Appendix K

Sand Separation Area Supporting Documents

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Appendix K - Appendices

Appendix K-1 Sand Separation Area Analytical Laboratory Reports
Appendix K-2 Sand Separation Area Data Validation Memorandums

Appendices

Appendix K-1

Sand Separation Area Analytical Laboratory Reports

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ANALYTICAL REPORT

Job Number: 140-17578-1

Job Description: San Jacinto River Waste Pits Superfund

For:
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Attention: Janie Smith

Approved for release.
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Definitions/Glossary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Qualifiers

Dioxin

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: GHD Services Inc.

Project: San Jacinto River Waste Pits Superfund

Report Number: 140-17578-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/10/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.2 C.

The following samples were submitted for analysis; however, it was not listed on the Chain-of-Custody (COC):
11187072-120619-SS-SJSSA06(4-6) (140-17578-12[MS]) and 11187072-120619-SS-SJSSA06(4-6) (140-17578-12[MSD])

NOTE: Results for non-detect PCDD/PCDF analytes are reported using the Estimated Detection Limit (EDL) convention, which provides the lowest possible detection limits for each analyte in each sample based on the magnitude of chromatographic and detector 'noise' at the expected retention time of each analyte. EDL values are typically well below 1 pg/g, and the TEQ-weighted sum of EDL values is below the targeted action limit of 30 pg/g in each reported sample.

DIOXINS

The following samples went through Gel-Permeation Cleanup procedure, based on EPA method 3640A:
1187072-120419-SS-SJSSA08(0-1) (140-17578-1), 11187072-120419-SS-SJSSA08(1-2) (140-17578-2), 11187072-120419-SS-SJSSA08(2-4) (140-17578-3), 11187072-120419-SS-SJSSA08(4-6) (140-17578-4), 11187072-120619-SS-SJSSA03(0-1) (140-17578-5), 11187072-120619-SS-SJSSA03(1-2) (140-17578-6), 11187072-120619-SS-SJSSA03(2-4) (140-17578-7), 11187072-120619-SS-SJSSA03(4-6) (140-17578-8), 11187072-120619-SS-SJSSA06(0-1) (140-17578-9), 11187072-120619-SS-SJSSA06(1-2) (140-17578-10), 11187072-120619-SS-SJSSA06(2-4) (140-17578-11), 11187072-120619-SS-SJSSA06(4-6) (140-17578-12), 11187072-120619-SS-SJSSA06(4-6) (140-17578-12[MS]), 11187072-120619-SS-SJSSA06(4-6) (140-17578-12[MSD]), 11187072-120619-SS-DUP1 (140-17578-13), 11187072-120719-SS-SJSSA02(2-4) (140-17578-14), 11187072-120719-SS-SJSSA02(4-6) (140-17578-15), 11187072-120719-SS-SJSSA02(0-1) (140-17578-16) and 11187072-120719-SS-SJSSA02(1-2) (140-17578-17).

Samples 11187072-120619-SS-SJSSA06(4-6) (140-17578-12) and 11187072-120619-SS-DUP1 (140-17578-13) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

One or more ion abundance ratios are outside criteria for the Isotope Dilution Analyte (IDA) associated with the following samples:
11187072-120619-SS-SJSSA06(4-6) (140-17578-12) and 11187072-120619-SS-SJSSA06(4-6) (140-17578-12[MSD]).

Several analytes were detected in method blank MB 140-35991/20-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Several analytes failed the recovery criteria low for the MS/MSD of sample 11187072-120619-SS-SJSSA06(4-6)MS (140-17578-12) in batch 140-36167. OCDD failed the recovery criteria high. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

PERCENT SOLIDS

The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

Detection Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	4.1		1.3	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	6.4	B q	1.3	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.20	J q	6.5	0.092	pg/g	1	☼	1613B	Total/NA
Total PeCDD	2.4	J q	6.5	0.092	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.047	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.57	J	6.5	0.049	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.3	J	6.5	0.045	pg/g	1	☼	1613B	Total/NA
Total HxCDD	18	B q	6.5	0.047	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	28	B	6.5	0.15	pg/g	1	☼	1613B	Total/NA
Total HpCDD	89	B	6.5	0.15	pg/g	1	☼	1613B	Total/NA
OCDD	930	B	13	0.050	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	11		1.3	0.46	pg/g	1	☼	1613B	Total/NA
Total TCDF	26	I B q	1.3	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.49	J	6.5	0.078	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.29	J	6.5	0.073	pg/g	1	☼	1613B	Total/NA
Total PeCDF	3.6	J I q	6.5	0.075	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.84	J	6.5	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.37	J I q	6.5	0.11	pg/g	1	☼	1613B	Total/NA
Total HxCDF	4.4	J I q	6.5	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	3.1	J B	6.5	0.075	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.53	J B q	6.5	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDF	7.1	B q	6.5	0.10	pg/g	1	☼	1613B	Total/NA
OCDF	20	B	13	0.17	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	10		1.5	0.096	pg/g	1	☼	1613B	Total/NA
Total TCDD	17	B q	1.5	0.096	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.49	J q	7.3	0.066	pg/g	1	☼	1613B	Total/NA
Total PeCDD	6.4	J q	7.3	0.066	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.98	J	7.3	0.052	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.7	J	7.3	0.052	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	3.0	J	7.3	0.049	pg/g	1	☼	1613B	Total/NA
Total HxCDD	50	B q	7.3	0.051	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	73	B	7.3	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDD	240	B	7.3	0.17	pg/g	1	☼	1613B	Total/NA
OCDD	2600	B	15	0.049	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	32		1.5	0.51	pg/g	1	☼	1613B	Total/NA
Total TCDF	68	I B q	1.5	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.2	J	7.3	0.062	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.86	J q	7.3	0.059	pg/g	1	☼	1613B	Total/NA
Total PeCDF	7.3	I q	7.3	0.060	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	2.5	J	7.3	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.1	J I	7.3	0.11	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.25	J q	7.3	0.13	pg/g	1	☼	1613B	Total/NA
Total HxCDF	12	I q	7.3	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	6.6	J B	7.3	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	1.0	J B	7.3	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDF	16	B q	7.3	0.14	pg/g	1	☼	1613B	Total/NA
OCDF	53	B	15	0.026	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	75		1.8	0.15	pg/g	1	☼	1613B	Total/NA
Total TCDD	92	B q	1.8	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	1.5	J	8.9	0.27	pg/g	1	☼	1613B	Total/NA
Total PeCDD	11	q	8.9	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	1.4	J	8.9	0.093	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	2.6	J	8.9	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	4.8	J	8.9	0.086	pg/g	1	☼	1613B	Total/NA
Total HxCDD	80	B	8.9	0.090	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	110	B	8.9	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDD	370	B	8.9	0.14	pg/g	1	☼	1613B	Total/NA
OCDD	3600	B	18	0.11	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	260		1.8	0.93	pg/g	1	☼	1613B	Total/NA
Total TCDF	540	I B q	1.8	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	6.9	J	8.9	0.088	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	5.2	J	8.9	0.084	pg/g	1	☼	1613B	Total/NA
Total PeCDF	27	I q	8.9	0.086	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	10		8.9	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	3.2	J	8.9	0.17	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.59	J	8.9	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.34	J q	8.9	0.24	pg/g	1	☼	1613B	Total/NA
Total HxCDF	29	I q	8.9	0.19	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	13	B	8.9	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	2.2	J B	8.9	0.27	pg/g	1	☼	1613B	Total/NA
Total HpCDF	29	B q	8.9	0.22	pg/g	1	☼	1613B	Total/NA
OCDF	93	B	18	0.60	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	35		1.4	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	47	B q	1.4	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.52	J	7.1	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	8.2	q	7.1	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.35	J q	7.1	0.21	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.90	J	7.1	0.20	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.3	J	7.1	0.19	pg/g	1	☼	1613B	Total/NA
Total HxCDD	40	B q	7.1	0.20	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	35	B	7.1	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDD	130	B	7.1	0.12	pg/g	1	☼	1613B	Total/NA
OCDD	830	B	14	0.046	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	120		1.4	0.69	pg/g	1	☼	1613B	Total/NA
Total TCDF	260	B q	1.4	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	2.7	J	7.1	0.14	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	2.6	J	7.1	0.13	pg/g	1	☼	1613B	Total/NA
Total PeCDF	8.7		7.1	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	4.0	J	7.1	0.16	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.99	J q	7.1	0.15	pg/g	1	☼	1613B	Total/NA
Total HxCDF	6.5	J I q	7.1	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.3	J B	7.1	0.073	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.41	J B q	7.1	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDF	4.6	J B q	7.1	0.095	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) (Continued) — Lab Sample ID: 140-17578-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
OCDF	8.6	J B	14	0.087	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) — Lab Sample ID: 140-17578-5

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	8.4		1.6	0.11	pg/g	1	☼	1613B	Total/NA
Total TCDD	20	B q	1.6	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.40	J	8.2	0.083	pg/g	1	☼	1613B	Total/NA
Total PeCDD	12	q	8.2	0.083	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.56	J	8.2	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.79	J q	8.2	0.30	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.7	J	8.2	0.27	pg/g	1	☼	1613B	Total/NA
Total HxCDD	53	B q	8.2	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	41	B	8.2	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDD	160	B	8.2	0.14	pg/g	1	☼	1613B	Total/NA
OCDD	980	B	16	0.044	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	34		1.6	0.60	pg/g	1	☼	1613B	Total/NA
Total TCDF	82	B q	1.6	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	4.6	J	8.2	0.15	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	4.9	J	8.2	0.14	pg/g	1	☼	1613B	Total/NA
Total PeCDF	19	I q	8.2	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	4.1	J	8.2	0.071	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.2	J	8.2	0.068	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.37	J	8.2	0.075	pg/g	1	☼	1613B	Total/NA
Total HxCDF	8.8	I q	8.2	0.078	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.2	J B	8.2	0.057	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.35	J B q	8.2	0.087	pg/g	1	☼	1613B	Total/NA
Total HpCDF	5.0	J B q	8.2	0.072	pg/g	1	☼	1613B	Total/NA
OCDF	10	J B	16	0.12	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) — Lab Sample ID: 140-17578-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	3.8		1.4	0.069	pg/g	1	☼	1613B	Total/NA
Total TCDD	17	B q	1.4	0.069	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.32	J	7.0	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	11	q	7.0	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.48	J q	7.0	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.87	J q	7.0	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.3	J	7.0	0.26	pg/g	1	☼	1613B	Total/NA
Total HxCDD	53	B q	7.0	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	34	B	7.0	0.11	pg/g	1	☼	1613B	Total/NA
Total HpCDD	130	B	7.0	0.11	pg/g	1	☼	1613B	Total/NA
OCDD	810	B	14	0.053	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	12		1.4	0.54	pg/g	1	☼	1613B	Total/NA
Total TCDF	28	B q	1.4	0.066	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.32	J q	7.0	0.12	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.26	J	7.0	0.11	pg/g	1	☼	1613B	Total/NA
Total PeCDF	2.1	J I q	7.0	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.66	J	7.0	0.094	pg/g	1	☼	1613B	Total/NA
Total HxCDF	2.3	J I q	7.0	0.11	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) (Continued) — Lab Sample ID: 140-17578-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,6,7,8-HpCDF	1.1	J B	7.0	0.037	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.23	J B	7.0	0.058	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.8	J B	7.0	0.048	pg/g	1	☼	1613B	Total/NA
OCDF	5.5	J B	14	0.15	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) — Lab Sample ID: 140-17578-7

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.20	J q	1.3	0.074	pg/g	1	☼	1613B	Total/NA
Total TCDD	4.9	q B	1.3	0.074	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.20	J q	6.4	0.070	pg/g	1	☼	1613B	Total/NA
Total PeCDD	6.1	J q	6.4	0.070	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.40	J	6.4	0.035	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.56	J q	6.4	0.037	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.2	J q	6.4	0.034	pg/g	1	☼	1613B	Total/NA
Total HxCDD	32	q B	6.4	0.035	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	30	B	6.4	0.13	pg/g	1	☼	1613B	Total/NA
Total HpCDD	110	B	6.4	0.13	pg/g	1	☼	1613B	Total/NA
OCDD	700	B	13	0.031	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	0.92	J q	1.3	0.061	pg/g	1	☼	1613B	Total/NA
Total TCDF	2.8	q B	1.3	0.061	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.78	J I q	6.4	0.087	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.52	J I	6.4	0.092	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.42	J B	6.4	0.053	pg/g	1	☼	1613B	Total/NA
Total HpCDF	0.98	J B	6.4	0.067	pg/g	1	☼	1613B	Total/NA
OCDF	1.6	J B	13	0.080	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) — Lab Sample ID: 140-17578-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	8.5		1.5	0.093	pg/g	1	☼	1613B	Total/NA
Total TCDD	15	B q	1.5	0.093	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.62	J q	7.3	0.058	pg/g	1	☼	1613B	Total/NA
Total PeCDD	9.3	q	7.3	0.058	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.95	J q	7.3	0.068	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	2.7	J	7.3	0.073	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	3.9	J	7.3	0.066	pg/g	1	☼	1613B	Total/NA
Total HxCDD	61	B q	7.3	0.069	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	90	B	7.3	0.11	pg/g	1	☼	1613B	Total/NA
Total HpCDD	270	B	7.3	0.11	pg/g	1	☼	1613B	Total/NA
OCDD	2300	B	15	0.045	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	24		1.5	0.39	pg/g	1	☼	1613B	Total/NA
Total TCDF	58	I B q	1.5	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.1	J	7.3	0.081	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.89	J	7.3	0.076	pg/g	1	☼	1613B	Total/NA
Total PeCDF	16	I q	7.3	0.078	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	2.6	J	7.3	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.5	J I	7.3	0.14	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.34	J q	7.3	0.16	pg/g	1	☼	1613B	Total/NA
Total HxCDF	24	I q	7.3	0.16	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	11	B	7.3	0.13	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) (Continued) Lab Sample ID: 140-17578-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,7,8,9-HpCDF	1.5	J B q	7.3	0.19	pg/g	1	☼	1613B	Total/NA
Total HpCDF	27	B q	7.3	0.16	pg/g	1	☼	1613B	Total/NA
OCDF	120	B	15	0.11	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	74		1.2	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	84	B q	1.2	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.69	J	5.8	0.032	pg/g	1	☼	1613B	Total/NA
Total PeCDD	2.7	J q	5.8	0.032	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.20	J q	5.8	0.023	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.45	J	5.8	0.023	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.87	J	5.8	0.022	pg/g	1	☼	1613B	Total/NA
Total HxCDD	14	B q	5.8	0.022	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	16	B	5.8	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDD	55	B	5.8	0.17	pg/g	1	☼	1613B	Total/NA
OCDD	380	B	12	0.072	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	270		1.2	0.70	pg/g	1	☼	1613B	Total/NA
Total TCDF	600	B q	1.2	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	6.6		5.8	0.069	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	4.7	J	5.8	0.062	pg/g	1	☼	1613B	Total/NA
Total PeCDF	19	q	5.8	0.066	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	9.6		5.8	0.056	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	2.3	J	5.8	0.053	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.35	J q	5.8	0.059	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.24	J	5.8	0.076	pg/g	1	☼	1613B	Total/NA
Total HxCDF	16	I q	5.8	0.061	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	3.1	J B	5.8	0.048	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.79	J B q	5.8	0.080	pg/g	1	☼	1613B	Total/NA
Total HpCDF	6.1	B q	5.8	0.064	pg/g	1	☼	1613B	Total/NA
OCDF	10	J B	12	0.053	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	83		1.1	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	94	B q	1.1	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.70	J	5.5	0.036	pg/g	1	☼	1613B	Total/NA
Total PeCDD	2.2	J q	5.5	0.036	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.20	J	5.5	0.026	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.24	J	5.5	0.025	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.72	J	5.5	0.024	pg/g	1	☼	1613B	Total/NA
Total HxCDD	11	B q	5.5	0.025	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	9.9	B	5.5	0.10	pg/g	1	☼	1613B	Total/NA
Total HpCDD	38	B	5.5	0.10	pg/g	1	☼	1613B	Total/NA
OCDD	210	B	11	0.028	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	300		1.1	0.66	pg/g	1	☼	1613B	Total/NA
Total TCDF	650	B q	1.1	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	6.2		5.5	0.041	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	5.1	J	5.5	0.038	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) (Continued) Lab Sample ID: 140-17578-10

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total PeCDF	20	q	5.5	0.040	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	9.2		5.5	0.053	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	2.4	J	5.5	0.049	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.32	J q	5.5	0.055	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.17	J q	5.5	0.071	pg/g	1	☼	1613B	Total/NA
Total HxCDF	15	I q	5.5	0.057	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.7	J B	5.5	0.041	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	1.0	J B	5.5	0.064	pg/g	1	☼	1613B	Total/NA
Total HpCDF	5.3	J B	5.5	0.052	pg/g	1	☼	1613B	Total/NA
OCDF	4.8	J B	11	0.046	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	82		1.2	0.11	pg/g	1	☼	1613B	Total/NA
Total TCDD	94	B q	1.2	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.68	J q	5.9	0.13	pg/g	1	☼	1613B	Total/NA
Total PeCDD	2.2	J q	5.9	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.16	J	5.9	0.035	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.42	J q	5.9	0.035	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.58	J q	5.9	0.033	pg/g	1	☼	1613B	Total/NA
Total HxCDD	11	B q	5.9	0.034	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	9.3	B	5.9	0.089	pg/g	1	☼	1613B	Total/NA
Total HpCDD	35	B	5.9	0.089	pg/g	1	☼	1613B	Total/NA
OCDD	200	B	12	0.042	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	290		1.2	0.75	pg/g	1	☼	1613B	Total/NA
Total TCDF	640	B	1.2	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	6.2		5.9	0.039	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	5.4	J	5.9	0.041	pg/g	1	☼	1613B	Total/NA
Total PeCDF	20	q	5.9	0.040	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	9.7		5.9	0.065	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	2.3	J	5.9	0.061	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.37	J	5.9	0.068	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.15	J q	5.9	0.092	pg/g	1	☼	1613B	Total/NA
Total HxCDF	15	q	5.9	0.072	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.8	J B	5.9	0.042	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.93	J B q	5.9	0.071	pg/g	1	☼	1613B	Total/NA
Total HpCDF	4.3	J B q	5.9	0.056	pg/g	1	☼	1613B	Total/NA
OCDF	3.4	J B	12	0.042	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	2800		17	2.4	pg/g	10	☼	1613B	Total/NA
Total TCDD	3100	B	17	2.4	pg/g	10	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	25	J	83	3.2	pg/g	10	☼	1613B	Total/NA
Total PeCDD	28	J q	83	3.2	pg/g	10	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	4.0	J F2	83	0.61	pg/g	10	☼	1613B	Total/NA
Total HxCDD	62	J B	83	0.63	pg/g	10	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	75	J B	83	0.62	pg/g	10	☼	1613B	Total/NA
Total HpCDD	250	B	83	0.62	pg/g	10	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) (Continued) Lab Sample ID: 140-17578-12

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
OCDD	1300	B F1	170	0.52	pg/g	10	☼	1613B	Total/NA
2,3,7,8-TCDF	3900		25	12	pg/g	15	☼	1613B	Total/NA
Total TCDF	17000	B q	17	1.2	pg/g	10	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	250	F1	83	0.47	pg/g	10	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	170	F1	83	0.44	pg/g	10	☼	1613B	Total/NA
Total PeCDF	700	I q	83	0.45	pg/g	10	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	420	F1	83	2.7	pg/g	10	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	110	F1	83	2.5	pg/g	10	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	11	J	83	2.7	pg/g	10	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	7.3	J q	83	3.4	pg/g	10	☼	1613B	Total/NA
Total HxCDF	630	I q	83	2.8	pg/g	10	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	100	F1 B	83	0.081	pg/g	10	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	41	J B	83	0.15	pg/g	10	☼	1613B	Total/NA
Total HpCDF	180	B q	83	0.11	pg/g	10	☼	1613B	Total/NA
OCDF	46	J B	170	1.4	pg/g	10	☼	1613B	Total/NA

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	360		1.8	0.56	pg/g	1	☼	1613B	Total/NA
Total TCDD	420	B q	1.8	0.56	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	7.7	J	9.2	0.18	pg/g	1	☼	1613B	Total/NA
Total PeCDD	11	q	9.2	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.71	J q	9.2	0.064	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.91	J	9.2	0.063	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.2	J	9.2	0.059	pg/g	1	☼	1613B	Total/NA
Total HxCDD	18	B q	9.2	0.062	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	12	B	9.2	0.25	pg/g	1	☼	1613B	Total/NA
Total HpCDD	42	B	9.2	0.25	pg/g	1	☼	1613B	Total/NA
OCDD	230	B	18	0.067	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	1900		9.2	3.2	pg/g	5	☼	1613B	Total/NA
Total TCDF	4500	B q	1.8	0.57	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	160		9.2	0.23	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	190		9.2	0.22	pg/g	1	☼	1613B	Total/NA
Total PeCDF	530	I	9.2	0.22	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	120		9.2	0.78	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	31		9.2	0.77	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	9.5		9.2	0.88	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	2.8	J	9.2	1.1	pg/g	1	☼	1613B	Total/NA
Total HxCDF	190	q	9.2	0.89	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	19	B	9.2	0.077	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	9.3	B	9.2	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDF	34	B q	9.2	0.099	pg/g	1	☼	1613B	Total/NA
OCDF	9.0	J B	18	0.079	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) Lab Sample ID: 140-17578-14

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	6.8		1.3	0.099	pg/g	1	☼	1613B	Total/NA
Total TCDD	20	B q	1.3	0.099	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.42	J q	6.4	0.063	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) (Continued) Lab Sample ID: 140-17578-14

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total PeCDD	11	q	6.4	0.063	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.39	J q	6.4	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.1	J	6.4	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.3	J	6.4	0.12	pg/g	1	☼	1613B	Total/NA
Total HxCDD	51	B q	6.4	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	44	B	6.4	0.21	pg/g	1	☼	1613B	Total/NA
Total HpCDD	150	B	6.4	0.21	pg/g	1	☼	1613B	Total/NA
OCDD	1000	B	13	0.061	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	18		1.3	0.19	pg/g	1	☼	1613B	Total/NA
Total TCDF	49	I B q	1.3	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.3	J	6.4	0.18	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	1.2	J	6.4	0.17	pg/g	1	☼	1613B	Total/NA
Total PeCDF	6.1	J I q	6.4	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	2.3	J	6.4	0.16	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.73	J I q	6.4	0.15	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.25	J	6.4	0.17	pg/g	1	☼	1613B	Total/NA
Total HxCDF	8.7	I q	6.4	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	4.2	J B	6.4	0.071	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.77	J B	6.4	0.10	pg/g	1	☼	1613B	Total/NA
Total HpCDF	11	B	6.4	0.086	pg/g	1	☼	1613B	Total/NA
OCDF	25	B	13	0.017	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) Lab Sample ID: 140-17578-15

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.62	J q	1.2	0.081	pg/g	1	☼	1613B	Total/NA
Total TCDD	5.2	B q	1.2	0.081	pg/g	1	☼	1613B	Total/NA
Total PeCDD	4.6	J q	6.2	0.080	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.39	J	6.2	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.54	J	6.2	0.088	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.0	J q	6.2	0.084	pg/g	1	☼	1613B	Total/NA
Total HxCDD	26	B q	6.2	0.088	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	22	B	6.2	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDD	70	B	6.2	0.17	pg/g	1	☼	1613B	Total/NA
OCDD	450	B	12	0.022	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	2.0		1.2	0.18	pg/g	1	☼	1613B	Total/NA
Total TCDF	5.0	B q	1.2	0.079	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.26	J	6.2	0.10	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.88	J I q	6.2	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.42	J	6.2	0.079	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.23	J	6.2	0.075	pg/g	1	☼	1613B	Total/NA
Total HxCDF	2.2	J I q	6.2	0.087	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.90	J B	6.2	0.043	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.3	J B q	6.2	0.053	pg/g	1	☼	1613B	Total/NA
OCDF	5.3	J B	12	0.099	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.1	J q	1.4	0.12	pg/g	1	☼	1613B	Total/NA
Total TCDD	7.0	B q	1.4	0.12	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) (Continued) Lab Sample ID: 140-17578-16

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total PeCDD	4.3	J q	7.1	0.062	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.32	J q	7.1	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.80	J	7.1	0.13	pg/g	1	☼	1613B	Total/NA
Total HxCDD	18	B q	7.1	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	14	B q	7.1	0.090	pg/g	1	☼	1613B	Total/NA
Total HpCDD	48	B q	7.1	0.090	pg/g	1	☼	1613B	Total/NA
OCDD	400	B	14	0.0088	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	3.6	q	1.4	0.17	pg/g	1	☼	1613B	Total/NA
Total TCDF	7.7	B q	1.4	0.094	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.85	J I q	7.1	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.67	J B	7.1	0.039	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.083	J B q	7.1	0.061	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.5	J B q	7.1	0.050	pg/g	1	☼	1613B	Total/NA
OCDF	3.8	J B	14	0.018	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.1	J	1.4	0.093	pg/g	1	☼	1613B	Total/NA
Total TCDD	11	B q	1.4	0.093	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.17	J q	7.0	0.065	pg/g	1	☼	1613B	Total/NA
Total PeCDD	8.8	q	7.0	0.065	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.33	J q	7.0	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.42	J	7.0	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.4	J	7.0	0.16	pg/g	1	☼	1613B	Total/NA
Total HxCDD	34	B q	7.0	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	21	B	7.0	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDD	77	B	7.0	0.17	pg/g	1	☼	1613B	Total/NA
OCDD	510	B	14	0.024	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF	3.2		1.4	0.28	pg/g	1	☼	1613B	Total/NA
Total TCDF	6.8	B q	1.4	0.072	pg/g	1	☼	1613B	Total/NA
Total PeCDF	1.1	J q	7.0	0.062	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.1	J	7.0	0.084	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.35	J	7.0	0.087	pg/g	1	☼	1613B	Total/NA
Total HxCDF	3.1	J I q	7.0	0.094	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.6	J B	7.0	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.52	J B	7.0	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDF	4.8	J B q	7.0	0.13	pg/g	1	☼	1613B	Total/NA
OCDF	4.3	J B q	14	0.12	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) **Lab Sample ID: 140-17578-1**
Date Collected: 12/04/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 76.3**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	4.1		1.3	0.13	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total TCDD	6.4	B q	1.3	0.13	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,7,8-PeCDD	0.20	J q	6.5	0.092	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total PeCDD	2.4	J q	6.5	0.092	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.047	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,6,7,8-HxCDD	0.57	J	6.5	0.049	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,7,8,9-HxCDD	1.3	J	6.5	0.045	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total HxCDD	18	B q	6.5	0.047	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,4,6,7,8-HpCDD	28	B	6.5	0.15	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total HpCDD	89	B	6.5	0.15	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
OCDD	930	B	13	0.050	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
2,3,7,8-TCDF	11		1.3	0.46	pg/g	☼	12/11/19 10:49	12/18/19 03:24	1
Total TCDF	26	I B q	1.3	0.11	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,7,8-PeCDF	0.49	J	6.5	0.078	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
2,3,4,7,8-PeCDF	0.29	J	6.5	0.073	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total PeCDF	3.6	J I q	6.5	0.075	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,4,7,8-HxCDF	0.84	J	6.5	0.12	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,6,7,8-HxCDF	0.37	J I q	6.5	0.11	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
2,3,4,6,7,8-HxCDF	ND		6.5	0.12	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,7,8,9-HxCDF	ND		6.5	0.16	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total HxCDF	4.4	J I q	6.5	0.13	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,4,6,7,8-HpCDF	3.1	J B	6.5	0.075	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
1,2,3,4,7,8,9-HpCDF	0.53	J B q	6.5	0.12	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
Total HpCDF	7.1	B q	6.5	0.10	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1
OCDF	20	B	13	0.17	pg/g	☼	12/11/19 10:49	12/17/19 05:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,7,8-PeCDD	*67*		*25 - 181*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*75*		*28 - 130*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*23 - 140*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-OCDD	*60*		*17 - 157*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/18/19 03:24*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-2,3,4,7,8-PeCDF	*68*		*21 - 178*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*70*		*26 - 152*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*71*		*26 - 123*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/17/19 05:02*	*1*
13C-OCDF	*60*		*17 - 157*	*12/11/19 10:49*	*12/17/19 05:02*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/17/19 05:02*	*1*

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) **Lab Sample ID: 140-17578-2**
Date Collected: 12/04/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 67.5**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	10		1.5	0.096	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total TCDD	17	B q	1.5	0.096	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,7,8-PeCDD	0.49	J q	7.3	0.066	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total PeCDD	6.4	J q	7.3	0.066	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,4,7,8-HxCDD	0.98	J	7.3	0.052	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,6,7,8-HxCDD	1.7	J	7.3	0.052	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,7,8,9-HxCDD	3.0	J	7.3	0.049	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total HxCDD	50	B q	7.3	0.051	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,4,6,7,8-HpCDD	73	B	7.3	0.17	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total HpCDD	240	B	7.3	0.17	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
OCDD	2600	B	15	0.049	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
2,3,7,8-TCDF	32		1.5	0.51	pg/g	☼	12/11/19 10:49	12/18/19 04:33	1
Total TCDF	68	I B q	1.5	0.12	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,7,8-PeCDF	1.2	J	7.3	0.062	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
2,3,4,7,8-PeCDF	0.86	J q	7.3	0.059	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total PeCDF	7.3	I q	7.3	0.060	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,4,7,8-HxCDF	2.5	J	7.3	0.12	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,6,7,8-HxCDF	1.1	J I	7.3	0.11	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
2,3,4,6,7,8-HxCDF	0.25	J q	7.3	0.13	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,7,8,9-HxCDF	ND		7.3	0.16	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total HxCDF	12	I q	7.3	0.13	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,4,6,7,8-HpCDF	6.6	J B	7.3	0.12	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
1,2,3,4,7,8,9-HpCDF	1.0	J B	7.3	0.17	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
Total HpCDF	16	B q	7.3	0.14	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1
OCDF	53	B	15	0.026	pg/g	☼	12/11/19 10:49	12/17/19 06:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,7,8-PeCDD	*70*		*25 - 181*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,6,7,8-HxCDD	*71*		*28 - 130*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*70*		*23 - 140*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-OCDD	*68*		*17 - 157*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*12/11/19 10:49*	*12/18/19 04:33*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*24 - 185*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,6,7,8-HxCDF	*67*		*26 - 123*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-2,3,4,6,7,8-HxCDF	*68*		*28 - 136*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*68*		*28 - 143*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*12/11/19 10:49*	*12/17/19 06:03*	*1*
13C-OCDF	*66*		*17 - 157*	*12/11/19 10:49*	*12/17/19 06:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/17/19 06:03*	*1*

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) **Lab Sample ID: 140-17578-3**
Date Collected: 12/04/19 15:40 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 57.7**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	75		1.8	0.15	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total TCDD	92	B q	1.8	0.15	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,7,8-PeCDD	1.5	J	8.9	0.27	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total PeCDD	11	q	8.9	0.27	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,4,7,8-HxCDD	1.4	J	8.9	0.093	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,6,7,8-HxCDD	2.6	J	8.9	0.091	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,7,8,9-HxCDD	4.8	J	8.9	0.086	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total HxCDD	80	B	8.9	0.090	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,4,6,7,8-HpCDD	110	B	8.9	0.14	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total HpCDD	370	B	8.9	0.14	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
OCDD	3600	B	18	0.11	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
2,3,7,8-TCDF	260		1.8	0.93	pg/g	☼	12/11/19 10:49	12/18/19 06:19	1
Total TCDF	540	I B q	1.8	0.15	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,7,8-PeCDF	6.9	J	8.9	0.088	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
2,3,4,7,8-PeCDF	5.2	J	8.9	0.084	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total PeCDF	27	I q	8.9	0.086	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,4,7,8-HxCDF	10		8.9	0.18	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,6,7,8-HxCDF	3.2	J	8.9	0.17	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
2,3,4,6,7,8-HxCDF	0.59	J	8.9	0.18	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,7,8,9-HxCDF	0.34	J q	8.9	0.24	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total HxCDF	29	I q	8.9	0.19	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,4,6,7,8-HpCDF	13	B	8.9	0.17	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
1,2,3,4,7,8,9-HpCDF	2.2	J B	8.9	0.27	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
Total HpCDF	29	B q	8.9	0.22	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1
OCDF	93	B	18	0.60	pg/g	☼	12/11/19 10:49	12/17/19 07:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,7,8-PeCDD	*69*		*25 - 181*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-OCDD	*66*		*17 - 157*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/18/19 06:19*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,6,7,8-HxCDF	*66*		*26 - 123*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*12/11/19 10:49*	*12/17/19 07:04*	*1*
13C-OCDF	*68*		*17 - 157*	*12/11/19 10:49*	*12/17/19 07:04*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/17/19 07:04*	*1*

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) **Lab Sample ID: 140-17578-4**
Date Collected: 12/04/19 15:45 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 70.1**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	35		1.4	0.13	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total TCDD	47	B q	1.4	0.13	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,7,8-PeCDD	0.52	J	7.1	0.12	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total PeCDD	8.2	q	7.1	0.12	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,4,7,8-HxCDD	0.35	J q	7.1	0.21	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,6,7,8-HxCDD	0.90	J	7.1	0.20	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,7,8,9-HxCDD	2.3	J	7.1	0.19	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total HxCDD	40	B q	7.1	0.20	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,4,6,7,8-HpCDD	35	B	7.1	0.12	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total HpCDD	130	B	7.1	0.12	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
OCDD	830	B	14	0.046	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
2,3,7,8-TCDF	120		1.4	0.69	pg/g	☼	12/11/19 10:49	12/18/19 05:44	1
Total TCDF	260	B q	1.4	0.14	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,7,8-PeCDF	2.7	J	7.1	0.14	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
2,3,4,7,8-PeCDF	2.6	J	7.1	0.13	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total PeCDF	8.7		7.1	0.14	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,4,7,8-HxCDF	4.0	J	7.1	0.16	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,6,7,8-HxCDF	0.99	J q	7.1	0.15	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
2,3,4,6,7,8-HxCDF	ND		7.1	0.16	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,7,8,9-HxCDF	ND		7.1	0.21	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total HxCDF	6.5	J I q	7.1	0.17	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,4,6,7,8-HpCDF	2.3	J B	7.1	0.073	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
1,2,3,4,7,8,9-HpCDF	0.41	J B q	7.1	0.12	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
Total HpCDF	4.6	J B q	7.1	0.095	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1
OCDF	8.6	J B	14	0.087	pg/g	☼	12/11/19 10:49	12/17/19 08:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,7,8-PeCDD	*67*		*25 - 181*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*67*		*23 - 140*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-OCDD	*64*		*17 - 157*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/18/19 05:44*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,6,7,8-HxCDF	*67*		*26 - 123*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/17/19 08:05*	*1*
13C-OCDF	*64*		*17 - 157*	*12/11/19 10:49*	*12/17/19 08:05*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*69*		*35 - 197*	*12/11/19 10:49*	*12/17/19 08:05*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) **Lab Sample ID: 140-17578-5**
Date Collected: 12/06/19 12:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 62.3**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	8.4		1.6	0.11	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total TCDD	20	B q	1.6	0.11	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,7,8-PeCDD	0.40	J	8.2	0.083	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total PeCDD	12	q	8.2	0.083	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,4,7,8-HxCDD	0.56	J	8.2	0.28	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,6,7,8-HxCDD	0.79	J q	8.2	0.30	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,7,8,9-HxCDD	2.7	J	8.2	0.27	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total HxCDD	53	B q	8.2	0.28	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,4,6,7,8-HpCDD	41	B	8.2	0.14	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total HpCDD	160	B	8.2	0.14	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
OCDD	980	B	16	0.044	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
2,3,7,8-TCDF	34		1.6	0.60	pg/g	☼	12/11/19 10:49	12/18/19 05:08	1
Total TCDF	82	B q	1.6	0.15	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,7,8-PeCDF	4.6	J	8.2	0.15	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
2,3,4,7,8-PeCDF	4.9	J	8.2	0.14	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total PeCDF	19	I q	8.2	0.15	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,4,7,8-HxCDF	4.1	J	8.2	0.071	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,6,7,8-HxCDF	1.2	J	8.2	0.068	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
2,3,4,6,7,8-HxCDF	0.37	J	8.2	0.075	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,7,8,9-HxCDF	ND		8.2	0.096	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total HxCDF	8.8	I q	8.2	0.078	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,4,6,7,8-HpCDF	2.2	J B	8.2	0.057	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
1,2,3,4,7,8,9-HpCDF	0.35	J B q	8.2	0.087	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
Total HpCDF	5.0	J B q	8.2	0.072	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1
OCDF	10	J B	16	0.12	pg/g	☼	12/11/19 10:49	12/17/19 09:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-OCDD	*61*		*17 - 157*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*12/11/19 10:49*	*12/18/19 05:08*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,6,7,8-HxCDF	*63*		*26 - 123*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*28 - 143*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*12/11/19 10:49*	*12/17/19 09:06*	*1*
13C-OCDF	*63*		*17 - 157*	*12/11/19 10:49*	*12/17/19 09:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*68*		*35 - 197*	*12/11/19 10:49*	*12/17/19 09:06*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) **Lab Sample ID: 140-17578-6**
Date Collected: 12/06/19 12:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 71.8**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	3.8		1.4	0.069	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total TCDD	17	B q	1.4	0.069	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,7,8-PeCDD	0.32	J	7.0	0.12	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total PeCDD	11	q	7.0	0.12	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,4,7,8-HxCDD	0.48	J q	7.0	0.27	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,6,7,8-HxCDD	0.87	J q	7.0	0.28	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,7,8,9-HxCDD	2.3	J	7.0	0.26	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total HxCDD	53	B q	7.0	0.27	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,4,6,7,8-HpCDD	34	B	7.0	0.11	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total HpCDD	130	B	7.0	0.11	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
OCDD	810	B	14	0.053	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
2,3,7,8-TCDF	12		1.4	0.54	pg/g	☼	12/11/19 10:49	12/18/19 03:58	1
Total TCDF	28	B q	1.4	0.066	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,7,8-PeCDF	0.32	J q	7.0	0.12	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
2,3,4,7,8-PeCDF	0.26	J	7.0	0.11	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total PeCDF	2.1	J I q	7.0	0.11	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,4,7,8-HxCDF	0.66	J	7.0	0.094	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,6,7,8-HxCDF	ND		7.0	0.095	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
2,3,4,6,7,8-HxCDF	ND		7.0	0.10	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,7,8,9-HxCDF	ND		7.0	0.14	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total HxCDF	2.3	J I q	7.0	0.11	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,4,6,7,8-HpCDF	1.1	J B	7.0	0.037	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
1,2,3,4,7,8,9-HpCDF	0.23	J B	7.0	0.058	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
Total HpCDF	2.8	J B	7.0	0.048	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1
OCDF	5.5	J B	14	0.15	pg/g	☼	12/11/19 10:49	12/17/19 10:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,7,8-PeCDD	*68*		*25 - 181*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-OCDD	*64*		*17 - 157*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-2,3,7,8-TCDF	*62*		*24 - 169*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/18/19 03:58*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,6,7,8-HxCDF	*67*		*26 - 123*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-2,3,4,6,7,8-HxCDF	*68*		*28 - 136*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*70*		*28 - 143*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*12/11/19 10:49*	*12/17/19 10:07*	*1*
13C-OCDF	*67*		*17 - 157*	*12/11/19 10:49*	*12/17/19 10:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*69*		*35 - 197*	*12/11/19 10:49*	*12/17/19 10:07*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) **Lab Sample ID: 140-17578-7**
Date Collected: 12/06/19 12:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 76.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.20**	**J q**	1.3	0.074	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total TCDD	**4.9**	**q B**	1.3	0.074	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,7,8-PeCDD	**0.20**	**J q**	6.4	0.070	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total PeCDD	**6.1**	**J q**	6.4	0.070	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,4,7,8-HxCDD	**0.40**	**J**	6.4	0.035	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,6,7,8-HxCDD	**0.56**	**J q**	6.4	0.037	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,7,8,9-HxCDD	**2.2**	**J q**	6.4	0.034	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total HxCDD	**32**	**q B**	6.4	0.035	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,4,6,7,8-HpCDD	**30**	**B**	6.4	0.13	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total HpCDD	**110**	**B**	6.4	0.13	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
OCDD	**700**	**B**	13	0.031	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
2,3,7,8-TCDF	**0.92**	**J q**	1.3	0.061	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total TCDF	**2.8**	**q B**	1.3	0.061	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,7,8-PeCDF	ND		6.4	0.091	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
2,3,4,7,8-PeCDF	ND		6.4	0.083	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total PeCDF	**0.78**	**J I q**	6.4	0.087	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,4,7,8-HxCDF	ND		6.4	0.084	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,6,7,8-HxCDF	ND		6.4	0.081	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
2,3,4,6,7,8-HxCDF	ND		6.4	0.090	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,7,8,9-HxCDF	ND		6.4	0.11	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total HxCDF	**0.52**	**J I**	6.4	0.092	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,4,6,7,8-HpCDF	**0.42**	**J B**	6.4	0.053	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
1,2,3,4,7,8,9-HpCDF	ND		6.4	0.082	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
Total HpCDF	**0.98**	**J B**	6.4	0.067	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1
OCDF	**1.6**	**J B**	13	0.080	pg/g	☼	12/11/19 10:49	12/17/19 11:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,7,8-PeCDD	*65*		*25 - 181*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-OCDD	*64*		*17 - 157*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-2,3,4,6,7,8-HxCDF	*68*		*28 - 136*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*26 - 138*	*12/11/19 10:49*	*12/17/19 11:08*	*1*
13C-OCDF	*65*		*17 - 157*	*12/11/19 10:49*	*12/17/19 11:08*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/17/19 11:08*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6)

Lab Sample ID: 140-17578-8
Date Collected: 12/06/19 12:35
Matrix: Sediment
Date Received: 12/10/19 10:00
Percent Solids: 67.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	8.5		1.5	0.093	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total TCDD	15	B q	1.5	0.093	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,7,8-PeCDD	0.62	J q	7.3	0.058	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total PeCDD	9.3	q	7.3	0.058	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,4,7,8-HxCDD	0.95	J q	7.3	0.068	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,6,7,8-HxCDD	2.7	J	7.3	0.073	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,7,8,9-HxCDD	3.9	J	7.3	0.066	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total HxCDD	61	B q	7.3	0.069	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,4,6,7,8-HpCDD	90	B	7.3	0.11	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total HpCDD	270	B	7.3	0.11	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
OCDD	2300	B	15	0.045	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
2,3,7,8-TCDF	24		1.5	0.39	pg/g	☼	12/11/19 10:49	12/18/19 06:55	1
Total TCDF	58	I B q	1.5	0.13	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,7,8-PeCDF	1.1	J	7.3	0.081	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
2,3,4,7,8-PeCDF	0.89	J	7.3	0.076	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total PeCDF	16	I q	7.3	0.078	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,4,7,8-HxCDF	2.6	J	7.3	0.15	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,6,7,8-HxCDF	1.5	J I	7.3	0.14	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
2,3,4,6,7,8-HxCDF	0.34	J q	7.3	0.16	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,7,8,9-HxCDF	ND		7.3	0.21	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total HxCDF	24	I q	7.3	0.16	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,4,6,7,8-HpCDF	11	B	7.3	0.13	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
1,2,3,4,7,8,9-HpCDF	1.5	J B q	7.3	0.19	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
Total HpCDF	27	B q	7.3	0.16	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1
OCDF	120	B	15	0.11	pg/g	☼	12/11/19 10:49	12/17/19 15:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,7,8-PeCDD	*65*		*25 - 181*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*23 - 140*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-OCDD	*67*		*17 - 157*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*12/11/19 10:49*	*12/18/19 06:55*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*69*		*28 - 143*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*12/11/19 10:49*	*12/17/19 15:32*	*1*
13C-OCDF	*69*		*17 - 157*	*12/11/19 10:49*	*12/17/19 15:32*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*68*		*35 - 197*	*12/11/19 10:49*	*12/17/19 15:32*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) **Lab Sample ID: 140-17578-9**
Date Collected: 12/06/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 83.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	74		1.2	0.13	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total TCDD	84	B q	1.2	0.13	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,7,8-PeCDD	0.69	J	5.8	0.032	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total PeCDD	2.7	J q	5.8	0.032	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,4,7,8-HxCDD	0.20	J q	5.8	0.023	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,6,7,8-HxCDD	0.45	J	5.8	0.023	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,7,8,9-HxCDD	0.87	J	5.8	0.022	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total HxCDD	14	B q	5.8	0.022	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,4,6,7,8-HpCDD	16	B	5.8	0.17	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total HpCDD	55	B	5.8	0.17	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
OCDD	380	B	12	0.072	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
2,3,7,8-TCDF	270		1.2	0.70	pg/g	☼	12/11/19 10:49	12/18/19 07:30	1
Total TCDF	600	B q	1.2	0.11	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,7,8-PeCDF	6.6		5.8	0.069	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
2,3,4,7,8-PeCDF	4.7	J	5.8	0.062	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total PeCDF	19	q	5.8	0.066	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,4,7,8-HxCDF	9.6		5.8	0.056	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,6,7,8-HxCDF	2.3	J	5.8	0.053	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
2,3,4,6,7,8-HxCDF	0.35	J q	5.8	0.059	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,7,8,9-HxCDF	0.24	J	5.8	0.076	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total HxCDF	16	I q	5.8	0.061	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,4,6,7,8-HpCDF	3.1	J B	5.8	0.048	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
1,2,3,4,7,8,9-HpCDF	0.79	J B q	5.8	0.080	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
Total HpCDF	6.1	B q	5.8	0.064	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1
OCDF	10	J B	12	0.053	pg/g	☼	12/11/19 10:49	12/17/19 16:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,7,8-PeCDD	*61*		*25 - 181*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*23 - 140*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-OCDD	*61*		*17 - 157*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/18/19 07:30*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*26 - 152*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,6,7,8-HxCDF	*68*		*26 - 123*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-2,3,4,6,7,8-HxCDF	*64*		*28 - 136*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*66*		*28 - 143*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/17/19 16:33*	*1*
13C-OCDF	*61*		*17 - 157*	*12/11/19 10:49*	*12/17/19 16:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*73*		*35 - 197*	*12/11/19 10:49*	*12/17/19 16:33*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Date Collected: 12/06/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 89.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	83		1.1	0.13	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total TCDD	94	B q	1.1	0.13	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,7,8-PeCDD	0.70	J	5.5	0.036	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total PeCDD	2.2	J q	5.5	0.036	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,4,7,8-HxCDD	0.20	J	5.5	0.026	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,6,7,8-HxCDD	0.24	J	5.5	0.025	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,7,8,9-HxCDD	0.72	J	5.5	0.024	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total HxCDD	11	B q	5.5	0.025	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,4,6,7,8-HpCDD	9.9	B	5.5	0.10	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total HpCDD	38	B	5.5	0.10	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
OCDD	210	B	11	0.028	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
2,3,7,8-TCDF	300		1.1	0.66	pg/g	☼	12/11/19 10:49	12/18/19 08:05	1
Total TCDF	650	B q	1.1	0.10	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,7,8-PeCDF	6.2		5.5	0.041	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
2,3,4,7,8-PeCDF	5.1	J	5.5	0.038	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total PeCDF	20	q	5.5	0.040	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,4,7,8-HxCDF	9.2		5.5	0.053	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,6,7,8-HxCDF	2.4	J	5.5	0.049	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
2,3,4,6,7,8-HxCDF	0.32	J q	5.5	0.055	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,7,8,9-HxCDF	0.17	J q	5.5	0.071	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total HxCDF	15	I q	5.5	0.057	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,4,6,7,8-HpCDF	2.7	J B	5.5	0.041	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
1,2,3,4,7,8,9-HpCDF	1.0	J B	5.5	0.064	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
Total HpCDF	5.3	J B	5.5	0.052	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1
OCDF	4.8	J B	11	0.046	pg/g	☼	12/11/19 10:49	12/17/19 17:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,7,8-PeCDD	*63*		*25 - 181*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-OCDD	*61*		*17 - 157*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*12/11/19 10:49*	*12/18/19 08:05*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,6,7,8-HxCDF	*66*		*26 - 123*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,7,8,9-HxCDF	*65*		*29 - 147*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*28 - 143*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/17/19 17:34*	*1*
13C-OCDF	*63*		*17 - 157*	*12/11/19 10:49*	*12/17/19 17:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/17/19 17:34*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) **Lab Sample ID: 140-17578-11**
Date Collected: 12/06/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 82.5**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	82		1.2	0.11	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total TCDD	94	B q	1.2	0.11	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,7,8-PeCDD	0.68	J q	5.9	0.13	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total PeCDD	2.2	J q	5.9	0.13	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,4,7,8-HxCDD	0.16	J	5.9	0.035	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,6,7,8-HxCDD	0.42	J q	5.9	0.035	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,7,8,9-HxCDD	0.58	J q	5.9	0.033	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total HxCDD	11	B q	5.9	0.034	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,4,6,7,8-HpCDD	9.3	B	5.9	0.089	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total HpCDD	35	B	5.9	0.089	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
OCDD	200	B	12	0.042	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
2,3,7,8-TCDF	290		1.2	0.75	pg/g	☼	12/11/19 10:49	12/18/19 08:41	1
Total TCDF	640	B	1.2	0.15	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,7,8-PeCDF	6.2		5.9	0.039	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
2,3,4,7,8-PeCDF	5.4	J	5.9	0.041	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total PeCDF	20	q	5.9	0.040	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,4,7,8-HxCDF	9.7		5.9	0.065	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,6,7,8-HxCDF	2.3	J	5.9	0.061	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
2,3,4,6,7,8-HxCDF	0.37	J	5.9	0.068	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,7,8,9-HxCDF	0.15	J q	5.9	0.092	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total HxCDF	15	q	5.9	0.072	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,4,6,7,8-HpCDF	2.8	J B	5.9	0.042	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
1,2,3,4,7,8,9-HpCDF	0.93	J B q	5.9	0.071	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
Total HpCDF	4.3	J B q	5.9	0.056	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1
OCDF	3.4	J B	12	0.042	pg/g	☼	12/11/19 10:49	12/17/19 18:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,7,8-PeCDD	*63*		*25 - 181*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-OCDD	*57*		*17 - 157*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*12/11/19 10:49*	*12/18/19 08:41*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,7,8,9-HxCDF	*65*		*29 - 147*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*12/11/19 10:49*	*12/17/19 18:35*	*1*
13C-OCDF	*57*		*17 - 157*	*12/11/19 10:49*	*12/17/19 18:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*71*		*35 - 197*	*12/11/19 10:49*	*12/17/19 18:35*	*1*

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) **Lab Sample ID: 140-17578-12**
Date Collected: 12/06/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 60.9**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	2800		17	2.4	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total TCDD	3100	B	17	2.4	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,7,8-PeCDD	25	J	83	3.2	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total PeCDD	28	J q	83	3.2	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,4,7,8-HxCDD	ND	F2 F1	83	0.65	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,6,7,8-HxCDD	ND		83	0.64	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,7,8,9-HxCDD	4.0	J F2	83	0.61	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total HxCDD	62	J B	83	0.63	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,4,6,7,8-HpCDD	75	J B	83	0.62	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total HpCDD	250	B	83	0.62	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
OCDD	1300	B F1	170	0.52	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
2,3,7,8-TCDF	3900		25	12	pg/g	☼	12/11/19 10:49	12/18/19 09:16	15
Total TCDF	17000	B q	17	1.2	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,7,8-PeCDF	250	F1	83	0.47	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
2,3,4,7,8-PeCDF	170	F1	83	0.44	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total PeCDF	700	I q	83	0.45	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,4,7,8-HxCDF	420	F1	83	2.7	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,6,7,8-HxCDF	110	F1	83	2.5	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
2,3,4,6,7,8-HxCDF	11	J	83	2.7	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,7,8,9-HxCDF	7.3	J q	83	3.4	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total HxCDF	630	I q	83	2.8	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,4,6,7,8-HpCDF	100	F1 B	83	0.081	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
1,2,3,4,7,8,9-HpCDF	41	J B	83	0.15	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
Total HpCDF	180	B q	83	0.11	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10
OCDF	46	J B	170	1.4	pg/g	☼	12/11/19 10:49	12/18/19 08:03	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,7,8-PeCDD	*63*	*q*	*25 - 181*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,6,7,8-HxCDD	*71*		*28 - 130*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*23 - 140*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-OCDD	*76*		*17 - 157*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-2,3,7,8-TCDF	*121*		*24 - 169*	*12/11/19 10:49*	*12/18/19 09:16*	*15*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-2,3,4,7,8-PeCDF	*69*		*21 - 178*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,6,7,8-HxCDF	*62*		*26 - 123*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,4,6,7,8-HpCDF	*76*		*28 - 143*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*12/11/19 10:49*	*12/18/19 08:03*	*10*
13C-OCDF	*71*		*17 - 157*	*12/11/19 10:49*	*12/18/19 08:03*	*10*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*12/11/19 10:49*	*12/18/19 08:03*	*10*

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Date Collected: 12/06/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 55.0**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	360		1.8	0.56	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total TCDD	420	B q	1.8	0.56	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,7,8-PeCDD	7.7	J	9.2	0.18	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total PeCDD	11	q	9.2	0.18	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,4,7,8-HxCDD	0.71	J q	9.2	0.064	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,6,7,8-HxCDD	0.91	J	9.2	0.063	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,7,8,9-HxCDD	1.2	J	9.2	0.059	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total HxCDD	18	B q	9.2	0.062	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,4,6,7,8-HpCDD	12	B	9.2	0.25	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total HpCDD	42	B	9.2	0.25	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
OCDD	230	B	18	0.067	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
2,3,7,8-TCDF	1900		9.2	3.2	pg/g	☼	12/11/19 10:49	12/18/19 19:48	5
Total TCDF	4500	B q	1.8	0.57	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,7,8-PeCDF	160		9.2	0.23	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
2,3,4,7,8-PeCDF	190		9.2	0.22	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total PeCDF	530	I	9.2	0.22	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,4,7,8-HxCDF	120		9.2	0.78	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,6,7,8-HxCDF	31		9.2	0.77	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
2,3,4,6,7,8-HxCDF	9.5		9.2	0.88	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,7,8,9-HxCDF	2.8	J	9.2	1.1	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total HxCDF	190	q	9.2	0.89	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,4,6,7,8-HpCDF	19	B	9.2	0.077	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
1,2,3,4,7,8,9-HpCDF	9.3	B	9.2	0.12	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
Total HpCDF	34	B q	9.2	0.099	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1
OCDF	9.0	J B	18	0.079	pg/g	☼	12/11/19 10:49	12/18/19 02:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,7,8-PeCDD	*60*		*25 - 181*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,4,7,8-HxCDD	*69*		*32 - 141*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,6,7,8-HxCDD	*71*		*28 - 130*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*23 - 140*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-OCDD	*53*		*17 - 157*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-2,3,7,8-TCDF	*74*		*24 - 169*	*12/11/19 10:49*	*12/18/19 19:48*	*5*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,4,7,8-HxCDF	*71*		*26 - 152*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/18/19 02:58*	*1*
13C-OCDF	*56*		*17 - 157*	*12/11/19 10:49*	*12/18/19 02:58*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*12/11/19 10:49*	*12/18/19 02:58*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) **Lab Sample ID: 140-17578-14**
Date Collected: 12/07/19 12:00 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 76.0**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	6.8		1.3	0.099	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total TCDD	20	B q	1.3	0.099	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,7,8-PeCDD	0.42	J q	6.4	0.063	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total PeCDD	11	q	6.4	0.063	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,4,7,8-HxCDD	0.39	J q	6.4	0.13	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,6,7,8-HxCDD	1.1	J	6.4	0.13	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,7,8,9-HxCDD	2.3	J	6.4	0.12	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total HxCDD	51	B q	6.4	0.13	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,4,6,7,8-HpCDD	44	B	6.4	0.21	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total HpCDD	150	B	6.4	0.21	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
OCDD	1000	B	13	0.061	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
2,3,7,8-TCDF	18		1.3	0.19	pg/g	☼	12/11/19 10:49	12/18/19 15:25	1
Total TCDF	49	I B q	1.3	0.14	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,7,8-PeCDF	1.3	J	6.4	0.18	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
2,3,4,7,8-PeCDF	1.2	J	6.4	0.17	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total PeCDF	6.1	J I q	6.4	0.17	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,4,7,8-HxCDF	2.3	J	6.4	0.16	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,6,7,8-HxCDF	0.73	J I q	6.4	0.15	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
2,3,4,6,7,8-HxCDF	0.25	J	6.4	0.17	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,7,8,9-HxCDF	ND		6.4	0.20	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total HxCDF	8.7	I q	6.4	0.17	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,4,6,7,8-HpCDF	4.2	J B	6.4	0.071	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
1,2,3,4,7,8,9-HpCDF	0.77	J B	6.4	0.10	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
Total HpCDF	11	B	6.4	0.086	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1
OCDF	25	B	13	0.017	pg/g	☼	12/11/19 10:49	12/18/19 03:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,7,8-PeCDD	*63*		*25 - 181*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*67*		*23 - 140*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-OCDD	*63*		*17 - 157*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-2,3,7,8-TCDF	*57*		*24 - 169*	*12/11/19 10:49*	*12/18/19 15:25*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-2,3,4,7,8-PeCDF	*62*		*21 - 178*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,6,7,8-HxCDF	*64*		*26 - 123*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,7,8,9-HxCDF	*65*		*29 - 147*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*28 - 143*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/18/19 03:59*	*1*
13C-OCDF	*64*		*17 - 157*	*12/11/19 10:49*	*12/18/19 03:59*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*67*		*35 - 197*	*12/11/19 10:49*	*12/18/19 03:59*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) **Lab Sample ID: 140-17578-15**
Date Collected: 12/07/19 12:05 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 79.7**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.62**	**J q**	1.2	0.081	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total TCDD	**5.2**	**B q**	1.2	0.081	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,7,8-PeCDD	ND		6.2	0.080	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total PeCDD	**4.6**	**J q**	6.2	0.080	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,4,7,8-HxCDD	**0.39**	**J**	6.2	0.091	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,6,7,8-HxCDD	**0.54**	**J**	6.2	0.088	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,7,8,9-HxCDD	**1.0**	**J q**	6.2	0.084	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total HxCDD	**26**	**B q**	6.2	0.088	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,4,6,7,8-HpCDD	**22**	**B**	6.2	0.17	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total HpCDD	**70**	**B**	6.2	0.17	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
OCDD	**450**	**B**	12	0.022	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
2,3,7,8-TCDF	**2.0**		1.2	0.18	pg/g	☼	12/11/19 10:49	12/18/19 13:39	1
Total TCDF	**5.0**	**B q**	1.2	0.079	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,7,8-PeCDF	ND		6.2	0.10	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
2,3,4,7,8-PeCDF	**0.26**	**J**	6.2	0.10	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total PeCDF	**0.88**	**J I q**	6.2	0.10	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,4,7,8-HxCDF	**0.42**	**J**	6.2	0.079	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,6,7,8-HxCDF	**0.23**	**J**	6.2	0.075	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
2,3,4,6,7,8-HxCDF	ND		6.2	0.081	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,7,8,9-HxCDF	ND		6.2	0.11	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total HxCDF	**2.2**	**J I q**	6.2	0.087	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,4,6,7,8-HpCDF	**0.90**	**J B**	6.2	0.043	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
1,2,3,4,7,8,9-HpCDF	ND		6.2	0.062	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
Total HpCDF	**2.3**	**J B q**	6.2	0.053	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1
OCDF	**5.3**	**J B**	12	0.099	pg/g	☼	12/11/19 10:49	12/18/19 05:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,4,7,8-HxCDD	*68*		*32 - 141*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-OCDD	*57*		*17 - 157*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-2,3,7,8-TCDF	*62*		*24 - 169*	*12/11/19 10:49*	*12/18/19 13:39*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,4,7,8-HxCDF	*69*		*26 - 152*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*12/11/19 10:49*	*12/18/19 05:00*	*1*
13C-OCDF	*62*		*17 - 157*	*12/11/19 10:49*	*12/18/19 05:00*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*71*		*35 - 197*	*12/11/19 10:49*	*12/18/19 05:00*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) **Lab Sample ID: 140-17578-16**
Date Collected: 12/07/19 11:50 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 71.2**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**1.1**	**J q**	1.4	0.12	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total TCDD	**7.0**	**B q**	1.4	0.12	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,7,8-PeCDD	ND		7.1	0.062	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total PeCDD	**4.3**	**J q**	7.1	0.062	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,4,7,8-HxCDD	ND		7.1	0.14	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,6,7,8-HxCDD	**0.32**	**J q**	7.1	0.14	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,7,8,9-HxCDD	**0.80**	**J**	7.1	0.13	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total HxCDD	**18**	**B q**	7.1	0.14	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,4,6,7,8-HpCDD	**14**	**B q**	7.1	0.090	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total HpCDD	**48**	**B q**	7.1	0.090	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
OCDD	**400**	**B**	14	0.0088	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
2,3,7,8-TCDF	**3.6**	**q**	1.4	0.17	pg/g	☼	12/11/19 10:49	12/18/19 14:14	1
Total TCDF	**7.7**	**B q**	1.4	0.094	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,7,8-PeCDF	ND		7.1	0.095	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
2,3,4,7,8-PeCDF	ND		7.1	0.092	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total PeCDF	ND		7.1	0.095	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,4,7,8-HxCDF	ND		7.1	0.094	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,6,7,8-HxCDF	ND		7.1	0.092	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
2,3,4,6,7,8-HxCDF	ND		7.1	0.097	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,7,8,9-HxCDF	ND		7.1	0.13	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total HxCDF	**0.85**	**J I q**	7.1	0.10	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,4,6,7,8-HpCDF	**0.67**	**J B**	7.1	0.039	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
1,2,3,4,7,8,9-HpCDF	**0.083**	**J B q**	7.1	0.061	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
Total HpCDF	**1.5**	**J B q**	7.1	0.050	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1
OCDF	**3.8**	**J B**	14	0.018	pg/g	☼	12/11/19 10:49	12/18/19 06:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,6,7,8-HxCDD	*74*		*28 - 130*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*23 - 140*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-OCDD	*63*		*17 - 157*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/18/19 14:14*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-2,3,4,7,8-PeCDF	*64*		*21 - 178*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,6,7,8-HxCDF	*70*		*26 - 123*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-2,3,4,6,7,8-HxCDF	*70*		*28 - 136*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*70*		*28 - 143*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*26 - 138*	*12/11/19 10:49*	*12/18/19 06:01*	*1*
13C-OCDF	*65*		*17 - 157*	*12/11/19 10:49*	*12/18/19 06:01*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*12/11/19 10:49*	*12/18/19 06:01*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) **Lab Sample ID: 140-17578-17**
Date Collected: 12/07/19 11:55 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 75.2**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.1	J	1.4	0.093	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total TCDD	11	B q	1.4	0.093	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,7,8-PeCDD	0.17	J q	7.0	0.065	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total PeCDD	8.8	q	7.0	0.065	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,4,7,8-HxCDD	0.33	J q	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,6,7,8-HxCDD	0.42	J	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,7,8,9-HxCDD	1.4	J	7.0	0.16	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total HxCDD	34	B q	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,4,6,7,8-HpCDD	21	B	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total HpCDD	77	B	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
OCDD	510	B	14	0.024	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
2,3,7,8-TCDF	3.2		1.4	0.28	pg/g	☼	12/11/19 10:49	12/18/19 14:50	1
Total TCDF	6.8	B q	1.4	0.072	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,7,8-PeCDF	ND		7.0	0.063	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
2,3,4,7,8-PeCDF	ND		7.0	0.061	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total PeCDF	1.1	J q	7.0	0.062	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,4,7,8-HxCDF	1.1	J	7.0	0.084	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,6,7,8-HxCDF	0.35	J	7.0	0.087	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
2,3,4,6,7,8-HxCDF	ND		7.0	0.084	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,7,8,9-HxCDF	ND		7.0	0.12	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total HxCDF	3.1	J I q	7.0	0.094	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,4,6,7,8-HpCDF	2.6	J B	7.0	0.10	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
1,2,3,4,7,8,9-HpCDF	0.52	J B	7.0	0.17	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
Total HpCDF	4.8	J B q	7.0	0.13	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1
OCDF	4.3	J B q	14	0.12	pg/g	☼	12/11/19 10:49	12/18/19 07:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,7,8-PeCDD	*63*		*25 - 181*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*23 - 140*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-OCDD	*59*		*17 - 157*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-2,3,7,8-TCDF	*60*		*24 - 169*	*12/11/19 10:49*	*12/18/19 14:50*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*67*		*26 - 123*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*68*		*28 - 143*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*12/11/19 10:49*	*12/18/19 07:02*	*1*
13C-OCDF	*60*		*17 - 157*	*12/11/19 10:49*	*12/18/19 07:02*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*67*		*35 - 197*	*12/11/19 10:49*	*12/18/19 07:02*	*1*

Toxicity Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	4.1		1.3	0.13	pg/g	1	4.1	1613B
1,2,3,7,8-PeCDD	0.20	J q	6.5	0.092	pg/g	1	0.20	1613B
1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.047	pg/g	0.1	0.031	1613B
1,2,3,6,7,8-HxCDD	0.57	J	6.5	0.049	pg/g	0.1	0.057	1613B
1,2,3,7,8,9-HxCDD	1.3	J	6.5	0.045	pg/g	0.1	0.13	1613B
1,2,3,4,6,7,8-HpCDD	28	B	6.5	0.15	pg/g	0.01	0.28	1613B
OCDD	930	B	13	0.050	pg/g	0.0003	0.28	1613B
2,3,7,8-TCDF	11		1.3	0.46	pg/g	0.1	1.1	1613B
1,2,3,7,8-PeCDF	0.49	J	6.5	0.078	pg/g	0.03	0.015	1613B
2,3,4,7,8-PeCDF	0.29	J	6.5	0.073	pg/g	0.3	0.087	1613B
1,2,3,4,7,8-HxCDF	0.84	J	6.5	0.12	pg/g	0.1	0.084	1613B
1,2,3,6,7,8-HxCDF	0.37	J I q	6.5	0.11	pg/g	0.1	0.037	1613B
2,3,4,6,7,8-HxCDF	ND		6.5	0.12	pg/g	0.1	0.0060	1613B
1,2,3,7,8,9-HxCDF	ND		6.5	0.16	pg/g	0.1	0.0080	1613B
1,2,3,4,6,7,8-HpCDF	3.1	J B	6.5	0.075	pg/g	0.01	0.031	1613B
1,2,3,4,7,8,9-HpCDF	0.53	J B q	6.5	0.12	pg/g	0.01	0.0053	1613B
OCDF	20	B	13	0.17	pg/g	0.0003	0.0060	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Toxic Dioxins and Furans					pg/g		6.5	TEQ

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	10		1.5	0.096	pg/g	1	10	1613B
1,2,3,7,8-PeCDD	0.49	J q	7.3	0.066	pg/g	1	0.49	1613B
1,2,3,4,7,8-HxCDD	0.98	J	7.3	0.052	pg/g	0.1	0.098	1613B
1,2,3,6,7,8-HxCDD	1.7	J	7.3	0.052	pg/g	0.1	0.17	1613B
1,2,3,7,8,9-HxCDD	3.0	J	7.3	0.049	pg/g	0.1	0.30	1613B
1,2,3,4,6,7,8-HpCDD	73	B	7.3	0.17	pg/g	0.01	0.73	1613B
OCDD	2600	B	15	0.049	pg/g	0.0003	0.78	1613B
2,3,7,8-TCDF	32		1.5	0.51	pg/g	0.1	3.2	1613B
1,2,3,7,8-PeCDF	1.2	J	7.3	0.062	pg/g	0.03	0.036	1613B
2,3,4,7,8-PeCDF	0.86	J q	7.3	0.059	pg/g	0.3	0.26	1613B
1,2,3,4,7,8-HxCDF	2.5	J	7.3	0.12	pg/g	0.1	0.25	1613B
1,2,3,6,7,8-HxCDF	1.1	J I	7.3	0.11	pg/g	0.1	0.11	1613B
2,3,4,6,7,8-HxCDF	0.25	J q	7.3	0.13	pg/g	0.1	0.025	1613B
1,2,3,7,8,9-HxCDF	ND		7.3	0.16	pg/g	0.1	0.0080	1613B
1,2,3,4,6,7,8-HpCDF	6.6	J B	7.3	0.12	pg/g	0.01	0.066	1613B
1,2,3,4,7,8,9-HpCDF	1.0	J B	7.3	0.17	pg/g	0.01	0.010	1613B
OCDF	53	B	15	0.026	pg/g	0.0003	0.016	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) (Continued) Lab Sample ID: 140-17578-2

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Toxic Dioxins and Furans					pg/g		17	TEQ

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	75		1.8	0.15	pg/g	1	75	1613B
1,2,3,7,8-PeCDD	1.5	J	8.9	0.27	pg/g	1	1.5	1613B
1,2,3,4,7,8-HxCDD	1.4	J	8.9	0.093	pg/g	0.1	0.14	1613B
1,2,3,6,7,8-HxCDD	2.6	J	8.9	0.091	pg/g	0.1	0.26	1613B
1,2,3,7,8,9-HxCDD	4.8	J	8.9	0.086	pg/g	0.1	0.48	1613B
1,2,3,4,6,7,8-HpCDD	110	B	8.9	0.14	pg/g	0.01	1.1	1613B
OCDD	3600	B	18	0.11	pg/g	0.0003	1.1	1613B
2,3,7,8-TCDF	260		1.8	0.93	pg/g	0.1	26	1613B
1,2,3,7,8-PeCDF	6.9	J	8.9	0.088	pg/g	0.03	0.21	1613B
2,3,4,7,8-PeCDF	5.2	J	8.9	0.084	pg/g	0.3	1.6	1613B
1,2,3,4,7,8-HxCDF	10		8.9	0.18	pg/g	0.1	1.0	1613B
1,2,3,6,7,8-HxCDF	3.2	J	8.9	0.17	pg/g	0.1	0.32	1613B
2,3,4,6,7,8-HxCDF	0.59	J	8.9	0.18	pg/g	0.1	0.059	1613B
1,2,3,7,8,9-HxCDF	0.34	J q	8.9	0.24	pg/g	0.1	0.034	1613B
1,2,3,4,6,7,8-HpCDF	13	B	8.9	0.17	pg/g	0.01	0.13	1613B
1,2,3,4,7,8,9-HpCDF	2.2	J B	8.9	0.27	pg/g	0.01	0.022	1613B
OCDF	93	B	18	0.60	pg/g	0.0003	0.028	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Toxic Dioxins and Furans					pg/g		110	TEQ

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	35		1.4	0.13	pg/g	1	35	1613B
1,2,3,7,8-PeCDD	0.52	J	7.1	0.12	pg/g	1	0.52	1613B
1,2,3,4,7,8-HxCDD	0.35	J q	7.1	0.21	pg/g	0.1	0.035	1613B
1,2,3,6,7,8-HxCDD	0.90	J	7.1	0.20	pg/g	0.1	0.090	1613B
1,2,3,7,8,9-HxCDD	2.3	J	7.1	0.19	pg/g	0.1	0.23	1613B
1,2,3,4,6,7,8-HpCDD	35	B	7.1	0.12	pg/g	0.01	0.35	1613B
OCDD	830	B	14	0.046	pg/g	0.0003	0.25	1613B
2,3,7,8-TCDF	120		1.4	0.69	pg/g	0.1	12	1613B
1,2,3,7,8-PeCDF	2.7	J	7.1	0.14	pg/g	0.03	0.081	1613B
2,3,4,7,8-PeCDF	2.6	J	7.1	0.13	pg/g	0.3	0.78	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) (Continued) — Lab Sample ID: 140-17578-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
1,2,3,4,7,8-HxCDF	4.0	J	7.1	0.16	pg/g	0.1	0.40	1613B
1,2,3,6,7,8-HxCDF	0.99	J q	7.1	0.15	pg/g	0.1	0.099	1613B
2,3,4,6,7,8-HxCDF	ND		7.1	0.16	pg/g	0.1	0.0080	1613B
1,2,3,7,8,9-HxCDF	ND		7.1	0.21	pg/g	0.1	0.011	1613B
1,2,3,4,6,7,8-HpCDF	2.3	J B	7.1	0.073	pg/g	0.01	0.023	1613B
1,2,3,4,7,8,9-HpCDF	0.41	J B q	7.1	0.12	pg/g	0.01	0.0041	1613B
OCDF	8.6	J B	14	0.087	pg/g	0.0003	0.0026	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		50	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) — Lab Sample ID: 140-17578-5

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	8.4		1.6	0.11	pg/g	1	8.4	1613B
1,2,3,7,8-PeCDD	0.40	J	8.2	0.083	pg/g	1	0.40	1613B
1,2,3,4,7,8-HxCDD	0.56	J	8.2	0.28	pg/g	0.1	0.056	1613B
1,2,3,6,7,8-HxCDD	0.79	J q	8.2	0.30	pg/g	0.1	0.079	1613B
1,2,3,7,8,9-HxCDD	2.7	J	8.2	0.27	pg/g	0.1	0.27	1613B
1,2,3,4,6,7,8-HpCDD	41	B	8.2	0.14	pg/g	0.01	0.41	1613B
OCDD	980	B	16	0.044	pg/g	0.0003	0.29	1613B
2,3,7,8-TCDF	34		1.6	0.60	pg/g	0.1	3.4	1613B
1,2,3,7,8-PeCDF	4.6	J	8.2	0.15	pg/g	0.03	0.14	1613B
2,3,4,7,8-PeCDF	4.9	J	8.2	0.14	pg/g	0.3	1.5	1613B
1,2,3,4,7,8-HxCDF	4.1	J	8.2	0.071	pg/g	0.1	0.41	1613B
1,2,3,6,7,8-HxCDF	1.2	J	8.2	0.068	pg/g	0.1	0.12	1613B
2,3,4,6,7,8-HxCDF	0.37	J	8.2	0.075	pg/g	0.1	0.037	1613B
1,2,3,7,8,9-HxCDF	ND		8.2	0.096	pg/g	0.1	0.0048	1613B
1,2,3,4,6,7,8-HpCDF	2.2	J B	8.2	0.057	pg/g	0.01	0.022	1613B
1,2,3,4,7,8,9-HpCDF	0.35	J B q	8.2	0.087	pg/g	0.01	0.0035	1613B
OCDF	10	J B	16	0.12	pg/g	0.0003	0.0030	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		16	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	3.8		1.4	0.069	pg/g	1	3.8	1613B
1,2,3,7,8-PeCDD	0.32	J	7.0	0.12	pg/g	1	0.32	1613B
1,2,3,4,7,8-HxCDD	0.48	J q	7.0	0.27	pg/g	0.1	0.048	1613B
1,2,3,6,7,8-HxCDD	0.87	J q	7.0	0.28	pg/g	0.1	0.087	1613B
1,2,3,7,8,9-HxCDD	2.3	J	7.0	0.26	pg/g	0.1	0.23	1613B
1,2,3,4,6,7,8-HpCDD	34	B	7.0	0.11	pg/g	0.01	0.34	1613B
OCDD	810	B	14	0.053	pg/g	0.0003	0.24	1613B
2,3,7,8-TCDF	12		1.4	0.54	pg/g	0.1	1.2	1613B
1,2,3,7,8-PeCDF	0.32	J q	7.0	0.12	pg/g	0.03	0.0096	1613B
2,3,4,7,8-PeCDF	0.26	J	7.0	0.11	pg/g	0.3	0.078	1613B
1,2,3,4,7,8-HxCDF	0.66	J	7.0	0.094	pg/g	0.1	0.066	1613B
1,2,3,6,7,8-HxCDF	ND		7.0	0.095	pg/g	0.1	0.0048	1613B
2,3,4,6,7,8-HxCDF	ND		7.0	0.10	pg/g	0.1	0.0050	1613B
1,2,3,7,8,9-HxCDF	ND		7.0	0.14	pg/g	0.1	0.0070	1613B
1,2,3,4,6,7,8-HpCDF	1.1	J B	7.0	0.037	pg/g	0.01	0.011	1613B
1,2,3,4,7,8,9-HpCDF	0.23	J B	7.0	0.058	pg/g	0.01	0.0023	1613B
OCDF	5.5	J B	14	0.15	pg/g	0.0003	0.0017	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Toxic Dioxins and Furans					pg/g		6.5	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) Lab Sample ID: 140-17578-7

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	0.20	J q	1.3	0.074	pg/g	1	0.20	1613B
1,2,3,7,8-PeCDD	0.20	J q	6.4	0.070	pg/g	1	0.20	1613B
1,2,3,4,7,8-HxCDD	0.40	J	6.4	0.035	pg/g	0.1	0.040	1613B
1,2,3,6,7,8-HxCDD	0.56	J q	6.4	0.037	pg/g	0.1	0.056	1613B
1,2,3,7,8,9-HxCDD	2.2	J q	6.4	0.034	pg/g	0.1	0.22	1613B
1,2,3,4,6,7,8-HpCDD	30	B	6.4	0.13	pg/g	0.01	0.30	1613B
OCDD	700	B	13	0.031	pg/g	0.0003	0.21	1613B
2,3,7,8-TCDF	0.92	J q	1.3	0.061	pg/g	0.1	0.092	1613B
1,2,3,7,8-PeCDF	ND		6.4	0.091	pg/g	0.03	0.0014	1613B
2,3,4,7,8-PeCDF	ND		6.4	0.083	pg/g	0.3	0.012	1613B
1,2,3,4,7,8-HxCDF	ND		6.4	0.084	pg/g	0.1	0.0042	1613B
1,2,3,6,7,8-HxCDF	ND		6.4	0.081	pg/g	0.1	0.0041	1613B
2,3,4,6,7,8-HxCDF	ND		6.4	0.090	pg/g	0.1	0.0045	1613B
1,2,3,7,8,9-HxCDF	ND		6.4	0.11	pg/g	0.1	0.0055	1613B
1,2,3,4,6,7,8-HpCDF	0.42	J B	6.4	0.053	pg/g	0.01	0.0042	1613B
1,2,3,4,7,8,9-HpCDF	ND		6.4	0.082	pg/g	0.01	0.00041	1613B
OCDF	1.6	J B	13	0.080	pg/g	0.0003	0.00048	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) (Continued) — Lab Sample ID: 140-17578-7

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		1.4	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) — Lab Sample ID: 140-17578-8

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**8.5**		1.5	0.093	pg/g	1	**8.5**	1613B
1,2,3,7,8-PeCDD	**0.62**	**J q**	7.3	0.058	pg/g	1	**0.62**	1613B
1,2,3,4,7,8-HxCDD	**0.95**	**J q**	7.3	0.068	pg/g	0.1	**0.095**	1613B
1,2,3,6,7,8-HxCDD	**2.7**	**J**	7.3	0.073	pg/g	0.1	**0.27**	1613B
1,2,3,7,8,9-HxCDD	**3.9**	**J**	7.3	0.066	pg/g	0.1	**0.39**	1613B
1,2,3,4,6,7,8-HpCDD	**90**	**B**	7.3	0.11	pg/g	0.01	**0.90**	1613B
OCDD	**2300**	**B**	15	0.045	pg/g	0.0003	**0.69**	1613B
2,3,7,8-TCDF	**24**		1.5	0.39	pg/g	0.1	**2.4**	1613B
1,2,3,7,8-PeCDF	**1.1**	**J**	7.3	0.081	pg/g	0.03	**0.033**	1613B
2,3,4,7,8-PeCDF	**0.89**	**J**	7.3	0.076	pg/g	0.3	**0.27**	1613B
1,2,3,4,7,8-HxCDF	**2.6**	**J**	7.3	0.15	pg/g	0.1	**0.26**	1613B
1,2,3,6,7,8-HxCDF	**1.5**	**J I**	7.3	0.14	pg/g	0.1	**0.15**	1613B
2,3,4,6,7,8-HxCDF	**0.34**	**J q**	7.3	0.16	pg/g	0.1	**0.034**	1613B
1,2,3,7,8,9-HxCDF	ND		7.3	0.21	pg/g	0.1	0.011	1613B
1,2,3,4,6,7,8-HpCDF	**11**	**B**	7.3	0.13	pg/g	0.01	**0.11**	1613B
1,2,3,4,7,8,9-HpCDF	**1.5**	**J B q**	7.3	0.19	pg/g	0.01	**0.015**	1613B
OCDF	**120**	**B**	15	0.11	pg/g	0.0003	**0.036**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		15	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) — Lab Sample ID: 140-17578-9

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**74**		1.2	0.13	pg/g	1	**74**	1613B
1,2,3,7,8-PeCDD	**0.69**	**J**	5.8	0.032	pg/g	1	**0.69**	1613B
1,2,3,4,7,8-HxCDD	**0.20**	**J q**	5.8	0.023	pg/g	0.1	**0.020**	1613B
1,2,3,6,7,8-HxCDD	**0.45**	**J**	5.8	0.023	pg/g	0.1	**0.045**	1613B
1,2,3,7,8,9-HxCDD	**0.87**	**J**	5.8	0.022	pg/g	0.1	**0.087**	1613B
1,2,3,4,6,7,8-HpCDD	**16**	**B**	5.8	0.17	pg/g	0.01	**0.16**	1613B
OCDD	**380**	**B**	12	0.072	pg/g	0.0003	**0.11**	1613B
2,3,7,8-TCDF	**270**		1.2	0.70	pg/g	0.1	**27**	1613B
1,2,3,7,8-PeCDF	**6.6**		5.8	0.069	pg/g	0.03	**0.20**	1613B
2,3,4,7,8-PeCDF	**4.7**	**J**	5.8	0.062	pg/g	0.3	**1.4**	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) (Continued) — Lab Sample ID: 140-17578-9

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
1,2,3,4,7,8-HxCDF	9.6		5.8	0.056	pg/g	0.1	0.96	1613B
1,2,3,6,7,8-HxCDF	2.3	J	5.8	0.053	pg/g	0.1	0.23	1613B
2,3,4,6,7,8-HxCDF	0.35	J q	5.8	0.059	pg/g	0.1	0.035	1613B
1,2,3,7,8,9-HxCDF	0.24	J	5.8	0.076	pg/g	0.1	0.024	1613B
1,2,3,4,6,7,8-HpCDF	3.1	J B	5.8	0.048	pg/g	0.01	0.031	1613B
1,2,3,4,7,8,9-HpCDF	0.79	J B q	5.8	0.080	pg/g	0.01	0.0079	1613B
OCDF	10	J B	12	0.053	pg/g	0.0003	0.0030	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		110	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) — Lab Sample ID: 140-17578-10

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	83		1.1	0.13	pg/g	1	83	1613B
1,2,3,7,8-PeCDD	0.70	J	5.5	0.036	pg/g	1	0.70	1613B
1,2,3,4,7,8-HxCDD	0.20	J	5.5	0.026	pg/g	0.1	0.020	1613B
1,2,3,6,7,8-HxCDD	0.24	J	5.5	0.025	pg/g	0.1	0.024	1613B
1,2,3,7,8,9-HxCDD	0.72	J	5.5	0.024	pg/g	0.1	0.072	1613B
1,2,3,4,6,7,8-HpCDD	9.9	B	5.5	0.10	pg/g	0.01	0.099	1613B
OCDD	210	B	11	0.028	pg/g	0.0003	0.063	1613B
2,3,7,8-TCDF	300		1.1	0.66	pg/g	0.1	30	1613B
1,2,3,7,8-PeCDF	6.2		5.5	0.041	pg/g	0.03	0.19	1613B
2,3,4,7,8-PeCDF	5.1	J	5.5	0.038	pg/g	0.3	1.5	1613B
1,2,3,4,7,8-HxCDF	9.2		5.5	0.053	pg/g	0.1	0.92	1613B
1,2,3,6,7,8-HxCDF	2.4	J	5.5	0.049	pg/g	0.1	0.24	1613B
2,3,4,6,7,8-HxCDF	0.32	J q	5.5	0.055	pg/g	0.1	0.032	1613B
1,2,3,7,8,9-HxCDF	0.17	J q	5.5	0.071	pg/g	0.1	0.017	1613B
1,2,3,4,6,7,8-HpCDF	2.7	J B	5.5	0.041	pg/g	0.01	0.027	1613B
1,2,3,4,7,8,9-HpCDF	1.0	J B	5.5	0.064	pg/g	0.01	0.010	1613B
OCDF	4.8	J B	11	0.046	pg/g	0.0003	0.0014	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		120	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	82		1.2	0.11	pg/g	1	82	1613B
1,2,3,7,8-PeCDD	0.68	J q	5.9	0.13	pg/g	1	0.68	1613B
1,2,3,4,7,8-HxCDD	0.16	J	5.9	0.035	pg/g	0.1	0.016	1613B
1,2,3,6,7,8-HxCDD	0.42	J q	5.9	0.035	pg/g	0.1	0.042	1613B
1,2,3,7,8,9-HxCDD	0.58	J q	5.9	0.033	pg/g	0.1	0.058	1613B
1,2,3,4,6,7,8-HpCDD	9.3	B	5.9	0.089	pg/g	0.01	0.093	1613B
OCDD	200	B	12	0.042	pg/g	0.0003	0.060	1613B
2,3,7,8-TCDF	290		1.2	0.75	pg/g	0.1	29	1613B
1,2,3,7,8-PeCDF	6.2		5.9	0.039	pg/g	0.03	0.19	1613B
2,3,4,7,8-PeCDF	5.4	J	5.9	0.041	pg/g	0.3	1.6	1613B
1,2,3,4,7,8-HxCDF	9.7		5.9	0.065	pg/g	0.1	0.97	1613B
1,2,3,6,7,8-HxCDF	2.3	J	5.9	0.061	pg/g	0.1	0.23	1613B
2,3,4,6,7,8-HxCDF	0.37	J	5.9	0.068	pg/g	0.1	0.037	1613B
1,2,3,7,8,9-HxCDF	0.15	J q	5.9	0.092	pg/g	0.1	0.015	1613B
1,2,3,4,6,7,8-HpCDF	2.8	J B	5.9	0.042	pg/g	0.01	0.028	1613B
1,2,3,4,7,8,9-HpCDF	0.93	J B q	5.9	0.071	pg/g	0.01	0.0093	1613B
OCDF	3.4	J B	12	0.042	pg/g	0.0003	0.0010	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Toxic Dioxins and Furans					pg/g		120	TEQ

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	2800		17	2.4	pg/g	1	2800	1613B
1,2,3,7,8-PeCDD	25	J	83	3.2	pg/g	1	25	1613B
1,2,3,4,7,8-HxCDD	ND	F2 F1	83	0.65	pg/g	0.1	0.033	1613B
1,2,3,6,7,8-HxCDD	ND		83	0.64	pg/g	0.1	0.032	1613B
1,2,3,7,8,9-HxCDD	4.0	J F2	83	0.61	pg/g	0.1	0.40	1613B
1,2,3,4,6,7,8-HpCDD	75	J B	83	0.62	pg/g	0.01	0.75	1613B
OCDD	1300	B F1	170	0.52	pg/g	0.0003	0.39	1613B
2,3,7,8-TCDF	3900		25	12	pg/g	0.1	390	1613B
1,2,3,7,8-PeCDF	250	F1	83	0.47	pg/g	0.03	7.5	1613B
2,3,4,7,8-PeCDF	170	F1	83	0.44	pg/g	0.3	51	1613B
1,2,3,4,7,8-HxCDF	420	F1	83	2.7	pg/g	0.1	42	1613B
1,2,3,6,7,8-HxCDF	110	F1	83	2.5	pg/g	0.1	11	1613B
2,3,4,6,7,8-HxCDF	11	J	83	2.7	pg/g	0.1	1.1	1613B
1,2,3,7,8,9-HxCDF	7.3	J q	83	3.4	pg/g	0.1	0.73	1613B
1,2,3,4,6,7,8-HpCDF	100	F1 B	83	0.081	pg/g	0.01	1.0	1613B
1,2,3,4,7,8,9-HpCDF	41	J B	83	0.15	pg/g	0.01	0.41	1613B
OCDF	46	J B	170	1.4	pg/g	0.0003	0.014	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) (Continued) — Lab Sample ID: 140-17578-12

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		3300	TEQ

Client Sample ID: 11187072-120619-SS-DUP1 — Lab Sample ID: 140-17578-13

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	360		1.8	0.56	pg/g	1	360	1613B
1,2,3,7,8-PeCDD	7.7	J	9.2	0.18	pg/g	1	7.7	1613B
1,2,3,4,7,8-HxCDD	0.71	J q	9.2	0.064	pg/g	0.1	0.071	1613B
1,2,3,6,7,8-HxCDD	0.91	J	9.2	0.063	pg/g	0.1	0.091	1613B
1,2,3,7,8,9-HxCDD	1.2	J	9.2	0.059	pg/g	0.1	0.12	1613B
1,2,3,4,6,7,8-HpCDD	12	B	9.2	0.25	pg/g	0.01	0.12	1613B
OCDD	230	B	18	0.067	pg/g	0.0003	0.069	1613B
2,3,7,8-TCDF	1900		9.2	3.2	pg/g	0.1	190	1613B
1,2,3,7,8-PeCDF	160		9.2	0.23	pg/g	0.03	4.8	1613B
2,3,4,7,8-PeCDF	190		9.2	0.22	pg/g	0.3	57	1613B
1,2,3,4,7,8-HxCDF	120		9.2	0.78	pg/g	0.1	12	1613B
1,2,3,6,7,8-HxCDF	31		9.2	0.77	pg/g	0.1	3.1	1613B
2,3,4,6,7,8-HxCDF	9.5		9.2	0.88	pg/g	0.1	0.95	1613B
1,2,3,7,8,9-HxCDF	2.8	J	9.2	1.1	pg/g	0.1	0.28	1613B
1,2,3,4,6,7,8-HpCDF	19	B	9.2	0.077	pg/g	0.01	0.19	1613B
1,2,3,4,7,8,9-HpCDF	9.3	B	9.2	0.12	pg/g	0.01	0.093	1613B
OCDF	9.0	J B	18	0.079	pg/g	0.0003	0.0027	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		640	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) — Lab Sample ID: 140-17578-14

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	6.8		1.3	0.099	pg/g	1	6.8	1613B
1,2,3,7,8-PeCDD	0.42	J q	6.4	0.063	pg/g	1	0.42	1613B
1,2,3,4,7,8-HxCDD	0.39	J q	6.4	0.13	pg/g	0.1	0.039	1613B
1,2,3,6,7,8-HxCDD	1.1	J	6.4	0.13	pg/g	0.1	0.11	1613B
1,2,3,7,8,9-HxCDD	2.3	J	6.4	0.12	pg/g	0.1	0.23	1613B
1,2,3,4,6,7,8-HpCDD	44	B	6.4	0.21	pg/g	0.01	0.44	1613B
OCDD	1000	B	13	0.061	pg/g	0.0003	0.30	1613B
2,3,7,8-TCDF	18		1.3	0.19	pg/g	0.1	1.8	1613B
1,2,3,7,8-PeCDF	1.3	J	6.4	0.18	pg/g	0.03	0.039	1613B
2,3,4,7,8-PeCDF	1.2	J	6.4	0.17	pg/g	0.3	0.36	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) (Continued) — Lab Sample ID: 140-17578-14

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
1,2,3,4,7,8-HxCDF	2.3	J	6.4	0.16	pg/g	0.1	0.23	1613B
1,2,3,6,7,8-HxCDF	0.73	J I q	6.4	0.15	pg/g	0.1	0.073	1613B
2,3,4,6,7,8-HxCDF	0.25	J	6.4	0.17	pg/g	0.1	0.025	1613B
1,2,3,7,8,9-HxCDF	ND		6.4	0.20	pg/g	0.1	0.010	1613B
1,2,3,4,6,7,8-HpCDF	4.2	J B	6.4	0.071	pg/g	0.01	0.042	1613B
1,2,3,4,7,8,9-HpCDF	0.77	J B	6.4	0.10	pg/g	0.01	0.0077	1613B
OCDF	25	B	13	0.017	pg/g	0.0003	0.0075	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		11	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) — Lab Sample ID: 140-17578-15

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	0.62	J q	1.2	0.081	pg/g	1	0.62	1613B
1,2,3,7,8-PeCDD	ND		6.2	0.080	pg/g	1	0.040	1613B
1,2,3,4,7,8-HxCDD	0.39	J	6.2	0.091	pg/g	0.1	0.039	1613B
1,2,3,6,7,8-HxCDD	0.54	J	6.2	0.088	pg/g	0.1	0.054	1613B
1,2,3,7,8,9-HxCDD	1.0	J q	6.2	0.084	pg/g	0.1	0.10	1613B
1,2,3,4,6,7,8-HpCDD	22	B	6.2	0.17	pg/g	0.01	0.22	1613B
OCDD	450	B	12	0.022	pg/g	0.0003	0.14	1613B
2,3,7,8-TCDF	2.0		1.2	0.18	pg/g	0.1	0.20	1613B
1,2,3,7,8-PeCDF	ND		6.2	0.10	pg/g	0.03	0.0015	1613B
2,3,4,7,8-PeCDF	0.26	J	6.2	0.10	pg/g	0.3	0.078	1613B
1,2,3,4,7,8-HxCDF	0.42	J	6.2	0.079	pg/g	0.1	0.042	1613B
1,2,3,6,7,8-HxCDF	0.23	J	6.2	0.075	pg/g	0.1	0.023	1613B
2,3,4,6,7,8-HxCDF	ND		6.2	0.081	pg/g	0.1	0.0041	1613B
1,2,3,7,8,9-HxCDF	ND		6.2	0.11	pg/g	0.1	0.0055	1613B
1,2,3,4,6,7,8-HpCDF	0.90	J B	6.2	0.043	pg/g	0.01	0.0090	1613B
1,2,3,4,7,8,9-HpCDF	ND		6.2	0.062	pg/g	0.01	0.00031	1613B
OCDF	5.3	J B	12	0.099	pg/g	0.0003	0.0016	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		1.6	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**1.1**	**J q**	1.4	0.12	pg/g	1	**1.1**	1613B
1,2,3,7,8-PeCDD	ND		7.1	0.062	pg/g	1	0.031	1613B
1,2,3,4,7,8-HxCDD	ND		7.1	0.14	pg/g	0.1	0.0070	1613B
1,2,3,6,7,8-HxCDD	**0.32**	**J q**	7.1	0.14	pg/g	0.1	**0.032**	1613B
1,2,3,7,8,9-HxCDD	**0.80**	**J**	7.1	0.13	pg/g	0.1	**0.080**	1613B
1,2,3,4,6,7,8-HpCDD	**14**	**B q**	7.1	0.090	pg/g	0.01	**0.14**	1613B
OCDD	**400**	**B**	14	0.0088	pg/g	0.0003	**0.12**	1613B
2,3,7,8-TCDF	**3.6**	**q**	1.4	0.17	pg/g	0.1	**0.36**	1613B
1,2,3,7,8-PeCDF	ND		7.1	0.095	pg/g	0.03	0.0014	1613B
2,3,4,7,8-PeCDF	ND		7.1	0.092	pg/g	0.3	0.014	1613B
1,2,3,4,7,8-HxCDF	ND		7.1	0.094	pg/g	0.1	0.0047	1613B
1,2,3,6,7,8-HxCDF	ND		7.1	0.092	pg/g	0.1	0.0046	1613B
2,3,4,6,7,8-HxCDF	ND		7.1	0.097	pg/g	0.1	0.0049	1613B
1,2,3,7,8,9-HxCDF	ND		7.1	0.13	pg/g	0.1	0.0065	1613B
1,2,3,4,6,7,8-HpCDF	**0.67**	**J B**	7.1	0.039	pg/g	0.01	**0.0067**	1613B
1,2,3,4,7,8,9-HpCDF	**0.083**	**J B q**	7.1	0.061	pg/g	0.01	**0.00083**	1613B
OCDF	**3.8**	**J B**	14	0.018	pg/g	0.0003	**0.0011**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		1.9	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**1.1**	**J**	1.4	0.093	pg/g	1	**1.1**	1613B
1,2,3,7,8-PeCDD	**0.17**	**J q**	7.0	0.065	pg/g	1	**0.17**	1613B
1,2,3,4,7,8-HxCDD	**0.33**	**J q**	7.0	0.17	pg/g	0.1	**0.033**	1613B
1,2,3,6,7,8-HxCDD	**0.42**	**J**	7.0	0.17	pg/g	0.1	**0.042**	1613B
1,2,3,7,8,9-HxCDD	**1.4**	**J**	7.0	0.16	pg/g	0.1	**0.14**	1613B
1,2,3,4,6,7,8-HpCDD	**21**	**B**	7.0	0.17	pg/g	0.01	**0.21**	1613B
OCDD	**510**	**B**	14	0.024	pg/g	0.0003	**0.15**	1613B
2,3,7,8-TCDF	**3.2**		1.4	0.28	pg/g	0.1	**0.32**	1613B
1,2,3,7,8-PeCDF	ND		7.0	0.063	pg/g	0.03	0.00095	1613B
2,3,4,7,8-PeCDF	ND		7.0	0.061	pg/g	0.3	0.0092	1613B
1,2,3,4,7,8-HxCDF	**1.1**	**J**	7.0	0.084	pg/g	0.1	**0.11**	1613B
1,2,3,6,7,8-HxCDF	**0.35**	**J**	7.0	0.087	pg/g	0.1	**0.035**	1613B
2,3,4,6,7,8-HxCDF	ND		7.0	0.084	pg/g	0.1	0.0042	1613B
1,2,3,7,8,9-HxCDF	ND		7.0	0.12	pg/g	0.1	0.0060	1613B
1,2,3,4,6,7,8-HpCDF	**2.6**	**J B**	7.0	0.10	pg/g	0.01	**0.026**	1613B
1,2,3,4,7,8,9-HpCDF	**0.52**	**J B**	7.0	0.17	pg/g	0.01	**0.0052**	1613B
OCDF	**4.3**	**J B q**	14	0.12	pg/g	0.0003	**0.0013**	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) (Continued)

Lab Sample ID: 140-17578-17

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Toxic Dioxins and Furans					pg/g		2.4	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Default Detection Limits

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Prep: HRMS-Sox

Analyte	RL		Units
1,2,3,4,6,7,8-HpCDD	5.0		pg/g
1,2,3,4,6,7,8-HpCDF	5.0		pg/g
1,2,3,4,7,8,9-HpCDF	5.0		pg/g
1,2,3,4,7,8-HxCDD	5.0		pg/g
1,2,3,4,7,8-HxCDF	5.0		pg/g
1,2,3,6,7,8-HxCDD	5.0		pg/g
1,2,3,6,7,8-HxCDF	5.0		pg/g
1,2,3,7,8,9-HxCDD	5.0		pg/g
1,2,3,7,8,9-HxCDF	5.0		pg/g
1,2,3,7,8-PeCDD	5.0		pg/g
1,2,3,7,8-PeCDF	5.0		pg/g
2,3,4,6,7,8-HxCDF	5.0		pg/g
2,3,4,7,8-PeCDF	5.0		pg/g
2,3,7,8-TCDD	1.0		pg/g
2,3,7,8-TCDF	1.0		pg/g
OCDD	10		pg/g
OCDF	10		pg/g
Total HpCDD	5.0		pg/g
Total HpCDF	5.0		pg/g
Total HxCDD	5.0		pg/g
Total HxCDF	5.0		pg/g
Total PeCDD	5.0		pg/g
Total PeCDF	5.0		pg/g
Total TCDD	1.0		pg/g
Total TCDF	1.0		pg/g

Surrogate Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	37TCDD (35-197)								
140-17578-1	11187072-120419-SS-SJSSA08	72								
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	72								
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	72								
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	69								
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	68								
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	69								
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	72								
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	68								
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	73								
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	72								
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	71								
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	101								
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	82								
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	78								
140-17578-13	11187072-120619-SS-DUP1	75								
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	67								
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	71								
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	72								
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	67								
MB 140-35991/20-A	Method Blank	76								

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	37TCDD (31-191)								
LCS 140-35991/21-A	Lab Control Sample	72								

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	PeCDD (25-181)	HxCDD (32-141)	HxDD (28-130)	HpCDD (23-140)	OCDD (17-157)	TCDF (24-169)	PeCDF (24-185)
140-17578-1	11187072-120419-SS-SJSSA08	64	67	66	75	71	60	66	66
140-17578-1	11187072-120419-SS-SJSSA08(0-1)							63	
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	64	70	65	71	70	68	63	68
140-17578-2	11187072-120419-SS-SJSSA08(1-2)							58	
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	63	69	65	68	69	66	64	67
140-17578-3	11187072-120419-SS-SJSSA08(2-4)							61	
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	63	67	67	68	67	64	65	67
140-17578-4	11187072-120419-SS-SJSSA08(4-6)							63	
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	61	66	64	66	66	61	61	63
140-17578-5	11187072-120619-SS-SJSSA03(0-1)							59	
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	63	68	64	70	69	64	62	65
140-17578-6	11187072-120619-SS-SJSSA03(1-2)							61	
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	64	65	67	70	69	64	63	65
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	63	65	67	67	71	67	61	63
140-17578-8	11187072-120619-SS-SJSSA03(4-6)							64	
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	64	61	65	67	68	61	63	62
140-17578-9	11187072-120619-SS-SJSSA06(0-1)							63	
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	65	63	61	66	66	61	65	64
140-17578-10	11187072-120619-SS-SJSSA06(1-2)							63	
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	63	63	66	68	66	57	64	66
140-17578-11	11187072-120619-SS-SJSSA06(2-4)							66	
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	69	63 q	70	71	71	76	67	61
140-17578-12	11187072-120619-SS-SJSSA06(4-6)							121	
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	64	64	70	70	62	57	60	59
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)							109	
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	54	52	70	69	60	66	59	54
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)							88	
140-17578-13	11187072-120619-SS-DUP1	65	60	69	71	64	53	65	60
140-17578-13	11187072-120619-SS-DUP1							74	

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	PeCDD (25-181)	HxCDD (32-141)	HxDD (28-130)	HpCDD (23-140)	OCDD (17-157)	TCDF (24-169)	PeCDF (24-185)
140-17578-14	11187072-120719-SS-SJSSA02	60	63	62	66	67	63	61	60
140-17578-14	11187072-120719-SS-SJSSA02(2-4)							57	
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	67	62	68	67	66	57	66	63
140-17578-15	11187072-120719-SS-SJSSA02(4-6)							62	
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	64	66	70	74	73	63	65	66
140-17578-16	11187072-120719-SS-SJSSA02(0-1)							61	
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	59	63	66	70	68	59	61	61
140-17578-17	11187072-120719-SS-SJSSA02(1-2)							60	
MB 140-35991/20-A	Method Blank	65	65	67	77	70	59	66	67

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCF (21-178)	HxCDF (26-152)	HxDF (26-123)	13CHxCF (28-136)	HxCF (29-147)	HpCDF (28-143)	HpCDF2 (26-138)	13C-OCDF (17-157)
140-17578-1	11187072-120419-SS-SJSSA08	68	70	71	69	69	67	62	60
140-17578-1	11187072-120419-SS-SJSSA08(0-1)								
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	66	66	67	68	67	68	63	66
140-17578-2	11187072-120419-SS-SJSSA08(1-2)								
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	66	66	66	67	66	67	65	68
140-17578-3	11187072-120419-SS-SJSSA08(2-4)								
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	66	66	67	67	67	67	62	64
140-17578-4	11187072-120419-SS-SJSSA08(4-6)								
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	63	65	63	65	63	65	63	63
140-17578-5	11187072-120619-SS-SJSSA03(0-1)								
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	66	68	67	68	66	70	65	67
140-17578-6	11187072-120619-SS-SJSSA03(1-2)								
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	65	68	69	68	67	67	64	65
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	63	65	69	66	67	69	66	69
140-17578-8	11187072-120619-SS-SJSSA03(4-6)								
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	63	63	68	64	66	66	62	61
140-17578-9	11187072-120619-SS-SJSSA06(0-1)								
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	65	66	66	65	65	65	62	63
140-17578-10	11187072-120619-SS-SJSSA06(1-2)								

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCF (21-178)	HxCDF (26-152)	HxDF (26-123)	13CHxCF (28-136)	HxCF (29-147)	HpCDF (28-143)	HpCDF2 (26-138)	13C-OCDF (17-157)
140-17578-11	11187072-120619-SS-SJSSA06	60	68	69	67	65	67	61	57
140-17578-11	11187072-120619-SS-SJSSA06(2-4)								
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	69	68	62	66	68	76	65	71
140-17578-12	11187072-120619-SS-SJSSA06(4-6)								
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	65	69	67	58	63	67	55	63
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)								
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	54	62 q	72	69	70	63 q	55	57
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)								
140-17578-13	11187072-120619-SS-DUP1	59	71	69	65	64	64	62	56
140-17578-13	11187072-120619-SS-DUP1								
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	62	65	64	65	65	65	62	64
140-17578-14	11187072-120719-SS-SJSSA02(2-4)								
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	60	69	69	69	68	64	62	62
140-17578-15	11187072-120719-SS-SJSSA02(4-6)								
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	64	67	70	70	69	70	64	65
140-17578-16	11187072-120719-SS-SJSSA02(0-1)								
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	63	67	67	69	66	68	61	60
140-17578-17	11187072-120719-SS-SJSSA02(1-2)								
MB 140-35991/20-A	Method Blank	66	72	73	74	71	72	64	63

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
13C-OCDF = 13C-OCDF

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 140-17578-1

Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		TCDD	PeCDD	HxCDD	HxDD	HpCDD	OCDD	TCDF	PeCDF
Lab Sample ID	Client Sample ID	(20-175)	(21-227)	(21-193)	(25-163)	(26-166)	(13-199)	(22-152)	(21-192)
LCS 140-35991/21-A	Lab Control Sample	65	70	70	78	79	70	65	69

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCF	HxCDF	HxDF	13CHxCF	HxCF	HpCDF	HpCDF2	13C-OCDF
Lab Sample ID	Client Sample ID	(13-328)	(19-202)	(21-159)	(22-176)	(17-205)	(21-158)	(20-186)	(13-199)
LCS 140-35991/21-A	Lab Control Sample	69	70	73	76	76	78	73	76

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
13C-OCDF = 13C-OCDF

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 140-35991/20-A **Client Sample ID: Method Blank**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36126 **Prep Batch: 35991**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.063	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total TCDD	0.118	J	1.0	0.063	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,7,8-PeCDD	ND		5.0	0.060	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total PeCDD	ND		5.0	0.060	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.041	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.040	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.038	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total HxCDD	0.683	J q	5.0	0.039	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,4,6,7,8-HpCDD	0.189	J q	5.0	0.071	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total HpCDD	0.435	J q	5.0	0.071	pg/g		12/11/19 10:49	12/17/19 04:00	1
OCDD	2.36	J q	10	0.019	pg/g		12/11/19 10:49	12/17/19 04:00	1
2,3,7,8-TCDF	ND		1.0	0.032	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total TCDF	0.116	J q	1.0	0.032	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,7,8-PeCDF	ND		5.0	0.053	pg/g		12/11/19 10:49	12/17/19 04:00	1
2,3,4,7,8-PeCDF	ND		5.0	0.048	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total PeCDF	ND		5.0	0.053	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.050	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.046	pg/g		12/11/19 10:49	12/17/19 04:00	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.050	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.067	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total HxCDF	ND		5.0	0.067	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,4,6,7,8-HpCDF	0.175	J q	5.0	0.017	pg/g		12/11/19 10:49	12/17/19 04:00	1
1,2,3,4,7,8,9-HpCDF	0.193	J	5.0	0.028	pg/g		12/11/19 10:49	12/17/19 04:00	1
Total HpCDF	0.368	J q	5.0	0.022	pg/g		12/11/19 10:49	12/17/19 04:00	1
OCDF	1.32	J	10	0.024	pg/g		12/11/19 10:49	12/17/19 04:00	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,7,8-PeCDD	*65*		*25 - 181*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,6,7,8-HxCDD	*77*		*28 - 130*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*70*		*23 - 140*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-OCDD	*59*		*17 - 157*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*26 - 152*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,6,7,8-HxCDF	*73*		*26 - 123*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-2,3,4,6,7,8-HxCDF	*74*		*28 - 136*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*72*		*28 - 143*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*26 - 138*	*12/11/19 10:49*	*12/17/19 04:00*	*1*
13C-OCDF	*63*		*17 - 157*	*12/11/19 10:49*	*12/17/19 04:00*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*12/11/19 10:49*	*12/17/19 04:00*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 140-35991/21-A **Client Sample ID: Lab Control Sample**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36126 **Prep Batch: 35991**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,3,7,8-TCDD			20.0	20.7		pg/g		104	67 - 158		
1,2,3,7,8-PeCDD			100	104		pg/g		104	70 - 142		
1,2,3,4,7,8-HxCDD			100	101		pg/g		101	70 - 164		
1,2,3,6,7,8-HxCDD			100	104		pg/g		104	76 - 134		
1,2,3,7,8,9-HxCDD			100	105		pg/g		105	64 - 162		
1,2,3,4,6,7,8-HpCDD			100	94.4		pg/g		94	70 - 140		
OCDD			200	187		pg/g		93	78 - 144		
2,3,7,8-TCDF			20.0	21.5		pg/g		108	75 - 158		
1,2,3,7,8-PeCDF			100	95.9		pg/g		96	80 - 134		
2,3,4,7,8-PeCDF			100	102		pg/g		102	68 - 160		
1,2,3,4,7,8-HxCDF			100	103		pg/g		103	72 - 134		
1,2,3,6,7,8-HxCDF			100	98.4		pg/g		98	84 - 130		
2,3,4,6,7,8-HxCDF			100	97.8		pg/g		98	70 - 156		
1,2,3,7,8,9-HxCDF			100	101		pg/g		101	78 - 130		
1,2,3,4,6,7,8-HpCDF			100	94.2		pg/g		94	82 - 122		
1,2,3,4,7,8,9-HpCDF			100	104		pg/g		104	78 - 138		
OCDF			200	165		pg/g		83	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*65*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*70*		*21 - 227*
13C-1,2,3,4,7,8-HxCDD	*70*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*78*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*79*		*26 - 166*
13C-OCDD	*70*		*13 - 199*
13C-2,3,7,8-TCDF	*65*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*69*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*69*		*13 - 328*
13C-1,2,3,4,7,8-HxCDF	*70*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*73*		*21 - 159*
13C-2,3,4,6,7,8-HxCDF	*76*		*22 - 176*
13C-1,2,3,7,8,9-HxCDF	*76*		*17 - 205*
13C-1,2,3,4,6,7,8-HpCDF	*78*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*73*		*20 - 186*
13C-OCDF	*76*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*72*		*31 - 191*

Lab Sample ID: 140-17578-12 MS **Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36166 **Prep Batch: 35991**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,3,7,8-TCDD	2800		34.4	1180	4	pg/g	☼	-4587	67 - 158		
1,2,3,7,8-PeCDD	25	J	172	182		pg/g	☼	91	70 - 142		
1,2,3,4,7,8-HxCDD	ND	F2 F1	172	177		pg/g	☼	103	70 - 164		
1,2,3,6,7,8-HxCDD	ND		172	158		pg/g	☼	92	76 - 134		

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: 140-17578-12 MS **Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36166 **Prep Batch: 35991**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,7,8,9-HxCDD	4.0	J F2	172	171		pg/g	☼	97	64 - 162
1,2,3,4,6,7,8-HpCDD	75	J B	172	253		pg/g	☼	104	70 - 140
OCDD	1300	B F1	344	2010	F1	pg/g	☼	201	78 - 144
1,2,3,7,8-PeCDF	250	F1	172	278	F1	pg/g	☼	14	80 - 134
2,3,4,7,8-PeCDF	170	F1	172	237	F1	pg/g	☼	39	68 - 160
1,2,3,4,7,8-HxCDF	420	F1	172	320	F1	pg/g	☼	-56	72 - 134
1,2,3,6,7,8-HxCDF	110	F1	172	215	F1	pg/g	☼	60	84 - 130
2,3,4,6,7,8-HxCDF	11	J	172	202		pg/g	☼	111	70 - 156
1,2,3,7,8,9-HxCDF	7.3	J q	172	179		pg/g	☼	100	78 - 130
1,2,3,4,6,7,8-HpCDF	100	F1 B	172	199	F1	pg/g	☼	55	82 - 122
1,2,3,4,7,8,9-HpCDF	41	J B	172	198		pg/g	☼	91	78 - 138
OCDF	46	J B	344	286		pg/g	☼	70	63 - 170

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*64*		*25 - 164*
13C-1,2,3,7,8-PeCDD	*64*		*25 - 181*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*
13C-OCDD	*57*		*17 - 157*
13C-2,3,7,8-TCDF	*60*		*24 - 169*
13C-1,2,3,7,8-PeCDF	*59*		*24 - 185*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*
13C-1,2,3,4,7,8-HxCDF	*69*		*26 - 152*
13C-1,2,3,6,7,8-HxCDF	*67*		*26 - 123*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*
13C-OCDF	*63*		*17 - 157*

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*82*		*35 - 197*

Lab Sample ID: 140-17578-12 MS **Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36167 **Prep Batch: 35991**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDF	3900		34.4	1860	4	pg/g	☼	-5938	75 - 158

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C-2,3,7,8-TCDF	*109*		*24 - 169*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: 140-17578-12 MSD **Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36166 **Prep Batch: 35991**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	2800		32.6	1190	4	pg/g	☼	-4818	67 - 158	1	25
1,2,3,7,8-PeCDD	25	J	163	203		pg/g	☼	109	70 - 142	11	25
1,2,3,4,7,8-HxCDD	ND	F2 F1	163	163		pg/g	☼	100	70 - 164	8	25
1,2,3,6,7,8-HxCDD	ND		163	188		pg/g	☼	116	76 - 134	17	25
1,2,3,7,8,9-HxCDD	4.0	J F2	163	176		pg/g	☼	106	64 - 162	3	25
1,2,3,4,6,7,8-HpCDD	75	J B	163	271		pg/g	☼	120	70 - 140	7	25
OCDD	1300	B F1	326	1790	4	pg/g	☼	145	78 - 144	12	25
1,2,3,7,8-PeCDF	250	F1	163	273	F1	pg/g	☼	12	80 - 134	2	25
2,3,4,7,8-PeCDF	170	F1	163	245	F1	pg/g	☼	46	68 - 160	3	25
1,2,3,4,7,8-HxCDF	420	F1	163	337	F1	pg/g	☼	-49	72 - 134	5	25
1,2,3,6,7,8-HxCDF	110	F1	163	190	F1	pg/g	☼	48	84 - 130	12	25
2,3,4,6,7,8-HxCDF	11	J	163	180		pg/g	☼	104	70 - 156	11	25
1,2,3,7,8,9-HxCDF	7.3	J q	163	160		pg/g	☼	94	78 - 130	11	25
1,2,3,4,6,7,8-HpCDF	100	F1 B	163	202	F1	pg/g	☼	60	82 - 122	2	25
1,2,3,4,7,8,9-HpCDF	41	J B	163	220		pg/g	☼	110	78 - 138	11	25
OCDF	46	J B	326	348		pg/g	☼	93	63 - 170	20	25

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*54*		*25 - 164*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*
13C-1,2,3,6,7,8-HxCDD	*69*		*28 - 130*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*23 - 140*
13C-OCDD	*66*		*17 - 157*
13C-2,3,7,8-TCDF	*59*		*24 - 169*
13C-1,2,3,7,8-PeCDF	*54*		*24 - 185*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*
13C-1,2,3,4,7,8-HxCDF	*62*	*q*	*26 - 152*
13C-1,2,3,6,7,8-HxCDF	*72*		*26 - 123*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*
13C-1,2,3,7,8,9-HxCDF	*70*		*29 - 147*
13C-1,2,3,4,6,7,8-HpCDF	*63*	*q*	*28 - 143*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*
13C-OCDF	*57*		*17 - 157*

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*78*		*35 - 197*

Lab Sample ID: 140-17578-12 MSD **Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 36167 **Prep Batch: 35991**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDF	3900		32.6	1950	4	pg/g	☼	-6013	75 - 158	4	25

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C-2,3,7,8-TCDF	*88*		*24 - 169*

Specialty Organics

Prep Batch: 35991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-1	11187072-120419-SS-SJSSA08(0-1)	Total/NA	Sediment	HRMS-Sox	
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	Total/NA	Sediment	HRMS-Sox	
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	Total/NA	Sediment	HRMS-Sox	
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	Total/NA	Sediment	HRMS-Sox	
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	Total/NA	Sediment	HRMS-Sox	
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	Total/NA	Sediment	HRMS-Sox	
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	Total/NA	Sediment	HRMS-Sox	
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	Total/NA	Sediment	HRMS-Sox	
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	Total/NA	Sediment	HRMS-Sox	
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	Total/NA	Sediment	HRMS-Sox	
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	Total/NA	Sediment	HRMS-Sox	
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	HRMS-Sox	
140-17578-13	11187072-120619-SS-DUP1	Total/NA	Sediment	HRMS-Sox	
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	Total/NA	Sediment	HRMS-Sox	
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	Total/NA	Sediment	HRMS-Sox	
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	Total/NA	Sediment	HRMS-Sox	
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	Total/NA	Sediment	HRMS-Sox	
MB 140-35991/20-A	Method Blank	Total/NA	Sediment	HRMS-Sox	
LCS 140-35991/21-A	Lab Control Sample	Total/NA	Sediment	HRMS-Sox	
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	HRMS-Sox	
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	HRMS-Sox	

Analysis Batch: 36126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-1	11187072-120419-SS-SJSSA08(0-1)	Total/NA	Sediment	1613B	35991
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	Total/NA	Sediment	1613B	35991
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	Total/NA	Sediment	1613B	35991
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	Total/NA	Sediment	1613B	35991
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	Total/NA	Sediment	1613B	35991
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	Total/NA	Sediment	1613B	35991
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	Total/NA	Sediment	1613B	35991
MB 140-35991/20-A	Method Blank	Total/NA	Sediment	1613B	35991
LCS 140-35991/21-A	Lab Control Sample	Total/NA	Sediment	1613B	35991

Analysis Batch: 36146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	Total/NA	Sediment	1613B	35991
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	Total/NA	Sediment	1613B	35991
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	Total/NA	Sediment	1613B	35991
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	Total/NA	Sediment	1613B	35991

Analysis Batch: 36166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991
140-17578-13	11187072-120619-SS-DUP1	Total/NA	Sediment	1613B	35991
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	Total/NA	Sediment	1613B	35991
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	Total/NA	Sediment	1613B	35991
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	Total/NA	Sediment	1613B	35991
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	Total/NA	Sediment	1613B	35991
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991

Specialty Organics

Analysis Batch: 36167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-1	11187072-120419-SS-SJSSA08(0-1)	Total/NA	Sediment	1613B	35991
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	Total/NA	Sediment	1613B	35991
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	Total/NA	Sediment	1613B	35991
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	Total/NA	Sediment	1613B	35991
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	Total/NA	Sediment	1613B	35991
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	Total/NA	Sediment	1613B	35991
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	Total/NA	Sediment	1613B	35991
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	Total/NA	Sediment	1613B	35991
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	Total/NA	Sediment	1613B	35991
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	Total/NA	Sediment	1613B	35991
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991
140-17578-12 MS	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991
140-17578-12 MSD	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	1613B	35991

Analysis Batch: 36178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-13	11187072-120619-SS-DUP1	Total/NA	Sediment	1613B	35991
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	Total/NA	Sediment	1613B	35991
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	Total/NA	Sediment	1613B	35991
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	Total/NA	Sediment	1613B	35991
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	Total/NA	Sediment	1613B	35991

General Chemistry

Analysis Batch: 36008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17578-1	11187072-120419-SS-SJSSA08(0-1)	Total/NA	Sediment	Moisture	
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	Total/NA	Sediment	Moisture	
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	Total/NA	Sediment	Moisture	
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	Total/NA	Sediment	Moisture	
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	Total/NA	Sediment	Moisture	
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	Total/NA	Sediment	Moisture	
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	Total/NA	Sediment	Moisture	
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	Total/NA	Sediment	Moisture	
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	Total/NA	Sediment	Moisture	
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	Total/NA	Sediment	Moisture	
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	Total/NA	Sediment	Moisture	
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	Total/NA	Sediment	Moisture	
140-17578-13	11187072-120619-SS-DUP1	Total/NA	Sediment	Moisture	
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	Total/NA	Sediment	Moisture	
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	Total/NA	Sediment	Moisture	
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	Total/NA	Sediment	Moisture	
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	Total/NA	Sediment	Moisture	
140-17578-1 DU	11187072-120419-SS-SJSSA08(0-1)	Total/NA	Sediment	Moisture	

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Date Collected: 12/04/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Date Collected: 12/04/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 76.3**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.06 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 03:24	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.06 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 05:02	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Date Collected: 12/04/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Date Collected: 12/04/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 67.5**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 04:33	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 06:03	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Date Collected: 12/04/19 15:40 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Date Collected: 12/04/19 15:40 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 57.7**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.76 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 06:19	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.76 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 07:04	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Date Collected: 12/04/19 15:45 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Date Collected: 12/04/19 15:45 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 70.1**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 05:44	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 08:05	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) Lab Sample ID: 140-17578-5

Date Collected: 12/06/19 12:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) Lab Sample ID: 140-17578-5

Date Collected: 12/06/19 12:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 62.3**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.83 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 05:08	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.83 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 09:06	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Date Collected: 12/06/19 12:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Date Collected: 12/06/19 12:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 71.8**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.95 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 03:58	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.95 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 10:07	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) Lab Sample ID: 140-17578-7

Date Collected: 12/06/19 12:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) Lab Sample ID: 140-17578-7

Date Collected: 12/06/19 12:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 76.6**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.15 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 11:08	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) Lab Sample ID: 140-17578-8

Date Collected: 12/06/19 12:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) Lab Sample ID: 140-17578-8

Date Collected: 12/06/19 12:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 67.8**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.16 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 06:55	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.16 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36146	12/17/19 15:32	MSD	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Date Collected: 12/06/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Date Collected: 12/06/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 83.6**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.37 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 07:30	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.37 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36146	12/17/19 16:33	MSD	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Date Collected: 12/06/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Date Collected: 12/06/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 89.6**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.19 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 08:05	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.19 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36146	12/17/19 17:34	MSD	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Date Collected: 12/06/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Date Collected: 12/06/19 15:30 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 82.5**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.31 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36167	12/18/19 08:41	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.31 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36146	12/17/19 18:35	MSD	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Date Collected: 12/06/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Date Collected: 12/06/19 15:35 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 60.9**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.90 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		15			36167	12/18/19 09:16	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.90 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		10			36166	12/18/19 08:03	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Date Collected: 12/06/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120619-SS-DUP1 — Lab Sample ID: 140-17578-13

Date Collected: 12/06/19 00:00 — **Matrix: Sediment**
Date Received: 12/10/19 10:00 — **Percent Solids: 55.0**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.84 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		5			36178	12/18/19 19:48	MSD	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.84 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36166	12/18/19 02:58	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) — Lab Sample ID: 140-17578-14

Date Collected: 12/07/19 12:00 — **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) — Lab Sample ID: 140-17578-14

Date Collected: 12/07/19 12:00 — **Matrix: Sediment**
Date Received: 12/10/19 10:00 — **Percent Solids: 76.0**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.27 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36178	12/18/19 15:25	MSD	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.27 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36166	12/18/19 03:59	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) — Lab Sample ID: 140-17578-15

Date Collected: 12/07/19 12:05 — **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) — Lab Sample ID: 140-17578-15

Date Collected: 12/07/19 12:05 — **Matrix: Sediment**
Date Received: 12/10/19 10:00 — **Percent Solids: 79.7**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.13 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36178	12/18/19 13:39	MSD	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.13 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36166	12/18/19 05:00	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Date Collected: 12/07/19 11:50 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Date Collected: 12/07/19 11:50 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 71.2**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.89 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36178	12/18/19 14:14	MSD	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.89 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36166	12/18/19 06:01	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Date Collected: 12/07/19 11:55 **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Date Collected: 12/07/19 11:55 **Matrix: Sediment**
Date Received: 12/10/19 10:00 **Percent Solids: 75.2**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.55 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36178	12/18/19 14:50	MSD	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.55 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36166	12/18/19 07:02	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: Method Blank Lab Sample ID: MB 140-35991/20-A

Date Collected: N/A **Matrix: Sediment**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 04:00	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-35991/21-A

Date Collected: N/A — **Matrix: Sediment**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		1			36126	12/17/19 02:04	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) — Lab Sample ID: 140-17578-12 MS

Date Collected: 12/06/19 15:35 — **Matrix: Sediment**
Date Received: 12/10/19 10:00 — **Percent Solids: 60.9**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			9.54 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		15			36167	12/18/19 09:52	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			9.54 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		10			36166	12/18/19 09:05	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) — Lab Sample ID: 140-17578-12 MSD

Date Collected: 12/06/19 15:35 — **Matrix: Sediment**
Date Received: 12/10/19 10:00 — **Percent Solids: 60.9**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			10.08 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		15			36167	12/18/19 10:27	LKM	TAL KNX
	Instrument ID: D12C									
Total/NA	Prep	HRMS-Sox			10.08 g	20 uL	35991	12/11/19 10:49	SSS	TAL KNX
Total/NA	Analysis	1613B		10			36166	12/18/19 10:06	PMP	TAL KNX
	Instrument ID: D2A									

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) — Lab Sample ID: 140-17578-1 DU

Date Collected: 12/04/19 15:30 — **Matrix: Sediment**
Date Received: 12/10/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			36008	12/11/19 15:11	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Laboratory: Eurofins TestAmerica, Knoxville

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704380-16-9	08-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8,9-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,4,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	2,3,4,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDD
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDF
1613B	HRMS-Sox	Sediment	OCDD
1613B	HRMS-Sox	Sediment	OCDF
1613B	HRMS-Sox	Sediment	Total HpCDD
1613B	HRMS-Sox	Sediment	Total HpCDF
1613B	HRMS-Sox	Sediment	Total HxCDD
1613B	HRMS-Sox	Sediment	Total HxCDF
1613B	HRMS-Sox	Sediment	Total PeCDD
1613B	HRMS-Sox	Sediment	Total PeCDF
1613B	HRMS-Sox	Sediment	Total TCDD
1613B	HRMS-Sox	Sediment	Total TCDF
Moisture		Sediment	Percent Moisture
Moisture		Sediment	Percent Solids

Laboratory: Eurofins TestAmerica, Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704528-15-2	03-31-20

Method Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL KNX
TEQ	Total TEQ Calculation	TAL SOP	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
HRMS-Sox	Soxhlet Extraction	EPA	TAL KNX

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: GHD Services Inc. Job ID: 140-17578-1
Project/Site: San Jacinto River Waste Pits Superfund

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17578-1	11187072-120419-SS-SJSSA08(0-1)	Sediment	12/04/19 15:30	12/10/19 10:00	
140-17578-2	11187072-120419-SS-SJSSA08(1-2)	Sediment	12/04/19 15:35	12/10/19 10:00	
140-17578-3	11187072-120419-SS-SJSSA08(2-4)	Sediment	12/04/19 15:40	12/10/19 10:00	
140-17578-4	11187072-120419-SS-SJSSA08(4-6)	Sediment	12/04/19 15:45	12/10/19 10:00	
140-17578-5	11187072-120619-SS-SJSSA03(0-1)	Sediment	12/06/19 12:20	12/10/19 10:00	
140-17578-6	11187072-120619-SS-SJSSA03(1-2)	Sediment	12/06/19 12:25	12/10/19 10:00	
140-17578-7	11187072-120619-SS-SJSSA03(2-4)	Sediment	12/06/19 12:30	12/10/19 10:00	
140-17578-8	11187072-120619-SS-SJSSA03(4-6)	Sediment	12/06/19 12:35	12/10/19 10:00	
140-17578-9	11187072-120619-SS-SJSSA06(0-1)	Sediment	12/06/19 15:20	12/10/19 10:00	
140-17578-10	11187072-120619-SS-SJSSA06(1-2)	Sediment	12/06/19 15:25	12/10/19 10:00	
140-17578-11	11187072-120619-SS-SJSSA06(2-4)	Sediment	12/06/19 15:30	12/10/19 10:00	
140-17578-12	11187072-120619-SS-SJSSA06(4-6)	Sediment	12/06/19 15:35	12/10/19 10:00	
140-17578-13	11187072-120619-SS-DUP1	Sediment	12/06/19 00:00	12/10/19 10:00	
140-17578-14	11187072-120719-SS-SJSSA02(2-4)	Sediment	12/07/19 12:00	12/10/19 10:00	
140-17578-15	11187072-120719-SS-SJSSA02(4-6)	Sediment	12/07/19 12:05	12/10/19 10:00	
140-17578-16	11187072-120719-SS-SJSSA02(0-1)	Sediment	12/07/19 11:50	12/10/19 10:00	
140-17578-17	11187072-120719-SS-SJSSA02(1-2)	Sediment	12/07/19 11:55	12/10/19 10:00	

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 29777

Lab Sample ID: CPS 140-29777/1 Client Sample ID:

Date Analyzed: 05/03/19 01:30 Lab File ID: d2190503w1.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	24.34	Peak assignment corrected	mcwhirter l	05/03/19 02:37
2,3,7,8-TCDF	24.37	Peak assignment corrected	mcwhirter l	05/03/19 02:37

Lab Sample ID: IC 140-29777/4 Client Sample ID:

Date Analyzed: 05/03/19 02:43 Lab File ID: icl1_190503024318.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.39	Peak assignment corrected	reynoldk	05/03/19 09:06
37Cl4-2,3,7,8-TCDD	21.42	Split Peak	reynoldk	05/03/19 09:46
2,3,7,8-TCDD	21.44	Split Peak	reynoldk	05/03/19 09:09
13C-2,3,7,8-TCDF	24.32	Peak assignment corrected	reynoldk	05/03/19 09:07

Lab Sample ID: IC 140-29777/6 Client Sample ID:

Date Analyzed: 05/03/19 03:35 Lab File ID: icl2_190503033522.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.39	Peak assignment corrected	reynoldk	05/03/19 09:09
2,3,7,8-TCDD	21.42	Peak assignment corrected	reynoldk	05/03/19 09:11
37Cl4-2,3,7,8-TCDD	21.42	Split Peak	reynoldk	05/03/19 10:26
13C-2,3,7,8-TCDF	24.31	Peak assignment corrected	reynoldk	05/03/19 09:11
2,3,7,8-TCDF	24.35	Split Peak	reynoldk	05/03/19 09:30

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 29777

Lab Sample ID: IC 140-29777/8 Client Sample ID:

Date Analyzed: 05/03/19 04:28 Lab File ID: icl3_190503042827.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.39	Peak assignment corrected	reynoldk	05/03/19 09:13
2,3,7,8-TCDD	21.42	Peak assignment corrected	reynoldk	05/03/19 09:13
13C-2,3,7,8-TCDF	24.31	Peak assignment corrected	reynoldk	05/03/19 09:13
2,3,7,8-TCDF	24.36	Baseline	reynoldk	05/03/19 10:28

Lab Sample ID: IC 140-29777/10 Client Sample ID:

Date Analyzed: 05/03/19 05:21 Lab File ID: icl4_190503052133.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.38	Peak assignment corrected	reynoldk	05/03/19 09:15
2,3,7,8-TCDD	21.41	Peak assignment corrected	reynoldk	05/03/19 09:16
13C-2,3,7,8-TCDF	24.30	Peak assignment corrected	reynoldk	05/03/19 09:15
2,3,7,8-TCDF	24.34	Peak assignment corrected	reynoldk	05/03/19 09:16

Lab Sample ID: IC 140-29777/12 Client Sample ID:

Date Analyzed: 05/03/19 06:14 Lab File ID: icl5_190503061437.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.35	Peak assignment corrected	reynoldk	05/03/19 09:16
2,3,7,8-TCDD	21.38	Peak assignment corrected	reynoldk	05/03/19 09:17
13C-2,3,7,8-TCDF	24.27	Peak assignment corrected	reynoldk	05/03/19 09:16
2,3,7,8-TCDF	24.31	Baseline	reynoldk	05/03/19 09:33

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 29777

Lab Sample ID: ICV 140-29777/17 Client Sample ID:

Date Analyzed: 05/03/19 12:43 Lab File ID: icv_190503124322.d GC Column: DB 225 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	21.36	Peak assignment corrected	reynoldk	05/03/19 13:20
2,3,7,8-TCDD	21.38	Peak assignment corrected	reynoldk	05/03/19 13:20
13C-2,3,7,8-TCDF	24.27	Peak assignment corrected	reynoldk	05/03/19 13:20
2,3,7,8-TCDF	24.32	Peak assignment corrected	reynoldk	05/03/19 13:20

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 36167

Lab Sample ID: CPS 140-36167/1 Client Sample ID:

Date Analyzed: 12/18/19 00:58 Lab File ID: d2191218w1.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.18	Peak assignment corrected	mcwhirterl	12/18/19 02:02
2,3,7,8-TCDF	22.21	Peak assignment corrected	mcwhirterl	12/18/19 02:02

Lab Sample ID: 140-17578-1 Client Sample ID: 11187072-120419-SS-SJSSA08(0-1)

Date Analyzed: 12/18/19 03:24 Lab File ID: 140-17578-a-1-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	22.23	Invalid Compound ID	mcwhirterl	12/18/19 04:17

Lab Sample ID: 140-17578-6 Client Sample ID: 11187072-120619-SS-SJSSA03(1-2)

Date Analyzed: 12/18/19 03:58 Lab File ID: 140-17578-a-6-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.21	Peak assignment corrected	davidsonm	12/18/19 09:04
2,3,7,8-TCDF	22.23	Split Peak	davidsonm	12/18/19 09:04

Lab Sample ID: 140-17578-5 Client Sample ID: 11187072-120619-SS-SJSSA03(0-1)

Date Analyzed: 12/18/19 05:08 Lab File ID: 140-17578-A-5-Aa.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.22	Peak assignment corrected	davidsonm	12/18/19 09:05

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 36167

Lab Sample ID: 140-17578-12 Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)

Date Analyzed: 12/18/19 09:16 Lab File ID: 140-17578-a-12-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	22.20	Baseline	davidsonm	12/18/19 10:05

Lab Sample ID: 140-17578-12 MSD Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MSD

Date Analyzed: 12/18/19 10:27 Lab File ID: 140-17578-a-12-cmsd.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.18	Baseline	davidsonm	12/18/19 11:10

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Analysis Batch Number: 36178

Lab Sample ID: 140-17578-15 Client Sample ID: 11187072-120719-SS-SJSSA02(4-6)

Date Analyzed: 12/18/19 13:39 Lab File ID: 140-17578-a-15-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.16	Peak assignment corrected	davidsonm	12/18/19 15:05

Lab Sample ID: 140-17578-16 Client Sample ID: 11187072-120719-SS-SJSSA02(0-1)

Date Analyzed: 12/18/19 14:14 Lab File ID: 140-17578-a-16-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	22.18	Peak assignment corrected	davidsonm	12/18/19 15:06
2,3,7,8-TCDF	22.20	Split Peak	davidsonm	12/18/19 15:06

Lab Sample ID: 140-17578-17 Client Sample ID: 11187072-120719-SS-SJSSA02(1-2)

Date Analyzed: 12/18/19 14:50 Lab File ID: 140-17578-a-17-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	22.17	Baseline	davidsonm	12/18/19 15:47

Lab Sample ID: 140-17578-14 Client Sample ID: 11187072-120719-SS-SJSSA02(2-4)

Date Analyzed: 12/18/19 15:25 Lab File ID: 140-17578-a-14-a.d GC Column: DB225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	22.21	Invalid Compound ID	mcwhirterl	12/18/19 20:45

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 7768

Lab Sample ID: IC 140-7768/2 Client Sample ID:

Date Analyzed: 05/16/14 14:26 Lab File ID: d3140516i1.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	29.76	Baseline	davidsonm	01/11/17 16:11
2,3,7,8-TCDD	31.87	Baseline	davidsonm	01/11/17 16:11
1,2,3,7,8-PeCDD	41.02	Shouldering	davidsonm	01/11/17 16:11
1,2,3,7,8,9-HxCDD	45.76	Shouldering	davidsonm	01/11/17 16:11
1,2,3,7,8,9-HxCDF	46.03	Shouldering	davidsonm	01/11/17 16:11
OCDD	54.30	Shouldering	davidsonm	01/11/17 16:11

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36126

Lab Sample ID: MB 140-35991/20-A Client Sample ID:

Date Analyzed: 12/17/19 04:00 Lab File ID: mb140-3599120-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,6,7,8-HpCDF	47.94	Baseline	parslyt	12/17/19 05:16
1,2,3,4,6,7,8-HpCDD	49.63	Split Peak	parslyt	12/17/19 05:16
1,2,3,4,7,8,9-HpCDF	50.27	Baseline	parslyt	12/17/19 05:17
OCDD	53.87	Split Peak	parslyt	12/17/19 05:17
OCDF	54.01	Split Peak	parslyt	12/17/19 05:18

Lab Sample ID: 140-17578-1 Client Sample ID: 11187072-120419-SS-SJSSA08(0-1)

Date Analyzed: 12/17/19 05:02 Lab File ID: 140-17578-a-1-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.78	Split Peak	davidsonm	12/17/19 10:05
1,2,3,7,8-PeCDD	40.54	Incomplete Integration	davidsonm	12/17/19 10:05
1,2,3,6,7,8-HxCDF	43.93	Split Peak	davidsonm	12/17/19 10:07
1,2,3,7,8,9-HxCDD	45.33	Split Peak	davidsonm	12/17/19 10:06

Lab Sample ID: 140-17578-2 Client Sample ID: 11187072-120419-SS-SJSSA08(1-2)

Date Analyzed: 12/17/19 06:03 Lab File ID: 140-17578-a-2-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.78	Split Peak	davidsonm	12/17/19 10:12
1,2,3,7,8-PeCDD	40.57	Incomplete Integration	davidsonm	12/17/19 10:11
1,2,3,6,7,8-HxCDF	43.93	Split Peak	davidsonm	12/17/19 10:13
2,3,4,6,7,8-HxCDF	44.64	Split Peak	davidsonm	12/17/19 10:13
1,2,3,4,6,7,8-HpCDF	47.94	Split Peak	davidsonm	12/17/19 10:14

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36126

Lab Sample ID: 140-17578-3 Client Sample ID: 11187072-120419-SS-SJSSA08(2-4)

Date Analyzed: 12/17/19 07:04 Lab File ID: 140-17578-a-3-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.77	Split Peak	davidsonm	12/17/19 10:19
1,2,3,7,8-PeCDD	40.58	Incomplete Integration	davidsonm	12/17/19 10:17
1,2,3,4,7,8-HxCDF	43.79	Split Peak	davidsonm	12/17/19 10:21
1,2,3,6,7,8-HxCDF	43.92	Split Peak	davidsonm	12/17/19 10:21
2,3,4,6,7,8-HxCDF	44.65	Split Peak	davidsonm	12/17/19 10:21
1,2,3,7,8,9-HxCDF	45.58	Incomplete Integration	davidsonm	12/17/19 10:22
1,2,3,4,7,8,9-HpCDF	50.28	Split Peak	davidsonm	12/17/19 10:23

Lab Sample ID: 140-17578-4 Client Sample ID: 11187072-120419-SS-SJSSA08(4-6)

Date Analyzed: 12/17/19 08:05 Lab File ID: 140-17578-a-4-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	30.83	Peak assignment corrected	davidsonm	12/17/19 11:40
1,2,3,7,8-PeCDF	38.78	Split Peak	davidsonm	12/17/19 11:46
1,2,3,4,7,8-HxCDF	43.82	Split Peak	davidsonm	12/17/19 11:47
1,2,3,4,7,8-HxCDD	44.83	Split Peak	davidsonm	12/17/19 11:47
1,2,3,6,7,8-HxCDD	44.95	Split Peak	davidsonm	12/17/19 11:47
1,2,3,7,8,9-HxCDD	45.32	Split Peak	davidsonm	12/17/19 11:47
OCDF	54.01	Split Peak	davidsonm	12/17/19 11:48

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36126

Lab Sample ID: 140-17578-5 Client Sample ID: 11187072-120619-SS-SJSSA03(0-1)

Date Analyzed: 12/17/19 09:06 Lab File ID: 140-17578-a-5-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	30.79	Peak assignment corrected	davidsonm	12/17/19 11:58
1,2,3,7,8-PeCDF	38.74	Split Peak	davidsonm	12/17/19 12:03
1,2,3,7,8-PeCDD	40.55	Incomplete Integration	davidsonm	12/17/19 12:01
2,3,4,6,7,8-HxCDF	44.62	Split Peak	davidsonm	12/17/19 12:04
1,2,3,4,7,8-HxCDD	44.81	Split Peak	davidsonm	12/17/19 12:04
1,2,3,6,7,8-HxCDD	44.92	Split Peak	davidsonm	12/17/19 12:04
1,2,3,7,8,9-HxCDD	45.30	Split Peak	davidsonm	12/17/19 12:04
1,2,3,7,8,9-HxCDF	45.60	Split Peak	davidsonm	12/17/19 12:05
1,2,3,4,6,7,8-HpCDF	47.93	Split Peak	davidsonm	12/17/19 12:06
1,2,3,4,7,8,9-HpCDF	50.28	Split Peak	davidsonm	12/17/19 12:06
OCDF	53.99	Split Peak	davidsonm	12/17/19 12:06

Lab Sample ID: 140-17578-6 Client Sample ID: 11187072-120619-SS-SJSSA03(1-2)

Date Analyzed: 12/17/19 10:07 Lab File ID: 140-17578-a-6-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,6,7,8-HxCDF		Invalid Compound ID	davidsonm	12/17/19 12:39
1,2,3,7,8-PeCDF	38.75	Split Peak	davidsonm	12/17/19 12:11
2,3,4,7,8-PeCDF	39.98	Incomplete Integration	davidsonm	12/17/19 12:12
1,2,3,4,7,8-HxCDD	44.80	Split Peak	davidsonm	12/17/19 12:15
1,2,3,6,7,8-HxCDD	44.92	Split Peak	davidsonm	12/17/19 12:15
1,2,3,7,8,9-HxCDD	45.27	Split Peak	davidsonm	12/17/19 12:15
1,2,3,4,6,7,8-HpCDF	47.91	Split Peak	davidsonm	12/17/19 12:39
1,2,3,4,7,8,9-HpCDF	50.23	Split Peak	davidsonm	12/17/19 12:40
OCDF	53.97	Split Peak	davidsonm	12/17/19 12:07

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36126

Lab Sample ID: 140-17578-7 Client Sample ID: 11187072-120619-SS-SJSSA03(2-4)

Date Analyzed: 12/17/19 11:08 Lab File ID: 140-17578-a-7-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	28.84	Incomplete Integration	davidsonm	12/17/19 12:43
2,3,7,8-TCDD	30.76	Incomplete Integration	davidsonm	12/17/19 12:42
1,2,3,7,8-PeCDD	40.54	Incomplete Integration	davidsonm	12/17/19 12:45
13C-1,2,3,4,7,8-HxCDD	44.78	Split Peak	davidsonm	12/17/19 12:48
1,2,3,6,7,8-HxCDD	44.91	Invalid Compound ID	davidsonm	12/17/19 12:48
13C-1,2,3,6,7,8-HxCDD	44.91	Invalid Compound ID	davidsonm	12/17/19 12:48
1,2,3,4,6,7,8-HpCDF	47.92	Split Peak	davidsonm	12/17/19 12:49
OCDF	53.98	Split Peak	davidsonm	12/17/19 12:50

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36146

Lab Sample ID: WDMCCV 140-36146/1 Client Sample ID:

Date Analyzed: 12/17/19 12:34 Lab File ID: d3191217s2.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8,9-HxCDF	45.59	Split Peak	davidsonm	12/17/19 13:37

Lab Sample ID: 140-17578-8 Client Sample ID: 11187072-120619-SS-SJSSA03(4-6)

Date Analyzed: 12/17/19 15:32 Lab File ID: 140-17578-a-8-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.73	Split Peak	parslyt	12/18/19 03:25
1,2,3,7,8-PeCDD	40.56	Baseline	parslyt	12/18/19 03:21
2,3,4,6,7,8-HxCDF	44.63	Split Peak	parslyt	12/18/19 03:30
1,2,3,7,8,9-HxCDD	45.29	Split Peak	parslyt	12/18/19 03:28
1,2,3,4,6,7,8-HpCDF	47.92	Split Peak	parslyt	12/18/19 03:33
1,2,3,4,7,8,9-HpCDF	50.26	Split Peak	parslyt	12/18/19 03:34
OCDD	53.84	Split Peak	parslyt	12/18/19 03:35
OCDF	53.98	Split Peak	parslyt	12/18/19 03:35

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36146

Lab Sample ID: 140-17578-9 Client Sample ID: 11187072-120619-SS-SJSSA06(0-1)

Date Analyzed: 12/17/19 16:33 Lab File ID: 140-17578-a-9-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.74	Split Peak	parslyt	12/18/19 03:39
1,2,3,7,8-PeCDD	40.54	Split Peak	parslyt	12/18/19 03:38
1,2,3,4,7,8-HxCDF	43.78	Split Peak	parslyt	12/18/19 03:41
1,2,3,6,7,8-HxCDF	43.90	Split Peak	parslyt	12/18/19 03:41
2,3,4,6,7,8-HxCDF	44.63	Split Peak	parslyt	12/18/19 03:41
1,2,3,7,8,9-HxCDF	45.57	Split Peak	parslyt	12/18/19 03:43
1,2,3,4,6,7,8-HpCDF	47.93	Split Peak	parslyt	12/18/19 03:45
1,2,3,4,7,8,9-HpCDF	50.27	Split Peak	parslyt	12/18/19 03:46
OCDD	53.84	Split Peak	parslyt	12/18/19 03:48
OCDF	53.98	Split Peak	parslyt	12/18/19 03:48

Lab Sample ID: 140-17578-10 Client Sample ID: 11187072-120619-SS-SJSSA06(1-2)

Date Analyzed: 12/17/19 17:34 Lab File ID: 140-17578-a-10-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.73	Split Peak	parslyt	12/18/19 04:00
1,2,3,7,8-PeCDD	40.54	Split Peak	parslyt	12/18/19 03:58
1,2,3,4,7,8-HxCDF	43.77	Baseline	parslyt	12/18/19 04:06
1,2,3,6,7,8-HxCDF	43.90	Split Peak	parslyt	12/18/19 04:04
2,3,4,6,7,8-HxCDF	44.63	Split Peak	parslyt	12/18/19 04:04
13C-1,2,3,4,7,8-HxCDD	44.78	Split Peak	parslyt	12/18/19 04:02
13C-1,2,3,6,7,8-HxCDD	44.90	Invalid Compound ID	parslyt	12/18/19 04:02
1,2,3,6,7,8-HxCDD	44.92	Invalid Compound ID	parslyt	12/18/19 04:02
1,2,3,7,8,9-HxCDF	45.58	Baseline	parslyt	12/18/19 04:05
OCDD	53.84	Split Peak	parslyt	12/18/19 04:09
OCDF	53.98	Split Peak	parslyt	12/18/19 04:09

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36146

Lab Sample ID: 140-17578-11 Client Sample ID: 11187072-120619-SS-SJSSA06(2-4)

Date Analyzed: 12/17/19 18:35 Lab File ID: 140-17578-a-11-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.74	Split Peak	parslyt	12/18/19 04:15
1,2,3,6,7,8-HxCDF	43.89	Split Peak	parslyt	12/18/19 04:16
1,2,3,7,8,9-HxCDF	45.55	Split Peak	parslyt	12/18/19 04:16
1,2,3,4,7,8,9-HpCDF	50.25	Baseline	parslyt	12/18/19 04:21
OCDD	53.83	Split Peak	parslyt	12/18/19 04:22
OCDF	53.97	Split Peak	parslyt	12/18/19 04:22

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36166

Lab Sample ID: WDMCCV 140-36166/1 Client Sample ID:

Date Analyzed: 12/18/19 00:01 Lab File ID: d3191217s3.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	30.81	Peak assignment corrected	parslyt	12/18/19 01:02

Lab Sample ID: 140-17578-13 Client Sample ID: 11187072-120619-SS-DUP1

Date Analyzed: 12/18/19 02:58 Lab File ID: 140-17578-a-13-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	38.80	Split Peak	davidsonm	12/18/19 07:57
1,2,3,7,8-PeCDD	40.60	Split Peak	davidsonm	12/18/19 07:56
1,2,3,6,7,8-HxCDF	43.94	Split Peak	davidsonm	12/18/19 07:58
2,3,4,6,7,8-HxCDF	44.67	Split Peak	davidsonm	12/18/19 07:58
1,2,3,7,8,9-HxCDD	45.34	Split Peak	davidsonm	12/18/19 07:57
1,2,3,4,6,7,8-HpCDD	49.64	Split Peak	davidsonm	12/18/19 07:59
1,2,3,4,7,8,9-HpCDF	50.30	Split Peak	davidsonm	12/18/19 07:59
OCDF	54.02	Split Peak	davidsonm	12/18/19 08:00

Lab Sample ID: 140-17578-14 Client Sample ID: 11187072-120719-SS-SJSSA02(2-4)

Date Analyzed: 12/18/19 03:59 Lab File ID: 140-17578-a-14-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	30.88	Incomplete Integration	davidsonm	12/18/19 08:26
1,2,3,7,8-PeCDF	38.79	Split Peak	davidsonm	12/18/19 08:30
2,3,4,7,8-PeCDF	40.05	Baseline	davidsonm	12/18/19 08:30
1,2,3,6,7,8-HxCDF	43.94	Split Peak	davidsonm	12/18/19 08:33
1,2,3,4,7,8-HxCDD	44.84	Split Peak	davidsonm	12/18/19 08:32
1,2,3,6,7,8-HxCDD	44.96	Split Peak	davidsonm	12/18/19 08:32
1,2,3,7,8,9-HxCDD	45.31	Split Peak	davidsonm	12/18/19 08:33
1,2,3,4,7,8,9-HpCDF	50.30	Split Peak	davidsonm	12/18/19 08:33
OCDF	54.02	Baseline	davidsonm	12/18/19 08:34

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36166

Lab Sample ID: 140-17578-15 Client Sample ID: 11187072-120719-SS-SJSSA02(4-6)

Date Analyzed: 12/18/19 05:00 Lab File ID: 140-17578-a-15-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	28.84	Incomplete Integration	davidsonm	12/18/19 07:33
2,3,4,7,8-PeCDF	40.04	Baseline	davidsonm	12/18/19 08:40
1,2,3,4,7,8-HxCDF	43.78	Split Peak	davidsonm	12/18/19 08:41
1,2,3,6,7,8-HxCDF	43.92	Invalid Compound ID	davidsonm	12/18/19 08:41
1,2,3,4,7,8-HxCDD	44.83	Split Peak	davidsonm	12/18/19 08:40
1,2,3,6,7,8-HxCDD	44.93	Split Peak	davidsonm	12/18/19 08:40
1,2,3,7,8,9-HxCDD	45.30	Split Peak	davidsonm	12/18/19 08:41
1,2,3,4,6,7,8-HpCDF	47.94	Split Peak	davidsonm	12/18/19 08:42
OCDF	54.00	Split Peak	davidsonm	12/18/19 08:43

Lab Sample ID: 140-17578-16 Client Sample ID: 11187072-120719-SS-SJSSA02(0-1)

Date Analyzed: 12/18/19 06:01 Lab File ID: 140-17578-a-16-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	28.83	Incomplete Integration	davidsonm	12/18/19 07:34
2,3,7,8-TCDD	30.87	Incomplete Integration	davidsonm	12/18/19 08:44
1,2,3,4,7,8,9-HpCDF	50.27	Split Peak	davidsonm	12/18/19 08:48

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36166

Lab Sample ID: 140-17578-17 Client Sample ID: 11187072-120719-SS-SJSSA02(1-2)

Date Analyzed: 12/18/19 07:02 Lab File ID: 140-17578-a-17-a.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8,9-HxCDF		Invalid Compound ID	davidsonm	12/18/19 08:55
2,3,7,8-TCDF	28.88	Baseline	davidsonm	12/18/19 08:51
2,3,7,8-TCDD	30.92	Invalid Compound ID	davidsonm	12/18/19 08:49
1,2,3,7,8-PeCDD	40.58	Split Peak	davidsonm	12/18/19 08:53
1,2,3,6,7,8-HxCDF	43.94	Split Peak	davidsonm	12/18/19 08:55
1,2,3,4,7,8-HxCDD	44.83	Split Peak	davidsonm	12/18/19 08:54
1,2,3,6,7,8-HxCDD	44.99	Split Peak	davidsonm	12/18/19 08:54
1,2,3,7,8,9-HxCDD	45.32	Baseline	davidsonm	12/18/19 08:54
1,2,3,4,6,7,8-HpCDF	47.96	Incomplete Integration	davidsonm	12/18/19 08:56
OCDF	54.02	Split Peak	davidsonm	12/18/19 08:56

Lab Sample ID: 140-17578-12 Client Sample ID: 11187072-120619-SS-SJSSA06(4-6)

Date Analyzed: 12/18/19 08:03 Lab File ID: 140-17578-a-12-aa.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	28.87	Incomplete Integration	davidsonm	12/18/19 09:09
2,3,7,8-TCDD	30.89	Peak assignment corrected	davidsonm	12/18/19 09:07
1,2,3,7,8-PeCDF	38.80	Split Peak	davidsonm	12/18/19 09:09
1,2,3,6,7,8-HxCDF	43.95	Split Peak	davidsonm	12/18/19 09:10
2,3,4,6,7,8-HxCDF	44.67	Split Peak	davidsonm	12/18/19 09:11
1,2,3,7,8,9-HxCDD	45.32	Split Peak	davidsonm	12/18/19 09:10
1,2,3,7,8,9-HxCDF	45.60	Incomplete Integration	davidsonm	12/18/19 09:11
13C-1,2,3,4,6,7,8-HpCDD	49.63	Baseline	davidsonm	12/18/19 09:13
1,2,3,4,7,8,9-HpCDF	50.30	Baseline	davidsonm	12/18/19 09:14

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36166

Lab Sample ID: 140-17578-12 MS Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MS

Date Analyzed: 12/18/19 09:05 Lab File ID: 140-17578-a-12-bmsa.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDD	30.81	Split Peak	davidsonm	12/18/19 10:11
13C-1,2,3,7,8-PeCDF	38.76	Baseline	davidsonm	12/18/19 10:12
13C-2,3,4,7,8-PeCDF	40.01	Baseline	davidsonm	12/18/19 10:12
13C-1,2,3,4,7,8-HxCDF	43.78	Invalid Compound ID	davidsonm	12/18/19 10:15
1,2,3,4,7,8-HxCDF	43.80	Invalid Compound ID	davidsonm	12/18/19 10:15
13C-1,2,3,6,7,8-HxCDF	43.90	Split Peak	davidsonm	12/18/19 10:15
13C-2,3,4,6,7,8-HxCDF	44.63	Baseline	davidsonm	12/18/19 10:15
13C-1,2,3,4,7,8-HxCDD	44.81	Invalid Compound ID	davidsonm	12/18/19 12:06
13C-1,2,3,6,7,8-HxCDD	44.91	Invalid Compound ID	davidsonm	12/18/19 10:13
13C-1,2,3,7,8,9-HxCDF	45.56	Invalid Compound ID	davidsonm	12/18/19 10:16
1,2,3,7,8,9-HxCDF	45.59	Invalid Compound ID	davidsonm	12/18/19 10:16
13C-1,2,3,4,6,7,8-HpCDF	47.94	Baseline	davidsonm	12/18/19 10:17
1,2,3,4,6,7,8-HpCDD	49.62	Split Peak	davidsonm	12/18/19 10:17
13C-1,2,3,4,7,8,9-HpCDF	50.26	Split Peak	davidsonm	12/18/19 10:18
1,2,3,4,7,8,9-HpCDF	50.27	Split Peak	davidsonm	12/18/19 10:18
13C-OCDD	53.84	Baseline	davidsonm	12/18/19 10:19

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxvi Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Analysis Batch Number: 36166

Lab Sample ID: 140-17578-12 MSD Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MSD

Date Analyzed: 12/18/19 10:06 Lab File ID: 140-17578-a-12-cmsda.d GC Column: RTX-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,7,8-TCDF	28.77	Split Peak	davidsonm	12/18/19 11:11
13C-1,2,3,7,8-PeCDD	40.54	Baseline	davidsonm	12/18/19 11:11
13C-1,2,3,4,7,8-HxCDF	43.77	Invalid Compound ID	davidsonm	12/18/19 11:12
13C-1,2,3,6,7,8-HxCDF	43.90	Invalid Compound ID	davidsonm	12/18/19 11:12
13C-2,3,4,6,7,8-HxCDF	44.63	Baseline	davidsonm	12/18/19 11:13
13C-1,2,3,7,8,9-HxCDF	45.56	Invalid Compound ID	davidsonm	12/18/19 11:13
1,2,3,7,8,9-HxCDF	45.57	Invalid Compound ID	davidsonm	12/18/19 11:13
13C-1,2,3,4,6,7,8-HpCDF	47.92	Baseline	davidsonm	12/18/19 11:14
13C-1,2,3,4,7,8,9-HpCDF	50.26	Split Peak	davidsonm	12/18/19 11:14
1,2,3,4,7,8,9-HpCDF	50.27	Invalid Compound ID	davidsonm	12/18/19 11:15
13C-OCDD	53.84	Split Peak	davidsonm	12/18/19 11:15

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
10CSDFCL37CUP_00044	07/31/25	09/03/19	Hexane, Lot 221330	200 mL	10XXDFCL37INP_00001	0.02 mL	37Cl4-2,3,7,8-TCDD	0.2 ng/mL
.10XXDFCL37INP_00001	07/31/25	09/28/16	Nonane, Lot SHBH0333V	3 mL	10INDFCL37P_00001	0.12 mL	37Cl4-2,3,7,8-TCDD	2000 ng/mL
..10INDFCL37P_00001	07/31/25	Cambridge Isotope, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
10IDDFC13WRKP_00073	08/31/22	10/28/19	ACETONE, Lot 234648	100 mL	10MXDFC13ISP_00027	1 mL	13C-1,2,3,4,6,7,8-HpCDD	1 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	1 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	1 ng/mL
							13C-1,2,3,4,7,8-HxCDD	1 ng/mL
							13C-1,2,3,4,7,8-HxCDF	1 ng/mL
							13C-1,2,3,6,7,8-HxCDD	1 ng/mL
							13C-1,2,3,6,7,8-HxCDF	1 ng/mL
							13C-1,2,3,7,8,9-HxCDF	1 ng/mL
							13C-1,2,3,7,8-PeCDD	1 ng/mL
							13C-1,2,3,7,8-PeCDF	1 ng/mL
							13C-2,3,4,6,7,8-HxCDF	1 ng/mL
							13C-2,3,4,7,8-PeCDF	1 ng/mL
							13C-2,3,7,8-TCDD	1 ng/mL
							13C-2,3,7,8-TCDF	1 ng/mL
							13C-OCDD	2 ng/mL
					10XX13COCDFP_00001	0.02 mL	13C-OCDF	2 ng/mL
.10MXDFC13ISP_00027	10/01/22	CIL, Lot ER082812-01			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
.10XX13COCDFP_00001	08/31/22	10/20/16	Nonane, Lot SHBH0333V	5 mL	10INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..10INC13OCDFP_00001	08/31/22	Cambridge Isotope, Lot ER080812-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
10RSDFWRKP_00037	06/30/20	09/03/19	Nonane, Lot SHBK4119	10 mL	10XXDFRSINTP_00001	0.2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
.10XXDFRSINTP_00001	06/30/20	01/30/17	Nonane, Lot SHBH0333V	10 mL	10INDFHXCDRSP_00001	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					10INDFTCDDRSP_00001	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
..10INDFHXCDRSP_00001	09/30/26	Cambridge Isotope, Lot ER08221601			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
..10INDFTCDDRSP_00001	06/30/20	Cambridge Isotope, Lot ER060710-01			(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
10SPDFNATSPKP_00030	05/01/26	10/14/19	ACETONE, Lot 236139	100 mL	10XXDFNATP_00008	0.5 mL	1,2,3,4,6,7,8-HpCDD	1 ng/mL
							1,2,3,4,6,7,8-HpCDF	1 ng/mL
							1,2,3,4,7,8,9-HpCDF	1 ng/mL
							1,2,3,4,7,8-HxCDD	1 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,7,8-HxCDF	1 ng/mL
							1,2,3,6,7,8-HxCDD	1 ng/mL
							1,2,3,6,7,8-HxCDF	1 ng/mL
							1,2,3,7,8,9-HxCDD	1 ng/mL
							1,2,3,7,8,9-HxCDF	1 ng/mL
							1,2,3,7,8-PeCDD	1 ng/mL
							1,2,3,7,8-PeCDF	1 ng/mL
							2,3,4,6,7,8-HxCDF	1 ng/mL
							2,3,4,7,8-PeCDF	1 ng/mL
							2,3,7,8-TCDD	0.2 ng/mL
							2,3,7,8-TCDF	0.2 ng/mL
							OCDD	2 ng/mL
							OCDF	2 ng/mL
.10XXDFNATP_00008	05/01/26	04/16/19	Nonane, Lot SHBK4119	3 mL	10MXDFNATP_00002	0.3 mL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
..10MXDFNATP_00002	05/01/26	Cambridge Isotope, Lot ER02241602			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
61CV1613OS_00005	04/01/20	04/08/15	Nonane, Lot 13CS30114	1 mL	61CV1613S_00001	1000 uL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
					61XX13COCDFP_00001	20 uL	13C-OCDF	200 ng/mL
.61CV1613S_00001	04/01/20		WELLINGTON, Lot 13CS30114		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61IDWDWRKTCDF_00002	10/01/21	03/28/17	Nonane, Lot SHBH0333V	5 mL	61IDWDMTCDF_00003	0.1 mL	13C-2,3,7,8-TCDF	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
.61IDWDMTCDF_00003	10/31/21	03/28/17	Nonane, Lot SHBH0333V	10 mL	10INC13TCDFP_00001	0.1 mL	13C-2,3,7,8-TCDF	500 ng/mL
					61IN2378TCDFP_00002	0.1 mL	2,3,7,8-TCDF	500 ng/mL
..10INC13TCDFP_00001	06/30/24	Cambridge Isotope, Lot ER12101304			(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..61IN2378TCDFP_00002	10/31/21	CERILLIANT, Lot ER101211-02			(Purchased Reagent)		2,3,7,8-TCDF	50 ug/mL
61L11613OP_00001	11/10/16	11/09/15	Nonane, Lot ER031611-01A	0.2 mL	61L11613P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	2.5 ng/mL
							1,2,3,4,6,7,8-HpCDF	2.5 ng/mL
							1,2,3,4,7,8,9-HpCDF	2.5 ng/mL
							1,2,3,4,7,8-HxCDD	2.5 ng/mL
							1,2,3,4,7,8-HxCDF	2.5 ng/mL
							1,2,3,6,7,8-HxCDD	2.5 ng/mL
							1,2,3,6,7,8-HxCDF	2.5 ng/mL
							1,2,3,7,8,9-HxCDD	2.5 ng/mL
							1,2,3,7,8,9-HxCDF	2.5 ng/mL
							1,2,3,7,8-PeCDD	2.5 ng/mL
							1,2,3,7,8-PeCDF	2.5 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	2.5 ng/mL
							2,3,4,7,8-PeCDF	2.5 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							37Cl4-2,3,7,8-TCDD	0.5 ng/mL
							OCDD	5 ng/mL
							OCDF	5 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61L11613P_00001	03/01/21		CERILLIANT, Lot ER031611-01A		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2.5 ng/mL
							1,2,3,4,6,7,8-HpCDF	2.5 ng/mL
							1,2,3,4,7,8,9-HpCDF	2.5 ng/mL
							1,2,3,4,7,8-HxCDD	2.5 ng/mL
							1,2,3,4,7,8-HxCDF	2.5 ng/mL
							1,2,3,6,7,8-HxCDD	2.5 ng/mL
							1,2,3,6,7,8-HxCDF	2.5 ng/mL
							1,2,3,7,8,9-HxCDD	2.5 ng/mL
							1,2,3,7,8,9-HxCDF	2.5 ng/mL
							1,2,3,7,8-PeCDD	2.5 ng/mL
							1,2,3,7,8-PeCDF	2.5 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	2.5 ng/mL
							2,3,4,7,8-PeCDF	2.5 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	0.5 ng/mL
							37Cl4-2,3,7,8-TCDD	0.5 ng/mL
							OCDD	5 ng/mL
							OCDF	5 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61L11613OP_00002	03/01/21	11/09/15	Nonane, Lot ER031611-01A	0.2 mL	61L11613P_00001	200 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							37Cl4-2,3,7,8-TCDD	0.5 ng/mL
.61L11613P_00001	03/01/21	CERILLIANT, Lot ER031611-01A			(Purchased Reagent)		13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							37Cl4-2,3,7,8-TCDD	0.5 ng/mL
61L21613OP_00001	03/01/21	11/09/15	Nonane, Lot ER031611-01B	0.2 mL	61L21613P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	10 ng/mL
							1,2,3,4,6,7,8-HpCDF	10 ng/mL
							1,2,3,4,7,8,9-HpCDF	10 ng/mL
							1,2,3,4,7,8-HxCDD	10 ng/mL
							1,2,3,4,7,8-HxCDF	10 ng/mL
							1,2,3,6,7,8-HxCDD	10 ng/mL
							1,2,3,6,7,8-HxCDF	10 ng/mL
							1,2,3,7,8,9-HxCDD	10 ng/mL
							1,2,3,7,8,9-HxCDF	10 ng/mL
							1,2,3,7,8-PeCDD	10 ng/mL
							1,2,3,7,8-PeCDF	10 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	10 ng/mL
							2,3,4,7,8-PeCDF	10 ng/mL
							2,3,7,8-TCDD	2 ng/mL
							2,3,7,8-TCDF	2 ng/mL
							37Cl4-2,3,7,8-TCDD	2 ng/mL
							OCDD	20 ng/mL
							OCDF	20 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61L21613P_00001	03/01/21	CERILLIANT, Lot ER031611-01B			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	10 ng/mL
							1,2,3,4,6,7,8-HpCDF	10 ng/mL
							1,2,3,4,7,8,9-HpCDF	10 ng/mL
							1,2,3,4,7,8-HxCDD	10 ng/mL
							1,2,3,4,7,8-HxCDF	10 ng/mL
							1,2,3,6,7,8-HxCDD	10 ng/mL
							1,2,3,6,7,8-HxCDF	10 ng/mL
							1,2,3,7,8,9-HxCDD	10 ng/mL
							1,2,3,7,8,9-HxCDF	10 ng/mL
							1,2,3,7,8-PeCDD	10 ng/mL
							1,2,3,7,8-PeCDF	10 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	10 ng/mL
							2,3,4,7,8-PeCDF	10 ng/mL
							2,3,7,8-TCDD	2 ng/mL
							2,3,7,8-TCDF	2 ng/mL
							37Cl4-2,3,7,8-TCDD	2 ng/mL
							OCDD	20 ng/mL
							OCDF	20 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61L31613OP_00001	03/01/21	11/09/15	Nonane, Lot ER031611-01C	0.2 mL	61L31613P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61L31613P_00001	03/01/21	CERILLIANT, Lot ER031611-01C			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61L31613OP_00006	01/31/21	10/05/16	Nonane, Lot ER011711-01	0.2 mL	61L31613P_00005	200 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
.61L31613P_00005	01/31/21	CERILLIANT, Lot ER011711-01			(Purchased Reagent)		13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
61L41613OP_00001	03/01/21	11/09/15	Nonane, Lot ER031611-01D	0.2 mL	61L41613P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8-PeCDF	200 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							37Cl4-2,3,7,8-TCDD	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61L41613P_00001	03/01/21	CERILLIANT, Lot ER031611-01D			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							37Cl4-2,3,7,8-TCDD	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61L41613OP_00002	10/16/20	05/01/19	Nonane, Lot ER031611-01D	0.05 mL	60MXDXNSCRN_00002	50 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							37Cl4-2,3,7,8-TCDD	40 ng/mL
.60MXDXNSCRN_00002	10/16/20	CIL, Lot ER031611-01D			(Purchased Reagent)		13C-1,2,3,4-TCDD	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							37Cl4-2,3,7,8-TCDD	40 ng/mL
61L51613OP_00001	03/01/21	11/09/15	Nonane, Lot ER031611-01E	0.2 mL	61L51613P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	1000 ng/mL
							1,2,3,4,6,7,8-HpCDF	1000 ng/mL
							1,2,3,4,7,8,9-HpCDF	1000 ng/mL
							1,2,3,4,7,8-HxCDD	1000 ng/mL
							1,2,3,4,7,8-HxCDF	1000 ng/mL
							1,2,3,6,7,8-HxCDD	1000 ng/mL
							1,2,3,6,7,8-HxCDF	1000 ng/mL
							1,2,3,7,8,9-HxCDD	1000 ng/mL
							1,2,3,7,8,9-HxCDF	1000 ng/mL
							1,2,3,7,8-PeCDD	1000 ng/mL
							1,2,3,7,8-PeCDF	1000 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	1000 ng/mL
							2,3,4,7,8-PeCDF	1000 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
							37Cl4-2,3,7,8-TCDD	200 ng/mL
							OCDD	2000 ng/mL
							OCDF	2000 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61L51613P_00001	03/01/21		CERILLIANT, Lot ER031611-01E		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	1000 ng/mL
							1,2,3,4,6,7,8-HpCDF	1000 ng/mL
							1,2,3,4,7,8,9-HpCDF	1000 ng/mL
							1,2,3,4,7,8-HxCDD	1000 ng/mL
							1,2,3,4,7,8-HxCDF	1000 ng/mL
							1,2,3,6,7,8-HxCDD	1000 ng/mL
							1,2,3,6,7,8-HxCDF	1000 ng/mL
							1,2,3,7,8,9-HxCDD	1000 ng/mL
							1,2,3,7,8,9-HxCDF	1000 ng/mL
							1,2,3,7,8-PeCDD	1000 ng/mL
							1,2,3,7,8-PeCDF	1000 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	1000 ng/mL
							2,3,4,7,8-PeCDF	1000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
							37Cl4-2,3,7,8-TCDD	200 ng/mL
							OCDD	2000 ng/mL
							OCDF	2000 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61WDML3OP_00001	01/31/21	08/22/16	Nonane, Lot ER031611-01C	0.2 mL	61WDML3P_00001	200 uL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61WDML3P_00001	01/31/21	CERILLIANT, Lot ER011711-01			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL
61WDML3OP_F/L_00070	01/31/21	11/22/19	Nonane, Lot SHBJ6527	0.2 mL	61WDML3P_F/L_00013	200 uL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
					61XX13COCDFP_00001	4 uL	13C-OCDF	200 ng/mL
.61WDML3P_F/L_00013	01/31/21	CERILLIANT, Lot ER011711-01			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-OCDD	200 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							37Cl4-2,3,7,8-TCDD	10 ng/mL
							OCDD	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							OCDF	100 ng/mL
.61XX13COCDFP_00001	06/01/21	11/10/15	Nonane, Lot SHBC8566V	5 mL	61INC13OCDFP_00001	1 mL	13C-OCDF	10 ug/mL
..61INC13OCDFP_00001	06/01/21	Cerriliant, Lot ER062011-01			(Purchased Reagent)		13C-OCDF	50 ug/mL

Reagent

10INC13OCDFP_00001

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

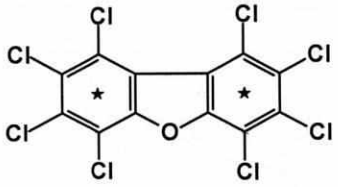
Recd 9/15/16
HRO 12-6
10INC130CDFP00001

CIL

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

Certificate of Analysis

Octachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-983
Solution Lot: ER080812-01
Expiration Date: August 2022
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Solution Purity	Certified Concentration
Octachlorodibenzofuran-$^{13}C_{12}$	> 99.9%	50.00 ± 0.31 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER080812-01	51.3	± 5%	0.2	≤ 3%
Previous Lot	ER062011-01	47.2	-------	0.7	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS ACCREDITED
REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

January 28, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

10INC13TCDFP_00001

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

Rec'd
12-5-16

HR0135

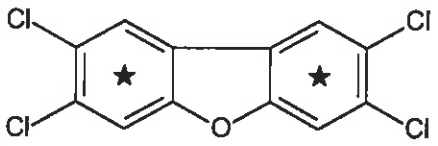
CIL

10INC13TCDFP00001

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-904
Solution Lot:	ER12101304
Expiration Date:	June 2024
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	99.4%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s). measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER12101304	50.08	± 5%	0.6	≤ 3%
Previous Lot	ER092507-01	50.80	± 5%	0.4	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

September 09, 2015
Date

Reagent

10INDFCL37P_00001

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

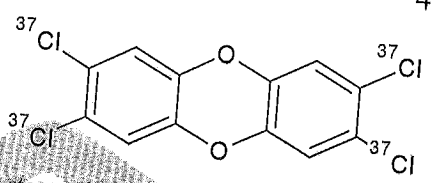
Recd 9/15/16
HR0125

CIL

Certificate of Analysis

2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP



Catalog Number:	ED-907
Solution Lot:	ER05211501
Expiration Date:	July 2025
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Shipping:	Ambient.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Instructions for Use:	Sonicate before use.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.
- For MS Applications, we advise laboratories not to mix lots during a single sequence.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$	98.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Acceptance Criteria	%RSD - Homogeneity Actual Results	Acceptance Criteria
New Lot	ER05211501	50.60	± 10%	0.2	≤ 5%
Previous Lot	ER052010-02	49.73	± 10%	0.5	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

August 03, 2015
Date

Reagent

10INDFHXCDRSP_00001

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

Rec'd 12-5-16

HR0133

CIL

Revision 00
Page 1 of 4

10INDFHXCDRSP00001

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$

Catalog Number: ED-996
Solution Lot: ER08221601
Expiration Date: September 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08221601	49.20	± 5%	0.3	≤ 3%
Previous Lot	ER021313-01	49.56	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darren Ellsworth, Quality Assurance Manager

September 28, 2016
Date

Reagent

10INDFTCDDRSP_00001

Cerilliant
Analytical Reference Standards
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Recd
12-5-16
ID INDFTCDDRSP00001

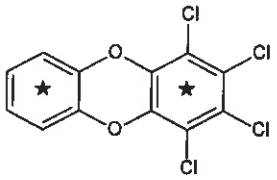
HR0132

CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-911
Solution Lot:	ER060710-01
Expiration Date:	June 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,4-TCDD-$^{13}C_{12}$	99.5%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER060710-01	49.1	± 3%	0.6	≤ 3%
Previous Lot	ER122203-01	49.8	± 3%	1.0	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

July 18, 2015
Date

Reagent

10MXDFC13ISP_00027

Rec'd (10)
DM/10-18-19
HR0182
10MXDFC13ISP00027

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Revision 0

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

Certificate of Analysis

Labeled Compound Stock Solution

Catalog Number: EDF-8999
Solution Lot: ER082812-01
Expiration Date: September 2022
Solvent: n-Nonane
Volume per Ampule: Not less than 500 µL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety: Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 500 µL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TCDD-$^{13}C_{12}$	ER060407-02	76523-40-5	$^{13}C_{12}H_4O_2Cl_4$	333.88	99.0%	100.0 ± 1.0 ng/mL
2,3,7,8-TCDF-$^{13}C_{12}$	ER092507-01	89059-46-1	$^{13}C_{12}H_4OCl_4$	317.88	99.0%	100.0 ± 1.0 ng/mL
1,2,3,7,8-PCDD-$^{13}C_{12}$	ER030907-02	109719-79-1	$^{13}C_{12}H_3O_2Cl_5$	368.33	99.0%	100.0 ± 1.0 ng/mL
1,2,3,7,8-PCDF-$^{13}C_{12}$	ER012111-01	109719-77-9	$^{13}C_{12}H_3OCl_5$	352.33	99.2%	100.0 ± 1.0 ng/mL
2,3,4,7,8-PCDF-$^{13}C_{12}$	ER102607-01	116843-02-8	$^{13}C_{12}H_3OCl_5$	352.33	99.0%	100.0 ± 1.0 ng/mL
1,2,3,4,7,8-HxCDD-$^{13}C_{12}$	ER102711-01	109719-80-4	$^{13}C_{12}H_2O_2Cl_6$	402.77	99.2%	100.0 ± 1.0 ng/mL
1,2,3,6,7,8-HxCDD-$^{13}C_{12}$	ER010209-01	109719-81-5	$^{13}C_{12}H_2O_2Cl_6$	402.77	99.0%	100.0 ± 1.0 ng/mL
1,2,3,4,7,8-HxCDF-$^{13}C_{12}$	ER072810-02	114423-98-2	$^{13}C_{12}H_2OCl_6$	386.77	99.6%	100.0 ± 1.0 ng/mL
1,2,3,6,7,8-HxCDF-$^{13}C_{12}$	ER053107-03	116843-03-9	$^{13}C_{12}H_2OCl_6$	386.77	98.0%	100.0 ± 1.0 ng/mL
1,2,3,7,8,9-HxCDF-$^{13}C_{12}$	ER100610-01	116843-04-0	$^{13}C_{12}H_2OCl_6$	386.77	99.5%	100.0 ± 1.0 ng/mL
2,3,4,6,7,8-HxCDF-$^{13}C_{12}$	ER100610-02	116843-05-1	$^{13}C_{12}H_2OCl_6$	386.77	99.4%	100.0 ± 1.0 ng/mL
1,2,3,4,6,7,8-HpCDD-$^{13}C_{12}$	ER111010-01	109719-83-7	$^{13}C_{12}HO_2Cl_7$	437.22	99.5%	100.0 ± 1.0 ng/mL
1,2,3,4,6,7,8-HpCDF-$^{13}C_{12}$	ER102711-02	109719-84-8	$^{13}C_{12}HOCl_7$	421.22	97.5%	100.0 ± 1.0 ng/mL
1,2,3,4,7,8,9-HpCDF-$^{13}C_{12}$	ER053107-02	109719-94-0	$^{13}C_{12}HOCl_7$	421.22	98.0%	100.0 ± 1.0 ng/mL
OCDD-$^{13}C_{12}$	ER071610-01	114423-97-1	$^{13}C_{12}O_2Cl_8$	471.66	99.1%	200.0 ± 2.0 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS ACCREDITED
REFERENCE MATERIAL PRODUCER

Lara Sparks, Quality Assurance Director

October 18, 2012
Date

Reagent

10MXDFNATP_00002

Recd 9/12/18 HRO164
10MXDFNATP00002

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Revision 01
Page 1 of 4

Certificate of Analysis

Method 1613 PAR Stock Solution

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number: EDF-7999-10X
Solution Lot: ER02241602
Expiration Date: April 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TeCDD	ER04271502	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%	399.9 ± 4.0 ng/mL
2,3,7,8-TeCDF	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.97	99.4%	399.9 ± 4.0 ng/mL
1,2,3,7,8-PeCDD	ER110909-02	40321-76-4	$C_{12}H_3Cl_5O_2$	356.42	99.2%	2000 ± 20 ng/mL
1,2,3,7,8-PeCDF	ER03121401	57117-41-6	$C_{12}H_3Cl_5O$	340.42	99.5%	1999 ± 20 ng/mL
2,3,4,7,8-PeCDF	ER070710-01	57117-31-4	$C_{12}H_3Cl_5O$	340.42	99.4%	1999 ± 20 ng/mL
1,2,3,4,7,8-HxCDD	ER080108-02	39227-28-6	$C_{12}H_2Cl_6O_2$	390.86	98.6%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDD	ER03231501	57653-85-7	$C_{12}H_2Cl_6O_2$	390.86	99.6%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDD	ER02041601	19408-74-3	$C_{12}H_2Cl_6O_2$	390.86	99.2%	2000 ± 20 ng/mL
1,2,3,4,7,8-HxCDF	ER021110-01	70648-26-9	$C_{12}H_2Cl_6O$	374.86	99.0%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDF	ER04161501	57117-44-9	$C_{12}H_2Cl_6O$	374.86	99.8%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDF	ER060107-01	72918-21-9	$C_{12}H_2Cl_6O$	374.86	97.5%	1999 ± 20 ng/mL
2,3,4,6,7,8-HxCDF	ER02041602	60851-34-5	$C_{12}H_2Cl_6O$	374.86	99.1%	2001 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDD	ER01201504	35822-46-9	$C_{12}HCl_7O_2$	425.31	98.5%	1999 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDF	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%	1999 ± 20 ng/mL
1,2,3,4,7,8,9-HpCDF	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%	1999 ± 20 ng/mL
OCDD	ER05221301	3268-87-9	$C_{12}Cl_8O_2$	459.75	99.9%	3999 ± 40 ng/mL
OCDF	ER040811-01	39001-02-0	$C_{12}Cl_8O$	443.75	98.9%	4000 ± 40 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

April 28, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

60MXDXNSCRN_00002

BNA 1436
Rec: 5/1/18
TR

Cerilliant
Analytical Reference Standards
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CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

Method 1613 Calibration Solution (CS4)

Catalog Number:	EDF-9999-4
Solution Lot:	ER031611-01D
Expiration Date:	March 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 0.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 0 2 mL volume We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

op: 10/16/13 TR
epp: 10/16/20

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darren Ellsworth, Quality Assurance Manager

October 28, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

61CV1613S_00001

Table A: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)**

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: B.G. Chittim **Date:** 02/03/2014 (mm/dd/yyyy)

WELLINGTON LABORATORIES

Recd 5-27-09

opened 4-12-10 4104:51

CERTIFICATE OF ANALYSIS/DOCUMENTATION

EPA-1613CVS
U.S. EPA Method 1613
Calibration and Verification Solutions
plus
Supplemental Calibration Solutions
EPA-1613CSL & EPA-1613CS0.5

DESCRIPTION:

EPA-1613CVS is a series of 5 HRGC/HRMS calibration solutions containing native and mass-labelled chlorinated dibenzo-p-dioxin (PCDD) and dibenzofuran (PCDF) congeners in nonane.

PRODUCT CODES	LOT NUMBERS
EPA-1613CVS	see below
EPA-1613CS1	13CS11107
EPA-1613CS2	13CS21107
EPA-1613CS3	13CS31107
EPA-1613CS4	13CS41107
EPA-1613CS5	13CS51107

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set and are ordered separately.

EPA-1613CS0.5	13CS0.51107
EPA-1613CSL	13CSL1107
DATE PREPARED: (mm/dd/yyyy)	12/07/2007
LAST TESTED: (mm/dd/yyyy)	12/07/2007 (HRGC/HRMS)
EXPIRY DATE:	12/07/2014

DETAILS:

These solutions contain native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) PCDDs and PCDFs in the concentrations given in Table A in nonane. They are designed to be used as received.

According to U.S. EPA Method 1613, these solutions (CS1-CS5) are used to calibrate the HRGC/HRMS system prior to performing analyses on cleaned-up sample extracts. In addition, solution CS3 is used to verify the original calibration and CS1 is used to establish the required sensitivity of the HRGC/HRMS.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method but either or both can be used to extend the calibration to lower levels.

EPA-1613CVS with EPA-1613CSL and EPA-1613CS0.5 were tested by HRGC/HRMS and found to give a linear calibration. The 5-point calibration summary for EPA-1613CVS is given in Table B and the 7-point calibration summary including both EPA-1613CSL and EPA-1613CS0.5 is shown in Table C. HRGC/HRMS data acquired for EPA-1613CS3, is shown in Figure 1.

ADDITIONAL INFORMATION:

For additional information including potential hazards, handling/storage, accuracy, and shelf life please request a copy of our Reference and Handling Guide. For your convenience this can be downloaded from our website at www.well-labs.com.

Reagent

61IN2378TCDFP_00002

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

HR0115

CIL

Revision 01

Product of USA

Rcvd: 11/16/15
Expires: 10/2021
opened: 11/19/18

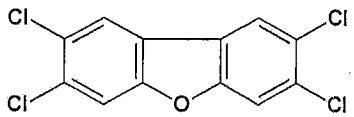
Certificate of Analysis

2,3,7,8-Tetrachlorodibenzofuran

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

Catalog Number:	EF-903
Solution Lot:	ER101211-02
Expiration Date:	October 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store unopened at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

(1 ampule)



- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzofuran	99.6%	50.00 ± 0.03 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Acceptance Crtieria	%RSD - Homogeneity Actual Results	Acceptance Crtieria
New Lot	ER101211-02	51.77	± 5%	0.2	≤ 3%
Previous Lot	ER092005-01	50.81	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS Accredited
REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

September 15, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,7,8-Tetrachlorodibenzofuran	**Chemical Formula:**	$C_{12}H_4Cl_4O$
Compound Lot:	ER073109-01	**CAS Number:**	51207-31-9
		Molecular Weight:	305.97

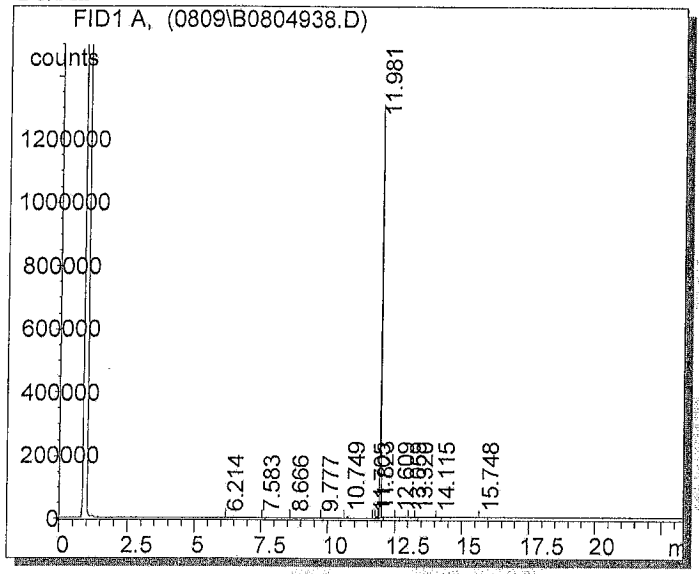
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.4%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent by ^{1}H-NMR Analysis	USP <761>, SP10-0116	0.23% Methylene chloride
Purity Factor		99.19%

- Chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity Factor = [(100 - wt% residual solvent - wt% residual water - wt% residual inorganics) x Chromatographic Purity/100].
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

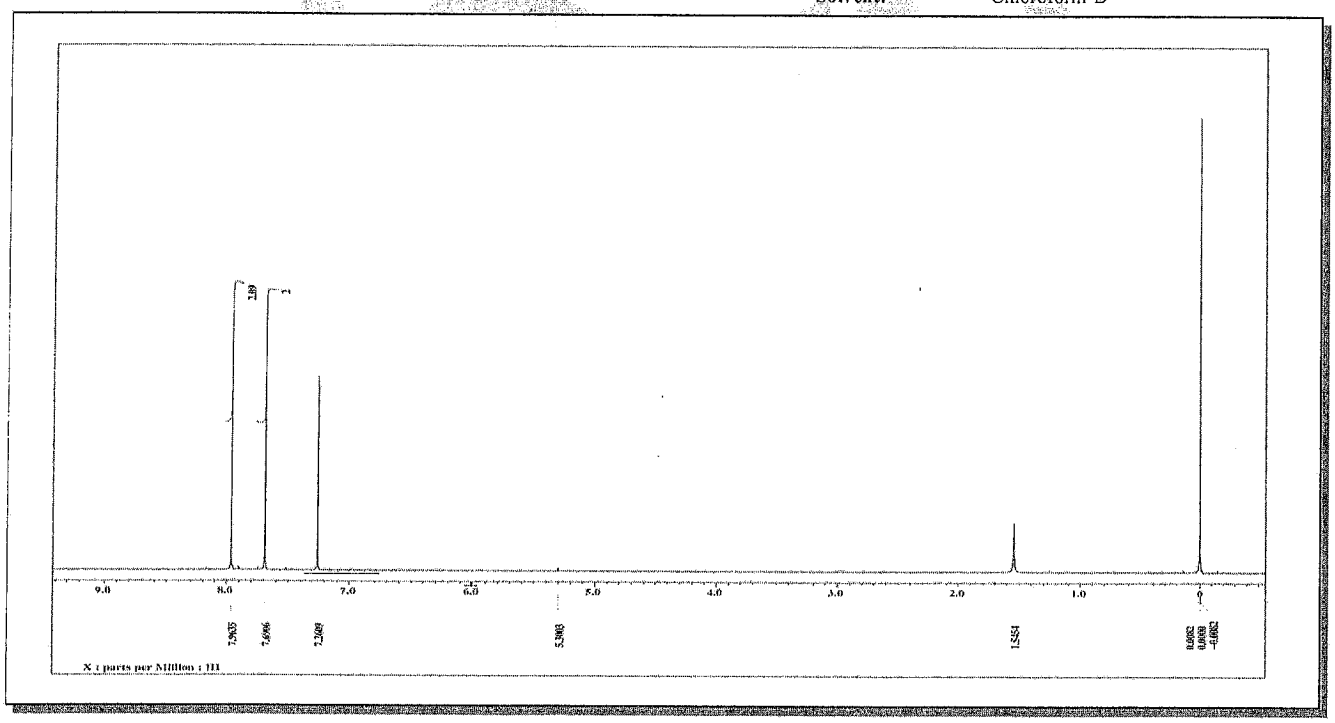


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	S:\GC\GC2\2009\0809\B0804938.D
Instrument:	GC#2
Sample Name:	ER073109-01
Acquired:	August 05, 2009

Peak #	Ret Time	Area	Height	Area %
1	6.21	288	126	0.01
2	7.58	400	134	0.01
3	8.67	386	129	0.01
4	9.78	394	141	0.01
5	10.75	2917	792	0.10
6	11.71	376	130	0.01
7	11.82	8083	3716	0.28
8	11.98	2844210	1310070	99.43
9	12.61	778	119	0.03
10	13.06	376	141	0.01
11	13.32	331	135	0.01
12	14.12	393	96	0.01
13	15.75	1523	217	0.05

^{1}H NMR

Instrument:	JEOL ECS 400
Solvent:	Chloroform-D

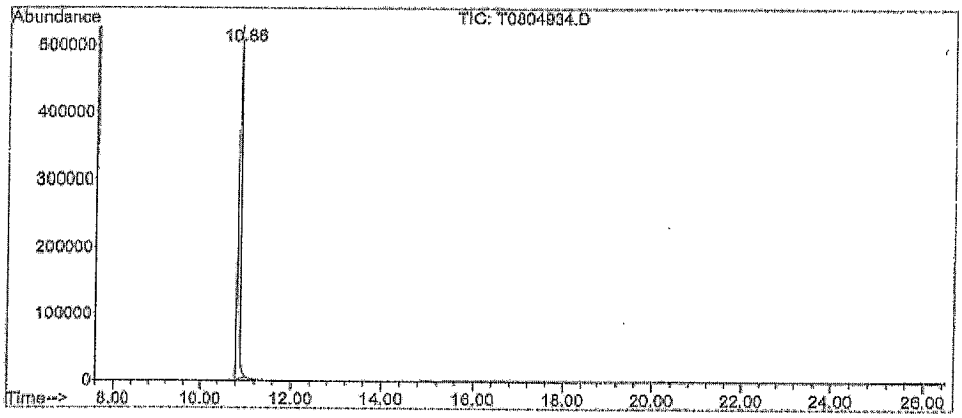


Spectral and Physical Data (cont.)

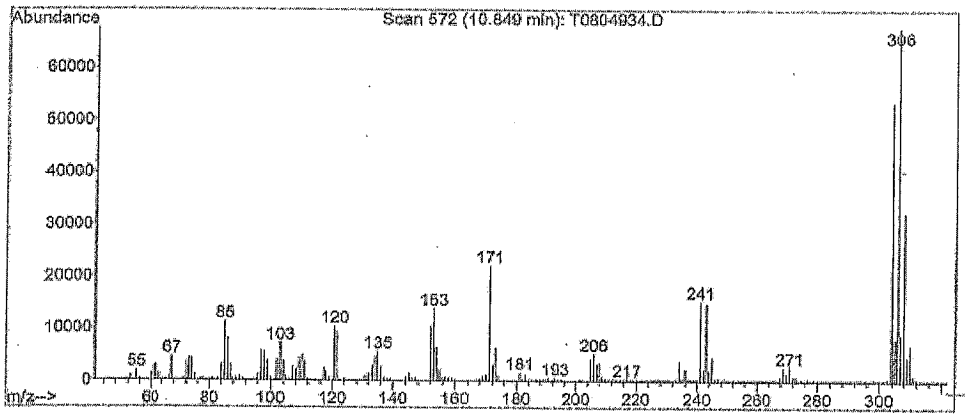
Identity by GC/MS Analysis

Compound Name	: 2,3,7,8-Tetrachlorodibenzofuran
Lot Number	: ER073109-01
Instrument	: Agilent 5973N MSD/6890N GC
Operator-Inst ID	: RPC - C10106
Date Reported	: Wed Aug 05 13:35:22 2009
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	: 140°C to 200°C@40°C/min,200°C to 300°C@4°C/min (5 min)
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.80 mL/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	November 01, 2011	Initial version
01	September 15, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"
		Corrected Analytical Test from HPLC/PDA (SP10-0102) to GC/FID (SP10-0101).



Reagent

61INC13OCDFP_00001

Rec'd 61INC130CDFP HR0078

DH/10-17-13

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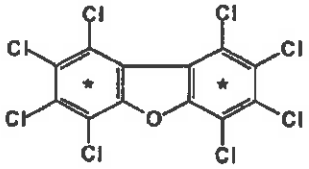
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

Certificate of Analysis

Octachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-983
Solution Lot:	ER062011-01
Expiration Date:	June 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Solution Purity	Certified Concentration
Octachlorodibenzofuran-$^{13}C_{12}$	99.4%	49.88 ± 0.31 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER062011-01	47.3	± 5%	0.7	≤ 3%
Previous Lot	ER121410-01	50.5	± 5%	0.8	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

Lara Sparks

Lara Sparks, Quality Assurance Director

October 26, 2011

Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

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HR0076

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Revision 0
Page 1 of 3

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Method 1613 Calibration Solutions (CS1 - CS5)

Catalog Number: EDF-9999
Kit Lot: ER031611-01

Solution	C1	C2	C3	C4	C5
Product Number	EDF-9999-1	EDF-9999-2	EDF-9999-3	EDF-9999-4	EDF-9999-5
Lot Number	ER031611-01A	ER031611-01B	ER031611-01C	ER031611-01D	ER031611-01E

Expiration Date: March 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 0.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 0.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Lara Sparks

Lara Sparks, Quality Assurance Director

April 25, 2011
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Compound	Prepared Concentration (ng/mL)				
	CS1	CS2	CS3	CS4	CS5
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.50	2.00	10.0	40.0	200.0
2,3,7,8-Tetrachlorodibenzofuran	0.50	2.00	10.0	40.0	200.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	2.50	10.0	50.0	200.0	1000
1,2,3,7,8-Pentachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
2,3,4,7,8-Pentachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	2.50	10.0	50.0	200.0	1000
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	2.50	10.0	50.0	200.0	1000
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.50	10.0	50.0	200.0	1000
1,2,3,4,7,8-Hexachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
1,2,3,6,7,8-Hexachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
1,2,3,7,8,9-Hexachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
2,3,4,6,7,8-Hexachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	2.50	10.0	50.0	200.0	1000
1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.50	10.0	50.0	200.0	1000
Octachlorodibenzo-p-dioxin	5.00	20.0	100.0	400.0	2000
Octachlorodibenzofuran	5.00	20.0	100.0	400.0	2000
1,2,3,4-Tetrachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
2,3,7,8-Tetrachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
2,3,7,8-Tetrachlorodibenzo-p-dioxin- $^{37}Cl_4$	0.50	2.00	10.0	40.0	200.0
2,3,7,8-Tetrachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,7,8-Pentachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
2,3,4,7,8-Pentachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,4,7,8-Hexachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,6,7,8-Hexachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,7,8,9-Hexachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
2,3,4,6,7,8-Hexachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran- $^{13}C_{12}$	100.0	100.0	100.0	100.0	100.0
Octachlorodibenzo-p-dioxin- $^{13}C_{12}$	200.0	200.0	200.0	200.0	200.0

Reagent

61L21613P_00001

Rec'd
DM/10-17-13

HR0076

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Revision 0

ISO GUIDE 34
CERTIFICATE AR1353
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3854

Certificate of Analysis

Method 1613 Calibration Solutions (CS1 - CS5)

Catalog Number: EDF-9999
Kit Lot: ER031611-01

Solution	C1	C2	C3	C4	C5
Product Number	EDF-9999-1	EDF-9999-2	EDF-9999-3	EDF-9999-4	EDF-9999-5
Lot Number	ER031611-01A	ER031611-01B	ER031611-01C	ER031611-01D	ER031611-01E

Expiration Date: March 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 0.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 0.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Lara Sparks

Lara Sparks, Quality Assurance Director

April 25, 2011
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

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Cerilliant Quality
ISO GUIDE 34
CERTIFICATE AR1383
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3854

Method 1613 Daily Calibration with Window Definer and Isomer Specificity

A-E (5 vials)

Catalog Number:	EDF-4141
Solution Lot:	ER011711-01
Expiration Date:	January 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 200 µL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 200 µL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Rec'd 8/10/16 [illegible]

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

February 25, 2016
Date

Native Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD	ER080408-01	30746-58-8	$C_{12}H_4O_2Cl_4$	321.97	97%	10.0 ± 1.0 ng/mL
1,2,3,7/1,2,3,8-TCDD	ER021510-01	67326-52-7	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
1,2,3,9-TCDD	ER122804-01	712669-26-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,2,8,9-TCDD	35166-60	62740-54-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDD	34706-74	33423-92-6	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDD	ER030907-02	1746-01-6	$C_{12}H_4O_2Cl_4$	321.97	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD	ER010209-01	40321-76-4	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDD	ER122704-02	71925-18-3	$C_{12}H_3O_2Cl_5$	356.42	98%	50.0 ± 5.0 ng/mL
1,2,4,6,8/1,2,4,7,9-PeCDD	35124-73	NA	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDD	ER092005-03	39227-28-6	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDD	ER092507-01	57653-85-7	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDD	35166-61	19408-74-3	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	ER010705-01	NA	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDD	ER031507-03	35822-46-9	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,9-HpCDD	ER021105-05	58200-70-7	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
OCDD	ER082306-02	3268-87-9	$C_{12}O_2Cl_8$	459.75	99%	100 ± 10 ng/mL
1,2,8,9-TCDF	ER041508-03	70648-22-5	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDF	ER021808-01	71998-72-6	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDF	ER02208-01	51207-31-9	$C_{12}H_4OCl_4$	305.98	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDF	ER082508-01	57117-41-6	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDF	ER061604-05	83704-54-5	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,3,4,6,8-PeCDF	ER102904-01	83704-55-6	$C_{12}H_3OCl_5$	340.42	99%	50.0 ± 5.0 ng/mL
2,3,4,7,8-PeCDF	ER011807-01	57117-31-4	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,8-HxCDF	ER111704-01	69698-60-8	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDF	ER102607-01	70648-26-9	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,8,9-HxCDF	ER031105-01	93241-07-6	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDF	ER011907-01	57117-44-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDF	ER053107-03	72918-21-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
2,3,4,6,7,8-HxCDF	ER020705-01	60851-34-5	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDF	ER020907-02	67562-39-4	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8,9-HpCDF	ER053107-02	55673-89-7	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
OCDF	ER072004-03	39001-02-0	$C_{12}OCl_8$	443.75	99%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Labeled Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD- $^{13}C_{12}$	ER122203-01	114423-99-3	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD- $^{13}C_{12}$	ER060407-02	76523-40-5	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD- $^{37}Cl_4$	ER060407-02	85508-50-5	$C_{12}H_4O_2{}^{37}Cl_4$	333.88	97%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD- $^{13}C_{12}$	ER030907-01	109719-79-1	$^{13}C_{12}H_3O_2Cl_5$	368.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDD- $^{13}C_{12}$	ER012208-01	109719-80-4	$^{13}C_{12}H_2O_2Cl_6$	402.77	98%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDD- $^{13}C_{12}$	ER010209-01	109719-81-5	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDD- $^{13}C_{12}$	ER082508-01	109719-82-6	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDD- $^{13}C_{12}$	ER011807-01	109719-83-7	$^{13}C_{12}HO_2Cl_7$	437.22	98%	100 ± 10 ng/mL
OCDD- $^{13}C_{12}$	ER092005-03	114423-97-1	$^{13}C_{12}O_2Cl_8$	471.66	99%	200 ± 20 ng/mL
2,3,7,8-TCDF- $^{13}C_{12}$	ER092507-01	89059-46-1	$^{13}C_{12}H_4OCl_4$	317.88	99%	100 ± 10 ng/mL
1,2,3,7,8-PeCDF- $^{13}C_{12}$	35166-61	109719-77-9	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
2,3,4,7,8-PeCDF- $^{13}C_{12}$	ER102607-01	116843-02-8	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDF- $^{13}C_{12}$	ER011907-01	114423-98-2	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDF- $^{13}C_{12}$	ER053107-03	116843-03-9	$^{13}C_{12}H_2OCl_6$	386.77	98%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDF- $^{13}C_{12}$	ER100107-01	116843-04-0	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
2,3,4,6,7,8-HxCDF- $^{13}C_{12}$	ER031507-03	116843-05-1	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDF- $^{13}C_{12}$	ER020907-02	109719-84-8	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL
1,2,3,4,7,8,9-HpCDF- $^{13}C_{12}$	ER053107-02	109719-94-0	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Reagent

61L31613P_00005

Cerilliant
Analytical Reference Standards

Rec'd (5) - 11/15/16
HR0129

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Method 1613 Daily Calibration with Window Definer and Isomer Specificity

A-E (5 vials)
A - Opened 11/15/16 - KCH
B -
C -
D -
E -

Catalog Number:	EDF-4141
Solution Lot:	ER011711-01
Expiration Date:	January 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 200 µL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 200 µL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

February 25, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Native Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD	ER080408-01	30746-58-8	$C_{12}H_4O_2Cl_4$	321.97	97%	10.0 ± 1.0 ng/mL
1,2,3,7/1,2,3,8-TCDD	ER021510-01	67326-52-7	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
1,2,3,9-TCDD	ER122804-01	712669-26-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,2,8,9-TCDD	35166-60	62740-54-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDD	34706-74	33423-92-6	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDD	ER030907-02	1746-01-6	$C_{12}H_4O_2Cl_4$	321.97	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD	ER010209-01	40321-76-4	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDD	ER122704-02	71925-18-3	$C_{12}H_3O_2Cl_5$	356.42	98%	50.0 ± 5.0 ng/mL
1,2,4,6,8/1,2,4,7,9-PeCDD	35124-73	NA	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDD	ER092005-03	39227-28-6	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDD	ER092507-01	57653-85-7	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDD	35166-61	19408-74-3	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	ER010705-01	NA	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDD	ER031507-03	35822-46-9	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,9-HpCDD	ER021105-05	58200-70-7	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
OCDD	ER082306-02	3268-87-9	$C_{12}O_2Cl_8$	459.75	99%	100 ± 10 ng/mL
1,2,8,9-TCDF	ER041508-03	70648-22-5	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDF	ER021808-01	71998-72-6	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDF	ER02208-01	51207-31-9	$C_{12}H_4OCl_4$	305.98	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDF	ER082508-01	57117-41-6	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDF	ER061604-05	83704-54-5	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,3,4,6,8-PeCDF	ER102904-01	83704-55-6	$C_{12}H_3OCl_5$	340.42	99%	50.0 ± 5.0 ng/mL
2,3,4,7,8-PeCDF	ER011807-01	57117-31-4	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,8-HxCDF	ER111704-01	69698-60-8	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDF	ER102607-01	70648-26-9	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,8,9-HxCDF	ER031105-01	93241-07-6	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDF	ER011907-01	57117-44-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDF	ER053107-03	72918-21-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
2,3,4,6,7,8-HxCDF	ER020705-01	60851-34-5	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDF	ER020907-02	67562-39-4	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8,9-HpCDF	ER053107-02	55673-89-7	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
OCDF	ER072004-03	39001-02-0	$C_{12}OCl_8$	443.75	99%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Labeled Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD- $^{13}C_{12}$	ER122203-01	114423-99-3	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD- $^{13}C_{12}$	ER060407-02	76523-40-5	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD-$^{37}Cl_4$	ER060407-02	85508-50-5	$C_{12}H_4O_2{}^{37}Cl_4$	333.88	97%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD- $^{13}C_{12}$	ER030907-01	109719-79-1	$^{13}C_{12}H_3O_2Cl_5$	368.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDD- $^{13}C_{12}$	ER012208-01	109719-80-4	$^{13}C_{12}H_2O_2Cl_6$	402.77	98%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDD- $^{13}C_{12}$	ER010209-01	109719-81-5	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDD- $^{13}C_{12}$	ER082508-01	109719-82-6	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDD- $^{13}C_{12}$	ER011807-01	109719-83-7	$^{13}C_{12}HO_2Cl_7$	437.22	98%	100 ± 10 ng/mL
OCDD- $^{13}C_{12}$	ER092005-03	114423-97-1	$^{13}C_{12}O_2Cl_8$	471.66	99%	200 ± 20 ng/mL
2,3,7,8-TCDF- $^{13}C_{12}$	ER092507-01	89059-46-1	$^{13}C_{12}H_4OCl_4$	317.88	99%	100 ± 10 ng/mL
1,2,3,7,8-PeCDF- $^{13}C_{12}$	35166-61	109719-77-9	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
2,3,4,7,8-PeCDF- $^{13}C_{12}$	ER102607-01	116843-02-8	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDF- $^{13}C_{12}$	ER011907-01	114423-98-2	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDF- $^{13}C_{12}$	ER053107-03	116843-03-9	$^{13}C_{12}H_2OCl_6$	386.77	98%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDF- $^{13}C_{12}$	ER100107-01	116843-04-0	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
2,3,4,6,7,8-HxCDF- $^{13}C_{12}$	ER031507-03	116843-05-1	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDF- $^{13}C_{12}$	ER020907-02	109719-84-8	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL
1,2,3,4,7,8,9-HpCDF- $^{13}C_{12}$	ER053107-02	109719-94-0	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Reagent

61L41613P_00001

Rec'd
DM/10-17-13

HR0076

Cerilliant
Analytical Reference Standards
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CIL

Revision 0

ISO GUIDE 34
CERTIFICATE AR1353
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3854

Certificate of Analysis

Method 1613 Calibration Solutions (CS1 - CS5)

Catalog Number: EDF-9999
Kit Lot: ER031611-01

Solution	C1	C2	C3	C4	C5
Product Number	EDF-9999-1	EDF-9999-2	EDF-9999-3	EDF-9999-4	EDF-9999-5
Lot Number	ER031611-01A	ER031611-01B	ER031611-01C	ER031611-01D	ER031611-01E

Expiration Date: March 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 0.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 0.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Lara Sparks

Lara Sparks, Quality Assurance Director

April 25, 2011
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

61L51613P_00001

Rec'd
DM/10-17-13

HR0076

Cerilliant
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Revision 0

ISO GUIDE 34
CERTIFICATE AR1353
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3854

Certificate of Analysis

Method 1613 Calibration Solutions (CS1 - CS5)

Catalog Number: EDF-9999
Kit Lot: ER031611-01

Solution	C1	C2	C3	C4	C5
Product Number	EDF-9999-1	EDF-9999-2	EDF-9999-3	EDF-9999-4	EDF-9999-5
Lot Number	ER031611-01A	ER031611-01B	ER031611-01C	ER031611-01D	ER031611-01E

Expiration Date: March 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 0.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: Flammable

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 0.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Lara Sparks

Lara Sparks, Quality Assurance Director

April 25, 2011
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

61WDML3P_00001

Cerilliant®
Analytical Reference Standards

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
CERTIFICATE AR1383
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3854

Method 1613 Daily Calibration with Window Definer and Isomer Specificity

A-E (5 vials)

Catalog Number:	EDF-4141
Solution Lot:	ER011711-01
Expiration Date:	January 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 200 µL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 200 µL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Rec'd 8/10/16

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

February 25, 2016
Date

Native Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD	ER080408-01	30746-58-8	$C_{12}H_4O_2Cl_4$	321.97	97%	10.0 ± 1.0 ng/mL
1,2,3,7/1,2,3,8-TCDD	ER021510-01	67326-52-7	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
1,2,3,9-TCDD	ER122804-01	712669-26-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,2,8,9-TCDD	35166-60	62740-54-6	$C_{12}H_4O_2Cl_4$	321.97	98%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDD	34706-74	33423-92-6	$C_{12}H_4O_2Cl_4$	321.97	100%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDD	ER030907-02	1746-01-6	$C_{12}H_4O_2Cl_4$	321.97	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD	ER010209-01	40321-76-4	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDD	ER122704-02	71925-18-3	$C_{12}H_3O_2Cl_5$	356.42	98%	50.0 ± 5.0 ng/mL
1,2,4,6,8/1,2,4,7,9-PeCDD	35124-73	NA	$C_{12}H_3O_2Cl_5$	356.42	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDD	ER092005-03	39227-28-6	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDD	ER092507-01	57653-85-7	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDD	35166-61	19408-74-3	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	ER010705-01	NA	$C_{12}H_2O_2Cl_6$	390.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDD	ER031507-03	35822-46-9	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,9-HpCDD	ER021105-05	58200-70-7	$C_{12}HO_2Cl_7$	425.31	99%	50.0 ± 5.0 ng/mL
OCDD	ER082306-02	3268-87-9	$C_{12}O_2Cl_8$	459.75	99%	100 ± 10 ng/mL
1,2,8,9-TCDF	ER041508-03	70648-22-5	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
1,3,6,8-TCDF	ER021808-01	71998-72-6	$C_{12}H_4OCl_4$	305.97	99%	10.0 ± 1.0 ng/mL
2,3,7,8-TCDF	ER02208-01	51207-31-9	$C_{12}H_4OCl_4$	305.98	99%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDF	ER082508-01	57117-41-6	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,8,9-PeCDF	ER061604-05	83704-54-5	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,3,4,6,8-PeCDF	ER102904-01	83704-55-6	$C_{12}H_3OCl_5$	340.42	99%	50.0 ± 5.0 ng/mL
2,3,4,7,8-PeCDF	ER011807-01	57117-31-4	$C_{12}H_3OCl_5$	340.42	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,8-HxCDF	ER111704-01	69698-60-8	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8-HxCDF	ER102607-01	70648-26-9	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,4,8,9-HxCDF	ER031105-01	93241-07-6	$C_{12}H_2OCl_6$	374.86	99%	50.0 ± 5.0 ng/mL
1,2,3,6,7,8-HxCDF	ER011907-01	57117-44-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,7,8,9-HxCDF	ER053107-03	72918-21-9	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
2,3,4,6,7,8-HxCDF	ER020705-01	60851-34-5	$C_{12}H_2OCl_6$	374.86	98%	50.0 ± 5.0 ng/mL
1,2,3,4,6,7,8-HpCDF	ER020907-02	67562-39-4	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
1,2,3,4,7,8,9-HpCDF	ER053107-02	55673-89-7	$C_{12}HOCl_7$	409.31	99%	50.0 ± 5.0 ng/mL
OCDF	ER072004-03	39001-02-0	$C_{12}OCl_8$	443.75	99%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Labeled Dioxins/Furans

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration [1]
1,2,3,4-TCDD- $^{13}C_{12}$	ER122203-01	114423-99-3	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD- $^{13}C_{12}$	ER060407-02	76523-40-5	$^{13}C_{12}H_4O_2Cl_4$	333.88	99%	100 ± 10 ng/mL
2,3,7,8-TCDD- $^{37}Cl_4$	ER060407-02	85508-50-5	$C_{12}H_4O_2{}^{37}Cl_4$	333.88	97%	10.0 ± 1.0 ng/mL
1,2,3,7,8-PeCDD- $^{13}C_{12}$	ER030907-01	109719-79-1	$^{13}C_{12}H_3O_2Cl_5$	368.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDD- $^{13}C_{12}$	ER012208-01	109719-80-4	$^{13}C_{12}H_2O_2Cl_6$	402.77	98%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDD- $^{13}C_{12}$	ER010209-01	109719-81-5	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDD- $^{13}C_{12}$	ER082508-01	109719-82-6	$^{13}C_{12}H_2O_2Cl_6$	402.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDD- $^{13}C_{12}$	ER011807-01	109719-83-7	$^{13}C_{12}HO_2Cl_7$	437.22	98%	100 ± 10 ng/mL
OCDD- $^{13}C_{12}$	ER092005-03	114423-97-1	$^{13}C_{12}O_2Cl_8$	471.66	99%	200 ± 20 ng/mL
2,3,7,8-TCDF- $^{13}C_{12}$	ER092507-01	89059-46-1	$^{13}C_{12}H_4OCl_4$	317.88	99%	100 ± 10 ng/mL
1,2,3,7,8-PeCDF- $^{13}C_{12}$	35166-61	109719-77-9	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
2,3,4,7,8-PeCDF- $^{13}C_{12}$	ER102607-01	116843-02-8	$^{13}C_{12}H_3OCl_5$	352.33	99%	100 ± 10 ng/mL
1,2,3,4,7,8-HxCDF- $^{13}C_{12}$	ER011907-01	114423-98-2	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,6,7,8-HxCDF- $^{13}C_{12}$	ER053107-03	116843-03-9	$^{13}C_{12}H_2OCl_6$	386.77	98%	100 ± 10 ng/mL
1,2,3,7,8,9-HxCDF- $^{13}C_{12}$	ER100107-01	116843-04-0	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
2,3,4,6,7,8-HxCDF- $^{13}C_{12}$	ER031507-03	116843-05-1	$^{13}C_{12}H_2OCl_6$	386.77	99%	100 ± 10 ng/mL
1,2,3,4,6,7,8-HpCDF- $^{13}C_{12}$	ER020907-02	109719-84-8	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL
1,2,3,4,7,8,9-HpCDF- $^{13}C_{12}$	ER053107-02	109719-94-0	$^{13}C_{12}HOCl_7$	421.22	98%	100 ± 10 ng/mL

[1] The estimated uncertainty for this standard is ± 10% at 95% confidence interval (k=2). This value incorporates uncertainty estimate from manufacturing process and analytical verification of concentration and homogeneity.

Reagent

61WDML3P_F/L_00013

Rec'd 9-23-19
HR0181

Cerilliant
Analytical Reference Standards

CIL

Revision 02

Source name: 6\WDML3P_F/L_ 00013

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
CERTIFICATE AR1350
ISO/IEC 17025
CERTIFICATE AT1352
ISO 9001:2008
CERTIFICATE 3654

Method 1613 Daily Calibration with Window Definer and Isomer Specificity

Catalog Number:	EDF-4141
Solution Lot:	ER011711-01
Expiration Date:	January 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 200 µL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 200 µL volume We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

5 vials rec'd

A

B

C

D

E

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

February 25, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Method 1613B

Dioxins and Furans (HRGC/HRMS) by Method 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
	LCS 140-35991/21-A	65	65	72	69	69	70	70	73

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	22-152
TCDD = 13C-2,3,7,8-TCDD	20-175
37TCDD = 37Cl4-2,3,7,8-TCDD	31-191
PeCDF = 13C-1,2,3,7,8-PeCDF	21-192
PeCF = 13C-2,3,4,7,8-PeCDF	13-328
PeCDD = 13C-1,2,3,7,8-PeCDD	21-227
HxCDF = 13C-1,2,3,4,7,8-HxCDF	19-202
HxDF = 13C-1,2,3,6,7,8-HxCDF	21-159

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
	LCS 140-35991/21-A	76	70	78	76	78	79	73	70

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	22-176
HxCDD = 13C-1,2,3,4,7,8-HxCDD	21-193
HxDD = 13C-1,2,3,6,7,8-HxCDD	25-163
HxCF = 13C-1,2,3,7,8,9-HxCDF	17-205
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	21-158
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	26-166
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	20-186
OCDD = 13C-OCDD	13-199

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	OCDF #
	LCS 140-35991/21-A	76

	QC LIMITS
OCDF = 13C-OCDF	13-199

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB225 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	63
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	58
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	61
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	63
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	59
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	61
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	64
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	63
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	63
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	66
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	121
11187072-120619-SS-DUP1	140-17578-13	74
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	57
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	62
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	61
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	60
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	109
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	88

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	66	64	72	66	68	67	70	71
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	63	64	72	68	66	70	66	67
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	64	63	72	67	66	69	66	66
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	65	63	69	67	66	67	66	67
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	61	61	68	63	63	66	65	63
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	62	63	69	65	66	68	68	67
11187072-120619-SS-SJSSA03(2-4)	140-17578-7	63	64	72	65	65	65	68	69
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	61	63	68	63	63	65	65	69
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	63	64	73	62	63	61	63	68
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	65	65	72	64	65	63	66	66
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	64	63	71	66	60	63	68	69
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	67	69	101	61	69	63 q	68	62
11187072-120619-SS-DUP1	140-17578-13	65	65	75	60	59	60	71	69
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	61	60	67	60	62	63	65	64
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	66	67	71	63	60	62	69	69
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	65	64	72	66	64	66	67	70
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	61	59	67	61	63	63	67	67
	MB 140-35991/20-A	66	65	76	67	66	65	72	73
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	60	64	82	59	65	64	69	67
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	59	54	78	54	54	52	62 q	72

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
TCDD = 13C-2,3,7,8-TCDD	25-164
37TCDD = 37Cl4-2,3,7,8-TCDD	35-197
PeCDF = 13C-1,2,3,7,8-PeCDF	24-185
PeCF = 13C-2,3,4,7,8-PeCDF	21-178
PeCDD = 13C-1,2,3,7,8-PeCDD	25-181
HxCDF = 13C-1,2,3,4,7,8-HxCDF	26-152
HxDF = 13C-1,2,3,6,7,8-HxCDF	26-123

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	69	66	75	69	67	71	62	60
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	68	65	71	67	68	70	63	68
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	67	65	68	66	67	69	65	66
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	67	67	68	67	67	67	62	64
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	65	64	66	63	65	66	63	61
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	68	64	70	66	70	69	65	64
11187072-120619-SS-SJSSA03(2-4)	140-17578-7	68	67	70	67	67	69	64	64
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	66	67	67	67	69	71	66	67
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	64	65	67	66	66	68	62	61
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	65	61	66	65	65	66	62	61
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	67	66	68	65	67	66	61	57
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	66	70	71	68	76	71	65	76
11187072-120619-SS-DUP1	140-17578-13	65	69	71	64	64	64	62	53
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	65	62	66	65	65	67	62	63
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	69	68	67	68	64	66	62	57
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	70	70	74	69	70	73	64	63
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	69	66	70	66	68	68	61	59
	MB 140-35991/20-A	74	67	77	71	72	70	64	59
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	58	70	70	63	67	62	55	57
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	69	70	69	70	63 q	60	55	66

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	28-136
HxCDD = 13C-1,2,3,4,7,8-HxCDD	32-141
HxDD = 13C-1,2,3,6,7,8-HxCDD	28-130
HxCF = 13C-1,2,3,7,8,9-HxCDF	29-147
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	28-143
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	23-140
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	26-138
OCDD = 13C-OCDD	17-157

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): RTX-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	OCDF #
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	60
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	66
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	68
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	64
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	63
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	67
11187072-120619-SS-SJSSA03(2-4)	140-17578-7	65
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	69
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	61
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	63
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	57
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	71
11187072-120619-SS-DUP1	140-17578-13	56
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	64
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	62
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	65
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	60
	MB 140-35991/20-A	63
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	63
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	57

	QC LIMITS
OCDF = 13C-OCDF	17-157

Column to be used to flag recovery values

FORM II 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: lcs140-3599121-a.d

Lab ID: LCS 140-35991/21-A Client ID:

COMPOUND	SPIKE ADDED (pg/g)	LCS CONCENTRATION (pg/g)	LCS % REC	QC LIMITS REC	#
2,3,7,8-TCDD	20.0	20.7	104	67-158	
1,2,3,7,8-PeCDD	100	104	104	70-142	
1,2,3,4,7,8-HxCDD	100	101	101	70-164	
1,2,3,6,7,8-HxCDD	100	104	104	76-134	
1,2,3,7,8,9-HxCDD	100	105	105	64-162	
1,2,3,4,6,7,8-HpCDD	100	94.4	94	70-140	
OCDD	200	187	93	78-144	
2,3,7,8-TCDF	20.0	21.5	108	75-158	
1,2,3,7,8-PeCDF	100	95.9	96	80-134	
2,3,4,7,8-PeCDF	100	102	102	68-160	
1,2,3,4,7,8-HxCDF	100	103	103	72-134	
1,2,3,6,7,8-HxCDF	100	98.4	98	84-130	
2,3,4,6,7,8-HxCDF	100	97.8	98	70-156	
1,2,3,7,8,9-HxCDF	100	101	101	78-130	
1,2,3,4,6,7,8-HpCDF	100	94.2	94	82-122	
1,2,3,4,7,8,9-HpCDF	100	104	104	78-138	
OCDF	200	165	83	63-170	
13C-2,3,7,8-TCDD	100	64.9	65	20-175	
13C-1,2,3,7,8-PeCDD	100	69.6	70	21-227	
13C-1,2,3,4,7,8-HxCDD	100	70.0	70	21-193	
13C-1,2,3,6,7,8-HxCDD	100	78.3	78	25-163	
13C-1,2,3,4,6,7,8-HpCDD	100	79.4	79	26-166	
13C-OCDD	200	141	70	13-199	
13C-2,3,7,8-TCDF	100	64.8	65	22-152	
13C-1,2,3,7,8-PeCDF	100	69.4	69	21-192	
13C-2,3,4,7,8-PeCDF	100	69.5	69	13-328	
13C-1,2,3,4,7,8-HxCDF	100	70.4	70	19-202	
13C-1,2,3,6,7,8-HxCDF	100	73.3	73	21-159	
13C-2,3,4,6,7,8-HxCDF	100	75.6	76	22-176	
13C-1,2,3,7,8,9-HxCDF	100	76.3	76	17-205	
13C-1,2,3,4,6,7,8-HpCDF	100	78.2	78	21-158	
13C-1,2,3,4,7,8,9-HpCDF	100	72.7	73	20-186	
13C-OCDF	200	152	76	13-199	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN MATRIX SPIKE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 140-17578-a-12-bmsa.d

Lab ID: 140-17578-12 MS Client ID: 11187072-120619-SS-SJSSA06(4-6)

COMPOUND	SPIKE ADDED (pg/g)	SAMPLE CONCENTRATION (pg/g)	MS CONCENTRATION (pg/g)	MS % REC	QC LIMITS REC	#
2,3,7,8-TCDD	34.4	2800	1180	-4587	67-158	4
1,2,3,7,8-PeCDD	172	25 J	182	91	70-142	
1,2,3,4,7,8-HxCDD	172	ND	177	103	70-164	
1,2,3,6,7,8-HxCDD	172	ND	158	92	76-134	
1,2,3,7,8,9-HxCDD	172	4.0 J	171	97	64-162	
1,2,3,4,6,7,8-HpCDD	172	75 J	253	104	70-140	
OCDD	344	1300	2010	201	78-144	F1
1,2,3,7,8-PeCDF	172	250	278	14	80-134	F1
2,3,4,7,8-PeCDF	172	170	237	39	68-160	F1
1,2,3,4,7,8-HxCDF	172	420	320	-56	72-134	F1
1,2,3,6,7,8-HxCDF	172	110	215	60	84-130	F1
2,3,4,6,7,8-HxCDF	172	11 J	202	111	70-156	
1,2,3,7,8,9-HxCDF	172	7.3 J	179	100	78-130	
1,2,3,4,6,7,8-HpCDF	172	100	199	55	82-122	F1
1,2,3,4,7,8,9-HpCDF	172	41 J	198	91	78-138	
OCDF	344	46 J	286	70	63-170	
13C-2,3,7,8-TCDD	172	110	109	64	25-164	
13C-1,2,3,7,8-PeCDD	172	100	109	64	25-181	
13C-1,2,3,4,7,8-HxCDD	172	120	120	70	32-141	
13C-1,2,3,6,7,8-HxCDD	172	120	120	70	28-130	
13C-1,2,3,4,6,7,8-HpCDD	172	120	107	62	23-140	
13C-OCDD	344	250	195	57	17-157	
13C-2,3,7,8-TCDF	172	110	103	60	24-169	
13C-1,2,3,7,8-PeCDF	172	100	101	59	24-185	
13C-2,3,4,7,8-PeCDF	172	110	111	65	21-178	
13C-1,2,3,4,7,8-HxCDF	172	110	119	69	26-152	
13C-1,2,3,6,7,8-HxCDF	172	100	116	67	26-123	
13C-2,3,4,6,7,8-HxCDF	172	110	99.5	58	28-136	
13C-1,2,3,7,8,9-HxCDF	172	110	108	63	29-147	
13C-1,2,3,4,6,7,8-HpCDF	172	130	116	67	28-143	
13C-1,2,3,4,7,8,9-HpCDF	172	110	94.3	55	26-138	
13C-OCDF	344	240	217	63	17-157	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN MATRIX SPIKE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 140-17578-a-12-bms.d

Lab ID: 140-17578-12 MS Client ID: 11187072-120619-SS-SJSSA06(4-6)

COMPOUND	SPIKE ADDED (pg/g)	SAMPLE CONCENTRATION (pg/g)	MS CONCENTRATION (pg/g)	MS % REC	QC LIMITS REC	#
2,3,7,8-TCDF	34.4	3900	1860	-5938	75-158	4
13C-2,3,7,8-TCDF	172	200	187	109	24-169	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 140-17578-a-12-cmsda.d

Lab ID: 140-17578-12 MSD Client ID: 11187072-120619-SS-SJSSA06(4-6)

COMPOUND	SPIKE ADDED (pg/g)	MSD CONCENTRATION (pg/g)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,3,7,8-TCDD	32.6	1190	-4818	1	25	67-158	4
1,2,3,7,8-PeCDD	163	203	109	11	25	70-142	
1,2,3,4,7,8-HxCDD	163	163	100	8	25	70-164	
1,2,3,6,7,8-HxCDD	163	188	116	17	25	76-134	
1,2,3,7,8,9-HxCDD	163	176	106	3	25	64-162	
1,2,3,4,6,7,8-HpCDD	163	271	120	7	25	70-140	
OCDD	326	1790	145	12	25	78-144	4
1,2,3,7,8-PeCDF	163	273	12	2	25	80-134	F1
2,3,4,7,8-PeCDF	163	245	46	3	25	68-160	F1
1,2,3,4,7,8-HxCDF	163	337	-49	5	25	72-134	F1
1,2,3,6,7,8-HxCDF	163	190	48	12	25	84-130	F1
2,3,4,6,7,8-HxCDF	163	180	104	11	25	70-156	
1,2,3,7,8,9-HxCDF	163	160	94	11	25	78-130	
1,2,3,4,6,7,8-HpCDF	163	202	60	2	25	82-122	F1
1,2,3,4,7,8,9-HpCDF	163	220	110	11	25	78-138	
OCDF	326	348	93	20	25	63-170	
13C-2,3,7,8-TCDD	163	87.6	54			25-164	
13C-1,2,3,7,8-PeCDD	163	84.7	52			25-181	
13C-1,2,3,4,7,8-HxCDD	163	114	70			32-141	
13C-1,2,3,6,7,8-HxCDD	163	112	69			28-130	
13C-1,2,3,4,6,7,8-HpCDD	163	97.6	60			23-140	
13C-OCDD	326	216	66			17-157	
13C-2,3,7,8-TCDF	163	96.8	59			24-169	
13C-1,2,3,7,8-PeCDF	163	87.6	54			24-185	
13C-2,3,4,7,8-PeCDF	163	88.3	54			21-178	
13C-1,2,3,4,7,8-HxCDF	163	100	62			26-152	q
13C-1,2,3,6,7,8-HxCDF	163	117	72			26-123	
13C-2,3,4,6,7,8-HxCDF	163	113	69			28-136	
13C-1,2,3,7,8,9-HxCDF	163	114	70			29-147	
13C-1,2,3,4,6,7,8-HpCDF	163	103	63			28-143	q
13C-1,2,3,4,7,8,9-HpCDF	163	90.3	55			26-138	
13C-OCDF	326	184	57			17-157	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 140-17578-a-12-cmsd.d

Lab ID: 140-17578-12 MSD Client ID: 11187072-120619-SS-SJSSA06(4-6)

COMPOUND	SPIKE ADDED (pg/g)	MSD CONCENTRATION (pg/g)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,3,7,8-TCDF	32.6	1950	-6013	4	25	75-158	4
13C-2,3,7,8-TCDF	163	143	88			24-169	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab File ID: mb140-3599120-a.d Lab Sample ID: MB 140-35991/20-A

Matrix: Sediment Date Extracted: 12/11/2019 10:49

Instrument ID: D2A Date Analyzed: 12/17/2019 04:00

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-35991/21-A	lcs140-3599121-a.d	12/17/2019 02:04
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	140-17578-a-1-a.d	12/17/2019 05:02
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	140-17578-a-2-a.d	12/17/2019 06:03
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	140-17578-a-3-a.d	12/17/2019 07:04
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	140-17578-a-4-a.d	12/17/2019 08:05
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	140-17578-a-5-a.d	12/17/2019 09:06
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	140-17578-a-6-a.d	12/17/2019 10:07
11187072-120619-SS-SJSSA03(2-4)	140-17578-7	140-17578-a-7-a.d	12/17/2019 11:08
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	140-17578-a-8-a.d	12/17/2019 15:32
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	140-17578-a-9-a.d	12/17/2019 16:33
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	140-17578-a-10-a.d	12/17/2019 17:34
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	140-17578-a-11-a.d	12/17/2019 18:35
11187072-120619-SS-DUP1	140-17578-13	140-17578-a-13-a.d	12/18/2019 02:58
11187072-120419-SS-SJSSA08(0-1)	140-17578-1	140-17578-a-1-a.d	12/18/2019 03:24
11187072-120619-SS-SJSSA03(1-2)	140-17578-6	140-17578-a-6-a.d	12/18/2019 03:58
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	140-17578-a-14-a.d	12/18/2019 03:59
11187072-120419-SS-SJSSA08(1-2)	140-17578-2	140-17578-a-2-a.d	12/18/2019 04:33
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	140-17578-a-15-a.d	12/18/2019 05:00
11187072-120619-SS-SJSSA03(0-1)	140-17578-5	140-17578-A-5-Aa.d	12/18/2019 05:08
11187072-120419-SS-SJSSA08(4-6)	140-17578-4	140-17578-a-4-a.d	12/18/2019 05:44
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	140-17578-a-16-a.d	12/18/2019 06:01
11187072-120419-SS-SJSSA08(2-4)	140-17578-3	140-17578-a-3-a.d	12/18/2019 06:19

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab File ID: mb140-3599120-a.d Lab Sample ID: MB 140-35991/20-A

Matrix: Sediment Date Extracted: 12/11/2019 10:49

Instrument ID: D2A Date Analyzed: 12/17/2019 04:00

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
11187072-120619-SS-SJSSA03(4-6)	140-17578-8	140-17578-a-8-a.d	12/18/2019 06:55
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	140-17578-a-17-a.d	12/18/2019 07:02
11187072-120619-SS-SJSSA06(0-1)	140-17578-9	140-17578-a-9-a.d	12/18/2019 07:30
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	140-17578-a-12-aa.d	12/18/2019 08:03
11187072-120619-SS-SJSSA06(1-2)	140-17578-10	140-17578-a-10-a.d	12/18/2019 08:05
11187072-120619-SS-SJSSA06(2-4)	140-17578-11	140-17578-a-11-a.d	12/18/2019 08:41
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	140-17578-a-12-bmsa.d	12/18/2019 09:05
11187072-120619-SS-SJSSA06(4-6)	140-17578-12	140-17578-a-12-a.d	12/18/2019 09:16
11187072-120619-SS-SJSSA06(4-6) MS	140-17578-12 MS	140-17578-a-12-bms.d	12/18/2019 09:52
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	140-17578-a-12-cmsda.d	12/18/2019 10:06
11187072-120619-SS-SJSSA06(4-6) MSD	140-17578-12 MSD	140-17578-a-12-cmsd.d	12/18/2019 10:27
11187072-120719-SS-SJSSA02(4-6)	140-17578-15	140-17578-a-15-a.d	12/18/2019 13:39
11187072-120719-SS-SJSSA02(0-1)	140-17578-16	140-17578-a-16-a.d	12/18/2019 14:14
11187072-120719-SS-SJSSA02(1-2)	140-17578-17	140-17578-a-17-a.d	12/18/2019 14:50
11187072-120719-SS-SJSSA02(2-4)	140-17578-14	140-17578-a-14-a.d	12/18/2019 15:25
11187072-120619-SS-DUP1	140-17578-13	140-17578-a-13-a.d	12/18/2019 19:48

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Matrix: Sediment Lab File ID: 140-17578-a-1-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.06(g) Date Analyzed: 12/17/2019 05:02

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 23.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	4.1		1.3	0.13
41903-57-5	Total TCDD	6.4	B q	1.3	0.13
40321-76-4	1,2,3,7,8-PeCDD	0.20	J q	6.5	0.092
36088-22-9	Total PeCDD	2.4	J q	6.5	0.092
39227-28-6	1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.047
57653-85-7	1,2,3,6,7,8-HxCDD	0.57	J	6.5	0.049
19408-74-3	1,2,3,7,8,9-HxCDD	1.3	J	6.5	0.045
34465-46-8	Total HxCDD	18	B q	6.5	0.047
35822-46-9	1,2,3,4,6,7,8-HpCDD	28	B	6.5	0.15
37871-00-4	Total HpCDD	89	B	6.5	0.15
3268-87-9	OCDD	930	B	13	0.050
30402-14-3	Total TCDF	26	I B q	1.3	0.11
57117-41-6	1,2,3,7,8-PeCDF	0.49	J	6.5	0.078
57117-31-4	2,3,4,7,8-PeCDF	0.29	J	6.5	0.073
30402-15-4	Total PeCDF	3.6	J I q	6.5	0.075
70648-26-9	1,2,3,4,7,8-HxCDF	0.84	J	6.5	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	0.37	J I q	6.5	0.11
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.5	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	ND		6.5	0.16
55684-94-1	Total HxCDF	4.4	J I q	6.5	0.13
67562-39-4	1,2,3,4,6,7,8-HpCDF	3.1	J B	6.5	0.075
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.53	J B q	6.5	0.12
38998-75-3	Total HpCDF	7.1	B q	6.5	0.10
39001-02-0	OCDF	20	B	13	0.17

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Matrix: Sediment Lab File ID: 140-17578-a-1-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.06(g) Date Analyzed: 12/17/2019 05:02

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 23.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	67		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	66		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	75		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	71		23-140
114423-97-1	13C-OCDD	60		17-157
89059-46-1	13C-2,3,7,8-TCDF	66		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	66		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	68		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	70		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	71		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	69		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	69		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	60		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 05:02:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:08:08 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:08:08

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:49	42287	0.75	1.1733	1.579	1.579	0.0483	0.0483		
A Non-2,3,7,8-sub-TCDD	29:30	23073	0.77	1.1733	0.9084	0.8613	0.0483	0.3205		RQM
S Total TCDD					2.487	2.440	0.0483	0.0483		RQ
2,3,7,8-TCDF	28:51	222143	0.85	1.0881	5.304	5.304	0.0435	0.0435		
A Non-2,3,7,8-sub-TCDF	28:13	200261	0.77	1.0881	4.879	4.782	0.0435	2.233		RQM
S Total TCDF					10.2	10.1	0.0435	0.0435		RQ
1,2,3,7,8-PeCDD	40:33	1577	1.55	1.0434	0.1244	0.0780	0.0351	0.0351		RQM
A Non-2,3,7,8-sub-PeCDD	39:27	16742	1.55	1.0434	0.9140	0.8278	0.0351	0.3684		RQM
S Total PeCDD					1.038	0.9058	0.0351	0.0351		RQ
1,2,3,7,8-PeCDF	38:47	6759	1.40	1.1898	0.1874	0.1874	0.0299	0.0299		M
2,3,4,7,8-PeCDF	40:02	3810	1.41	1.1095	0.1104	0.1104	0.0280	0.0280		
A Non-2,3,7,8-sub-PeCDF	38:02	38446	1.55	1.1496	1.181	1.089	0.0289	0.2824		RQMa
S Total PeCDF					1.479	1.387	0.0290	0.0290		RQ
1,2,3,4,7,8-HxCDD	44:50	2761	1.24	1.1409	0.1460	0.1202	0.0179	0.0179		RQ
1,2,3,6,7,8-HxCDD	44:57	6007	1.16	1.1481	0.2184	0.2184	0.0187	0.0187		
1,2,3,7,8,9-HxCDD	45:21	13560	1.27	1.2212	0.5037	0.5037	0.0172	0.0172		M
A Non-2,3,7,8-sub-HxCDD	44:19	158450	1.24	1.1700	6.211	6.143	0.0179	4.199		RQM
S Total HxCDD					7.079	6.985	0.0179	0.0179		RQ
1,2,3,4,7,8-HxCDF	43:48	12789	1.23	1.3629	0.3220	0.3220	0.0448	0.0448		
1,2,3,6,7,8-HxCDF	43:56	6621	1.24	1.2762	0.1638	0.1434	0.0410	0.0410		RQM
2,3,4,6,7,8-HxCDF	44:40						0.0472	0.0472		
1,2,3,7,8,9-HxCDF	45:36						0.0620	0.0620		
A Non-2,3,7,8-sub-HxCDF	44:10	50298	1.24	1.2905	1.287	1.237	0.0477	0.4499		RQM
S Total HxCDF					1.773	1.702	0.0488	0.0488		RQ
1,2,3,4,6,7,8-HpCDD	49:37	242849	1.00	1.1204	10.8	10.8	0.0592	0.0592		
A Non-2,3,7,8-sub-HpCDD	49:03	527664	1.07	1.1204	23.5	23.5	0.0592	23.5		
S Total HpCDD					34.3	34.3	0.0592	0.0592		
1,2,3,4,6,7,8-HpCDF	47:58	43681	1.17	1.4984	1.189	1.189	0.0287	0.0287		
1,2,3,4,7,8,9-HpCDF	50:16	5450	1.04	1.3807	0.2225	0.2032	0.0479	0.0479		RQ
A Non-2,3,7,8-sub-HpCDF	49:20	42248	1.04	1.4395	1.336	1.336	0.0362	1.161		a

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					2.748	2.729	0.0383	0.0383		RQ
OCDD	53:53	6415562	0.94	1.2073	358.8	358.8	0.0193	0.0193		
OCDF	54:01	185801	0.94	1.1162	7.547	7.547	0.0655	0.0655		
D 13C-2,3,7,8-TCDD	30:47	1141586	0.76	1.0709	32.0	32.0	0.3405	0.3405	64.05	
D 13C-2,3,7,8-TCDF	28:47	1924301	0.78	1.7545	32.9	32.9	0.5172	0.5172	65.90	
D 13C-1,2,3,7,8-PeCDD	40:34	969152	1.65	0.8743	33.3	33.3	0.2745	0.2745	66.60	
D 13C-1,2,3,7,8-PeCDF	38:45	1515859	1.58	1.3704	33.2	33.2	0.3466	0.3466	66.46	
D 13C-2,3,4,7,8-PeCDF	40:01	1555244	1.59	1.3837	33.8	33.8	0.3432	0.3432	67.53	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1006660	1.30	0.8772	32.9	32.9	0.1756	0.1756	65.87	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1197894	1.37	0.9171	37.5	37.5	0.1680	0.1680	74.97	
D 13C-1,2,3,4,7,8-HxCDF	43:47	1457087	0.54	1.1892	35.2	35.2	0.2355	0.2355	70.33	
D 13C-1,2,3,6,7,8-HxCDF	43:55	1809146	0.52	1.4625	35.5	35.5	0.1915	0.1915	71.01	
D 13C-2,3,4,6,7,8-HxCDF	44:39	1594578	0.51	1.3197	34.7	34.7	0.2122	0.2122	69.36	
D 13C-1,2,3,7,8,9-HxCDF	45:35	1441373	0.52	1.2001	34.5	34.5	0.2334	0.2334	68.94	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	1002268	1.15	0.8155	35.3	35.3	0.2904	0.2904	70.55	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	1225464	0.45	1.0496	33.5	33.5	0.3768	0.3768	67.01	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	971353	0.47	0.8947	31.2	31.2	0.4421	0.4421	62.32	
D 13C-OCDD	53:52	1481293	0.88	0.7044	60.4	60.4	0.5053	0.5053	60.35	
D 13C-OCDF	54:00	2205784	0.89	1.0615	59.6	59.6	0.1852	0.1852	59.64	
$ 37Cl4-2,3,7,8-TCDD	30:48	293093		1.2266	7.179	7.179	0.0856	0.0856	71.79	
* 13C-1,2,3,4-TCDD	30:15	3328704	0.82	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:20	3484377	1.30	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 05:02:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:08:08 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:08:08

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:49	30:49	-3	1.001	18142	2133	21	52	102		
321.8936	30:48	30:49	-4	1.001	24145	2612	35	87	75	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	24:54	29:30	-275	0.809	1543	269	21	52	13		
	Empc Correction				1160	214	21	52	10		
321.8936	24:53	29:30	-276	0.808	1507	279	35	87	8	1.02(0.65-0.89)	M
319.8965	25:41	29:30	-228	0.834	820	127	21	52	6		
321.8936	25:36	29:30	-234	0.831	1561	216	35	87	6	0.53(0.65-0.89)	
	Empc Correction				1064	164	35	87	5		
319.8965	27:47	29:30	-102	0.903	3518	469	21	52	22		M
321.8936	27:47	29:30	-102	0.903	5068	622	35	87	18	0.69(0.65-0.89)	
319.8965	30:17	29:30	48	0.984	1409	260	21	52	12		M
321.8936	30:16	29:30	47	0.984	1640	285	35	87	8	0.86(0.65-0.89)	
319.8965	30:35	29:30	65	0.993	1405	170	21	52	8		
	Empc Correction				1024	206	21	52	10		
321.8936	30:34	29:30	64	0.993	1331	268	35	87	8	1.06(0.65-0.89)	
319.8965	31:52	29:30	143	1.036	1871	220	21	52	10		
321.8936	31:54	29:30	145	1.037	2661	416	35	87	12	0.70(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:51	28:51	-2	1.002	102381	10478	39	97	269		
305.8987	28:49	28:51	-4	1.001	119762	13142	46	115	286	0.85(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:48	28:13	-265	0.827	1789	364	39	97	9		
305.8987	23:49	28:13	-264	0.827	3299	541	46	115	12	0.54(0.65-0.89)	
	Empc Correction				2323	472	46	115	10		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	24:20	28:13	-233	0.845	2862	427	39	97	11		
305.8987	24:20	28:13	-233	0.845	3454	402	46	115	9	0.83(0.65-0.89)	
303.9016	25:03	28:13	-190	0.871	6274	690	39	97	18		
	Empc Correction				4618	619	39	97	16		
305.8987	25:02	28:13	-191	0.870	5998	805	46	115	18	1.05(0.65-0.89)	M
303.9016	25:48	28:13	-145	0.896	7146	715	39	97	18		M
305.8987	25:48	28:13	-145	0.896	9663	1068	46	115	23	0.74(0.65-0.89)	
303.9016	26:14	28:13	-119	0.912	1574	239	39	97	6		
305.8987	26:15	28:13	-118	0.912	2322	260	46	115	6	0.68(0.65-0.89)	
303.9016	26:27	28:13	-106	0.919	2468	449	39	97	12		
305.8987	26:27	28:13	-106	0.919	3929	477	46	115	10	0.63(0.65-0.89)	
	Empc Correction				3205	583	46	115	13		
303.9016	26:55	28:13	-78	0.936	4173	708	39	97	18		
305.8987	27:03	28:13	-71	0.940	6177	515	46	115	11	0.68(0.65-0.89)	
303.9016	27:44	28:13	-29	0.964	38326	4587	39	97	118		M
305.8987	27:43	28:13	-30	0.963	55189	6997	46	115	152	0.69(0.65-0.89)	
303.9016	28:20	28:13	7	0.985	3457	278	39	97	7		M
	Empc Correction				2743	237	39	97	6		
305.8987	28:20	28:13	7	0.985	3563	308	46	115	7	0.97(0.65-0.89)	
303.9016	30:00	28:13	107	1.043	6271	653	39	97	17		
305.8987	30:03	28:13	110	1.044	9035	913	46	115	20	0.69(0.65-0.89)	
303.9016	32:46	28:13	272	1.139	5303	509	39	97	13		
305.8987	32:48	28:13	274	1.140	6462	736	46	115	16	0.82(0.65-0.89)	
303.9016	33:51	28:13	337	1.176	7178	781	39	97	20		
305.8987	33:53	28:13	339	1.177	8419	1051	46	115	23	0.85(0.65-0.89)	
1,2,3,7,8-PeCDD											RQM
355.8546	40:33	40:33	-3	1.000	959	181	22	55	8		M
357.8516	40:35	40:33	-1	1.000	1557	243	39	97	6	0.62(1.32-1.78)	M
	Empc Correction				618	116	39	97	3		
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	37:36	39:27	-111	0.927	3064	495	22	55	23		
	Empc Correction				1523	406	22	55	18		
357.8516	37:37	39:27	-110	0.927	983	262	39	97	7	3.12(1.32-1.78)	
355.8546	38:26	39:27	-60	0.948	4575	880	22	55	40		
357.8516	38:27	39:27	-59	0.948	2876	635	39	97	16	1.59(1.32-1.78)	
355.8546	38:57	39:27	-30	0.000			22	55			
357.8516	38:57	39:27	-30	0.000			39	97		0.00(1.32-1.78)	
355.8546	39:10	39:27	-17	0.966	983	228	22	55	10		M
357.8516	39:09	39:27	-18	0.965	836	174	39	97	4	1.18(1.32-1.78)	
	Empc Correction				634	147	39	97	4		
355.8546	39:50	39:27	23	0.982	3020	519	22	55	24		
357.8516	39:50	39:27	23	0.982	2148	388	39	97	10	1.41(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:47	38:47	-1	1.001	3943	724	39	97	19		M
341.8567	38:47	38:47	-1	1.001	2816	492	44	110	11	1.40(1.32-1.78)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	40:02	40:03	-2	1.000	2228	442	39	97	11		
341.8567	40:01	40:03	-3	1.000	1582	323	44	110	7	1.41(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:42	38:02	-199	0.895	4010	541	39	97	14		
341.8567	34:39	38:02	-202	0.894	3076	506	44	110	12	1.30(1.32-1.78)	
	Empc Correction				2587	349	44	110	8		
339.8597	37:15	38:02	-47	0.961	6186	900	39	97	23		
341.8567	37:16	38:02	-45	0.962	3785	676	44	110	15	1.63(1.32-1.78)	
339.8597	38:08	38:02	6	0.984	3520	712	39	97	18		
	Empc Correction				2644	799	39	97	20		
341.8567	38:09	38:02	7	0.984	1706	516	44	110	12	2.06(1.32-1.78)	
339.8597	39:24	38:02	83	1.017	5668	905	39	97	23		
341.8567	39:25	38:02	84	1.017	3274	553	44	110	13	1.73(1.32-1.78)	
339.8597	40:16	38:02	134	1.039	2063	426	39	97	11		
341.8567	40:16	38:02	134	1.039	1987	252	44	110	6	1.04(1.32-1.78)	M
	Empc Correction				1330	274	44	110	6		
339.8597	41:27	38:02	205	1.070	3157	570	39	97	15		a
341.8567	41:27	38:02	205	1.070	3271	511	44	110	12	0.97(1.32-1.78)	
	Empc Correction				2036	367	44	110	8		
1,2,3,4,7,8-HxCDD											RQ
389.8158	44:50	44:50	0	1.000	2121	384	25	62	15		
	Empc Correction				1528	328	25	62	13		
391.8127	44:51	44:50	1	1.001	1233	265	19	47	14	1.72(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:57	44:57	0	1.000	3225	870	25	62	35		
391.8127	44:57	44:57	0	1.000	2782	684	19	47	36	1.16(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	45:21	45:19	0	1.012	7599	1223	25	62	49		M
391.8127	45:19	45:19	-2	1.011	5961	1116	19	47	59	1.27(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	42:59	44:19	-80	0.000			25	62			
391.8127	42:59	44:19	-80	0.000			19	47		0.00(1.05-1.43)	
389.8158	43:17	44:19	-62	0.963	60581	15889	25	62	636		
391.8127	43:16	44:19	-63	0.963	47731	11839	19	47	623	1.27(1.05-1.43)	M
389.8158	43:50	44:19	-29	0.976	4378	841	25	62	34		
	Empc Correction				2611	668	25	62	27		
391.8127	43:51	44:19	-28	0.976	2106	539	19	47	28	2.08(1.05-1.43)	
389.8158	44:08	44:19	-12	0.982	22720	4793	25	62	192		
391.8127	44:08	44:19	-12	0.982	17406	4487	19	47	236	1.31(1.05-1.43)	
389.8158	44:18	44:19	-1	0.986	3067	674	25	62	27		
391.8127	44:18	44:19	-1	0.986	2228	452	19	47	24	1.38(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:48	43:49	0	1.000	7064	1758	82	205	21		
375.8178	43:48	43:49	0	1.000	5725	1538	103	257	15	1.23(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDF											RQM
373.8208	43:56	43:56	0	1.000	4609	1294	82	205	16		
	Empc Correction				3665	771	82	205	9		
375.8178	43:56	43:56	0	1.000	2956	622	103	257	6	1.56(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											
373.8208	44:40						82	205			
375.8178	44:40						103	257			
1,2,3,7,8,9-HxCDF											
373.8208	45:36						82	205			
375.8178	45:36						103	257			
A Non-2,3,7,8-sub-HxCDF											RQM
373.8208	42:34	44:10	-96	0.969	2759	728	82	205	9		
375.8178	42:34	44:10	-96	0.969	2866	742	103	257	7	0.96(1.05-1.43)	
	Empc Correction				2224	587	103	257	6		
373.8208	42:45	44:10	-84	0.973	8776	2240	82	205	27		
375.8178	42:45	44:10	-84	0.973	8165	2339	103	257	23	1.07(1.05-1.43)	M
373.8208	43:22	44:10	-48	0.987	5579	1550	82	205	19		
375.8178	43:22	44:10	-48	0.987	5885	1043	103	257	10	0.95(1.05-1.43)	M
	Empc Correction				4499	1249	103	257	12		
373.8208	43:33	44:10	-37	0.992	9993	2687	82	205	33		
375.8178	43:33	44:10	-37	0.992	8303	2416	103	257	23	1.20(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:37	49:37	-1	1.000	121649	20986	40	100	525		
425.7737	49:37	49:37	-1	1.000	121200	19902	52	130	383	1.00(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:27	49:03	-35	0.977	272458	52048	40	100	1301		
425.7737	48:27	49:03	-35	0.977	255206	45115	52	130	868	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:58	-1	1.000	23545	4665	42	105	111		
409.7788	47:58	47:58	-1	1.000	20136	3920	46	115	85	1.17(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											RQ
407.7817	50:16	50:17	-2	1.000	3297	681	42	105	16		
	Empc Correction				2778	415	42	105	10		
409.7788	50:18	50:17	0	1.001	2672	400	46	115	9	1.23(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											a
407.7817	48:22	49:20	-57	1.009	2836	461	42	105	11		a
409.7788	48:20	49:20	-59	1.008	2683	554	46	115	12	1.06(0.88-1.20)	
407.7817	48:35	49:20	-44	1.013	18720	3795	42	105	90		a
409.7788	48:35	49:20	-44	1.013	18009	3593	46	115	78	1.04(0.88-1.20)	
OCDD											
457.7377	53:53	53:53	-1	1.000	3110890	639210	19	47	33643		
459.7348	53:53	53:53	-1	1.000	3304672	700504	10	25	70050	0.94(0.76-1.02)	
OCDF											
441.7428	54:01	54:01	-1	1.000	90161	19460	61	152	319		
443.7399	54:01	54:01	-1	1.000	95640	20602	81	202	254	0.94(0.76-1.02)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDD											
331.9368	30:47	30:45	-2	1.017	494189	50897	343	857	148		
333.9338	30:46	30:45	-3	1.017	647397	72737	199	497	366	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:47	28:46	-3	0.951	841489	93609	489	1222	191		
317.9389	28:47	28:46	-3	0.951	1082812	130275	860	2150	151	0.78(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:30	-1	1.341	602925	128340	187	467	686		
369.8919	40:34	40:30	-1	1.341	366227	78971	170	425	465	1.65(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:42	-2	1.281	928336	176487	347	867	509		
353.8970	38:45	38:42	-2	1.281	587523	114224	359	897	318	1.58(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	39:58	-2	1.322	955384	205559	347	867	592		
353.8970	40:01	39:58	-2	1.322	599860	127348	359	897	355	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	0	0.989	568218	151336	325	812	466		
403.8529	44:49	44:49	0	0.989	438442	117319	103	257	1139	1.30(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	0	0.991	691874	144016	325	812	443		
403.8529	44:56	44:56	0	0.991	506020	112205	103	257	1089	1.37(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:47	0	0.966	508748	133946	256	640	523		
385.8610	43:47	43:47	0	0.966	948339	244005	522	1305	467	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:56	0	0.969	619829	149794	256	640	585		
385.8610	43:55	43:56	0	0.969	1189317	291388	522	1305	558	0.52(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	540734	136092	256	640	532		
385.8610	44:39	44:39	0	0.985	1053844	250661	522	1305	480	0.51(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	494798	99498	256	640	389		
385.8610	45:35	45:35	0	1.006	946575	196615	522	1305	377	0.52(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:36	-1	1.094	535643	90620	228	570	397		
437.8140	49:36	49:36	-1	1.094	466625	82806	430	1075	193	1.15(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	-1	1.058	381432	76818	688	1720	112		
419.8220	47:57	47:57	-1	1.058	844032	178968	411	1027	435	0.45(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	-1	1.109	309353	52108	688	1720	76		
419.8220	50:16	50:16	-1	1.109	662000	114320	411	1027	278	0.47(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	-1	1.188	694974	145861	442	1105	330		
471.7750	53:52	53:52	-1	1.188	786319	162578	547	1367	297	0.88(0.76-1.02)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-OCDF											
453.7830	54:00	54:01	-1	1.191	1037009	228715	292	730	783		
455.7801	54:00	54:01	-1	1.191	1168775	257020	254	635	1012	0.89(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:48	30:48	-4	1.018	293093	31670	156	390	203		
13C-1,2,3,4-TCDD											
331.9368	30:15	30:19	-4		1501305	166031	343	857	484		
333.9338	30:15	30:19	-4		1827399	205589	199	497	1033	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:20	0		1969858	385765	325	812	1187		
403.8529	45:20	45:20	0		1514519	308752	103	257	2998	1.30(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1141586	123634

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1141586	123634

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:54	1543	269	1507	279	0.1139	1.02	RQM
24:54	1160	214	1507	279	0.0996		Empc Correction
25:41	820	127	1561	216	0.0889	0.53	RQ
25:41	820	127	1064	164	0.0703		Empc Correction
27:47	3518	469	5068	622	0.3205	0.69	M
30:17	1409	260	1640	285	0.1138	0.86	M
30:35	1405	170	1331	268	0.1021	1.06	RQ
30:35	1024	206	1331	268	0.0879		Empc Correction
31:52	1871	220	2661	416	0.1692	0.70	
Signal Totals:							
	9802	1496	13271	2034			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	24334	3601				0.77	RQM
	23073	3530					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9084 = (24334 * 50.000) / (1141586 * 1.173)
Empc Amount: 0.8613 = (23073 * 50.000) / (1141586 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	1924301	223884

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	1924301	223884

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:48	1789	364	3299	541	0.1215	0.54	RQ
23:48	1789	364	2323	472	0.0982		Empc Correction
24:20	2862	427	3454	402	0.1508	0.83	
25:03	6274	690	5998	805	0.2930	1.05	RQM
25:03	4618	619	5998	805	0.2535		Empc Correction
25:48	7146	715	9663	1068	0.4014	0.74	M
26:14	1574	239	2322	260	0.0930	0.68	
26:27	2468	449	3929	477	0.1528	0.63	RQ
26:27	2468	449	3205	583	0.1355		Empc Correction
26:55	4173	708	6177	515	0.2471	0.68	
27:44	38326	4587	55189	6997	2.23	0.69	M
28:20	3457	278	3563	308	0.1676	0.97	RQM
28:20	2743	237	3563	308	0.1506		Empc Correction
30:00	6271	653	9035	913	0.3655	0.69	
32:46	5303	509	6462	736	0.2809	0.82	
33:51	7178	781	8419	1051	0.3724	0.85	
Signal Totals:							
	84451	10288	115810	14110			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	204331	24473				0.74	RQM
	200261	24398					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.879 = (204331 * 50.000) / (1924301 * 1.088)
Empc Amount: 4.782 = (200261 * 50.000) / (1924301 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	969152	207311

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	969152	207311

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:36	3064	495	983	262	0.2001	3.12	RQ
37:36	1523	406	983	262	0.1239		Empc Correction
38:26	4575	880	2876	635	0.3684	1.59	
38:57	0	0	0	0		0.00	
39:10	983	228	836	174	0.0899	1.18	RQM
39:10	983	228	634	147	0.0800		Empc Correction
39:50	3020	519	2148	388	0.2555	1.41	
Signal Totals:							
	10101	2033	6641	1432			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	18485	3581				1.70	RQM
	16742	3465					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9140 = (18485 * 50.000) / (969152 * 1.043)
Empc Amount: 0.8278 = (16742 * 50.000) / (969152 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1515859	290711
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1555244	332907

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1535551	311809

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:42	4010	541	3076	506	0.2007	1.30	RQ
34:42	4010	541	2587	349	0.1869		Empc Correction
37:15	6186	900	3785	676	0.2824	1.63	
38:08	3520	712	1706	516	0.1480	2.06	RQ
38:08	2644	799	1706	516	0.1232		Empc Correction
39:24	5668	905	3274	553	0.2533	1.73	
40:16	2063	426	1987	252	0.1147	1.04	RQM
40:16	2063	426	1330	274	0.0961		Empc Correction
41:27	3157	570	3271	511	0.1821	0.97	RQa
41:27	3157	570	2036	367	0.1471		Empc Correction
Signal Totals:							
	23728	4141	14718	2735			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	41703	7068				1.44	RQMa
	38446	6876					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.181 = (41703 * 50.000) / (1535551 * 1.150)
Empc Amount: 1.089 = (38446 * 50.000) / (1535551 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1006660	268655
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1197894	256221
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1102277	262438

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
42:59	0	0	0	0		0.00	
43:17	60581	15889	47731	11839	4.20	1.27	M
43:50	4378	841	2106	539	0.2514	2.08	RQ
43:50	2611	668	2106	539	0.1829		Empc Correction
44:08	22720	4793	17406	4487	1.56	1.31	
44:18	3067	674	2228	452	0.2053	1.38	
Signal Totals:							
	88979	22024	69471	17317			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	160217	39514				1.31	RQM
	158450	39341					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.211 = (160217 * 50.000) / (1102277 * 1.170)
Empc Amount: 6.143 = (158450 * 50.000) / (1102277 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1457087	377951
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	1809146	441182
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1594578	386753
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1441373	296113

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1575546	375499

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:34	2759	728	2866	742	0.1383	0.96	RQ
42:34	2759	728	2224	587	0.1225		Empc Correction
42:45	8776	2240	8165	2339	0.4166	1.07	M
43:22	5579	1550	5885	1043	0.2819	0.95	RQM
43:22	5579	1550	4499	1249	0.2478		Empc Correction
43:33	9993	2687	8303	2416	0.4499	1.20	
Signal Totals:							
	27107	7205	23191	6591			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	52326	13745				1.07	RQM
	50298	13796					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.287 = (52326 * 50.000) / (1575546 * 1.290)
Empc Amount: 1.237 = (50298 * 50.000) / (1575546 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1002268	173426

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1002268	173426

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	272458	52048	255206	45115	23.5	1.07	
Signal Totals:							
	272458	52048	255206	45115			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	527664	97163				1.07	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 23.494 = (527664 * 50.000) / (1002268 * 1.120)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Inject. Date: 17-Dec-2019 05:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1225464	255786
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	971353	166428

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1098408	211107

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:22	2836	461	2683	554	0.1745	1.06	a
48:35	18720	3795	18009	3593	1.16	1.04	a
Signal Totals:							
	21556	4256	20692	4147			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	42248	8403				1.04	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.336 = (42248 * 50.000) / (1098408 * 1.440)

QC Flag Legend

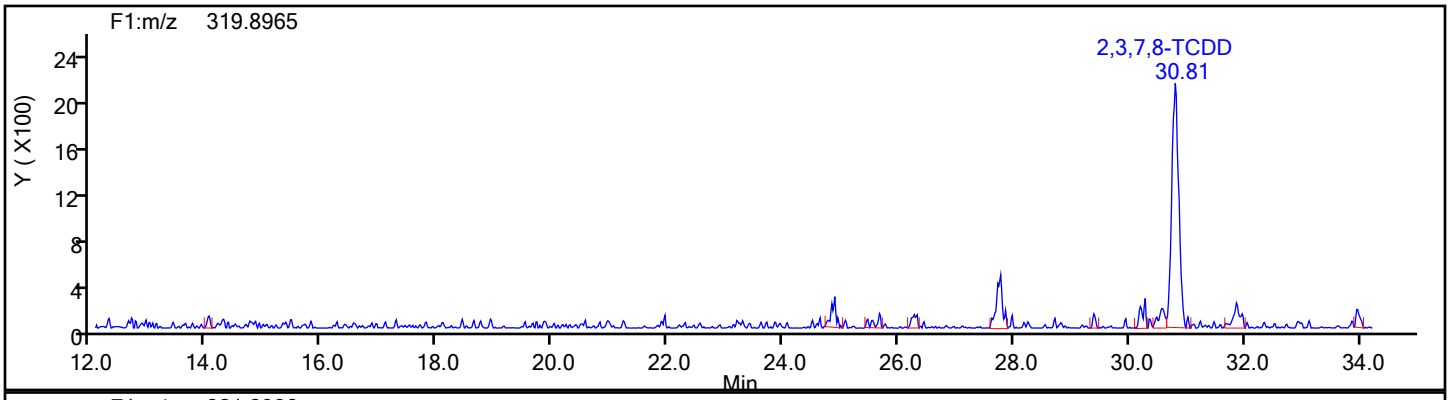
Review Flags
a - User Assigned ID

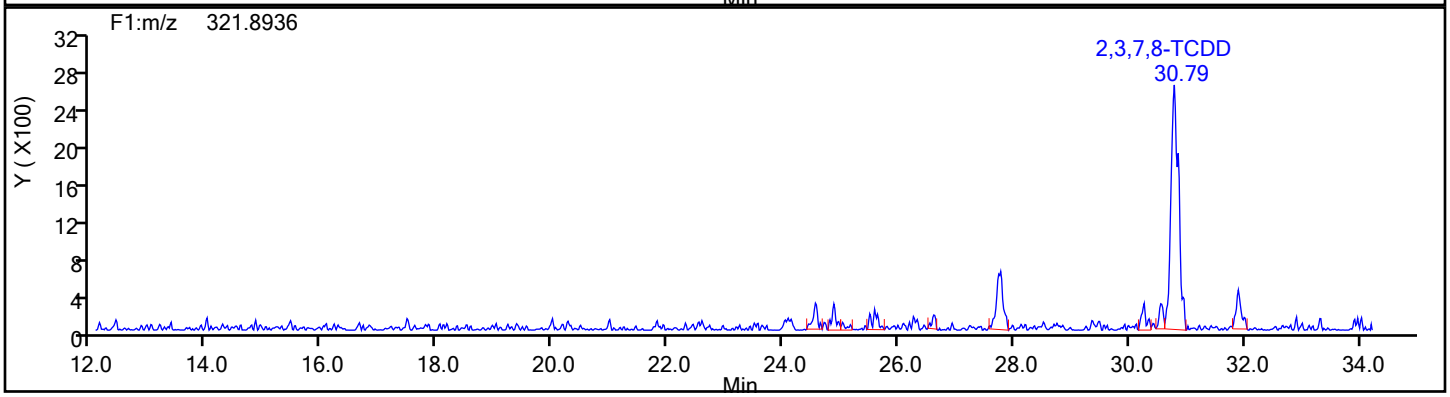
Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

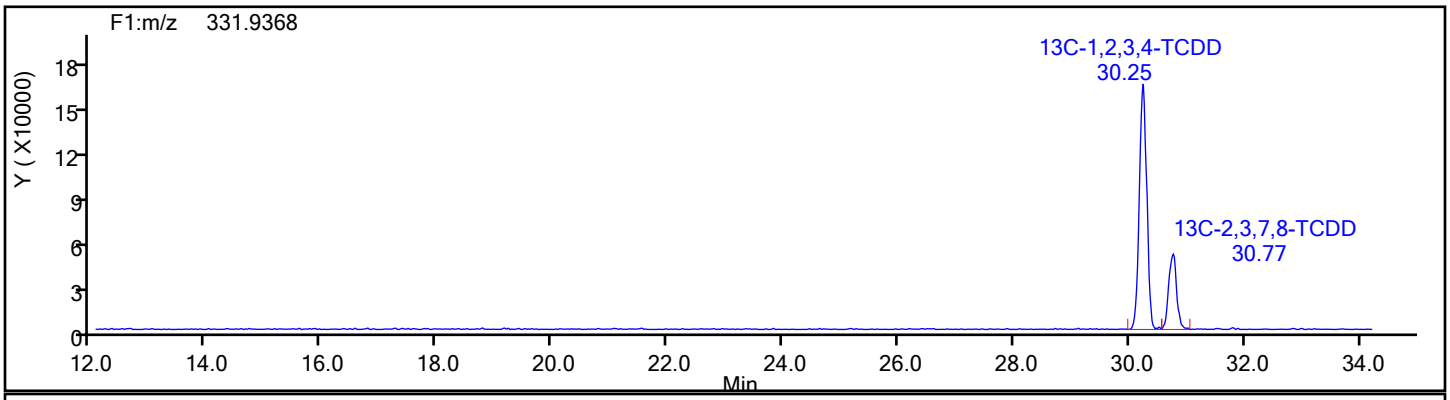
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

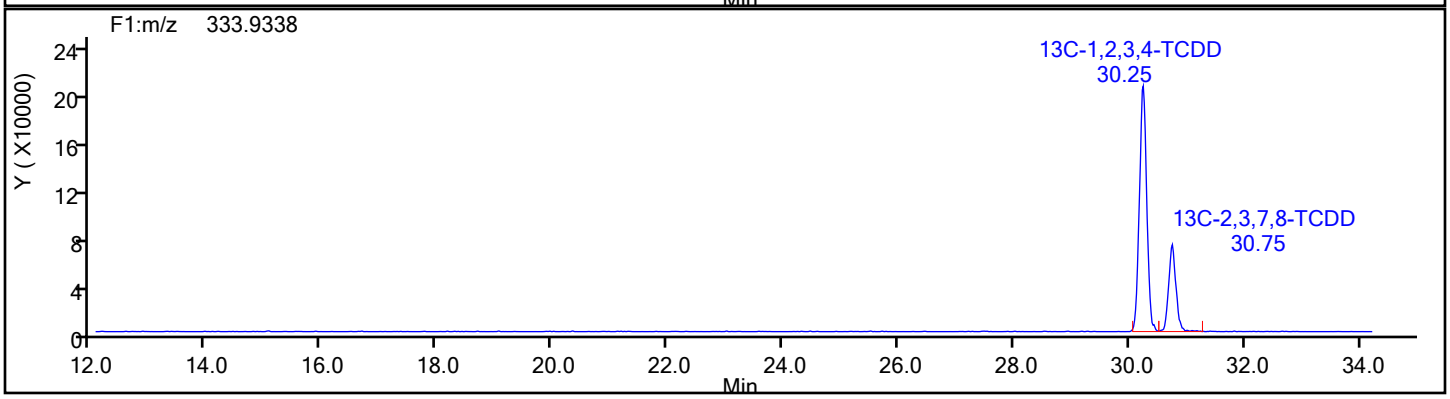
TCDD





TCDD Standards



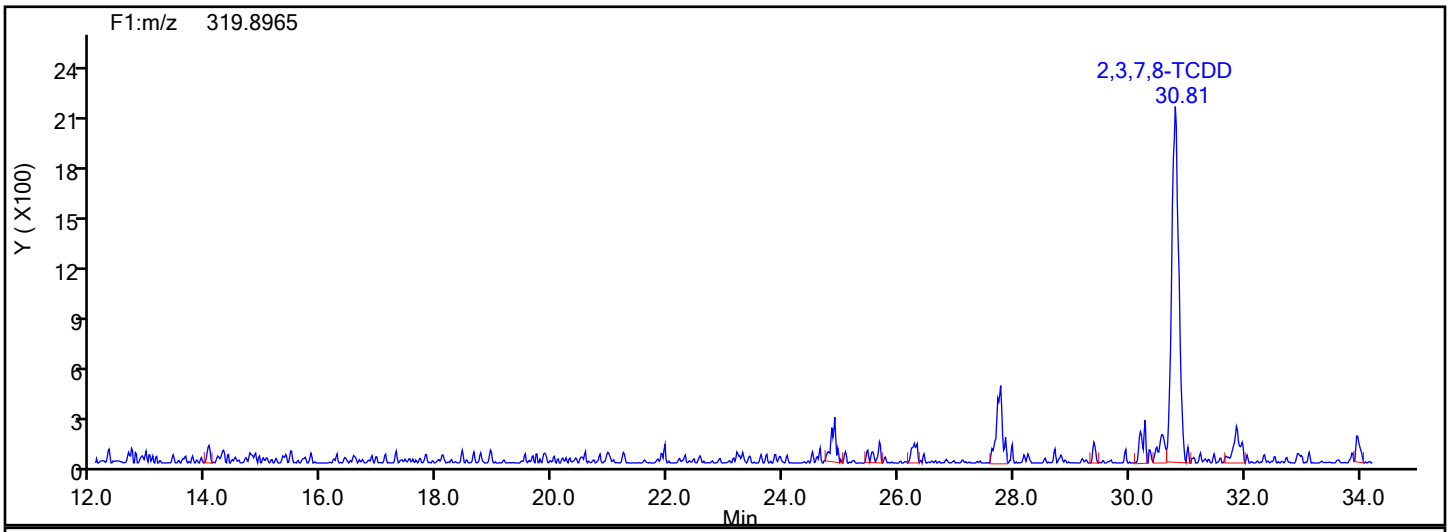


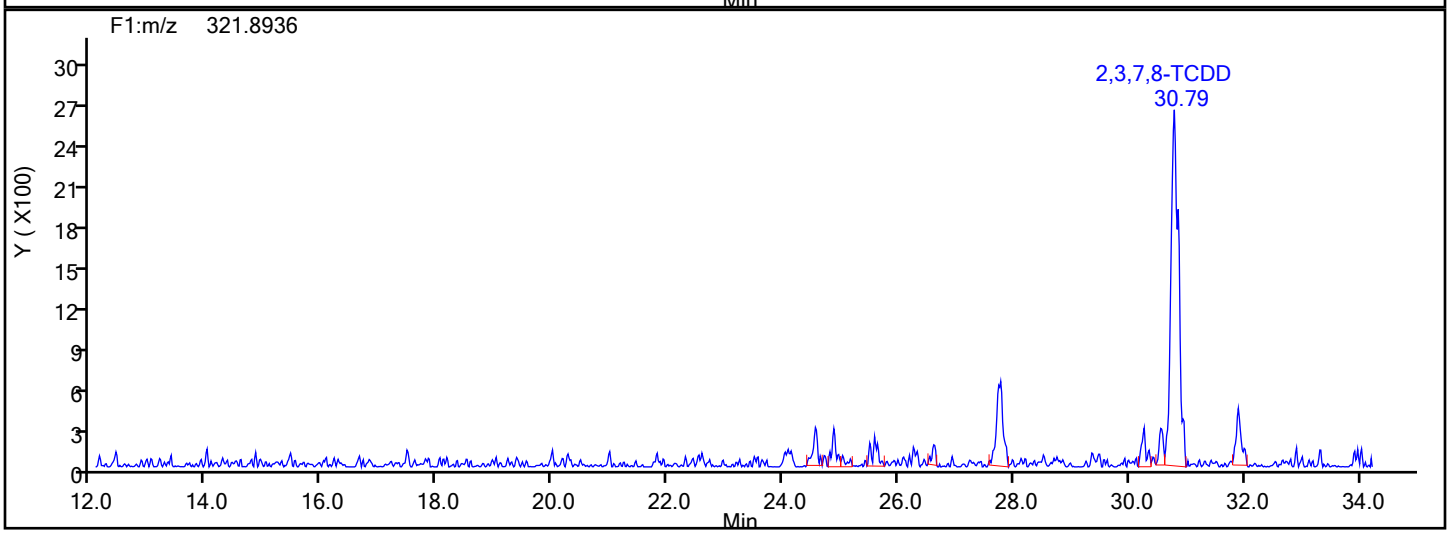
Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

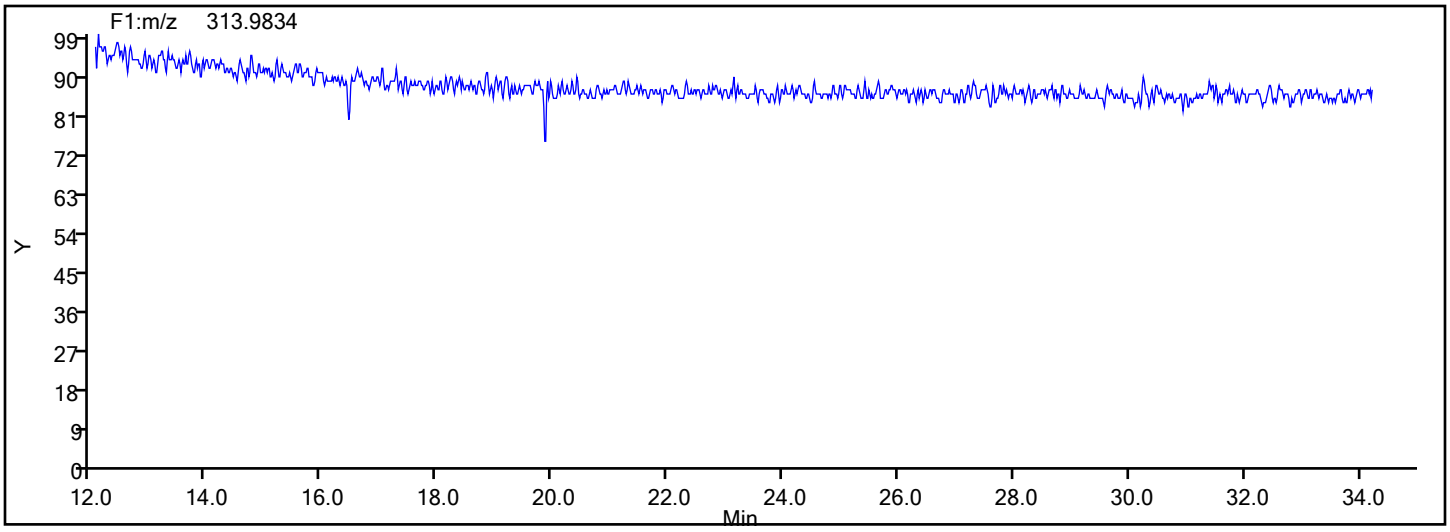
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

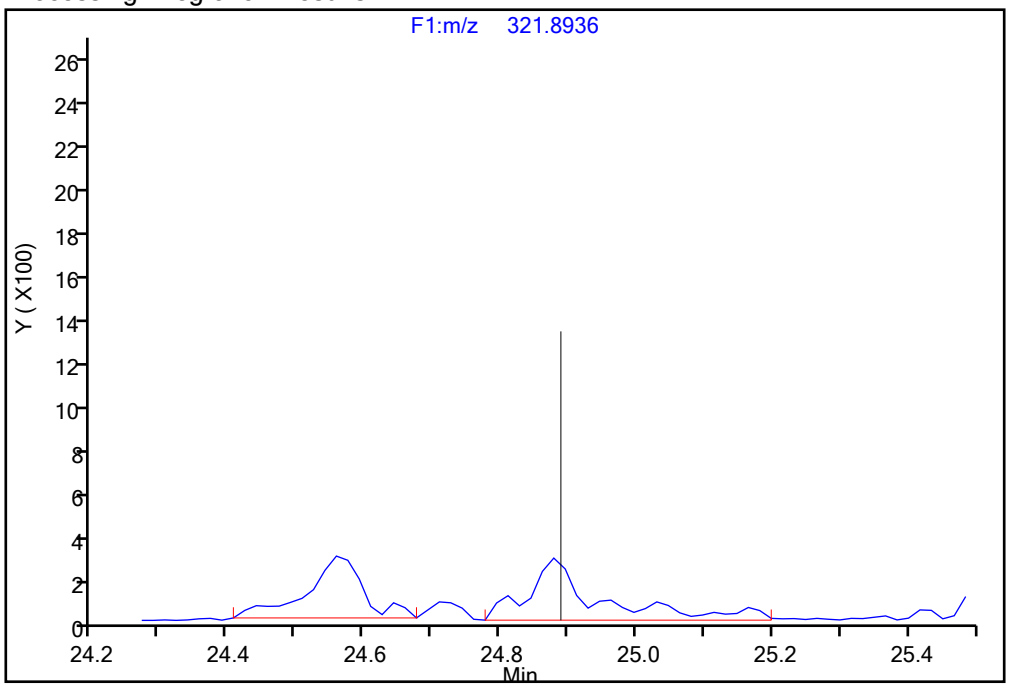
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

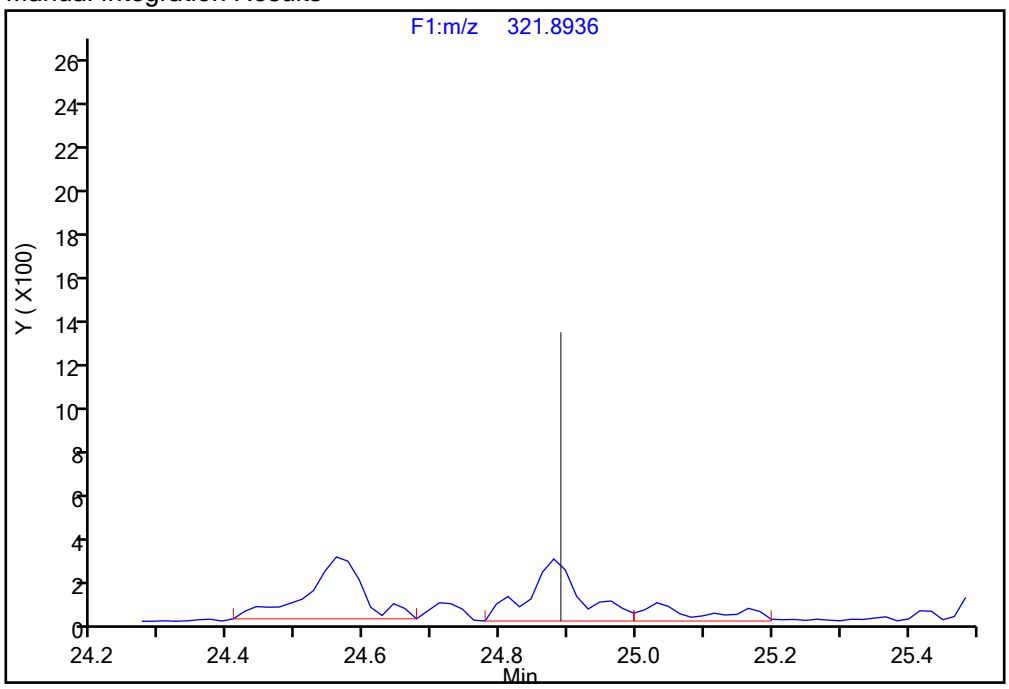
Processing Integration Results

RT = 24.879 Area = 1998



Manual Integration Results

RT = 24.879 Area = 1507 M



Reviewer: davidsonm, 17-Dec-2019 10:03:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

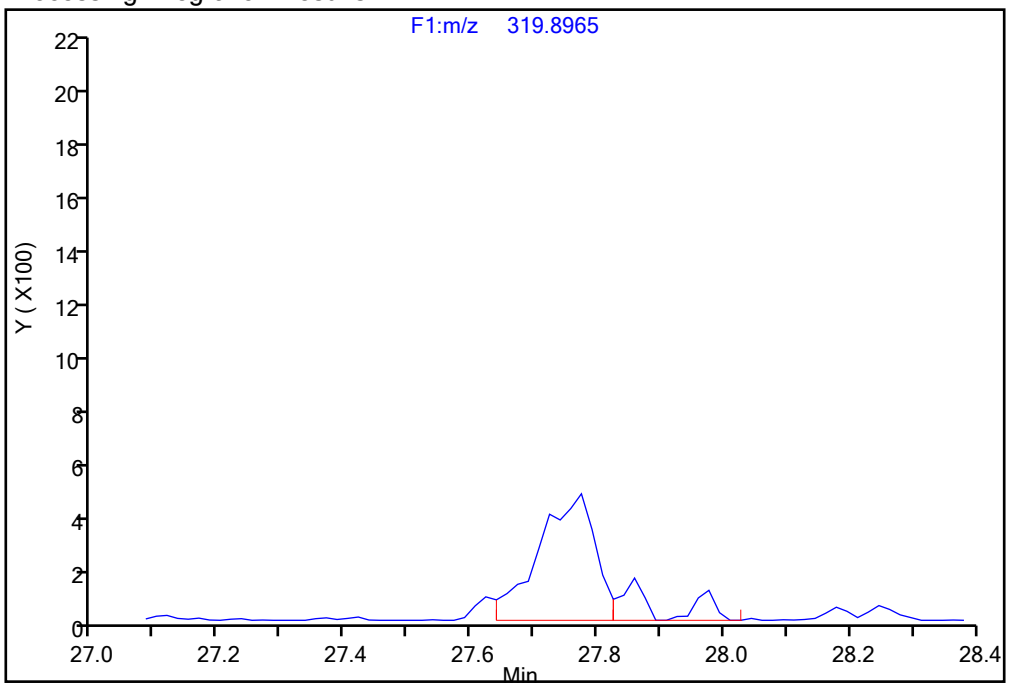
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

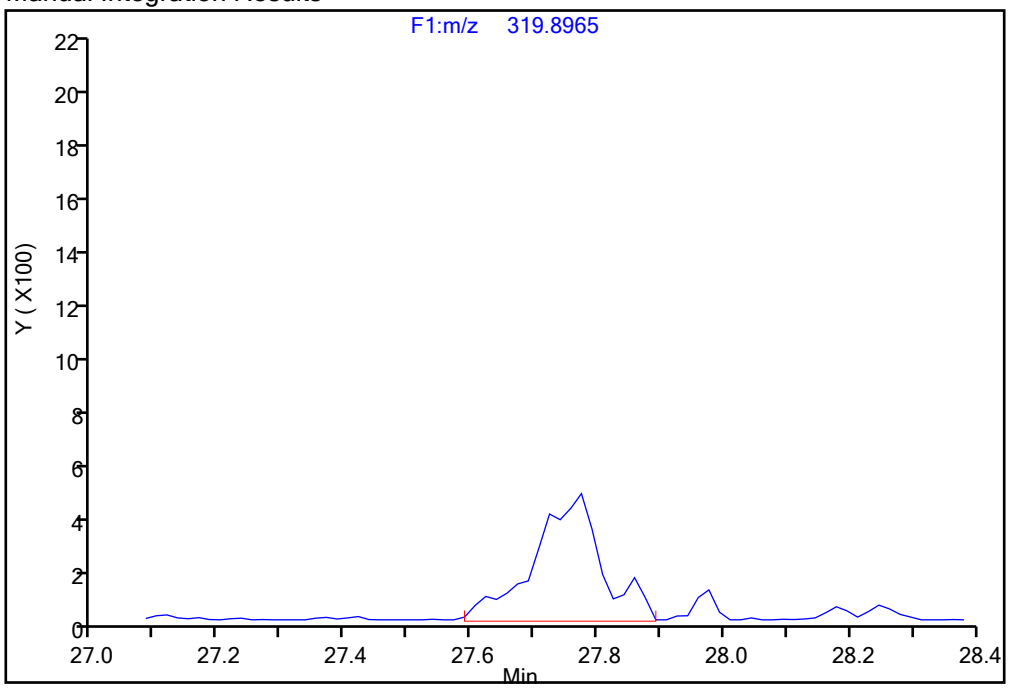
Processing Integration Results

RT = 27.774 Area = 2872



Manual Integration Results

RT = 27.774 Area = 3518 M



Reviewer: davidsonm, 17-Dec-2019 10:03:25

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

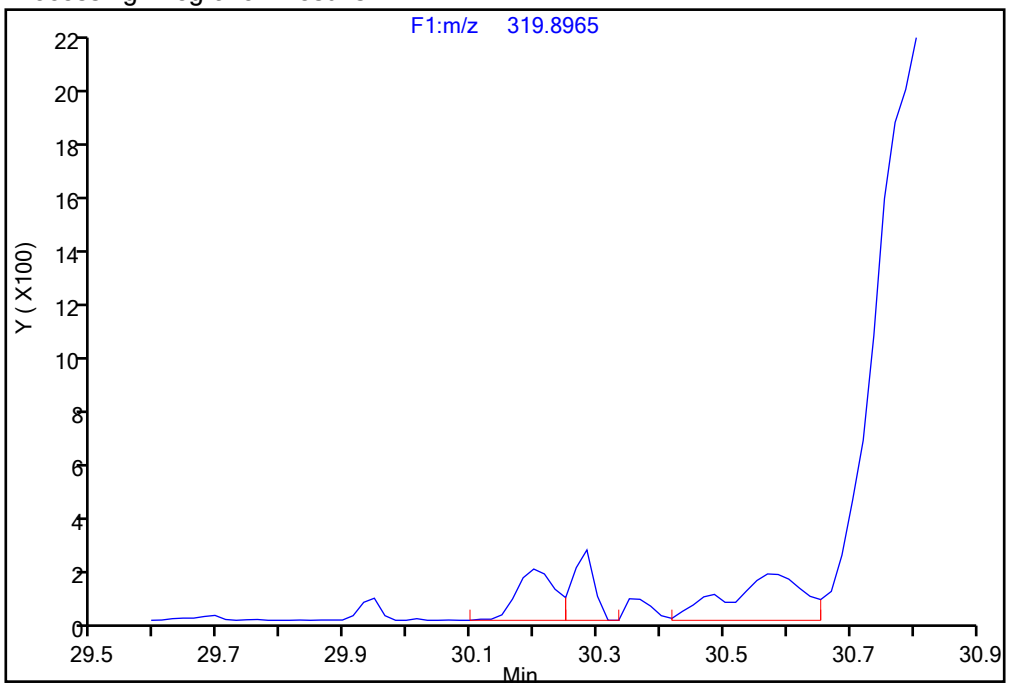
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

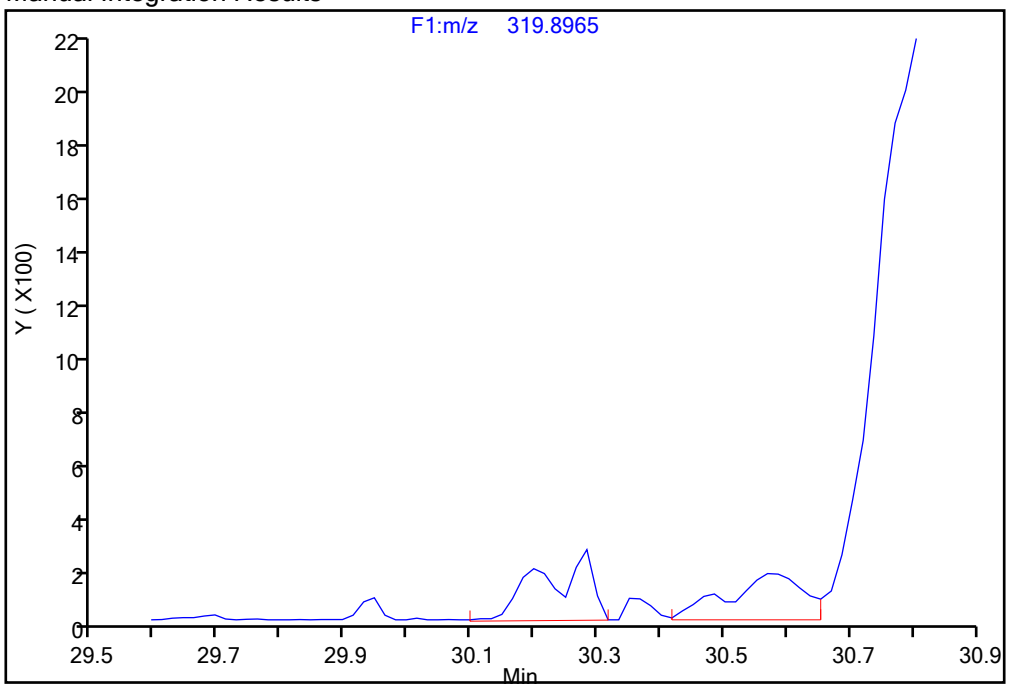
Processing Integration Results

RT = 30.283 Area = 586



Manual Integration Results

RT = 30.283 Area = 1409 M



Reviewer: davidsonm, 17-Dec-2019 10:03:25

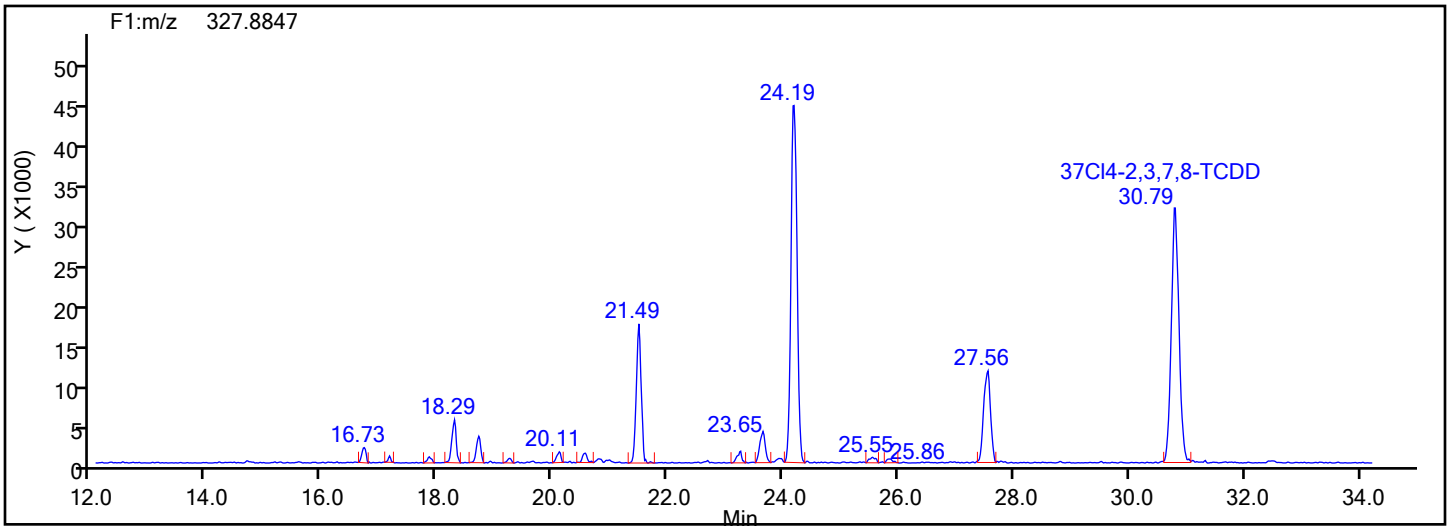
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

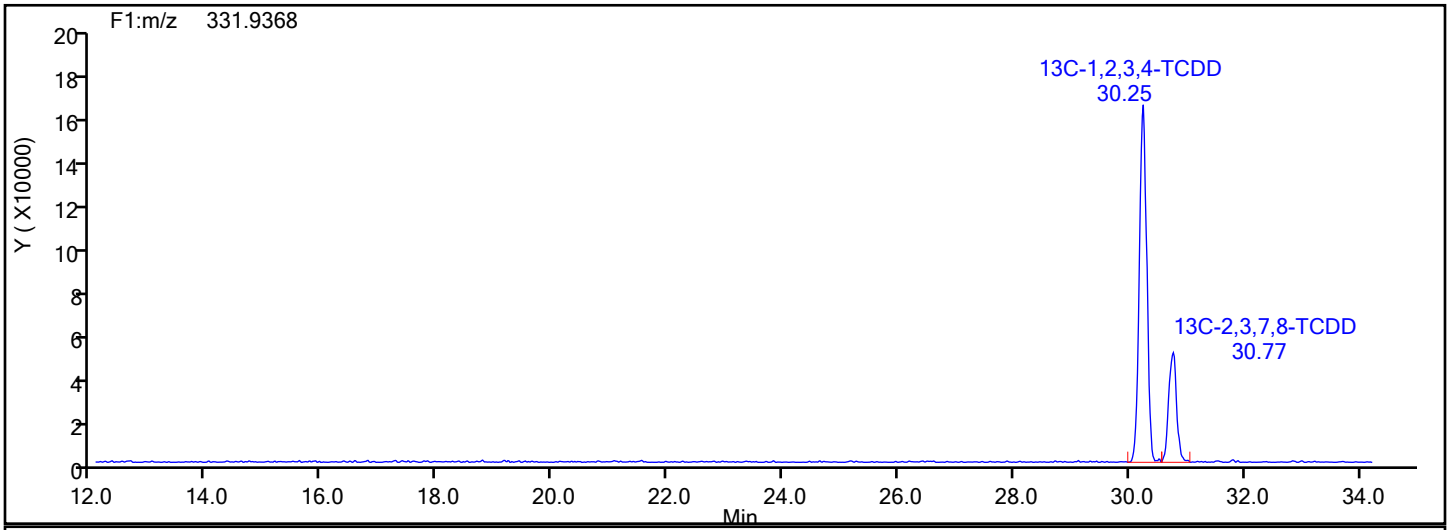
Eurofins TestAmerica, Knoxville

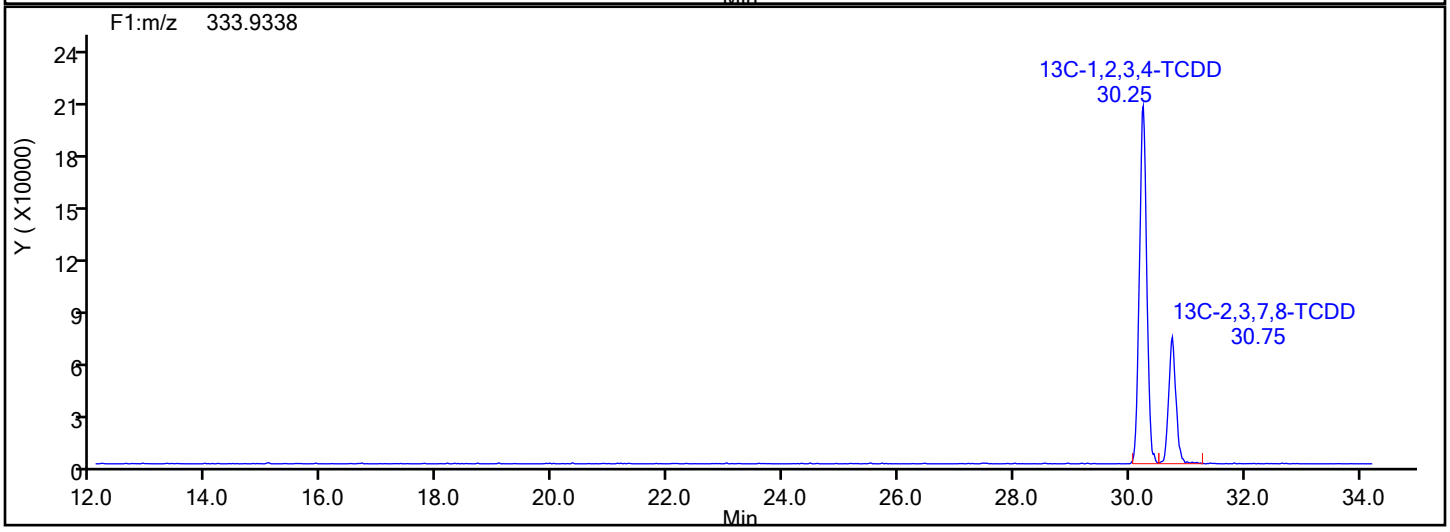
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



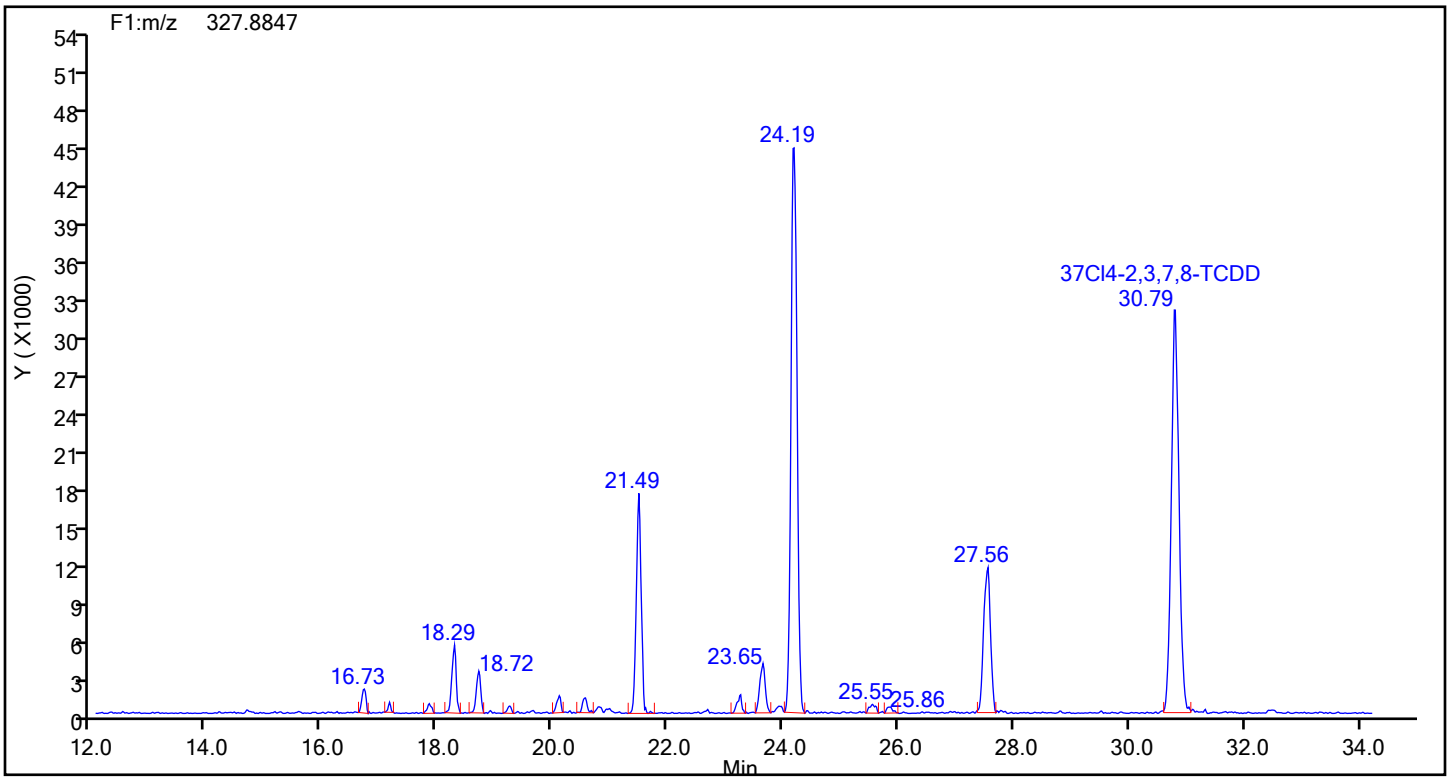


Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

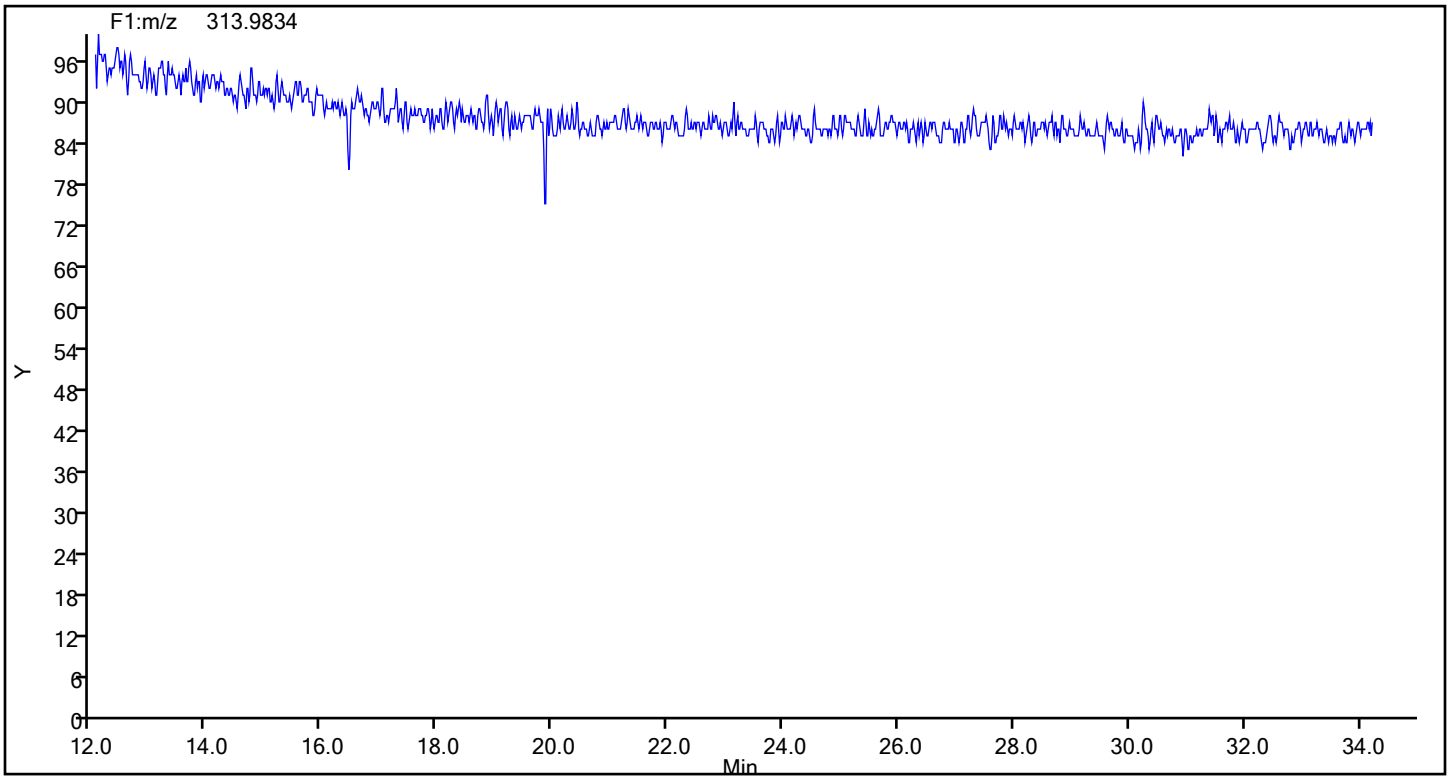
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

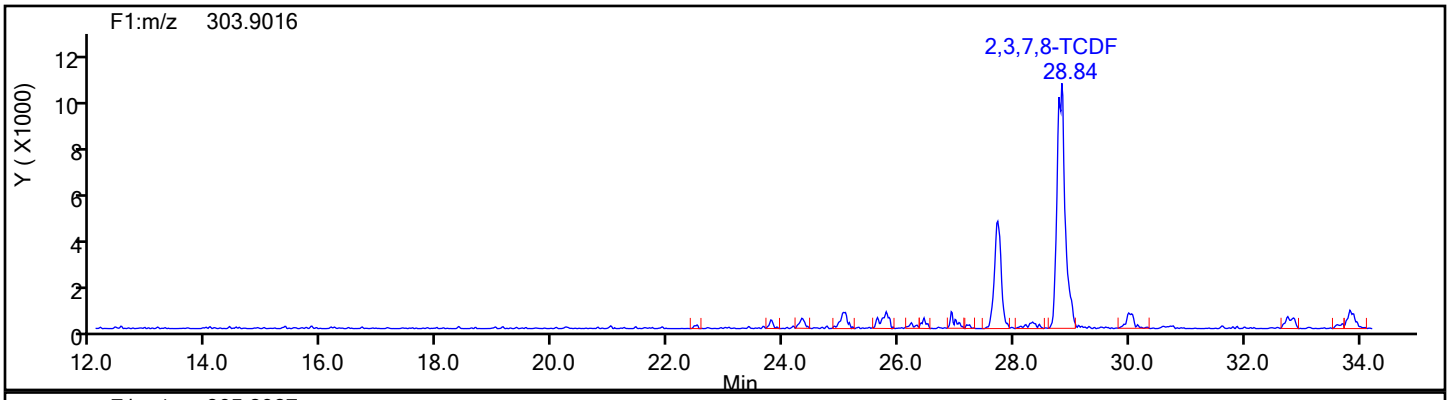


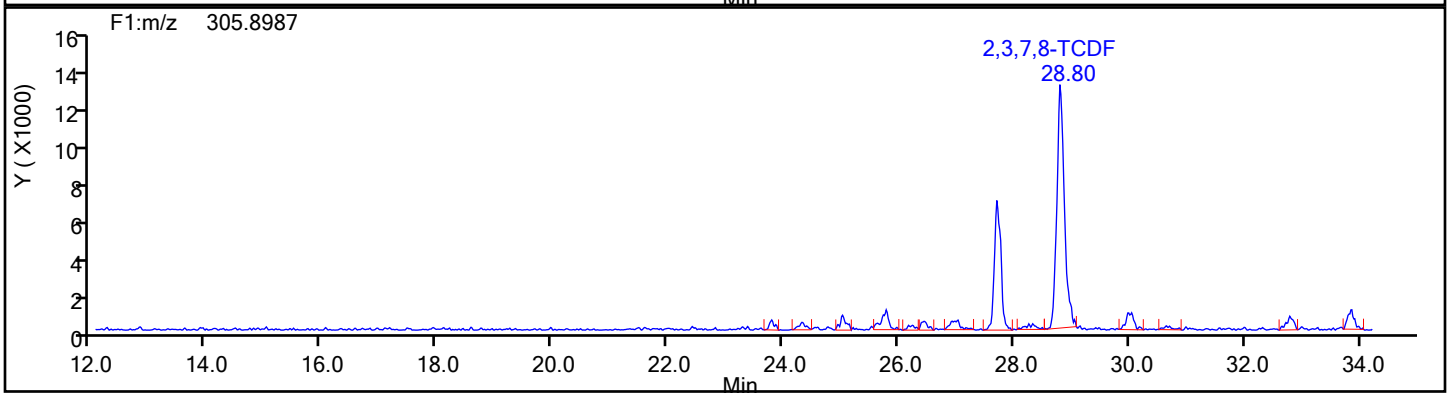
Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

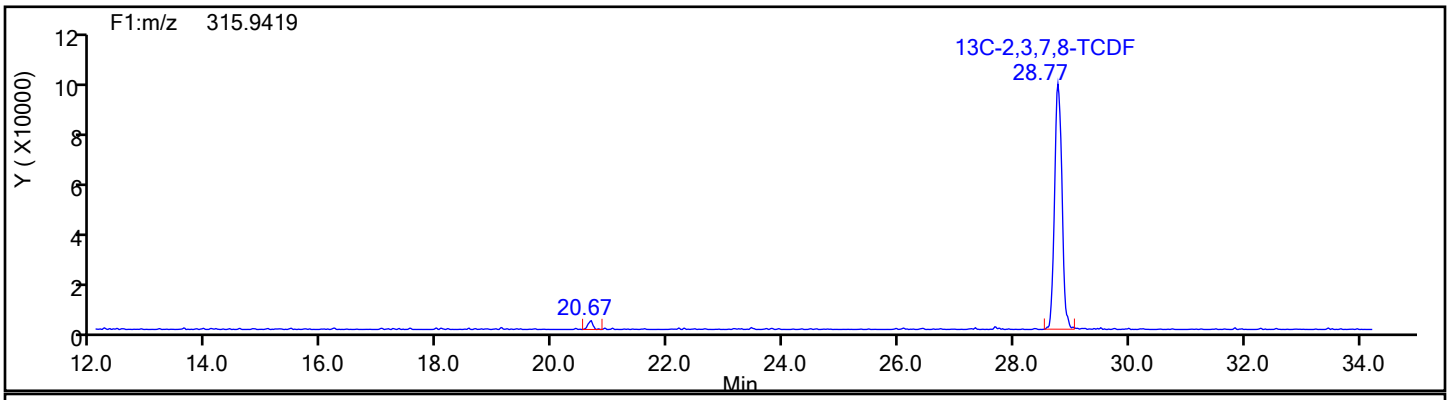
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

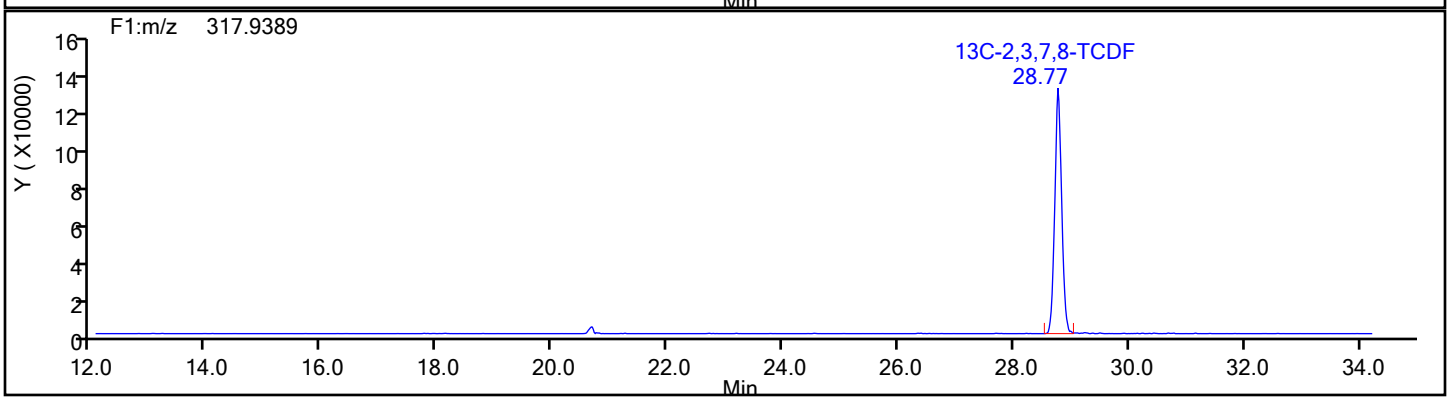
TCDF





TCDF Standards



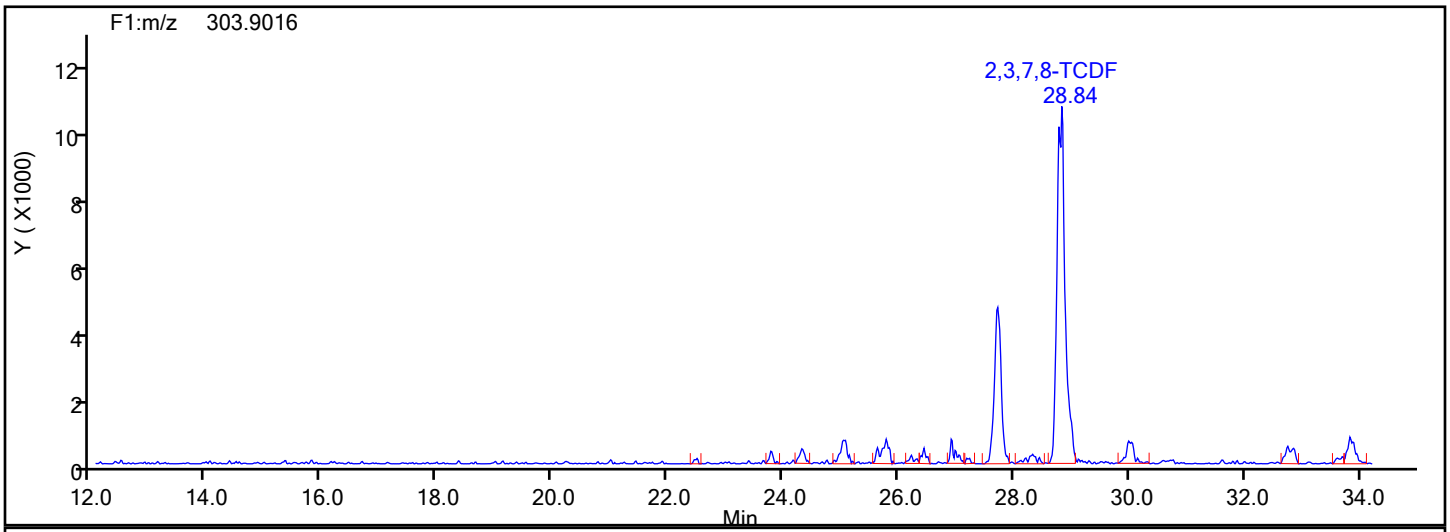


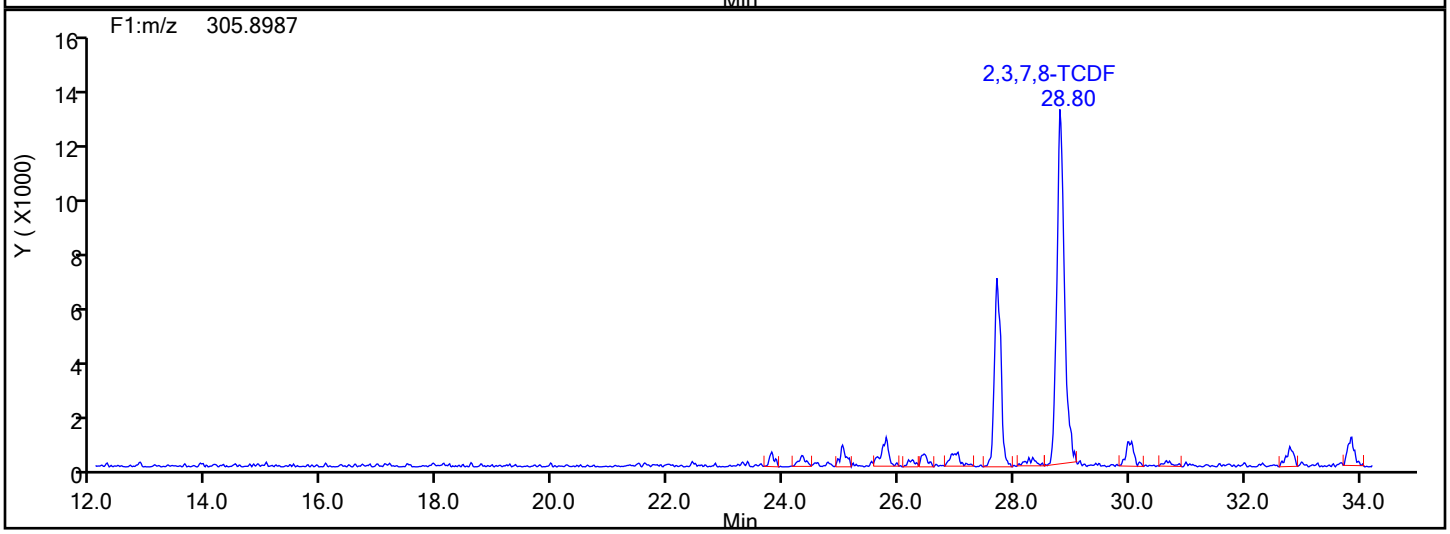
Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

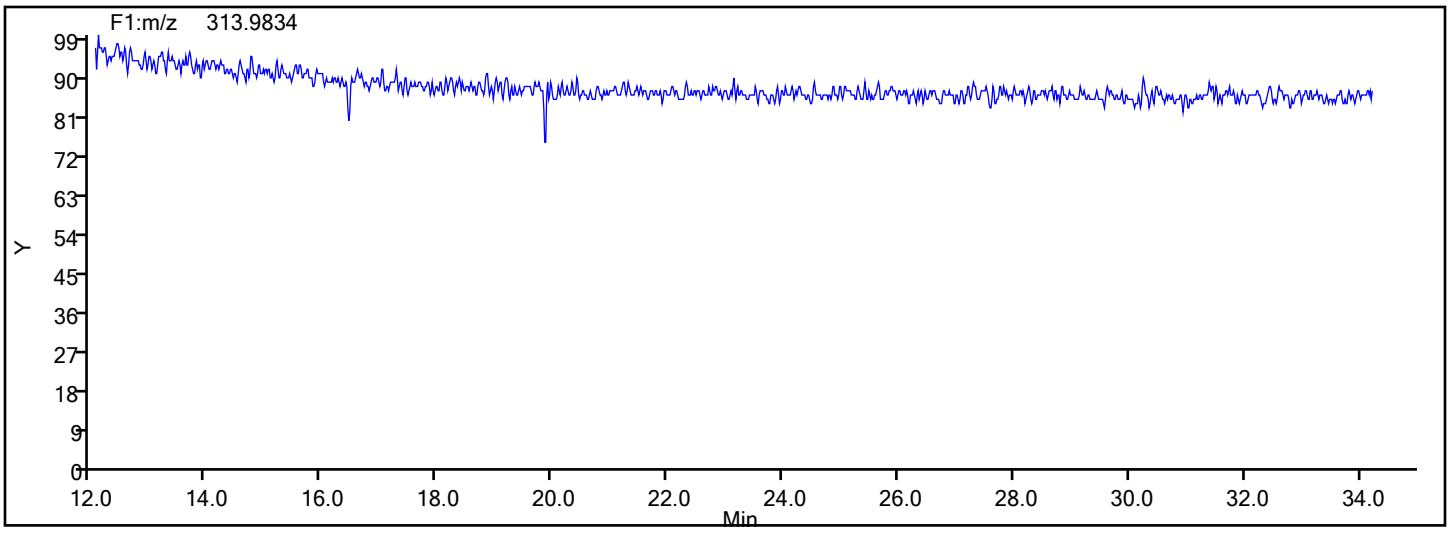
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

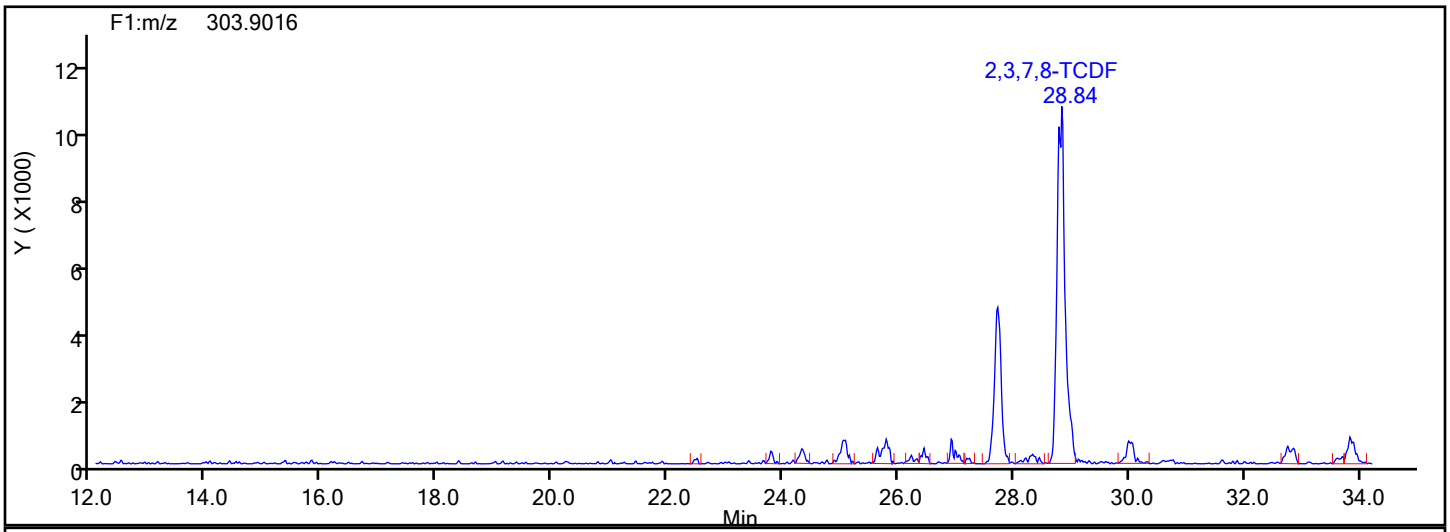


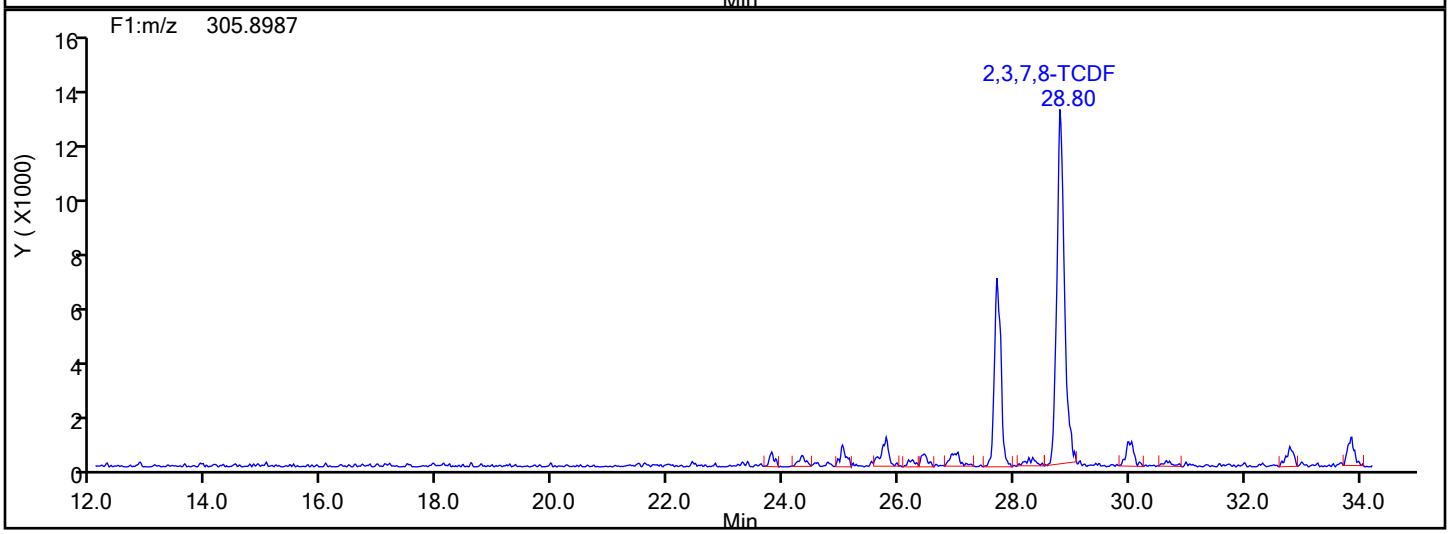
Report Date: 17-Dec-2019 10:08:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

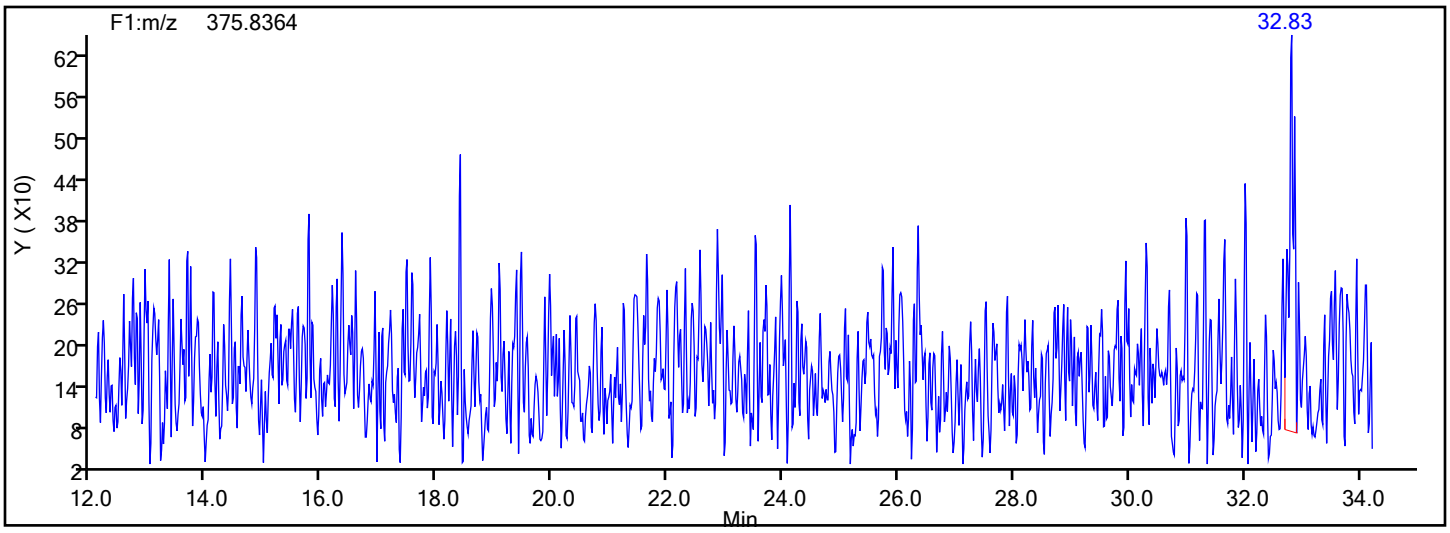
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

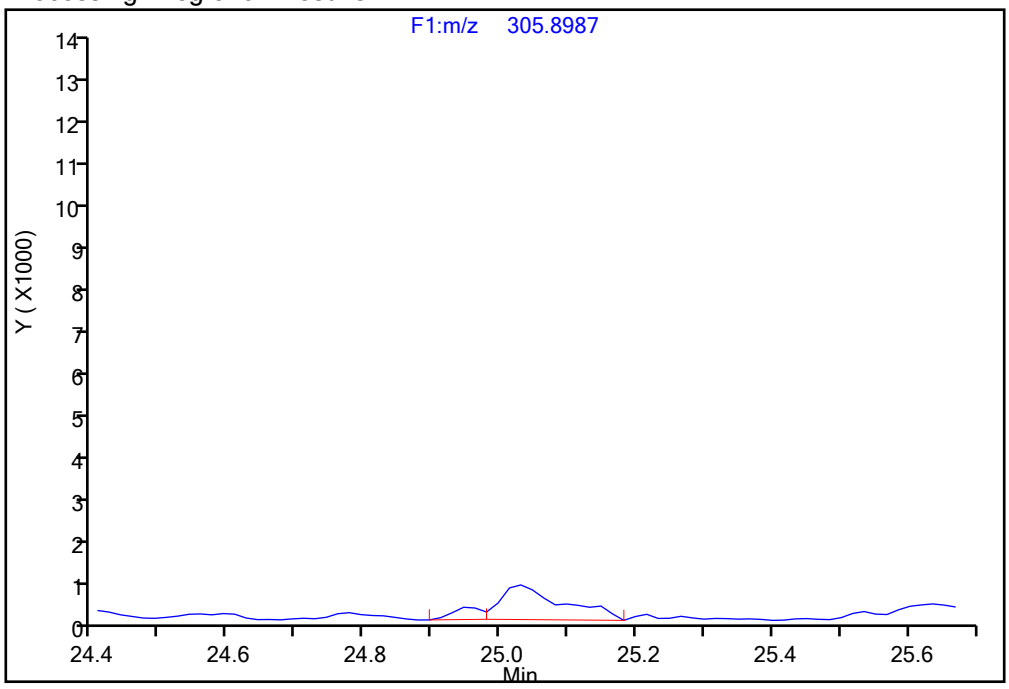
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

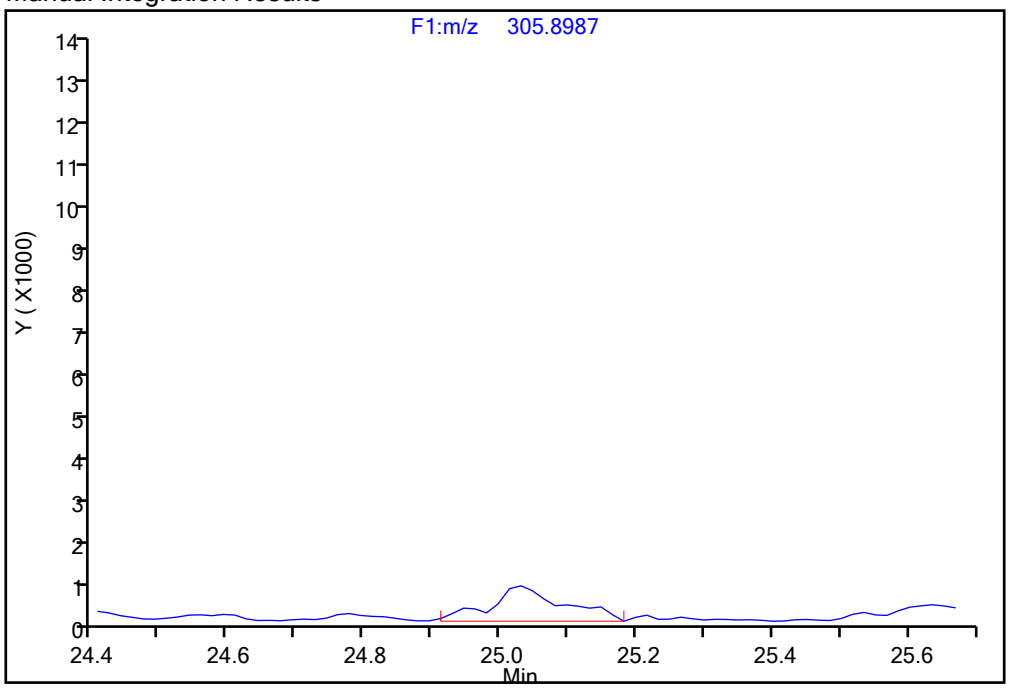
Processing Integration Results

RT = 25.030 Area = 4975



Manual Integration Results

RT = 25.030 Area = 5998 M



Reviewer: davidsonm, 17-Dec-2019 10:04:15

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

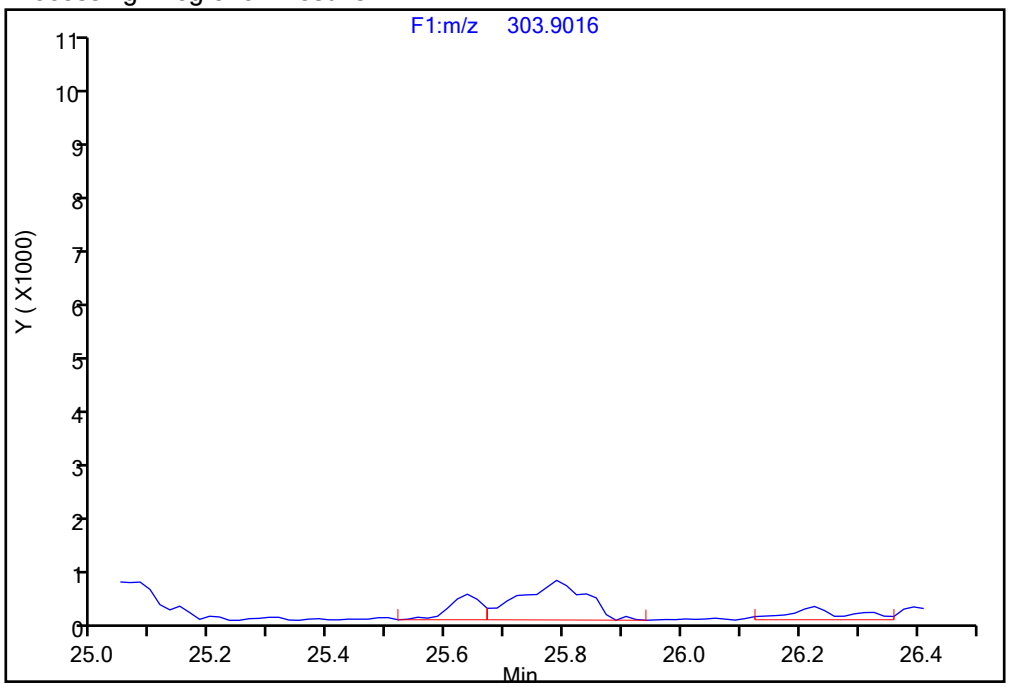
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

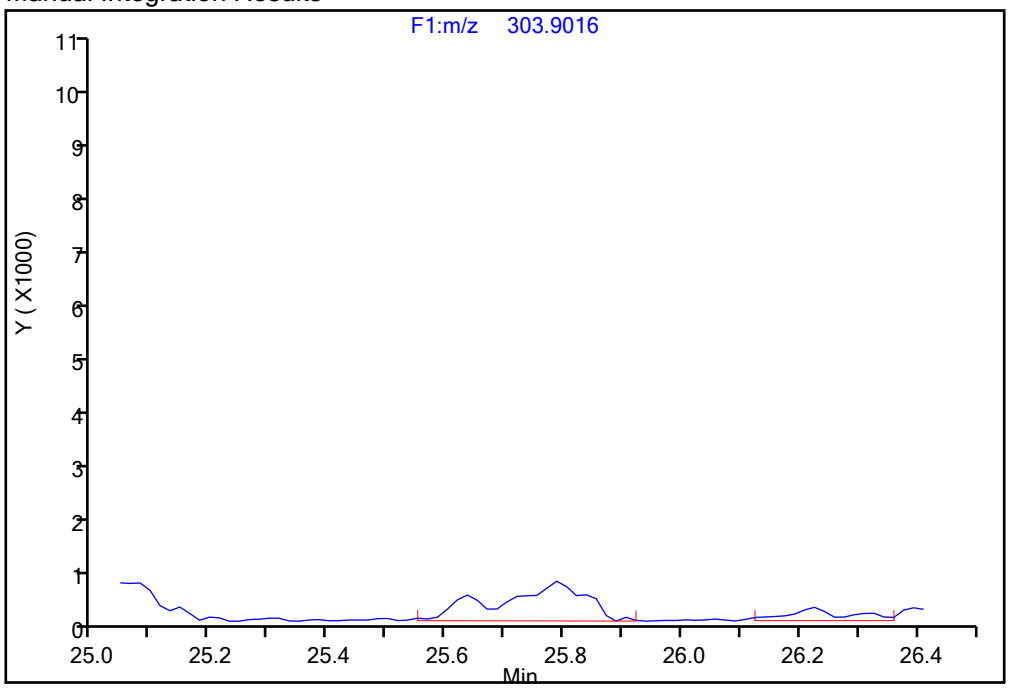
Processing Integration Results

RT = 25.788 Area = 5473



Manual Integration Results

RT = 25.788 Area = 7146 M



Reviewer: davidsonm, 17-Dec-2019 10:04:39

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

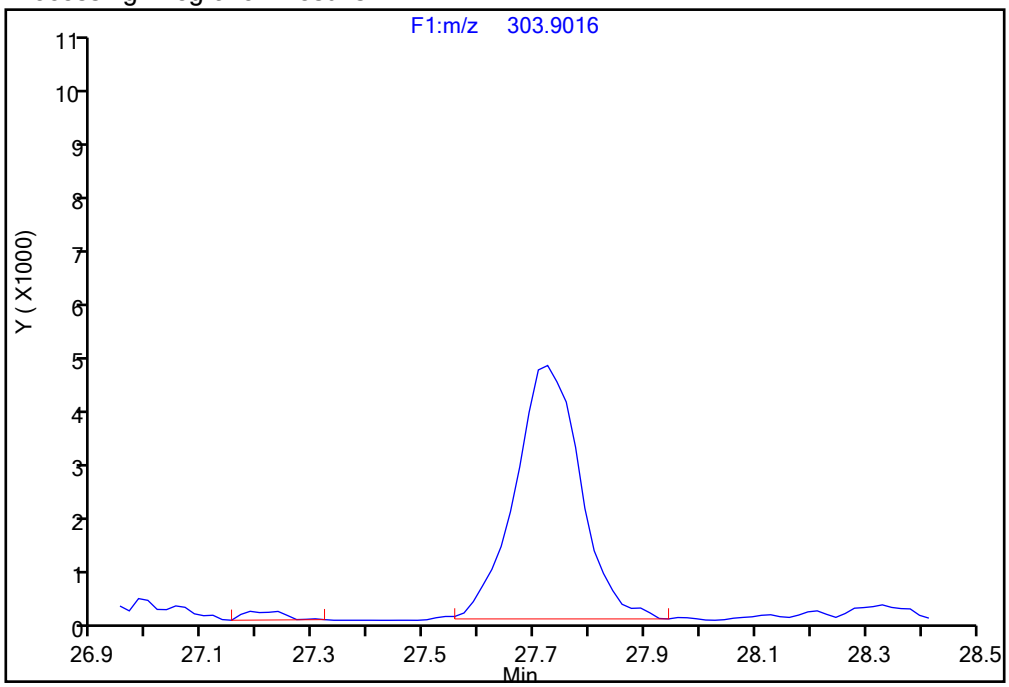
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

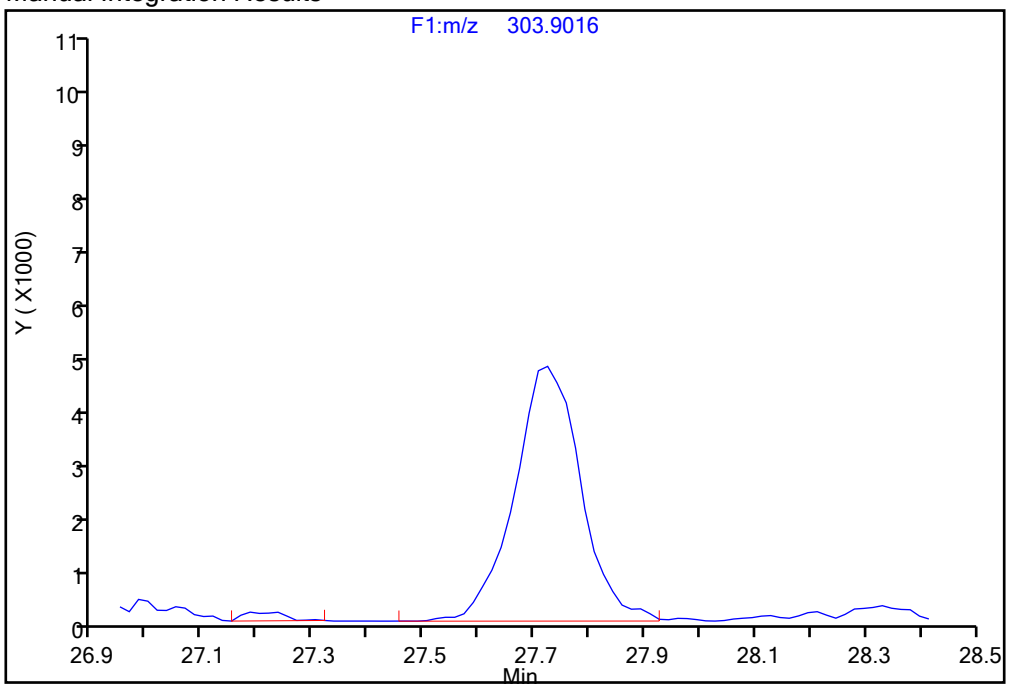
Processing Integration Results

RT = 27.724 Area = 37626



Manual Integration Results

RT = 27.724 Area = 38326 M



Reviewer: davidsonm, 17-Dec-2019 10:04:39

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

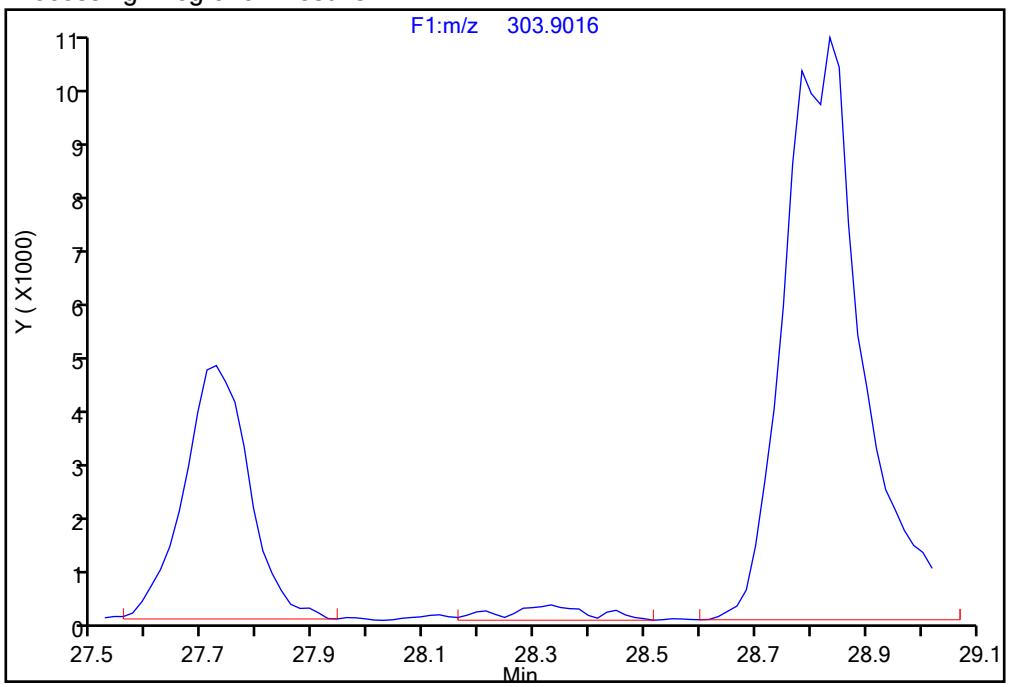
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

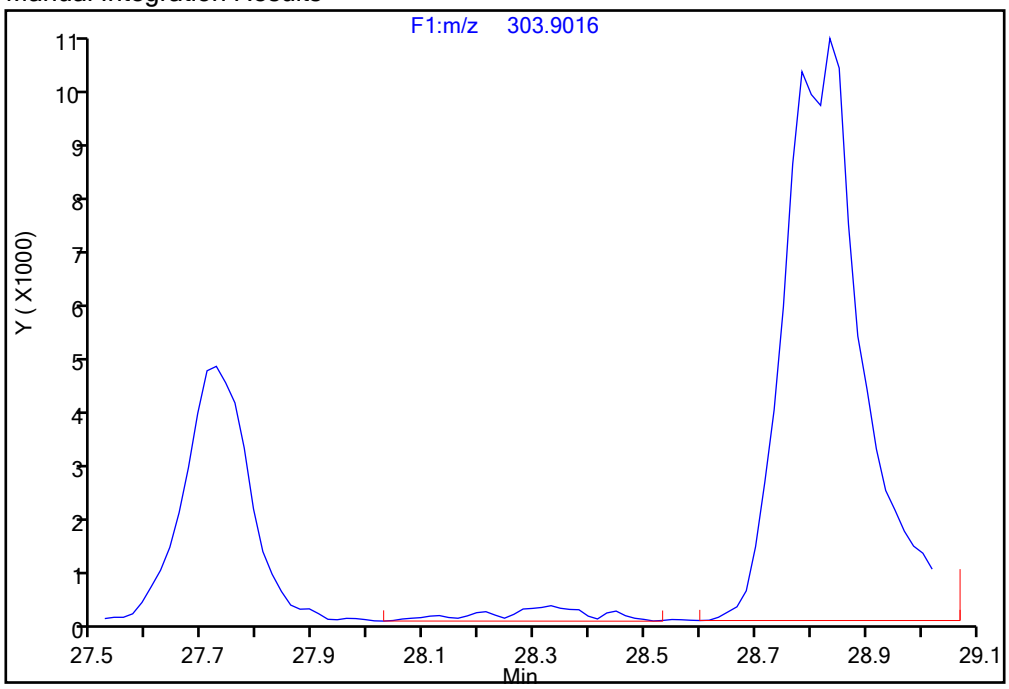
Processing Integration Results

RT = 28.330 Area = 2951



Manual Integration Results

RT = 28.330 Area = 3457 M



Reviewer: davidsonm, 17-Dec-2019 10:04:39

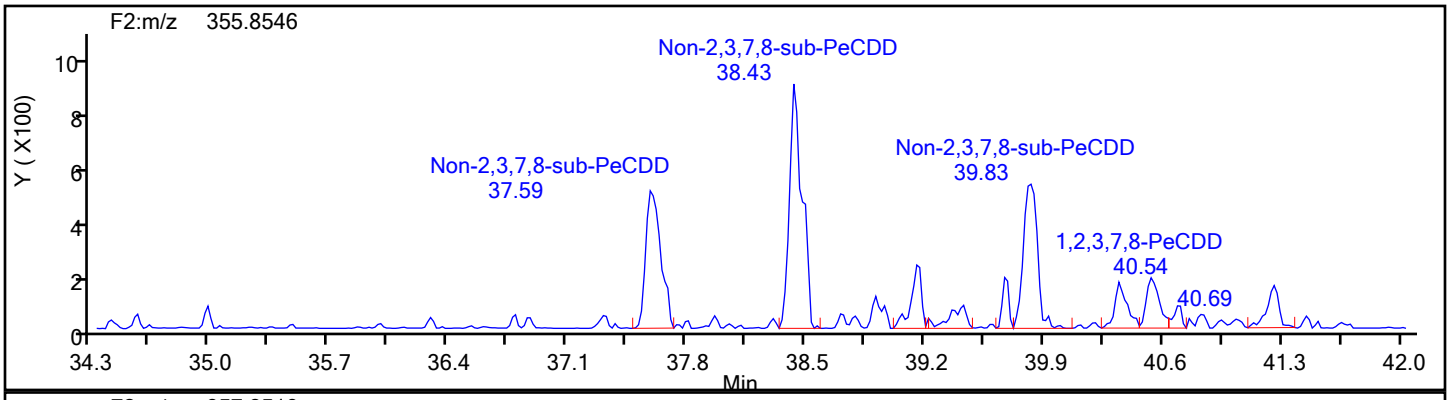
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

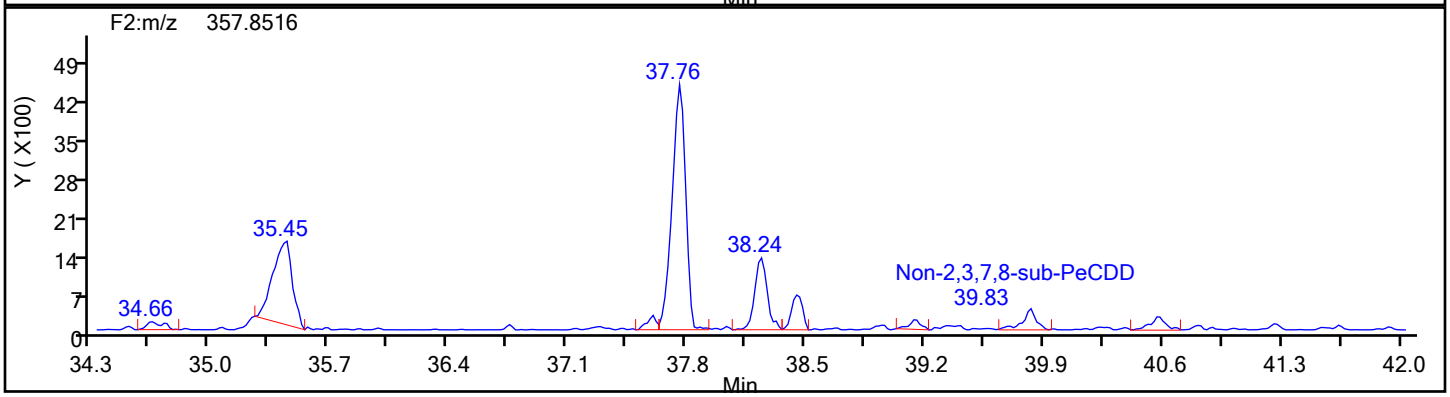
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

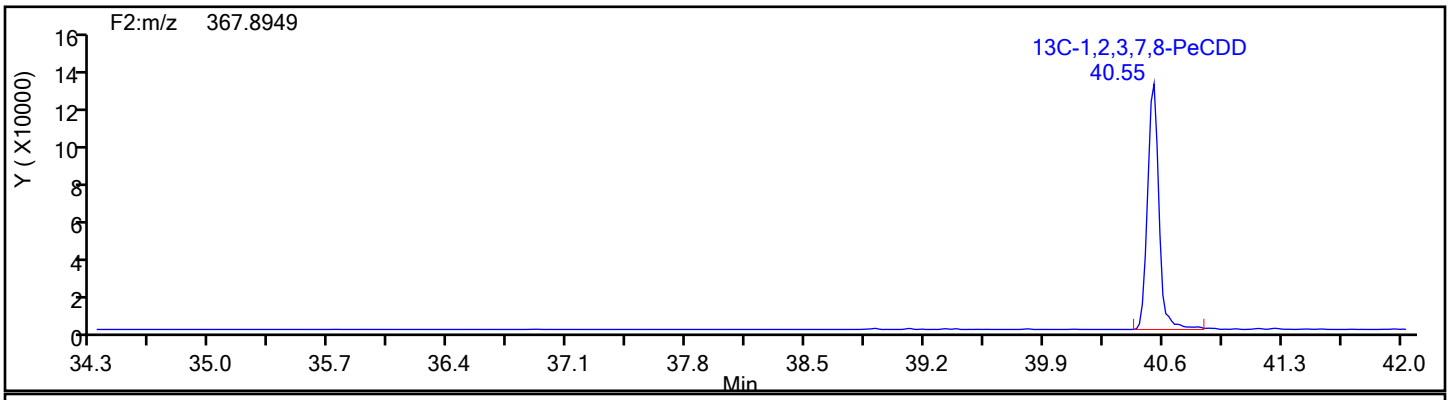
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

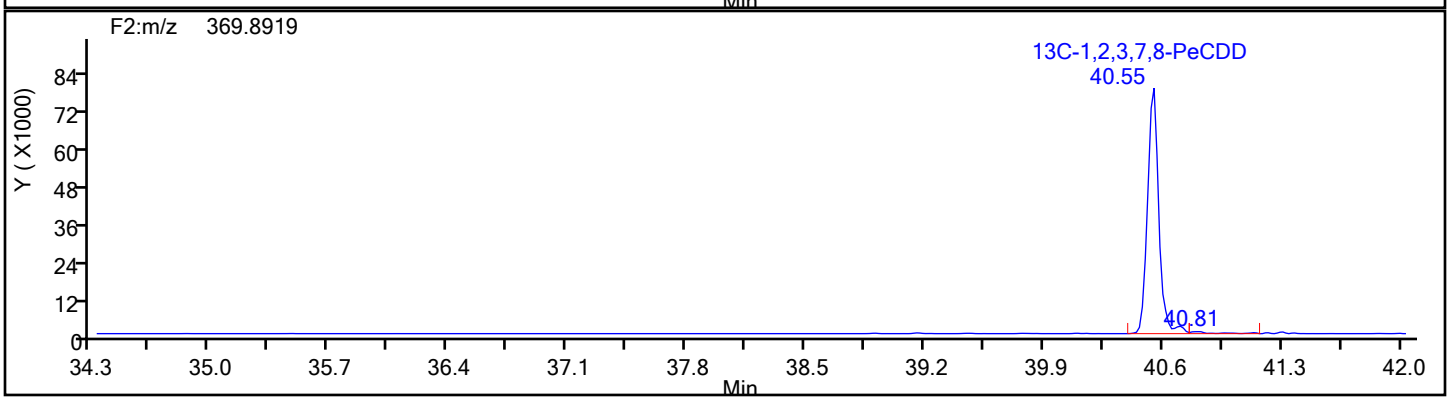
PeCDD





PeCDD Standards



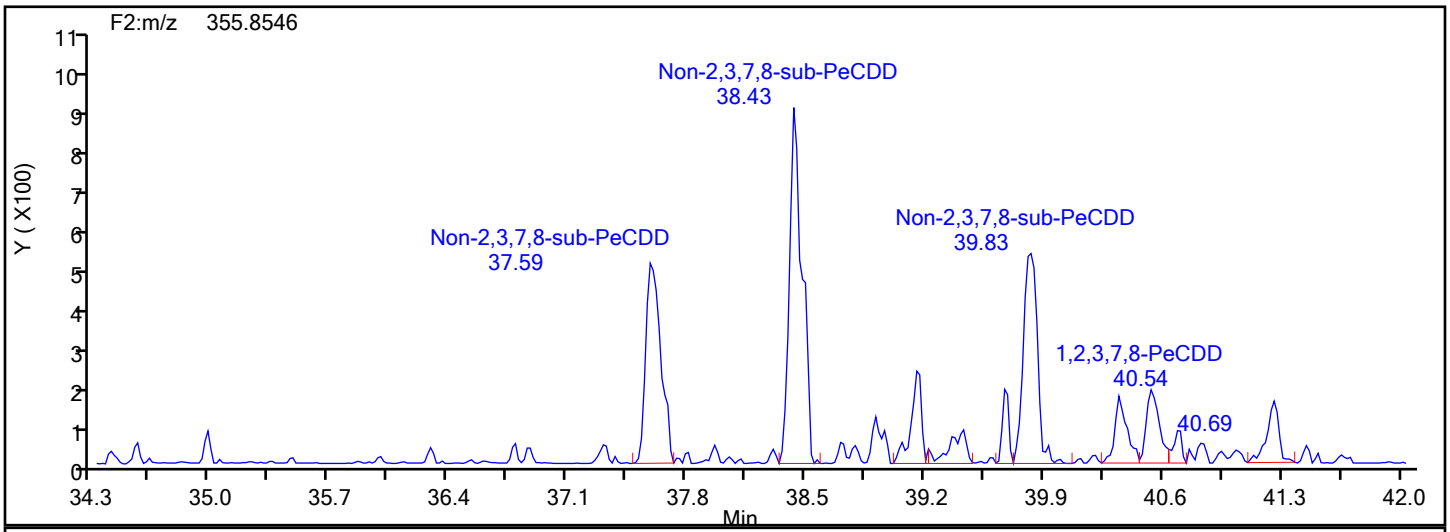


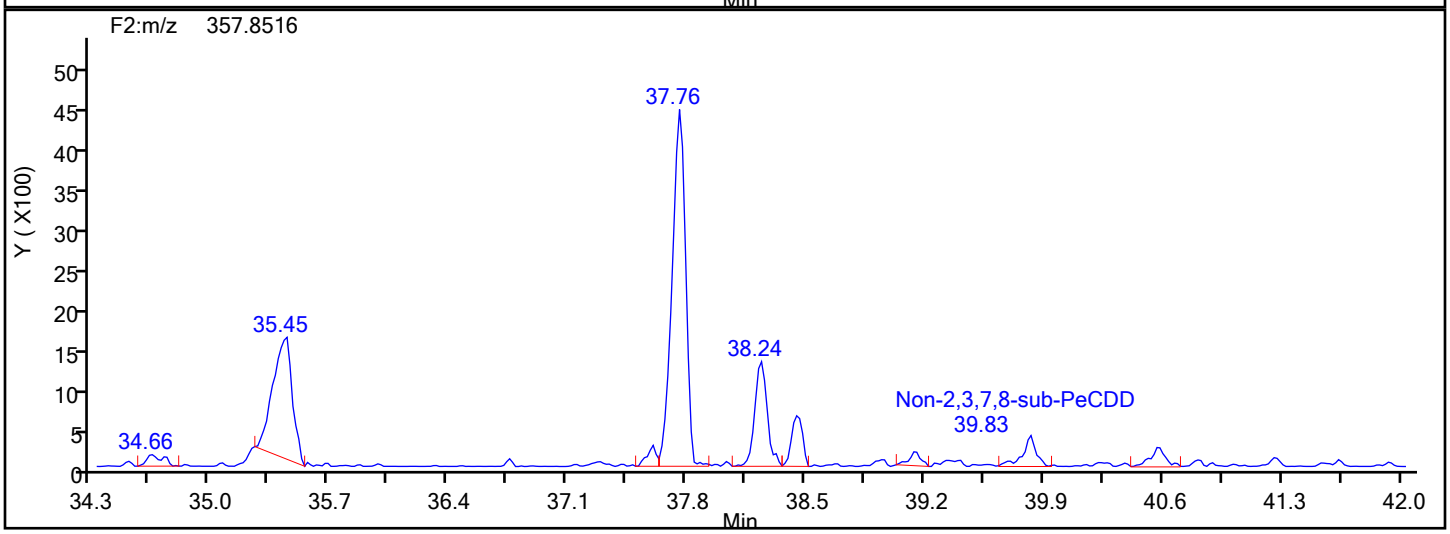
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

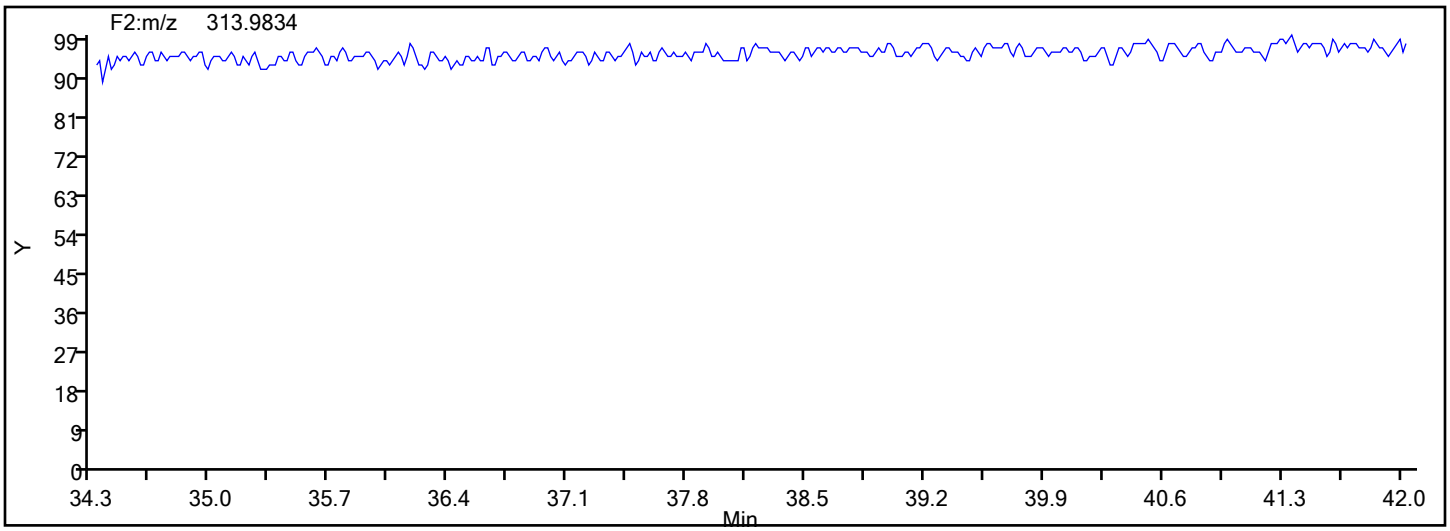
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

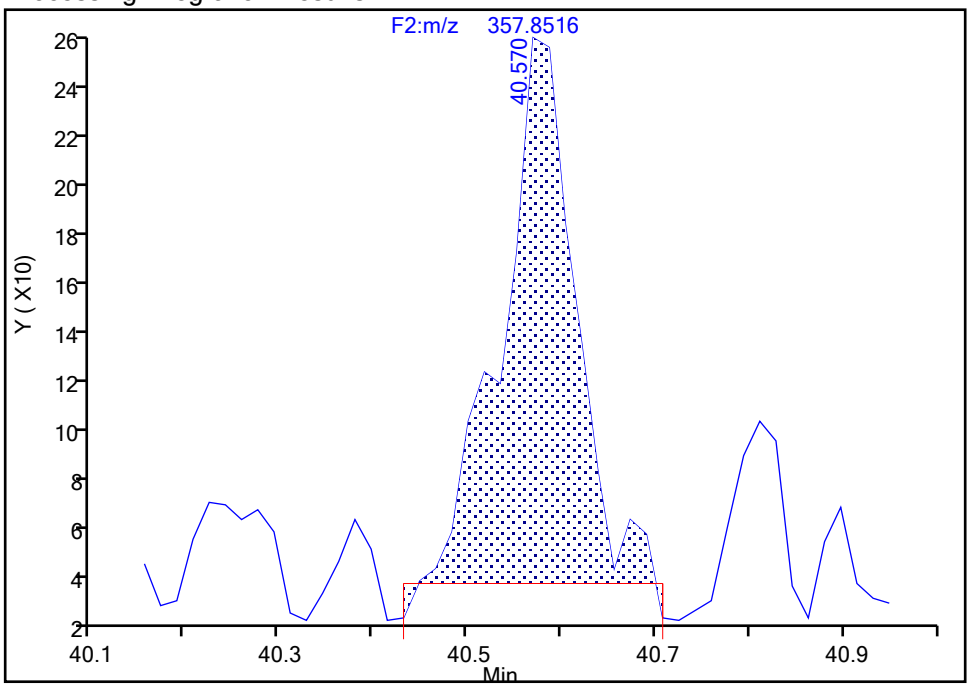
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

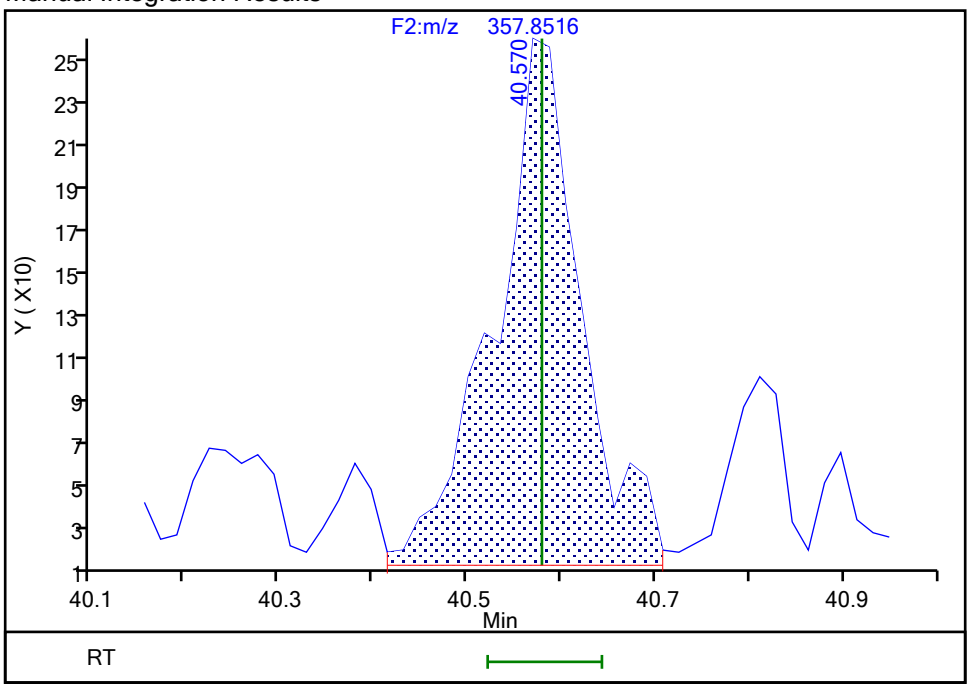
Processing Integration Results

RT: 40.57
Area: 1203
Amount: 0.118075
Amount Units: pg/ul



Manual Integration Results

RT: 40.57
Area: 1557
Amount: 0.124404
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:05:15

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

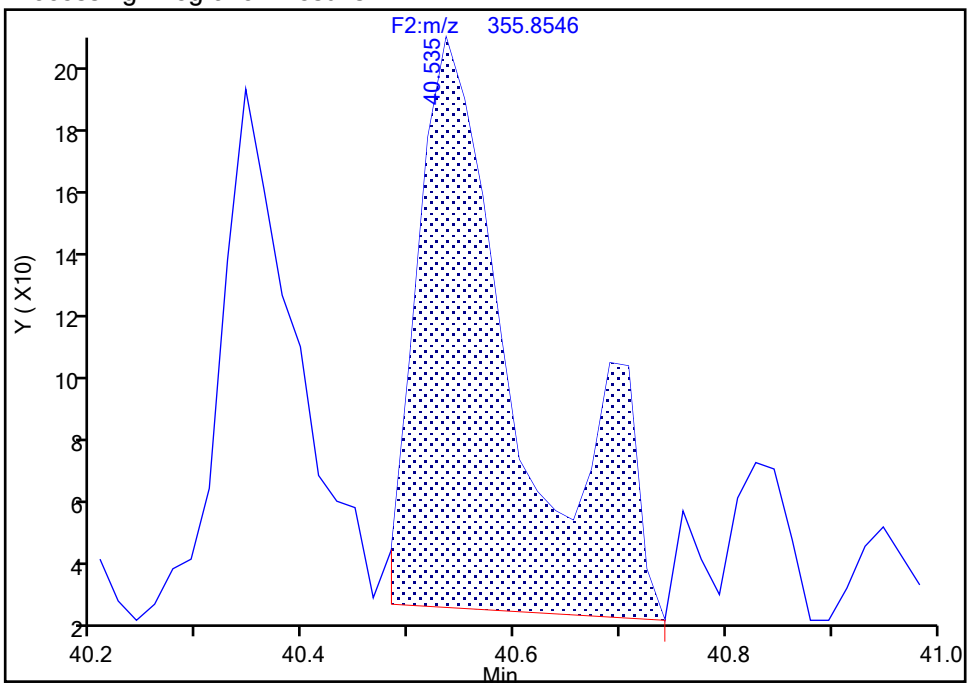
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

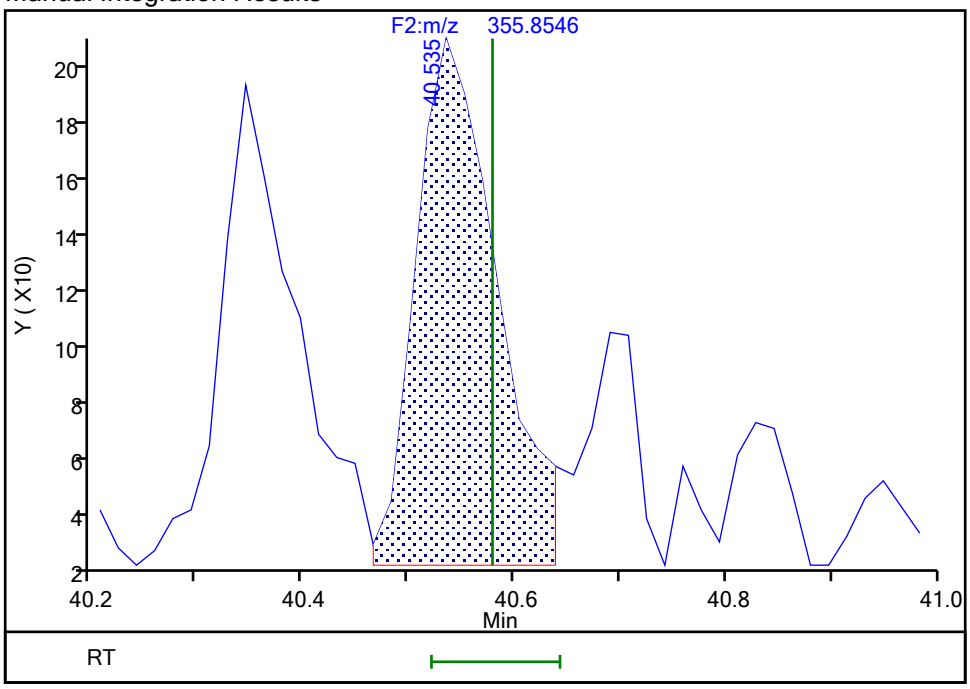
Processing Integration Results

RT: 40.54
Area: 1185
Amount: 0.118075
Amount Units: pg/ul



Manual Integration Results

RT: 40.54
Area: 959
Amount: 0.124404
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:05:25

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

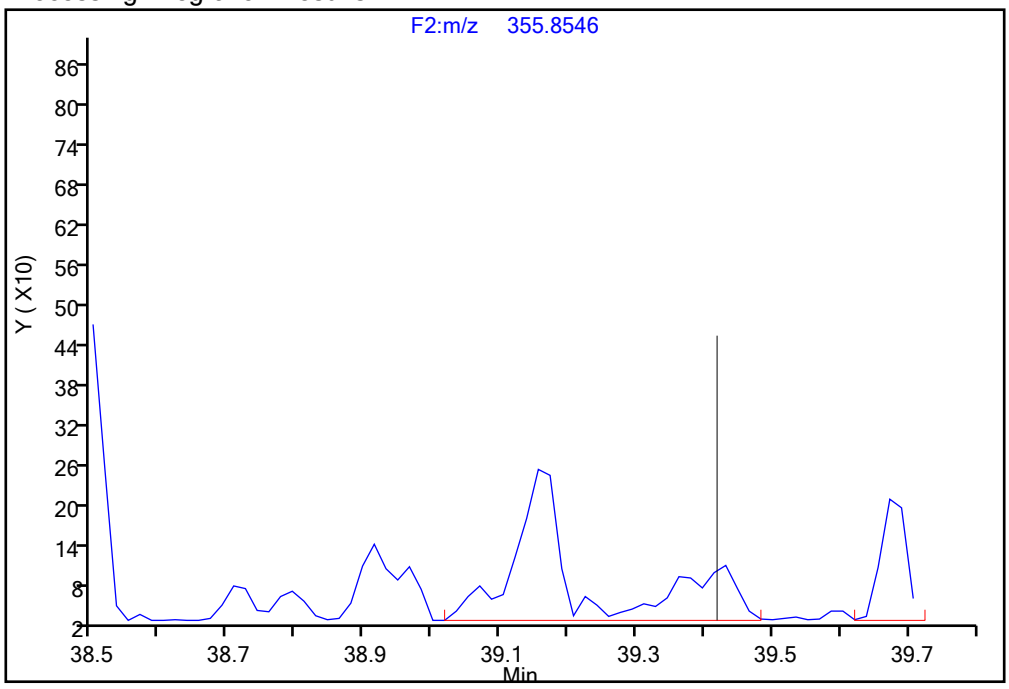
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

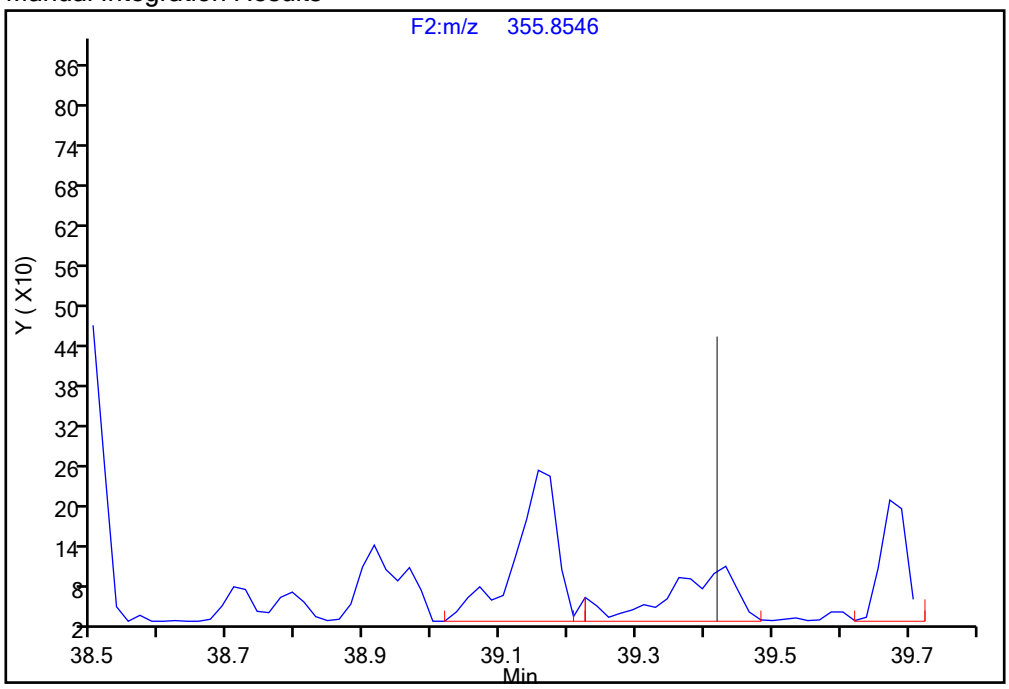
Processing Integration Results

RT = 39.156 Area = 1576



Manual Integration Results

RT = 39.156 Area = 983 M



Reviewer: davidsonm, 17-Dec-2019 10:05:37

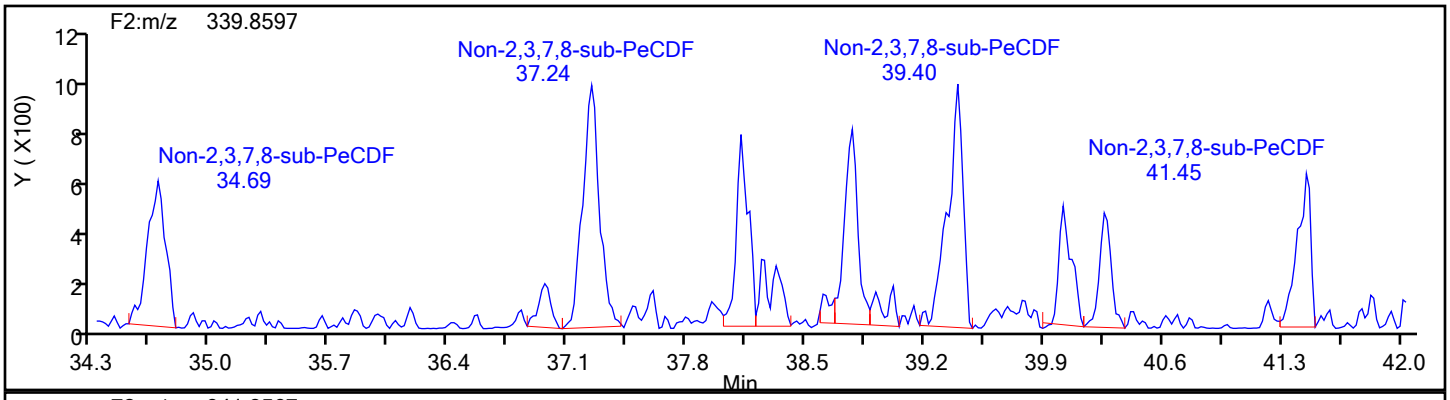
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

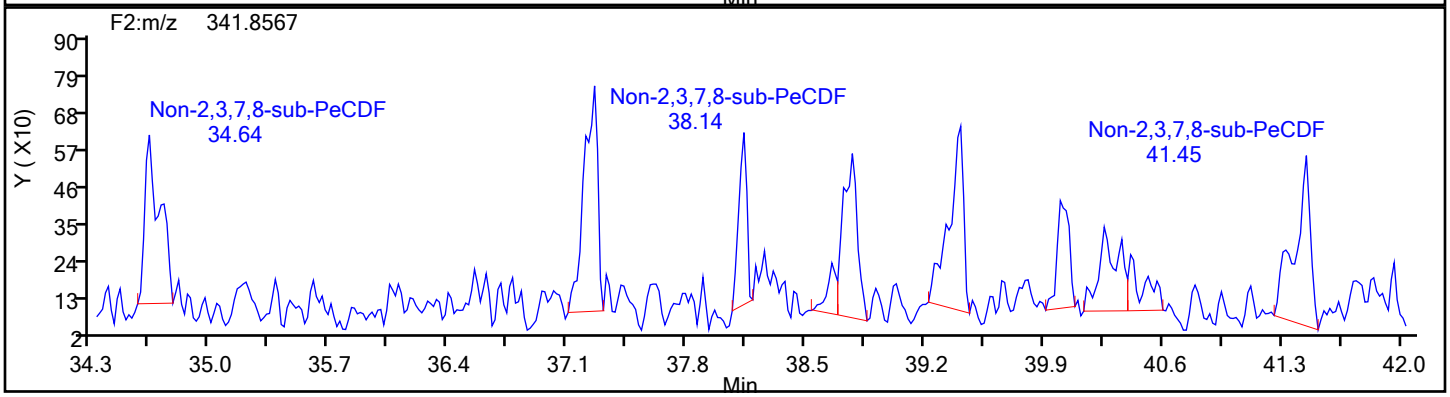
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

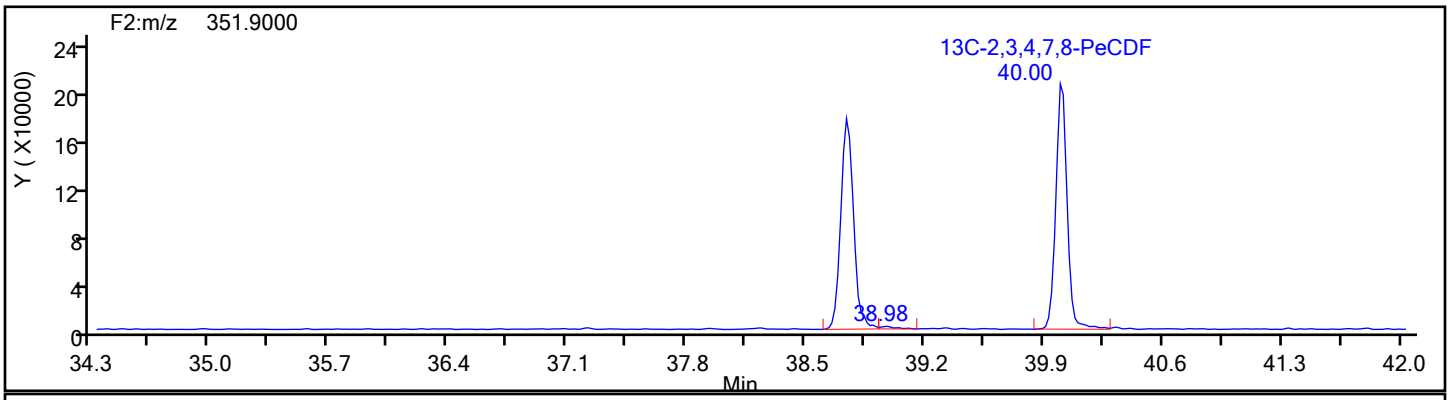
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

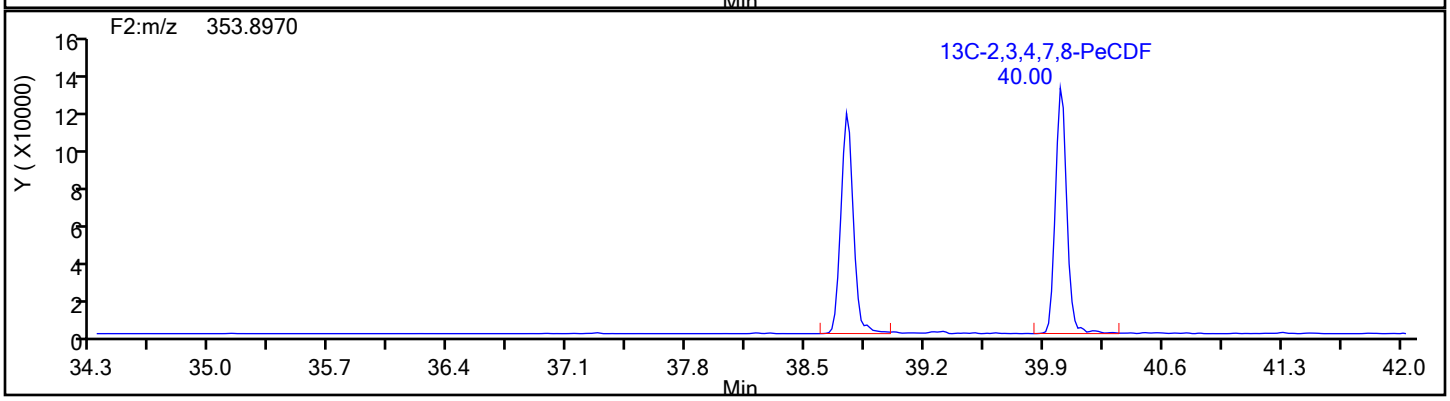
PeCDF





PeCDF Standards



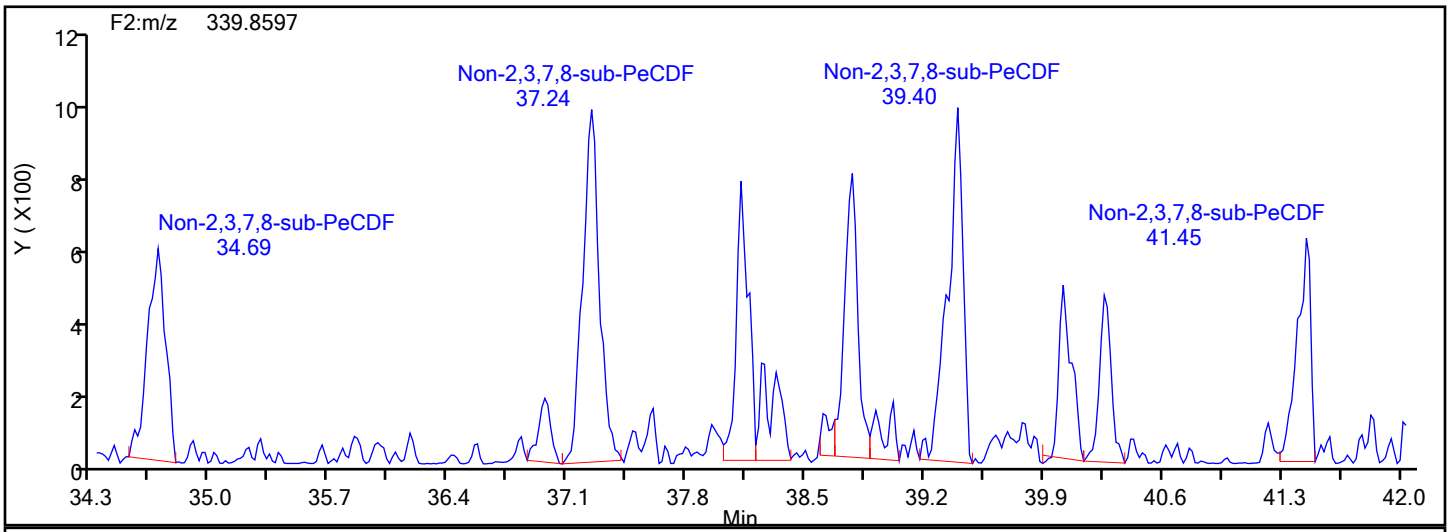


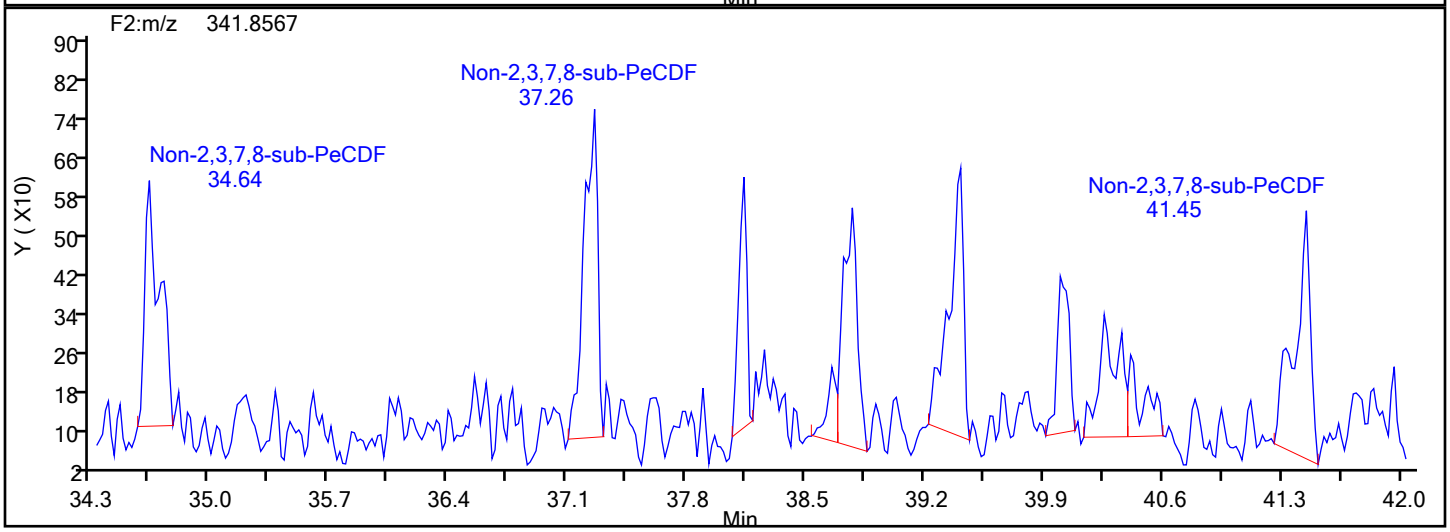
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

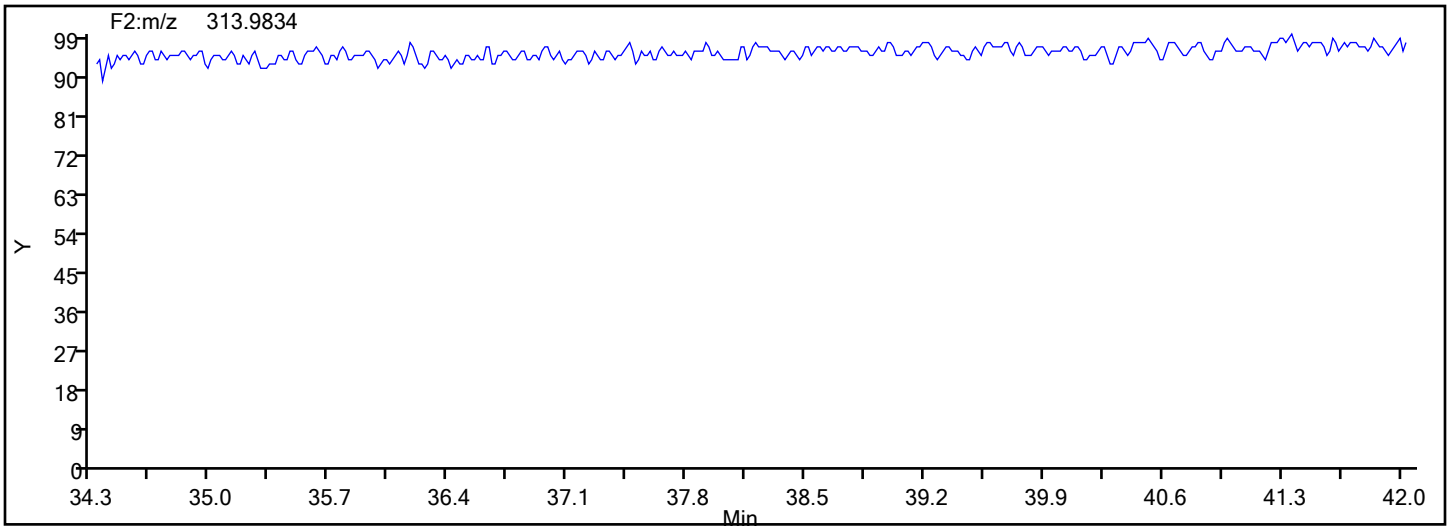
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

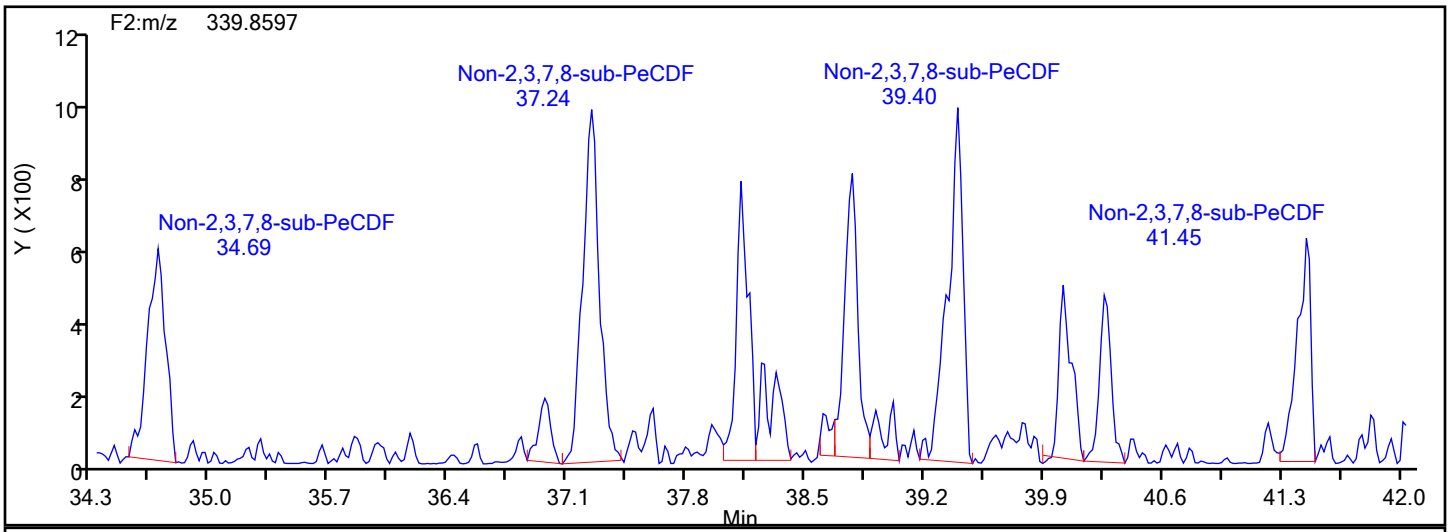


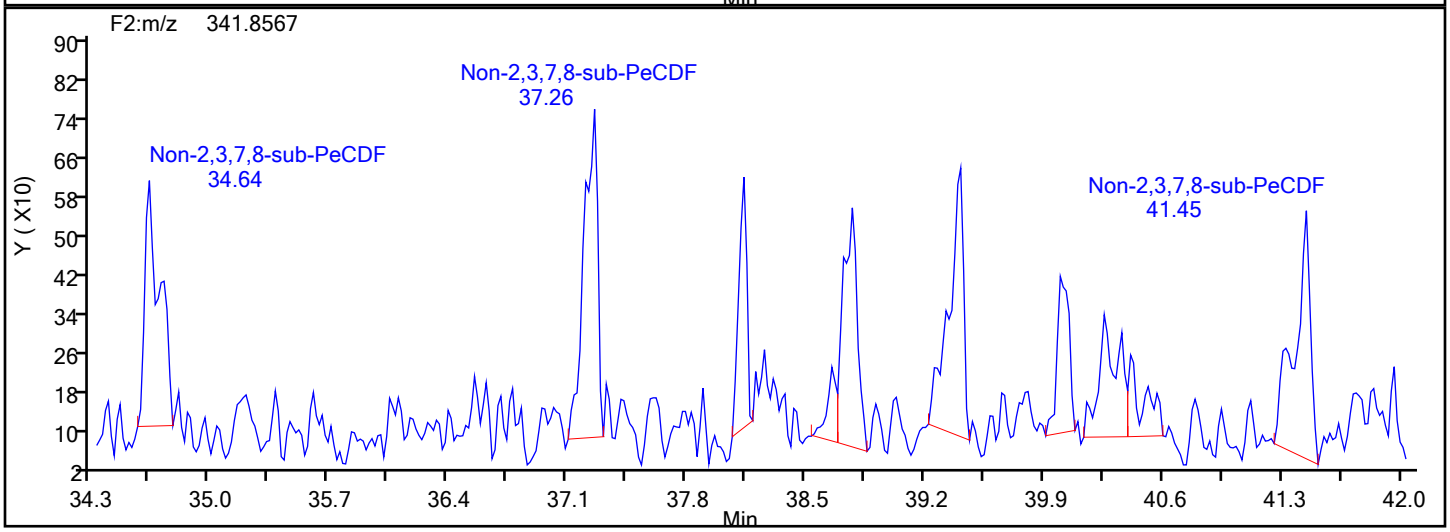
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

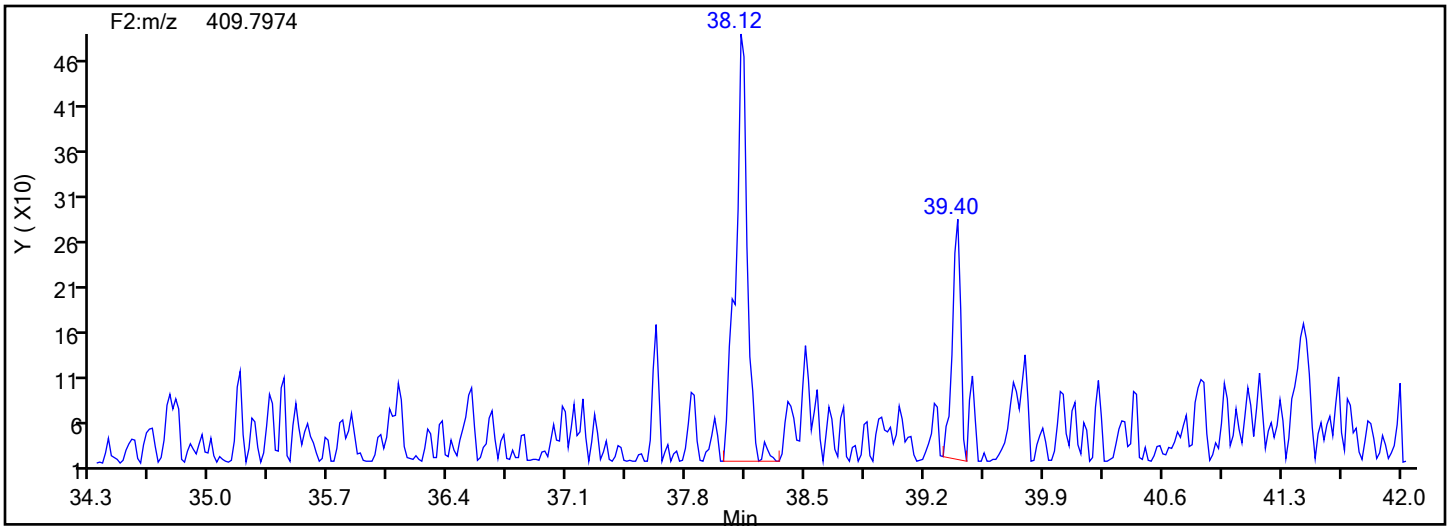
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

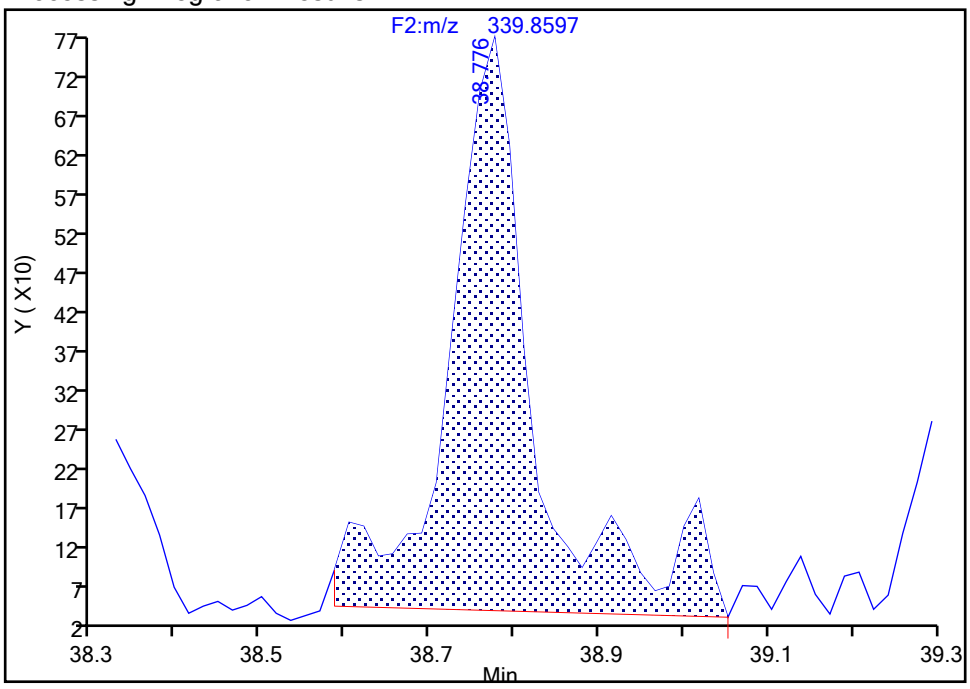
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

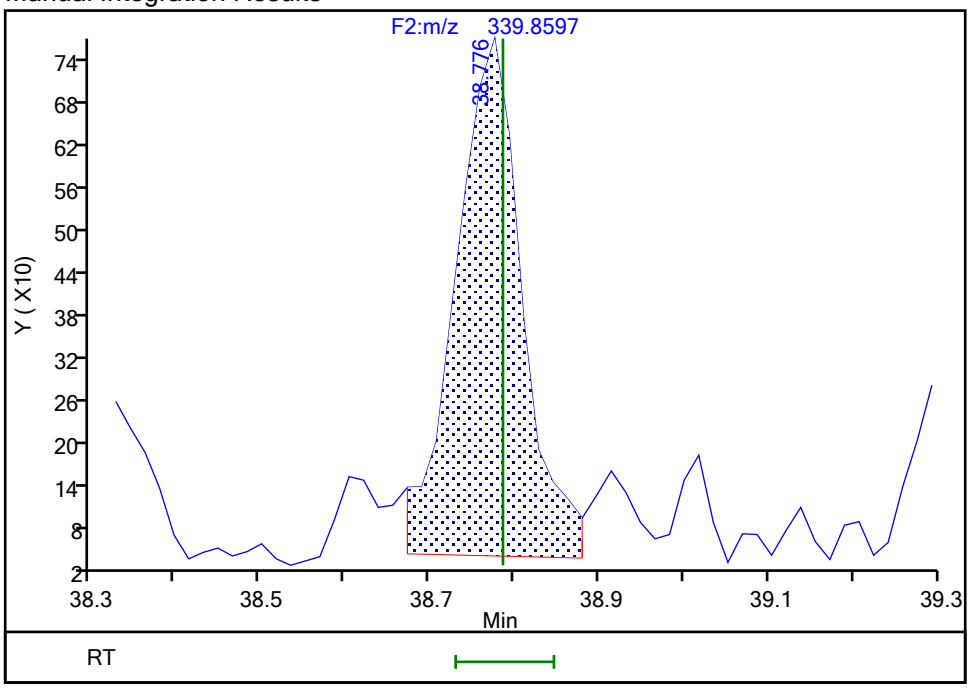
Processing Integration Results

RT: 38.78
Area: 5179
Amount: 0.237394
Amount Units: pg/ul



Manual Integration Results

RT: 38.78
Area: 3943
Amount: 0.187381
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:05:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

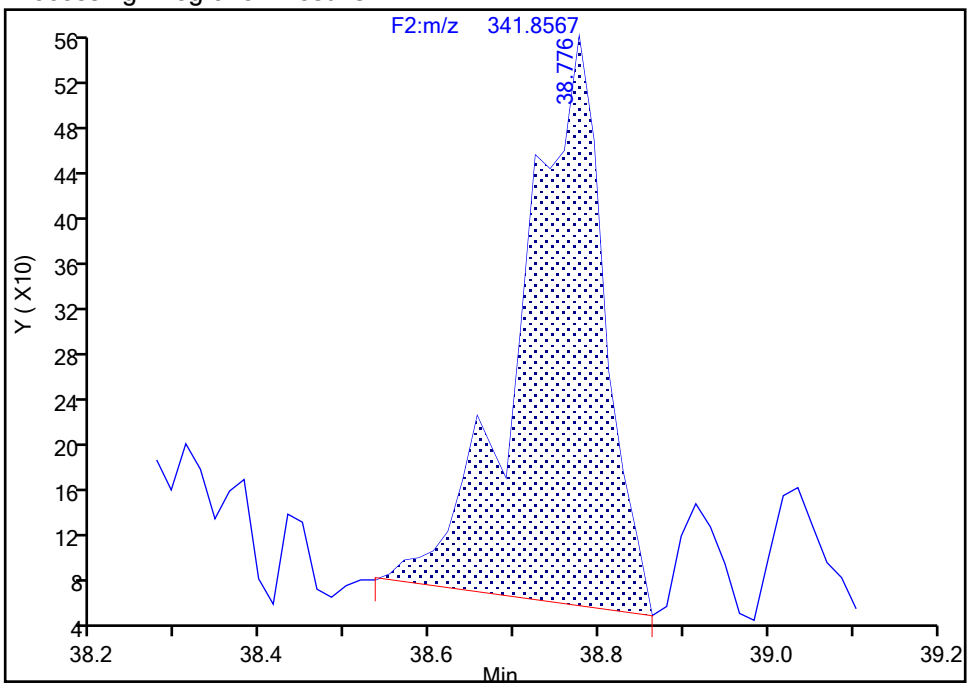
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

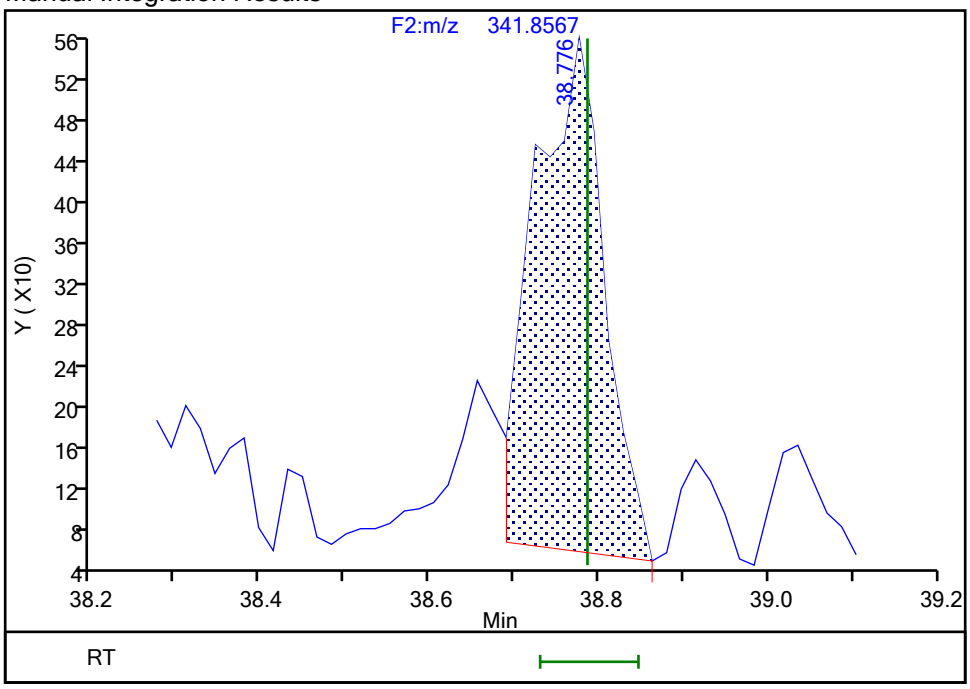
Processing Integration Results

RT: 38.78
Area: 3384
Amount: 0.237394
Amount Units: pg/ul



Manual Integration Results

RT: 38.78
Area: 2816
Amount: 0.187381
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:05:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

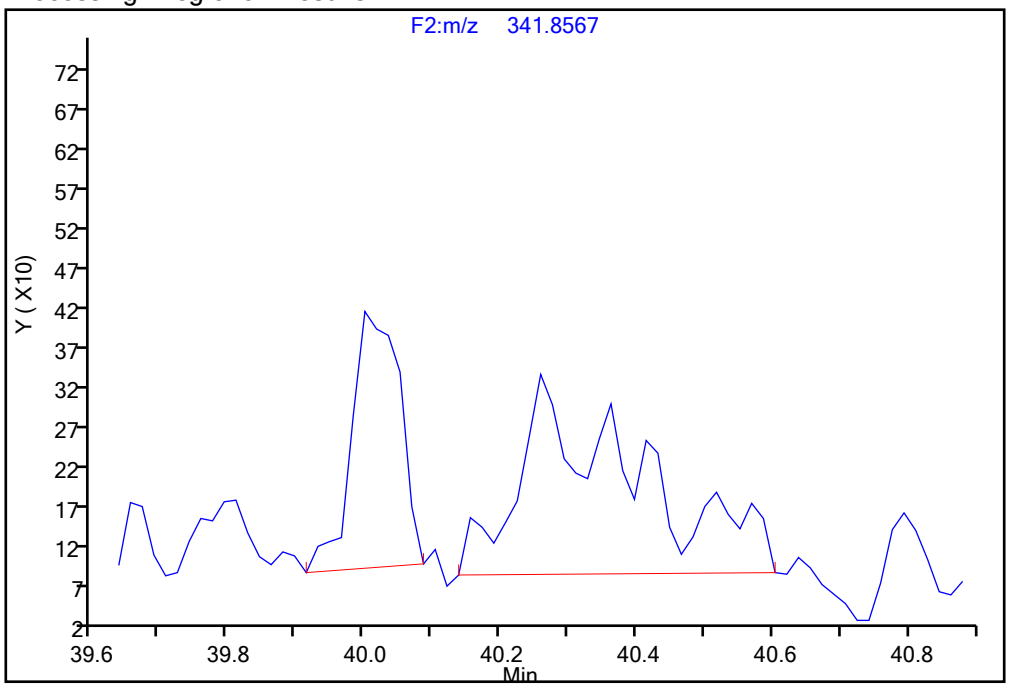
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

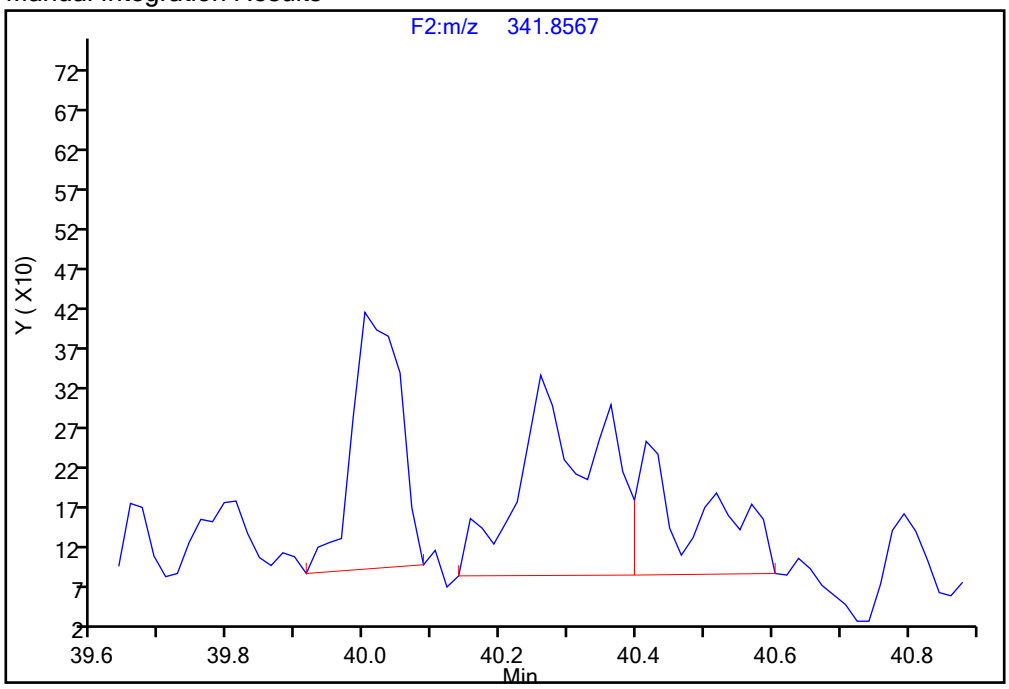
Processing Integration Results

RT = 40.259 Area = 2978



Manual Integration Results

RT = 40.259 Area = 1987 M



Reviewer: davidsonm, 17-Dec-2019 10:06:06

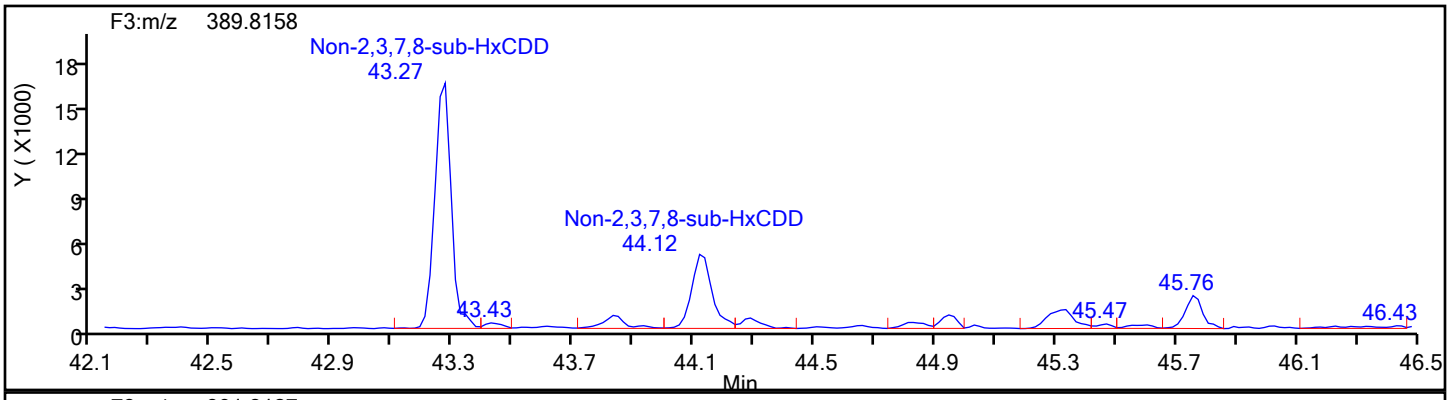
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

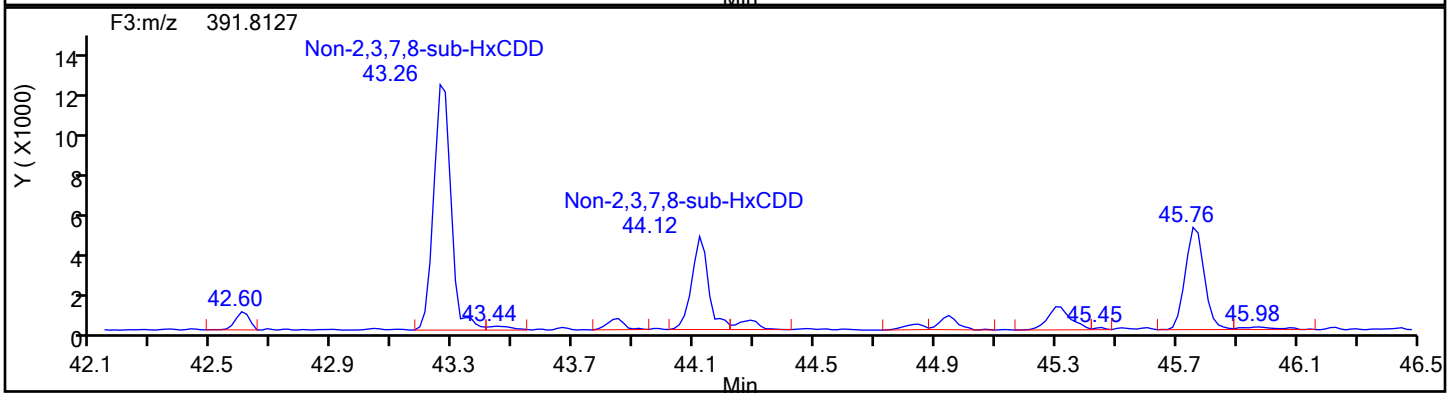
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

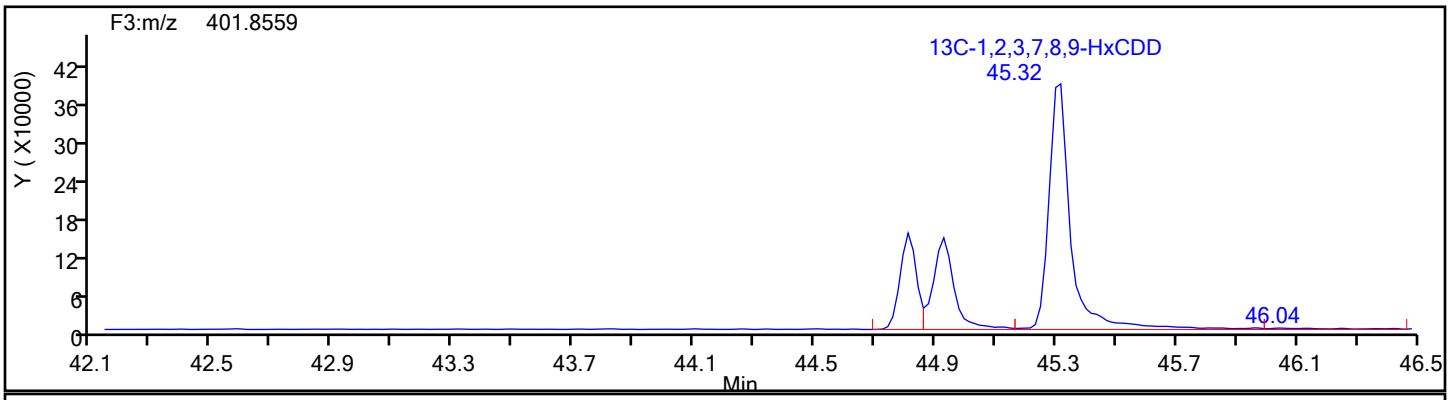
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

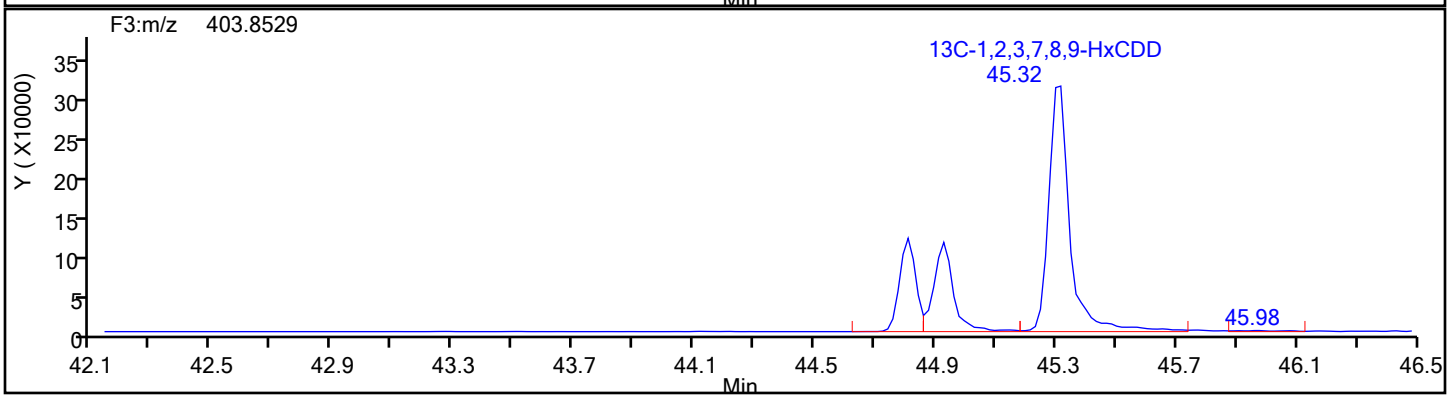
HxCDD





HxCDD Standards



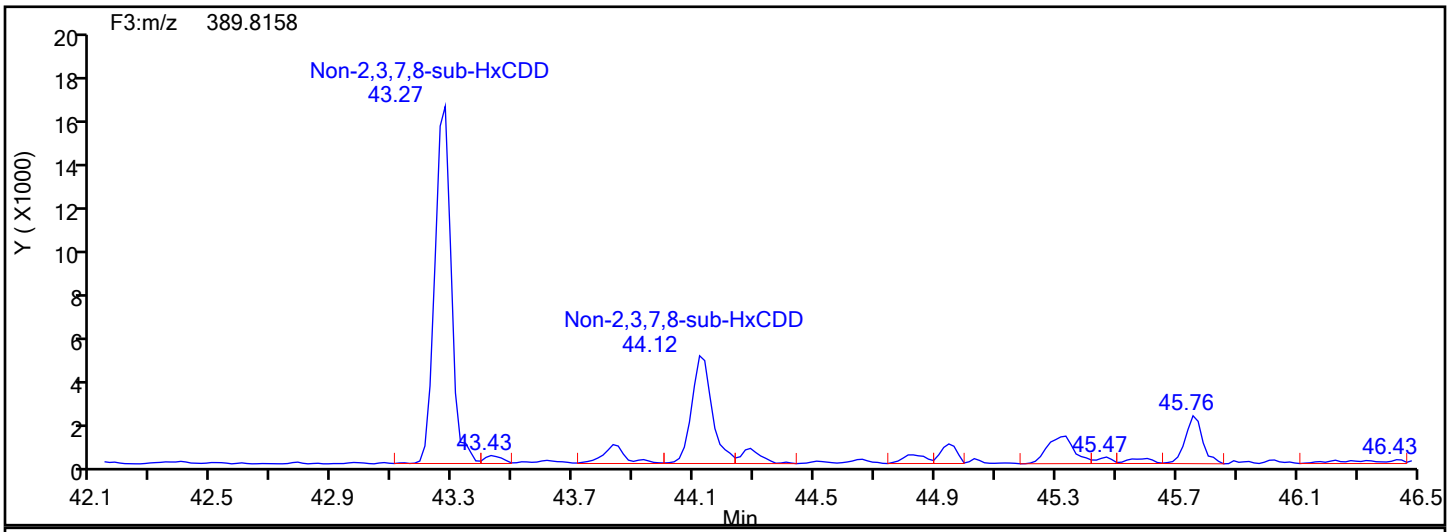


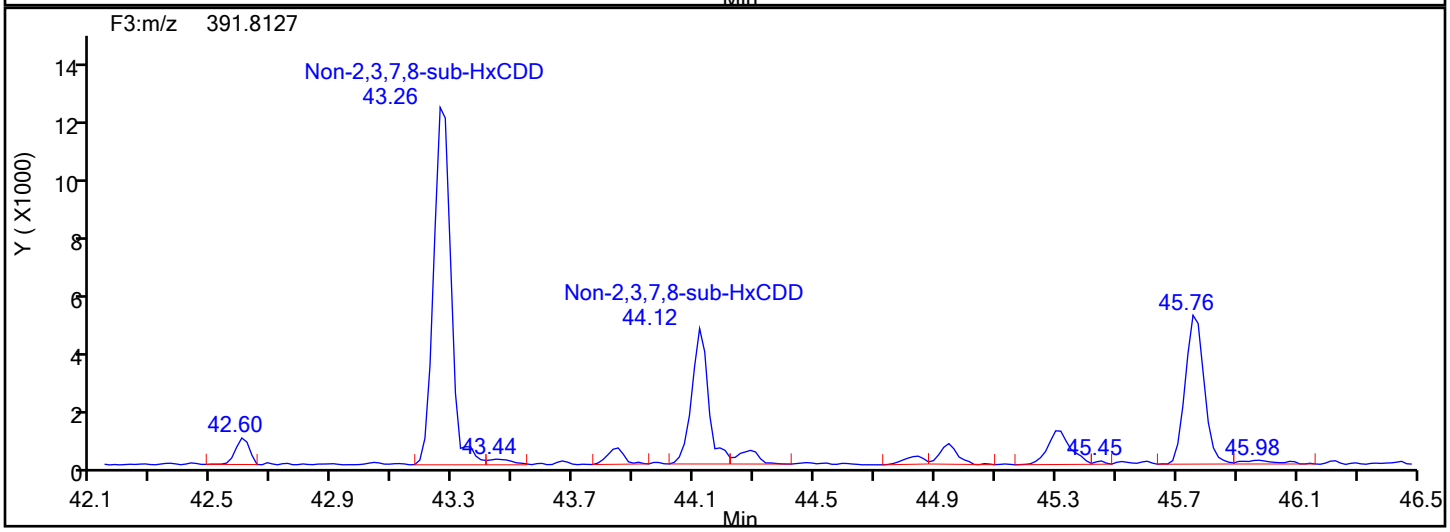
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

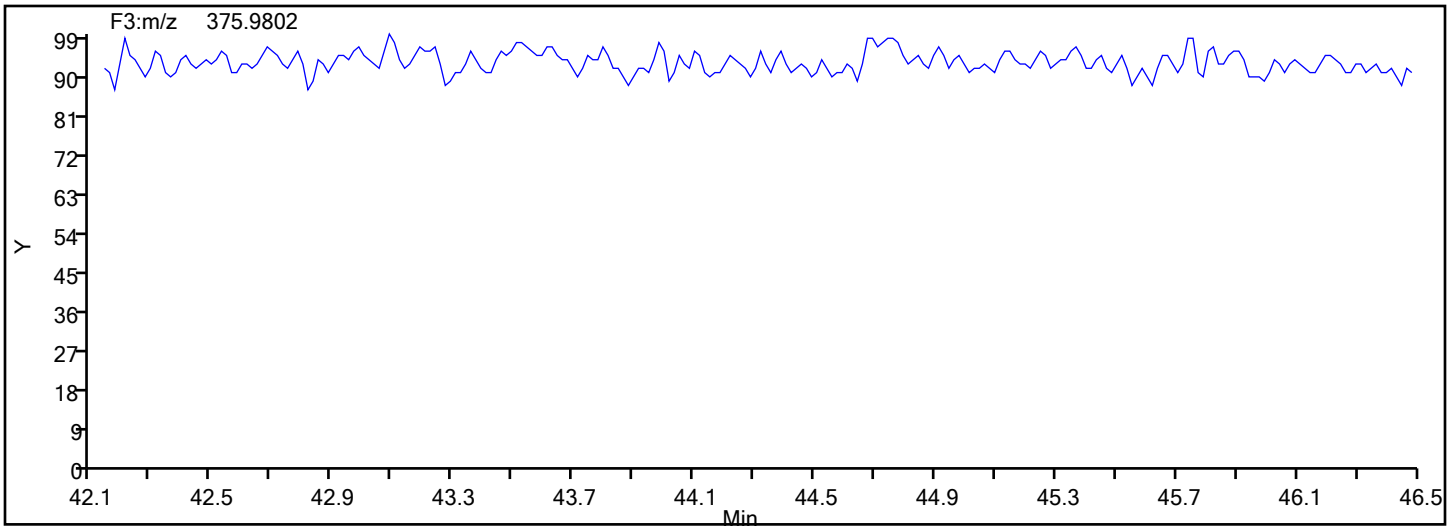
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

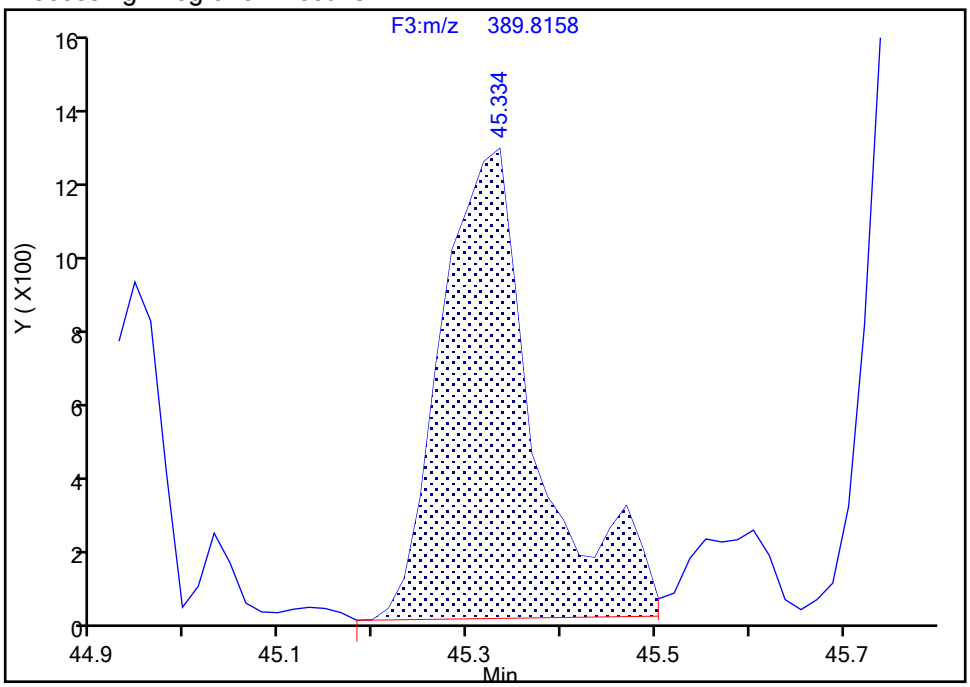
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

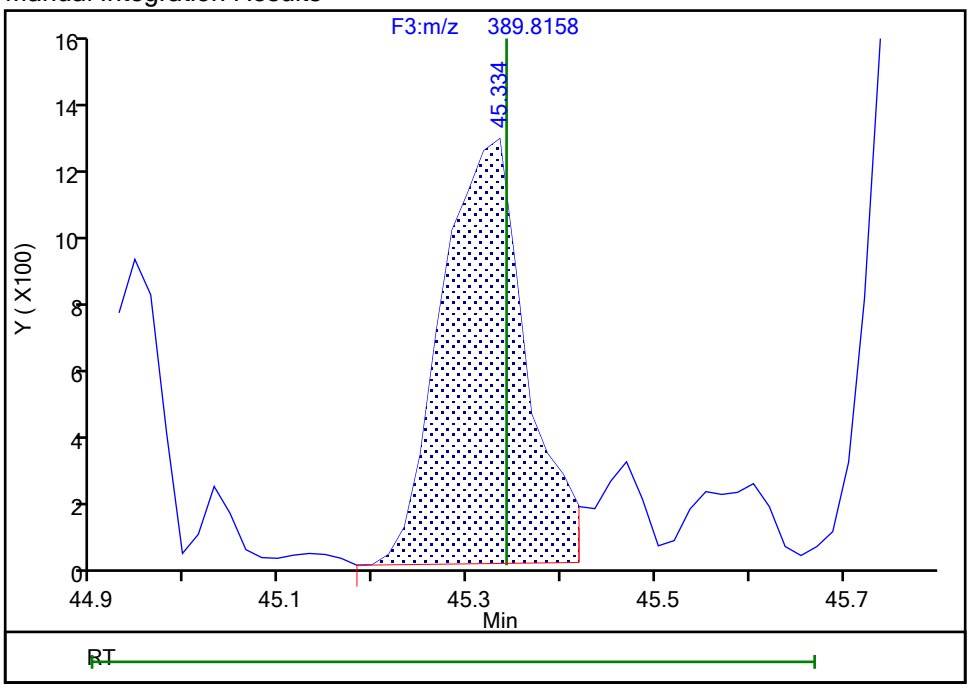
Processing Integration Results

RT: 45.33
Area: 8569
Amount: 0.548262
Amount Units: pg/ul



Manual Integration Results

RT: 45.33
Area: 7599
Amount: 0.503688
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:06:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

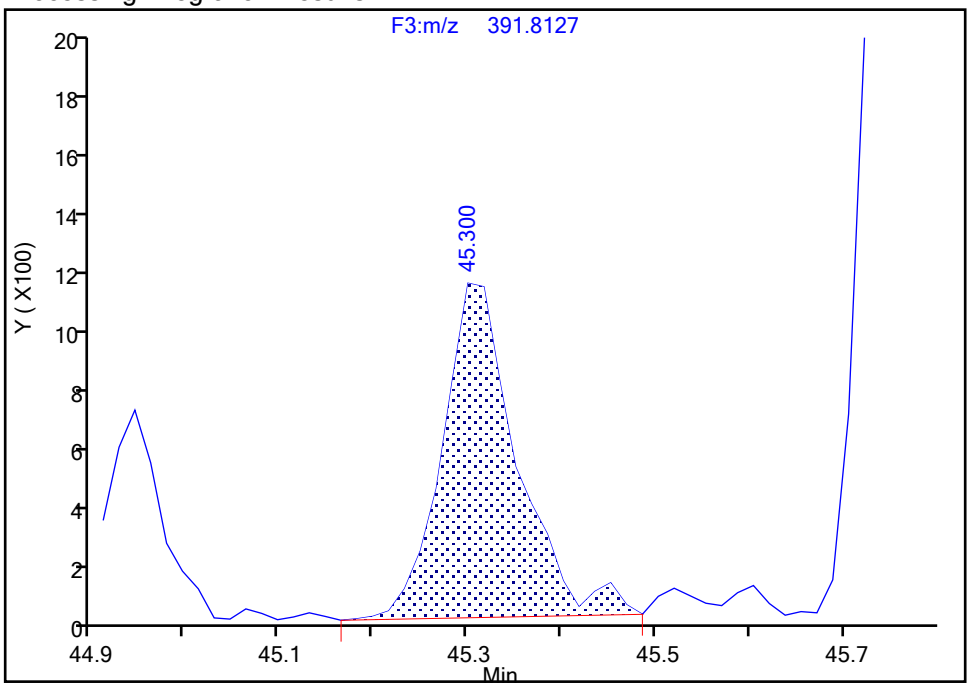
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

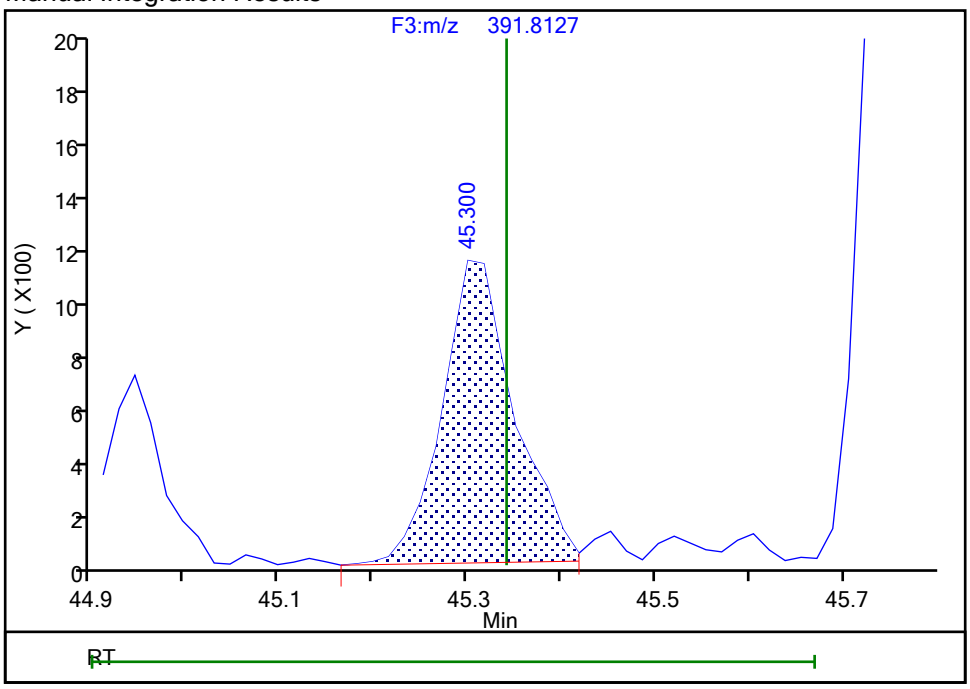
Processing Integration Results

RT: 45.30
Area: 6191
Amount: 0.548262
Amount Units: pg/ul



Manual Integration Results

RT: 45.30
Area: 5961
Amount: 0.503688
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:06:41

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

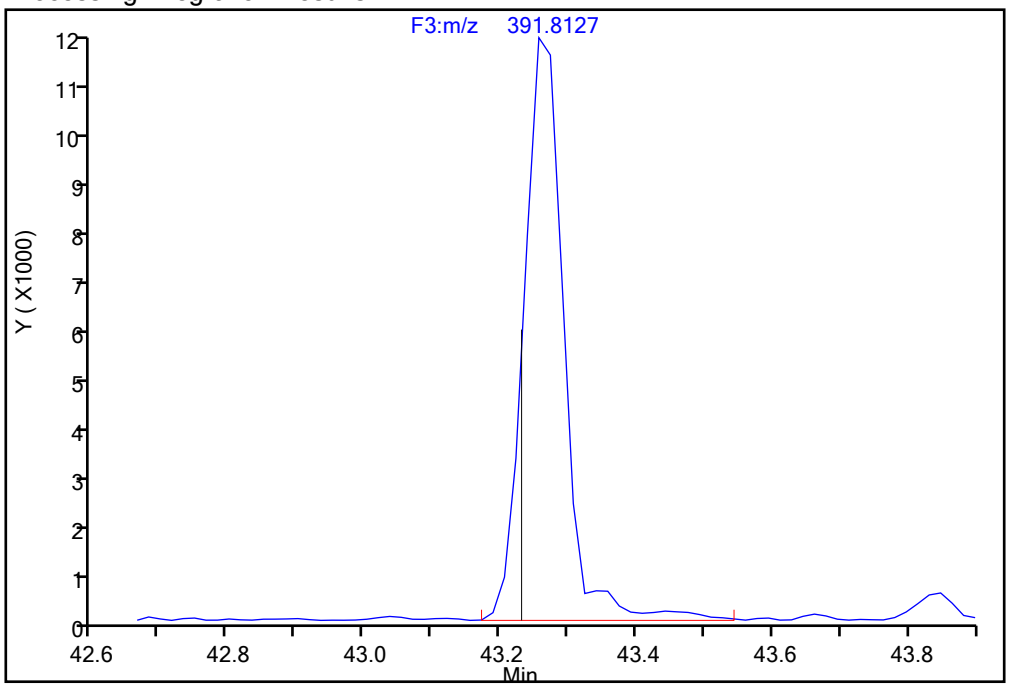
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.23- 45.39)

Signal: 2

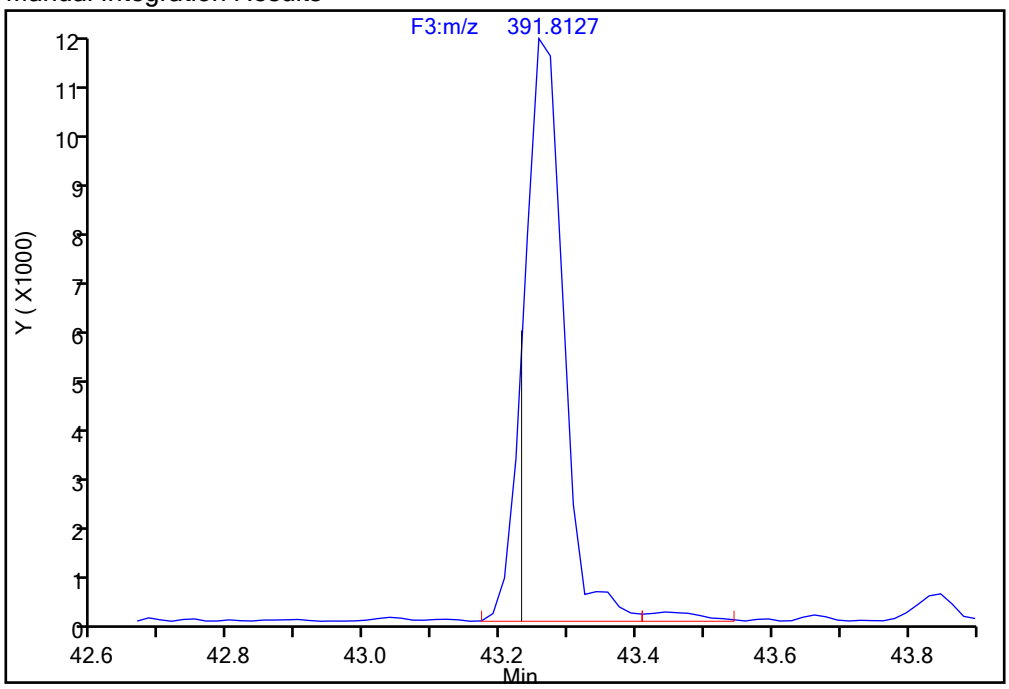
Processing Integration Results

RT = 43.257 Area = 48750



Manual Integration Results

RT = 43.257 Area = 47731 M



Reviewer: davidsonm, 17-Dec-2019 10:06:48

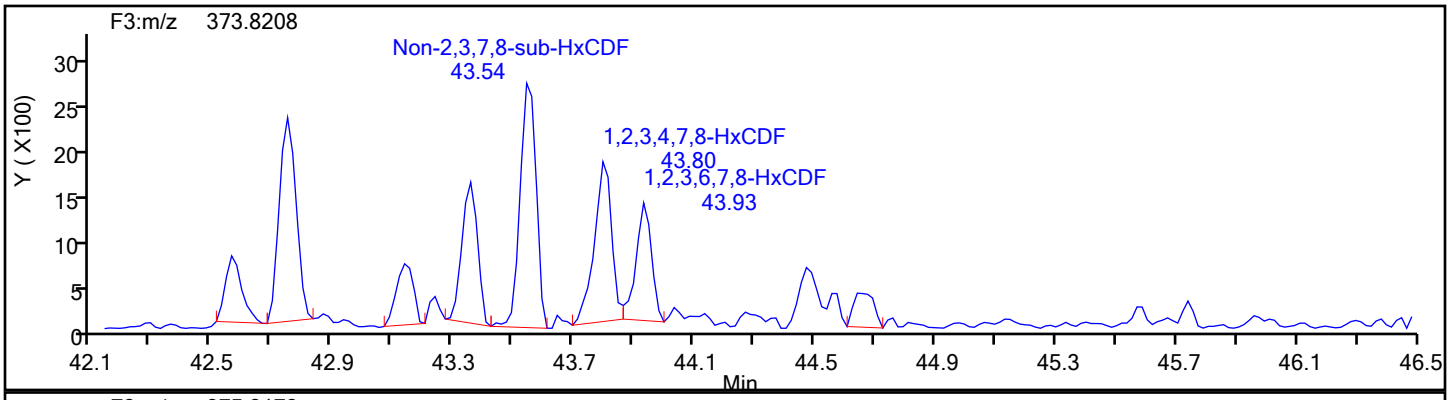
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

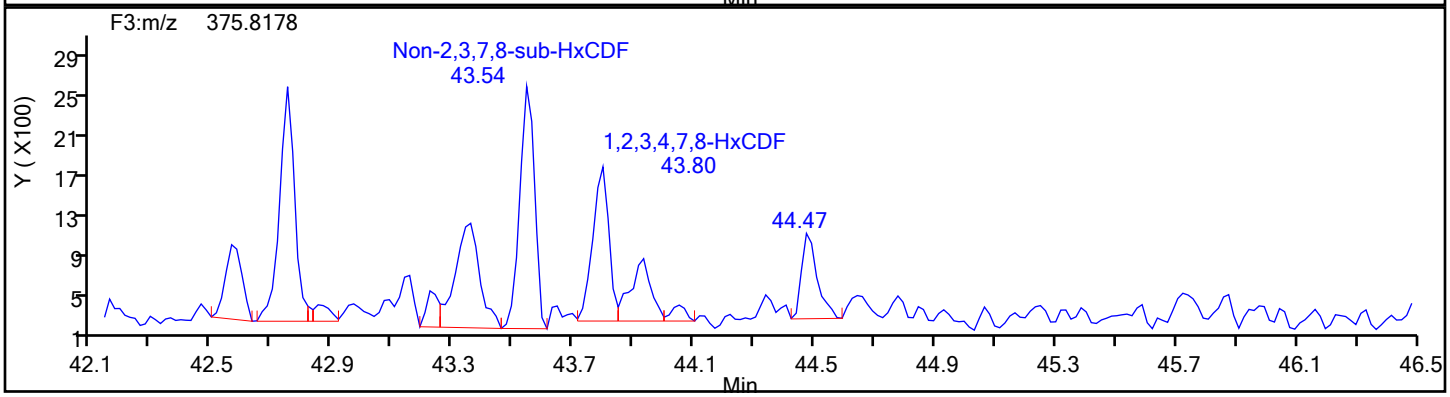
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

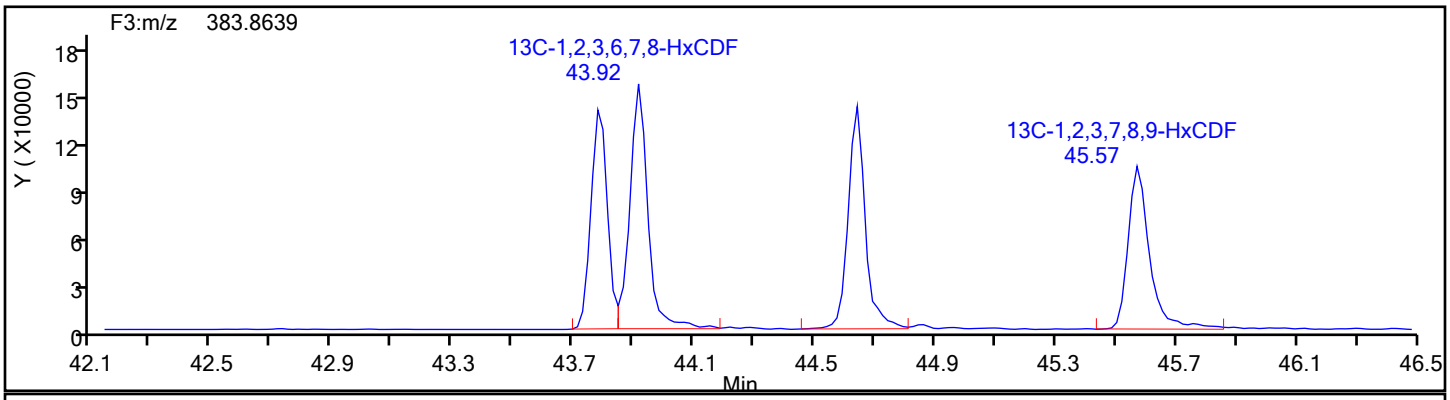
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

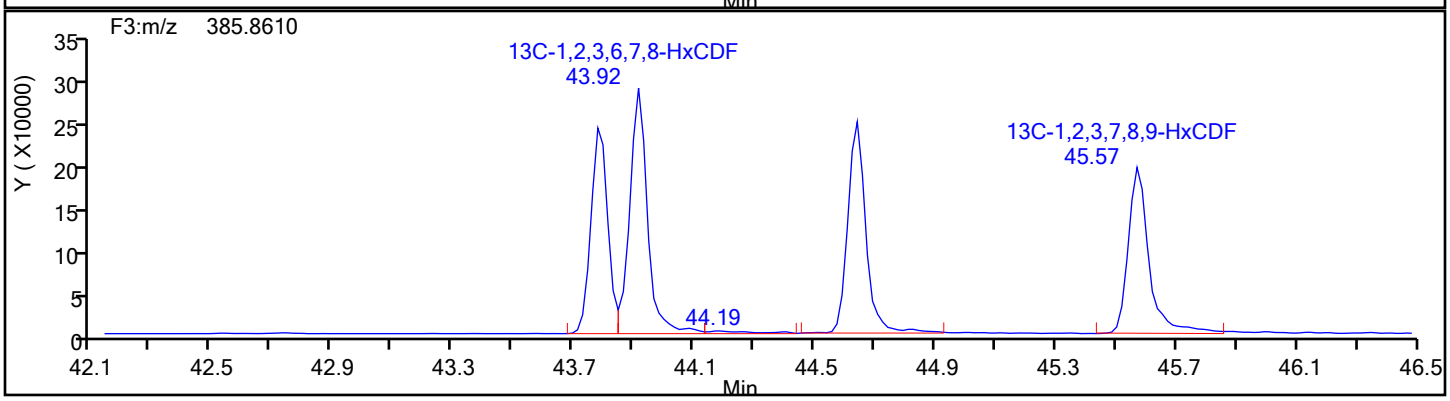
HxCDF





HxCDF Standards



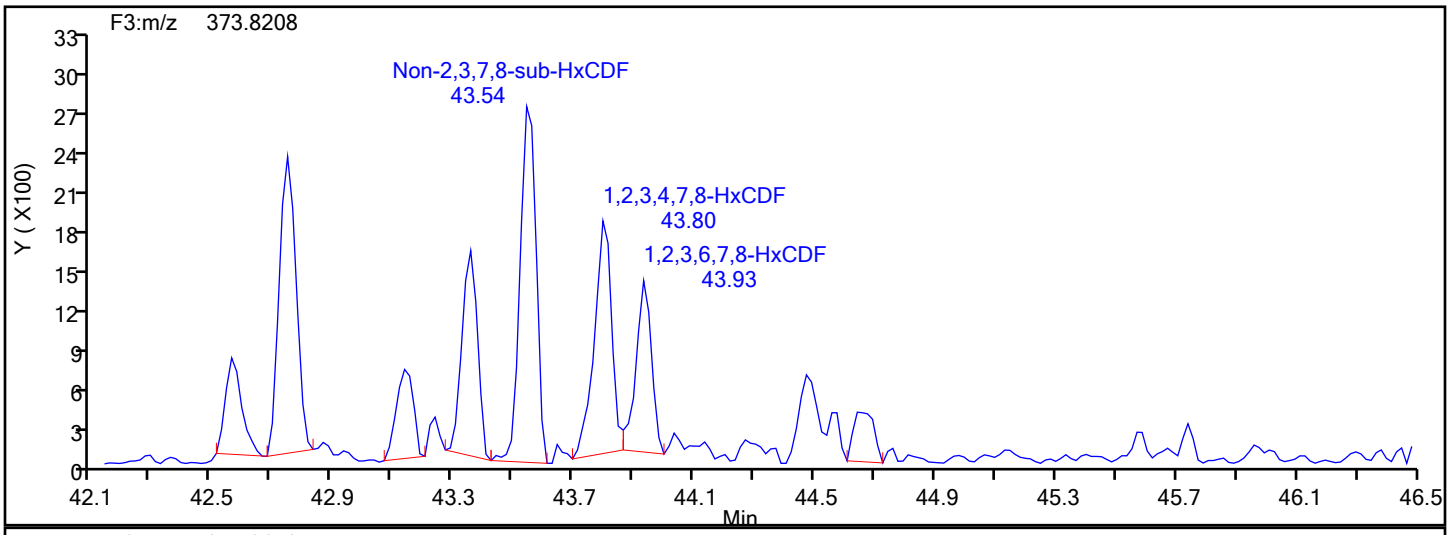


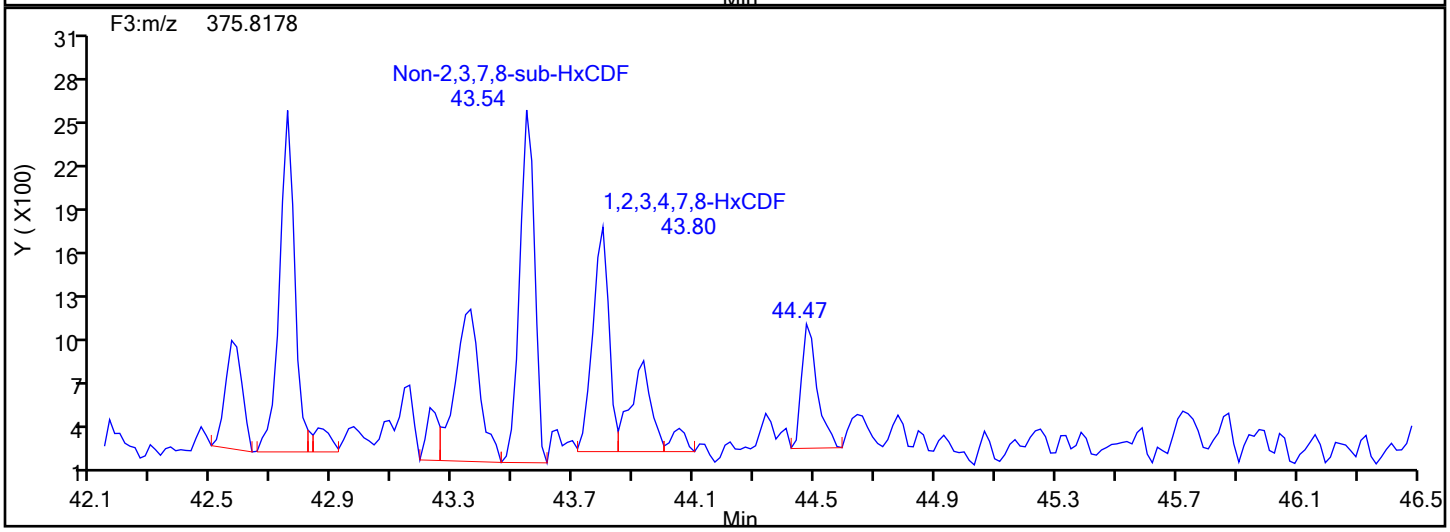
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

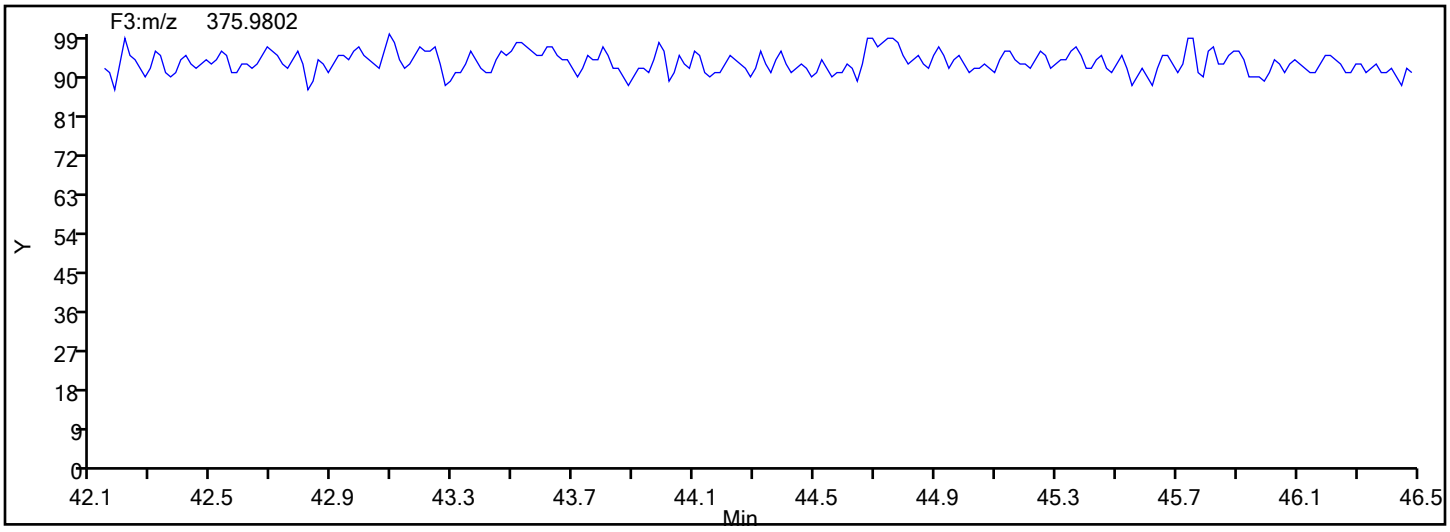
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

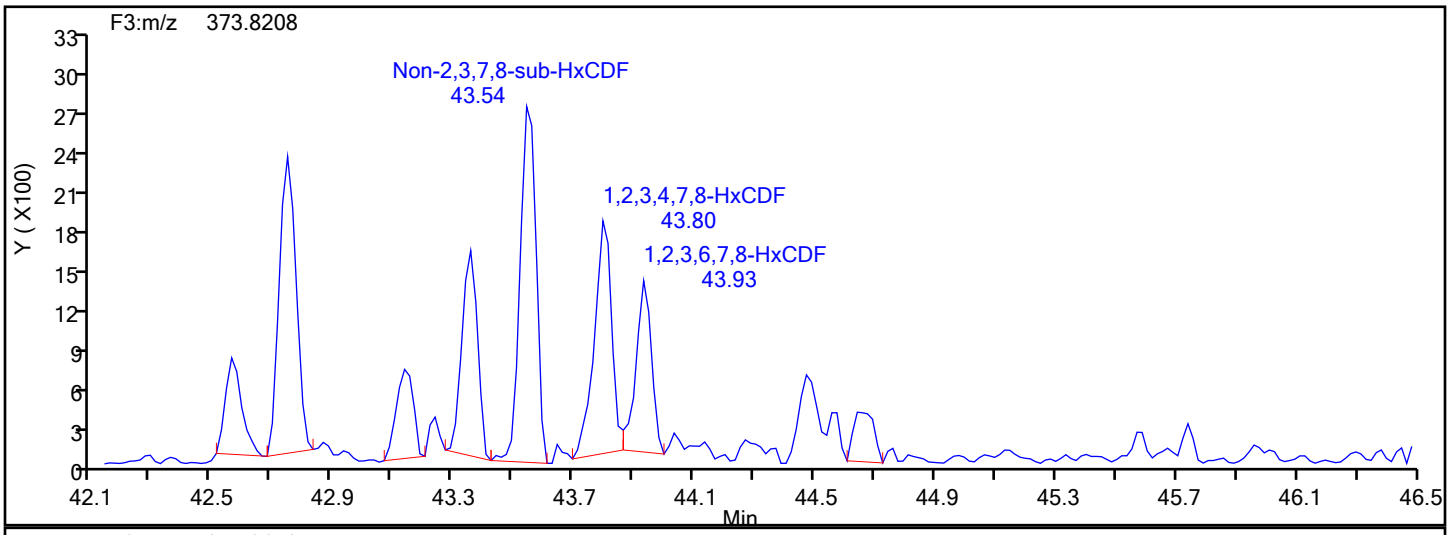


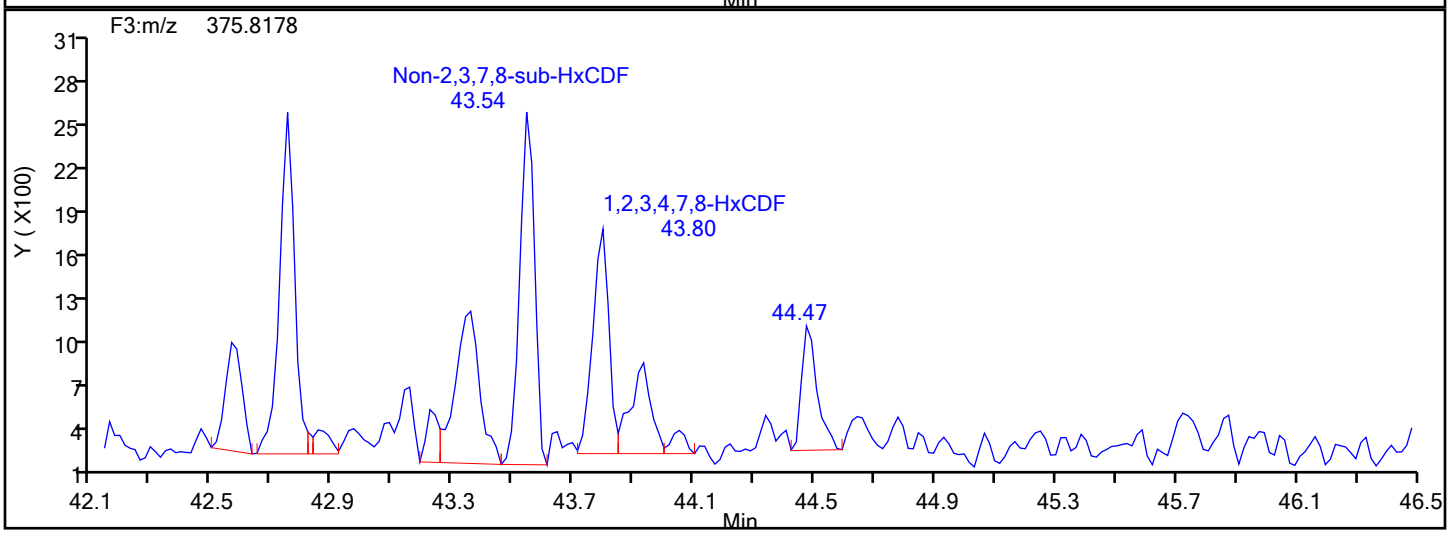
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

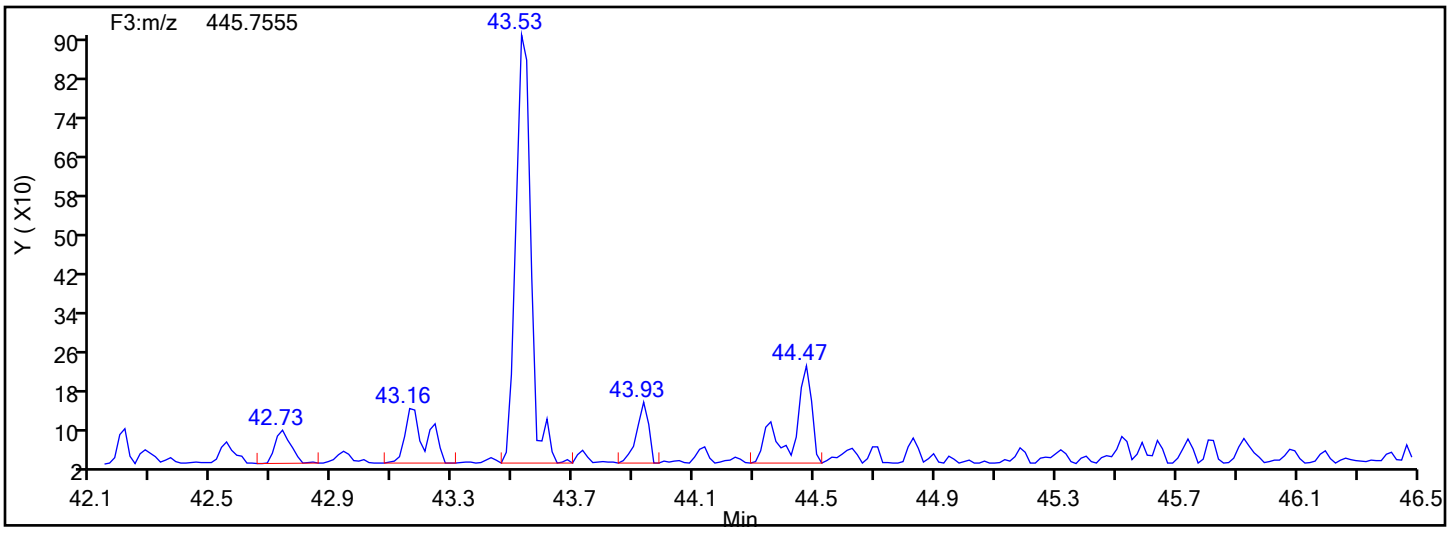
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

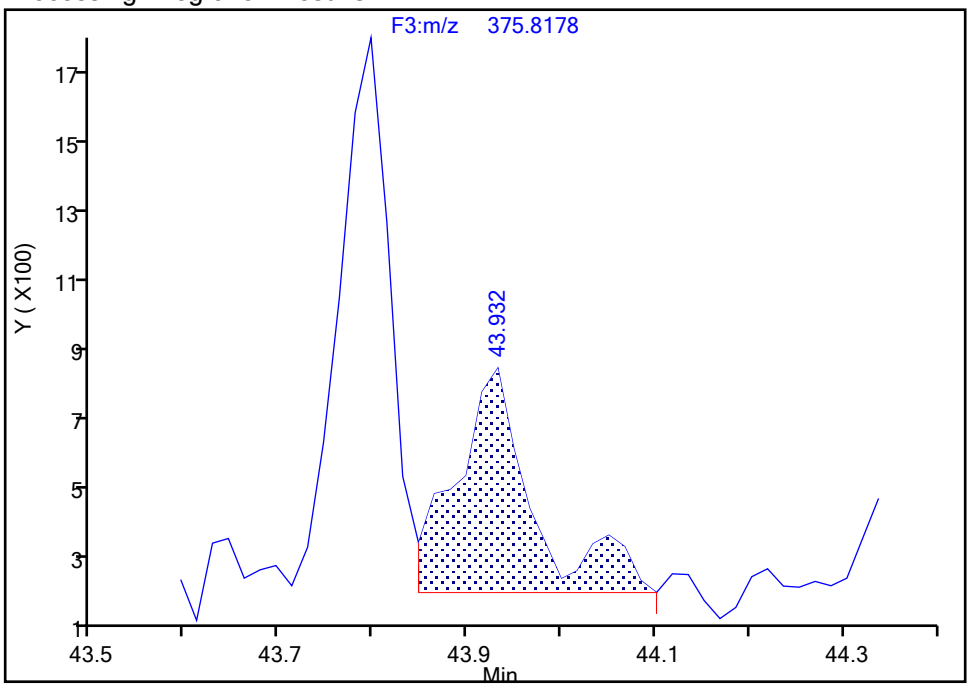
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

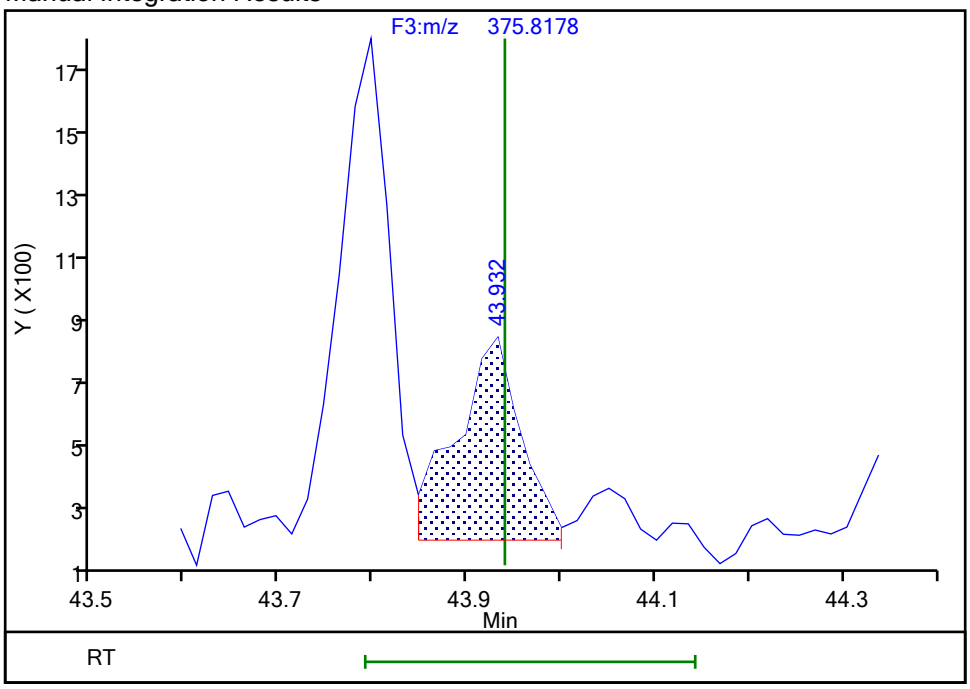
Processing Integration Results

RT: 43.93
Area: 3497
Amount: 0.175538
Amount Units: pg/ul



Manual Integration Results

RT: 43.93
Area: 2956
Amount: 0.163823
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:07:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

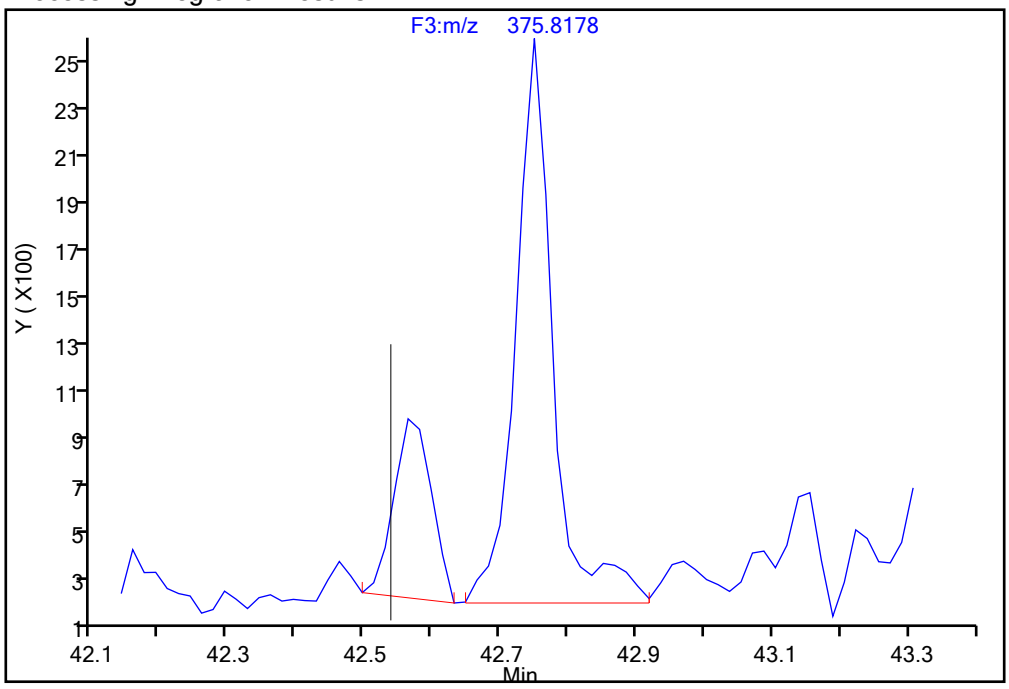
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.54- 45.78)

Signal: 2

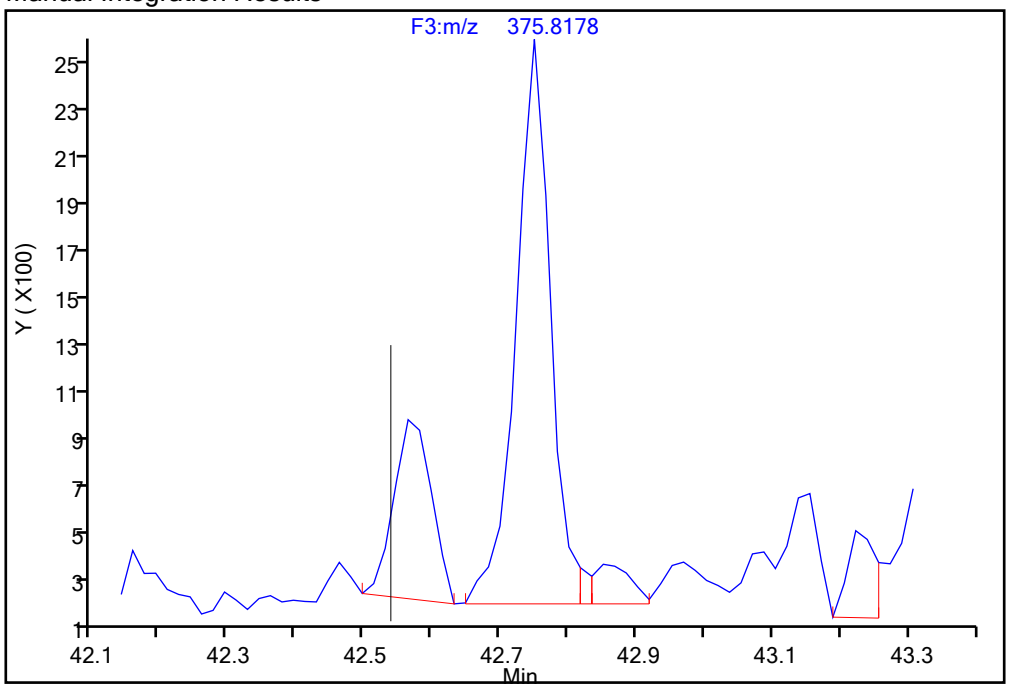
Processing Integration Results

RT = 42.750 Area = 8891



Manual Integration Results

RT = 42.750 Area = 8165 M



Reviewer: davidsonm, 17-Dec-2019 10:07:19

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

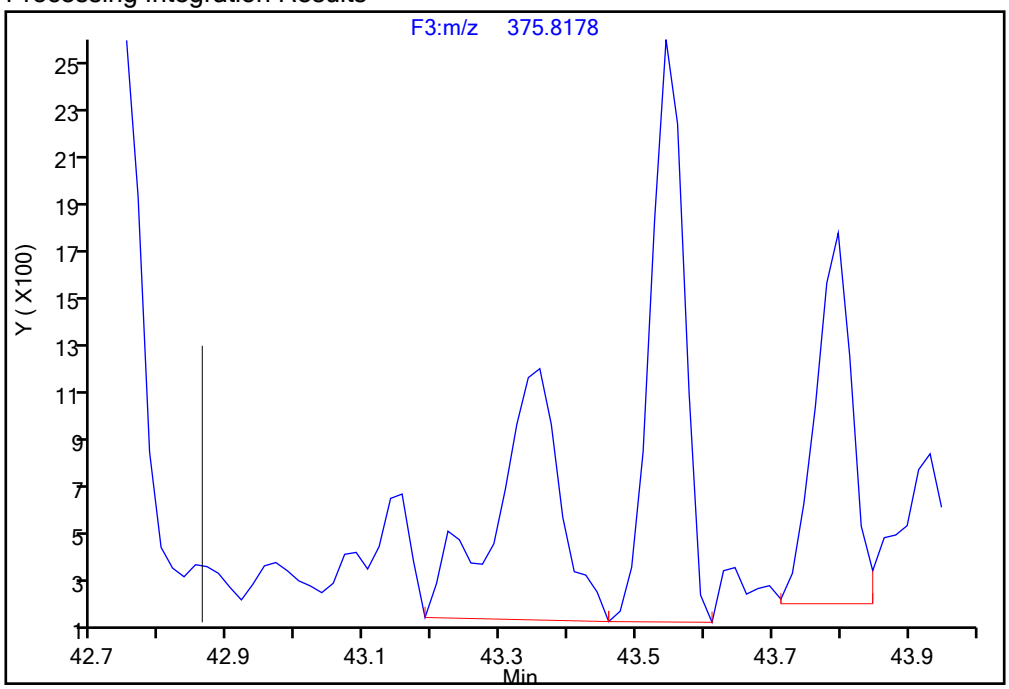
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d				
Injection Date:	17-Dec-2019 05:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.54- 45.78)

Signal: 2

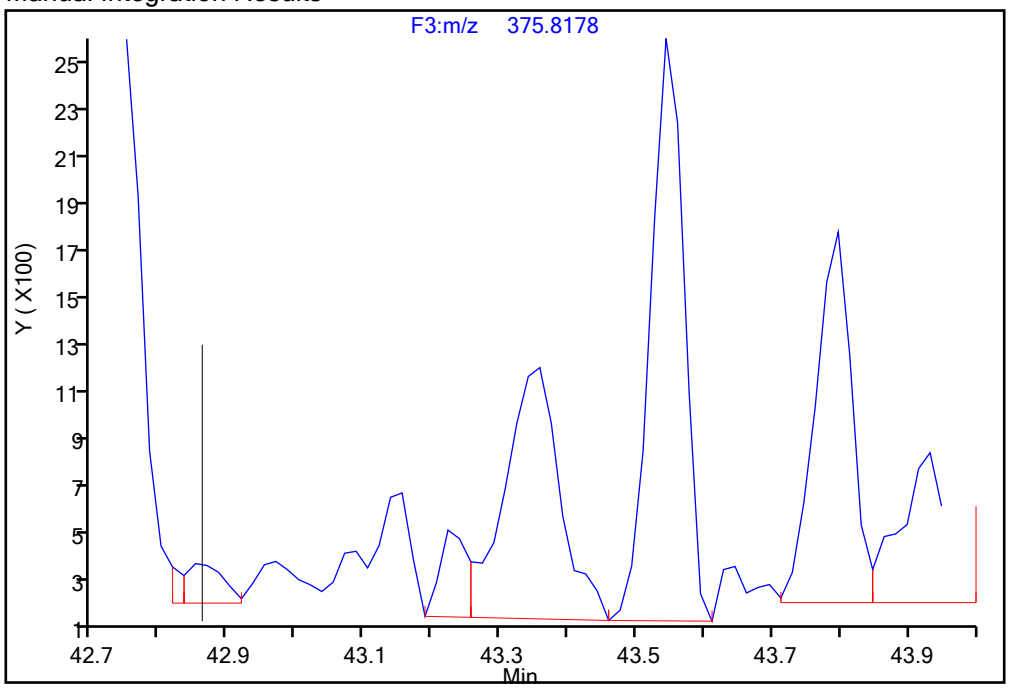
Processing Integration Results

RT = 43.358 Area = 6841



Manual Integration Results

RT = 43.358 Area = 5885 M



Reviewer: davidsonm, 17-Dec-2019 10:07:19

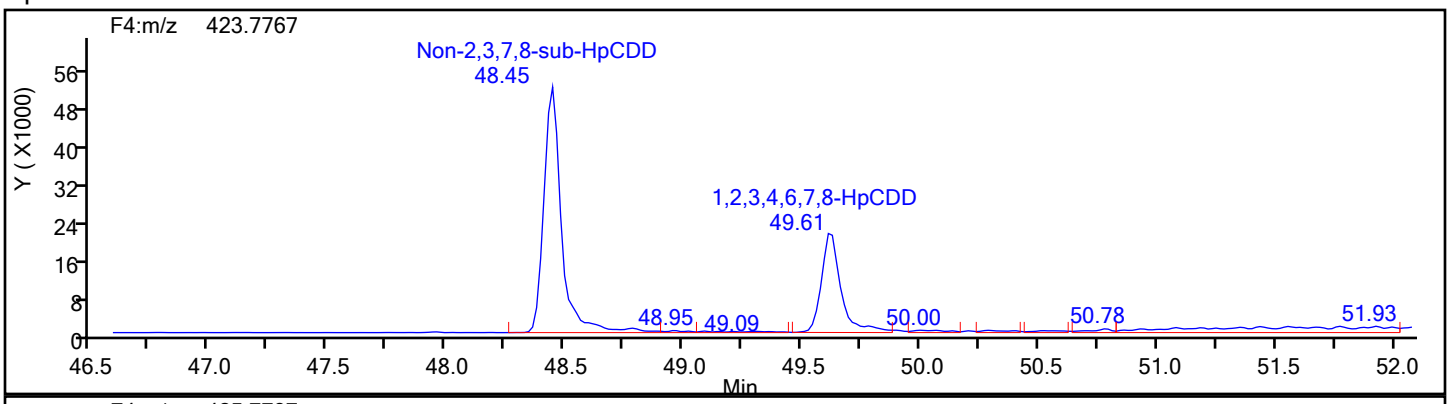
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

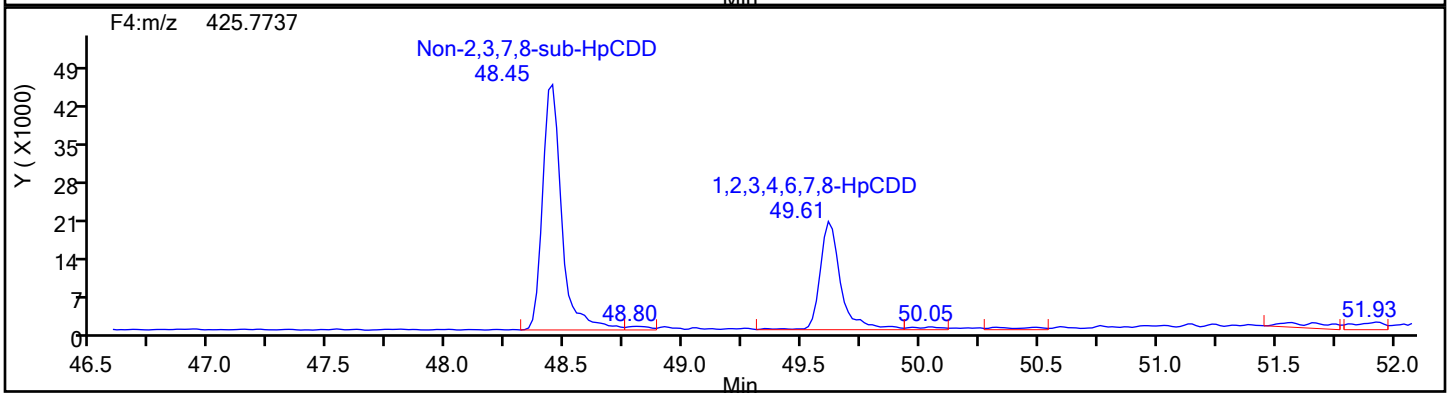
Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

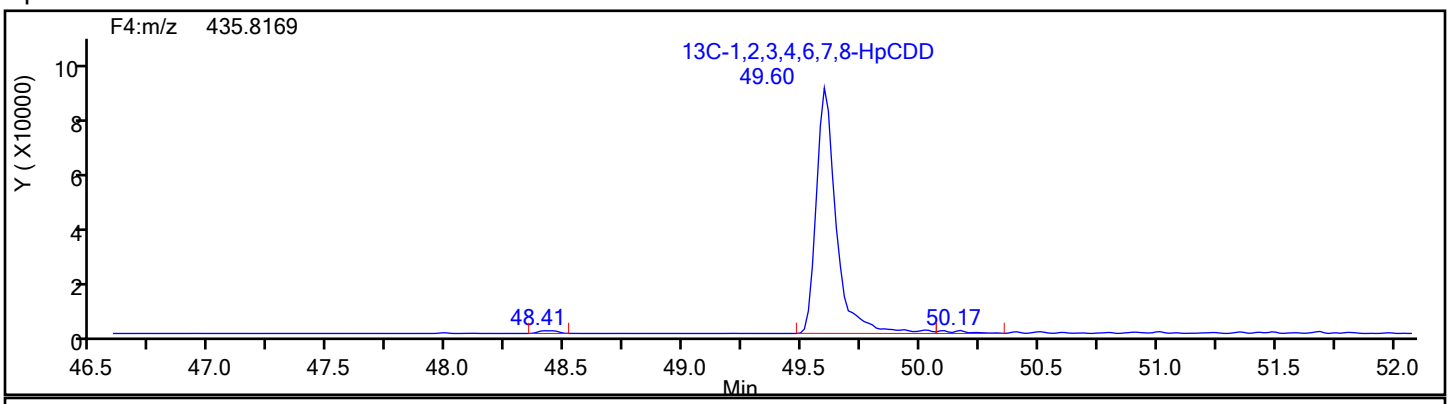
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36126	Sample Line#:	8
Column Type:		Column Dia:	

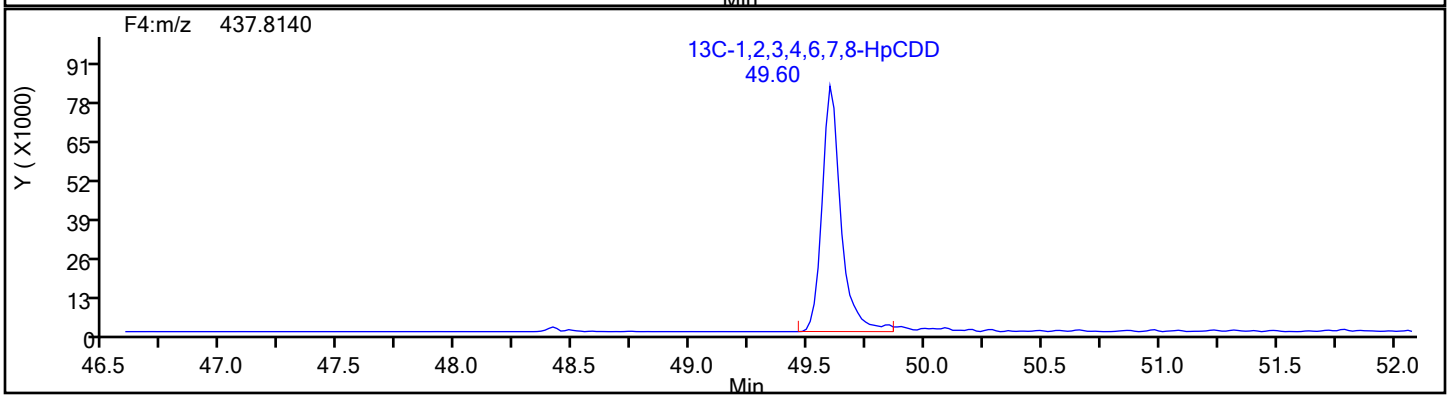
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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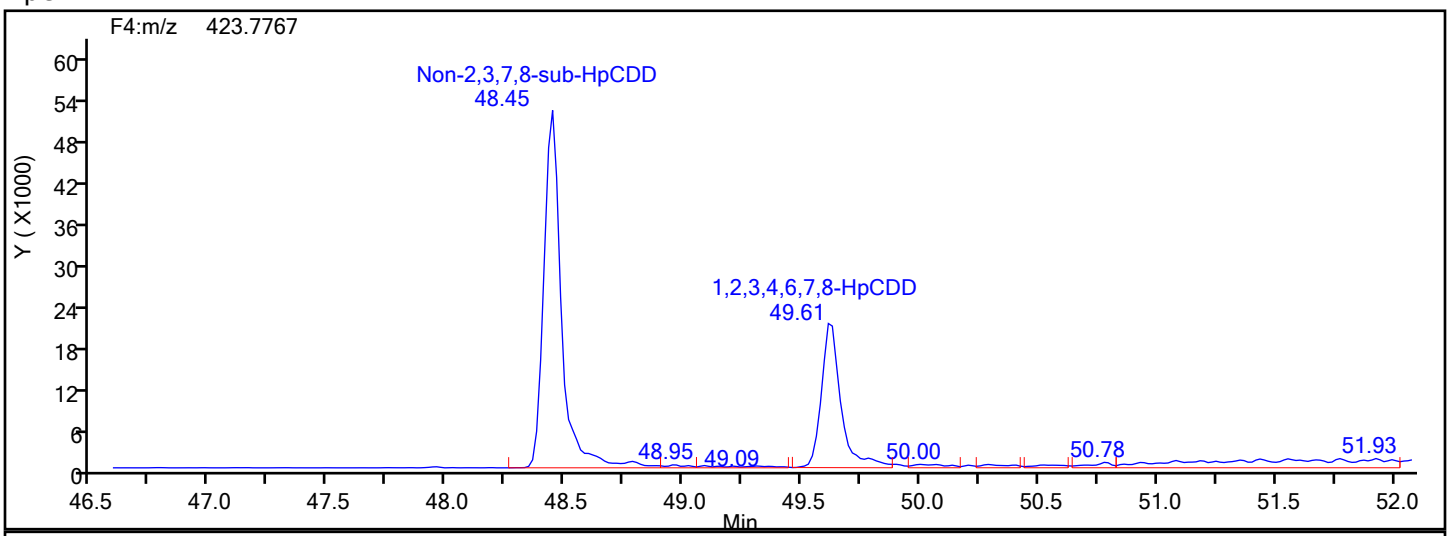
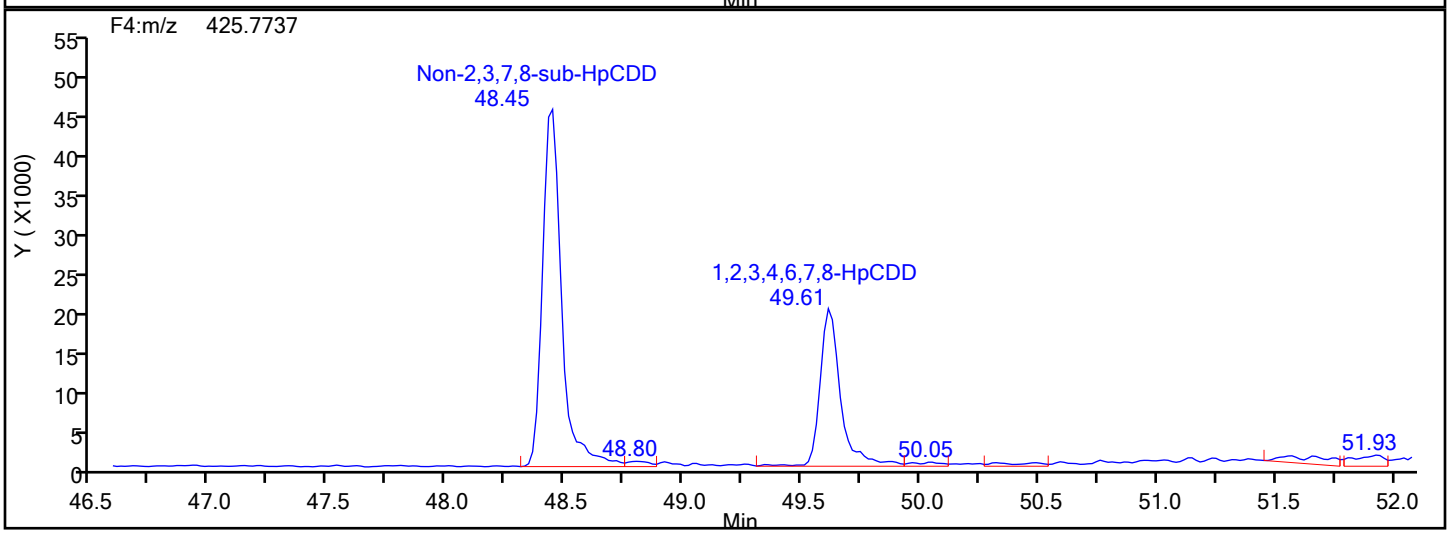
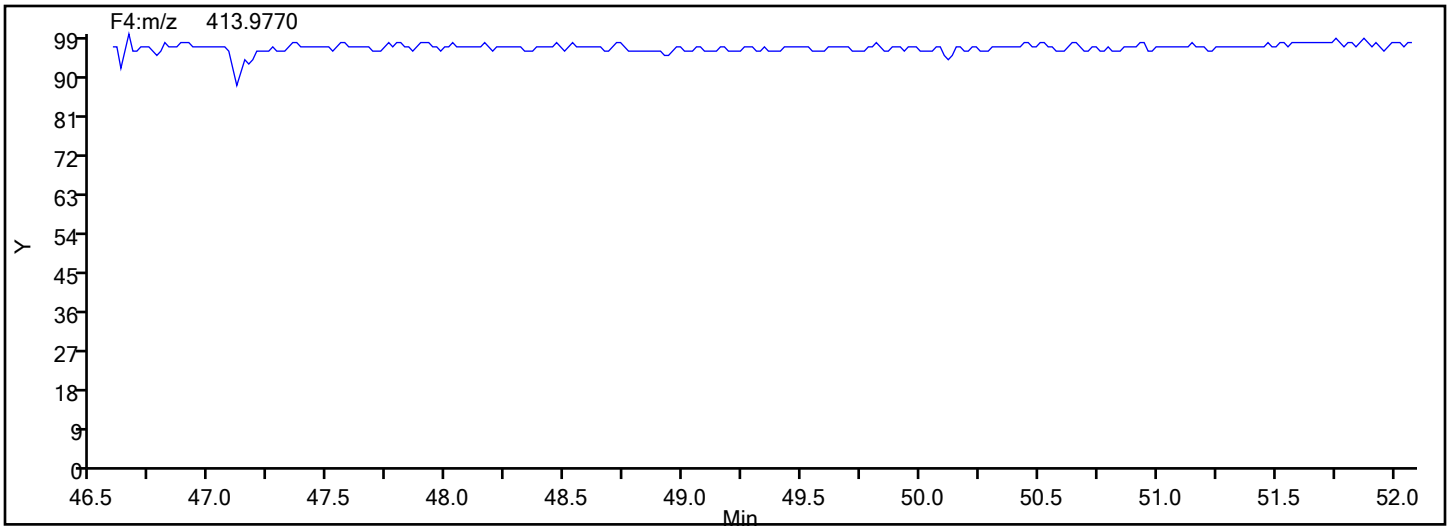
HpCDD





HpCDD Lock Mass



Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
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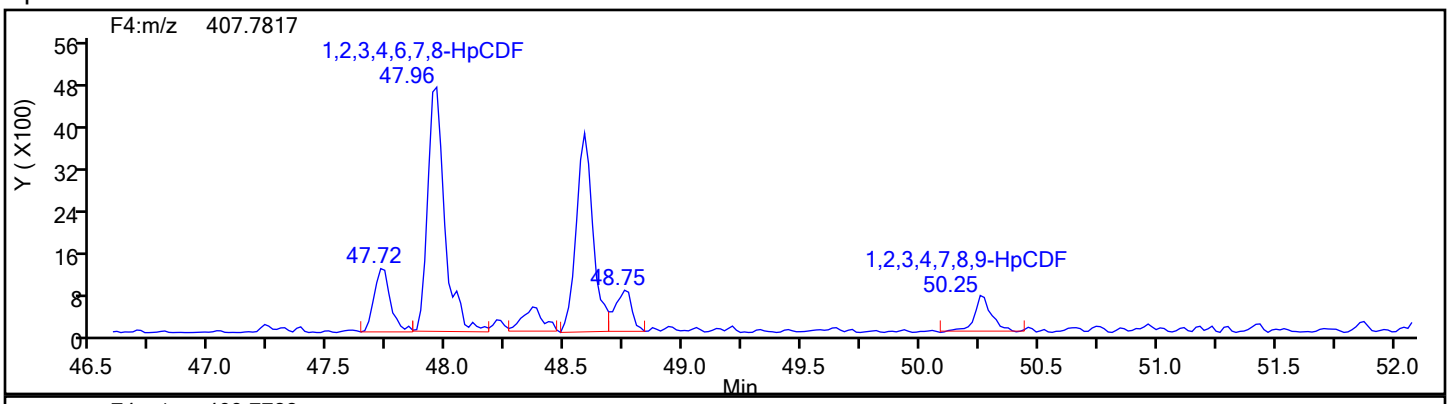
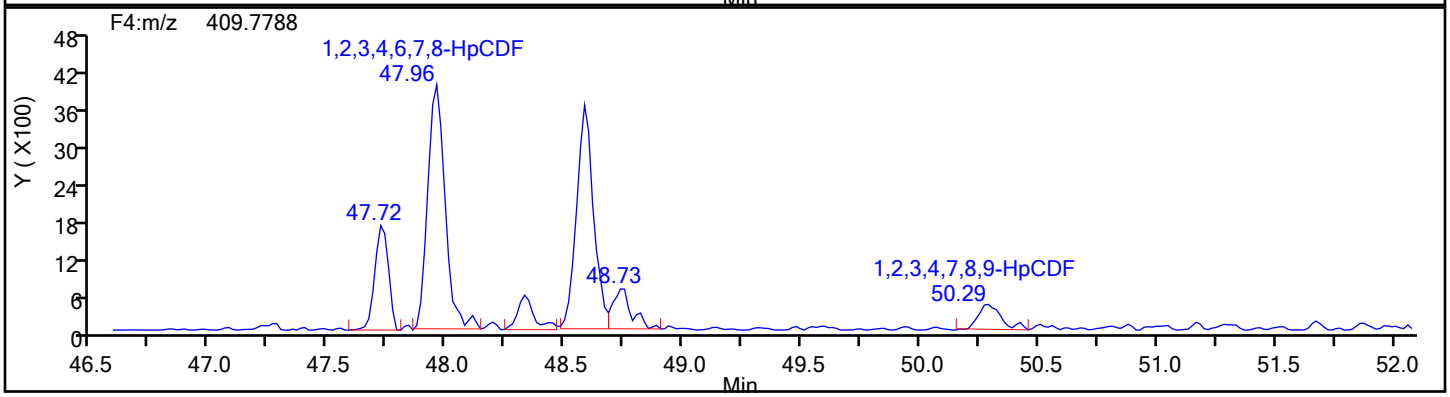
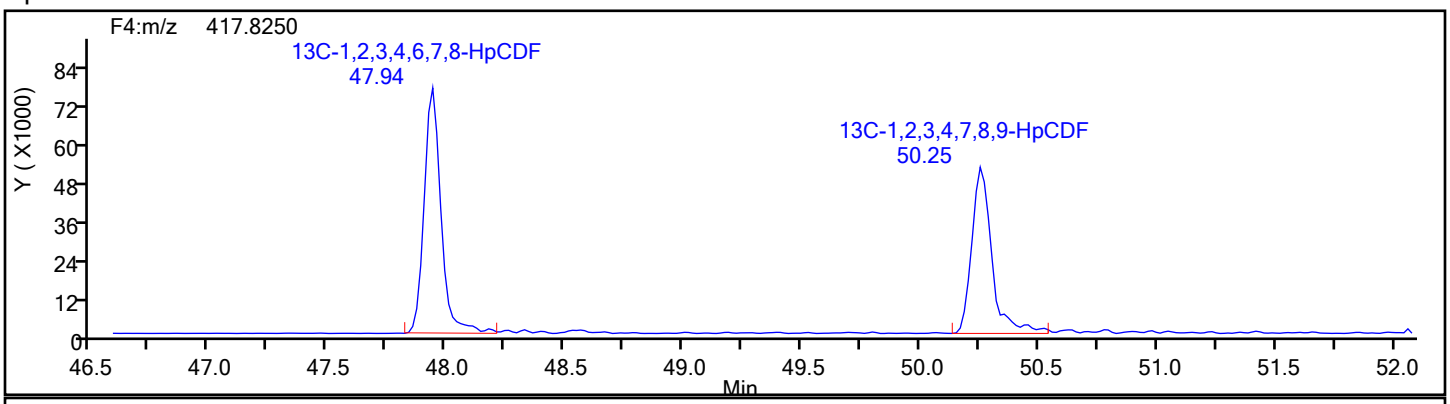
Column Type:		Column Dia:	

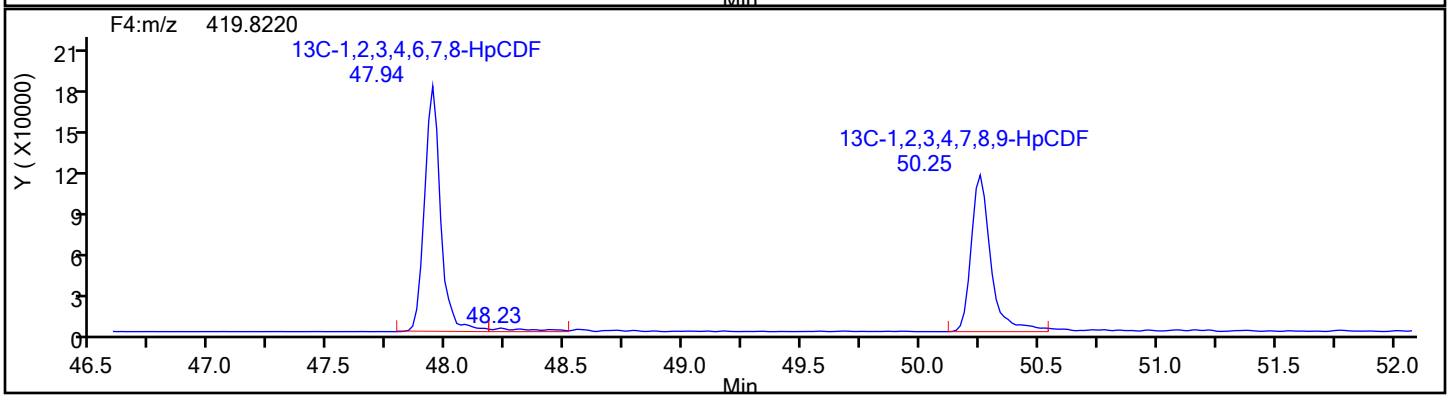
HpCDF





HpCDF Standards





Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
Injection Date:	17-Dec-2019 05:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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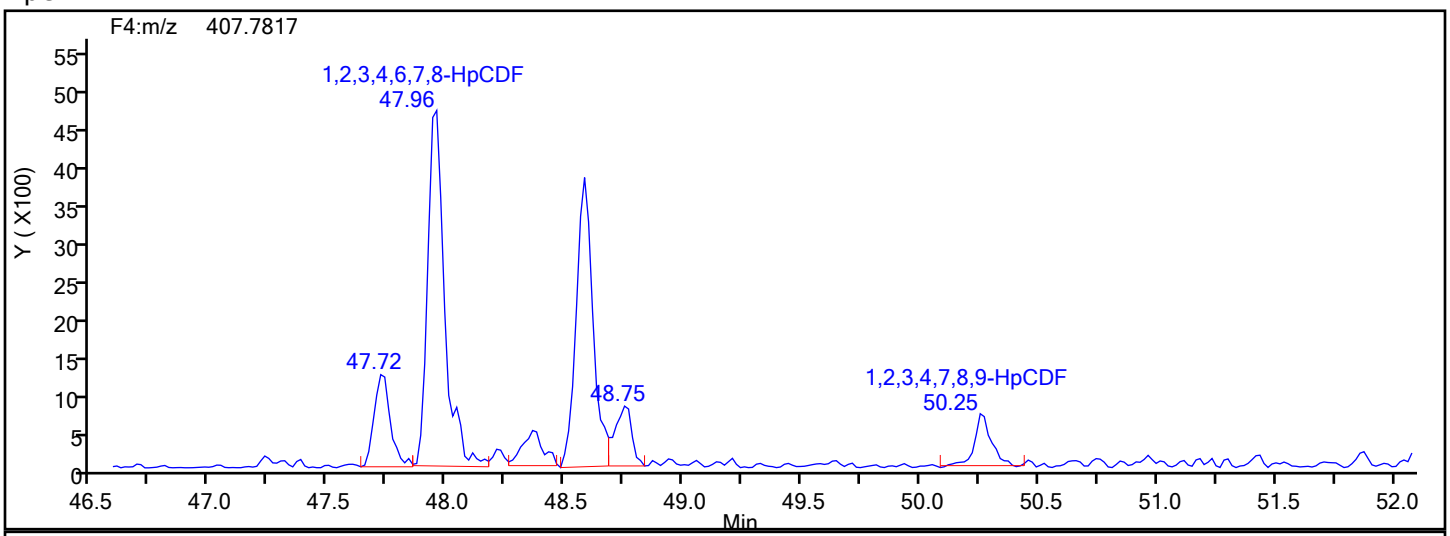
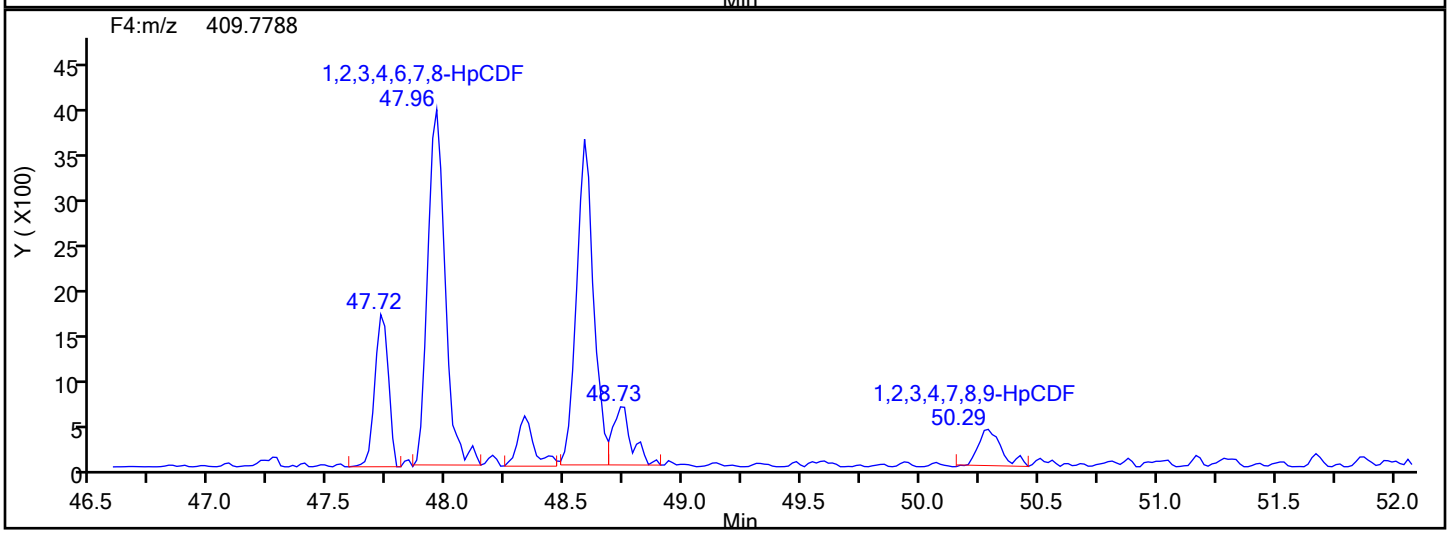
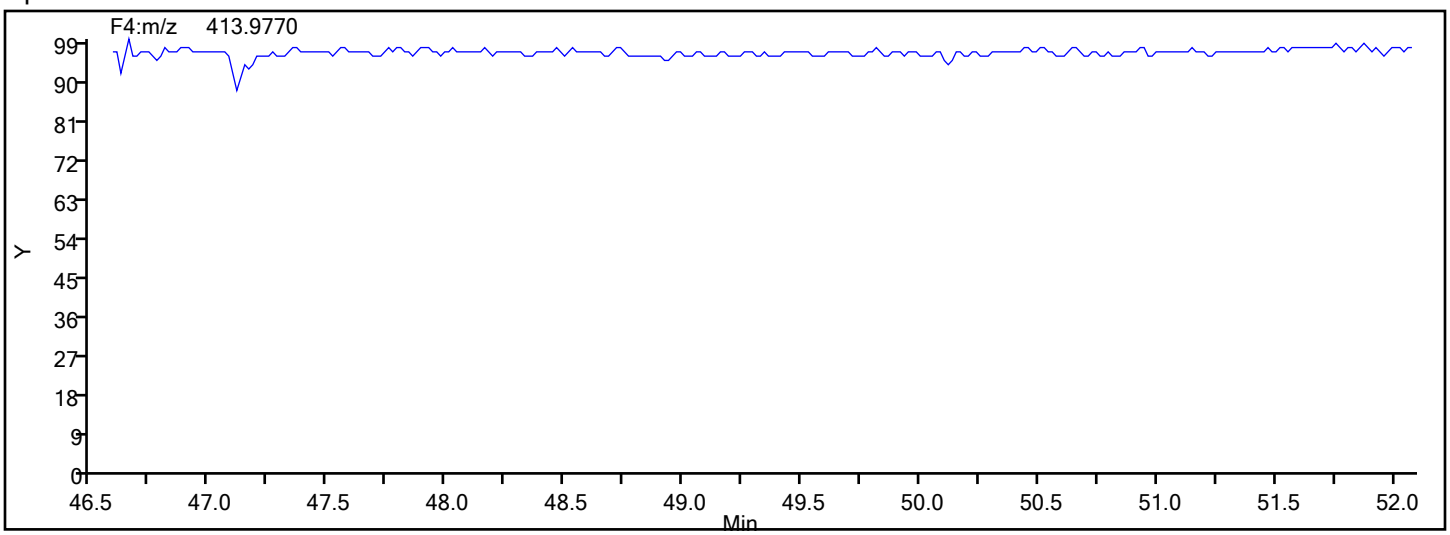
HpCDF





HpCDF Lock Mass



Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
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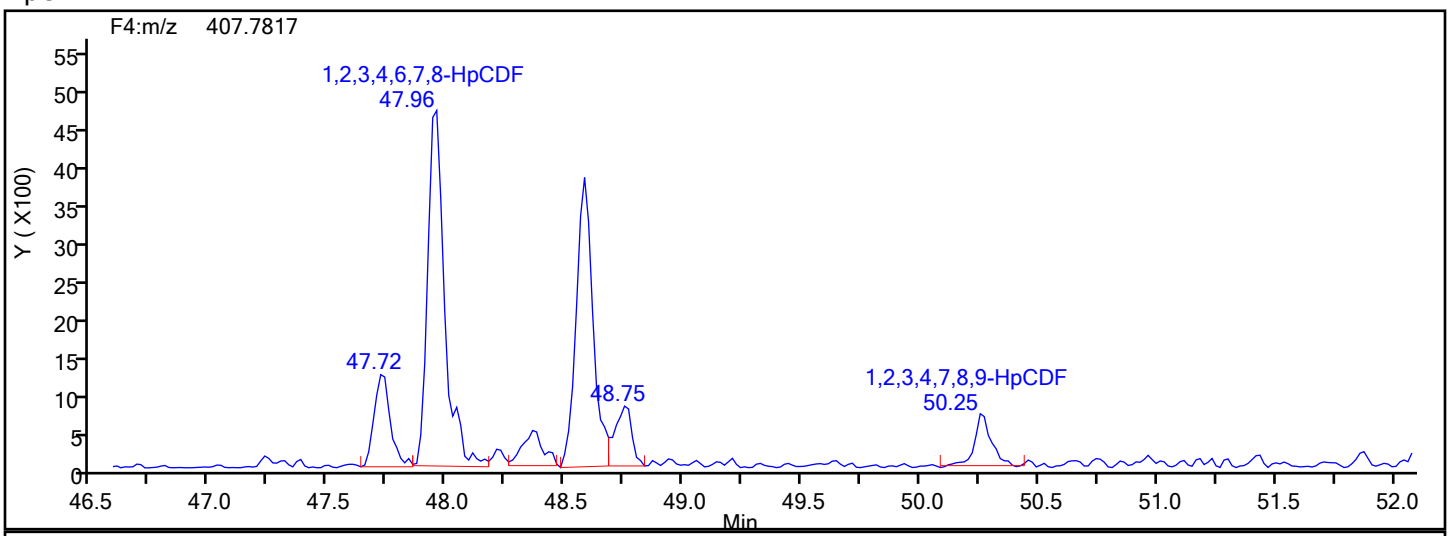
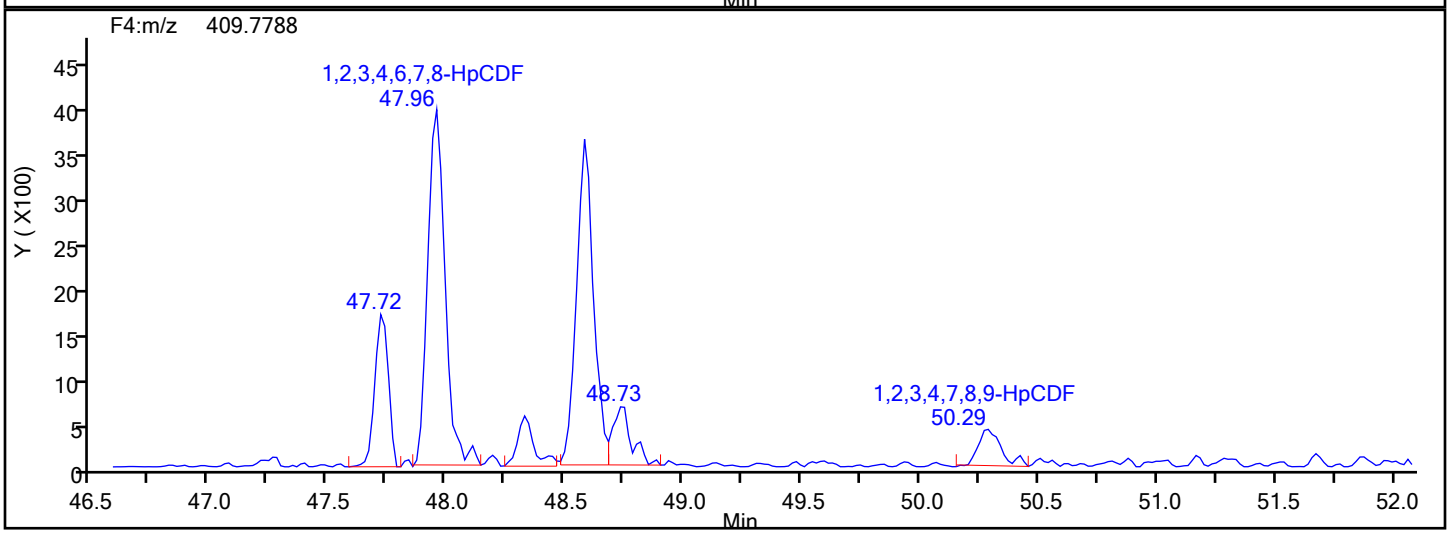
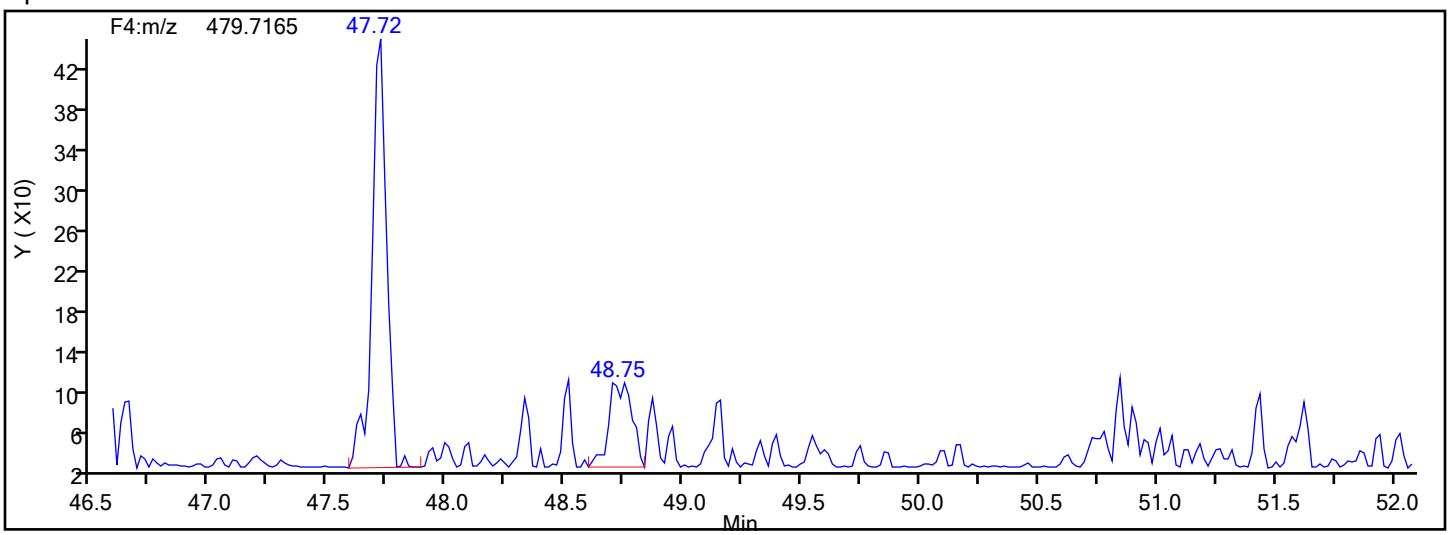
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Report Date: 17-Dec-2019 10:08:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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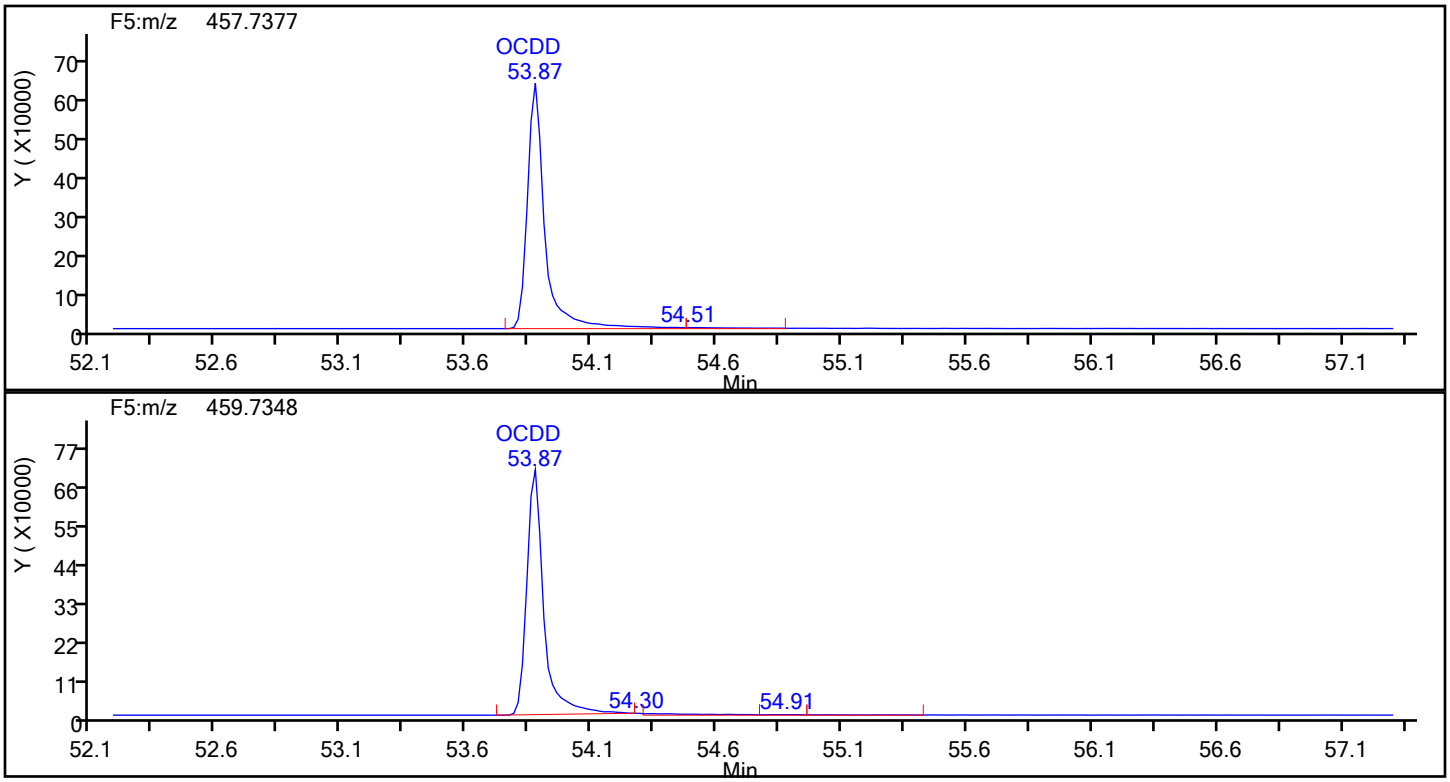
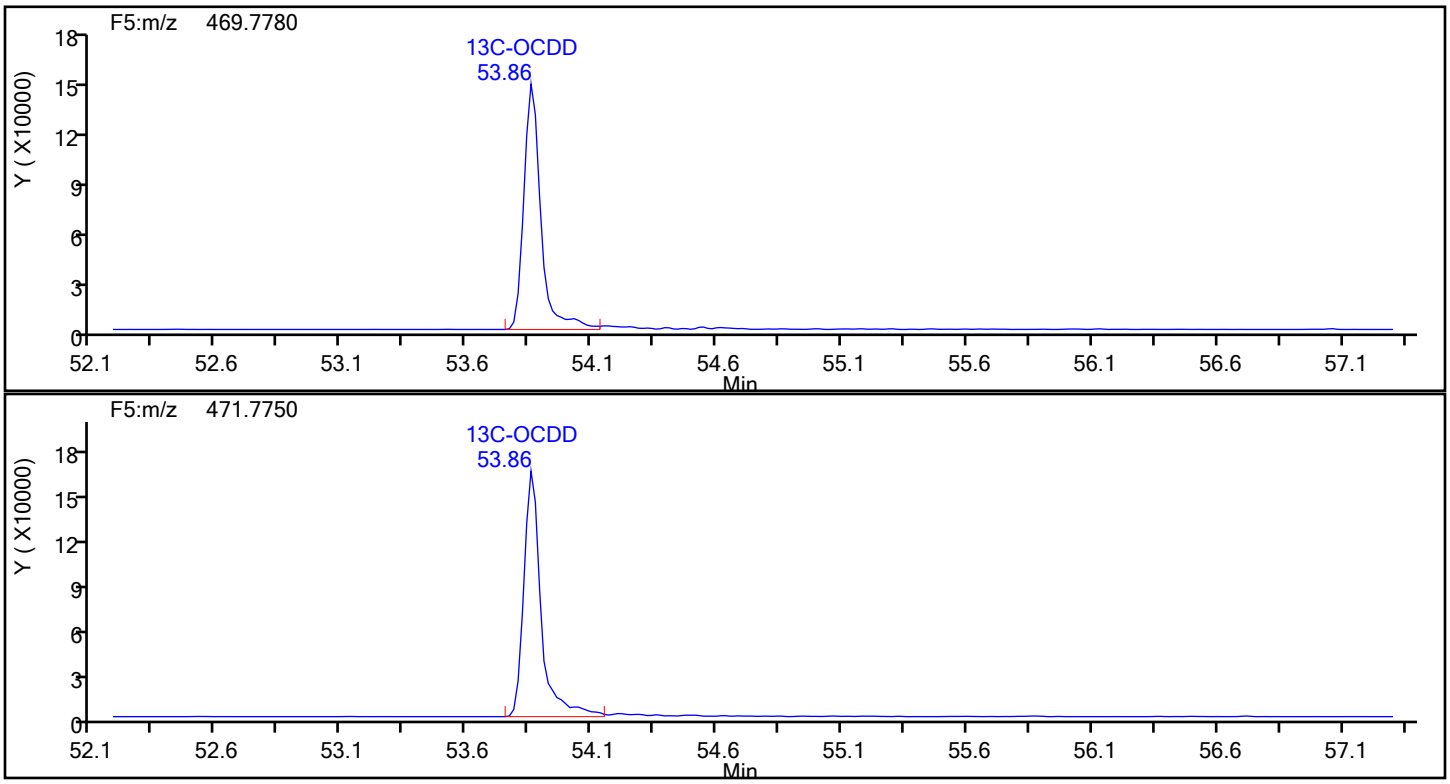
OCDD



OCDD Standards



Report Date: 17-Dec-2019 10:08:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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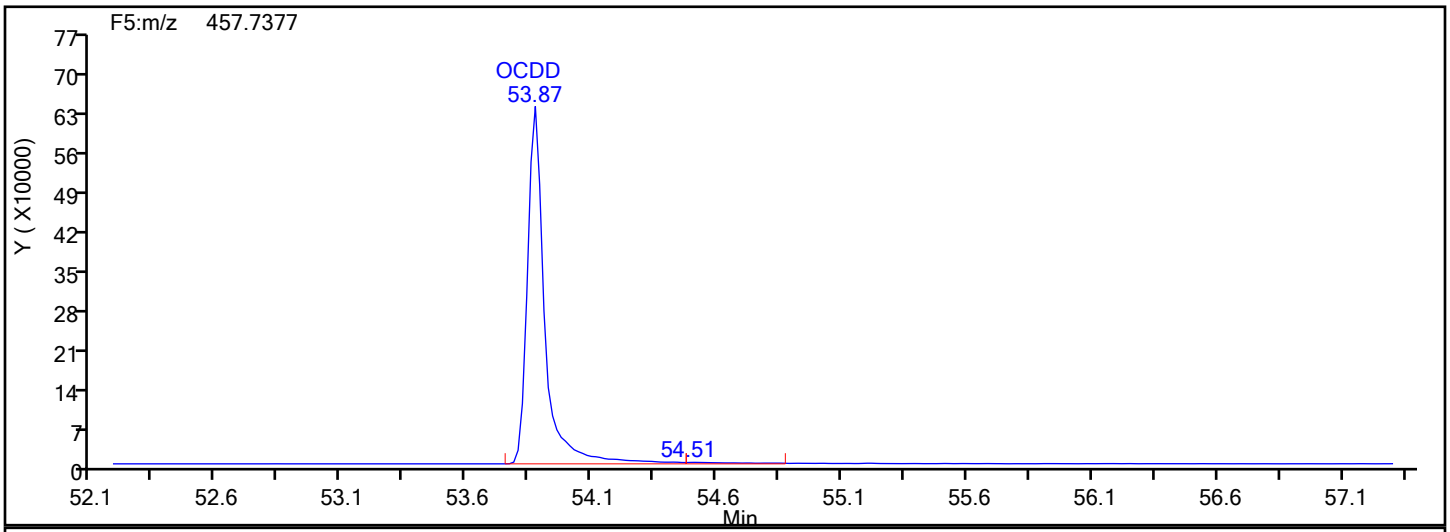
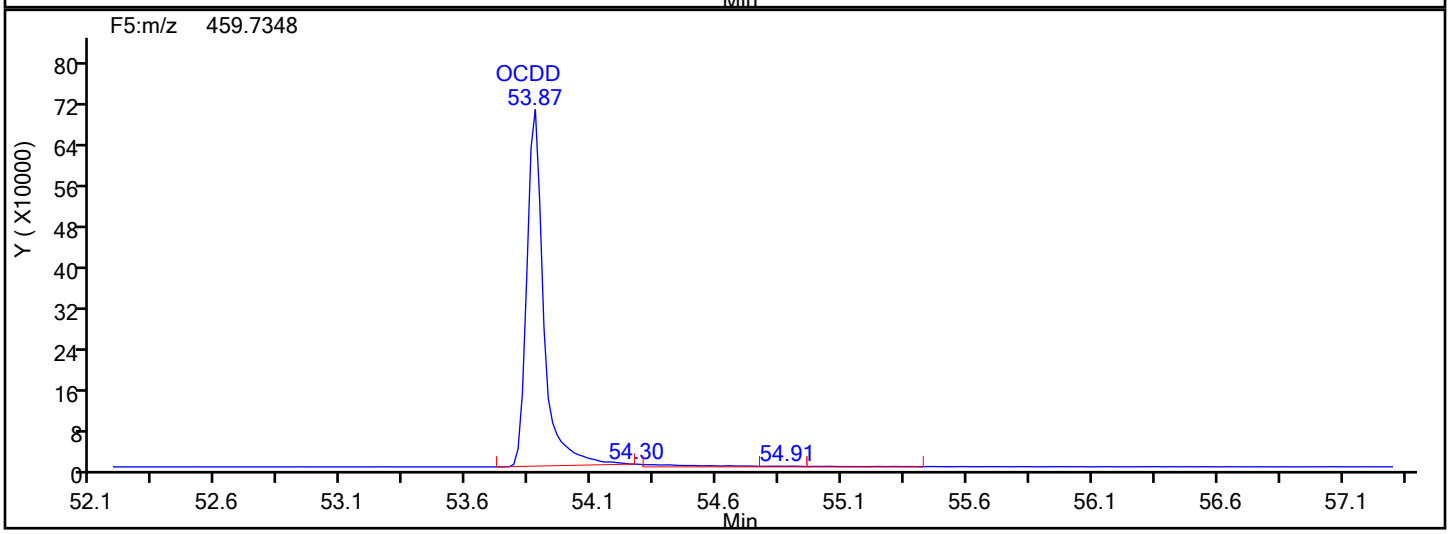
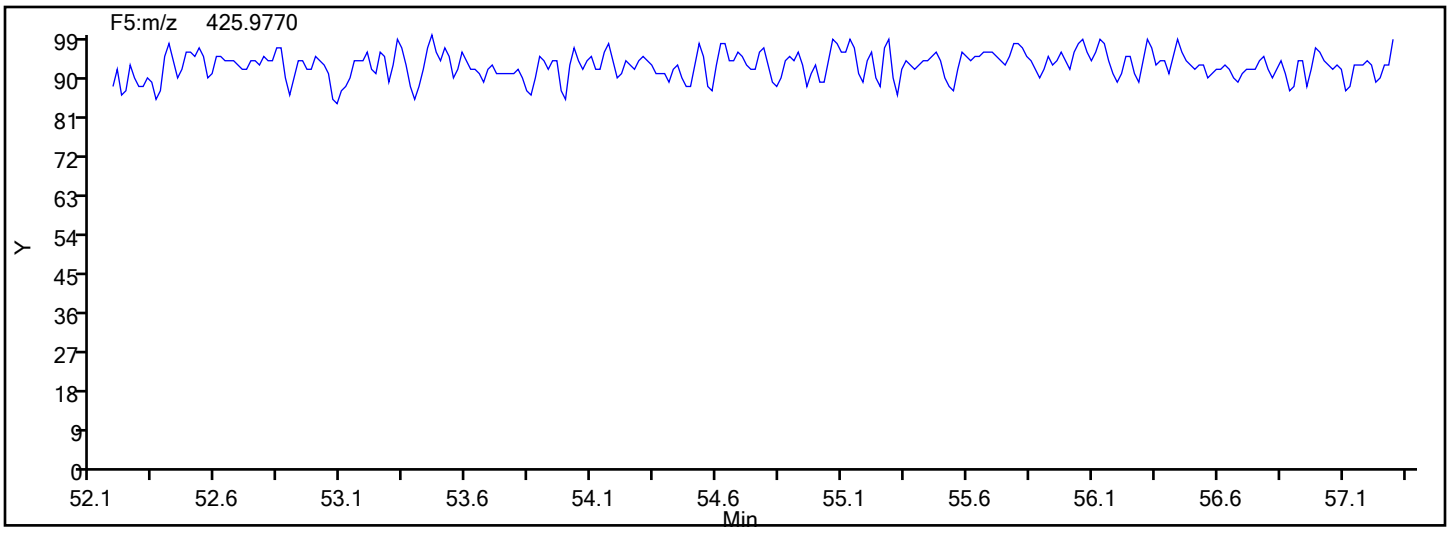
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 10:08:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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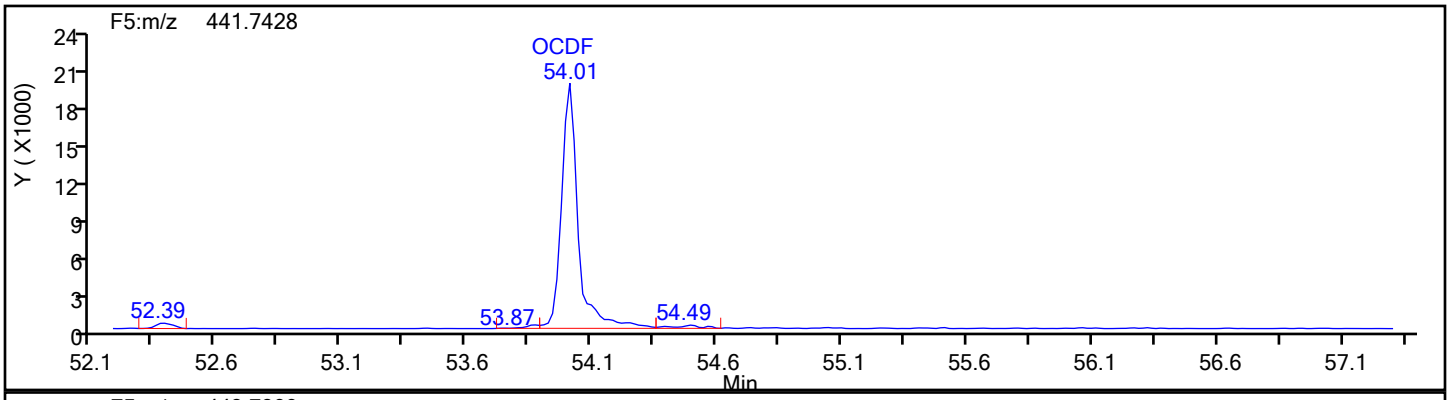
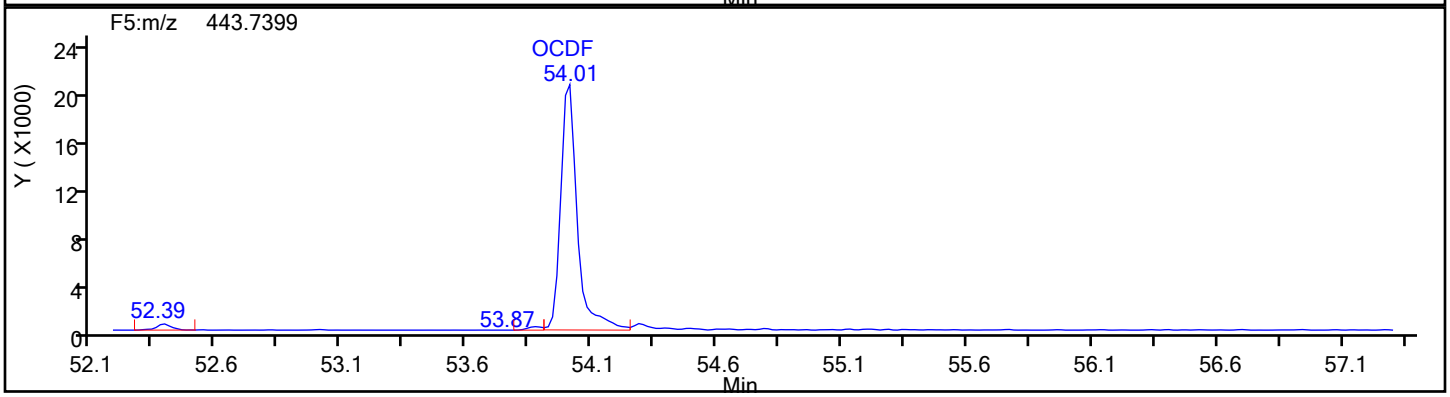
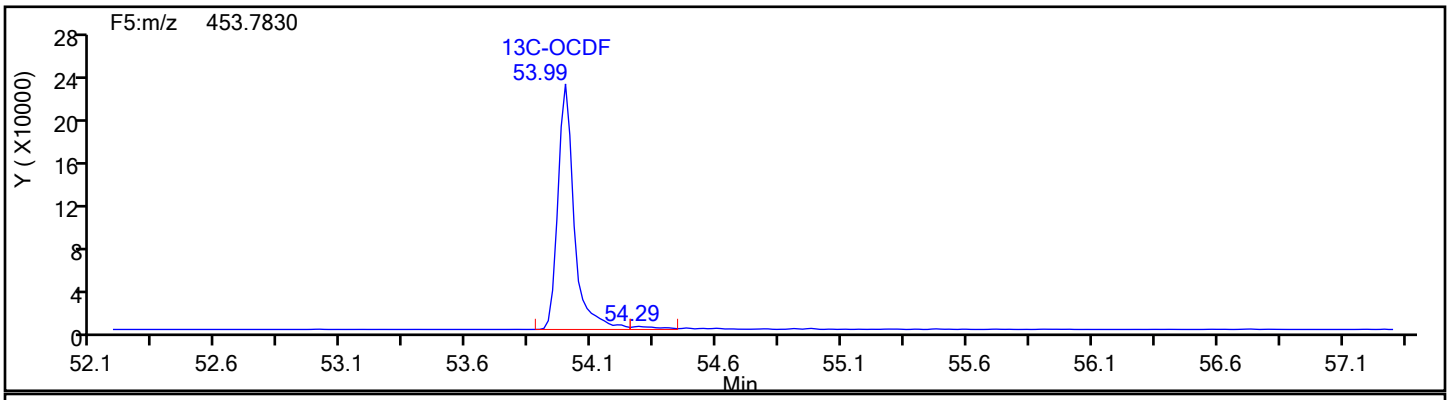
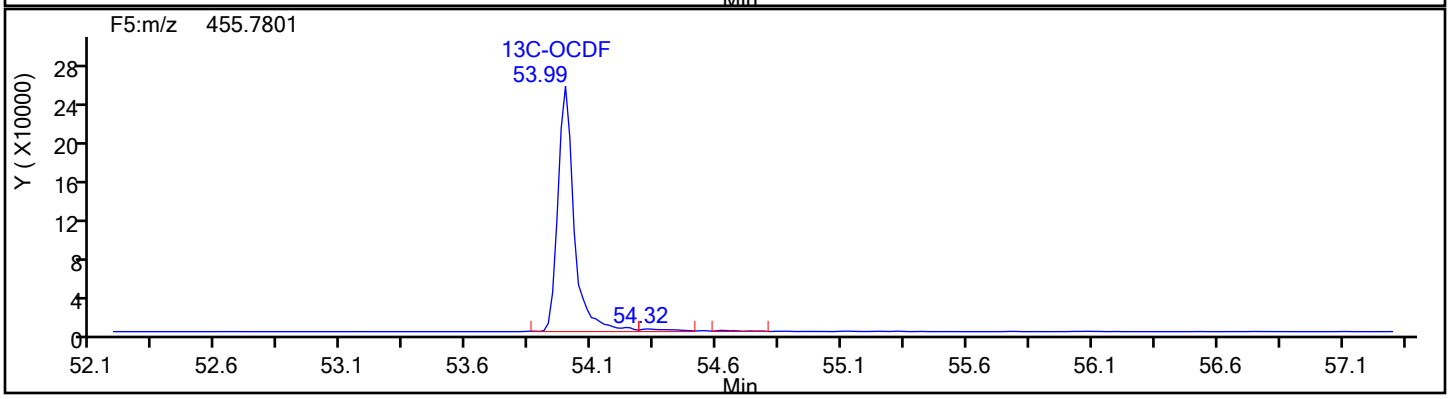




OCDF Standards





Report Date: 17-Dec-2019 10:08:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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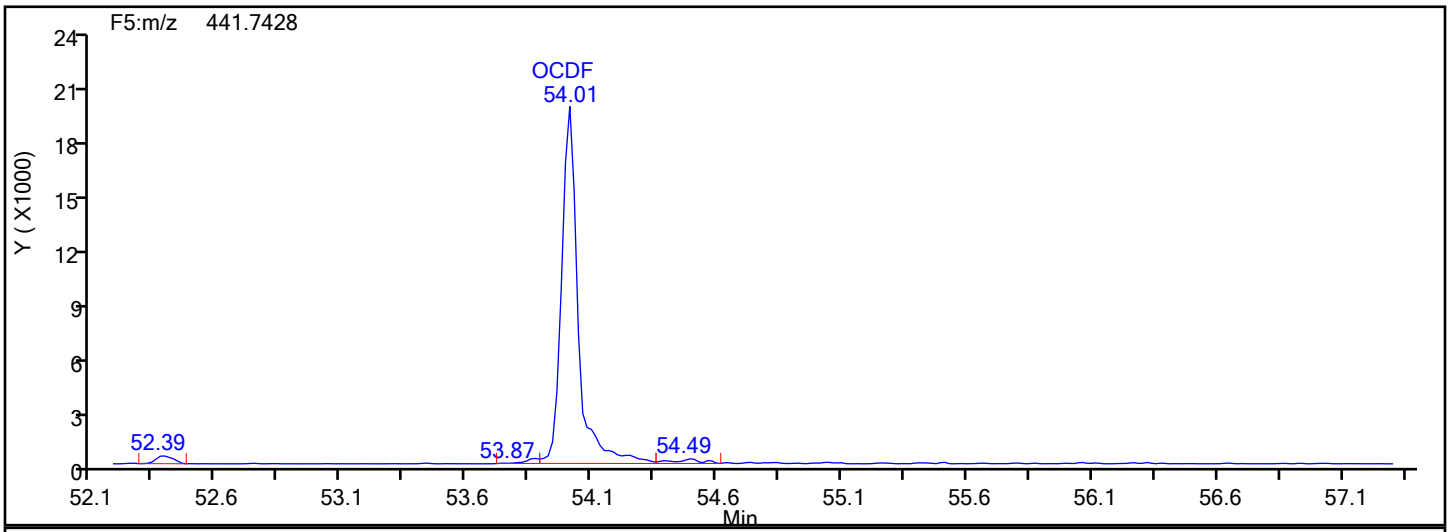
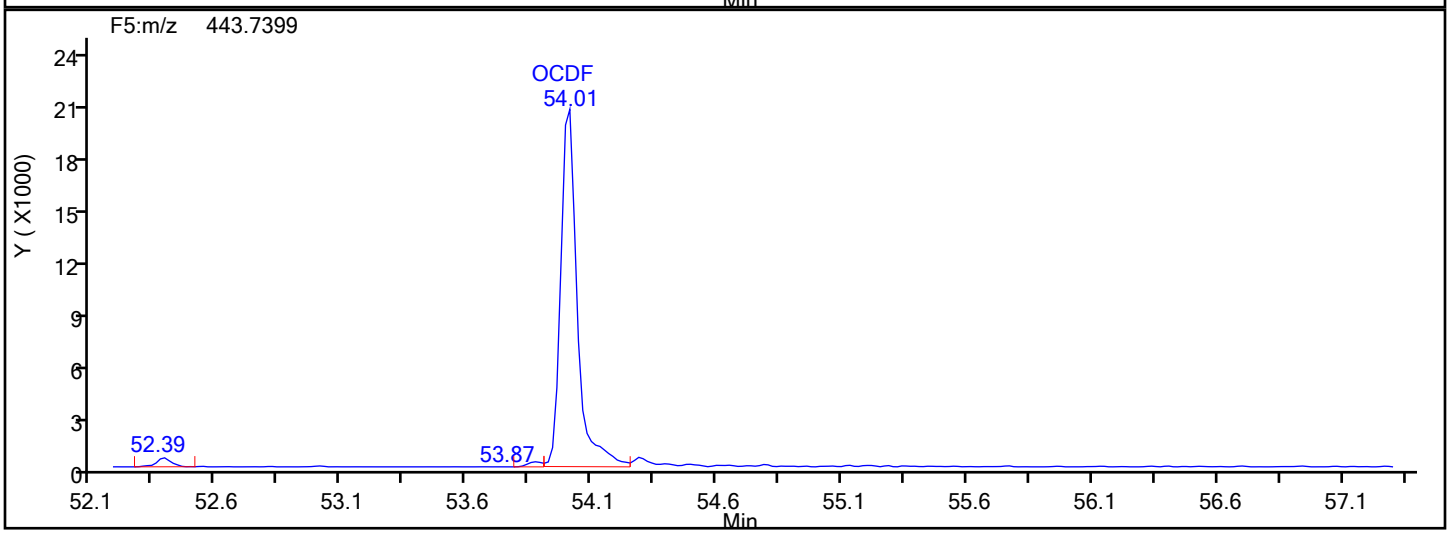
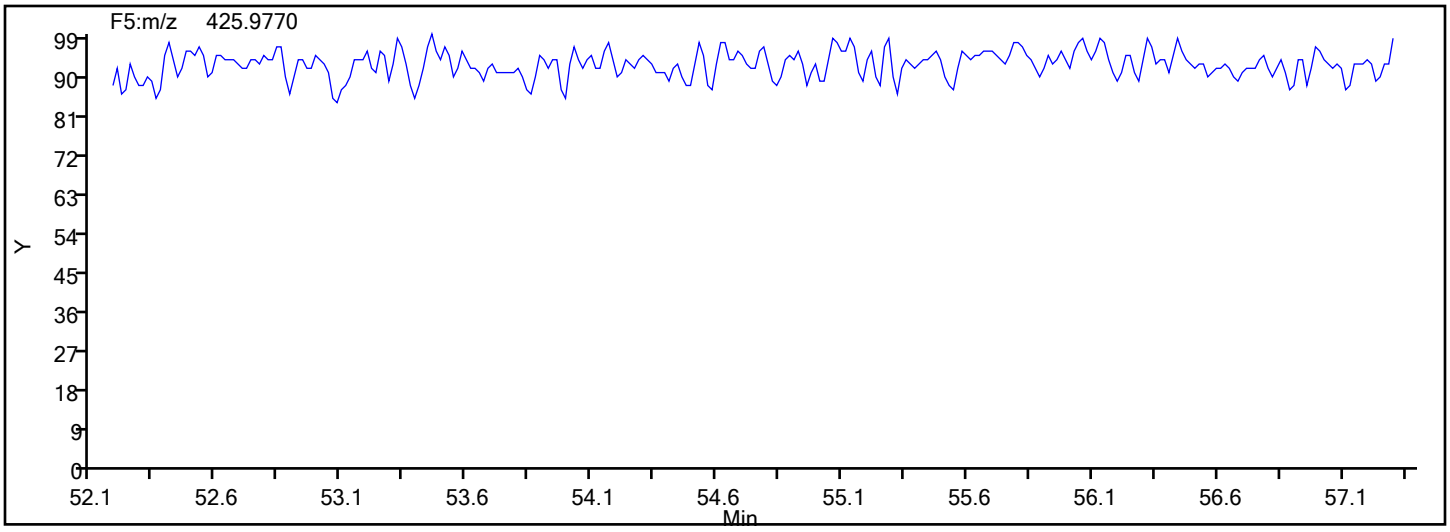




OCDF Lock Mass



Report Date: 17-Dec-2019 10:08:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-1-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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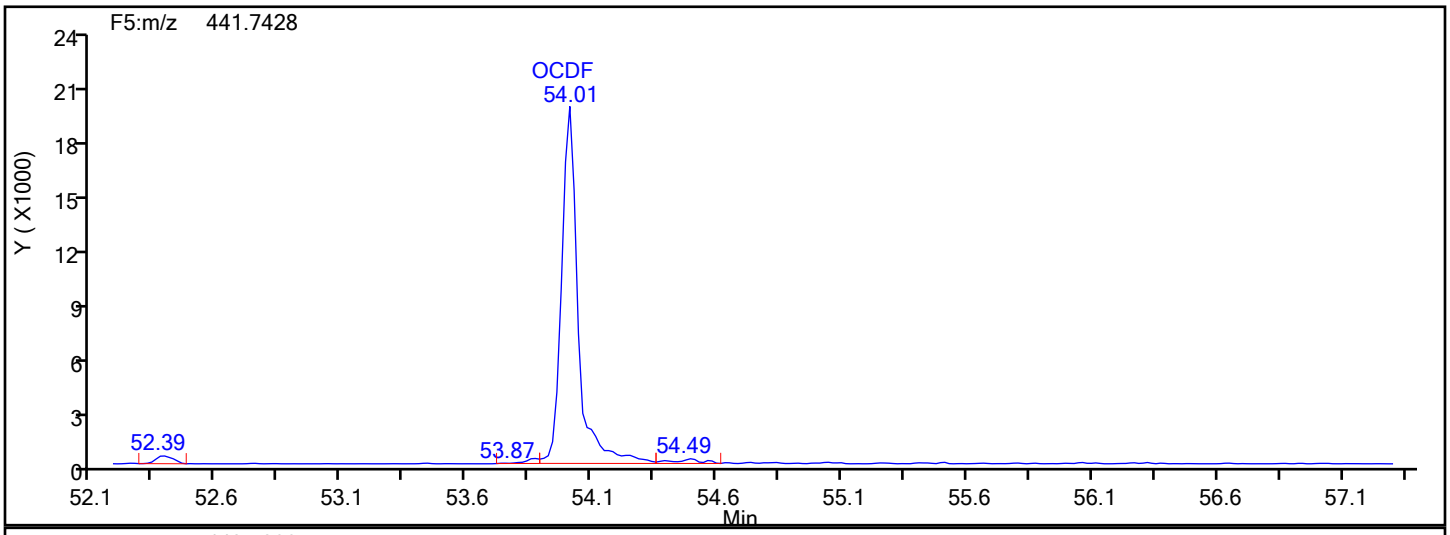
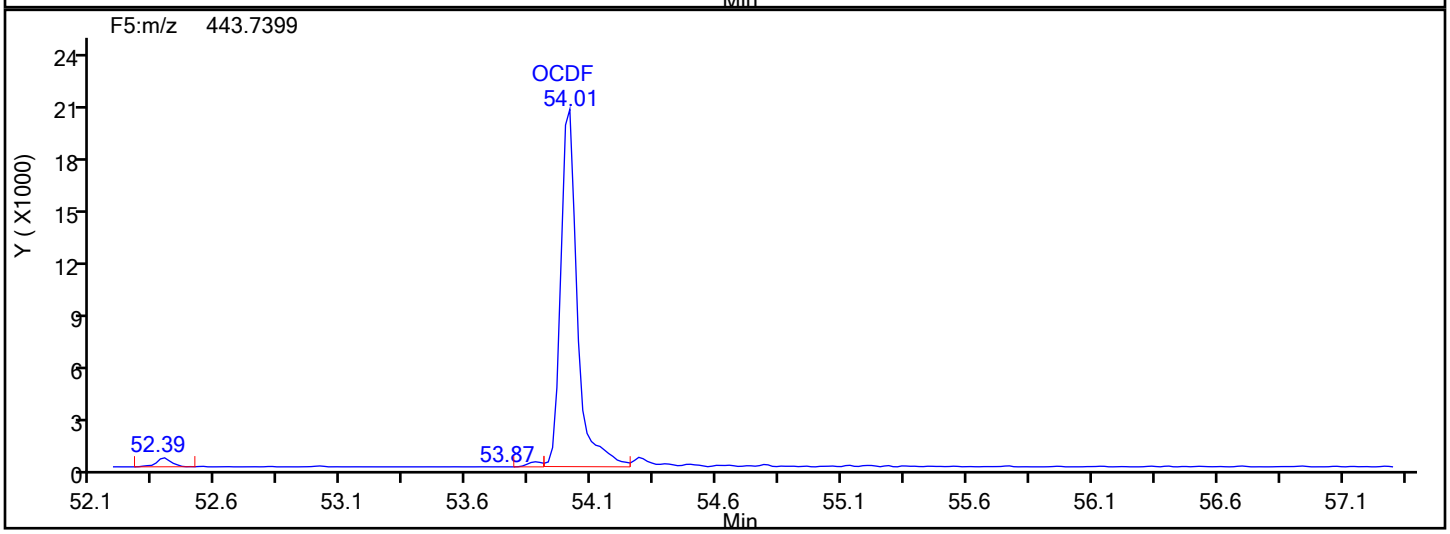
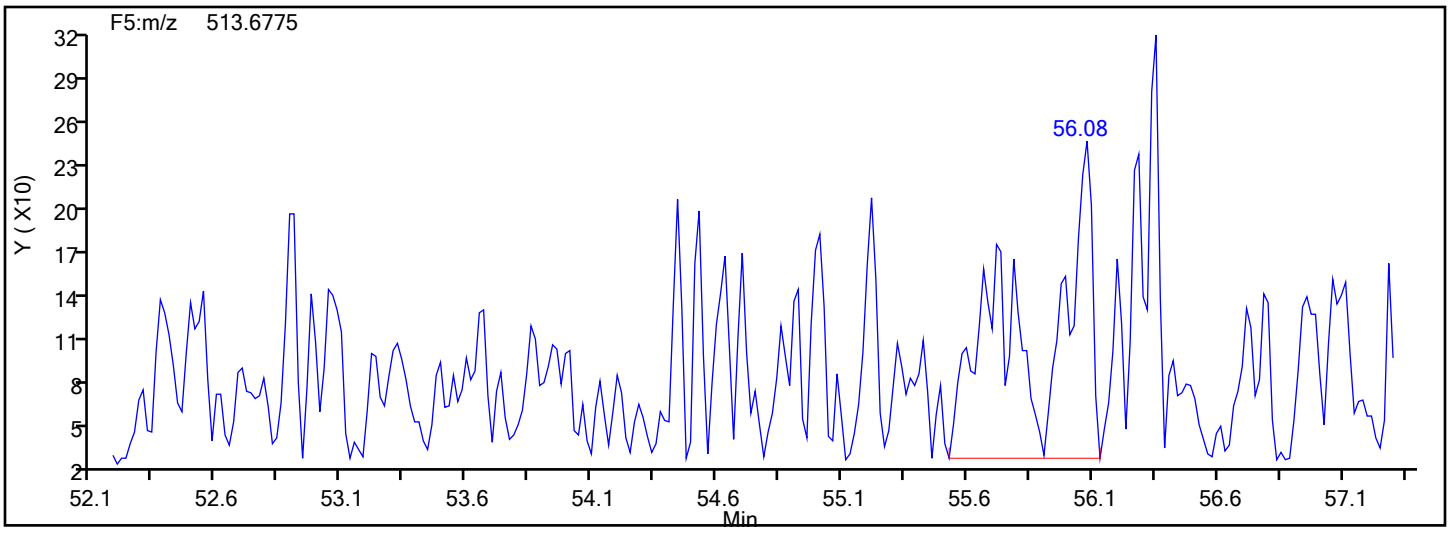




OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(0-1) Lab Sample ID: 140-17578-1

Matrix: Sediment Lab File ID: 140-17578-a-1-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.06(g) Date Analyzed: 12/18/2019 03:24

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 23.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	11		1.3	0.46

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	63		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:24:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-006
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:18:13 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 04:18:12

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	51736	0.77	1.2213	2.256	1.708	0.2770	0.2770		RQ
2,3,7,8-TCDF	22:14	155746	0.79	1.1100	4.162	4.162	0.1762	0.1762		Ma
D 13C-2,3,7,8-TCDD	19:42	1240299	0.84	1.0031	37.1	37.1	0.6890	0.6890	74.25	
D 13C-2,3,7,8-TCDF	22:12	1685590	0.81	1.6193	31.3	31.3	0.2386	0.2386	62.51	
$ 37Cl4-2,3,7,8-TCDD	19:43	274991		1.1834	6.977	6.977	0.0522	0.0522	69.77	
* 13C-1,2,3,4-TCDD	20:09	3330621	0.83	1.6E+05	100.0	100.0				

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d
Lims ID: 140-17578-A-1-A
Client ID: 11187072-120419-SS-SJSSA08(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:24:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-006
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:18:13 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 04:18:12

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQ
319.8965	19:43	19:43	0	1.001	22507	3457	322	805	11		
321.8936	19:44	19:43	1	1.002	45828	4067	135	337	30	0.49(0.65-0.89)	
	Empc Correction				29229	4489	135	337	33		
2,3,7,8-TCDF											Ma
303.9016	22:14	22:14	-1	1.002	68695	9925	220	550	45		M
305.8987	22:15	22:14	0	1.002	87051	11811	121	302	98	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:42	19:42	0	0.977	565682	77101	683	1707	113		
333.9338	19:42	19:42	0	0.977	674617	91664	714	1785	128	0.84(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:12	22:13	-1	1.102	754929	93081	367	917	254		
317.9389	22:13	22:13	0	1.103	930661	124743	414	1035	301	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:43	0	0.978	274991	42921	125	312	343		
13C-1,2,3,4-TCDD											
331.9368	20:09	20:09	0		1510125	218972	683	1707	321		
333.9338	20:08	20:09	-1		1820496	286295	714	1785	401	0.83(0.65-0.89)	

QC Flag Legend

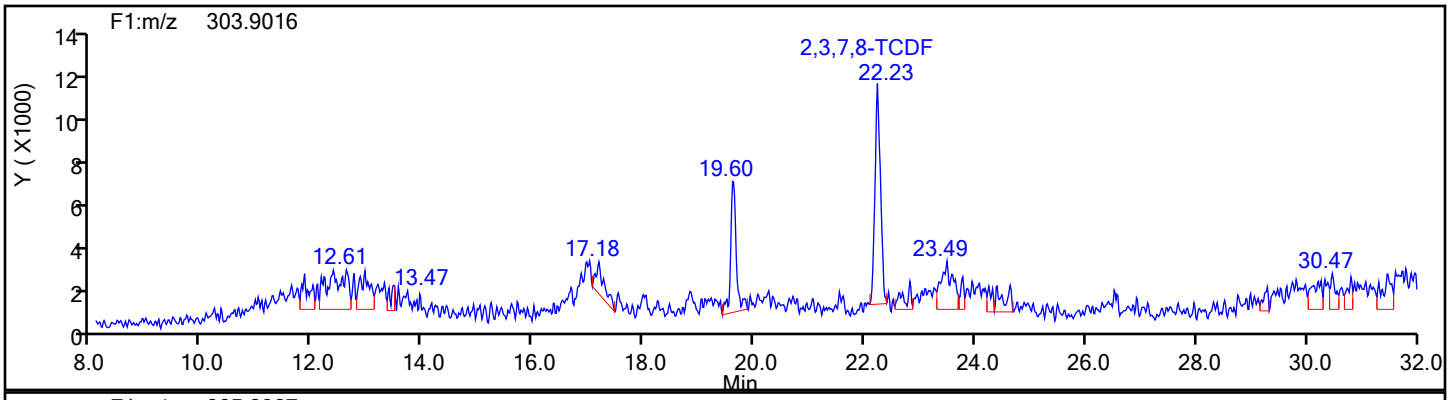
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated
a - User Assigned ID

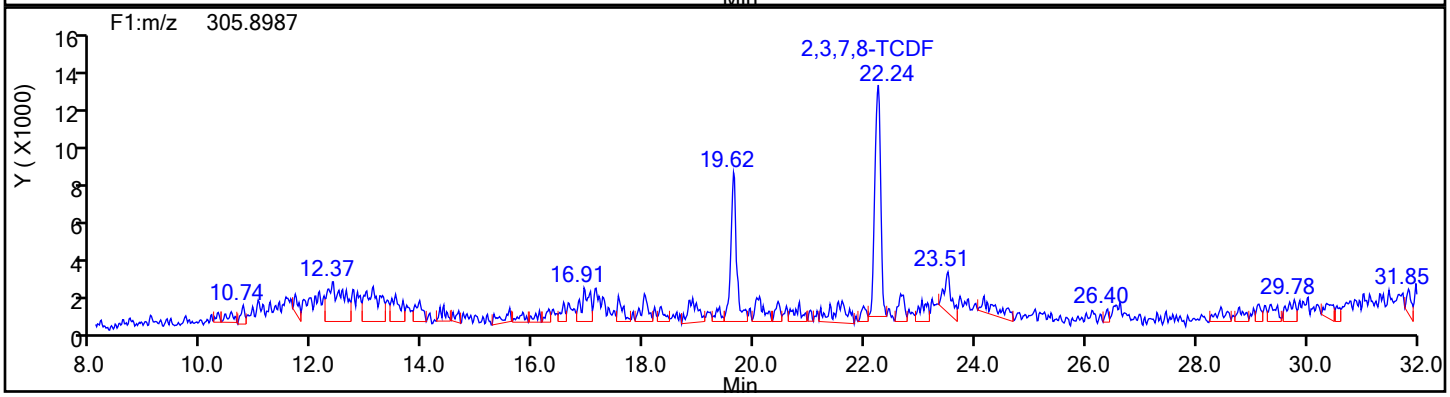
Report Date: 18-Dec-2019 04:18:14 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

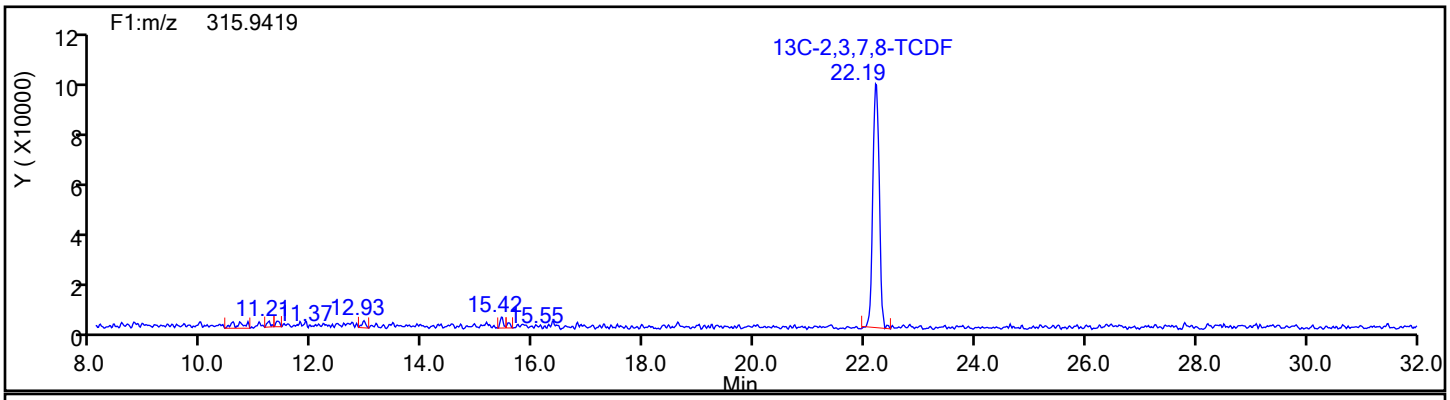
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d		
Injection Date:	18-Dec-2019 03:24:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36167	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

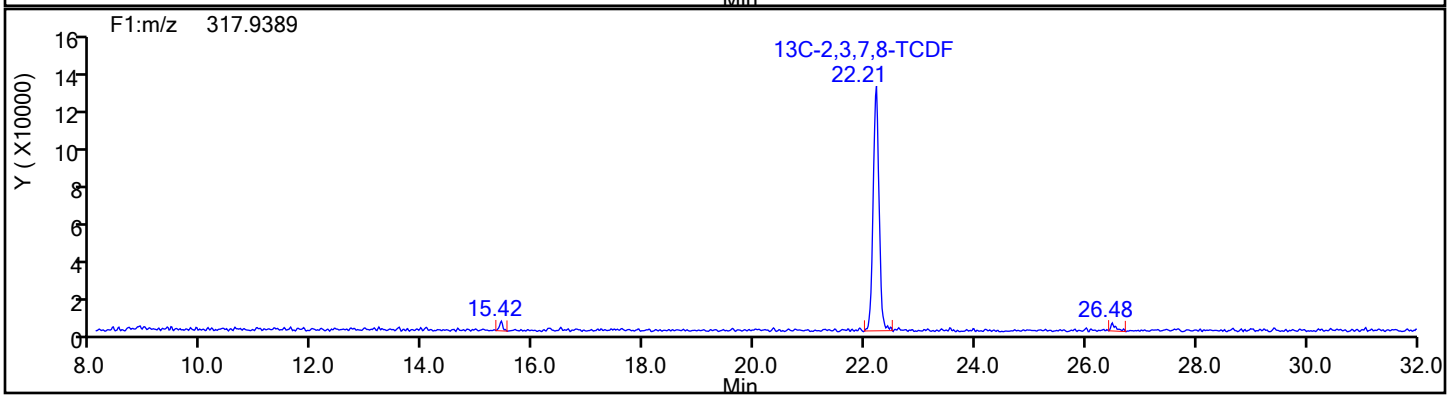
TCDF





TCDF Standards



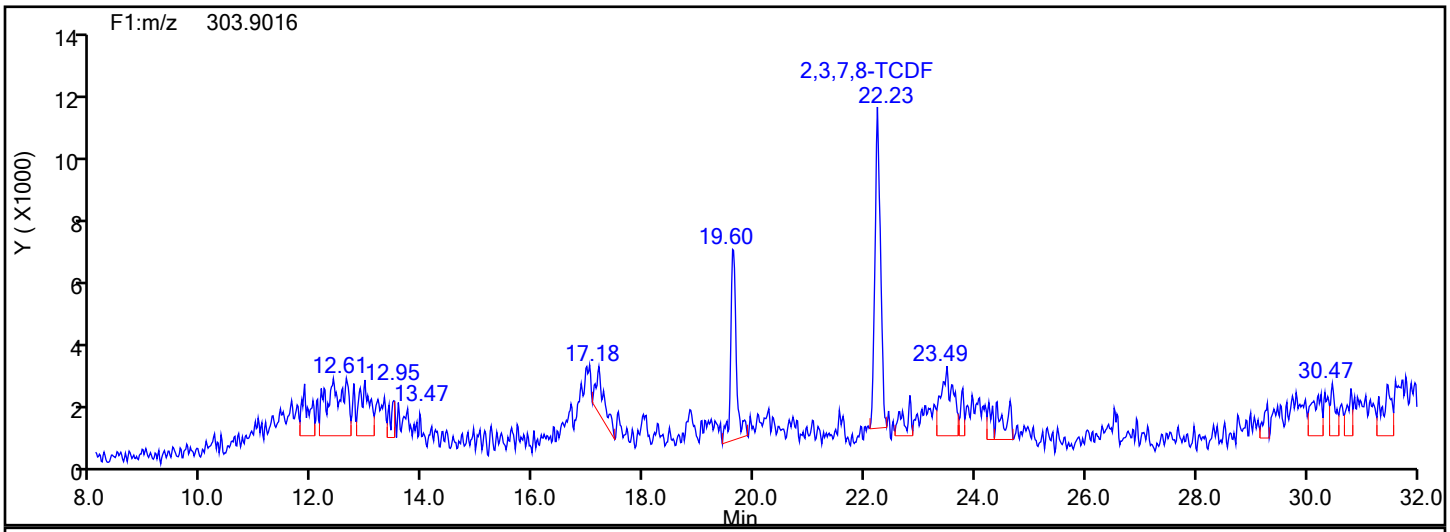


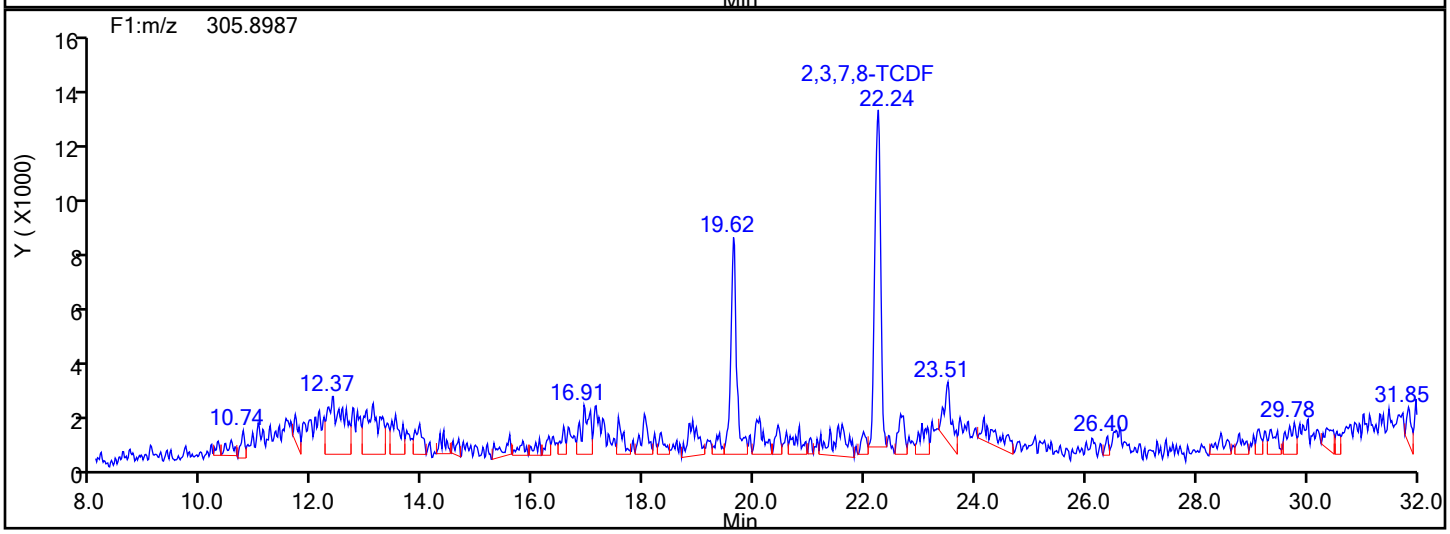
Report Date: 18-Dec-2019 04:18:14 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

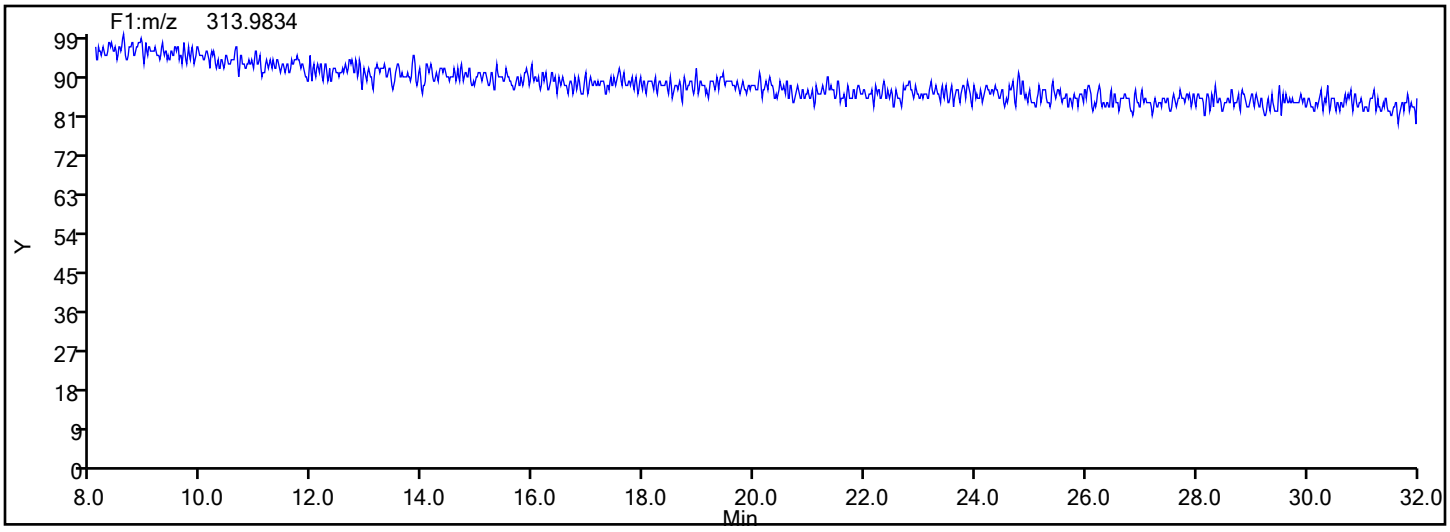
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d		
Injection Date:	18-Dec-2019 03:24:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36167	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

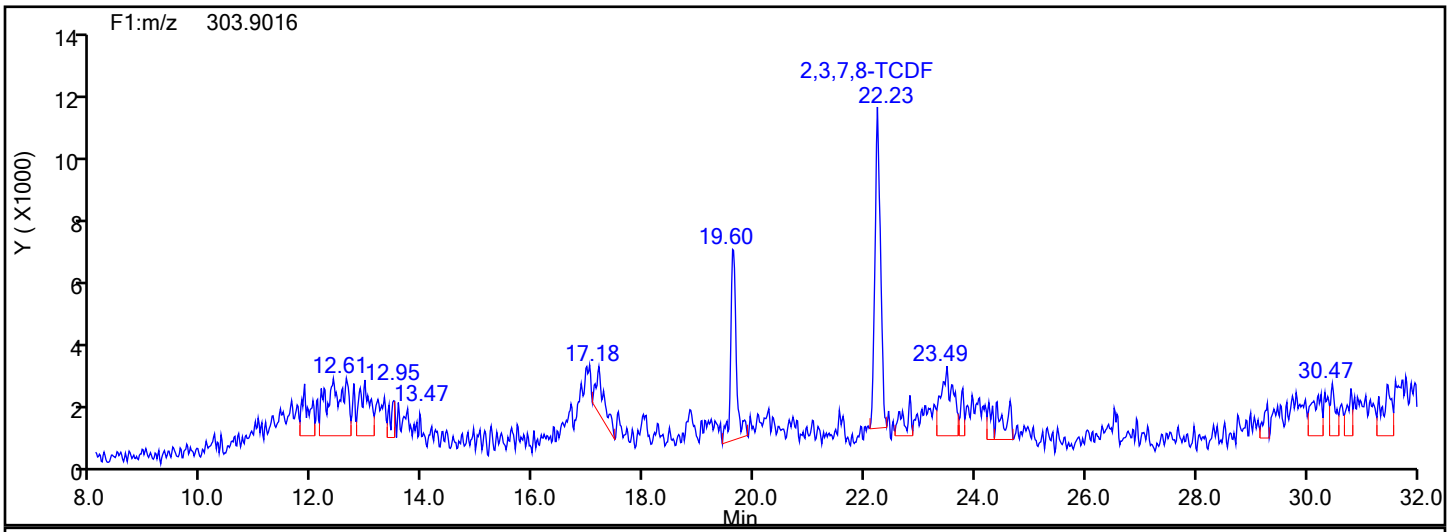


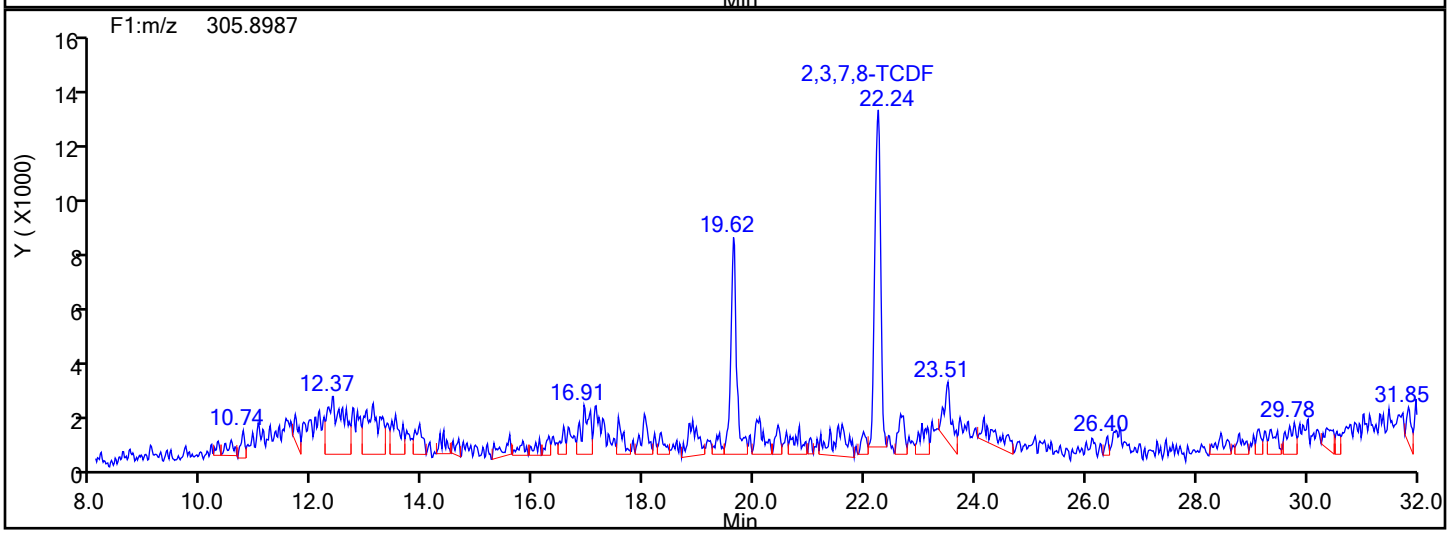
Report Date: 18-Dec-2019 04:18:14 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

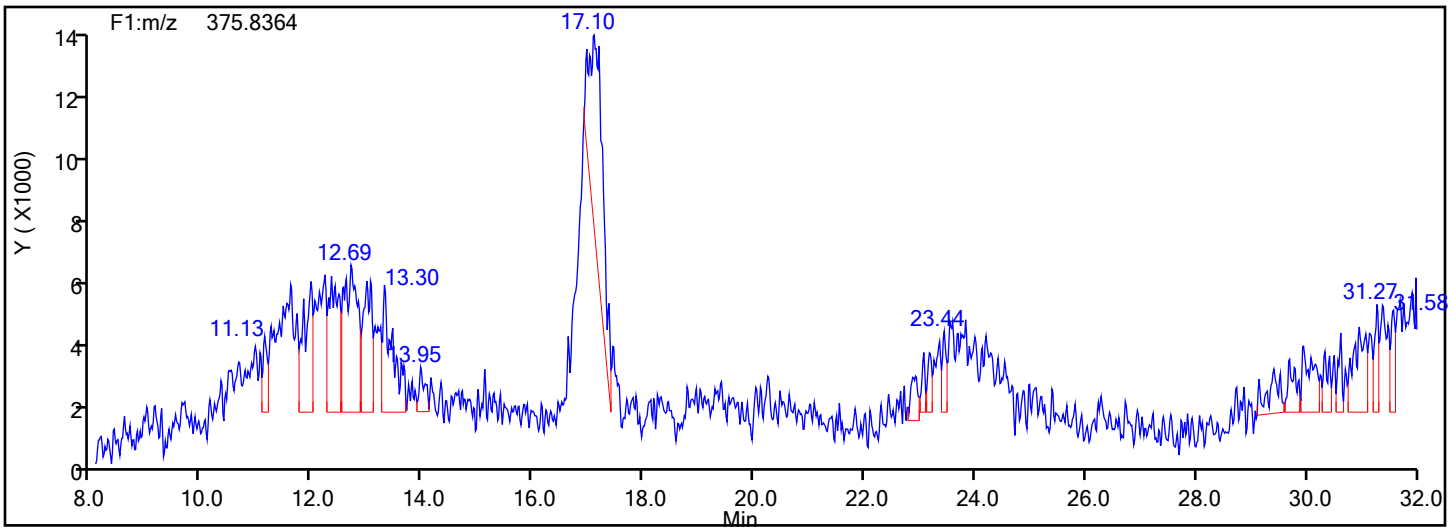
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d		
Injection Date:	18-Dec-2019 03:24:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(0-1)		
Worklist#:	36167	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

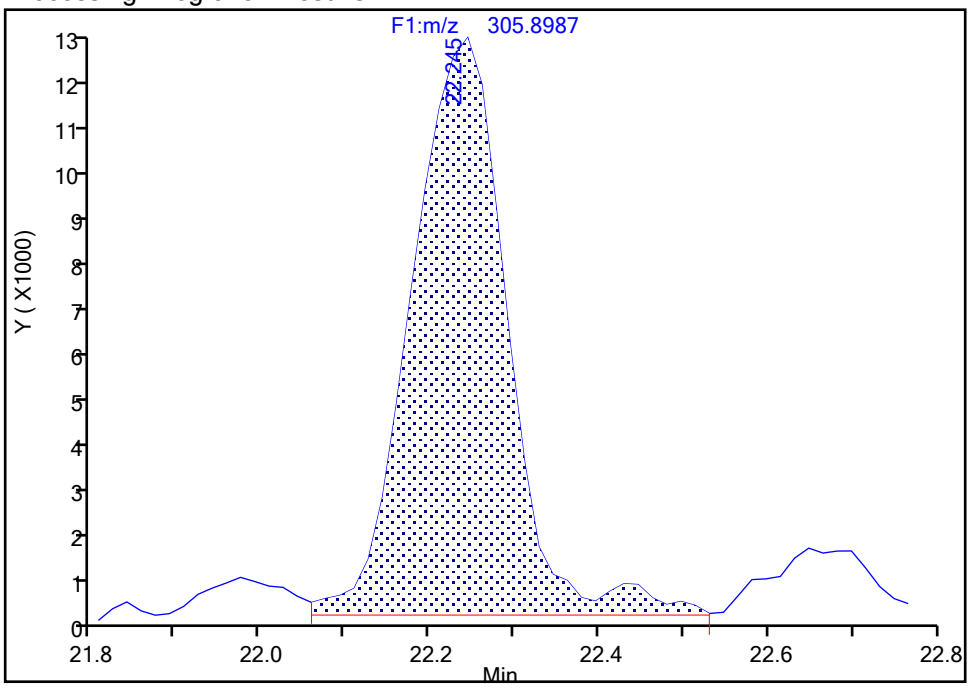
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d				
Injection Date:	18-Dec-2019 03:24:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

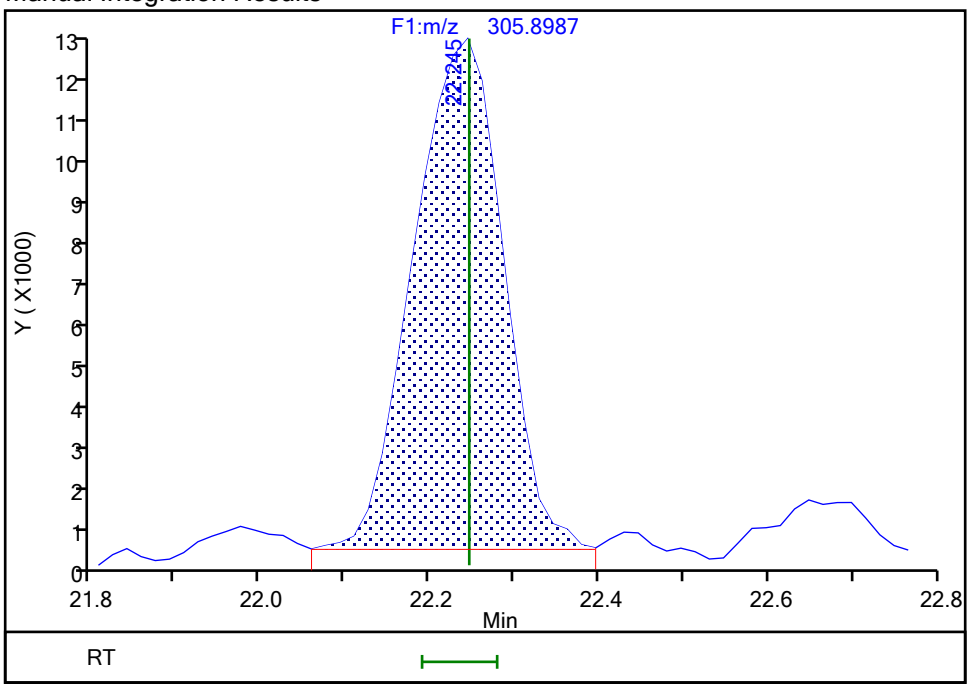
Processing Integration Results

RT: 22.24
Area: 95250
Amount: 4.680051
Amount Units: pg/ul



Manual Integration Results

RT: 22.24
Area: 87051
Amount: 4.161975
Amount Units: pg/ul



Reviewer: mcwhirterl, 18-Dec-2019 04:17:51
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Knoxville

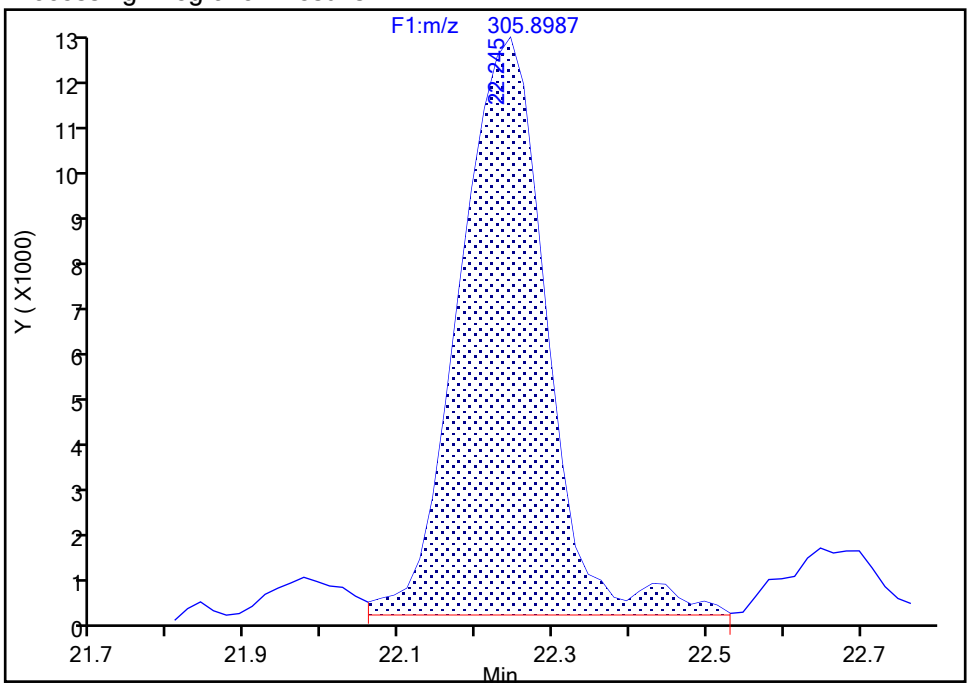
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d				
Injection Date:	18-Dec-2019 03:24:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 3

Processing Integration Results

RT: 22.23
Area: 175133
Amount: 4.680051
Amount Units: pg/ul



Manual Integration Results

RT: 22.23
Area: 155746
Amount: 4.161975
Amount Units: pg/ul
Reviewer: mcwhirterl, 18-Dec-2019 04:17:51
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Knoxville

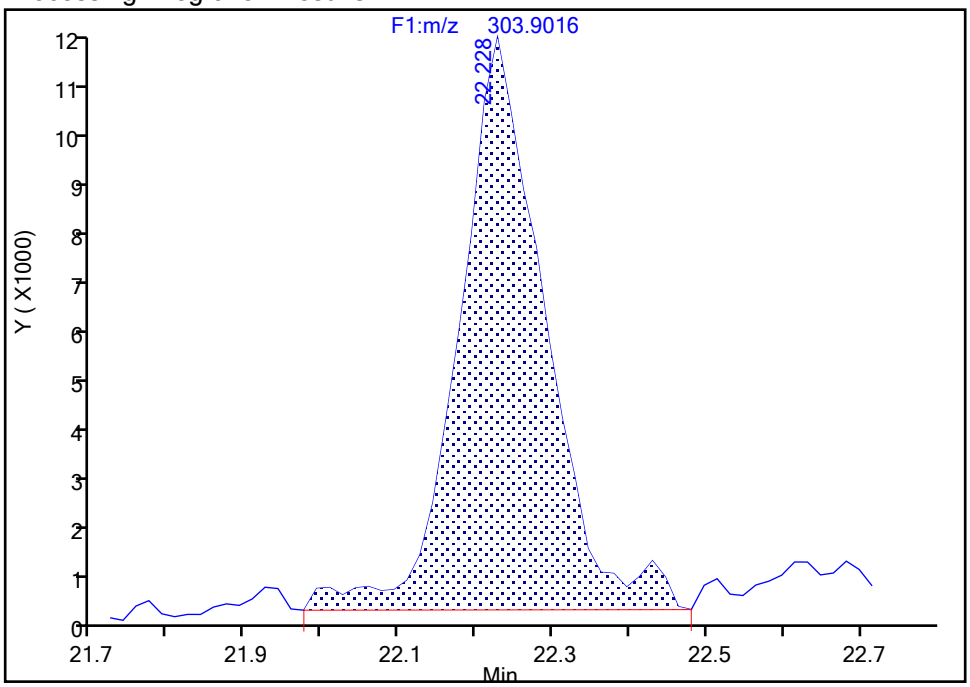
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-1-a.d				
Injection Date:	18-Dec-2019 03:24:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-1-A	Lab Sample ID:	140-17578-1		
Client ID:	11187072-120419-SS-SJSSA08(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

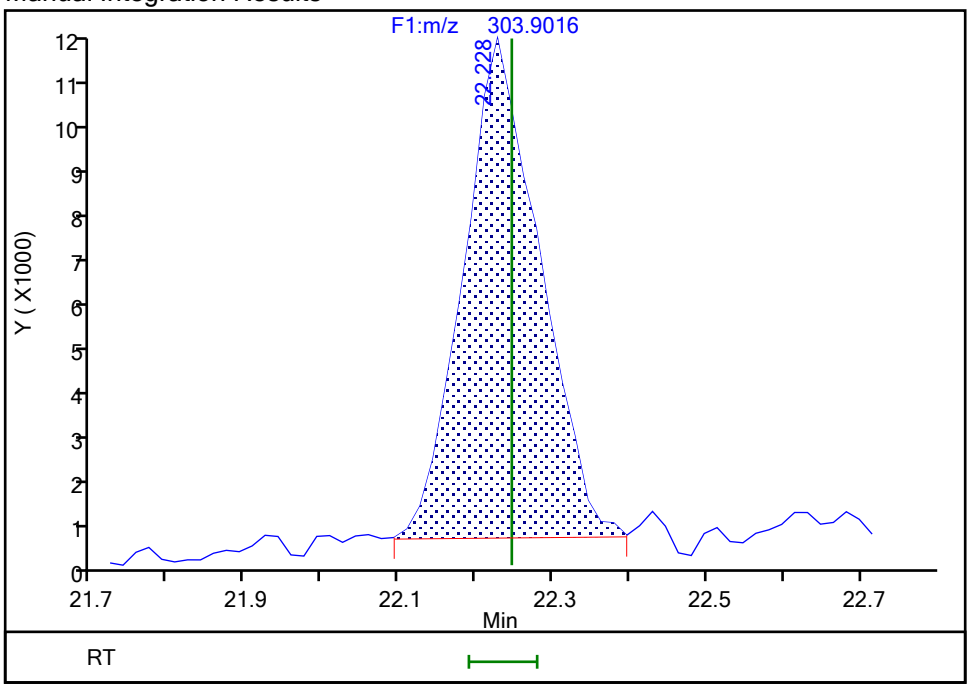
Processing Integration Results

RT: 22.23
Area: 79883
Amount: 4.680051
Amount Units: pg/ul



Manual Integration Results

RT: 22.23
Area: 68695
Amount: 4.161975
Amount Units: pg/ul



Reviewer: mcwhirterl, 18-Dec-2019 04:17:52
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Matrix: Sediment Lab File ID: 140-17578-a-2-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/17/2019 06:03

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	10		1.5	0.096
41903-57-5	Total TCDD	17	B q	1.5	0.096
40321-76-4	1,2,3,7,8-PeCDD	0.49	J q	7.3	0.066
36088-22-9	Total PeCDD	6.4	J q	7.3	0.066
39227-28-6	1,2,3,4,7,8-HxCDD	0.98	J	7.3	0.052
57653-85-7	1,2,3,6,7,8-HxCDD	1.7	J	7.3	0.052
19408-74-3	1,2,3,7,8,9-HxCDD	3.0	J	7.3	0.049
34465-46-8	Total HxCDD	50	B q	7.3	0.051
35822-46-9	1,2,3,4,6,7,8-HpCDD	73	B	7.3	0.17
37871-00-4	Total HpCDD	240	B	7.3	0.17
3268-87-9	OCDD	2600	B	15	0.049
30402-14-3	Total TCDF	68	I B q	1.5	0.12
57117-41-6	1,2,3,7,8-PeCDF	1.2	J	7.3	0.062
57117-31-4	2,3,4,7,8-PeCDF	0.86	J q	7.3	0.059
30402-15-4	Total PeCDF	7.3	I q	7.3	0.060
70648-26-9	1,2,3,4,7,8-HxCDF	2.5	J	7.3	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	1.1	J I	7.3	0.11
60851-34-5	2,3,4,6,7,8-HxCDF	0.25	J q	7.3	0.13
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.3	0.16
55684-94-1	Total HxCDF	12	I q	7.3	0.13
67562-39-4	1,2,3,4,6,7,8-HpCDF	6.6	J B	7.3	0.12
55673-89-7	1,2,3,4,7,8,9-HpCDF	1.0	J B	7.3	0.17
38998-75-3	Total HpCDF	16	B q	7.3	0.14
39001-02-0	OCDF	53	B	15	0.026

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Matrix: Sediment Lab File ID: 140-17578-a-2-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/17/2019 06:03

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	70		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	71		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	70		23-140
114423-97-1	13C-OCDD	68		17-157
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	68		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	66		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	67		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	68		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	67		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	68		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	63		26-138
109719-78-0	13C-OCDF	66		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 06:03:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:15:19 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:15:19

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:48	125164	0.76	1.1733	3.544	3.544	0.0327	0.0327		
A Non-2,3,7,8-sub-TCDD	29:30	76117	0.77	1.1733	2.346	2.155	0.0327	0.8369		RQMa
S Total TCDD					5.890	5.699	0.0327	0.0327		RQ
2,3,7,8-TCDF	28:49	637235	0.82	1.0881	12.1	12.1	0.0403	0.0403		
A Non-2,3,7,8-sub-TCDF	28:13	588218	0.77	1.0881	11.3	11.2	0.0403	5.208		RQM
S Total TCDF					23.4	23.3	0.0403	0.0403		RQ
1,2,3,7,8-PeCDD	40:35	4682	1.55	1.0434	0.2007	0.1671	0.0226	0.0226		RQM
A Non-2,3,7,8-sub-PeCDD	39:27	56458	1.55	1.0434	2.202	2.015	0.0226	0.9272		RQ
S Total PeCDD					2.403	2.182	0.0226	0.0226		RQ
1,2,3,7,8-PeCDF	38:47	20260	1.39	1.1898	0.4197	0.4197	0.0211	0.0211		M
2,3,4,7,8-PeCDF	40:02	13025	1.55	1.1095	0.3273	0.2943	0.0200	0.0200		RQ
A Non-2,3,7,8-sub-PeCDF	38:02	82851	1.55	1.1496	1.916	1.791	0.0205	0.5565		RQM
S Total PeCDF					2.663	2.505	0.0205	0.0205		RQ
1,2,3,4,7,8-HxCDD	44:50	10588	1.31	1.1409	0.3345	0.3345	0.0176	0.0176		
1,2,3,6,7,8-HxCDD	44:57	21216	1.19	1.1481	0.5774	0.5774	0.0179	0.0179		
1,2,3,7,8,9-HxCDD	45:20	37155	1.15	1.2212	1.019	1.019	0.0166	0.0166		
A Non-2,3,7,8-sub-HxCDD	44:19	529893	1.24	1.1700	15.2	15.2	0.0174	10.5		RQ
S Total HxCDD					17.1	17.1	0.0174	0.0174		RQ
1,2,3,4,7,8-HxCDF	43:48	44110	1.24	1.3629	0.8390	0.8390	0.0405	0.0405		
1,2,3,6,7,8-HxCDF	43:56	22961	1.17	1.2762	0.3733	0.3733	0.0391	0.0391		M
2,3,4,6,7,8-HxCDF	44:39	4776	1.24	1.2654	0.1105	0.0857	0.0446	0.0446		RQMa
1,2,3,7,8,9-HxCDF	45:36						0.0545	0.0545		
A Non-2,3,7,8-sub-HxCDF	44:10	151604	1.24	1.2905	2.809	2.760	0.0440	0.7816		RQMa
S Total HxCDF					4.132	4.058	0.0447	0.0447		RQ
1,2,3,4,6,7,8-HpCDD	49:37	779404	1.02	1.1204	24.8	24.8	0.0593	0.0593		
A Non-2,3,7,8-sub-HpCDD	49:03	1785649	1.04	1.1204	56.9	56.9	0.0593	56.9		
S Total HpCDD					81.7	81.7	0.0593	0.0593		
1,2,3,4,6,7,8-HpCDF	47:57	118582	0.99	1.4984	2.263	2.263	0.0394	0.0394		M
1,2,3,4,7,8,9-HpCDF	50:17	12981	0.97	1.3807	0.3419	0.3419	0.0583	0.0583		
A Non-2,3,7,8-sub-HpCDF	49:20	132968	1.04	1.4395	3.022	2.957	0.0473	2.710		RQMa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					5.627	5.563	0.0488	0.0488		RQ
OCDD	53:53	24681595	0.90	1.2073	877.0	877.0	0.0168	0.0168		
OCDF	54:00	693321	0.92	1.1162	18.0	18.0	0.008754	0.008754		
D 13C-2,3,7,8-TCDD	30:45	1505183	0.81	1.0709	32.1	32.1	0.2596	0.2596	64.14	
D 13C-2,3,7,8-TCDF	28:47	2416473	0.81	1.7545	31.4	31.4	0.7926	0.7926	62.85	
D 13C-1,2,3,7,8-PeCDD	40:33	1342920	1.59	0.8743	35.0	35.0	0.2435	0.2435	70.10	
D 13C-1,2,3,7,8-PeCDF	38:45	2028743	1.56	1.3704	33.8	33.8	0.3172	0.3172	67.56	
D 13C-2,3,4,7,8-PeCDF	40:01	1994592	1.66	1.3837	32.9	32.9	0.3141	0.3141	65.78	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1387066	1.27	0.8772	32.3	32.3	0.1063	0.1063	64.52	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1600185	1.27	0.9171	35.6	35.6	0.1017	0.1017	71.20	
D 13C-1,2,3,4,7,8-HxCDF	43:47	1928699	0.53	1.1892	33.1	33.1	0.2975	0.2975	66.18	
D 13C-1,2,3,6,7,8-HxCDF	43:55	2409647	0.51	1.4625	33.6	33.6	0.2419	0.2419	67.23	
D 13C-2,3,4,6,7,8-HxCDF	44:39	2203267	0.54	1.3197	34.1	34.1	0.2681	0.2681	68.13	
D 13C-1,2,3,7,8,9-HxCDF	45:35	1971647	0.55	1.2001	33.5	33.5	0.2948	0.2948	67.04	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	1400601	1.00	0.8155	35.0	35.0	0.1230	0.1230	70.08	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	1748388	0.48	1.0496	34.0	34.0	0.1998	0.1998	67.97	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	1374841	0.47	0.8947	31.4	31.4	0.2344	0.2344	62.70	
D 13C-OCDD	53:52	2331248	0.94	0.7044	67.5	67.5	0.2276	0.2276	67.52	
D 13C-OCDF	54:00	3443827	0.92	1.0615	66.2	66.2	0.1657	0.1657	66.20	
$ 37Cl4-2,3,7,8-TCDD	30:48	387099		1.2266	7.201	7.201	0.3238	0.3238	72.01	
* 13C-1,2,3,4-TCDD	30:16	4382440	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	4901310	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 17-Dec-2019 10:15:21 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 06:03:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:15:19 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:15:19

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:48	30:49	-3	1.002	54103	5808	19	47	306		
321.8936	30:49	30:49	-2	1.002	71061	7517	29	72	259	0.76(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:53	29:30	-276	0.809	2088	282	19	47	15		
321.8936	24:52	29:30	-277	0.809	2940	406	29	72	14	0.71(0.65-0.89)	
319.8965	25:38	29:30	-231	0.833	1063	114	19	47	6		
321.8936	25:37	29:30	-232	0.833	2479	360	29	72	12	0.43(0.65-0.89)	
	Empc Correction				1380	148	29	72	5		
319.8965	26:16	29:30	-193	0.854	1251	222	19	47	12		
321.8936	26:16	29:30	-193	0.854	2239	282	29	72	10	0.56(0.65-0.89)	
	Empc Correction				1624	288	29	72	10		
319.8965	27:46	29:30	-103	0.903	13403	1589	19	47	84		
321.8936	27:45	29:30	-104	0.902	16157	1868	29	72	64	0.83(0.65-0.89)	
319.8965	28:14	29:30	-75	0.918	1011	236	19	47	12		
321.8936	28:11	29:30	-78	0.917	1354	181	29	72	6	0.75(0.65-0.89)	M
319.8965	28:30	29:30	-60	0.927	864	152	19	47	8		M
321.8936	28:33	29:30	-57	0.928	1112	175	29	72	6	0.78(0.65-0.89)	
319.8965	28:46	29:30	-44	0.935	1483	195	19	47	10		
	Empc Correction				907	117	19	47	6		
321.8936	28:38	29:30	-52	0.931	1179	153	29	72	5	1.26(0.65-0.89)	
319.8965	29:27	29:30	-2	0.958	1044	165	19	47	9		
321.8936	29:26	29:30	-3	0.957	1240	284	29	72	10	0.84(0.65-0.89)	
319.8965	30:13	29:30	43	0.982	4202	615	19	47	32		
	Empc Correction				3522	443	19	47	23		
321.8936	30:15	29:30	45	0.984	4575	576	29	72	20	0.92(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	30:35	29:30	65	0.995	3527	424	19	47	22		
	Empc Correction				2250	397	19	47	21		
321.8936	30:35	29:30	65	0.995	2923	516	29	72	18	1.21(0.65-0.89)	
319.8965	31:55	29:30	145	1.038	4894	599	19	47	32		M
	Empc Correction				3896	381	19	47	20		
321.8936	31:54	29:30	144	1.037	5060	496	29	72	17	0.97(0.65-0.89)	
319.8965	32:37	29:30	187	1.061	488	111	19	47	6		
321.8936	32:36	29:30	186	1.060	1533	170	29	72	6	0.32(0.65-0.89)	
	Empc Correction				633	144	29	72	5		
319.8965	34:04	29:30	274	1.108	1807	283	19	47	15		
321.8936	34:01	29:30	271	1.106	2958	361	29	72	12	0.61(0.65-0.89)	
	Empc Correction				2346	367	29	72	13		
2,3,7,8-TCDF											
303.9016	28:49	28:51	-3	1.001	286637	30468	35	87	871		
305.8987	28:49	28:51	-3	1.001	350598	35137	61	152	576	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	22:29	28:13	-344	0.781	1348	229	35	87	7		
305.8987	22:28	28:13	-345	0.781	2504	413	61	152	7	0.54(0.65-0.89)	
	Empc Correction				1750	297	61	152	5		
303.9016	23:22	28:13	-290	0.812	2074	227	35	87	6		
	Empc Correction				989	266	35	87	8		
305.8987	23:21	28:13	-291	0.812	1285	346	61	152	6	1.61(0.65-0.89)	
303.9016	23:48	28:13	-265	0.827	4947	743	35	87	21		M
305.8987	23:50	28:13	-263	0.828	5898	725	61	152	12	0.84(0.65-0.89)	
303.9016	24:20	28:13	-233	0.845	6323	936	35	87	27		
305.8987	24:20	28:13	-233	0.845	9607	1088	61	152	18	0.66(0.65-0.89)	
303.9016	25:06	28:13	-187	0.872	15730	1815	35	87	52		M
305.8987	25:04	28:13	-189	0.871	17918	2106	61	152	35	0.88(0.65-0.89)	
303.9016	25:48	28:13	-145	0.896	20023	2062	35	87	59		M
305.8987	25:46	28:13	-147	0.895	25377	2427	61	152	40	0.79(0.65-0.89)	
303.9016	26:15	28:13	-118	0.912	3261	353	35	87	10		M
305.8987	26:15	28:13	-118	0.912	4803	724	61	152	12	0.68(0.65-0.89)	
303.9016	26:29	28:13	-104	0.920	8761	1264	35	87	36		
305.8987	26:27	28:13	-106	0.919	12312	1425	61	152	23	0.71(0.65-0.89)	
303.9016	26:58	28:13	-76	0.937	12779	1749	35	87	50		M
	Empc Correction				10631	1385	35	87	40		
305.8987	26:58	28:13	-76	0.937	13807	1799	61	152	29	0.93(0.65-0.89)	
303.9016	27:14	28:13	-59	0.946	2310	349	35	87	10		
	Empc Correction				1487	264	35	87	8		
305.8987	27:14	28:13	-59	0.946	1932	343	61	152	6	1.20(0.65-0.89)	
303.9016	27:43	28:13	-30	0.963	122656	14364	35	87	410		
305.8987	27:43	28:13	-30	0.963	151237	17608	61	152	289	0.81(0.65-0.89)	
303.9016	28:16	28:13	3	0.982	9567	790	35	87	23		
	Empc Correction				7990	612	35	87	17		
305.8987	28:18	28:13	5	0.984	10377	795	61	152	13	0.92(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	30:03	28:13	109	1.044	21949	2433	35	87	70		
305.8987	30:01	28:13	107	1.043	26573	2982	61	152	49	0.83(0.65-0.89)	
303.9016	30:42	28:13	148	1.067	4673	468	35	87	13		
305.8987	30:41	28:13	147	1.066	7155	605	61	152	10	0.65(0.65-0.89)	
303.9016	32:48	28:13	274	1.140	9689	1013	35	87	29		
305.8987	32:48	28:13	274	1.140	12292	1216	61	152	20	0.79(0.65-0.89)	
303.9016	33:52	28:13	338	1.177	20393	2003	35	87	57		
305.8987	33:50	28:13	336	1.176	25045	2542	61	152	42	0.81(0.65-0.89)	
1,2,3,7,8-PeCDD											RQM
355.8546	40:35	40:34	0	1.001	2846	687	20	50	34		
357.8516	40:34	40:34	-1	1.000	2779	410	35	87	12	1.02(1.32-1.78)	M
	Empc Correction				1836	443	35	87	13		
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:36	39:27	-111	0.927	9751	1527	20	50	76		
	Empc Correction				7342	1773	20	50	89		
357.8516	37:36	39:27	-111	0.927	4737	1144	35	87	33	2.06(1.32-1.78)	
355.8546	38:28	39:27	-59	0.949	15179	2834	20	50	142		
357.8516	38:28	39:27	-59	0.949	10805	2164	35	87	62	1.40(1.32-1.78)	
355.8546	39:10	39:27	-17	0.966	2959	654	20	50	33		
357.8516	39:09	39:27	-18	0.966	4750	686	35	87	20	0.62(1.32-1.78)	
	Empc Correction				1909	421	35	87	12		
355.8546	39:49	39:27	22	0.982	8262	1604	20	50	80		
357.8516	39:50	39:27	23	0.983	5265	895	35	87	26	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:47	38:45	0	1.001	11798	1986	17	42	117		M
341.8567	38:45	38:45	-2	1.000	8462	1565	61	152	26	1.39(1.32-1.78)	M
2,3,4,7,8-PeCDF											RQ
339.8597	40:02	40:03	-1	1.000	9378	1907	17	42	112		
	Empc Correction				7917	1692	17	42	100		
341.8567	40:02	40:03	-1	1.000	5108	1092	61	152	18	1.84(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	34:41	38:02	-200	0.895	10772	1248	17	42	73		
341.8567	34:39	38:02	-202	0.894	6911	872	61	152	14	1.56(1.32-1.78)	
339.8597	37:16	38:02	-45	0.962	18048	2333	17	42	137		
	Empc Correction				15647	1920	17	42	113		
341.8567	37:16	38:02	-45	0.962	10095	1239	61	152	20	1.79(1.32-1.78)	
339.8597	38:09	38:02	7	0.984	8707	874	17	42	51		M
341.8567	38:09	38:02	7	0.984	6743	822	61	152	13	1.29(1.32-1.78)	M
	Empc Correction				5617	563	61	152	9		
339.8597	39:18	38:02	77	1.014	3820	957	17	42	56		
	Empc Correction				3309	765	17	42	45		
341.8567	39:17	38:02	75	1.014	2135	494	61	152	8	1.79(1.32-1.78)	
339.8597	39:25	38:02	83	1.017	5551	1146	17	42	67		
341.8567	39:25	38:02	83	1.017	3913	969	61	152	16	1.42(1.32-1.78)	
339.8597	40:16	38:02	134	1.039	4459	720	17	42	42		
341.8567	40:17	38:02	135	1.040	3732	409	61	152	7	1.19(1.32-1.78)	
	Empc Correction				2876	464	61	152	8		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	41:22	38:02	200	1.068	1738	431	17	42	25		
341.8567	41:22	38:02	200	1.068	2012	470	61	152	8	0.86(1.32-1.78)	
	Empc Correction				1121	278	61	152	5		
1,2,3,4,7,8-HxCDD											
389.8158	44:50	44:50	0	1.000	6000	1582	36	90	44		
391.8127	44:49	44:50	-1	1.000	4588	1084	22	55	49	1.31(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:57	44:57	0	1.000	11545	2794	36	90	78		
391.8127	44:56	44:57	-1	1.000	9671	1868	22	55	85	1.19(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:20	45:19	-1	1.011	19837	3781	36	90	105		
391.8127	45:19	45:19	-2	1.011	17318	3033	22	55	138	1.15(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:16	44:19	-63	0.963	205212	53975	36	90	1499		
391.8127	43:16	44:19	-63	0.963	160983	42217	22	55	1919	1.27(1.05-1.43)	
389.8158	43:50	44:19	-29	0.976	12150	2638	36	90	73		
391.8127	43:50	44:19	-29	0.976	8717	1965	22	55	89	1.39(1.05-1.43)	
389.8158	44:08	44:19	-12	0.982	72757	16737	36	90	465		
391.8127	44:08	44:19	-12	0.982	52176	12298	22	55	559	1.39(1.05-1.43)	
389.8158	44:18	44:19	-1	0.986	9908	2000	36	90	56		
391.8127	44:18	44:19	-1	0.986	9624	1896	22	55	86	1.03(1.05-1.43)	
	Empc Correction				7990	1612	22	55	73		
1,2,3,4,7,8-HxCDF											
373.8208	43:48	43:49	0	1.000	24409	6101	128	320	48		
375.8178	43:48	43:49	0	1.000	19701	4860	101	252	48	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDF											M
373.8208	43:56	43:55	0	1.000	12376	3262	128	320	25		M
375.8178	43:55	43:55	-1	1.000	10585	2407	101	252	24	1.17(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											RQMa
373.8208	44:39	44:40	-1	1.000	2644	798	128	320	6		a
375.8178	44:40	44:40	0	1.000	3516	626	101	252	6	0.75(1.05-1.43)	M
	Empc Correction				2132	643	101	252	6		
1,2,3,7,8,9-HxCDF											
373.8208	45:36						128	320			
375.8178	45:36						101	252			
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:34	44:10	-95	0.969	7612	1999	128	320	16		a
	Empc Correction				6006	1483	128	320	12		
375.8178	42:34	44:10	-95	0.969	4844	1196	101	252	12	1.57(1.05-1.43)	
373.8208	42:46	44:10	-84	0.973	24185	6567	128	320	51		a
375.8178	42:46	44:10	-84	0.973	18749	4874	101	252	48	1.29(1.05-1.43)	
373.8208	43:09	44:10	-61	0.982	6571	1225	128	320	10		a
	Empc Correction				5496	993	128	320	8		
375.8178	43:09	44:10	-61	0.982	4433	801	101	252	8	1.48(1.05-1.43)	
373.8208	43:21	44:10	-49	0.987	18216	4962	128	320	39		a
375.8178	43:21	44:10	-49	0.987	16220	4212	101	252	42	1.12(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	43:33	44:10	-37	0.992	19494	5910	128	320	46		a
375.8178	43:33	44:10	-37	0.992	15733	4352	101	252	43	1.24(1.05-1.43)	
373.8208	44:29	44:10	19	1.013	10389	2115	128	320	17		M
375.8178	44:29	44:10	19	1.013	7839	1595	101	252	16	1.33(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:37	49:37	0	1.000	394150	68167	68	170	1002		
425.7737	49:37	49:37	0	1.000	385254	64081	62	155	1034	1.02(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:27	49:03	-35	0.977	912011	167379	68	170	2461		
425.7737	48:26	49:03	-36	0.977	873638	164845	62	155	2659	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:57	47:57	-1	1.000	58879	11991	92	230	130		M
409.7788	47:58	47:57	0	1.000	59703	11809	68	170	174	0.99(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											
407.7817	50:17	50:17	0	1.000	6402	1022	92	230	11		
409.7788	50:17	50:17	0	1.000	6579	1052	68	170	15	0.97(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											RQMa
407.7817	48:21	49:20	-58	1.008	8547	1314	92	230	14		a
	Empc Correction				5667	1090	92	230	12		
409.7788	48:20	49:20	-59	1.008	5450	1049	68	170	15	1.57(0.88-1.20)	
407.7817	48:36	49:20	-44	1.013	61814	12243	92	230	133		M
409.7788	48:36	49:20	-44	1.013	60037	11999	68	170	176	1.03(0.88-1.20)	
OCDD											
457.7377	53:53	53:53	-1	1.000	11704267	2558704	16	40	159919		
459.7348	53:53	53:53	-1	1.000	12977328	2763227	25	62	110529	0.90(0.76-1.02)	
OCDF											
441.7428	54:00	54:01	-2	1.000	332193	69378	14	35	4956		
443.7399	54:00	54:01	-2	1.000	361128	76426	15	37	5095	0.92(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:45	30:45	-3	1.016	672223	66800	366	915	183		
333.9338	30:46	30:45	-2	1.017	832960	89463	168	420	533	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:47	28:46	-2	0.951	1084472	126119	1336	3340	94		
317.9389	28:47	28:46	-2	0.951	1332001	147265	1335	3337	110	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:33	40:30	-1	1.340	824998	178765	243	607	736		
369.8919	40:33	40:30	-1	1.340	517922	111845	166	415	674	1.59(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:42	-1	1.281	1235178	233592	436	1090	536		
353.8970	38:45	38:42	-1	1.281	793565	154809	399	997	388	1.56(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	39:58	-1	1.322	1244246	273320	436	1090	627		
353.8970	40:01	39:58	-1	1.322	750346	167116	399	997	419	1.66(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	0	0.989	777257	200473	302	755	664		
403.8529	44:49	44:49	0	0.989	609809	160645	93	232	1727	1.27(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	0	0.992	895528	197888	302	755	655		
403.8529	44:56	44:56	0	0.992	704657	155106	93	232	1668	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:47	0	0.966	665808	176026	519	1297	339		
385.8610	43:47	43:47	0	0.966	1262891	341812	979	2447	349	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:56	0	0.969	819022	195811	519	1297	377		
385.8610	43:55	43:56	0	0.969	1590625	377645	979	2447	386	0.51(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	770188	181307	519	1297	349		
385.8610	44:39	44:39	0	0.985	1433079	325363	979	2447	332	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	701991	146642	519	1297	283		
385.8610	45:35	45:35	0	1.006	1269656	271074	979	2447	277	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:36	0	1.095	701904	119619	228	570	525		
437.8140	49:36	49:36	0	1.095	698697	125124	197	492	635	1.00(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	0	1.058	569815	111180	325	812	342		
419.8220	47:56	47:57	-1	1.058	1178573	227758	563	1407	405	0.48(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	0	1.109	440347	76736	325	812	236		
419.8220	50:16	50:16	0	1.109	934494	171799	563	1407	305	0.47(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	-1	1.189	1129885	244679	416	1040	588		
471.7750	53:52	53:52	-1	1.189	1201363	259670	263	657	987	0.94(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:01	-1	1.192	1646656	352482	270	675	1305		
455.7801	54:00	54:01	-1	1.192	1797171	384365	475	1187	809	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:48	30:48	-3	1.018	387099	38328	763	1907	50		
13C-1,2,3,4-TCDD											
331.9368	30:16	30:19	-3		1957342	215384	366	915	588		
333.9338	30:16	30:19	-3		2425098	264752	168	420	1576	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:20	-1		2731539	585078	302	755	1937		
403.8529	45:19	45:20	-1		2169771	473367	93	232	5090	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1505183	156263

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1505183	156263

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:53	2088	282	2940	406	0.1424	0.71	
25:38	1063	114	2479	360	0.1003	0.43	RQ
25:38	1063	114	1380	148	0.0692		Empc Correction
26:16	1251	222	2239	282	0.0988	0.56	RQ
26:16	1251	222	1624	288	0.0814		Empc Correction
27:46	13403	1589	16157	1868	0.8369	0.83	
28:14	1011	236	1354	181	0.0670	0.75	M
28:30	864	152	1112	175	0.0559	0.78	Ma
28:46	1483	195	1179	153	0.0754	1.26	RQ
28:46	907	117	1179	153	0.0591		Empc Correction
29:27	1044	165	1240	284	0.0647	0.84	
30:13	4202	615	4575	576	0.2485	0.92	RQ
30:13	3522	443	4575	576	0.2292		Empc Correction
30:35	3527	424	2923	516	0.1826	1.21	RQ
30:35	2250	397	2923	516	0.1465		Empc Correction
31:55	4894	599	5060	496	0.2818	0.97	RQM
31:55	3896	381	5060	496	0.2536		Empc Correction
32:37	488	111	1533	170	0.0572	0.32	RQ
32:37	488	111	633	144	0.0317		Empc Correction
34:04	1807	283	2958	361	0.1349	0.61	RQ
34:04	1807	283	2346	367	0.1176		Empc Correction
Signal Totals:							
	33594	4492	42523	5602			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	82874	10815				0.81	RQMa
	76117	10094					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2416473	273384

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2416473	273384

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:29	1348	229	2504	413	0.0732	0.54	RQ
22:29	1348	229	1750	297	0.0589		Empc Correction
23:22	2074	227	1285	346	0.0639	1.61	RQ
23:22	989	266	1285	346	0.0432		Empc Correction
23:48	4947	743	5898	725	0.2062	0.84	M
24:20	6323	936	9607	1088	0.3029	0.66	
25:06	15730	1815	17918	2106	0.6398	0.88	M
25:48	20023	2062	25377	2427	0.8633	0.79	M
26:15	3261	353	4803	724	0.1533	0.68	M
26:29	8761	1264	12312	1425	0.4007	0.71	
26:58	12779	1749	13807	1799	0.5055	0.93	RQM
26:58	10631	1385	13807	1799	0.4647		Empc Correction
27:14	2310	349	1932	343	0.0807	1.20	RQ
27:14	1487	264	1932	343	0.0650		Empc Correction
27:43	122656	14364	151237	17608	5.21	0.81	
28:16	9567	790	10377	795	0.3792	0.92	RQ
28:16	7990	612	10377	795	0.3493		Empc Correction
30:03	21949	2433	26573	2982	0.9227	0.83	
30:42	4673	468	7155	605	0.2249	0.65	
32:48	9689	1013	12292	1216	0.4180	0.79	
33:52	20393	2003	25045	2542	0.8640	0.81	
Signal Totals:							
	260850	30210	327368	37028			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	594605	67942				0.81	RQM
	588218	67238					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1342920	290610

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1342920	290610

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:36	9751	1527	4737	1144	0.5170	2.06	RQ
37:36	7342	1773	4737	1144	0.4310		Empc Correction
38:28	15179	2834	10805	2164	0.9272	1.40	
39:10	2959	654	4750	686	0.2751	0.62	RQ
39:10	2959	654	1909	421	0.1737		Empc Correction
39:49	8262	1604	5265	895	0.4827	1.57	
Signal Totals:							
	33742	6865	22716	4624			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	61708	11508				1.41	RQ
	56458	11489					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.202 = (61708 * 50.000) / (1342920 * 1.043)
Empc Amount: 2.015 = (56458 * 50.000) / (1342920 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	2028743	388401
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1994592	440436

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	2011667	414418

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:41	10772	1248	6911	872	0.3823	1.56	
37:16	18048	2333	10095	1239	0.6085	1.79	RQ
37:16	15647	1920	10095	1239	0.5565		Empc Correction
38:09	8707	874	6743	822	0.3340	1.29	RQM
38:09	8707	874	5617	563	0.3097		Empc Correction
39:18	3820	957	2135	494	0.1287	1.79	RQ
39:18	3309	765	2135	494	0.1177		Empc Correction
39:25	5551	1146	3913	969	0.2046	1.42	
40:16	4459	720	3732	409	0.1771	1.19	RQ
40:16	4459	720	2876	464	0.1586		Empc Correction
41:22	1738	431	2012	470	0.0811	0.86	RQ
41:22	1738	431	1121	278	0.0618		Empc Correction
Signal Totals:							
	50183	7104	32668	4879			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	88636	12984				1.49	RQM
	82851	11983					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.916 = (88636 * 50.000) / (2011667 * 1.150)
Empc Amount: 1.791 = (82851 * 50.000) / (2011667 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 17-Dec-2019 10:15:21 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1387066	361118
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1600185	352994
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1493625	357056

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:16	205212	53975	160983	42217	10.5	1.27	
43:50	12150	2638	8717	1965	0.5970	1.39	
44:08	72757	16737	52176	12298	3.57	1.39	
44:18	9908	2000	9624	1896	0.5588	1.03	RQ
44:18	9908	2000	7990	1612	0.5121		Empc Correction
Signal Totals:							
	300027	75350	229866	58092			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	531527	133726				1.30	RQ
	529893	133442					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 15.207 = (531527 * 50.000) / (1493625 * 1.170)
Empc Amount: 15.160 = (529893 * 50.000) / (1493625 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1928699	517838
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2409647	573456
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	2203267	506670
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1971647	417716

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	2128315	503920

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:34	7612	1999	4844	1196	0.2268	1.57	RQa
42:34	6006	1483	4844	1196	0.1975		Empc Correction
42:46	24185	6567	18749	4874	0.7816	1.29	a
43:09	6571	1225	4433	801	0.2003	1.48	RQa
43:09	5496	993	4433	801	0.1808		Empc Correction
43:21	18216	4962	16220	4212	0.6269	1.12	a
43:33	19494	5910	15733	4352	0.6413	1.24	a
44:29	10389	2115	7839	1595	0.3318	1.33	Ma
Signal Totals:							
	83786	22030	67818	17030			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	154285	39808				1.27	RQMa
	151604	39060					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.809 = (154285 * 50.000) / (2128315 * 1.290)
Empc Amount: 2.760 = (151604 * 50.000) / (2128315 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1400601	244743

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1400601	244743

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	912011	167379	873638	164845	56.9	1.04	
Signal Totals:							
	912011	167379	873638	164845			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1785649	332224				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 56.894 = (1785649 * 50.000) / (1400601 * 1.120)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Inject. Date: 17-Dec-2019 06:03:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1748388	338938
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1374841	248535

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1561614	293736

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	8547	1314	5450	1049	0.3113	1.57	RQa
48:21	5667	1090	5450	1049	0.2473		Empc Correction
48:36	61814	12243	60037	11999	2.71	1.03	Ma
Signal Totals:							
	67481	13333	65487	13048			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	135848	26605				1.07	RQMa
	132968	26381					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.022 = (135848 * 50.000) / (1561614 * 1.440)
Empc Amount: 2.957 = (132968 * 50.000) / (1561614 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

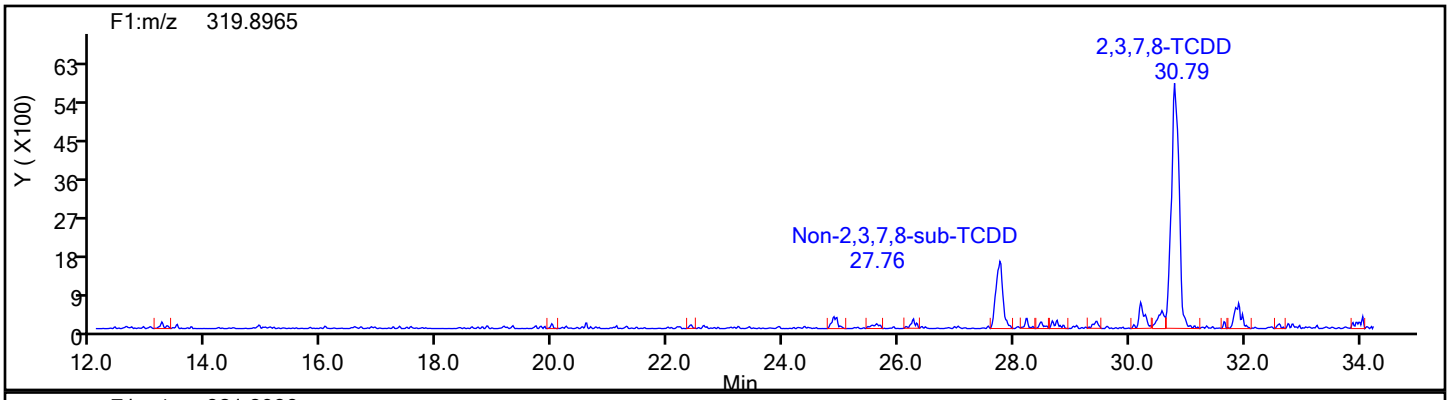
Review Flags
M - Manually Integrated
a - User Assigned ID

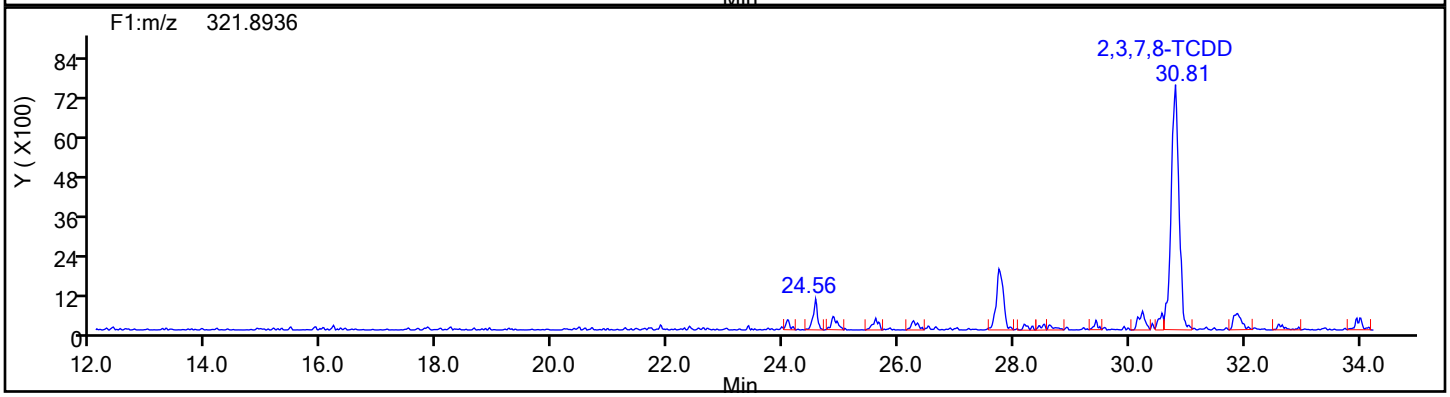
Report Date: 17-Dec-2019 10:15:21 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

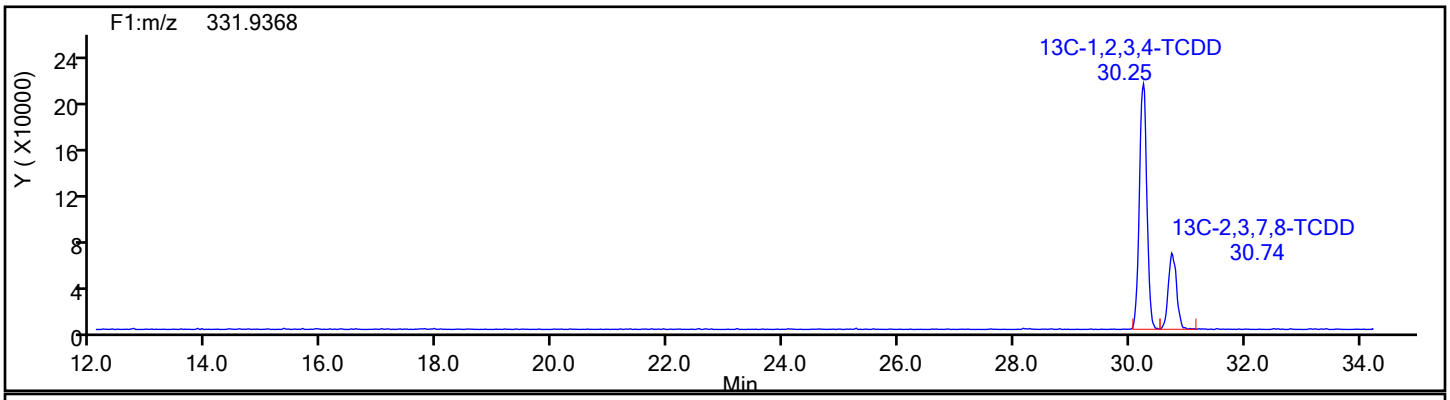
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

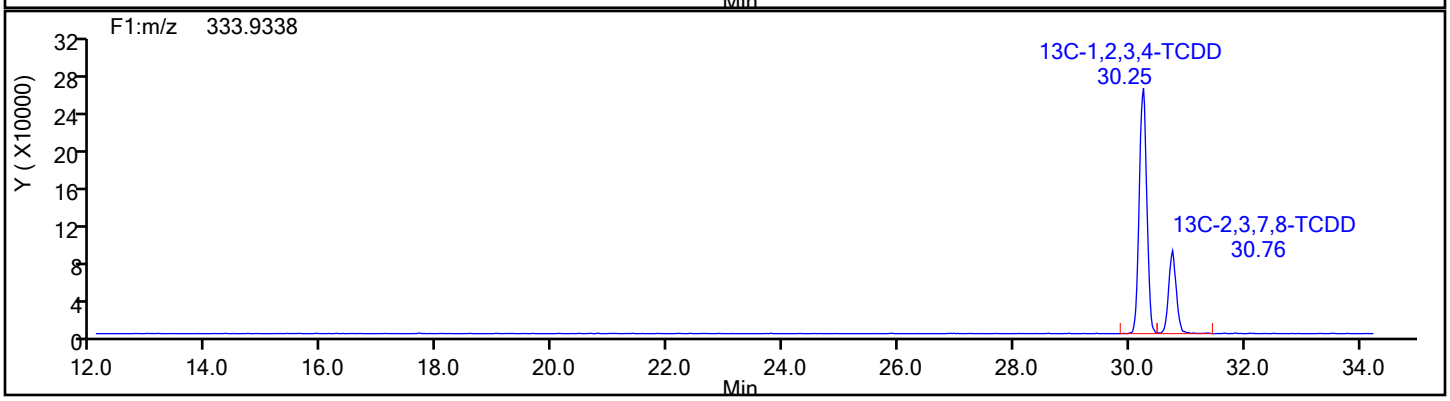
TCDD





TCDD Standards



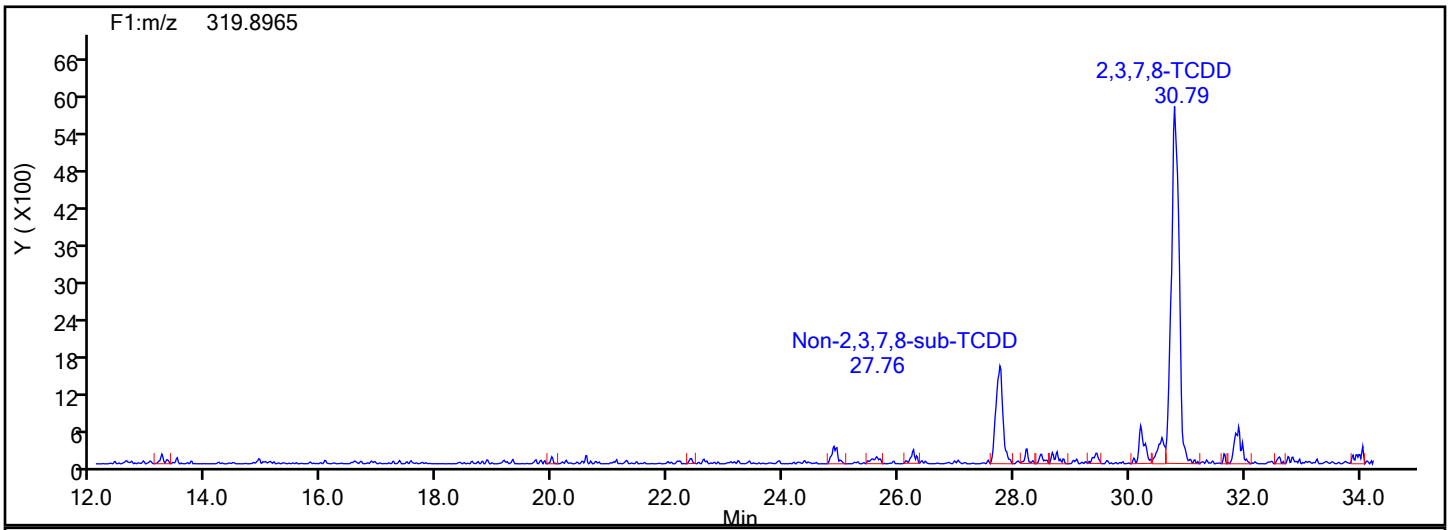


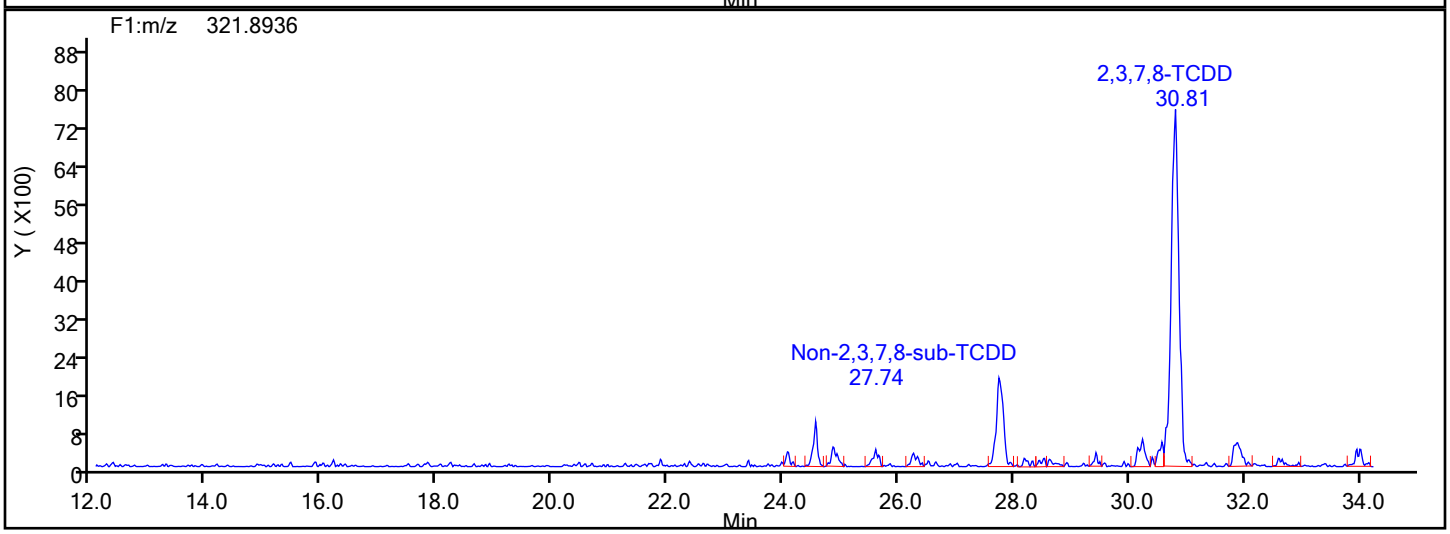
Report Date: 17-Dec-2019 10:15:21 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

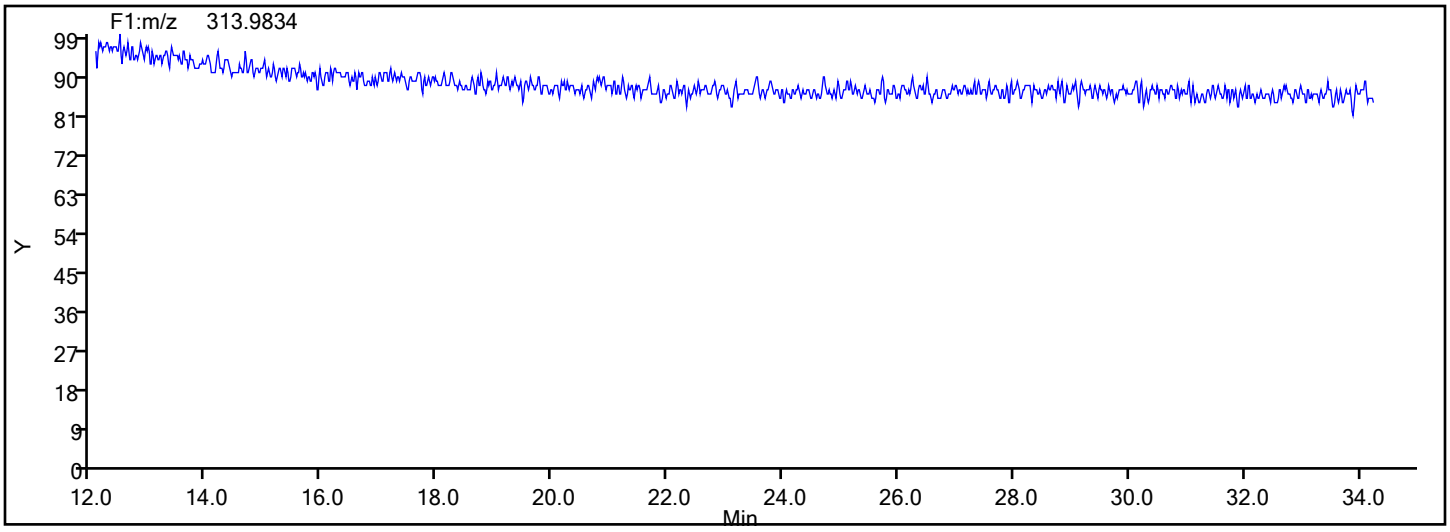
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

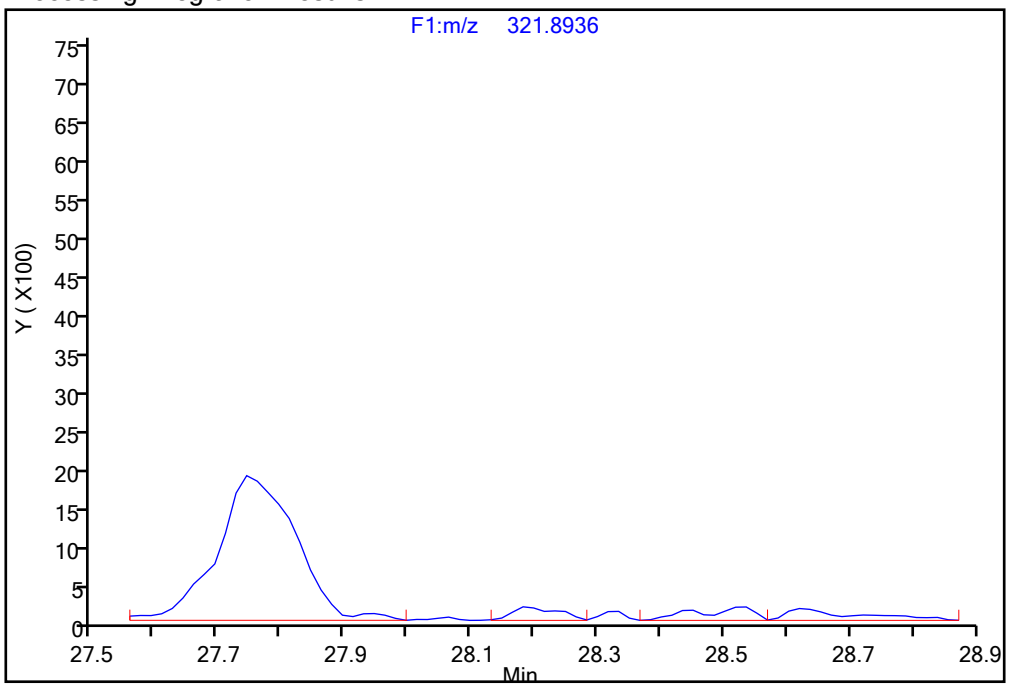
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

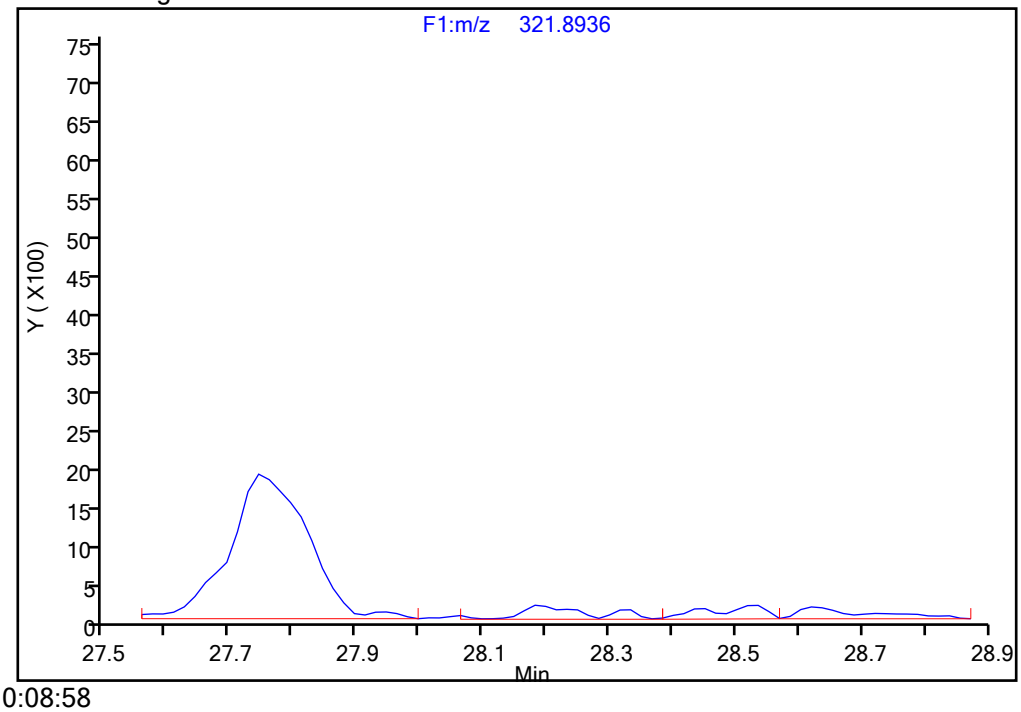
Processing Integration Results

RT = 28.182 Area = 883



Manual Integration Results

RT = 28.182 Area = 1354 M



Reviewer: davidsonm, 17-Dec-2019 10:08:58

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

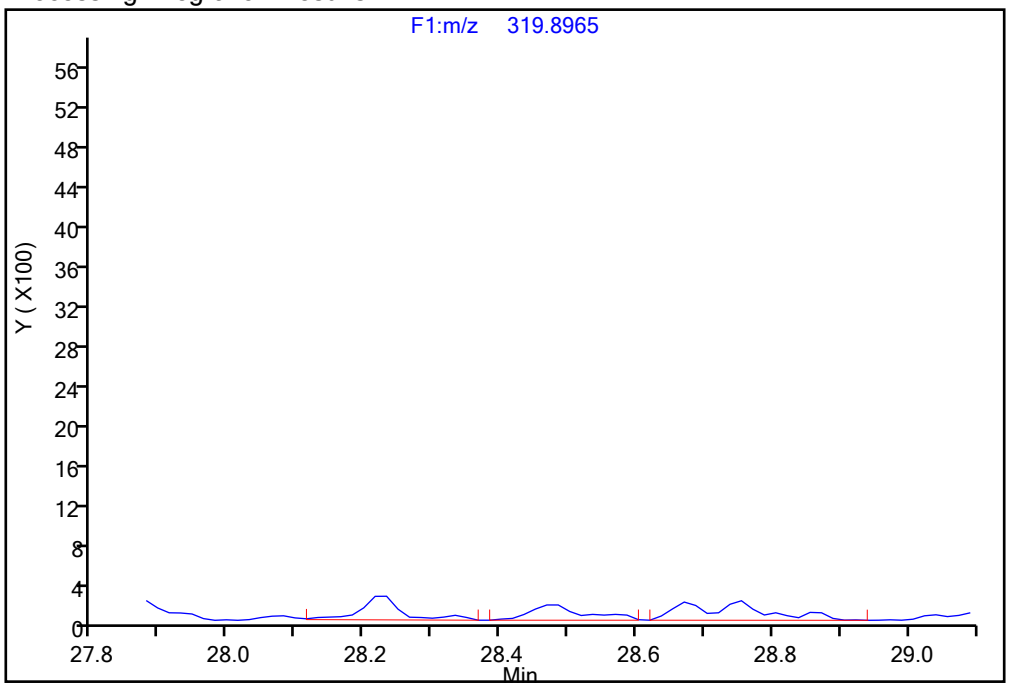
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

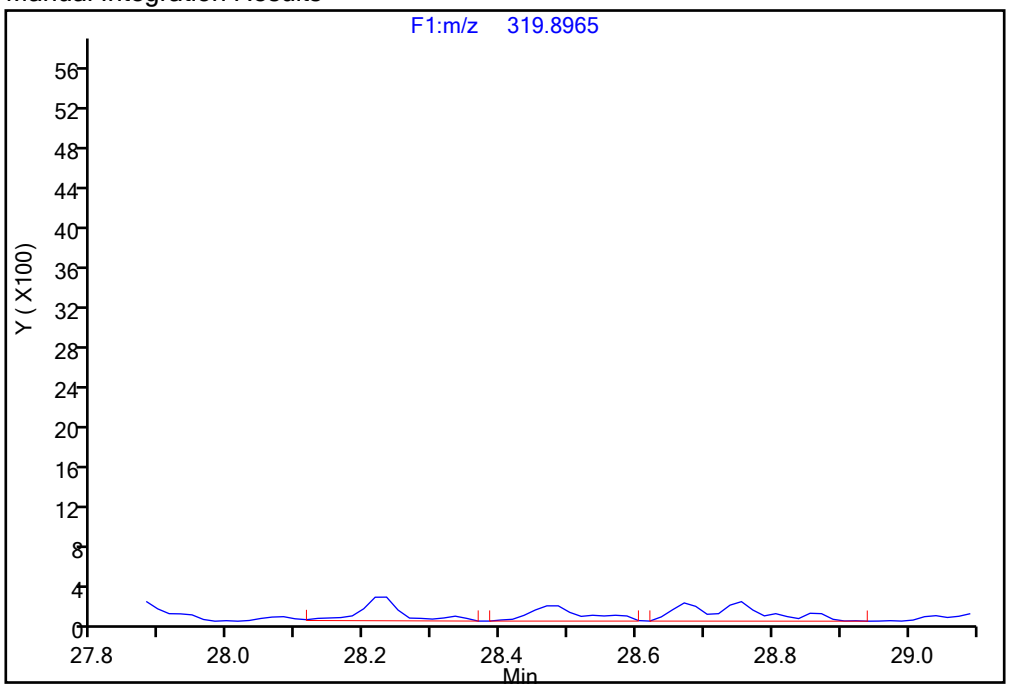
Processing Integration Results

RT = 28.485 Area = 864



Manual Integration Results

RT = 28.485 Area = 864



Reviewer: davidsonm, 17-Dec-2019 10:09:43

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

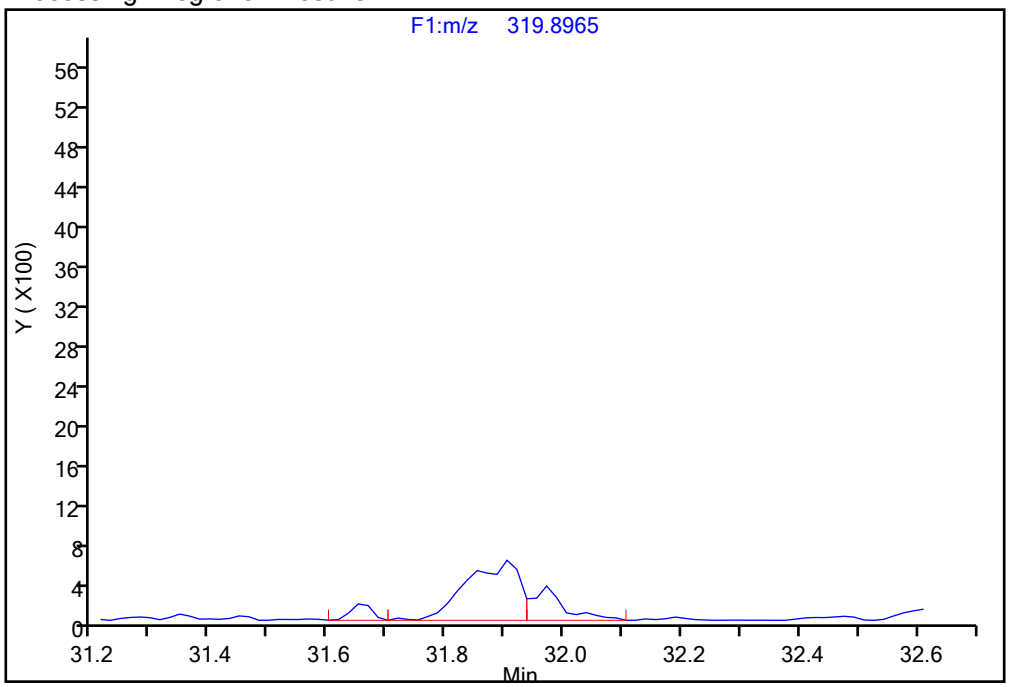
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

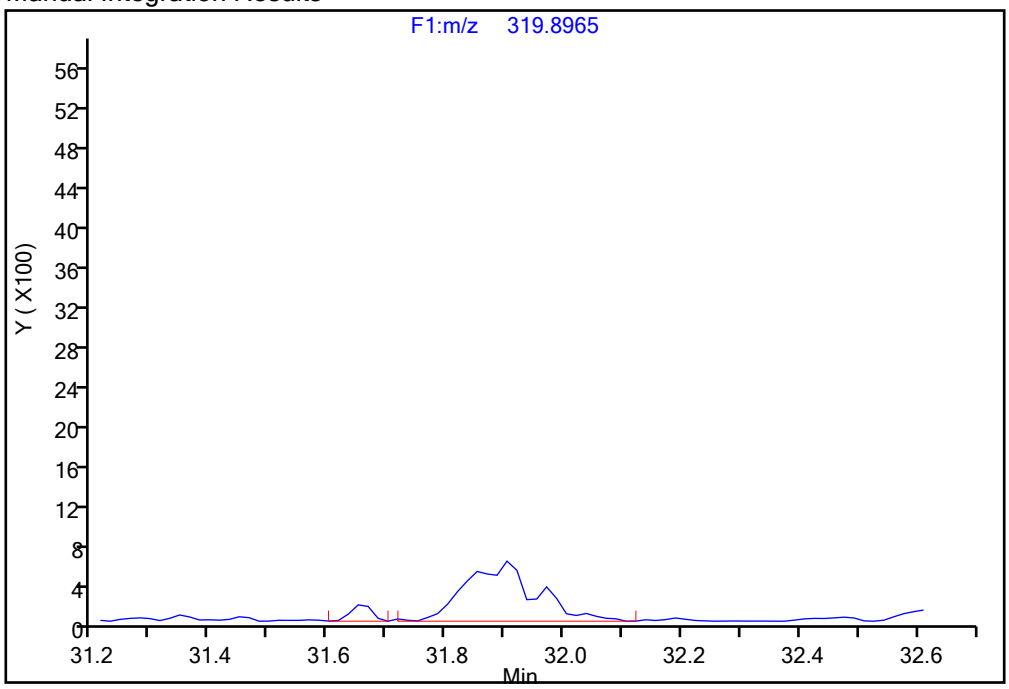
Processing Integration Results

RT = 31.903 Area = 3684



Manual Integration Results

RT = 31.903 Area = 4894 M



Reviewer: davidsonm, 17-Dec-2019 10:09:43

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

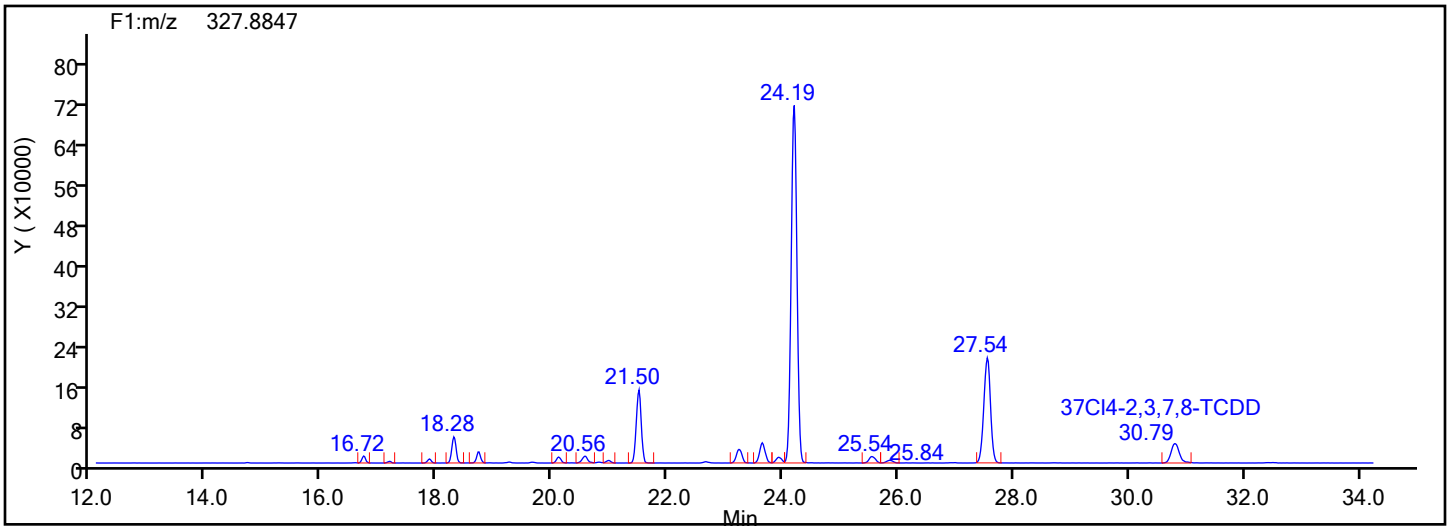
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

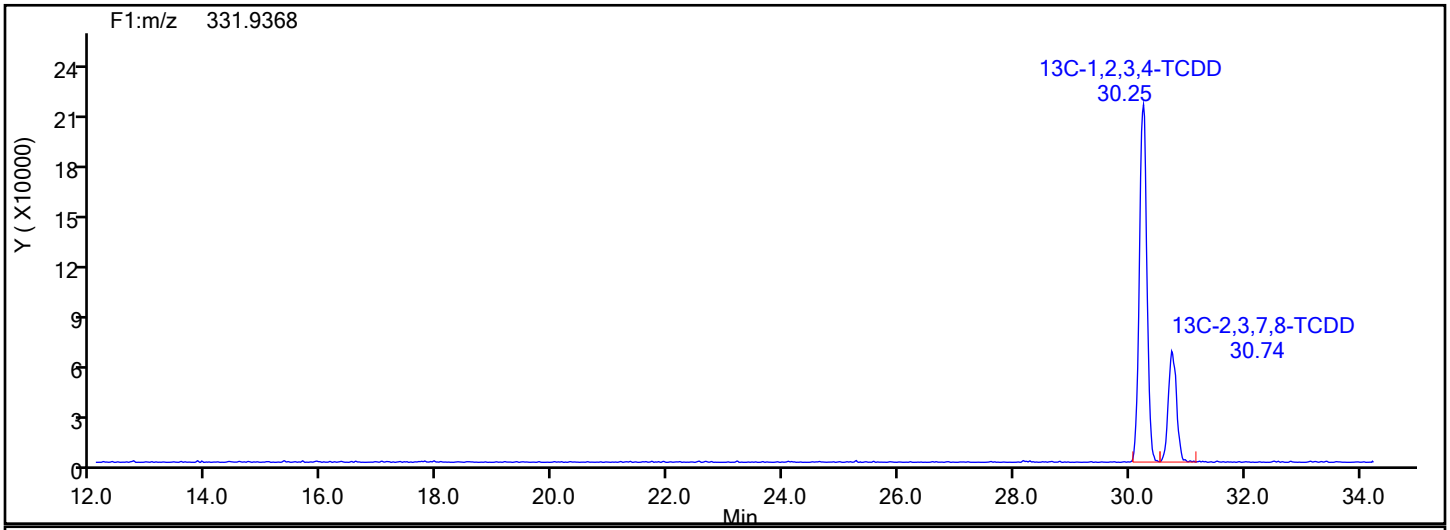
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d

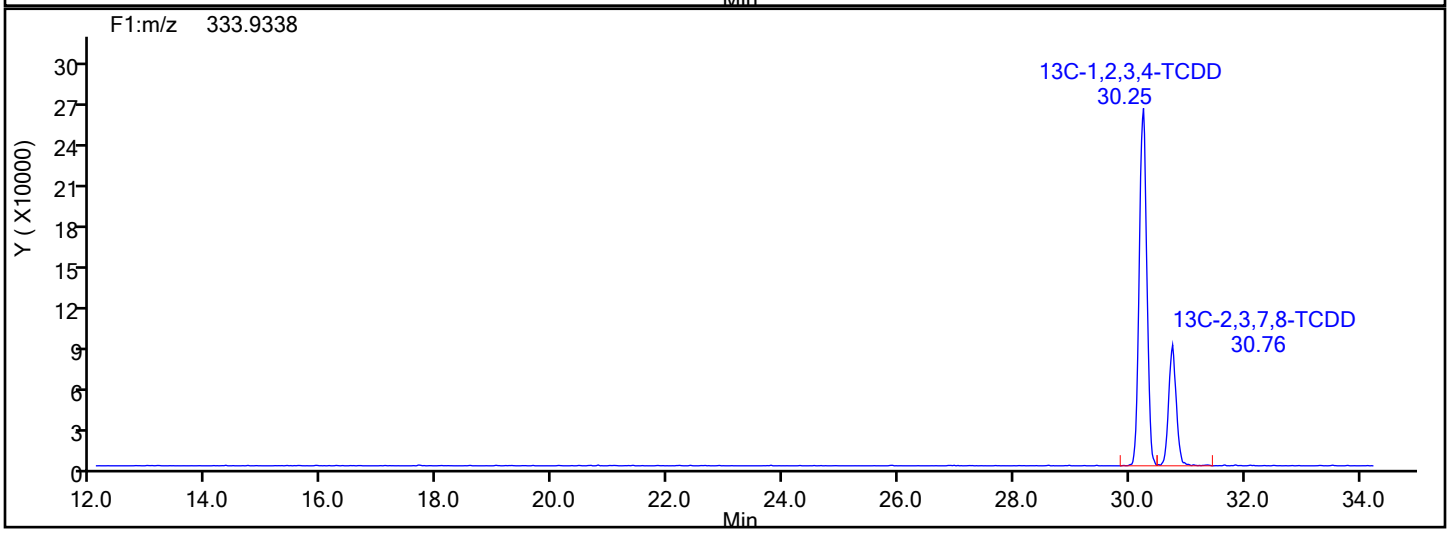
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



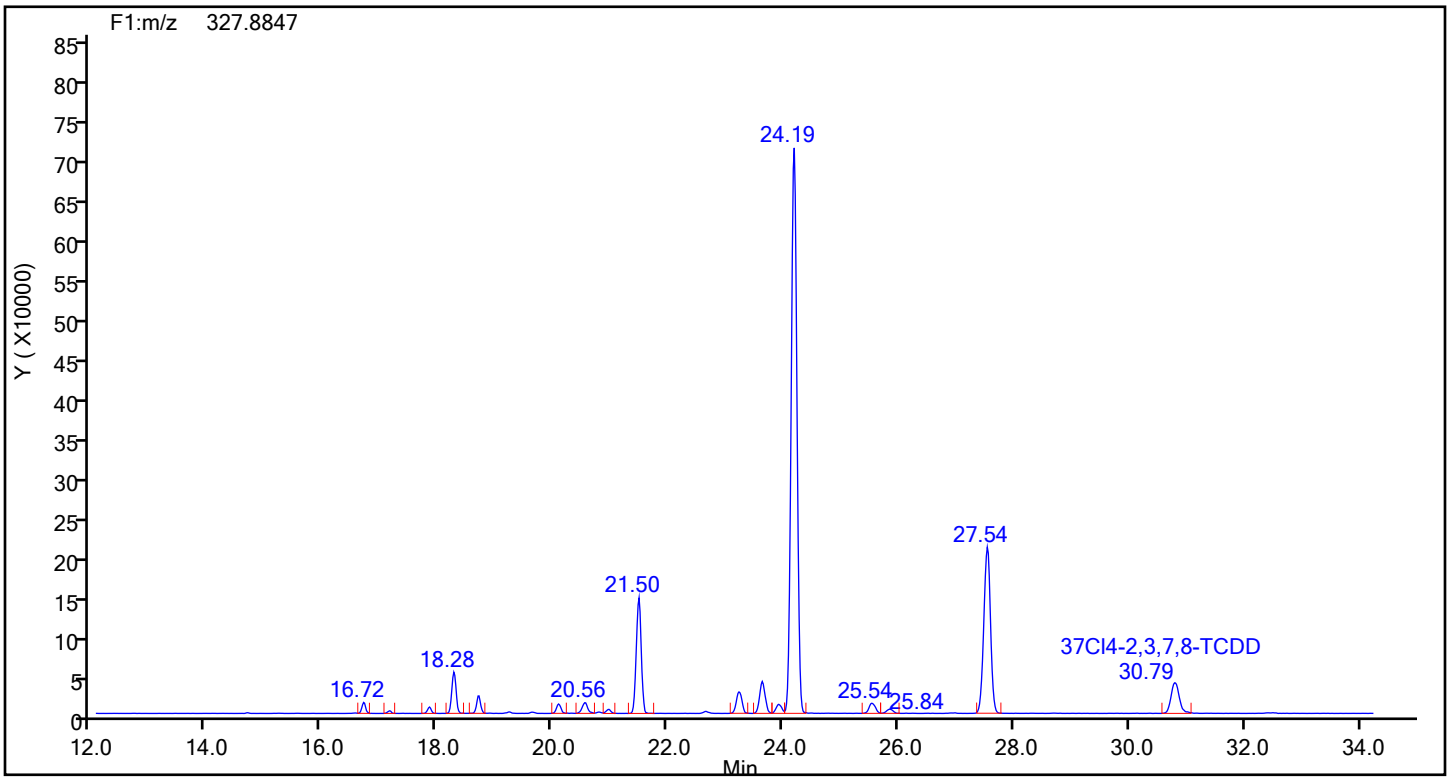


Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

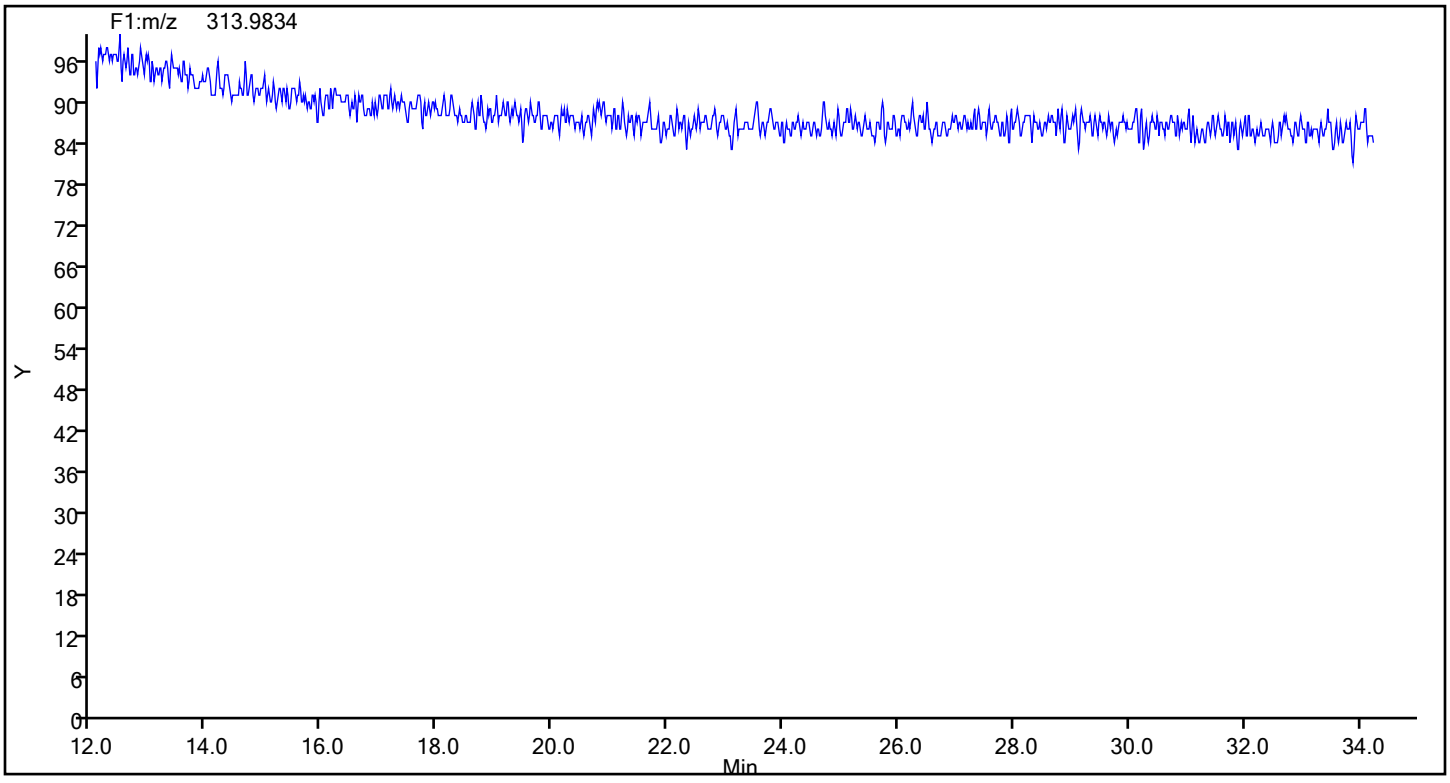
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

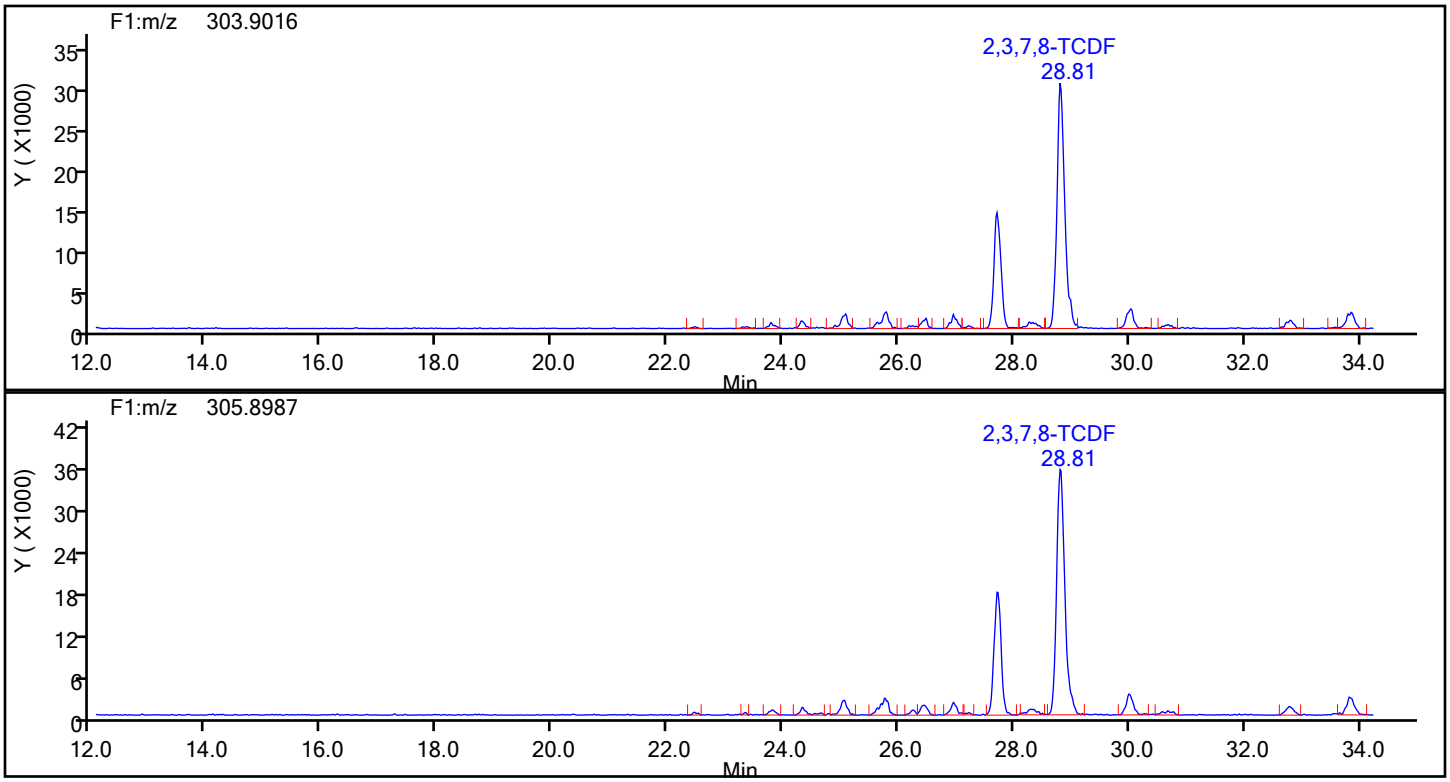


Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

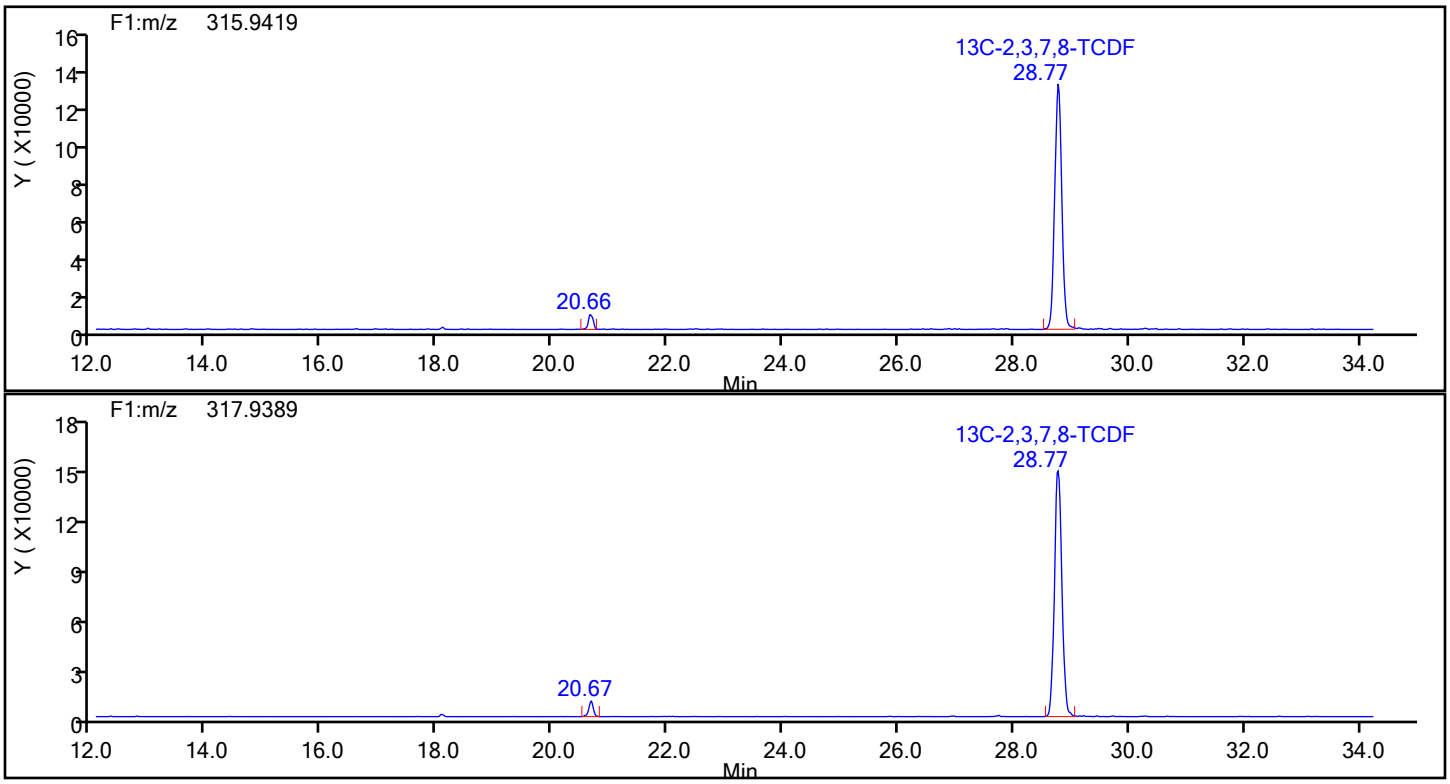
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

TCDF



TCDF Standards

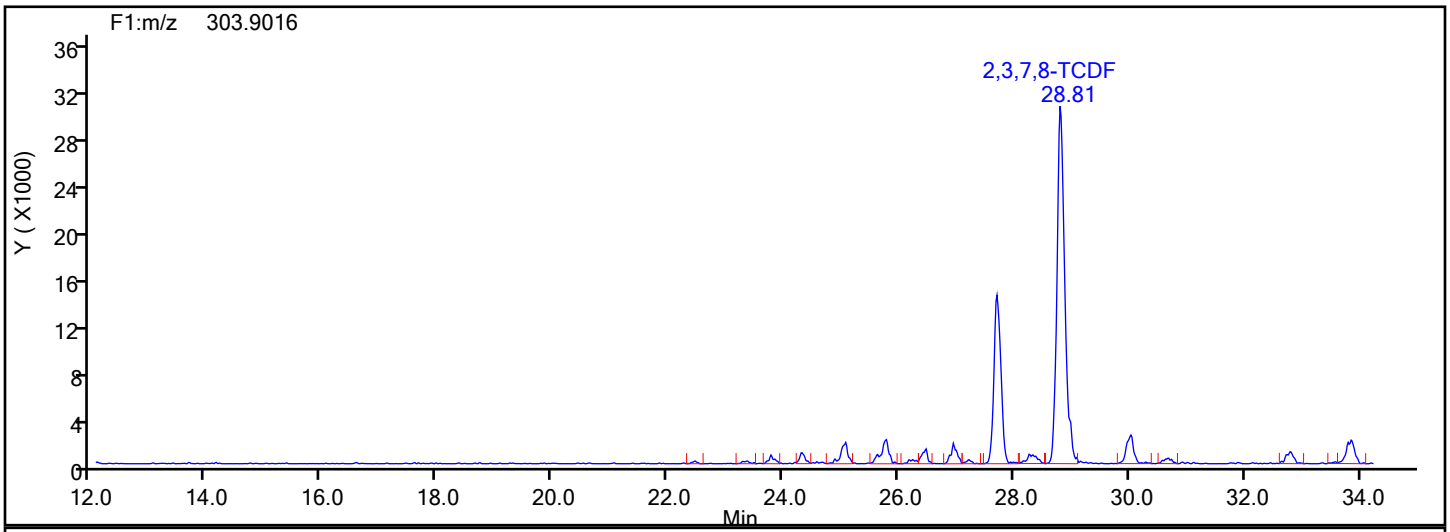


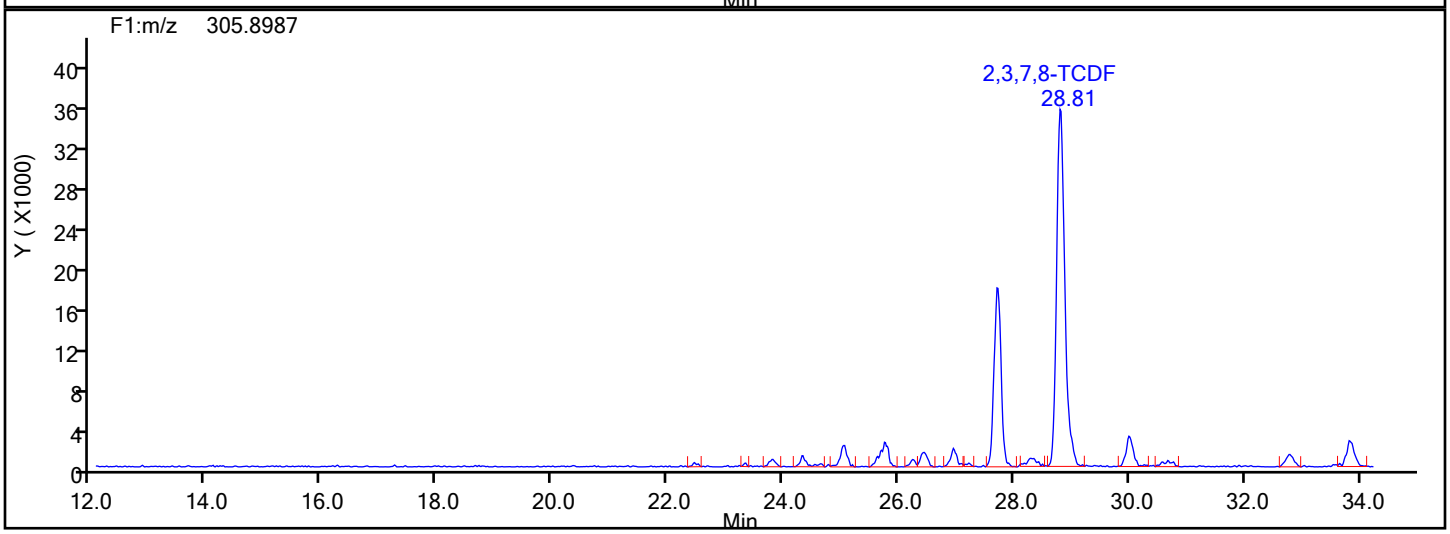
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

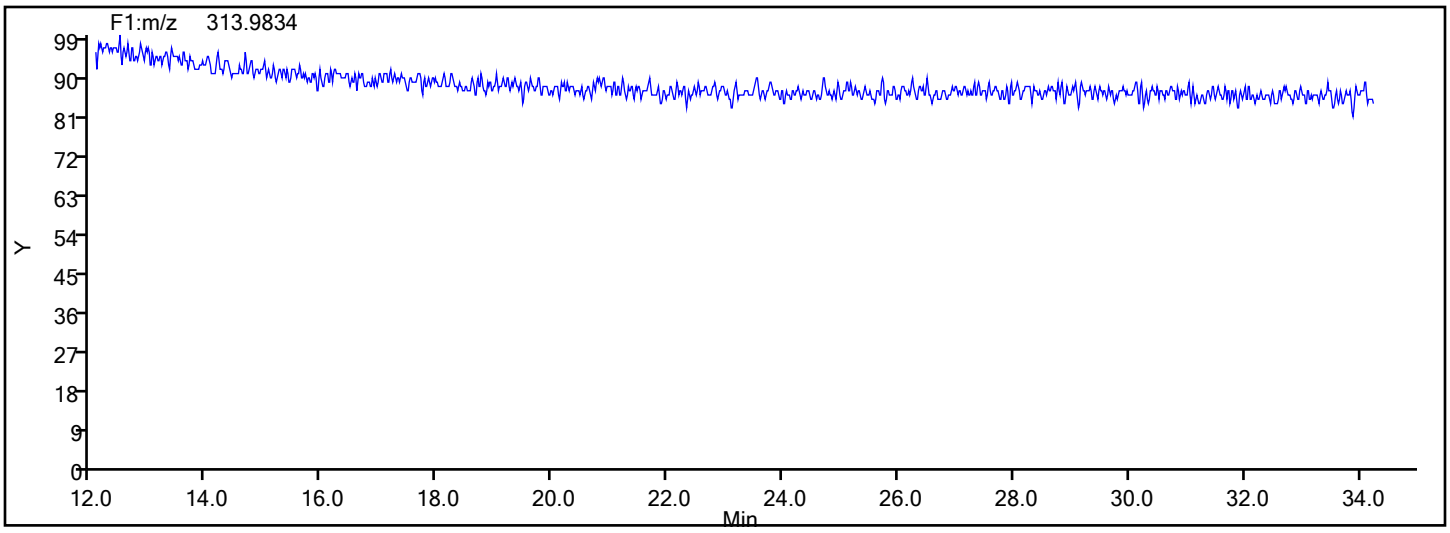
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

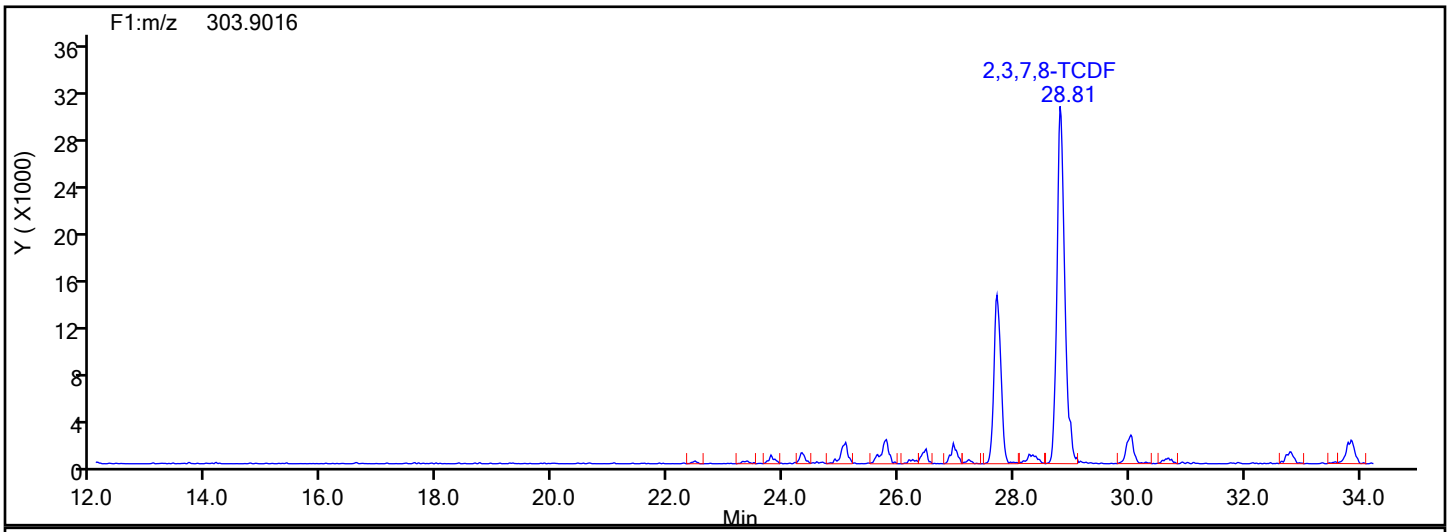


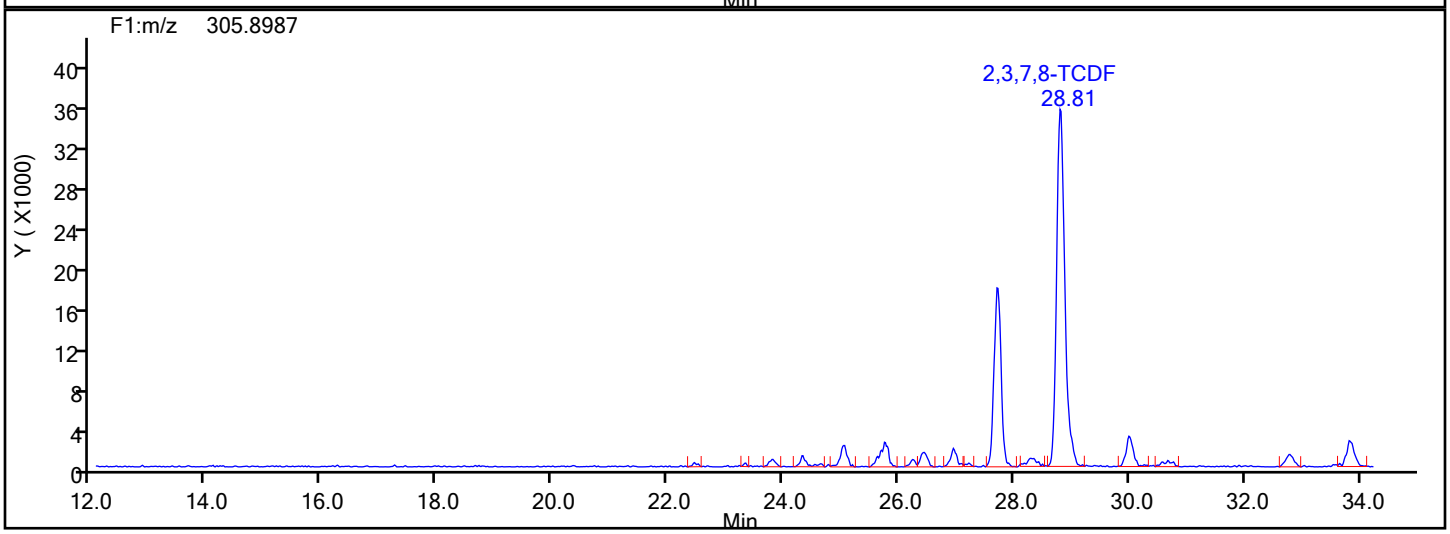
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

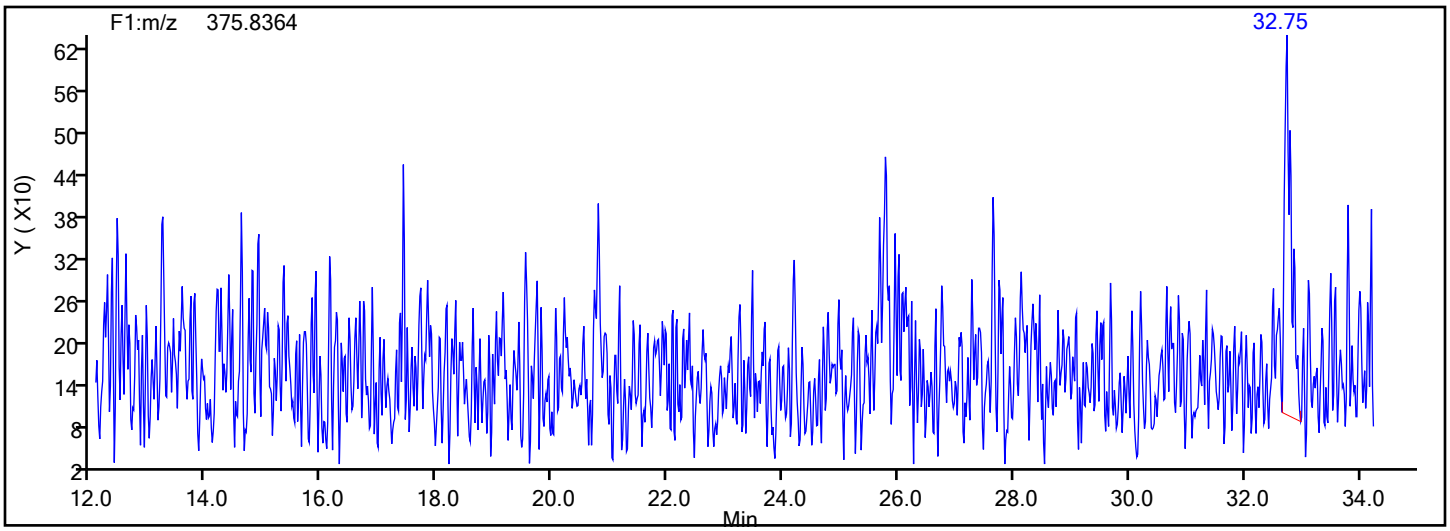
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

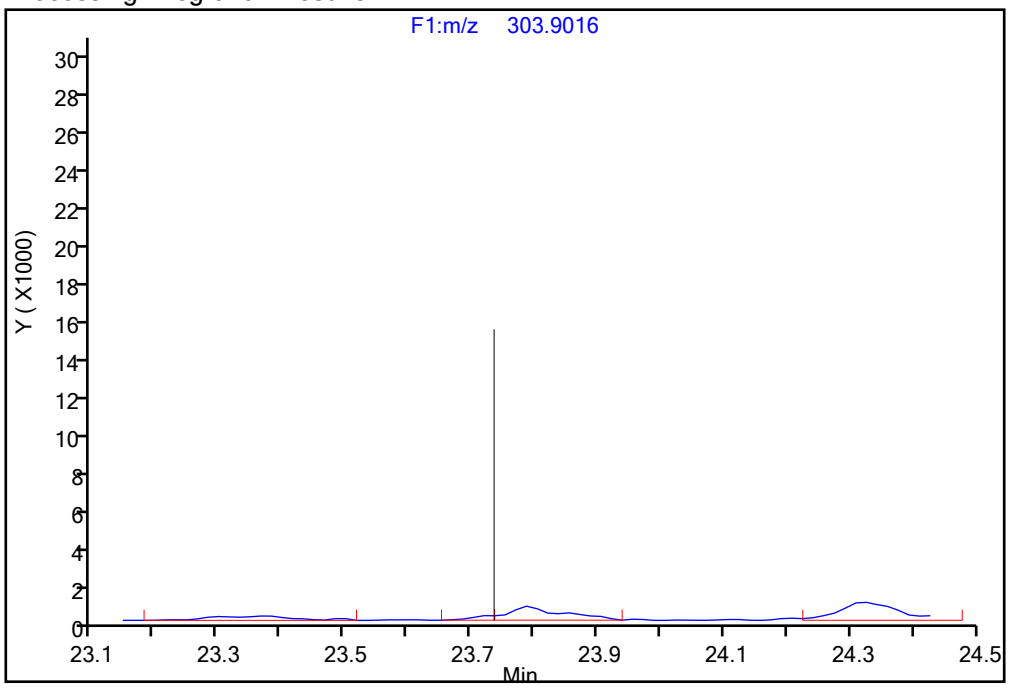
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

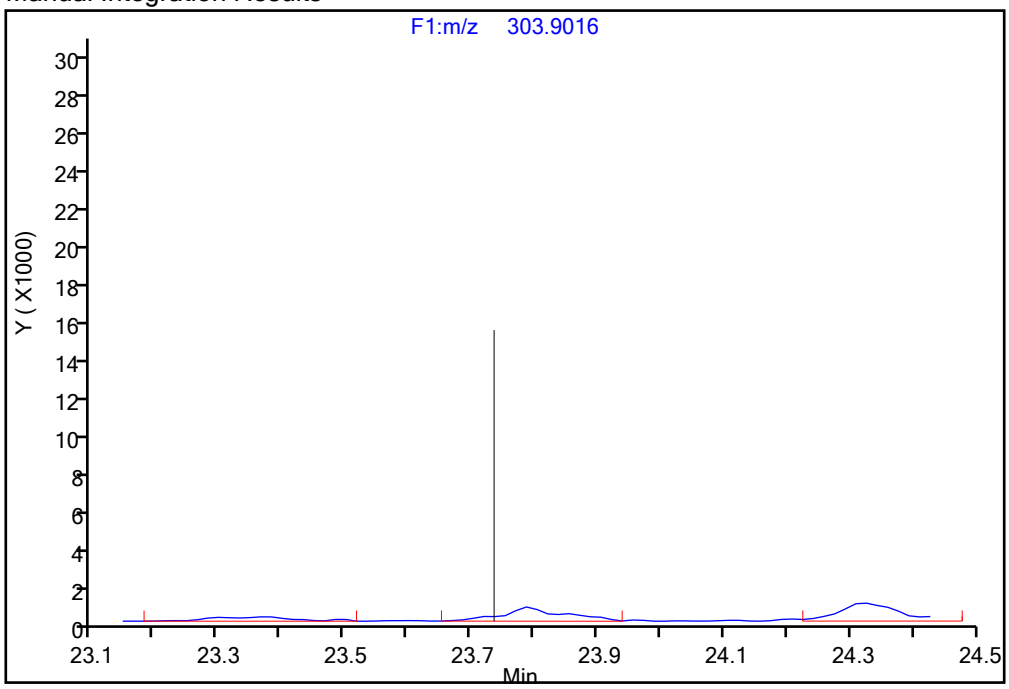
Processing Integration Results

RT = 23.787 Area = 4178



Manual Integration Results

RT = 23.787 Area = 4947 M



Reviewer: davidsonm, 17-Dec-2019 10:10:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

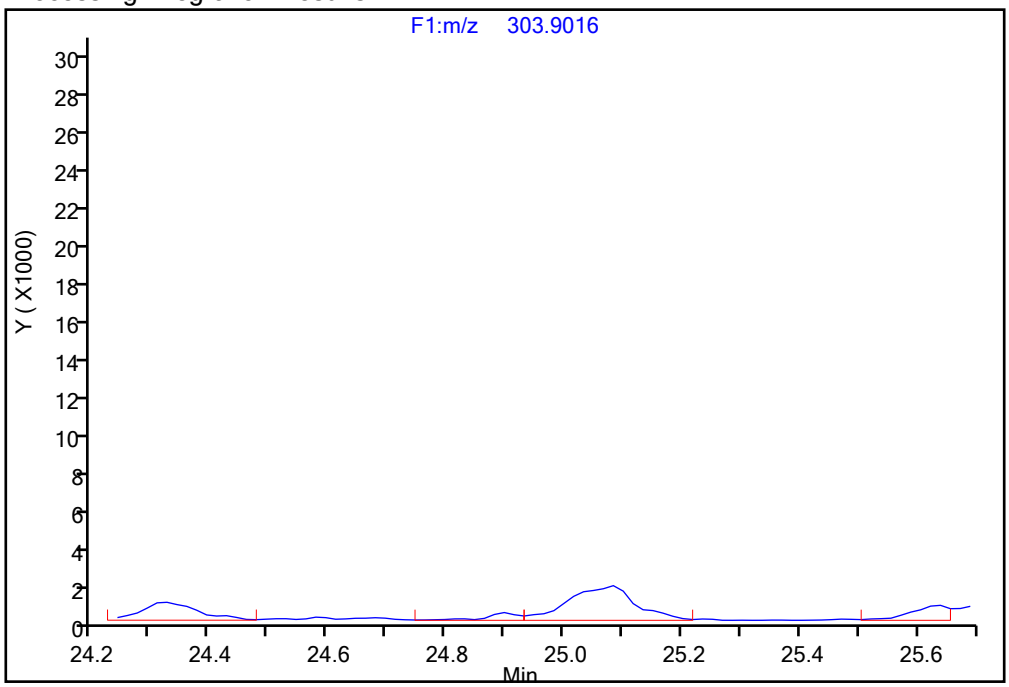
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

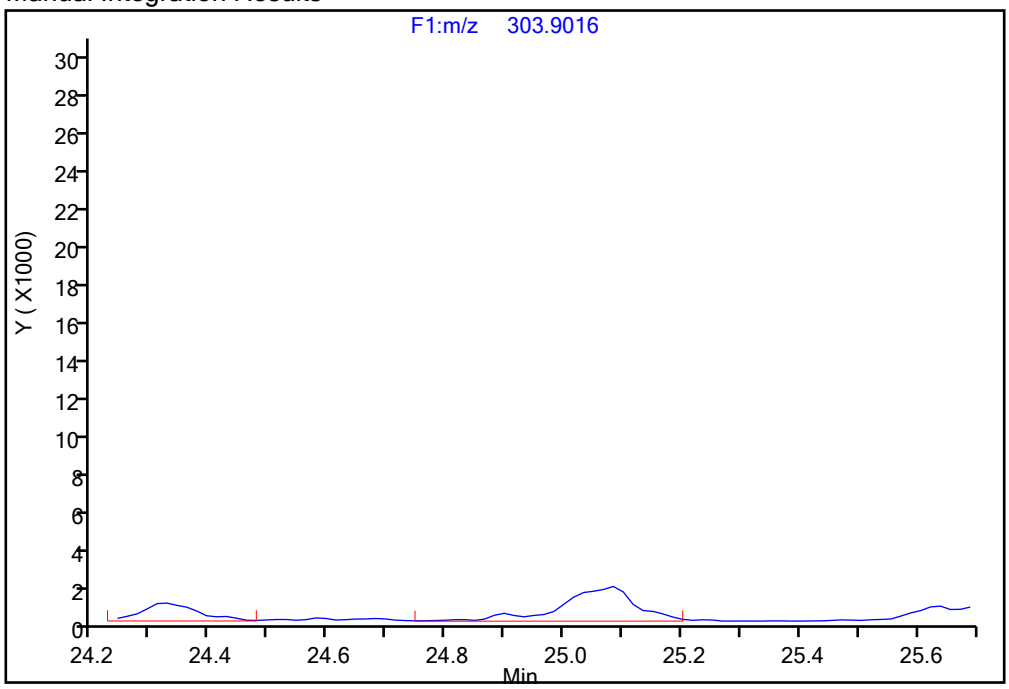
Processing Integration Results

RT = 25.084 Area = 14199



Manual Integration Results

RT = 25.084 Area = 15730 M



Reviewer: davidsonm, 17-Dec-2019 10:10:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

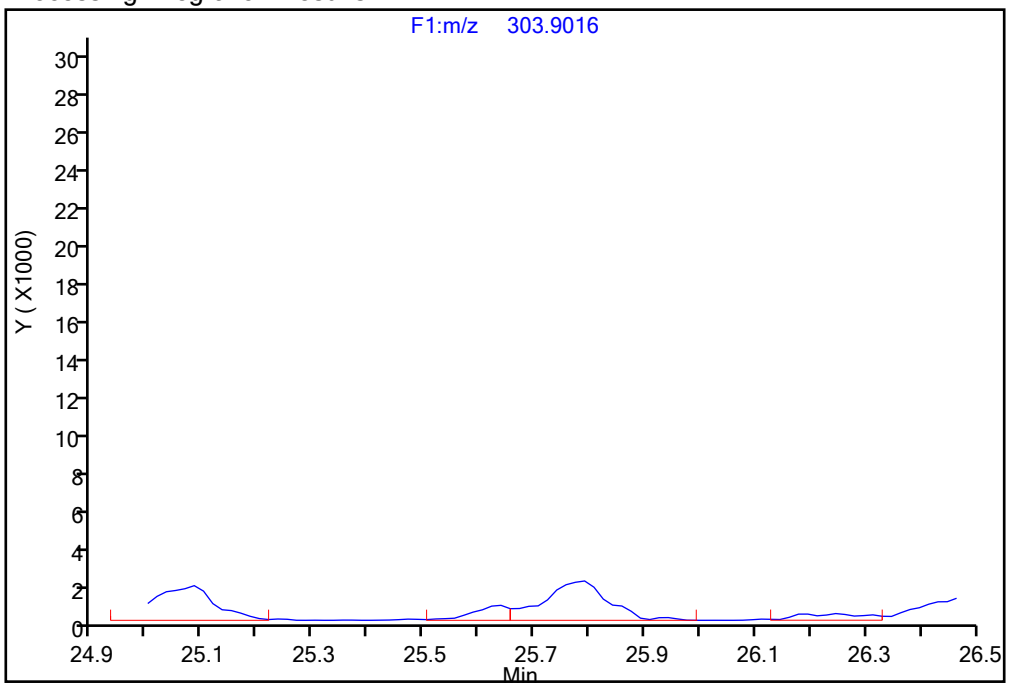
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

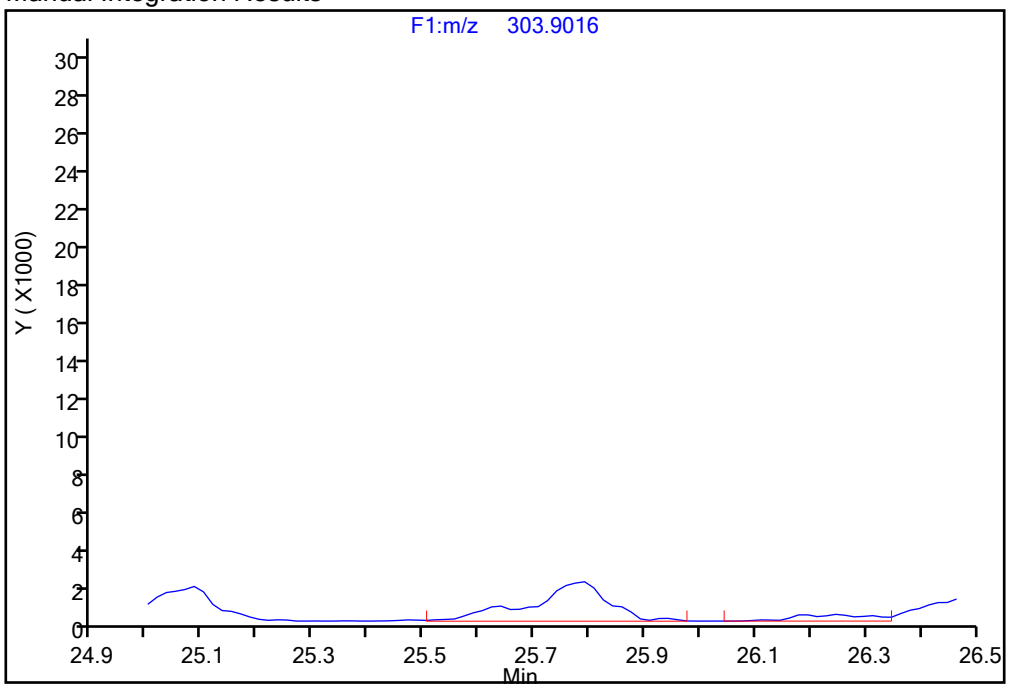
Processing Integration Results

RT = 25.791 Area = 16498



Manual Integration Results

RT = 25.791 Area = 20023 M



Reviewer: davidsonm, 17-Dec-2019 10:10:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

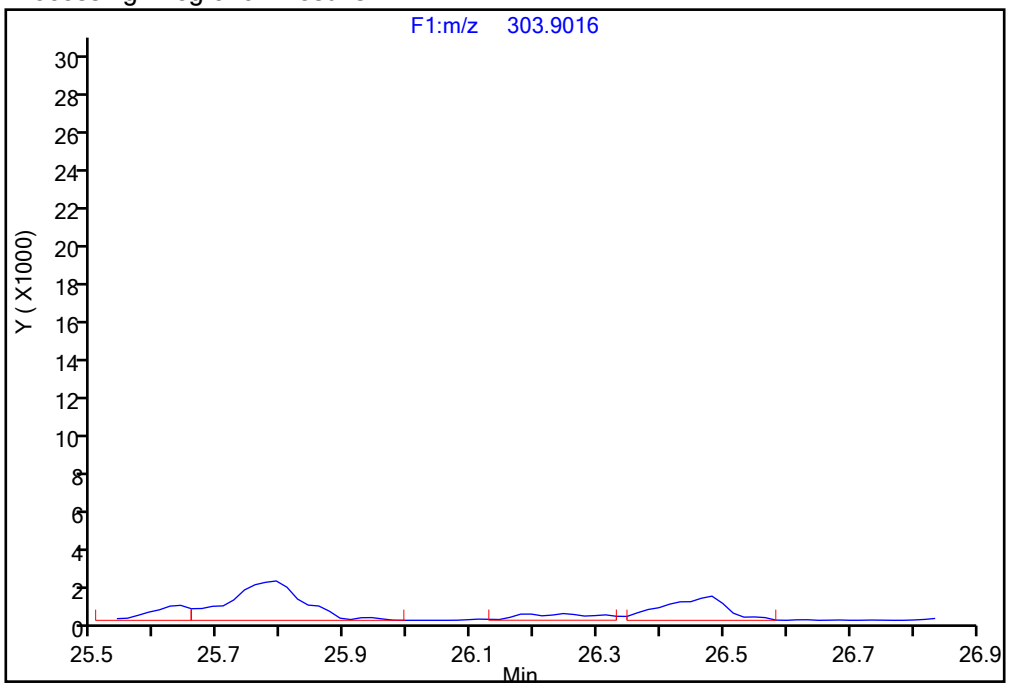
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

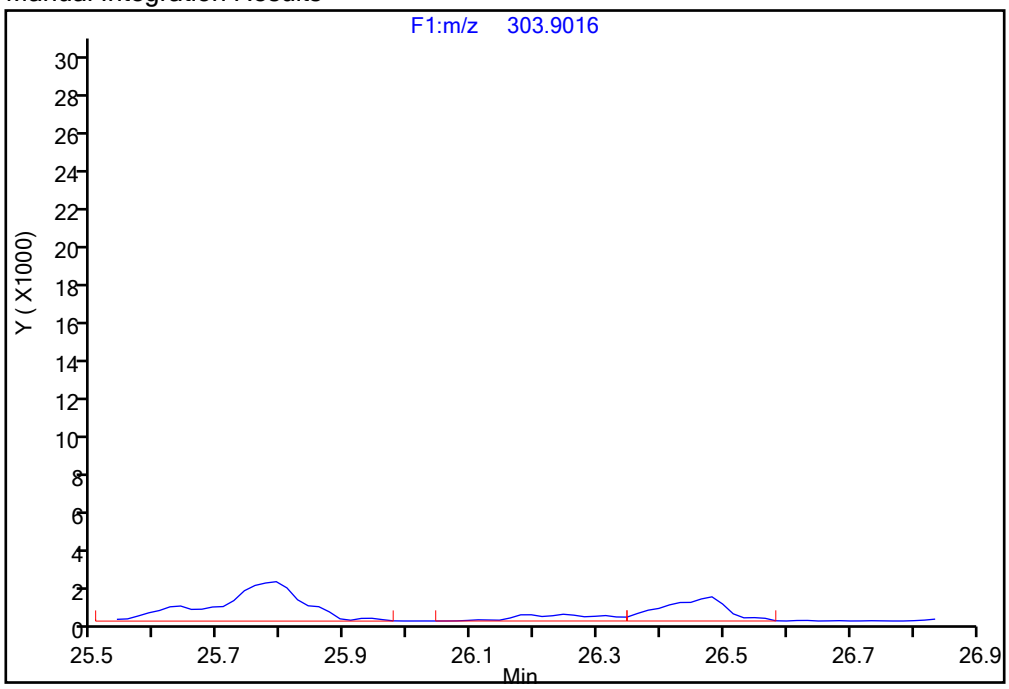
Processing Integration Results

RT = 26.246 Area = 2867



Manual Integration Results

RT = 26.246 Area = 3261 M



Reviewer: davidsonm, 17-Dec-2019 10:10:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

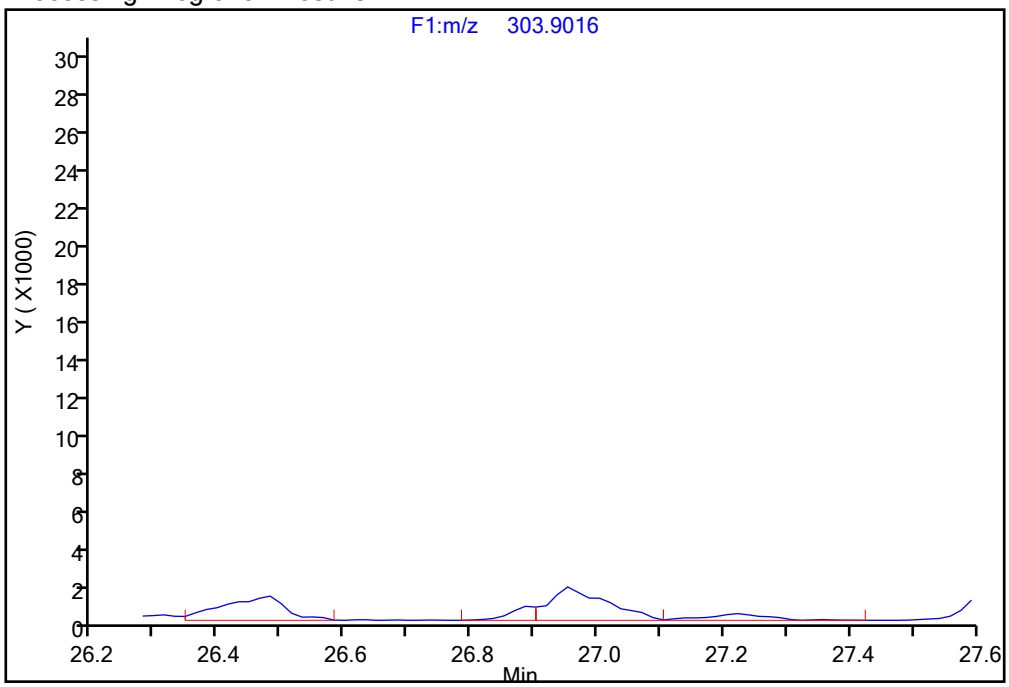
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

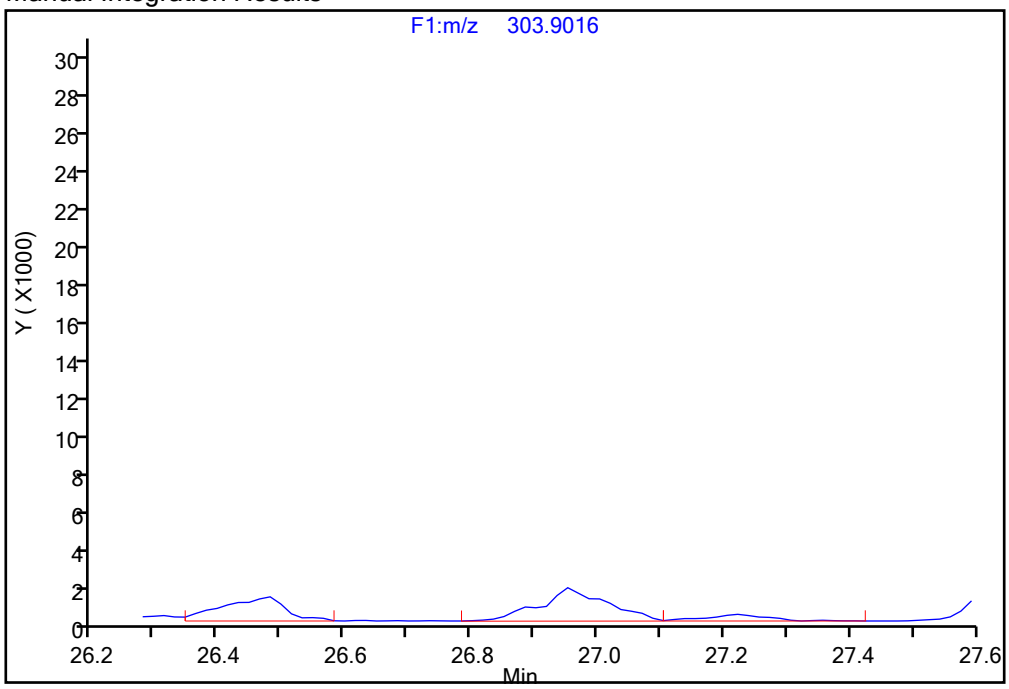
Processing Integration Results

RT = 26.953 Area = 10659



Manual Integration Results

RT = 26.953 Area = 12779 M



Reviewer: davidsonm, 17-Dec-2019 10:10:45

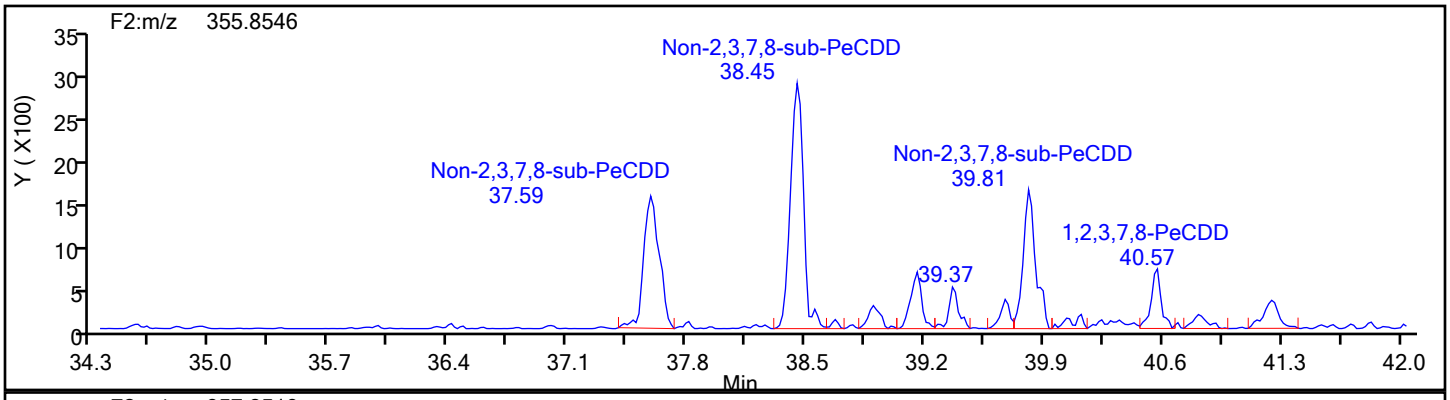
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

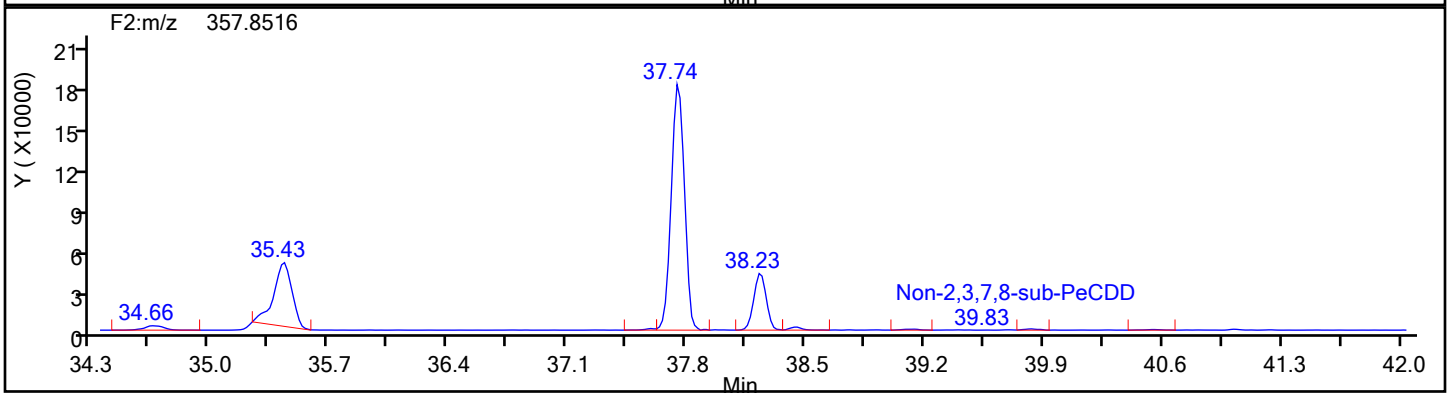
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

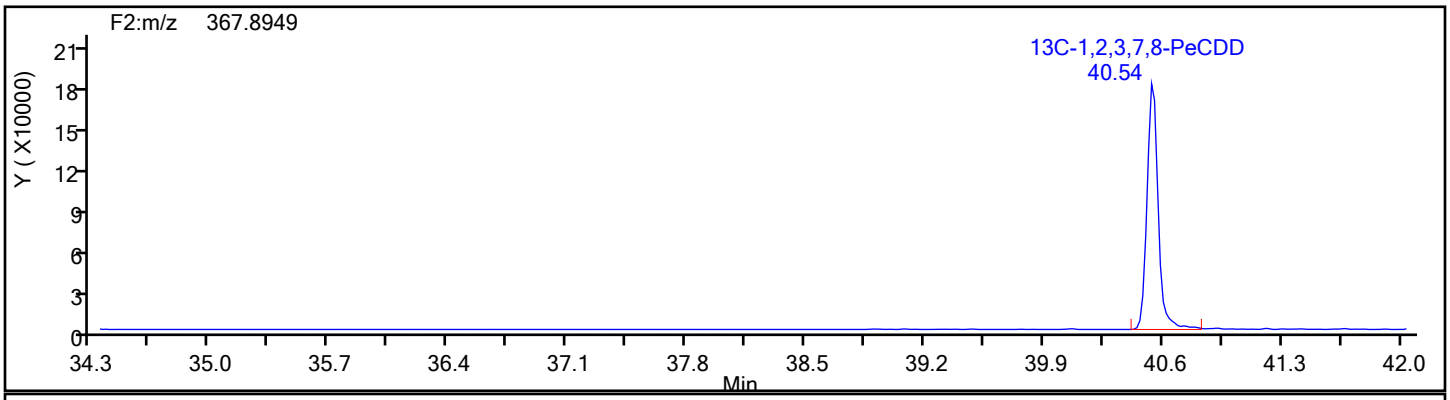
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

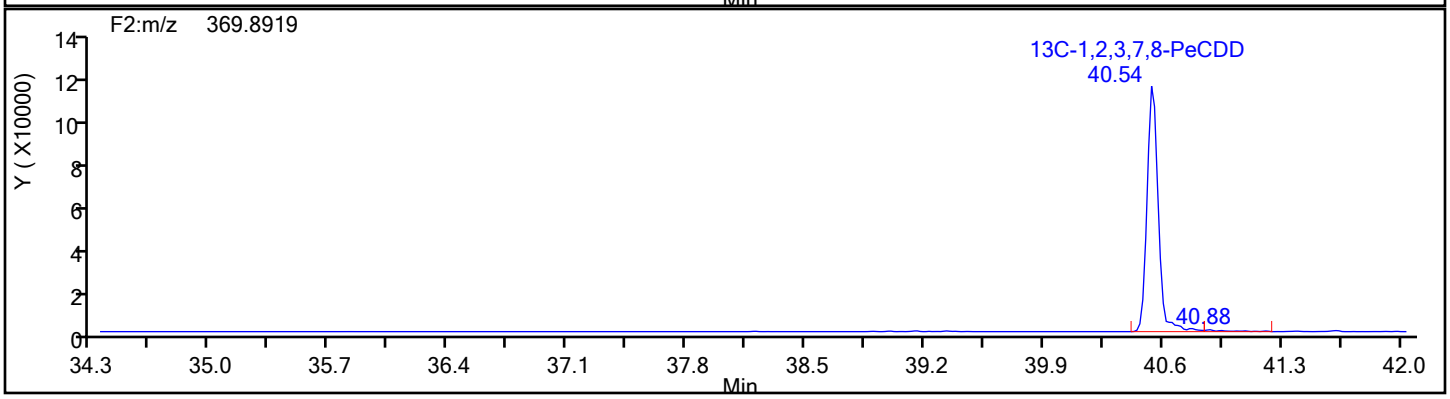
PeCDD





PeCDD Standards



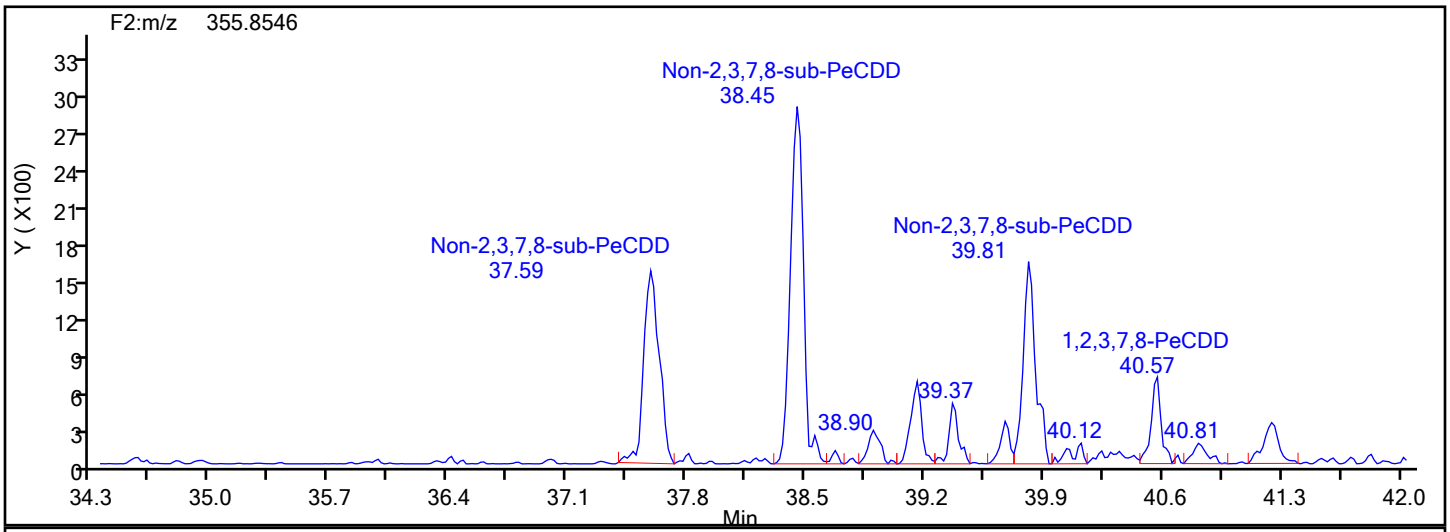


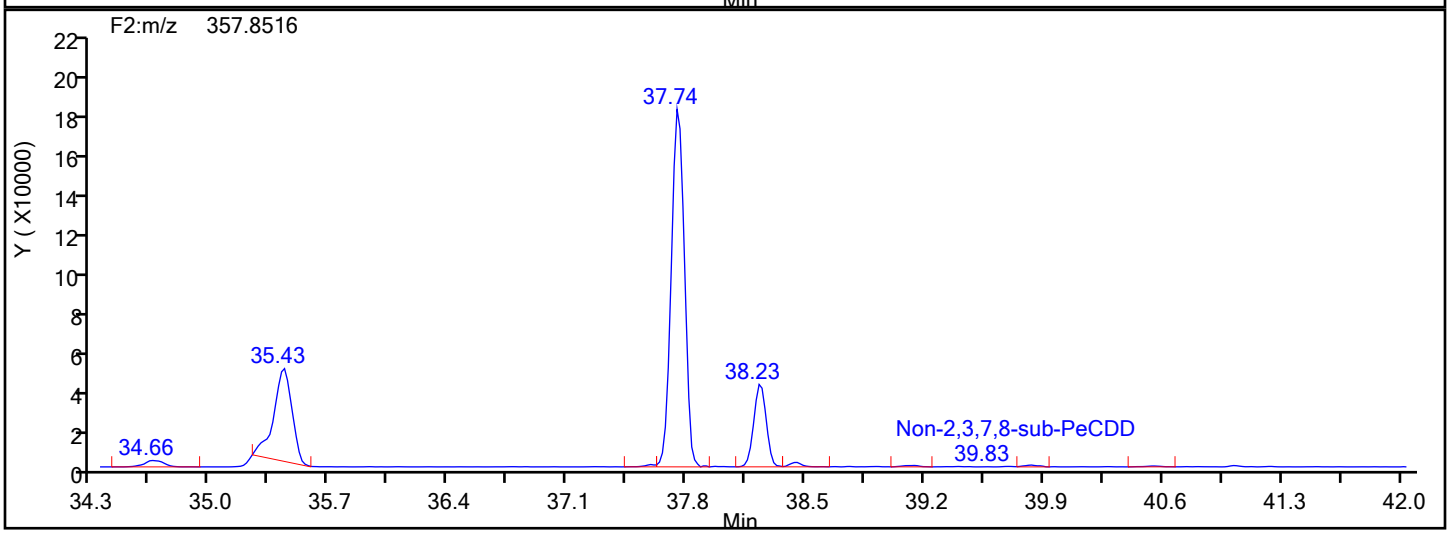
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

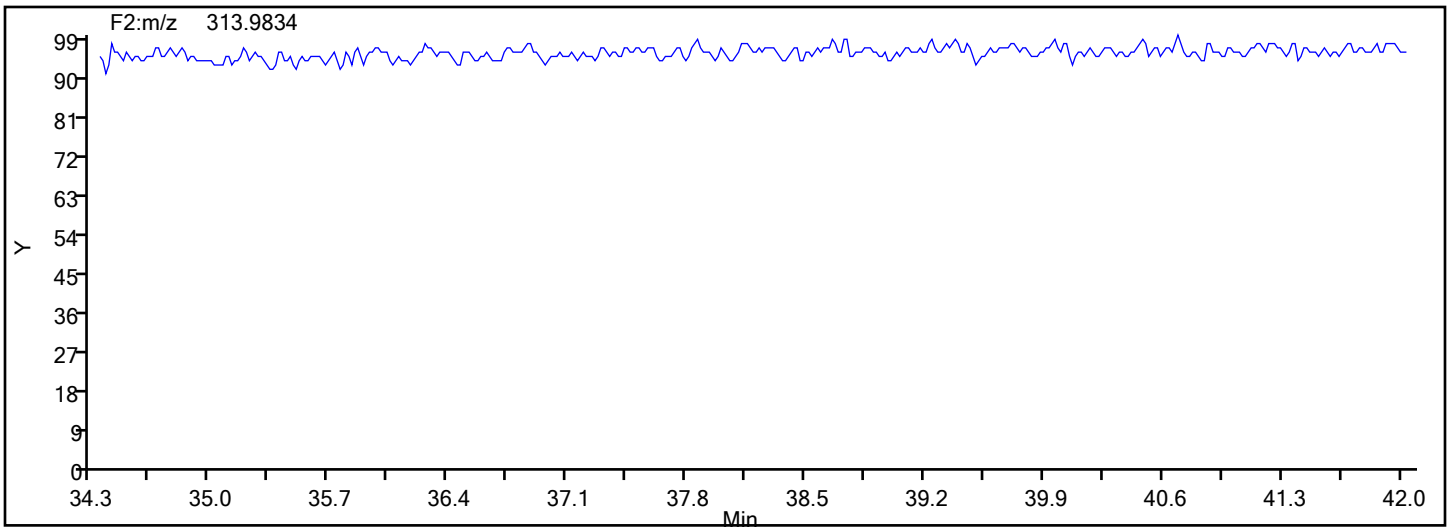
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

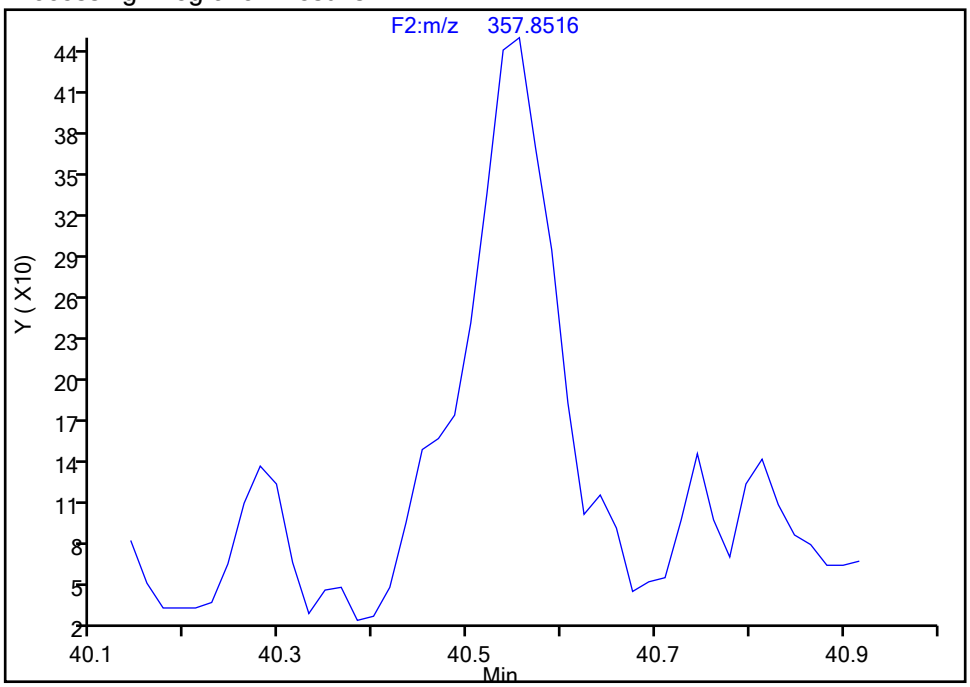
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

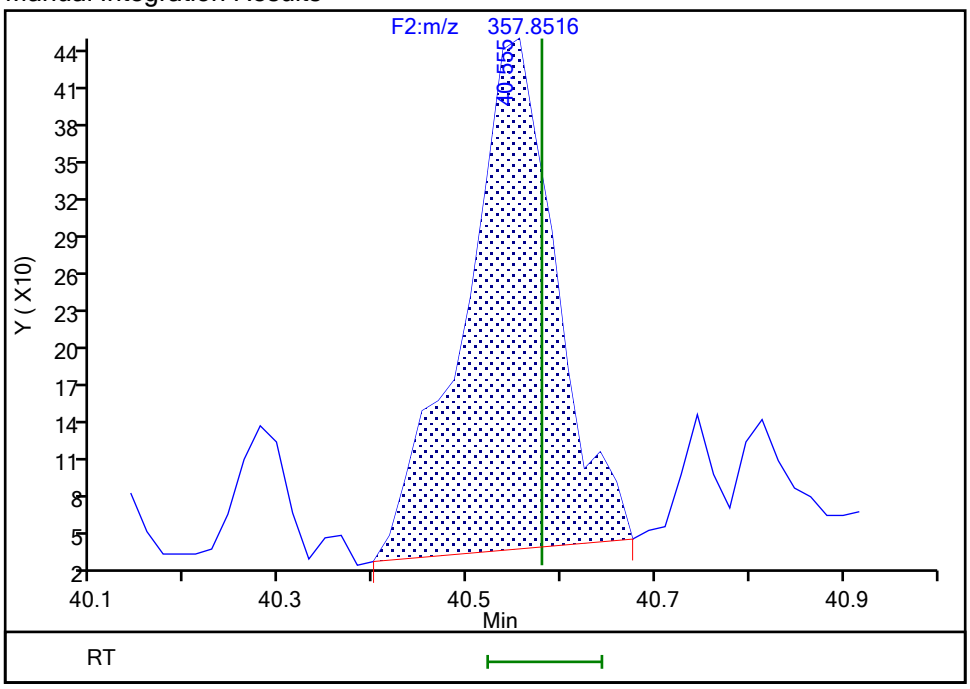
Not Detected
Expected RT: 40.58

Processing Integration Results



Manual Integration Results

RT: 40.56
Area: 2779
Amount: 0.200719
Amount Units: pg/ul



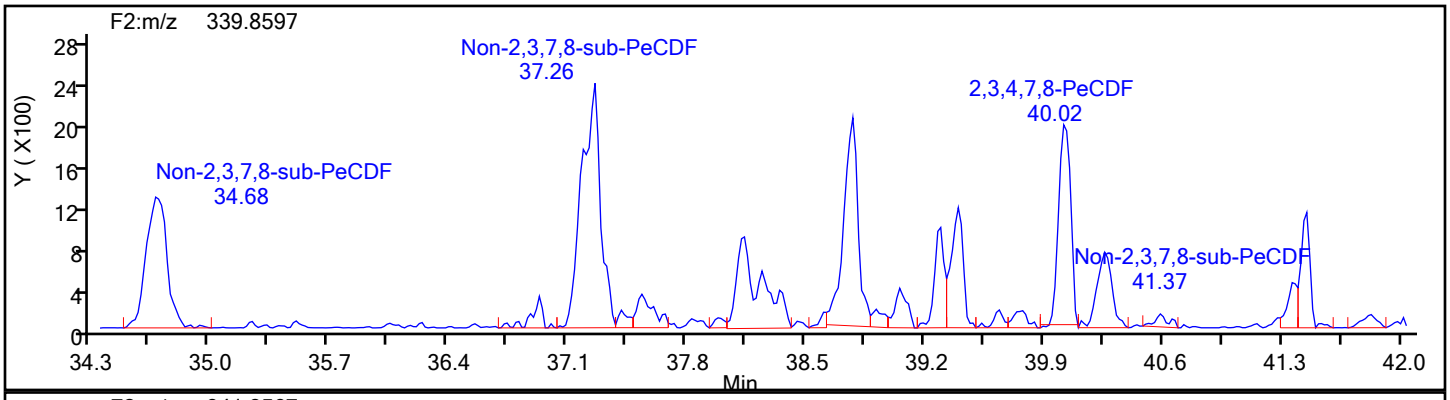
Reviewer: davidsonm, 17-Dec-2019 10:11:46
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

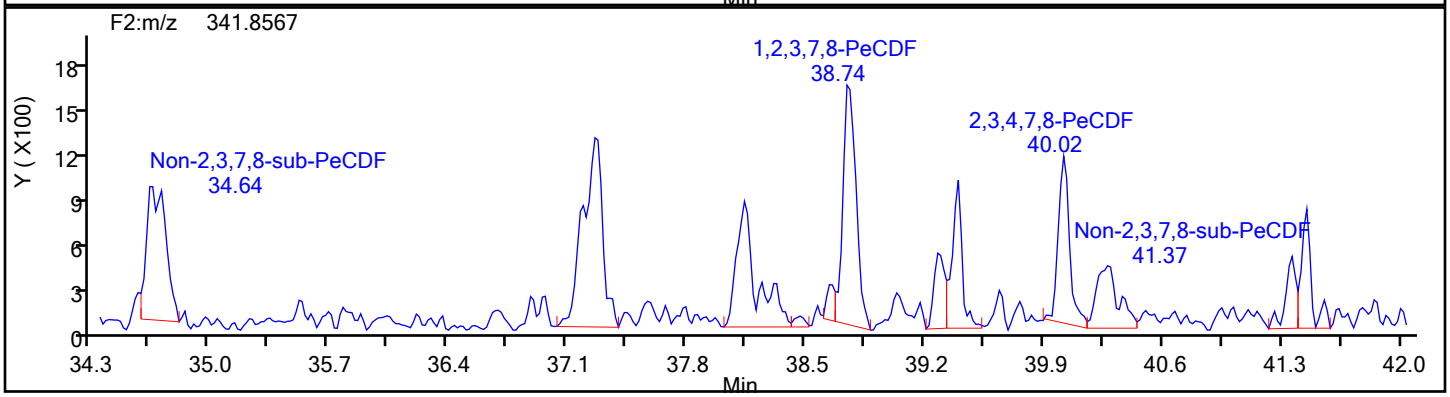
Report Date: 17-Dec-2019 10:15:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

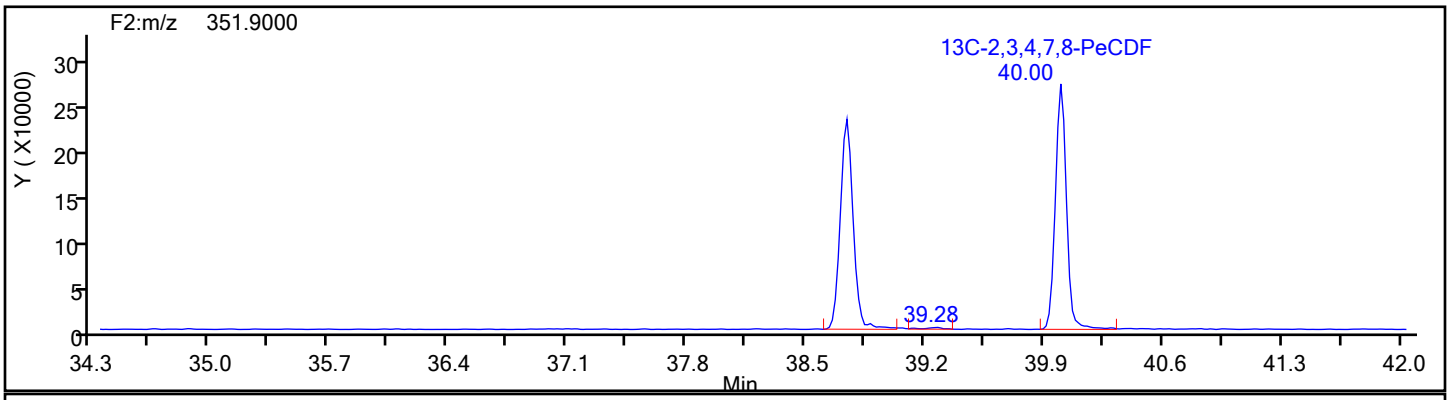
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

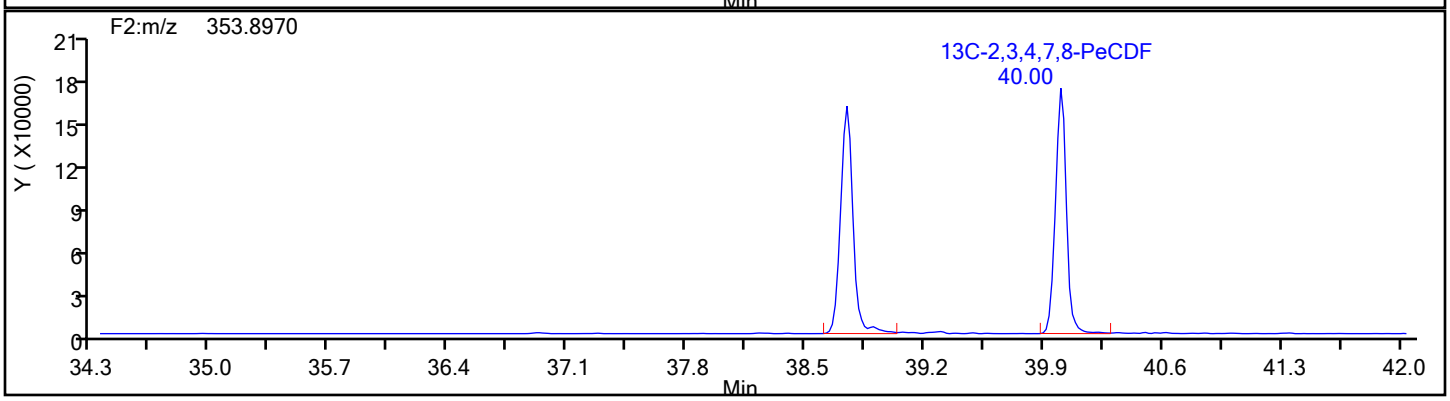
PeCDF





PeCDF Standards



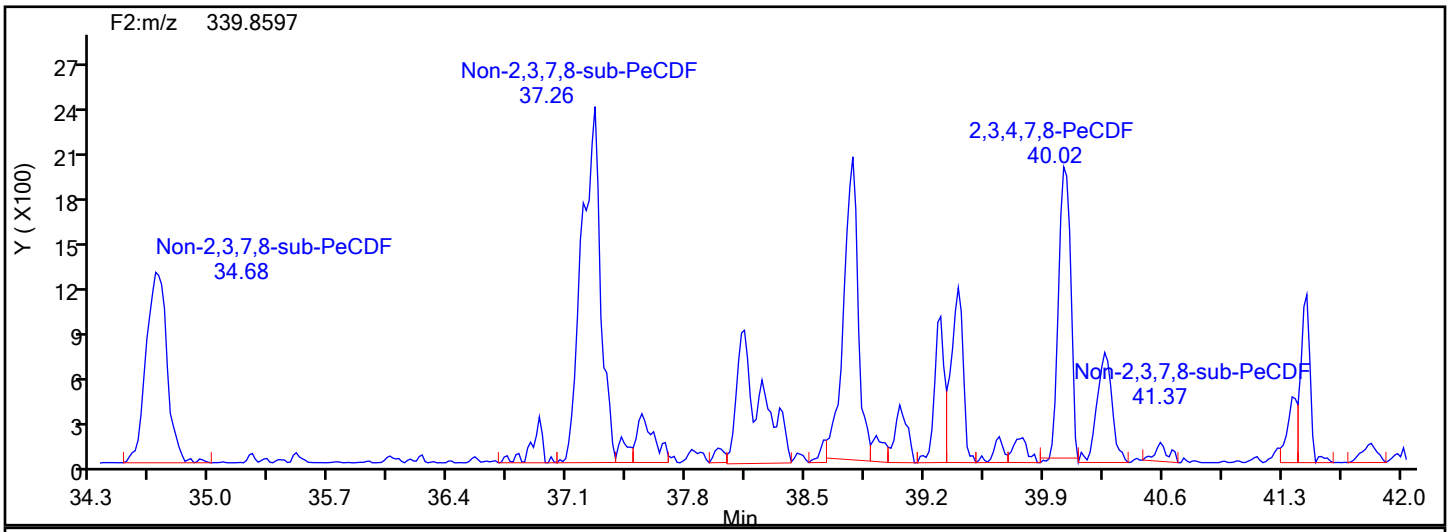


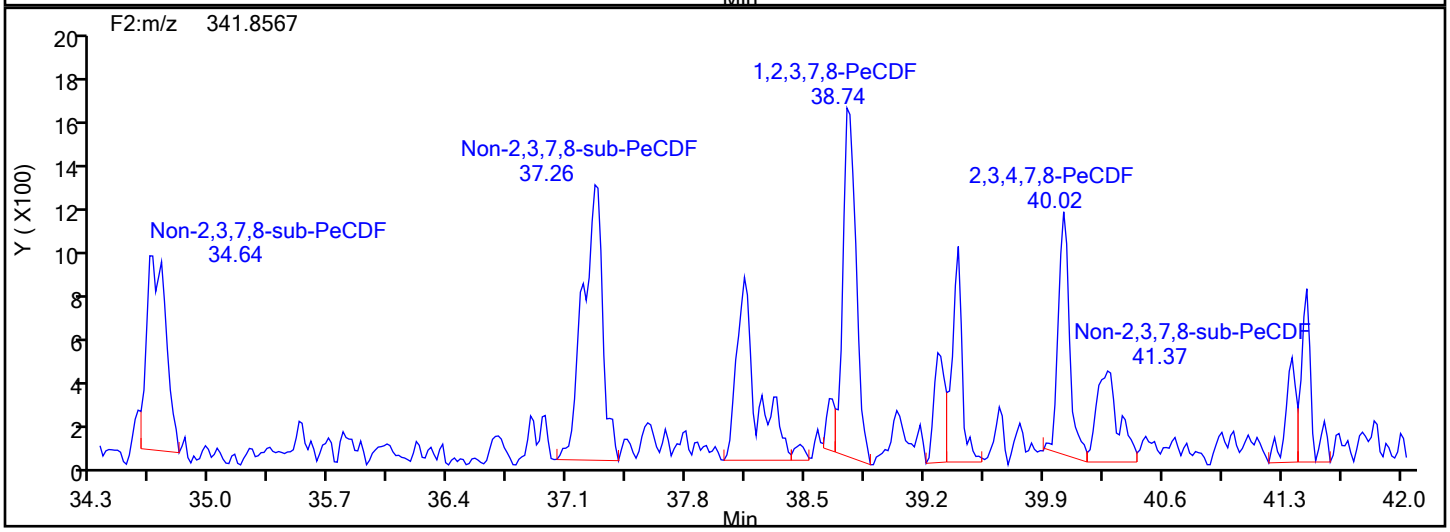
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

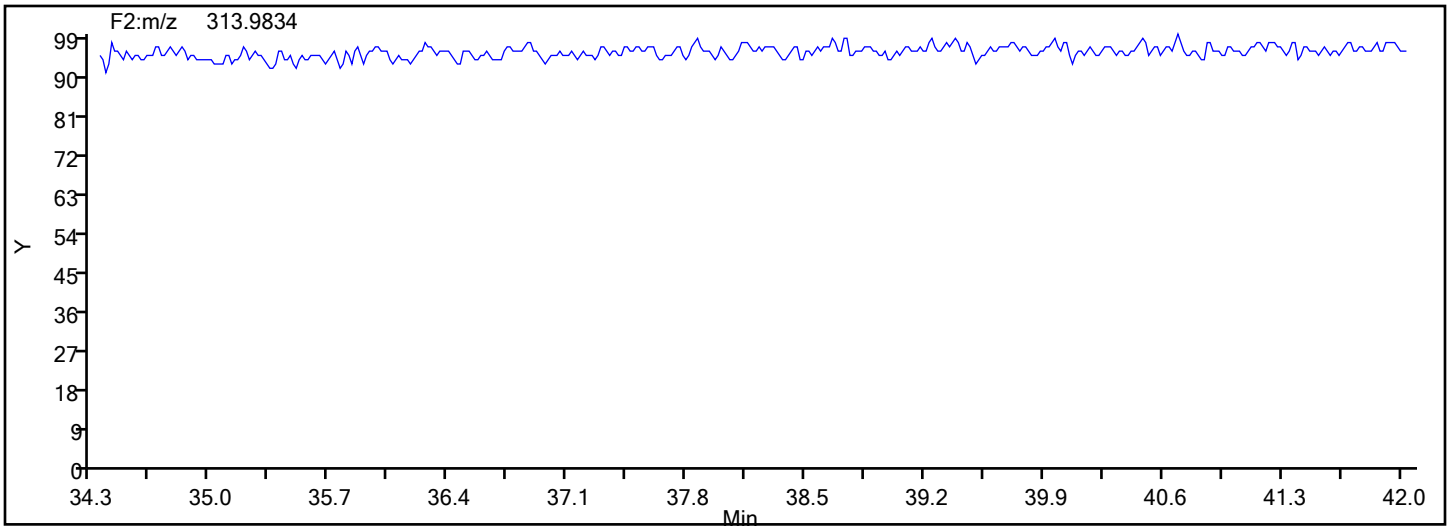
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

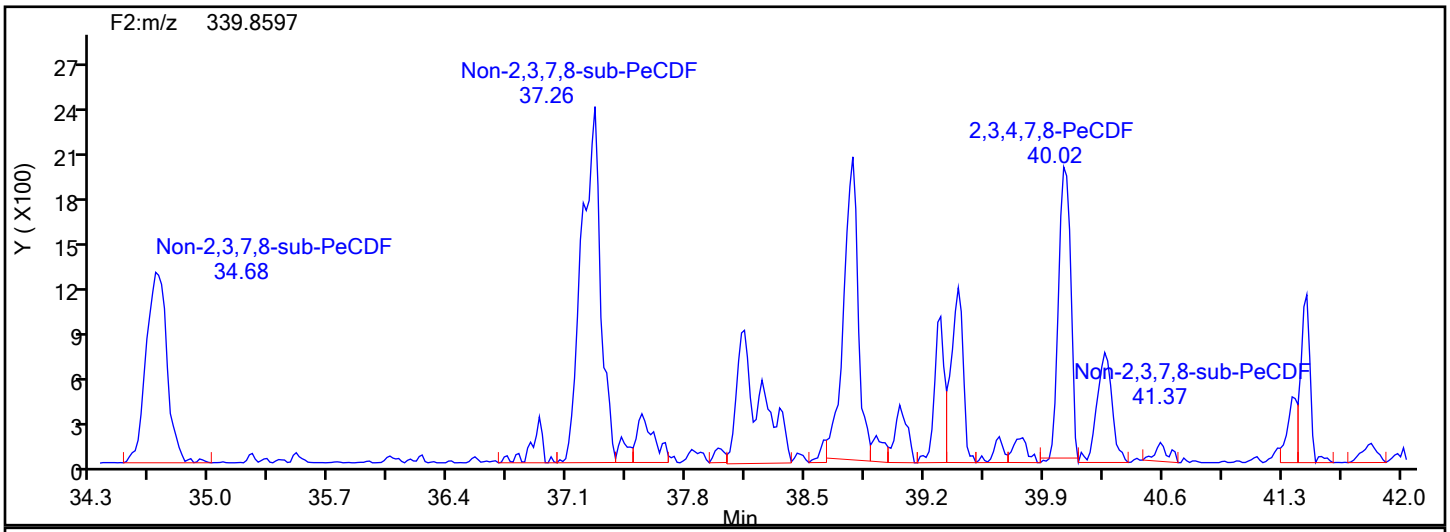


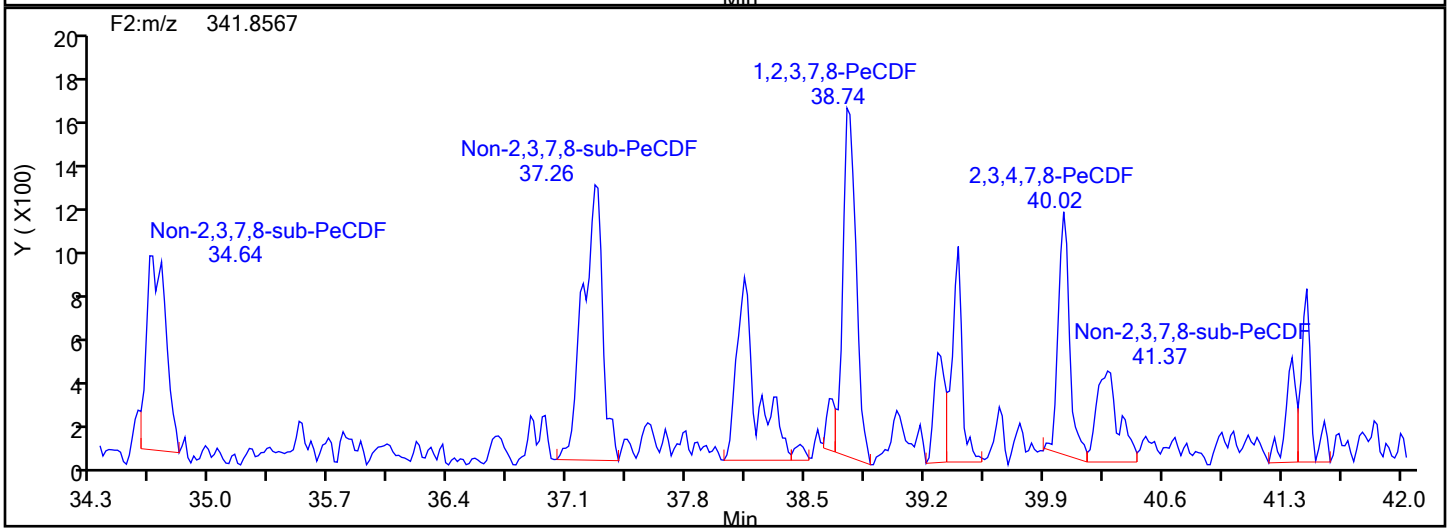
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

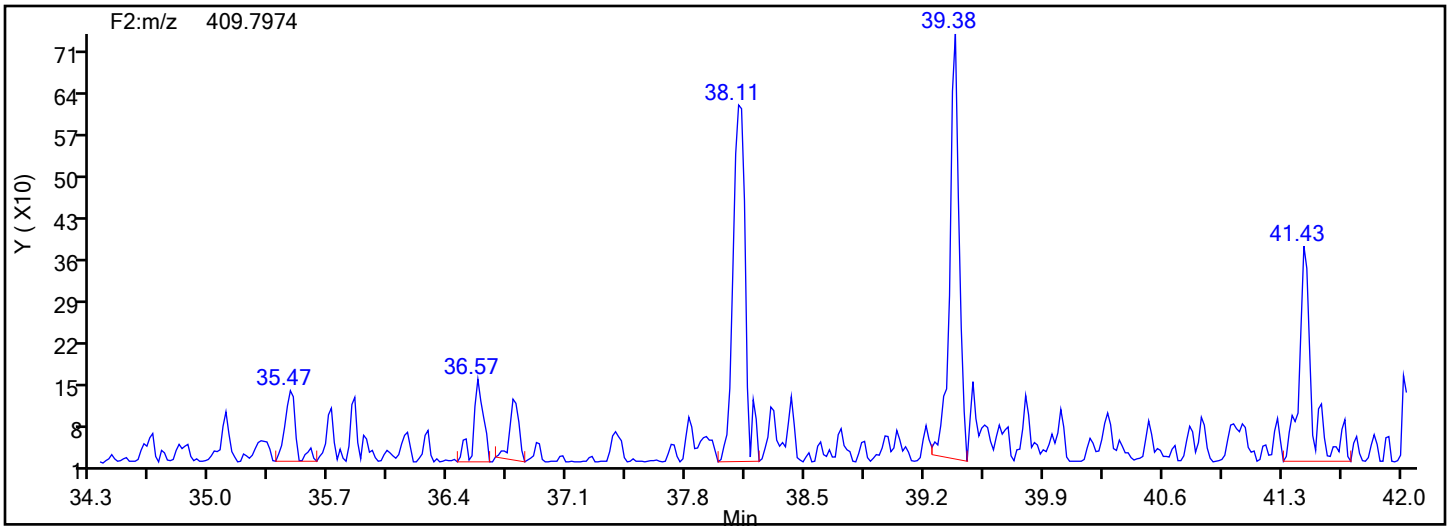
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

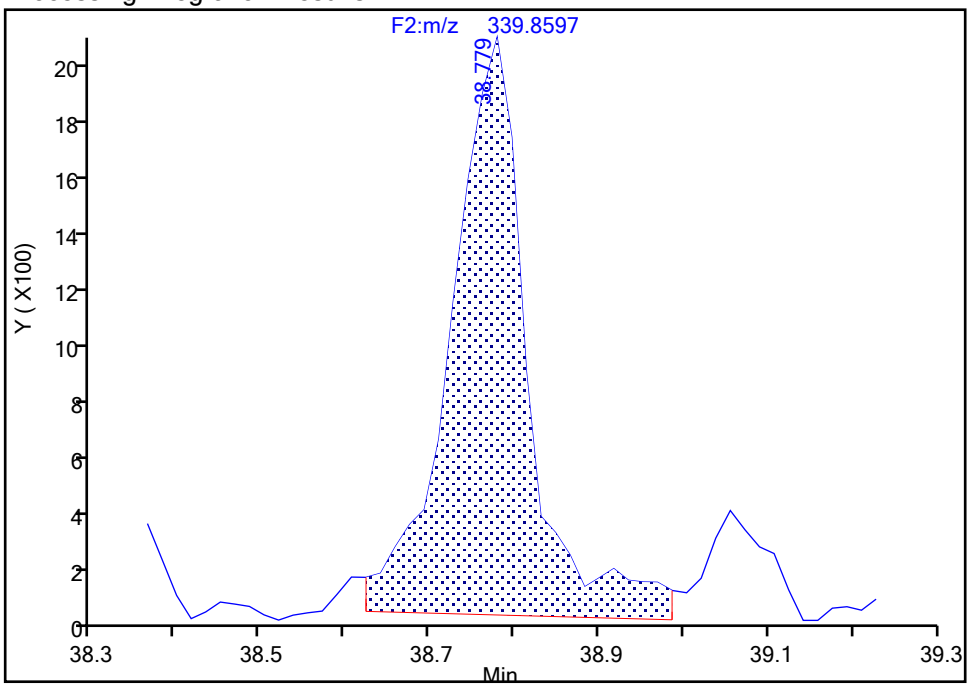
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

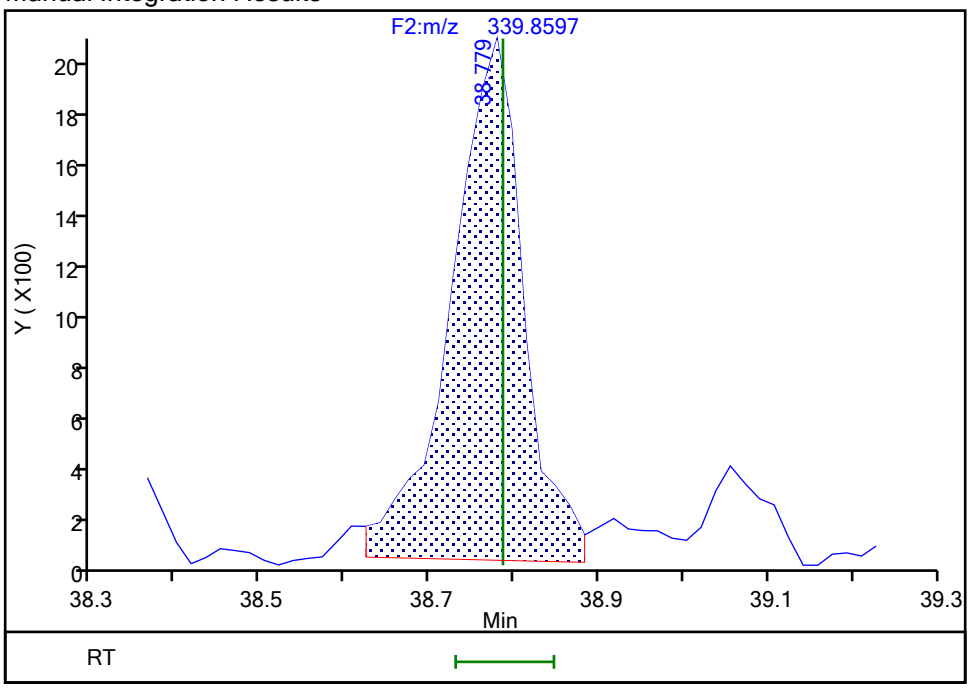
Processing Integration Results

RT: 38.78
Area: 12629
Amount: 0.452322
Amount Units: pg/ul



Manual Integration Results

RT: 38.78
Area: 11798
Amount: 0.419676
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:12:15

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

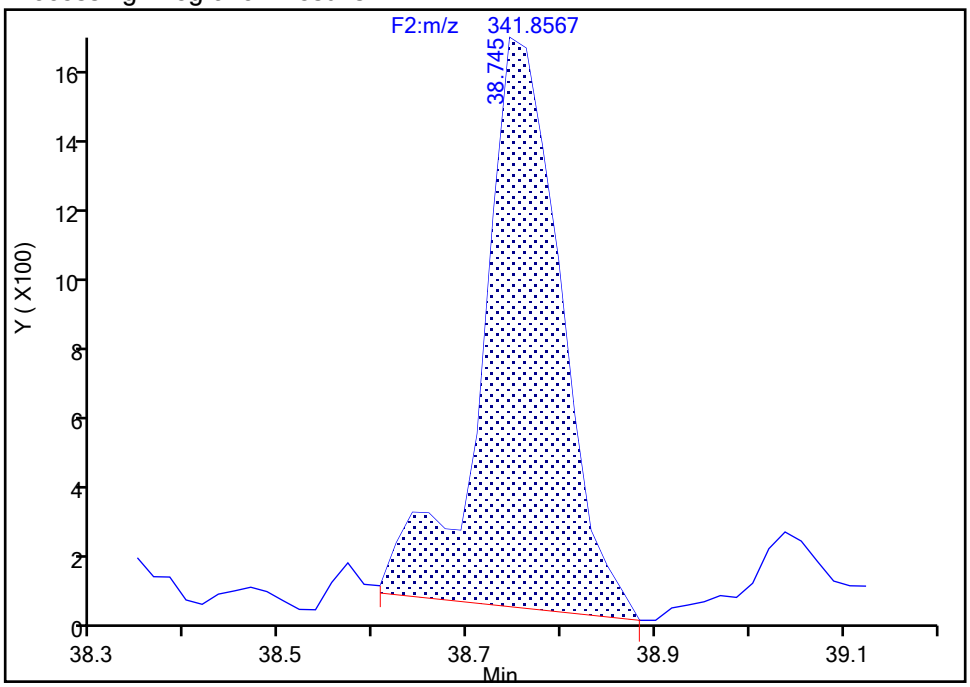
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

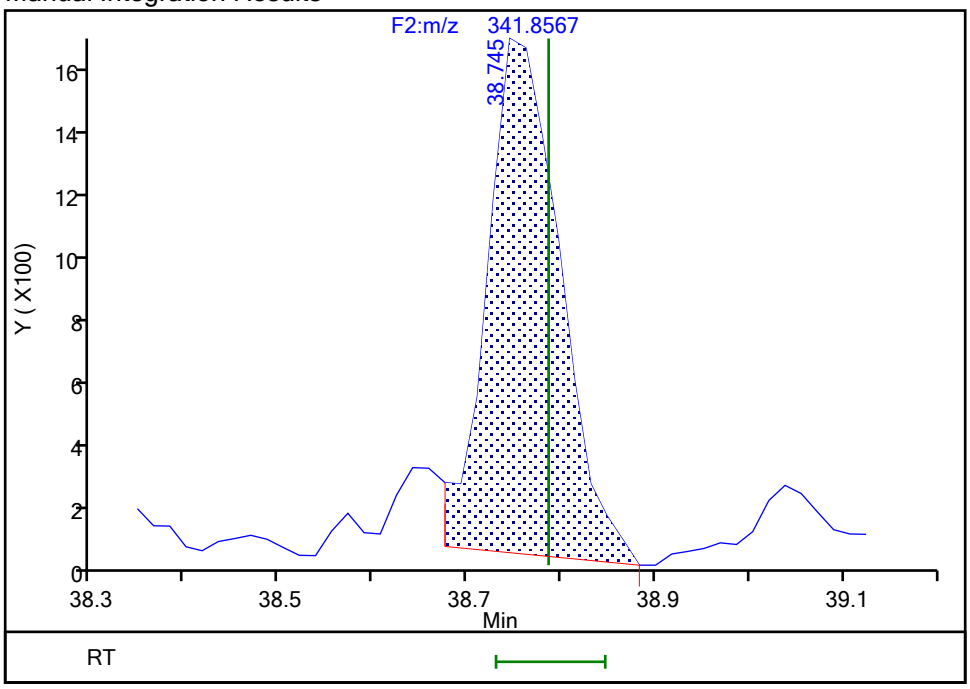
Processing Integration Results

RT: 38.74
Area: 9207
Amount: 0.452322
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 8462
Amount: 0.419676
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:12:17

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

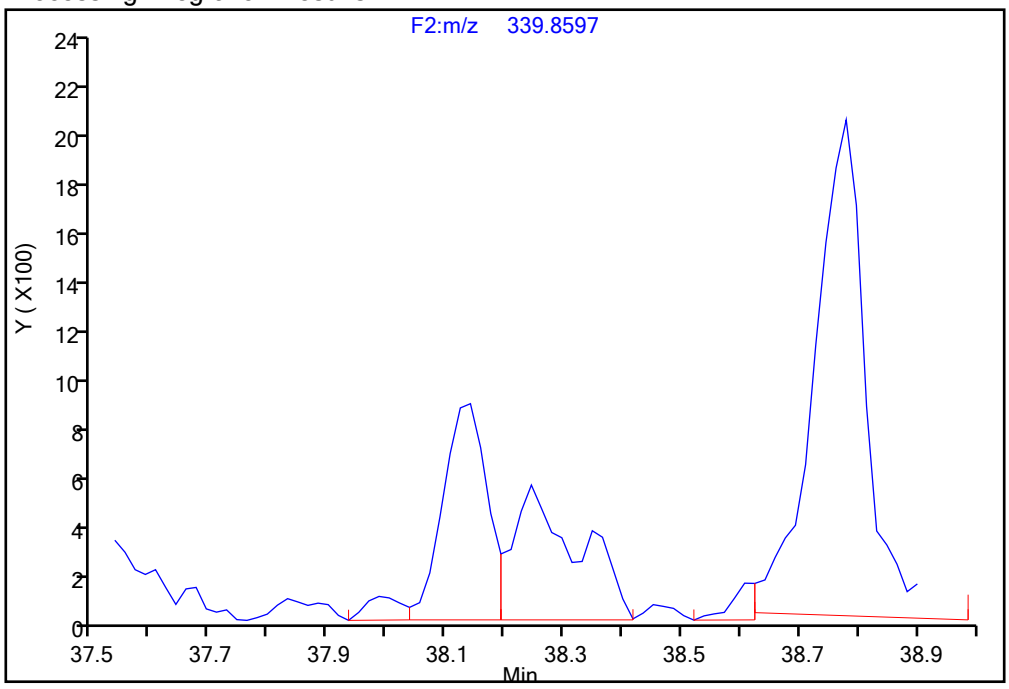
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

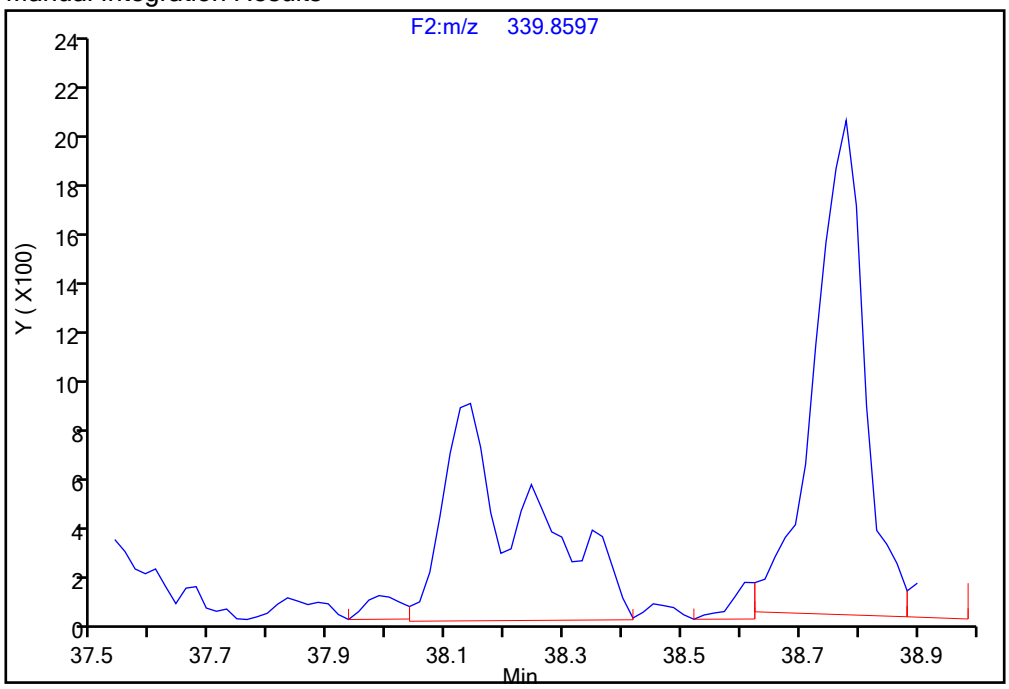
Processing Integration Results

RT = 38.141 Area = 4473



Manual Integration Results

RT = 38.141 Area = 8707 M



Reviewer: davidsonm, 17-Dec-2019 10:12:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

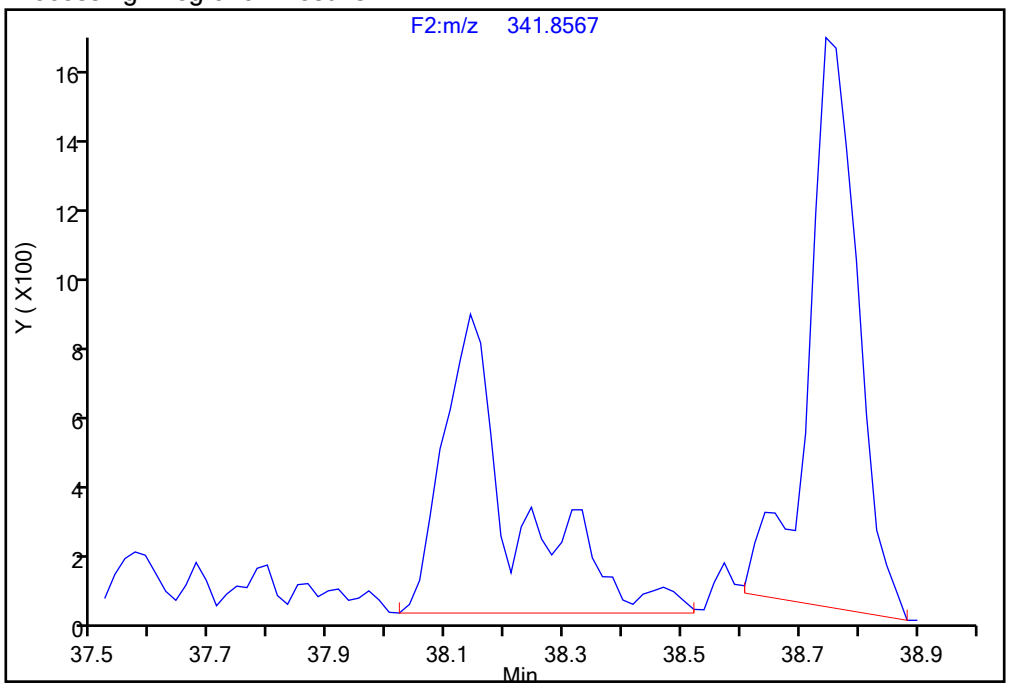
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

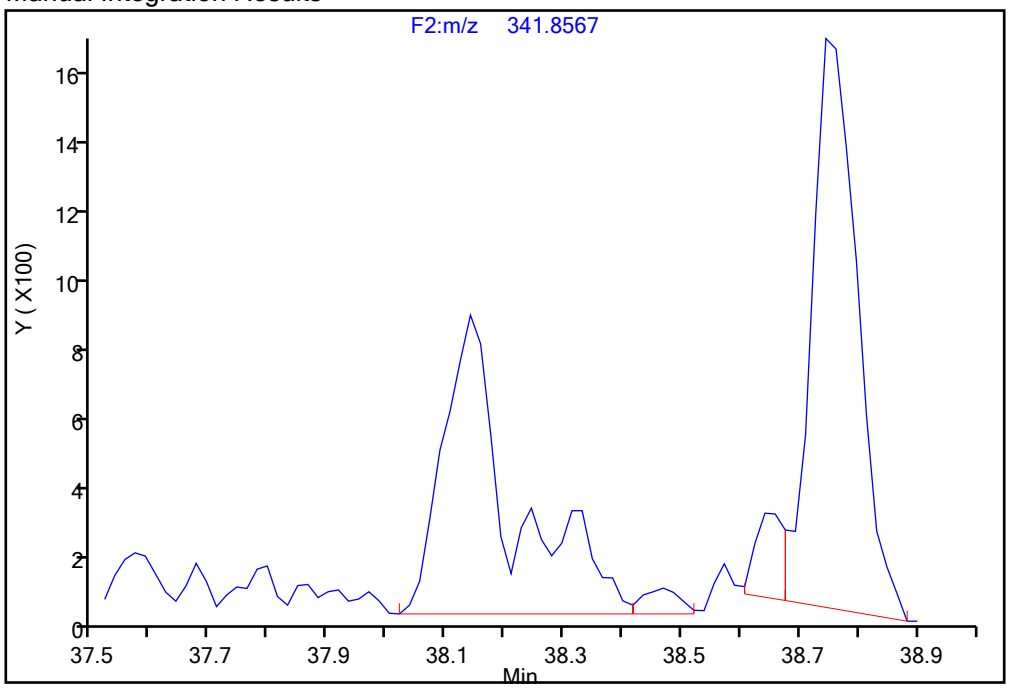
Processing Integration Results

RT = 38.141 Area = 7047



Manual Integration Results

RT = 38.141 Area = 6743 M



Reviewer: davidsonm, 17-Dec-2019 10:12:31

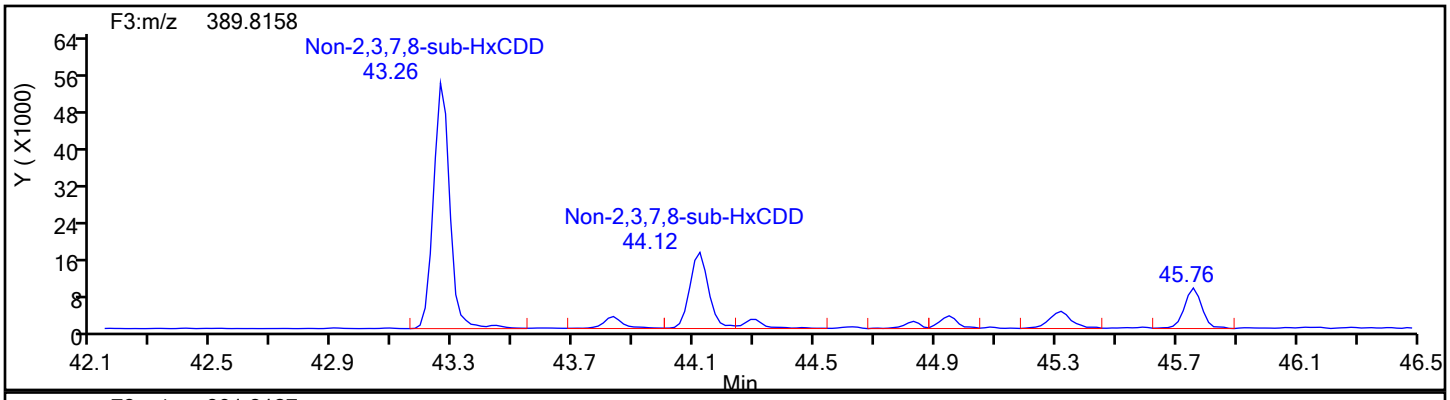
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

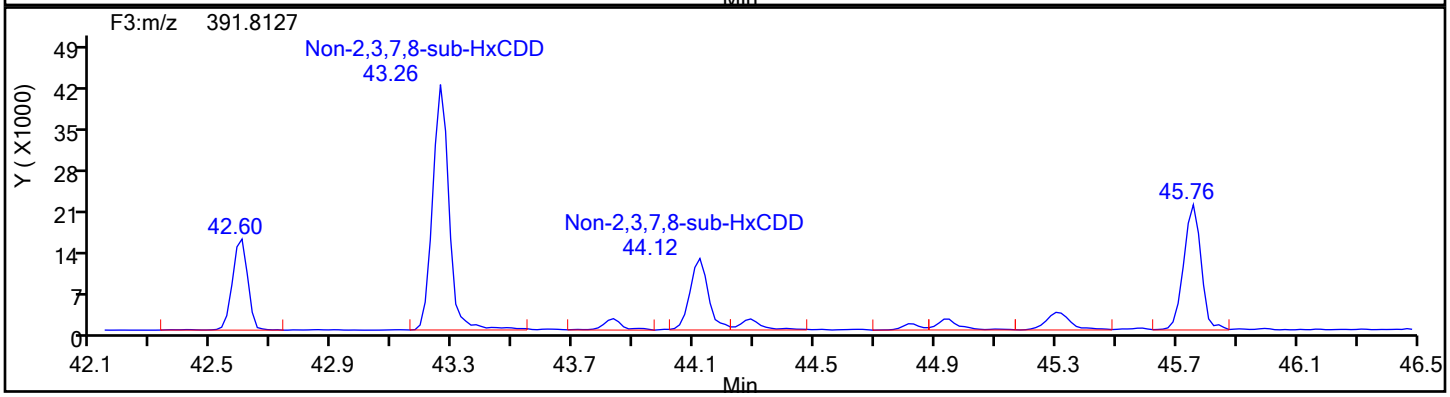
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

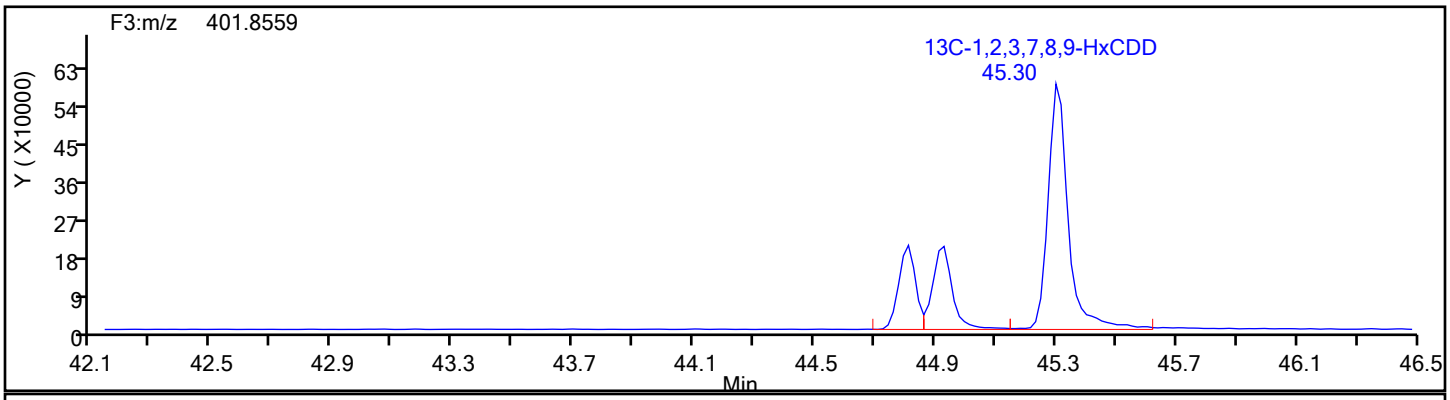
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

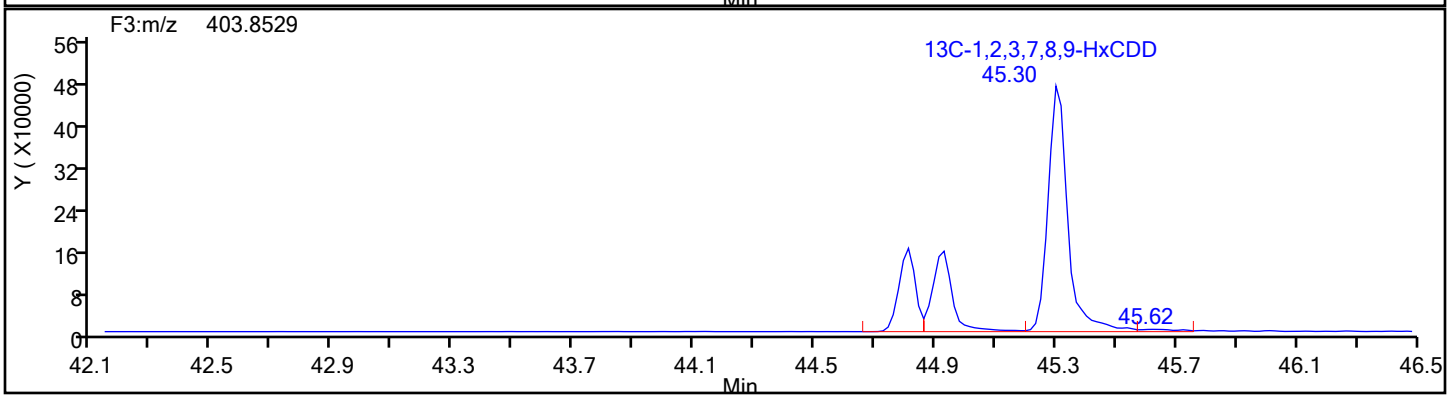
HxCDD





HxCDD Standards



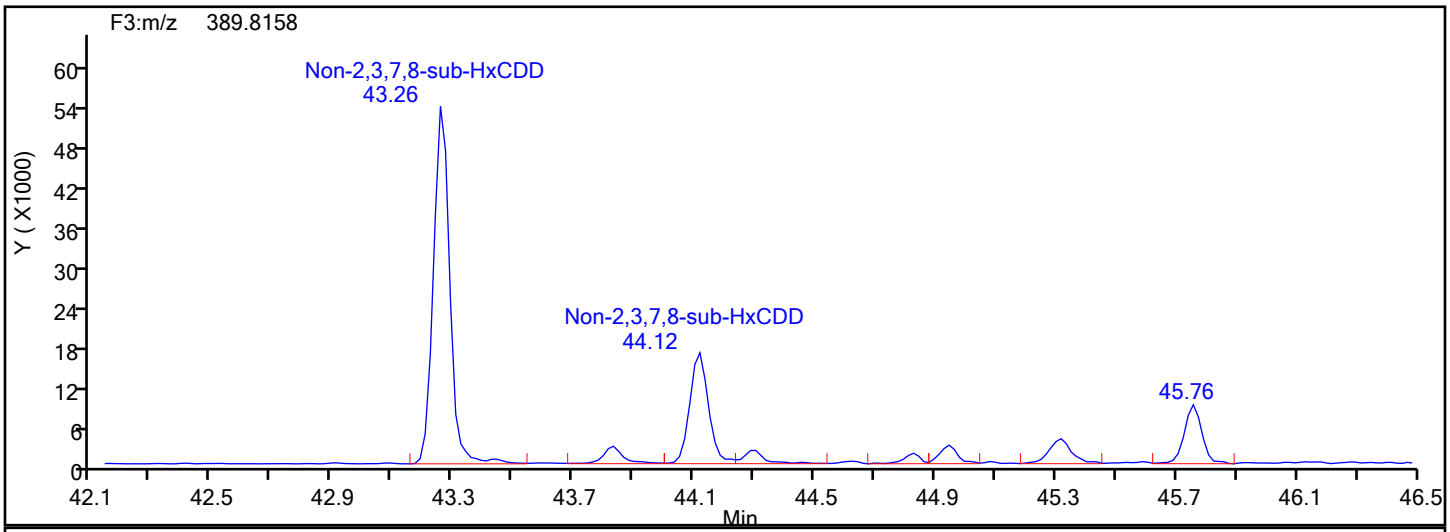


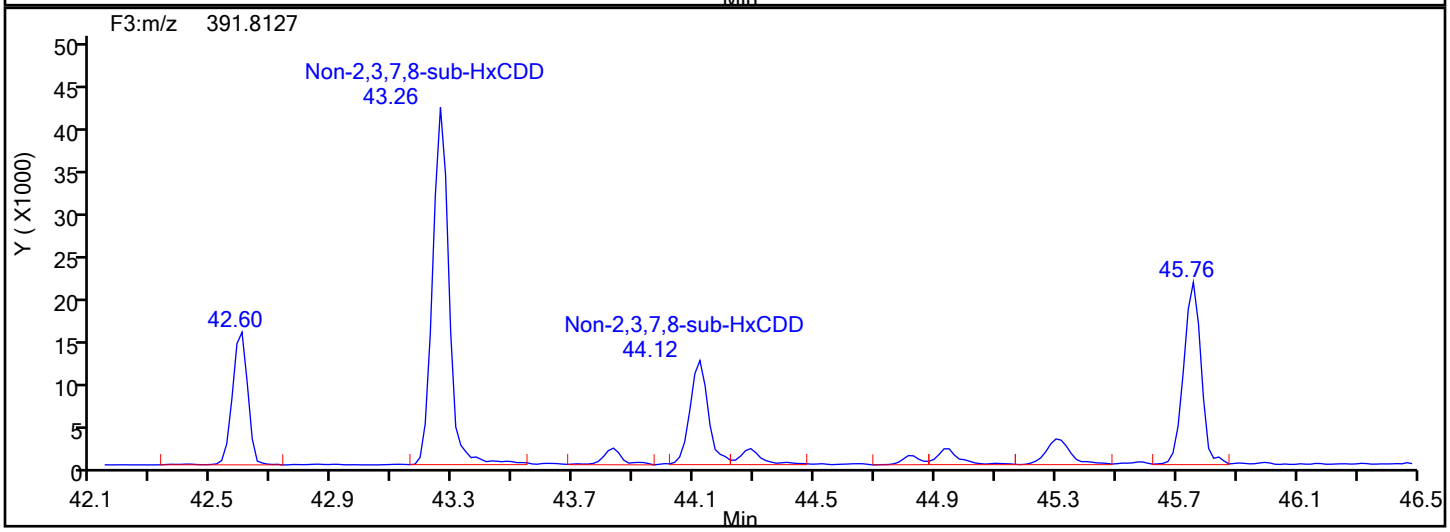
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

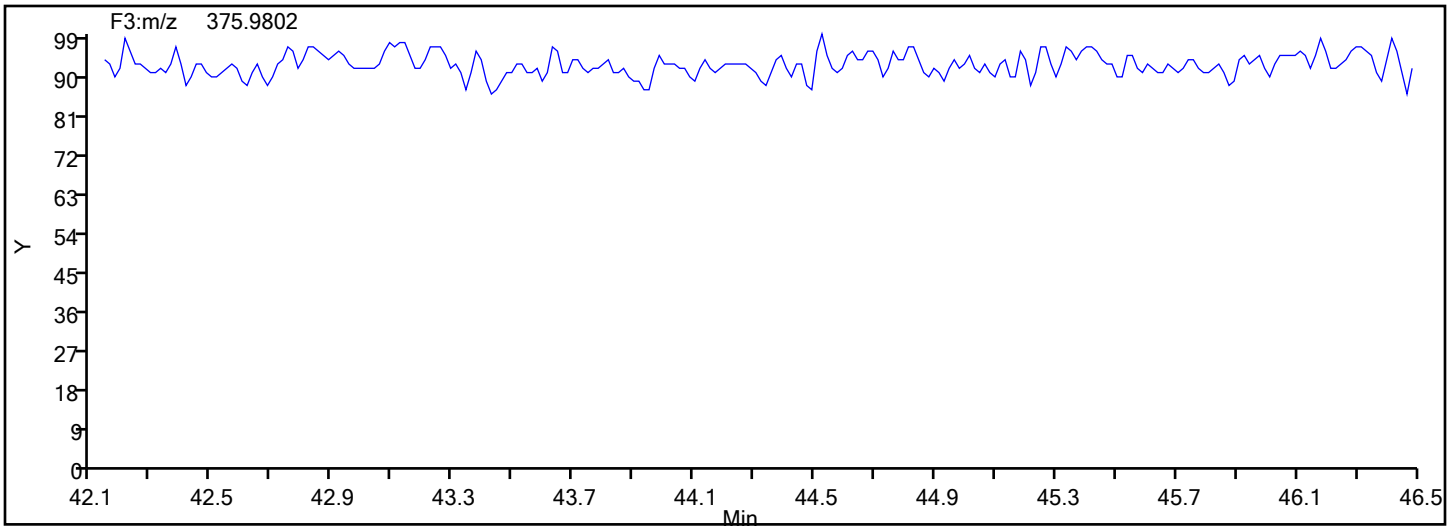
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass

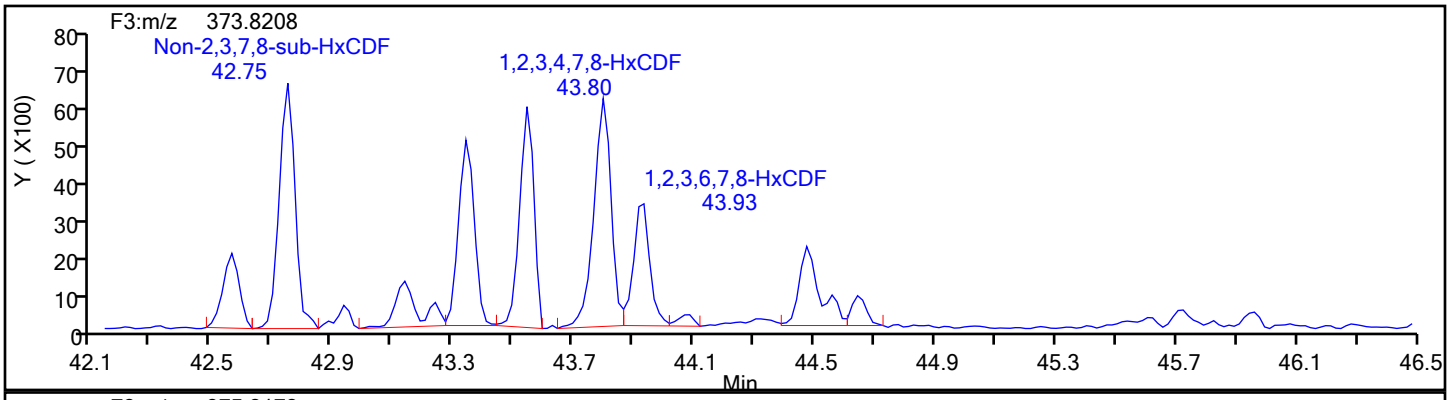


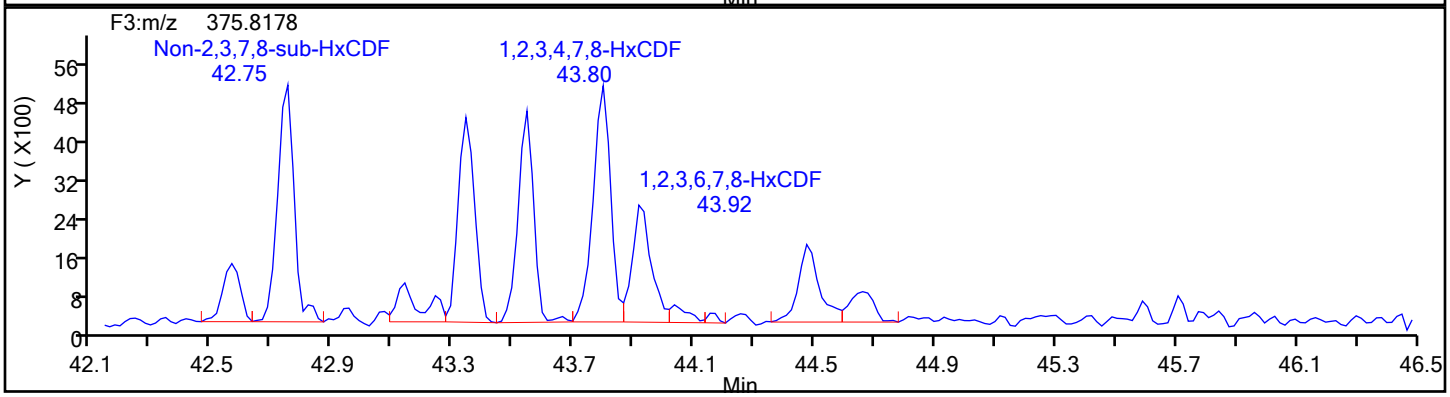
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

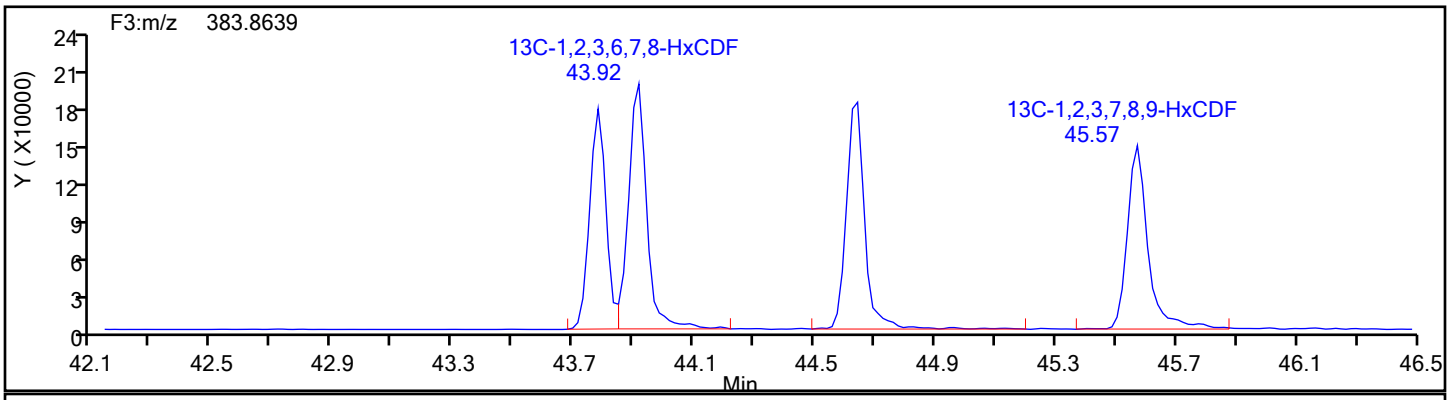
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

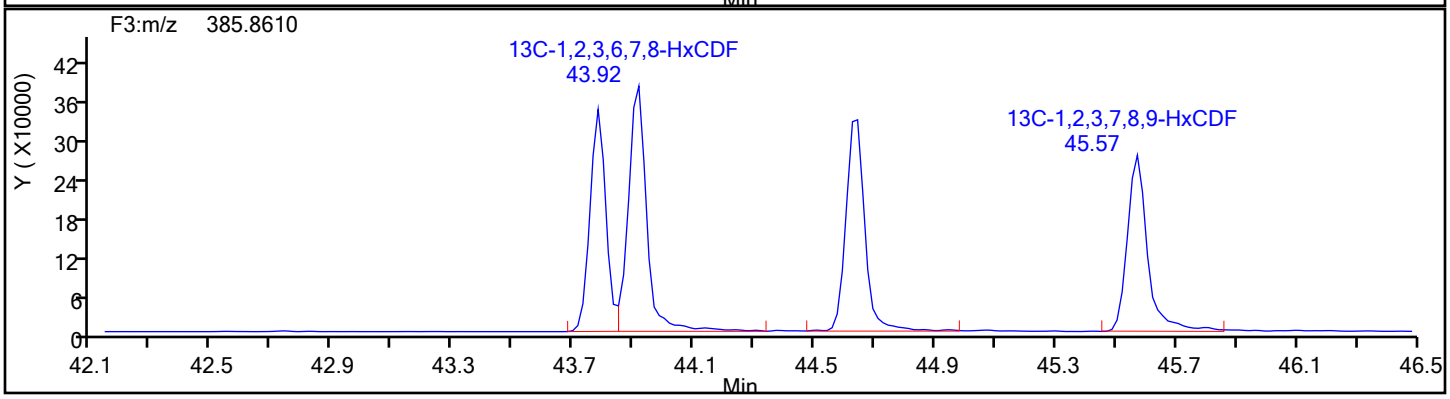
HxCDF





HxCDF Standards



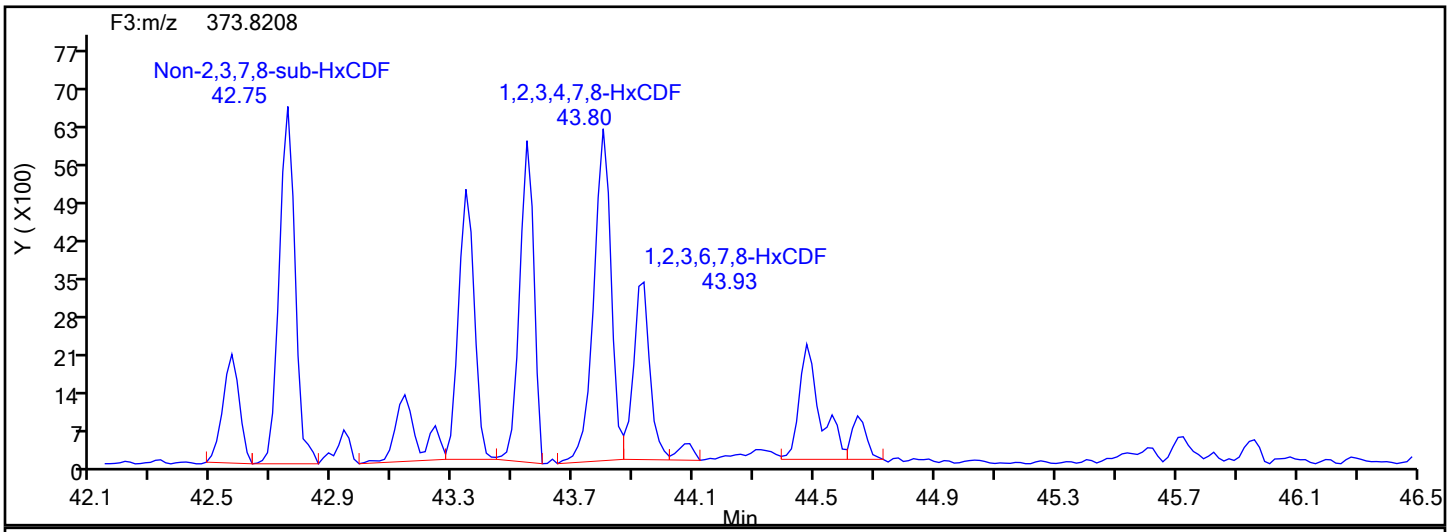


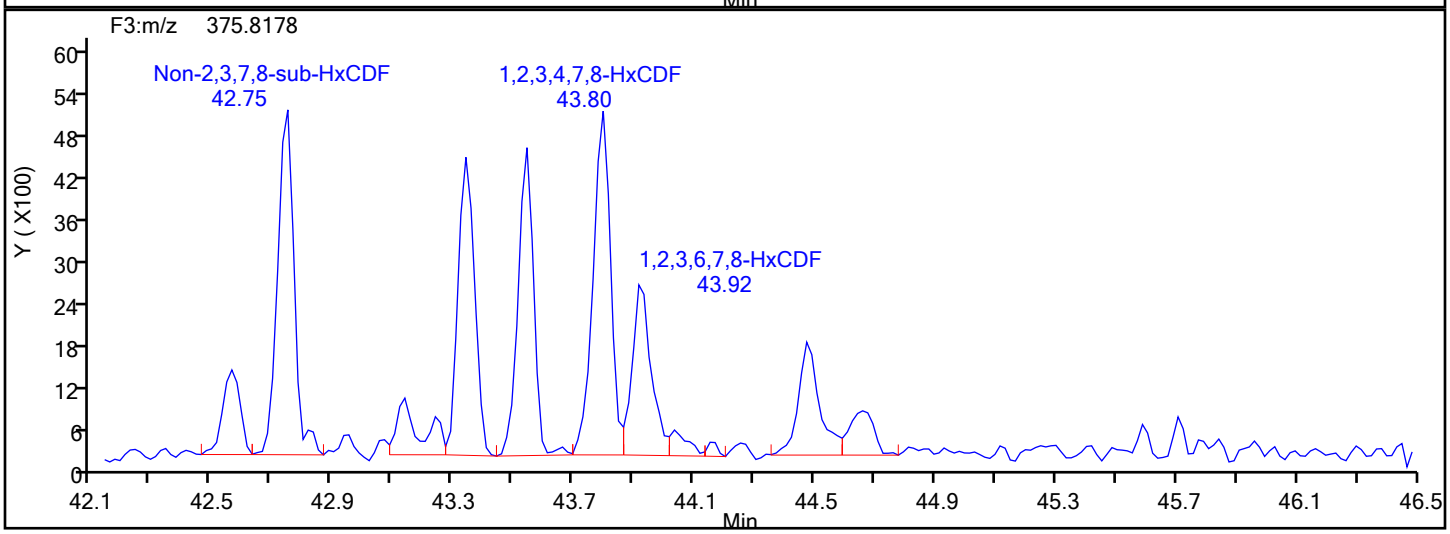
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

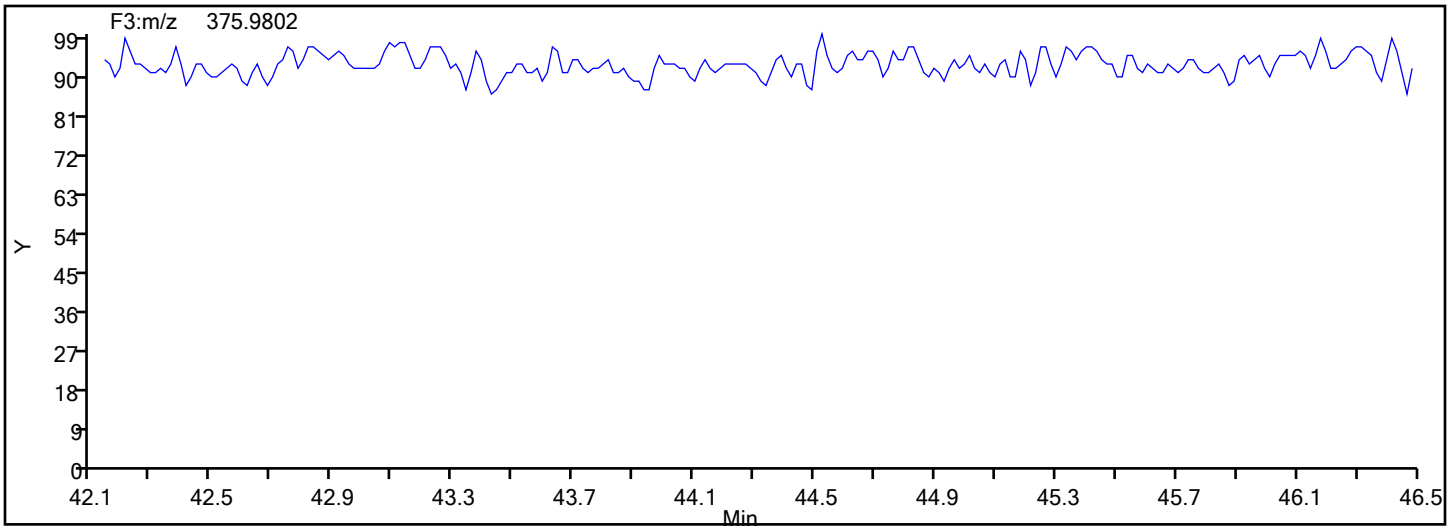
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

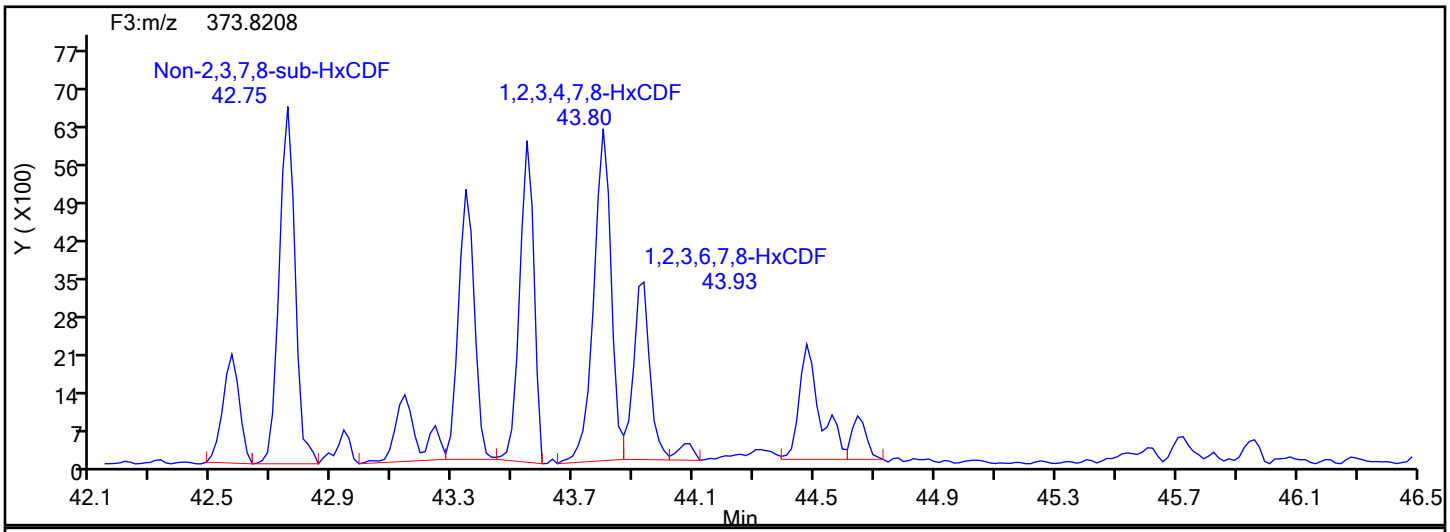


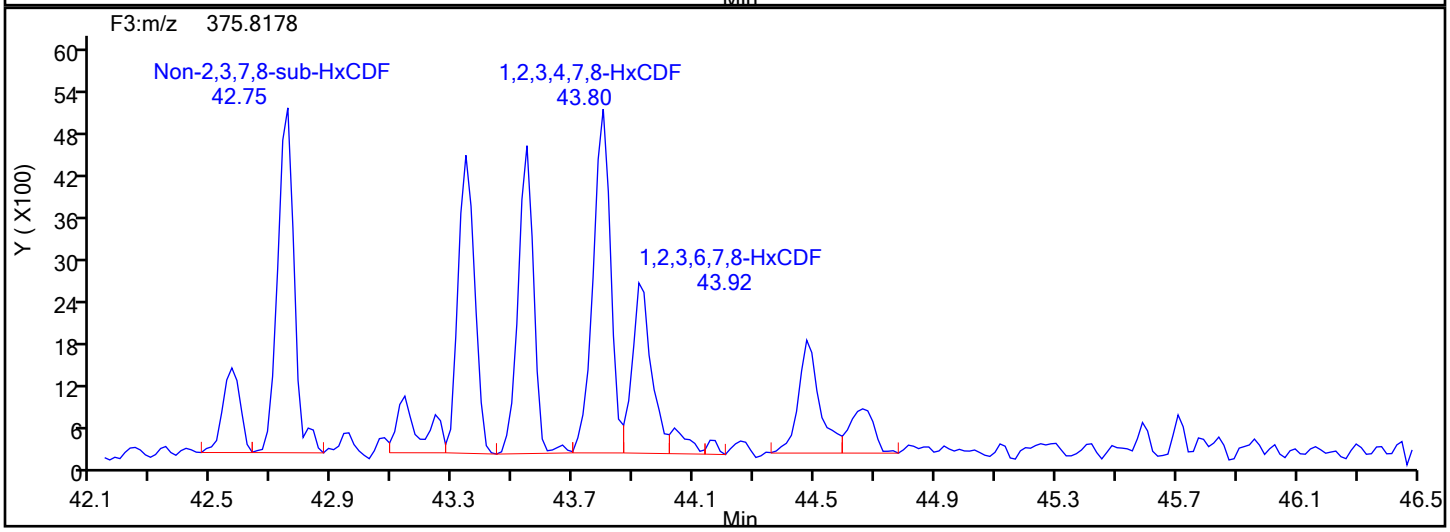
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

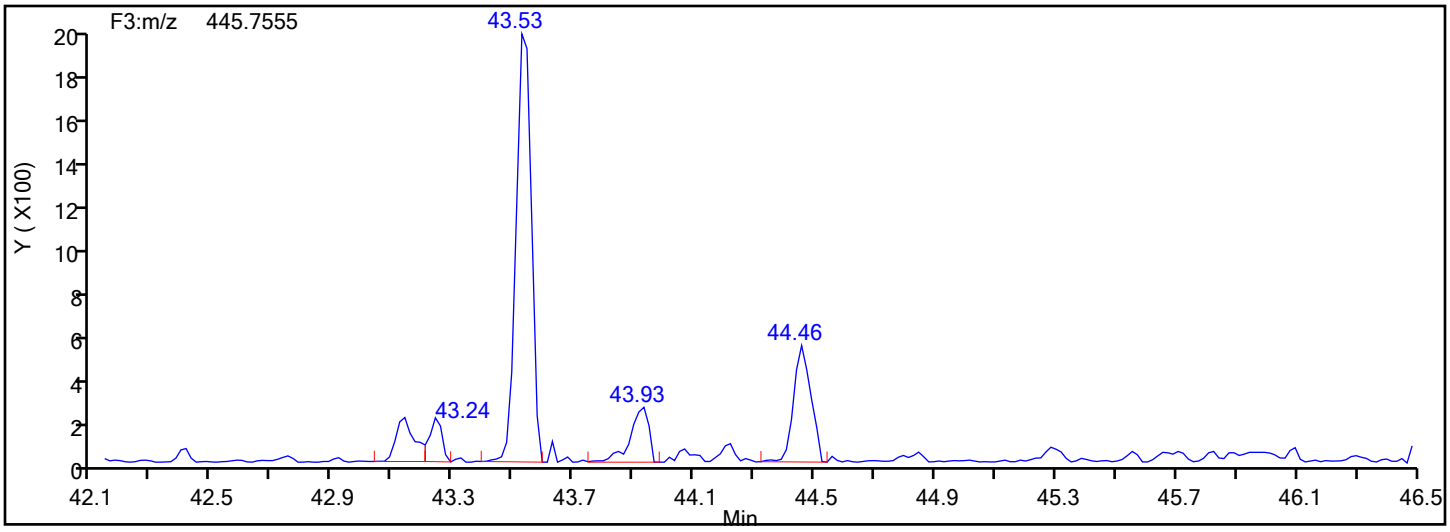
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

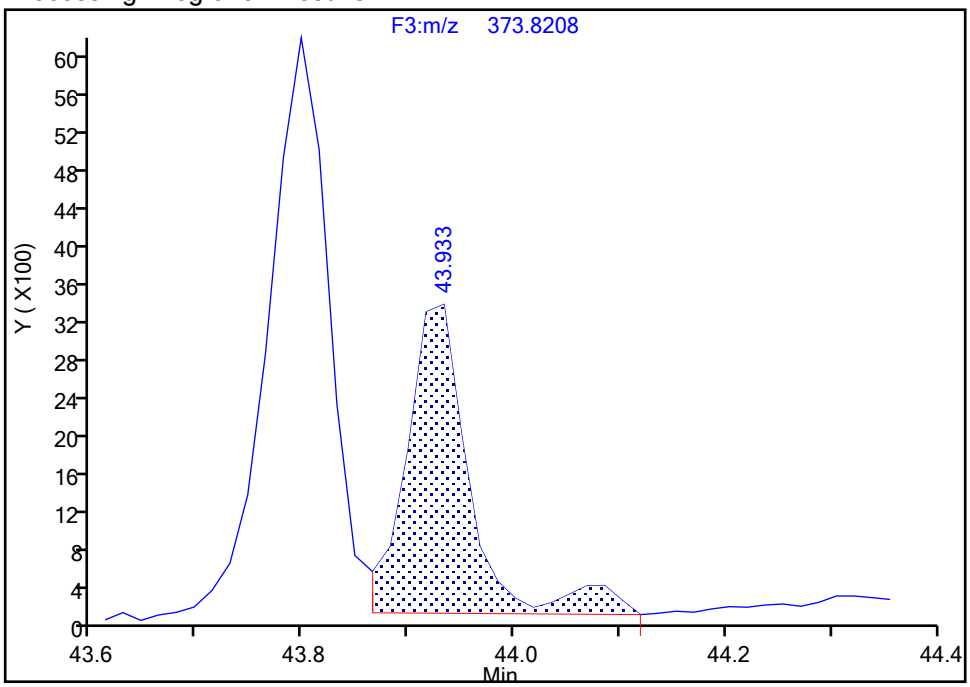
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

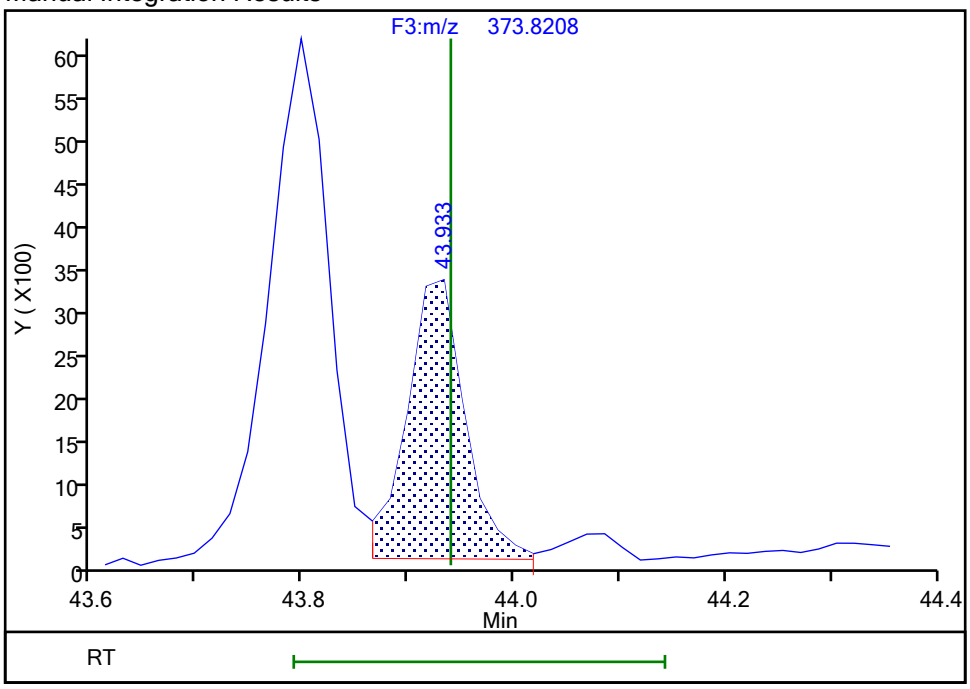
Processing Integration Results

RT: 43.93
Area: 13497
Amount: 0.422758
Amount Units: pg/ul



Manual Integration Results

RT: 43.93
Area: 12376
Amount: 0.373315
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:13:18

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

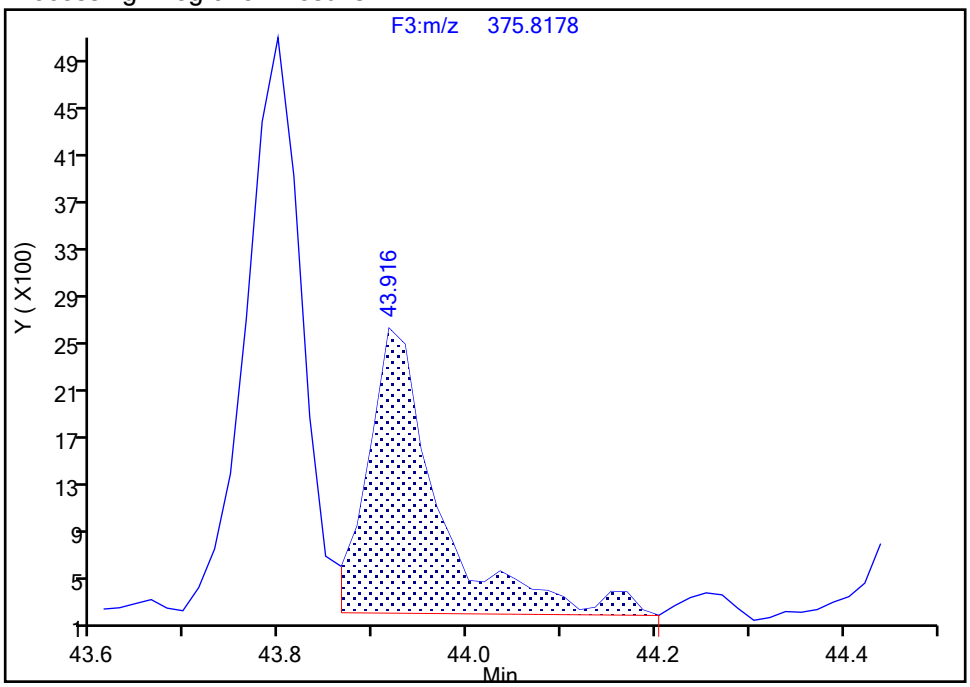
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

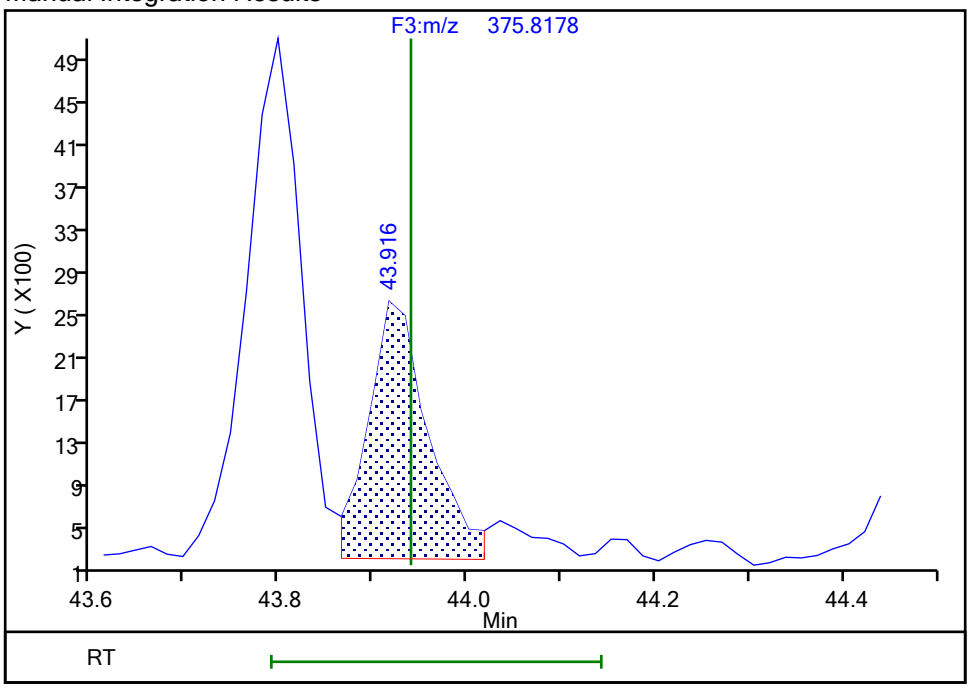
Processing Integration Results

RT: 43.92
Area: 12505
Amount: 0.422758
Amount Units: pg/ul



Manual Integration Results

RT: 43.92
Area: 10585
Amount: 0.373315
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:13:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

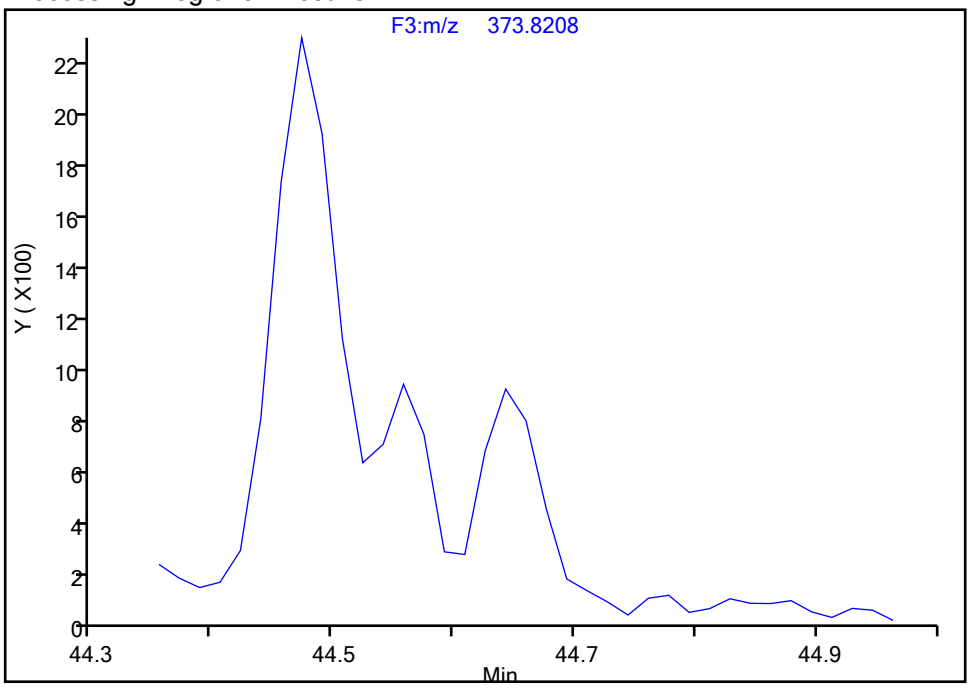
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

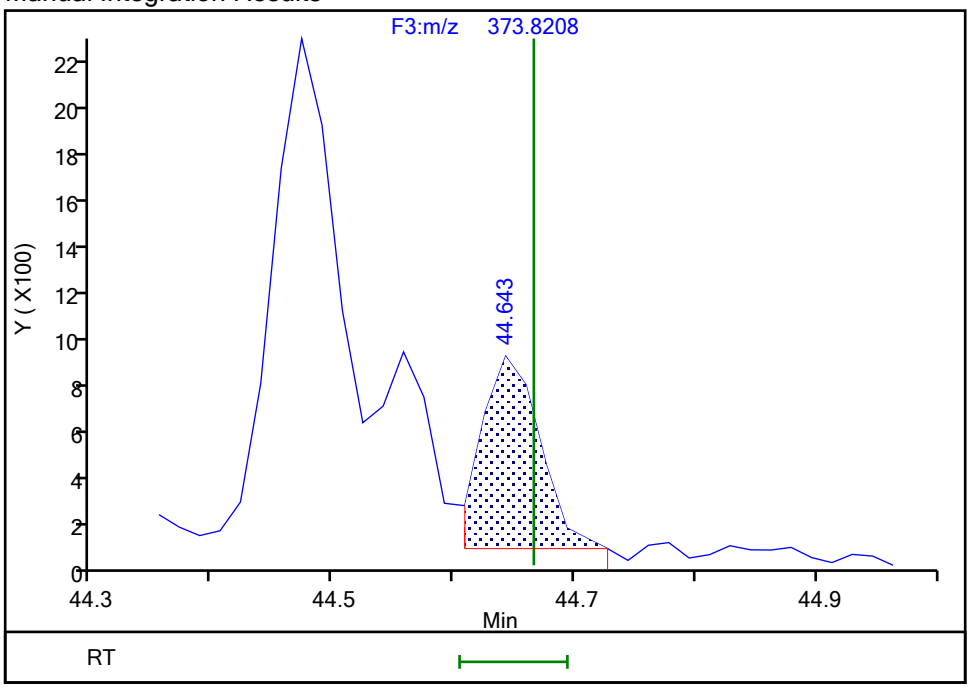
Not Detected
Expected RT: 44.67

Processing Integration Results



Manual Integration Results

RT: 44.64
Area: 2644
Amount: 0.110474
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:13:26
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

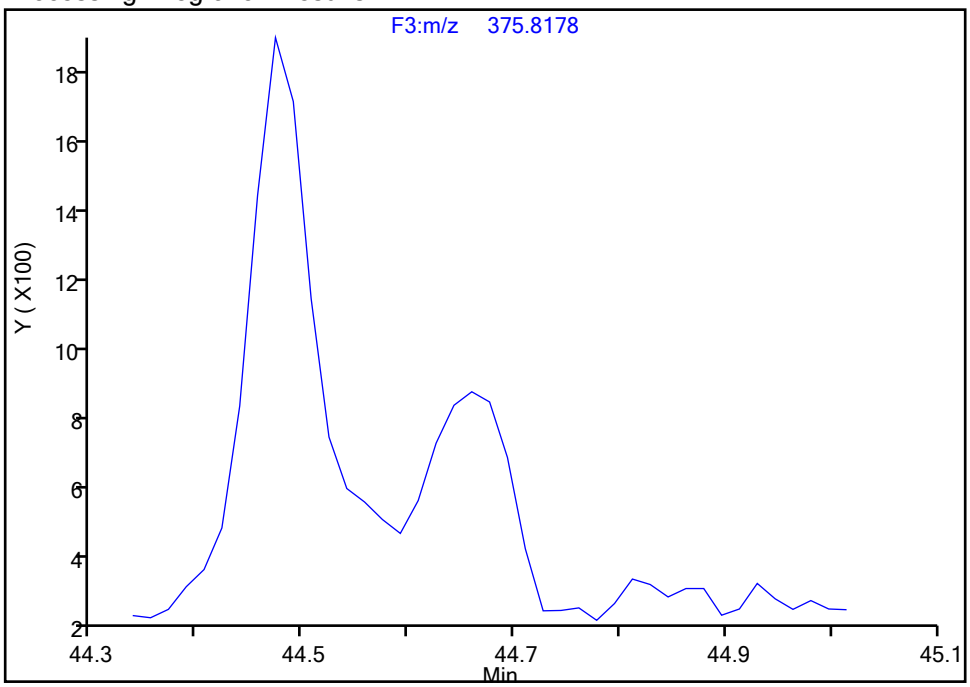
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

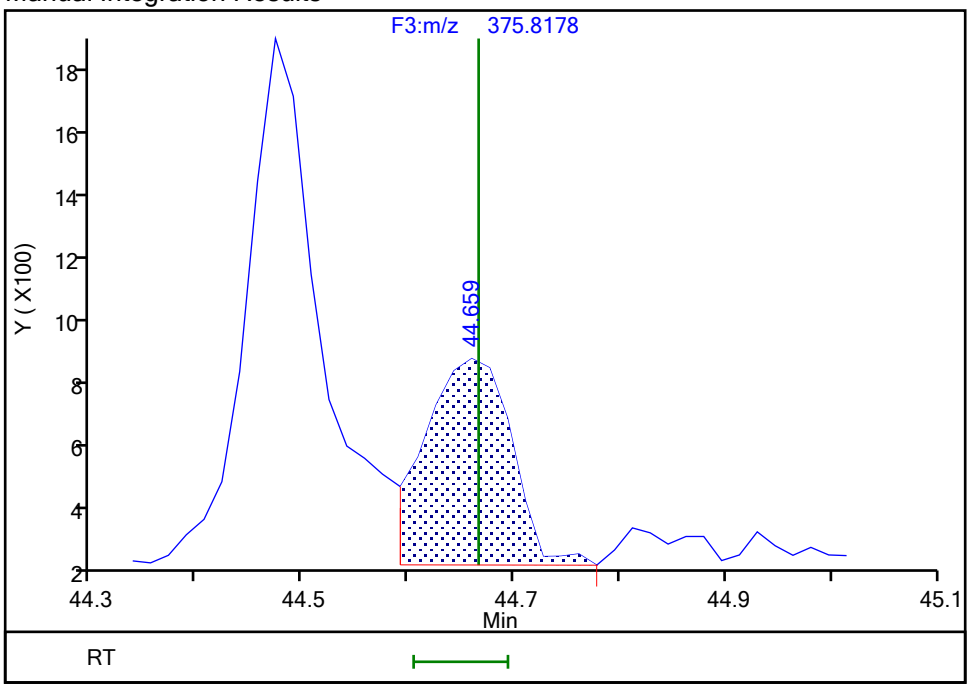
Not Detected
Expected RT: 44.67

Processing Integration Results



Manual Integration Results

RT: 44.66
Area: 3516
Amount: 0.110474
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:13:29
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

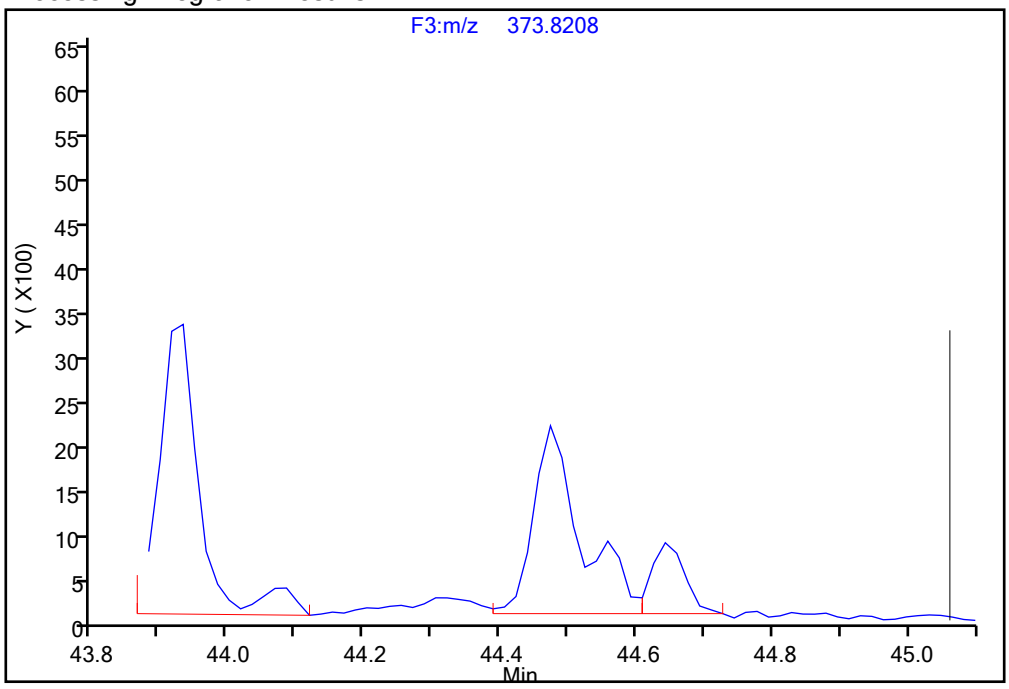
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.54- 45.78)

Signal: 1

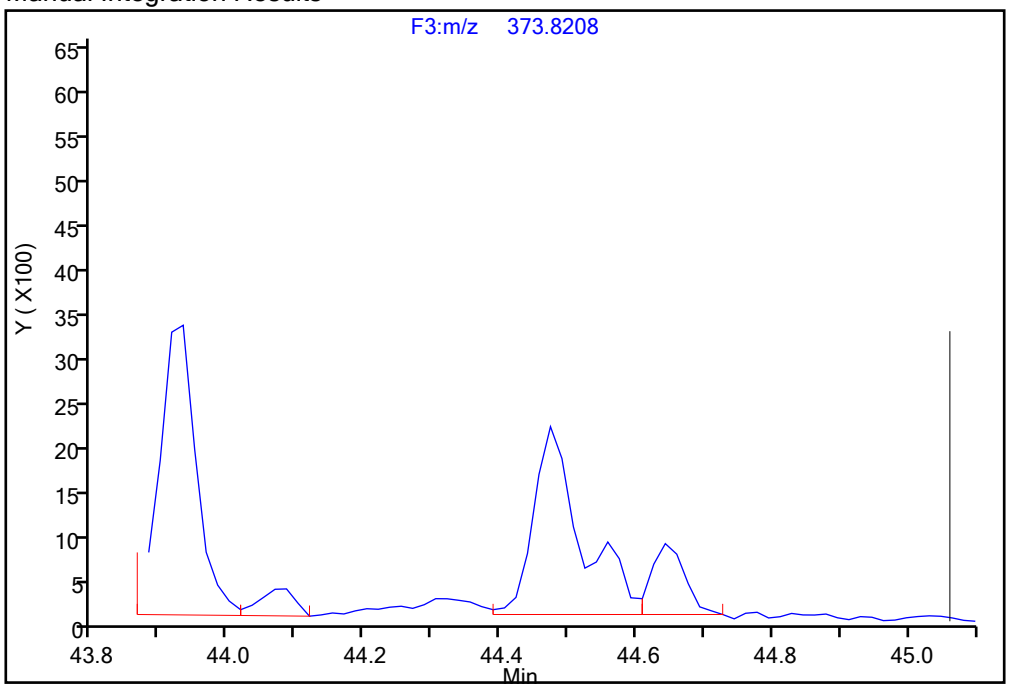
Processing Integration Results

RT = 44.474 Area = 10389



Manual Integration Results

RT = 44.474 Area = 10389



Reviewer: davidsonm, 17-Dec-2019 10:14:34

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
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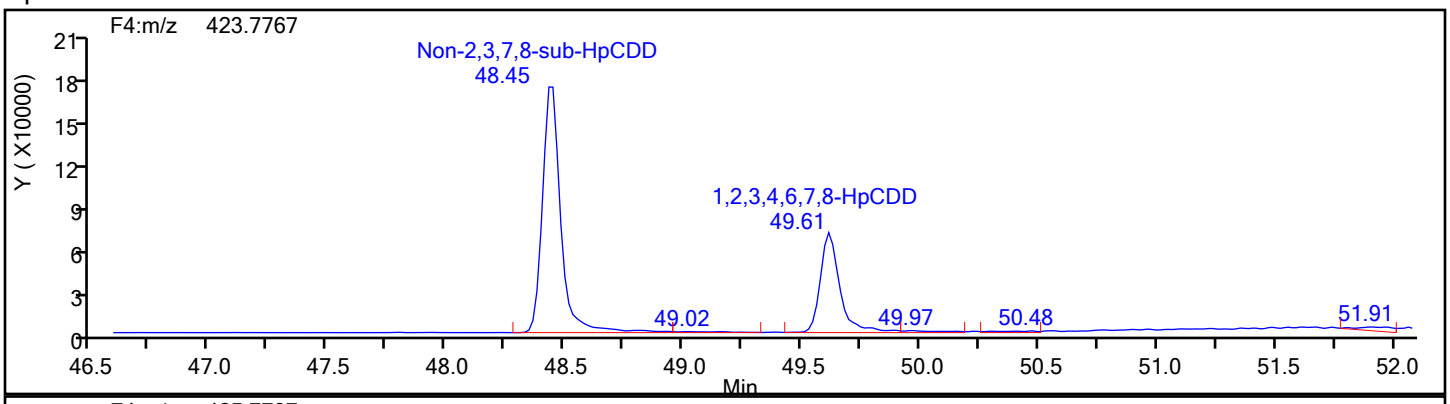
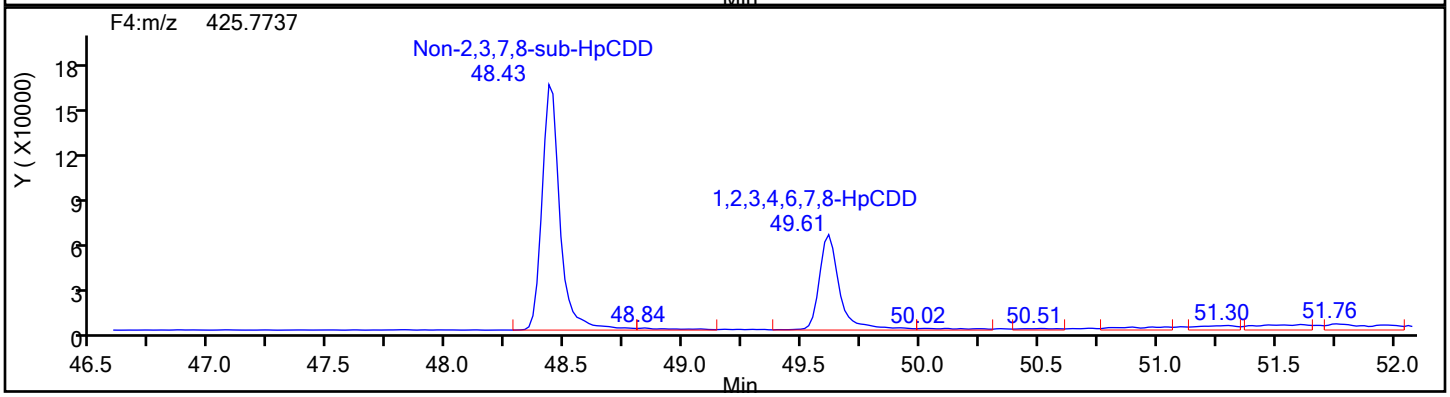
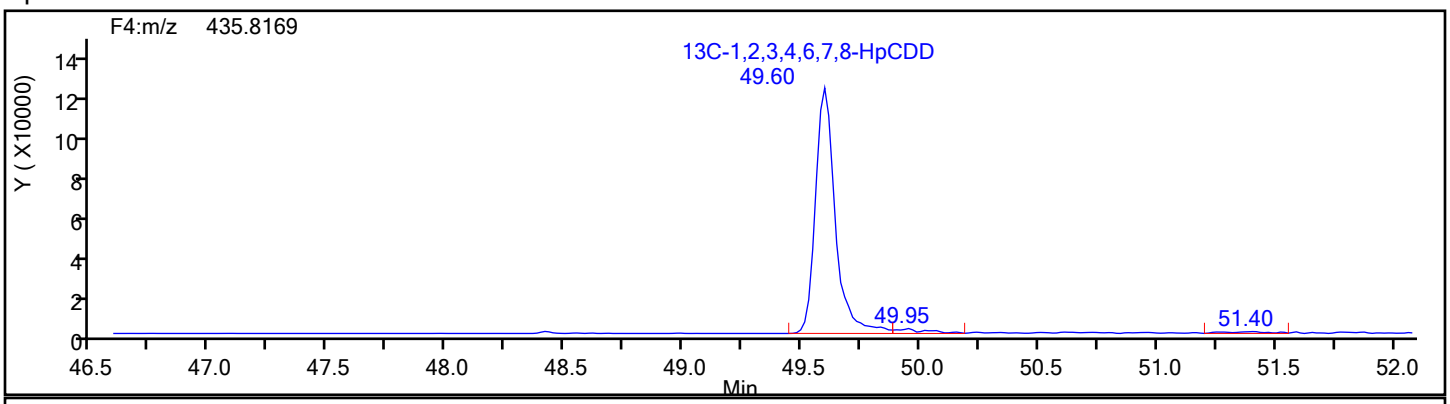
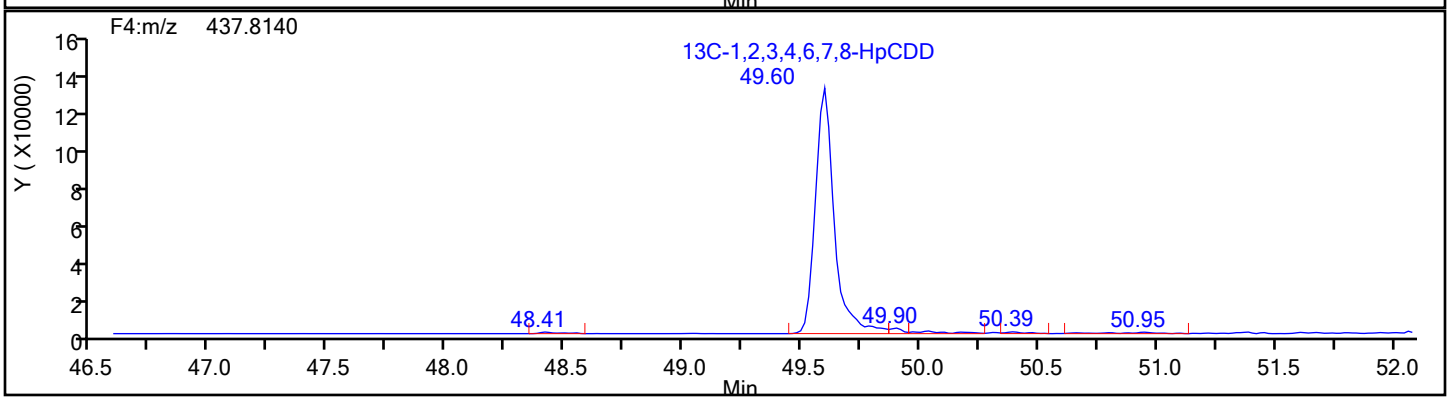
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
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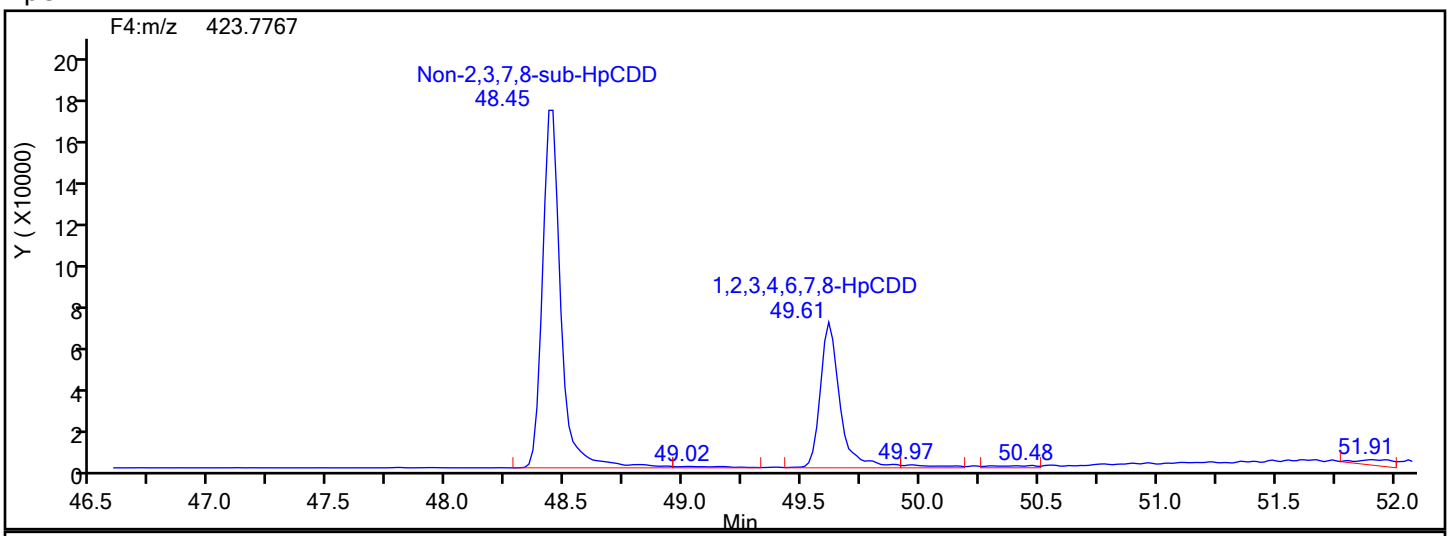
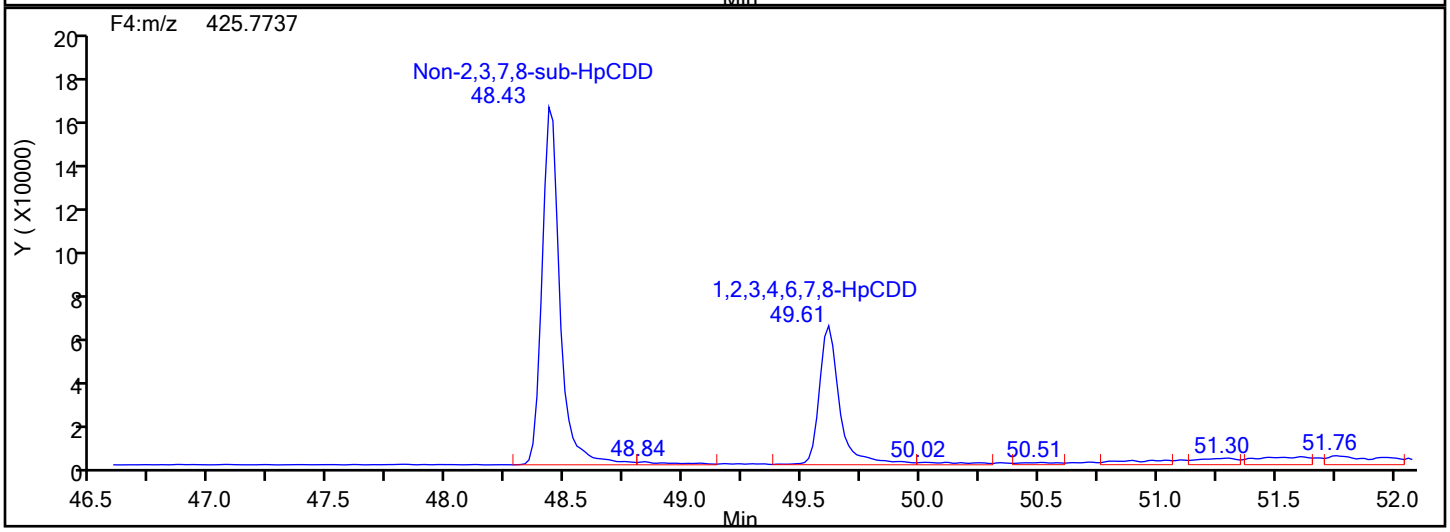
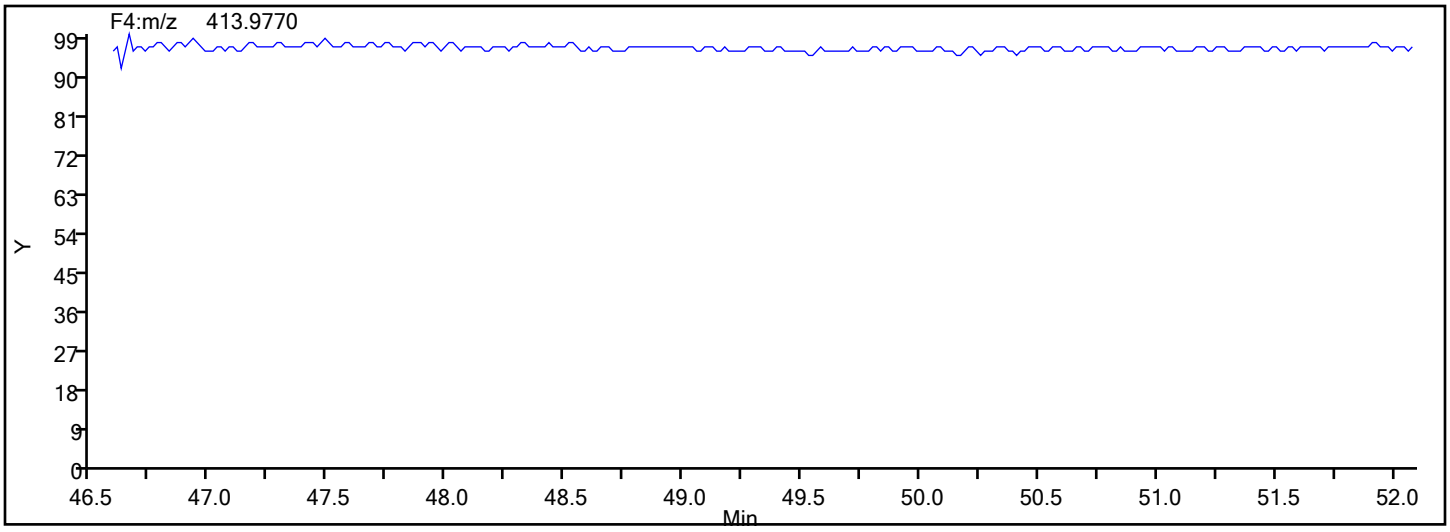
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

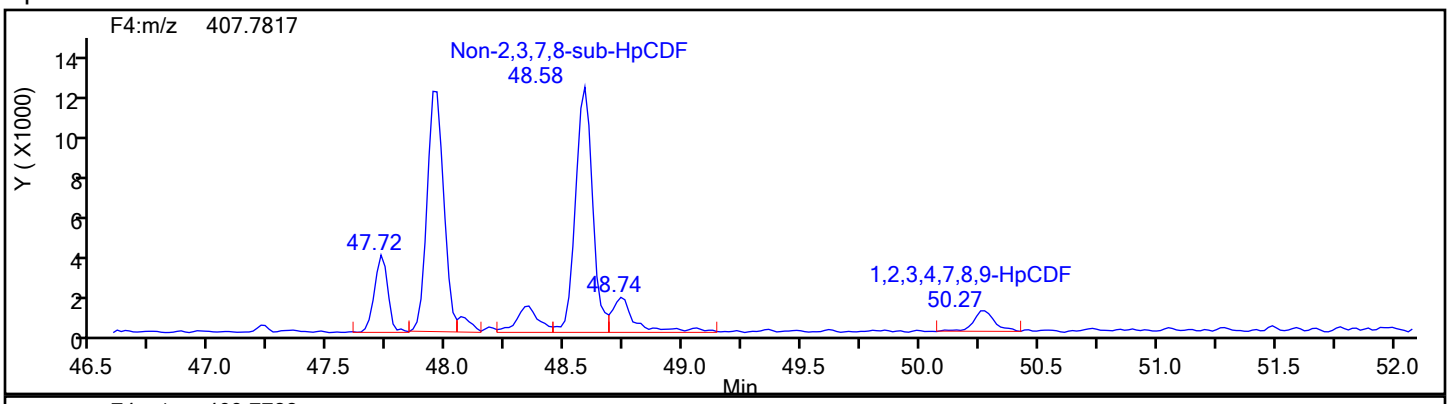


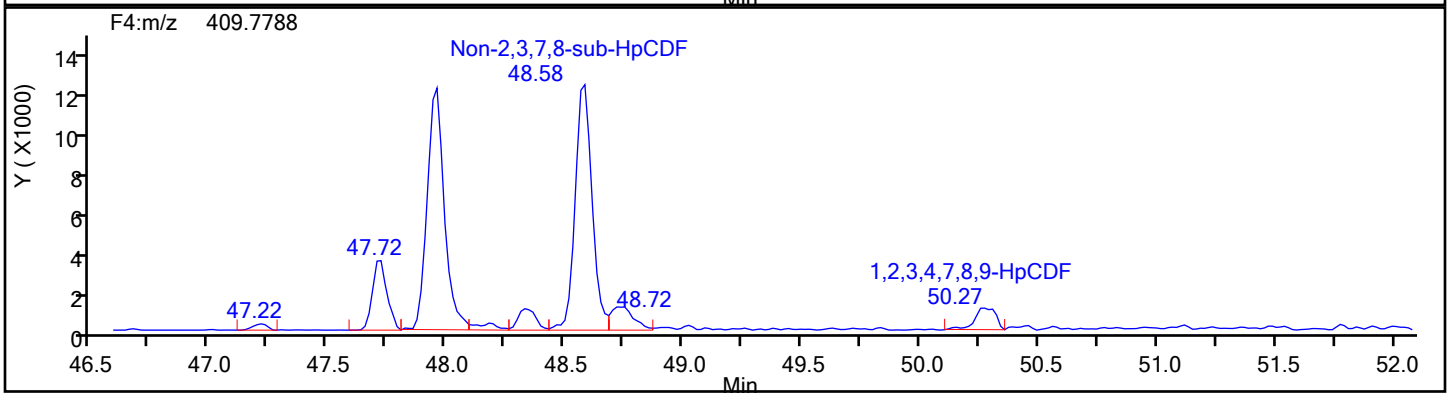
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

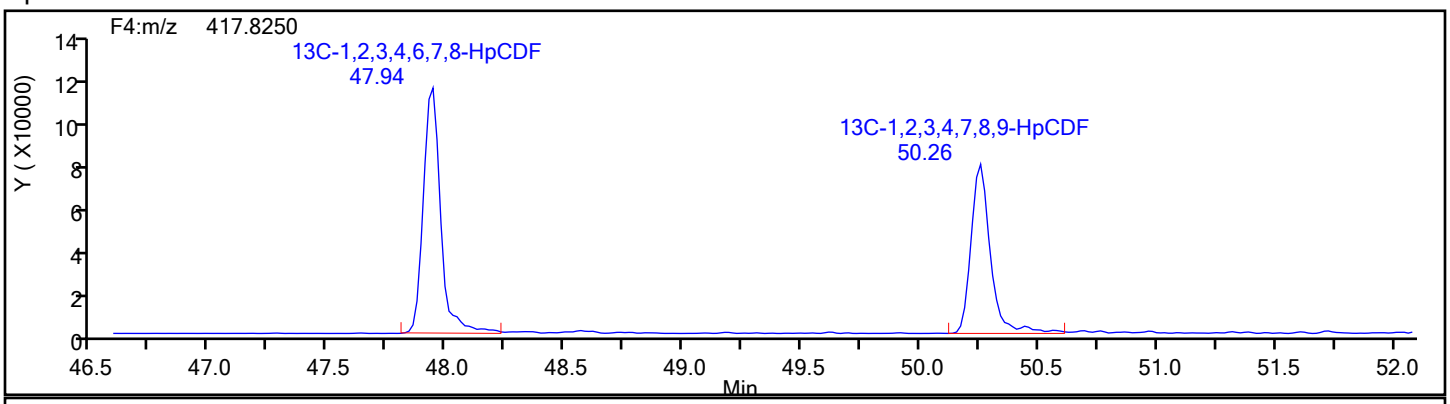
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

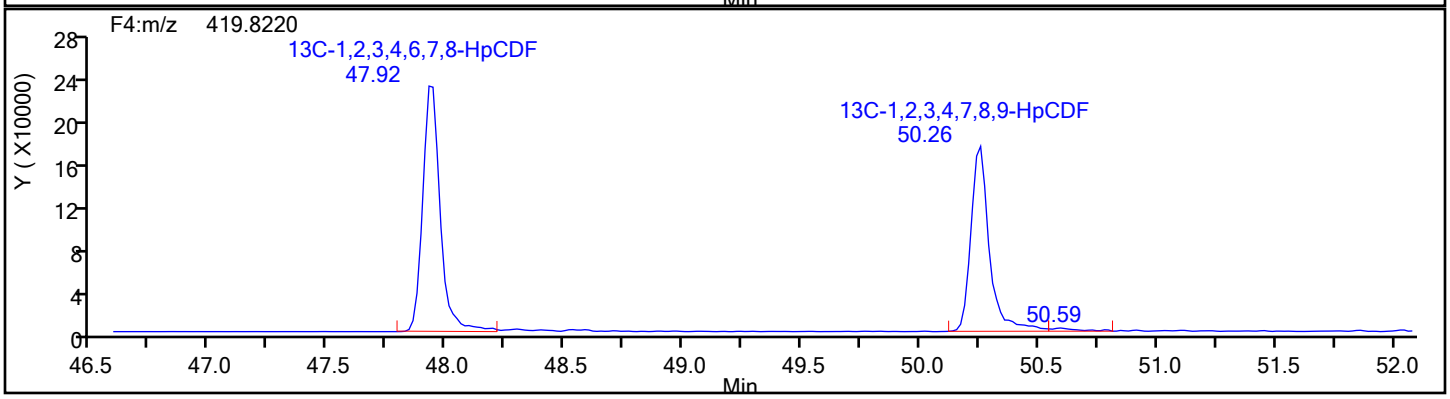
HpCDF





HpCDF Standards





Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
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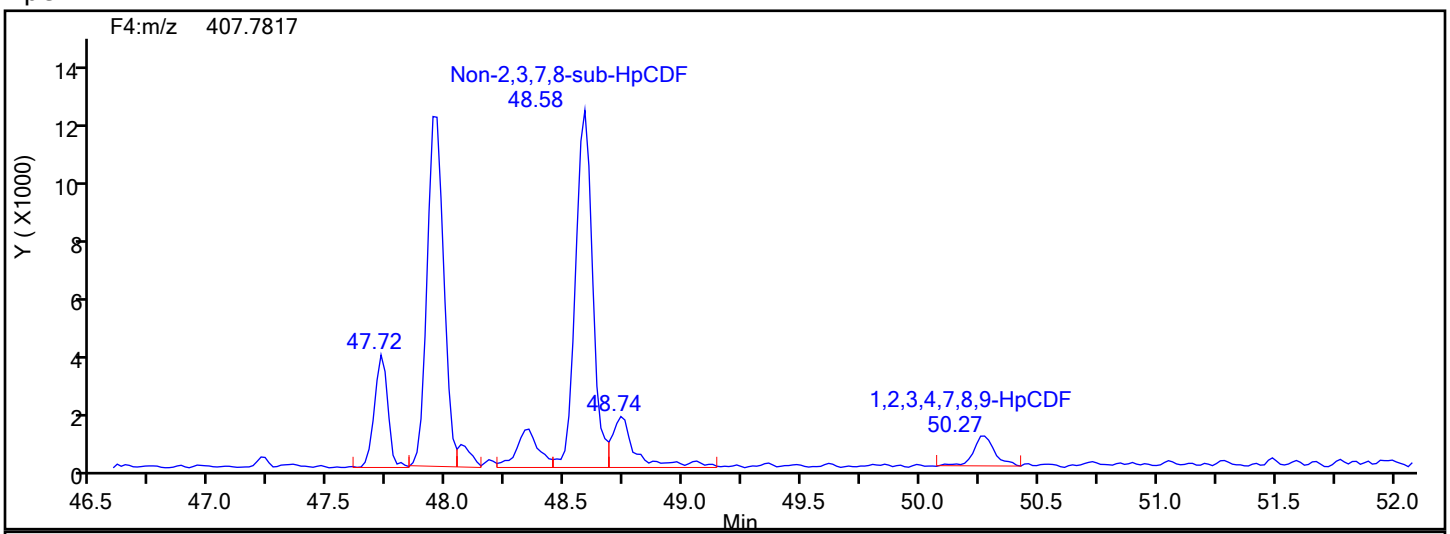
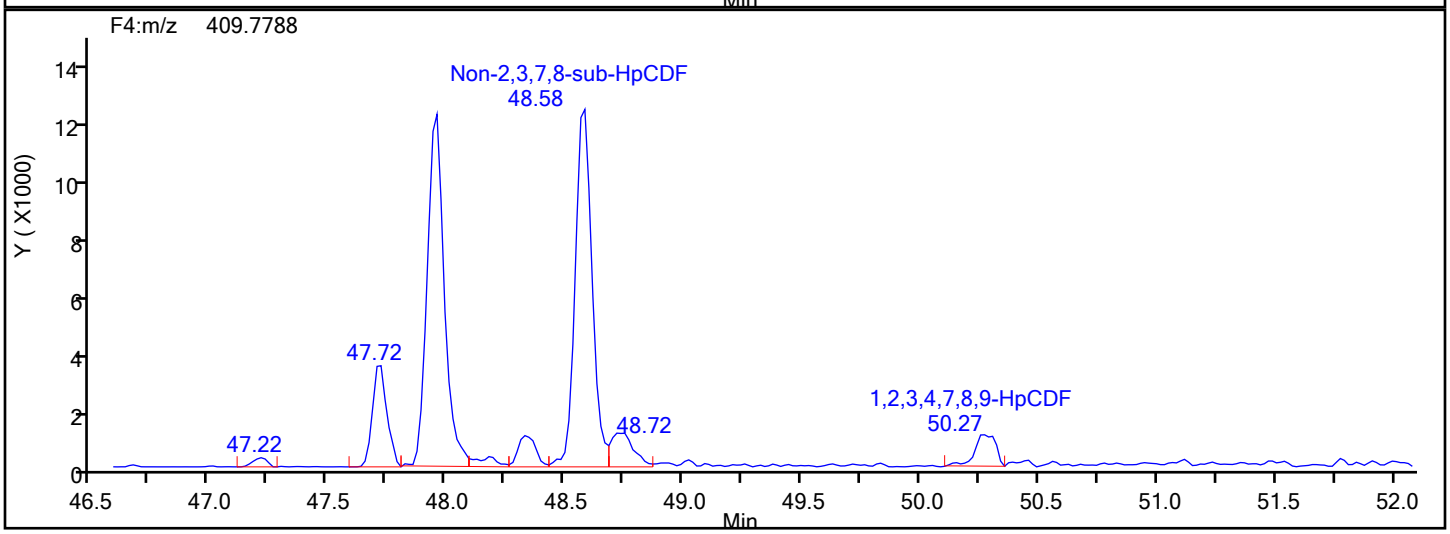
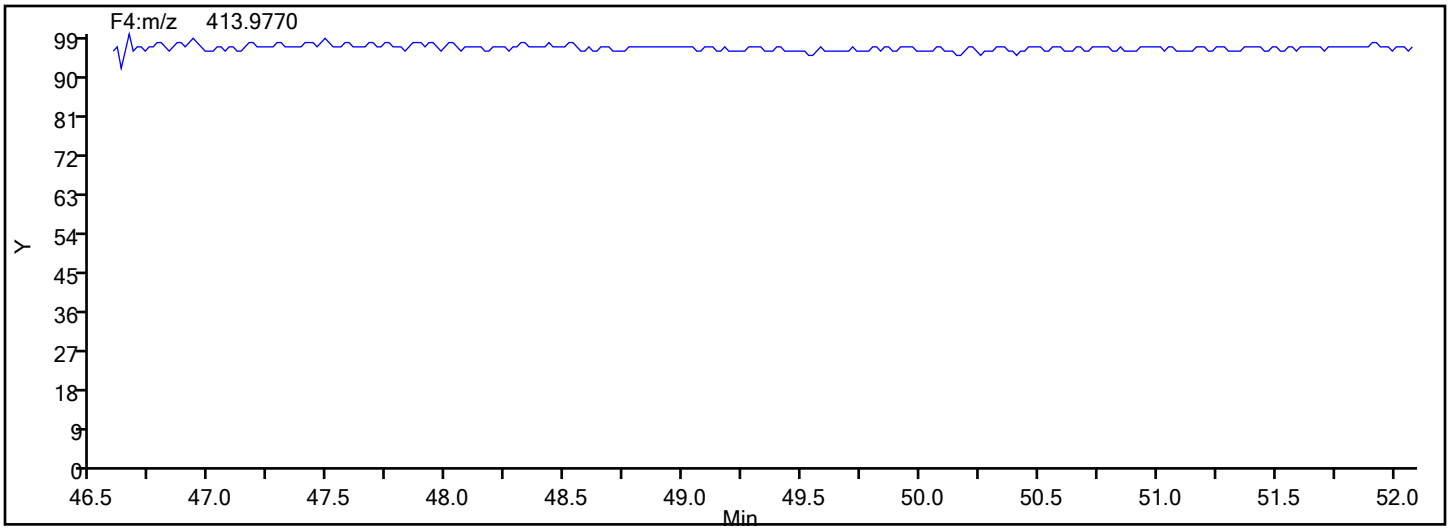
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

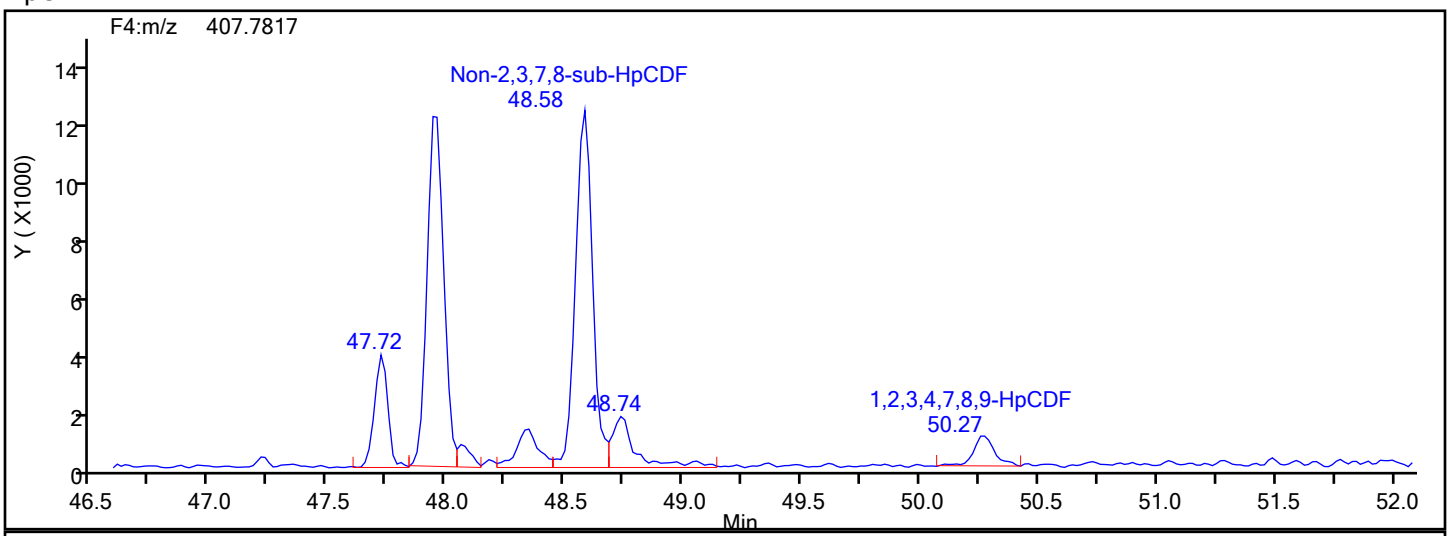


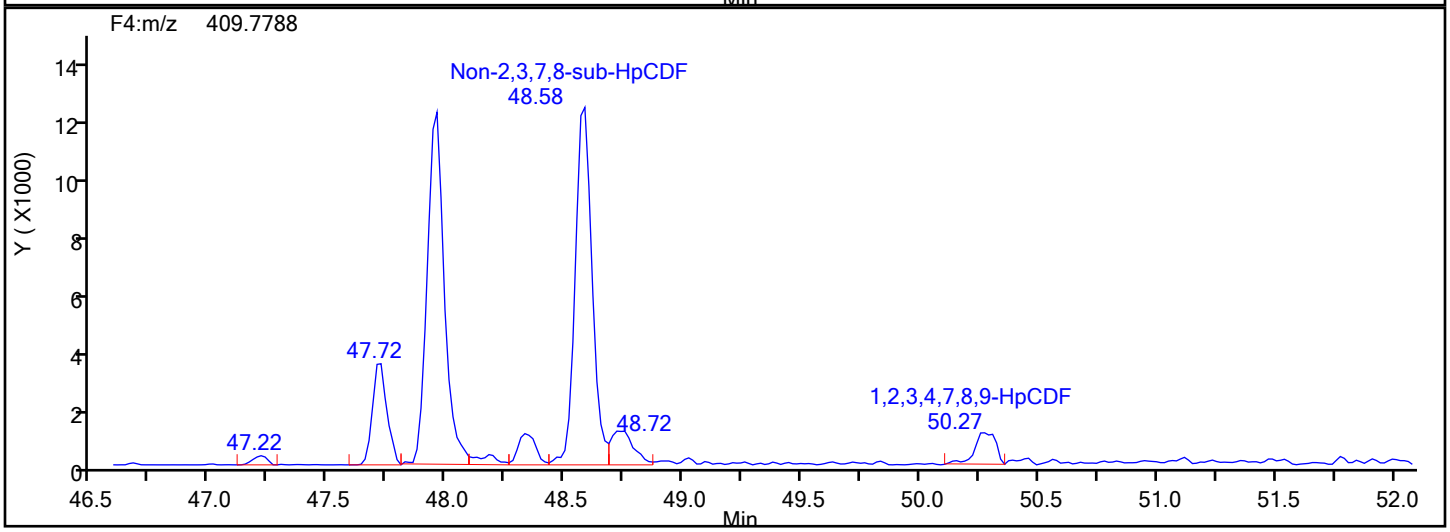
Report Date: 17-Dec-2019 10:15:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

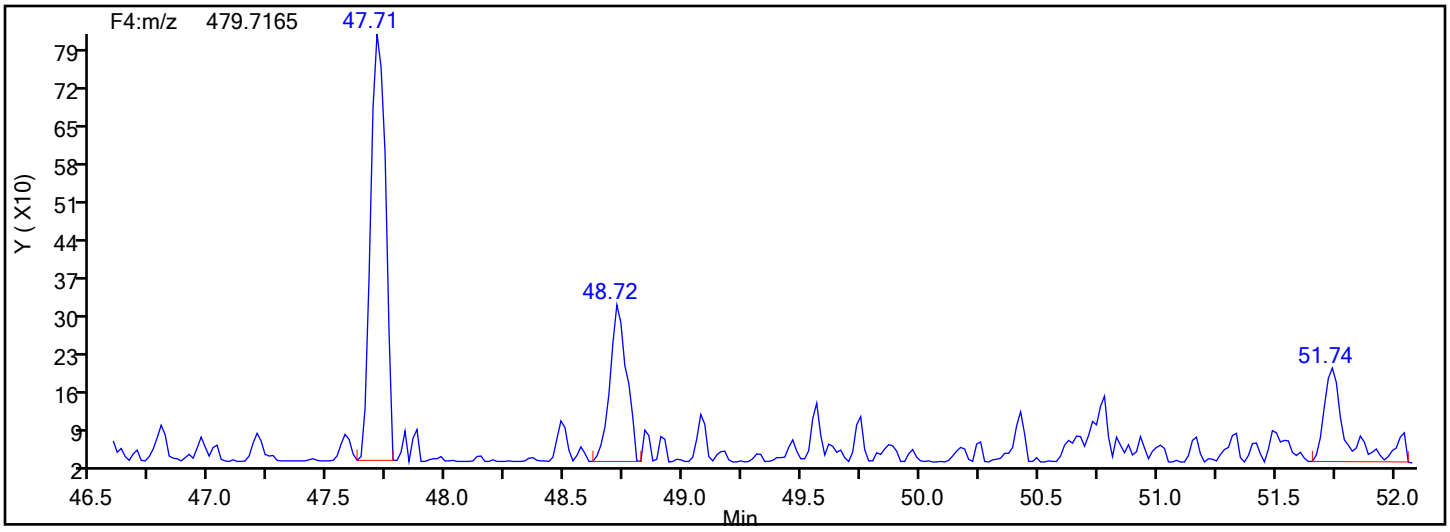
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

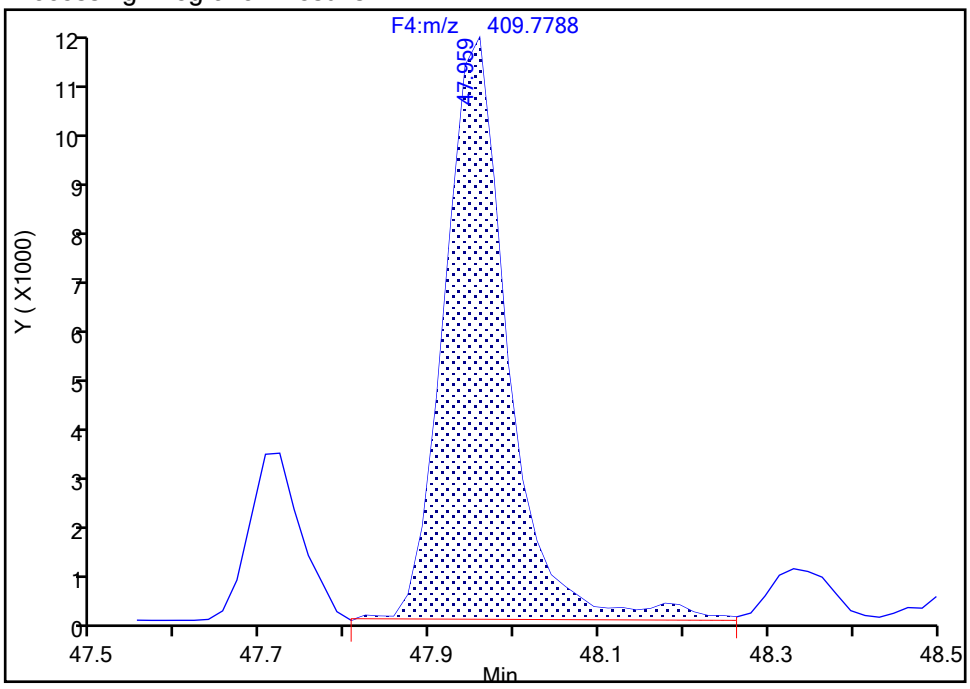
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

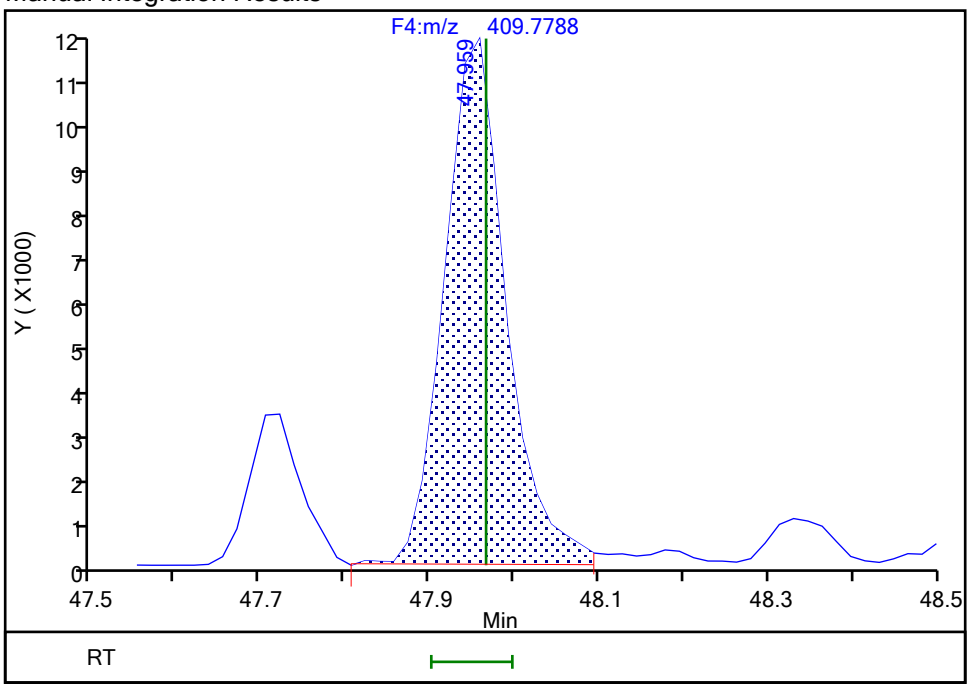
Processing Integration Results

RT: 47.96
Area: 61803
Amount: 2.359401
Amount Units: pg/ul



Manual Integration Results

RT: 47.96
Area: 59703
Amount: 2.263246
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:14:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

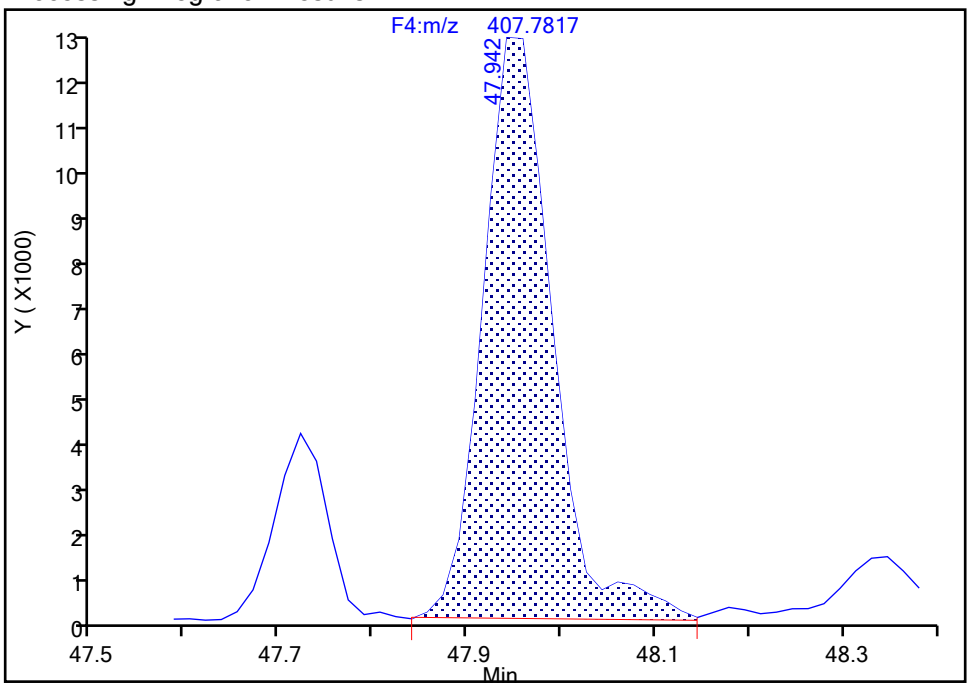
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

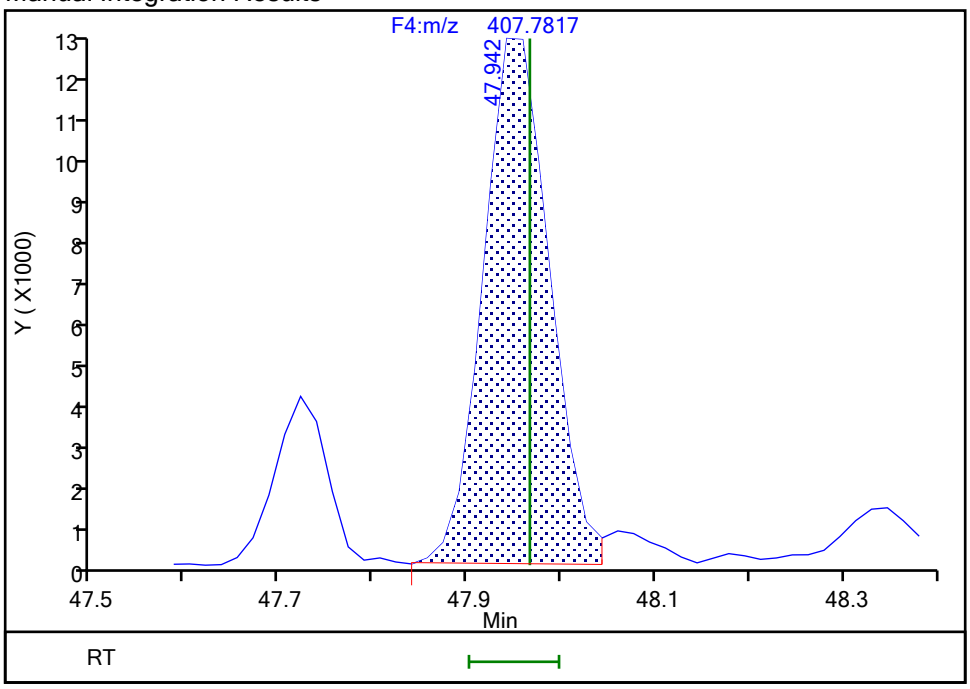
Processing Integration Results

RT: 47.94
Area: 61817
Amount: 2.359401
Amount Units: pg/ul



Manual Integration Results

RT: 47.94
Area: 58879
Amount: 2.263246
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:14:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

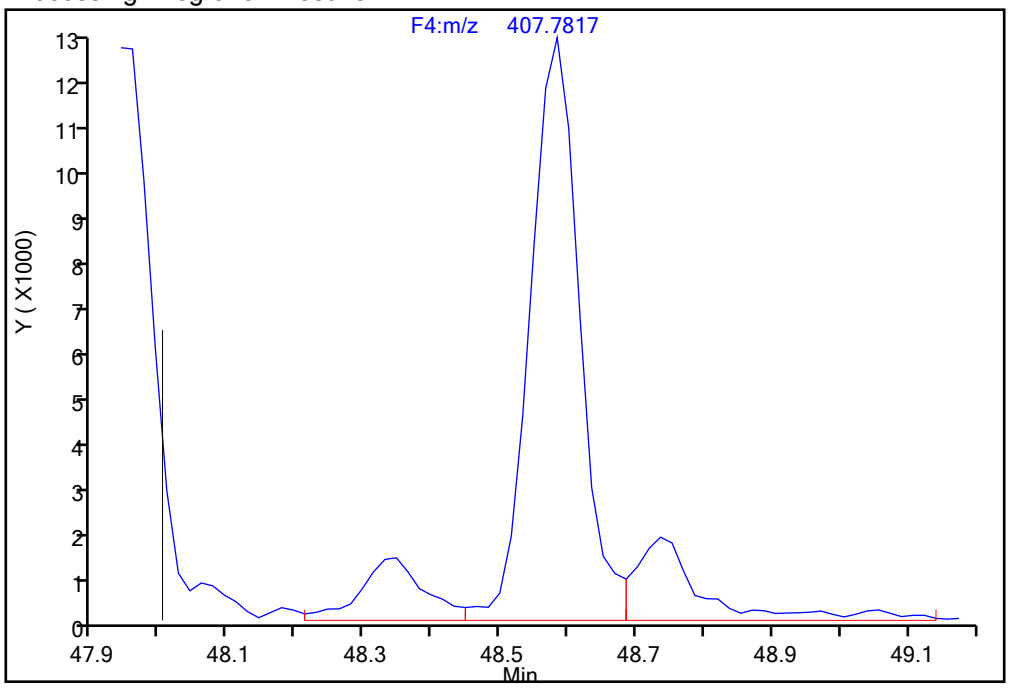
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d				
Injection Date:	17-Dec-2019 06:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-2-A	Lab Sample ID:	140-17578-2		
Client ID:	11187072-120419-SS-SJSSA08(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.80- 50.84)

Signal: 1

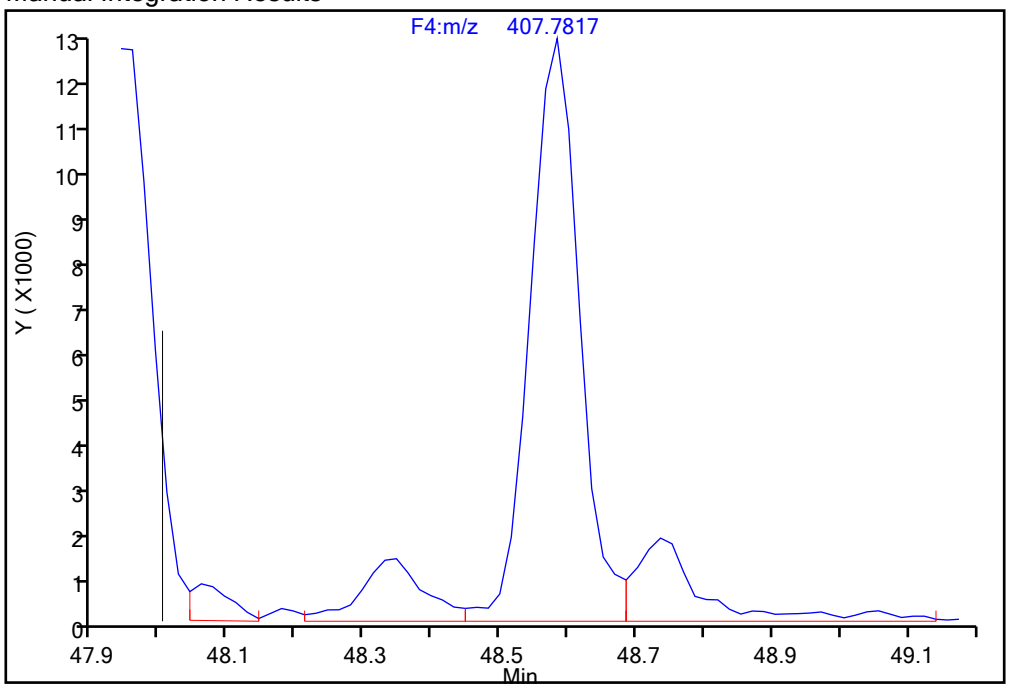
Processing Integration Results

RT = 48.584 Area = 61814



Manual Integration Results

RT = 48.584 Area = 61814



Reviewer: davidsonm, 17-Dec-2019 10:15:05

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Report Date: 17-Dec-2019 10:15:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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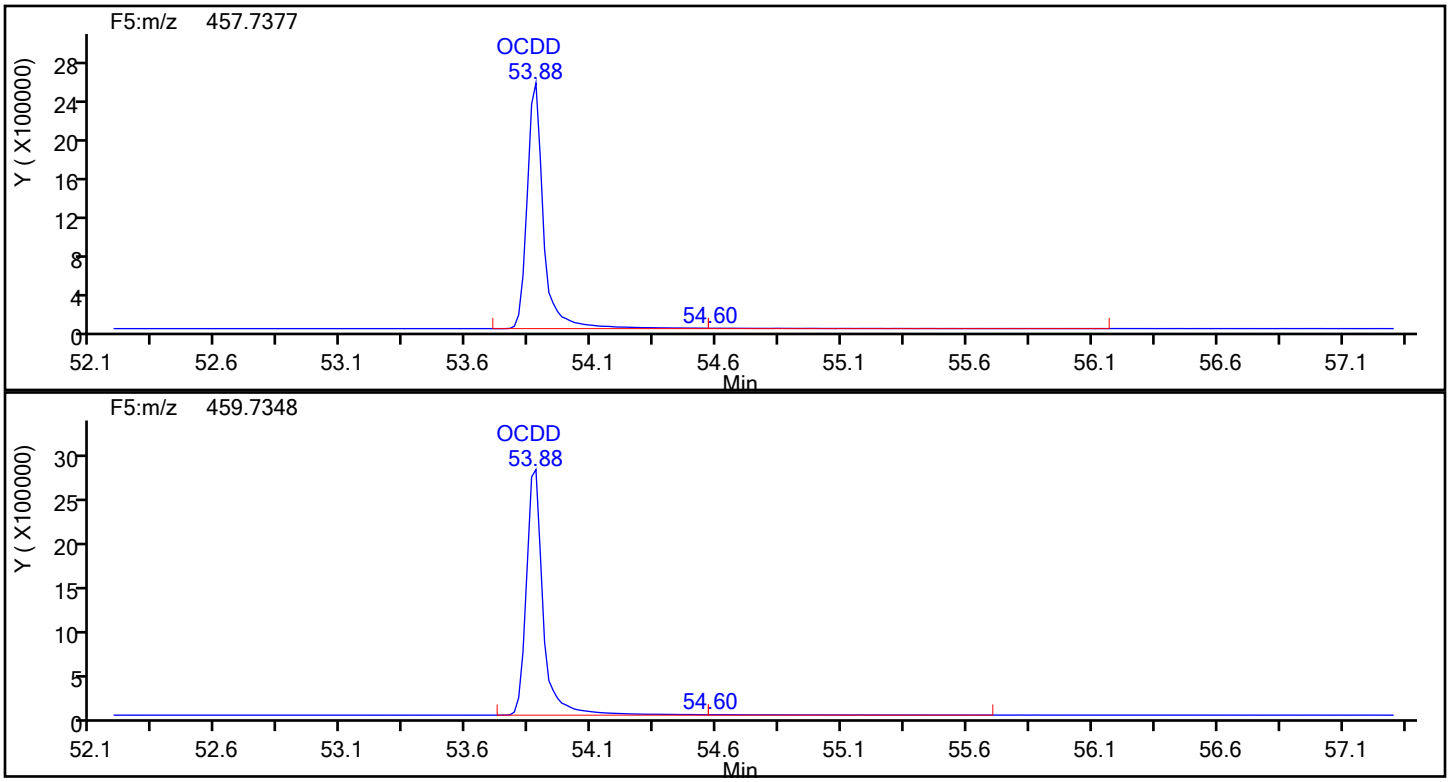
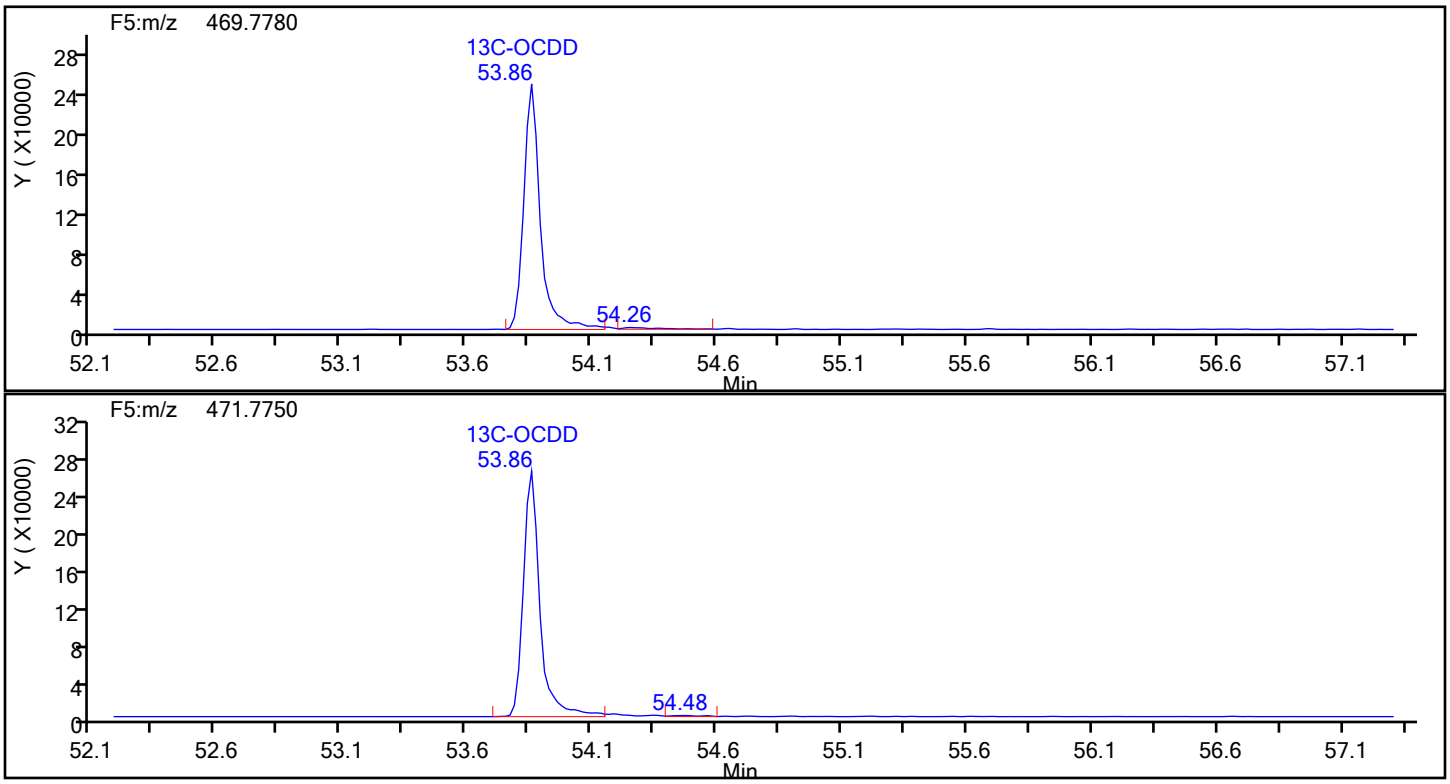
Column Type:		Column Dia:	

OCDD



OCDD Standards



Report Date: 17-Dec-2019 10:15:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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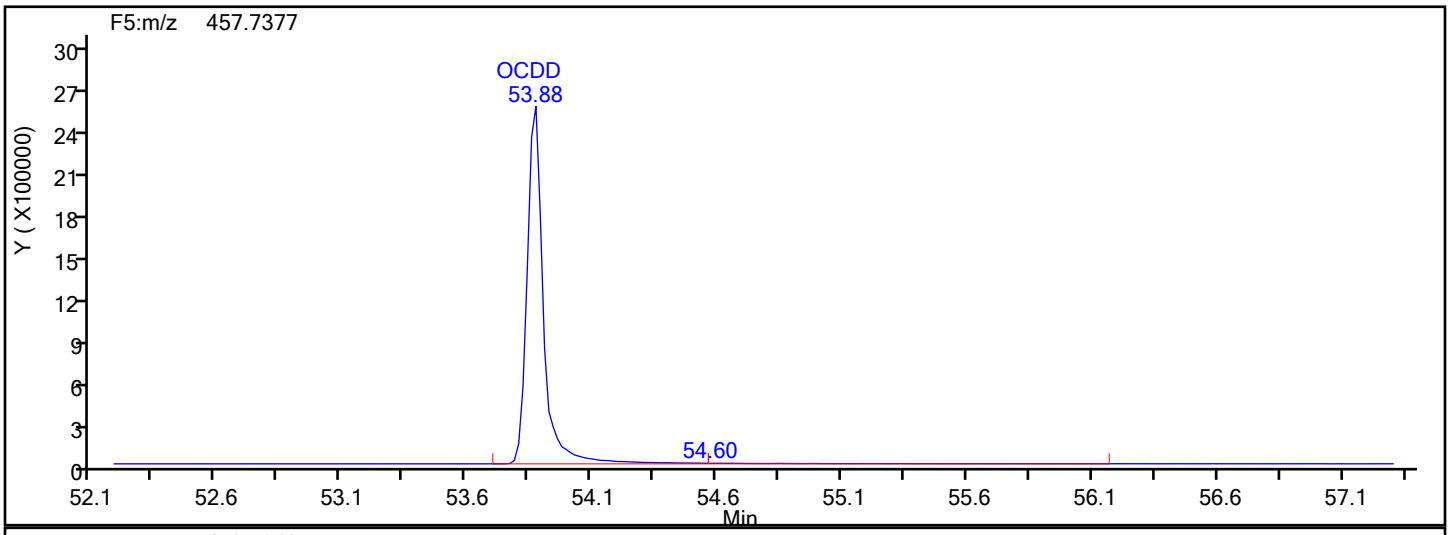
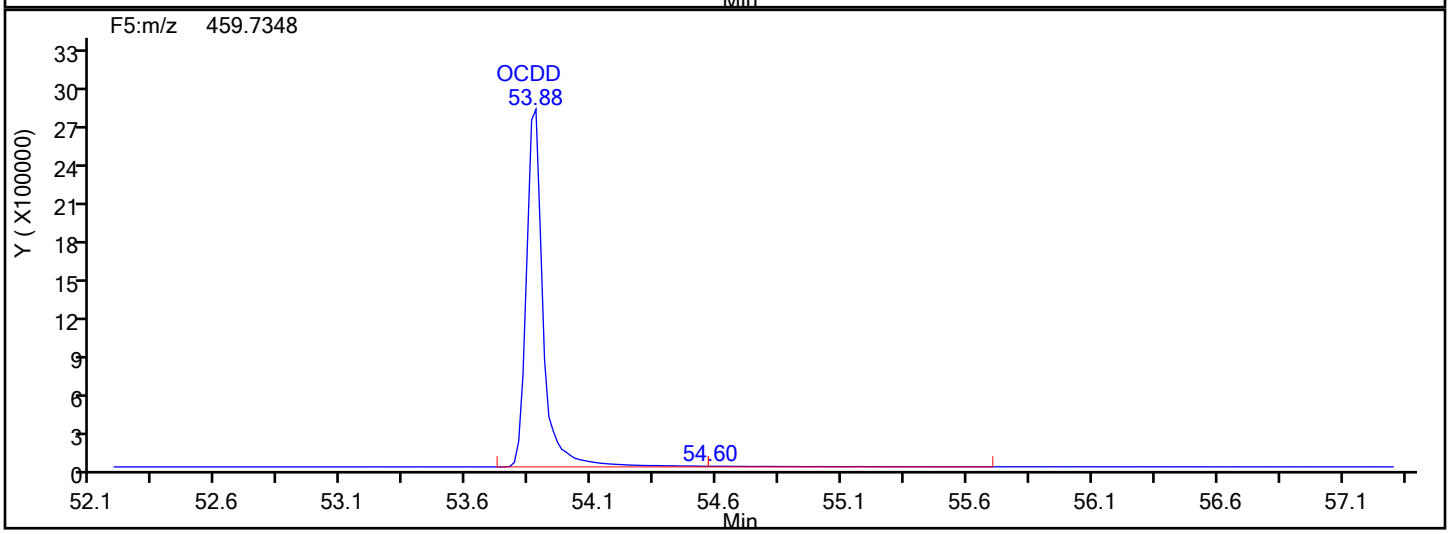
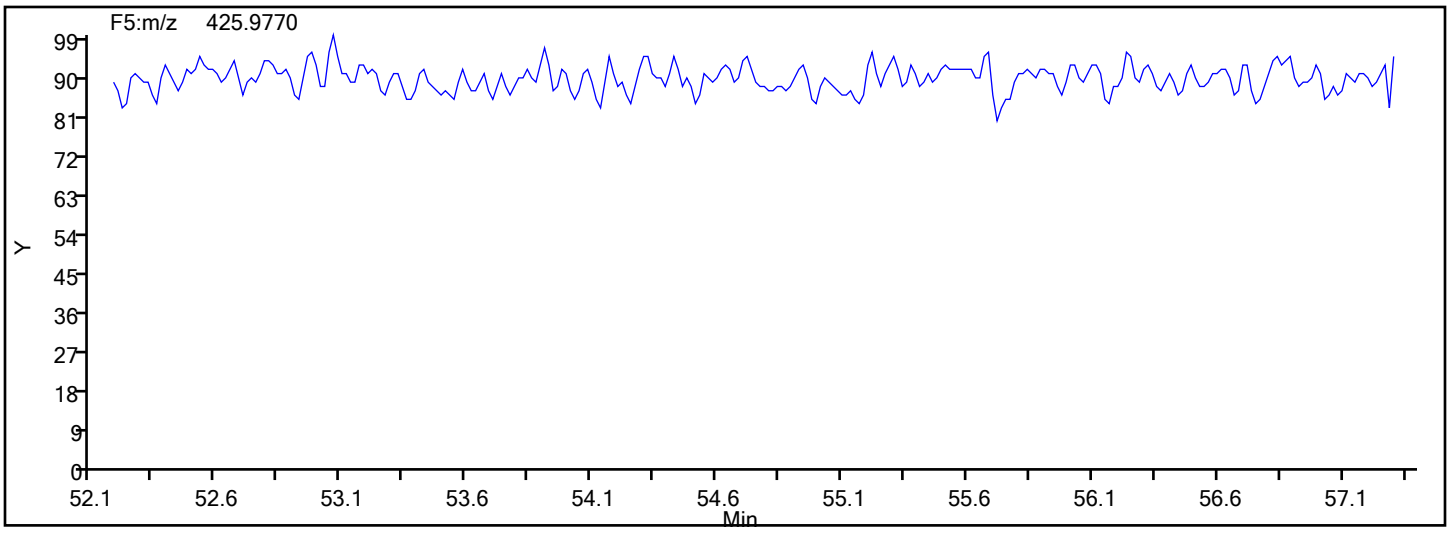
OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 10:15:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d

Injection Date: 17-Dec-2019 06:03:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

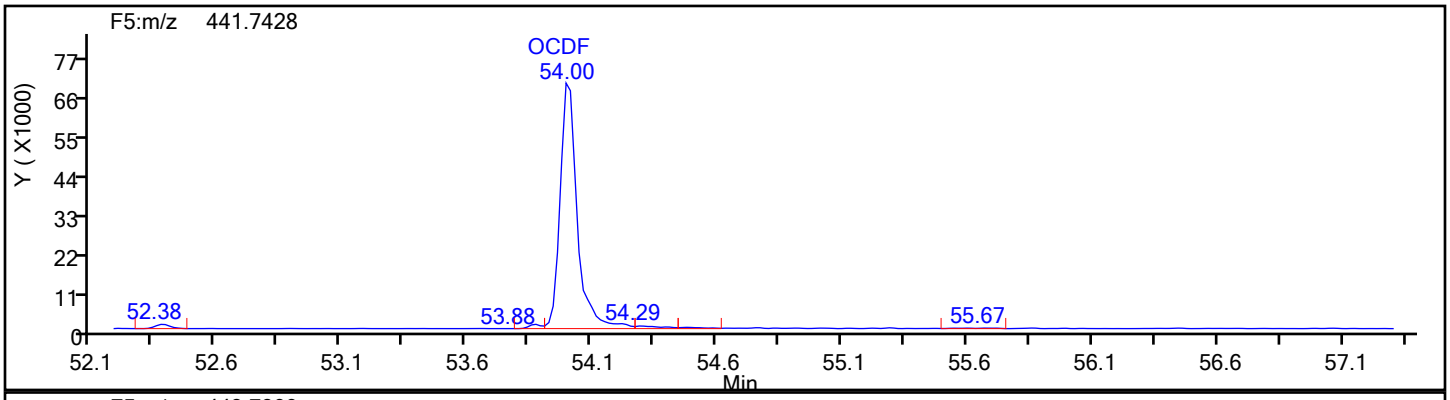
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

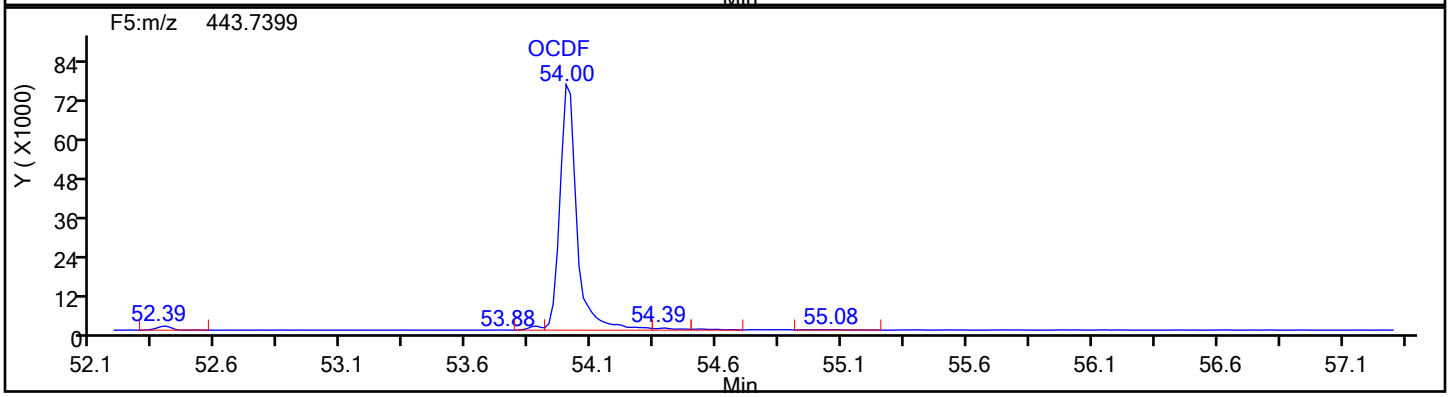
Client ID: 11187072-120419-SS-SJSSA08(1-2)

Worklist#: 36126 Sample Line#: 9

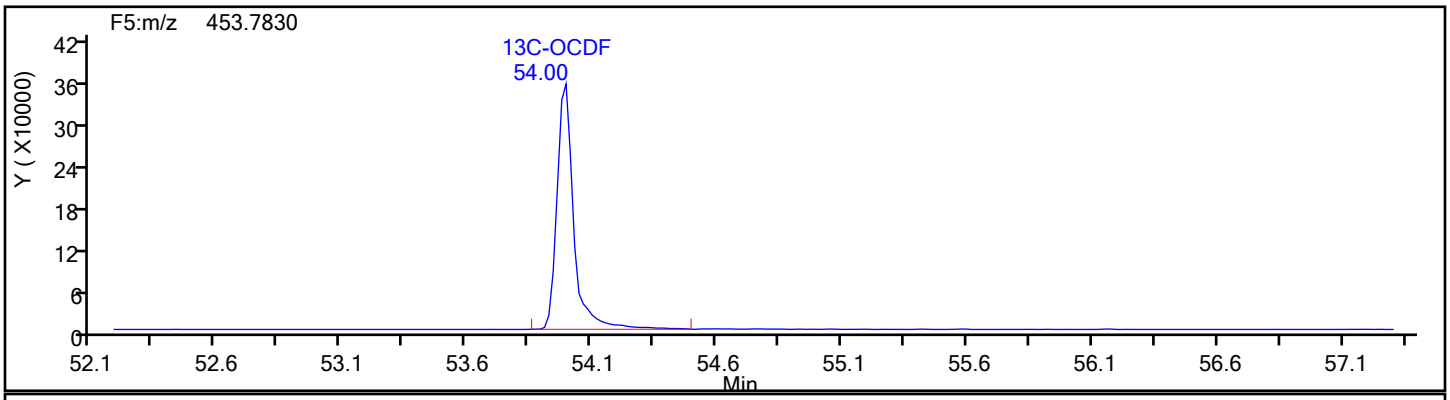
Column Type: Column Dia:

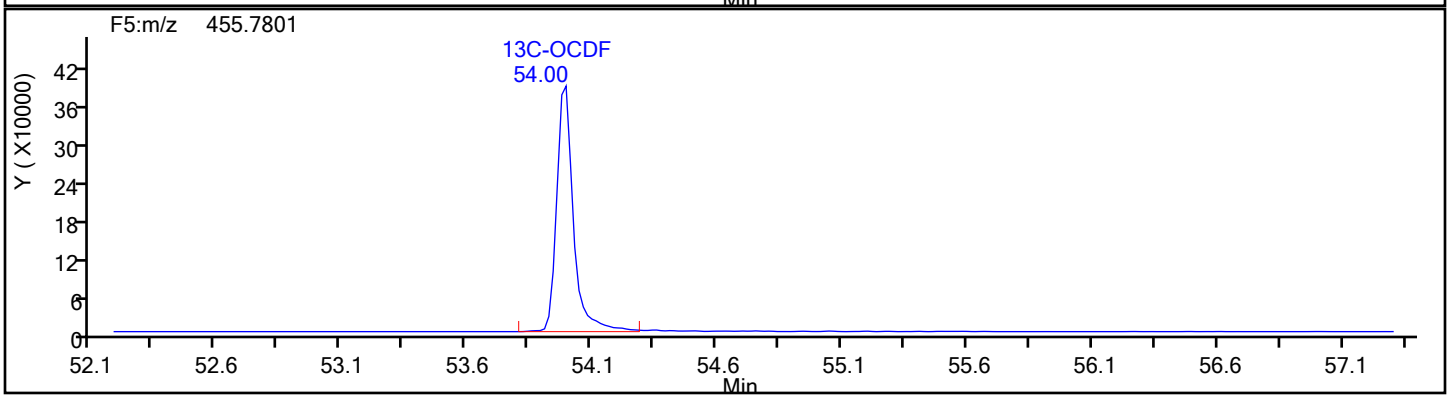
OCDF





OCDF Standards





Report Date: 17-Dec-2019 10:15:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
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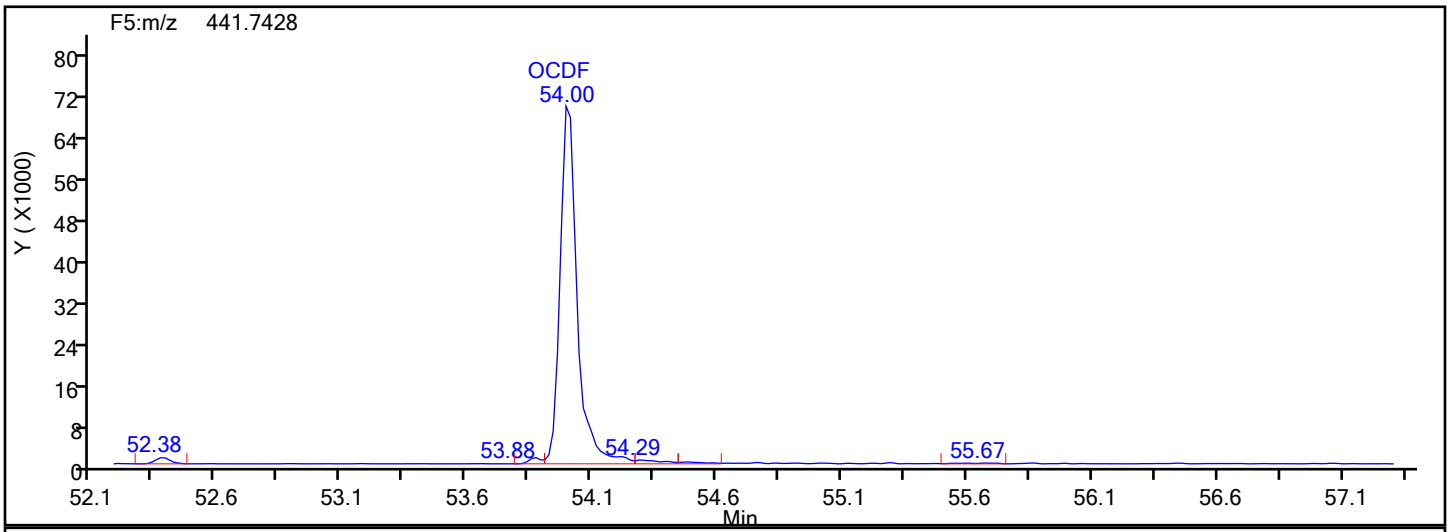
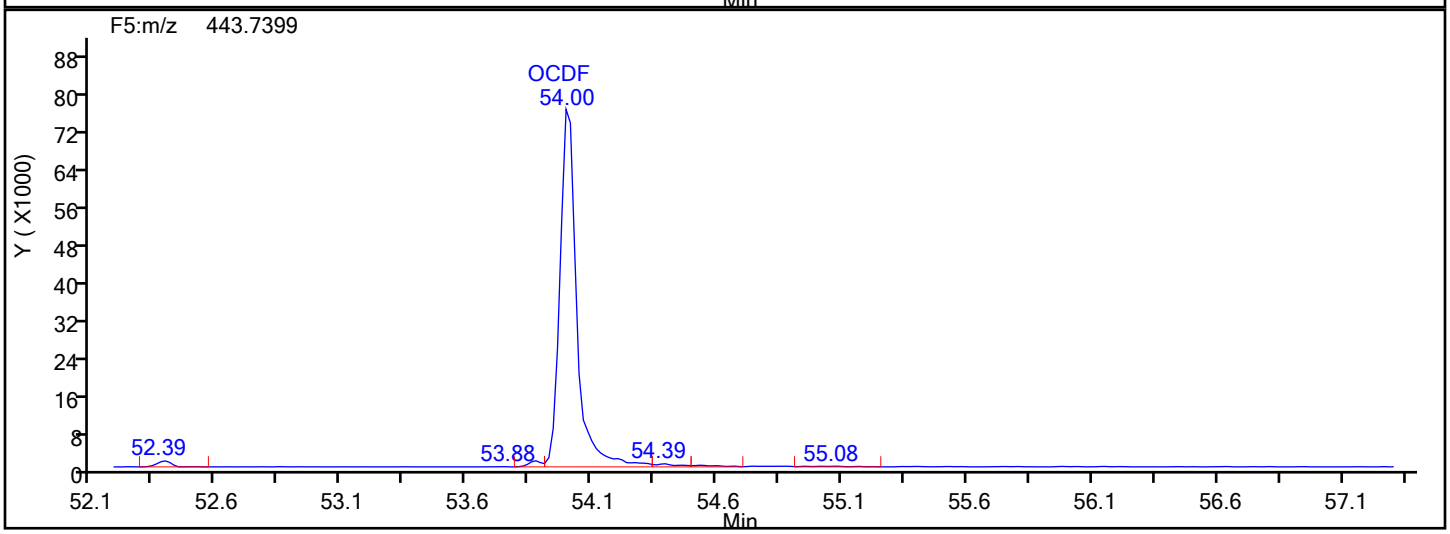
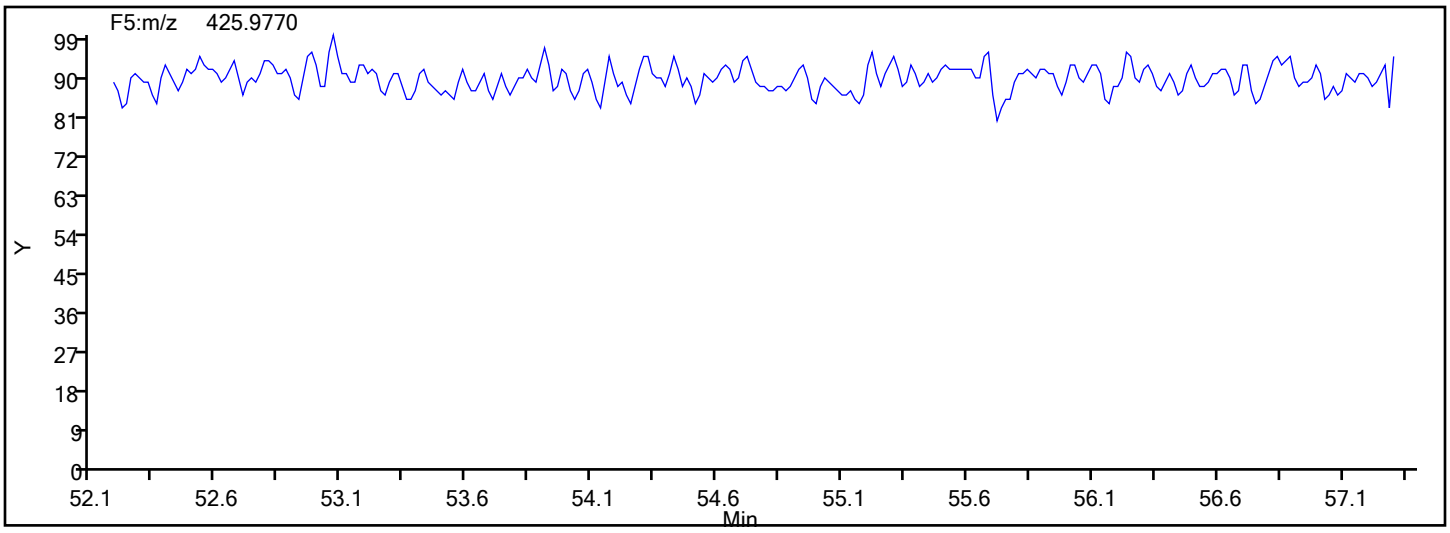
OCDF





OCDF Lock Mass

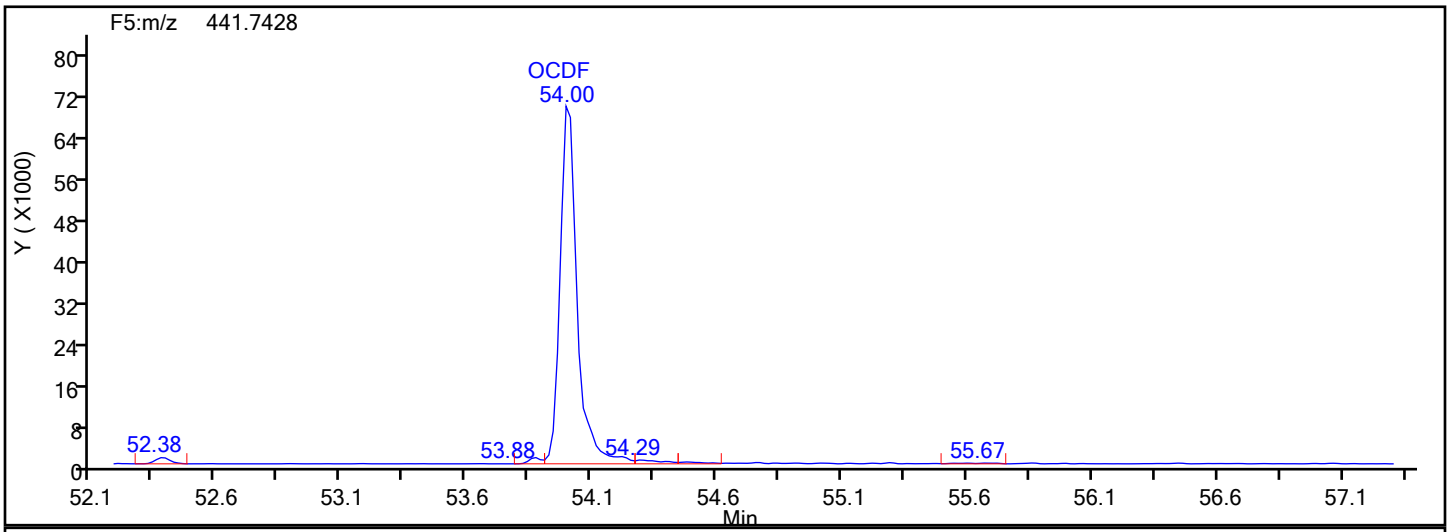


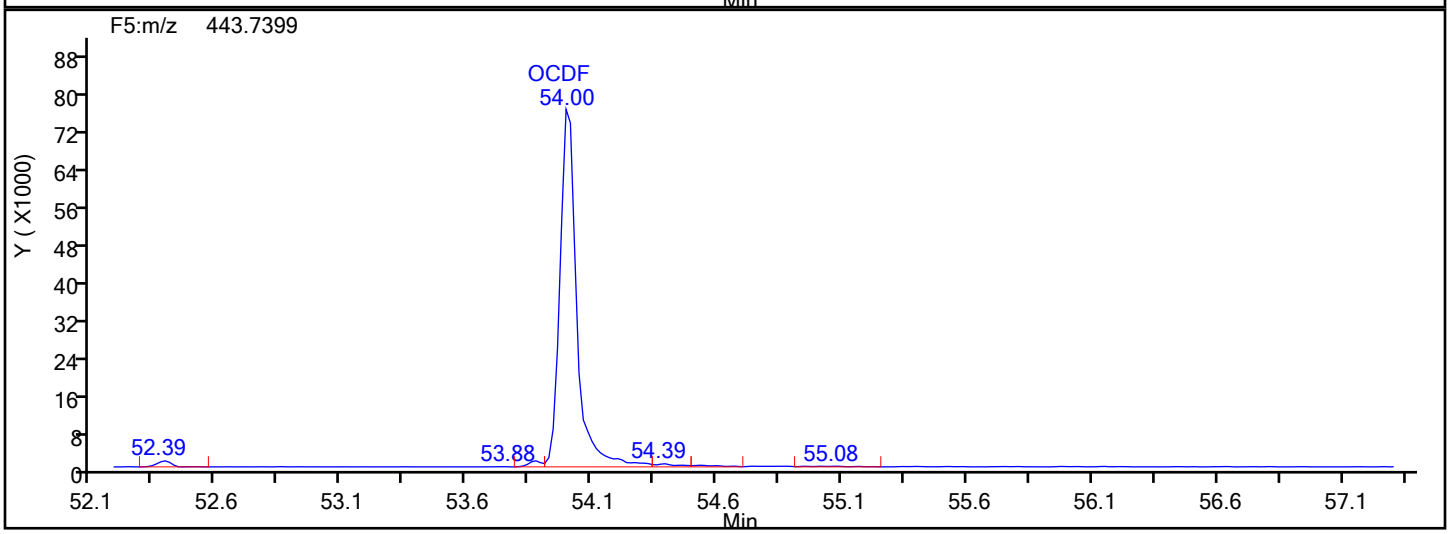
Report Date: 17-Dec-2019 10:15:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

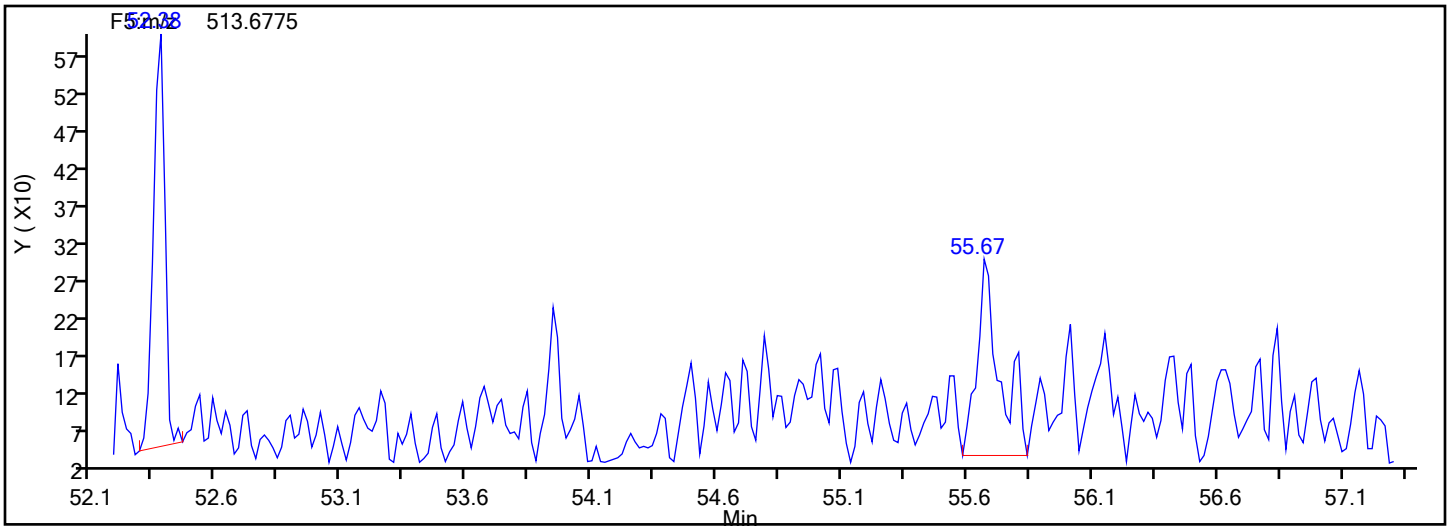
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-2-a.d		
Injection Date:	17-Dec-2019 06:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36126	Sample Line#:	9
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(1-2) Lab Sample ID: 140-17578-2

Matrix: Sediment Lab File ID: 140-17578-a-2-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/18/2019 04:33

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	32		1.5	0.51

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	58		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 04:33:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-008
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:04:44 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:06

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	113441	0.85	1.2213	3.117	3.117	0.1226	0.1226		
2,3,7,8-TCDF	22:15	516627	0.79	1.1100	10.8	10.8	0.1734	0.1734		
D 13C-2,3,7,8-TCDD	19:42	1489772	0.82	1.0031	32.6	32.6	0.5991	0.5991	65.16	
D 13C-2,3,7,8-TCDF	22:12	2147764	0.77	1.6193	29.1	29.1	0.1808	0.1808	58.20	
$ 37Cl4-2,3,7,8-TCDD	19:43	374851		1.1834	6.949	6.949	0.2026	0.2026	69.49	
* 13C-1,2,3,4-TCDD	20:09	4558234	0.80	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-2-a.d
Lims ID: 140-17578-A-2-A
Client ID: 11187072-120419-SS-SJSSA08(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 04:33:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-008
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:04:44 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:06

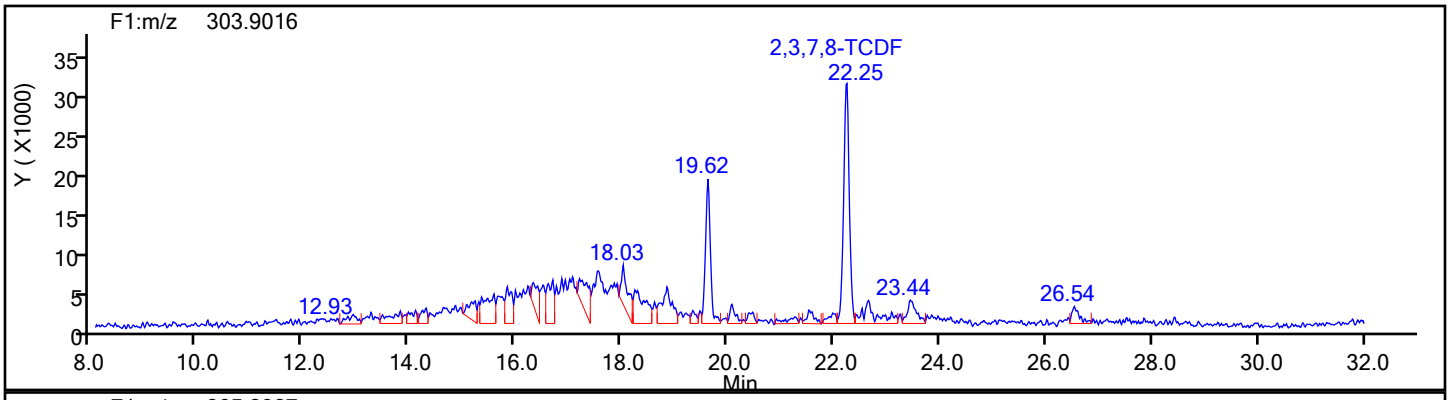
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:42	0	1.001	52128	7647	142	355	54		
321.8936	19:43	19:42	0	1.001	61313	9369	138	345	68	0.85(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:15	22:14	0	1.002	228715	30593	203	507	151		
305.8987	22:14	22:14	-1	1.002	287912	36555	245	612	149	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:42	19:41	0	0.977	672351	106564	904	2260	118		
333.9338	19:42	19:41	0	0.977	817421	127274	760	1900	167	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:12	22:13	-1	1.102	937710	121301	343	857	354		
317.9389	22:12	22:13	-1	1.102	1210054	169688	468	1170	363	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.978	374851	59523	664	1660	90		
13C-1,2,3,4-TCDD											
331.9368	20:09	20:09	0		2025949	308266	904	2260	341		
333.9338	20:09	20:09	0		2532285	384004	760	1900	505	0.80(0.65-0.89)	

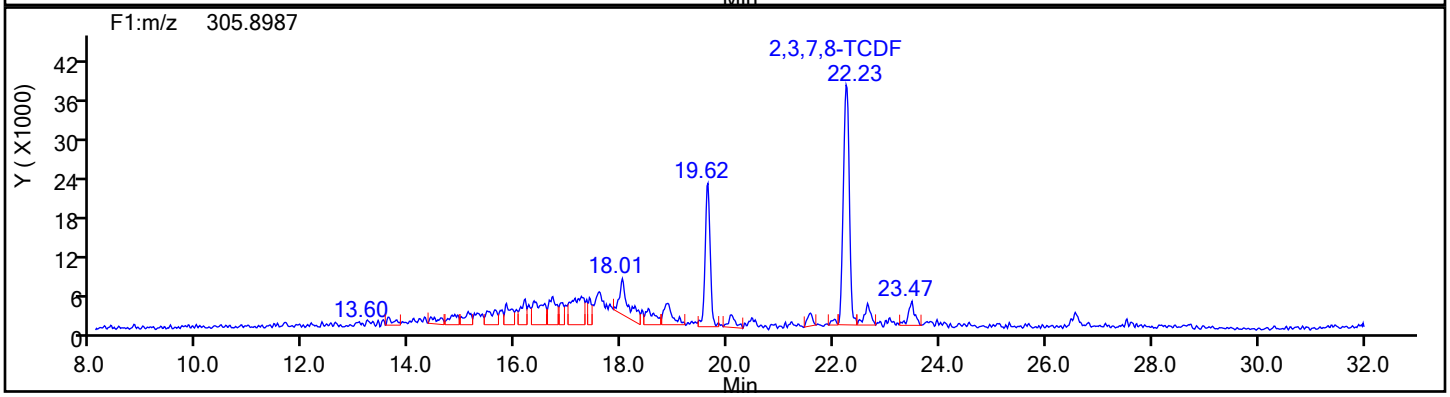
Report Date: 18-Dec-2019 09:05:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

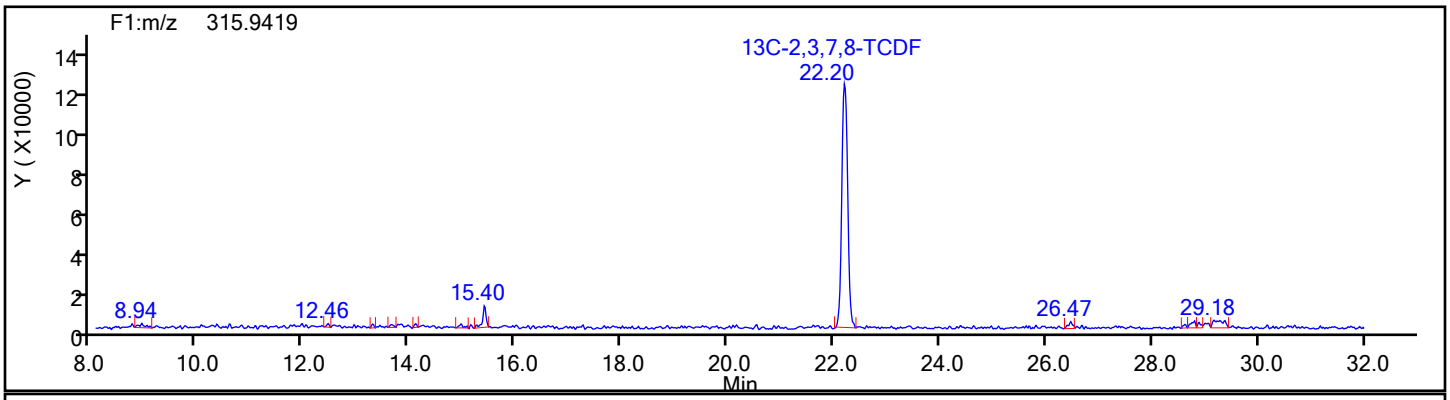
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-2-a.d		
Injection Date:	18-Dec-2019 04:33:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36167	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

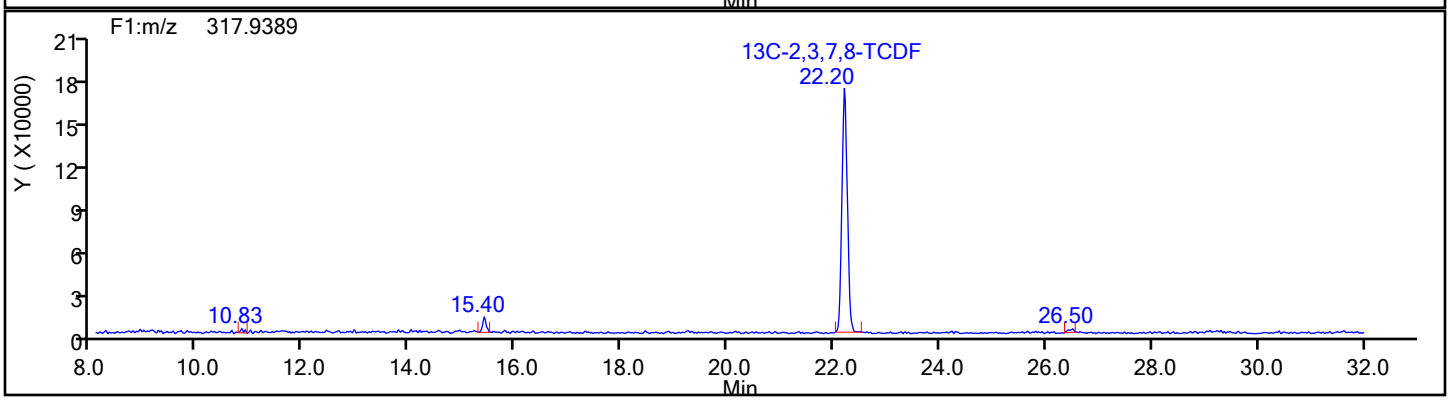
TCDF





TCDF Standards



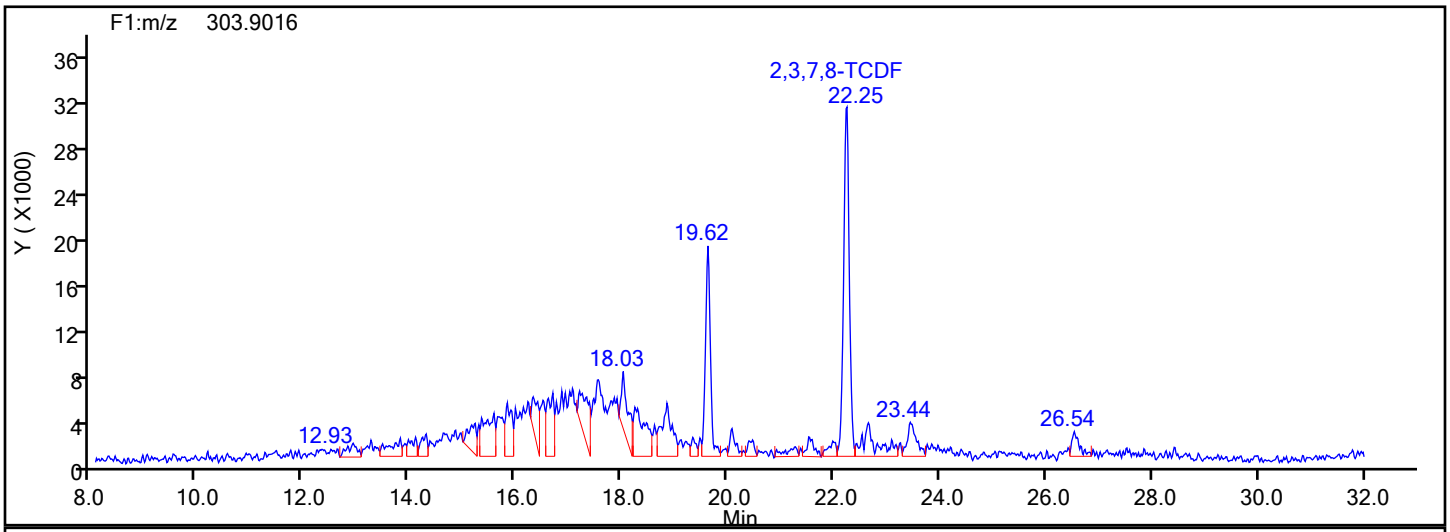


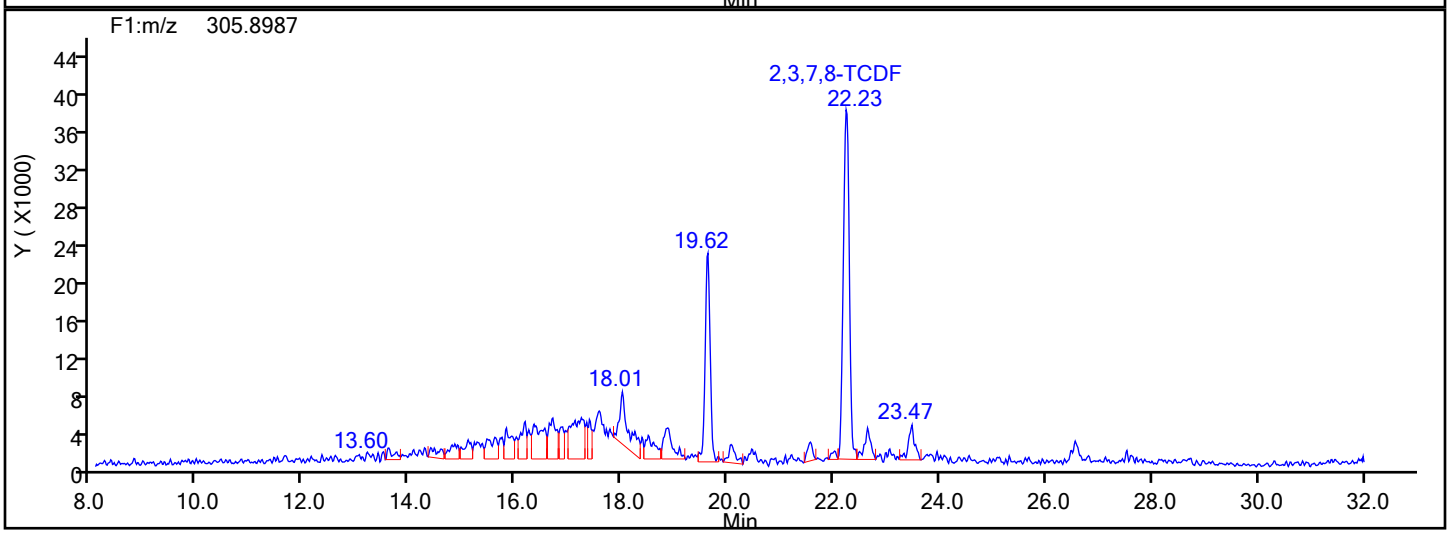
Report Date: 18-Dec-2019 09:05:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

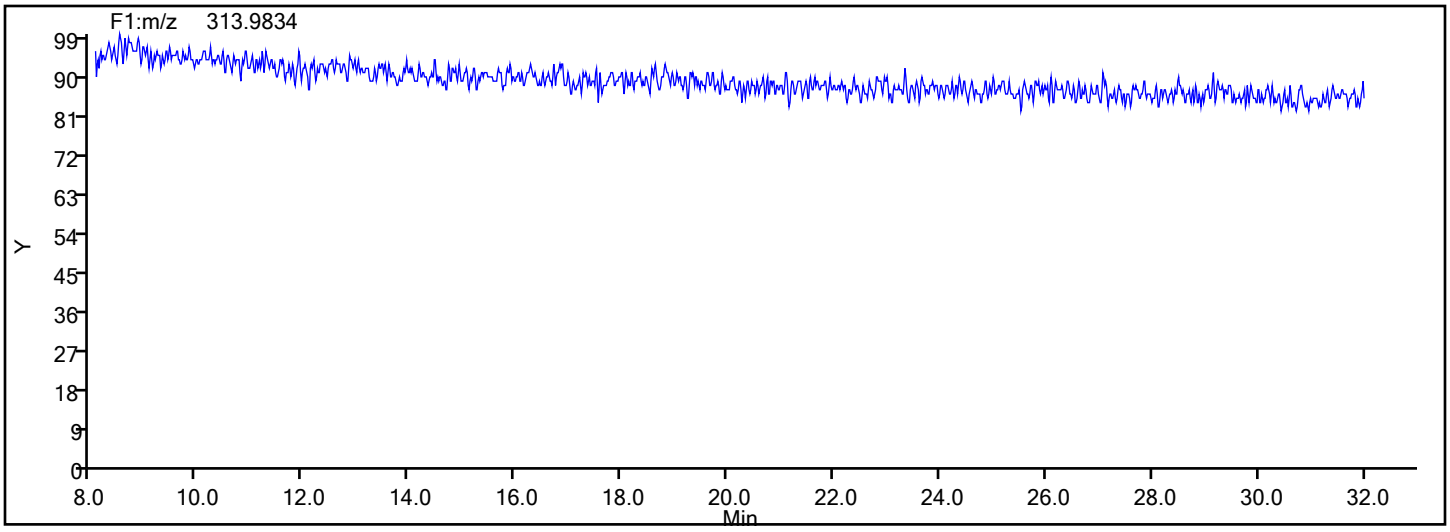
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-2-a.d		
Injection Date:	18-Dec-2019 04:33:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36167	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

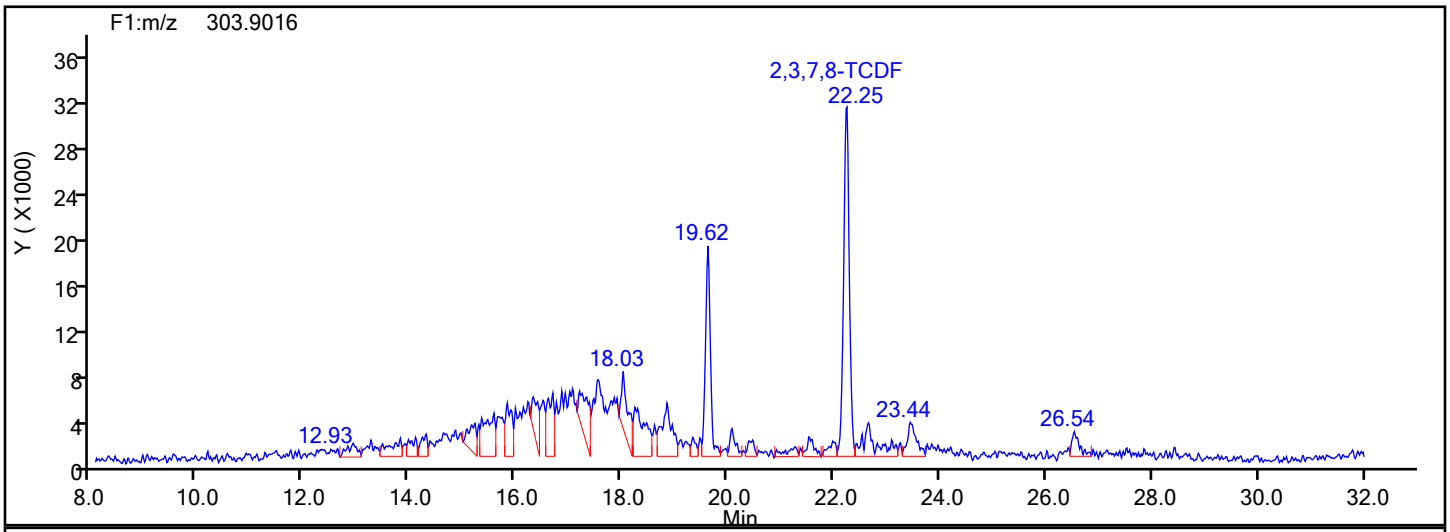


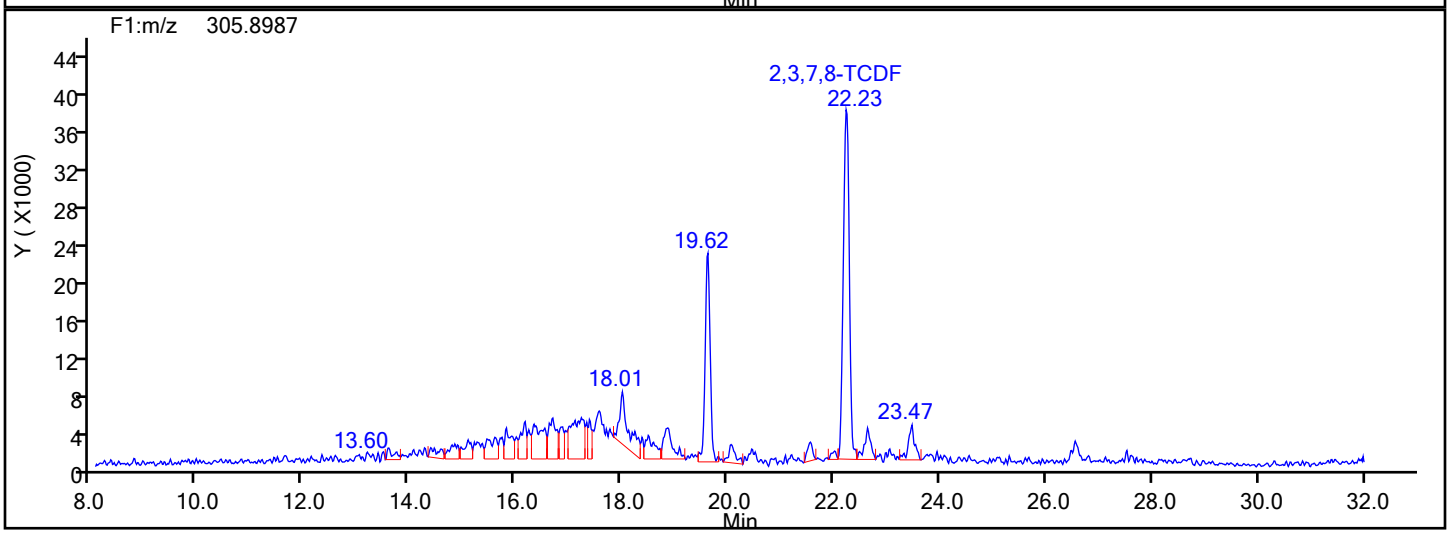
Report Date: 18-Dec-2019 09:05:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

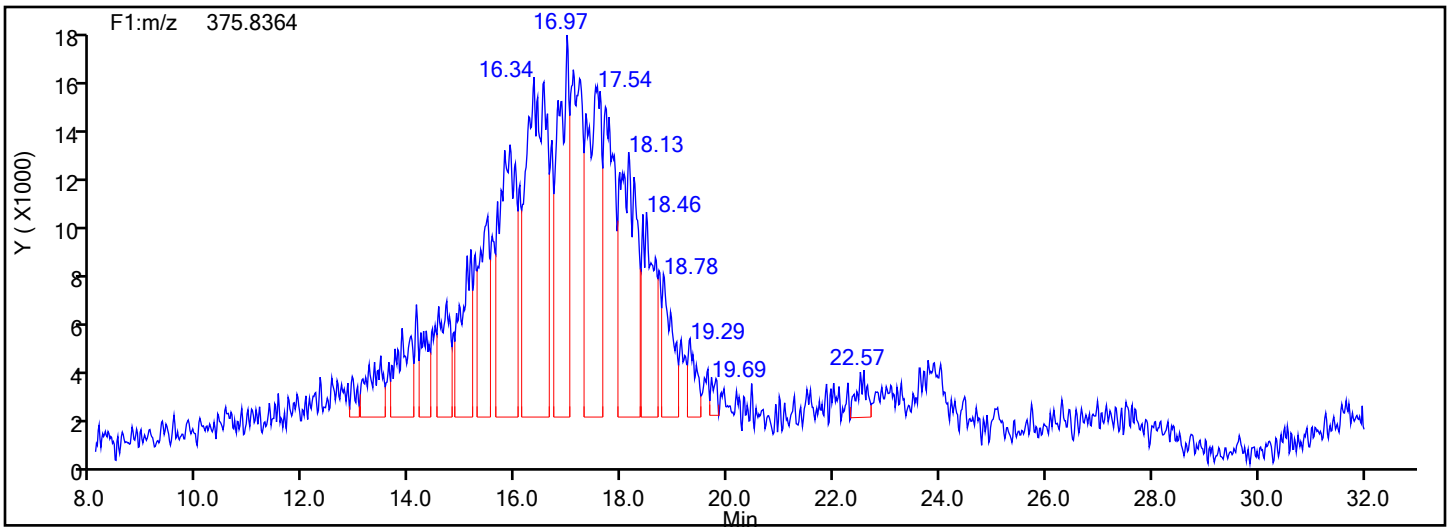
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-2-a.d		
Injection Date:	18-Dec-2019 04:33:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(1-2)		
Worklist#:	36167	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Matrix: Sediment Lab File ID: 140-17578-a-3-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.76(g) Date Analyzed: 12/17/2019 07:04

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	75		1.8	0.15
41903-57-5	Total TCDD	92	B q	1.8	0.15
40321-76-4	1,2,3,7,8-PeCDD	1.5	J	8.9	0.27
36088-22-9	Total PeCDD	11	q	8.9	0.27
39227-28-6	1,2,3,4,7,8-HxCDD	1.4	J	8.9	0.093
57653-85-7	1,2,3,6,7,8-HxCDD	2.6	J	8.9	0.091
19408-74-3	1,2,3,7,8,9-HxCDD	4.8	J	8.9	0.086
34465-46-8	Total HxCDD	80	B	8.9	0.090
35822-46-9	1,2,3,4,6,7,8-HpCDD	110	B	8.9	0.14
37871-00-4	Total HpCDD	370	B	8.9	0.14
3268-87-9	OCDD	3600	B	18	0.11
30402-14-3	Total TCDF	540	I B q	1.8	0.15
57117-41-6	1,2,3,7,8-PeCDF	6.9	J	8.9	0.088
57117-31-4	2,3,4,7,8-PeCDF	5.2	J	8.9	0.084
30402-15-4	Total PeCDF	27	I q	8.9	0.086
70648-26-9	1,2,3,4,7,8-HxCDF	10		8.9	0.18
57117-44-9	1,2,3,6,7,8-HxCDF	3.2	J	8.9	0.17
60851-34-5	2,3,4,6,7,8-HxCDF	0.59	J	8.9	0.18
72918-21-9	1,2,3,7,8,9-HxCDF	0.34	J q	8.9	0.24
55684-94-1	Total HxCDF	29	I q	8.9	0.19
67562-39-4	1,2,3,4,6,7,8-HpCDF	13	B	8.9	0.17
55673-89-7	1,2,3,4,7,8,9-HpCDF	2.2	J B	8.9	0.27
38998-75-3	Total HpCDF	29	B q	8.9	0.22
39001-02-0	OCDF	93	B	18	0.60

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Matrix: Sediment Lab File ID: 140-17578-a-3-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.76(g) Date Analyzed: 12/17/2019 07:04

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	69		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	68		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	69		23-140
114423-97-1	13C-OCDD	66		17-157
89059-46-1	13C-2,3,7,8-TCDF	64		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	67		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	66		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	66		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	67		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	66		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	65		26-138
109719-78-0	13C-OCDF	68		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 07:04:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:23:22 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:23:22

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:50	801718	0.80	1.1733	21.2	21.2	0.0428	0.0428		
A Non-2,3,7,8-sub-TCDD	29:30	178446	0.77	1.1733	4.844	4.722	0.0428	2.042		RQMa
S Total TCDD					26.1	25.9	0.0428	0.0428		RQ
2,3,7,8-TCDF	28:50	4990607	0.80	1.0881	85.1	85.1	0.0426	0.0426		
A Non-2,3,7,8-sub-TCDF	28:13	3890266	0.77	1.0881	66.5	66.3	0.0426	35.0		RQM
S Total TCDF					151.6	151.4	0.0426	0.0426		RQ
1,2,3,7,8-PeCDD	40:35	13113	1.36	1.0434	0.4337	0.4337	0.0772	0.0772		M
A Non-2,3,7,8-sub-PeCDD	39:27	79122	1.55	1.0434	2.889	2.617	0.0772	0.9503		RQMa
S Total PeCDD					3.323	3.051	0.0772	0.0772		RQ
1,2,3,7,8-PeCDF	38:47	101407	1.70	1.1898	1.942	1.942	0.0248	0.0248		M
2,3,4,7,8-PeCDF	40:02	71237	1.56	1.1095	1.456	1.456	0.0235	0.0235		
A Non-2,3,7,8-sub-PeCDF	38:02	216438	1.55	1.1496	4.465	4.278	0.0241	1.401		RQMa
S Total PeCDF					7.862	7.676	0.0241	0.0241		RQ
1,2,3,4,7,8-HxCDD	44:50	13497	1.30	1.1409	0.3899	0.3899	0.0260	0.0260		
1,2,3,6,7,8-HxCDD	44:57	27244	1.24	1.1481	0.7197	0.7197	0.0256	0.0256		
1,2,3,7,8,9-HxCDD	45:19	52654	1.33	1.2212	1.362	1.362	0.0242	0.0242		
A Non-2,3,7,8-sub-HxCDD	44:19	739296	1.26	1.1700	20.0	20.0	0.0252	14.0		
S Total HxCDD					22.4	22.4	0.0253	0.0253		
1,2,3,4,7,8-HxCDF	43:48	163279	1.22	1.3629	2.891	2.891	0.0514	0.0514		M
1,2,3,6,7,8-HxCDF	43:56	59548	1.26	1.2762	0.9111	0.9111	0.0474	0.0474		M
2,3,4,6,7,8-HxCDF	44:39	9835	1.40	1.2654	0.1665	0.1665	0.0515	0.0515		M
1,2,3,7,8,9-HxCDF	45:35	5048	1.24	1.2573	0.1143	0.0963	0.0672	0.0672		RQMa
A Non-2,3,7,8-sub-HxCDF	44:10	239601	1.24	1.2905	4.170	4.102	0.0535	1.208		RQMa
S Total HxCDF					8.253	8.167	0.0544	0.0544		RQ
1,2,3,4,6,7,8-HpCDD	49:38	1014810	1.06	1.1204	30.5	30.5	0.0399	0.0399		
A Non-2,3,7,8-sub-HpCDD	49:03	2492652	1.03	1.1204	75.0	75.0	0.0399	75.0		
S Total HpCDD					105.5	105.5	0.0399	0.0399		
1,2,3,4,6,7,8-HpCDF	47:57	196960	1.04	1.4984	3.556	3.556	0.0472	0.0472		
1,2,3,4,7,8,9-HpCDF	50:17	26694	1.10	1.3807	0.6313	0.6313	0.0754	0.0754		M
A Non-2,3,7,8-sub-HpCDF	49:20	191343	1.04	1.4395	3.993	3.933	0.0585	3.552		RQa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					8.180	8.120	0.0613	0.0613		RQ
OCDD	53:52	30118549	0.91	1.2073	1013.4	1013.4	0.0301	0.0301		
OCDF	54:01	1111402	0.90	1.1162	26.0	26.0	0.1688	0.1688		
D 13C-2,3,7,8-TCDD	30:47	1610503	0.76	1.0709	31.3	31.3	0.2268	0.2268	62.70	
D 13C-2,3,7,8-TCDF	28:48	2694885	0.81	1.7545	32.0	32.0	0.1890	0.1890	64.04	
D 13C-1,2,3,7,8-PeCDD	40:33	1448861	1.61	0.8743	34.5	34.5	0.2811	0.2811	69.09	
D 13C-1,2,3,7,8-PeCDF	38:46	2194817	1.54	1.3704	33.4	33.4	0.3947	0.3947	66.77	
D 13C-2,3,4,7,8-PeCDF	40:01	2205543	1.58	1.3837	33.2	33.2	0.3909	0.3909	66.45	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1517288	1.33	0.8772	32.7	32.7	0.1064	0.1064	65.34	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1648613	1.27	0.9171	34.0	34.0	0.1018	0.1018	67.91	
D 13C-1,2,3,4,7,8-HxCDF	43:48	2072127	0.54	1.1892	32.9	32.9	0.2048	0.2048	65.83	
D 13C-1,2,3,6,7,8-HxCDF	43:55	2560693	0.53	1.4625	33.1	33.1	0.1666	0.1666	66.15	
D 13C-2,3,4,6,7,8-HxCDF	44:38	2334692	0.52	1.3197	33.4	33.4	0.1846	0.1846	66.83	
D 13C-1,2,3,7,8,9-HxCDF	45:35	2084108	0.54	1.2001	32.8	32.8	0.2030	0.2030	65.60	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	1484003	1.10	0.8155	34.4	34.4	0.1431	0.1431	68.75	
D 13C-1,2,3,4,6,7,8-HpCDF	47:56	1848413	0.47	1.0496	33.3	33.3	0.1639	0.1639	66.53	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	1531144	0.46	0.8947	32.3	32.3	0.1923	0.1923	64.65	
D 13C-OCDD	53:51	2461835	0.93	0.7044	66.0	66.0	0.3357	0.3357	66.02	
D 13C-OCDF	54:00	3823240	0.89	1.0615	68.0	68.0	0.1769	0.1769	68.04	
$ 37Cl4-2,3,7,8-TCDD	30:50	425825		1.2266	7.237	7.237	0.1271	0.1271	72.37	
* 13C-1,2,3,4-TCDD	30:17	4797106	0.82	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	5294088	1.29	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 07:04:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 10:23:22 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 10:23:22

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:50	30:49	-1	1.002	356175	37592	32	80	1175		
321.8936	30:50	30:49	-1	1.002	445543	48331	35	87	1381	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:58	29:30	-272	0.811	3076	496	32	80	16		M
	Empc Correction				2524	384	32	80	12		
321.8936	24:53	29:30	-276	0.809	3278	500	35	87	14	0.94(0.65-0.89)	
319.8965	25:37	29:30	-232	0.832	2765	411	32	80	13		
	Empc Correction				1792	332	32	80	10		
321.8936	25:38	29:30	-231	0.833	2328	432	35	87	12	1.19(0.65-0.89)	
319.8965	26:16	29:30	-193	0.853	1947	239	32	80	7		M
321.8936	26:15	29:30	-195	0.000			35	87		0.00(0.65-0.89)	
319.8965	27:47	29:30	-102	0.903	18777	2297	32	80	72		
321.8936	27:47	29:30	-102	0.903	25132	3063	35	87	88	0.75(0.65-0.89)	
319.8965	28:19	29:30	-71	0.920	2079	212	32	80	7		
321.8936	28:19	29:30	-71	0.920	2532	258	35	87	7	0.82(0.65-0.89)	M
319.8965	28:47	29:30	-43	0.935	2331	297	32	80	9		
	Empc Correction				1285	184	32	80	6		
321.8936	28:45	29:30	-45	0.934	1670	239	35	87	7	1.40(0.65-0.89)	
319.8965	30:17	29:30	47	0.984	5407	725	32	80	23		
	Empc Correction				4608	552	32	80	17		
321.8936	30:15	29:30	45	0.982	5985	717	35	87	20	0.90(0.65-0.89)	
319.8965	30:34	29:30	64	0.993	6506	1207	32	80	38		a
321.8936	30:37	29:30	67	0.995	9845	1162	35	87	33	0.66(0.65-0.89)	
319.8965	31:55	29:30	145	1.037	32556	3157	32	80	99		
321.8936	31:54	29:30	144	1.036	44620	4316	35	87	123	0.73(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	32:49	29:30	199	1.066	2332	238	32	80	7		M
321.8936	32:47	29:30	197	1.065	3255	309	35	87	9	0.72(0.65-0.89)	
319.8965	34:00	29:30	270	1.104	2347	350	32	80	11		
321.8936	34:00	29:30	270	1.104	4279	480	35	87	14	0.55(0.65-0.89)	
	Empc Correction				3048	454	35	87	13		
2,3,7,8-TCDF											
303.9016	28:50	28:51	-2	1.001	2216609	232654	49	122	4748		
305.8987	28:50	28:51	-2	1.001	2773998	290891	65	162	4475	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	22:29	28:13	-344	0.781	2556	380	49	122	8		
305.8987	22:31	28:13	-342	0.782	3040	514	65	162	8	0.84(0.65-0.89)	
303.9016	23:23	28:13	-290	0.812	3540	470	49	122	10		
305.8987	23:23	28:13	-290	0.812	4148	747	65	162	11	0.85(0.65-0.89)	
303.9016	23:49	28:13	-264	0.827	8531	1171	49	122	24		
	Empc Correction				6790	964	49	122	20		
305.8987	23:52	28:13	-261	0.829	8819	1252	65	162	19	0.97(0.65-0.89)	
303.9016	24:21	28:13	-232	0.846	23893	3504	49	122	72		
	Empc Correction				20261	2815	49	122	57		
305.8987	24:20	28:13	-233	0.845	26314	3657	65	162	56	0.91(0.65-0.89)	
303.9016	24:39	28:13	-214	0.856	4461	514	49	122	10		
305.8987	24:36	28:13	-217	0.854	6108	742	65	162	11	0.73(0.65-0.89)	
303.9016	25:05	28:13	-188	0.871	89635	10923	49	122	223		
305.8987	25:05	28:13	-188	0.871	116370	14412	65	162	222	0.77(0.65-0.89)	
303.9016	25:48	28:13	-145	0.896	117289	12697	49	122	259		M
305.8987	25:48	28:13	-145	0.896	151141	15043	65	162	231	0.78(0.65-0.89)	
303.9016	26:17	28:13	-116	0.913	19471	2577	49	122	53		
305.8987	26:16	28:13	-117	0.912	25447	3265	65	162	50	0.77(0.65-0.89)	
303.9016	26:27	28:13	-106	0.919	56661	7332	49	122	150		
305.8987	26:27	28:13	-106	0.919	66948	7986	65	162	123	0.85(0.65-0.89)	
303.9016	26:59	28:13	-74	0.937	82882	9722	49	122	198		
305.8987	27:00	28:13	-73	0.937	105760	13012	65	162	200	0.78(0.65-0.89)	
303.9016	27:15	28:13	-58	0.946	12351	1300	49	122	27		
	Empc Correction				9250	1278	49	122	26		
305.8987	27:15	28:13	-58	0.946	12014	1660	65	162	26	1.03(0.65-0.89)	
303.9016	27:45	28:13	-28	0.964	911315	106638	49	122	2176		
305.8987	27:44	28:13	-29	0.963	1141819	136782	65	162	2104	0.80(0.65-0.89)	
303.9016	28:22	28:13	8	0.985	51240	5487	49	122	112		
305.8987	28:21	28:13	7	0.984	67683	7045	65	162	108	0.76(0.65-0.89)	
303.9016	30:02	28:13	108	1.043	145739	15338	49	122	313		
305.8987	30:02	28:13	108	1.043	183822	19304	65	162	297	0.79(0.65-0.89)	
303.9016	30:43	28:13	149	1.067	28972	3361	49	122	69		
305.8987	30:41	28:13	147	1.066	39208	3352	65	162	52	0.74(0.65-0.89)	
303.9016	32:48	28:13	274	1.139	15963	1959	49	122	40		
305.8987	32:48	28:13	274	1.139	20053	2039	65	162	31	0.80(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	33:52	28:13	338	1.176	150184	16565	49	122	338		
305.8987	33:52	28:13	338	1.176	195363	19724	65	162	303	0.77(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	40:35	40:34	0	1.001	7567	1694	32	80	53		
357.8516	40:34	40:34	-1	1.000	5546	934	177	442	5	1.36(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:36	39:27	-111	0.927	14359	2249	32	80	70		a
	Empc Correction				10561	2018	32	80	63		
357.8516	37:38	39:27	-108	0.928	6814	1302	177	442	7	2.11(1.32-1.78)	
355.8546	38:27	39:27	-60	0.948	20605	4090	32	80	128		a
	Empc Correction				17465	3430	32	80	107		
357.8516	38:28	39:27	-59	0.949	11268	2213	177	442	13	1.83(1.32-1.78)	
355.8546	39:09	39:27	-18	0.966	4168	803	32	80	25		M
357.8516	39:08	39:27	-19	0.965	3668	606	177	442	3	1.14(1.32-1.78)	
	Empc Correction				2689	518	177	442	3		
355.8546	39:51	39:27	24	0.983	14624	2064	32	80	65		M
357.8516	39:49	39:27	22	0.982	8218	1119	177	442	6	1.78(1.32-1.78)	
355.8546	41:15	39:27	107	1.017	2015	392	32	80	12		M
357.8516	41:15	39:27	107	1.017	1608	457	177	442	3	1.25(1.32-1.78)	
	Empc Correction				1300	252	177	442	1		
1,2,3,7,8-PeCDF											M
339.8597	38:47	38:47	-1	1.000	63808	12138	70	175	173		M
341.8567	38:47	38:47	-1	1.000	37599	7221	30	75	241	1.70(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:02	40:03	-1	1.000	43393	9594	70	175	137		
341.8567	40:02	40:03	-1	1.000	27844	6435	30	75	215	1.56(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:42	38:02	-199	0.895	15028	1876	70	175	27		
341.8567	34:41	38:02	-200	0.895	9743	1087	30	75	36	1.54(1.32-1.78)	M
339.8597	37:16	38:02	-46	0.961	42793	5933	70	175	85		
341.8567	37:17	38:02	-45	0.962	28062	3574	30	75	119	1.52(1.32-1.78)	
339.8597	37:35	38:02	-26	0.970	1820	304	70	175	4		
341.8567	37:35	38:02	-26	0.970	3063	343	30	75	11	0.59(1.32-1.78)	M
	Empc Correction				1174	196	30	75	7		
339.8597	38:08	38:02	7	0.984	15117	1604	70	175	23		
341.8567	38:08	38:02	7	0.984	12399	1448	30	75	48	1.22(1.32-1.78)	M
	Empc Correction				9752	1034	30	75	34		
339.8597	38:40	38:02	39	0.998	3534	1491	70	175	21		M
341.8567	38:41	38:02	40	0.998	3031	1059	30	75	35	1.17(1.32-1.78)	
	Empc Correction				2280	961	30	75	32		
339.8597	38:57	38:02	55	1.005	1251	292	70	175	4		M
341.8567	38:56	38:02	54	1.004	1001	281	30	75	9	1.25(1.32-1.78)	
	Empc Correction				807	188	30	75	6		
339.8597	39:03	38:02	61	1.008	2510	485	70	175	7		
341.8567	39:04	38:02	62	1.008	2072	392	30	75	13	1.21(1.32-1.78)	
	Empc Correction				1619	312	30	75	10		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	39:19	38:02	77	1.014	24850	3587	70	175	51		
341.8567	39:18	38:02	76	1.014	17684	2548	30	75	85	1.41(1.32-1.78)	M
339.8597	40:17	38:02	135	1.039	13709	2208	70	175	32		
341.8567	40:16	38:02	134	1.039	10245	1618	30	75	54	1.34(1.32-1.78)	
339.8597	41:27	38:02	205	1.069	8790	1269	70	175	18		M
341.8567	41:27	38:02	205	1.069	9176	1126	30	75	38	0.96(1.32-1.78)	
	Empc Correction				5670	818	30	75	27		
1,2,3,4,7,8-HxCDD											
389.8158	44:50	44:50	-1	1.000	7619	1577	46	115	34		
391.8127	44:50	44:50	-1	1.000	5878	1487	45	112	33	1.30(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:57	44:57	-1	1.000	15082	3185	46	115	69		
391.8127	44:57	44:57	-1	1.000	12162	2796	45	112	62	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:19	45:19	-2	1.011	30025	5117	46	115	111		
391.8127	45:19	45:19	-2	1.011	22629	3941	45	112	88	1.33(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	43:16	44:19	-63	0.963	288039	78533	46	115	1707		
391.8127	43:16	44:19	-63	0.963	230897	61447	45	112	1365	1.25(1.05-1.43)	
389.8158	43:51	44:19	-28	0.976	13901	2931	46	115	64		
391.8127	43:50	44:19	-29	0.976	11566	3026	45	112	67	1.20(1.05-1.43)	
389.8158	44:07	44:19	-12	0.982	94126	21711	46	115	472		
391.8127	44:07	44:19	-12	0.982	72048	17106	45	112	380	1.31(1.05-1.43)	
389.8158	44:18	44:19	-1	0.986	16172	3802	46	115	83		
391.8127	44:18	44:19	-1	0.986	12547	3347	45	112	74	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDF											M
373.8208	43:48	43:48	-1	1.000	89836	21767	202	505	108		
375.8178	43:48	43:48	-1	1.000	73443	18499	97	242	191	1.22(1.05-1.43)	M
1,2,3,6,7,8-HxCDF											M
373.8208	43:56	43:56	-1	1.000	33213	8239	202	505	41		M
375.8178	43:56	43:56	-1	1.000	26335	6624	97	242	68	1.26(1.05-1.43)	
2,3,4,6,7,8-HxCDF											M
373.8208	44:39	44:39	-1	1.000	5729	1565	202	505	8		M
375.8178	44:39	44:39	-1	1.000	4106	1177	97	242	12	1.40(1.05-1.43)	M
1,2,3,7,8,9-HxCDF											RQMa
373.8208	45:35	45:35	-1	1.000	3736	733	202	505	4		M
	Empc Correction				2794	606	202	505	3		
375.8178	45:36	45:35	0	1.000	2254	489	97	242	5	1.66(1.05-1.43)	a
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:35	44:10	-95	0.970	10026	2783	202	505	14		
375.8178	42:34	44:10	-96	0.969	8770	2127	97	242	22	1.14(1.05-1.43)	
373.8208	42:45	44:10	-85	0.973	39940	10500	202	505	52		
375.8178	42:45	44:10	-85	0.973	30629	7907	97	242	82	1.30(1.05-1.43)	
373.8208	43:08	44:10	-62	0.982	5974	1809	202	505	9		
375.8178	43:09	44:10	-61	0.983	5376	1397	97	242	14	1.11(1.05-1.43)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	43:21	44:10	-49	0.987	30429	8278	202	505	41		
375.8178	43:20	44:10	-50	0.987	22269	6016	97	242	62	1.37(1.05-1.43)	
373.8208	43:34	44:10	-36	0.992	27593	7776	202	505	38		M
375.8178	43:34	44:10	-36	0.992	23536	6545	97	242	67	1.17(1.05-1.43)	
373.8208	44:29	44:10	19	1.013	14012	2954	202	505	15		
375.8178	44:29	44:10	19	1.013	10428	2007	97	242	21	1.34(1.05-1.43)	
373.8208	45:43	44:10	93	1.041	9847	1630	202	505	8		
	Empc Correction				5878	1562	202	505	8		
375.8178	45:43	44:10	93	1.041	4741	1260	97	242	13	2.08(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:37	0	1.001	521367	87834	32	80	2745		
425.7737	49:37	49:37	-1	1.000	493443	83101	62	155	1340	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:27	49:03	-36	0.977	1267614	247525	32	80	7735		
425.7737	48:27	49:03	-36	0.977	1225038	238503	62	155	3847	1.03(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:57	47:57	-1	1.000	100617	20433	103	257	198		
409.7788	47:57	47:57	-1	1.000	96343	20449	113	282	181	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:17	50:16	0	1.000	13971	2503	103	257	24		M
409.7788	50:16	50:16	-1	1.000	12723	2078	113	282	18	1.10(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											RQa
407.7817	48:21	49:20	-59	1.008	12377	1876	103	257	18		a
	Empc Correction				9452	1717	103	257	17		
409.7788	48:21	49:20	-59	1.008	9089	1651	113	282	15	1.36(0.88-1.20)	
407.7817	48:35	49:20	-45	1.013	90894	18347	103	257	178		a
409.7788	48:35	49:20	-45	1.013	81908	17189	113	282	152	1.11(0.88-1.20)	
OCDD											
457.7377	53:52	53:53	-1	1.000	14351022	3292810	33	82	99782		
459.7348	53:52	53:53	-1	1.000	15767527	3671399	48	120	76487	0.91(0.76-1.02)	
OCDF											
441.7428	54:01	54:01	-1	1.000	526330	116694	309	772	378		
443.7399	54:01	54:01	-1	1.000	585072	129980	354	885	367	0.90(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:47	30:45	-1	1.017	695423	73082	298	745	245		
333.9338	30:46	30:45	-2	1.016	915080	93204	208	520	448	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:48	28:46	-1	0.951	1207739	134838	243	607	555		
317.9389	28:48	28:46	-1	0.951	1487146	172425	448	1120	385	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:33	40:30	-1	1.339	894771	201397	339	847	594		
369.8919	40:33	40:30	-1	1.339	554090	122580	173	432	709	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:46	38:42	-1	1.280	1330860	258124	843	2107	306		
353.8970	38:46	38:42	-1	1.280	863957	166353	284	710	586	1.54(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	39:58	-1	1.322	1349673	295049	843	2107	350		
353.8970	40:01	39:58	-1	1.322	855870	183784	284	710	647	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	-1	0.989	866188	215056	249	622	864		
403.8529	44:49	44:49	-1	0.989	651100	166876	196	490	851	1.33(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	-1	0.991	923810	214417	249	622	861		
403.8529	44:56	44:56	-1	0.991	724803	172335	196	490	879	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:48	43:47	0	0.966	729837	188469	503	1257	375		
385.8610	43:48	43:47	0	0.966	1342290	344645	658	1645	524	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:56	-1	0.969	885719	215636	503	1257	429		
385.8610	43:55	43:56	-1	0.969	1674974	402118	658	1645	611	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:38	44:39	-1	0.985	801106	194966	503	1257	388		
385.8610	44:38	44:39	-1	0.985	1533586	377632	658	1645	574	0.52(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	731209	155089	503	1257	308		
385.8610	45:35	45:35	0	1.006	1352899	286638	658	1645	436	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:36	-1	1.094	777661	137731	236	590	584		
437.8140	49:36	49:36	-1	1.094	706342	124855	320	800	390	1.10(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:56	47:57	-1	1.058	589991	122123	341	852	358		
419.8220	47:56	47:57	-1	1.058	1258422	259830	479	1197	542	0.47(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	0	1.109	481535	79235	341	852	232		
419.8220	50:15	50:16	-1	1.109	1049609	180277	479	1197	376	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:52	-1	1.188	1184143	265634	707	1767	376		
471.7750	53:51	53:52	-1	1.188	1277692	290098	420	1050	691	0.93(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:01	-1	1.192	1795165	413464	509	1272	812		
455.7801	54:00	54:01	-1	1.192	2028075	465960	386	965	1207	0.89(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:50	30:48	-1	1.018	425825	44995	325	812	138		
13C-1,2,3,4-TCDD											
331.9368	30:17	30:19	-2		2159097	233108	298	745	782		
333.9338	30:16	30:19	-3		2638009	287670	208	520	1383	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:20	-1		2981532	662637	249	622	2661		
403.8529	45:19	45:20	-1		2312556	528640	196	490	2697	1.29(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1610503	166286

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1610503	166286

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:58	3076	496	3278	500	0.1681	0.94	RQM
24:58	2524	384	3278	500	0.1535		Empc Correction
25:37	2765	411	2328	432	0.1348	1.19	RQ
25:37	1792	332	2328	432	0.1090		Empc Correction
26:16	1947	239	0	0	0.0515	0.00	M
27:47	18777	2297	25132	3063	1.16	0.75	
28:19	2079	212	2532	258	0.1220	0.82	M
28:47	2331	297	1670	239	0.1059	1.40	RQ
28:47	1285	184	1670	239	0.0782		Empc Correction
30:17	5407	725	5985	717	0.3014	0.90	RQ
30:17	4608	552	5985	717	0.2803		Empc Correction
30:34	6506	1207	9845	1162	0.4327	0.66	a
31:55	32556	3157	44620	4316	2.04	0.73	
32:49	2332	238	3255	309	0.1478	0.72	M
34:00	2347	350	4279	480	0.1753	0.55	RQ
34:00	2347	350	3048	454	0.1428		Empc Correction
Signal Totals:							
	76753	9152	101693	11450			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	183047	21105				0.78	RQMa
	178446	20602					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.844 = (183047 * 50.000) / (1610503 * 1.173)
Empc Amount: 4.722 = (178446 * 50.000) / (1610503 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2694885	307263

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2694885	307263

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:29	2556	380	3040	514	0.0954	0.84	
23:23	3540	470	4148	747	0.1311	0.85	
23:49	8531	1171	8819	1252	0.2958	0.97	RQ
23:49	6790	964	8819	1252	0.2661		Empc Correction
24:21	23893	3504	26314	3657	0.8561	0.91	RQ
24:21	20261	2815	26314	3657	0.7941		Empc Correction
24:39	4461	514	6108	742	0.1802	0.73	
25:05	89635	10923	116370	14412	3.51	0.77	
25:48	117289	12697	151141	15043	4.58	0.78	M
26:17	19471	2577	25447	3265	0.7659	0.77	
26:27	56661	7332	66948	7986	2.11	0.85	
26:59	82882	9722	105760	13012	3.22	0.78	
27:15	12351	1300	12014	1660	0.4154	1.03	RQ
27:15	9250	1278	12014	1660	0.3626		Empc Correction
27:45	911315	106638	1141819	136782	35.0	0.80	
28:22	51240	5487	67683	7045	2.03	0.76	
30:02	145739	15338	183822	19304	5.62	0.79	
30:43	28972	3361	39208	3352	1.16	0.74	
32:48	15963	1959	20053	2039	0.6141	0.80	
33:52	150184	16565	195363	19724	5.89	0.77	
Signal Totals:							
	1716209	199020	2174057	250536			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3898740	450474				0.79	RQM
	3890266	449556					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 66.476 = (3898740 * 50.000) / (2694885 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1448861	323977

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1448861	323977

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:36	14359	2249	6814	1302	0.7003	2.11	RQa
37:36	10561	2018	6814	1302	0.5747		Empc Correction
38:27	20605	4090	11268	2213	1.05	1.83	RQa
38:27	17465	3430	11268	2213	0.9503		Empc Correction
39:09	4168	803	3668	606	0.2592	1.14	RQMa
39:09	4168	803	2689	518	0.2268		Empc Correction
39:51	14624	2064	8218	1119	0.7555	1.78	M
41:15	2015	392	1608	457	0.1198	1.25	RQM
41:15	2015	392	1300	252	0.1096		Empc Correction
Signal Totals:							
	48833	8707	30289	5404			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	87347	15295				1.77	RQMa
	79122	14111					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.889 = (87347 * 50.000) / (1448861 * 1.043)
Empc Amount: 2.617 = (79122 * 50.000) / (1448861 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	2194817	424477
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	2205543	478833

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	2200180	451655

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:42	15028	1876	9743	1087	0.4897	1.54	M
37:16	42793	5933	28062	3574	1.40	1.52	
37:35	1820	304	3063	343	0.0965	0.59	RQM
37:35	1820	304	1174	196	0.0592		Empc Correction
38:08	15117	1604	12399	1448	0.5439	1.22	RQM
38:08	15117	1604	9752	1034	0.4916		Empc Correction
38:40	3534	1491	3031	1059	0.1298	1.17	RQMa
38:40	3534	1491	2280	961	0.1149		Empc Correction
38:57	1251	292	1001	281	0.0445	1.25	RQMa
38:57	1251	292	807	188	0.0407		Empc Correction
39:03	2510	485	2072	392	0.0906	1.21	RQ
39:03	2510	485	1619	312	0.0816		Empc Correction
39:19	24850	3587	17684	2548	0.8408	1.41	M
40:17	13709	2208	10245	1618	0.4735	1.34	
41:27	8790	1269	9176	1126	0.3551	0.96	RQM
41:27	8790	1269	5670	818	0.2858		Empc Correction
Signal Totals:							
	129402	19049	87036	12336			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	225878	32525				1.34	RQMa
	216438	31385					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.465 = (225878 * 50.000) / (2200180 * 1.150)
Empc Amount: 4.278 = (216438 * 50.000) / (2200180 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1517288	381932
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1648613	386752
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1582950	384342

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:16	288039	78533	230897	61447	14.0	1.25	
43:51	13901	2931	11566	3026	0.6875	1.20	
44:07	94126	21711	72048	17106	4.49	1.31	
44:18	16172	3802	12547	3347	0.7753	1.29	
Signal Totals:							
	412238	106977	327058	84926			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	739296	191903				1.26	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 19.958 = (739296 * 50.000) / (1582950 * 1.170)

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	2072127	533114
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2560693	617754
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	2334692	572598
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	2084108	441727

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	2262905	541298

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:35	10026	2783	8770	2127	0.3218	1.14	
42:45	39940	10500	30629	7907	1.21	1.30	
43:08	5974	1809	5376	1397	0.1943	1.11	M
43:21	30429	8278	22269	6016	0.9023	1.37	
43:34	27593	7776	23536	6545	0.8754	1.17	Ma
44:29	14012	2954	10428	2007	0.4185	1.34	
45:43	9847	1630	4741	1260	0.2498	2.08	RQ
45:43	5878	1562	4741	1260	0.1818		Empc Correction
Signal Totals:							
	133852	35662	105749	27259			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	243570	62989				1.30	RQMa
	239601	62921					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.170 = (243570 * 50.000) / (2262905 * 1.290)
Empc Amount: 4.102 = (239601 * 50.000) / (2262905 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1484003	262586

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1484003	262586

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	1267614	247525	1225038	238503	75.0	1.03	
Signal Totals:							
	1267614	247525	1225038	238503			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2492652	486028				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 74.957 = (2492652 * 50.000) / (1484003 * 1.120)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Inject. Date: 17-Dec-2019 07:04:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1848413	381953
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1531144	259512

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1689778	320732

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	12377	1876	9089	1651	0.4412	1.36	RQa
48:21	9452	1717	9089	1651	0.3811		Empc Correction
48:35	90894	18347	81908	17189	3.55	1.11	a
Signal Totals:							
	100346	20064	90997	18840			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	194268	39063				1.13	RQa
	191343	38904					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.993 = (194268 * 50.000) / (1689778 * 1.440)
Empc Amount: 3.933 = (191343 * 50.000) / (1689778 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

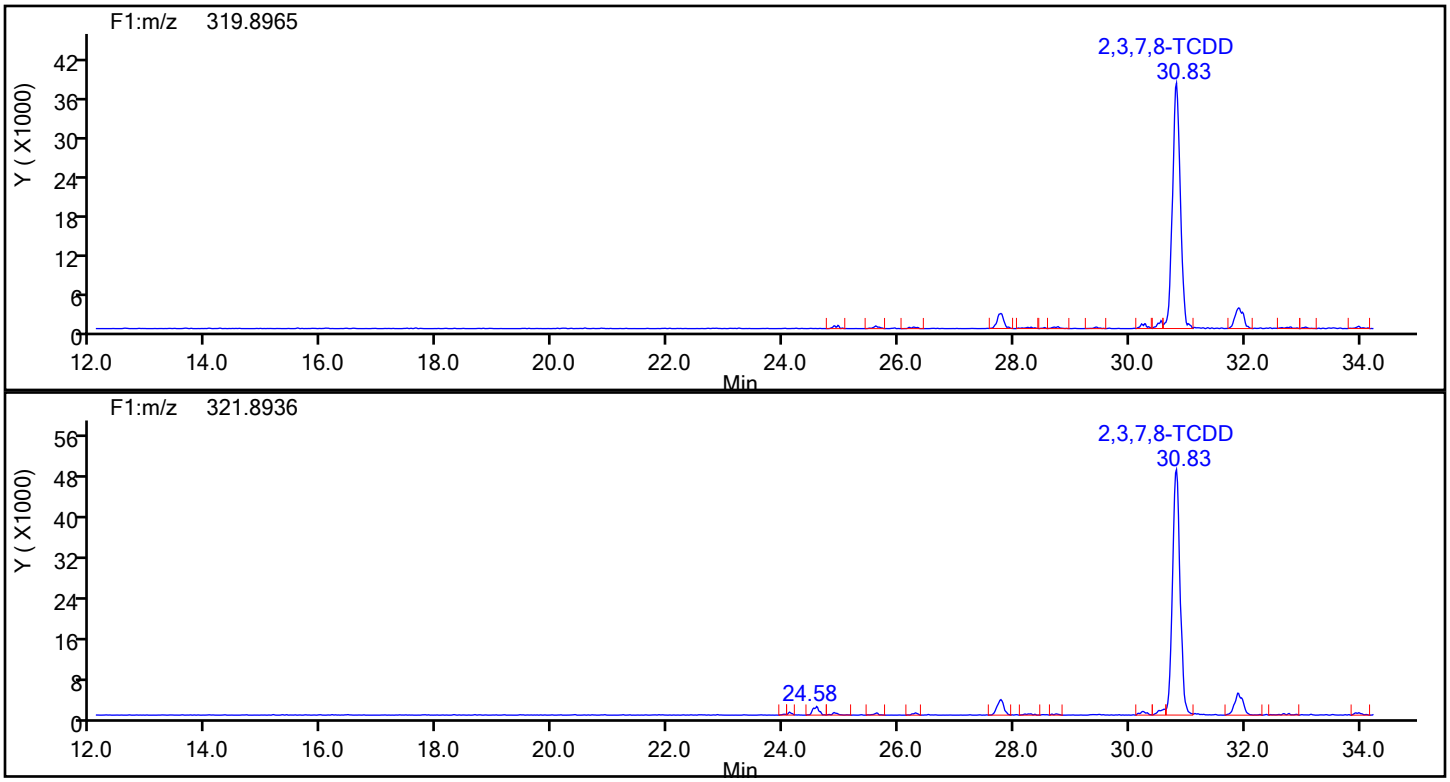
Review Flags
a - User Assigned ID

Report Date: 17-Dec-2019 10:23:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

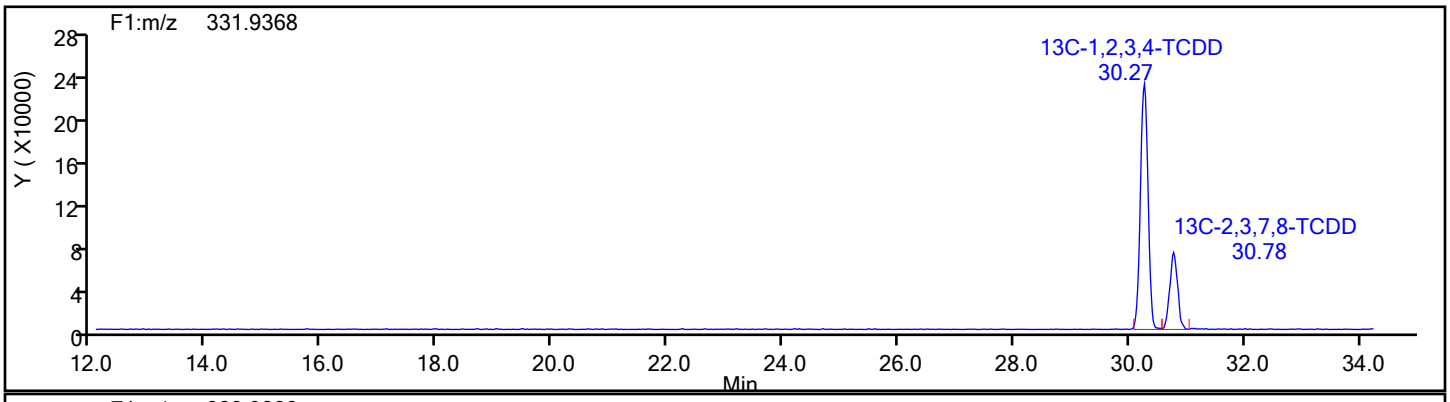
Eurofins TestAmerica, Knoxville

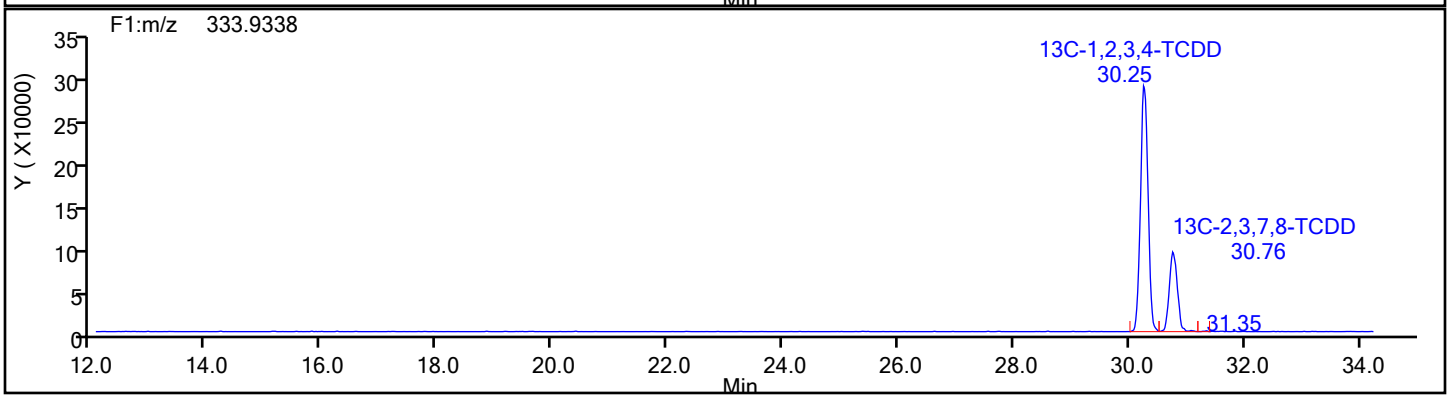
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

TCDD



TCDD Standards



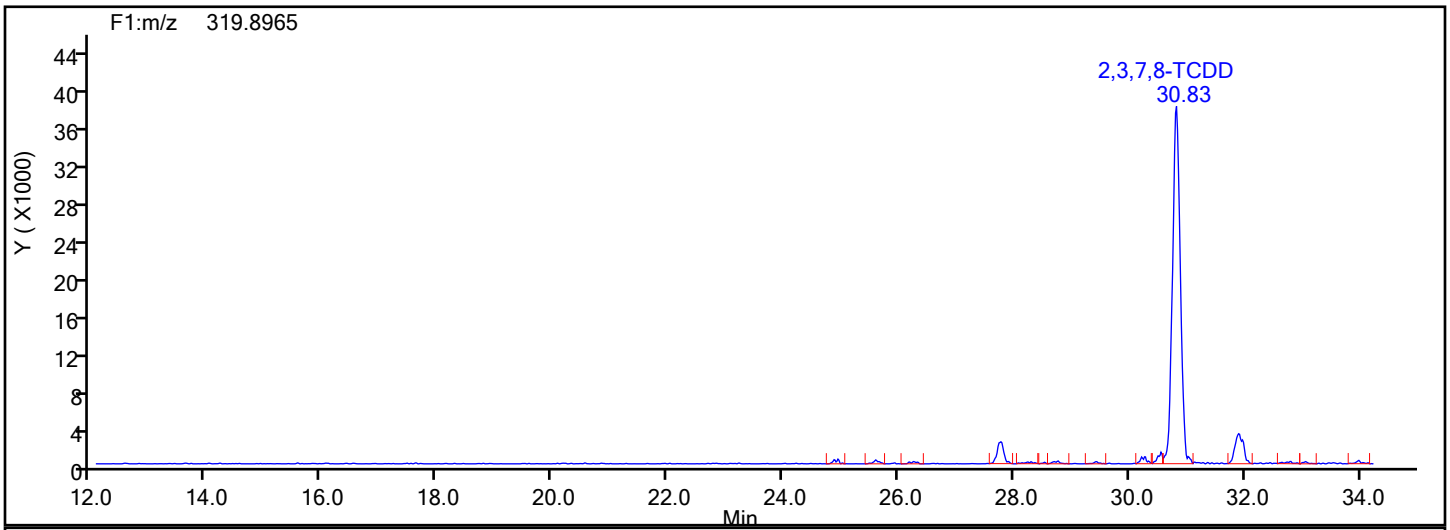


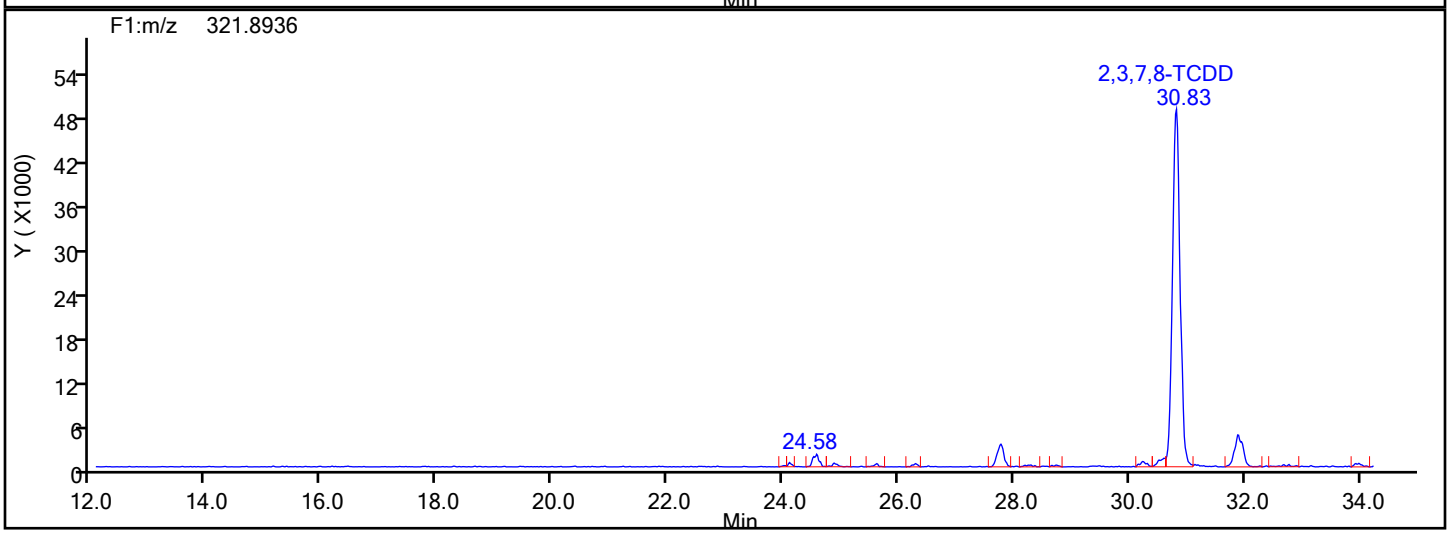
Report Date: 17-Dec-2019 10:23:22 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

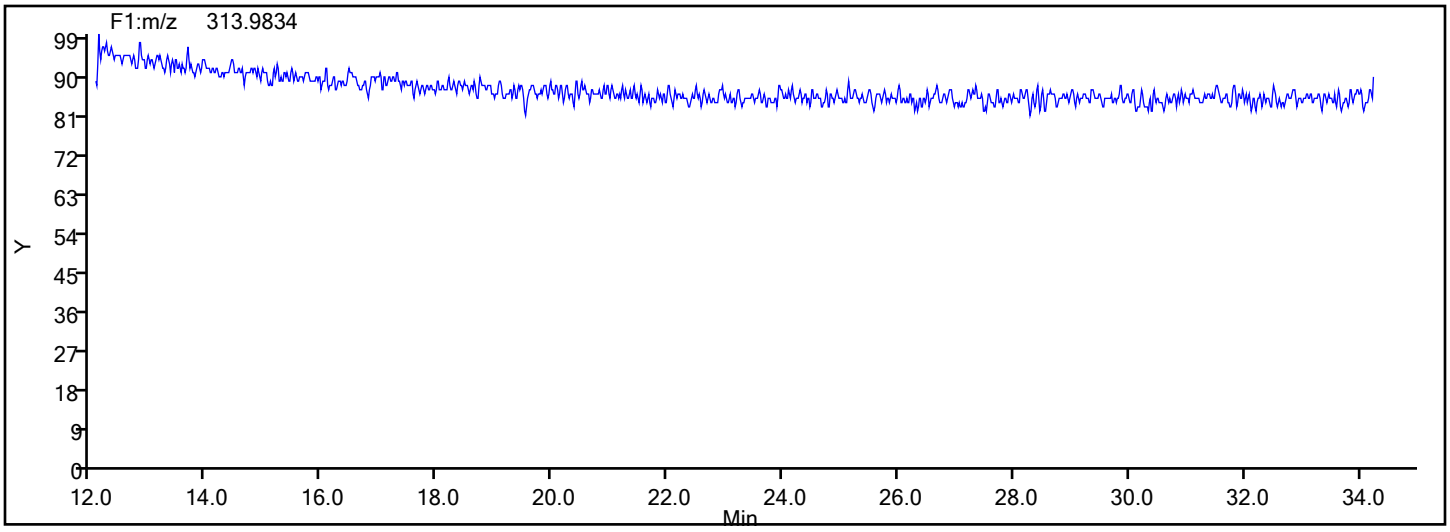
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

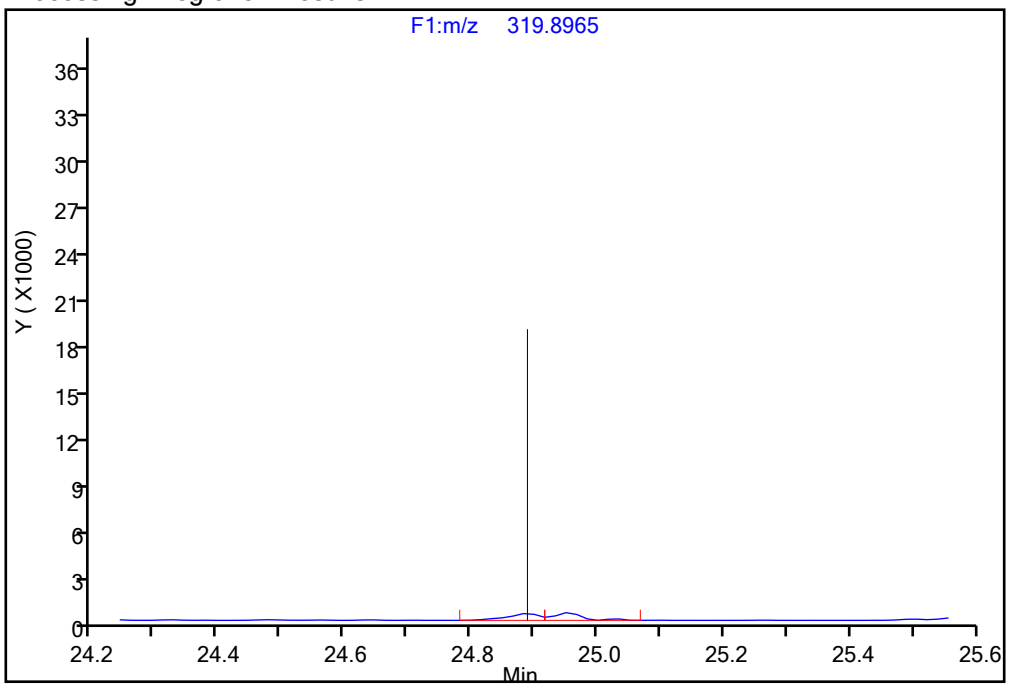
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

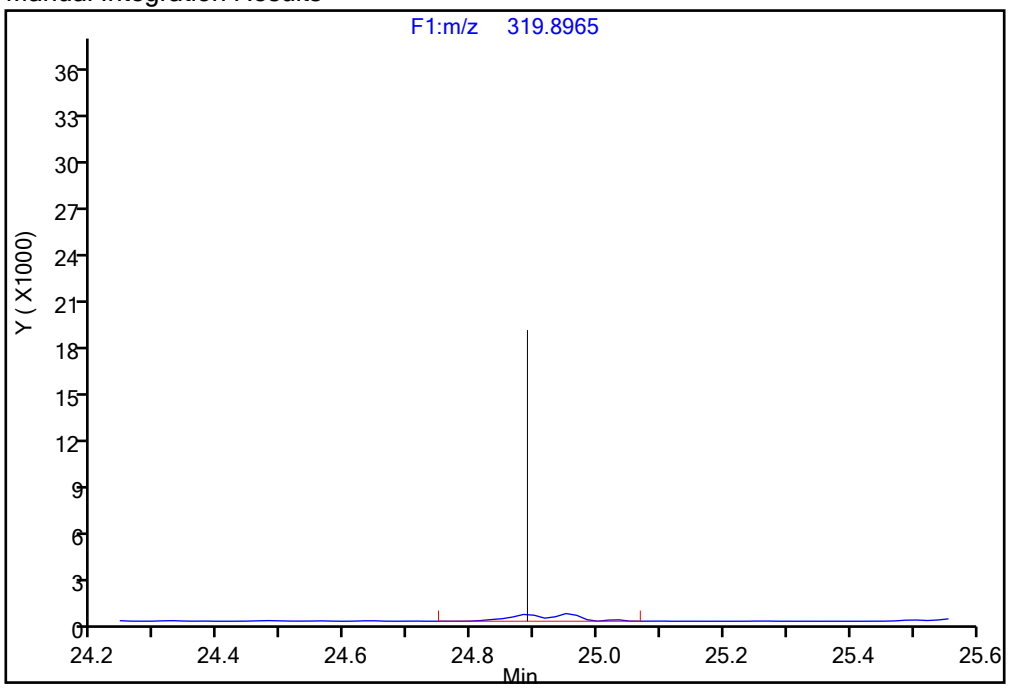
Processing Integration Results

RT = 24.950 Area = 1547



Manual Integration Results

RT = 24.950 Area = 3076 M



Reviewer: davidsonm, 17-Dec-2019 10:16:24

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

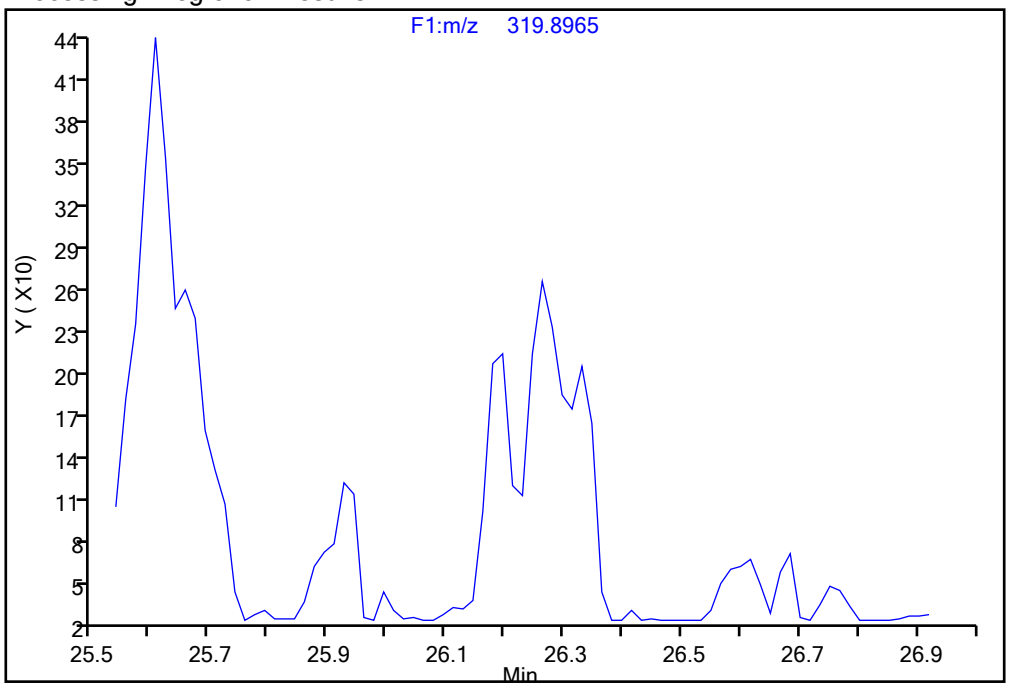
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

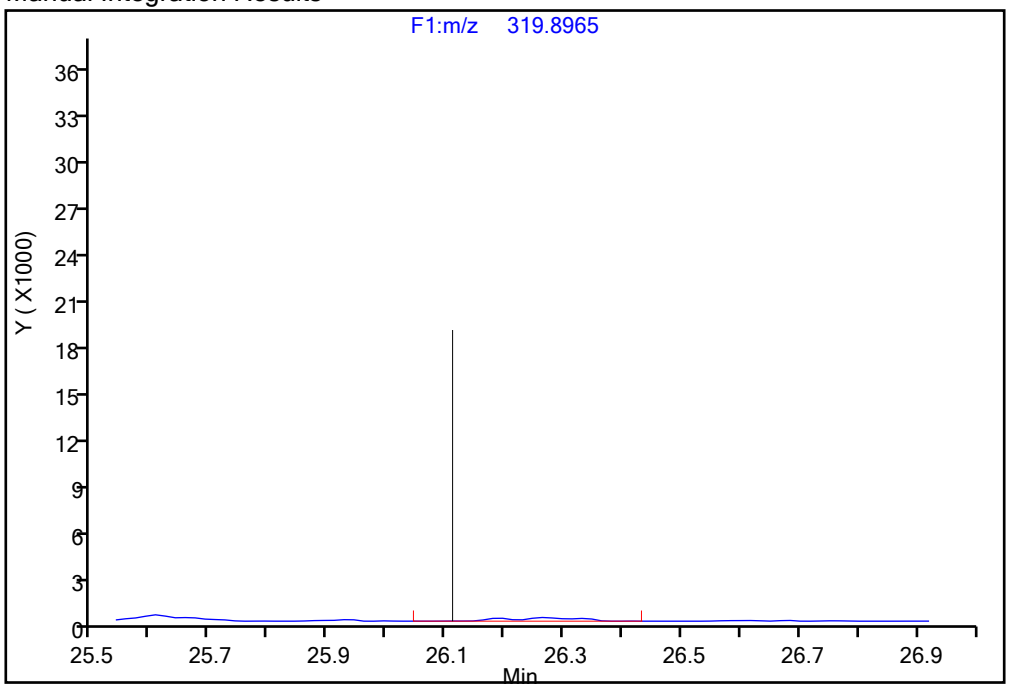
Not Detected
RT: 24.89- 34.08

Processing Integration Results



Manual Integration Results

RT = 26.263 Area = 1947 M



Reviewer: davidsonm, 17-Dec-2019 10:16:24
Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

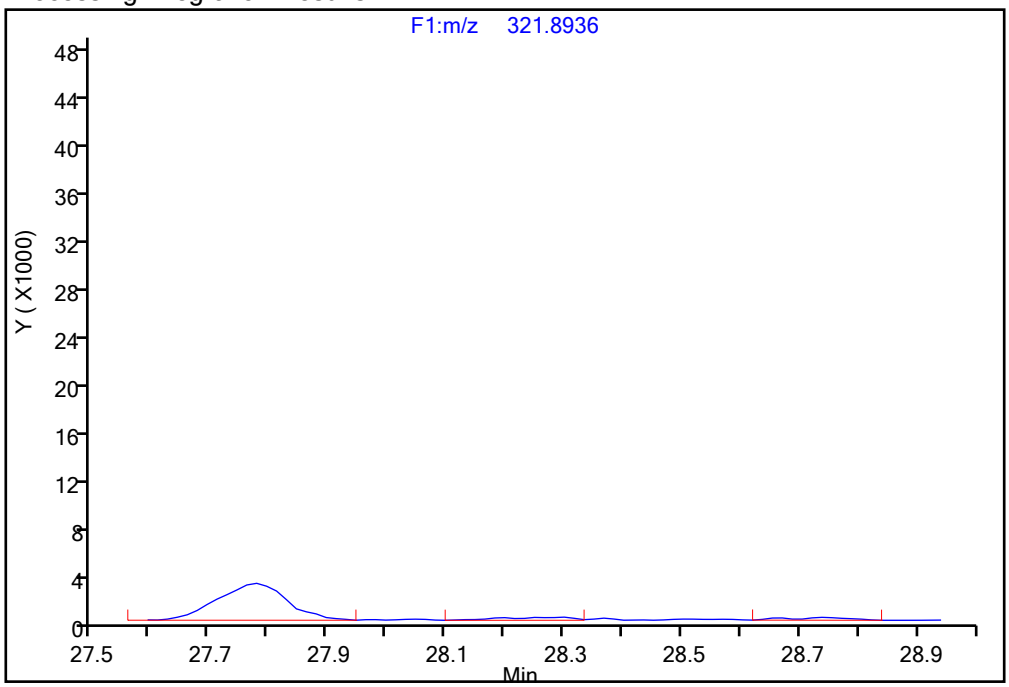
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

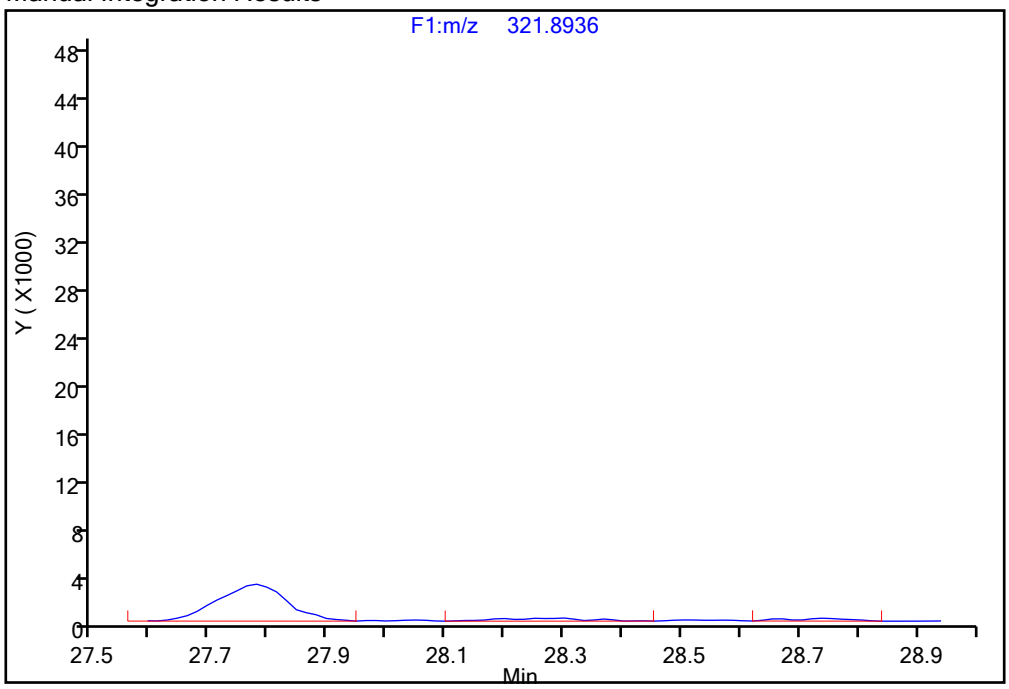
Processing Integration Results

RT = 28.301 Area = 2102



Manual Integration Results

RT = 28.301 Area = 2532 M



Reviewer: davidsonm, 17-Dec-2019 10:16:12

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

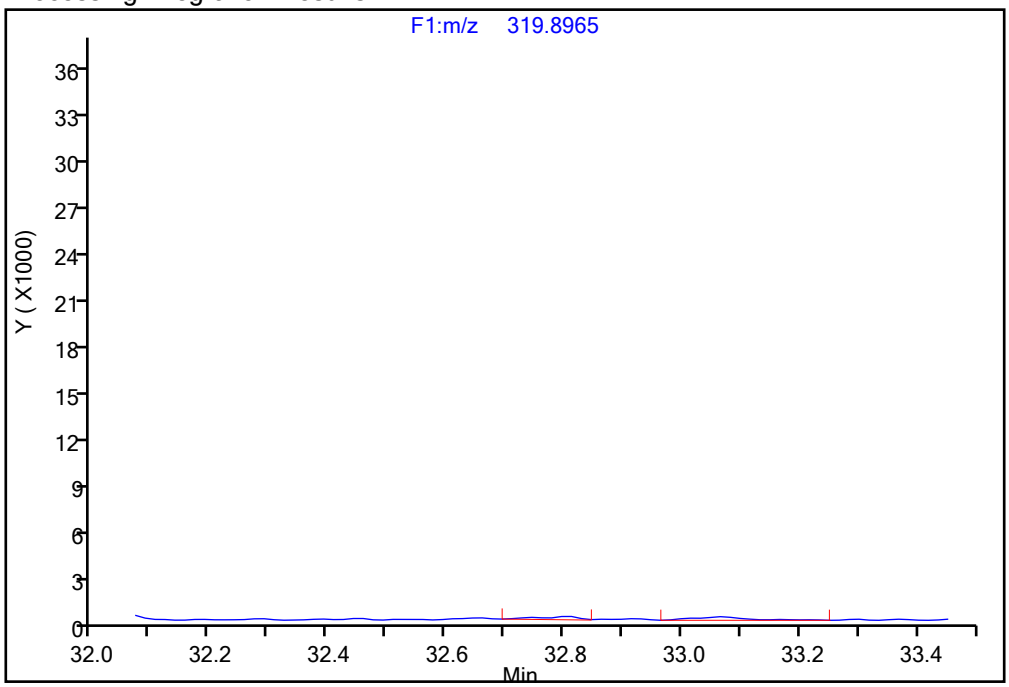
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

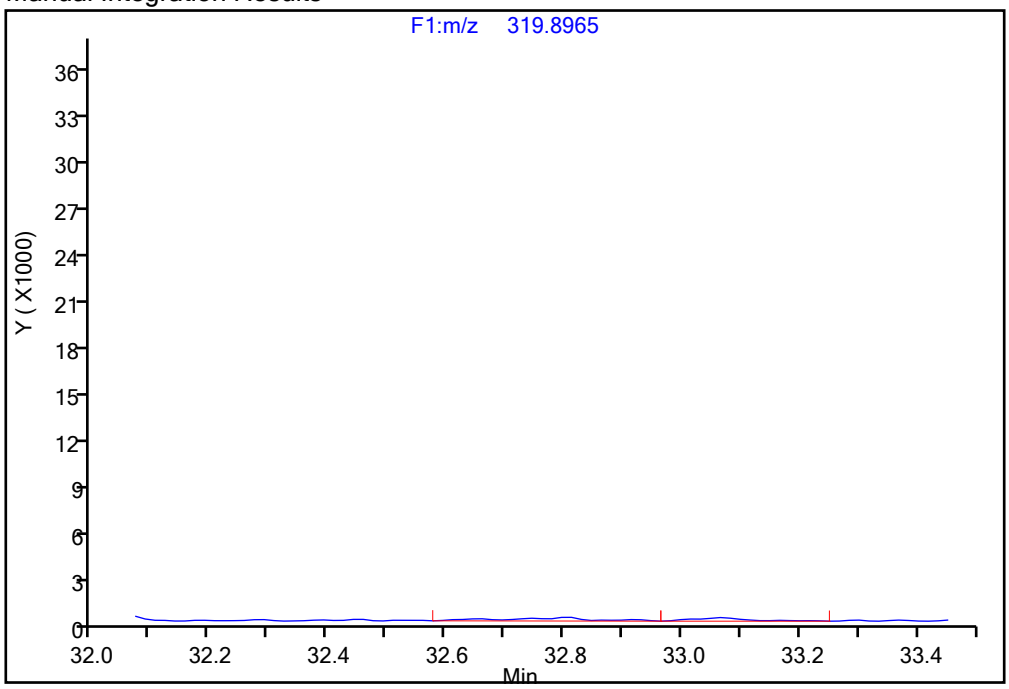
Processing Integration Results

RT = 32.813 Area = 1024



Manual Integration Results

RT = 32.813 Area = 2332 M



Reviewer: davidsonm, 17-Dec-2019 10:16:24

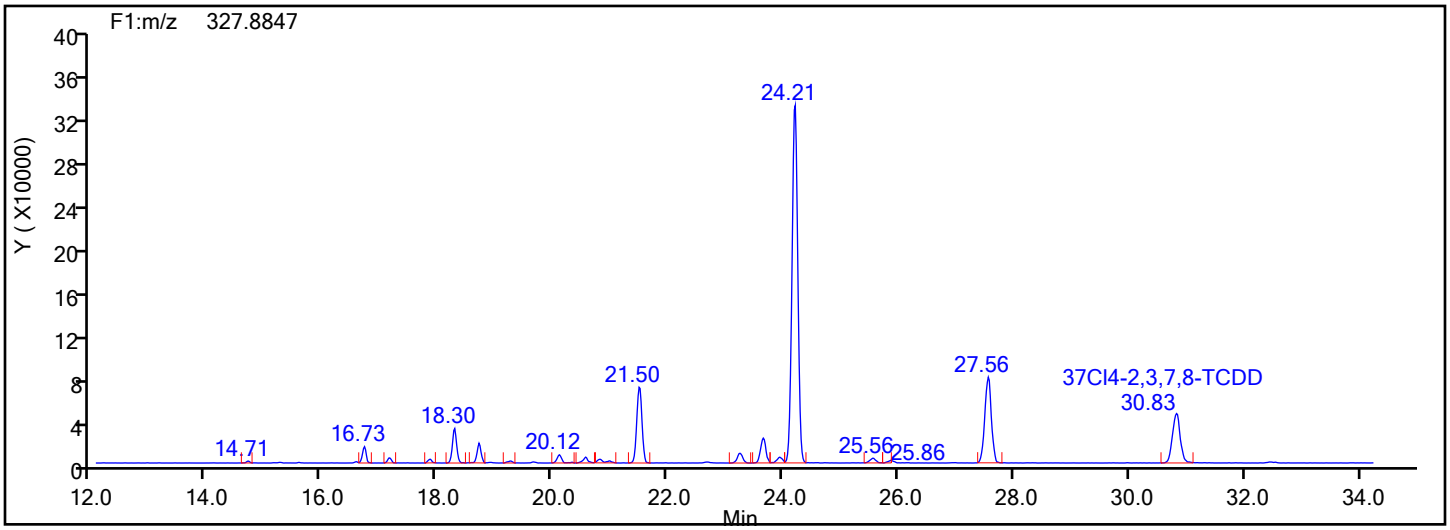
Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

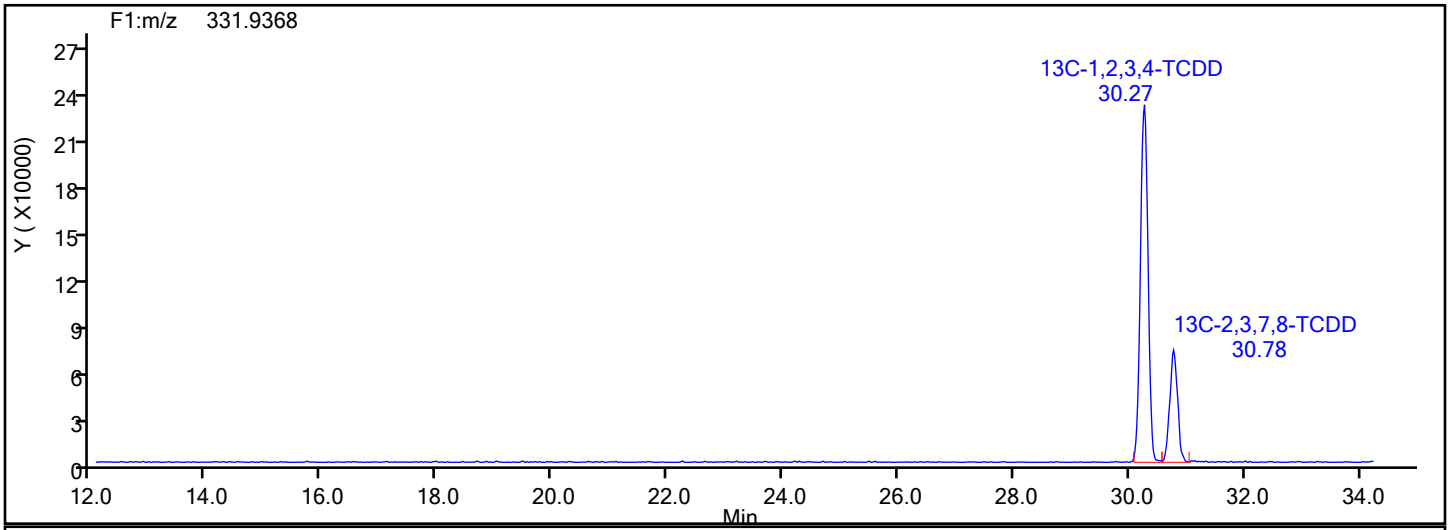
Eurofins TestAmerica, Knoxville

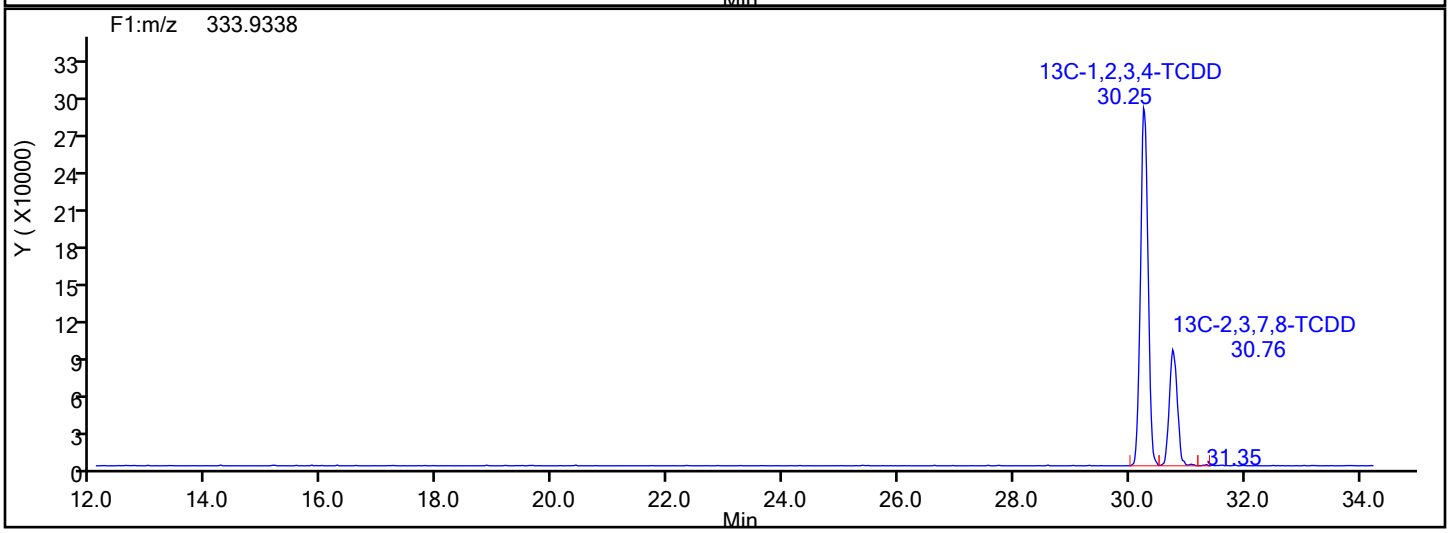
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



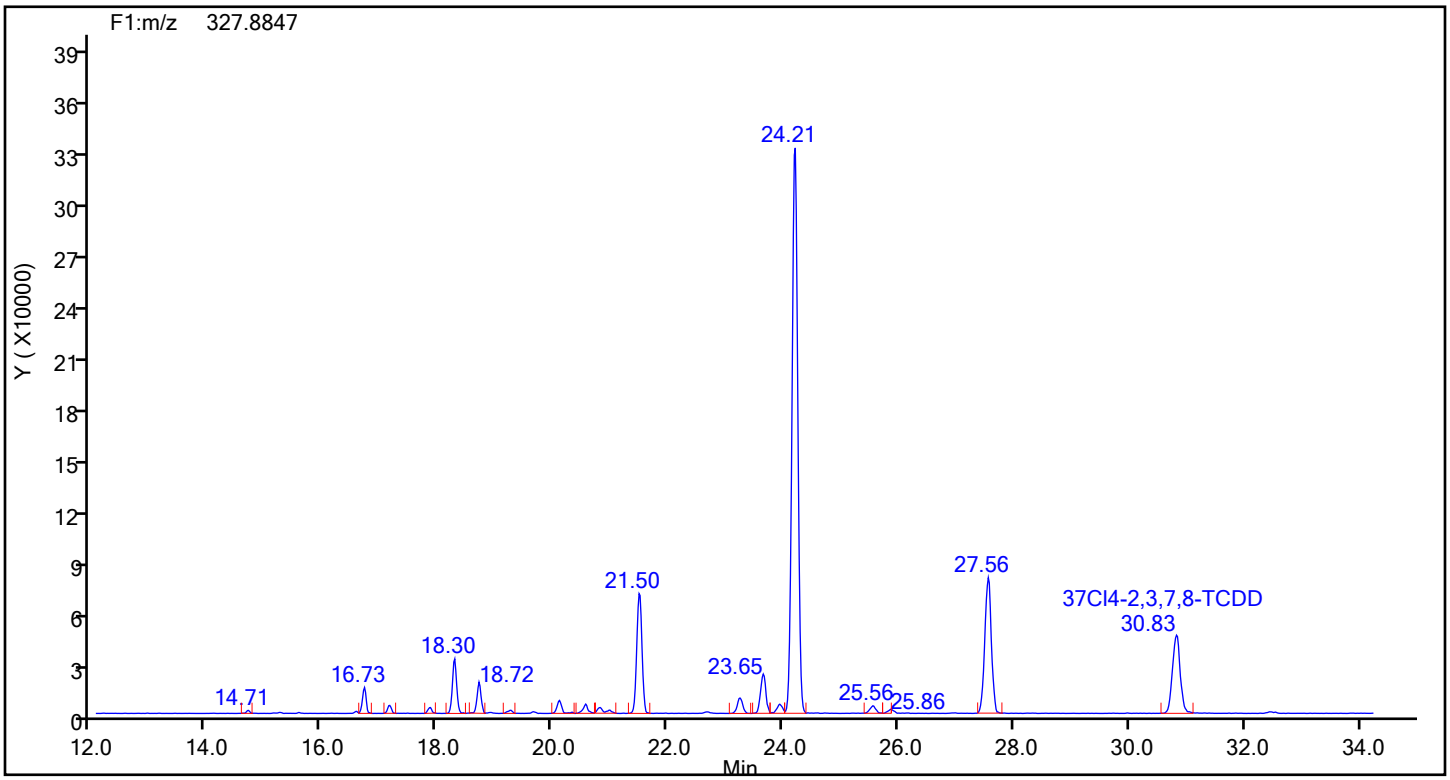


Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

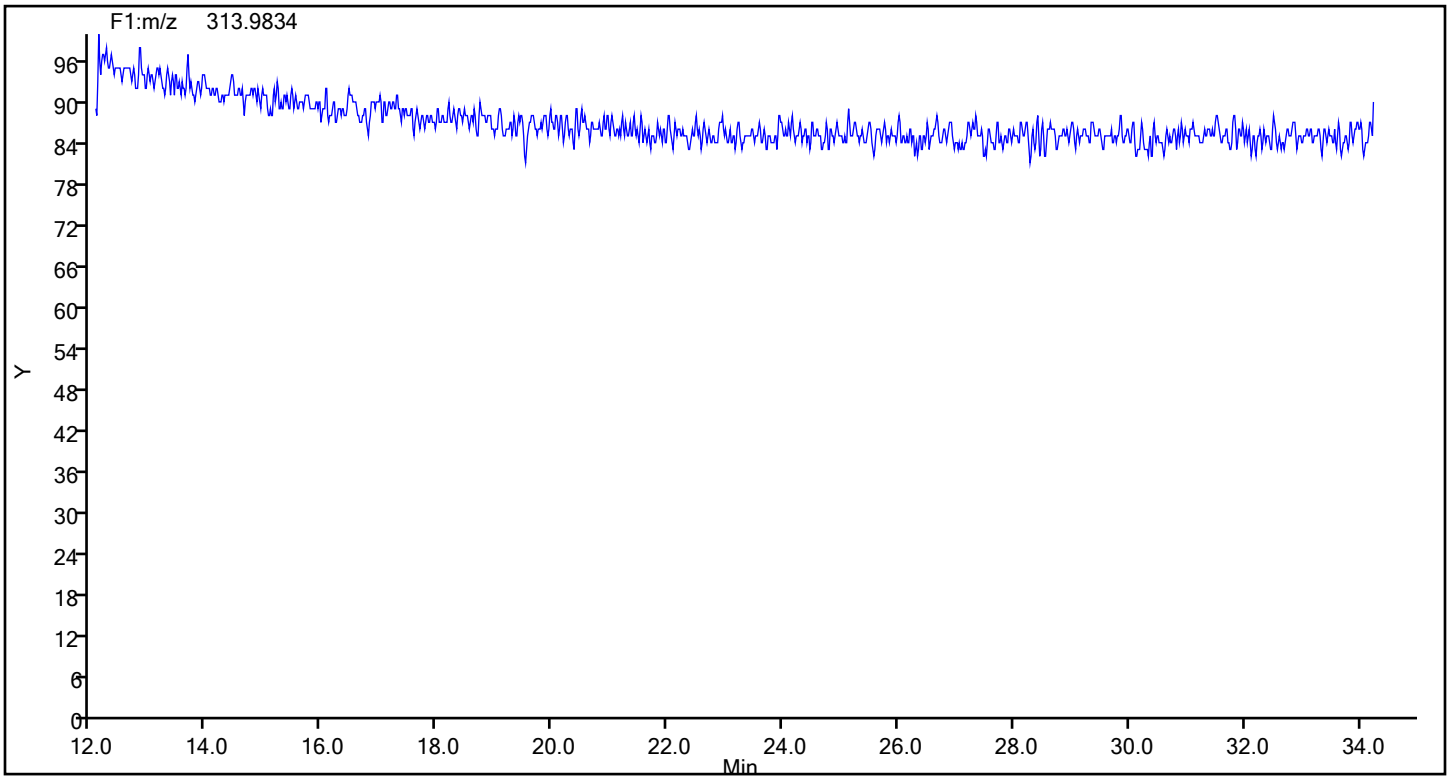
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

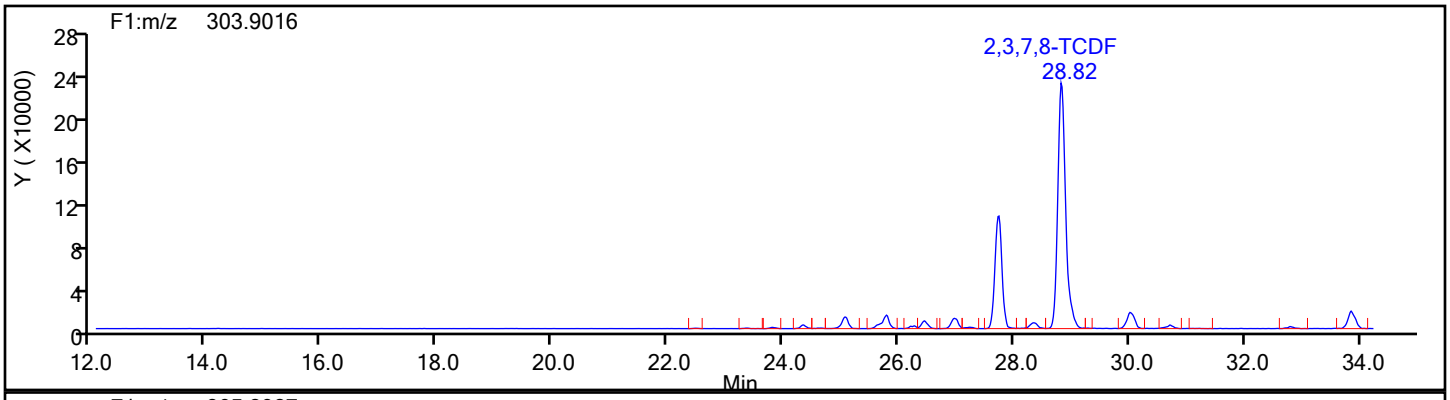


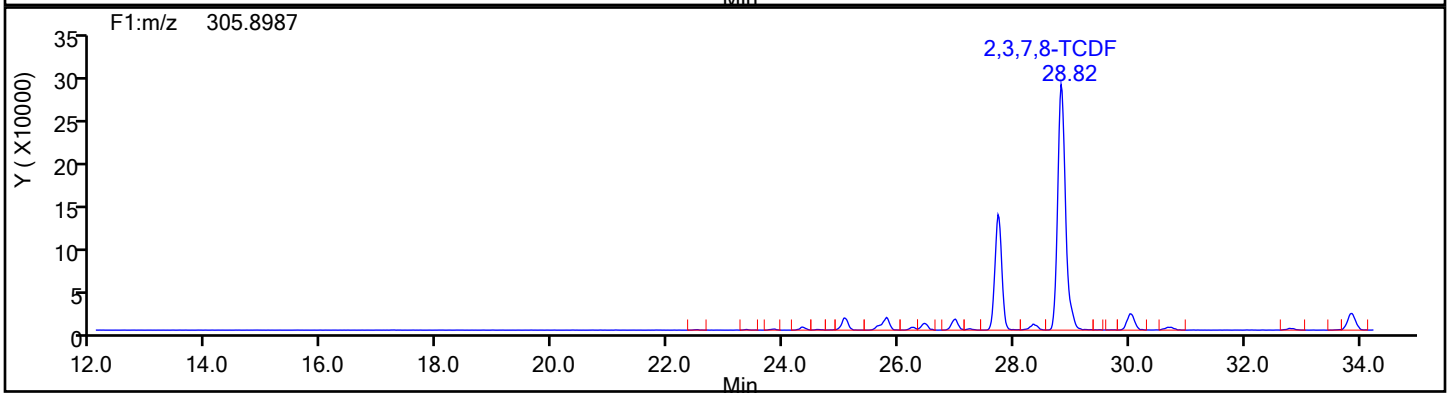
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

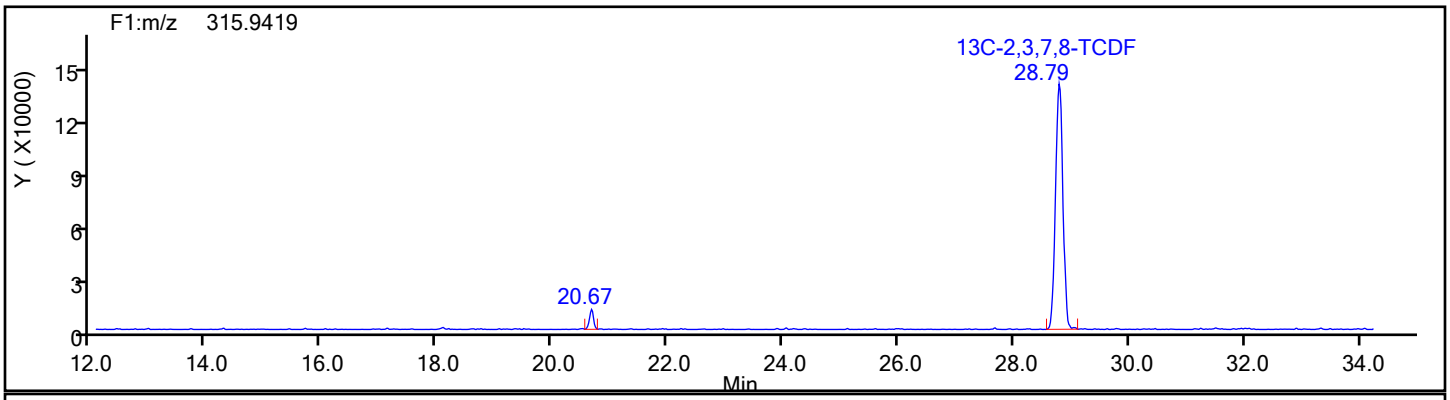
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

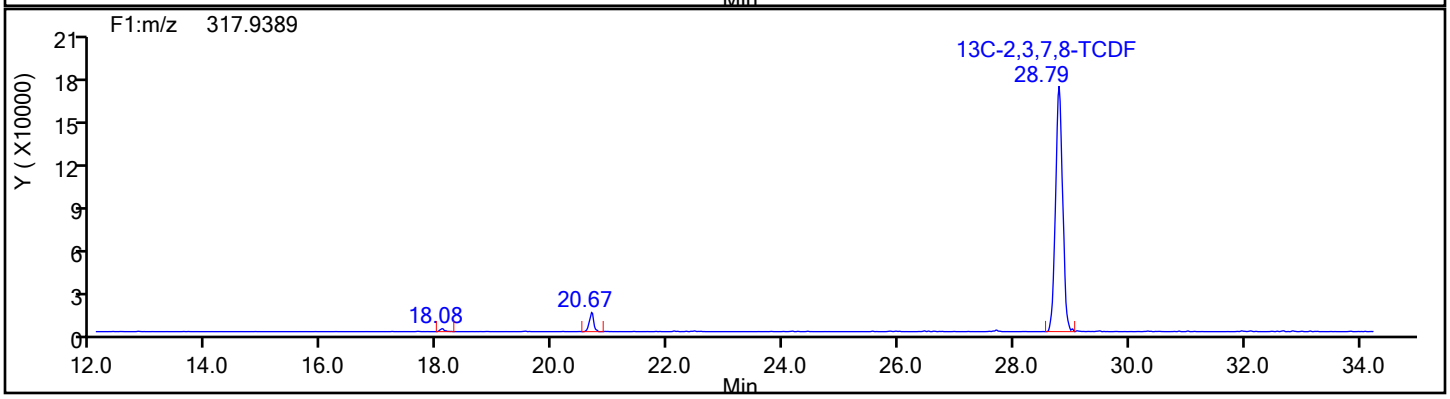
TCDF





TCDF Standards



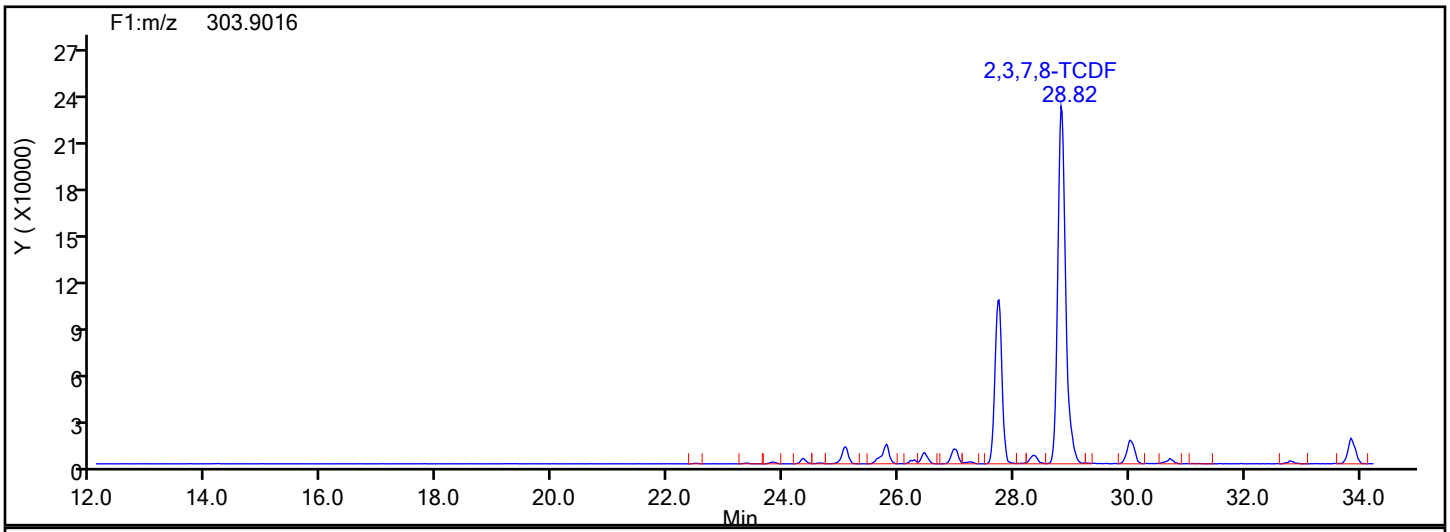


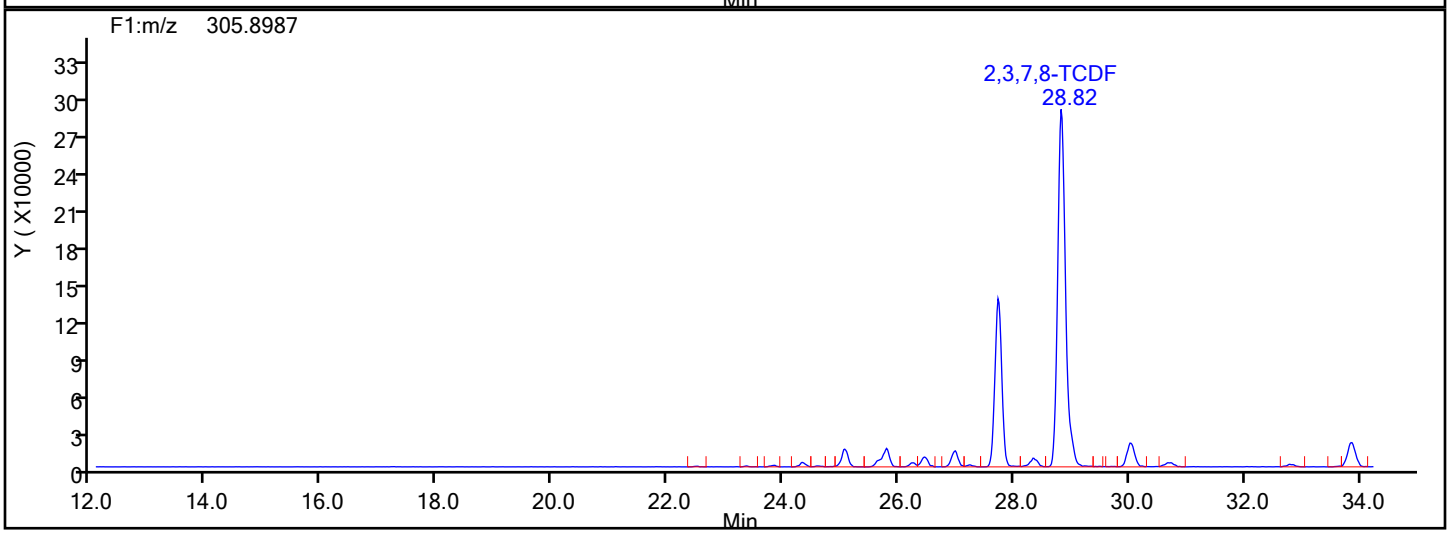
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

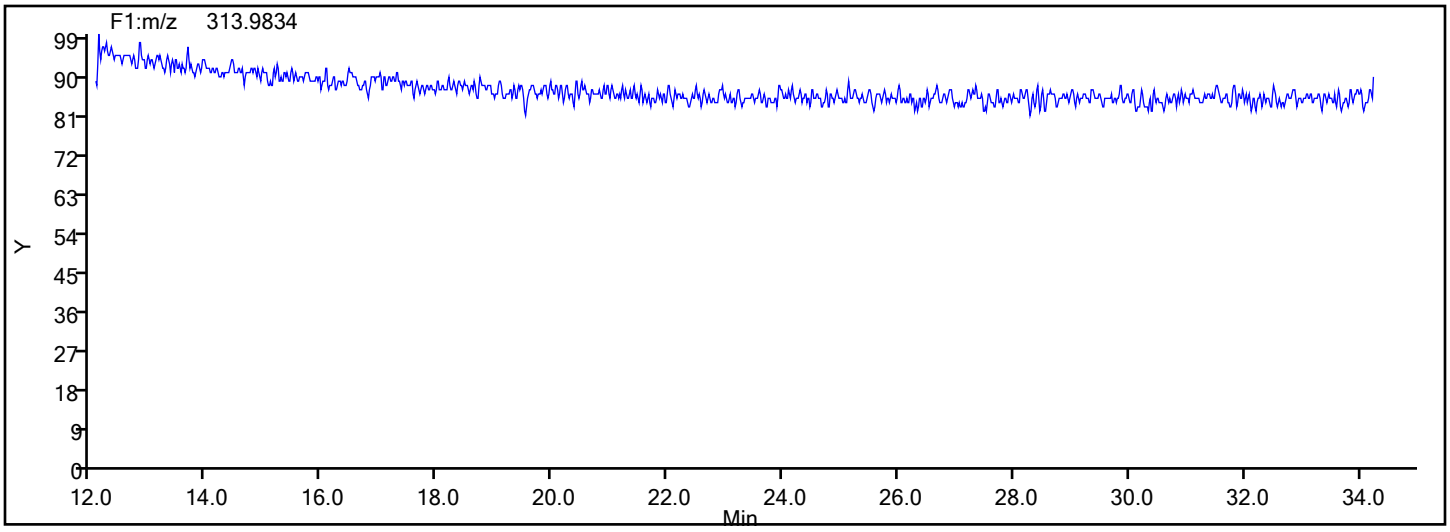
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

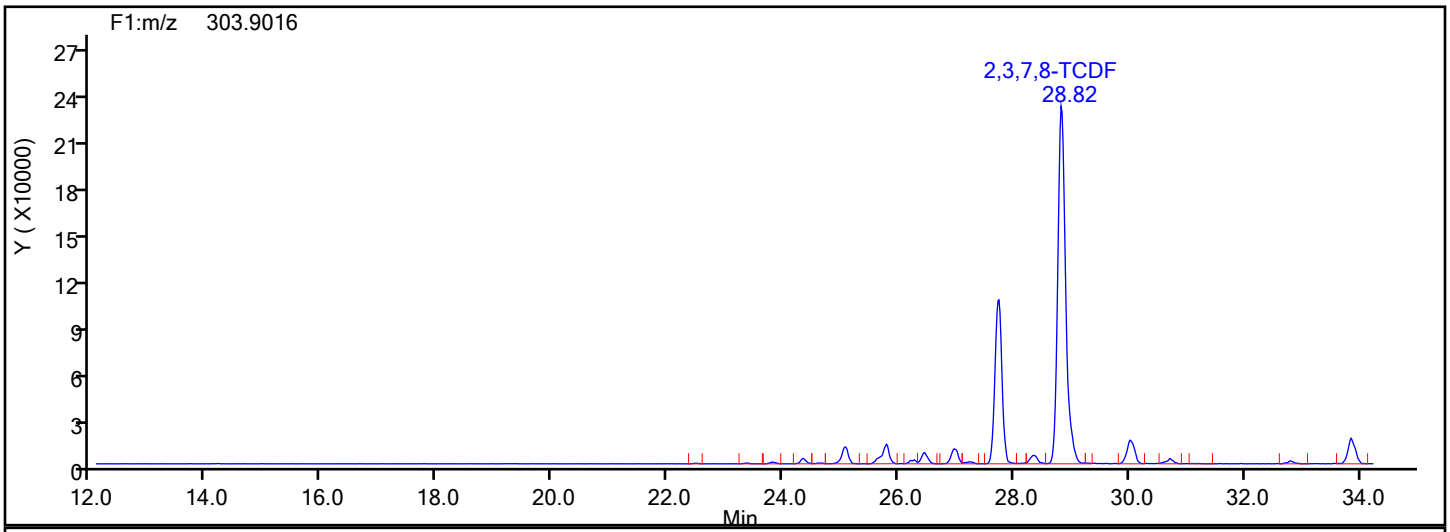


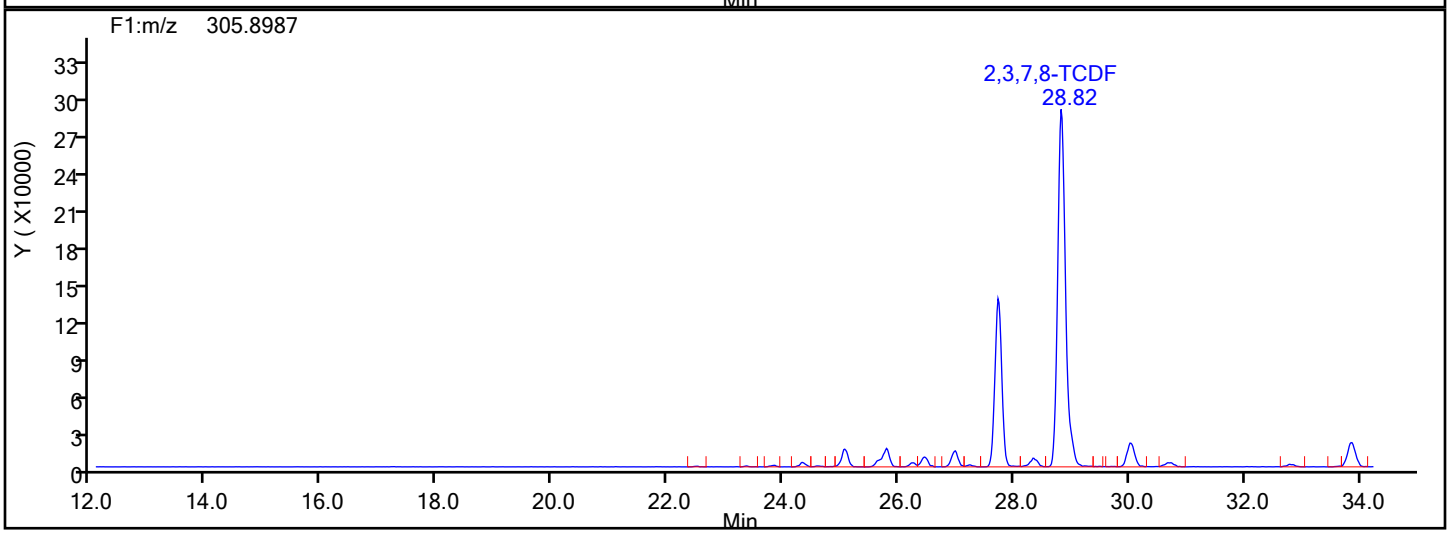
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

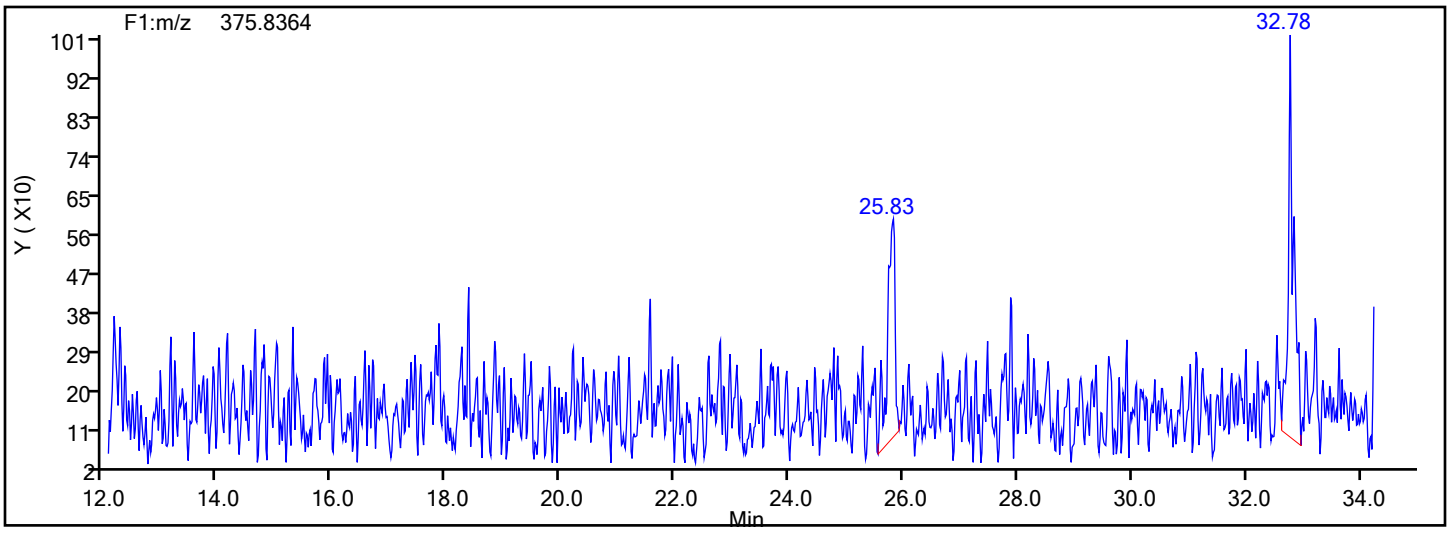
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

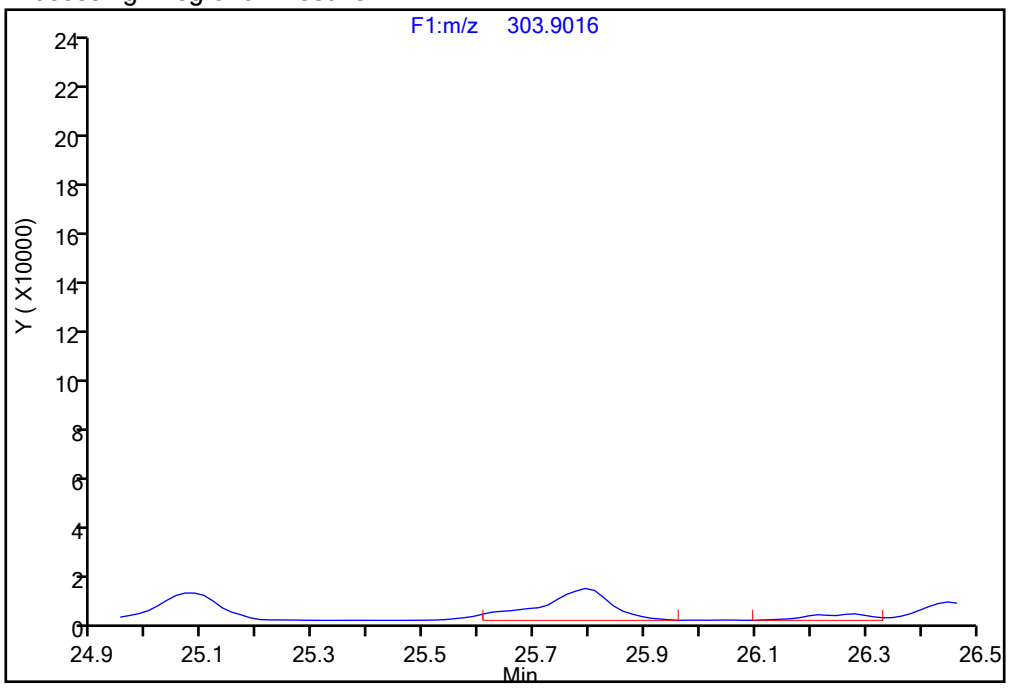
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

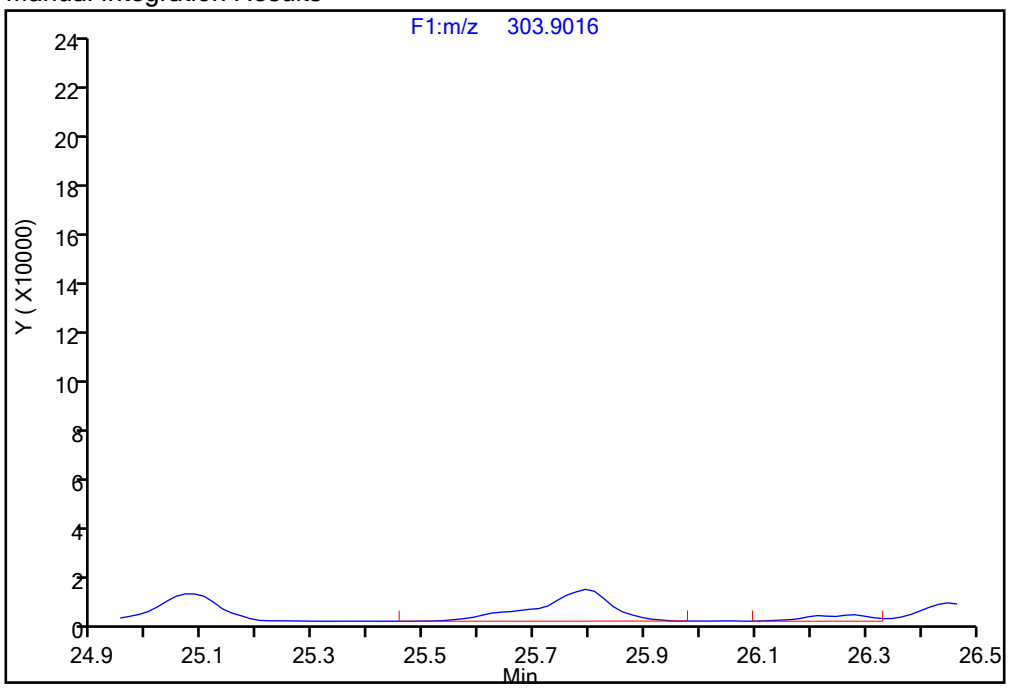
Processing Integration Results

RT = 25.792 Area = 112810



Manual Integration Results

RT = 25.792 Area = 117289 M



Reviewer: davidsonm, 17-Dec-2019 10:17:20

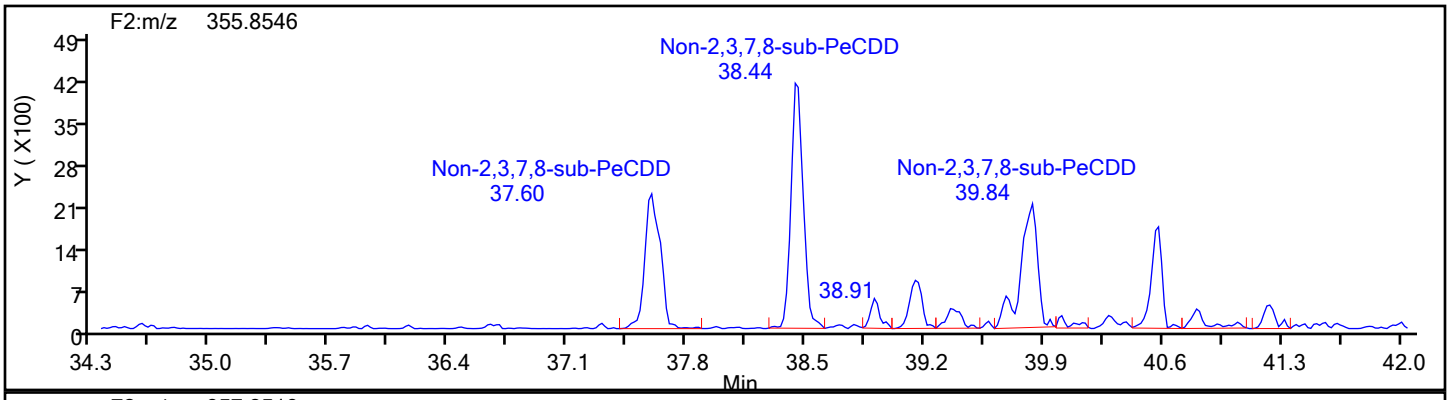
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

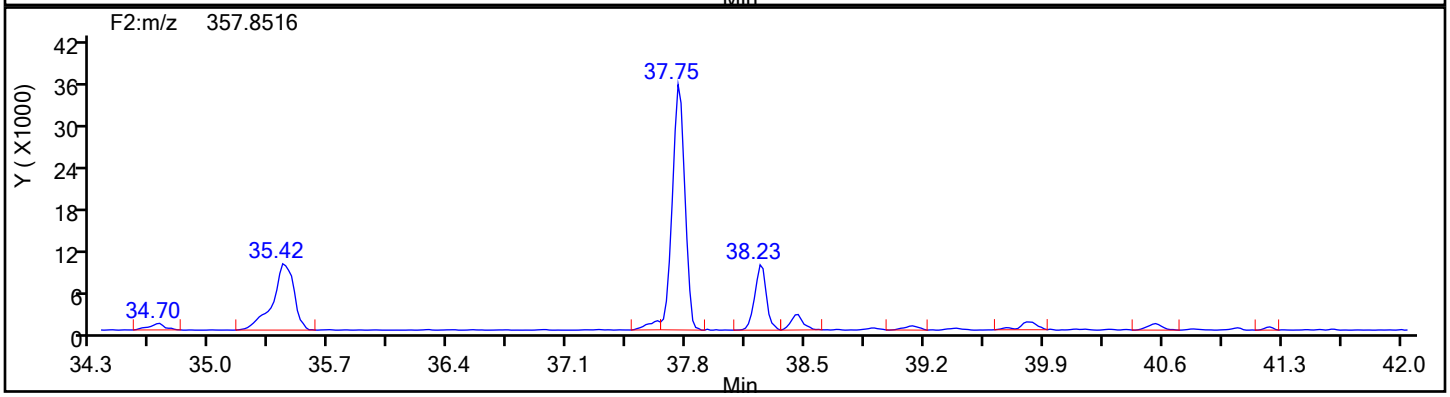
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

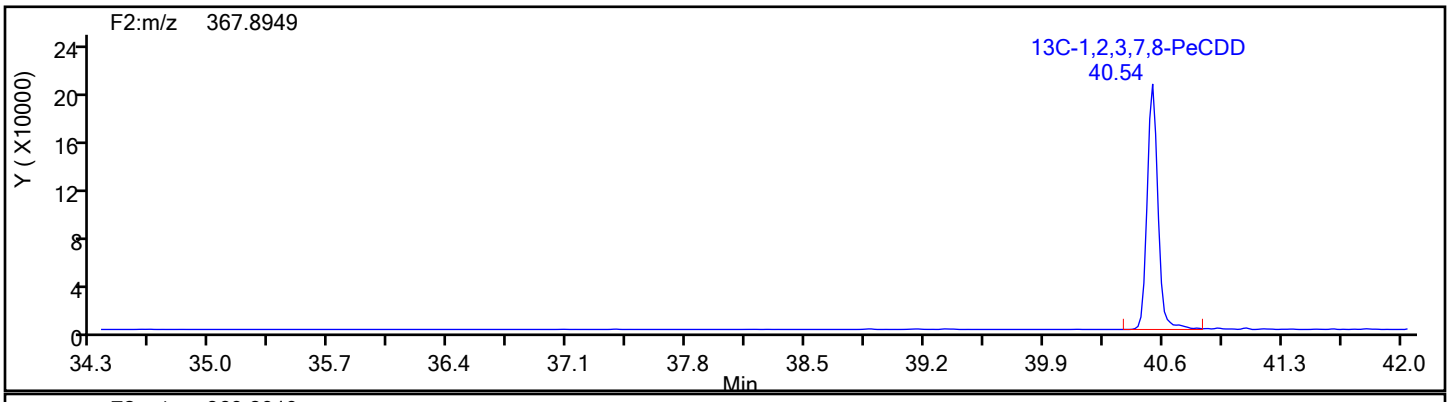
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

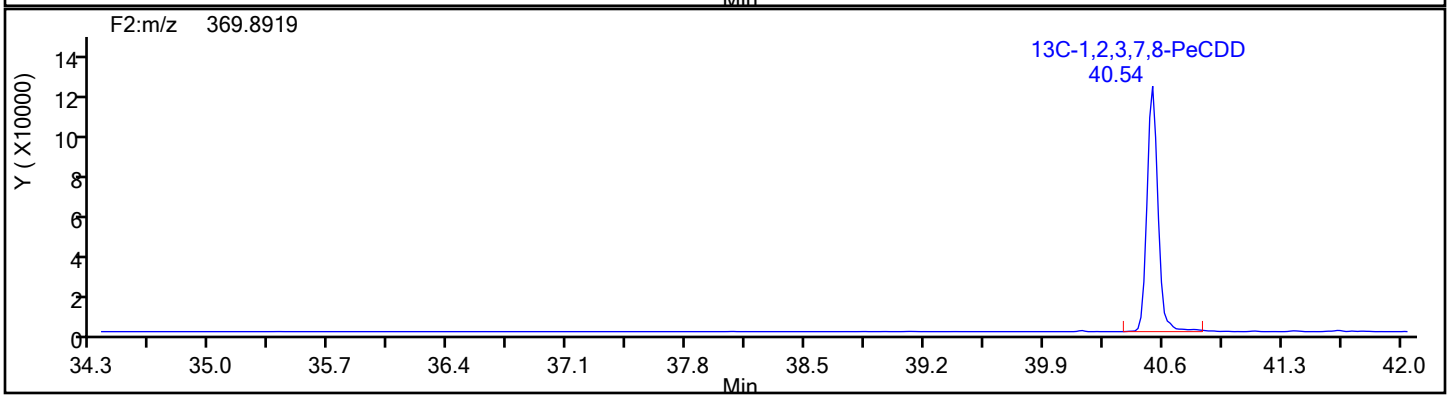
PeCDD





PeCDD Standards



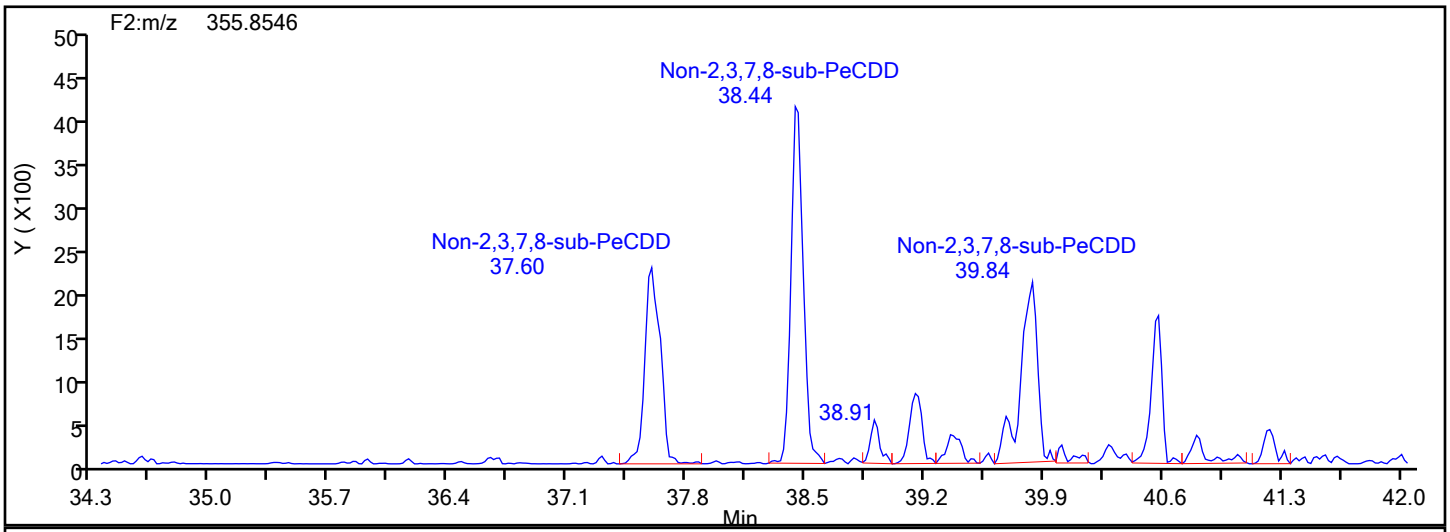


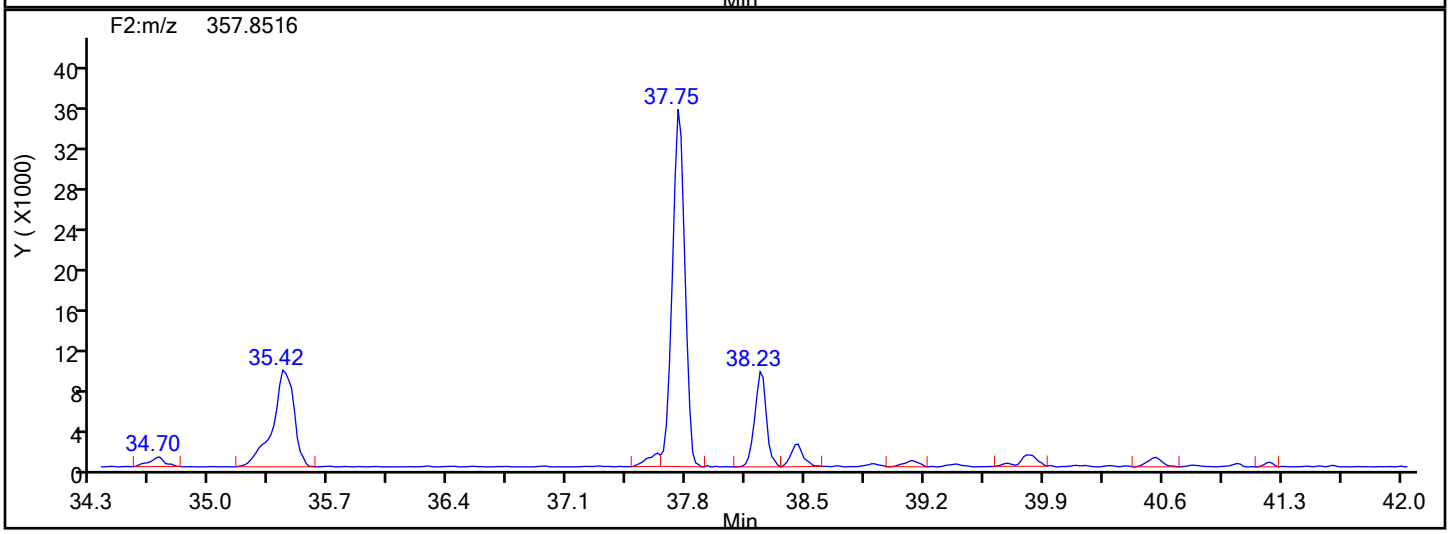
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

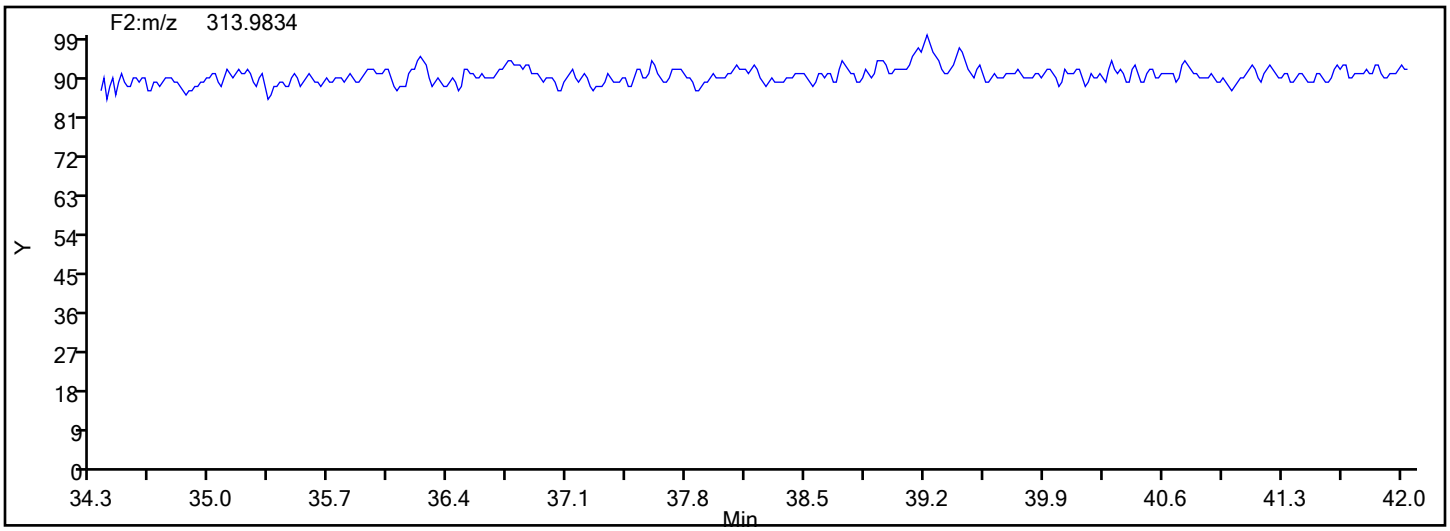
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

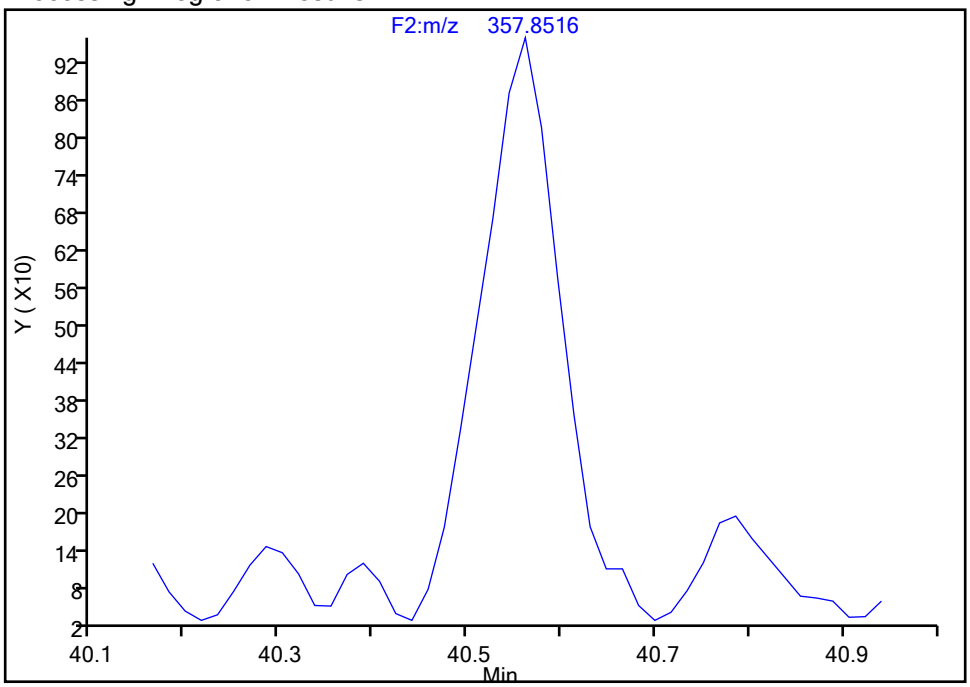
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

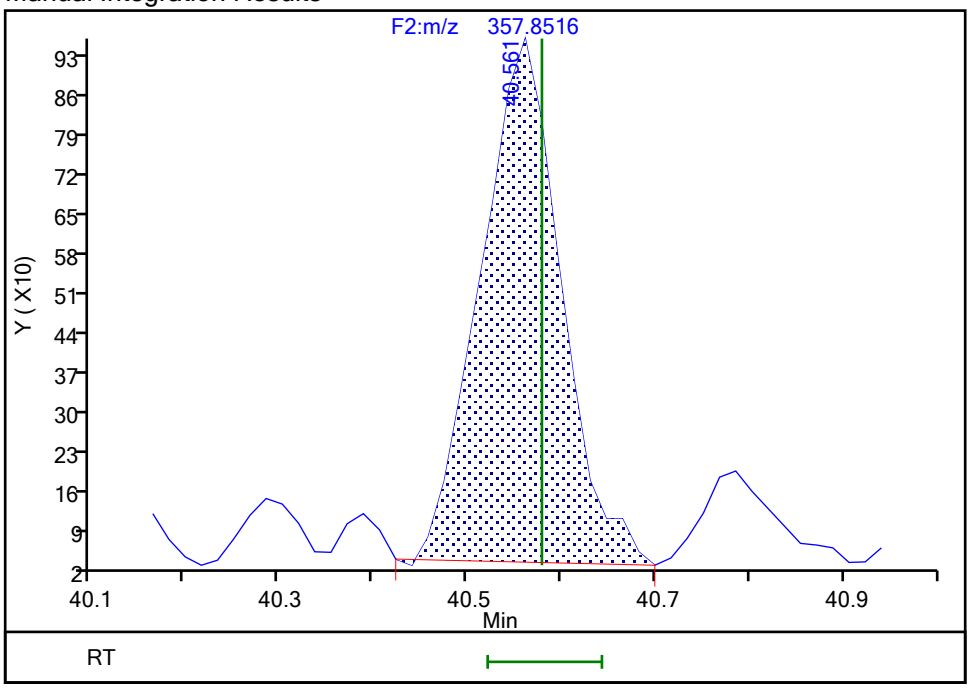
Not Detected
Expected RT: 40.58

Processing Integration Results



Manual Integration Results

RT: 40.56
Area: 5546
Amount: 0.433702
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:17:50
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

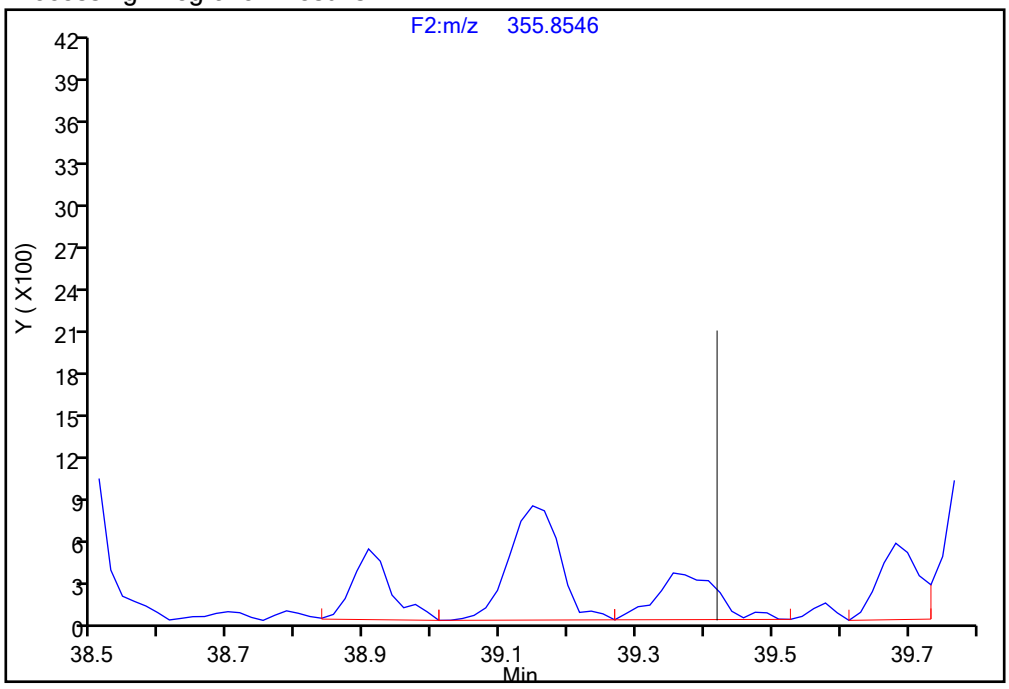
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

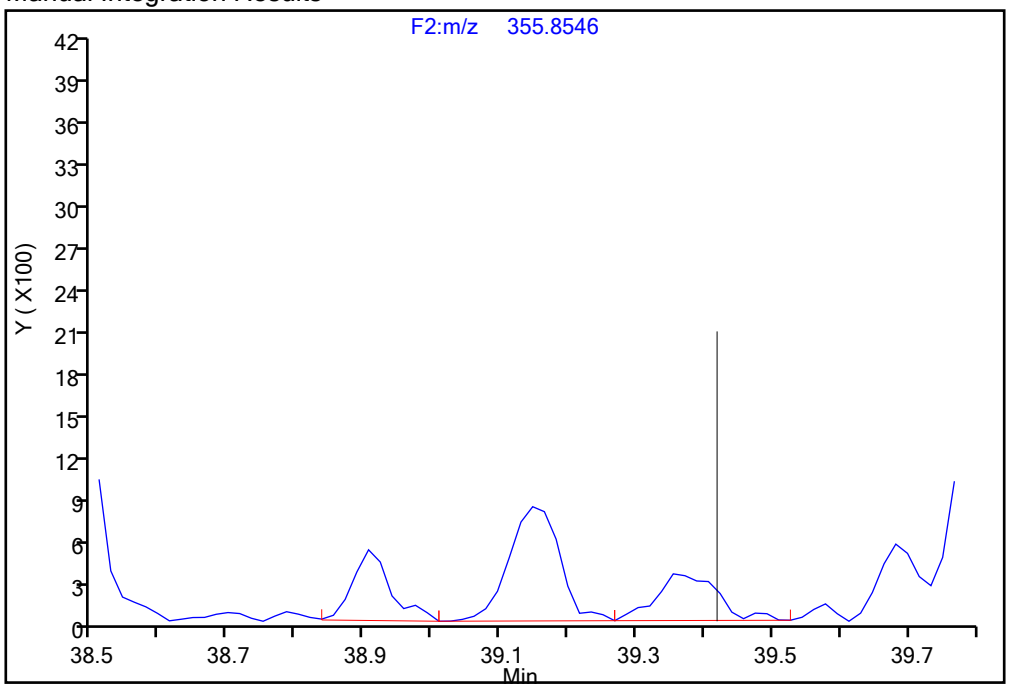
Processing Integration Results

RT = 39.147 Area = 4168



Manual Integration Results

RT = 39.147 Area = 4168



Reviewer: davidsonm, 17-Dec-2019 10:19:19

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

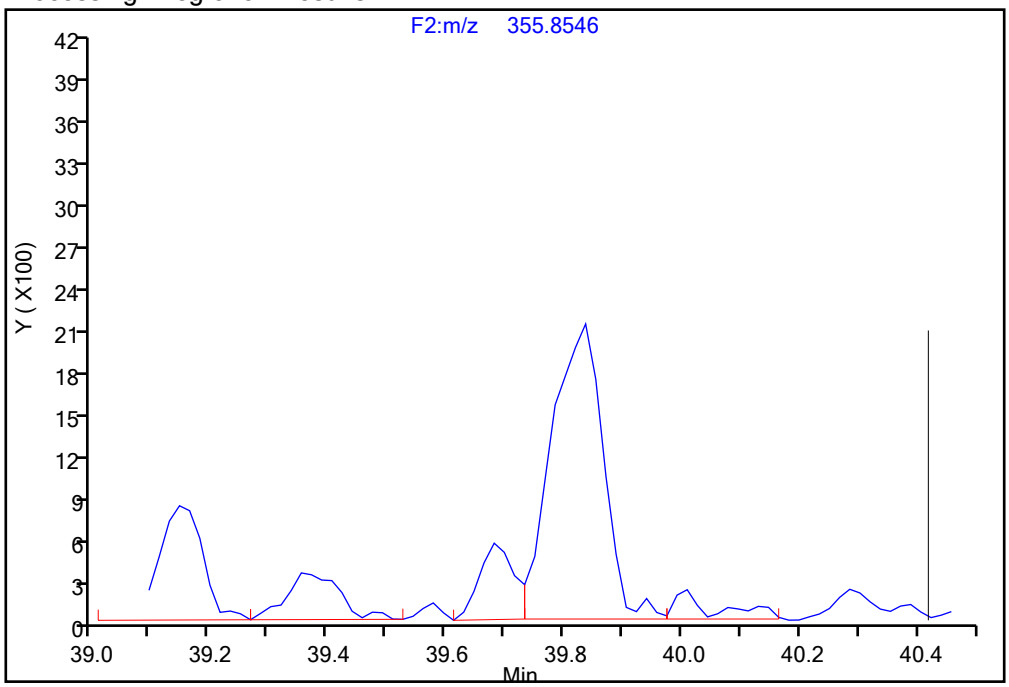
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

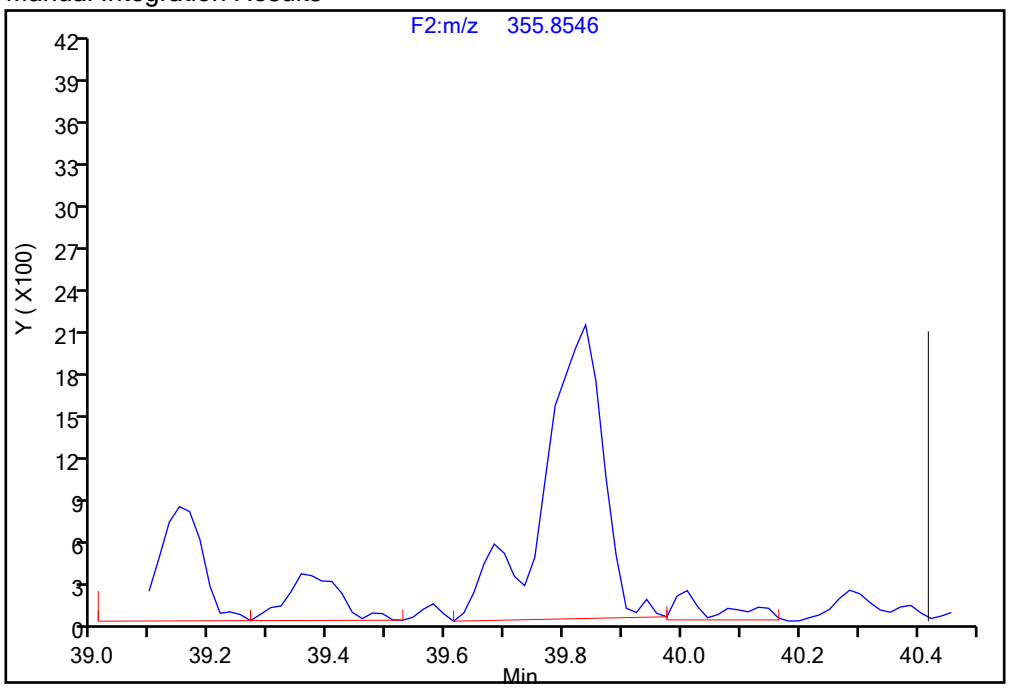
Processing Integration Results

RT = 39.837 Area = 12636



Manual Integration Results

RT = 39.837 Area = 14624 M



Reviewer: davidsonm, 17-Dec-2019 10:19:19

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

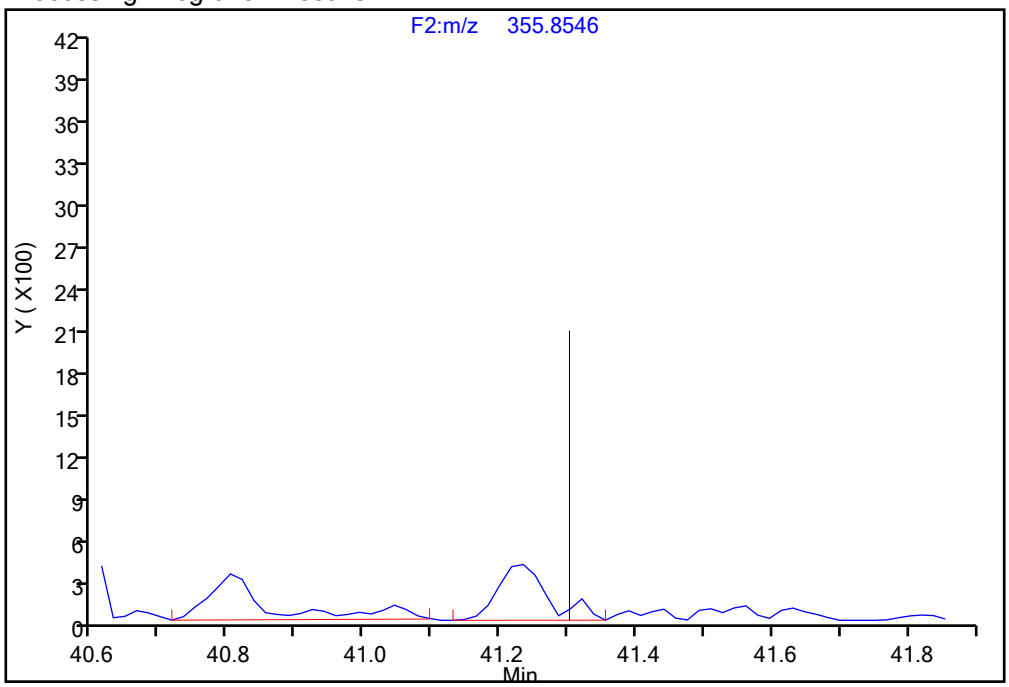
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

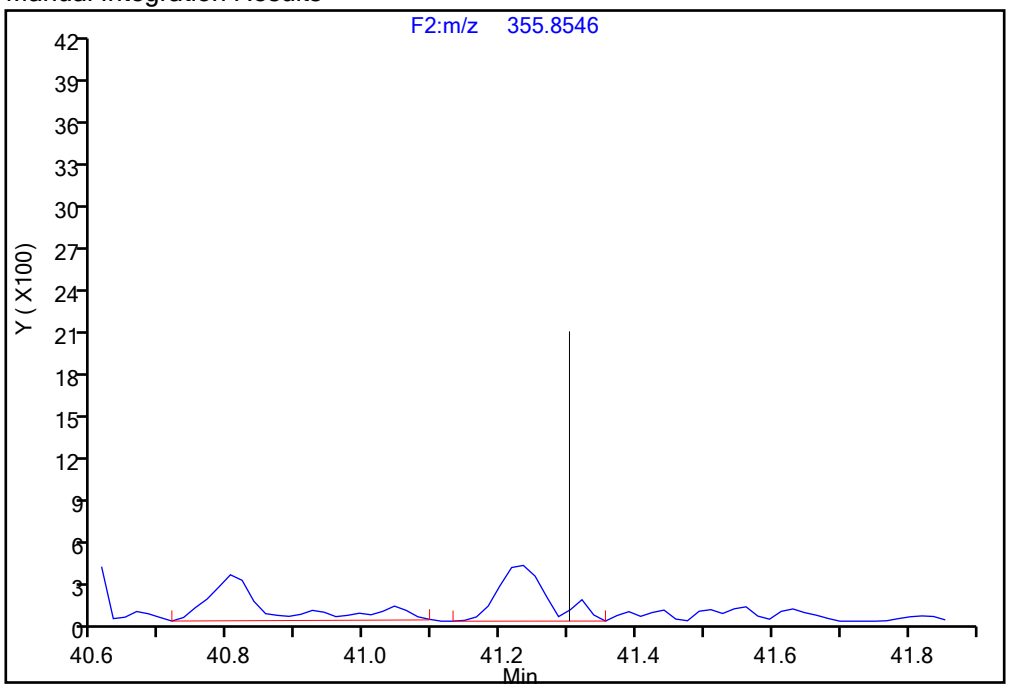
Processing Integration Results

RT = 41.234 Area = 2015



Manual Integration Results

RT = 41.234 Area = 2015



Reviewer: davidsonm, 17-Dec-2019 10:19:19

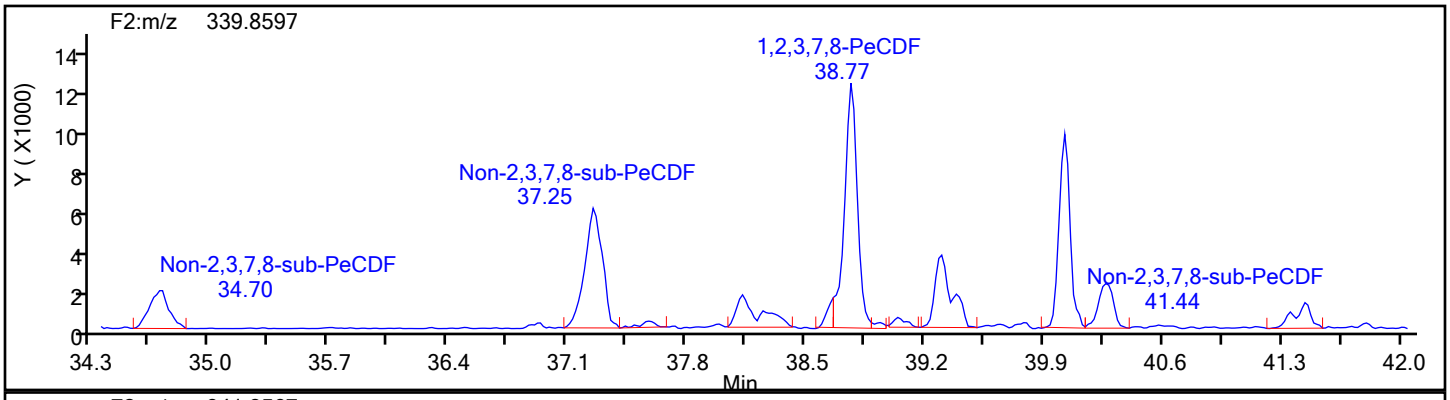
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

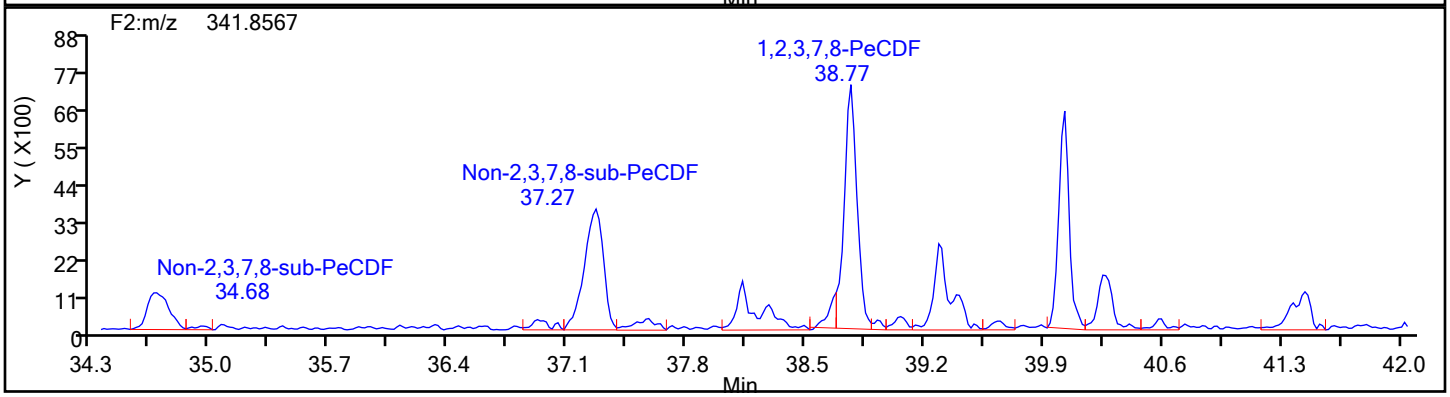
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

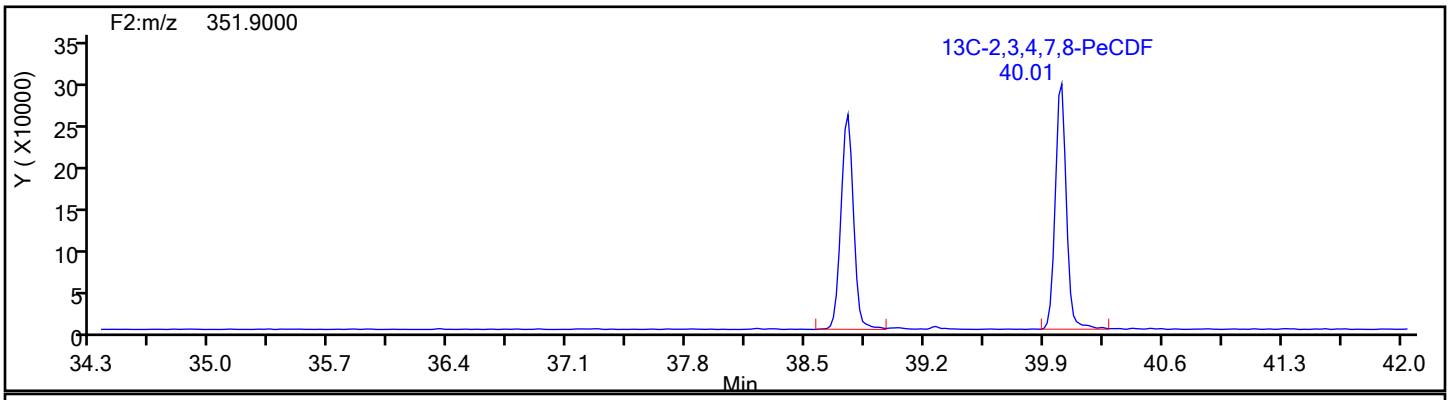
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

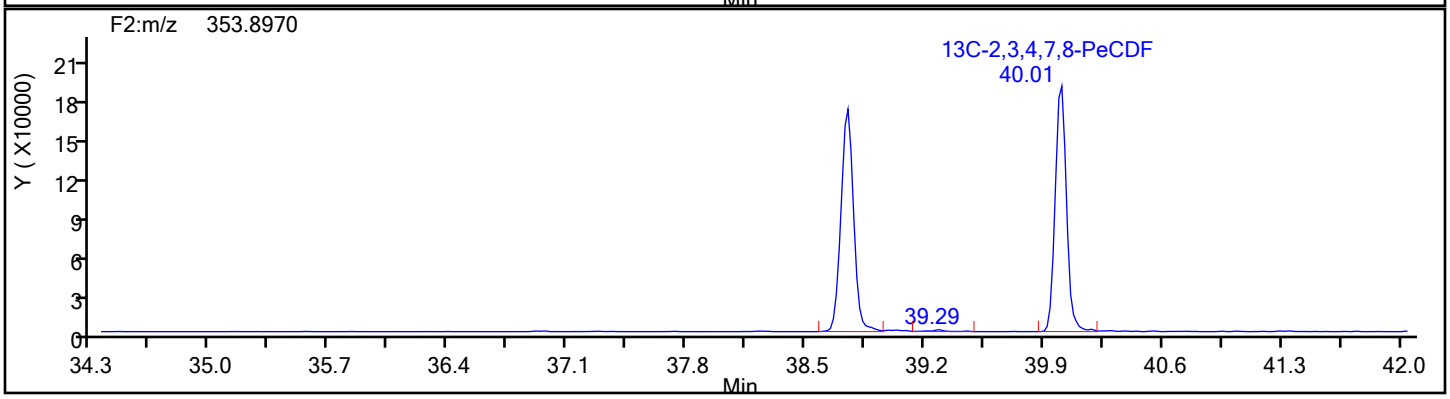
PeCDF





PeCDF Standards





Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
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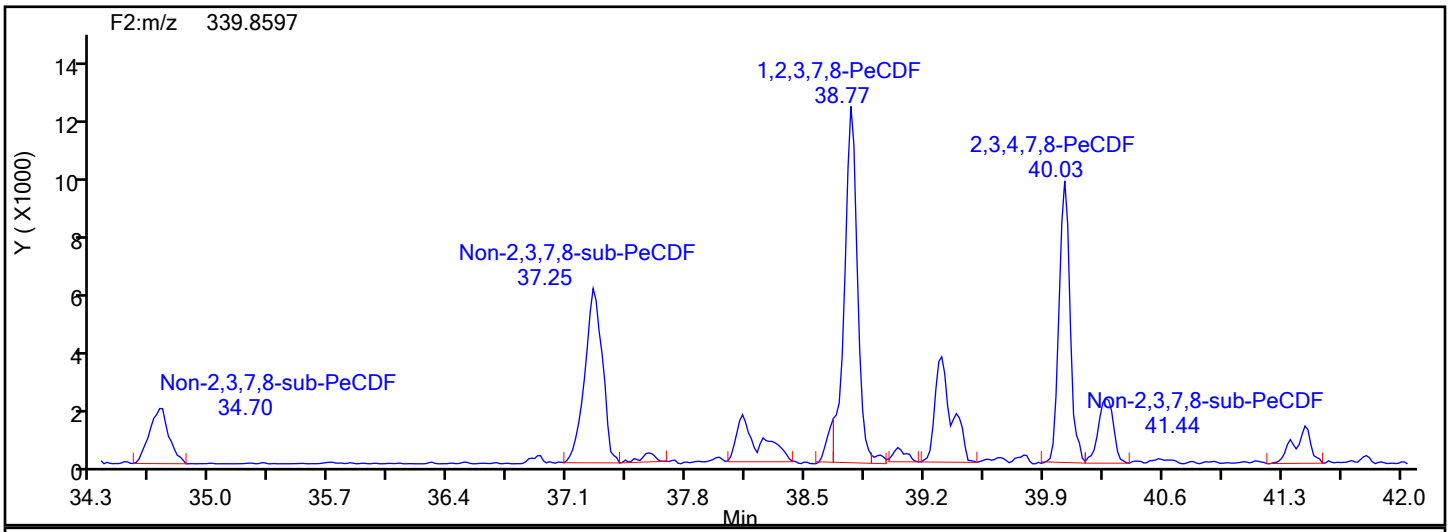
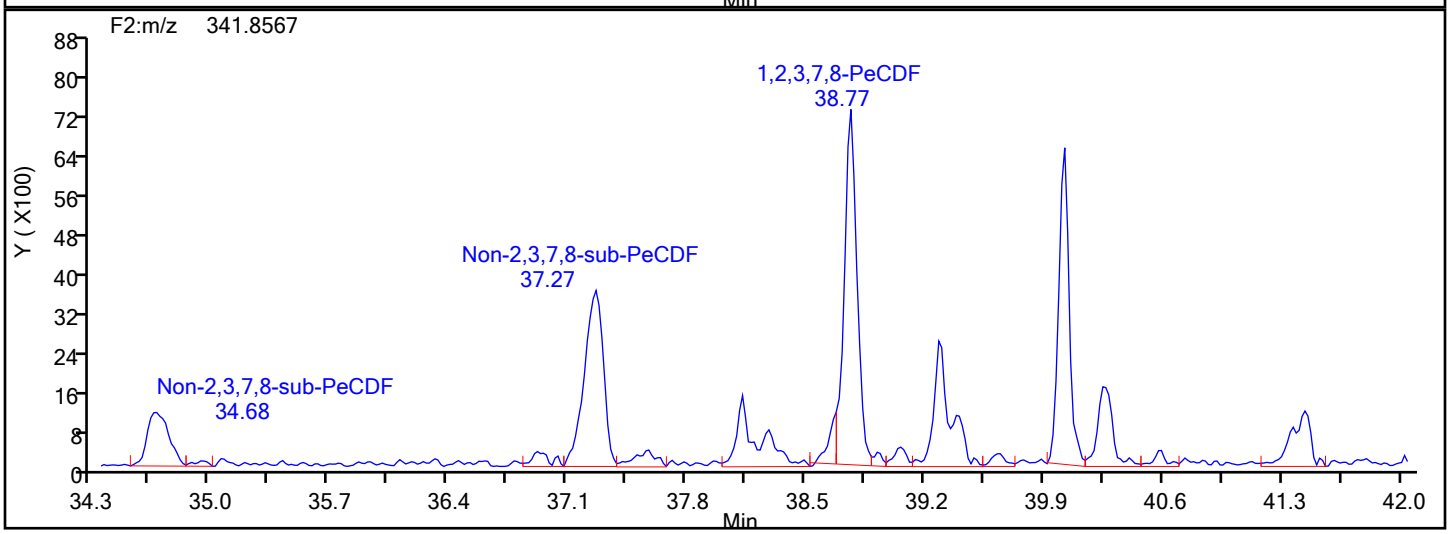
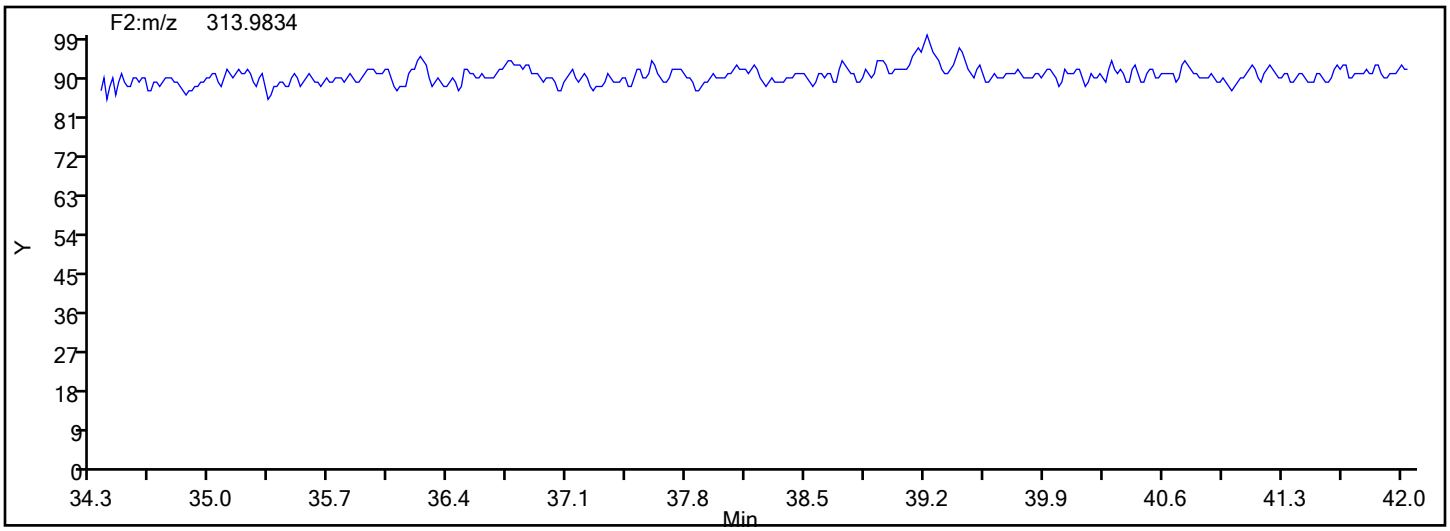
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

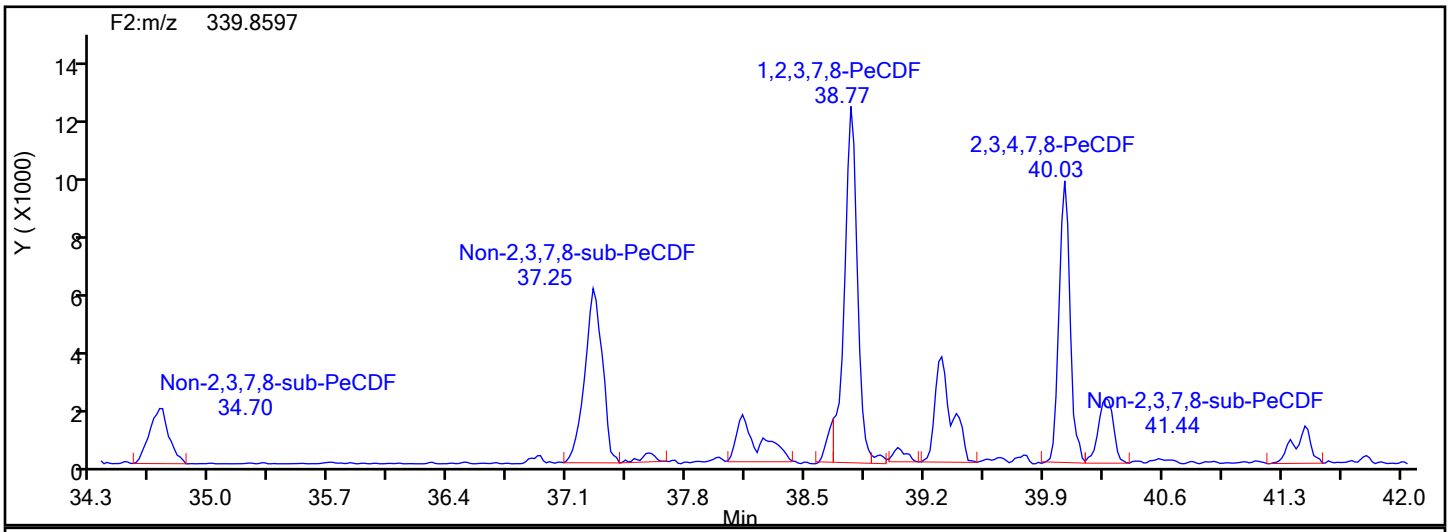


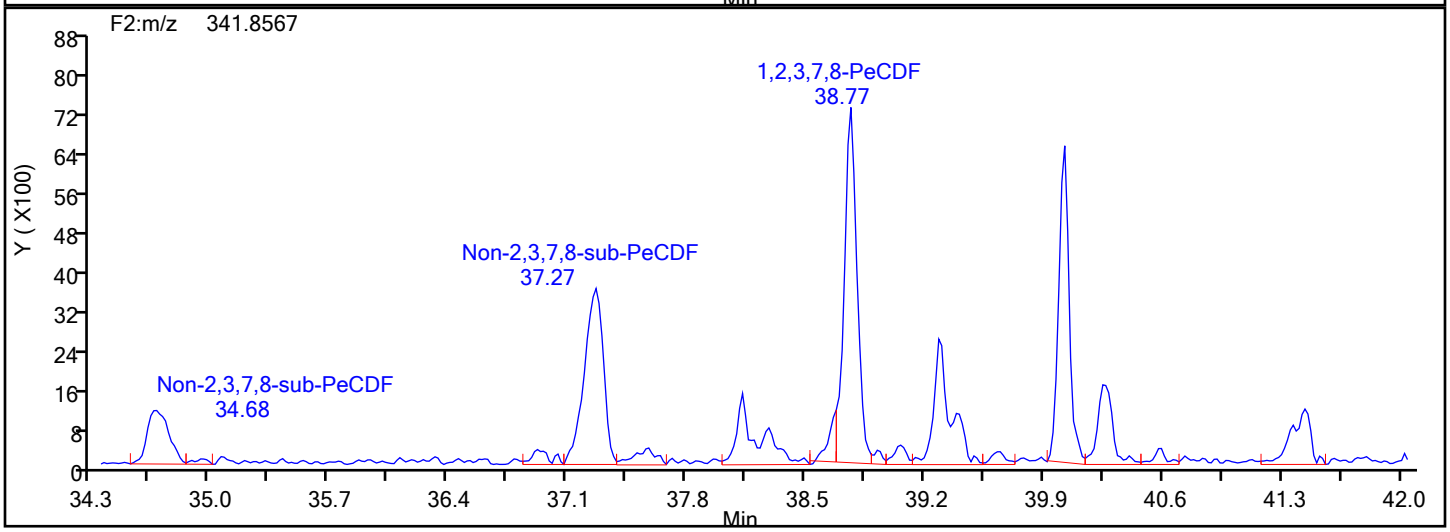
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

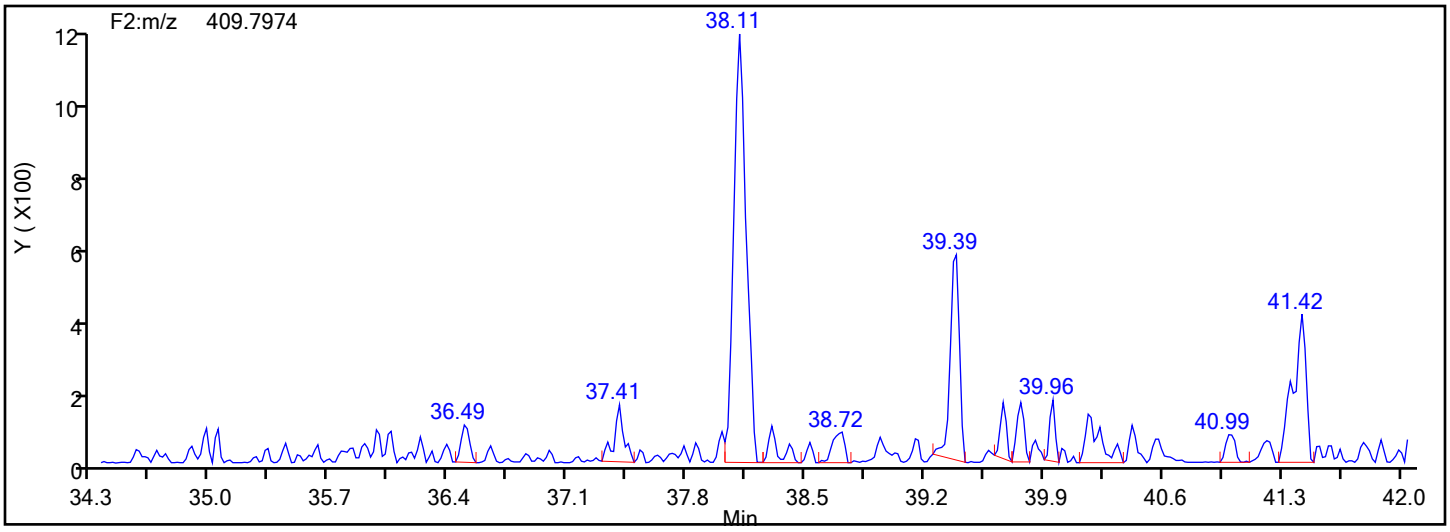
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

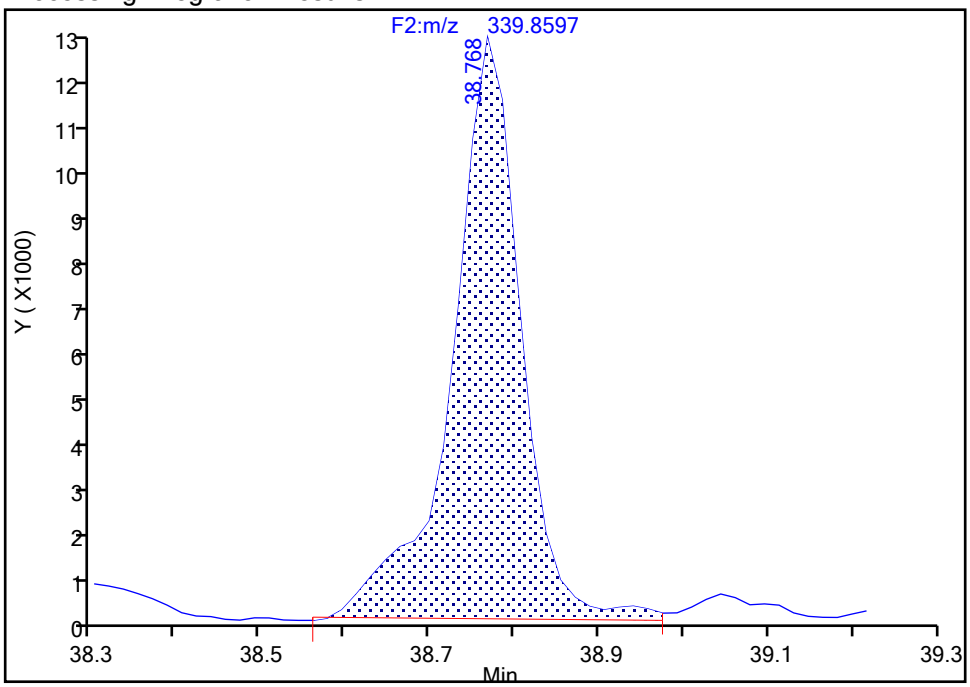
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

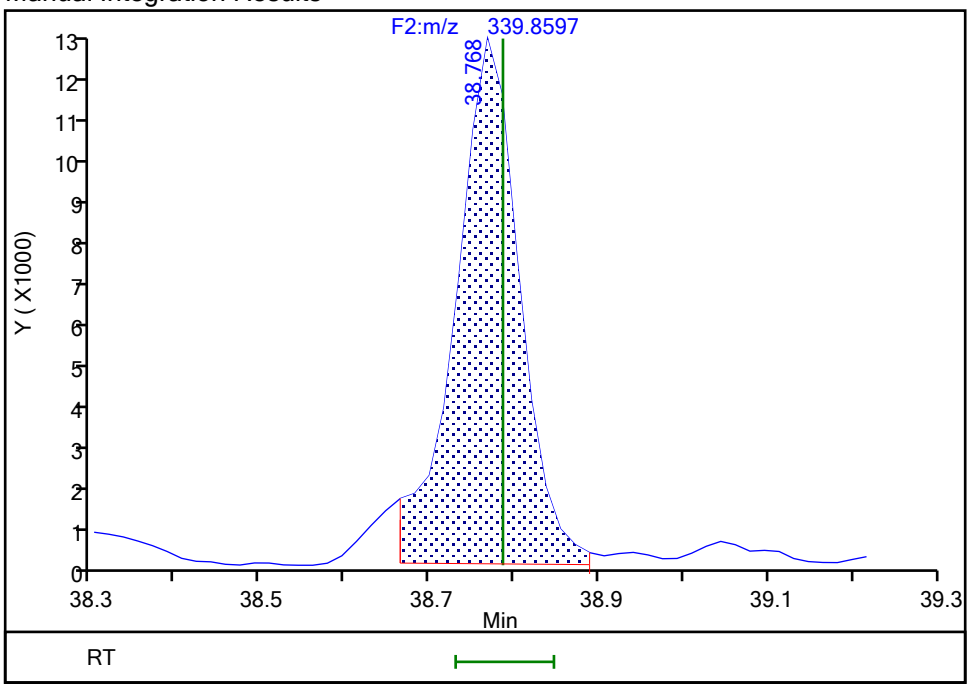
Processing Integration Results

RT: 38.77
Area: 68593
Amount: 2.110282
Amount Units: pg/ul



Manual Integration Results

RT: 38.77
Area: 63808
Amount: 1.941653
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:19:41

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

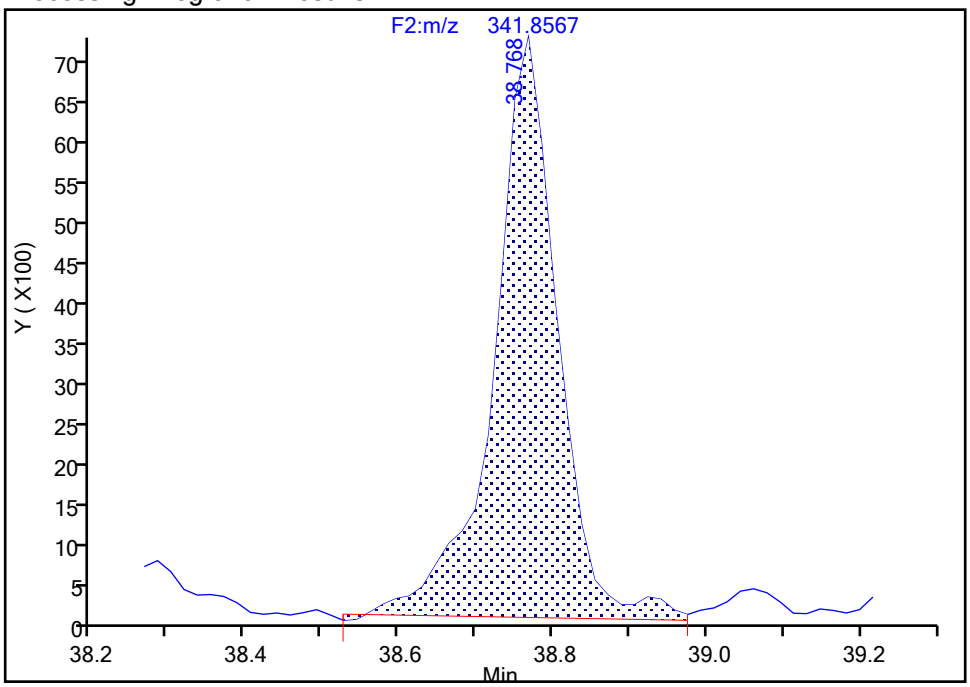
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

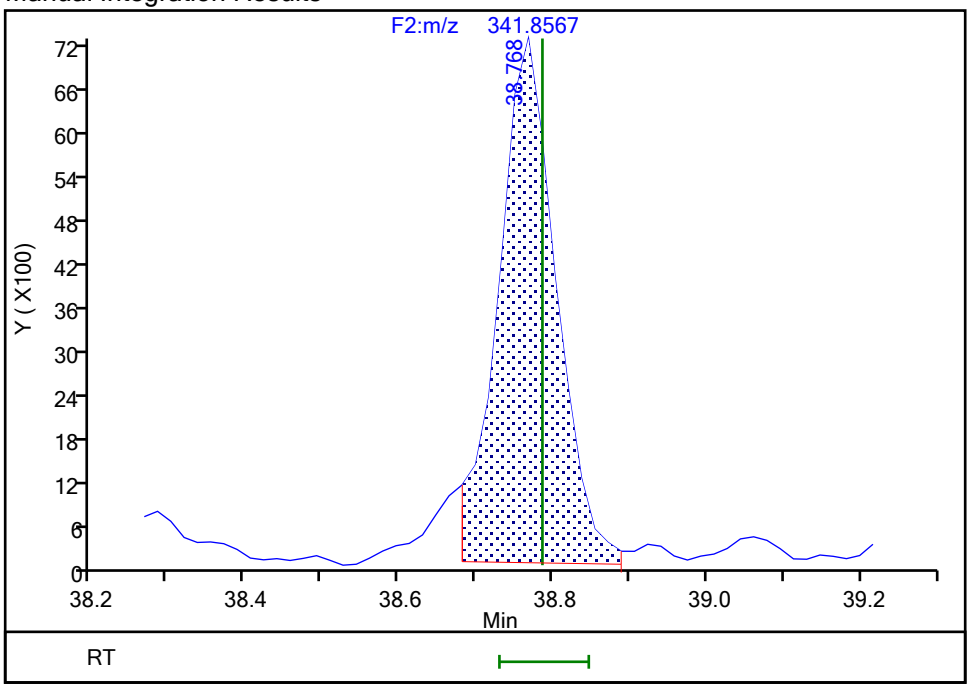
Processing Integration Results

RT: 38.77
Area: 41621
Amount: 2.110282
Amount Units: pg/ul



Manual Integration Results

RT: 38.77
Area: 37599
Amount: 1.941653
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:19:44

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

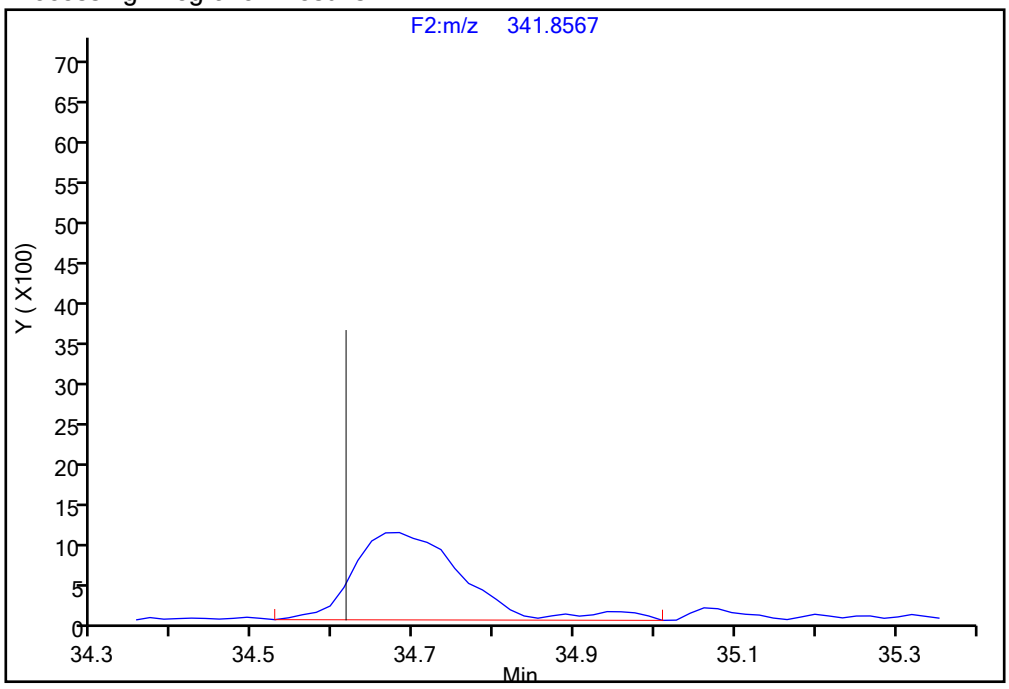
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

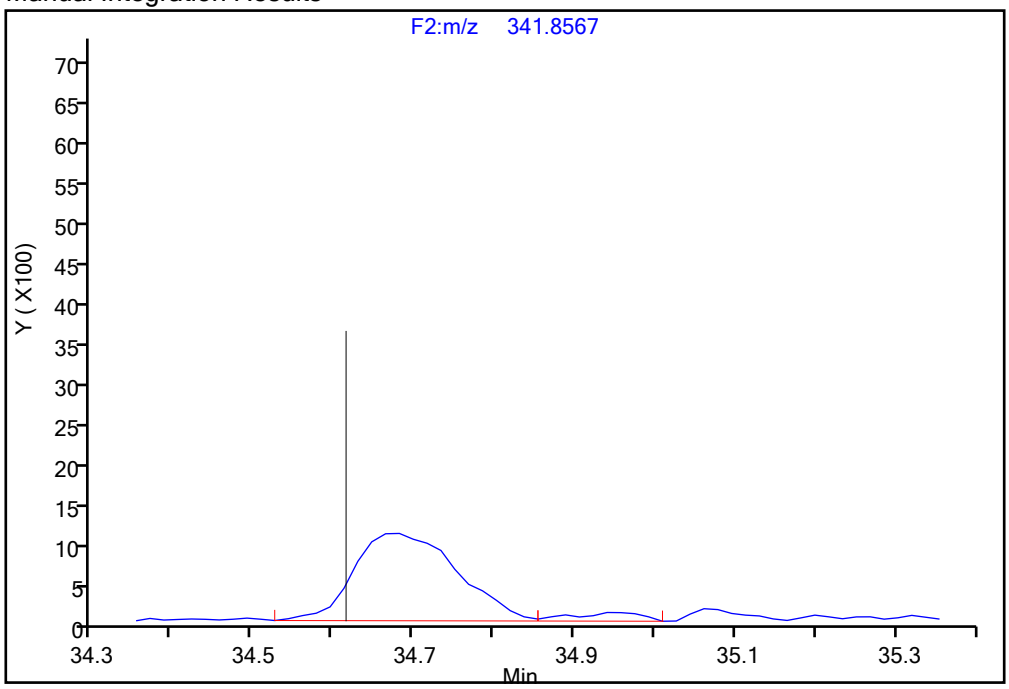
Processing Integration Results

RT = 34.682 Area = 10388



Manual Integration Results

RT = 34.682 Area = 9743 M



Reviewer: davidsonm, 17-Dec-2019 10:20:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

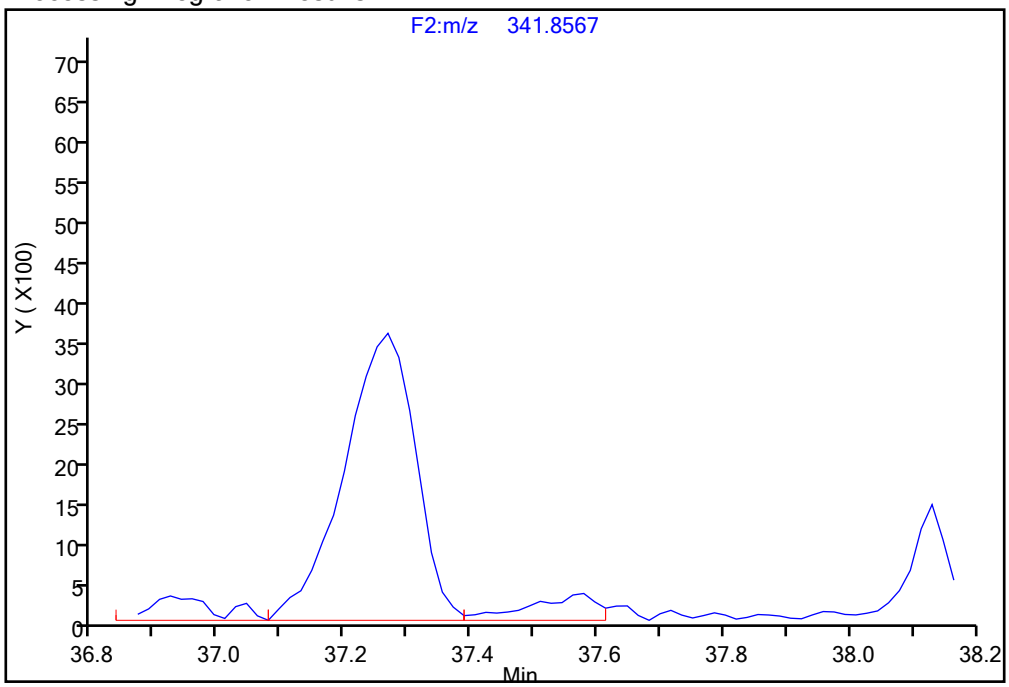
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

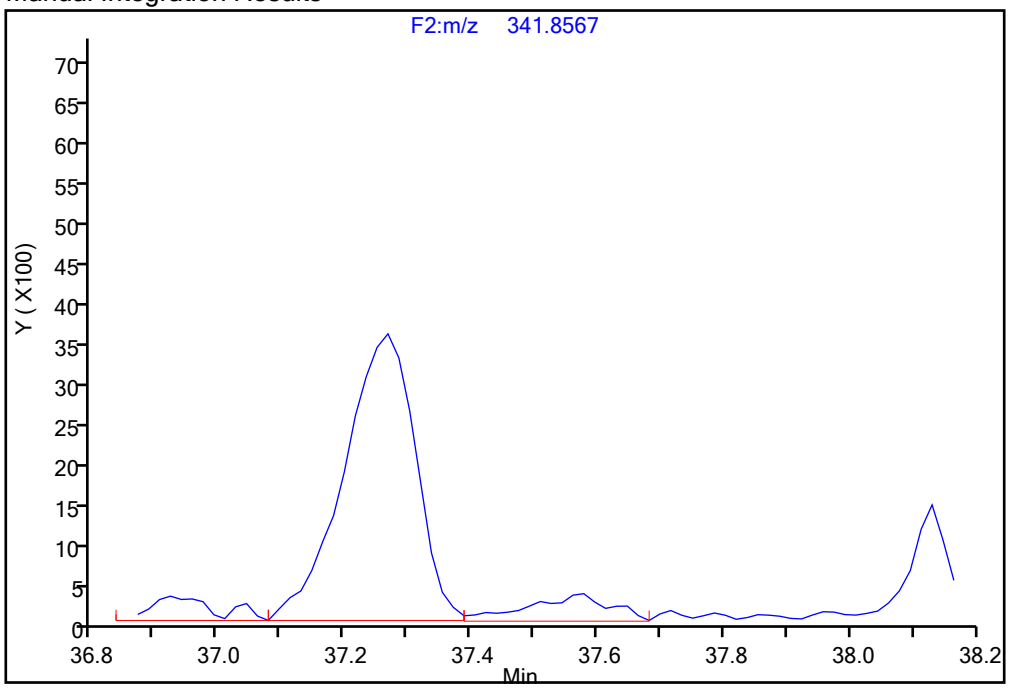
Processing Integration Results

RT = 37.578 Area = 2395



Manual Integration Results

RT = 37.578 Area = 3063 M



Reviewer: davidsonm, 17-Dec-2019 10:20:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

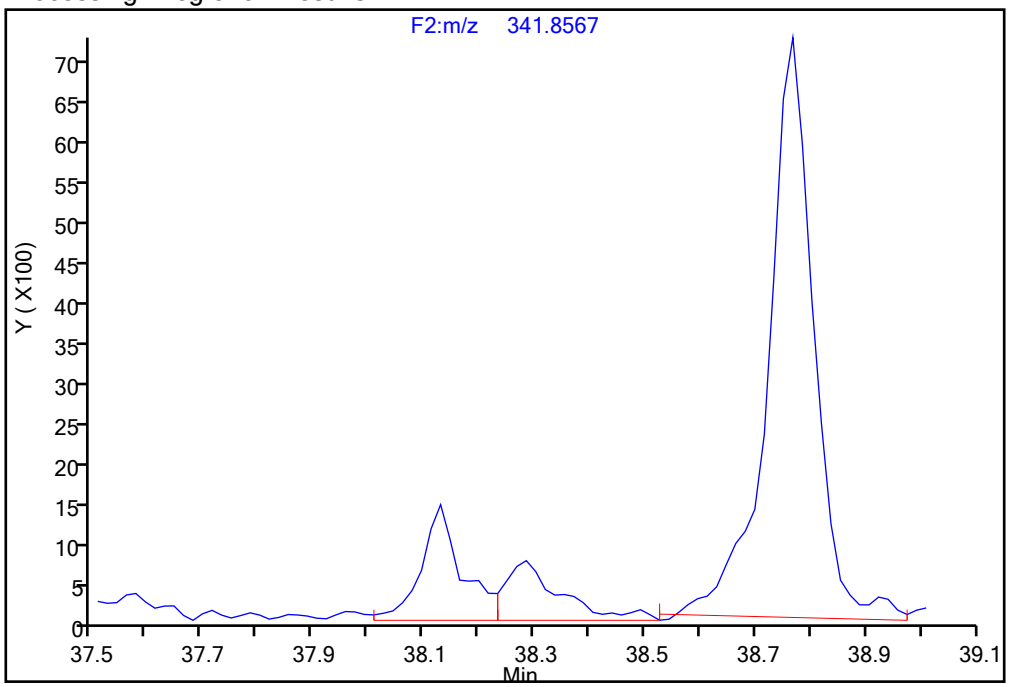
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

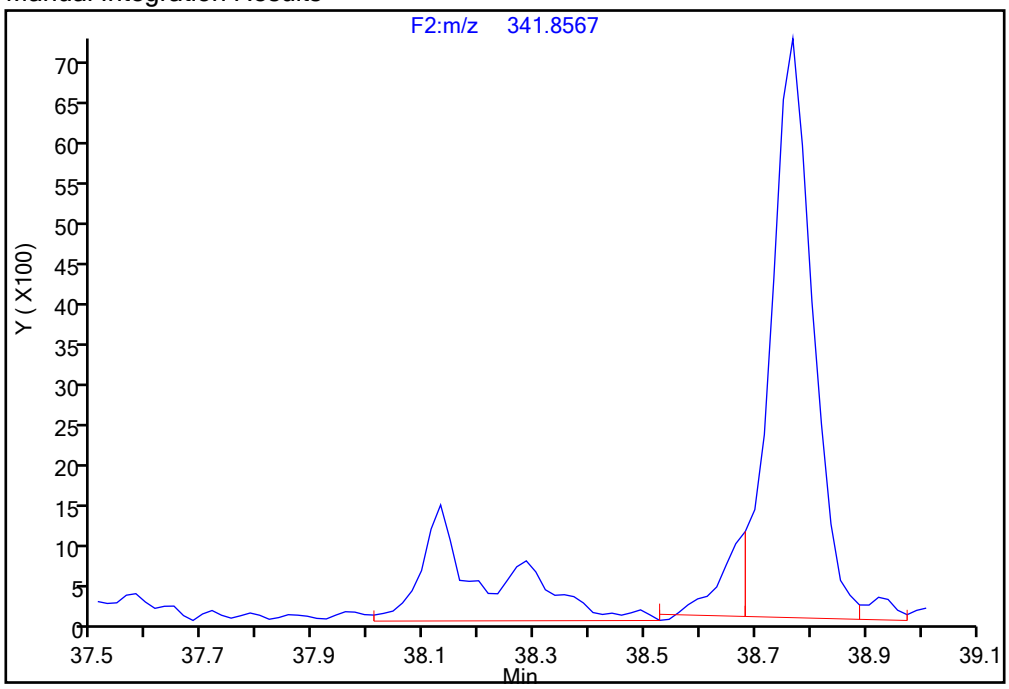
Processing Integration Results

RT = 38.130 Area = 7262



Manual Integration Results

RT = 38.130 Area = 12399 M



Reviewer: davidsonm, 17-Dec-2019 10:20:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

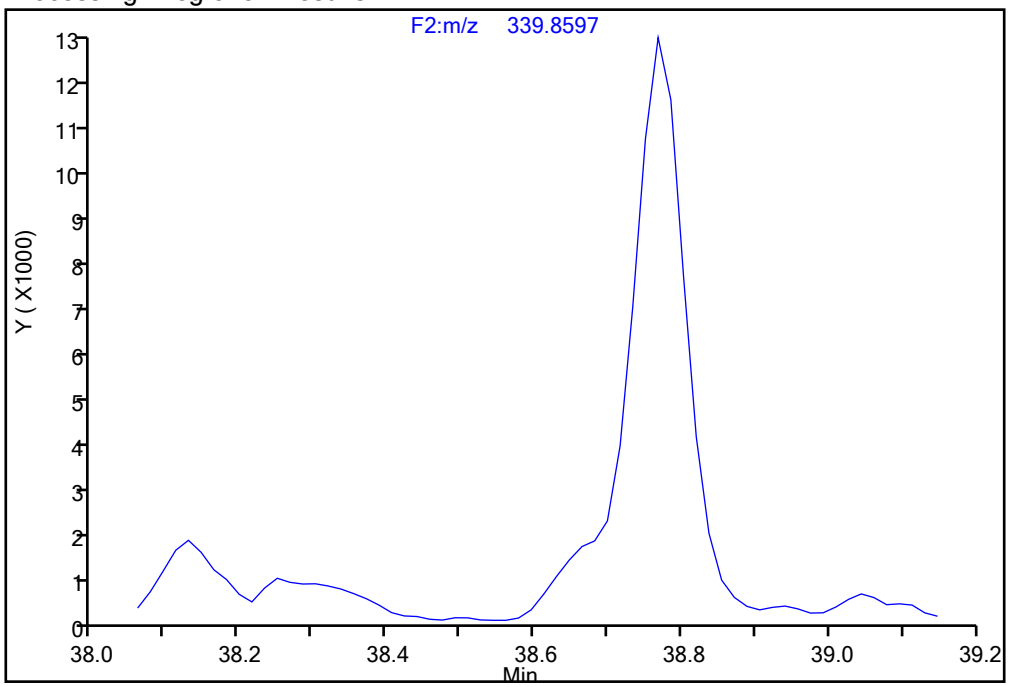
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

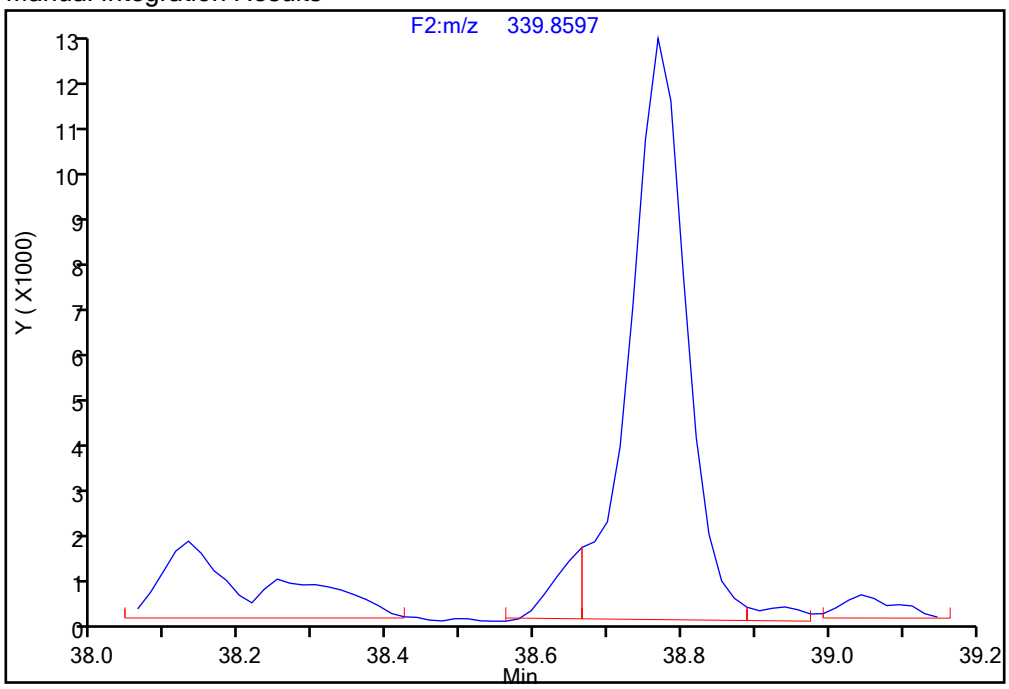
Not Detected
RT: 34.62- 41.42

Processing Integration Results



RT = 38.665 Area = 3534 M

Manual Integration Results



Reviewer: davidsonm, 17-Dec-2019 10:21:00
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

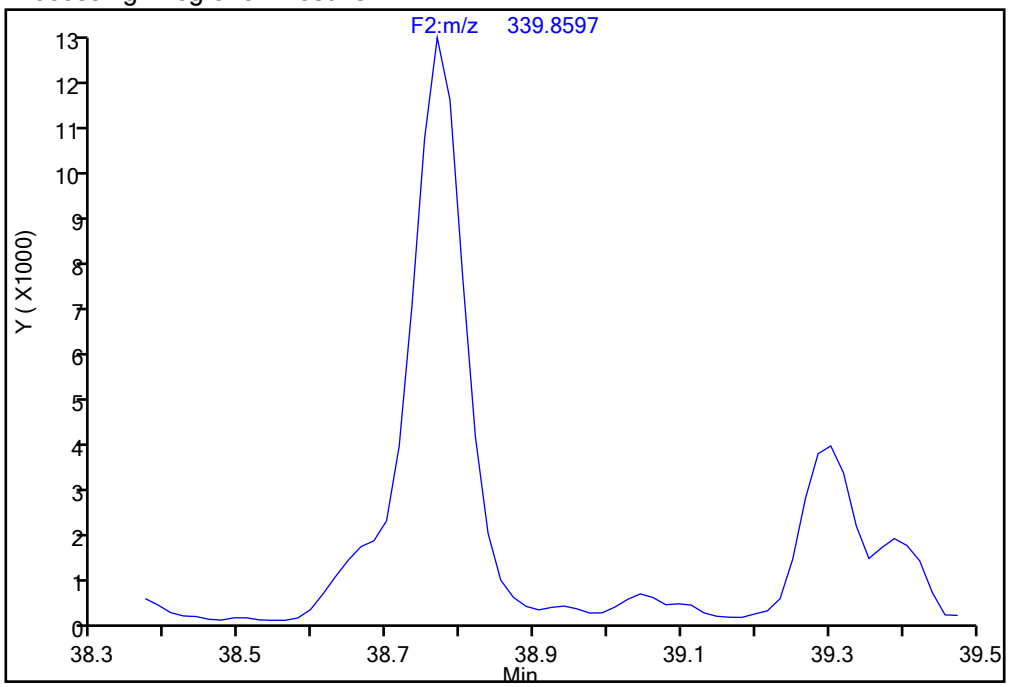
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

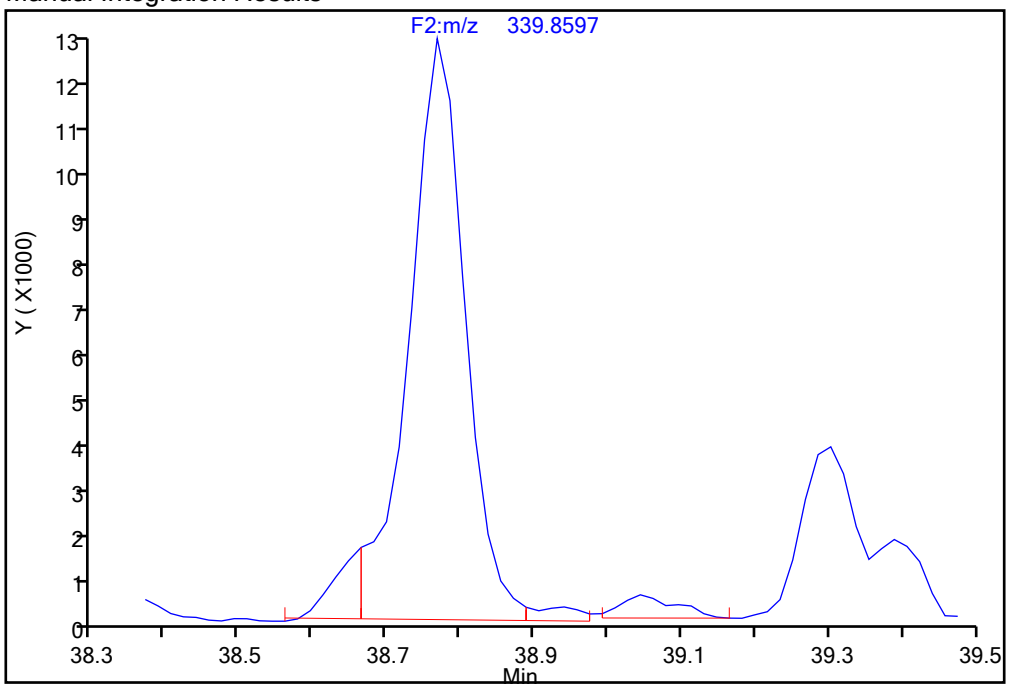
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 38.940 Area = 1251 M



Reviewer: davidsonm, 17-Dec-2019 10:21:00
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

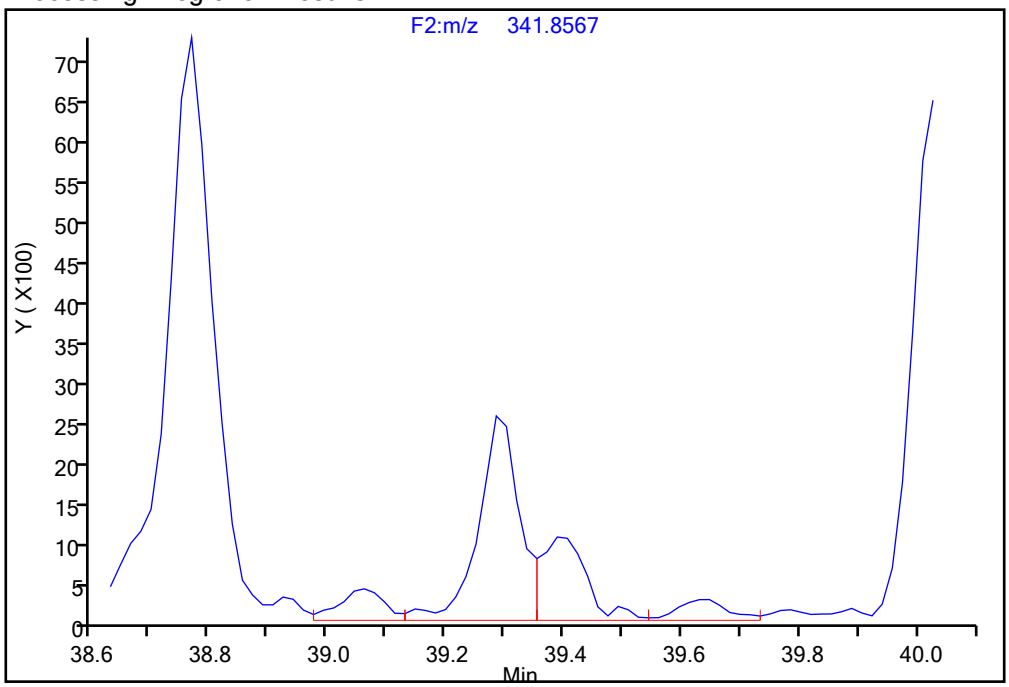
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

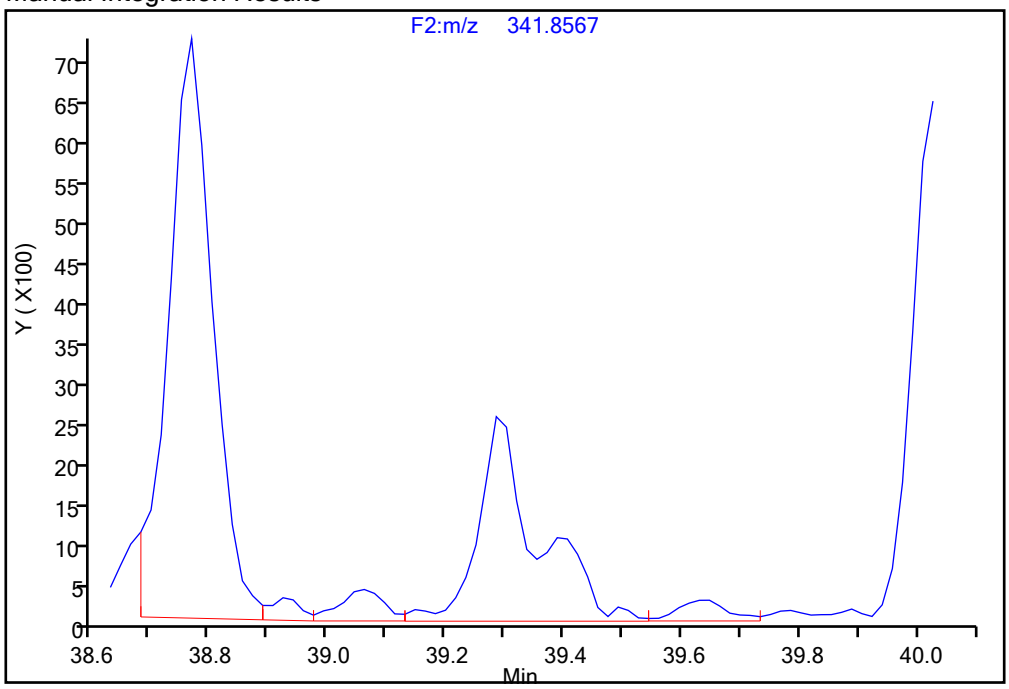
Processing Integration Results

RT = 39.285 Area = 12177



Manual Integration Results

RT = 39.285 Area = 17684 M



Reviewer: davidsonm, 17-Dec-2019 10:20:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

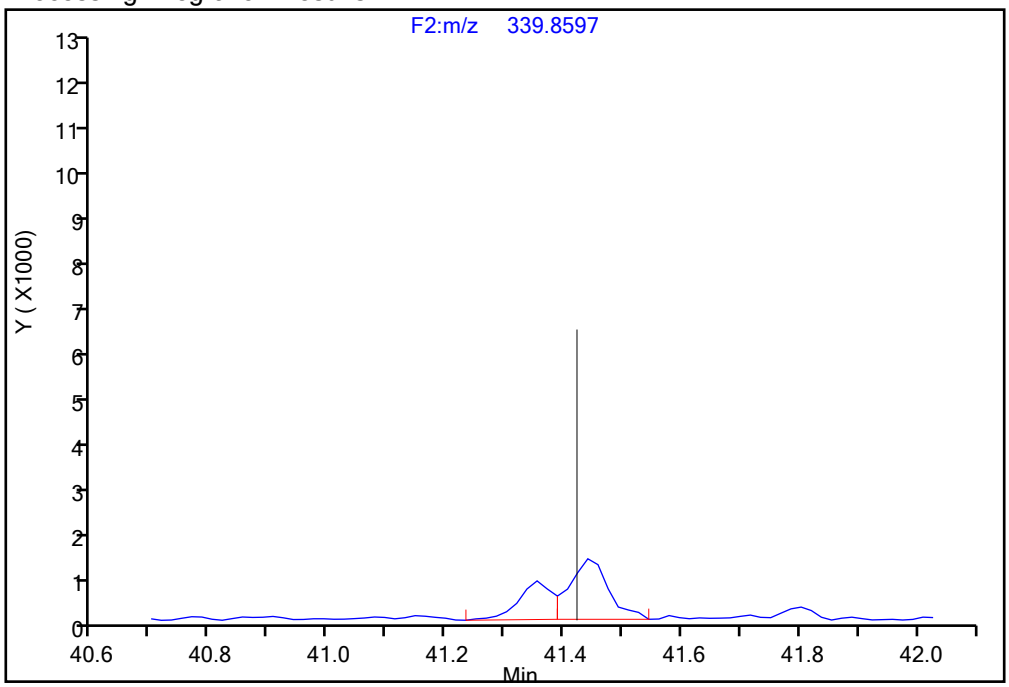
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

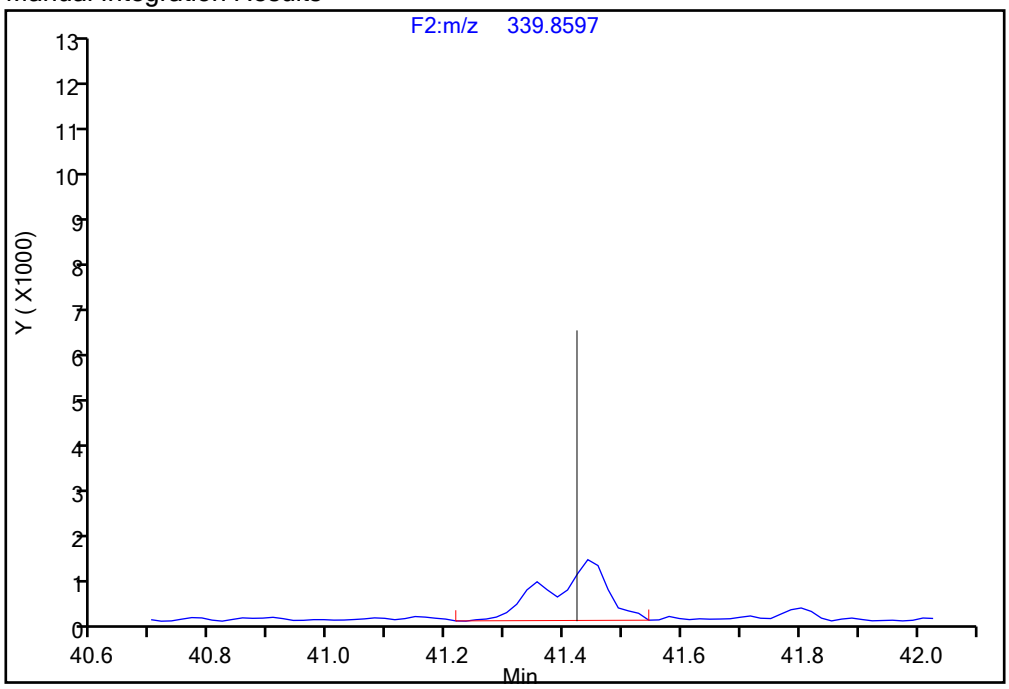
Processing Integration Results

RT = 41.441 Area = 5669



Manual Integration Results

RT = 41.441 Area = 8790 M



Reviewer: davidsonm, 17-Dec-2019 10:21:00

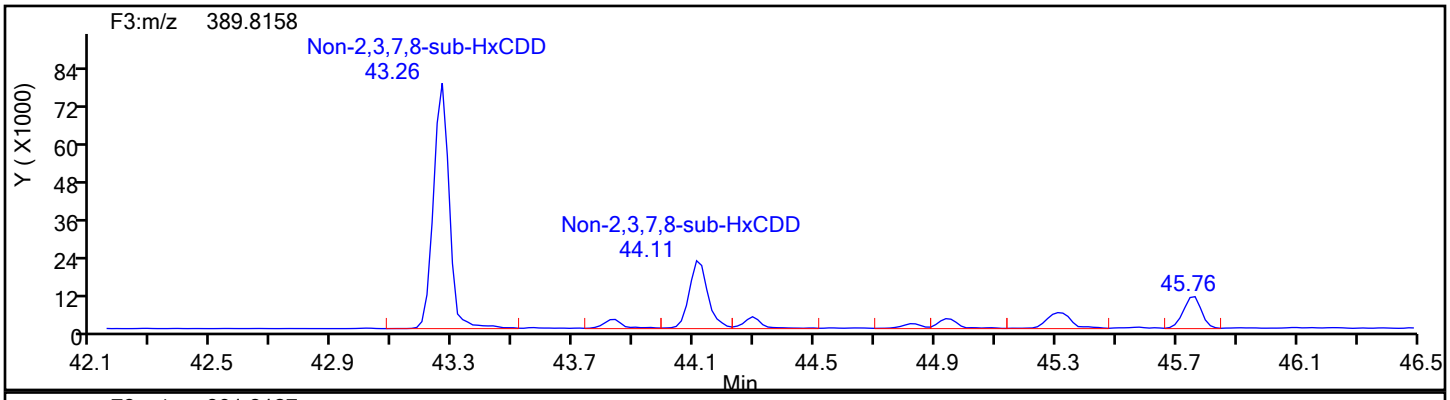
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

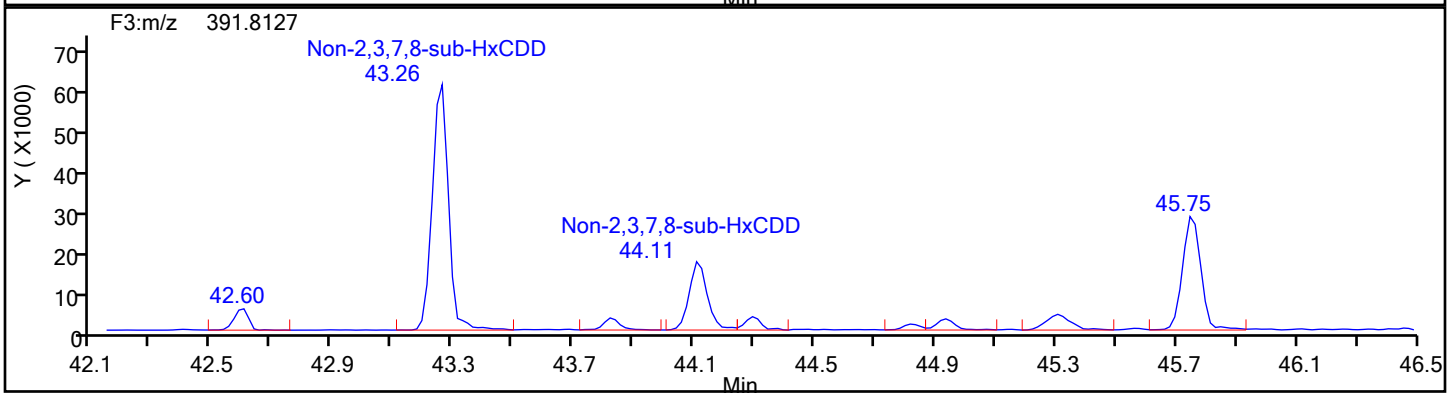
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

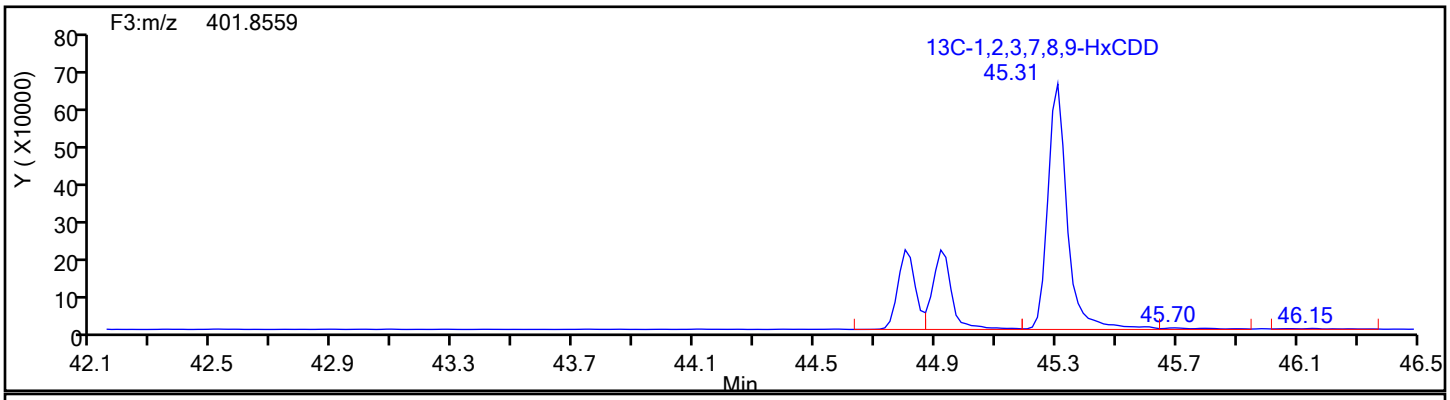
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

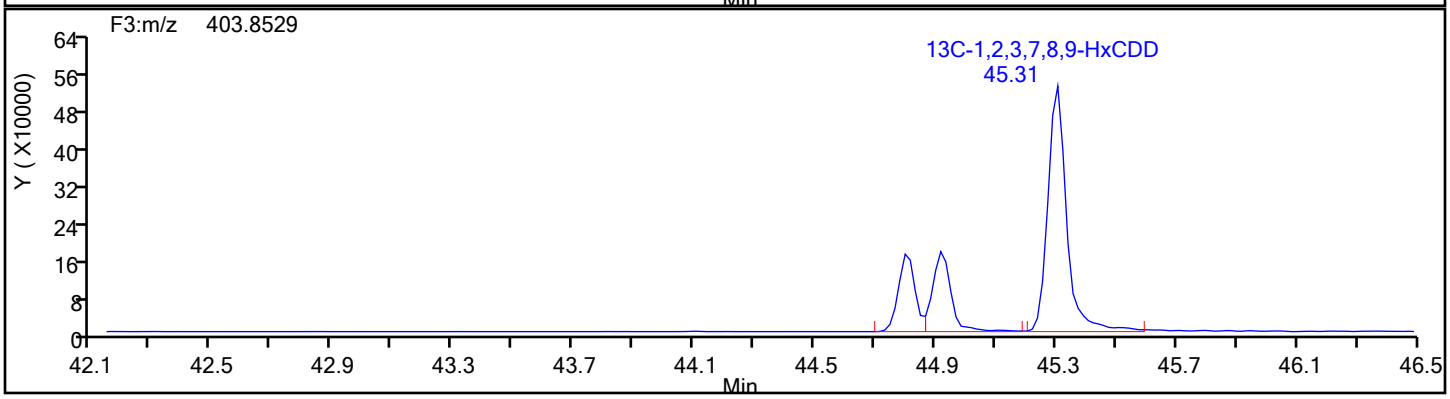
HxCDD





HxCDD Standards



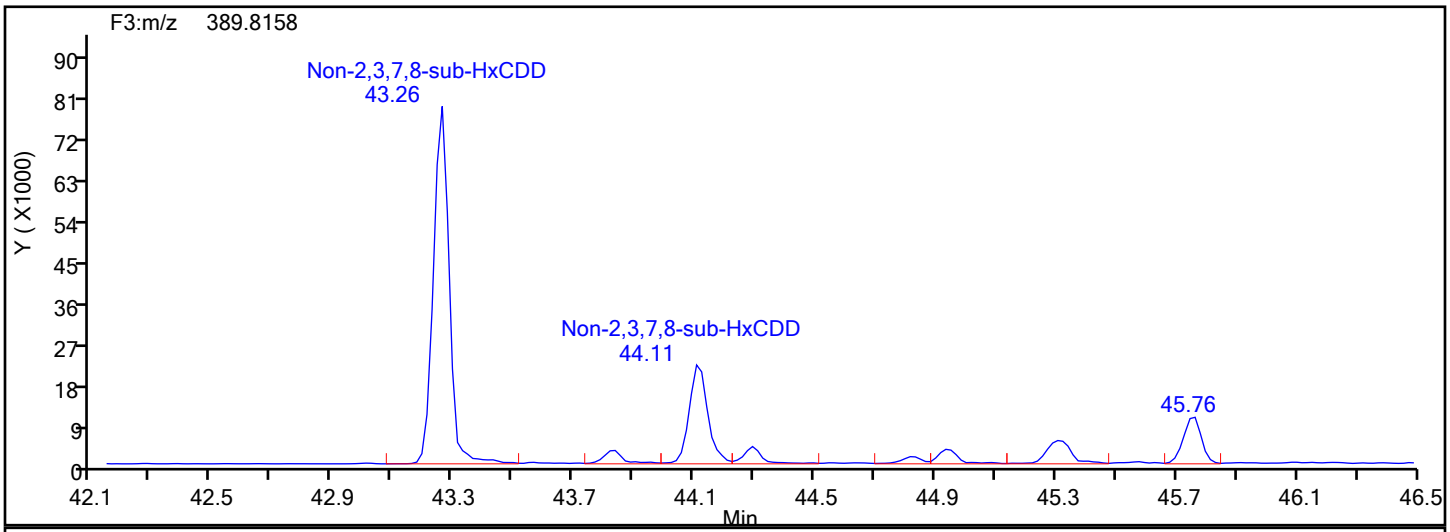


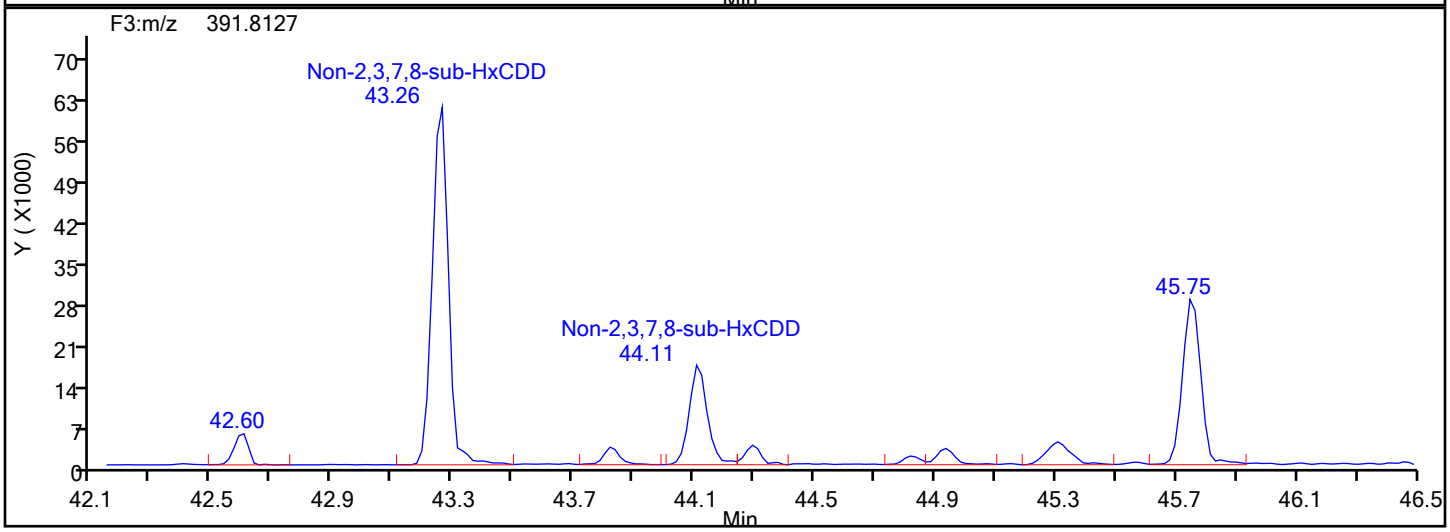
Report Date: 17-Dec-2019 10:23:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

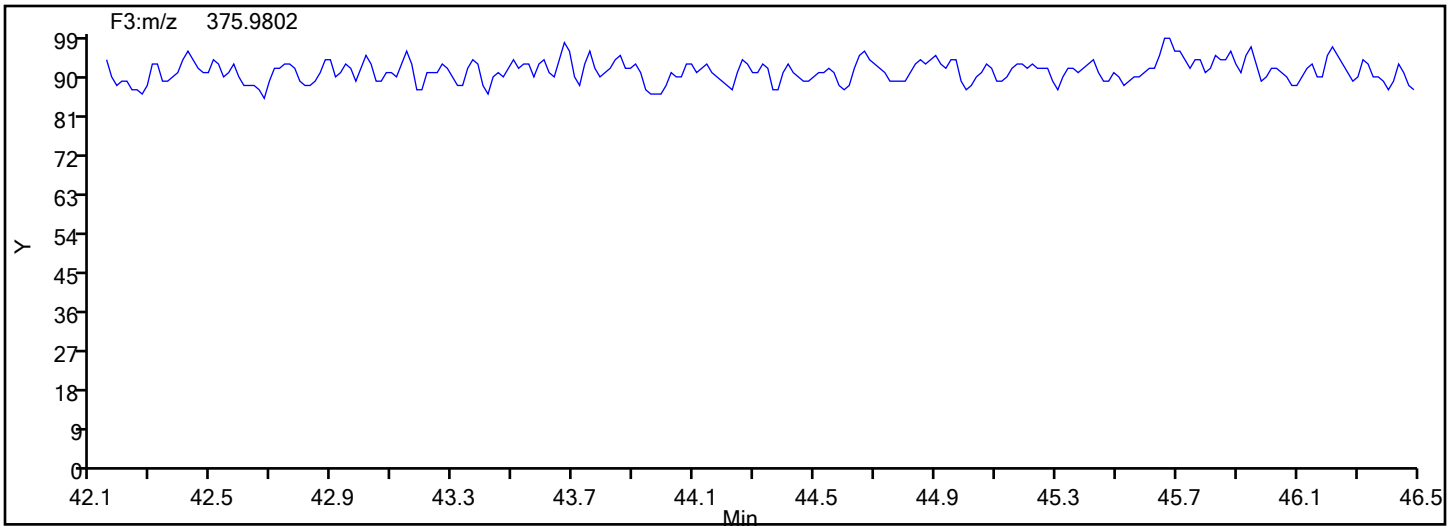
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass

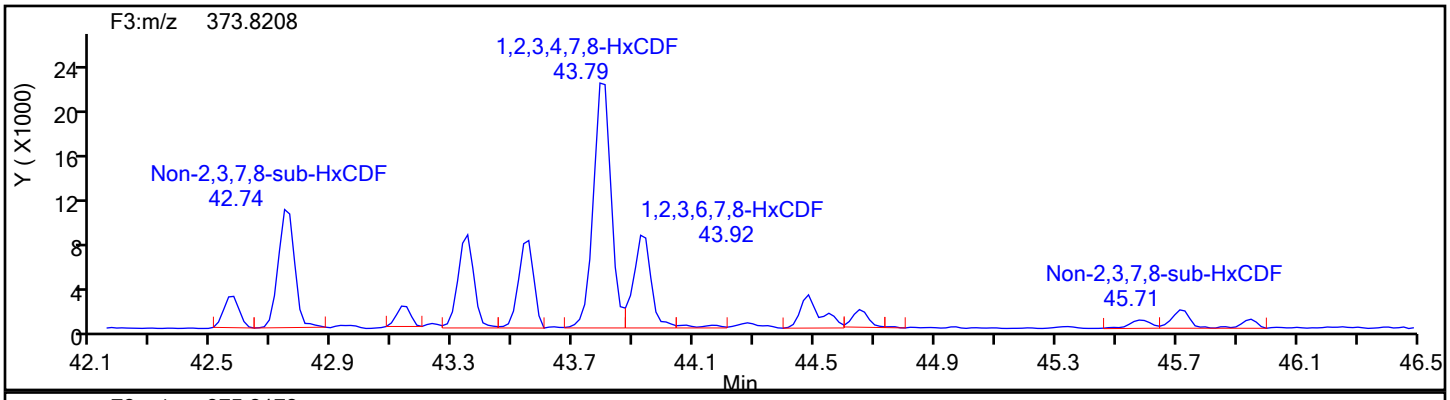


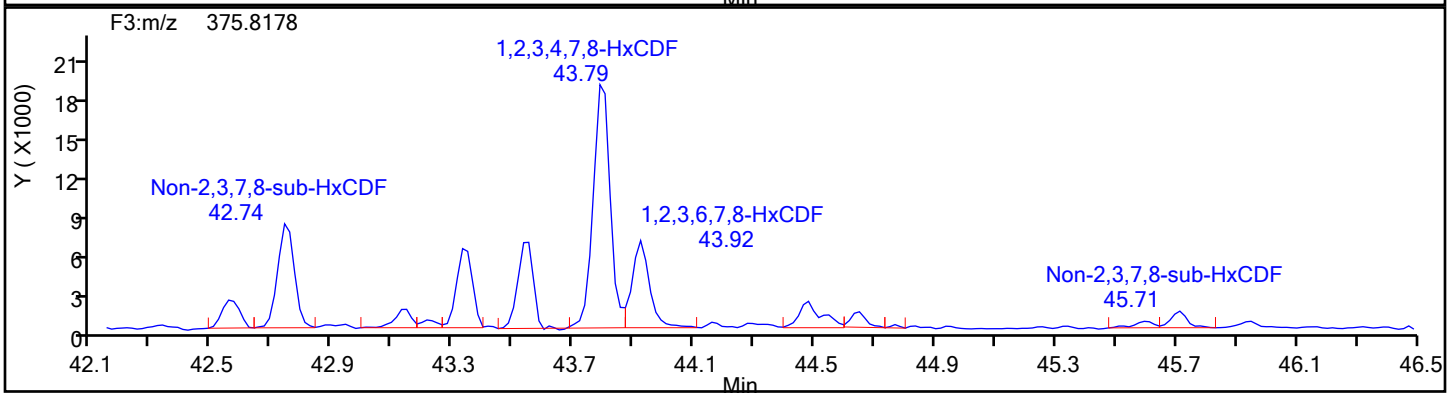
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

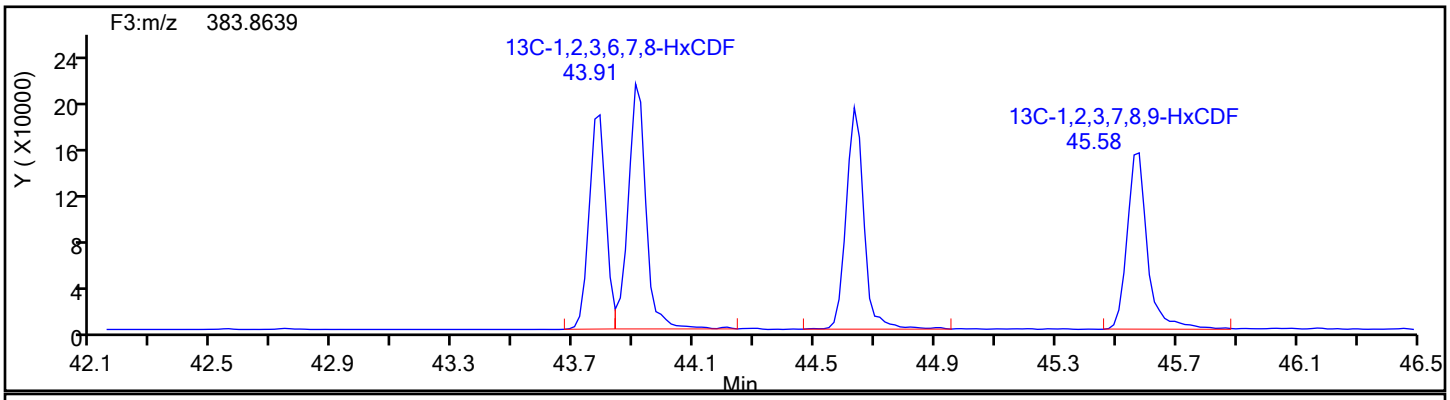
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

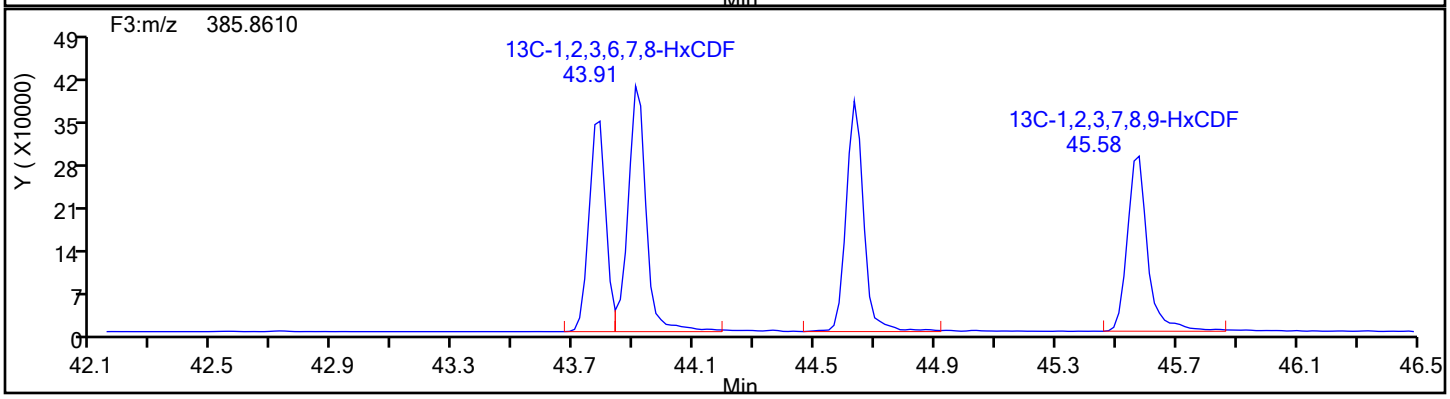
HxCDF





HxCDF Standards



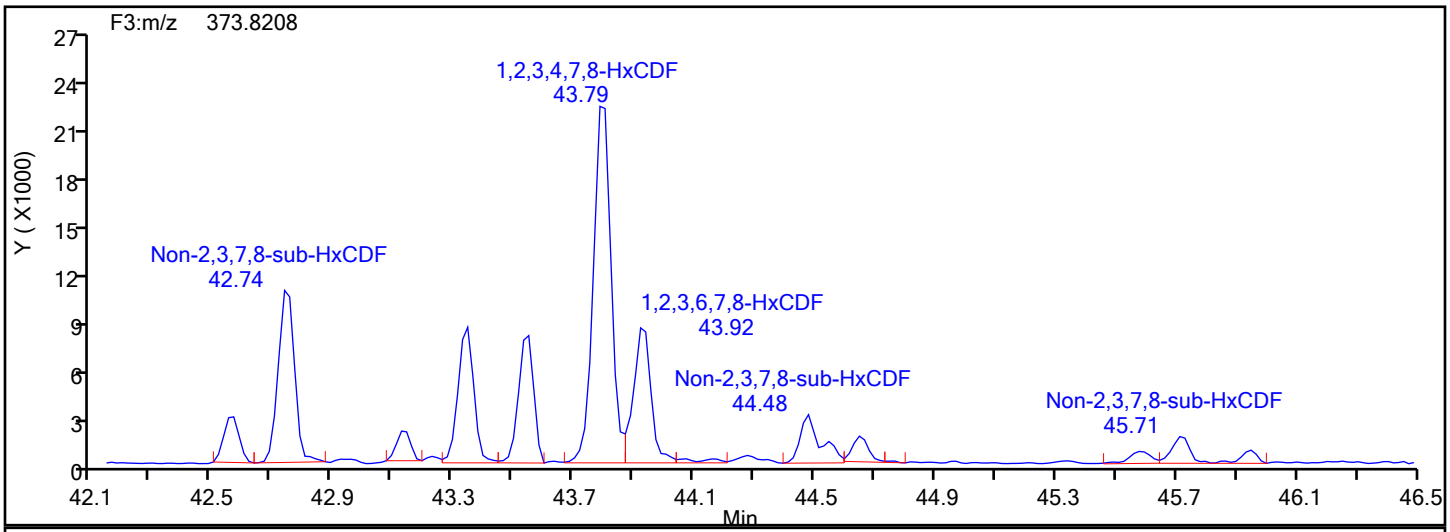


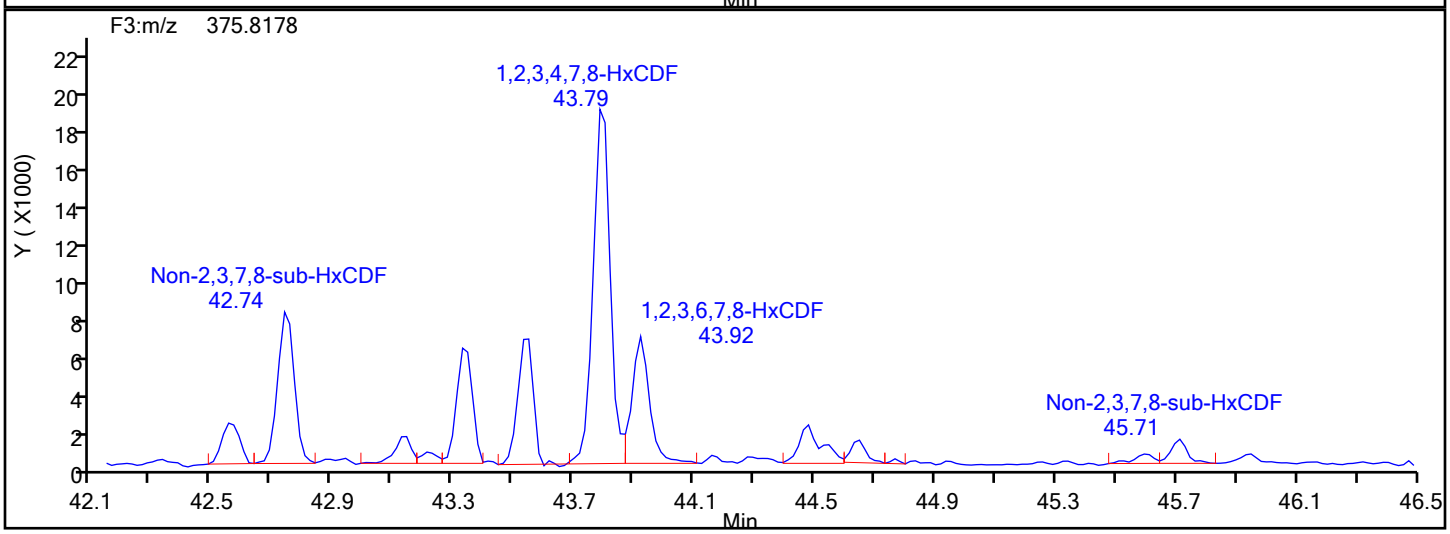
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

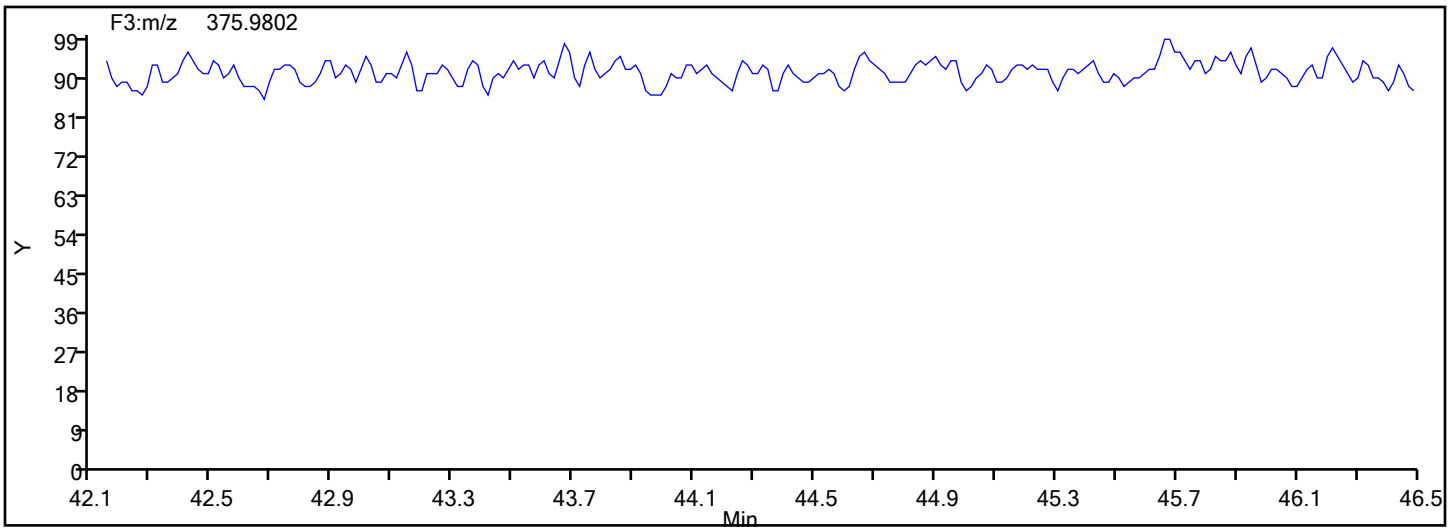
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





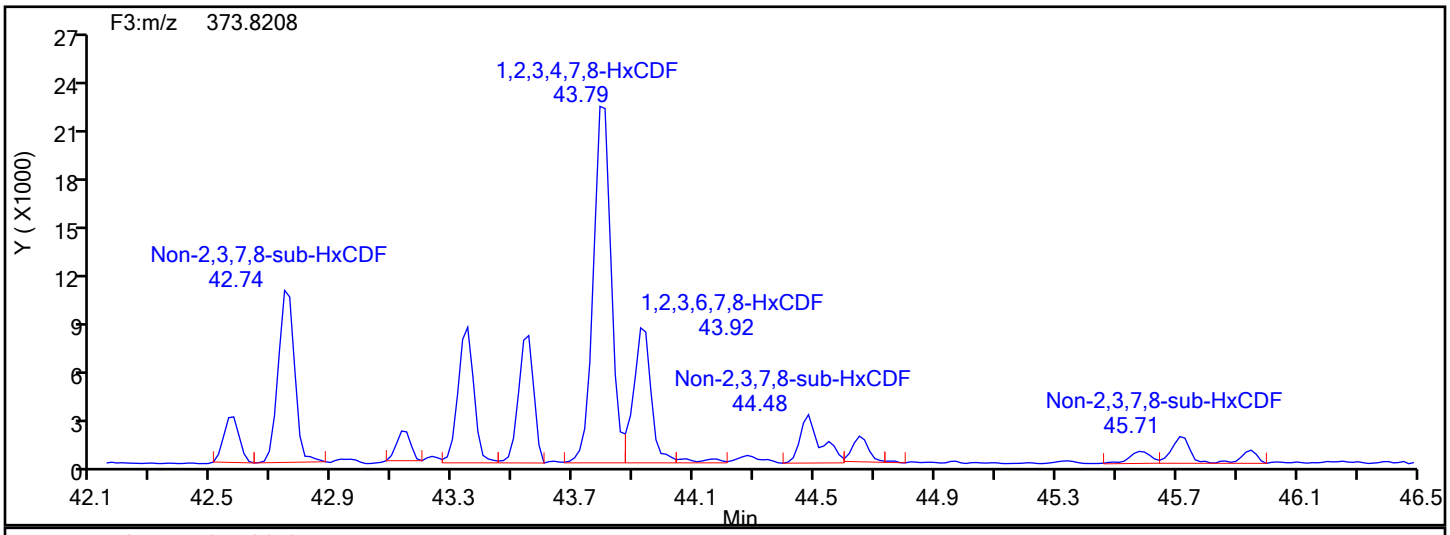
HxCDF Lock Mass

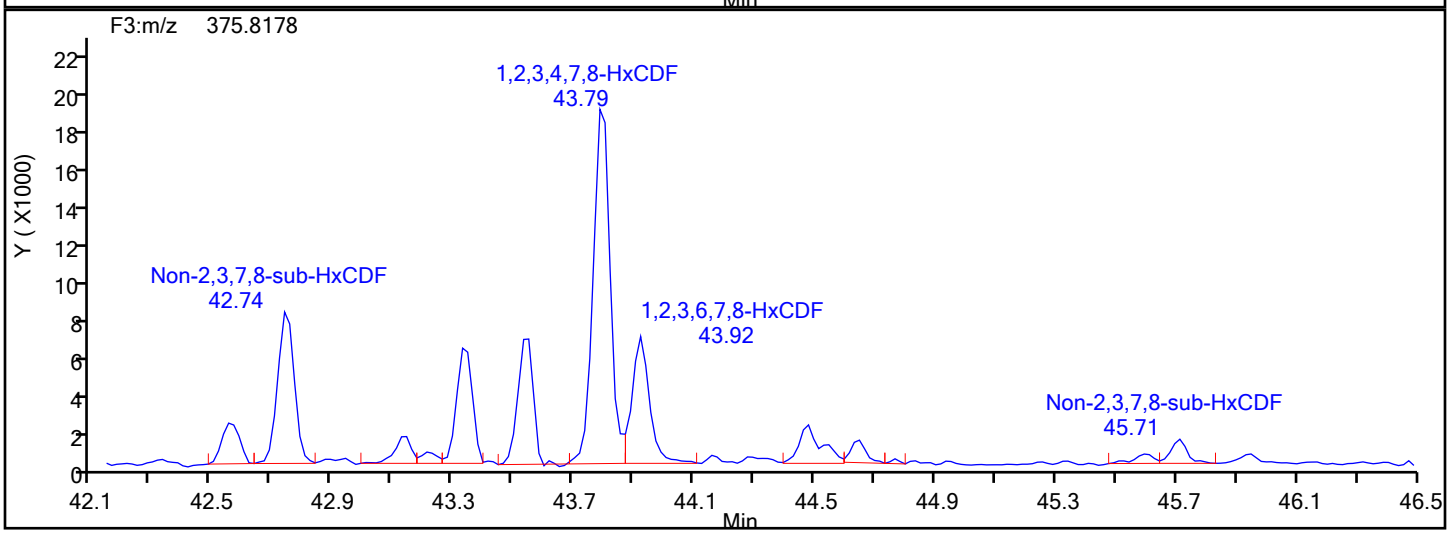


Eurofins TestAmerica, Knoxville

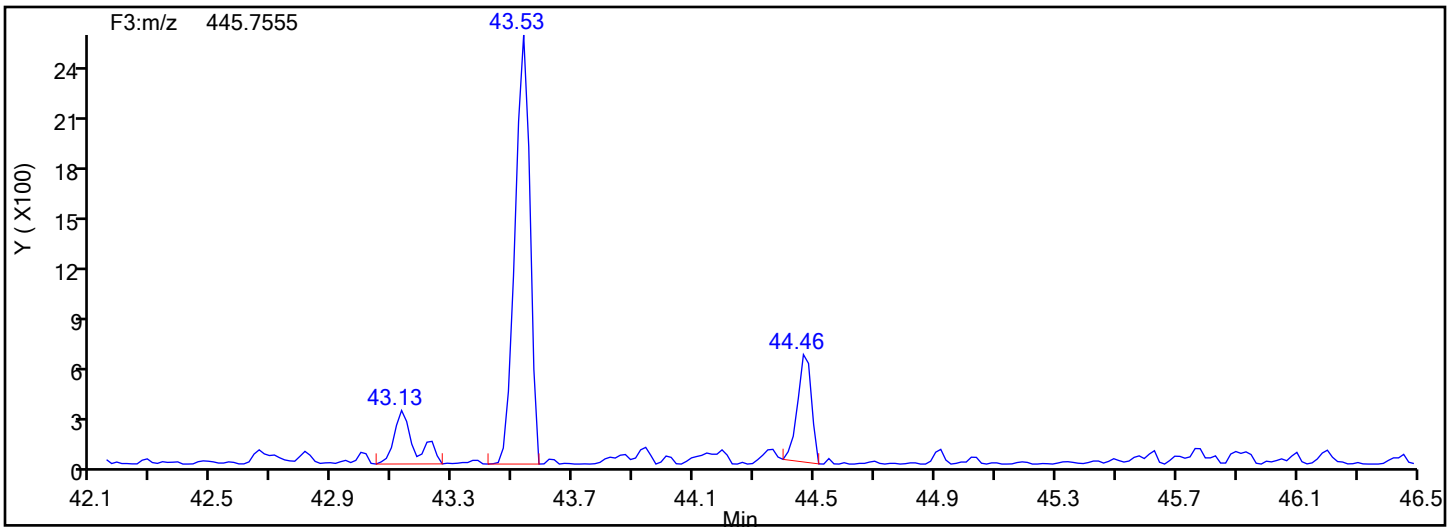
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

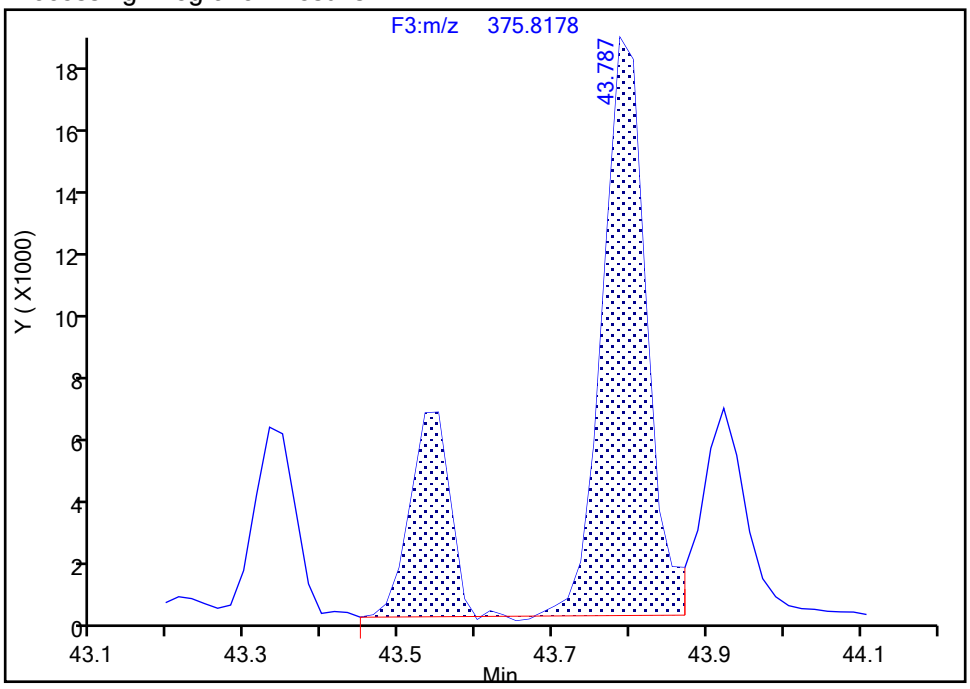
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

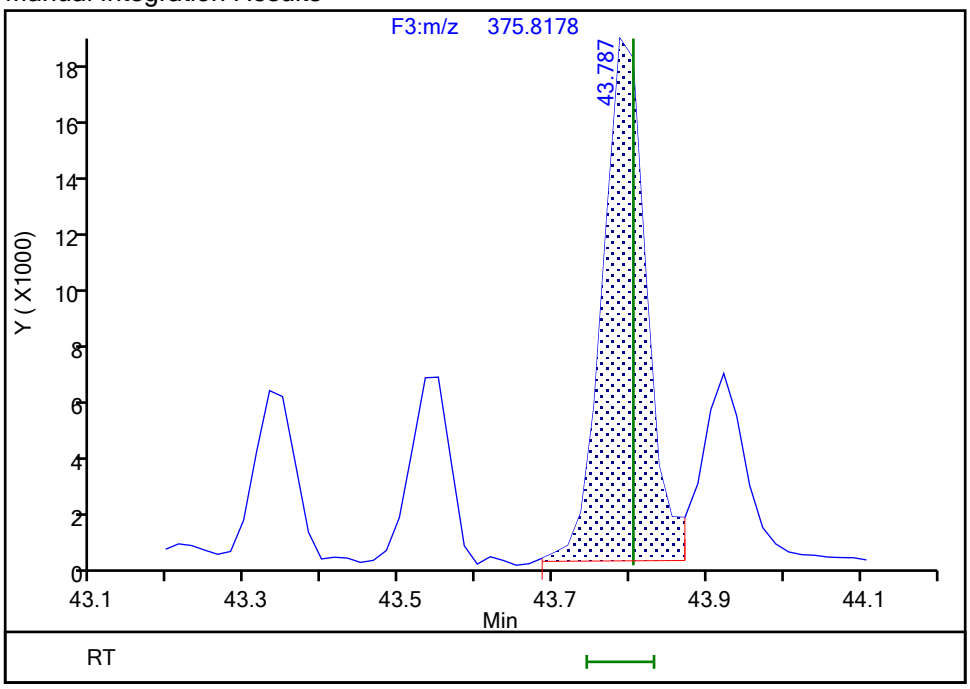
Processing Integration Results

RT: 43.79
Area: 96960
Amount: 3.307178
Amount Units: pg/ul



Manual Integration Results

RT: 43.79
Area: 73443
Amount: 2.890815
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:21:43

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

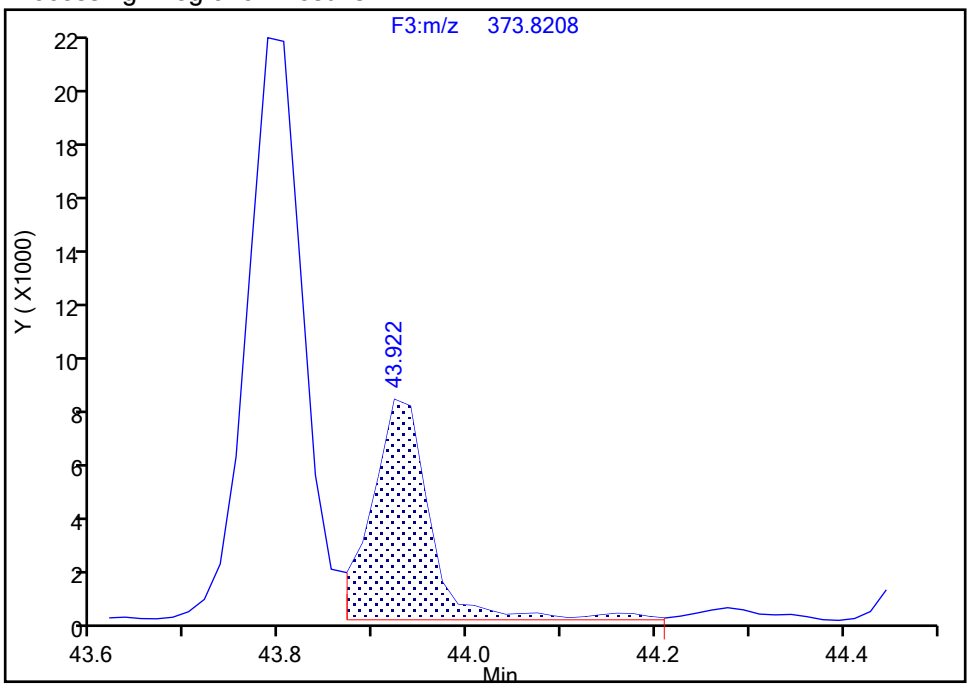
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

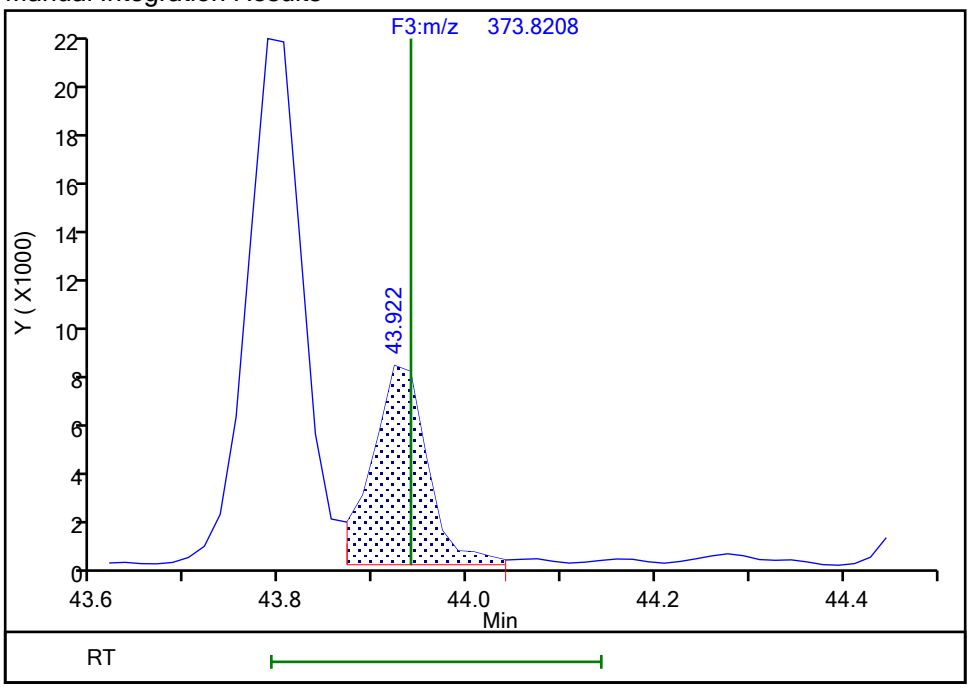
Processing Integration Results

RT: 43.92
Area: 34916
Amount: 0.937117
Amount Units: pg/ul



Manual Integration Results

RT: 43.92
Area: 33213
Amount: 0.911062
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:21:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

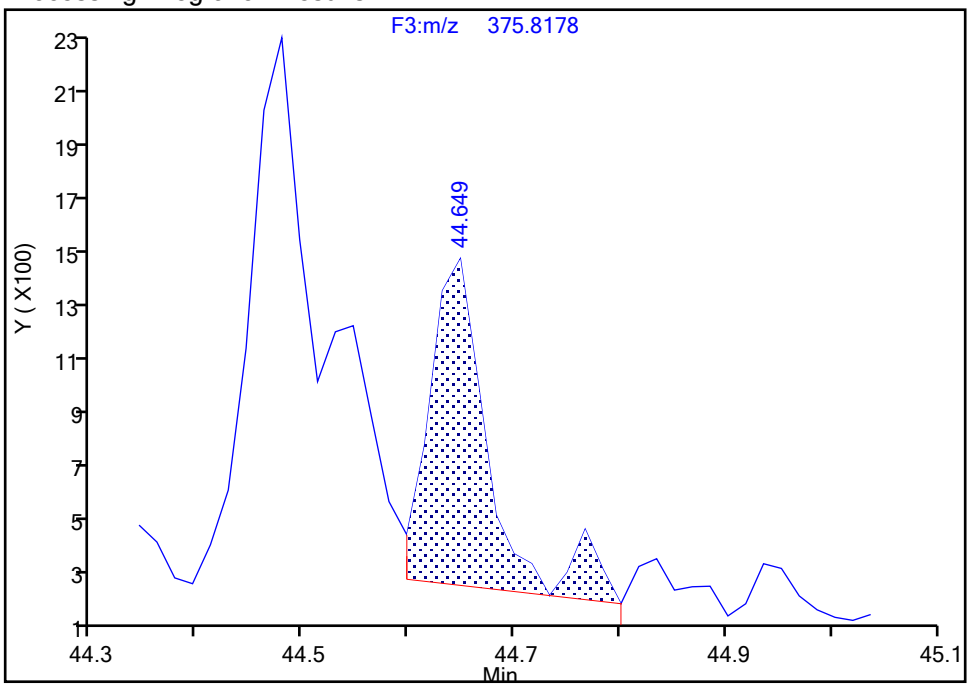
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

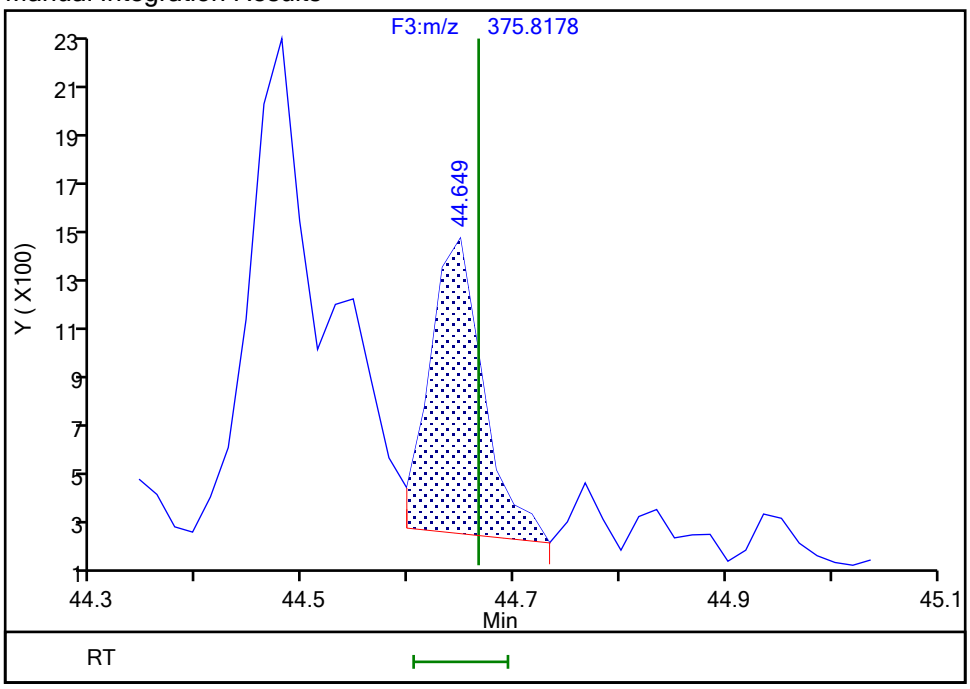
Processing Integration Results

RT: 44.65
Area: 4570
Amount: 0.178012
Amount Units: pg/ul



Manual Integration Results

RT: 44.65
Area: 4106
Amount: 0.166453
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:21:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

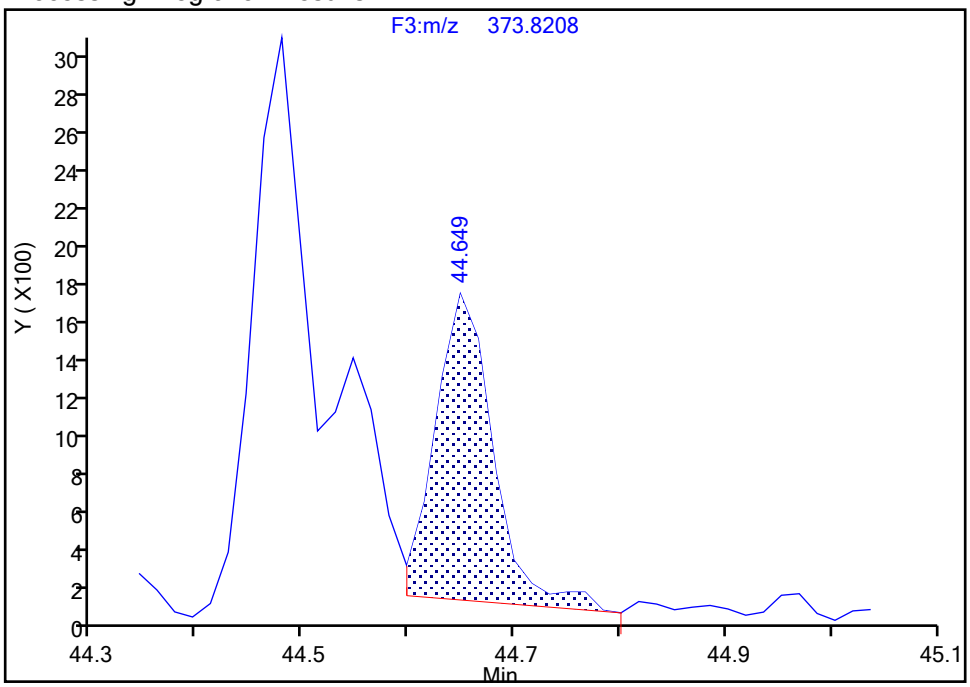
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

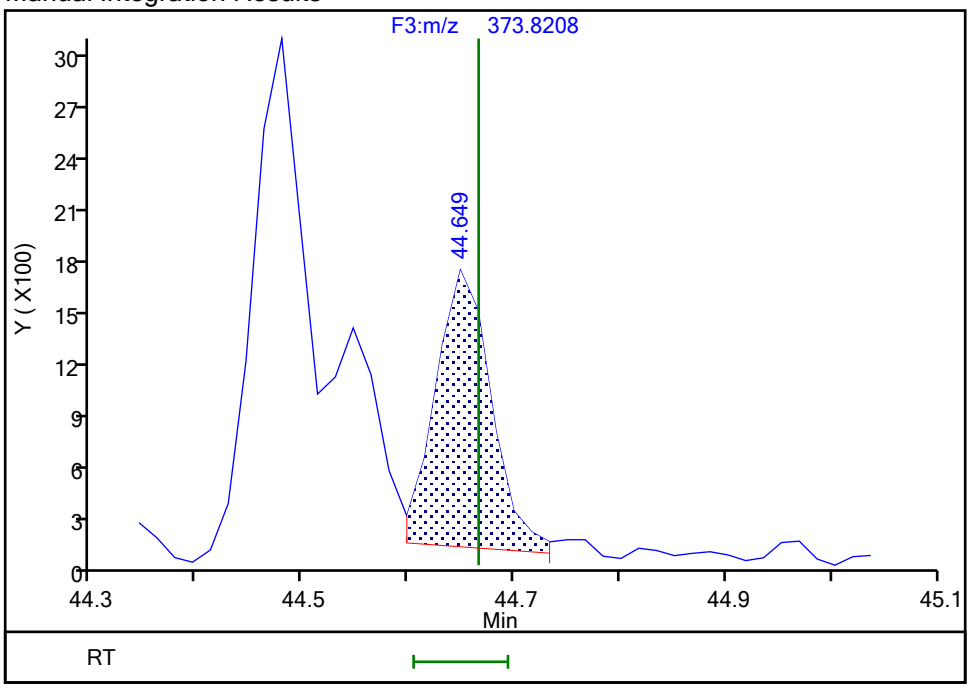
Processing Integration Results

RT: 44.65
Area: 5948
Amount: 0.178012
Amount Units: pg/ul



Manual Integration Results

RT: 44.65
Area: 5729
Amount: 0.166453
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:21:59

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

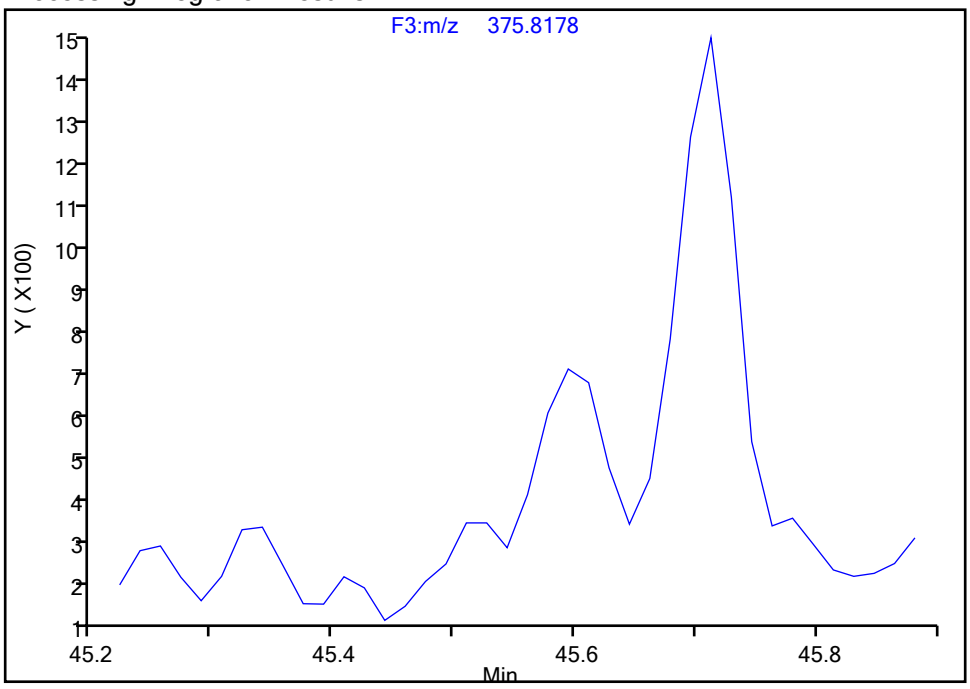
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

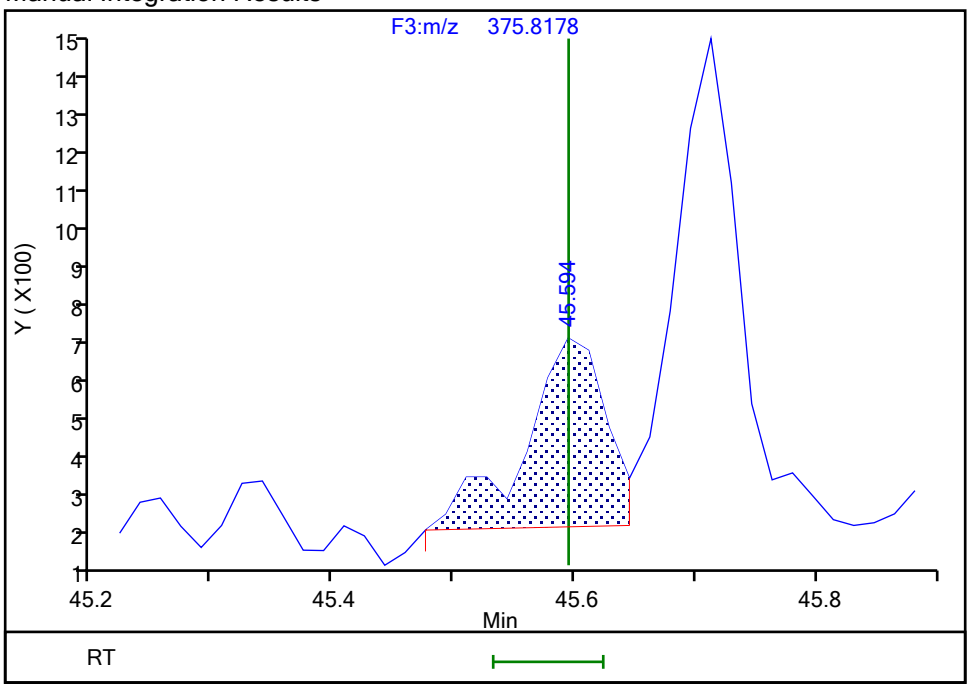
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.59
Area: 2254
Amount: 0.114295
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:22:13
Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

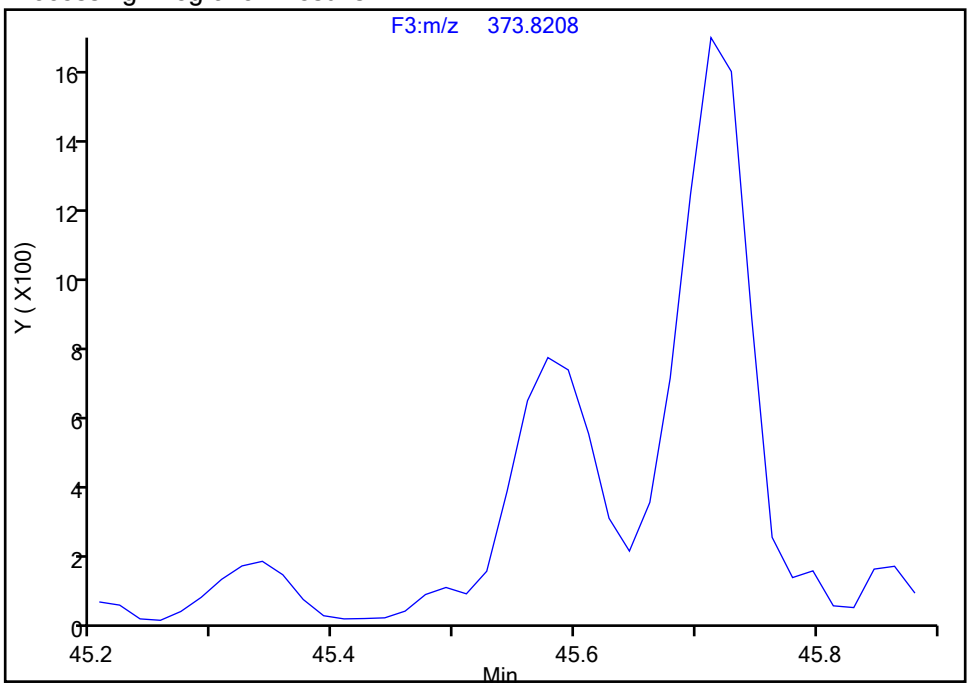
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

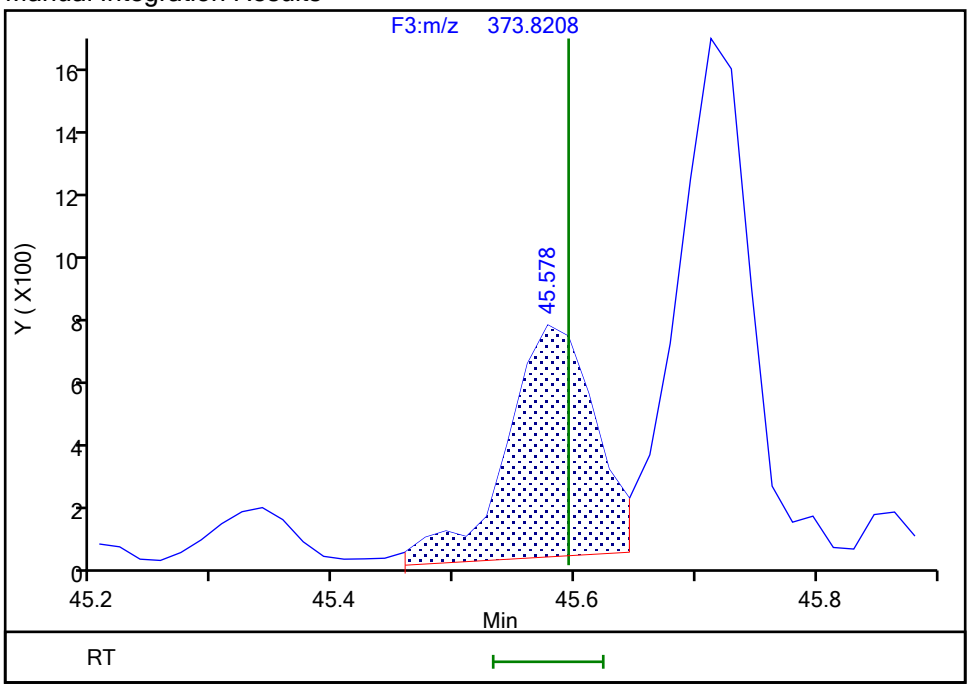
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT:	45.58
Area:	3736
Amount:	0.114295
Amount Units:	pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:22:13
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

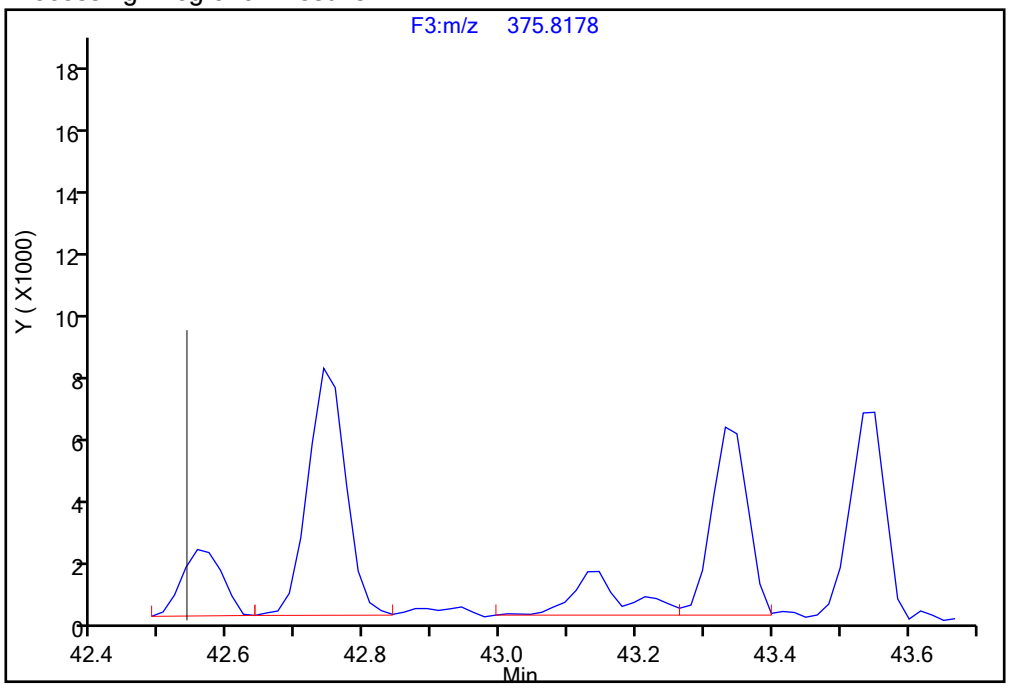
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.54- 45.78)

Signal: 2

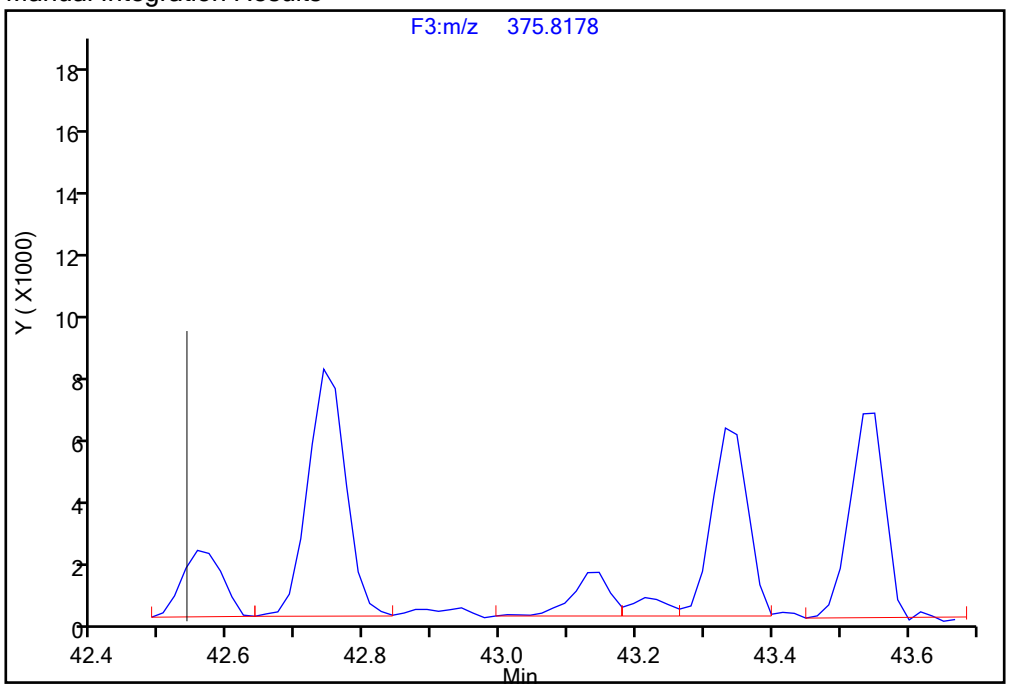
Processing Integration Results

RT = 43.145 Area = 7541



Manual Integration Results

RT = 43.145 Area = 5376 M



Reviewer: davidsonm, 17-Dec-2019 10:22:33

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

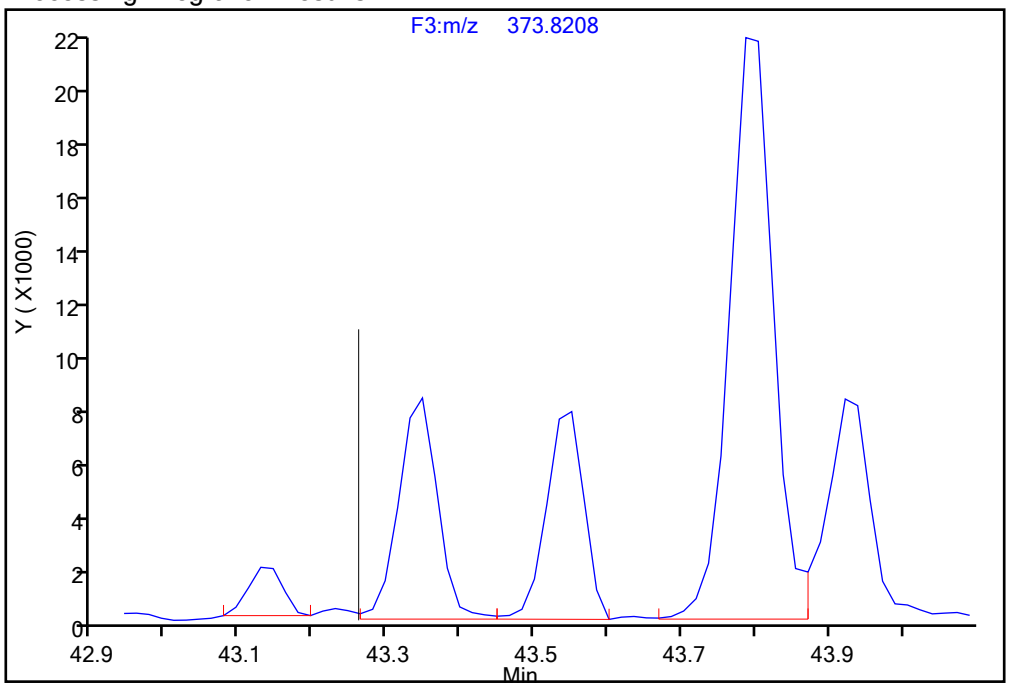
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.54- 45.78)

Signal: 1

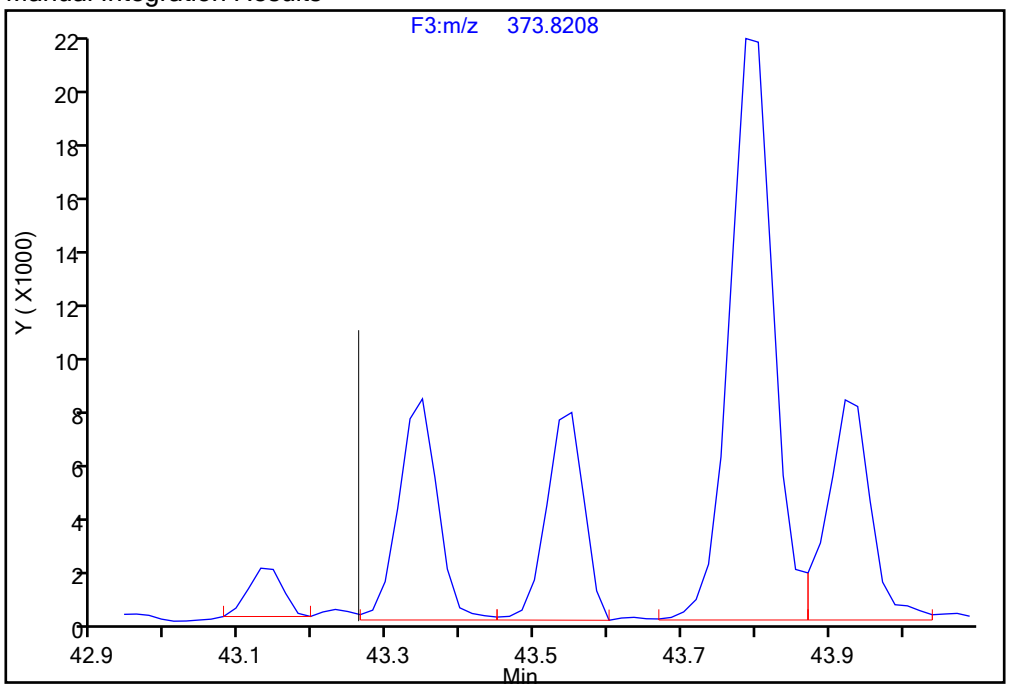
Processing Integration Results

RT = 43.551 Area = 27593



Manual Integration Results

RT = 43.551 Area = 27593



Reviewer: davidsonm, 17-Dec-2019 10:22:23

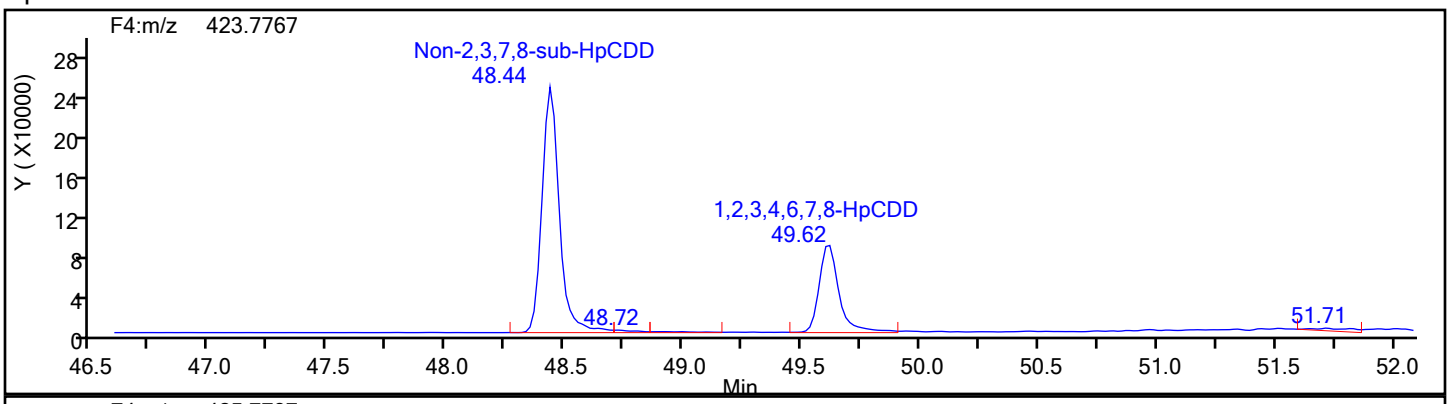
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

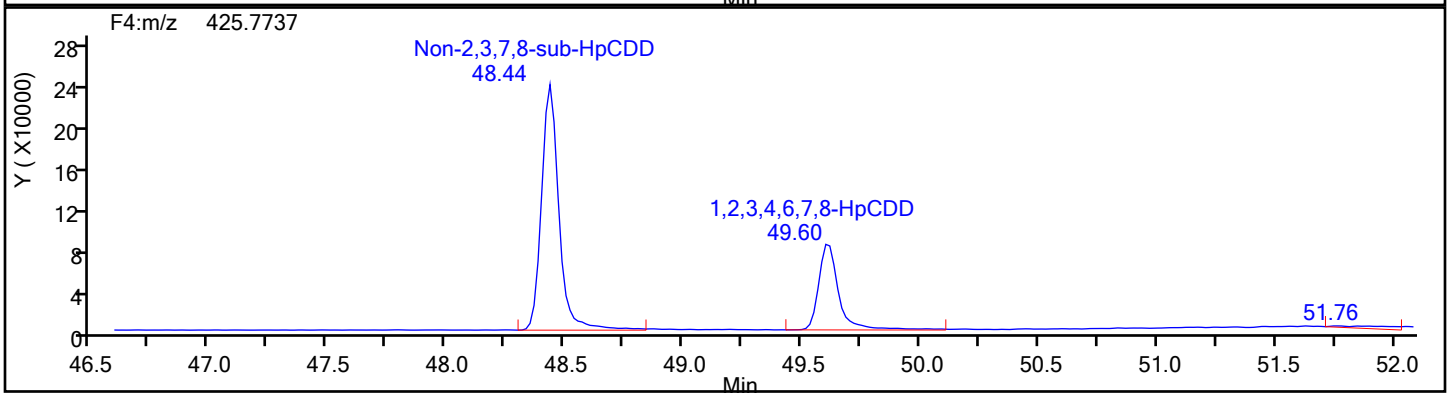
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

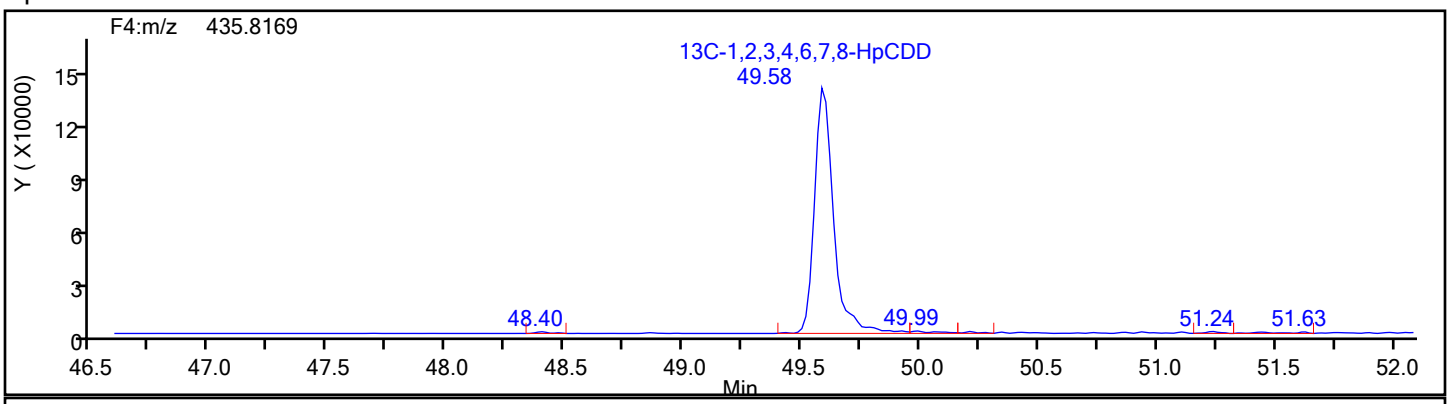
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

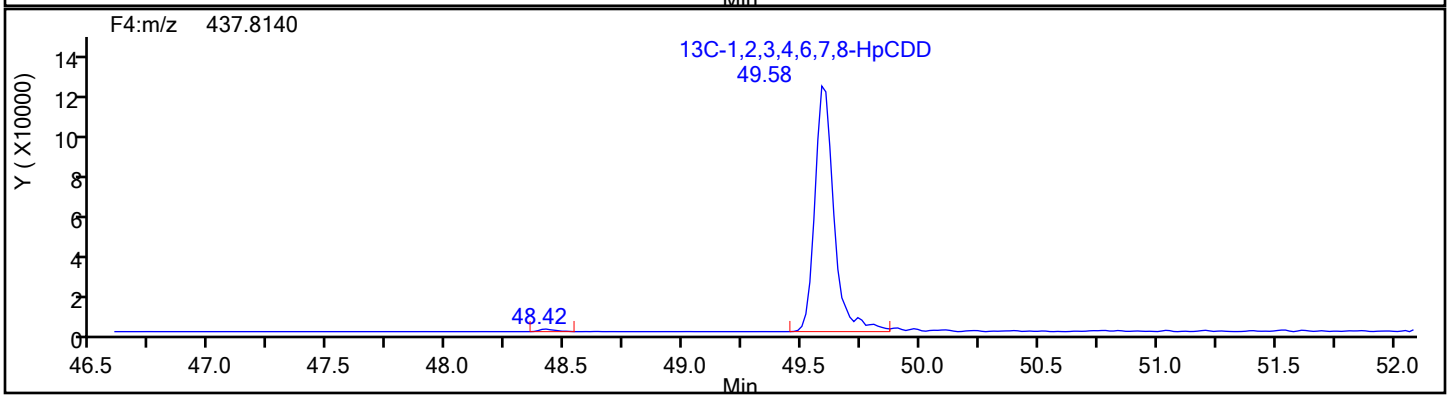
HpCDD





HpCDD Standards



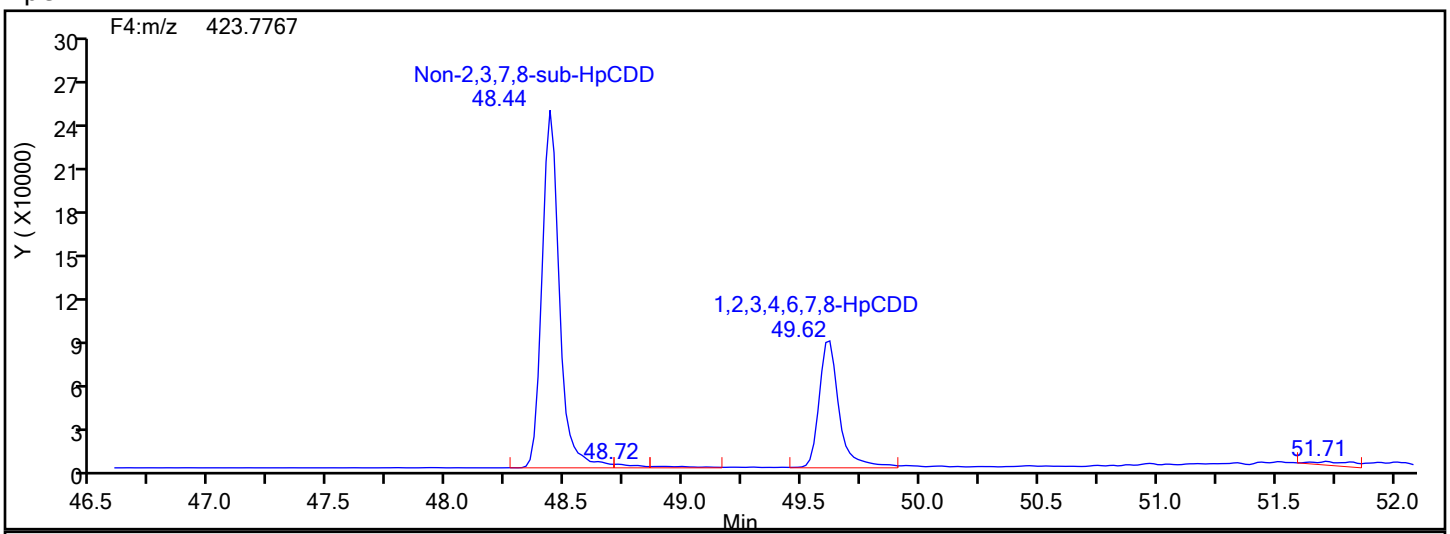


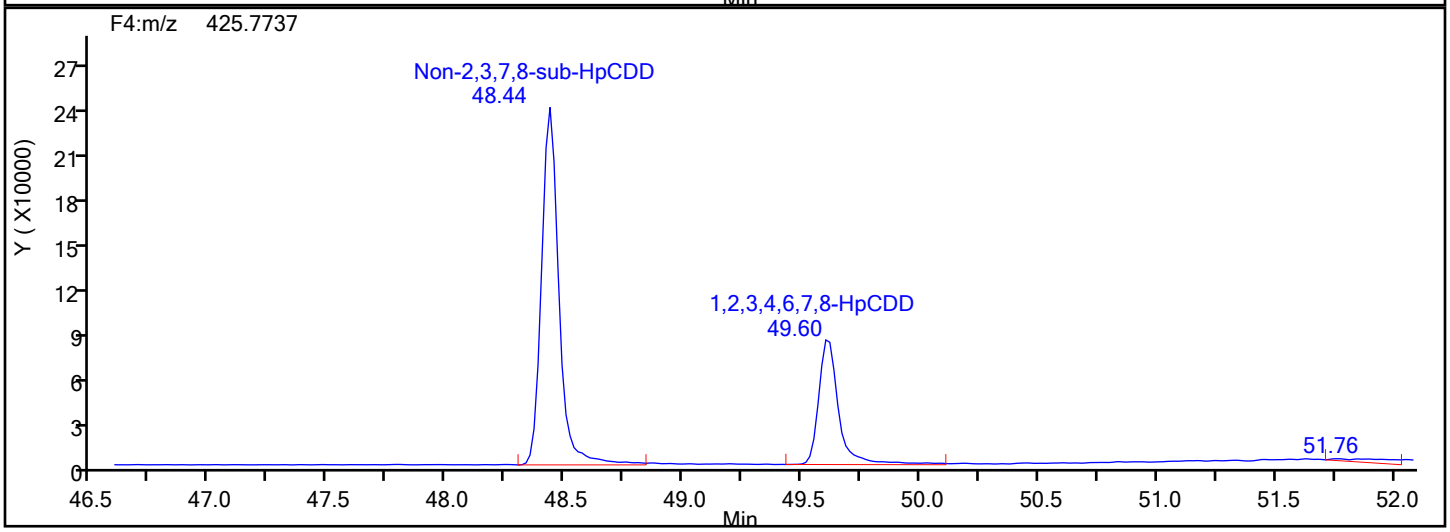
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

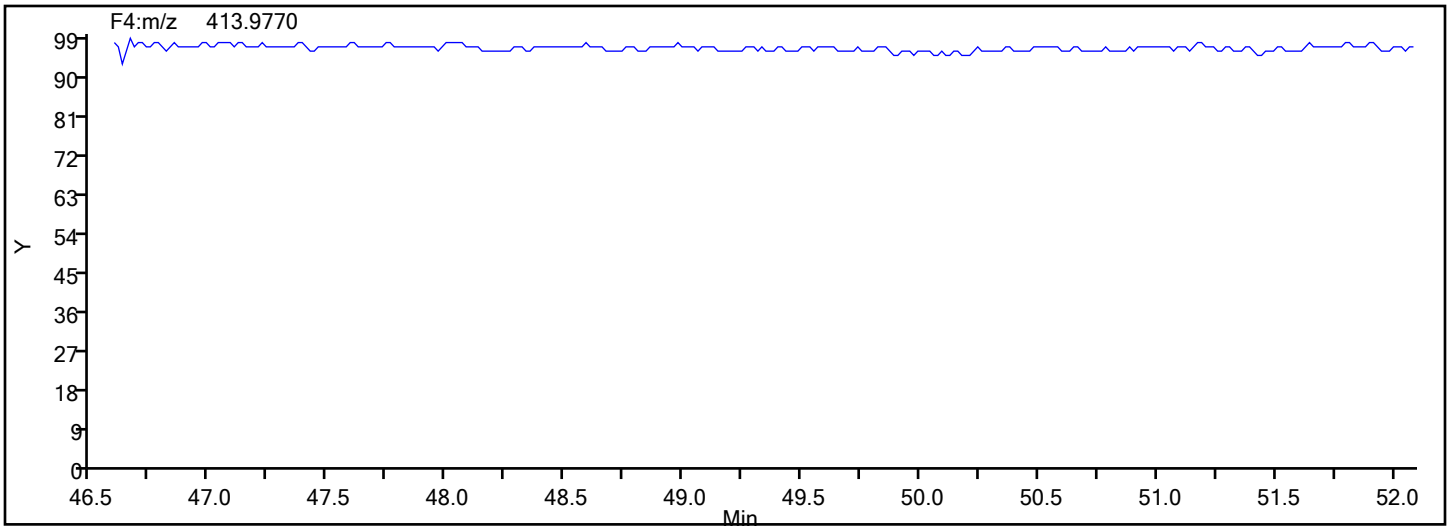
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

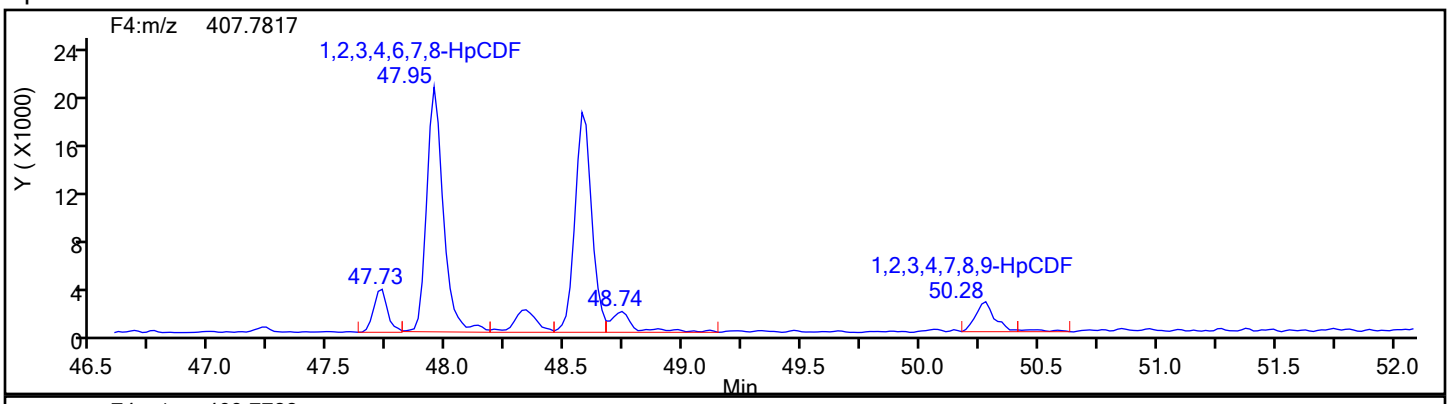


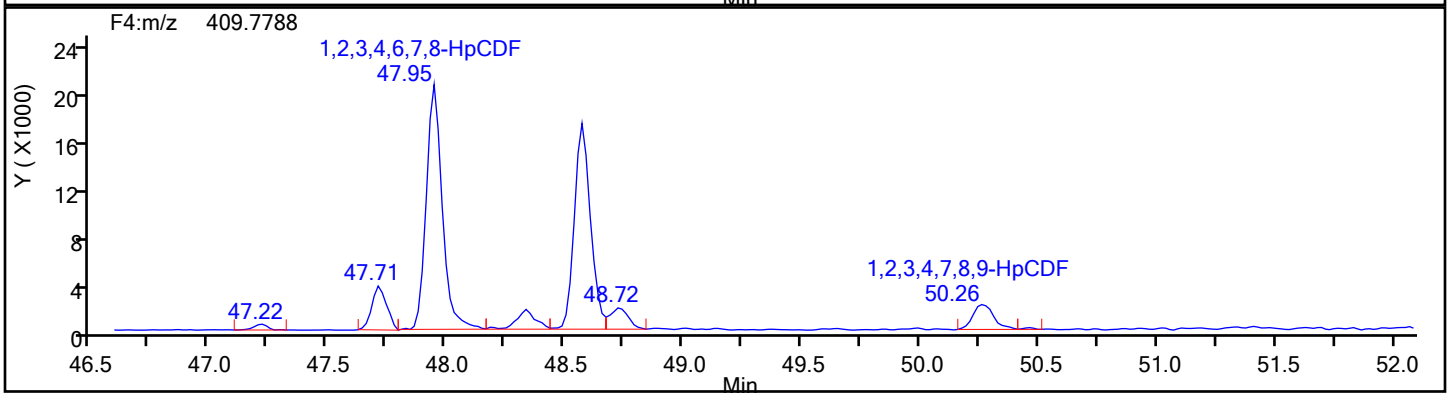
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

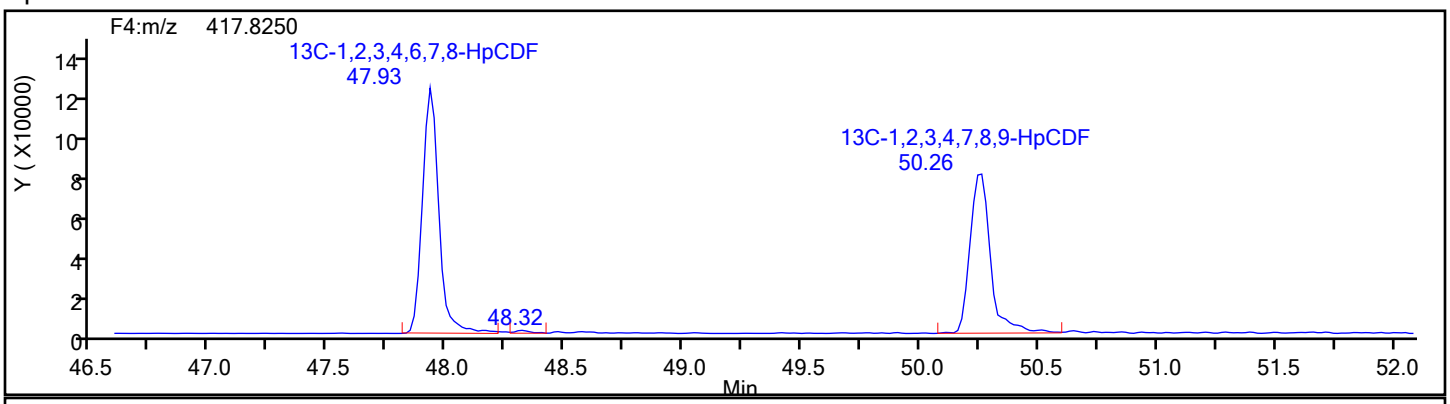
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

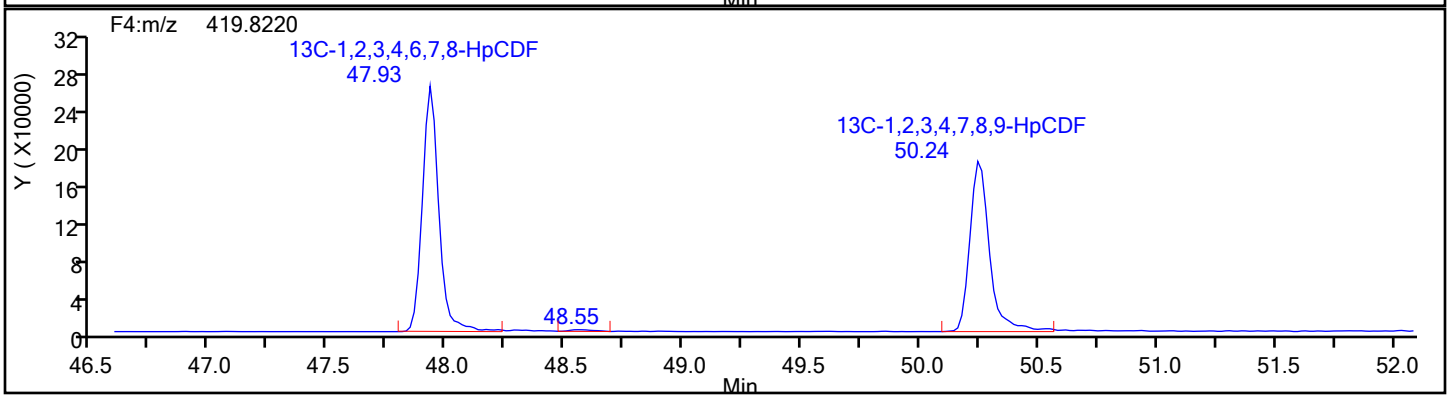
HpCDF





HpCDF Standards



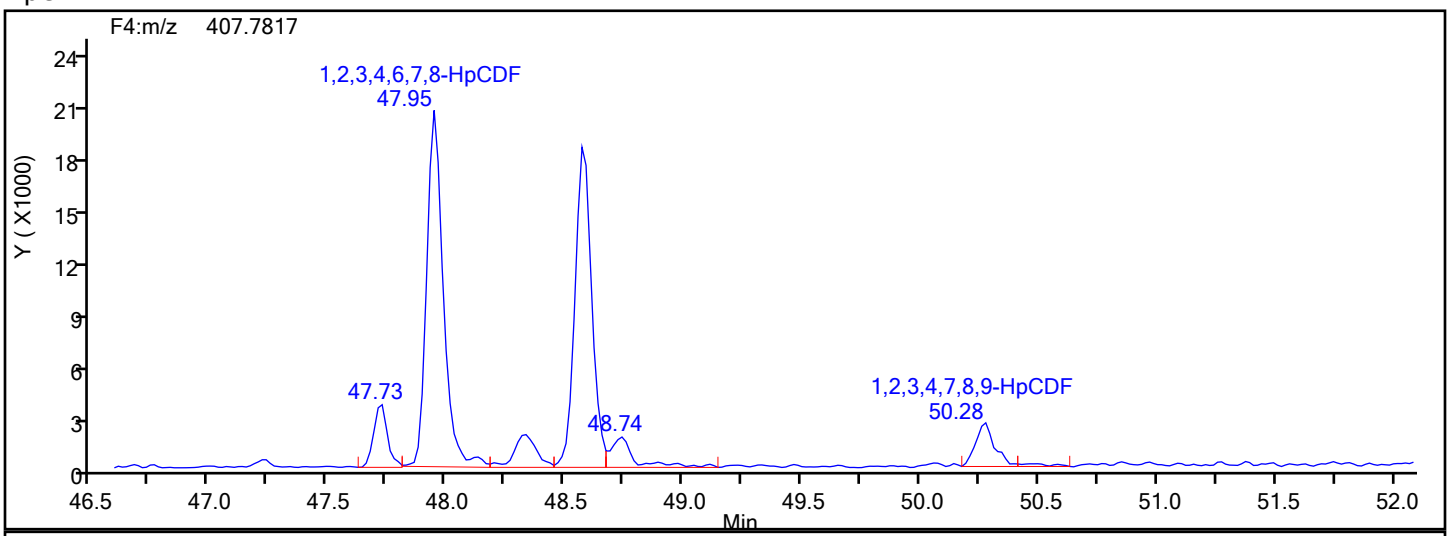


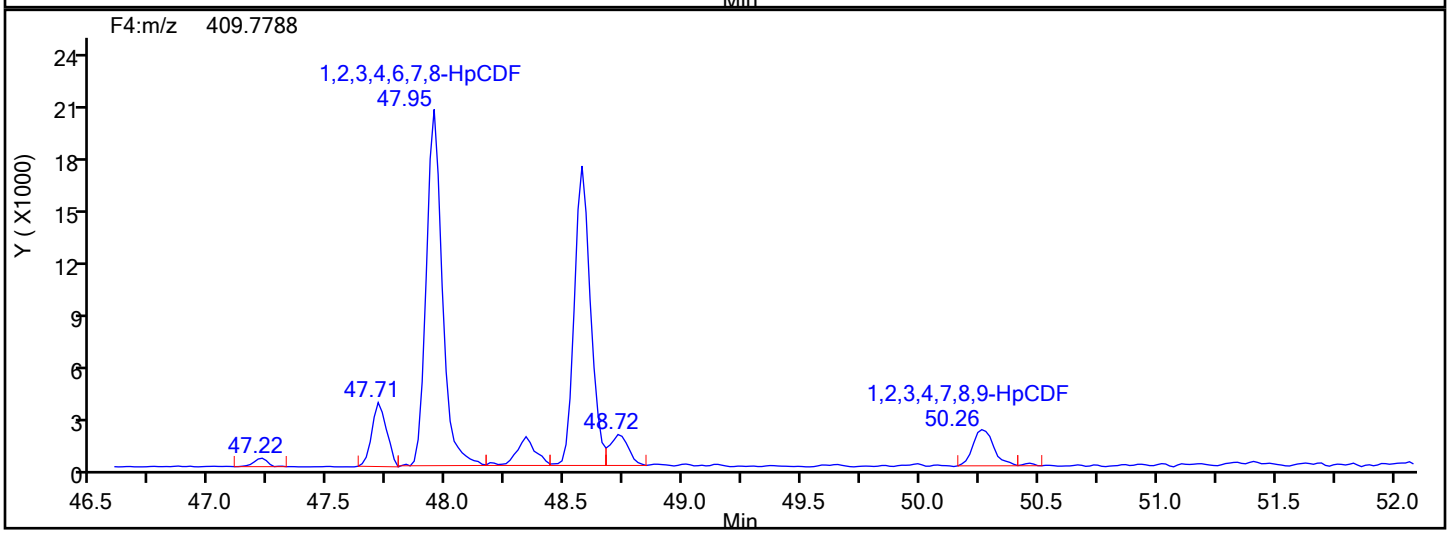
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

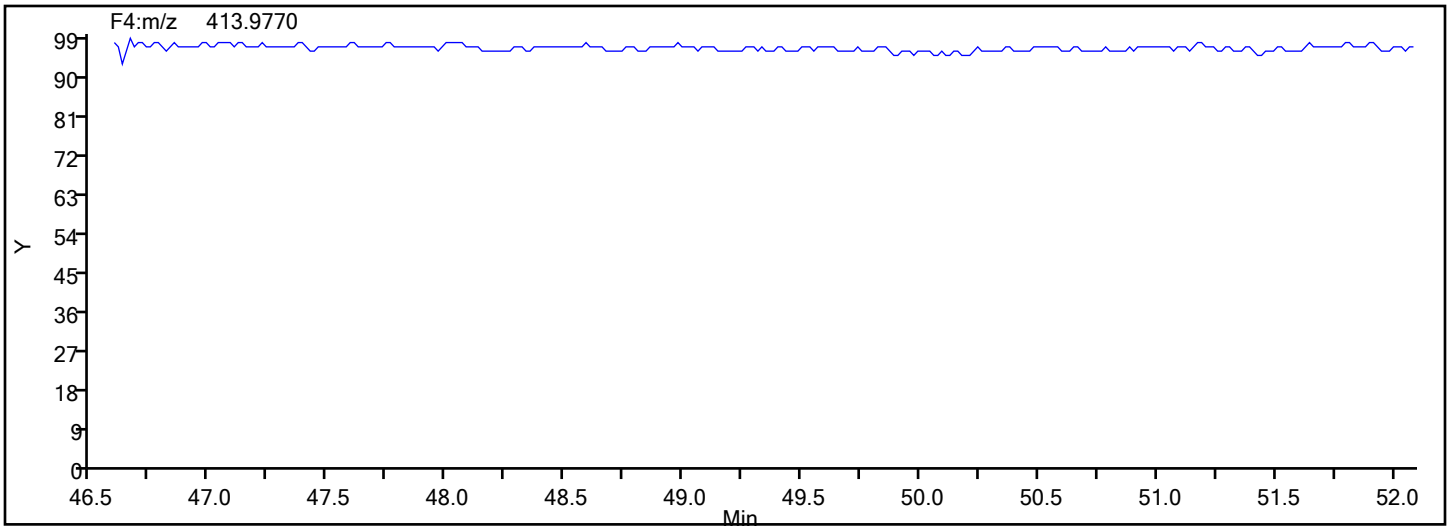
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

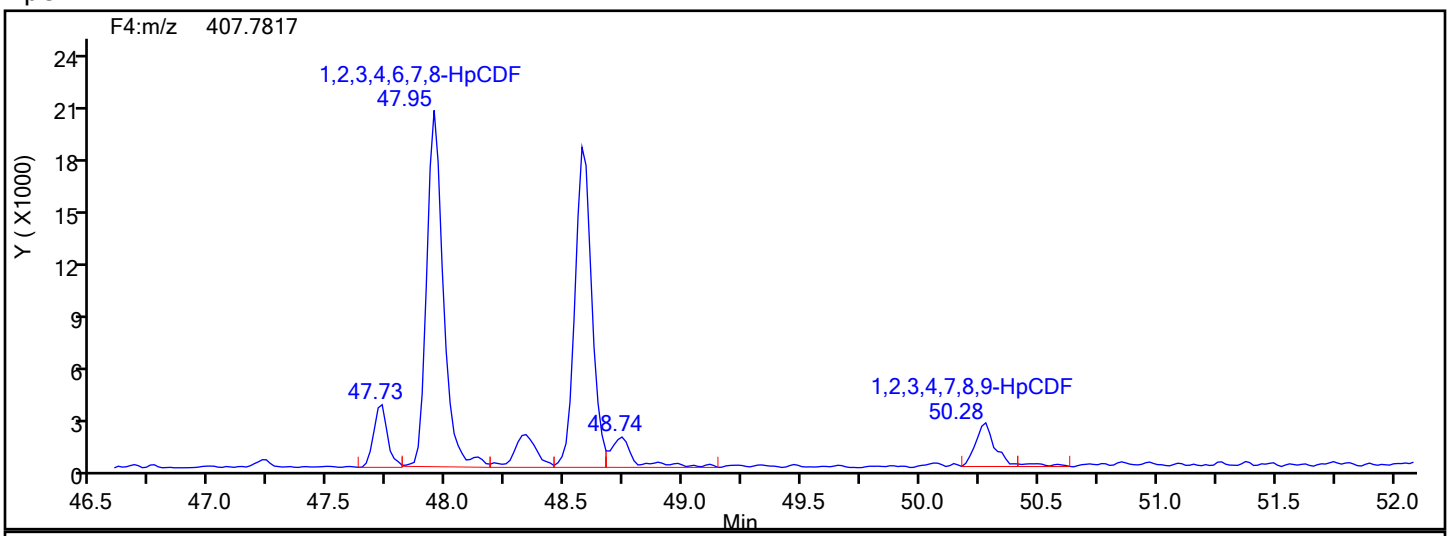


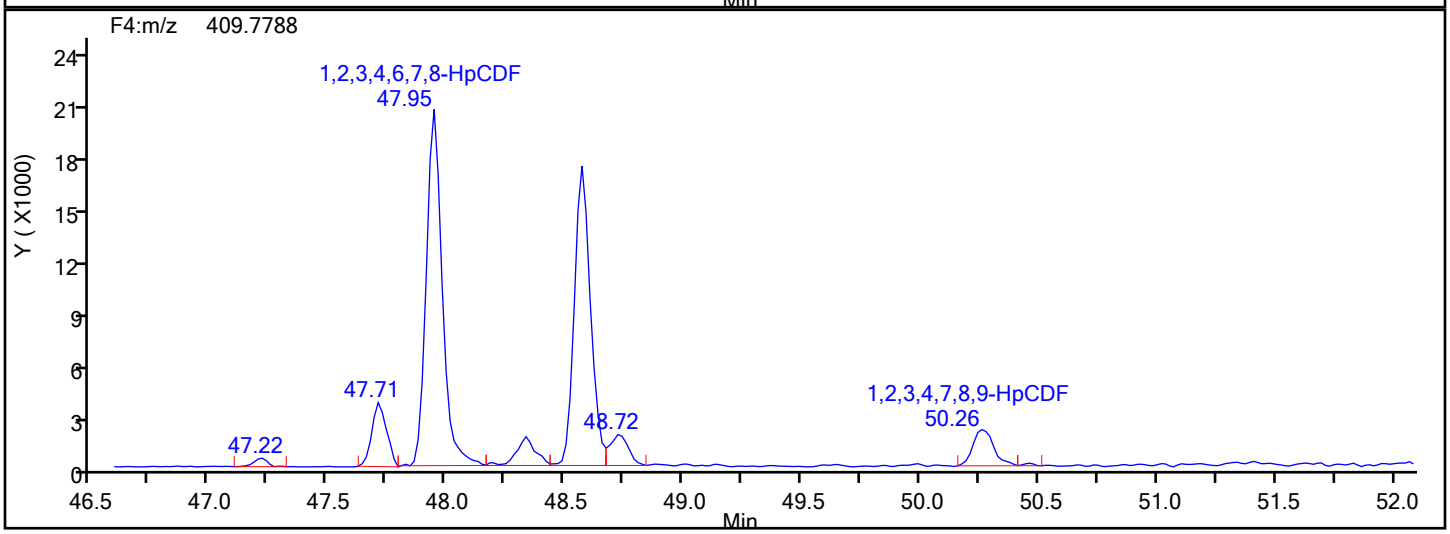
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

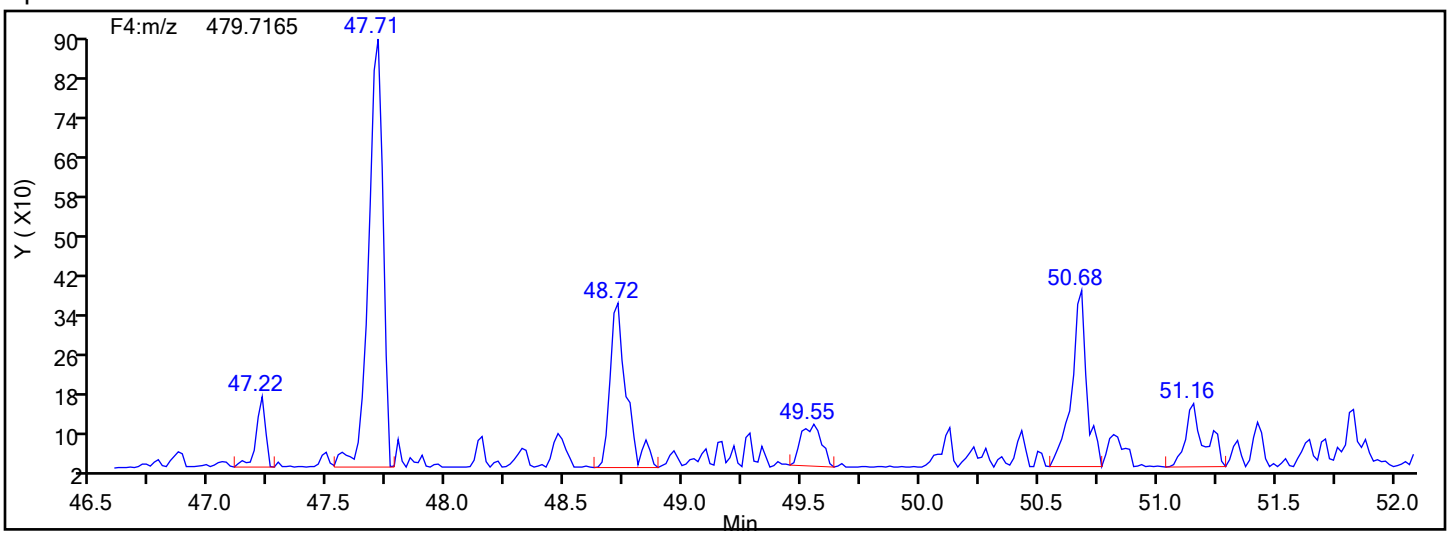
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

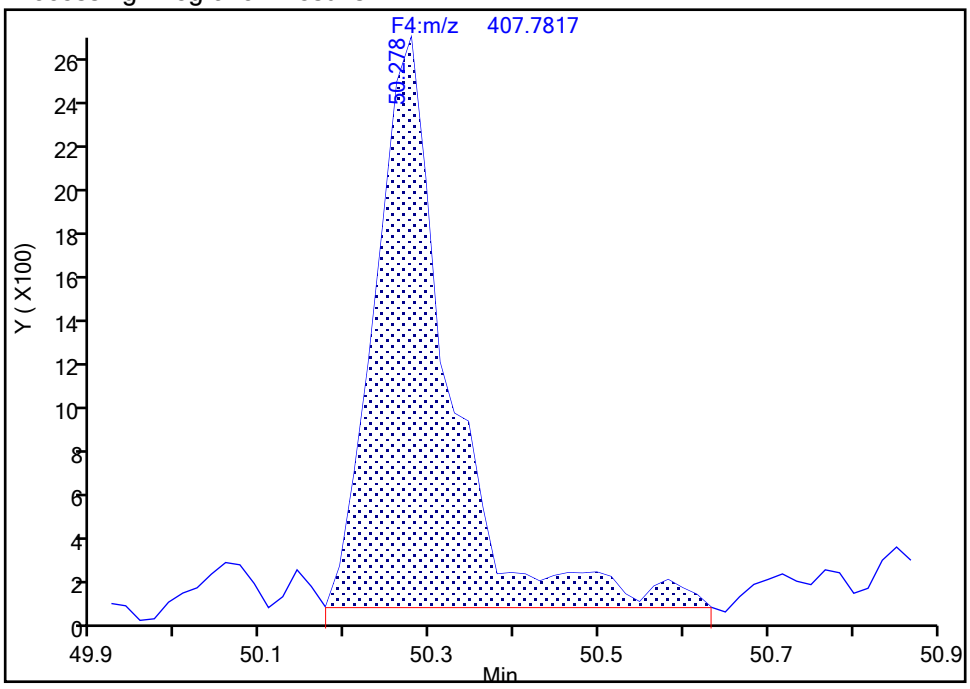
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

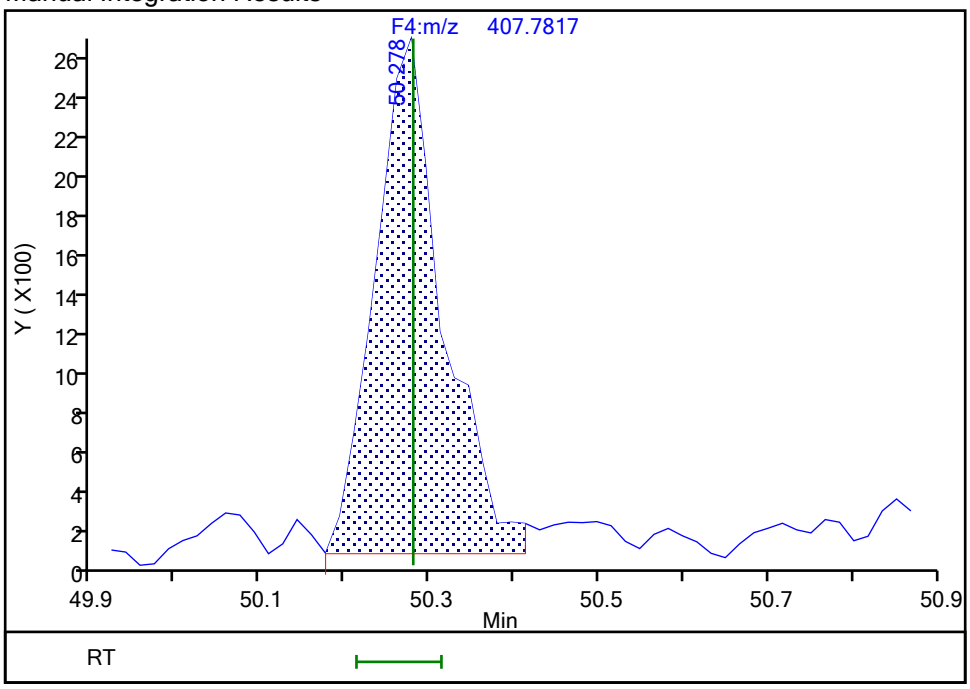
Processing Integration Results

RT: 50.28
Area: 15363
Amount: 0.673962
Amount Units: pg/ul



Manual Integration Results

RT: 50.28
Area: 13971
Amount: 0.631343
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:23:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

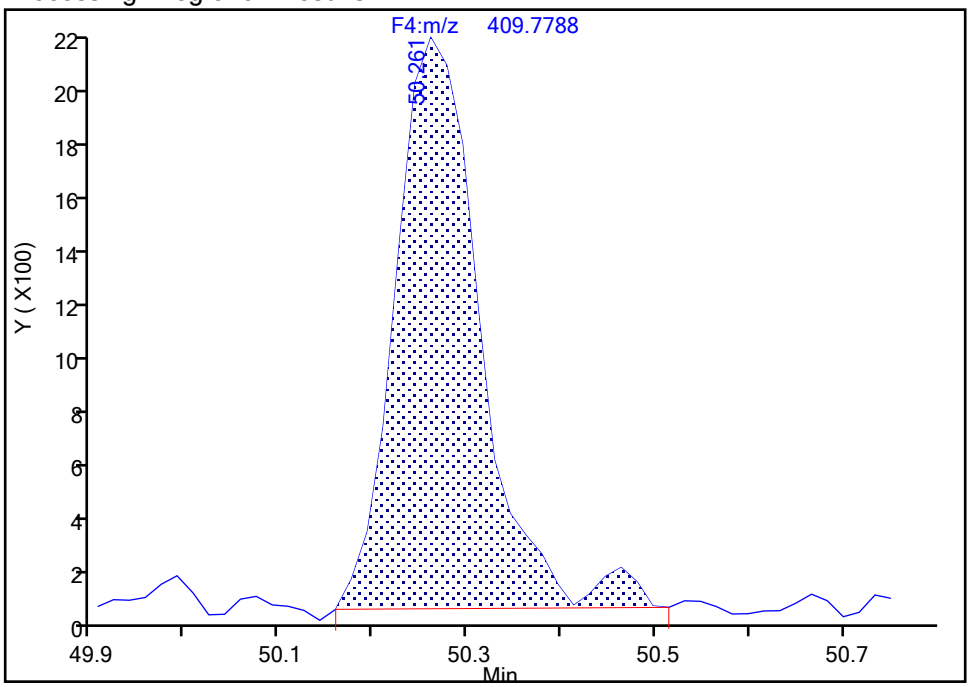
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d				
Injection Date:	17-Dec-2019 07:04:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-3-A	Lab Sample ID:	140-17578-3		
Client ID:	11187072-120419-SS-SJSSA08(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

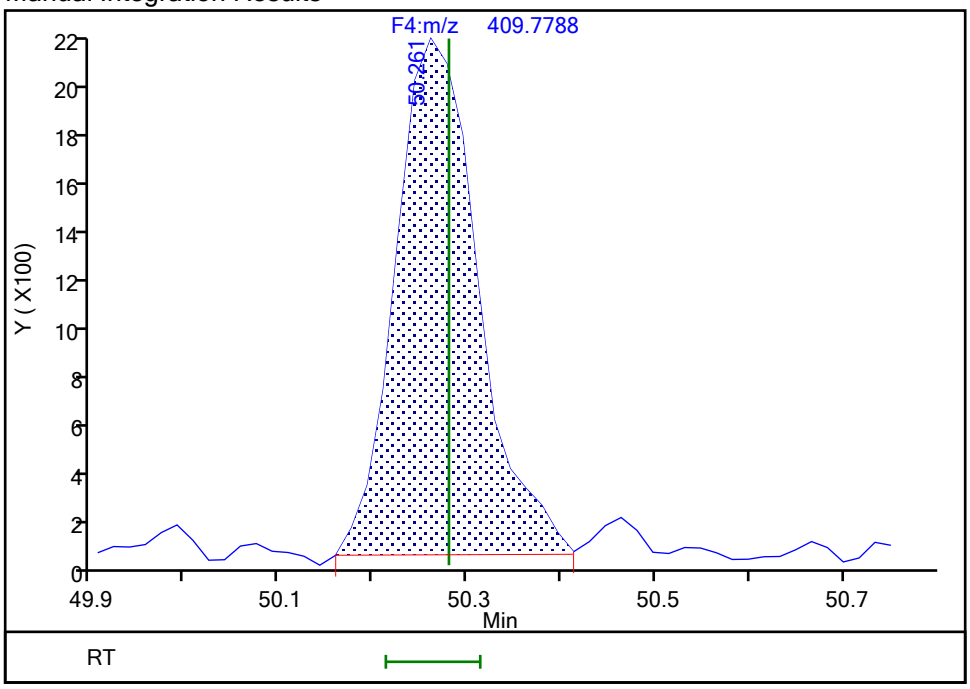
Processing Integration Results

RT: 50.26
Area: 13133
Amount: 0.673962
Amount Units: pg/ul



Manual Integration Results

RT: 50.26
Area: 12723
Amount: 0.631343
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 10:23:03

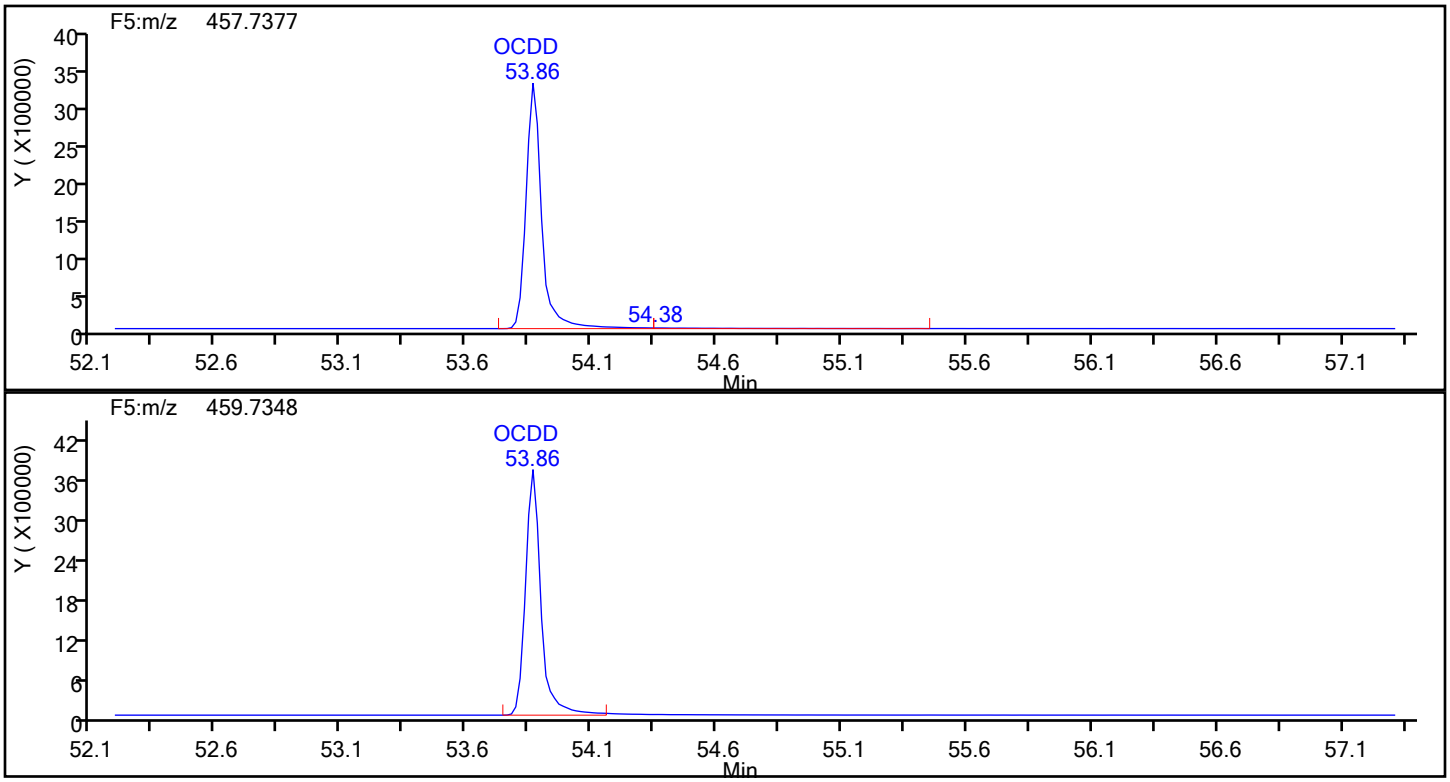
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

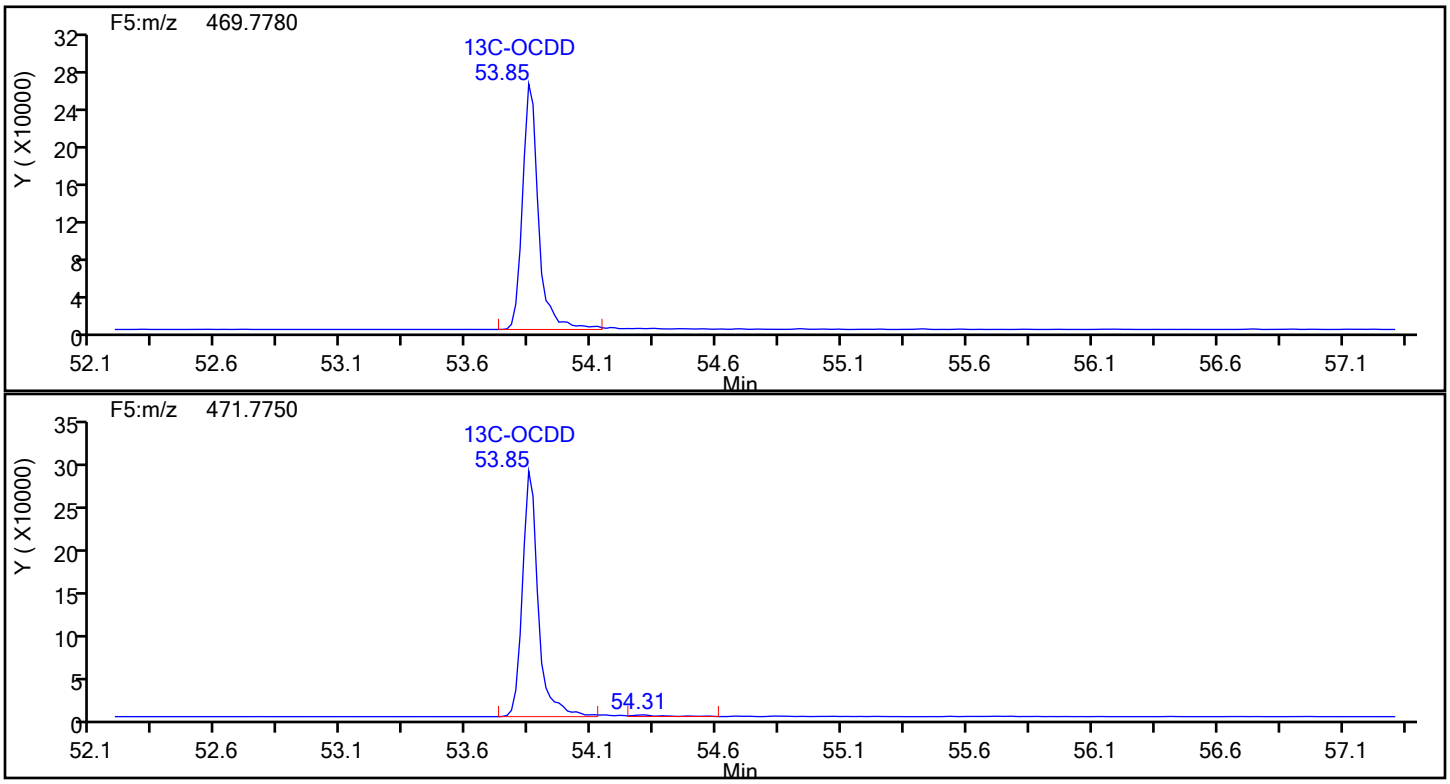
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

OCDD



OCDD Standards

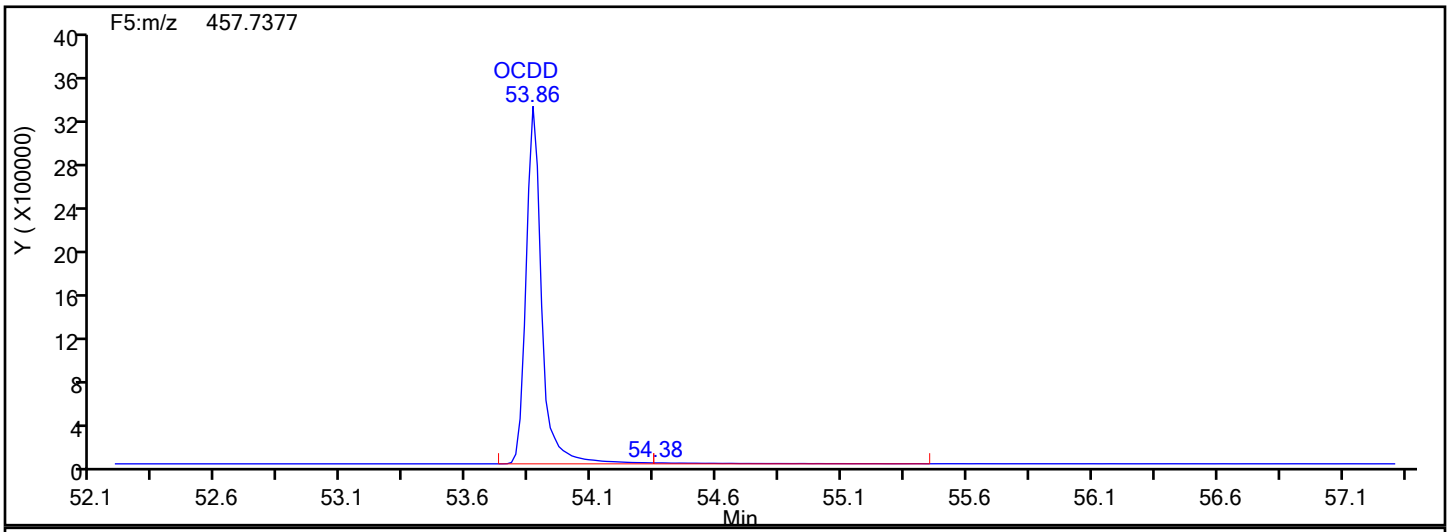


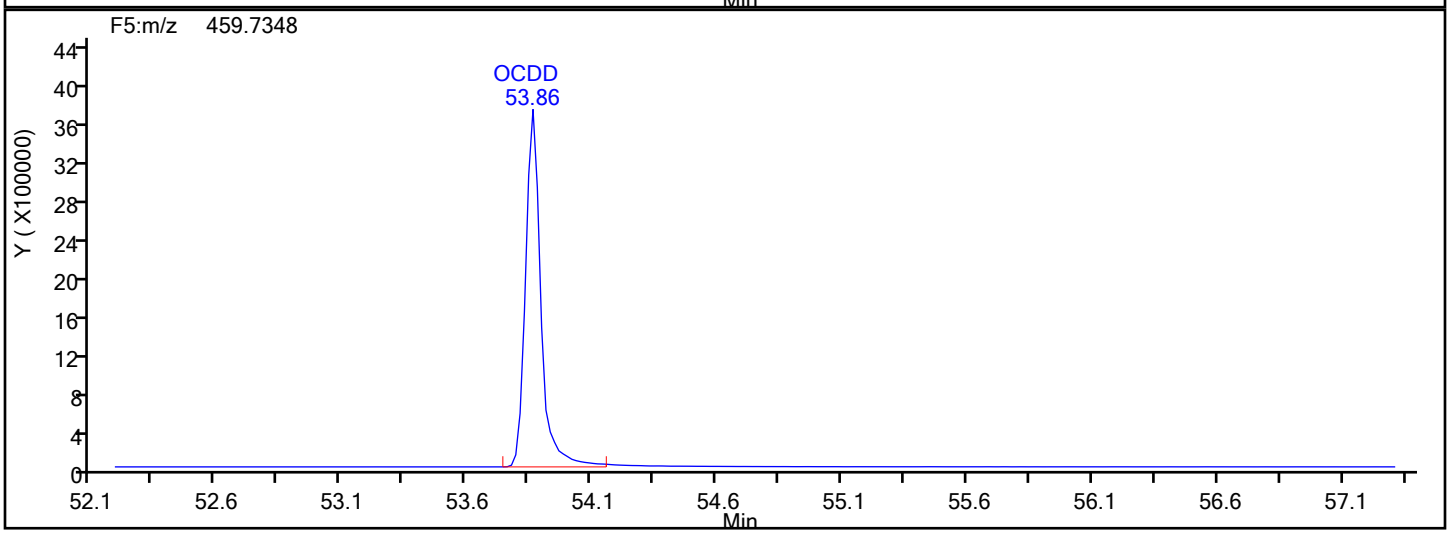
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

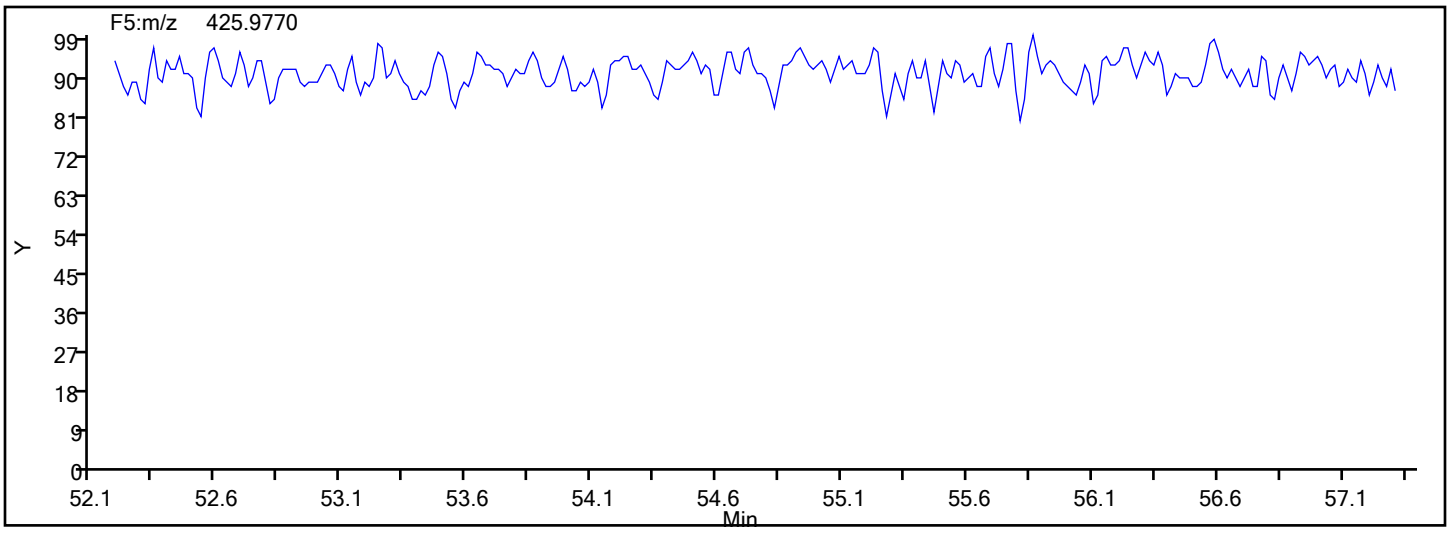
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d

Injection Date: 17-Dec-2019 07:04:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

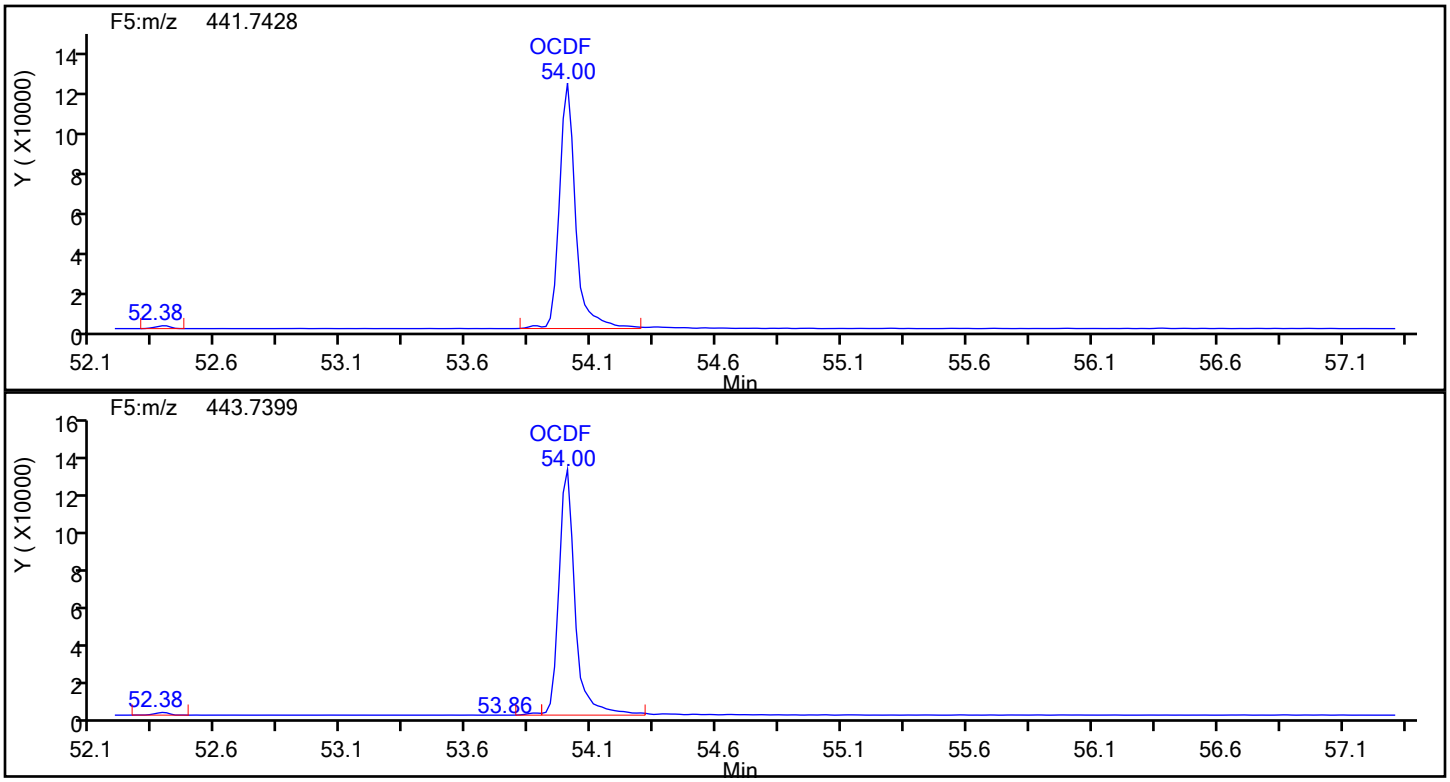
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120419-SS-SJSSA08(2-4)

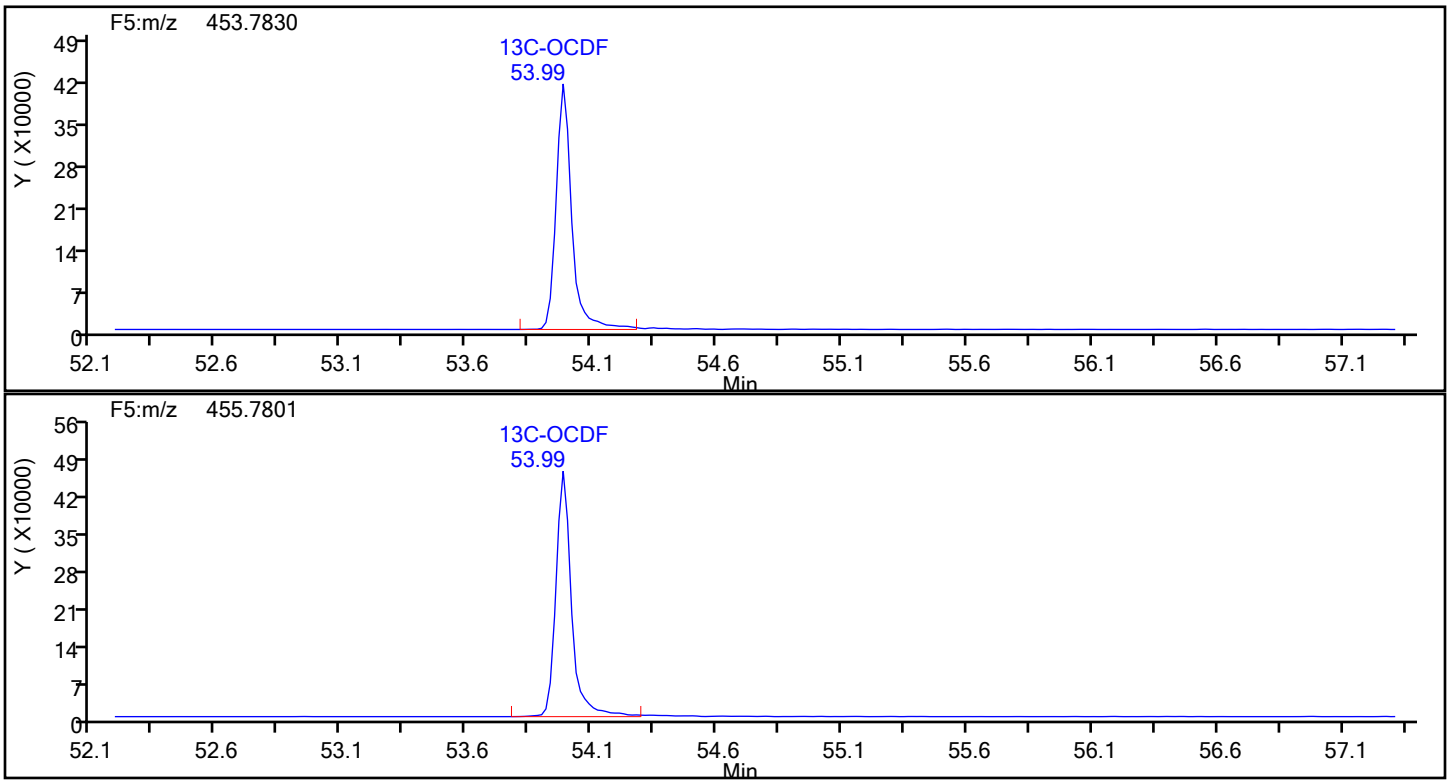
Worklist#: 36126 Sample Line#: 10

Column Type: Column Dia:

OCDF



OCDF Standards

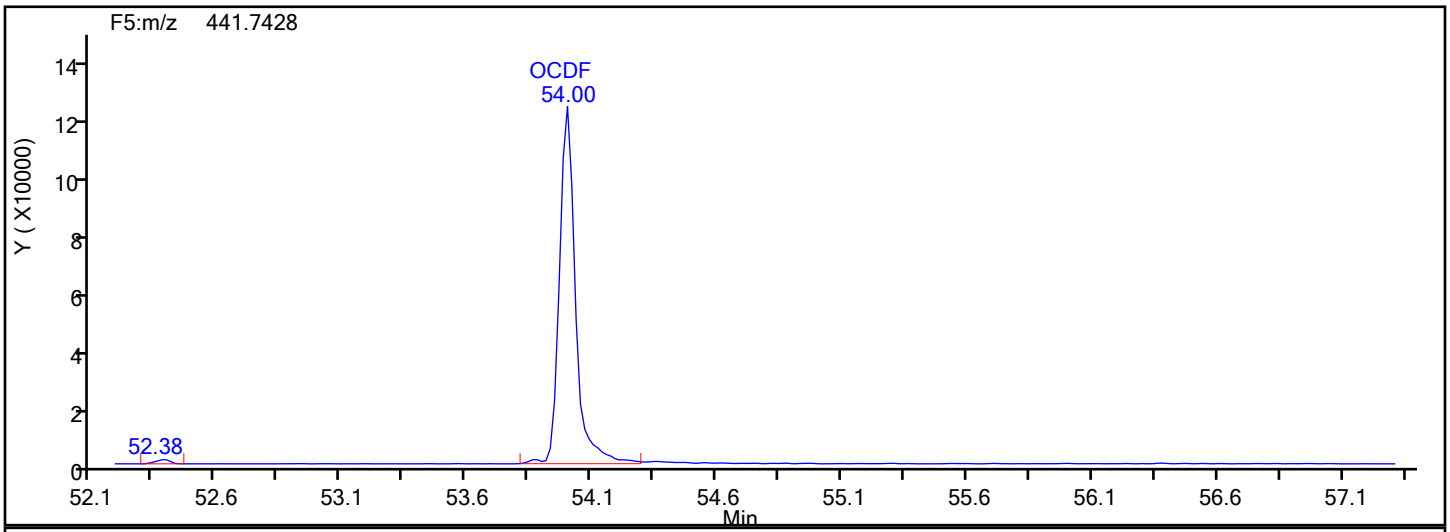


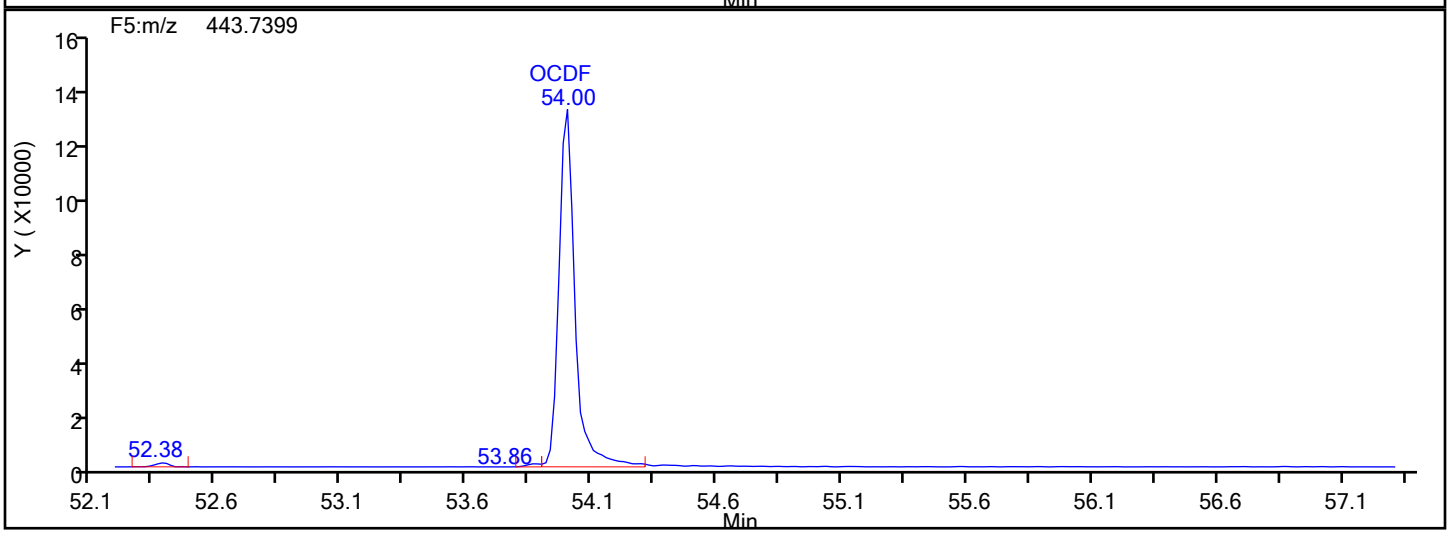
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

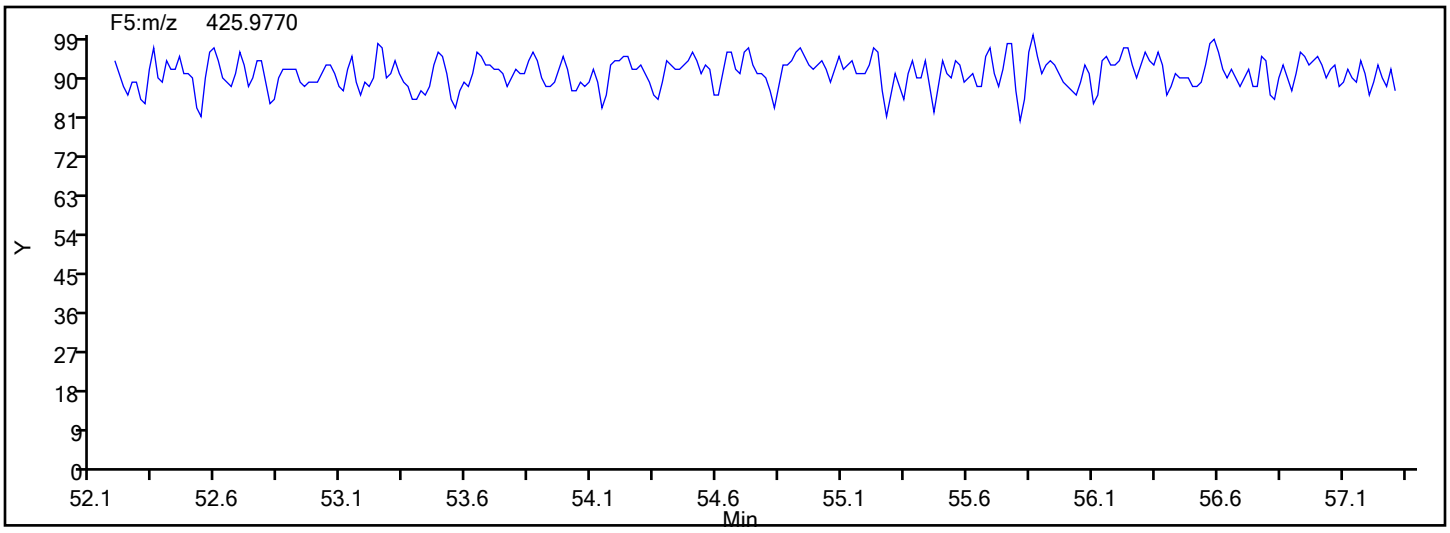
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

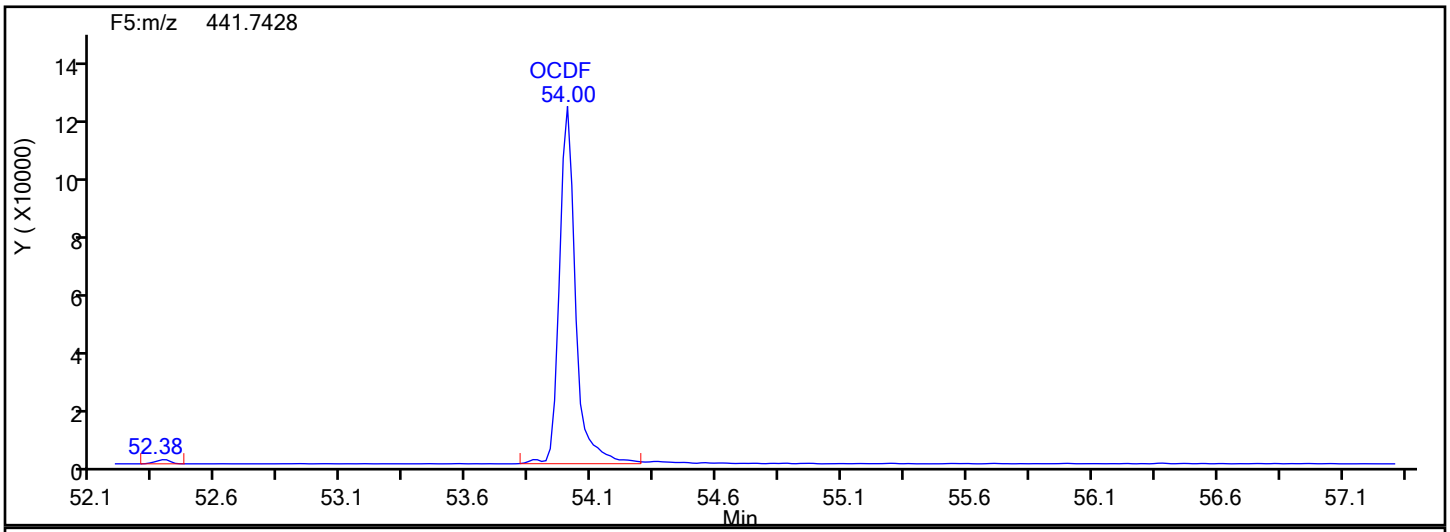


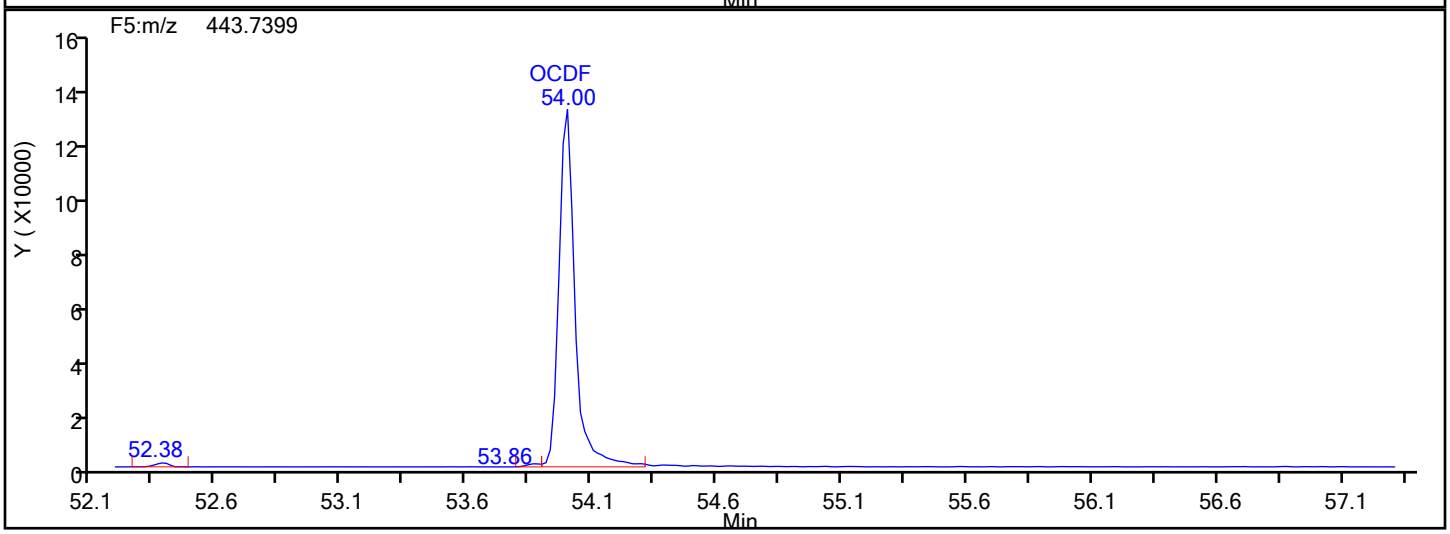
Report Date: 17-Dec-2019 10:23:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

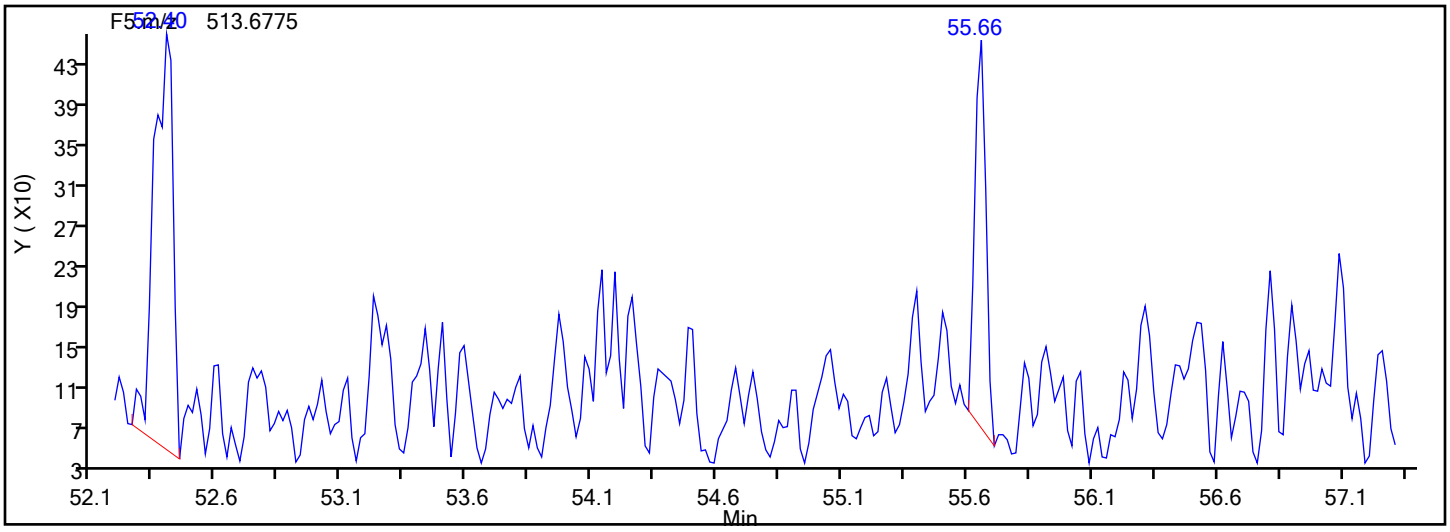
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-3-a.d		
Injection Date:	17-Dec-2019 07:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36126	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(2-4) Lab Sample ID: 140-17578-3

Matrix: Sediment Lab File ID: 140-17578-a-3-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.76(g) Date Analyzed: 12/18/2019 06:19

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	260		1.8	0.93

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	61		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:19:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-011
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:06

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:42	665590	0.78	1.2213	18.7	18.7	0.1674	0.1674		
2,3,7,8-TCDF	22:14	3495305	0.82	1.1100	74.0	74.0	0.2624	0.2624		
D 13C-2,3,7,8-TCDD	19:41	1454302	0.81	1.0031	33.7	33.7	0.4486	0.4486	67.47	
D 13C-2,3,7,8-TCDF	22:13	2127535	0.84	1.6193	30.6	30.6	0.2196	0.2196	61.14	
$ 37Cl4-2,3,7,8-TCDD	19:42	363982		1.1834	7.157	7.157	0.1273	0.1273	71.57	
* 13C-1,2,3,4-TCDD	20:09	4297734	0.82	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-3-a.d
Lims ID: 140-17578-A-3-A
Client ID: 11187072-120419-SS-SJSSA08(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:19:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-011
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:06

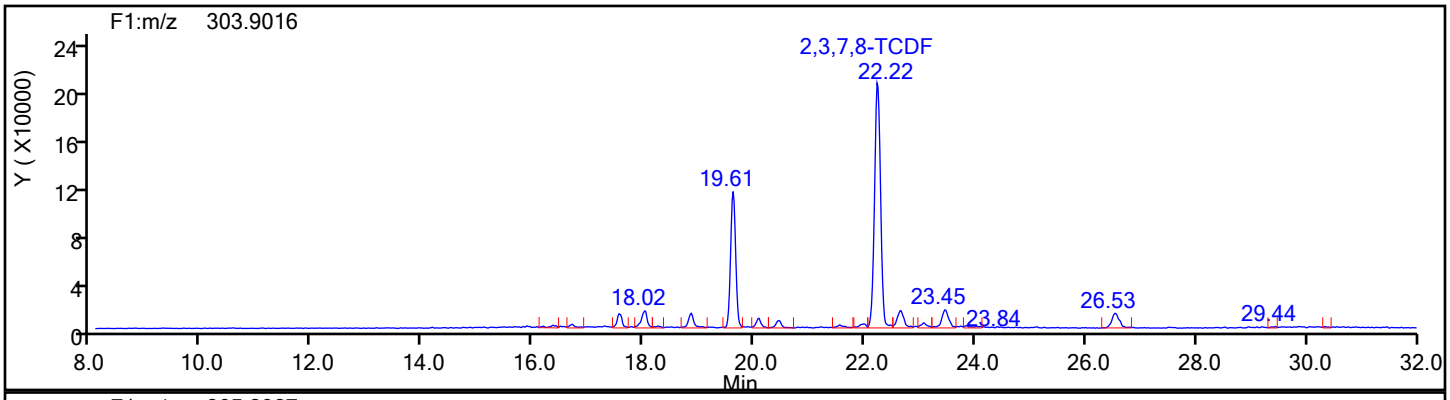
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:42	19:44	-1	1.001	291701	44390	115	287	386		
321.8936	19:43	19:44	0	1.002	373889	58633	259	647	226	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:14	-2	1.001	1578196	205860	241	602	854		
305.8987	22:14	22:14	-2	1.001	1917109	253993	437	1092	581	0.82(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:41	19:41	-1	0.977	650622	102089	518	1295	197		
333.9338	19:41	19:41	-1	0.977	803680	126511	665	1662	190	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:13	22:14	-1	1.103	968311	130762	419	1047	312		
317.9389	22:12	22:14	-2	1.102	1159224	160246	516	1290	311	0.84(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:42	19:42	-1	0.978	363982	56470	396	990	143		
13C-1,2,3,4-TCDD											
331.9368	20:09	20:09	-1		1930483	286690	518	1295	553		
333.9338	20:09	20:09	-1		2367251	370495	665	1662	557	0.82(0.65-0.89)	

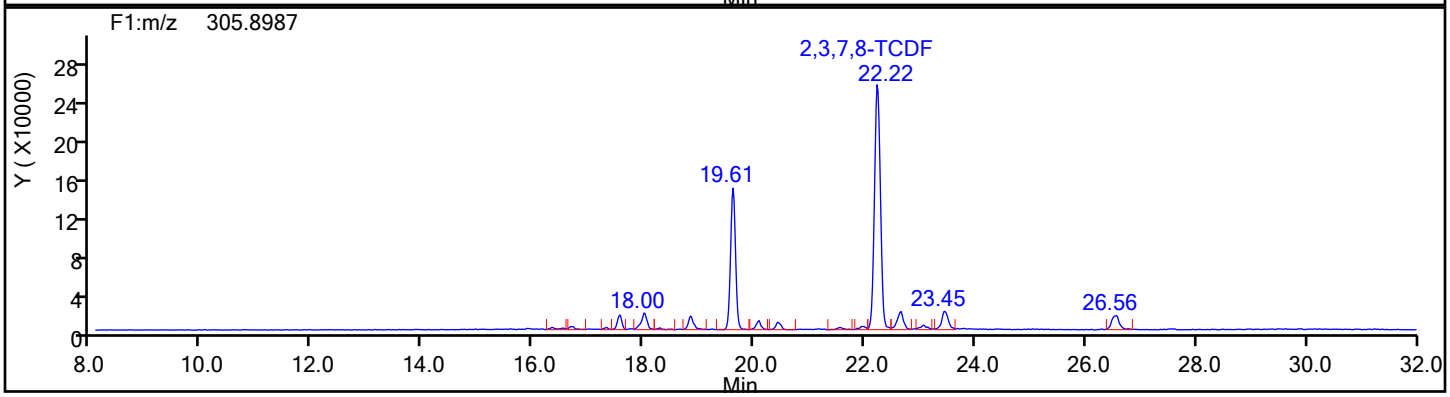
Report Date: 18-Dec-2019 09:06:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

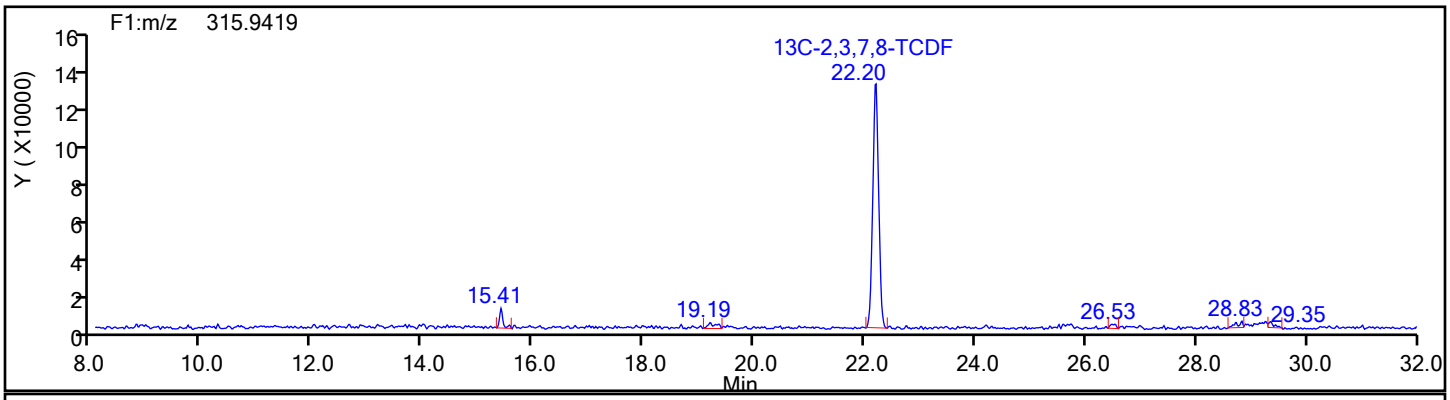
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-3-a.d		
Injection Date:	18-Dec-2019 06:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36167	Sample Line#:	11
Column Type:	DB225	Column Dia:	0.32 mm

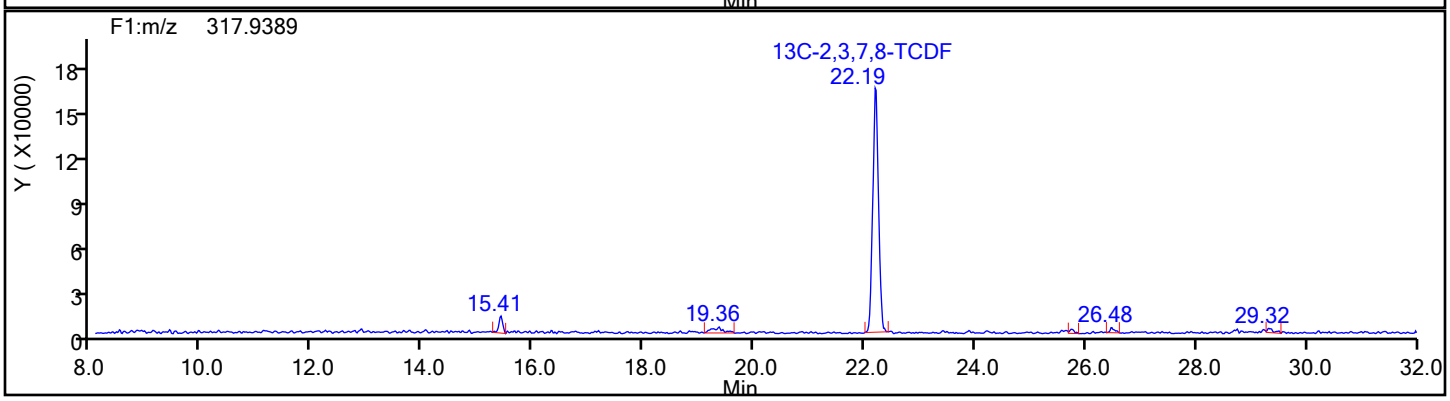
TCDF





TCDF Standards



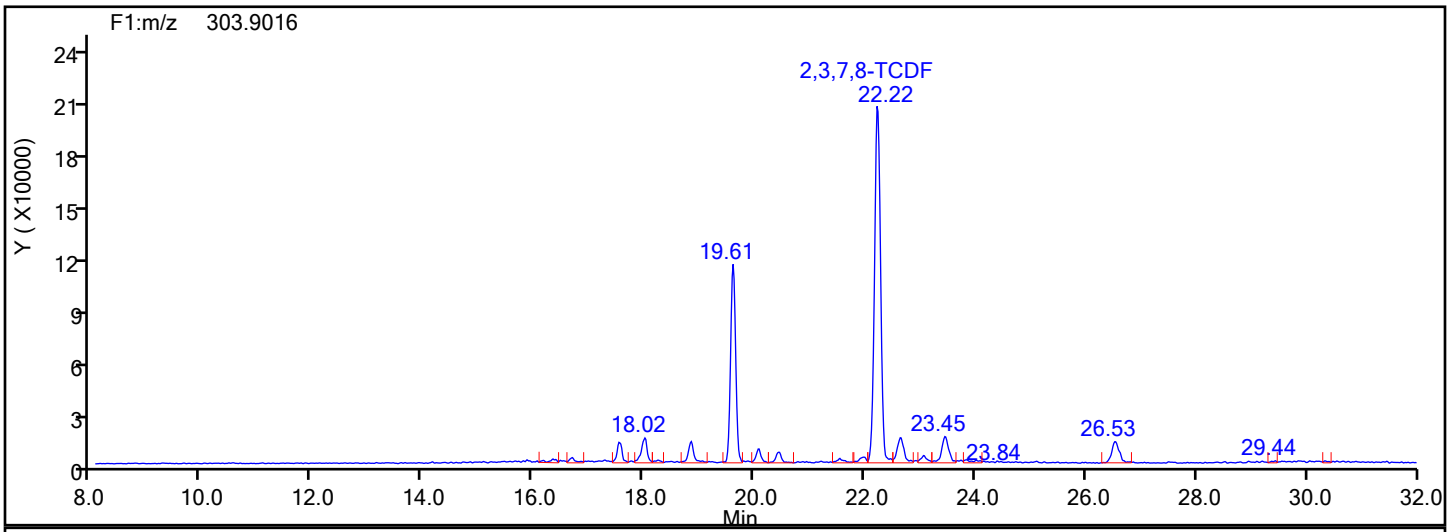


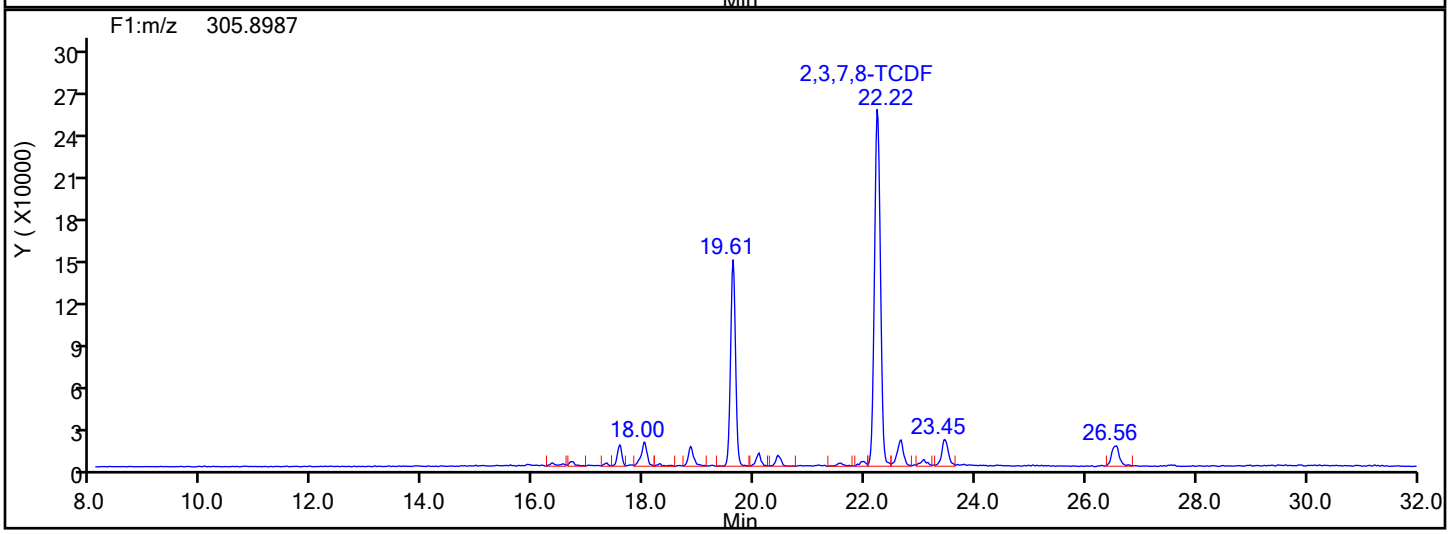
Report Date: 18-Dec-2019 09:06:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

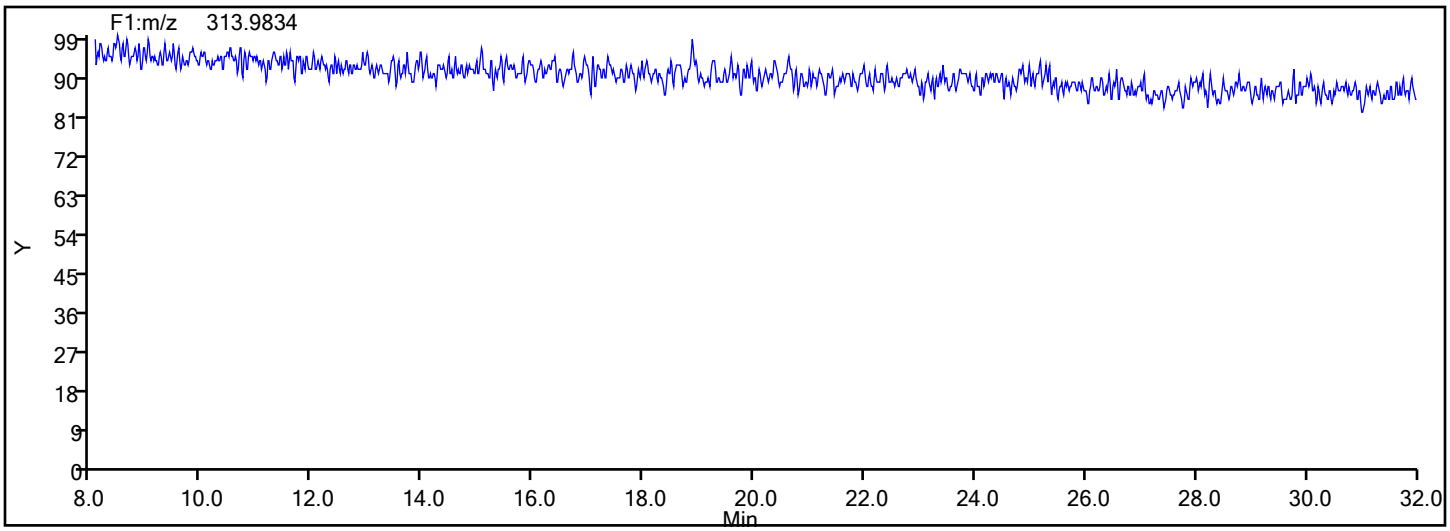
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-3-a.d		
Injection Date:	18-Dec-2019 06:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36167	Sample Line#:	11
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

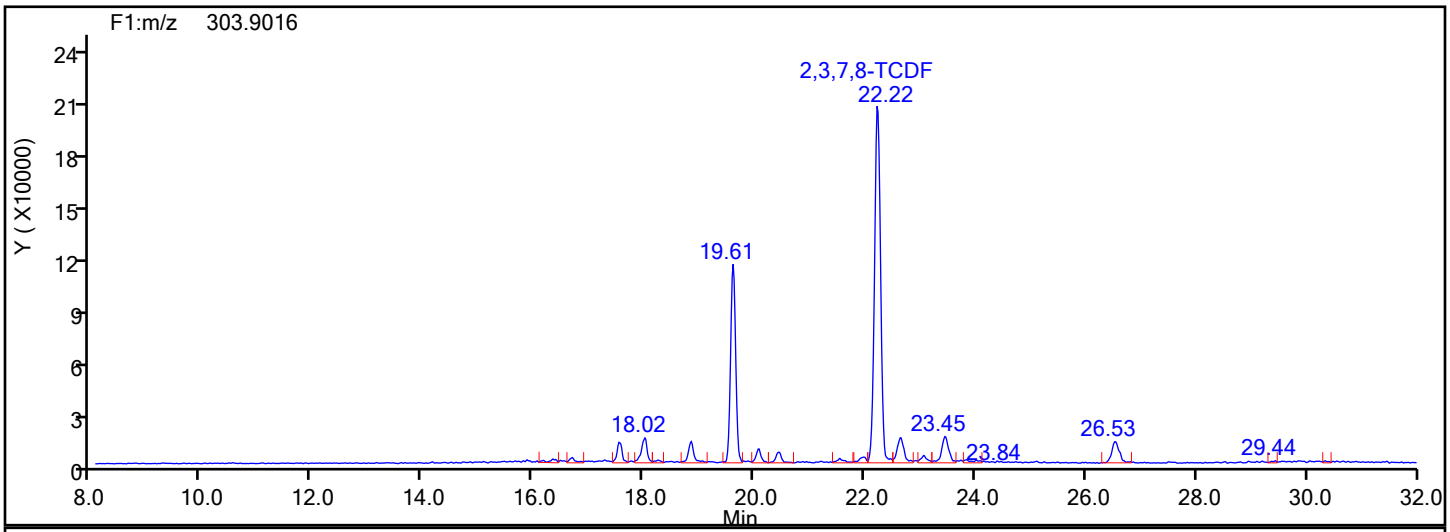


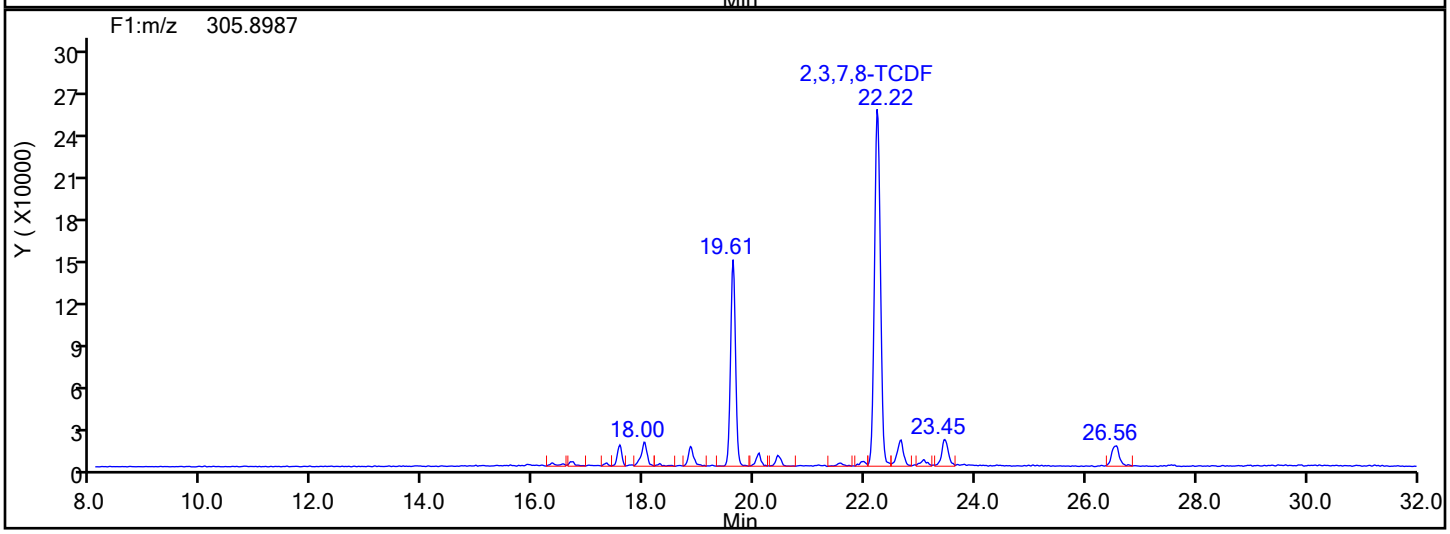
Report Date: 18-Dec-2019 09:06:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

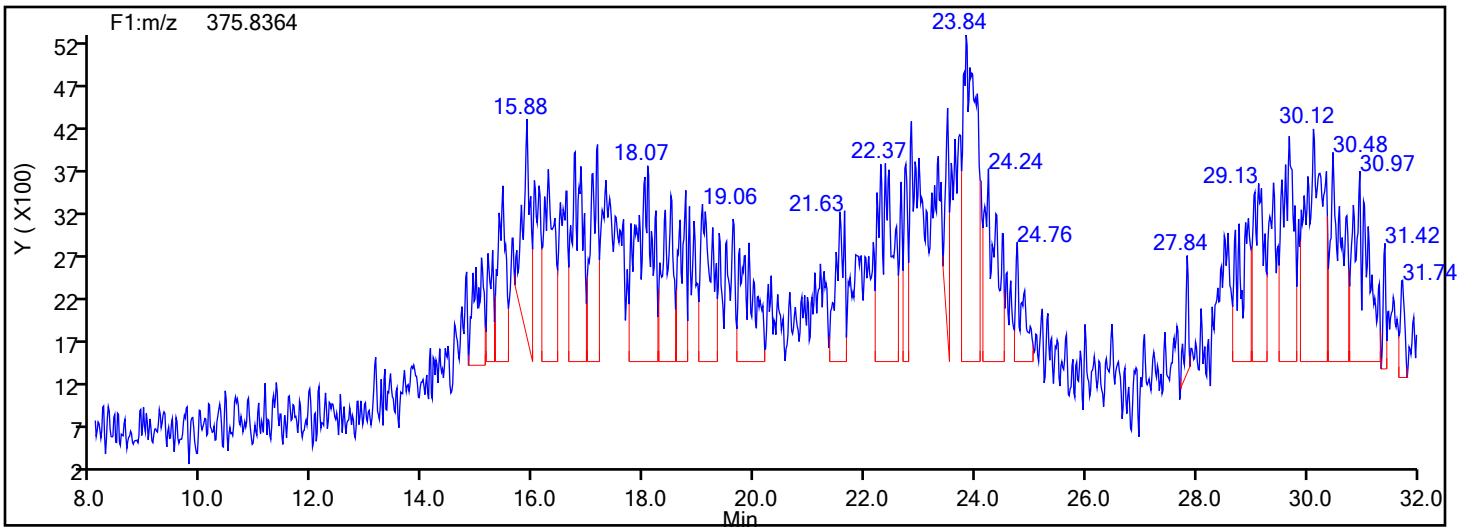
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-3-a.d		
Injection Date:	18-Dec-2019 06:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(2-4)		
Worklist#:	36167	Sample Line#:	11
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Matrix: Sediment Lab File ID: 140-17578-a-4-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:45

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/17/2019 08:05

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 29.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	35		1.4	0.13
41903-57-5	Total TCDD	47	B q	1.4	0.13
40321-76-4	1,2,3,7,8-PeCDD	0.52	J	7.1	0.12
36088-22-9	Total PeCDD	8.2	q	7.1	0.12
39227-28-6	1,2,3,4,7,8-HxCDD	0.35	J q	7.1	0.21
57653-85-7	1,2,3,6,7,8-HxCDD	0.90	J	7.1	0.20
19408-74-3	1,2,3,7,8,9-HxCDD	2.3	J	7.1	0.19
34465-46-8	Total HxCDD	40	B q	7.1	0.20
35822-46-9	1,2,3,4,6,7,8-HpCDD	35	B	7.1	0.12
37871-00-4	Total HpCDD	130	B	7.1	0.12
3268-87-9	OCDD	830	B	14	0.046
30402-14-3	Total TCDF	260	B q	1.4	0.14
57117-41-6	1,2,3,7,8-PeCDF	2.7	J	7.1	0.14
57117-31-4	2,3,4,7,8-PeCDF	2.6	J	7.1	0.13
30402-15-4	Total PeCDF	8.7		7.1	0.14
70648-26-9	1,2,3,4,7,8-HxCDF	4.0	J	7.1	0.16
57117-44-9	1,2,3,6,7,8-HxCDF	0.99	J q	7.1	0.15
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.1	0.16
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.1	0.21
55684-94-1	Total HxCDF	6.5	J I q	7.1	0.17
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.3	J B	7.1	0.073
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.41	J B q	7.1	0.12
38998-75-3	Total HpCDF	4.6	J B q	7.1	0.095
39001-02-0	OCDF	8.6	J B	14	0.087

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Matrix: Sediment Lab File ID: 140-17578-a-4-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:45

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/17/2019 08:05

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 29.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	67		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	67		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	68		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	67		23-140
114423-97-1	13C-OCDD	64		17-157
89059-46-1	13C-2,3,7,8-TCDF	65		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	67		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	66		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	67		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	67		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	67		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	64		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	69		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 08:05:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-011
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 11:49:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 11:49:32

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:50	373272	0.78	1.1733	12.3	12.3	0.0443	0.0443		a
A Non-2,3,7,8-sub-TCDD	29:30	136915	0.77	1.1733	4.569	4.505	0.0443	1.603		RQMa
S Total TCDD					16.9	16.8	0.0443	0.0443		RQ
2,3,7,8-TCDF	28:51	2389983	0.80	1.0881	50.9	50.9	0.0483	0.0483		
A Non-2,3,7,8-sub-TCDF	28:13	1944829	0.77	1.0881	41.5	41.4	0.0483	22.1		RQM
S Total TCDF					92.3	92.2	0.0483	0.0483		RQ
1,2,3,7,8-PeCDD	40:35	4271	1.47	1.0434	0.1838	0.1838	0.0424	0.0424		
A Non-2,3,7,8-sub-PeCDD	39:27	63196	1.55	1.0434	2.748	2.720	0.0424	1.187		RQMa
S Total PeCDD					2.932	2.904	0.0424	0.0424		RQ
1,2,3,7,8-PeCDF	38:47	39571	1.60	1.1898	0.9540	0.9540	0.0498	0.0498		M
2,3,4,7,8-PeCDF	40:03	34757	1.65	1.1095	0.9035	0.9035	0.0477	0.0477		
A Non-2,3,7,8-sub-PeCDF	38:02	48484	1.52	1.1496	1.213	1.213	0.0486	0.5454		Ma
S Total PeCDF					3.071	3.071	0.0487	0.0487		
1,2,3,4,7,8-HxCDD	44:50	3456	1.24	1.1409	0.1771	0.1246	0.0751	0.0751		RnQMa
1,2,3,6,7,8-HxCDD	44:57	9562	1.29	1.1481	0.3195	0.3195	0.0718	0.0718		M
1,2,3,7,8,9-HxCDD	45:20	24897	1.35	1.2212	0.8095	0.8095	0.0688	0.0688		M
A Non-2,3,7,8-sub-HxCDD	44:19	376423	1.24	1.1700	12.9	12.8	0.0718	9.787		RQ
S Total HxCDD					14.2	14.0	0.0719	0.0719		RQ
1,2,3,4,7,8-HxCDF	43:49	62021	1.25	1.3629	1.399	1.399	0.0560	0.0560		M
1,2,3,6,7,8-HxCDF	43:57	18350	1.24	1.2762	0.3838	0.3517	0.0519	0.0519		RQ
2,3,4,6,7,8-HxCDF	44:40						0.0563	0.0563		
1,2,3,7,8,9-HxCDF	45:36						0.0741	0.0741		
A Non-2,3,7,8-sub-HxCDF	44:10	25569	1.14	1.2905	0.5530	0.5530	0.0585	0.2761		Ma
S Total HxCDF					2.336	2.304	0.0596	0.0596		RQ
1,2,3,4,6,7,8-HpCDD	49:38	308594	1.07	1.1204	12.2	12.2	0.0430	0.0430		
A Non-2,3,7,8-sub-HpCDD	49:03	814757	1.04	1.1204	32.3	32.3	0.0430	32.3		
S Total HpCDD					44.5	44.5	0.0430	0.0430		
1,2,3,4,6,7,8-HpCDF	47:58	36027	1.17	1.4984	0.8229	0.8229	0.0259	0.0259		
1,2,3,4,7,8,9-HpCDF	50:17	4599	1.04	1.3807	0.1785	0.1435	0.0416	0.0416		RQ
A Non-2,3,7,8-sub-HpCDF	49:20	25053	1.04	1.4395	0.6865	0.6639	0.0322	0.6336		RQa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					1.688	1.630	0.0338	0.0338		RQ
OCDD	53:53	6607735	0.90	1.2073	294.2	294.2	0.0162	0.0162		
OCDF	54:01	95574	0.83	1.1162	3.038	3.038	0.0308	0.0308		M
D 13C-2,3,7,8-TCDD	30:46	1295069	0.80	1.0709	31.7	31.7	0.2892	0.2892	63.37	
D 13C-2,3,7,8-TCDF	28:48	2159615	0.81	1.7545	32.3	32.3	0.1840	0.1840	64.50	
D 13C-1,2,3,7,8-PeCDD	40:34	1113467	1.60	0.8743	33.4	33.4	0.2209	0.2209	66.74	
D 13C-1,2,3,7,8-PeCDF	38:46	1743080	1.60	1.3704	33.3	33.3	0.3260	0.3260	66.65	
D 13C-2,3,4,7,8-PeCDF	40:02	1733687	1.59	1.3837	32.8	32.8	0.3228	0.3228	65.66	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1215474	1.28	0.8772	33.4	33.4	0.1058	0.1058	66.75	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1303188	1.33	0.9171	34.2	34.2	0.1012	0.1012	68.45	
D 13C-1,2,3,4,7,8-HxCDF	43:48	1626459	0.54	1.1892	32.9	32.9	0.1999	0.1999	65.89	
D 13C-1,2,3,6,7,8-HxCDF	43:56	2044048	0.54	1.4625	33.7	33.7	0.1626	0.1626	67.33	
D 13C-2,3,4,6,7,8-HxCDF	44:39	1838825	0.53	1.3197	33.6	33.6	0.1802	0.1802	67.12	
D 13C-1,2,3,7,8,9-HxCDF	45:36	1657127	0.51	1.2001	33.3	33.3	0.1981	0.1981	66.52	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	1127014	1.10	0.8155	33.3	33.3	0.1219	0.1219	66.58	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	1460867	0.48	1.0496	33.5	33.5	0.1917	0.1917	67.05	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	1160364	0.44	0.8947	31.2	31.2	0.2249	0.2249	62.48	
D 13C-OCDD	53:52	1860584	0.96	0.7044	63.6	63.6	0.2003	0.2003	63.62	
D 13C-OCDF	54:00	2818685	0.88	1.0615	64.0	64.0	0.2428	0.2428	63.96	
$ 37Cl4-2,3,7,8-TCDD	30:50	325126		1.2266	6.945	6.945	0.0644	0.0644	69.45	
* 13C-1,2,3,4-TCDD	30:16	3816558	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:20	4151709	1.32	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- n - Failed Sig-To-Noise Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 08:05:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-011
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 11:49:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 11:49:32

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	30:50	30:50	-1	1.002	163139	16749	25	62	670		a
321.8936	30:49	30:50	-2	1.002	210133	21962	35	87	627	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:54	29:30	-275	0.809	2821	433	25	62	17		M
	Empc Correction				1761	215	25	62	9		
321.8936	24:51	29:30	-278	0.808	2288	280	35	87	8	1.23(0.65-0.89)	
319.8965	25:38	29:30	-231	0.833	1916	237	25	62	9		a
321.8936	25:37	29:30	-232	0.832	2729	493	35	87	14	0.70(0.65-0.89)	
319.8965	26:16	29:30	-193	0.854	2500	342	25	62	14		a
321.8936	26:17	29:30	-192	0.854	2832	399	35	87	11	0.88(0.65-0.89)	
319.8965	27:45	29:30	-104	0.902	20746	2379	25	62	95		a
321.8936	27:45	29:30	-104	0.902	27973	3353	35	87	96	0.74(0.65-0.89)	
319.8965	28:11	29:30	-78	0.916	1954	209	25	62	8		M
321.8936	28:13	29:30	-76	0.917	2339	188	35	87	5	0.84(0.65-0.89)	
319.8965	28:42	29:30	-48	0.933	1184	205	25	62	8		a
321.8936	28:44	29:30	-46	0.934	1702	205	35	87	6	0.70(0.65-0.89)	
319.8965	29:26	29:30	-3	0.957	779	200	25	62	8		M
321.8936	29:24	29:30	-5	0.956	1091	205	35	87	6	0.71(0.65-0.89)	
319.8965	30:15	29:30	45	0.983	5101	640	25	62	26		a
321.8936	30:17	29:30	47	0.984	6457	662	35	87	19	0.79(0.65-0.89)	
319.8965	30:34	29:30	64	0.993	4022	514	25	62	21		M
321.8936	30:35	29:30	65	0.994	5235	821	35	87	23	0.77(0.65-0.89)	
319.8965	31:21	29:30	111	1.019	754	120	25	62	5		a
321.8936	31:14	29:30	104	1.015	1463	145	35	87	4	0.52(0.65-0.89)	
	Empc Correction				979	155	35	87	4		

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	31:55	29:30	145	1.037	17229	1777	25	62	71		a
321.8936	31:57	29:30	147	1.038	20095	2096	35	87	60	0.86(0.65-0.89)	
319.8965	32:42	29:30	192	1.063	994	164	25	62	7		M
321.8936	32:40	29:30	190	1.062	1240	191	35	87	5	0.80(0.65-0.89)	
319.8965	34:01	29:30	271	1.106	1312	222	25	62	9		a
321.8936	34:02	29:30	272	1.106	2096	183	35	87	5	0.63(0.65-0.89)	
	Empc Correction				1703	288	35	87	8		
2,3,7,8-TCDF											
303.9016	28:51	28:51	-1	1.002	1063469	111545	48	120	2324		
305.8987	28:50	28:51	-2	1.001	1326514	139712	57	142	2451	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	22:29	28:13	-344	0.781	1660	311	48	120	6		
305.8987	22:31	28:13	-342	0.782	2178	584	57	142	10	0.76(0.65-0.89)	
303.9016	23:21	28:13	-291	0.811	1688	271	48	120	6		
305.8987	23:20	28:13	-292	0.810	2046	367	57	142	6	0.83(0.65-0.89)	
303.9016	23:49	28:13	-264	0.827	6279	977	48	120	20		
305.8987	23:50	28:13	-263	0.827	8173	1319	57	142	23	0.77(0.65-0.89)	
303.9016	24:21	28:13	-232	0.846	12030	1548	48	120	32		
	Empc Correction				9648	1484	48	120	31		
305.8987	24:22	28:13	-231	0.846	12531	1928	57	142	34	0.96(0.65-0.89)	
303.9016	25:05	28:13	-187	0.871	47423	5790	48	120	121		
305.8987	25:04	28:13	-188	0.871	59364	7180	57	142	126	0.80(0.65-0.89)	
303.9016	25:47	28:13	-146	0.895	57901	5551	48	120	116		M
305.8987	25:47	28:13	-146	0.895	75968	7829	57	142	137	0.76(0.65-0.89)	M
303.9016	26:16	28:13	-117	0.912	9496	1299	48	120	27		
305.8987	26:16	28:13	-117	0.912	12607	1645	57	142	29	0.75(0.65-0.89)	
303.9016	26:27	28:13	-106	0.919	27410	3455	48	120	72		
305.8987	26:27	28:13	-106	0.919	36552	4825	57	142	85	0.75(0.65-0.89)	
303.9016	27:00	28:13	-74	0.937	41025	5267	48	120	110		
305.8987	26:59	28:13	-75	0.937	51974	5932	57	142	104	0.79(0.65-0.89)	
303.9016	27:16	28:13	-57	0.947	6496	682	48	120	14		M
	Empc Correction				4703	622	48	120	13		
305.8987	27:15	28:13	-58	0.946	6108	809	57	142	14	1.06(0.65-0.89)	
303.9016	27:45	28:13	-28	0.964	466459	54466	48	120	1135		
305.8987	27:44	28:13	-29	0.963	571779	66519	57	142	1167	0.82(0.65-0.89)	
303.9016	28:23	28:13	10	0.986	24106	2423	48	120	50		
305.8987	28:20	28:13	7	0.984	30524	3419	57	142	60	0.79(0.65-0.89)	
303.9016	30:02	28:13	108	1.043	71492	7418	48	120	155		
305.8987	30:03	28:13	109	1.043	92699	10311	57	142	181	0.77(0.65-0.89)	
303.9016	30:44	28:13	150	1.067	15509	1593	48	120	33		
305.8987	30:42	28:13	148	1.066	18511	1862	57	142	33	0.84(0.65-0.89)	
303.9016	32:49	28:13	275	1.140	2026	256	48	120	5		
305.8987	32:47	28:13	273	1.139	2618	301	57	142	5	0.77(0.65-0.89)	
303.9016	33:52	28:13	338	1.176	78776	8718	48	120	182		
305.8987	33:52	28:13	338	1.176	95596	8997	57	142	158	0.82(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDD											
355.8546	40:35	40:34	0	1.000	2540	655	24	60	27		
357.8516	40:34	40:34	-2	1.000	1731	427	64	160	7	1.47(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:38	39:27	-109	0.928	7643	1140	24	60	48		a
357.8516	37:38	39:27	-109	0.928	4738	894	64	160	14	1.61(1.32-1.78)	
355.8546	38:28	39:27	-59	0.948	17038	3341	24	60	139		a
357.8516	38:28	39:27	-59	0.948	10553	2268	64	160	35	1.61(1.32-1.78)	
355.8546	39:11	39:27	-16	0.966	2000	339	24	60	14		M
357.8516	39:10	39:27	-17	0.966	1274	285	64	160	4	1.57(1.32-1.78)	
355.8546	39:23	39:27	-4	0.971	2042	405	24	60	17		a
357.8516	39:26	39:27	-1	0.000			64	160		0.00(1.32-1.78)	
355.8546	39:42	39:27	15	0.979	2085	368	24	60	15		a
	Empc Correction				1666	305	24	60	13		
357.8516	39:42	39:27	15	0.979	1075	197	64	160	3	1.94(1.32-1.78)	
355.8546	39:51	39:27	24	0.983	8205	1657	24	60	69		a
357.8516	39:51	39:27	24	0.983	5420	937	64	160	15	1.51(1.32-1.78)	
355.8546	41:04	39:27	97	0.000			24	60			
357.8516	41:04	39:27	97	0.000			64	160		0.00(1.32-1.78)	
355.8546	41:15	39:27	108	1.017	1183	249	24	60	10		M
	Empc Correction				937	247	24	60	10		
357.8516	41:14	39:27	107	1.017	605	160	64	160	3	1.96(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:47	38:47	0	1.000	24347	4705	92	230	51		M
341.8567	38:47	38:47	0	1.000	15224	3119	66	165	47	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40:03	40:03	0	1.000	21623	4692	92	230	51		
341.8567	40:03	40:03	0	1.000	13134	2981	66	165	45	1.65(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											Ma
339.8597	37:18	38:02	-43	0.962	12660	1870	92	230	20		
341.8567	37:16	38:02	-45	0.961	9139	1391	66	165	21	1.39(1.32-1.78)	
339.8597	38:43	38:02	41	0.999	2261	796	92	230	9		M
341.8567	38:41	38:02	39	0.998	1491	445	66	165	7	1.52(1.32-1.78)	
339.8597	39:19	38:02	77	1.014	8151	1875	92	230	20		
341.8567	39:18	38:02	76	1.014	5096	753	66	165	11	1.60(1.32-1.78)	
339.8597	40:18	38:02	136	1.040	6163	1277	92	230	14		
341.8567	40:19	38:02	137	1.040	3523	373	66	165	6	1.75(1.32-1.78)	
1,2,3,4,7,8-HxCDD											RnQMa
389.8158	44:50	44:50	0	1.000	3368	791	13	32	61		M
	Empc Correction				1913	504	13	32	39		
391.8127	44:50	44:50	0	1.000	1543	407	191	477	2	2.18(1.05-1.43)	
1,2,3,6,7,8-HxCDD											M
389.8158	44:57	44:57	0	1.000	5395	1391	13	32	107		M
391.8127	44:57	44:57	0	1.000	4167	1089	191	477	6	1.29(1.05-1.43)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDD											M
389.8158	45:20	45:20	-1	1.011	14325	2602	13	32	200		M
391.8127	45:20	45:20	-1	1.011	10572	1881	191	477	10	1.35(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:17	44:19	-62	0.963	163185	44440	13	32	3418		
391.8127	43:17	44:19	-62	0.963	125236	32651	191	477	171	1.30(1.05-1.43)	
389.8158	43:50	44:19	-29	0.976	6400	1294	13	32	100		
	Empc Correction				4659	1004	13	32	77		
391.8127	43:50	44:19	-29	0.976	3758	810	191	477	4	1.70(1.05-1.43)	
389.8158	44:09	44:19	-10	0.982	38213	8595	13	32	661		
391.8127	44:08	44:19	-11	0.982	30468	7292	191	477	38	1.25(1.05-1.43)	
389.8158	44:19	44:19	0	0.986	7401	1315	13	32	101		
	Empc Correction				6036	1243	13	32	96		
391.8127	44:19	44:19	0	0.986	4868	1003	191	477	5	1.52(1.05-1.43)	
1,2,3,4,7,8-HxCDF											M
373.8208	43:49	43:48	1	1.000	34397	9654	145	362	67		
375.8178	43:48	43:48	0	1.000	27624	6758	114	285	59	1.25(1.05-1.43)	M
1,2,3,6,7,8-HxCDF											RQ
373.8208	43:57	43:56	0	1.000	11830	2663	145	362	18		
	Empc Correction				10158	2174	145	362	15		
375.8178	43:57	43:56	0	1.000	8192	1754	114	285	15	1.44(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:40						145	362			
375.8178	44:40						114	285			
1,2,3,7,8,9-HxCDF											
373.8208	45:37						145	362			
375.8178	45:37						114	285			
A Non-2,3,7,8-sub-HxCDF											Ma
373.8208	42:46	44:10	-84	0.973	6633	1486	145	362	10		M
375.8178	42:46	44:10	-84	0.973	6134	1597	114	285	14	1.08(1.05-1.43)	
373.8208	43:22	44:10	-48	0.987	4720	1364	145	362	9		a
375.8178	43:22	44:10	-48	0.987	3647	1203	114	285	11	1.29(1.05-1.43)	
373.8208	45:44	44:10	94	1.041	2276	645	145	362	4		a
375.8178	45:44	44:10	94	1.041	2159	486	114	285	4	1.05(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:37	1	1.001	159442	28946	37	92	782		
425.7737	49:38	49:37	1	1.001	149152	25907	43	107	602	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:27	49:03	-35	0.977	416023	83198	37	92	2249		
425.7737	48:27	49:03	-35	0.977	398734	77723	43	107	1808	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:57	0	1.000	19427	3810	69	172	55		
409.7788	47:59	47:57	1	1.001	16600	3663	26	65	141	1.17(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											RQ
407.7817	50:17	50:16	0	1.000	2345	556	69	172	8		
409.7788	50:18	50:16	1	1.001	3375	708	26	65	27	0.69(0.88-1.20)	
	Empc Correction				2254	534	26	65	21		

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											RQa
407.7817	48:21	49:20	-58	1.008	1434	283	69	172	4		a
	Empc Correction				583	147	69	172	2		
409.7788	48:21	49:20	-58	1.008	561	142	26	65	5	2.56(0.88-1.20)	
407.7817	48:37	49:20	-43	1.014	12451	2475	69	172	36		a
409.7788	48:36	49:20	-44	1.013	11458	2263	26	65	87	1.09(0.88-1.20)	
OCDD											
457.7377	53:53	53:53	-1	1.000	3120989	685007	19	47	36053		
459.7348	53:53	53:53	-1	1.000	3486746	759353	13	32	58412	0.90(0.76-1.02)	
OCDF											M
441.7428	54:01	54:01	-1	1.000	43423	10665	25	62	427		M
443.7399	54:01	54:01	-1	1.000	52151	12153	62	155	196	0.83(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:46	30:45	-2	1.017	576779	64335	282	705	228		
333.9338	30:46	30:45	-2	1.017	718290	80069	223	557	359	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:48	28:46	-1	0.952	966661	107954	359	897	301		
317.9389	28:48	28:46	-1	0.952	1192954	141371	167	417	847	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:30	0	1.341	685881	152212	155	387	982		
369.8919	40:34	40:30	0	1.341	427586	96205	160	400	601	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:46	38:42	0	1.281	1072924	205979	474	1185	435		
353.8970	38:46	38:42	0	1.281	670156	127539	254	635	502	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	39:58	0	1.323	1063657	230761	474	1185	487		
353.8970	40:02	39:58	0	1.323	670030	142600	254	635	561	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	0	0.989	682763	169561	218	545	778		
403.8529	44:49	44:49	0	0.989	532711	128149	123	307	1042	1.28(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	0	0.991	744058	177158	218	545	813		
403.8529	44:56	44:56	0	0.991	559130	131964	123	307	1073	1.33(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:48	43:47	1	0.966	567742	147307	409	1022	360		
385.8610	43:48	43:47	1	0.966	1058717	276180	464	1160	595	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:56	0	0.969	715620	166581	409	1022	407		
385.8610	43:56	43:56	0	0.969	1328428	321792	464	1160	694	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	637347	154530	409	1022	378		
385.8610	44:39	44:39	0	0.985	1201478	299278	464	1160	645	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:36	45:35	1	1.006	561794	117288	409	1022	287		
385.8610	45:35	45:35	0	1.006	1095333	229917	464	1160	496	0.51(0.43-0.59)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:36	0	1.094	589391	108146	142	355	762		
437.8140	49:36	49:36	0	1.094	537623	99594	223	557	447	1.10(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	0	1.058	475270	98895	348	870	284		
419.8220	47:57	47:57	0	1.058	985597	206006	391	977	527	0.48(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	0	1.109	357177	65289	348	870	188		
419.8220	50:16	50:16	0	1.109	803187	140960	391	977	361	0.44(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	-1	1.188	911120	198767	253	632	786		
471.7750	53:52	53:52	-1	1.188	949464	209973	265	662	792	0.96(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:01	-1	1.191	1315679	289350	324	810	893		
455.7801	54:00	54:01	-1	1.191	1503006	341067	622	1555	548	0.88(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:50	30:48	-1	1.019	325126	32967	129	322	256		
13C-1,2,3,4-TCDD											
331.9368	30:16	30:19	-3		1705356	187532	282	705	665		
333.9338	30:17	30:19	-2		2111202	219896	223	557	986	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:20	0		2361907	524154	218	545	2404		
403.8529	45:20	45:20	0		1789802	393582	123	307	3200	1.32(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1295069	144404

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1295069	144404

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:54	2821	433	2288	280	0.1681	1.23	RQMa
24:54	1761	215	2288	280	0.1332		Empc Correction
25:38	1916	237	2729	493	0.1528	0.70	a
26:16	2500	342	2832	399	0.1755	0.88	a
27:45	20746	2379	27973	3353	1.60	0.74	a
28:11	1954	209	2339	188	0.1413	0.84	Ma
28:42	1184	205	1702	205	0.0950	0.70	a
29:26	779	200	1091	205	0.0615	0.71	Ma
30:15	5101	640	6457	662	0.3803	0.79	a
30:34	4022	514	5235	821	0.3046	0.77	Ma
31:21	754	120	1463	145	0.0730	0.52	RQa
31:21	754	120	979	155	0.0570		Empc Correction
31:55	17229	1777	20095	2096	1.23	0.86	a
32:42	994	164	1240	191	0.0735	0.80	Ma
34:01	1312	222	2096	183	0.1121	0.63	RQa
34:01	1312	222	1703	288	0.0992		Empc Correction
Signal Totals:							
	60252	7224	76663	9336			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	138852	16663				0.79	RQMa
	136915	16560					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.569 = (138852 * 50.000) / (1295069 * 1.173)
Empc Amount: 4.505 = (136915 * 50.000) / (1295069 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2159615	249325

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2159615	249325

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:29	1660	311	2178	584	0.0817	0.76	
23:21	1688	271	2046	367	0.0794	0.83	
23:49	6279	977	8173	1319	0.3075	0.77	
24:21	12030	1548	12531	1928	0.5226	0.96	RQ
24:21	9648	1484	12531	1928	0.4719		Empc Correction
25:05	47423	5790	59364	7180	2.27	0.80	
25:47	57901	5551	75968	7829	2.85	0.76	M
26:16	9496	1299	12607	1645	0.4703	0.75	
26:27	27410	3455	36552	4825	1.36	0.75	
27:00	41025	5267	51974	5932	1.98	0.79	
27:16	6496	682	6108	809	0.2682	1.06	RQM
27:16	4703	622	6108	809	0.2300		Empc Correction
27:45	466459	54466	571779	66519	22.1	0.82	
28:23	24106	2423	30524	3419	1.16	0.79	
30:02	71492	7418	92699	10311	3.49	0.77	
30:44	15509	1593	18511	1862	0.7238	0.84	
32:49	2026	256	2618	301	0.0988	0.77	
33:52	78776	8718	95596	8997	3.71	0.82	
Signal Totals:	865601	99901	1079228	123827			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1949004	223852				0.81	RQM
	1944829	223728					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 41.469 = (1949004 * 50.000) / (2159615 * 1.088)
Empc Amount: 41.380 = (1944829 * 50.000) / (2159615 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1113467	248417

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1113467	248417

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:38	7643	1140	4738	894	0.5328	1.61	a
38:28	17038	3341	10553	2268	1.19	1.61	a
39:11	2000	339	1274	285	0.1409	1.57	Ma
39:23	2042	405	0	0	0.0879	0.00	a
39:42	2085	368	1075	197	0.1360	1.94	RQa
39:42	1666	305	1075	197	0.1180		Empc Correction
39:51	8205	1657	5420	937	0.5864	1.51	a
41:04	0	0	0	0		0.00	
41:15	1183	249	605	160	0.0769	1.96	RQM
41:15	937	247	605	160	0.0664		Empc Correction
Signal Totals:							
	39531	7434	23665	4741			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	63861	12240				1.70	RQMa
	63196	12175					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.748 = (63861 * 50.000) / (1113467 * 1.043)
Empc Amount: 2.720 = (63196 * 50.000) / (1113467 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1743080	333518
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1733687	373361

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1738383	353439

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:18	12660	1870	9139	1391	0.5454	1.39	
38:43	2261	796	1491	445	0.0939	1.52	Ma
39:19	8151	1875	5096	753	0.3314	1.60	
40:18	6163	1277	3523	373	0.2423	1.75	
Signal Totals:							
	29235	5818	19249	2962			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	48484	8780				1.52	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.213 = (48484 * 50.000) / (1738383 * 1.150)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1215474	297710
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1303188	309122
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1259331	303416

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	163185	44440	125236	32651	9.79	1.30	
43:50	6400	1294	3758	810	0.3447	1.70	RQ
43:50	4659	1004	3758	810	0.2856		Empc Correction
44:09	38213	8595	30468	7292	2.33	1.25	
44:19	7401	1315	4868	1003	0.4163	1.52	RQ
44:19	6036	1243	4868	1003	0.3700		Empc Correction
Signal Totals:							
	212093	55282	164330	41756			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	379529	97400				1.31	RQ
	376423	97038					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 12.879 = (379529 * 50.000) / (1259331 * 1.170)
Empc Amount: 12.773 = (376423 * 50.000) / (1259331 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1626459	423487
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2044048	488373
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1838825	453808
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1657127	347205

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1791614	428218

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:46	6633	1486	6134	1597	0.2761	1.08	Ma
43:22	4720	1364	3647	1203	0.1809	1.29	a
45:44	2276	645	2159	486	0.0959	1.05	a
Signal Totals:							
	13629	3495	11940	3286			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	25569	6781				1.14	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5530 = (25569 * 50.000) / (1791614 * 1.290)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1127014	207740

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1127014	207740

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	416023	83198	398734	77723	32.3	1.04	
Signal Totals:							
	416023	83198	398734	77723			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	814757	160921				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 32.262 = (814757 * 50.000) / (1127014 * 1.120)

Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Inject. Date: 17-Dec-2019 08:05:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1460867	304901
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1160364	206249

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1310615	255575

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	1434	283	561	142	0.0529	2.56	RQa
48:21	583	147	561	142	0.0303		Empc Correction
48:37	12451	2475	11458	2263	0.6336	1.09	a
Signal Totals:							
	13034	2622	12019	2405			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	25904	5163				1.16	RQa
	25053	5027					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6865 = (25904 * 50.000) / (1310615 * 1.440)
Empc Amount: 0.6639 = (25053 * 50.000) / (1310615 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

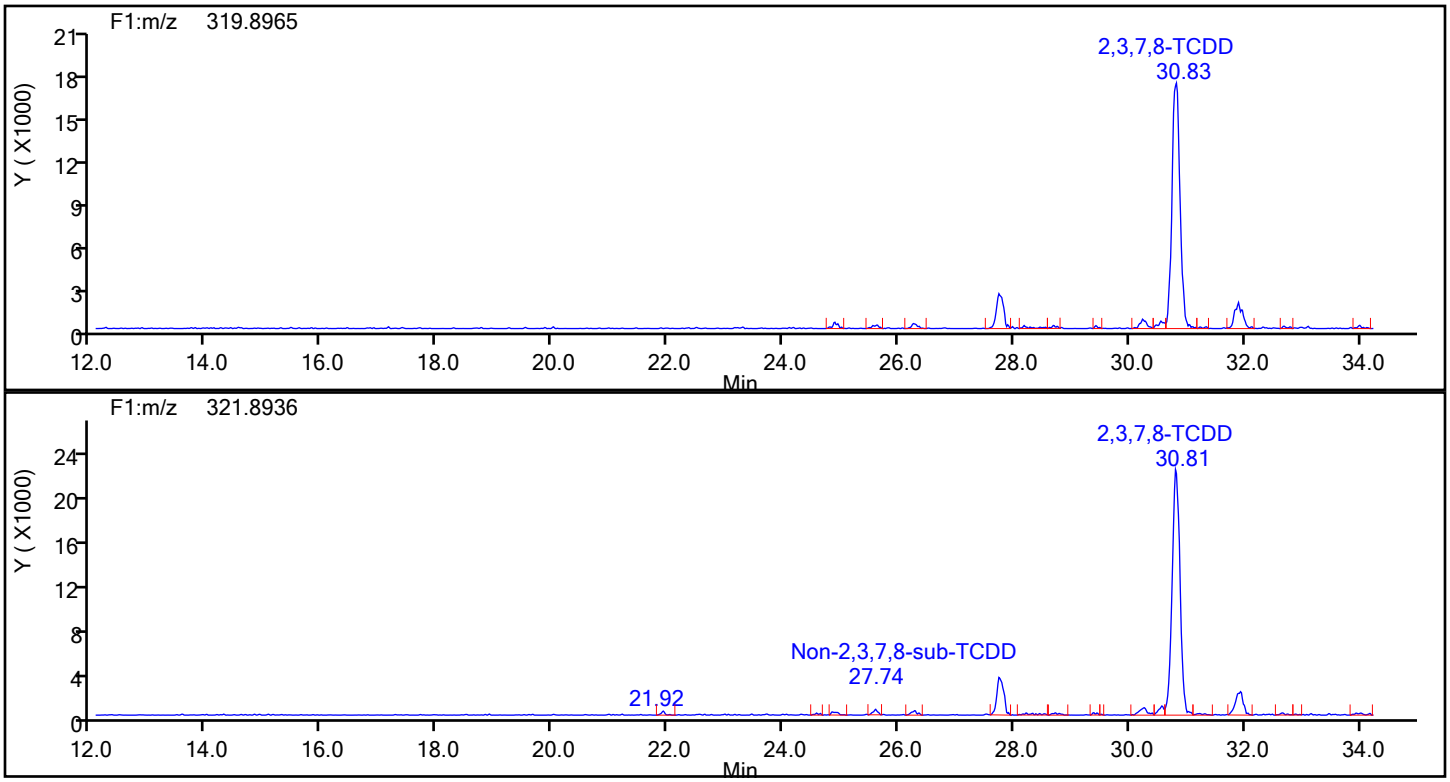
Review Flags
a - User Assigned ID

Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

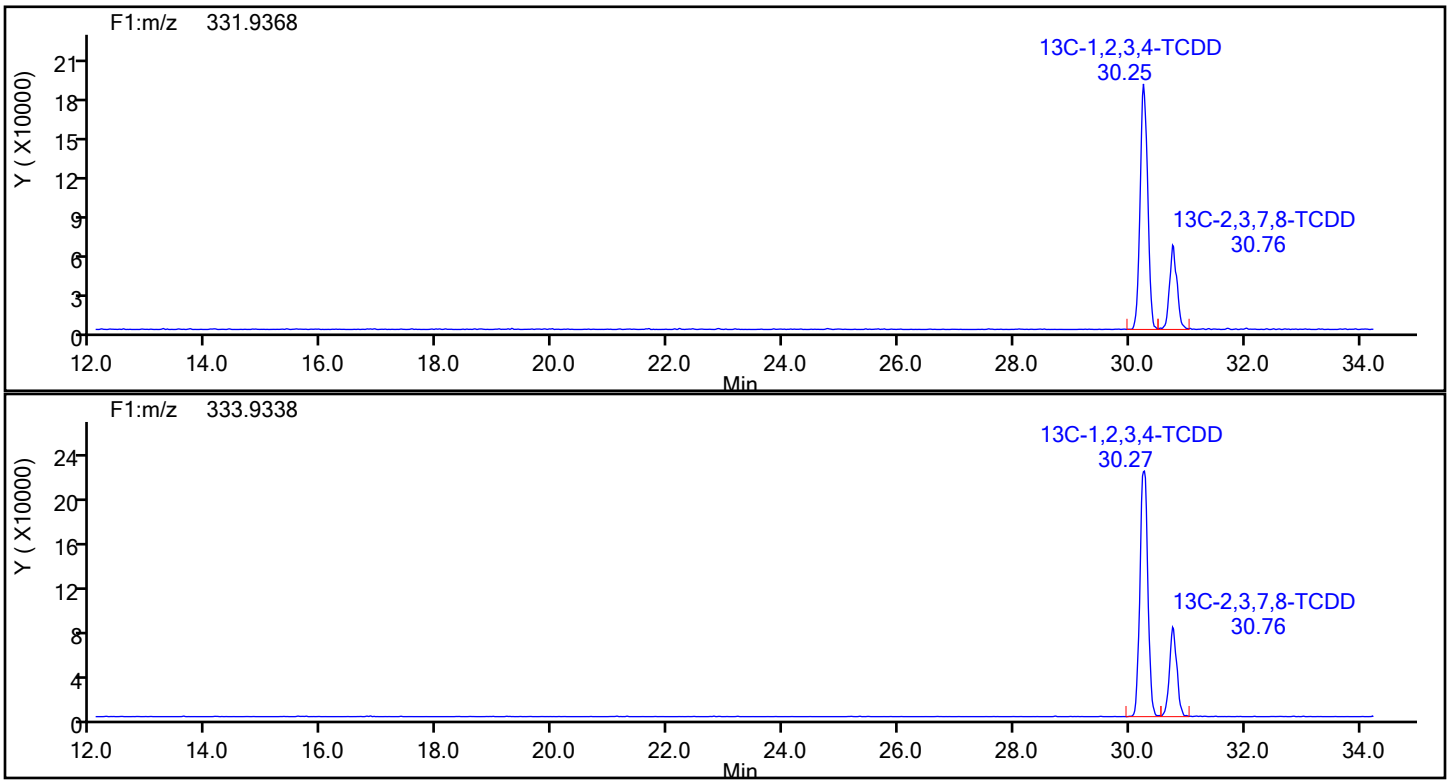
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

TCDD



TCDD Standards

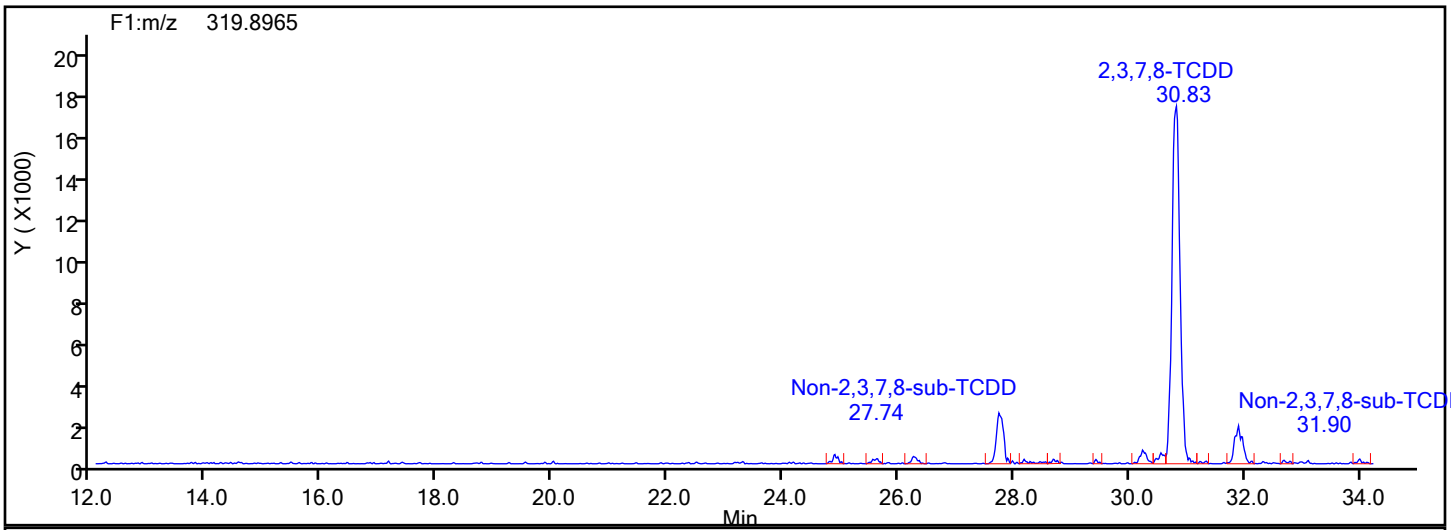


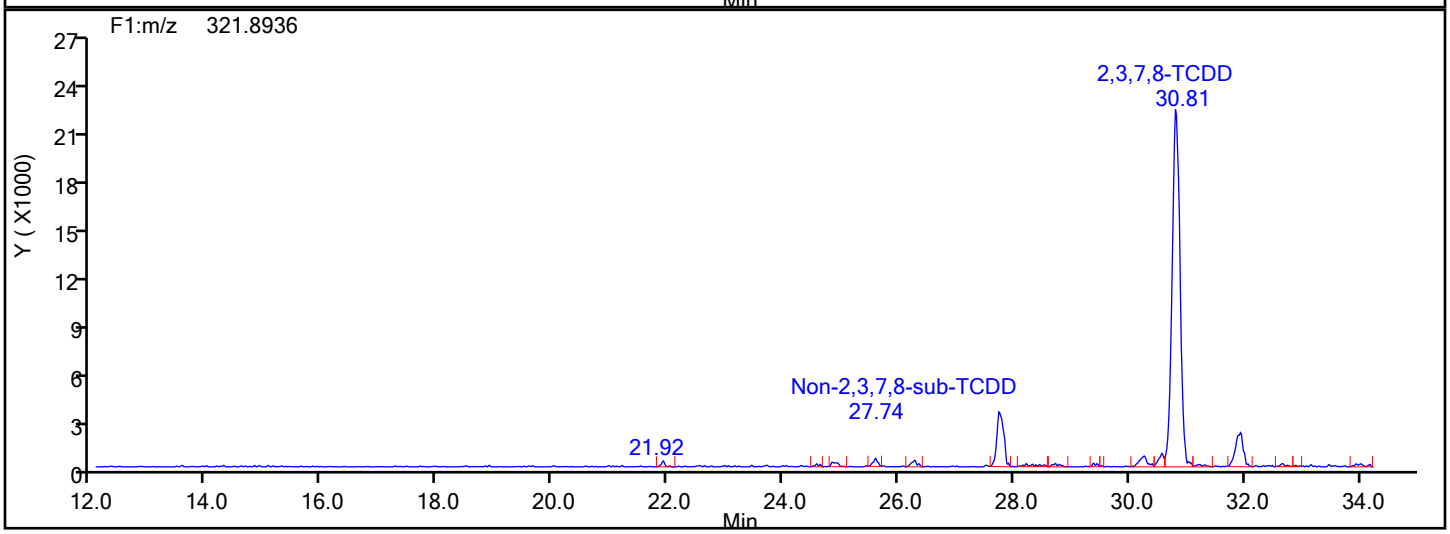
Report Date: 17-Dec-2019 11:49:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

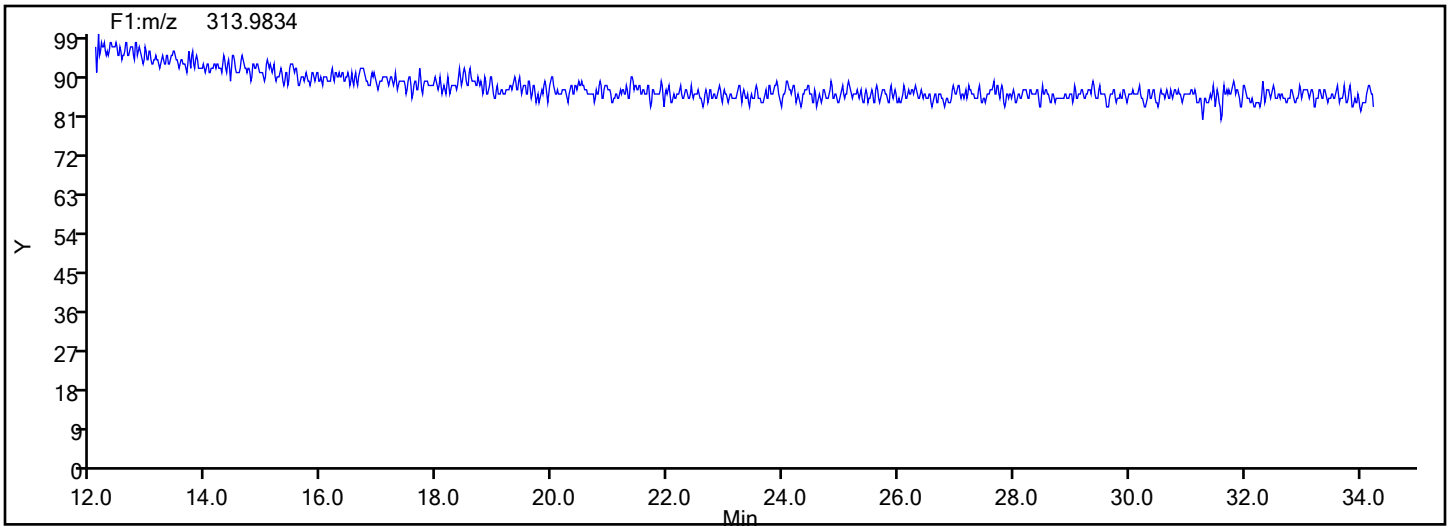
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

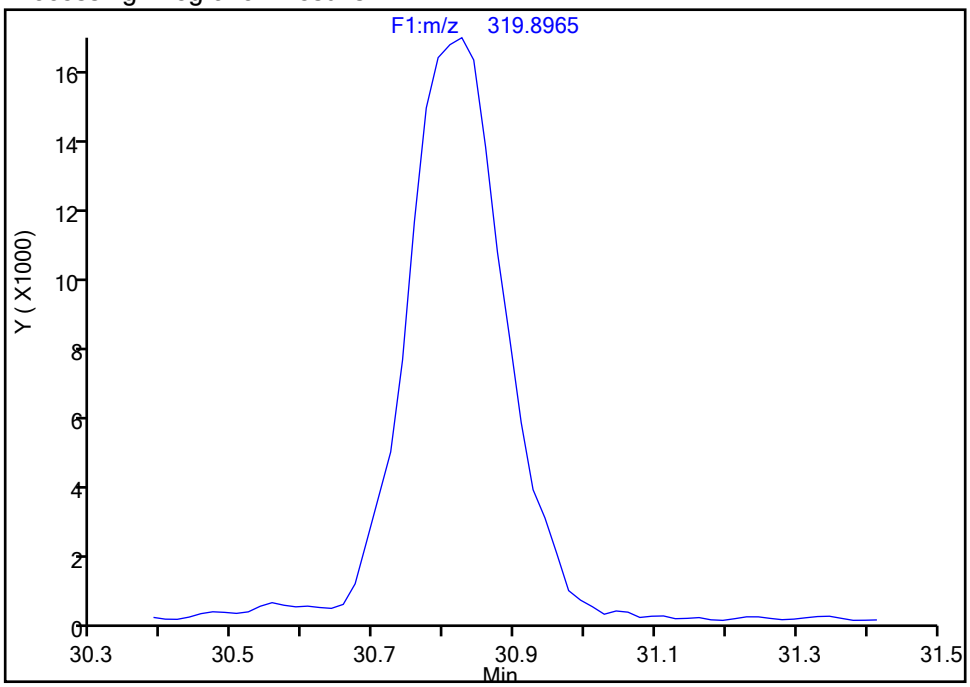
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

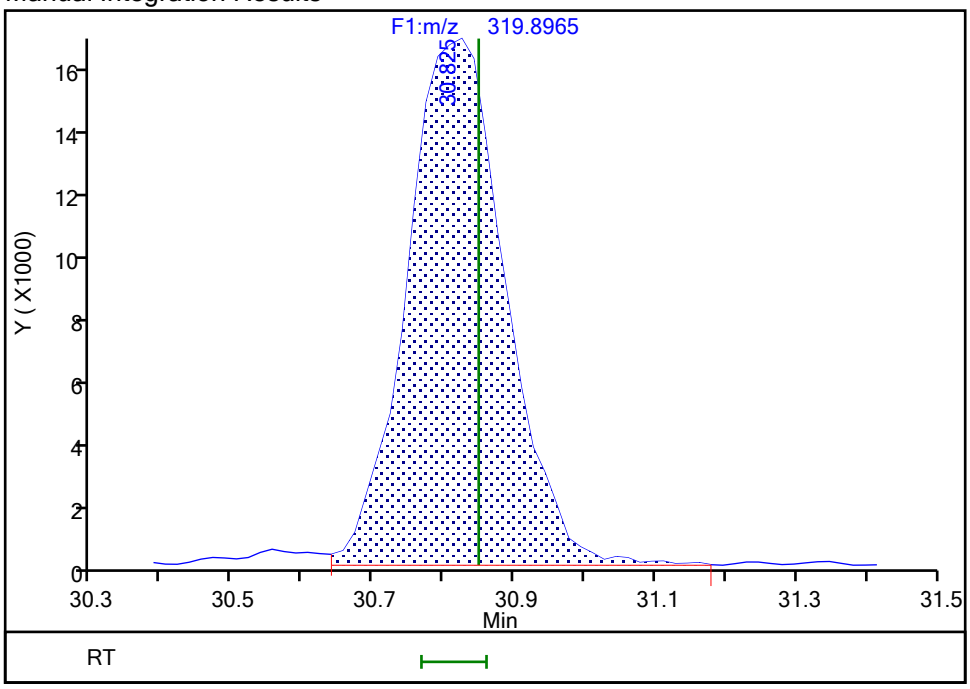
Not Detected
Expected RT: 30.85

Processing Integration Results



Manual Integration Results

RT: 30.83
Area: 163139
Amount: 12.282835
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:40:42
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

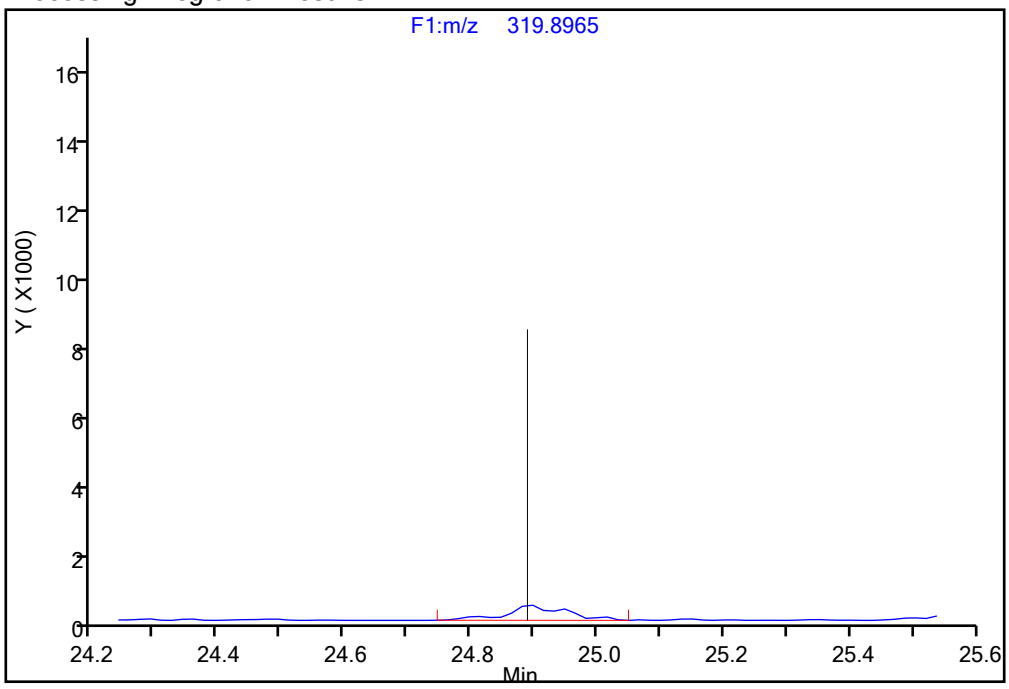
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

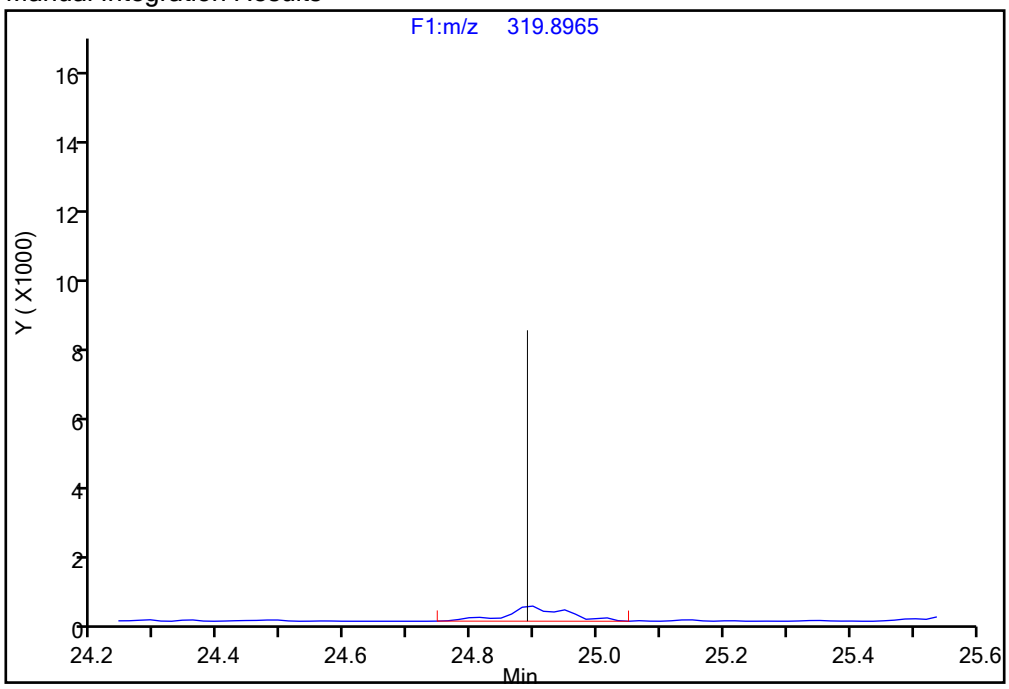
Processing Integration Results

RT = 24.898 Area = 2821



Manual Integration Results

RT = 24.898 Area = 2821



Reviewer: davidsonm, 17-Dec-2019 11:43:33

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

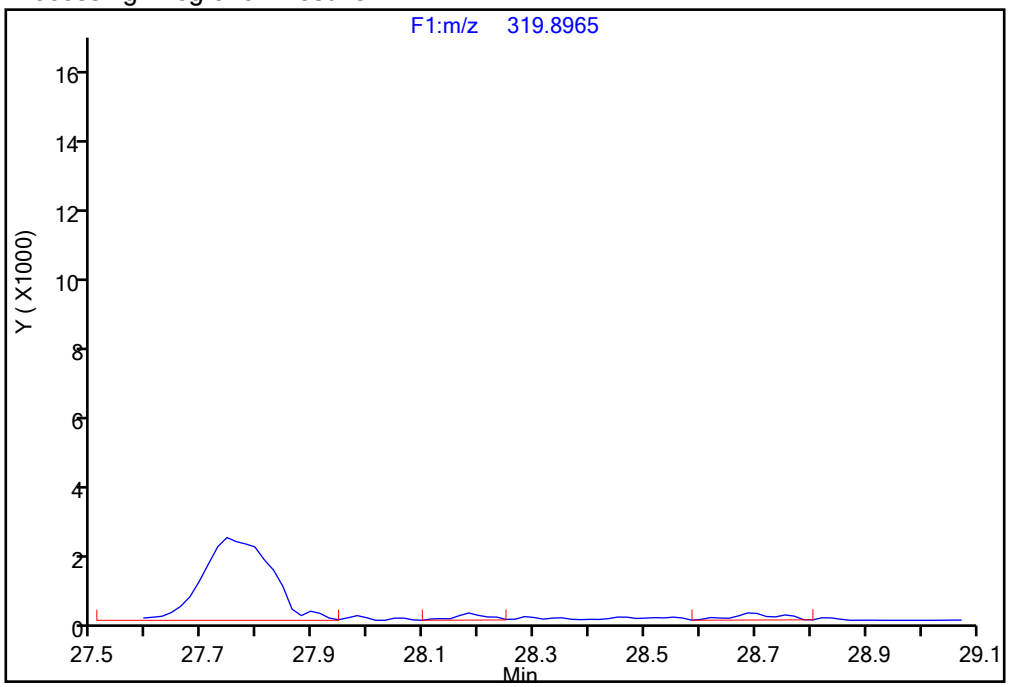
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

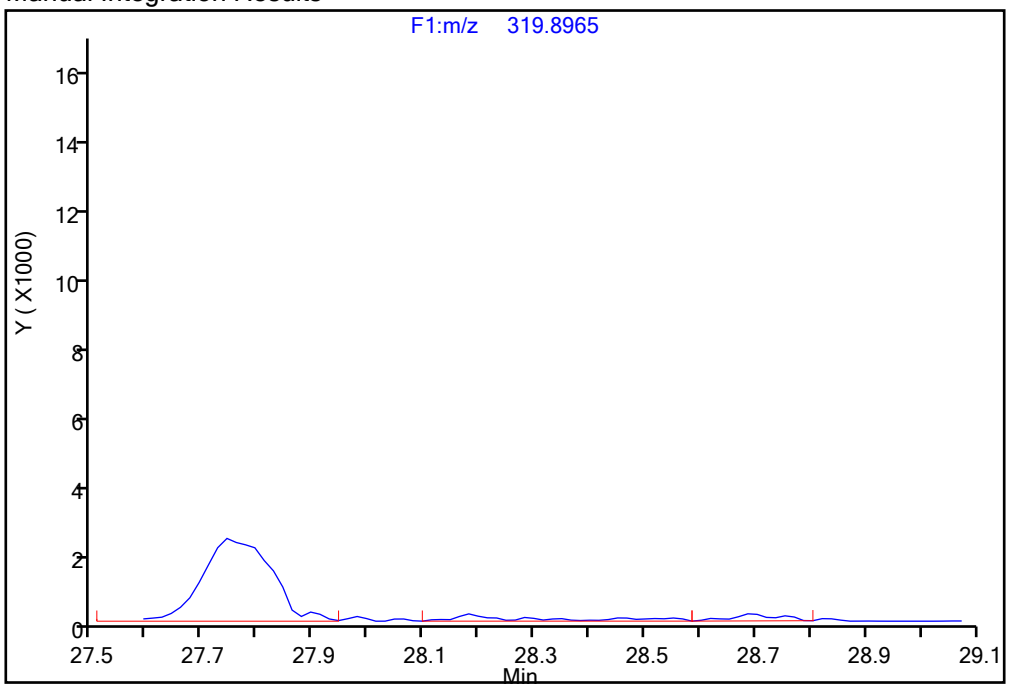
Processing Integration Results

RT = 28.181 Area = 783



Manual Integration Results

RT = 28.181 Area = 1954 M



Reviewer: davidsonm, 17-Dec-2019 11:43:33

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

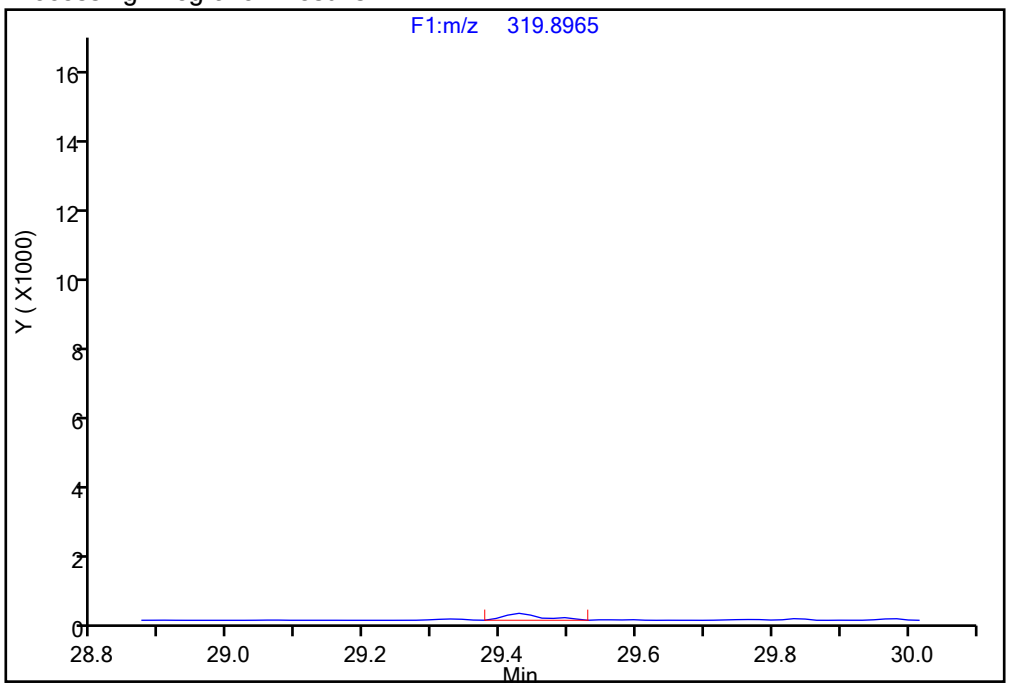
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

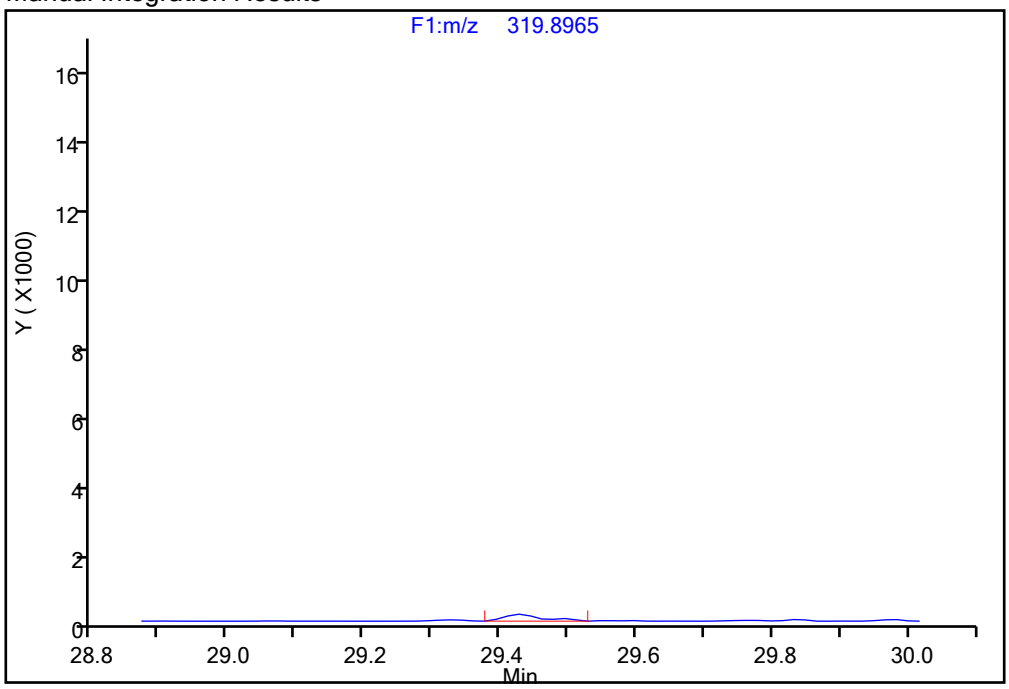
Processing Integration Results

RT = 29.427 Area = 779



Manual Integration Results

RT = 29.427 Area = 779



Reviewer: davidsonm, 17-Dec-2019 11:43:33

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

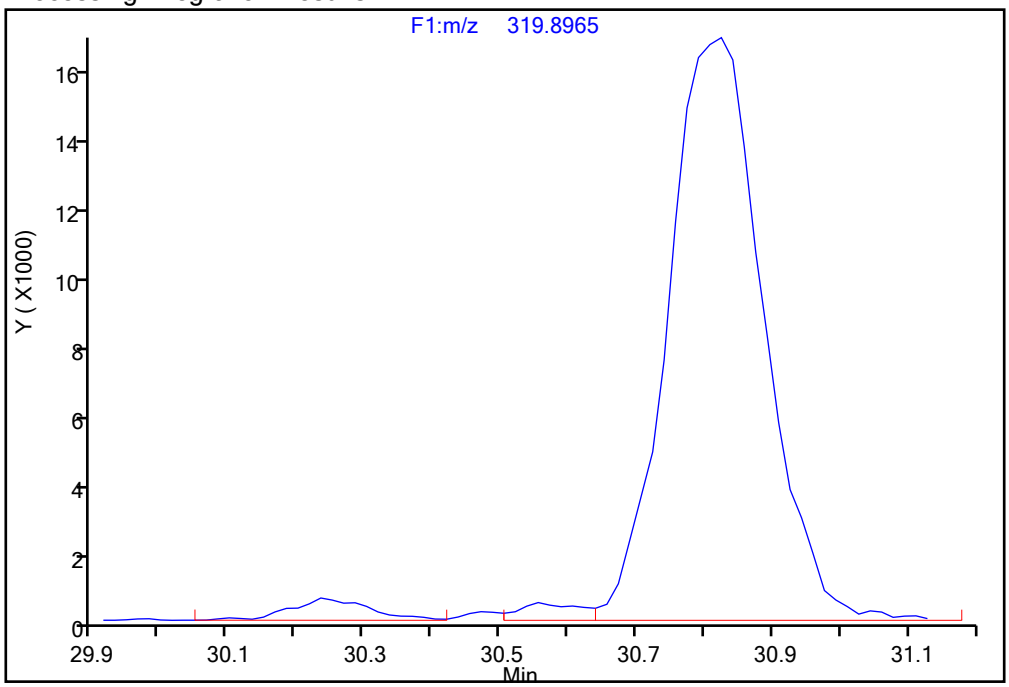
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

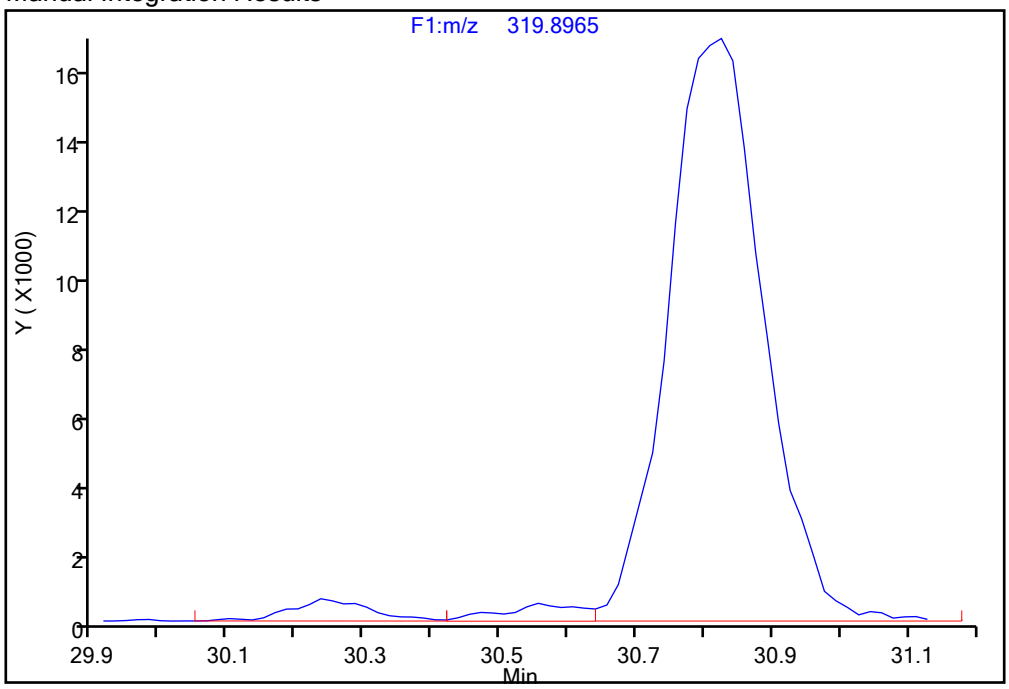
Processing Integration Results

RT = 30.556 Area = 3077



Manual Integration Results

RT = 30.556 Area = 4022 M



Reviewer: davidsonm, 17-Dec-2019 11:43:33

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

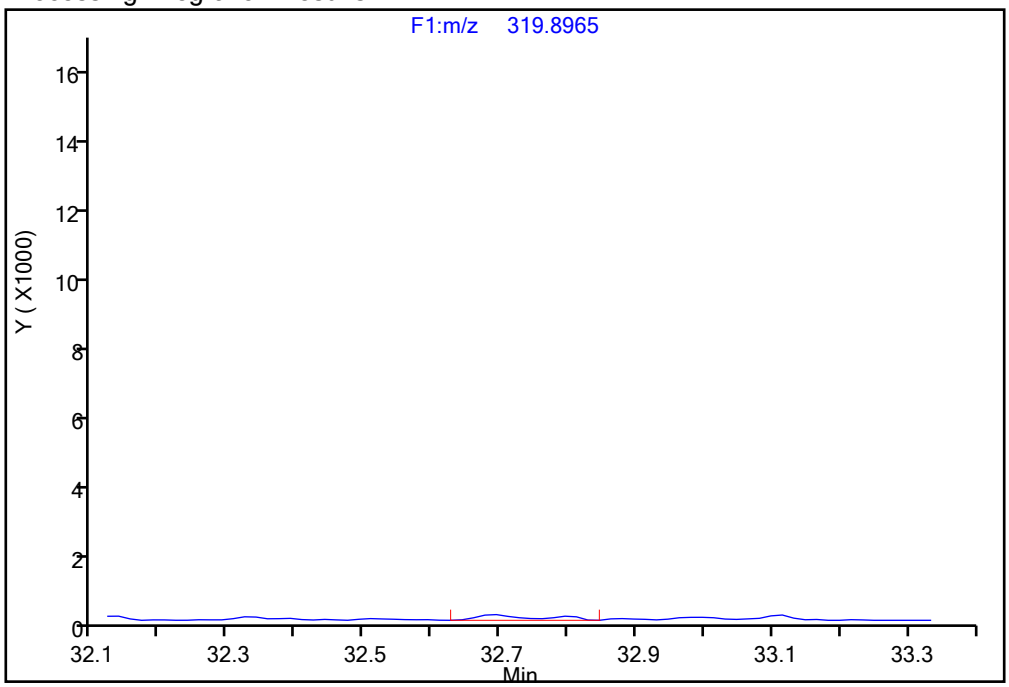
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

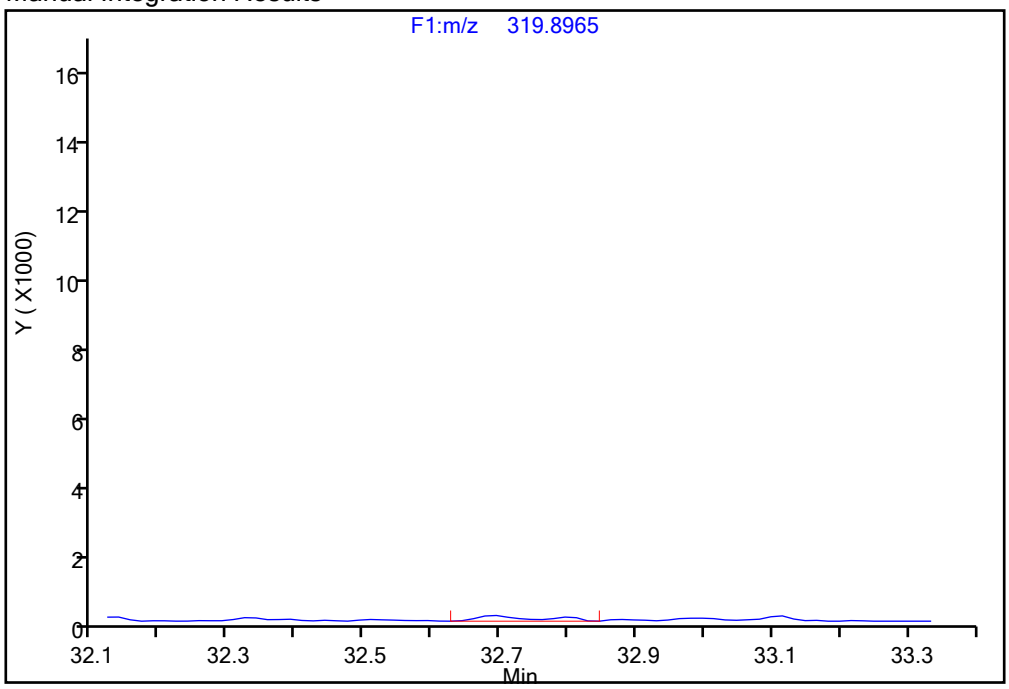
Processing Integration Results

RT = 32.694 Area = 994



Manual Integration Results

RT = 32.694 Area = 994



Reviewer: davidsonm, 17-Dec-2019 11:43:33

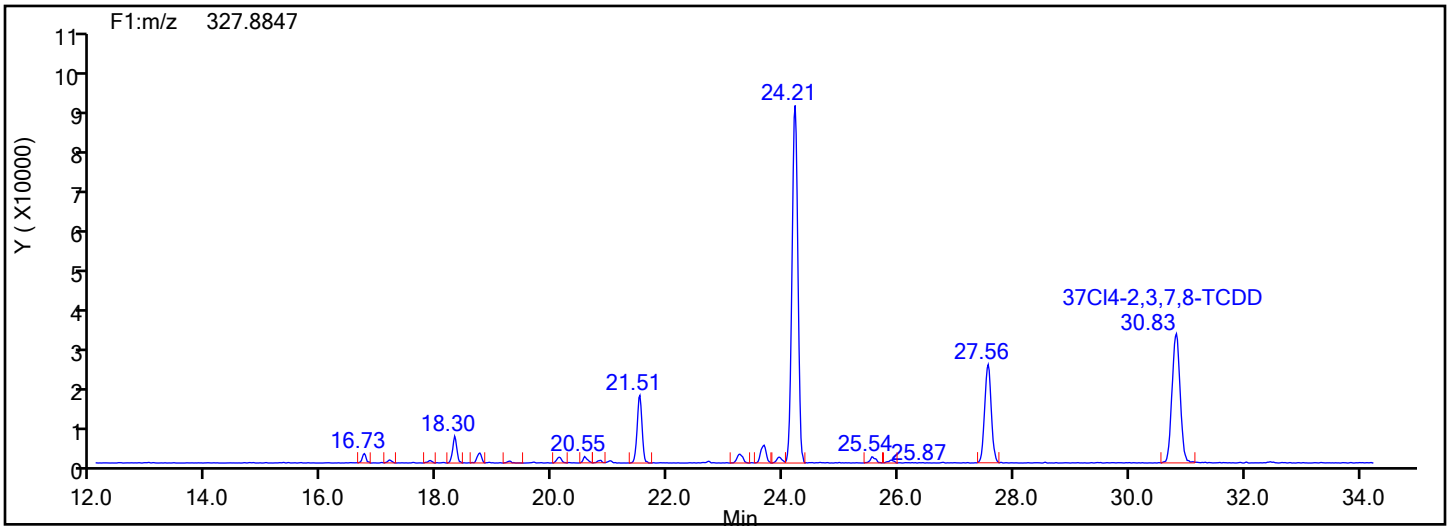
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

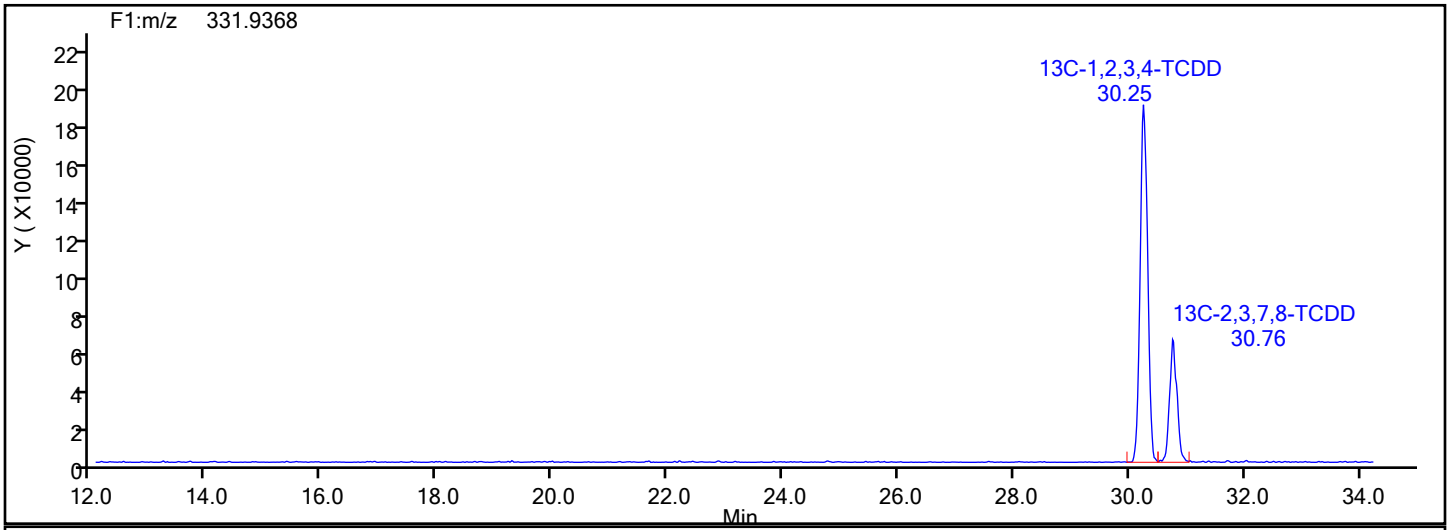
Eurofins TestAmerica, Knoxville

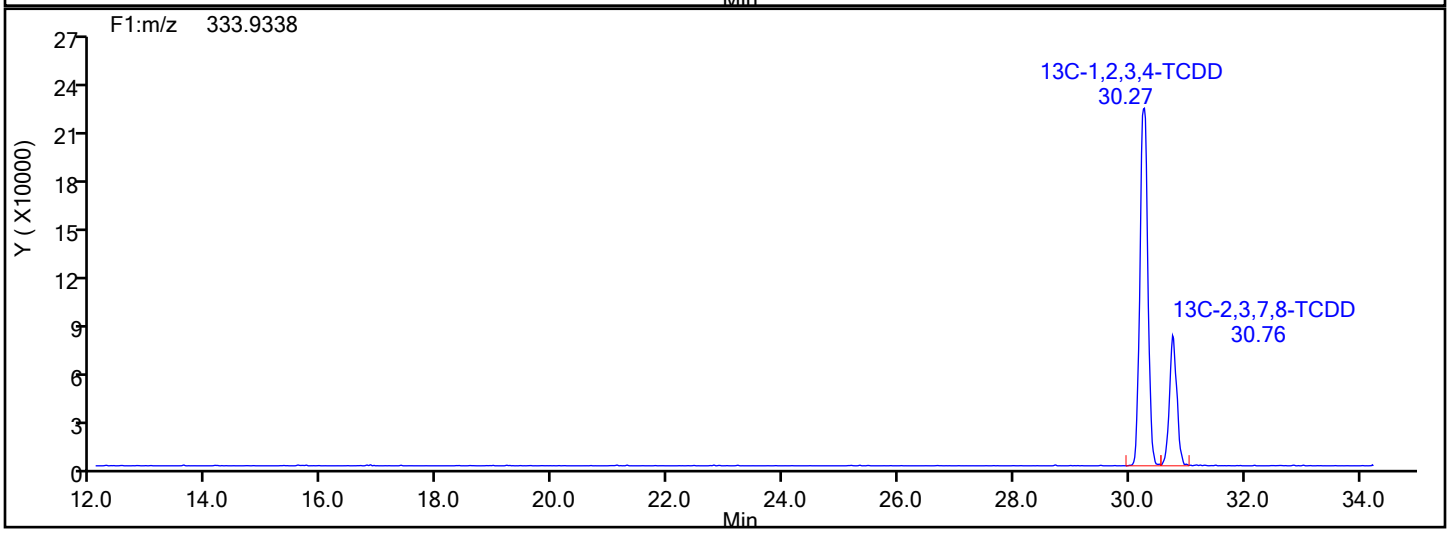
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



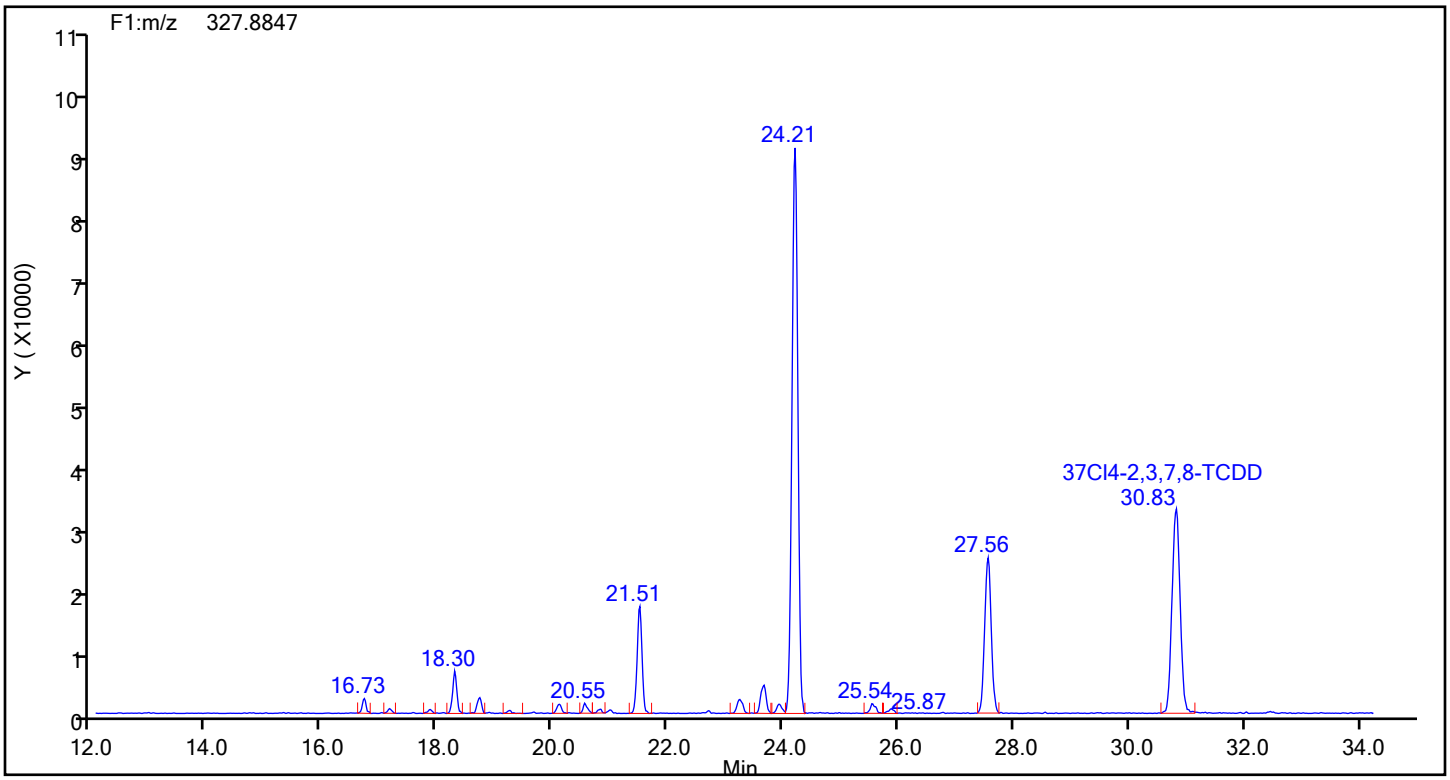


Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

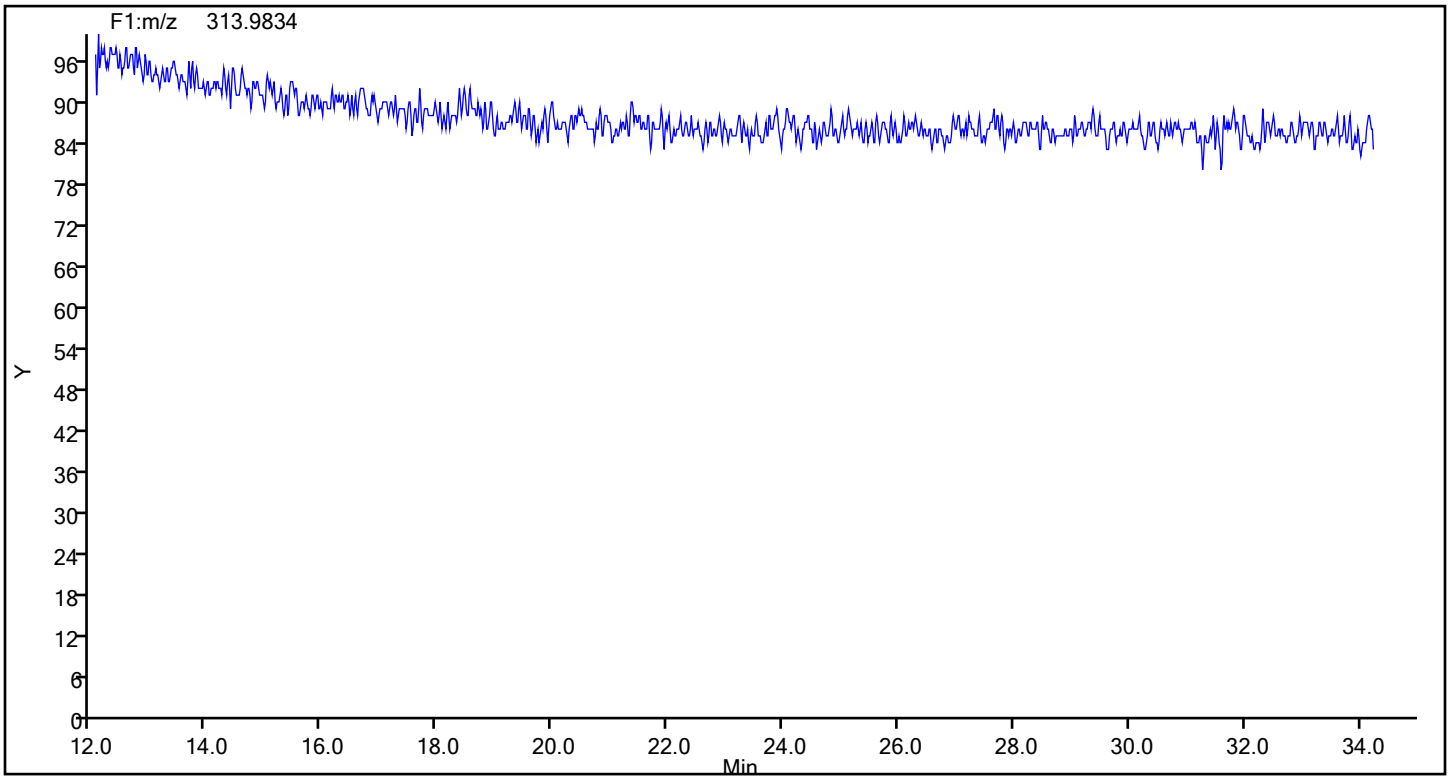
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

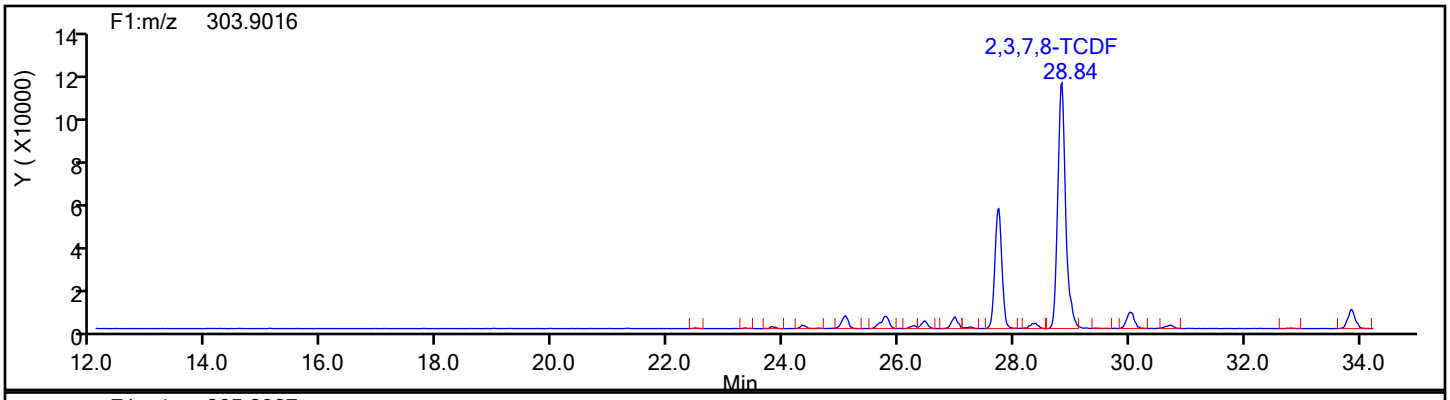


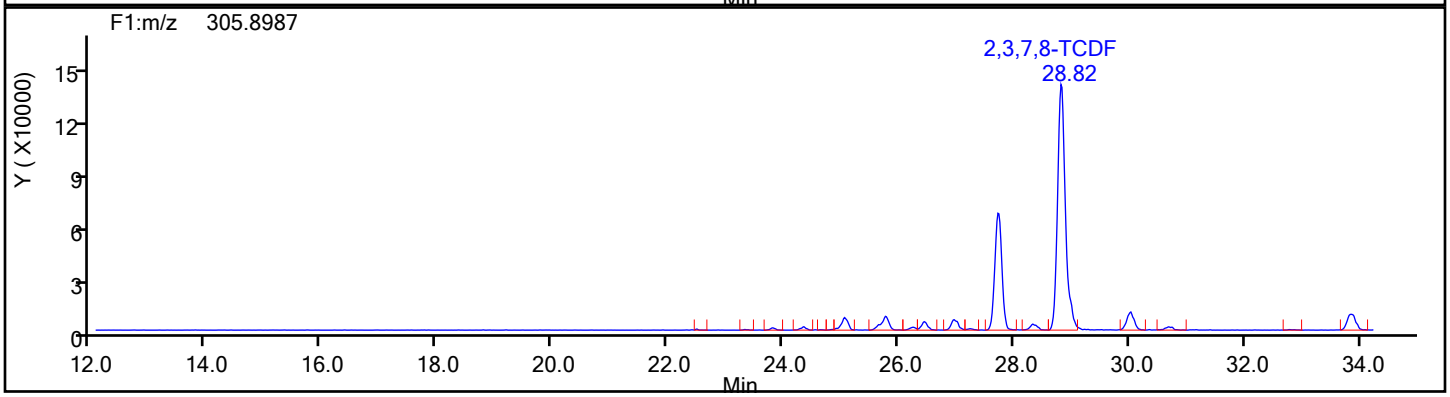
Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

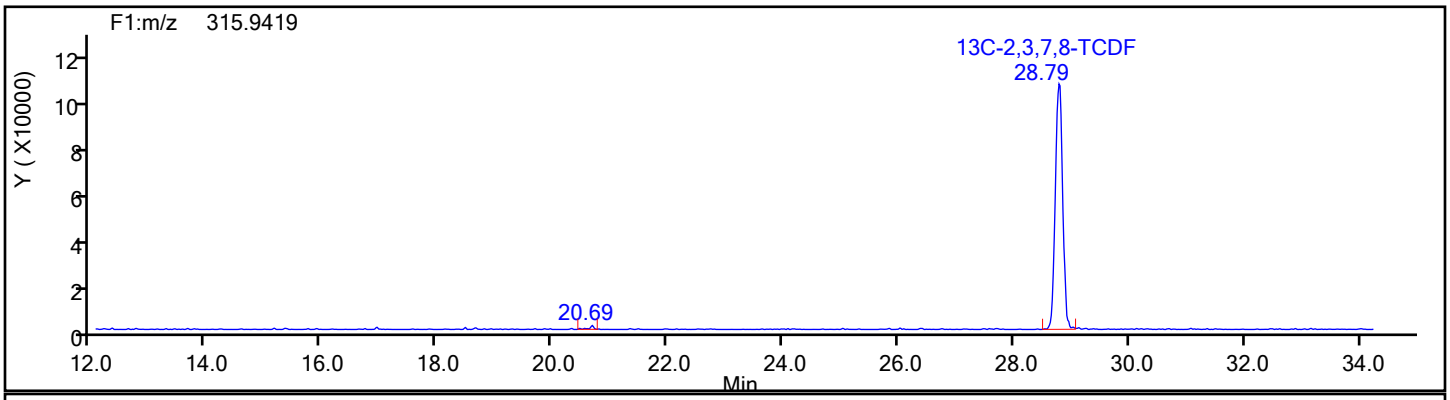
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

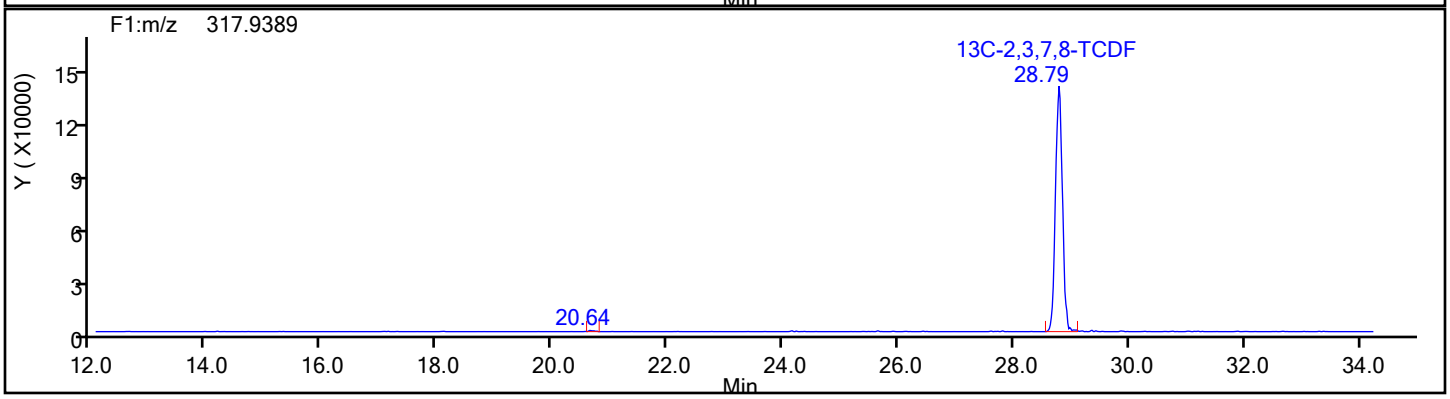
TCDF





TCDF Standards



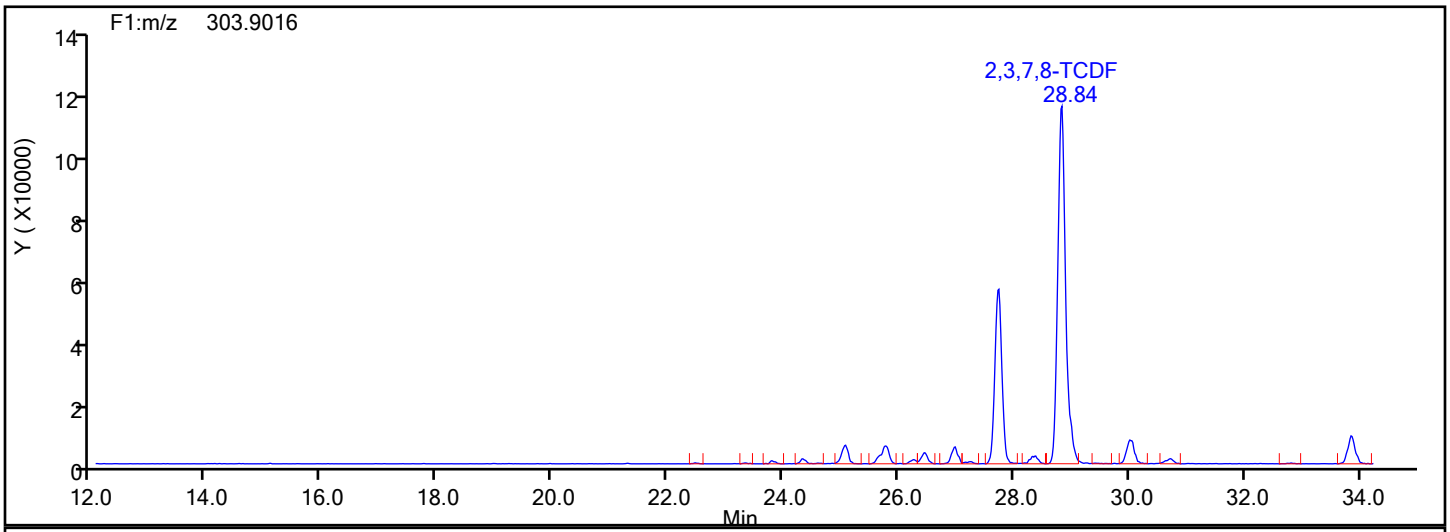


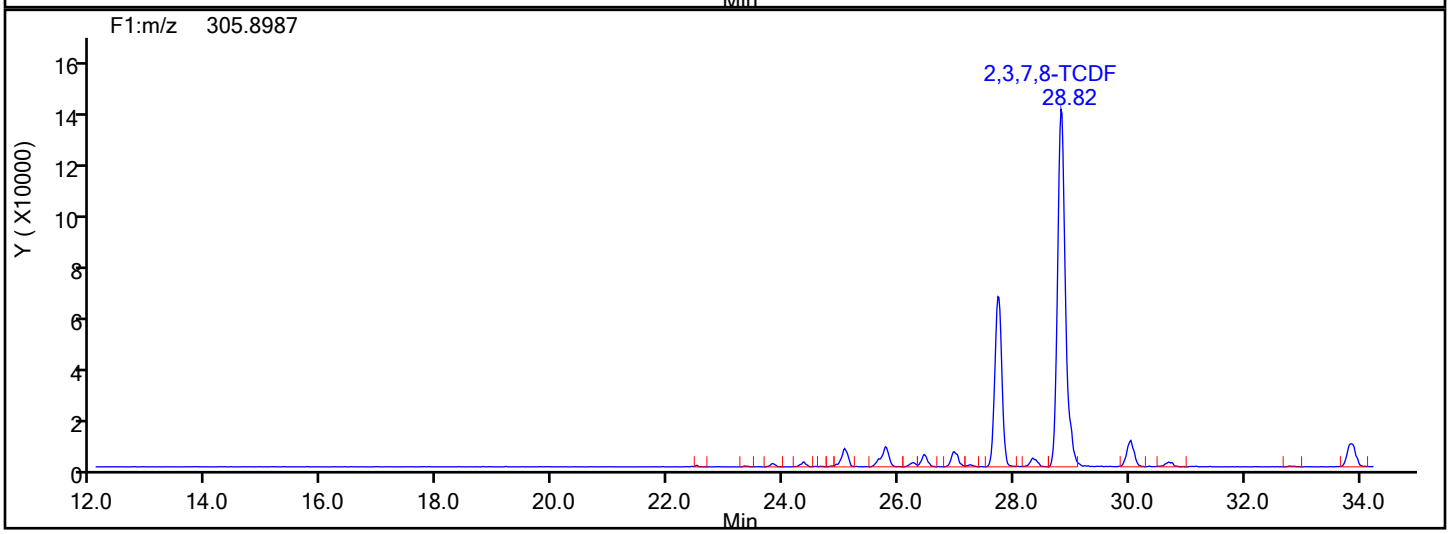
Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

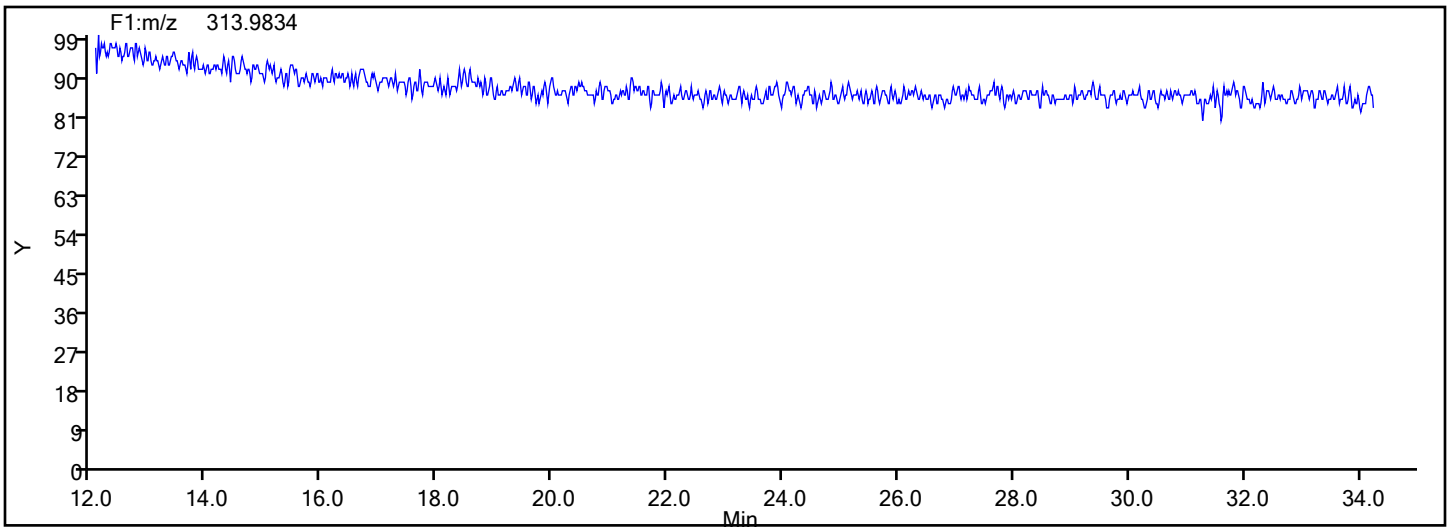
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

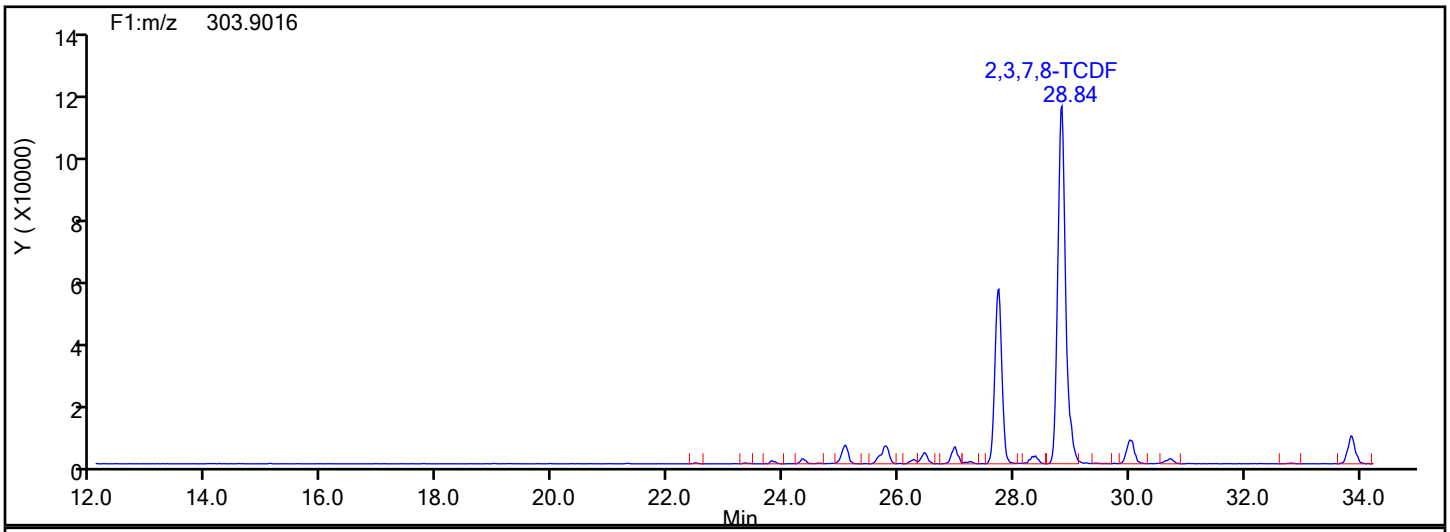


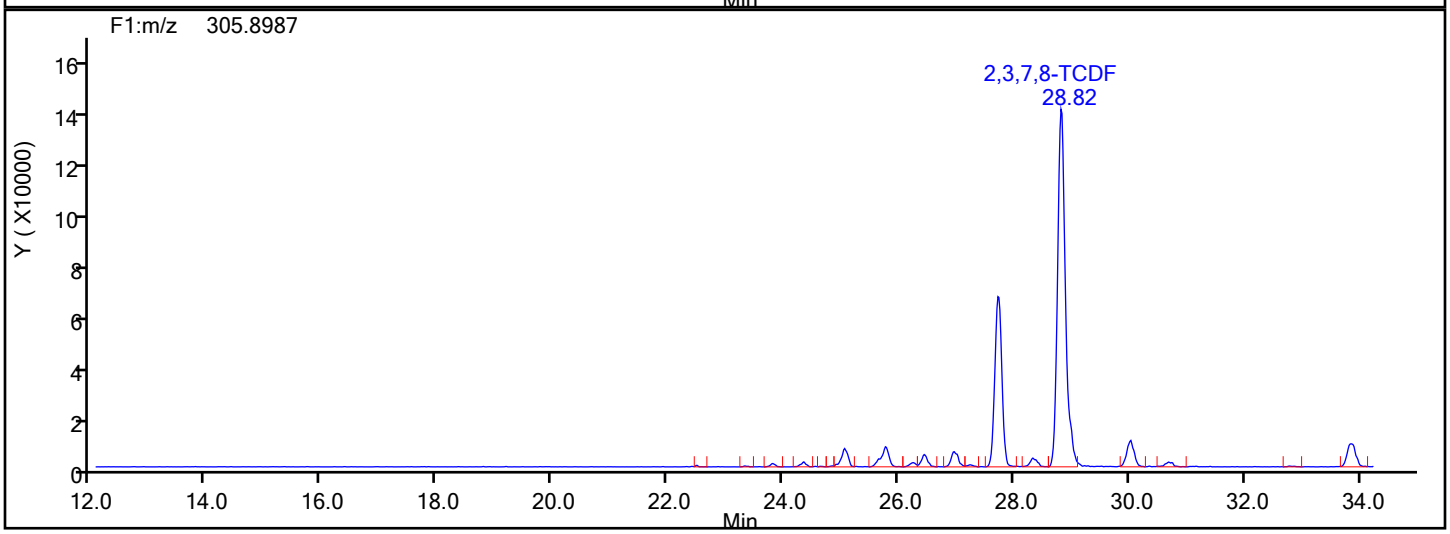
Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

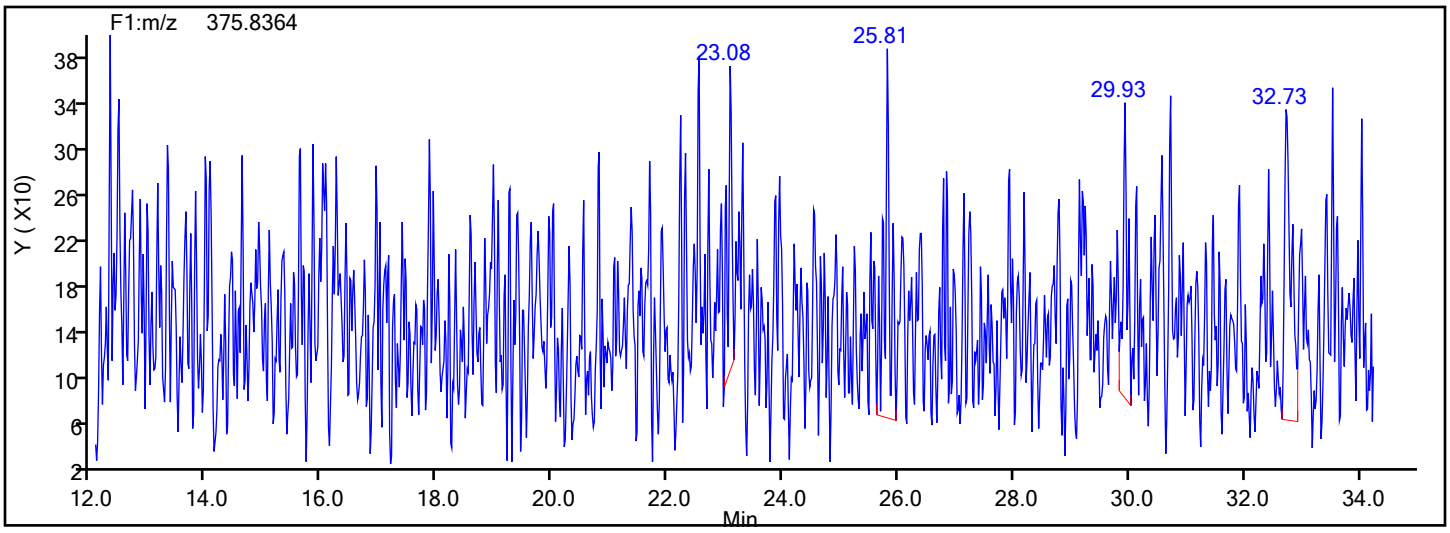
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

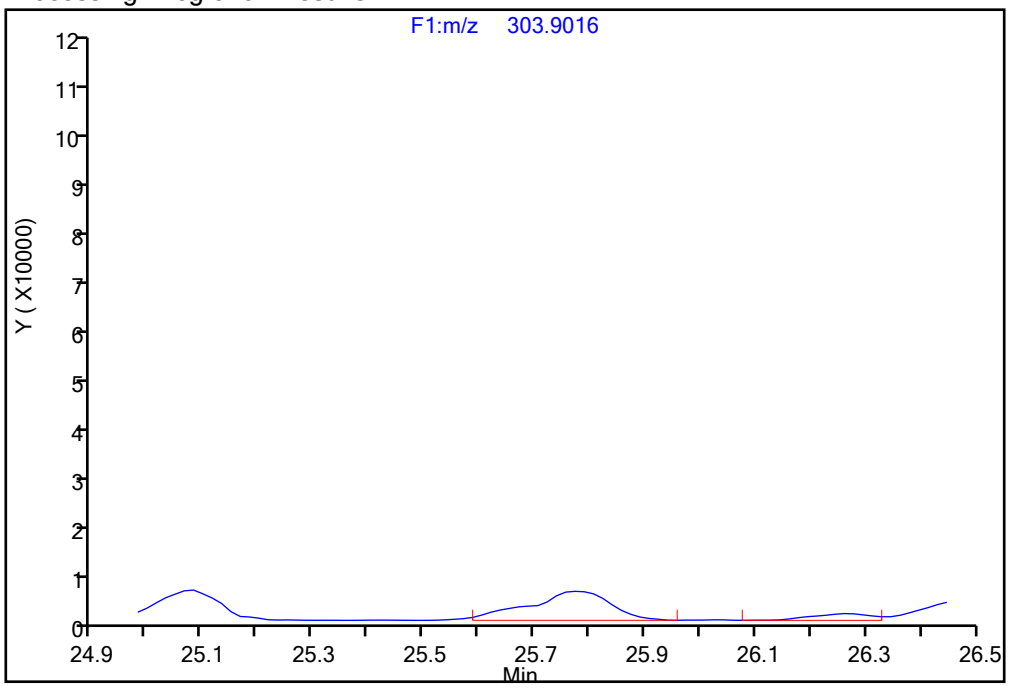
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

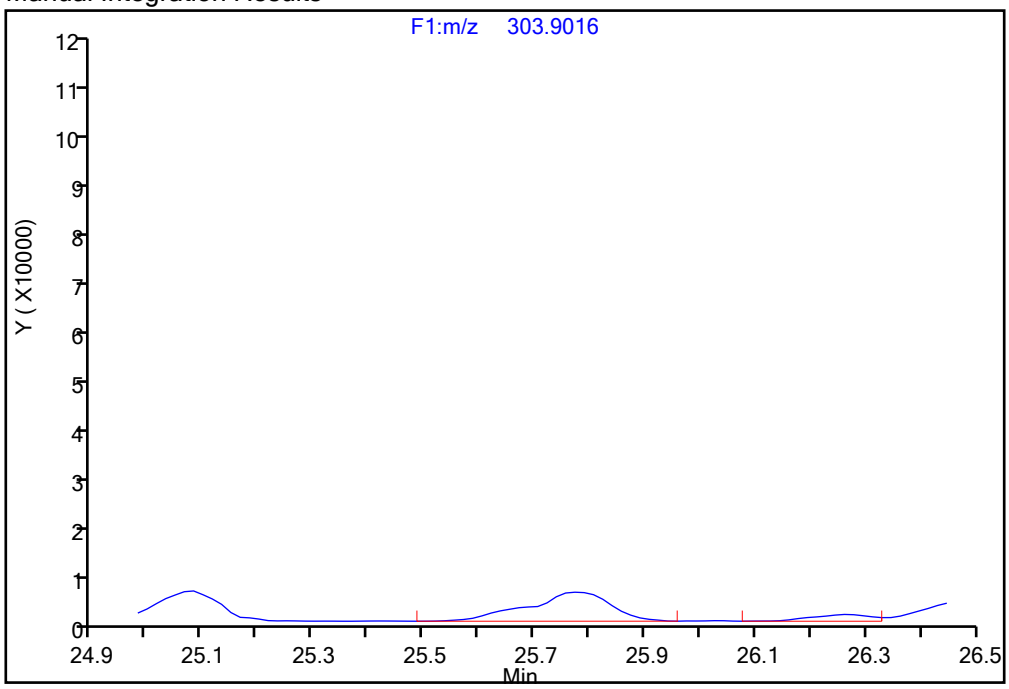
Processing Integration Results

RT = 25.773 Area = 56887



Manual Integration Results

RT = 25.773 Area = 57901 M



Reviewer: davidsonm, 17-Dec-2019 11:44:20

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Eurofins TestAmerica, Knoxville

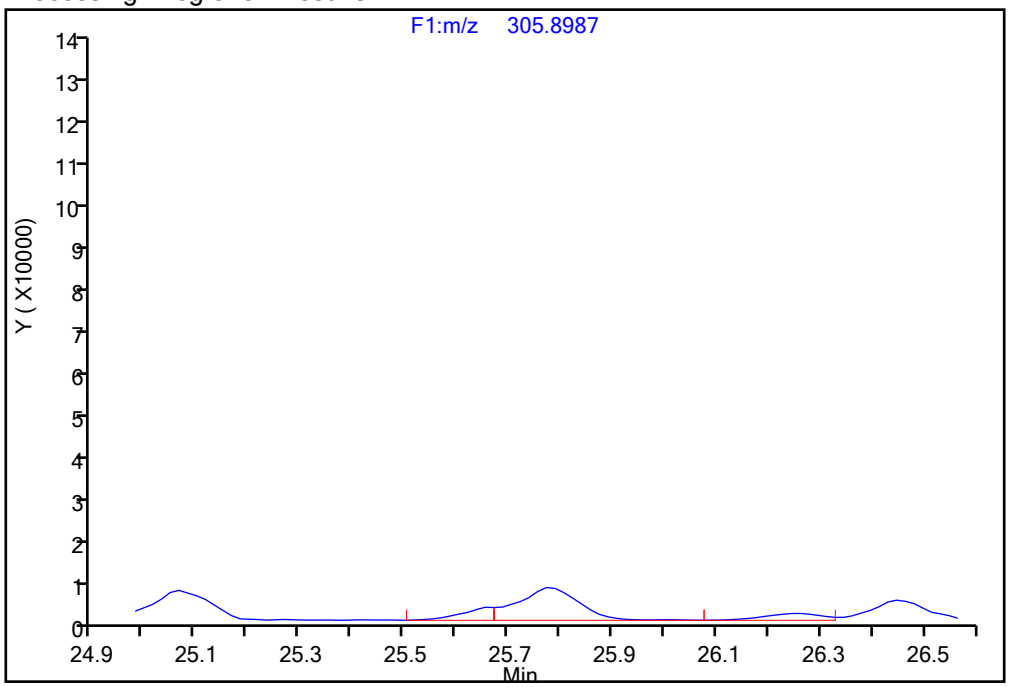
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

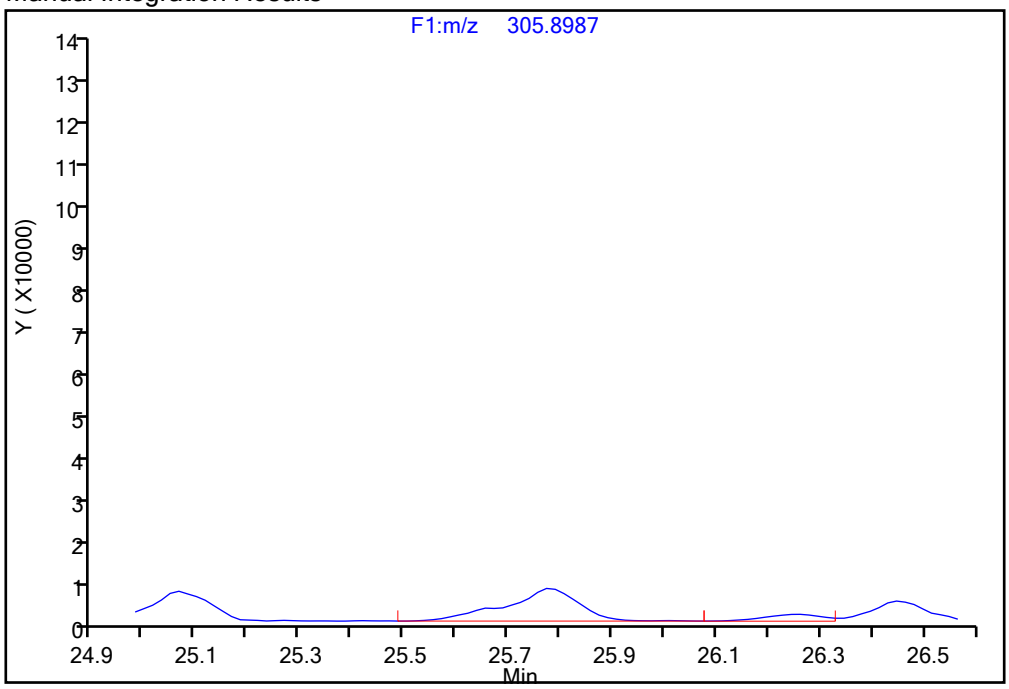
Processing Integration Results

RT = 25.773 Area = 63781



Manual Integration Results

RT = 25.773 Area = 75968 M



Reviewer: davidsonm, 17-Dec-2019 11:44:11

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

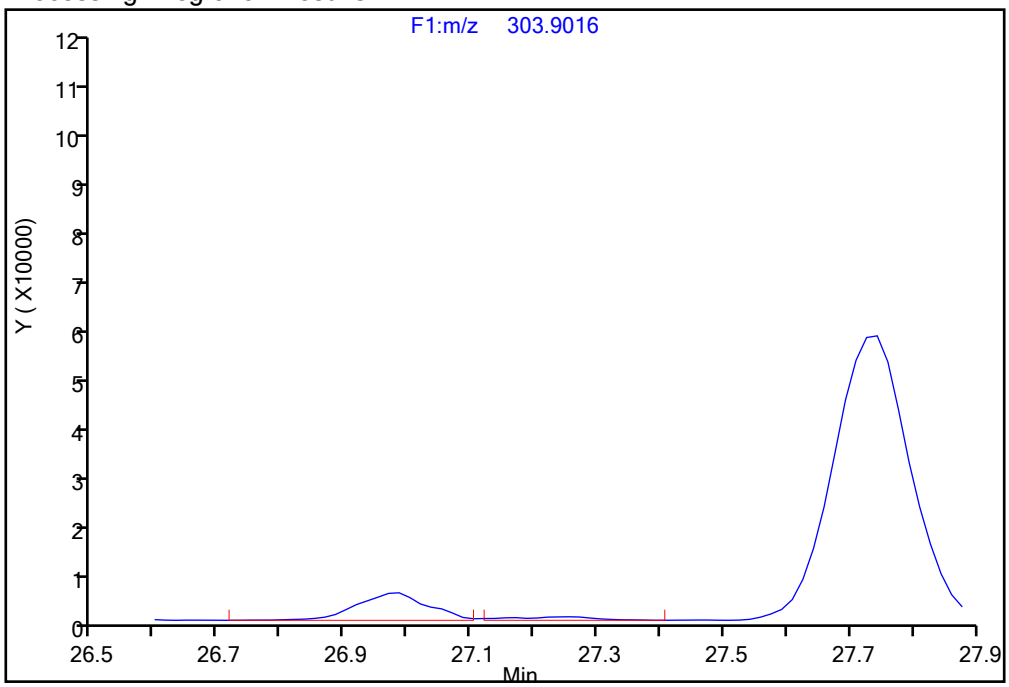
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

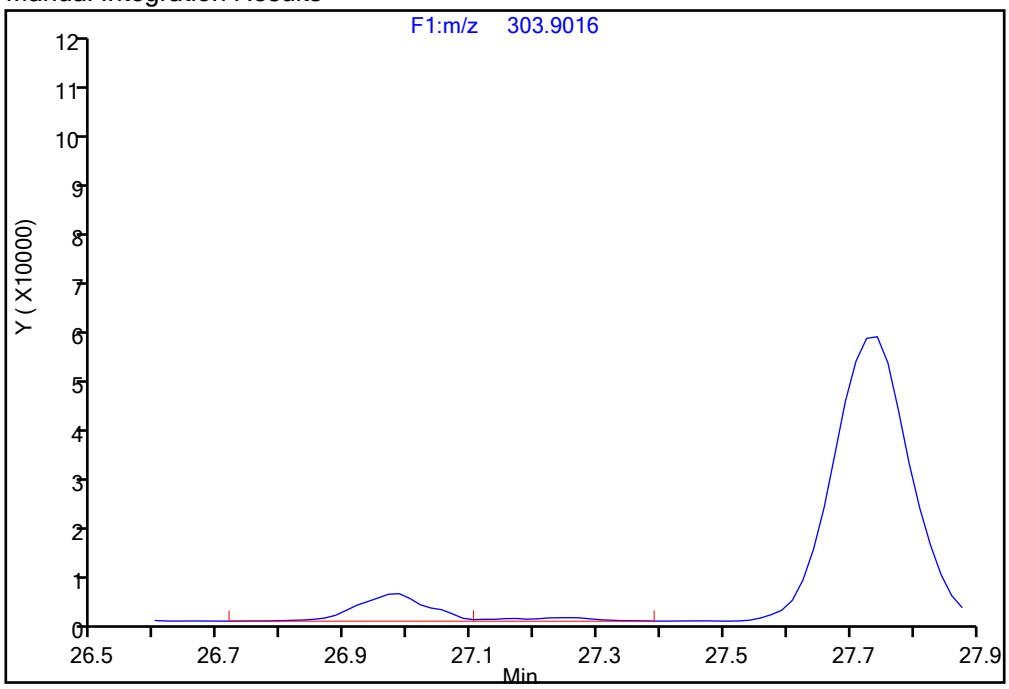
Processing Integration Results

RT = 27.255 Area = 6022



Manual Integration Results

RT = 27.255 Area = 6496 M



Reviewer: davidsonm, 17-Dec-2019 11:44:20

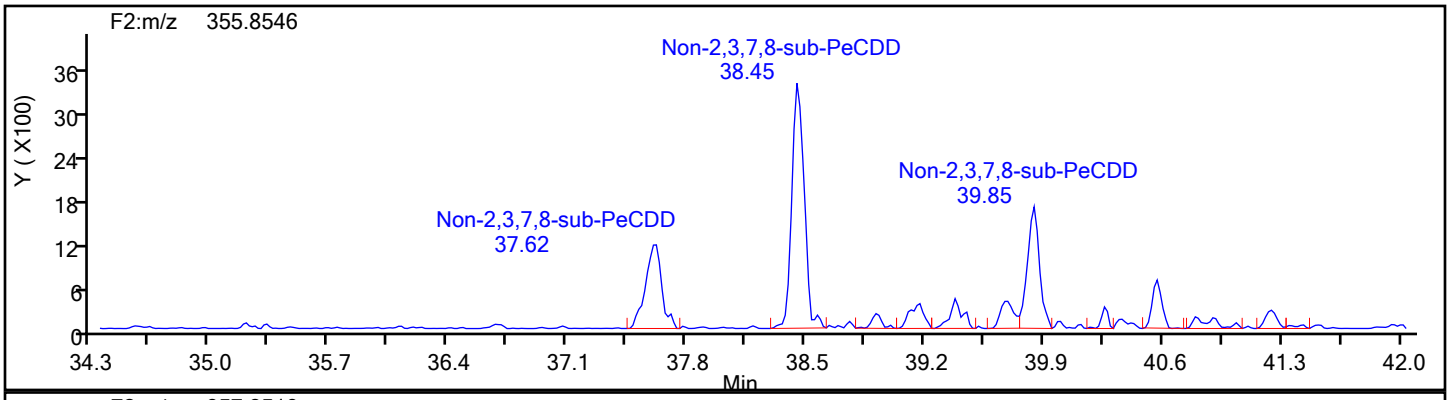
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

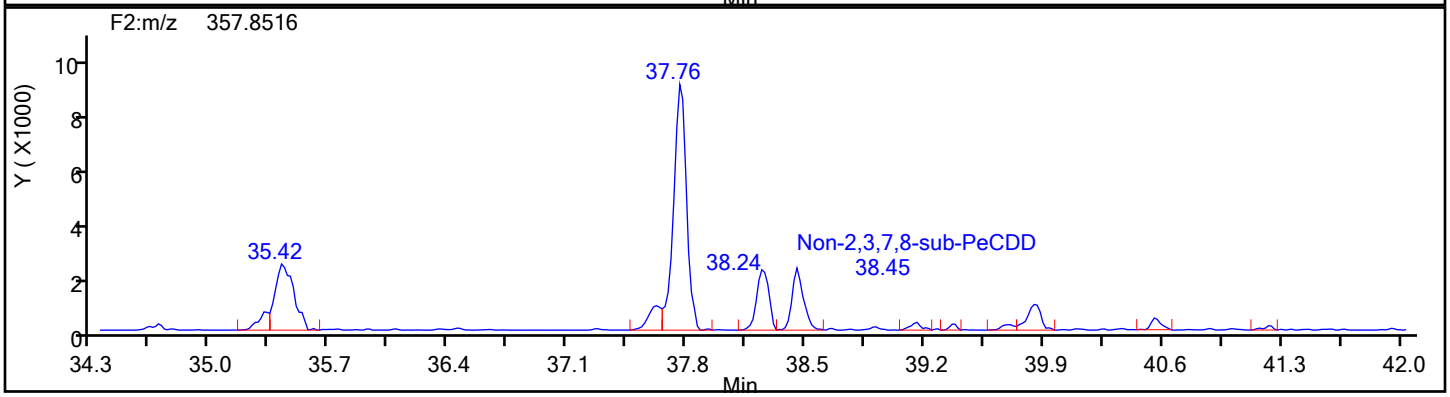
Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

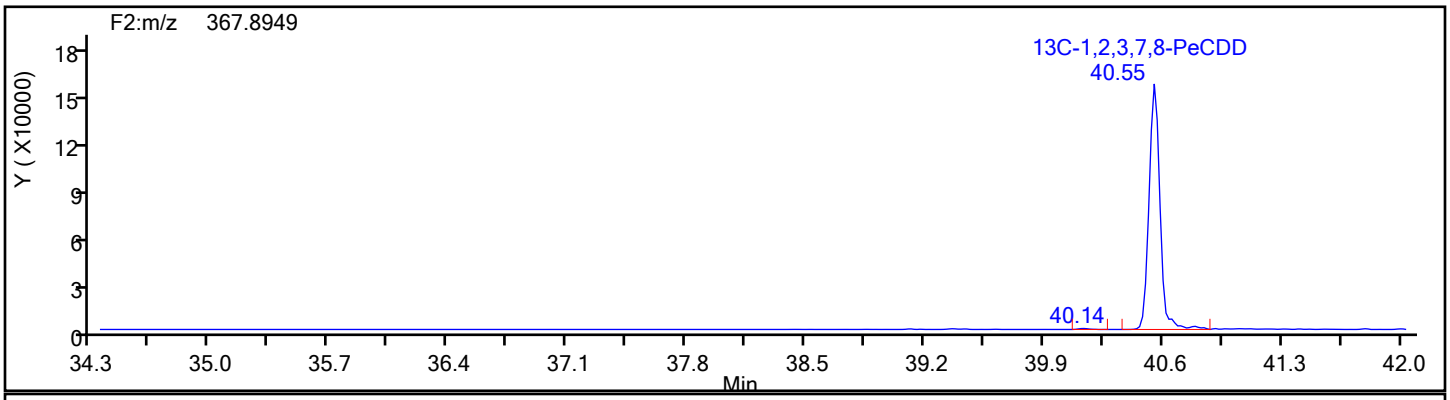
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

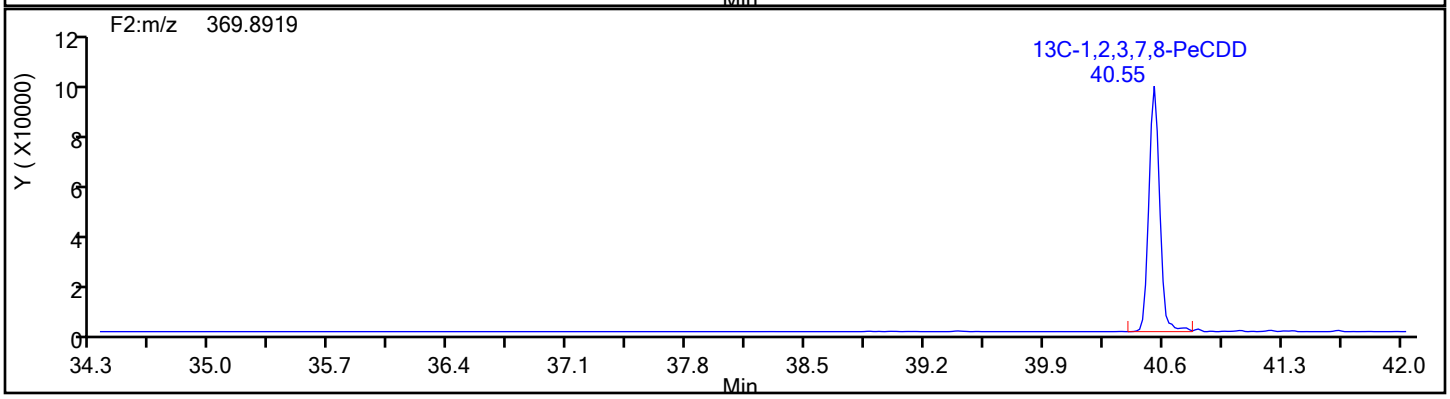
PeCDD





PeCDD Standards



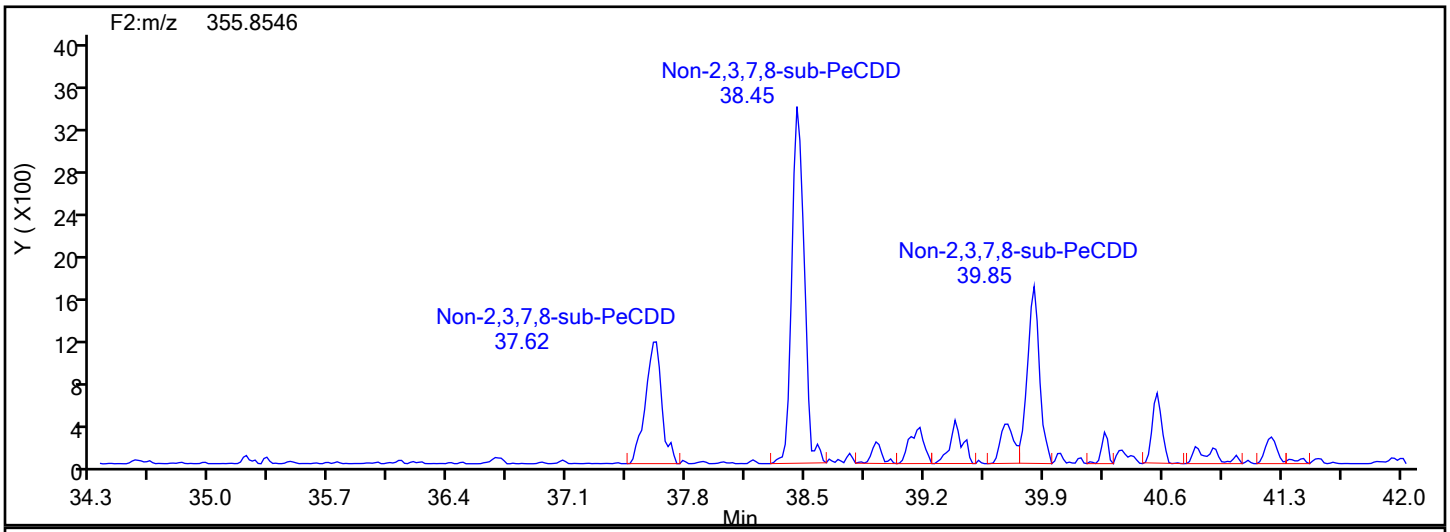


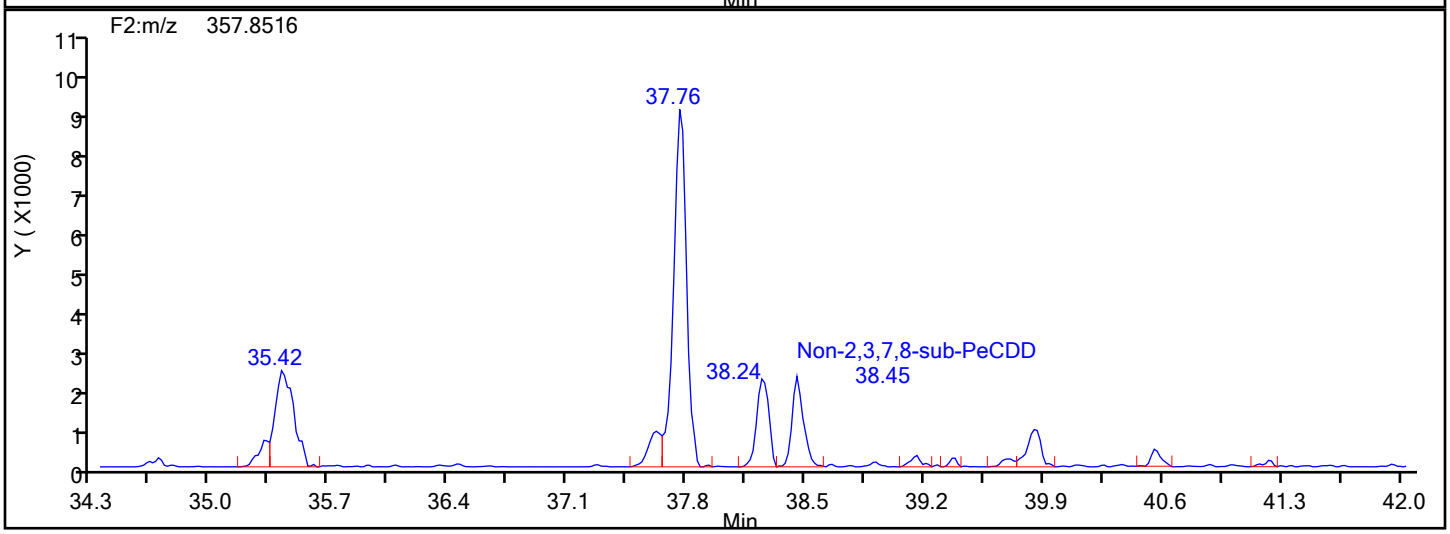
Report Date: 17-Dec-2019 11:49:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

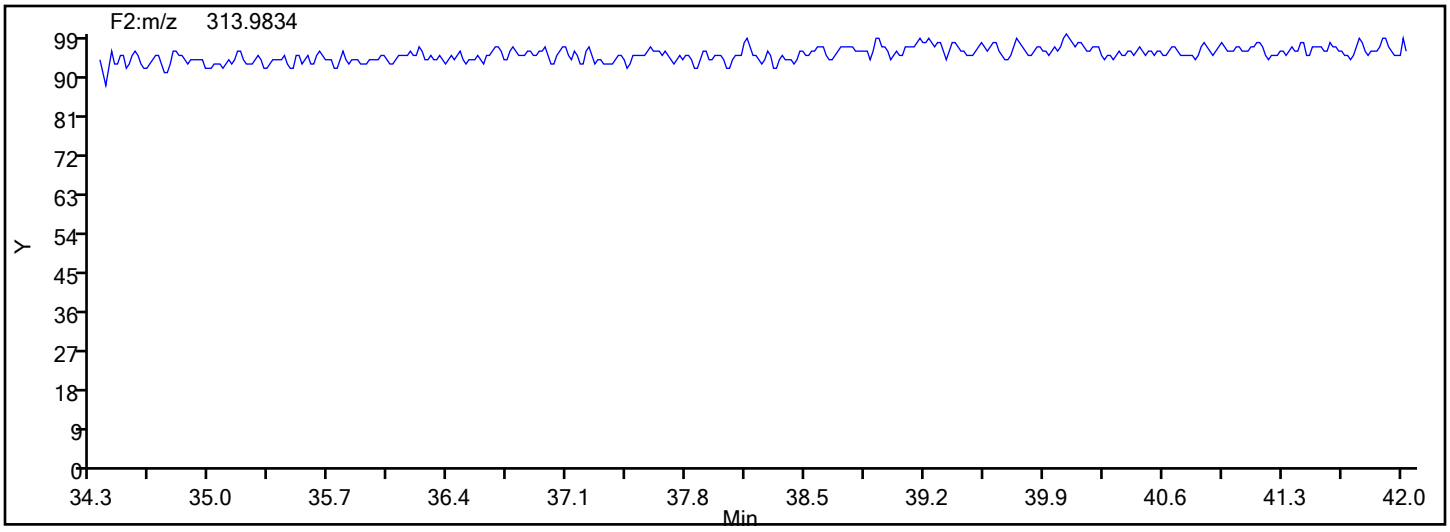
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

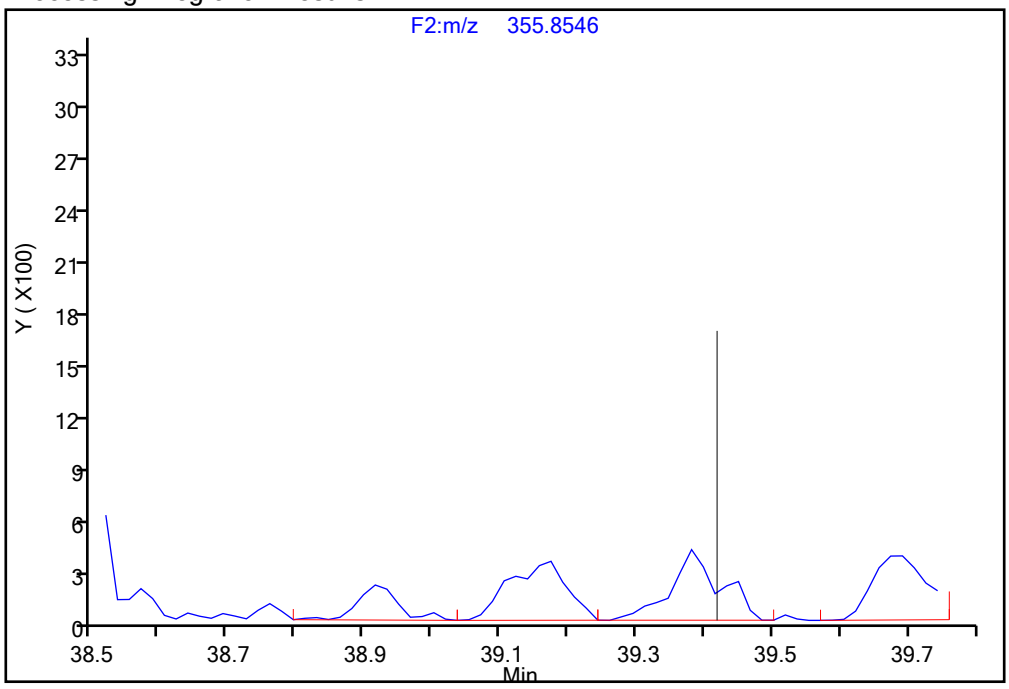
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

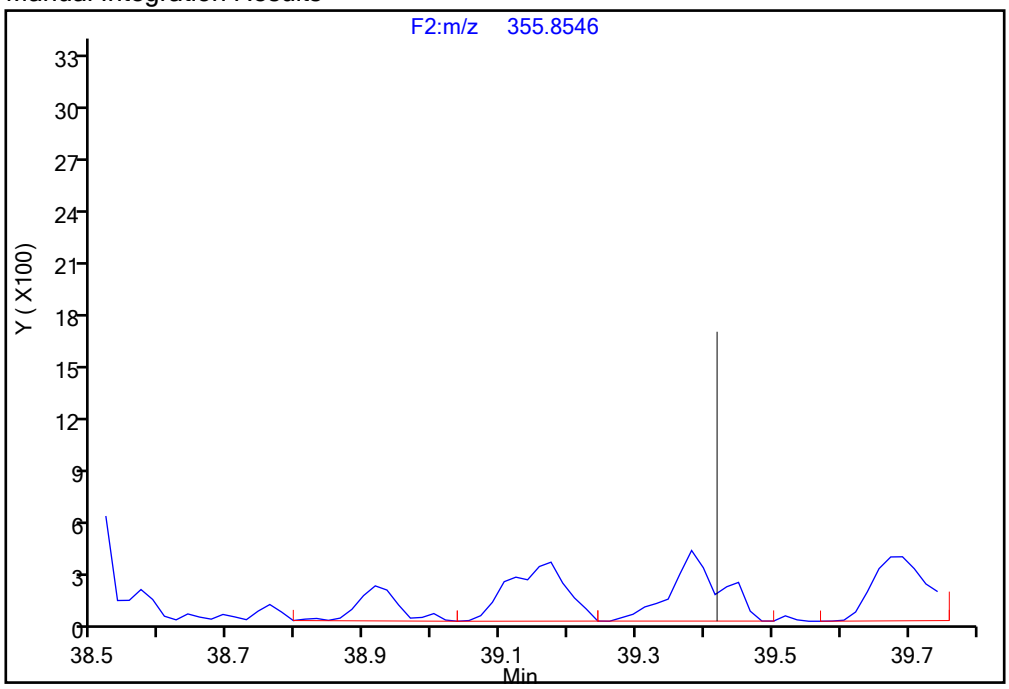
Processing Integration Results

RT = 39.174 Area = 2000



Manual Integration Results

RT = 39.174 Area = 2000



Reviewer: davidsonm, 17-Dec-2019 11:46:11

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

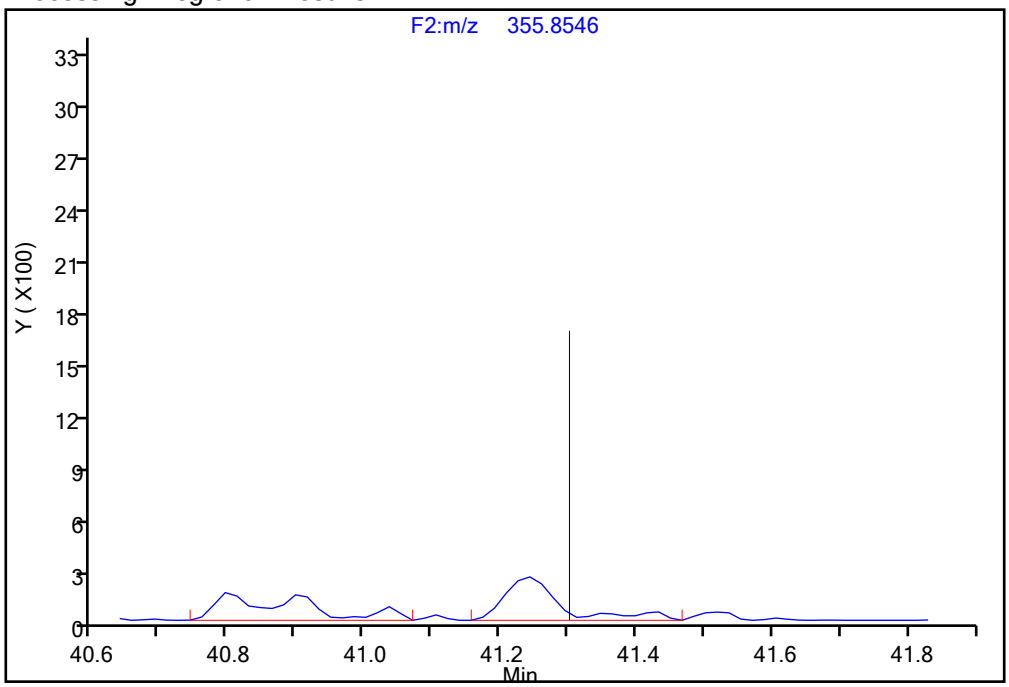
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

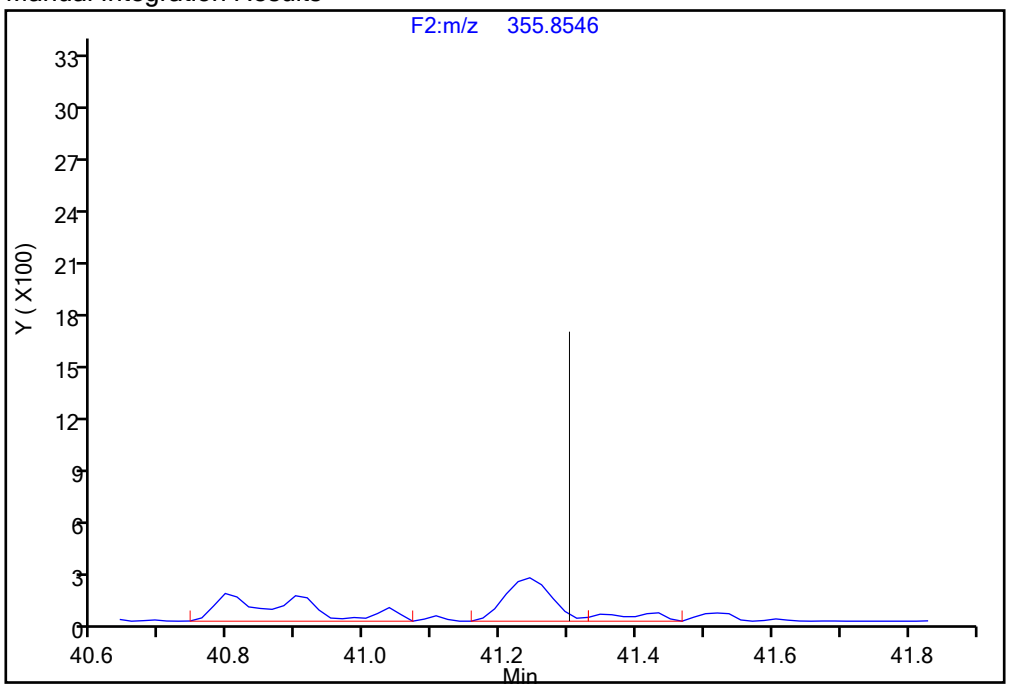
Processing Integration Results

RT = 41.243 Area = 1435



Manual Integration Results

RT = 41.243 Area = 1183 M



Reviewer: davidsonm, 17-Dec-2019 11:46:11

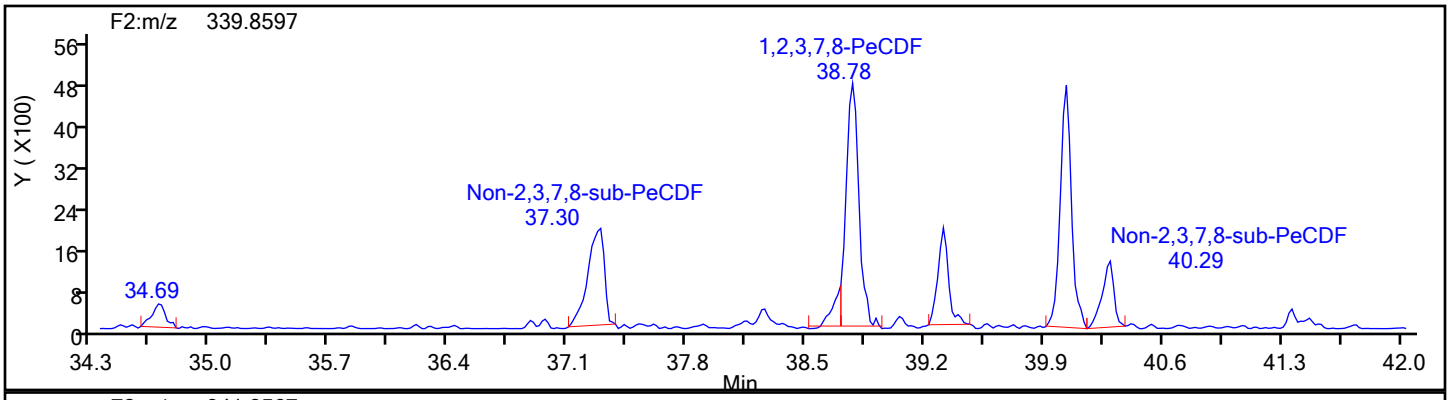
Audit Action: Assigned Compound ID Audit Reason: Split Peak

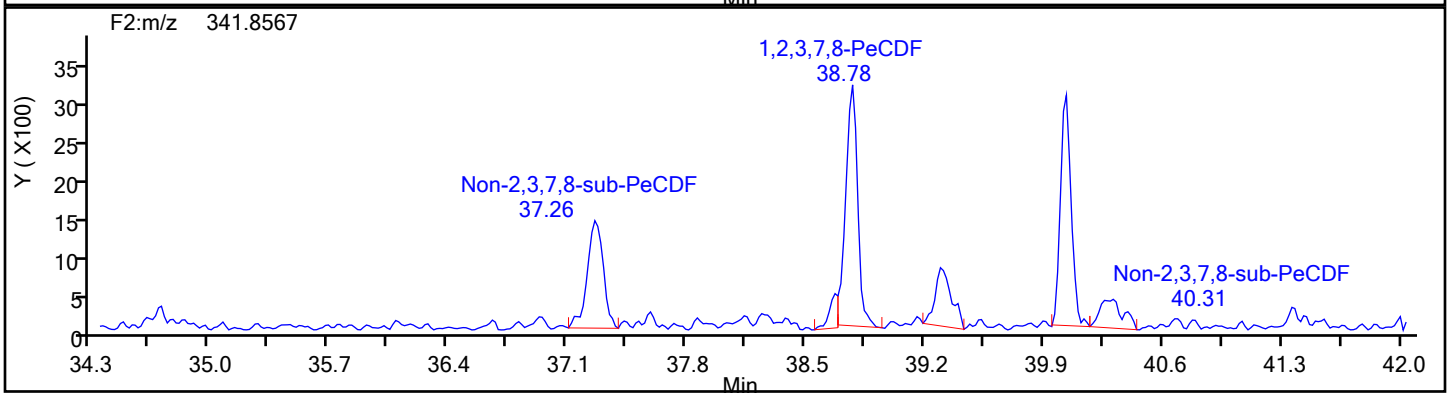
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

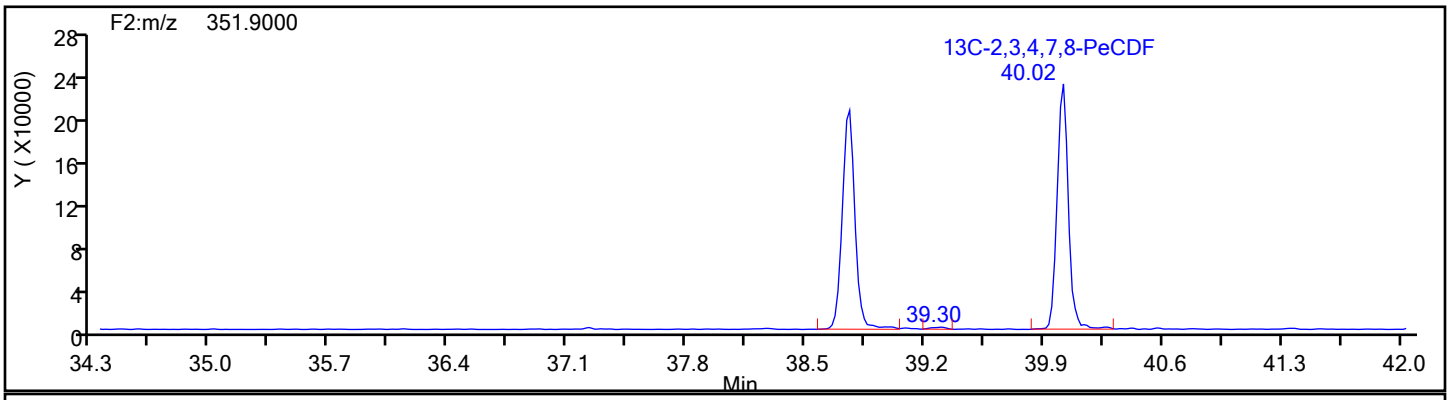
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

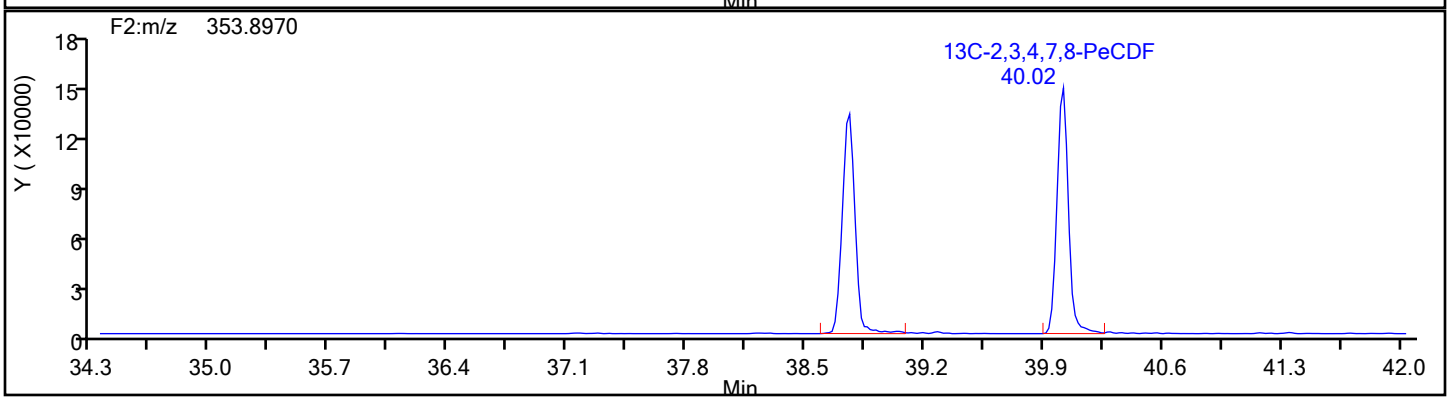
PeCDF





PeCDF Standards



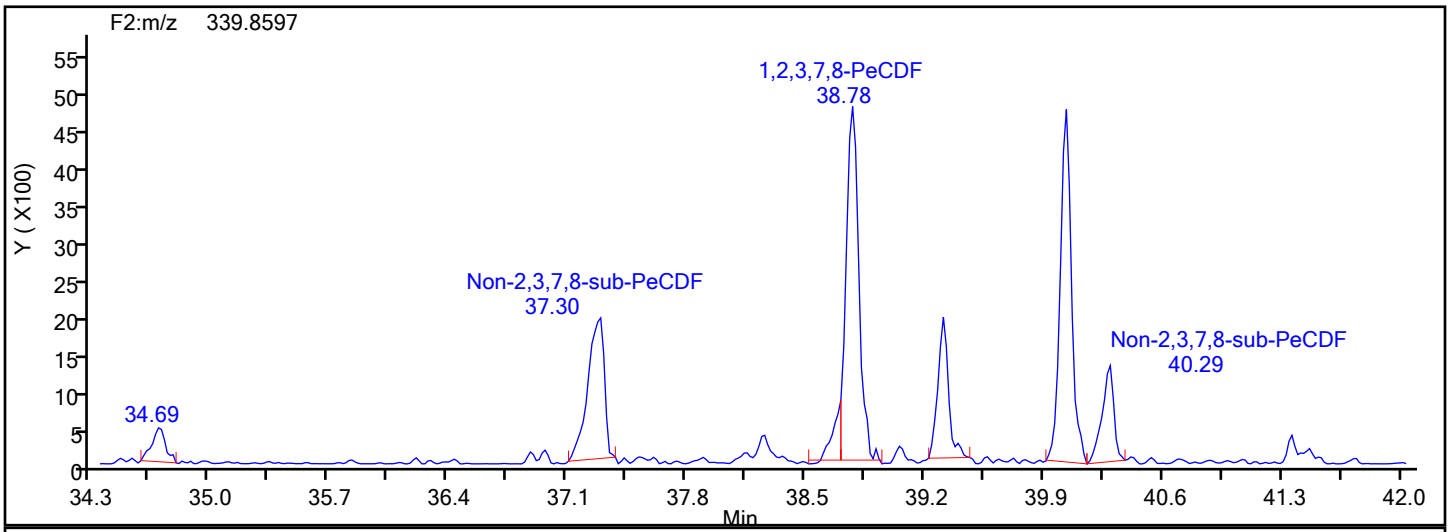


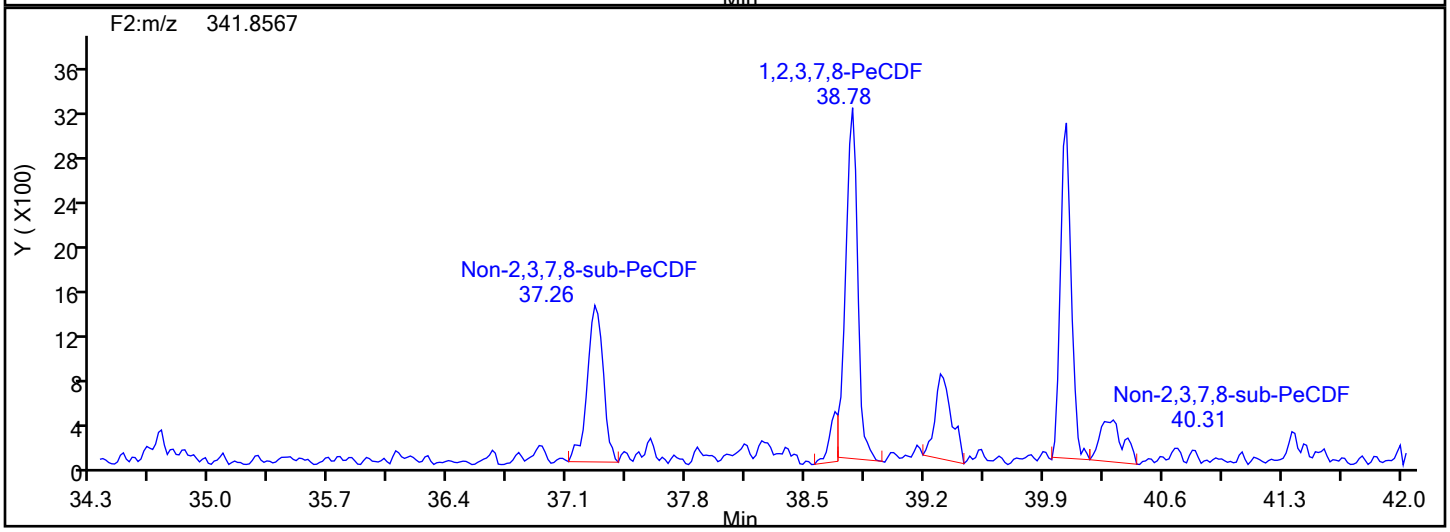
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

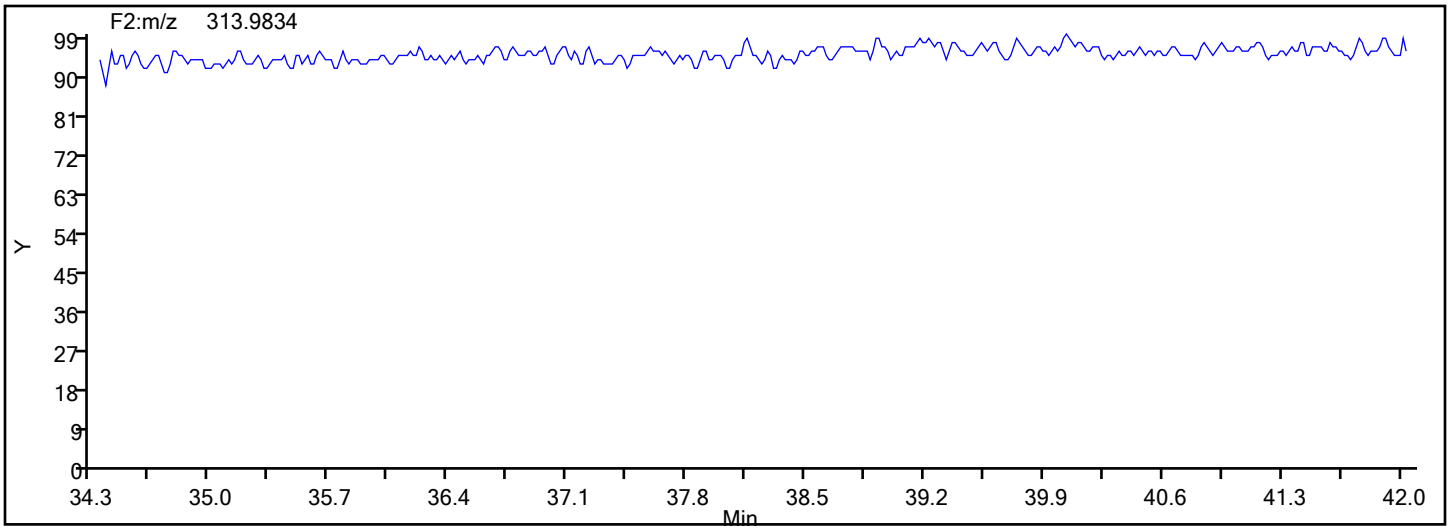
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

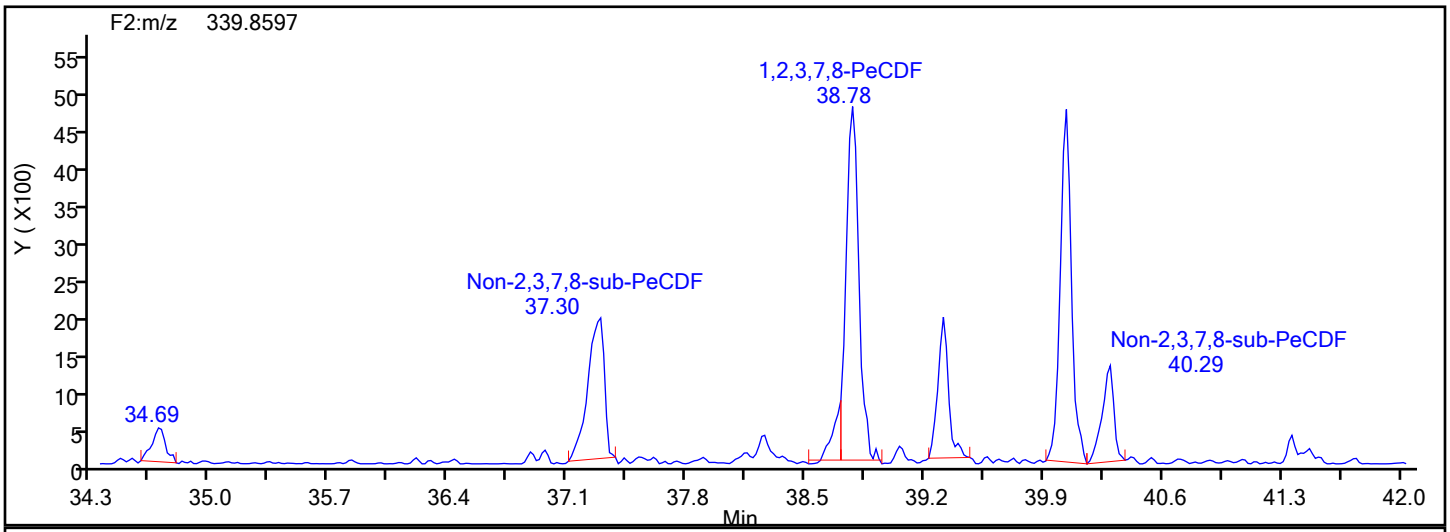


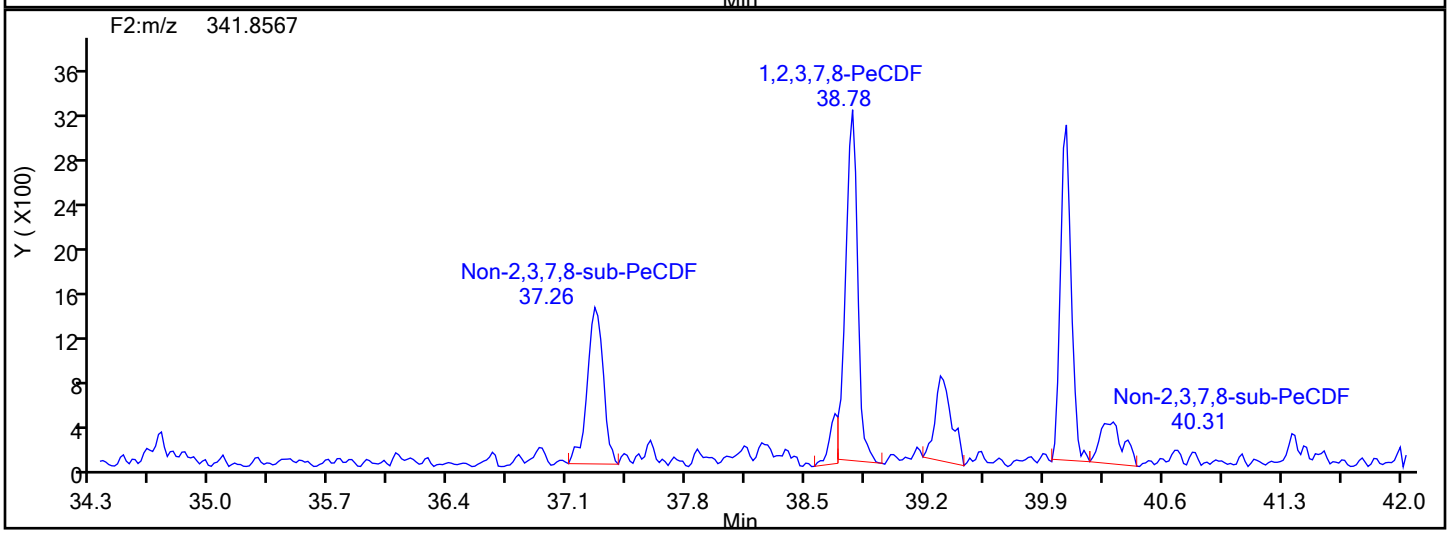
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

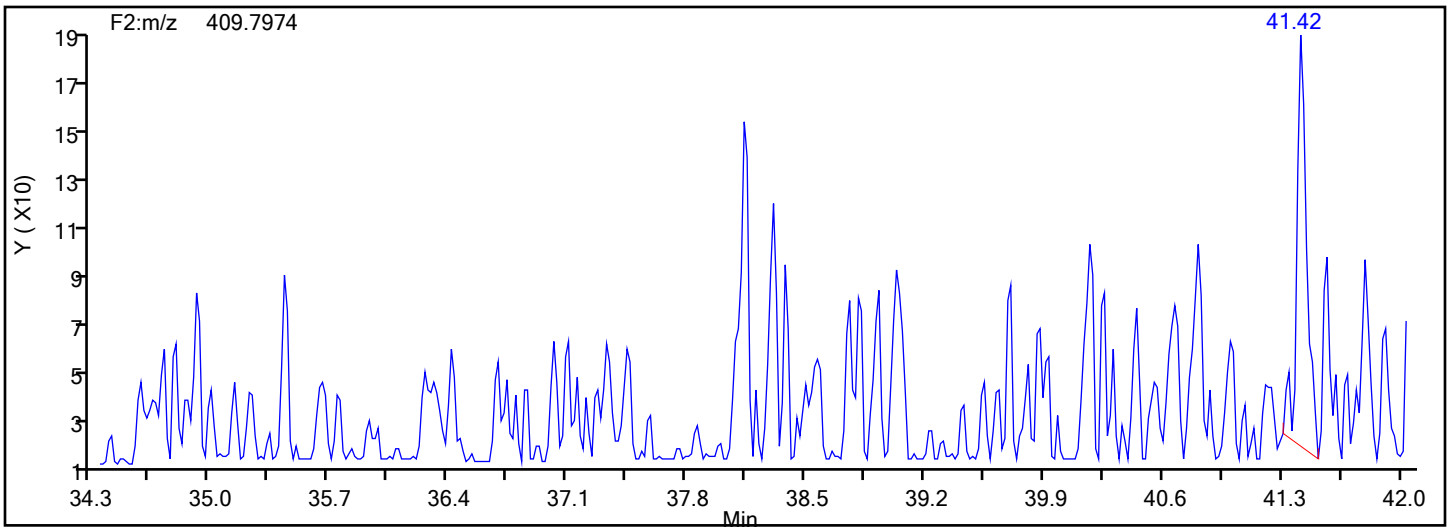
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

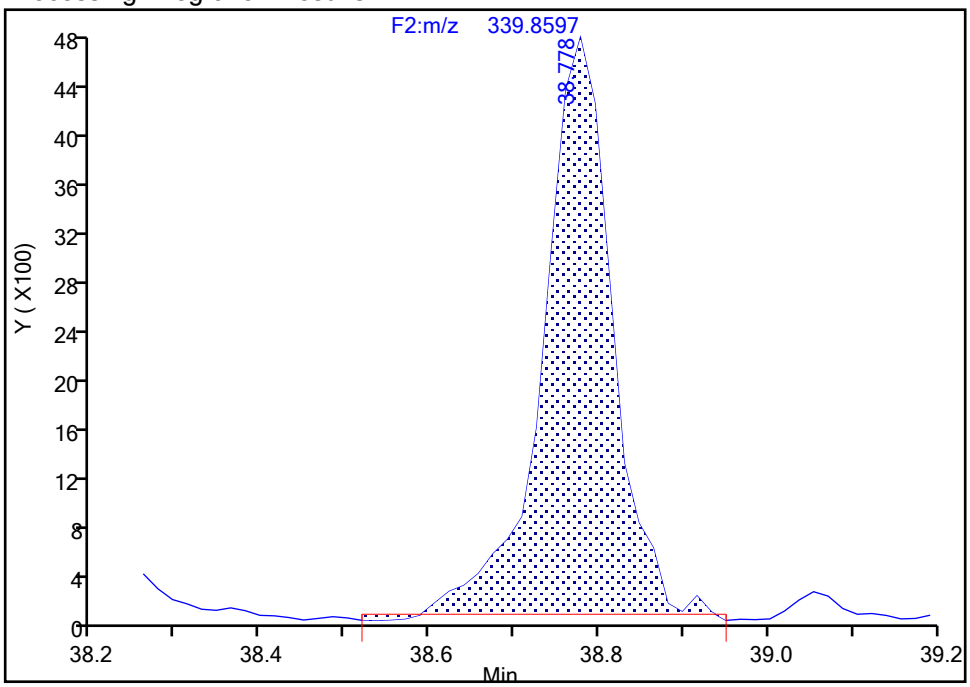
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

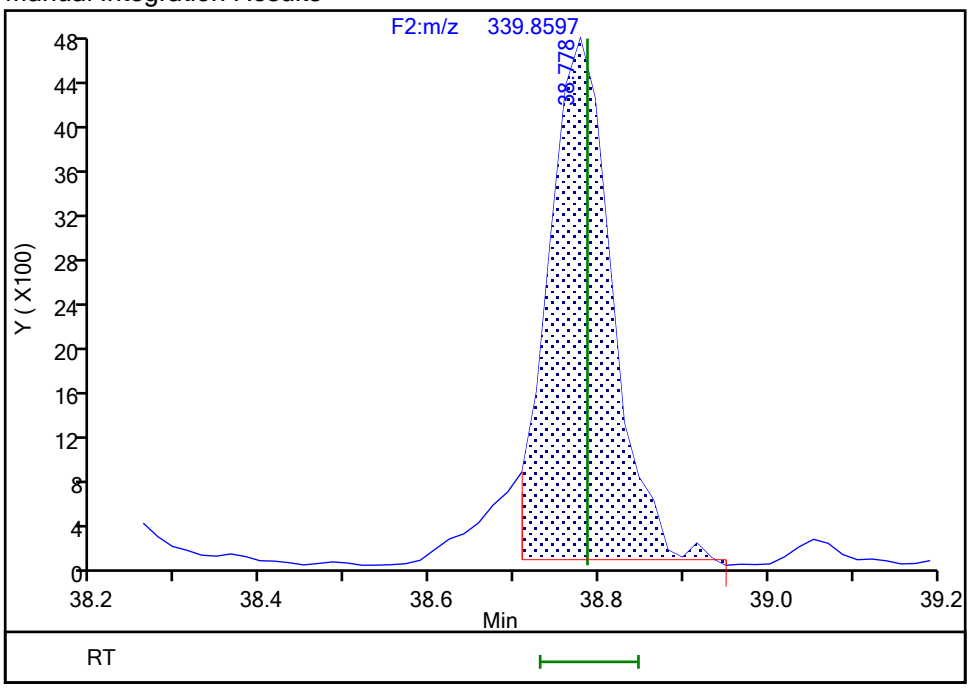
Processing Integration Results

RT: 38.78
Area: 26608
Amount: 1.008541
Amount Units: pg/ul



Manual Integration Results

RT: 38.78
Area: 24347
Amount: 0.954029
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:46:26

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

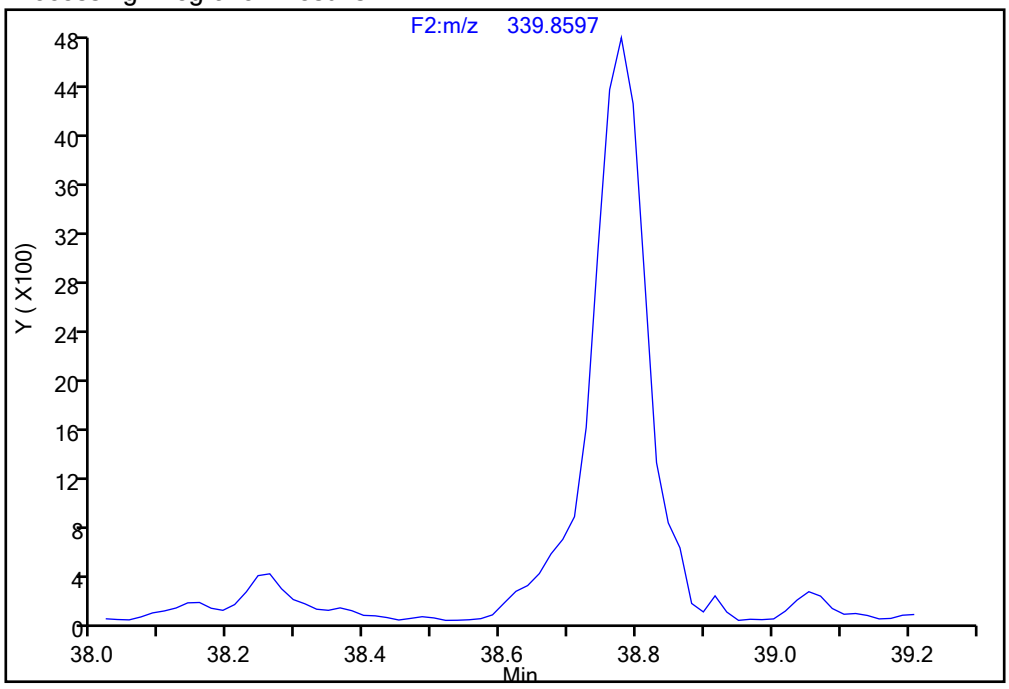
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

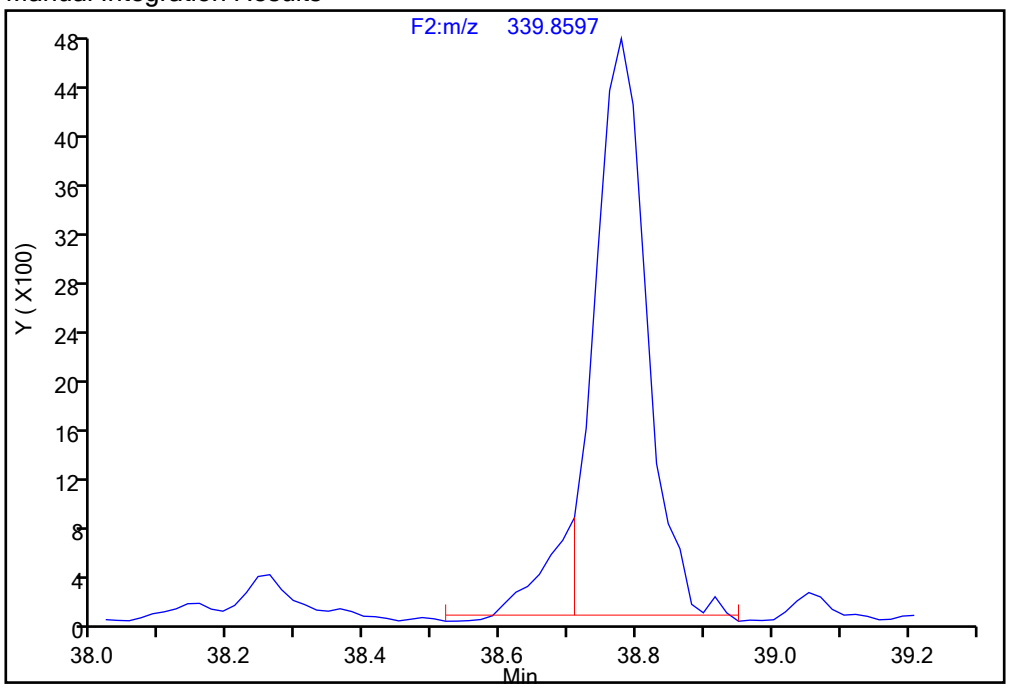
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 38.709 Area = 2261 M



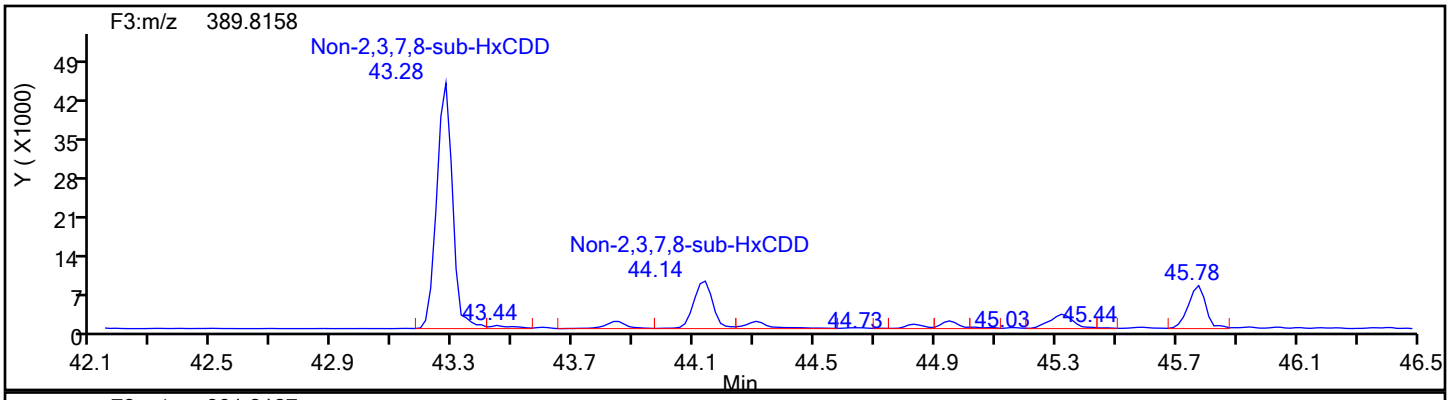
Reviewer: davidsonm, 17-Dec-2019 11:46:34
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

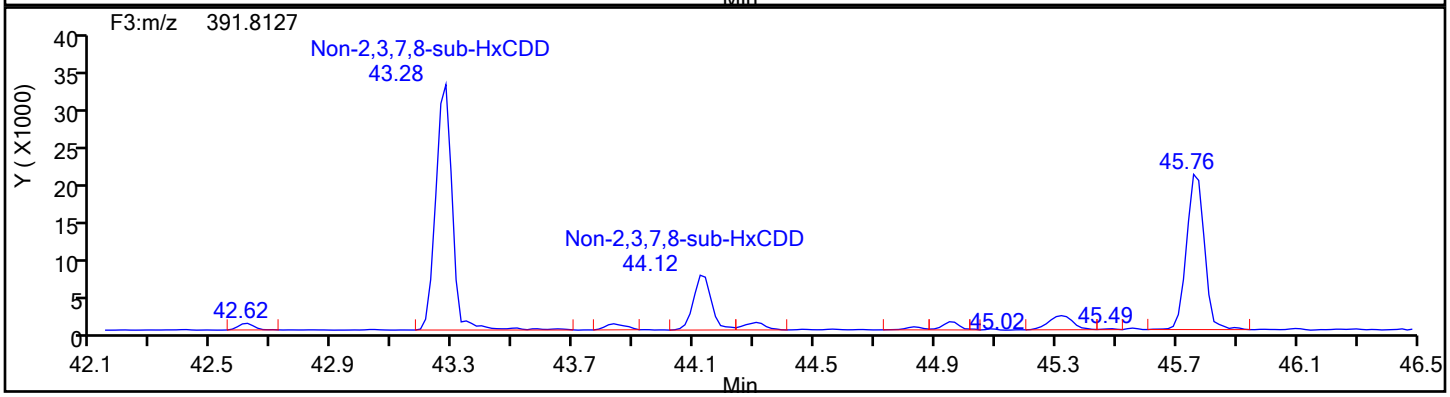
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

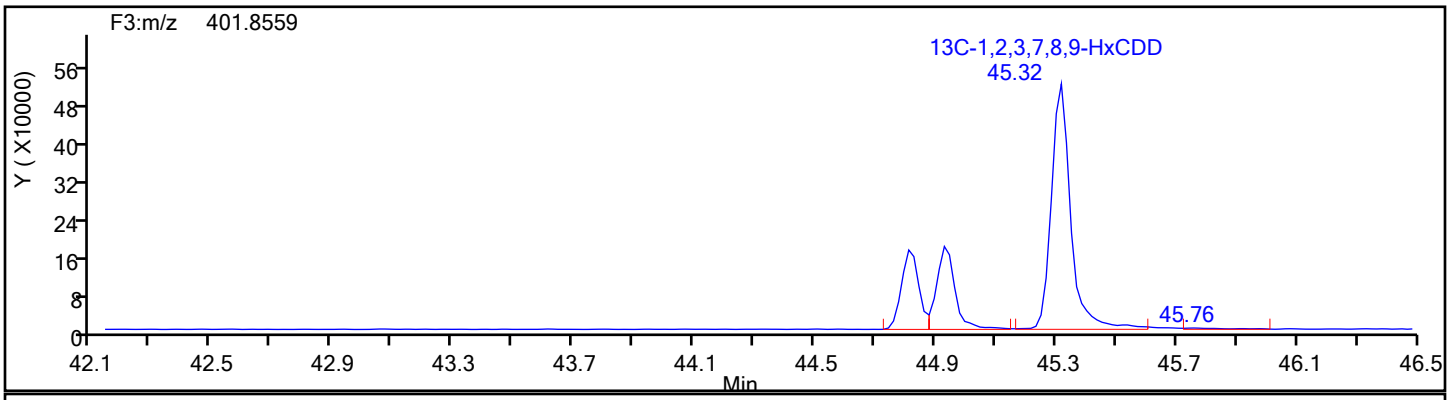
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

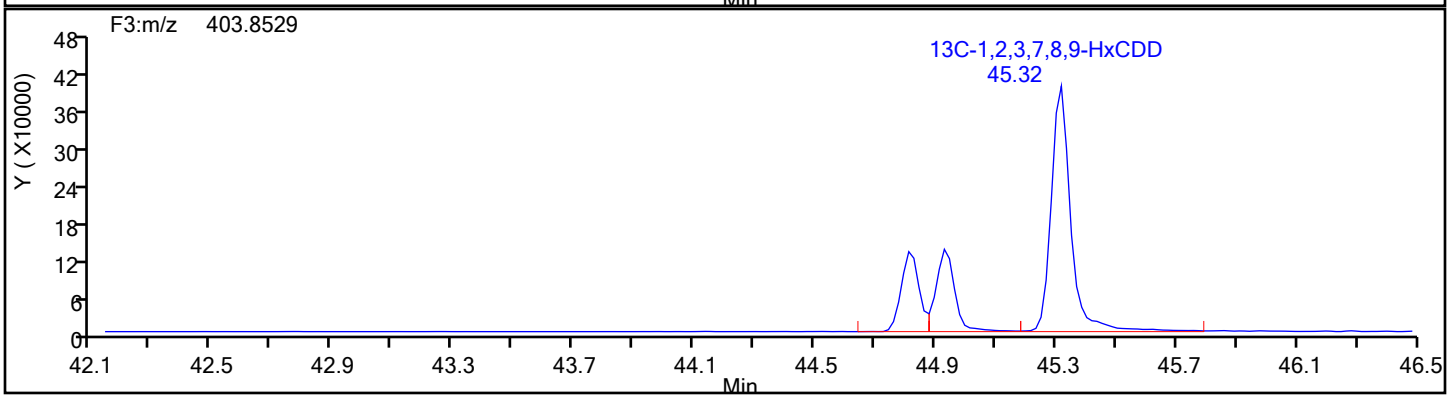
HxCDD





HxCDD Standards



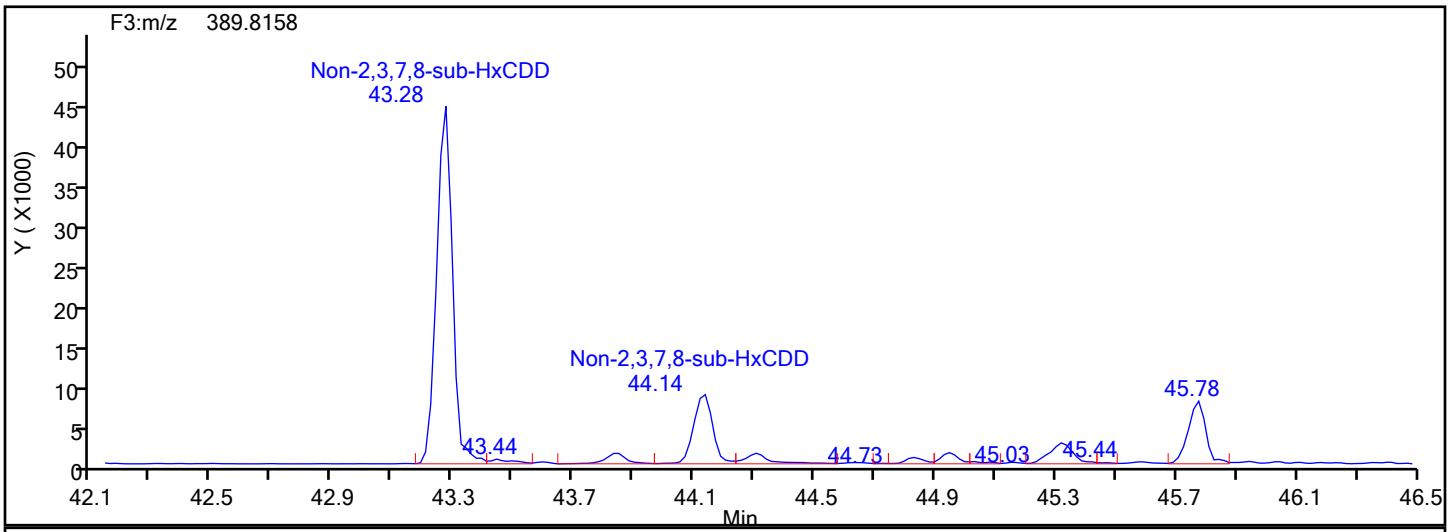


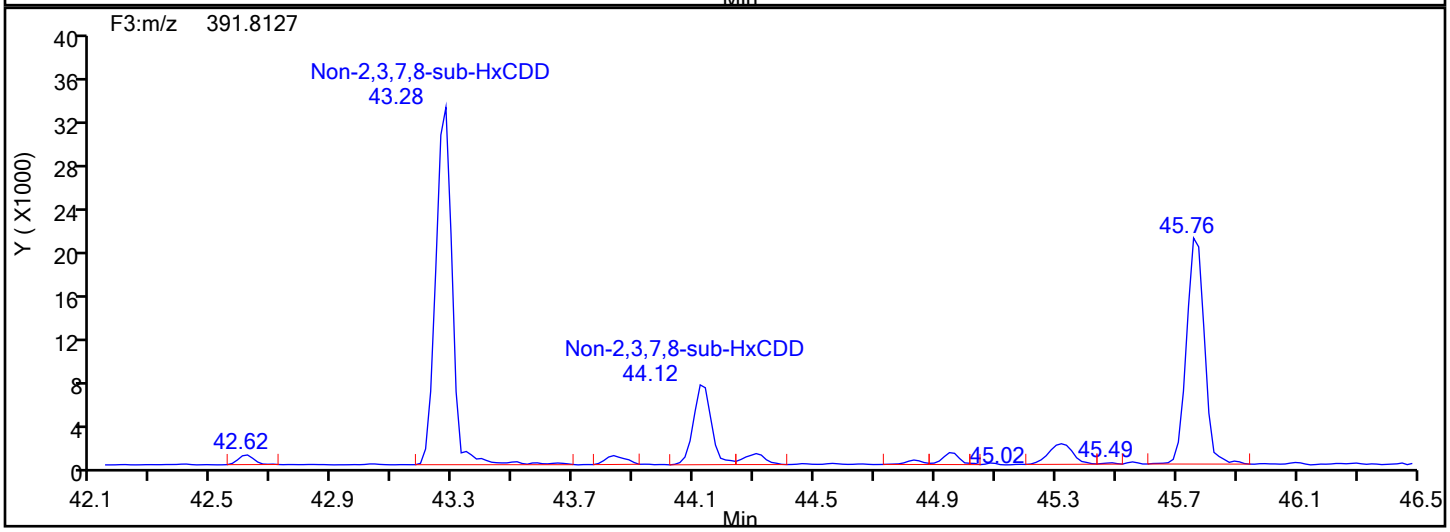
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

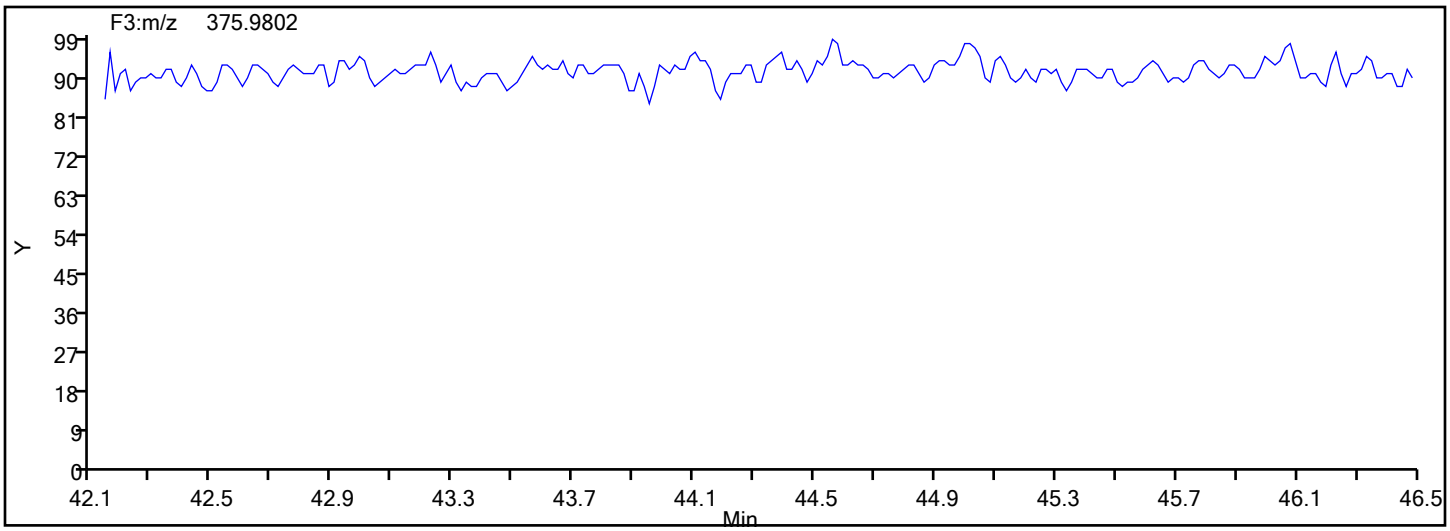
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

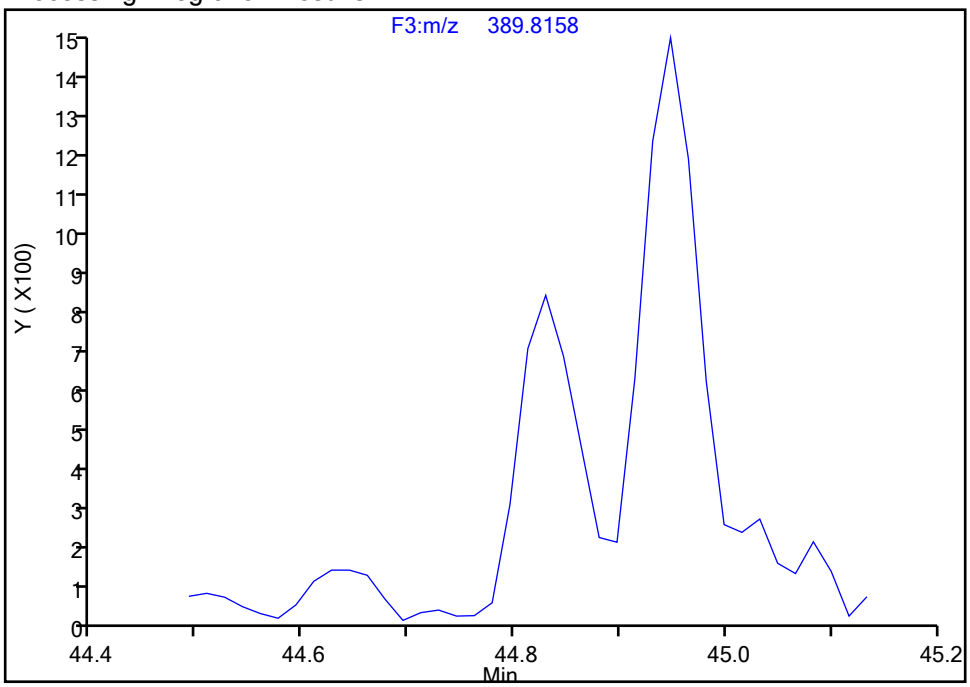
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

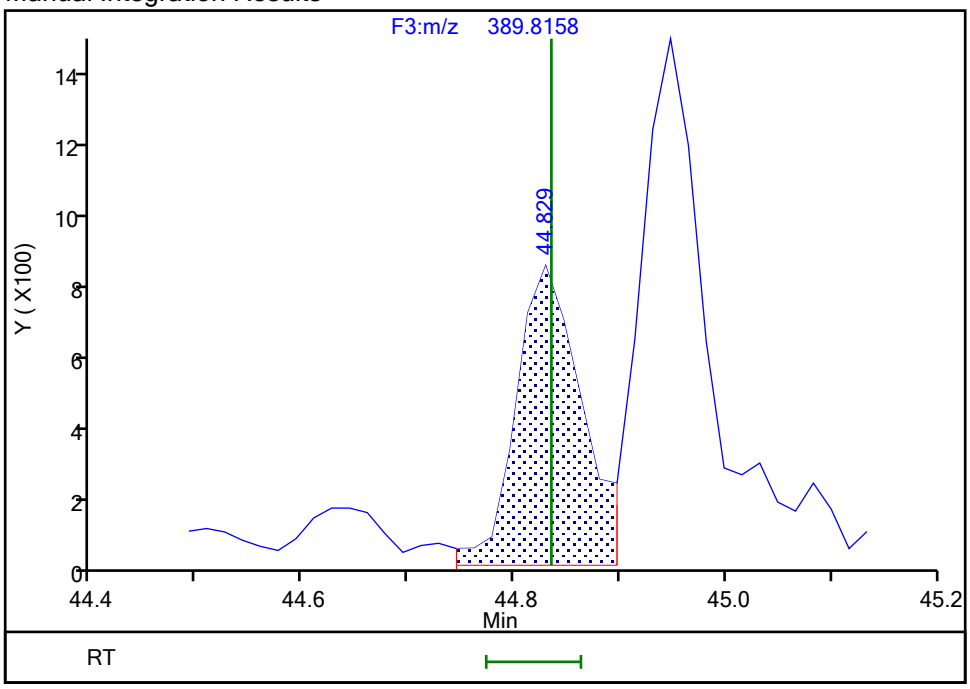
Not Detected
Expected RT: 44.83

Processing Integration Results



Manual Integration Results

RT: 44.83
Area: 3368
Amount: 0.177078
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:23
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

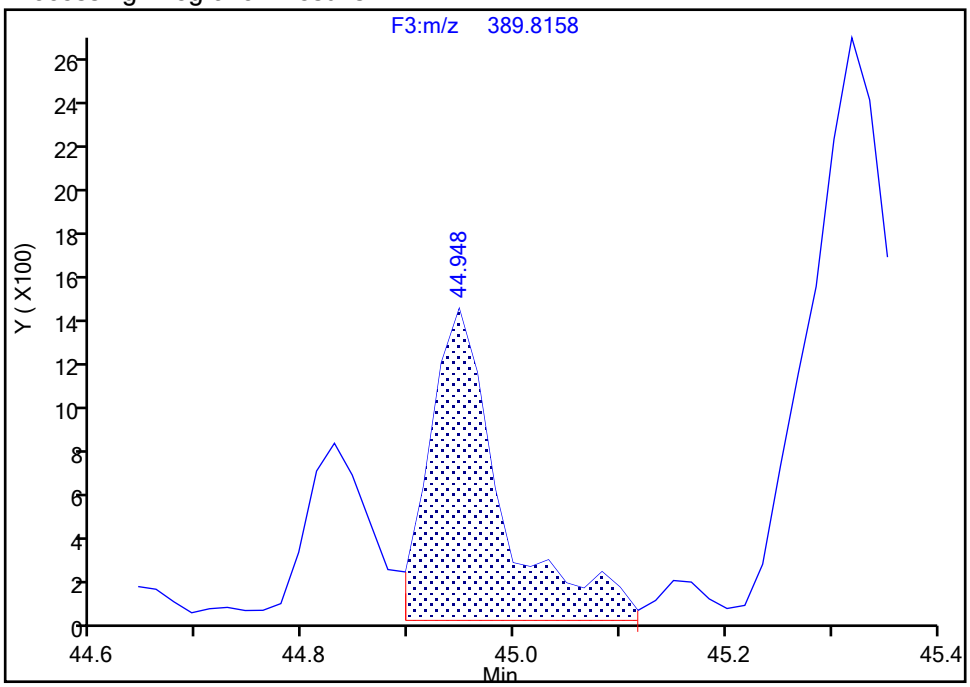
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

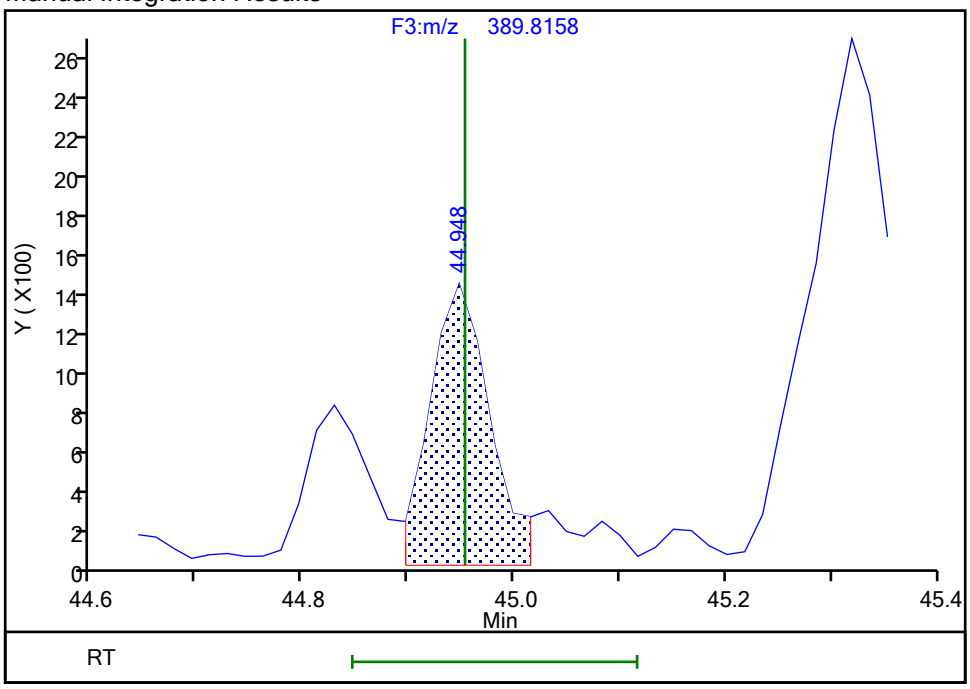
Processing Integration Results

RT: 44.95
Area: 6497
Amount: 0.396969
Amount Units: pg/ul



Manual Integration Results

RT: 44.95
Area: 5395
Amount: 0.319540
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:14

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

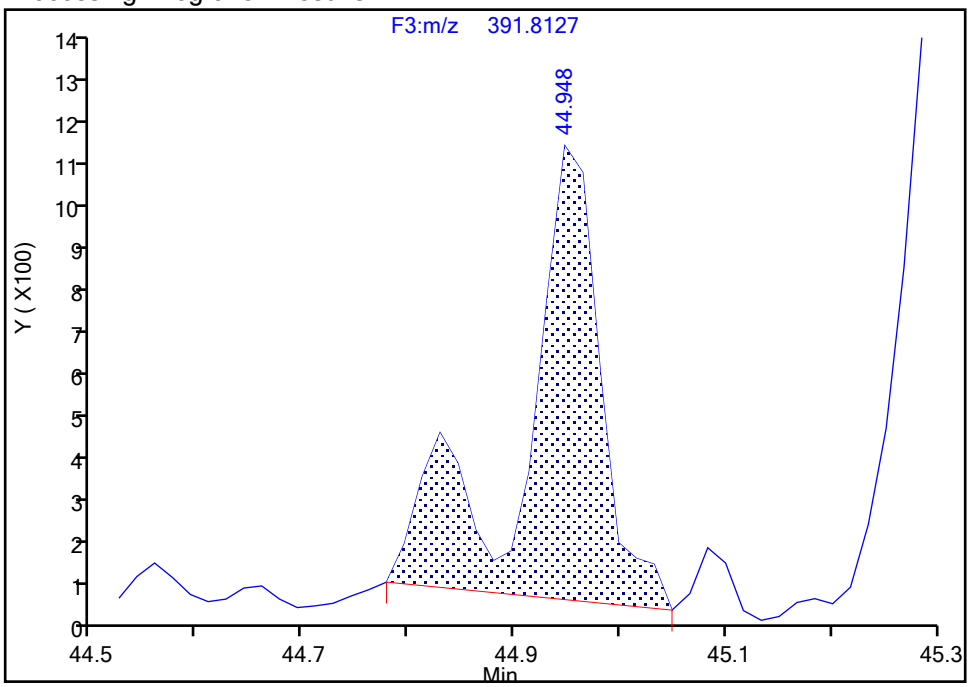
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

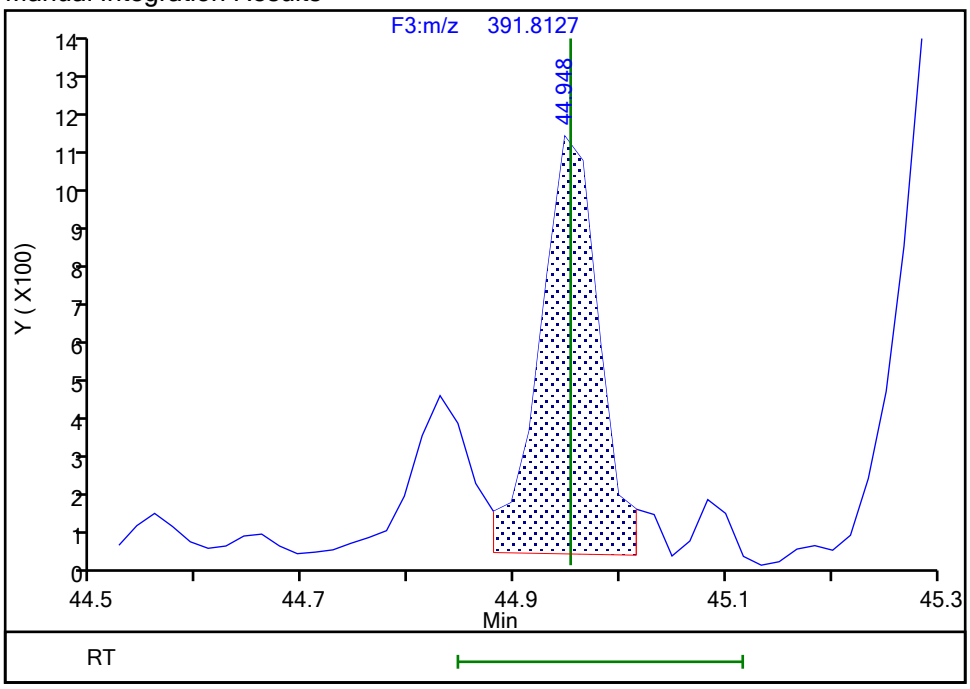
Processing Integration Results

RT: 44.95
Area: 5382
Amount: 0.396969
Amount Units: pg/ul



Manual Integration Results

RT: 44.95
Area: 4167
Amount: 0.319540
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:15

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

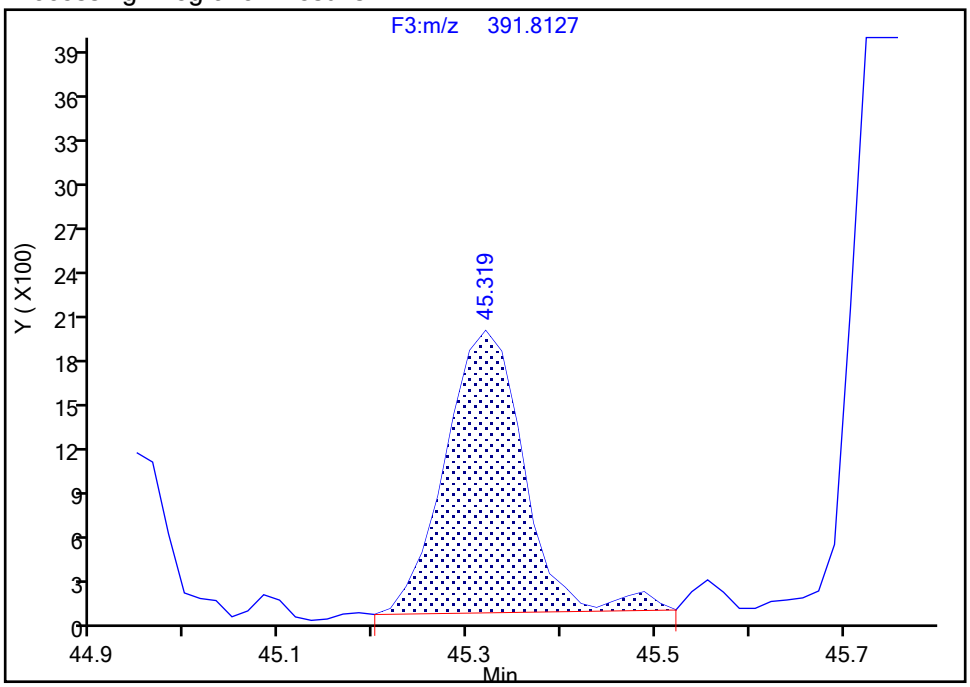
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

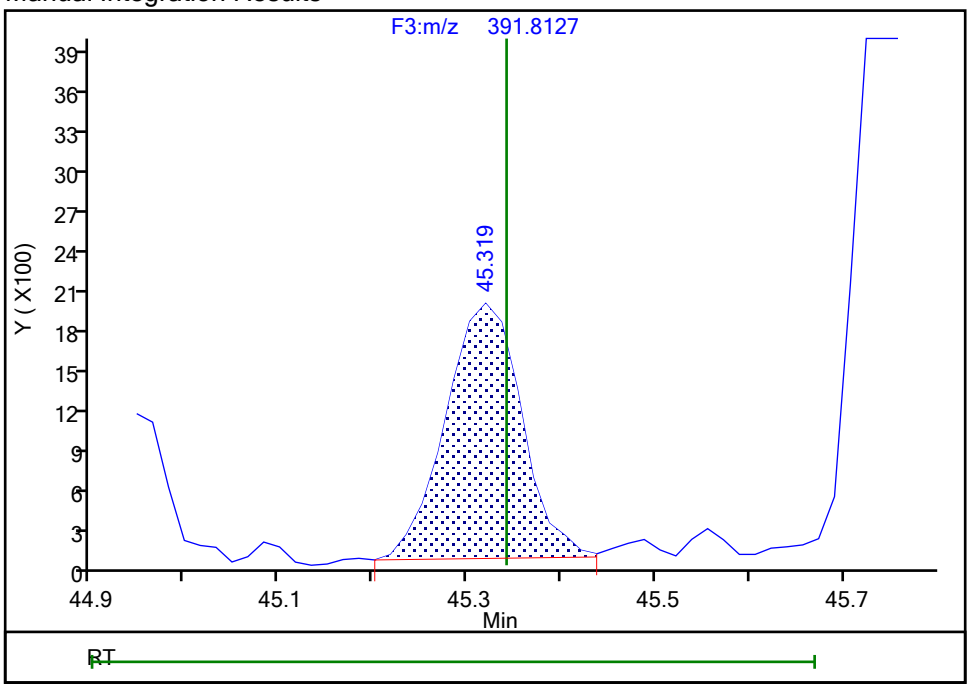
Processing Integration Results

RT: 45.32
Area: 10916
Amount: 0.835446
Amount Units: pg/ul



Manual Integration Results

RT: 45.32
Area: 10572
Amount: 0.809469
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:29

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

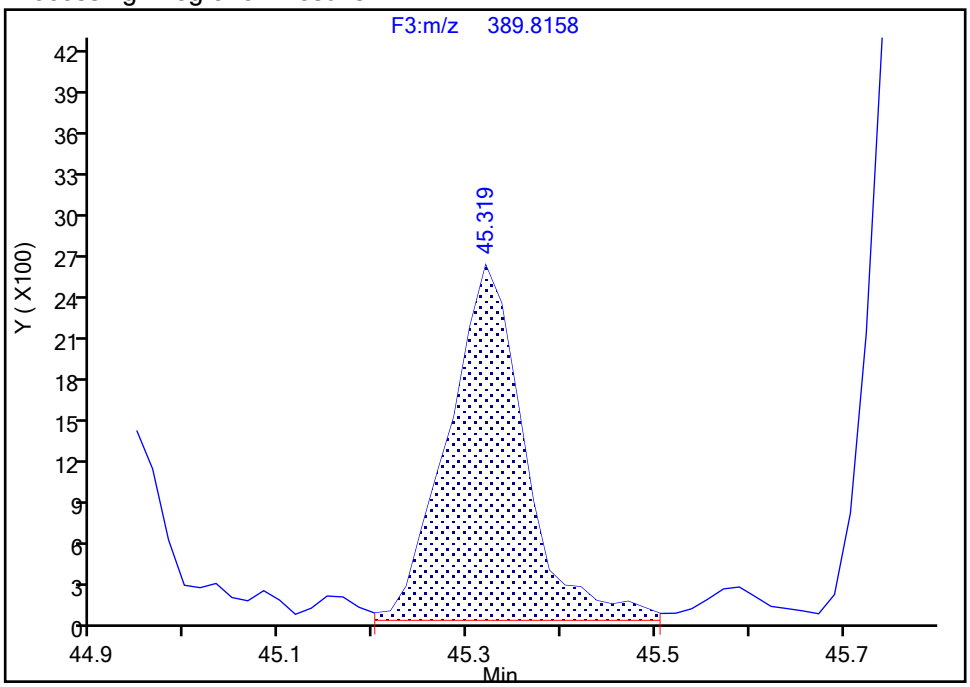
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

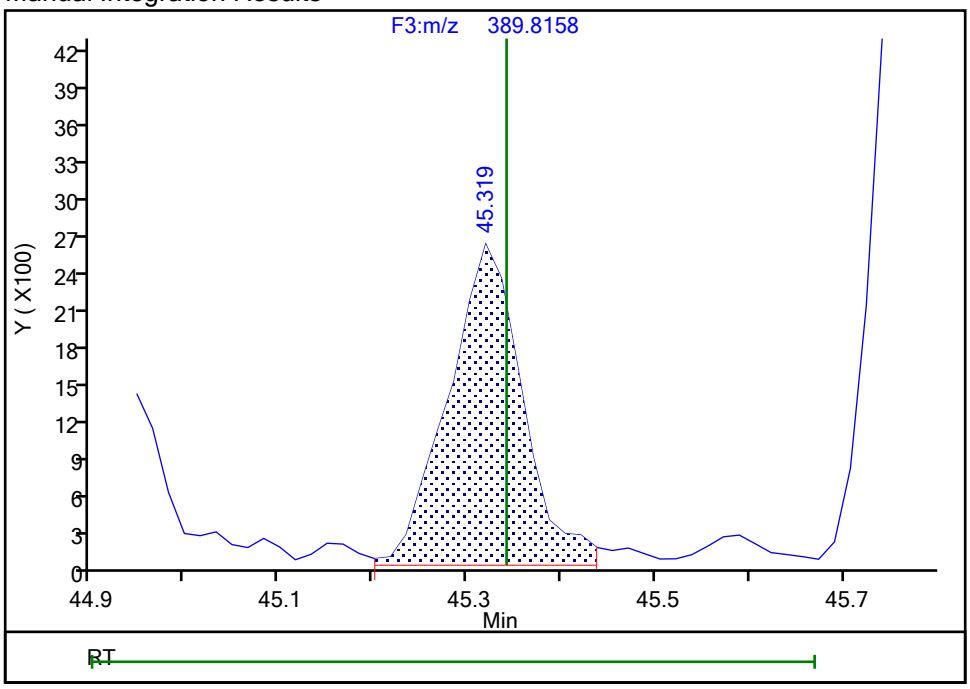
Processing Integration Results

RT: 45.32
Area: 14780
Amount: 0.835446
Amount Units: pg/ul



Manual Integration Results

RT: 45.32
Area: 14325
Amount: 0.809469
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:31

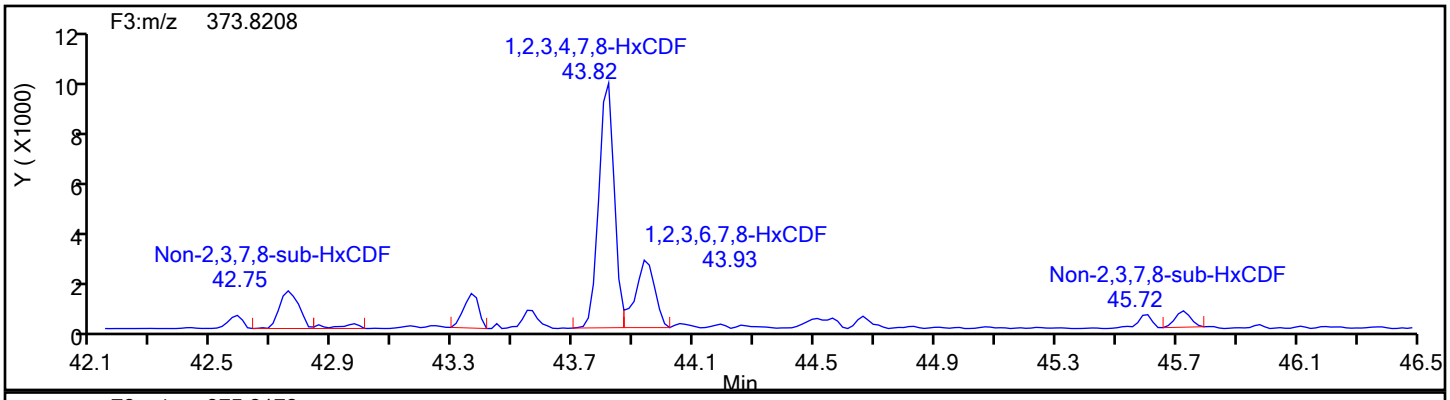
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

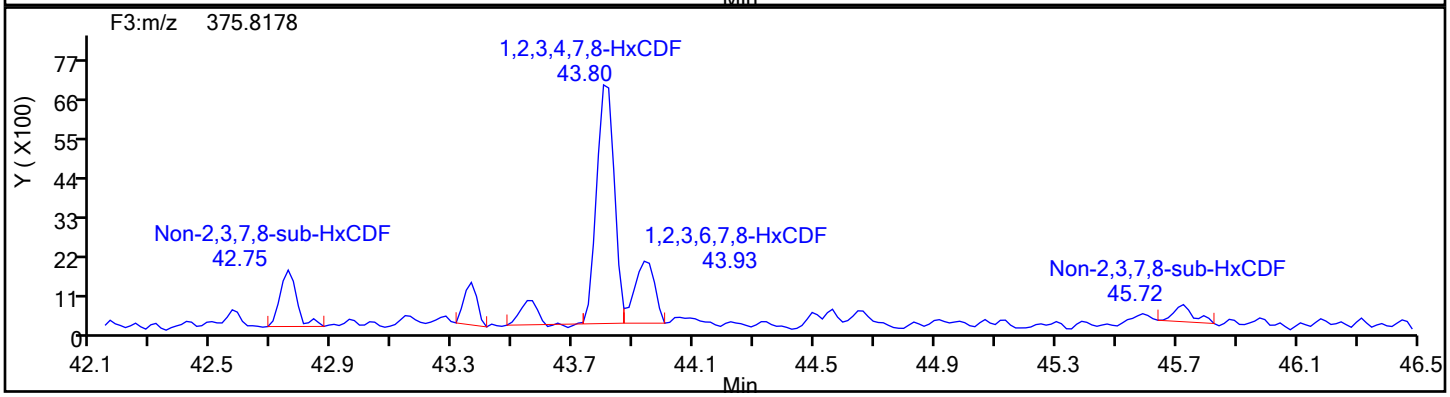
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

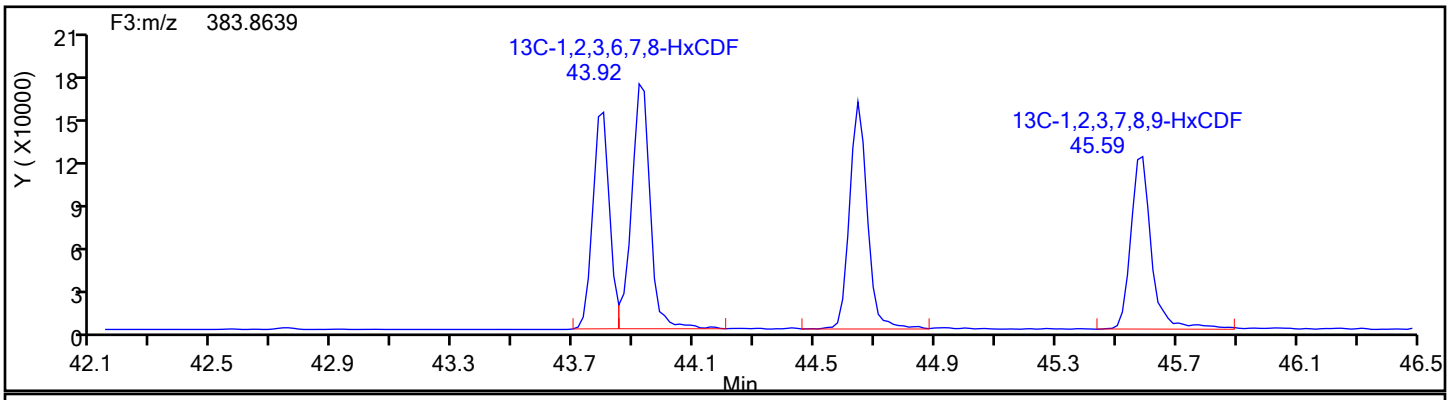
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

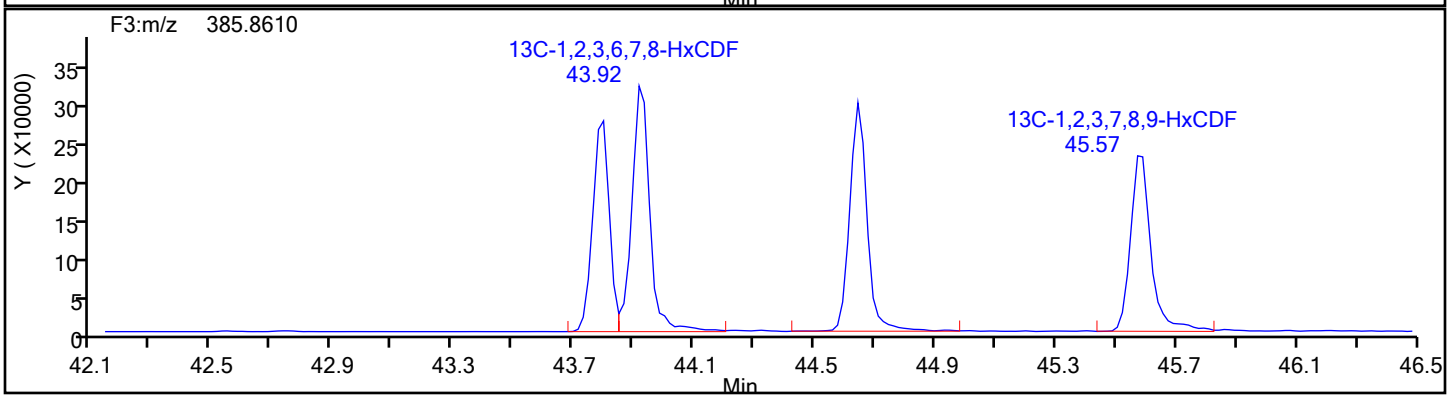
HxCDF





HxCDF Standards



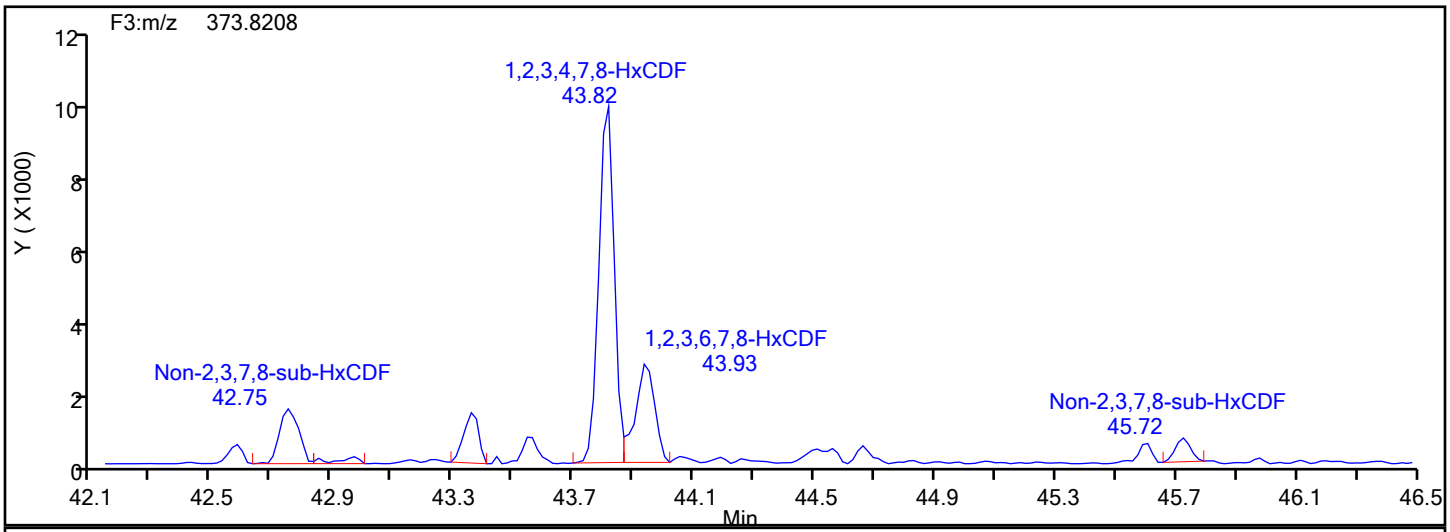


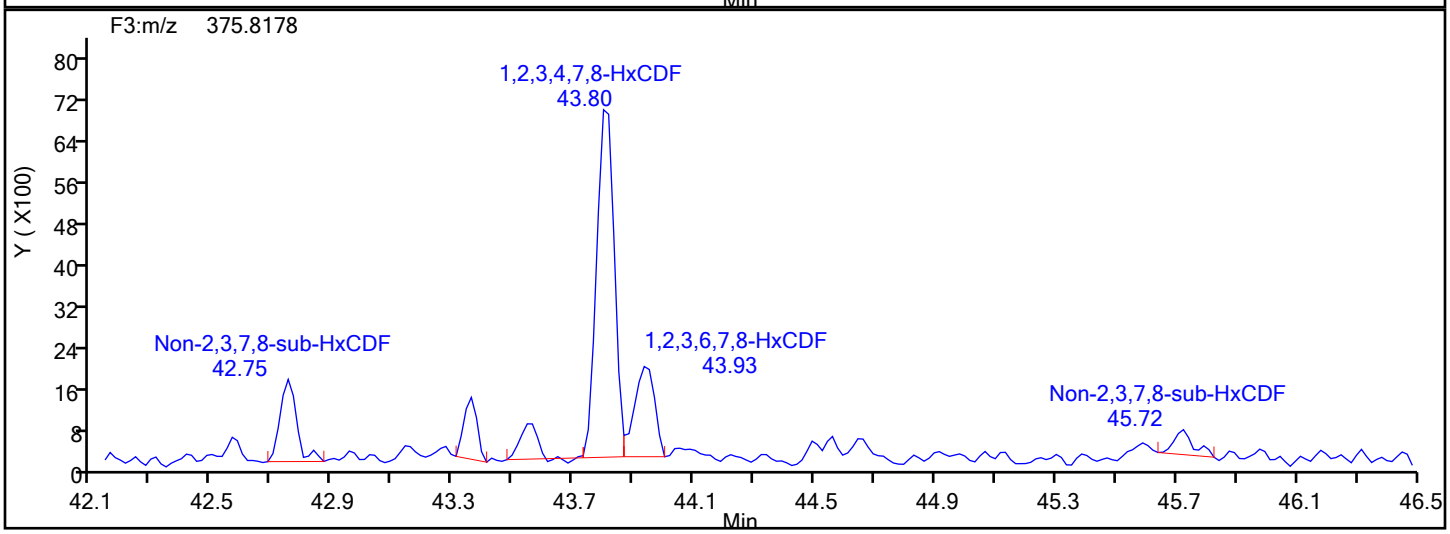
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

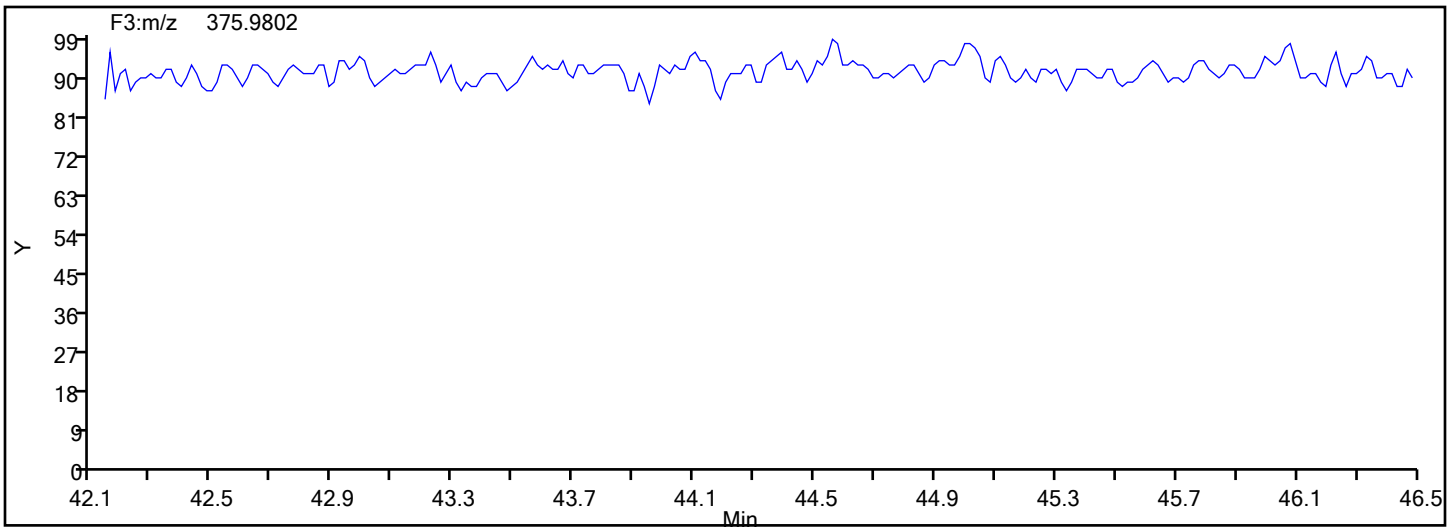
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

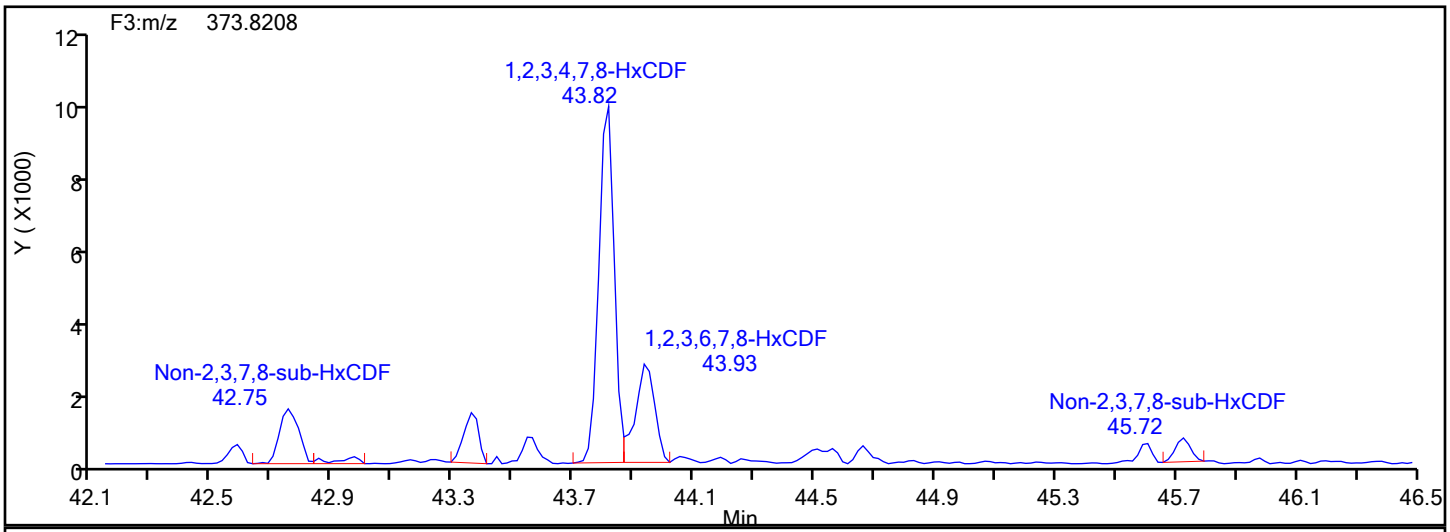


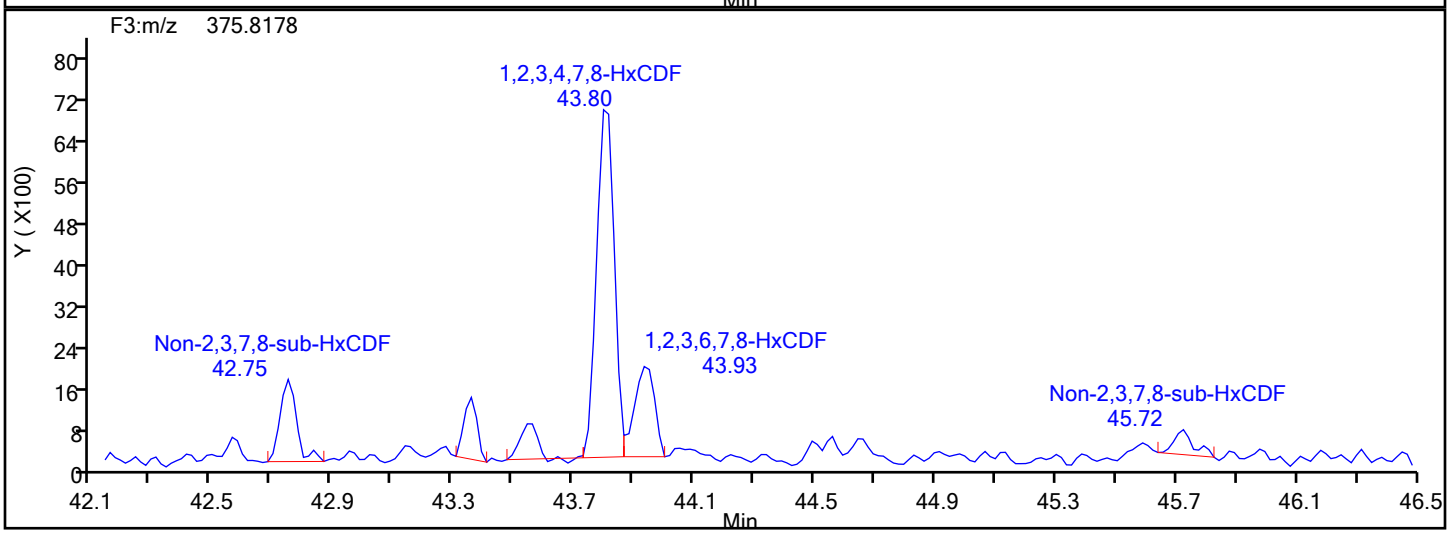
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

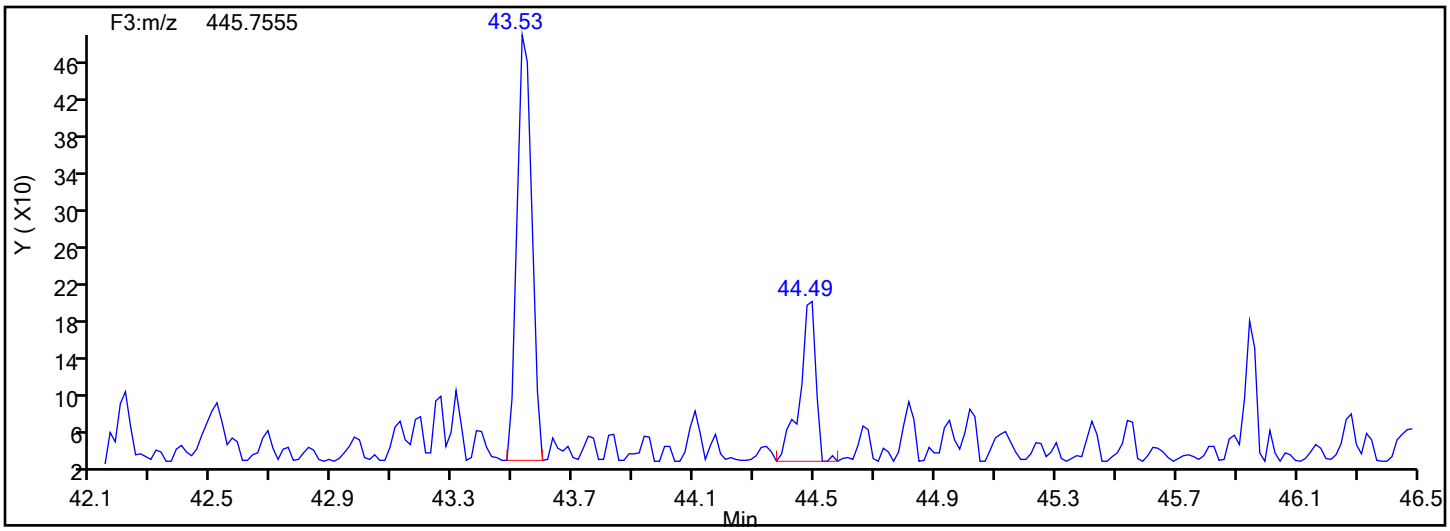
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

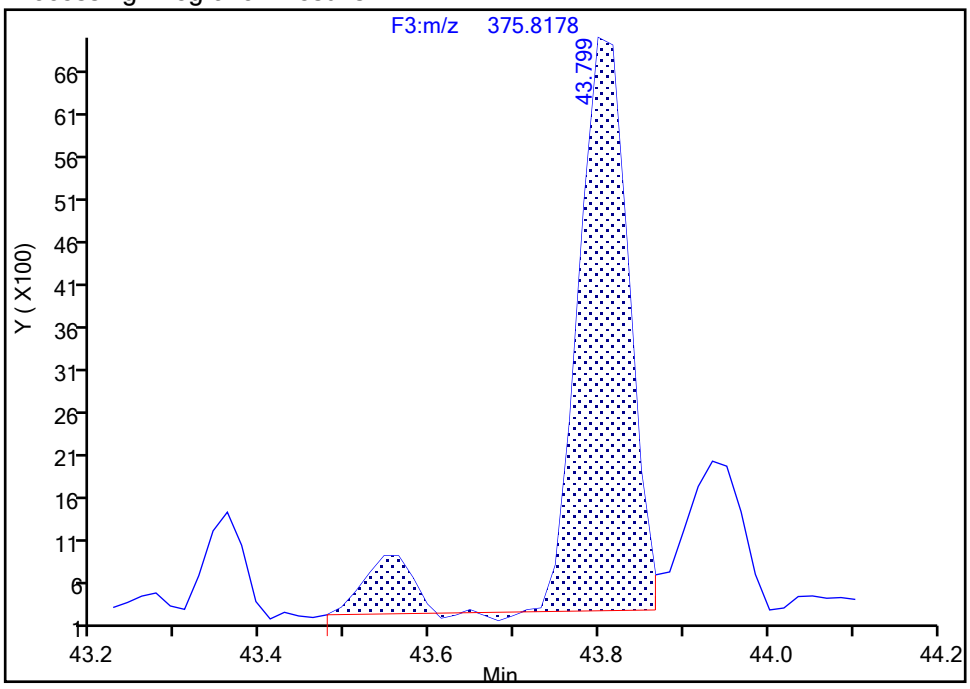
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

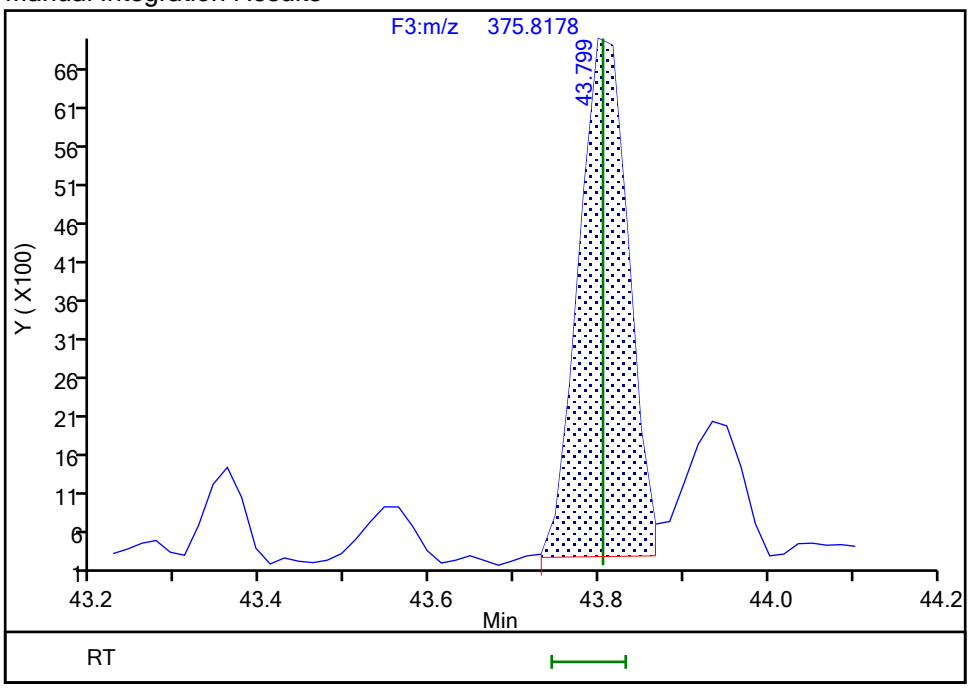
Processing Integration Results

RT: 43.80
Area: 30222
Amount: 1.457550
Amount Units: pg/ul



Manual Integration Results

RT: 43.80
Area: 27624
Amount: 1.398950
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:47:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

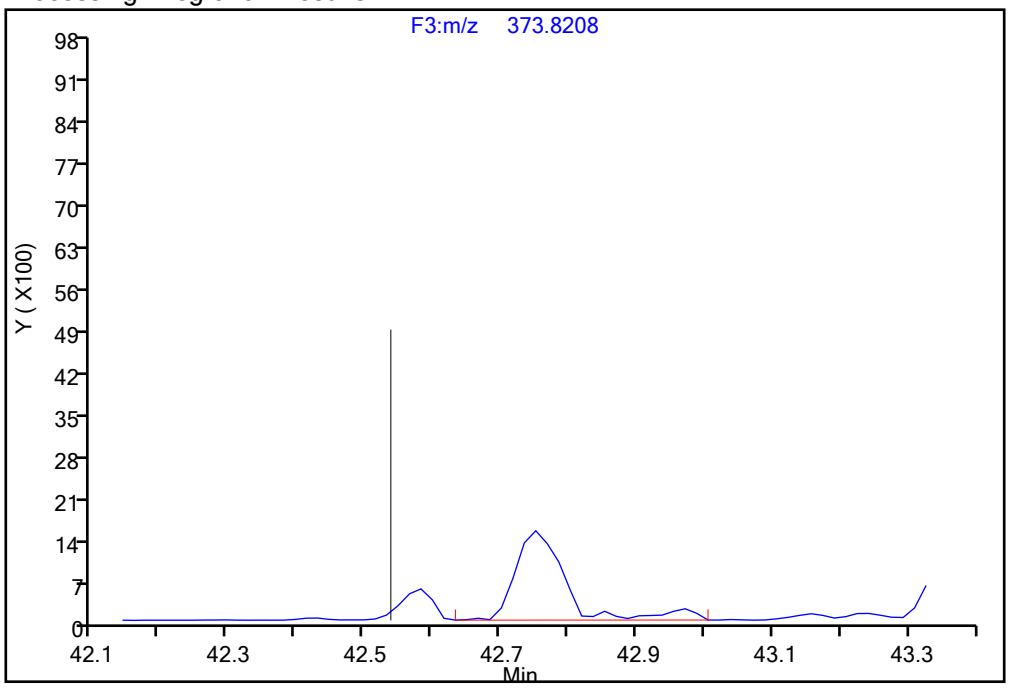
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.54- 45.78)

Signal: 1

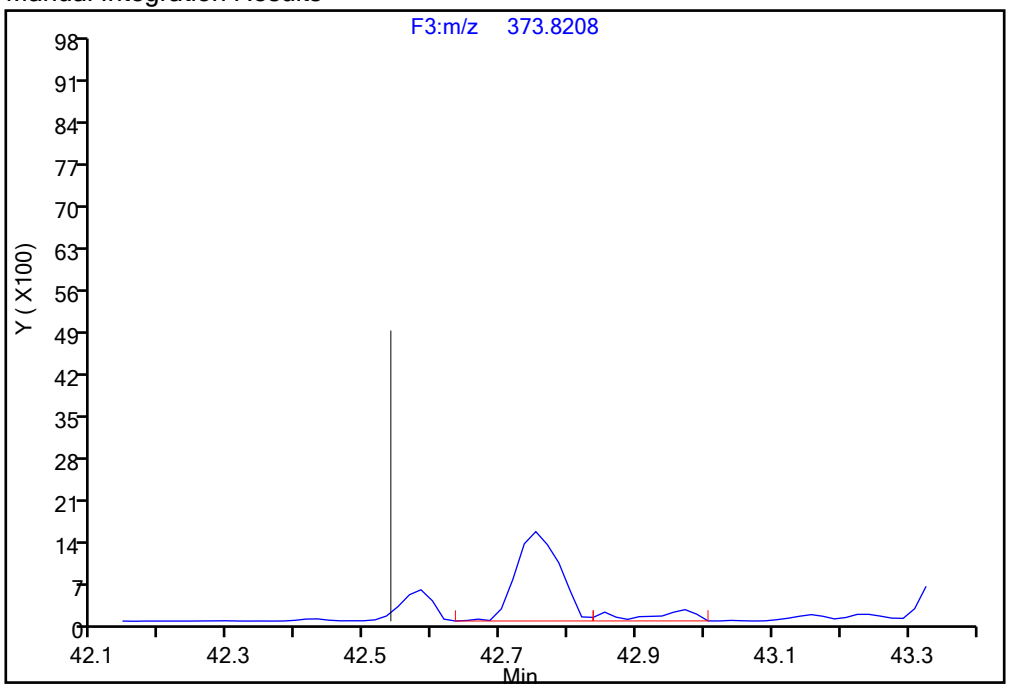
Processing Integration Results

RT = 42.752 Area = 7581



Manual Integration Results

RT = 42.752 Area = 6633 M



Reviewer: davidsonm, 17-Dec-2019 11:48:12

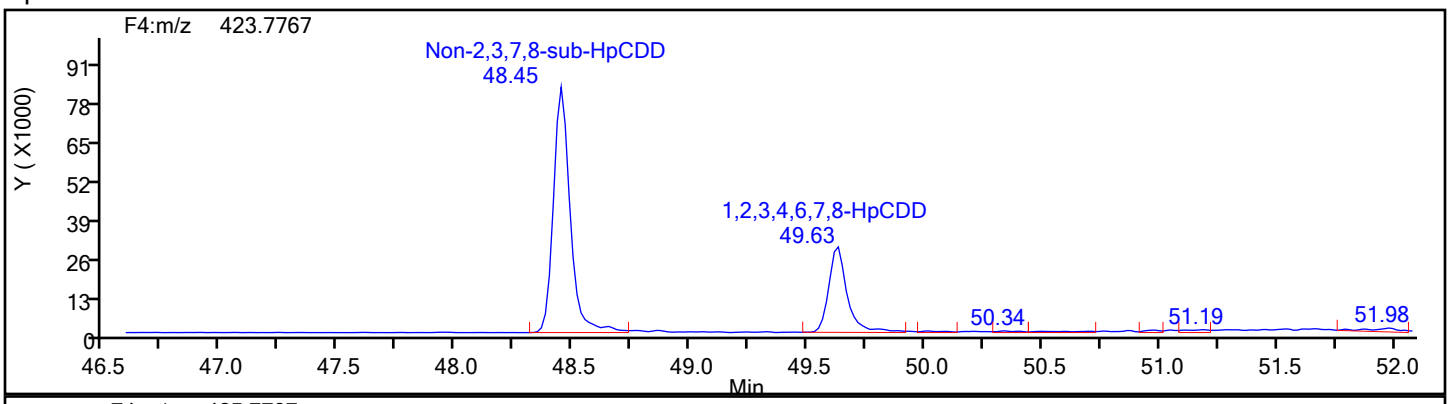
Audit Action: Assigned Compound ID Audit Reason: Split Peak

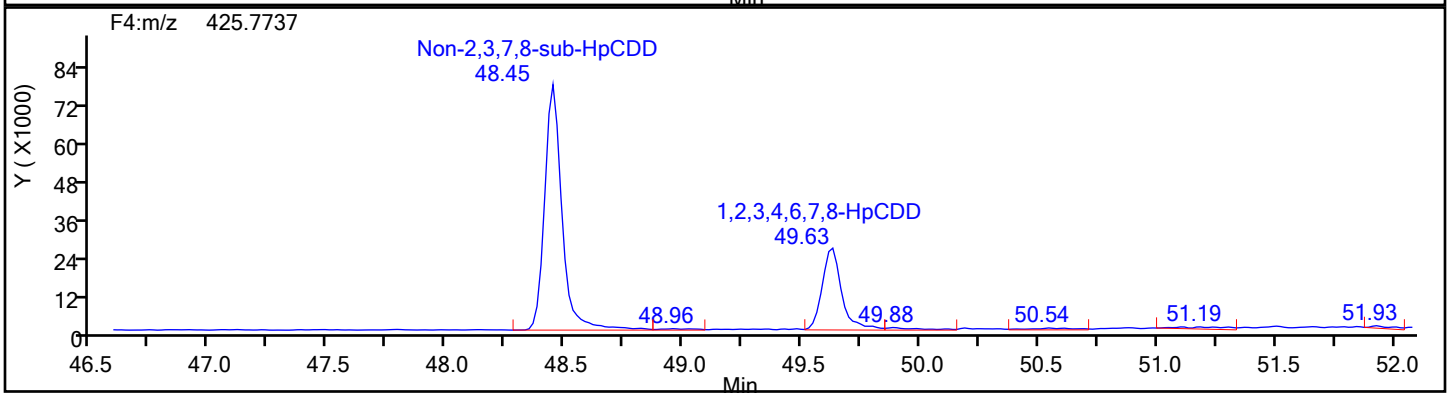
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

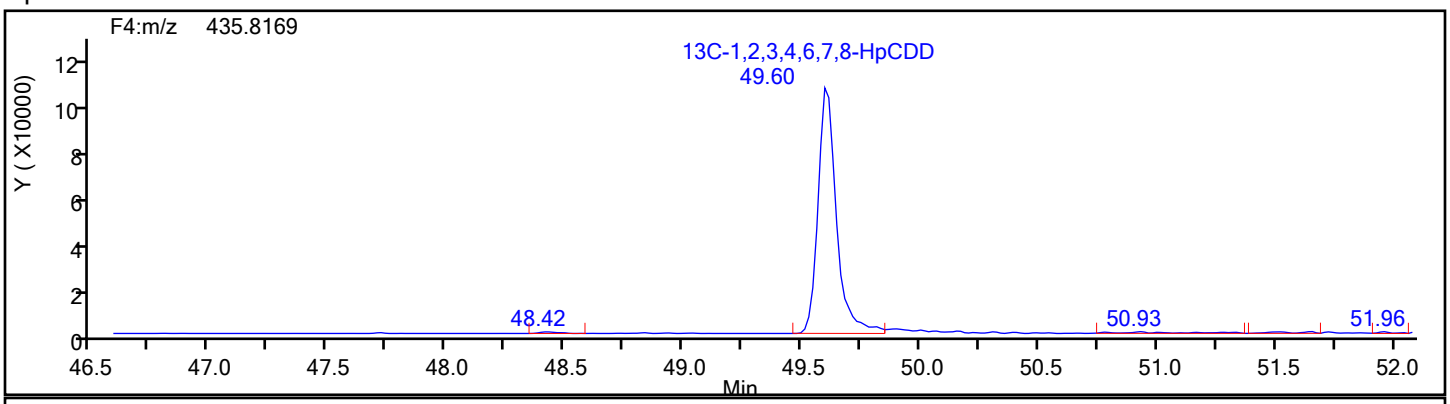
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

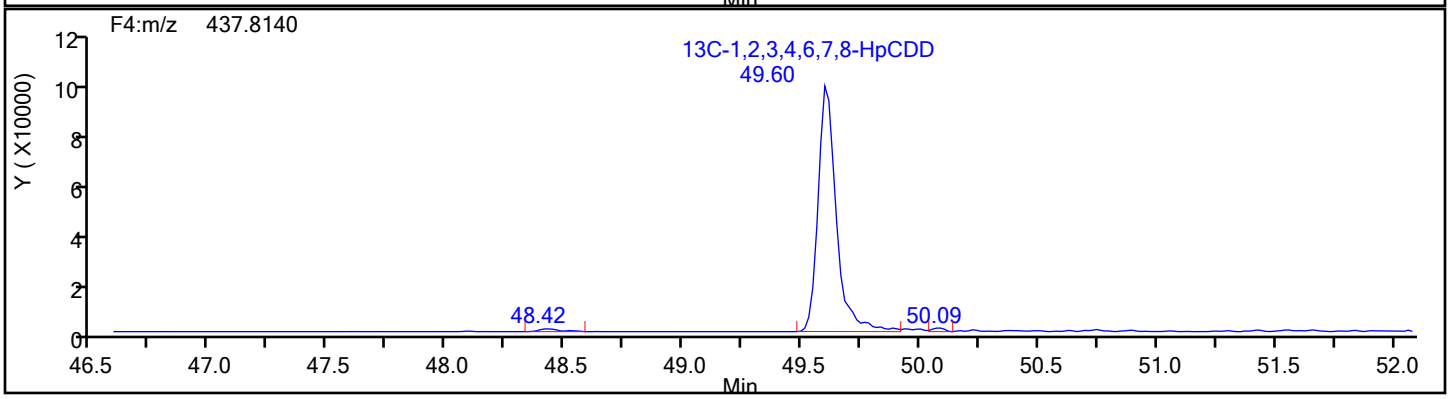
HpCDD





HpCDD Standards



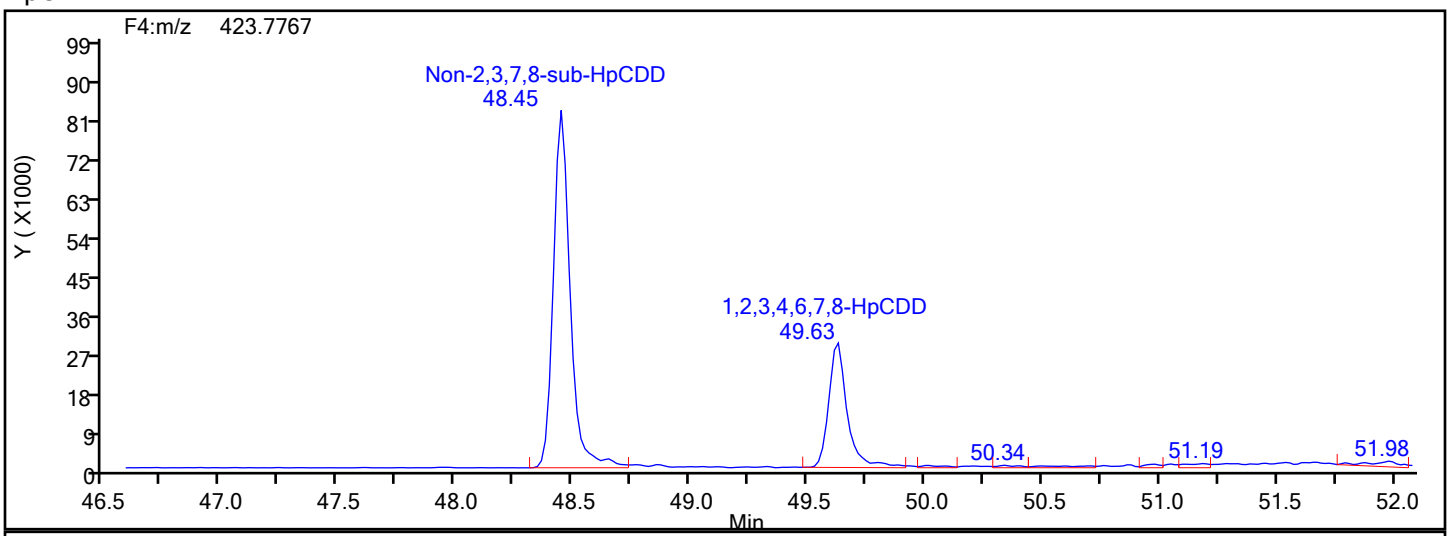


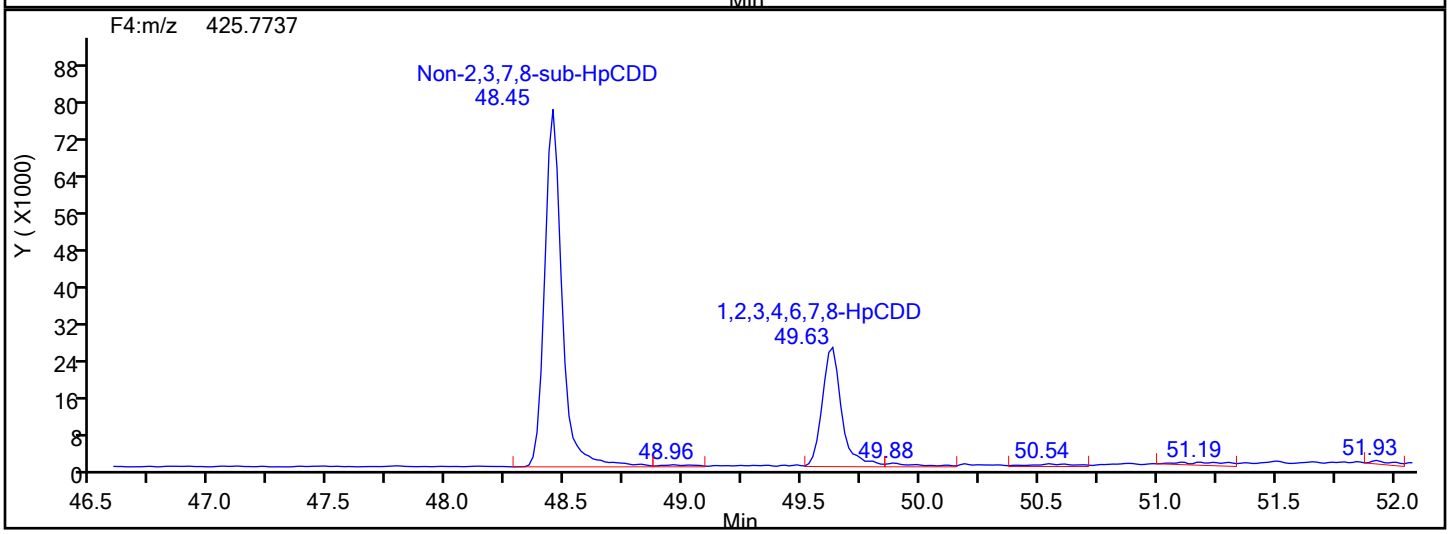
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

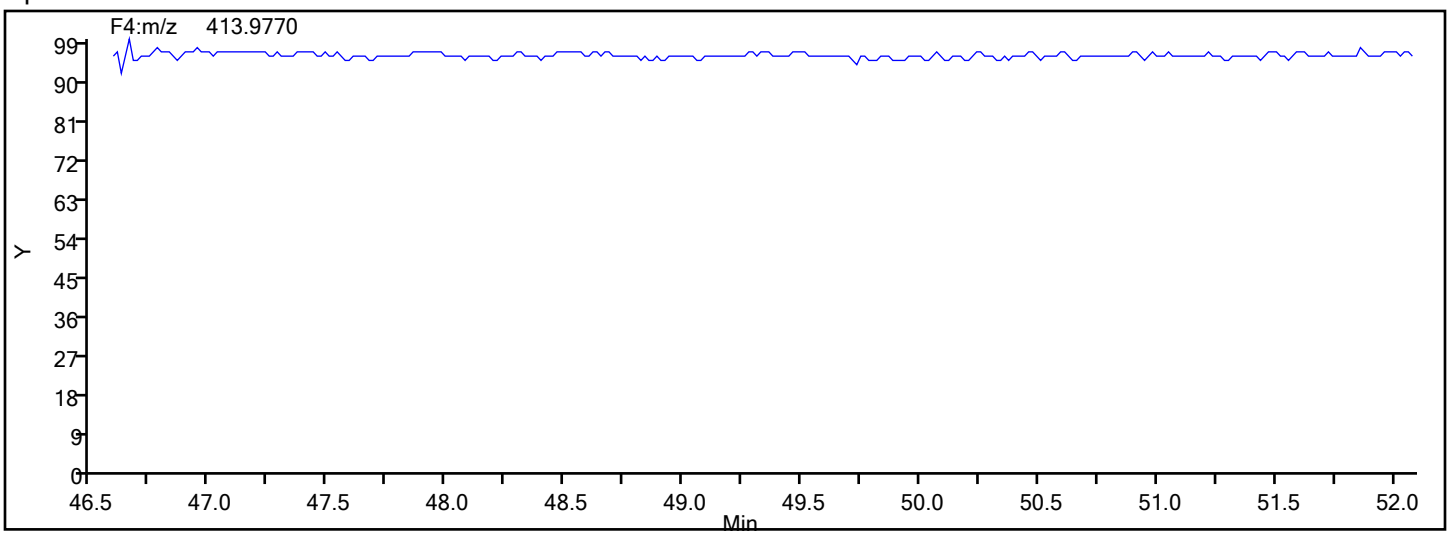
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

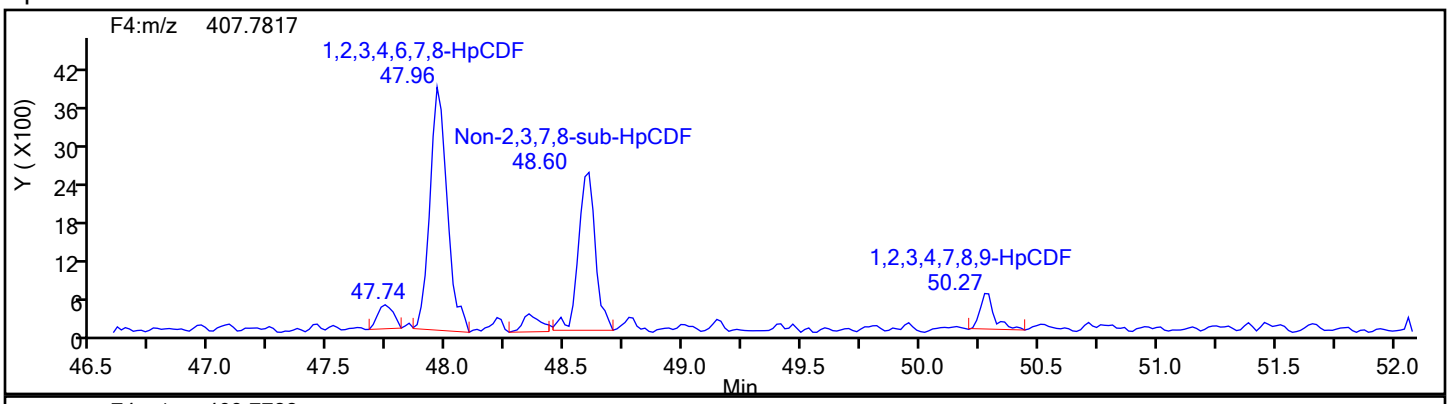


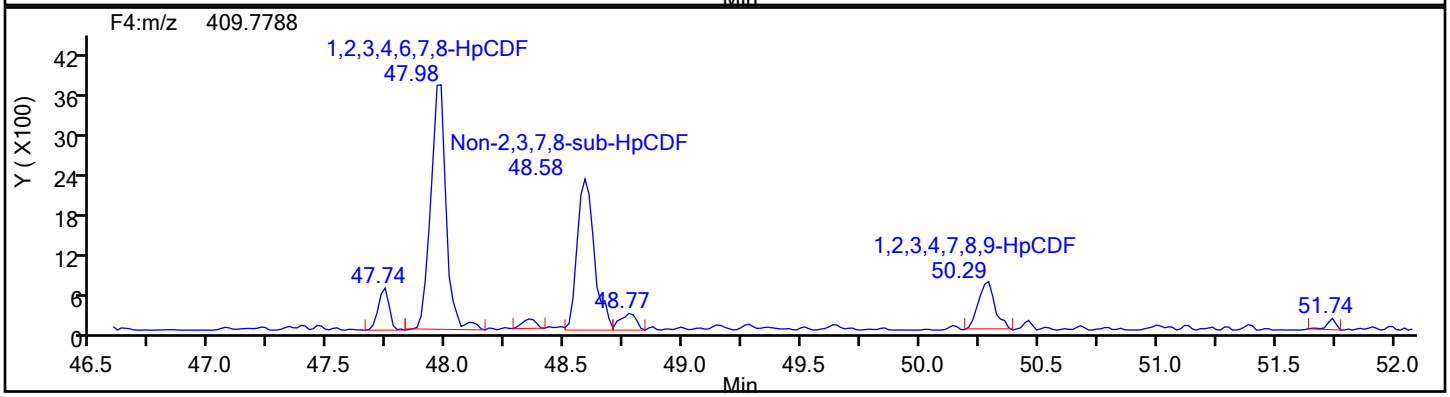
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

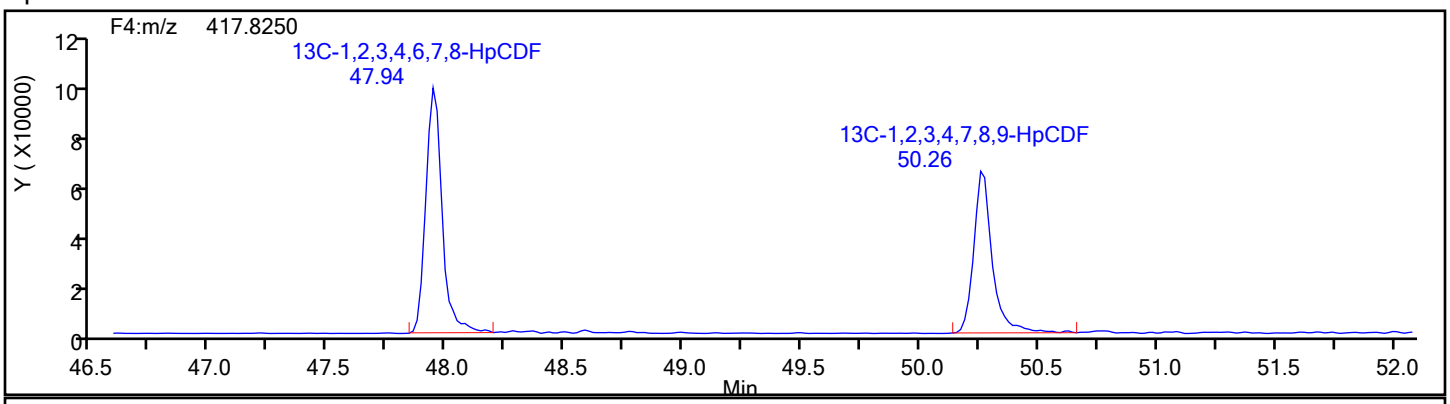
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

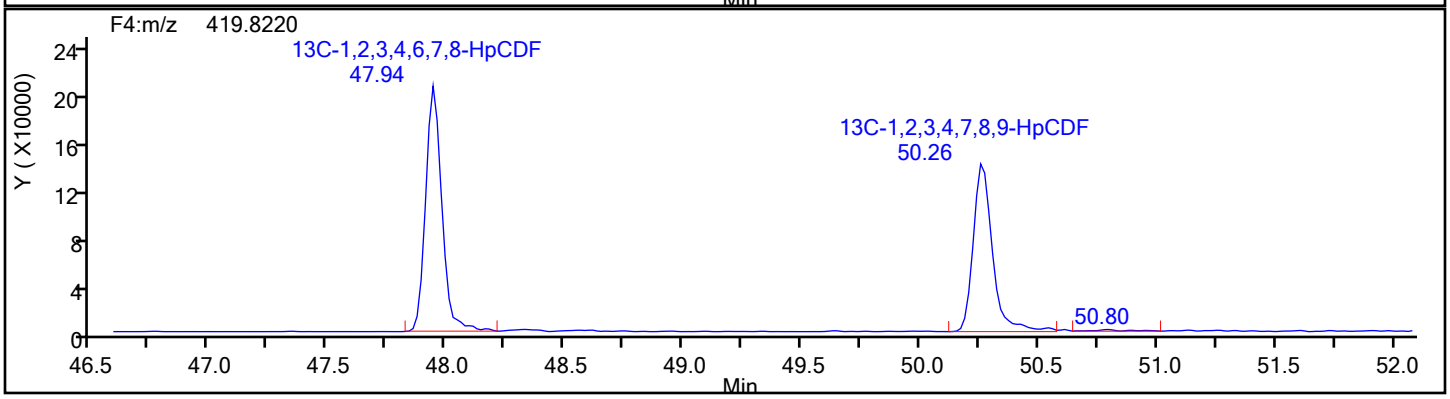
HpCDF





HpCDF Standards



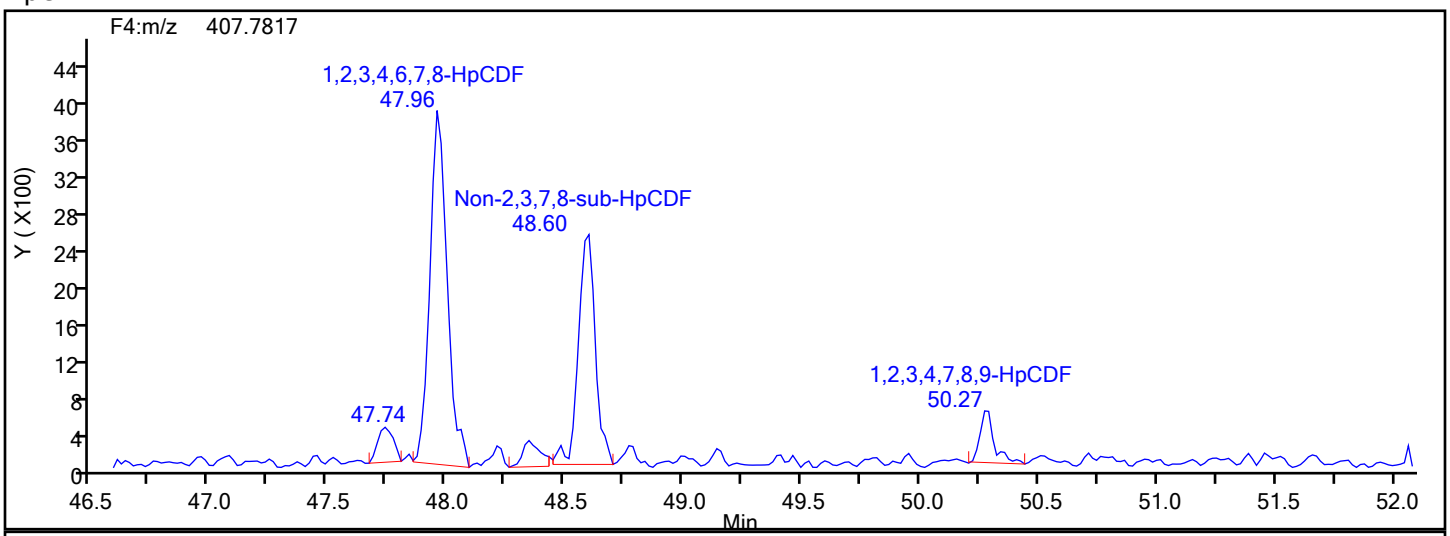


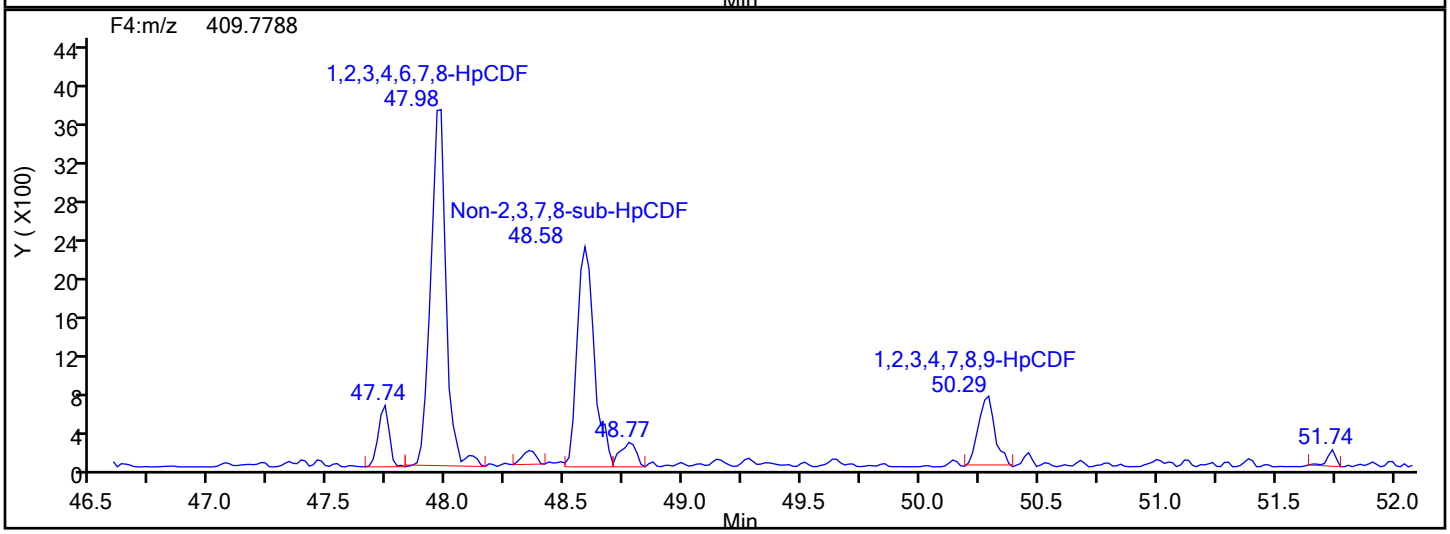
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

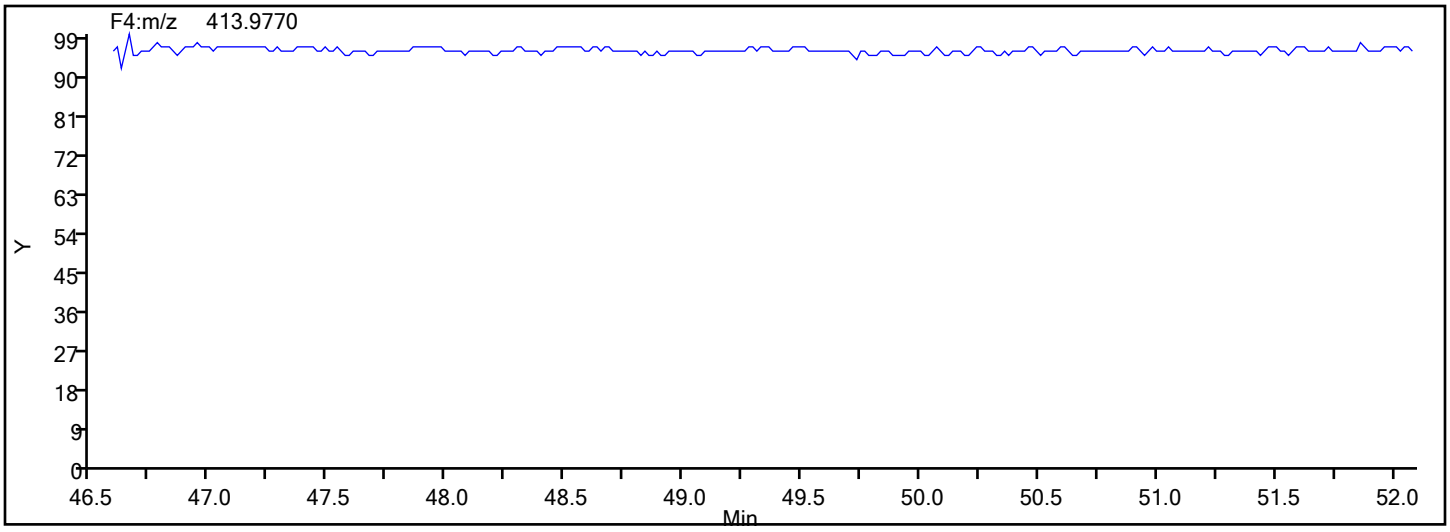
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

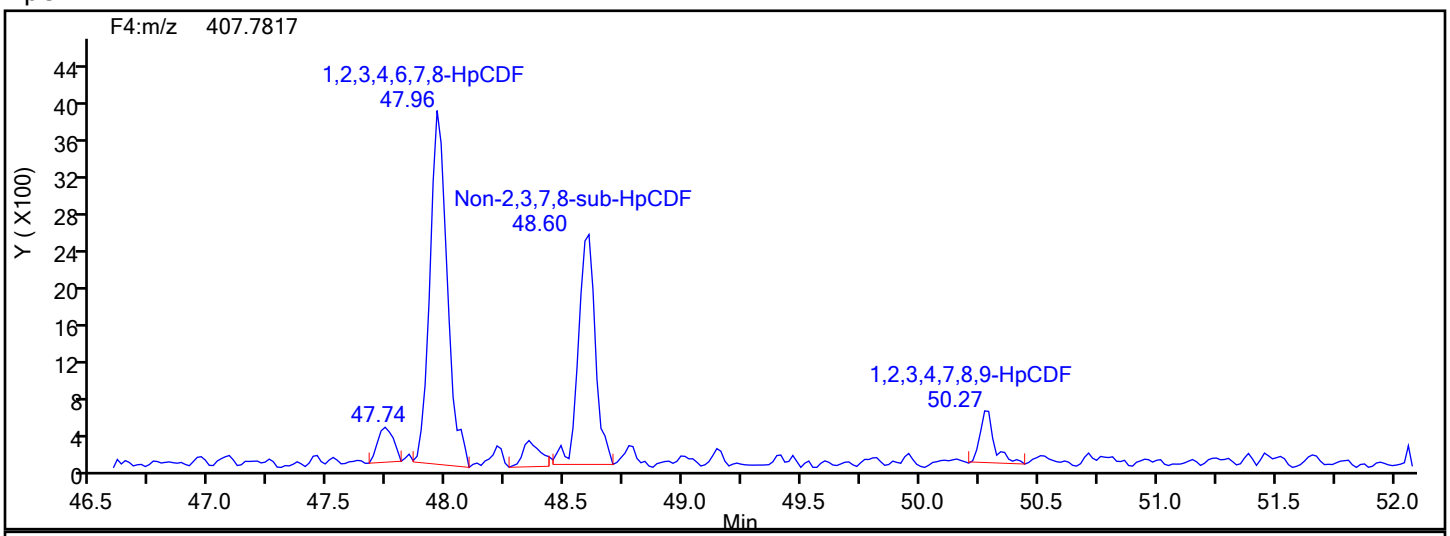


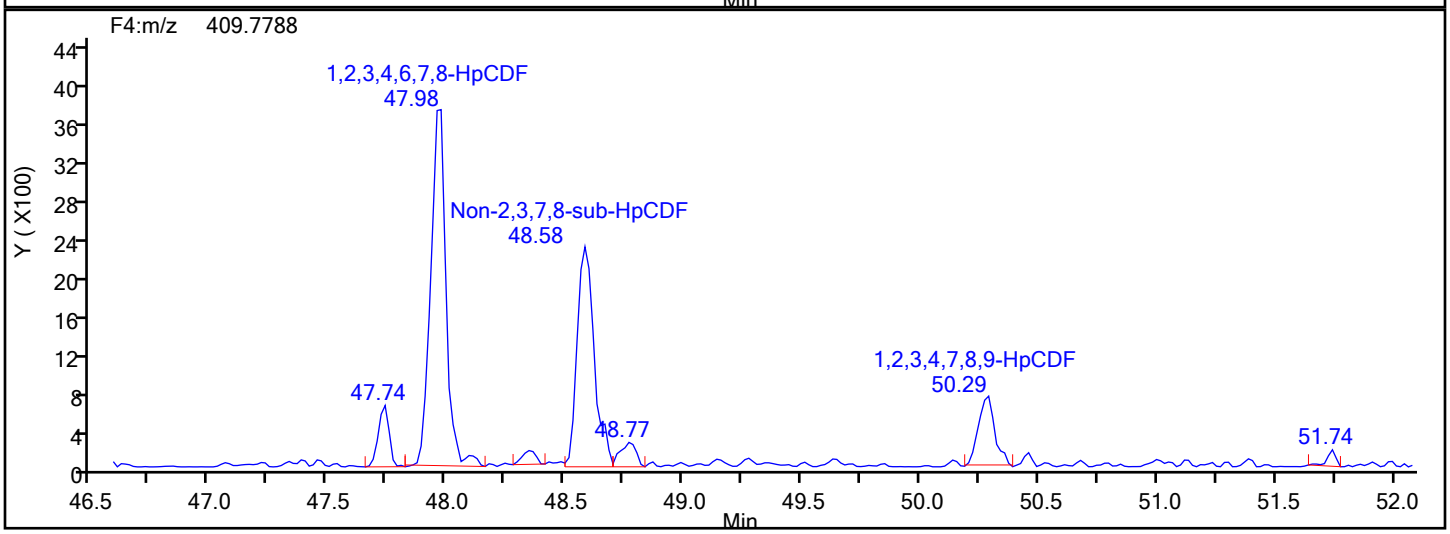
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

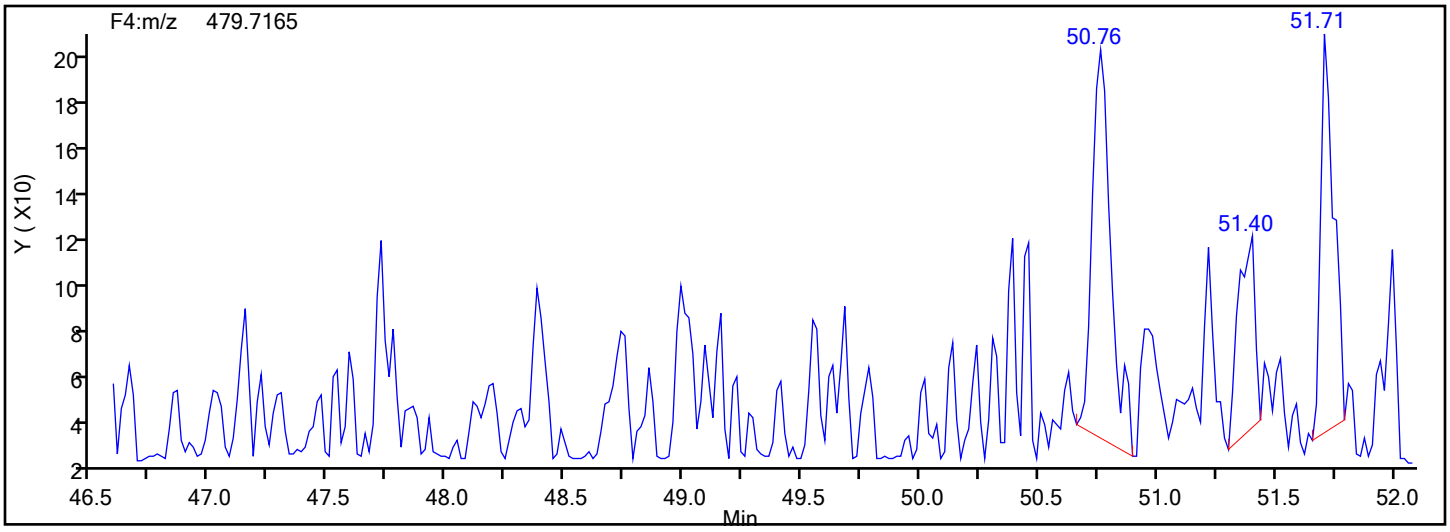
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass

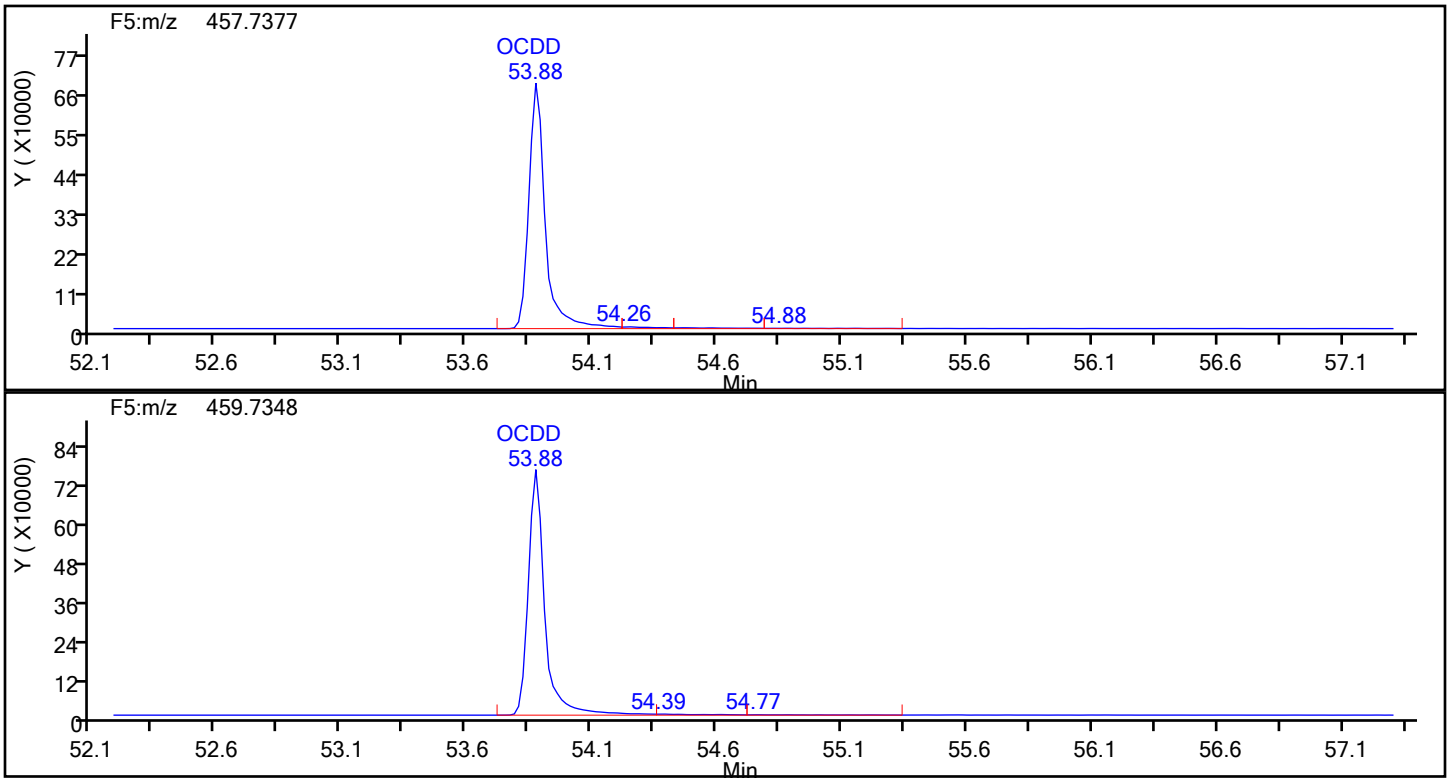


Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

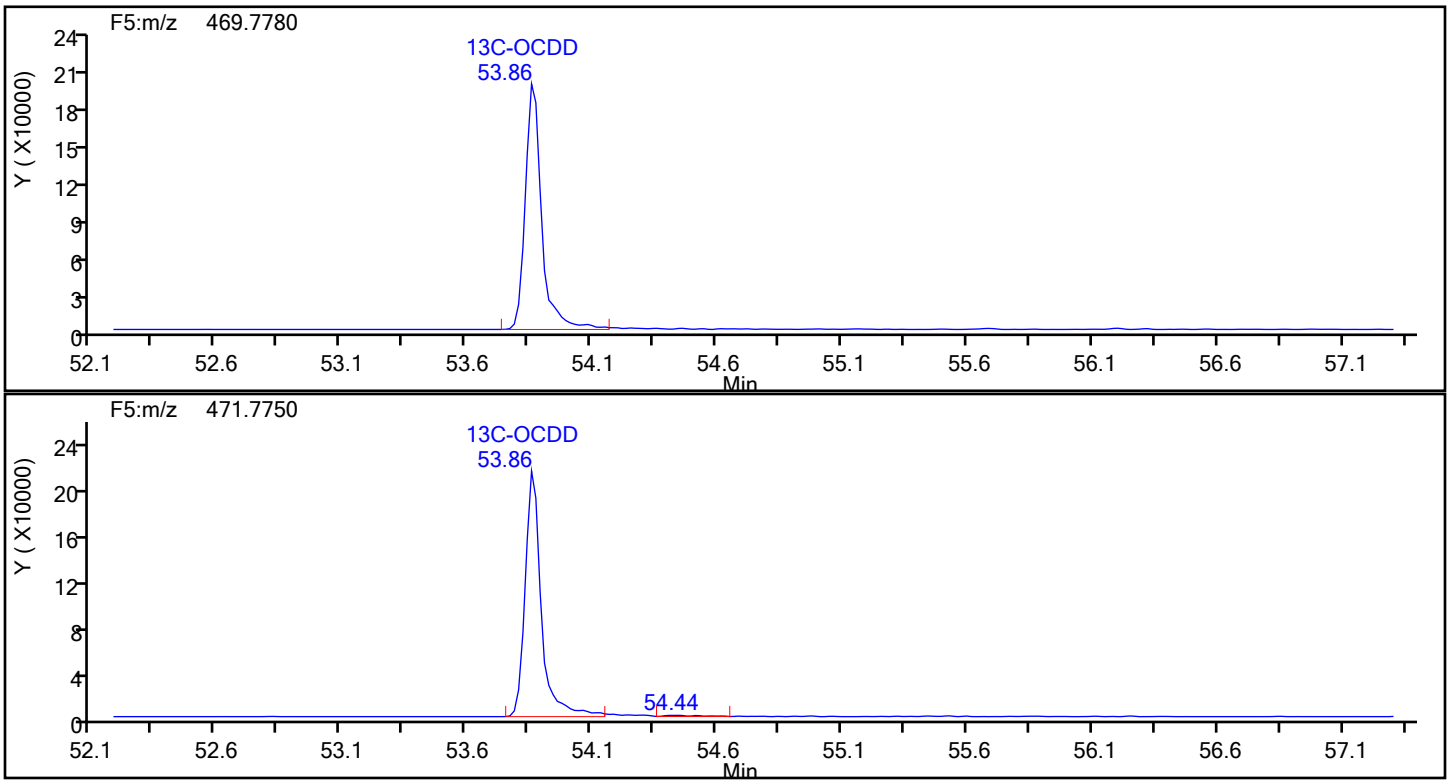
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

OCDD



OCDD Standards

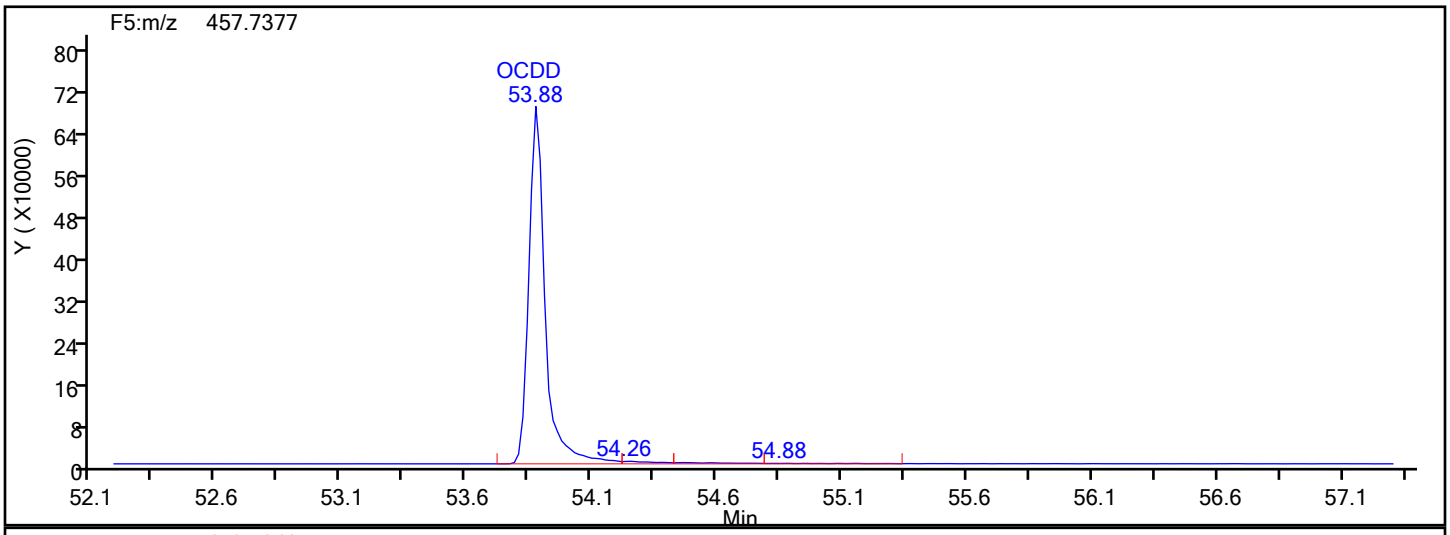


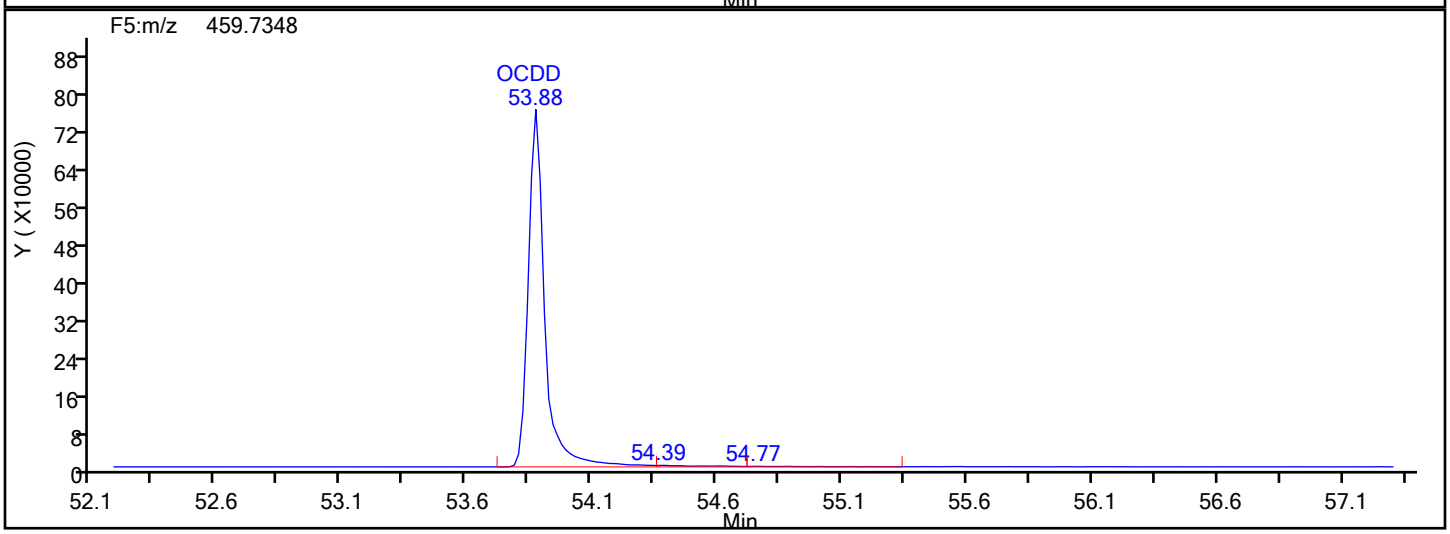
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

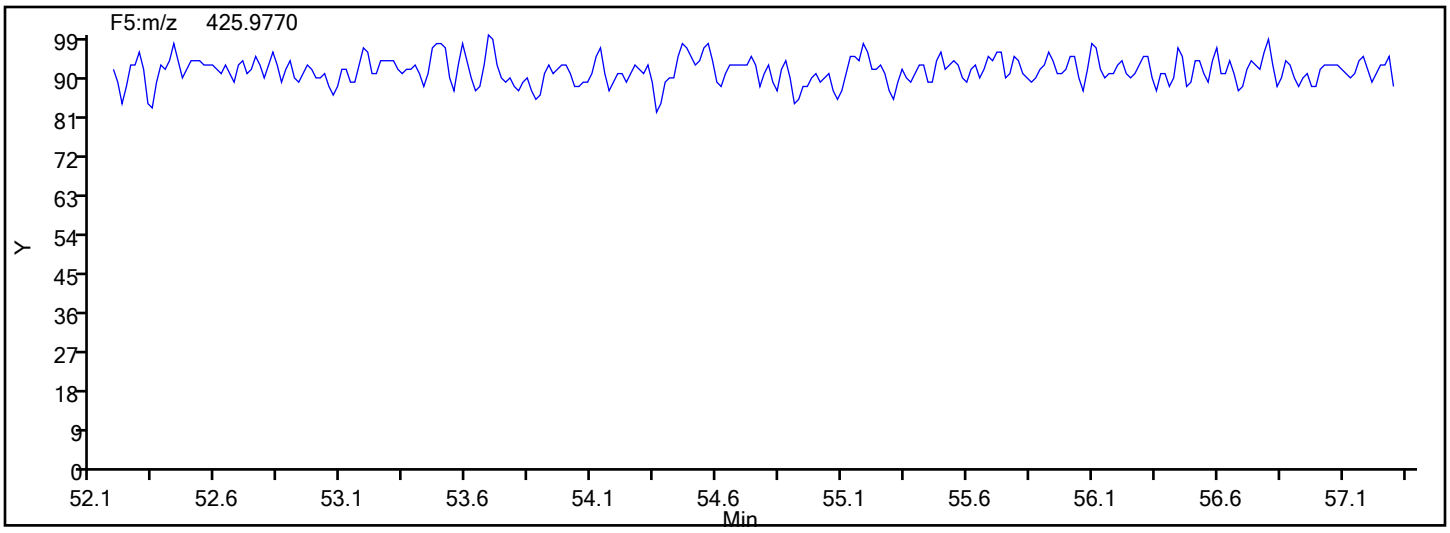
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass

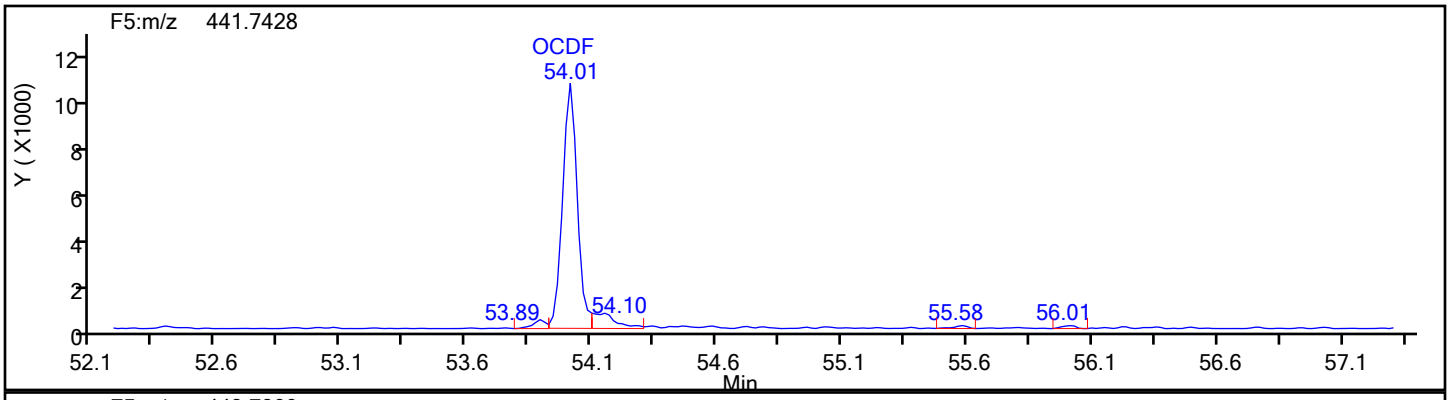


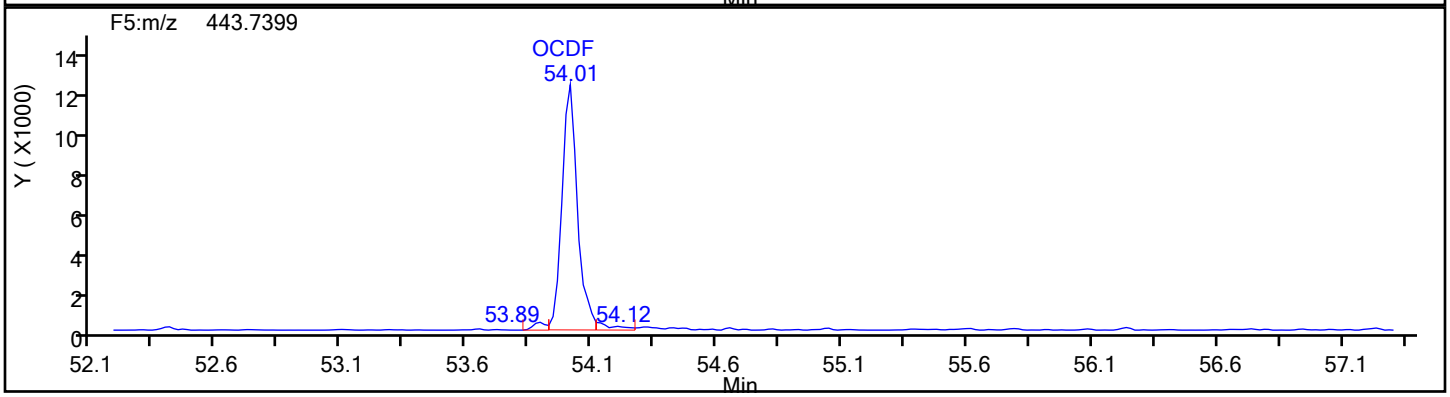
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

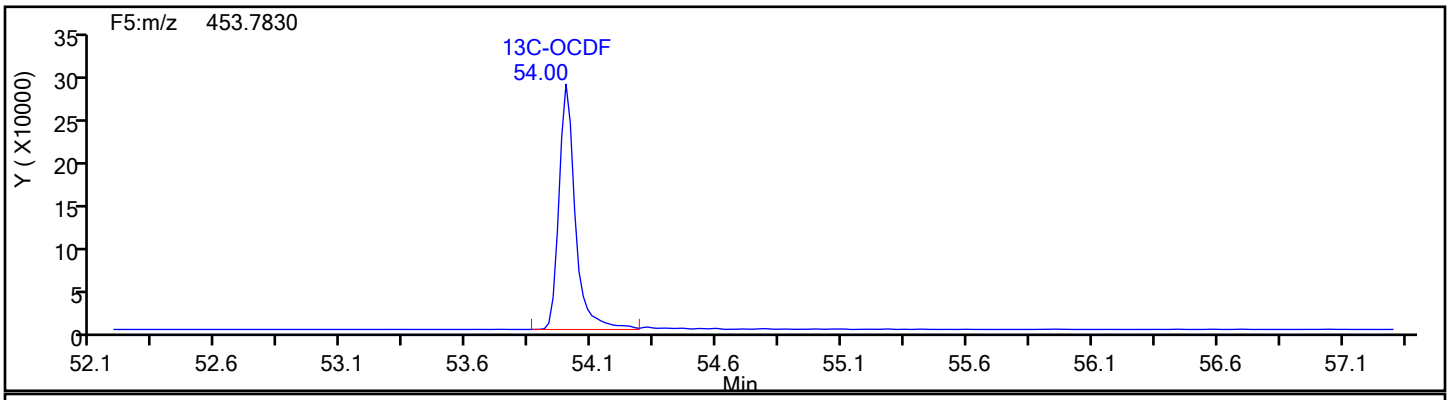
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

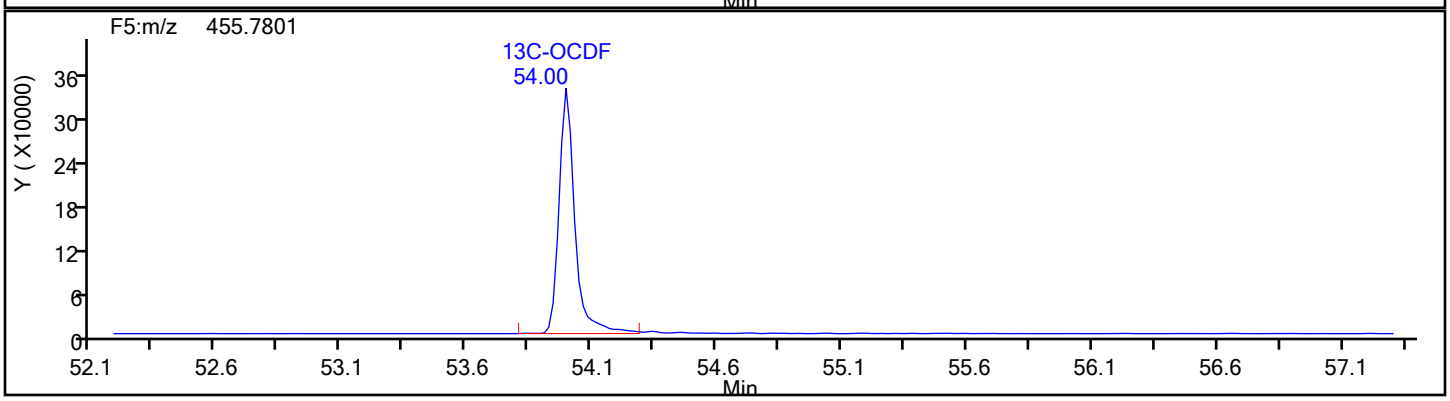
OCDF





OCDF Standards



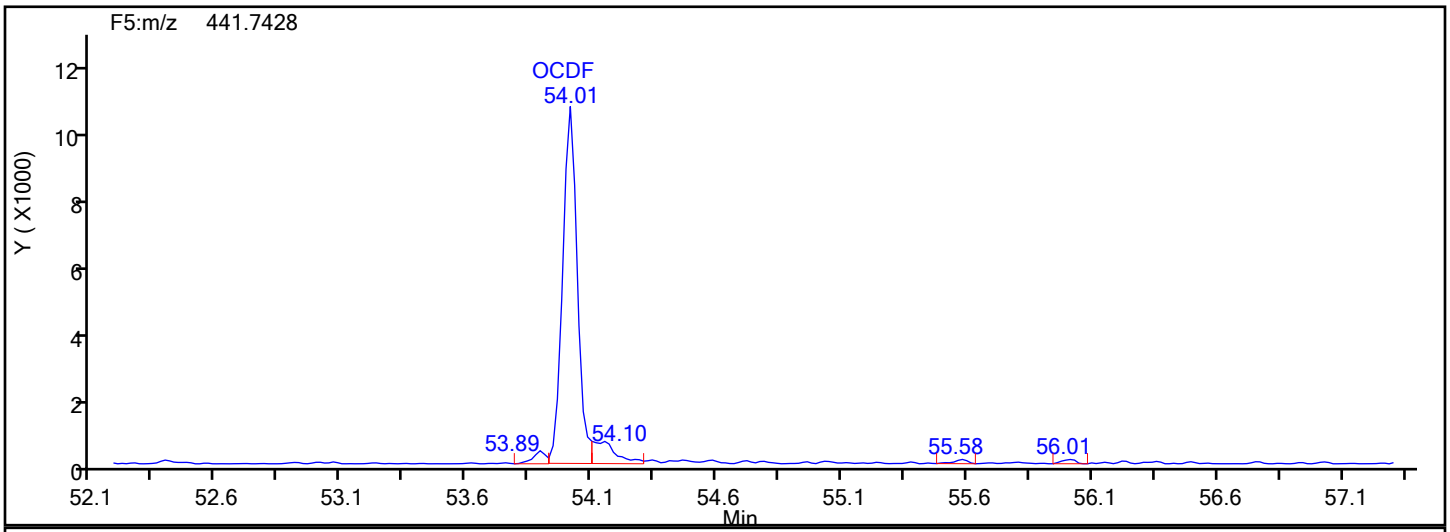


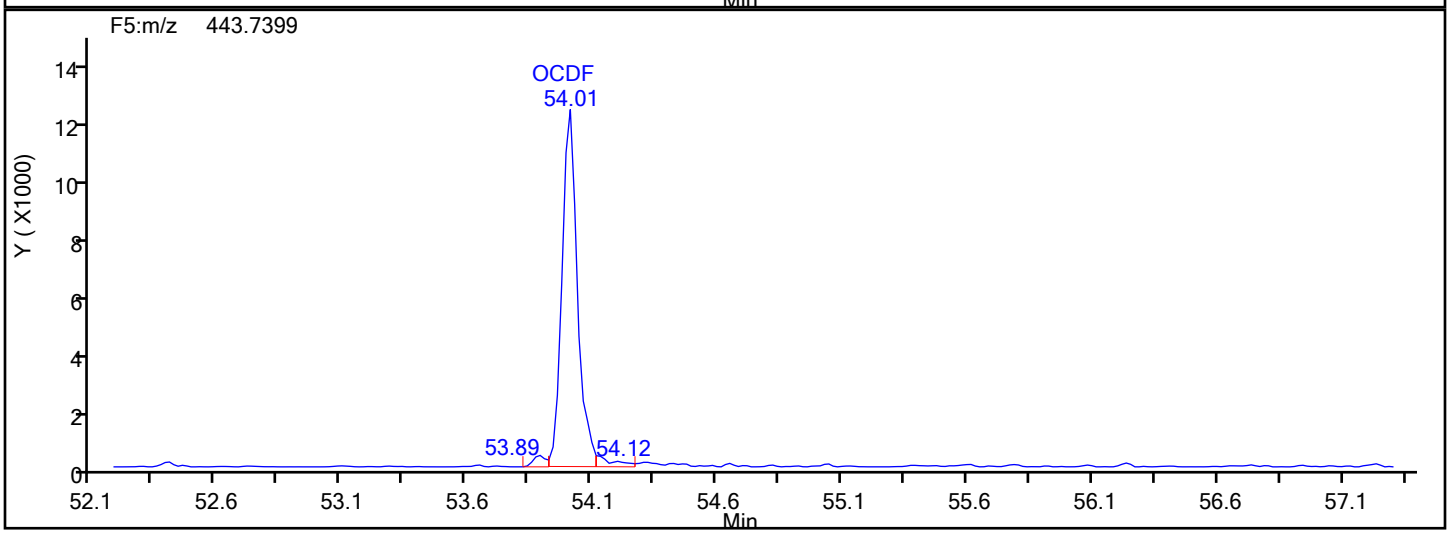
Report Date: 17-Dec-2019 11:49:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

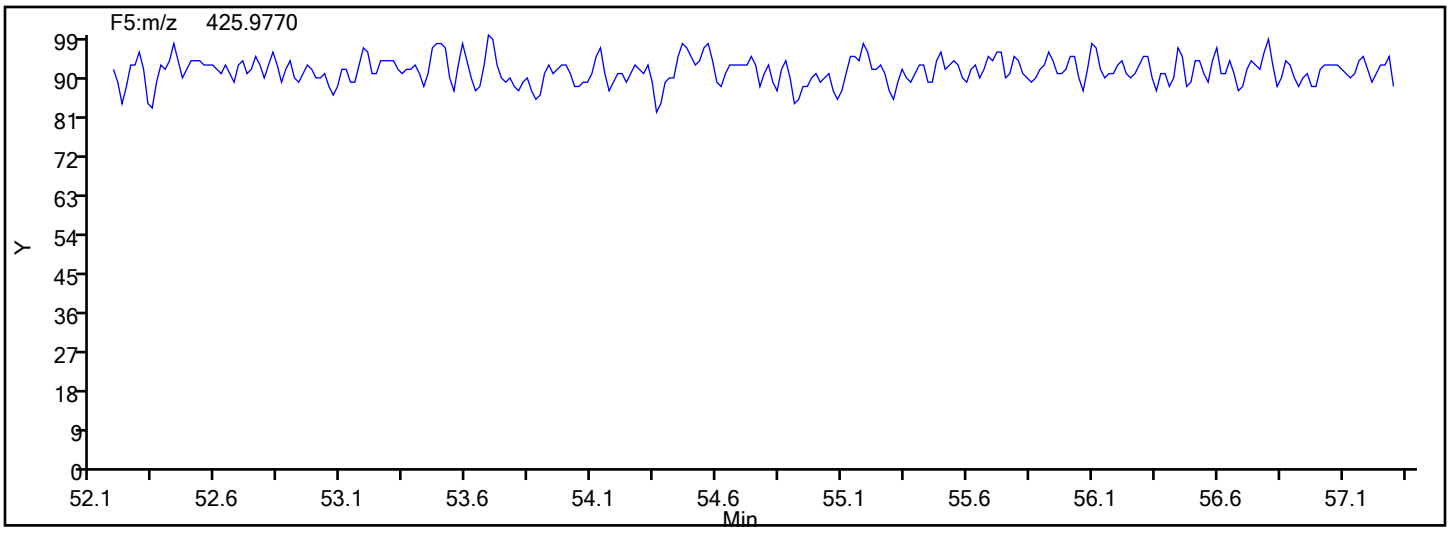
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

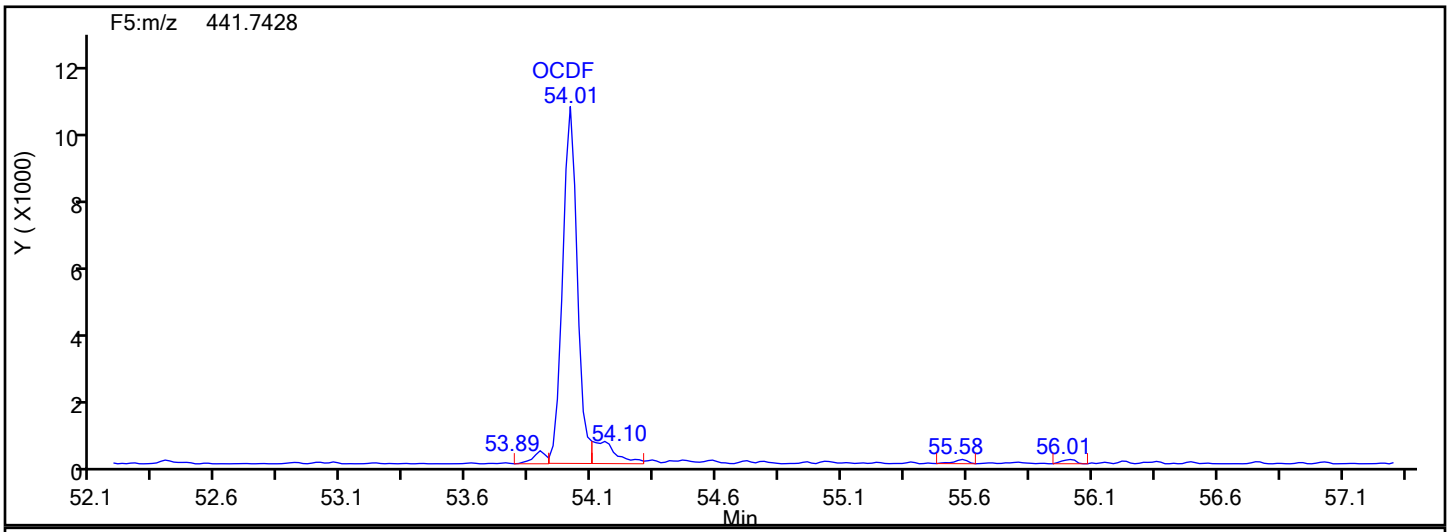


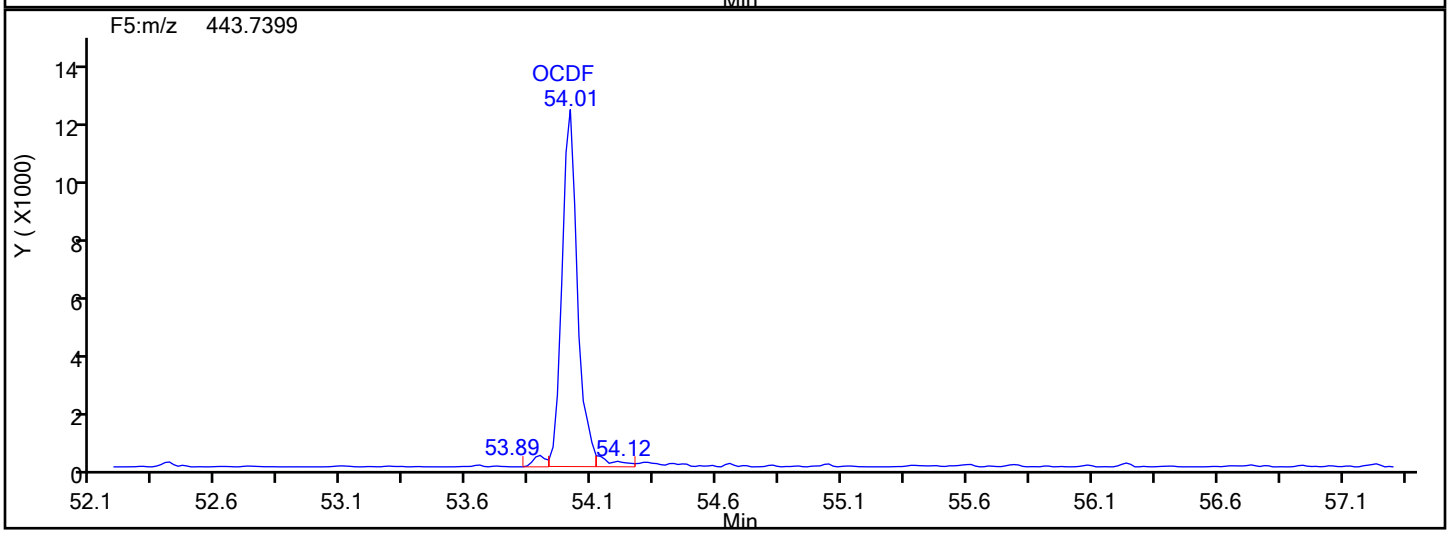
Report Date: 17-Dec-2019 11:49:37 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

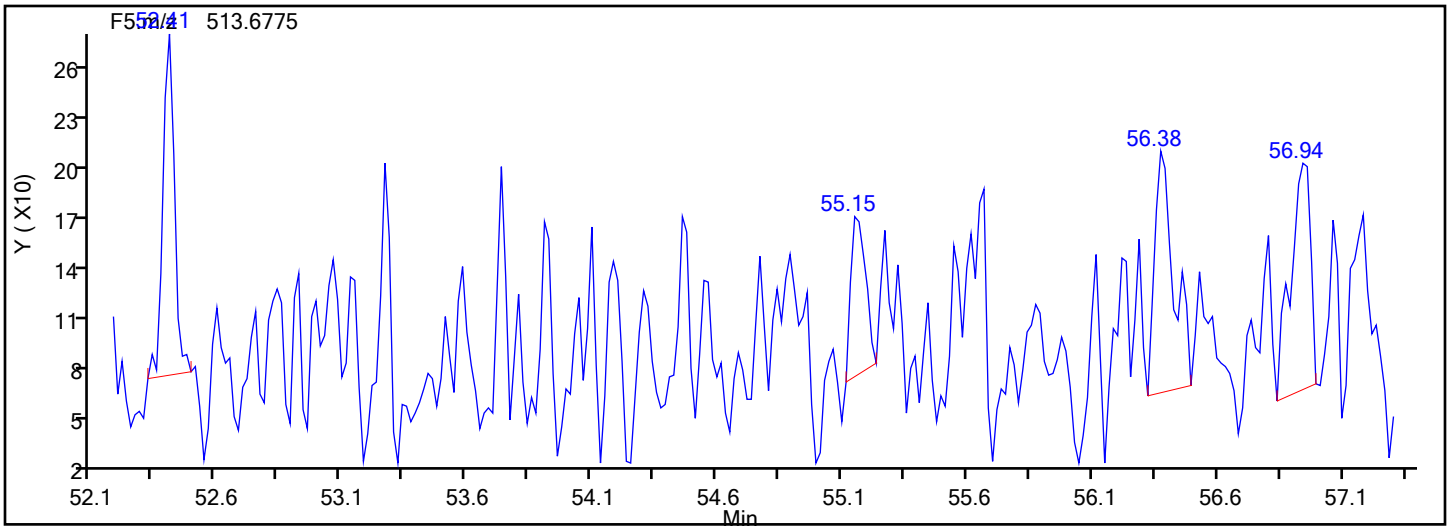
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d		
Injection Date:	17-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36126	Sample Line#:	11
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

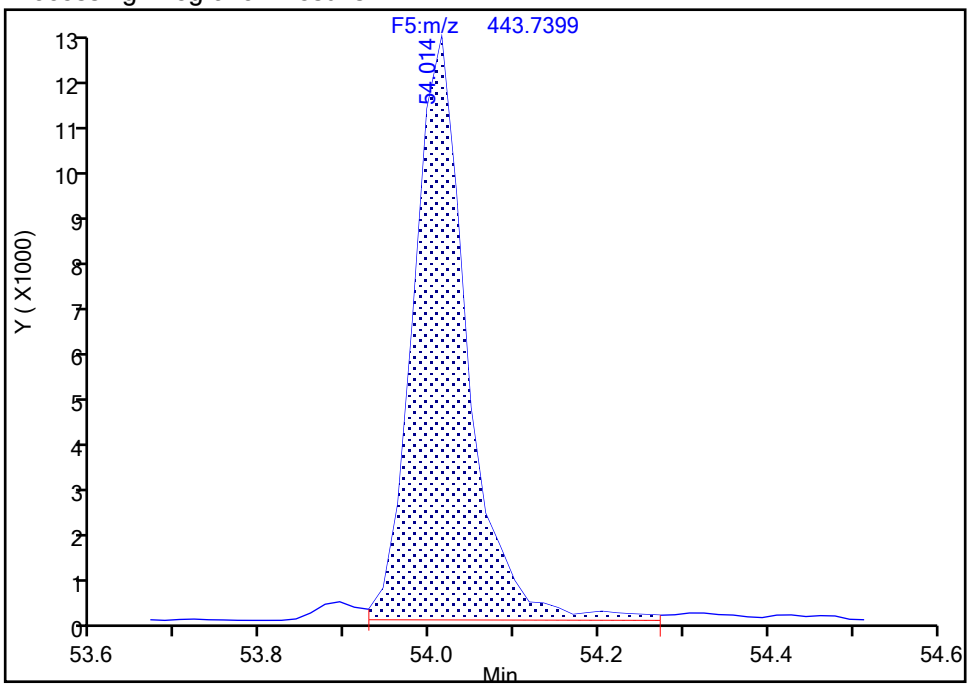
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

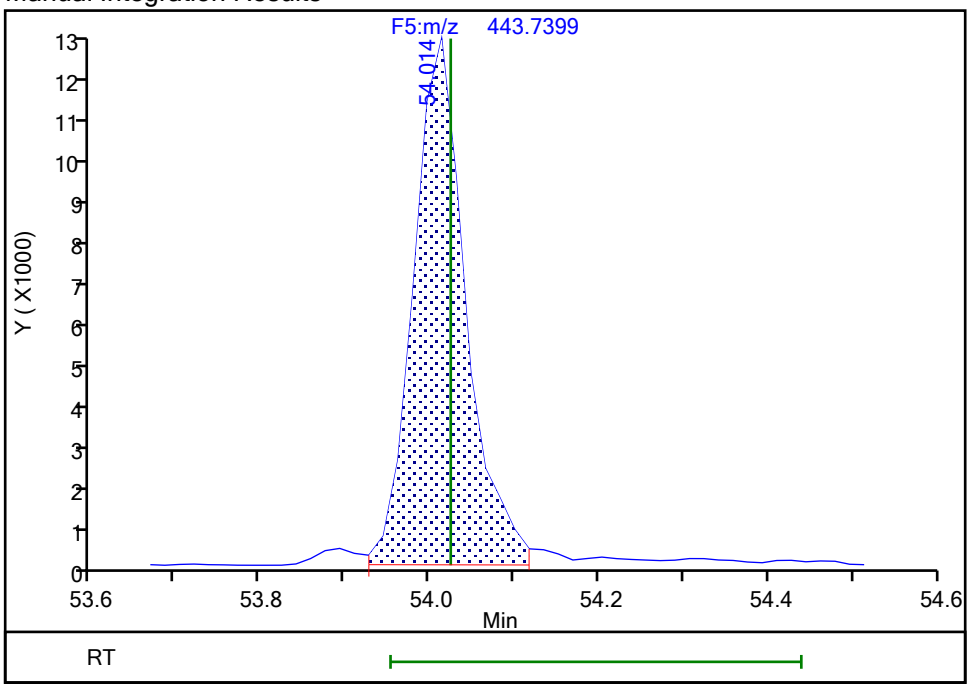
Processing Integration Results

RT: 54.01
Area: 53918
Amount: 3.229174
Amount Units: pg/ul



Manual Integration Results

RT: 54.01
Area: 52151
Amount: 3.037828
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:48:49

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

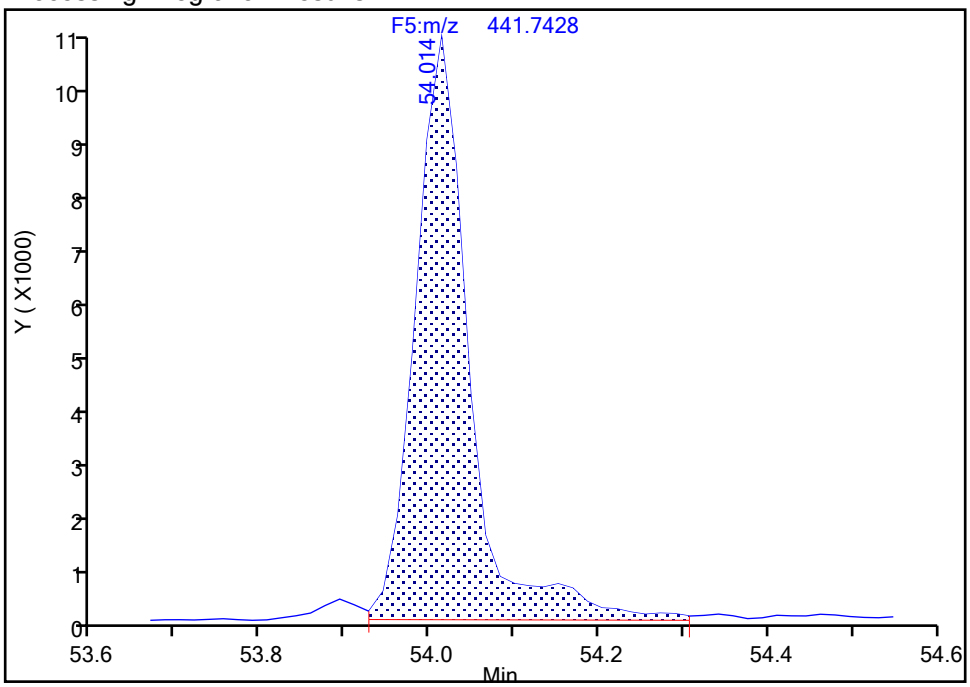
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-4-a.d				
Injection Date:	17-Dec-2019 08:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-4-A	Lab Sample ID:	140-17578-4		
Client ID:	11187072-120419-SS-SJSSA08(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

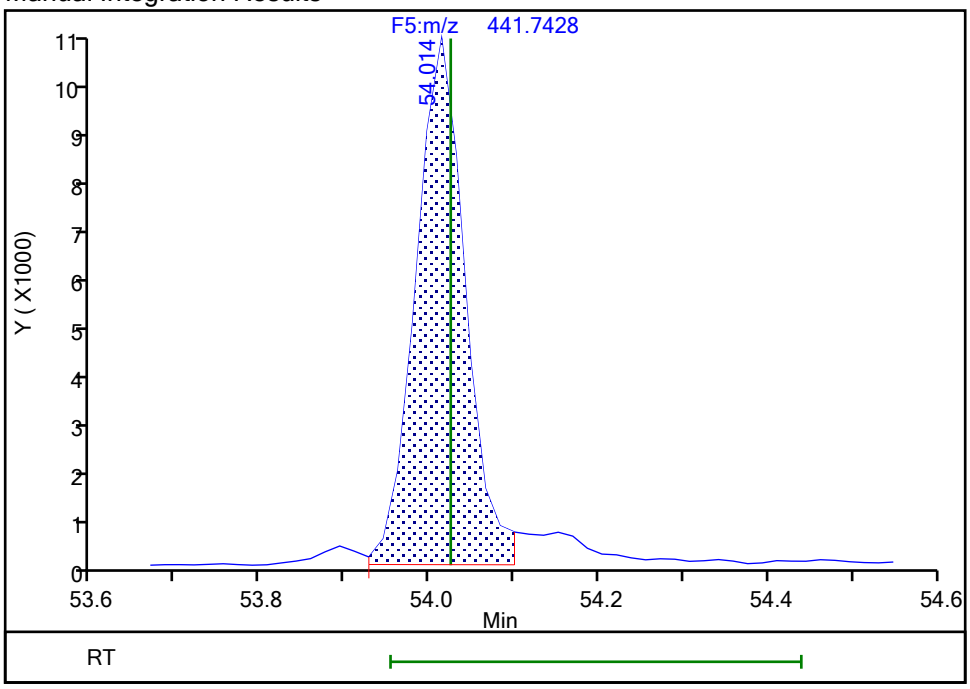
Processing Integration Results

RT: 54.01
Area: 47676
Amount: 3.229174
Amount Units: pg/ul



Manual Integration Results

RT: 54.01
Area: 43423
Amount: 3.037828
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:48:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120419-SS-SJSSA08(4-6) Lab Sample ID: 140-17578-4

Matrix: Sediment Lab File ID: 140-17578-a-4-a.d

Analysis Method: 1613B Date Collected: 12/04/2019 15:45

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.10(g) Date Analyzed: 12/18/2019 05:44

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 29.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	120		1.4	0.69

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	63		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:44:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-010
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:48

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:44	310928	0.73	1.2213	11.9	11.9	0.2144	0.2144		
2,3,7,8-TCDF	22:14	1523960	0.81	1.1100	42.0	42.0	0.2443	0.2443		
D 13C-2,3,7,8-TCDD	19:42	1069291	0.77	1.0031	33.3	33.3	0.6891	0.6891	66.68	
D 13C-2,3,7,8-TCDF	22:12	1634501	0.77	1.6193	31.6	31.6	0.2885	0.2885	63.14	
$ 37Cl4-2,3,7,8-TCDD	19:43	270263		1.1834	7.143	7.143	0.0701	0.0701	71.43	
* 13C-1,2,3,4-TCDD	20:09	3197123	0.80	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-4-a.d
Lims ID: 140-17578-A-4-A
Client ID: 11187072-120419-SS-SJSSA08(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:44:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-010
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:48

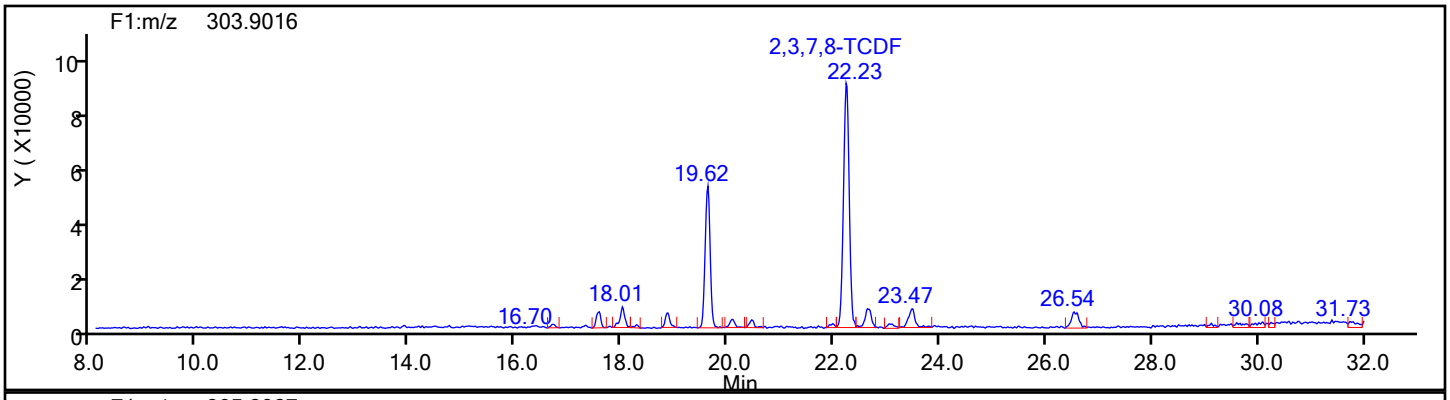
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:44	19:44	1	1.002	131158	19276	121	302	159		
321.8936	19:43	19:44	0	1.001	179770	26258	226	565	116	0.73(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:14	-1	1.002	681434	90310	271	677	333		
305.8987	22:14	22:14	-1	1.002	842526	111402	220	550	506	0.81(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:42	19:41	0	0.977	466564	70732	607	1517	117		
333.9338	19:42	19:41	0	0.977	602727	94794	744	1860	127	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:12	22:14	-1	1.102	711933	100190	640	1600	157		
317.9389	22:13	22:14	0	1.103	922568	126034	273	682	462	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.978	270263	41845	162	405	258		
13C-1,2,3,4-TCDD											
331.9368	20:09	20:09	0		1423385	218510	607	1517	360		
333.9338	20:08	20:09	-1		1773738	270008	744	1860	363	0.80(0.65-0.89)	

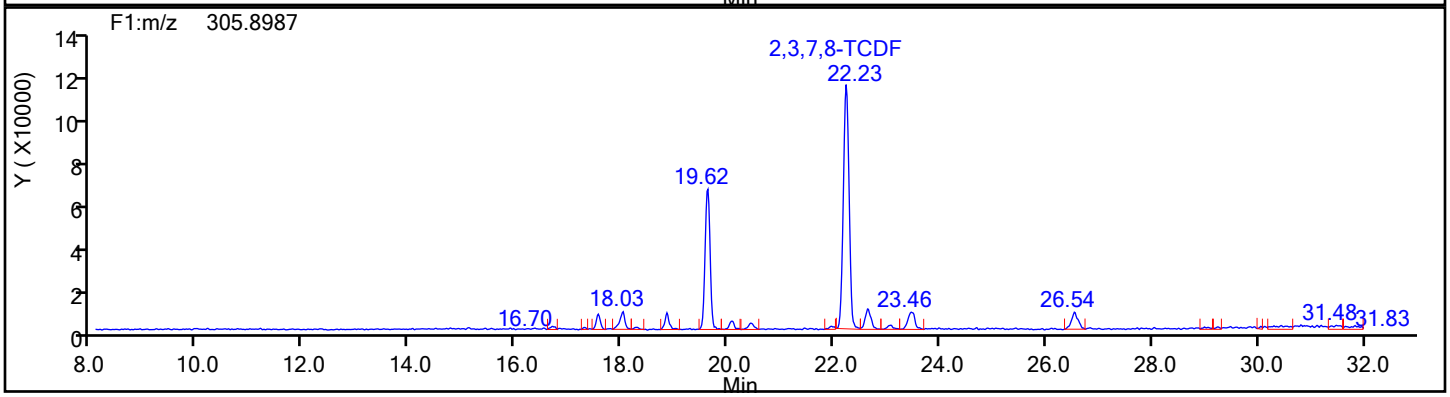
Report Date: 18-Dec-2019 09:05:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

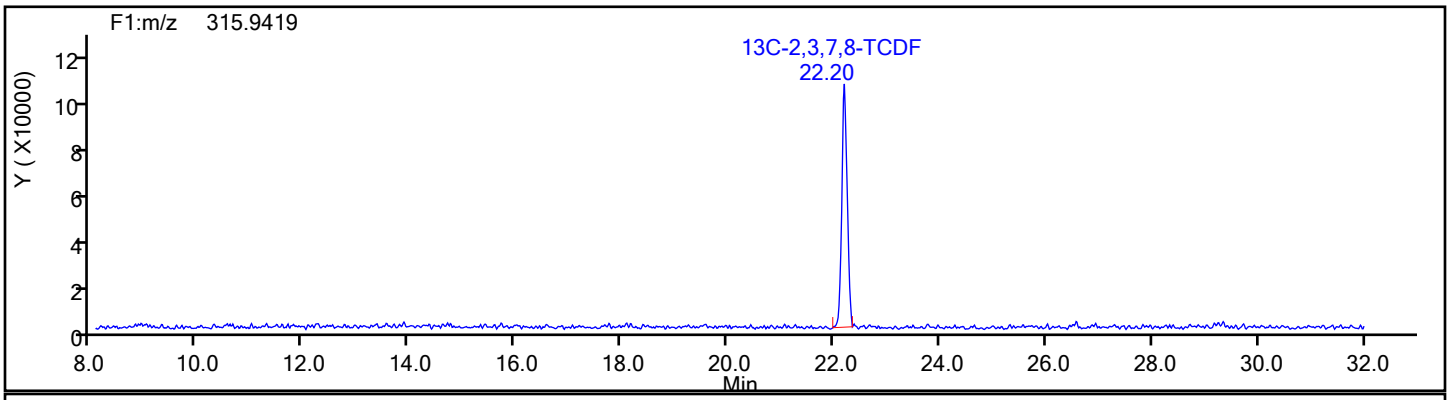
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-4-a.d		
Injection Date:	18-Dec-2019 05:44:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36167	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

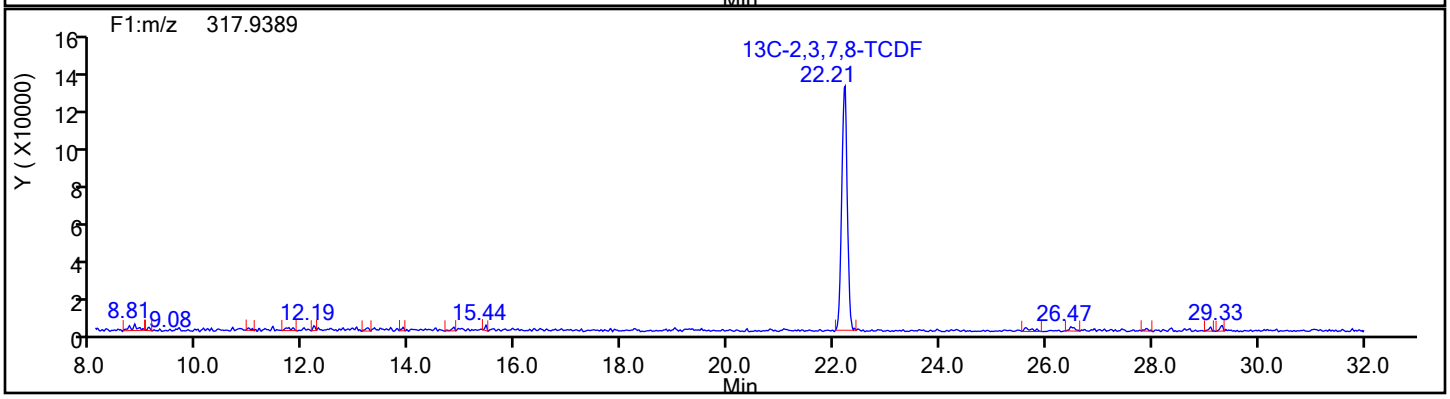
TCDF





TCDF Standards



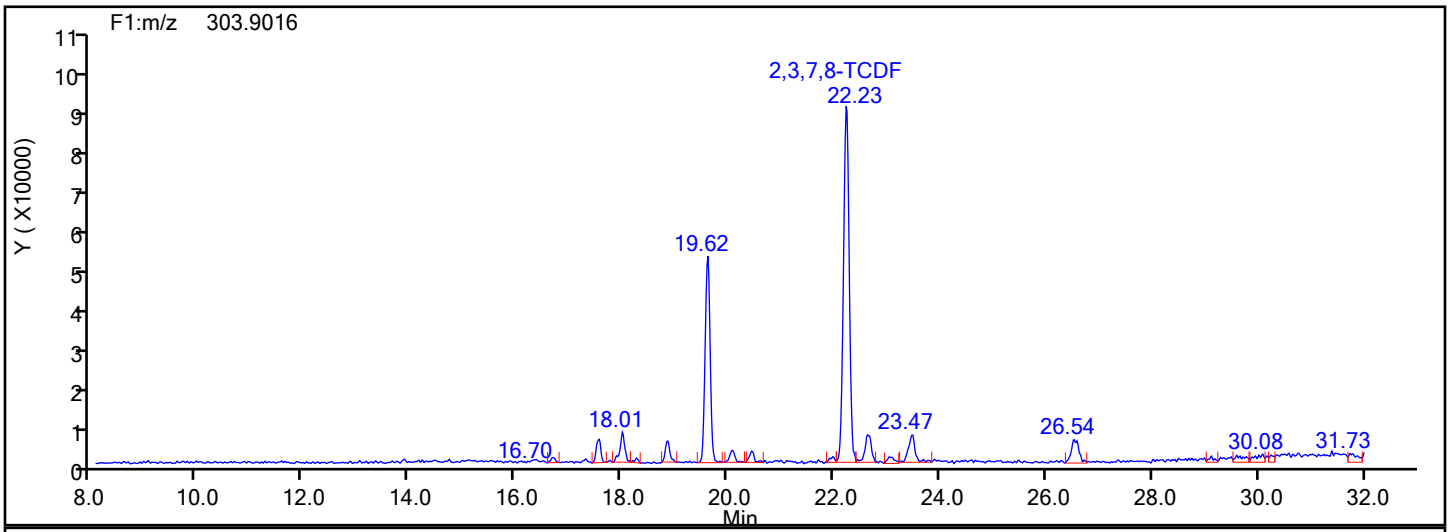


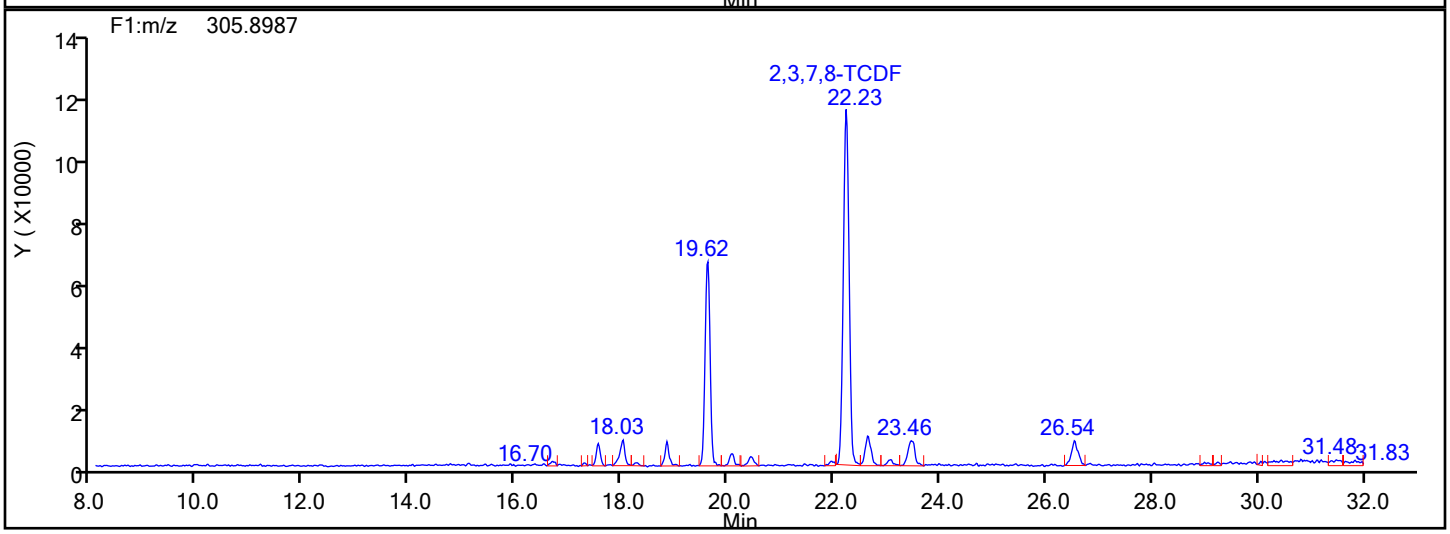
Report Date: 18-Dec-2019 09:05:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

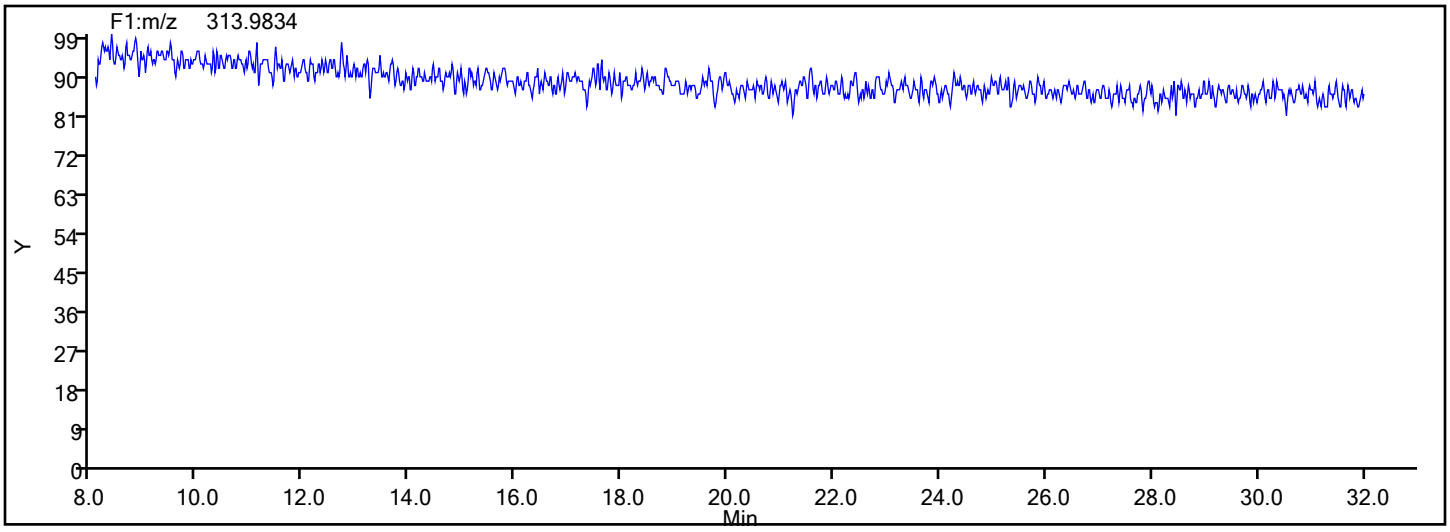
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-4-a.d		
Injection Date:	18-Dec-2019 05:44:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36167	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

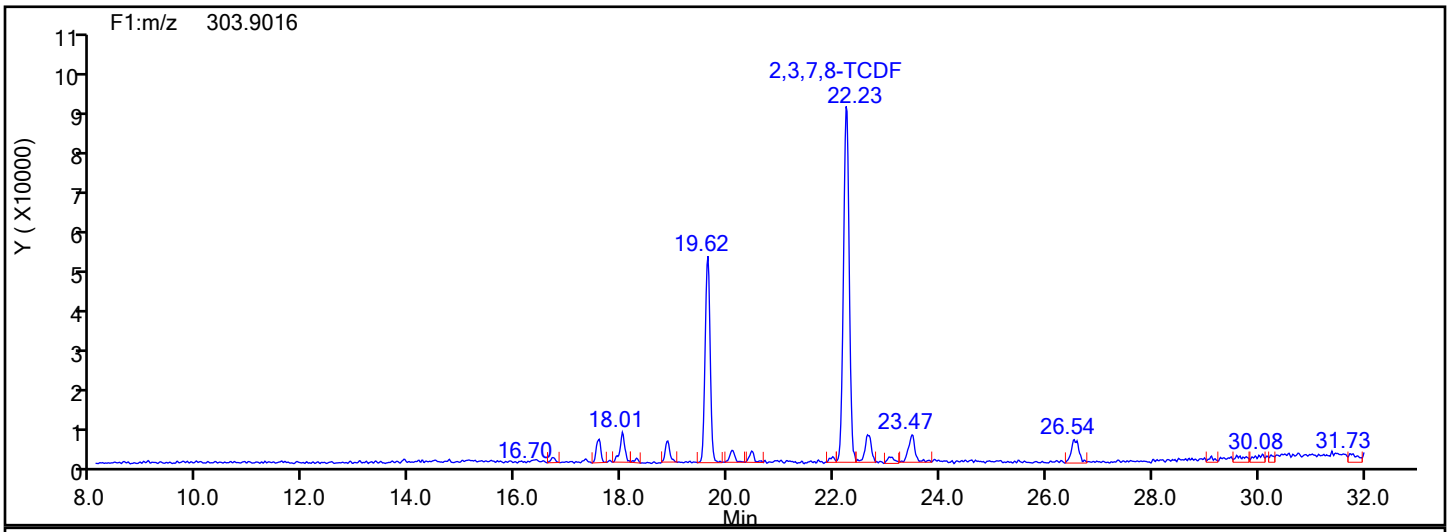


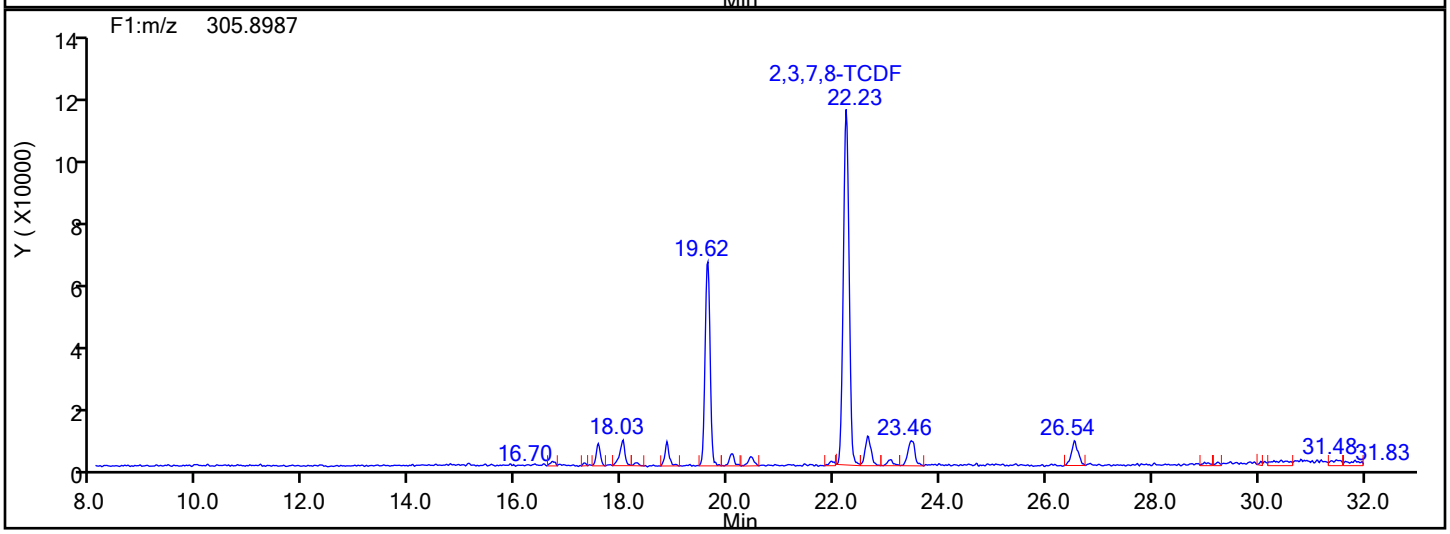
Report Date: 18-Dec-2019 09:05:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

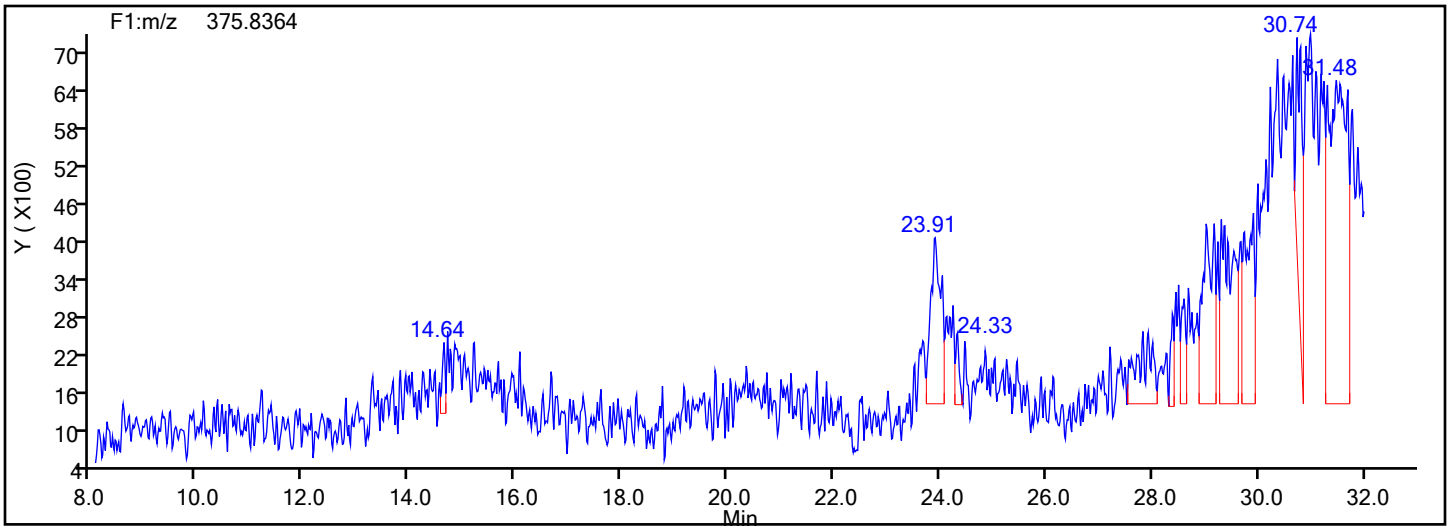
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-4-a.d		
Injection Date:	18-Dec-2019 05:44:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120419-SS-SJSSA08(4-6)		
Worklist#:	36167	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) Lab Sample ID: 140-17578-5

Matrix: Sediment Lab File ID: 140-17578-a-5-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.83(g) Date Analyzed: 12/17/2019 09:06

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 37.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	8.4		1.6	0.11
41903-57-5	Total TCDD	20	B q	1.6	0.11
40321-76-4	1,2,3,7,8-PeCDD	0.40	J	8.2	0.083
36088-22-9	Total PeCDD	12	q	8.2	0.083
39227-28-6	1,2,3,4,7,8-HxCDD	0.56	J	8.2	0.28
57653-85-7	1,2,3,6,7,8-HxCDD	0.79	J q	8.2	0.30
19408-74-3	1,2,3,7,8,9-HxCDD	2.7	J	8.2	0.27
34465-46-8	Total HxCDD	53	B q	8.2	0.28
35822-46-9	1,2,3,4,6,7,8-HpCDD	41	B	8.2	0.14
37871-00-4	Total HpCDD	160	B	8.2	0.14
3268-87-9	OCDD	980	B	16	0.044
30402-14-3	Total TCDF	82	B q	1.6	0.15
57117-41-6	1,2,3,7,8-PeCDF	4.6	J	8.2	0.15
57117-31-4	2,3,4,7,8-PeCDF	4.9	J	8.2	0.14
30402-15-4	Total PeCDF	19	I q	8.2	0.15
70648-26-9	1,2,3,4,7,8-HxCDF	4.1	J	8.2	0.071
57117-44-9	1,2,3,6,7,8-HxCDF	1.2	J	8.2	0.068
60851-34-5	2,3,4,6,7,8-HxCDF	0.37	J	8.2	0.075
72918-21-9	1,2,3,7,8,9-HxCDF	ND		8.2	0.096
55684-94-1	Total HxCDF	8.8	I q	8.2	0.078
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.2	J B	8.2	0.057
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.35	J B q	8.2	0.087
38998-75-3	Total HpCDF	5.0	J B q	8.2	0.072
39001-02-0	OCDF	10	J B	16	0.12

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) Lab Sample ID: 140-17578-5

Matrix: Sediment Lab File ID: 140-17578-a-5-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.83(g) Date Analyzed: 12/17/2019 09:06

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 37.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	61		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	66		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	64		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	66		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
114423-97-1	13C-OCDD	61		17-157
89059-46-1	13C-2,3,7,8-TCDF	61		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	63		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	65		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	63		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	63		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	65		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	63		26-138
109719-78-0	13C-OCDF	63		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	68		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 09:06:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-012
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 12:06:51 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 12:06:51

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:48	77748	0.70	1.1733	2.581	2.581	0.0335	0.0335		a
A Non-2,3,7,8-sub-TCDD	29:30	107670	0.77	1.1733	3.908	3.575	0.0335	1.727		RQMa
S Total TCDD					6.490	6.156	0.0335	0.0335		RQ
2,3,7,8-TCDF	28:47	572338	0.82	1.0881	12.5	12.5	0.0467	0.0467		
A Non-2,3,7,8-sub-TCDF	28:13	567905	0.77	1.0881	12.5	12.4	0.0467	6.890		RQM
S Total TCDF					25.0	24.9	0.0467	0.0467		RQ
1,2,3,7,8-PeCDD	40:33	2879	1.52	1.0434	0.1211	0.1211	0.0253	0.0253		M
A Non-2,3,7,8-sub-PeCDD	39:27	85303	1.55	1.0434	3.667	3.589	0.0253	1.644		RQMa
S Total PeCDD					3.788	3.711	0.0253	0.0253		RQ
1,2,3,7,8-PeCDF	38:45	57191	1.60	1.1898	1.415	1.415	0.0468	0.0468		M
2,3,4,7,8-PeCDF	40:00	57027	1.62	1.1095	1.491	1.491	0.0438	0.0438		
A Non-2,3,7,8-sub-PeCDF	38:02	114286	1.55	1.1496	2.992	2.905	0.0452	1.085		RQMa
S Total PeCDF					5.898	5.811	0.0453	0.0453		RQ
1,2,3,4,7,8-HxCDD	44:49	4926	1.18	1.1409	0.1718	0.1718	0.0844	0.0844		Ma
1,2,3,6,7,8-HxCDD	44:56	7532	1.24	1.1481	0.2689	0.2425	0.0903	0.0903		RQM
1,2,3,7,8,9-HxCDD	45:18	25946	1.40	1.2212	0.8142	0.8142	0.0818	0.0818		M
A Non-2,3,7,8-sub-HxCDD	44:19	456226	1.24	1.1700	15.1	14.9	0.0853	11.8		RQ
S Total HxCDD					16.3	16.2	0.0855	0.0855		RQ
1,2,3,4,7,8-HxCDF	43:47	59004	1.19	1.3629	1.266	1.266	0.0216	0.0216		
1,2,3,6,7,8-HxCDF	43:55	18555	1.26	1.2762	0.3530	0.3530	0.0209	0.0209		
2,3,4,6,7,8-HxCDF	44:38	5547	1.42	1.2654	0.1147	0.1147	0.0230	0.0230		M
1,2,3,7,8,9-HxCDF	45:36	1150	1.24	1.2573	0.0383	0.0270	0.0295	0.0295		RQMa
A Non-2,3,7,8-sub-HxCDF	44:10	44118	1.24	1.2905	1.008	0.9277	0.0233	0.2885		RQMa
S Total HxCDF					2.780	2.688	0.0237	0.0237		RQ
1,2,3,4,6,7,8-HpCDD	49:36	335670	1.07	1.1204	12.6	12.6	0.0424	0.0424		
A Non-2,3,7,8-sub-HpCDD	49:03	948875	1.08	1.1204	35.6	35.6	0.0424	35.6		Ma
S Total HpCDD					48.2	48.2	0.0424	0.0424		
1,2,3,4,6,7,8-HpCDF	47:56	30132	1.03	1.4984	0.6676	0.6676	0.0174	0.0174		M
1,2,3,4,7,8,9-HpCDF	50:17	3697	1.04	1.3807	0.1273	0.1064	0.0266	0.0266		RQMa
A Non-2,3,7,8-sub-HpCDF	49:20	30211	1.04	1.4395	0.7674	0.7592	0.0212	0.7153		RQMa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					1.562	1.533	0.0220	0.0220		RQ
OCDD	53:51	6941290	0.92	1.2073	300.5	300.5	0.0133	0.0133		
OCDF	54:00	105191	0.87	1.1162	3.160	3.160	0.0375	0.0375		M
D 13C-2,3,7,8-TCDD	30:44	1283543	0.80	1.0709	30.5	30.5	0.2156	0.2156	60.95	
D 13C-2,3,7,8-TCDF	28:45	2100545	0.81	1.7545	30.4	30.4	0.2372	0.2372	60.88	
D 13C-1,2,3,7,8-PeCDD	40:31	1138802	1.54	0.8743	33.1	33.1	0.2907	0.2907	66.24	
D 13C-1,2,3,7,8-PeCDF	38:44	1698299	1.64	1.3704	31.5	31.5	0.4727	0.4727	63.02	
D 13C-2,3,4,7,8-PeCDF	39:59	1724040	1.59	1.3837	31.7	31.7	0.4681	0.4681	63.36	
D 13C-1,2,3,4,7,8-HxCDD	44:48	1256978	1.23	0.8772	32.2	32.2	0.0893	0.0893	64.42	
D 13C-1,2,3,6,7,8-HxCDD	44:55	1352550	1.24	0.9171	33.2	33.2	0.0854	0.0854	66.30	
D 13C-1,2,3,4,7,8-HxCDF	43:46	1709882	0.54	1.1892	32.3	32.3	0.3068	0.3068	64.64	
D 13C-1,2,3,6,7,8-HxCDF	43:54	2059224	0.54	1.4625	31.7	31.7	0.2495	0.2495	63.30	
D 13C-2,3,4,6,7,8-HxCDF	44:38	1911029	0.54	1.3197	32.6	32.6	0.2765	0.2765	65.10	
D 13C-1,2,3,7,8,9-HxCDF	45:33	1690663	0.55	1.2001	31.7	31.7	0.3040	0.3040	63.33	
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	1189021	1.06	0.8155	32.8	32.8	0.1943	0.1943	65.55	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1506060	0.46	1.0496	32.3	32.3	0.2722	0.2722	64.51	
D 13C-1,2,3,4,7,8,9-HpCDF	50:14	1258164	0.47	0.8947	31.6	31.6	0.3193	0.3193	63.22	
D 13C-OCDD	53:50	1913454	0.90	0.7044	61.1	61.1	0.2721	0.2721	61.06	
D 13C-OCDF	53:59	2982304	0.90	1.0615	63.2	63.2	0.2728	0.2728	63.16	
$ 37Cl4-2,3,7,8-TCDD	30:47	328043		1.2266	6.800	6.800	0.0368	0.0368	68.00	
* 13C-1,2,3,4-TCDD	30:12	3932998	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:17	4448633	1.31	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 09:06:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-012
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 12:06:51 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 12:06:51

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	30:48	30:48	-4	1.002	32101	3422	15	37	228		a
321.8936	30:48	30:48	-4	1.002	45647	5006	27	67	185	0.70(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:52	29:30	-277	0.809	2586	407	15	37	27		
	Empc Correction				1356	189	15	37	13		
321.8936	24:54	29:30	-275	0.810	1762	246	27	67	9	1.47(0.65-0.89)	
319.8965	25:34	29:30	-235	0.832	2043	317	15	37	21		
321.8936	25:35	29:30	-234	0.833	2837	387	27	67	14	0.72(0.65-0.89)	
319.8965	26:14	29:30	-195	0.854	2844	426	15	37	28		
321.8936	26:15	29:30	-194	0.854	4276	525	27	67	19	0.67(0.65-0.89)	
319.8965	27:45	29:30	-105	0.903	22635	2732	15	37	182		
321.8936	27:45	29:30	-105	0.903	35393	4369	27	67	162	0.64(0.65-0.89)	
	Empc Correction				29396	3548	27	67	131		
319.8965	28:09	29:30	-80	0.916	1753	165	15	37	11		
321.8936	28:14	29:30	-75	0.919	2120	215	27	67	8	0.83(0.65-0.89)	M
319.8965	29:29	29:30	-1	0.959	2263	219	15	37	15		
321.8936	29:26	29:30	-4	0.958	3045	378	27	67	14	0.74(0.65-0.89)	M
319.8965	30:11	29:30	42	0.982	5561	663	15	37	44		M
321.8936	30:14	29:30	45	0.984	9315	1120	27	67	41	0.60(0.65-0.89)	
	Empc Correction				7222	861	27	67	32		
319.8965	30:32	29:30	62	0.993	1915	272	15	37	18		M
321.8936	30:36	29:30	66	0.996	2977	359	27	67	13	0.64(0.65-0.89)	M
	Empc Correction				2487	353	27	67	13		
319.8965	31:51	29:30	141	1.037	3760	394	15	37	26		M
321.8936	31:54	29:30	144	1.038	4623	480	27	67	18	0.81(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	32:42	29:30	192	1.064	398	68	15	37	5		
321.8936	32:41	29:30	191	1.064	748	193	27	67	7	0.53(0.65-0.89)	
	Empc Correction				516	88	27	67	3		
319.8965	33:59	29:30	268	1.106	2154	516	15	37	34		
321.8936	34:01	29:30	270	1.107	2704	356	27	67	13	0.80(0.65-0.89)	M
2,3,7,8-TCDF											
303.9016	28:47	28:51	-5	1.001	258711	26435	40	100	661		
305.8987	28:47	28:51	-5	1.001	313627	32217	53	132	608	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:18	28:13	-295	0.810	977	186	40	100	5		
305.8987	23:21	28:13	-292	0.812	1559	280	53	132	5	0.63(0.65-0.89)	
	Empc Correction				1268	241	53	132	5		
303.9016	23:47	28:13	-265	0.827	3312	601	40	100	15		
305.8987	23:46	28:13	-266	0.827	4445	609	53	132	11	0.75(0.65-0.89)	
303.9016	24:18	28:13	-235	0.845	2665	457	40	100	11		M
305.8987	24:19	28:13	-234	0.845	4455	760	53	132	14	0.60(0.65-0.89)	
	Empc Correction				3461	593	53	132	11		
303.9016	25:03	28:13	-190	0.871	21243	2827	40	100	71		
305.8987	25:03	28:13	-190	0.871	27490	3496	53	132	66	0.77(0.65-0.89)	
303.9016	25:46	28:13	-147	0.896	17130	1728	40	100	43		
305.8987	25:46	28:13	-147	0.896	23987	2368	53	132	45	0.71(0.65-0.89)	
303.9016	26:26	28:13	-107	0.919	8594	1037	40	100	26		M
305.8987	26:27	28:13	-106	0.920	10558	1130	53	132	21	0.81(0.65-0.89)	M
303.9016	26:56	28:13	-77	0.937	11308	1503	40	100	38		
305.8987	26:56	28:13	-77	0.937	17082	2039	53	132	38	0.66(0.65-0.89)	
303.9016	27:12	28:13	-61	0.946	1559	284	40	100	7		
	Empc Correction				1154	178	40	100	4		
305.8987	27:08	28:13	-65	0.944	1500	232	53	132	4	1.04(0.65-0.89)	
303.9016	27:43	28:13	-30	0.964	136443	16104	40	100	403		
305.8987	27:42	28:13	-31	0.963	178516	21305	53	132	402	0.76(0.65-0.89)	
303.9016	28:17	28:13	4	0.984	5974	665	40	100	17		
305.8987	28:20	28:13	7	0.985	7721	888	53	132	17	0.77(0.65-0.89)	
303.9016	30:00	28:13	107	1.043	16081	1836	40	100	46		
305.8987	30:00	28:13	107	1.043	18690	2119	53	132	40	0.86(0.65-0.89)	
303.9016	30:38	28:13	144	1.065	3915	371	40	100	9		M
	Empc Correction				2611	297	40	100	7		
305.8987	30:42	28:13	148	1.067	3392	387	53	132	7	1.15(0.65-0.89)	
303.9016	32:48	28:13	274	1.141	2270	290	40	100	7		
305.8987	32:46	28:13	272	1.139	3231	587	53	132	11	0.70(0.65-0.89)	
303.9016	33:50	28:13	336	1.176	16309	2051	40	100	51		
305.8987	33:52	28:13	338	1.177	20493	2174	53	132	41	0.80(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	40:33	40:32	-2	1.001	1737	428	19	47	23		M
357.8516	40:32	40:32	-3	1.000	1142	272	33	82	8	1.52(1.32-1.78)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:36	39:27	-111	0.928	10255	1426	19	47	75		
357.8516	37:34	39:27	-112	0.927	6191	896	33	82	27	1.66(1.32-1.78)	
355.8546	38:26	39:27	-61	0.949	24677	5358	19	47	282		
357.8516	38:26	39:27	-61	0.949	14387	2918	33	82	88	1.72(1.32-1.78)	
355.8546	38:54	39:27	-33	0.960	851	250	19	47	13		M
357.8516	38:54	39:27	-33	0.960	694	115	33	82	3	1.23(1.32-1.78)	
	Empc Correction				549	161	33	82	5		
355.8546	39:07	39:27	-20	0.965	1761	303	19	47	16		
	Empc Correction				1204	266	19	47	14		
357.8516	39:08	39:27	-19	0.966	777	172	33	82	5	2.27(1.32-1.78)	
355.8546	39:21	39:27	-6	0.971	1732	353	19	47	19		M
	Empc Correction				1159	158	19	47	8		
357.8516	39:21	39:27	-6	0.971	748	102	33	82	3	2.32(1.32-1.78)	
355.8546	39:41	39:27	14	0.979	1587	369	19	47	19		
357.8516	39:40	39:27	13	0.979	1173	317	33	82	10	1.35(1.32-1.78)	
355.8546	39:49	39:27	22	0.983	10989	1900	19	47	100		
357.8516	39:48	39:27	21	0.982	6440	1076	33	82	33	1.71(1.32-1.78)	
355.8546	40:20	39:27	53	0.995	948	182	19	47	10		M
	Empc Correction				719	144	19	47	8		
357.8516	40:22	39:27	55	0.996	464	93	33	82	3	2.04(1.32-1.78)	
355.8546	40:47	39:27	80	1.006	789	151	19	47	8		
357.8516	40:46	39:27	79	1.006	852	142	33	82	4	0.93(1.32-1.78)	
	Empc Correction				509	97	33	82	3		
355.8546	41:13	39:27	106	1.017	1078	229	19	47	12		M
357.8516	41:13	39:27	106	1.017	757	258	33	82	8	1.42(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:45	38:45	-3	1.000	35195	6404	96	240	67		M
341.8567	38:45	38:45	-3	1.000	21996	4552	48	120	95	1.60(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:00	40:03	-3	1.000	35255	7268	96	240	76		
341.8567	40:00	40:03	-3	1.000	21772	4908	48	120	102	1.62(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	37:14	38:02	-48	0.961	25667	4300	96	240	45		
	Empc Correction				22216	3960	96	240	41		
341.8567	37:14	38:02	-48	0.961	14333	2555	48	120	53	1.79(1.32-1.78)	
339.8597	38:39	38:02	37	0.998	9131	2166	96	240	23		M
341.8567	38:40	38:02	38	0.998	5603	1408	48	120	29	1.63(1.32-1.78)	
339.8597	39:17	38:02	75	1.014	25451	4949	96	240	52		
341.8567	39:17	38:02	75	1.014	17229	3550	48	120	74	1.48(1.32-1.78)	
339.8597	40:16	38:02	134	1.040	8541	1470	96	240	15		
341.8567	40:16	38:02	134	1.040	4873	1069	48	120	22	1.75(1.32-1.78)	
339.8597	41:21	38:02	199	1.068	4129	615	96	240	6		
341.8567	41:20	38:02	198	1.067	2780	375	48	120	8	1.49(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDD											Ma
389.8158	44:49	44:49	-2	1.000	2667	703	31	77	23		M
391.8127	44:49	44:49	-2	1.000	2259	620	221	552	3	1.18(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQM
389.8158	44:56	44:56	-2	1.000	4170	1094	31	77	35		M
391.8127	44:56	44:56	-2	1.000	4182	1333	221	552	6	1.00(1.05-1.43)	M
	Empc Correction				3362	882	221	552	4		
1,2,3,7,8,9-HxCDD											M
389.8158	45:18	45:17	-3	1.011	15127	3082	31	77	99		M
391.8127	45:17	45:17	-4	1.011	10819	2049	221	552	9	1.40(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:15	44:19	-64	0.963	203380	51761	31	77	1670		
391.8127	43:15	44:19	-64	0.963	156880	40779	221	552	185	1.30(1.05-1.43)	
389.8158	43:49	44:19	-30	0.976	9178	1738	31	77	56		
	Empc Correction				5918	1359	31	77	44		
391.8127	43:49	44:19	-30	0.976	4773	1096	221	552	5	1.92(1.05-1.43)	
389.8158	44:06	44:19	-13	0.982	41377	9329	31	77	301		
391.8127	44:06	44:19	-13	0.982	31320	7350	221	552	33	1.32(1.05-1.43)	
389.8158	44:17	44:19	-2	0.986	6963	1844	31	77	59		
391.8127	44:16	44:19	-3	0.986	6774	1294	221	552	6	1.03(1.05-1.43)	
	Empc Correction				5615	1487	221	552	7		
1,2,3,4,7,8-HxCDF											
373.8208	43:47	43:48	-2	1.000	32113	8726	53	132	165		
375.8178	43:47	43:48	-2	1.000	26891	6738	53	132	127	1.19(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:55	43:56	-2	1.000	10360	2340	53	132	44		
375.8178	43:54	43:56	-3	1.000	8195	1601	53	132	30	1.26(1.05-1.43)	
2,3,4,6,7,8-HxCDF											M
373.8208	44:38	44:38	-3	1.000	3253	782	53	132	15		M
375.8178	44:38	44:38	-3	1.000	2294	477	53	132	9	1.42(1.05-1.43)	M
1,2,3,7,8,9-HxCDF											RQMa
373.8208	45:36	45:34	0	1.001	637	153	53	132	3		M
375.8178	45:34	45:34	-2	1.000	993	275	53	132	5	0.64(1.05-1.43)	M
	Empc Correction				513	123	53	132	2		
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:22	44:10	-108	0.000			53	132			
375.8178	42:22	44:10	-108	0.000			53	132		0.00(1.05-1.43)	
373.8208	42:33	44:10	-97	0.969	1756	413	53	132	8		
375.8178	42:33	44:10	-97	0.969	2636	494	53	132	9	0.67(1.05-1.43)	
	Empc Correction				1416	333	53	132	6		
373.8208	42:44	44:10	-86	0.973	8069	2232	53	132	42		
375.8178	42:44	44:10	-86	0.973	5650	1452	53	132	27	1.43(1.05-1.43)	M
373.8208	43:07	44:10	-62	0.982	1450	535	53	132	10		
375.8178	43:06	44:10	-63	0.982	1192	282	53	132	5	1.22(1.05-1.43)	
373.8208	43:20	44:10	-50	0.987	4504	1216	53	132	23		
	Empc Correction				3534	1058	53	132	20		
375.8178	43:20	44:10	-50	0.987	2850	854	53	132	16	1.58(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	43:32	44:10	-38	0.992	4562	1436	53	132	27		
375.8178	43:32	44:10	-38	0.992	4047	968	53	132	18	1.13(1.05-1.43)	
373.8208	45:25	44:10	75	0.000			53	132			
375.8178	45:25	44:10	75	0.000			53	132		0.00(1.05-1.43)	
373.8208	45:34	44:10	84	0.000			53	132			
375.8178	45:34	44:10	84	0.000			53	132		0.00(1.05-1.43)	
373.8208	45:43	44:10	92	1.041	5310	1537	53	132	29		M
375.8178	45:43	44:10	92	1.041	5913	1587	53	132	30	0.90(1.05-1.43)	M
	Empc Correction				4282	1239	53	132	23		
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:37	-2	1.000	173299	30815	20	50	1541		
425.7737	49:36	49:37	-2	1.000	162371	28689	64	160	448	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											Ma
423.7767	48:11	49:03	-51	0.000			20	50			
425.7737	48:11	49:03	-51	0.000			64	160		0.00(0.88-1.20)	
423.7767	48:26	49:03	-37	0.977	493664	95340	20	50	4767		M
425.7737	48:25	49:03	-38	0.976	455211	88076	64	160	1376	1.08(0.88-1.20)	M
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:56	47:56	-2	1.000	15306	3504	44	110	80		M
409.7788	47:55	47:56	-3	1.000	14826	3141	20	50	157	1.03(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											RQMa
407.7817	50:17	50:14	0	1.001	1885	385	44	110	9		a
409.7788	50:14	50:14	-3	1.000	2537	510	20	50	26	0.74(0.88-1.20)	M
	Empc Correction				1812	370	20	50	19		
A Non-2,3,7,8-sub-HpCDF											RQMa
407.7817	48:19	49:20	-61	1.008	1216	278	44	110	6		a
	Empc Correction				890	178	44	110	4		
409.7788	48:18	49:20	-62	1.008	856	172	20	50	9	1.42(0.88-1.20)	
407.7817	48:34	49:20	-46	1.013	13418	2765	44	110	63		M
409.7788	48:34	49:20	-46	1.013	15047	3176	20	50	159	0.89(0.88-1.20)	
OCDD											
457.7377	53:51	53:53	-2	1.000	3317578	716285	16	40	44768		
459.7348	53:51	53:53	-2	1.000	3623712	786404	11	27	71491	0.92(0.76-1.02)	
OCDF											M
441.7428	54:00	54:00	-2	1.000	48903	11966	54	135	222		M
443.7399	54:00	54:00	-2	1.000	56288	12910	56	140	231	0.87(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:44	30:45	-5	1.017	569234	59747	253	632	236		
333.9338	30:44	30:45	-5	1.017	714309	73904	136	340	543	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:45	28:46	-4	0.952	939332	99652	204	510	488		
317.9389	28:45	28:46	-4	0.952	1161213	128452	497	1242	258	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:31	40:30	-3	1.342	689614	148767	218	545	682		
369.8919	40:31	40:30	-3	1.342	449188	97807	210	525	466	1.54(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:42	-3	1.282	1054430	198669	705	1762	282		
353.8970	38:44	38:42	-3	1.282	643869	124351	386	965	322	1.64(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	39:59	39:58	-3	1.324	1058351	225323	705	1762	320		
353.8970	39:59	39:58	-3	1.324	665689	144733	386	965	375	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:49	-2	0.989	692134	178619	226	565	790		
403.8529	44:48	44:49	-2	0.989	564844	148625	71	177	2093	1.23(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:56	-2	0.992	750008	165877	226	565	734		
403.8529	44:55	44:56	-2	0.992	602542	137876	71	177	1942	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:47	-2	0.966	599687	159702	860	2150	186		
385.8610	43:46	43:47	-2	0.966	1110195	290613	522	1305	557	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:56	-2	0.969	718963	169822	860	2150	197		
385.8610	43:54	43:56	-2	0.969	1340261	327855	522	1305	628	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:38	44:39	-2	0.985	669043	160731	860	2150	187		
385.8610	44:38	44:39	-2	0.985	1241986	294765	522	1305	565	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:33	45:35	-2	1.006	597809	128143	860	2150	149		
385.8610	45:33	45:35	-2	1.006	1092854	229355	522	1305	439	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:36	-2	1.095	612384	112311	254	635	442		
437.8140	49:35	49:36	-2	1.095	576637	108662	346	865	314	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:57	-2	1.058	476313	99982	360	900	278		
419.8220	47:55	47:57	-2	1.058	1029747	207336	722	1805	287	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:14	50:16	-2	1.109	404662	68274	360	900	190		
419.8220	50:14	50:16	-2	1.109	853502	149694	722	1805	207	0.47(0.37-0.51)	
13C-OCDD											
469.7780	53:50	53:52	-2	1.189	906815	197342	308	770	641		
471.7750	53:50	53:52	-2	1.189	1006639	219453	418	1045	525	0.90(0.76-1.02)	
13C-OCDF											
453.7830	53:59	54:01	-2	1.192	1412015	312408	566	1415	552		
455.7801	53:59	54:01	-2	1.192	1570289	344199	531	1327	648	0.90(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:47	30:48	-5	1.019	328043	34676	76	190	456		
13C-1,2,3,4-TCDD											
331.9368	30:12	30:19	-7		1759682	181894	253	632	719		
333.9338	30:14	30:19	-5		2173316	239074	136	340	1758	0.81(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:17	45:20	-3		2524441	533624	226	565	2361		
403.8529	45:17	45:20	-3		1924192	413270	71	177	5821	1.31(1.05-1.43)	

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1283543	133651

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1283543	133651

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:52	2586	407	1762	246	0.1444	1.47	RQ
24:52	1356	189	1762	246	0.1035		Empc Correction
25:34	2043	317	2837	387	0.1620	0.72	
26:14	2844	426	4276	525	0.2364	0.67	
27:45	22635	2732	35393	4369	1.93	0.64	RQ
27:45	22635	2732	29396	3548	1.73		Empc Correction
28:09	1753	165	2120	215	0.1286	0.83	M
29:29	2263	219	3045	378	0.1762	0.74	M
30:11	5561	663	9315	1120	0.4939	0.60	RQM
30:11	5561	663	7222	861	0.4244		Empc Correction
30:32	1915	272	2977	359	0.1624	0.64	RQM
30:32	1915	272	2487	353	0.1462		Empc Correction
31:51	3760	394	4623	480	0.2783	0.81	Ma
32:42	398	68	748	193	0.0380	0.53	RQ
32:42	398	68	516	88	0.0303		Empc Correction
33:59	2154	516	2704	356	0.1613	0.80	M
Signal Totals:							
	46682	5961	60988	7437			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	117712	14807				0.69	RQMa
	107670	13398					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.908 = (117712 * 50.000) / (1283543 * 1.173)
Empc Amount: 3.575 = (107670 * 50.000) / (1283543 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 12:06:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2100545	228104

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2100545	228104

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:18	977	186	1559	280	0.0555	0.63	RQ
23:18	977	186	1268	241	0.0491		Empc Correction
23:47	3312	601	4445	609	0.1697	0.75	
24:18	2665	457	4455	760	0.1558	0.60	RQM
24:18	2665	457	3461	593	0.1340		Empc Correction
25:03	21243	2827	27490	3496	1.07	0.77	
25:46	17130	1728	23987	2368	0.8994	0.71	
26:26	8594	1037	10558	1130	0.4190	0.81	M
26:56	11308	1503	17082	2039	0.6210	0.66	
27:12	1559	284	1500	232	0.0669	1.04	RQ
27:12	1154	178	1500	232	0.0581		Empc Correction
27:43	136443	16104	178516	21305	6.89	0.76	
28:17	5974	665	7721	888	0.2996	0.77	
30:00	16081	1836	18690	2119	0.7606	0.86	
30:38	3915	371	3392	387	0.1598	1.15	RQM
30:38	2611	297	3392	387	0.1313		Empc Correction
32:48	2270	290	3231	587	0.1203	0.70	
33:50	16309	2051	20493	2174	0.8050	0.80	
Signal Totals:							
	246071	29760	321834	38168			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	570899	68314				0.77	RQM
	567905	67928					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 12.488 = (570899 * 50.000) / (2100545 * 1.088)
Empc Amount: 12.423 = (567905 * 50.000) / (2100545 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1138802	246574

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1138802	246574

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:36	10255	1426	6191	896	0.6920	1.66	
38:26	24677	5358	14387	2918	1.64	1.72	
38:54	851	250	694	115	0.0650	1.23	RQMa
38:54	851	250	549	161	0.0589		Empc Correction
39:07	1761	303	777	172	0.1068	2.27	RQ
39:07	1204	266	777	172	0.0834		Empc Correction
39:21	1732	353	748	102	0.1044	2.32	RQMa
39:21	1159	158	748	102	0.0802		Empc Correction
39:41	1587	369	1173	317	0.1161	1.35	
39:49	10989	1900	6440	1076	0.7334	1.71	
40:20	948	182	464	93	0.0594	2.04	RQMa
40:20	719	144	464	93	0.0498		Empc Correction
40:47	789	151	852	142	0.0691	0.93	RQ
40:47	789	151	509	97	0.0546		Empc Correction
41:13	1078	229	757	258	0.0772	1.42	M
Signal Totals:							
	53308	10251	31995	6090			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	87150	16610				1.68	RQMa
	85303	16341					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.667 = (87150 * 50.000) / (1138802 * 1.043)
Empc Amount: 3.589 = (85303 * 50.000) / (1138802 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1698299	323020
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1724040	370056

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1711169	346538

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:14	25667	4300	14333	2555	1.02	1.79	RQ
37:14	22216	3960	14333	2555	0.9290		Empc Correction
38:39	9131	2166	5603	1408	0.3745	1.63	Ma
39:17	25451	4949	17229	3550	1.08	1.48	
40:16	8541	1470	4873	1069	0.3409	1.75	
41:21	4129	615	2780	375	0.1756	1.49	
Signal Totals:							
	69468	13160	44818	8957			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	117737	22457				1.63	RQMa
	114286	22117					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.992 = (117737 * 50.000) / (1711169 * 1.150)
Empc Amount: 2.905 = (114286 * 50.000) / (1711169 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 12:06:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1256978	327244
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1352550	303753
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1304764	315498

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	203380	51761	156880	40779	11.8	1.30	
43:49	9178	1738	4773	1096	0.4569	1.92	RQ
43:49	5918	1359	4773	1096	0.3501		Empc Correction
44:06	41377	9329	31320	7350	2.38	1.32	
44:17	6963	1844	6774	1294	0.4499	1.03	RQ
44:17	6963	1844	5615	1487	0.4120		Empc Correction
Signal Totals:							
	257638	64293	198588	50712			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	460645	115191				1.31	RQ
	456226	115005					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 15.087 = (460645 * 50.000) / (1304764 * 1.170)
Empc Amount: 14.942 = (456226 * 50.000) / (1304764 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1709882	450315
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2059224	497677
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1911029	455496
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1690663	357498

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1842699	440246

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:22	0	0	0	0		0.00	
42:33	1756	413	2636	494	0.0923	0.67	RQ
42:33	1756	413	1416	333	0.0667		Empc Correction
42:44	8069	2232	5650	1452	0.2885	1.43	M
43:07	1450	535	1192	282	0.0556	1.22	
43:20	4504	1216	2850	854	0.1546	1.58	RQ
43:20	3534	1058	2850	854	0.1342		Empc Correction
43:32	4562	1436	4047	968	0.1810	1.13	
45:25	0	0	0	0		0.00	
45:34	0	0	0	0		0.00	
45:43	5310	1537	5913	1587	0.2360	0.90	RQM
45:43	5310	1537	4282	1239	0.2017		Empc Correction
Signal Totals:							
	24681	7211	19437	5128			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	47939	13006				1.15	RQM
	44118	12339					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.008 = (47939 * 50.000) / (1842699 * 1.290)
Empc Amount: 0.9277 = (44118 * 50.000) / (1842699 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1189021	220973

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1189021	220973

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:11	0	0	0	0		0.00	
48:26	493664	95340	455211	88076	35.6	1.08	M
Signal Totals:							
	493664	95340	455211	88076			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	948875	183416				1.08	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 35.613 = (948875 * 50.000) / (1189021 * 1.120)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Inject. Date: 17-Dec-2019 09:06:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1506060	307318
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1258164	217968

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1382112	262643

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:19	1216	278	856	172	0.0521	1.42	RQa
48:19	890	178	856	172	0.0439		Empc Correction
48:34	13418	2765	15047	3176	0.7153	0.89	M
Signal Totals:							
	14308	2943	15903	3348			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	30537	6391				0.92	RQMa
	30211	6291					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7674 = (30537 * 50.000) / (1382112 * 1.440)
Empc Amount: 0.7592 = (30211 * 50.000) / (1382112 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

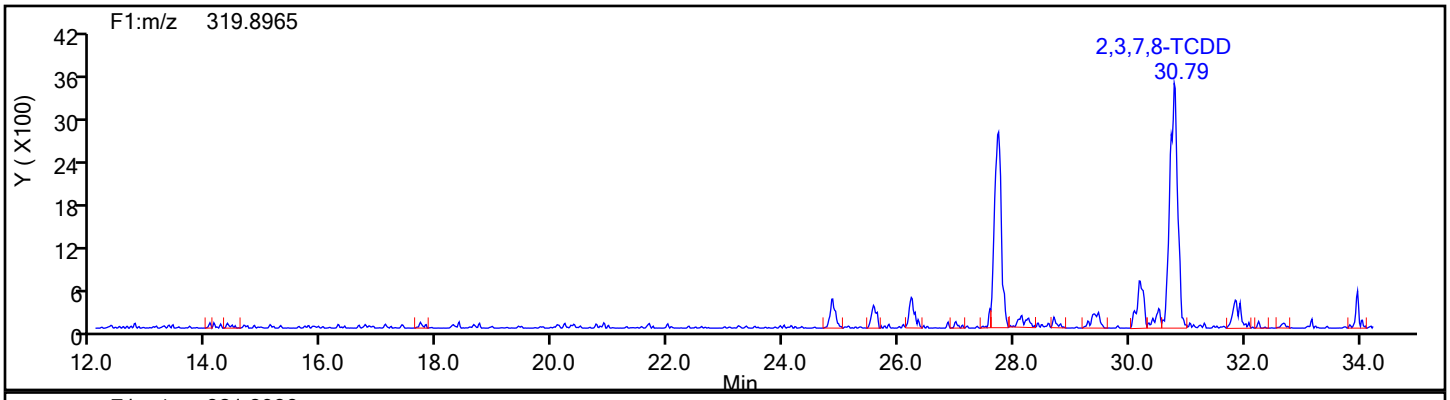
Review Flags
M - Manually Integrated
a - User Assigned ID

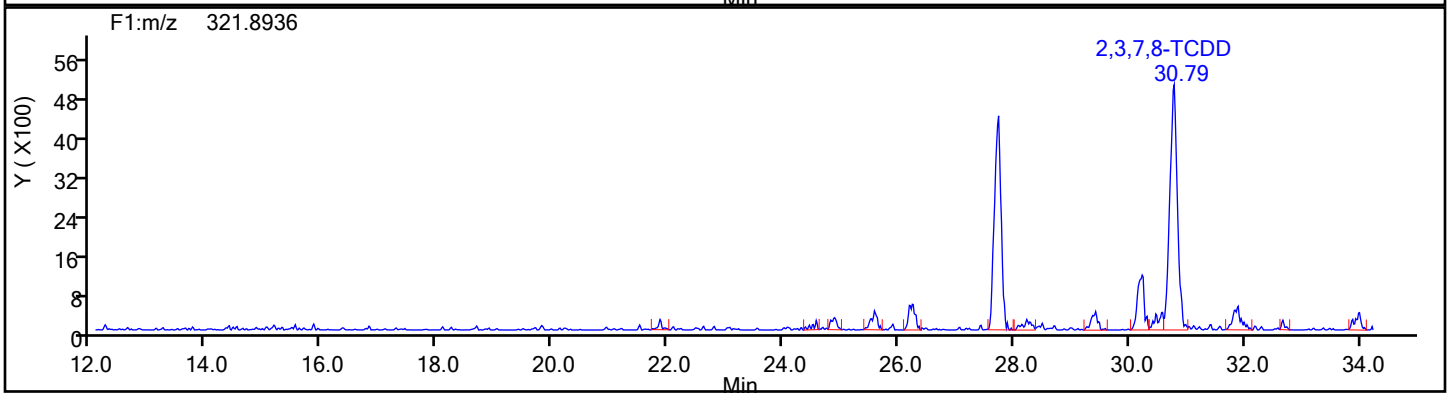
Report Date: 17-Dec-2019 12:06:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

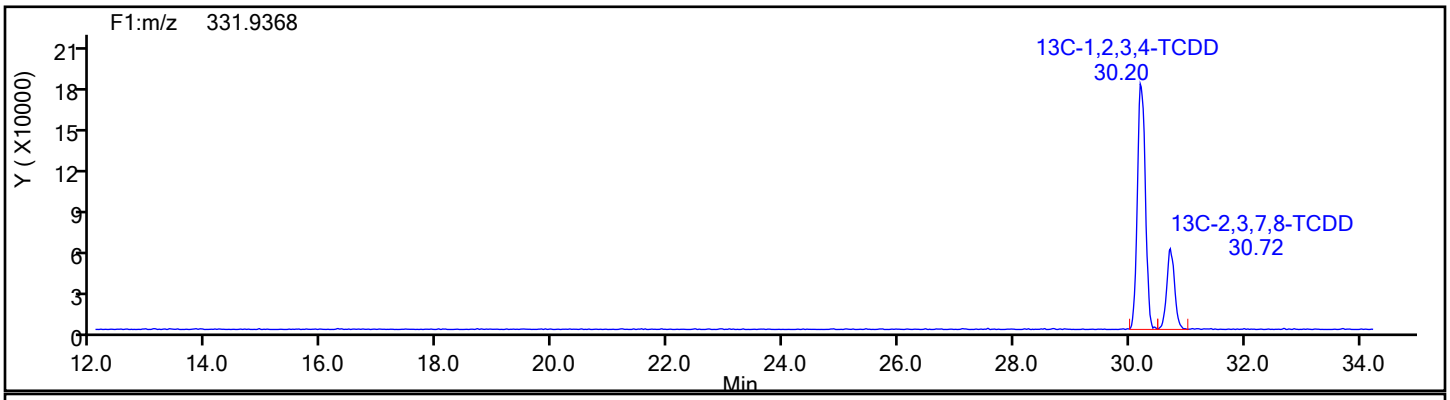
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

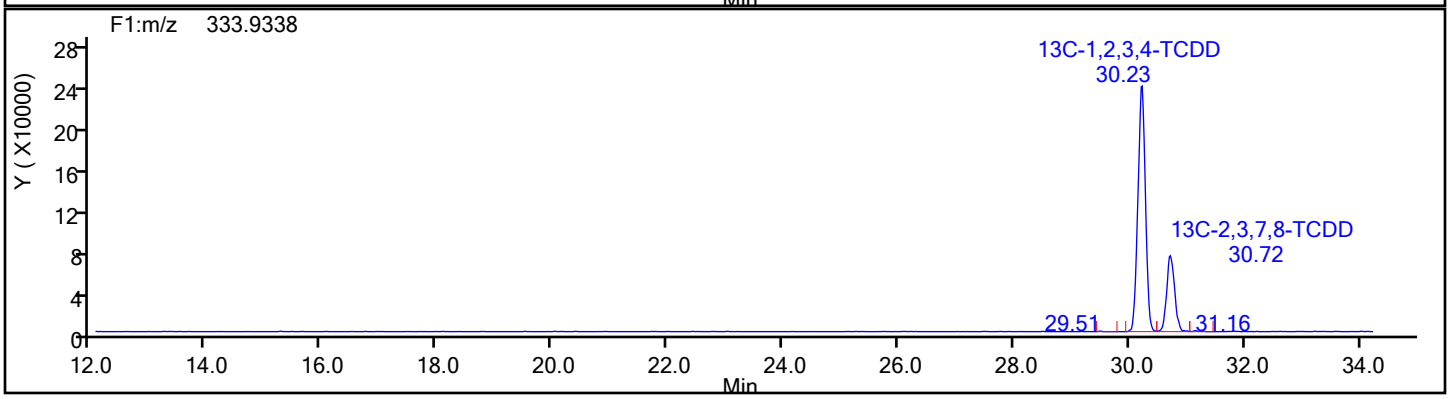
TCDD





TCDD Standards



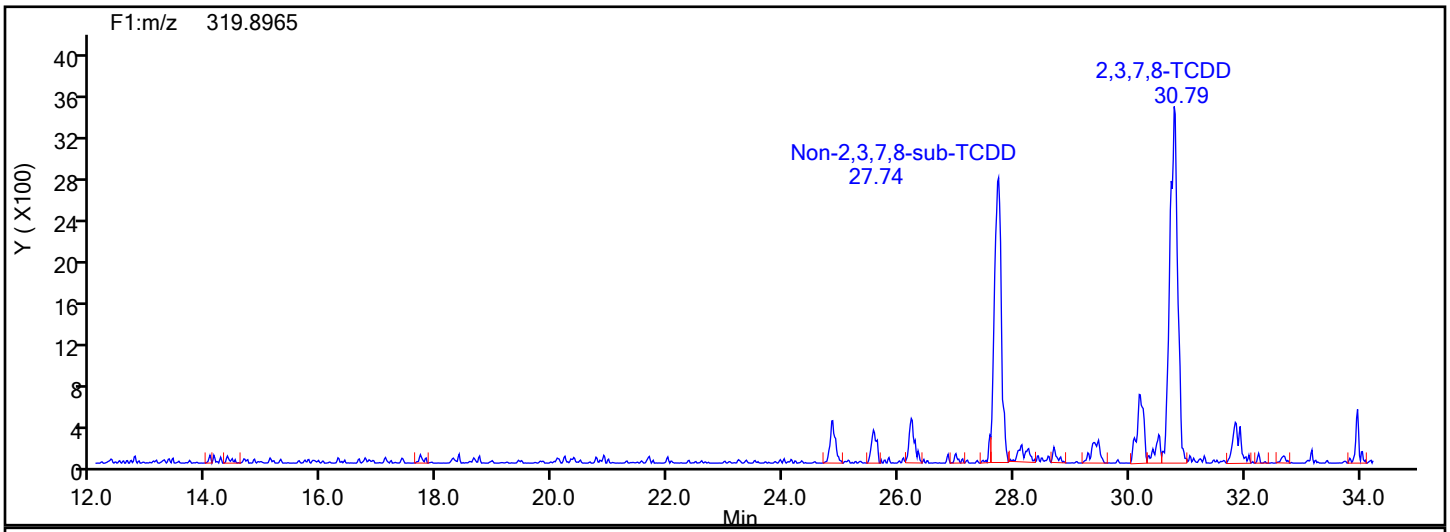


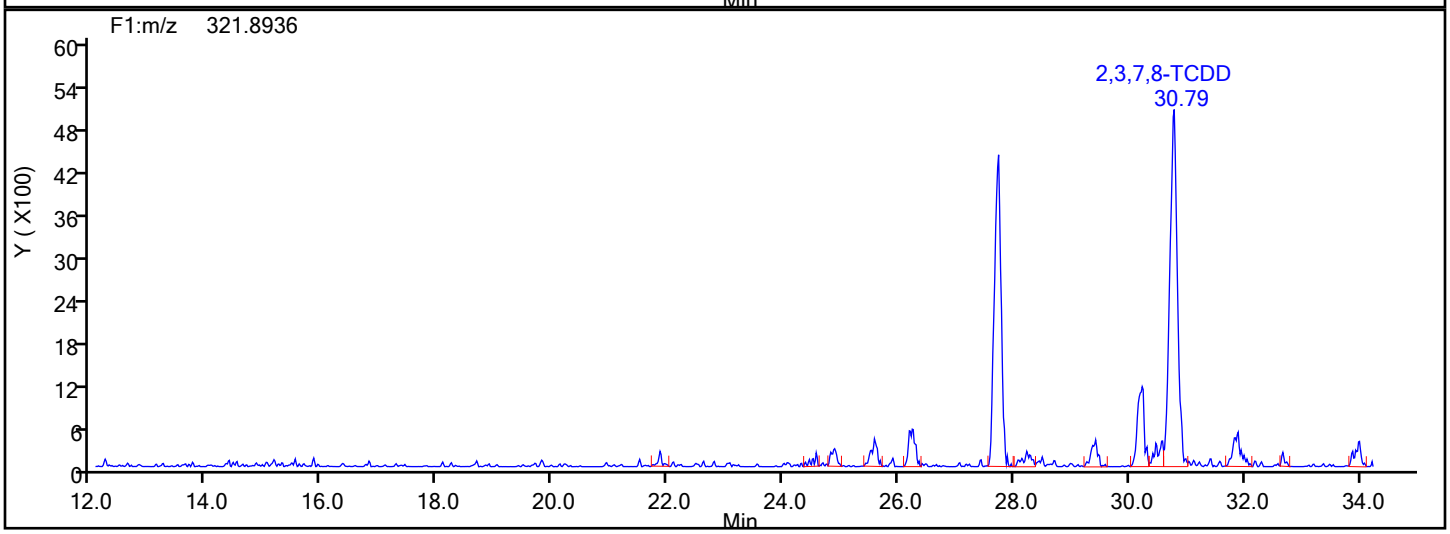
Report Date: 17-Dec-2019 12:06:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

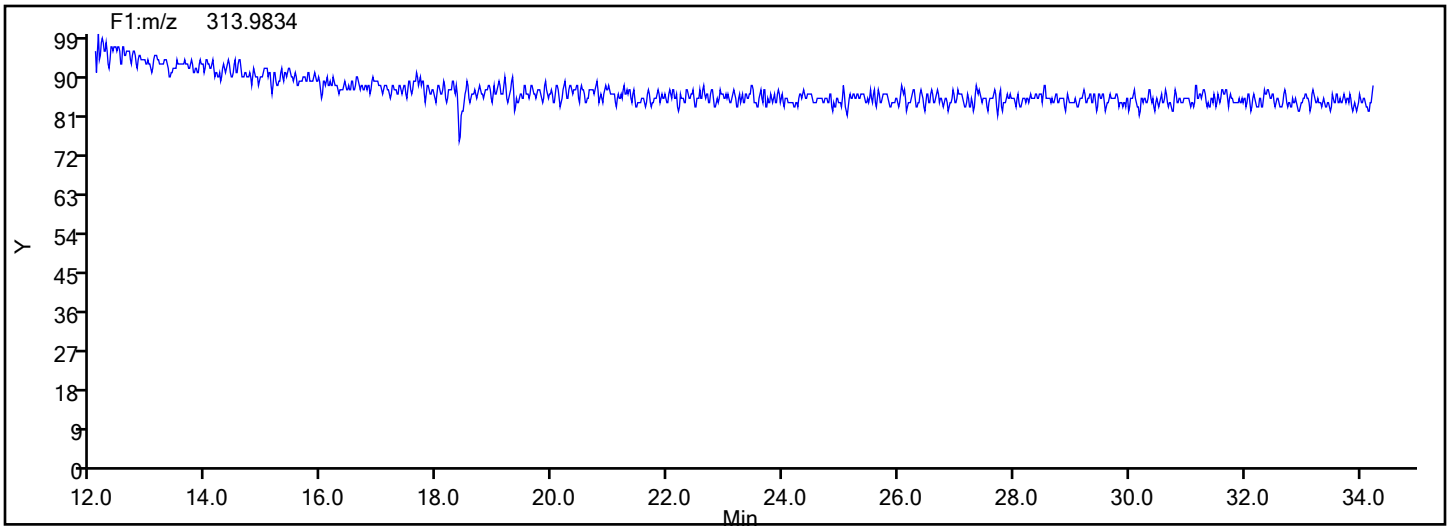
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

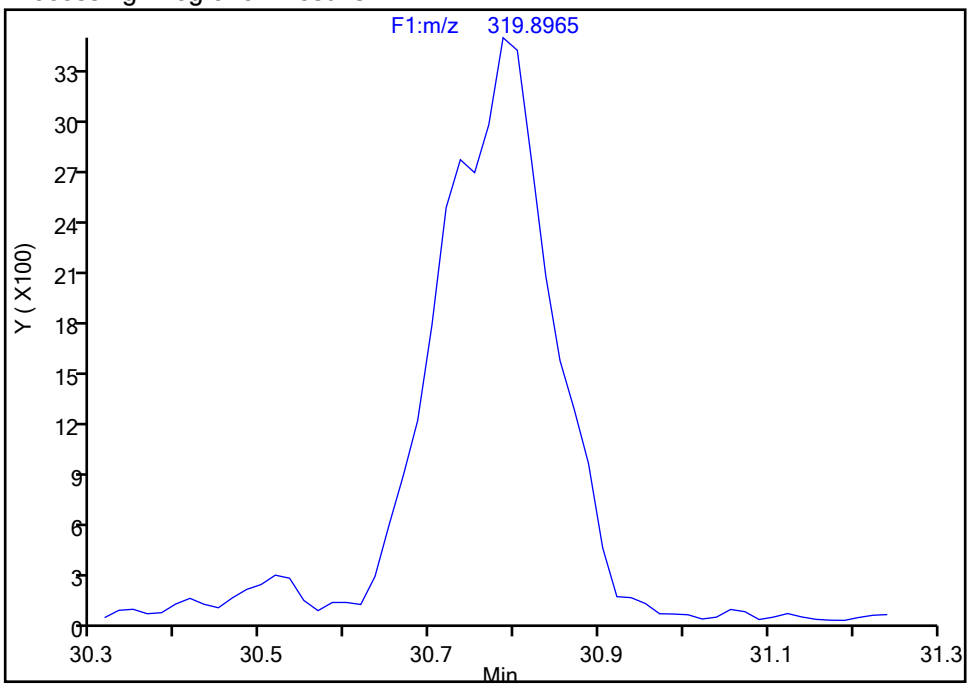
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

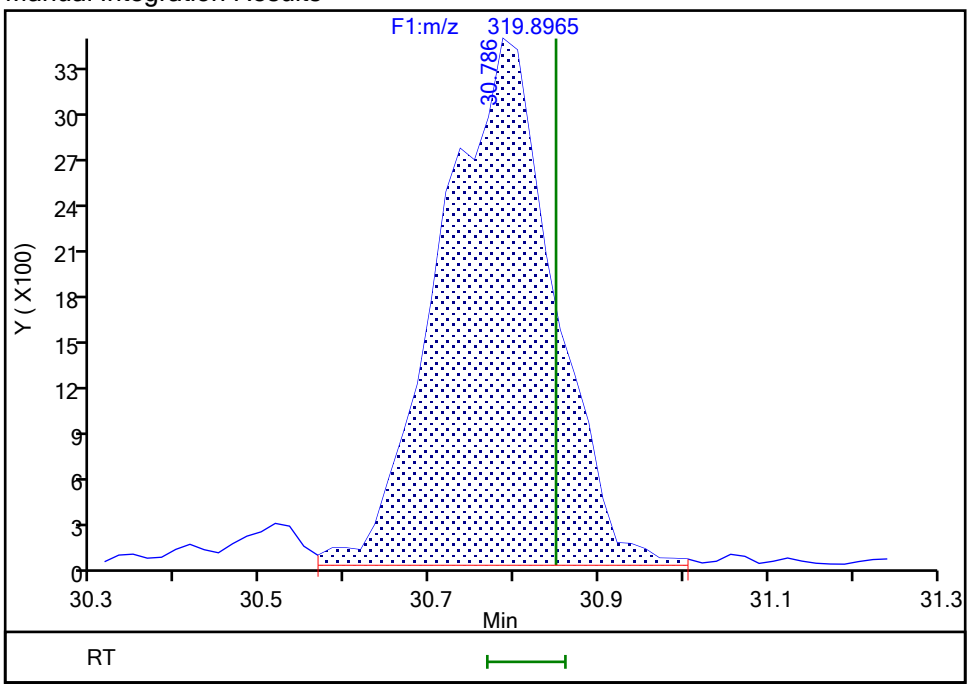
Not Detected
Expected RT: 30.85

Processing Integration Results



Manual Integration Results

RT: 30.79
Area: 32101
Amount: 2.581338
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 11:58:21
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

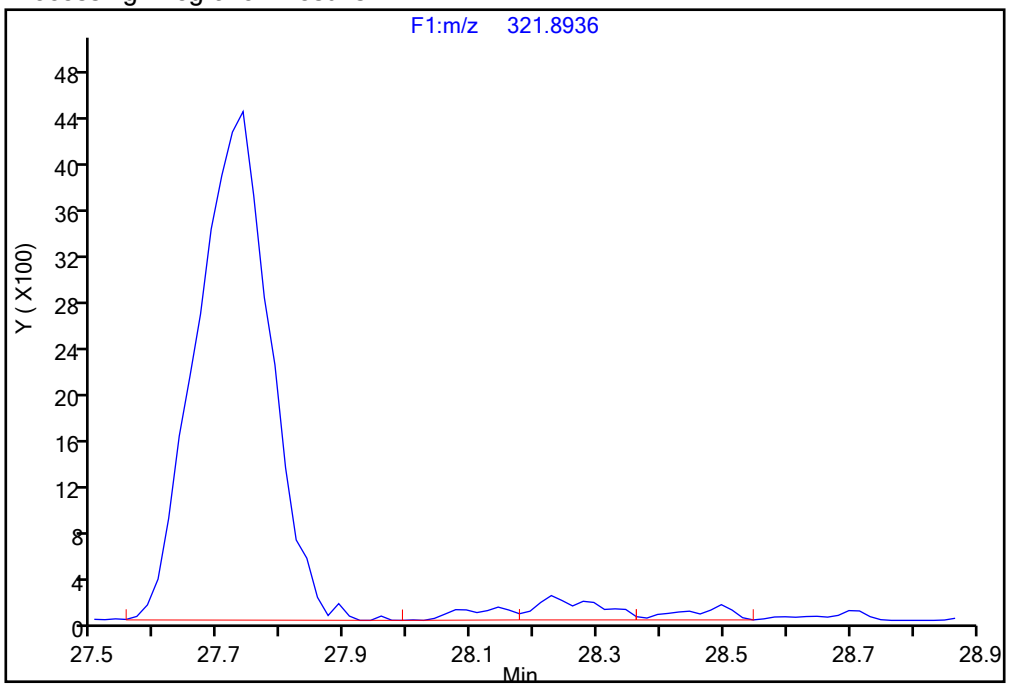
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

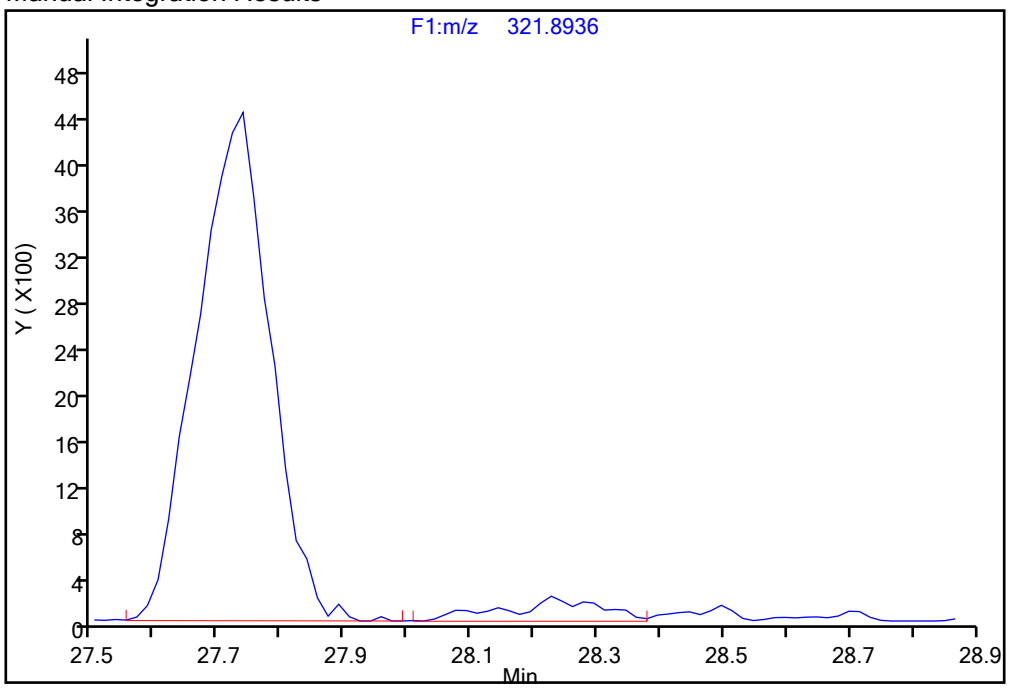
Processing Integration Results

RT = 28.227 Area = 1360



Manual Integration Results

RT = 28.227 Area = 2120 M



Reviewer: davidsonm, 17-Dec-2019 11:59:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

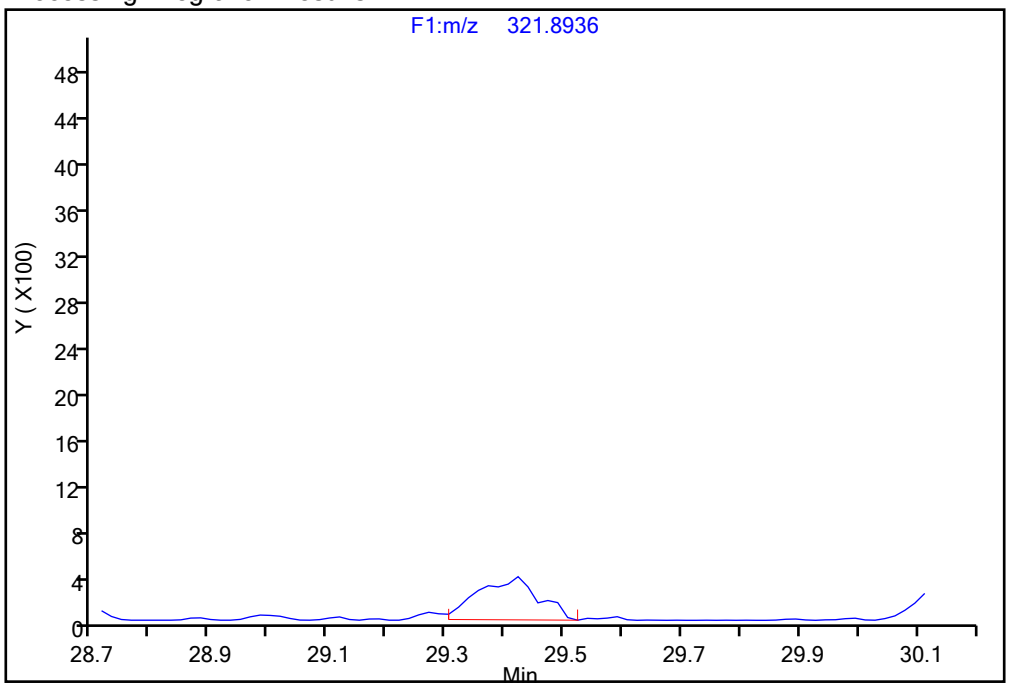
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

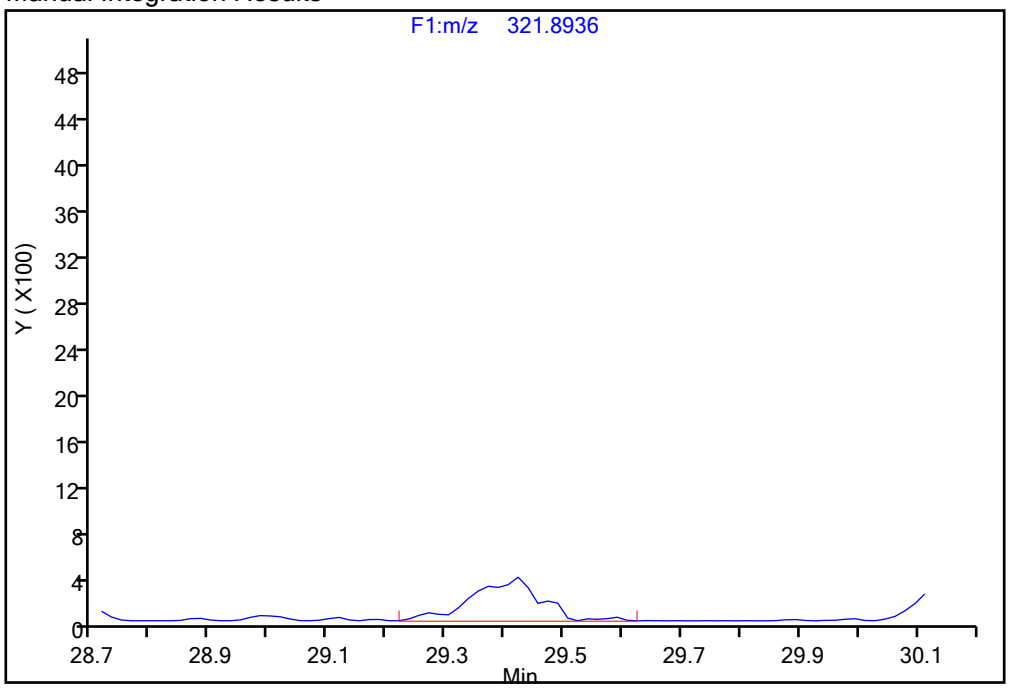
Processing Integration Results

RT = 29.422 Area = 2617



Manual Integration Results

RT = 29.422 Area = 3045 M



Reviewer: davidsonm, 17-Dec-2019 11:59:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

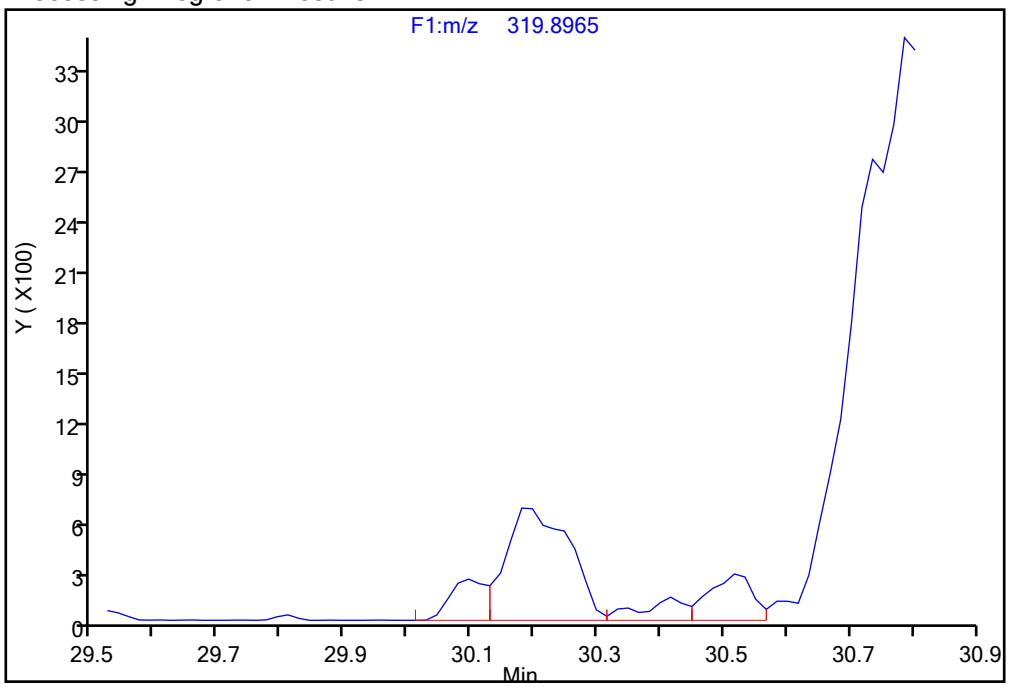
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

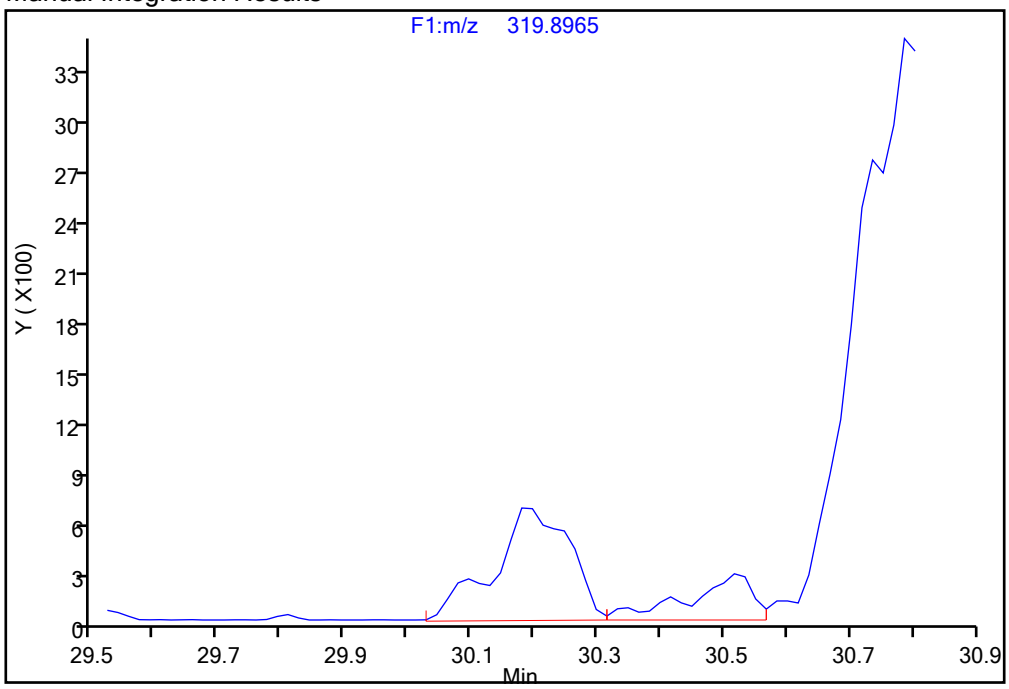
Processing Integration Results

RT = 30.180 Area = 4561



Manual Integration Results

RT = 30.180 Area = 5561 M



Reviewer: davidsonm, 17-Dec-2019 12:00:12

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

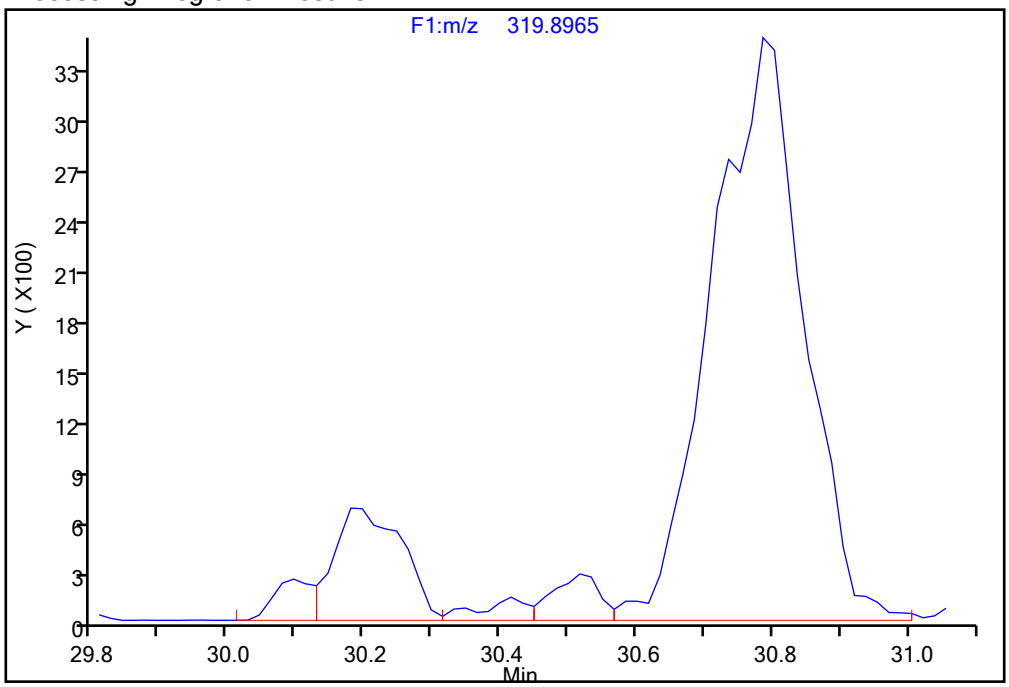
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

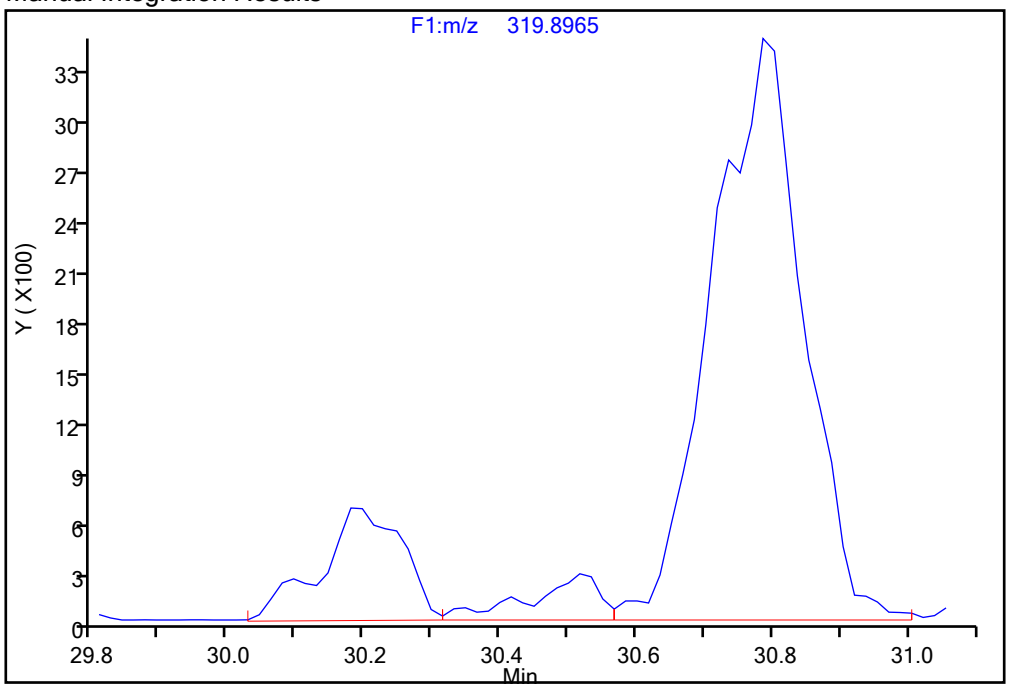
Processing Integration Results

RT = 30.517 Area = 1281



Manual Integration Results

RT = 30.517 Area = 1915 M



Reviewer: davidsonm, 17-Dec-2019 12:00:12

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

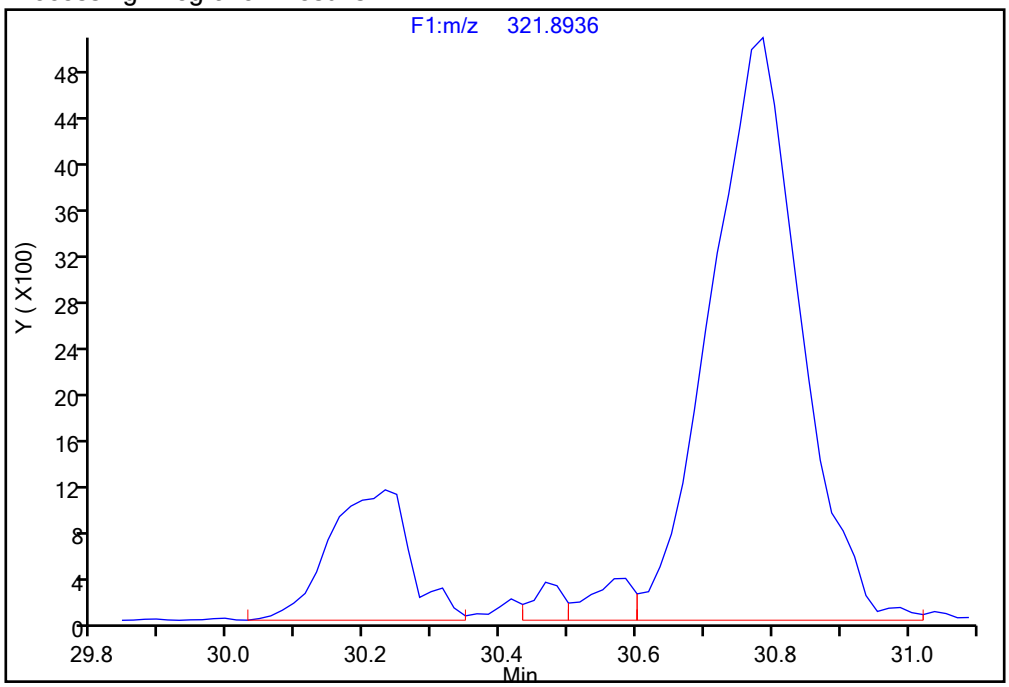
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

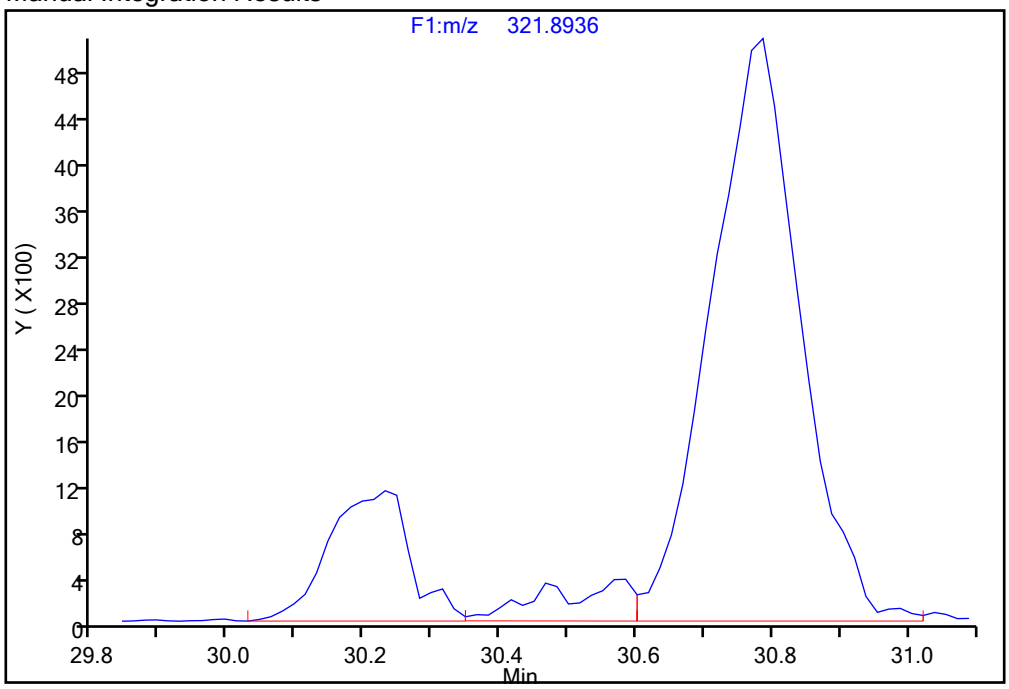
Processing Integration Results

RT = 30.584 Area = 1556



Manual Integration Results

RT = 30.584 Area = 2977 M



Reviewer: davidsonm, 17-Dec-2019 11:59:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

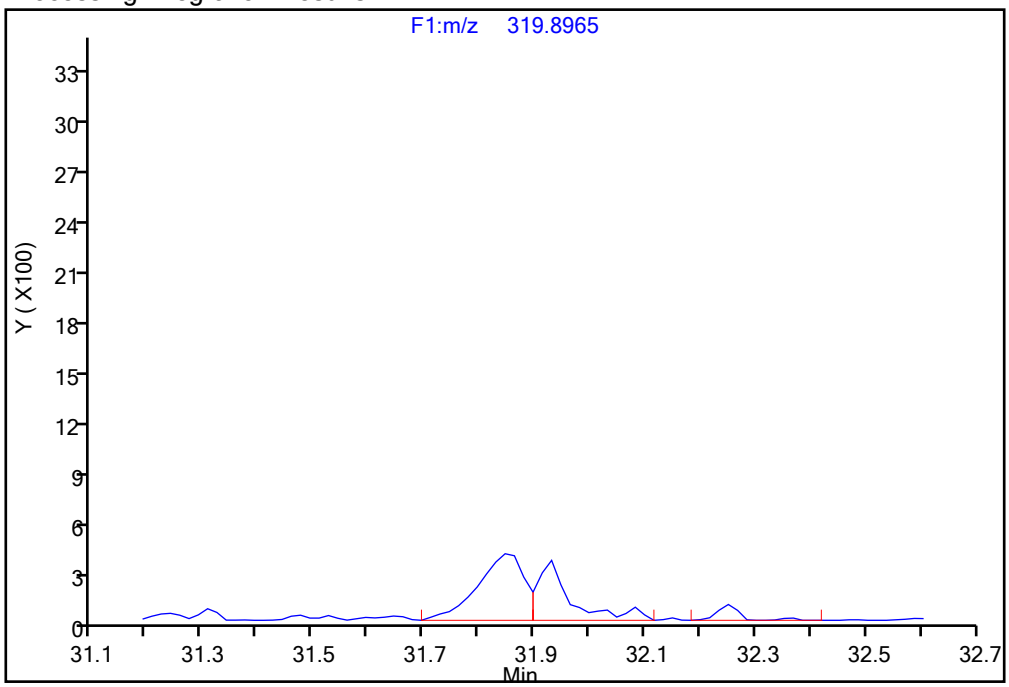
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

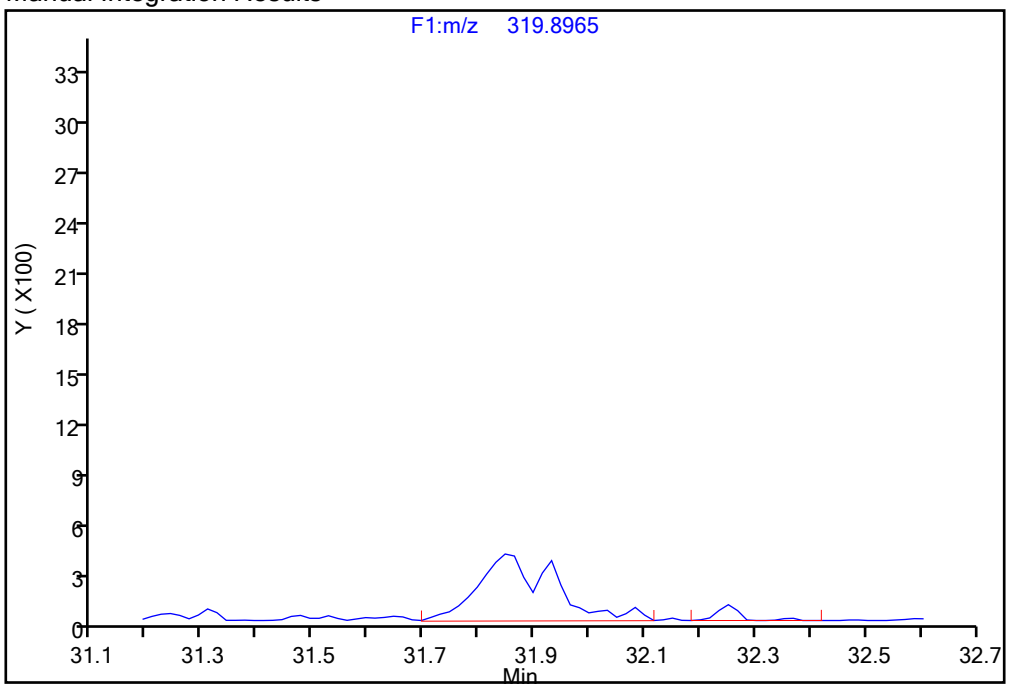
Processing Integration Results

RT = 31.847 Area = 2267



Manual Integration Results

RT = 31.847 Area = 3760 M



Reviewer: davidsonm, 17-Dec-2019 12:00:12

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

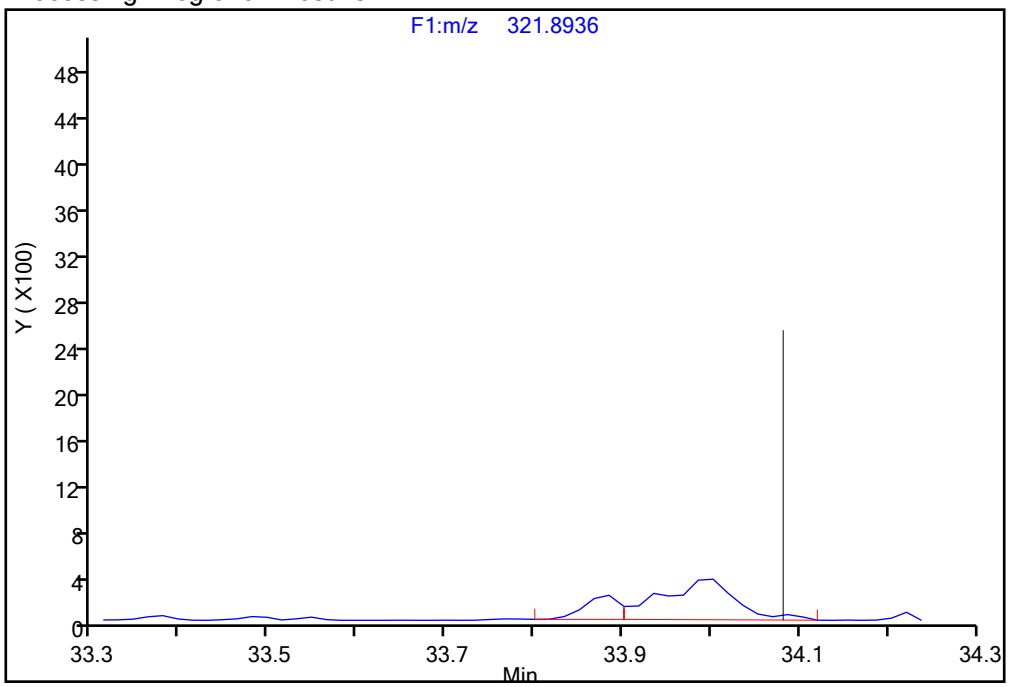
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

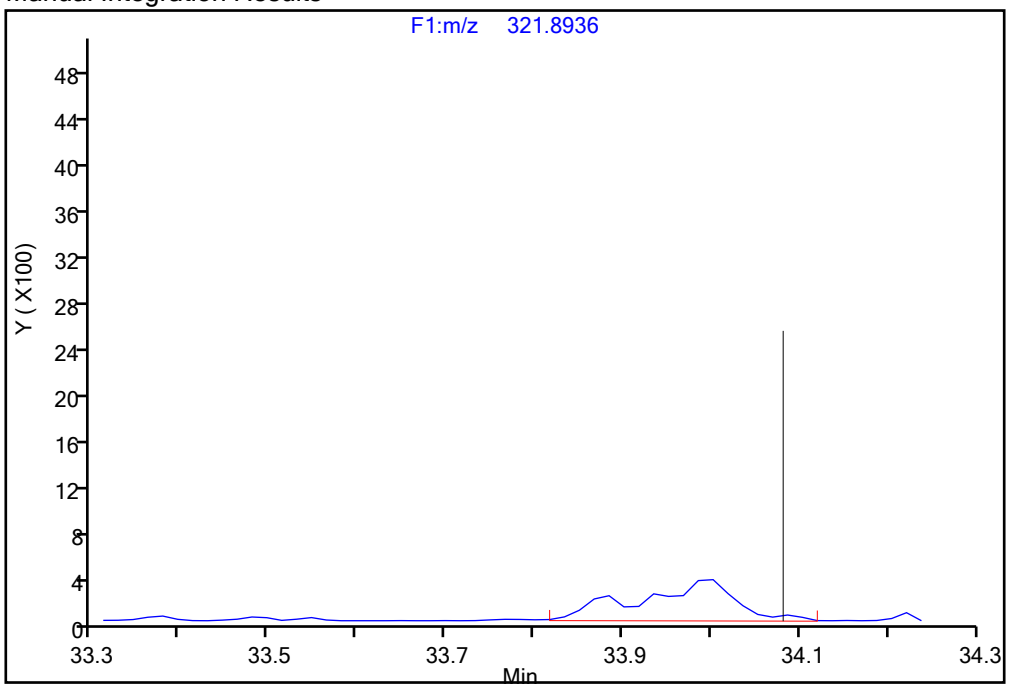
Processing Integration Results

RT = 34.002 Area = 2023



Manual Integration Results

RT = 34.002 Area = 2704 M



Reviewer: davidsonm, 17-Dec-2019 11:59:53

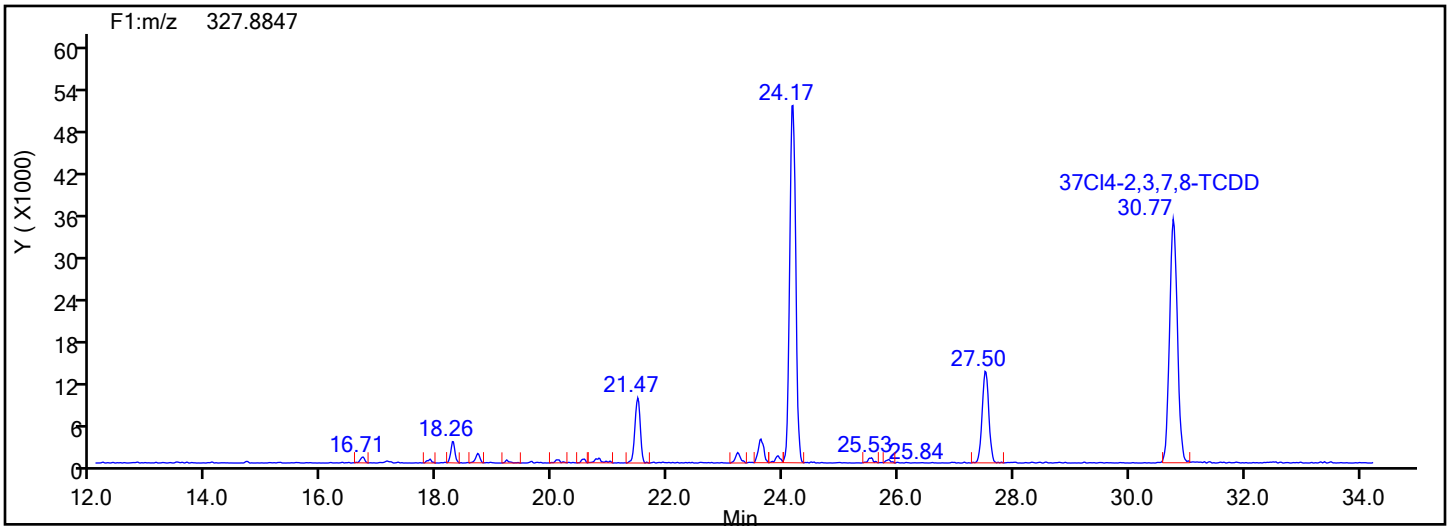
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

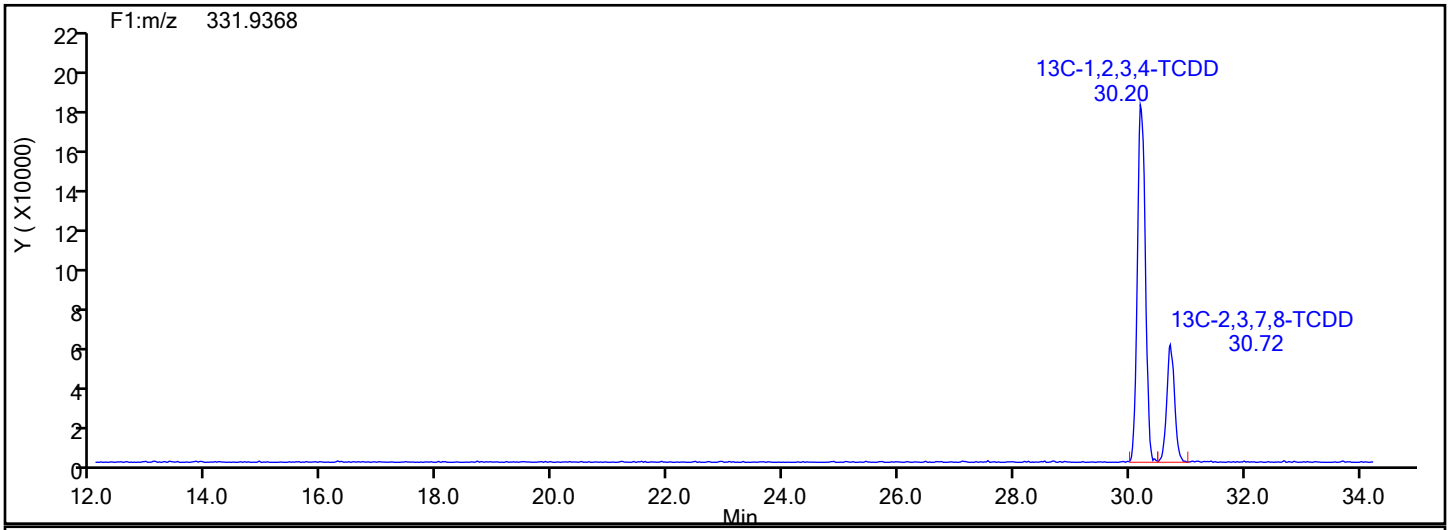
Eurofins TestAmerica, Knoxville

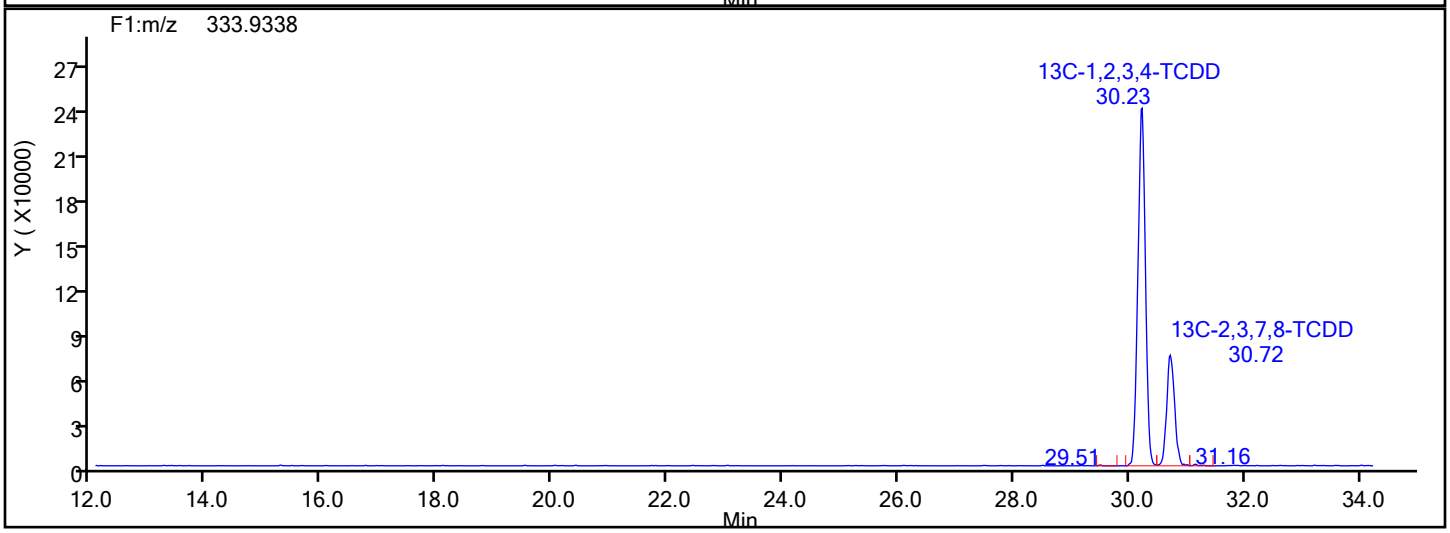
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



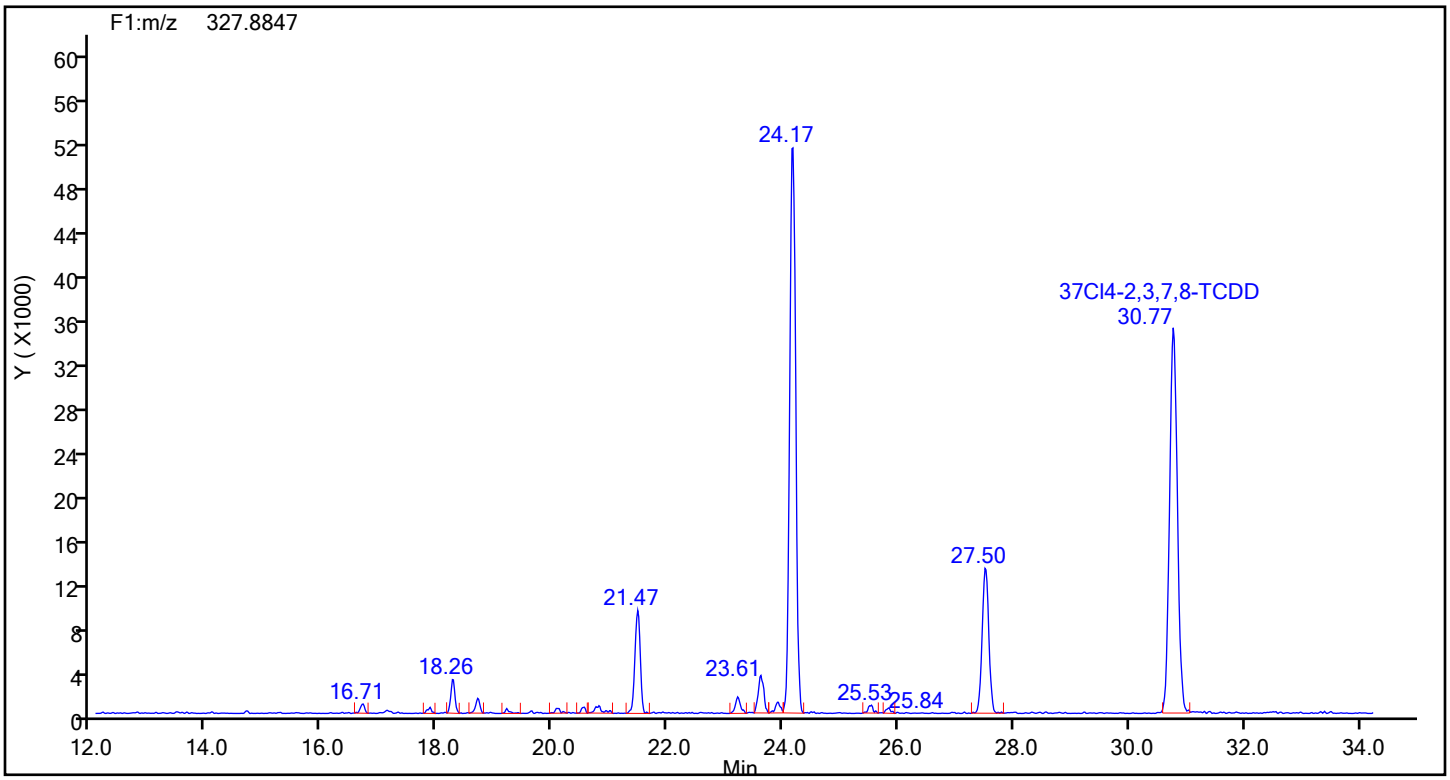


Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

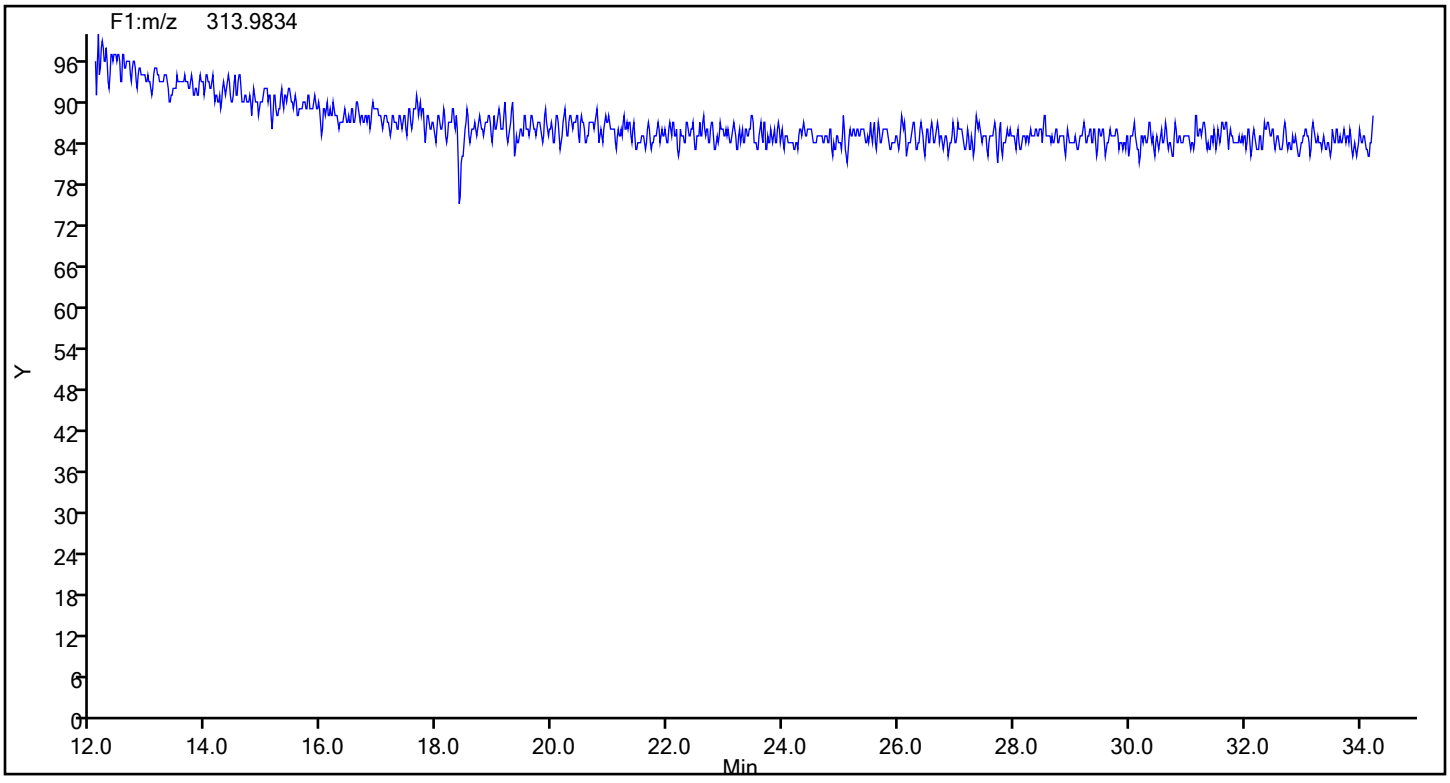
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

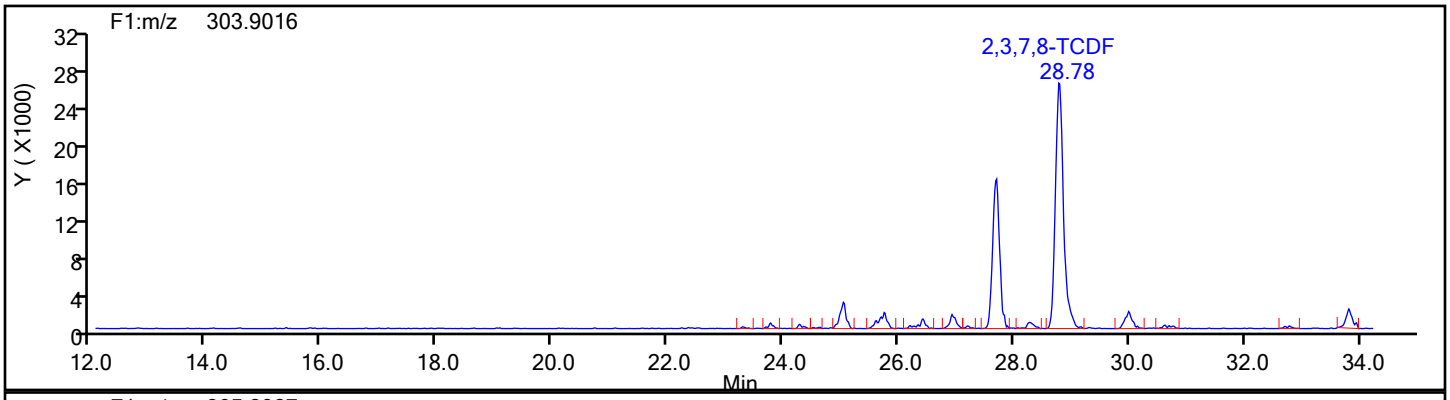


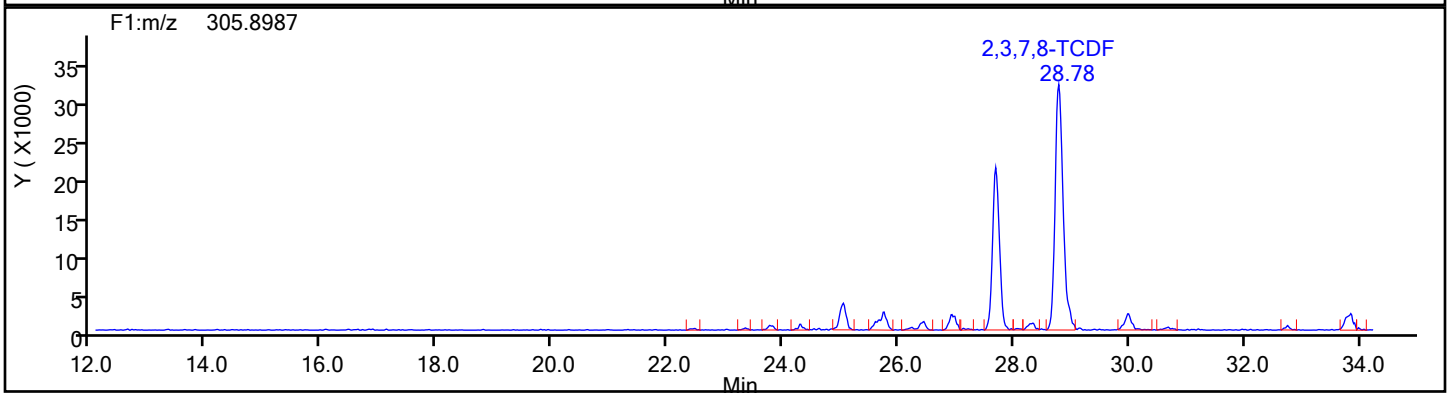
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

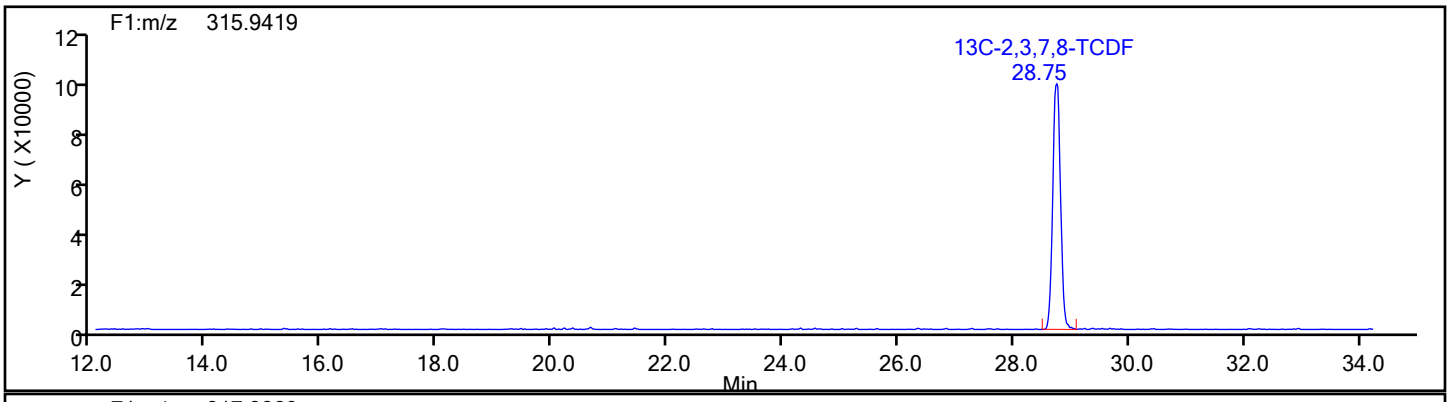
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

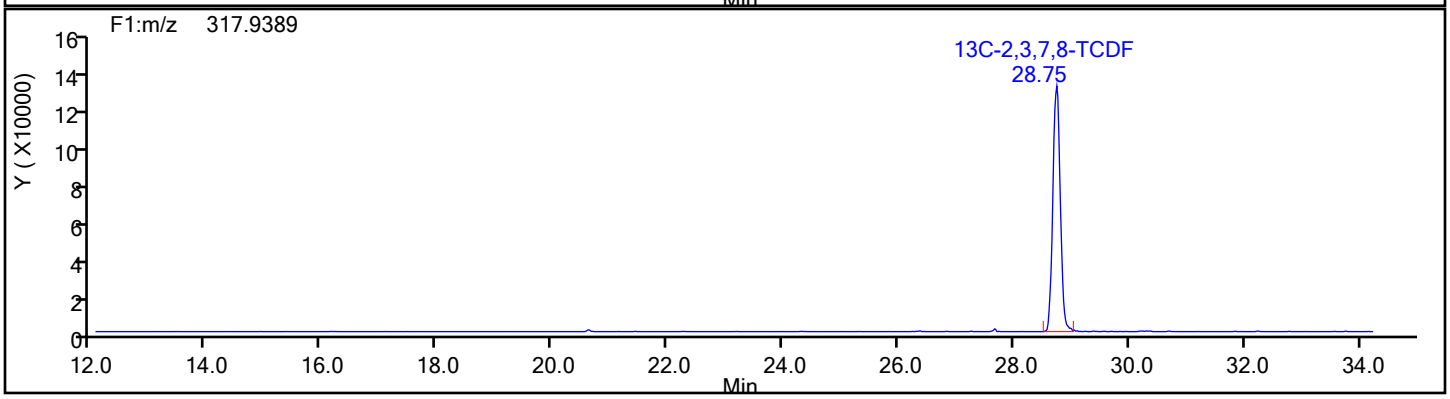
TCDF





TCDF Standards



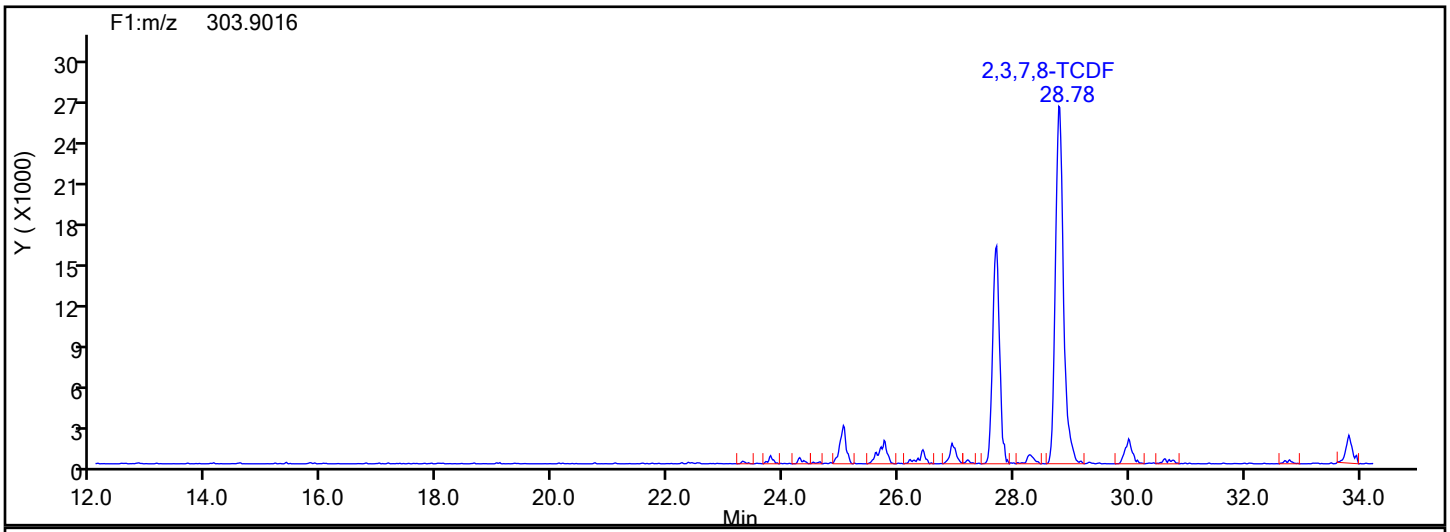


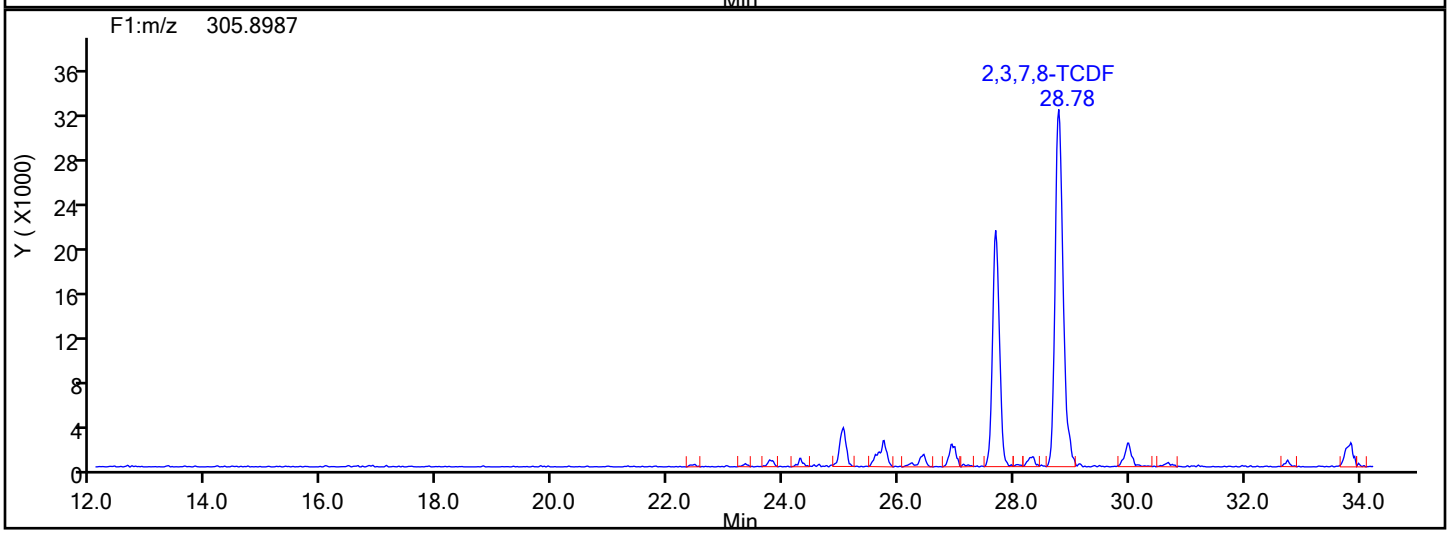
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

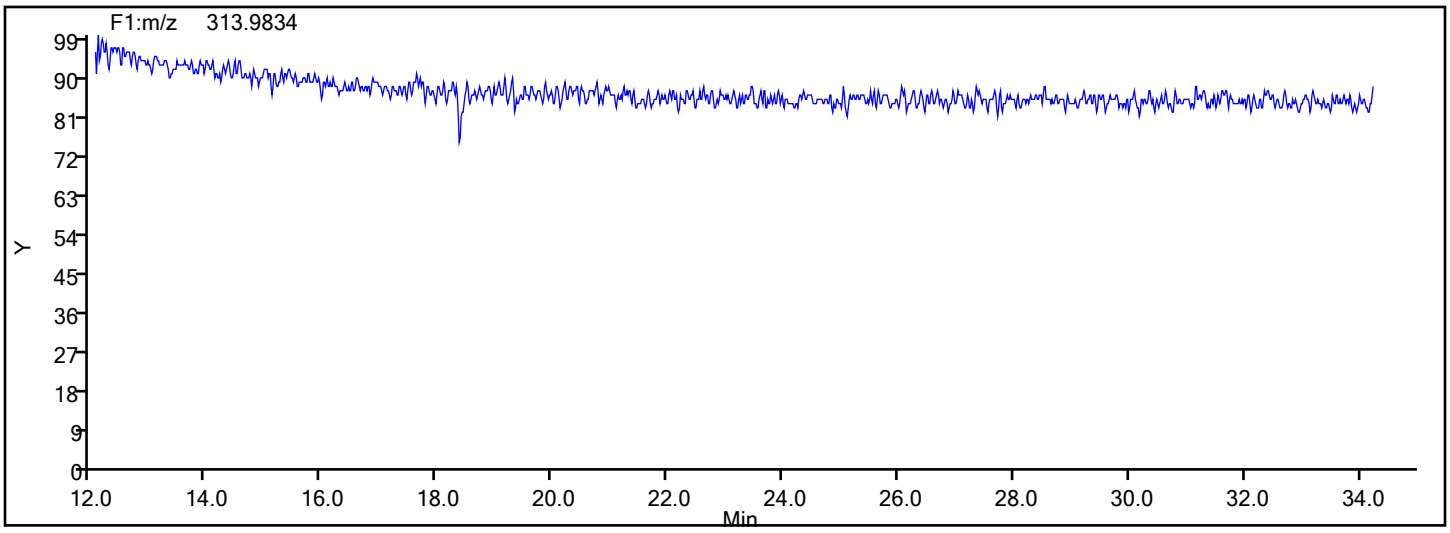
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

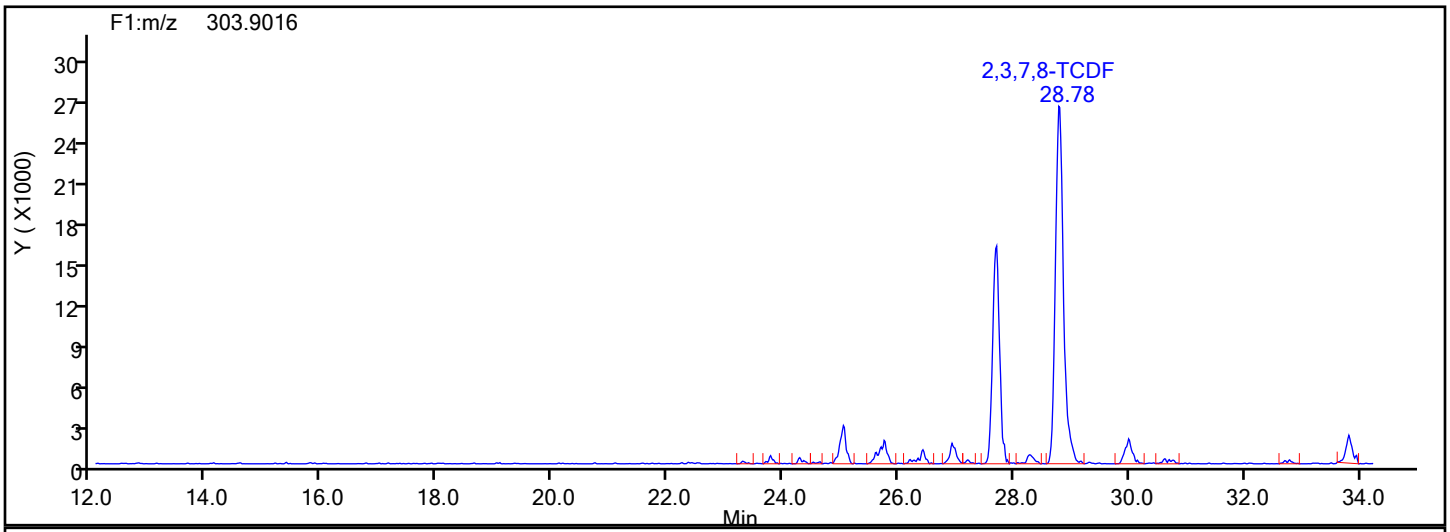


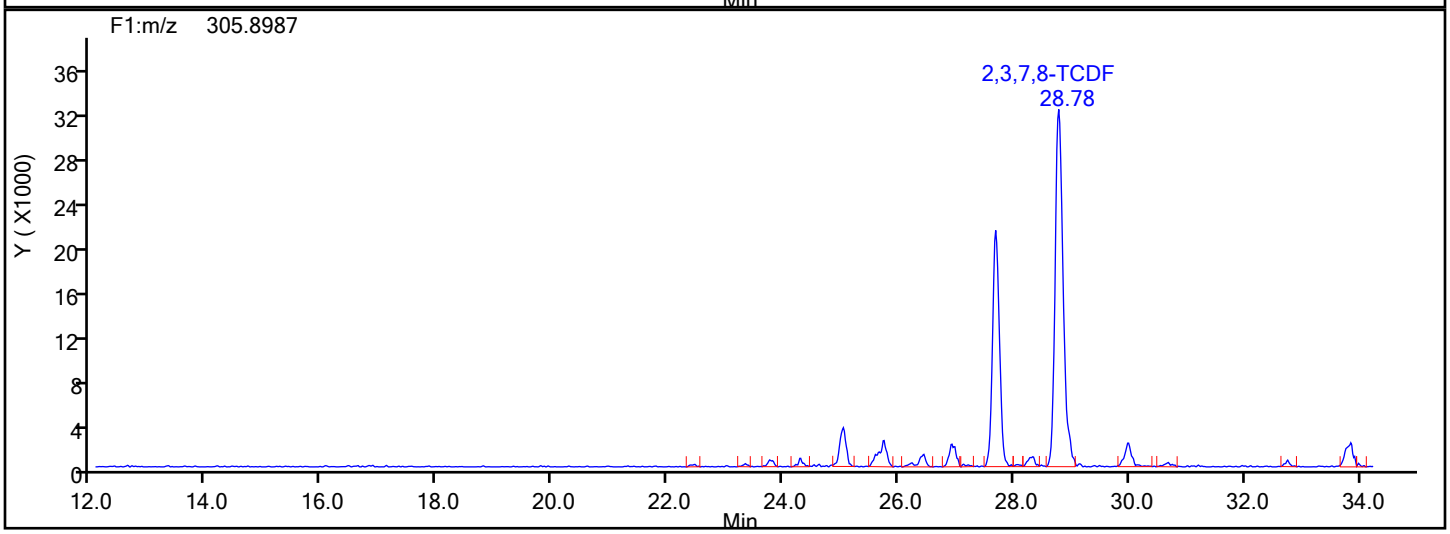
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

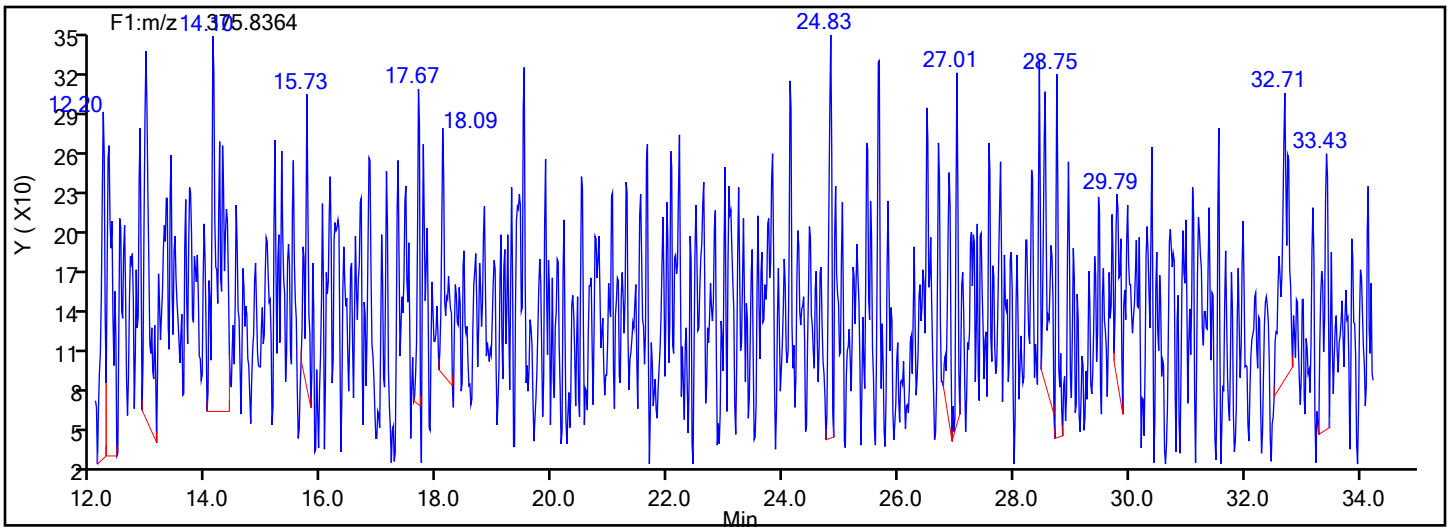
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

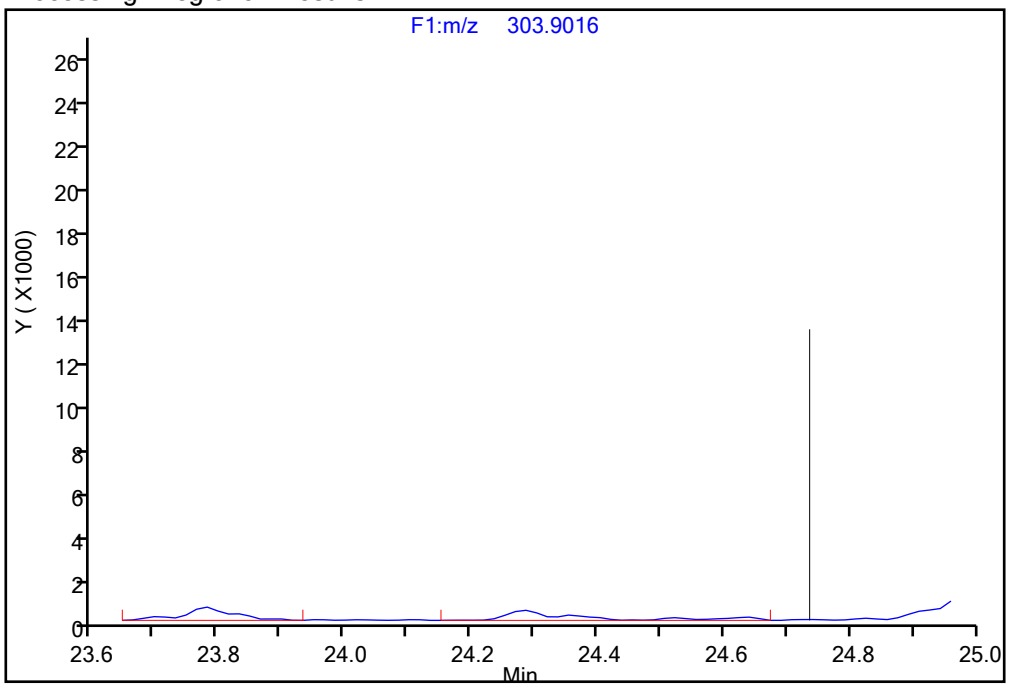
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

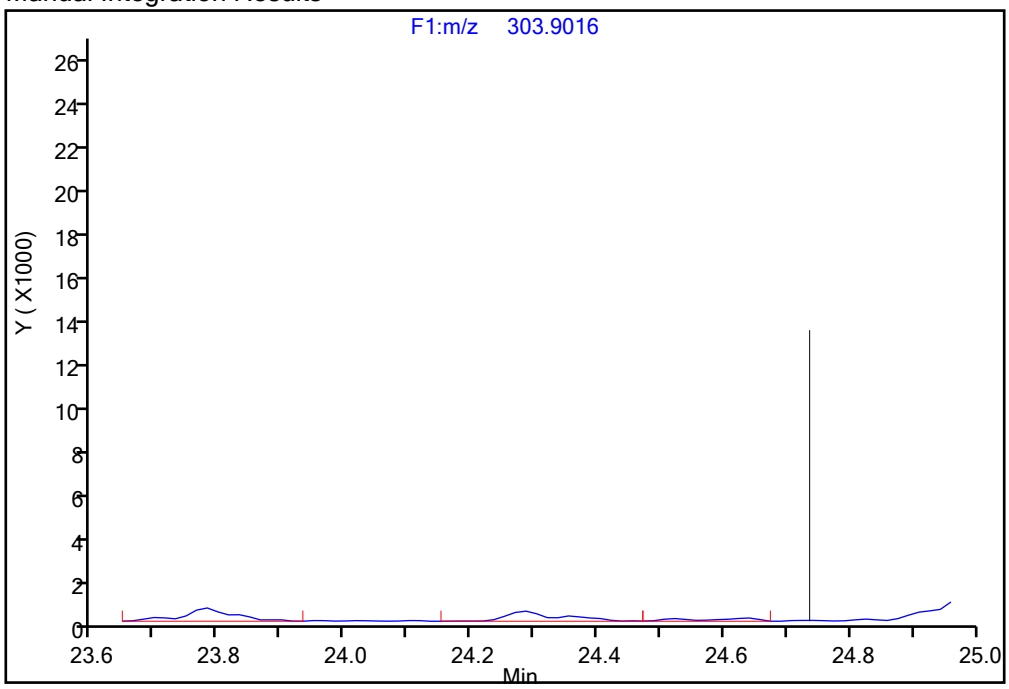
Processing Integration Results

RT = 24.287 Area = 3601



Manual Integration Results

RT = 24.287 Area = 2665 M



Reviewer: davidsonm, 17-Dec-2019 12:01:35

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

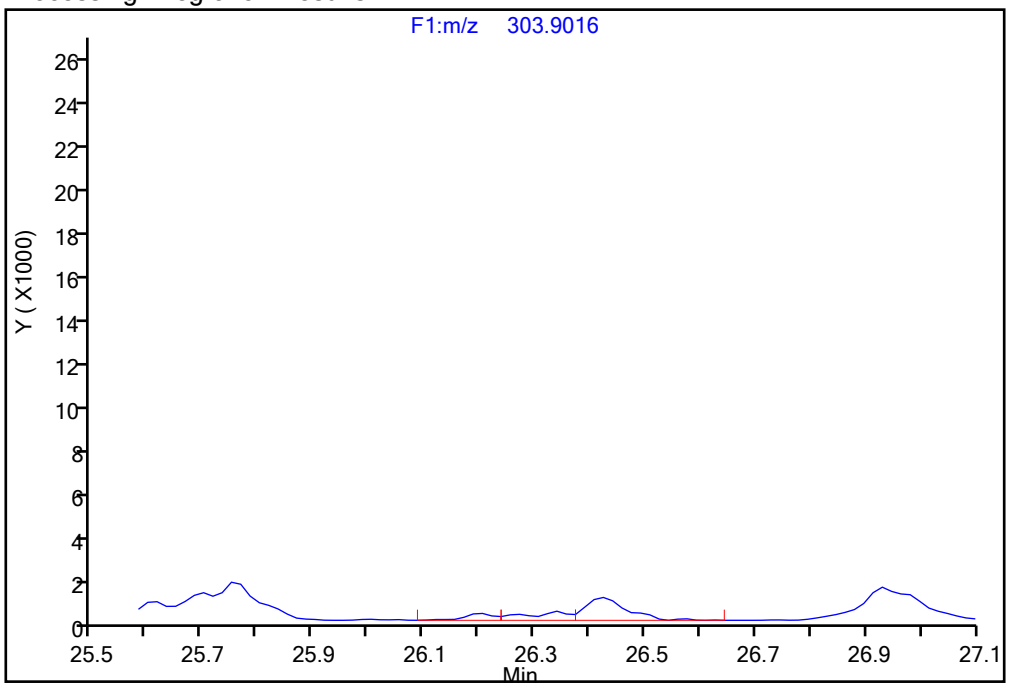
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

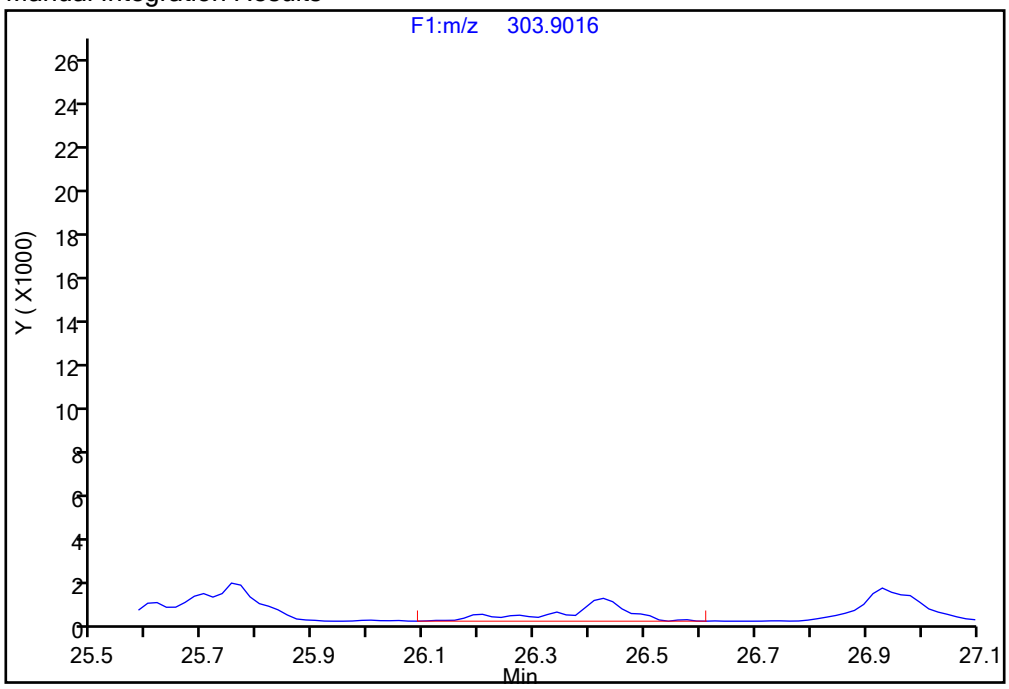
Processing Integration Results

RT = 26.425 Area = 5322



Manual Integration Results

RT = 26.425 Area = 8594 M



Reviewer: davidsonm, 17-Dec-2019 12:01:35

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

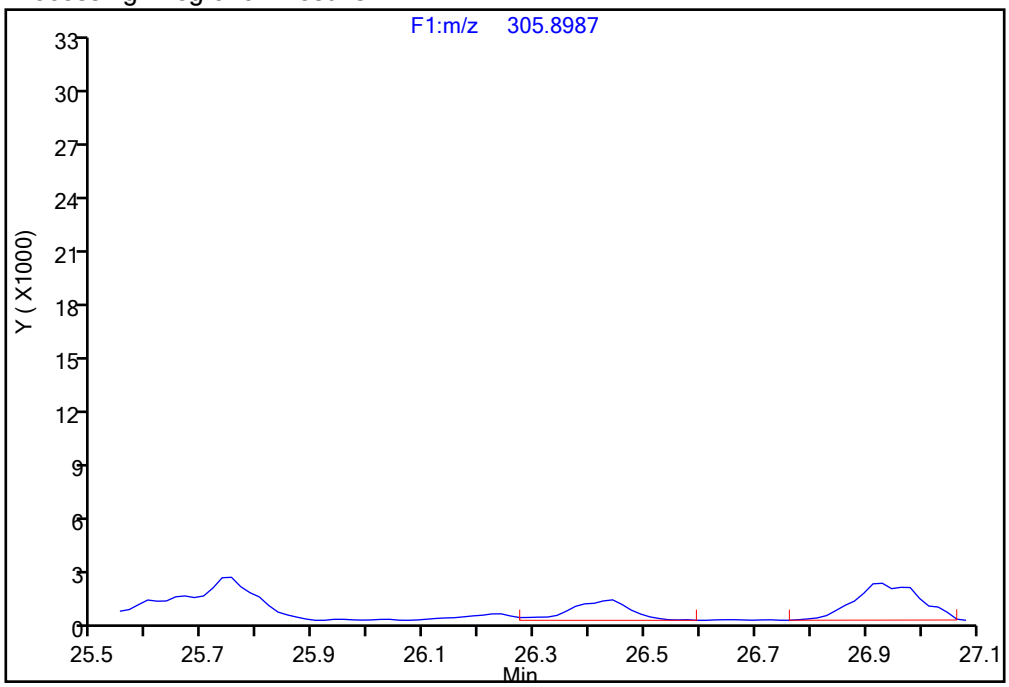
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

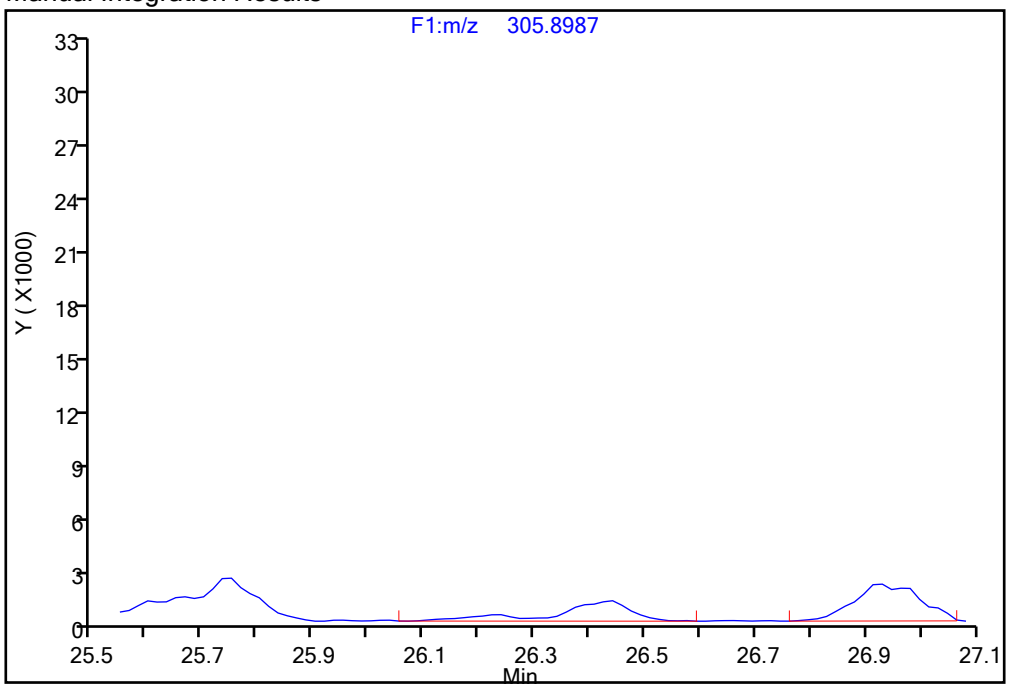
Processing Integration Results

RT = 26.442 Area = 8435



Manual Integration Results

RT = 26.442 Area = 10558 M



Reviewer: davidsonm, 17-Dec-2019 12:01:16

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

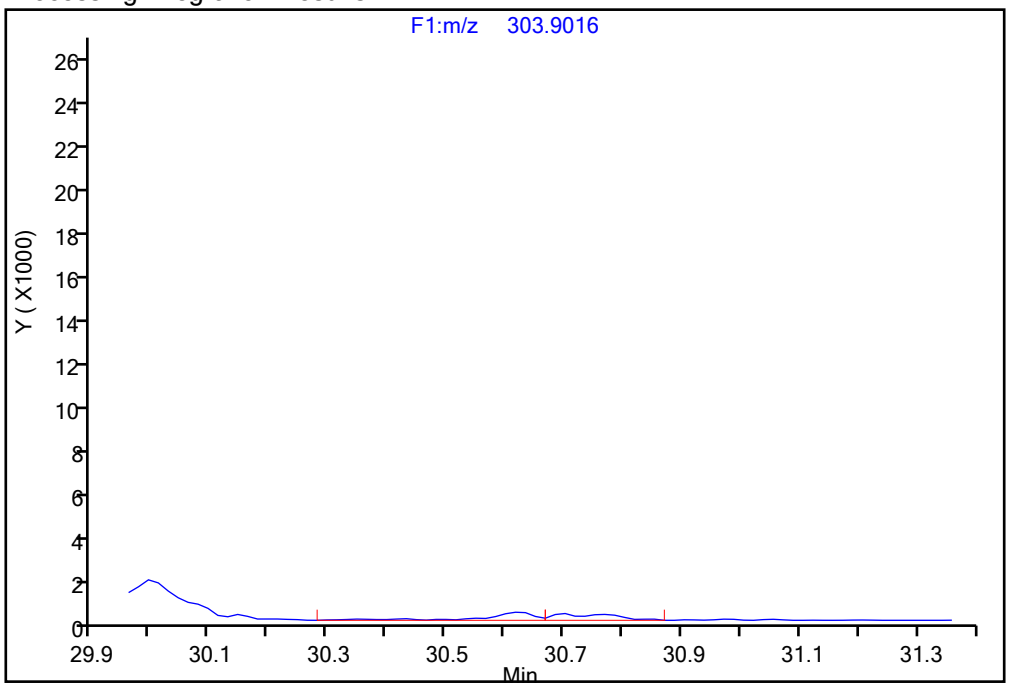
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

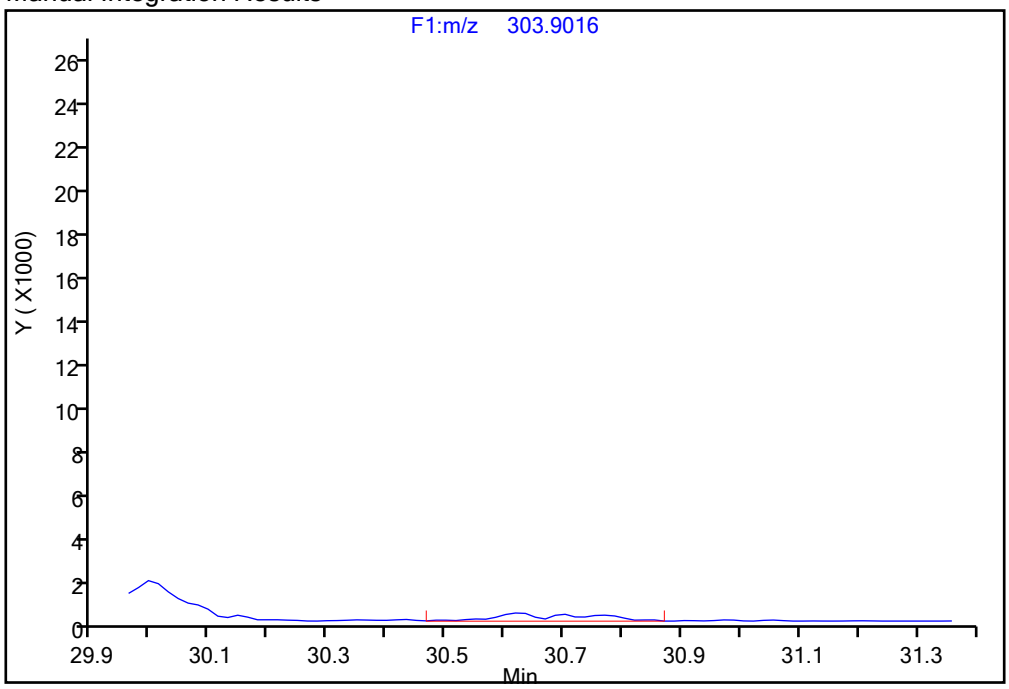
Processing Integration Results

RT = 30.618 Area = 2197



Manual Integration Results

RT = 30.618 Area = 3915 M



Reviewer: davidsonm, 17-Dec-2019 12:01:35

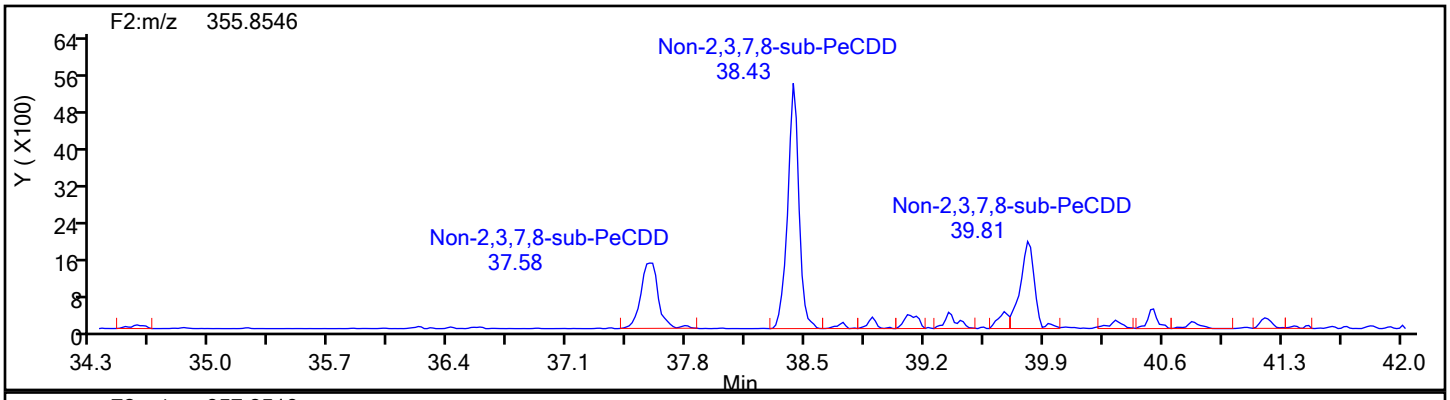
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

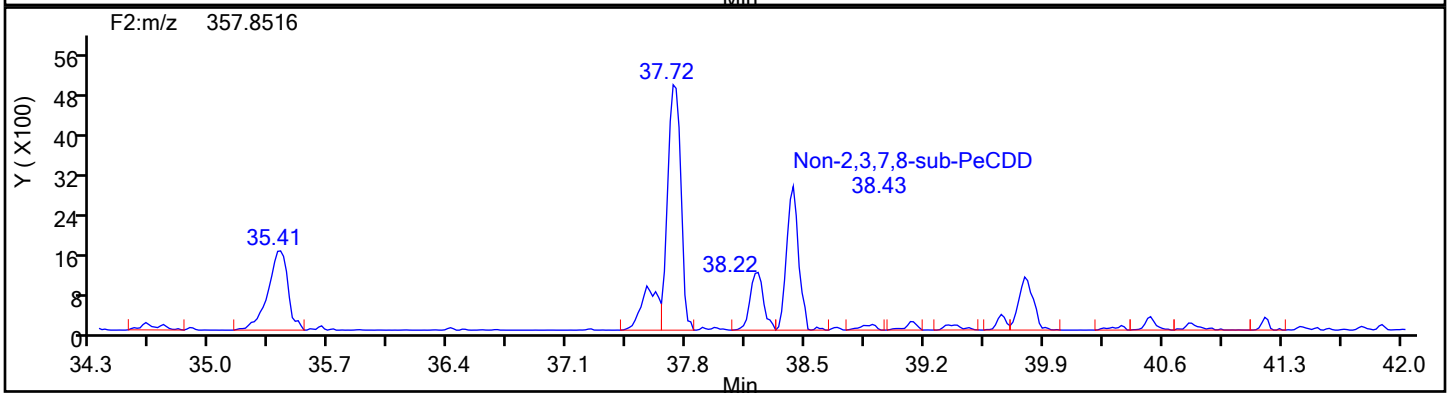
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

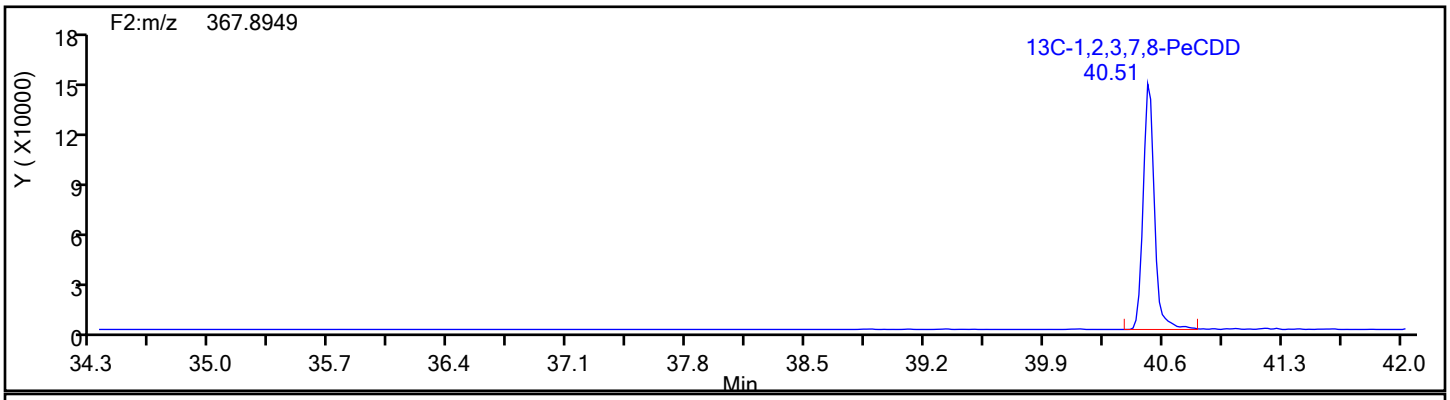
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

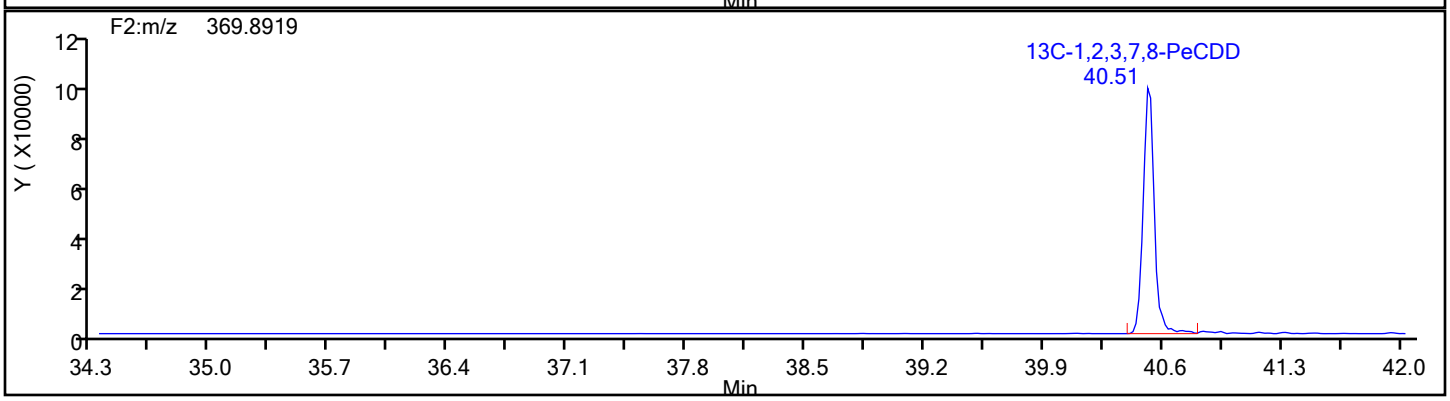
PeCDD





PeCDD Standards



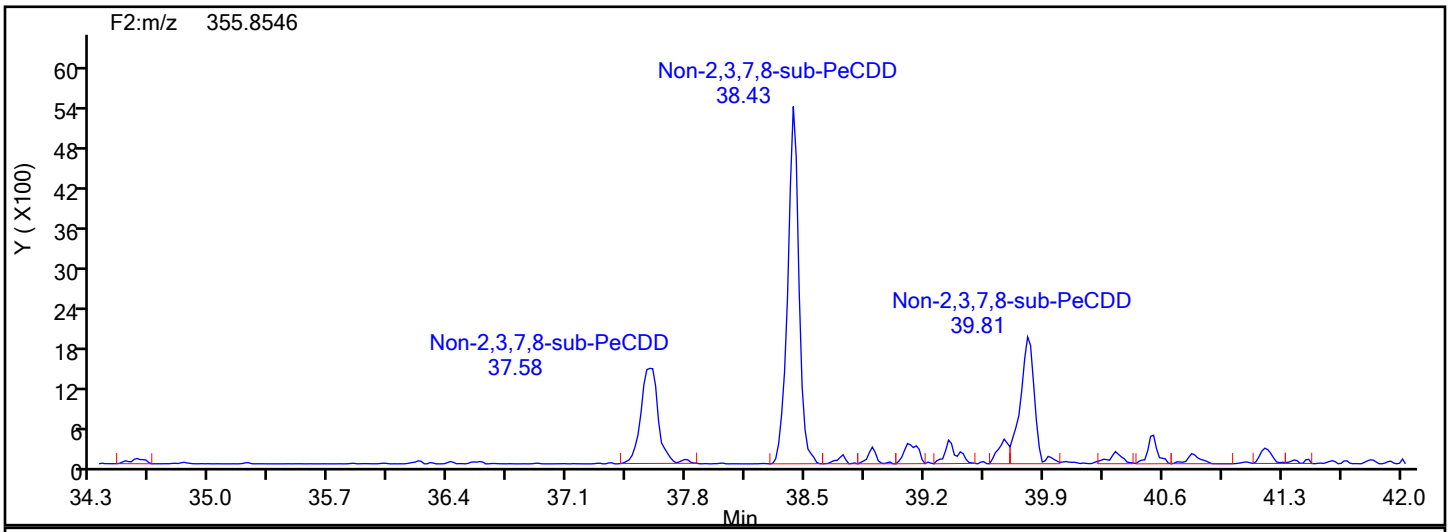


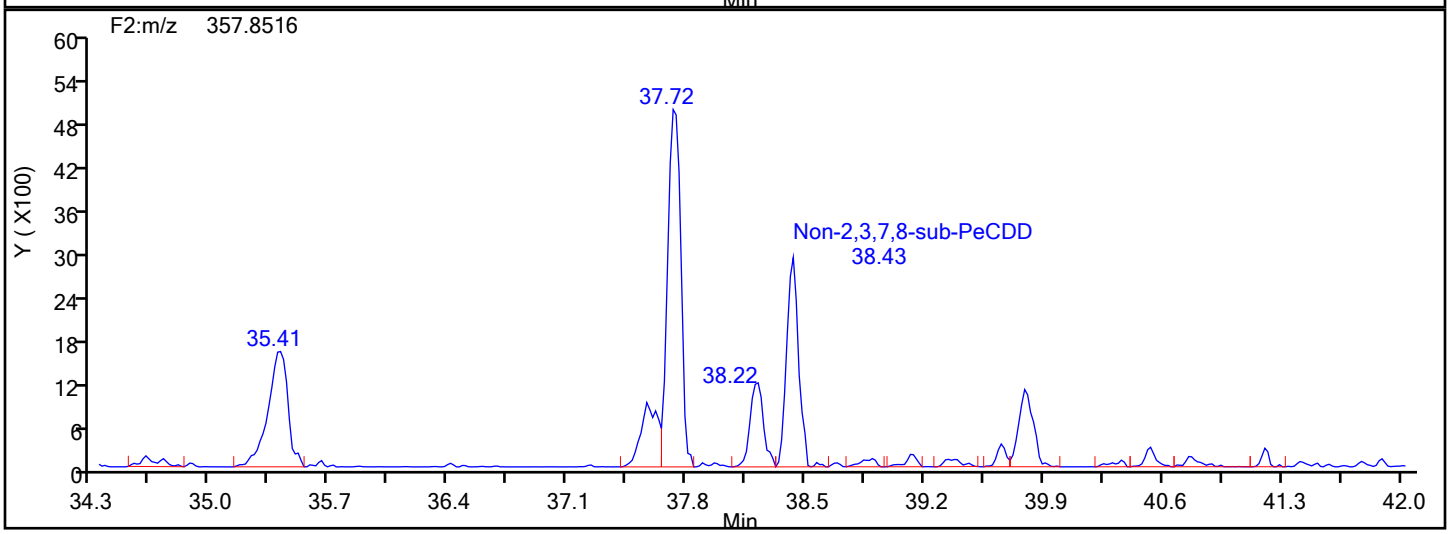
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

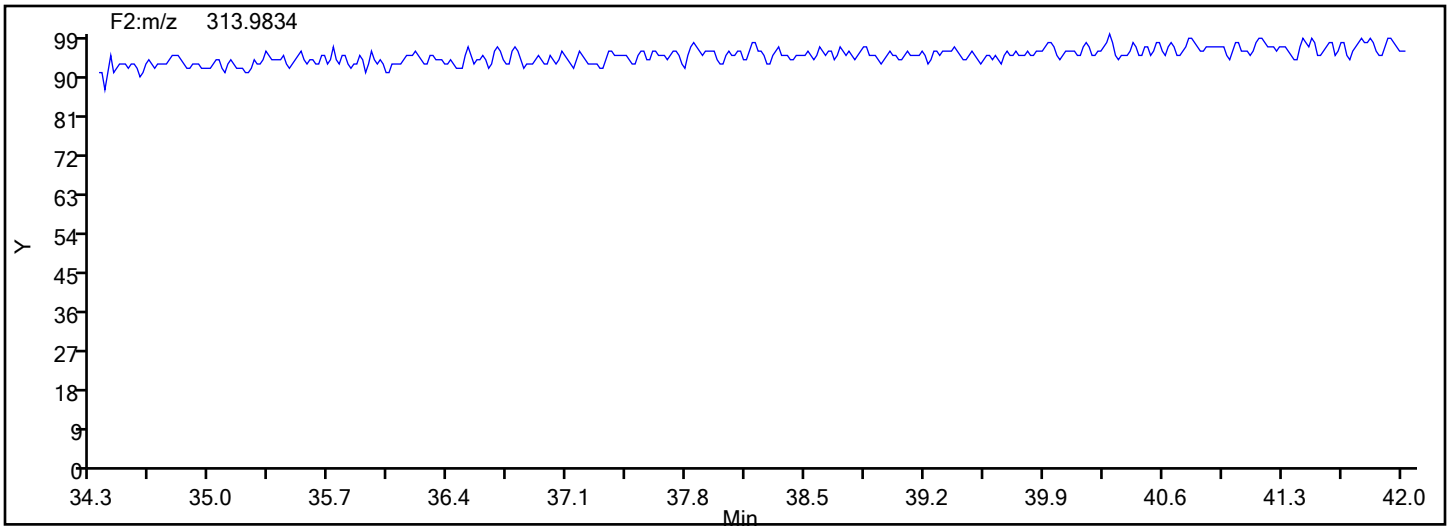
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

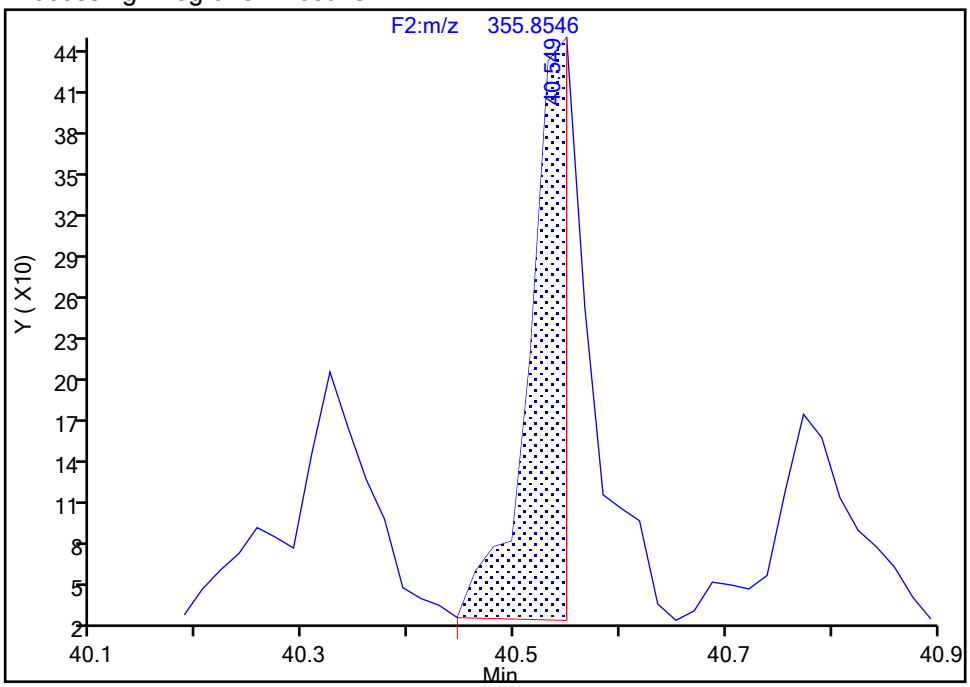
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

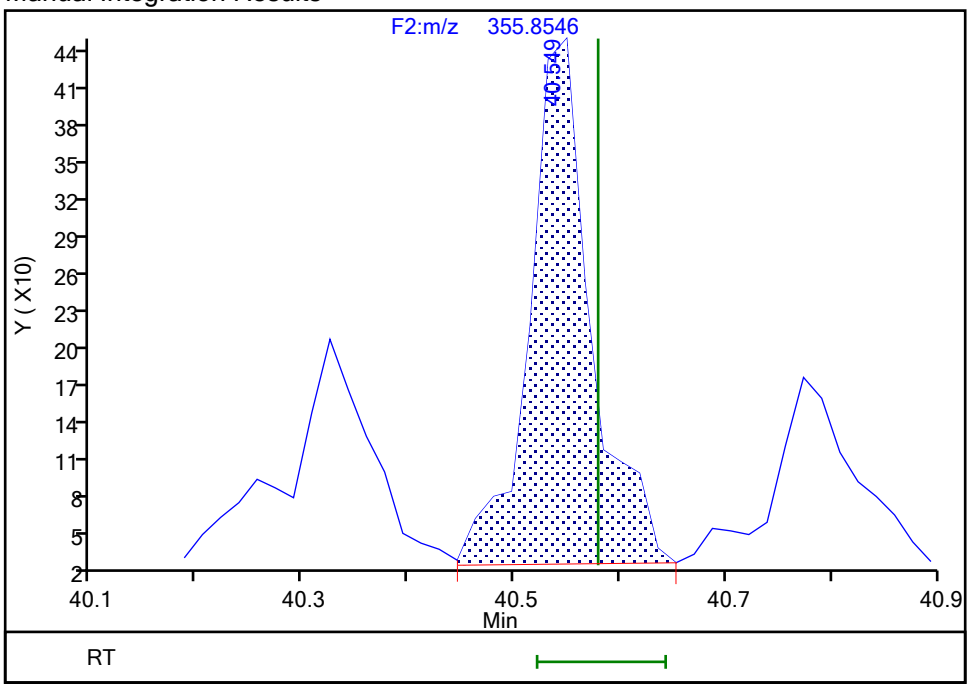
Processing Integration Results

RT: 40.55
Area: 992
Amount: 0.082602
Amount Units: pg/ul



Manual Integration Results

RT: 40.55
Area: 1737
Amount: 0.121146
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:01:57

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

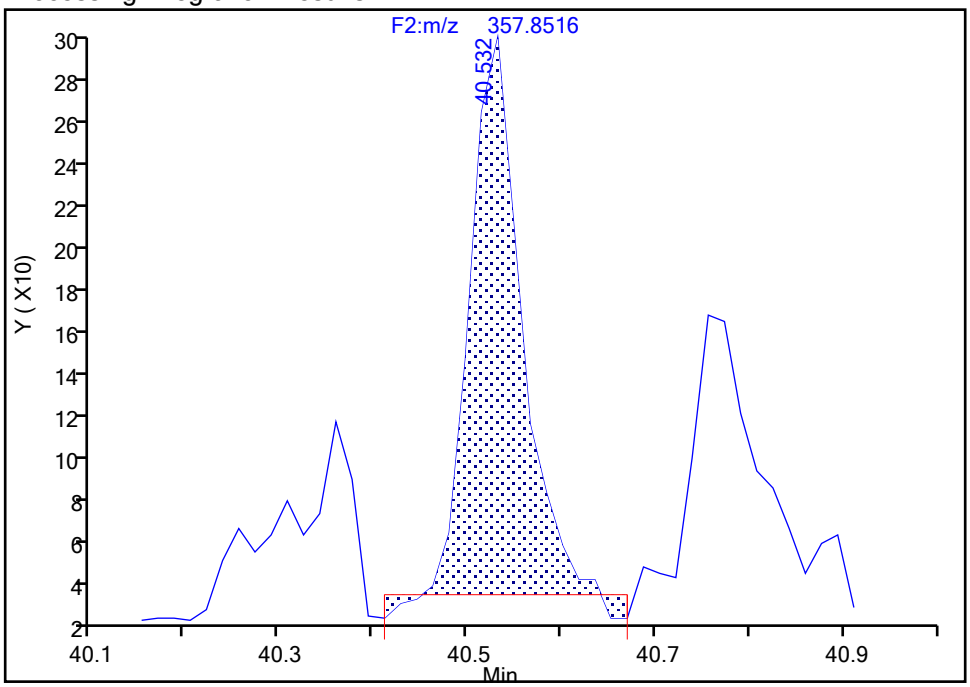
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

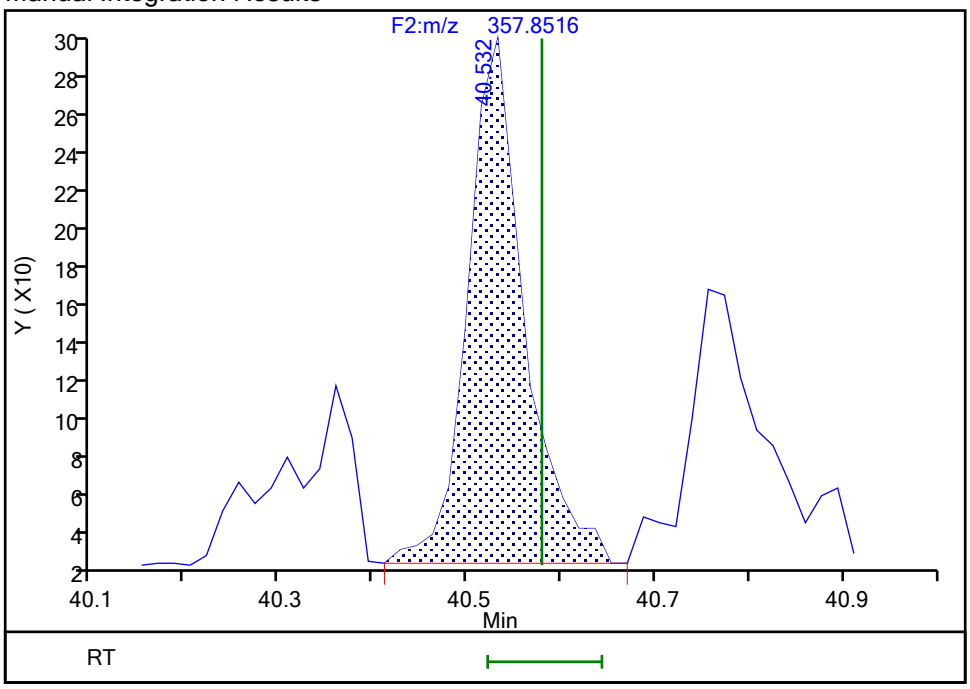
Processing Integration Results

RT: 40.53
Area: 971
Amount: 0.082602
Amount Units: pg/ul



Manual Integration Results

RT: 40.53
Area: 1142
Amount: 0.121146
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:02:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

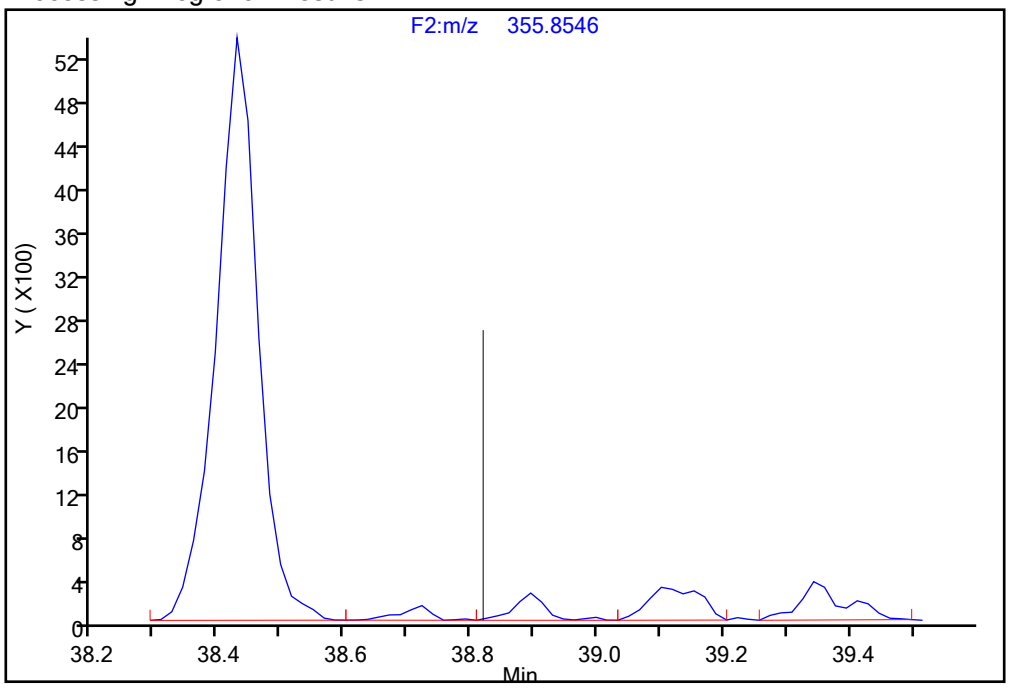
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

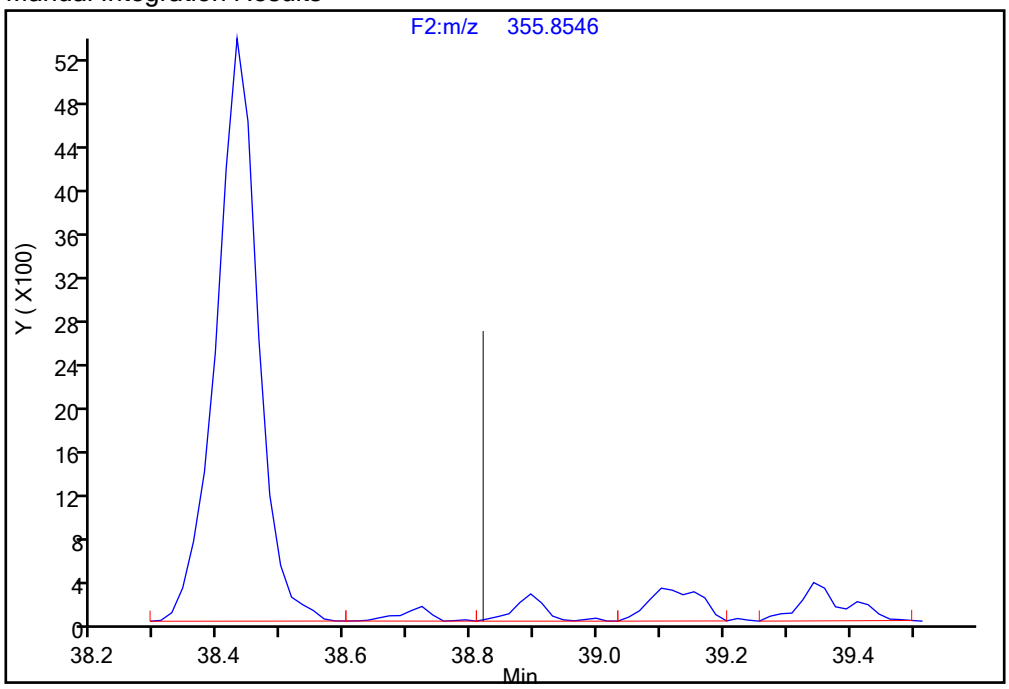
Processing Integration Results

RT = 38.894 Area = 851



Manual Integration Results

RT = 38.894 Area = 851



Reviewer: davidsonm, 17-Dec-2019 12:03:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

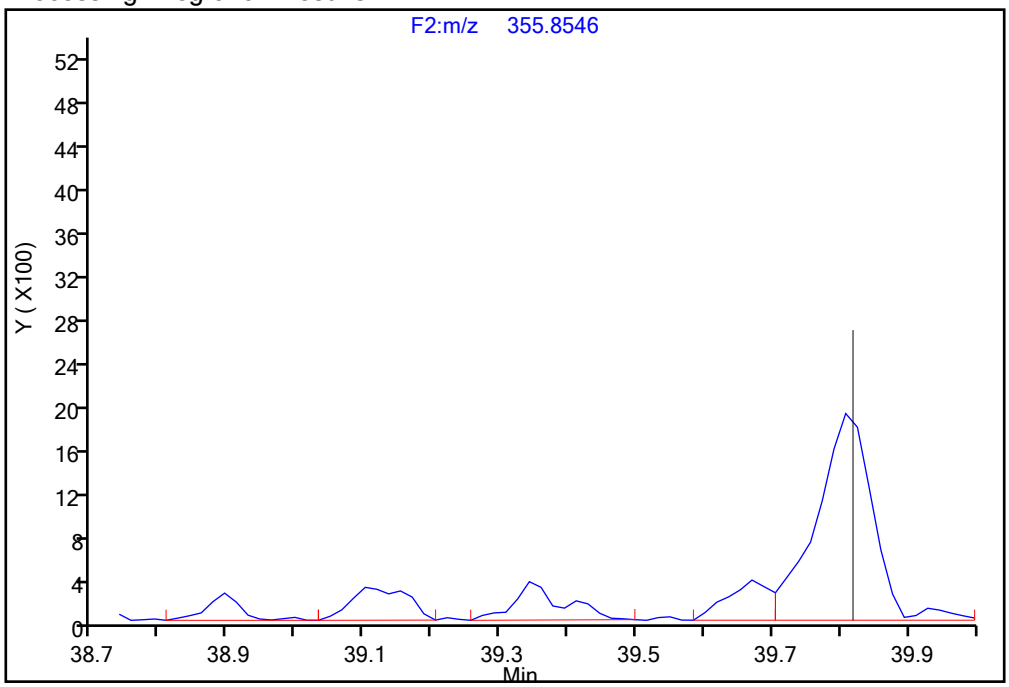
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

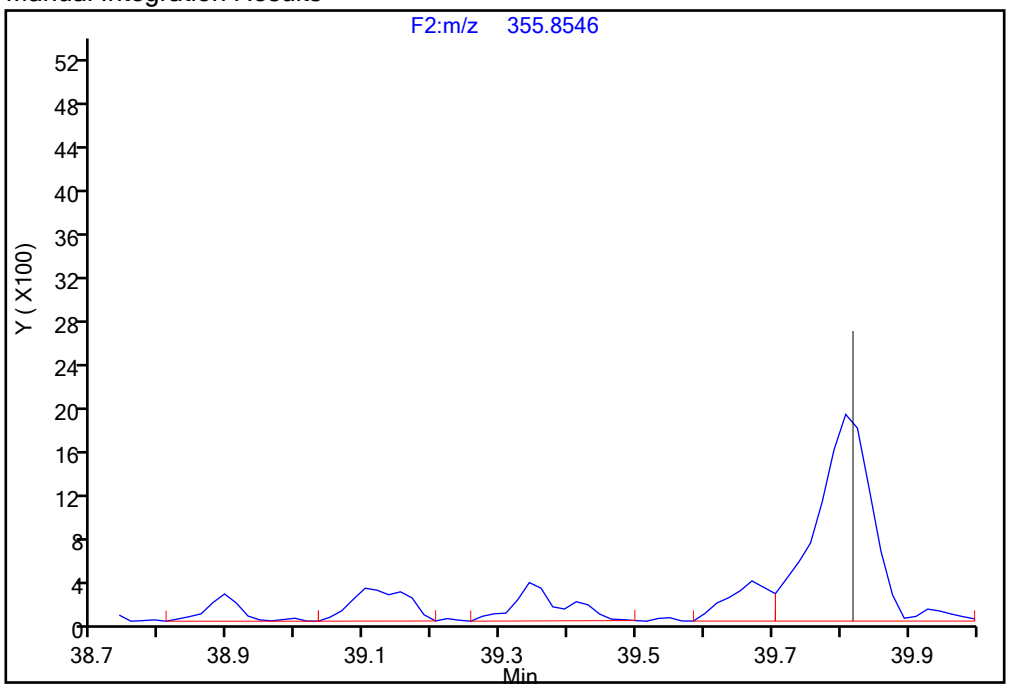
Processing Integration Results

RT = 39.343 Area = 1732



Manual Integration Results

RT = 39.343 Area = 1732



Reviewer: davidsonm, 17-Dec-2019 12:03:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

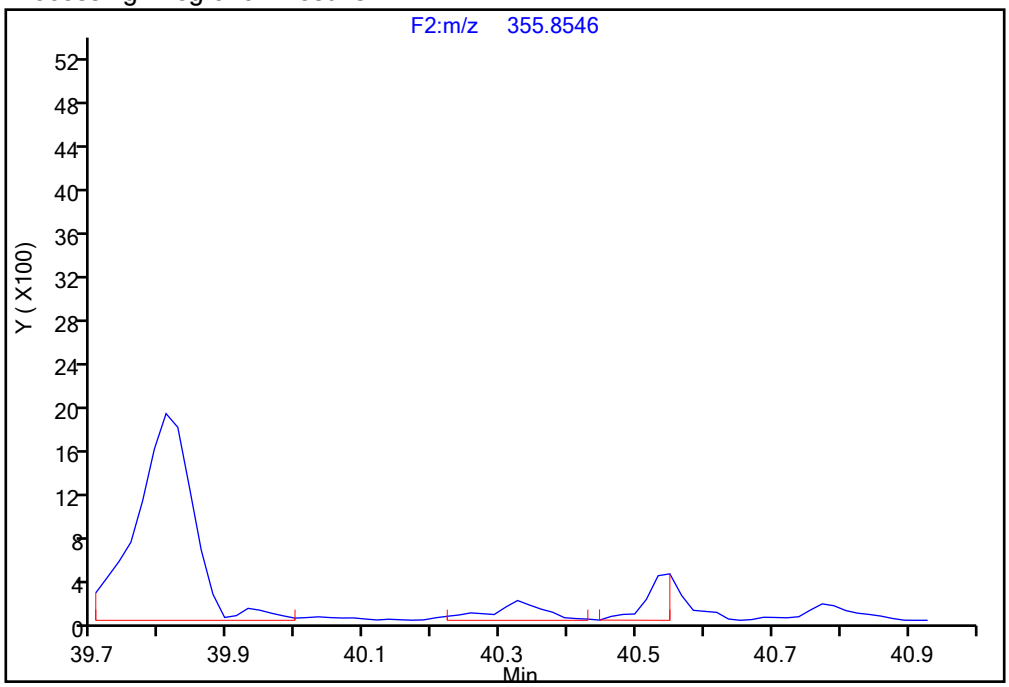
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

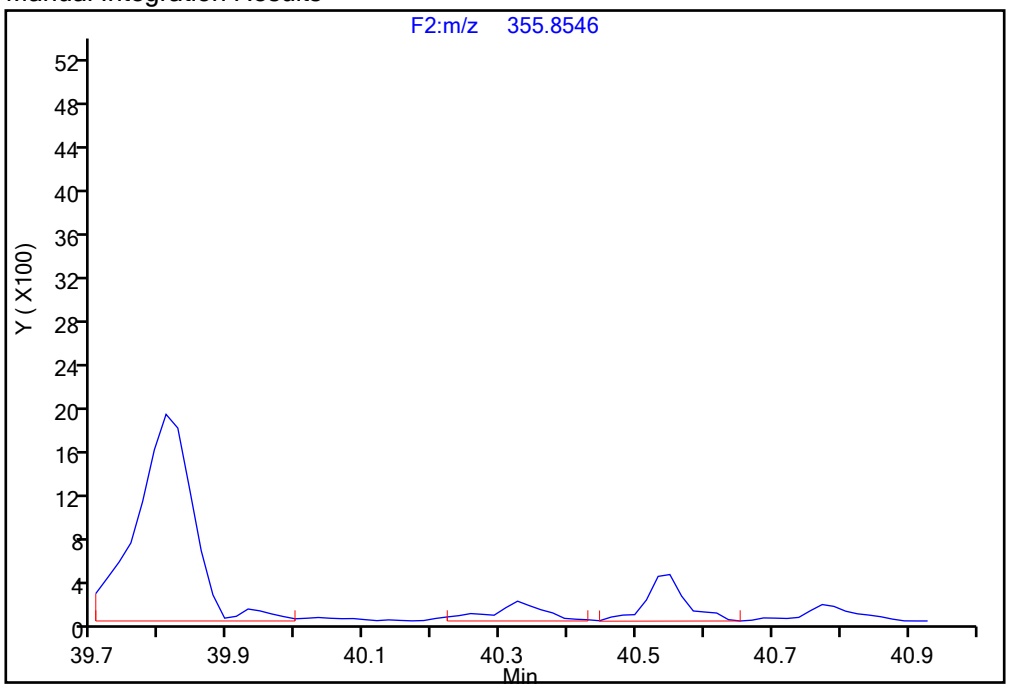
Processing Integration Results

RT = 40.325 Area = 948



Manual Integration Results

RT = 40.325 Area = 948



Reviewer: davidsonm, 17-Dec-2019 12:03:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Eurofins TestAmerica, Knoxville

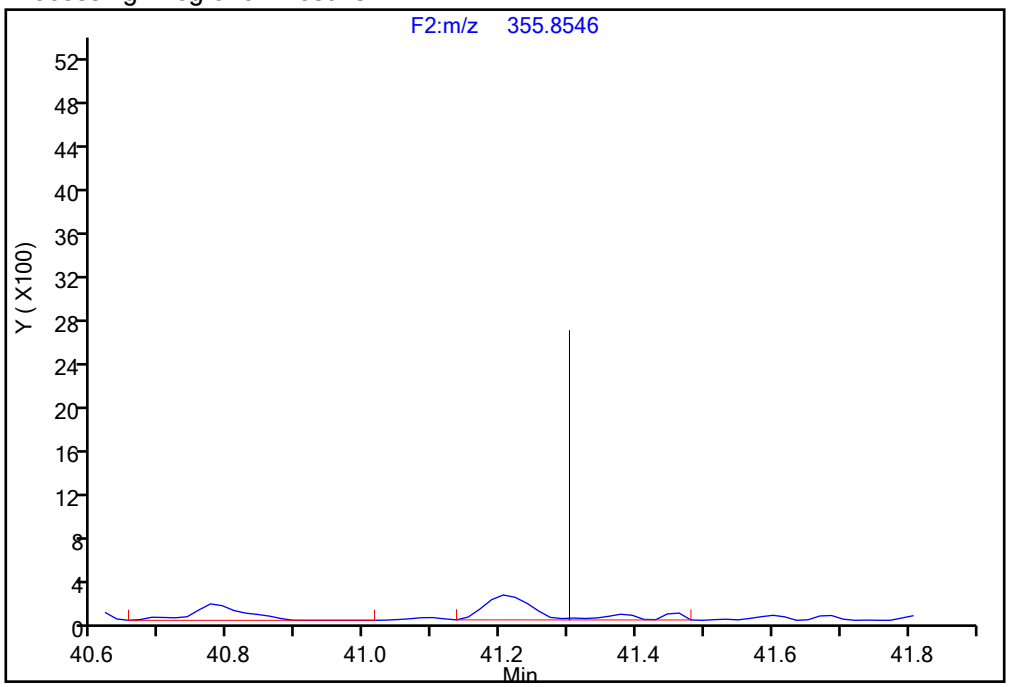
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

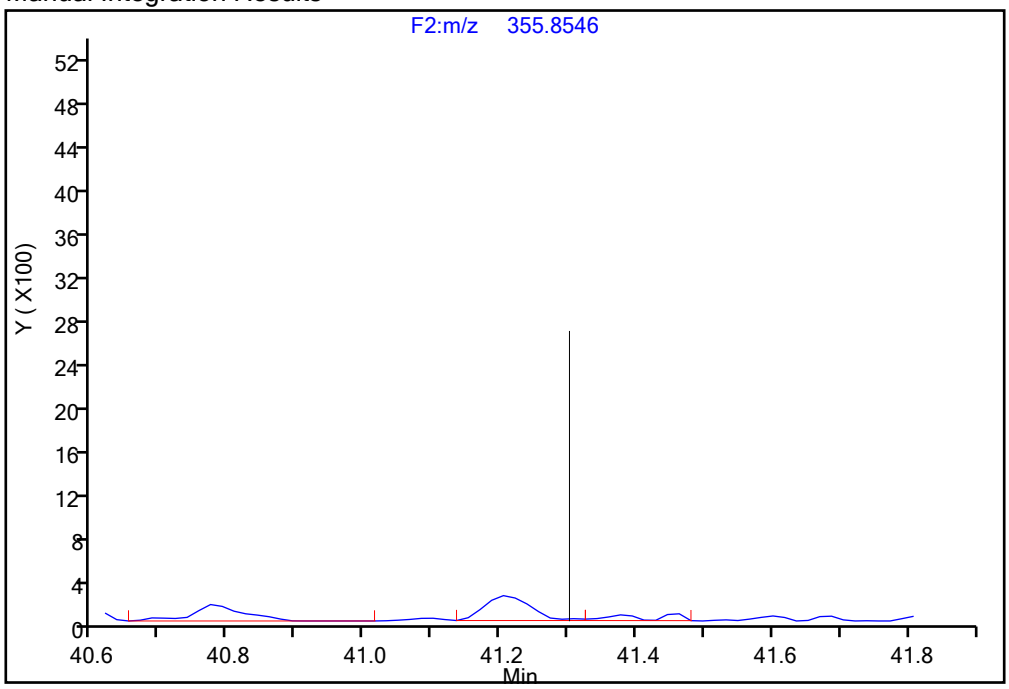
Processing Integration Results

RT = 41.204 Area = 1372



Manual Integration Results

RT = 41.204 Area = 1078 M



Reviewer: davidsonm, 17-Dec-2019 12:03:21

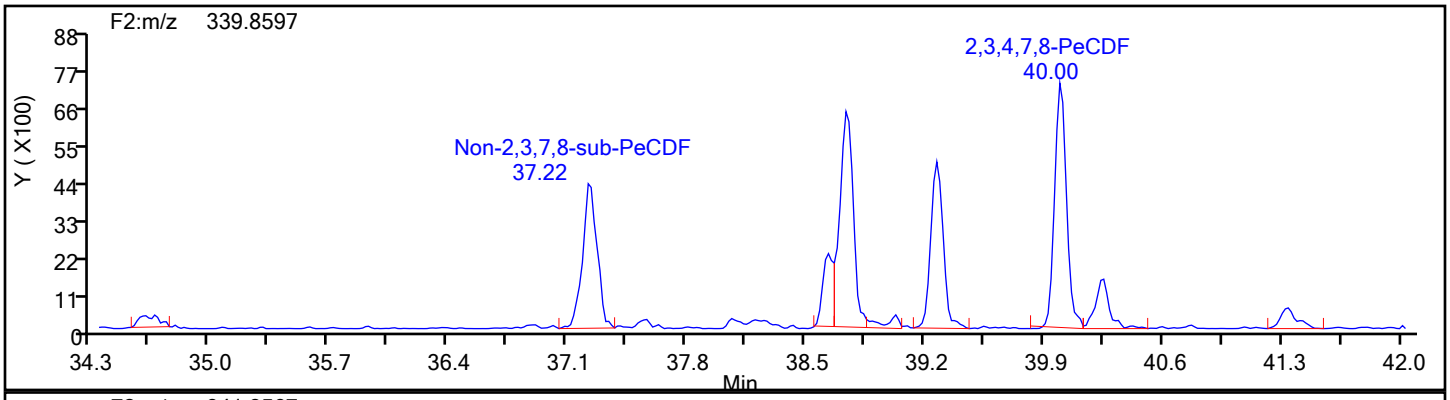
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

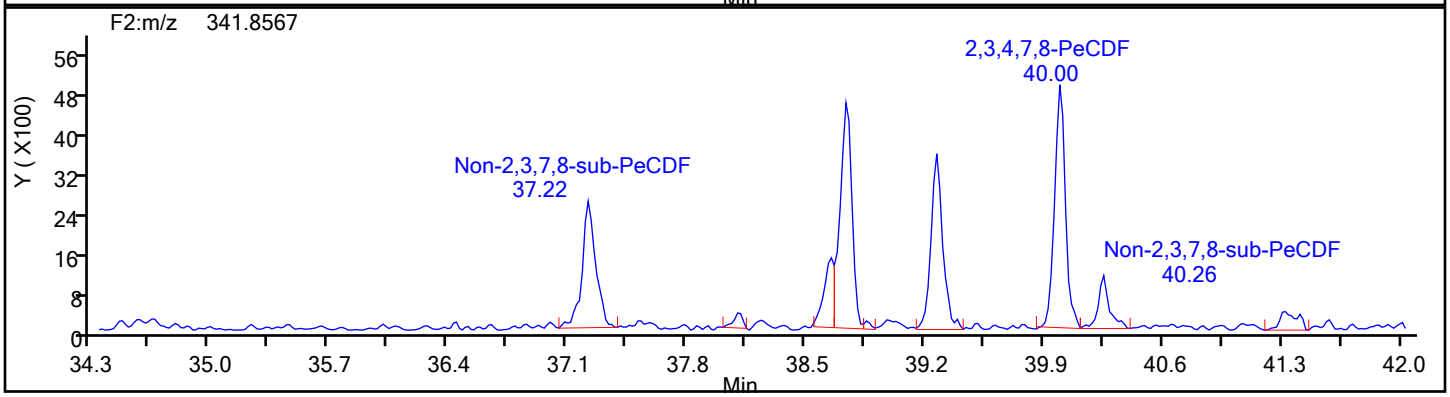
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

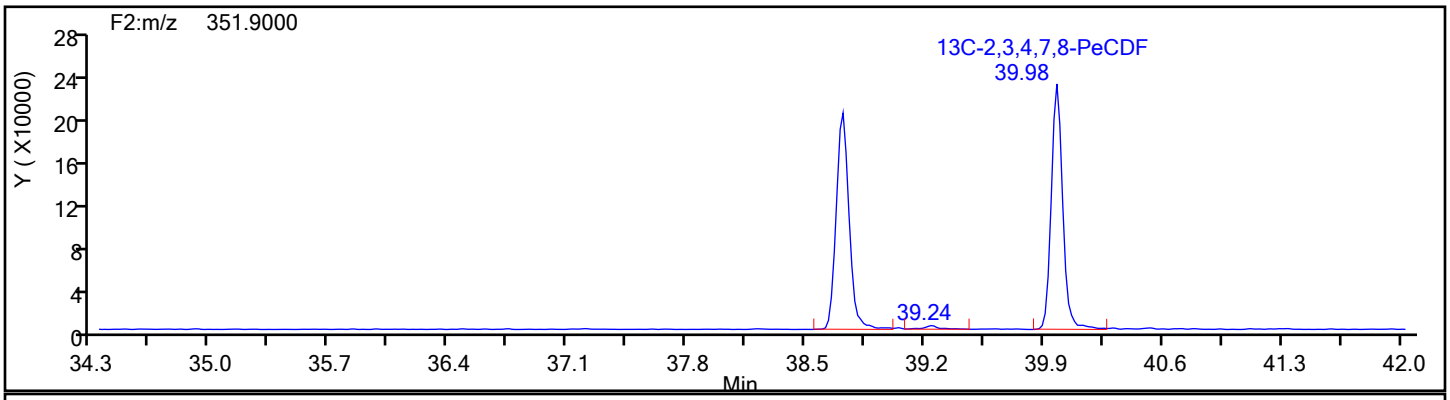
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

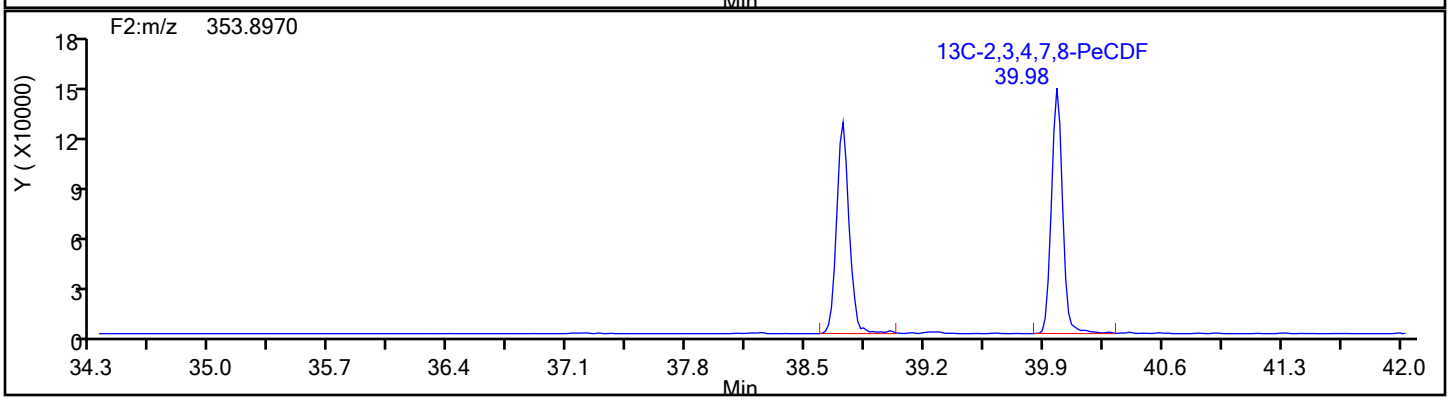
PeCDF





PeCDF Standards



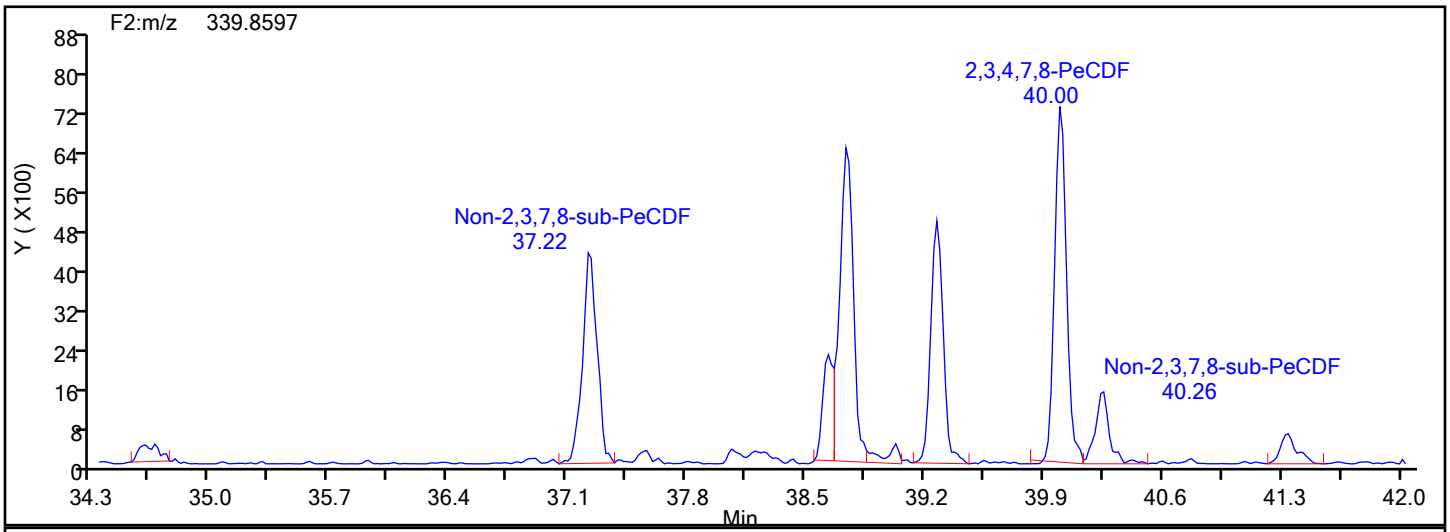


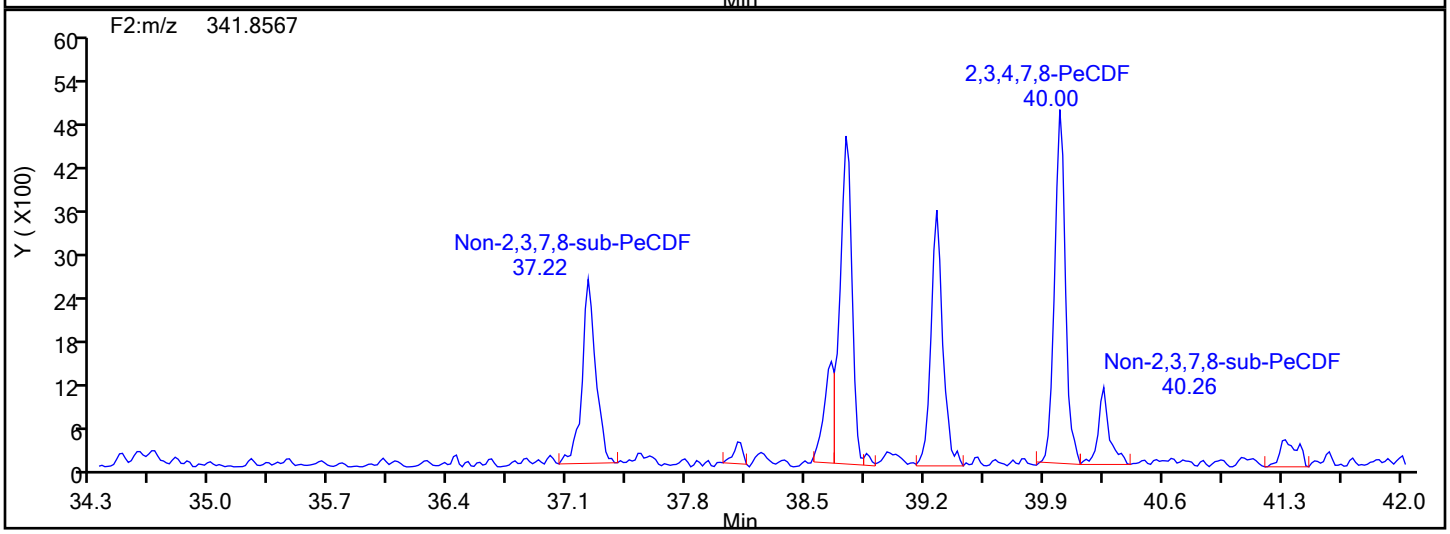
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

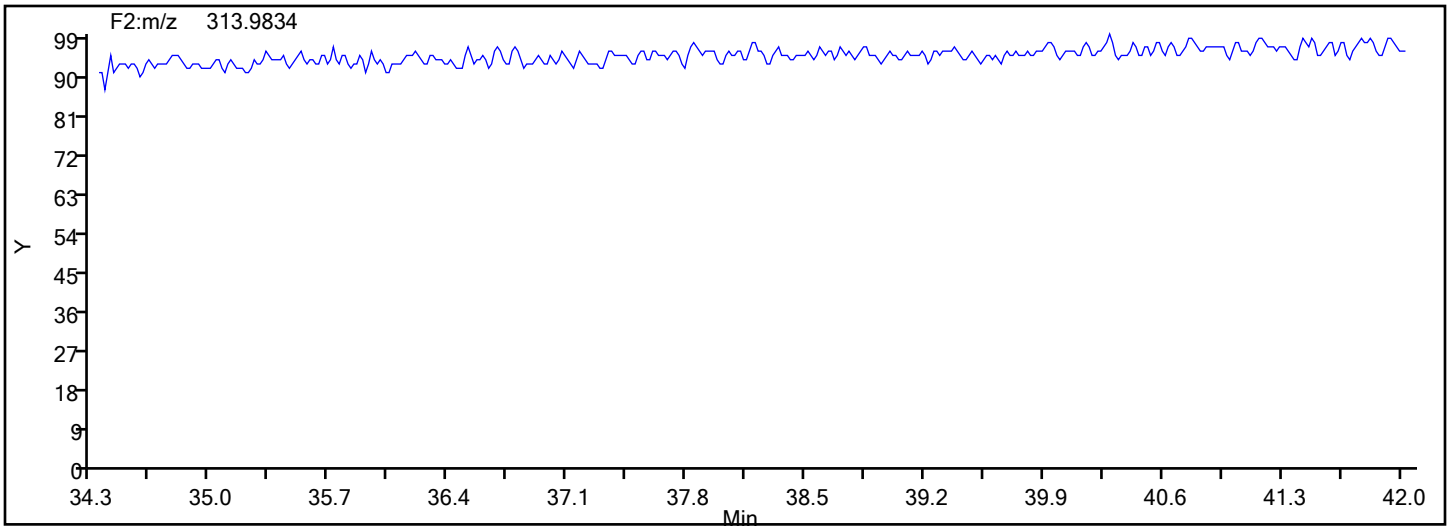
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

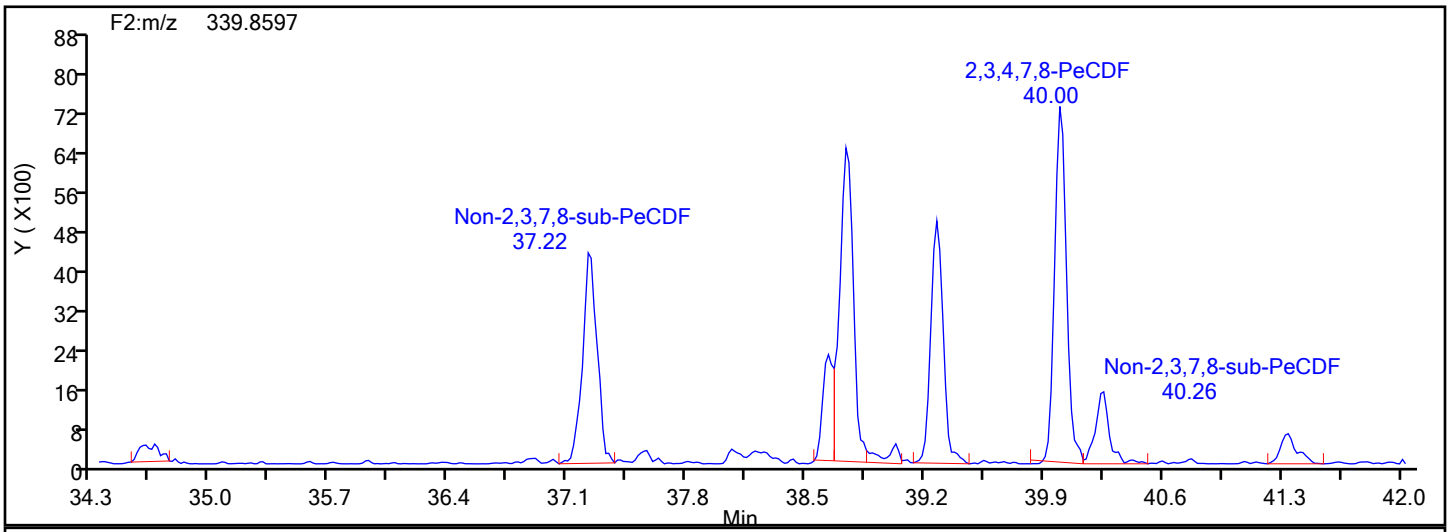


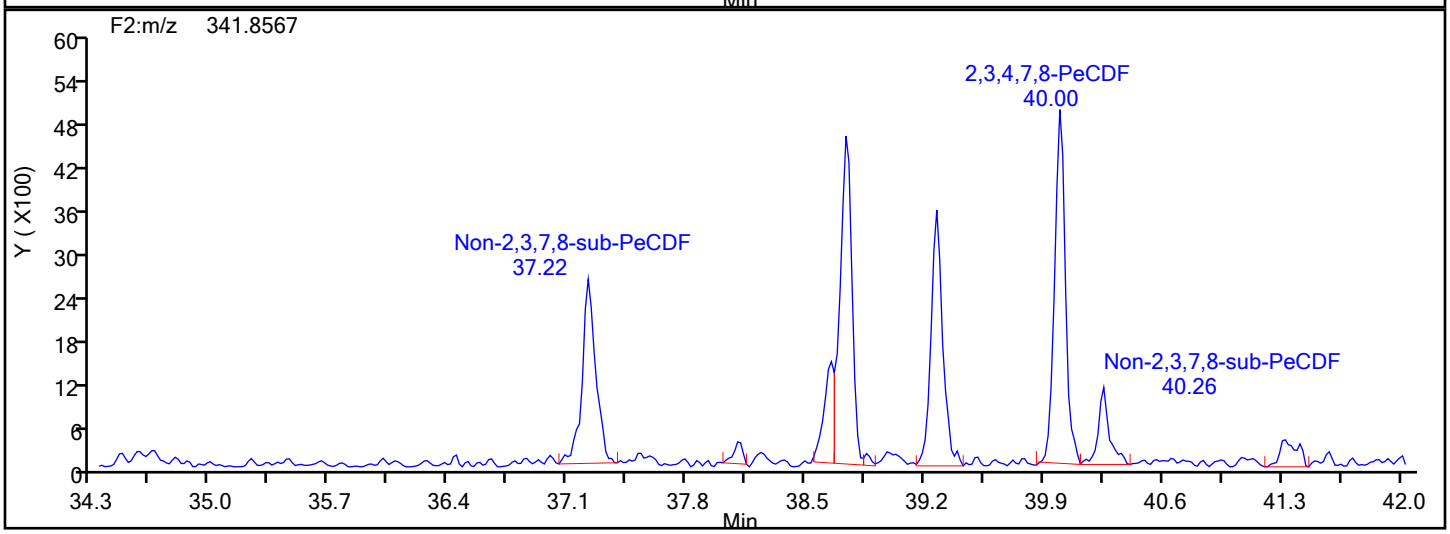
Report Date: 17-Dec-2019 12:06:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

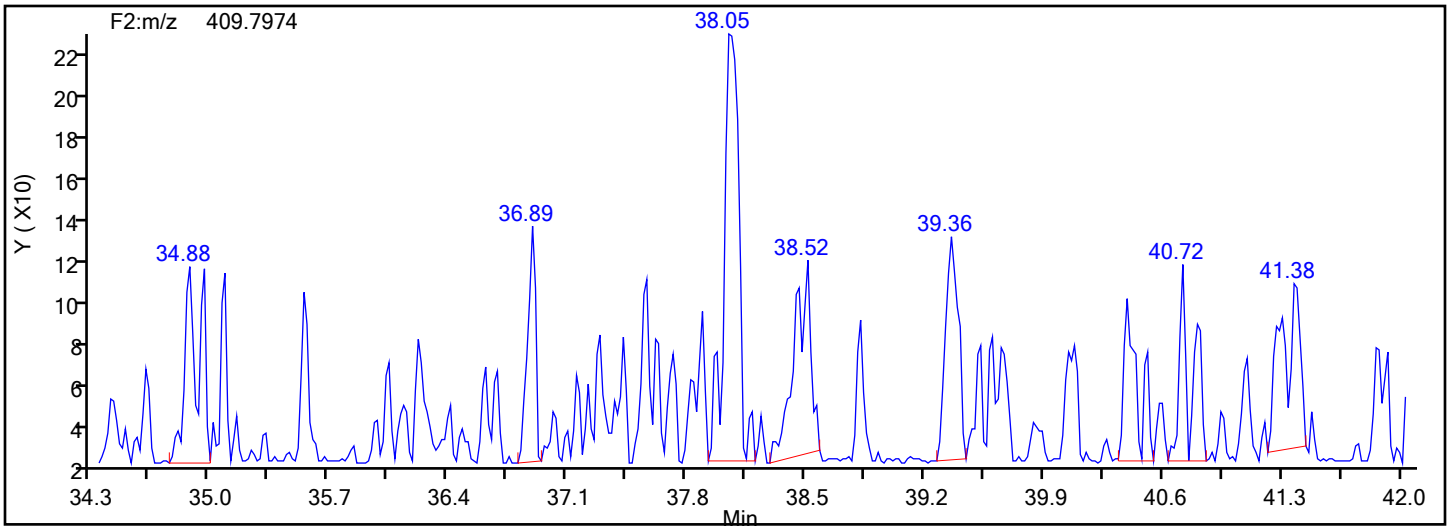
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

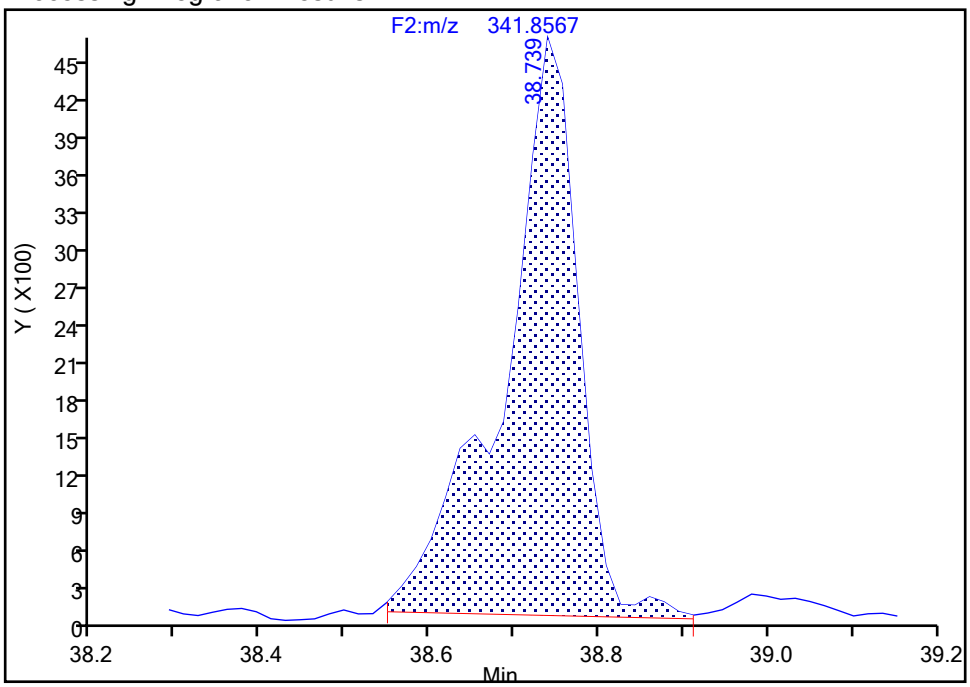
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

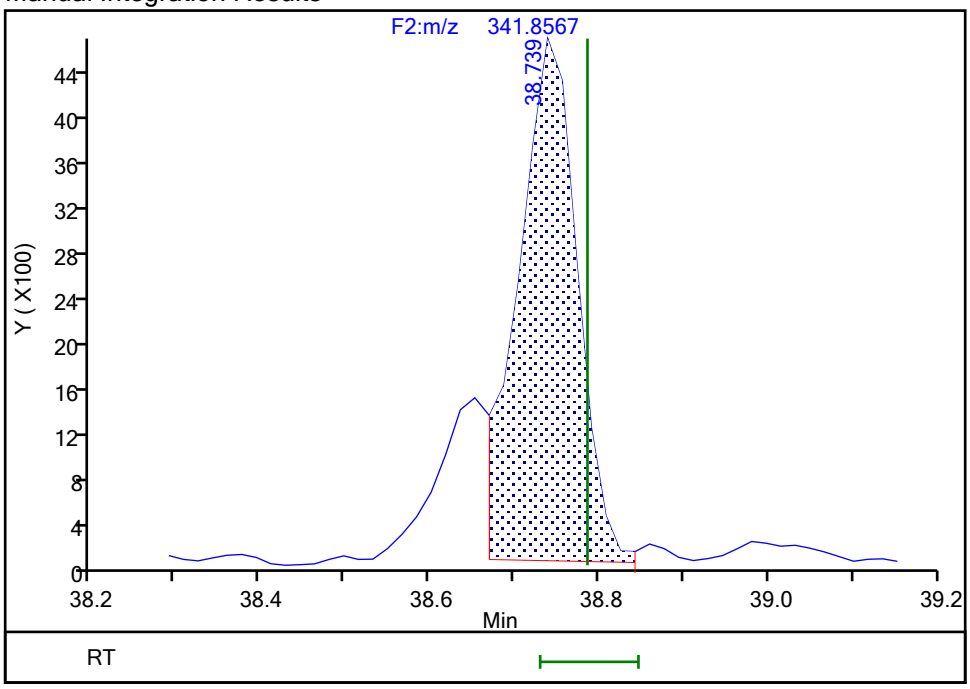
Processing Integration Results

RT: 38.74
Area: 28035
Amount: 1.849913
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 21996
Amount: 1.415193
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:03:45

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

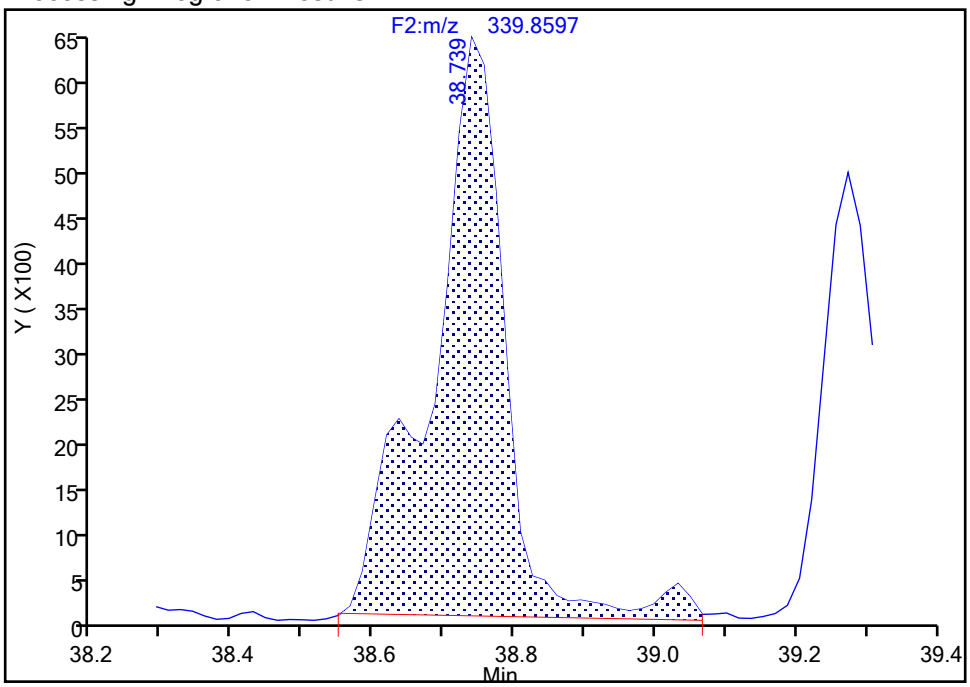
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

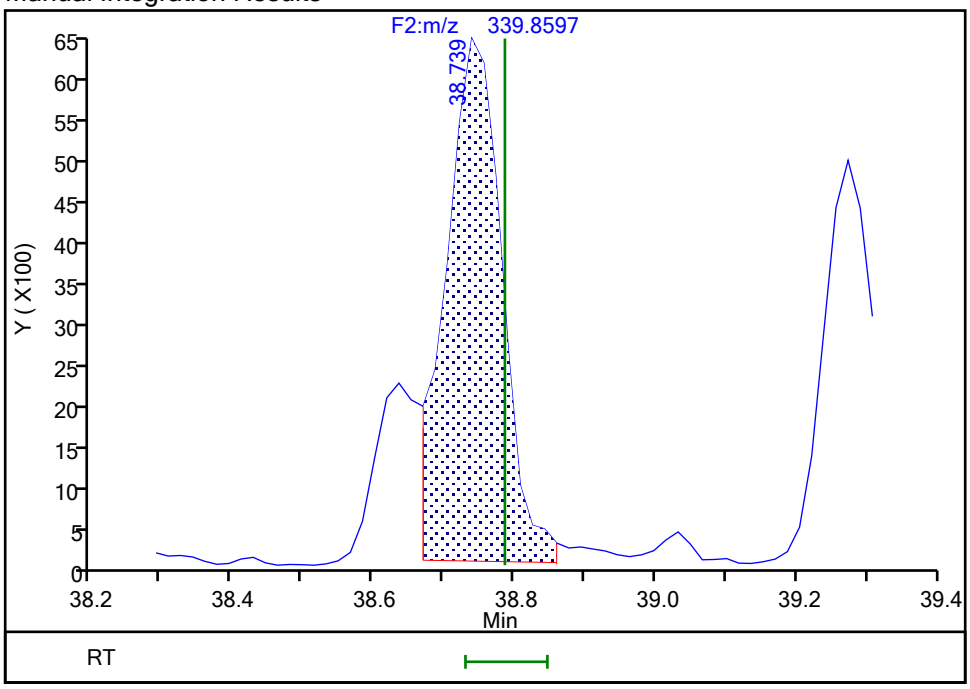
Processing Integration Results

RT: 38.74
Area: 46724
Amount: 1.849913
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 35195
Amount: 1.415193
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:03:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

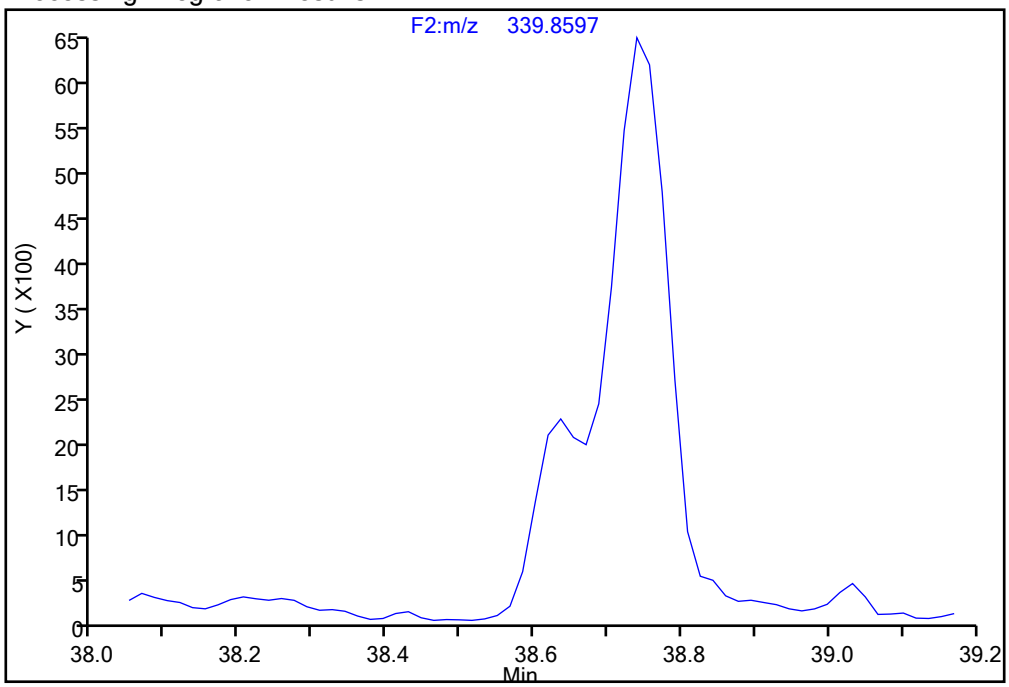
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

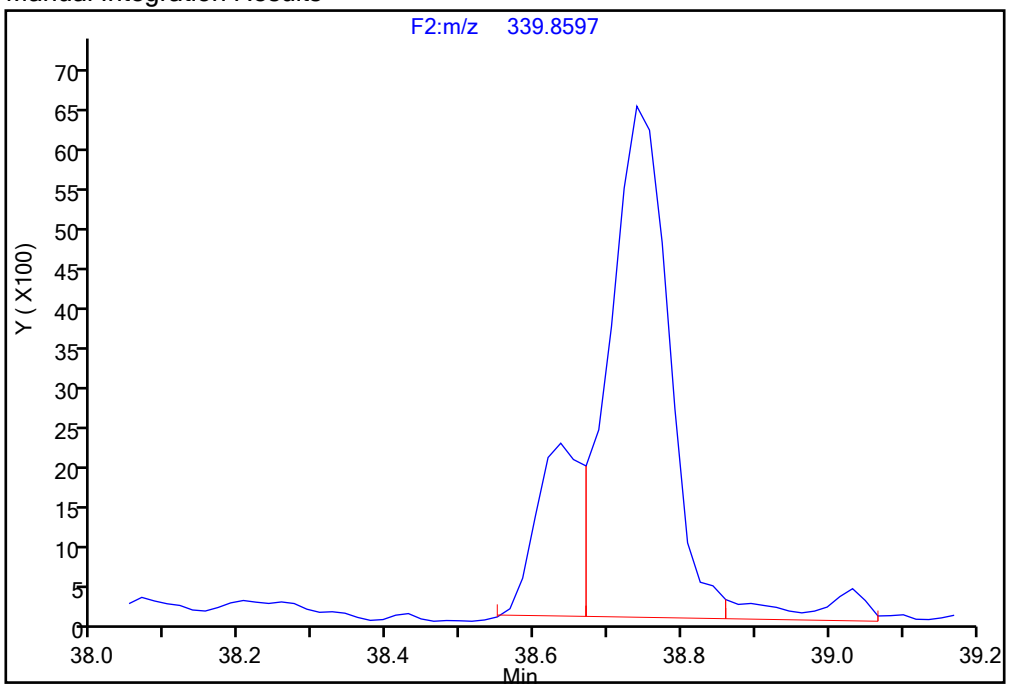
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 38.636 Area = 9131 M



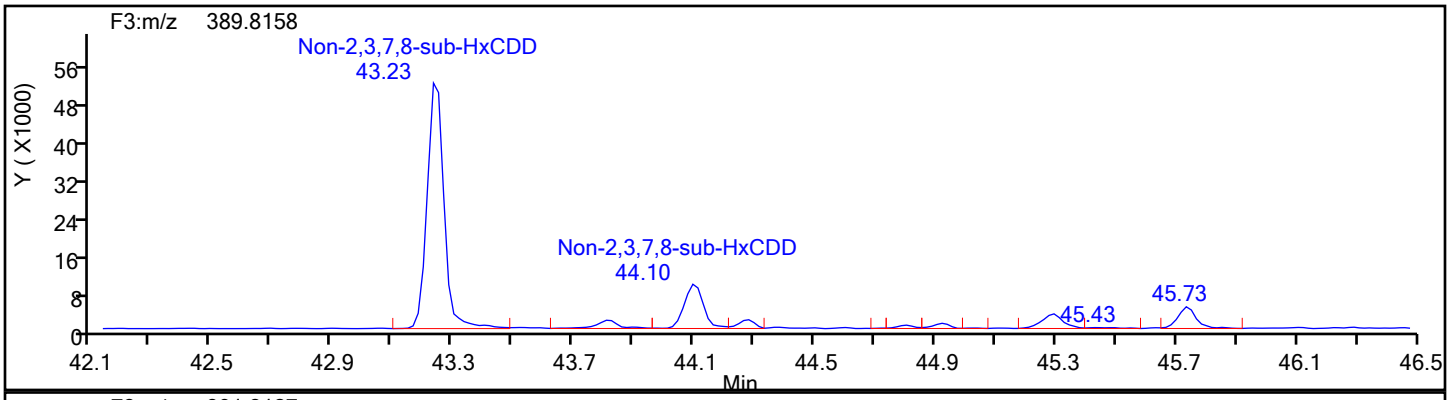
Reviewer: davidsonm, 17-Dec-2019 12:03:54
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

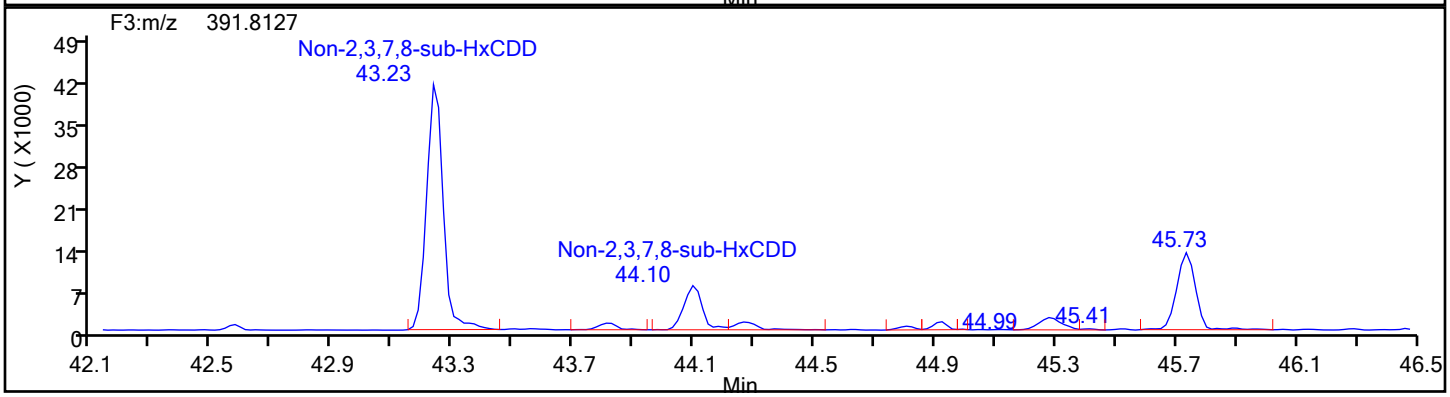
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

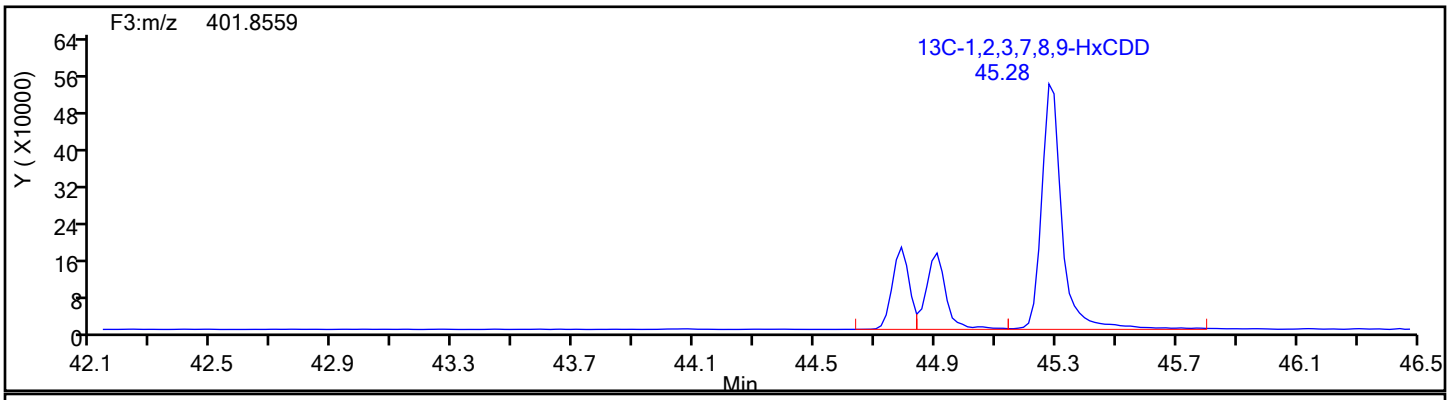
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

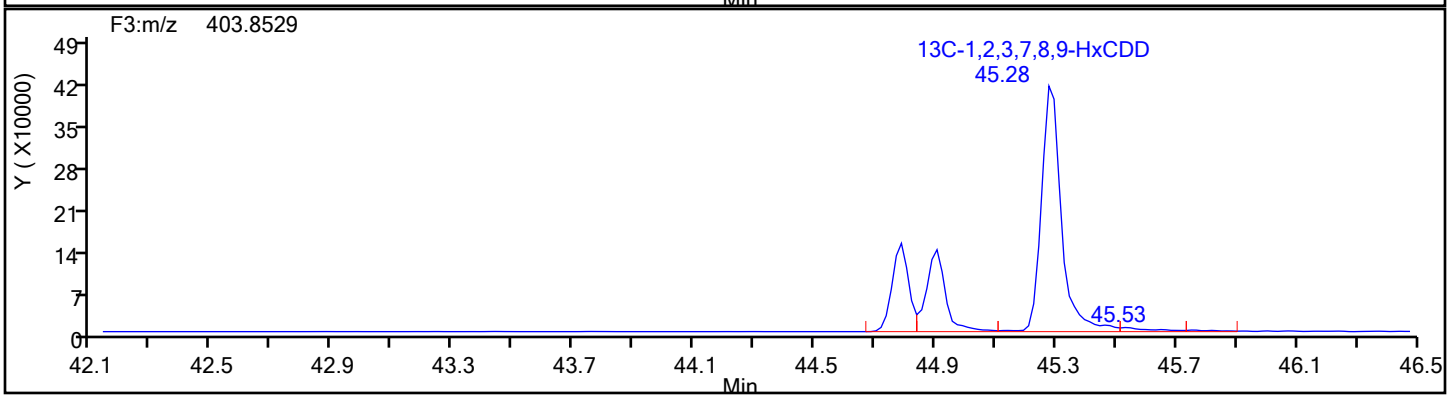
HxCDD





HxCDD Standards



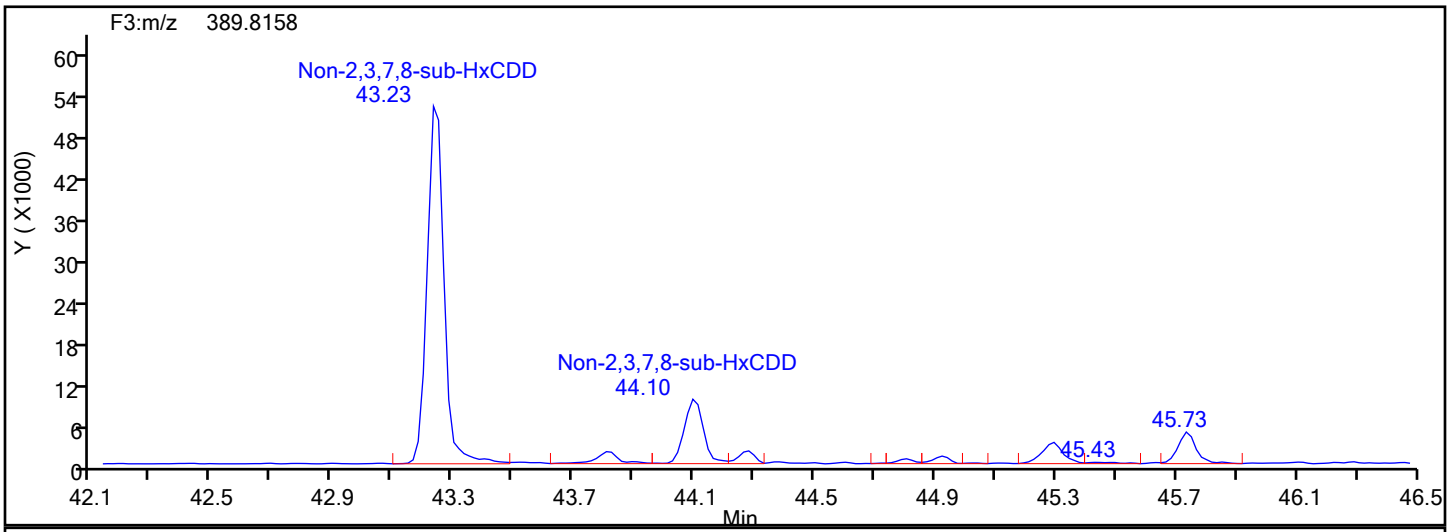


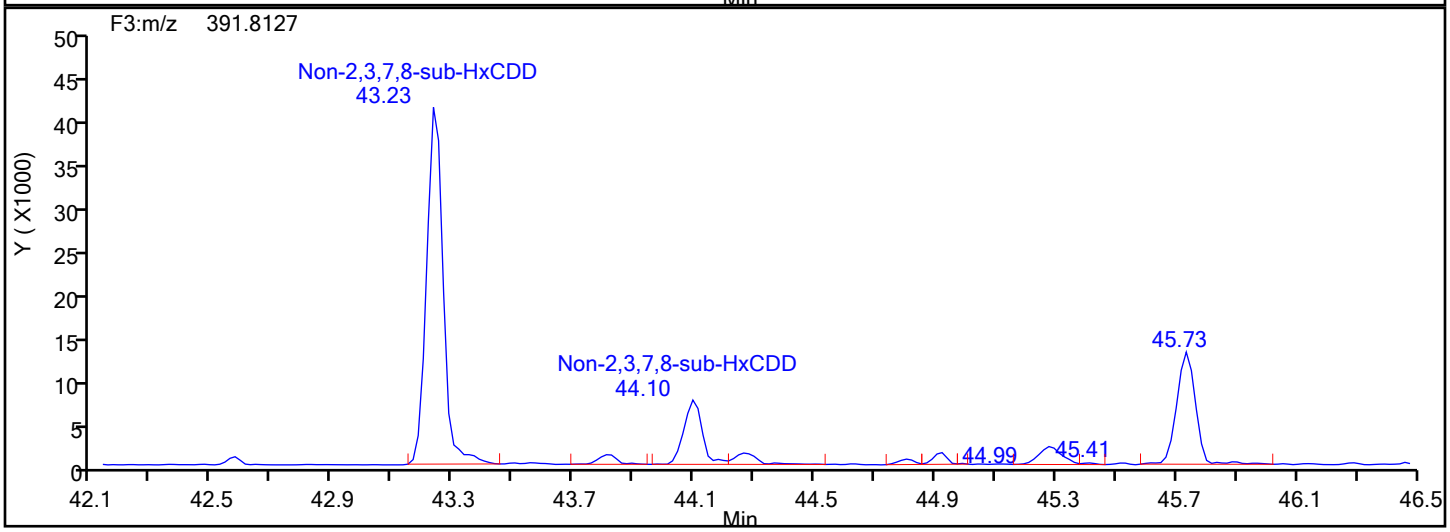
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

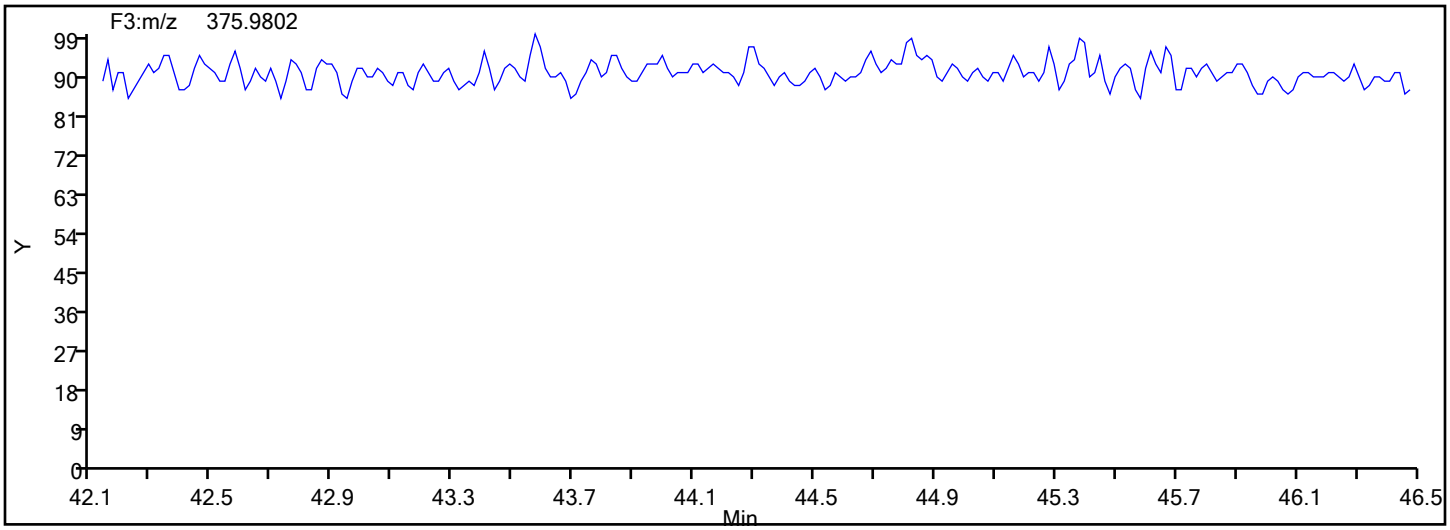
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

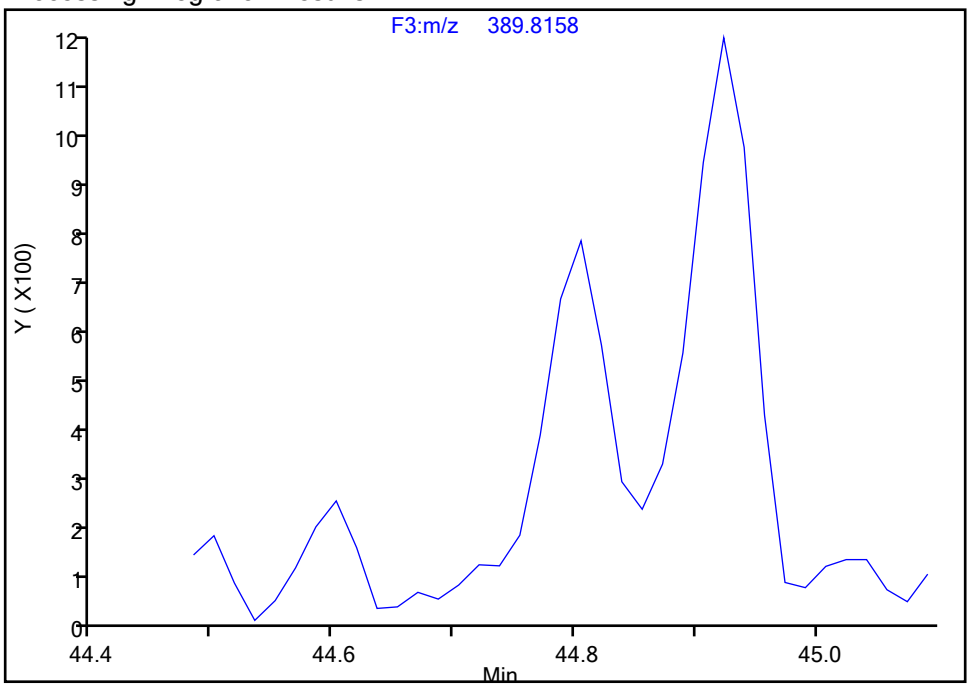
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

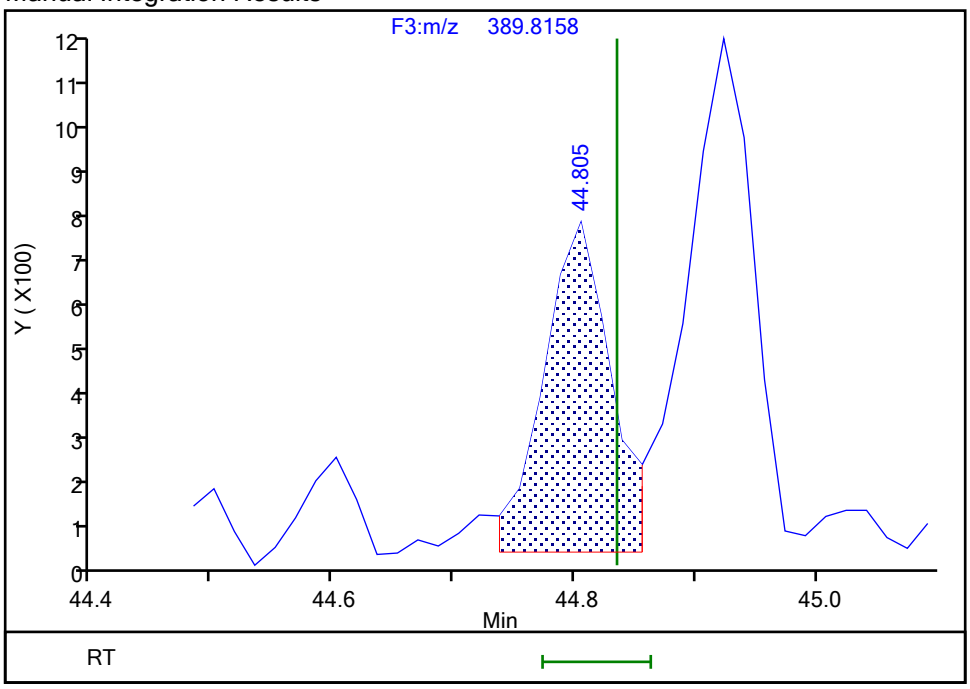
Not Detected
Expected RT: 44.83

Processing Integration Results



Manual Integration Results

RT: 44.81
Area: 2667
Amount: 0.171754
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:29
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

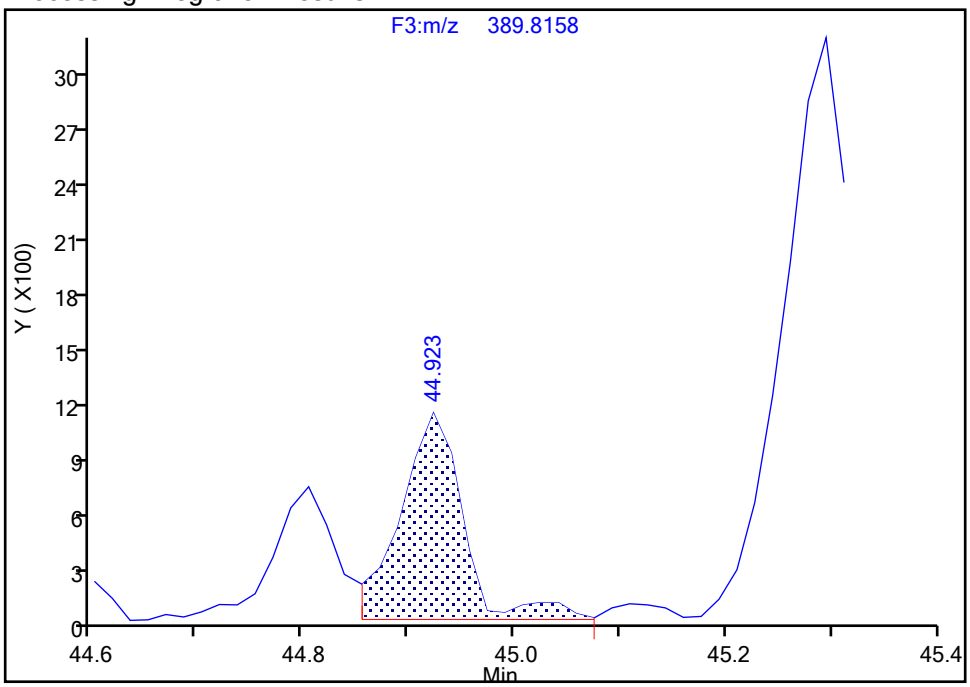
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

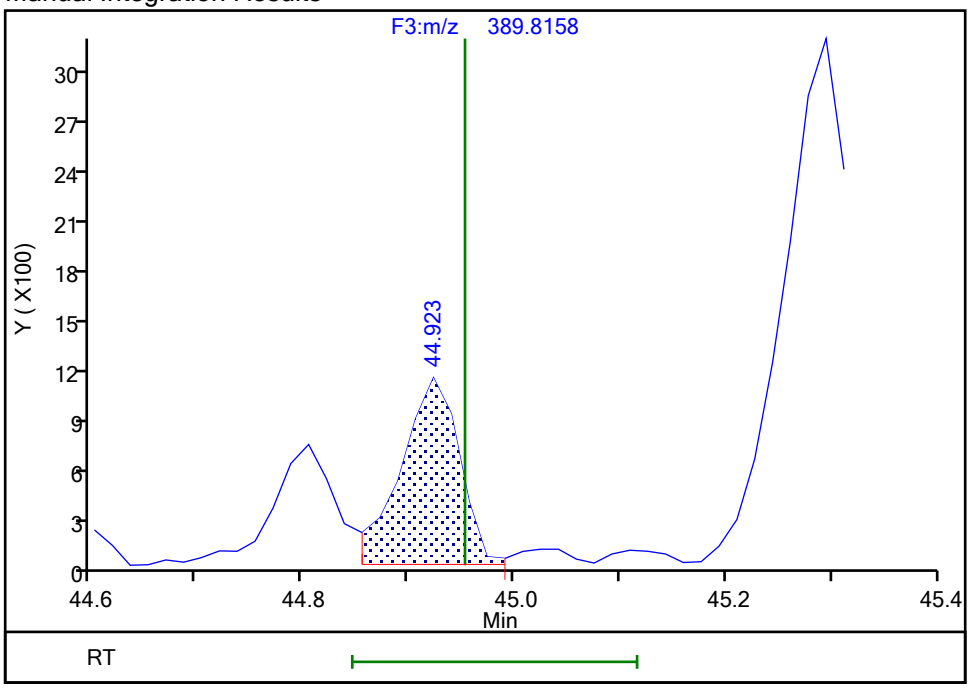
Processing Integration Results

RT: 44.92
Area: 4481
Amount: 0.355210
Amount Units: pg/ul



Manual Integration Results

RT: 44.92
Area: 4170
Amount: 0.268919
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:21

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

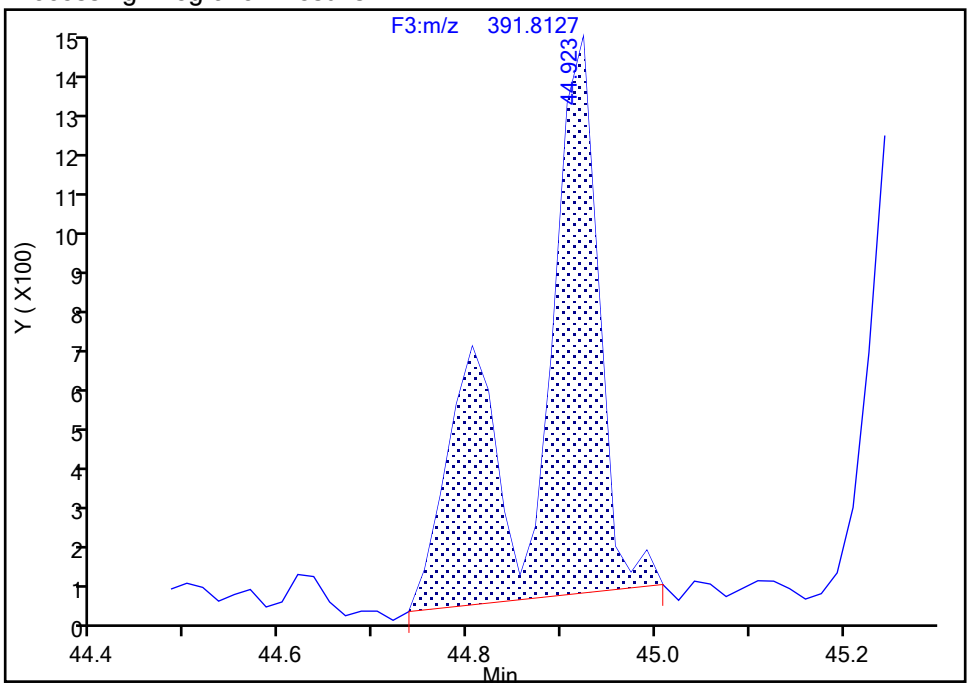
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

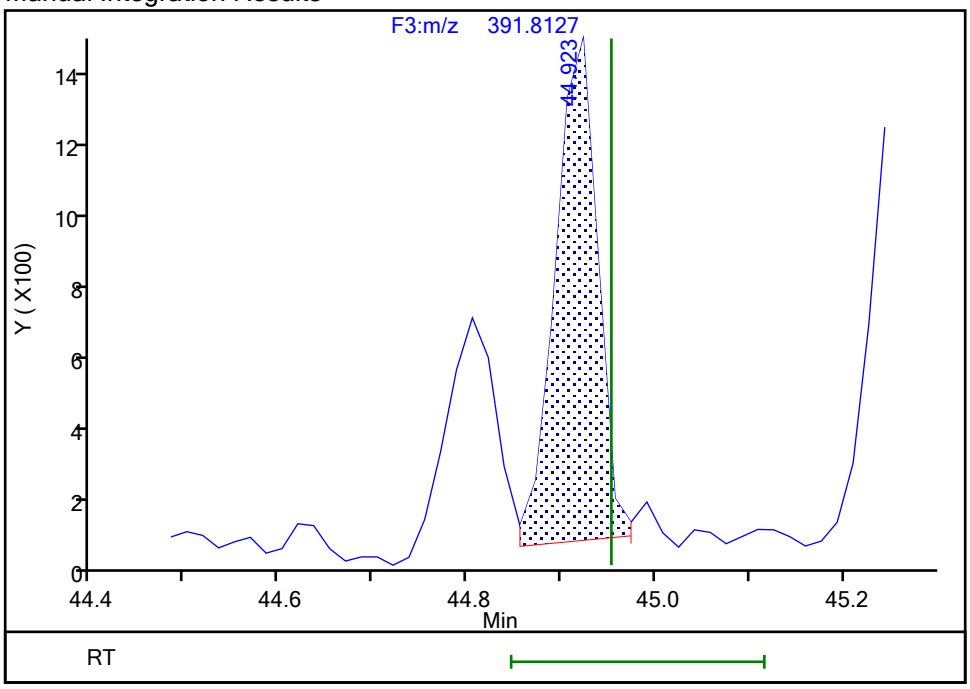
Processing Integration Results

RT: 44.92
Area: 6551
Amount: 0.355210
Amount Units: pg/ul



Manual Integration Results

RT: 44.92
Area: 4182
Amount: 0.268919
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:23

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

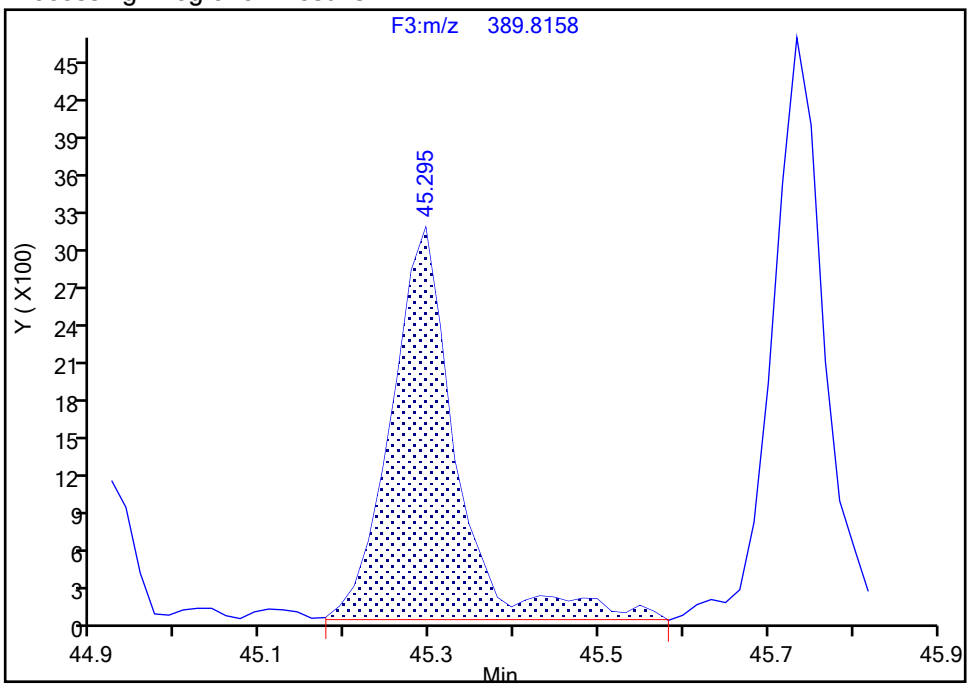
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

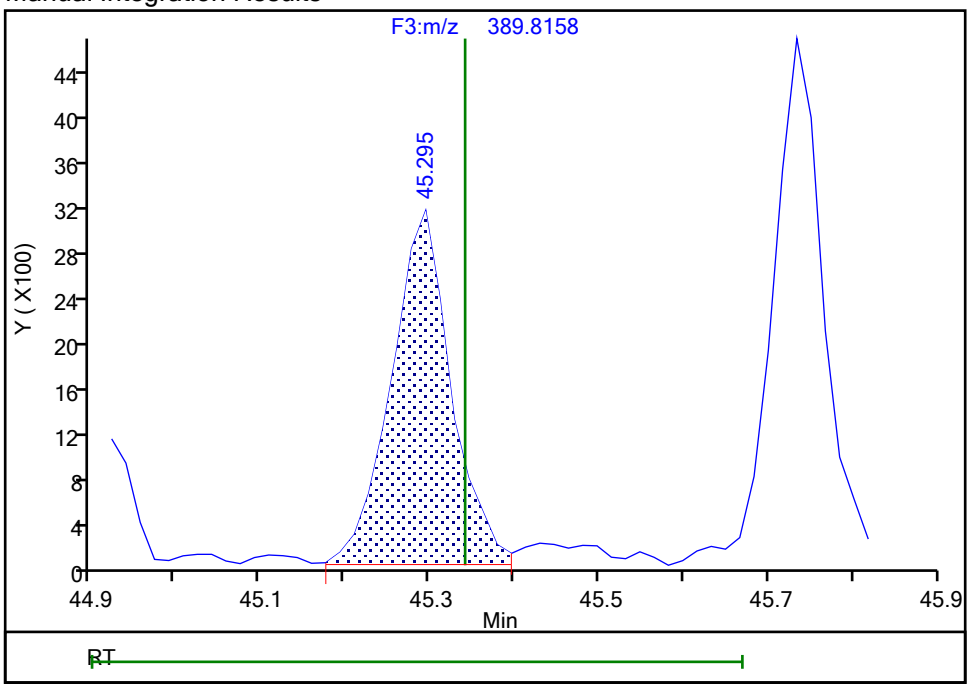
Processing Integration Results

RT: 45.29
Area: 16466
Amount: 0.872694
Amount Units: pg/ul



Manual Integration Results

RT: 45.29
Area: 15127
Amount: 0.814201
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

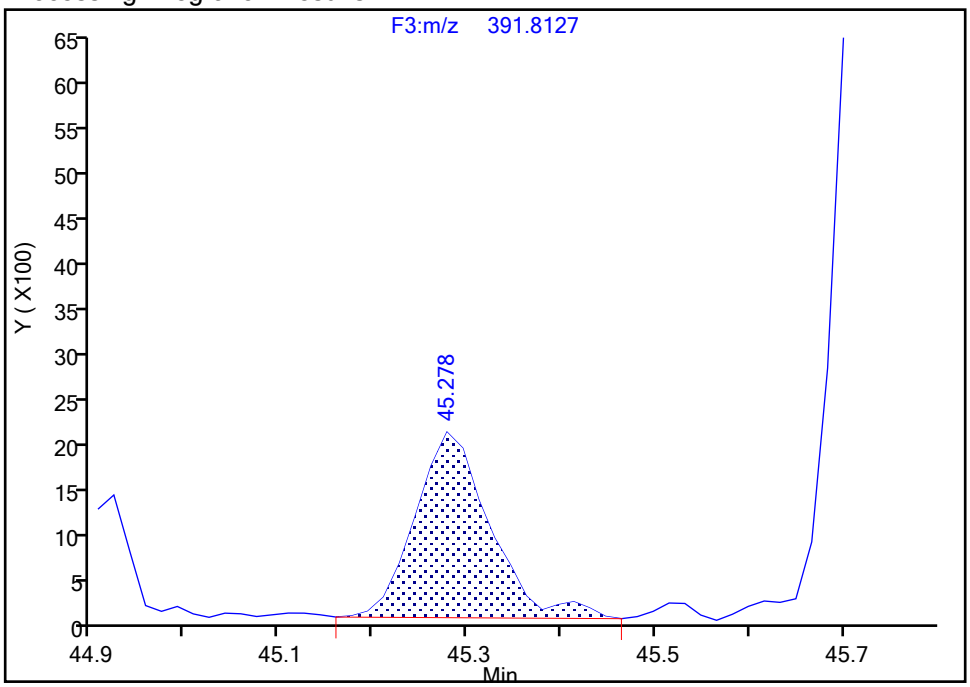
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

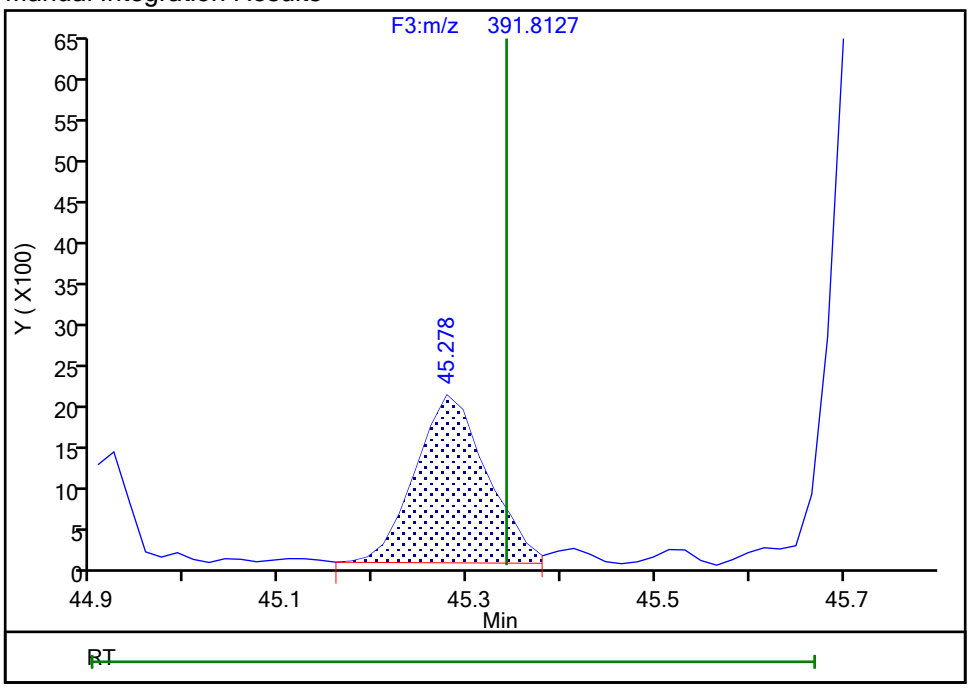
Processing Integration Results

RT: 45.28
Area: 11344
Amount: 0.872694
Amount Units: pg/ul



Manual Integration Results

RT: 45.28
Area: 10819
Amount: 0.814201
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:36

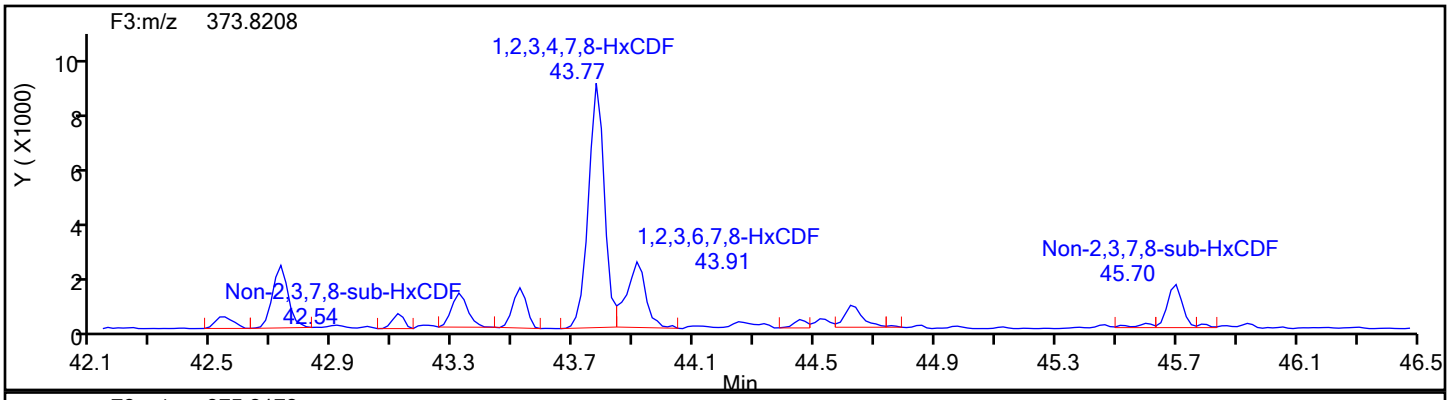
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

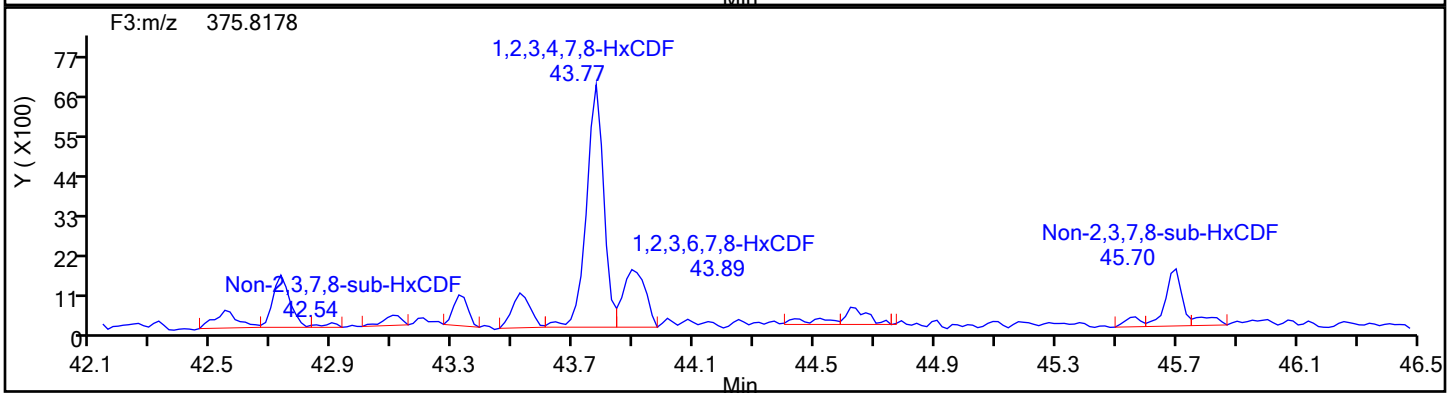
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

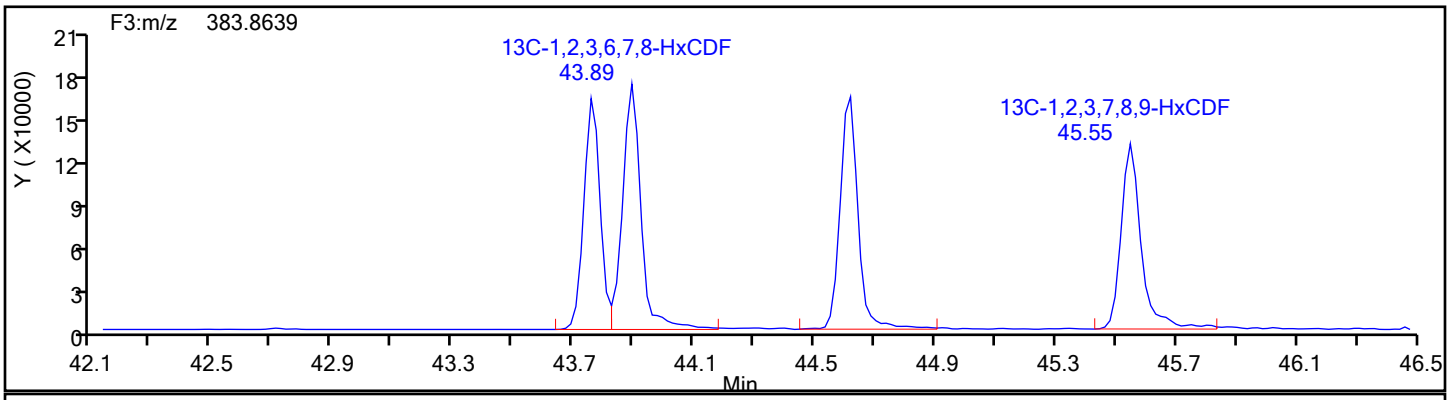
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

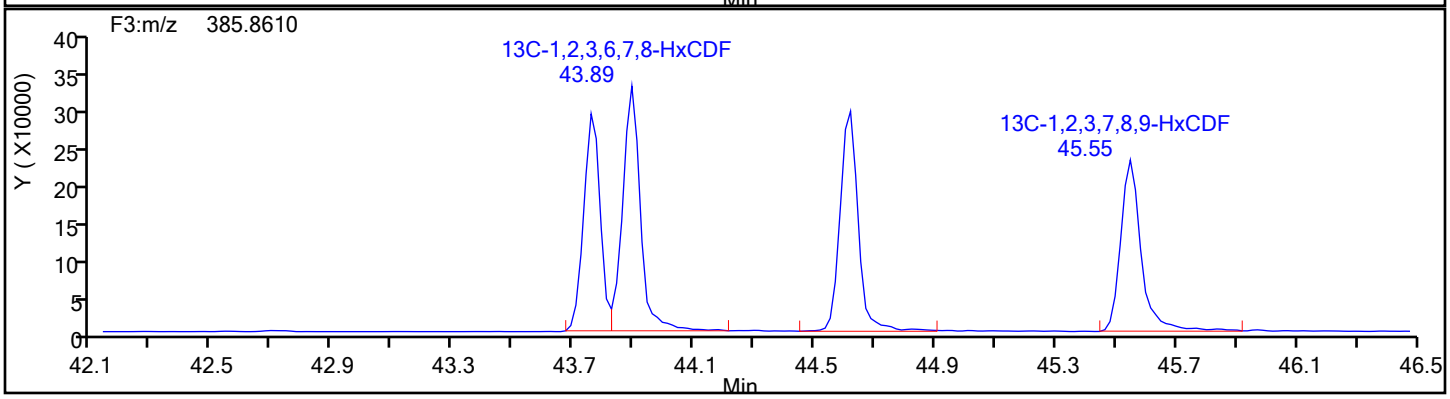
HxCDF





HxCDF Standards



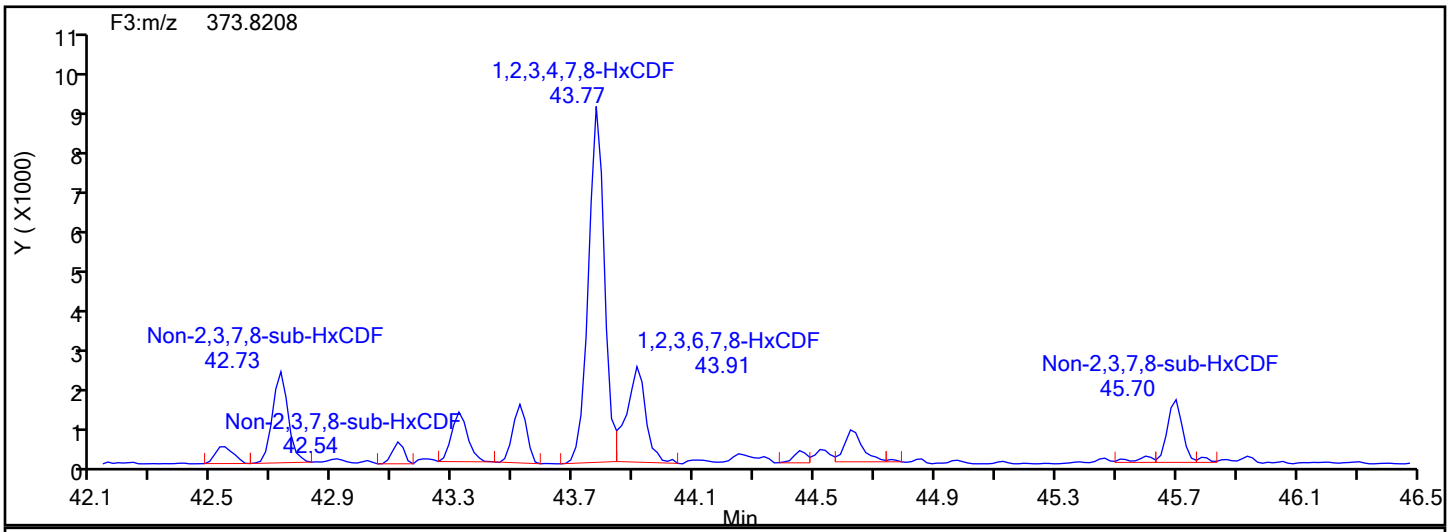


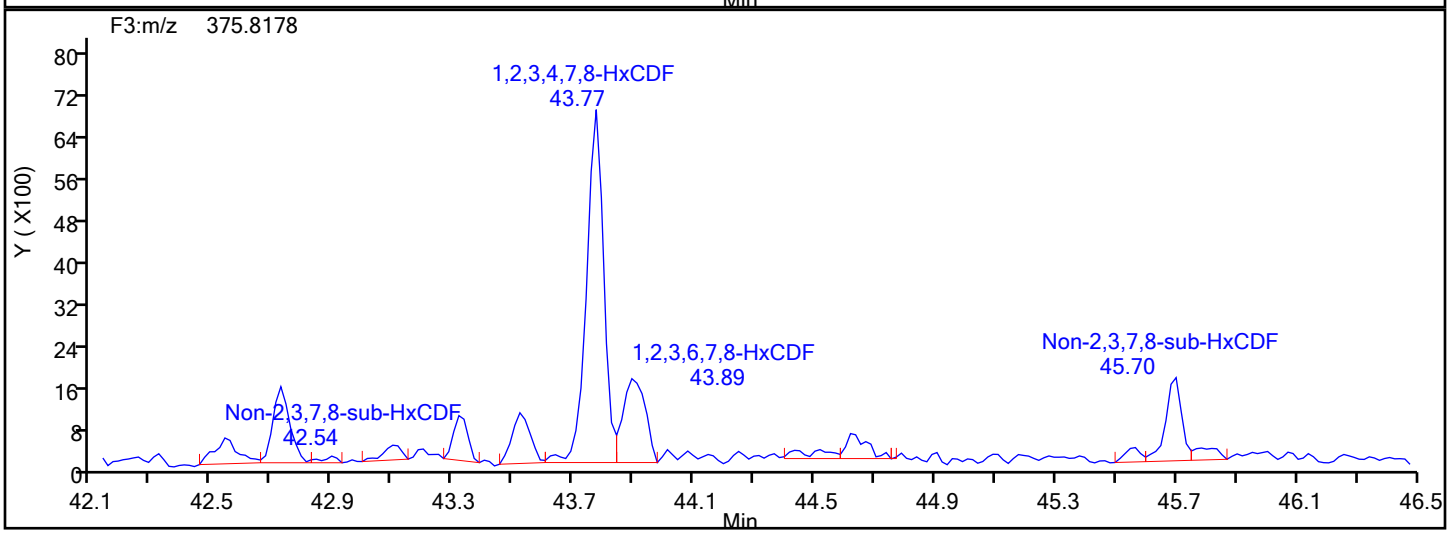
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

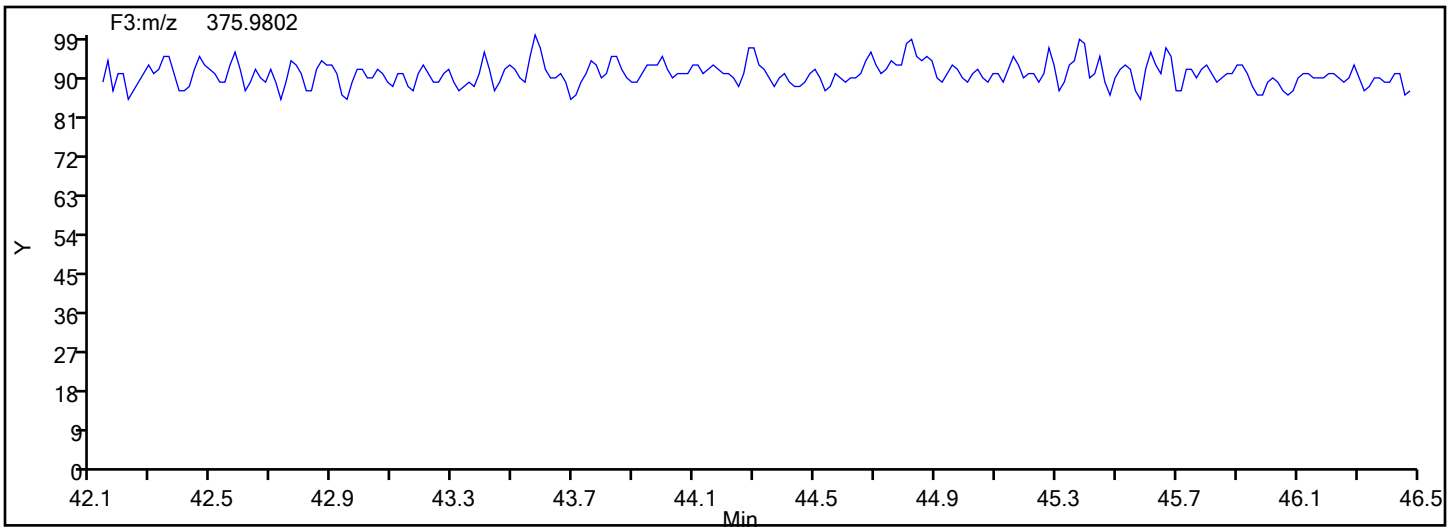
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

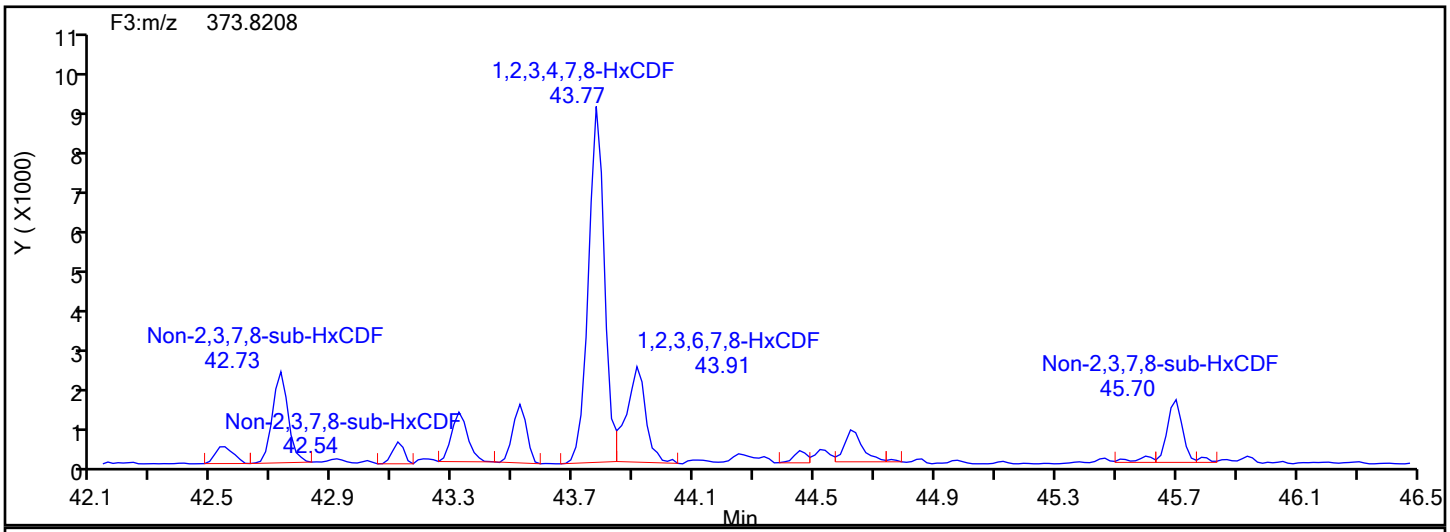


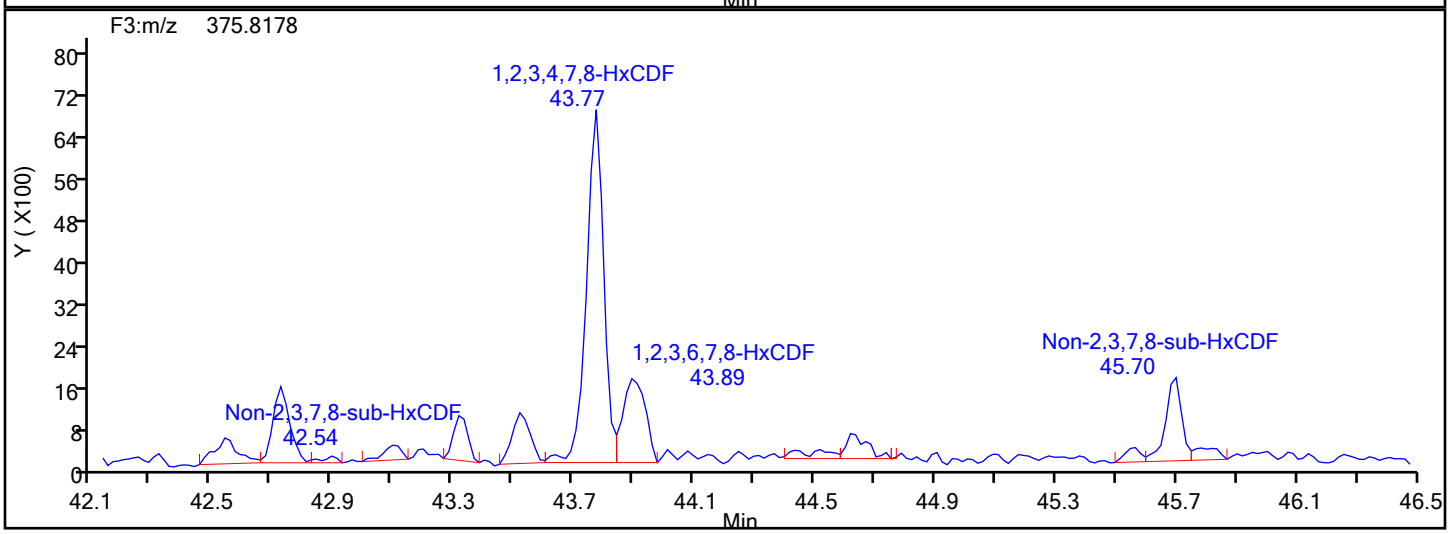
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

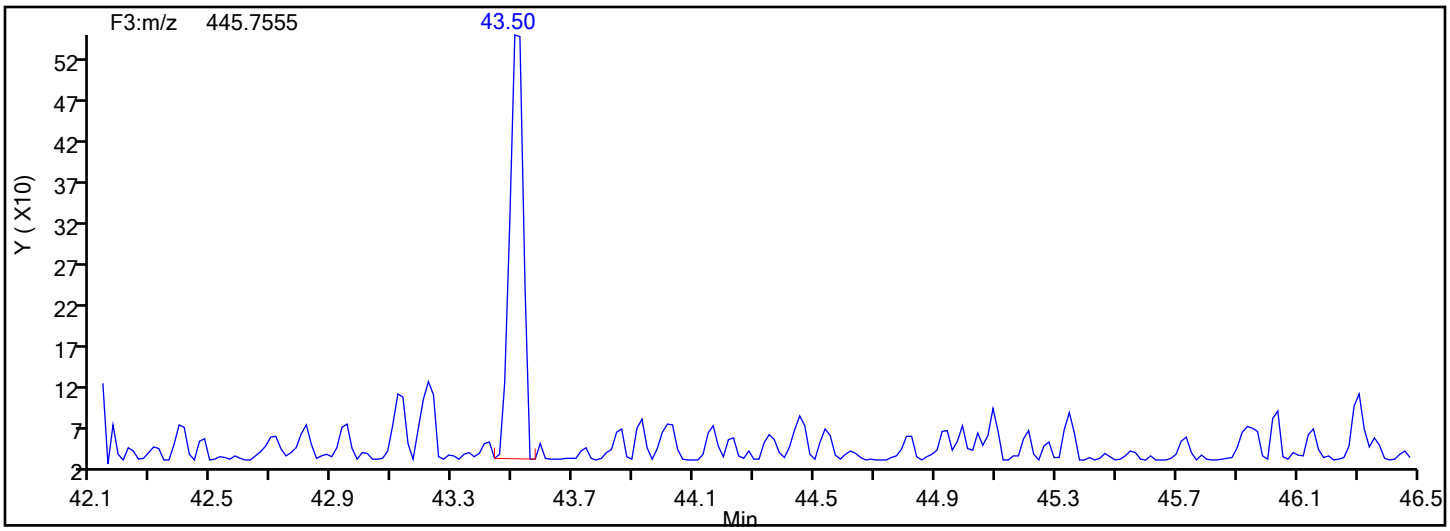
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

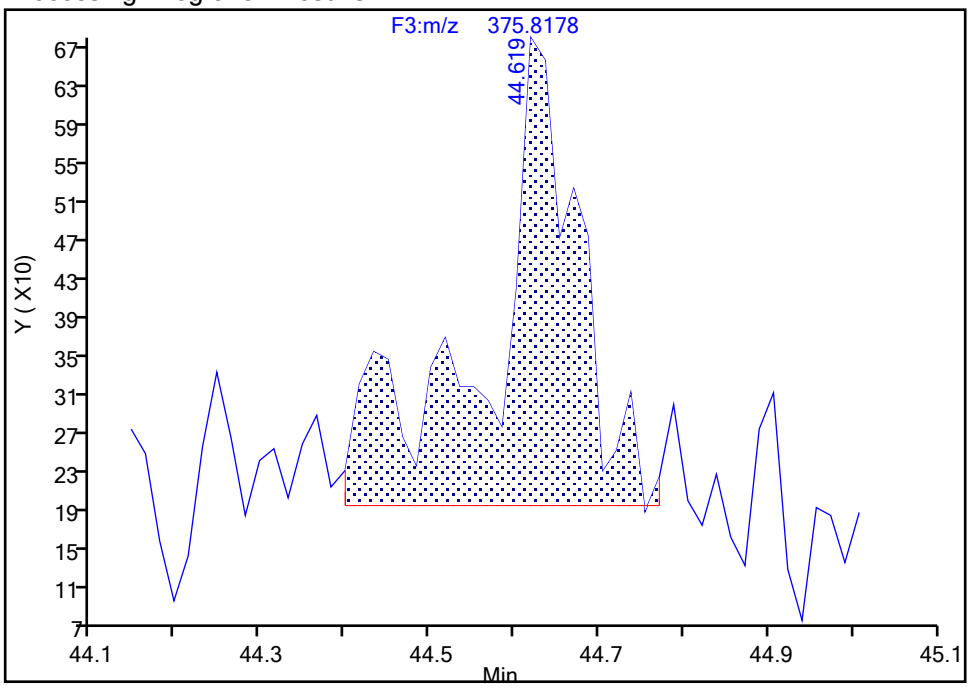
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

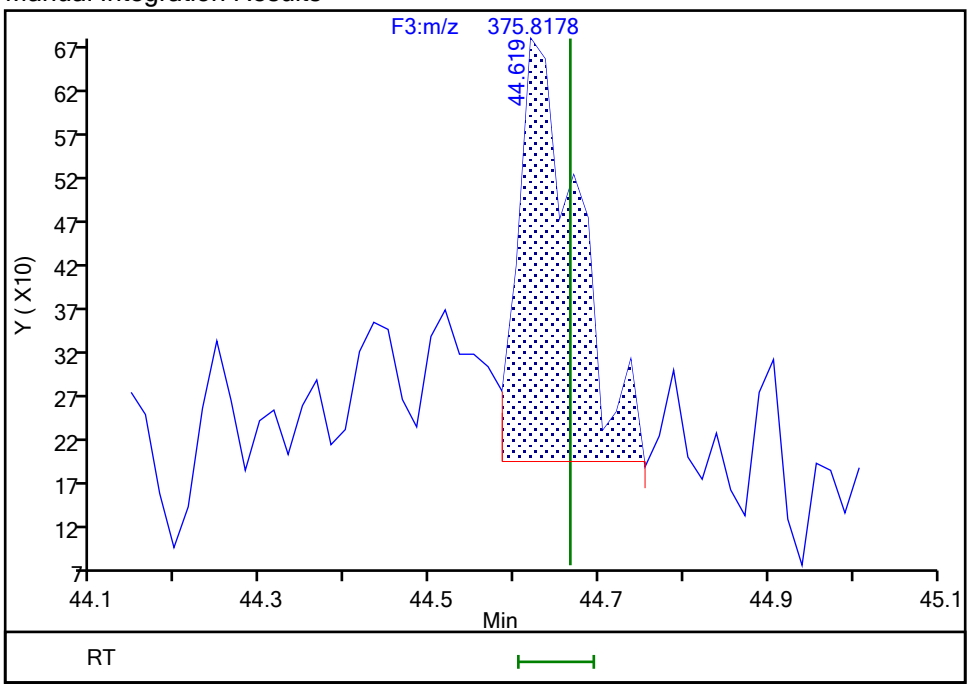
Processing Integration Results

RT: 44.62
Area: 3580
Amount: 0.143599
Amount Units: pg/ul



Manual Integration Results

RT: 44.62
Area: 2294
Amount: 0.114693
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:54
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

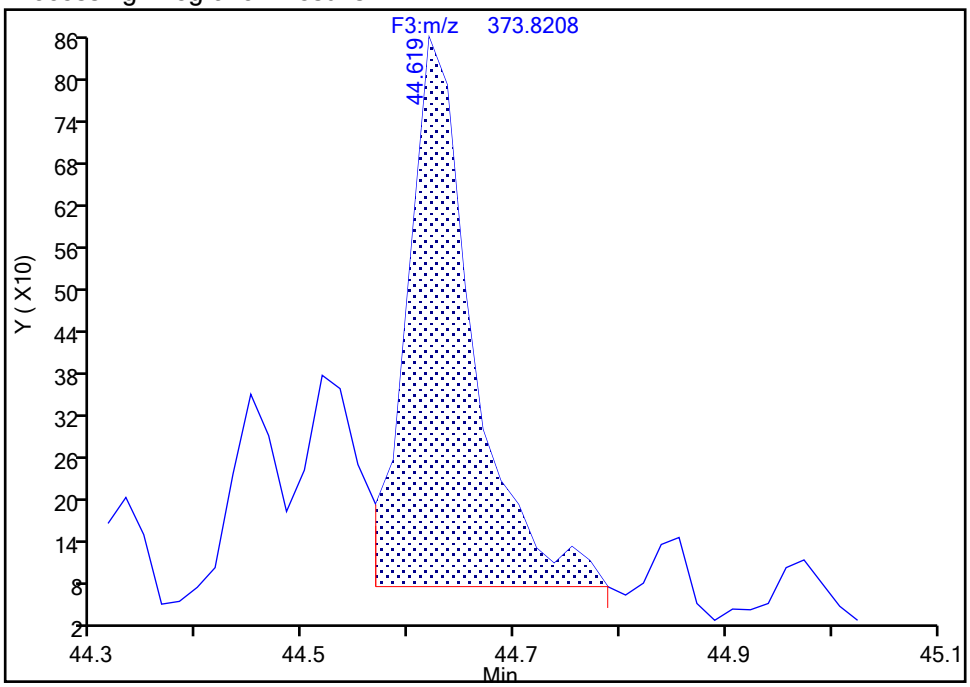
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

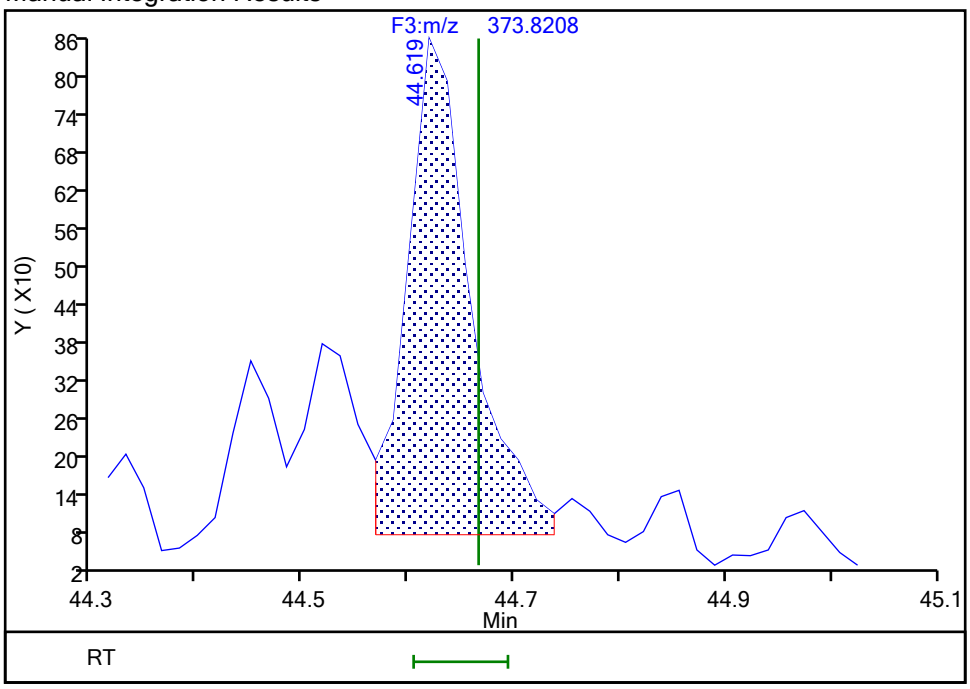
Processing Integration Results

RT: 44.62
Area: 3365
Amount: 0.143599
Amount Units: pg/ul



Manual Integration Results

RT: 44.62
Area: 3253
Amount: 0.114693
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:04:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

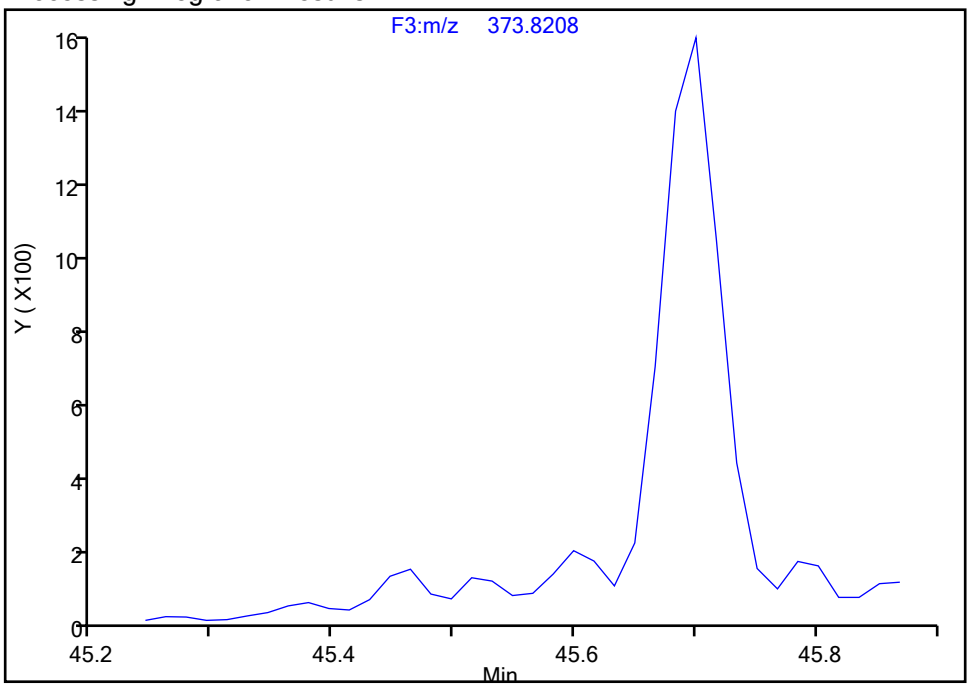
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

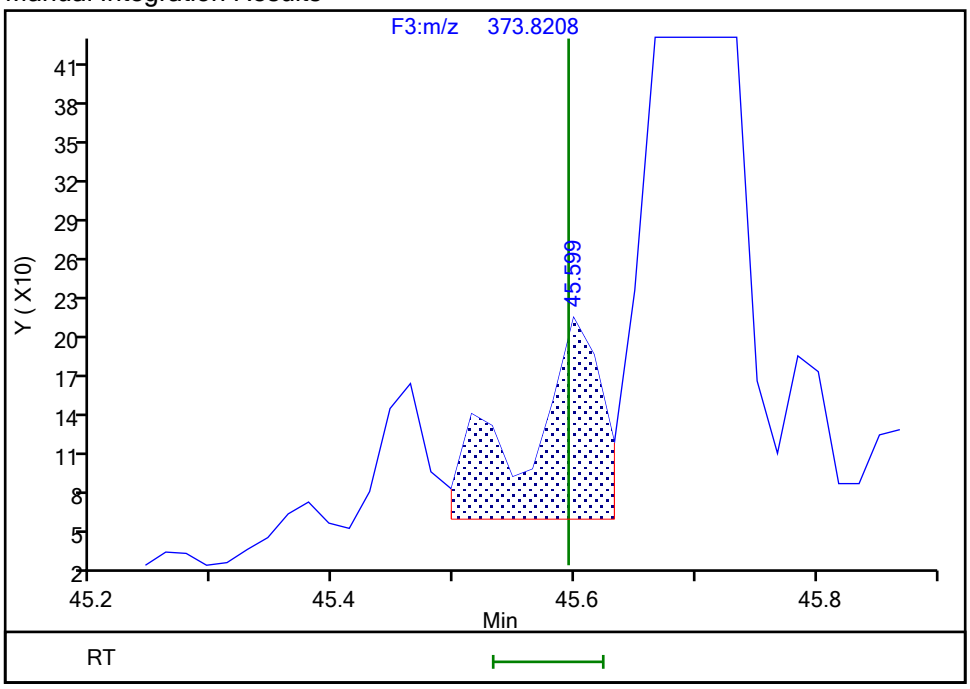
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.60
Area: 637
Amount: 0.038340
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:05:06
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

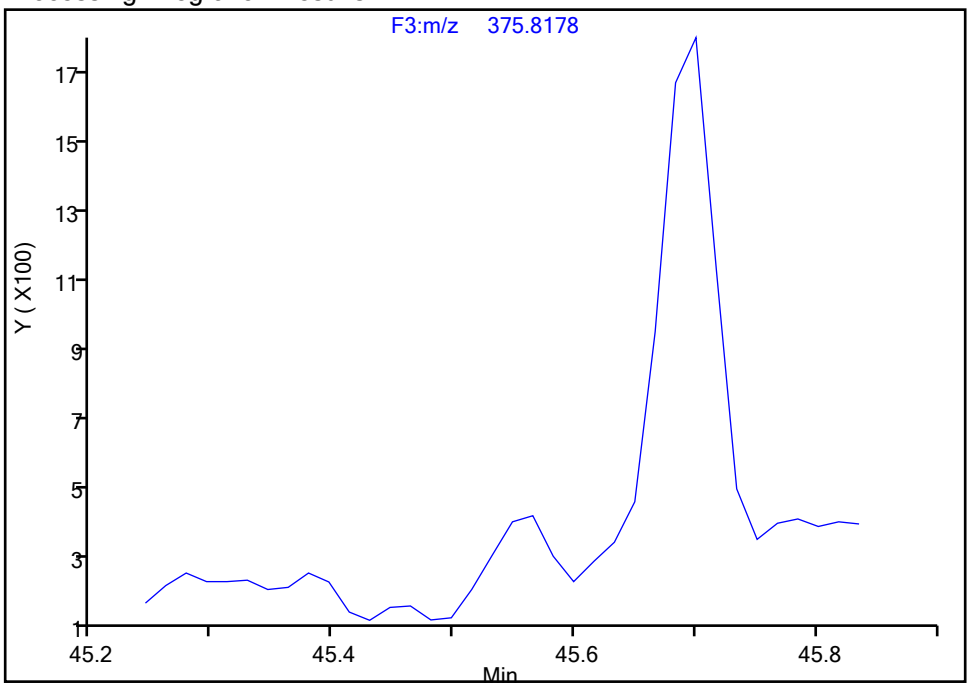
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

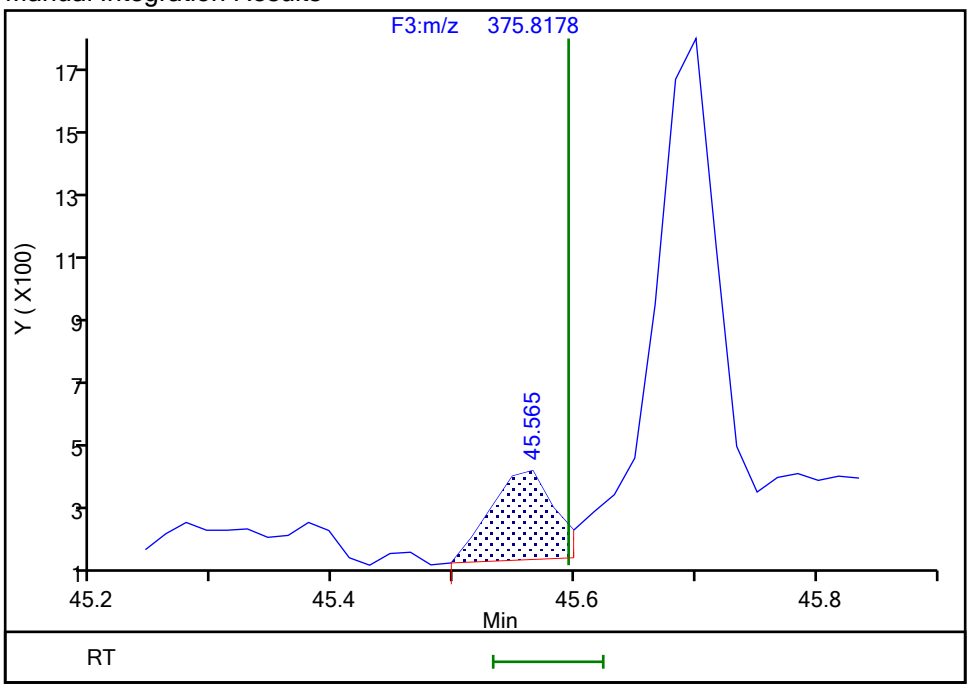
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.57
Area: 993
Amount: 0.038340
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:05:08
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

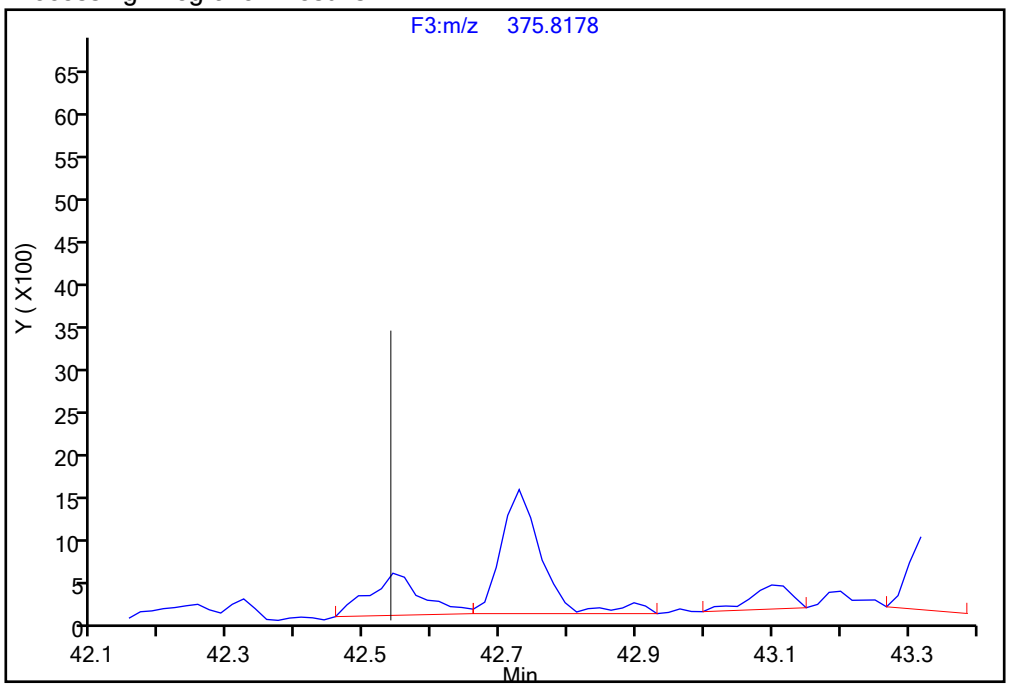
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.54- 45.78)

Signal: 2

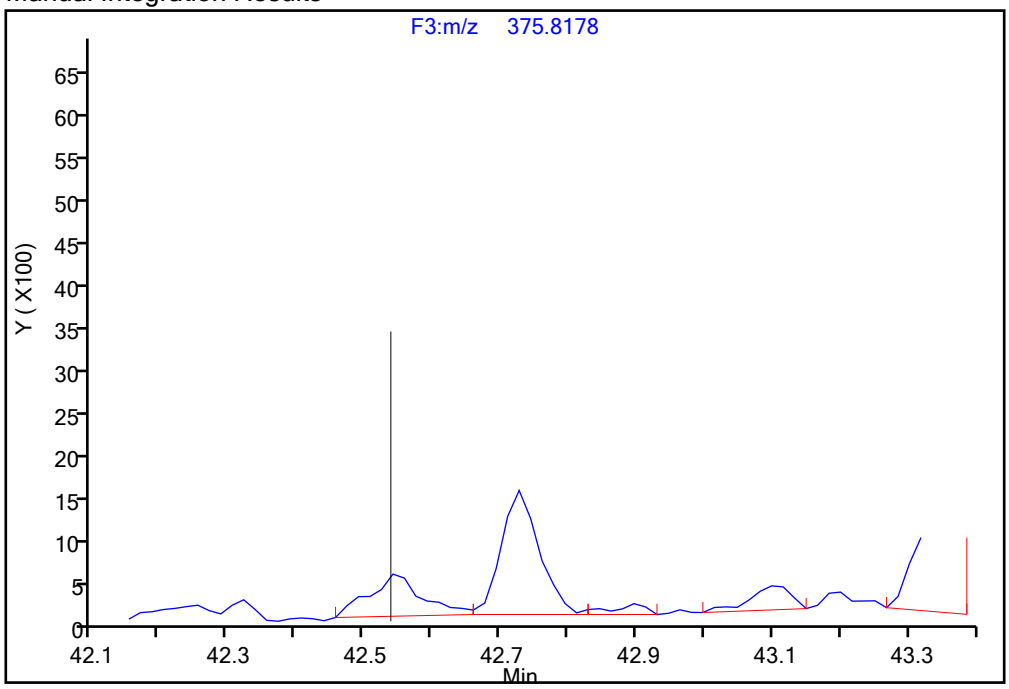
Processing Integration Results

RT = 42.728 Area = 6074



Manual Integration Results

RT = 42.728 Area = 5650 M



Reviewer: davidsonm, 17-Dec-2019 12:05:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

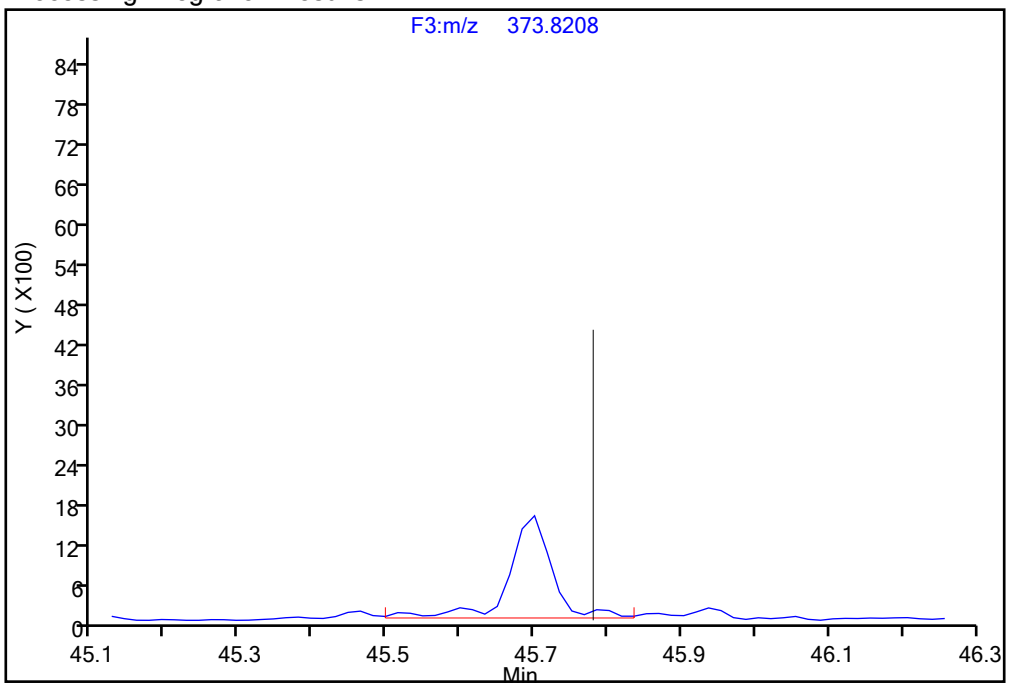
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.54- 45.78)

Signal: 1

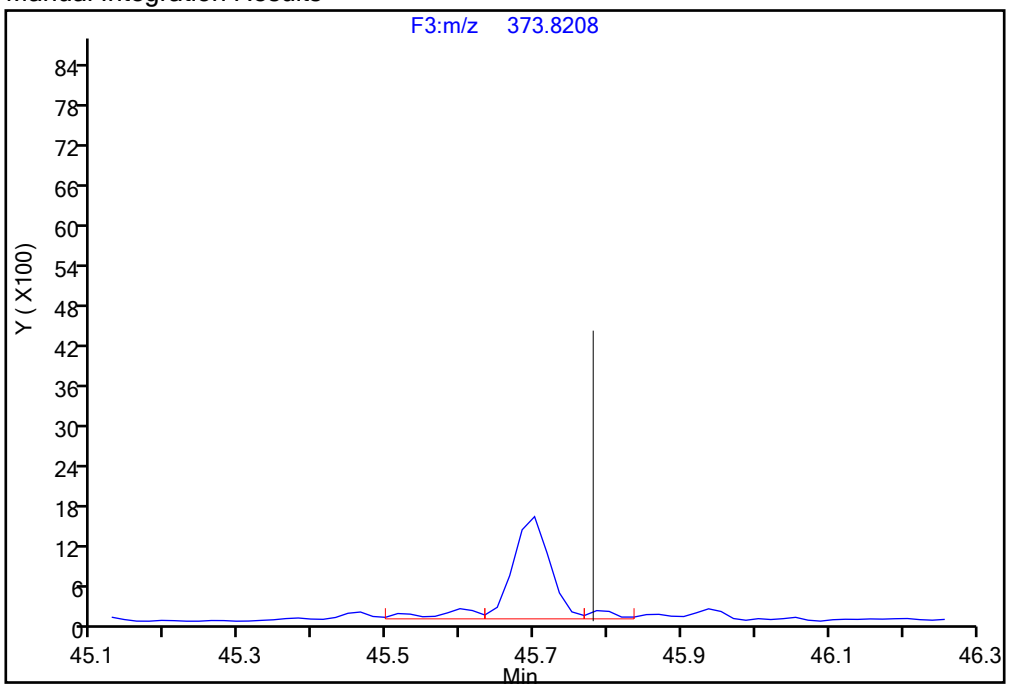
Processing Integration Results

RT = 45.700 Area = 6254



Manual Integration Results

RT = 45.700 Area = 5310 M



Reviewer: davidsonm, 17-Dec-2019 12:05:37

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

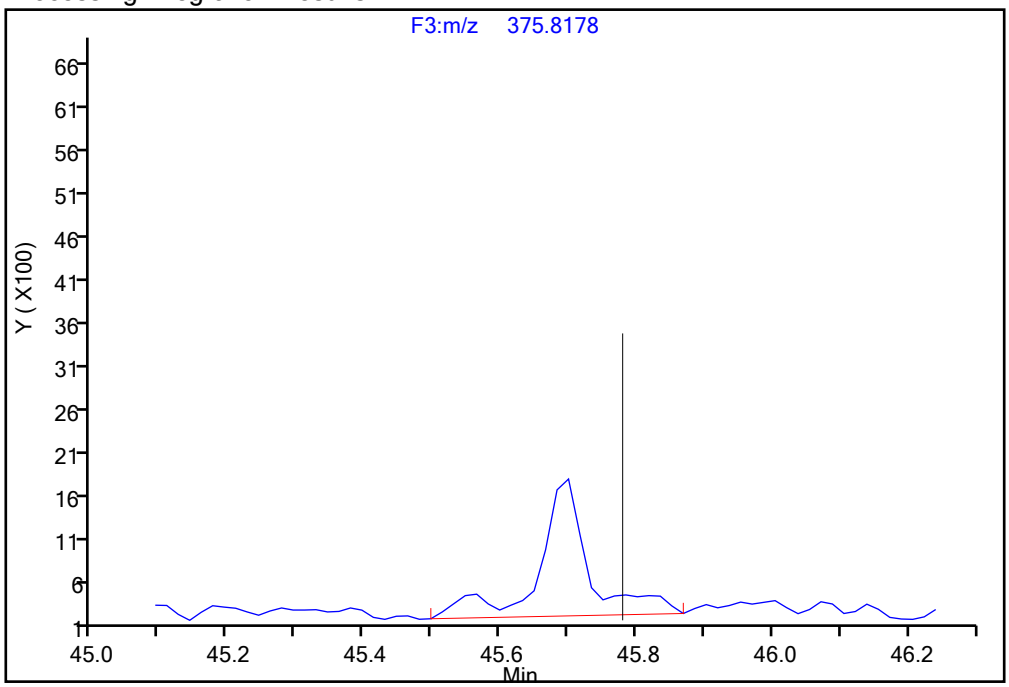
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.54- 45.78)

Signal: 2

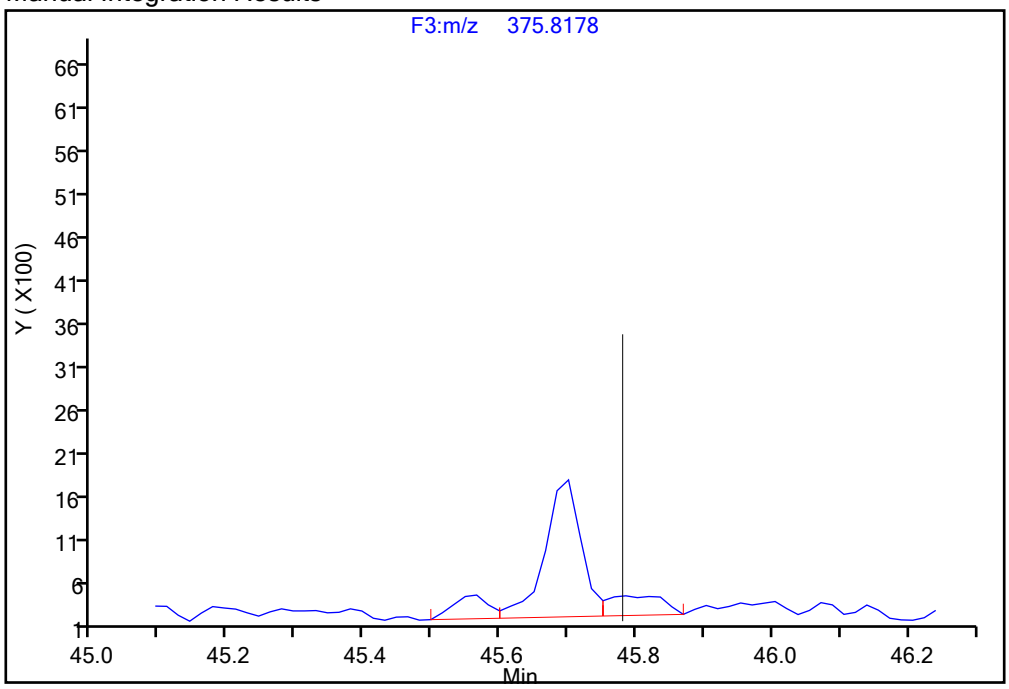
Processing Integration Results

RT = 45.700 Area = 8175



Manual Integration Results

RT = 45.700 Area = 5913 M



Reviewer: davidsonm, 17-Dec-2019 12:05:42

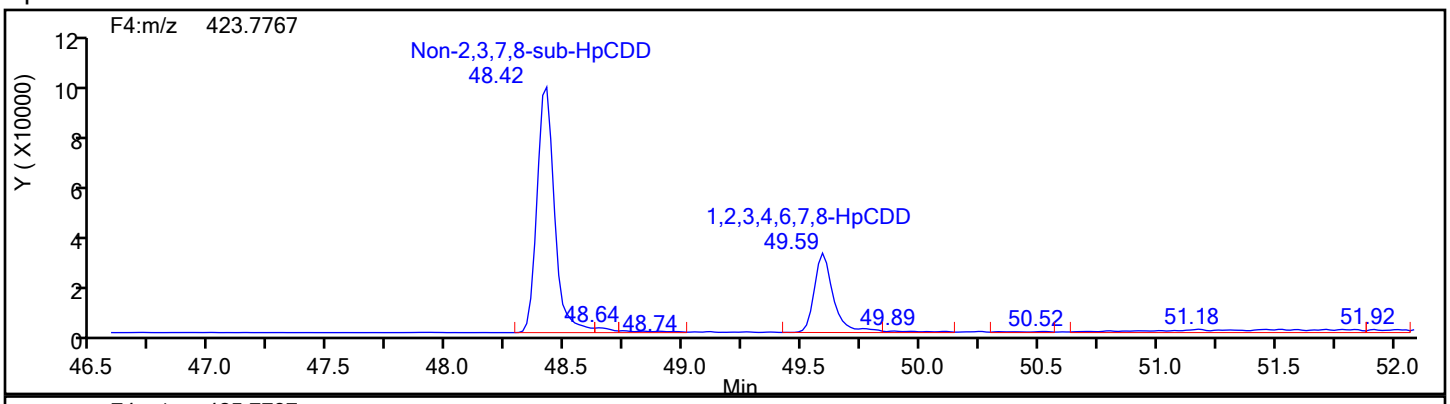
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

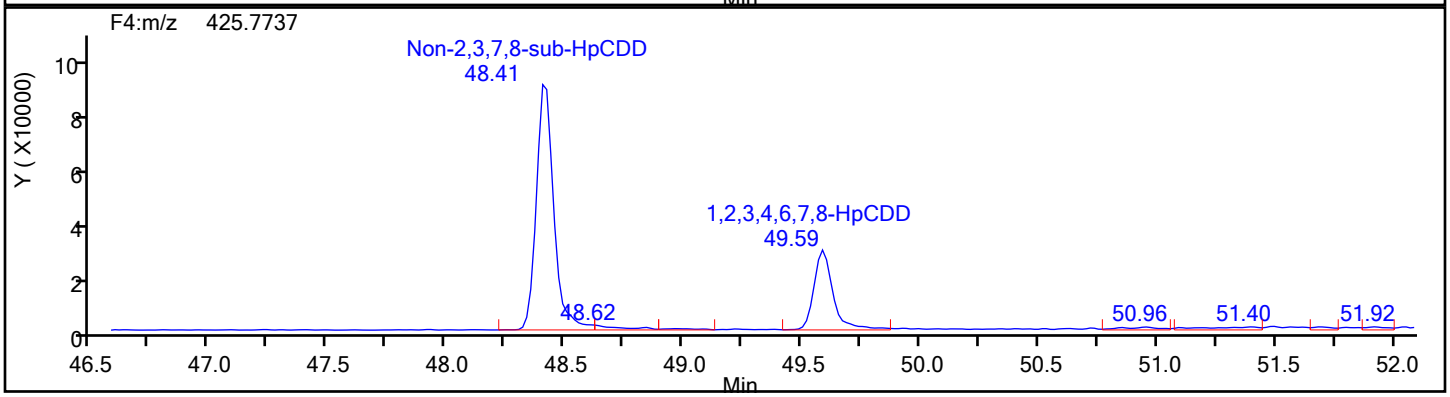
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

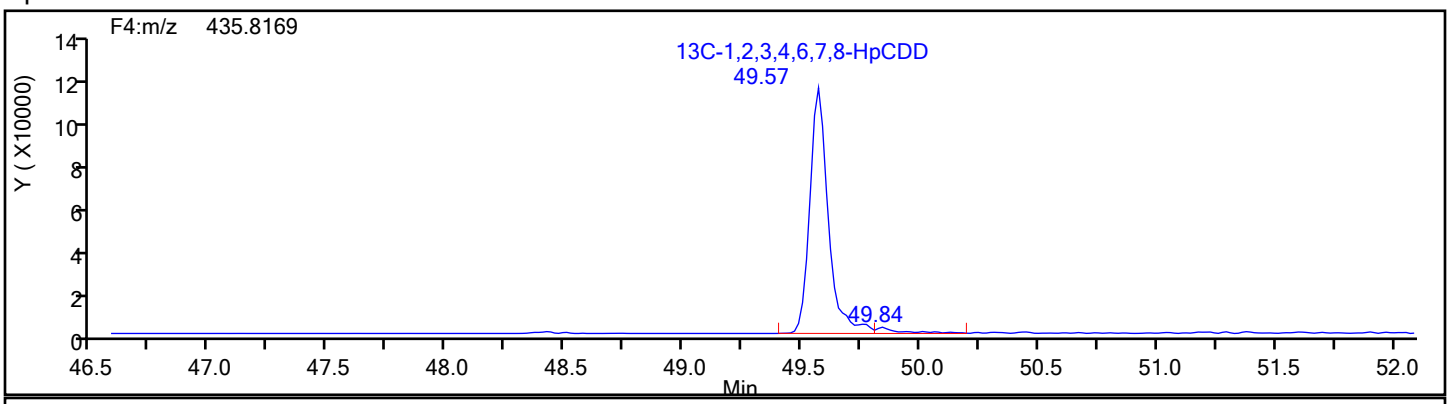
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

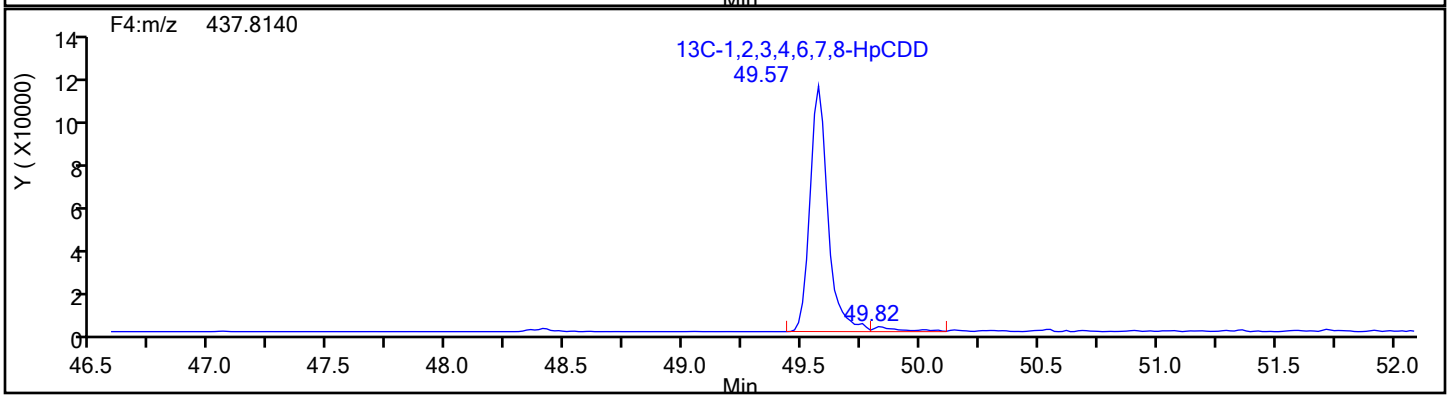
HpCDD





HpCDD Standards



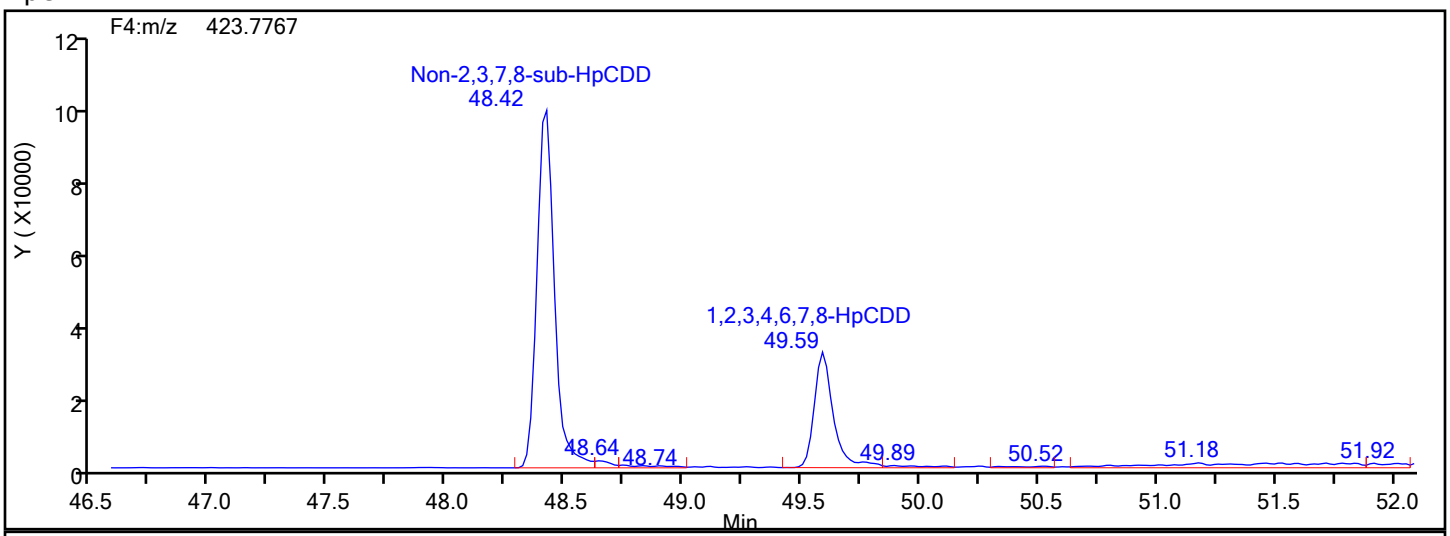


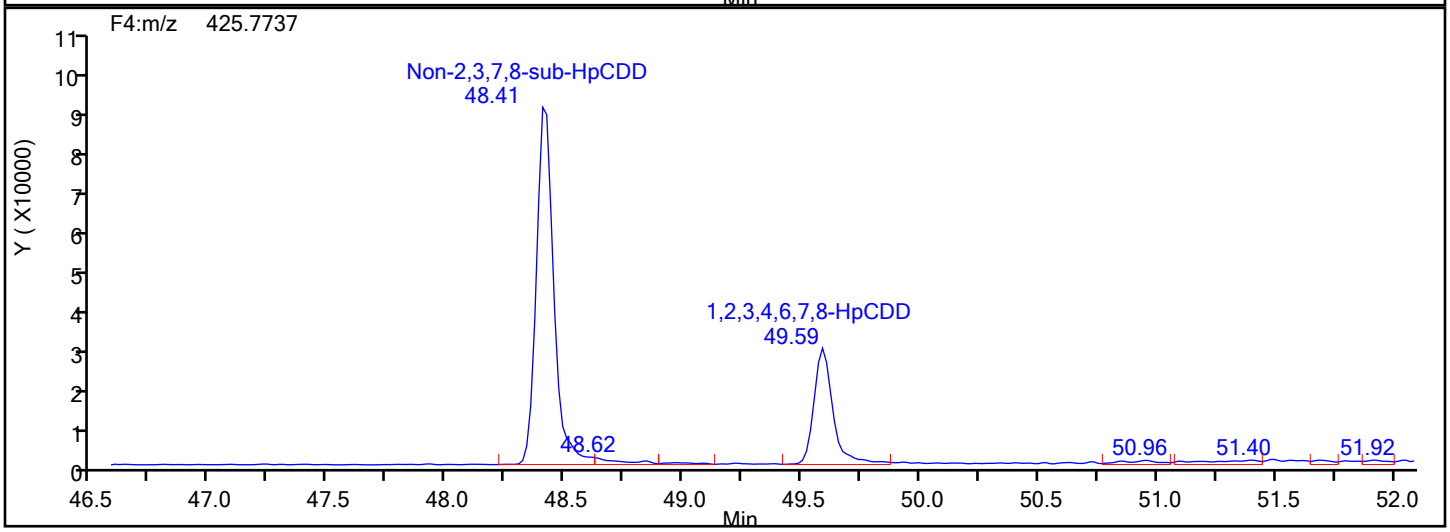
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

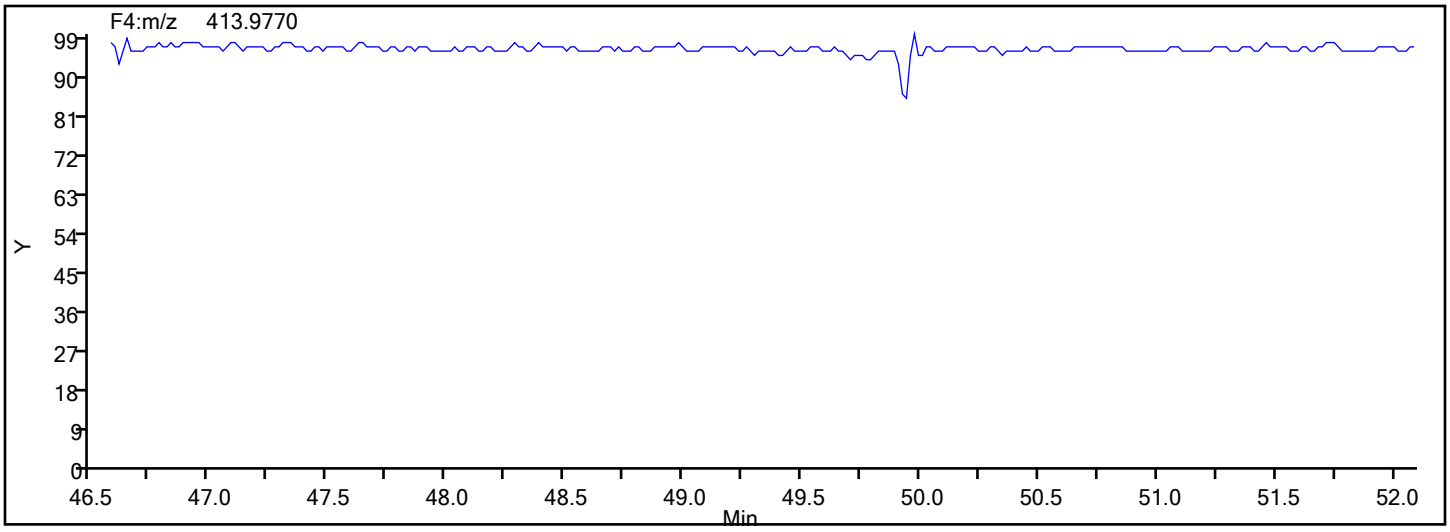
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

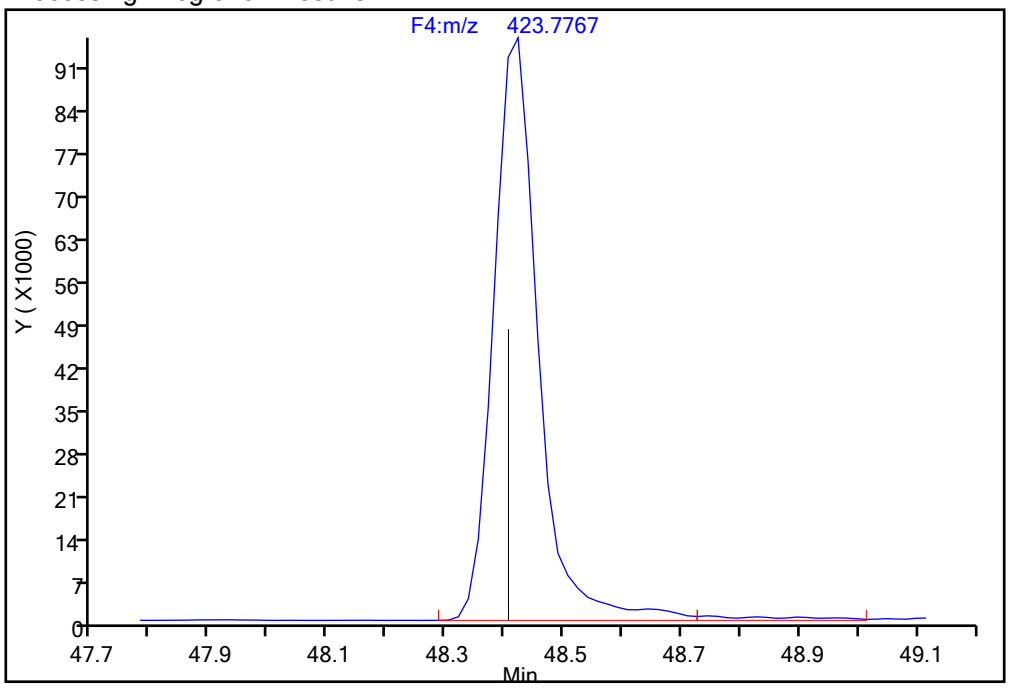
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7767, RT: (48.41- 49.67)

Signal: 1

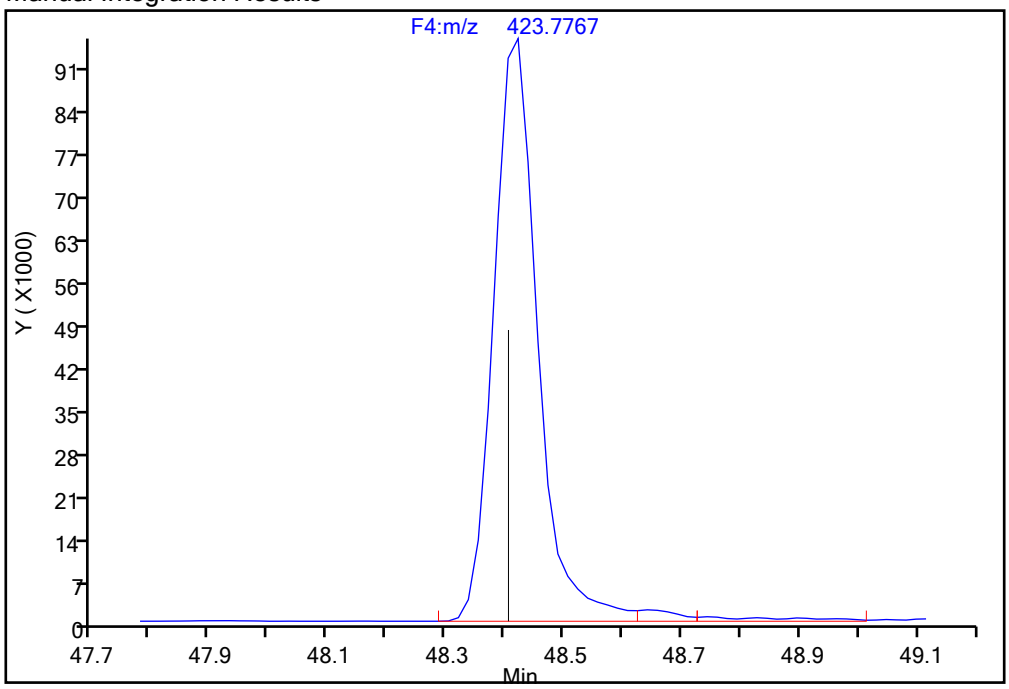
Processing Integration Results

RT = 48.422 Area = 502086



Manual Integration Results

RT = 48.422 Area = 493664 M



Reviewer: davidsonm, 17-Dec-2019 12:06:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

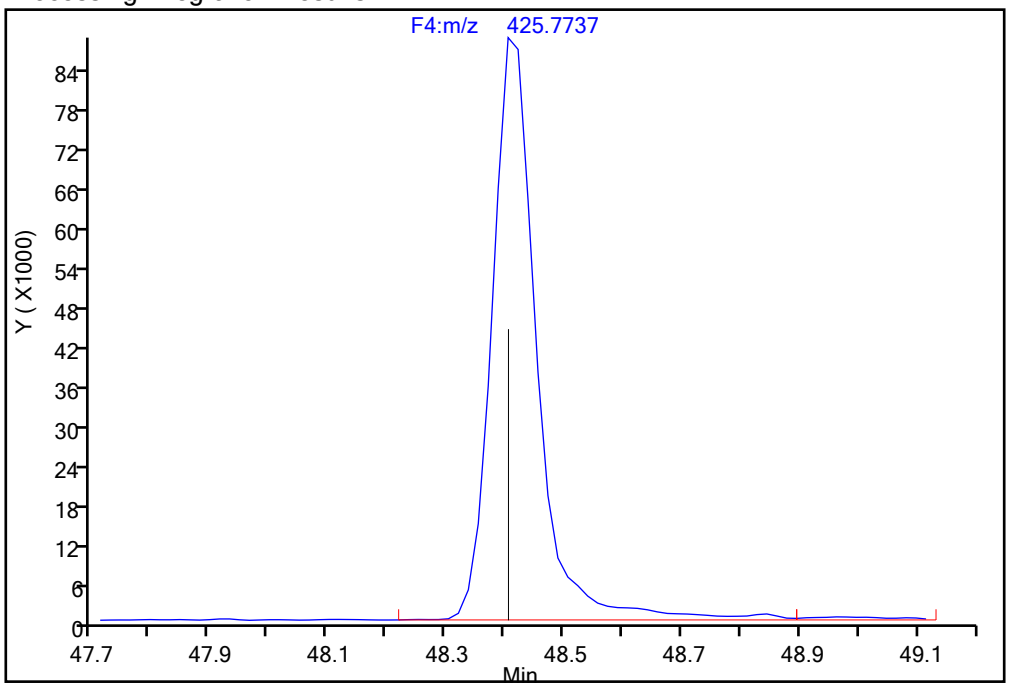
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (48.41- 49.67)

Signal: 2

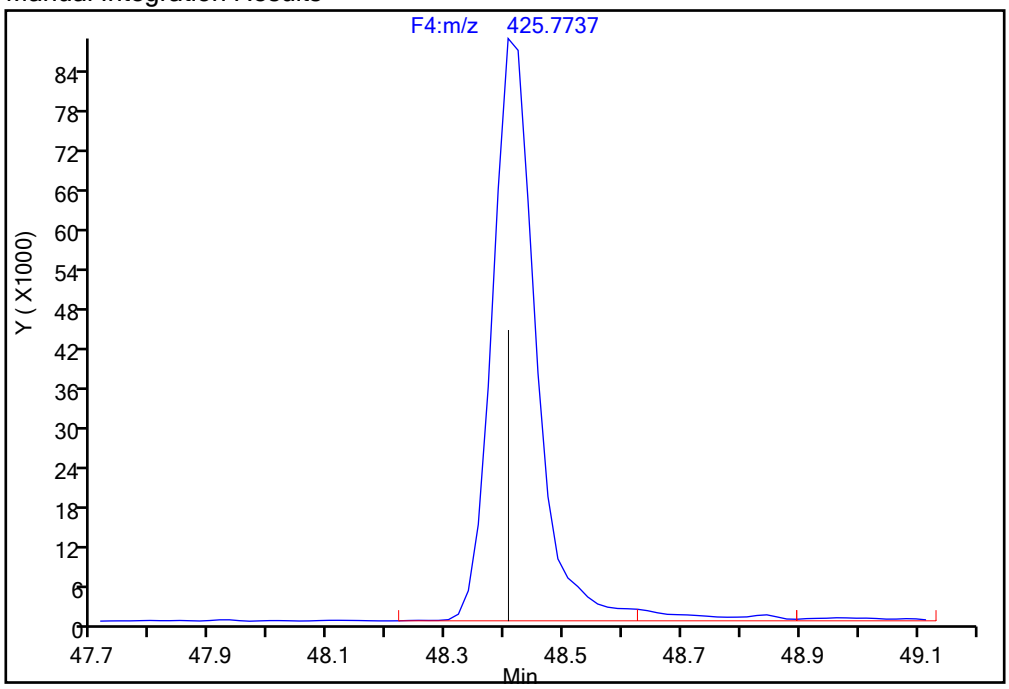
Processing Integration Results

RT = 48.405 Area = 468270



Manual Integration Results

RT = 48.405 Area = 455211 M



Reviewer: davidsonm, 17-Dec-2019 12:06:04

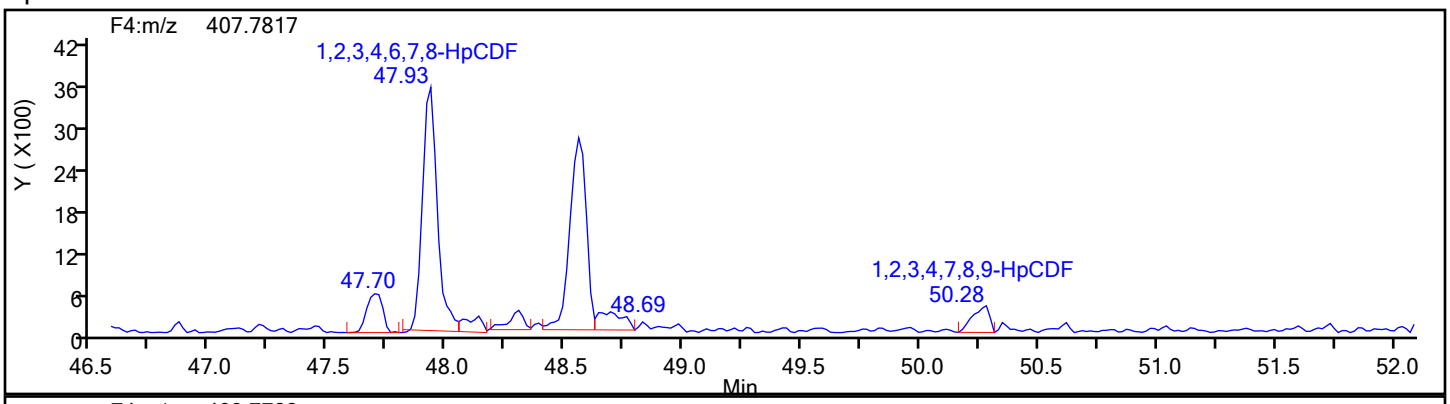
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

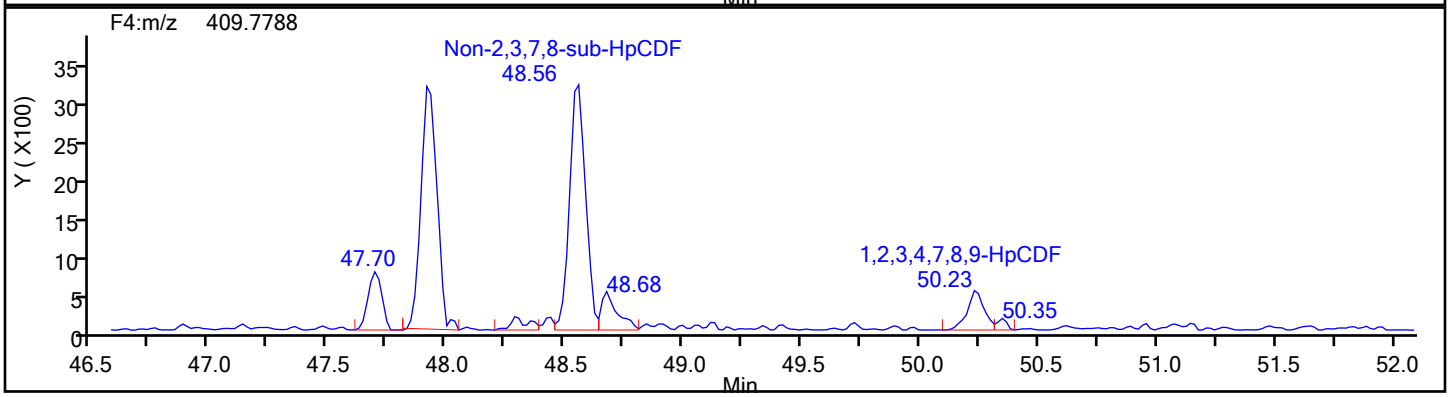
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

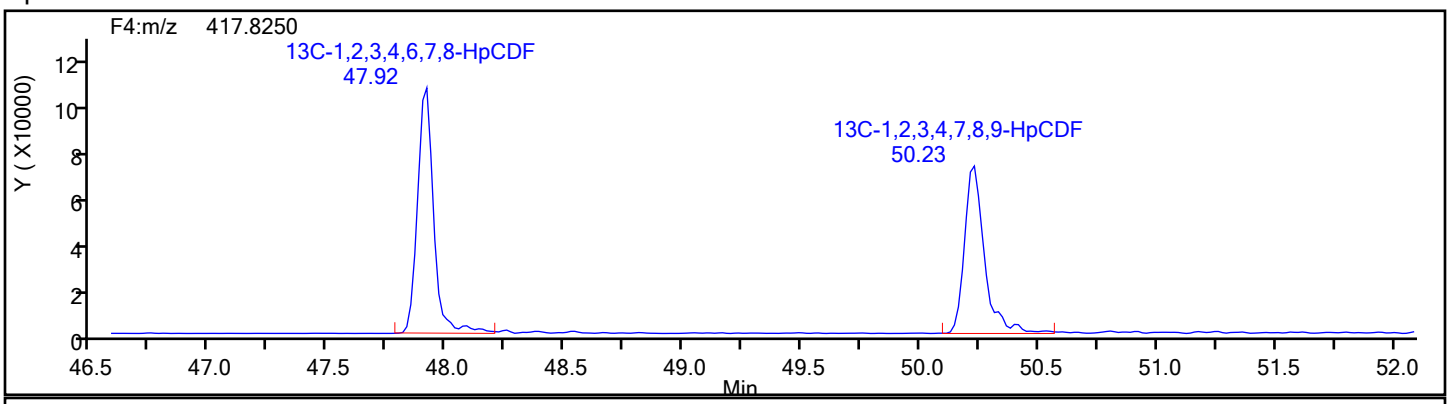
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

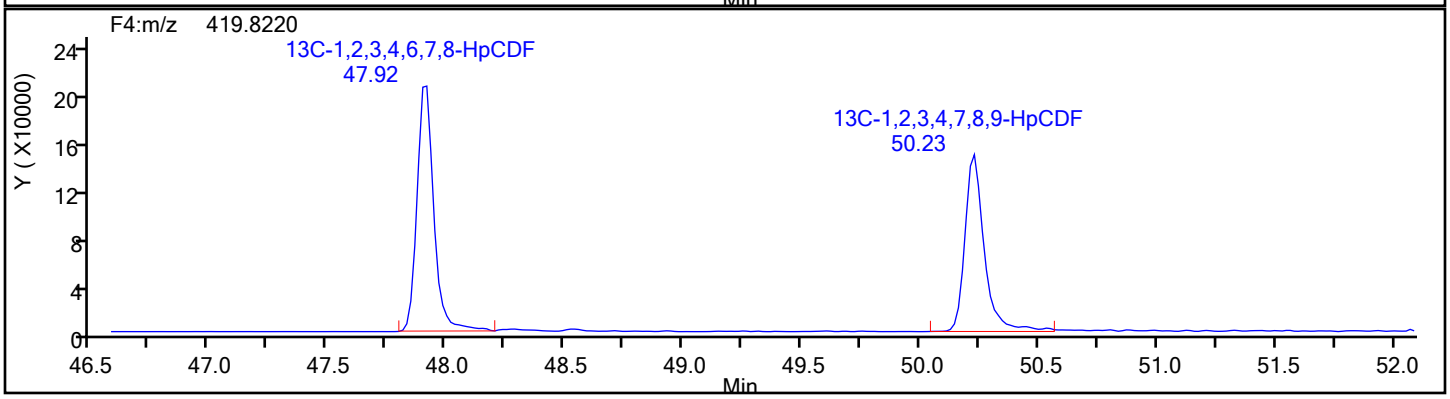
HpCDF





HpCDF Standards



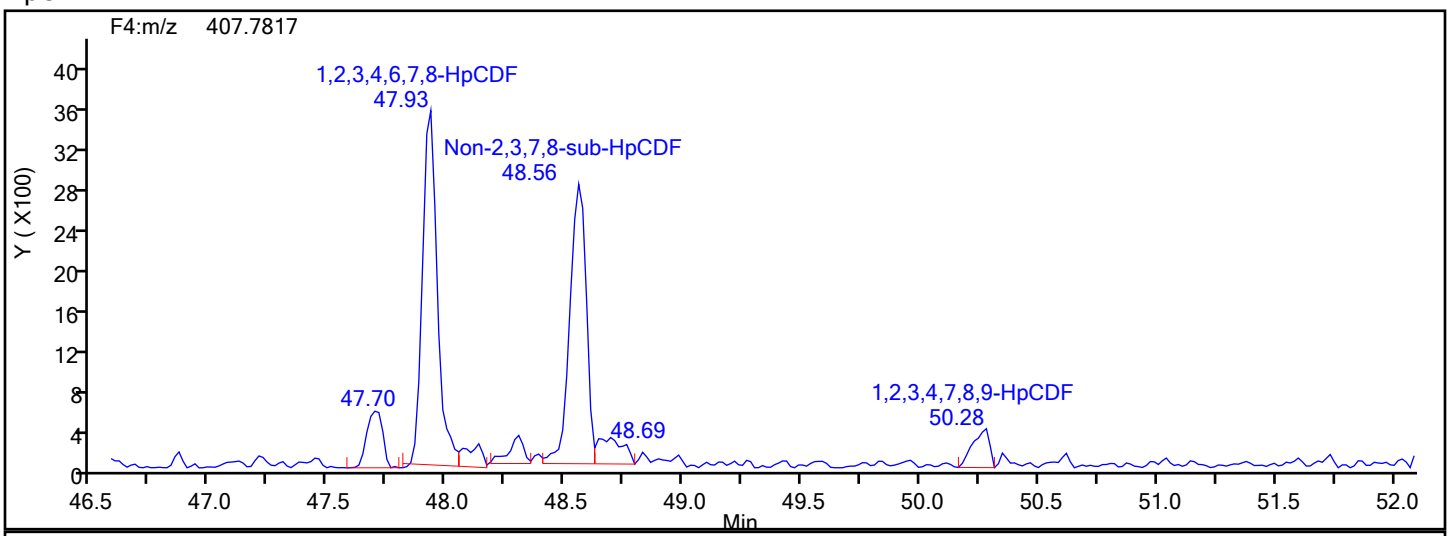


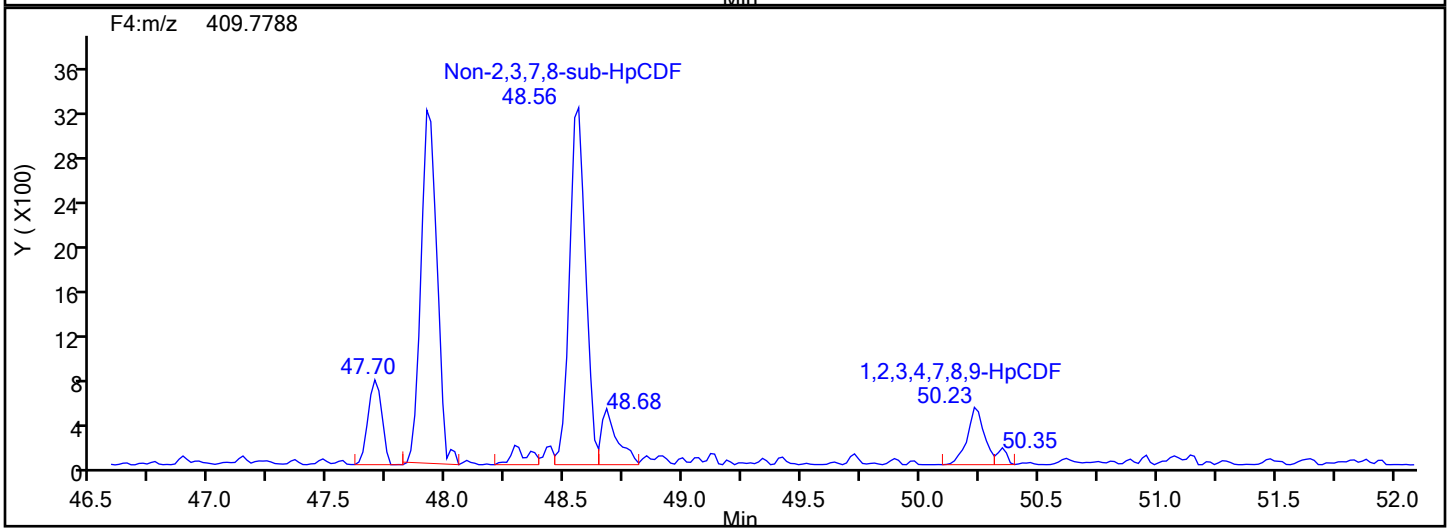
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

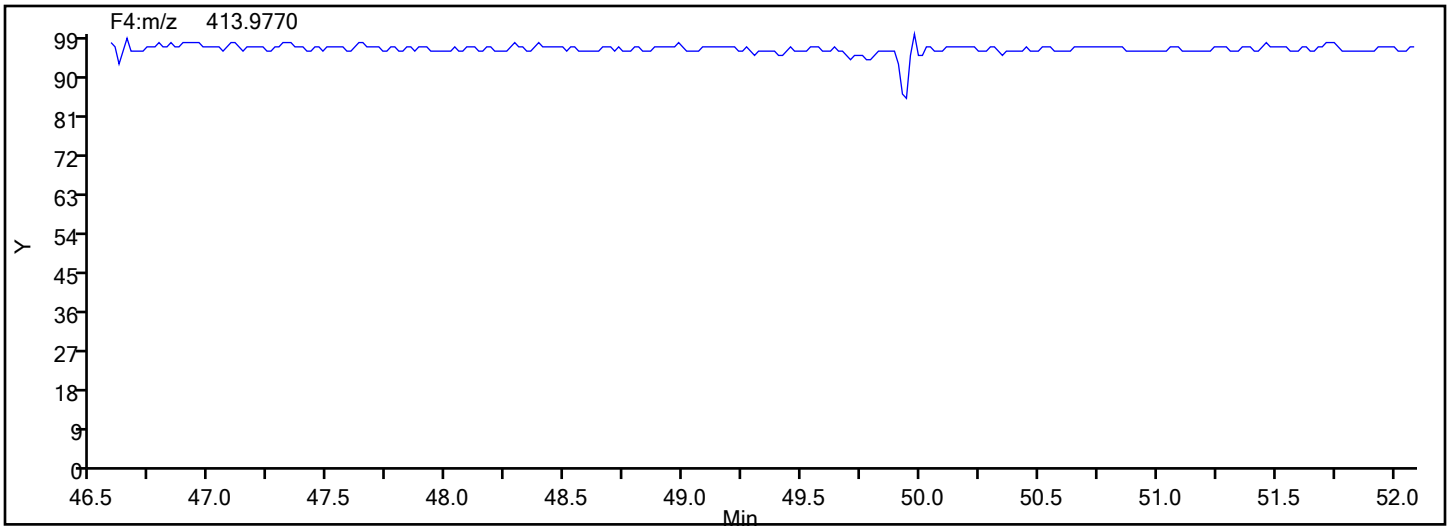
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

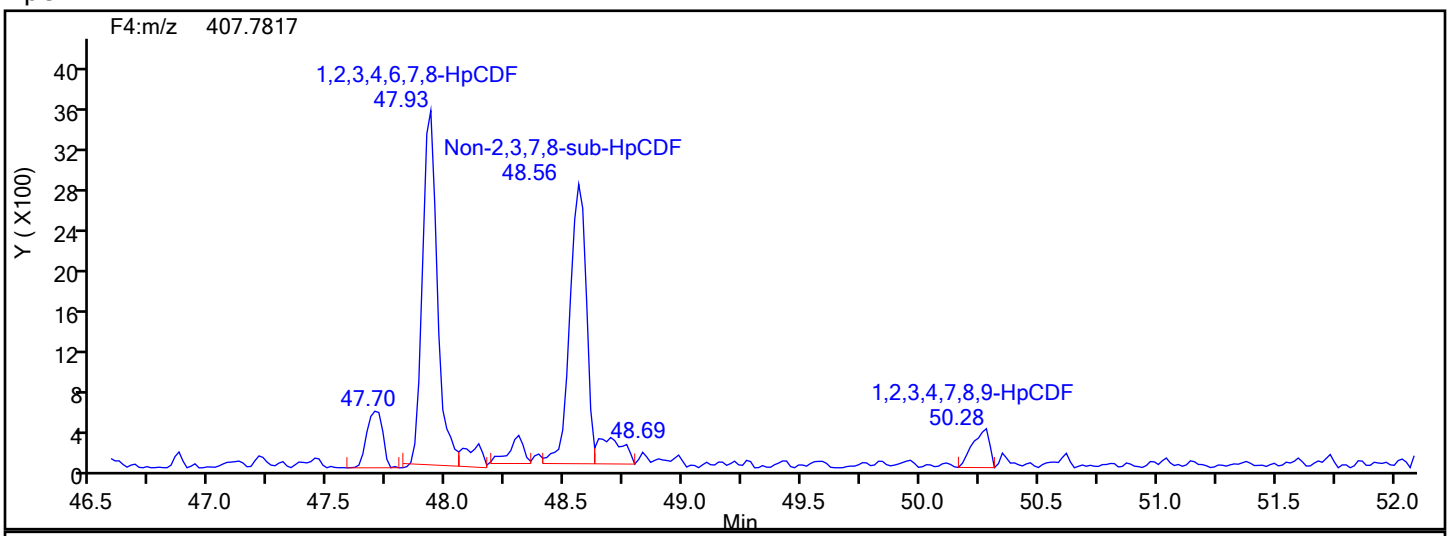


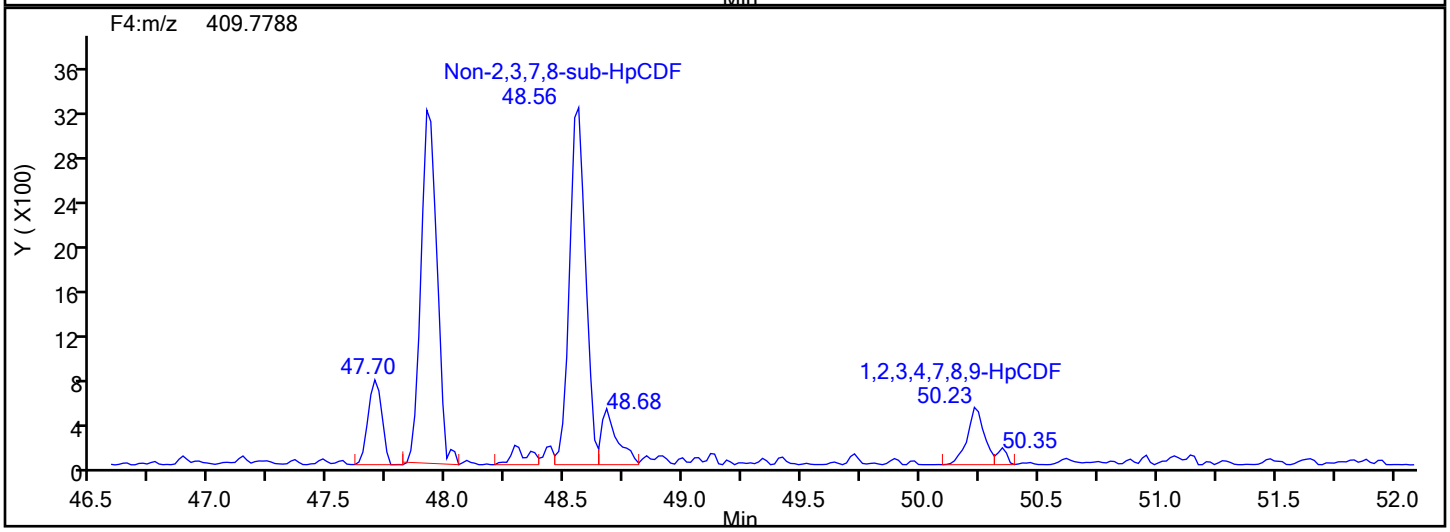
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

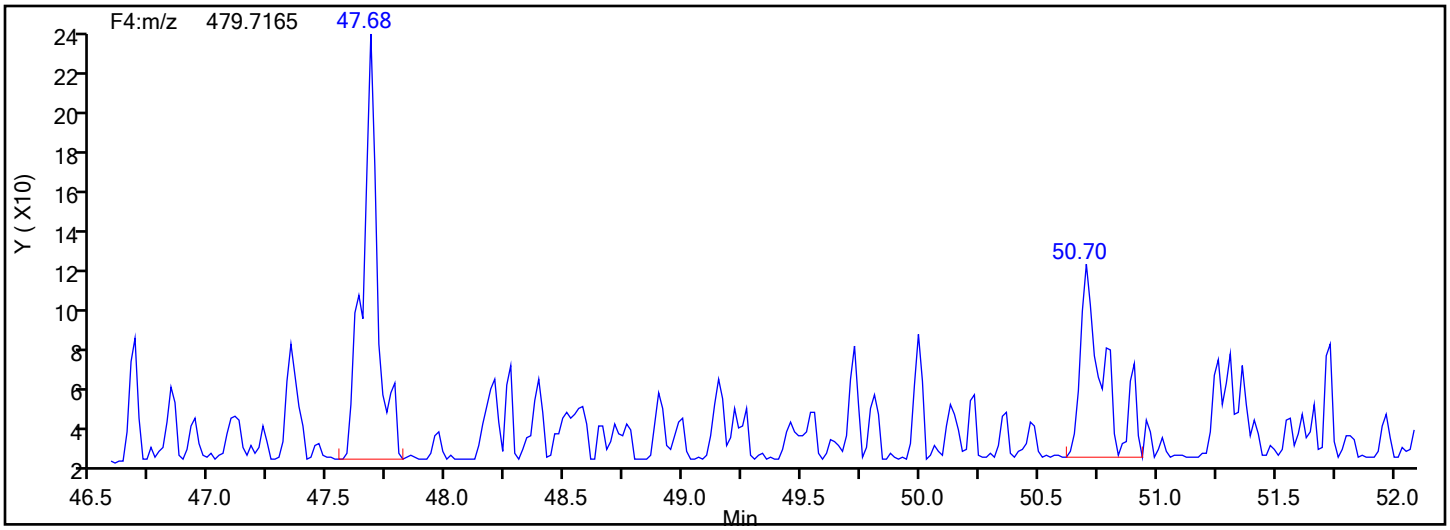
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

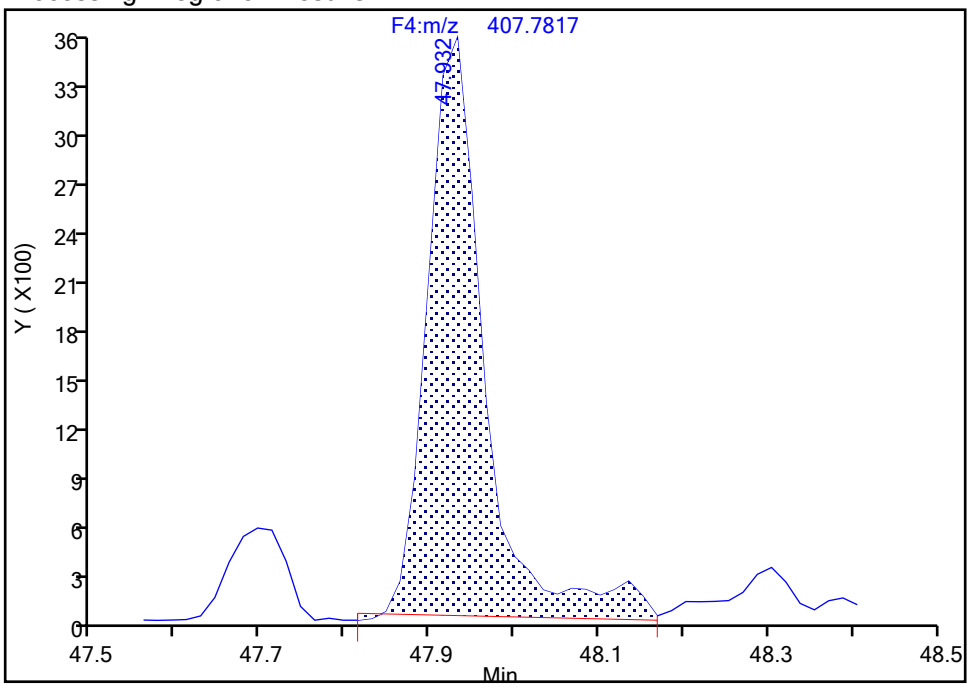
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

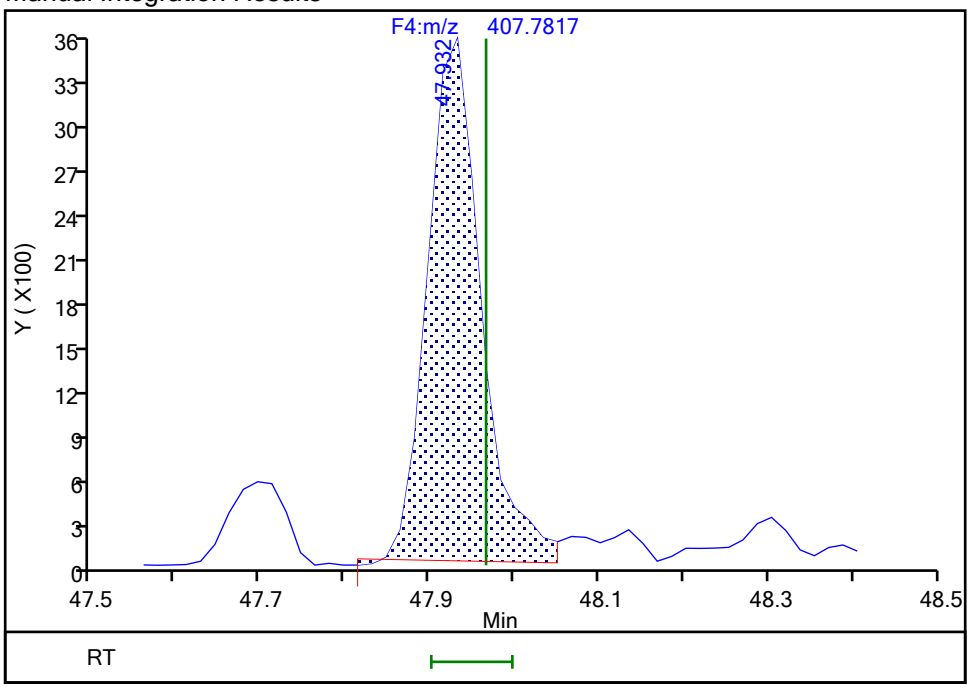
Processing Integration Results

RT: 47.93
Area: 16463
Amount: 0.693267
Amount Units: pg/ul



Manual Integration Results

RT: 47.93
Area: 15306
Amount: 0.667631
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:06:12

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

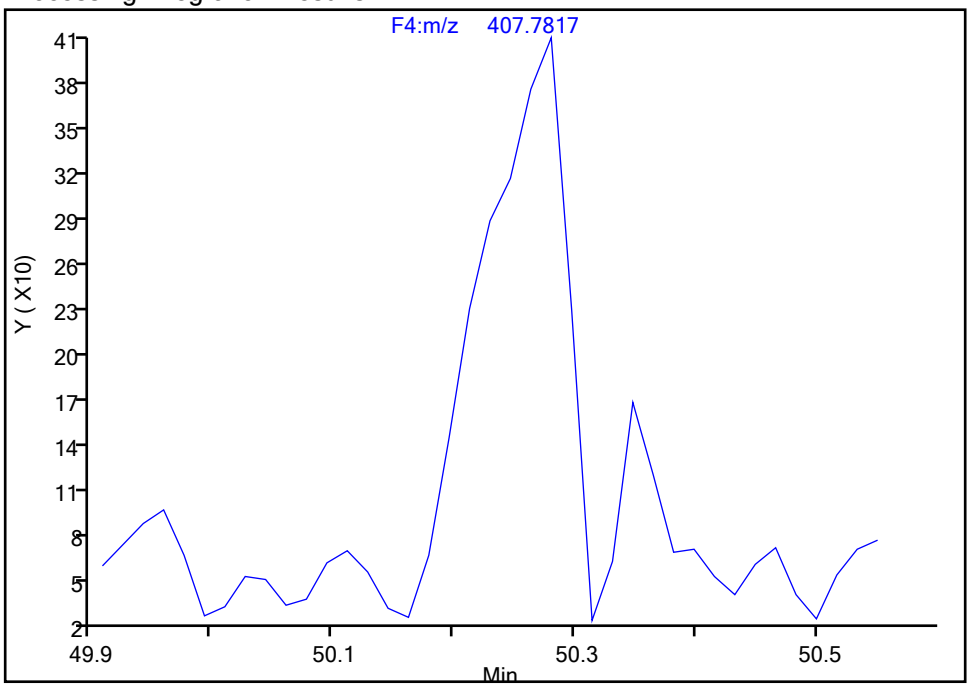
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

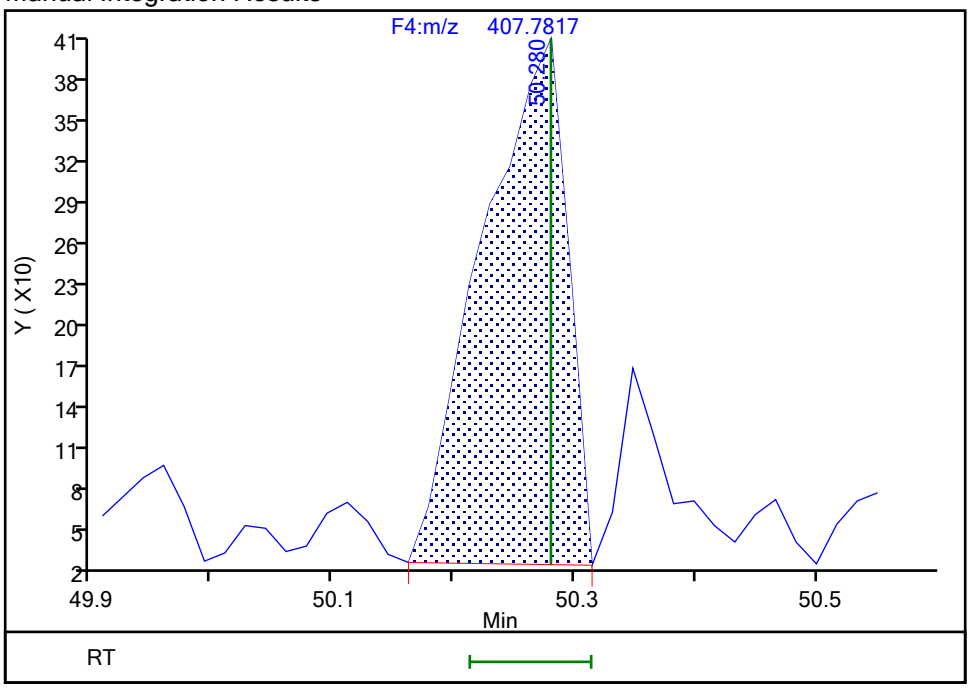
Not Detected
Expected RT: 50.28

Processing Integration Results



Manual Integration Results

RT: 50.28
Area: 1885
Amount: 0.127277
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:06:18
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

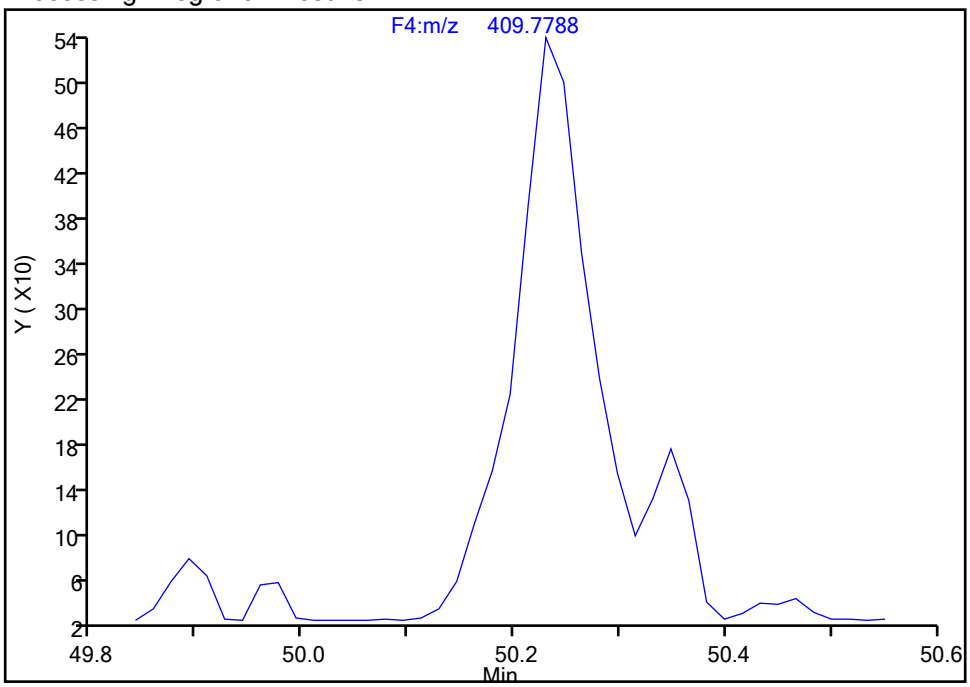
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

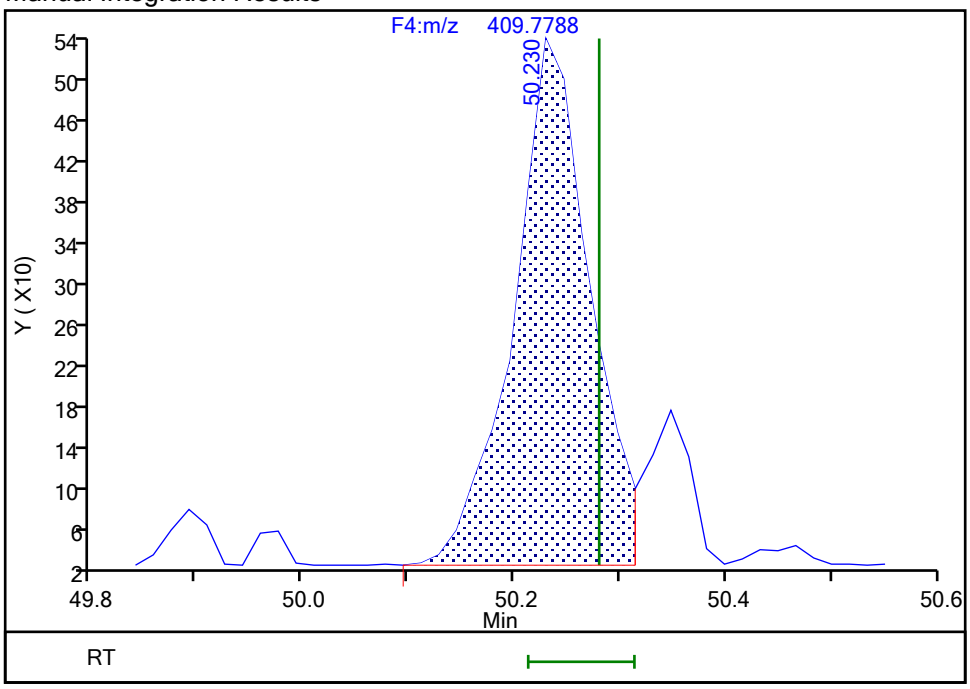
Not Detected
Expected RT: 50.28

Processing Integration Results



Manual Integration Results

RT: 50.23
Area: 2537
Amount: 0.127277
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:06:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

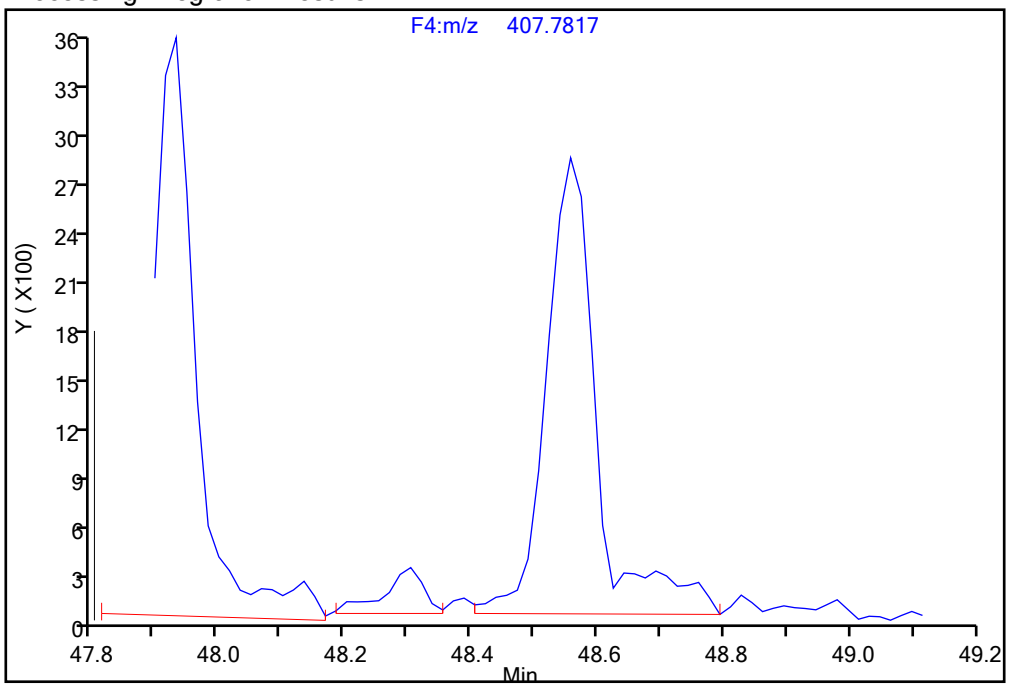
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.80- 50.84)

Signal: 1

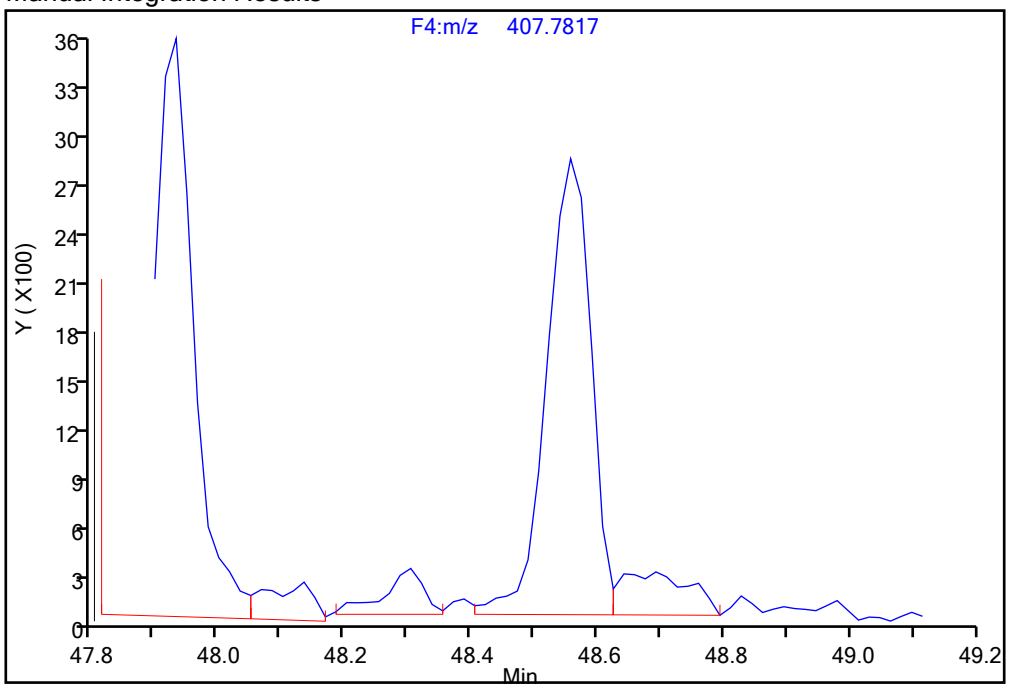
Processing Integration Results

RT = 48.557 Area = 15373



Manual Integration Results

RT = 48.557 Area = 13418 M



Reviewer: davidsonm, 17-Dec-2019 12:06:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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Worklist#:	36126	Sample Line#:	12
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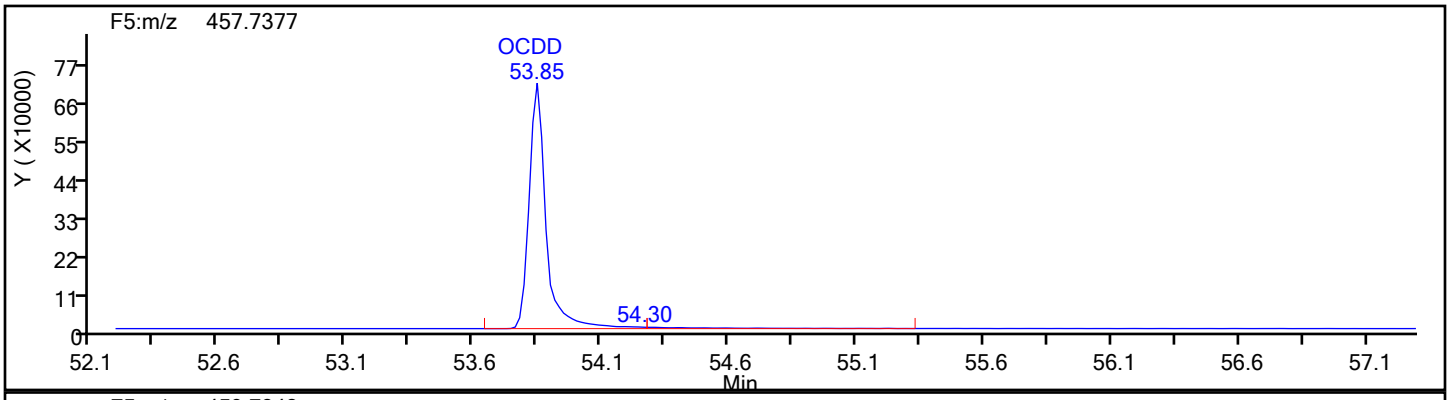
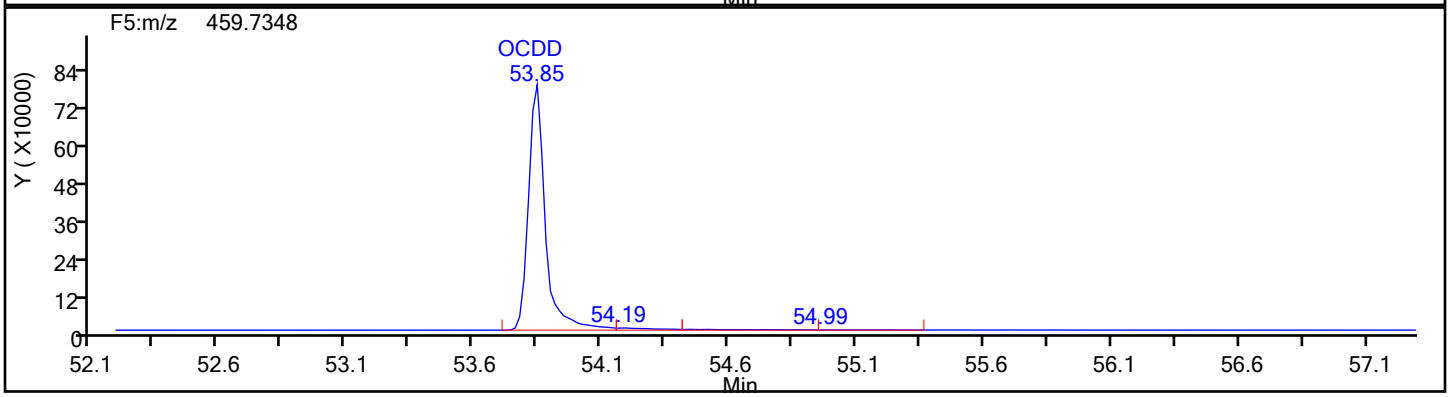
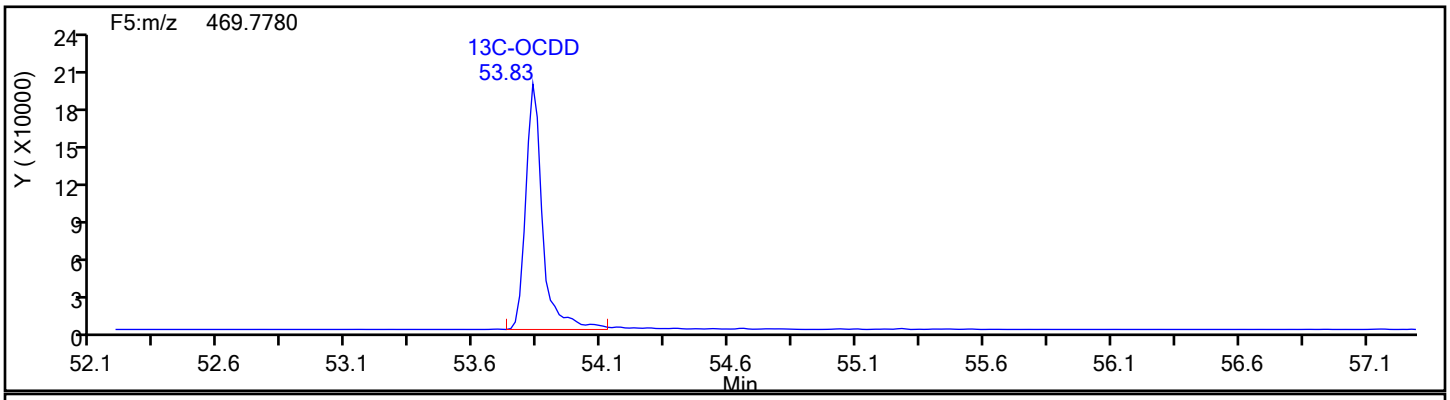
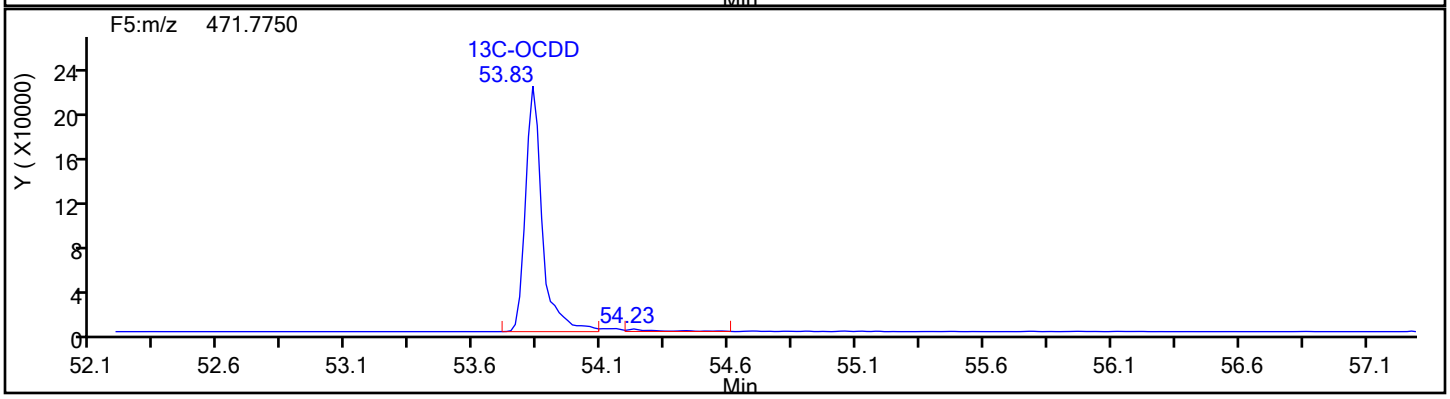
OCDD





OCDD Standards



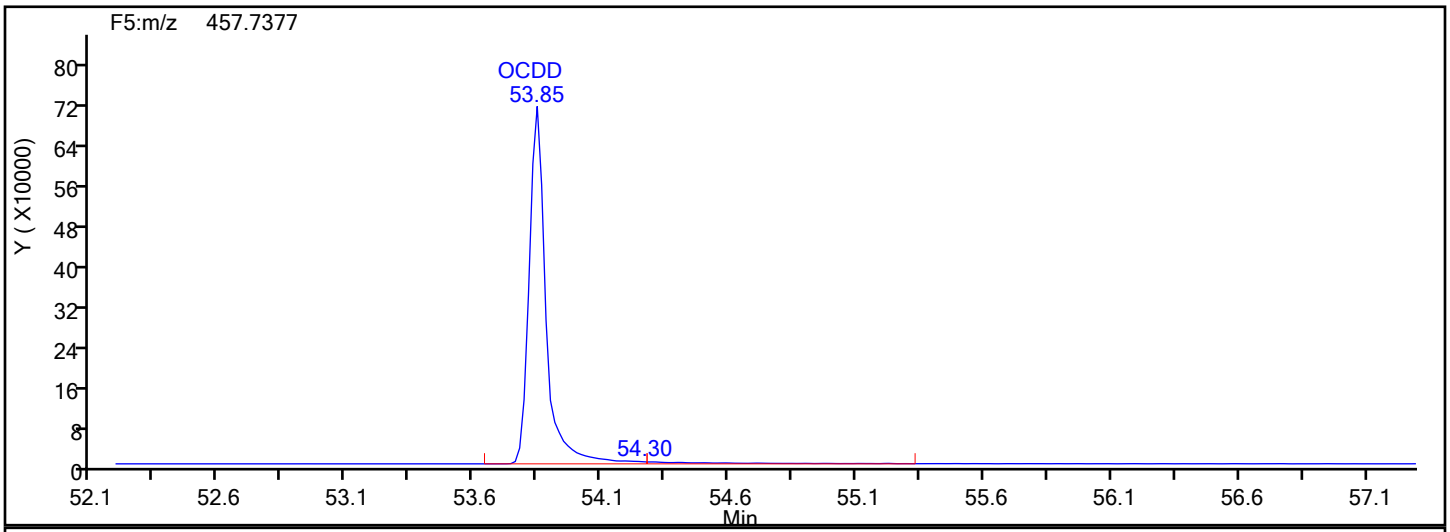


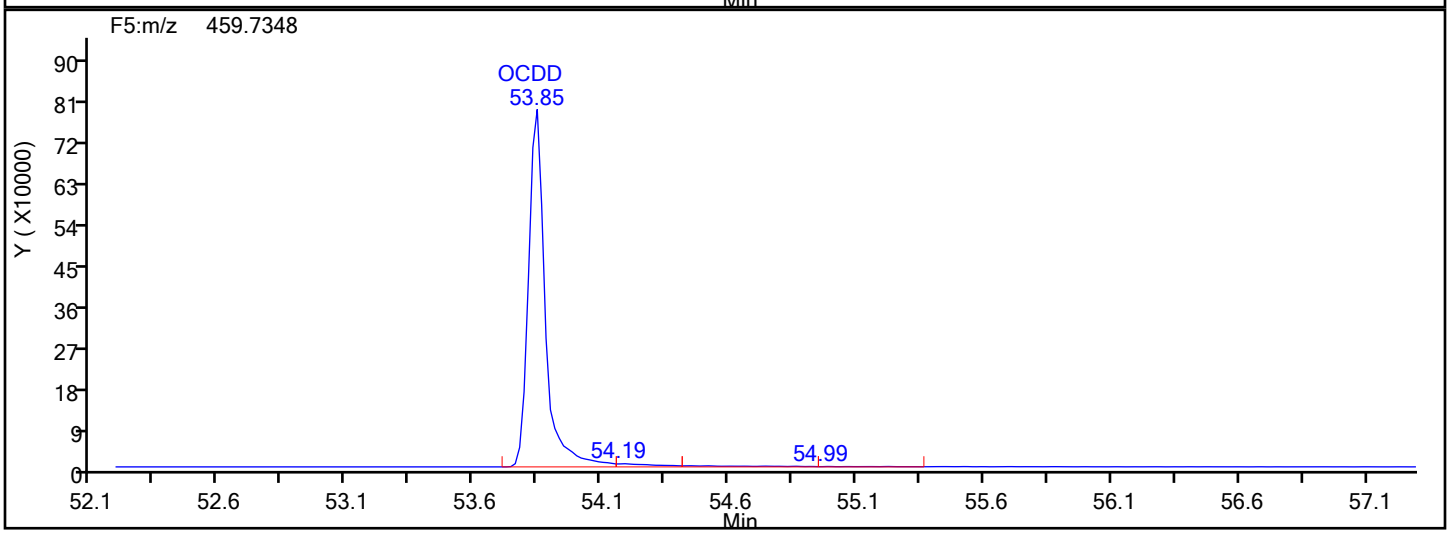
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

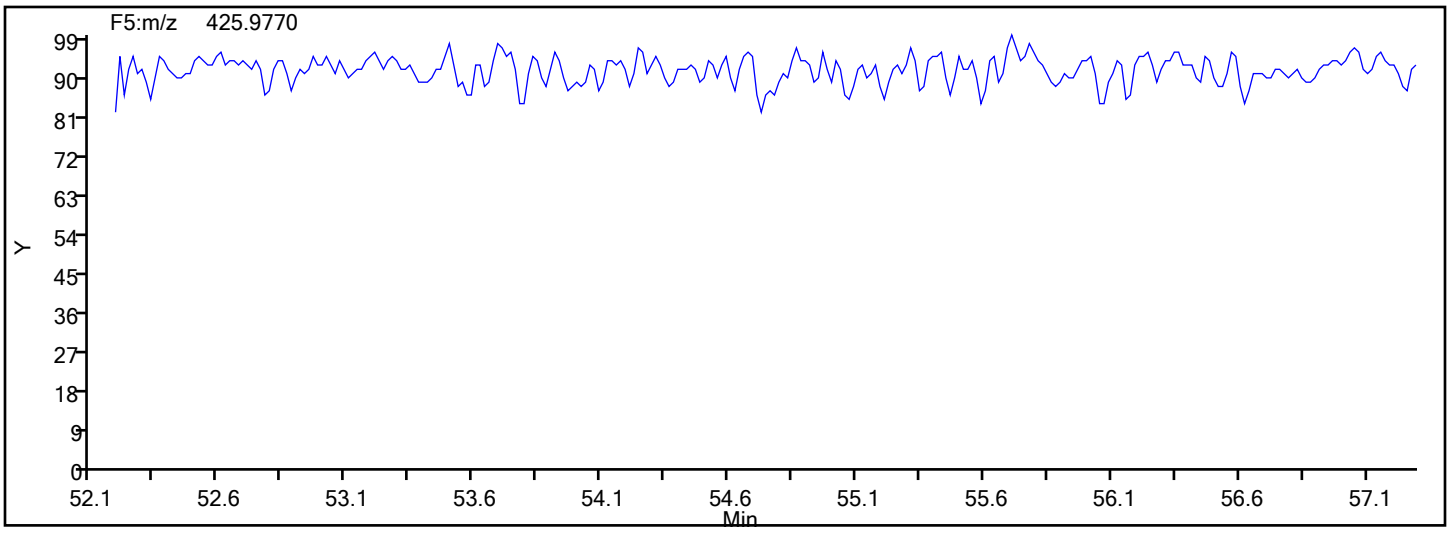
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d

Injection Date: 17-Dec-2019 09:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

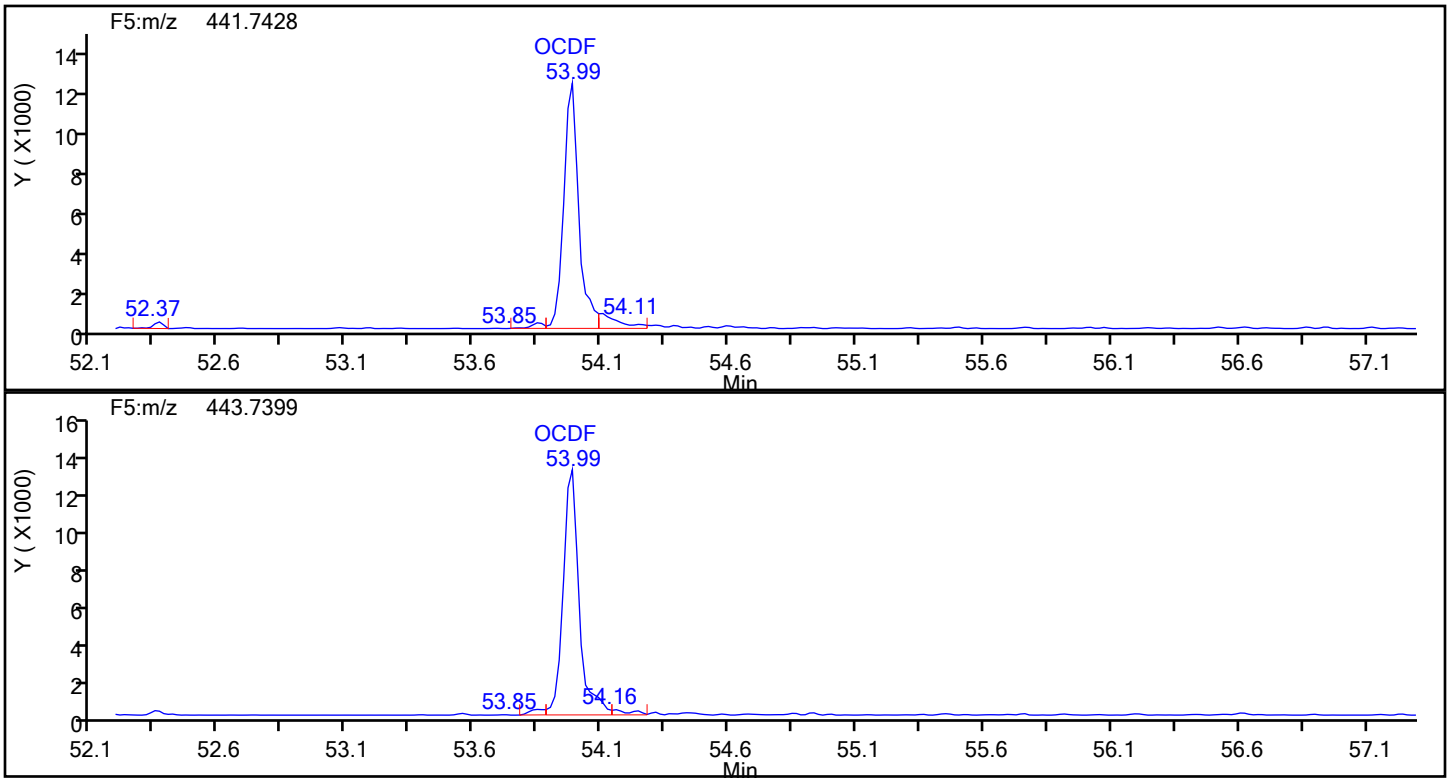
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA03(0-1)

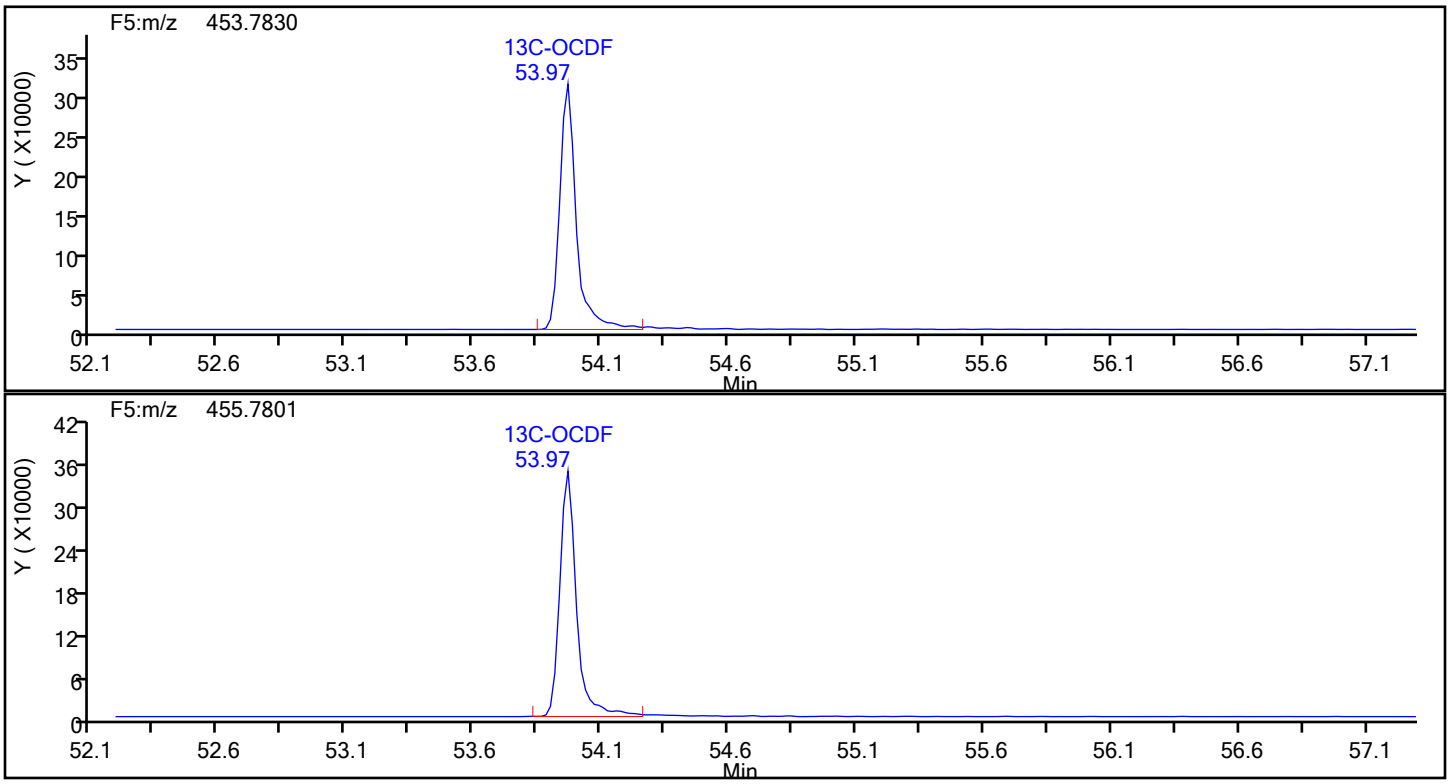
Worklist#: 36126 Sample Line#: 12

Column Type: Column Dia:

OCDF



OCDF Standards

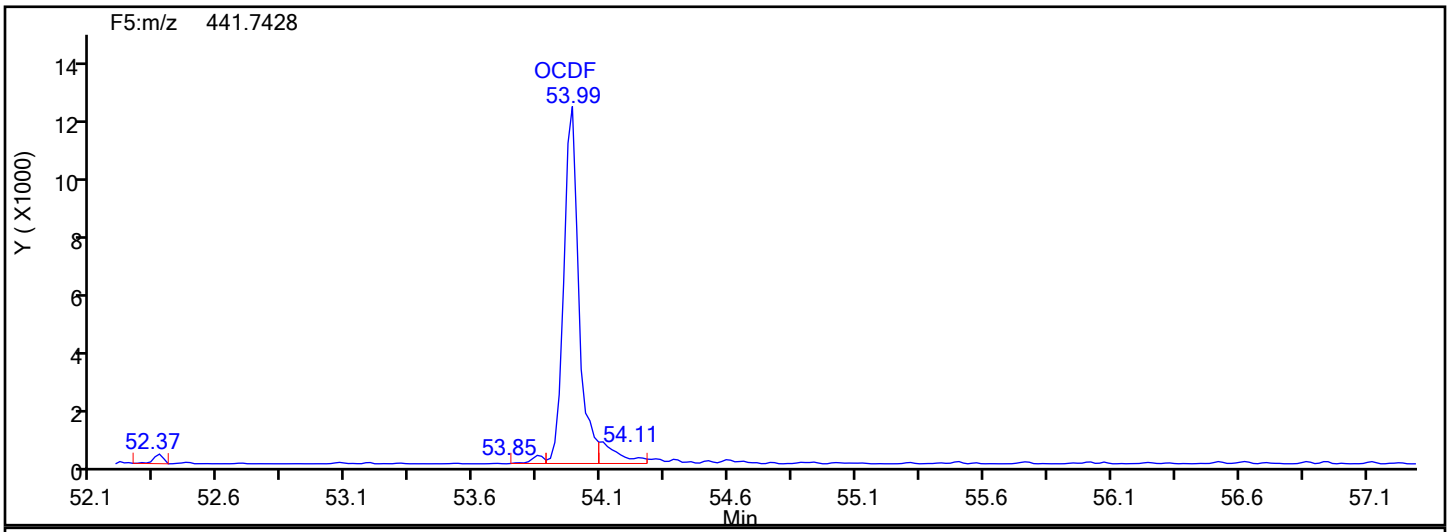


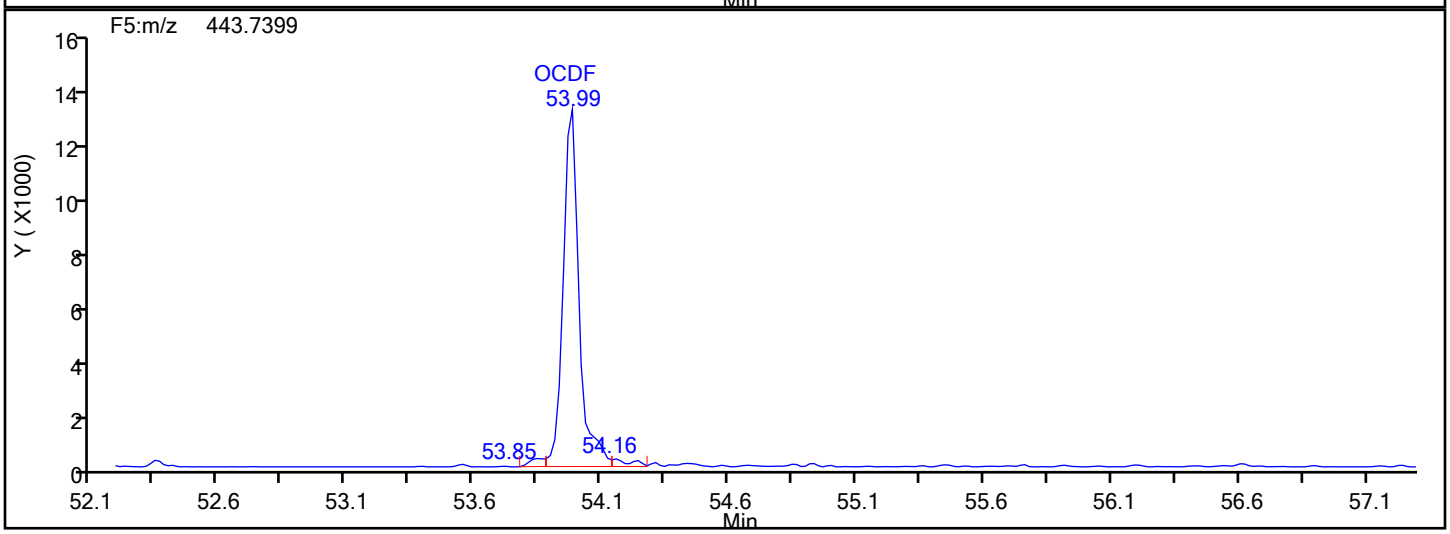
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

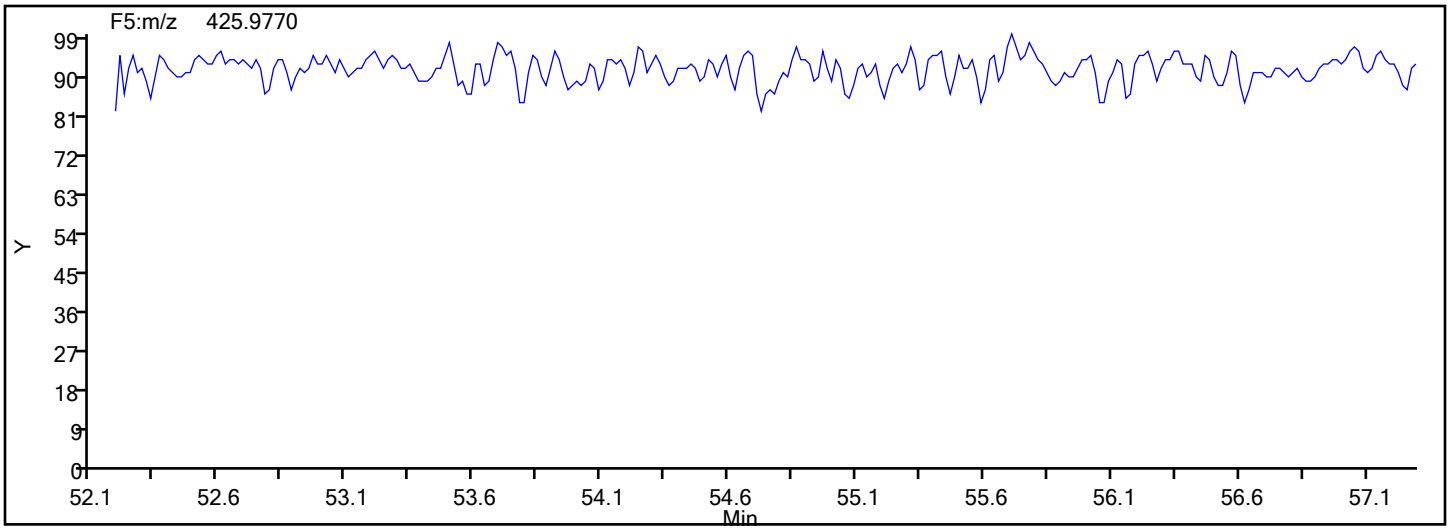
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

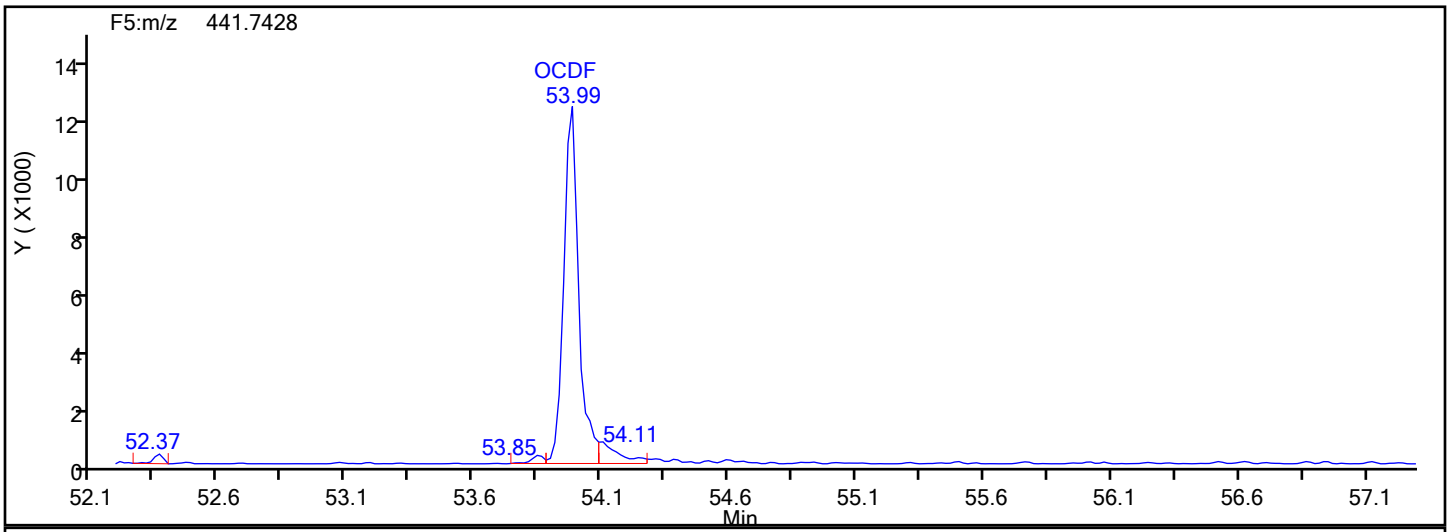


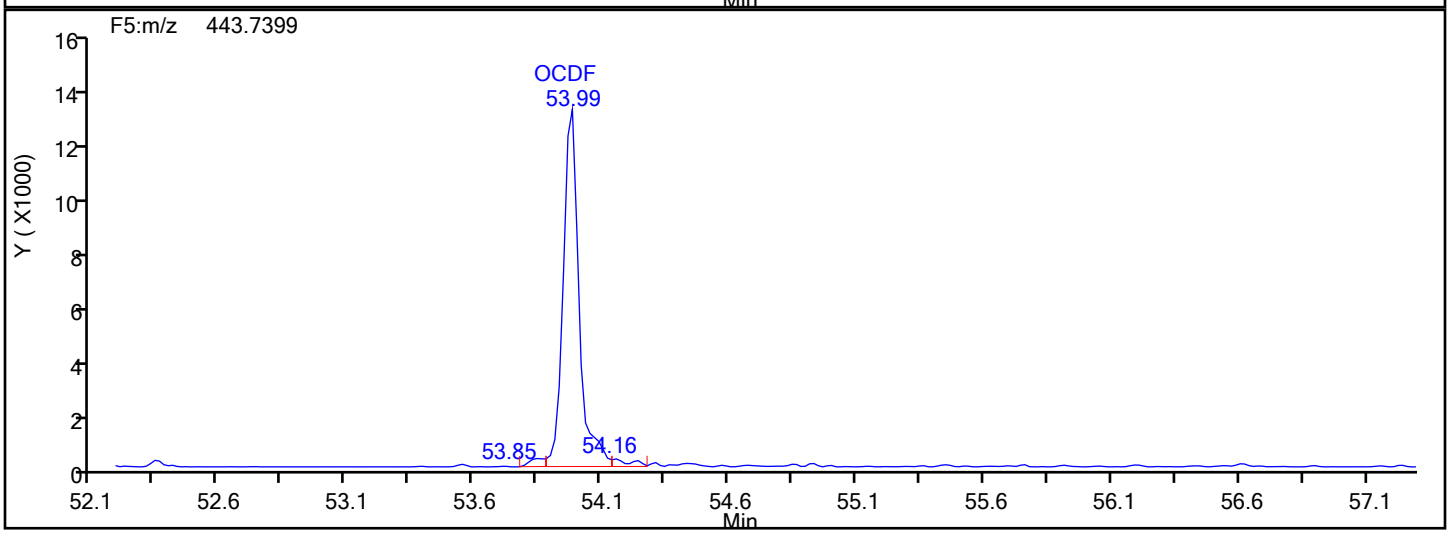
Report Date: 17-Dec-2019 12:06:54 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

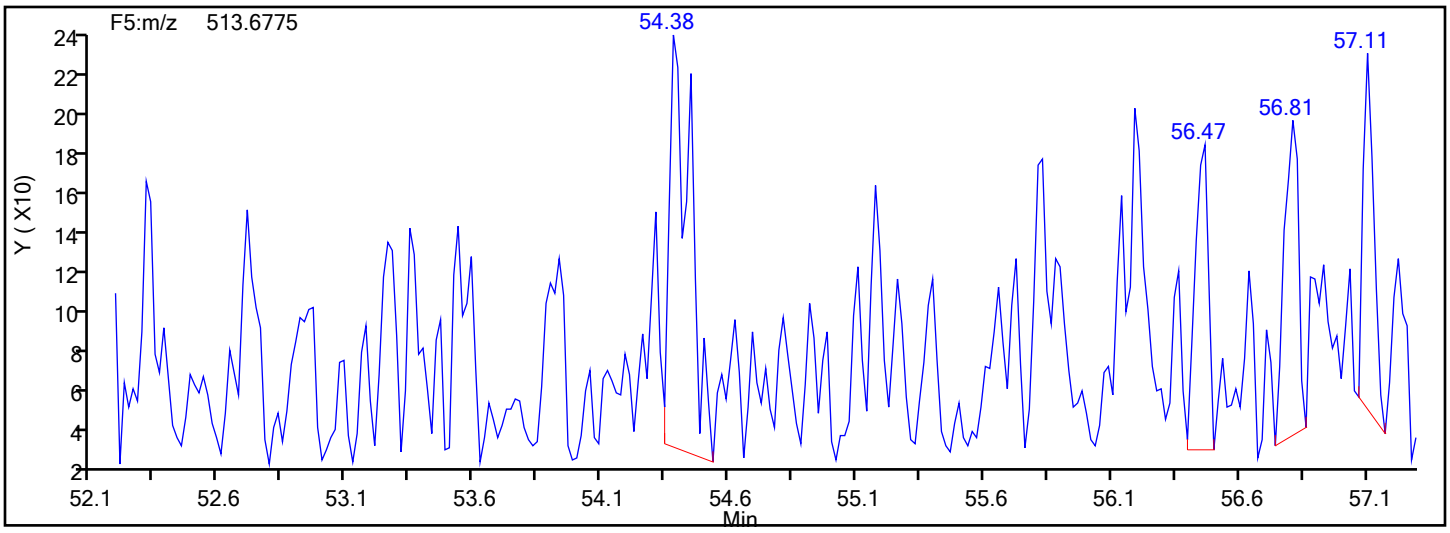
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d		
Injection Date:	17-Dec-2019 09:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36126	Sample Line#:	12
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

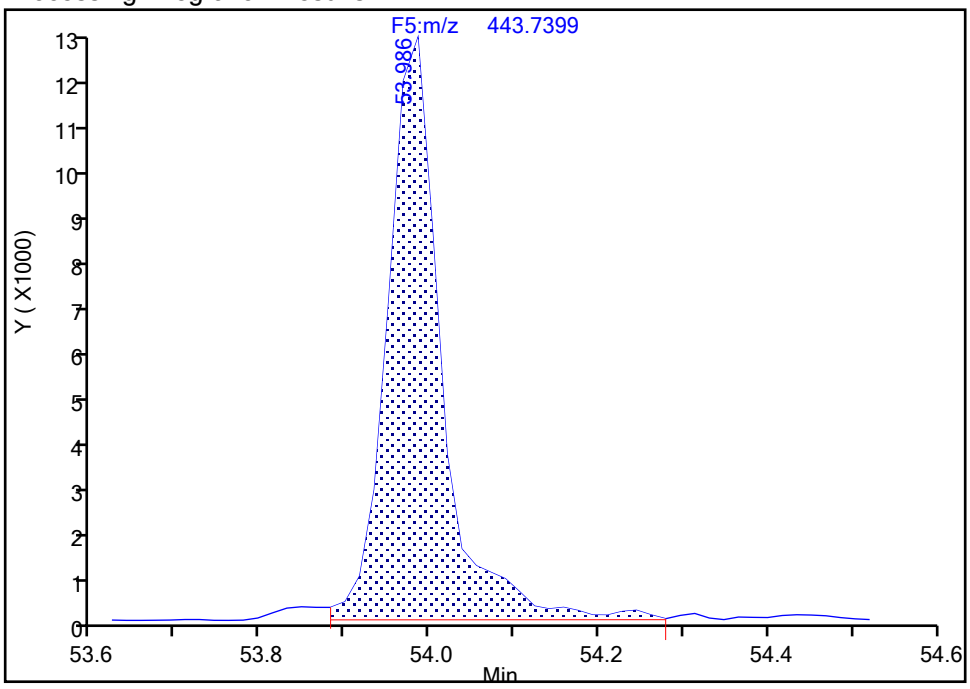
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

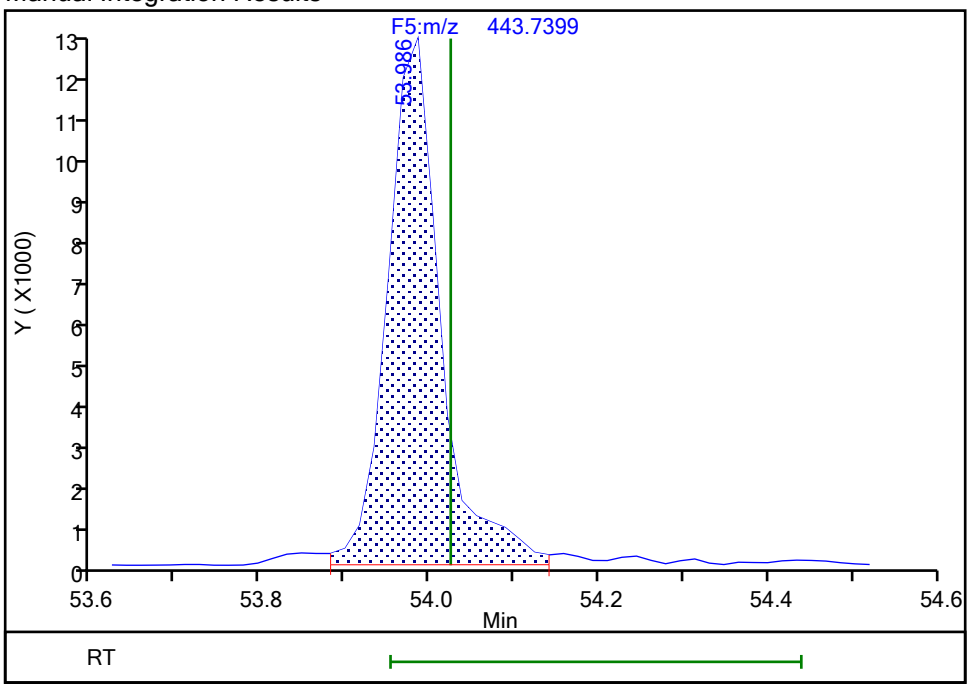
Processing Integration Results

RT: 53.99
Area: 57637
Amount: 3.317486
Amount Units: pg/ul



Manual Integration Results

RT: 53.99
Area: 56288
Amount: 3.160069
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:06:40

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

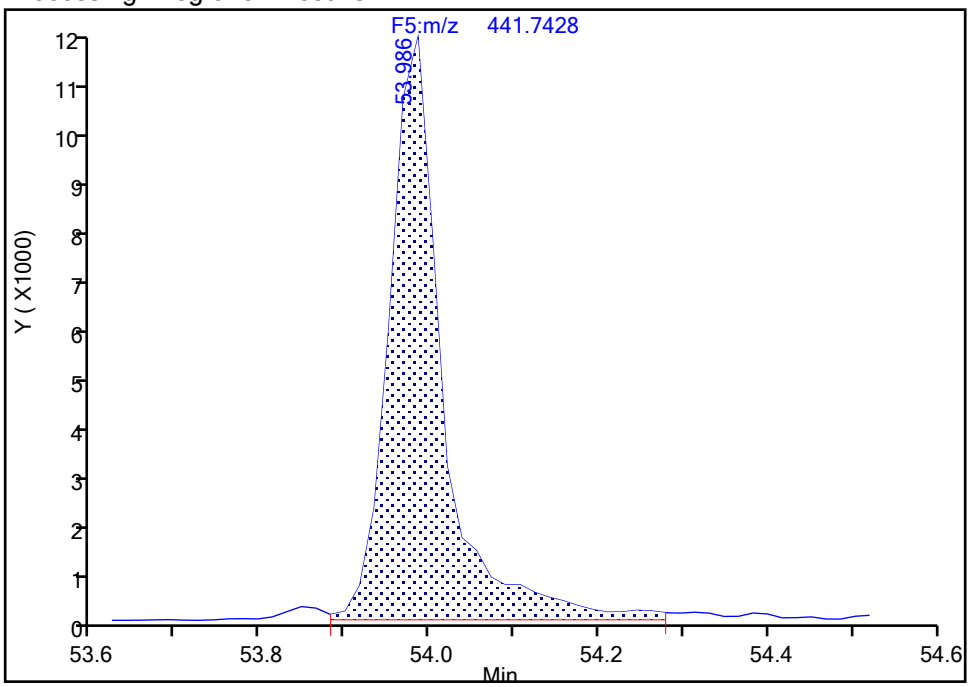
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-5-a.d				
Injection Date:	17-Dec-2019 09:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

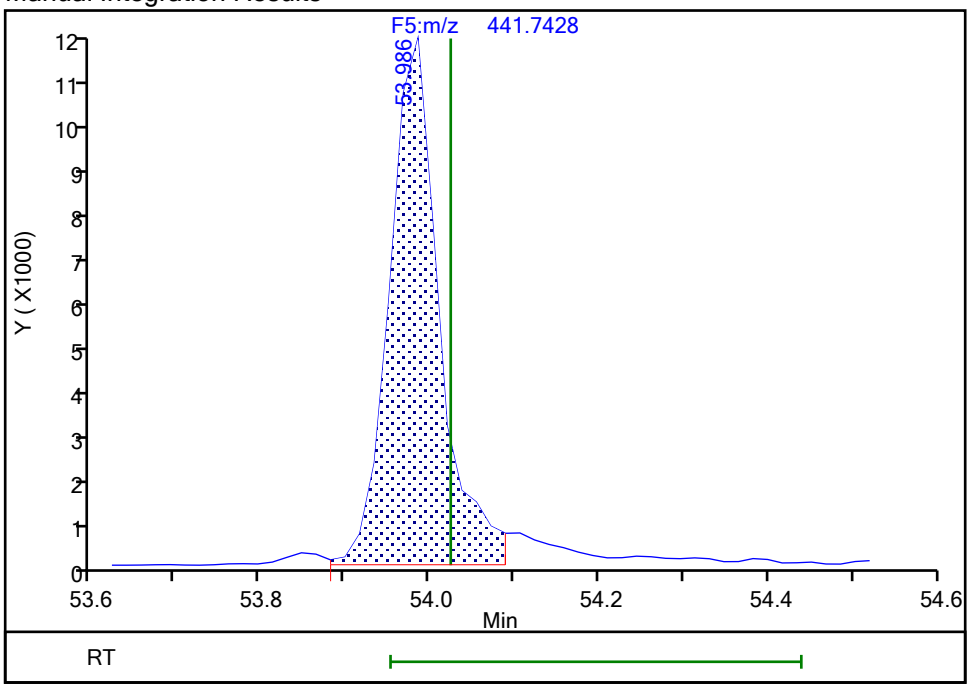
Processing Integration Results

RT: 53.99
Area: 52794
Amount: 3.317486
Amount Units: pg/ul



Manual Integration Results

RT: 53.99
Area: 48903
Amount: 3.160069
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:06:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(0-1) Lab Sample ID: 140-17578-5

Matrix: Sediment Lab File ID: 140-17578-A-5-Aa.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.83(g) Date Analyzed: 12/18/2019 05:08

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 37.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	34		1.6	0.60

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	59		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:08:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-009
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\ical5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:32

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:44	78657	0.77	1.2213	2.624	2.426	0.2482	0.2482		RQa
2,3,7,8-TCDF	22:16	465715	0.79	1.1100	10.5	10.5	0.1823	0.1823		
D 13C-2,3,7,8-TCDD	19:41	1327588	0.83	1.0031	31.8	31.8	0.5707	0.5707	63.64	
D 13C-2,3,7,8-TCDF	22:14	1993621	0.80	1.6193	29.6	29.6	0.1806	0.1806	59.20	a
$ 37Cl4-2,3,7,8-TCDD	19:43	323923		1.1834	6.581	6.581	0.0457	0.0457	65.81	
* 13C-1,2,3,4-TCDD	20:08	4159159	0.81	1.6E+05	100.0	100.0				

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d
Lims ID: 140-17578-A-5-A
Client ID: 11187072-120619-SS-SJSSA03(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:08:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-009
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:05:32

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQa
319.8965	19:44	19:44	1	1.003	40647	5535	343	857	16		a
	Empc Correction				34218	4953	343	857	14		
321.8936	19:43	19:44	0	1.002	44439	6433	143	357	45	0.91(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:16	22:14	0	1.002	206092	26474	214	535	124		
305.8987	22:16	22:14	0	1.002	259623	34040	215	537	158	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:41	19:41	-1	0.977	603147	92501	669	1672	138		
333.9338	19:41	19:41	-1	0.977	724441	107902	772	1930	140	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	22:14	22:14	0	1.104	887683	118497	397	992	298		a
317.9389	22:14	22:14	0	1.104	1105938	146418	339	847	432	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.979	323923	51889	136	340	382		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:09	-1		1857607	283142	669	1672	423		
333.9338	20:08	20:09	-1		2301552	346019	772	1930	448	0.81(0.65-0.89)	

QC Flag Legend

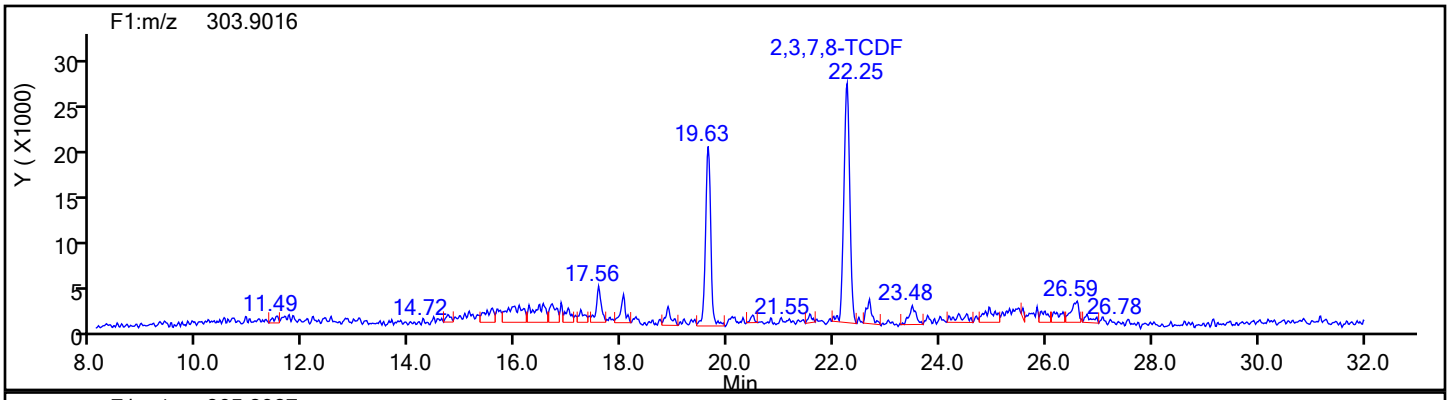
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
a - User Assigned ID

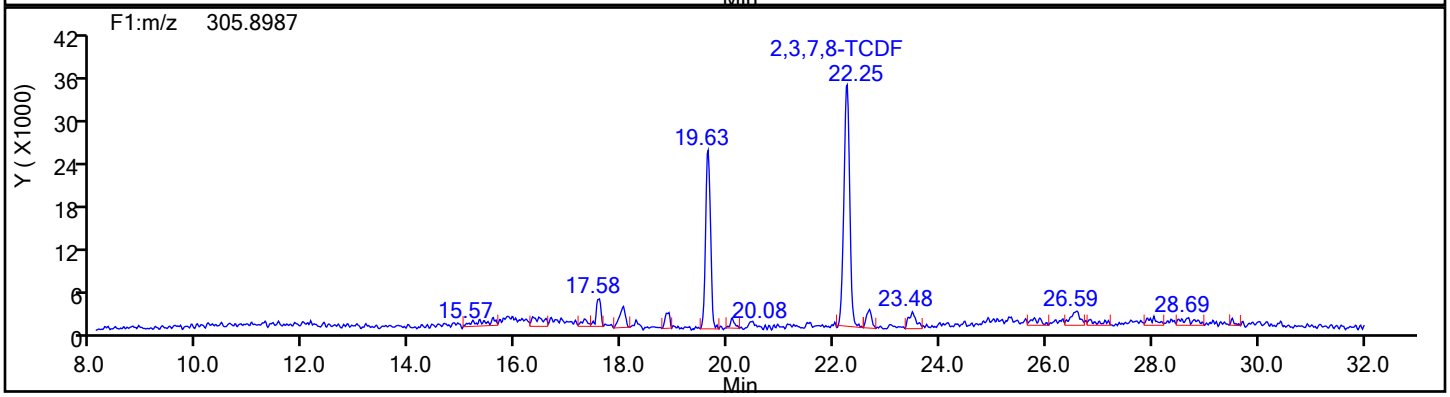
Report Date: 18-Dec-2019 09:05:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

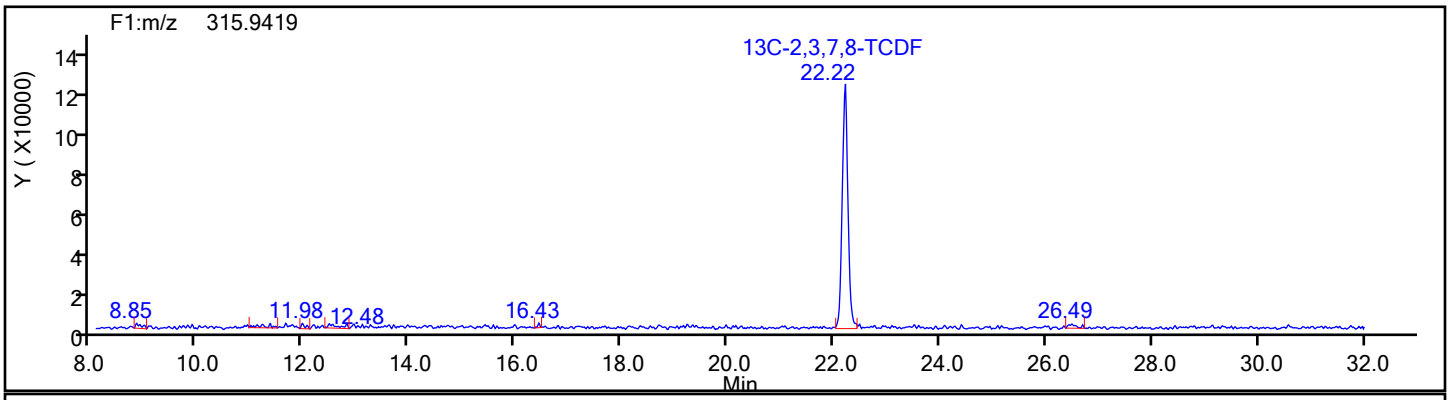
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d		
Injection Date:	18-Dec-2019 05:08:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36167	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

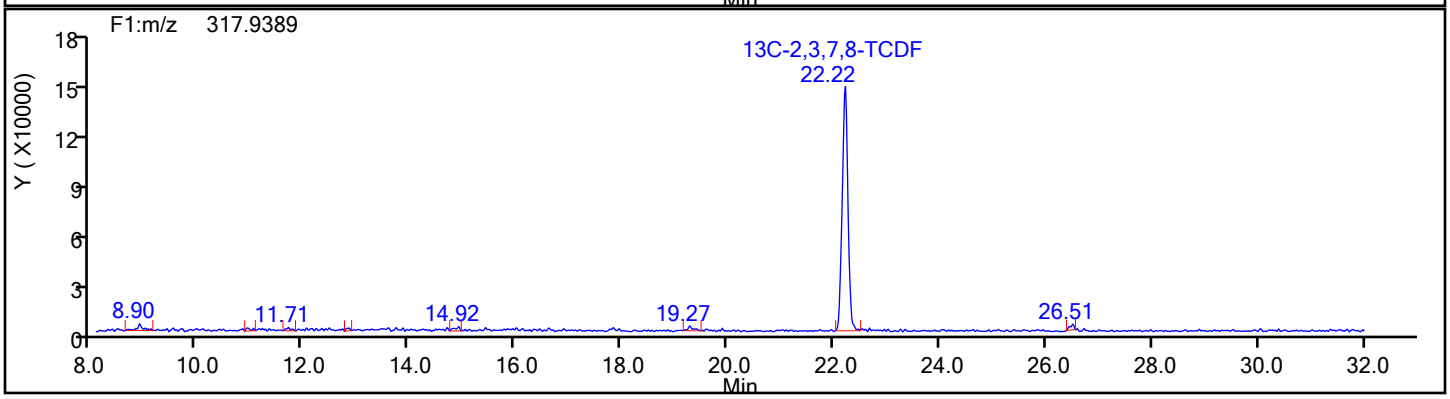
TCDF





TCDF Standards



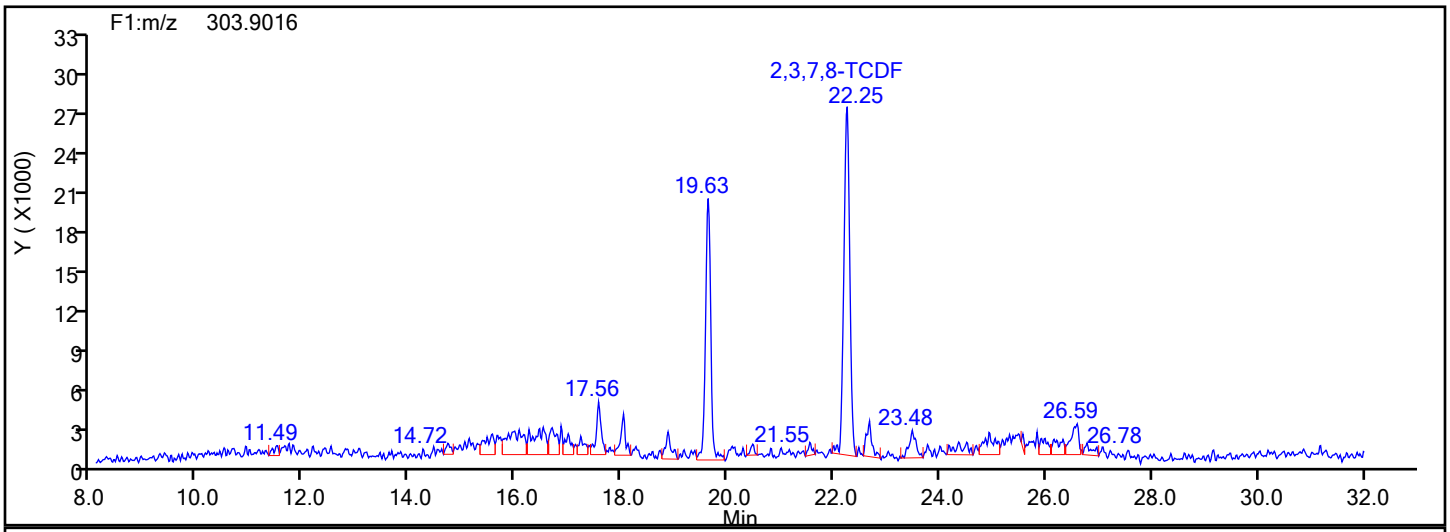


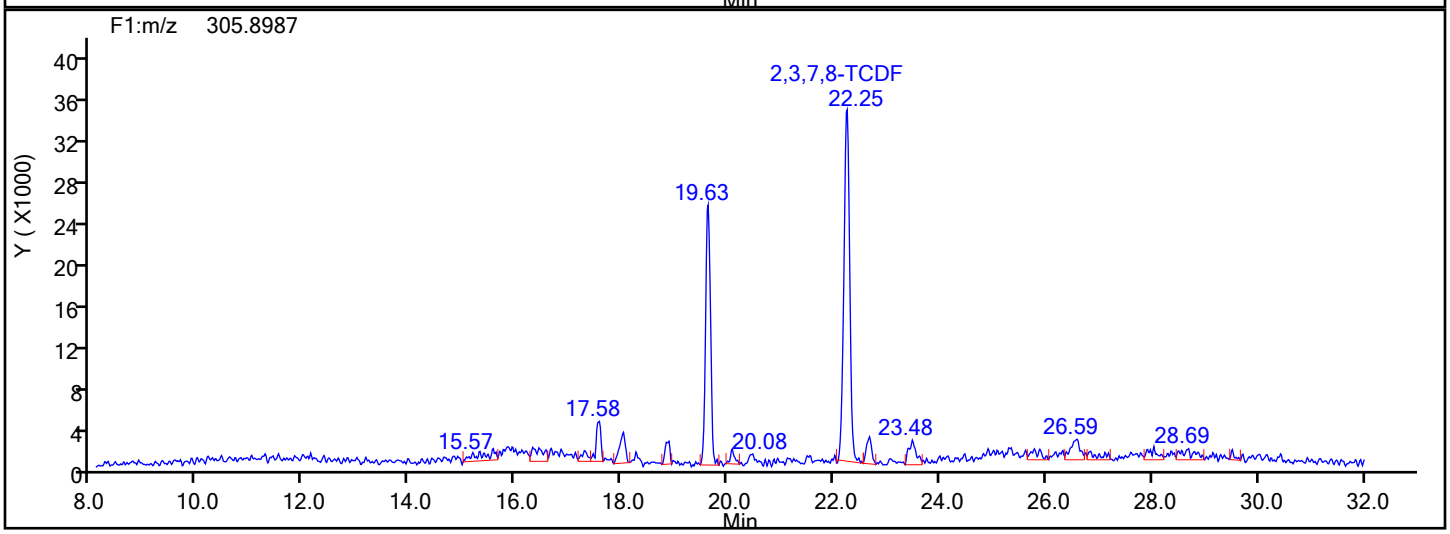
Report Date: 18-Dec-2019 09:05:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

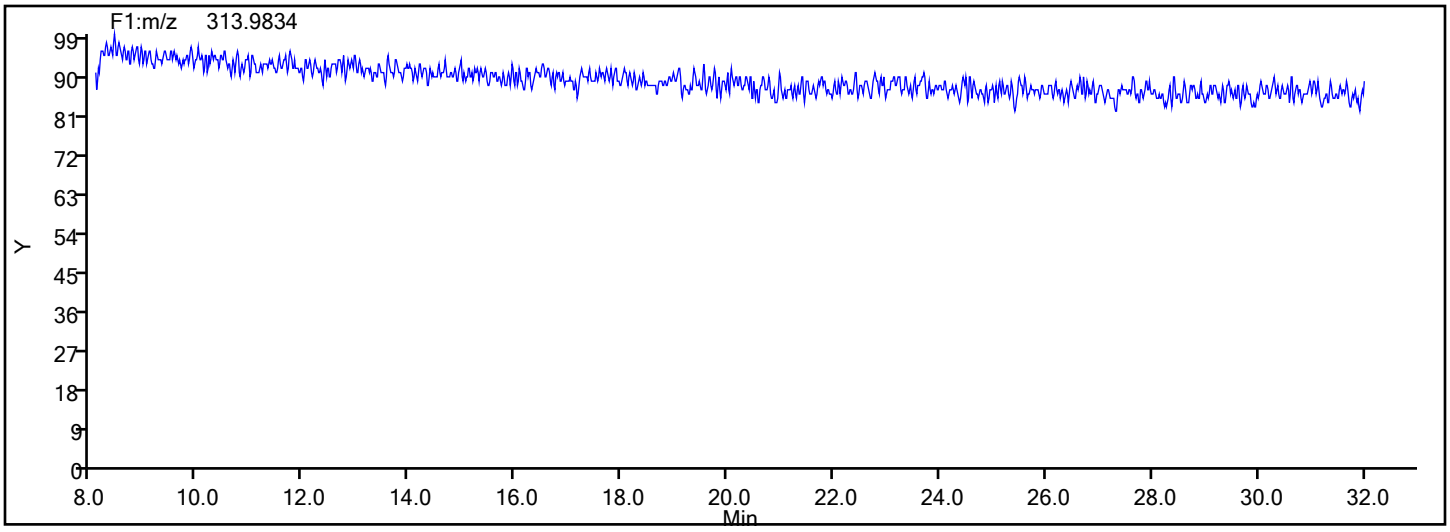
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d		
Injection Date:	18-Dec-2019 05:08:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36167	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

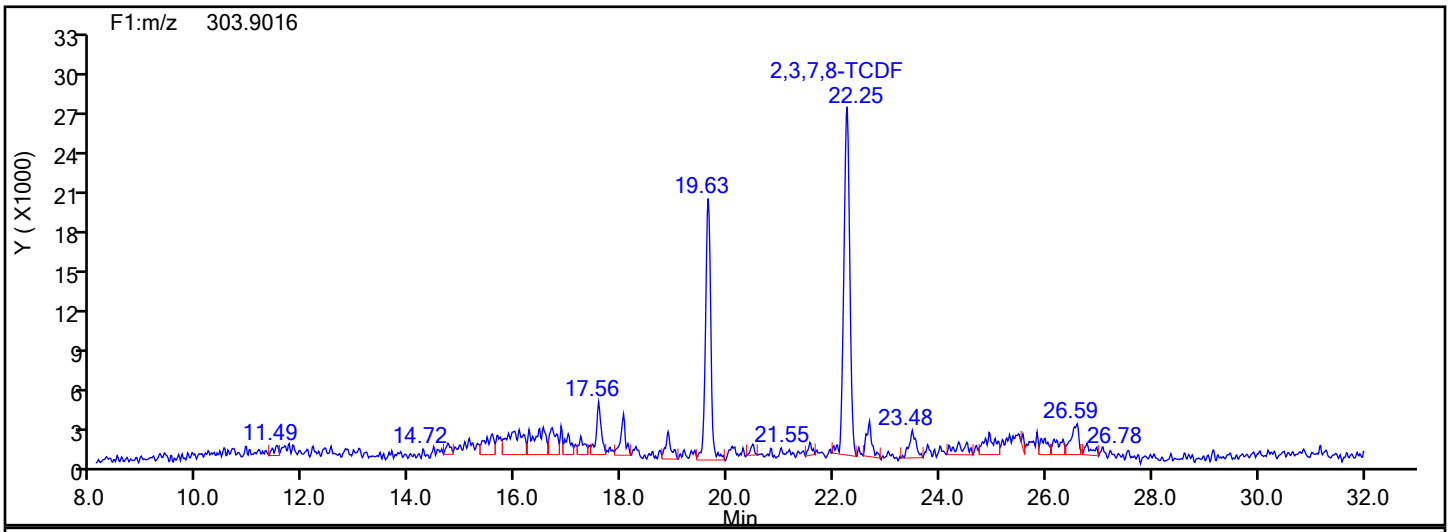


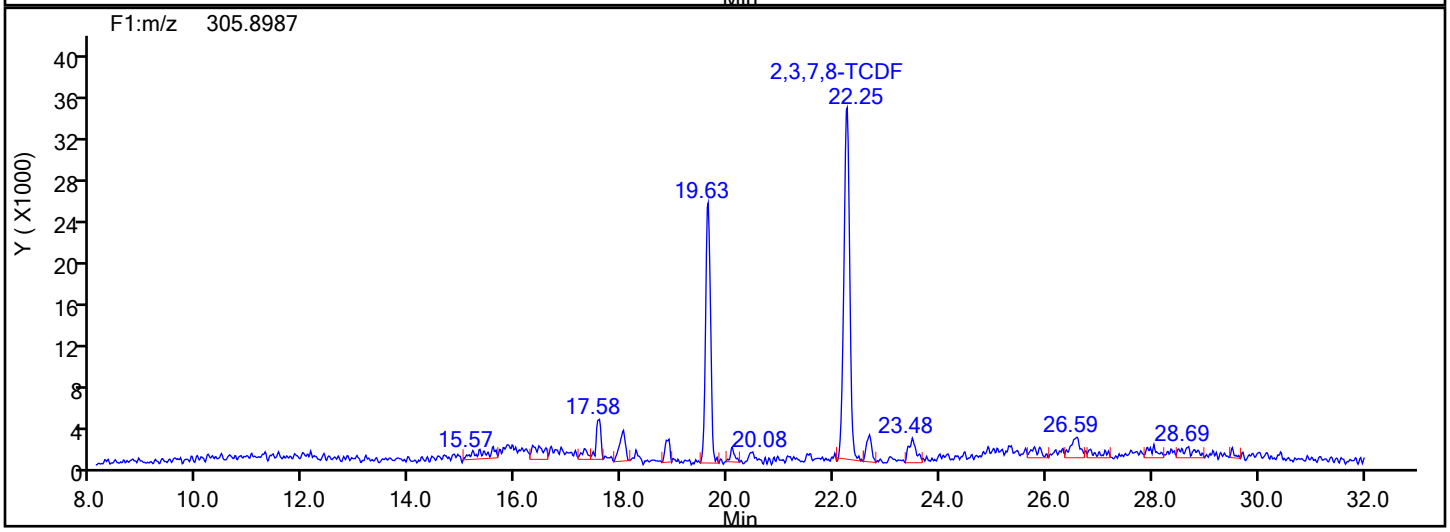
Report Date: 18-Dec-2019 09:05:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

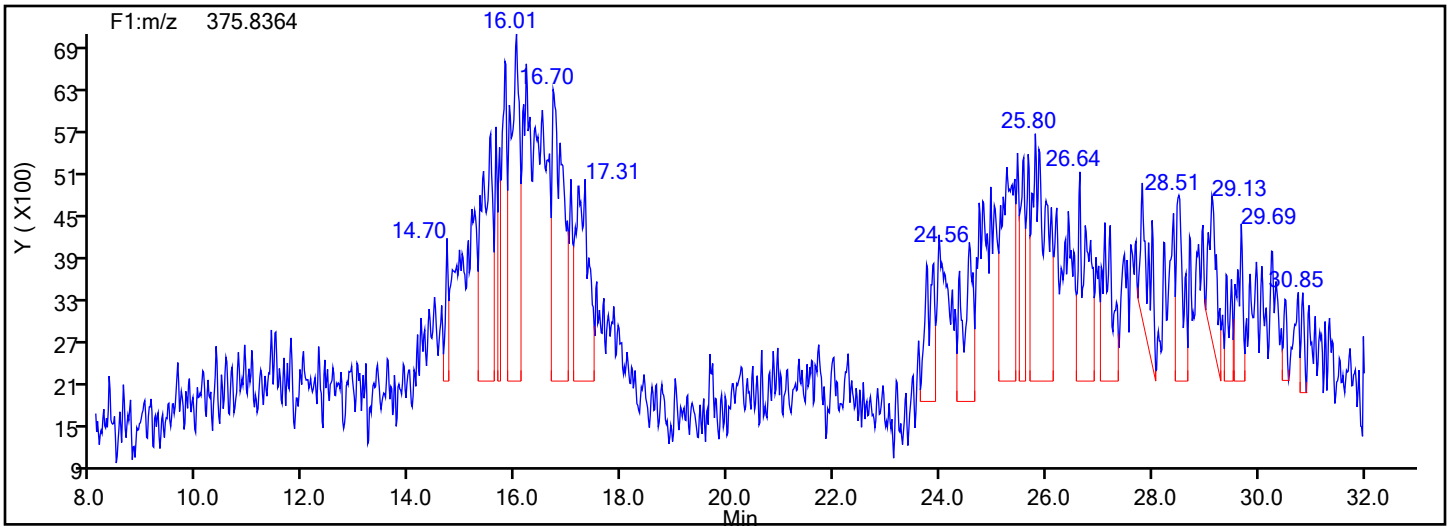
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d		
Injection Date:	18-Dec-2019 05:08:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(0-1)		
Worklist#:	36167	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

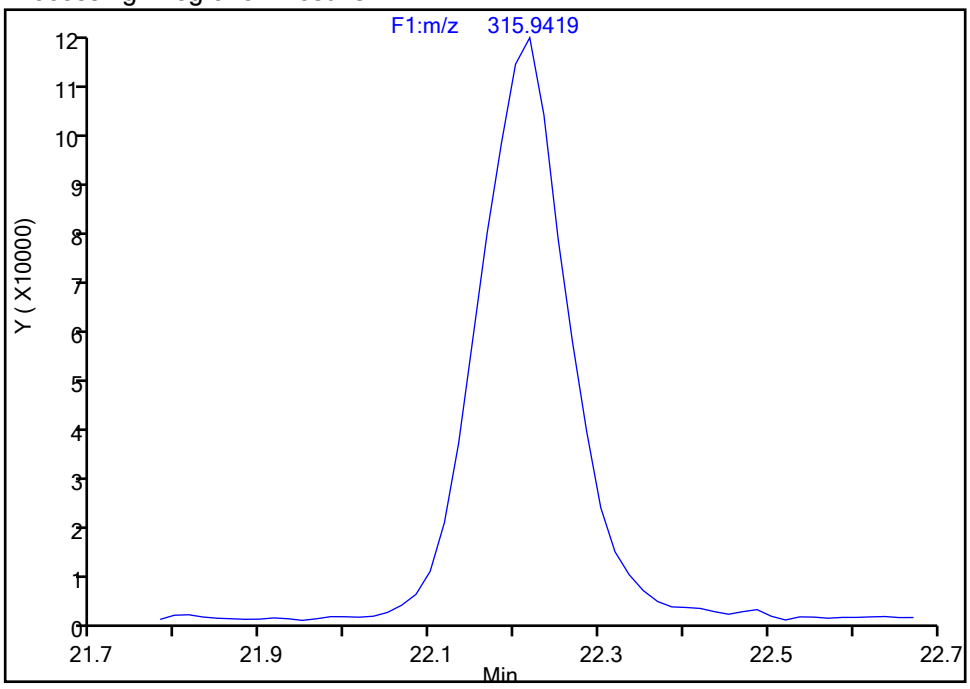
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-A-5-Aa.d				
Injection Date:	18-Dec-2019 05:08:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-5-A	Lab Sample ID:	140-17578-5		
Client ID:	11187072-120619-SS-SJSSA03(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

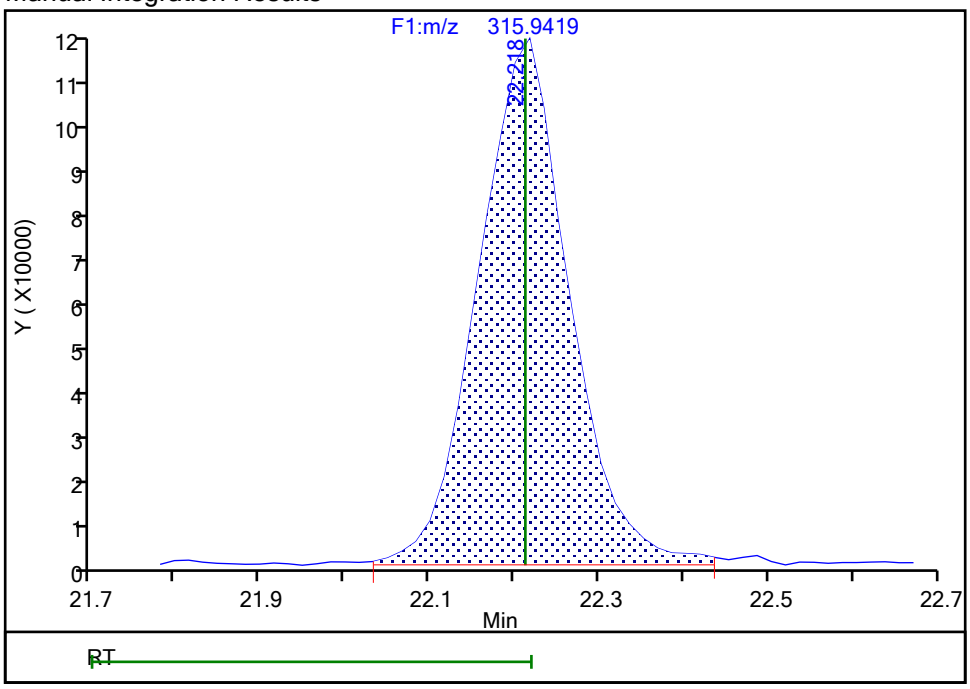
Not Detected
Expected RT: 22.21

Processing Integration Results



Manual Integration Results

RT: 22.22
Area: 887683
Amount: 29.601843
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:05:19
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Matrix: Sediment Lab File ID: 140-17578-a-6-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.95(g) Date Analyzed: 12/17/2019 10:07

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	3.8		1.4	0.069
41903-57-5	Total TCDD	17	B q	1.4	0.069
40321-76-4	1,2,3,7,8-PeCDD	0.32	J	7.0	0.12
36088-22-9	Total PeCDD	11	q	7.0	0.12
39227-28-6	1,2,3,4,7,8-HxCDD	0.48	J q	7.0	0.27
57653-85-7	1,2,3,6,7,8-HxCDD	0.87	J q	7.0	0.28
19408-74-3	1,2,3,7,8,9-HxCDD	2.3	J	7.0	0.26
34465-46-8	Total HxCDD	53	B q	7.0	0.27
35822-46-9	1,2,3,4,6,7,8-HpCDD	34	B	7.0	0.11
37871-00-4	Total HpCDD	130	B	7.0	0.11
3268-87-9	OCDD	810	B	14	0.053
30402-14-3	Total TCDF	28	B q	1.4	0.066
57117-41-6	1,2,3,7,8-PeCDF	0.32	J q	7.0	0.12
57117-31-4	2,3,4,7,8-PeCDF	0.26	J	7.0	0.11
30402-15-4	Total PeCDF	2.1	J I q	7.0	0.11
70648-26-9	1,2,3,4,7,8-HxCDF	0.66	J	7.0	0.094
57117-44-9	1,2,3,6,7,8-HxCDF	ND		7.0	0.095
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.0	0.10
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.0	0.14
55684-94-1	Total HxCDF	2.3	J I q	7.0	0.11
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.1	J B	7.0	0.037
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.23	J B	7.0	0.058
38998-75-3	Total HpCDF	2.8	J B	7.0	0.048
39001-02-0	OCDF	5.5	J B	14	0.15

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Matrix: Sediment Lab File ID: 140-17578-a-6-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.95(g) Date Analyzed: 12/17/2019 10:07

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	68		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	64		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	69		23-140
114423-97-1	13C-OCDD	64		17-157
89059-46-1	13C-2,3,7,8-TCDF	62		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	65		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	68		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	67		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	68		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	66		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	70		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	65		26-138
109719-78-0	13C-OCDF	67		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	69		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 10:07:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-013
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 12:40:39 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 12:40:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:46	45139	0.78	1.1733	1.356	1.356	0.0245	0.0245		
A Non-2,3,7,8-sub-TCDD	29:30	156702	0.77	1.1733	4.787	4.706	0.0245	2.967		RQMa
S Total TCDD					6.143	6.062	0.0245	0.0245		RQ
2,3,7,8-TCDF	28:47	263530	0.81	1.0881	5.236	5.236	0.0237	0.0237		
A Non-2,3,7,8-sub-TCDF	28:13	235998	0.77	1.0881	4.790	4.689	0.0237	2.158		RQM
S Total TCDF					10.0	9.925	0.0237	0.0237		RQ
1,2,3,7,8-PeCDD	40:33	2984	1.53	1.0434	0.1144	0.1144	0.0422	0.0422		
A Non-2,3,7,8-sub-PeCDD	39:27	102393	1.55	1.0434	4.031	3.926	0.0422	2.127		RQMa
S Total PeCDD					4.146	4.040	0.0422	0.0422		RQ
1,2,3,7,8-PeCDF	38:46	5154	1.55	1.1898	0.1368	0.1147	0.0415	0.0415		RQM
2,3,4,7,8-PeCDF	39:59	3943	1.37	1.1095	0.0924	0.0924	0.0391	0.0391		M
A Non-2,3,7,8-sub-PeCDF	38:02	24269	1.55	1.1496	0.6553	0.5537	0.0401	0.1517		RQMa
S Total PeCDF					0.8845	0.7608	0.0403	0.0403		RQ
1,2,3,4,7,8-HxCDD	44:49	5177	1.24	1.1409	0.2052	0.1713	0.0979	0.0979		RQM
1,2,3,6,7,8-HxCDD	44:56	10763	1.24	1.1481	0.3545	0.3112	0.0988	0.0988		RQMa
1,2,3,7,8,9-HxCDD	45:17	28618	1.37	1.2212	0.8277	0.8277	0.0922	0.0922		M
A Non-2,3,7,8-sub-HxCDD	44:19	579862	1.24	1.1700	17.7	17.5	0.0962	14.3		RQMa
S Total HxCDD					19.1	18.8	0.0963	0.0963		RQ
1,2,3,4,7,8-HxCDF	43:48	12295	1.22	1.3629	0.2374	0.2374	0.0335	0.0335		
1,2,3,6,7,8-HxCDF	43:48						0.0341	0.0341		U
2,3,4,6,7,8-HxCDF	44:40						0.0373	0.0373		
1,2,3,7,8,9-HxCDF	45:36						0.0488	0.0488		
A Non-2,3,7,8-sub-HxCDF	44:10	30297	1.24	1.2905	0.5980	0.5718	0.0376	0.1913		RQ
S Total HxCDF					0.8355	0.8093	0.0384	0.0384		RQ
1,2,3,4,6,7,8-HpCDD	49:36	359064	1.04	1.1204	12.0	12.0	0.0391	0.0391		
A Non-2,3,7,8-sub-HpCDD	49:03	1013191	1.04	1.1204	33.8	33.8	0.0391	33.8		a
S Total HpCDD					45.8	45.8	0.0391	0.0391		
1,2,3,4,6,7,8-HpCDF	47:55	19558	1.07	1.4984	0.3786	0.3786	0.0134	0.0134		M
1,2,3,4,7,8,9-HpCDF	50:14	3102	1.11	1.3807	0.0819	0.0819	0.0208	0.0208		M
A Non-2,3,7,8-sub-HpCDF	49:20	23477	1.09	1.4395	0.5269	0.5269	0.0164	0.4858		M

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					0.9874	0.9874	0.0171	0.0171		
OCDD	53:51	7420206	0.90	1.2073	289.2	289.2	0.0191	0.0191		
OCDF	53:58	73708	0.86	1.1162	1.977	1.977	0.0534	0.0534		M
D 13C-2,3,7,8-TCDD	30:44	1419040	0.82	1.0709	31.4	31.4	0.2037	0.2037	62.78	
D 13C-2,3,7,8-TCDF	28:45	2312694	0.82	1.7545	31.2	31.2	0.3200	0.3200	62.45	
D 13C-1,2,3,7,8-PeCDD	40:31	1249878	1.54	0.8743	33.9	33.9	0.4166	0.4166	67.73	
D 13C-1,2,3,7,8-PeCDF	38:44	1888558	1.56	1.3704	32.6	32.6	0.4104	0.4104	65.29	
D 13C-2,3,4,7,8-PeCDF	39:59	1923846	1.66	1.3837	32.9	32.9	0.4065	0.4065	65.87	
D 13C-1,2,3,4,7,8-HxCDD	44:48	1324770	1.31	0.8772	32.0	32.0	0.1081	0.1081	63.99	
D 13C-1,2,3,6,7,8-HxCDD	44:55	1506392	1.29	0.9171	34.8	34.8	0.1034	0.1034	69.60	
D 13C-1,2,3,4,7,8-HxCDF	43:46	1899646	0.52	1.1892	33.8	33.8	0.2699	0.2699	67.68	
D 13C-1,2,3,6,7,8-HxCDF	43:54	2322223	0.57	1.4625	33.6	33.6	0.2195	0.2195	67.28	
D 13C-2,3,4,6,7,8-HxCDF	44:36	2116043	0.54	1.3197	34.0	34.0	0.2432	0.2432	67.94	
D 13C-1,2,3,7,8,9-HxCDF	45:33	1873331	0.55	1.2001	33.1	33.1	0.2674	0.2674	66.14	
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	1335899	1.12	0.8155	34.7	34.7	0.1819	0.1819	69.41	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1723963	0.46	1.0496	34.8	34.8	0.2899	0.2899	69.59	
D 13C-1,2,3,4,7,8,9-HpCDF	50:14	1371070	0.47	0.8947	32.5	32.5	0.3401	0.3401	64.93	
D 13C-OCDD	53:50	2125043	0.89	0.7044	63.9	63.9	0.2517	0.2517	63.91	
D 13C-OCDF	53:58	3340846	0.91	1.0615	66.7	66.7	0.2133	0.2133	66.68	
$ 37Cl4-2,3,7,8-TCDD	30:46	357946		1.2266	6.913	6.913	0.0427	0.0427	69.13	
* 13C-1,2,3,4-TCDD	30:13	4221568	0.79	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:17	4720398	1.30	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Report Date: 17-Dec-2019 12:40:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 10:07:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-013
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 12:40:39 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 12:40:39

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:46	30:48	-5	1.001	19828	2093	15	37	140		
321.8936	30:48	30:48	-3	1.002	25311	2527	19	47	133	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:54	29:30	-275	0.810	1991	330	15	37	22		
321.8936	24:52	29:30	-277	0.809	3016	354	19	47	19	0.66(0.65-0.89)	
319.8965	25:36	29:30	-233	0.833	2740	411	15	37	27		
	Empc Correction				1888	406	15	37	27		
321.8936	25:35	29:30	-234	0.832	2453	528	19	47	28	1.12(0.65-0.89)	
319.8965	26:16	29:30	-194	0.854	3588	569	15	37	38		
321.8936	26:15	29:30	-195	0.854	4509	756	19	47	40	0.80(0.65-0.89)	
319.8965	27:44	29:30	-106	0.902	43720	5449	15	37	363		
321.8936	27:44	29:30	-106	0.902	55077	6976	19	47	367	0.79(0.65-0.89)	
319.8965	28:16	29:30	-74	0.919	1549	193	15	37	13		
321.8936	28:10	29:30	-80	0.916	2897	337	19	47	18	0.53(0.65-0.89)	M
	Empc Correction				2011	250	19	47	13		
319.8965	28:48	29:30	-41	0.937	643	161	15	37	11		a
	Empc Correction				398	117	15	37	8		
321.8936	28:41	29:30	-48	0.933	517	152	19	47	8	1.24(0.65-0.89)	
319.8965	29:22	29:30	-8	0.955	2994	339	15	37	23		
	Empc Correction				2263	310	15	37	21		
321.8936	29:24	29:30	-6	0.956	2940	403	19	47	21	1.02(0.65-0.89)	
319.8965	30:13	29:30	43	0.983	8160	1066	15	37	71		
321.8936	30:13	29:30	43	0.983	10728	1156	19	47	61	0.76(0.65-0.89)	
319.8965	30:33	29:30	64	0.994	1308	325	15	37	22		
321.8936	30:30	29:30	61	0.992	1900	359	19	47	19	0.69(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	31:56	29:30	146	1.039	1895	250	15	37	17		
321.8936	31:51	29:30	141	1.036	2369	387	19	47	20	0.80(0.65-0.89)	
319.8965	33:57	29:30	267	1.105	1985	326	15	37	22		
321.8936	33:59	29:30	269	1.106	2437	344	19	47	18	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:47	28:51	-5	1.001	117725	11551	26	65	444		
305.8987	28:47	28:51	-5	1.001	145805	14625	28	70	522	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	22:27	28:13	-345	0.781	432	145	26	65	6		
305.8987	22:27	28:13	-345	0.781	1265	273	28	70	10	0.34(0.65-0.89)	
	Empc Correction				561	188	28	70	7		
303.9016	23:49	28:13	-264	0.828	4617	735	26	65	28		
	Empc Correction				3444	435	26	65	17		
305.8987	23:50	28:13	-263	0.829	4474	565	28	70	20	1.03(0.65-0.89)	
303.9016	24:18	28:13	-234	0.845	1767	233	26	65	9		
305.8987	24:20	28:13	-233	0.846	3429	377	28	70	13	0.52(0.65-0.89)	
	Empc Correction				2294	302	28	70	11		
303.9016	24:37	28:13	-216	0.856	671	123	26	65	5		
	Empc Correction				500	147	26	65	6		
305.8987	24:34	28:13	-219	0.854	650	192	28	70	7	1.03(0.65-0.89)	
303.9016	25:05	28:13	-188	0.872	5567	822	26	65	32		
305.8987	25:04	28:13	-189	0.872	7643	1028	28	70	37	0.73(0.65-0.89)	
303.9016	25:48	28:13	-145	0.897	8250	726	26	65	28		
305.8987	25:47	28:13	-146	0.897	9584	795	28	70	28	0.86(0.65-0.89)	M
303.9016	26:25	28:13	-108	0.919	5189	599	26	65	23		M
305.8987	26:25	28:13	-108	0.919	7006	572	28	70	20	0.74(0.65-0.89)	M
303.9016	26:56	28:13	-77	0.937	5350	681	26	65	26		
	Empc Correction				4084	562	26	65	22		
305.8987	26:55	28:13	-78	0.936	5305	731	28	70	26	1.01(0.65-0.89)	
303.9016	27:11	28:13	-62	0.946	906	180	26	65	7		
305.8987	27:14	28:13	-59	0.947	1105	152	28	70	5	0.82(0.65-0.89)	
303.9016	27:42	28:13	-32	0.963	47420	5603	26	65	216		
305.8987	27:43	28:13	-31	0.964	61170	7981	28	70	285	0.78(0.65-0.89)	
303.9016	28:16	28:13	3	0.983	3173	321	26	65	12		
305.8987	28:21	28:13	8	0.986	4519	417	28	70	15	0.70(0.65-0.89)	M
303.9016	29:09	28:13	56	1.014	827	143	26	65	6		
305.8987	29:17	28:13	63	1.018	1284	169	28	70	6	0.64(0.65-0.89)	
	Empc Correction				1074	185	28	70	7		
303.9016	30:01	28:13	107	1.044	7706	1005	26	65	39		
305.8987	29:59	28:13	105	1.043	10722	1242	28	70	44	0.72(0.65-0.89)	
303.9016	30:36	28:13	143	1.064	1655	257	26	65	10		
305.8987	30:41	28:13	148	1.067	2602	309	28	70	11	0.64(0.65-0.89)	M
	Empc Correction				2149	333	28	70	12		
303.9016	32:42	28:13	268	1.137	4414	363	26	65	14		
305.8987	32:46	28:13	272	1.139	6059	768	28	70	27	0.73(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	33:51	28:13	337	1.177	7431	814	26	65	31		M
305.8987	33:50	28:13	336	1.177	8918	1023	28	70	37	0.83(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:33	40:32	-2	1.001	1805	457	30	75	15		
357.8516	40:33	40:32	-2	1.001	1179	240	66	165	4	1.53(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:35	39:27	-111	0.928	12144	1936	30	75	65		
	Empc Correction				10037	1655	30	75	55		
357.8516	37:35	39:27	-111	0.928	6476	1068	66	165	16	1.88(1.32-1.78)	
355.8546	38:26	39:27	-61	0.949	34655	6530	30	75	218		
357.8516	38:26	39:27	-61	0.949	20816	4320	66	165	65	1.66(1.32-1.78)	
355.8546	39:08	39:27	-19	0.966	1525	293	30	75	10		M
357.8516	39:06	39:27	-21	0.965	895	177	66	165	3	1.70(1.32-1.78)	
355.8546	39:22	39:27	-5	0.971	1155	263	30	75	9		M
357.8516	39:23	39:27	-4	0.972	890	241	66	165	4	1.30(1.32-1.78)	
	Empc Correction				745	169	66	165	3		
355.8546	39:39	39:27	12	0.979	1825	341	30	75	11		
357.8516	39:39	39:27	12	0.979	1383	418	66	165	6	1.32(1.32-1.78)	
355.8546	39:48	39:27	21	0.982	12565	2112	30	75	70		
357.8516	39:49	39:27	22	0.983	8808	1427	66	165	22	1.43(1.32-1.78)	
355.8546	41:12	39:27	104	1.017	917	157	30	75	5		
357.8516	41:13	39:27	105	1.017	1092	233	66	165	4	0.84(1.32-1.78)	
	Empc Correction				591	101	66	165	2		
1,2,3,7,8-PeCDF											RQM
339.8597	38:46	38:45	-2	1.001	3133	665	112	280	6		M
341.8567	38:45	38:45	-3	1.000	3016	593	30	75	20	1.04(1.32-1.78)	M
	Empc Correction				2021	429	30	75	14		
2,3,4,7,8-PeCDF											M
339.8597	39:59	40:00	-4	1.000	2276	426	112	280	4		M
341.8567	40:00	40:00	-3	1.000	1667	333	30	75	11	1.37(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:42	38:02	-200	0.896	2277	293	112	280	3		M
341.8567	34:37	38:02	-204	0.894	2827	398	30	75	13	0.81(1.32-1.78)	
	Empc Correction				1469	189	30	75	6		
339.8597	37:13	38:02	-49	0.961	4199	548	112	280	5		
341.8567	37:17	38:02	-45	0.963	2449	344	30	75	11	1.71(1.32-1.78)	
339.8597	38:05	38:02	4	0.984	2254	421	112	280	4		
341.8567	38:06	38:02	5	0.984	2915	420	30	75	14	0.77(1.32-1.78)	
	Empc Correction				1454	271	30	75	9		
339.8597	39:23	38:02	81	1.017	2881	407	112	280	4		M
341.8567	39:22	38:02	80	1.016	2393	355	30	75	12	1.20(1.32-1.78)	
	Empc Correction				1858	262	30	75	9		
339.8597	40:16	38:02	134	1.040	1249	341	112	280	3		M
341.8567	40:16	38:02	134	1.040	1273	173	30	75	6	0.98(1.32-1.78)	
	Empc Correction				805	220	30	75	7		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	41:25	38:02	203	1.069	2051	411	112	280	4		M
341.8567	41:26	38:02	204	1.070	1951	333	30	75	11	1.05(1.32-1.78)	M
	Empc Correction				1323	265	30	75	9		
1,2,3,4,7,8-HxCDD											RQM
389.8158	44:49	44:48	-2	1.000	2866	821	21	52	39		M
391.8127	44:48	44:48	-3	1.000	3337	749	278	695	3	0.86(1.05-1.43)	M
	Empc Correction				2311	662	278	695	2		
1,2,3,6,7,8-HxCDD											RQMa
389.8158	44:56	44:55	-2	1.000	7457	1742	21	52	83		M
	Empc Correction				5958	1213	21	52	58		
391.8127	44:55	44:55	-3	1.000	4805	979	278	695	4	1.55(1.05-1.43)	M
1,2,3,7,8,9-HxCDD											M
389.8158	45:17	45:17	-4	1.011	16530	3349	21	52	159		M
391.8127	45:18	45:17	-3	1.011	12088	2303	278	695	8	1.37(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQMa
389.8158	43:14	44:19	-65	0.963	265364	67403	21	52	3210		
391.8127	43:14	44:19	-65	0.963	208373	55277	278	695	199	1.27(1.05-1.43)	
389.8158	43:49	44:19	-30	0.976	6534	1422	21	52	68		M
	Empc Correction				4667	1274	21	52	61		
391.8127	43:48	44:19	-31	0.975	3764	1028	278	695	4	1.74(1.05-1.43)	
389.8158	44:06	44:19	-13	0.982	47893	10560	21	52	503		
391.8127	44:06	44:19	-13	0.982	40732	9245	278	695	33	1.18(1.05-1.43)	M
389.8158	44:16	44:19	-3	0.986	8389	1725	21	52	82		M
	Empc Correction				5020	1160	21	52	55		
391.8127	44:16	44:19	-3	0.986	4049	936	278	695	3	2.07(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:48	43:48	-1	1.001	6756	1445	79	197	18		
375.8178	43:47	43:48	-2	1.000	5539	1386	107	267	13	1.22(1.05-1.43)	
1,2,3,6,7,8-HxCDF											U
373.8208	43:56						79	197			
375.8178	43:56						107	267			
2,3,4,6,7,8-HxCDF											
373.8208	44:37						79	197			
375.8178	44:37						107	267			
1,2,3,7,8,9-HxCDF											
373.8208	45:34						79	197			
375.8178	45:34						107	267			
A Non-2,3,7,8-sub-HxCDF											RQ
373.8208	42:44	44:10	-86	0.973	4918	1138	79	197	14		
375.8178	42:44	44:10	-86	0.973	5353	1503	107	267	14	0.92(1.05-1.43)	
	Empc Correction				3966	917	107	267	9		
373.8208	43:20	44:10	-50	0.987	4164	910	79	197	12		
375.8178	43:19	44:10	-51	0.987	3608	927	107	267	9	1.15(1.05-1.43)	
373.8208	43:32	44:10	-38	0.992	5645	1676	79	197	21		
375.8178	43:32	44:10	-38	0.992	4490	1383	107	267	13	1.26(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	44:27	44:10	17	1.013	1801	551	79	197	7		
375.8178	44:27	44:10	17	1.013	1705	421	107	267	4	1.06(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:37	-2	1.000	182643	32572	32	80	1018		
425.7737	49:36	49:37	-2	1.000	176421	29978	52	130	577	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											a
423.7767	48:25	49:03	-38	0.976	515731	96196	32	80	3006		a
425.7737	48:25	49:03	-38	0.976	497460	94635	52	130	1820	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:55	47:55	-3	1.000	10096	2141	31	77	69		M
409.7788	47:55	47:55	-3	1.000	9462	1942	24	60	81	1.07(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:14	50:15	-3	1.000	1630	368	31	77	12		M
409.7788	50:15	50:15	-2	1.000	1472	347	24	60	14	1.11(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											M
407.7817	48:19	49:20	-61	1.008	996	216	31	77	7		
409.7788	48:18	49:20	-62	1.008	838	171	24	60	7	1.19(0.88-1.20)	M
407.7817	48:34	49:20	-46	1.013	11237	2385	31	77	77		
409.7788	48:34	49:20	-46	1.013	10406	1808	24	60	75	1.08(0.88-1.20)	M
OCDD											
457.7377	53:51	53:53	-2	1.000	3510988	740554	21	52	35264		
459.7348	53:50	53:53	-3	1.000	3909218	802083	21	52	38194	0.90(0.76-1.02)	
OCDF											M
441.7428	53:58	53:58	-3	1.000	34122	7838	58	145	135		M
443.7399	53:58	53:58	-3	1.000	39586	9578	116	290	83	0.86(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:44	30:45	-4	1.017	638772	66680	266	665	251		
333.9338	30:43	30:45	-5	1.017	780268	81277	151	377	538	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:45	28:46	-4	0.952	1043498	116495	602	1505	194		
317.9389	28:45	28:46	-4	0.952	1269196	145502	471	1177	309	0.82(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:31	40:30	-3	1.341	757466	164845	257	642	641		
369.8919	40:31	40:30	-3	1.341	492412	107705	439	1097	245	1.54(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:42	-3	1.282	1152036	220274	643	1607	343		
353.8970	38:44	38:42	-3	1.282	736522	139183	432	1080	322	1.56(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	39:59	39:58	-3	1.323	1199871	252775	643	1607	393		
353.8970	39:59	39:58	-3	1.323	723975	156880	432	1080	363	1.66(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:49	-2	0.989	751194	186961	300	750	623		
403.8529	44:48	44:49	-2	0.989	573576	147384	86	215	1714	1.31(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:56	-2	0.992	847912	183372	300	750	611		
403.8529	44:55	44:56	-2	0.992	658480	145886	86	215	1696	1.29(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:47	-2	0.966	651858	179190	403	1007	445		
385.8610	43:46	43:47	-2	0.966	1247788	330266	904	2260	365	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:56	-2	0.969	840584	190523	403	1007	473		
385.8610	43:54	43:56	-2	0.969	1481639	343793	904	2260	380	0.57(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:36	44:39	-3	0.985	743119	168351	403	1007	418		
385.8610	44:36	44:39	-3	0.985	1372924	324495	904	2260	359	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:33	45:35	-2	1.006	666150	131968	403	1007	327		
385.8610	45:33	45:35	-2	1.006	1207181	247226	904	2260	273	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:36	-2	1.095	706390	127918	254	635	504		
437.8140	49:35	49:36	-2	1.095	629509	111997	350	875	320	1.12(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:57	-2	1.058	546529	104619	401	1002	261		
419.8220	47:54	47:57	-3	1.058	1177434	237382	838	2095	283	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:14	50:16	-2	1.109	435589	77776	401	1002	194		
419.8220	50:14	50:16	-2	1.109	935481	161047	838	2095	192	0.47(0.37-0.51)	
13C-OCDD											
469.7780	53:50	53:52	-2	1.189	998142	213547	414	1035	516		
471.7750	53:50	53:52	-2	1.189	1126901	241782	308	770	785	0.89(0.76-1.02)	
13C-OCDF											
453.7830	53:58	54:01	-2	1.192	1593457	357541	509	1272	702		
455.7801	53:58	54:01	-2	1.192	1747389	372816	413	1032	903	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:46	30:48	-5	1.018	357946	39264	100	250	393		
13C-1,2,3,4-TCDD											
331.9368	30:13	30:19	-6		1868235	209100	266	665	786		
333.9338	30:14	30:19	-5		2353333	268626	151	377	1779	0.79(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:17	45:20	-3		2668965	570401	300	750	1901		
403.8529	45:17	45:20	-3		2051433	447481	86	215	5203	1.30(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Report Date: 17-Dec-2019 12:40:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1419040	147957

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1419040	147957

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:54	1991	330	3016	354	0.1504	0.66	
25:36	2740	411	2453	528	0.1560	1.12	RQ
25:36	1888	406	2453	528	0.1304		Empc Correction
26:16	3588	569	4509	756	0.2432	0.80	
27:44	43720	5449	55077	6976	2.97	0.79	
28:16	1549	193	2897	337	0.1335	0.53	RQM
28:16	1549	193	2011	250	0.1069		Empc Correction
28:48	643	161	517	152	0.0348	1.24	RQa
28:48	398	117	517	152	0.0275		Empc Correction
29:22	2994	339	2940	403	0.1782	1.02	RQ
29:22	2263	310	2940	403	0.1563		Empc Correction
30:13	8160	1066	10728	1156	0.5672	0.76	
30:33	1308	325	1900	359	0.0963	0.69	
31:56	1895	250	2369	387	0.1281	0.80	
33:57	1985	326	2437	344	0.1328	0.81	
Signal Totals:							
	68745	9341	87957	11665			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	159416	21171				0.79	RQMa
	156702	21006					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.787 = (159416 * 50.000) / (1419040 * 1.173)
Empc Amount: 4.706 = (156702 * 50.000) / (1419040 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2312694	261997

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2312694	261997

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:27	432	145	1265	273	0.0337	0.34	RQ
22:27	432	145	561	188	0.0197		Empc Correction
23:49	4617	735	4474	565	0.1806	1.03	RQ
23:49	3444	435	4474	565	0.1573		Empc Correction
24:18	1767	233	3429	377	0.1032	0.52	RQ
24:18	1767	233	2294	302	0.0807		Empc Correction
24:37	671	123	650	192	0.0262	1.03	RQ
24:37	500	147	650	192	0.0228		Empc Correction
25:05	5567	822	7643	1028	0.2625	0.73	
25:48	8250	726	9584	795	0.3543	0.86	M
26:25	5189	599	7006	572	0.2423	0.74	M
26:56	5350	681	5305	731	0.2117	1.01	RQ
26:56	4084	562	5305	731	0.1865		Empc Correction
27:11	906	180	1105	152	0.0400	0.82	
27:42	47420	5603	61170	7981	2.16	0.78	
28:16	3173	321	4519	417	0.1528	0.70	M
29:09	827	143	1284	169	0.0419	0.64	RQ
29:09	827	143	1074	185	0.0378		Empc Correction
30:01	7706	1005	10722	1242	0.3661	0.72	
30:36	1655	257	2602	309	0.0846	0.64	RQM
30:36	1655	257	2149	333	0.0756		Empc Correction
32:42	4414	363	6059	768	0.2081	0.73	
33:51	7431	814	8918	1023	0.3248	0.83	M
Signal Totals:							
	102765	12355	133233	16474			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	241110	29344				0.78	RQM
	235998	28829					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)

Quant By: Area

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1249878	272550

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1249878	272550

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:35	12144	1936	6476	1068	0.7139	1.88	RQ
37:35	10037	1655	6476	1068	0.6331		Empc Correction
38:26	34655	6530	20816	4320	2.13	1.66	
39:08	1525	293	895	177	0.0928	1.70	Ma
39:22	1155	263	890	241	0.0784	1.30	RQMa
39:22	1155	263	745	169	0.0728		Empc Correction
39:39	1825	341	1383	418	0.1230	1.32	
39:48	12565	2112	8808	1427	0.8194	1.43	
41:12	917	157	1092	233	0.0770	0.84	RQ
41:12	917	157	591	101	0.0578		Empc Correction
Signal Totals:							
	62679	11351	39714	7680			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	105146	19516				1.61	RQMa
	102393	19031					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.031 = (105146 * 50.000) / (1249878 * 1.043)
Empc Amount: 3.926 = (102393 * 50.000) / (1249878 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1888558	359457
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1923846	409655

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1906202	384556

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:42	2277	293	2827	398	0.1165	0.81	RQMa
34:42	2277	293	1469	189	0.0855		Empc Correction
37:13	4199	548	2449	344	0.1517	1.71	
38:05	2254	421	2915	420	0.1179	0.77	RQ
38:05	2254	421	1454	271	0.0846		Empc Correction
39:23	2881	407	2393	355	0.1203	1.20	RQMa
39:23	2881	407	1858	262	0.1081		Empc Correction
40:16	1249	341	1273	173	0.0575	0.98	RQMa
40:16	1249	341	805	220	0.0469		Empc Correction
41:25	2051	411	1951	333	0.0913	1.05	RQM
41:25	2051	411	1323	265	0.0770		Empc Correction
Signal Totals:							
	14911	2421	9358	1551			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28719	4444				1.08	RQMa
	24269	3972					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6553 = (28719 * 50.000) / (1906202 * 1.150)
Empc Amount: 0.5537 = (24269 * 50.000) / (1906202 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 12:40:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1324770	334345
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1506392	329258
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1415581	331801

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:14	265364	67403	208373	55277	14.3	1.27	
43:49	6534	1422	3764	1028	0.3109	1.74	RQMa
43:49	4667	1274	3764	1028	0.2545		Empc Correction
44:06	47893	10560	40732	9245	2.68	1.18	M
44:16	8389	1725	4049	936	0.3755	2.07	RQMa
44:16	5020	1160	4049	936	0.2738		Empc Correction
Signal Totals:							
	322944	80397	256918	66486			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	585098	147596				1.28	RQMa
	579862	146883					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 17.663 = (585098 * 50.000) / (1415581 * 1.170)
Empc Amount: 17.505 = (579862 * 50.000) / (1415581 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1899646	509456
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2322223	534316
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	2116043	492846
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1873331	379194

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	2052810	478953

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:44	4918	1138	5353	1503	0.1939	0.92	RQ
42:44	4918	1138	3966	917	0.1677		Empc Correction
43:20	4164	910	3608	927	0.1467	1.15	
43:32	5645	1676	4490	1383	0.1913	1.26	
44:27	1801	551	1705	421	0.0662	1.06	
Signal Totals:							
	16528	4275	13769	3648			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	31684	8509				1.09	RQ
	30297	7923					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5980 = (31684 * 50.000) / (2052810 * 1.290)
Empc Amount: 0.5718 = (30297 * 50.000) / (2052810 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1335899	239915

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1335899	239915

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	515731	96196	497460	94635	33.8	1.04	a
Signal Totals:							
	515731	96196	497460	94635			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1013191	190831				1.04	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 33.846 = (1013191 * 50.000) / (1335899 * 1.120)

QC Flag Legend

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Inject. Date: 17-Dec-2019 10:07:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1723963	342001
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1371070	238823

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1547516	290412

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:19	996	216	838	171	0.0412	1.19	M
48:34	11237	2385	10406	1808	0.4858	1.08	M
Signal Totals:							
	12233	2601	11244	1979			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	23477	4580				1.09	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5269 = (23477 * 50.000) / (1547516 * 1.440)

QC Flag Legend

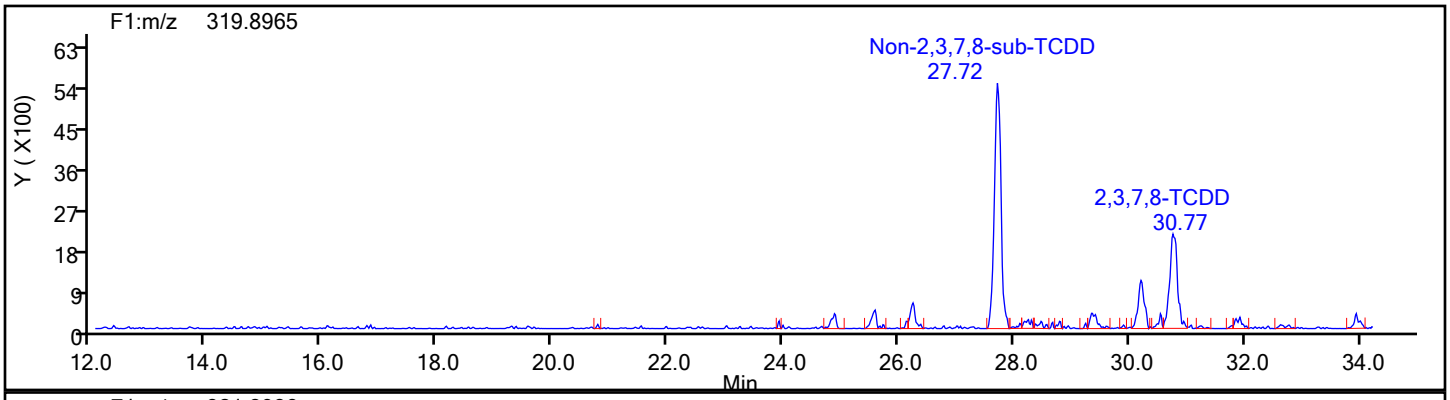
Review Flags
M - Manually Integrated

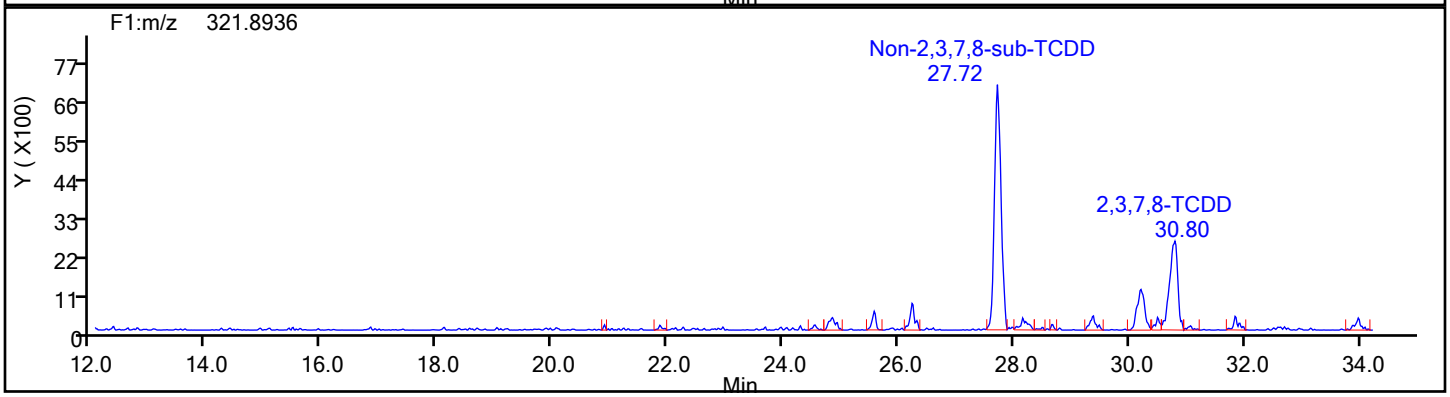
Report Date: 17-Dec-2019 12:40:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

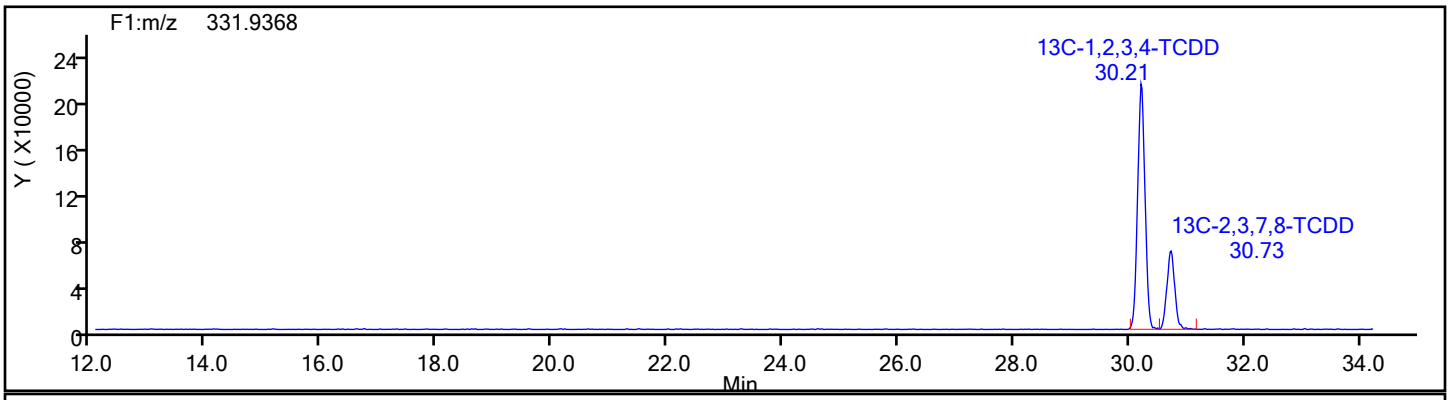
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

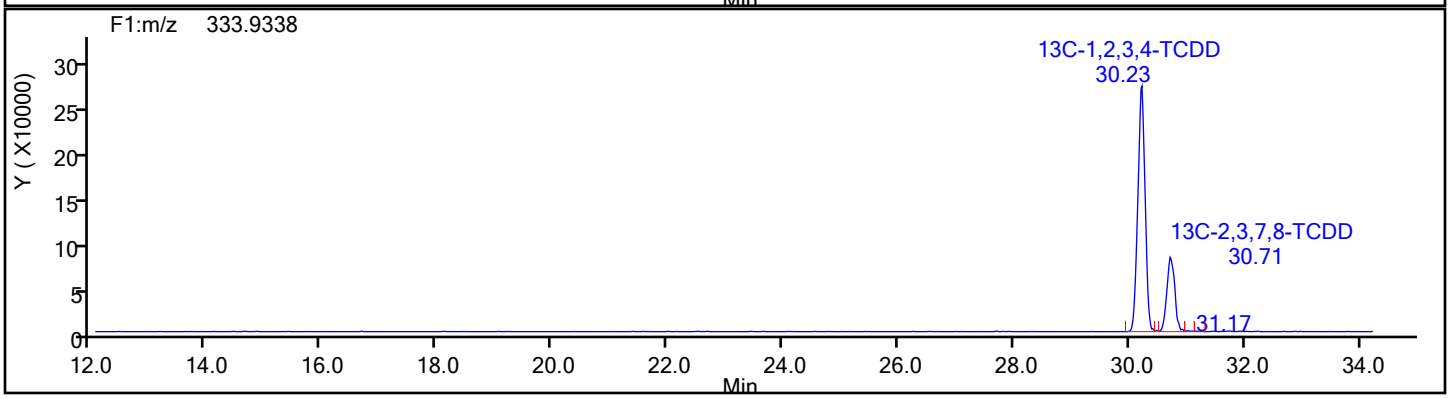
TCDD





TCDD Standards



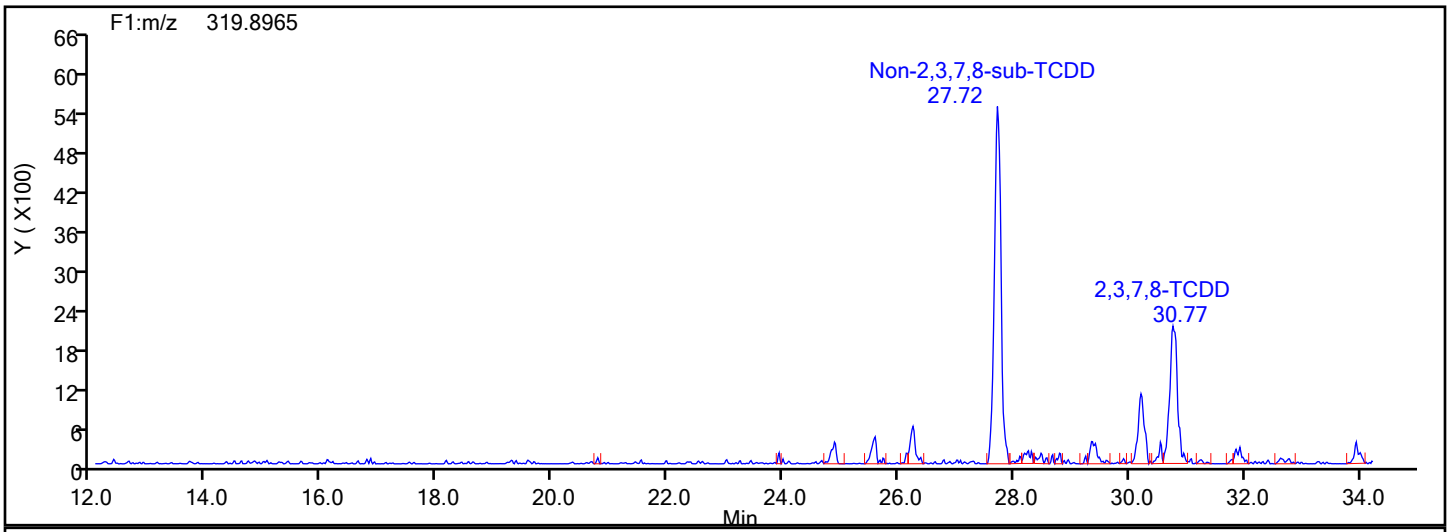


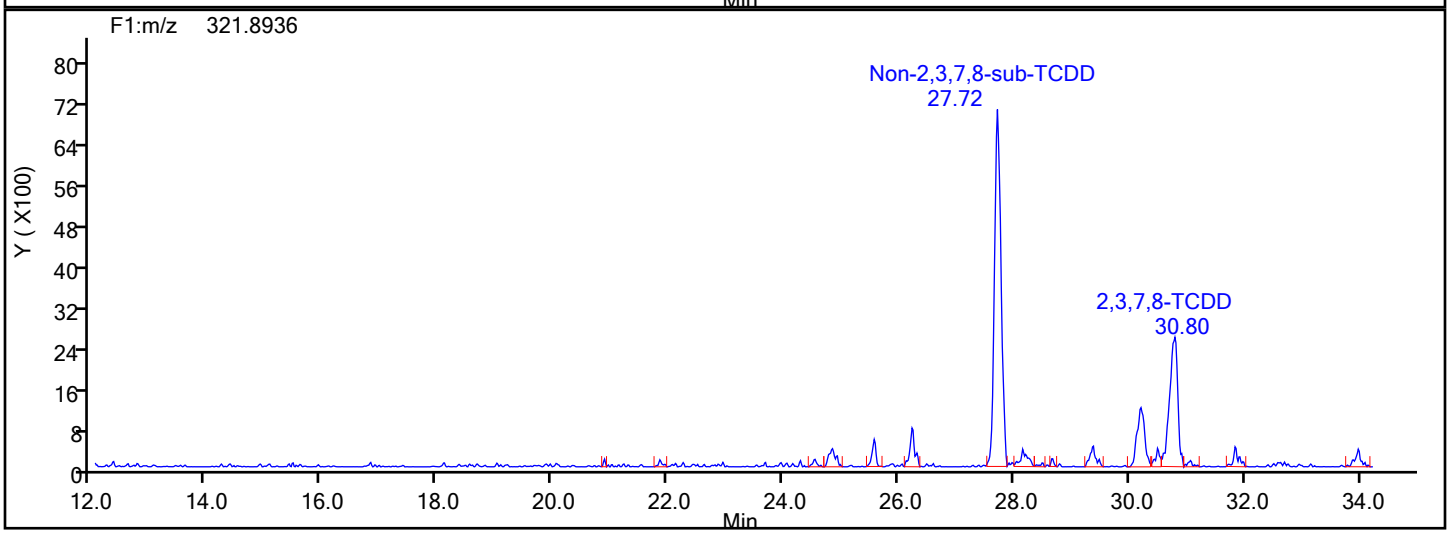
Report Date: 17-Dec-2019 12:40:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

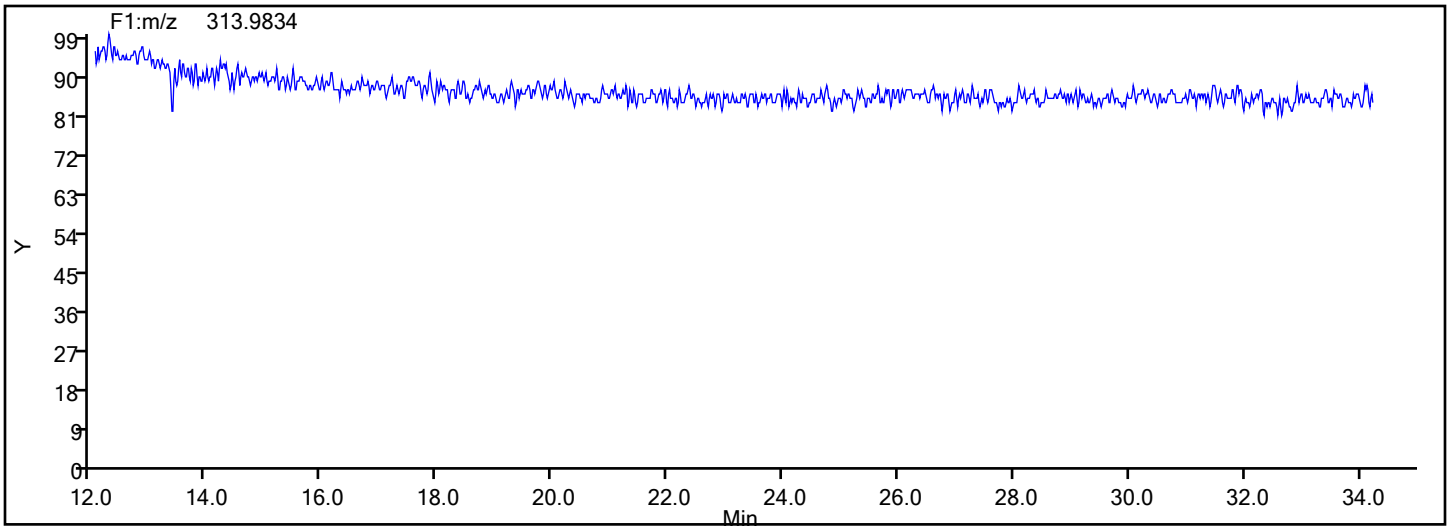
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

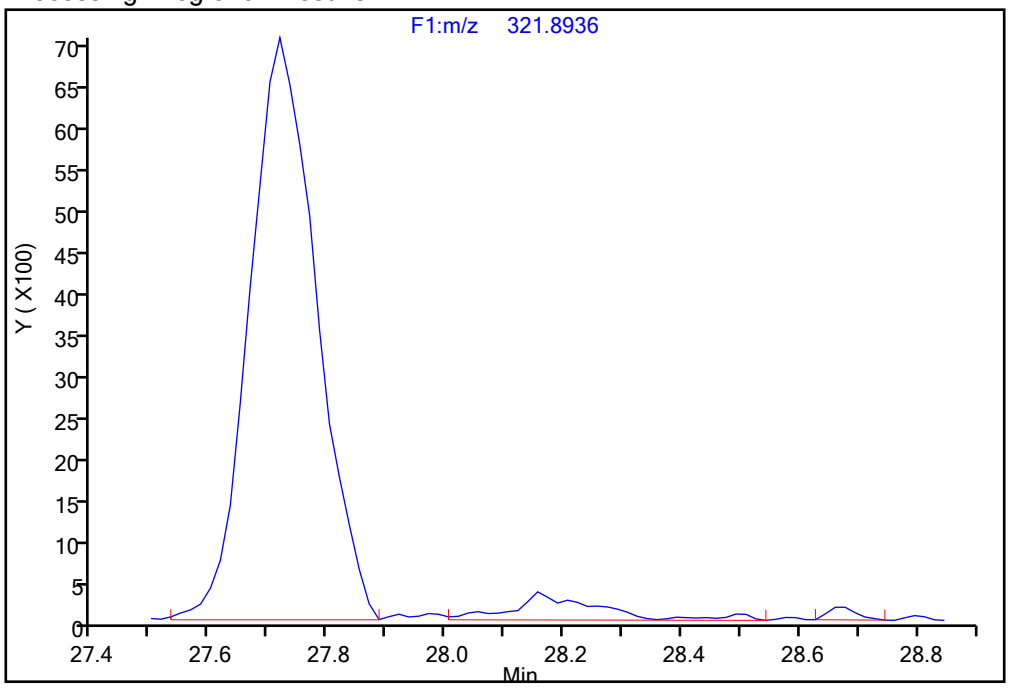
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

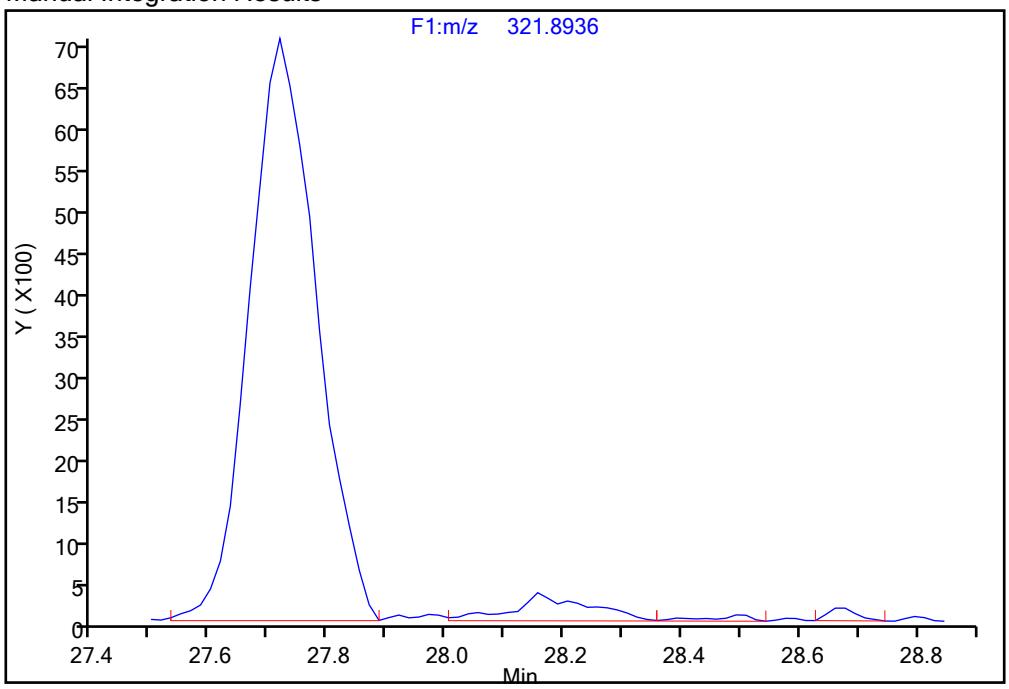
Processing Integration Results

RT = 28.156 Area = 3277



Manual Integration Results

RT = 28.156 Area = 2897 M



Reviewer: davidsonm, 17-Dec-2019 12:07:38

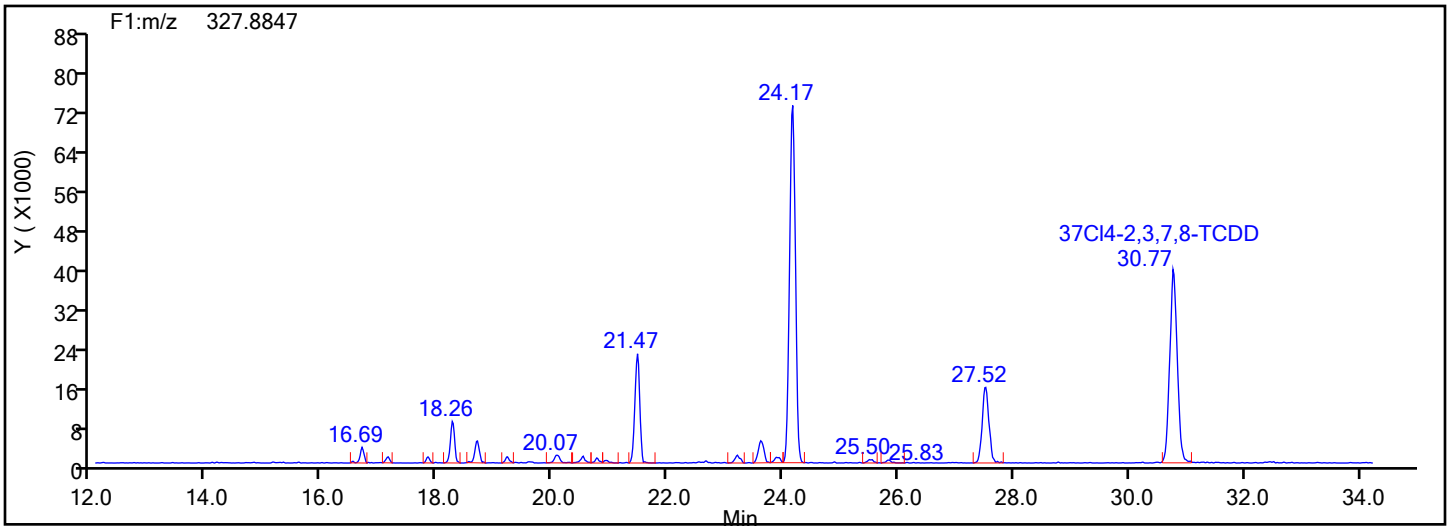
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

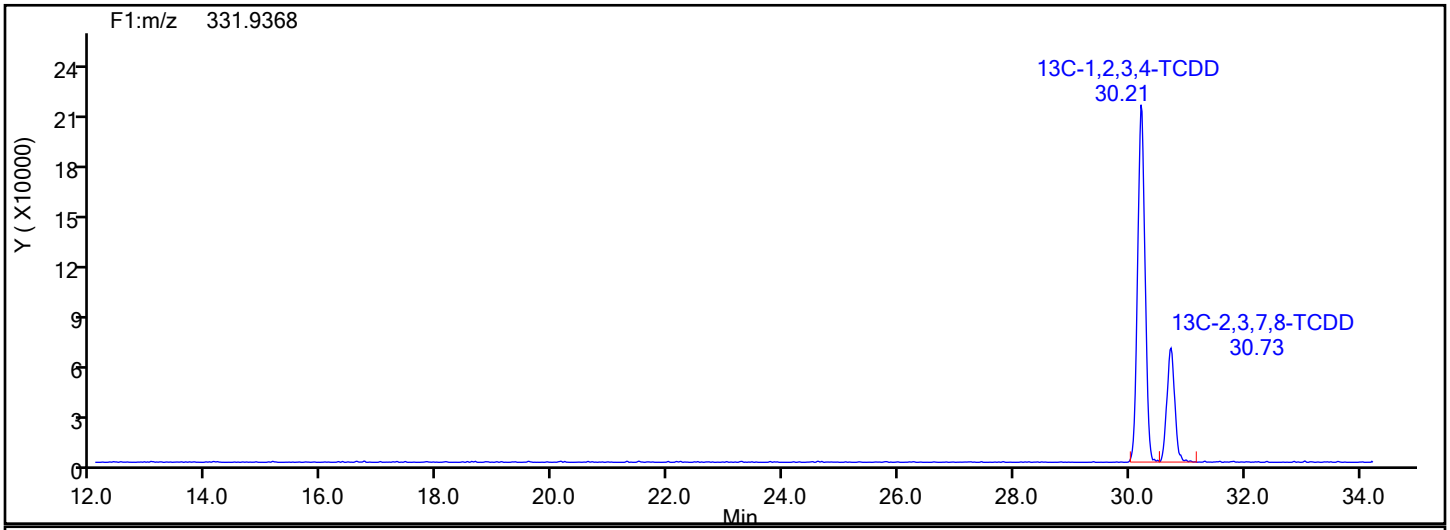
Eurofins TestAmerica, Knoxville

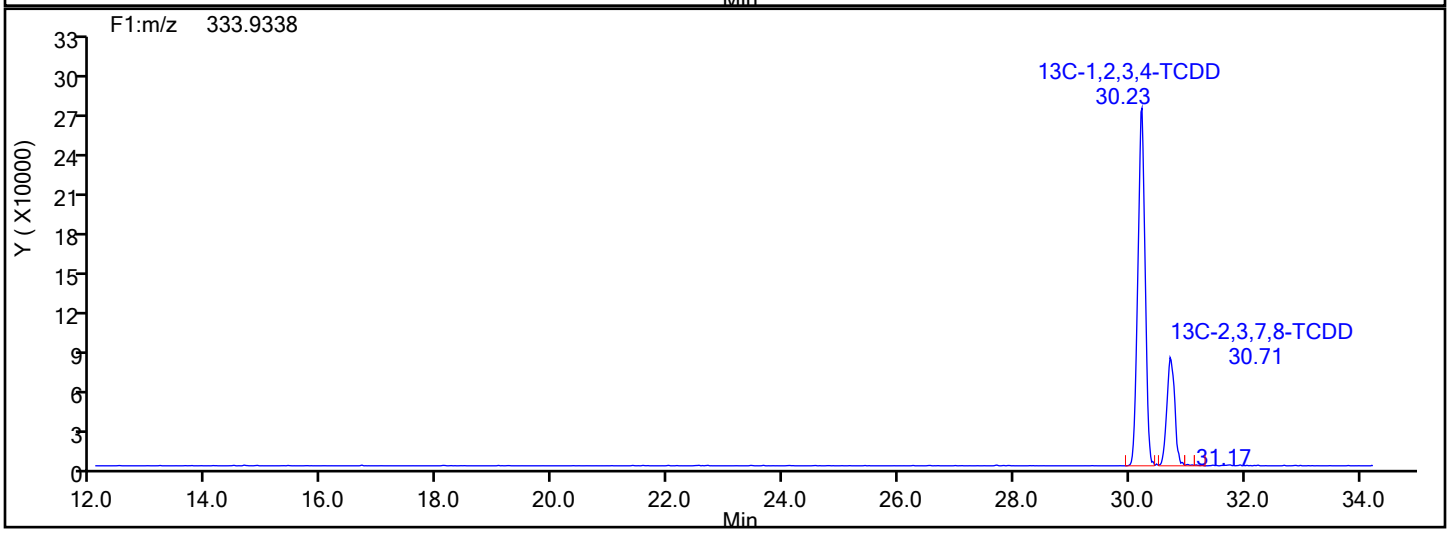
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



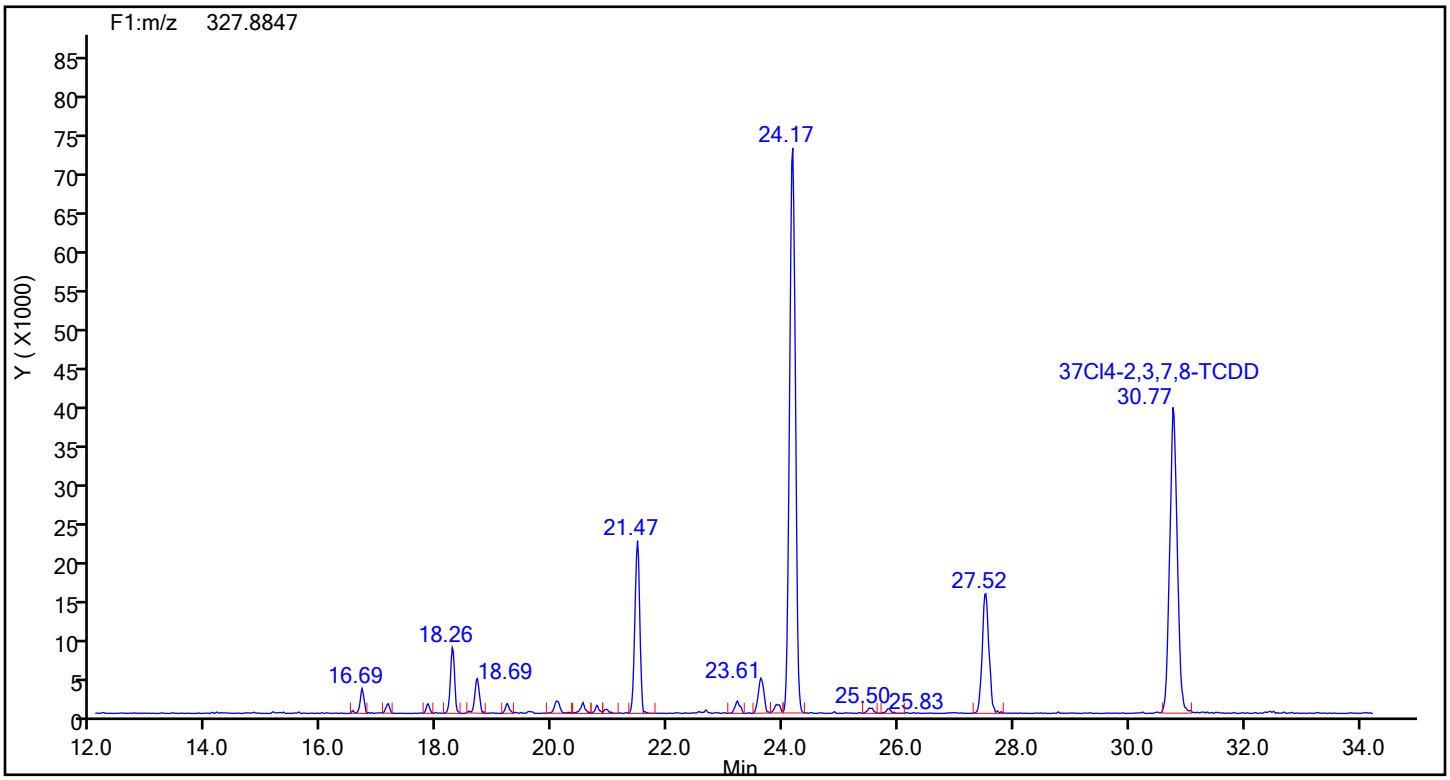


Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

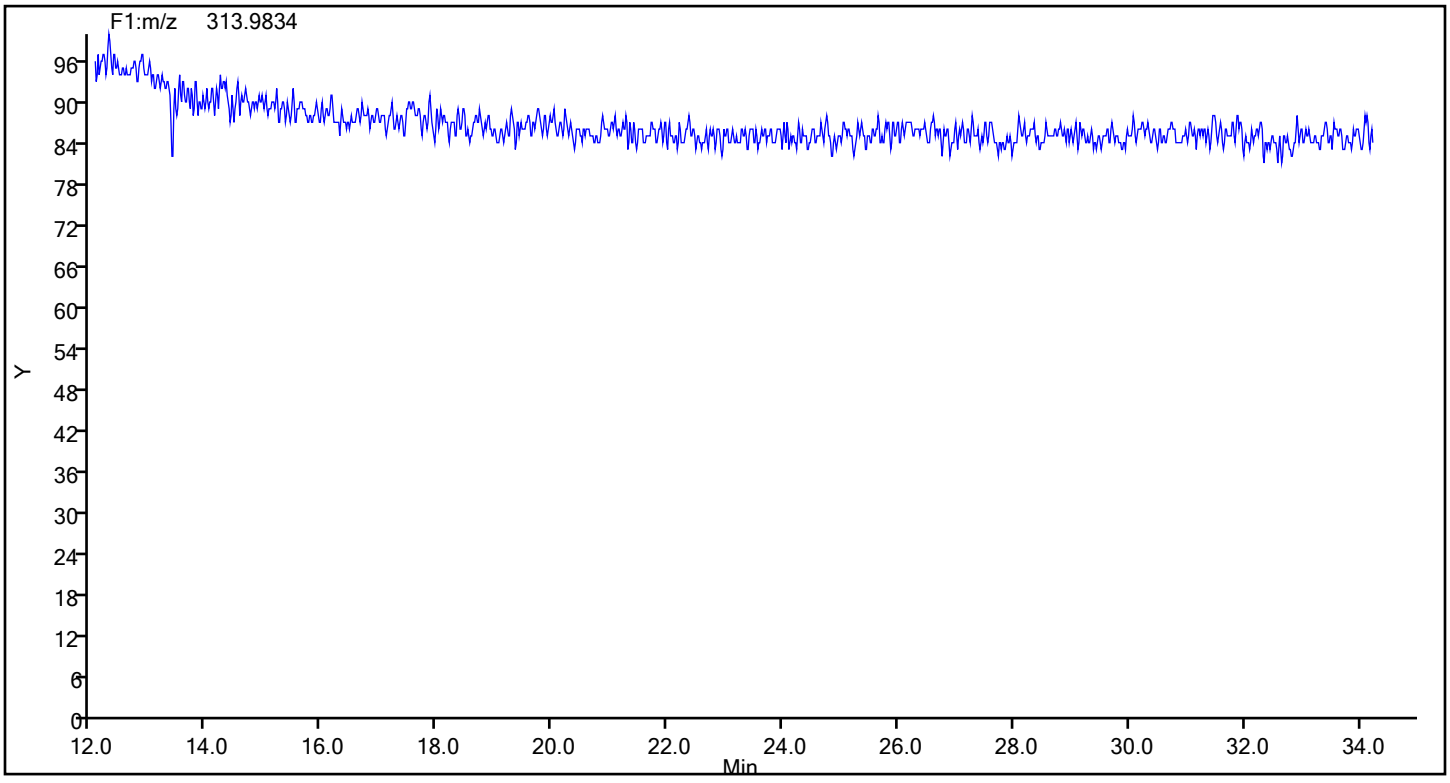
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

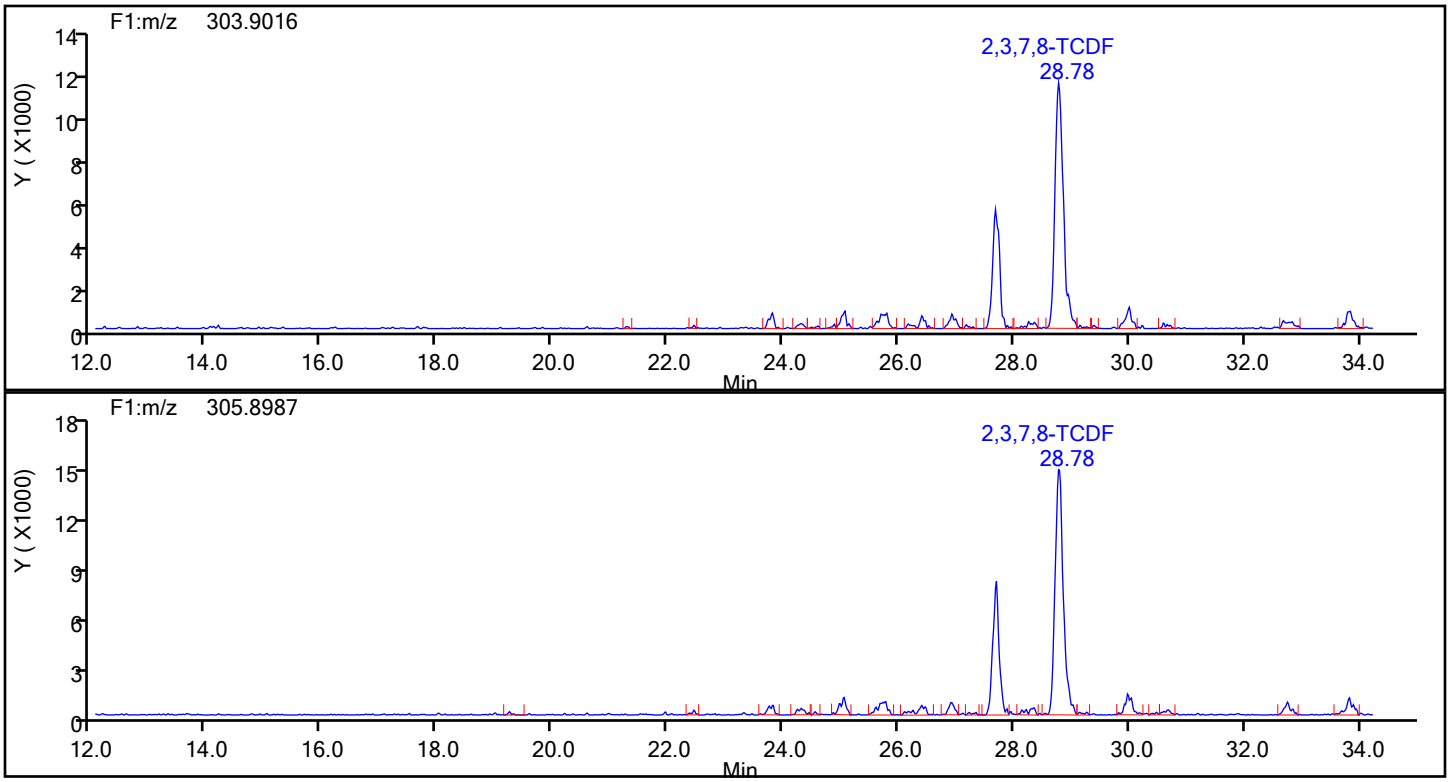


Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

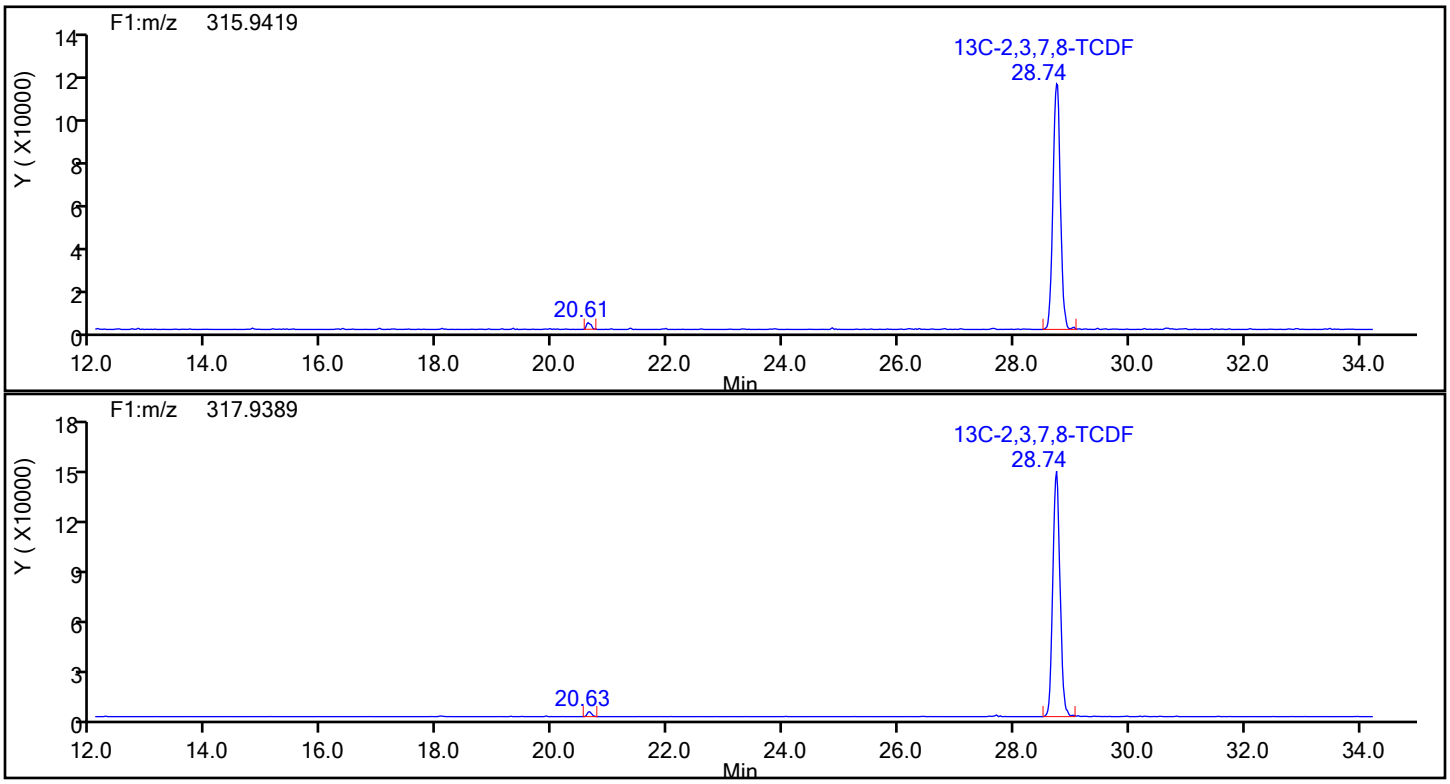
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

TCDF



TCDF Standards

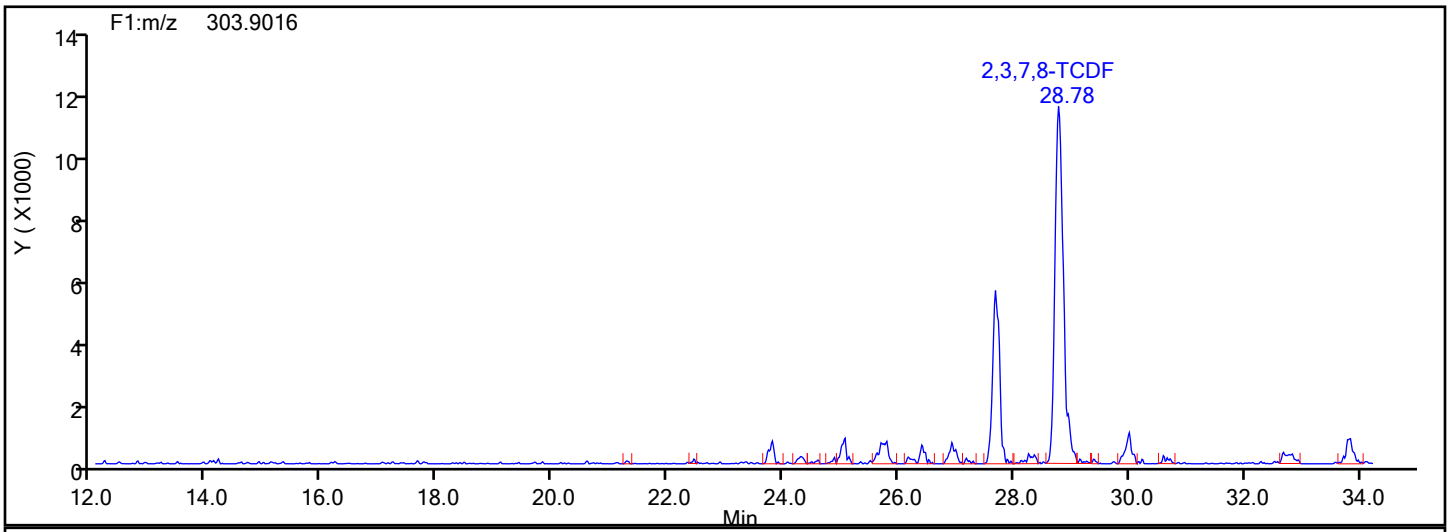


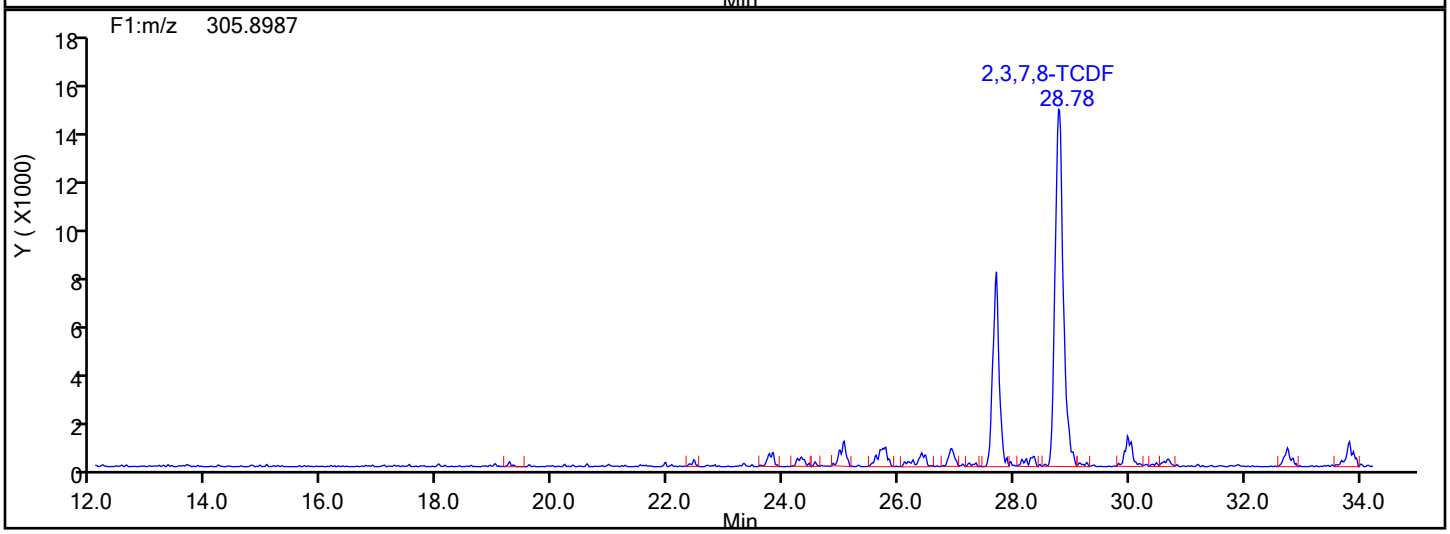
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

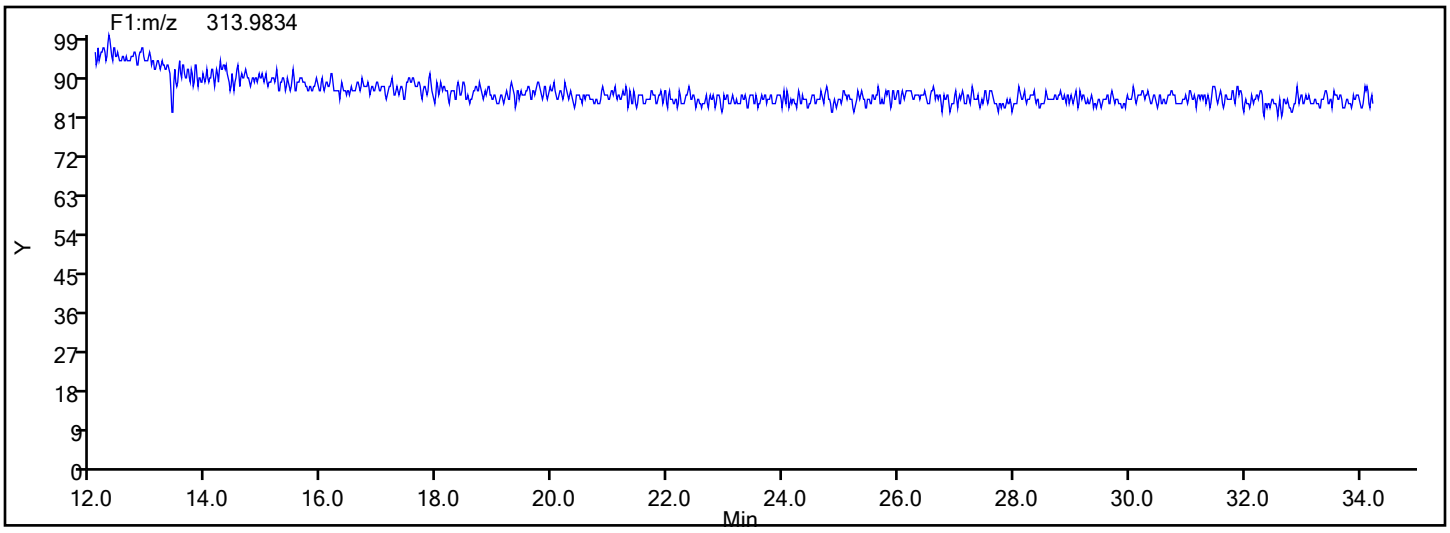
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

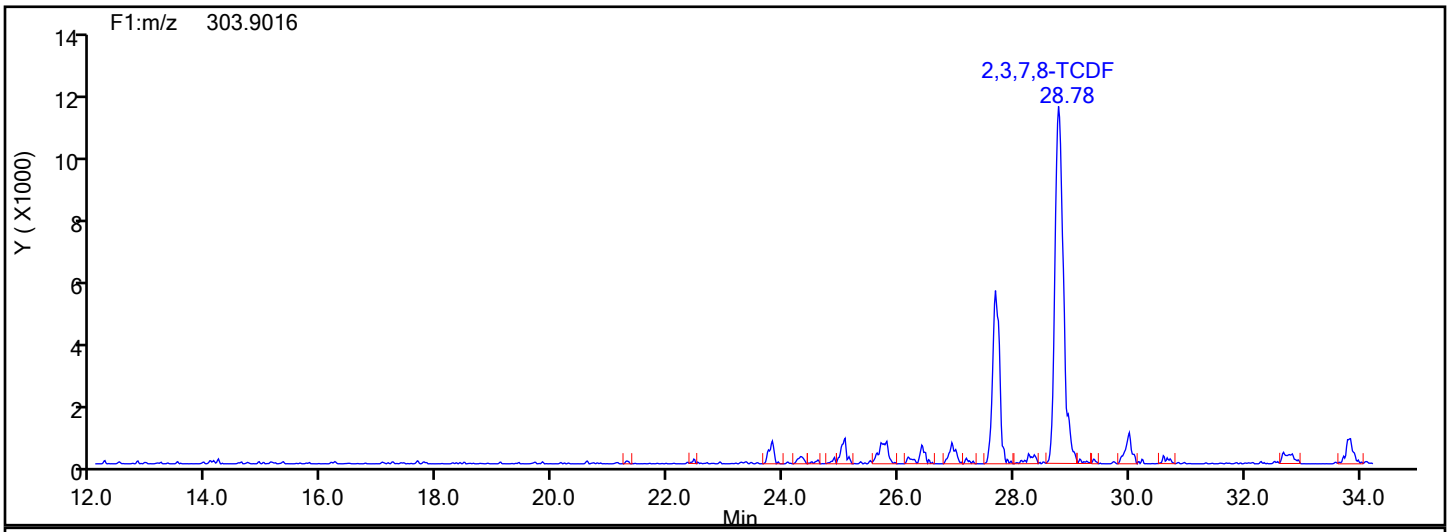


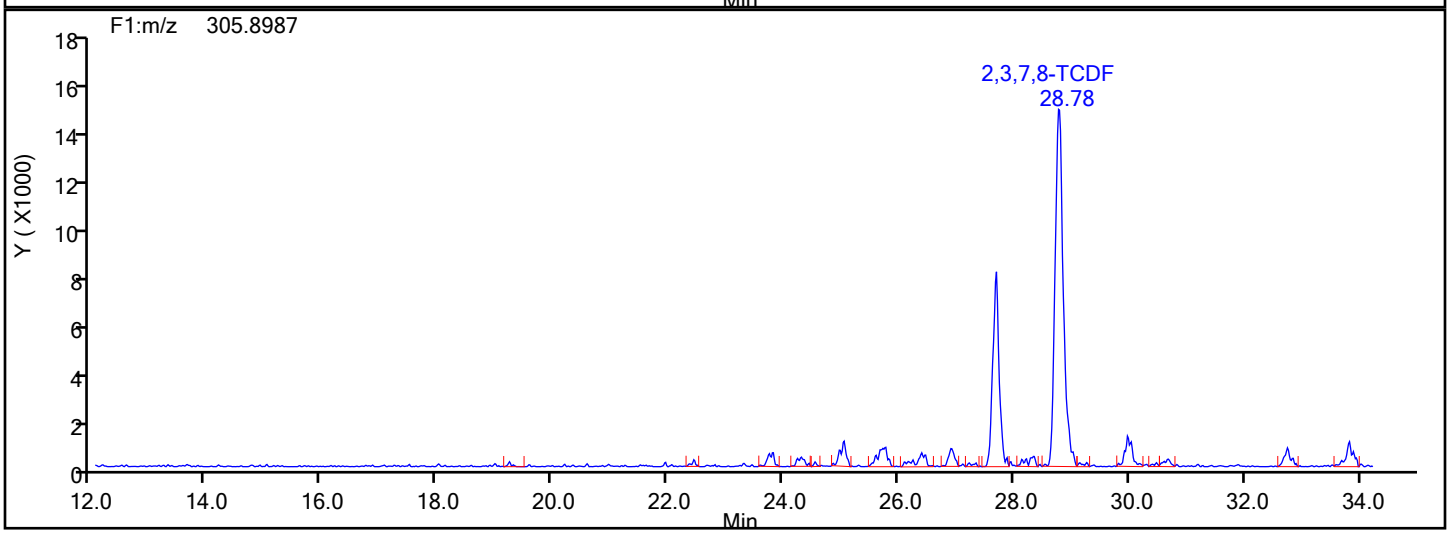
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

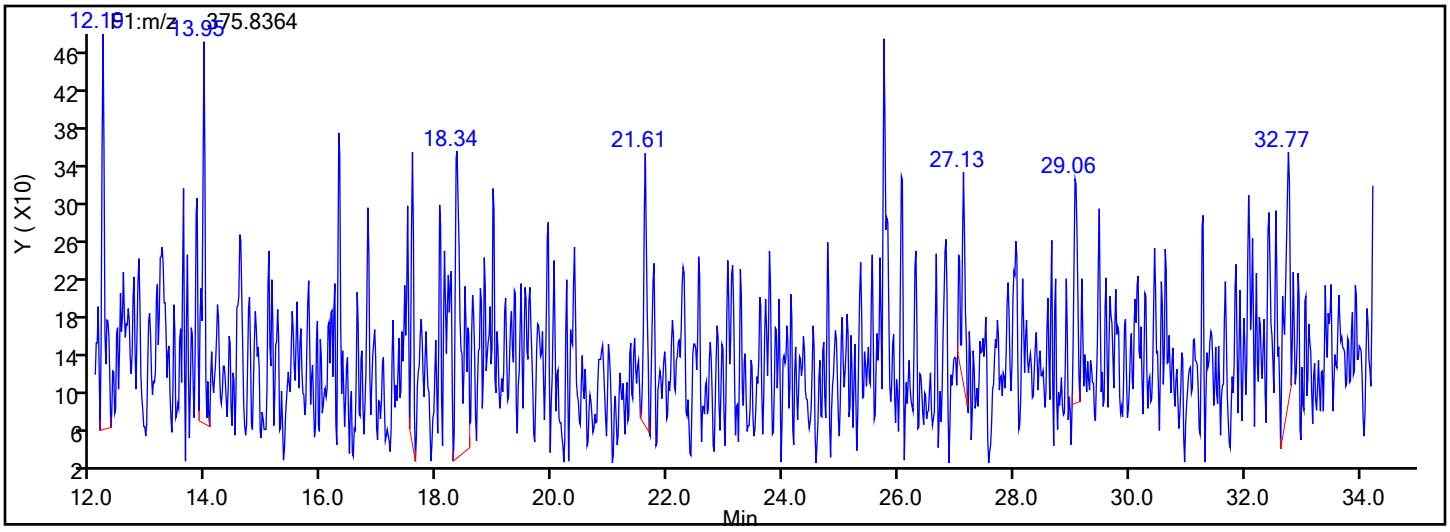
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

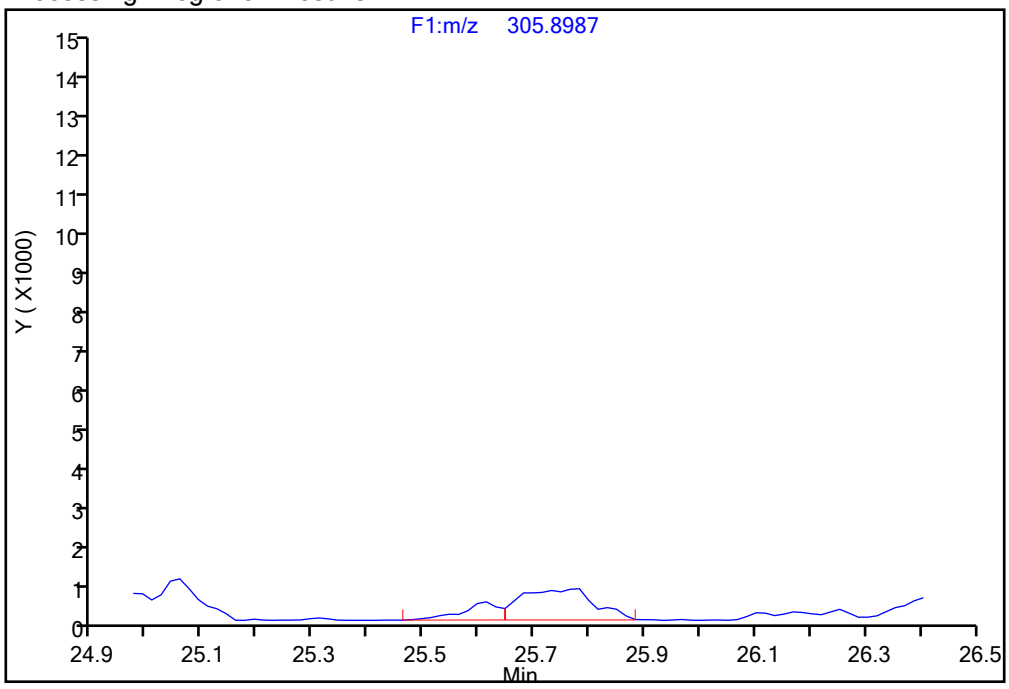
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

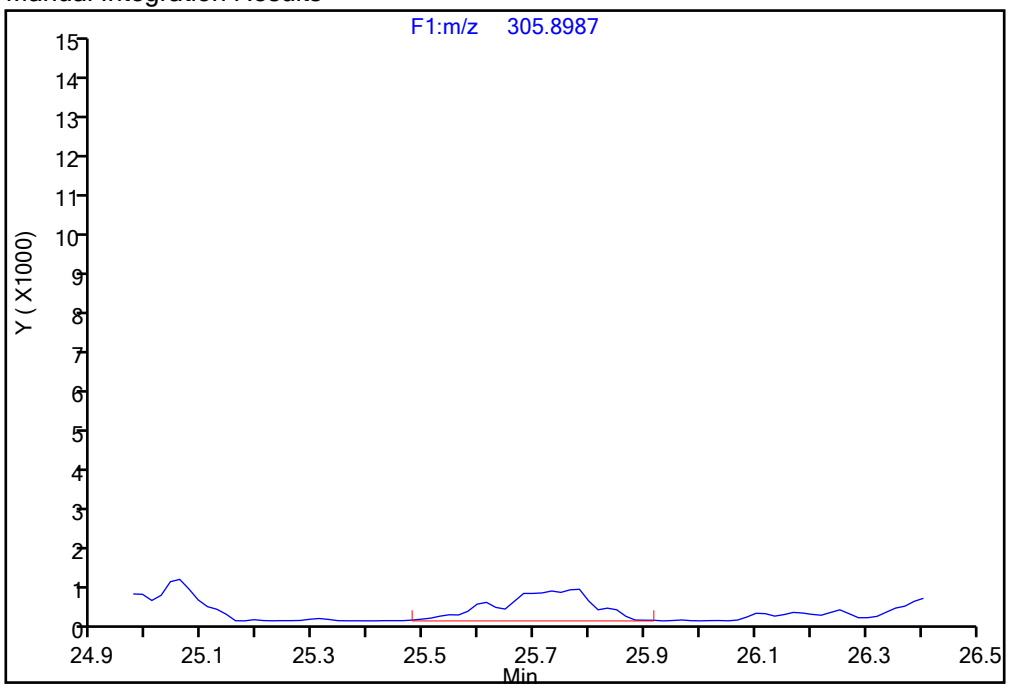
Processing Integration Results

RT = 25.782 Area = 7186



Manual Integration Results

RT = 25.782 Area = 9584 M



Reviewer: davidsonm, 17-Dec-2019 12:08:54

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

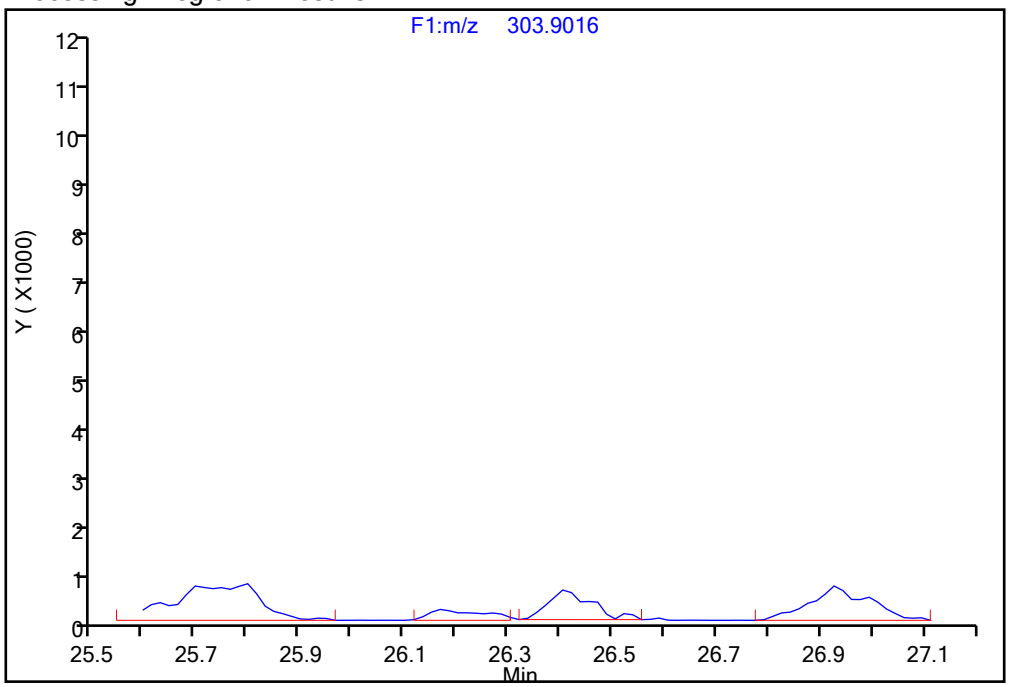
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

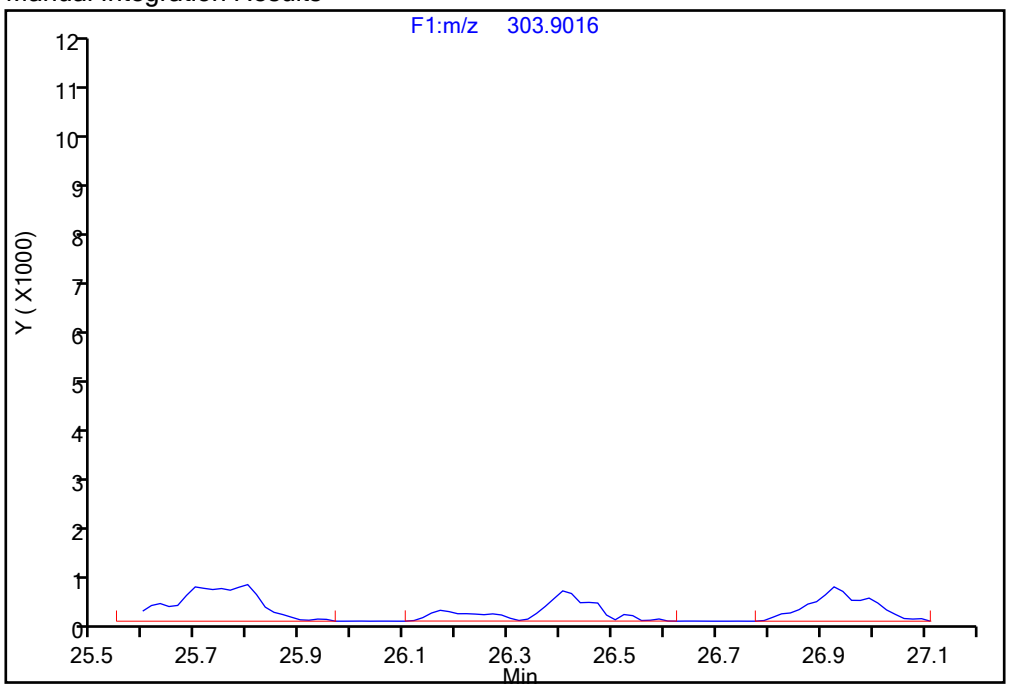
Processing Integration Results

RT = 26.404 Area = 3436



Manual Integration Results

RT = 26.404 Area = 5189 M



Reviewer: davidsonm, 17-Dec-2019 12:09:21

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

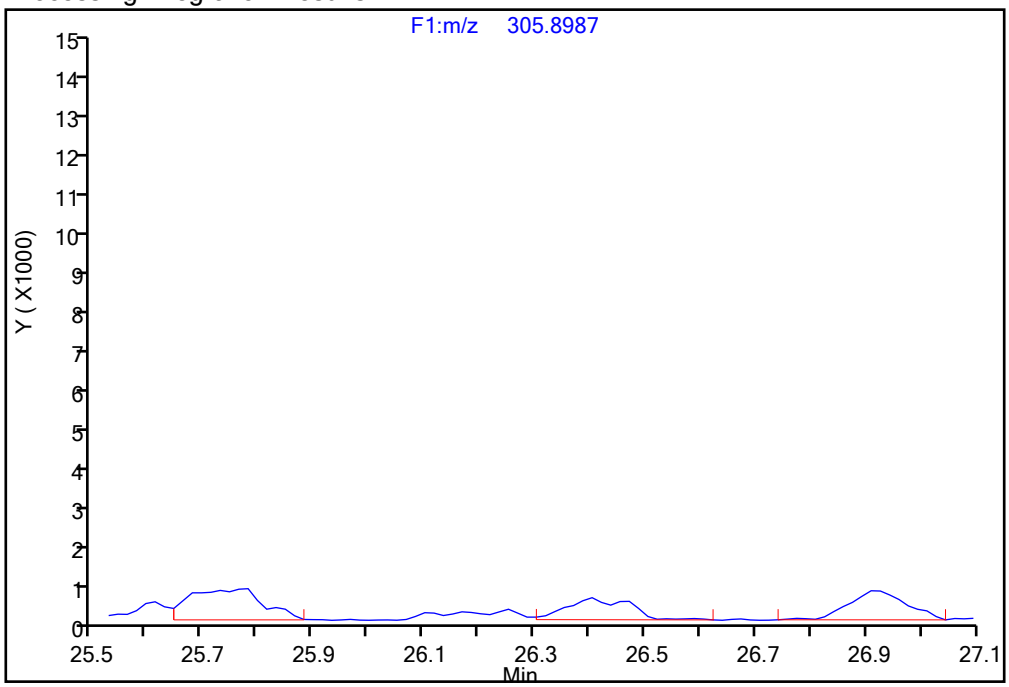
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

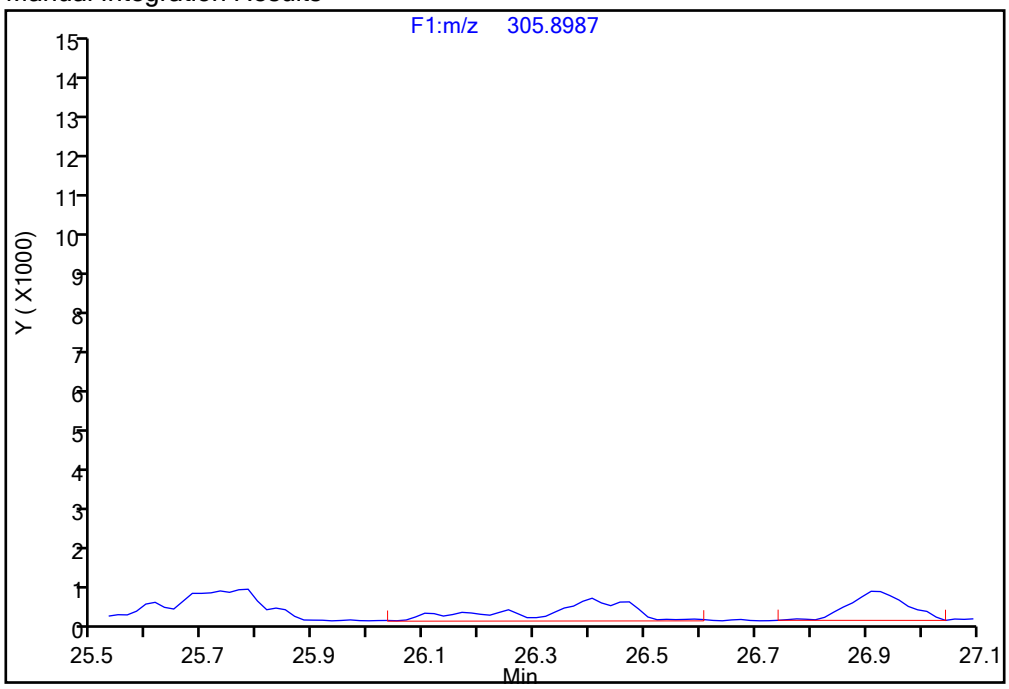
Processing Integration Results

RT = 26.404 Area = 4292



Manual Integration Results

RT = 26.404 Area = 7006 M



Reviewer: davidsonm, 17-Dec-2019 12:08:54

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

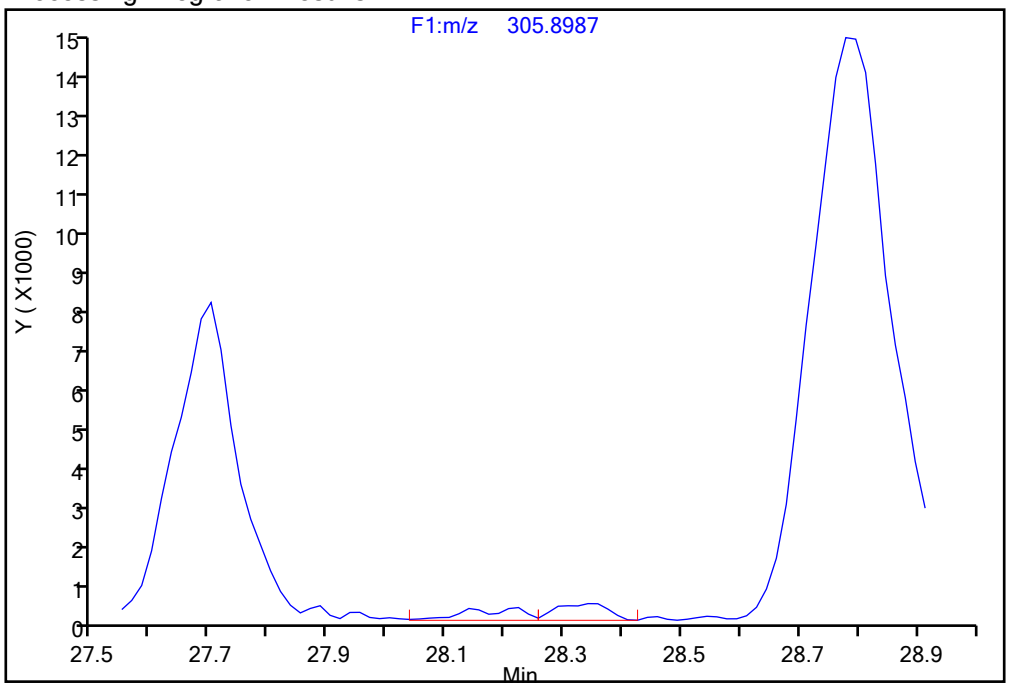
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

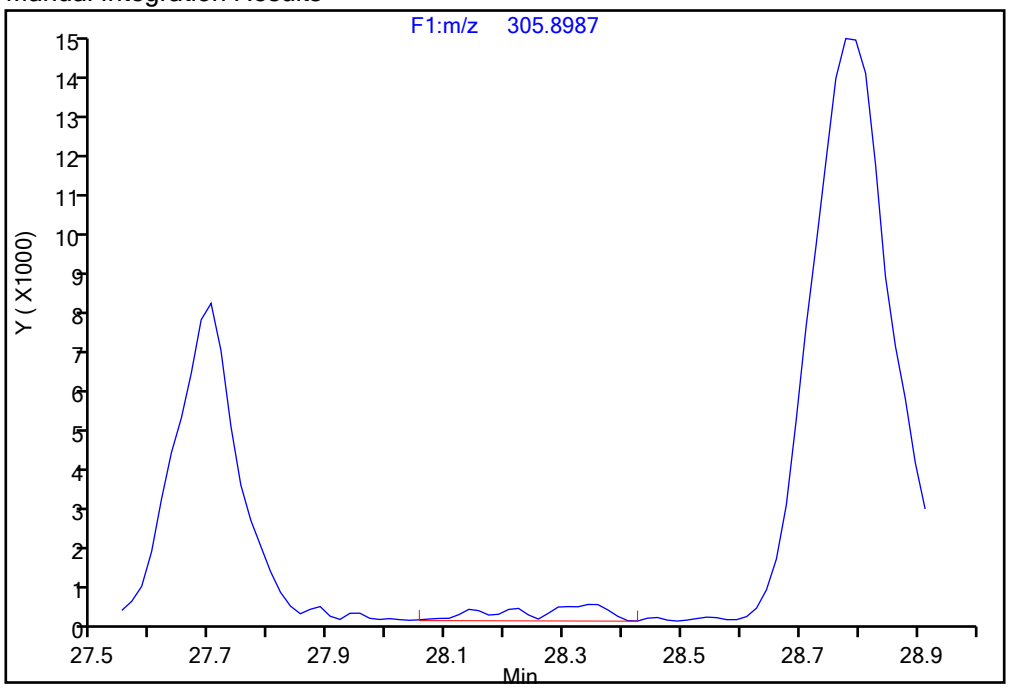
Processing Integration Results

RT = 28.341 Area = 2585



Manual Integration Results

RT = 28.341 Area = 4519 M



Reviewer: davidsonm, 17-Dec-2019 12:08:54

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

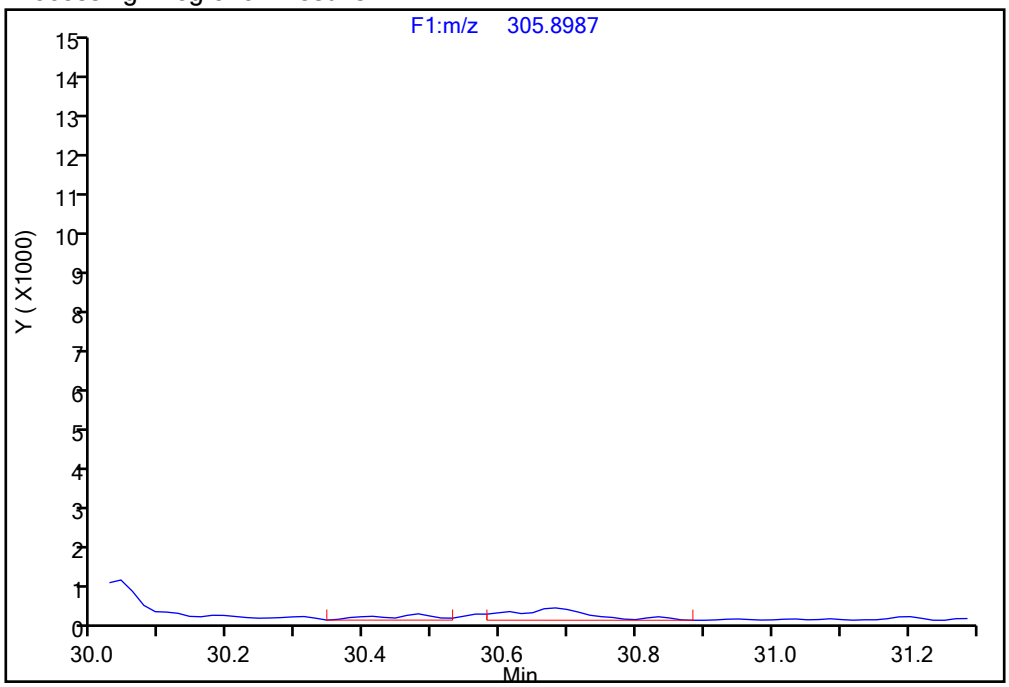
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.46- 33.96)

Signal: 2

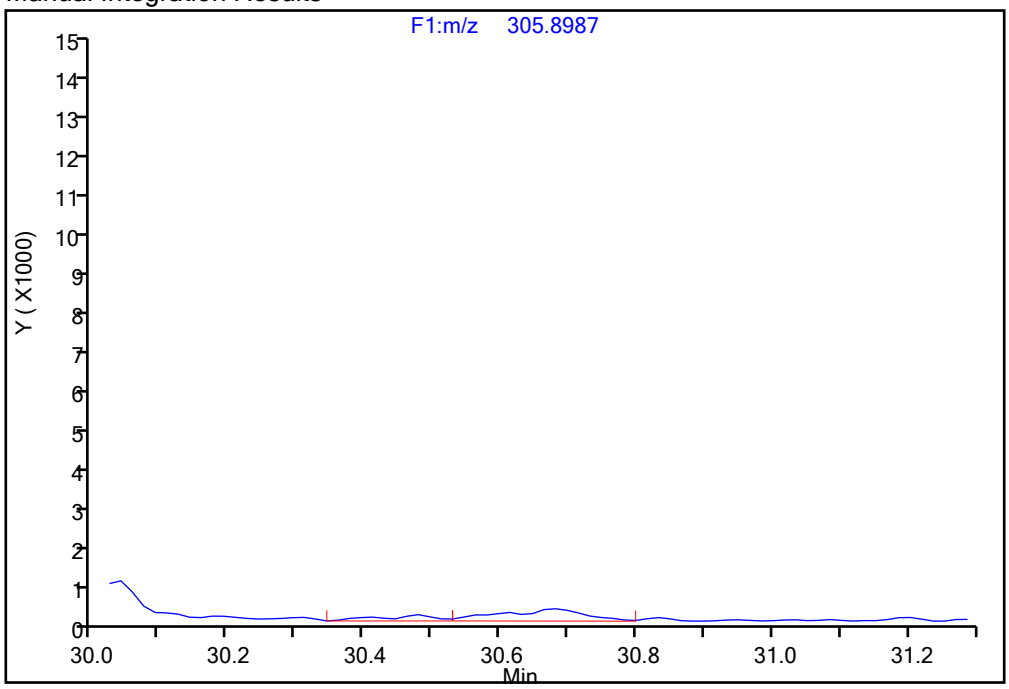
Processing Integration Results

RT = 30.681 Area = 2466



Manual Integration Results

RT = 30.681 Area = 2602 M



Reviewer: davidsonm, 17-Dec-2019 12:08:54

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

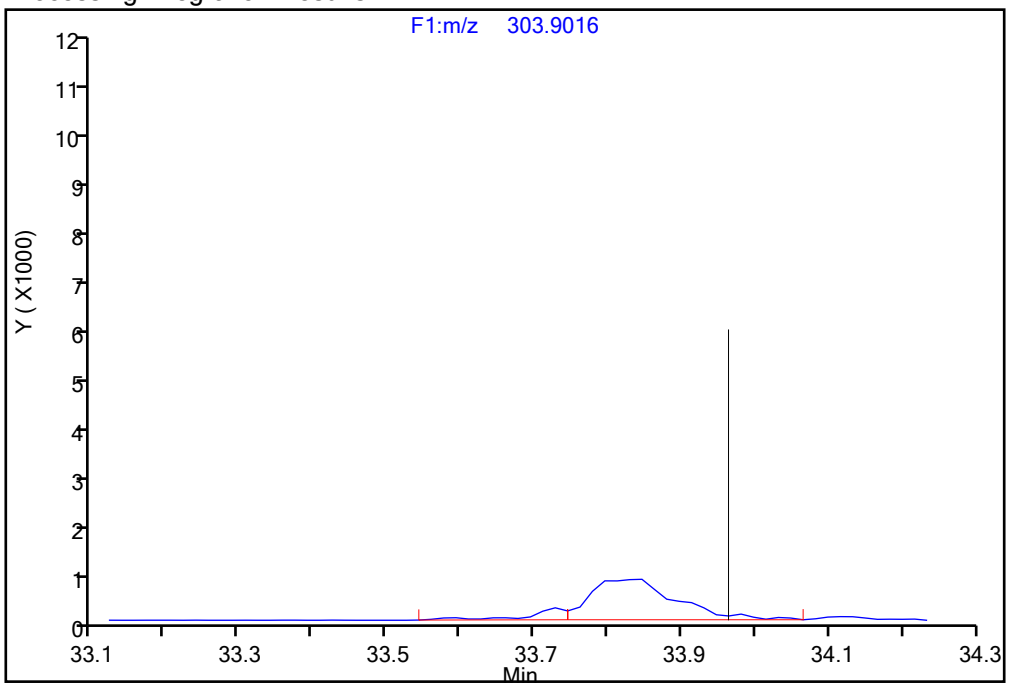
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.46- 33.96)

Signal: 1

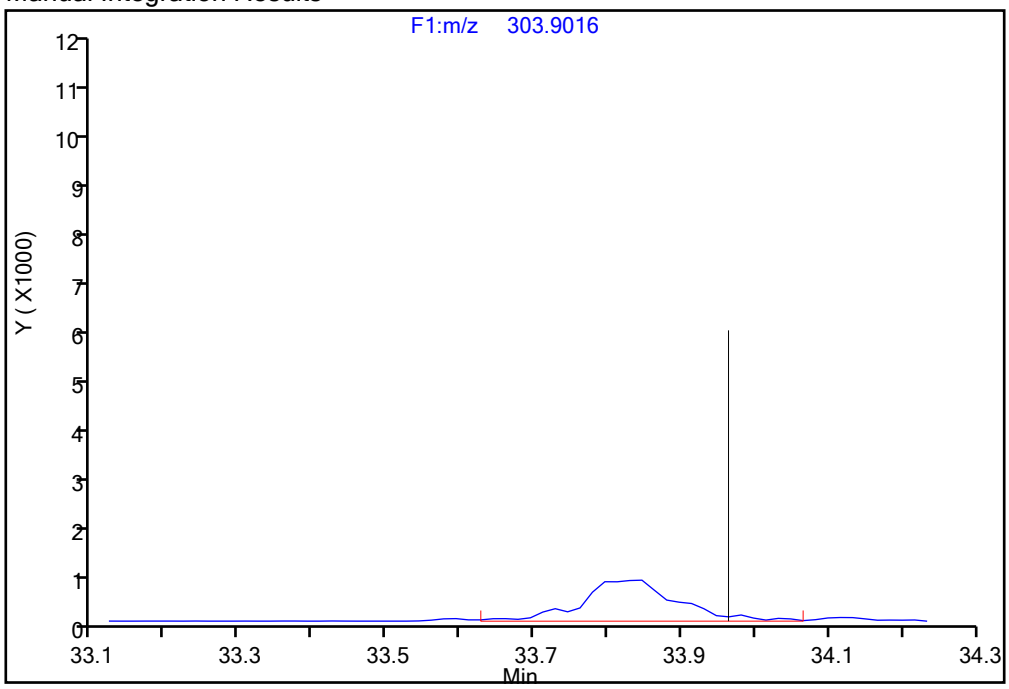
Processing Integration Results

RT = 33.846 Area = 6487



Manual Integration Results

RT = 33.846 Area = 7431 M



Reviewer: davidsonm, 17-Dec-2019 12:09:21

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d

Injection Date: 17-Dec-2019 10:07:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

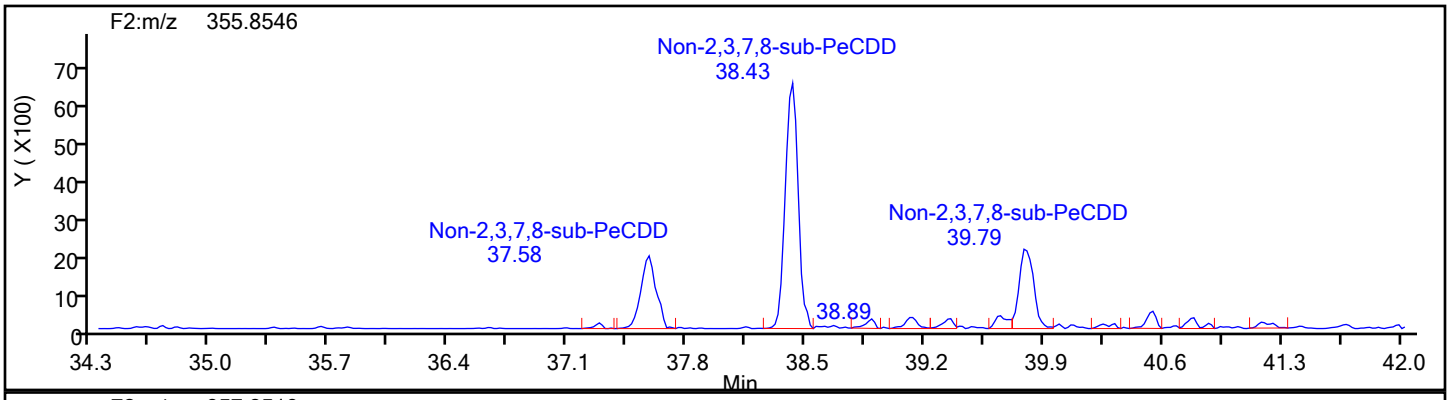
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

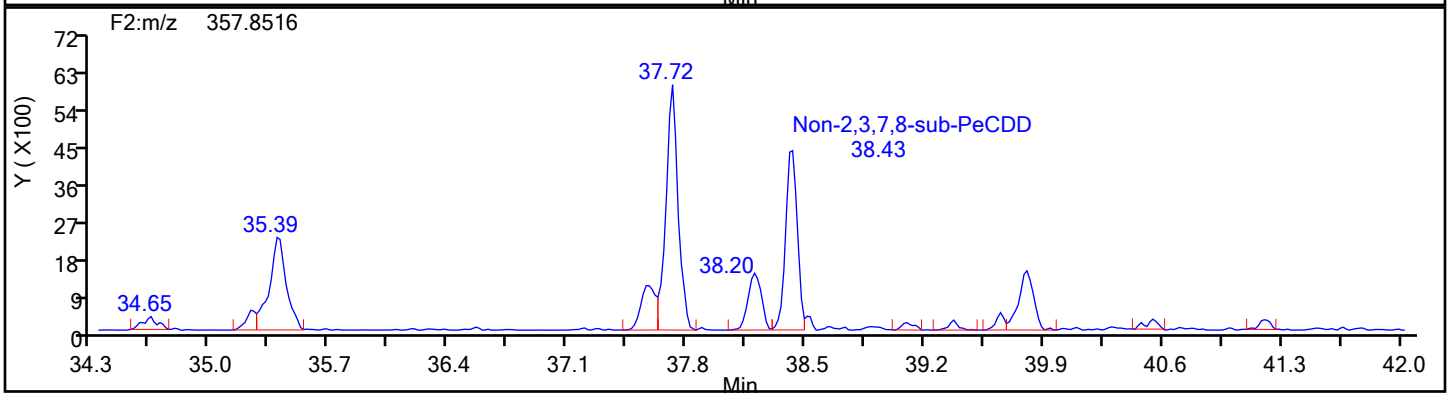
Client ID: 11187072-120619-SS-SJSSA03(1-2)

Worklist#: 36126 Sample Line#: 13

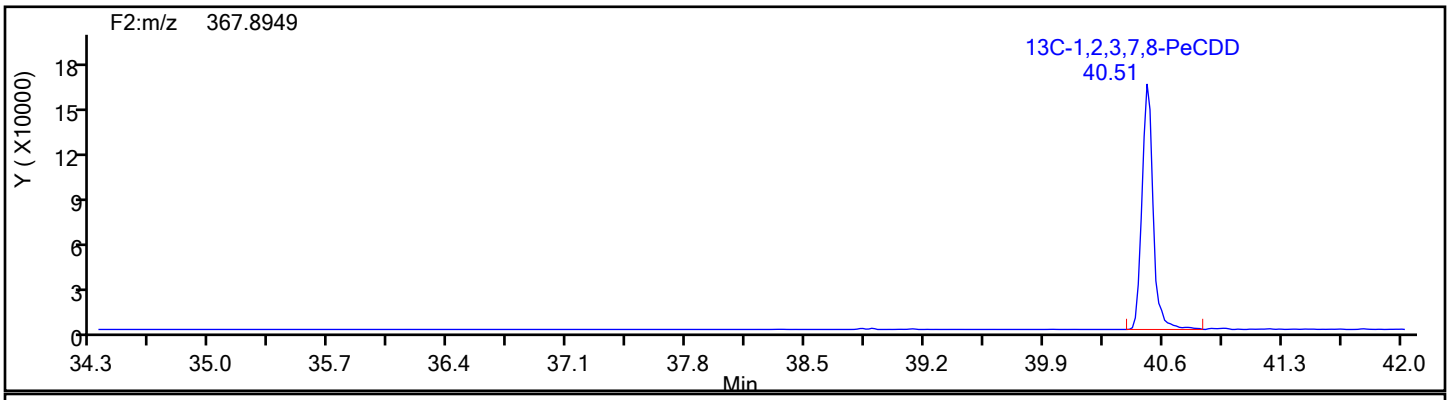
Column Type: Column Dia:

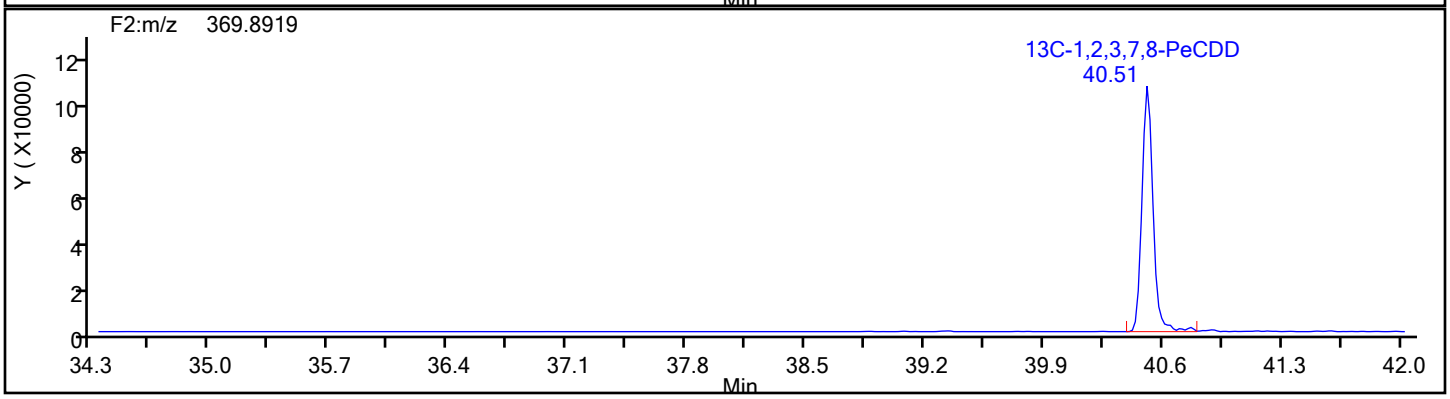
PeCDD





PeCDD Standards



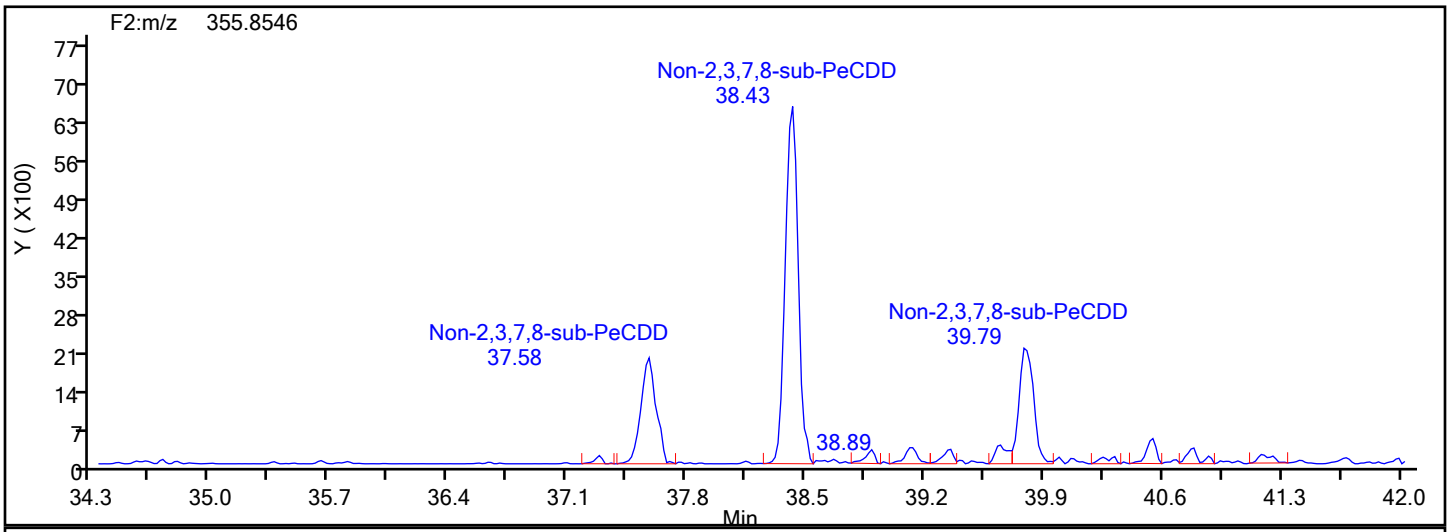


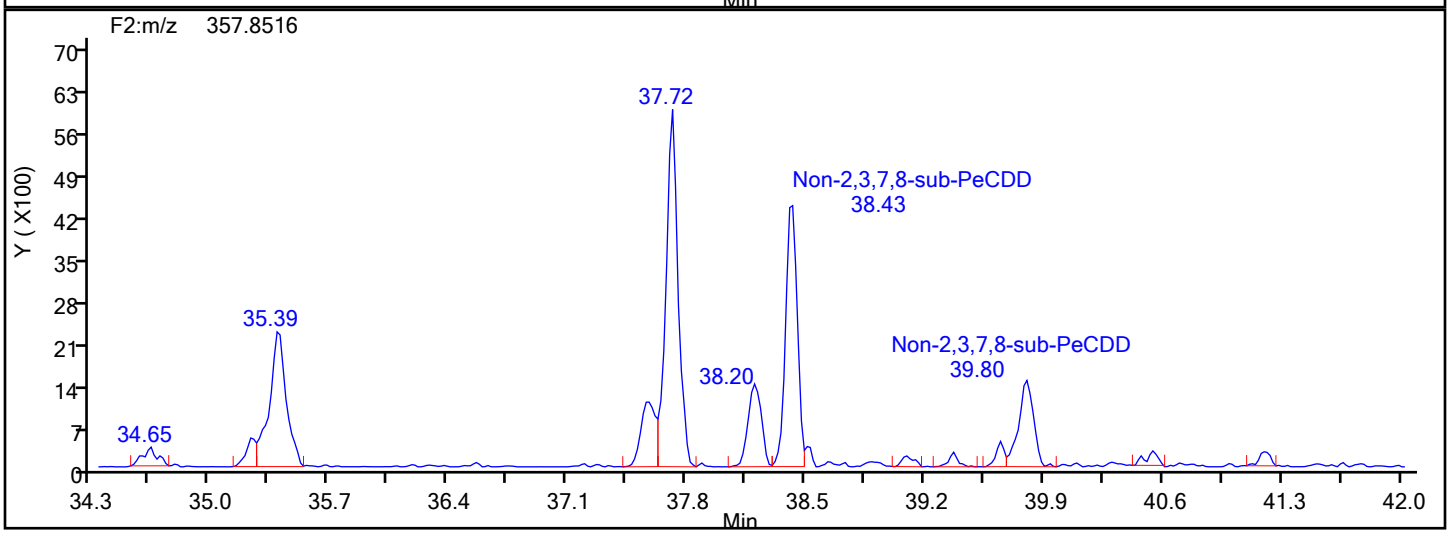
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

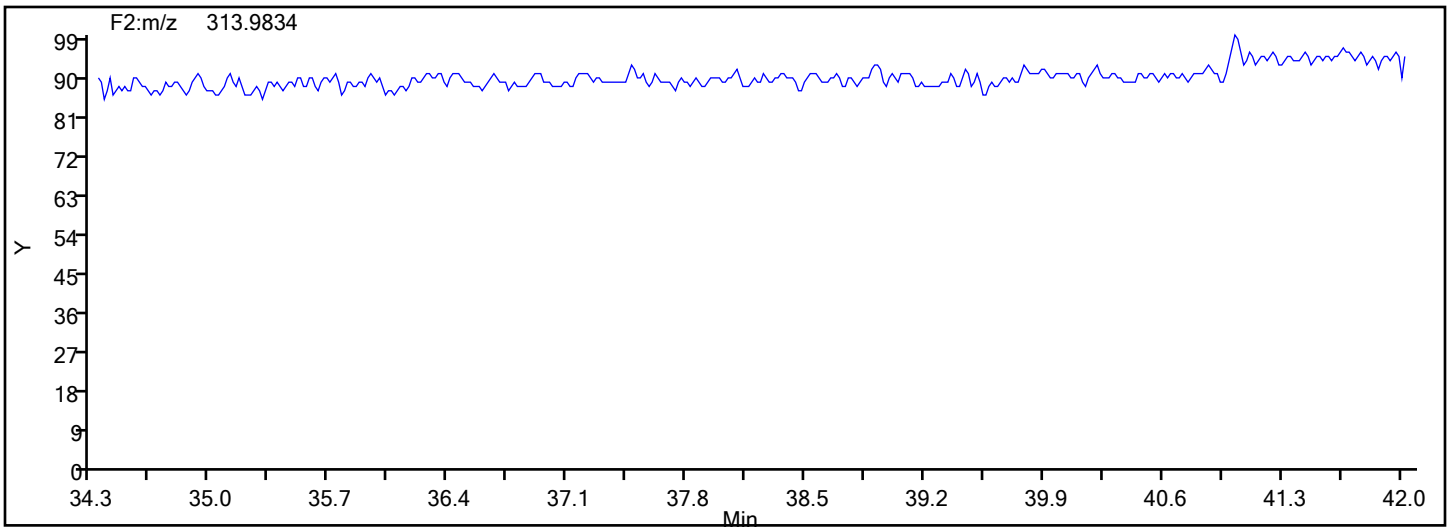
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

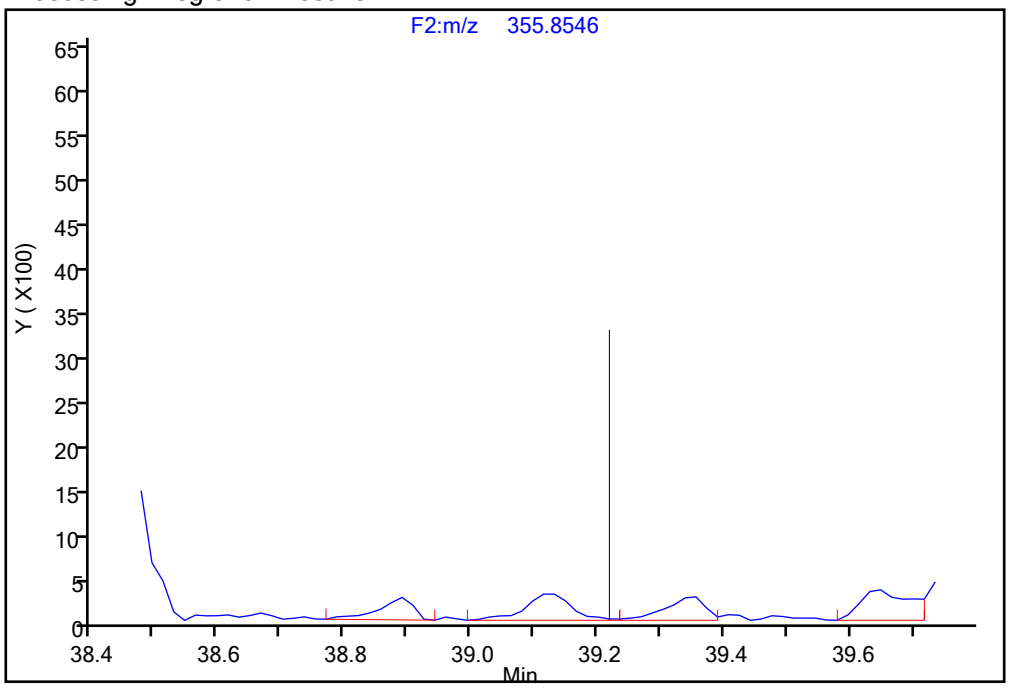
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

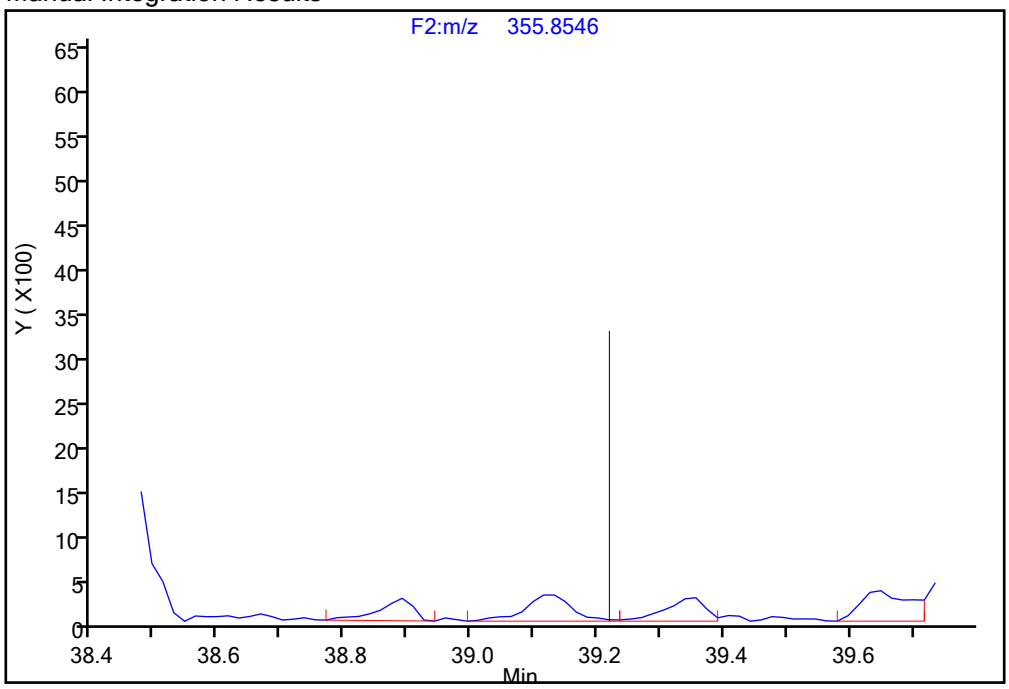
Processing Integration Results

RT = 39.132 Area = 1525



Manual Integration Results

RT = 39.132 Area = 1525



Reviewer: davidsonm, 17-Dec-2019 12:11:03

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

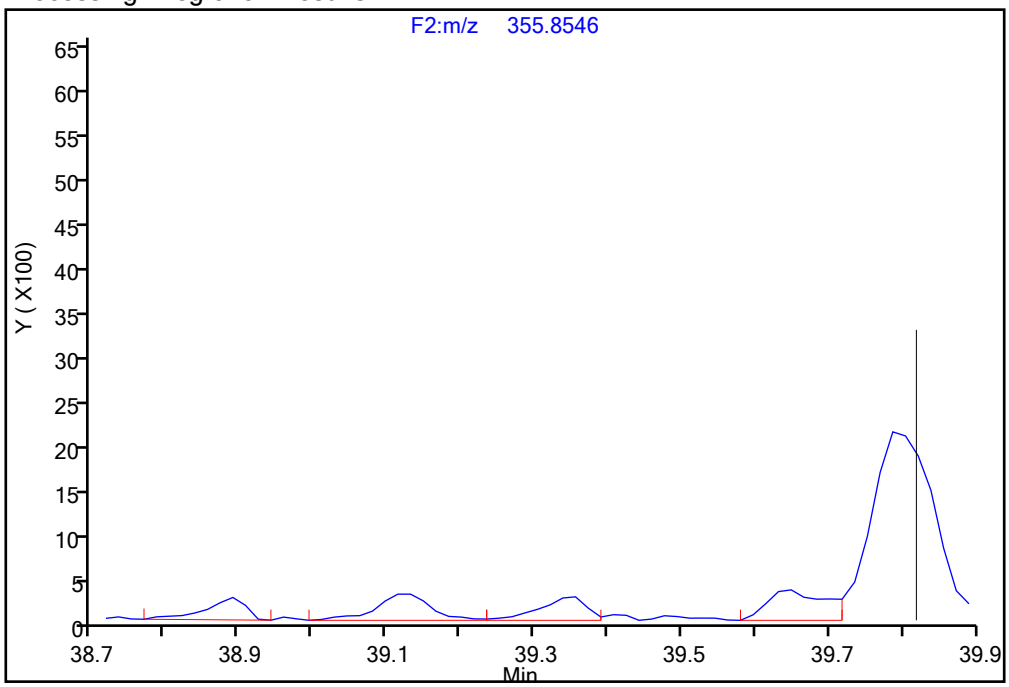
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

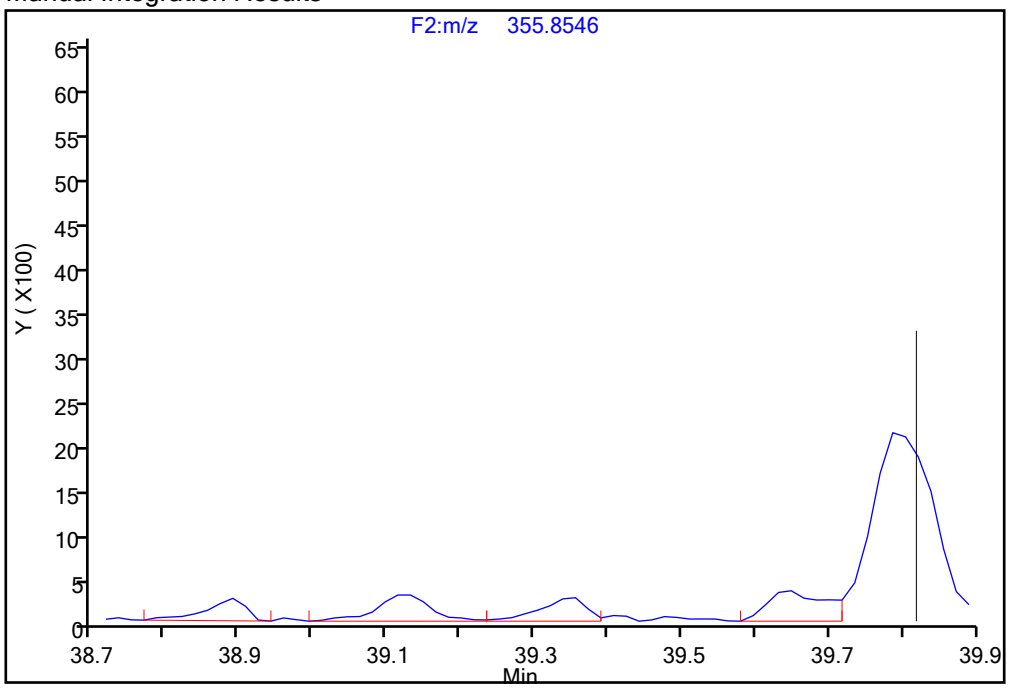
Processing Integration Results

RT = 39.356 Area = 1155



Manual Integration Results

RT = 39.356 Area = 1155



Reviewer: davidsonm, 17-Dec-2019 12:11:03

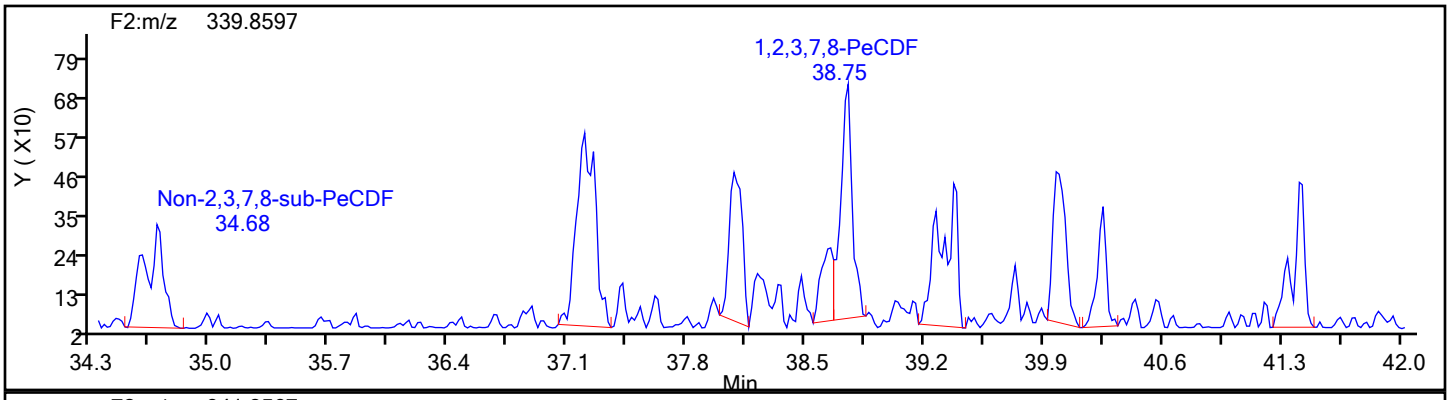
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

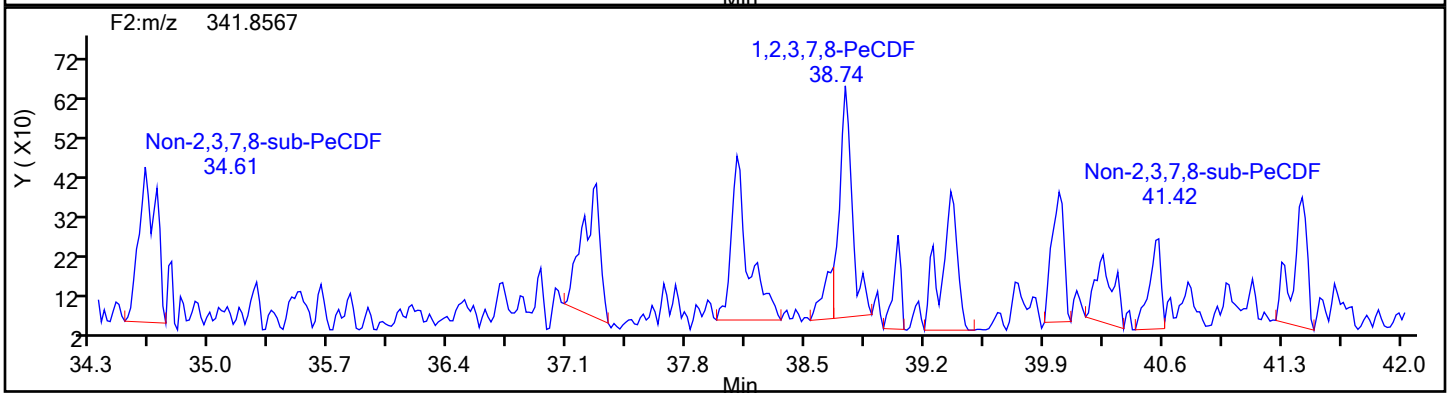
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

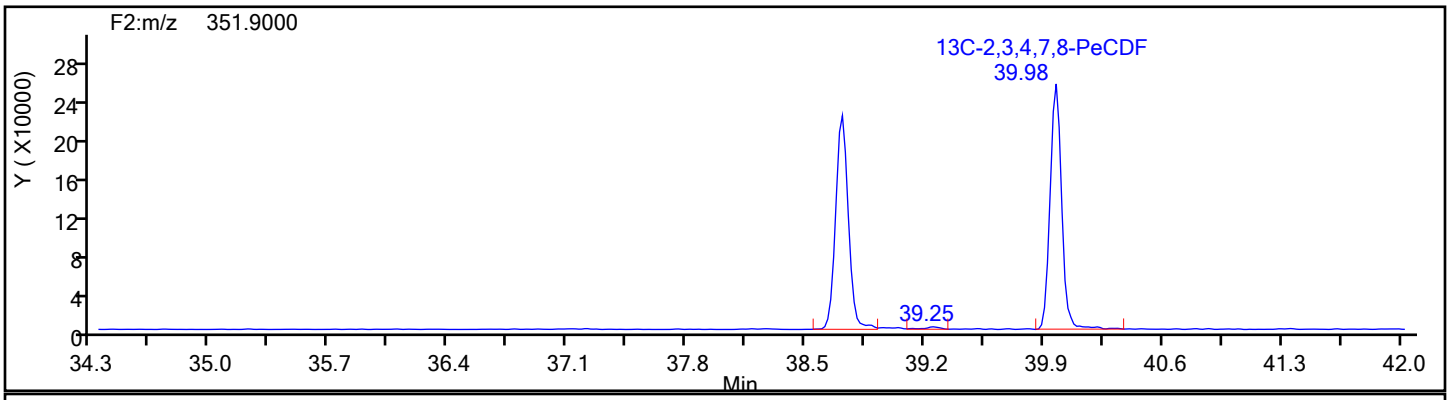
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

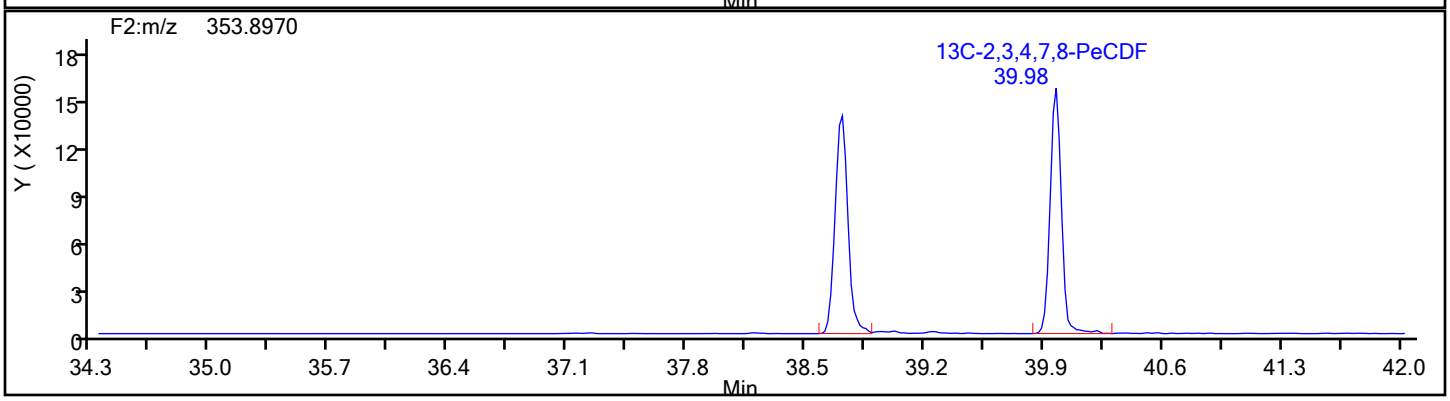
PeCDF





PeCDF Standards



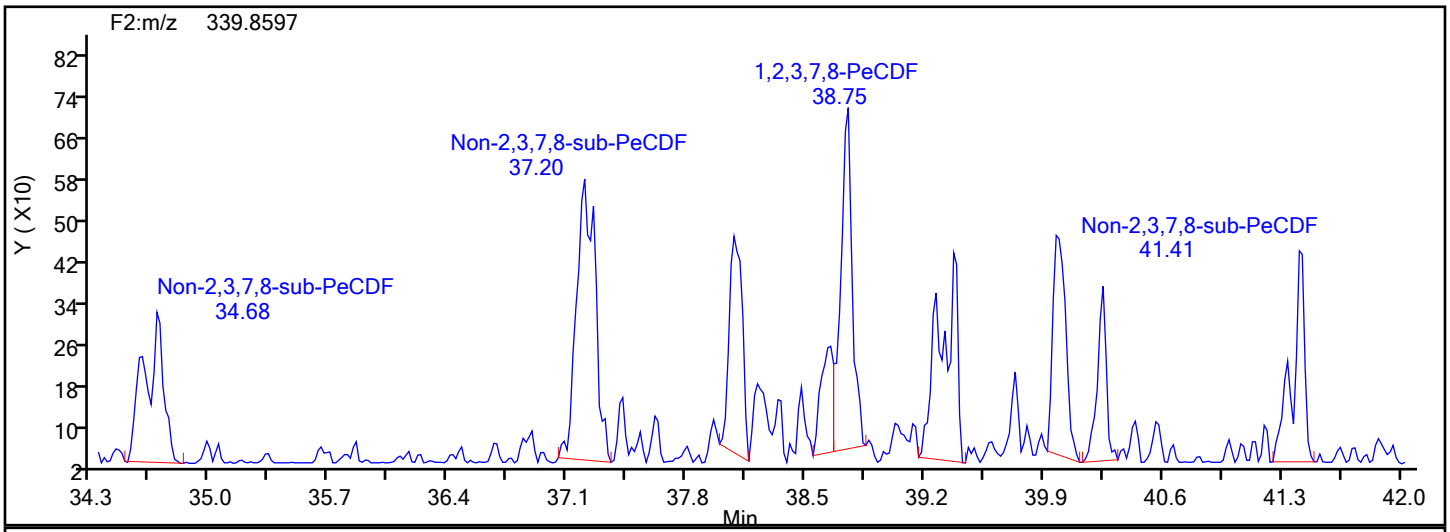


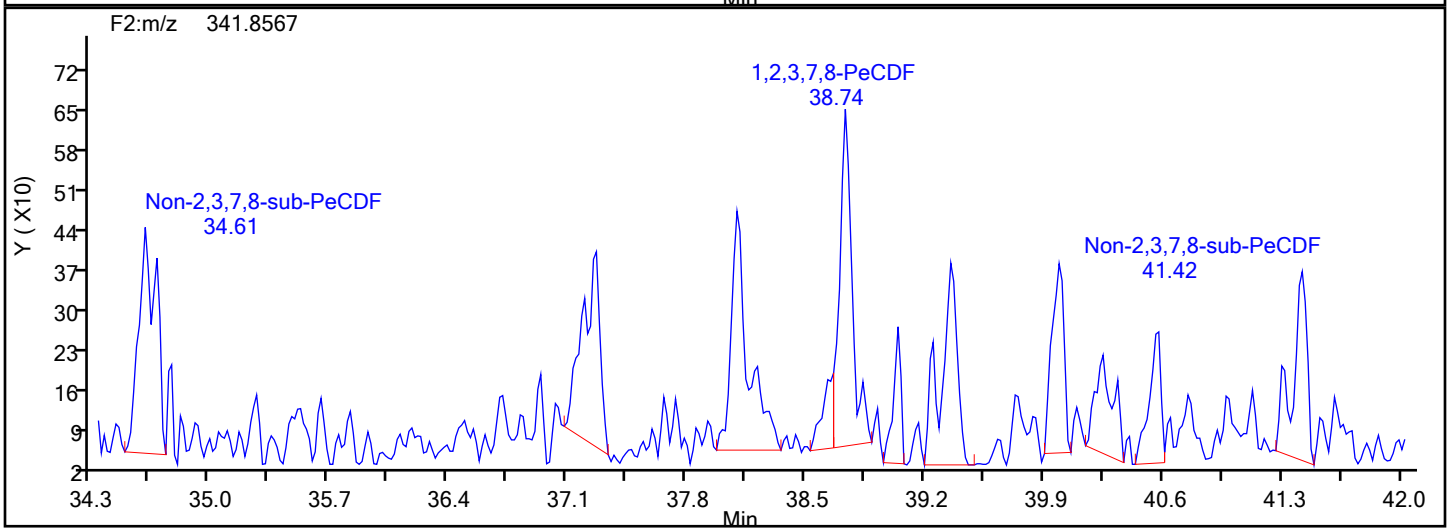
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

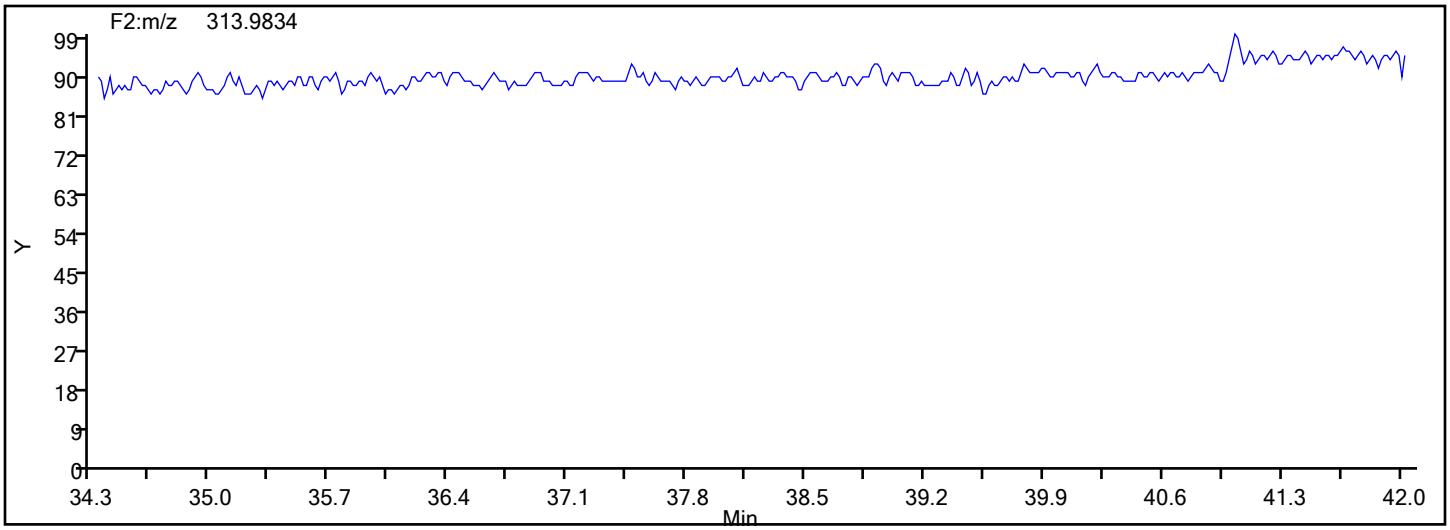
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

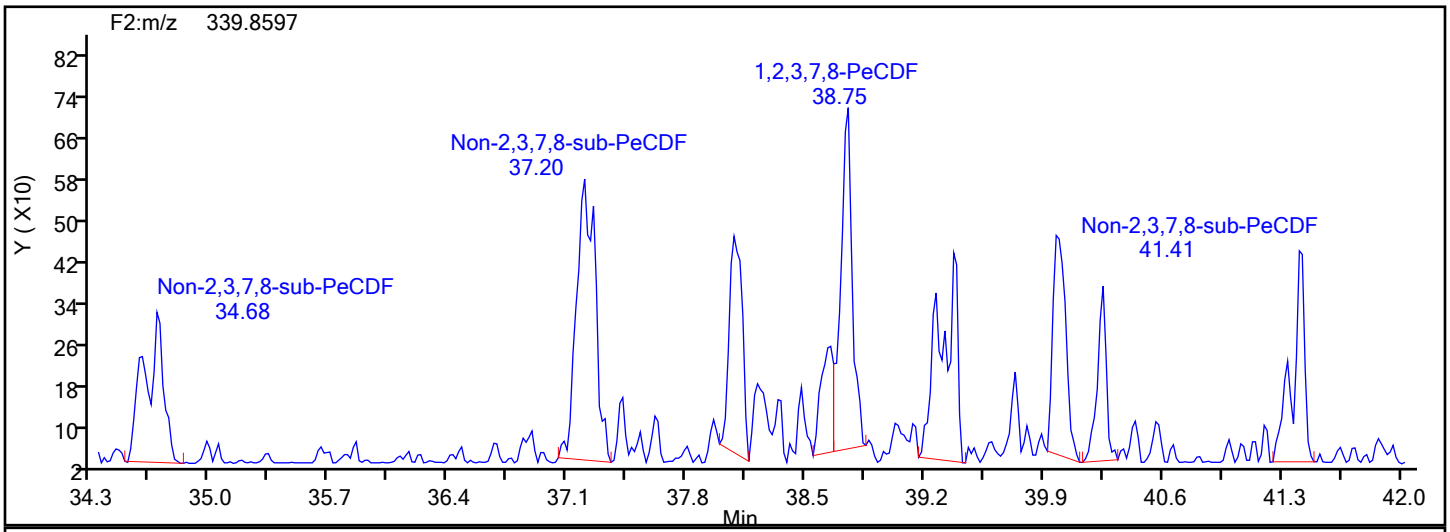


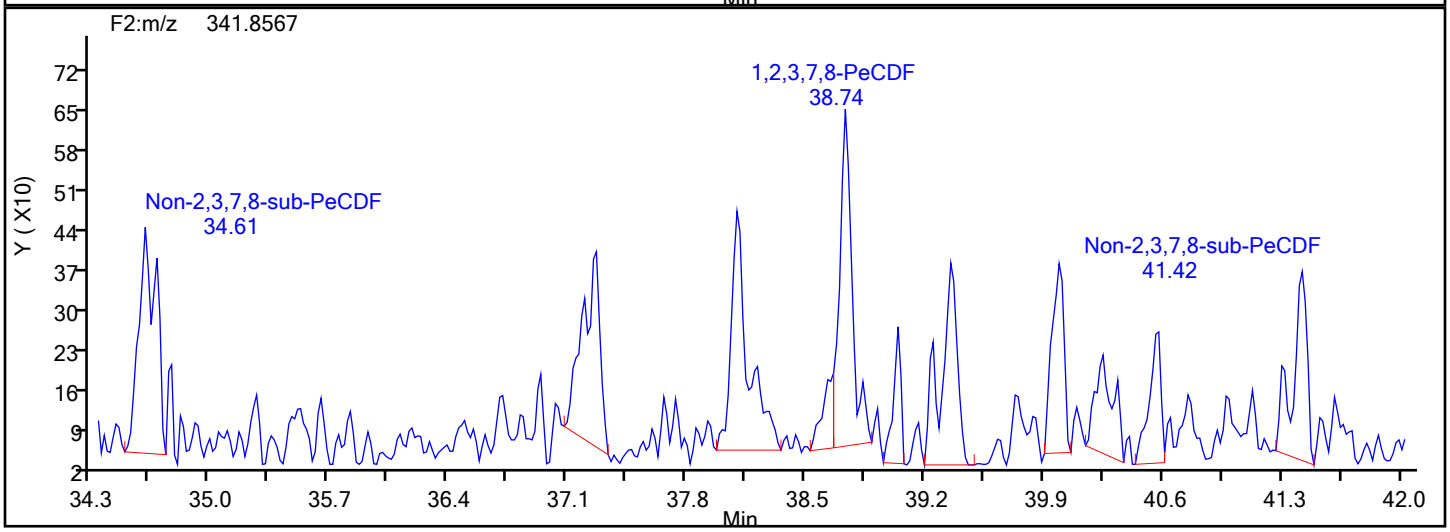
Report Date: 17-Dec-2019 12:40:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

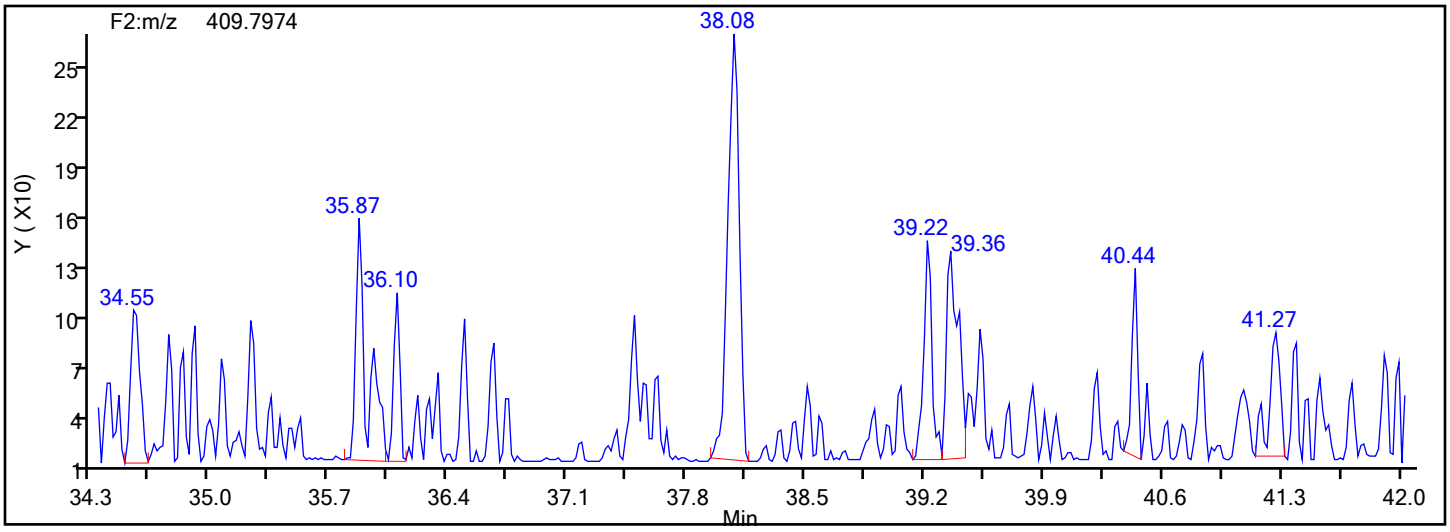
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

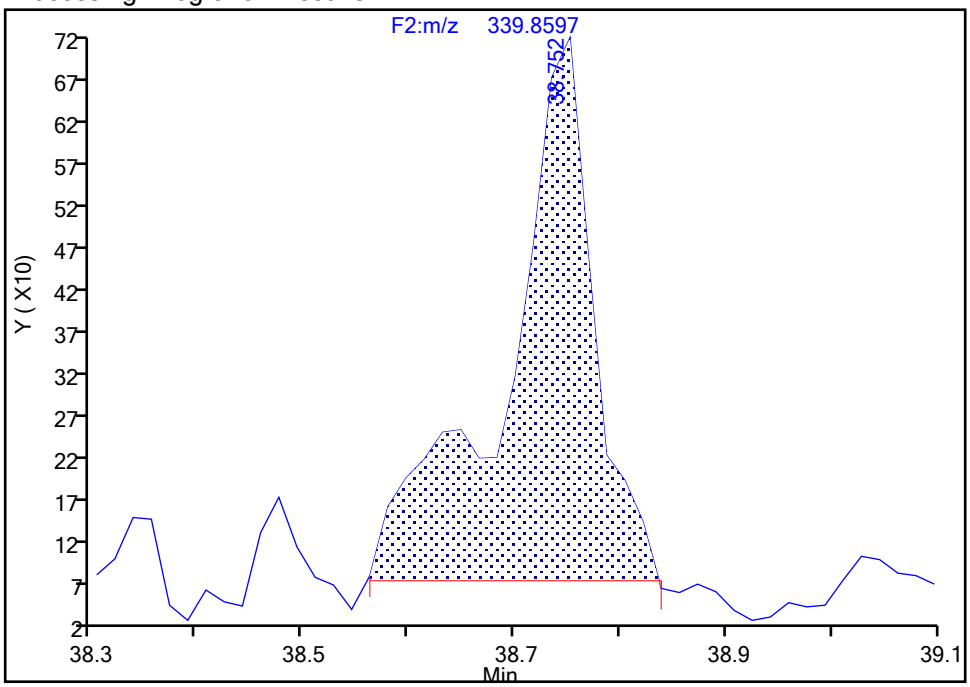
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

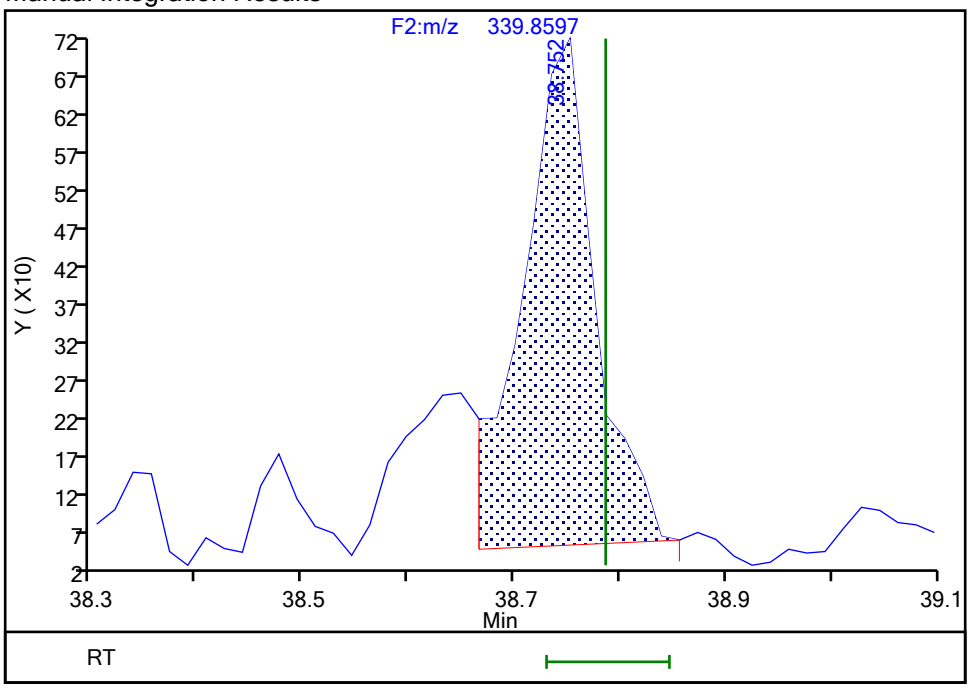
Processing Integration Results

RT: 38.75
Area: 3728
Amount: 0.155565
Amount Units: pg/ul



Manual Integration Results

RT: 38.75
Area: 3133
Amount: 0.136828
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:11:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

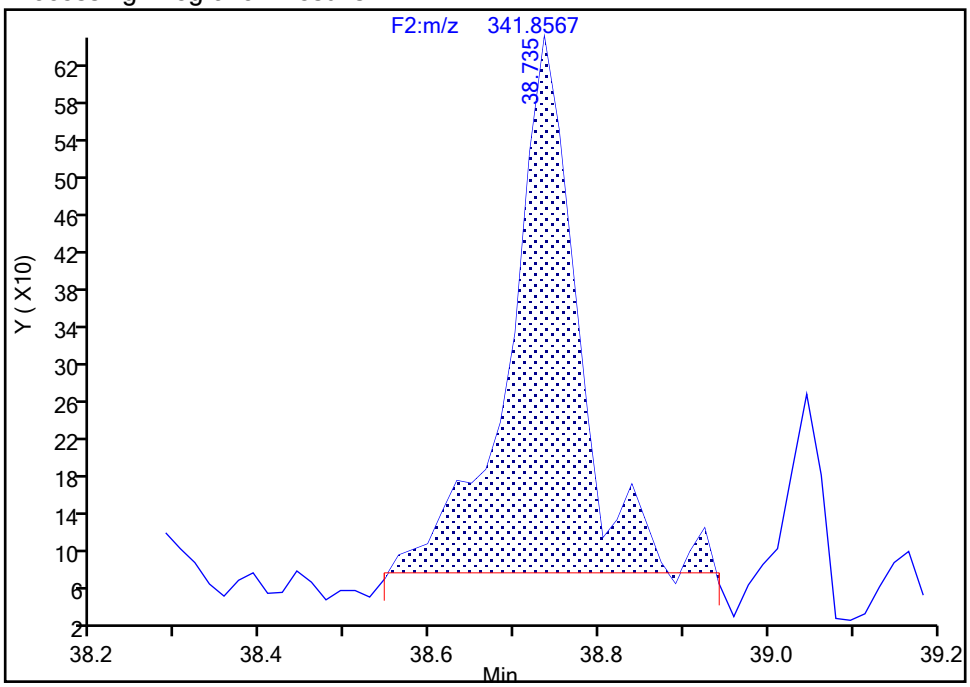
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

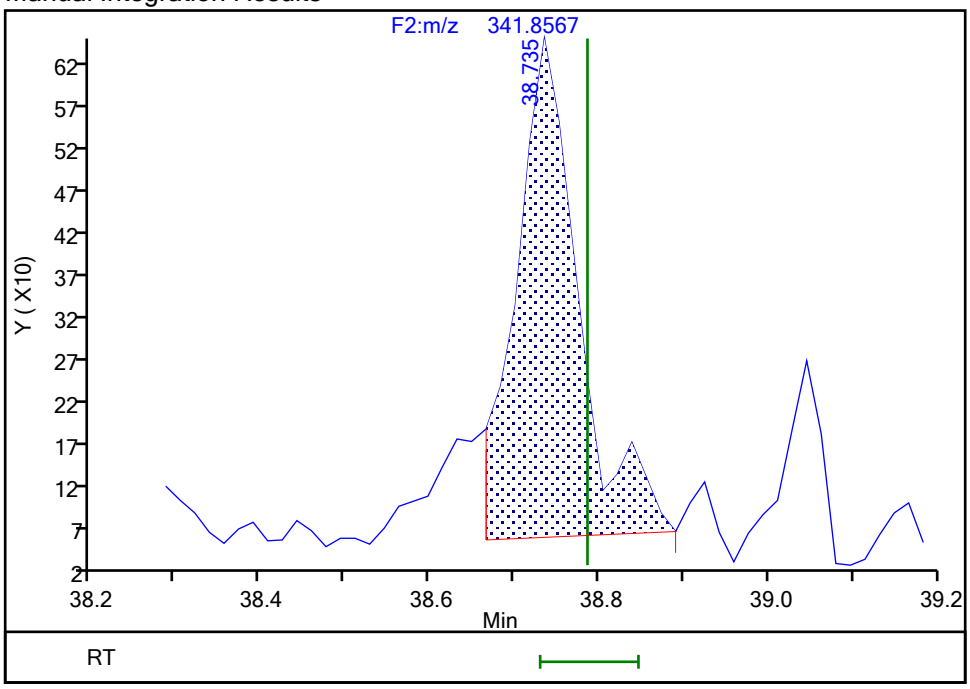
Processing Integration Results

RT: 38.74
Area: 3263
Amount: 0.155565
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 3016
Amount: 0.136828
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:11:49
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

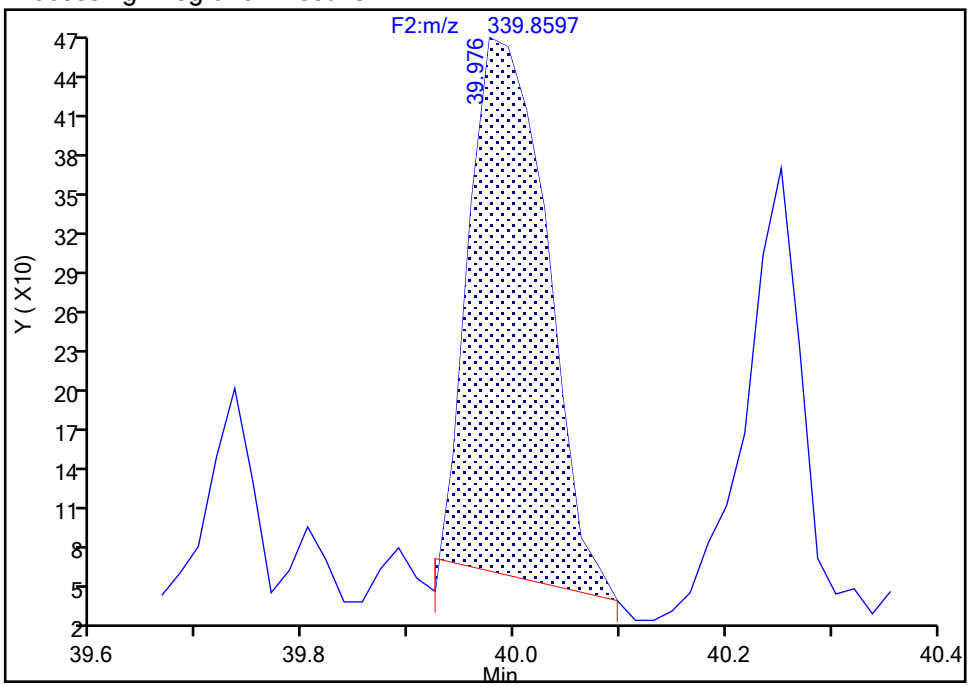
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 1

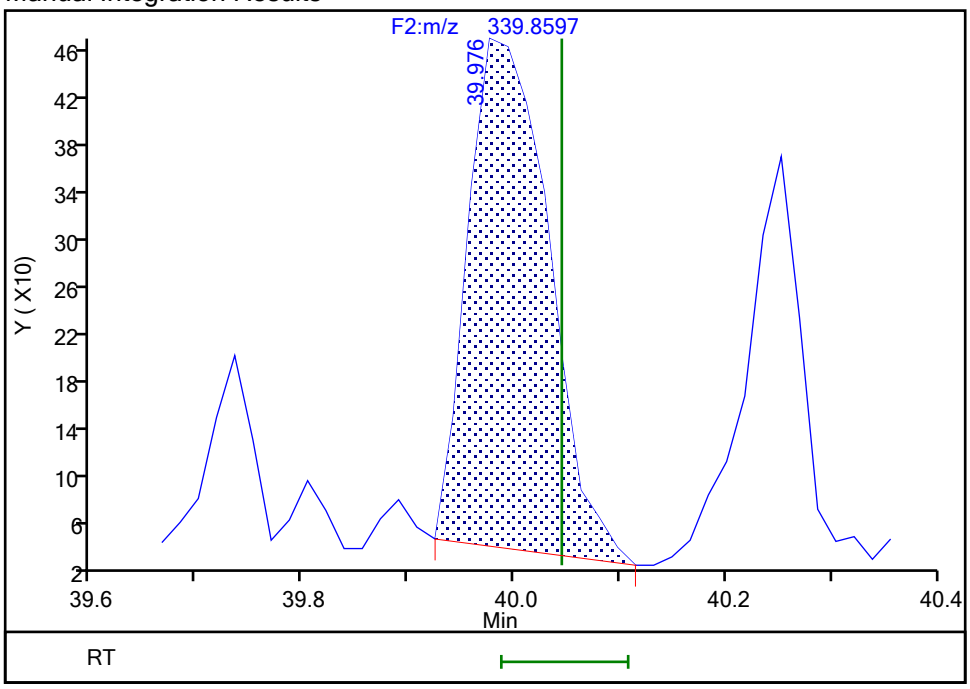
Processing Integration Results

RT: 39.98
Area: 2072
Amount: 0.084214
Amount Units: pg/ul



Manual Integration Results

RT: 39.98
Area: 2276
Amount: 0.092366
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:12:00

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

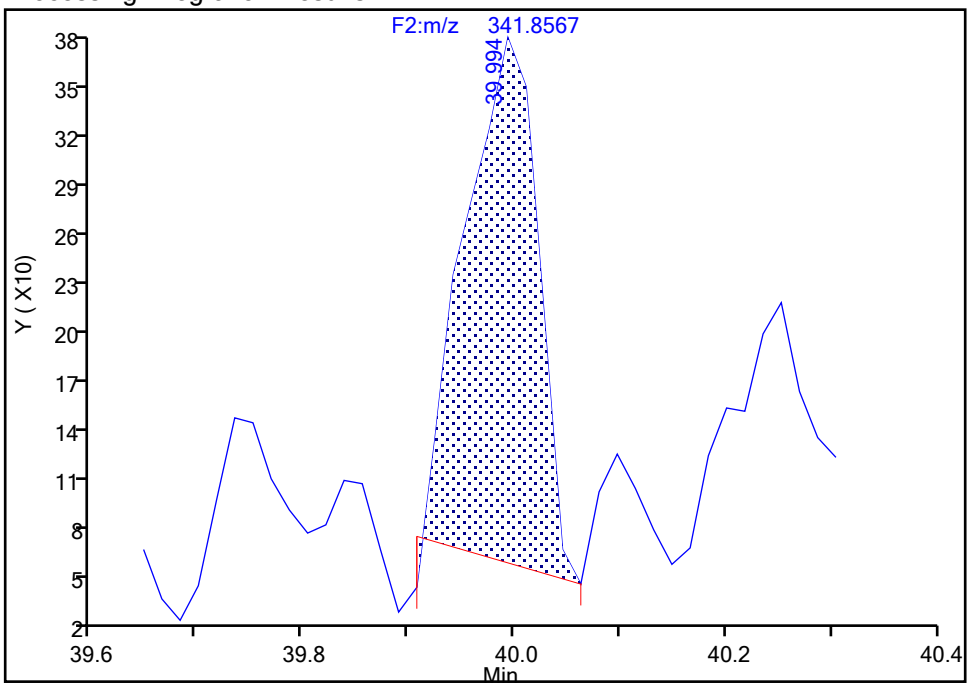
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

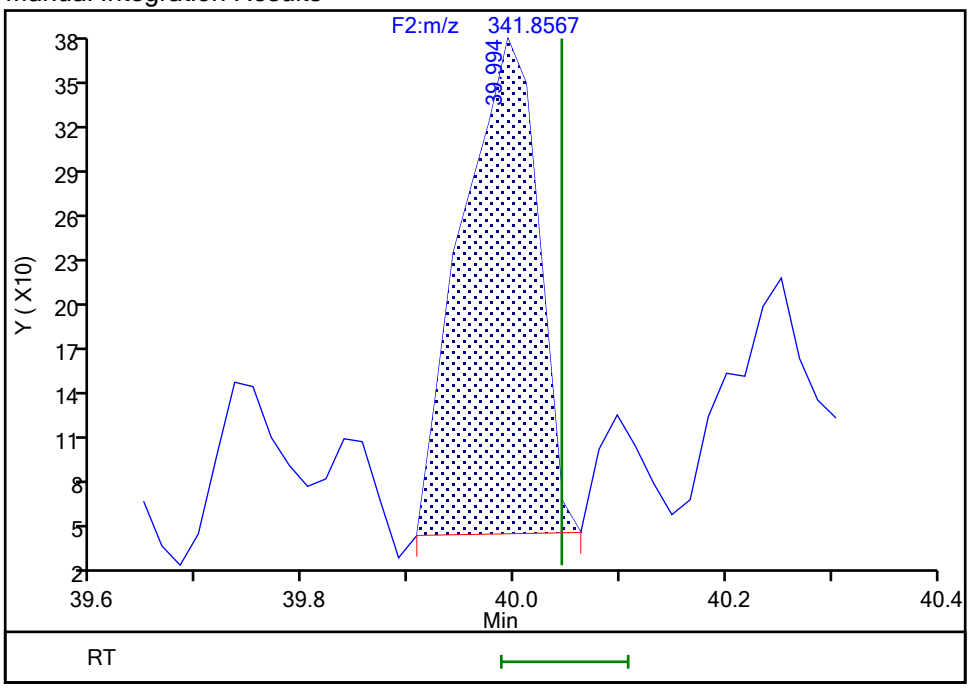
Processing Integration Results

RT: 39.99
Area: 1523
Amount: 0.084214
Amount Units: pg/ul



Manual Integration Results

RT: 39.99
Area: 1667
Amount: 0.092366
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:12:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

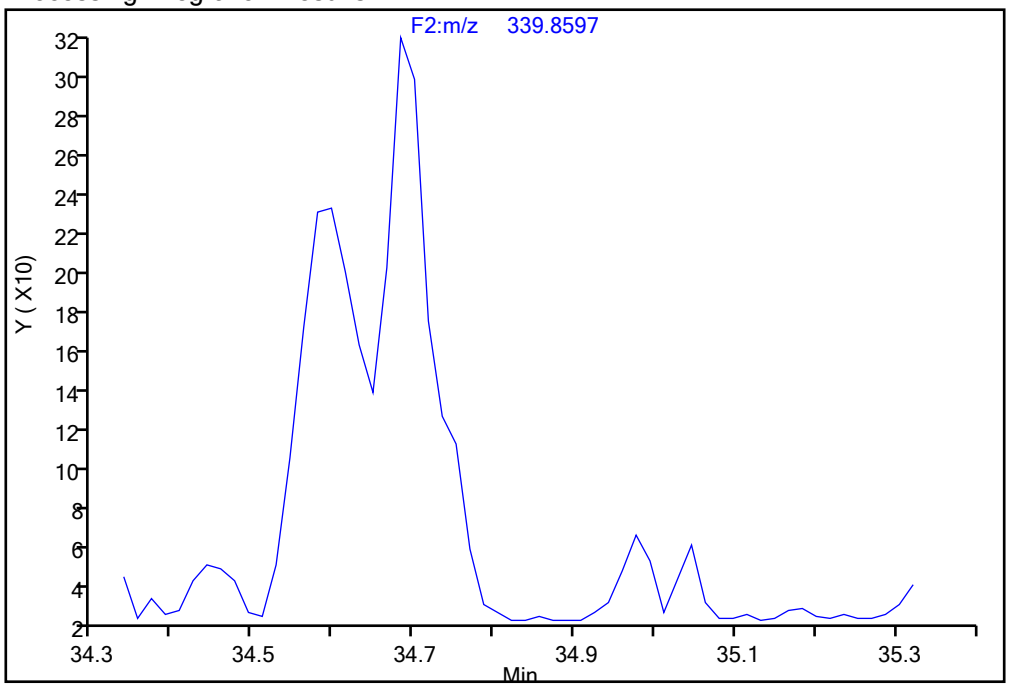
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

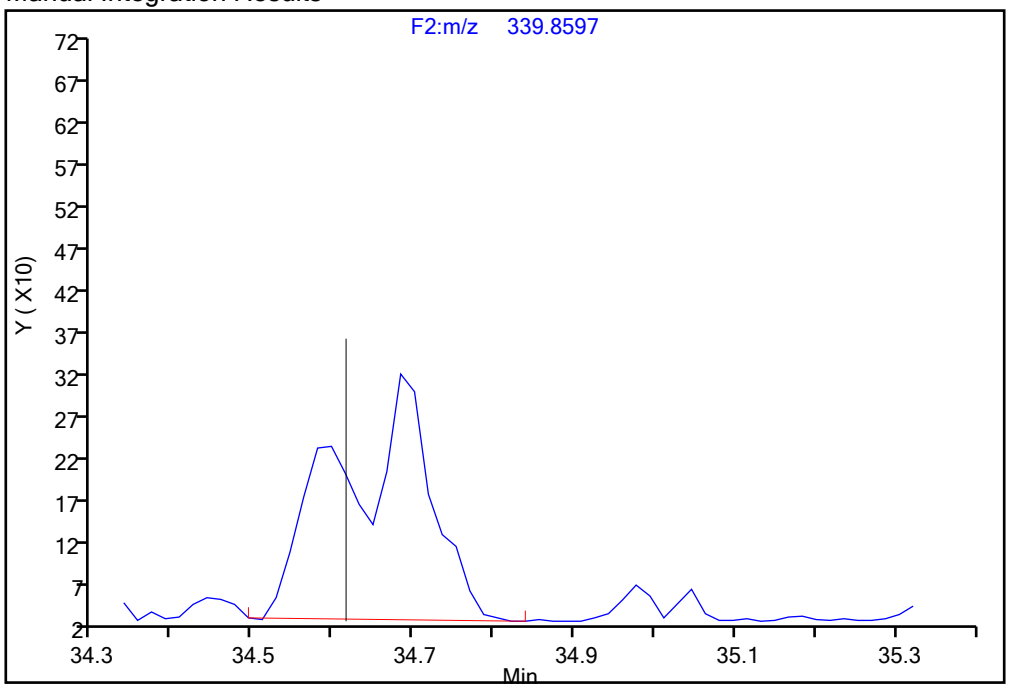
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 34.684 Area = 2277 M



Reviewer: davidsonm, 17-Dec-2019 12:13:53
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

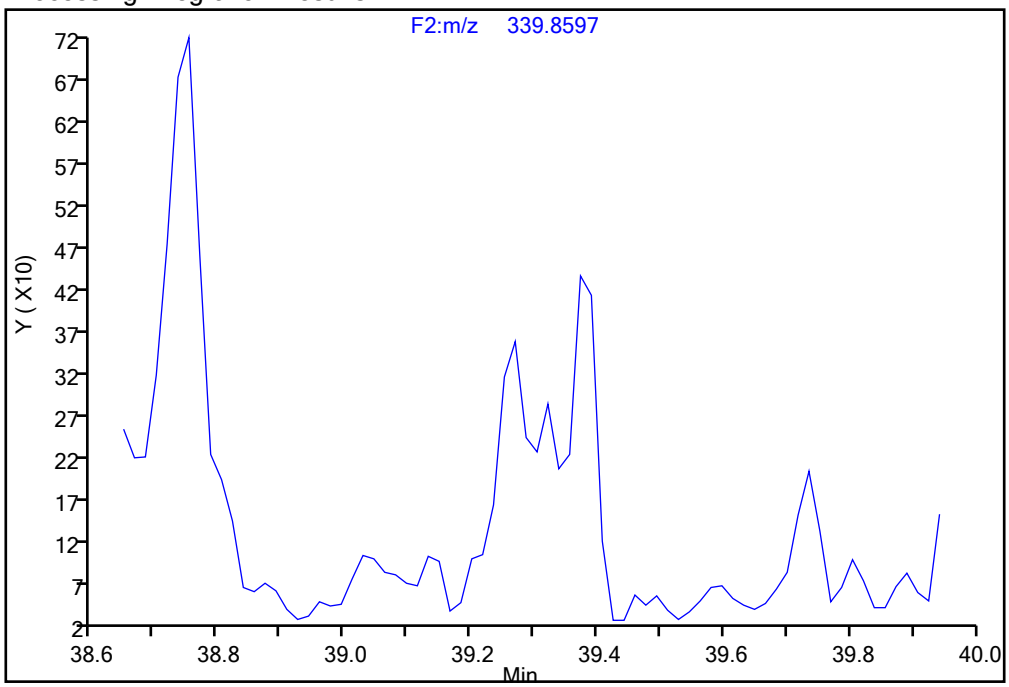
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

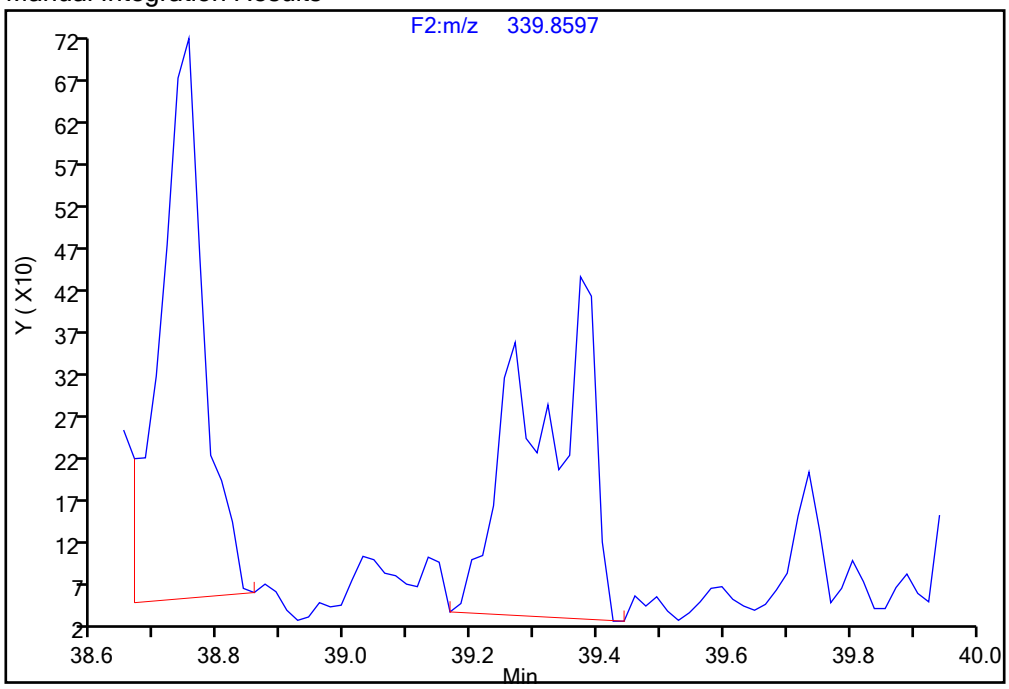
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 39.373 Area = 2881 M



Reviewer: davidsonm, 17-Dec-2019 12:13:53

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

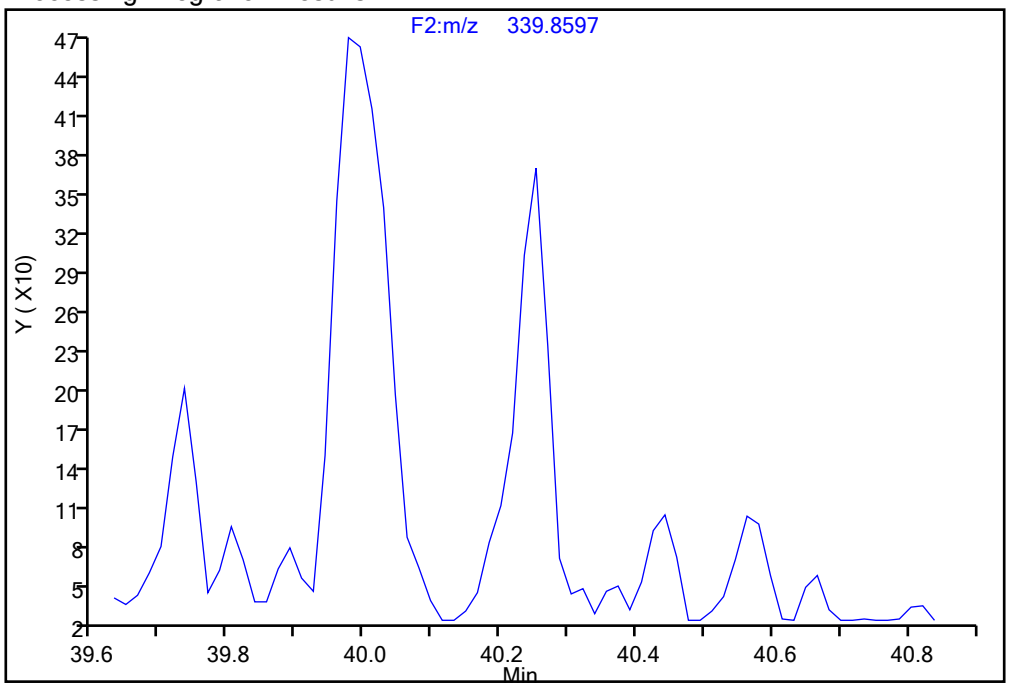
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

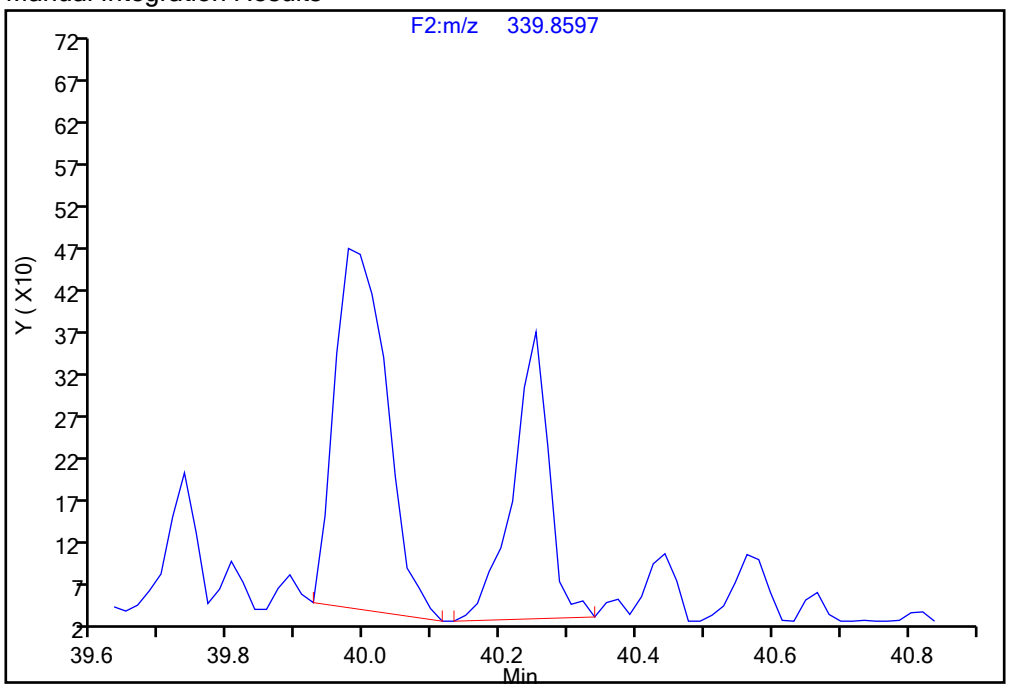
Not Detected
RT: 34.62- 41.42

Processing Integration Results



RT = 40.252 Area = 1249 M

Manual Integration Results



Reviewer: davidsonm, 17-Dec-2019 12:13:53

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

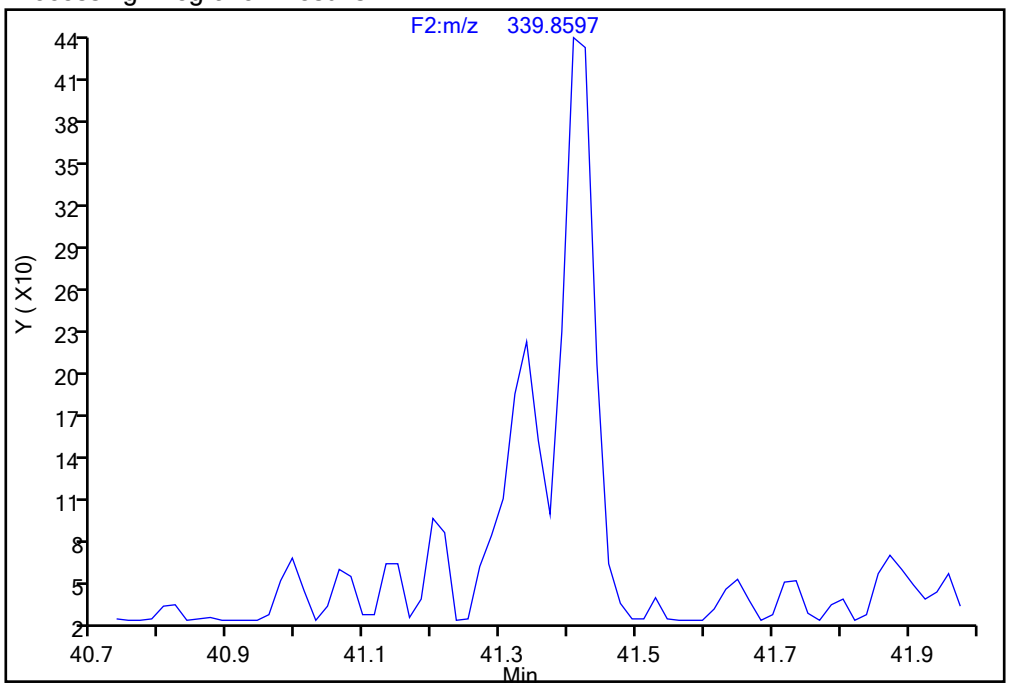
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

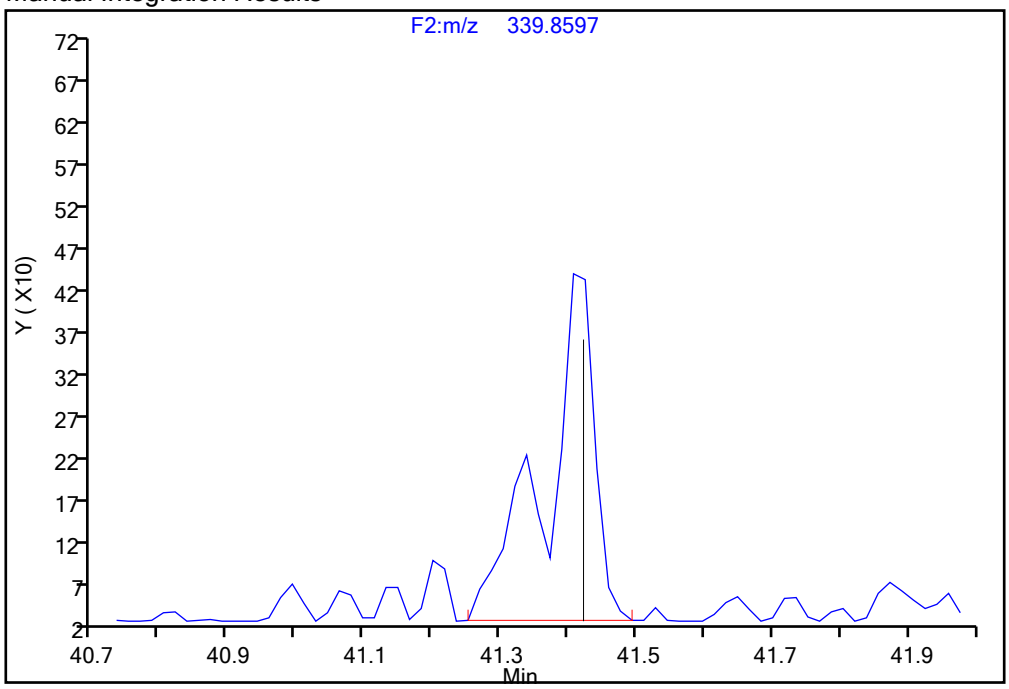
Not Detected
RT: 34.62- 41.42

Processing Integration Results



RT = 41.408 Area = 2051 M

Manual Integration Results



Reviewer: davidsonm, 17-Dec-2019 12:13:53
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

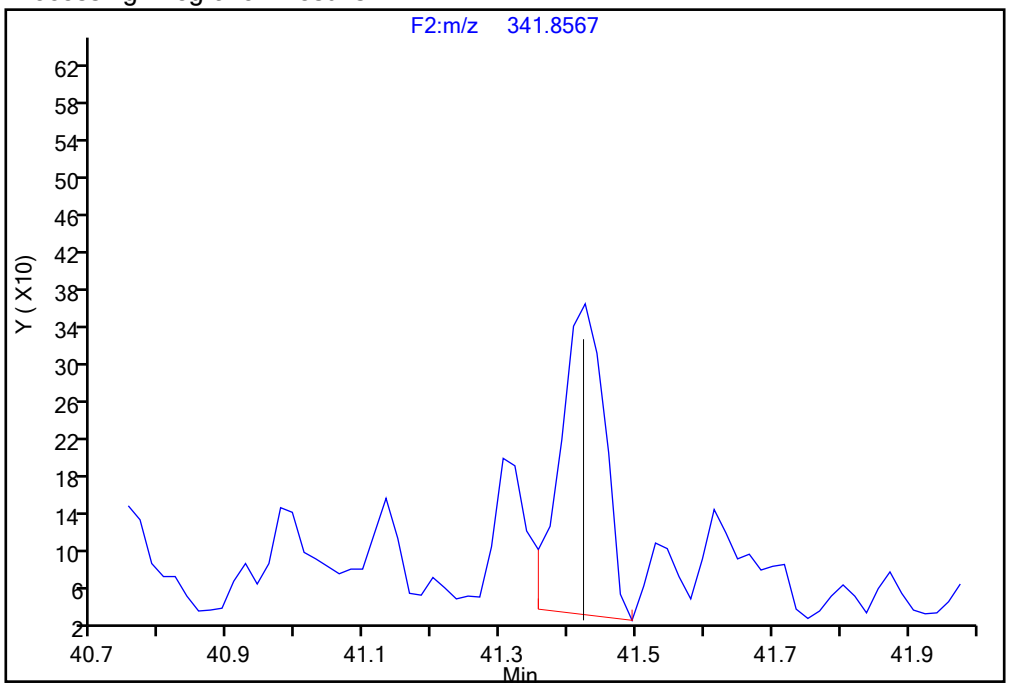
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.62- 41.42)

Signal: 2

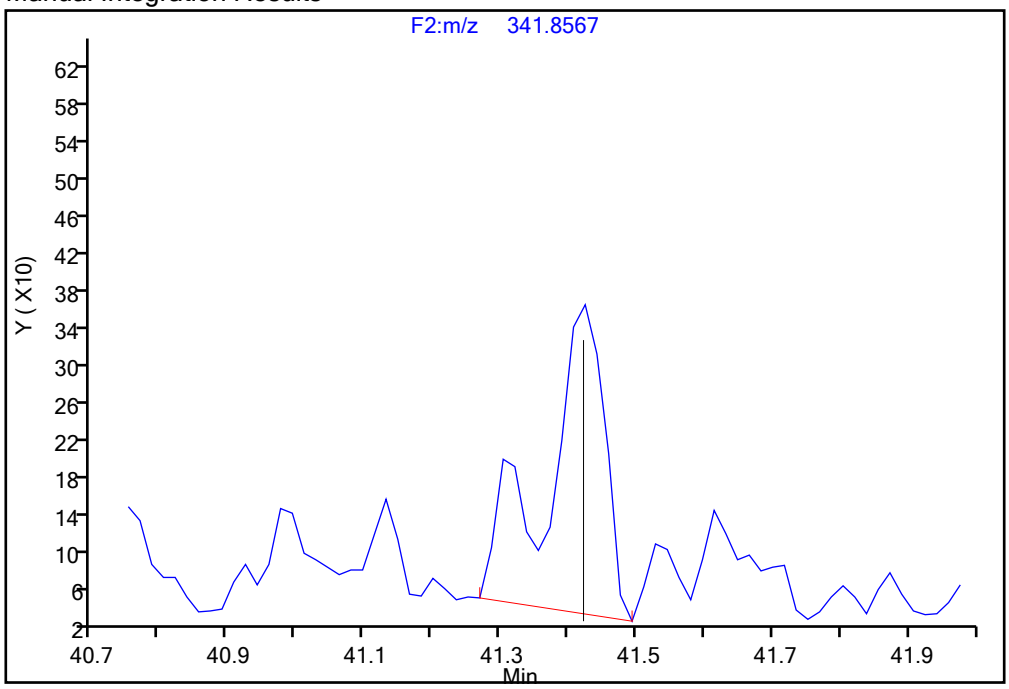
Processing Integration Results

RT = 41.425 Area = 1484



Manual Integration Results

RT = 41.425 Area = 1951 M



Reviewer: davidsonm, 17-Dec-2019 12:12:39

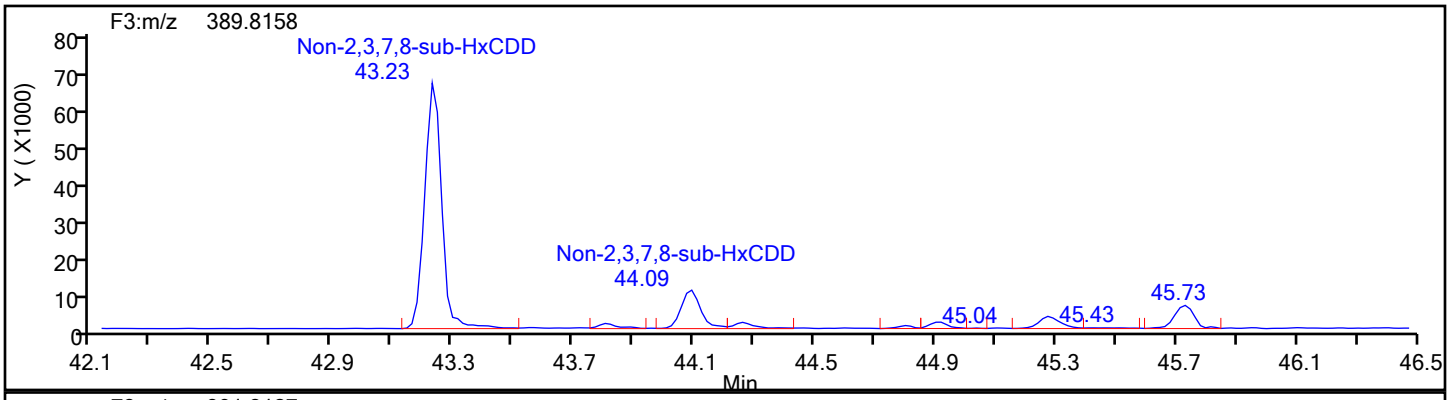
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

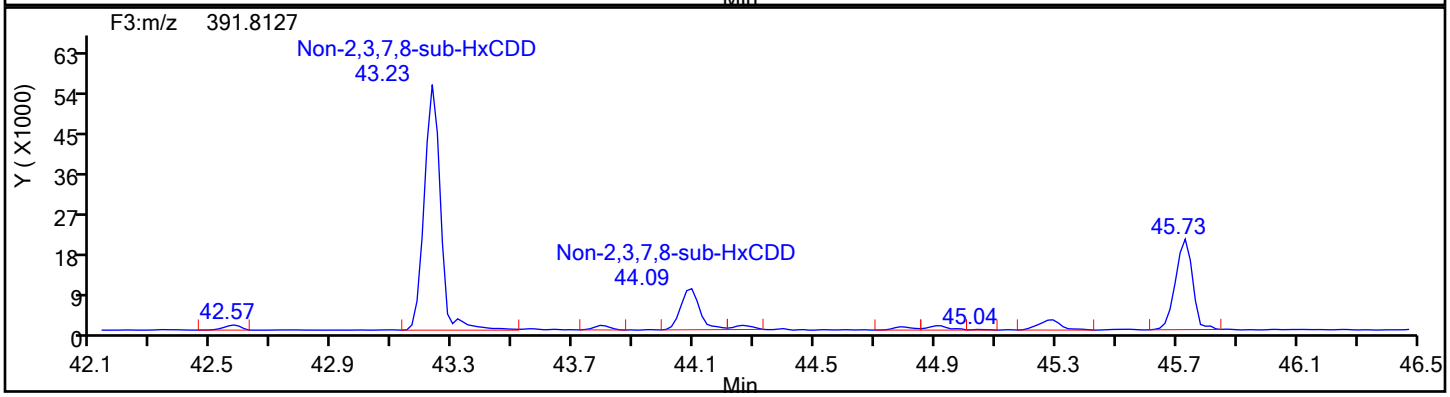
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

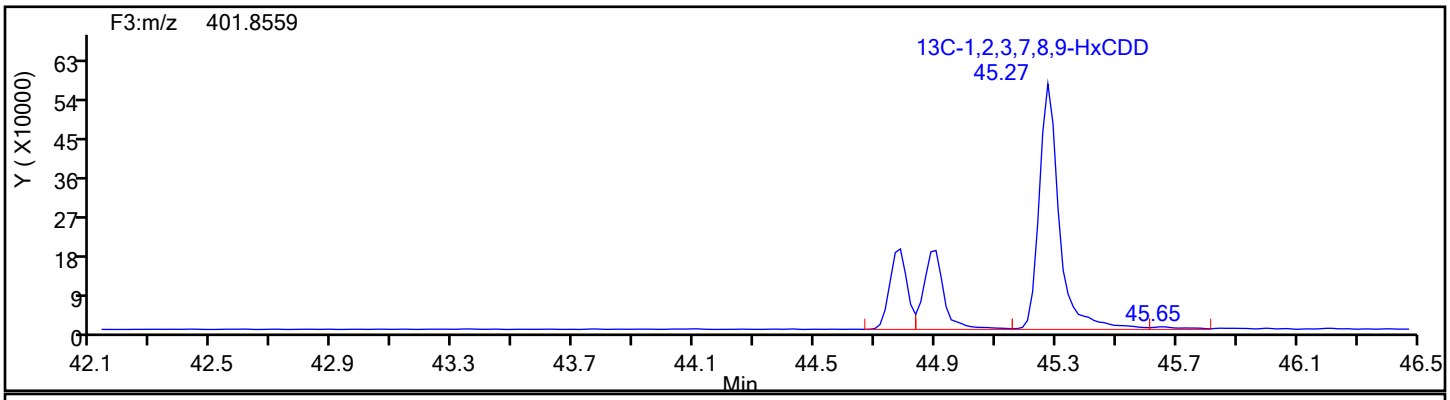
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

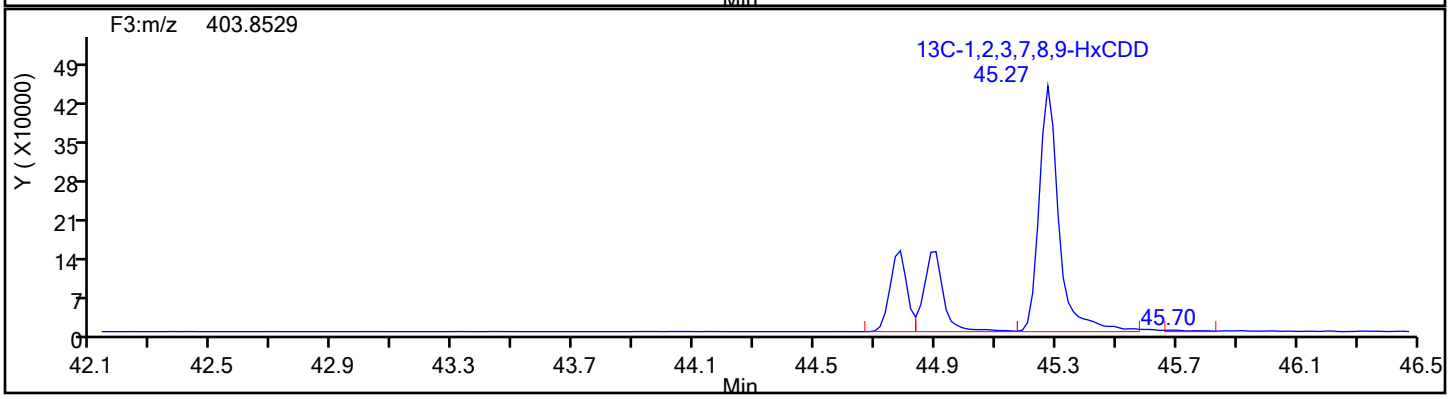
HxCDD





HxCDD Standards



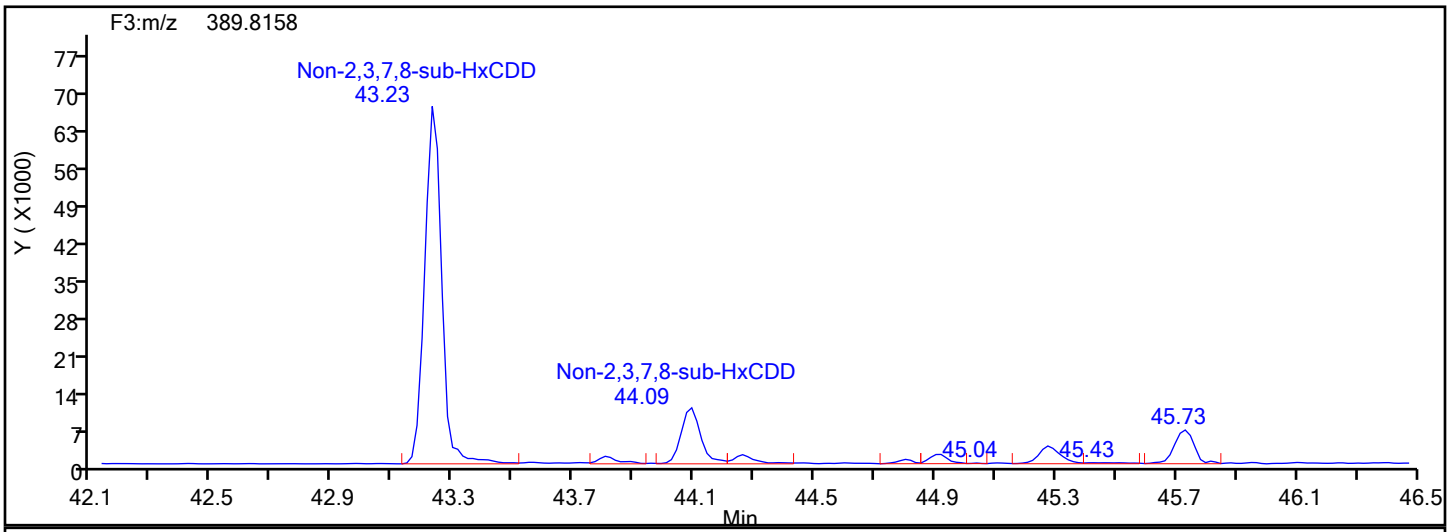


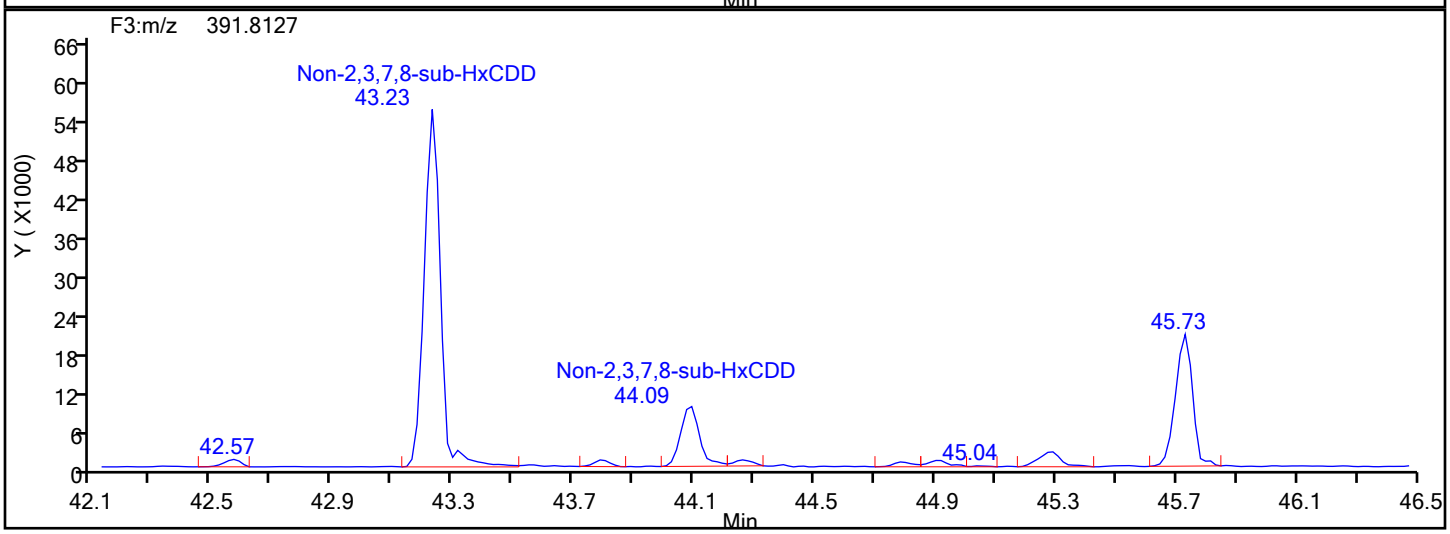
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

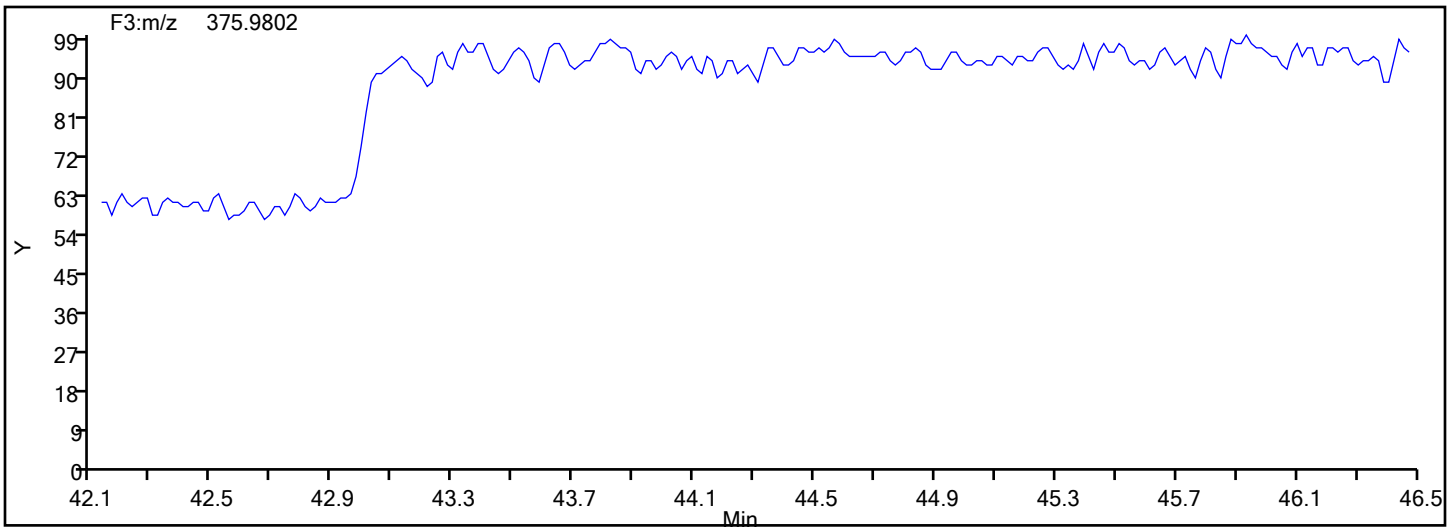
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

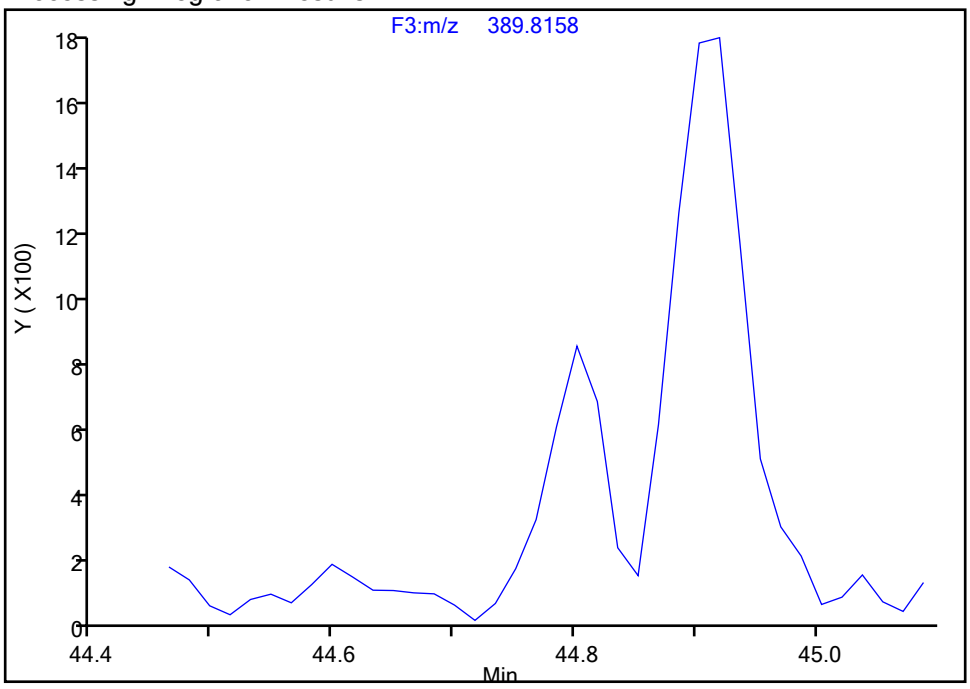
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

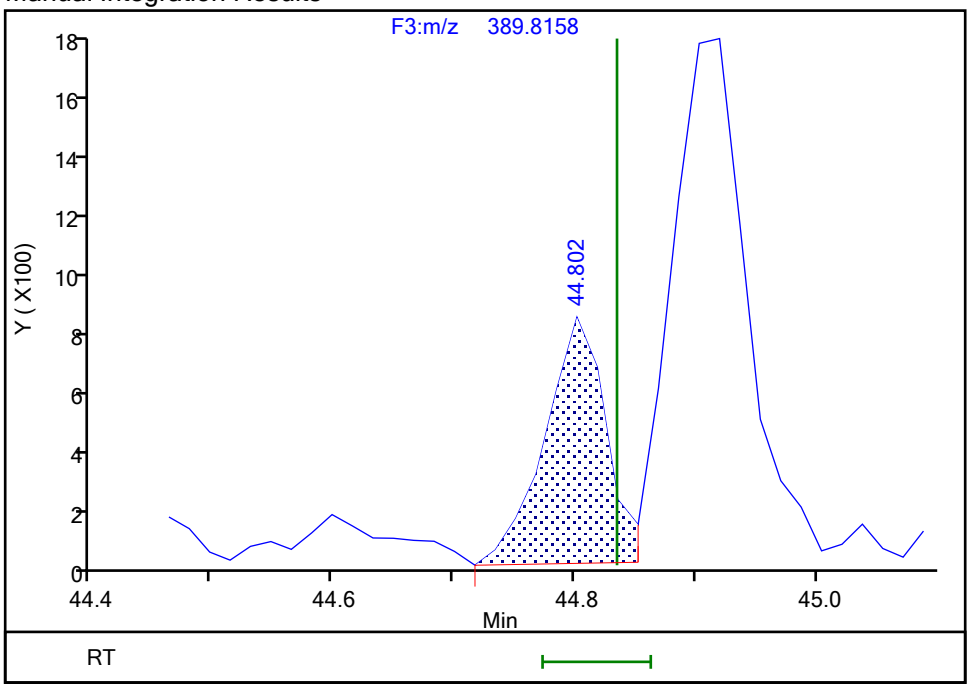
Not Detected
Expected RT: 44.83

Processing Integration Results



Manual Integration Results

RT: 44.80
Area: 2866
Amount: 0.205212
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:15:14
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

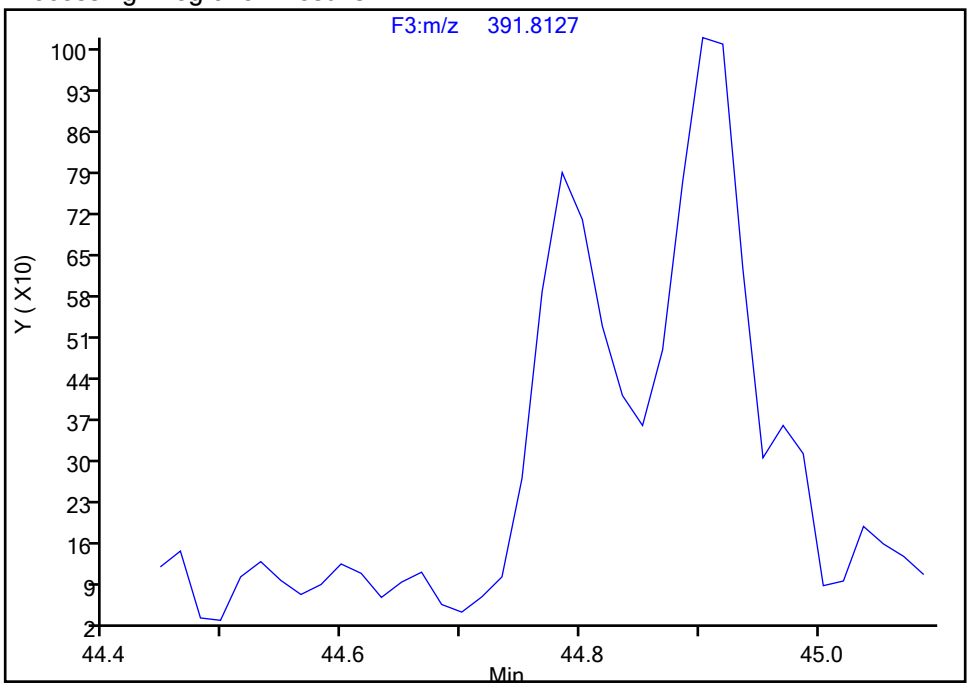
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

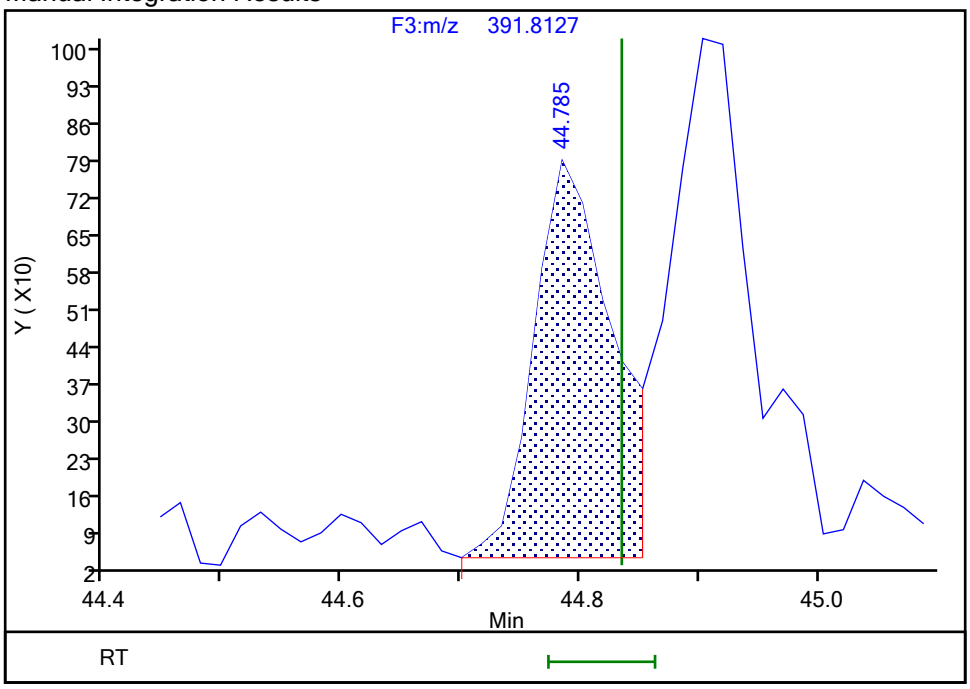
Not Detected
Expected RT: 44.83

Processing Integration Results



Manual Integration Results

RT: 44.78
Area: 3337
Amount: 0.205212
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:15:17
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

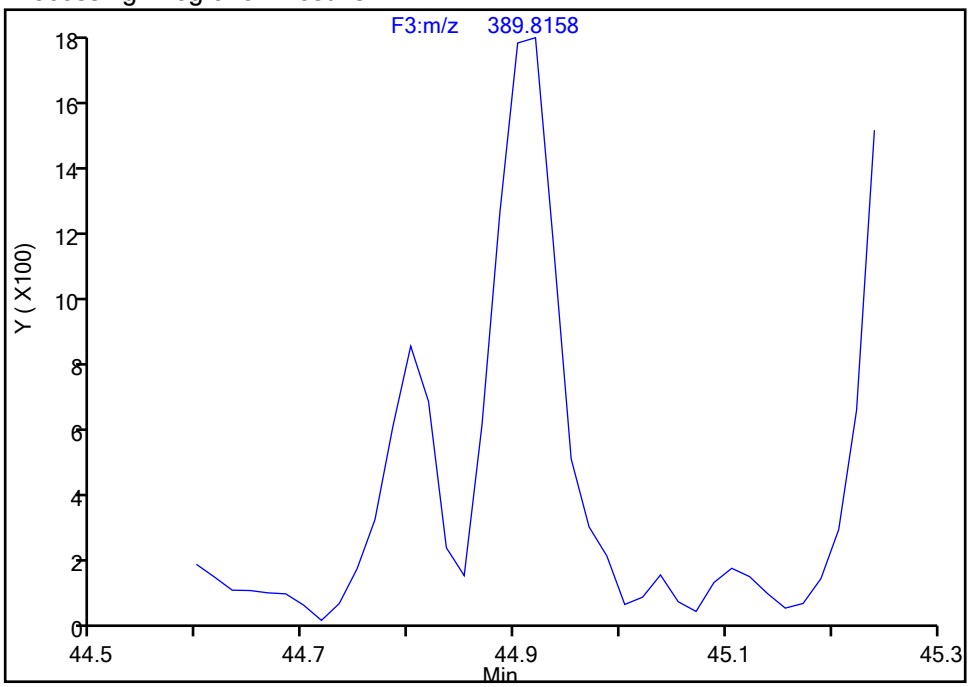
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

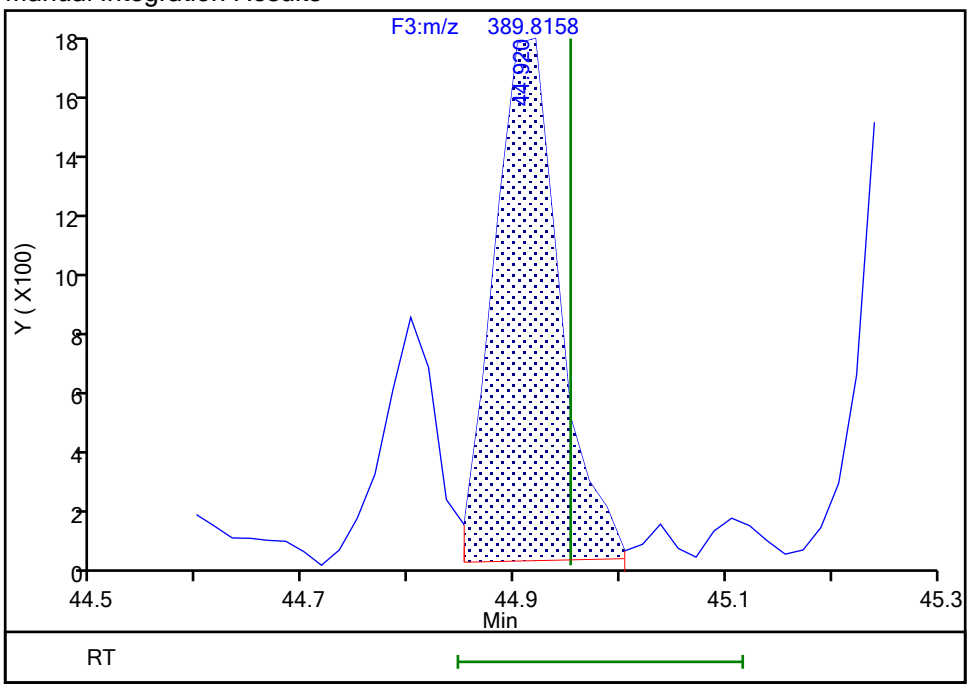
Not Detected
Expected RT: 44.95

Processing Integration Results



Manual Integration Results

RT: 44.92
Area: 7457
Amount: 0.354493
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:15:25
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

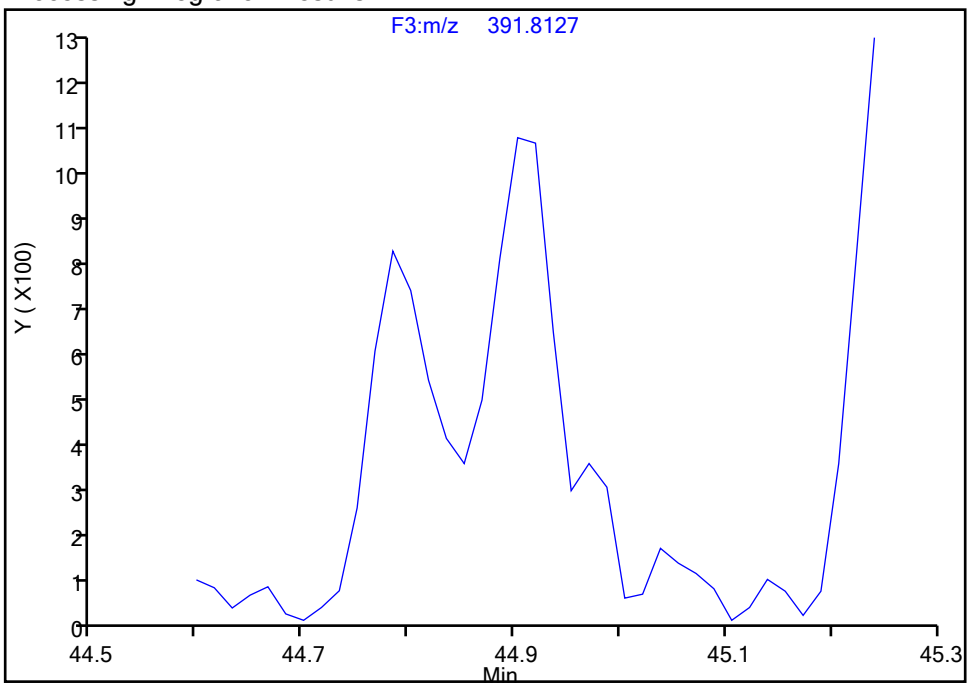
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

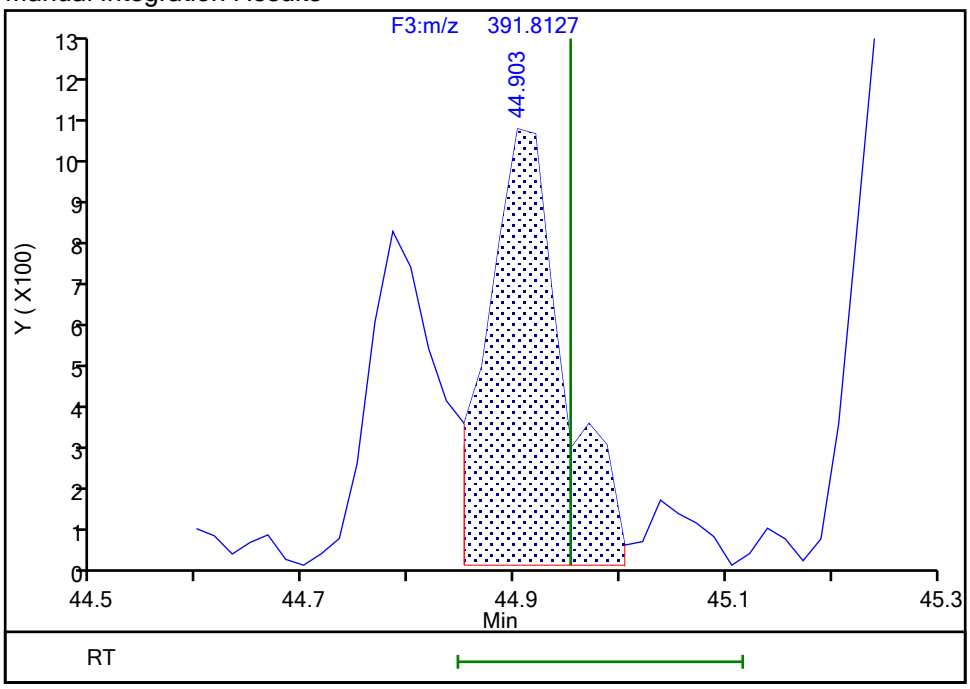
Not Detected
Expected RT: 44.95

Processing Integration Results



Manual Integration Results

RT: 44.90
Area: 4805
Amount: 0.354493
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:15:27
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

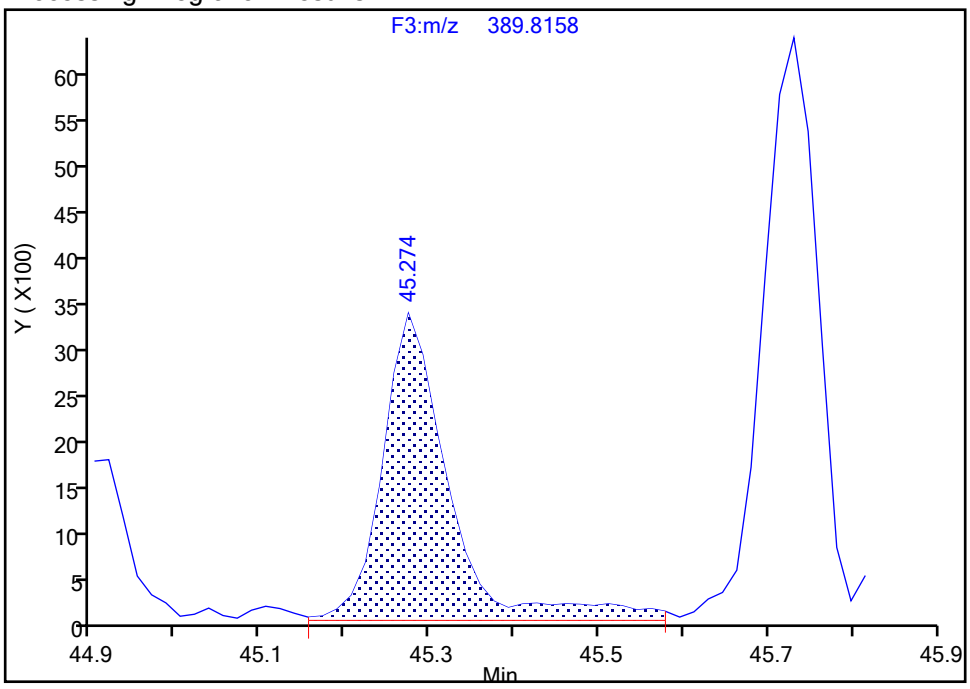
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

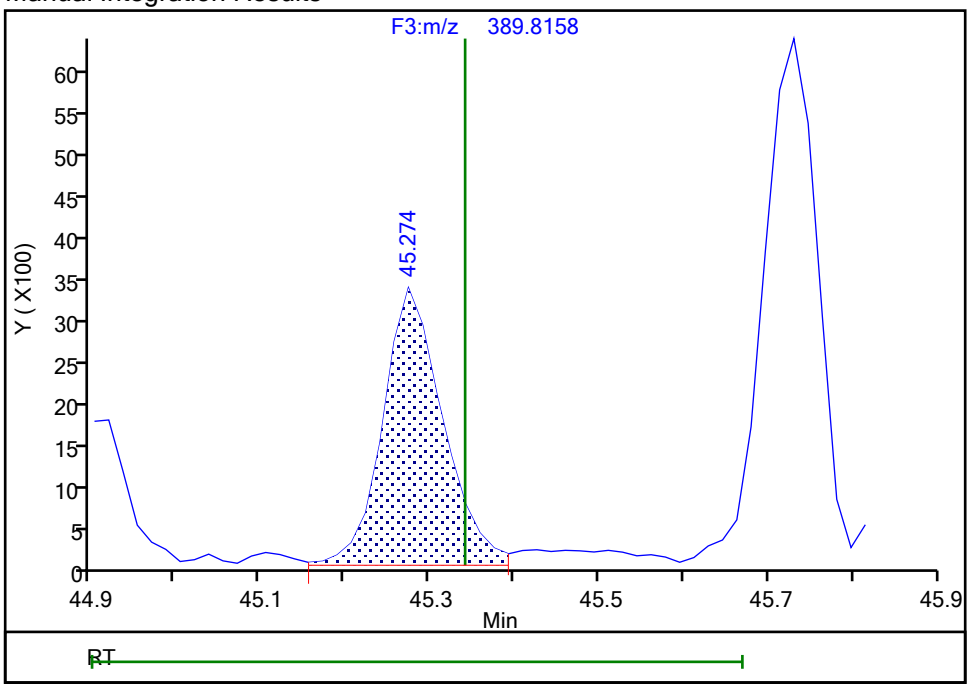
Processing Integration Results

RT: 45.27
Area: 18296
Amount: 0.878826
Amount Units: pg/ul



Manual Integration Results

RT: 45.27
Area: 16530
Amount: 0.827747
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:15:31

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

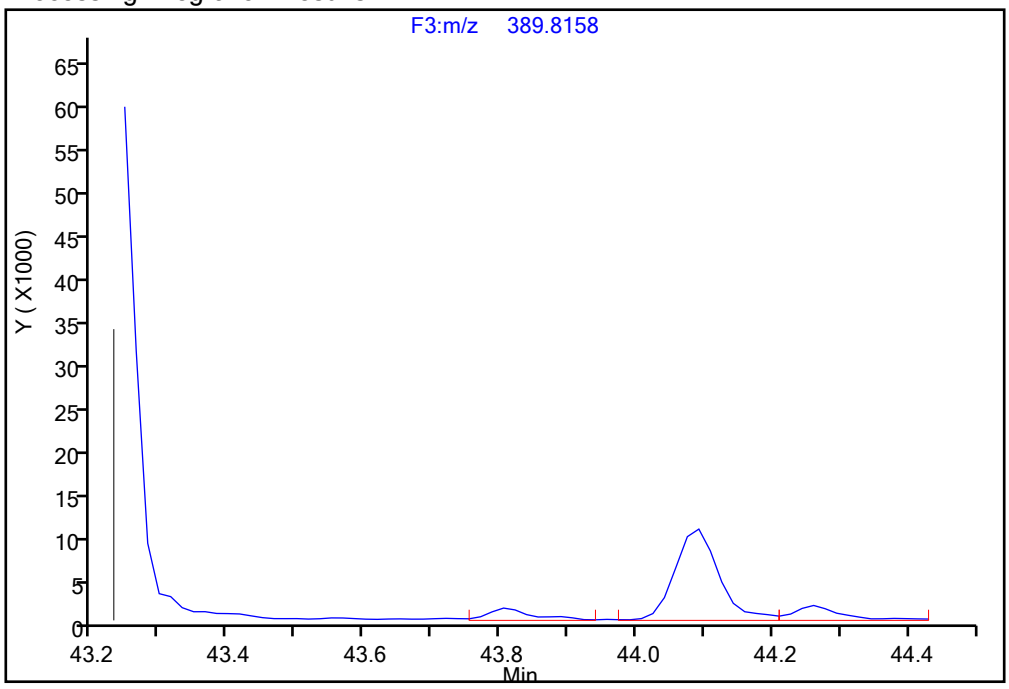
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.23- 45.39)

Signal: 1

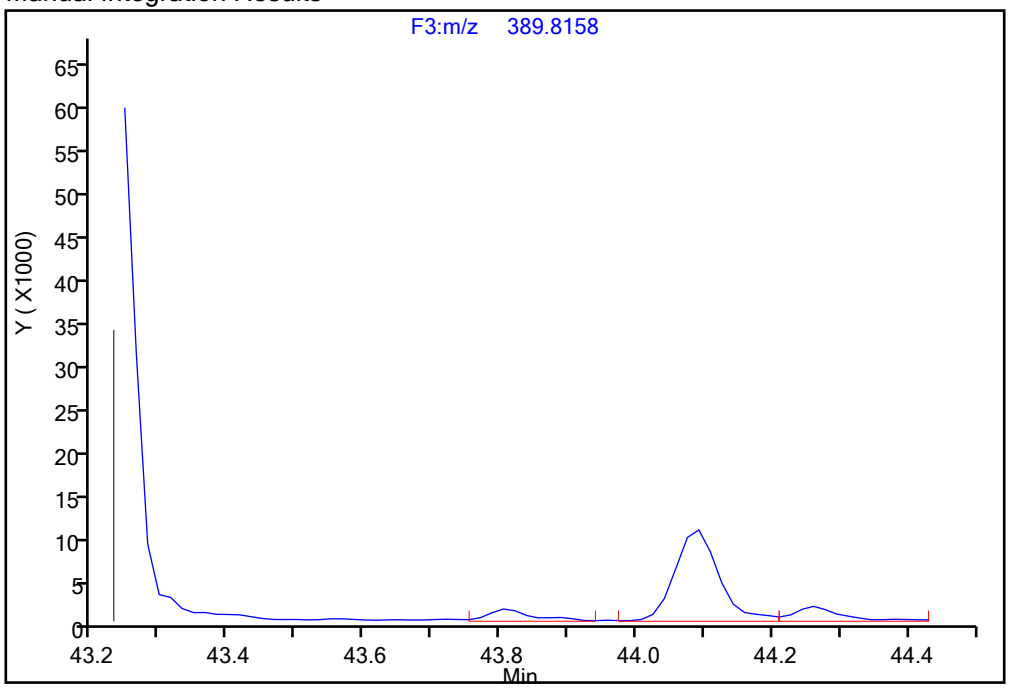
Processing Integration Results

RT = 43.805 Area = 6534



Manual Integration Results

RT = 43.805 Area = 6534



Reviewer: davidsonm, 17-Dec-2019 12:16:09

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

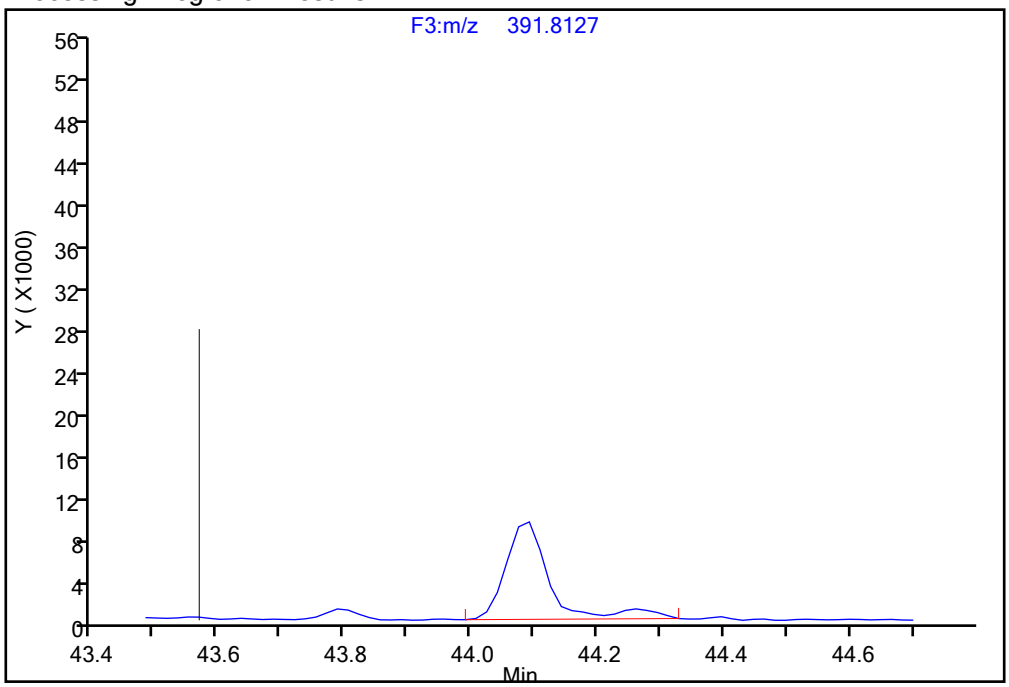
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.23- 45.39)

Signal: 2

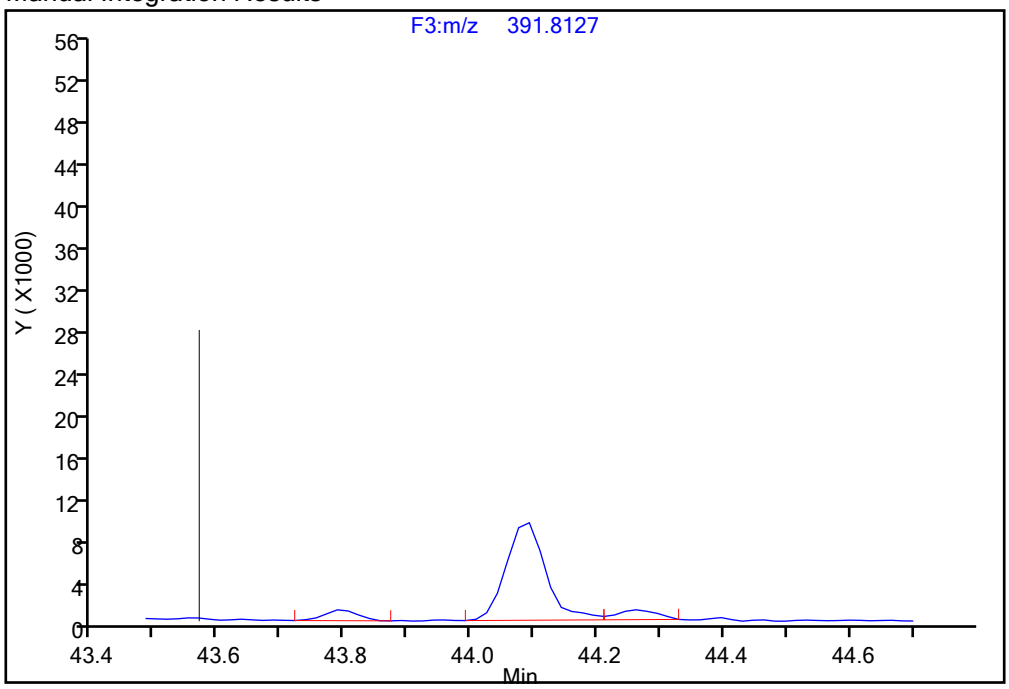
Processing Integration Results

RT = 44.092 Area = 44776



Manual Integration Results

RT = 44.092 Area = 40732 M



Reviewer: davidsonm, 17-Dec-2019 12:15:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

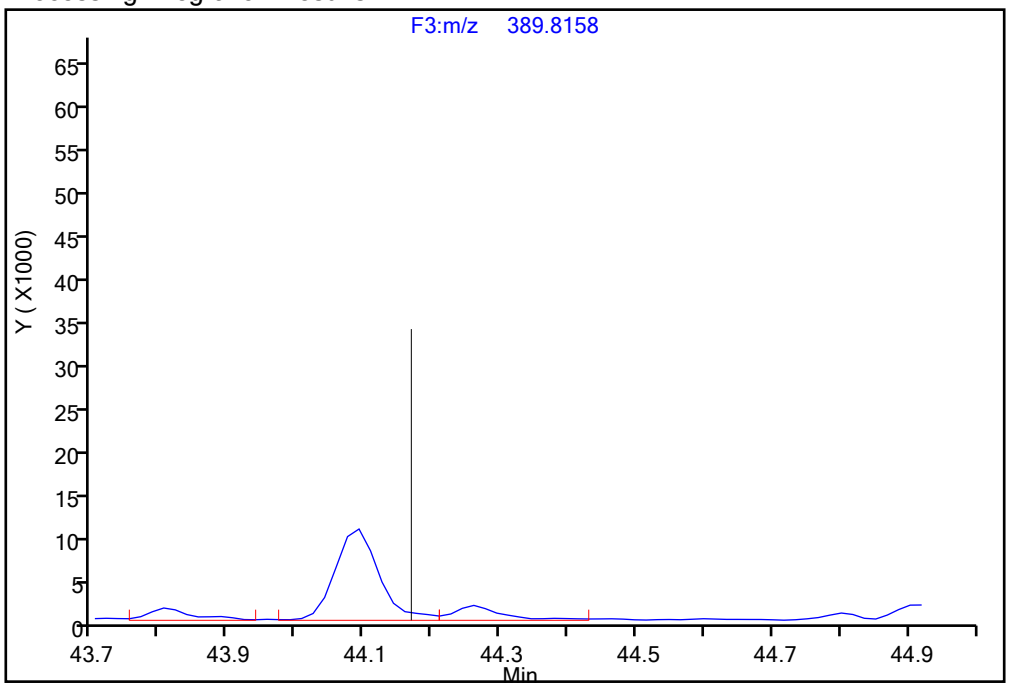
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.23- 45.39)

Signal: 1

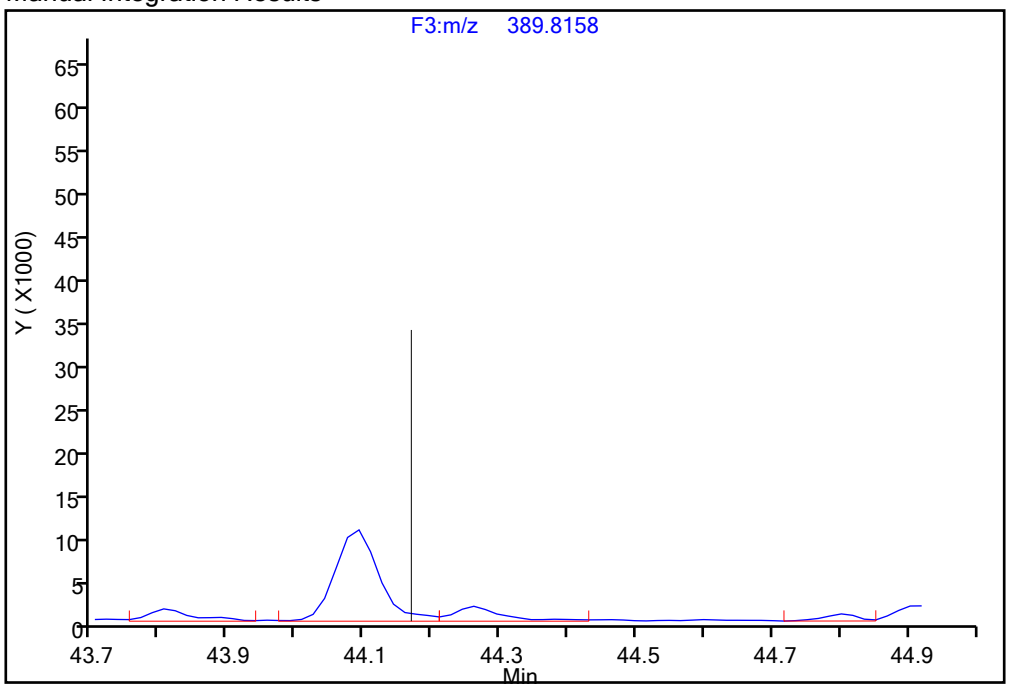
Processing Integration Results

RT = 44.261 Area = 8389



Manual Integration Results

RT = 44.261 Area = 8389



Reviewer: davidsonm, 17-Dec-2019 12:16:09

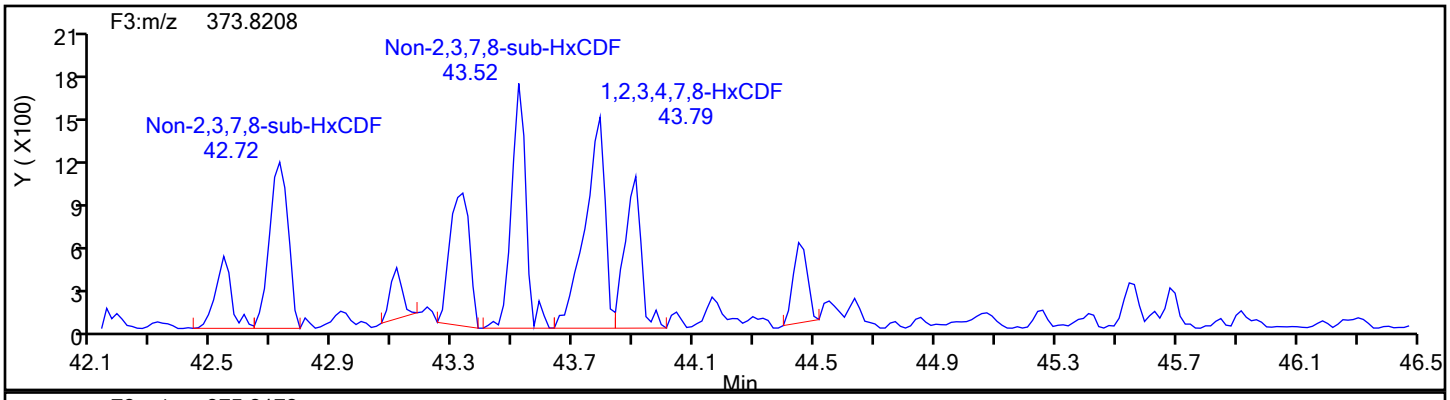
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

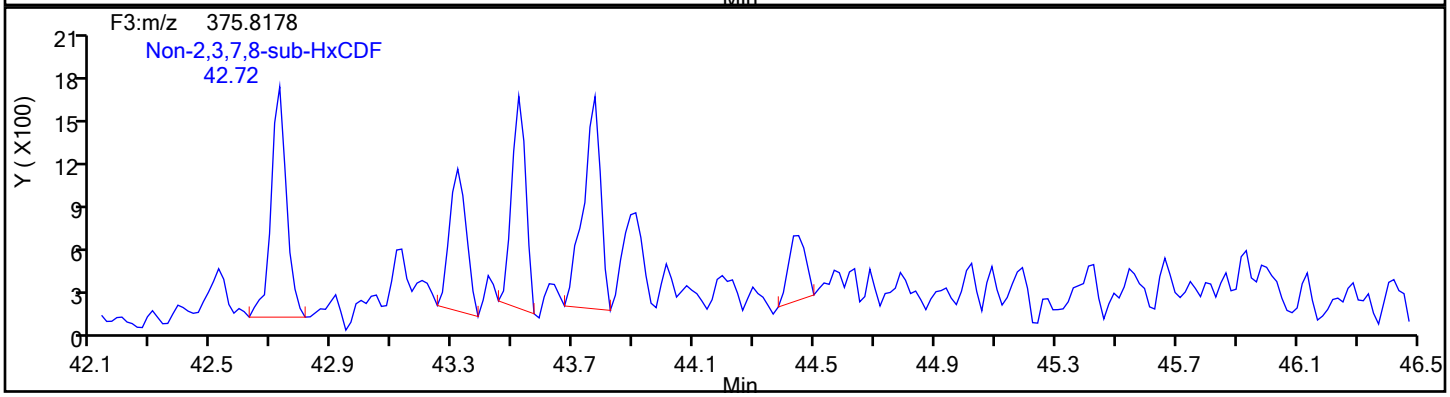
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

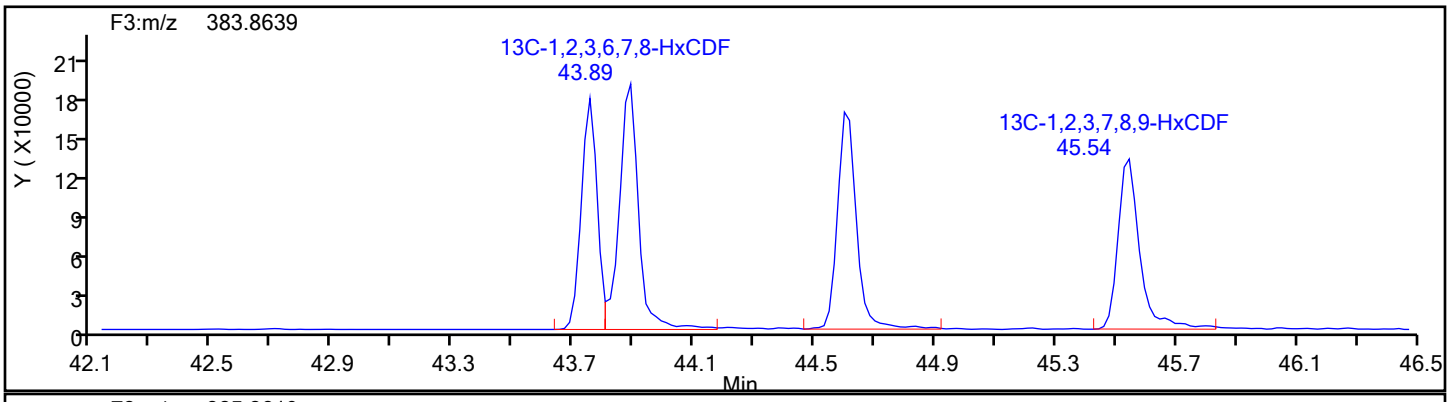
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

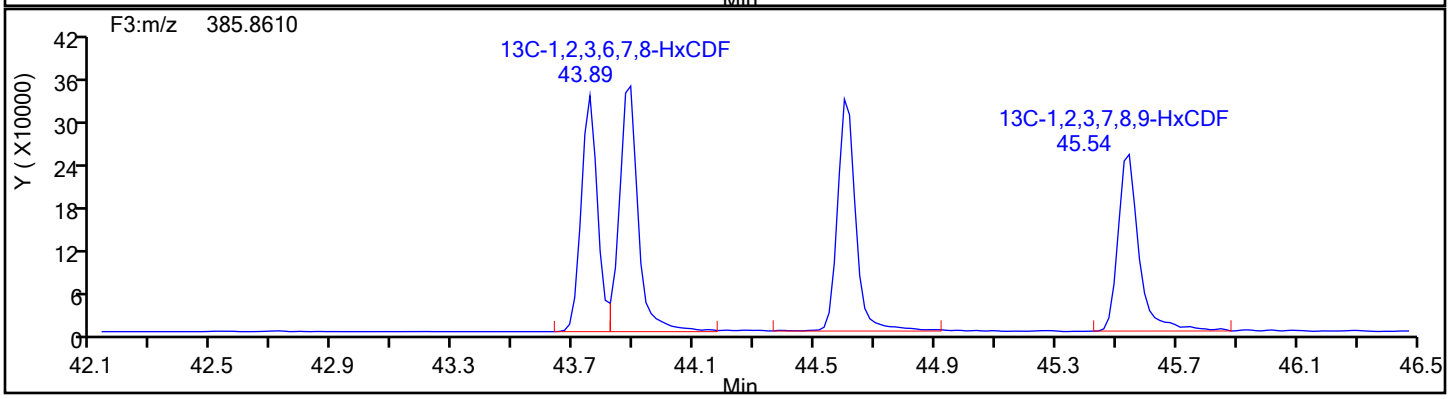
HxCDF





HxCDF Standards



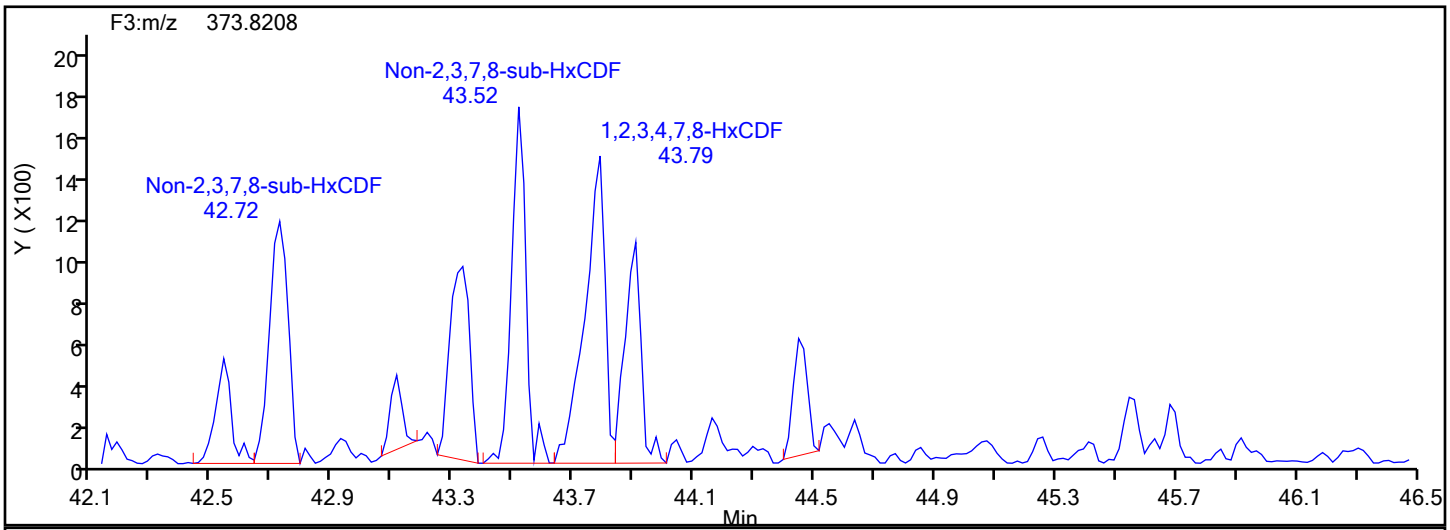


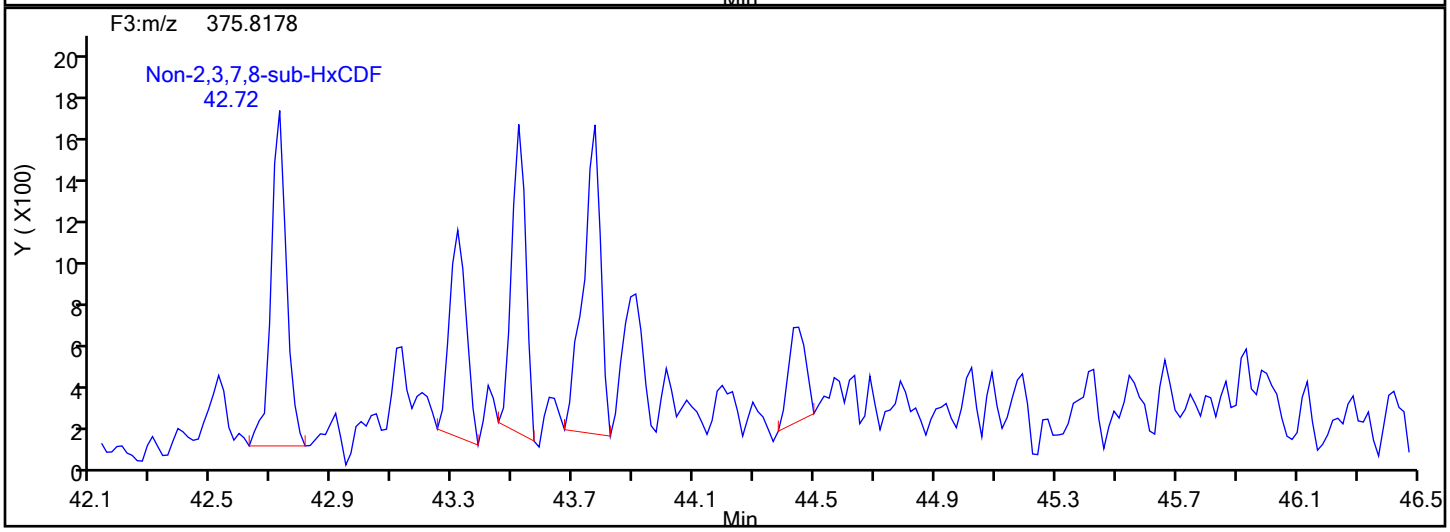
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

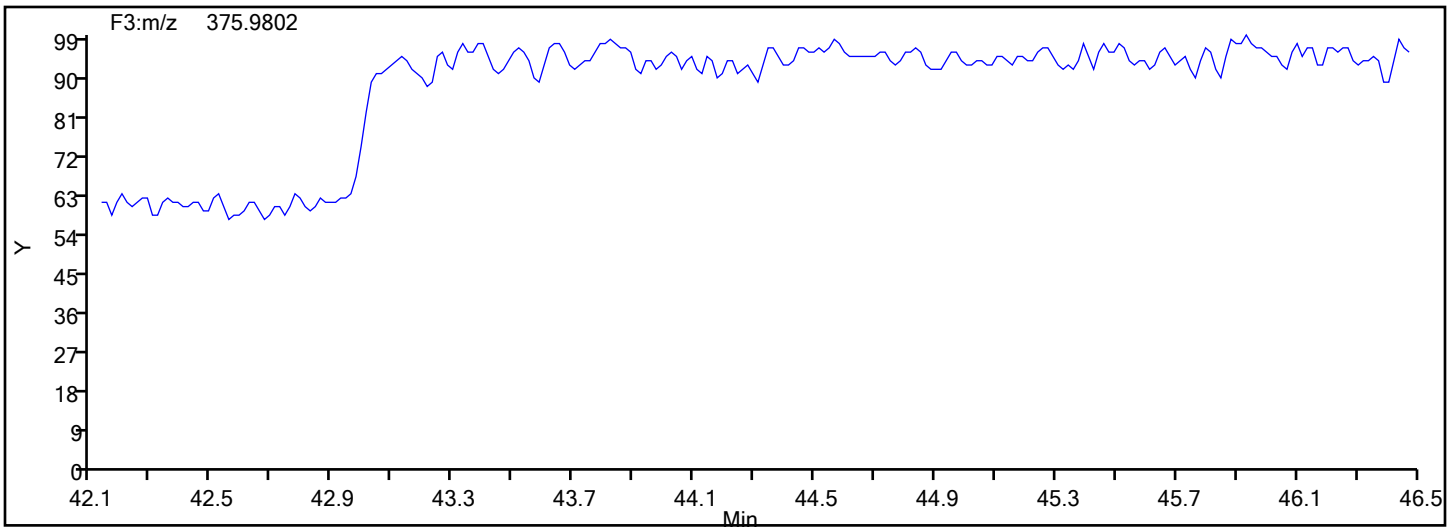
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

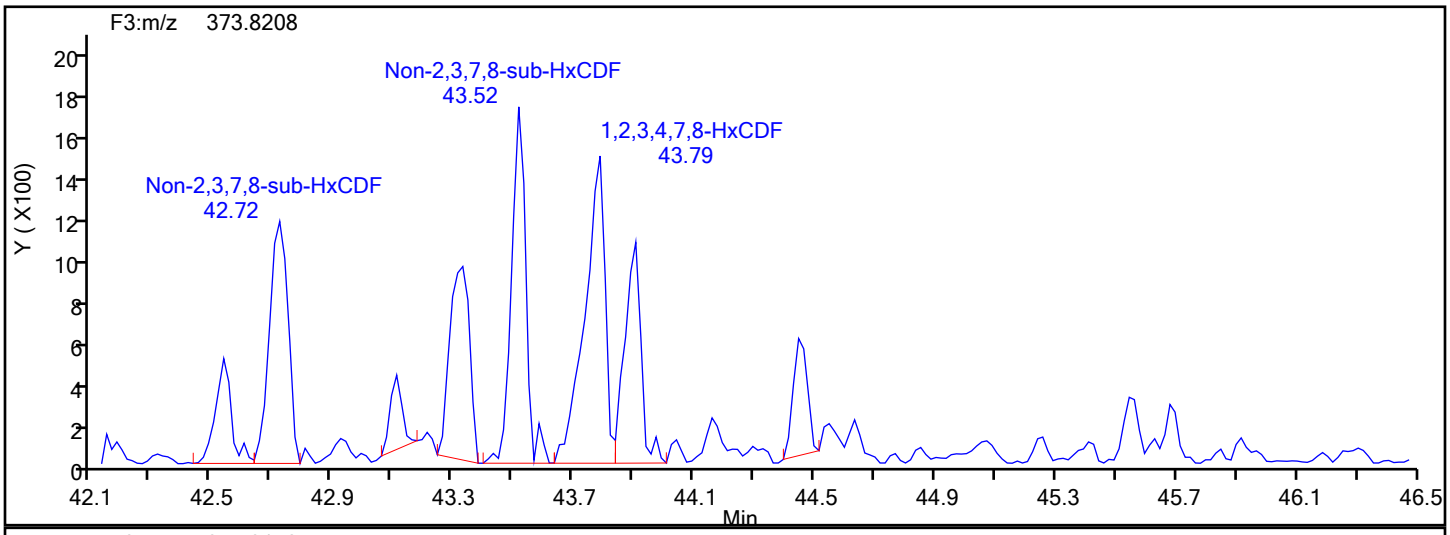


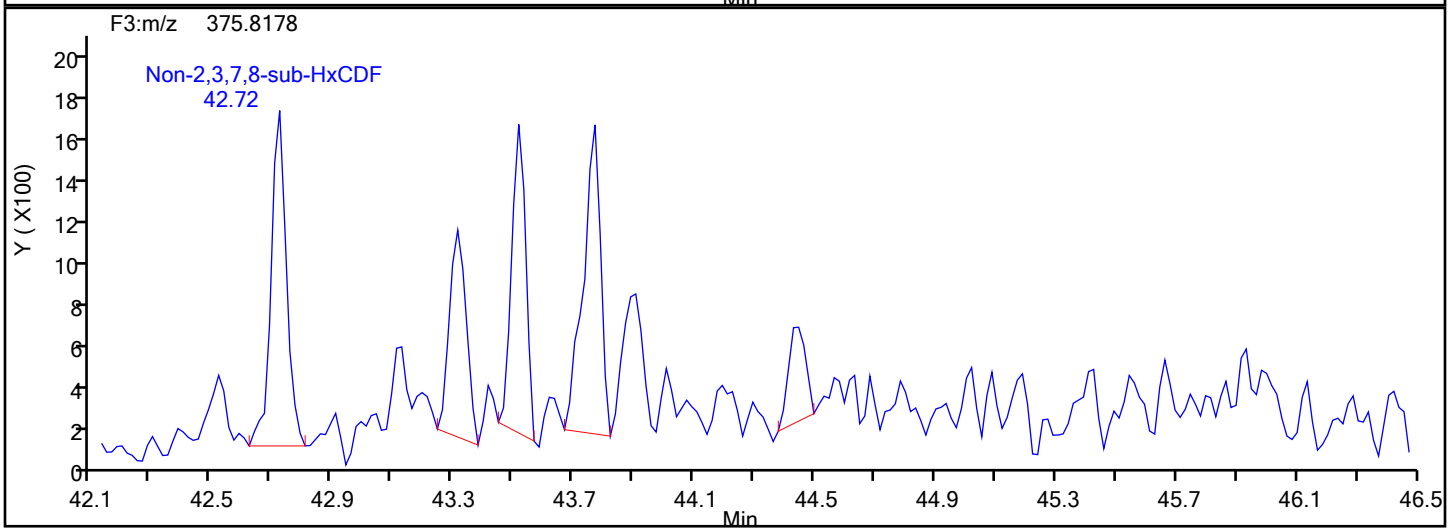
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

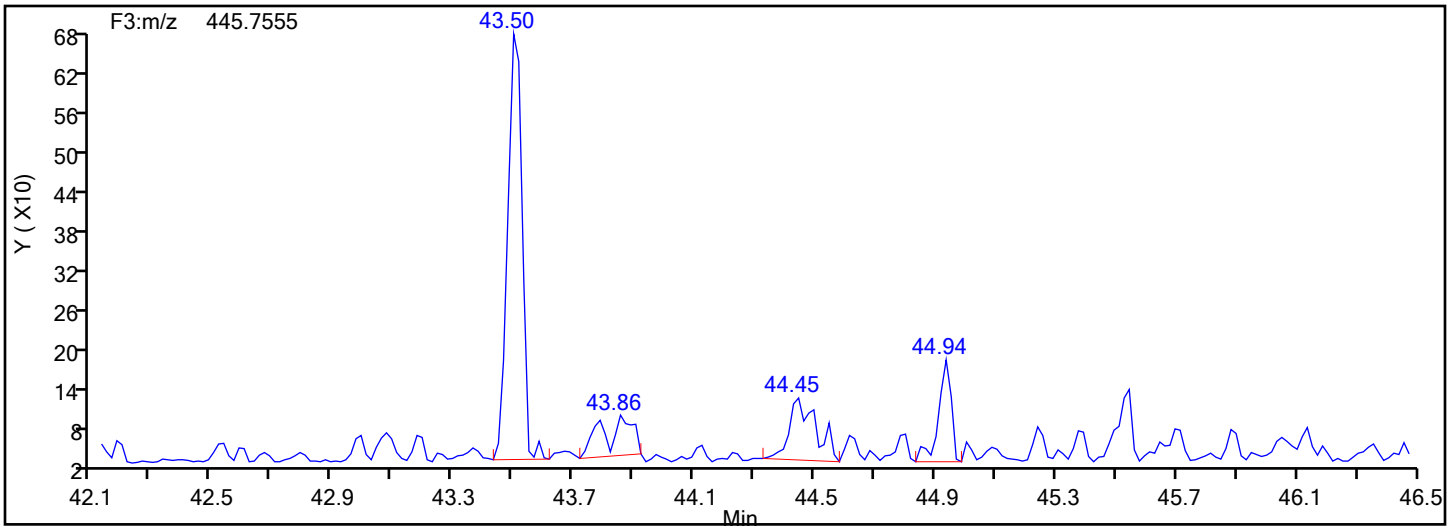
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass

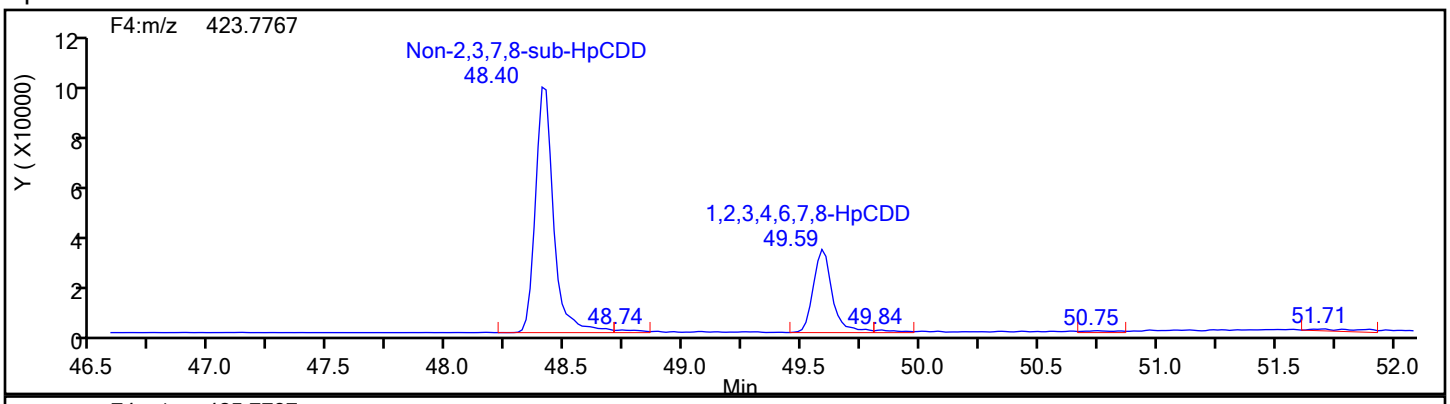


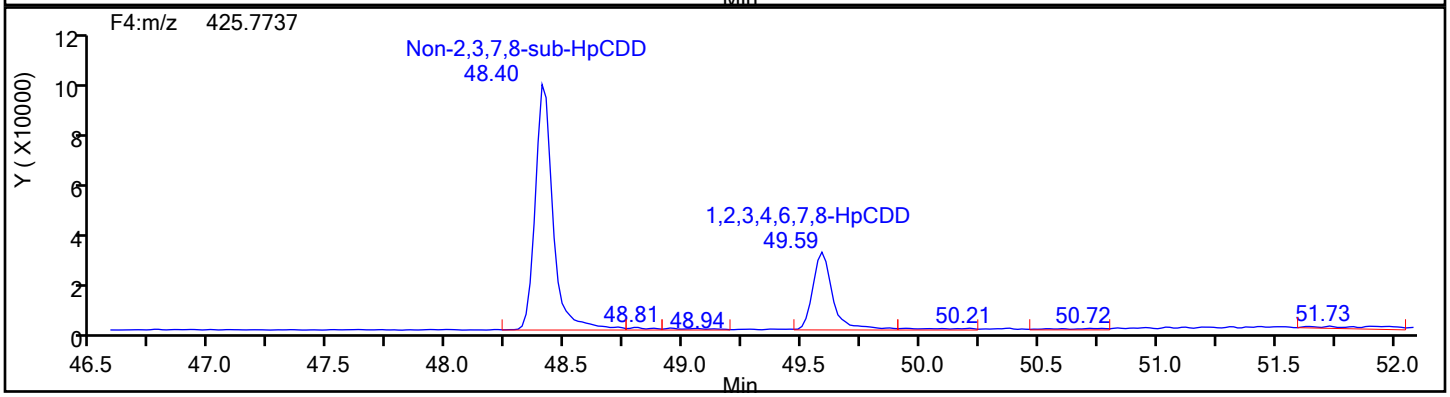
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

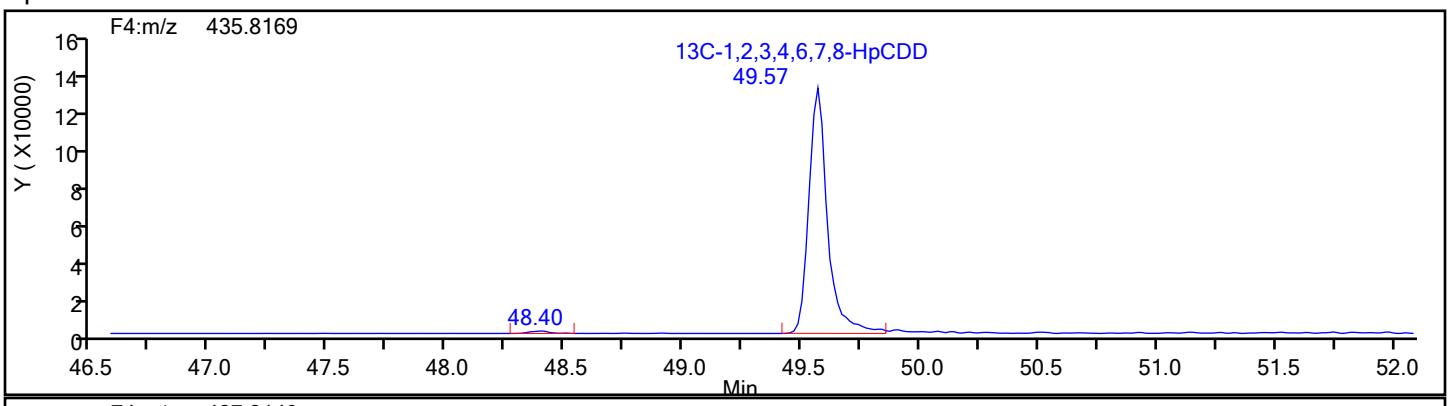
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

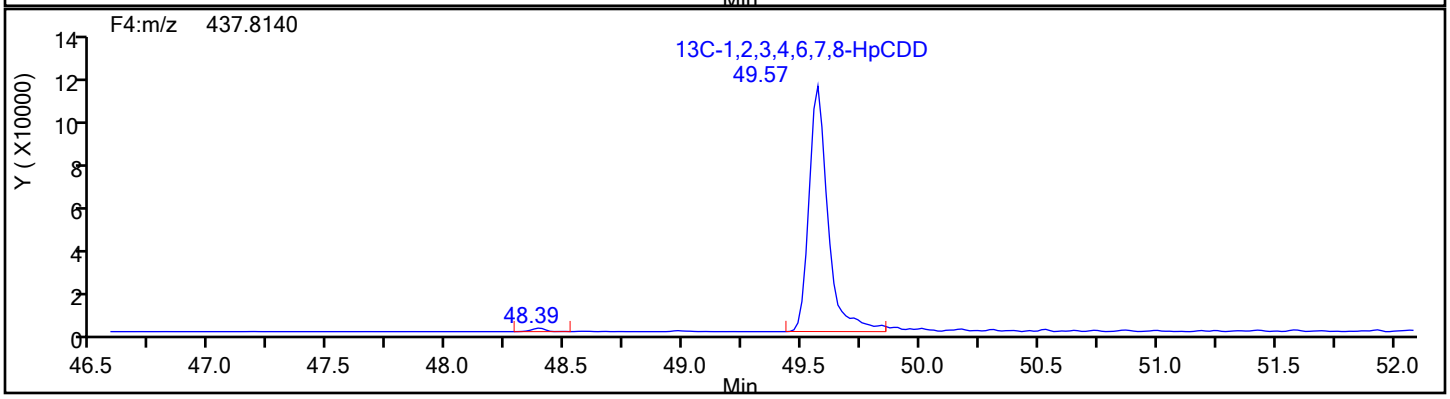
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
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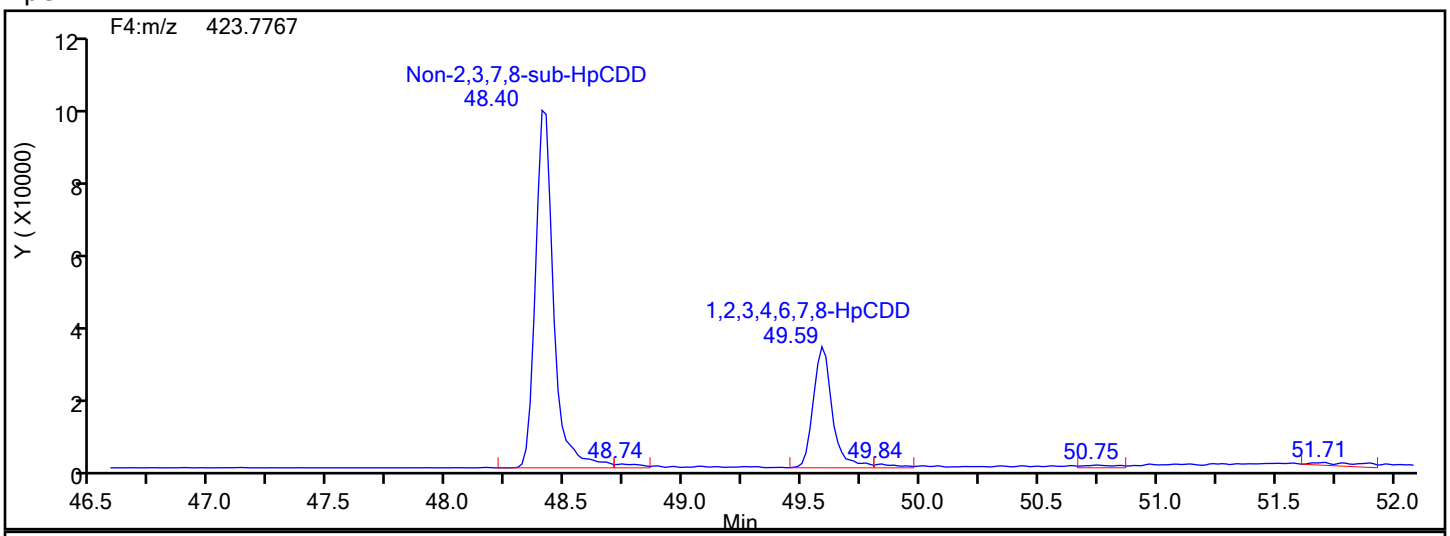
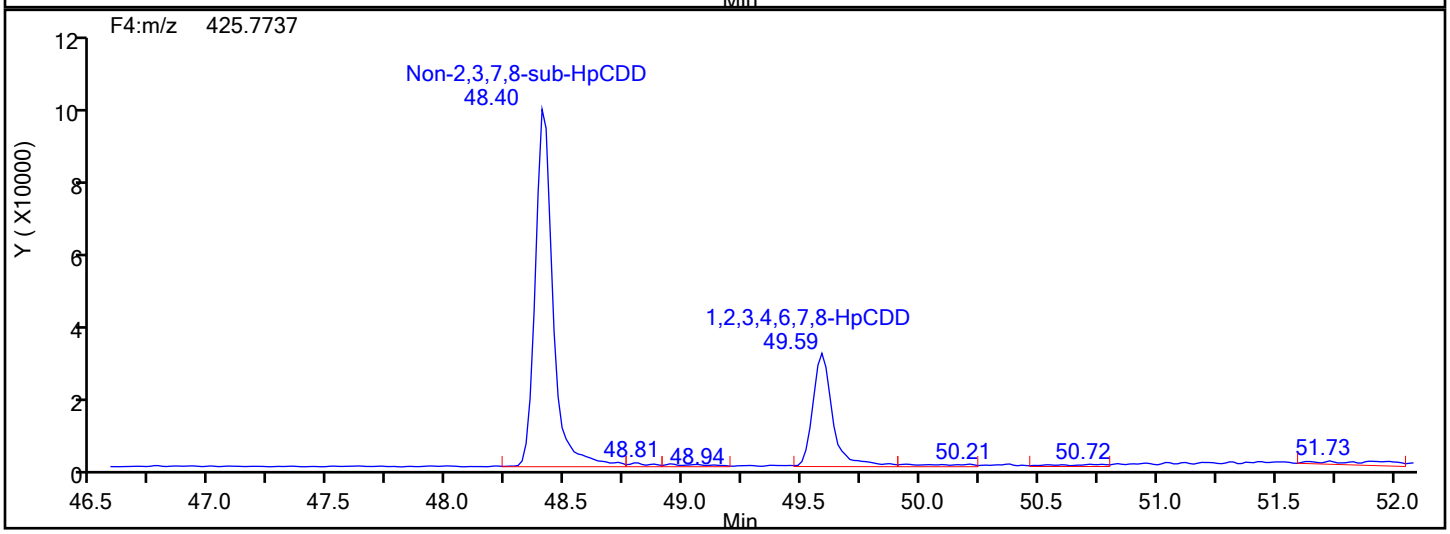
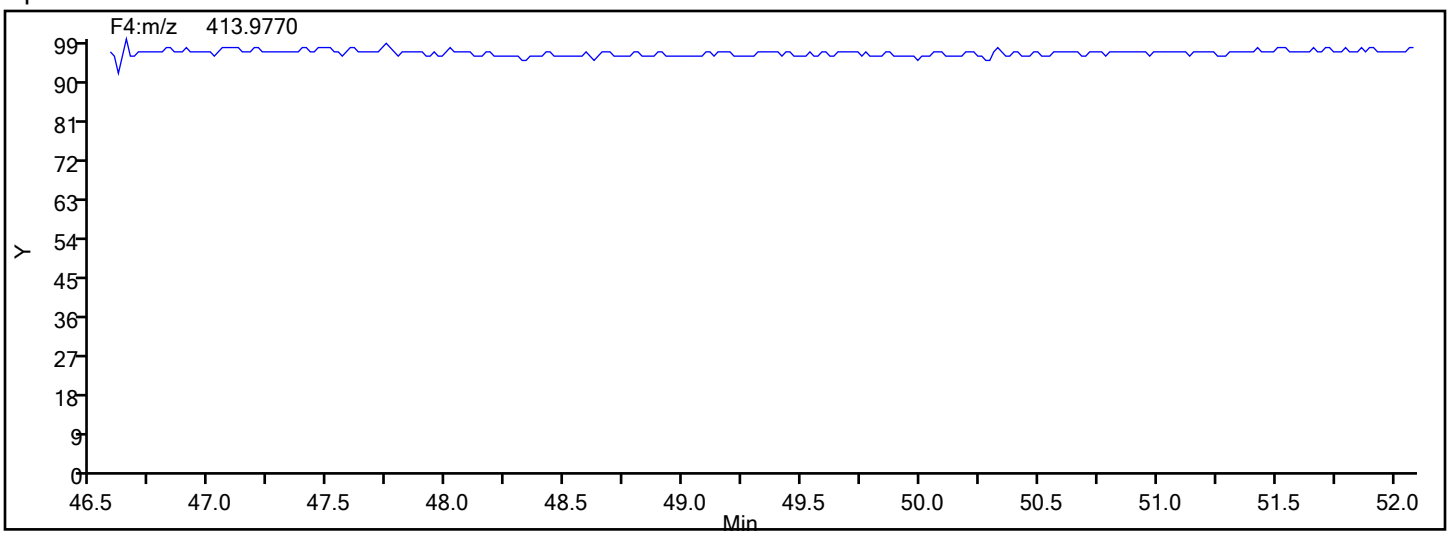
HpCDD





HpCDD Lock Mass



Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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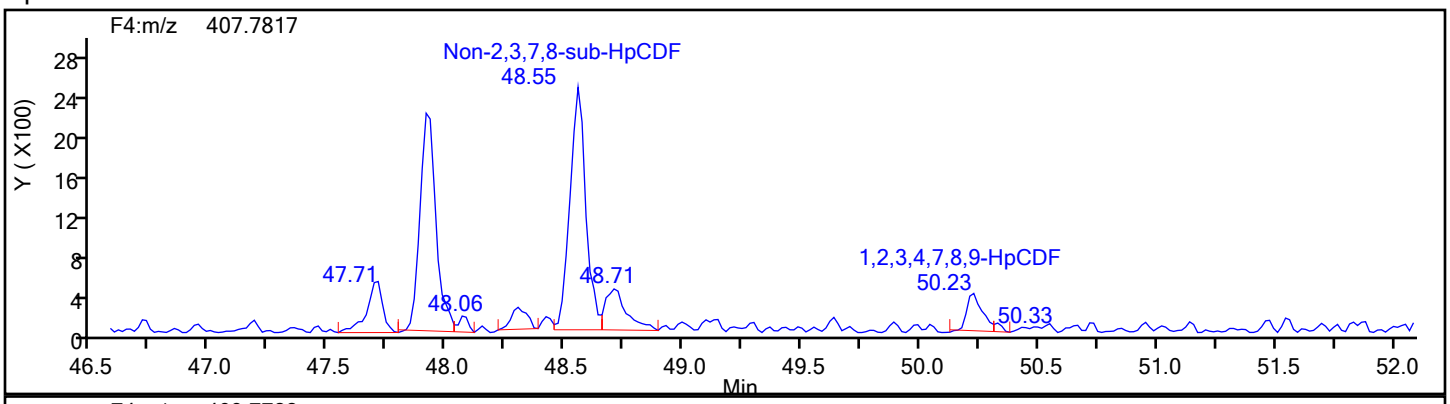
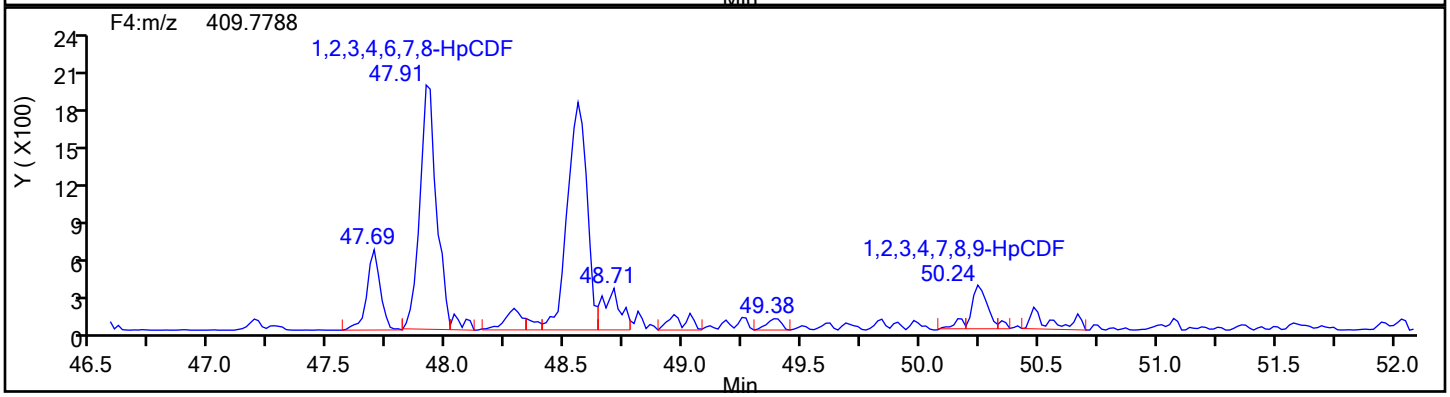
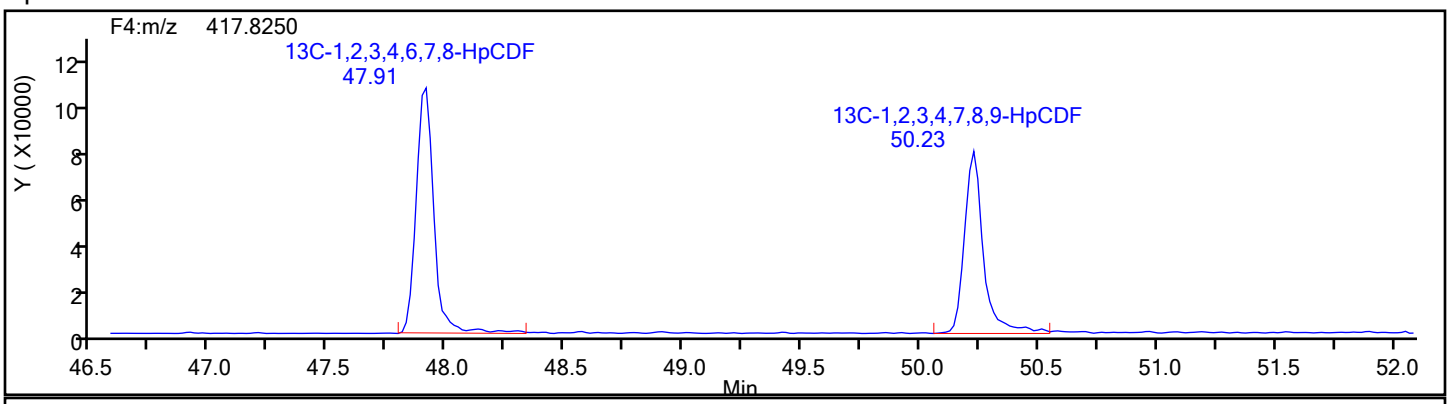
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

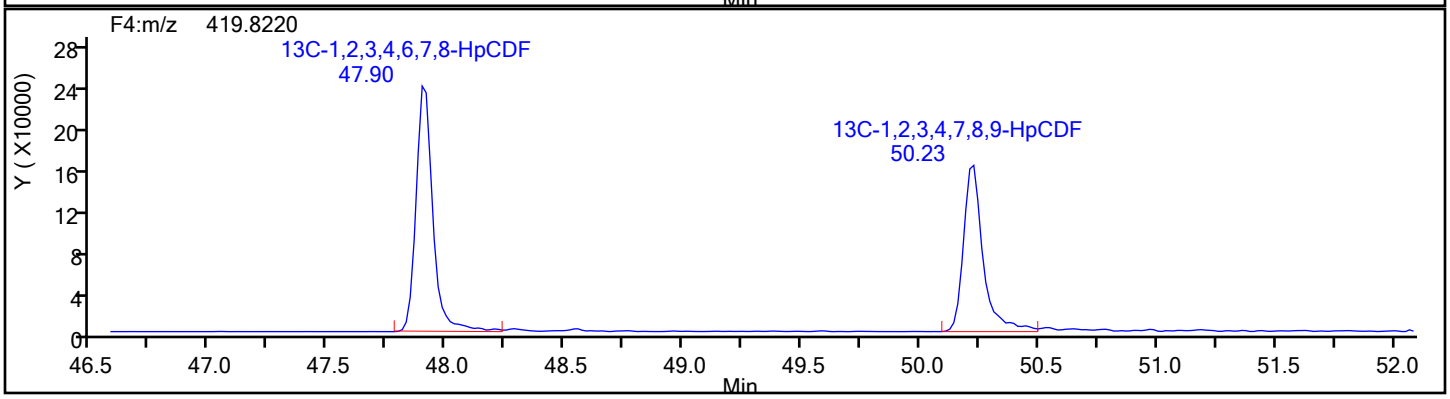
HpCDF





HpCDF Standards





Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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Worklist#:	36126	Sample Line#:	13
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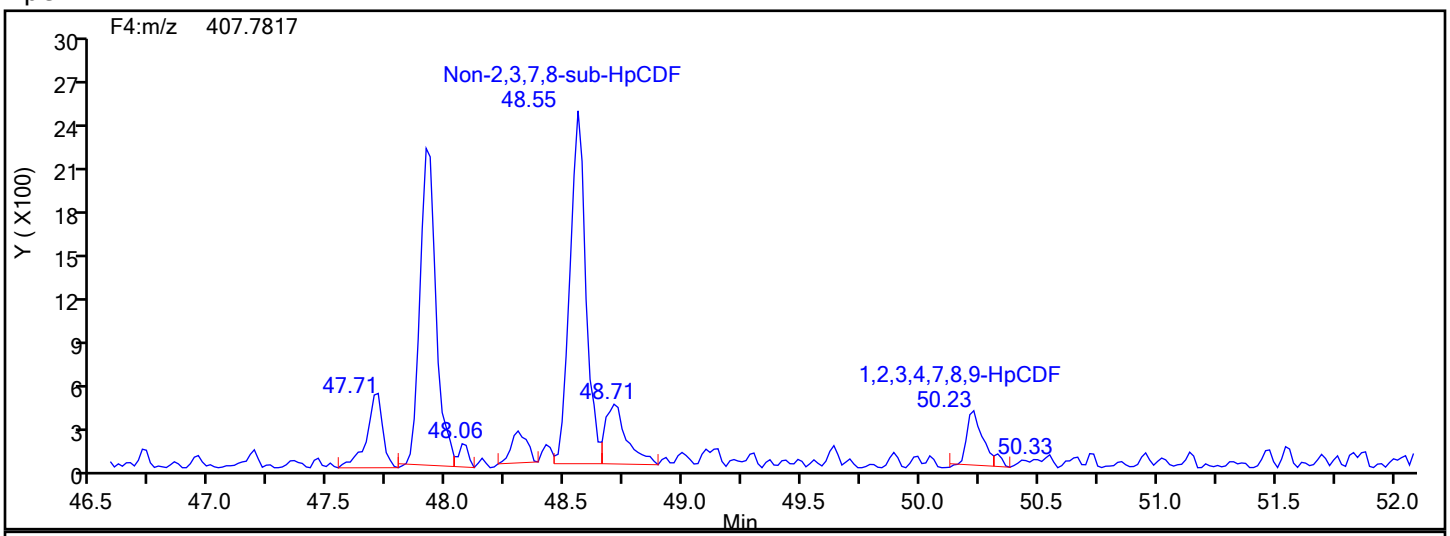
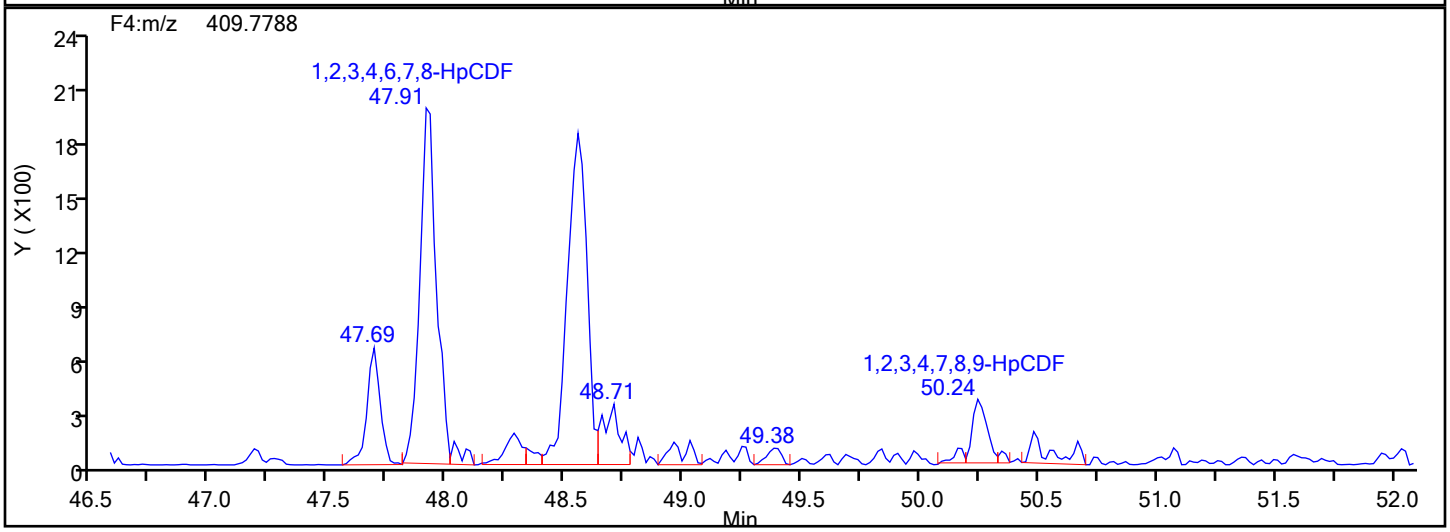
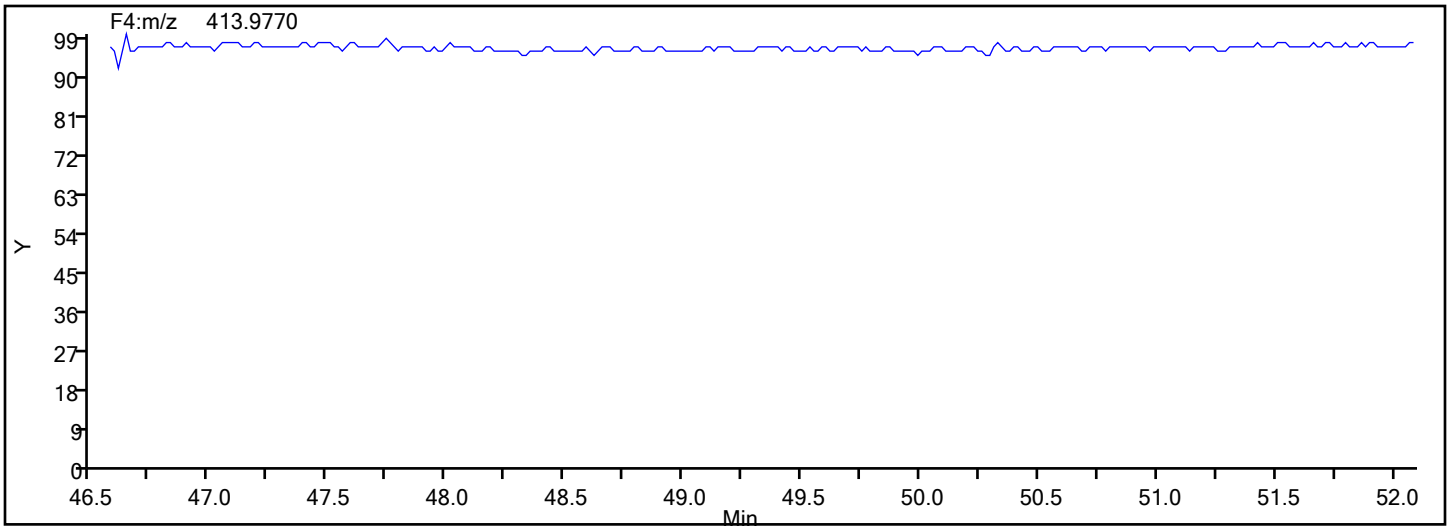
HpCDF





HpCDF Lock Mass

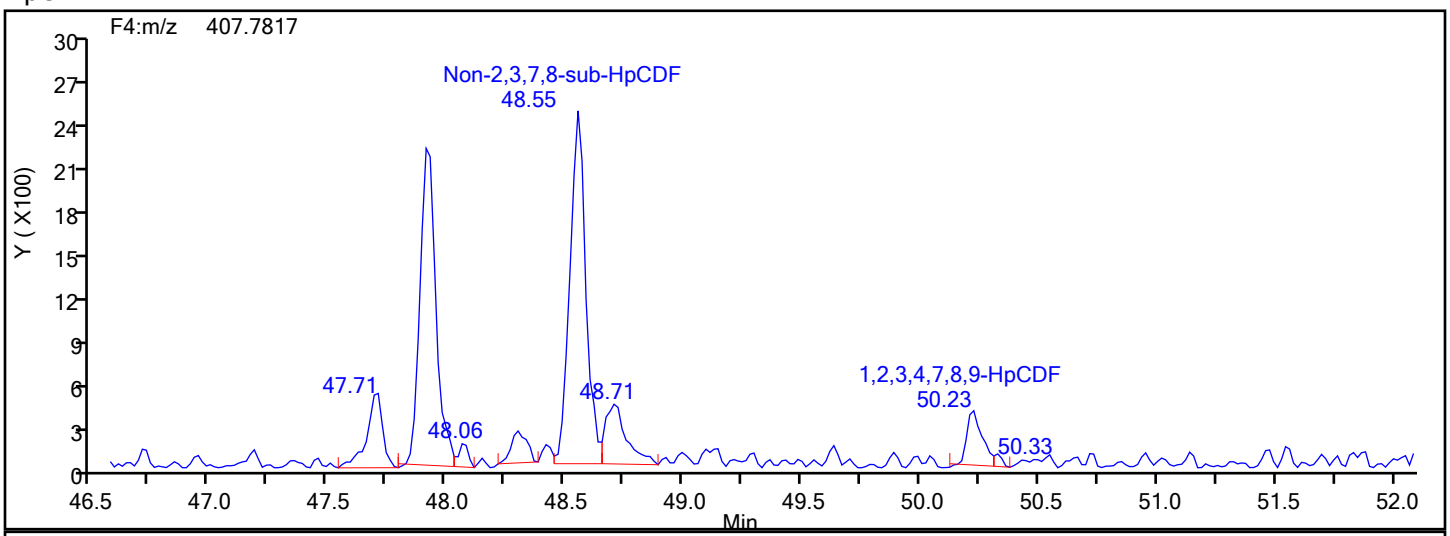


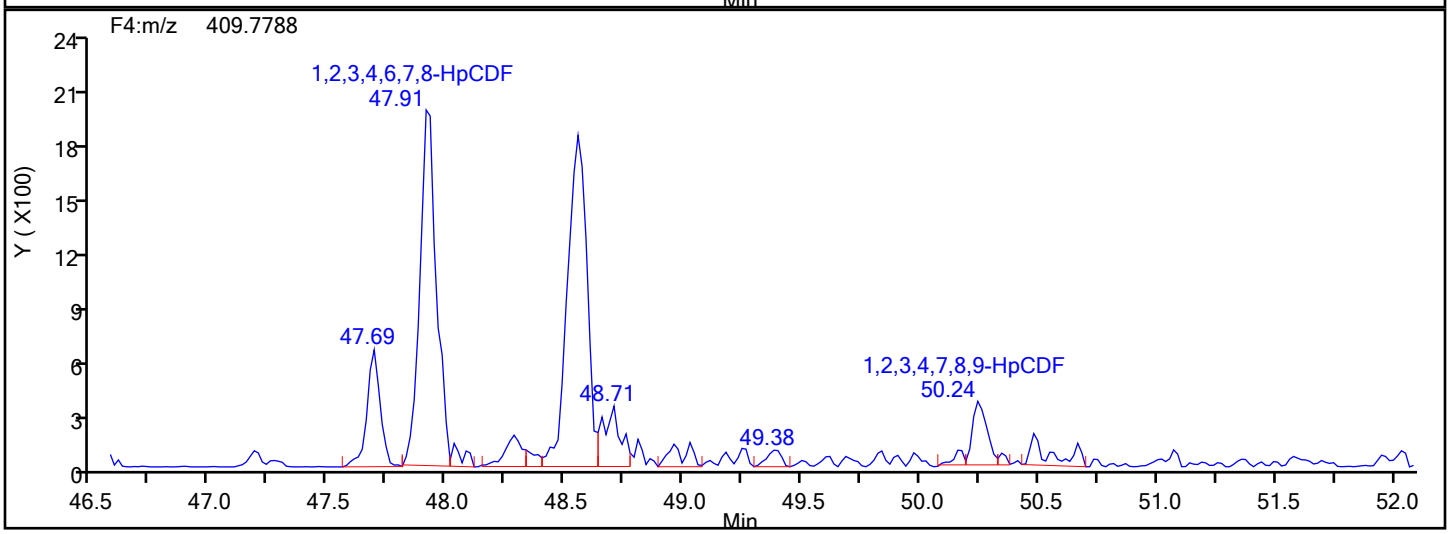
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

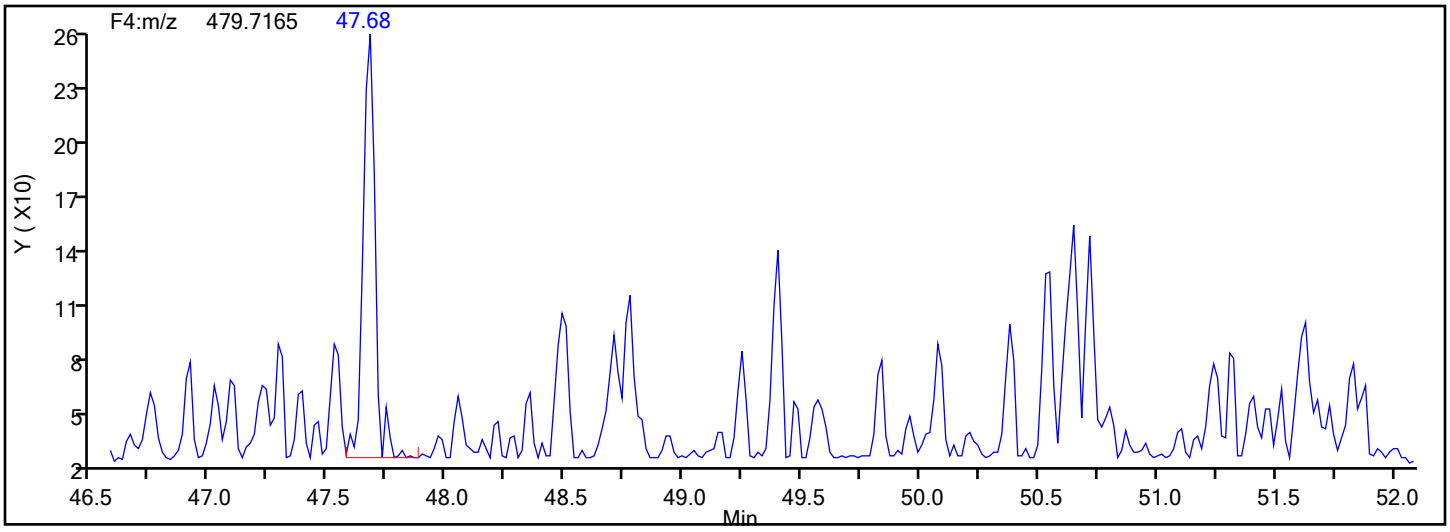
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

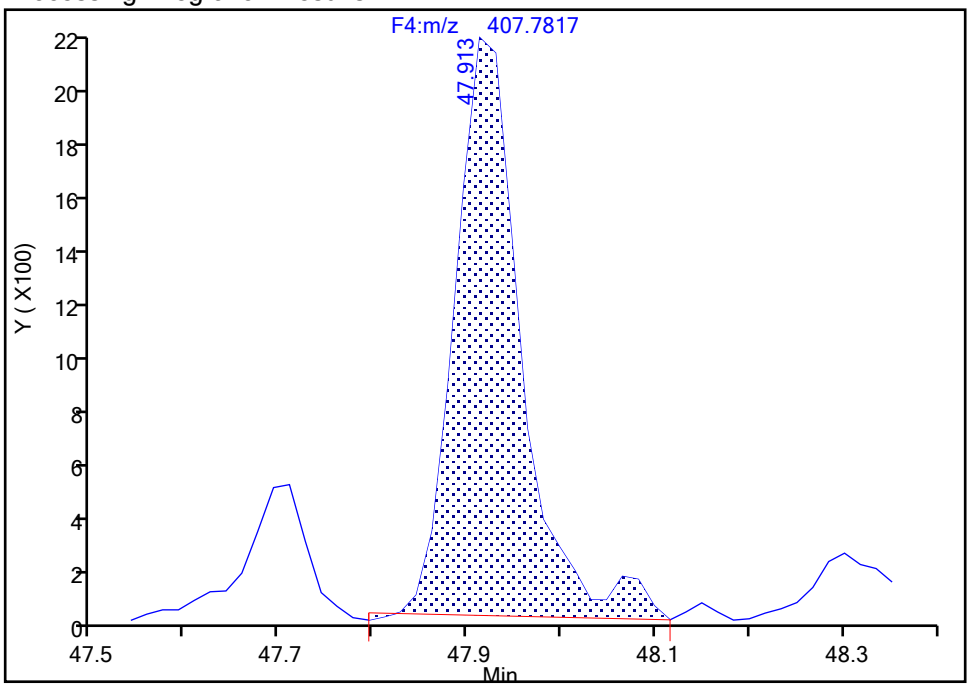
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

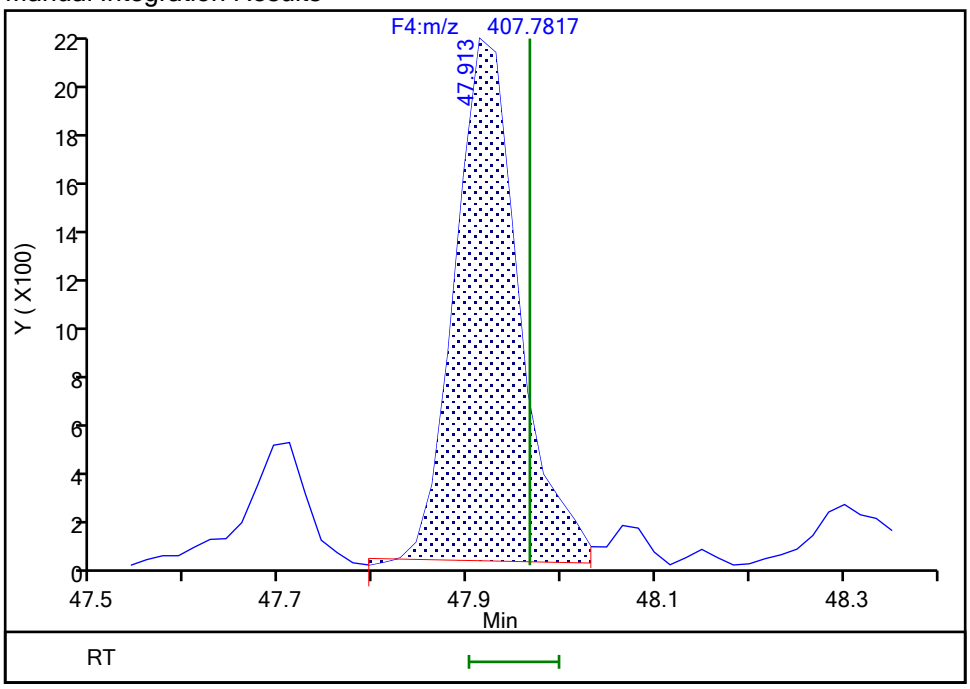
Processing Integration Results

RT: 47.91
Area: 10559
Amount: 0.395508
Amount Units: pg/ul



Manual Integration Results

RT: 47.91
Area: 10096
Amount: 0.378571
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:39:58

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

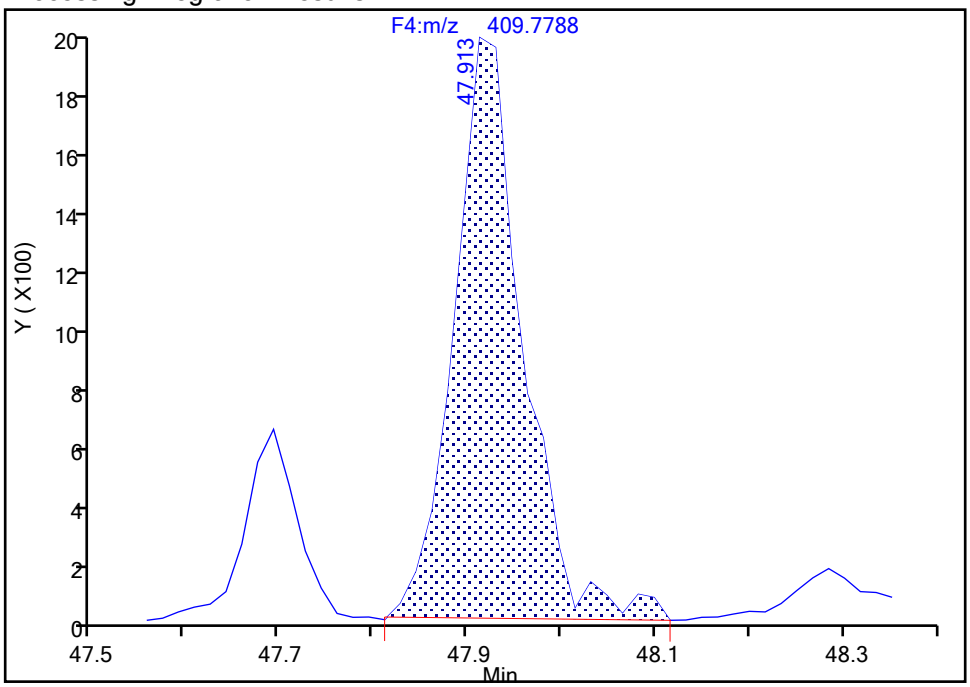
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

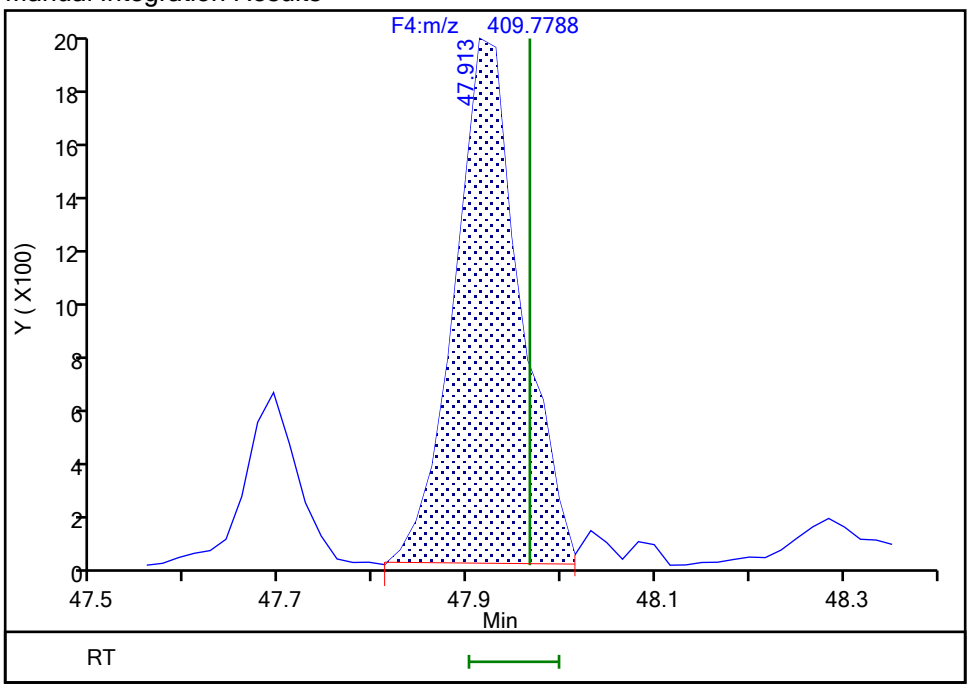
Processing Integration Results

RT: 47.91
Area: 9874
Amount: 0.395508
Amount Units: pg/ul



Manual Integration Results

RT: 47.91
Area: 9462
Amount: 0.378571
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:40:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

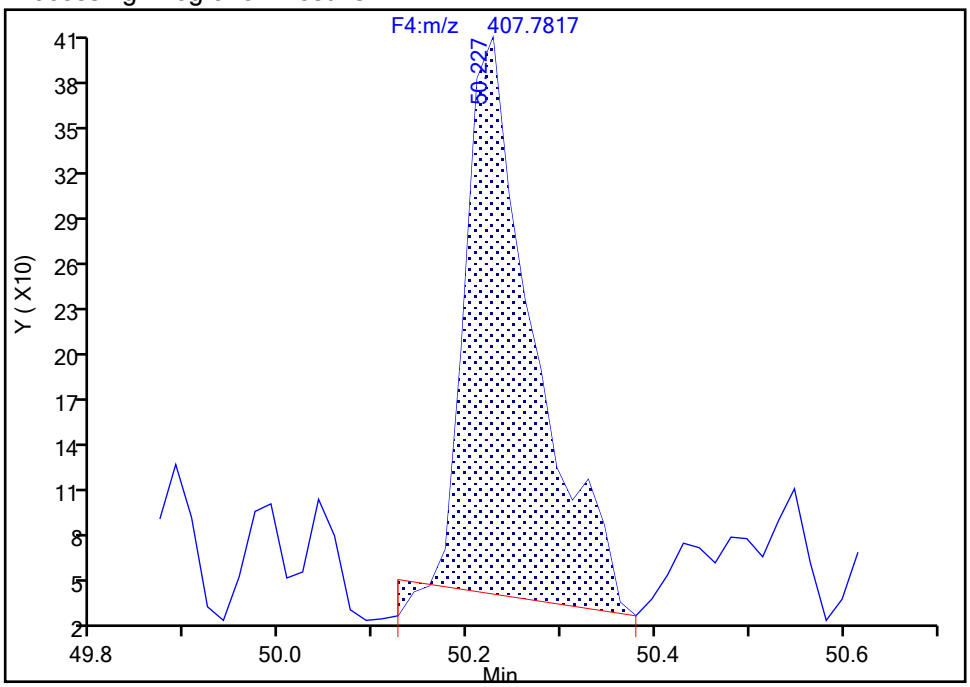
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

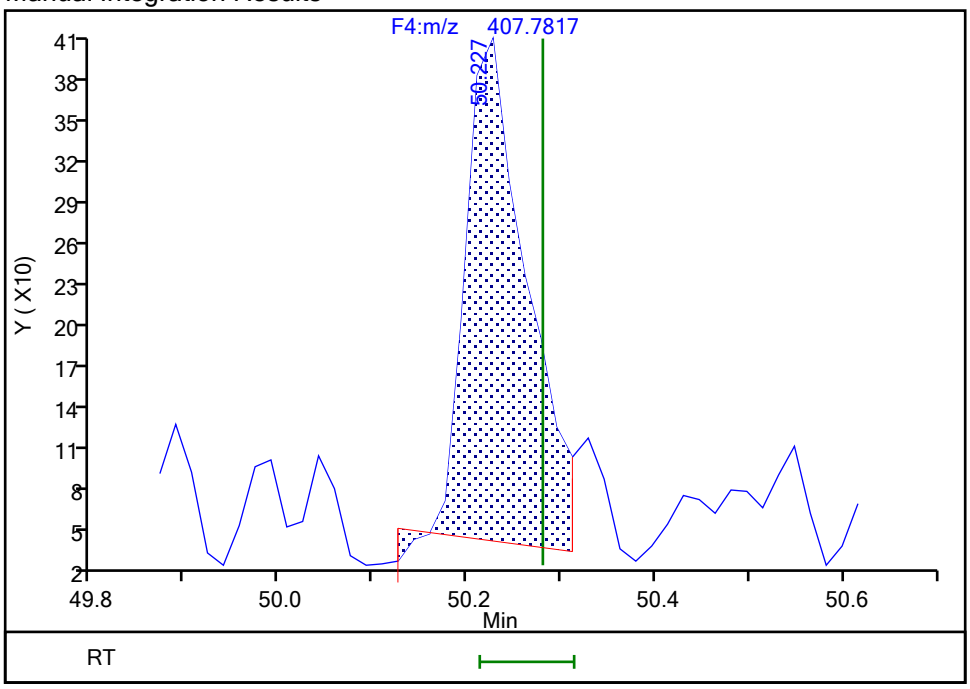
Processing Integration Results

RT: 50.23
Area: 1820
Amount: 0.096696
Amount Units: pg/ul



Manual Integration Results

RT: 50.23
Area: 1630
Amount: 0.081931
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:40:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

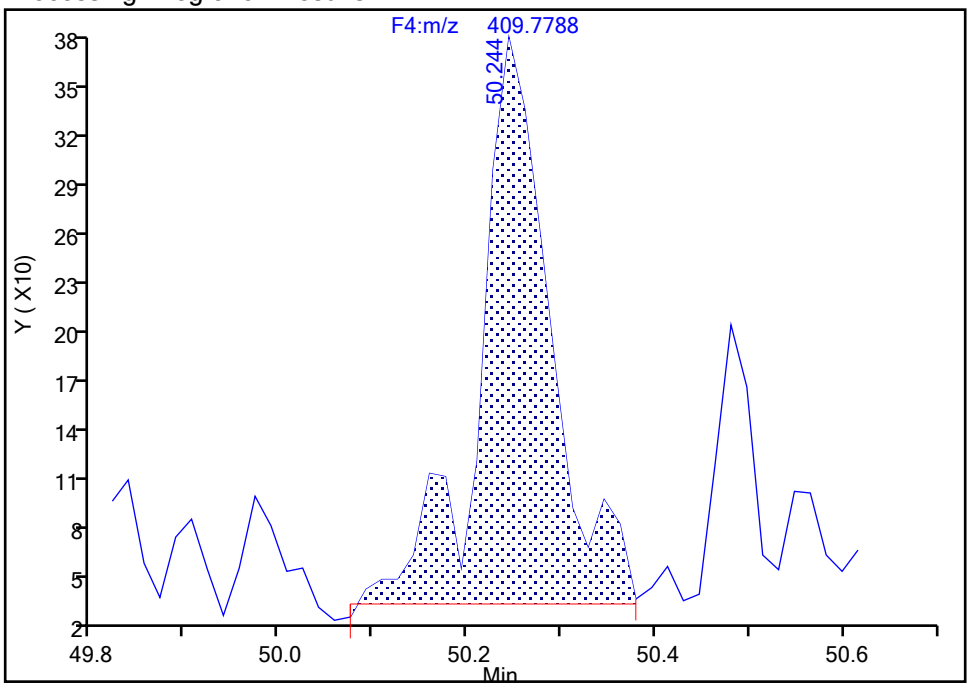
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

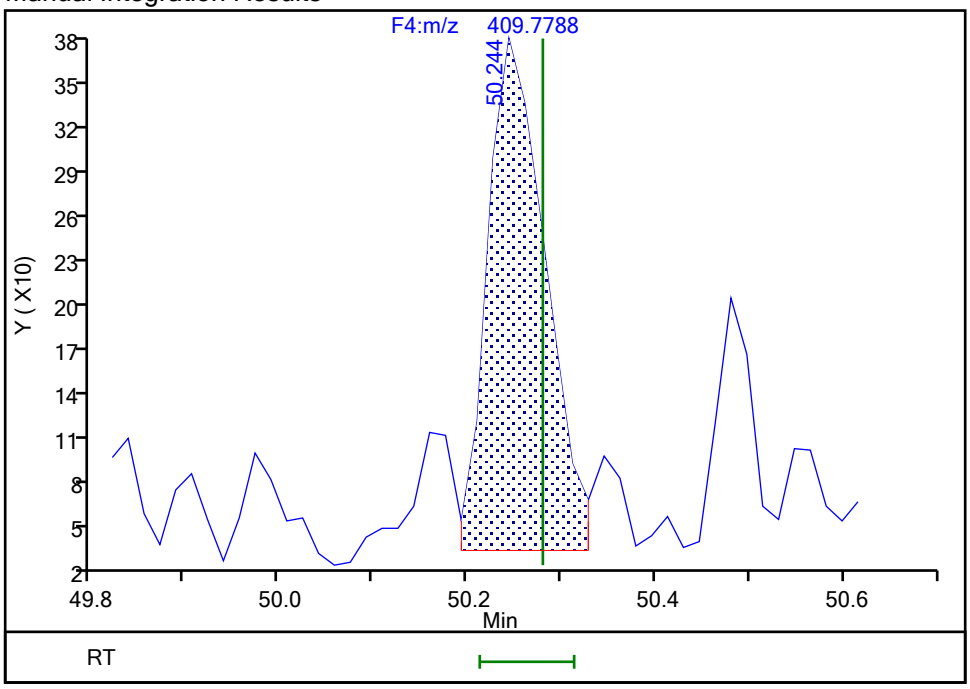
Processing Integration Results

RT: 50.24
Area: 1841
Amount: 0.096696
Amount Units: pg/ul



Manual Integration Results

RT: 50.24
Area: 1472
Amount: 0.081931
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:40:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

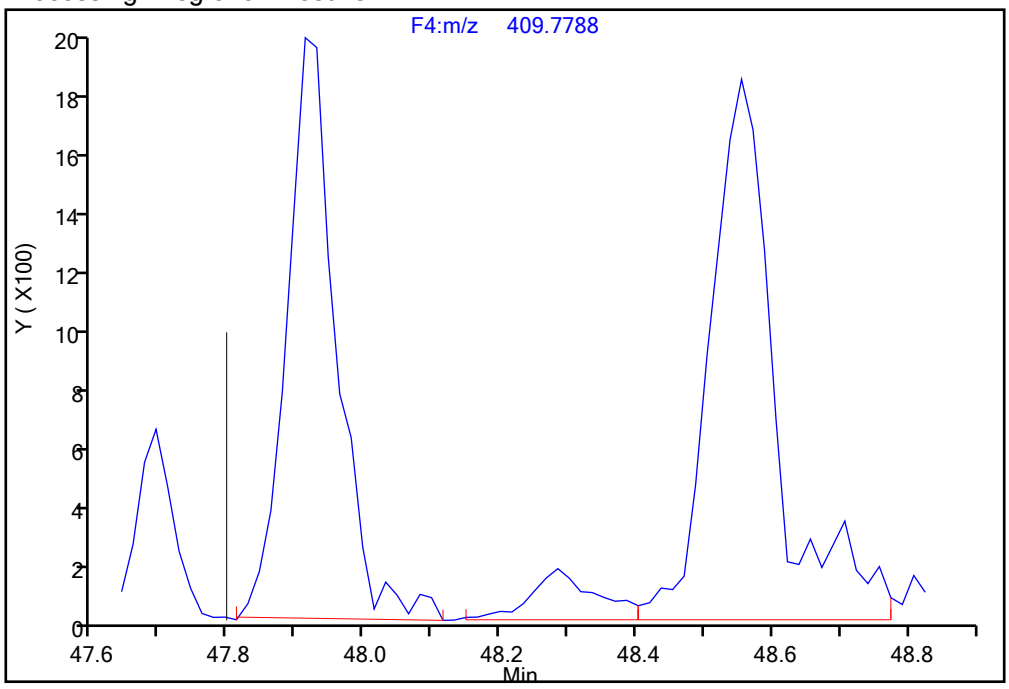
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.80- 50.84)

Signal: 2

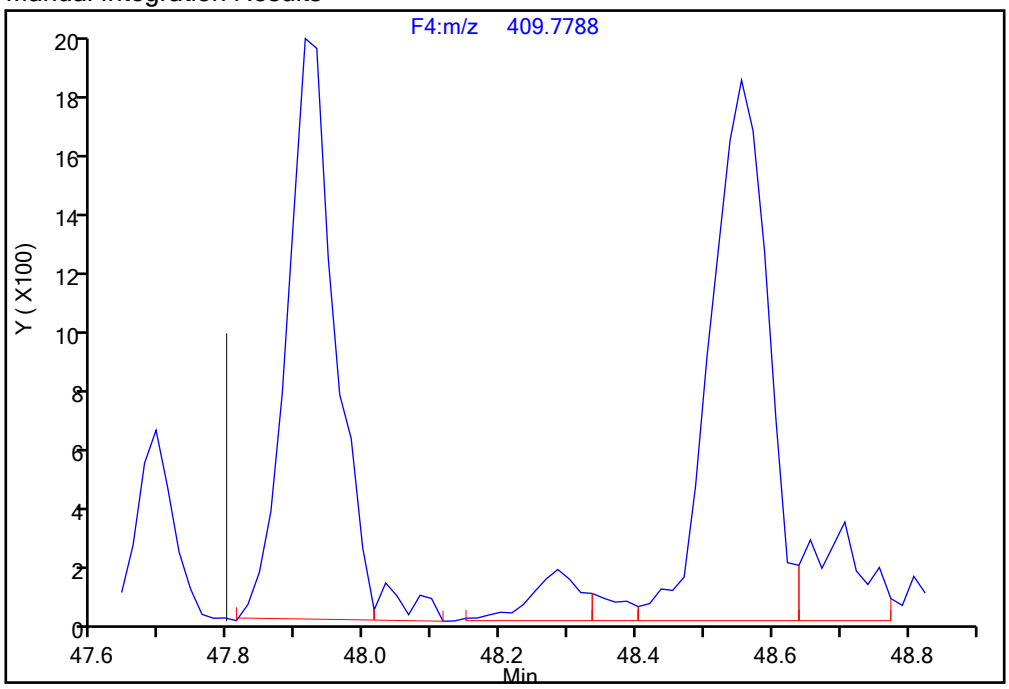
Processing Integration Results

RT = 48.284 Area = 1113



Manual Integration Results

RT = 48.284 Area = 838 M



Reviewer: davidsonm, 17-Dec-2019 12:40:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

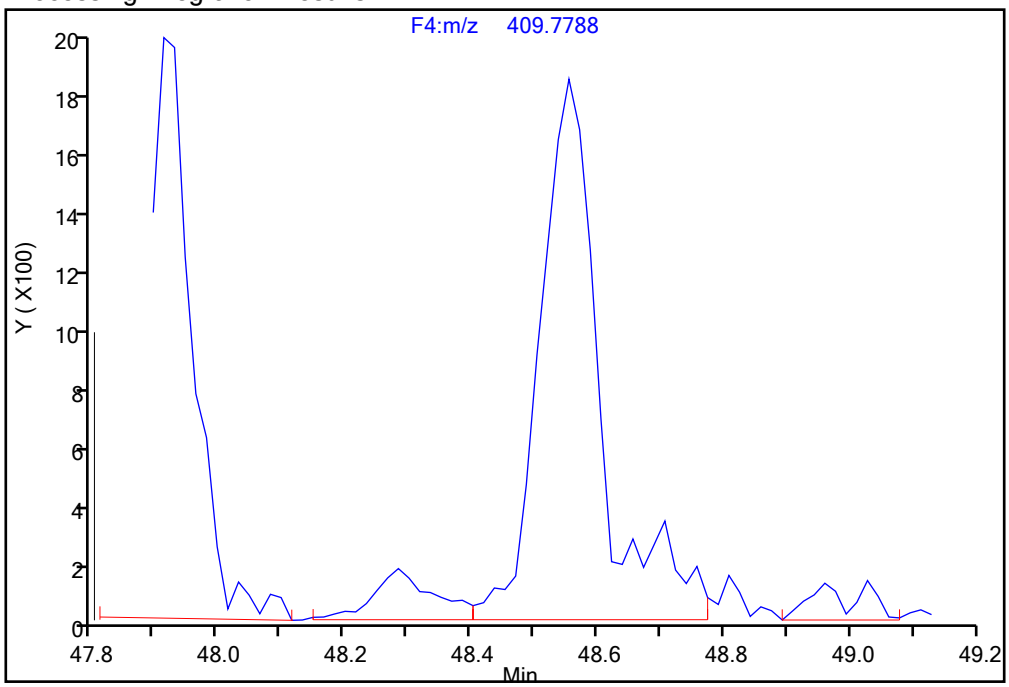
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.80- 50.84)

Signal: 2

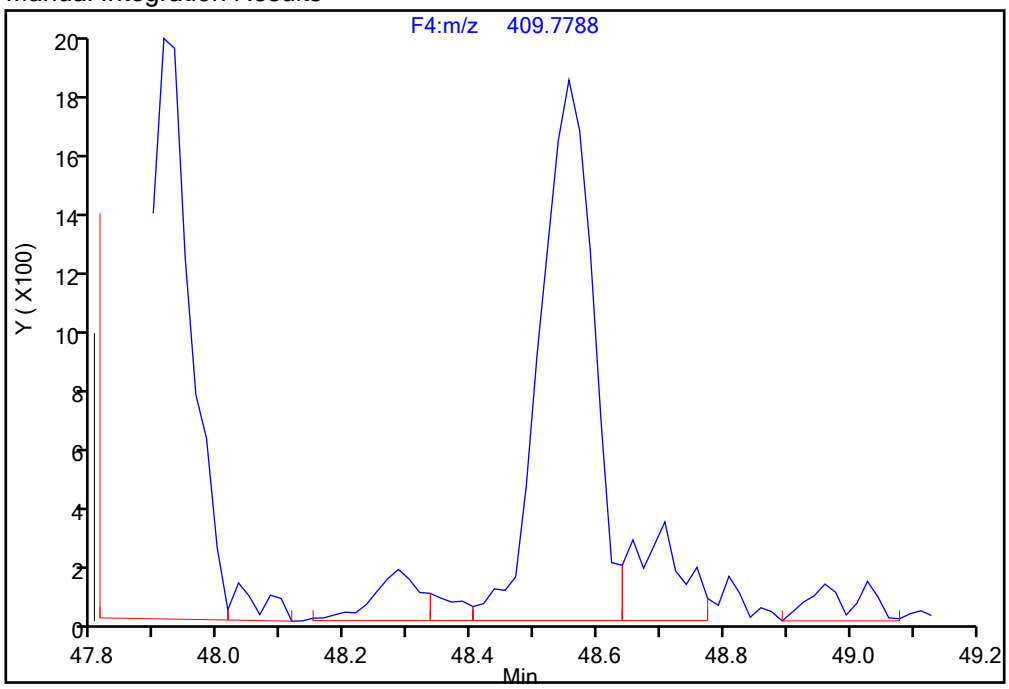
Processing Integration Results

RT = 48.555 Area = 12051



Manual Integration Results

RT = 48.555 Area = 10406 M



Reviewer: davidsonm, 17-Dec-2019 12:40:20

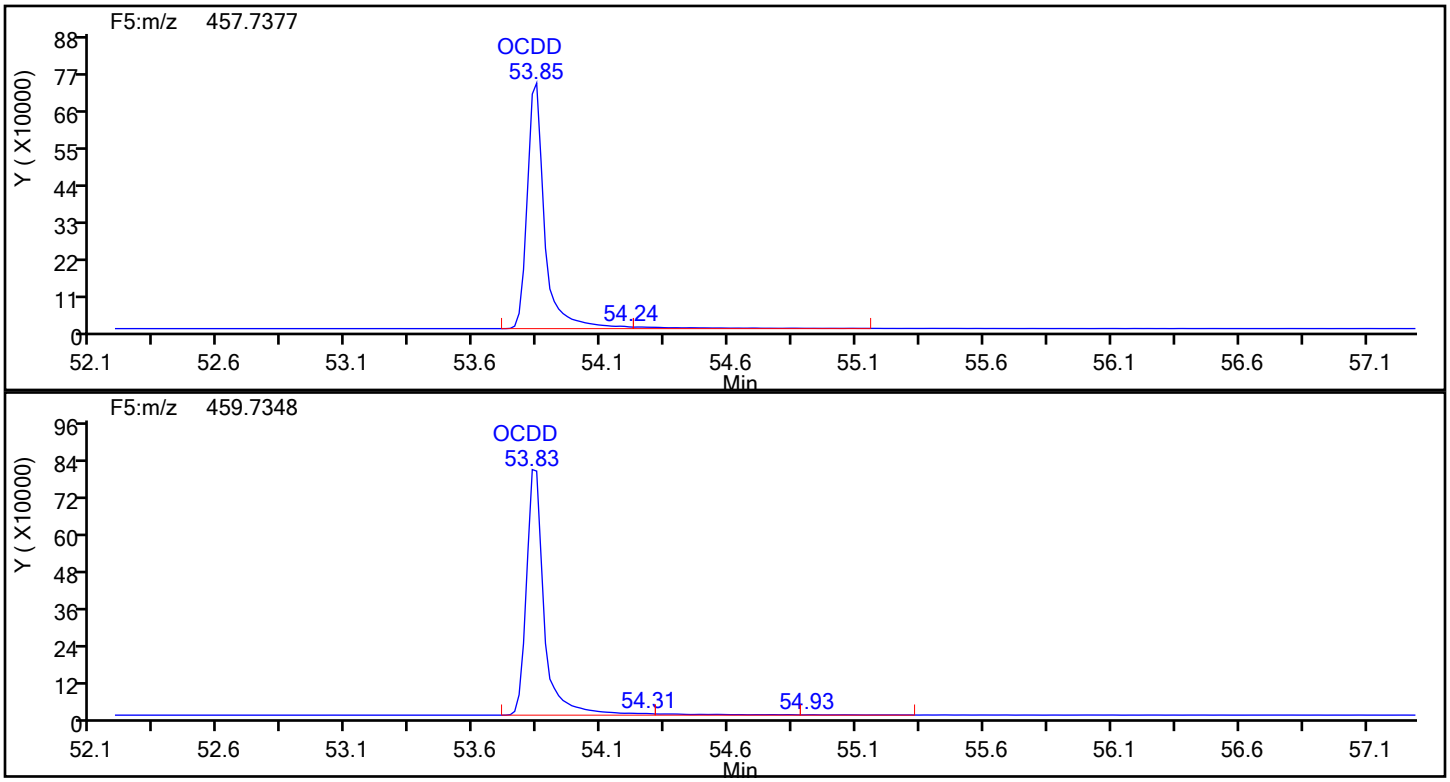
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

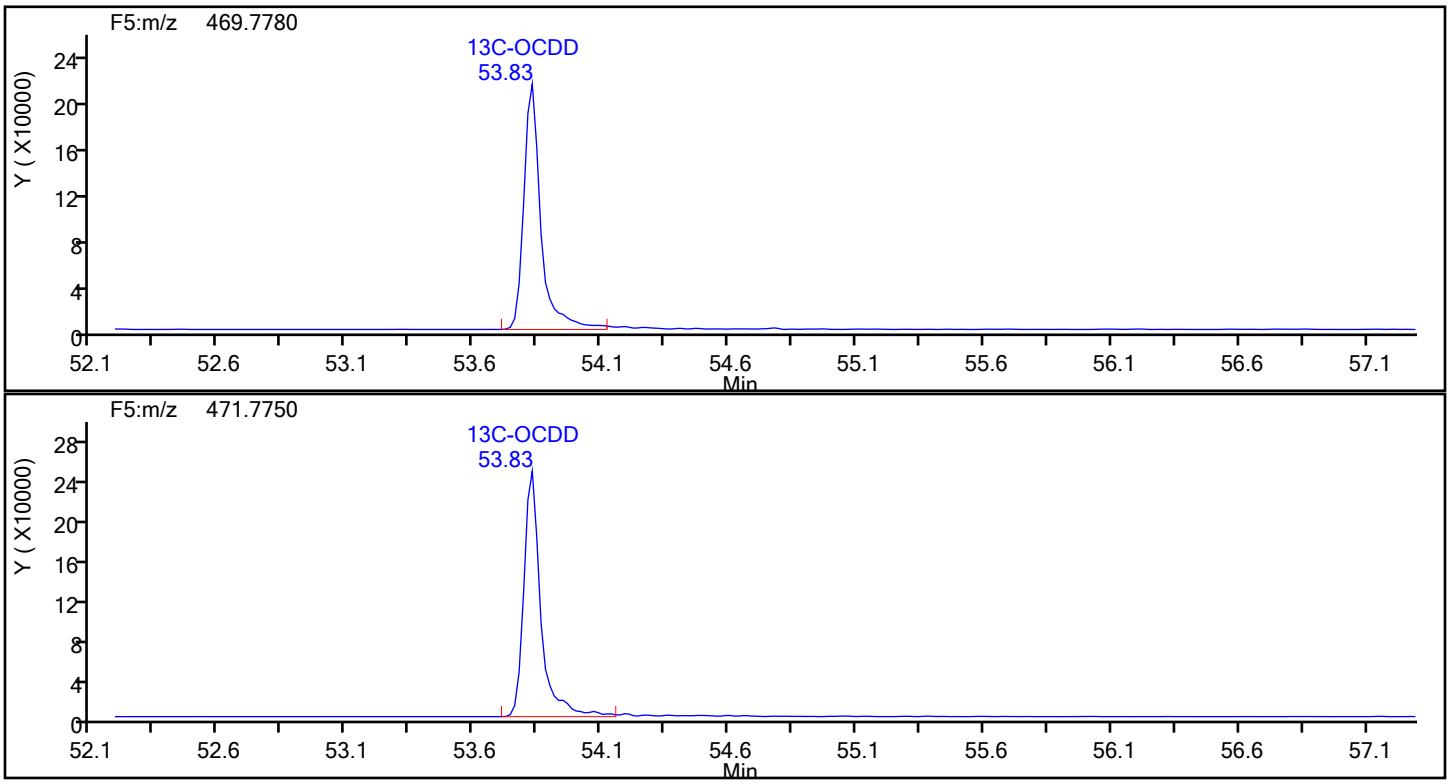
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

OCDD



OCDD Standards

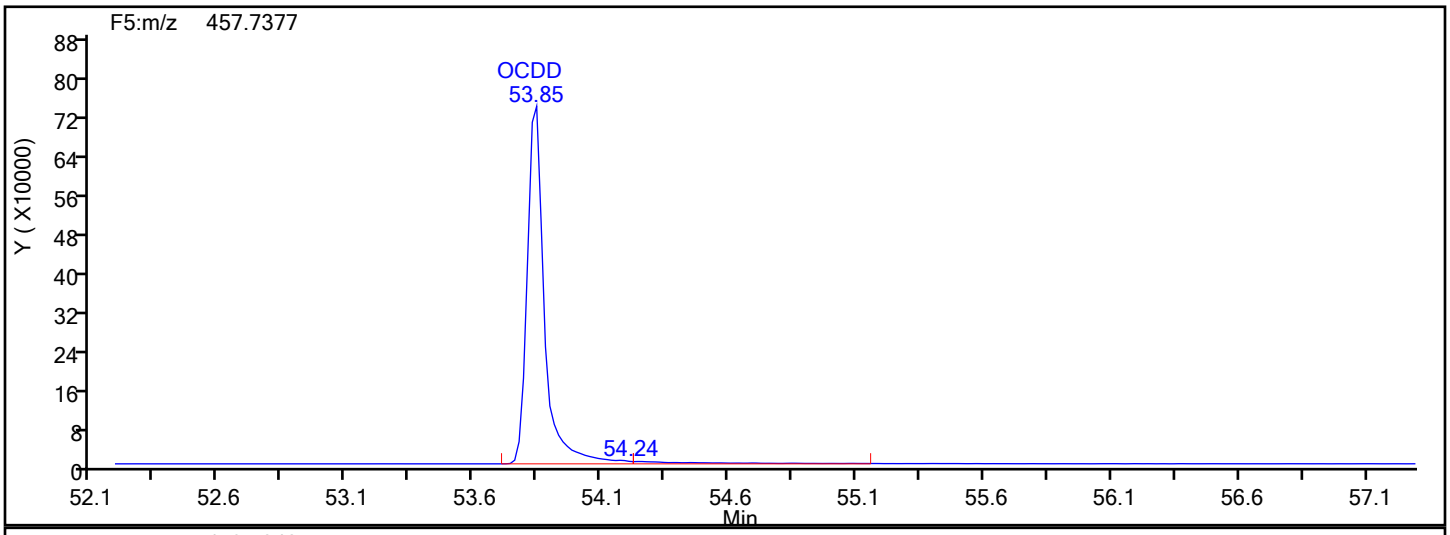


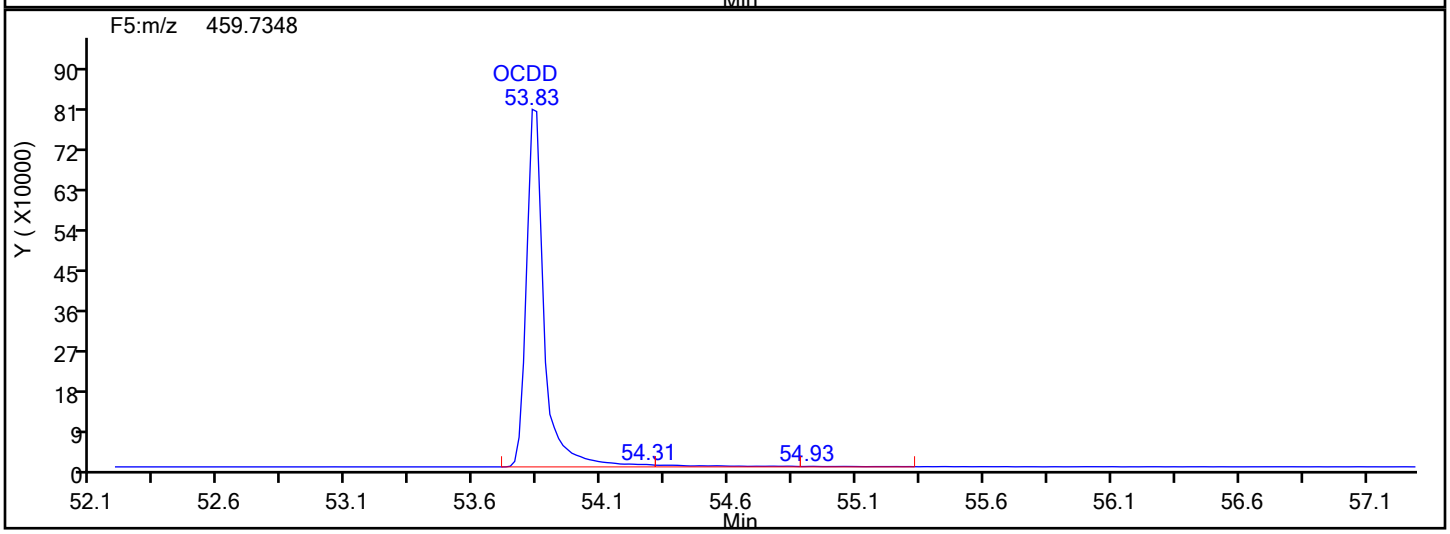
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

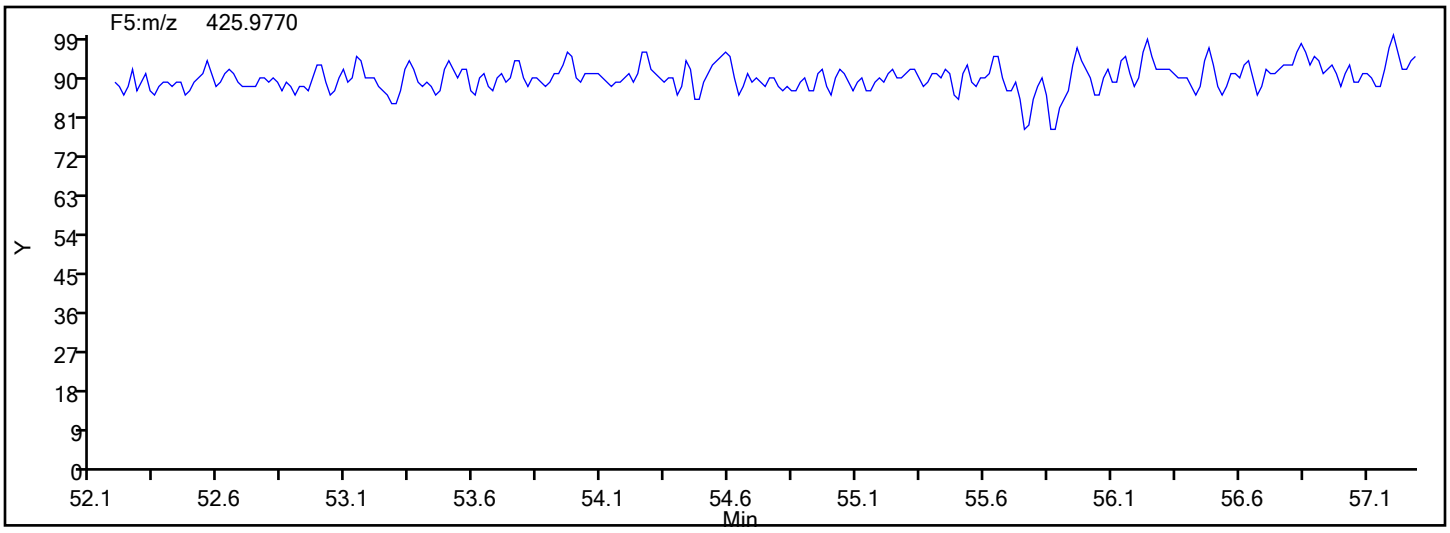
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d

Injection Date: 17-Dec-2019 10:07:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

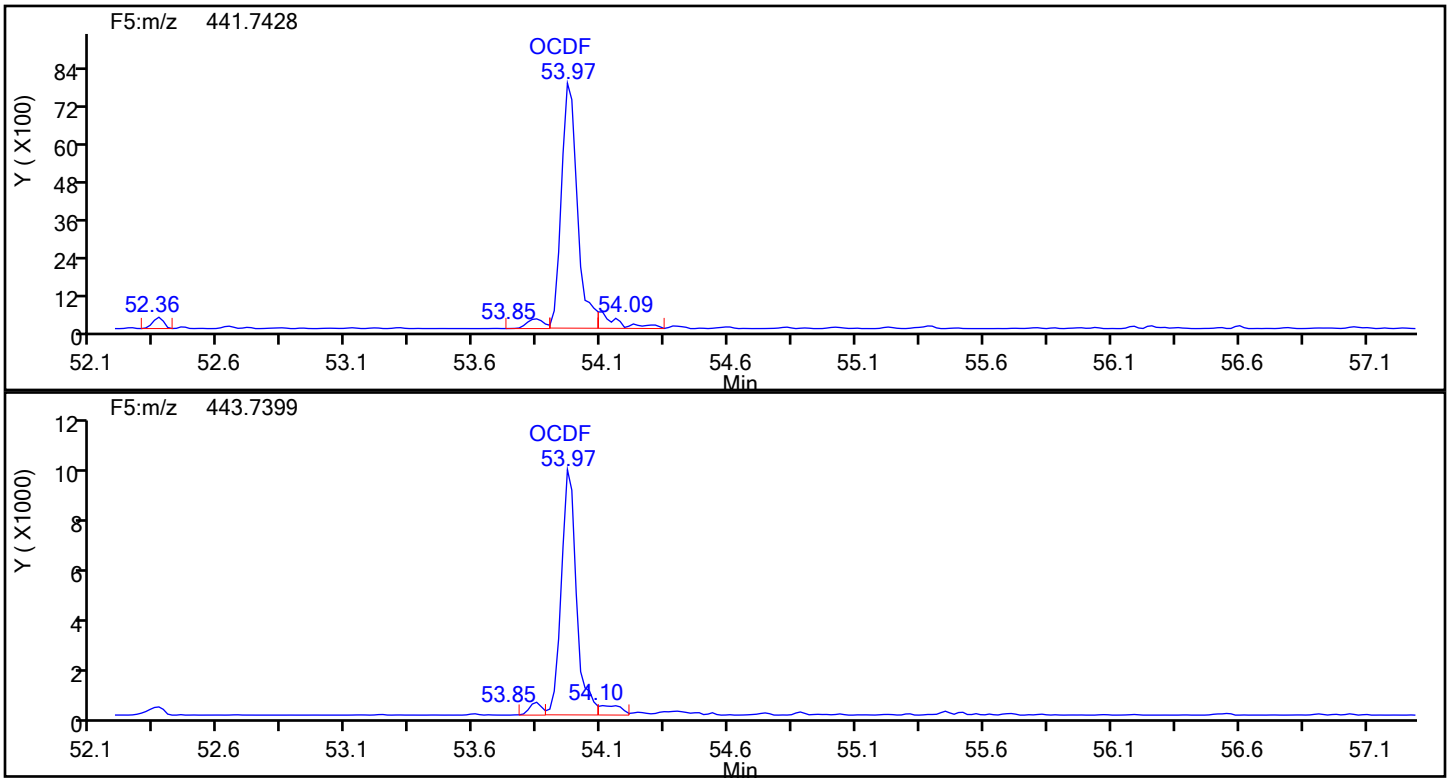
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA03(1-2)

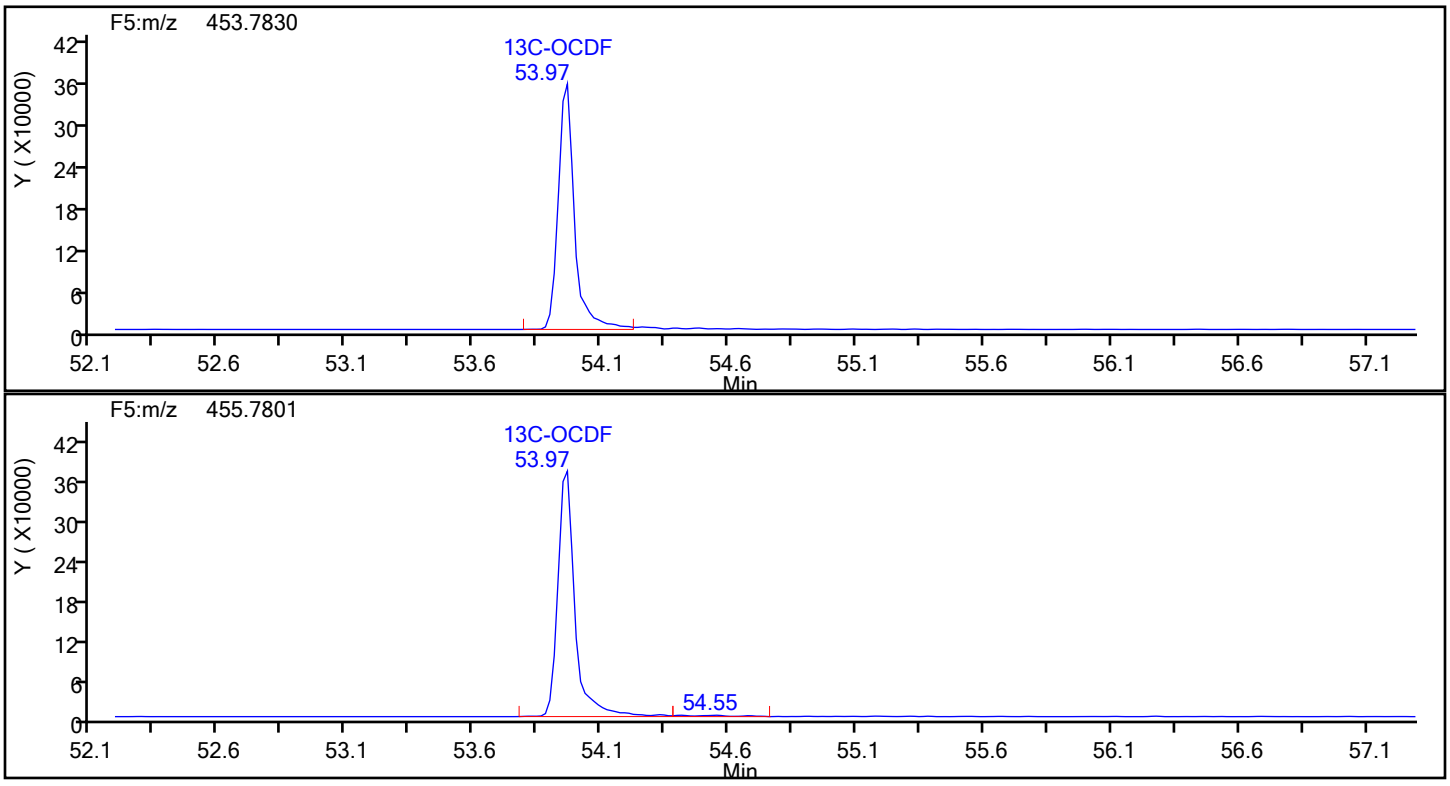
Worklist#: 36126 Sample Line#: 13

Column Type: Column Dia:

OCDF



OCDF Standards

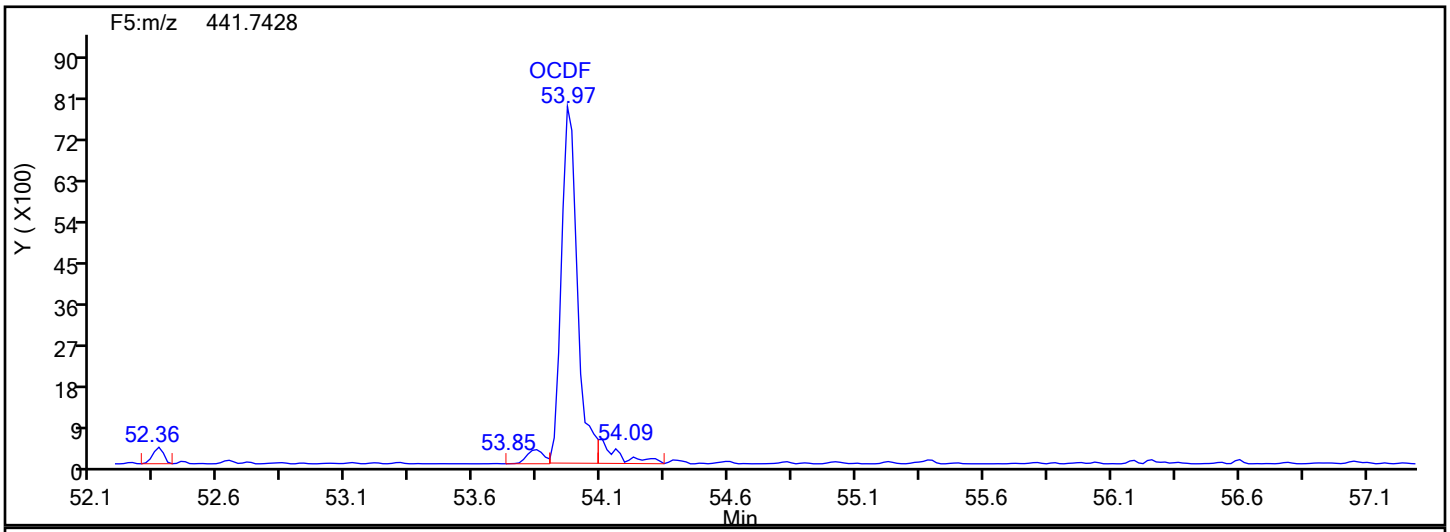


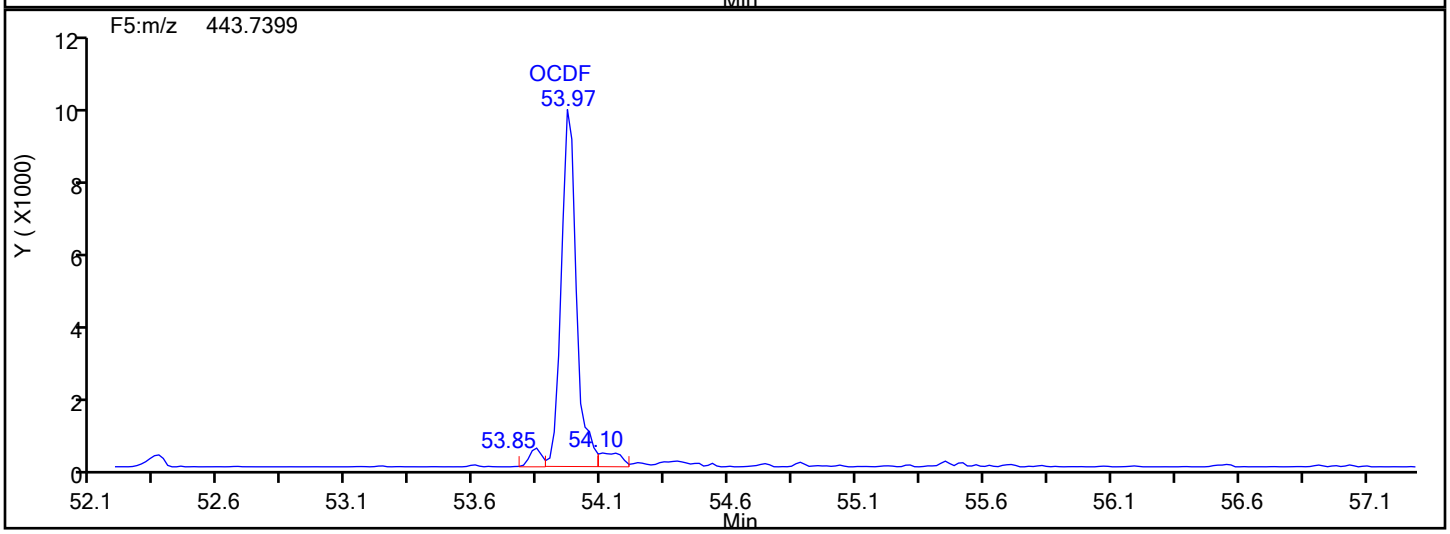
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

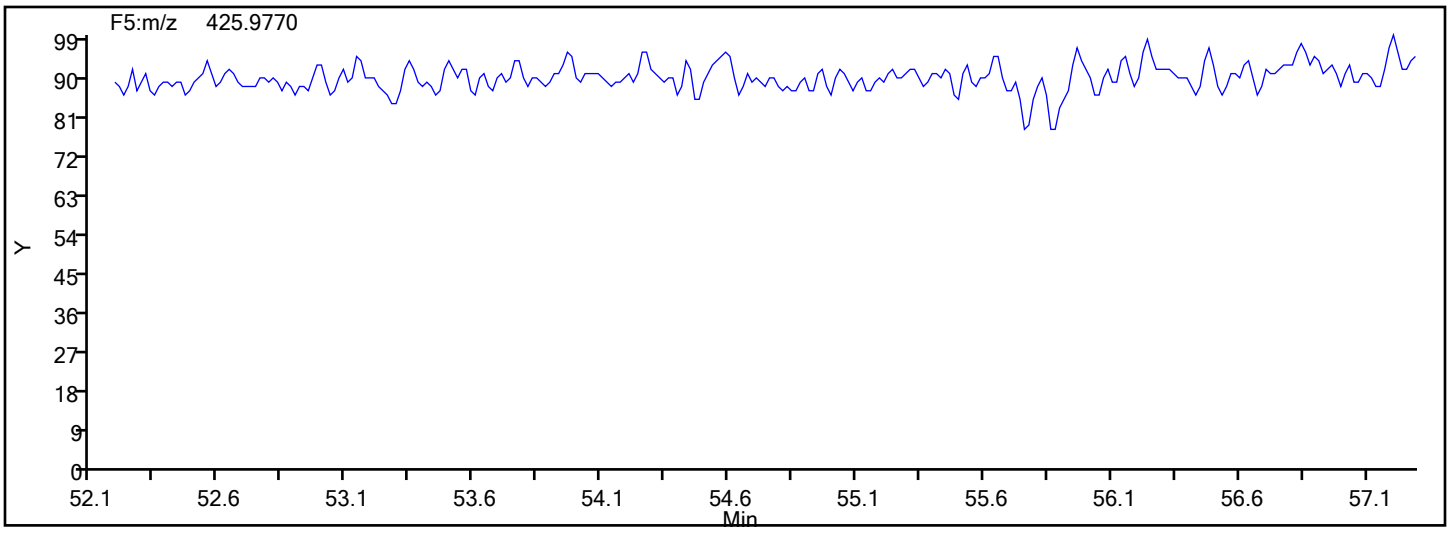
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

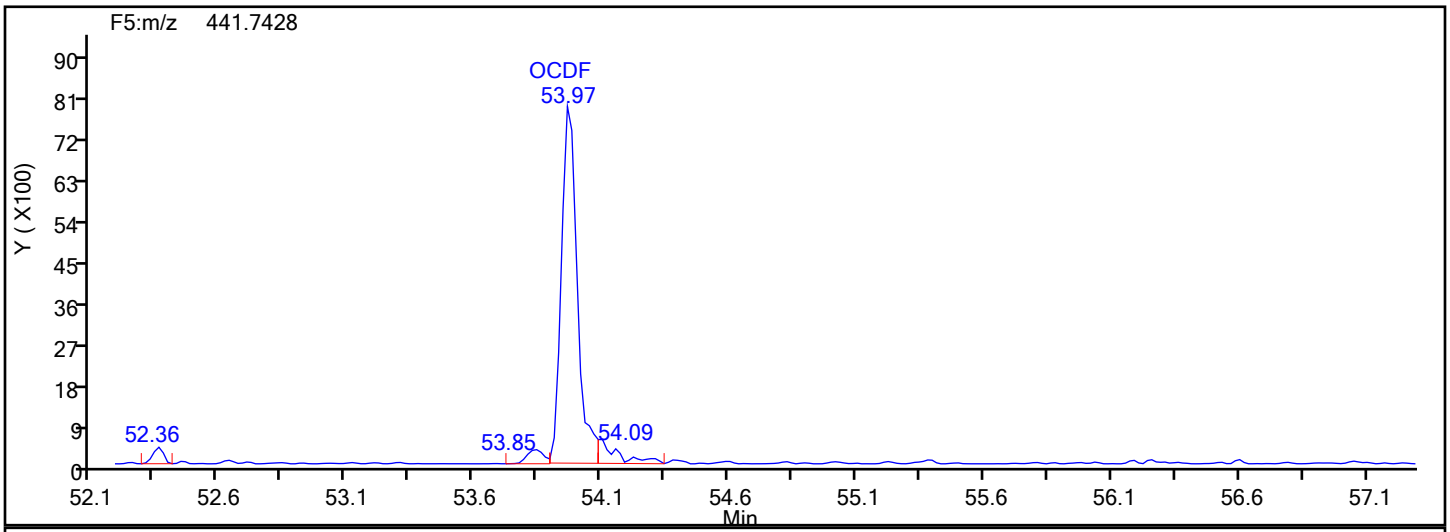


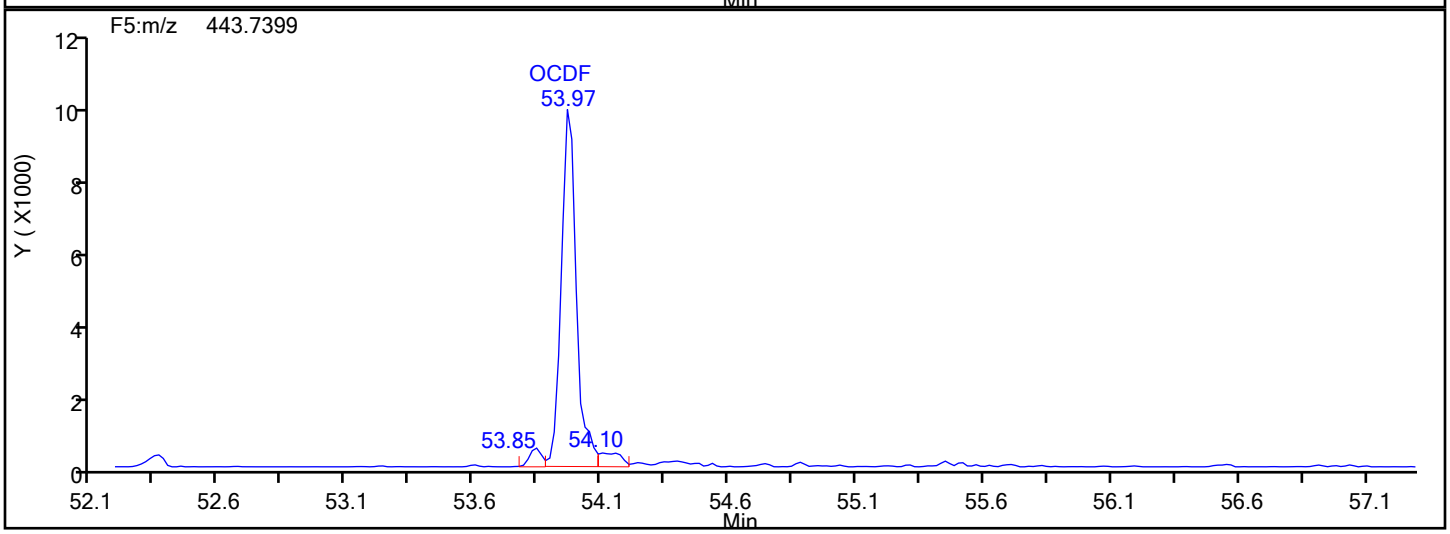
Report Date: 17-Dec-2019 12:40:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

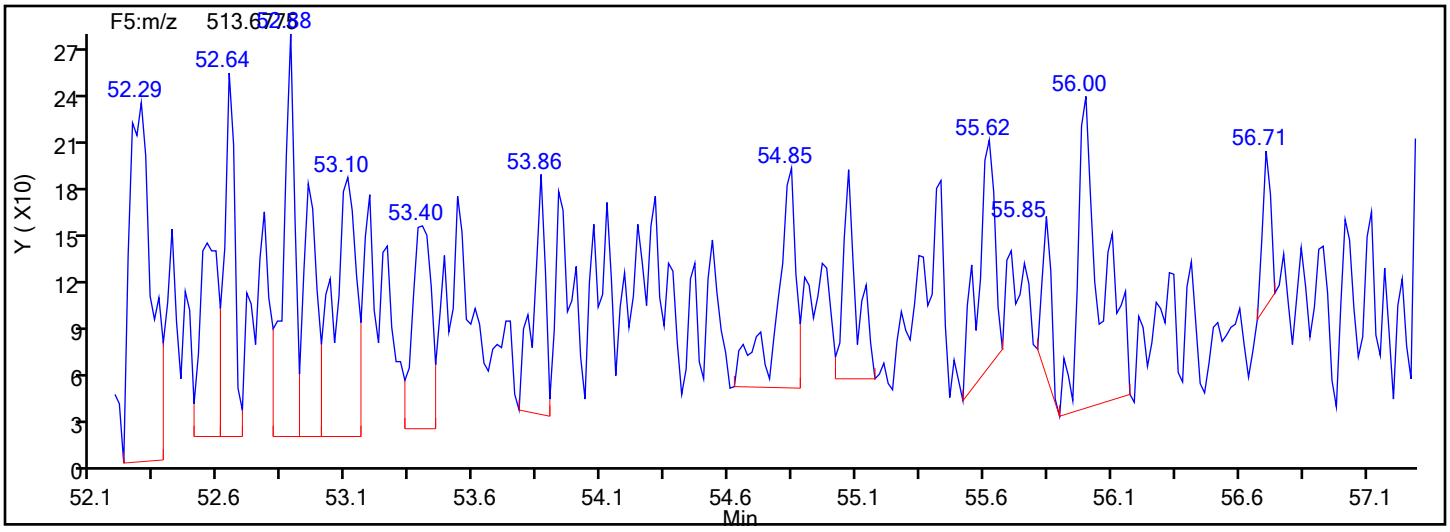
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d		
Injection Date:	17-Dec-2019 10:07:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36126	Sample Line#:	13
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

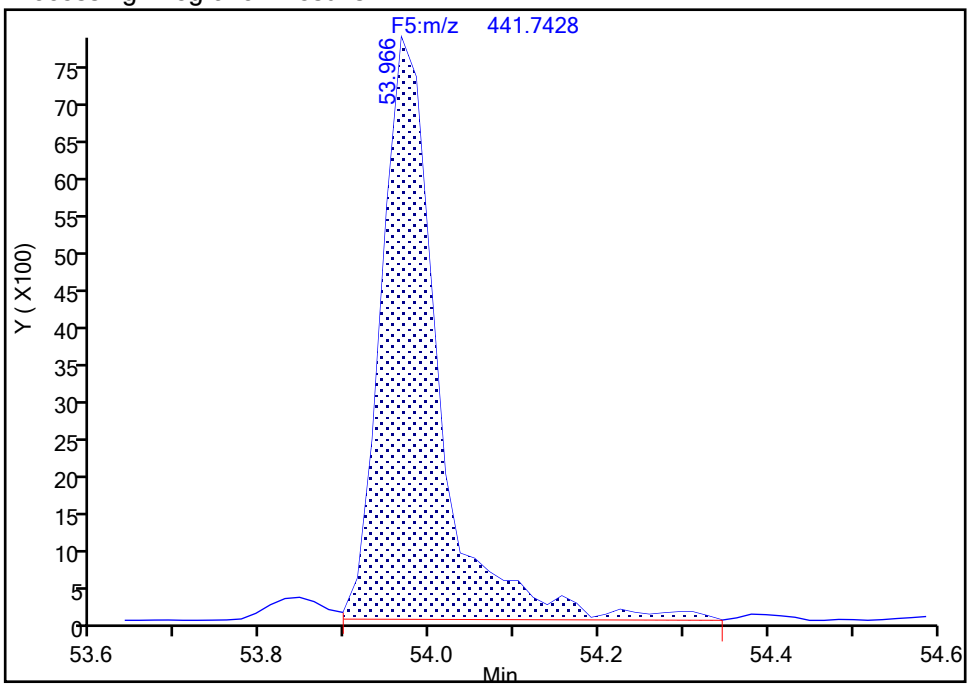
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

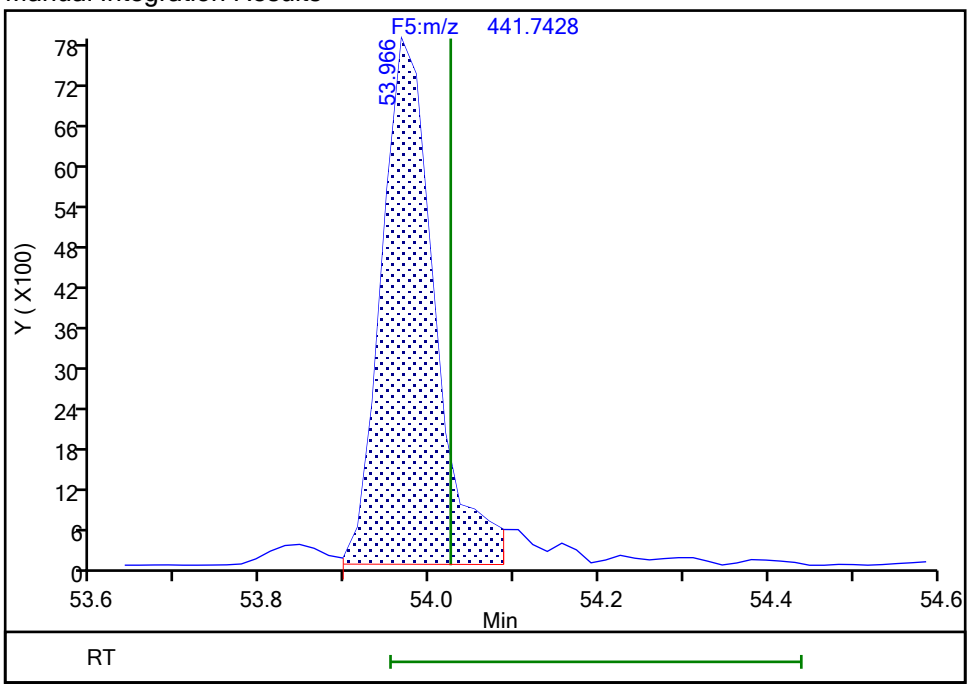
Processing Integration Results

RT: 53.97
Area: 36837
Amount: 2.108100
Amount Units: pg/ul



Manual Integration Results

RT: 53.97
Area: 34122
Amount: 1.976642
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:07:17

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

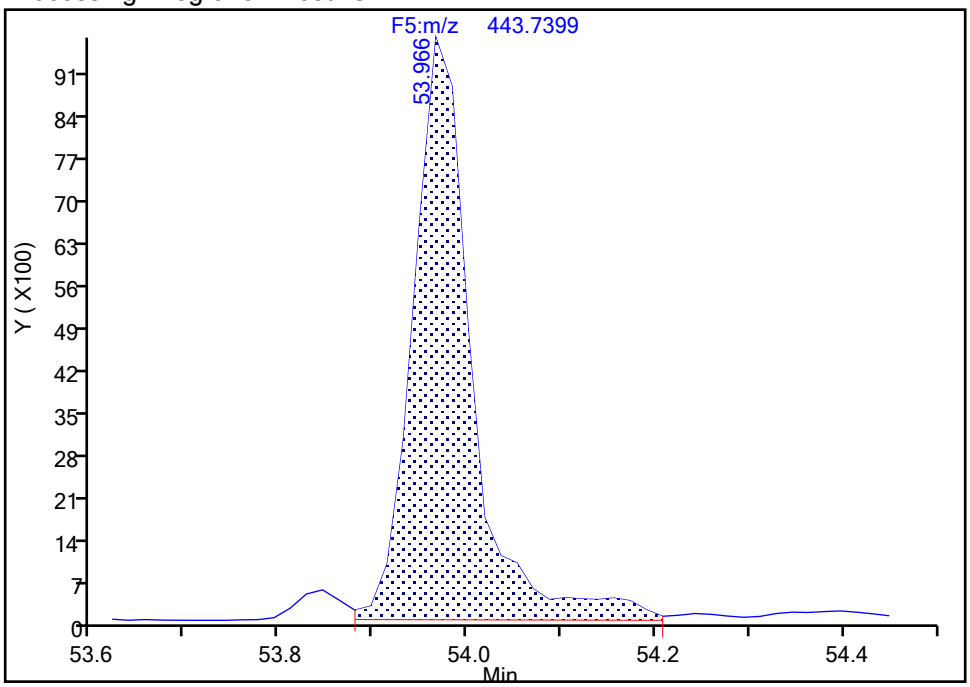
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-6-a.d				
Injection Date:	17-Dec-2019 10:07:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

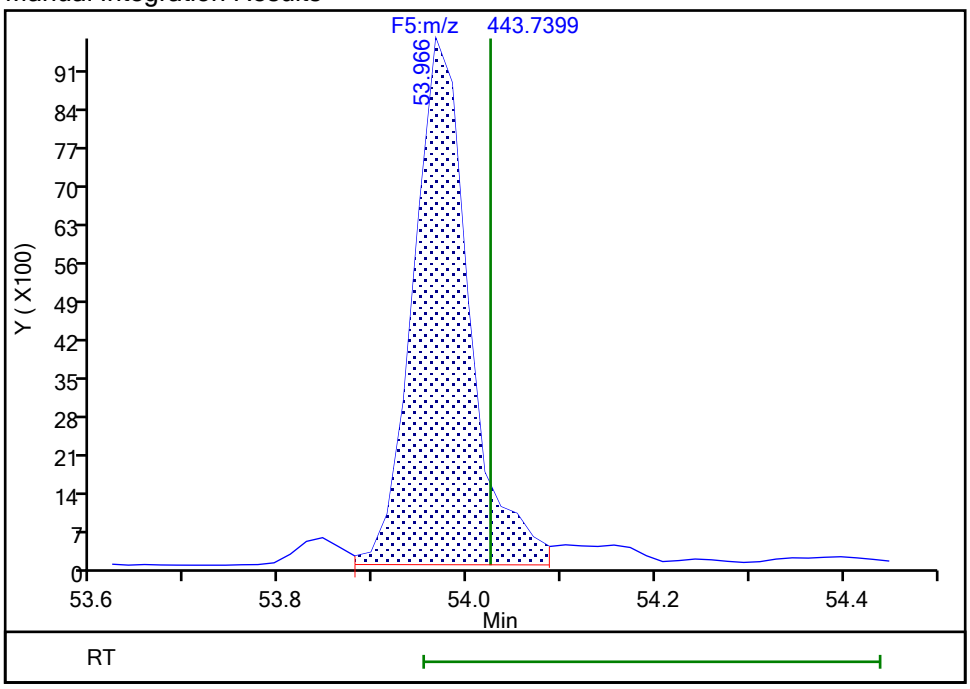
Processing Integration Results

RT: 53.97
Area: 41773
Amount: 2.108100
Amount Units: pg/ul



Manual Integration Results

RT: 53.97
Area: 39586
Amount: 1.976642
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:07:18

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(1-2) Lab Sample ID: 140-17578-6

Matrix: Sediment Lab File ID: 140-17578-a-6-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.95(g) Date Analyzed: 12/18/2019 03:58

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	12		1.4	0.54

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	61		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:58:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-007
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:04:44 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:04:44

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	47710	0.80	1.2213	1.336	1.336	0.2238	0.2238		
2,3,7,8-TCDF	22:14	205184	0.83	1.1100	4.226	4.226	0.1945	0.1945		M
D 13C-2,3,7,8-TCDD	19:42	1462404	0.79	1.0031	32.8	32.8	0.5456	0.5456	65.52	
D 13C-2,3,7,8-TCDF	22:13	2186757	0.83	1.6193	30.3	30.3	0.1770	0.1770	60.69	a
$ 37Cl4-2,3,7,8-TCDD	19:43	351369		1.1834	6.672	6.672	0.1167	0.1167	66.72	
* 13C-1,2,3,4-TCDD	20:08	4450200	0.78	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d
Lims ID: 140-17578-A-6-A
Client ID: 11187072-120619-SS-SJSSA03(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:58:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-007
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:04:44 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:04:44

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:42	0	1.001	21201	2830	86	215	33		
321.8936	19:44	19:42	1	1.002	26509	3959	409	1022	10	0.80(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	22:14	22:14	-1	1.001	93038	12556	197	492	64		M
305.8987	22:14	22:14	-1	1.001	112146	15030	305	762	49	0.83(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:42	19:41	0	0.978	645285	98694	817	2042	121		
333.9338	19:42	19:41	0	0.978	817119	127565	665	1662	192	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	22:13	22:13	0	1.104	990792	131917	318	795	415		a
317.9389	22:12	22:13	-1	1.103	1195965	158793	458	1145	347	0.83(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.979	351369	55399	374	935	148		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:09	-1		1953777	295047	817	2042	361		
333.9338	20:09	20:09	0		2496423	381895	665	1662	574	0.78(0.65-0.89)	

QC Flag Legend

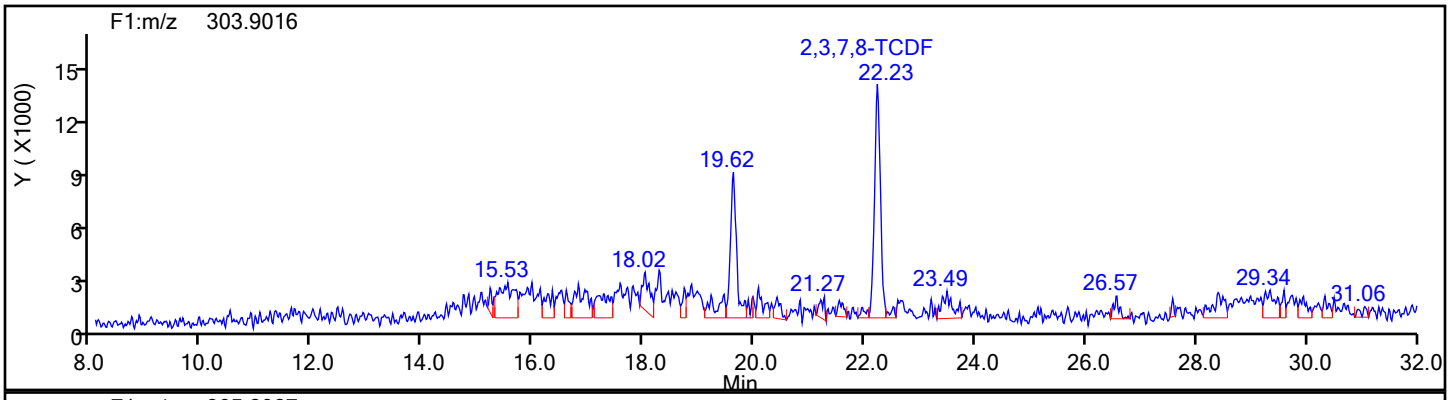
Review Flags
M - Manually Integrated
a - User Assigned ID

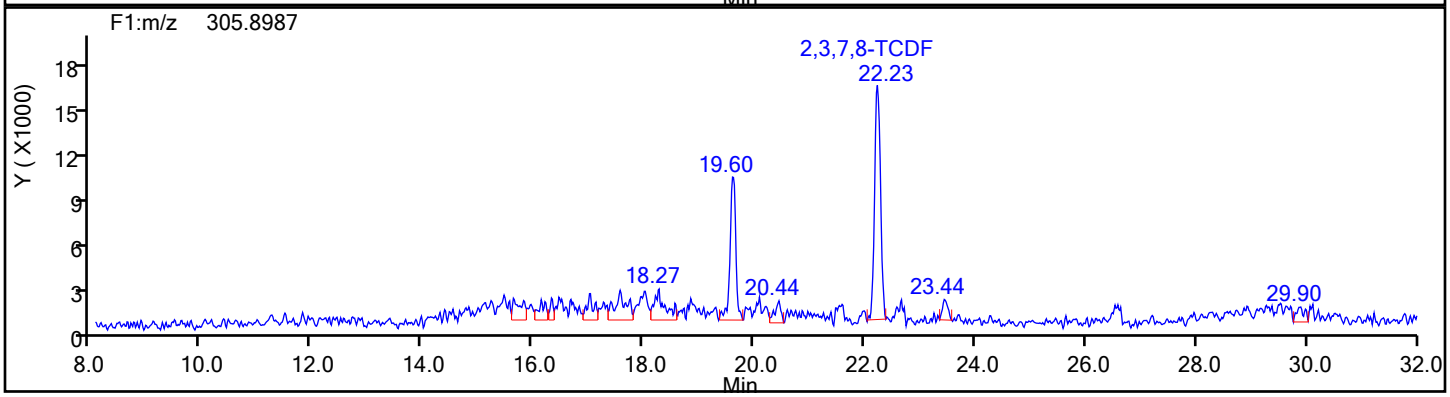
Report Date: 18-Dec-2019 09:04:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

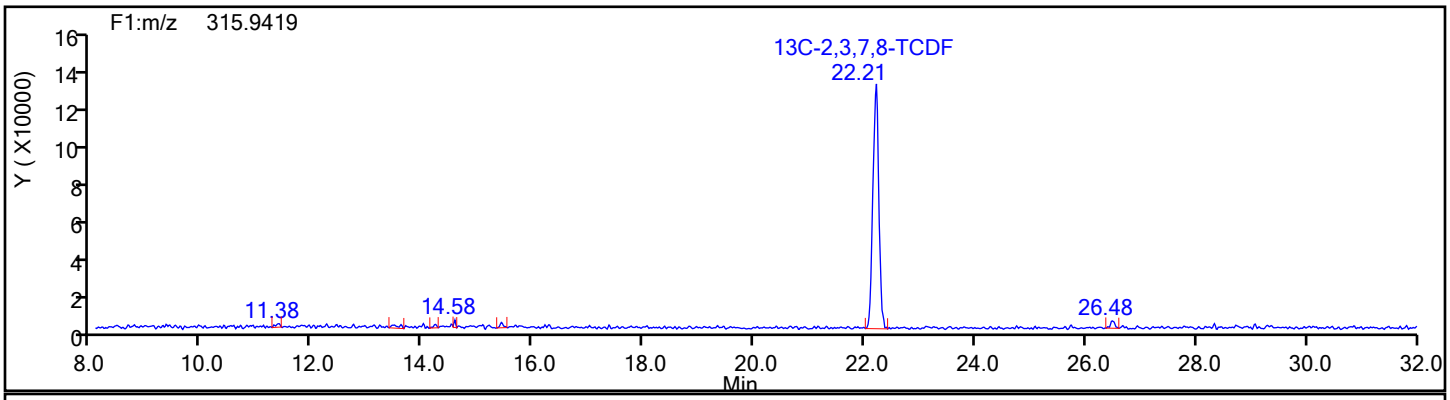
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d		
Injection Date:	18-Dec-2019 03:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36167	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

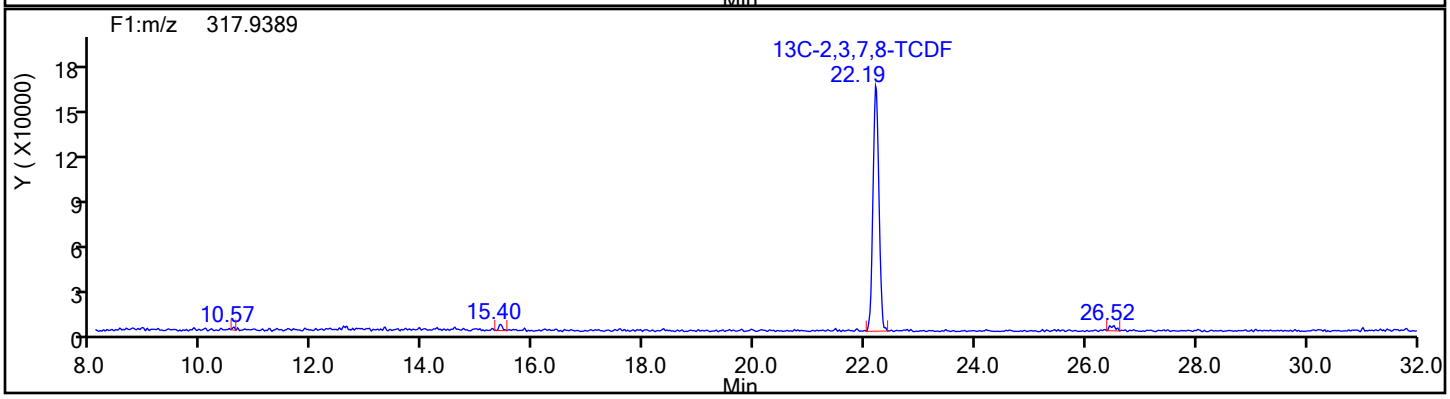
TCDF





TCDF Standards



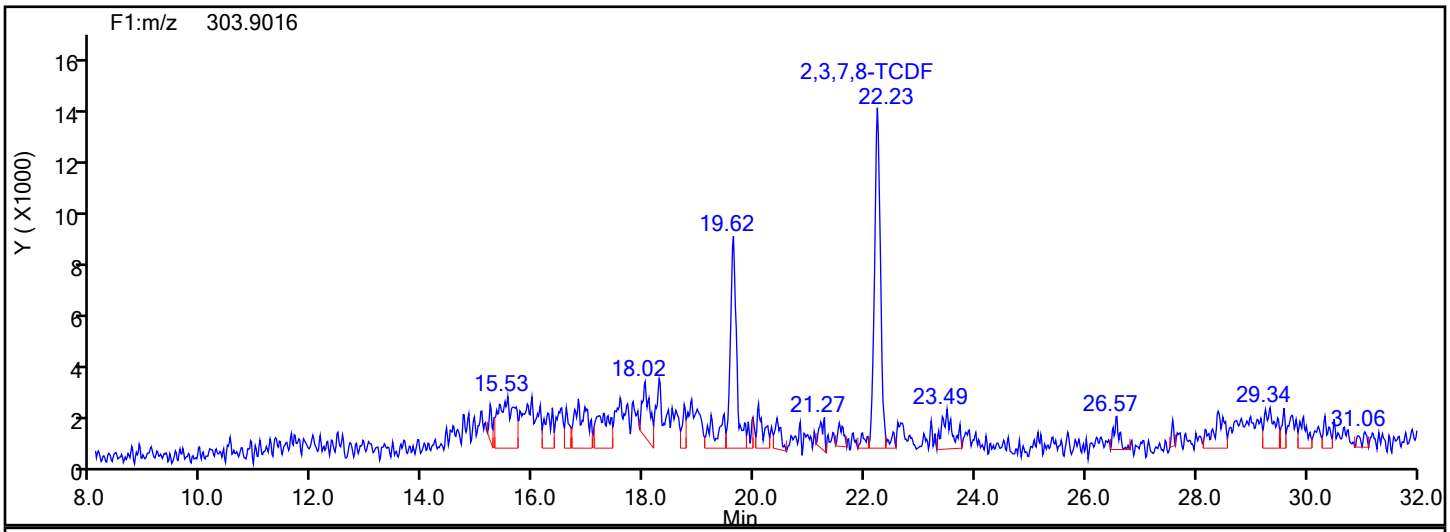


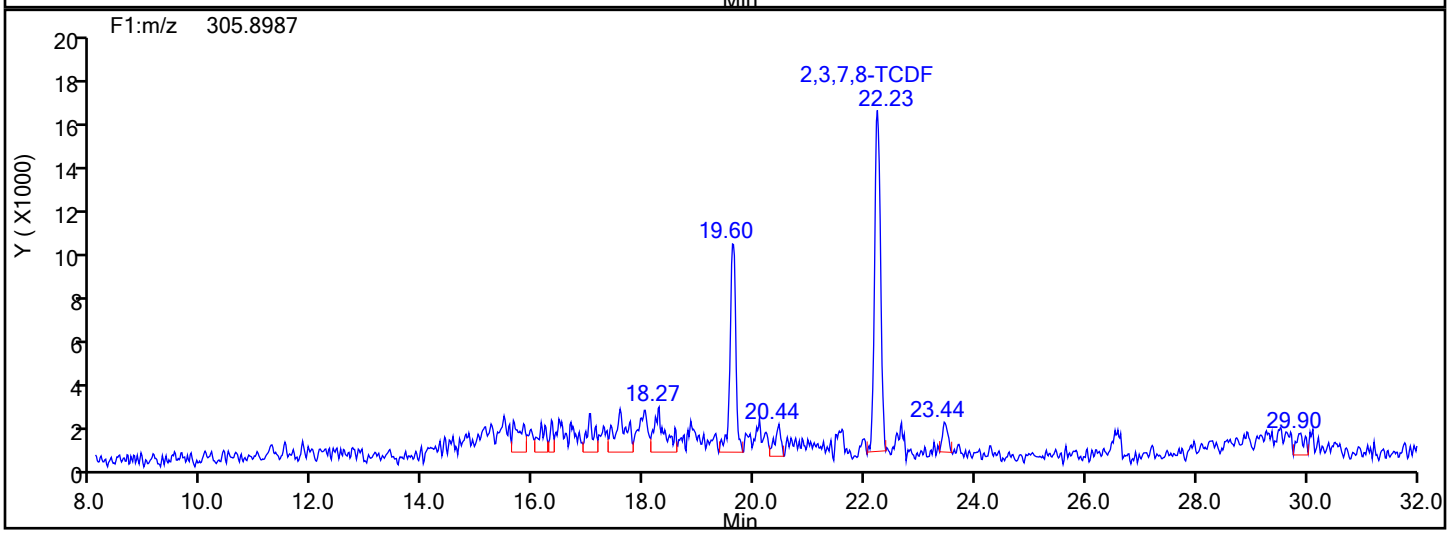
Report Date: 18-Dec-2019 09:04:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

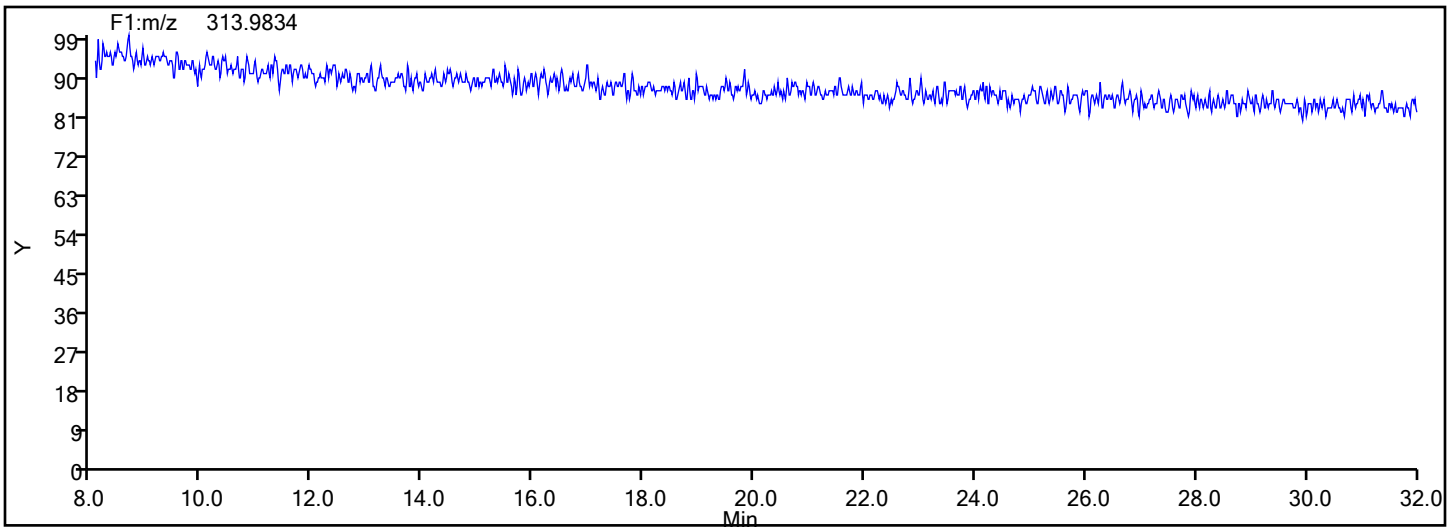
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d		
Injection Date:	18-Dec-2019 03:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36167	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

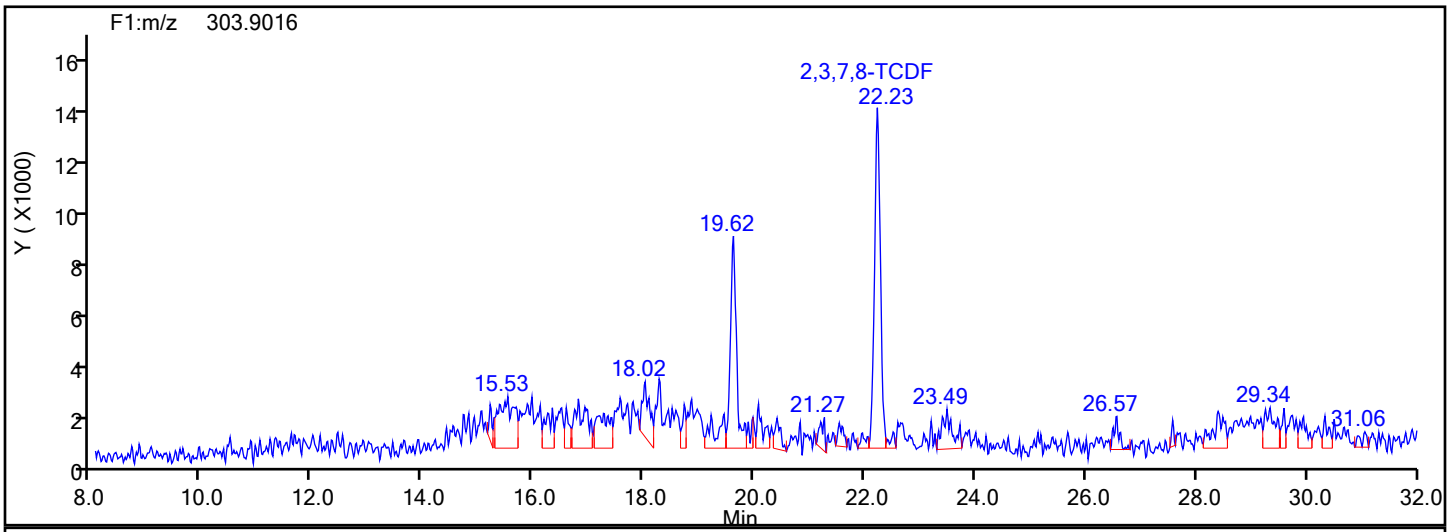


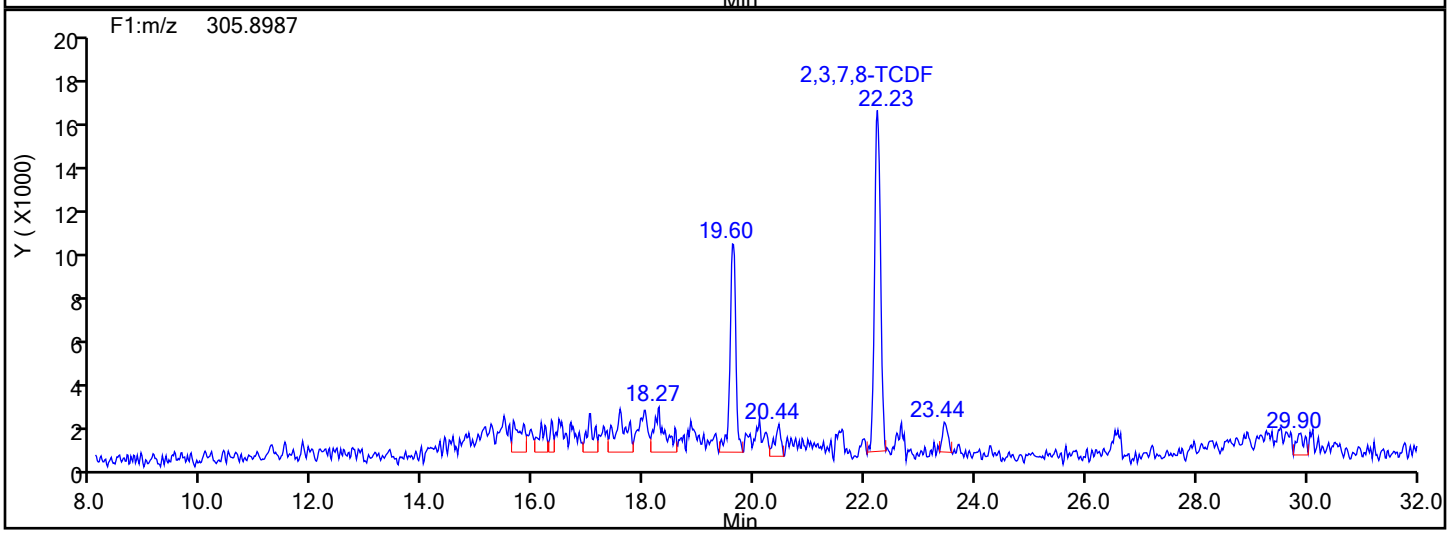
Report Date: 18-Dec-2019 09:04:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

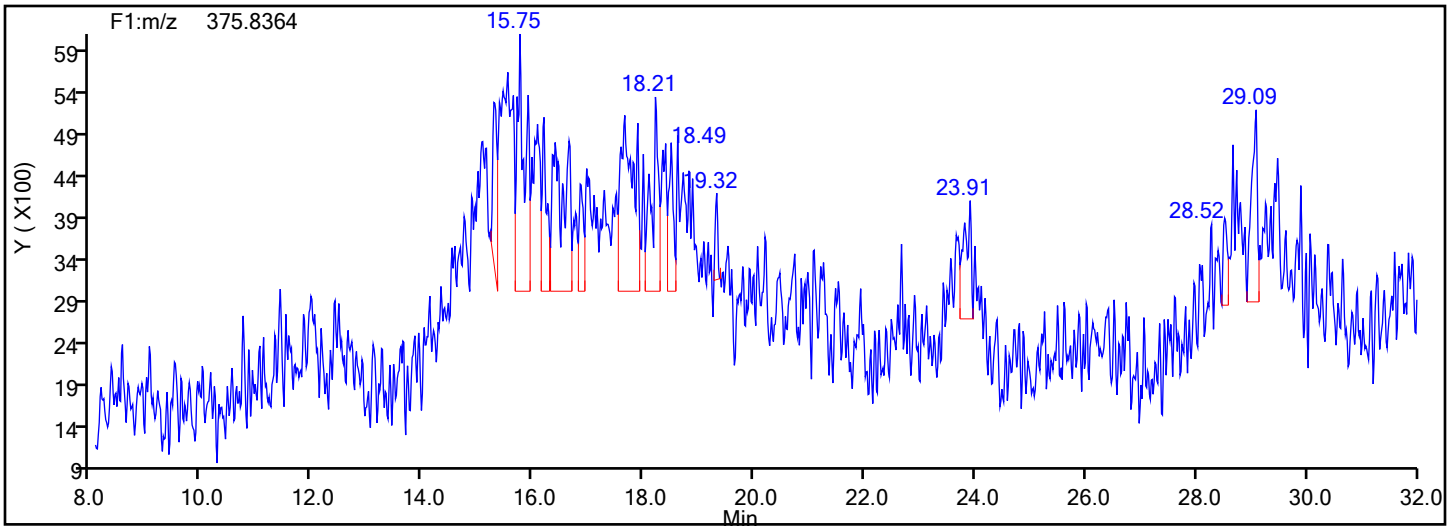
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d		
Injection Date:	18-Dec-2019 03:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(1-2)		
Worklist#:	36167	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

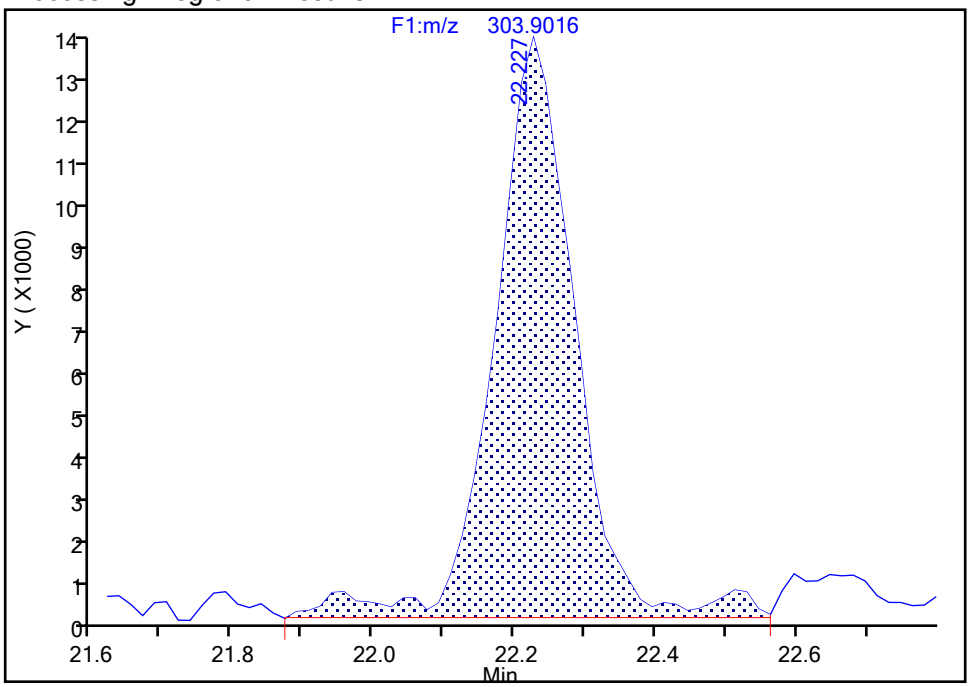
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d				
Injection Date:	18-Dec-2019 03:58:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

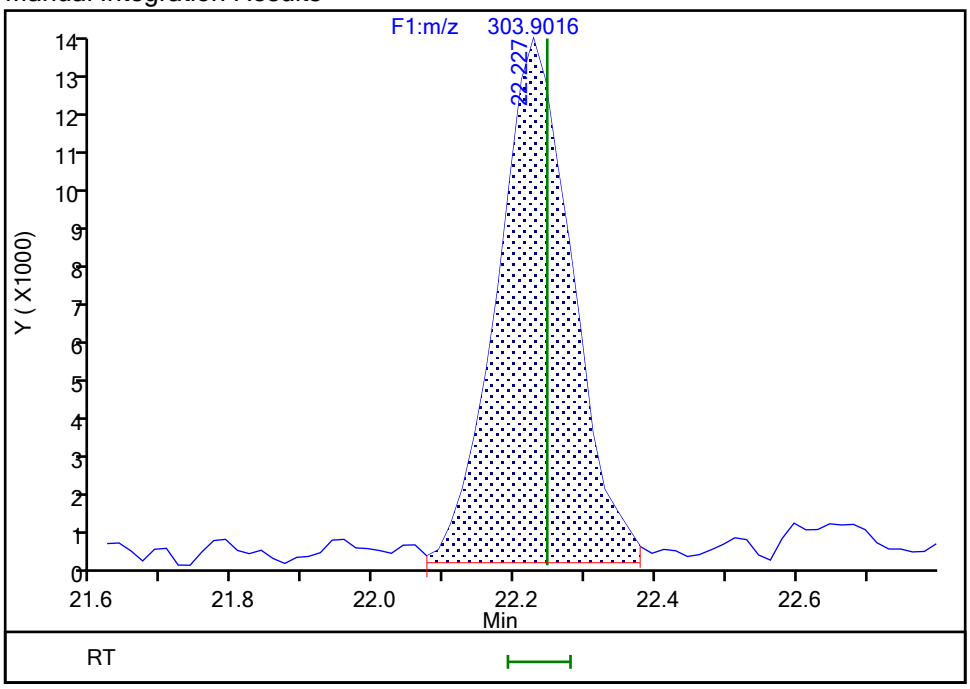
Processing Integration Results

RT: 22.23
Area: 100347
Amount: 4.377021
Amount Units: pg/ul



Manual Integration Results

RT: 22.23
Area: 93038
Amount: 4.226467
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:04:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

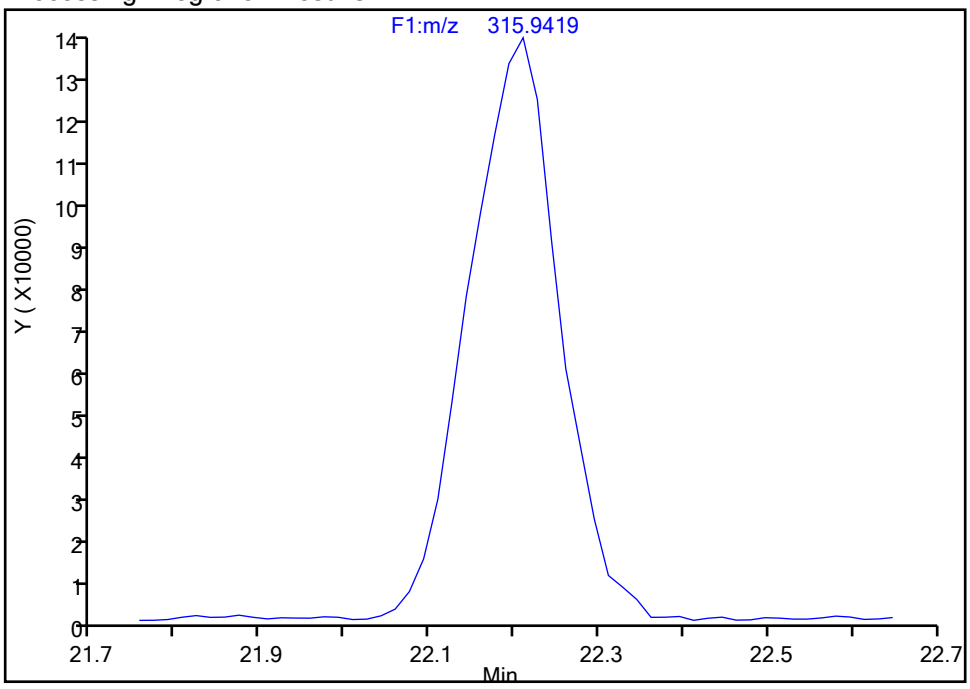
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-6-a.d				
Injection Date:	18-Dec-2019 03:58:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-6-A	Lab Sample ID:	140-17578-6		
Client ID:	11187072-120619-SS-SJSSA03(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

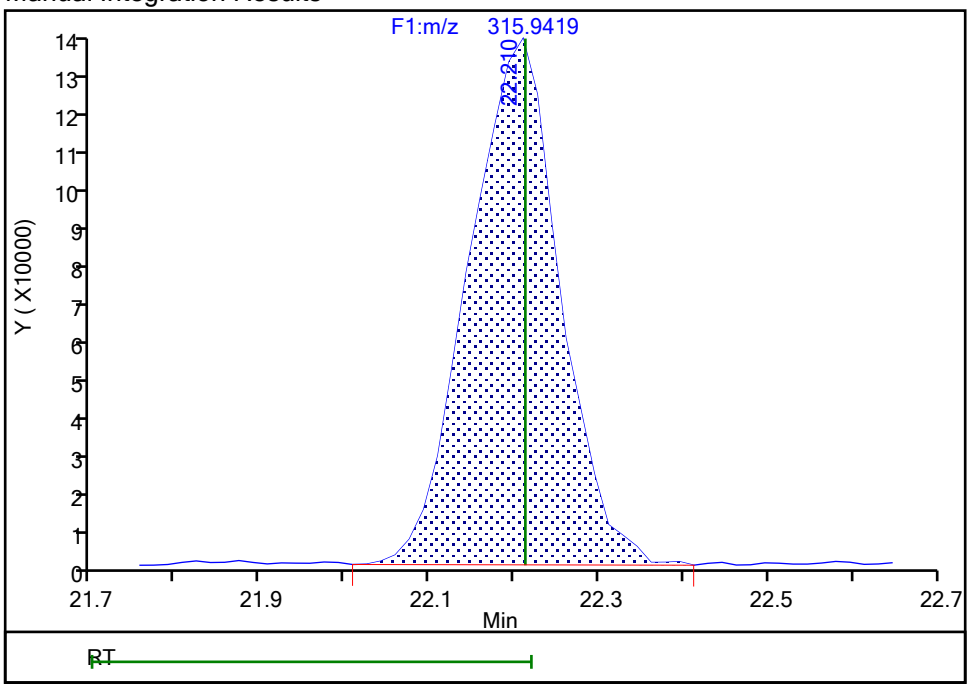
Not Detected
Expected RT: 22.21

Processing Integration Results



Manual Integration Results

RT: 22.21
Area: 990792
Amount: 30.346085
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:04:14
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) Lab Sample ID: 140-17578-7

Matrix: Sediment Lab File ID: 140-17578-a-7-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.15(g) Date Analyzed: 12/17/2019 11:08

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 23.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	0.20	J q	1.3	0.074
41903-57-5	Total TCDD	4.9	q B	1.3	0.074
40321-76-4	1,2,3,7,8-PeCDD	0.20	J q	6.4	0.070
36088-22-9	Total PeCDD	6.1	J q	6.4	0.070
39227-28-6	1,2,3,4,7,8-HxCDD	0.40	J	6.4	0.035
57653-85-7	1,2,3,6,7,8-HxCDD	0.56	J q	6.4	0.037
19408-74-3	1,2,3,7,8,9-HxCDD	2.2	J q	6.4	0.034
34465-46-8	Total HxCDD	32	q B	6.4	0.035
35822-46-9	1,2,3,4,6,7,8-HpCDD	30	B	6.4	0.13
37871-00-4	Total HpCDD	110	B	6.4	0.13
3268-87-9	OCDD	700	B	13	0.031
51207-31-9	2,3,7,8-TCDF	0.92	J q	1.3	0.061
30402-14-3	Total TCDF	2.8	q B	1.3	0.061
57117-41-6	1,2,3,7,8-PeCDF	ND		6.4	0.091
57117-31-4	2,3,4,7,8-PeCDF	ND		6.4	0.083
30402-15-4	Total PeCDF	0.78	J I q	6.4	0.087
70648-26-9	1,2,3,4,7,8-HxCDF	ND		6.4	0.084
57117-44-9	1,2,3,6,7,8-HxCDF	ND		6.4	0.081
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.4	0.090
72918-21-9	1,2,3,7,8,9-HxCDF	ND		6.4	0.11
55684-94-1	Total HxCDF	0.52	J I	6.4	0.092
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.42	J B	6.4	0.053
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		6.4	0.082
38998-75-3	Total HpCDF	0.98	J B	6.4	0.067
39001-02-0	OCDF	1.6	J B	13	0.080

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(2-4) Lab Sample ID: 140-17578-7

Matrix: Sediment Lab File ID: 140-17578-a-7-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.15(g) Date Analyzed: 12/17/2019 11:08

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 23.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	65		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	67		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	69		23-140
114423-97-1	13C-OCDD	64		17-157
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	65		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	65		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	68		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	69		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	68		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	67		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	64		26-138
109719-78-0	13C-OCDF	65		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 11:08:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-014
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 21:26:45 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 17-Dec-2019 21:26:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:46	2645	0.77	1.1733	0.1016	0.0794	0.0288	0.0288		RQM
A Non-2,3,7,8-sub-TCDD	29:30	60571	0.77	1.1733	2.001	1.818	0.0288	0.7080		RQMa
S Total TCDD					2.102	1.898	0.0288	0.0288		RQ
2,3,7,8-TCDF	28:51	17884	0.77	1.0881	0.4058	0.3595	0.0239	0.0239		RQM
A Non-2,3,7,8-sub-TCDF	28:13	35647	0.77	1.0881	0.7482	0.7165	0.0239	0.3335		RQ
S Total TCDF					1.154	1.076	0.0239	0.0239		RQ
1,2,3,7,8-PeCDD	40:33	1853	1.55	1.0434	0.0838	0.0761	0.0271	0.0271		RQM
A Non-2,3,7,8-sub-PeCDD	39:27	56186	1.55	1.0434	2.365	2.306	0.0271	0.9501		RQMa
S Total PeCDD					2.449	2.382	0.0271	0.0271		RQ
1,2,3,7,8-PeCDF	38:48						0.0352	0.0352		
2,3,4,7,8-PeCDF	40:03						0.0325	0.0325		
A Non-2,3,7,8-sub-PeCDF	38:02	12952	1.55	1.1496	0.3790	0.3036	0.0337	0.1109		RQMa
S Total PeCDF					0.3790	0.3036	0.0338	0.0338		RQ
1,2,3,4,7,8-HxCDD	44:49	4720	1.13	1.1409	0.1539	0.1539	0.0137	0.0137		
1,2,3,6,7,8-HxCDD	44:55	7279	1.24	1.1481	0.2494	0.2178	0.0144	0.0144		RQMa
1,2,3,7,8,9-HxCDD	45:18	28877	1.24	1.2212	0.9417	0.8447	0.0132	0.0132		RQ
A Non-2,3,7,8-sub-HxCDD	44:19	371644	1.24	1.1700	11.4	11.3	0.0138	8.761		RQMa
S Total HxCDD					12.8	12.6	0.0138	0.0138		RQ
1,2,3,4,7,8-HxCDF	43:49						0.0326	0.0326		
1,2,3,6,7,8-HxCDF	43:57						0.0315	0.0315		
2,3,4,6,7,8-HxCDF	44:40						0.0349	0.0349		
1,2,3,7,8,9-HxCDF	45:36						0.0447	0.0447		
A Non-2,3,7,8-sub-HxCDF	44:10	10410	1.36	1.2905	0.2015	0.2015	0.0353	0.2015		
S Total HxCDF					0.2015	0.2015	0.0359	0.0359		
1,2,3,4,6,7,8-HpCDD	49:36	335849	1.06	1.1204	11.8	11.8	0.0490	0.0490		
A Non-2,3,7,8-sub-HpCDD	49:03	928821	1.06	1.1204	32.5	32.5	0.0490	32.5		a
S Total HpCDD					44.3	44.3	0.0490	0.0490		
1,2,3,4,6,7,8-HpCDF	47:56	7834	0.96	1.4984	0.1630	0.1630	0.0206	0.0206		M
1,2,3,4,7,8,9-HpCDF	50:17						0.0317	0.0317		
A Non-2,3,7,8-sub-HpCDF	49:20	9109	1.03	1.4395	0.2170	0.2170	0.0251	0.2170		M

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					0.3800	0.3800	0.0261	0.0261		
OCDD	53:51	6731747	0.89	1.2073	271.9	271.9	0.0122	0.0122		
OCDF	53:59	21530	0.86	1.1162	0.6135	0.6135	0.0312	0.0312		M
D 13C-2,3,7,8-TCDD	30:44	1419545	0.84	1.0709	32.2	32.2	0.2530	0.2530	64.30	
D 13C-2,3,7,8-TCDF	28:46	2286105	0.80	1.7545	31.6	31.6	0.2488	0.2488	63.21	
D 13C-1,2,3,7,8-PeCDD	40:32	1167570	1.69	0.8743	32.4	32.4	0.2000	0.2000	64.78	
D 13C-1,2,3,7,8-PeCDF	38:44	1848306	1.55	1.3704	32.7	32.7	0.3045	0.3045	65.43	
D 13C-2,3,4,7,8-PeCDF	40:00	1862424	1.58	1.3837	32.6	32.6	0.3015	0.3015	65.29	
D 13C-1,2,3,4,7,8-HxCDD	44:47	1344315	1.33	0.8772	33.6	33.6	0.1273	0.1273	67.22	M
D 13C-1,2,3,6,7,8-HxCDD	44:55	1455234	1.28	0.9171	34.8	34.8	0.1218	0.1218	69.60	Ma
D 13C-1,2,3,4,7,8-HxCDF	43:46	1836168	0.54	1.1892	33.9	33.9	0.1885	0.1885	67.73	
D 13C-1,2,3,6,7,8-HxCDF	43:54	2290199	0.55	1.4625	34.3	34.3	0.1533	0.1533	68.69	
D 13C-2,3,4,6,7,8-HxCDF	44:38	2042817	0.51	1.3197	33.9	33.9	0.1699	0.1699	67.90	
D 13C-1,2,3,7,8,9-HxCDF	45:34	1836482	0.56	1.2001	33.6	33.6	0.1868	0.1868	67.12	
D 13C-1,2,3,4,6,7,8-HpCDD	49:34	1273962	1.07	0.8155	34.3	34.3	0.1399	0.1399	68.52	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1603741	0.44	1.0496	33.5	33.5	0.2240	0.2240	67.02	
D 13C-1,2,3,4,7,8,9-HpCDF	50:15	1312492	0.46	0.8947	32.2	32.2	0.2628	0.2628	64.34	
D 13C-OCDD	53:51	2051005	0.90	0.7044	63.9	63.9	0.2982	0.2982	63.86	
D 13C-OCDF	53:59	3144066	0.92	1.0615	65.0	65.0	0.3214	0.3214	64.96	
$ 37Cl4-2,3,7,8-TCDD	30:47	365697		1.2266	7.232	7.232	0.0658	0.0658	72.32	
* 13C-1,2,3,4-TCDD	30:14	4122766	0.83	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:18	4559735	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 11:08:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-014
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 21:26:45 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 17-Dec-2019 21:26:45

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQM
319.8965	30:46	30:48	-6	1.001	1151	184	12	30	15		
321.8936	30:48	30:48	-4	1.002	2232	307	29	72	11	0.52(0.65-0.89)	M
	Empc Correction				1494	238	29	72	8		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:54	29:30	-275	0.810	1636	277	12	30	23		
321.8936	24:53	29:30	-276	0.810	1908	358	29	72	12	0.86(0.65-0.89)	
319.8965	25:34	29:30	-235	0.832	2342	262	12	30	22		
321.8936	25:36	29:30	-233	0.833	3356	557	29	72	19	0.70(0.65-0.89)	
319.8965	26:16	29:30	-193	0.855	2065	327	12	30	27		M
321.8936	26:14	29:30	-195	0.854	2414	331	29	72	11	0.86(0.65-0.89)	
319.8965	27:44	29:30	-105	0.902	12006	1411	12	30	118		
	Empc Correction				10260	1261	12	30	105		
321.8936	27:43	29:30	-106	0.902	13325	1638	29	72	56	0.90(0.65-0.89)	
319.8965	28:18	29:30	-71	0.921	2039	142	12	30	12		M
	Empc Correction				1382	103	12	30	9		
321.8936	28:08	29:30	-81	0.916	1796	134	29	72	5	1.14(0.65-0.89)	M
319.8965	28:46	29:30	-44	0.936	1568	155	12	30	13		M
	Empc Correction				719	80	12	30	7		
321.8936	28:43	29:30	-47	0.934	935	104	29	72	4	1.68(0.65-0.89)	M
319.8965	29:21	29:30	-9	0.955	1528	173	12	30	14		
	Empc Correction				1288	207	12	30	17		
321.8936	29:23	29:30	-7	0.956	1674	269	29	72	9	0.91(0.65-0.89)	
319.8965	30:12	29:30	42	0.982	3761	477	12	30	40		M
	Empc Correction				2741	380	12	30	32		
321.8936	30:14	29:30	44	0.984	3561	494	29	72	17	1.06(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	30:32	29:30	62	0.993	4463	551	12	30	46		M
	Empc Correction				3148	394	12	30	33		
321.8936	30:31	29:30	61	0.993	4089	512	29	72	18	1.09(0.65-0.89)	M
319.8965	33:59	29:30	269	1.106	1081	133	12	30	11		M
	Empc Correction				840	187	12	30	16		
321.8936	33:54	29:30	264	1.103	1092	244	29	72	8	0.99(0.65-0.89)	
2,3,7,8-TCDF											RQM
303.9016	28:51	28:46	-1	1.003	10085	923	28	70	33		M
	Empc Correction				7780	720	28	70	26		
305.8987	28:46	28:46	-7	1.000	10104	936	25	62	37	1.00(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	22:28	28:13	-345	0.781	1270	222	28	70	8		
	Empc Correction				769	133	28	70	5		
305.8987	22:29	28:13	-344	0.782	999	174	25	62	7	1.27(0.65-0.89)	
303.9016	23:50	28:13	-263	0.828	3631	561	28	70	20		
	Empc Correction				3048	351	28	70	13		
305.8987	23:46	28:13	-267	0.826	3959	457	25	62	18	0.92(0.65-0.89)	
303.9016	25:50	28:13	-143	0.898	2435	322	28	70	12		
	Empc Correction				1943	264	28	70	9		
305.8987	25:46	28:13	-147	0.896	2524	344	25	62	14	0.96(0.65-0.89)	
303.9016	27:43	28:13	-30	0.964	2613	392	28	70	14		
305.8987	27:46	28:13	-27	0.965	3202	328	25	62	13	0.82(0.65-0.89)	
303.9016	32:46	28:13	272	1.139	7835	914	28	70	33		
305.8987	32:47	28:13	273	1.140	8755	903	25	62	36	0.89(0.65-0.89)	
1,2,3,7,8-PeCDD											RQM
355.8546	40:33	40:33	-2	1.000	1315	186	19	47	10		
	Empc Correction				1126	198	19	47	10		
357.8516	40:33	40:33	-2	1.000	727	128	40	100	3	1.81(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:36	39:27	-111	0.928	7698	1303	19	47	69		a
357.8516	37:36	39:27	-111	0.928	4989	856	40	100	21	1.54(1.32-1.78)	
355.8546	38:27	39:27	-60	0.949	13825	2767	19	47	146		a
357.8516	38:27	39:27	-60	0.949	9325	1879	40	100	47	1.48(1.32-1.78)	
355.8546	38:52	39:27	-34	0.959	935	210	19	47	11		M
	Empc Correction				517	164	19	47	9		
357.8516	38:52	39:27	-34	0.959	334	106	40	100	3	2.80(1.32-1.78)	
355.8546	39:07	39:27	-20	0.965	1721	302	19	47	16		M
	Empc Correction				1415	198	19	47	10		
357.8516	39:07	39:27	-20	0.965	913	128	40	100	3	1.88(1.32-1.78)	
355.8546	39:22	39:27	-5	0.971	804	185	19	47	10		M
	Empc Correction				664	136	19	47	7		
357.8516	39:22	39:27	-5	0.971	429	88	40	100	2	1.87(1.32-1.78)	
355.8546	39:41	39:27	14	0.979	1186	297	19	47	16		a
357.8516	39:39	39:27	12	0.978	1111	254	40	100	6	1.07(1.32-1.78)	
	Empc Correction				765	191	40	100	5		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
355.8546	39:49	39:27	22	0.983	7804	1190	19	47	63		a
357.8516	39:49	39:27	22	0.983	4723	657	40	100	16	1.65(1.32-1.78)	
355.8546	41:12	39:27	105	1.017	972	182	19	47	10		M
357.8516	41:13	39:27	106	1.017	857	164	40	100	4	1.13(1.32-1.78)	
	Empc Correction				627	117	40	100	3		
1,2,3,7,8-PeCDF											
339.8597	38:45						78	195			
341.8567	38:45						38	95			
2,3,4,7,8-PeCDF											
339.8597	40:01						78	195			
341.8567	40:01						38	95			
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:41	38:02	-200	0.895	1367	163	78	195	2		M
341.8567	34:40	38:02	-201	0.895	1840	234	38	95	6	0.74(1.32-1.78)	
	Empc Correction				881	105	38	95	3		
339.8597	38:06	38:02	4	0.984	2656	615	78	195	8		a
341.8567	38:09	38:02	7	0.985	2427	412	38	95	11	1.09(1.32-1.78)	
	Empc Correction				1713	396	38	95	10		
339.8597	39:23	38:02	82	1.017	2876	552	78	195	7		M
341.8567	39:22	38:02	81	1.016	2788	599	38	95	16	1.03(1.32-1.78)	
	Empc Correction				1855	356	38	95	9		
339.8597	41:27	38:02	205	1.070	975	301	78	195	4		a
341.8567	41:27	38:02	205	1.070	1237	319	38	95	8	0.79(1.32-1.78)	
	Empc Correction				629	194	38	95	5		
1,2,3,4,7,8-HxCDD											
389.8158	44:49	44:48	-1	1.001	2508	534	27	67	20		
391.8127	44:48	44:48	-2	1.000	2212	601	15	37	40	1.13(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMa
389.8158	44:55	44:56	-2	1.000	4030	1128	27	67	42		a
391.8127	44:56	44:56	-1	1.000	4303	953	15	37	64	0.94(1.05-1.43)	M
	Empc Correction				3249	909	15	37	61		
1,2,3,7,8,9-HxCDD											RQ
389.8158	45:18	45:17	-3	1.011	15986	2803	27	67	104		
391.8127	45:18	45:17	-3	1.011	16207	3245	15	37	216	0.99(1.05-1.43)	
	Empc Correction				12891	2260	15	37	151		
A Non-2,3,7,8-sub-HxCDD											RQMa
389.8158	43:15	44:19	-64	0.963	161104	42967	27	67	1591		a
391.8127	43:15	44:19	-64	0.963	125872	31606	15	37	2107	1.28(1.05-1.43)	
389.8158	43:49	44:19	-30	0.976	6787	1291	27	67	48		a
	Empc Correction				5186	695	27	67	26		
391.8127	43:49	44:19	-30	0.976	4183	561	15	37	37	1.62(1.05-1.43)	
389.8158	44:07	44:19	-13	0.982	36310	7964	27	67	295		a
391.8127	44:07	44:19	-13	0.982	28843	6533	15	37	436	1.26(1.05-1.43)	
389.8158	44:17	44:19	-2	0.986	5617	817	27	67	30		M
391.8127	44:17	44:19	-2	0.986	5603	1213	15	37	81	1.00(1.05-1.43)	
	Empc Correction				4529	658	15	37	44		

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDF											
373.8208	43:48						53	132			
375.8178	43:48						115	287			
1,2,3,6,7,8-HxCDF											
373.8208	43:56						53	132			
375.8178	43:56						115	287			
2,3,4,6,7,8-HxCDF											
373.8208	44:39						53	132			
375.8178	44:39						115	287			
1,2,3,7,8,9-HxCDF											
373.8208	45:35						53	132			
375.8178	45:35						115	287			
A Non-2,3,7,8-sub-HxCDF											
373.8208	43:32	44:10	-38	0.992	5997	1724	53	132	33		
375.8178	43:32	44:10	-38	0.992	4413	1111	115	287	10	1.36(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:37	-2	1.001	173077	28841	26	65	1109		
425.7737	49:36	49:37	-2	1.001	162772	27326	70	175	390	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											a
423.7767	48:25	49:03	-37	0.977	478901	92529	26	65	3559		a
425.7737	48:25	49:03	-37	0.977	449920	85689	70	175	1224	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:56	47:56	-3	1.000	3847	818	47	117	17		M
409.7788	47:55	47:56	-4	1.000	3987	798	31	77	26	0.96(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:16						47	117			
409.7788	50:16						31	77			
A Non-2,3,7,8-sub-HpCDF											M
407.7817	48:26	49:20	-53	0.000			47	117			
409.7788	48:26	49:20	-53	0.000			31	77		0.00(0.88-1.20)	
407.7817	48:32	49:20	-47	1.013	4621	806	47	117	17		M
409.7788	48:33	49:20	-46	1.013	4488	789	31	77	25	1.03(0.88-1.20)	M
OCDD											
457.7377	53:51	53:53	-3	1.000	3174549	654094	12	30	54508		
459.7348	53:51	53:53	-3	1.000	3557198	738097	13	32	56777	0.89(0.76-1.02)	
OCDF											M
441.7428	53:59	53:59	-3	1.000	9969	2117	51	127	42		M
443.7399	53:59	53:59	-3	1.000	11561	2894	41	102	71	0.86(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:44	30:45	-5	1.017	646494	67184	319	797	211		
333.9338	30:44	30:45	-5	1.017	773051	83888	174	435	482	0.84(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:46	28:46	-3	0.952	1019136	111726	378	945	296		
317.9389	28:46	28:46	-3	0.952	1266969	141904	416	1040	341	0.80(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDD											
367.8949	40:32	40:30	-2	1.341	732888	165921	211	527	786		
369.8919	40:32	40:30	-2	1.341	434682	93702	107	267	876	1.69(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:42	-2	1.282	1123156	210903	491	1227	430		
353.8970	38:44	38:42	-2	1.282	725150	135146	268	670	504	1.55(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:00	39:58	-2	1.323	1140542	244266	491	1227	497		
353.8970	40:00	39:58	-2	1.323	721882	158448	268	670	591	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											M
401.8559	44:47	44:47	-2	0.989	767028	191272	311	777	615		M
403.8529	44:47	44:47	-2	0.989	577287	144581	116	290	1246	1.33(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											Ma
401.8559	44:55	44:55	-1	0.992	817402	174398	311	777	561		M
403.8529	44:55	44:55	-1	0.992	637832	142165	116	290	1226	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:47	-1	0.966	647331	165945	389	972	427		
385.8610	43:46	43:47	-1	0.966	1188837	306935	468	1170	656	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:56	-1	0.969	809595	181323	389	972	466		
385.8610	43:54	43:56	-1	0.969	1480604	341485	468	1170	730	0.55(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:38	44:39	-1	0.985	694085	157265	389	972	404		
385.8610	44:37	44:39	-2	0.985	1348732	318070	468	1170	680	0.51(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:34	45:35	-1	1.006	655509	131687	389	972	339		
385.8610	45:34	45:35	-1	1.006	1180973	242311	468	1170	518	0.56(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:34	49:36	-3	1.094	659838	109735	235	587	467		
437.8140	49:35	49:36	-2	1.095	614124	108931	201	502	542	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:57	-3	1.058	486975	96085	288	720	334		
419.8220	47:55	47:57	-3	1.058	1116766	220451	611	1527	361	0.44(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:15	50:16	-2	1.109	416216	72834	288	720	253		
419.8220	50:15	50:16	-2	1.109	896276	149693	611	1527	245	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:52	-2	1.189	969846	198952	214	535	930		
471.7750	53:51	53:52	-2	1.189	1081159	222834	589	1472	378	0.90(0.76-1.02)	
13C-OCDF											
453.7830	53:59	54:01	-2	1.192	1510308	312781	640	1600	489		
455.7801	53:59	54:01	-2	1.192	1633758	347572	664	1660	523	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:47	30:48	-5	1.018	365697	38166	147	367	260		
13C-1,2,3,4-TCDD											
331.9368	30:14	30:19	-6		1869921	206265	319	797	647		
333.9338	30:14	30:19	-6		2252845	248388	174	435	1428	0.83(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:18	45:20	-2		2544238	540187	311	777	1737		
403.8529	45:18	45:20	-2		2015497	415366	116	290	3581	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 17-Dec-2019 21:26:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1419545	151072

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1419545	151072

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:54	1636	277	1908	358	0.1064	0.86	
25:34	2342	262	3356	557	0.1711	0.70	
26:16	2065	327	2414	331	0.1345	0.86	M
27:44	12006	1411	13325	1638	0.7604	0.90	RQ
27:44	10260	1261	13325	1638	0.7080		Empc Correction
28:18	2039	142	1796	134	0.1151	1.14	RQM
28:18	1382	103	1796	134	0.0954		Empc Correction
28:46	1568	155	935	104	0.0751	1.68	RQM
28:46	719	80	935	104	0.0497		Empc Correction
29:21	1528	173	1674	269	0.0961	0.91	RQ
29:21	1288	207	1674	269	0.0889		Empc Correction
30:12	3761	477	3561	494	0.2198	1.06	RQM
30:12	2741	380	3561	494	0.1892		Empc Correction
30:32	4463	551	4089	512	0.2567	1.09	RQM
30:32	3148	394	4089	512	0.2173		Empc Correction
33:59	1081	133	1092	244	0.0652	0.99	RQMa
33:59	840	187	1092	244	0.0580		Empc Correction
Signal Totals:							
	26421	3478	34150	4641			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	66639	8549				0.95	RQMa
	60571	8119					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.001 = (66639 * 50.000) / (1419545 * 1.173)
Empc Amount: 1.818 = (60571 * 50.000) / (1419545 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 21:26:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2286105	253630

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2286105	253630

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:28	1270	222	999	174	0.0456	1.27	RQ
22:28	769	133	999	174	0.0355		Empc Correction
23:50	3631	561	3959	457	0.1526	0.92	RQ
23:50	3048	351	3959	457	0.1408		Empc Correction
25:50	2435	322	2524	344	0.0997	0.96	RQ
25:50	1943	264	2524	344	0.0898		Empc Correction
27:43	2613	392	3202	328	0.1169	0.82	
32:46	7835	914	8755	903	0.3335	0.89	
Signal Totals:							
	16208	2054	19439	2206			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	37223	4617				0.91	RQ
	35647	4260					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7482 = (37223 * 50.000) / (2286105 * 1.088)
Empc Amount: 0.7165 = (35647 * 50.000) / (2286105 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1167570	259623

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1167570	259623

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:36	7698	1303	4989	856	0.5207	1.54	a
38:27	13825	2767	9325	1879	0.9501	1.48	a
38:52	935	210	334	106	0.0521	2.80	RQMa
38:52	517	164	334	106	0.0349		Empc Correction
39:07	1721	302	913	128	0.1081	1.88	RQMa
39:07	1415	198	913	128	0.0955		Empc Correction
39:22	804	185	429	88	0.0506	1.87	RnQMa
39:22	664	136	429	88	0.0449		Empc Correction
39:41	1186	297	1111	254	0.0943	1.07	RQa
39:41	1186	297	765	191	0.0801		Empc Correction
39:49	7804	1190	4723	657	0.5141	1.65	a
41:12	972	182	857	164	0.0751	1.13	RQMa
41:12	972	182	627	117	0.0656		Empc Correction
Signal Totals:							
	34081	6237	22105	4022			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	57626	10568				1.54	RQMa
	56186	10259					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.365 = (57626 * 50.000) / (1167570 * 1.043)
Empc Amount: 2.306 = (56186 * 50.000) / (1167570 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1848306	346049
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1862424	402714

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1855365	374381

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:41	1367	163	1840	234	0.0752	0.74	RnQMa
34:41	1367	163	881	105	0.0527		Empc Correction
38:06	2656	615	2427	412	0.1192	1.09	RQa
38:06	2656	615	1713	396	0.1024		Empc Correction
39:23	2876	552	2788	599	0.1328	1.03	RQMa
39:23	2876	552	1855	356	0.1109		Empc Correction
41:27	975	301	1237	319	0.0519	0.79	RQa
41:27	975	301	629	194	0.0376		Empc Correction
Signal Totals:							
	7874	1631	5078	1051			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	16166	3195				0.95	RQMa
	12952	2682					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3790 = (16166 * 50.000) / (1855365 * 1.150)
Empc Amount: 0.3036 = (12952 * 50.000) / (1855365 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 21:26:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1344315	335853
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1455234	316563
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1399774	326208

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	161104	42967	125872	31606	8.76	1.28	a
43:49	6787	1291	4183	561	0.3349	1.62	RQa
43:49	5186	695	4183	561	0.2860		Empc Correction
44:07	36310	7964	28843	6533	1.99	1.26	a
44:17	5617	817	5603	1213	0.3425	1.00	RQMa
44:17	5617	817	4529	658	0.3097		Empc Correction
Signal Totals:							
	208217	52443	163427	39358			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	374319	92952				1.28	RQMa
	371644	91801					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 11.427 = (374319 * 50.000) / (1399774 * 1.170)
Empc Amount: 11.346 = (371644 * 50.000) / (1399774 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 21:26:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1836168	472880
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2290199	522808
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	2042817	475335
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1836482	373998

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	2001416	461255

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
43:32	5997	1724	4413	1111	0.2015	1.36	
Signal Totals:							
	5997	1724	4413	1111			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10410	2835				1.36	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2015 = (10410 * 50.000) / (2001416 * 1.290)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1273962	218666

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1273962	218666

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	478901	92529	449920	85689	32.5	1.06	a
Signal Totals:							
	478901	92529	449920	85689			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	928821	178218				1.06	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 32.536 = (928821 * 50.000) / (1273962 * 1.120)

QC Flag Legend

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d
Lims ID: 140-17578-A-7-A
Client ID: 11187072-120619-SS-SJSSA03(2-4)
Inject. Date: 17-Dec-2019 11:08:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1603741	316536
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1312492	222527

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1458116	269531

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:26	0	0	0	0		0.00	
48:32	4621	806	4488	789	0.2170	1.03	M
Signal Totals:							
	4621	806	4488	789			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9109	1595				1.03	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2170 = (9109 * 50.000) / (1458116 * 1.440)

QC Flag Legend

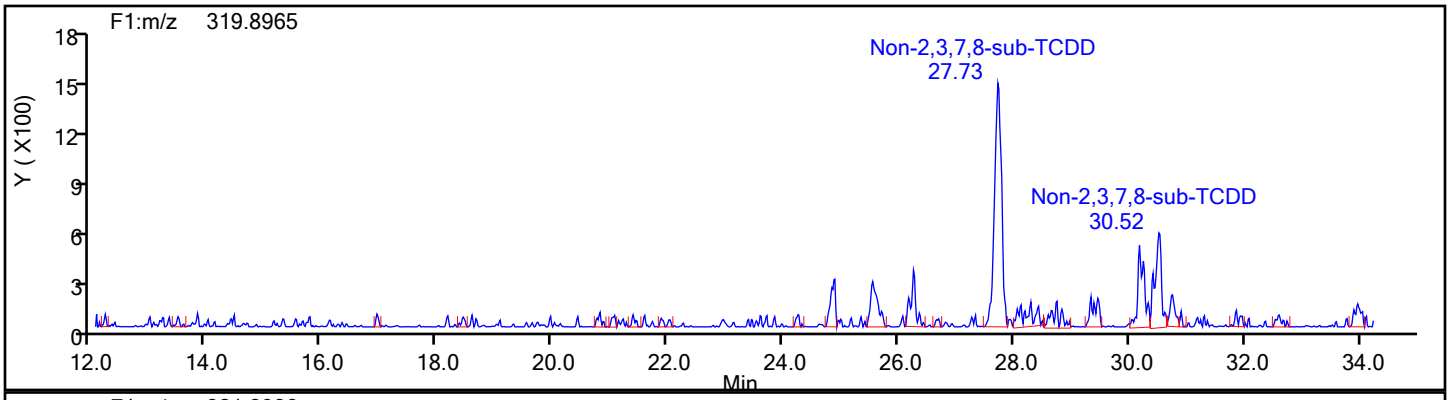
Review Flags
M - Manually Integrated

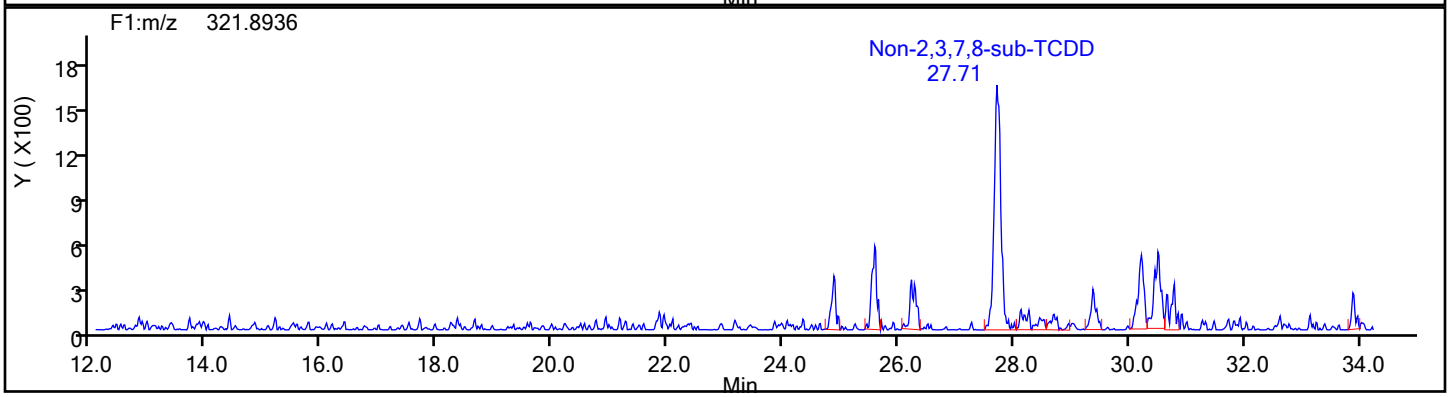
Report Date: 17-Dec-2019 21:26:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

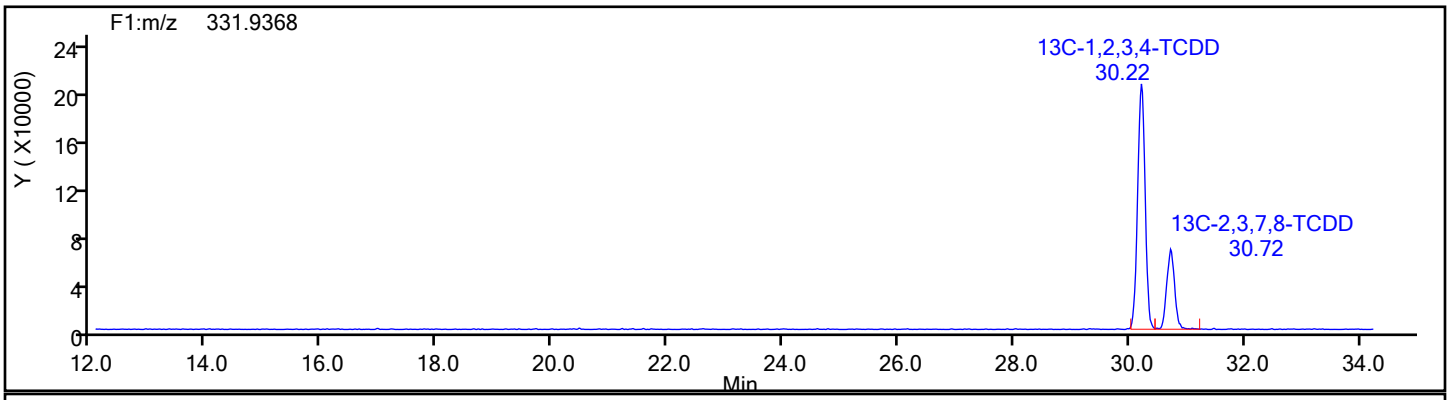
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

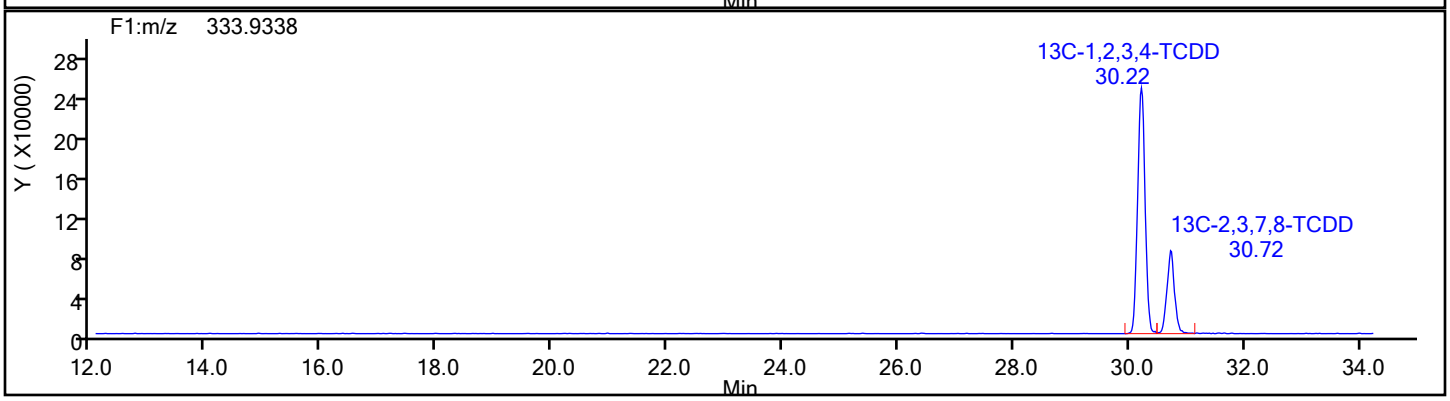
TCDD





TCDD Standards



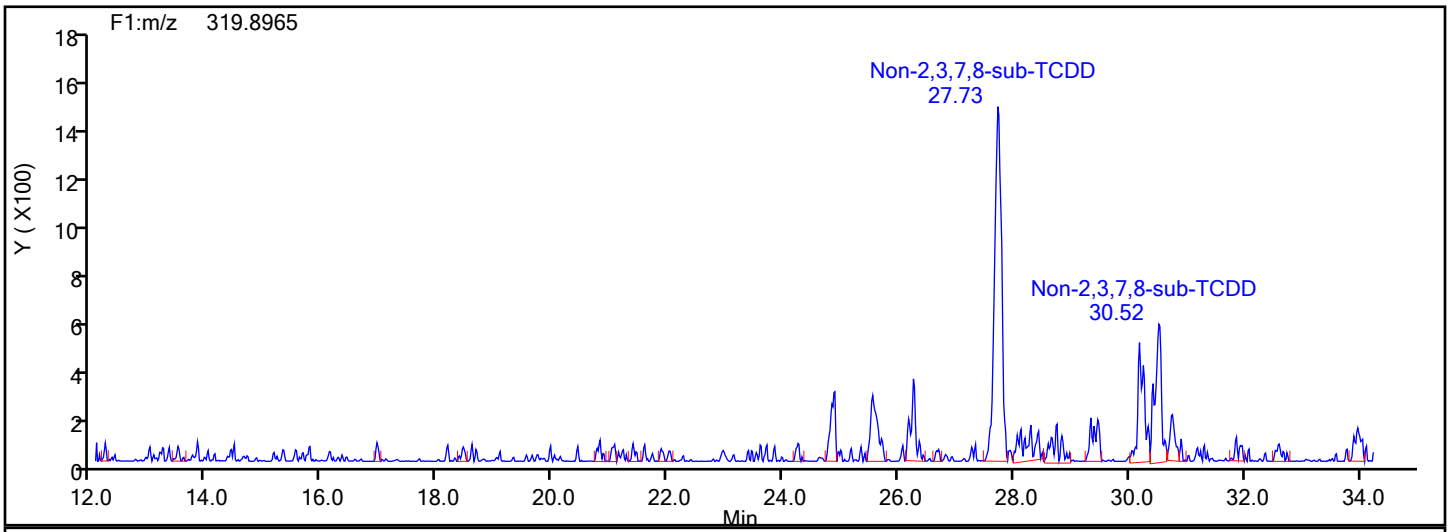


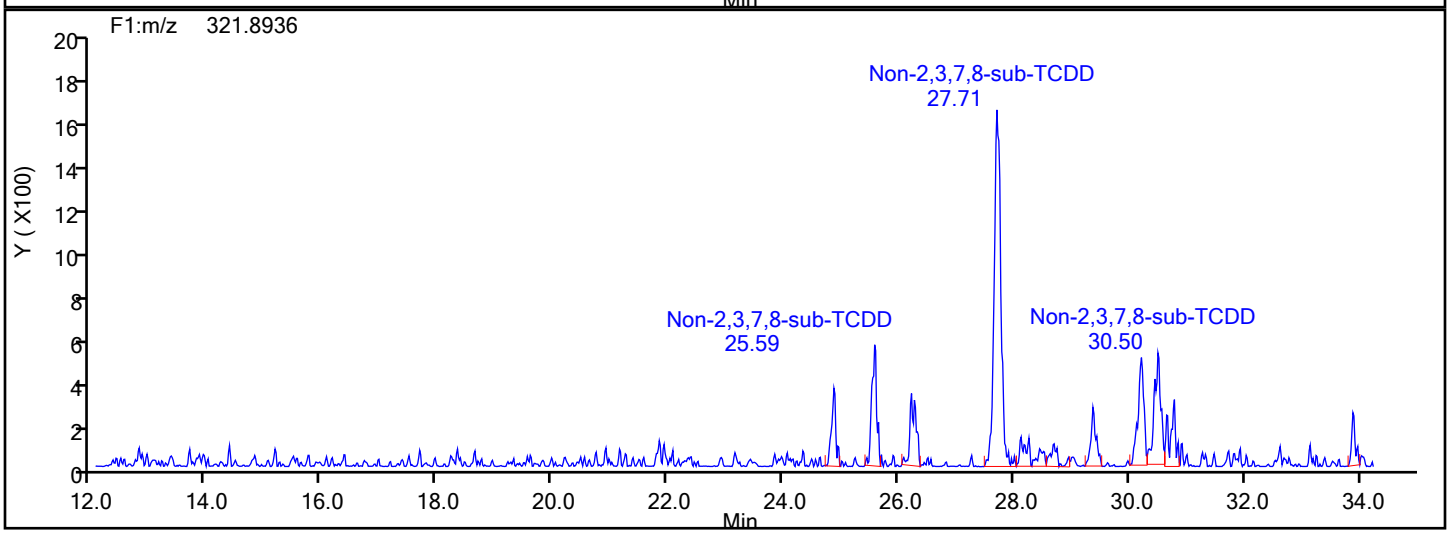
Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

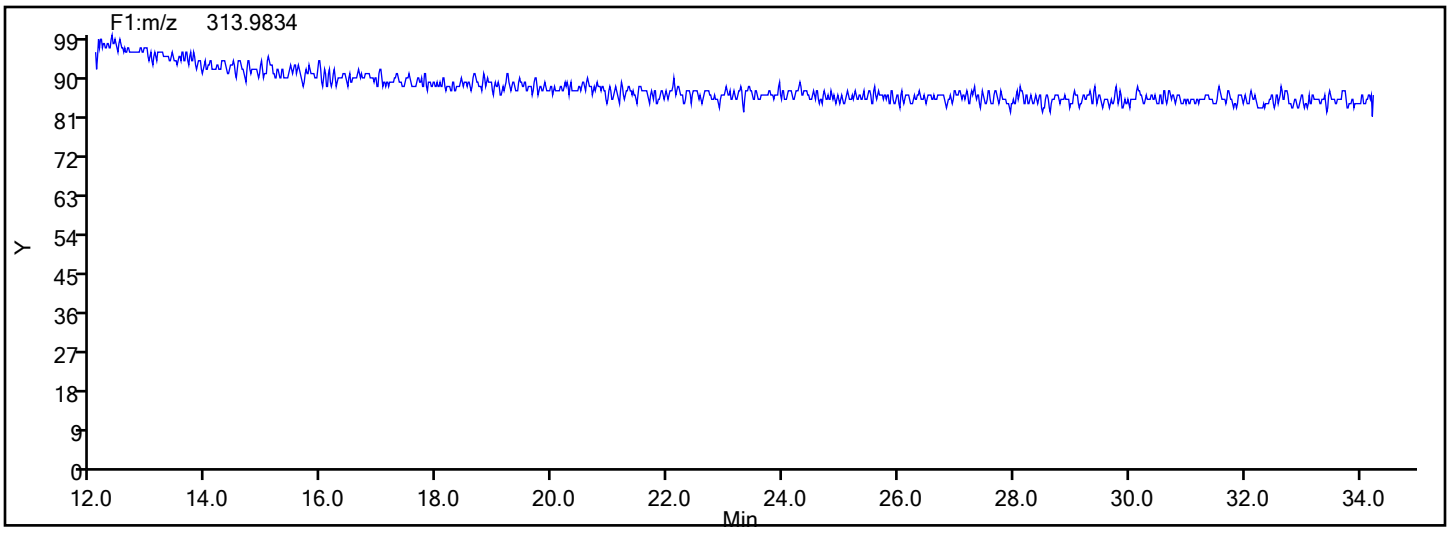
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

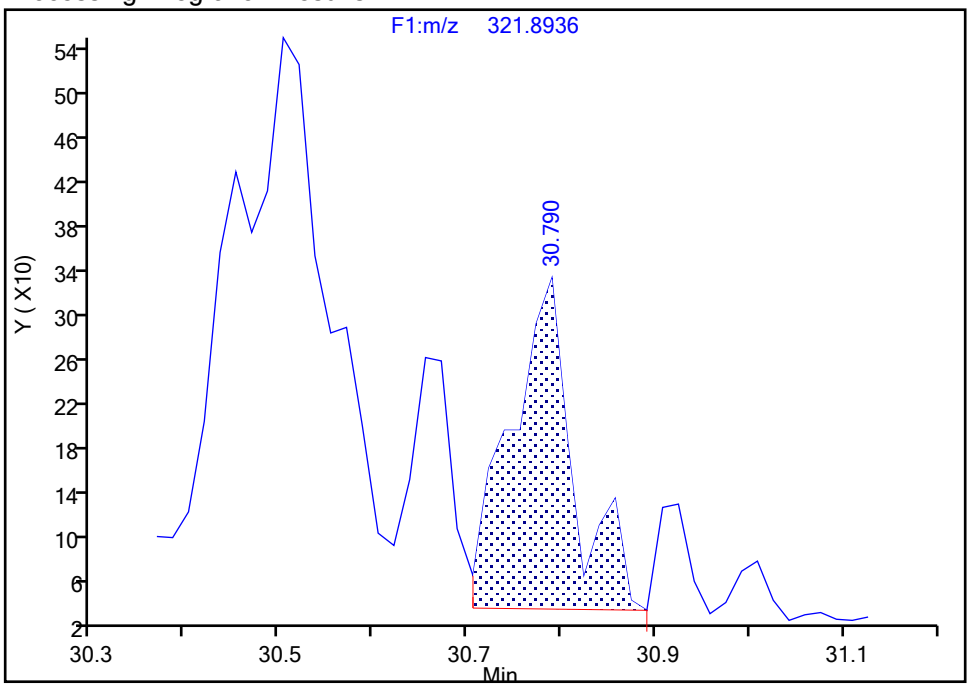
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

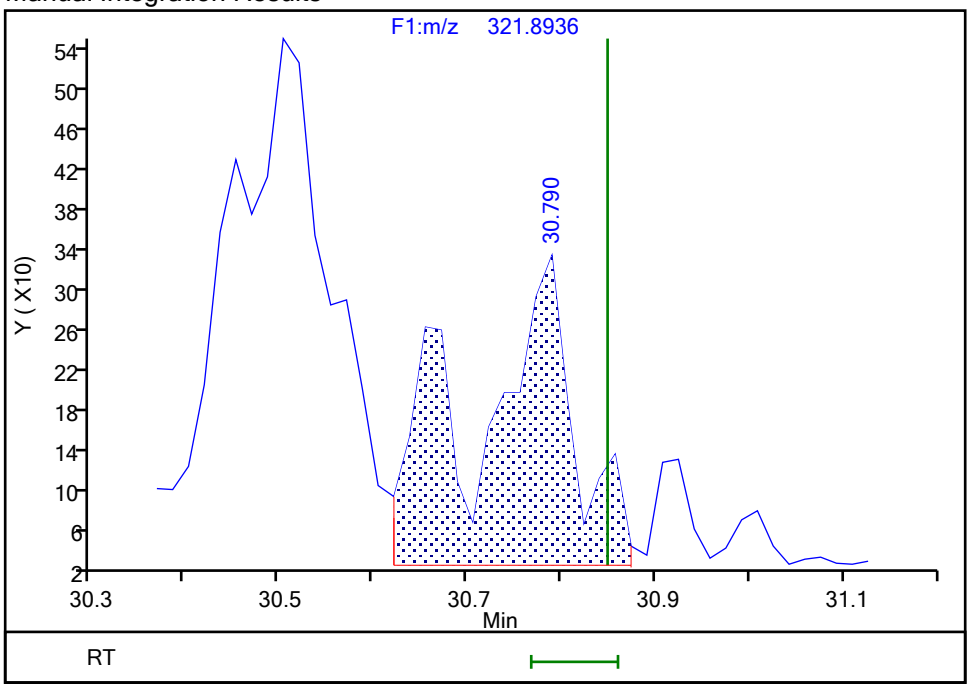
Processing Integration Results

RT: 30.79
Area: 1384
Amount: 0.076102
Amount Units: pg/ul



Manual Integration Results

RT: 30.79
Area: 2232
Amount: 0.101559
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:42:02

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

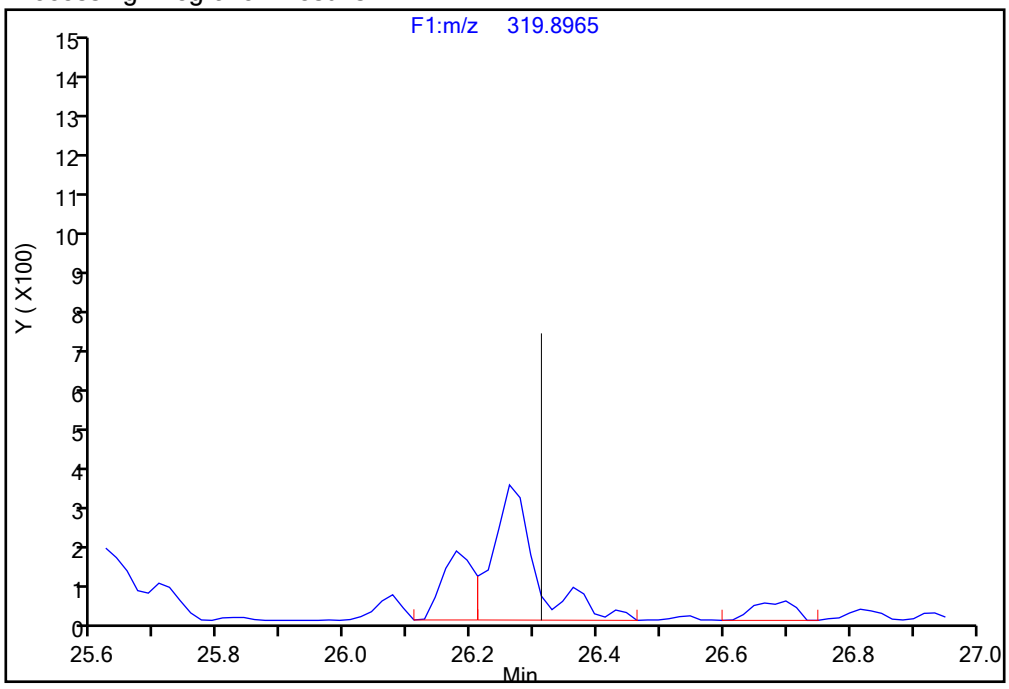
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

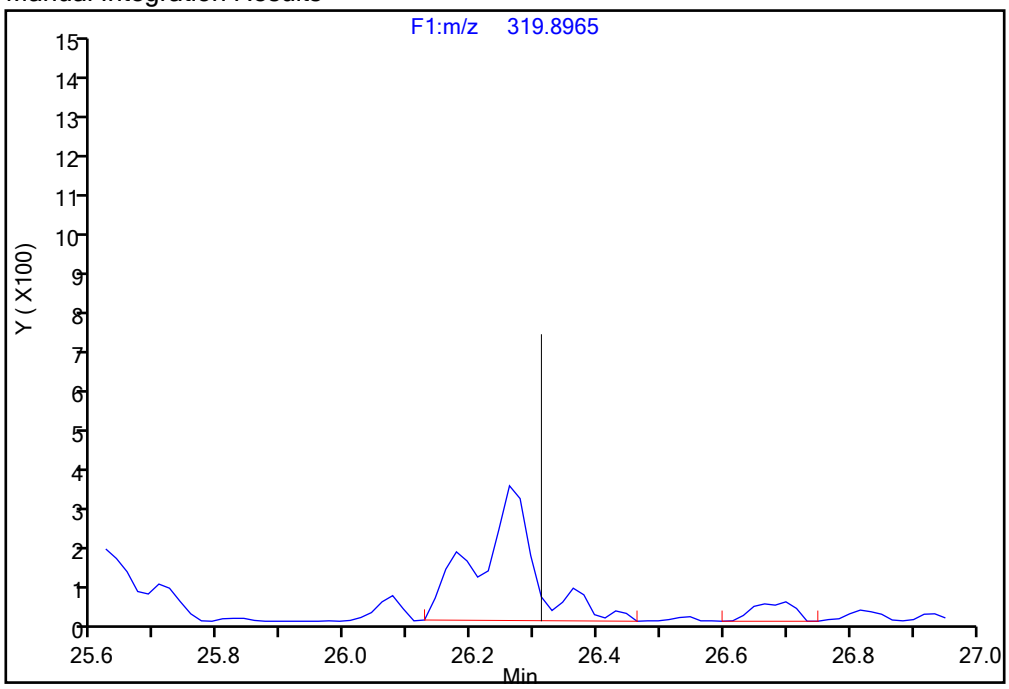
Processing Integration Results

RT = 26.260 Area = 1531



Manual Integration Results

RT = 26.260 Area = 2065 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

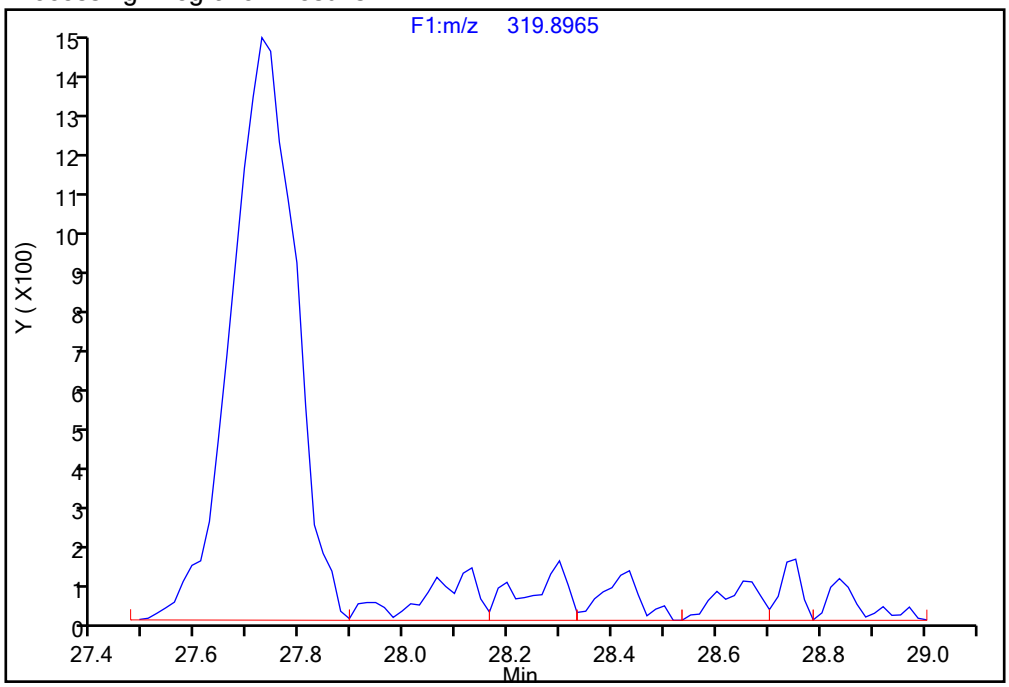
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

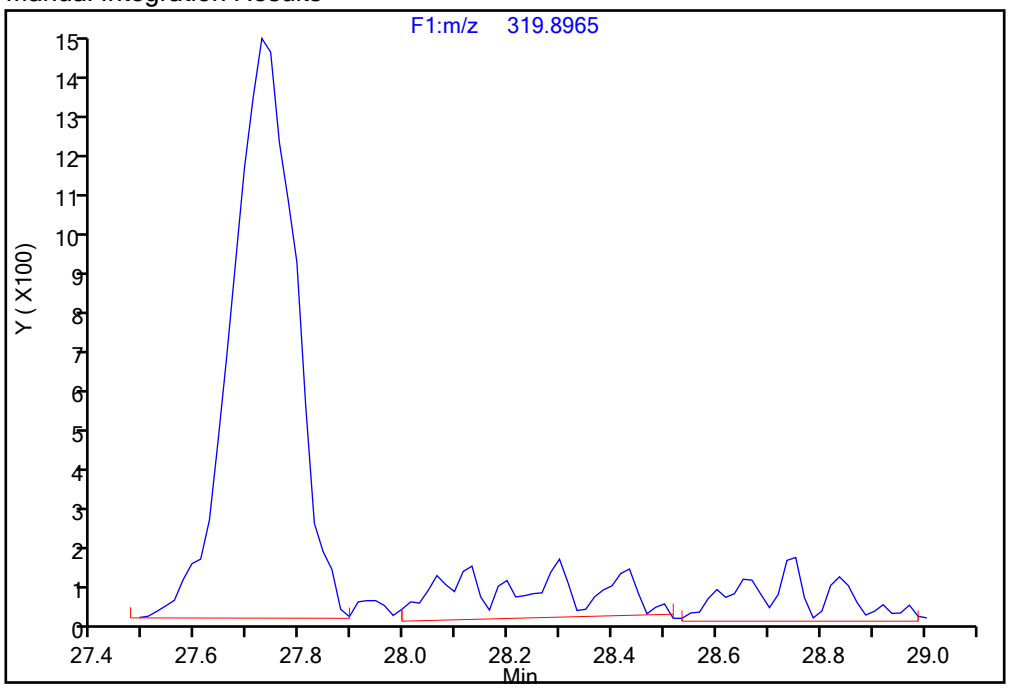
Processing Integration Results

RT = 28.298 Area = 767



Manual Integration Results

RT = 28.298 Area = 2039 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

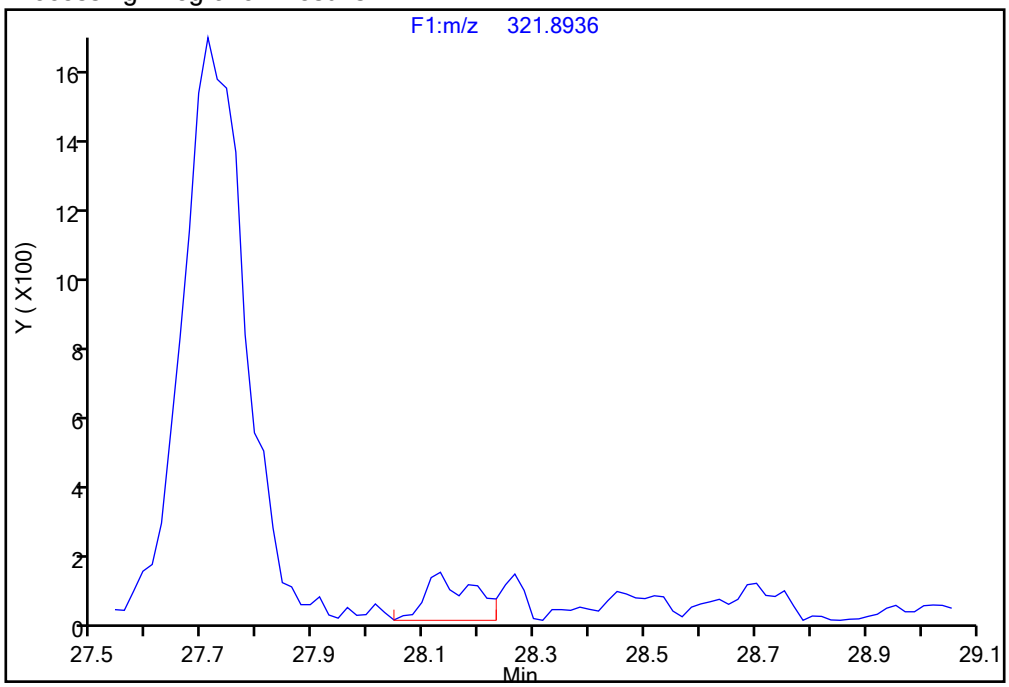
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

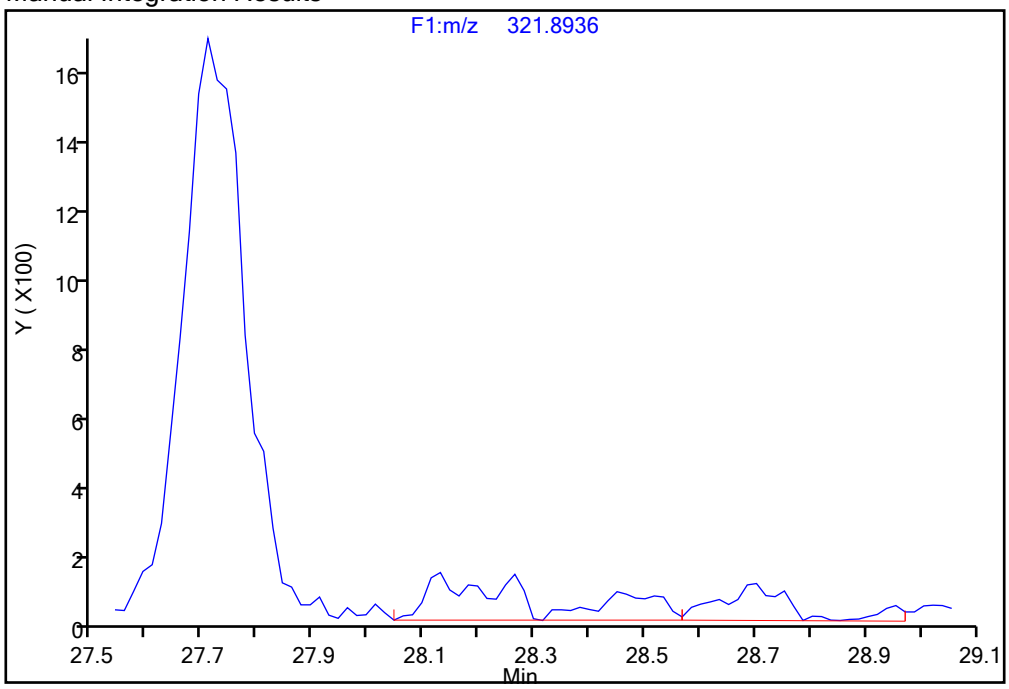
Processing Integration Results

RT = 28.130 Area = 786



Manual Integration Results

RT = 28.130 Area = 1796 M



Reviewer: davidsonm, 17-Dec-2019 12:42:38

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

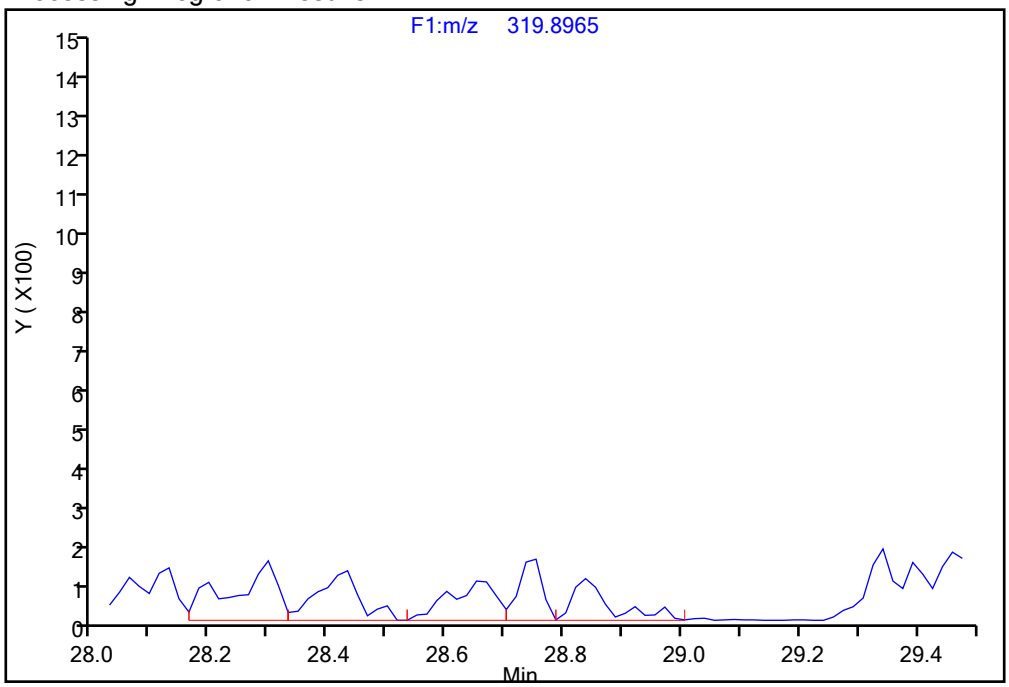
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

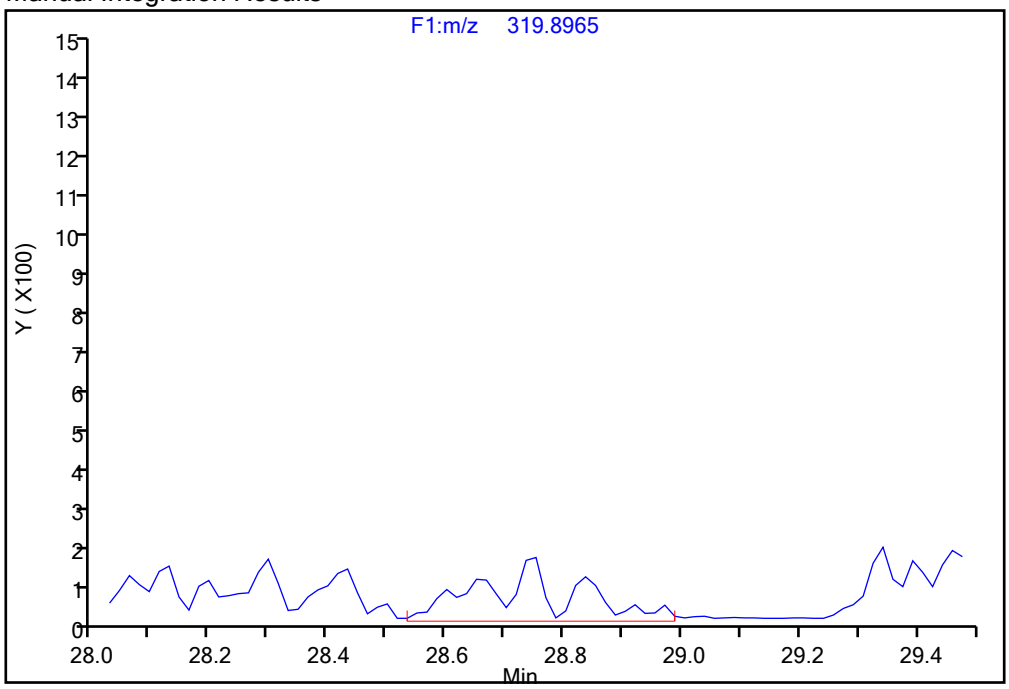
Processing Integration Results

RT = 28.753 Area = 414



Manual Integration Results

RT = 28.753 Area = 1568 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

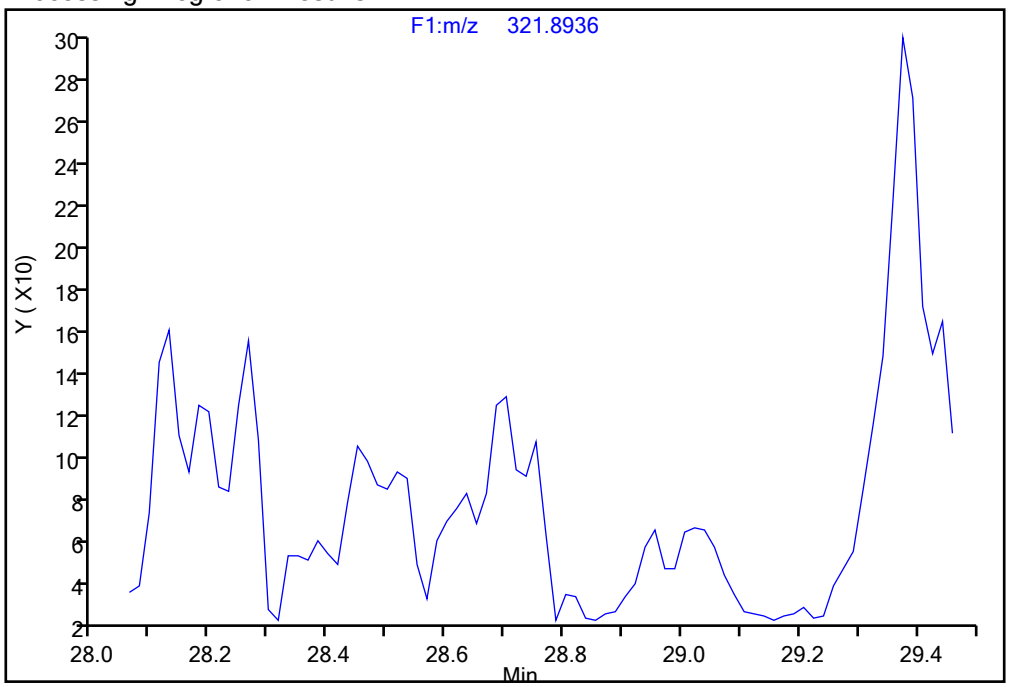
Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

Not Detected

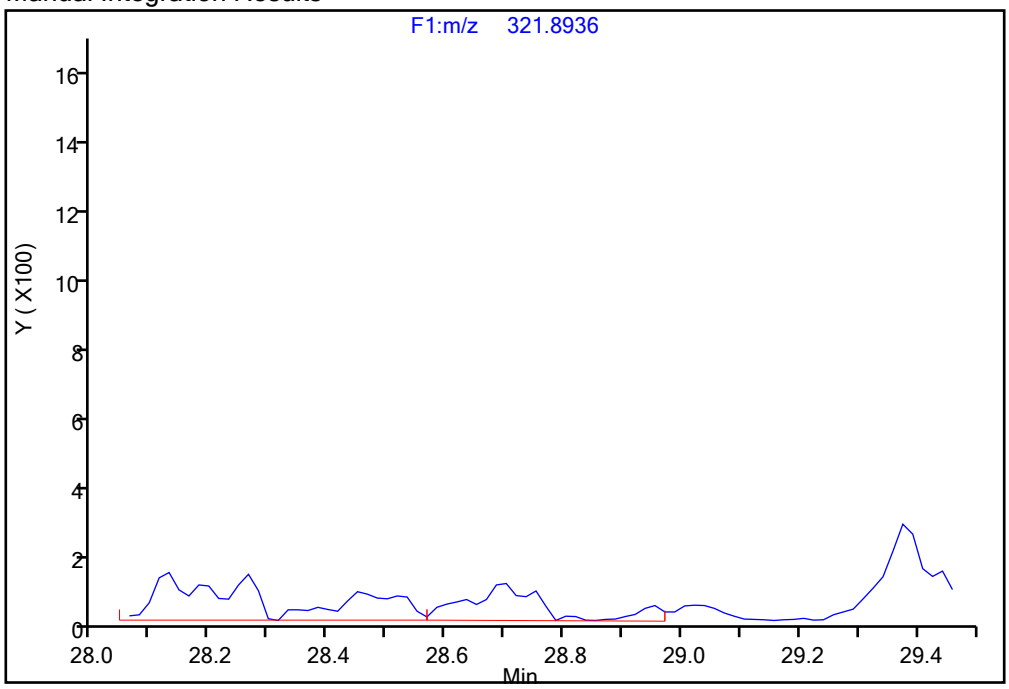
RT: 24.89- 34.08

Processing Integration Results



Manual Integration Results

RT = 28.702 Area = 935 M



Reviewer: davidsonm, 17-Dec-2019 12:42:38

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

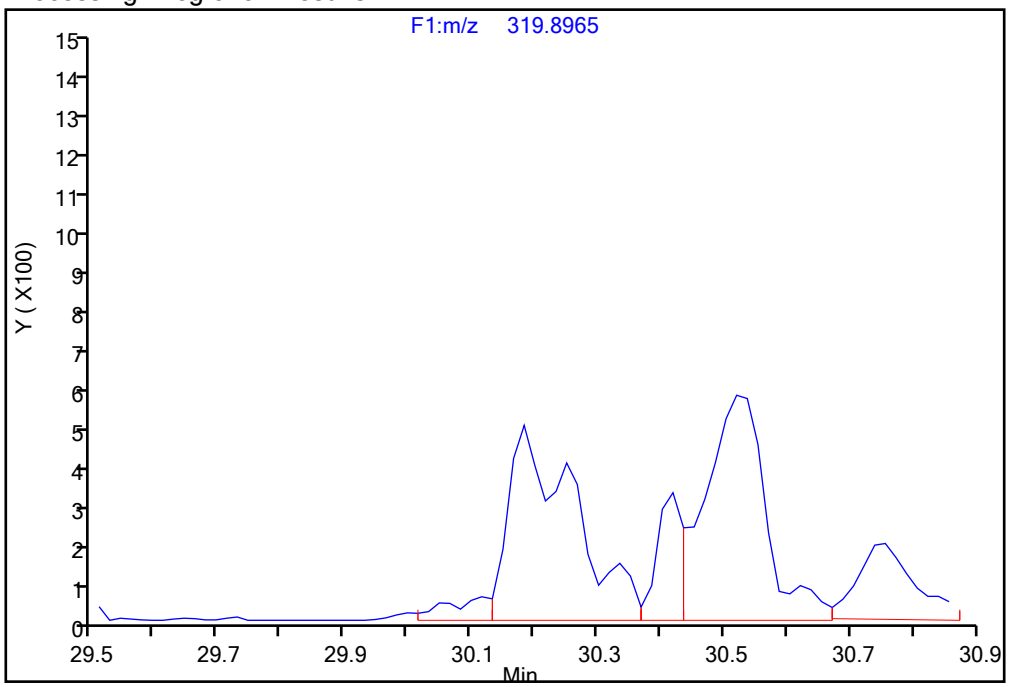
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

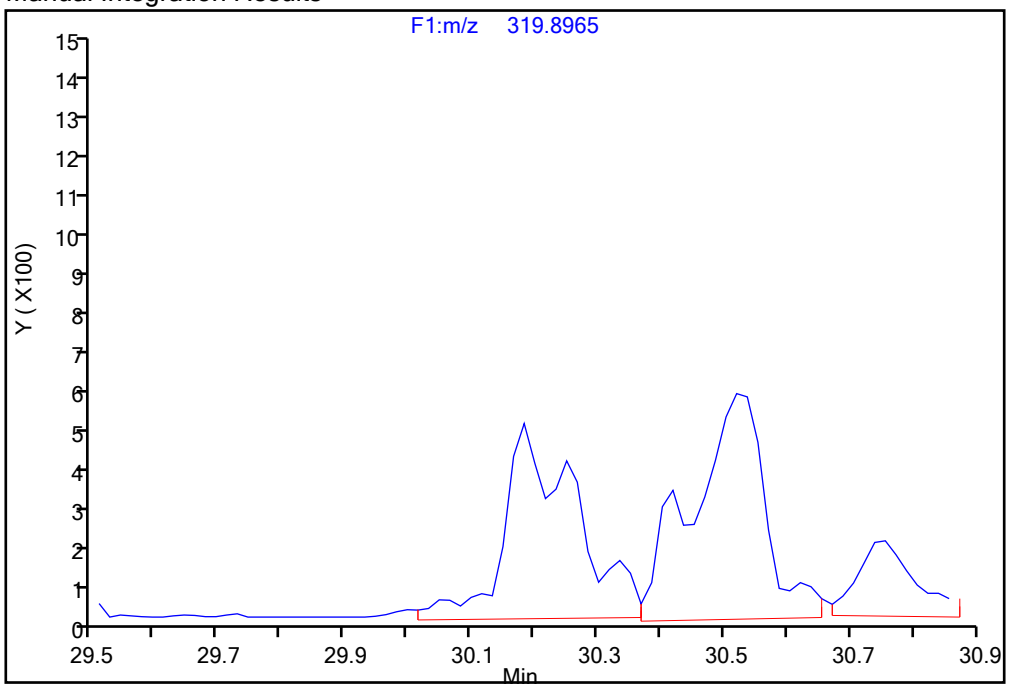
Processing Integration Results

RT = 30.184 Area = 3403



Manual Integration Results

RT = 30.184 Area = 3761 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

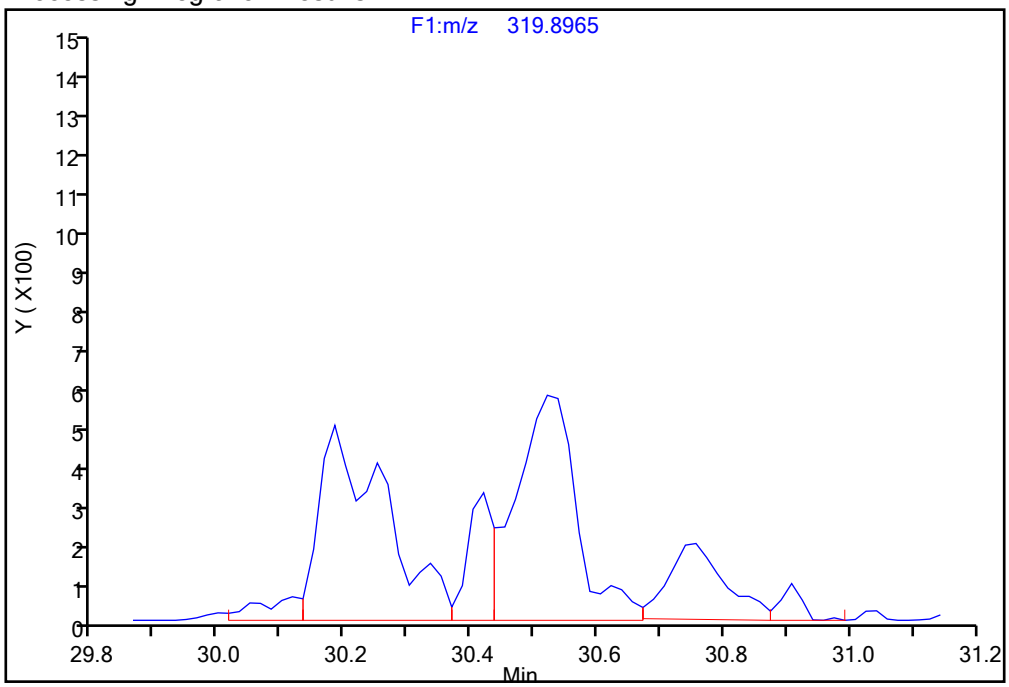
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

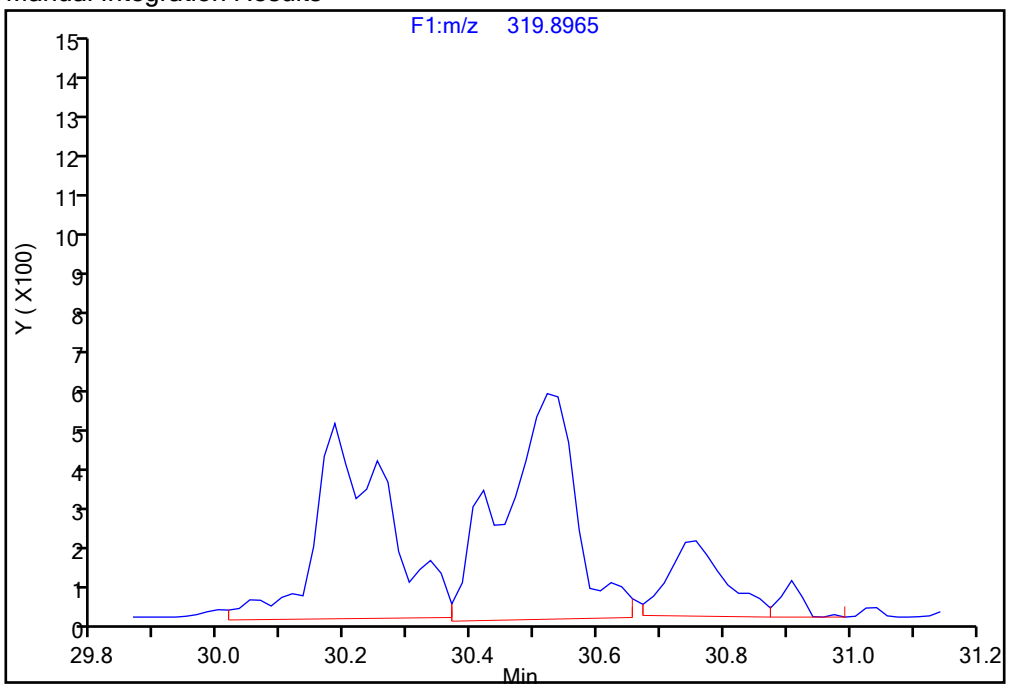
Processing Integration Results

RT = 30.520 Area = 3609



Manual Integration Results

RT = 30.520 Area = 4463 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

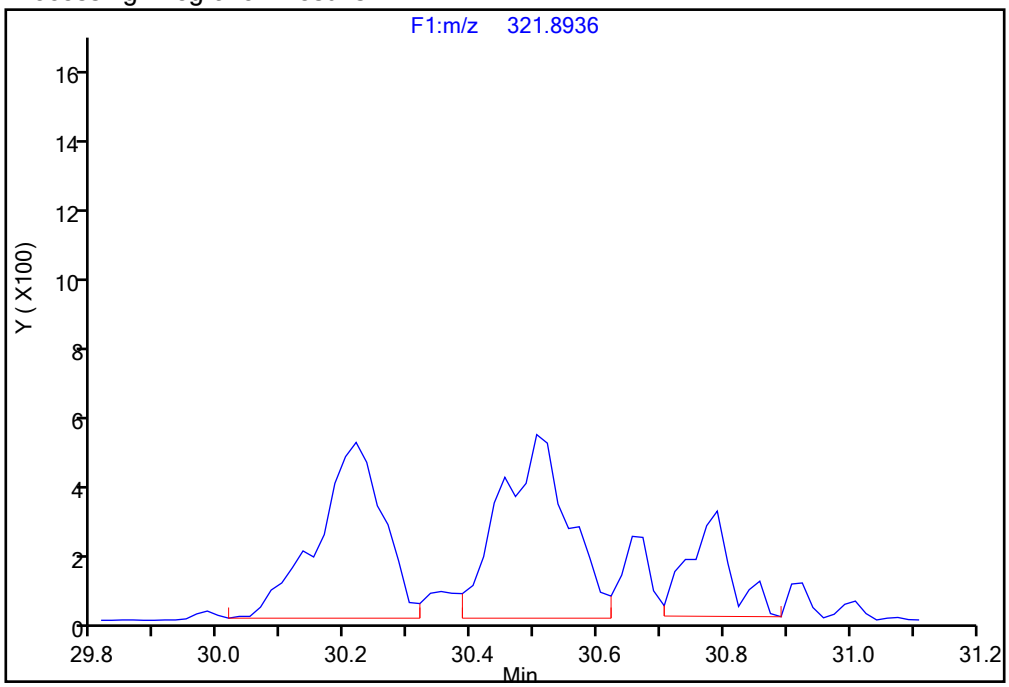
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.89- 34.08)

Signal: 2

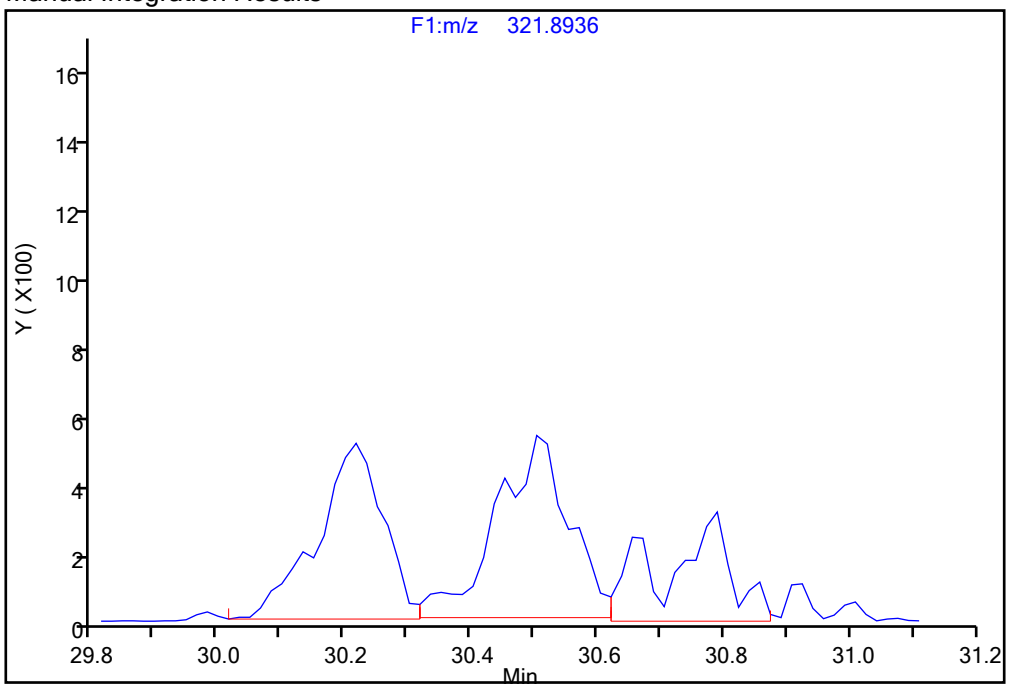
Processing Integration Results

RT = 30.504 Area = 3889



Manual Integration Results

RT = 30.504 Area = 4089 M



Reviewer: davidsonm, 17-Dec-2019 12:42:38

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

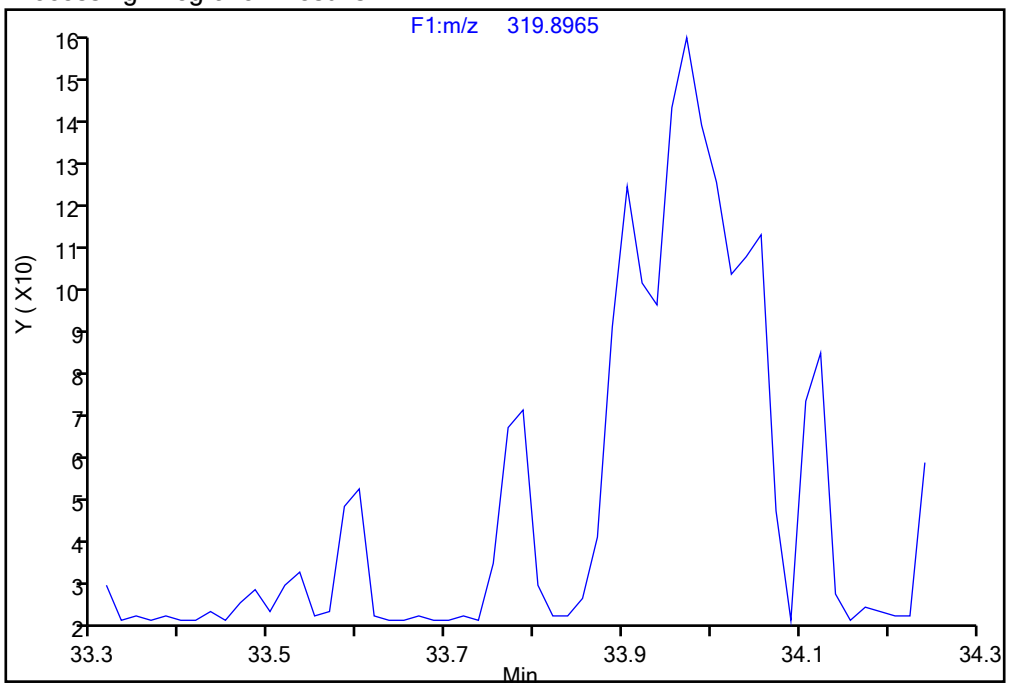
Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.89- 34.08)

Signal: 1

Not Detected

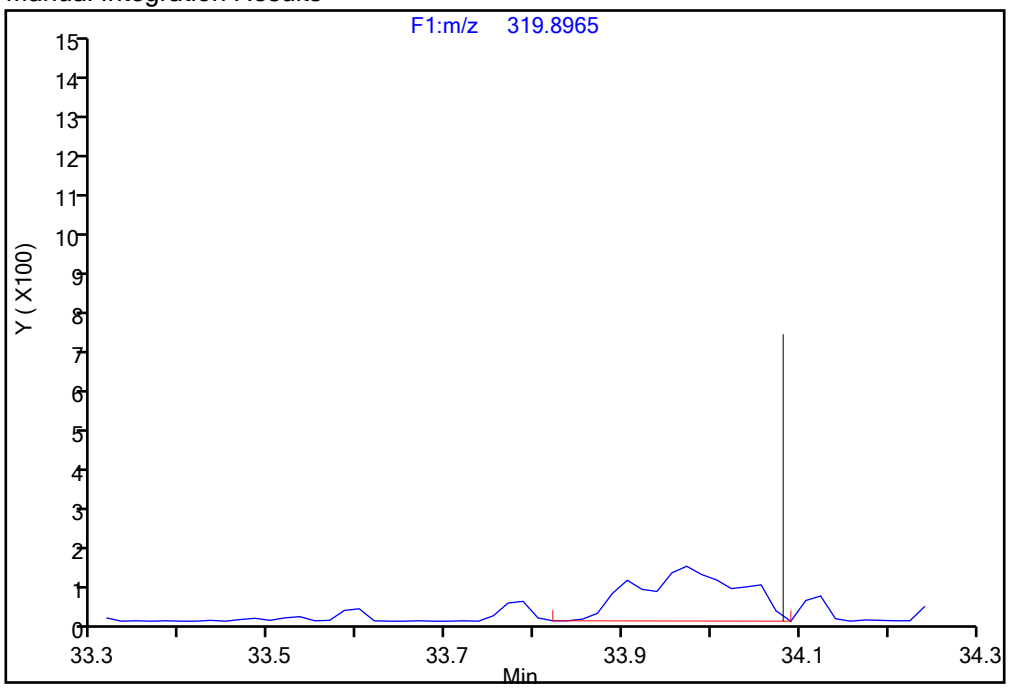
RT: 24.89- 34.08

Processing Integration Results



Manual Integration Results

RT = 33.972 Area = 1081 M



Reviewer: davidsonm, 17-Dec-2019 12:43:21

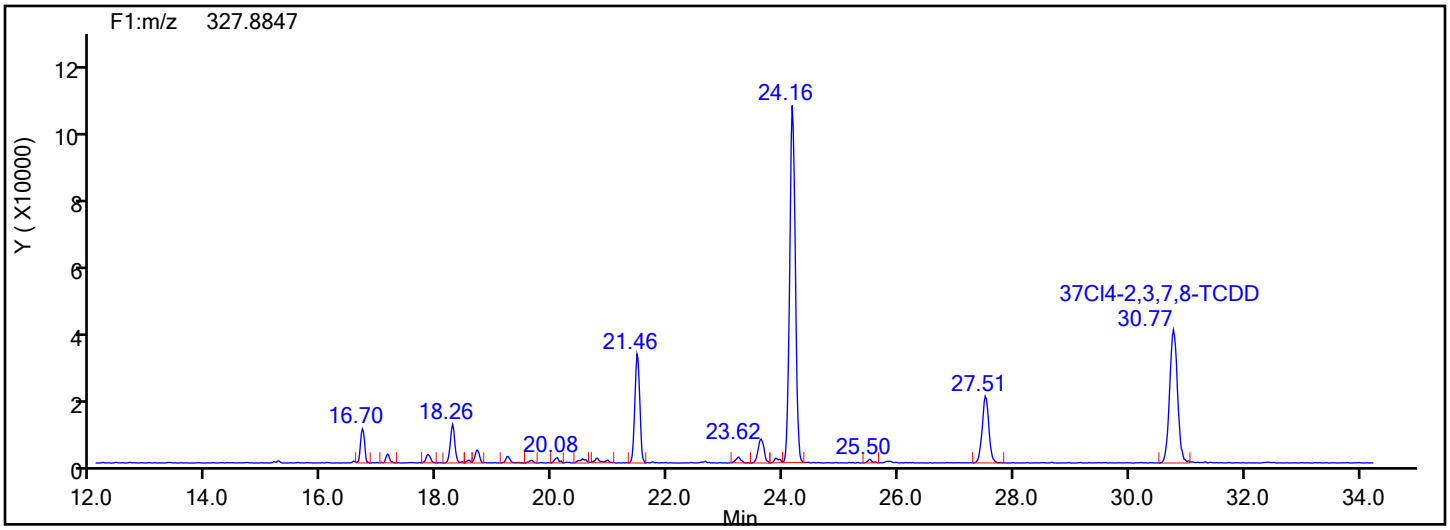
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

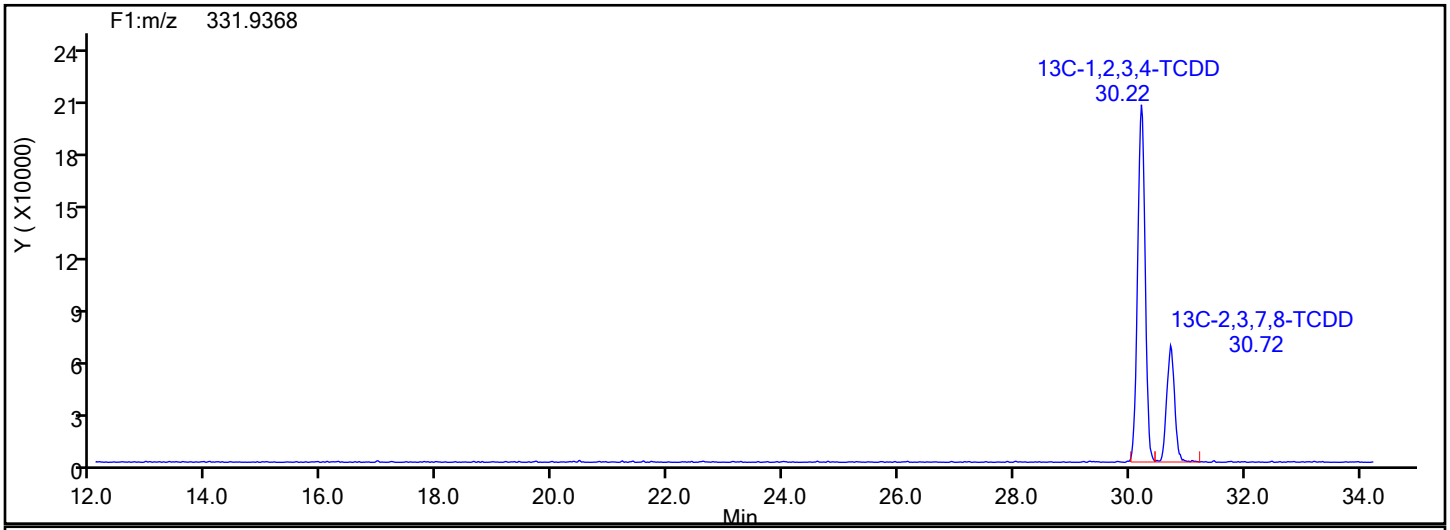
Eurofins TestAmerica, Knoxville

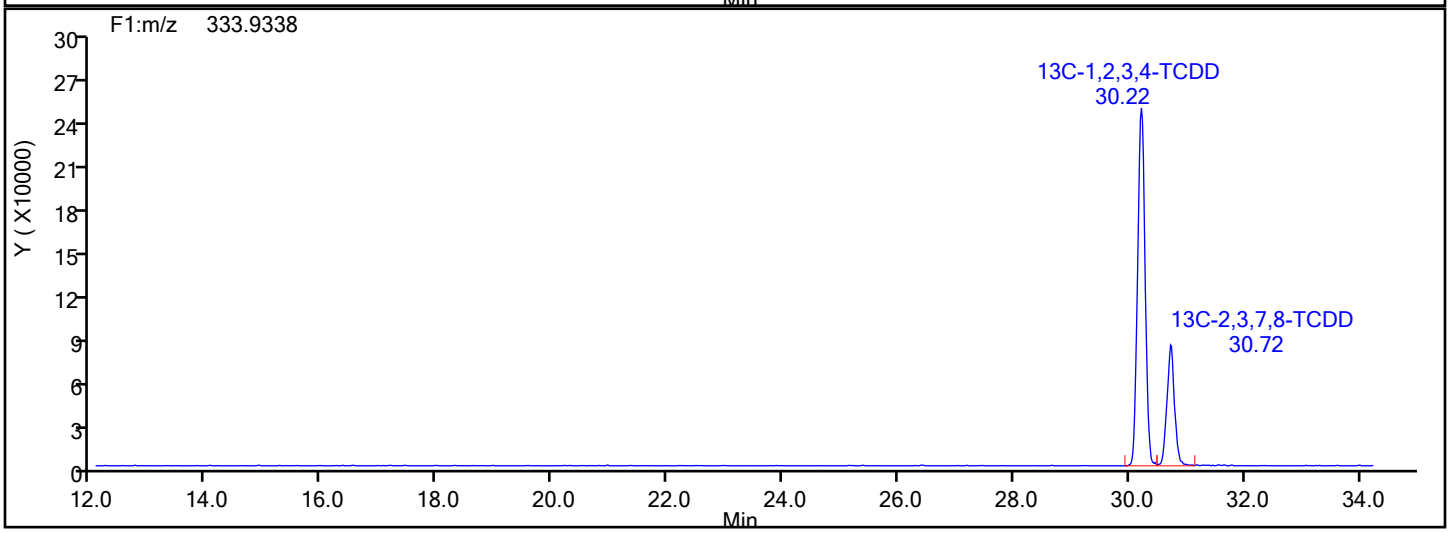
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



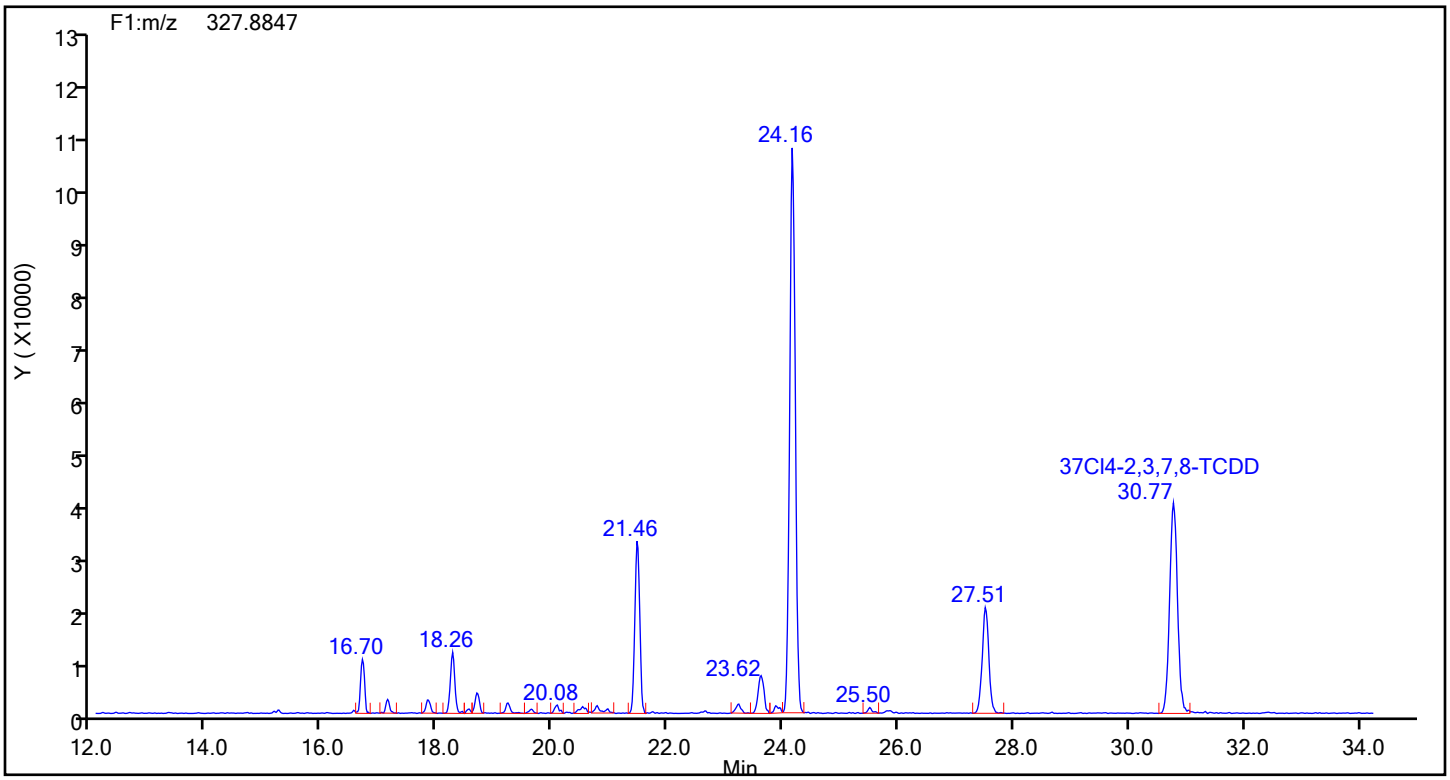


Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

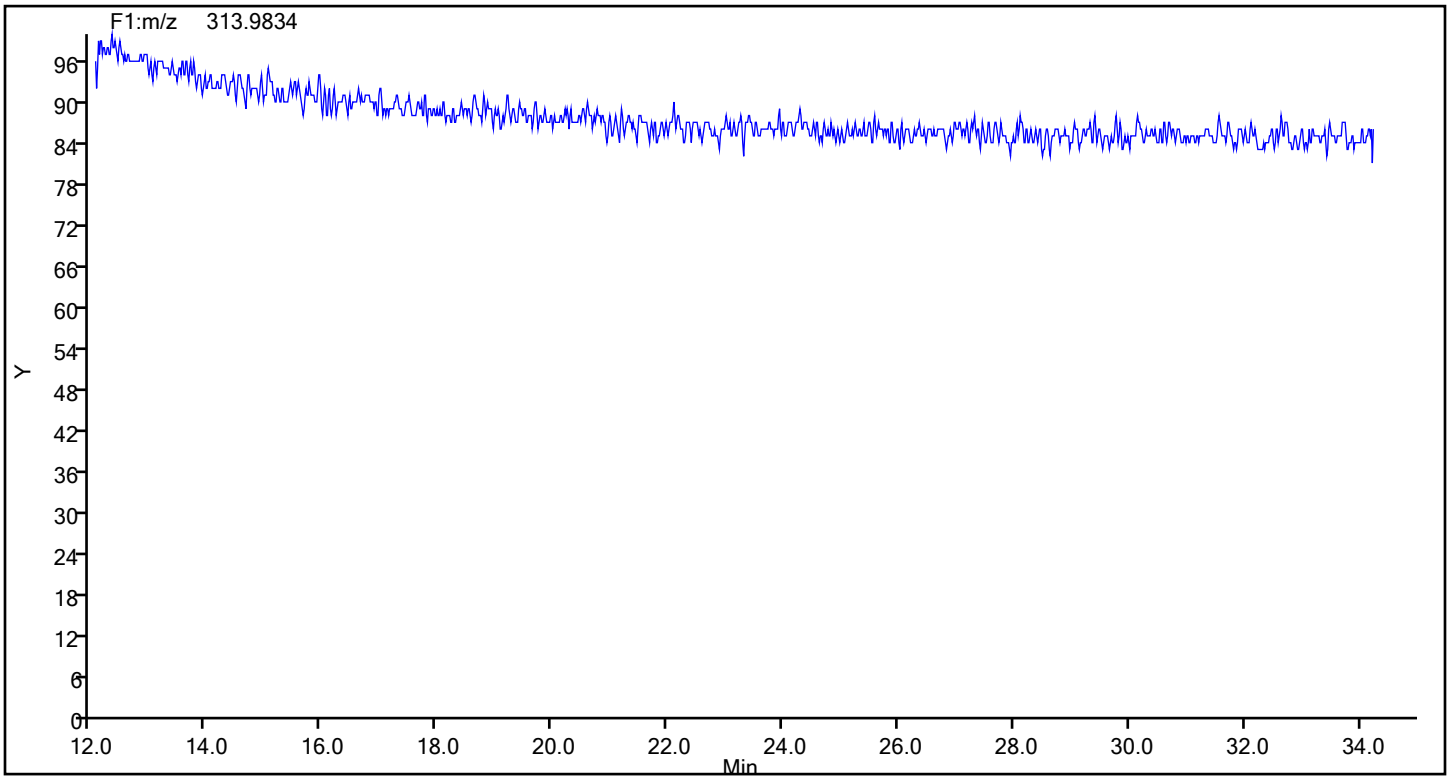
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

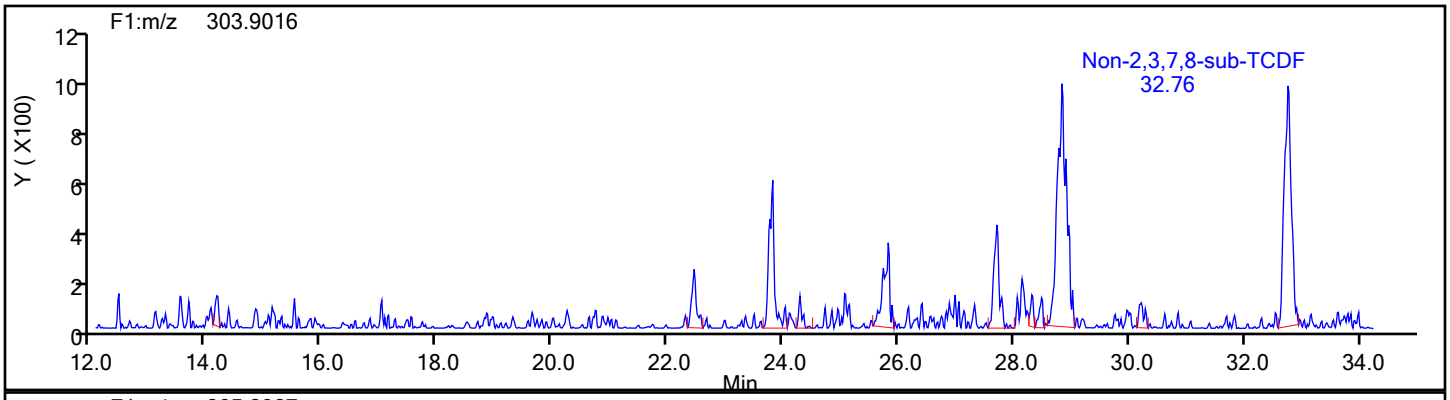


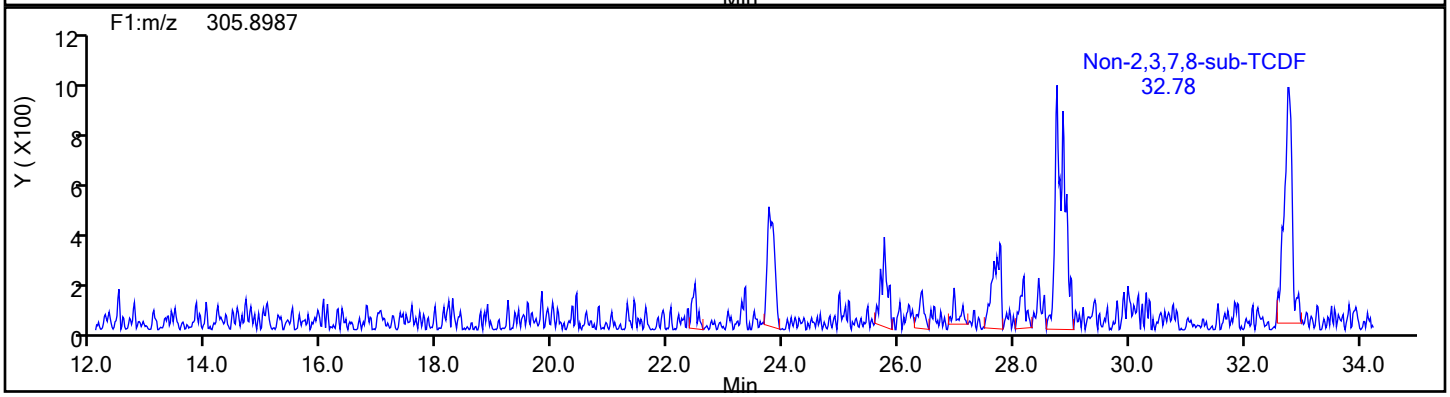
Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

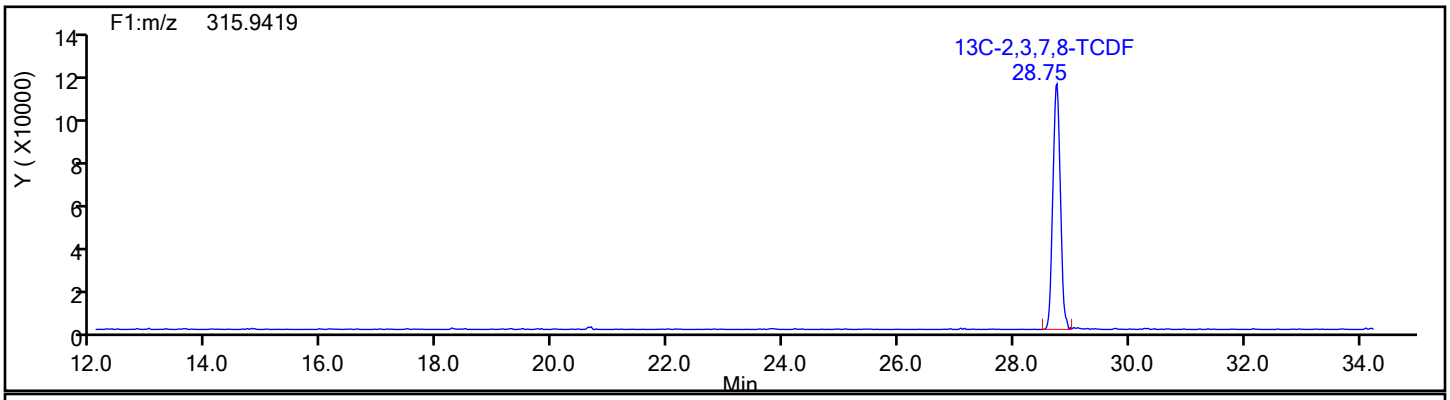
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

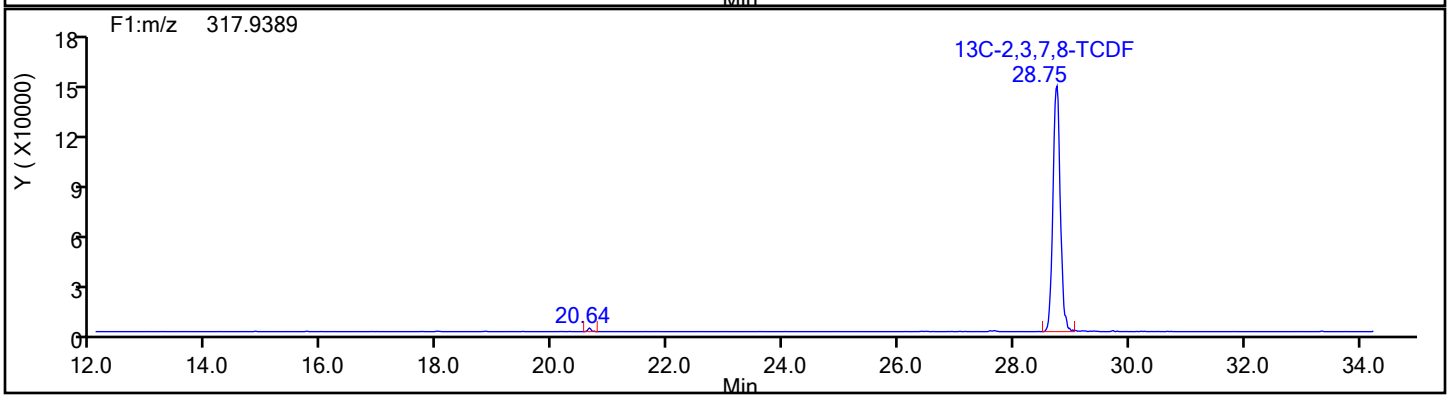
TCDF





TCDF Standards



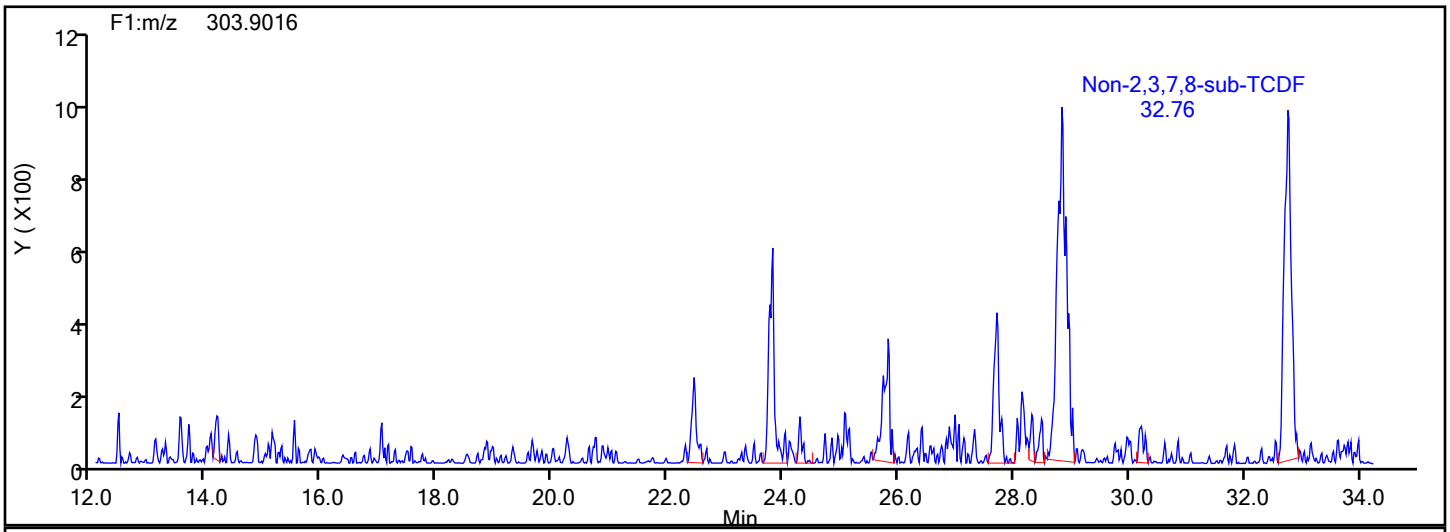


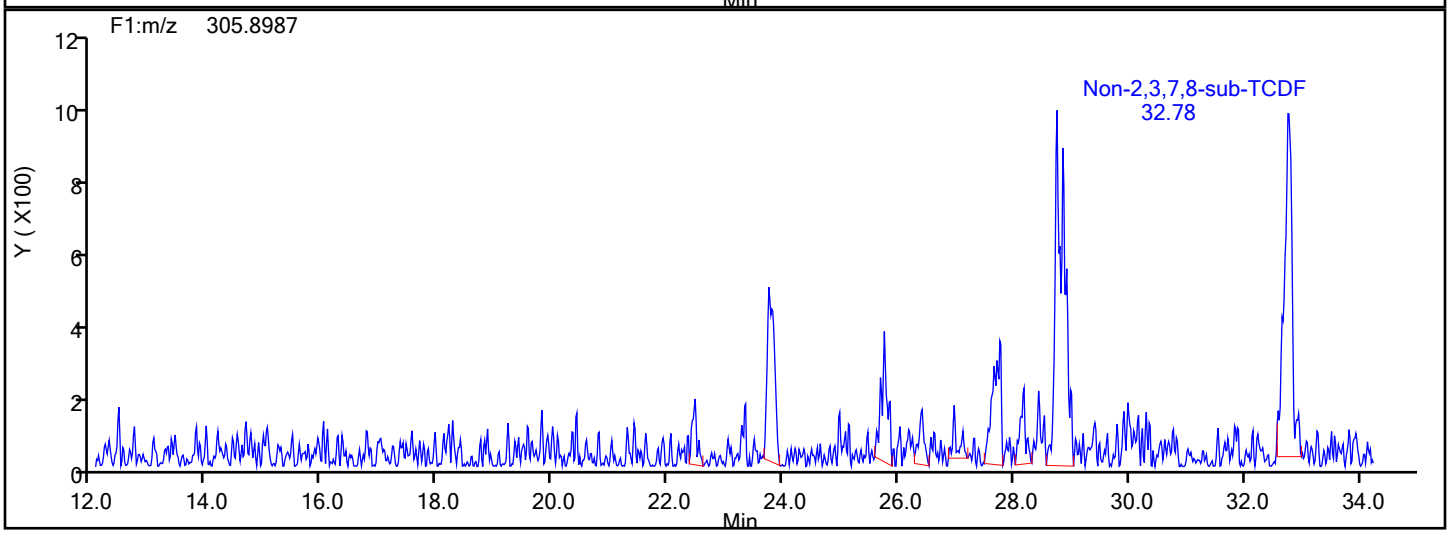
Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

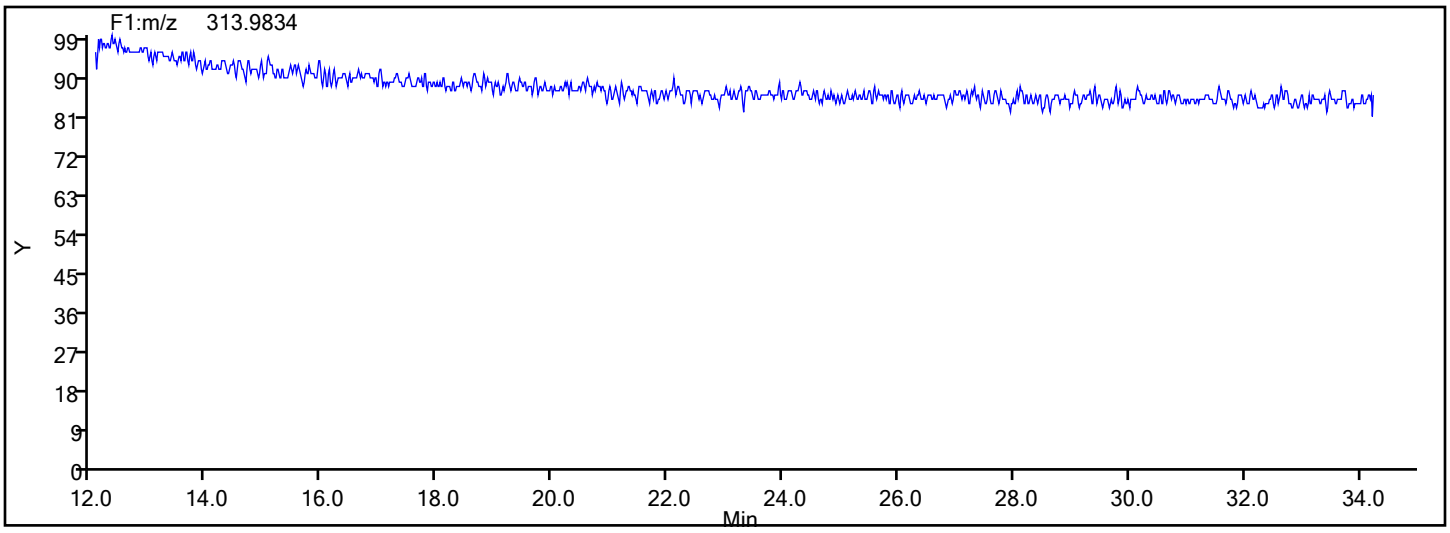
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

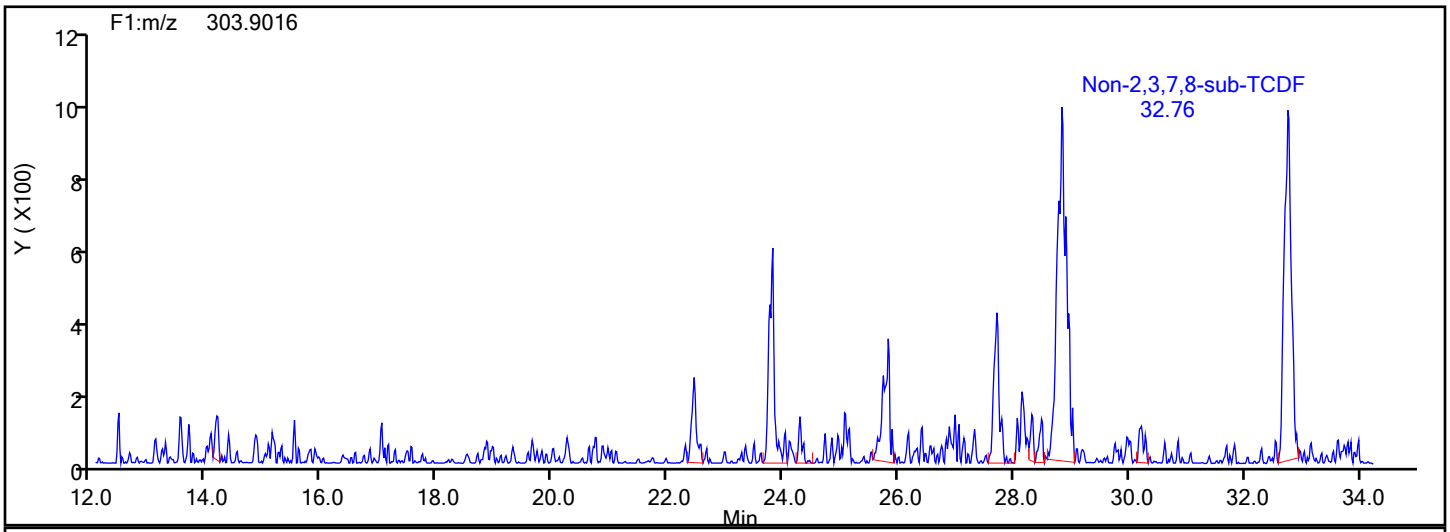


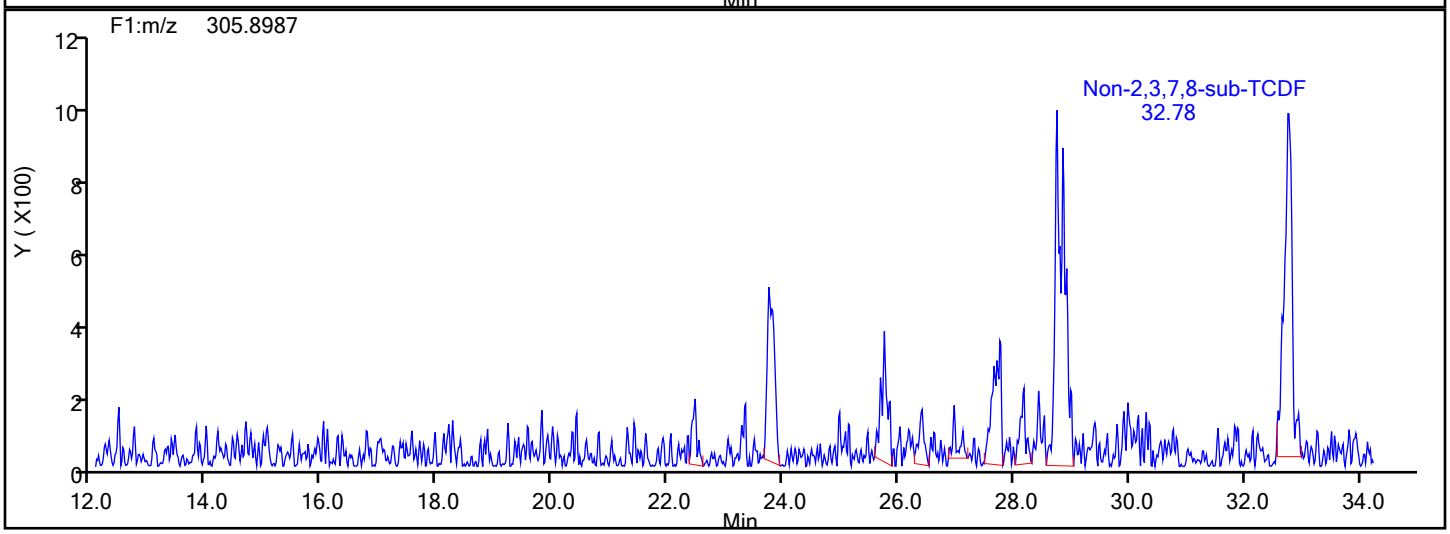
Report Date: 17-Dec-2019 21:26:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

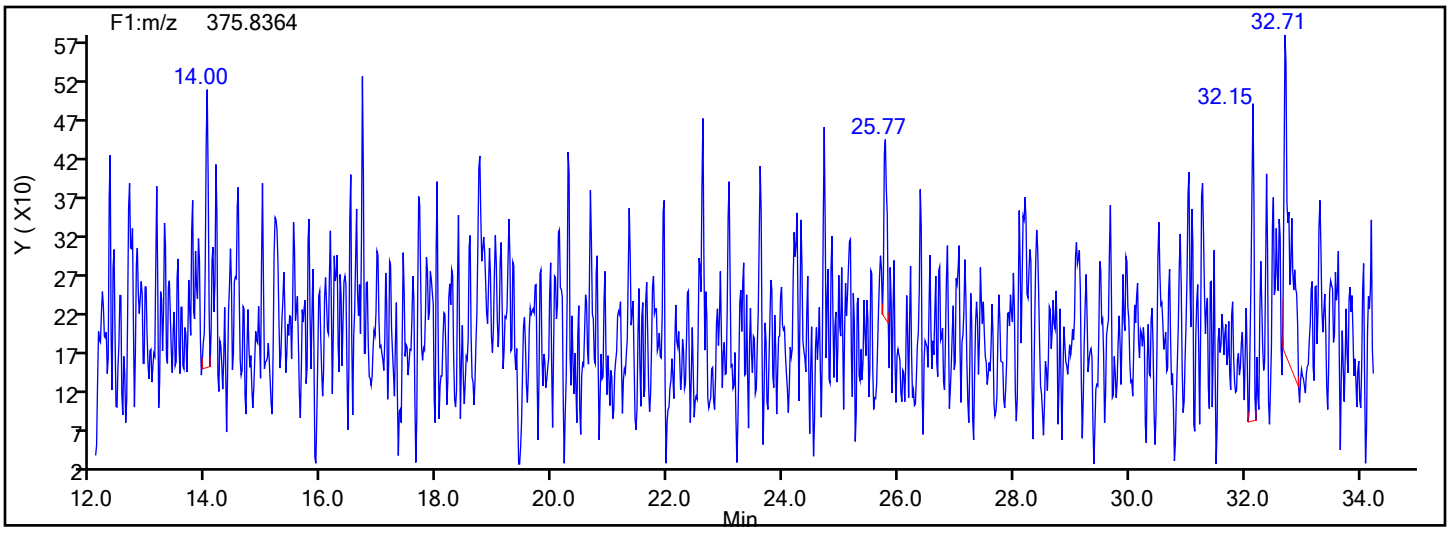
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

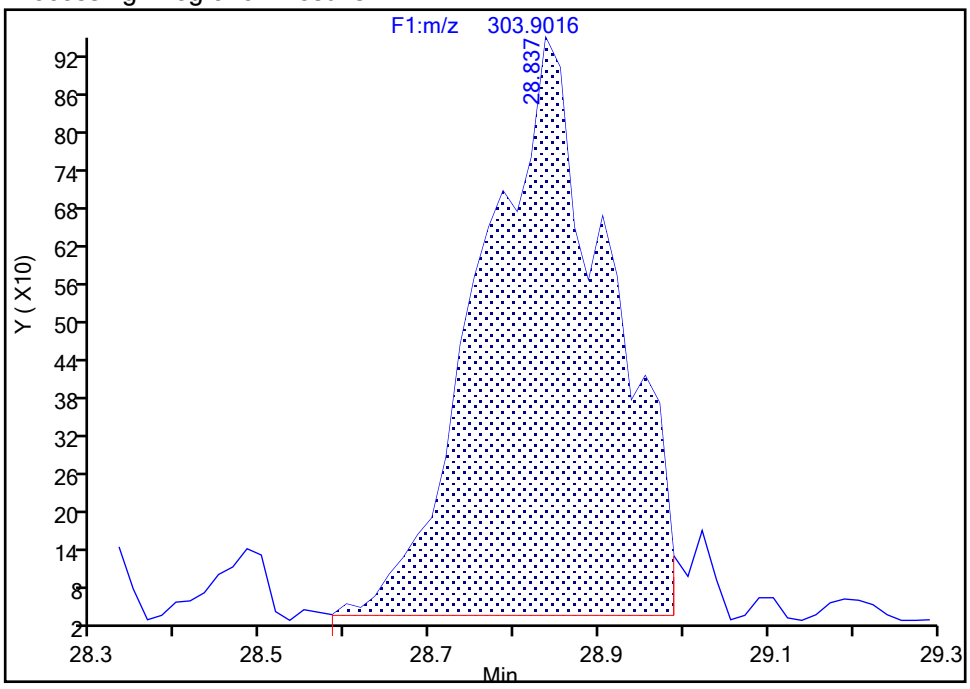
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

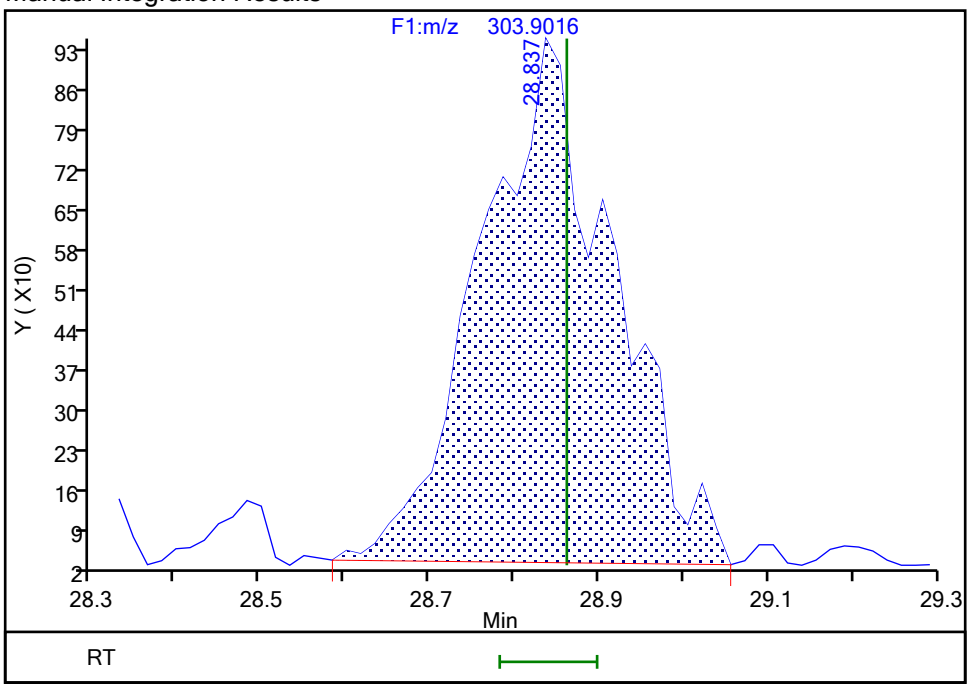
Processing Integration Results

RT: 28.84
Area: 9699
Amount: 0.279102
Amount Units: pg/ul



Manual Integration Results

RT: 28.84
Area: 10085
Amount: 0.405790
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:43:49

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

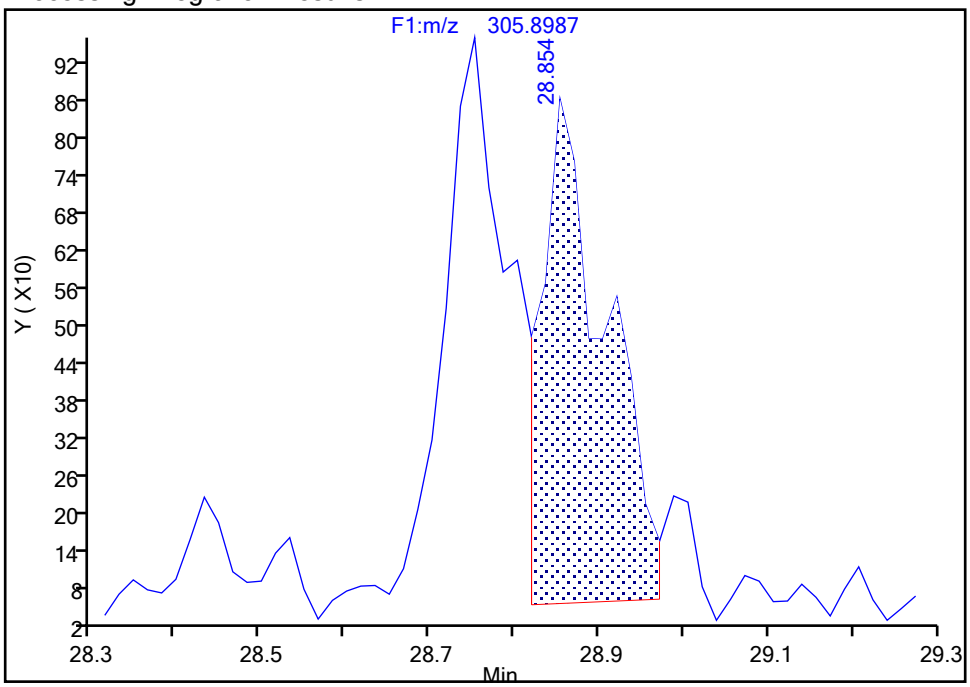
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

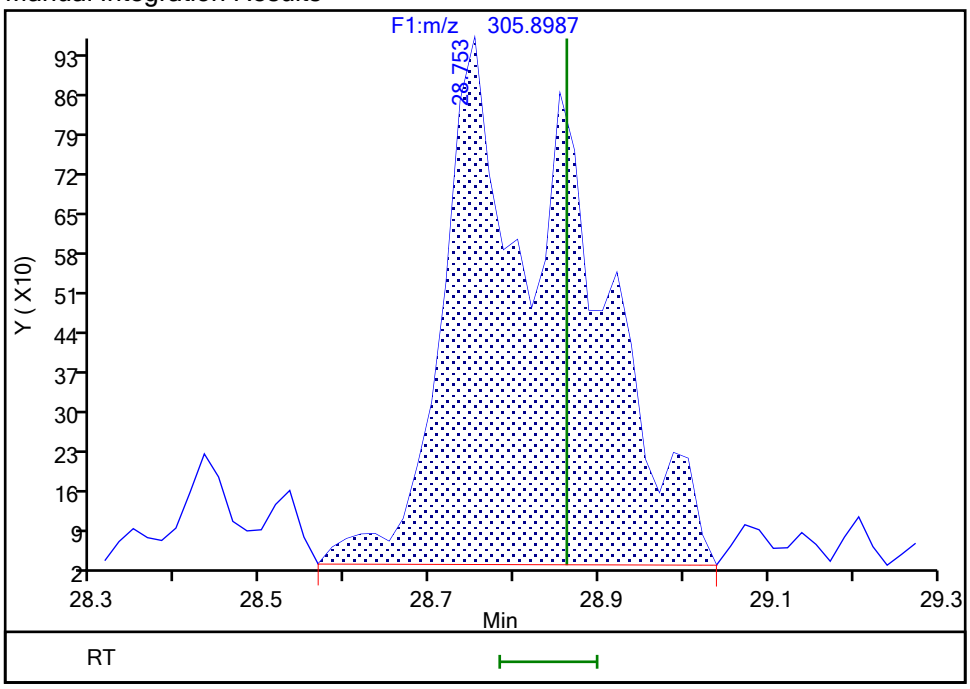
Processing Integration Results

RT: 28.85
Area: 4187
Amount: 0.279102
Amount Units: pg/ul



Manual Integration Results

RT: 28.75
Area: 10104
Amount: 0.405790
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:43:54

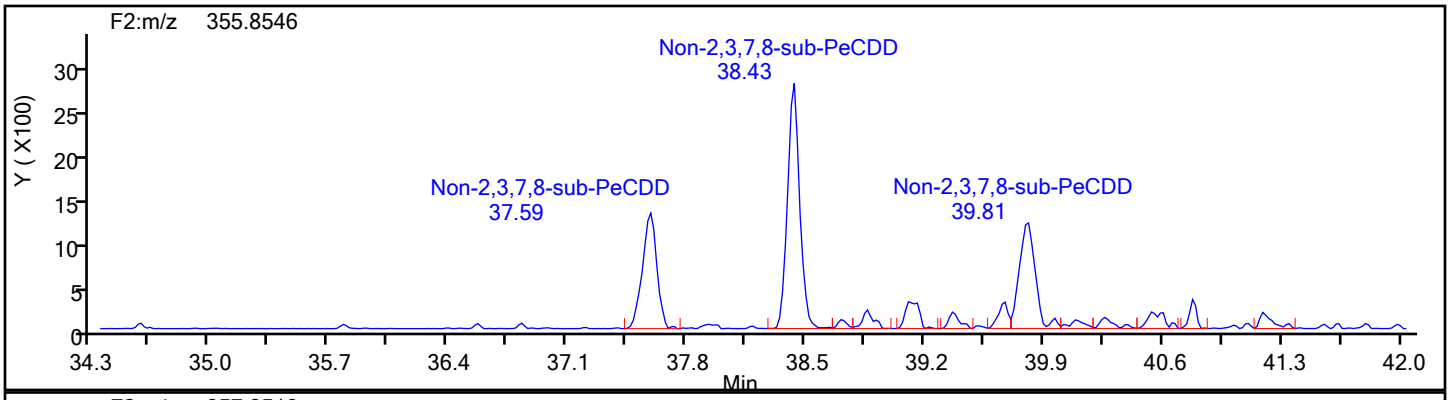
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

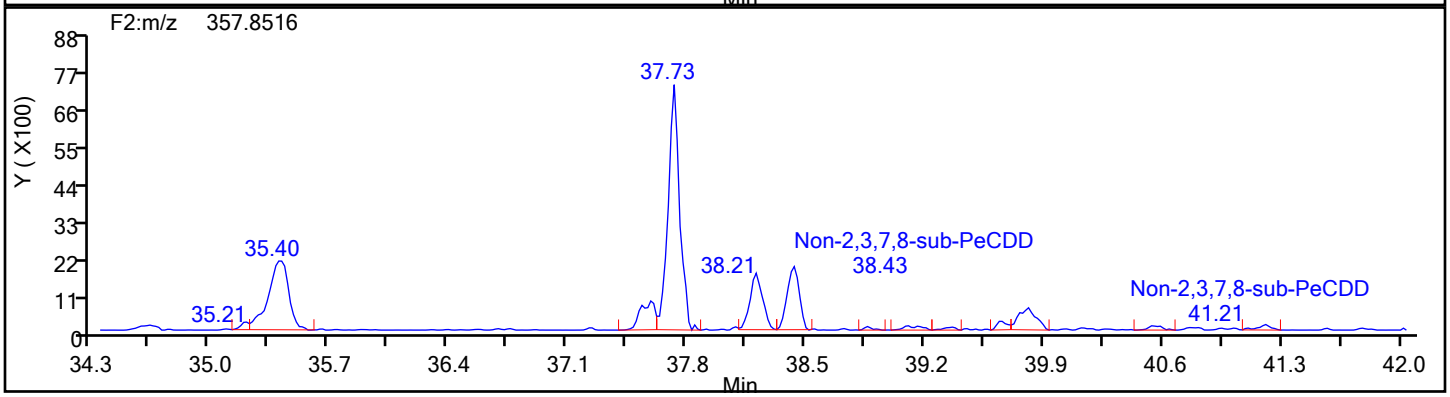
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

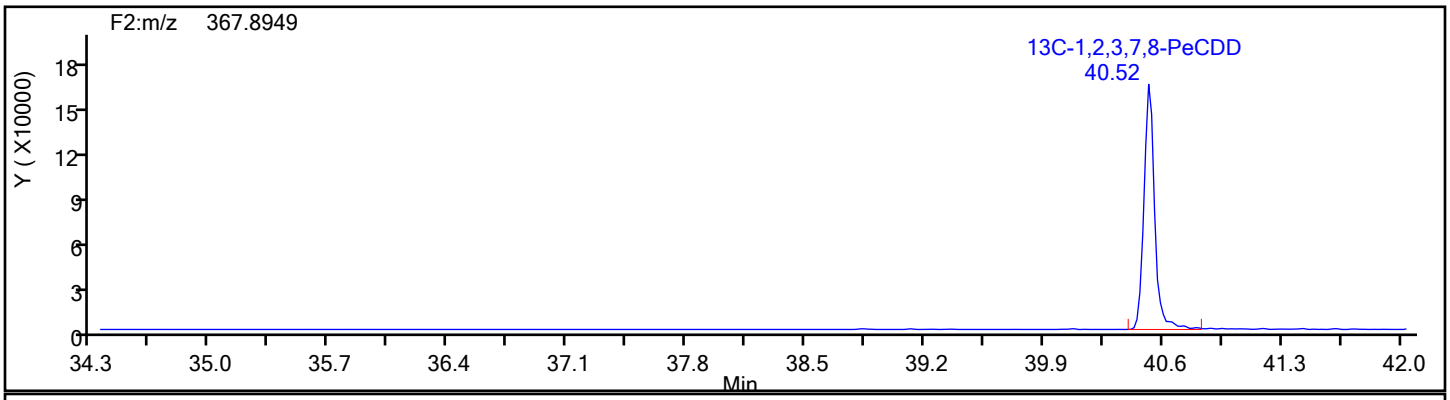
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

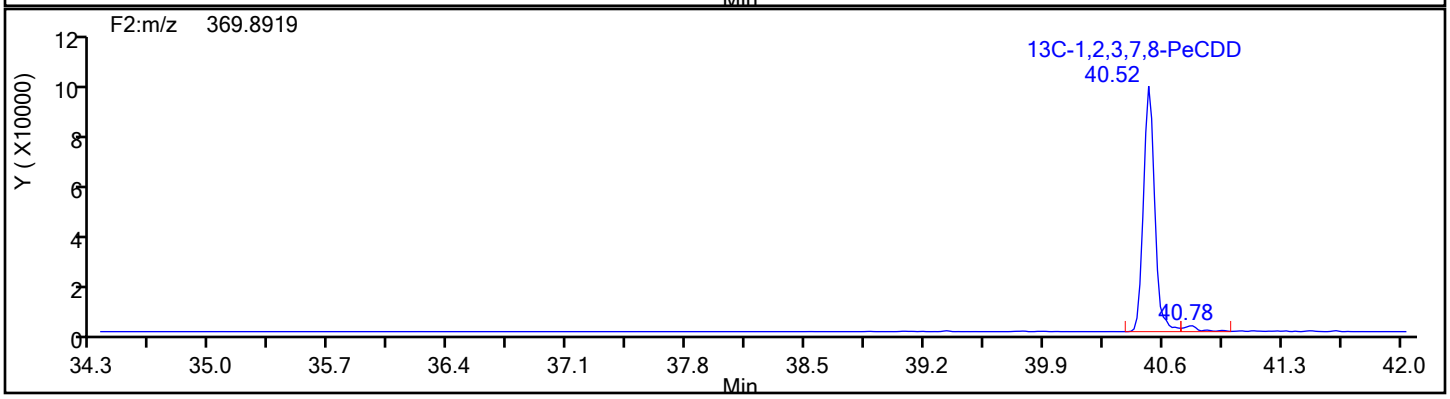
PeCDD





PeCDD Standards



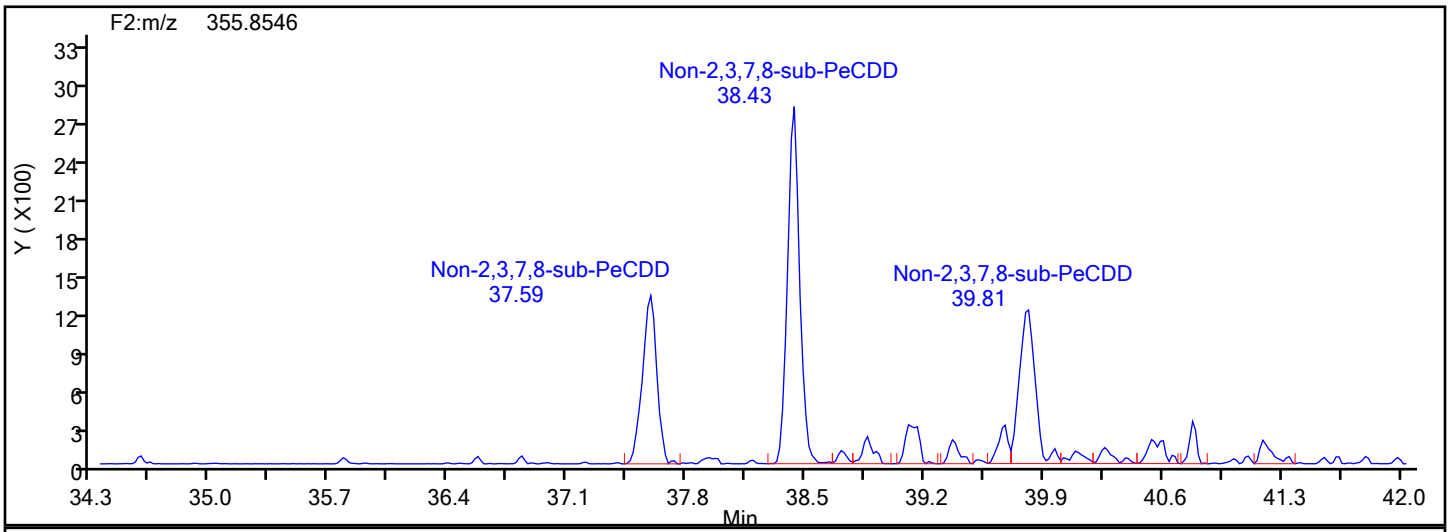


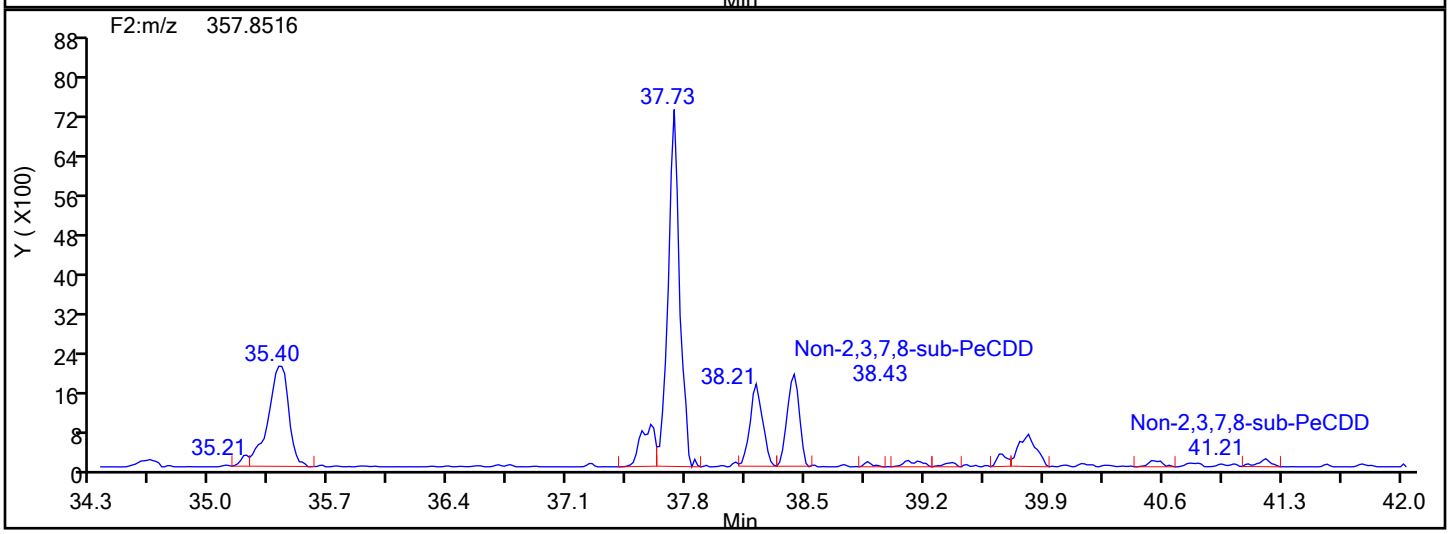
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

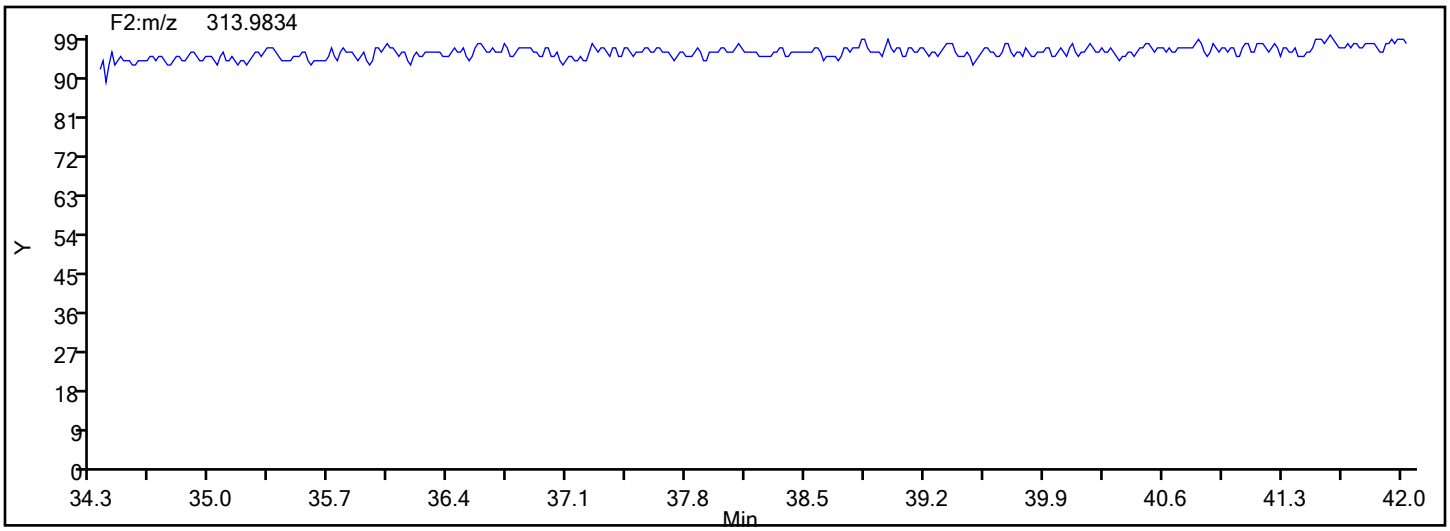
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

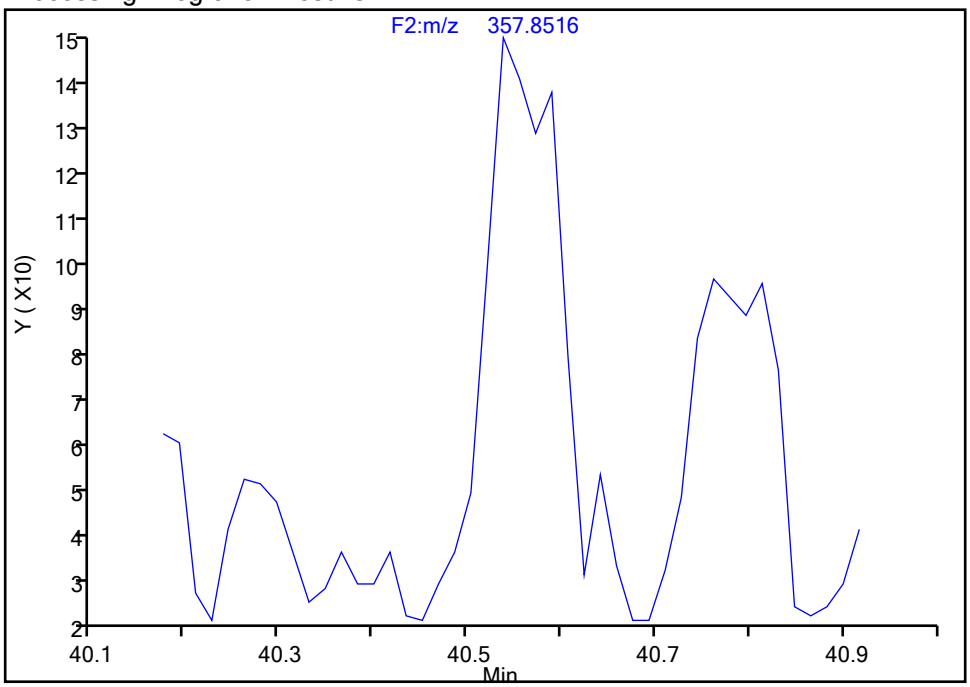
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

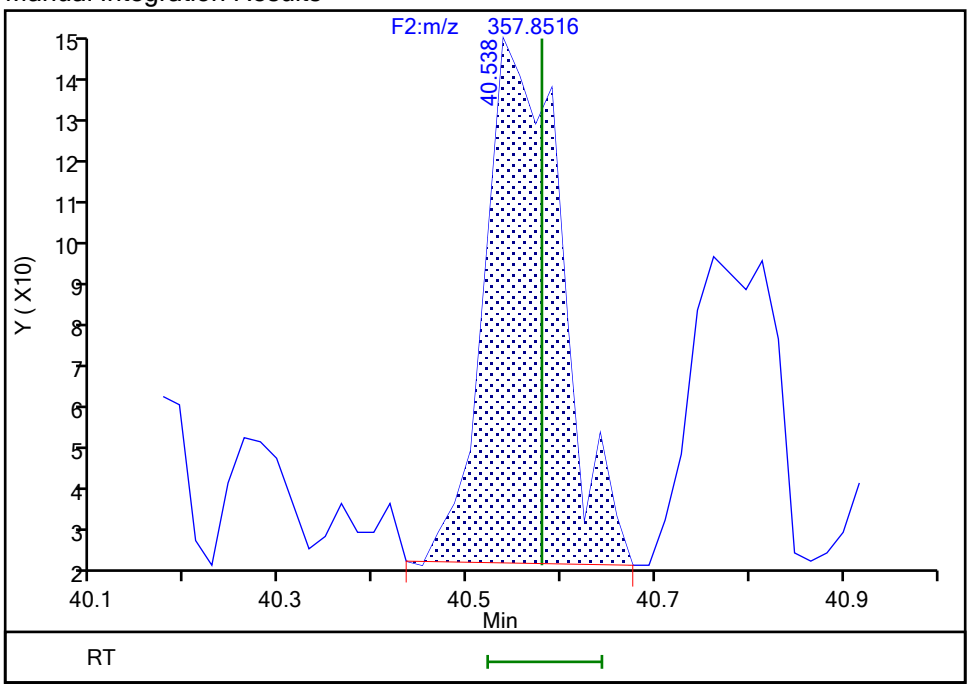
Not Detected
Expected RT: 40.58

Processing Integration Results



Manual Integration Results

RT: 40.54
Area: 727
Amount: 0.083809
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:45:57
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

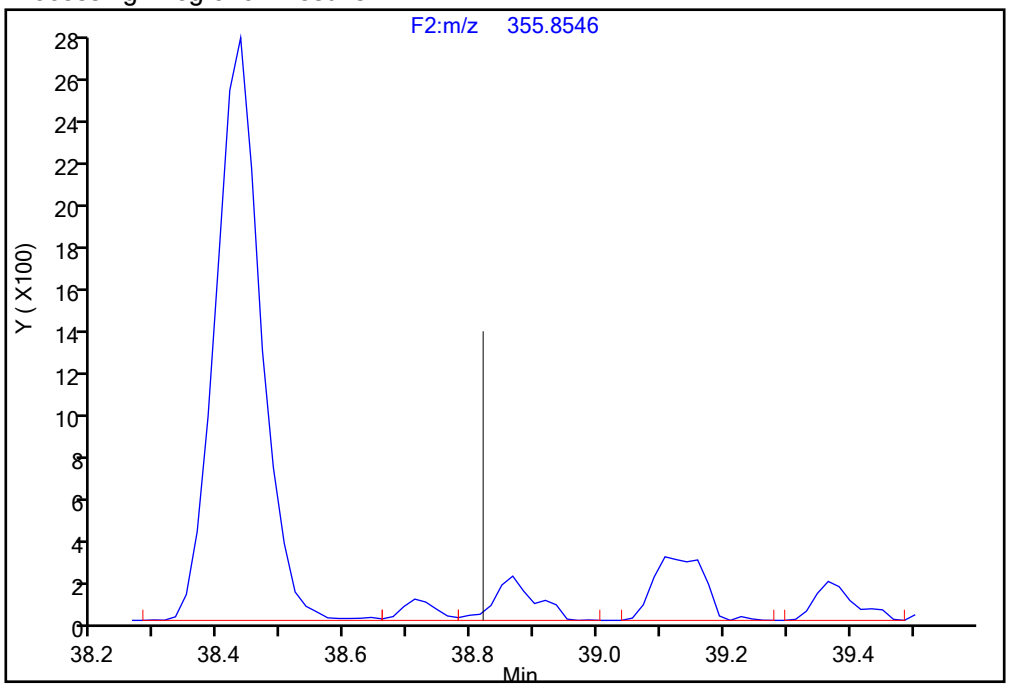
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

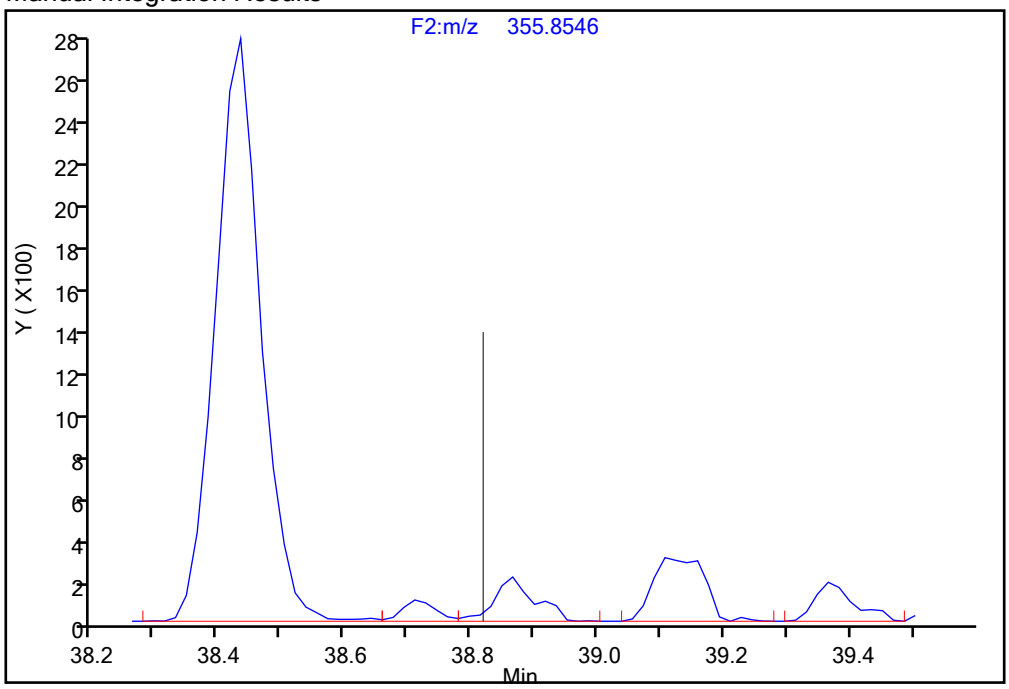
Processing Integration Results

RT = 38.866 Area = 935



Manual Integration Results

RT = 38.866 Area = 935



Reviewer: davidsonm, 17-Dec-2019 12:47:11

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

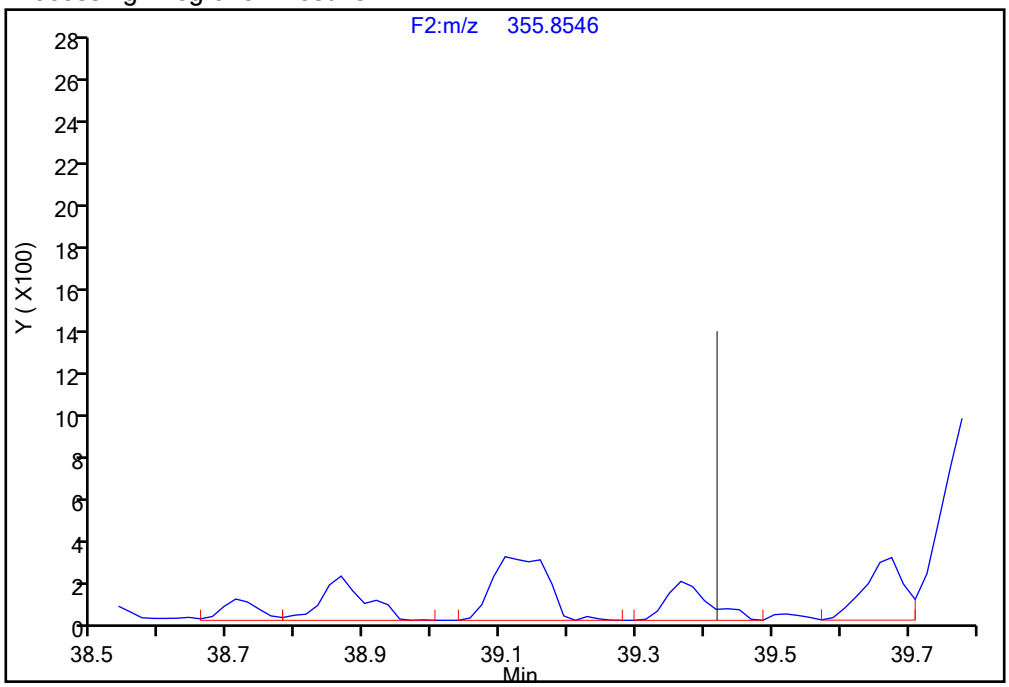
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

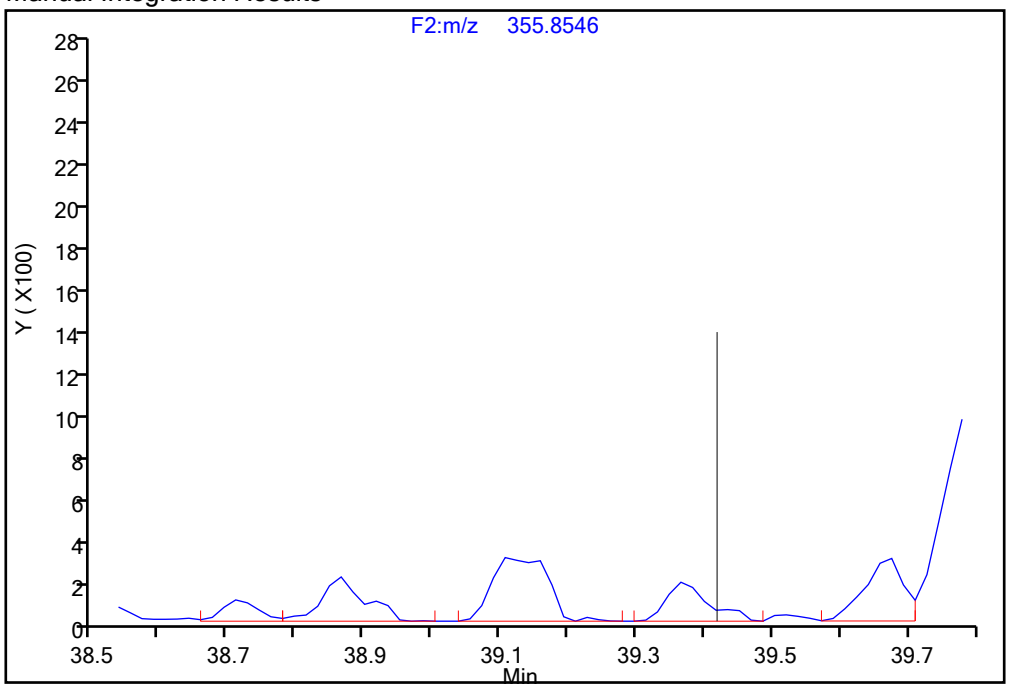
Processing Integration Results

RT = 39.107 Area = 1721



Manual Integration Results

RT = 39.107 Area = 1721



Reviewer: davidsonm, 17-Dec-2019 12:47:11

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

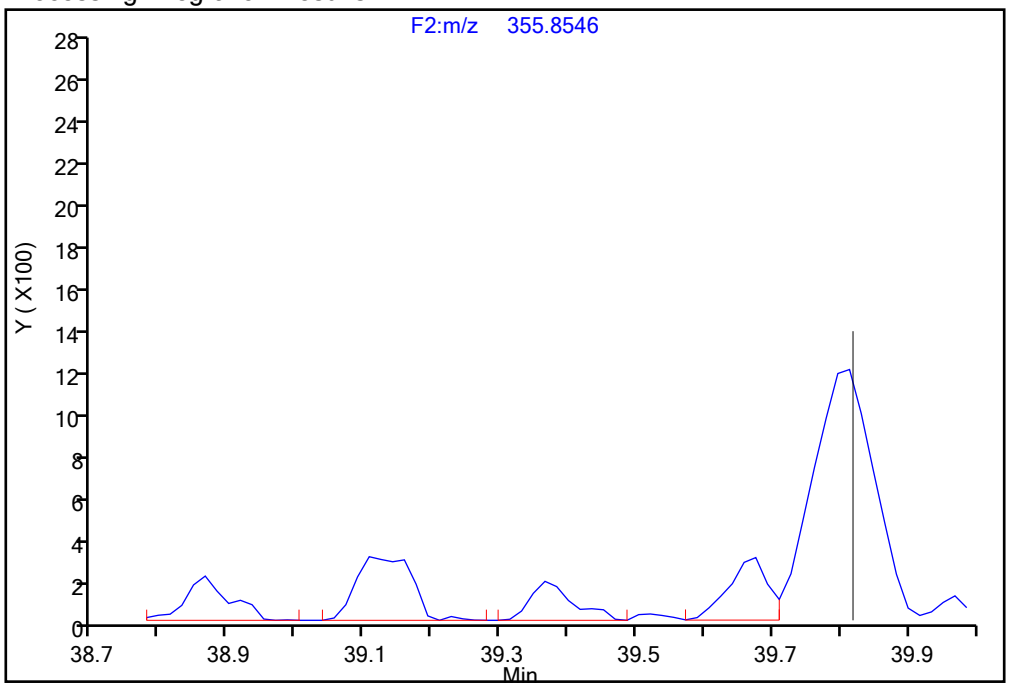
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

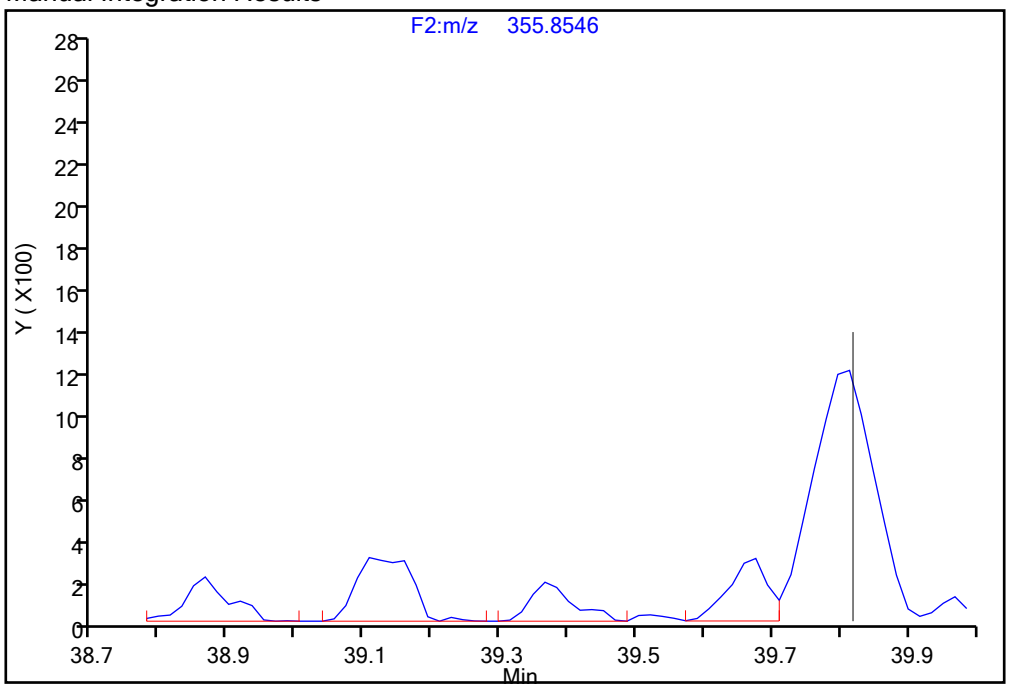
Processing Integration Results

RT = 39.366 Area = 804



Manual Integration Results

RT = 39.366 Area = 804



Reviewer: davidsonm, 17-Dec-2019 12:47:11

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

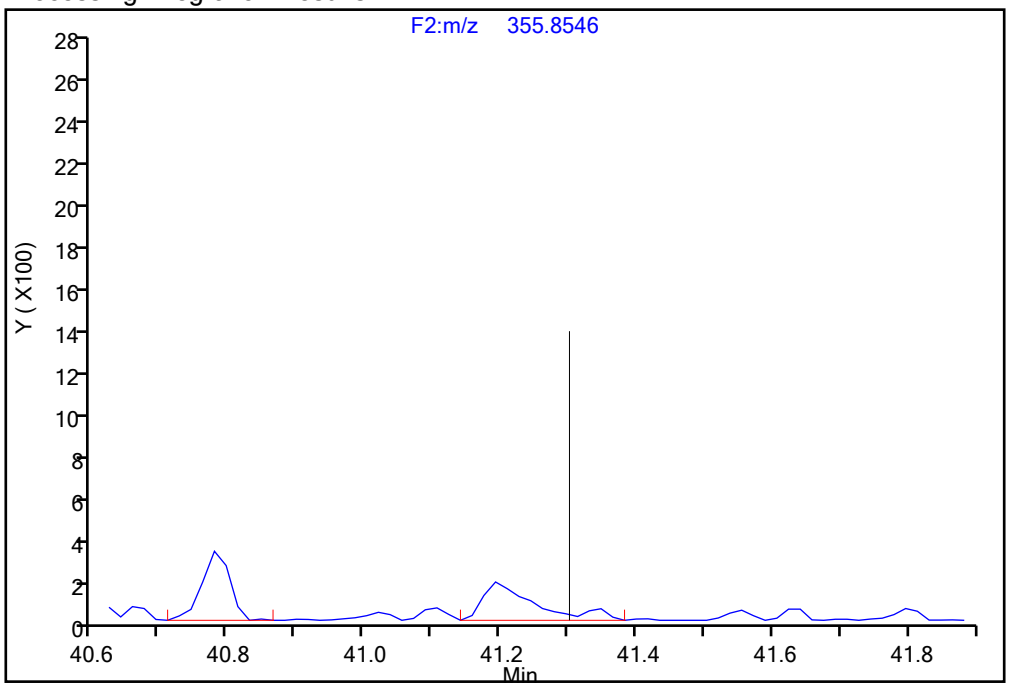
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.58- 41.30)

Signal: 1

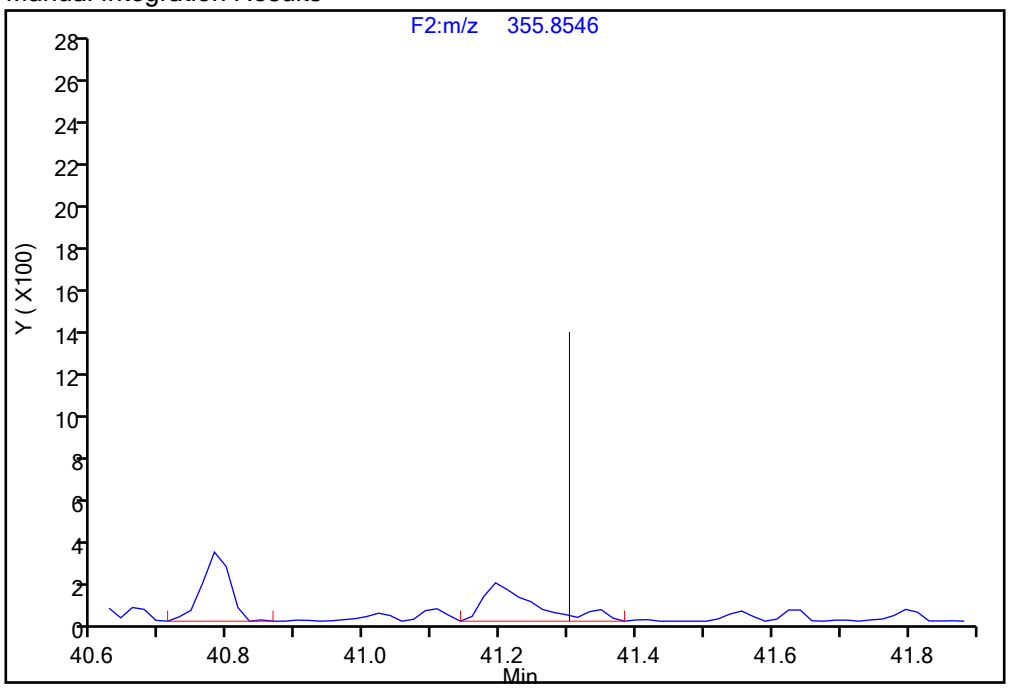
Processing Integration Results

RT = 41.193 Area = 972



Manual Integration Results

RT = 41.193 Area = 972



Reviewer: davidsonm, 17-Dec-2019 12:47:11

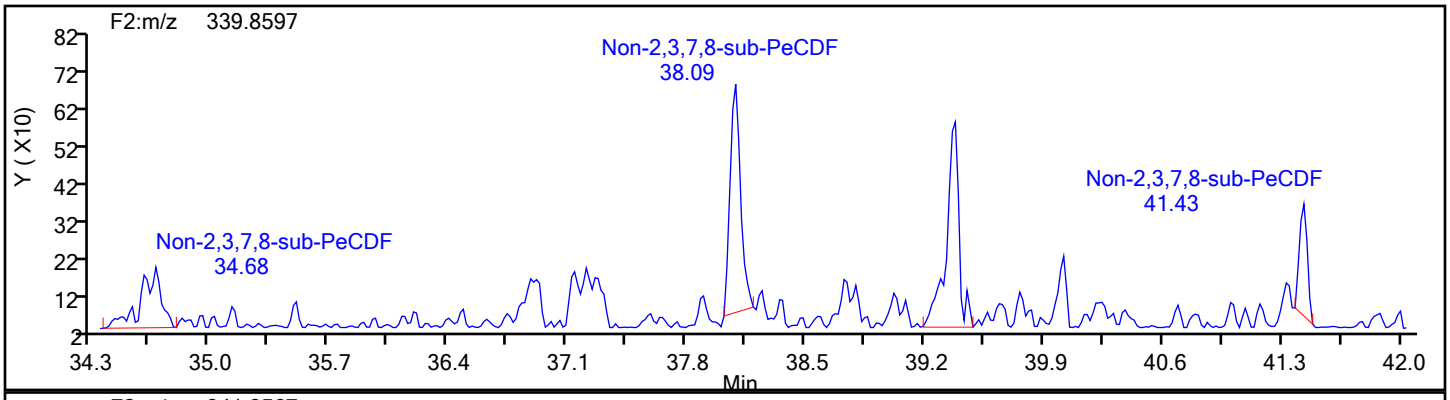
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

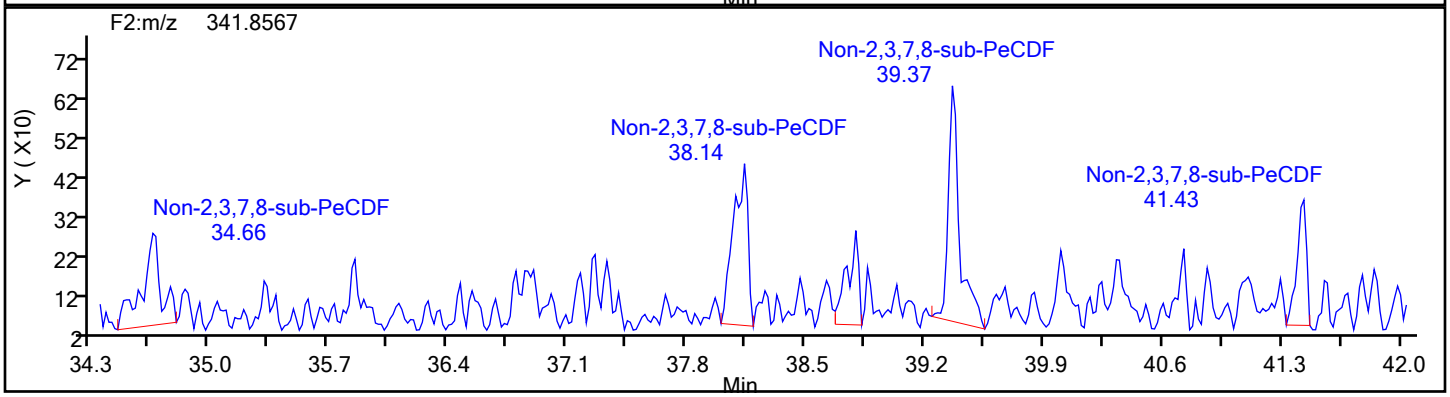
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

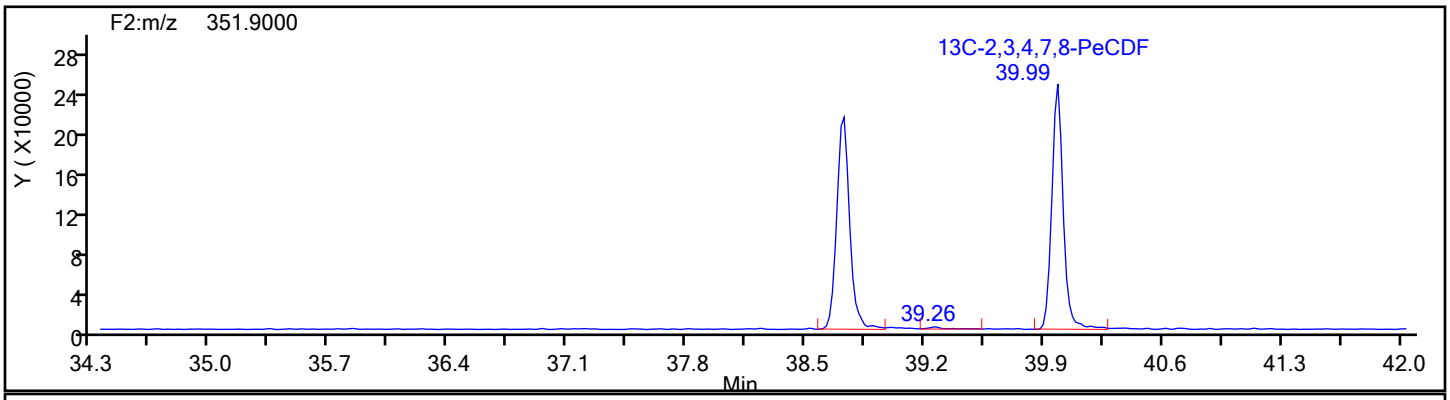
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

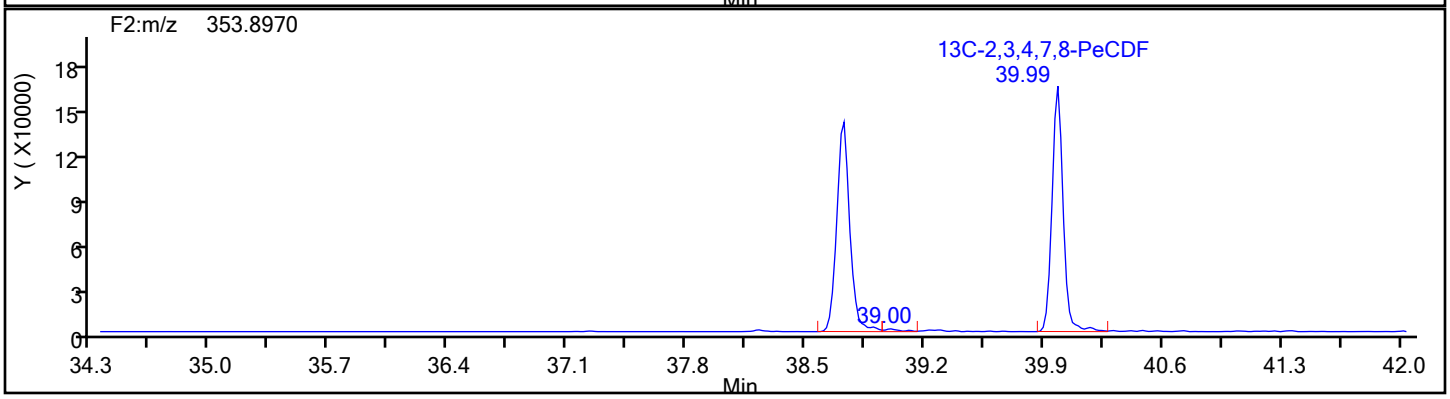
PeCDF





PeCDF Standards



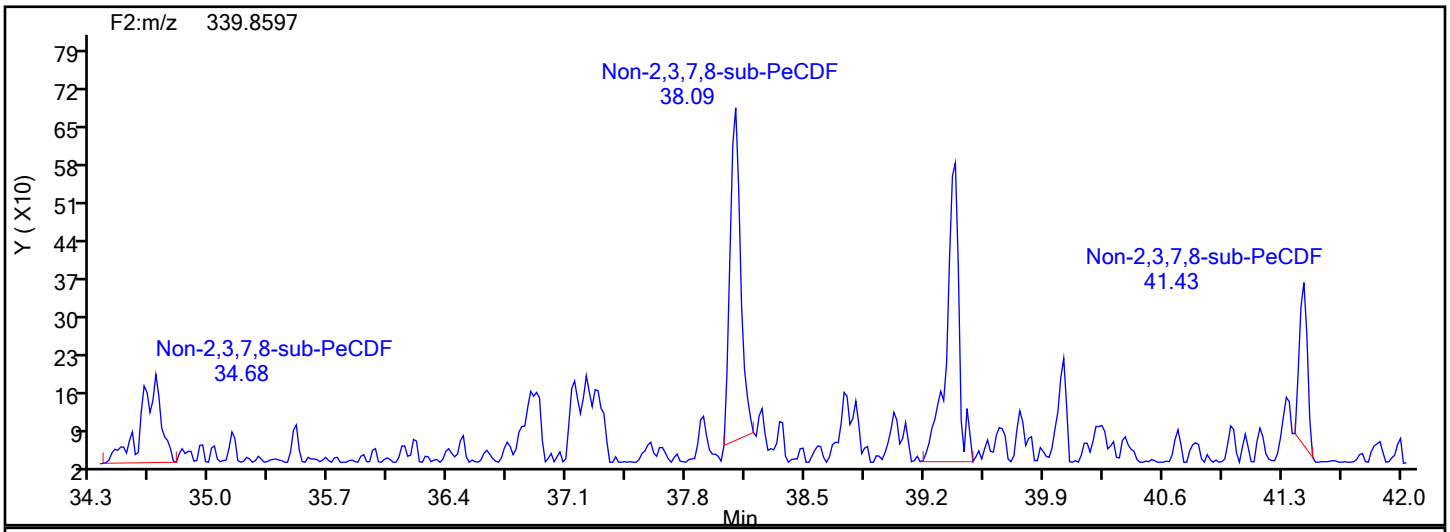


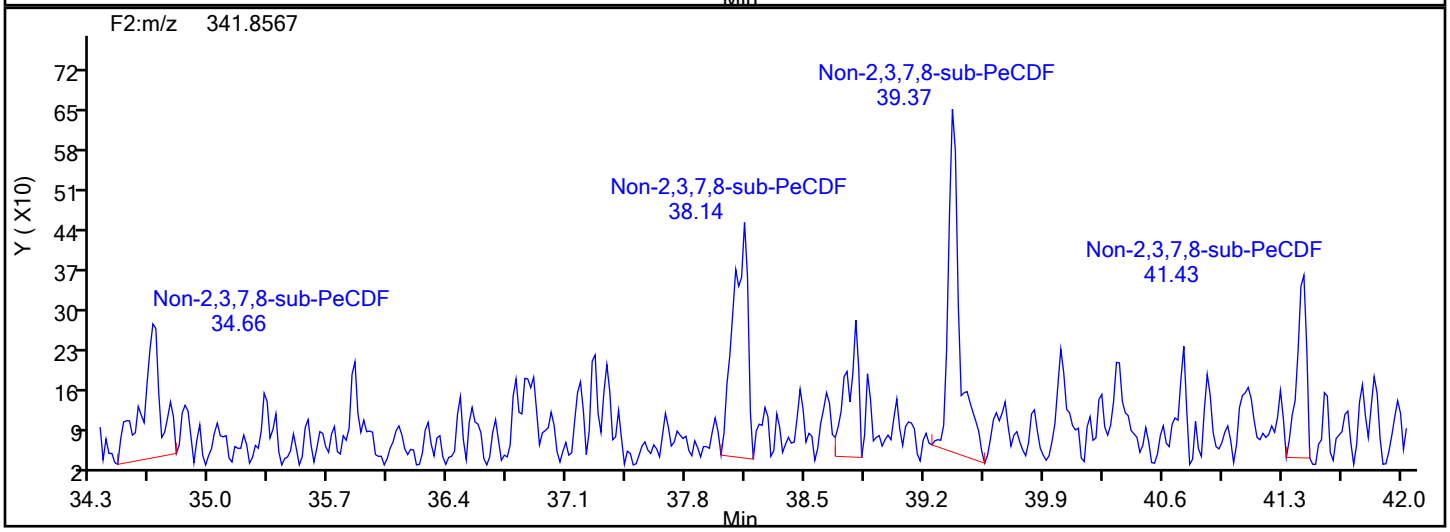
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

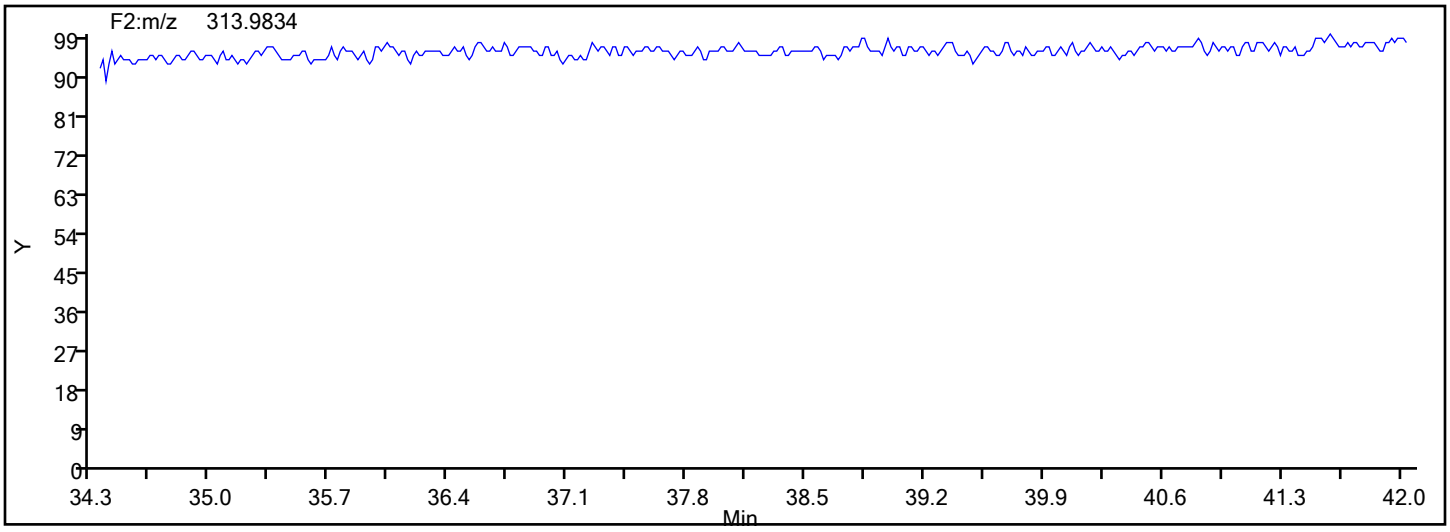
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

PeCDF





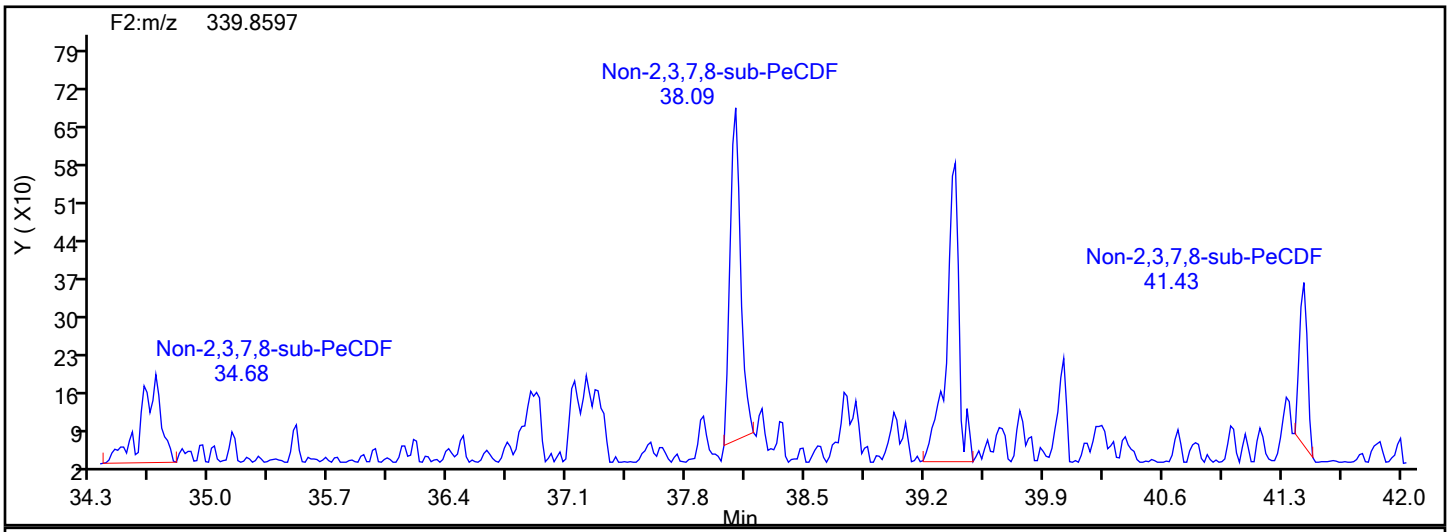
PeCDF Lock Mass

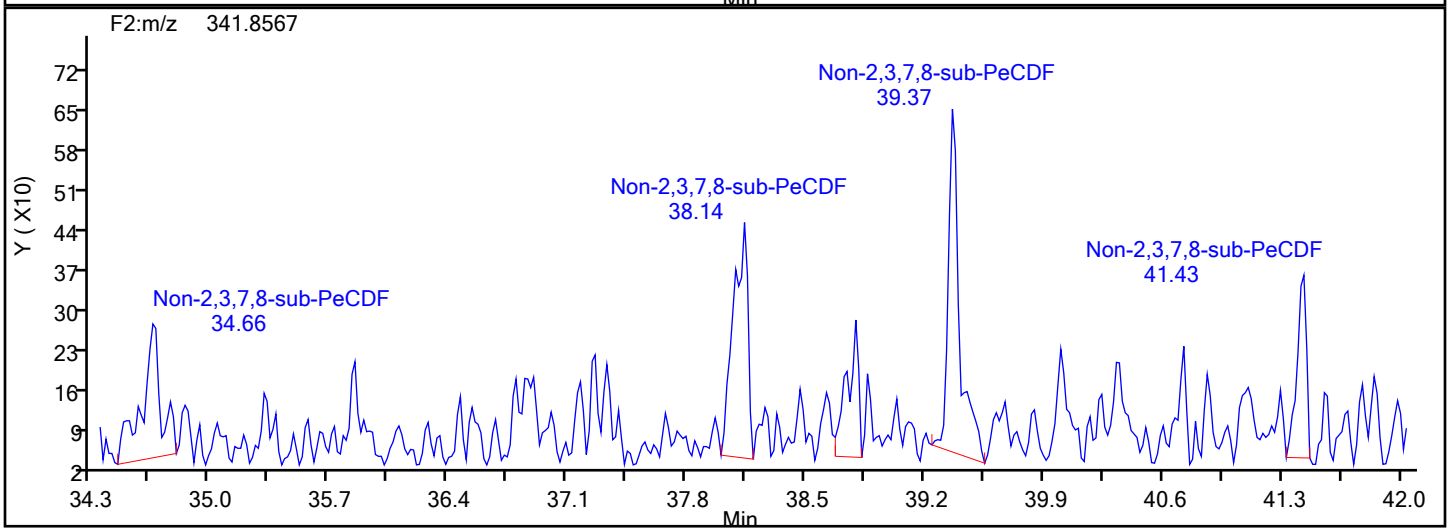


Eurofins TestAmerica, Knoxville

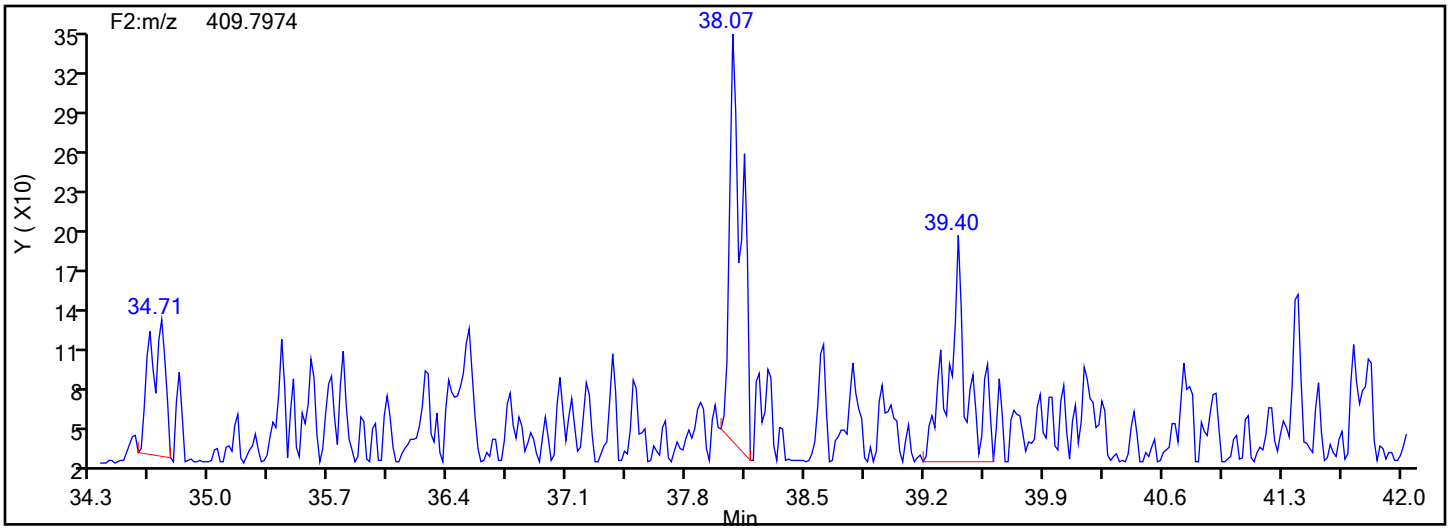
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

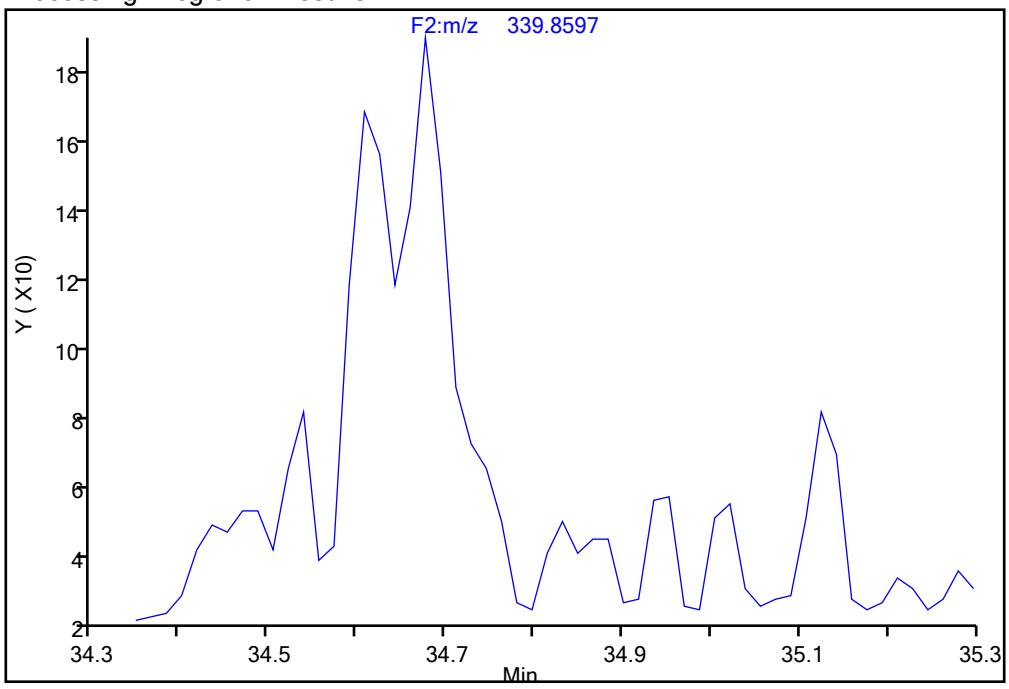
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

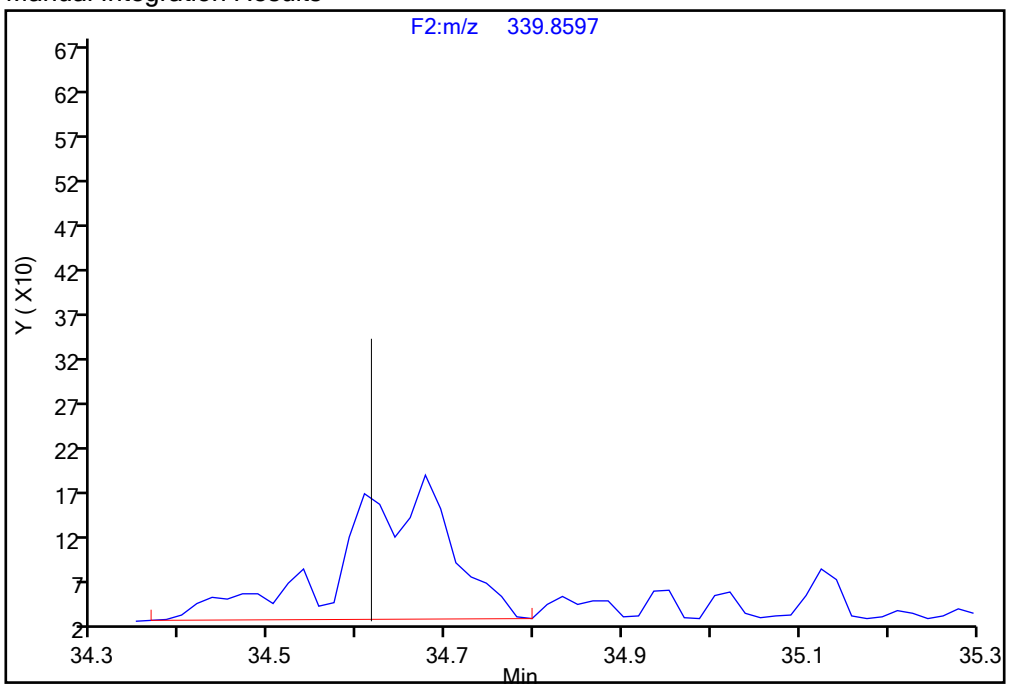
Not Detected
RT: 34.62- 41.42

Processing Integration Results



Manual Integration Results

RT = 34.677 Area = 1367 M



Reviewer: mcwhirterl, 17-Dec-2019 21:18:33
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

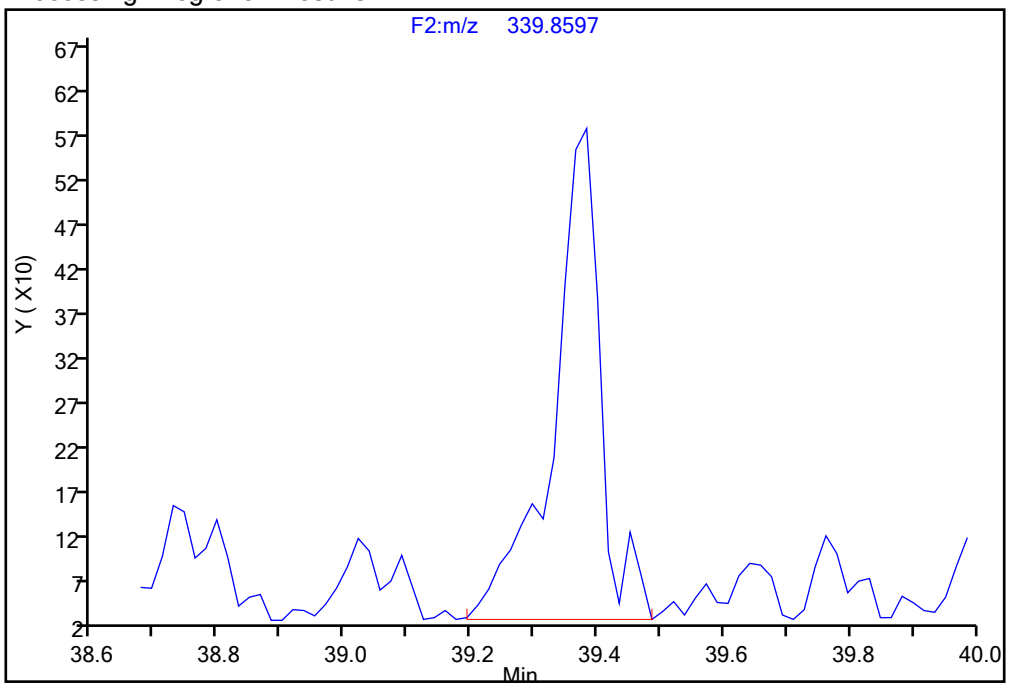
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.62- 41.42)

Signal: 1

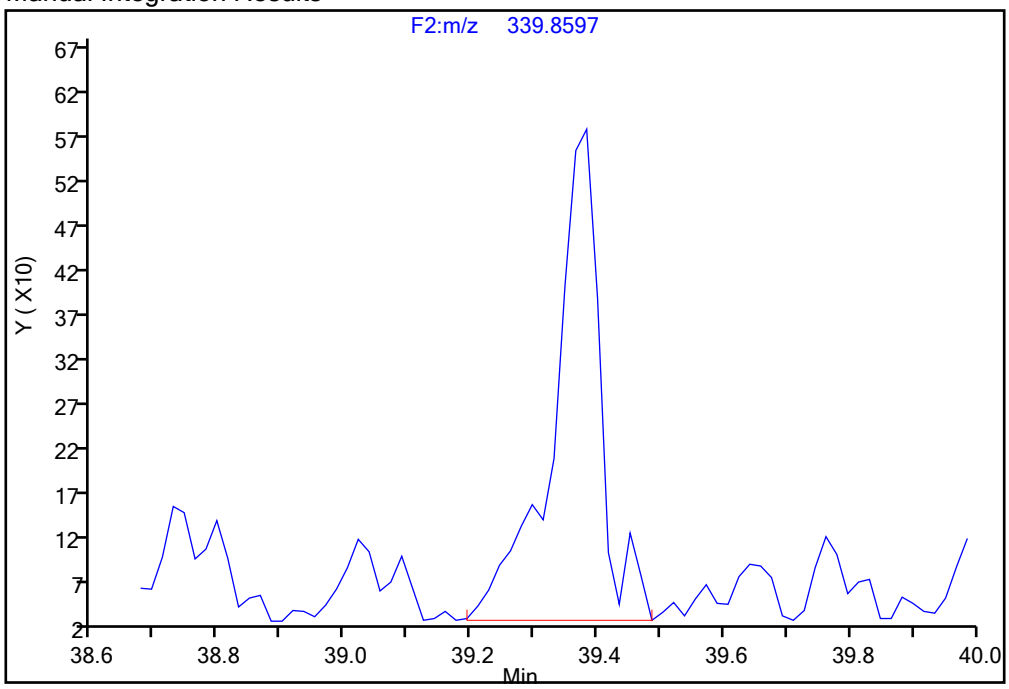
Processing Integration Results

RT = 39.383 Area = 2876



Manual Integration Results

RT = 39.383 Area = 2876



Reviewer: mcwhirterl, 17-Dec-2019 21:18:33

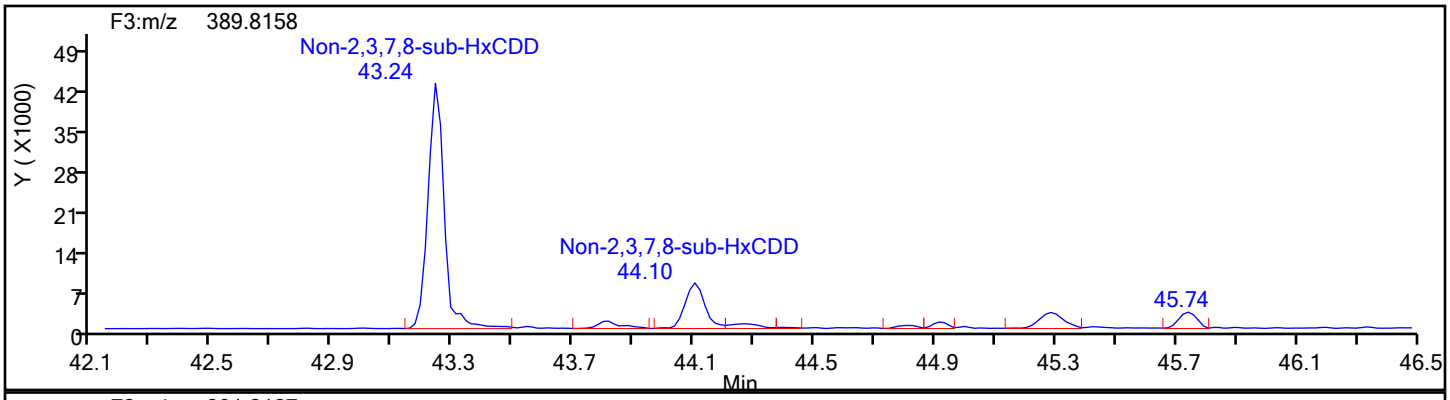
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

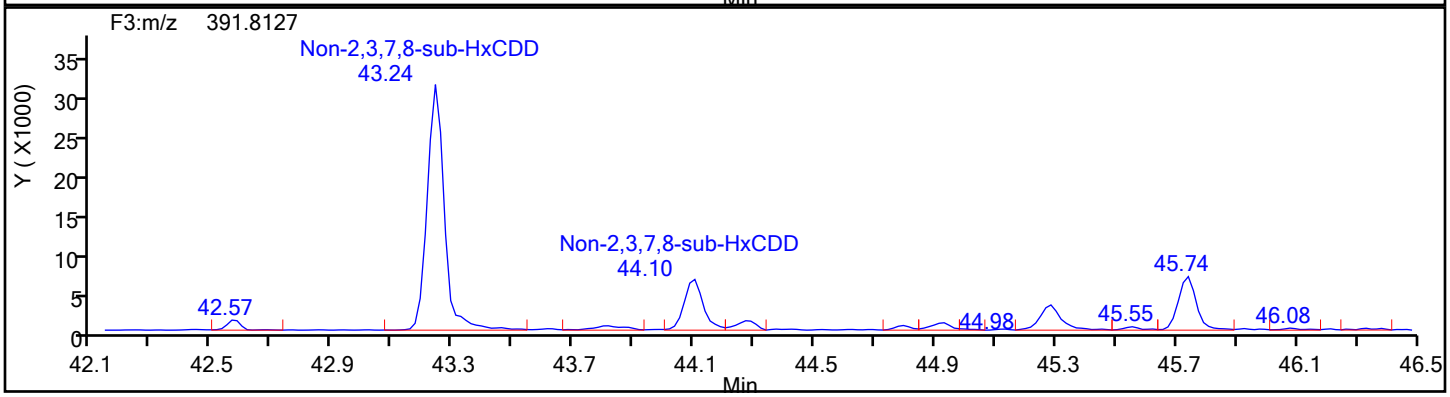
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

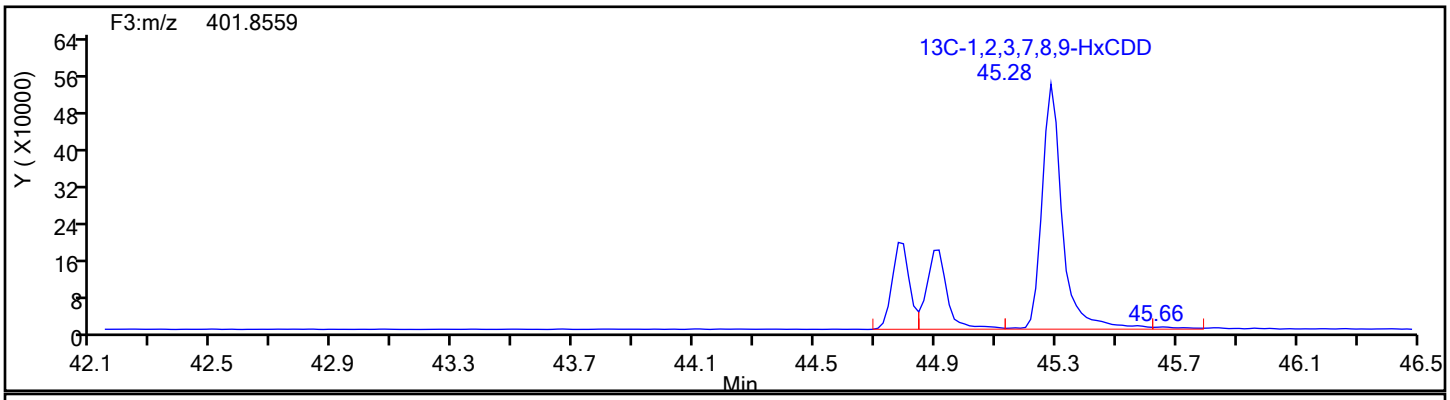
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

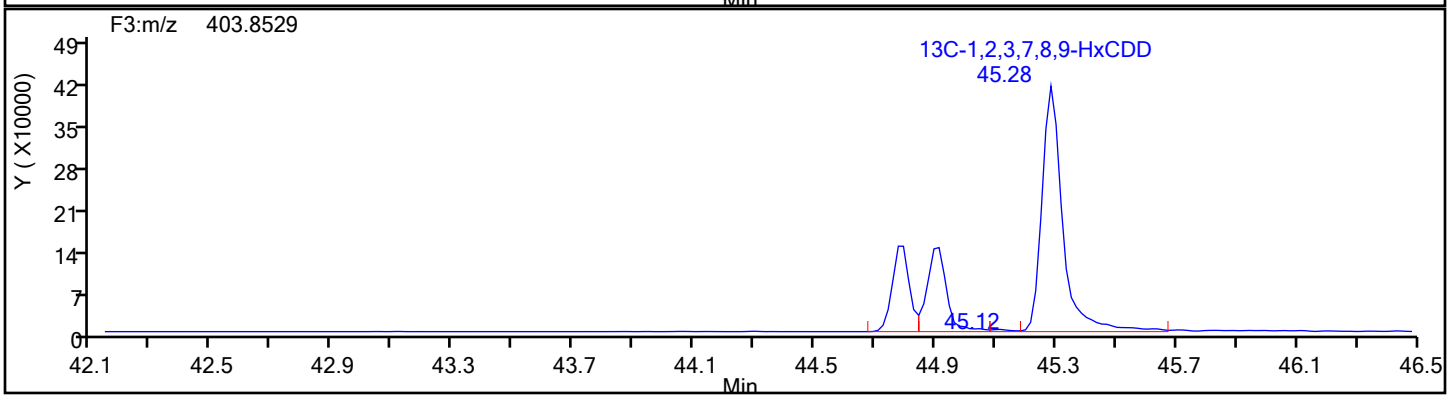
HxCDD





HxCDD Standards



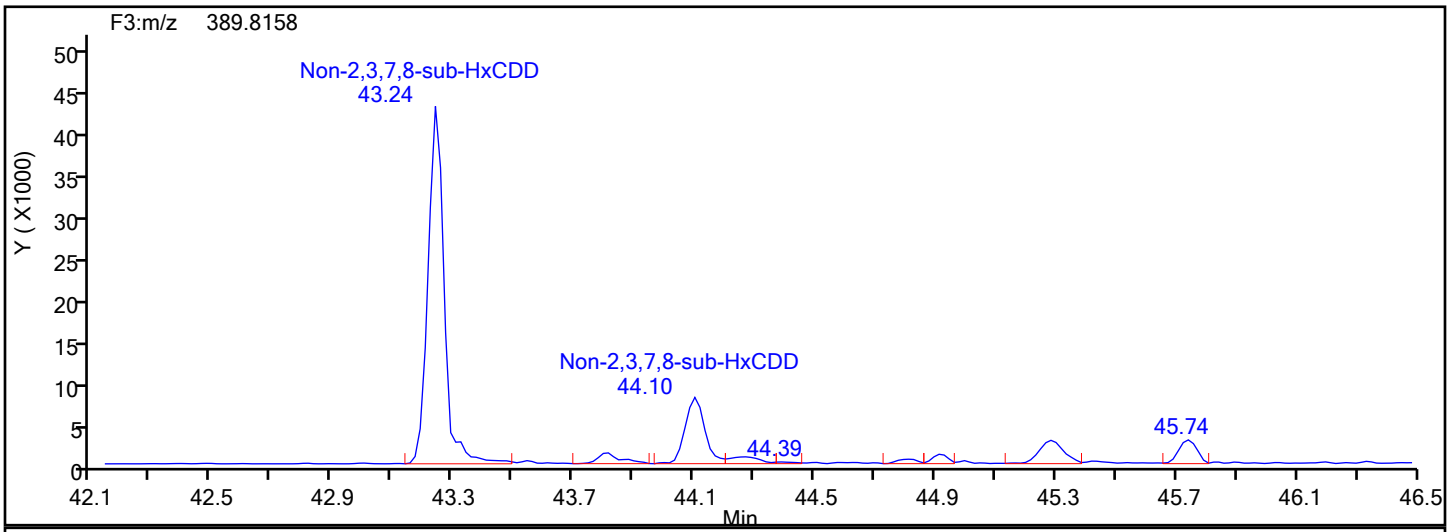


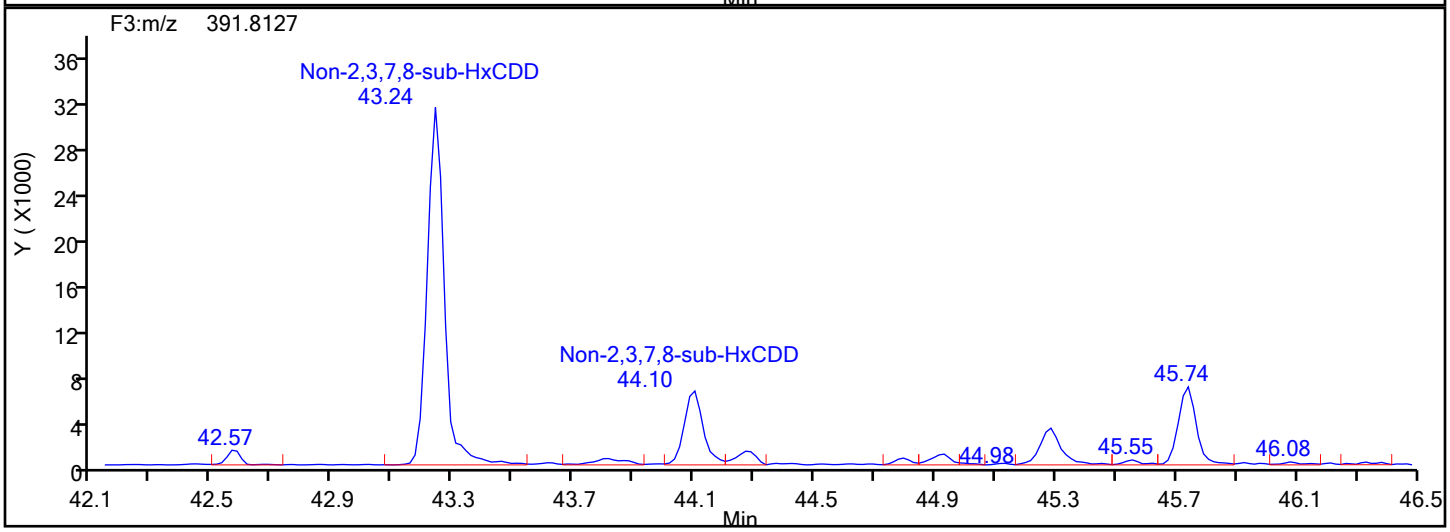
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

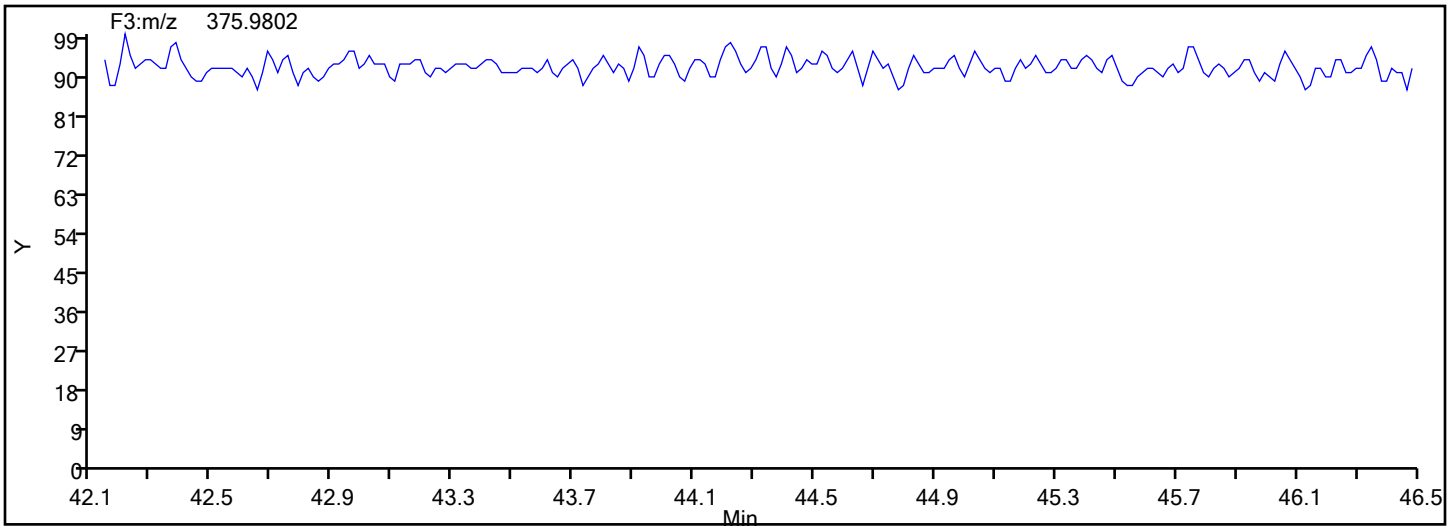
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT:	44.81
Area:	4720
Amount:	0.141251
Amount Units:	pg/ul

Manual Integration Results

RT:	44.91
Area:	8333
Amount:	0.249375
Amount Units:	pg/ul

Reviewer: davidsonm, 17-Dec-2019 12:48:30

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

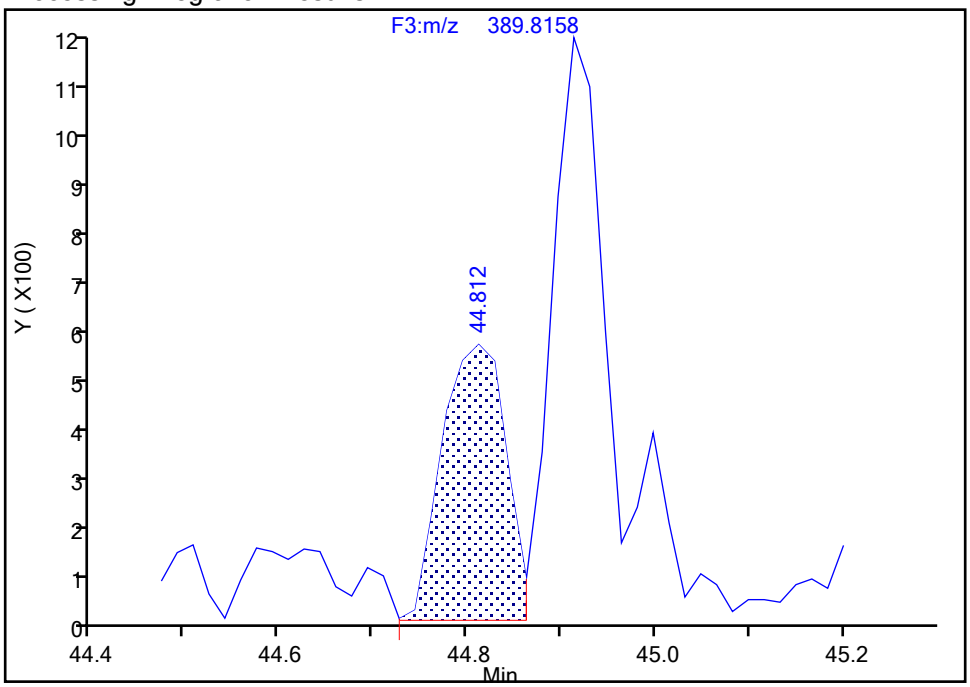
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

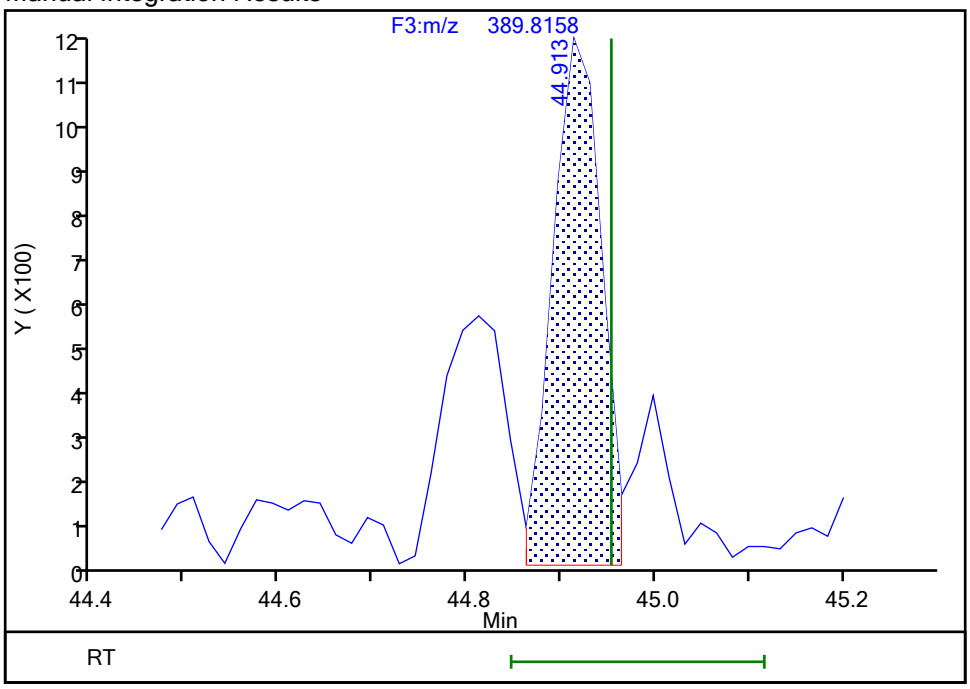
Processing Integration Results

RT: 44.81
Area: 2508
Amount: 0.141251
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 4030
Amount: 0.249375
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:48:32
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

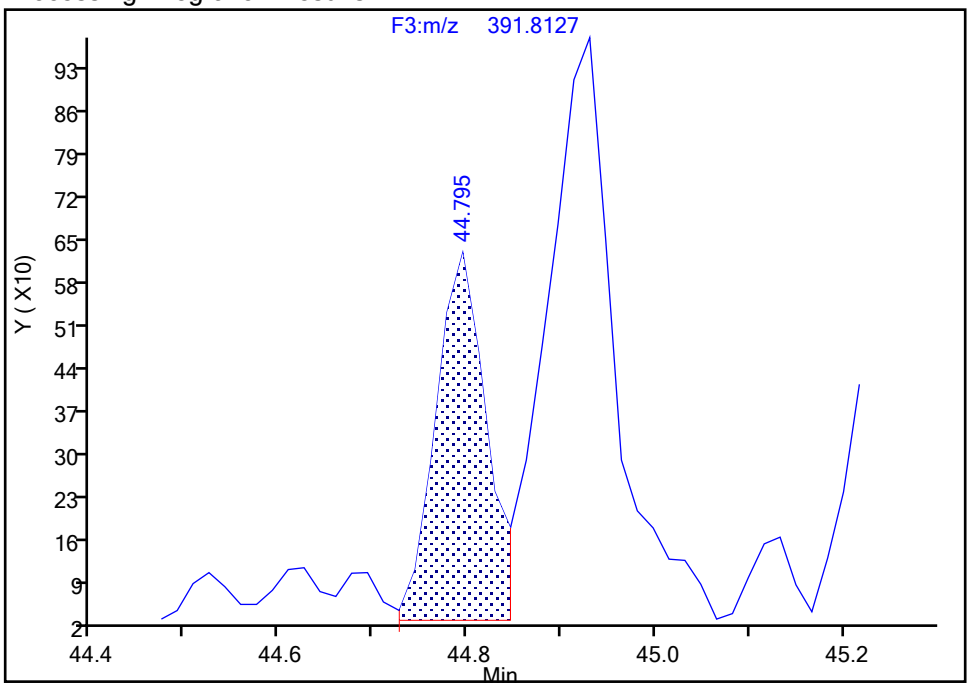
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

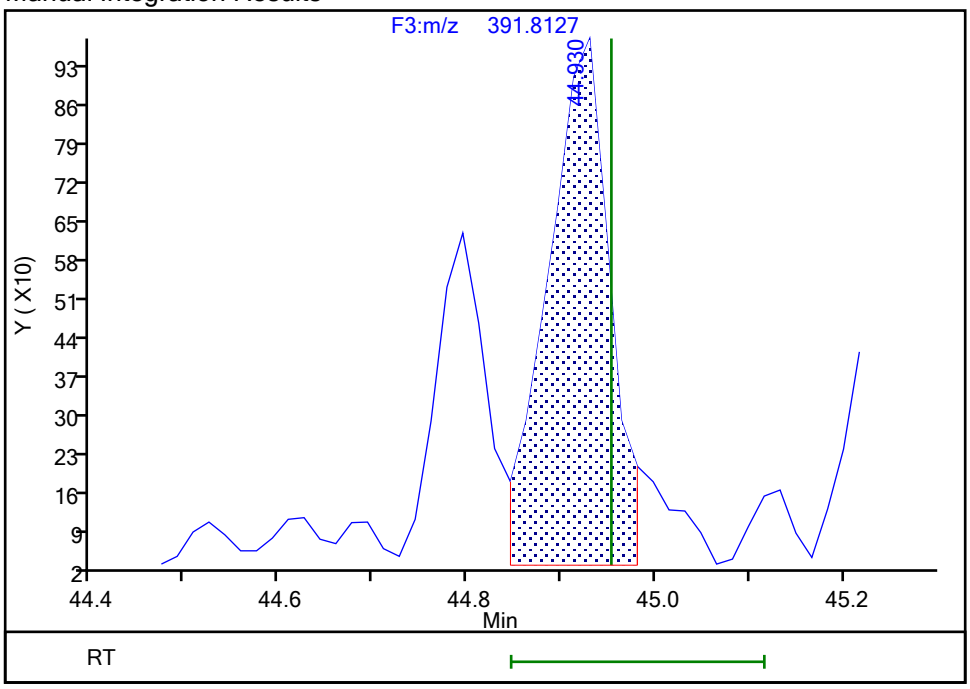
Processing Integration Results

RT: 44.79
Area: 2212
Amount: 0.141251
Amount Units: pg/ul



Manual Integration Results

RT: 44.93
Area: 4303
Amount: 0.249375
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:48:54
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

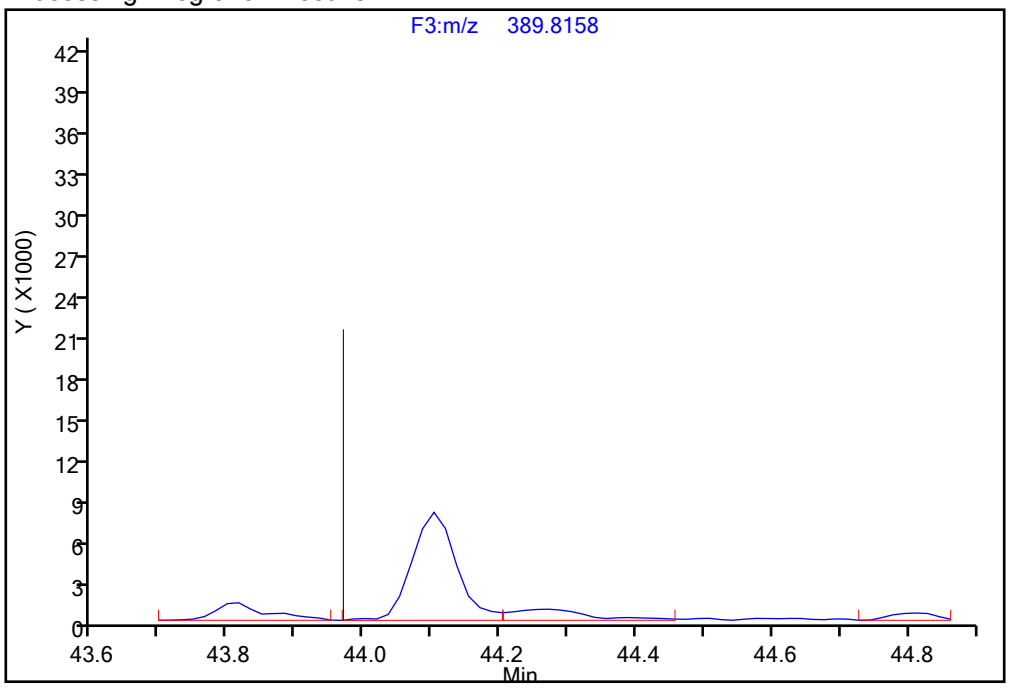
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.23- 45.39)

Signal: 1

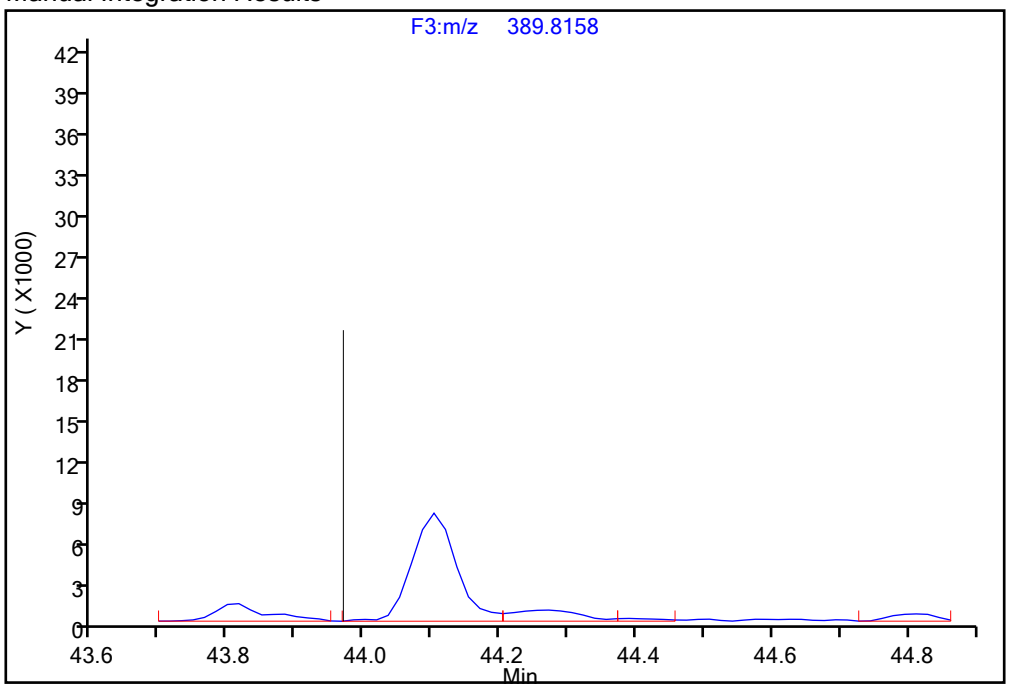
Processing Integration Results

RT = 44.271 Area = 6423



Manual Integration Results

RT = 44.271 Area = 5617 M



Reviewer: davidsonm, 17-Dec-2019 12:49:14

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

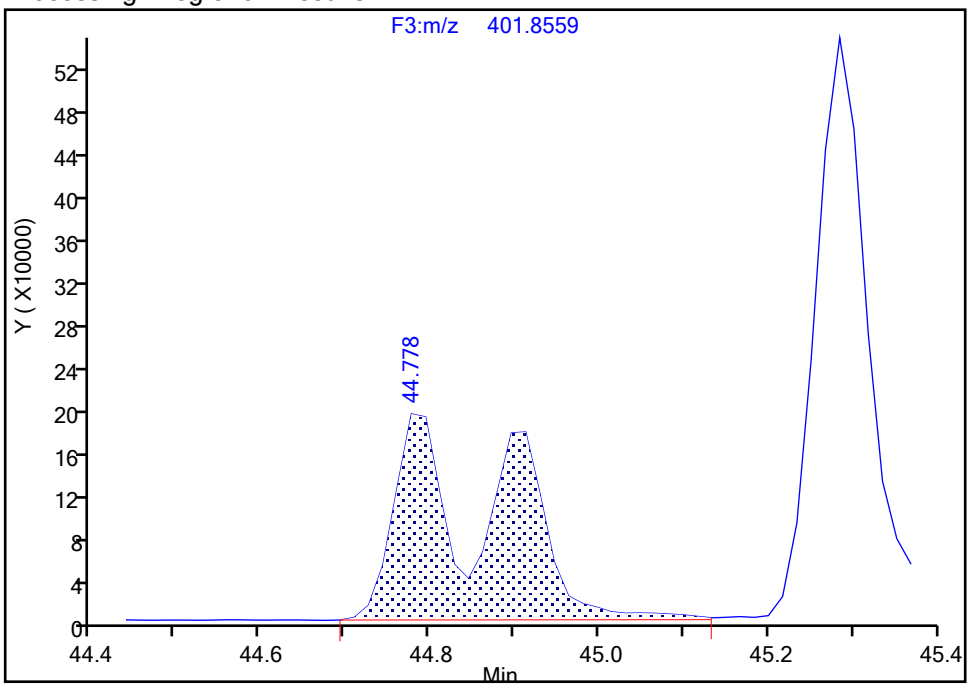
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

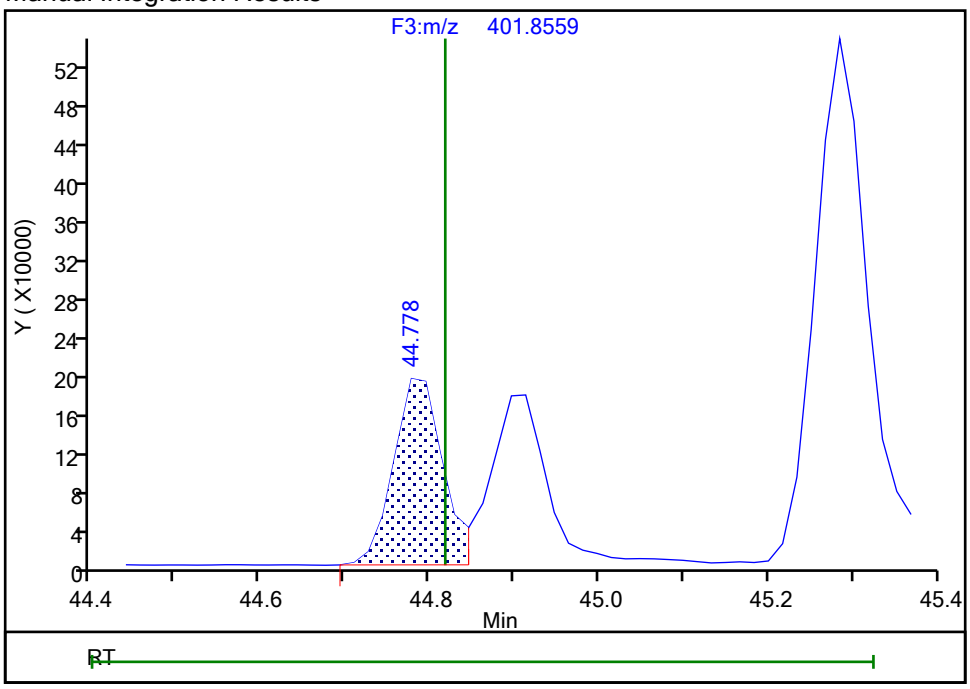
Processing Integration Results

RT: 44.78
Area: 1584390
Amount: 54.044485
Amount Units: pg/ul



Manual Integration Results

RT: 44.78
Area: 767028
Amount: 33.609467
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:48:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

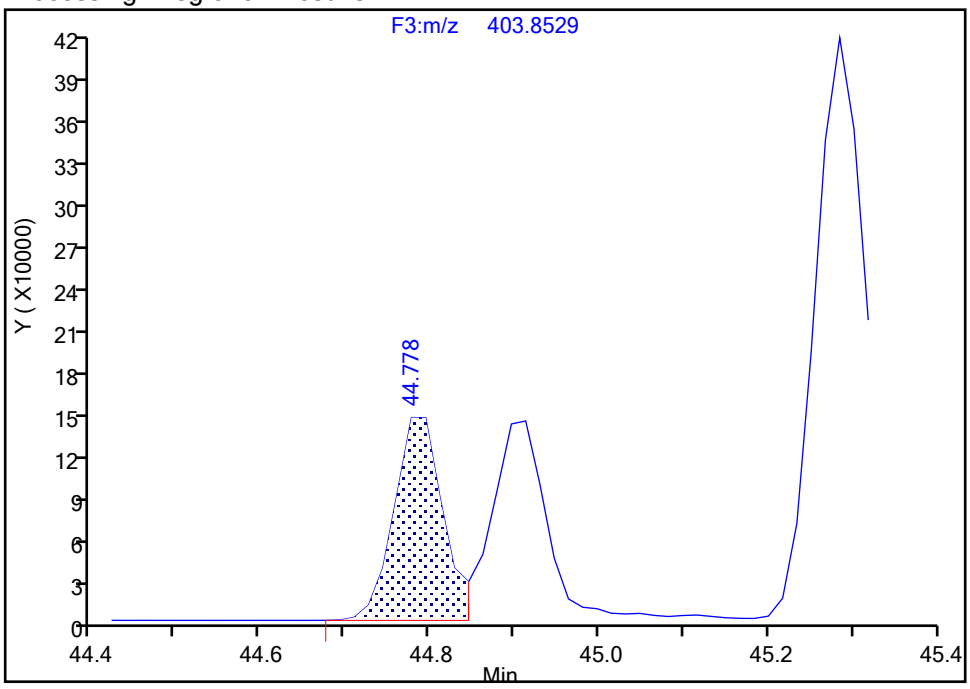
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 2

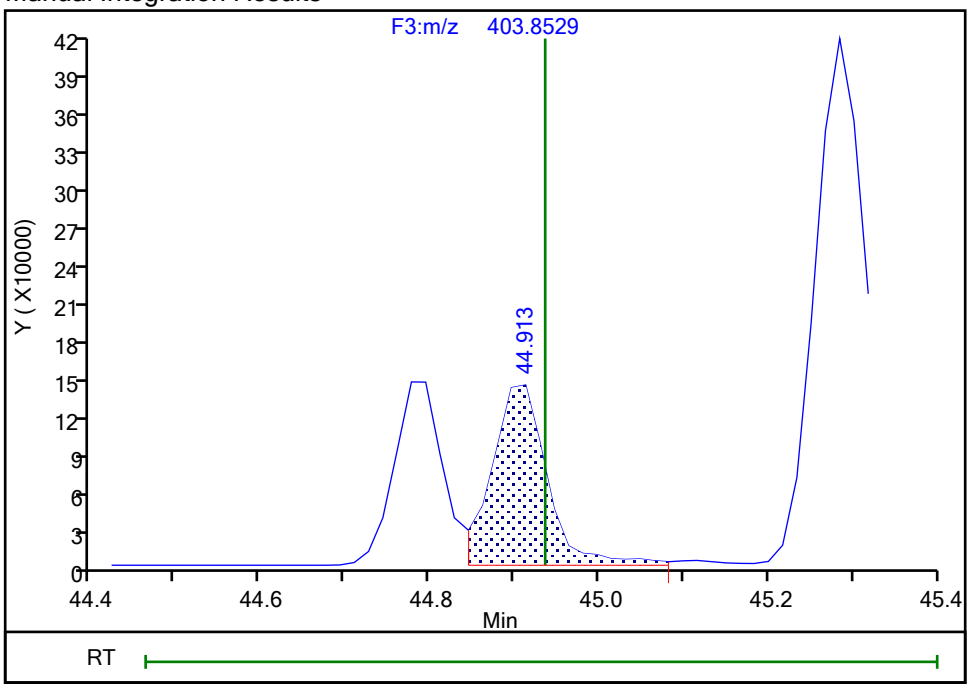
Processing Integration Results

RT: 44.78
Area: 577287
Amount: 51.694060
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 637832
Amount: 34.800275
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:48:23

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

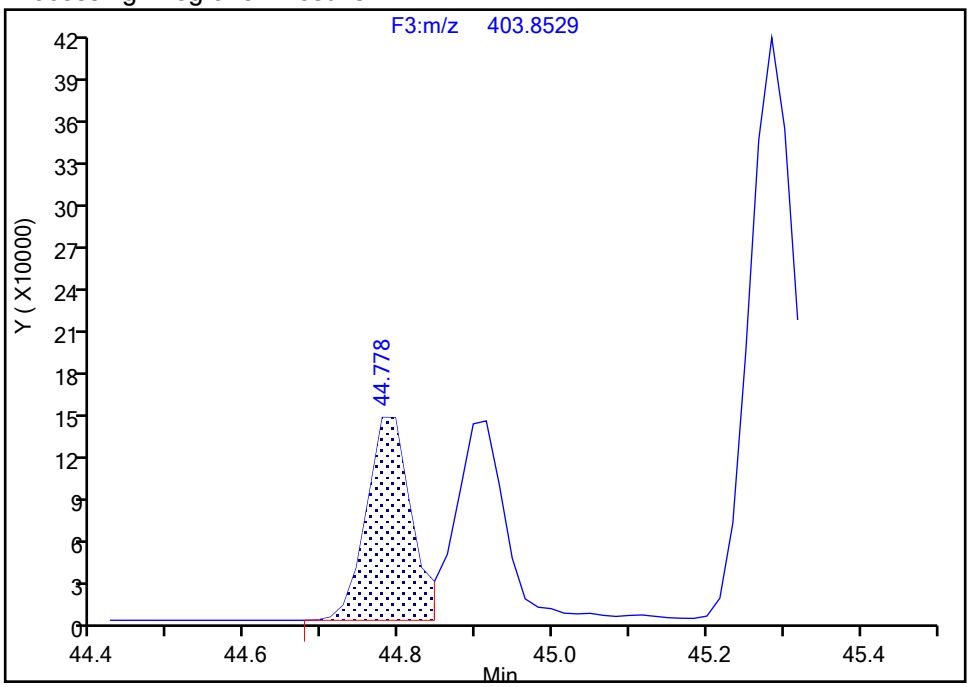
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 3

Processing Integration Results

RT: 44.78
Area: 2161677
Amount: 51.694060
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 1455234
Amount: 34.800275
Amount Units: pg/ul
Reviewer: davidsonm, 17-Dec-2019 12:48:23
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

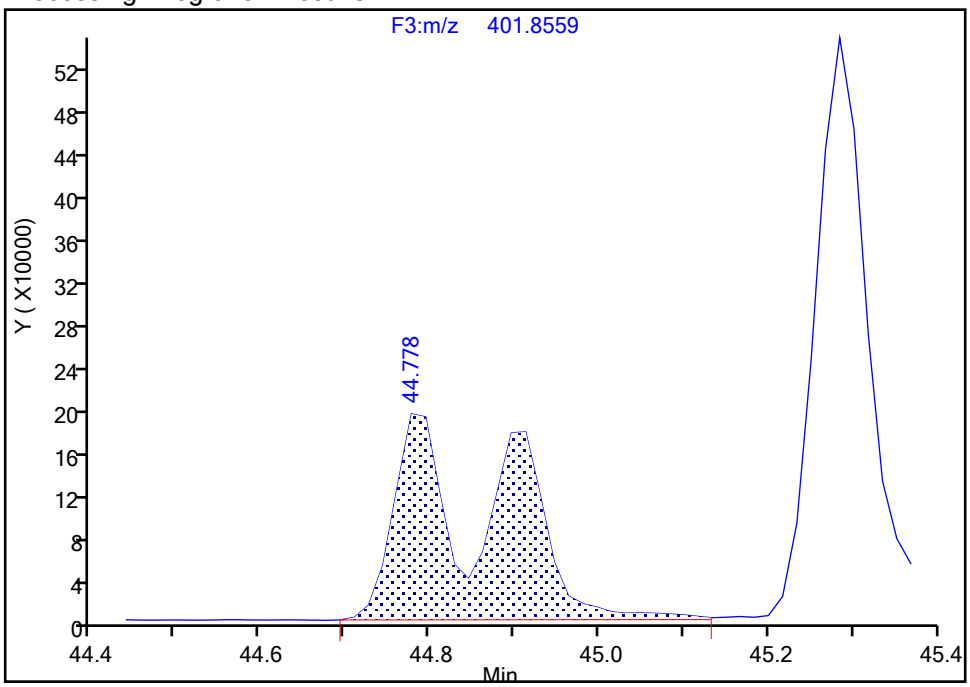
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 1

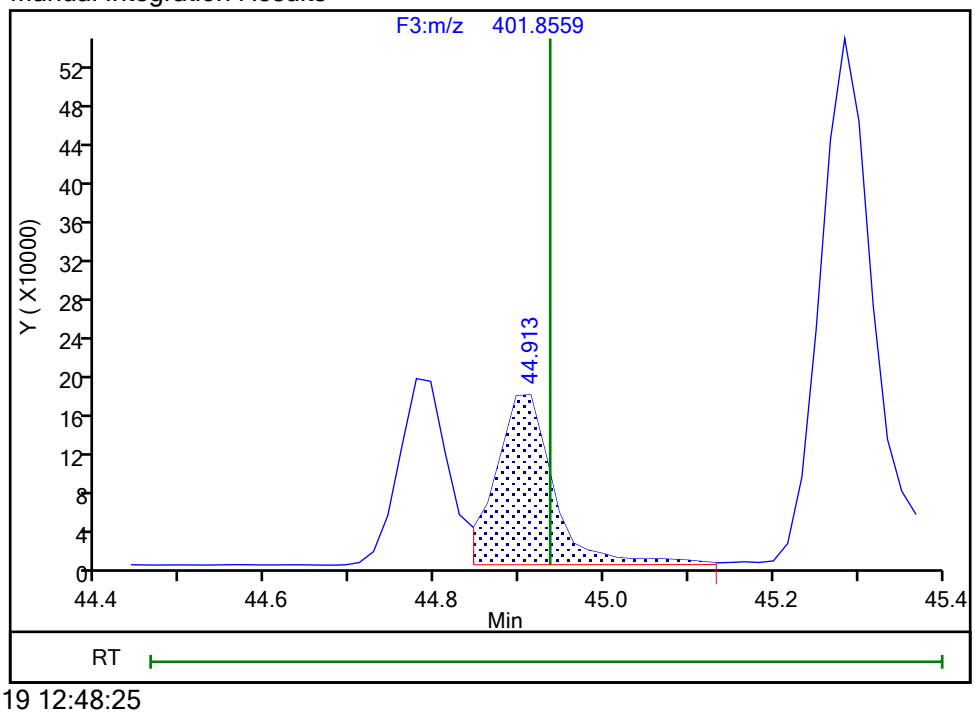
Processing Integration Results

RT: 44.78
Area: 1584390
Amount: 51.694060
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 817402
Amount: 34.800275
Amount Units: pg/ul



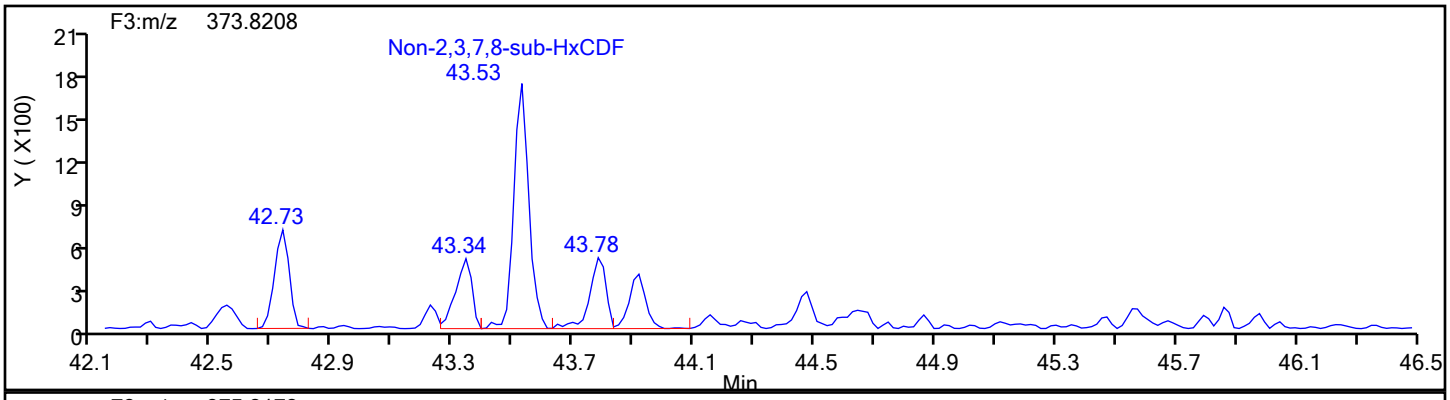
Reviewer: davidsonm, 17-Dec-2019 12:48:25
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

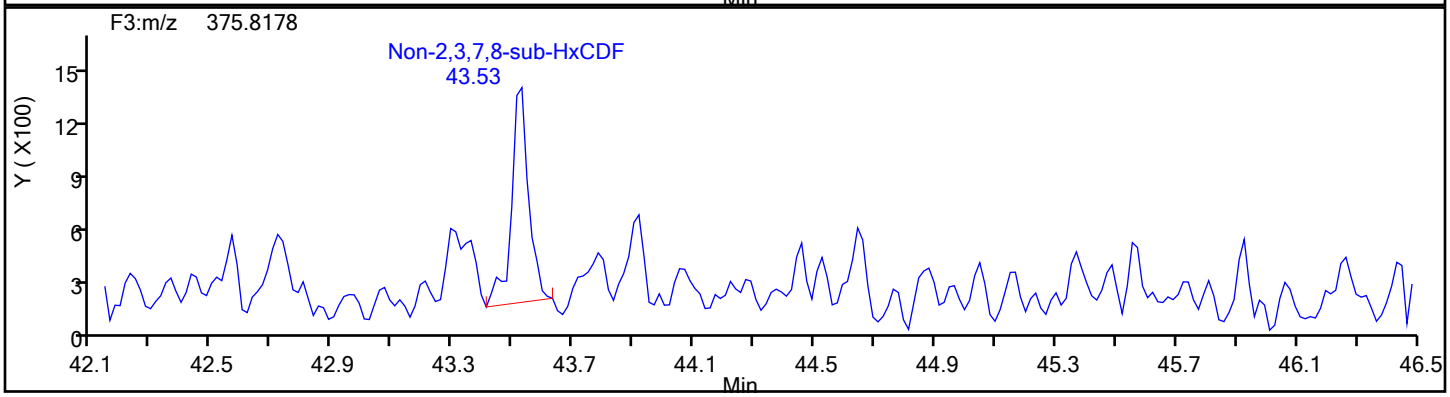
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

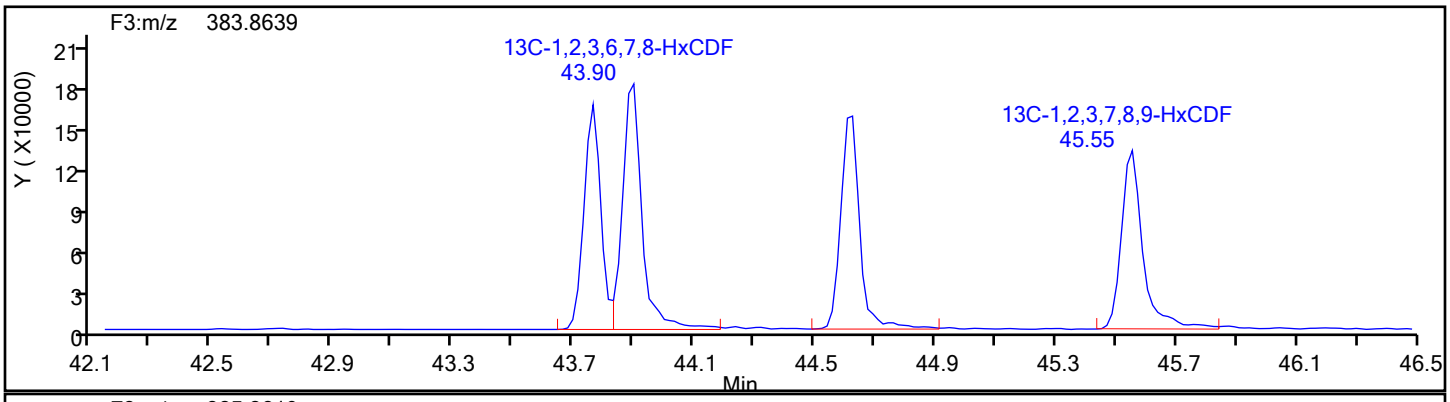
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

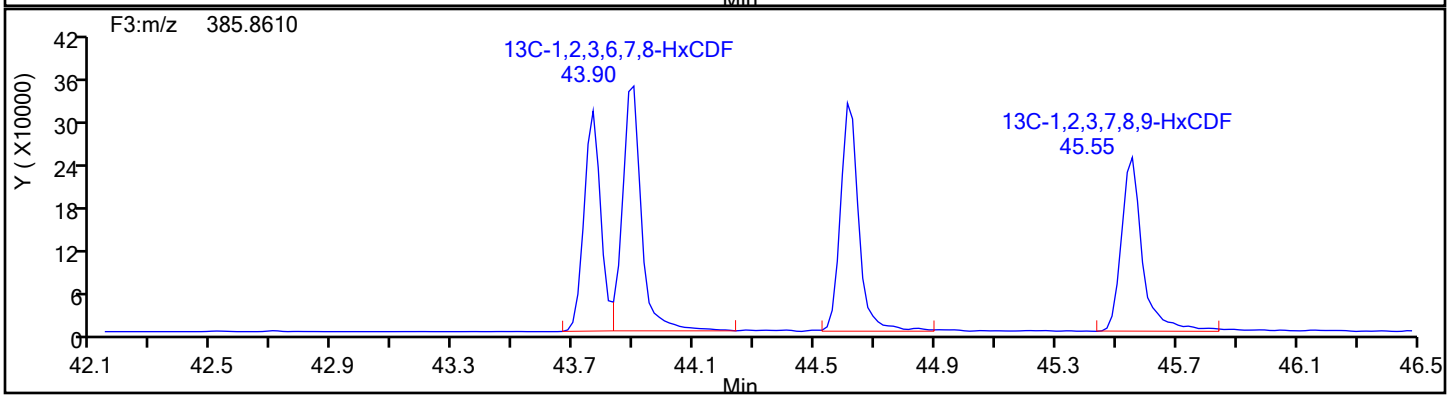
HxCDF





HxCDF Standards



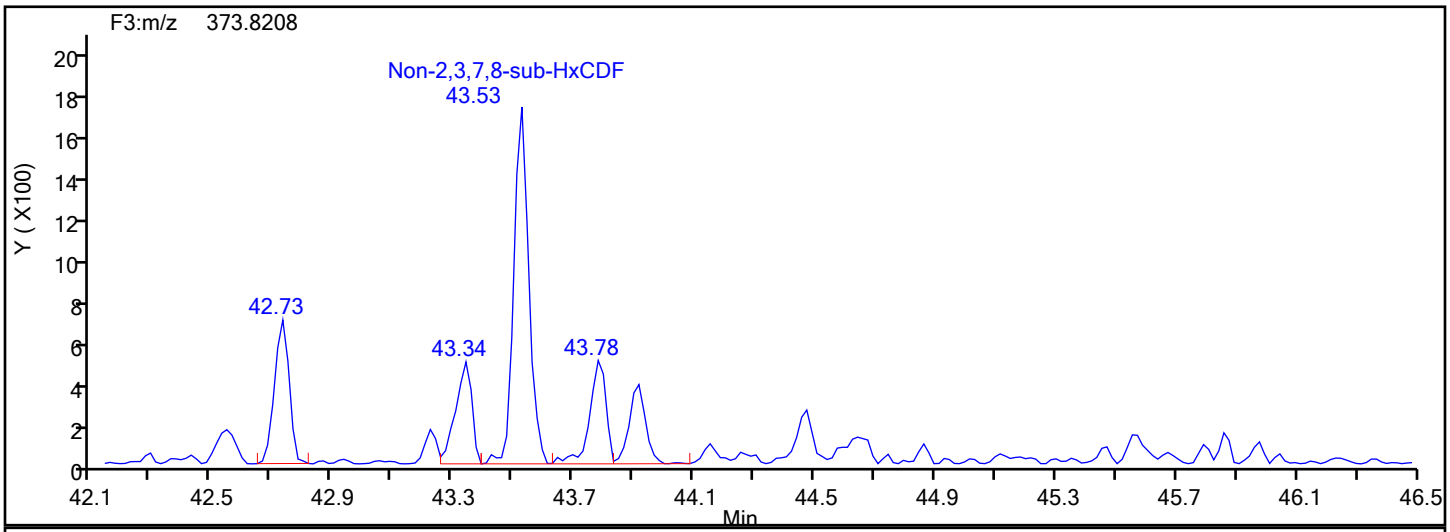


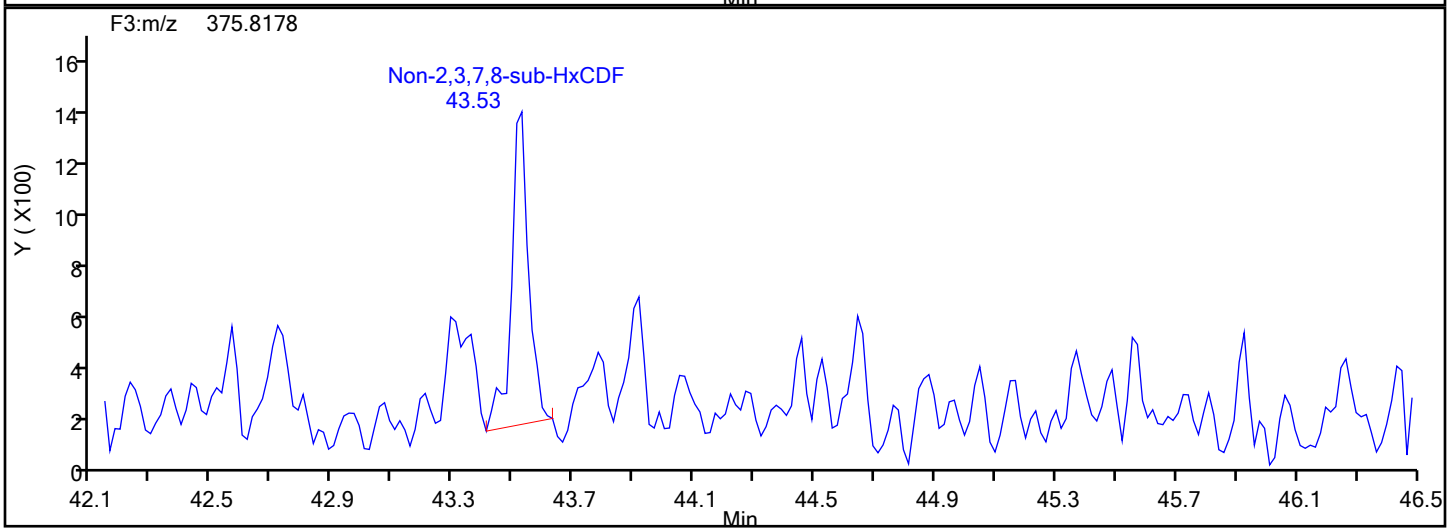
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

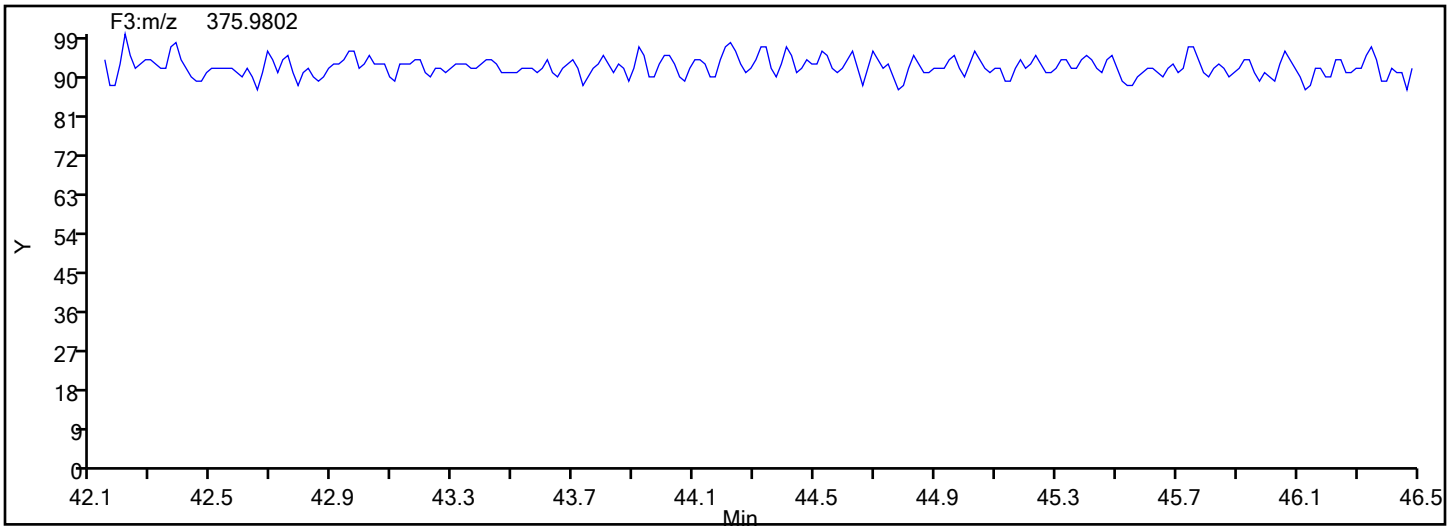
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

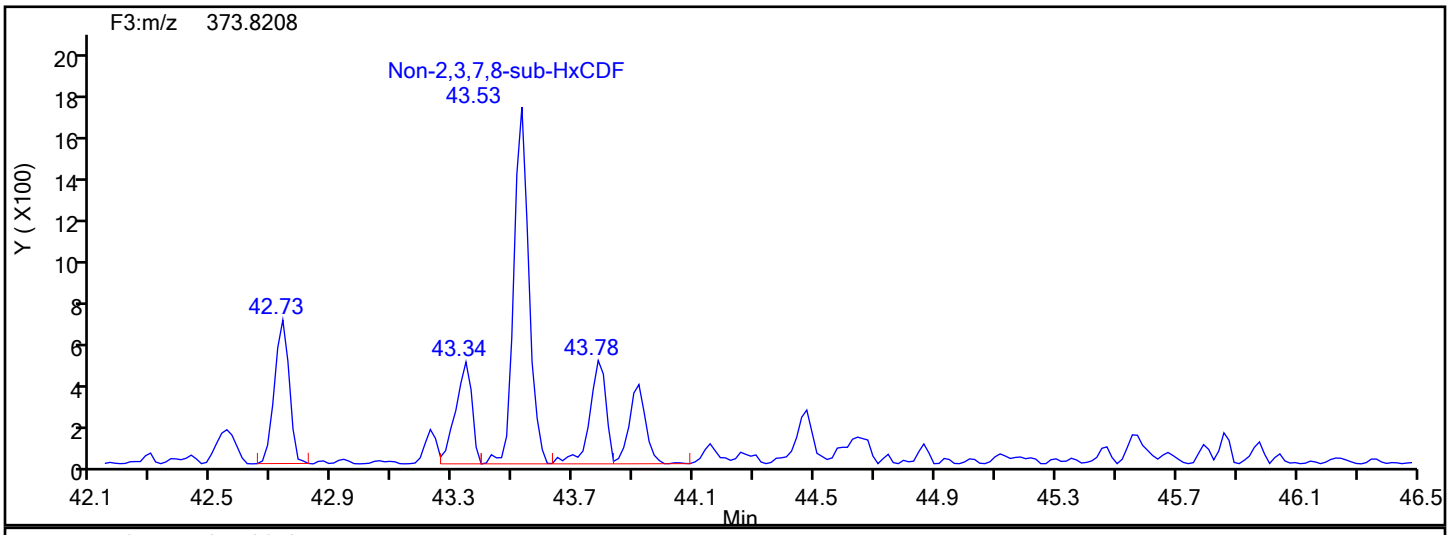


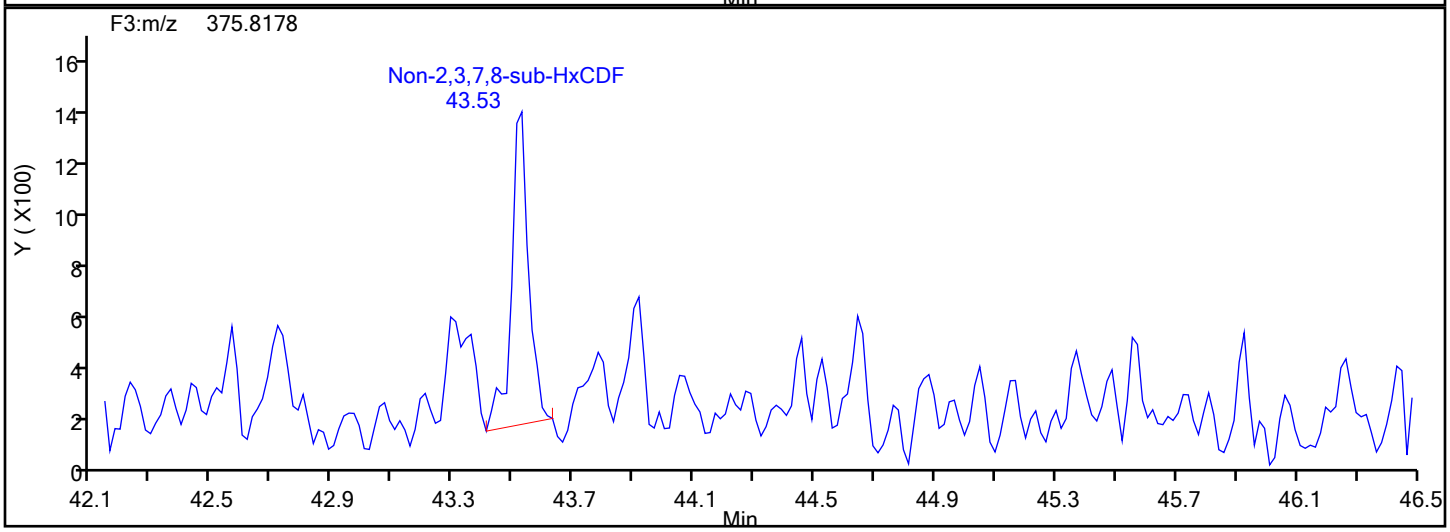
Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

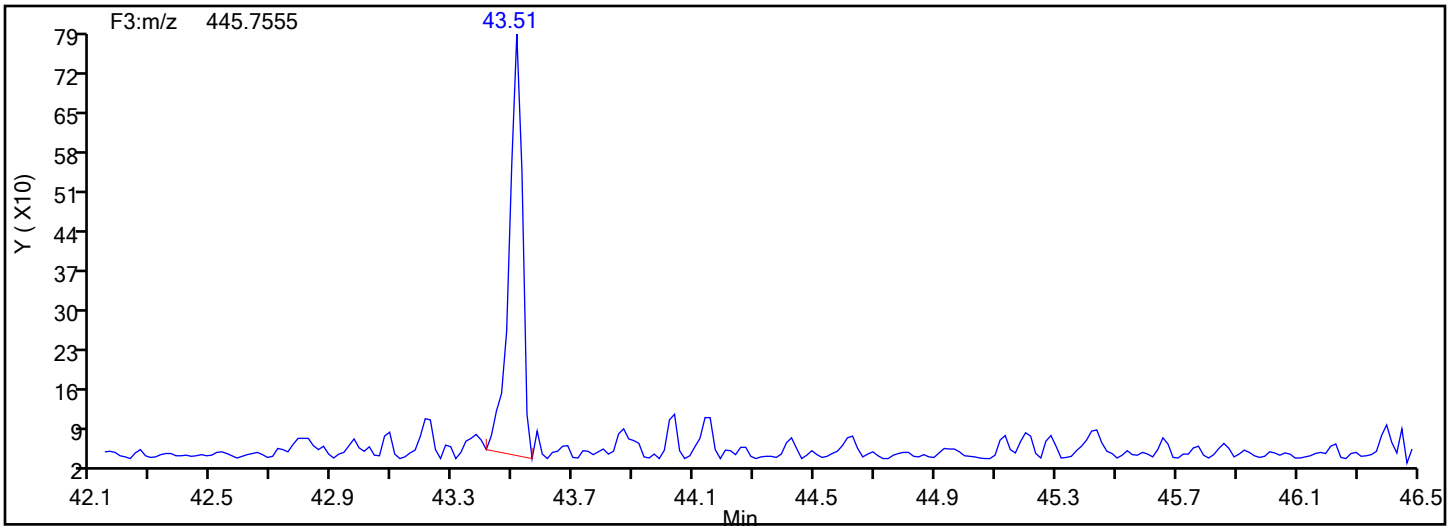
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Report Date: 17-Dec-2019 21:26:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
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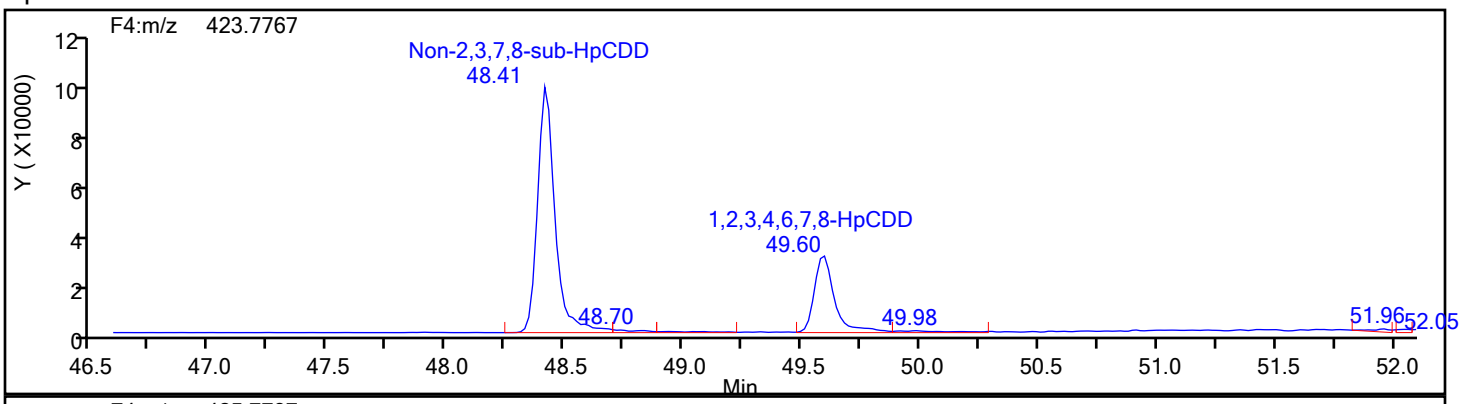
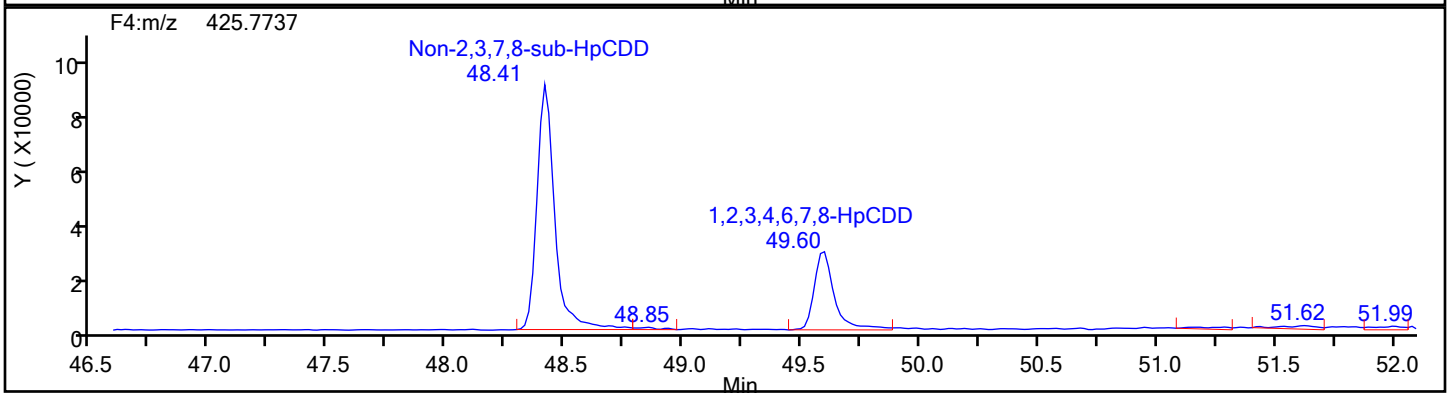
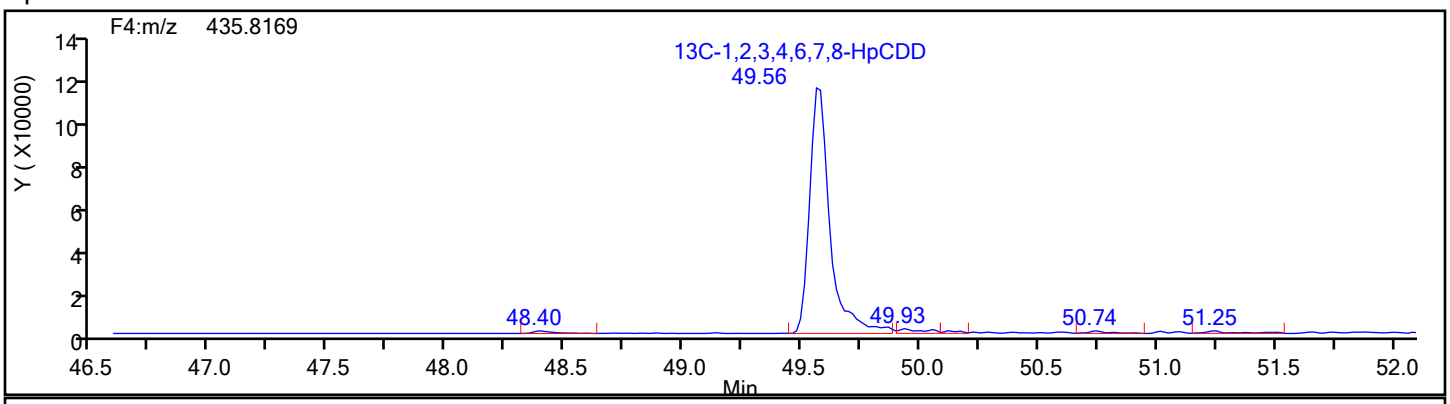
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

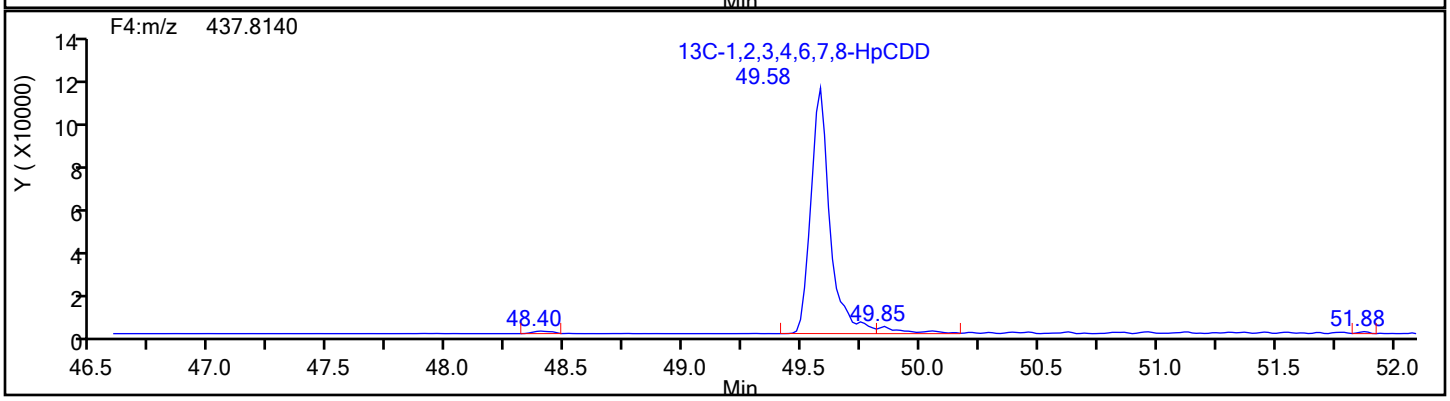
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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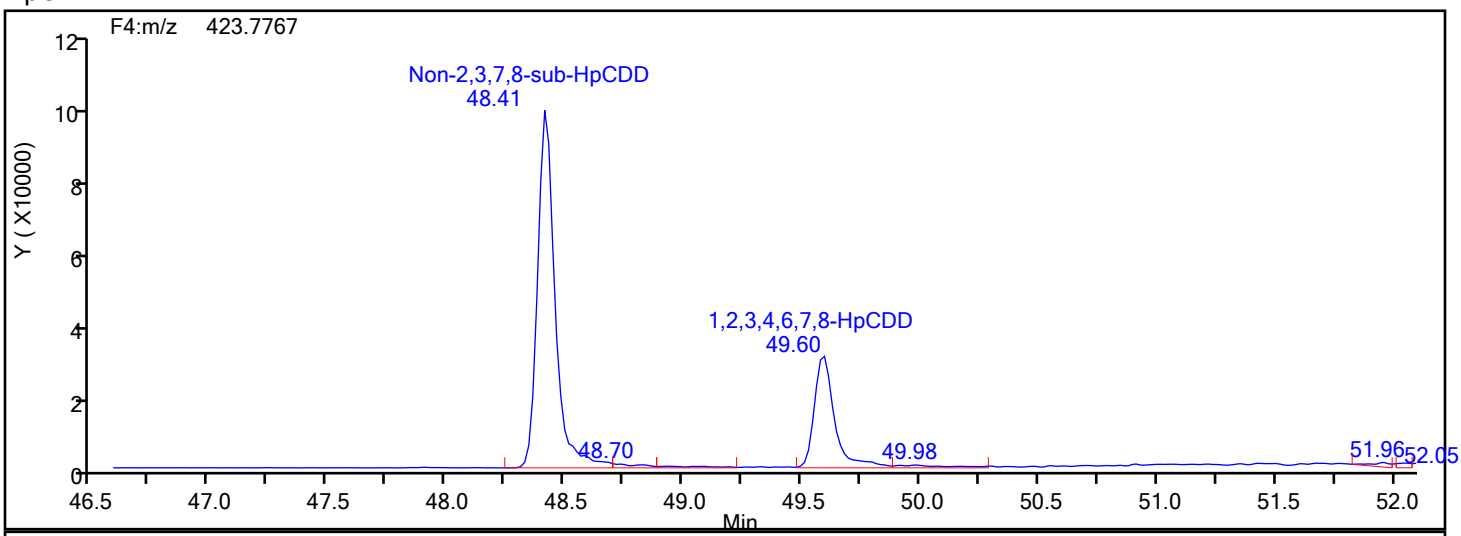
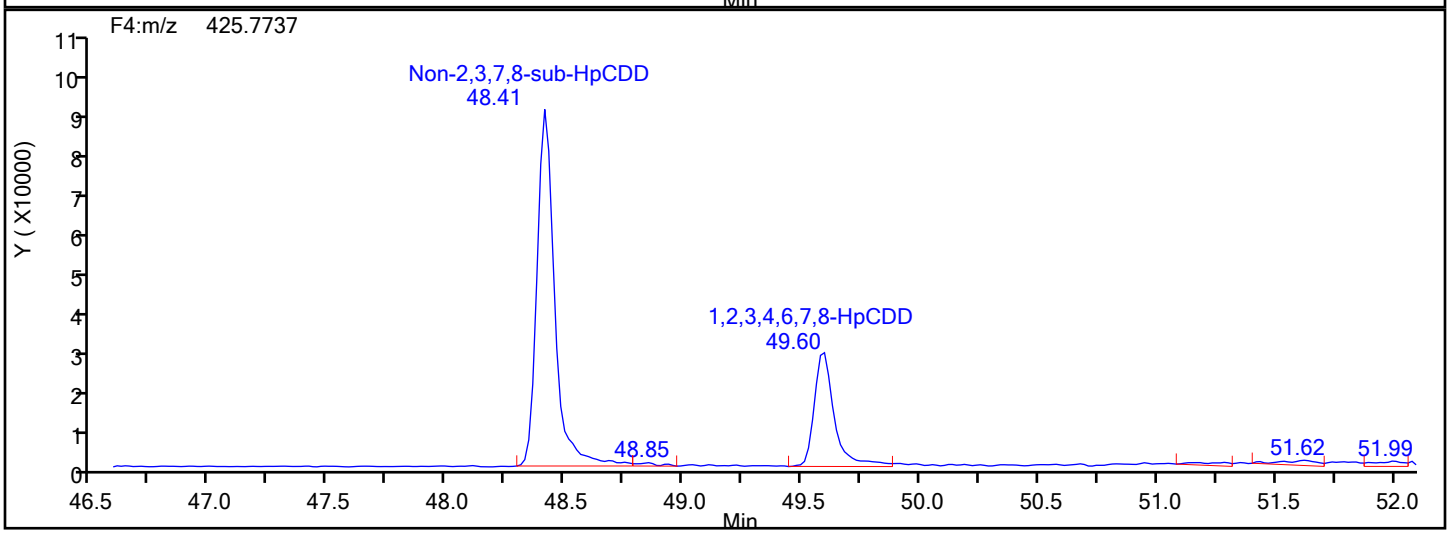
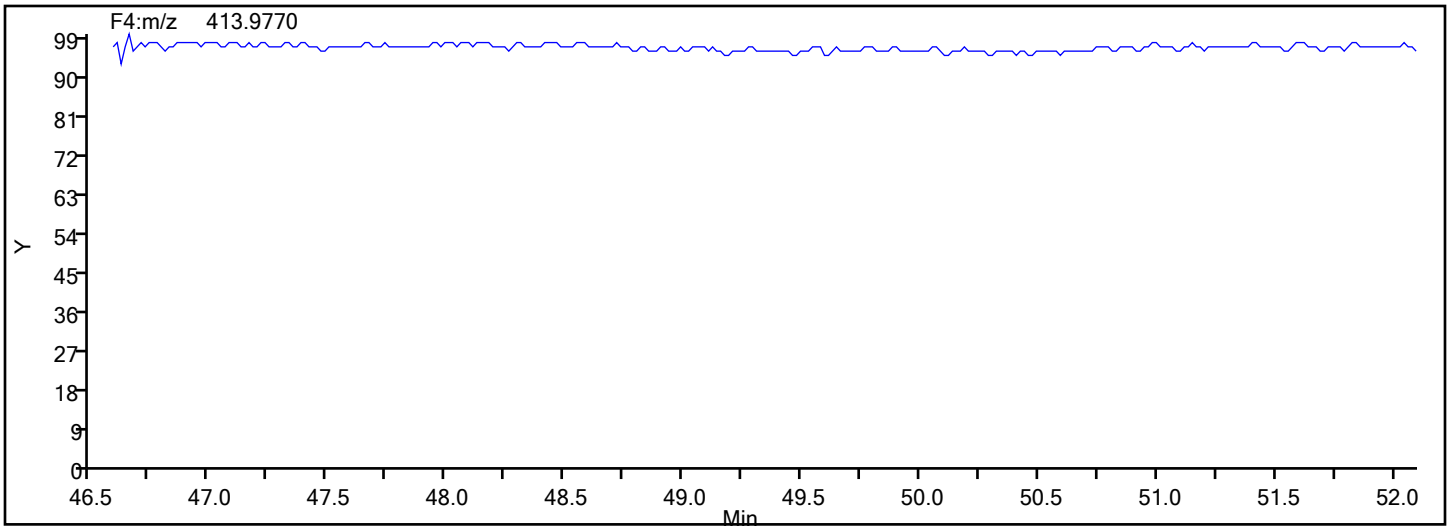
HpCDD





HpCDD Lock Mass



Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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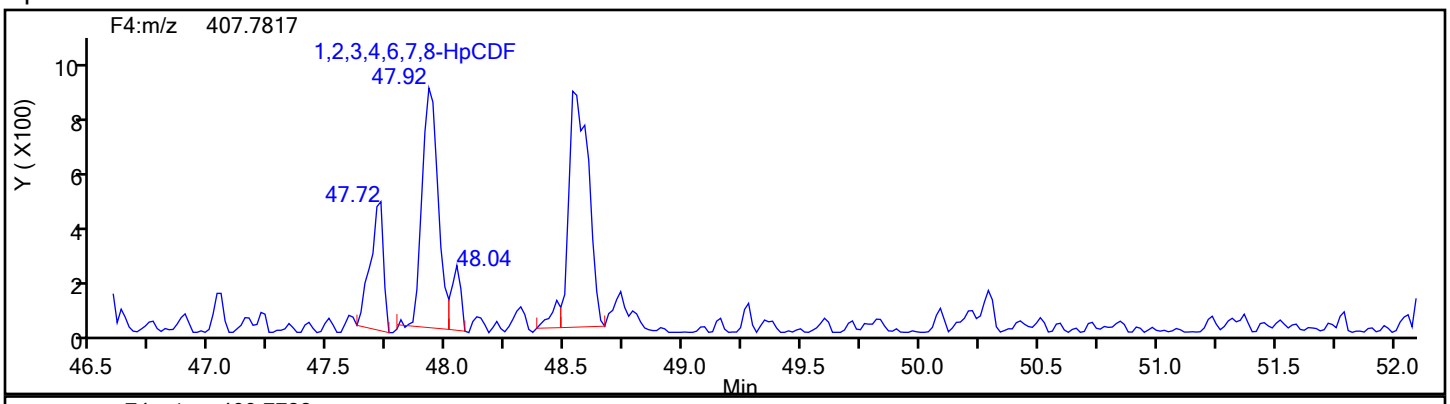
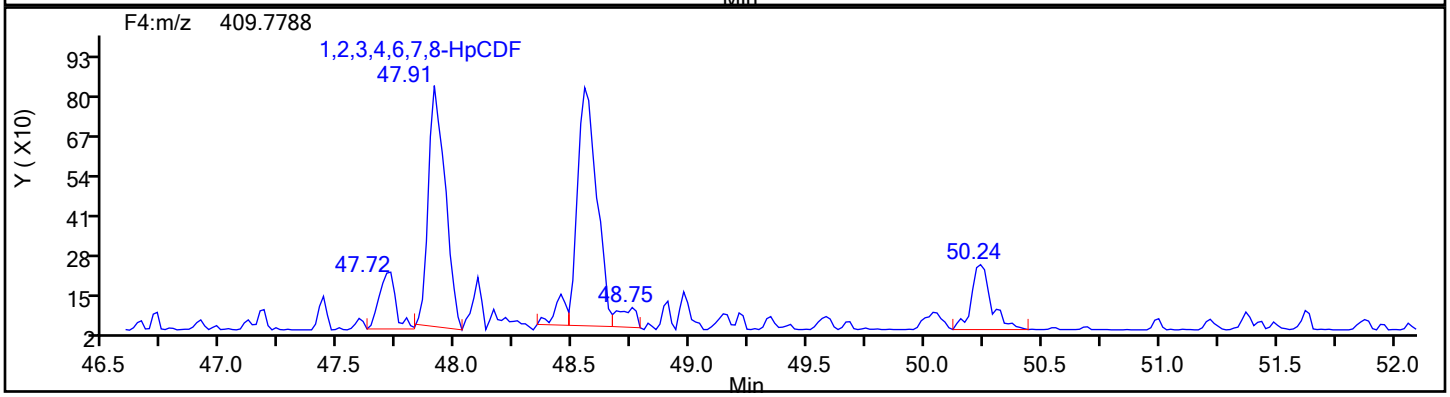
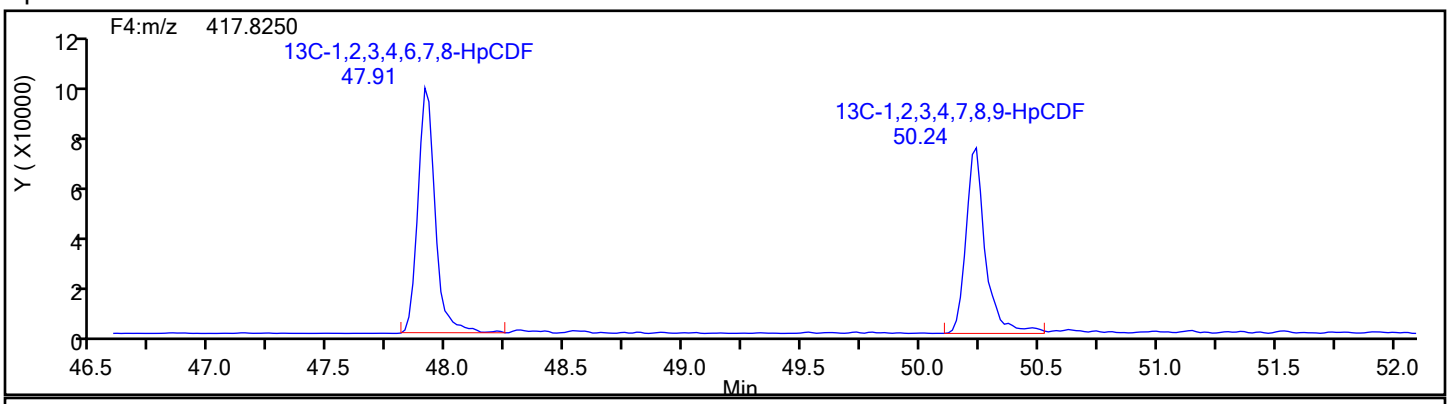
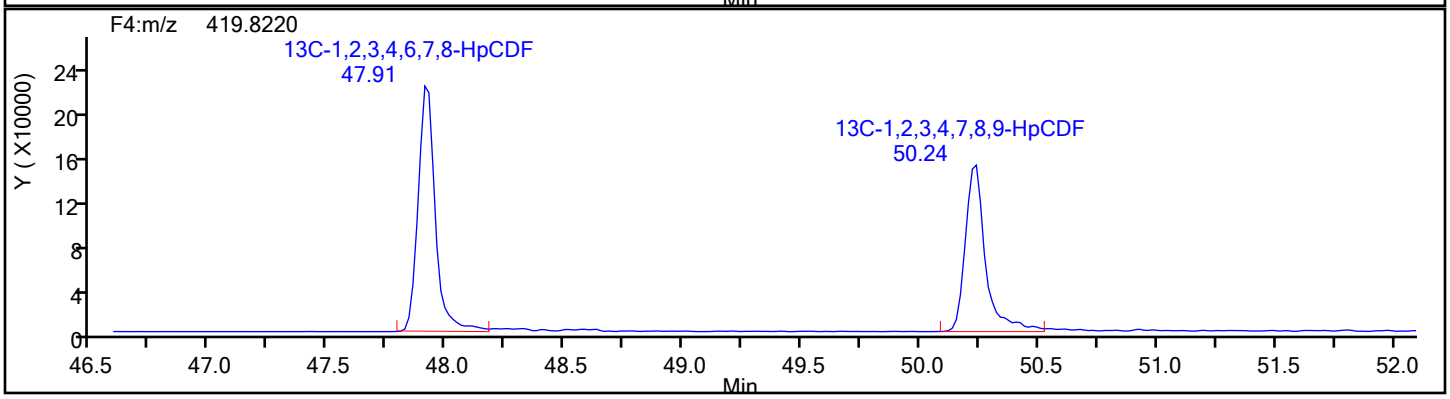




HpCDF Standards





Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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Worklist#:	36126	Sample Line#:	14
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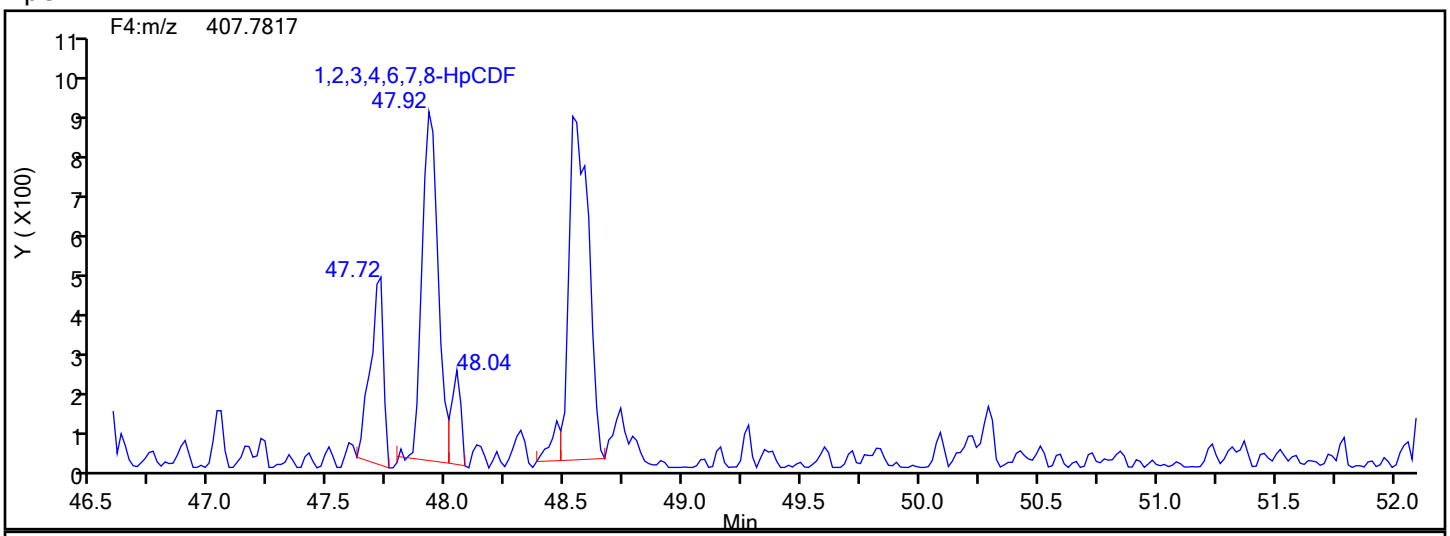
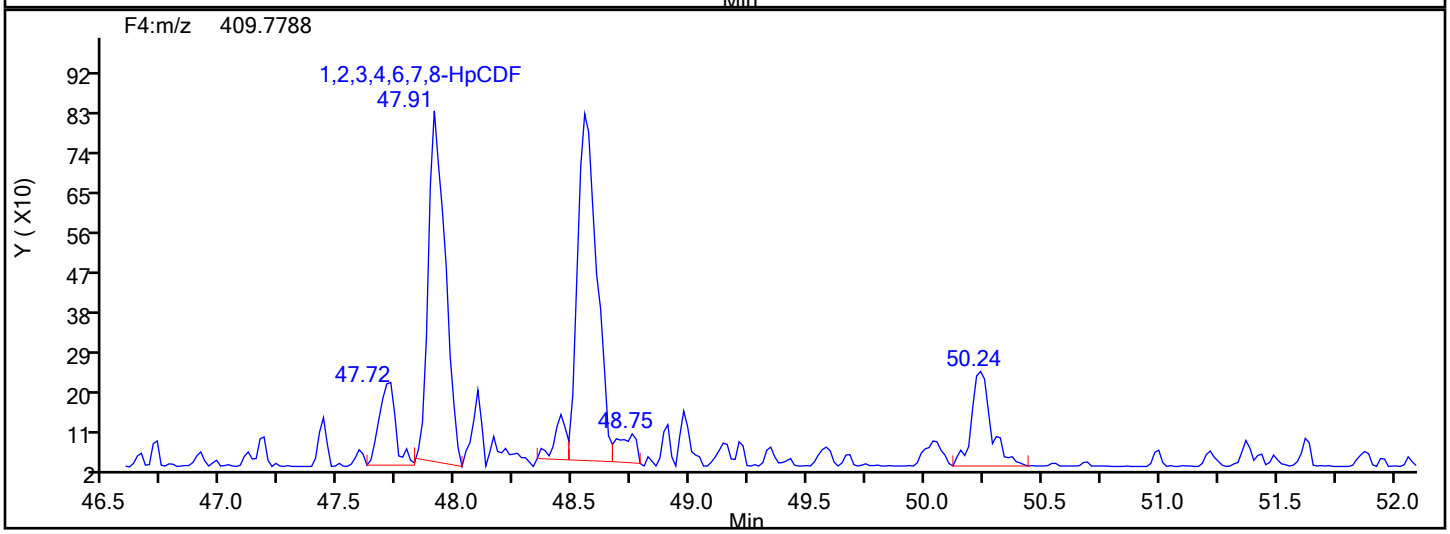
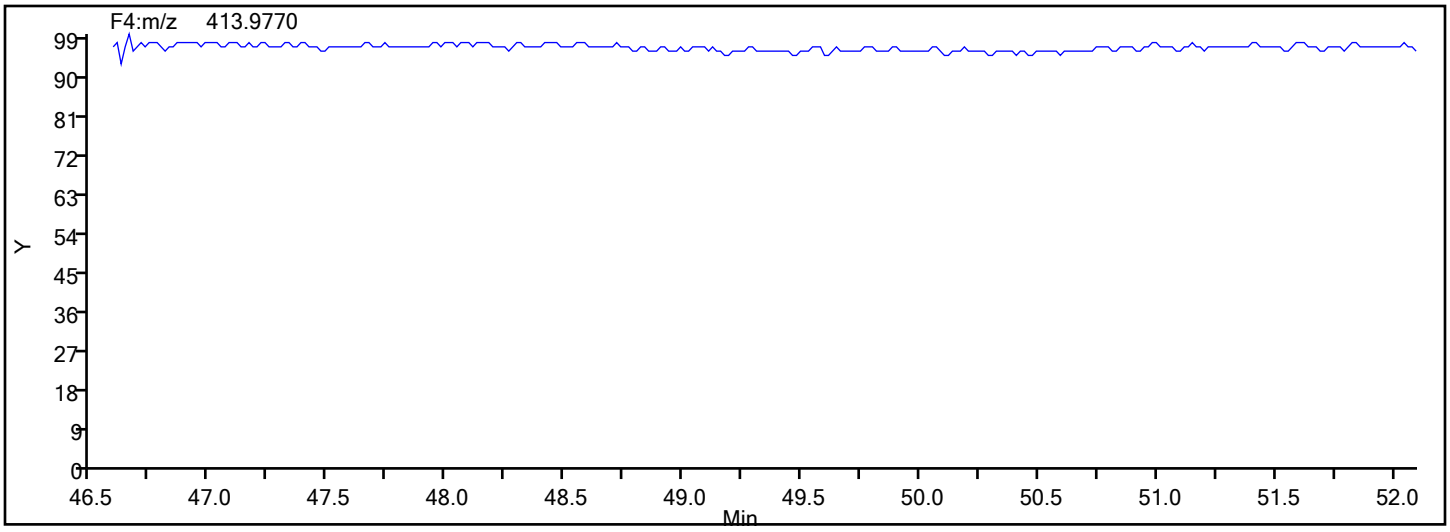
HpCDF





HpCDF Lock Mass



Eurofins TestAmerica, Knoxville

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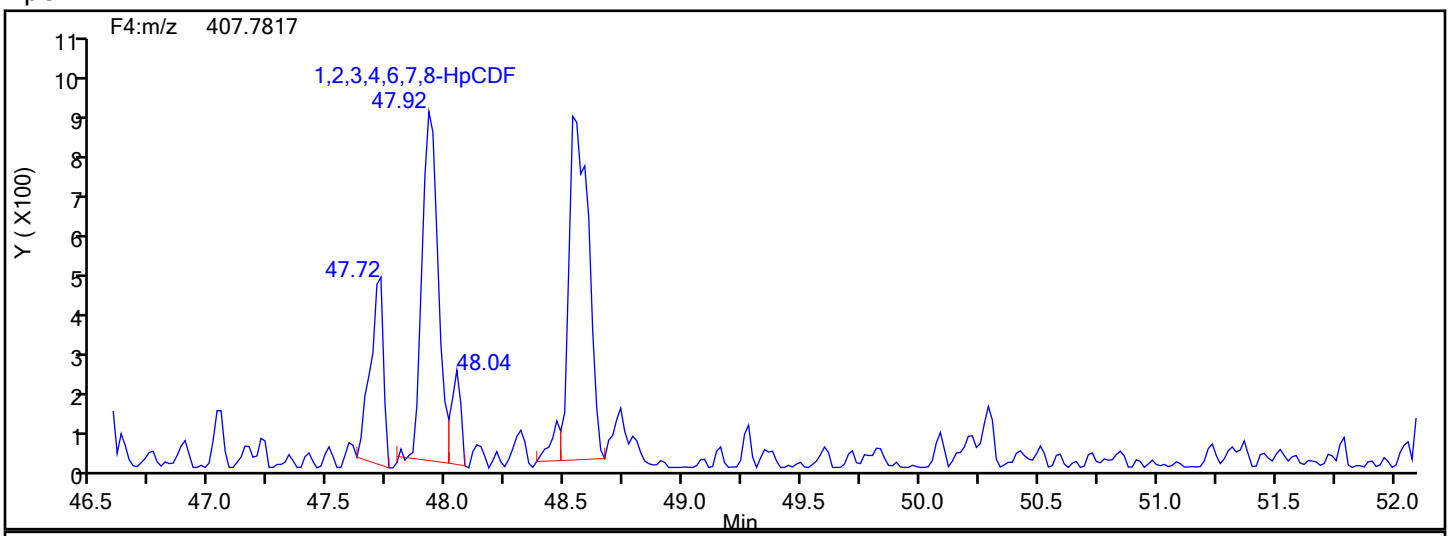
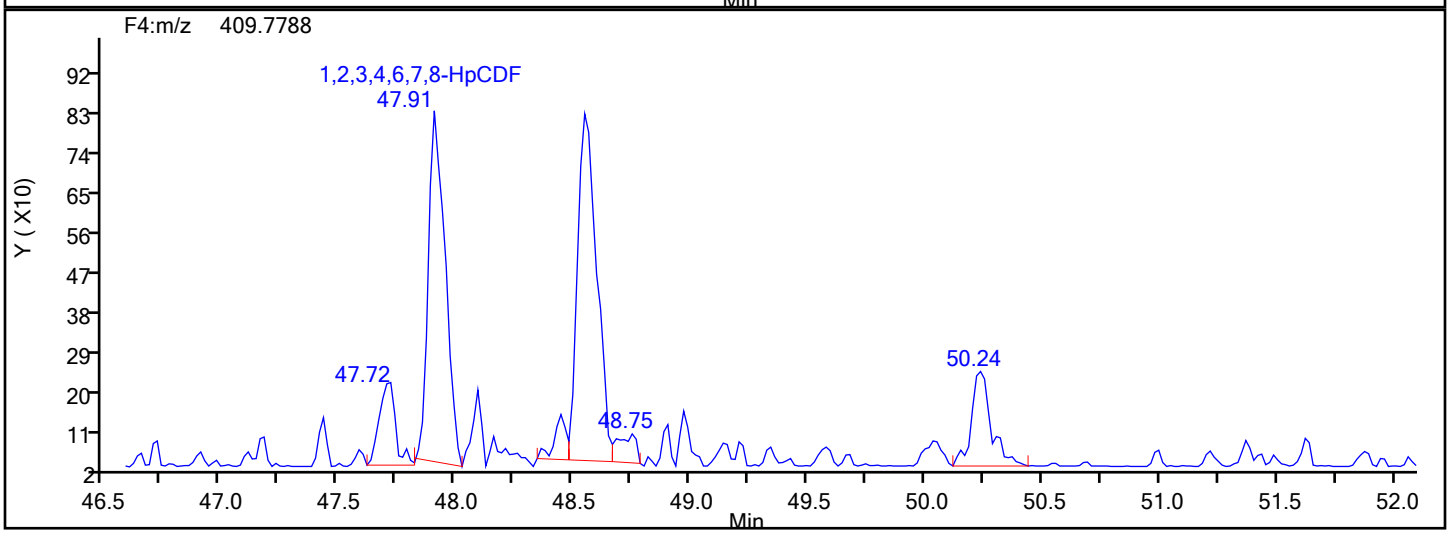
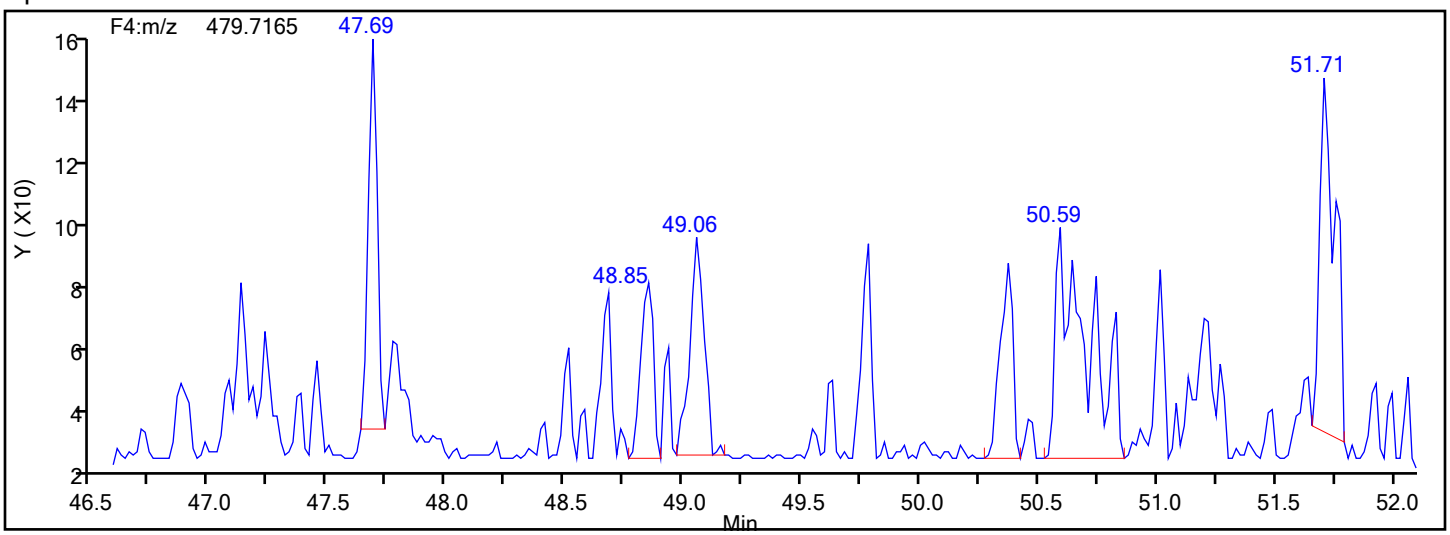
HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

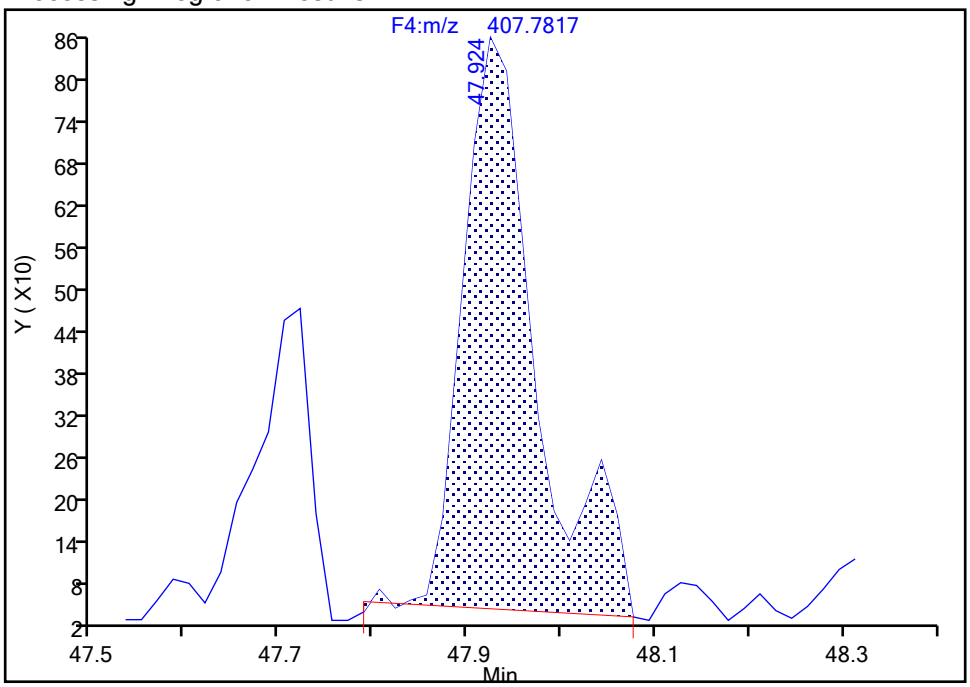
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

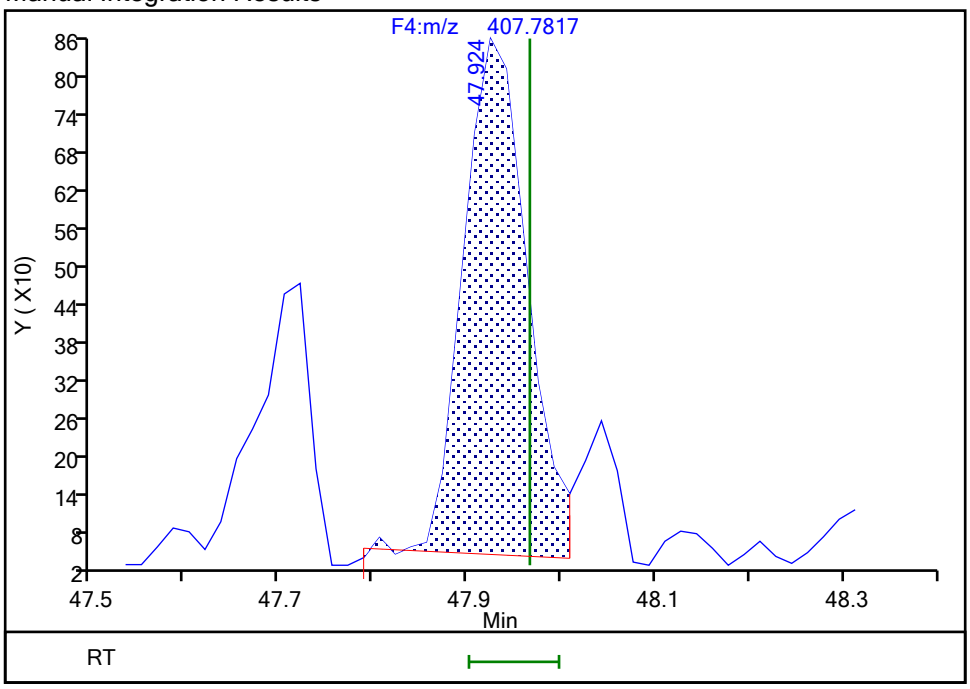
Processing Integration Results

RT: 47.92
Area: 4433
Amount: 0.175198
Amount Units: pg/ul



Manual Integration Results

RT: 47.92
Area: 3847
Amount: 0.163005
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:49:59

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

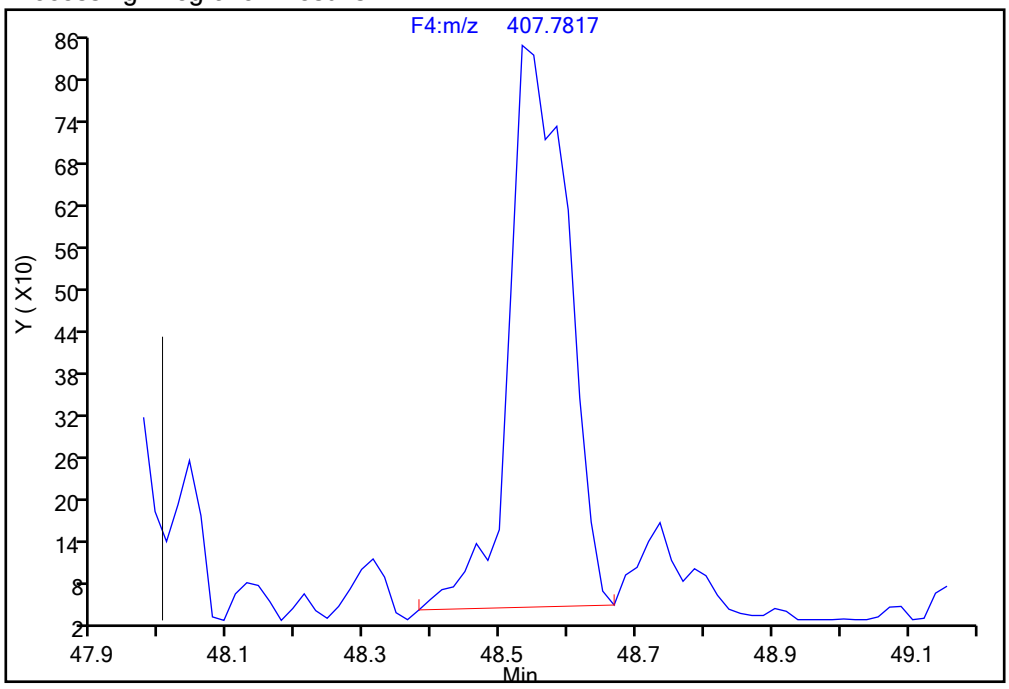
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.80- 50.84)

Signal: 1

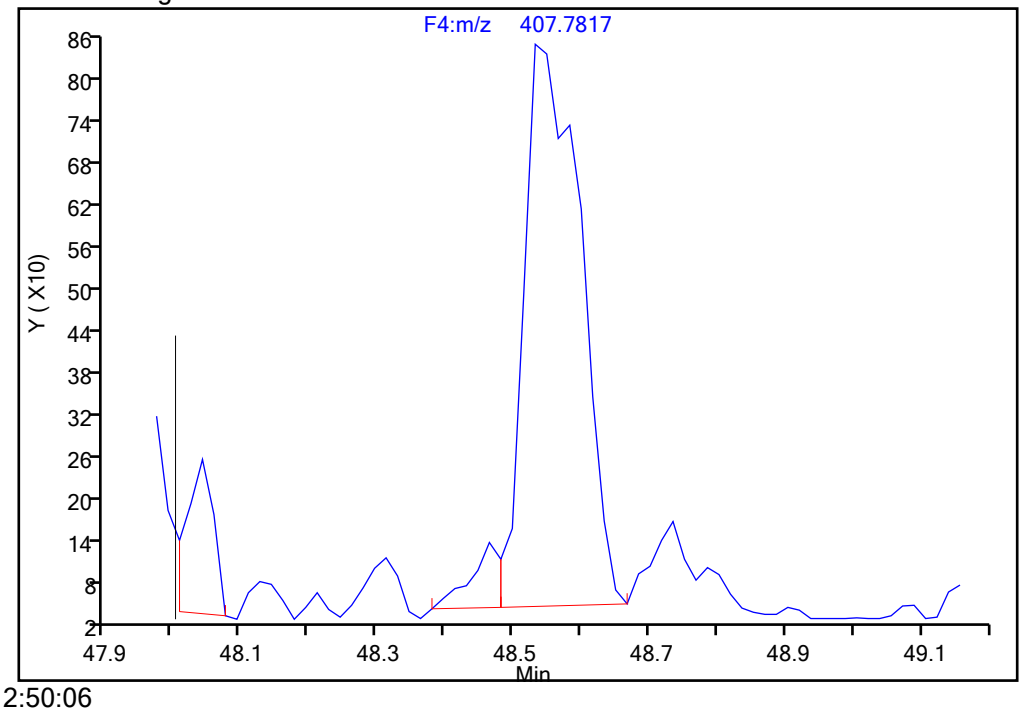
Processing Integration Results

RT = 48.532 Area = 4877



Manual Integration Results

RT = 48.532 Area = 4621 M



Reviewer: davidsonm, 17-Dec-2019 12:50:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

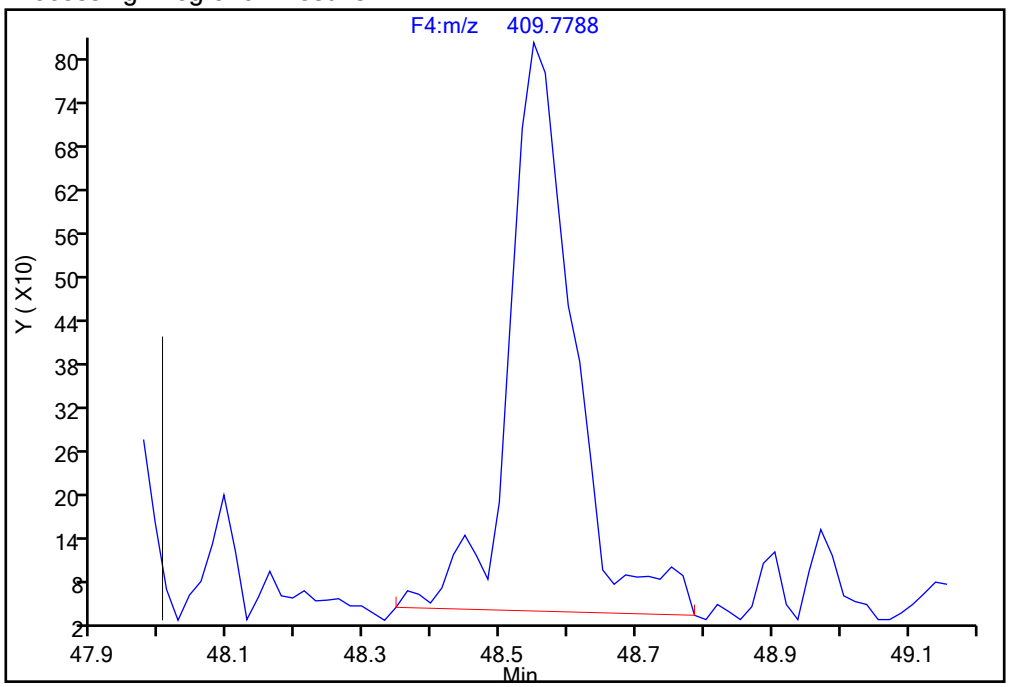
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.80- 50.84)

Signal: 2

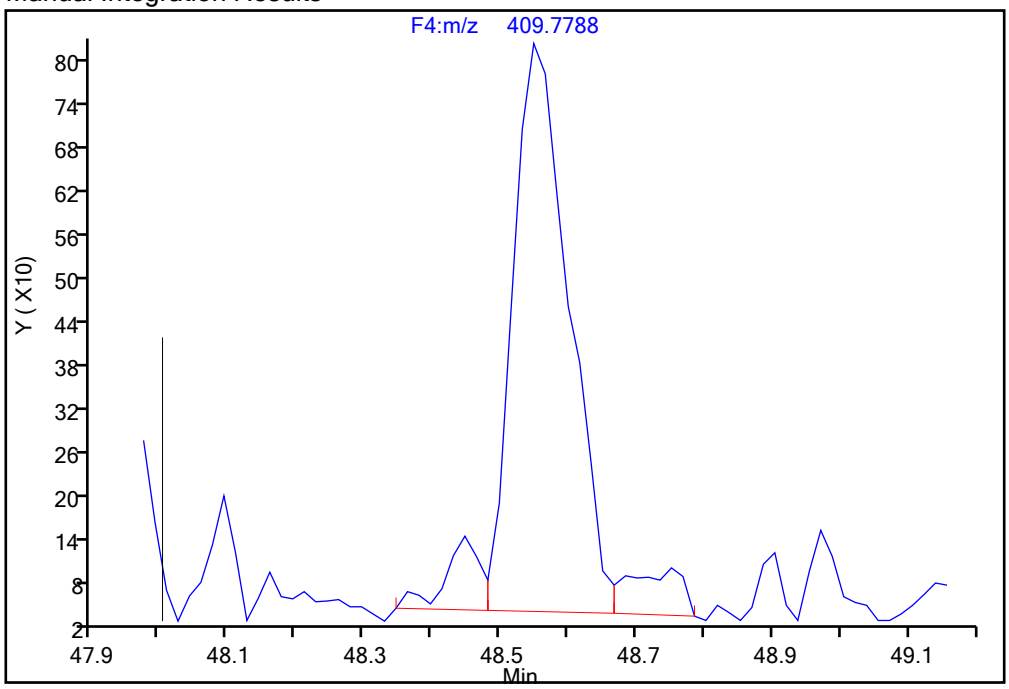
Processing Integration Results

RT = 48.549 Area = 5203



Manual Integration Results

RT = 48.549 Area = 4488 M



Reviewer: davidsonm, 17-Dec-2019 12:50:10

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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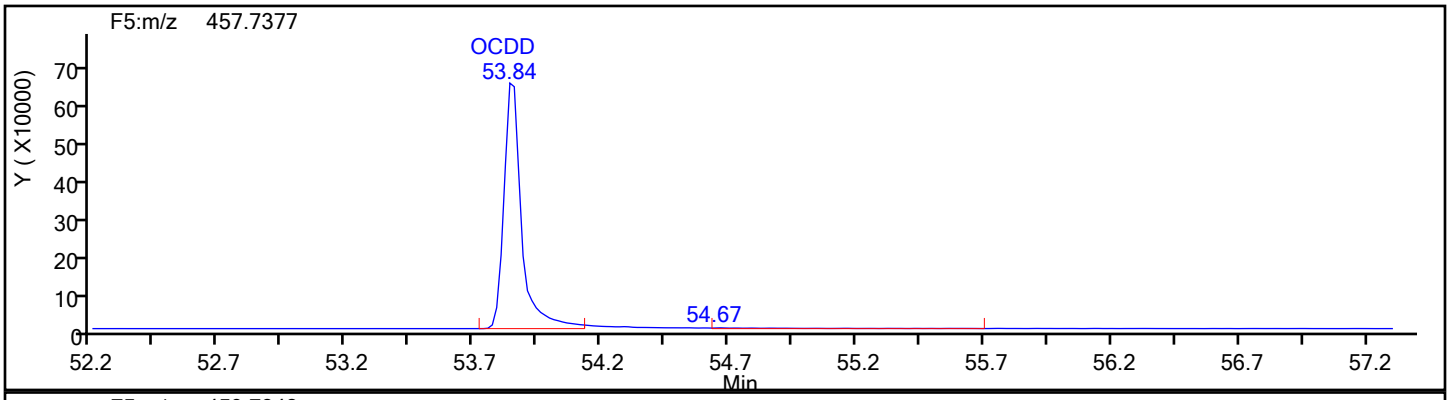
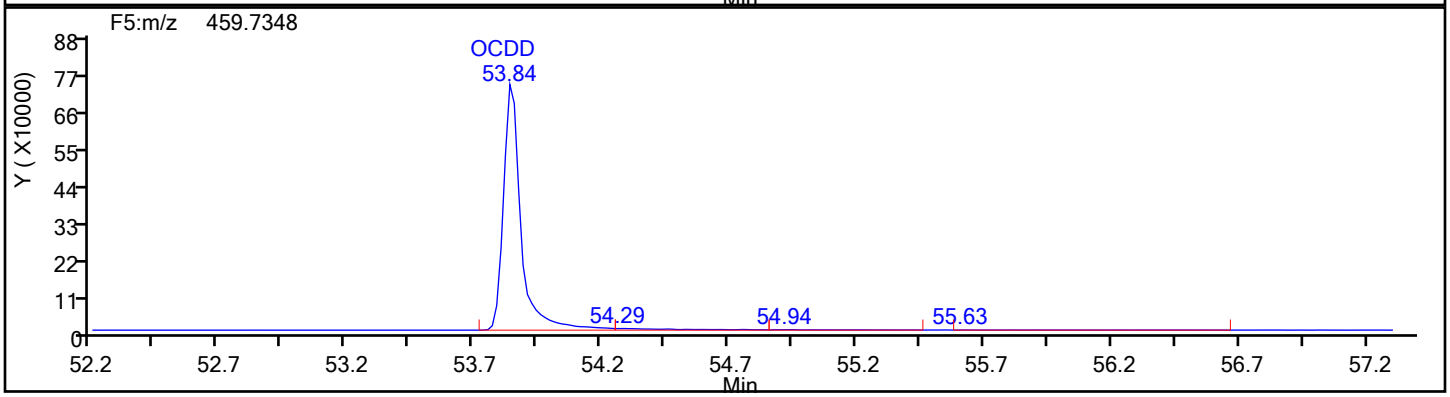
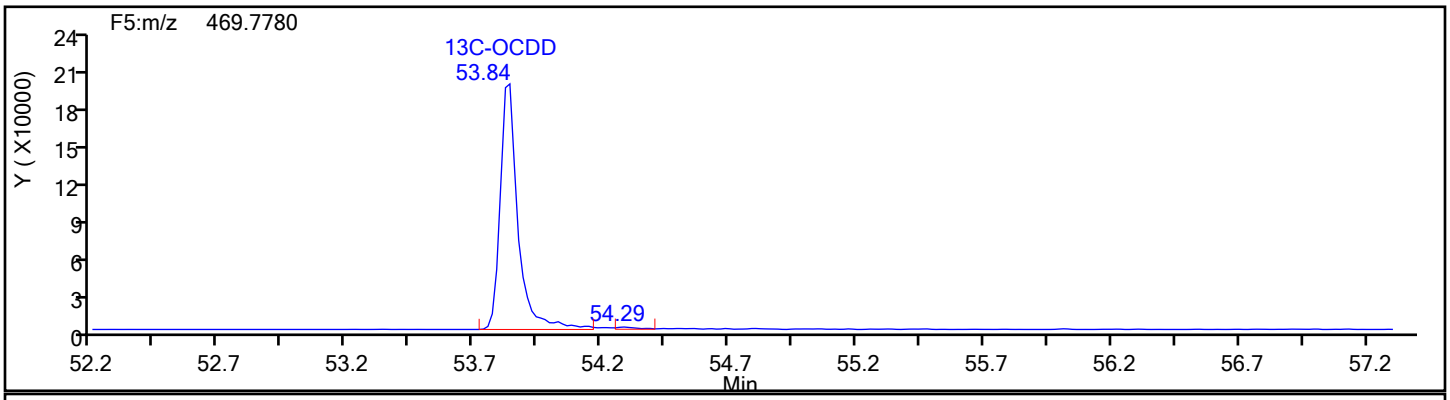
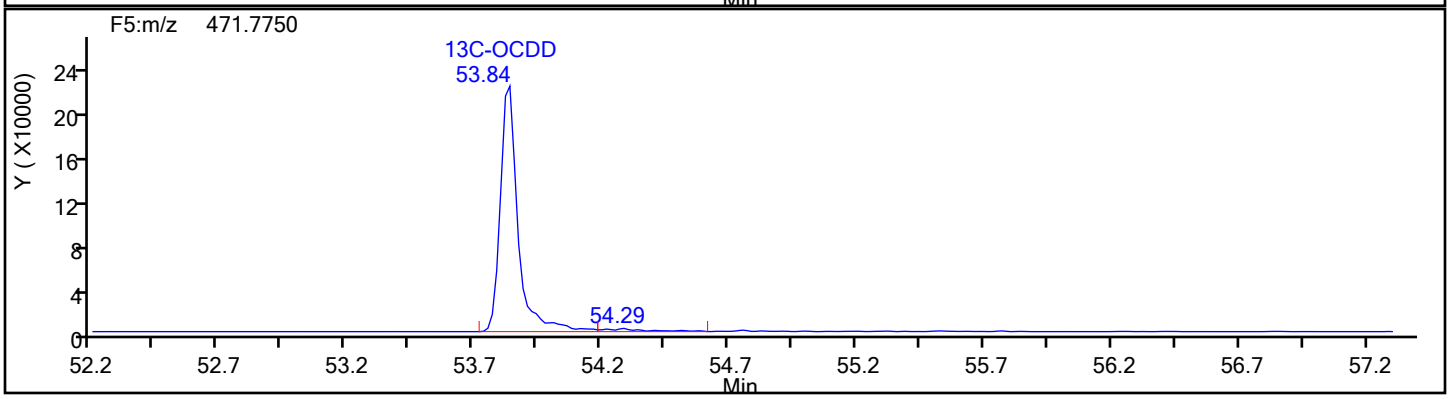
OCDD





OCDD Standards





Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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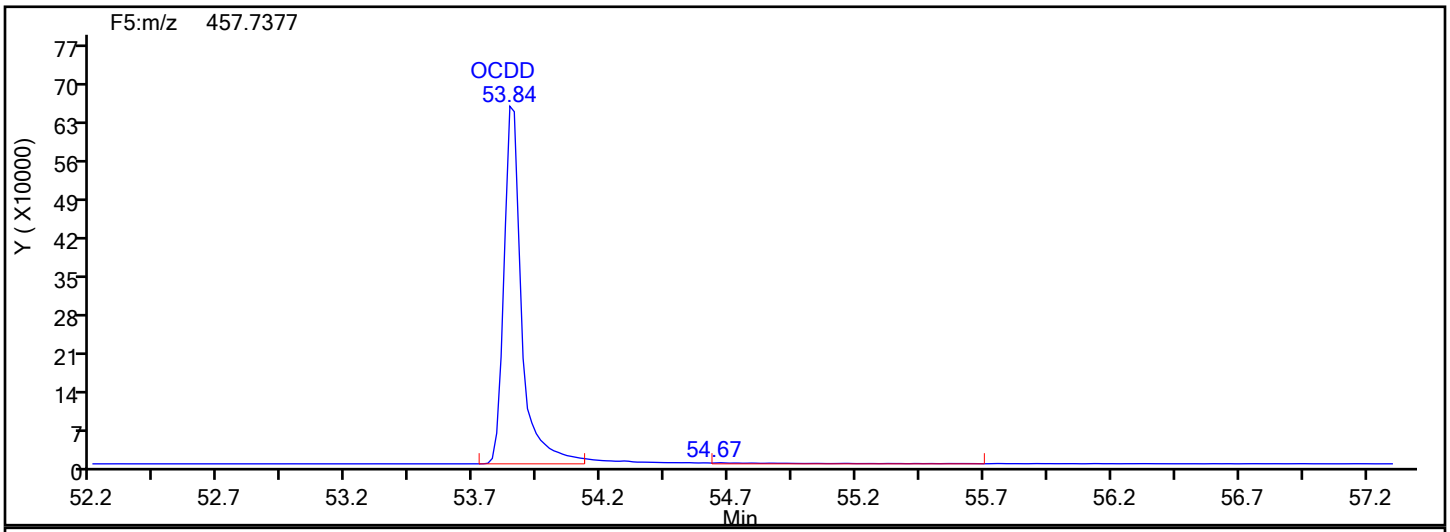
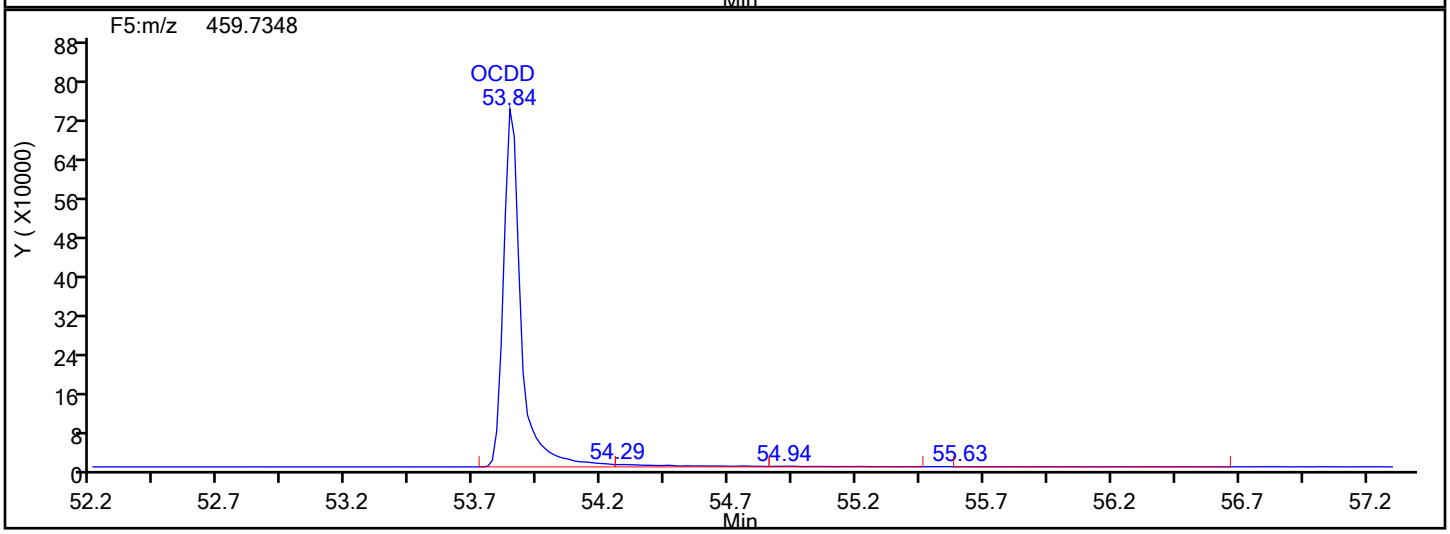
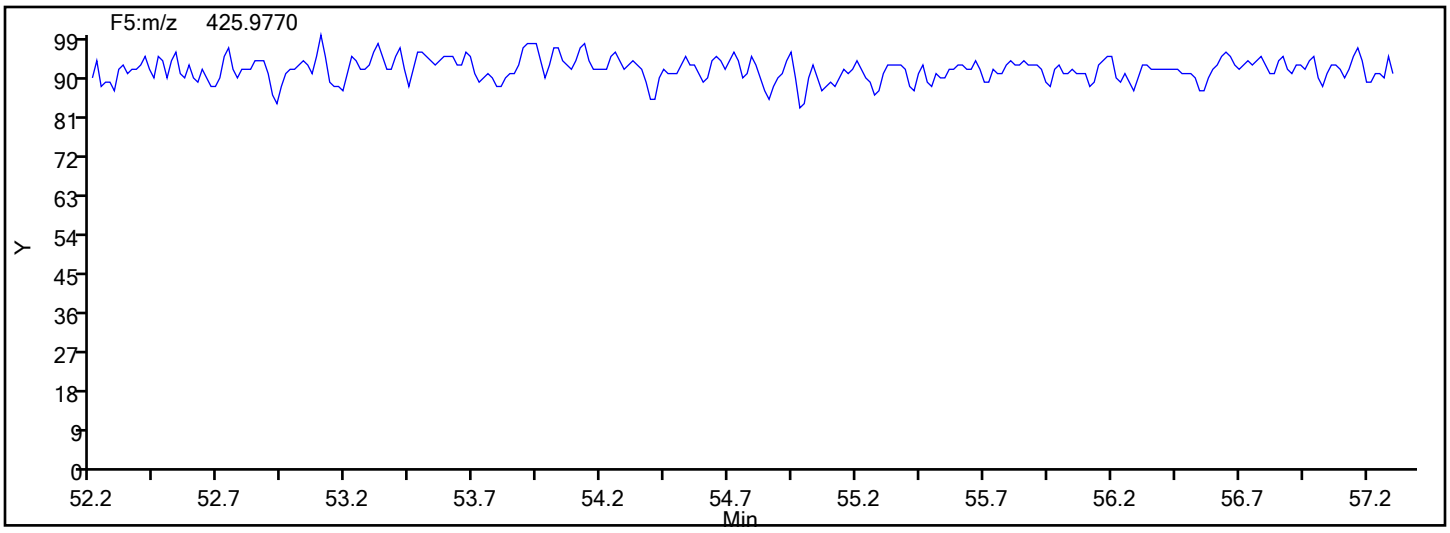
OCDD





OCDD Lock Mass



Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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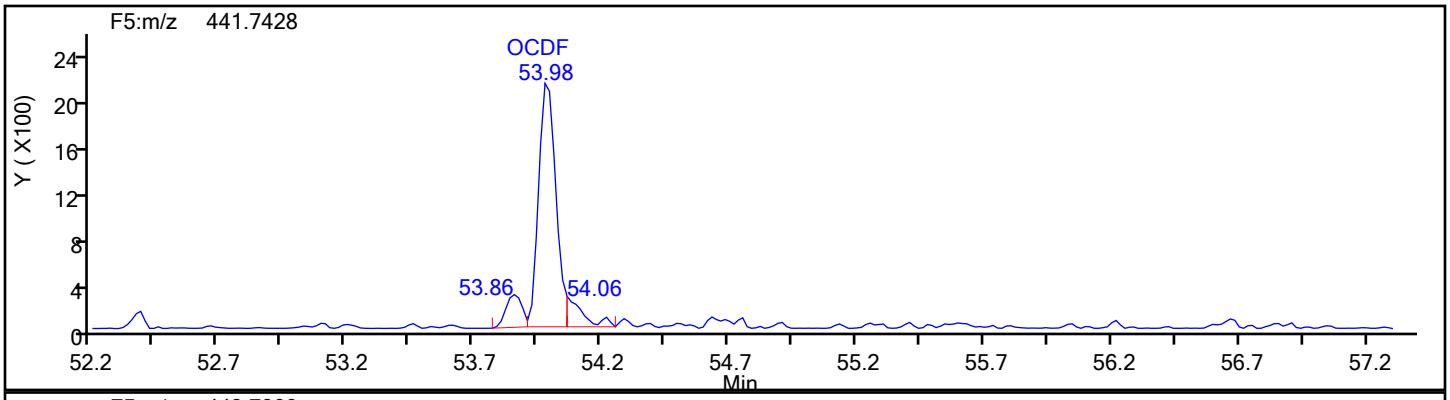
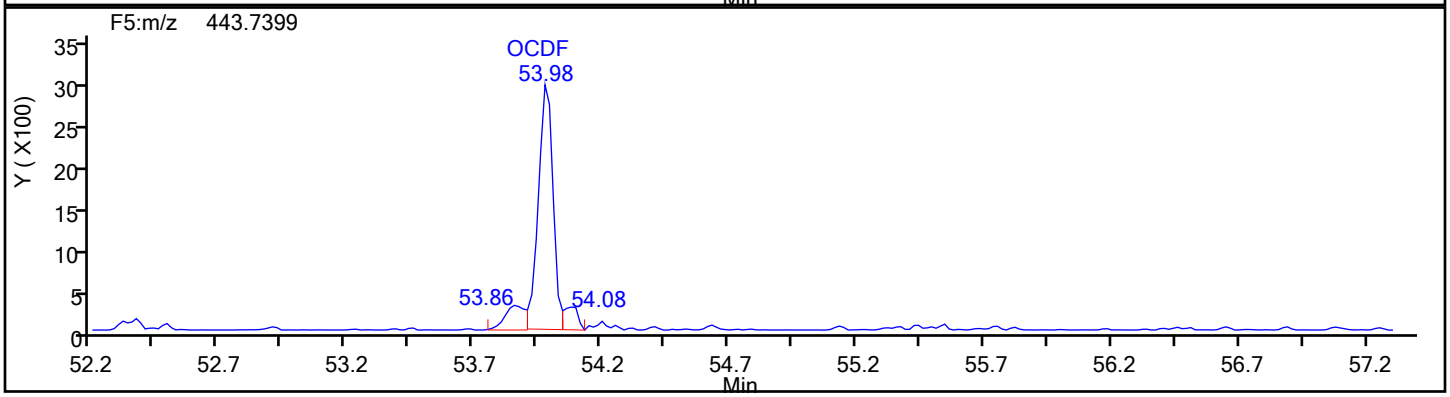
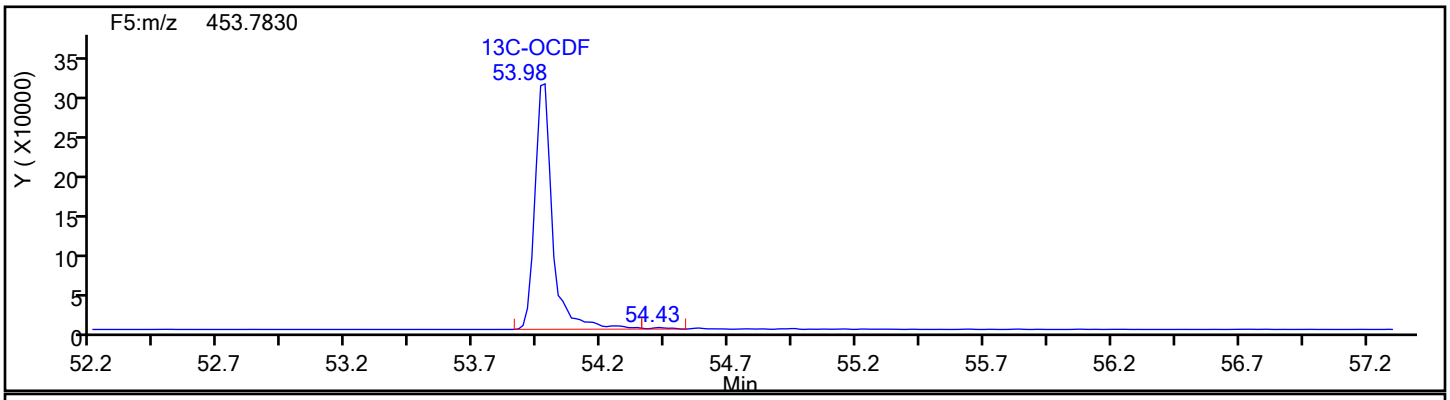
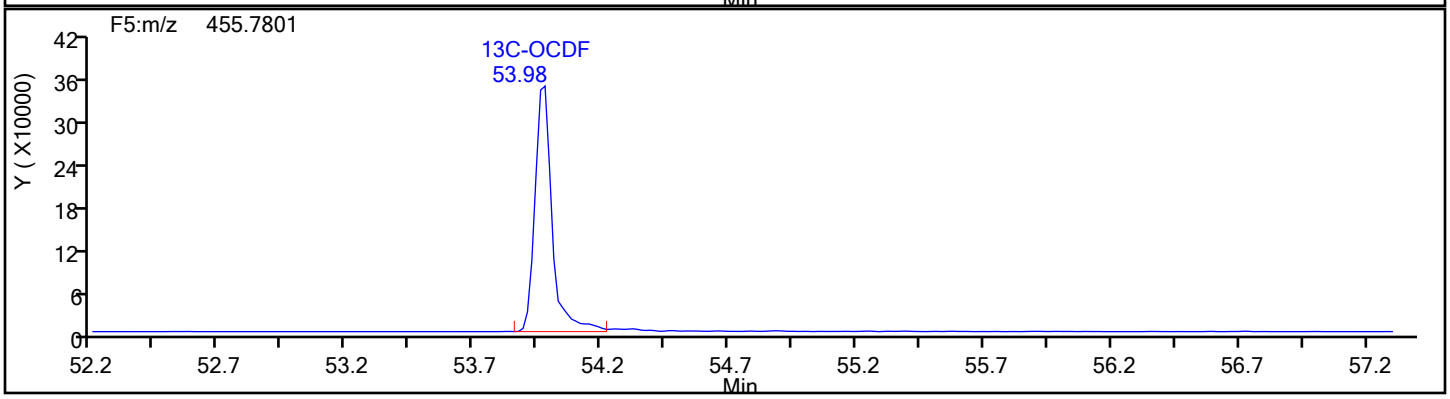
OCDF





OCDF Standards





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Eurofins TestAmerica, Knoxville

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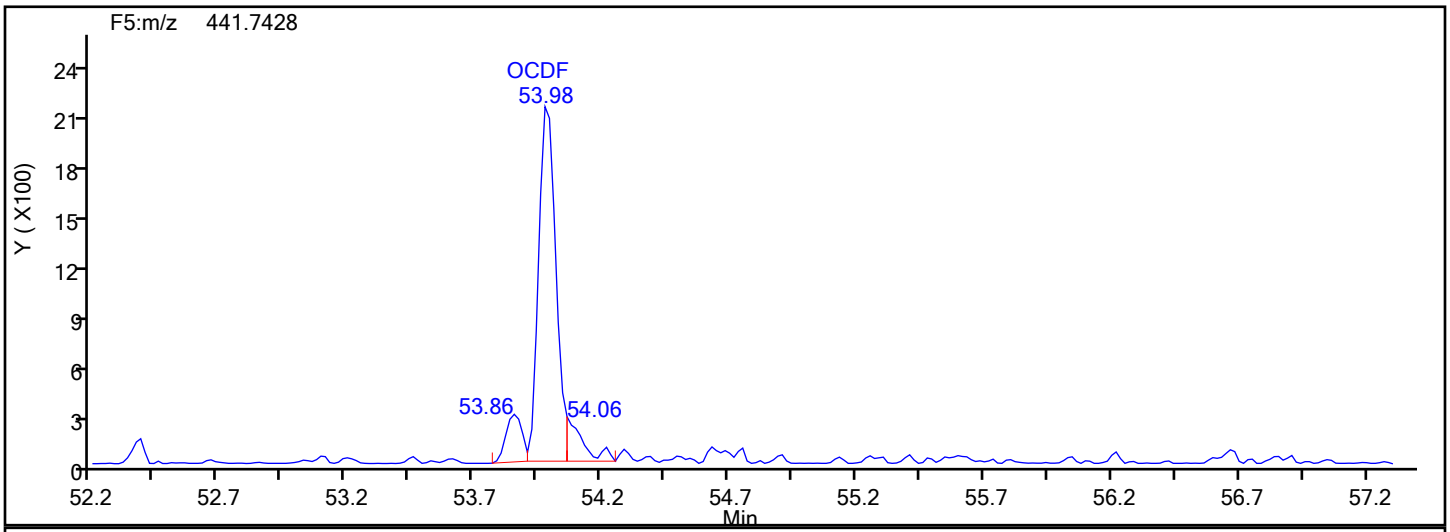
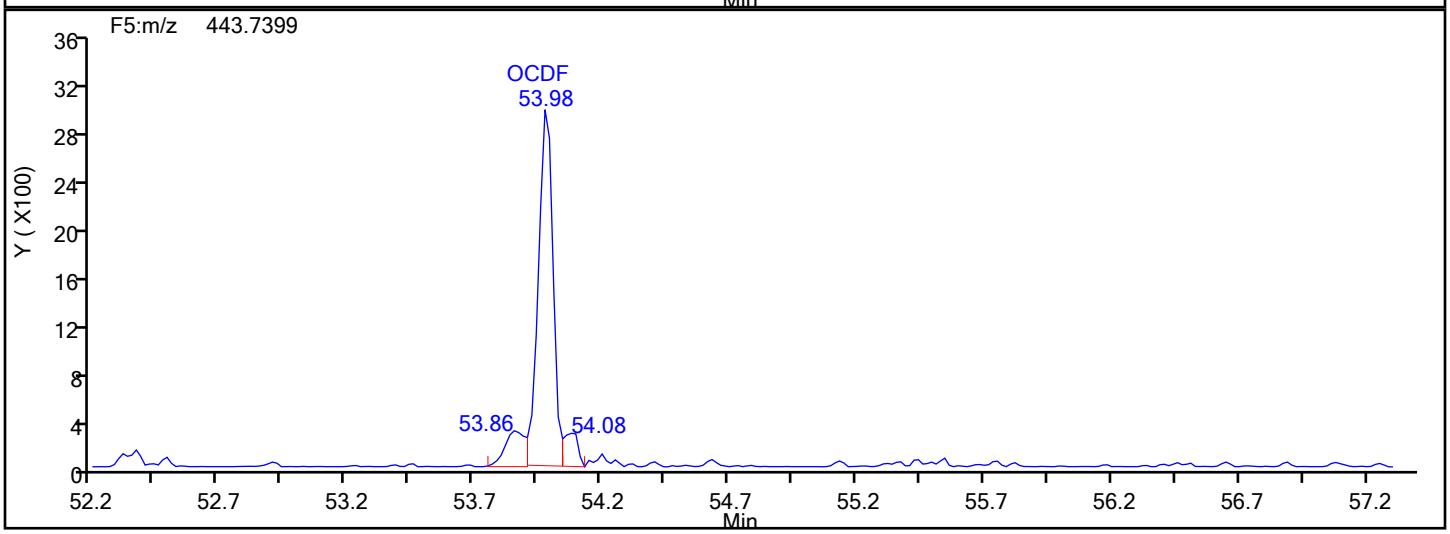
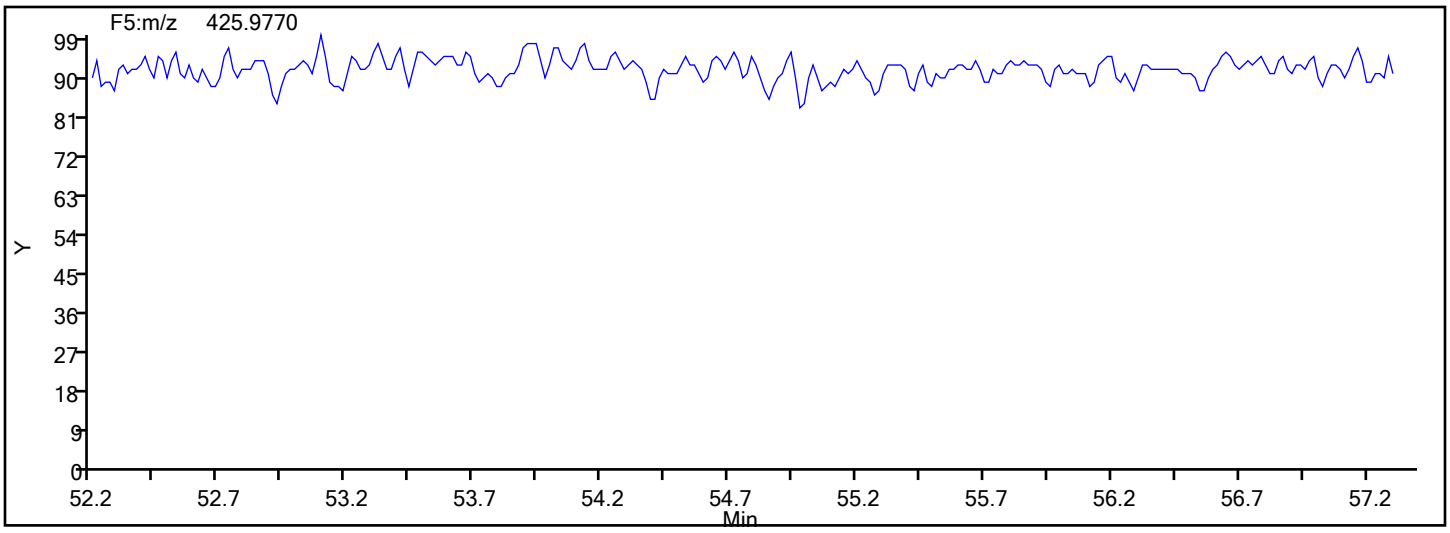
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

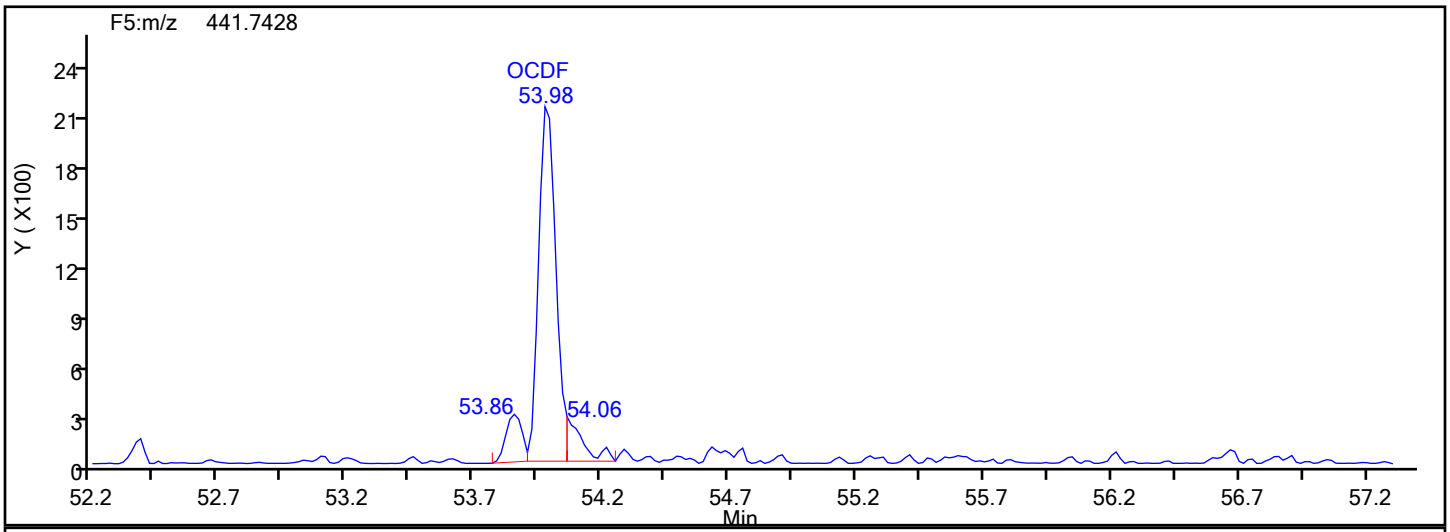


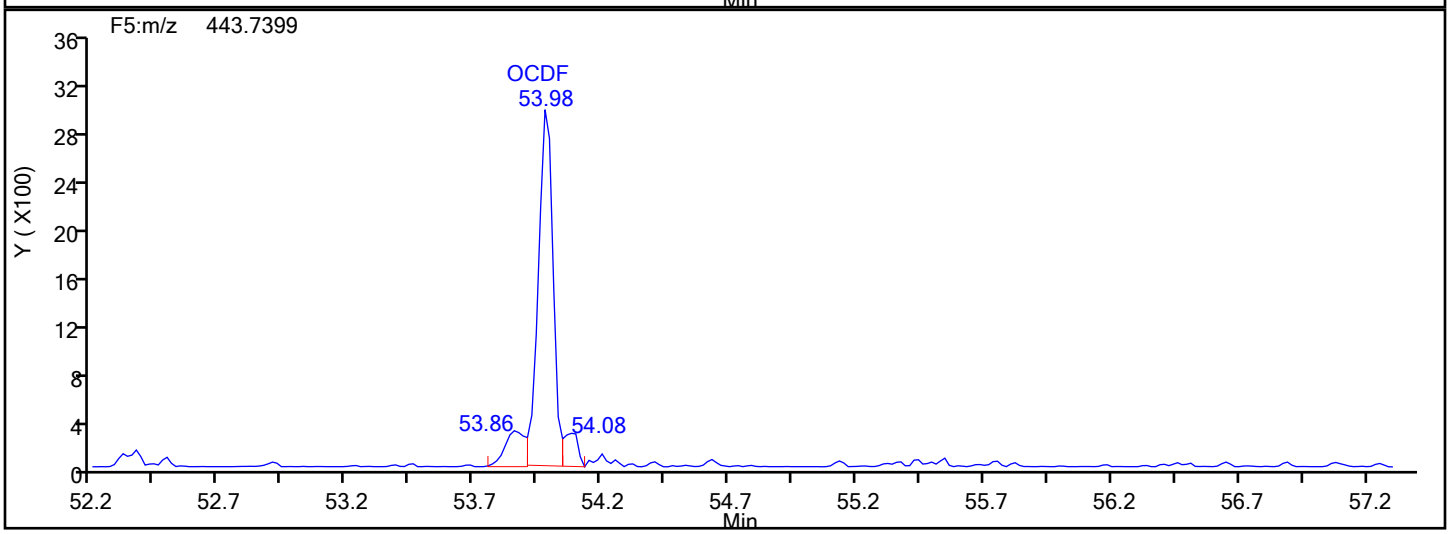
Report Date: 17-Dec-2019 21:26:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

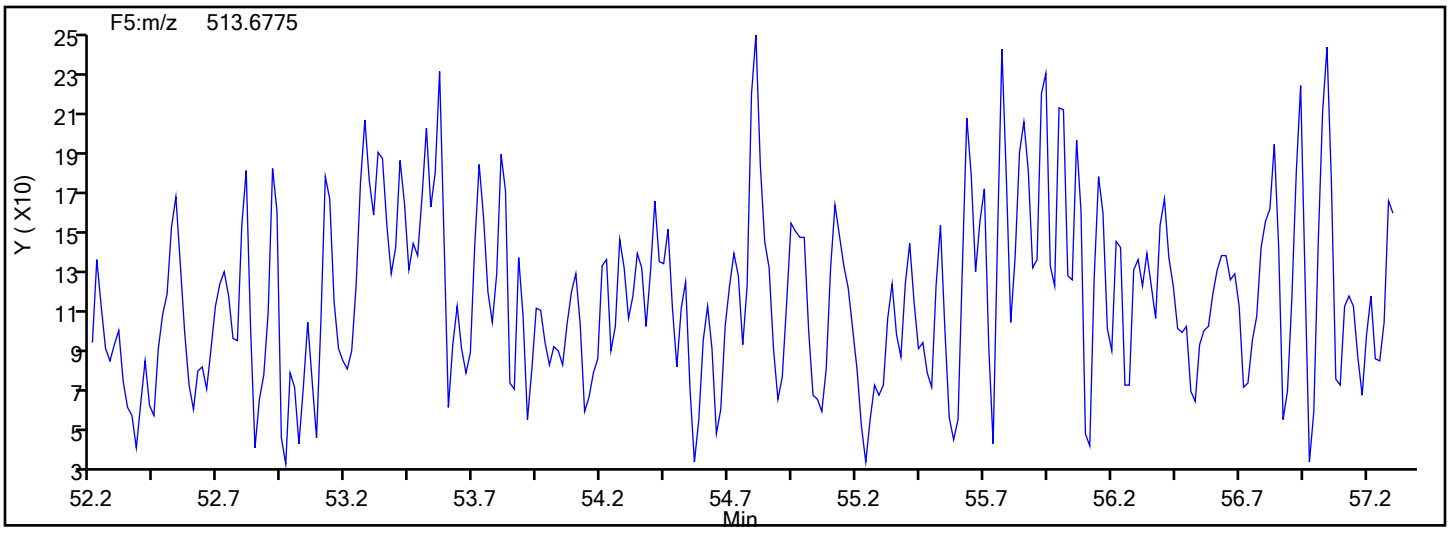
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d		
Injection Date:	17-Dec-2019 11:08:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(2-4)		
Worklist#:	36126	Sample Line#:	14
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

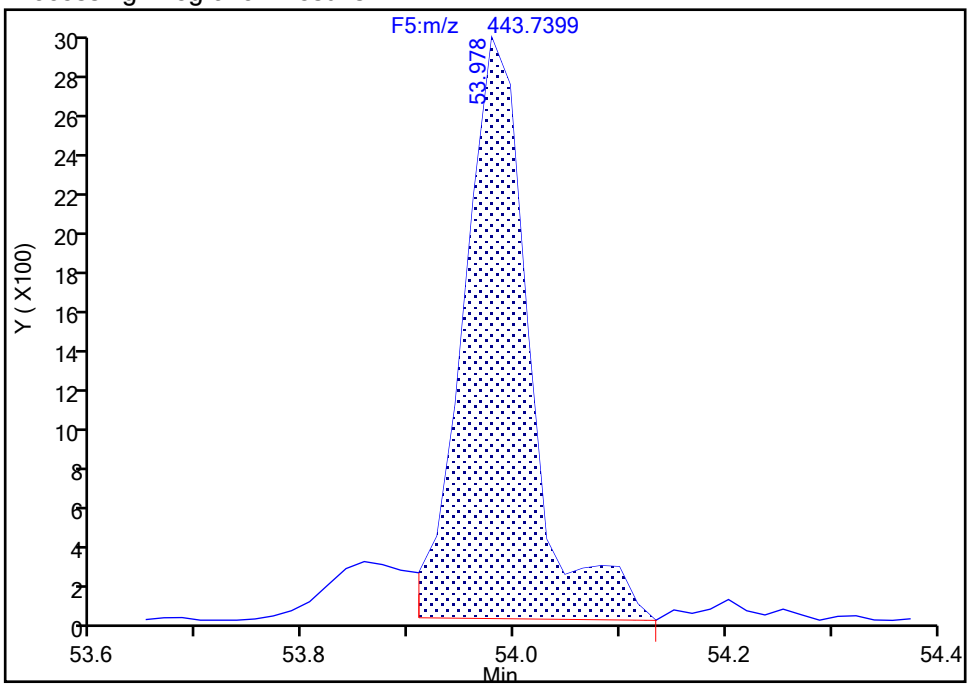
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

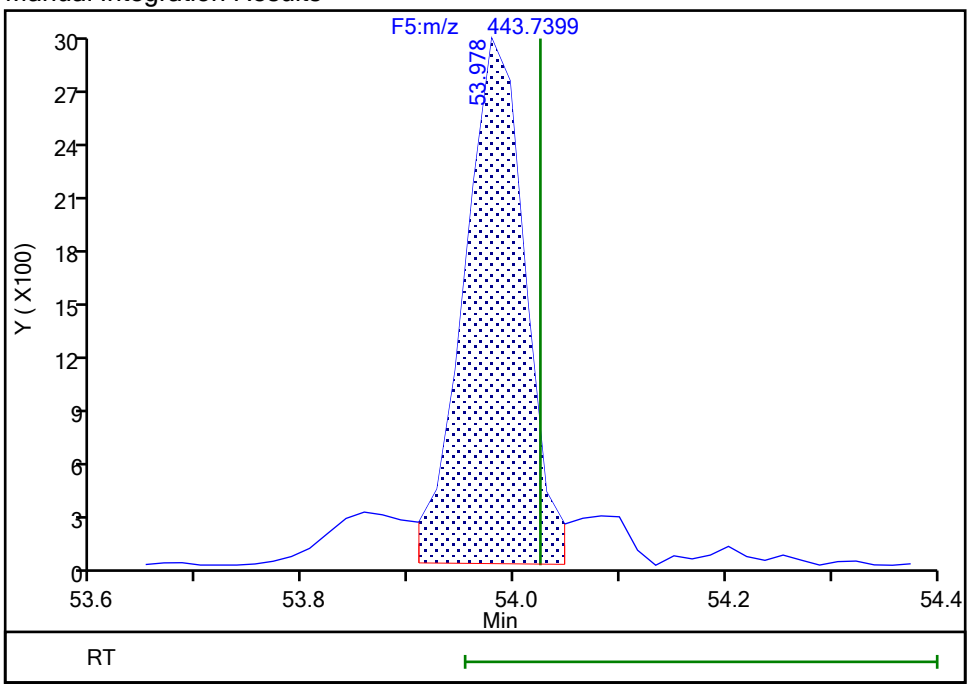
Processing Integration Results

RT: 53.98
Area: 12577
Amount: 0.674121
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 11561
Amount: 0.613511
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:50:53

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

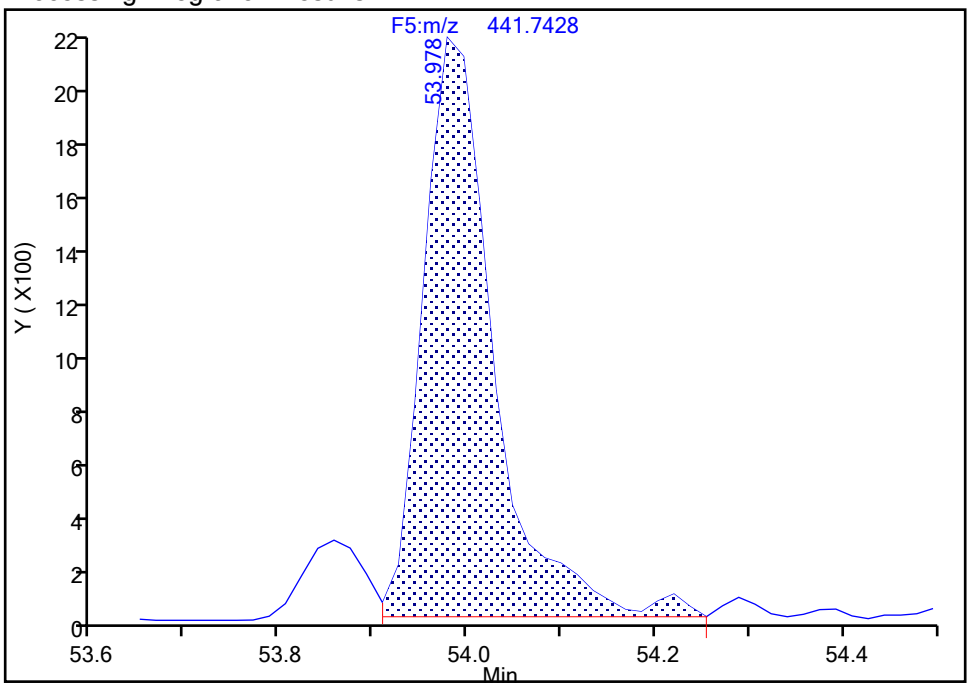
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\140-17578-a-7-a.d				
Injection Date:	17-Dec-2019 11:08:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-7-A	Lab Sample ID:	140-17578-7		
Client ID:	11187072-120619-SS-SJSSA03(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

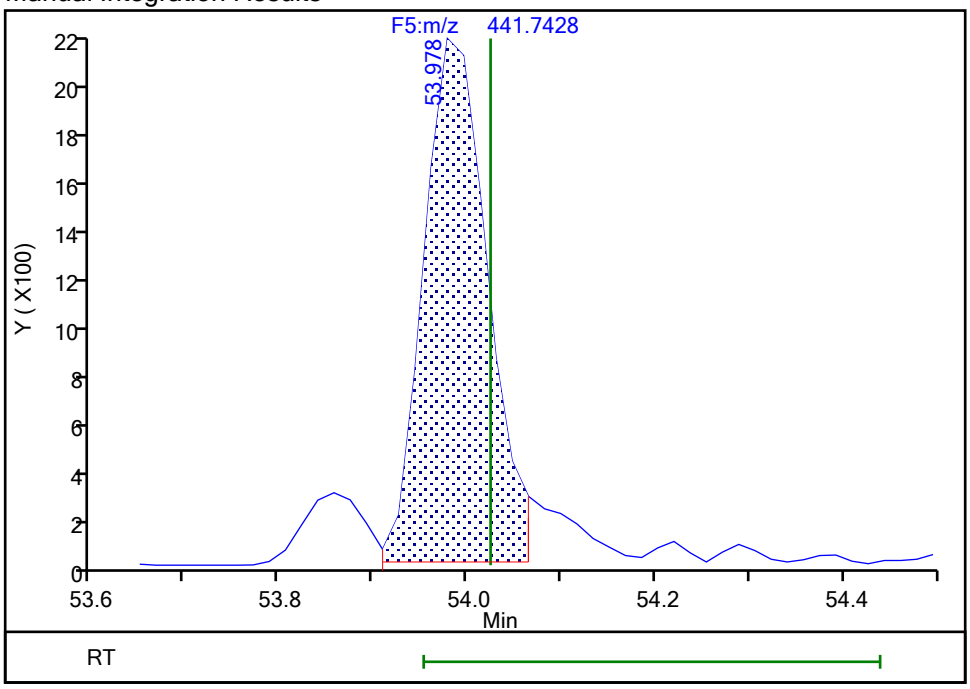
Processing Integration Results

RT: 53.98
Area: 11080
Amount: 0.674121
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 9969
Amount: 0.613511
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 12:50:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) Lab Sample ID: 140-17578-8

Matrix: Sediment Lab File ID: 140-17578-a-8-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.16(g) Date Analyzed: 12/17/2019 15:32

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	8.5		1.5	0.093
41903-57-5	Total TCDD	15	B q	1.5	0.093
40321-76-4	1,2,3,7,8-PeCDD	0.62	J q	7.3	0.058
36088-22-9	Total PeCDD	9.3	q	7.3	0.058
39227-28-6	1,2,3,4,7,8-HxCDD	0.95	J q	7.3	0.068
57653-85-7	1,2,3,6,7,8-HxCDD	2.7	J	7.3	0.073
19408-74-3	1,2,3,7,8,9-HxCDD	3.9	J	7.3	0.066
34465-46-8	Total HxCDD	61	B q	7.3	0.069
35822-46-9	1,2,3,4,6,7,8-HpCDD	90	B	7.3	0.11
37871-00-4	Total HpCDD	270	B	7.3	0.11
3268-87-9	OCDD	2300	B	15	0.045
30402-14-3	Total TCDF	58	I B q	1.5	0.13
57117-41-6	1,2,3,7,8-PeCDF	1.1	J	7.3	0.081
57117-31-4	2,3,4,7,8-PeCDF	0.89	J	7.3	0.076
30402-15-4	Total PeCDF	16	I q	7.3	0.078
70648-26-9	1,2,3,4,7,8-HxCDF	2.6	J	7.3	0.15
57117-44-9	1,2,3,6,7,8-HxCDF	1.5	J I	7.3	0.14
60851-34-5	2,3,4,6,7,8-HxCDF	0.34	J q	7.3	0.16
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.3	0.21
55684-94-1	Total HxCDF	24	I q	7.3	0.16
67562-39-4	1,2,3,4,6,7,8-HpCDF	11	B	7.3	0.13
55673-89-7	1,2,3,4,7,8,9-HpCDF	1.5	J B q	7.3	0.19
38998-75-3	Total HpCDF	27	B q	7.3	0.16
39001-02-0	OCDF	120	B	15	0.11

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) Lab Sample ID: 140-17578-8

Matrix: Sediment Lab File ID: 140-17578-a-8-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.16(g) Date Analyzed: 12/17/2019 15:32

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	65		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	67		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	67		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	71		23-140
114423-97-1	13C-OCDD	67		17-157
89059-46-1	13C-2,3,7,8-TCDF	61		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	63		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	65		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	69		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	66		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	67		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	69		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	66		26-138
109719-78-0	13C-OCDF	69		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	68		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 15:32:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 03:36:18 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 03:36:18

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:48	96884	0.86	1.1733	2.938	2.938	0.0321	0.0321		
A Non-2,3,7,8-sub-TCDD	29:29	77134	0.77	1.1733	2.433	2.339	0.0321	0.7902		RQ
S Total TCDD					5.371	5.276	0.0321	0.0321		RQ
2,3,7,8-TCDF	28:48	443874	0.79	1.0881	9.106	9.106	0.0446	0.0446		
A Non-2,3,7,8-sub-TCDF	28:12	524813	0.77	1.0881	10.9	10.8	0.0446	3.827		RQMa
S Total TCDF					20.0	19.9	0.0446	0.0446		RQ
1,2,3,7,8-PeCDD	40:34	5243	1.55	1.0434	0.2328	0.2130	0.0201	0.0201		RQM
A Non-2,3,7,8-sub-PeCDD	39:26	73483	1.55	1.0434	3.459	2.986	0.0201	1.055		RQM
S Total PeCDD					3.692	3.199	0.0201	0.0201		RQ
1,2,3,7,8-PeCDF	38:44	15494	1.71	1.1898	0.3636	0.3636	0.0278	0.0278		M
2,3,4,7,8-PeCDF	40:01	12386	1.49	1.1095	0.3067	0.3067	0.0261	0.0261		
A Non-2,3,7,8-sub-PeCDF	38:01	204288	1.55	1.1496	5.032	4.921	0.0268	0.8909		RQM
S Total PeCDF					5.703	5.591	0.0269	0.0269		RQ
1,2,3,4,7,8-HxCDD	44:48	9600	1.24	1.1409	0.3669	0.3255	0.0233	0.0233		RQ
1,2,3,6,7,8-HxCDD	44:55	28801	1.37	1.1481	0.9258	0.9258	0.0251	0.0251		
1,2,3,7,8,9-HxCDD	45:18	43105	1.17	1.2212	1.333	1.333	0.0227	0.0227		M
A Non-2,3,7,8-sub-HxCDD	44:19	574272	1.27	1.1700	18.5	18.5	0.0237	12.9		M
S Total HxCDD					21.2	21.1	0.0237	0.0237		RQ
1,2,3,4,7,8-HxCDF	43:46	41098	1.16	1.3629	0.8882	0.8882	0.0533	0.0533		
1,2,3,6,7,8-HxCDF	43:55	29932	1.06	1.2762	0.5319	0.5319	0.0490	0.0490		
2,3,4,6,7,8-HxCDF	44:38	5701	1.24	1.2654	0.1279	0.1174	0.0540	0.0540		RQMa
1,2,3,7,8,9-HxCDF	45:36						0.0708	0.0708		
A Non-2,3,7,8-sub-HxCDF	44:10	327793	1.22	1.2905	6.703	6.703	0.0557	2.592		M
S Total HxCDF					8.251	8.241	0.0568	0.0568		RQ
1,2,3,4,6,7,8-HpCDD	49:36	888015	1.01	1.1204	31.0	31.0	0.0362	0.0362		
A Non-2,3,7,8-sub-HpCDD	49:03	1794229	1.05	1.1204	62.7	62.7	0.0362	62.7		Ma
S Total HpCDD					93.7	93.7	0.0362	0.0362		
1,2,3,4,6,7,8-HpCDF	47:56	177652	1.07	1.4984	3.762	3.762	0.0432	0.0432		M
1,2,3,4,7,8,9-HpCDF	50:16	18597	1.04	1.3807	0.5825	0.5214	0.0656	0.0656		RQM
A Non-2,3,7,8-sub-HpCDF	49:56	203277	1.11	1.4395	4.924	4.924	0.0524	4.426		a

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					9.269	9.207	0.0544	0.0544		RQ
OCDD	53:51	19302993	0.89	1.2073	774.6	774.6	0.0155	0.0155		M
OCDF	53:59	1503098	0.91	1.1162	42.2	42.2	0.0387	0.0387		M
D 13C-2,3,7,8-TCDD	30:45	1405489	0.77	1.0709	31.6	31.6	0.3293	0.3293	63.21	
D 13C-2,3,7,8-TCDF	28:46	2239706	0.81	1.7545	30.7	30.7	0.4021	0.4021	61.49	
D 13C-1,2,3,7,8-PeCDD	40:32	1179325	1.54	0.8743	32.5	32.5	0.2657	0.2657	64.97	
D 13C-1,2,3,7,8-PeCDF	38:44	1790814	1.54	1.3704	31.5	31.5	0.3504	0.3504	62.94	
D 13C-2,3,4,7,8-PeCDF	40:00	1820207	1.67	1.3837	31.7	31.7	0.3470	0.3470	63.36	
D 13C-1,2,3,4,7,8-HxCDD	44:47	1292677	1.33	0.8772	33.6	33.6	0.1291	0.1291	67.23	
D 13C-1,2,3,6,7,8-HxCDD	44:54	1354796	1.20	0.9171	33.7	33.7	0.1235	0.1235	67.40	
D 13C-1,2,3,4,7,8-HxCDF	43:46	1697464	0.52	1.1892	32.6	32.6	0.2691	0.2691	65.12	
D 13C-1,2,3,6,7,8-HxCDF	43:54	2204876	0.54	1.4625	34.4	34.4	0.2188	0.2188	68.79	
D 13C-2,3,4,6,7,8-HxCDF	44:37	1918893	0.53	1.3197	33.2	33.2	0.2424	0.2424	66.34	
D 13C-1,2,3,7,8,9-HxCDF	45:33	1757559	0.53	1.2001	33.4	33.4	0.2666	0.2666	66.82	
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	1277322	1.07	0.8155	35.7	35.7	0.1297	0.1297	71.46	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1575900	0.48	1.0496	34.3	34.3	0.1735	0.1735	68.50	
D 13C-1,2,3,4,7,8,9-HpCDF	50:15	1291700	0.45	0.8947	32.9	32.9	0.2035	0.2035	65.87	
D 13C-OCDD	53:51	2064133	0.91	0.7044	66.8	66.8	0.2145	0.2145	66.85	
D 13C-OCDF	53:58	3189825	0.91	1.0615	68.6	68.6	0.1622	0.1622	68.55	
$ 37Cl4-2,3,7,8-TCDD	30:48	347321		1.2266	6.820	6.820	0.1507	0.1507	68.20	
* 13C-1,2,3,4-TCDD	30:15	4152270	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:18	4383630	1.32	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 15:32:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 03:36:18 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 03:36:18

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:48	30:51	-2	1.002	44662	4713	18	45	262		
321.8936	30:46	30:51	-4	1.001	52222	5331	27	67	197	0.86(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	24:52	29:29	-276	0.809	2766	429	18	45	24		
321.8936	24:51	29:29	-277	0.808	3868	575	27	67	21	0.72(0.65-0.89)	
319.8965	25:36	29:29	-232	0.832	3053	437	18	45	24		
321.8936	25:35	29:29	-233	0.832	4785	616	27	67	23	0.64(0.65-0.89)	
	Empc Correction				3964	567	27	67	21		
319.8965	26:18	29:29	-190	0.855	2275	312	18	45	17		
321.8936	26:17	29:29	-191	0.855	2605	390	27	67	14	0.87(0.65-0.89)	
319.8965	27:44	29:29	-104	0.902	11635	1344	18	45	75		
321.8936	27:44	29:29	-104	0.902	14425	1872	27	67	69	0.81(0.65-0.89)	
319.8965	28:07	29:29	-81	0.915	2077	249	18	45	14		
321.8936	28:10	29:29	-78	0.916	2587	356	27	67	13	0.80(0.65-0.89)	
319.8965	28:27	29:29	-62	0.925	1072	204	18	45	11		
	Empc Correction				814	100	18	45	6		
321.8936	28:29	29:29	-60	0.926	1058	131	27	67	5	1.01(0.65-0.89)	
319.8965	30:15	29:29	46	0.984	3890	568	18	45	32		
321.8936	30:13	29:29	44	0.982	4731	510	27	67	19	0.82(0.65-0.89)	
319.8965	30:36	29:29	67	0.995	2529	391	18	45	22		
321.8936	30:32	29:29	63	0.993	4240	586	27	67	22	0.60(0.65-0.89)	
	Empc Correction				3284	507	27	67	19		
319.8965	31:56	29:29	147	1.038	3393	449	18	45	25		
321.8936	31:54	29:29	145	1.037	4596	454	27	67	17	0.74(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	32:43	29:29	194	1.064	751	126	18	45	7		
321.8936	32:39	29:29	190	1.062	1280	196	27	67	7	0.59(0.65-0.89)	
	Empc Correction				975	163	27	67	6		
319.8965	33:56	29:29	267	1.104	1585	213	18	45	12		
	Empc Correction				808	119	18	45	7		
321.8936	33:59	29:29	270	1.105	1050	155	27	67	6	1.51(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:48	28:49	-3	1.001	195687	20471	52	130	394		
305.8987	28:48	28:49	-3	1.001	248187	25089	50	125	502	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	22:28	28:12	-344	0.781	2140	285	52	130	5		
305.8987	22:28	28:12	-344	0.781	3092	405	50	125	8	0.69(0.65-0.89)	
303.9016	23:20	28:12	-291	0.811	2772	393	52	130	8		
	Empc Correction				2357	328	52	130	6		
305.8987	23:20	28:12	-291	0.811	3062	426	50	125	9	0.91(0.65-0.89)	
303.9016	23:48	28:12	-264	0.827	5000	836	52	130	16		
305.8987	23:49	28:12	-263	0.828	7280	1088	50	125	22	0.69(0.65-0.89)	
303.9016	24:19	28:12	-233	0.845	5928	843	52	130	16		
305.8987	24:20	28:12	-232	0.846	8899	1205	50	125	24	0.67(0.65-0.89)	
303.9016	24:34	28:12	-218	0.854	1903	262	52	130	5		
305.8987	24:34	28:12	-218	0.854	3039	274	50	125	5	0.63(0.65-0.89)	
	Empc Correction				2471	340	50	125	7		
303.9016	25:02	28:12	-189	0.871	10431	1301	52	130	25		
305.8987	25:03	28:12	-188	0.871	15055	2104	50	125	42	0.69(0.65-0.89)	
303.9016	25:48	28:12	-144	0.897	23533	2811	52	130	54		
305.8987	25:46	28:12	-146	0.896	31478	3536	50	125	71	0.75(0.65-0.89)	
303.9016	26:26	28:12	-106	0.919	7014	902	52	130	17		
305.8987	26:24	28:12	-108	0.918	10670	936	50	125	19	0.66(0.65-0.89)	
303.9016	26:58	28:12	-74	0.937	9858	1358	52	130	26		M
	Empc Correction				8184	944	52	130	18		
305.8987	26:57	28:12	-75	0.937	10629	1227	50	125	25	0.93(0.65-0.89)	
303.9016	26:58	28:12	-74	0.937	9858	1358	52	130	26		M
	Empc Correction				8184	944	52	130	18		
305.8987	26:57	28:12	-75	0.937	10629	1227	50	125	25	0.93(0.65-0.89)	
303.9016	27:42	28:12	-30	0.963	83524	9828	52	130	189		
305.8987	27:42	28:12	-30	0.963	103018	13123	50	125	262	0.81(0.65-0.89)	
303.9016	28:16	28:12	4	0.983	9980	530	52	130	10		
305.8987	28:19	28:12	7	0.985	14833	837	50	125	17	0.67(0.65-0.89)	M
303.9016	30:01	28:12	108	1.043	12856	1631	52	130	31		
305.8987	30:01	28:12	108	1.043	16459	1789	50	125	36	0.78(0.65-0.89)	
303.9016	30:40	28:12	147	1.066	3558	377	52	130	7		
305.8987	30:39	28:12	146	1.066	4988	482	50	125	10	0.71(0.65-0.89)	
303.9016	32:49	28:12	276	1.141	27438	2614	52	130	50		
305.8987	32:48	28:12	275	1.141	38920	4615	50	125	92	0.70(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	33:37	28:12	324	1.169	1341	315	52	130	6		
	Empc Correction				1135	207	52	130	4		
305.8987	33:38	28:12	325	1.169	1475	270	50	125	5	0.91(0.65-0.89)	
303.9016	33:52	28:12	339	1.177	12668	1388	52	130	27		
305.8987	33:51	28:12	338	1.177	16022	1474	50	125	29	0.79(0.65-0.89)	
1,2,3,7,8-PeCDD											RQM
355.8546	40:34	40:33	-1	1.001	3187	782	19	47	41		
357.8516	40:33	40:33	-2	1.000	2542	477	24	60	20	1.25(1.32-1.78)	M
	Empc Correction				2056	504	24	60	21		
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	37:35	39:26	-111	0.927	14786	2087	19	47	110		
	Empc Correction				8394	1732	19	47	91		
357.8516	37:36	39:26	-110	0.928	5416	1118	24	60	47	2.73(1.32-1.78)	
355.8546	38:27	39:26	-60	0.949	15250	2890	19	47	152		
357.8516	38:26	39:26	-61	0.948	10711	2211	24	60	92	1.42(1.32-1.78)	
355.8546	38:55	39:26	-32	0.960	1944	398	19	47	21		
357.8516	38:54	39:26	-33	0.960	1362	300	24	60	13	1.43(1.32-1.78)	
355.8546	39:09	39:26	-17	0.966	5107	624	19	47	33		M
357.8516	39:08	39:26	-18	0.966	4594	437	24	60	18	1.11(1.32-1.78)	M
	Empc Correction				3294	402	24	60	17		
355.8546	39:40	39:26	14	0.979	2516	496	19	47	26		
357.8516	39:39	39:26	13	0.978	1581	321	24	60	13	1.59(1.32-1.78)	
355.8546	39:47	39:26	21	0.982	11634	1758	19	47	93		
	Empc Correction				8151	1613	19	47	85		
357.8516	39:49	39:26	23	0.983	5259	1041	24	60	43	2.21(1.32-1.78)	
355.8546	40:47	39:26	81	1.006	837	243	19	47	13		
357.8516	40:47	39:26	81	1.006	1005	200	24	60	8	0.83(1.32-1.78)	
	Empc Correction				540	156	24	60	7		
355.8546	41:12	39:26	106	1.017	1958	436	19	47	23		M
357.8516	41:13	39:26	107	1.017	1163	226	24	60	9	1.68(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:44	38:45	-3	1.000	9786	1767	38	95	47		M
341.8567	38:45	38:45	-2	1.000	5708	1239	50	125	25	1.71(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:01	40:01	-2	1.000	7419	1520	38	95	40		
341.8567	40:01	40:01	-2	1.000	4967	918	50	125	18	1.49(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	34:40	38:01	-201	0.895	20013	2257	38	95	59		
341.8567	34:40	38:01	-201	0.895	14287	1814	50	125	36	1.40(1.32-1.78)	
339.8597	37:14	38:01	-47	0.961	24384	3142	38	95	83		
	Empc Correction				20892	3138	38	95	83		
341.8567	37:14	38:01	-47	0.961	13479	2025	50	125	41	1.81(1.32-1.78)	
339.8597	37:35	38:01	-26	0.970	1866	263	38	95	7		
341.8567	37:32	38:01	-29	0.969	1764	281	50	125	6	1.06(1.32-1.78)	
	Empc Correction				1203	169	50	125	3		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	38:07	38:01	6	0.984	22209	4830	38	95	127		
341.8567	38:07	38:01	6	0.984	13880	2489	50	125	50	1.60(1.32-1.78)	
339.8597	38:16	38:01	15	0.988	6354	835	38	95	22		
341.8567	38:15	38:01	14	0.988	3791	538	50	125	11	1.68(1.32-1.78)	
339.8597	38:41	38:01	40	0.999	2157	706	38	95	19		M
	Empc Correction				1593	336	38	95	9		
341.8567	38:36	38:01	35	0.996	1028	217	50	125	4	2.10(1.32-1.78)	
339.8597	39:02	38:01	61	1.008	3160	447	38	95	12		M
341.8567	39:02	38:01	61	1.008	2133	217	50	125	4	1.48(1.32-1.78)	
339.8597	39:23	38:01	81	1.016	22592	4011	38	95	106		
341.8567	39:23	38:01	81	1.016	14392	2366	50	125	47	1.57(1.32-1.78)	M
339.8597	39:37	38:01	96	1.023	4541	620	38	95	16		M
341.8567	39:37	38:01	96	1.023	3308	392	50	125	8	1.37(1.32-1.78)	M
339.8597	40:13	38:01	132	1.038	5666	899	38	95	24		
341.8567	40:16	38:01	135	1.040	3642	495	50	125	10	1.56(1.32-1.78)	
339.8597	40:34	38:01	153	1.047	2678	535	38	95	14		
341.8567	40:34	38:01	153	1.047	1816	451	50	125	9	1.47(1.32-1.78)	
339.8597	41:26	38:01	204	1.069	12327	2855	38	95	75		M
341.8567	41:26	38:01	204	1.069	7438	1617	50	125	32	1.66(1.32-1.78)	
1,2,3,4,7,8-HxCDD											RQ
389.8158	44:48	44:49	-2	1.000	6537	1395	27	67	52		
	Empc Correction				5314	1355	27	67	50		
391.8127	44:49	44:49	-1	1.001	4286	1093	42	105	26	1.53(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:55	44:55	-2	1.000	16648	3647	27	67	135		
391.8127	44:55	44:55	-2	1.000	12153	2593	42	105	62	1.37(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	45:18	45:18	-3	1.011	23230	3952	27	67	146		M
391.8127	45:18	45:18	-3	1.011	19875	3175	42	105	76	1.17(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											M
389.8158	43:15	44:19	-64	0.963	222255	58068	27	67	2151		M
391.8127	43:15	44:19	-64	0.963	177448	44135	42	105	1051	1.25(1.05-1.43)	M
389.8158	43:49	44:19	-29	0.976	11905	2877	27	67	107		
391.8127	43:48	44:19	-30	0.976	10995	2465	42	105	59	1.08(1.05-1.43)	
389.8158	44:07	44:19	-12	0.982	76233	17047	27	67	631		
391.8127	44:06	44:19	-13	0.982	57002	12938	42	105	308	1.34(1.05-1.43)	
389.8158	44:17	44:19	-2	0.986	10712	2346	27	67	87		
391.8127	44:17	44:19	-2	0.986	7722	1550	42	105	37	1.39(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:46	43:48	-3	1.000	22104	5139	154	385	33		
375.8178	43:47	43:48	-2	1.000	18994	4377	98	245	45	1.16(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:55	43:55	-2	1.000	15416	4018	154	385	26		
375.8178	43:55	43:55	-2	1.000	14516	3751	98	245	38	1.06(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,6,7,8-HxCDF											RQMa
373.8208	44:38	44:38	-2	1.000	3156	799	154	385	5		M
375.8178	44:38	44:38	-2	1.000	3054	809	98	245	8	1.03(1.05-1.43)	
	Empc Correction				2545	644	98	245	7		
1,2,3,7,8,9-HxCDF											
373.8208	45:34						154	385			
375.8178	45:34						98	245			
A Non-2,3,7,8-sub-HxCDF											M
373.8208	42:33	44:10	-96	0.970	10222	2919	154	385	19		
375.8178	42:32	44:10	-97	0.969	9227	2518	98	245	26	1.11(1.05-1.43)	
373.8208	42:44	44:10	-86	0.973	44403	11586	154	385	75		
375.8178	42:44	44:10	-86	0.973	34427	9032	98	245	92	1.29(1.05-1.43)	
373.8208	43:07	44:10	-63	0.982	12090	2167	154	385	14		
375.8178	43:07	44:10	-63	0.982	8961	1750	98	245	18	1.35(1.05-1.43)	M
373.8208	43:20	44:10	-49	0.987	30702	8521	154	385	55		
375.8178	43:20	44:10	-49	0.987	24248	6806	98	245	69	1.27(1.05-1.43)	
373.8208	43:32	44:10	-37	0.992	68812	20484	154	385	133		
375.8178	43:31	44:10	-38	0.992	57921	16548	98	245	169	1.19(1.05-1.43)	
373.8208	44:28	44:10	18	1.013	13710	3122	154	385	20		M
375.8178	44:28	44:10	18	1.013	13070	2625	98	245	27	1.05(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:35	-2	1.000	445118	76941	26	65	2959		
425.7737	49:36	49:35	-2	1.000	442897	73120	46	115	1590	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											Ma
423.7767	48:25	49:03	-37	0.976	921116	180392	26	65	6938		M
425.7737	48:25	49:03	-37	0.976	873113	170175	46	115	3699	1.05(0.88-1.20)	M
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:56	47:56	-2	1.000	91629	20034	144	360	139		M
409.7788	47:56	47:56	-2	1.000	86023	19586	17	42	1152	1.07(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											RQM
407.7817	50:16	50:16	-1	1.000	9481	1657	144	360	12		M
409.7788	50:16	50:16	-1	1.000	11298	2063	17	42	121	0.84(0.88-1.20)	M
	Empc Correction				9116	1593	17	42	94		
A Non-2,3,7,8-sub-HpCDF											a
407.7817	48:20	49:56	-96	1.009	10868	1990	144	360	14		a
409.7788	48:19	49:56	-97	1.008	9704	1742	17	42	102	1.12(0.88-1.20)	
407.7817	48:33	49:56	-82	1.013	95876	19277	144	360	134		a
409.7788	48:33	49:56	-82	1.013	86829	18158	17	42	1068	1.10(0.88-1.20)	
OCDD											M
457.7377	53:51	53:51	-2	1.000	9115446	2127352	11	27	193396		M
459.7348	53:51	53:51	-2	1.000	10187547	2434623	24	60	101443	0.89(0.76-1.02)	M
OCDF											M
441.7428	53:59	53:59	-2	1.000	715484	169149	106	265	1596		M
443.7399	53:59	53:59	-2	1.000	787614	188481	15	37	12565	0.91(0.76-1.02)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDD											
331.9368	30:45	30:47	-3	1.017	610897	66355	438	1095	151		
333.9338	30:45	30:47	-3	1.017	794592	82346	207	517	398	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:46	28:48	-3	0.951	1002529	116545	932	2330	125		
317.9389	28:46	28:48	-3	0.951	1237177	145942	358	895	408	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:32	40:33	-2	1.340	715587	155676	207	517	752		
369.8919	40:32	40:33	-2	1.340	463738	99345	218	545	456	1.54(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:45	-2	1.281	1086544	203352	505	1262	403		
353.8970	38:44	38:45	-2	1.281	704270	129734	373	932	348	1.54(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:00	40:01	-2	1.323	1137433	232943	505	1262	461		
353.8970	40:00	40:01	-2	1.323	682774	147021	373	932	394	1.67(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:47	44:47	-2	0.989	738929	186091	365	912	510		
403.8529	44:47	44:47	-2	0.989	553748	137110	70	175	1959	1.33(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:54	44:54	-2	0.991	739253	163046	365	912	447		
403.8529	44:54	44:54	-2	0.991	615543	135020	70	175	1929	1.20(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:46	-1	0.966	582510	147993	426	1065	347		
385.8610	43:46	43:46	-1	0.966	1114954	285366	802	2005	356	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:54	-2	0.969	769332	177208	426	1065	416		
385.8610	43:54	43:54	-2	0.969	1435544	326937	802	2005	408	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:37	44:37	-2	0.985	667667	158542	426	1065	372		
385.8610	44:37	44:37	-2	0.985	1251226	302591	802	2005	377	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:33	45:33	-2	1.006	606825	120865	426	1065	284		
385.8610	45:33	45:33	-2	1.006	1150734	233170	802	2005	291	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:35	-2	1.095	659493	114347	300	750	381		
437.8140	49:35	49:35	-2	1.095	617829	107478	106	265	1014	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:55	-2	1.058	509380	100902	316	790	319		
419.8220	47:55	47:55	-2	1.058	1066520	209925	383	957	548	0.48(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:15	50:14	-1	1.109	402709	71158	316	790	225		
419.8220	50:15	50:14	-1	1.109	888991	150823	383	957	394	0.45(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:50	-1	1.189	982561	221065	265	662	834		
471.7750	53:51	53:50	-1	1.189	1081572	242618	315	787	770	0.91(0.76-1.02)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-OCDF											
453.7830	53:58	53:58	-2	1.192	1521599	332638	317	792	1049		
455.7801	53:58	53:58	-2	1.192	1668226	367284	344	860	1068	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:48	30:49	-2	1.018	347321	38733	338	845	115		
13C-1,2,3,4-TCDD											
331.9368	30:15	30:17	-3		1856827	199834	438	1095	456		
333.9338	30:15	30:17	-3		2295443	257247	207	517	1243	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:18	45:20	-2		2490728	536476	365	912	1470		
403.8529	45:18	45:20	-2		1892902	423041	70	175	6043	1.32(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 29.467

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1405489	148701

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1405489	148701

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:52	2766	429	3868	575	0.2011	0.72	
25:36	3053	437	4785	616	0.2377	0.64	RQ
25:36	3053	437	3964	567	0.2128		Empc Correction
26:18	2275	312	2605	390	0.1480	0.87	
27:44	11635	1344	14425	1872	0.7902	0.81	
28:07	2077	249	2587	356	0.1414	0.80	
28:27	1072	204	1058	131	0.0646	1.01	RQ
28:27	814	100	1058	131	0.0568		Empc Correction
30:15	3890	568	4731	510	0.2614	0.82	
30:36	2529	391	4240	586	0.2052	0.60	RQ
30:36	2529	391	3284	507	0.1763		Empc Correction
31:56	3393	449	4596	454	0.2422	0.74	
32:43	751	126	1280	196	0.0616	0.59	RQ
32:43	751	126	975	163	0.0523		Empc Correction
33:56	1585	213	1050	155	0.0799	1.51	RQ
33:56	808	119	1050	155	0.0563		Empc Correction
Signal Totals:							
	33991	4524	43143	5680			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	80251	10563				0.77	RQ
	77134	10204					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.433 = (80251 * 50.000) / (1405489 * 1.173)
Empc Amount: 2.339 = (77134 * 50.000) / (1405489 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 28.196

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2239706	262487

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2239706	262487

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:28	2140	285	3092	405	0.1073	0.69	
23:20	2772	393	3062	426	0.1197	0.91	RQ
23:20	2357	328	3062	426	0.1112		Empc Correction
23:48	5000	836	7280	1088	0.2519	0.69	
24:19	5928	843	8899	1205	0.3042	0.67	
24:34	1903	262	3039	274	0.1014	0.63	RQ
24:34	1903	262	2471	340	0.0897		Empc Correction
25:02	10431	1301	15055	2104	0.5229	0.69	
25:48	23533	2811	31478	3536	1.13	0.75	
26:26	7014	902	10670	936	0.3628	0.66	
26:58	9858	1358	10629	1227	0.4203	0.93	RQMa
26:58	8184	944	10629	1227	0.3860		Empc Correction
26:58	9858	1358	10629	1227	0.4203	0.93	RQM
26:58	8184	944	10629	1227	0.3860		Empc Correction
27:42	83524	9828	103018	13123	3.83	0.81	
28:16	9980	530	14833	837	0.5091	0.67	M
30:01	12856	1631	16459	1789	0.6014	0.78	
30:40	3558	377	4988	482	0.1753	0.71	
32:49	27438	2614	38920	4615	1.36	0.70	
33:37	1341	315	1475	270	0.0578	0.91	RQ
33:37	1135	207	1475	270	0.0535		Empc Correction
33:52	12668	1388	16022	1474	0.5886	0.79	
Signal Totals:	225833	26031	298980	35084			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	529350	62050				0.77	RQMa
	524813	61115					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDD, RT: 39.432

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1179325	255021

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1179325	255021

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:35	14786	2087	5416	1118	0.8209	2.73	RQ
37:35	8394	1732	5416	1118	0.5611		Empc Correction
38:27	15250	2890	10711	2211	1.05	1.42	
38:55	1944	398	1362	300	0.1343	1.43	
39:09	5107	624	4594	437	0.3942	1.11	RQM
39:09	5107	624	3294	402	0.3414		Empc Correction
39:40	2516	496	1581	321	0.1665	1.59	
39:47	11634	1758	5259	1041	0.6864	2.21	RQ
39:47	8151	1613	5259	1041	0.5449		Empc Correction
40:47	837	243	1005	200	0.0748	0.83	RQ
40:47	837	243	540	156	0.0560		Empc Correction
41:12	1958	436	1163	226	0.1268	1.68	M
Signal Totals:							
	44157	8432	29326	5775			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	85123	14786				1.74	RQM
	73483	14207					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.459 = (85123 * 50.000) / (1179325 * 1.043)
Empc Amount: 2.986 = (73483 * 50.000) / (1179325 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDF, RT: 38.009

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1790814	333086
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1820207	379964

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1805510	356525

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:40	20013	2257	14287	1814	0.8262	1.40	
37:14	24384	3142	13479	2025	0.9121	1.81	RQ
37:14	20892	3138	13479	2025	0.8280		Empc Correction
37:35	1866	263	1764	281	0.0874	1.06	RQ
37:35	1866	263	1203	169	0.0739		Empc Correction
38:07	22209	4830	13880	2489	0.8693	1.60	
38:16	6354	835	3791	538	0.2444	1.68	
38:41	2157	706	1028	217	0.0767	2.10	RQM
38:41	1593	336	1028	217	0.0631		Empc Correction
39:02	3160	447	2133	217	0.1275	1.48	M
39:23	22592	4011	14392	2366	0.8909	1.57	M
39:37	4541	620	3308	392	0.1891	1.37	M
40:13	5666	899	3642	495	0.2242	1.56	
40:34	2678	535	1816	451	0.1083	1.47	
41:26	12327	2855	7438	1617	0.4761	1.66	M
Signal Totals:							
	123891	21026	80397	12790			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	208905	34302				1.58	RQM
	204288	33816					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.032 = (208905 * 50.000) / (1805510 * 1.150)
Empc Amount: 4.921 = (204288 * 50.000) / (1805510 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 44.304

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1292677	323201
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1354796	298066
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1323736	310633

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	222255	58068	177448	44135	12.9	1.25	M
43:49	11905	2877	10995	2465	0.7393	1.08	
44:07	76233	17047	57002	12938	4.30	1.34	
44:17	10712	2346	7722	1550	0.5951	1.39	
Signal Totals:							
	321105	80338	253167	61088			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	574272	141426				1.27	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 18.539 = (574272 * 50.000) / (1323736 * 1.170)

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDF, RT: 44.151

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1697464	433359
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2204876	504145
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1918893	461133
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1757559	354035

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1894698	438168

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:33	10222	2919	9227	2518	0.3977	1.11	
42:44	44403	11586	34427	9032	1.61	1.29	
43:07	12090	2167	8961	1750	0.4305	1.35	M
43:20	30702	8521	24248	6806	1.12	1.27	
43:32	68812	20484	57921	16548	2.59	1.19	
44:28	13710	3122	13070	2625	0.5476	1.05	M
Signal Totals:							
	179939	48799	147854	39279			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	327793	88078				1.22	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.703 = (327793 * 50.000) / (1894698 * 1.290)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1277322	221825

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1277322	221825

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	921116	180392	873113	170175	62.7	1.05	M
Signal Totals:							
	921116	180392	873113	170175			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1794229	350567				1.05	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 62.685 = (1794229 * 50.000) / (1277322 * 1.120)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Inject. Date: 17-Dec-2019 15:32:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDF, RT: 49.925

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1575900	310827
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1291700	221981

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1433800	266404

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:20	10868	1990	9704	1742	0.4983	1.12	a
48:33	95876	19277	86829	18158	4.43	1.10	a
Signal Totals:							
	106744	21267	96533	19900			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	203277	41167				1.11	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.924 = (203277 * 50.000) / (1433800 * 1.440)

QC Flag Legend

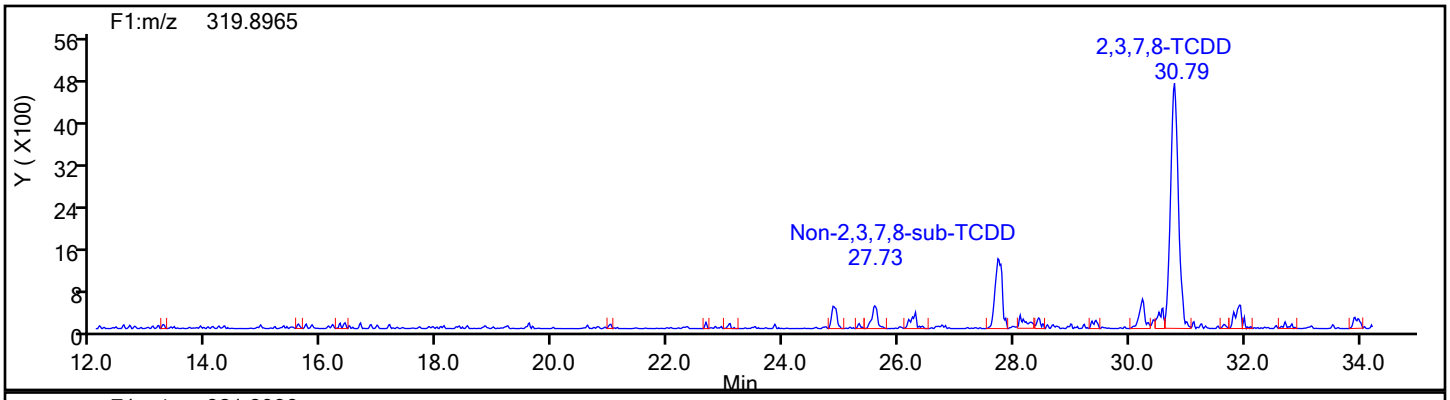
Review Flags
a - User Assigned ID

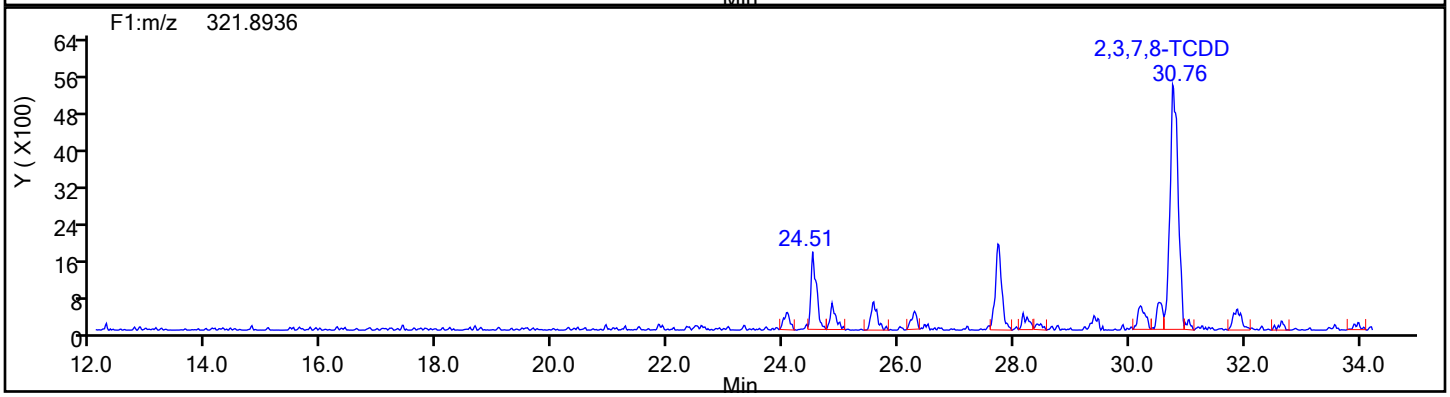
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

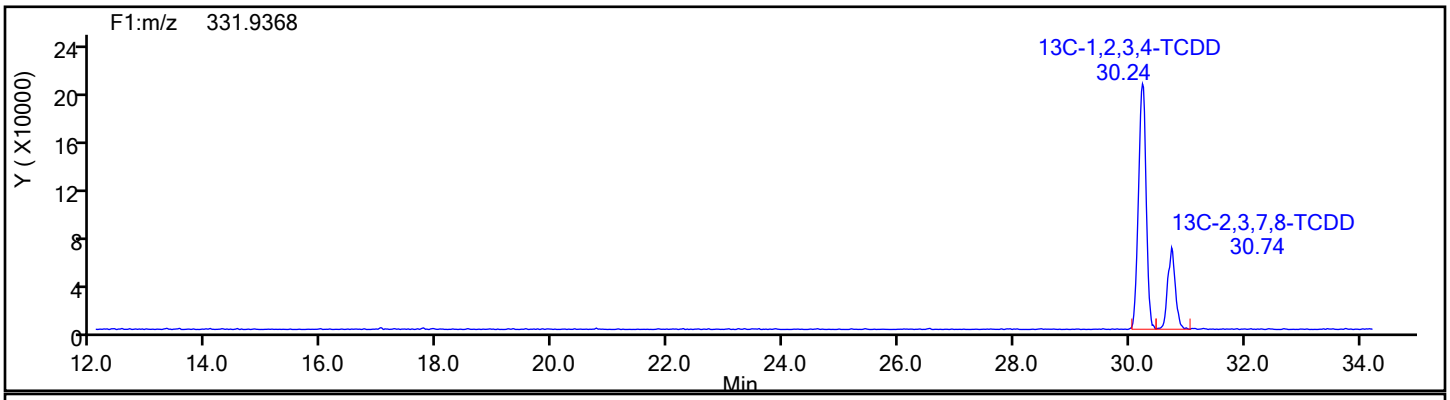
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

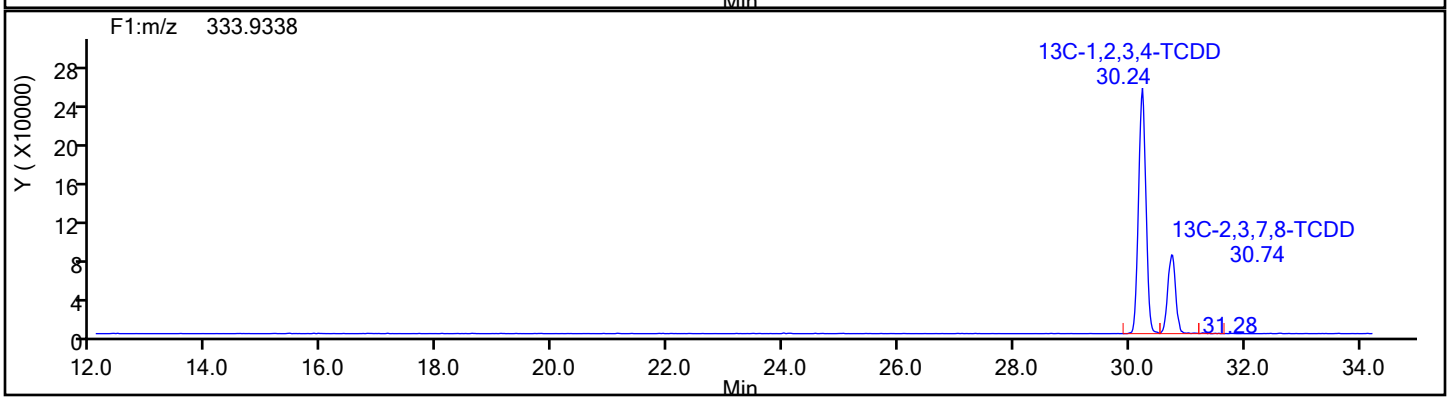
TCDD





TCDD Standards



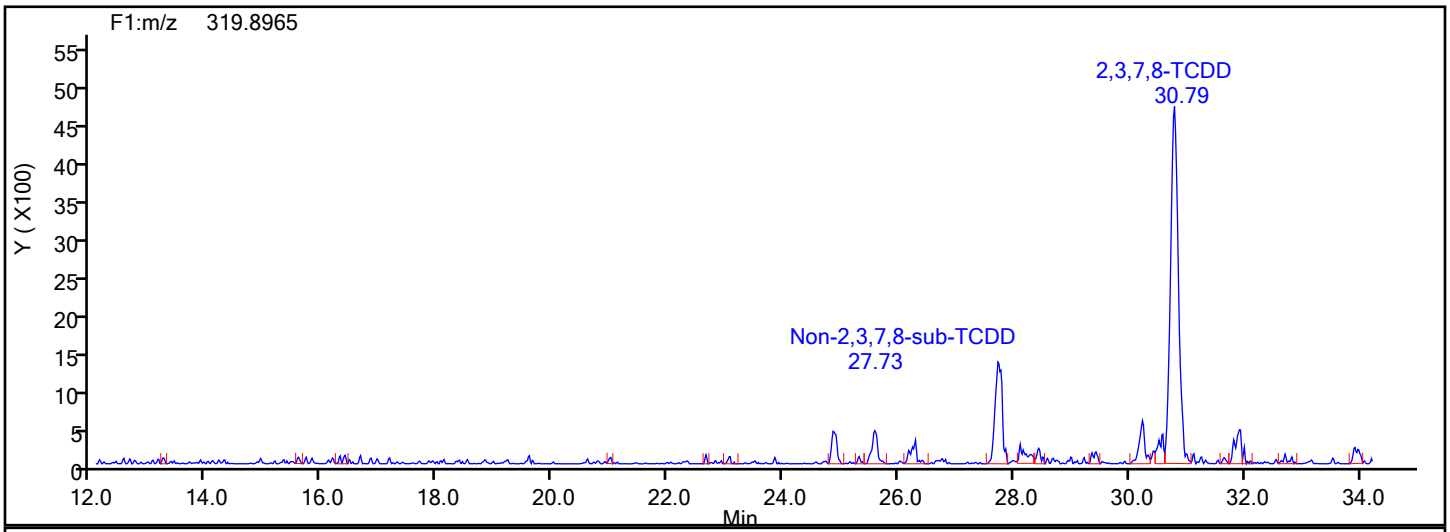


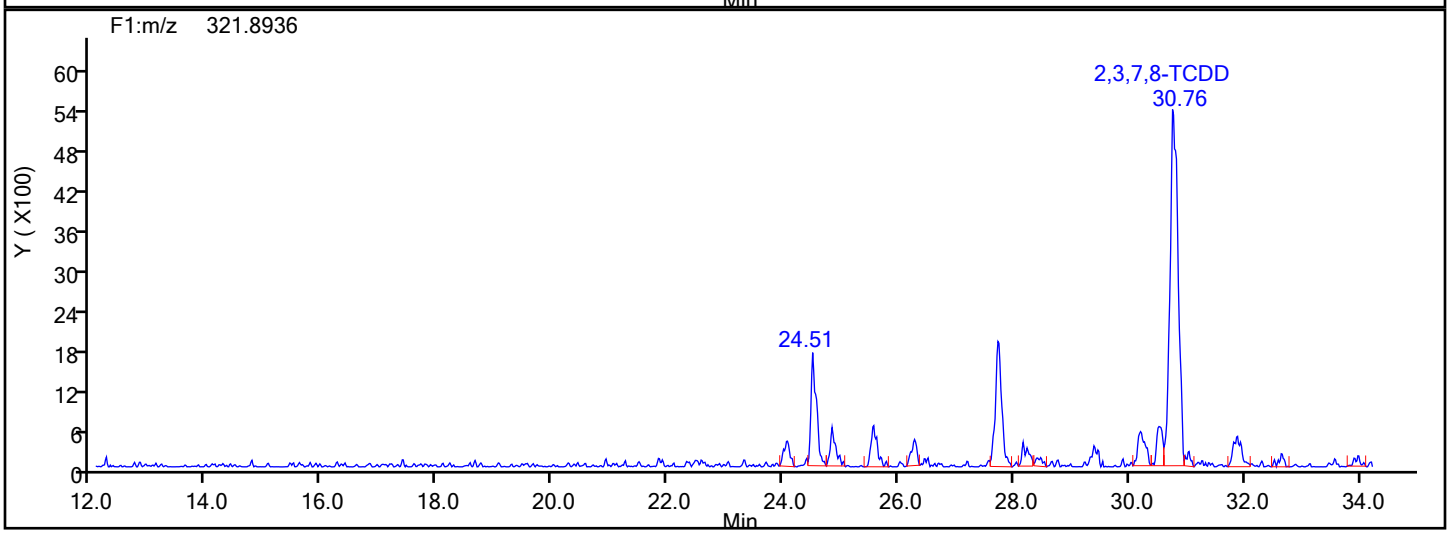
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

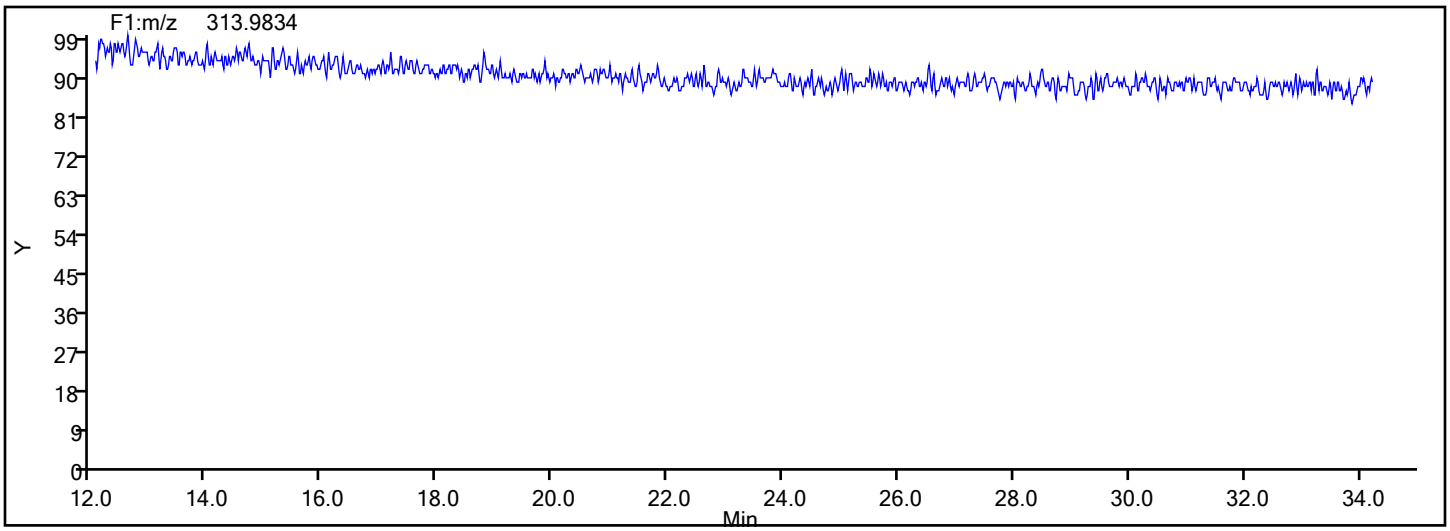
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass

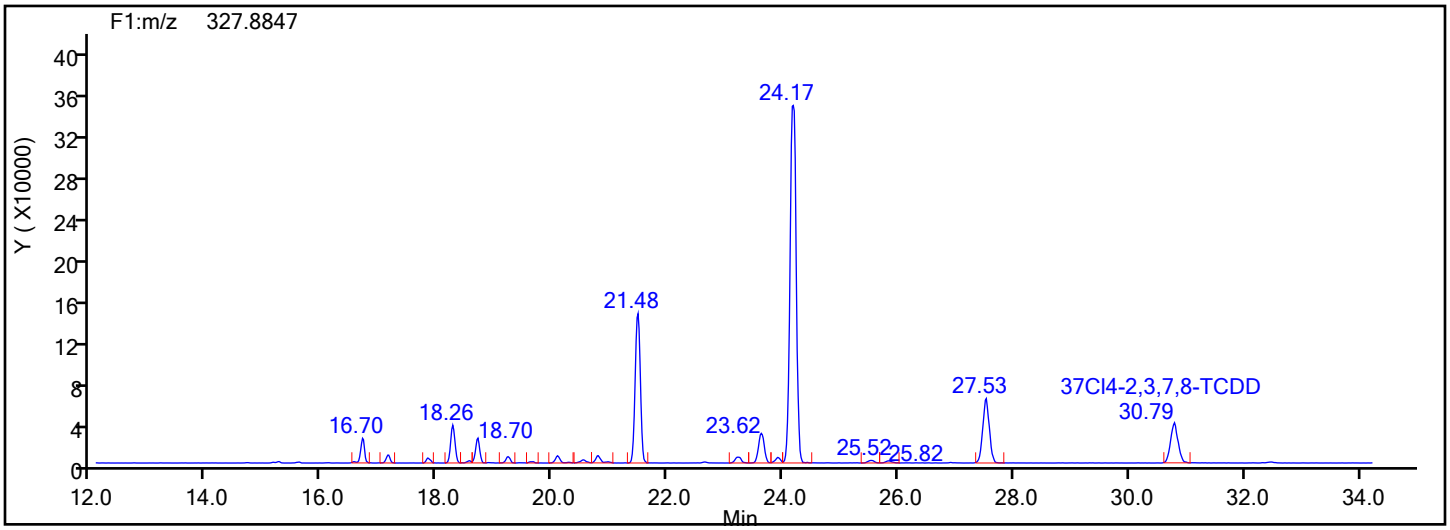


Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

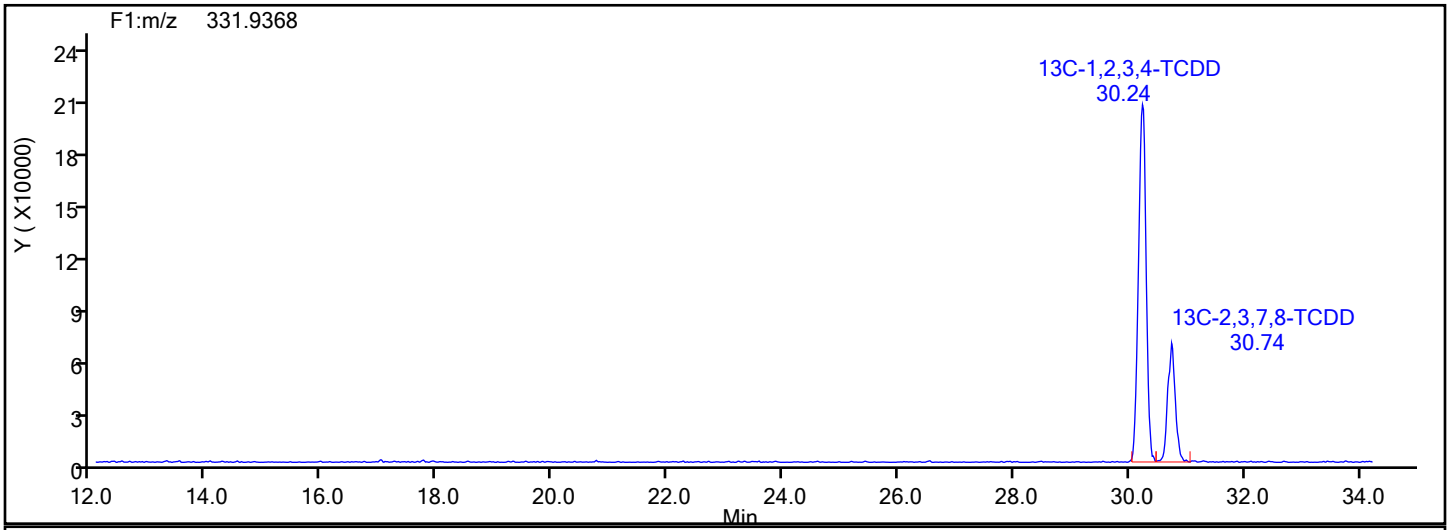
Eurofins TestAmerica, Knoxville

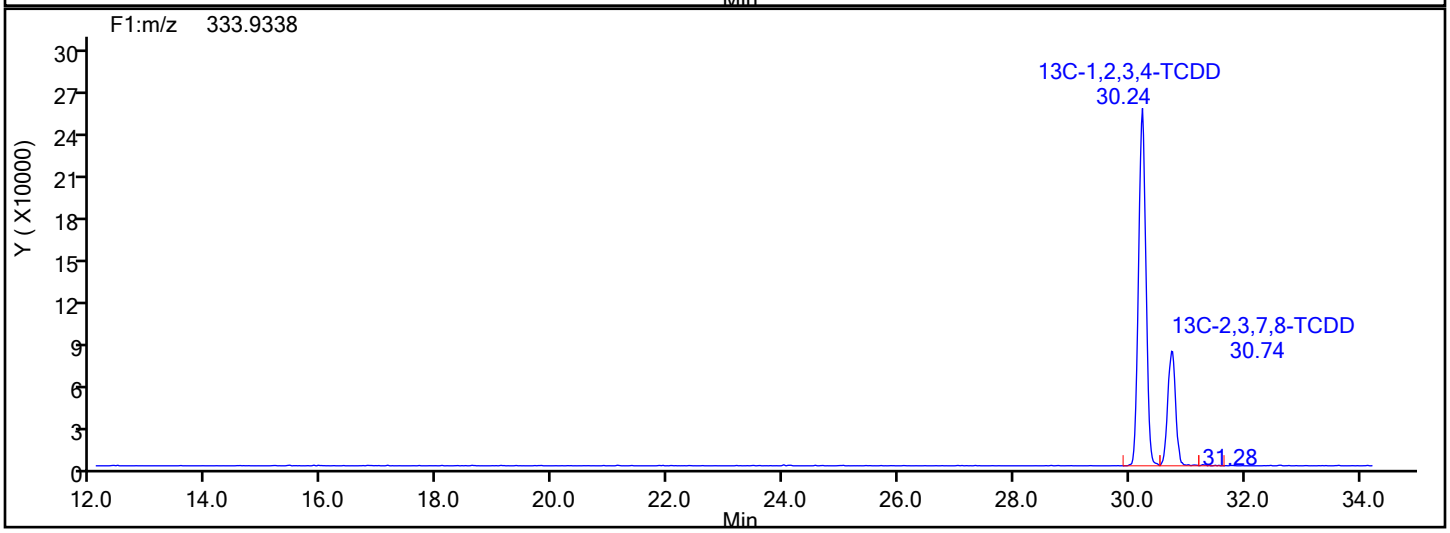
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



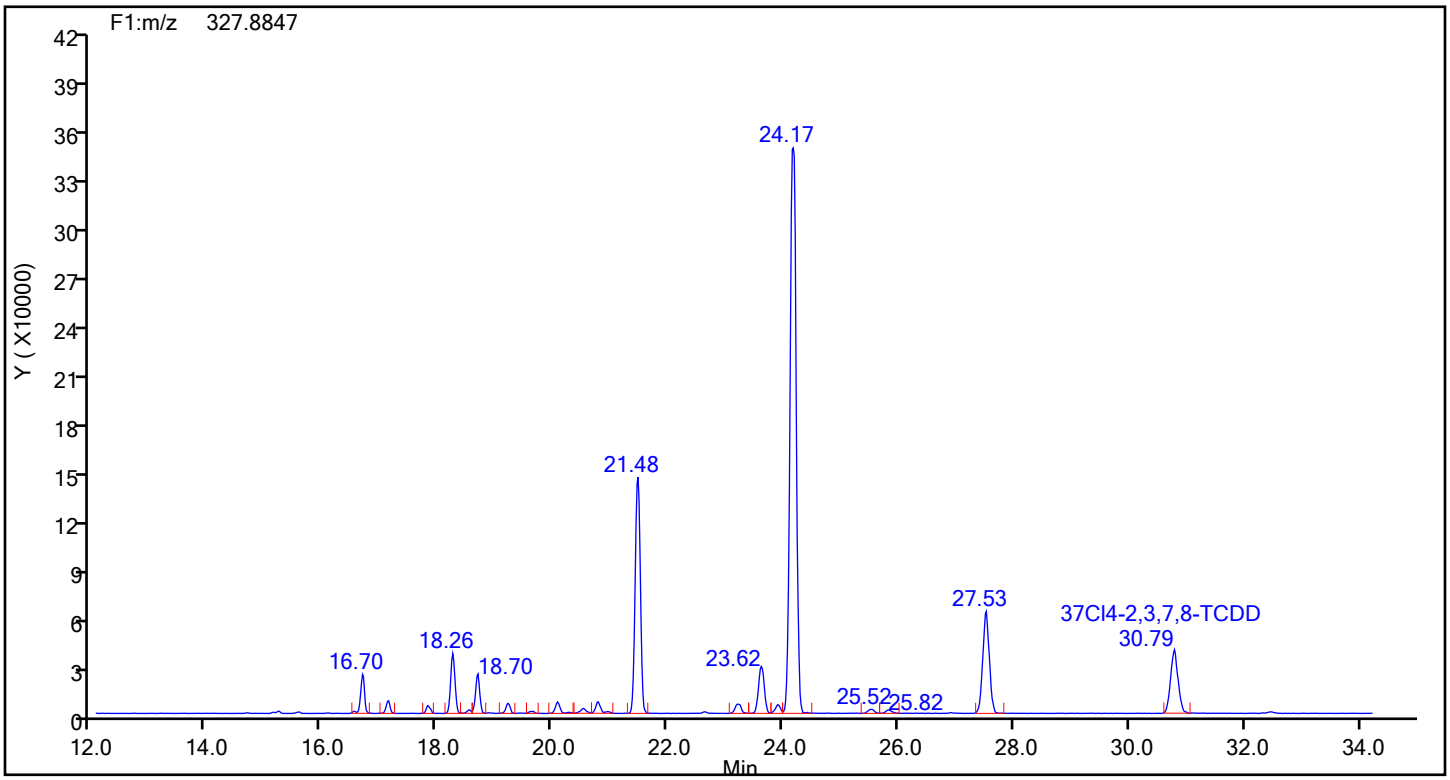


Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

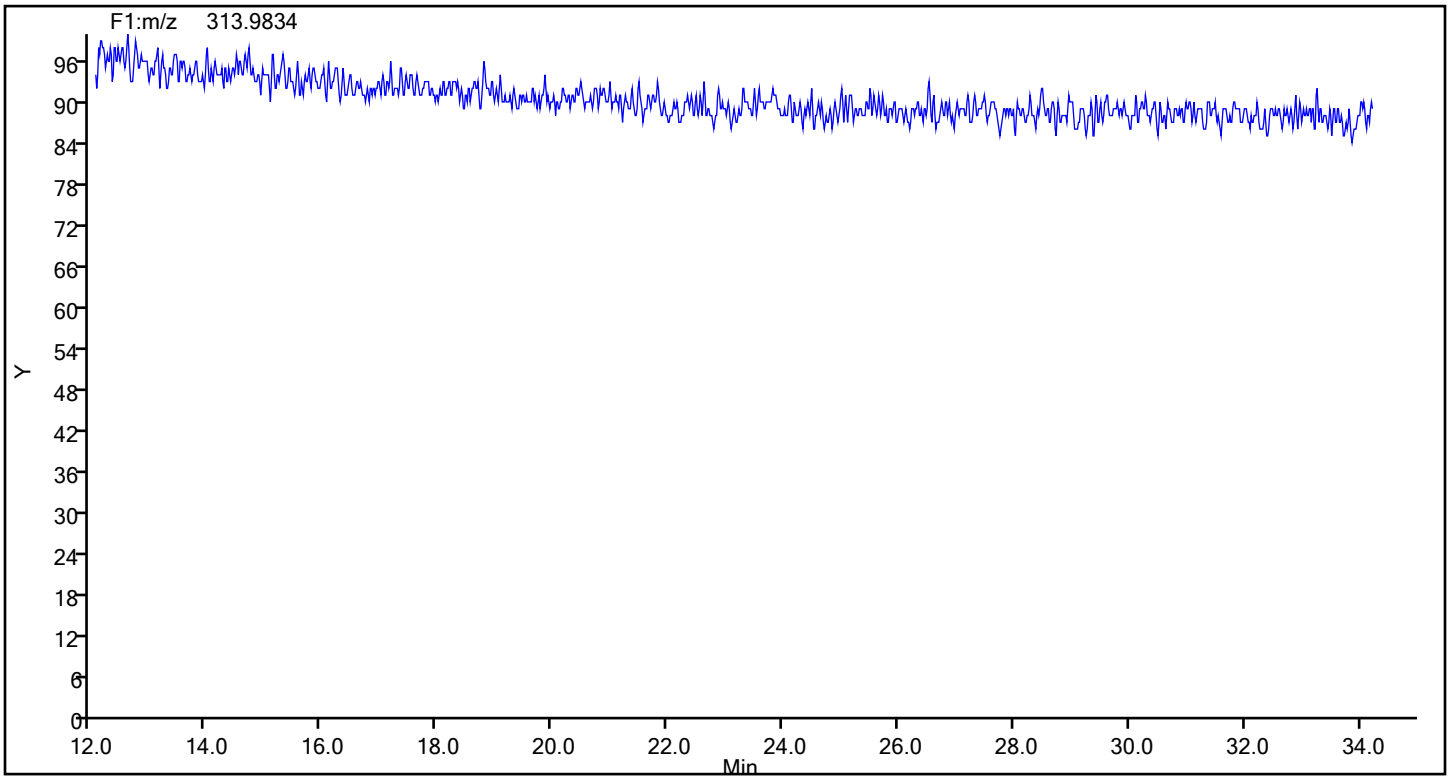
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

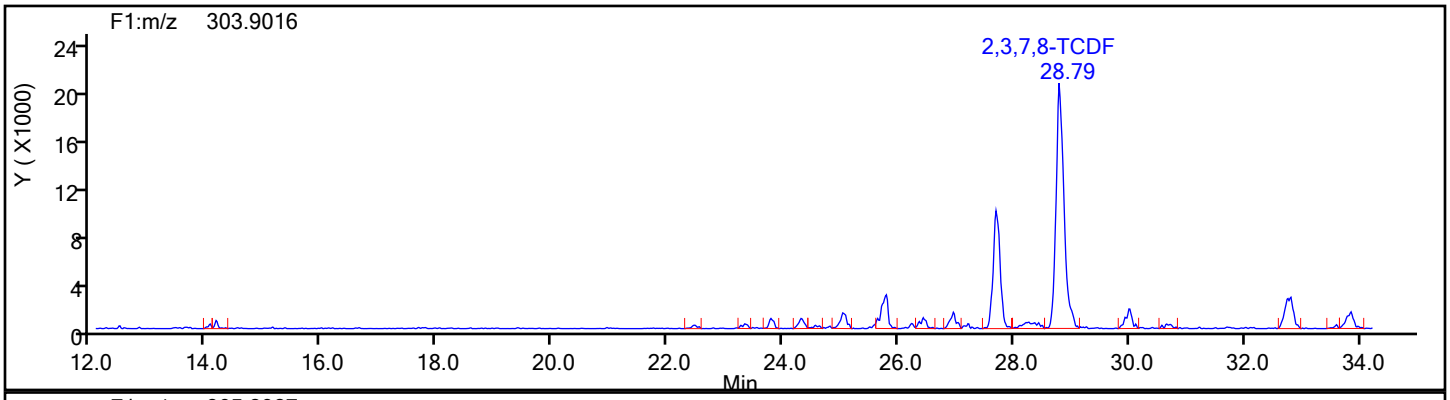


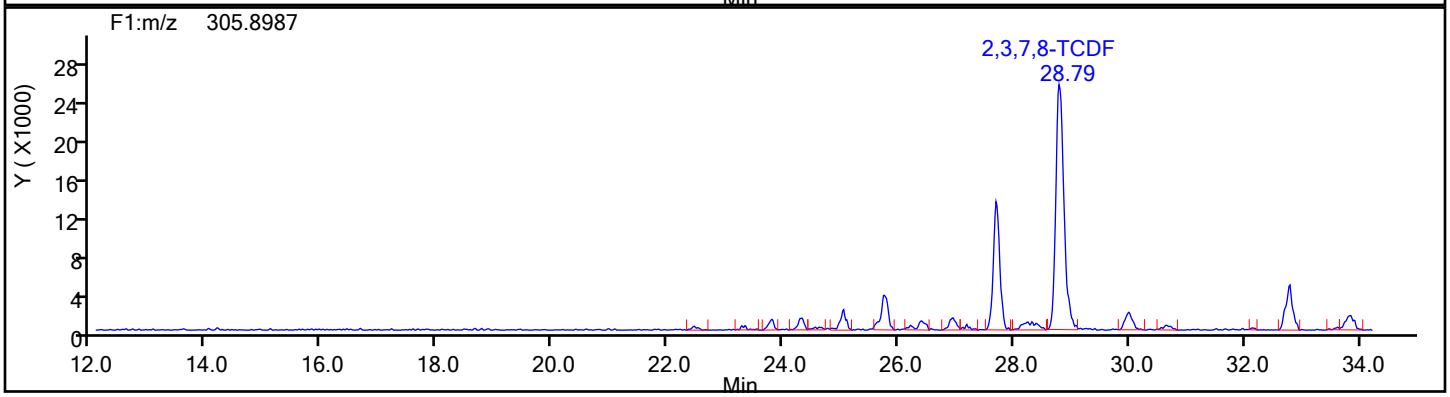
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

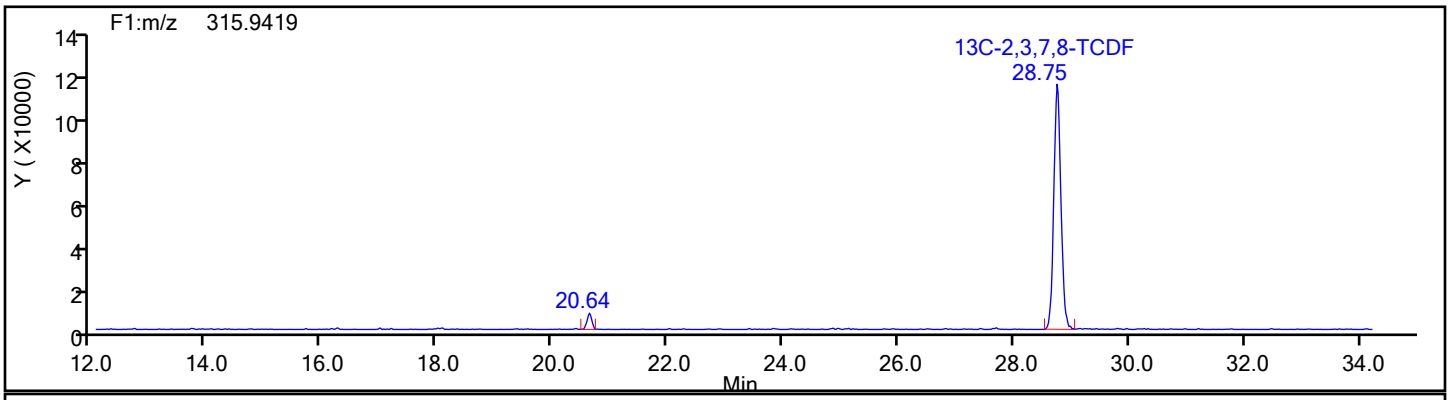
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

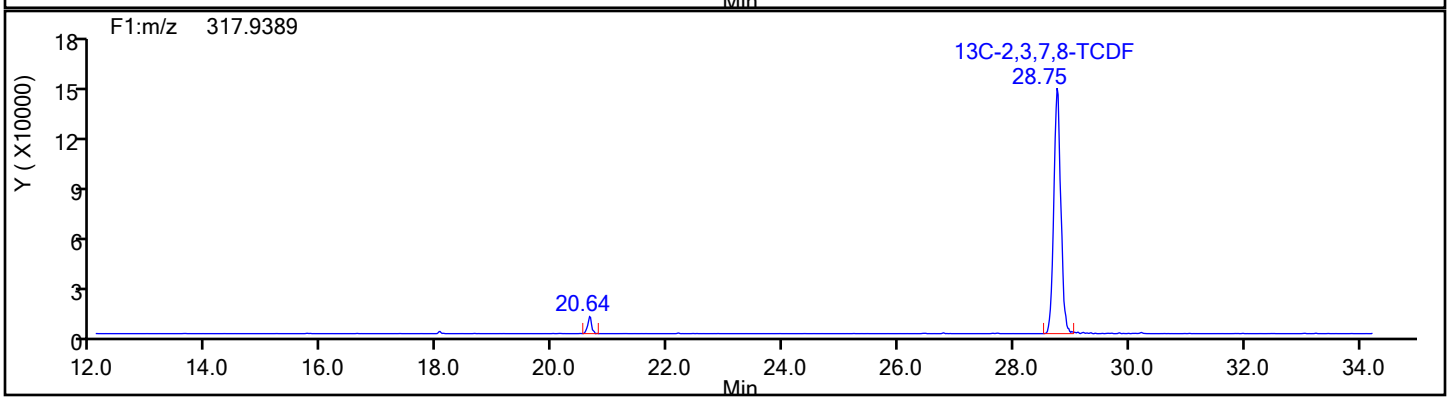
TCDF





TCDF Standards



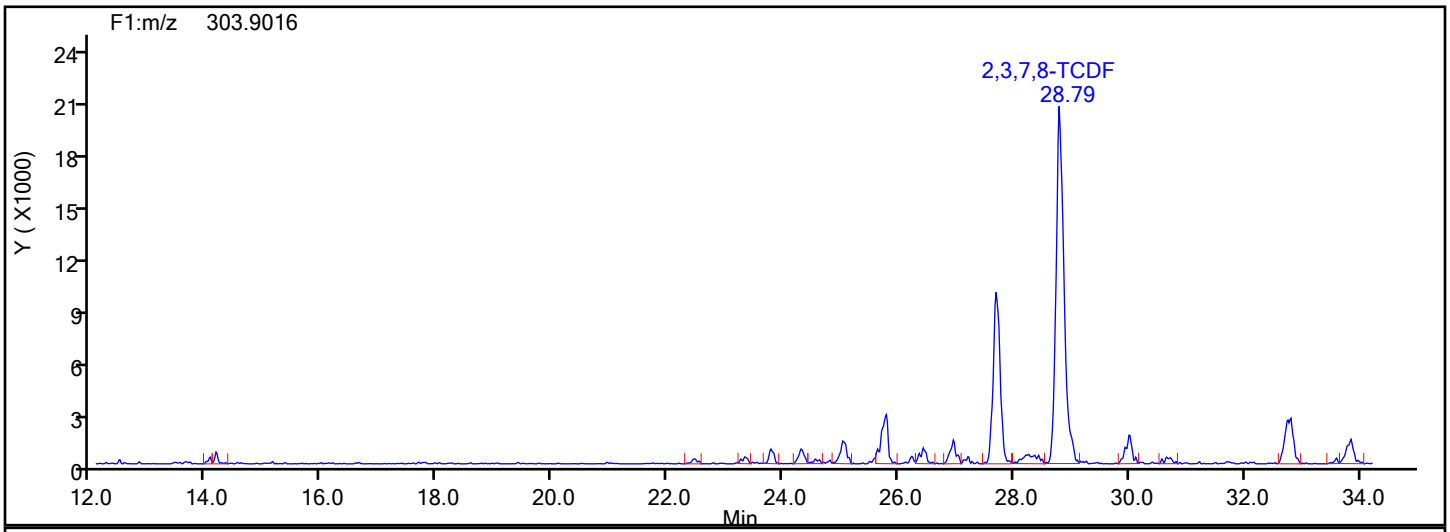


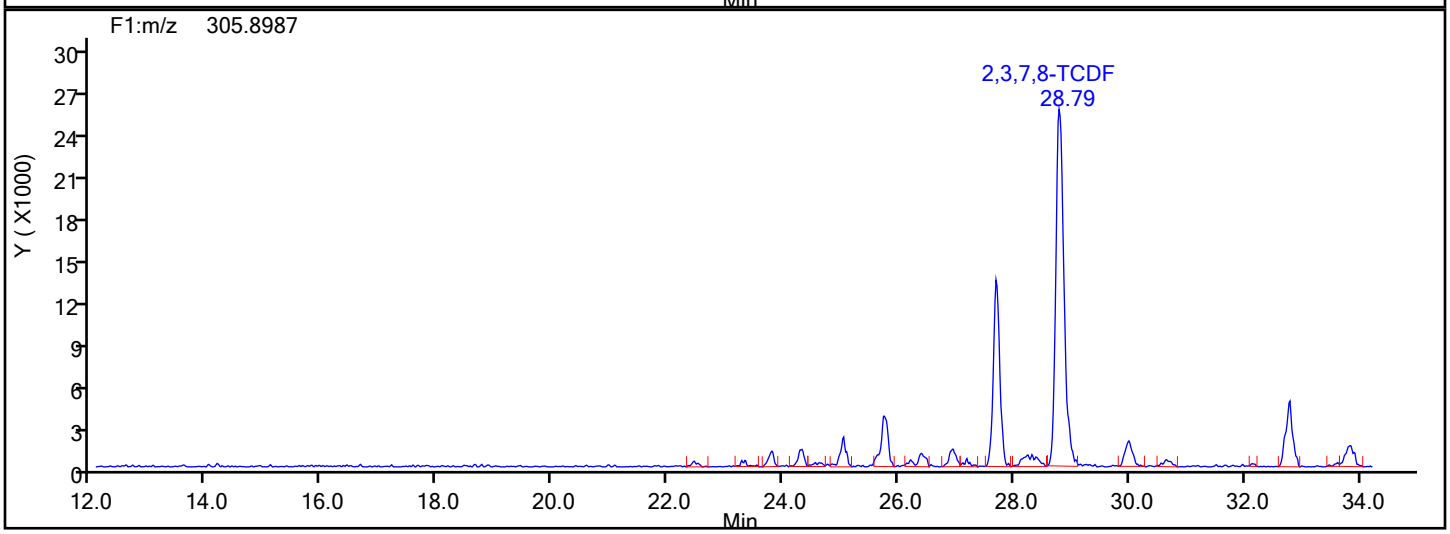
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

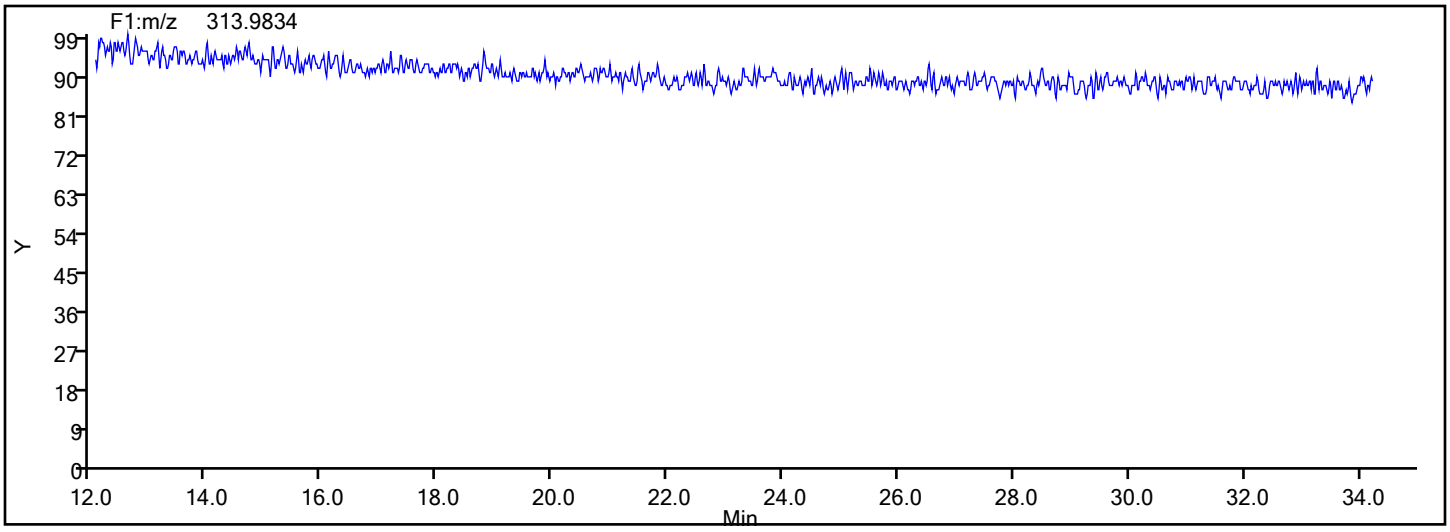
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

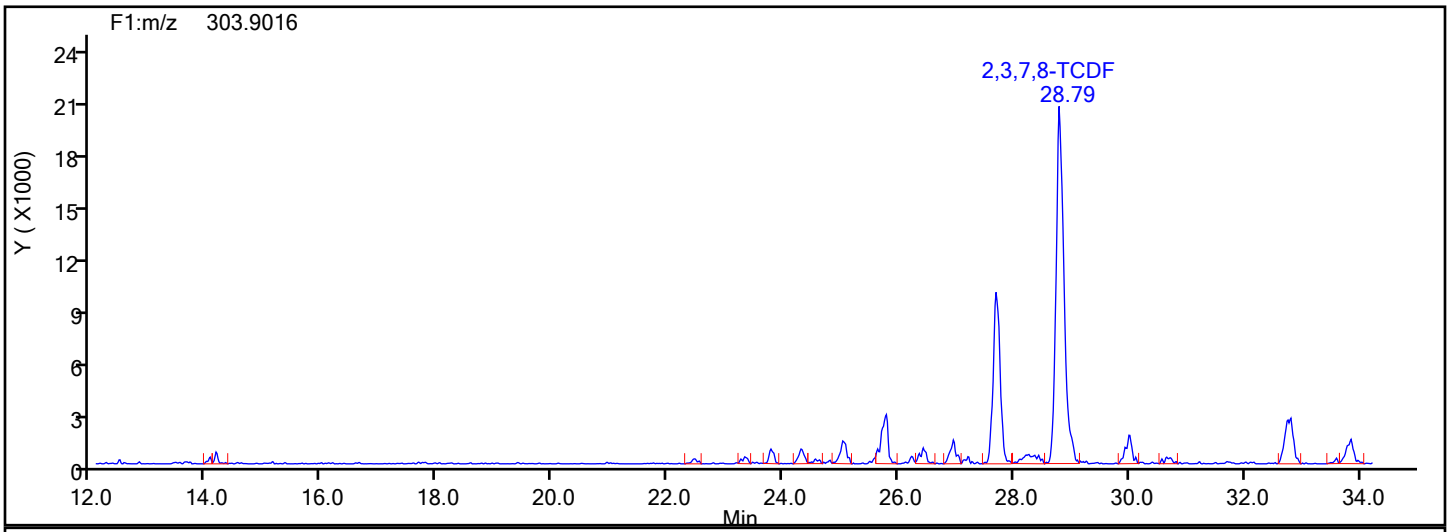


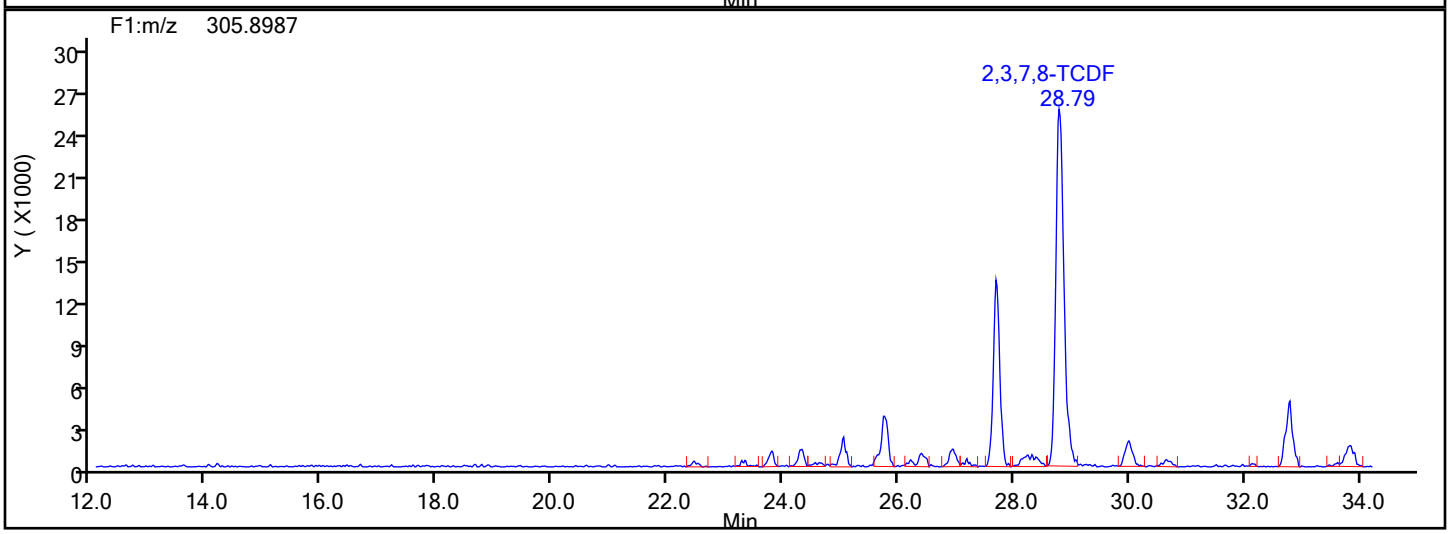
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

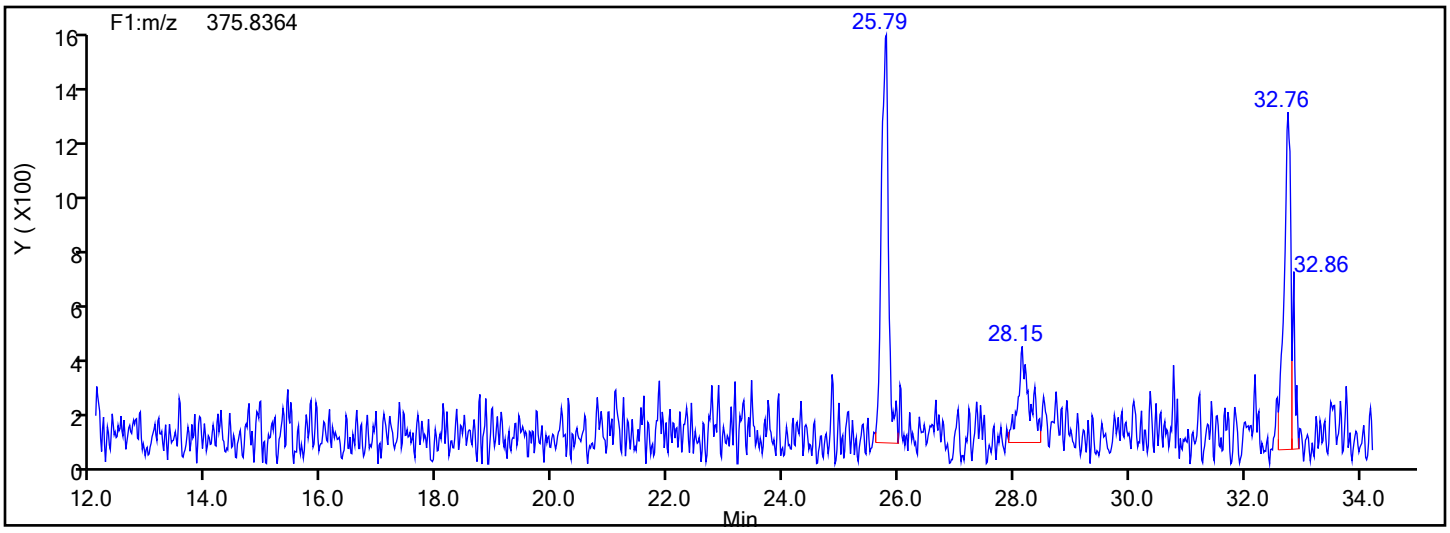
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

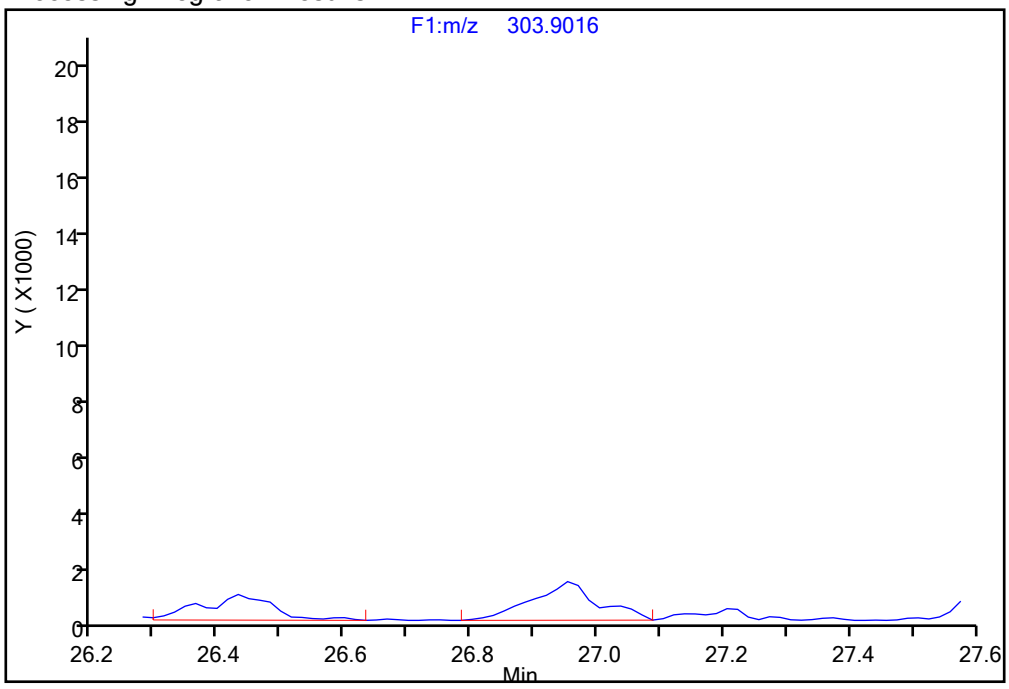
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.45- 33.94)

Signal: 1

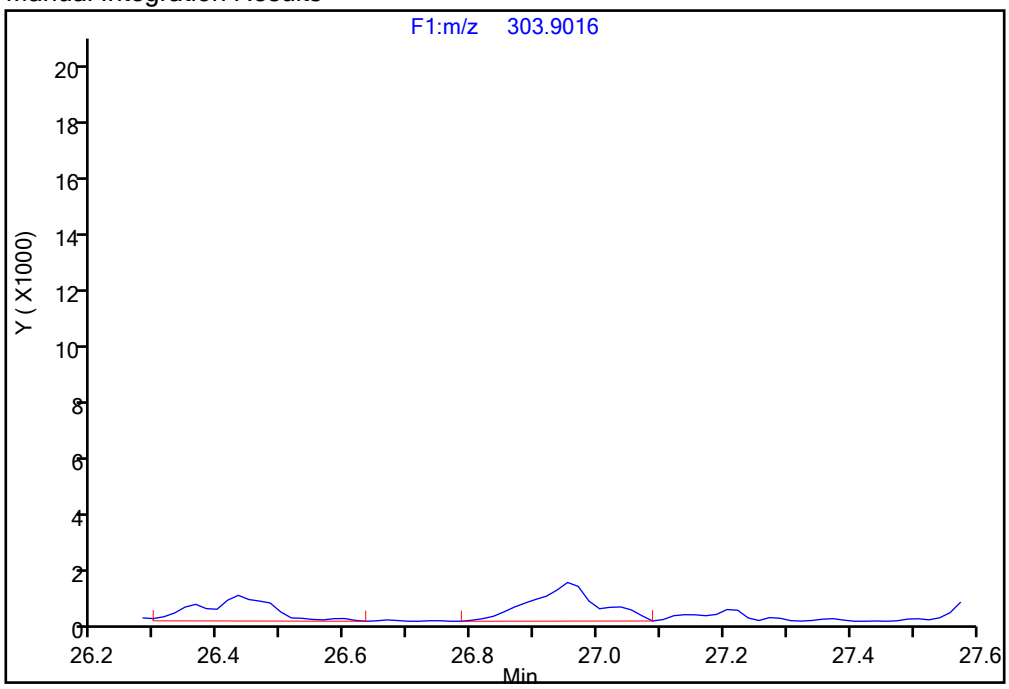
Processing Integration Results

RT = 26.953 Area = 9858



Manual Integration Results

RT = 26.953 Area = 9858



Reviewer: parslyt, 18-Dec-2019 03:19:33

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

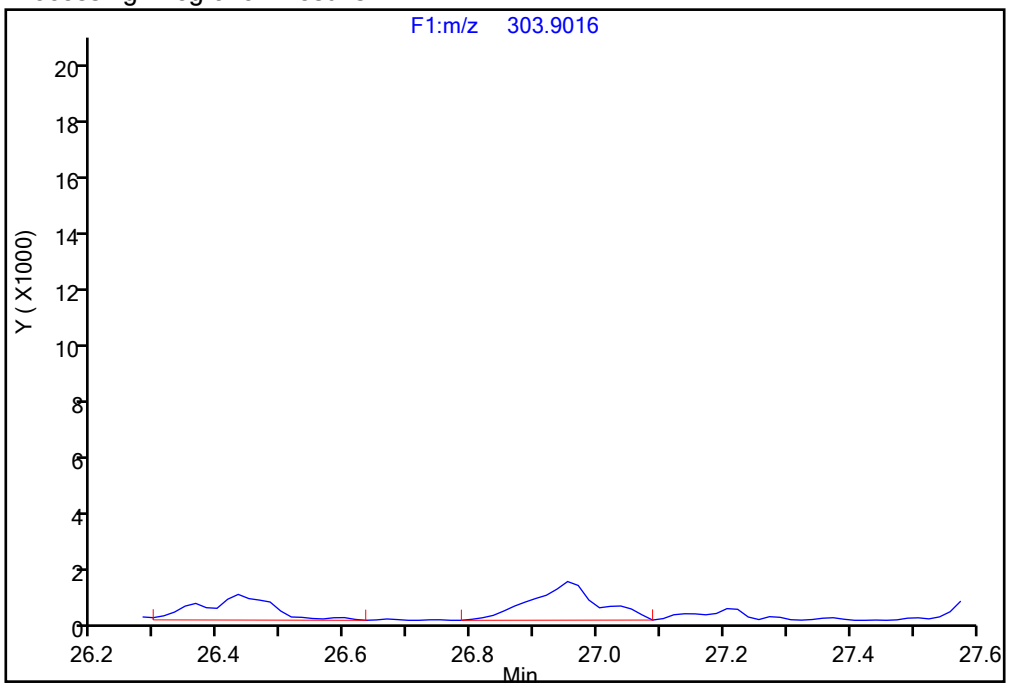
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.45- 33.94)

Signal: 1

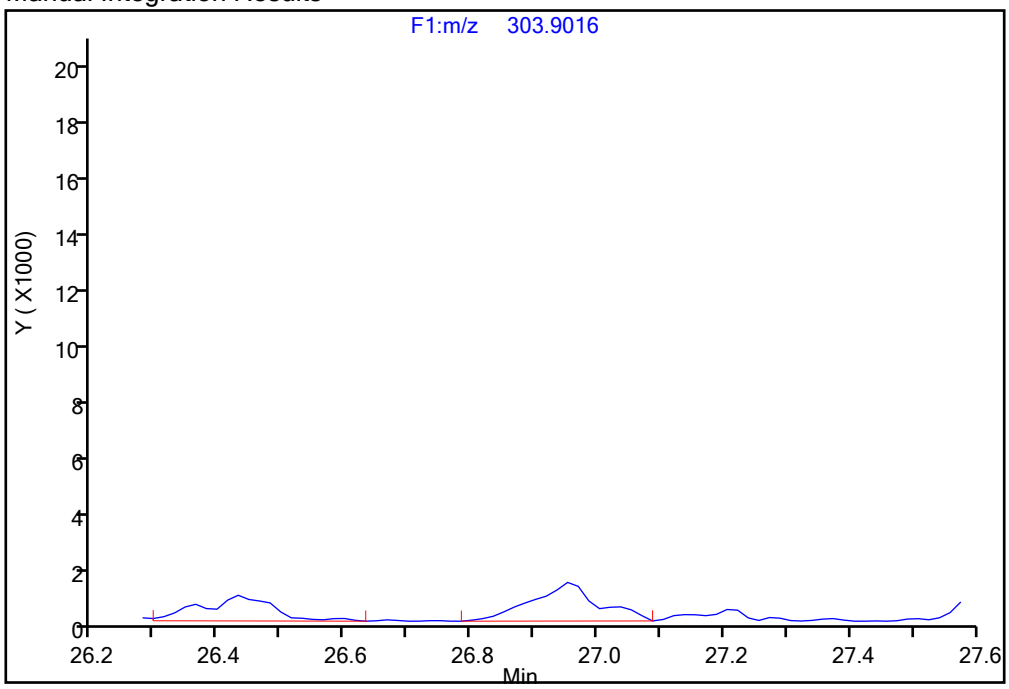
Processing Integration Results

RT = 26.953 Area = 9858



Manual Integration Results

RT = 26.953 Area = 9858



Reviewer: parslyt, 18-Dec-2019 03:19:33

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

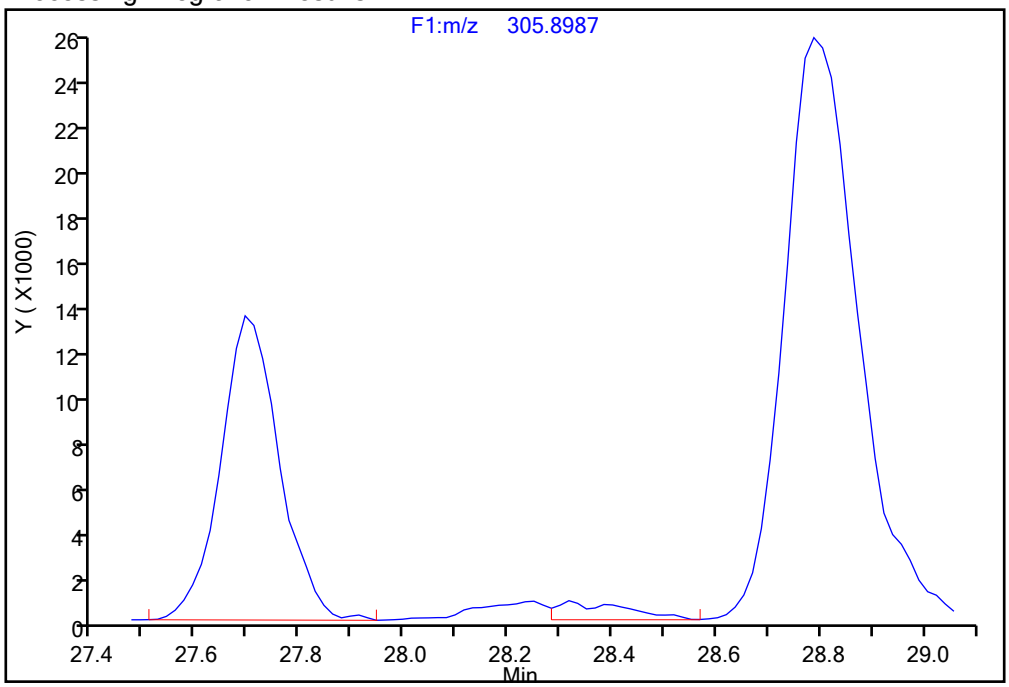
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.45- 33.94)

Signal: 2

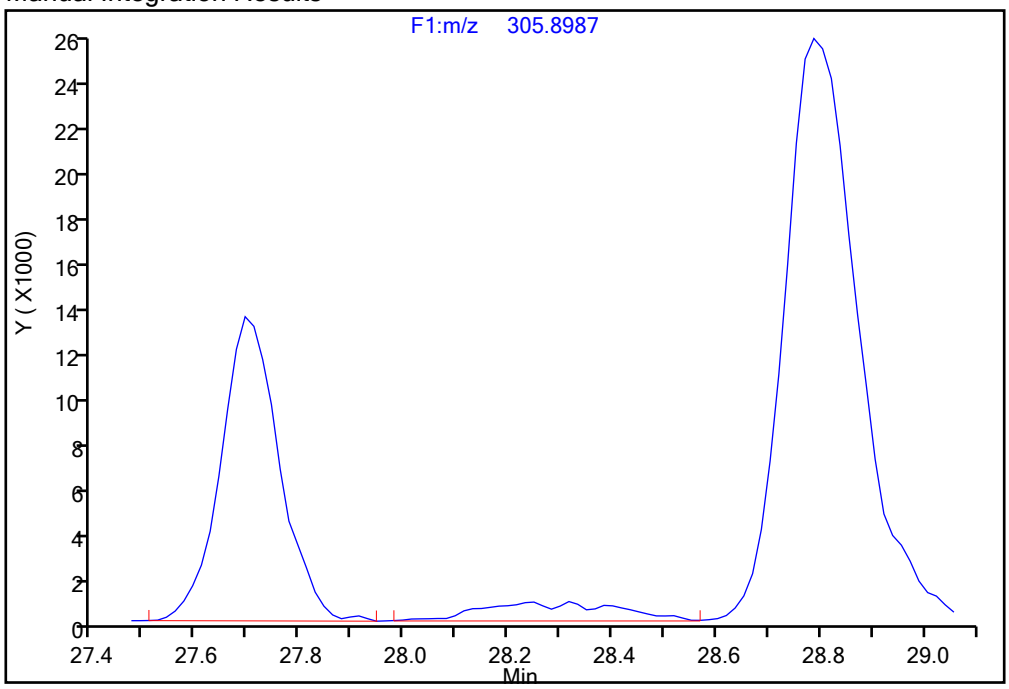
Processing Integration Results

RT = 28.316 Area = 7177



Manual Integration Results

RT = 28.316 Area = 14833 M



Reviewer: parslyt, 18-Dec-2019 03:20:18

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d

Injection Date: 17-Dec-2019 15:32:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

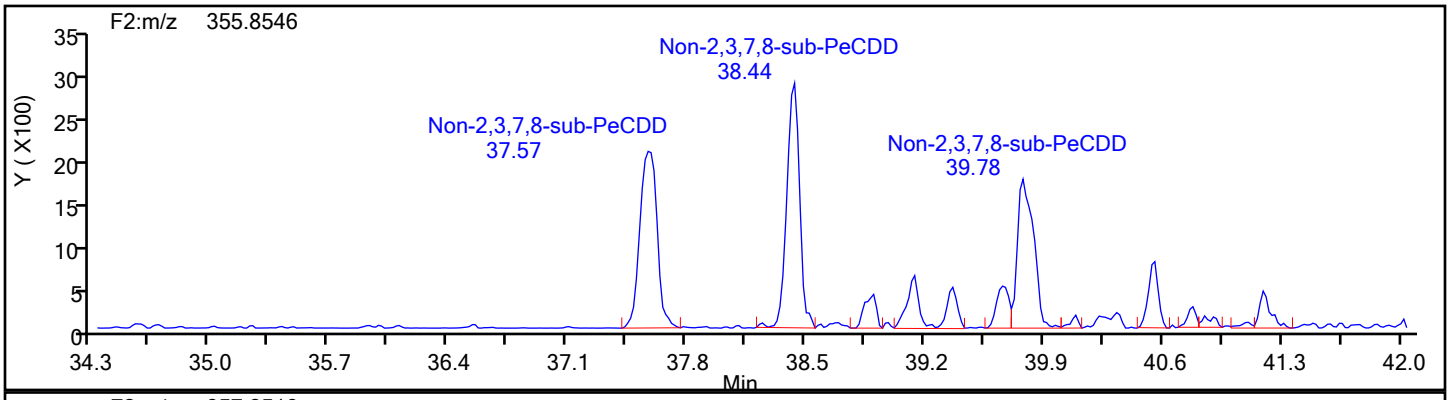
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

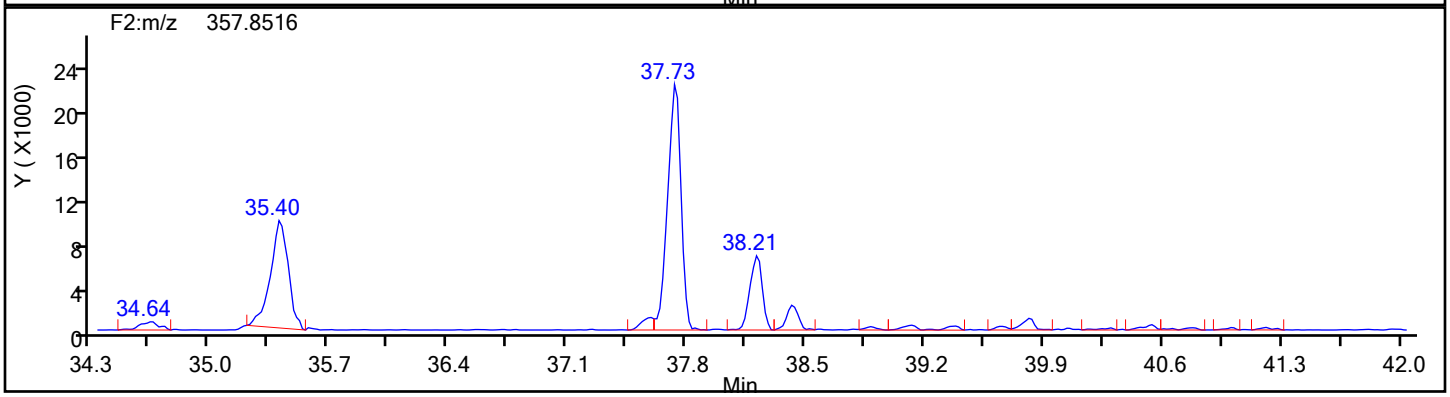
Client ID: 11187072-120619-SS-SJSSA03(4-6)

Worklist#: 36146 Sample Line#: 7

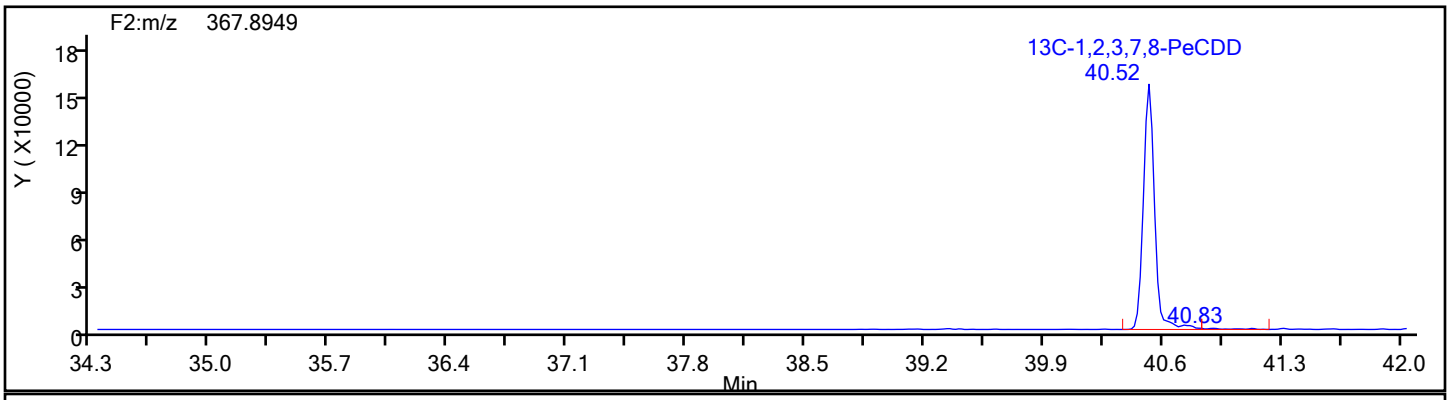
Column Type: Column Dia:

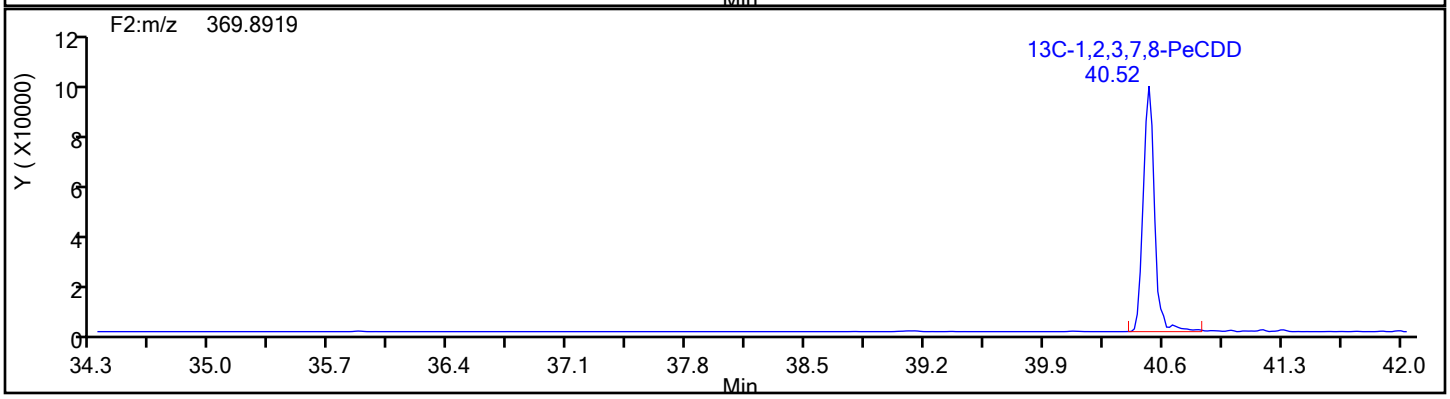
PeCDD





PeCDD Standards



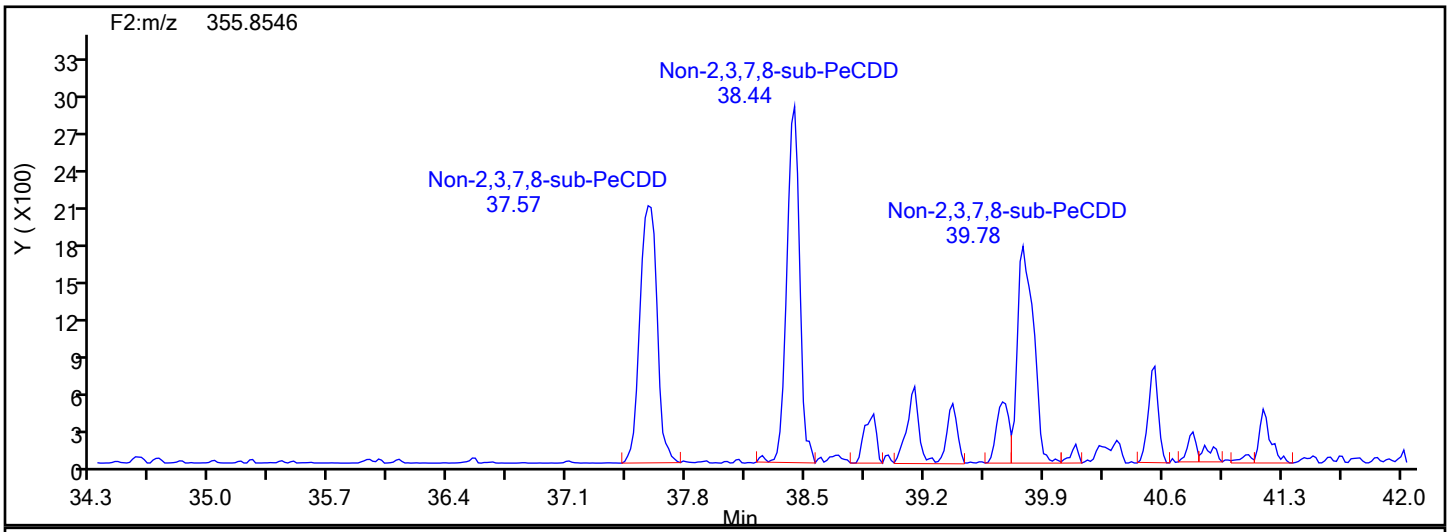


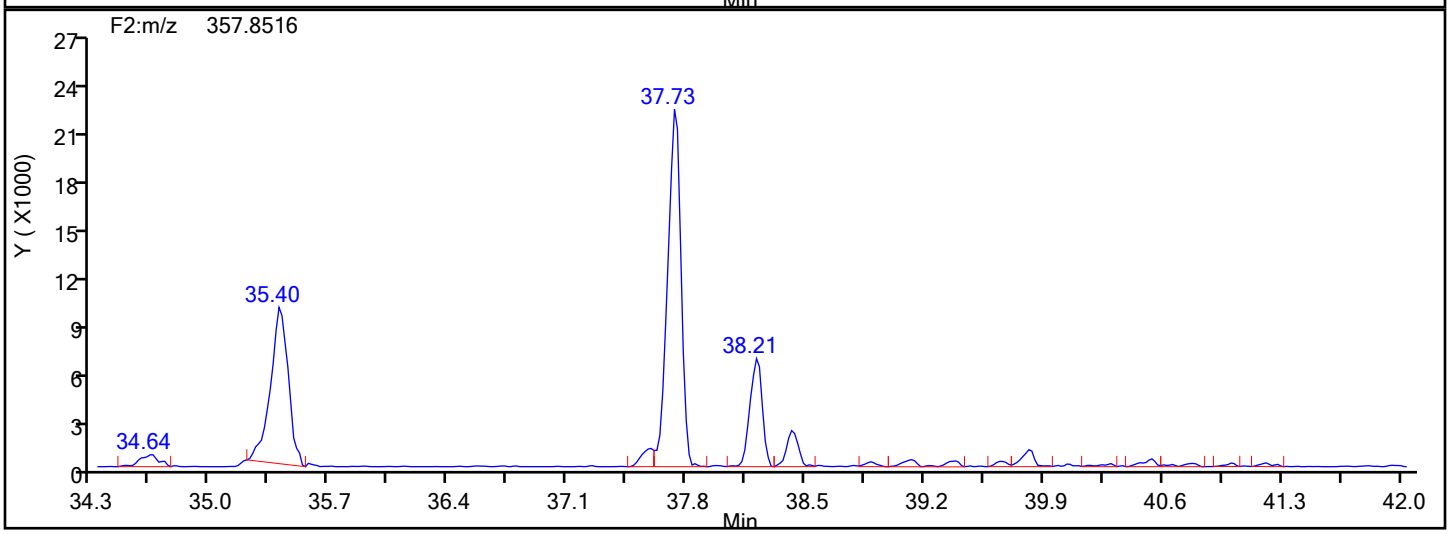
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

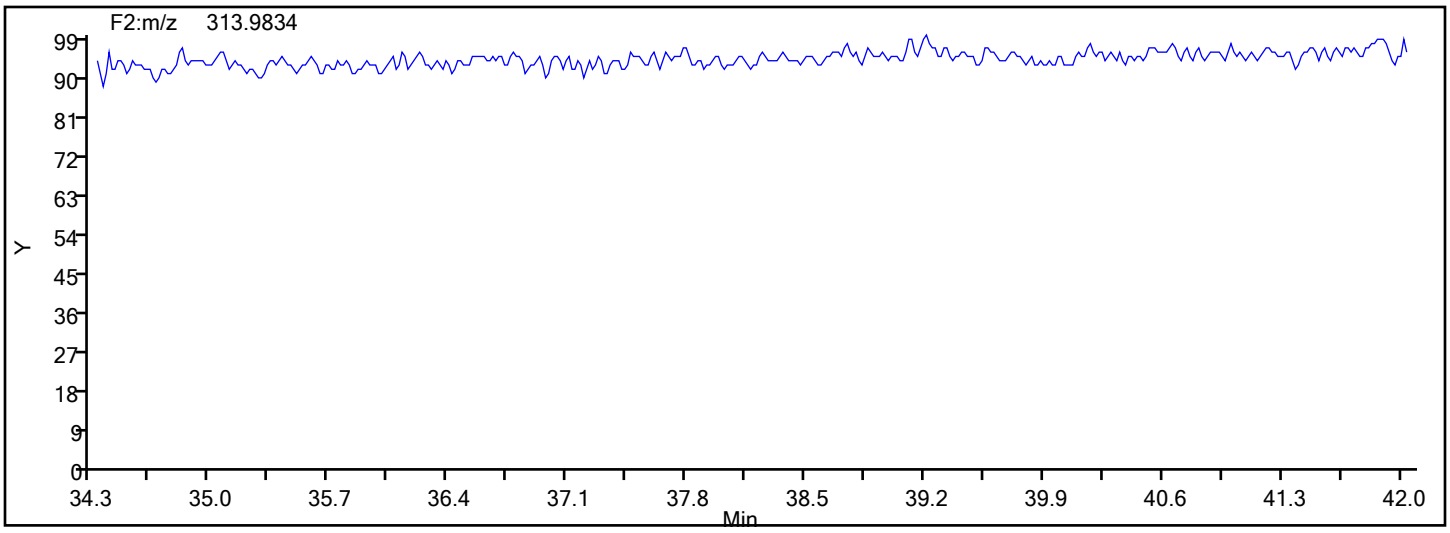
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

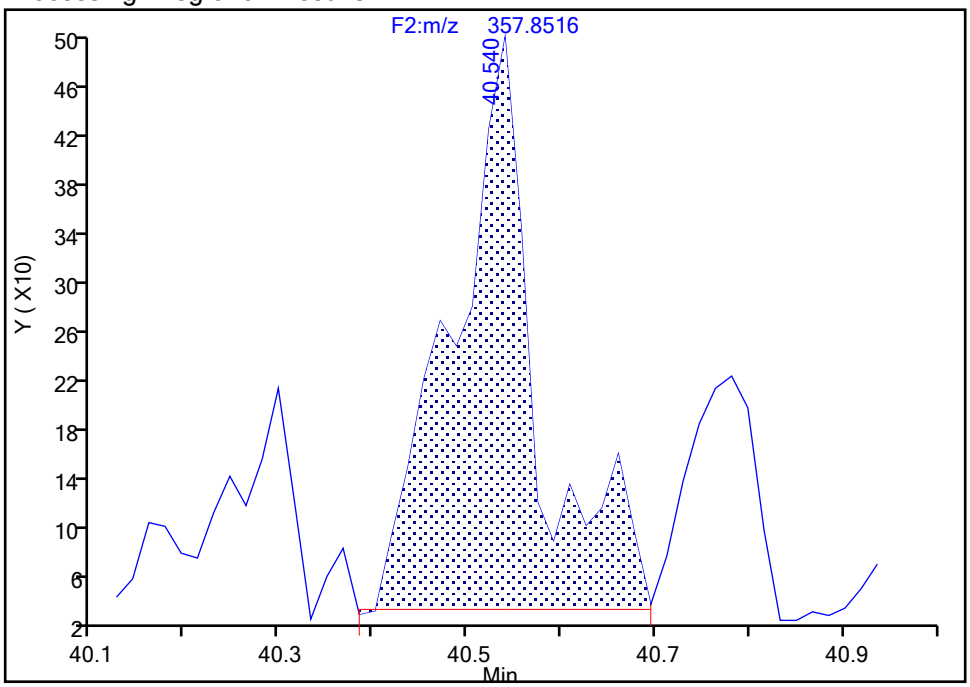
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 2

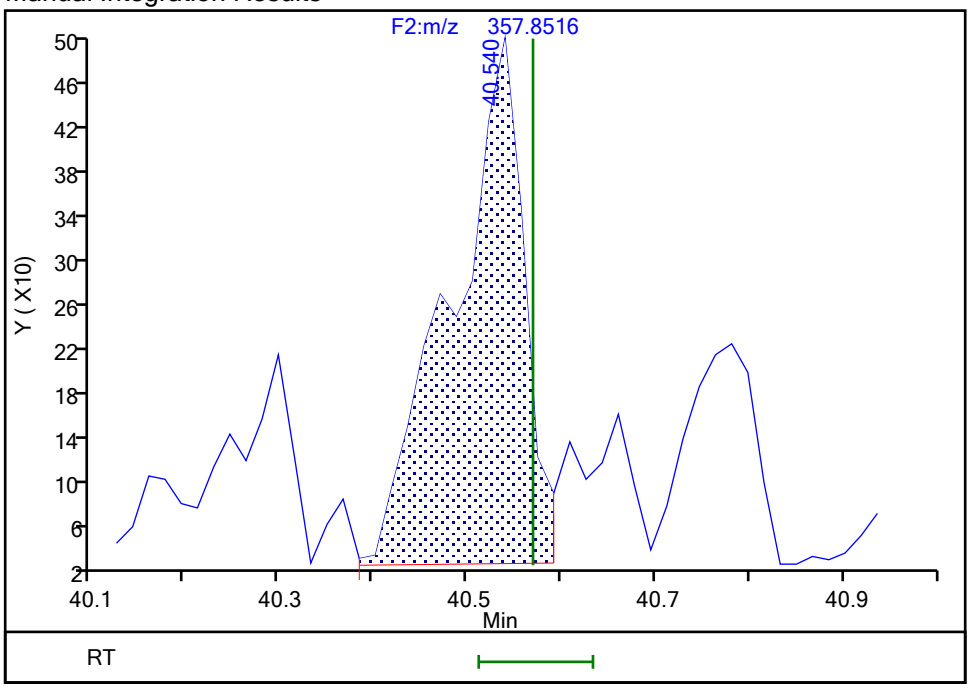
Processing Integration Results

RT: 40.54
Area: 2918
Amount: 0.248067
Amount Units: pg/ul



Manual Integration Results

RT: 40.54
Area: 2542
Amount: 0.232789
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:21:20

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

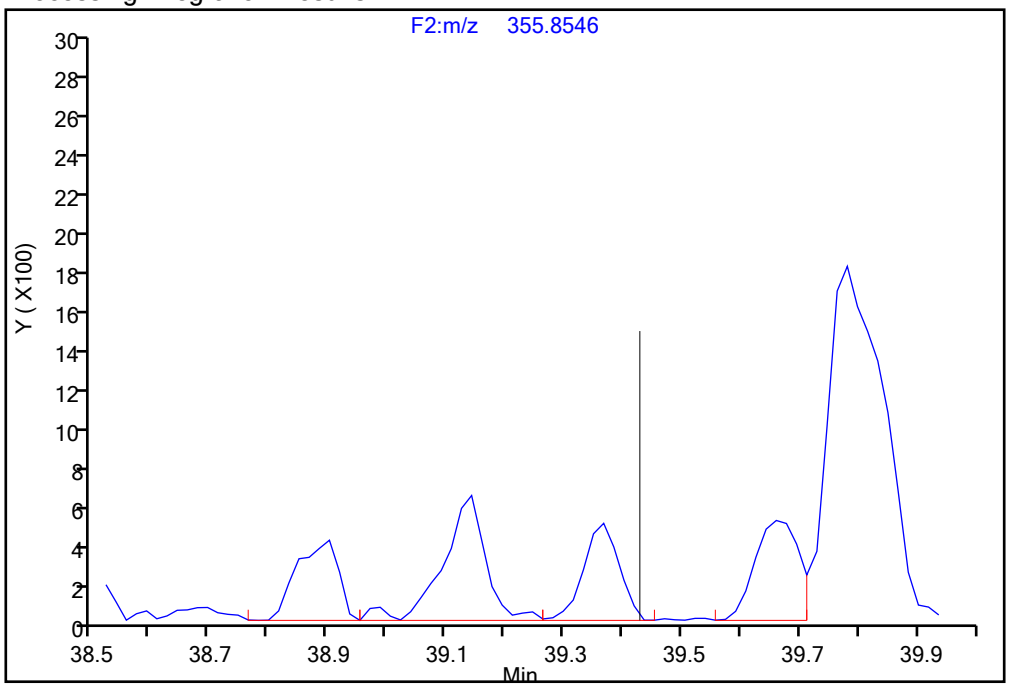
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.57- 41.29)

Signal: 1

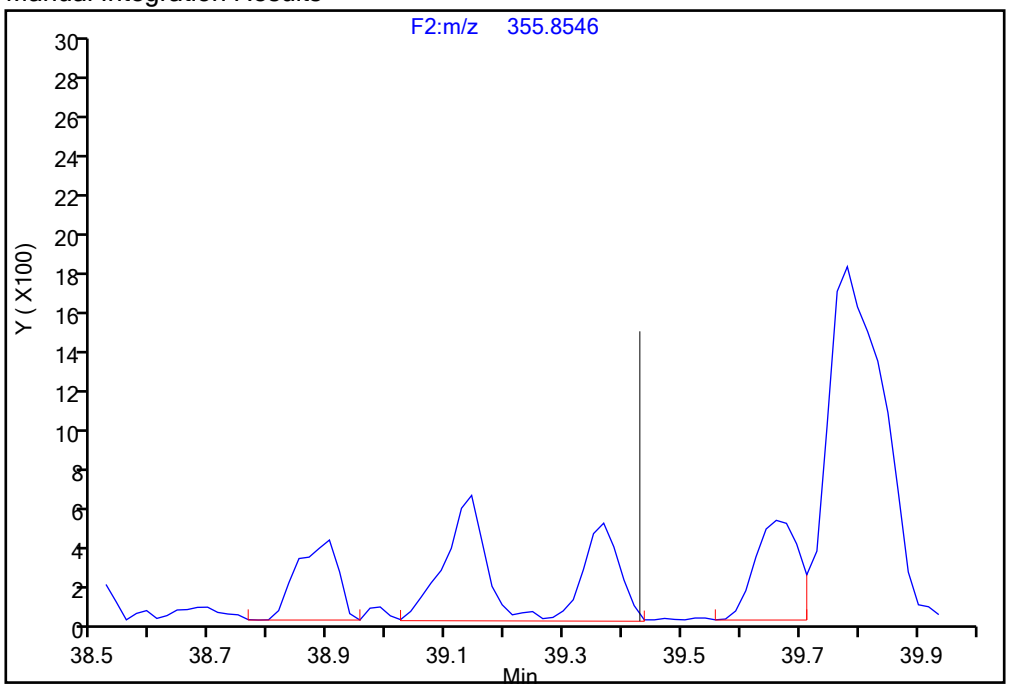
Processing Integration Results

RT = 39.143 Area = 3119



Manual Integration Results

RT = 39.143 Area = 5107 M



Reviewer: parslyt, 18-Dec-2019 03:24:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

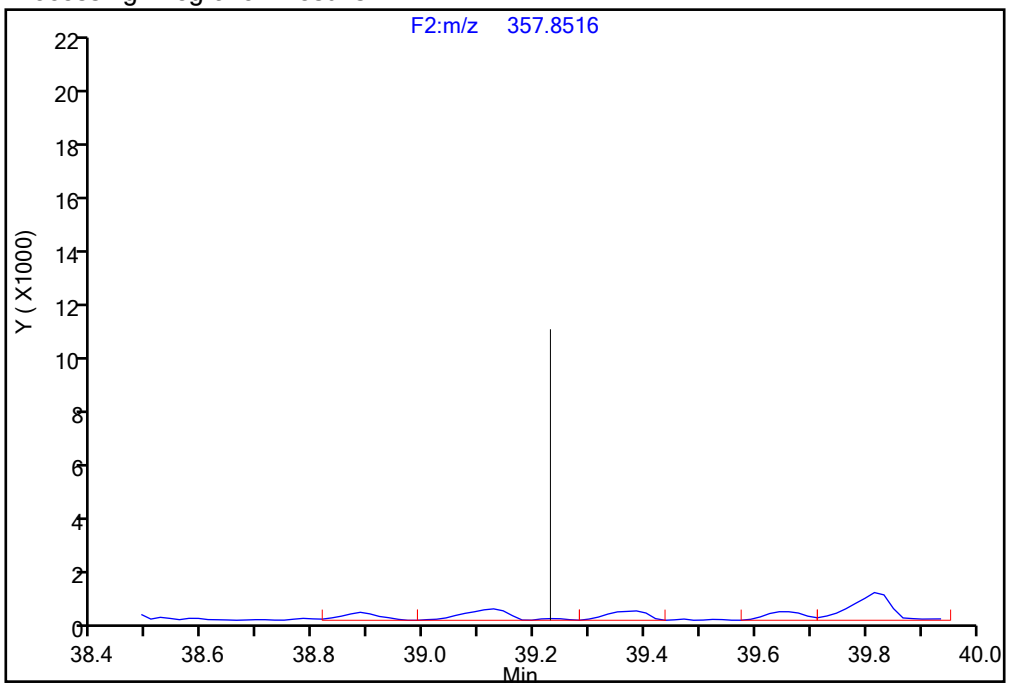
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 2, m/z: 357.8516, RT: (37.57- 41.29)

Signal: 2

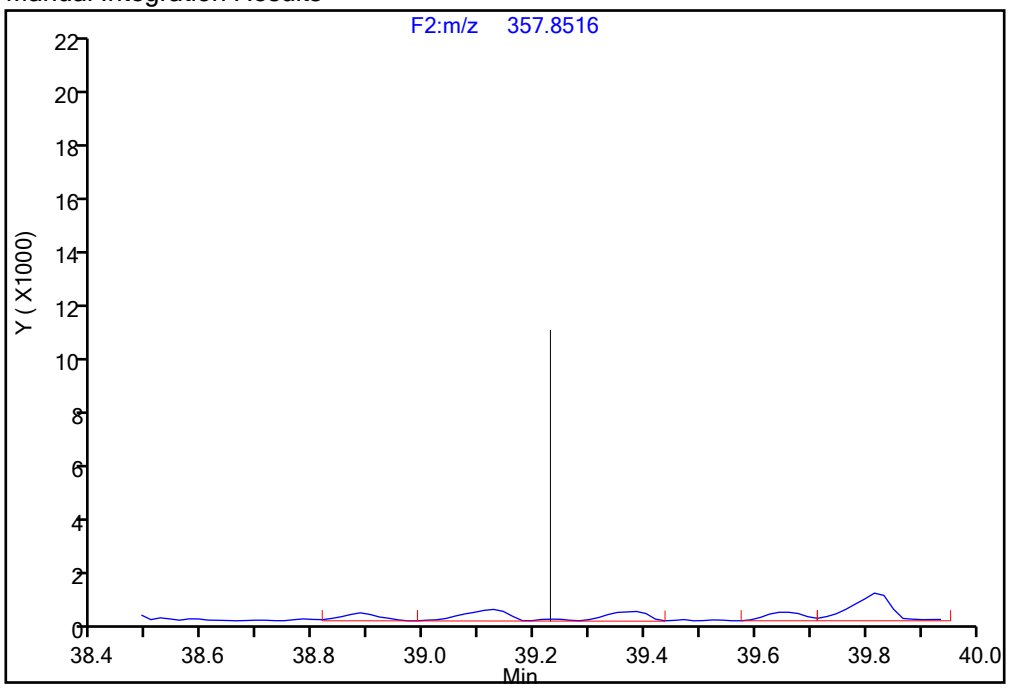
Processing Integration Results

RT = 39.126 Area = 2556



Manual Integration Results

RT = 39.126 Area = 4594 M



Reviewer: parslyt, 18-Dec-2019 03:23:12

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

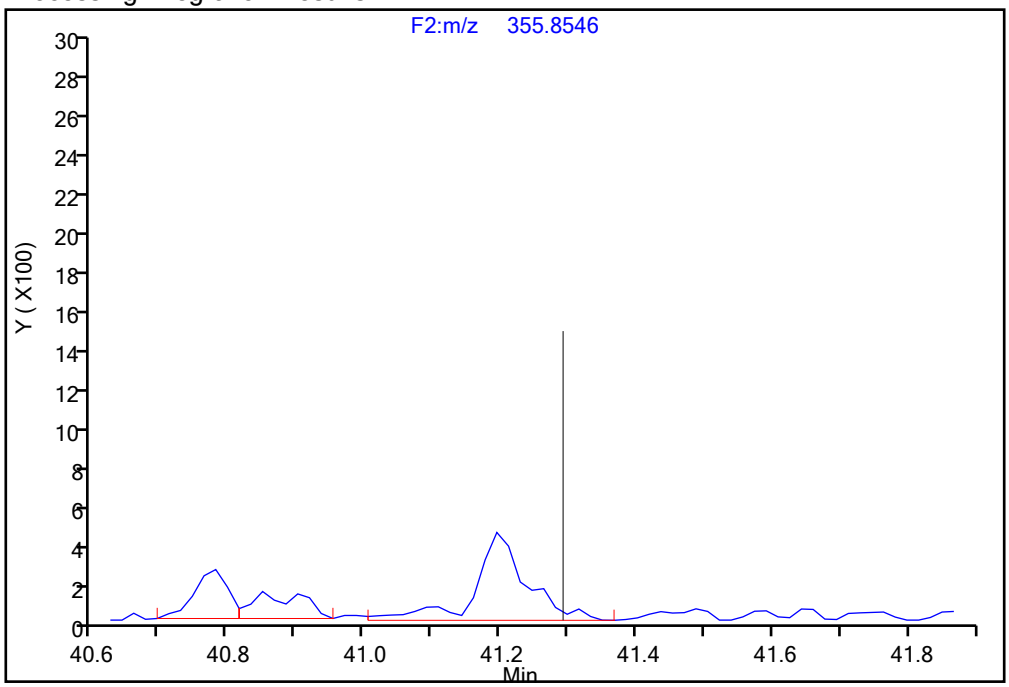
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (37.57- 41.29)

Signal: 1

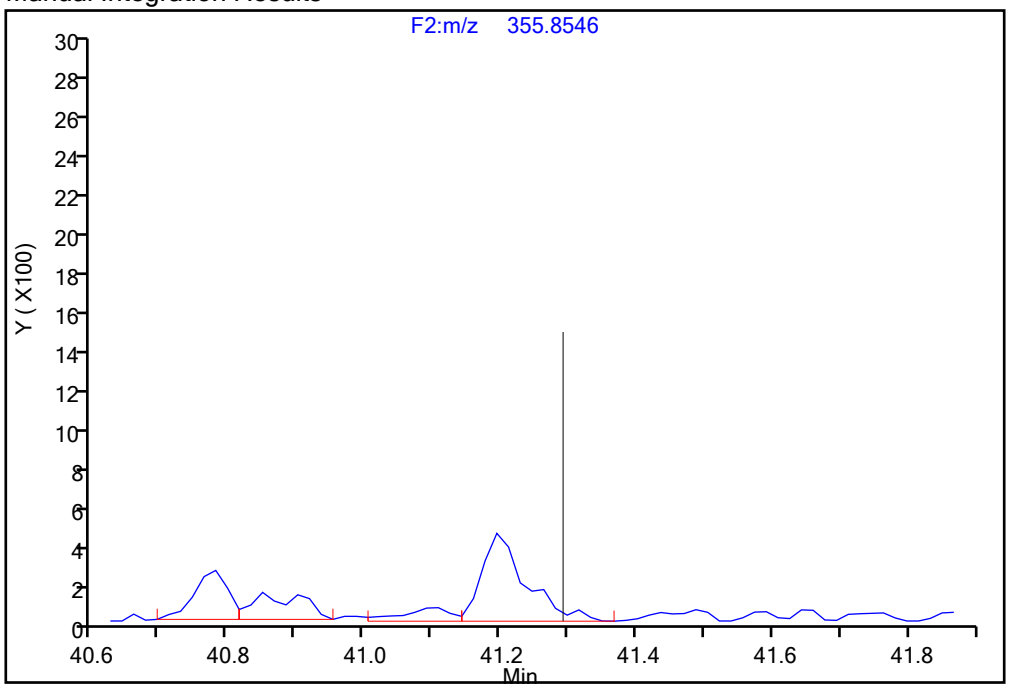
Processing Integration Results

RT = 41.195 Area = 2283



Manual Integration Results

RT = 41.195 Area = 1958 M



Reviewer: parslyt, 18-Dec-2019 03:24:13

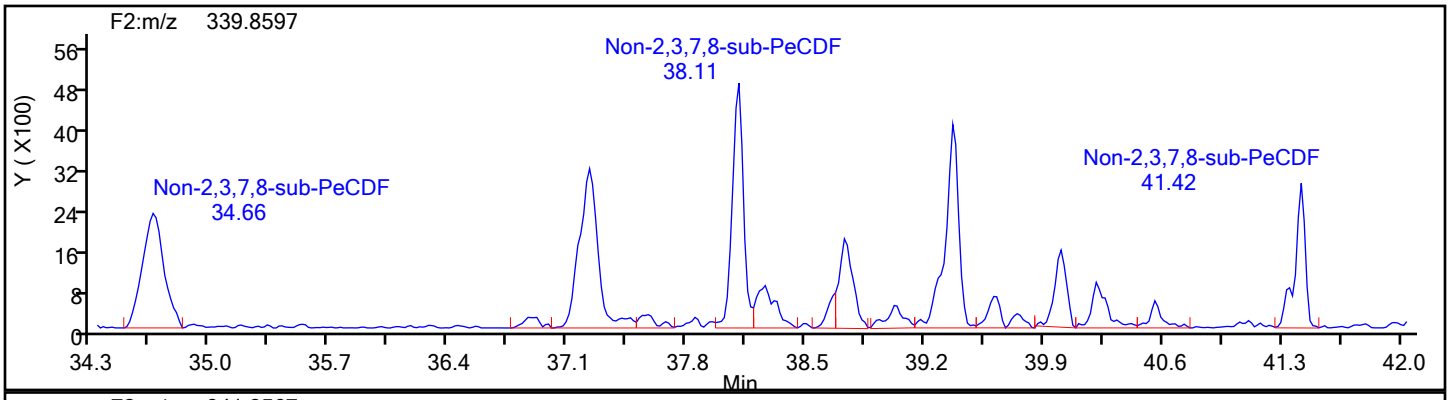
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

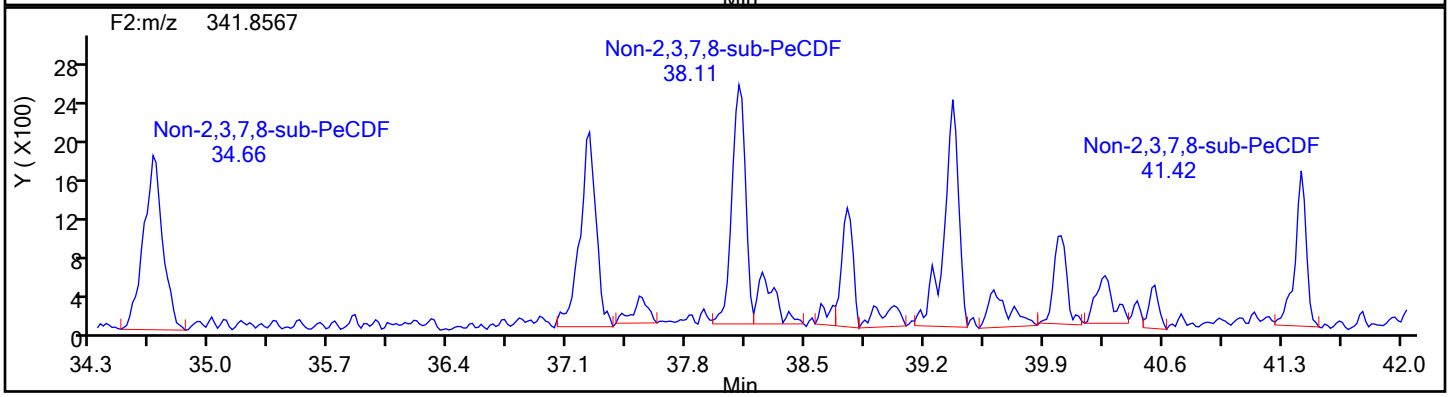
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

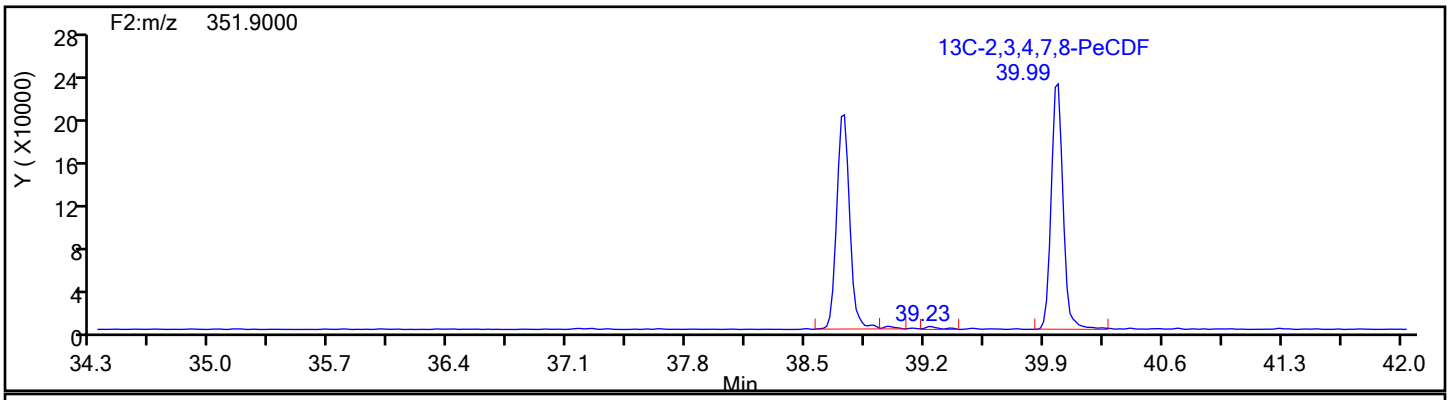
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

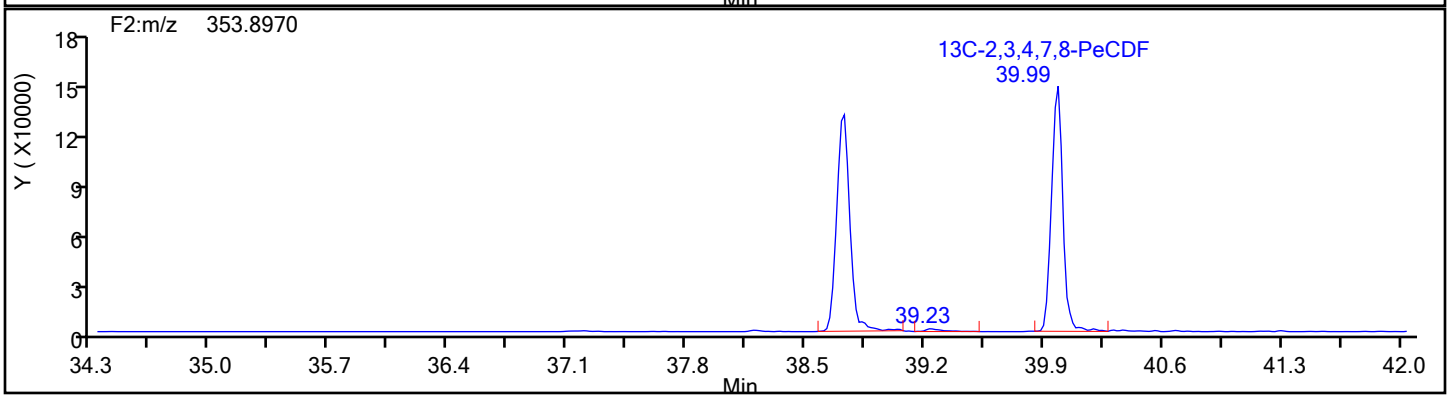
PeCDF





PeCDF Standards



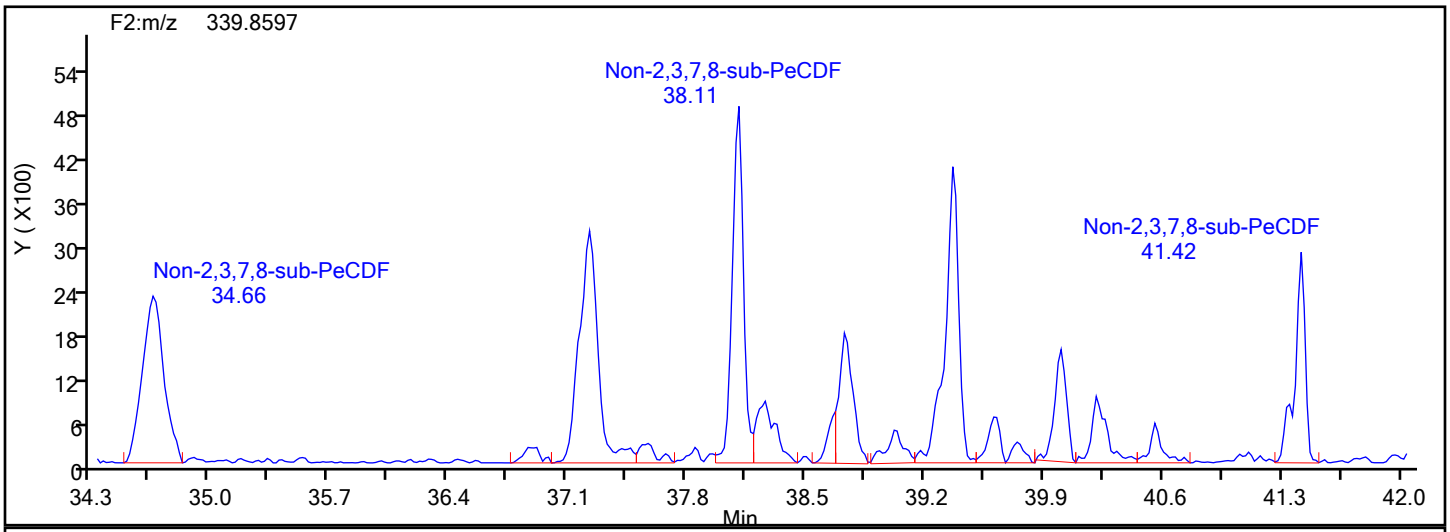


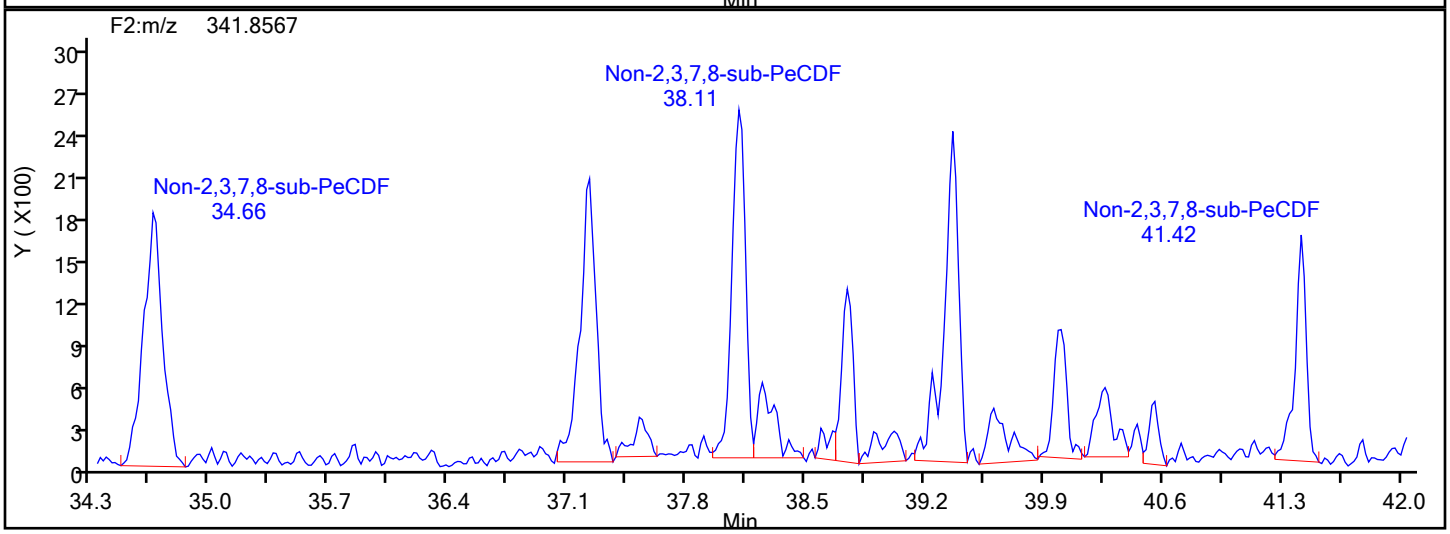
Report Date: 18-Dec-2019 03:36:19 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

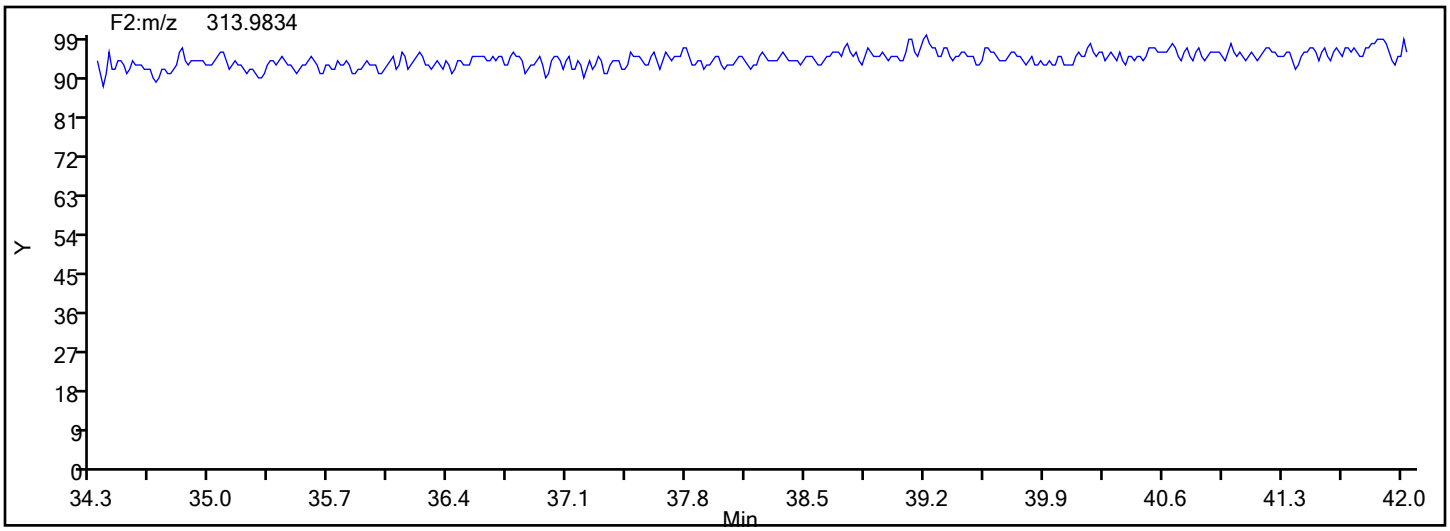
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

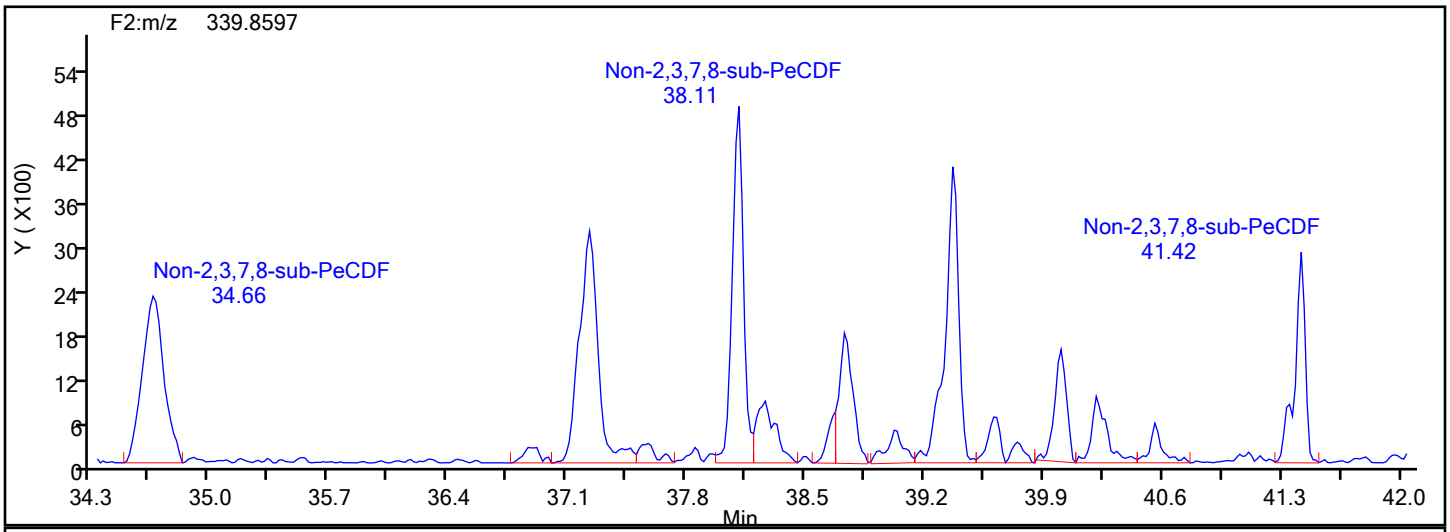


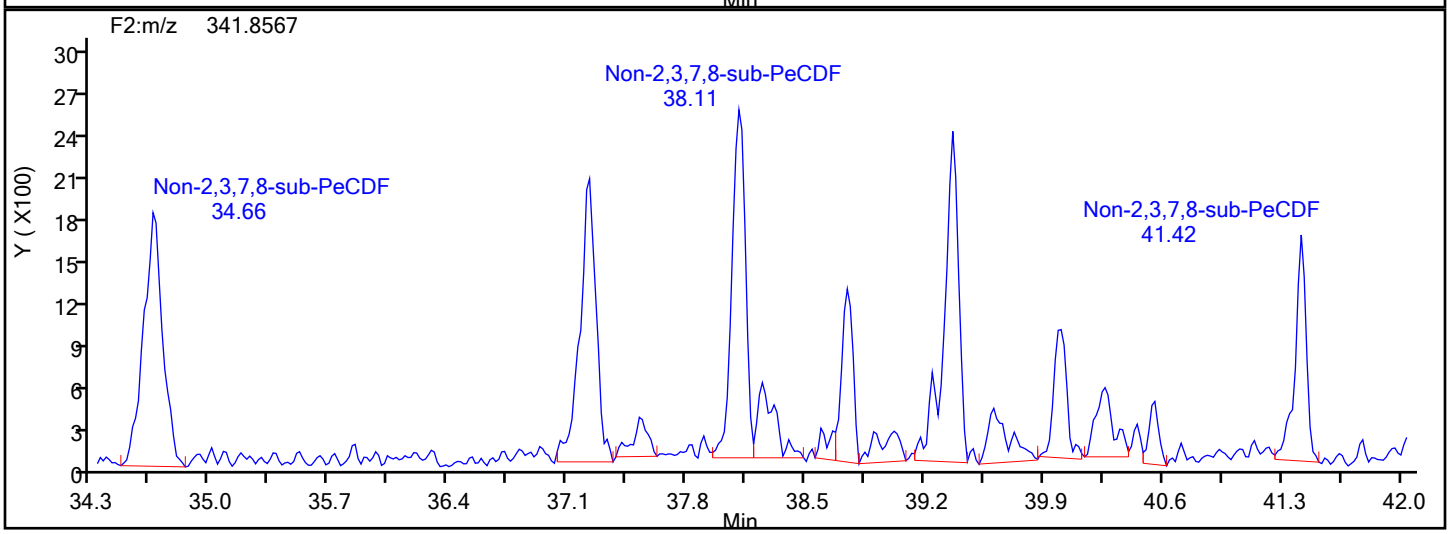
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

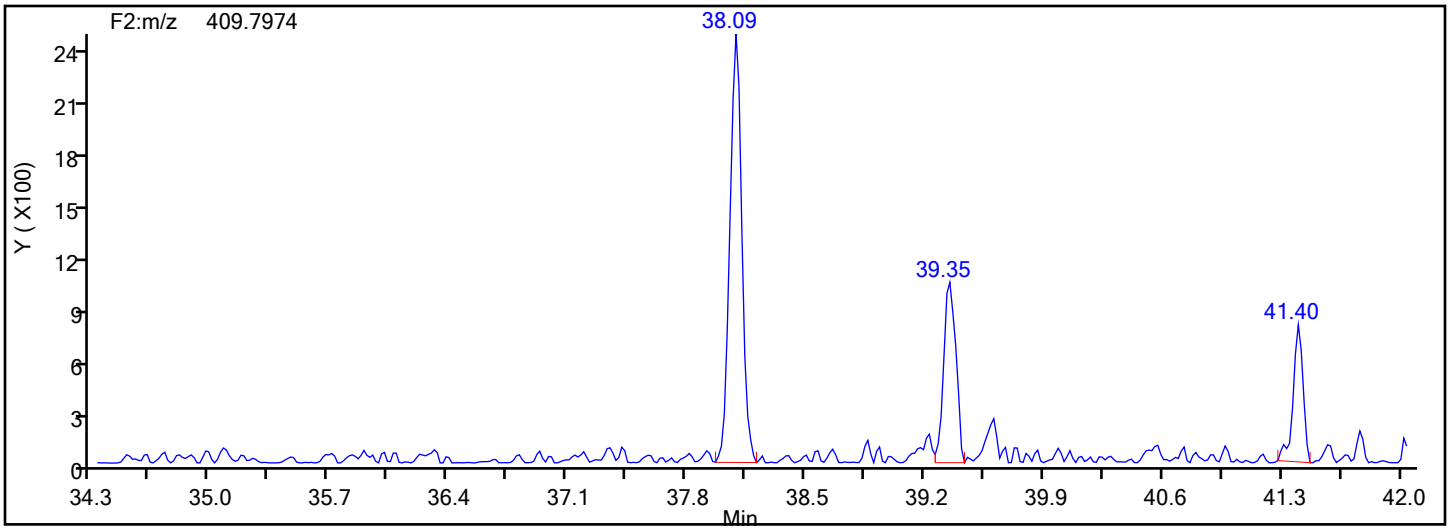
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

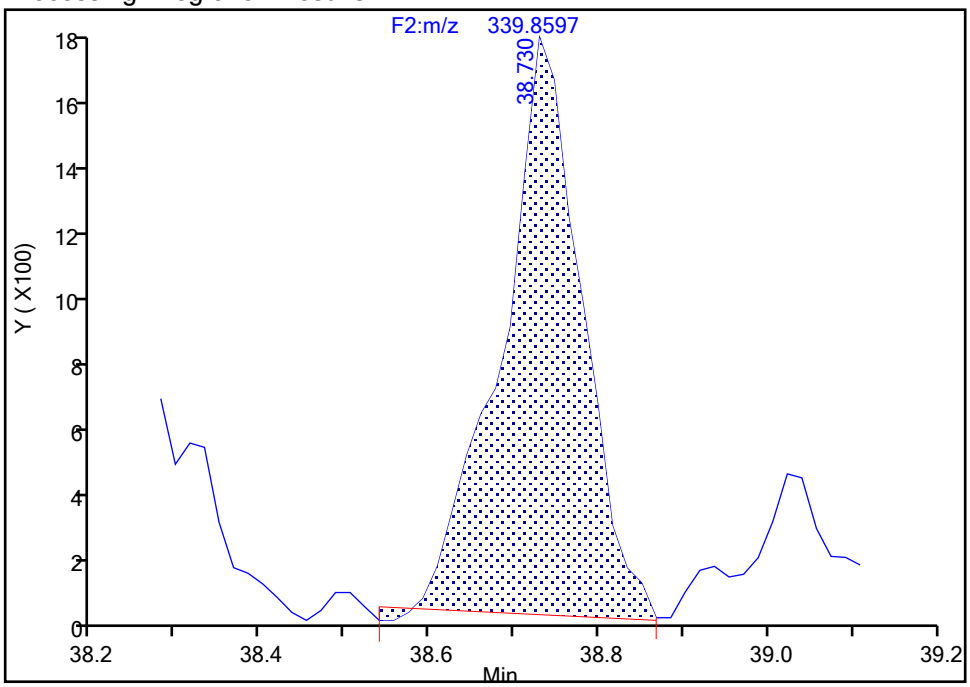
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

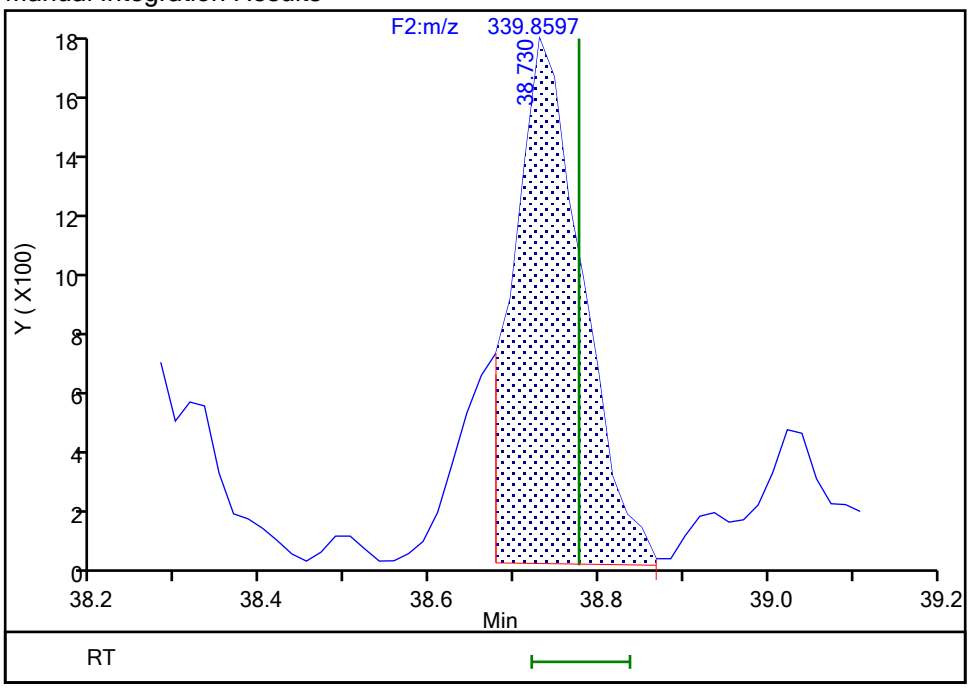
Processing Integration Results

RT: 38.73
Area: 11398
Amount: 0.425662
Amount Units: pg/ul



Manual Integration Results

RT: 38.73
Area: 9786
Amount: 0.363593
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:25:30
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

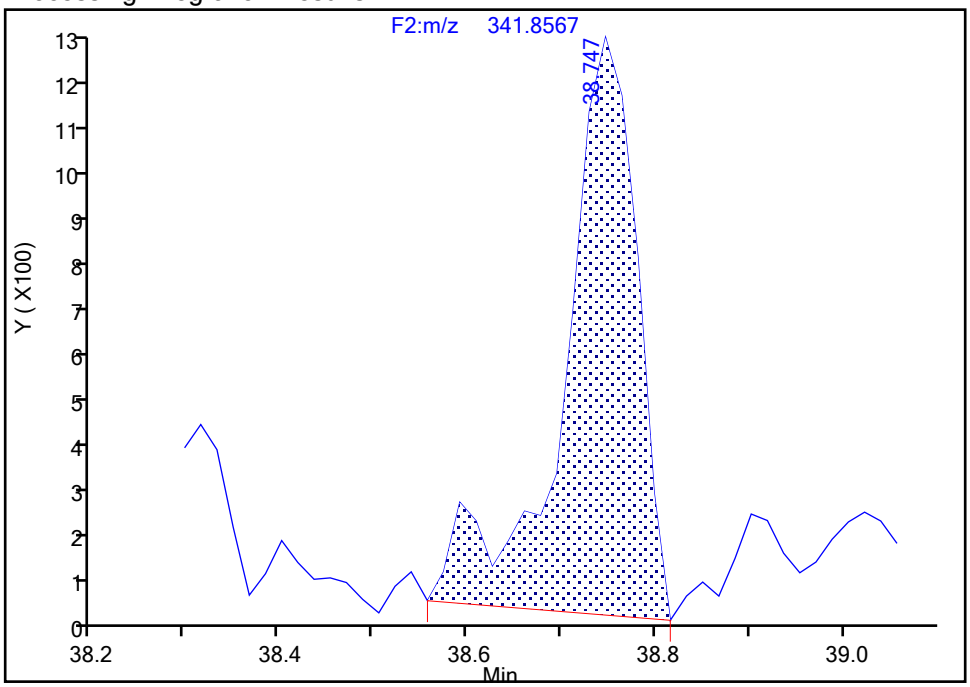
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

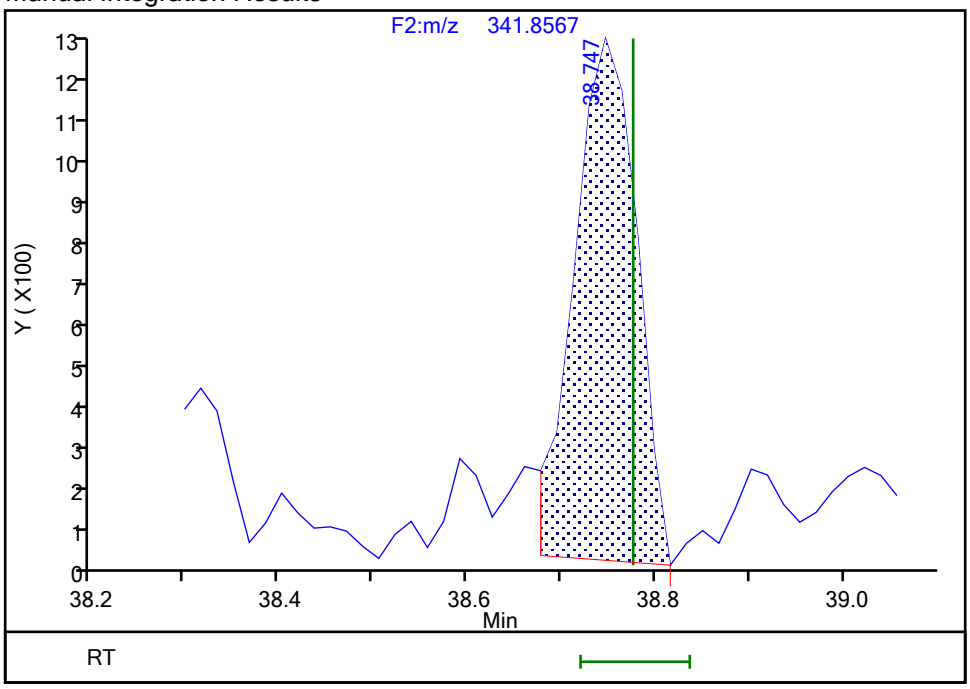
Processing Integration Results

RT: 38.75
Area: 6741
Amount: 0.425662
Amount Units: pg/ul



Manual Integration Results

RT: 38.75
Area: 5708
Amount: 0.363593
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:25:35
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

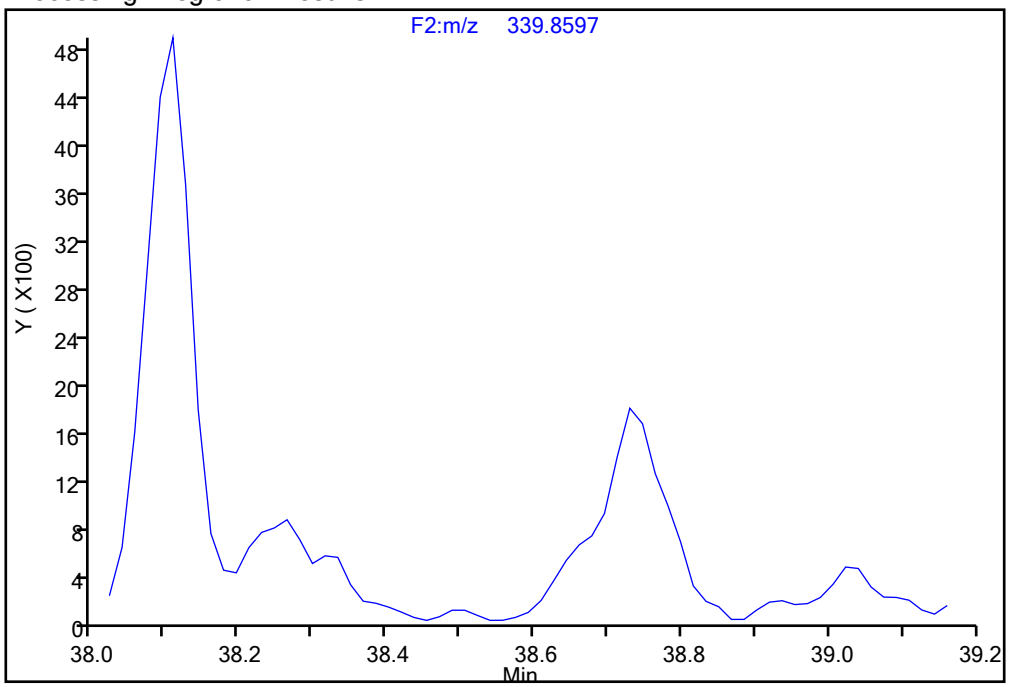
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

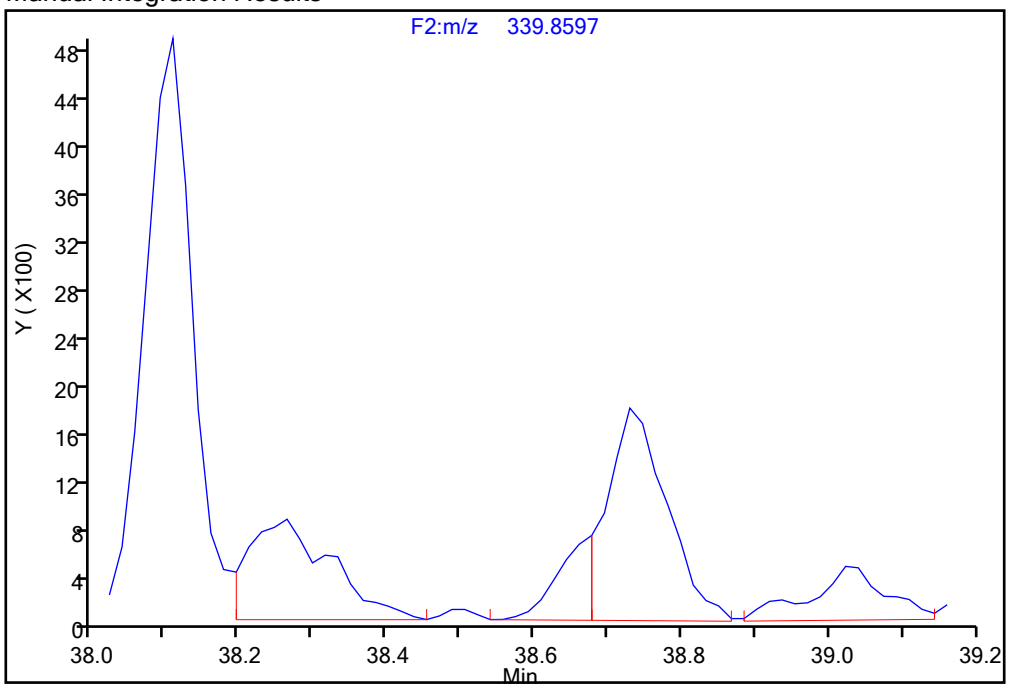
Not Detected
RT: 34.61- 41.41

Processing Integration Results



Manual Integration Results

RT = 38.678 Area = 2157 M



Reviewer: parslyt, 18-Dec-2019 03:27:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

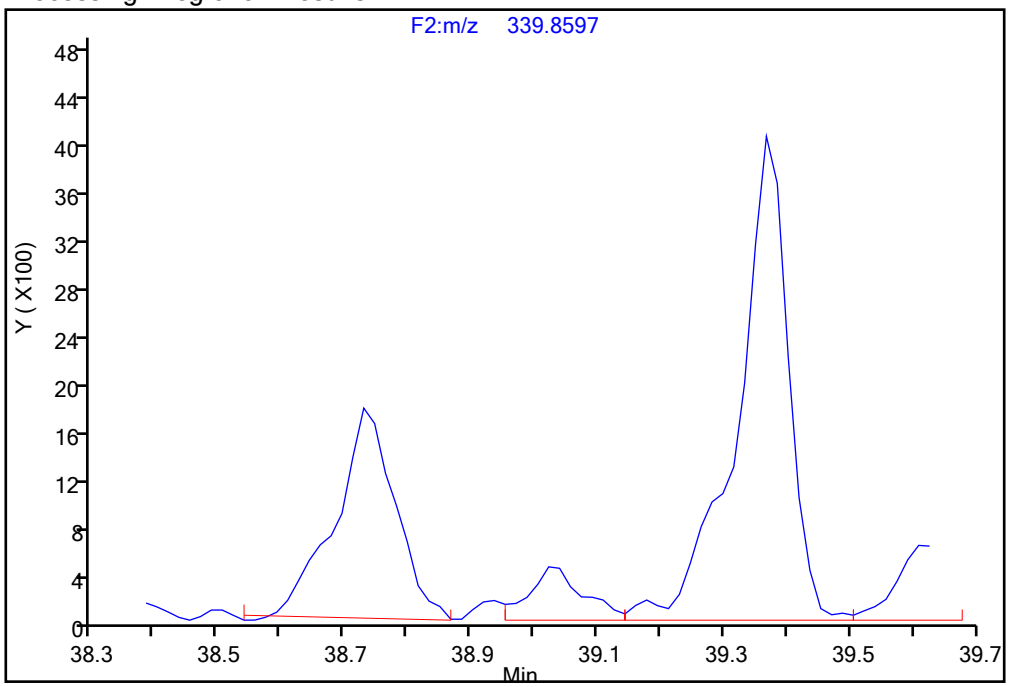
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

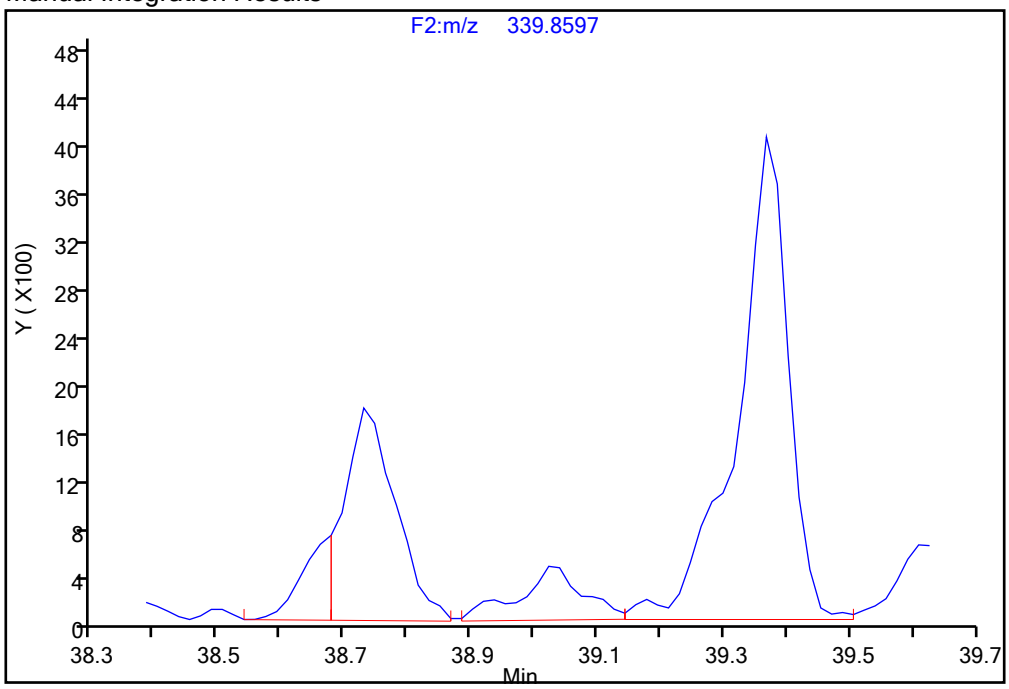
Processing Integration Results

RT = 39.023 Area = 2589



Manual Integration Results

RT = 39.023 Area = 3160 M



Reviewer: parslyt, 18-Dec-2019 03:27:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

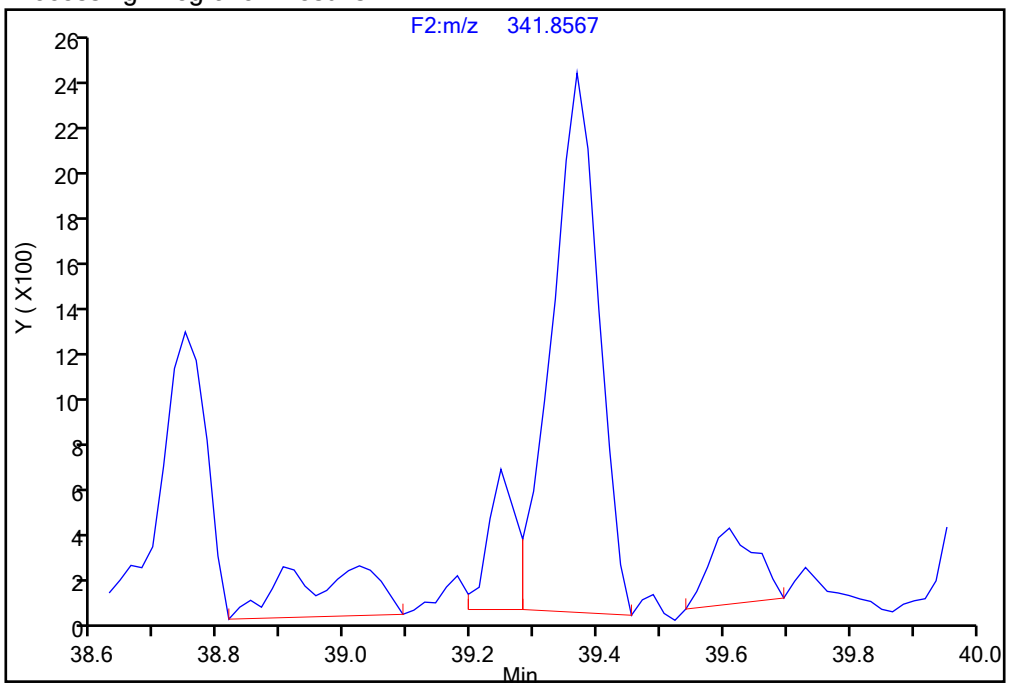
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.61- 41.41)

Signal: 2

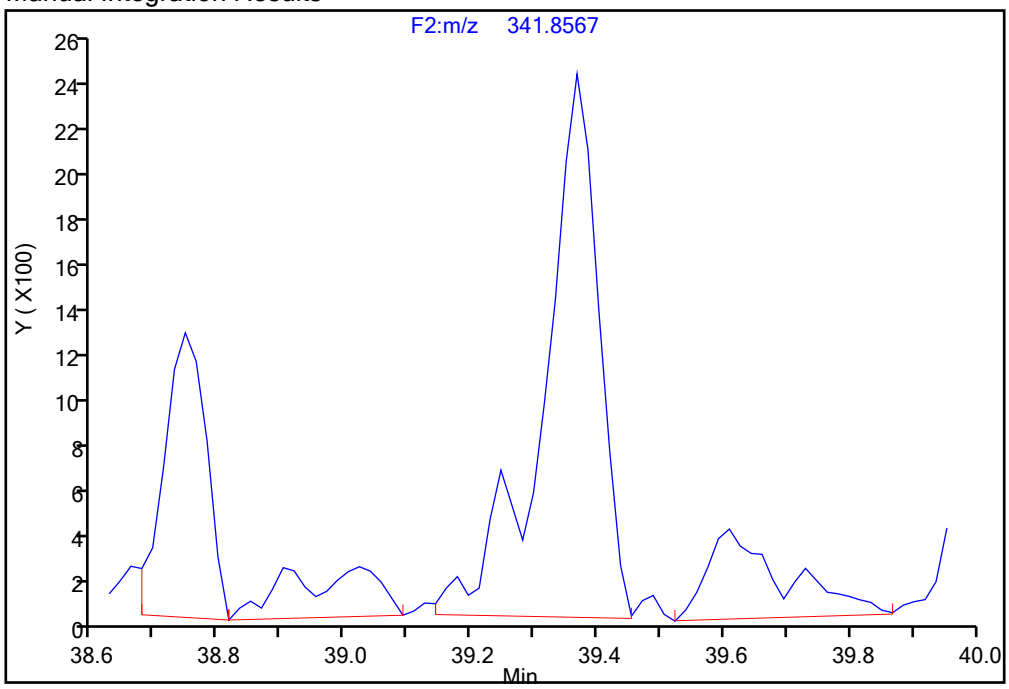
Processing Integration Results

RT = 39.368 Area = 11917



Manual Integration Results

RT = 39.368 Area = 14392 M



Reviewer: parslyt, 18-Dec-2019 03:27:30

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

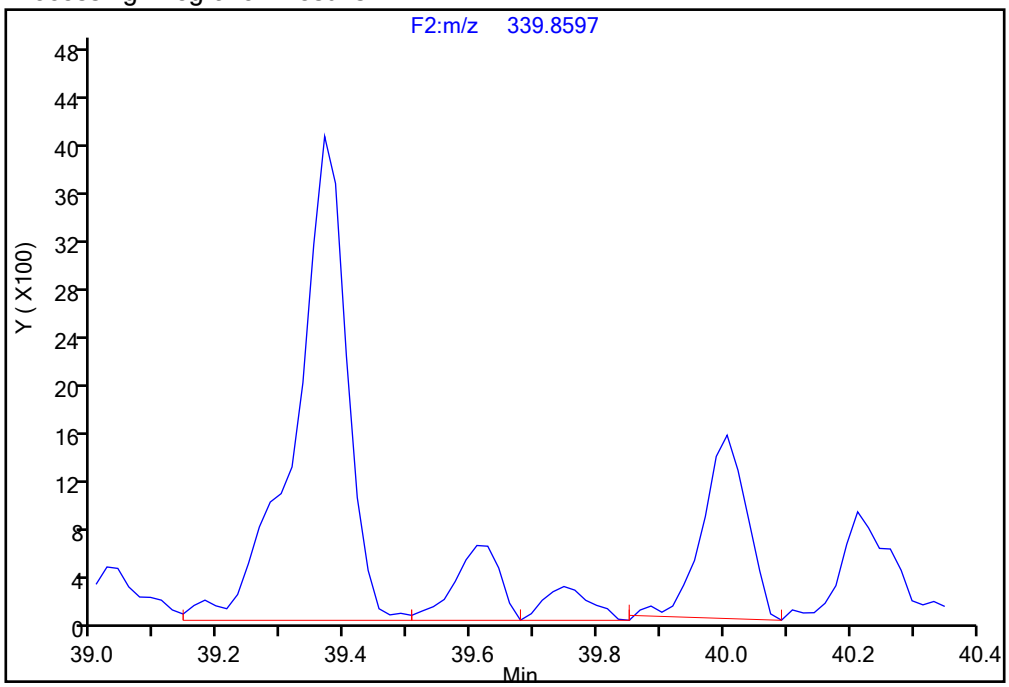
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

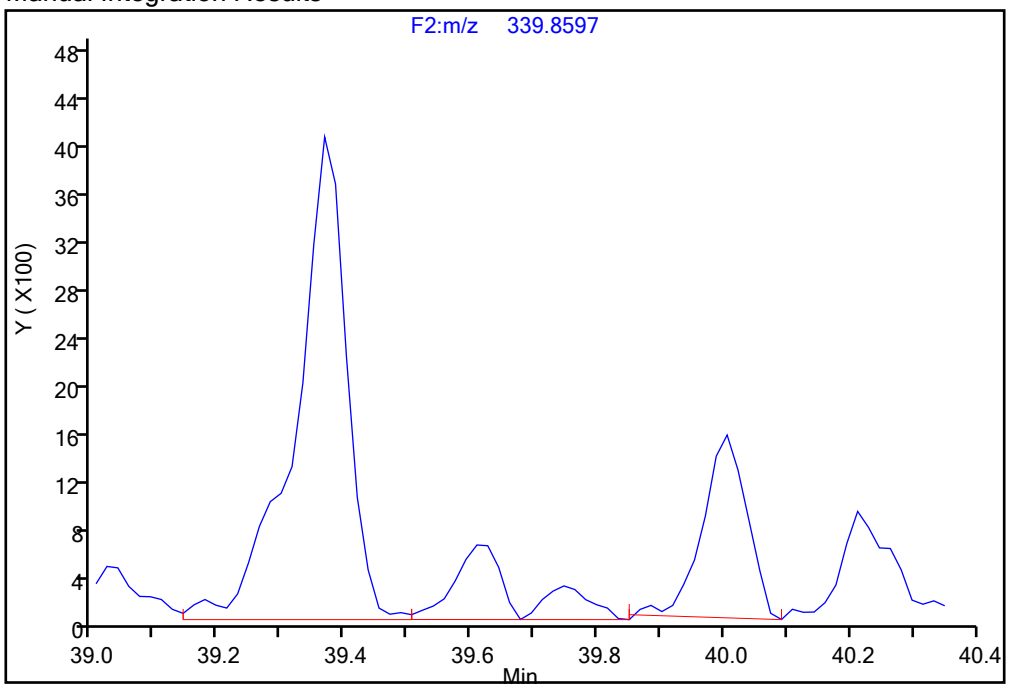
Processing Integration Results

RT = 39.609 Area = 3122



Manual Integration Results

RT = 39.609 Area = 4541 M



Reviewer: parslyt, 18-Dec-2019 03:27:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

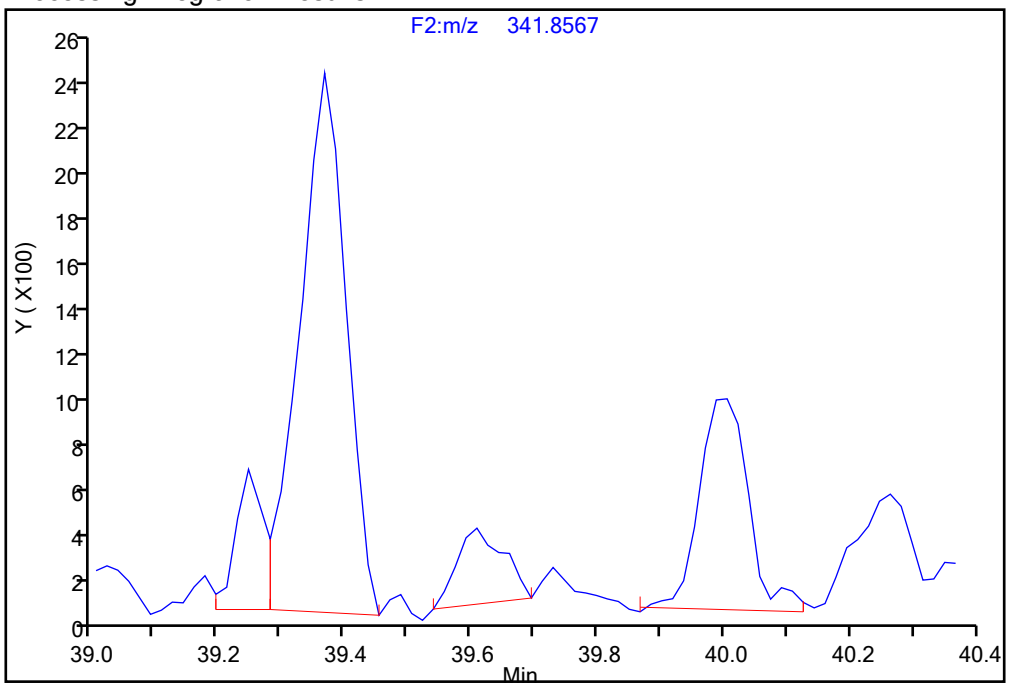
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.61- 41.41)

Signal: 2

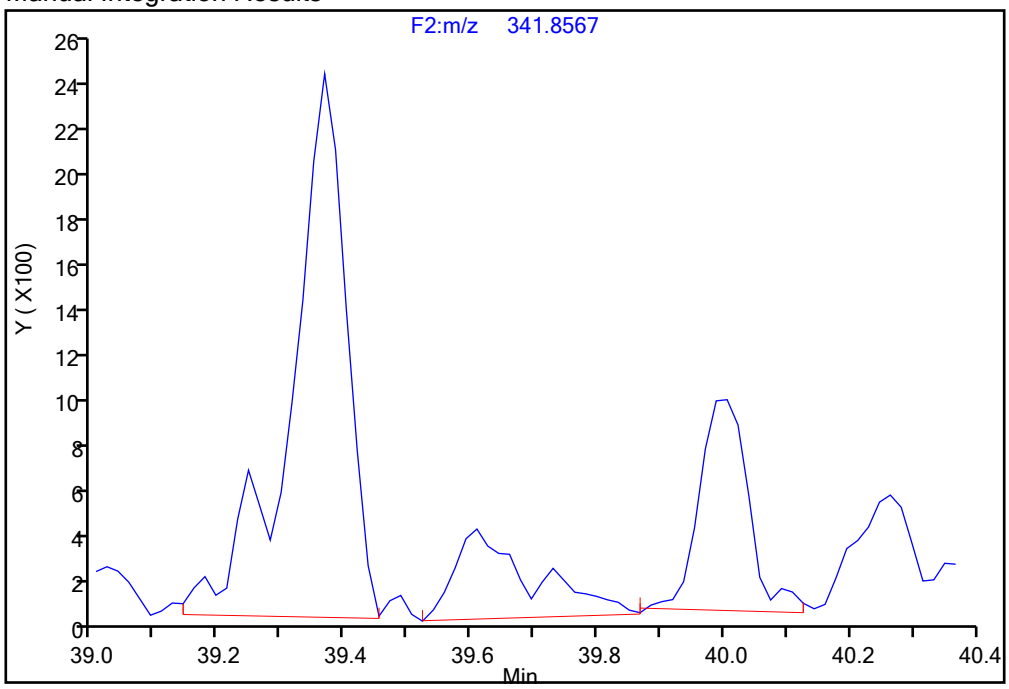
Processing Integration Results

RT = 39.609 Area = 1682



Manual Integration Results

RT = 39.609 Area = 3308 M



Reviewer: parslyt, 18-Dec-2019 03:27:30

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

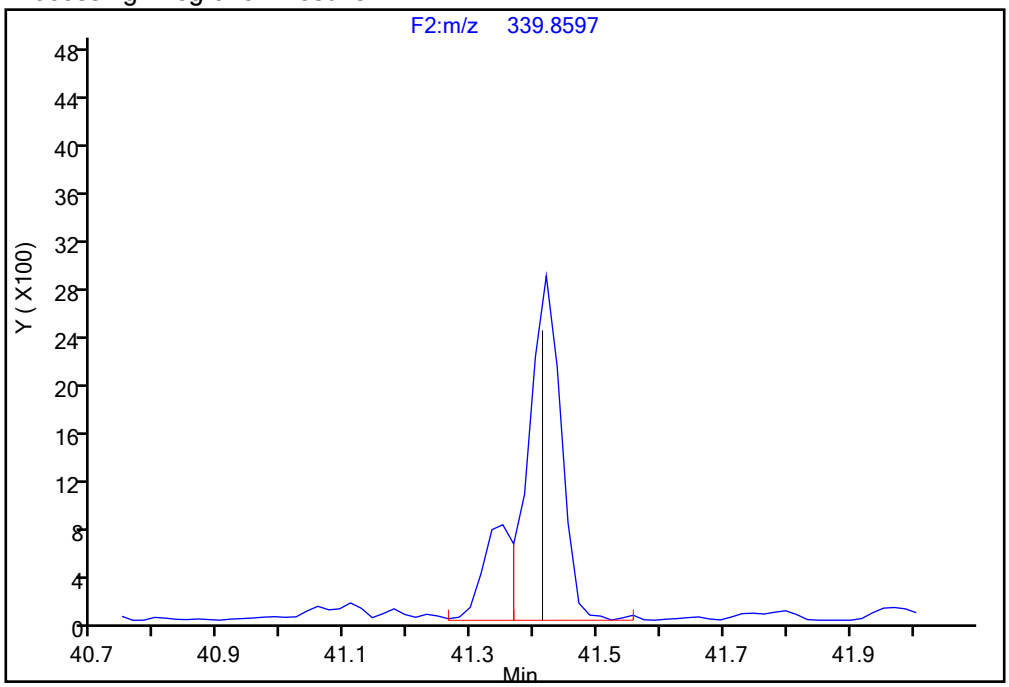
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

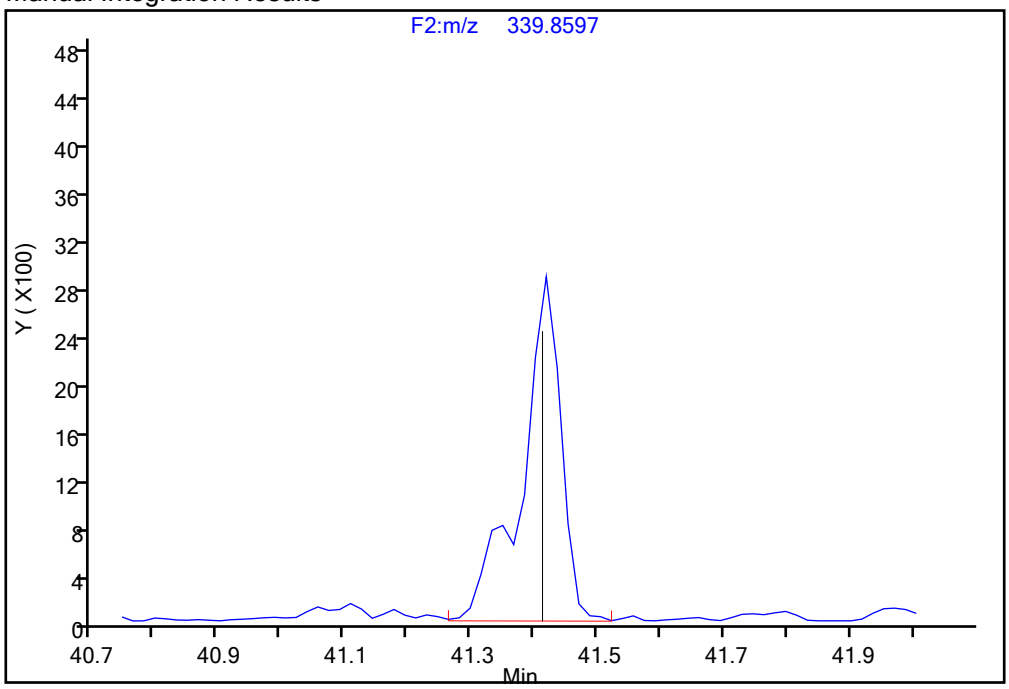
Processing Integration Results

RT = 41.419 Area = 9889



Manual Integration Results

RT = 41.419 Area = 12327 M



Reviewer: parslyt, 18-Dec-2019 03:27:51

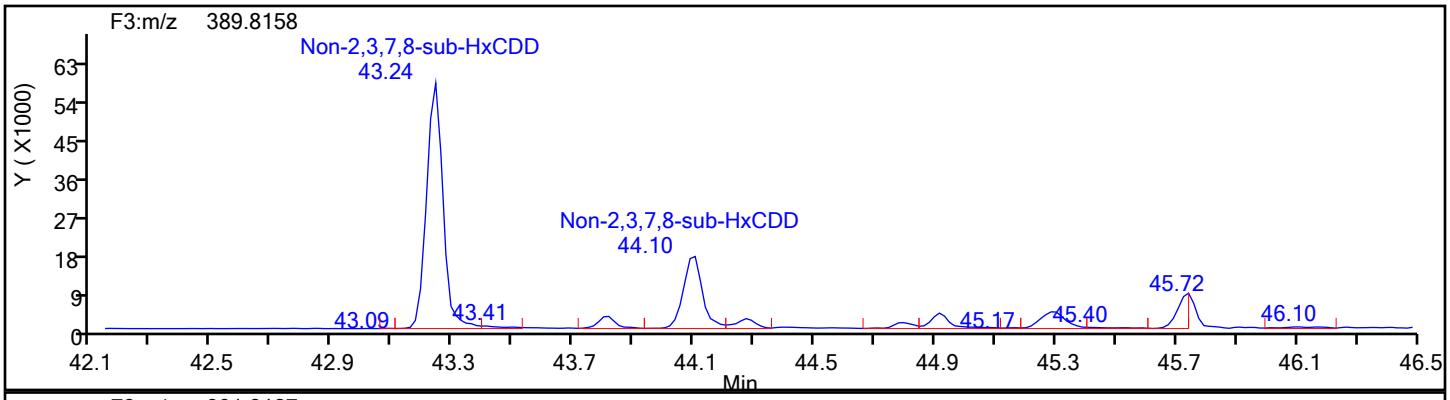
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

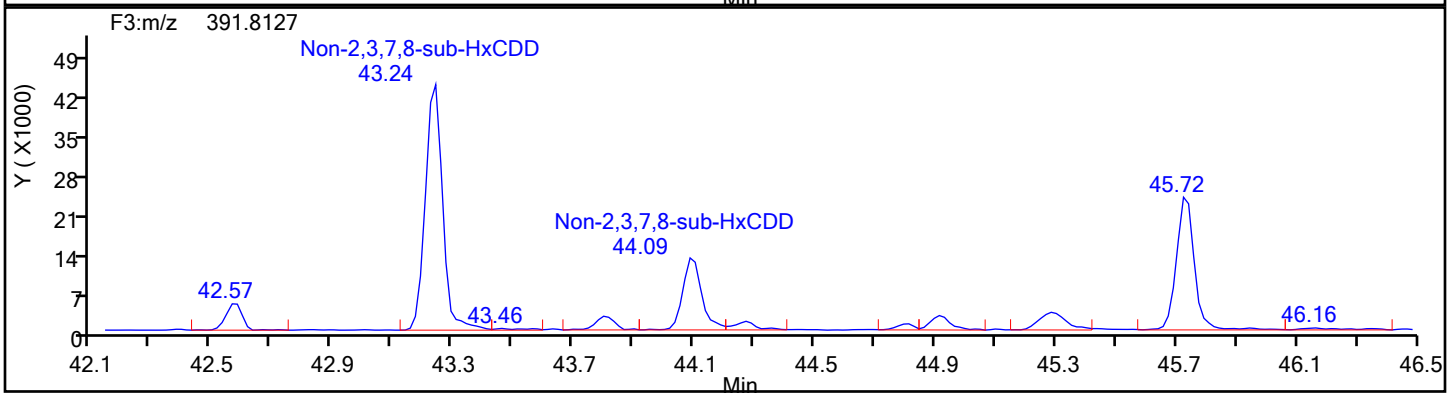
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

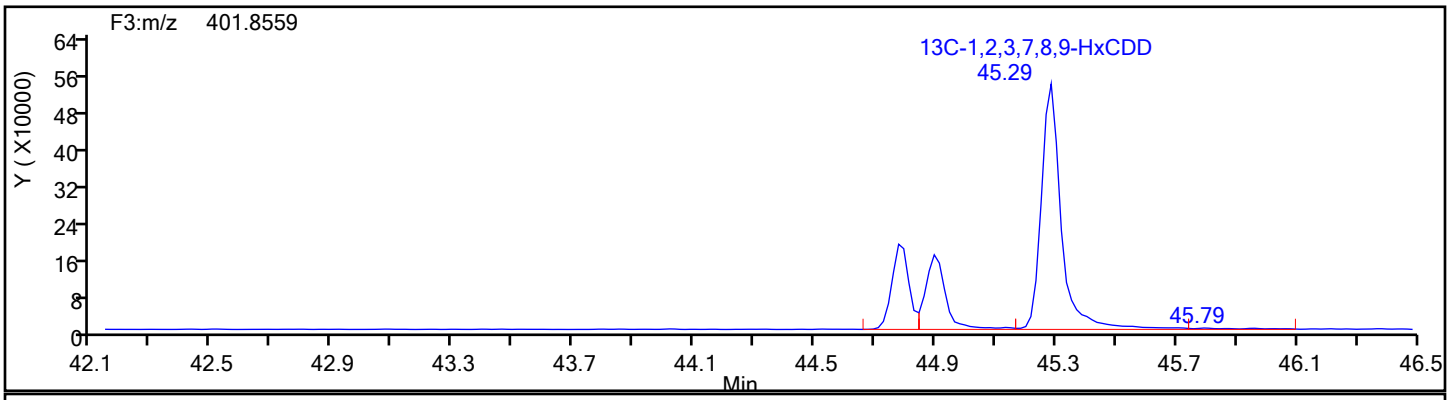
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

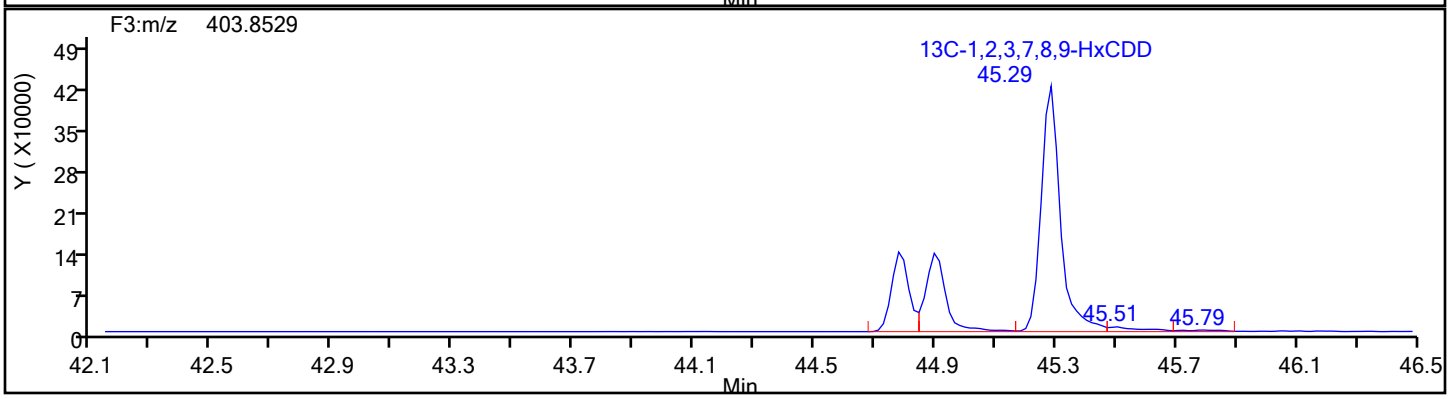
HxCDD





HxCDD Standards



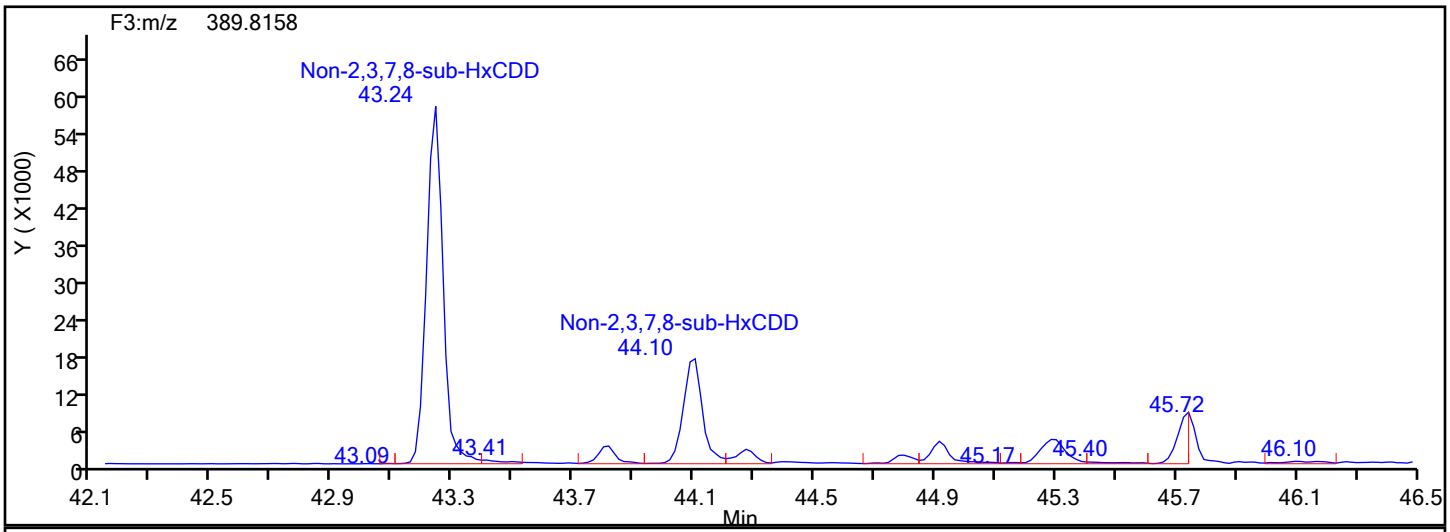


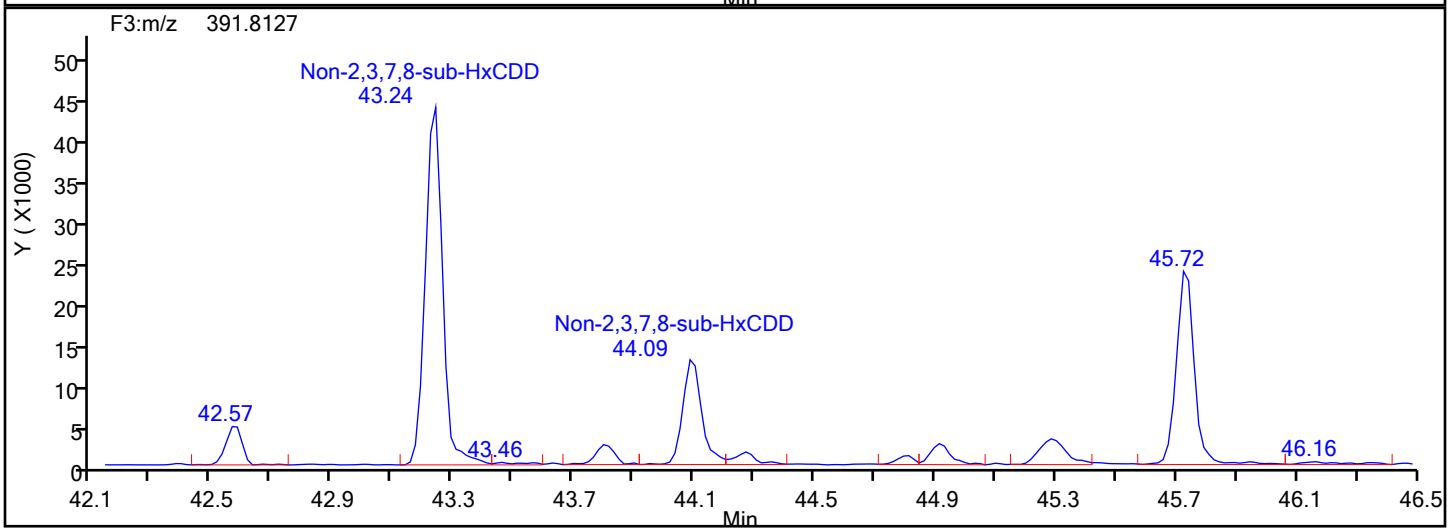
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

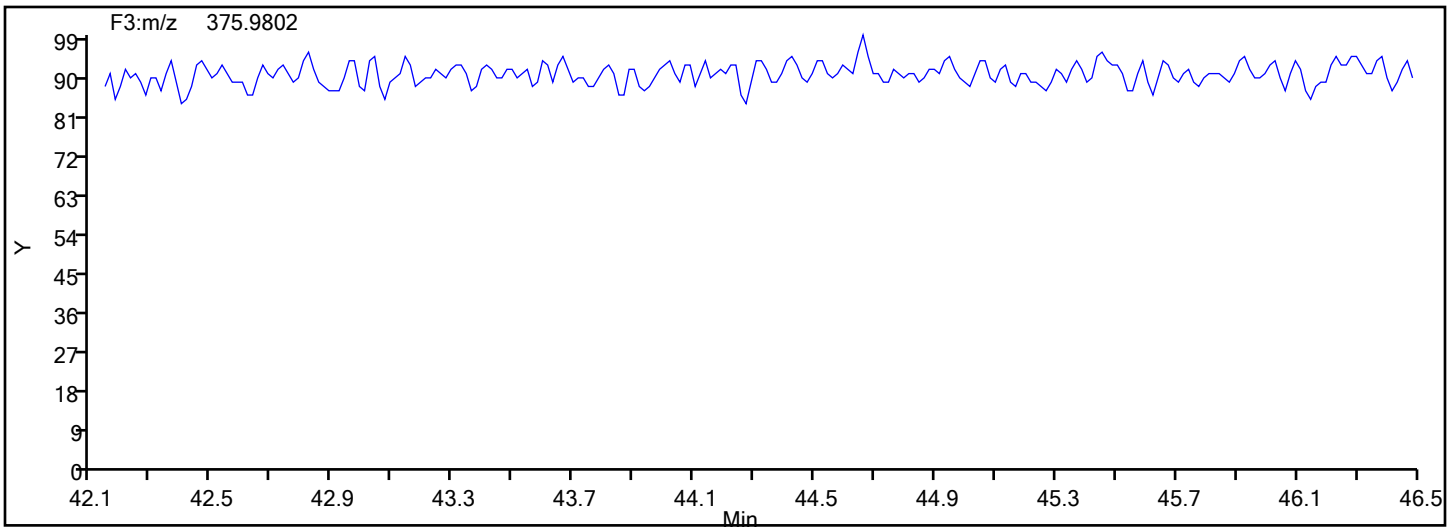
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

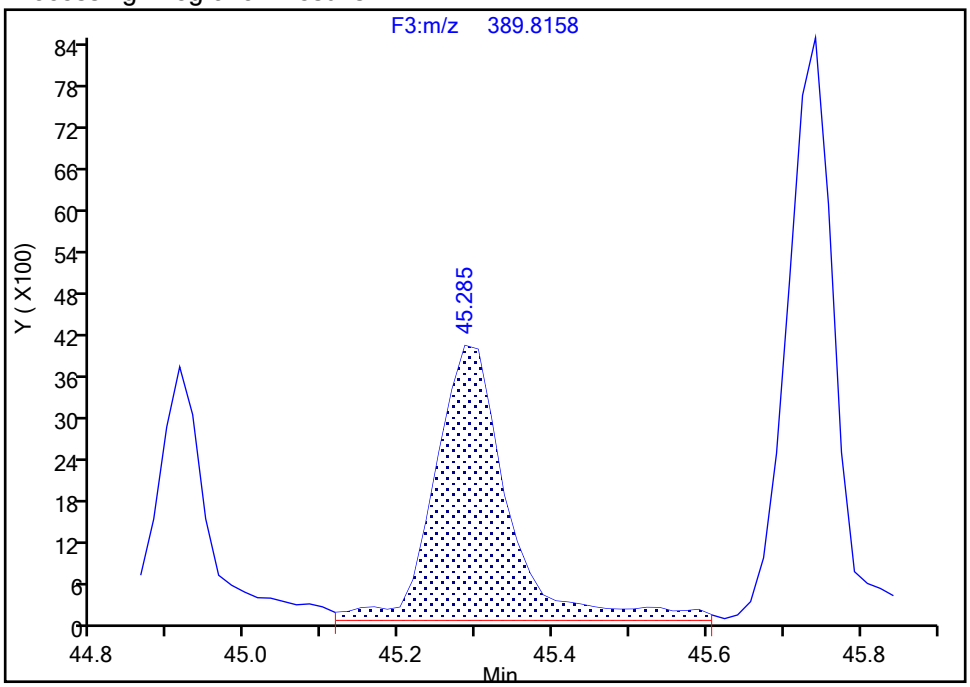
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

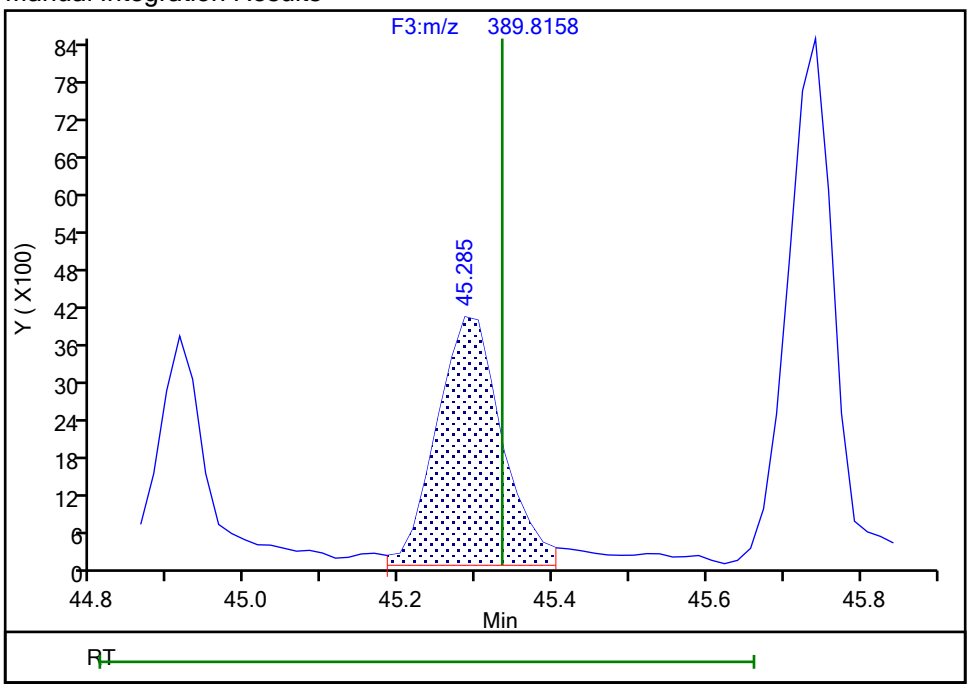
Processing Integration Results

RT: 45.29
Area: 26029
Amount: 1.454553
Amount Units: pg/ul



Manual Integration Results

RT: 45.29
Area: 23230
Amount: 1.333273
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:28:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

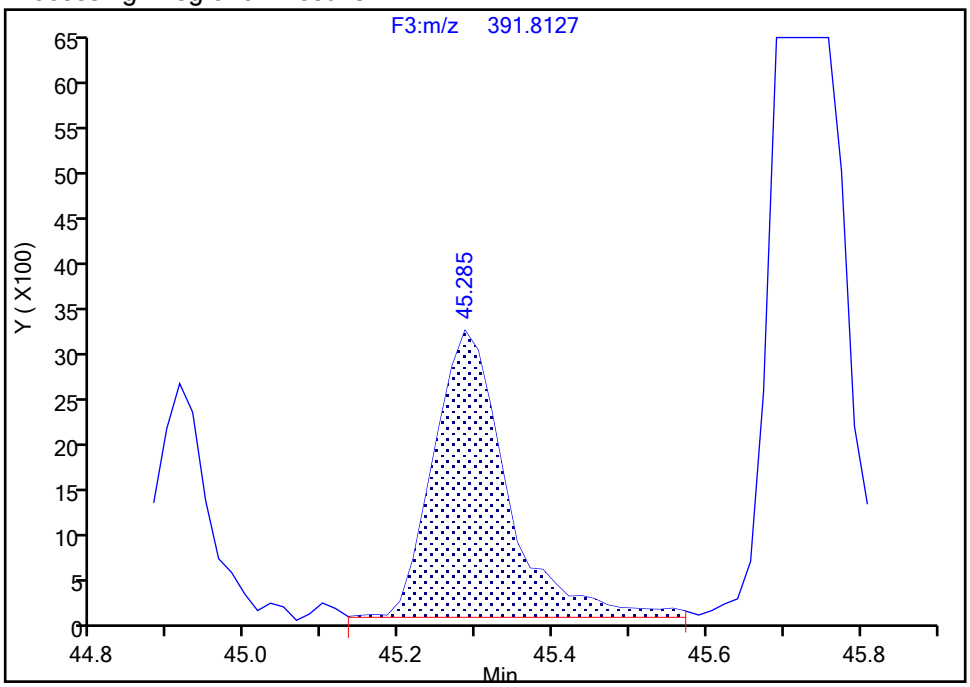
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

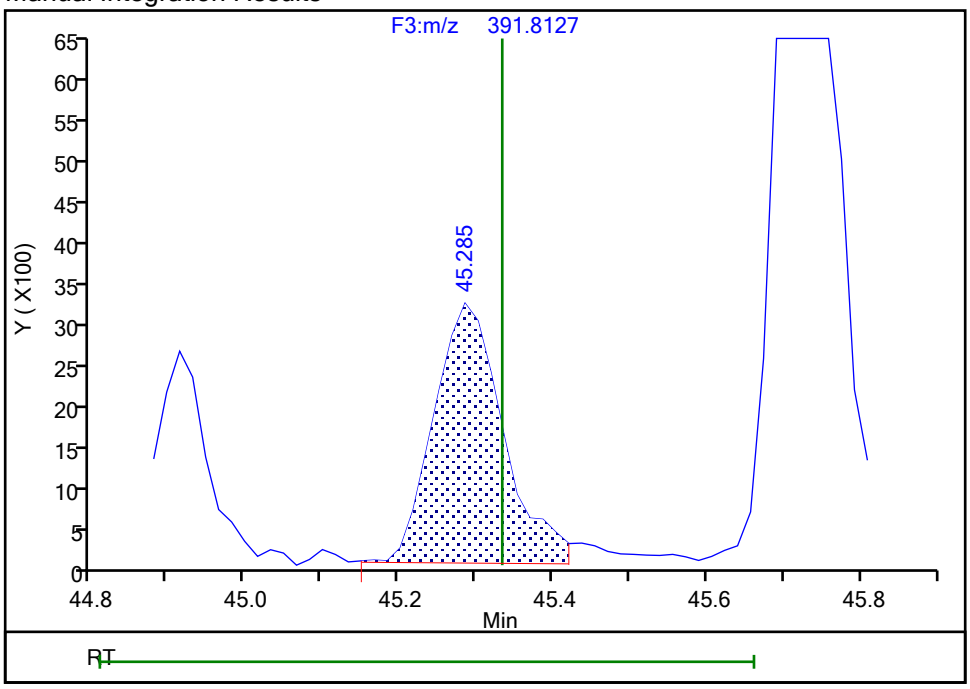
Processing Integration Results

RT: 45.29
Area: 20997
Amount: 1.454553
Amount Units: pg/ul



Manual Integration Results

RT: 45.29
Area: 19875
Amount: 1.333273
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:29:04

Audit Action: Manually Integrated Audit Reason: Analyst error

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

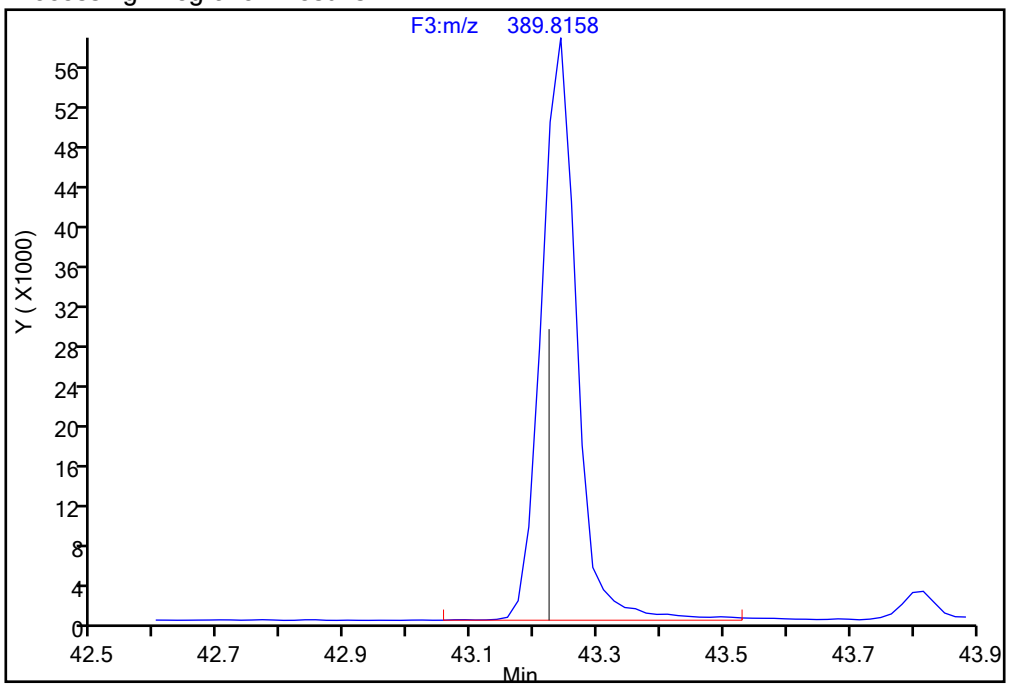
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.22- 45.38)

Signal: 1

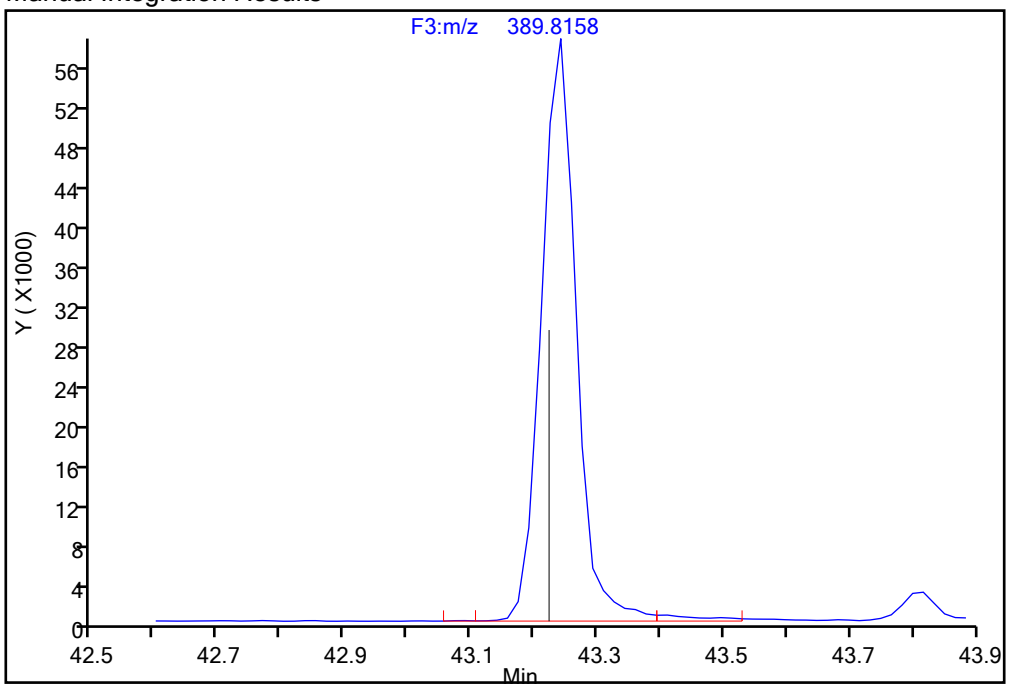
Processing Integration Results

RT = 43.242 Area = 225462



Manual Integration Results

RT = 43.242 Area = 222255 M



Reviewer: parslyt, 18-Dec-2019 03:29:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

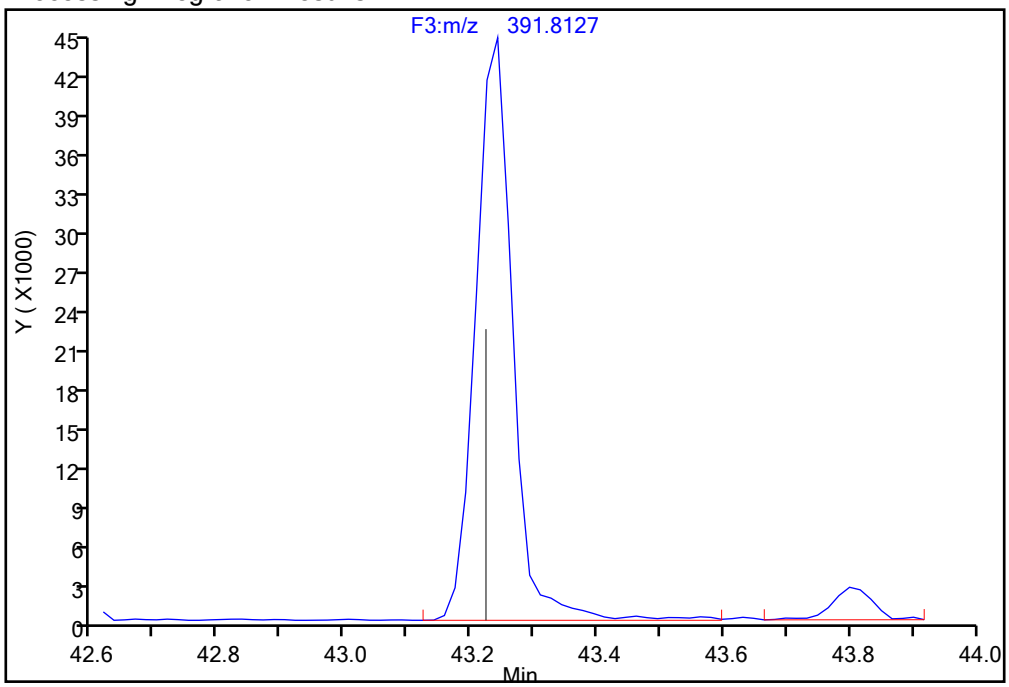
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.22- 45.38)

Signal: 2

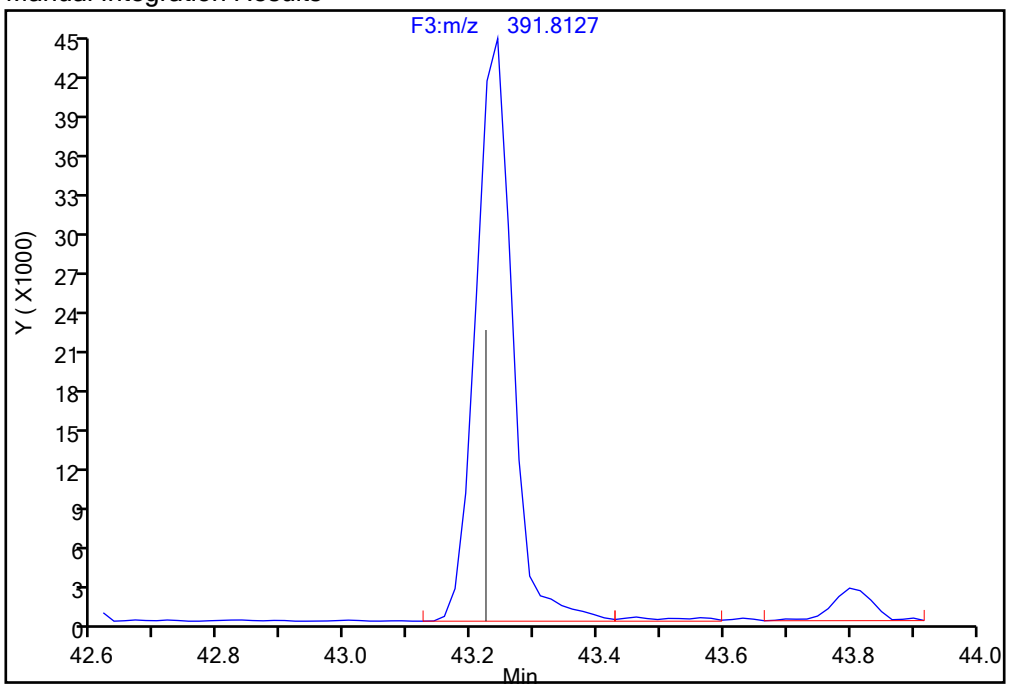
Processing Integration Results

RT = 43.242 Area = 179498



Manual Integration Results

RT = 43.242 Area = 177448 M



Reviewer: parslyt, 18-Dec-2019 03:29:33

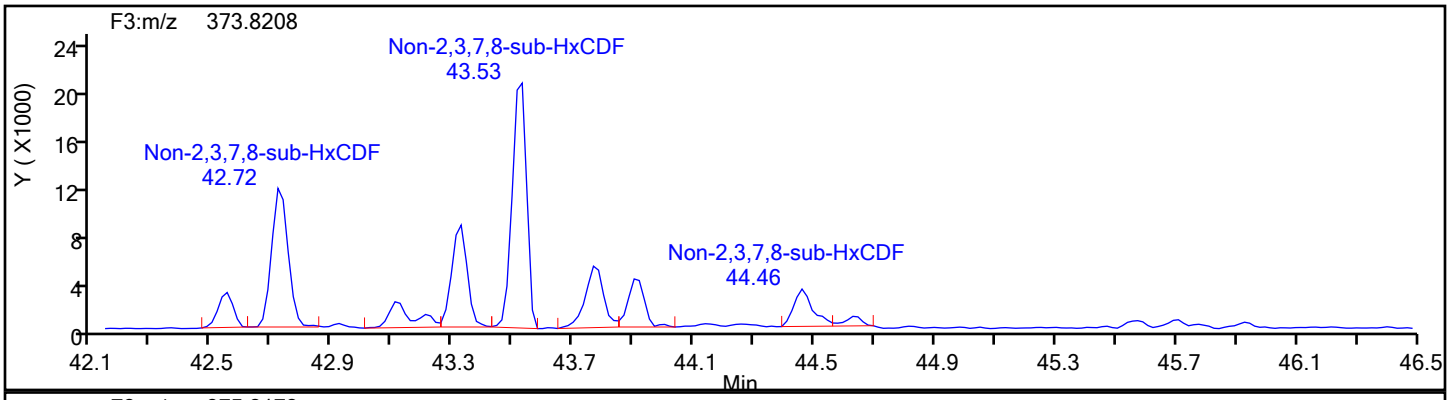
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

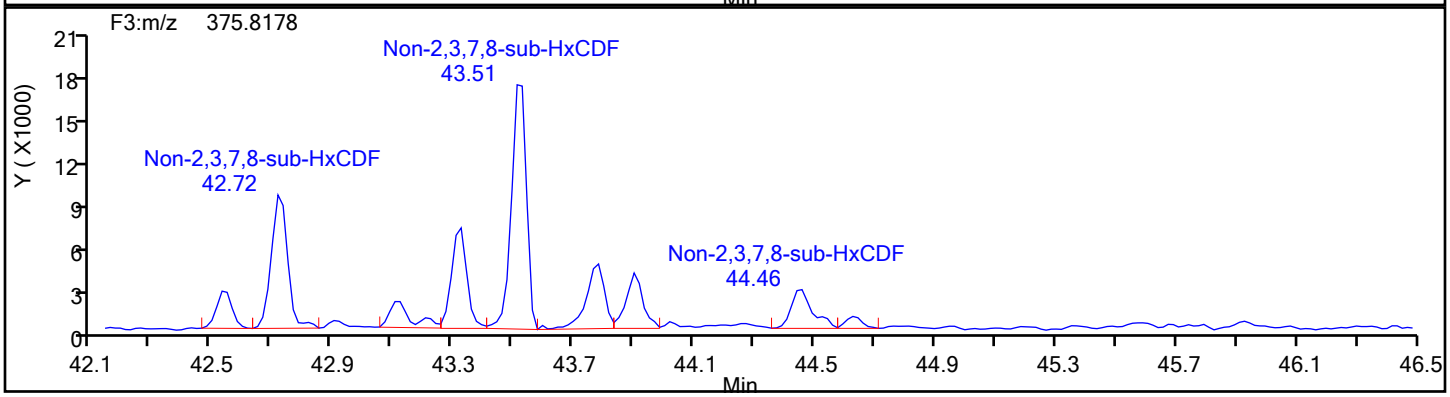
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

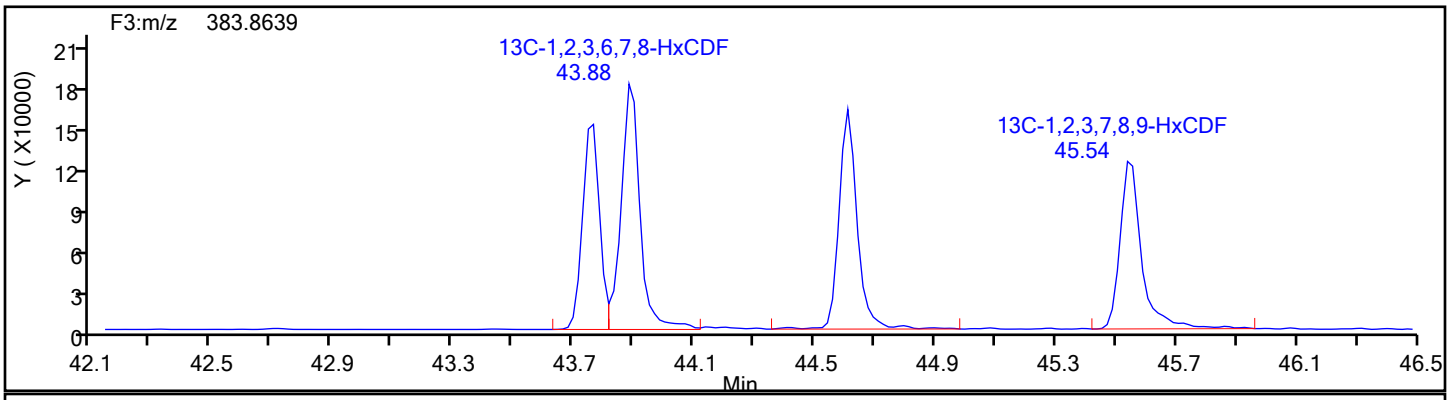
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

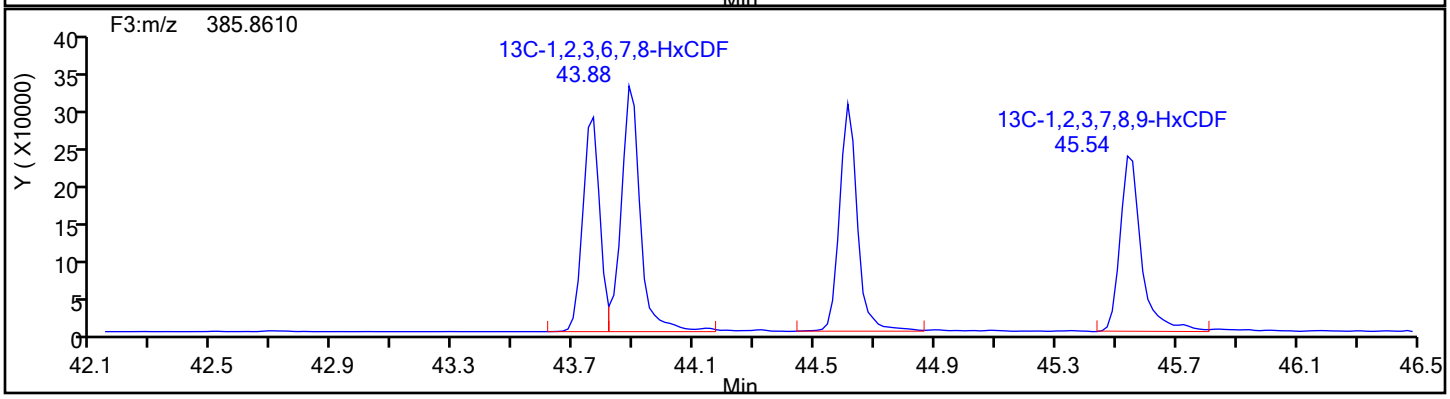
HxCDF





HxCDF Standards



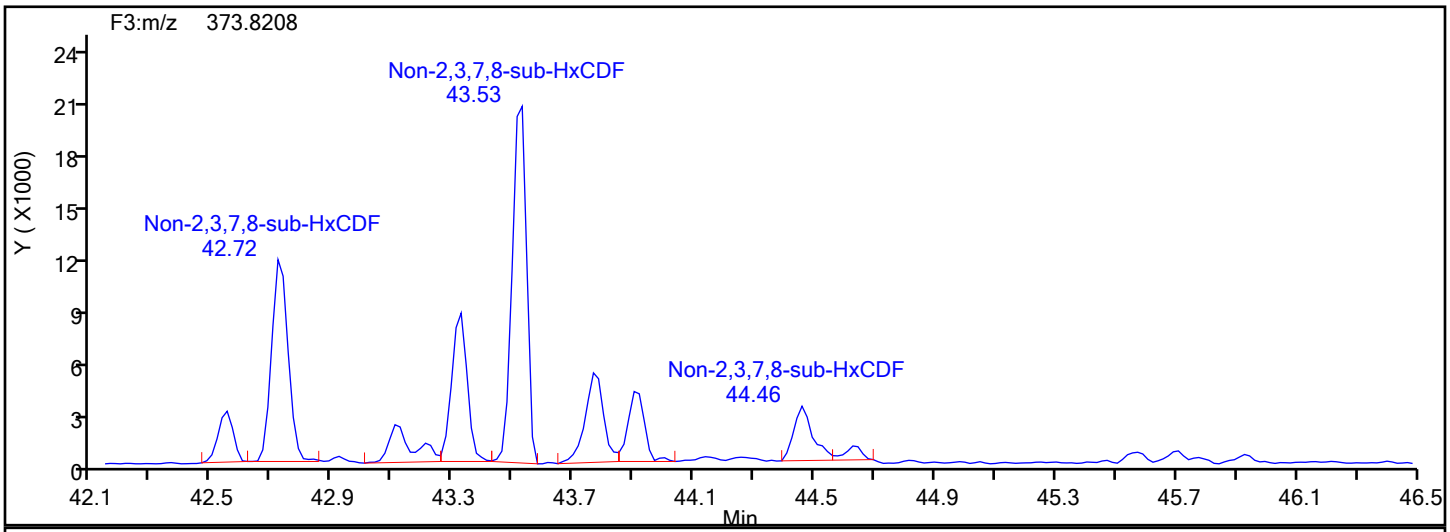


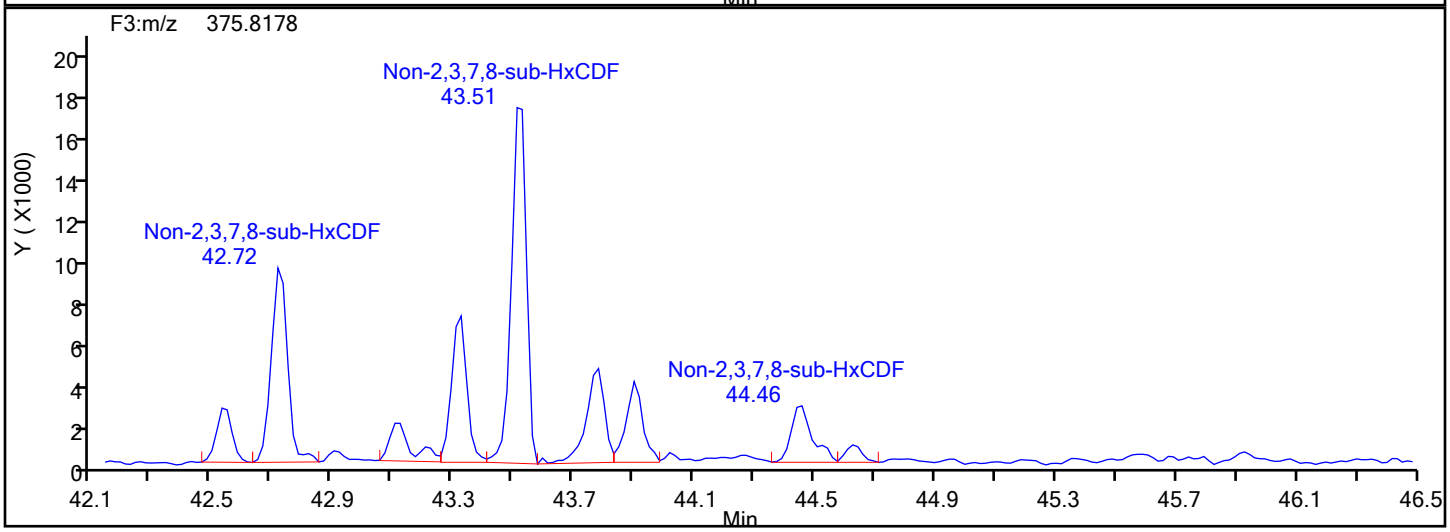
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

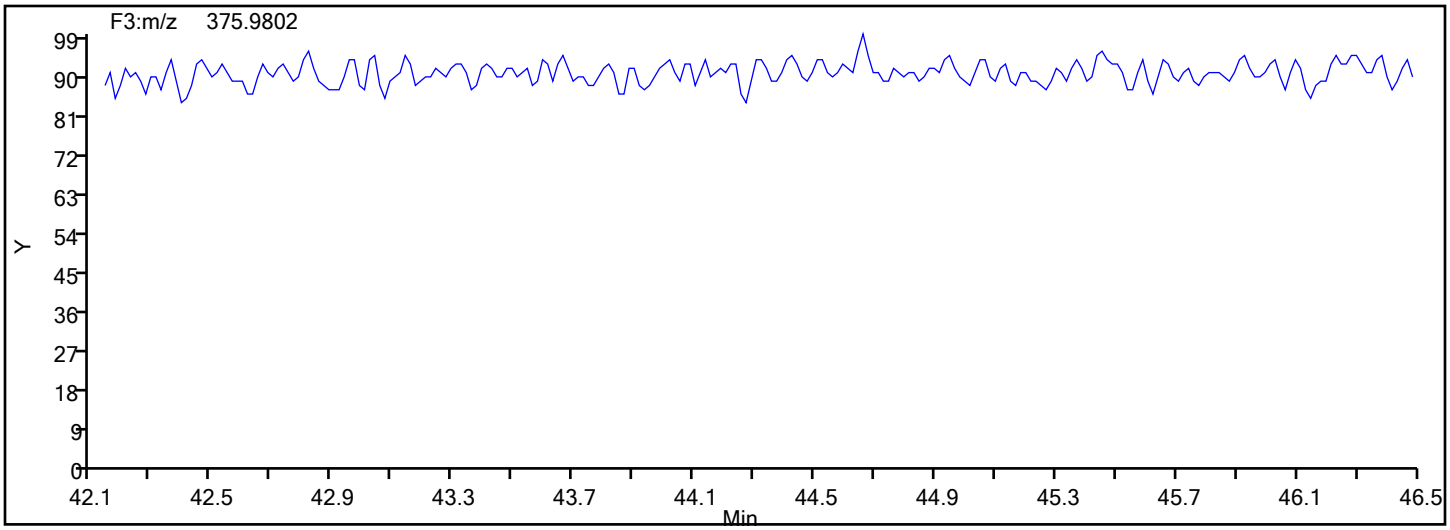
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





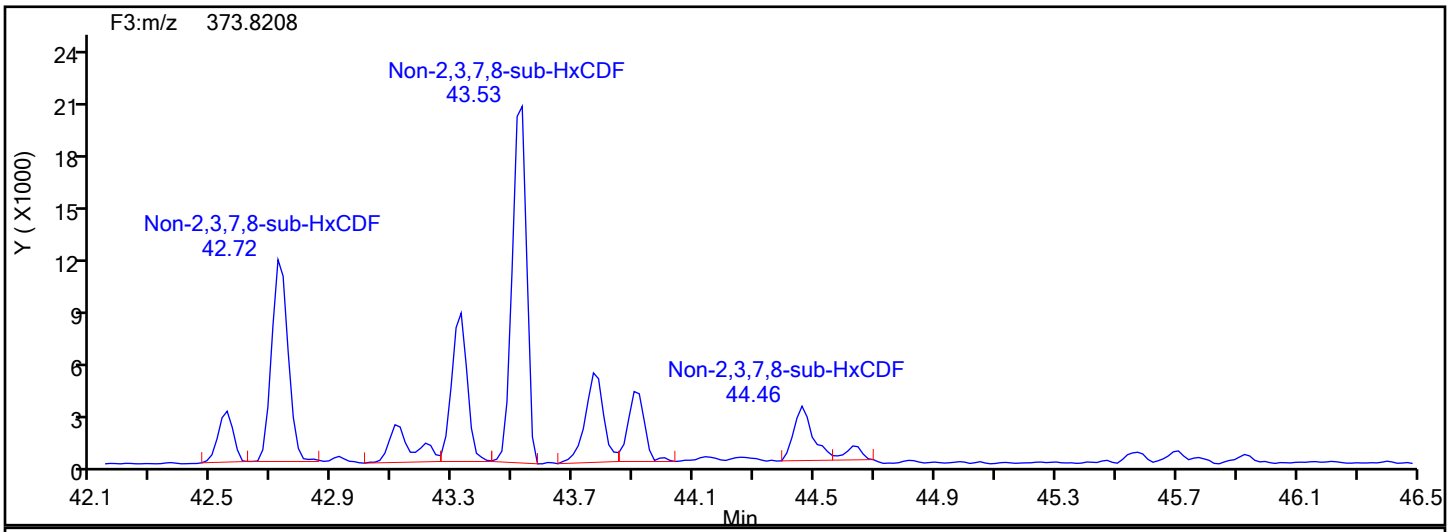
HxCDF Lock Mass

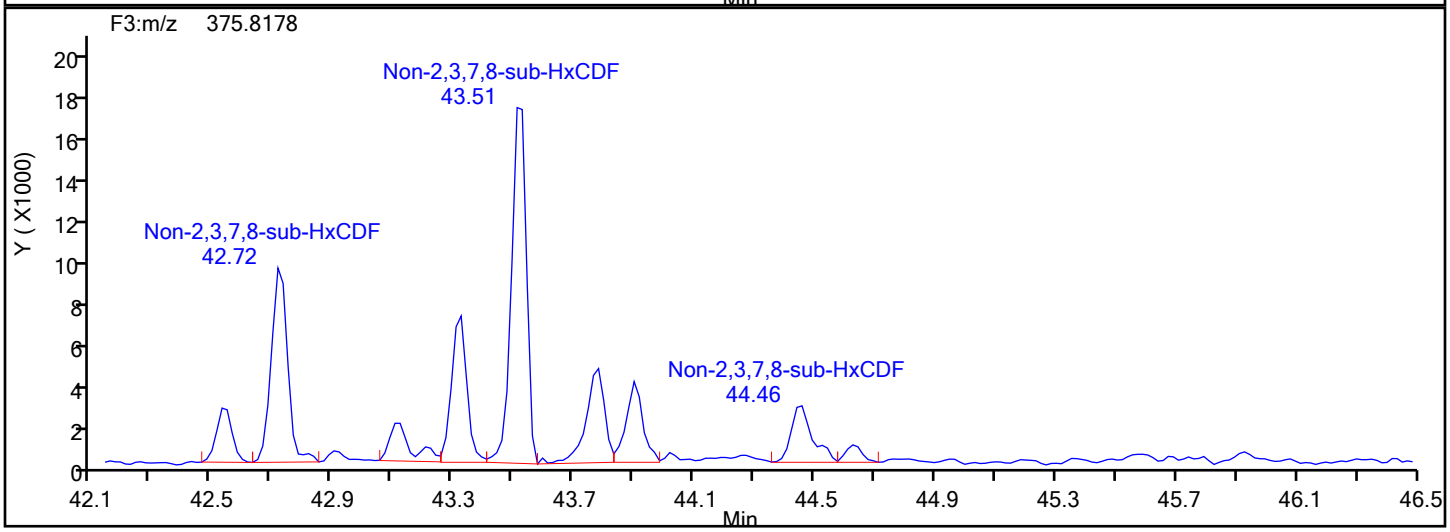


Eurofins TestAmerica, Knoxville

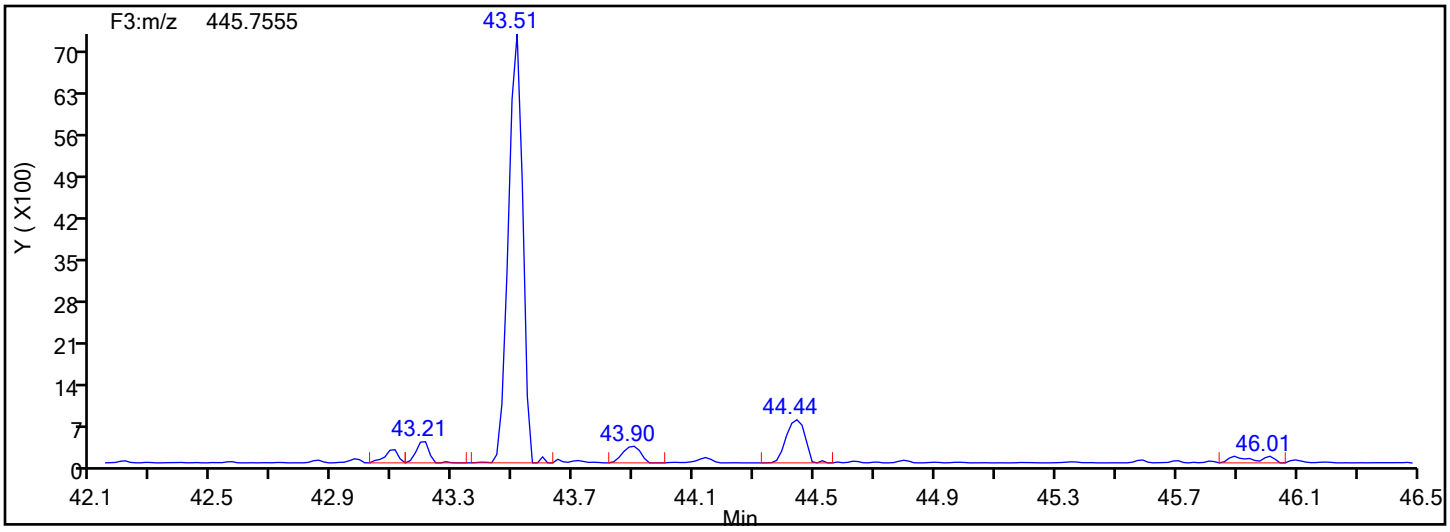
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

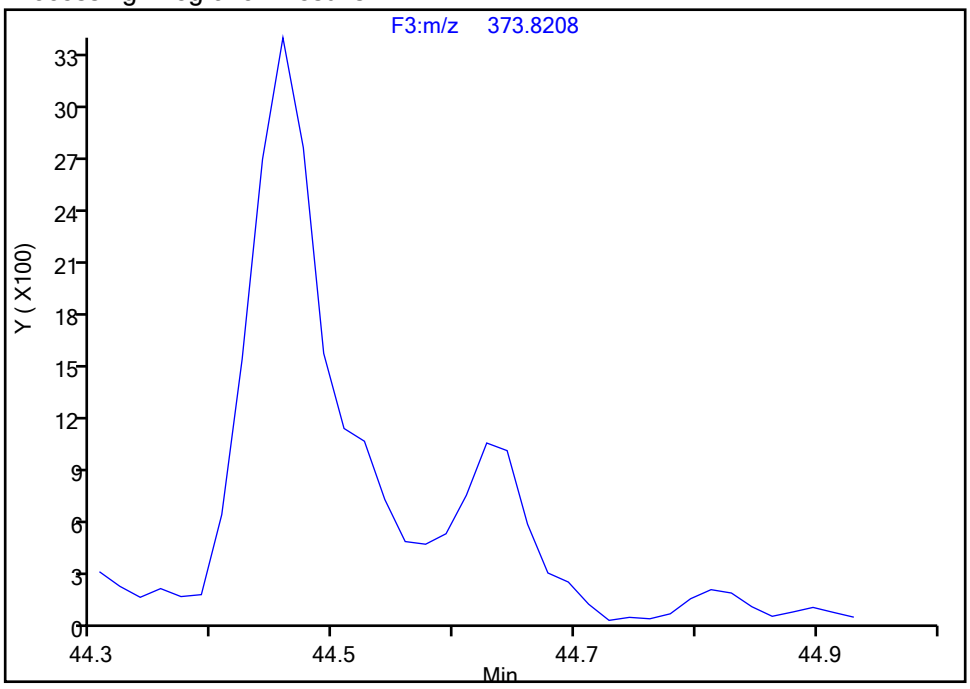
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

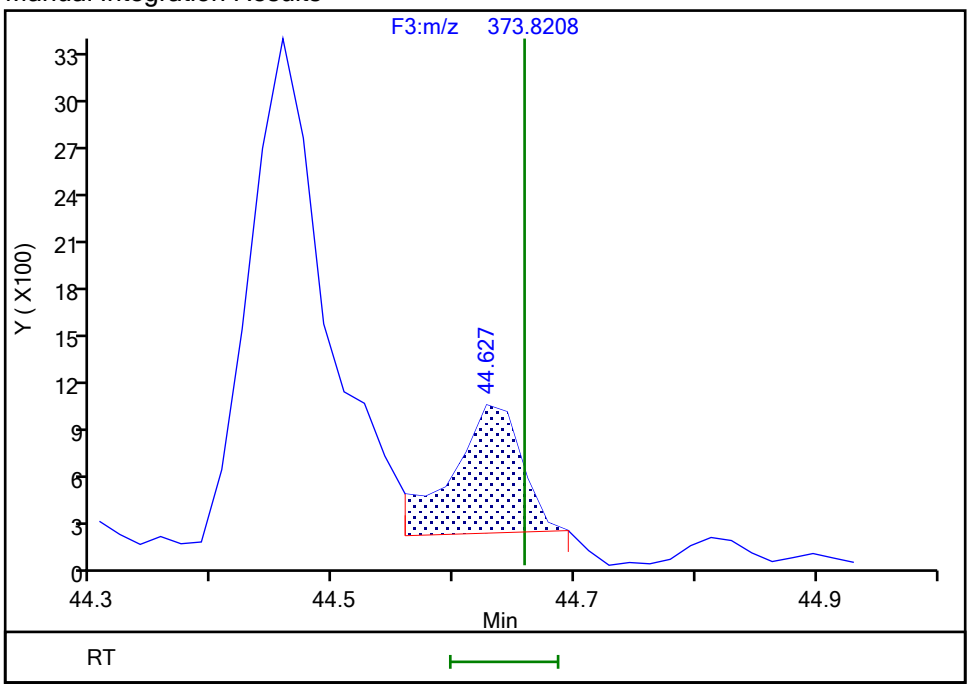
Not Detected
Expected RT: 44.66

Processing Integration Results



Manual Integration Results

RT: 44.63
Area: 3156
Amount: 0.127876
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:30:30
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

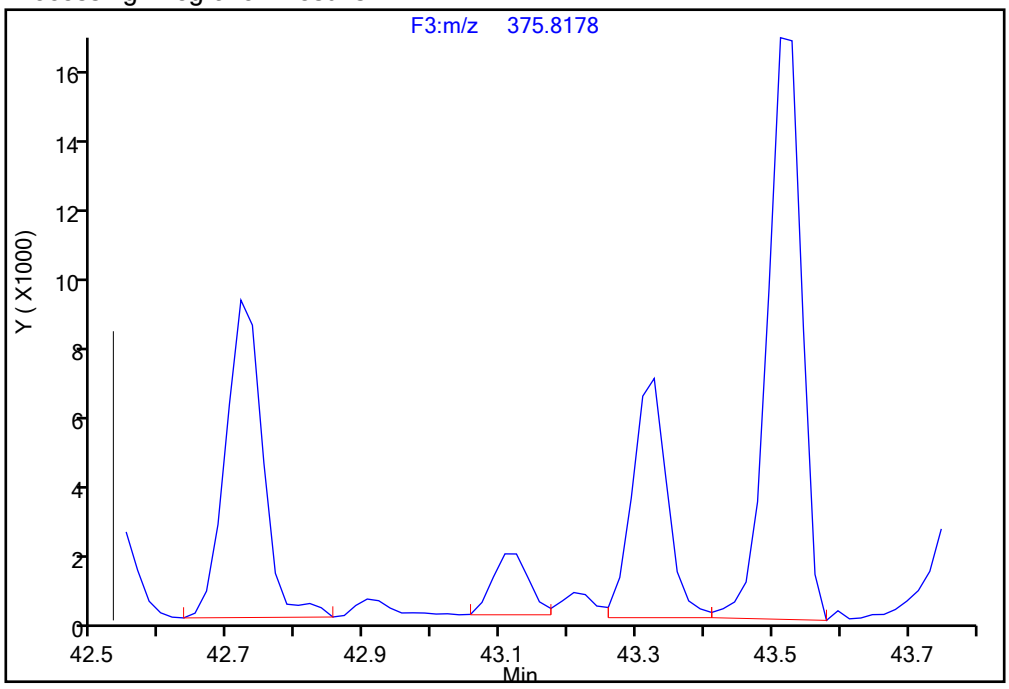
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.53- 45.77)

Signal: 2

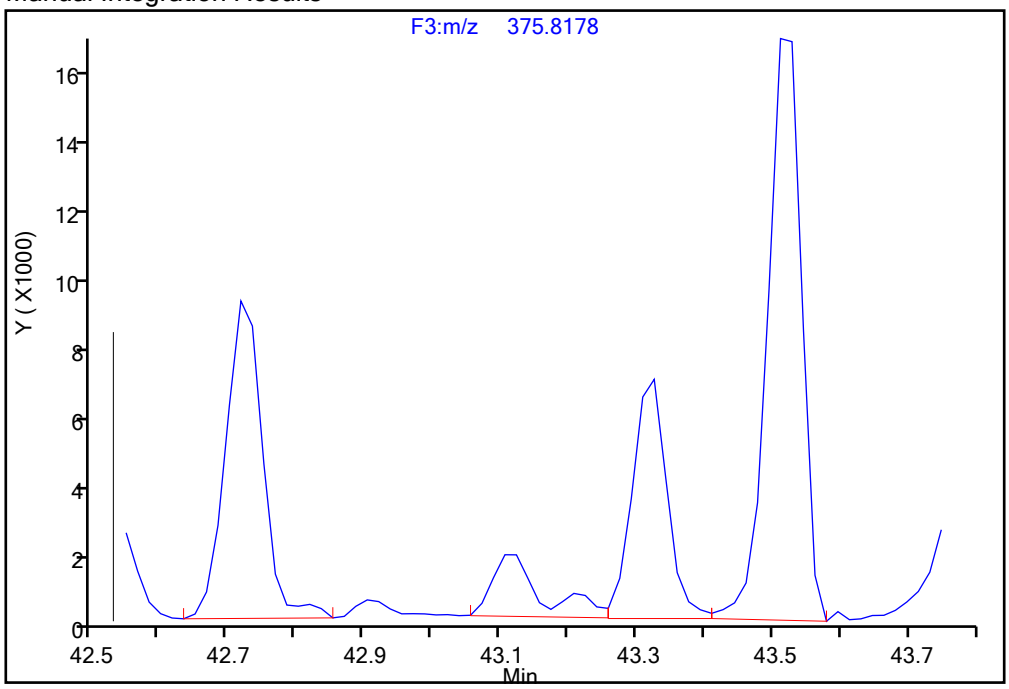
Processing Integration Results

RT = 43.107 Area = 6507



Manual Integration Results

RT = 43.107 Area = 8961 M



Reviewer: parslyt, 18-Dec-2019 03:31:44

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Eurofins TestAmerica, Knoxville

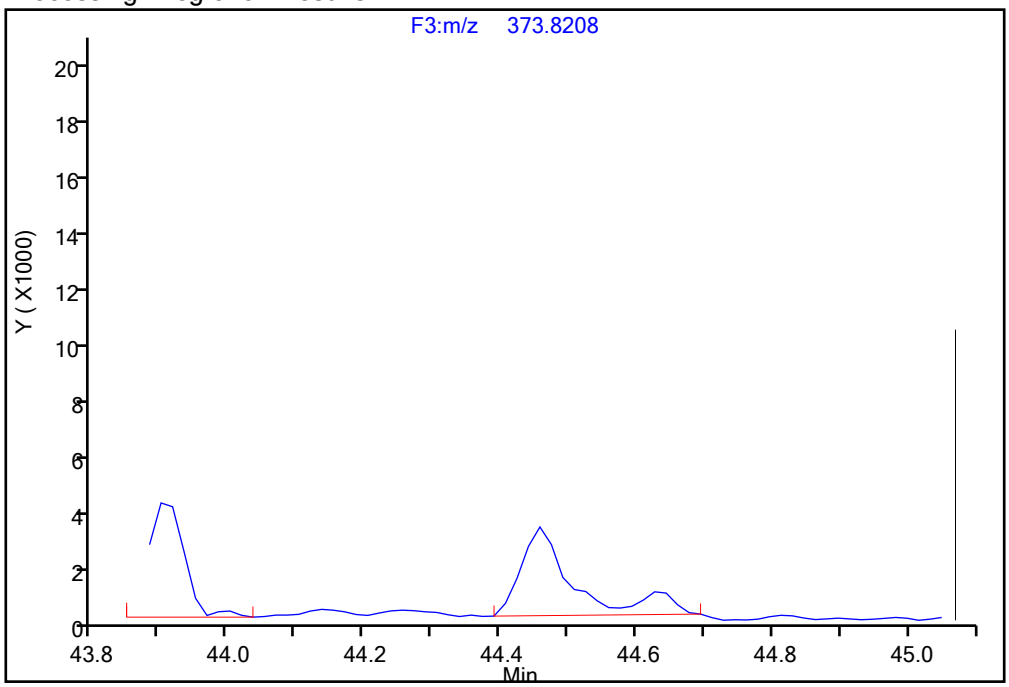
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

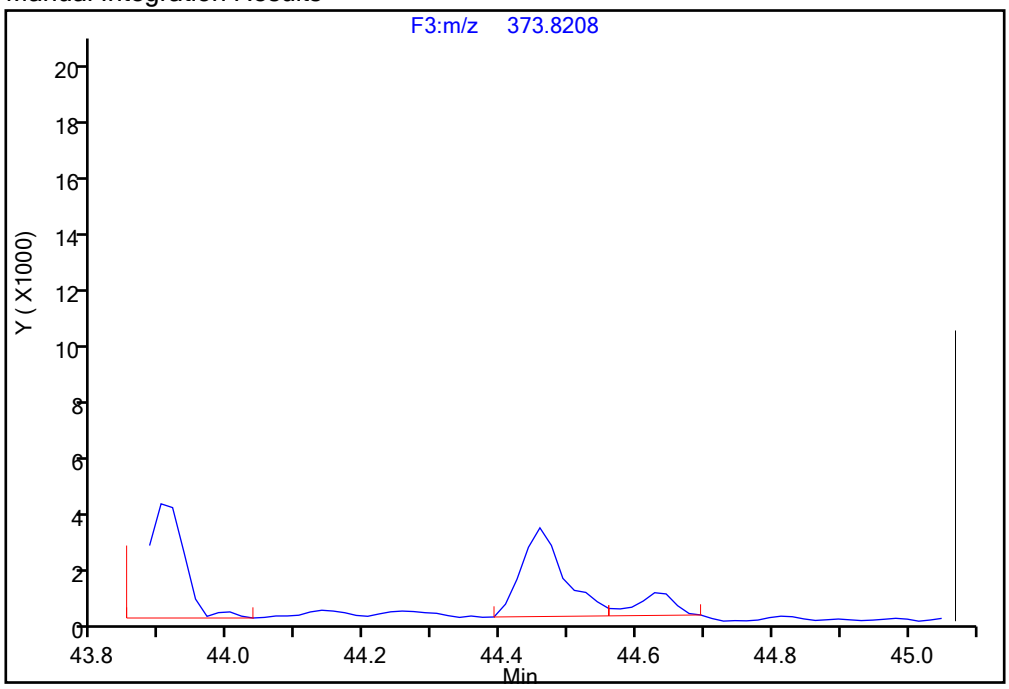
Processing Integration Results

RT = 44.458 Area = 16862



Manual Integration Results

RT = 44.458 Area = 13710 M



Reviewer: parslyt, 18-Dec-2019 03:31:16

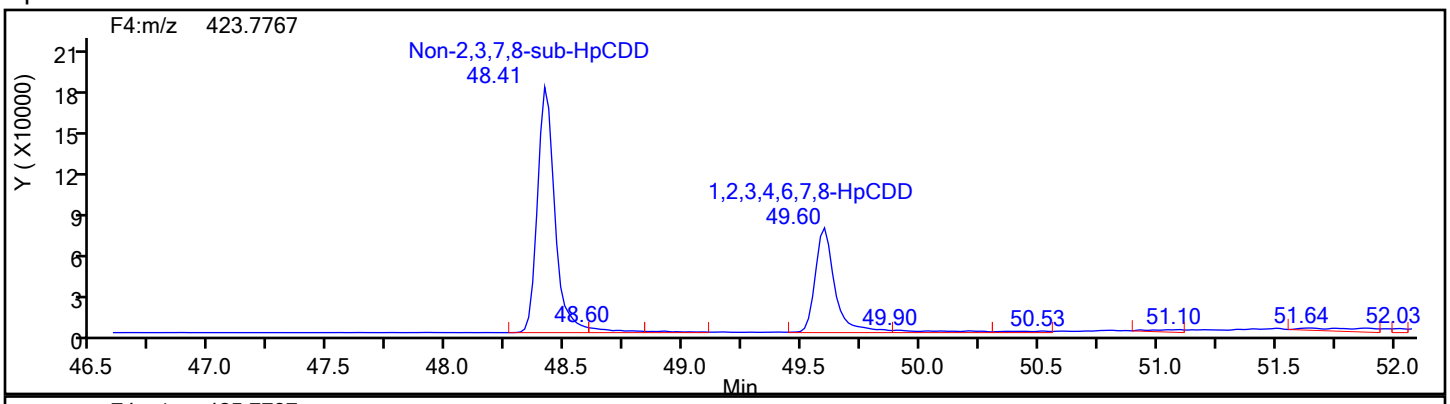
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

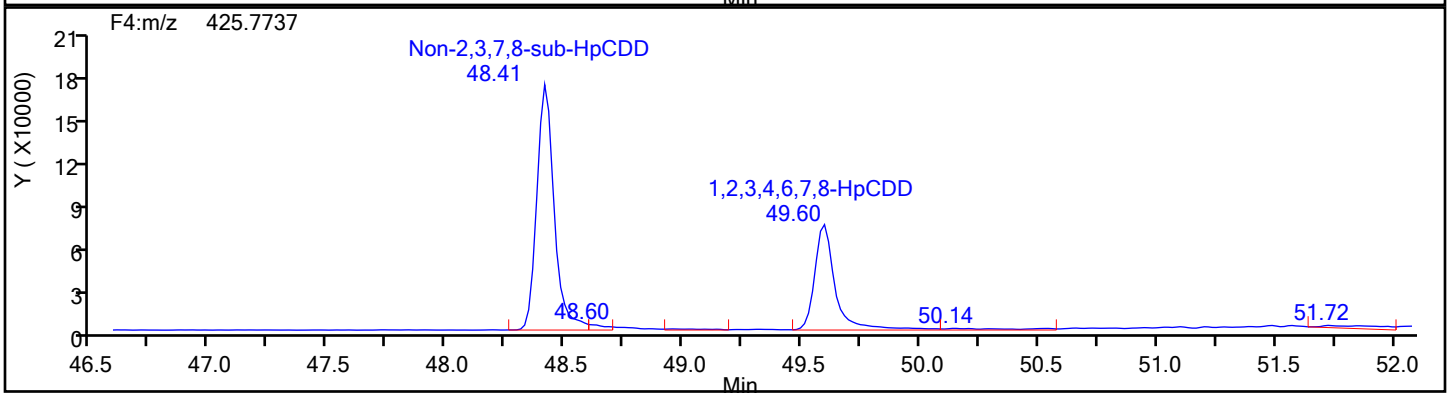
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

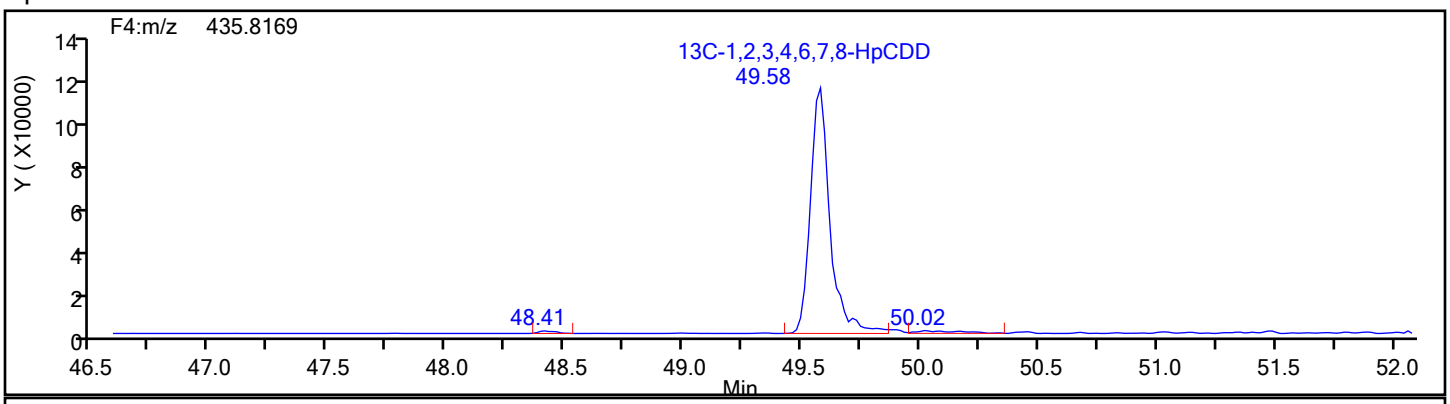
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

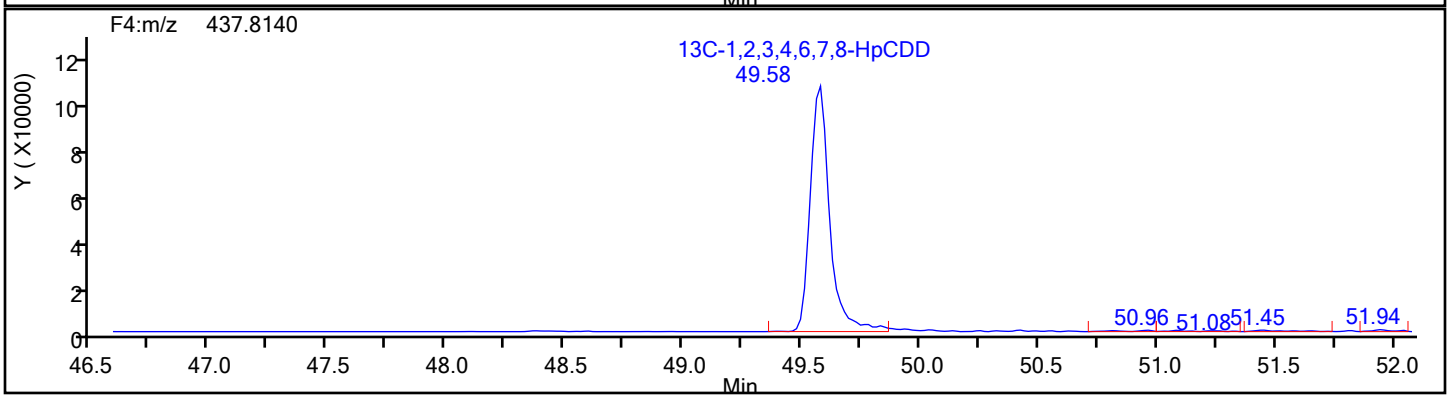
HpCDD





HpCDD Standards



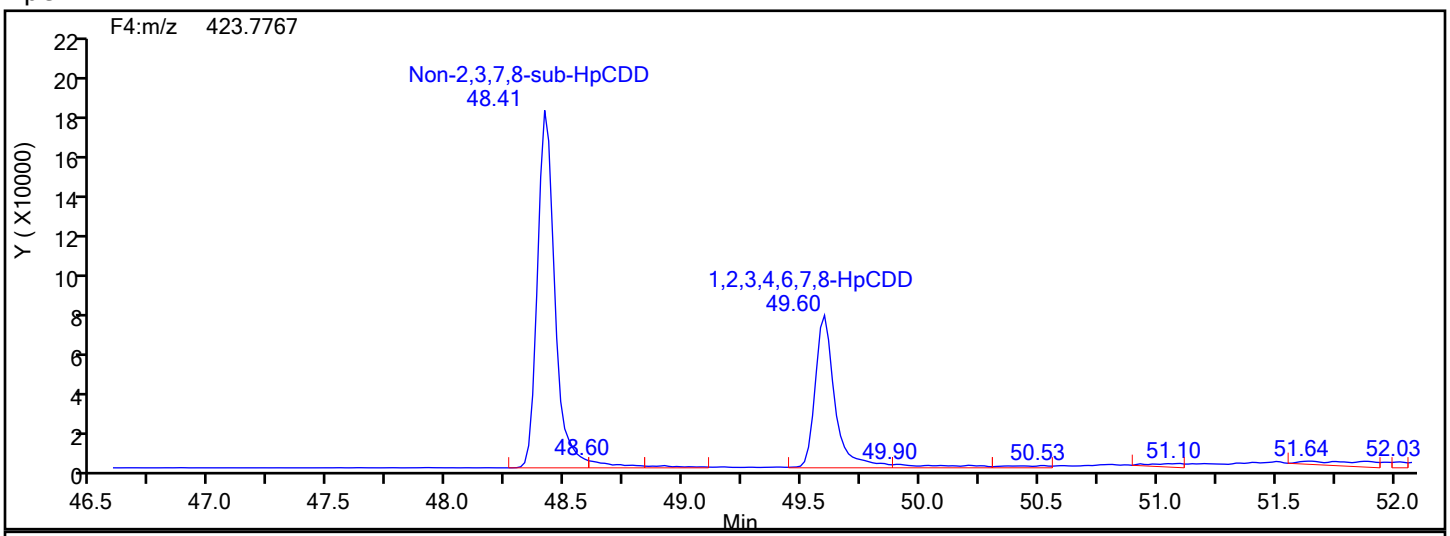


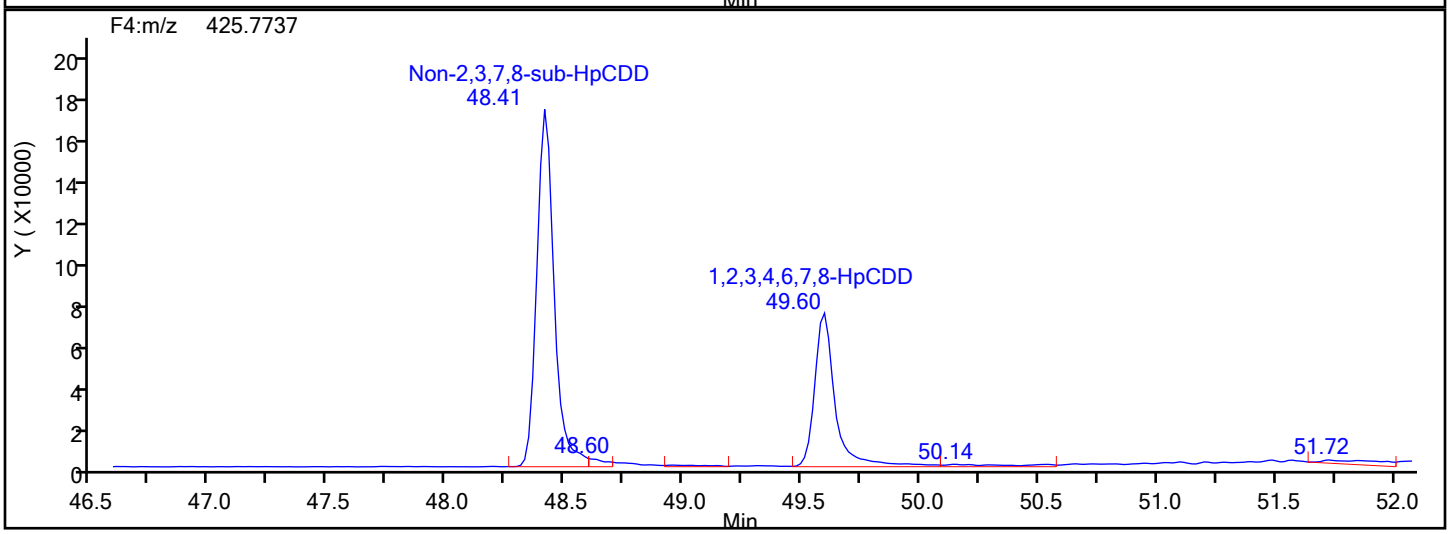
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

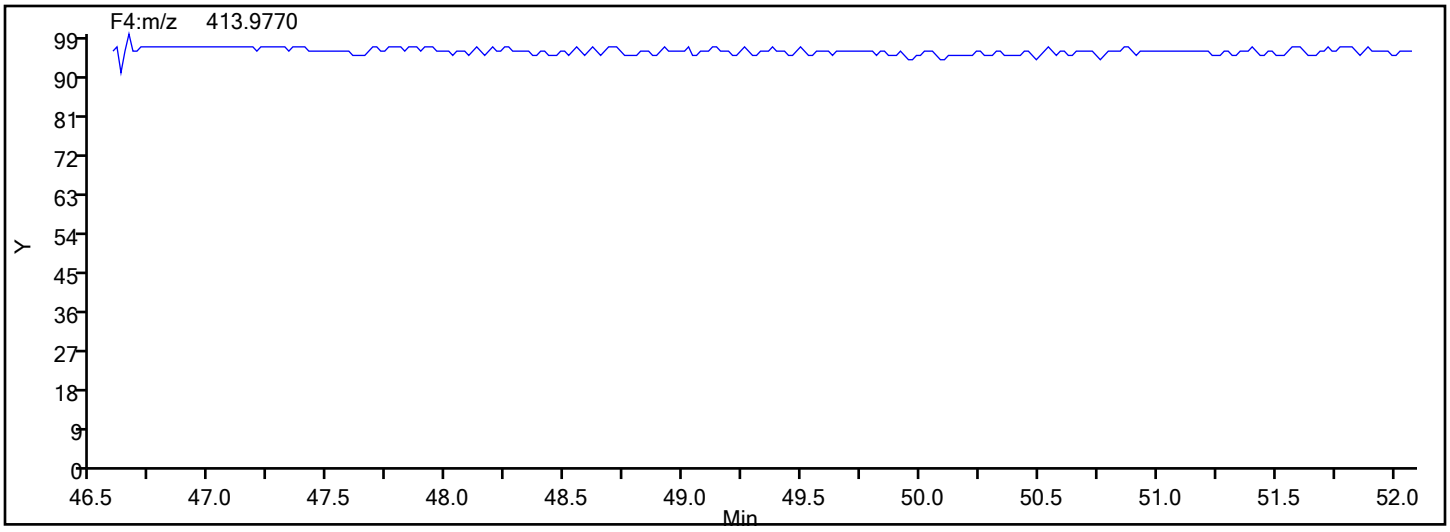
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

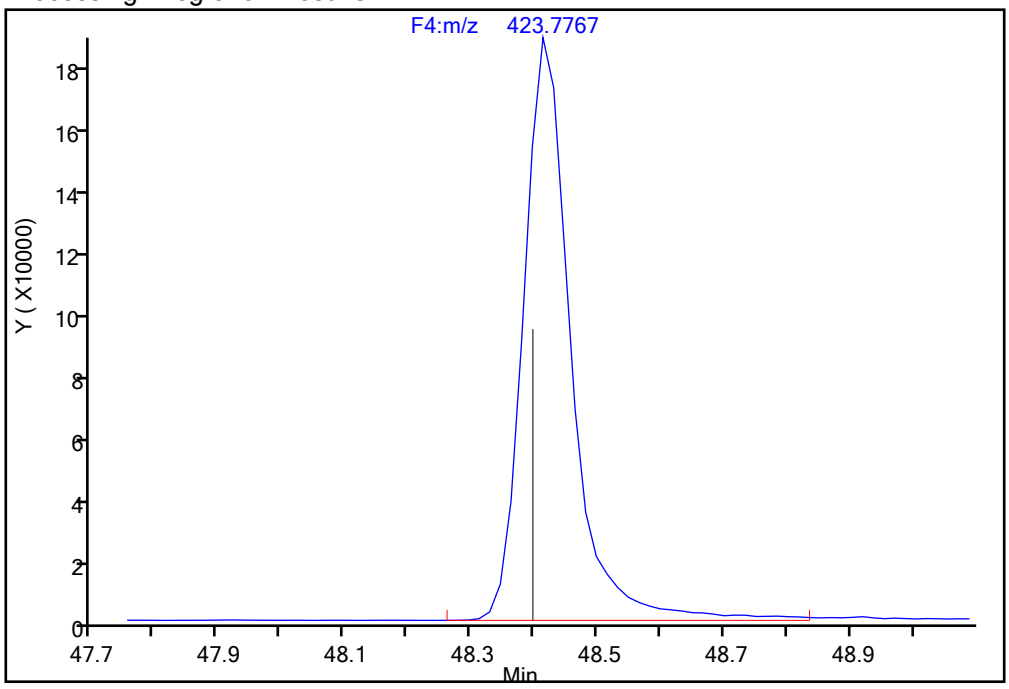
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7767, RT: (48.40- 49.68)

Signal: 1

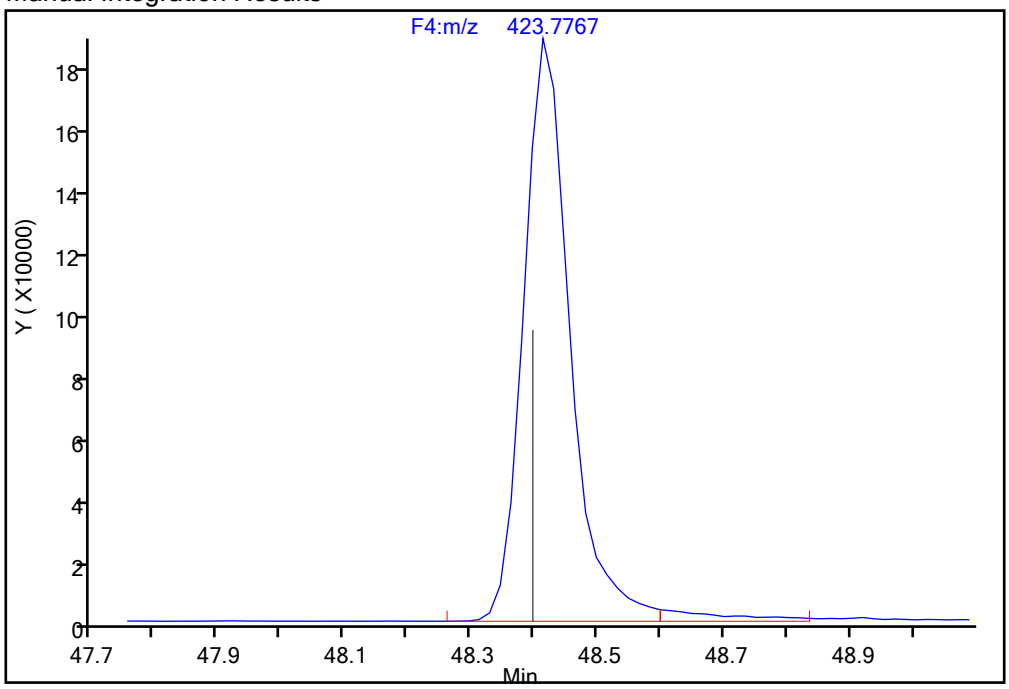
Processing Integration Results

RT = 48.414 Area = 947064



Manual Integration Results

RT = 48.414 Area = 921116 M



Reviewer: parslyt, 18-Dec-2019 03:33:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

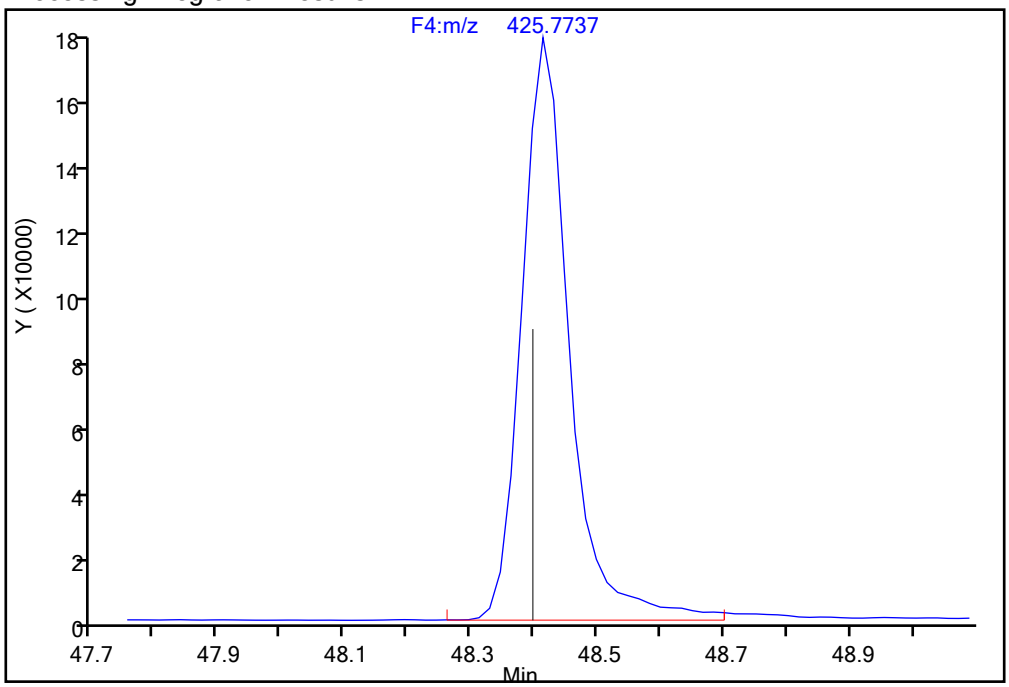
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (48.40- 49.68)

Signal: 2

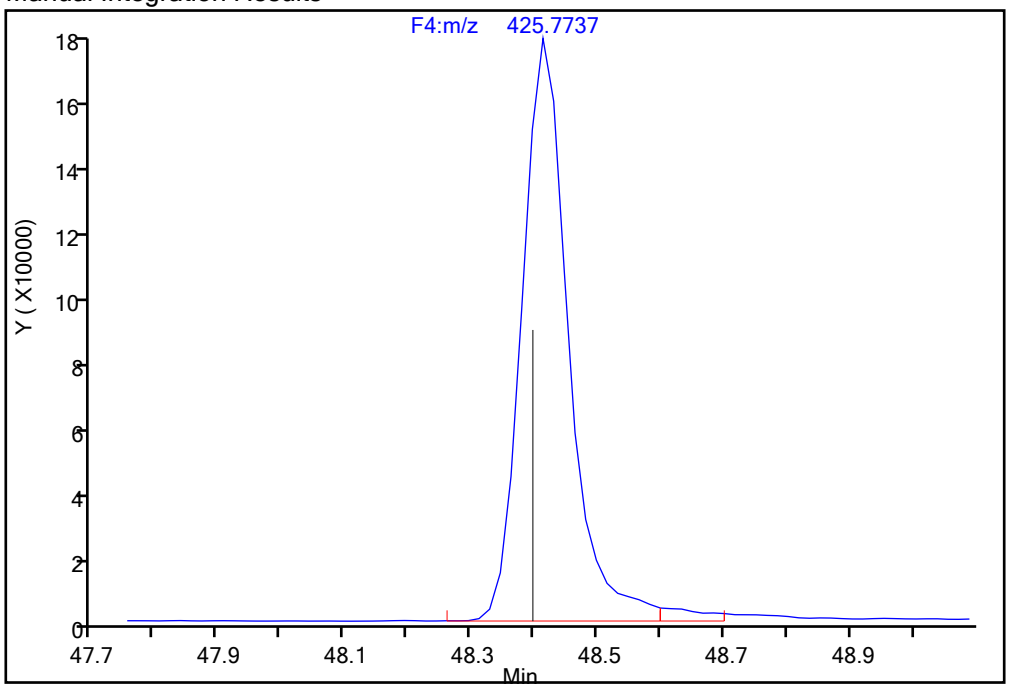
Processing Integration Results

RT = 48.414 Area = 890841



Manual Integration Results

RT = 48.414 Area = 873113 M



Reviewer: parslyt, 18-Dec-2019 03:33:03

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

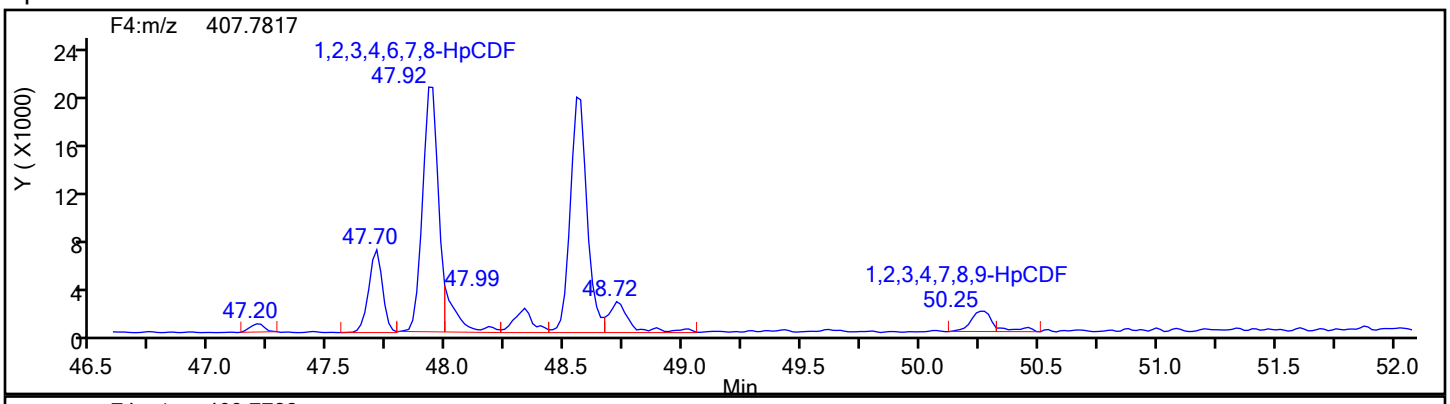
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

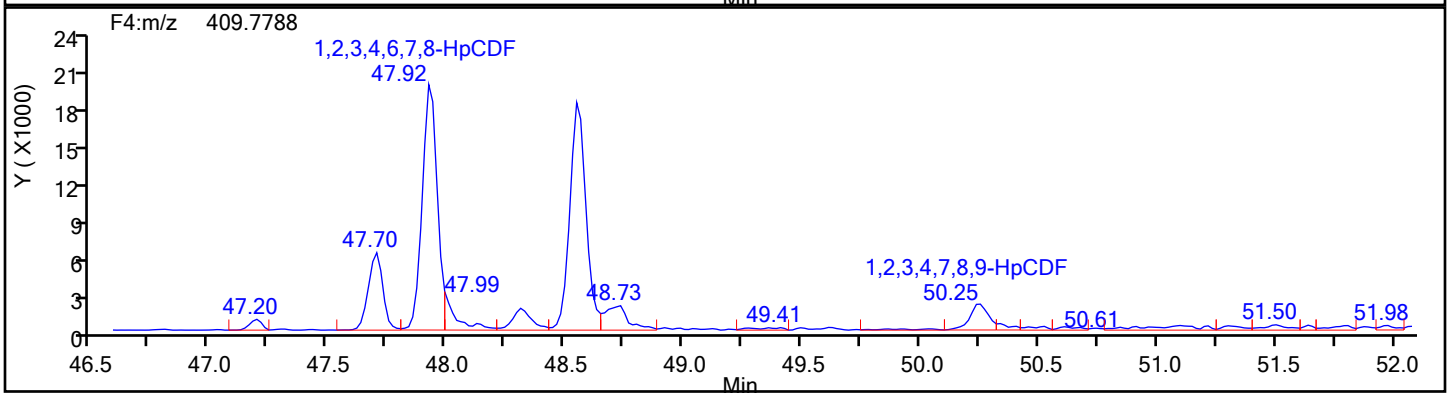
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d

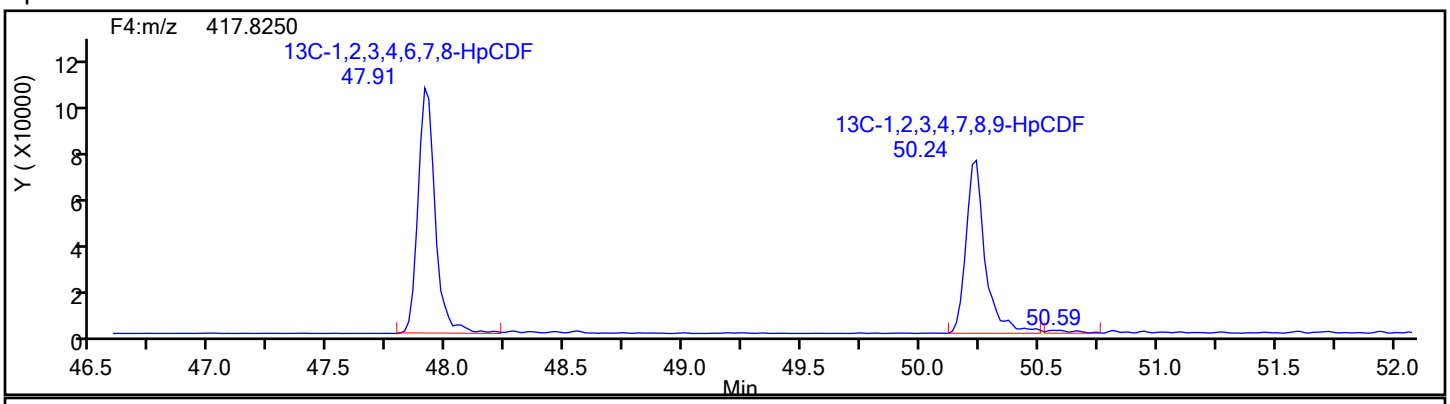
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

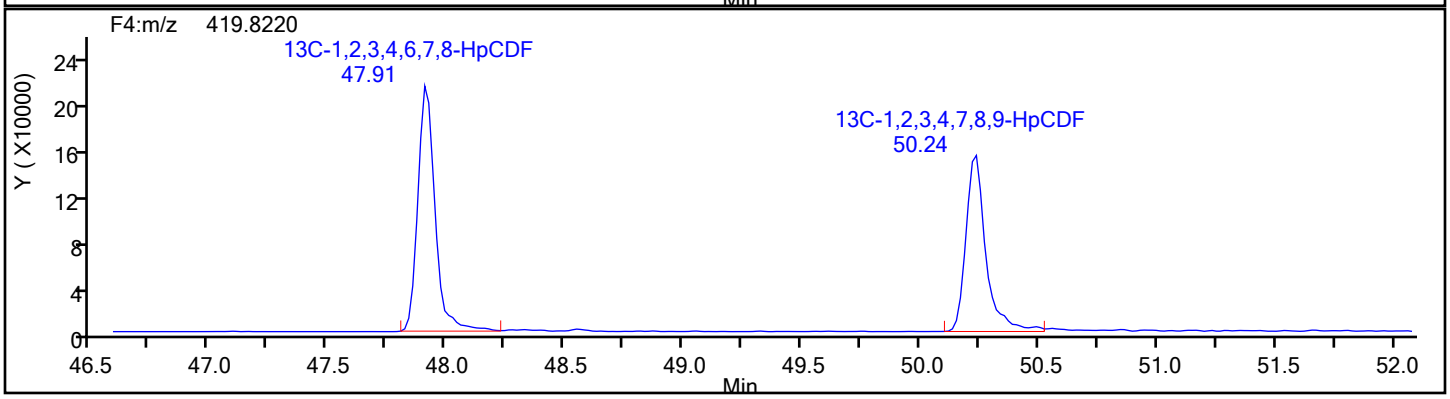
HpCDF





HpCDF Standards



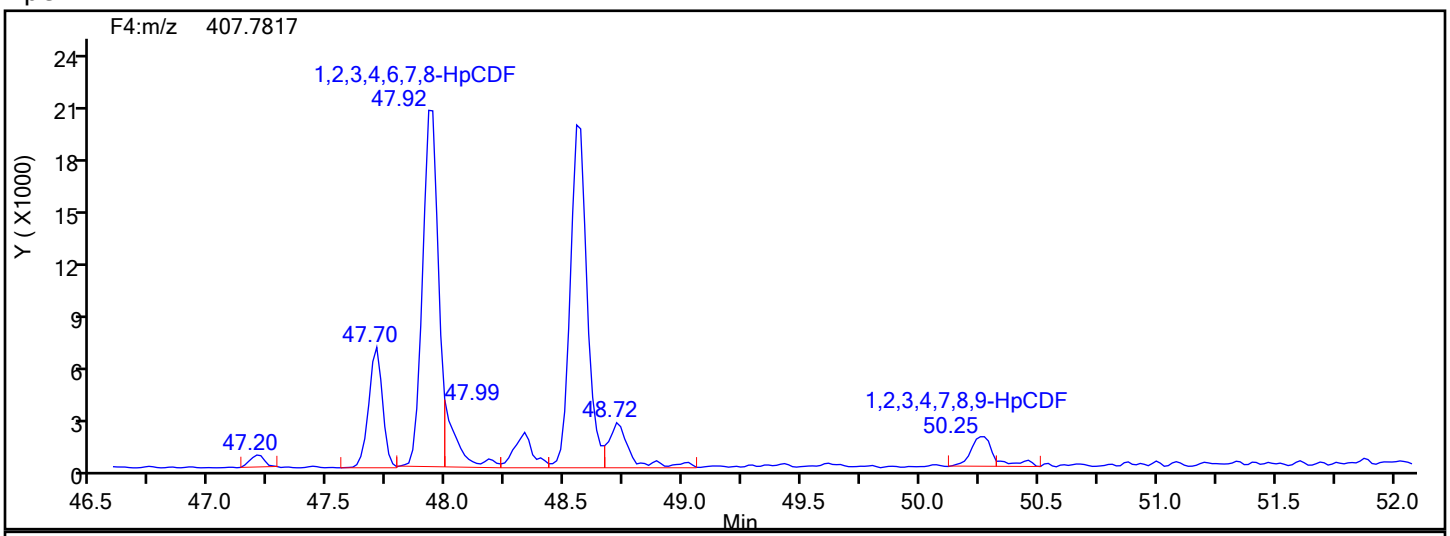


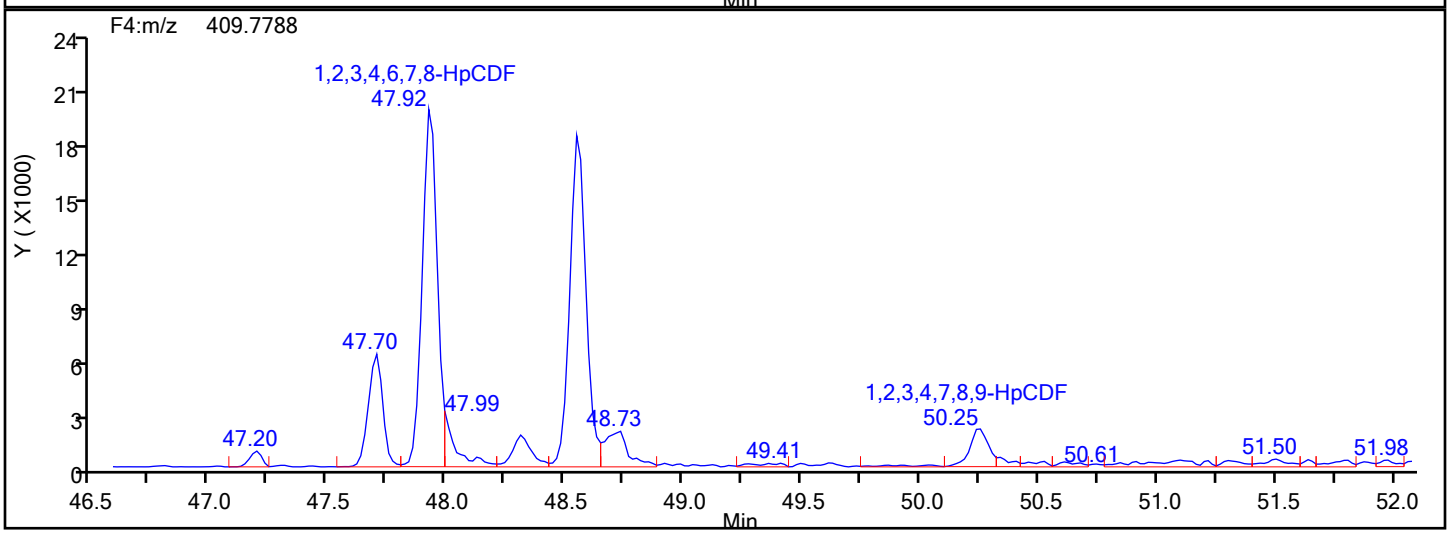
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

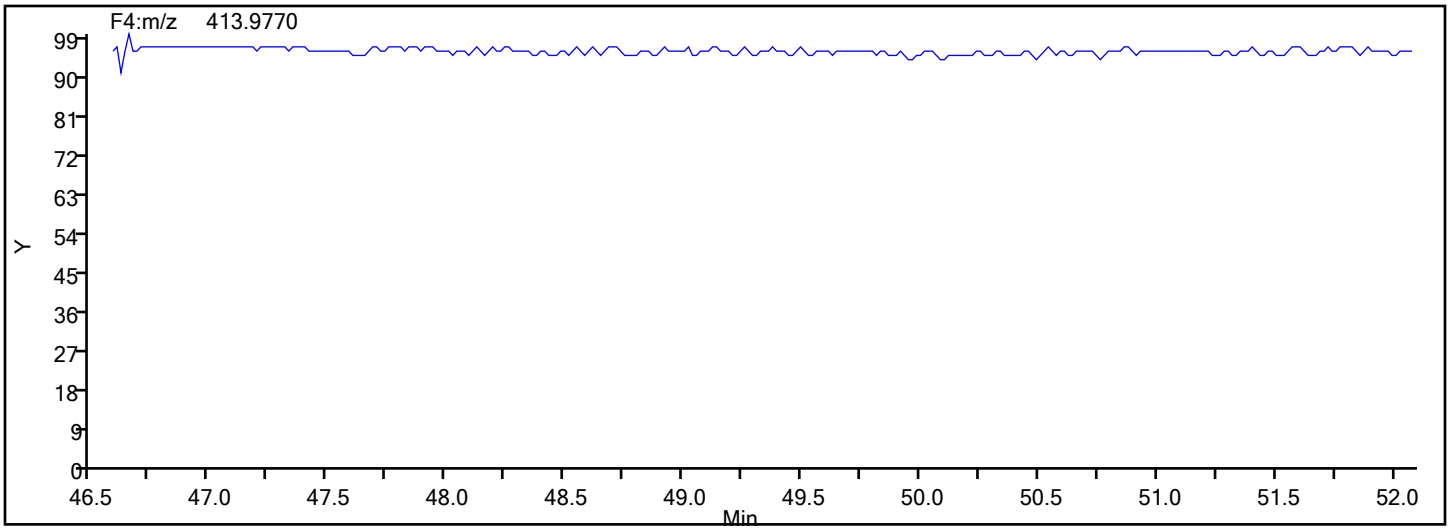
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

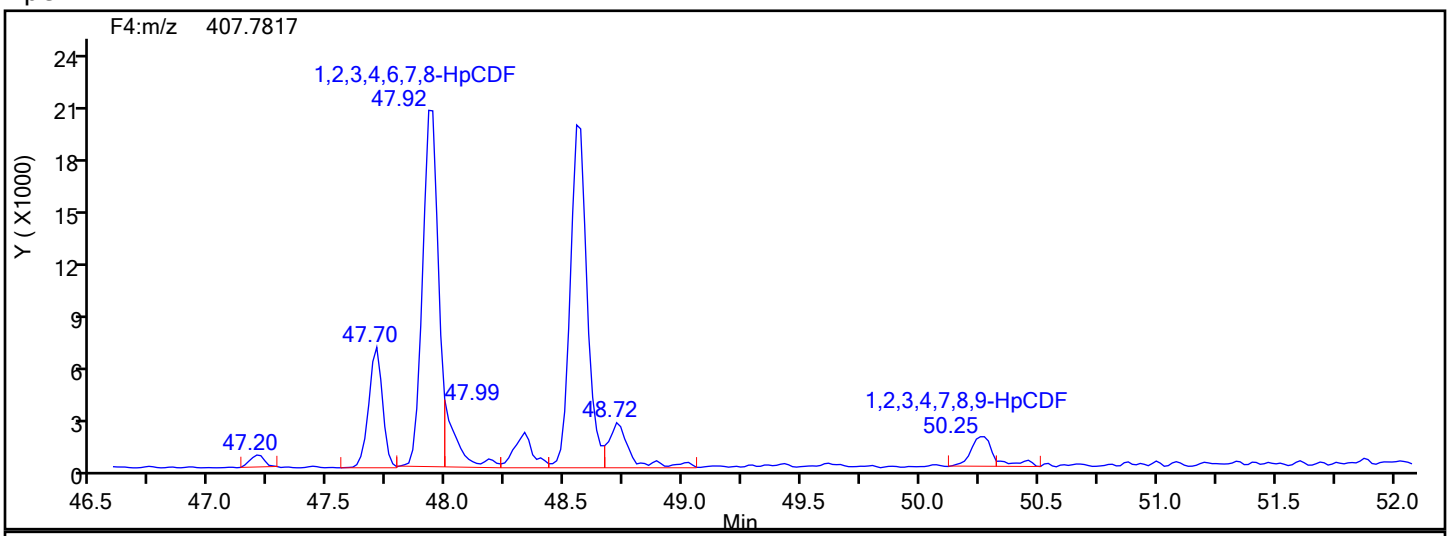


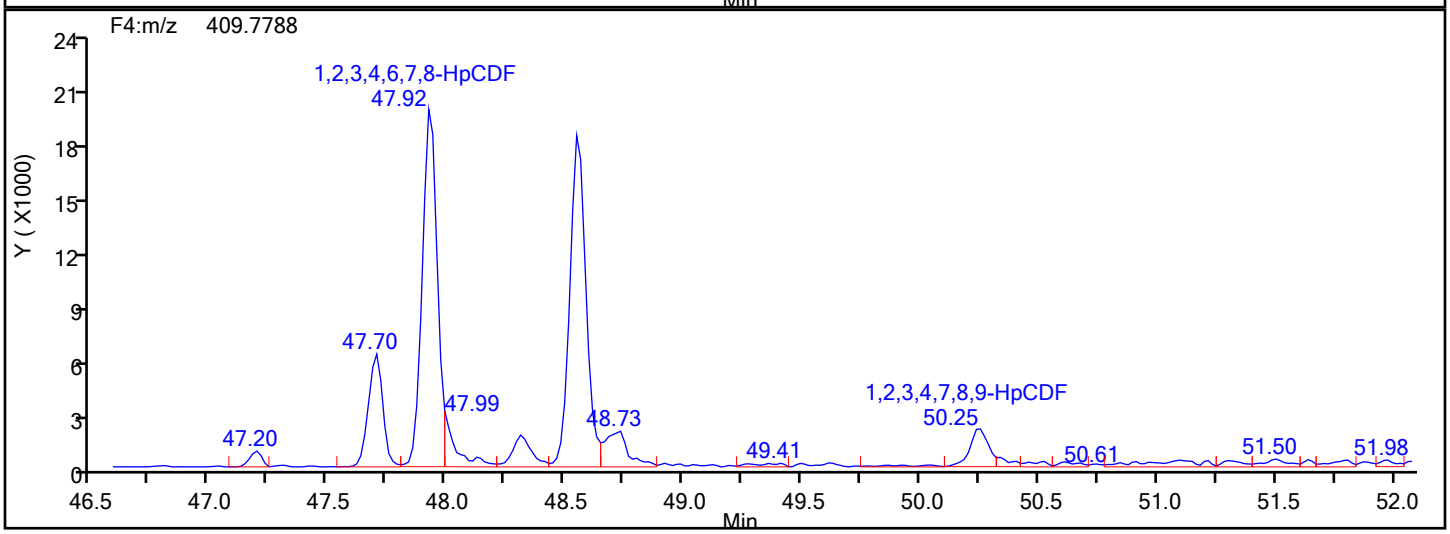
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

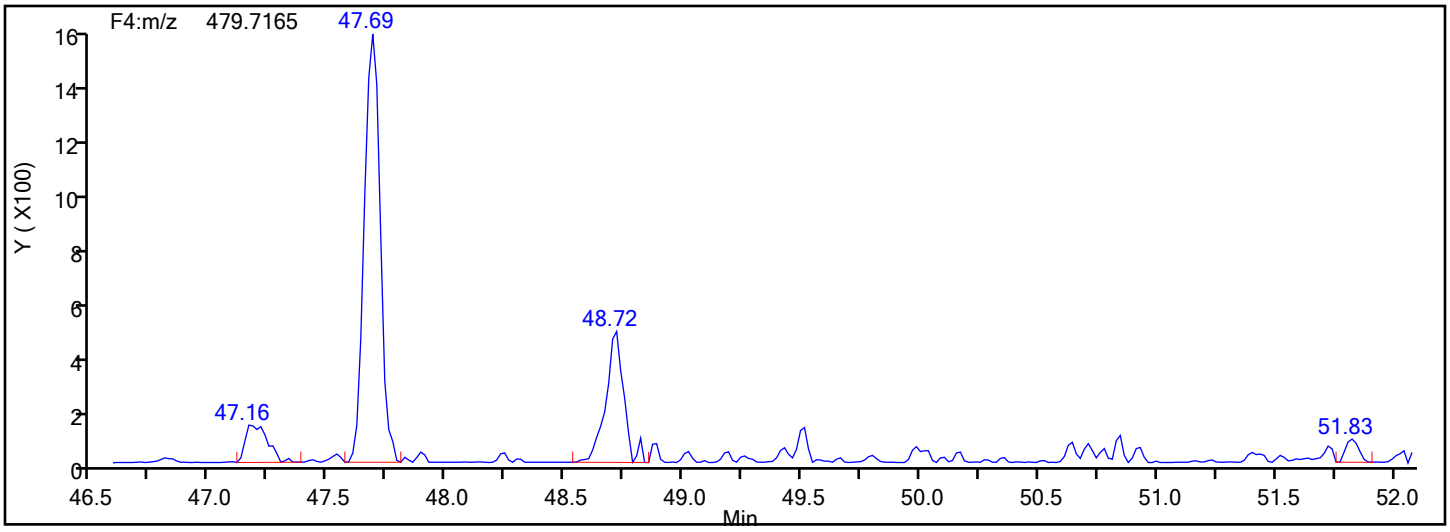
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

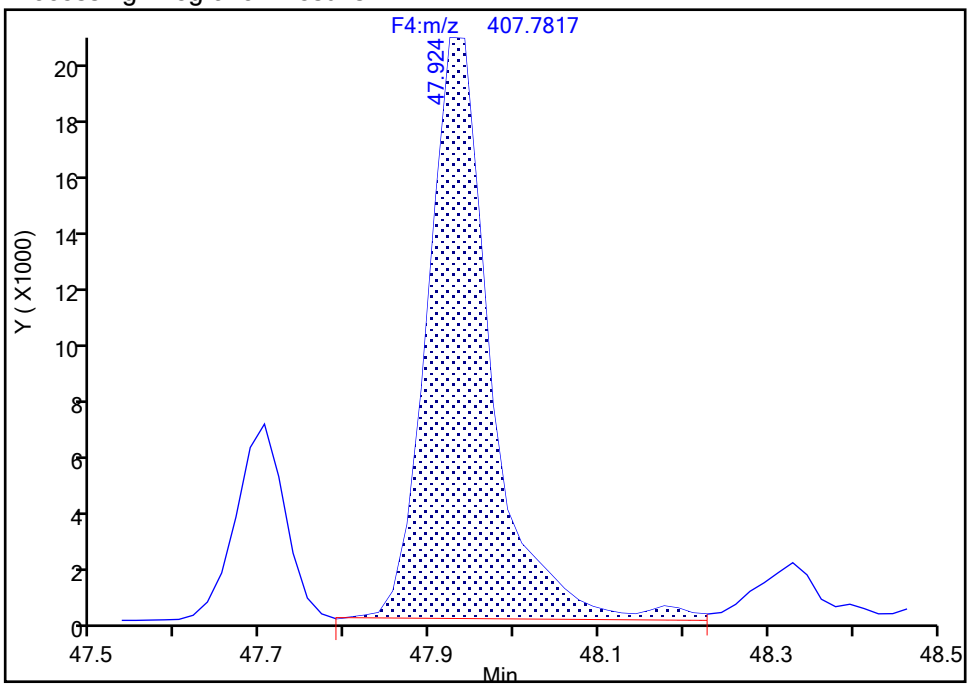
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

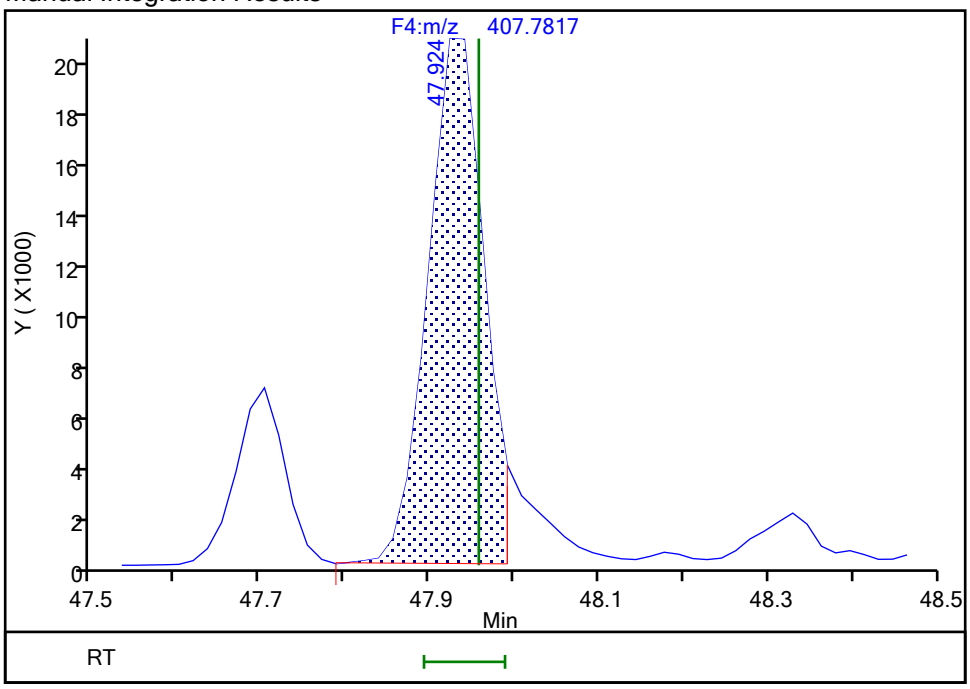
Processing Integration Results

RT: 47.92
Area: 104452
Amount: 4.235836
Amount Units: pg/ul



Manual Integration Results

RT: 47.92
Area: 91629
Amount: 3.761771
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:33:45
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

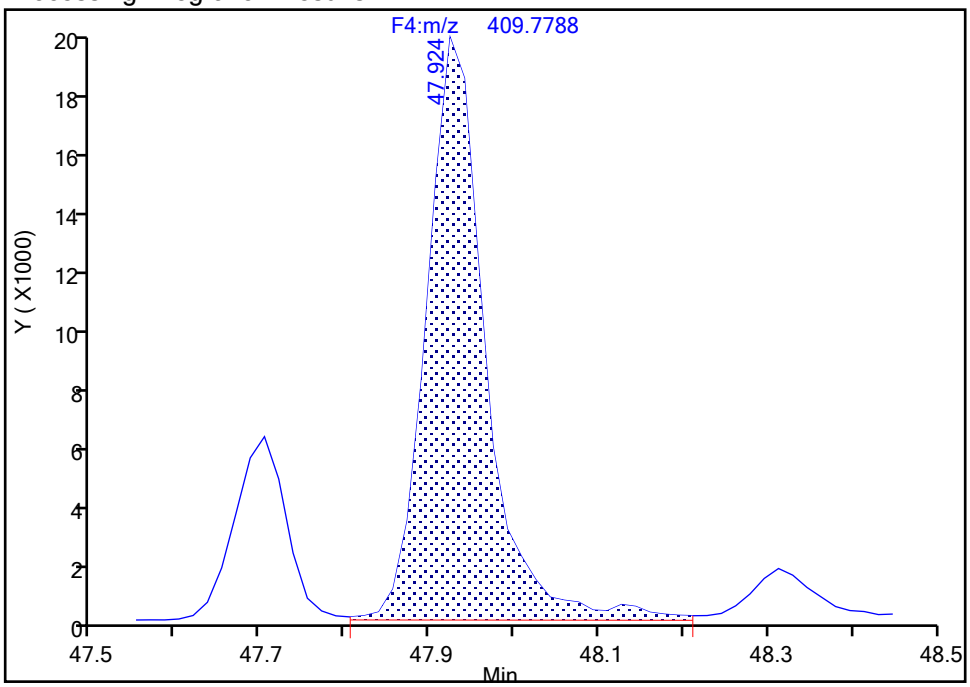
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

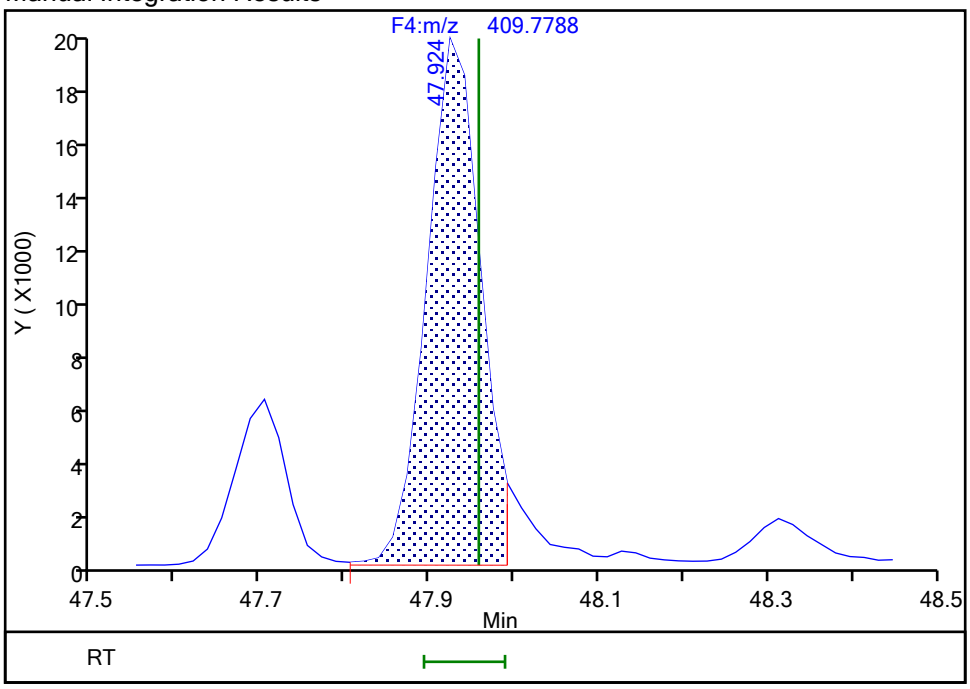
Processing Integration Results

RT: 47.92
Area: 95588
Amount: 4.235836
Amount Units: pg/ul



Manual Integration Results

RT: 47.92
Area: 86023
Amount: 3.761771
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:33:49
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

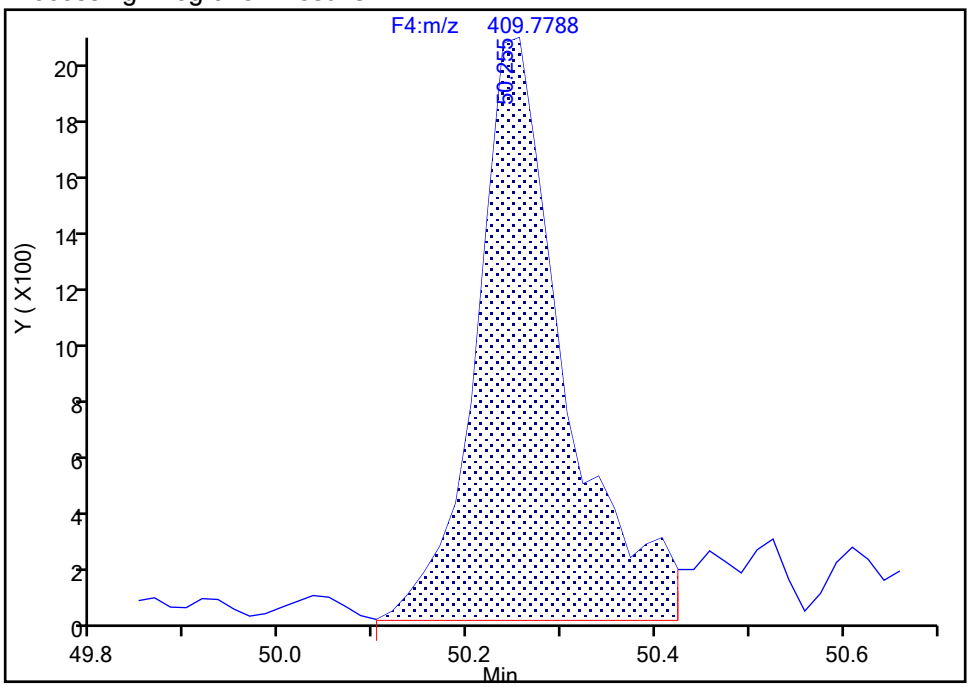
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

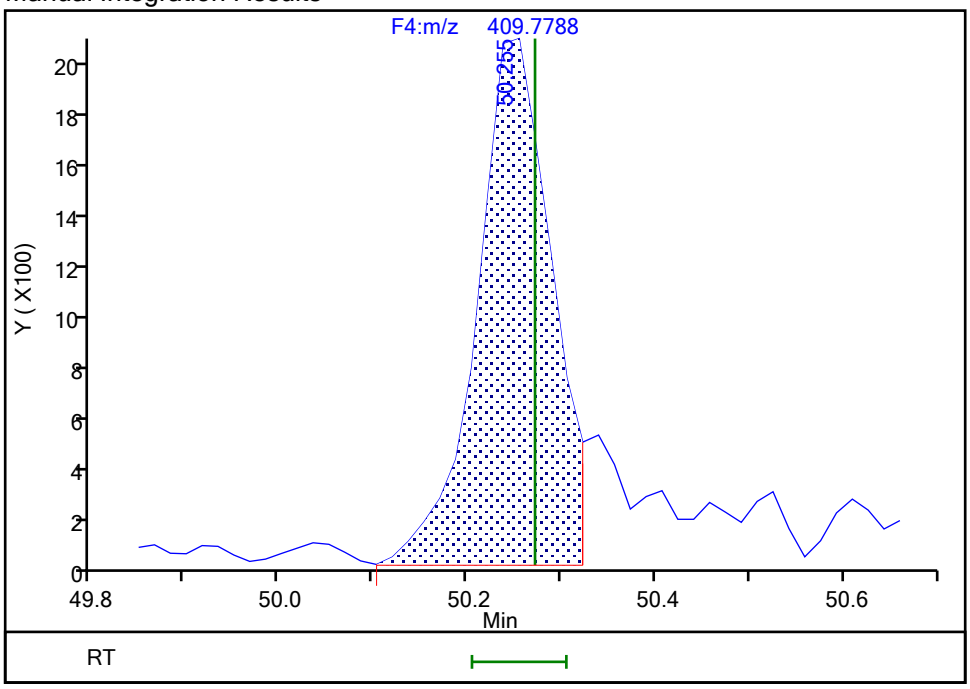
Processing Integration Results

RT: 50.25
Area: 13342
Amount: 0.703912
Amount Units: pg/ul



Manual Integration Results

RT: 50.25
Area: 11298
Amount: 0.582547
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:34:11

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

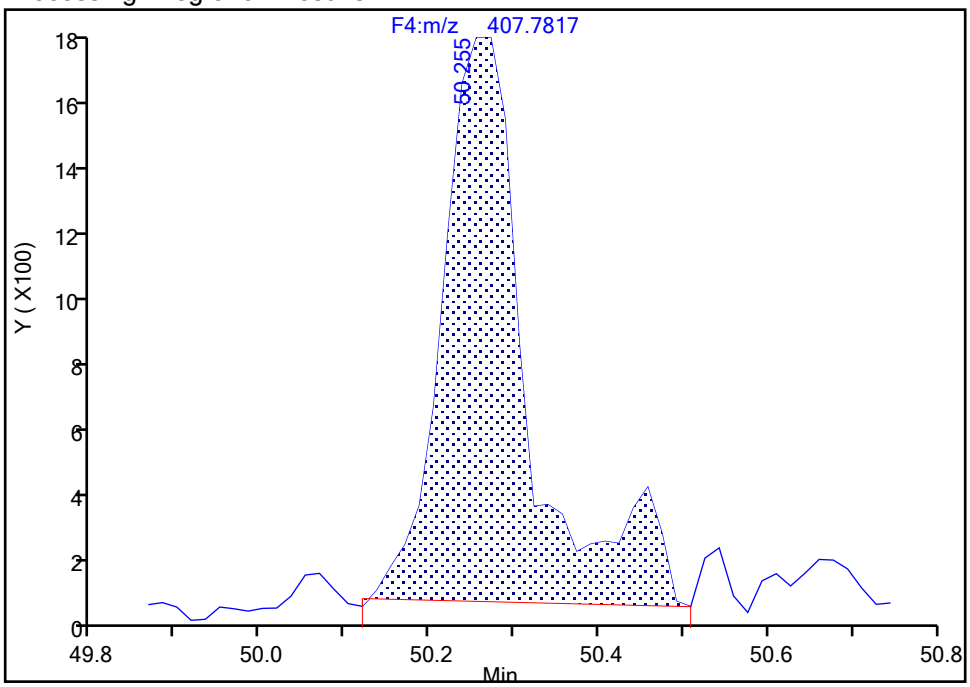
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

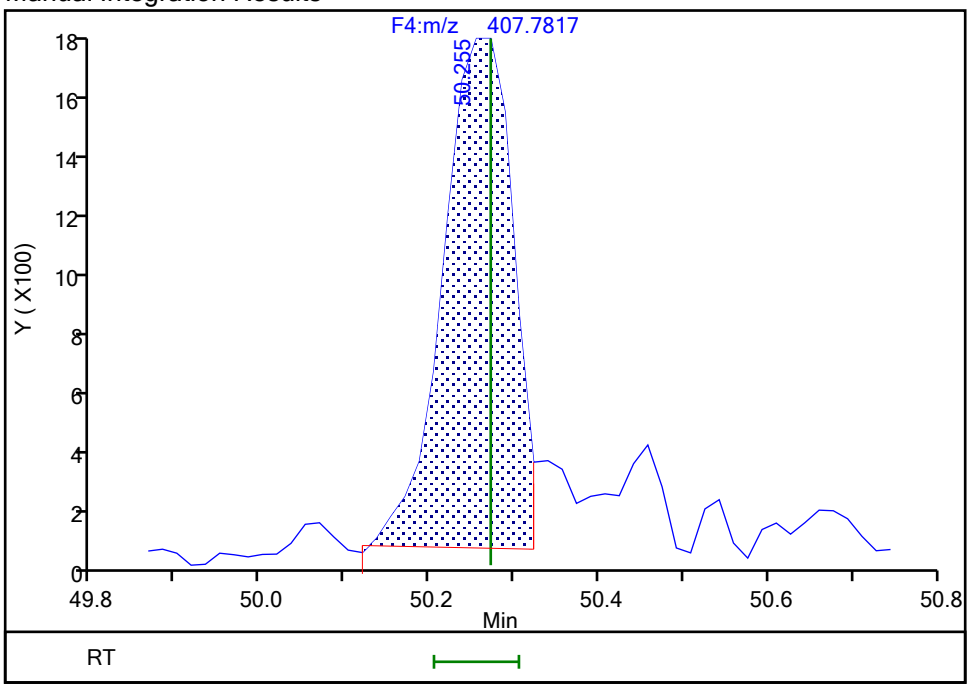
Processing Integration Results

RT: 50.25
Area: 11766
Amount: 0.703912
Amount Units: pg/ul



Manual Integration Results

RT: 50.25
Area: 9481
Amount: 0.582547
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:34:14

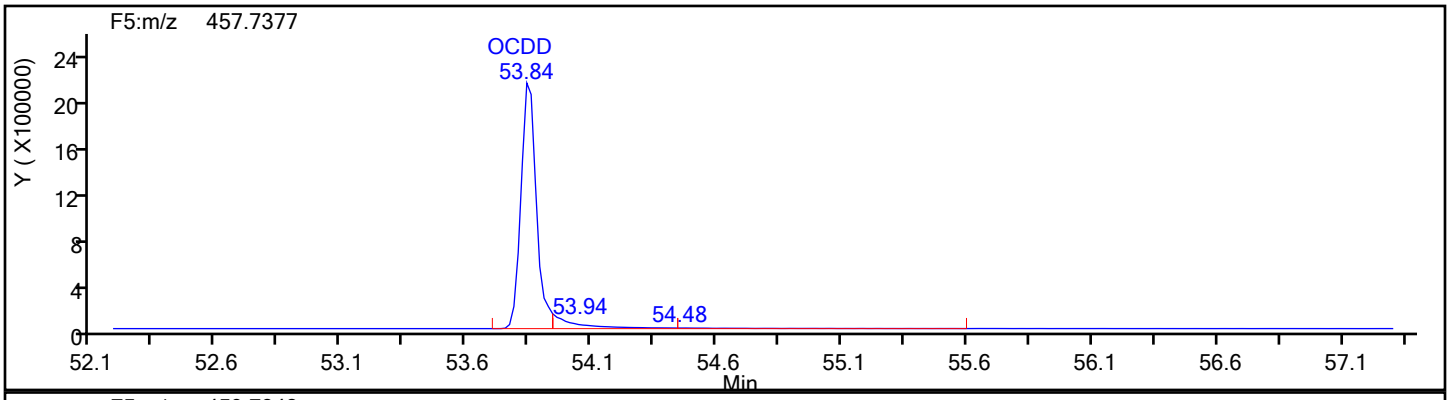
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

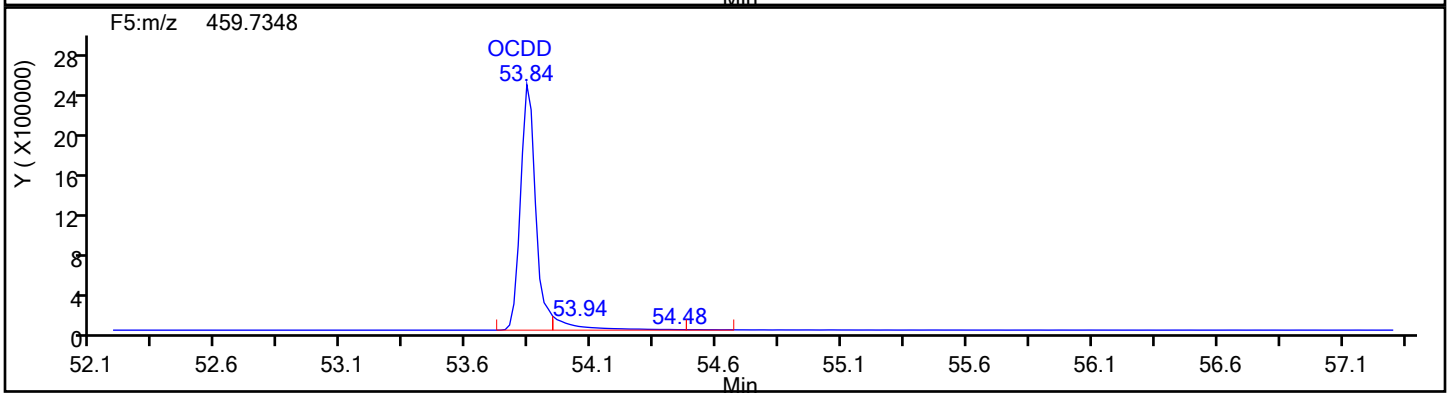
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

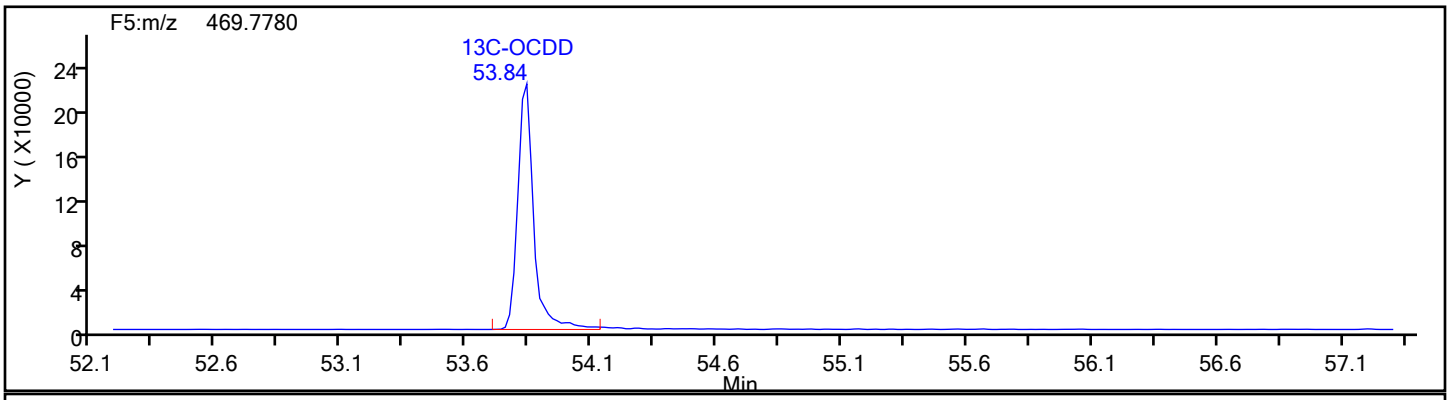
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

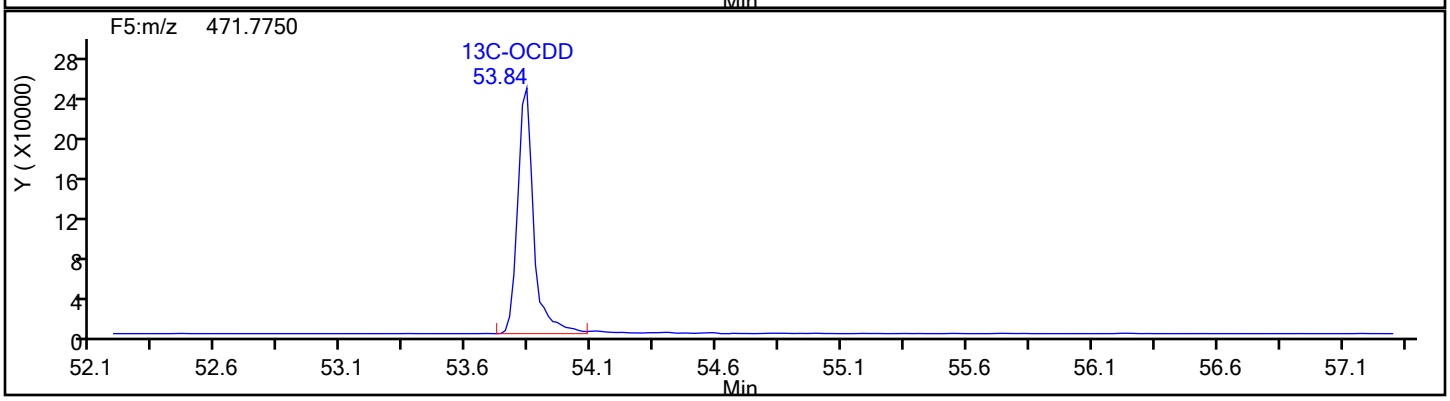
OCDD





OCDD Standards



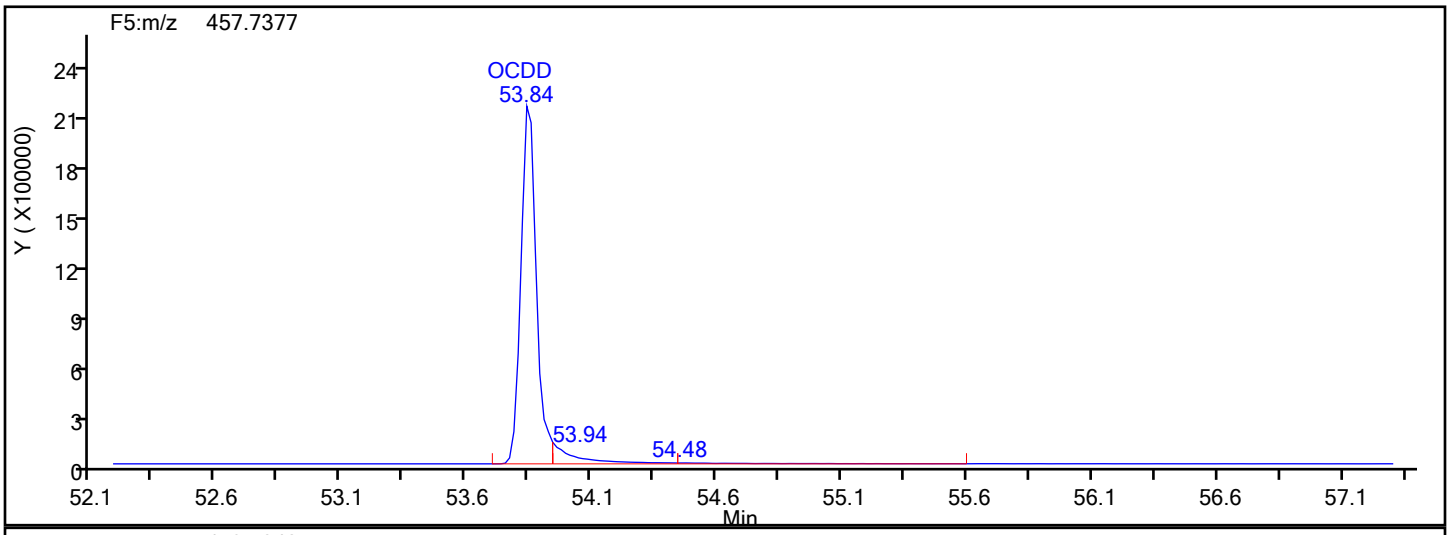


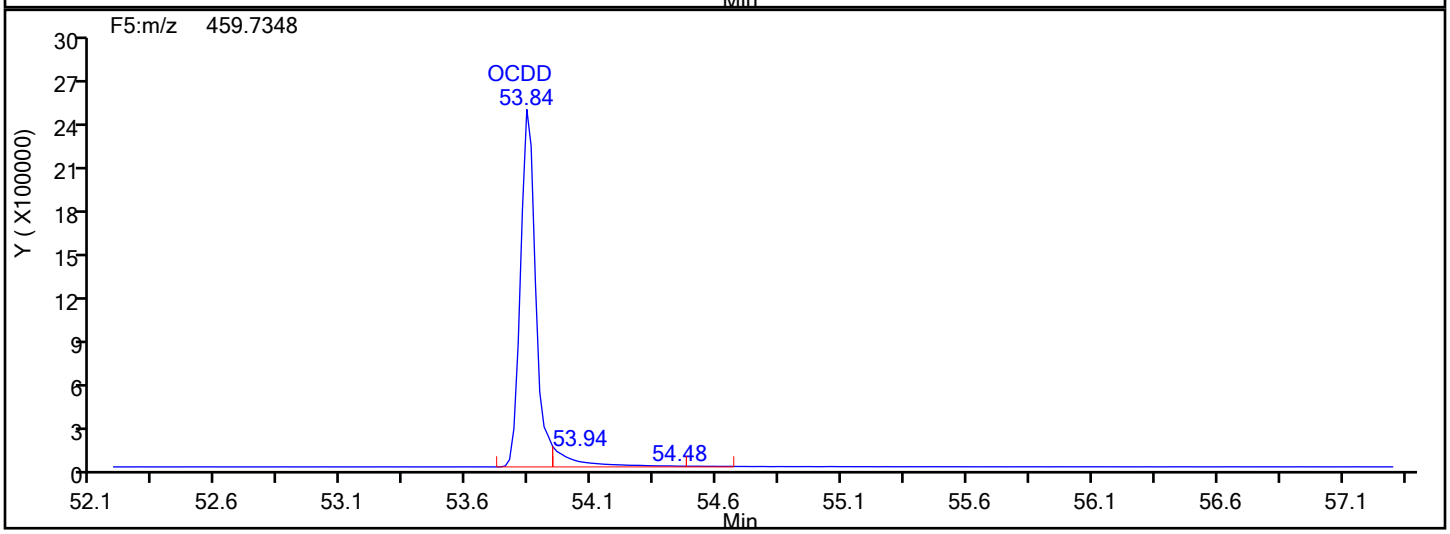
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

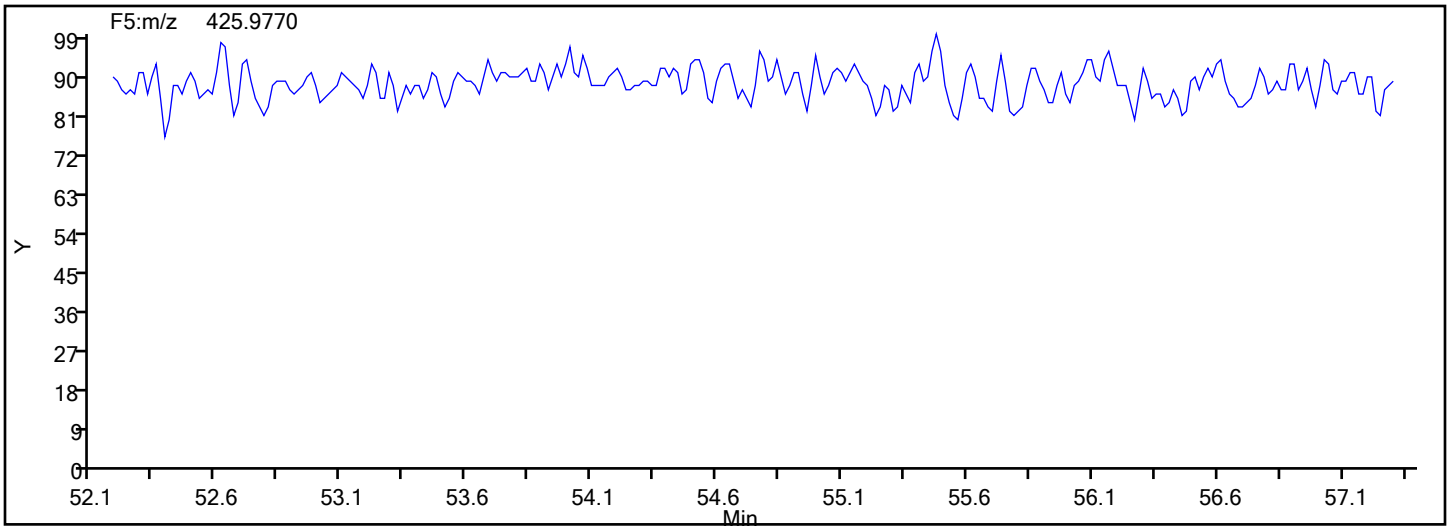
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

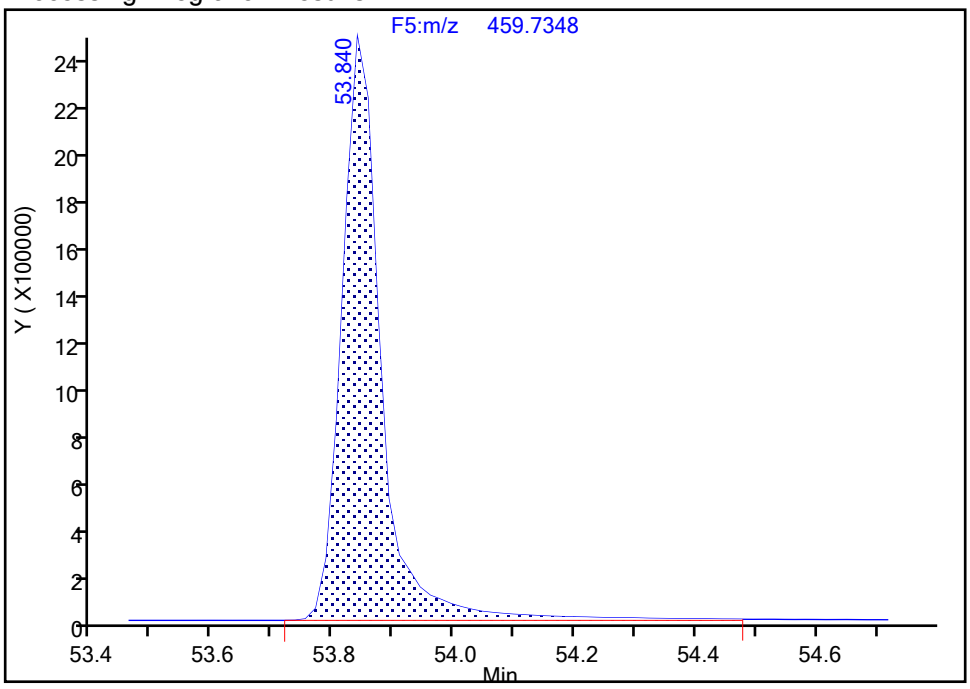
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 2

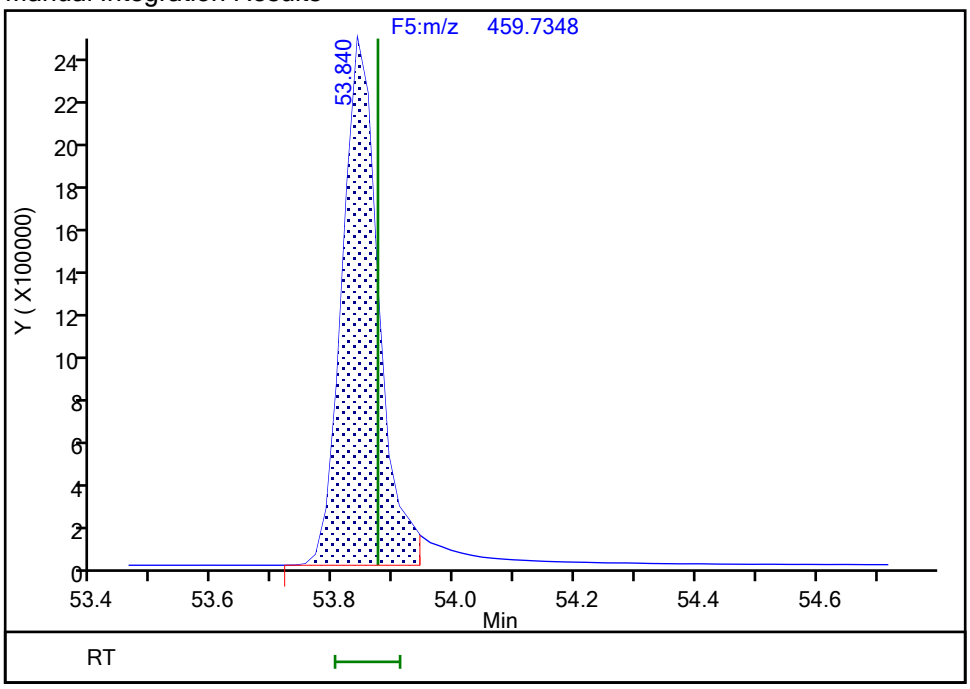
Processing Integration Results

RT: 53.84
Area: 11006207
Amount: 837.6856
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 10187547
Amount: 774.6173
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:35:20
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

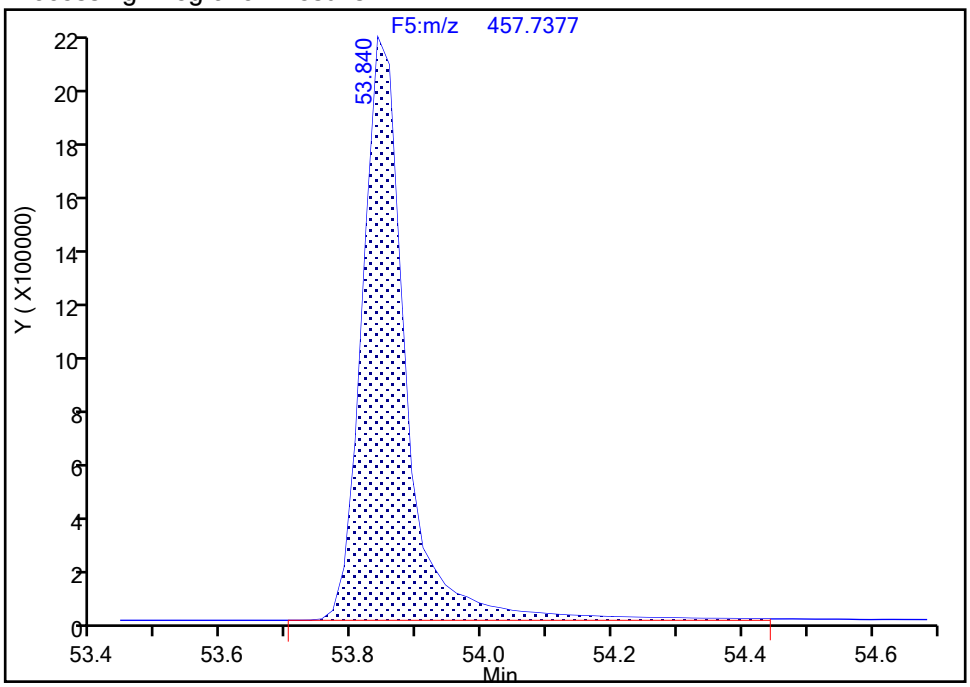
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 1

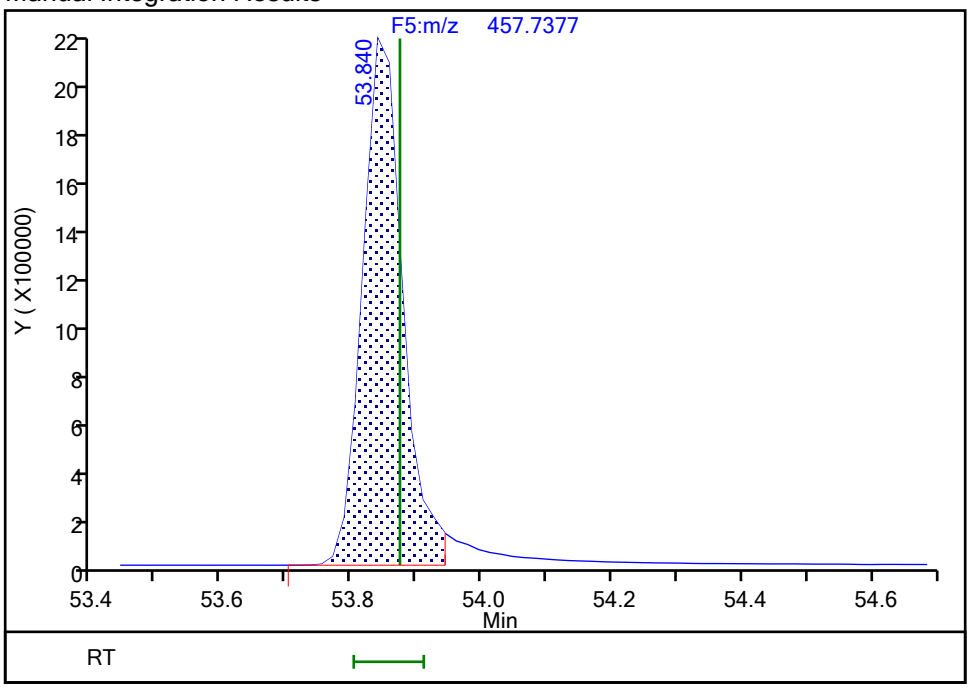
Processing Integration Results

RT: 53.84
Area: 9868410
Amount: 837.6856
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 9115446
Amount: 774.6173
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:35:24

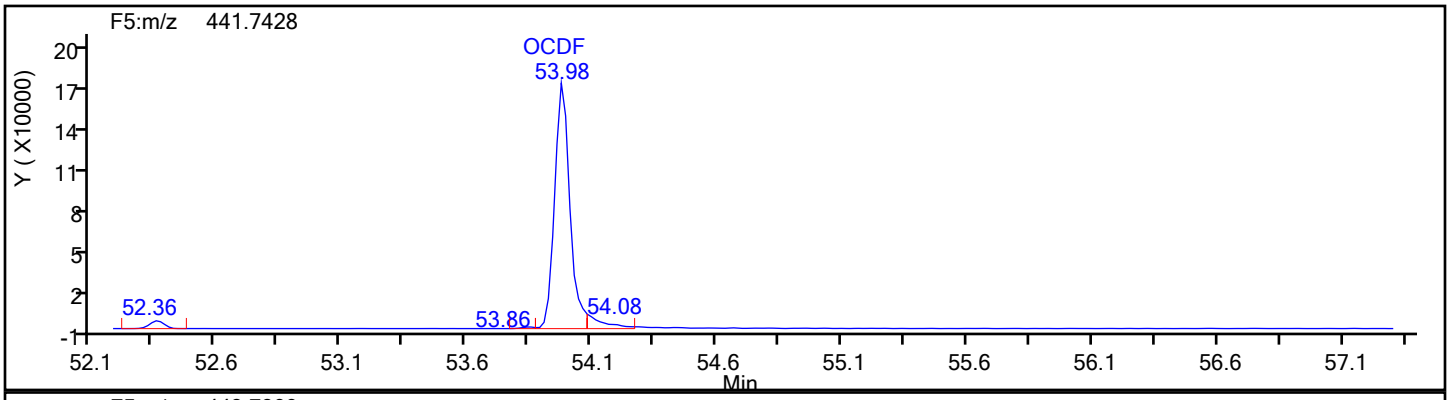
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

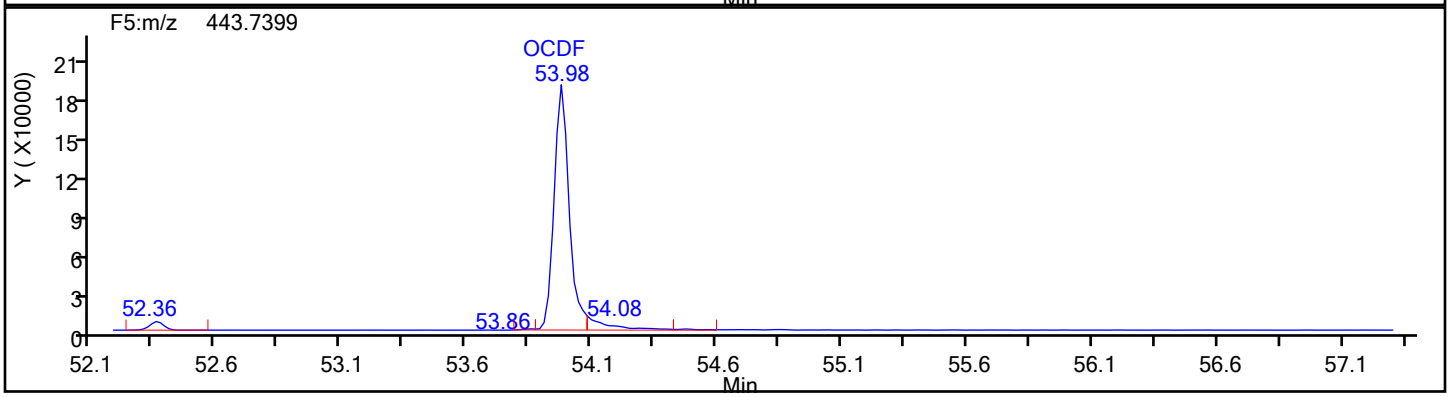
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

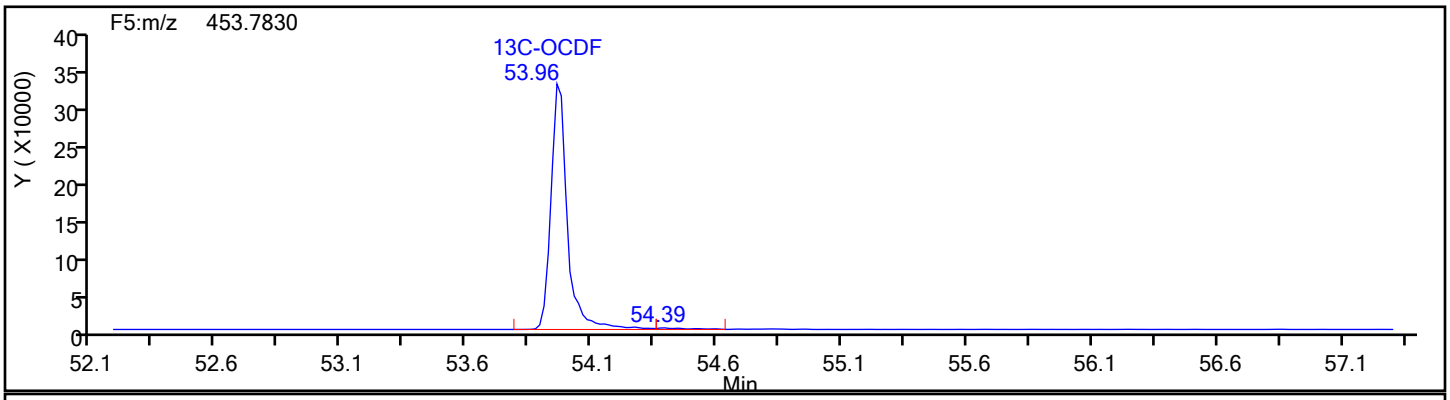
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

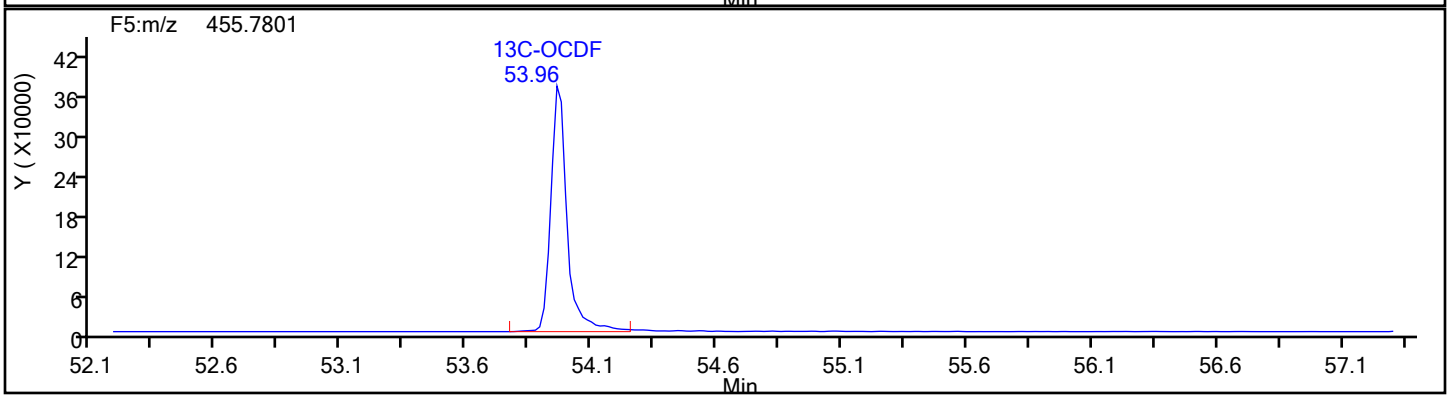
OCDF





OCDF Standards



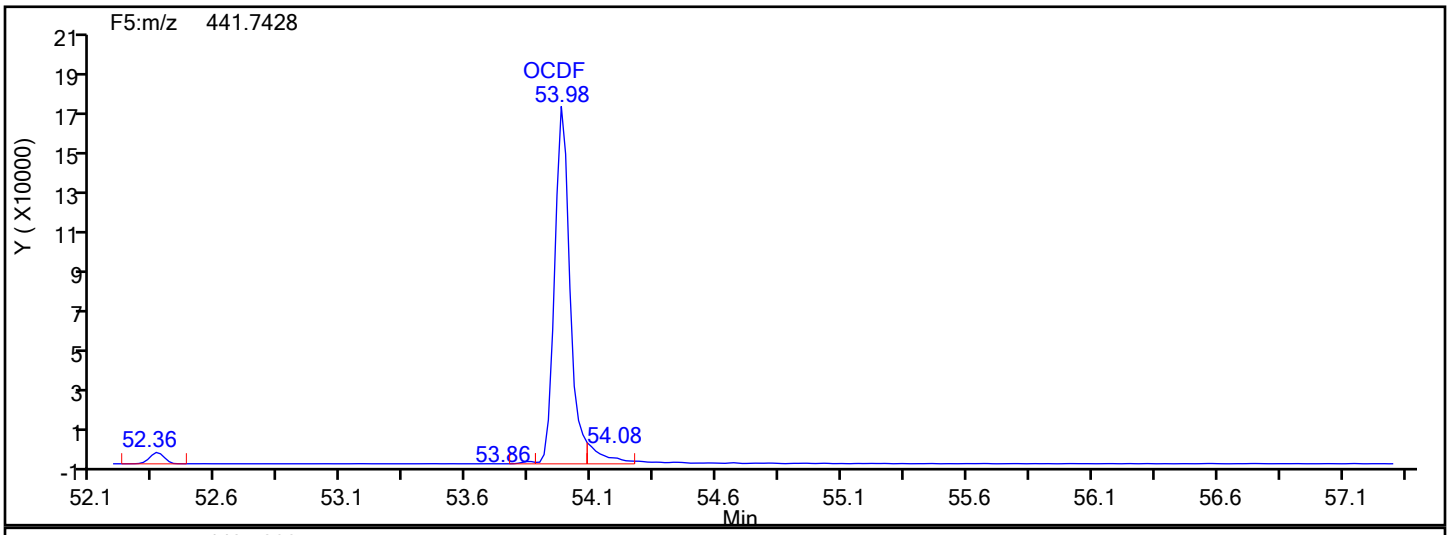


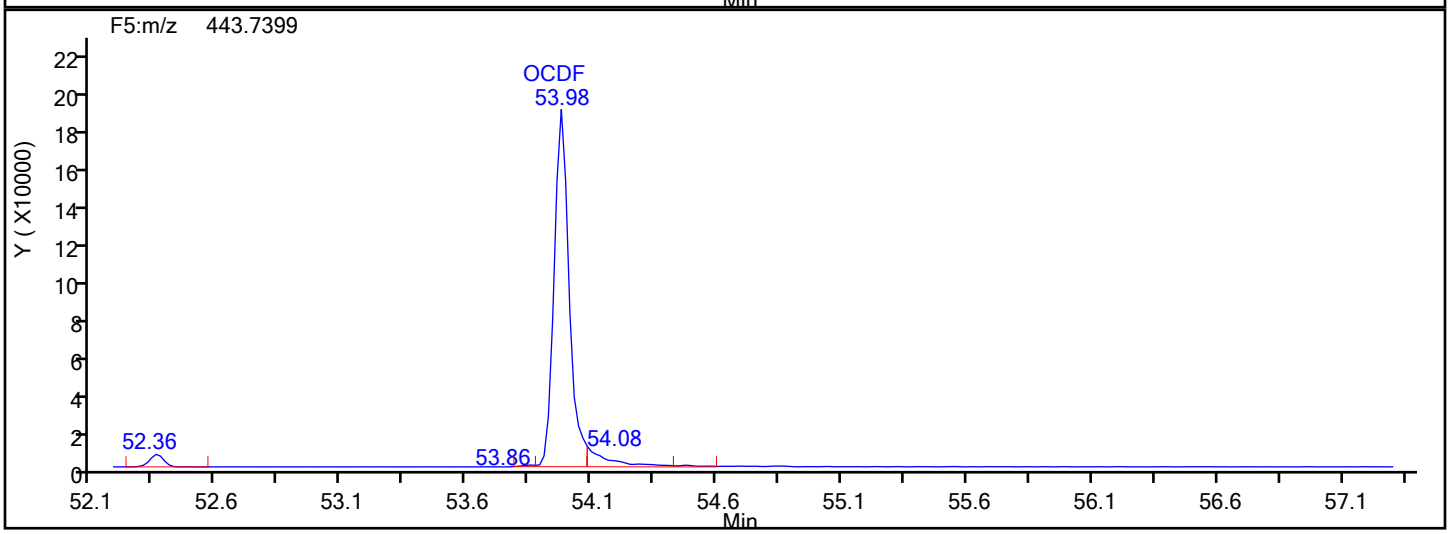
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

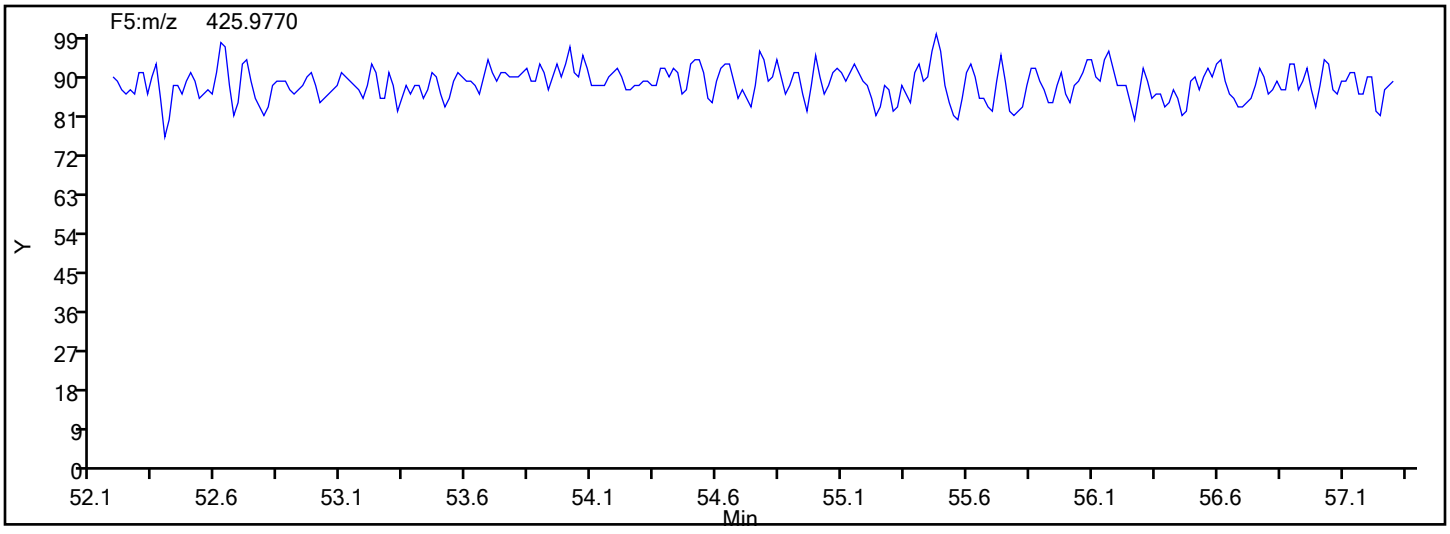
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

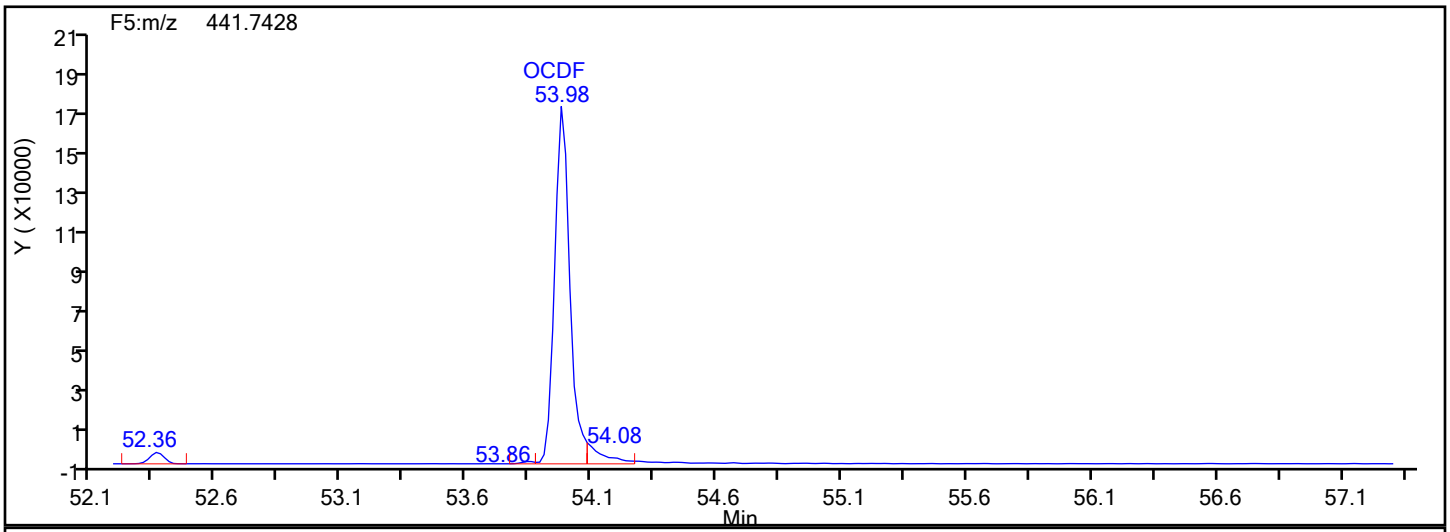


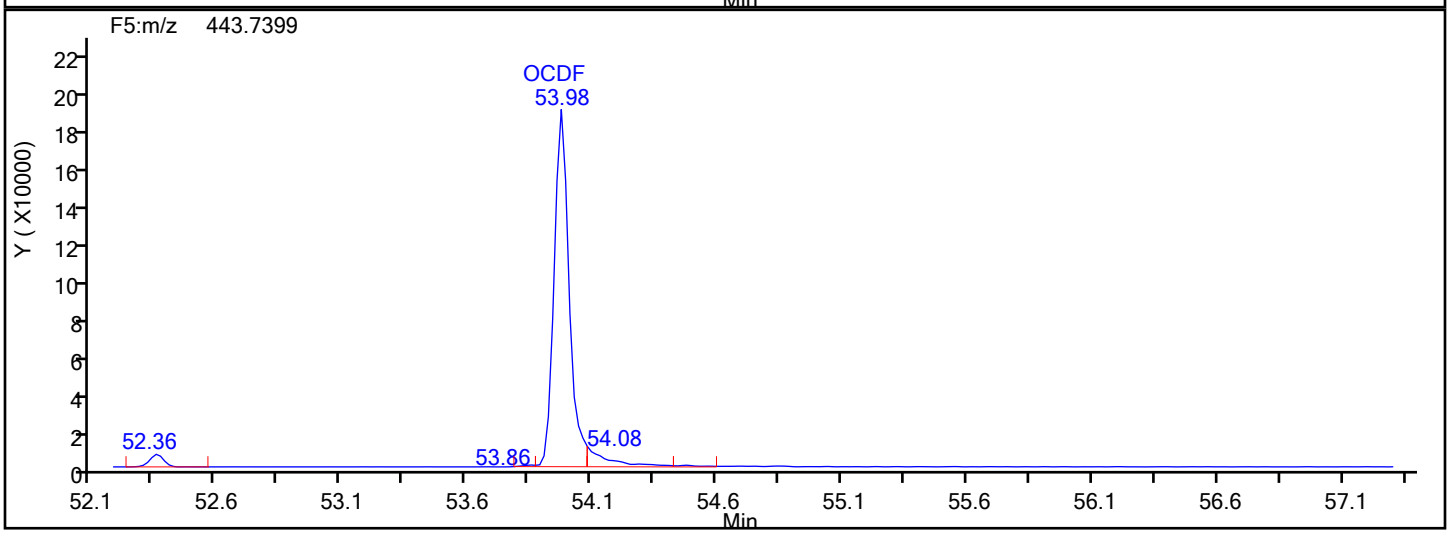
Report Date: 18-Dec-2019 03:36:20 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

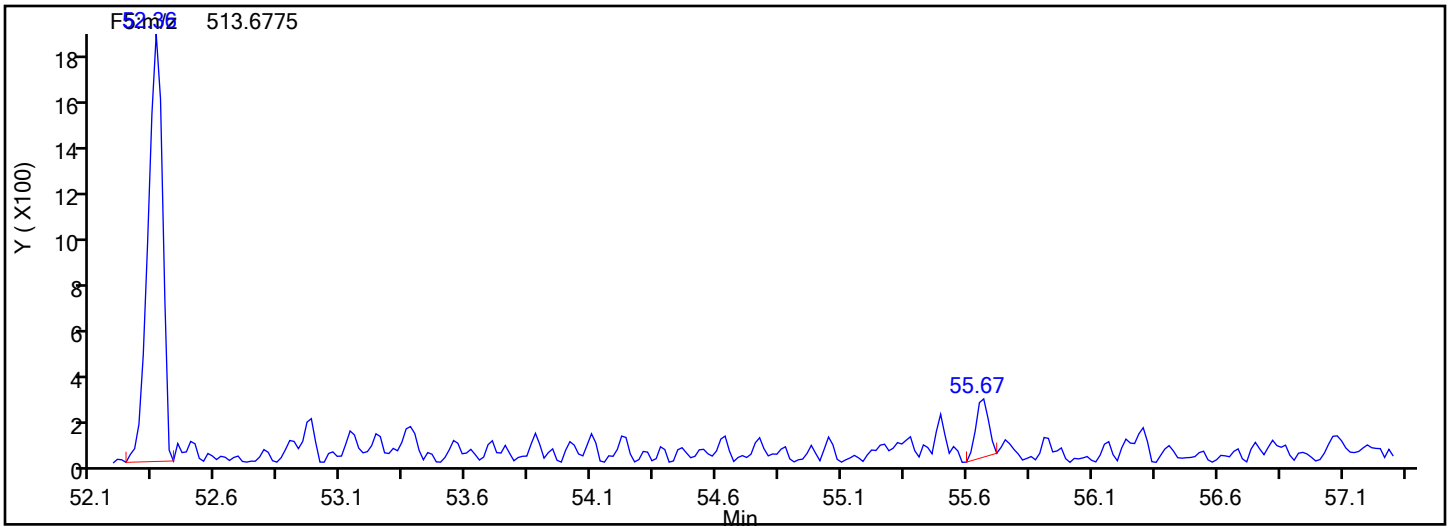
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d		
Injection Date:	17-Dec-2019 15:32:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36146	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

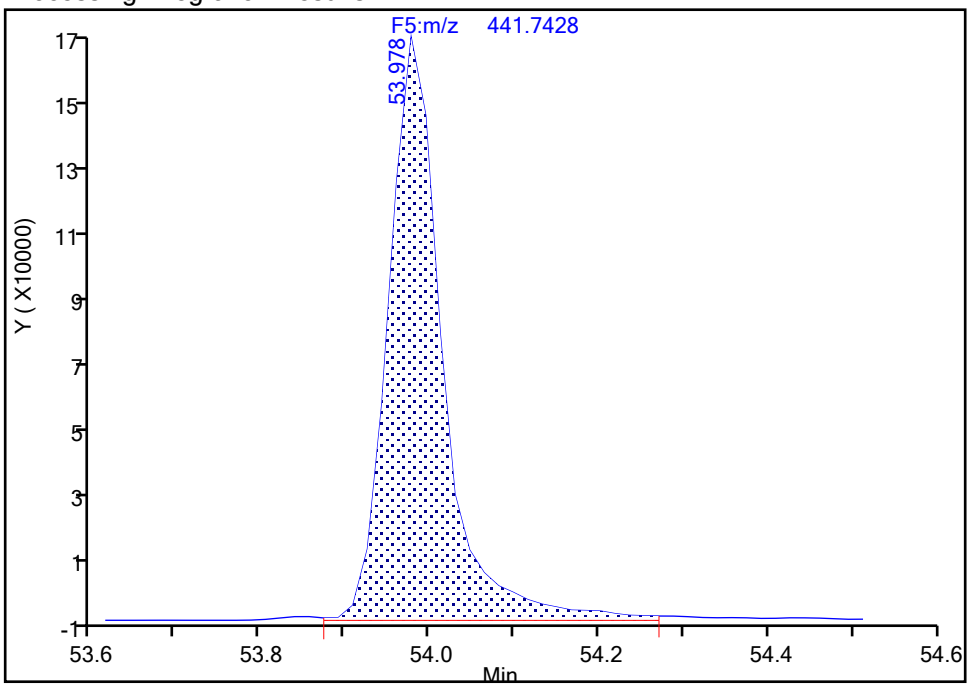
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

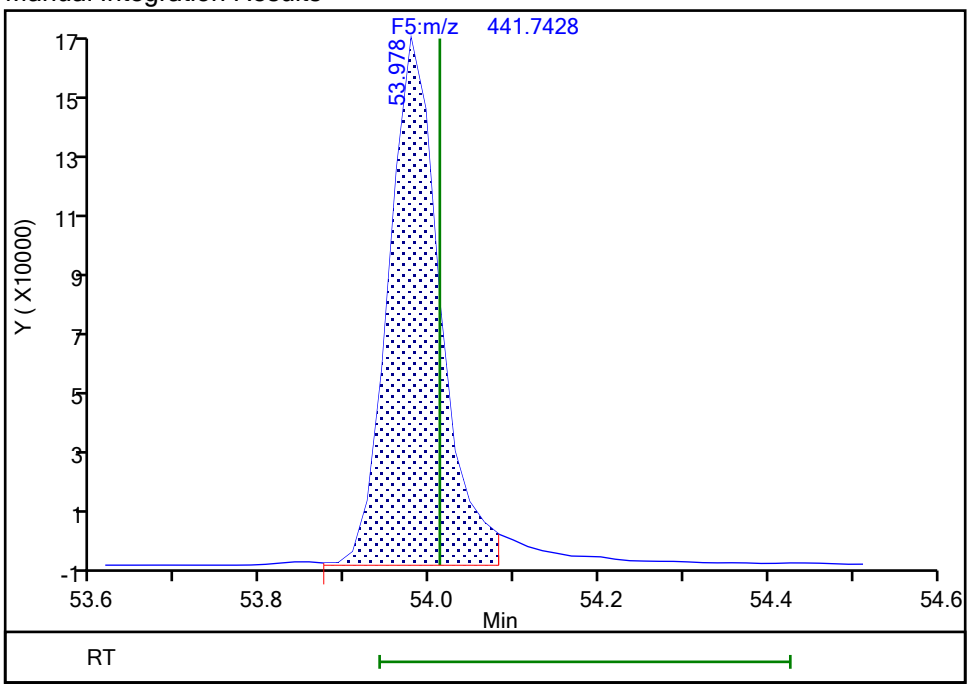
Processing Integration Results

RT: 53.98
Area: 758456
Amount: 45.117429
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 715484
Amount: 42.217293
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:35:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

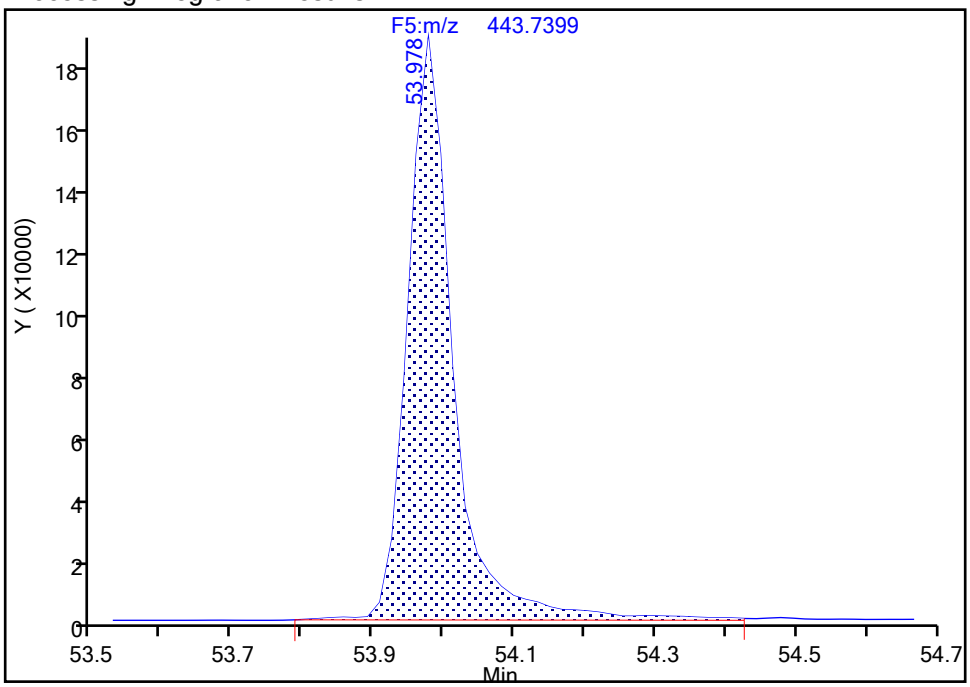
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-8-a.d				
Injection Date:	17-Dec-2019 15:32:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-8-A	Lab Sample ID:	140-17578-8		
Client ID:	11187072-120619-SS-SJSSA03(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

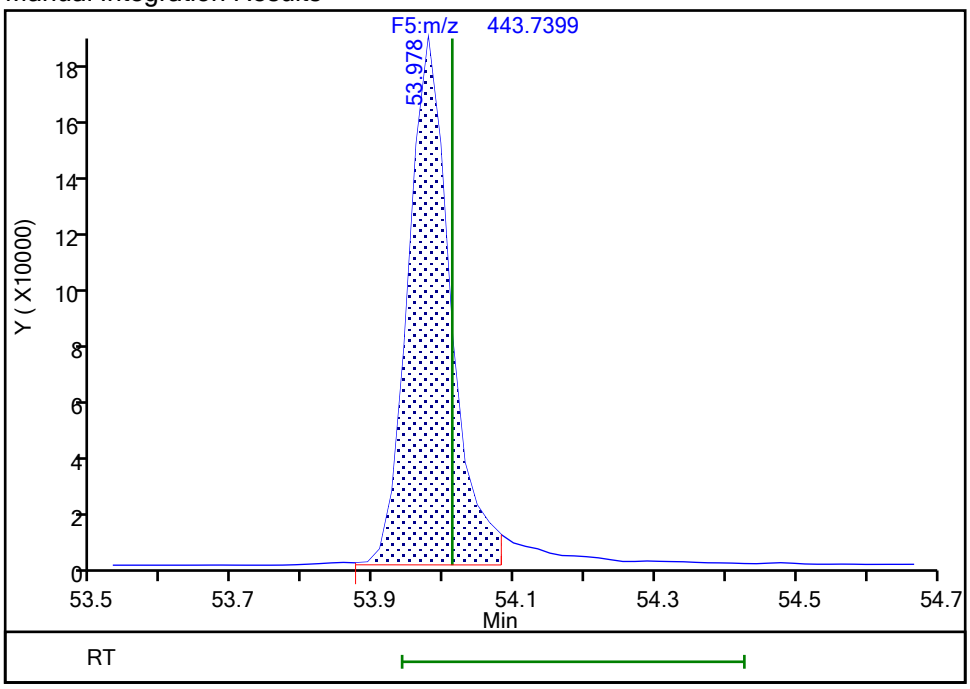
Processing Integration Results

RT: 53.98
Area: 847898
Amount: 45.117429
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 787614
Amount: 42.217293
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:35:49

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA03(4-6) Lab Sample ID: 140-17578-8

Matrix: Sediment Lab File ID: 140-17578-a-8-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 12:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.16(g) Date Analyzed: 12/18/2019 06:55

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 32.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	24		1.5	0.39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	64		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:55:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-012
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:23

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:41	95823	0.79	1.2213	3.047	3.047	0.1368	0.1368		
2,3,7,8-TCDF	22:14	362485	0.79	1.1100	8.143	8.143	0.1349	0.1349		
D 13C-2,3,7,8-TCDD	19:40	1287295	0.81	1.0031	33.0	33.0	0.6939	0.6939	66.08	
D 13C-2,3,7,8-TCDF	22:11	2005035	0.77	1.6193	31.9	31.9	0.1620	0.1620	63.76	
$ 37Cl4-2,3,7,8-TCDD	19:41	325554		1.1834	7.083	7.083	0.1723	0.1723	70.83	
* 13C-1,2,3,4-TCDD	20:08	3883837	0.79	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-8-a.d
Lims ID: 140-17578-A-8-A
Client ID: 11187072-120619-SS-SJSSA03(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:55:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-012
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:23

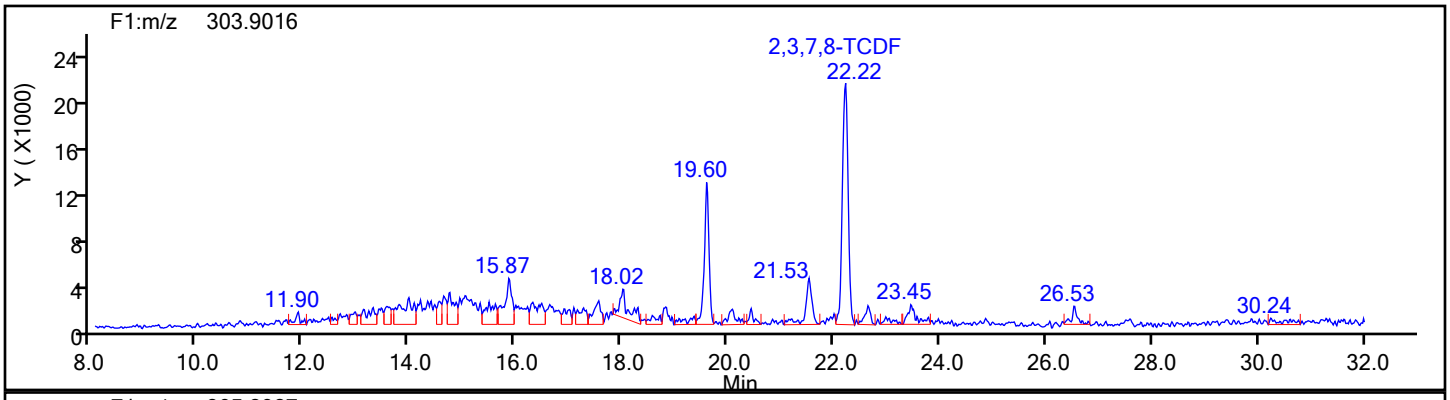
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:41	19:44	-2	1.001	42437	5877	149	372	39		
321.8936	19:42	19:44	-1	1.002	53386	7804	137	342	57	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:14	-2	1.002	160483	21108	152	380	139		
305.8987	22:13	22:14	-3	1.002	202002	27786	159	397	175	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:41	-2	0.977	575191	96009	1131	2827	85		
333.9338	19:40	19:41	-2	0.977	712104	118019	583	1457	202	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:14	-3	1.102	870046	113499	329	822	345		
317.9389	22:11	22:14	-3	1.102	1134989	145850	317	792	460	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:41	19:42	-2	0.978	325554	50673	502	1255	101		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:09	-2		1714142	278258	1131	2827	246		
333.9338	20:08	20:09	-2		2169695	337362	583	1457	579	0.79(0.65-0.89)	

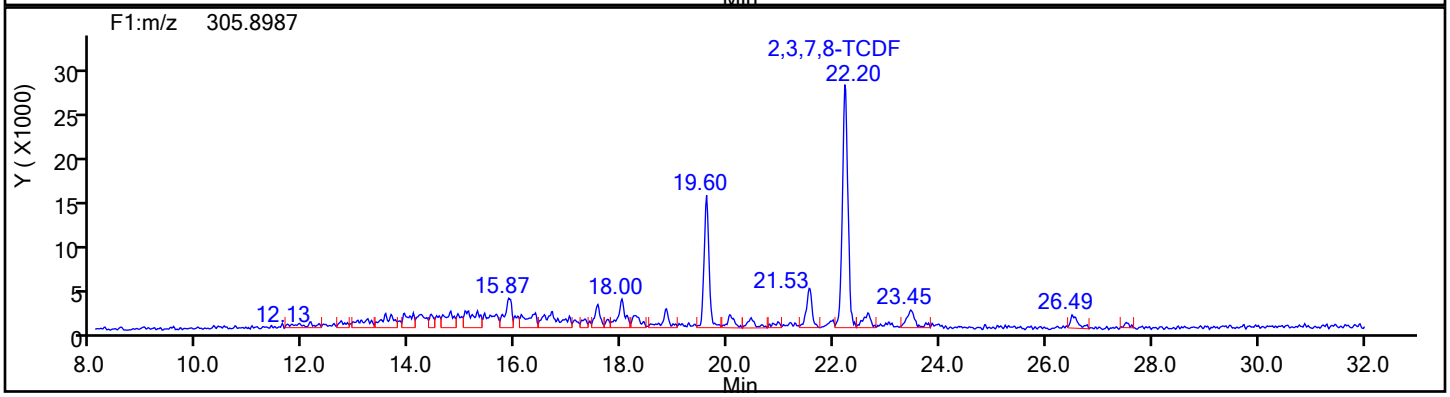
Report Date: 18-Dec-2019 09:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

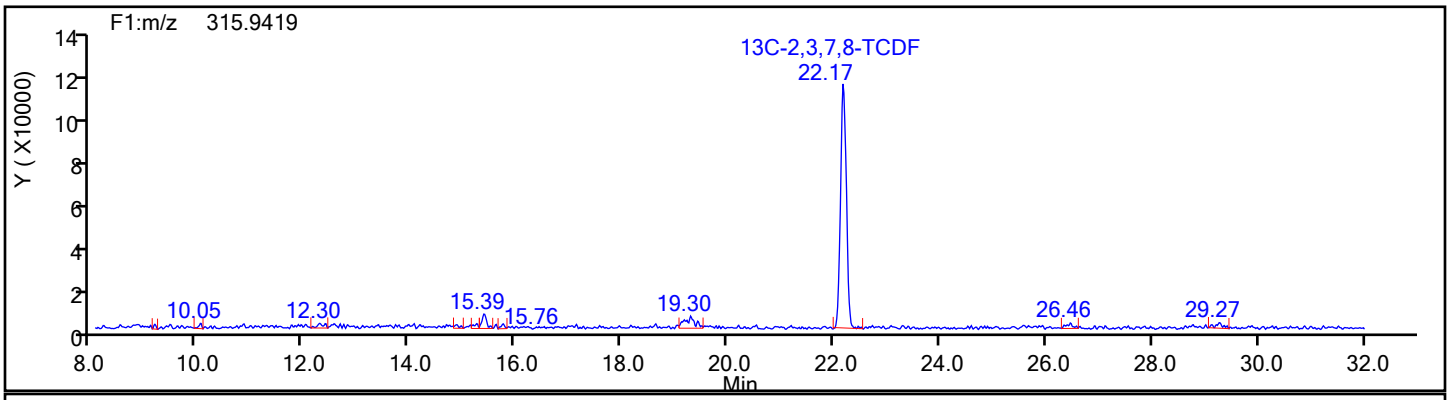
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-8-a.d		
Injection Date:	18-Dec-2019 06:55:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36167	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

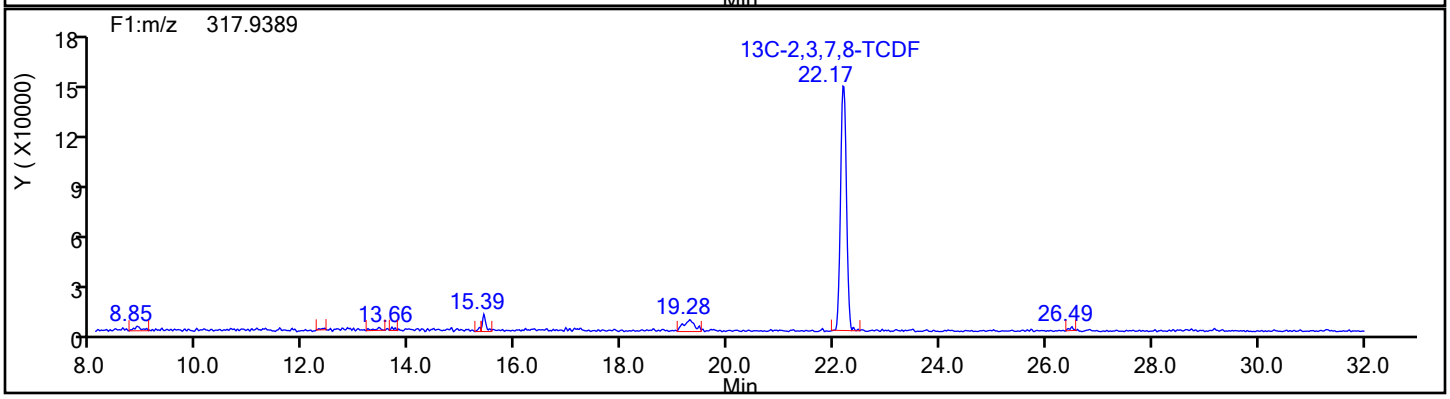
TCDF





TCDF Standards



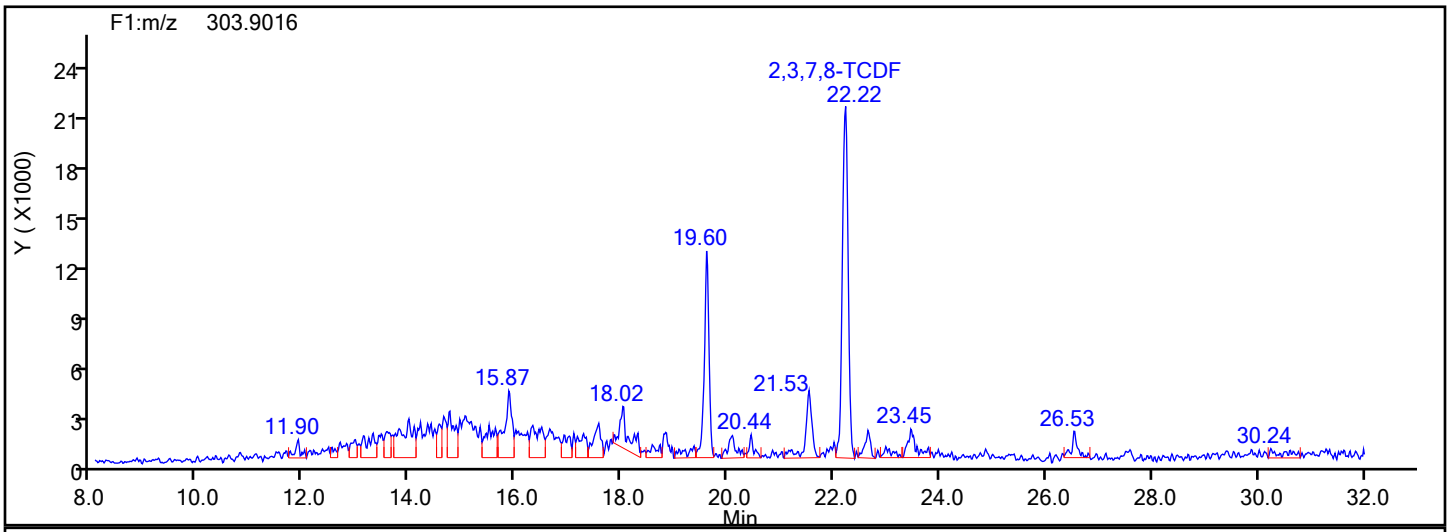


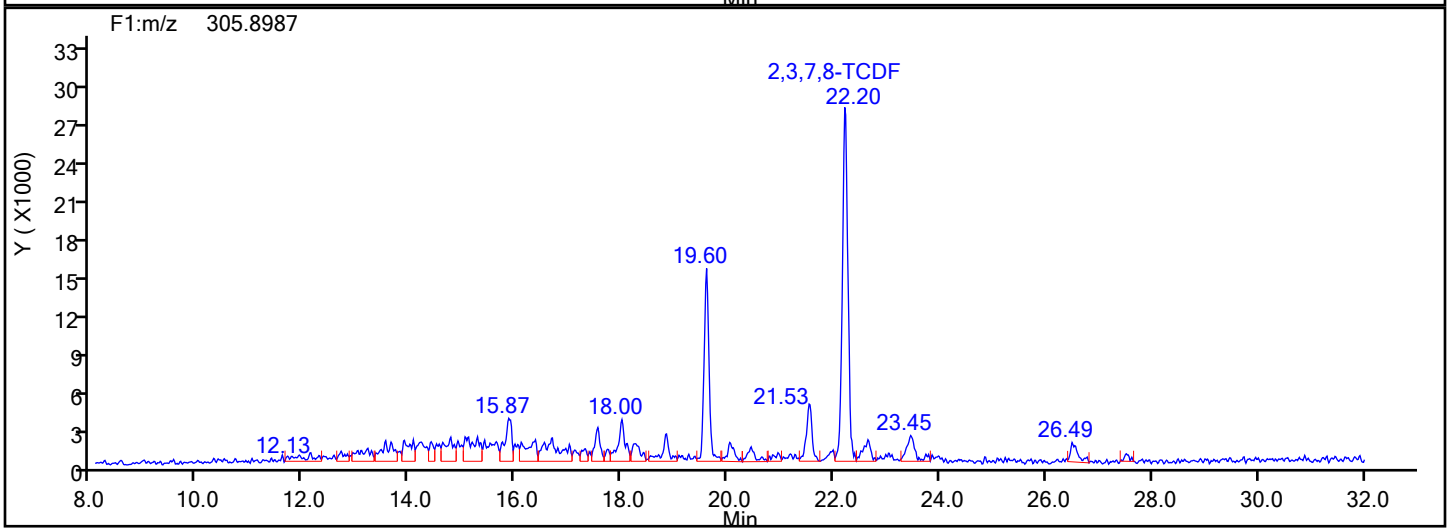
Report Date: 18-Dec-2019 09:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

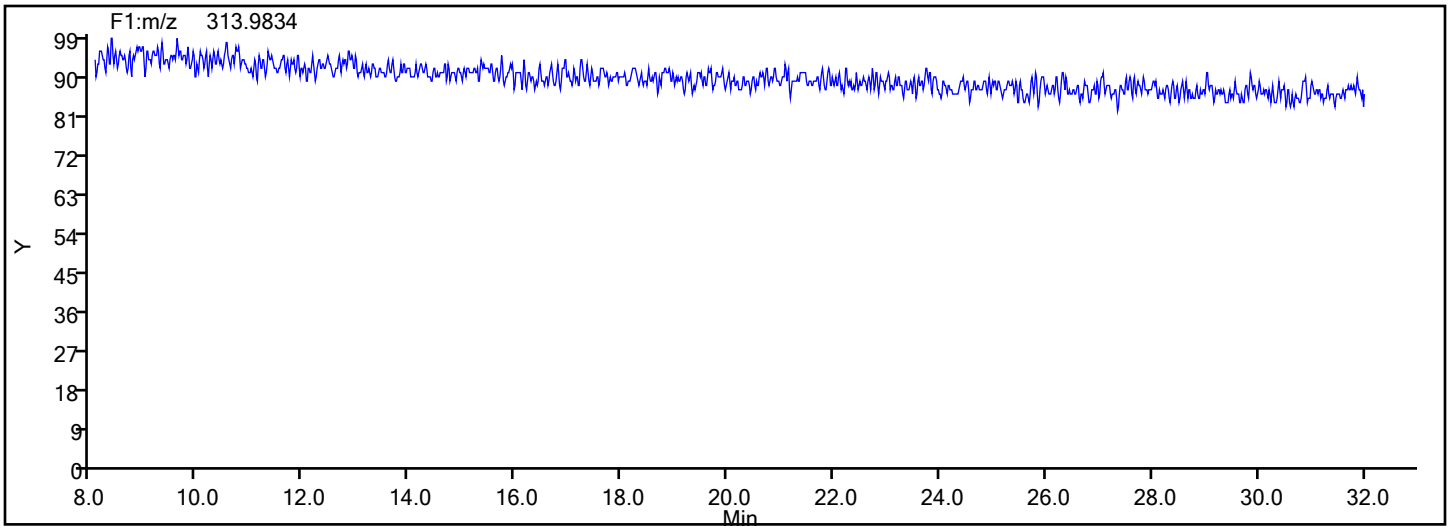
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-8-a.d		
Injection Date:	18-Dec-2019 06:55:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36167	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

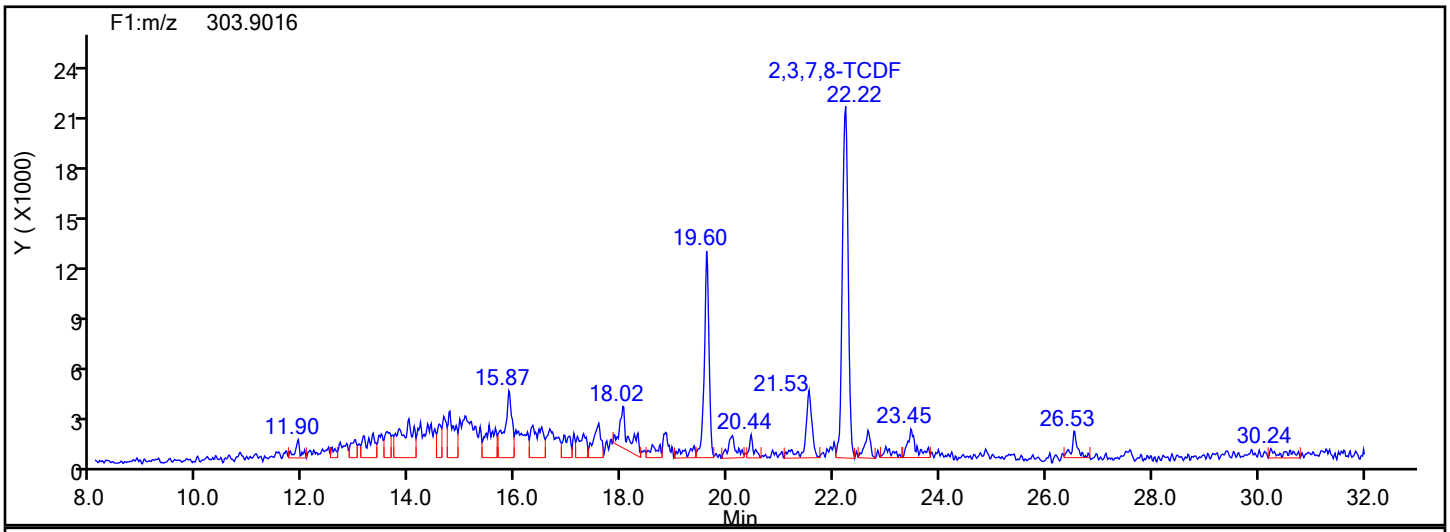


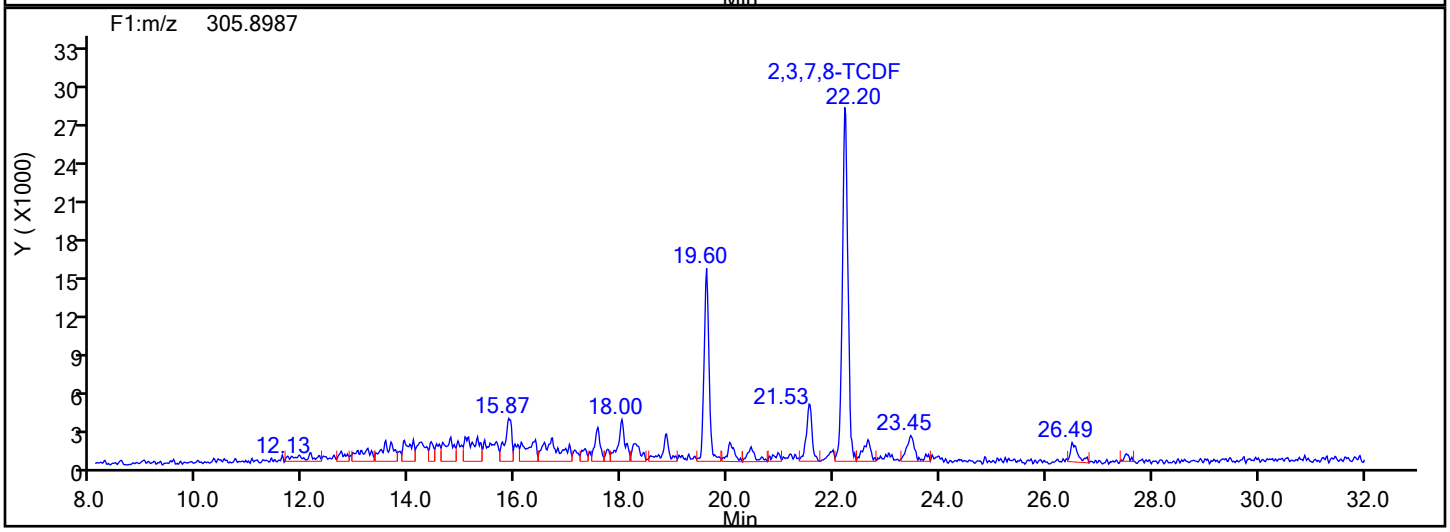
Report Date: 18-Dec-2019 09:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

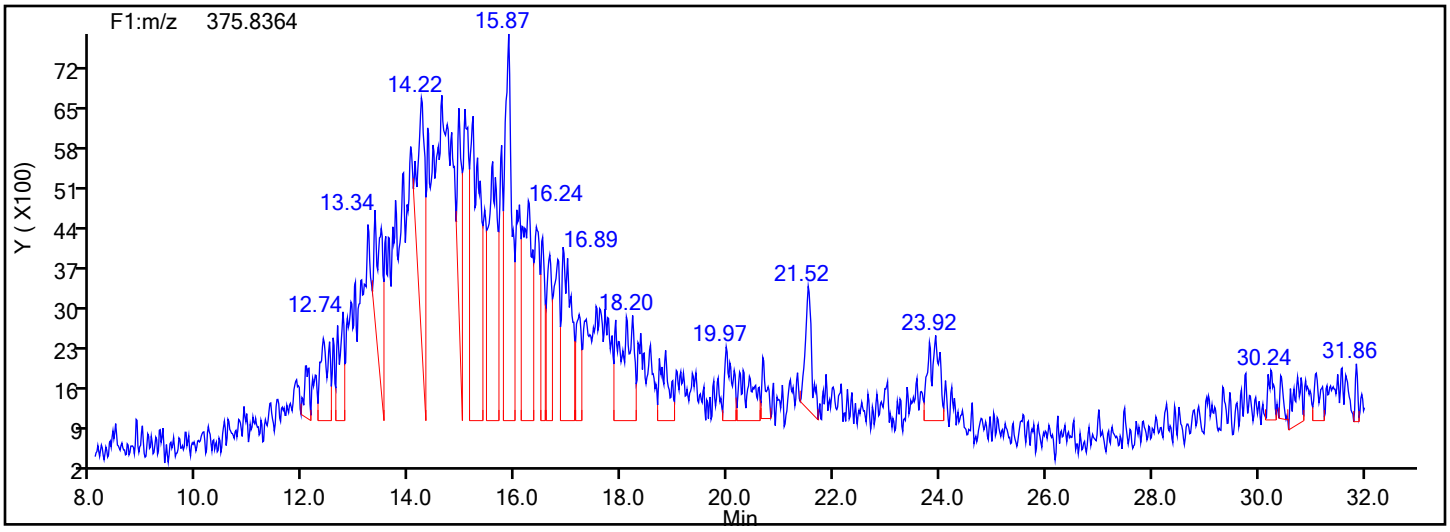
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-8-a.d		
Injection Date:	18-Dec-2019 06:55:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA03(4-6)		
Worklist#:	36167	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Matrix: Sediment Lab File ID: 140-17578-a-9-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.37(g) Date Analyzed: 12/17/2019 16:33

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 16.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	74		1.2	0.13
41903-57-5	Total TCDD	84	B q	1.2	0.13
40321-76-4	1,2,3,7,8-PeCDD	0.69	J	5.8	0.032
36088-22-9	Total PeCDD	2.7	J q	5.8	0.032
39227-28-6	1,2,3,4,7,8-HxCDD	0.20	J q	5.8	0.023
57653-85-7	1,2,3,6,7,8-HxCDD	0.45	J	5.8	0.023
19408-74-3	1,2,3,7,8,9-HxCDD	0.87	J	5.8	0.022
34465-46-8	Total HxCDD	14	B q	5.8	0.022
35822-46-9	1,2,3,4,6,7,8-HpCDD	16	B	5.8	0.17
37871-00-4	Total HpCDD	55	B	5.8	0.17
3268-87-9	OCDD	380	B	12	0.072
30402-14-3	Total TCDF	600	B q	1.2	0.11
57117-41-6	1,2,3,7,8-PeCDF	6.6		5.8	0.069
57117-31-4	2,3,4,7,8-PeCDF	4.7	J	5.8	0.062
30402-15-4	Total PeCDF	19	q	5.8	0.066
70648-26-9	1,2,3,4,7,8-HxCDF	9.6		5.8	0.056
57117-44-9	1,2,3,6,7,8-HxCDF	2.3	J	5.8	0.053
60851-34-5	2,3,4,6,7,8-HxCDF	0.35	J q	5.8	0.059
72918-21-9	1,2,3,7,8,9-HxCDF	0.24	J	5.8	0.076
55684-94-1	Total HxCDF	16	I q	5.8	0.061
67562-39-4	1,2,3,4,6,7,8-HpCDF	3.1	J B	5.8	0.048
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.79	J B q	5.8	0.080
38998-75-3	Total HpCDF	6.1	B q	5.8	0.064
39001-02-0	OCDF	10	J B	12	0.053

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Matrix: Sediment Lab File ID: 140-17578-a-9-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.37(g) Date Analyzed: 12/17/2019 16:33

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 16.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	61		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	67		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	68		23-140
114423-97-1	13C-OCDD	61		17-157
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	62		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	63		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	68		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	64		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	66		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	66		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	61		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	73		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:33:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 03:48:59 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 03:48:59

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:47	991747	0.80	1.1733	31.8	31.8	0.0553	0.0553		
A Non-2,3,7,8-sub-TCDD	29:29	137709	0.77	1.1733	4.436	4.422	0.0553	3.176		RQ
S Total TCDD					36.3	36.3	0.0553	0.0553		RQ
2,3,7,8-TCDF	28:48	6620030	0.79	1.0881	142.2	142.2	0.0486	0.0486		
A Non-2,3,7,8-sub-TCDF	28:12	5511211	0.77	1.0881	119.4	118.4	0.0486	64.2		RQM
S Total TCDF					261.6	260.6	0.0486	0.0486		RQ
1,2,3,7,8-PeCDD	40:33	6435	1.55	1.0434	0.2973	0.2973	0.0139	0.0139		M
A Non-2,3,7,8-sub-PeCDD	39:26	18760	1.55	1.0434	0.9752	0.8667	0.0139	0.4127		RQ
S Total PeCDD					1.273	1.164	0.0139	0.0139		RQ
1,2,3,7,8-PeCDF	38:45	112161	1.66	1.1898	2.851	2.851	0.0301	0.0301		M
2,3,4,7,8-PeCDF	40:01	76482	1.46	1.1095	2.058	2.058	0.0270	0.0270		
A Non-2,3,7,8-sub-PeCDF	38:01	135160	1.55	1.1496	3.613	3.532	0.0284	1.368		RQMa
S Total PeCDF					8.522	8.441	0.0285	0.0285		RQ
1,2,3,4,7,8-HxCDD	44:48	2318	1.24	1.1409	0.0989	0.0885	0.0100	0.0100		RQ
1,2,3,6,7,8-HxCDD	44:55	5499	1.33	1.1481	0.1948	0.1948	0.0100	0.0100		
1,2,3,7,8,9-HxCDD	45:19	10900	1.19	1.2212	0.3755	0.3755	0.009329	0.009329		
A Non-2,3,7,8-sub-HxCDD	44:19	147134	1.24	1.1700	5.365	5.290	0.009737	3.914		RQM
S Total HxCDD					6.034	5.948	0.009746	0.009746		RQ
1,2,3,4,7,8-HxCDF	43:47	170934	1.19	1.3629	4.149	4.149	0.0241	0.0241		M
1,2,3,6,7,8-HxCDF	43:55	49425	1.12	1.2762	0.9772	0.9772	0.0229	0.0229		M
2,3,4,6,7,8-HxCDF	44:38	6640	1.24	1.2654	0.1699	0.1538	0.0254	0.0254		RQM
1,2,3,7,8,9-HxCDF	45:35	4176	1.06	1.2573	0.1049	0.1049	0.0327	0.0327		M
A Non-2,3,7,8-sub-HxCDF	44:10	64083	1.24	1.2905	1.561	1.464	0.0258	0.5085		RQMa
S Total HxCDF					6.962	6.850	0.0263	0.0263		RQ
1,2,3,4,6,7,8-HpCDD	49:36	172424	1.06	1.1204	6.906	6.906	0.0734	0.0734		
A Non-2,3,7,8-sub-HpCDD	49:03	421123	1.01	1.1204	16.9	16.9	0.0734	16.9		
S Total HpCDD					23.8	23.8	0.0734	0.0734		
1,2,3,4,6,7,8-HpCDF	47:56	55845	1.05	1.4984	1.340	1.340	0.0210	0.0210		M
1,2,3,4,7,8,9-HpCDF	50:17	10546	1.04	1.3807	0.3974	0.3425	0.0345	0.0345		RQMa
A Non-2,3,7,8-sub-HpCDF	49:56	35183	1.04	1.4395	1.005	0.9753	0.0263	0.8884		RQMa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					2.742	2.658	0.0277	0.0277		RQ
OCDD	53:51	3496306	0.89	1.2073	166.6	166.6	0.0311	0.0311		M
OCDF	53:59	128067	0.86	1.1162	4.388	4.388	0.0228	0.0228		M
D 13C-2,3,7,8-TCDD	30:45	1327174	0.78	1.0709	32.0	32.0	0.2836	0.2836	63.99	
D 13C-2,3,7,8-TCDF	28:46	2138748	0.80	1.7545	31.5	31.5	0.1951	0.1951	62.95	
D 13C-1,2,3,7,8-PeCDD	40:32	1037285	1.65	0.8743	30.6	30.6	0.3573	0.3573	61.26	
D 13C-1,2,3,7,8-PeCDF	38:44	1653147	1.60	1.3704	31.1	31.1	0.4110	0.4110	62.29	
D 13C-2,3,4,7,8-PeCDF	40:00	1675164	1.63	1.3837	31.3	31.3	0.4070	0.4070	62.51	
D 13C-1,2,3,4,7,8-HxCDD	44:47	1148142	1.26	0.8772	32.6	32.6	0.0944	0.0944	65.21	
D 13C-1,2,3,6,7,8-HxCDD	44:54	1229212	1.26	0.9171	33.4	33.4	0.0903	0.0903	66.78	
D 13C-1,2,3,4,7,8-HxCDF	43:46	1511260	0.54	1.1892	31.7	31.7	0.2508	0.2508	63.31	
D 13C-1,2,3,6,7,8-HxCDF	43:55	1981598	0.54	1.4625	33.8	33.8	0.2039	0.2039	67.50	
D 13C-2,3,4,6,7,8-HxCDF	44:37	1706388	0.50	1.3197	32.2	32.2	0.2260	0.2260	64.42	
D 13C-1,2,3,7,8,9-HxCDF	45:34	1583049	0.53	1.2001	32.9	32.9	0.2485	0.2485	65.72	
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	1114149	1.14	0.8155	34.0	34.0	0.2293	0.2293	68.07	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1390850	0.46	1.0496	33.0	33.0	0.2258	0.2258	66.02	
D 13C-1,2,3,4,7,8,9-HpCDF	50:14	1114964	0.46	0.8947	31.0	31.0	0.2649	0.2649	62.08	
D 13C-OCDD	53:51	1738256	0.88	0.7044	61.5	61.5	0.3591	0.3591	61.47	
D 13C-OCDF	53:58	2614676	0.88	1.0615	61.4	61.4	0.2066	0.2066	61.36	
$ 37Cl4-2,3,7,8-TCDD	30:47	346109		1.2266	7.286	7.286	0.0865	0.0865	72.86	
* 13C-1,2,3,4-TCDD	30:14	3873053	0.83	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:18	4014506	1.30	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:33:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 03:48:59 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 03:48:59

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:47	30:51	-3	1.001	439560	45869	32	80	1433		
321.8936	30:47	30:51	-3	1.001	552187	59524	38	95	1566	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	24:51	29:29	-277	0.808	1301	241	32	80	8		
	Empc Correction				850	168	32	80	5		
321.8936	24:52	29:29	-276	0.809	1104	219	38	95	6	1.18(0.65-0.89)	
319.8965	27:46	29:29	-102	0.903	8219	979	32	80	31		
321.8936	27:44	29:29	-104	0.902	9735	1084	38	95	29	0.84(0.65-0.89)	
319.8965	28:41	29:29	-48	0.933	1886	319	32	80	10		
321.8936	28:45	29:29	-44	0.935	2308	314	38	95	8	0.82(0.65-0.89)	
319.8965	30:16	29:29	47	0.984	1569	223	32	80	7		
321.8936	30:09	29:29	40	0.980	1932	274	38	95	7	0.81(0.65-0.89)	
319.8965	30:31	29:29	62	0.992	4741	997	32	80	31		
321.8936	30:31	29:29	62	0.992	6457	1067	38	95	28	0.73(0.65-0.89)	
319.8965	31:52	29:29	143	1.036	45186	4693	32	80	147		
321.8936	31:53	29:29	144	1.037	53722	5480	38	95	144	0.84(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:48	28:49	-3	1.001	2927926	304654	47	117	6482		
305.8987	28:48	28:49	-3	1.001	3692104	379169	56	140	6771	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:20	28:12	-291	0.811	4989	680	47	117	14		
	Empc Correction				3277	552	47	117	12		
305.8987	23:20	28:12	-291	0.811	4257	718	56	140	13	1.17(0.65-0.89)	
303.9016	23:48	28:12	-264	0.827	3445	554	47	117	12		
305.8987	23:48	28:12	-264	0.827	4806	631	56	140	11	0.72(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	24:20	28:12	-232	0.846	26692	3093	47	117	66		
305.8987	24:19	28:12	-233	0.845	34196	4734	56	140	85	0.78(0.65-0.89)	
303.9016	24:37	28:12	-215	0.856	2764	510	47	117	11		
305.8987	24:34	28:12	-218	0.854	4583	626	56	140	11	0.60(0.65-0.89)	M
	Empc Correction				3589	662	56	140	12		
303.9016	25:02	28:12	-189	0.871	136407	16485	47	117	351		
305.8987	25:02	28:12	-189	0.871	170512	20957	56	140	374	0.80(0.65-0.89)	
303.9016	25:37	28:12	-155	0.890	25002	6210	47	117	132		
305.8987	25:38	28:12	-154	0.891	49863	8562	56	140	153	0.50(0.65-0.89)	
	Empc Correction				32470	8064	56	140	144		
303.9016	25:45	28:12	-147	0.895	148111	18173	47	117	387		
	Empc Correction				125111	15793	47	117	336		
305.8987	25:46	28:12	-146	0.896	162482	20511	56	140	366	0.91(0.65-0.89)	
303.9016	26:12	28:12	-120	0.911	25891	3149	47	117	67		
305.8987	26:14	28:12	-118	0.912	29133	4104	56	140	73	0.89(0.65-0.89)	
303.9016	26:25	28:12	-107	0.919	82878	10195	47	117	217		
305.8987	26:25	28:12	-107	0.919	101388	13367	56	140	239	0.82(0.65-0.89)	
303.9016	26:57	28:12	-76	0.937	118456	14876	47	117	317		
305.8987	26:57	28:12	-76	0.937	150262	19296	56	140	345	0.79(0.65-0.89)	
303.9016	27:12	28:12	-60	0.946	14763	2042	47	117	43		
305.8987	27:11	28:12	-61	0.945	17071	1829	56	140	33	0.86(0.65-0.89)	
303.9016	27:42	28:12	-30	0.963	1320706	157141	47	117	3343		
305.8987	27:42	28:12	-30	0.963	1666473	199779	56	140	3567	0.79(0.65-0.89)	
303.9016	28:19	28:12	7	0.985	68532	8264	47	117	176		
305.8987	28:19	28:12	7	0.985	89405	10751	56	140	192	0.77(0.65-0.89)	
303.9016	29:23	28:12	71	1.022	4244	493	47	117	10		
	Empc Correction				2803	348	47	117	7		
305.8987	29:24	28:12	72	1.022	3641	452	56	140	8	1.17(0.65-0.89)	
303.9016	29:59	28:12	107	1.043	209583	23004	47	117	489		
305.8987	29:59	28:12	107	1.043	268215	29556	56	140	528	0.78(0.65-0.89)	
303.9016	30:40	28:12	147	1.066	44883	4608	47	117	98		
305.8987	30:40	28:12	147	1.066	59998	5147	56	140	92	0.75(0.65-0.89)	
303.9016	32:47	28:12	274	1.140	4531	262	47	117	6		
	Empc Correction				2498	262	47	117	6		
305.8987	32:49	28:12	276	1.141	3245	341	56	140	6	1.40(0.65-0.89)	
303.9016	33:51	28:12	338	1.177	222755	22305	47	117	475		
305.8987	33:51	28:12	338	1.177	273622	27429	56	140	490	0.81(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	40:33	40:33	-2	1.000	3911	1077	16	40	67		M
357.8516	40:32	40:33	-3	1.000	2524	450	11	27	41	1.55(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:35	39:26	-111	0.927	3218	595	16	40	37		
	Empc Correction				2404	460	16	40	29		
357.8516	37:35	39:26	-111	0.927	1551	297	11	27	27	2.07(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
355.8546	38:27	39:26	-60	0.949	5296	1000	16	40	63		
357.8516	38:27	39:26	-60	0.949	3638	786	11	27	71	1.46(1.32-1.78)	
355.8546	39:07	39:26	-19	0.965	995	270	16	40	17		
357.8516	39:07	39:26	-19	0.965	799	230	11	27	21	1.25(1.32-1.78)	
	Empc Correction				641	174	11	27	16		
355.8546	39:40	39:26	14	0.979	1226	192	16	40	12		
	Empc Correction				916	187	16	40	12		
357.8516	39:39	39:26	13	0.978	591	121	11	27	11	2.07(1.32-1.78)	
355.8546	39:49	39:26	23	0.983	2726	567	16	40	35		
	Empc Correction				1658	320	16	40	20		
357.8516	39:47	39:26	21	0.982	1070	207	11	27	19	2.55(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:45	38:45	-2	1.000	70054	12587	40	100	315		M
341.8567	38:45	38:45	-2	1.000	42107	7986	47	117	170	1.66(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:01	40:01	-2	1.000	45429	9858	40	100	246		
341.8567	40:01	40:01	-2	1.000	31053	6937	47	117	148	1.46(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:40	38:01	-201	0.895	3654	635	40	100	16		
341.8567	34:38	38:01	-203	0.894	2946	420	47	117	9	1.24(1.32-1.78)	
	Empc Correction				2357	409	47	117	9		
339.8597	37:15	38:01	-46	0.962	32077	4925	40	100	123		
341.8567	37:14	38:01	-47	0.961	20286	3428	47	117	73	1.58(1.32-1.78)	
339.8597	37:34	38:01	-27	0.970	700	150	40	100	4		
341.8567	37:33	38:01	-28	0.969	1799	258	47	117	5	0.39(1.32-1.78)	
	Empc Correction				451	96	47	117	2		
339.8597	38:40	38:01	39	0.998	5989	1803	40	100	45		M
	Empc Correction				4839	1709	40	100	43		
341.8567	38:40	38:01	39	0.998	3122	1103	47	117	23	1.92(1.32-1.78)	
339.8597	39:17	38:01	76	1.014	22660	4365	40	100	109		
341.8567	39:16	38:01	75	1.014	15956	2962	47	117	63	1.42(1.32-1.78)	
339.8597	40:16	38:01	135	1.040	13340	2783	40	100	70		
341.8567	40:15	38:01	134	1.039	8688	1635	47	117	35	1.54(1.32-1.78)	
339.8597	41:21	38:01	200	1.068	4127	814	40	100	20		M
341.8567	41:20	38:01	199	1.067	2903	621	47	117	13	1.42(1.32-1.78)	
1,2,3,4,7,8-HxCDD											RQ
389.8158	44:48	44:49	-2	1.000	1556	284	19	47	15		
	Empc Correction				1283	355	19	47	19		
391.8127	44:48	44:49	-2	1.000	1035	287	7	17	41	1.50(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:55	44:55	-2	1.000	3134	746	19	47	39		
391.8127	44:55	44:55	-2	1.000	2365	515	7	17	74	1.33(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:19	45:18	-2	1.012	5919	1043	19	47	55		
391.8127	45:19	45:18	-2	1.012	4981	873	7	17	125	1.19(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	43:15	44:19	-64	0.963	59435	15600	19	47	821		M
391.8127	43:15	44:19	-64	0.963	49435	13412	7	17	1916	1.20(1.05-1.43)	
389.8158	43:50	44:19	-28	0.976	4021	643	19	47	34		
	Empc Correction				2390	620	19	47	33		
391.8127	43:48	44:19	-30	0.976	1928	500	7	17	71	2.09(1.05-1.43)	
389.8158	44:07	44:19	-12	0.982	16411	3897	19	47	205		
391.8127	44:06	44:19	-13	0.982	14044	3182	7	17	455	1.17(1.05-1.43)	
389.8158	44:17	44:19	-2	0.986	1933	429	19	47	23		
391.8127	44:18	44:19	-1	0.986	2017	411	7	17	59	0.96(1.05-1.43)	
	Empc Correction				1558	345	7	17	49		
1,2,3,4,7,8-HxCDF											M
373.8208	43:47	43:47	-2	1.000	92986	23690	53	132	447		
375.8178	43:47	43:47	-2	1.000	77948	19346	54	135	358	1.19(1.05-1.43)	M
1,2,3,6,7,8-HxCDF											M
373.8208	43:55	43:55	-2	1.000	26143	5960	53	132	112		M
375.8178	43:55	43:55	-2	1.000	23282	5639	54	135	104	1.12(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											RQM
373.8208	44:38	44:38	-2	1.000	3676	963	53	132	18		M
375.8178	44:38	44:38	-2	1.000	3661	730	54	135	14	1.00(1.05-1.43)	M
	Empc Correction				2964	776	54	135	14		
1,2,3,7,8,9-HxCDF											M
373.8208	45:35	45:35	-1	1.000	2146	461	53	132	9		M
375.8178	45:35	45:35	-1	1.000	2030	423	54	135	8	1.06(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:33	44:10	-96	0.969	2908	649	53	132	12		a
	Empc Correction				2424	705	53	132	13		
375.8178	42:33	44:10	-96	0.969	1955	569	54	135	11	1.49(1.05-1.43)	
373.8208	42:44	44:10	-86	0.973	12077	3187	53	132	60		a
375.8178	42:44	44:10	-86	0.973	10174	2373	54	135	44	1.19(1.05-1.43)	
373.8208	43:20	44:10	-49	0.987	6674	1721	53	132	32		a
375.8178	43:20	44:10	-49	0.987	6540	1641	54	135	30	1.02(1.05-1.43)	
	Empc Correction				5382	1387	54	135	26		
373.8208	43:32	44:10	-37	0.992	5045	1171	53	132	22		M
375.8178	43:32	44:10	-37	0.992	4858	1104	54	135	20	1.04(1.05-1.43)	
	Empc Correction				4068	944	54	135	17		
373.8208	44:32	44:10	22	1.014	3497	516	53	132	10		M
375.8178	44:28	44:10	18	1.013	3388	470	54	135	9	1.03(1.05-1.43)	
	Empc Correction				2820	416	54	135	8		
373.8208	45:42	44:10	92	1.041	5518	1371	53	132	26		M
375.8178	45:42	44:10	92	1.041	5659	1457	54	135	27	0.98(1.05-1.43)	
	Empc Correction				4449	1105	54	135	20		
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:35	-2	1.000	88799	16832	63	157	267		
425.7737	49:36	49:35	-2	1.000	83625	13458	66	165	204	1.06(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:25	49:03	-37	0.976	211312	39973	63	157	634		
425.7737	48:25	49:03	-37	0.976	209811	41075	66	165	622	1.01(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:56	47:56	-2	1.000	28648	6149	12	30	512		M
409.7788	47:56	47:56	-2	1.000	27197	5421	60	150	90	1.05(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											RQMa
407.7817	50:17	50:15	0	1.001	7067	1073	12	30	89		M
	Empc Correction				5376	1087	12	30	91		
409.7788	50:15	50:15	-2	1.000	5170	1046	60	150	17	1.37(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											RQMa
407.7817	48:18	49:56	-98	1.008	2660	529	12	30	44		a
	Empc Correction				1599	246	12	30	21		
409.7788	48:18	49:56	-98	1.008	1538	237	60	150	4	1.73(0.88-1.20)	
407.7817	48:35	49:56	-81	1.014	16088	3549	12	30	296		a
409.7788	48:34	49:56	-82	1.013	15958	3281	60	150	55	1.01(0.88-1.20)	M
OCDD											M
457.7377	53:51	53:51	-2	1.000	1648167	373984	34	85	11000		M
459.7348	53:51	53:51	-2	1.000	1848139	420127	21	52	20006	0.89(0.76-1.02)	M
OCDF											M
441.7428	53:59	53:59	-2	1.000	59098	14384	15	37	959		M
443.7399	53:59	53:59	-2	1.000	68969	17713	43	107	412	0.86(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:45	30:47	-3	1.017	581802	57181	345	862	166		
333.9338	30:45	30:47	-3	1.017	745372	77715	184	460	422	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:46	28:48	-3	0.952	950697	104799	225	562	466		
317.9389	28:46	28:48	-3	0.952	1188051	138014	371	927	372	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:32	40:33	-2	1.341	645457	141488	258	645	548		
369.8919	40:32	40:33	-2	1.341	391828	89798	286	715	314	1.65(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:45	-2	1.282	1017440	186818	653	1632	286		
353.8970	38:44	38:45	-2	1.282	635707	116419	328	820	355	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:00	40:01	-2	1.323	1038261	224496	653	1632	344		
353.8970	40:00	40:01	-2	1.323	636903	137527	328	820	419	1.63(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:47	44:47	-2	0.989	639513	157767	235	587	671		
403.8529	44:47	44:47	-2	0.989	508629	128451	60	150	2141	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:54	44:54	-2	0.991	686317	158305	235	587	674		
403.8529	44:54	44:54	-2	0.991	542895	126033	60	150	2101	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:46	-1	0.966	529634	142148	454	1135	313		
385.8610	43:46	43:46	-1	0.966	981626	264179	608	1520	435	0.54(0.43-0.59)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:54	-1	0.969	693554	160013	454	1135	352		
385.8610	43:55	43:54	-1	0.969	1288044	296956	608	1520	488	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:37	44:37	-2	0.985	569209	138350	454	1135	305		
385.8610	44:37	44:37	-2	0.985	1137179	277082	608	1520	456	0.50(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:34	45:33	-1	1.006	546746	111407	454	1135	245		
385.8610	45:34	45:33	-1	1.006	1036303	212951	608	1520	350	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:35	-2	1.095	592409	102326	364	910	281		
437.8140	49:35	49:35	-2	1.095	521740	93478	302	755	310	1.14(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:55	-2	1.058	441289	90629	301	752	301		
419.8220	47:55	47:55	-2	1.058	949561	195687	543	1357	360	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:14	50:14	-2	1.109	351970	61658	301	752	205		
419.8220	50:15	50:14	-1	1.109	762994	127302	543	1357	234	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:50	-1	1.189	811562	173666	567	1417	306		
471.7750	53:51	53:50	-1	1.189	926694	191257	334	835	573	0.88(0.76-1.02)	
13C-OCDF											
453.7830	53:58	53:58	-2	1.192	1225288	267028	246	615	1085		
455.7801	53:58	53:58	-2	1.192	1389388	303901	535	1337	568	0.88(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:47	30:49	-3	1.018	346109	35567	185	462	192		
13C-1,2,3,4-TCDD											
331.9368	30:14	30:17	-4		1755357	201945	345	862	585		
333.9338	30:14	30:17	-4		2117696	233384	184	460	1268	0.83(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:18	45:20	-2		2270583	498603	235	587	2122		
403.8529	45:18	45:20	-2		1743923	391727	60	150	6529	1.30(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 29.467

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1327174	134896

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1327174	134896

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:51	1301	241	1104	219	0.0772	1.18	RQ
24:51	850	168	1104	219	0.0627		Empc Correction
27:46	8219	979	9735	1084	0.5765	0.84	
28:41	1886	319	2308	314	0.1347	0.82	
30:16	1569	223	1932	274	0.1124	0.81	
30:31	4741	997	6457	1067	0.3596	0.73	
31:52	45186	4693	53722	5480	3.18	0.84	
Signal Totals:							
	62451	7379	75258	8438			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	138160	15890				0.84	RQ
	137709	15817					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.436 = (138160 * 50.000) / (1327174 * 1.173)
Empc Amount: 4.422 = (137709 * 50.000) / (1327174 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 28.196

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2138748	242813

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2138748	242813

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:20	4989	680	4257	718	0.1986	1.17	RQ
23:20	3277	552	4257	718	0.1619		Empc Correction
23:48	3445	554	4806	631	0.1773	0.72	
24:20	26692	3093	34196	4734	1.31	0.78	
24:37	2764	510	4583	626	0.1578	0.60	RQM
24:37	2764	510	3589	662	0.1365		Empc Correction
25:02	136407	16485	170512	20957	6.59	0.80	
25:37	25002	6210	49863	8562	1.61	0.50	RQ
25:37	25002	6210	32470	8064	1.23		Empc Correction
25:45	148111	18173	162482	20511	6.67	0.91	RQ
25:45	125111	15793	162482	20511	6.18		Empc Correction
26:12	25891	3149	29133	4104	1.18	0.89	
26:25	82878	10195	101388	13367	3.96	0.82	
26:57	118456	14876	150262	19296	5.77	0.79	
27:12	14763	2042	17071	1829	0.6839	0.86	
27:42	1320706	157141	1666473	199779	64.2	0.79	
28:19	68532	8264	89405	10751	3.39	0.77	
29:23	4244	493	3641	452	0.1694	1.17	RQ
29:23	2803	348	3641	452	0.1384		Empc Correction
29:59	209583	23004	268215	29556	10.3	0.78	
30:40	44883	4608	59998	5147	2.25	0.75	
32:47	4531	262	3245	341	0.1671	1.40	RQ
32:47	2498	262	3245	341	0.1234		Empc Correction
33:51	222755	22305	273622	27429	10.7	0.81	
Signal Totals:							
	2436446	289391	3074765	368328			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	5557784	660834				0.80	RQM
	5511211	657719					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 39.432

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1037285	231286

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1037285	231286

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:35	3218	595	1551	297	0.2203	2.07	RQ
37:35	2404	460	1551	297	0.1827		Empc Correction
38:27	5296	1000	3638	786	0.4127	1.46	
39:07	995	270	799	230	0.0829	1.25	RQ
39:07	995	270	641	174	0.0756		Empc Correction
39:40	1226	192	591	121	0.0839	2.07	RQ
39:40	916	187	591	121	0.0696		Empc Correction
39:49	2726	567	1070	207	0.1754	2.55	RQ
39:49	1658	320	1070	207	0.1260		Empc Correction
Signal Totals:							
	11269	2237	7491	1585			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	21110	4265				1.76	RQ
	18760	3822					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9752 = (21110 * 50.000) / (1037285 * 1.043)
Empc Amount: 0.8667 = (18760 * 50.000) / (1037285 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDF, RT: 38.009

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1653147	303237
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1675164	362023

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1664155	332630

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:40	3654	635	2946	420	0.1725	1.24	RQ
34:40	3654	635	2357	409	0.1571		Empc Correction
37:15	32077	4925	20286	3428	1.37	1.58	
37:34	700	150	1799	258	0.0653	0.39	RQ
37:34	700	150	451	96	0.0301		Empc Correction
38:40	5989	1803	3122	1103	0.2381	1.92	RQMa
38:40	4839	1709	3122	1103	0.2081		Empc Correction
39:17	22660	4365	15956	2962	1.01	1.42	
40:16	13340	2783	8688	1635	0.5757	1.54	
41:21	4127	814	2903	621	0.1837	1.42	M
Signal Totals:							
	81397	15381	53763	10254			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	138247	25902				1.48	RQMa
	135160	25635					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.613 = (138247 * 50.000) / (1664155 * 1.150)
Empc Amount: 3.532 = (135160 * 50.000) / (1664155 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 44.304

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1148142	286218
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1229212	284338
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1188677	285278

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	59435	15600	49435	13412	3.91	1.20	M
43:50	4021	643	1928	500	0.2139	2.09	RQ
43:50	2390	620	1928	500	0.1552		Empc Correction
44:07	16411	3897	14044	3182	1.09	1.17	
44:17	1933	429	2017	411	0.1420	0.96	RQ
44:17	1933	429	1558	345	0.1255		Empc Correction
Signal Totals:							
	80169	20546	66965	17439			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	149224	38074				1.21	RQM
	147134	37985					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.365 = (149224 * 50.000) / (1188677 * 1.170)
Empc Amount: 5.290 = (147134 * 50.000) / (1188677 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDF, RT: 44.151

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1511260	406327
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	1981598	456969
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1706388	415432
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1583049	324358

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1695573	400771

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:33	2908	649	1955	569	0.1111	1.49	RQa
42:33	2424	705	1955	569	0.1001		Empc Correction
42:44	12077	3187	10174	2373	0.5085	1.19	a
43:20	6674	1721	6540	1641	0.3020	1.02	RQa
43:20	6674	1721	5382	1387	0.2755		Empc Correction
43:32	5045	1171	4858	1104	0.2263	1.04	RQMa
43:32	5045	1171	4068	944	0.2082		Empc Correction
44:32	3497	516	3388	470	0.1573	1.03	RQMa
44:32	3497	516	2820	416	0.1444		Empc Correction
45:42	5518	1371	5659	1457	0.2554	0.98	RQMa
45:42	5518	1371	4449	1105	0.2278		Empc Correction
Signal Totals:							
	35235	8671	28848	6794			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	68293	16229				1.10	RQMa
	64083	15465					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.561 = (68293 * 50.000) / (1695573 * 1.290)
Empc Amount: 1.464 = (64083 * 50.000) / (1695573 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1114149	195804

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1114149	195804

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	211312	39973	209811	41075	16.9	1.01	
Signal Totals:	211312	39973	209811	41075			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	421123	81048				1.01	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 16.868 = (421123 * 50.000) / (1114149 * 1.120)

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Inject. Date: 17-Dec-2019 16:33:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 49.925

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1390850	286316
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1114964	188960

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1252907	237638

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:18	2660	529	1538	237	0.1164	1.73	RQa
48:18	1599	246	1538	237	0.0870		Empc Correction
48:35	16088	3549	15958	3281	0.8884	1.01	M
Signal Totals:							
	17687	3795	17496	3518			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	36244	7596				1.07	RQMa
	35183	7313					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.005 = (36244 * 50.000) / (1252907 * 1.440)
Empc Amount: 0.9753 = (35183 * 50.000) / (1252907 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

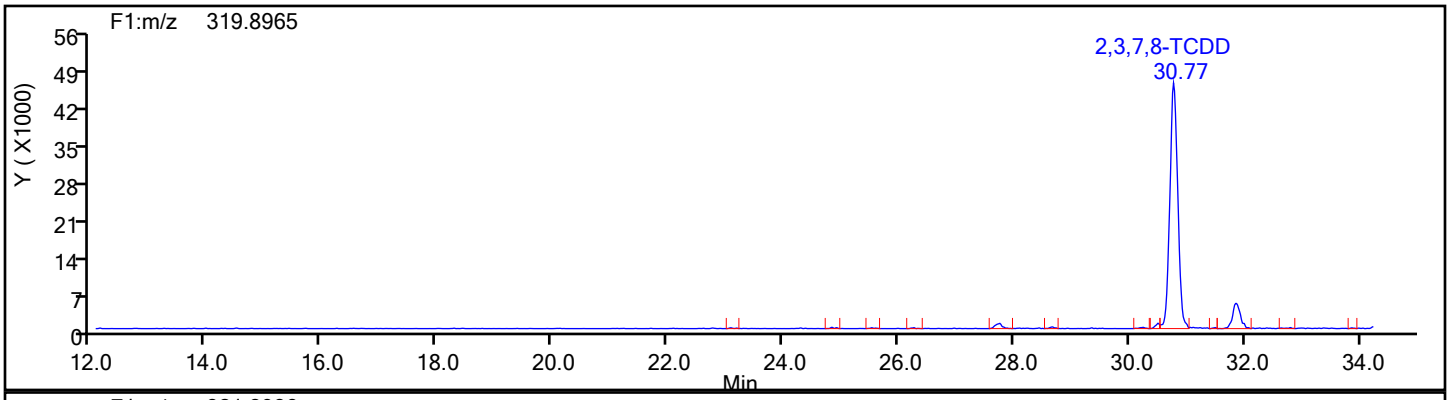
Review Flags
M - Manually Integrated
a - User Assigned ID

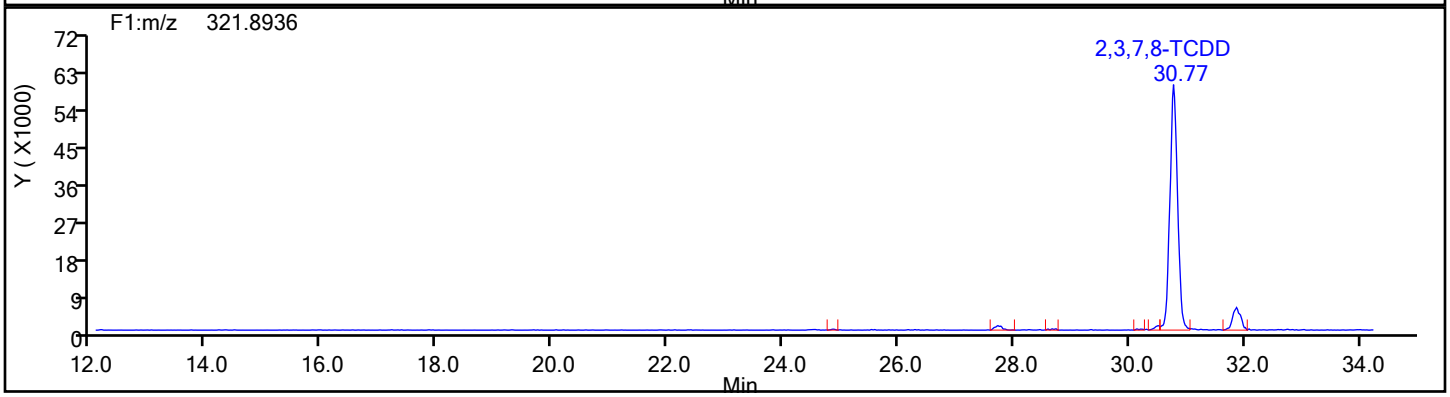
Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

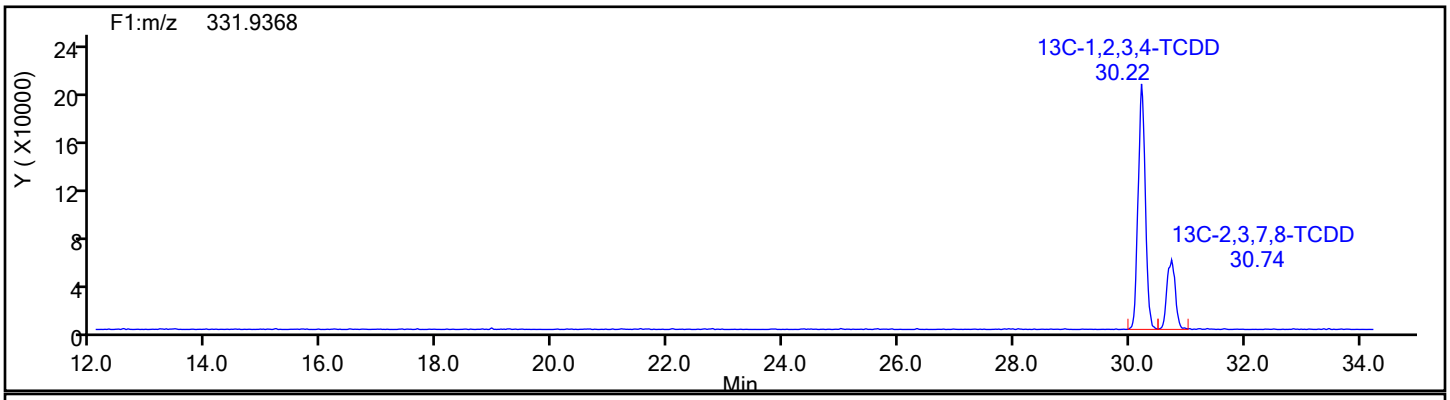
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

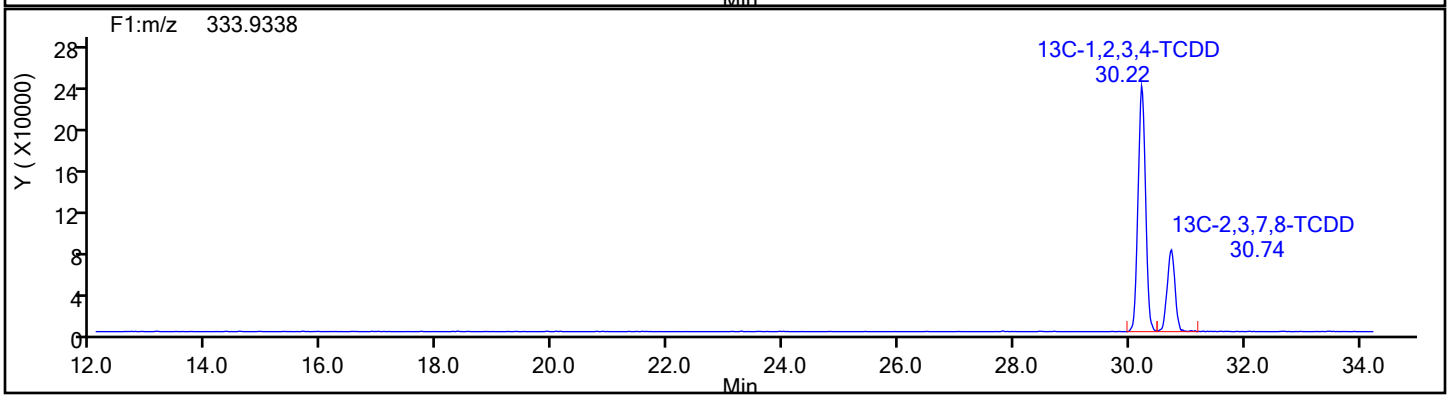
TCDD





TCDD Standards



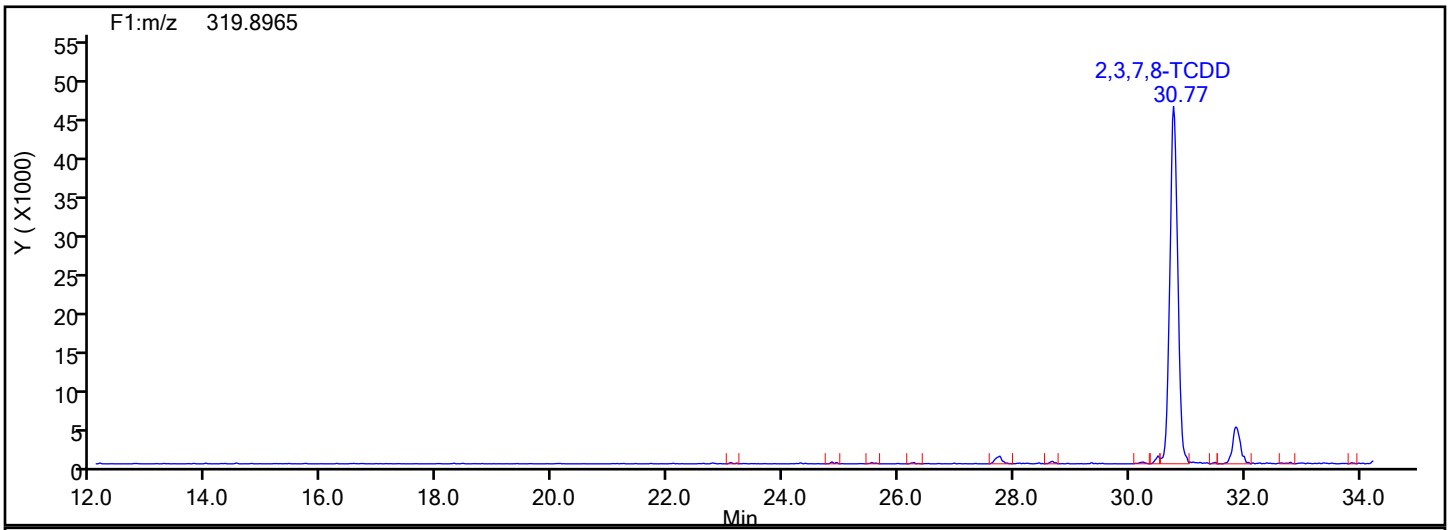


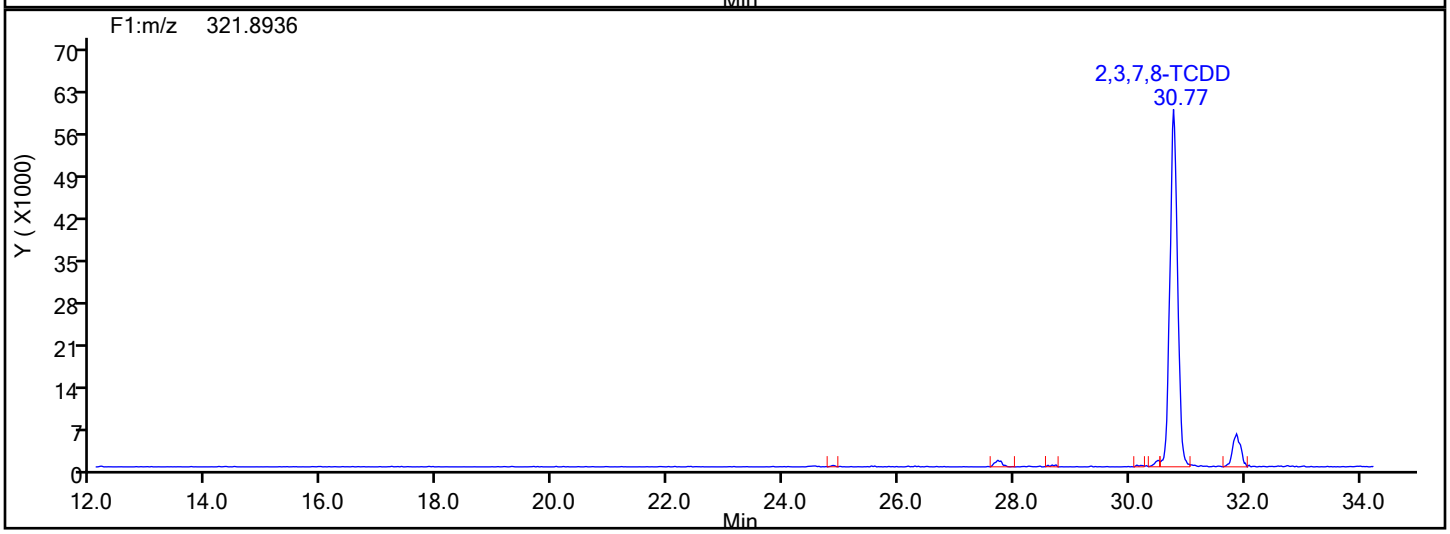
Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

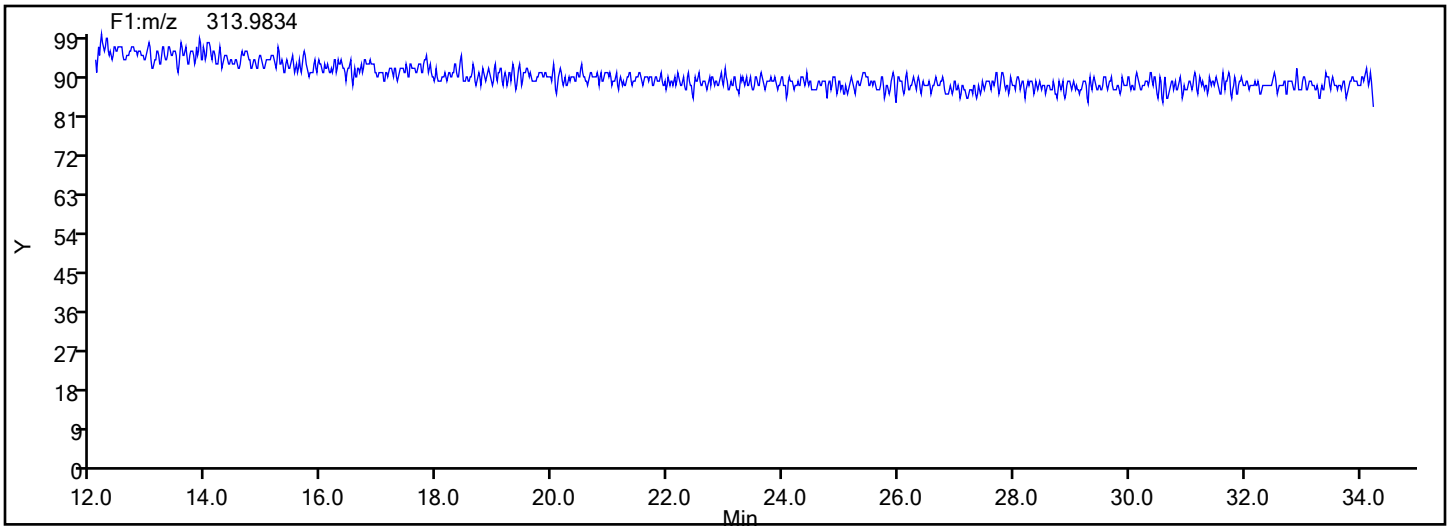
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



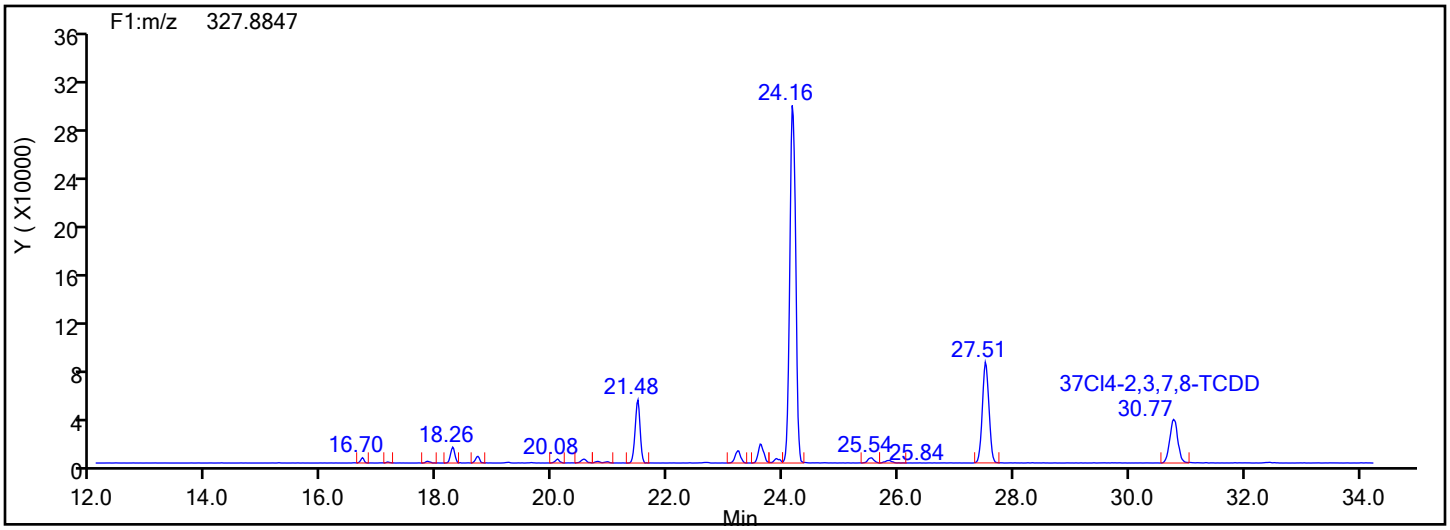
Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

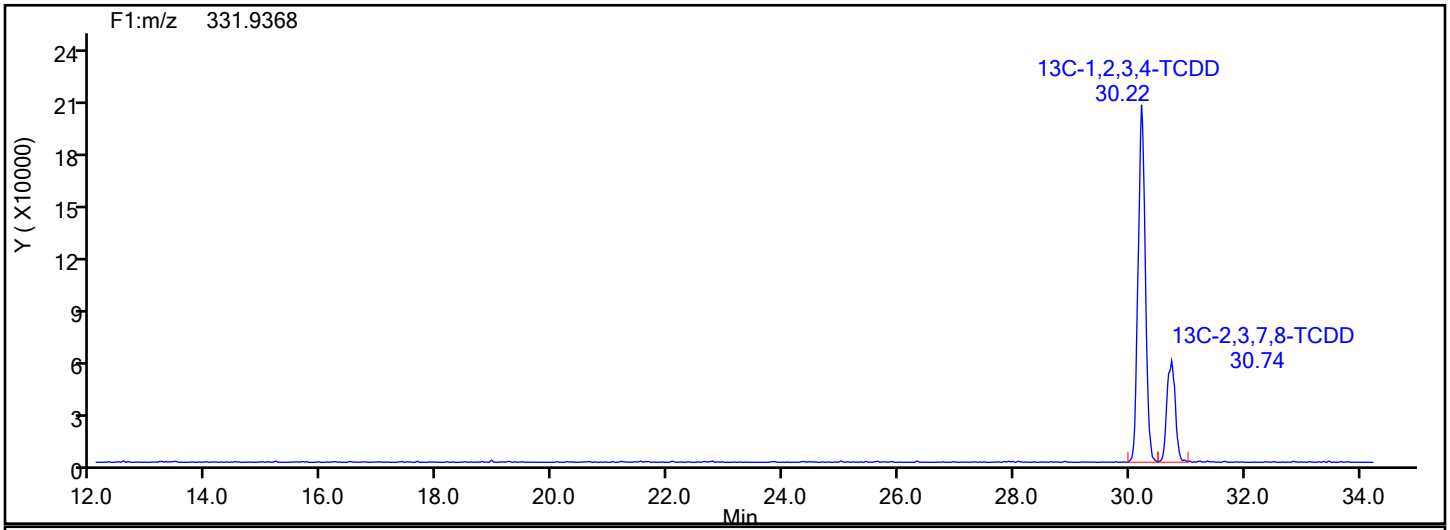
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d

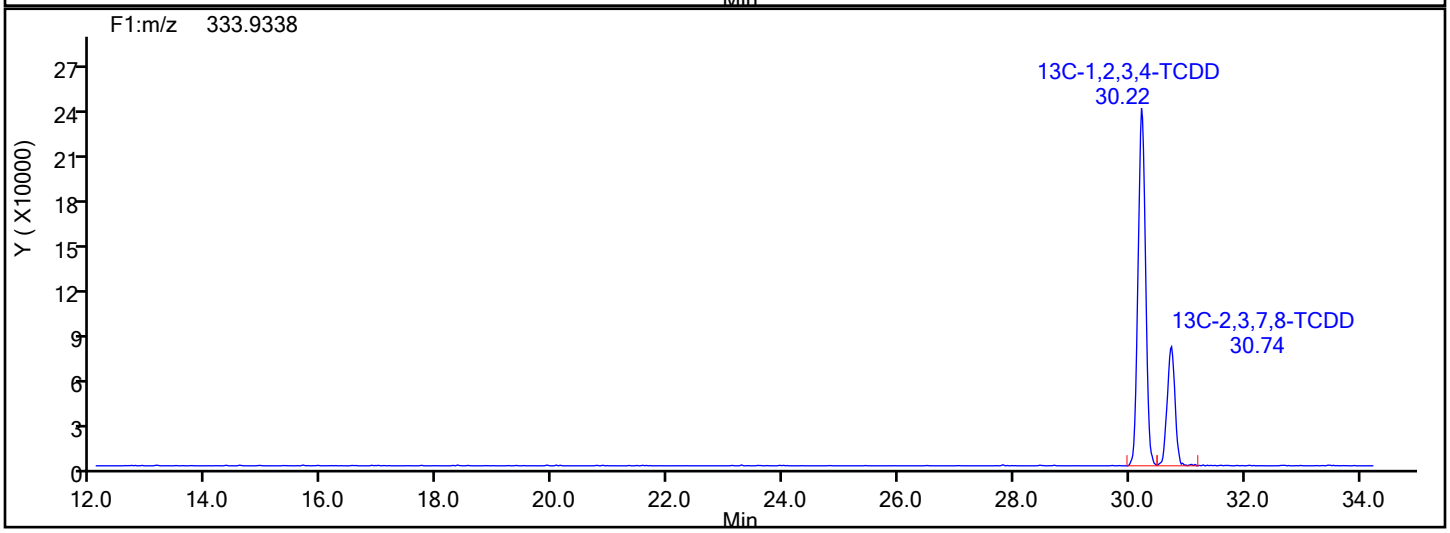
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



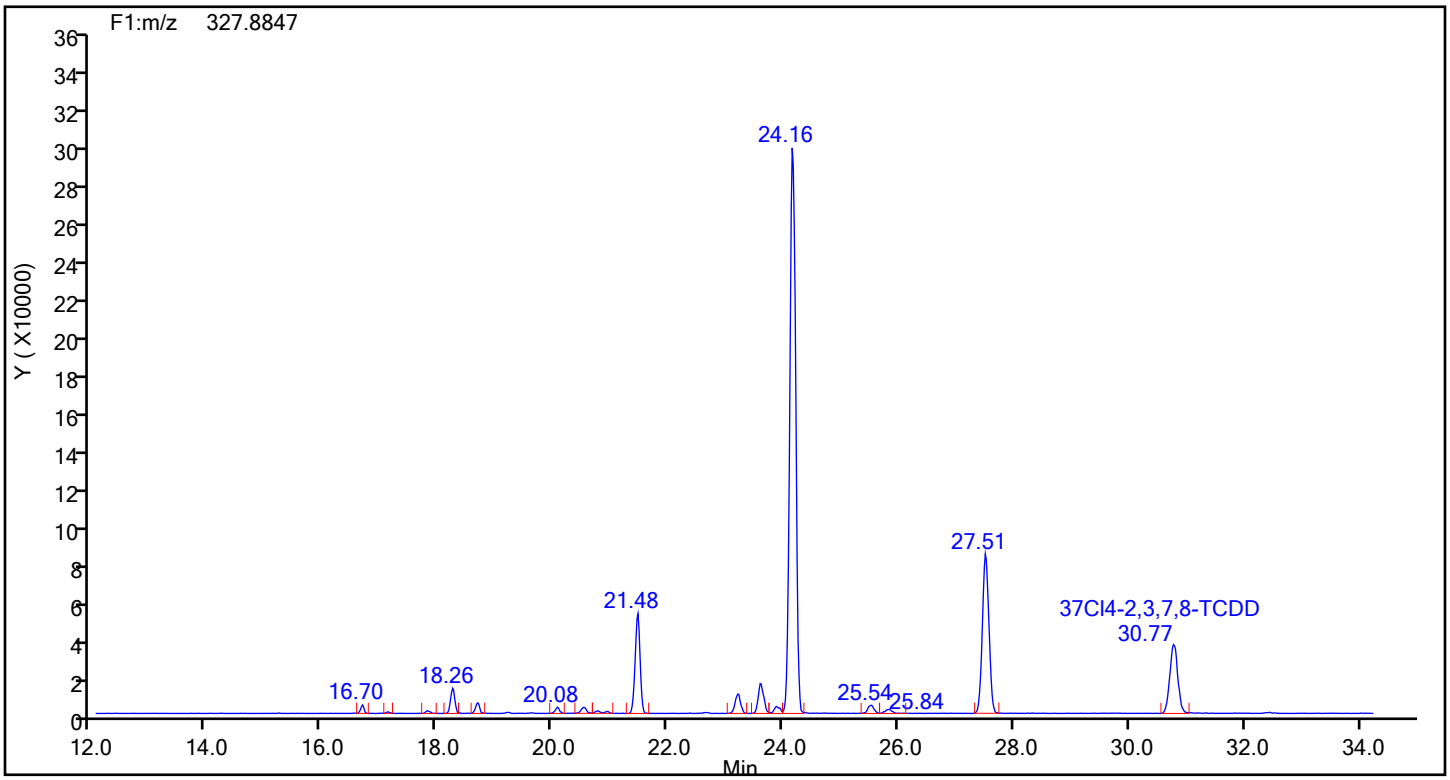


Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

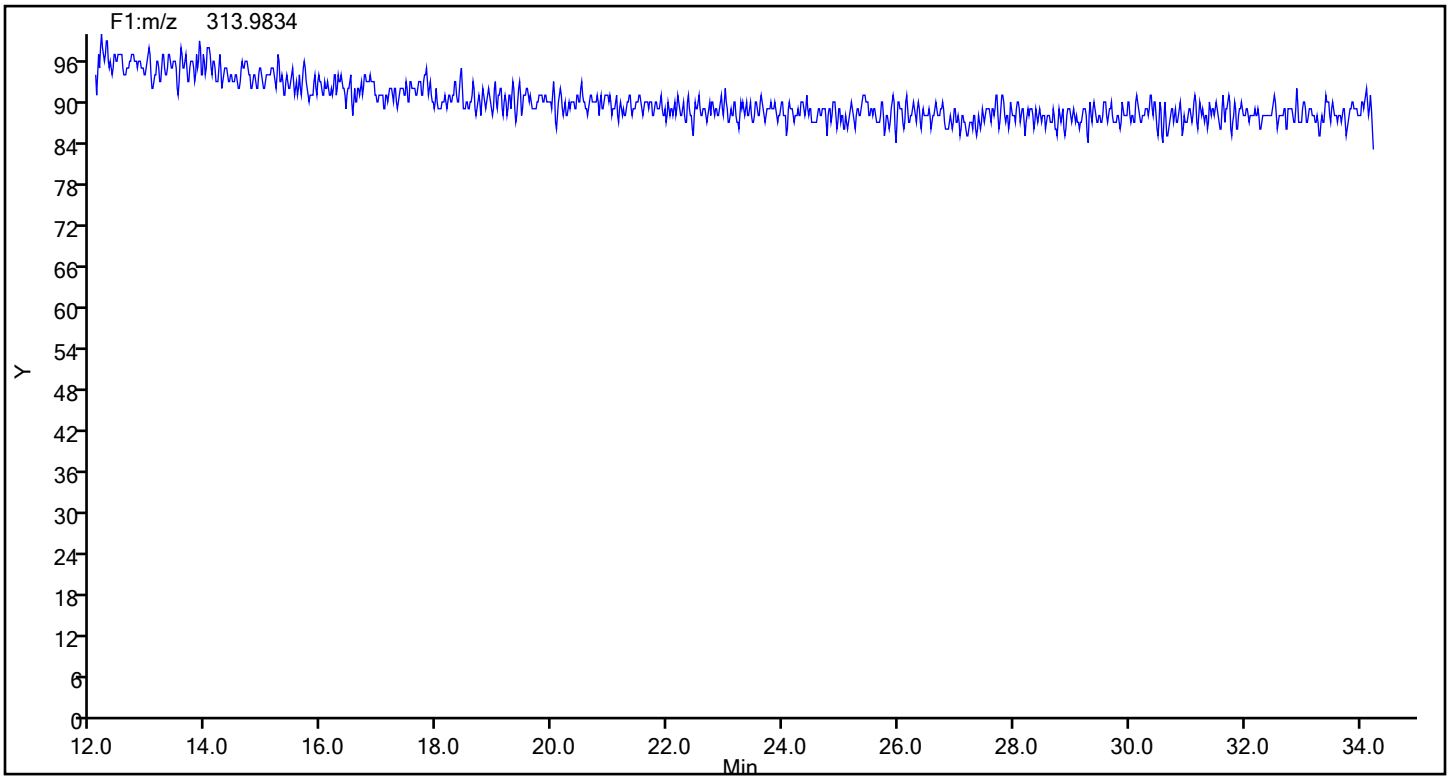
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
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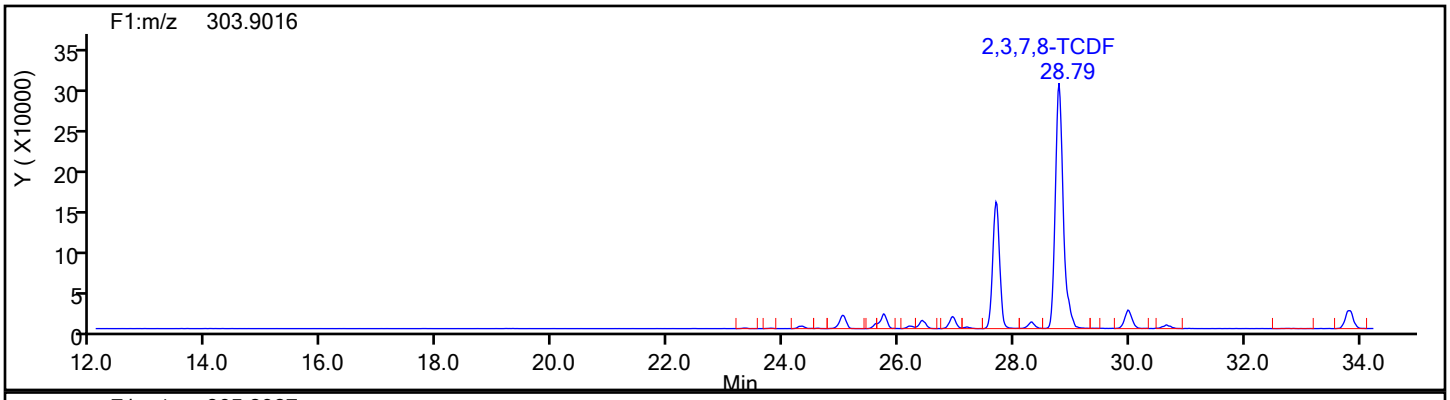
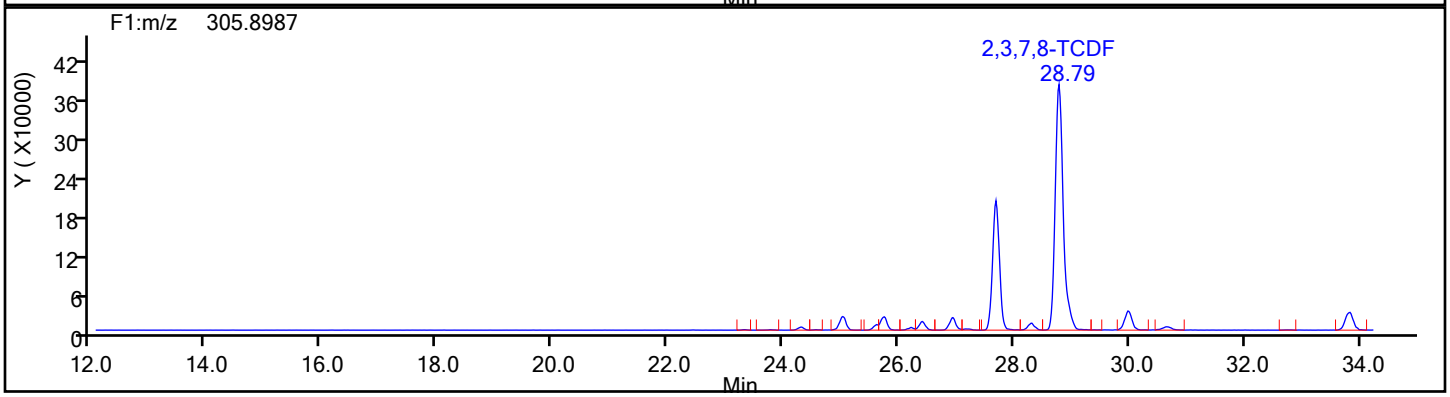
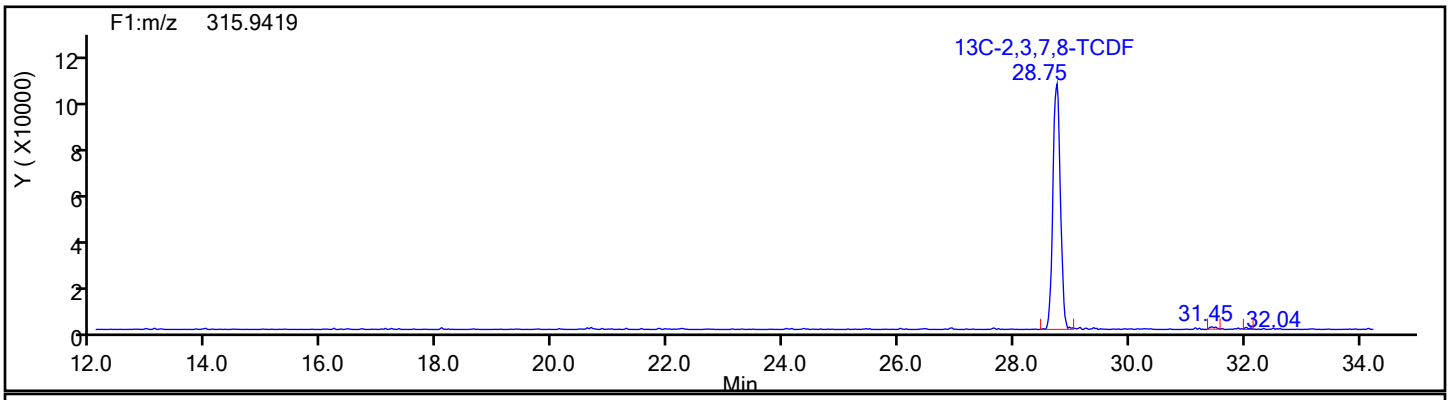
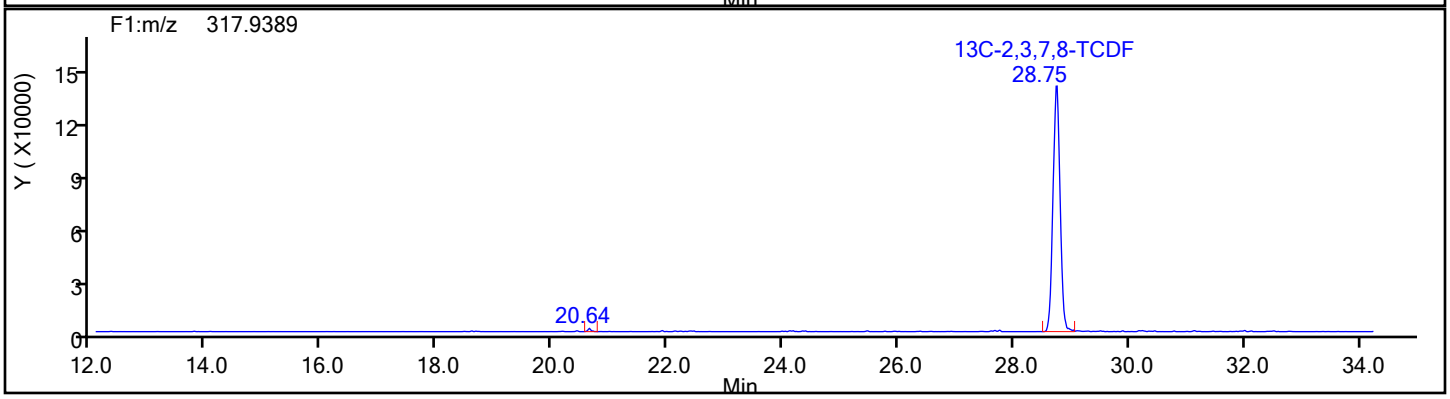
TCDF





TCDF Standards





Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
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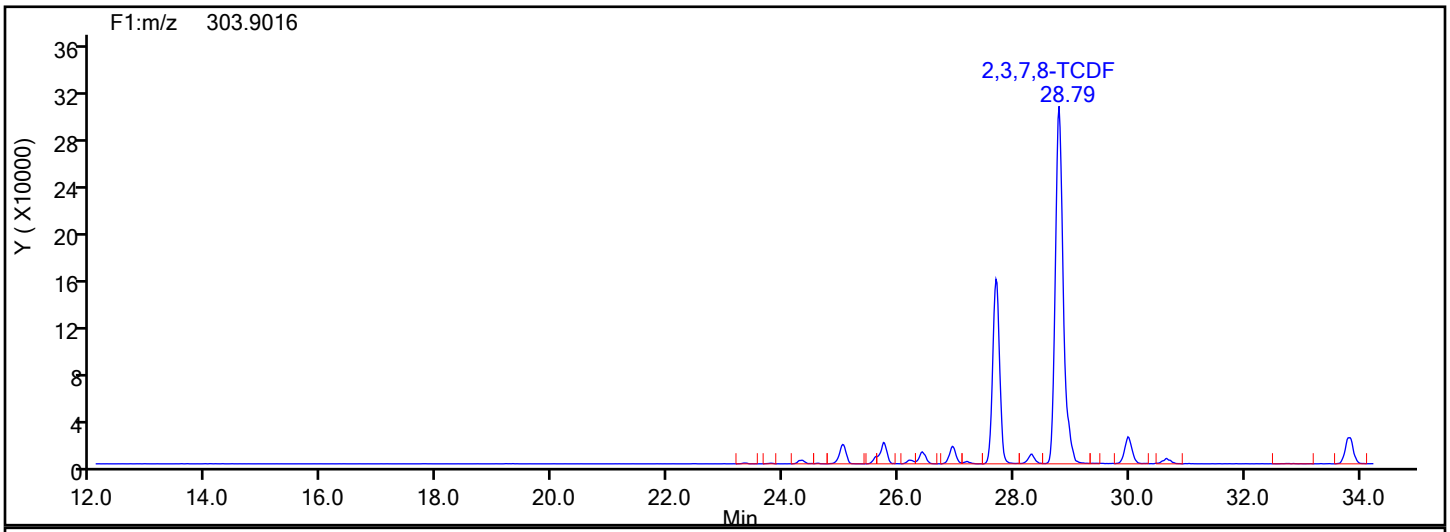
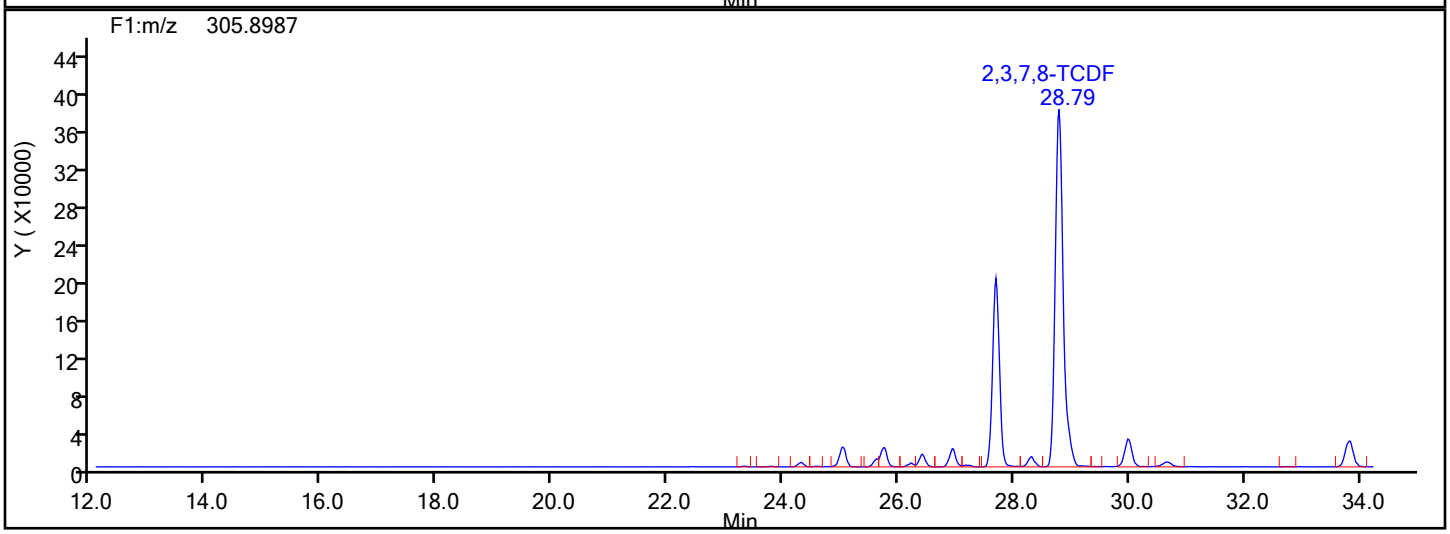
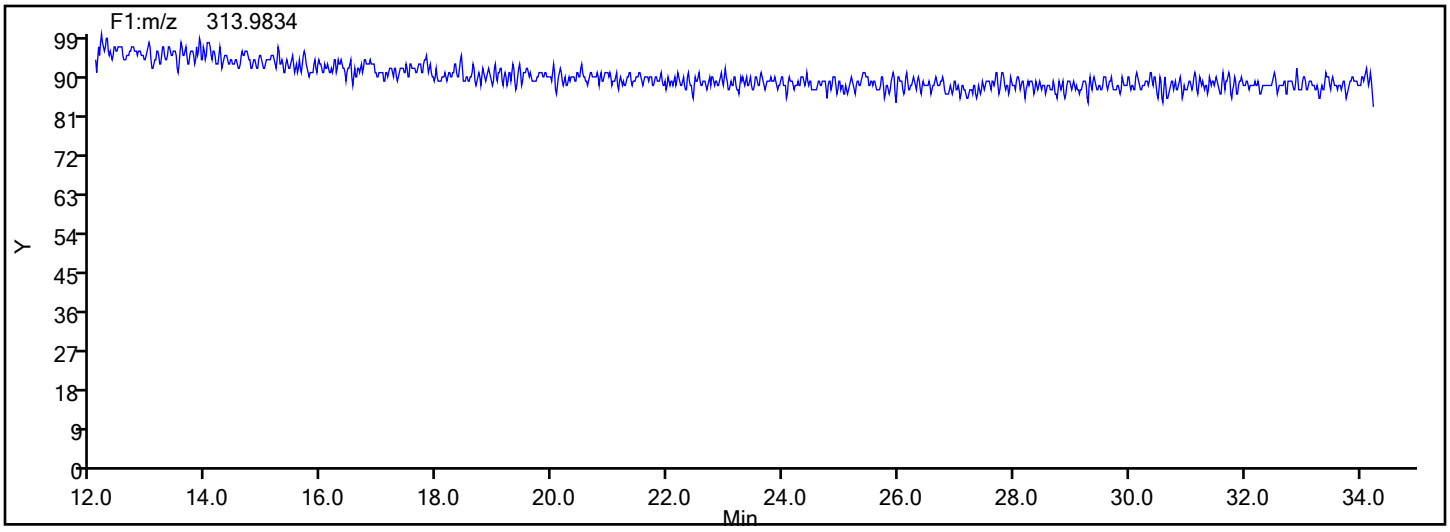
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

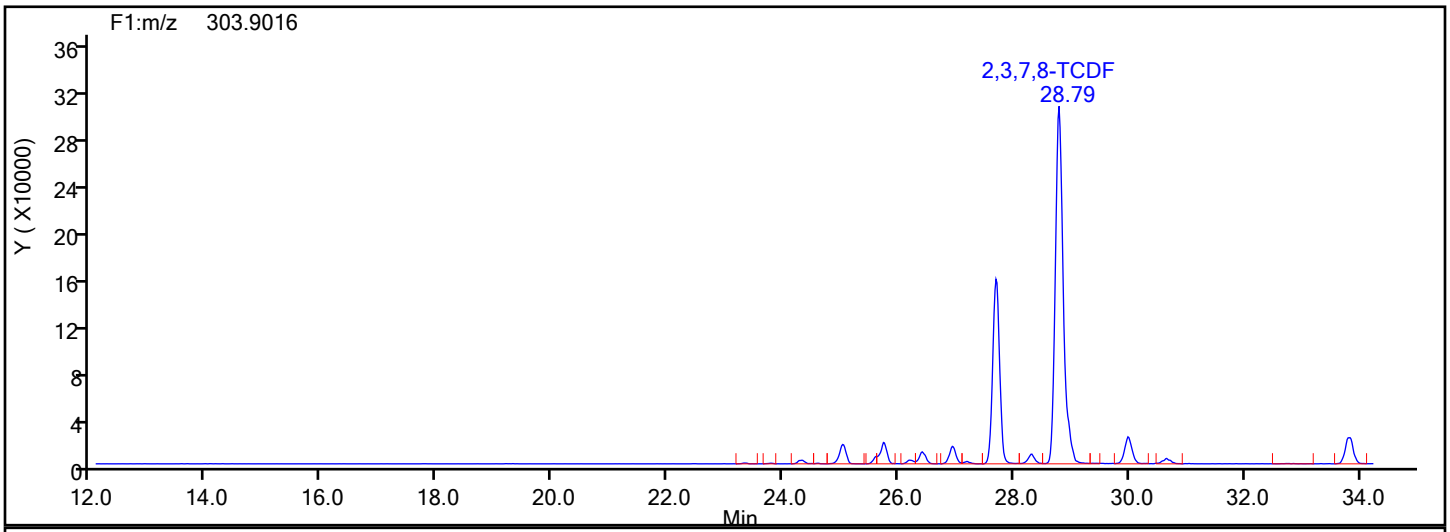


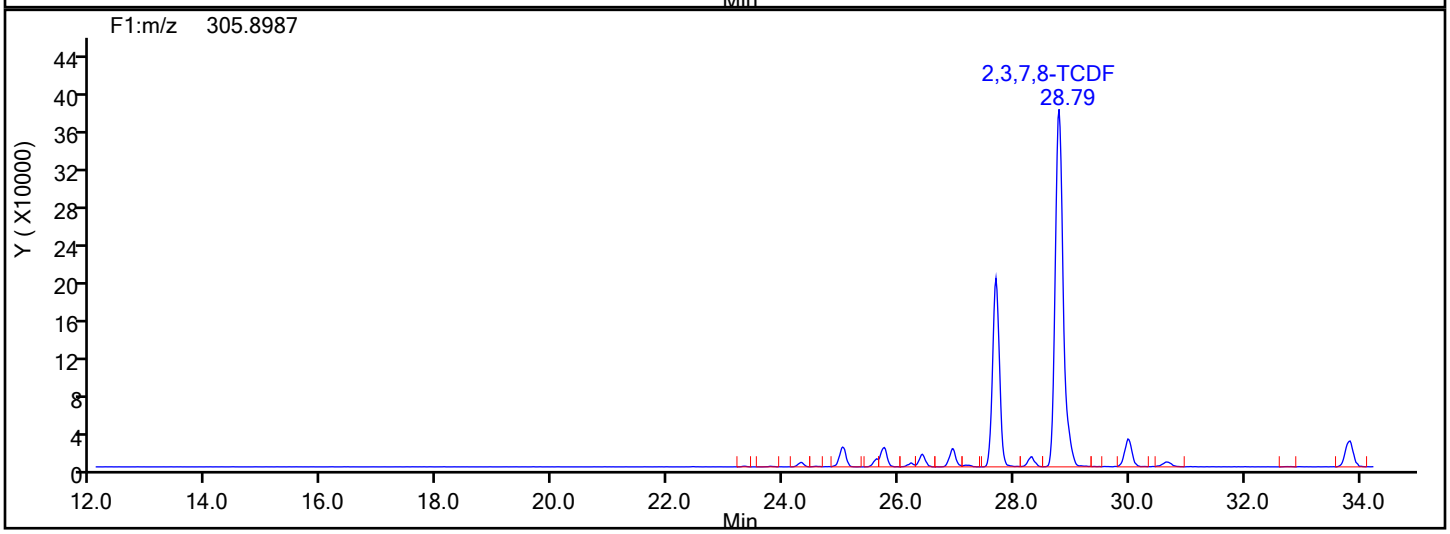
Report Date: 18-Dec-2019 03:49:00 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

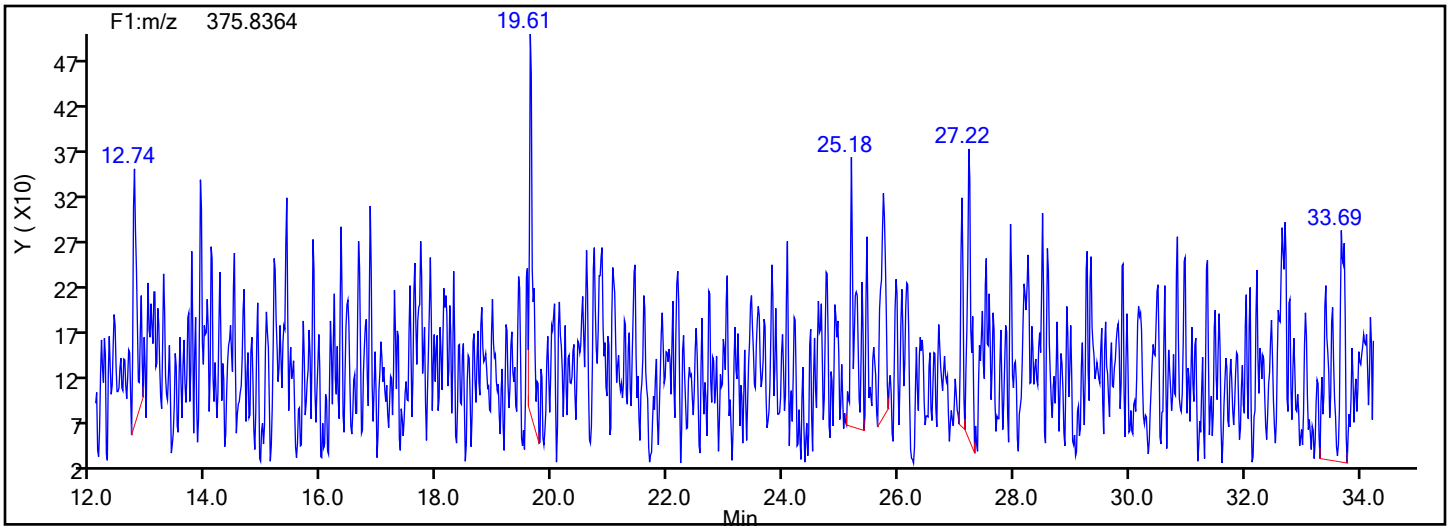
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

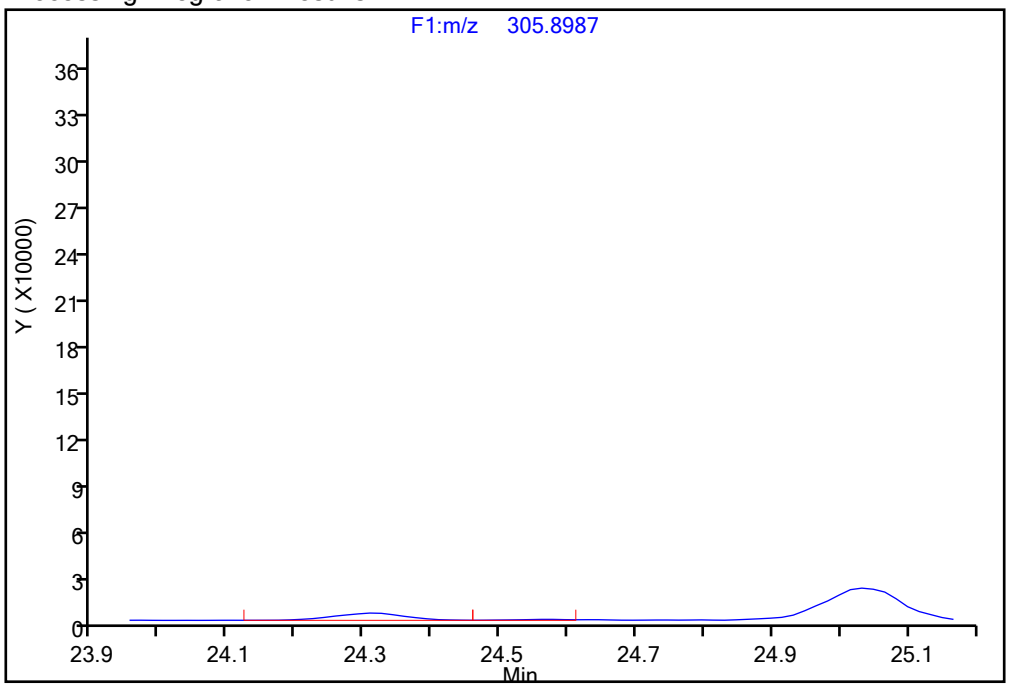
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.45- 33.94)

Signal: 2

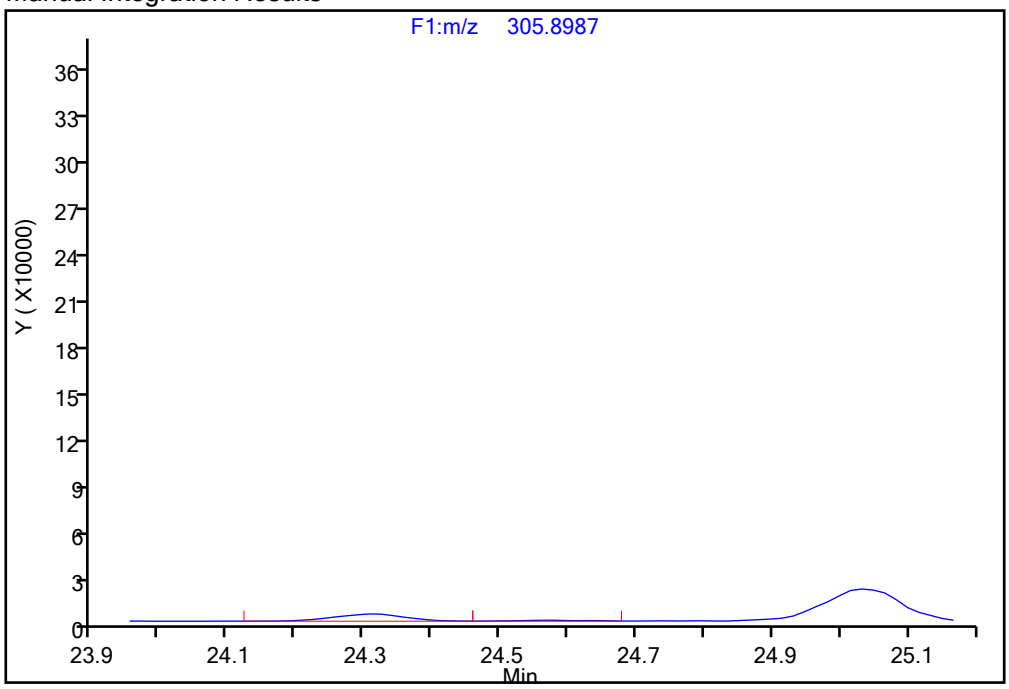
Processing Integration Results

RT = 24.560 Area = 3309



Manual Integration Results

RT = 24.560 Area = 4583 M



Reviewer: parslyt, 18-Dec-2019 03:37:51

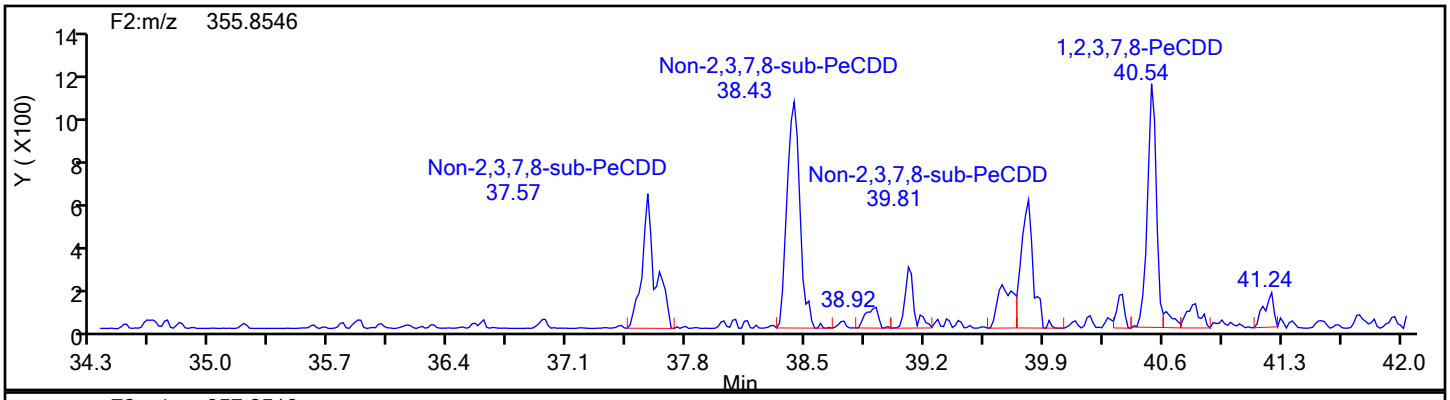
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

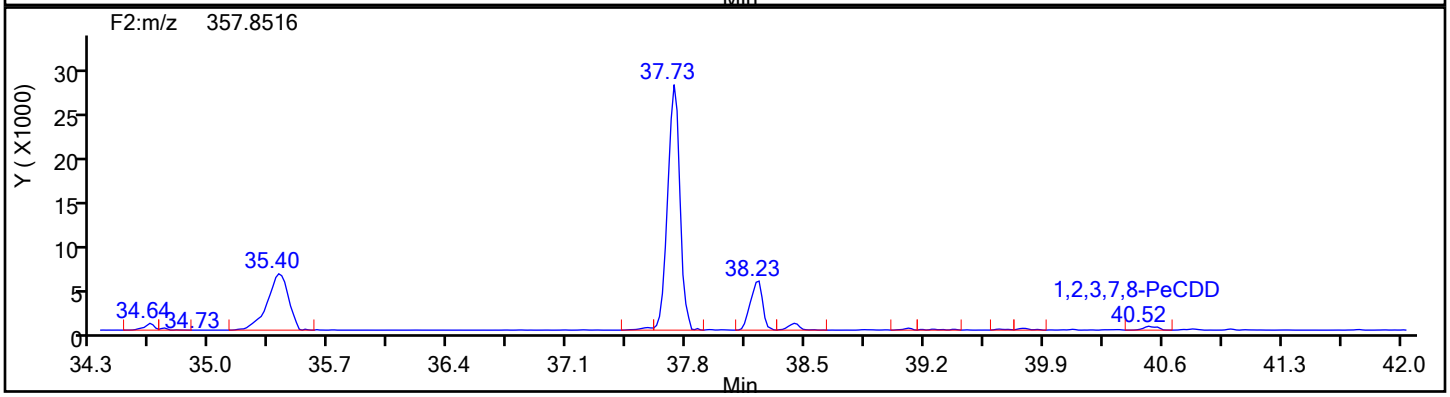
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

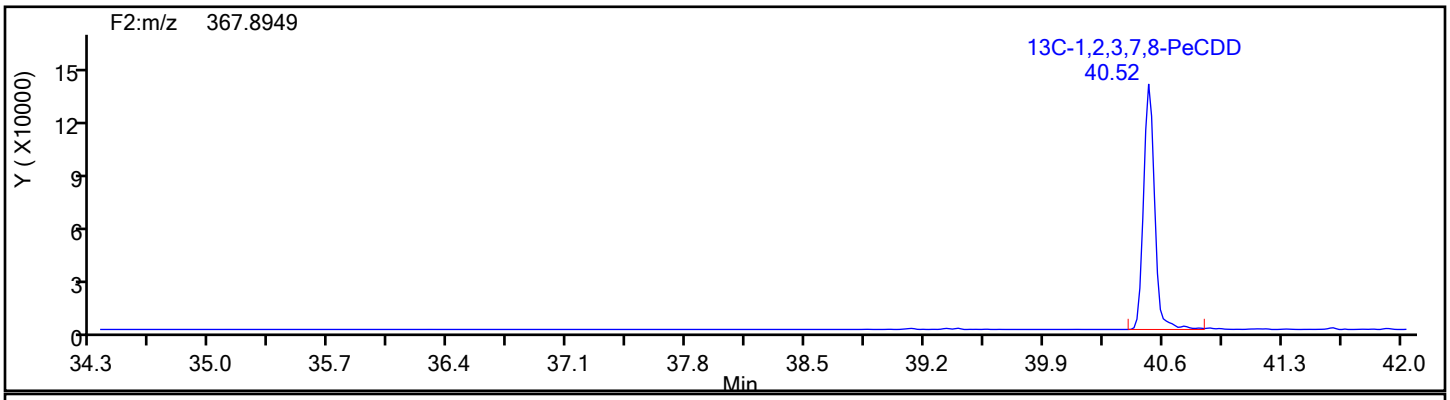
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

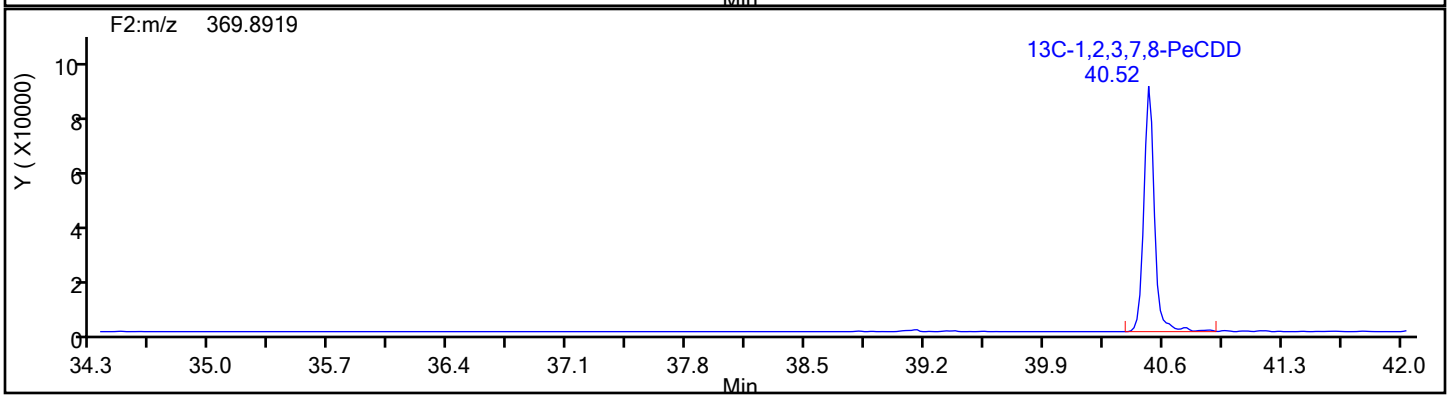
PeCDD





PeCDD Standards



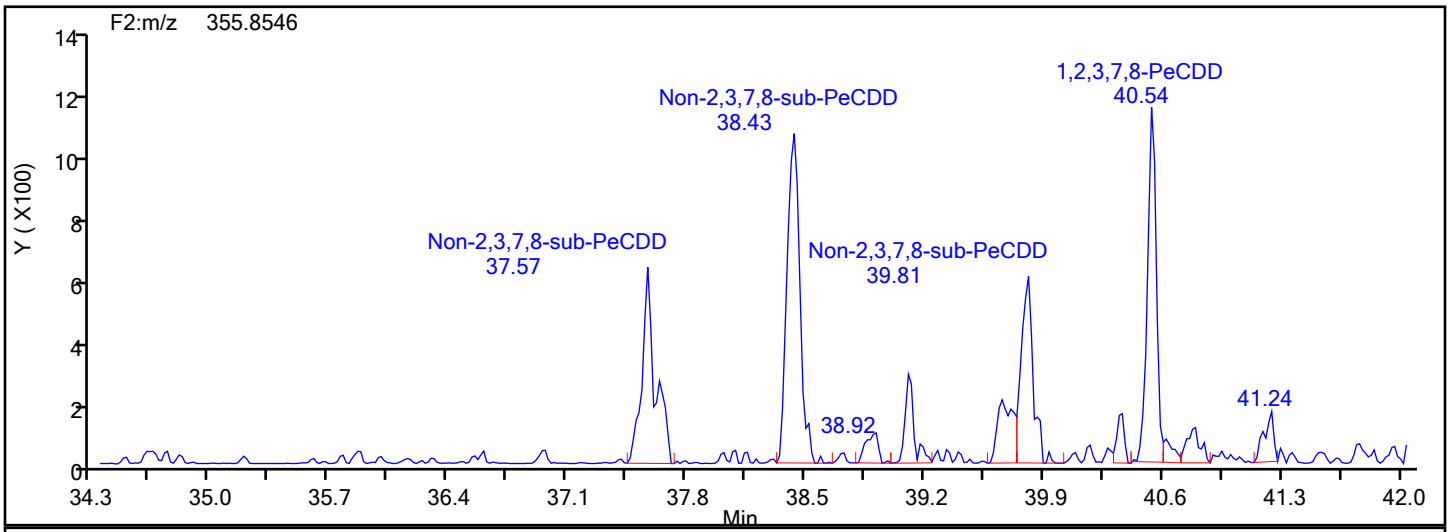


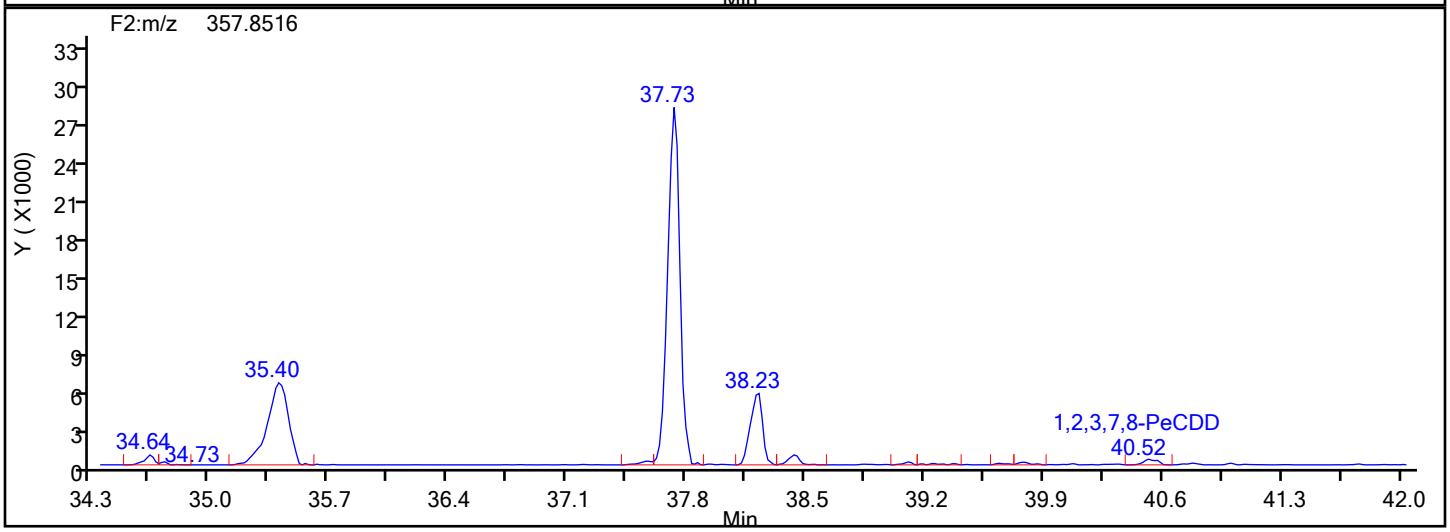
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

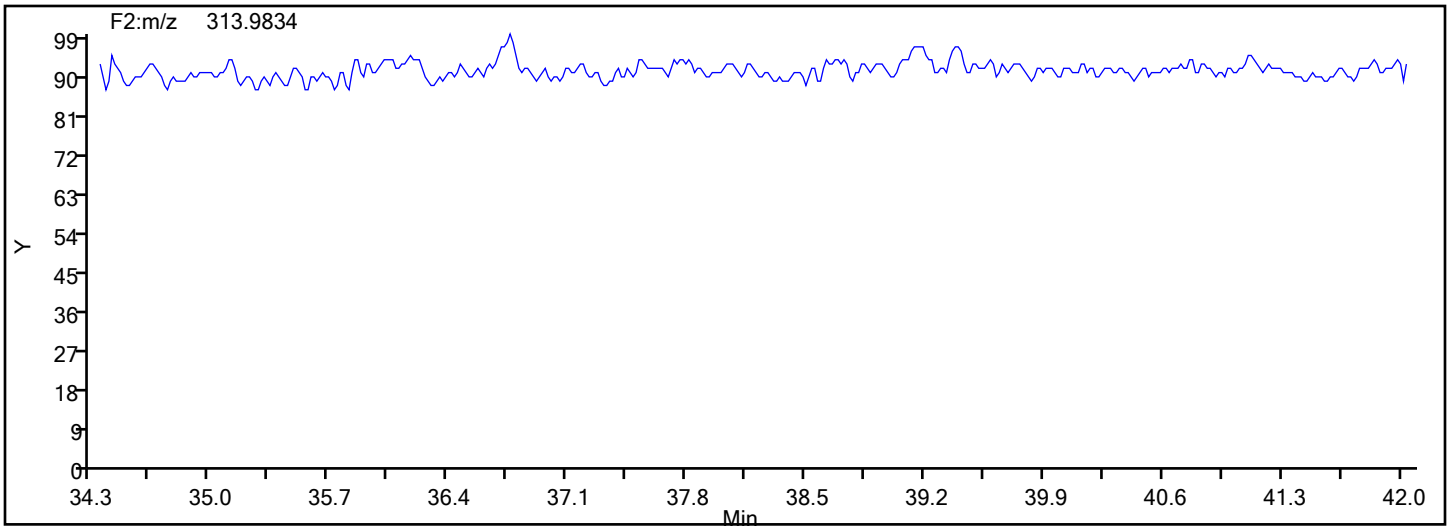
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

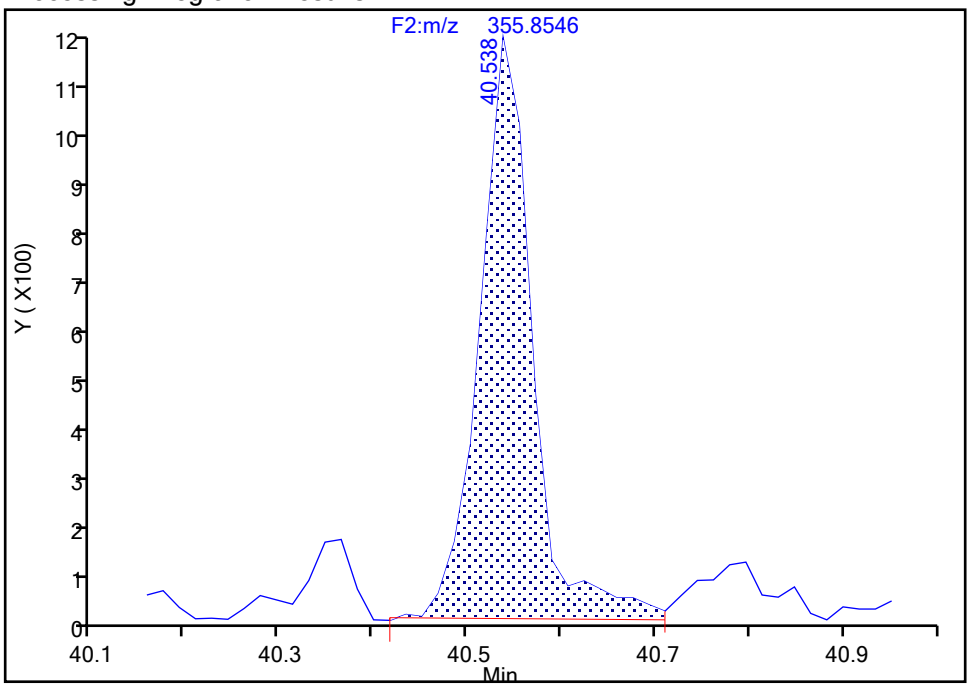
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

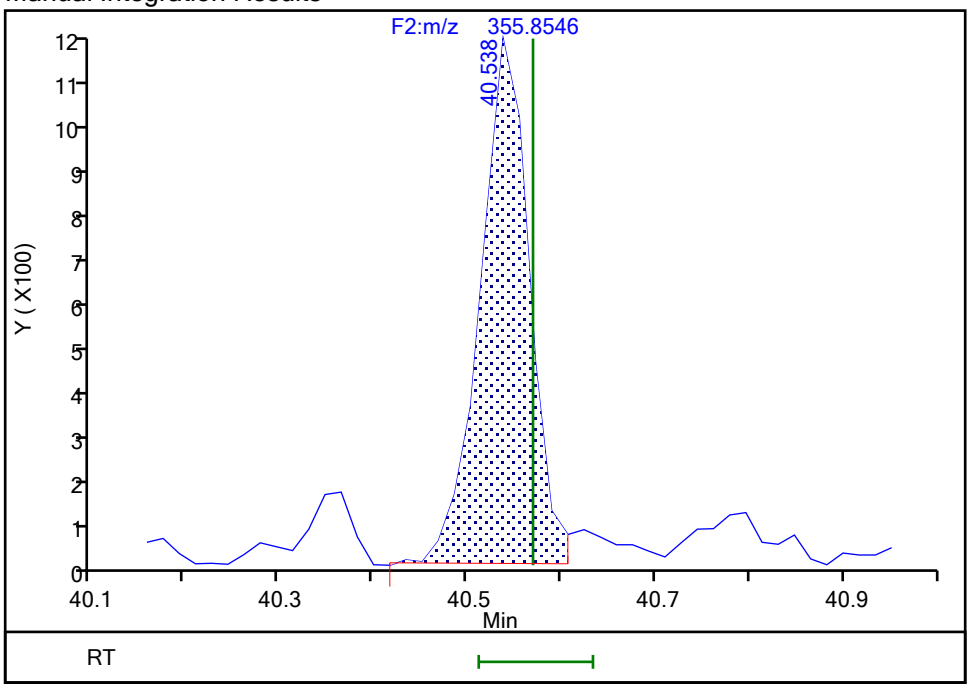
Processing Integration Results

RT: 40.54
Area: 4197
Amount: 0.310493
Amount Units: pg/ul



Manual Integration Results

RT: 40.54
Area: 3911
Amount: 0.297281
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:38:40

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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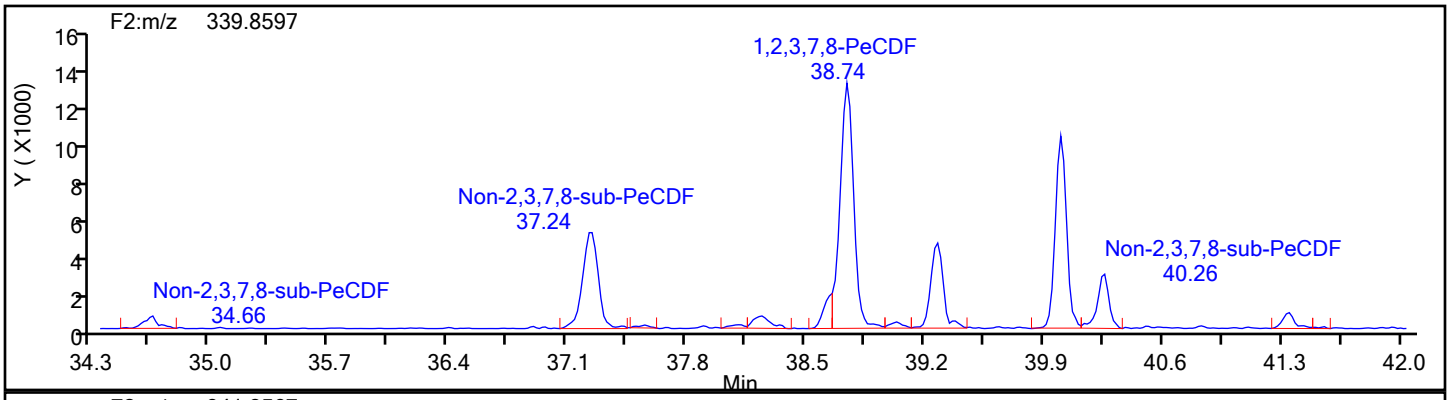
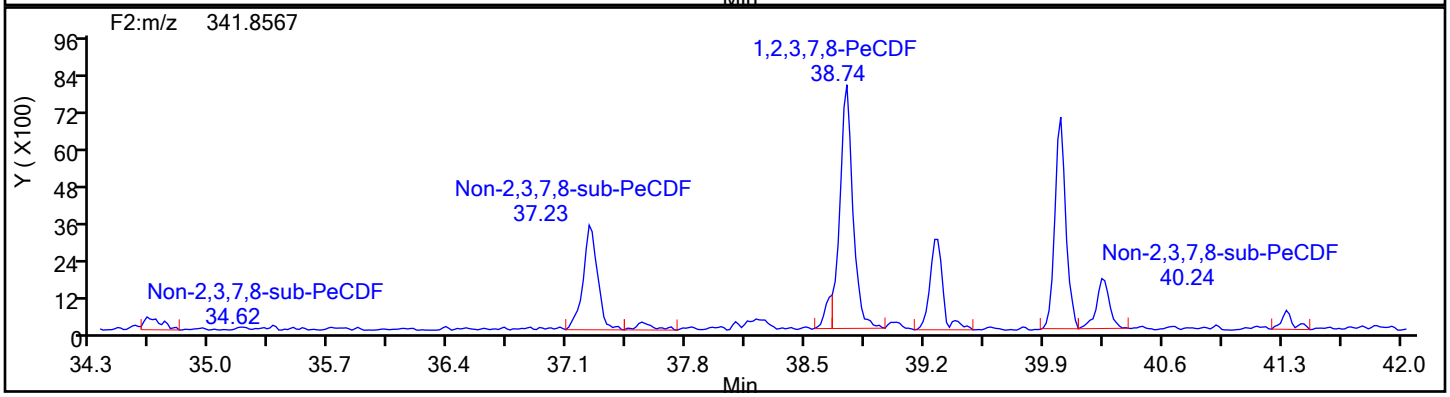
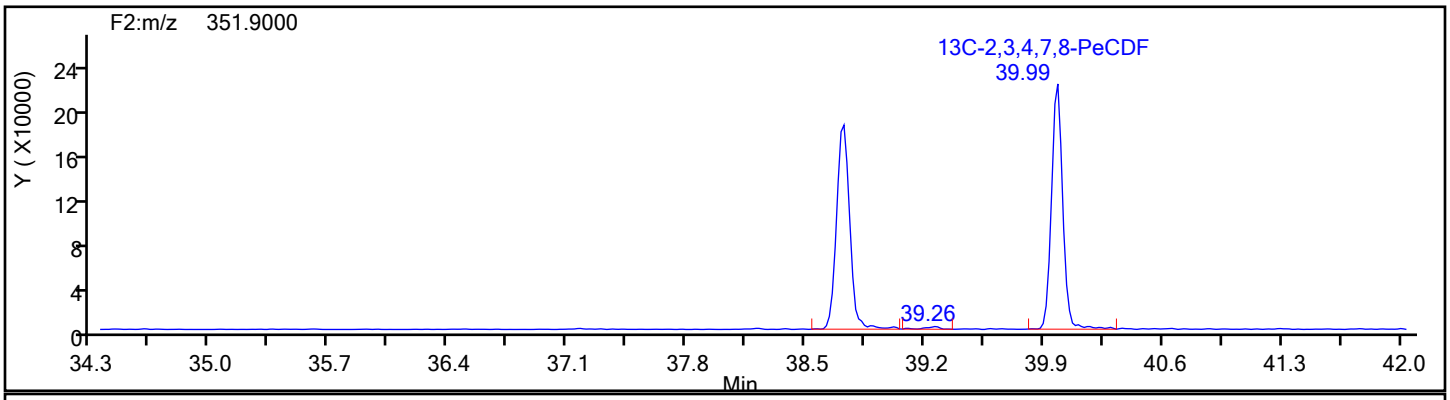
Column Type:		Column Dia:	

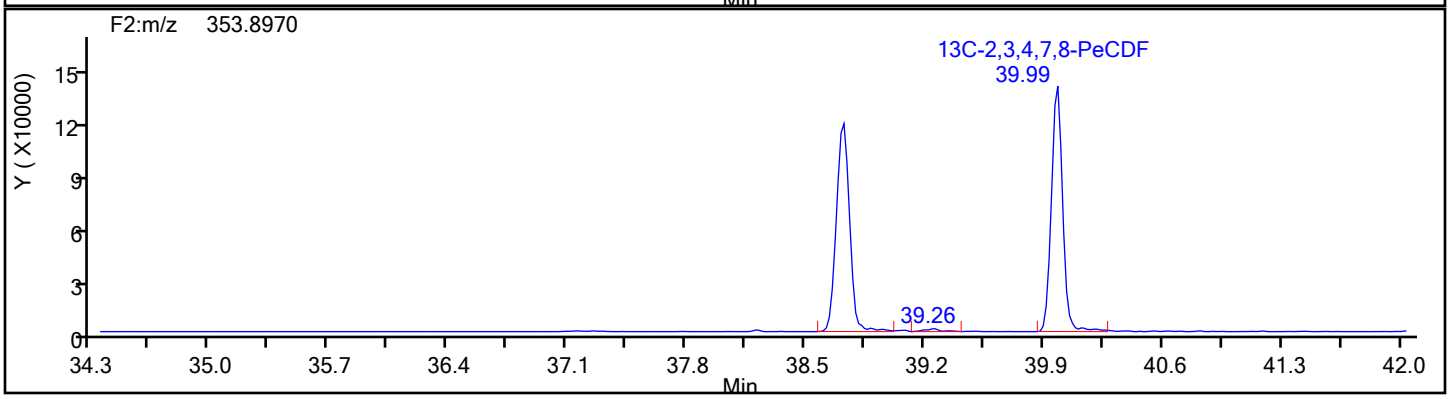
PeCDF





PeCDF Standards



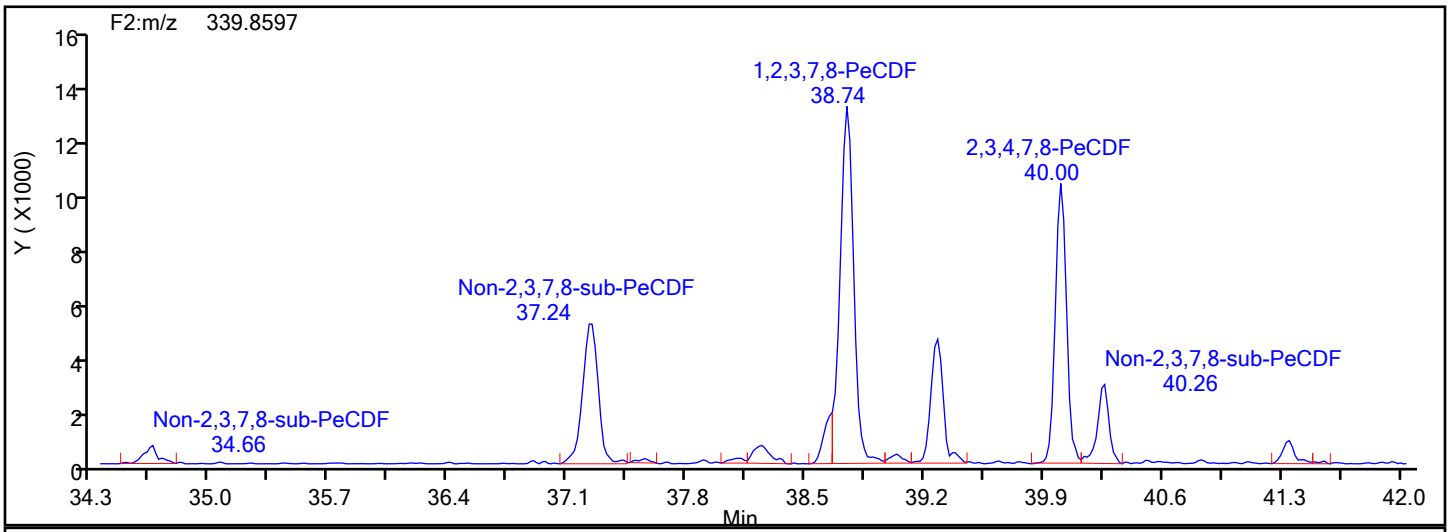


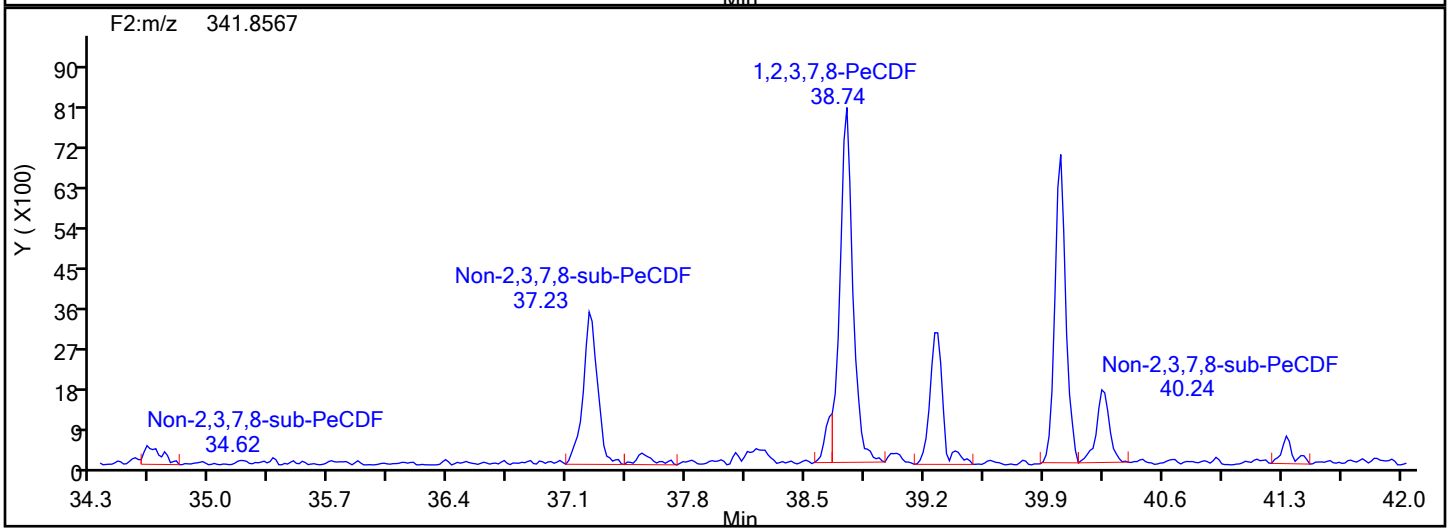
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

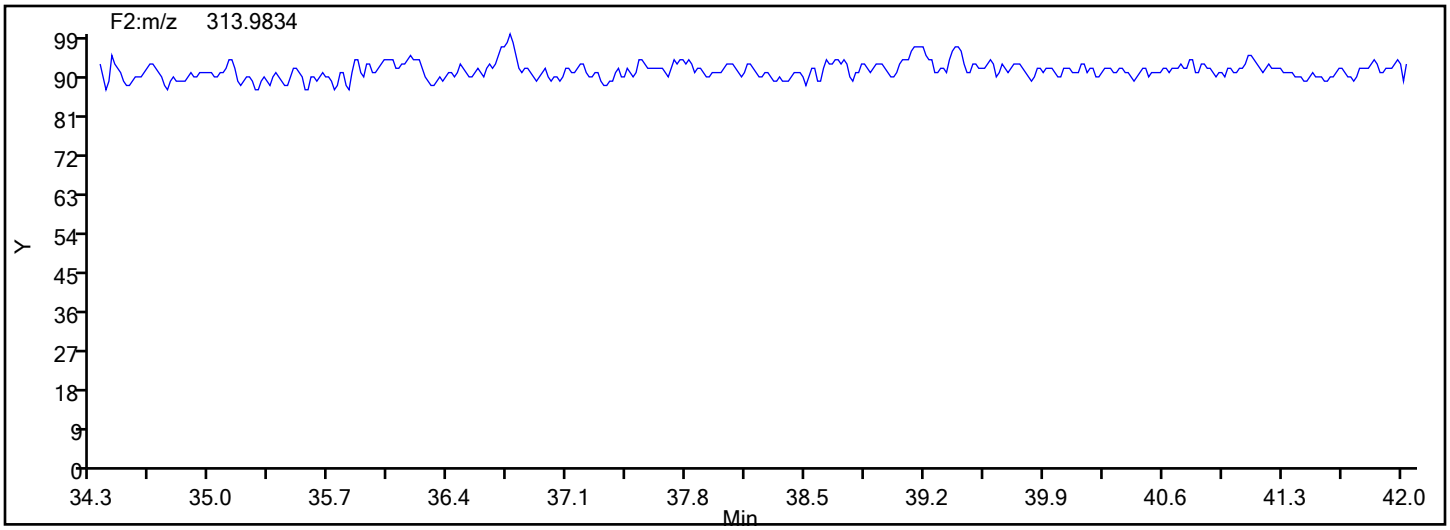
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

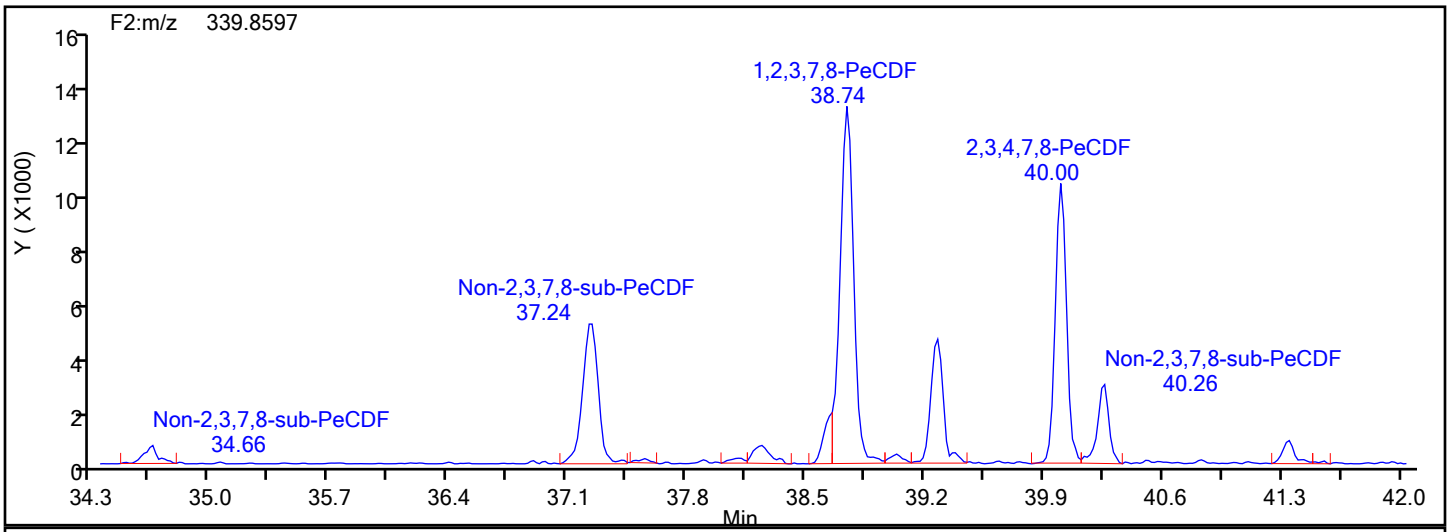


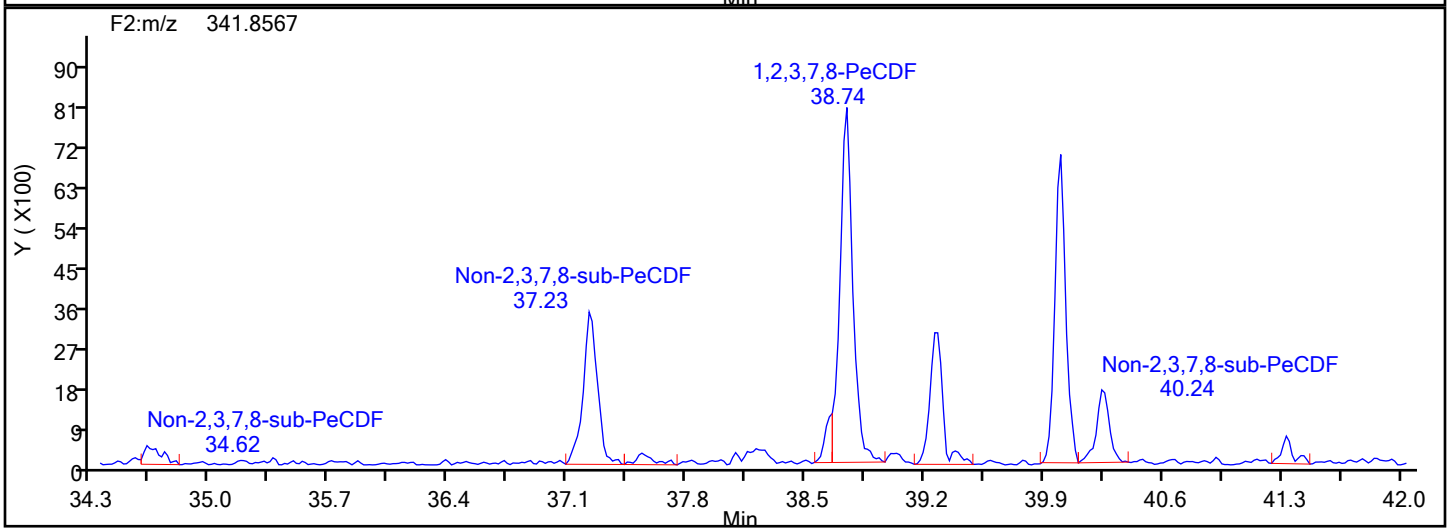
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

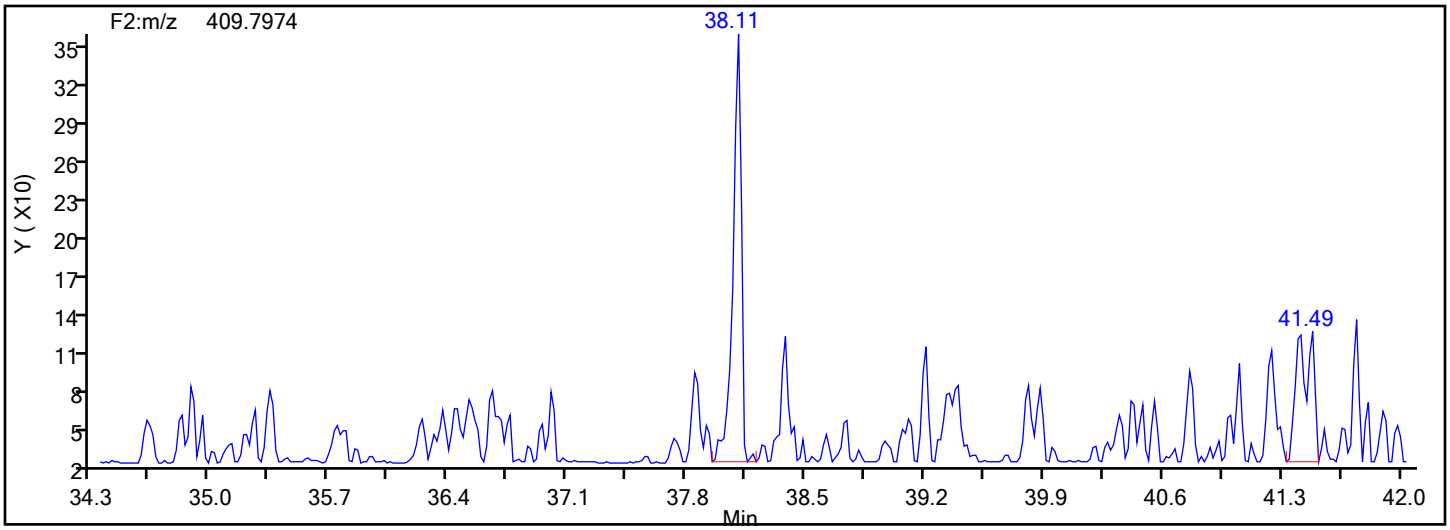
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

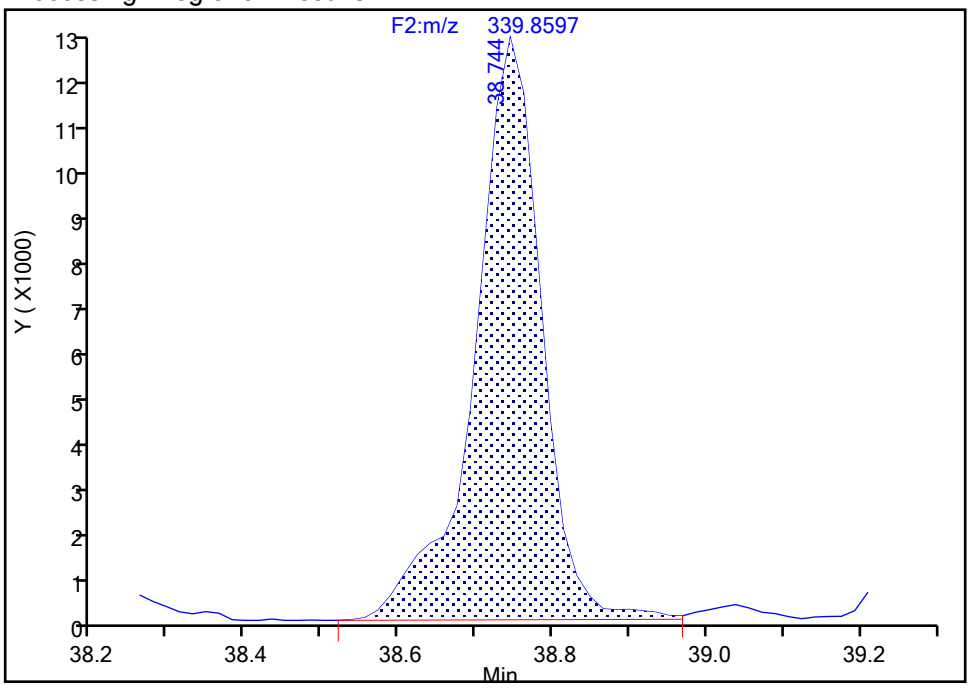
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

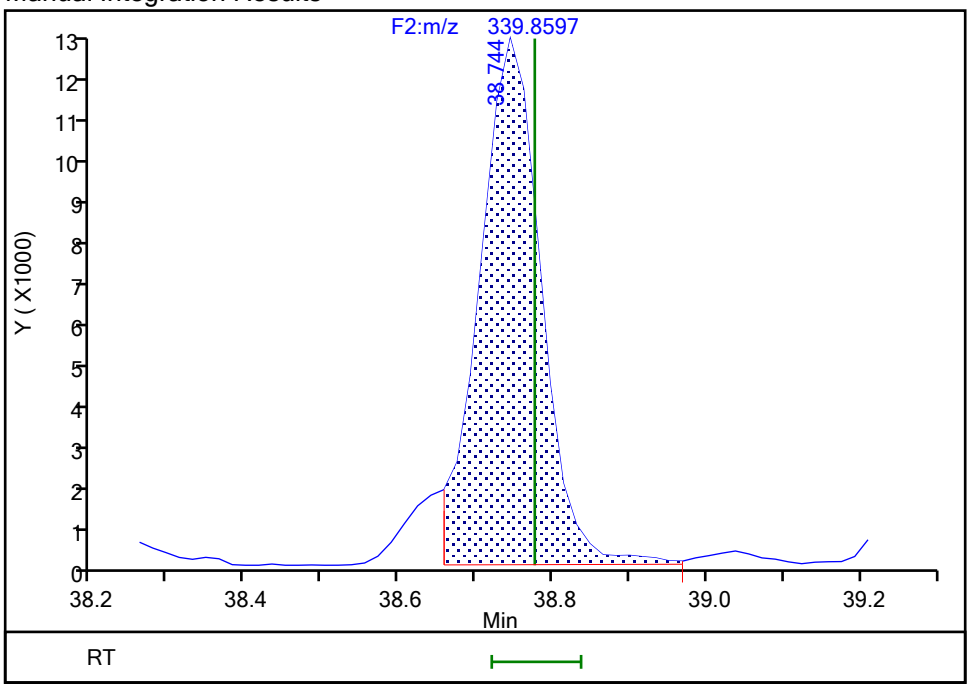
Processing Integration Results

RT: 38.74
Area: 76043
Amount: 3.082689
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 70054
Amount: 2.851231
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:39:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

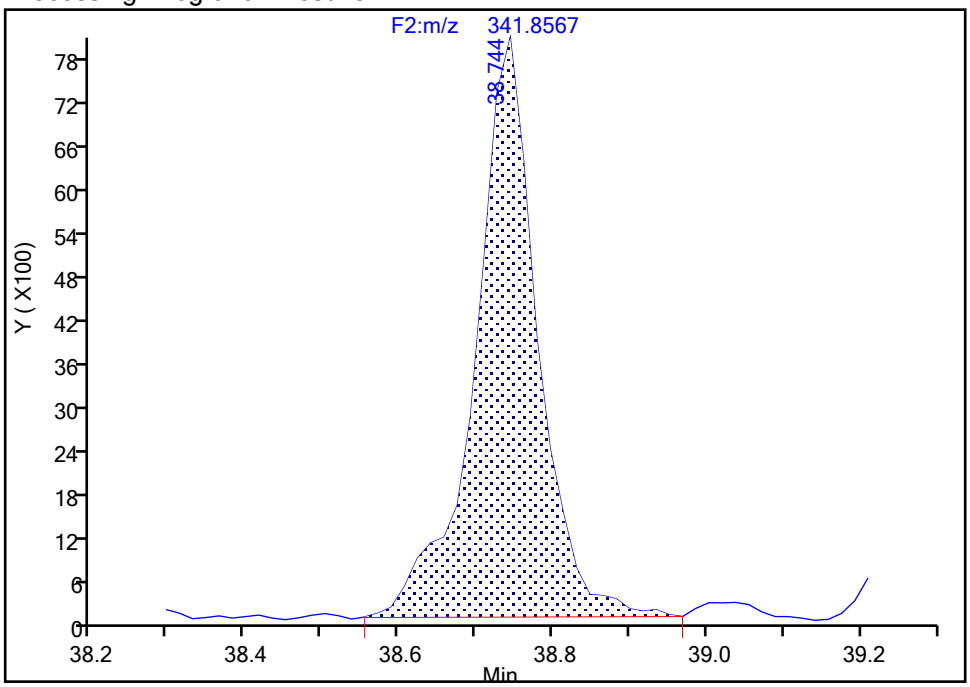
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

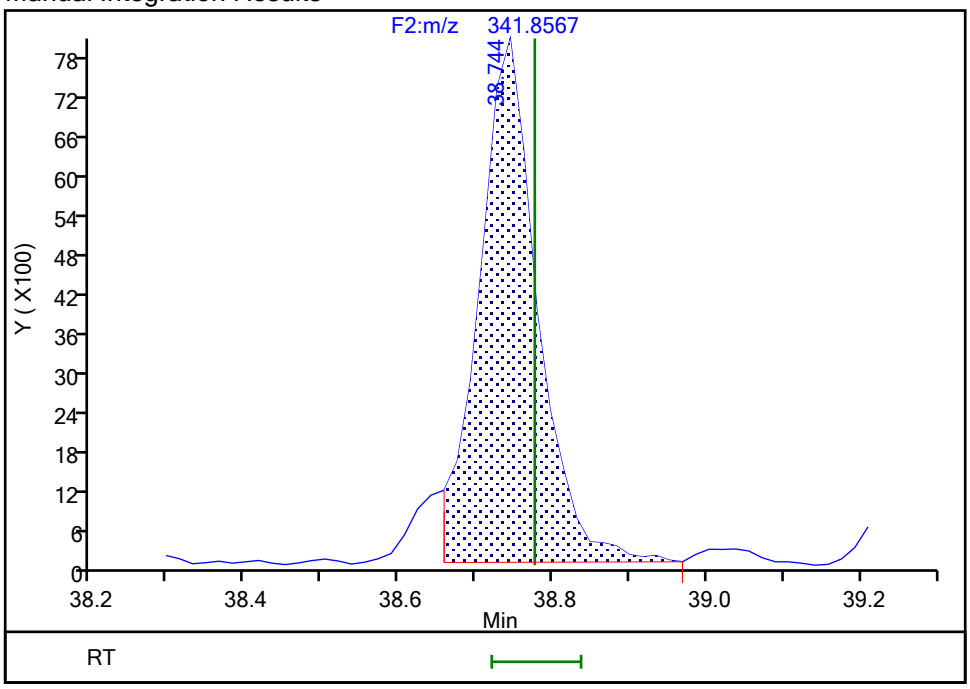
Processing Integration Results

RT: 38.74
Area: 45223
Amount: 3.082689
Amount Units: pg/ul



Manual Integration Results

RT: 38.74
Area: 42107
Amount: 2.851231
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:39:32
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

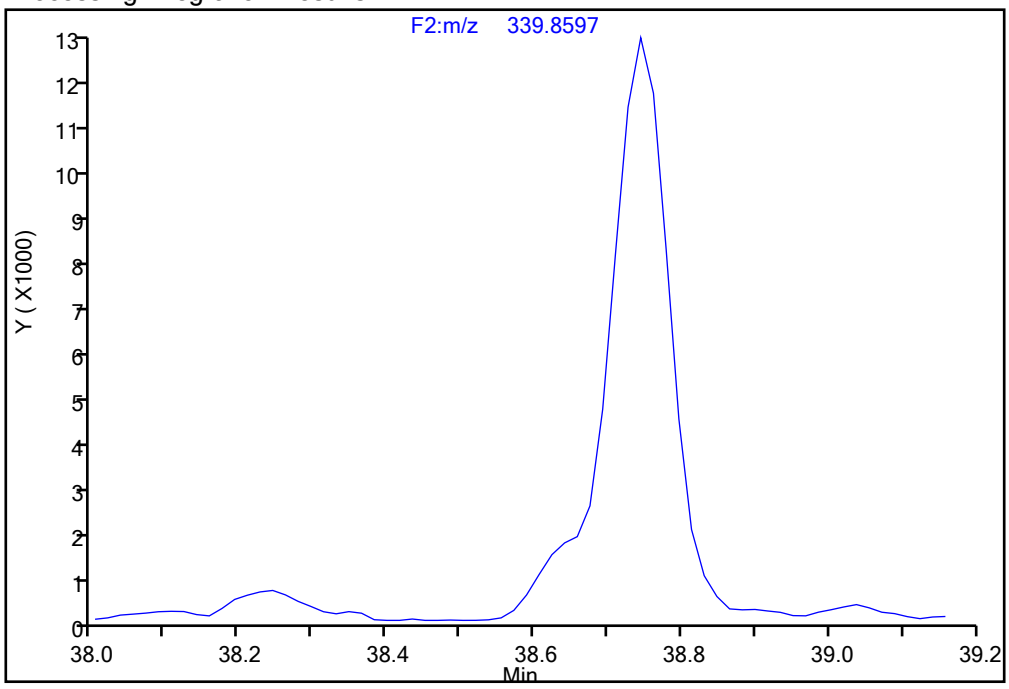
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

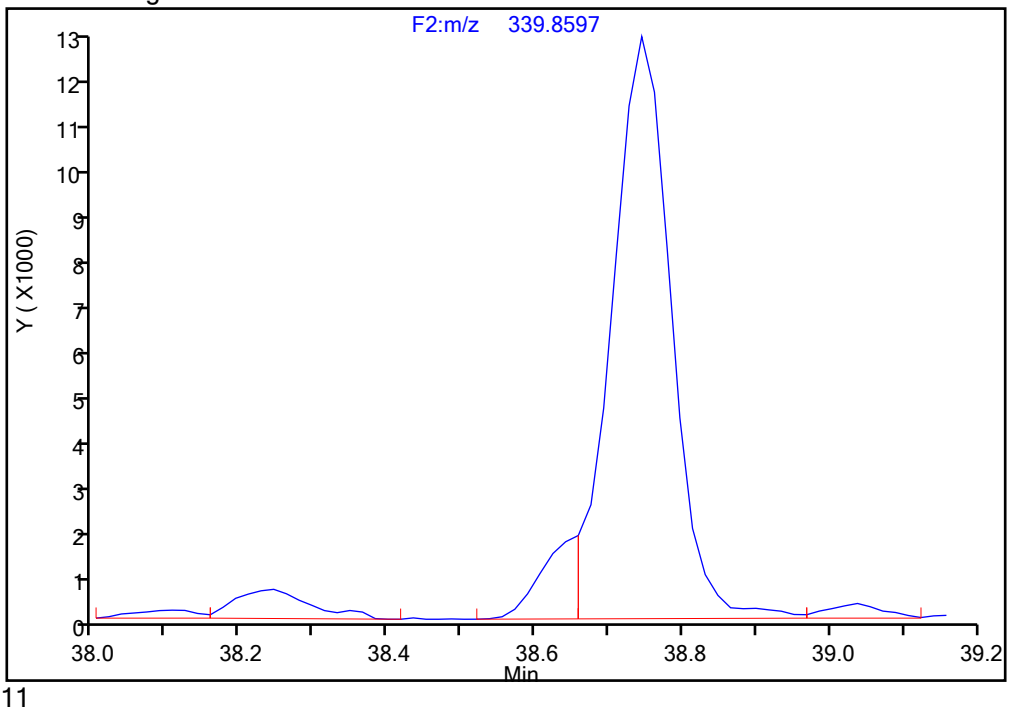
Not Detected
RT: 34.61- 41.41

Processing Integration Results



Manual Integration Results

RT = 38.658 Area = 5989 M



Reviewer: parslyt, 18-Dec-2019 03:40:11

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

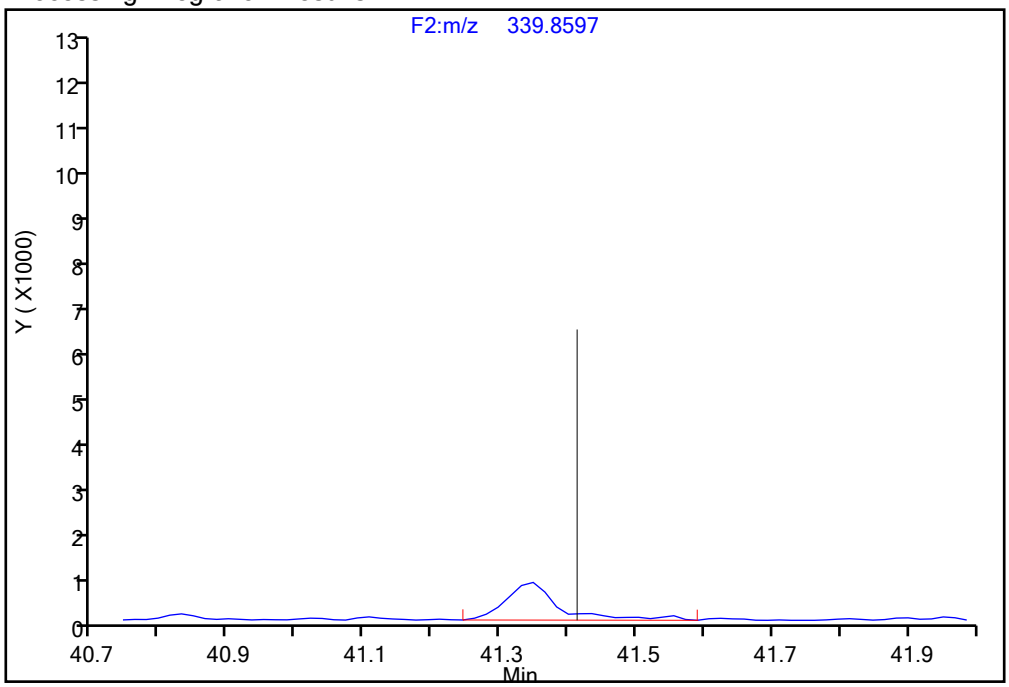
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

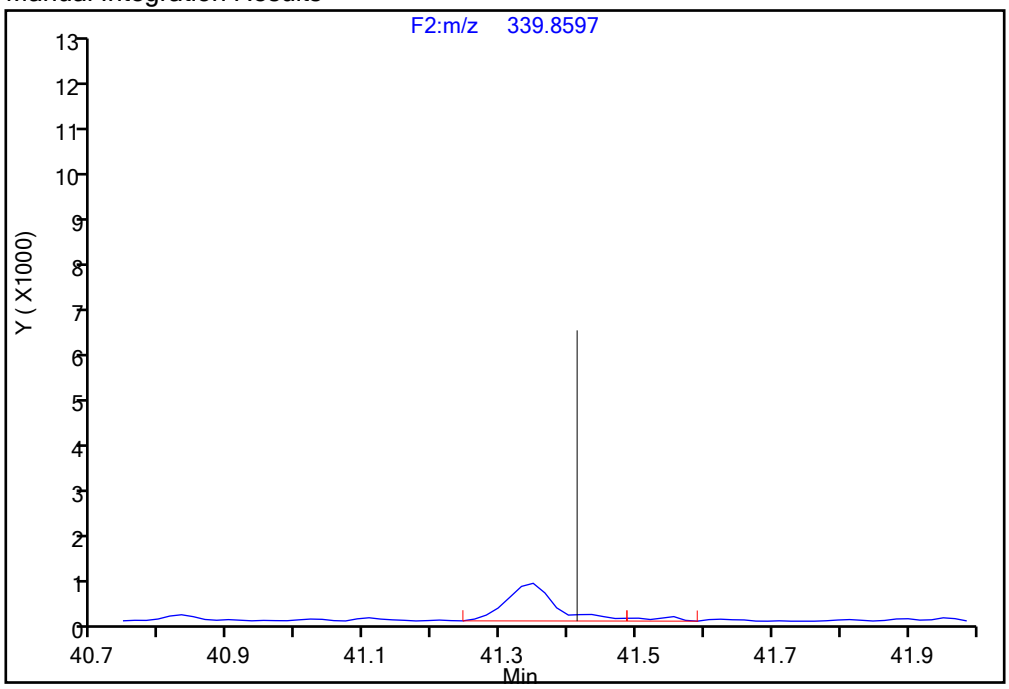
Processing Integration Results

RT = 41.348 Area = 4454



Manual Integration Results

RT = 41.348 Area = 4127 M



Reviewer: parslyt, 18-Dec-2019 03:40:11

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d

Injection Date: 17-Dec-2019 16:33:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

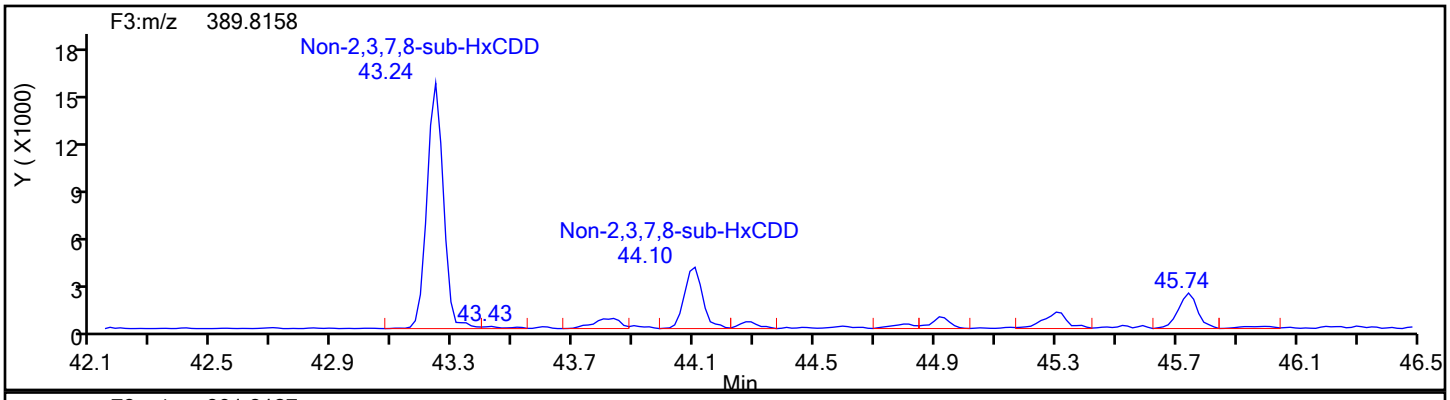
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

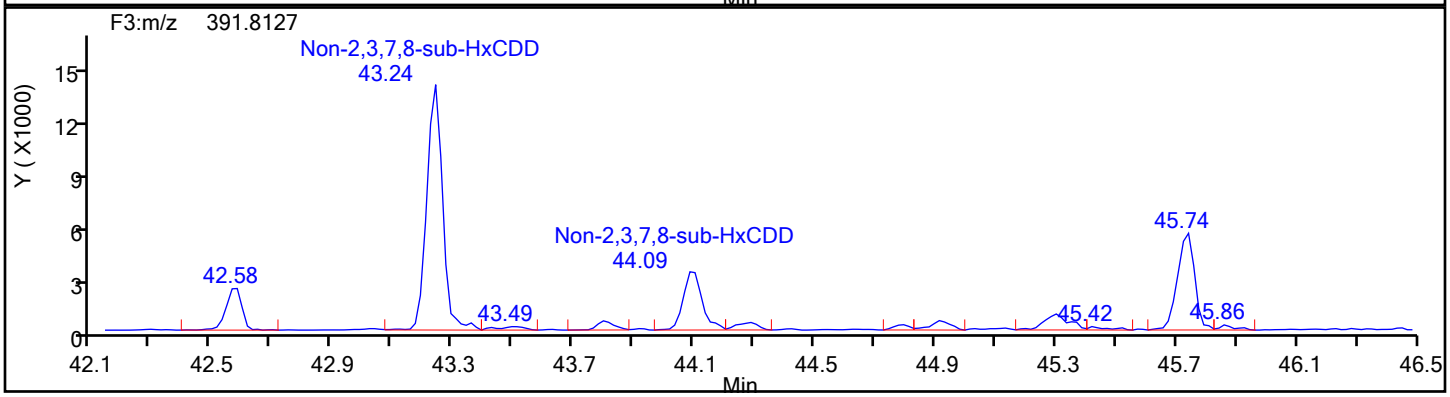
Client ID: 11187072-120619-SS-SJSSA06(0-1)

Worklist#: 36146 Sample Line#: 8

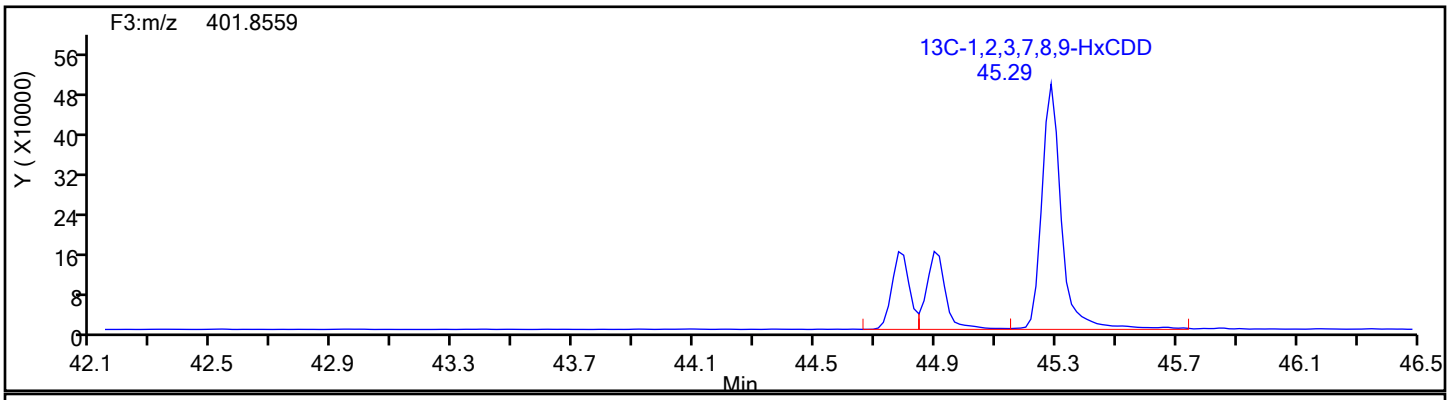
Column Type: Column Dia:

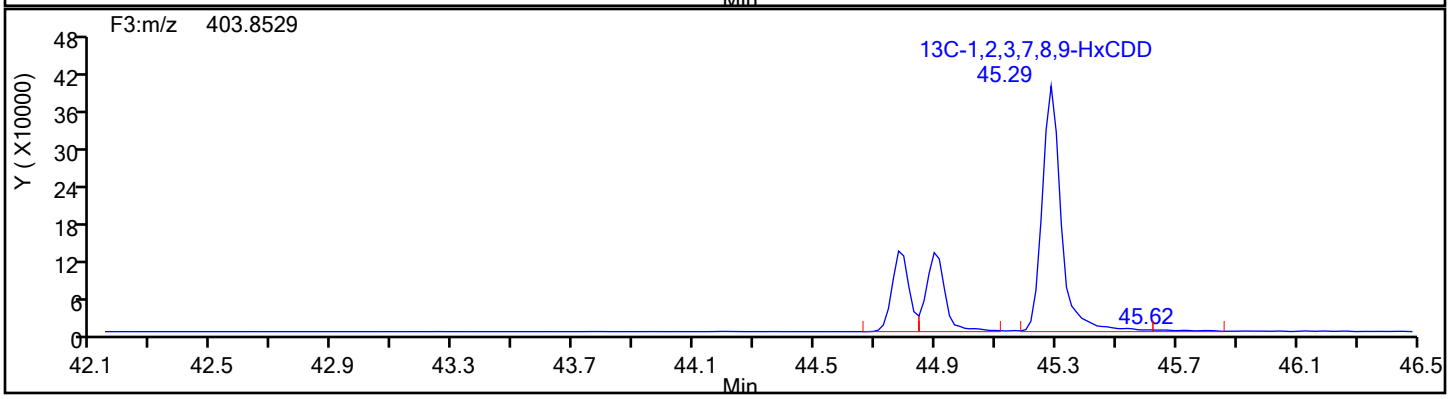
HxCDD





HxCDD Standards



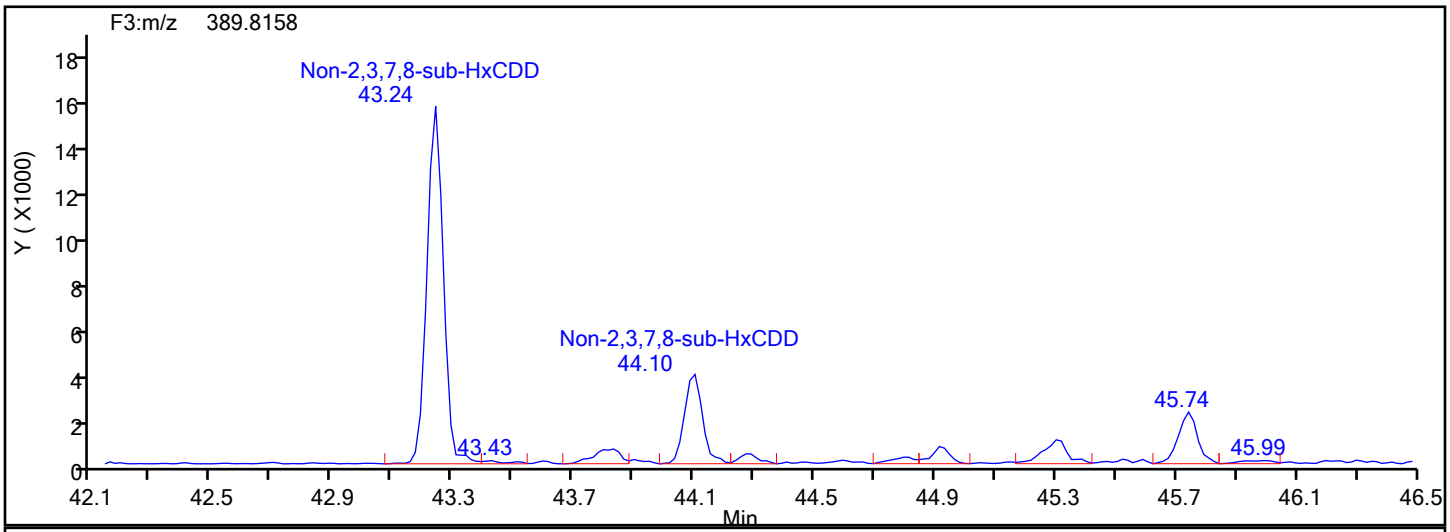


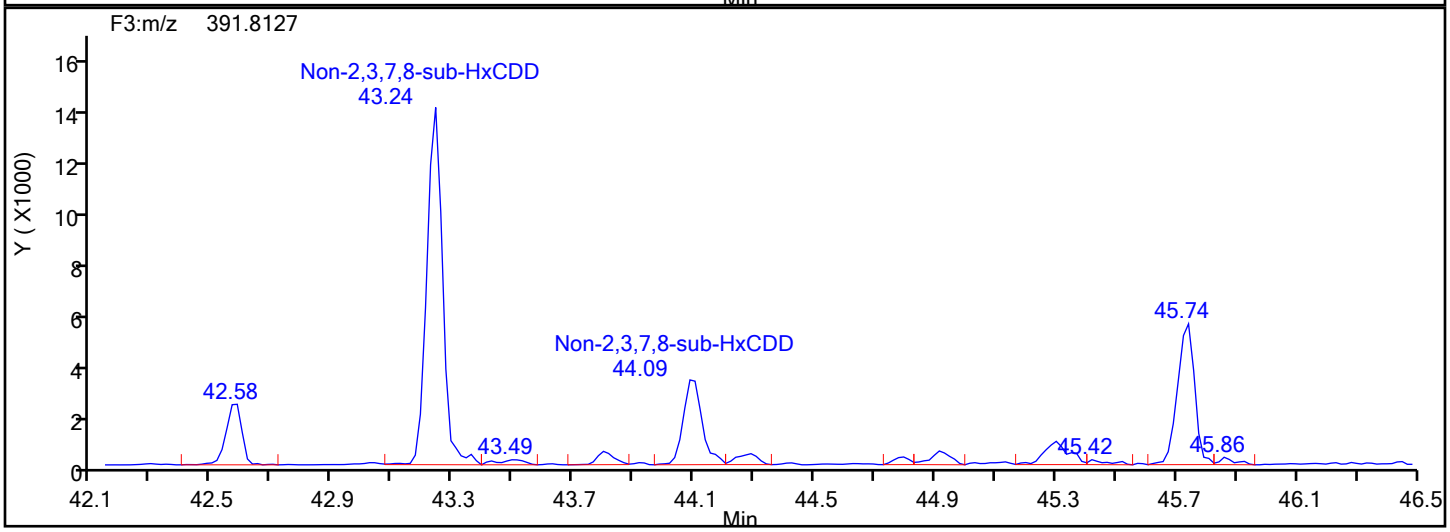
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

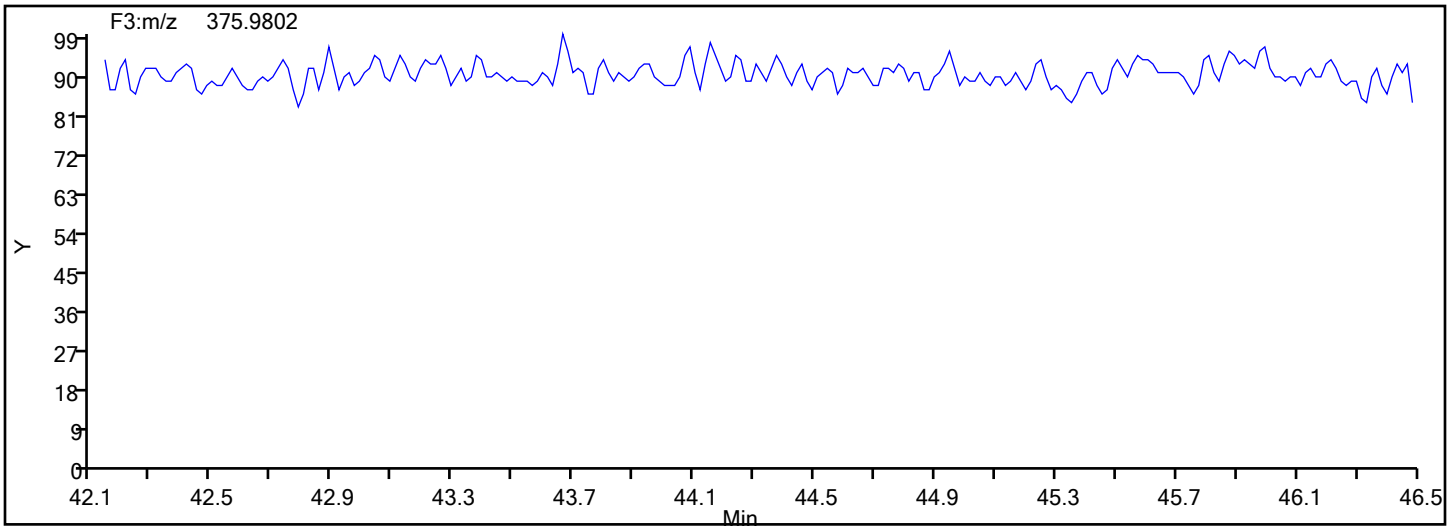
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Eurofins TestAmerica, Knoxville

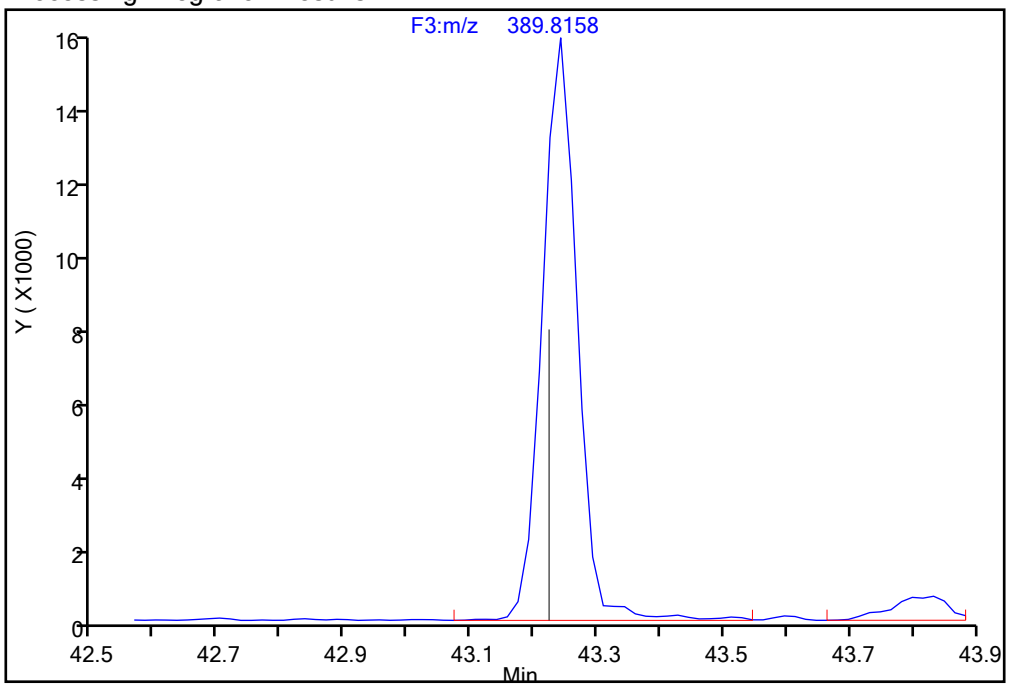
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.22- 45.38)

Signal: 1

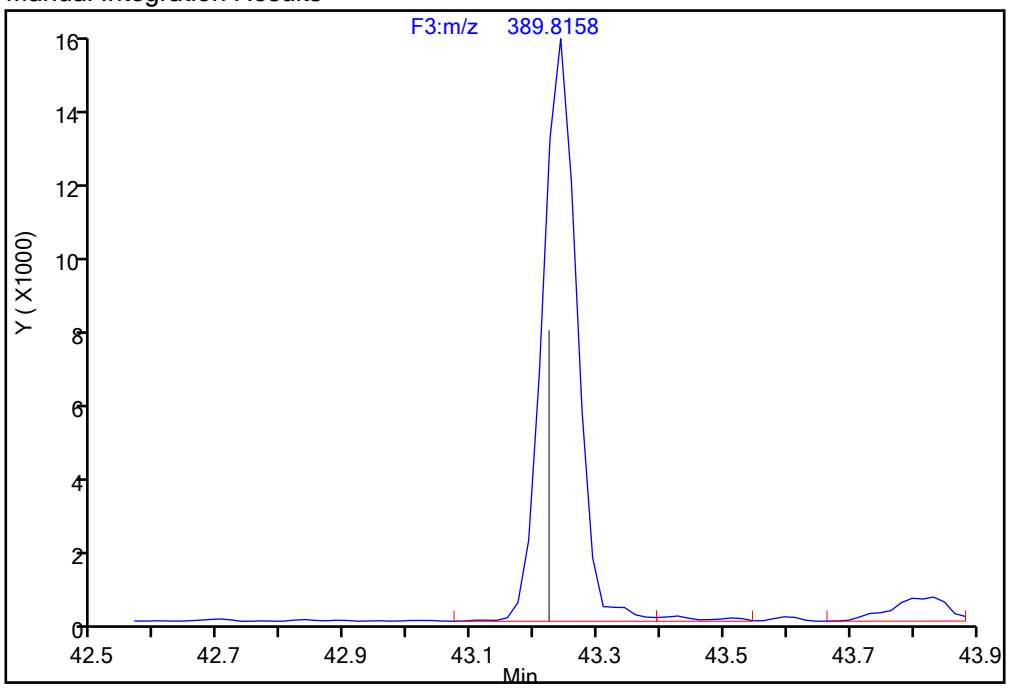
Processing Integration Results

RT = 43.242 Area = 60138



Manual Integration Results

RT = 43.242 Area = 59435 M



Reviewer: parslyt, 18-Dec-2019 03:40:40

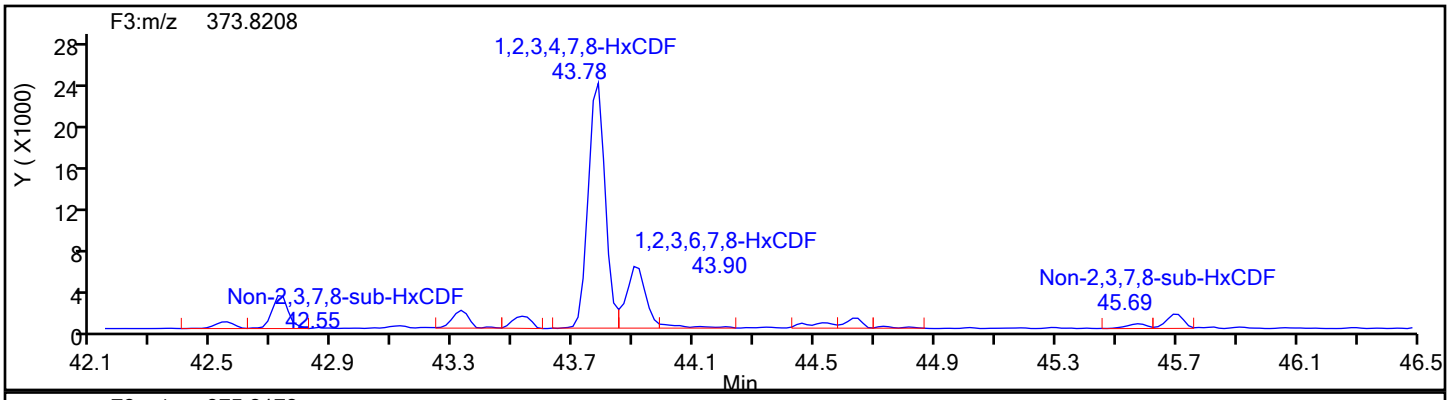
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

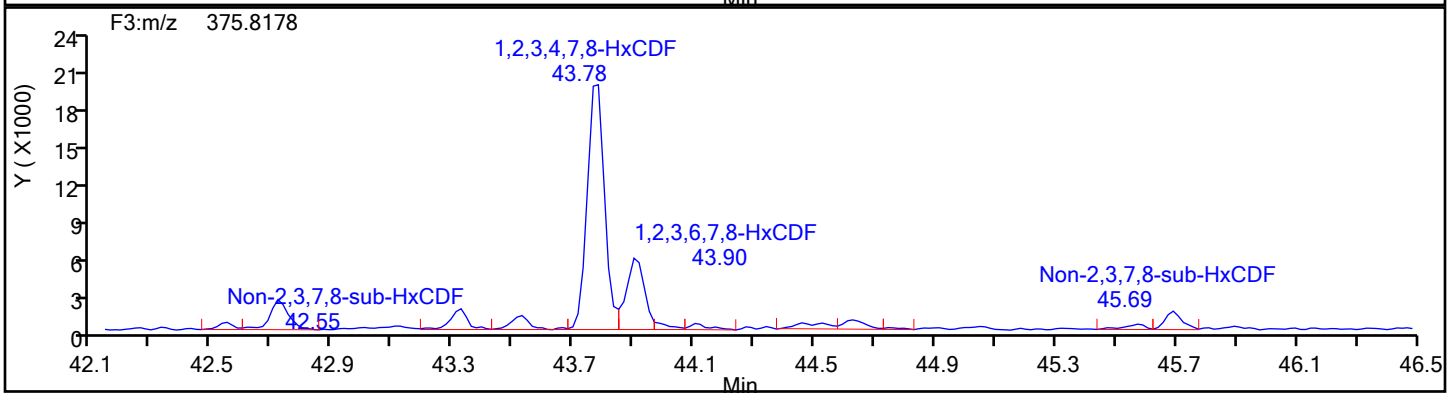
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

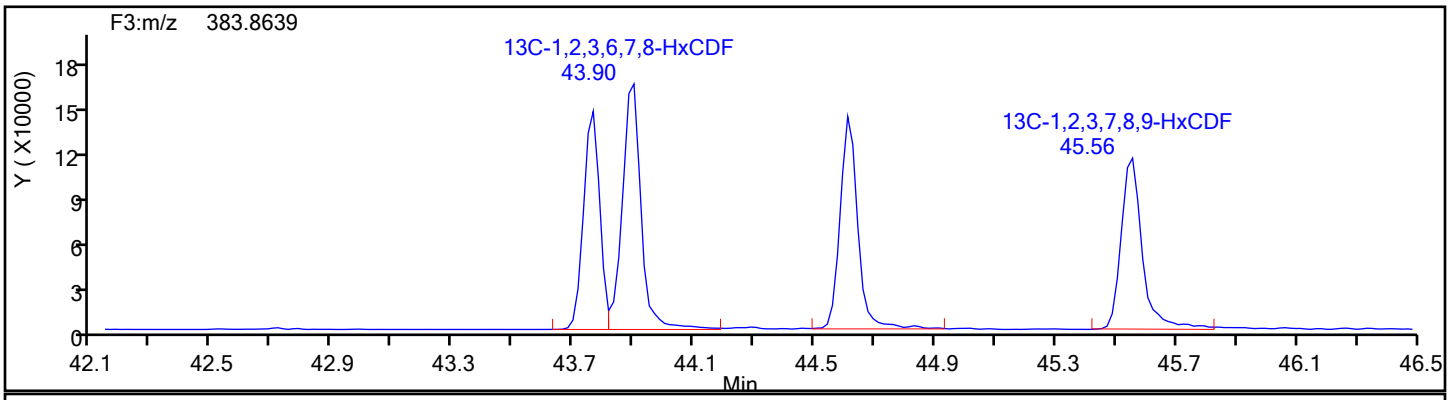
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

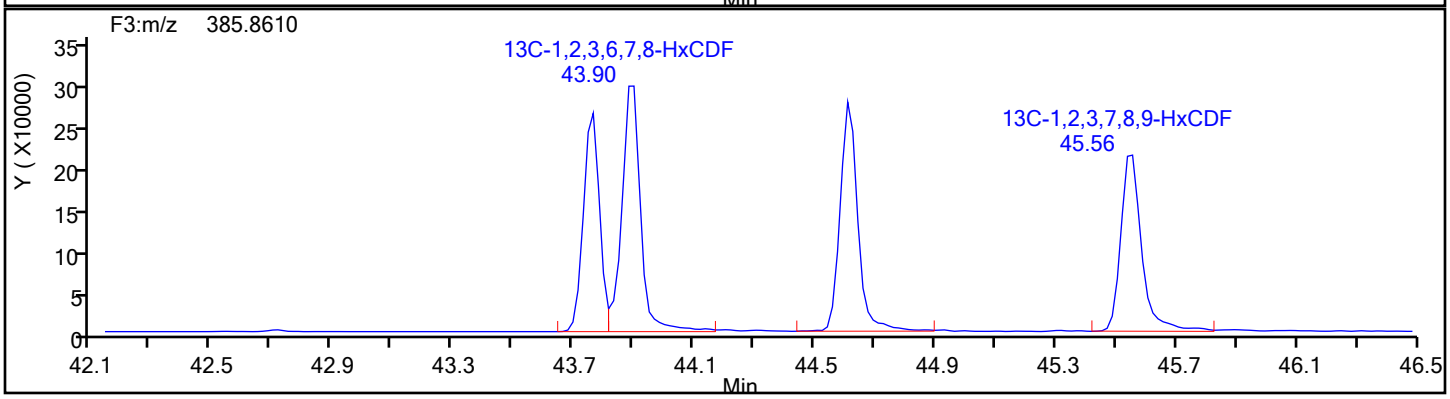
HxCDF





HxCDF Standards



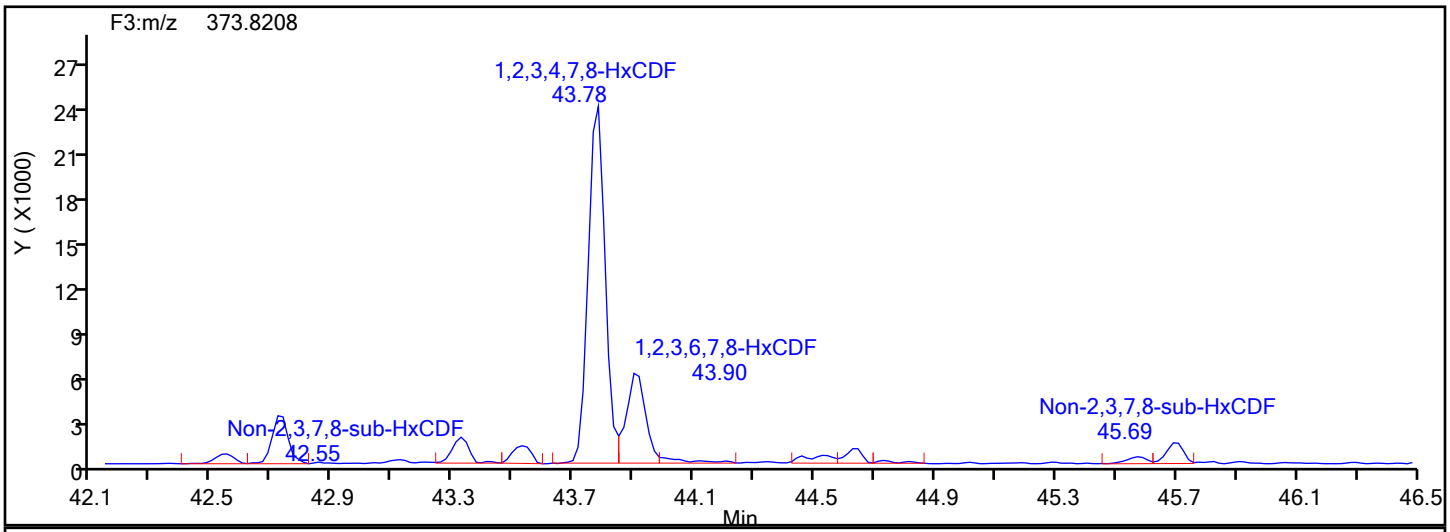


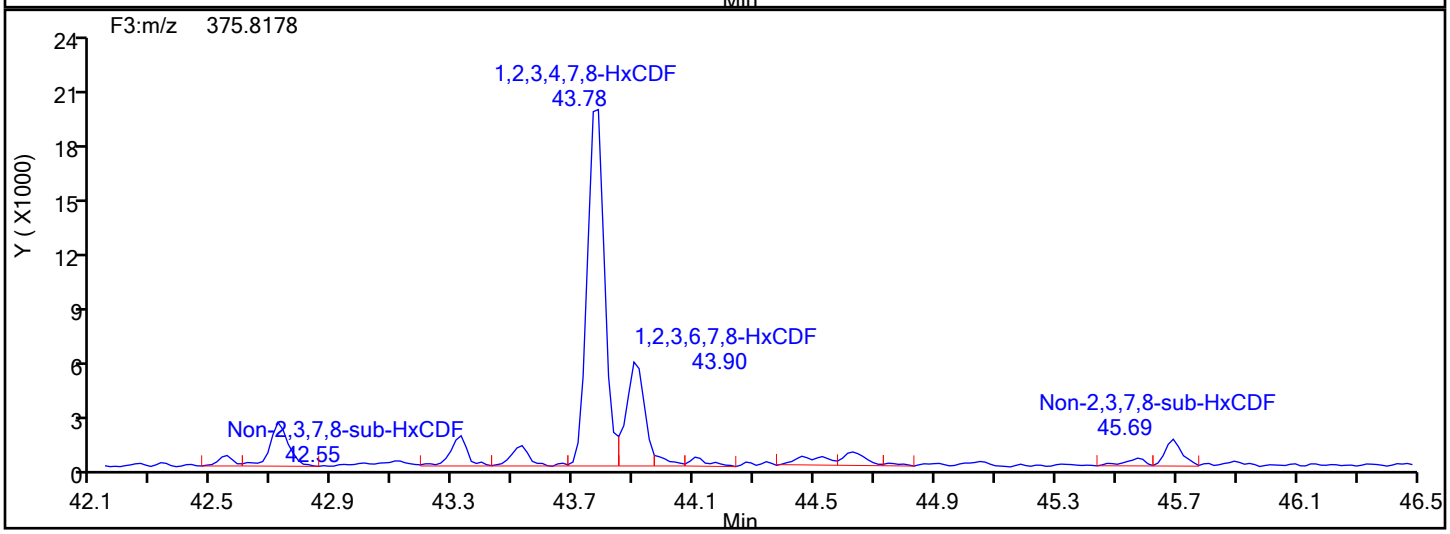
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

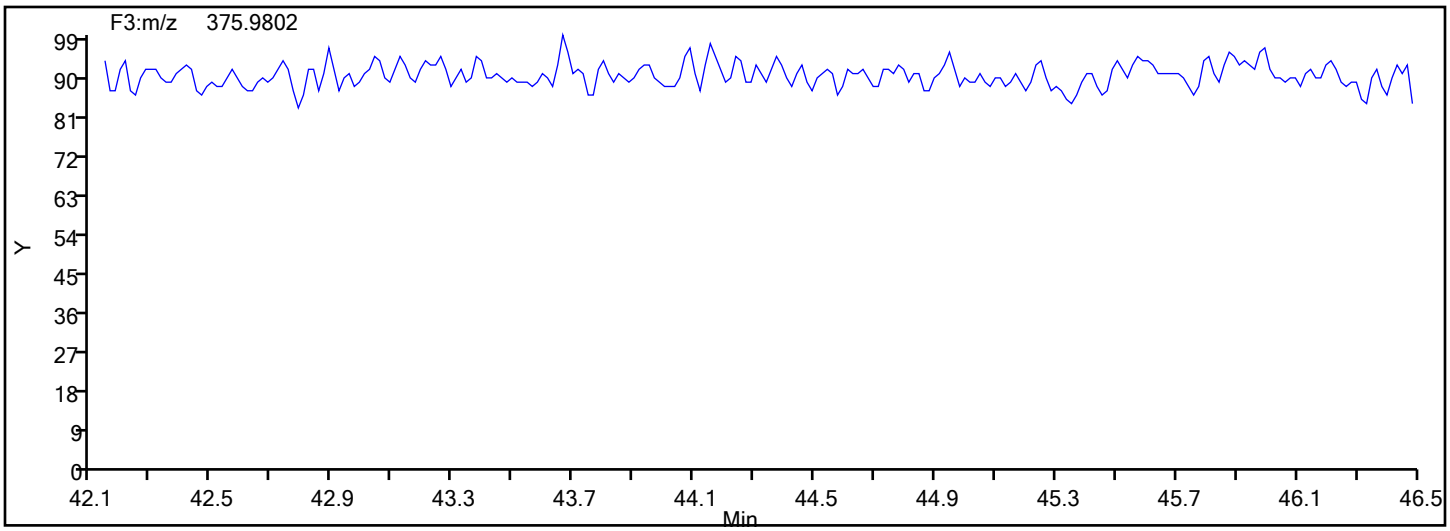
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

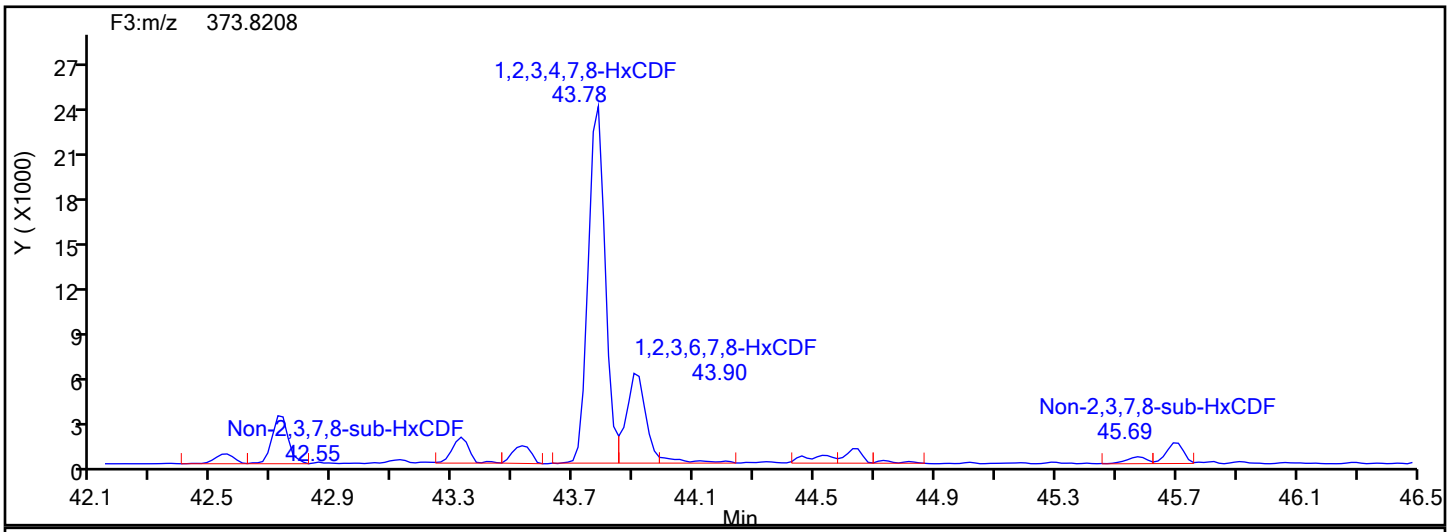


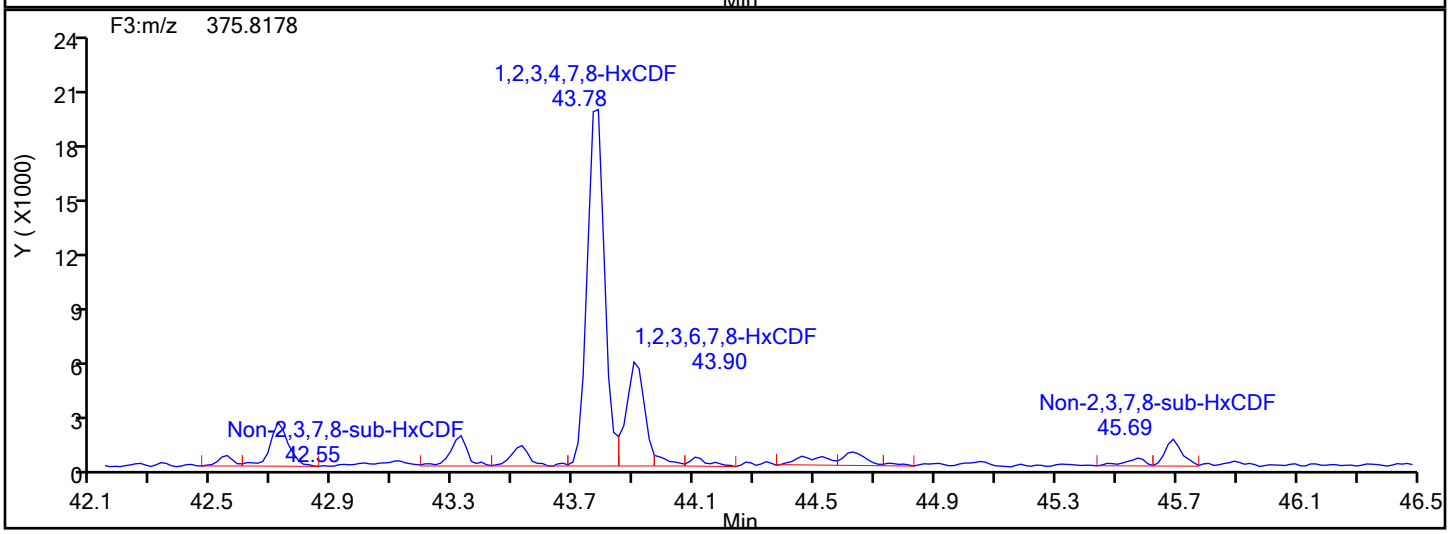
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

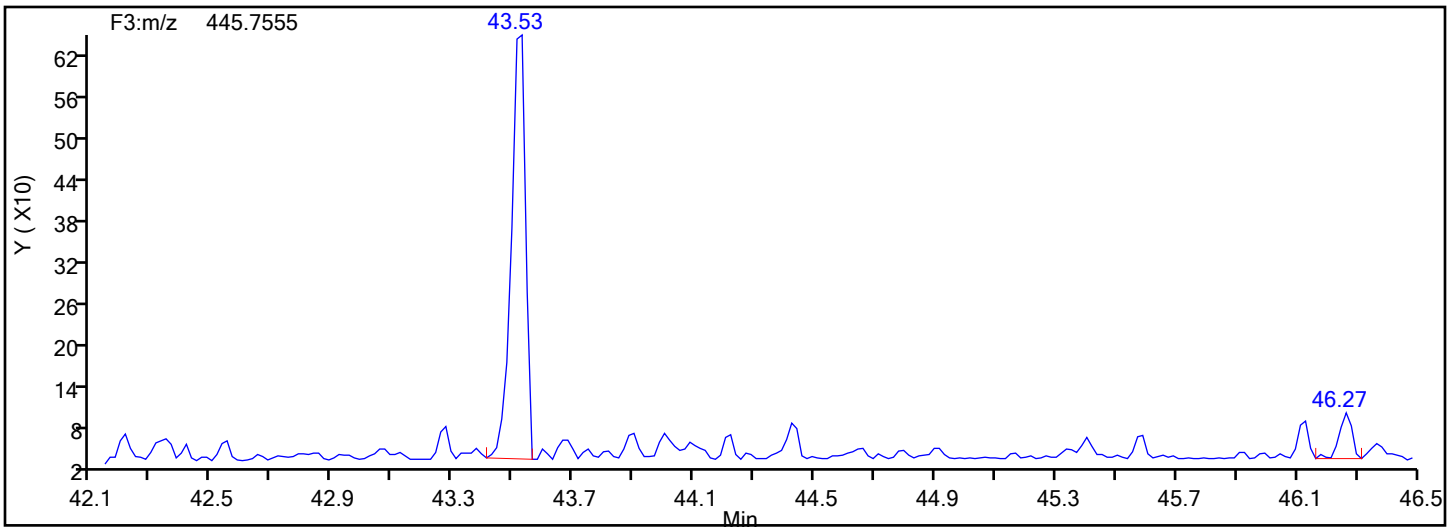
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

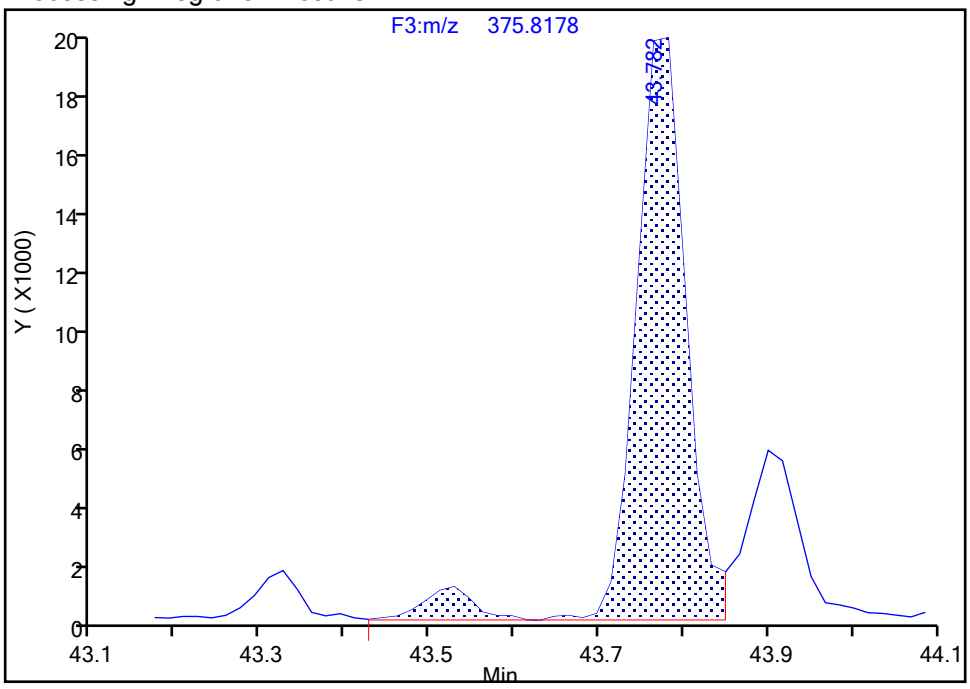
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

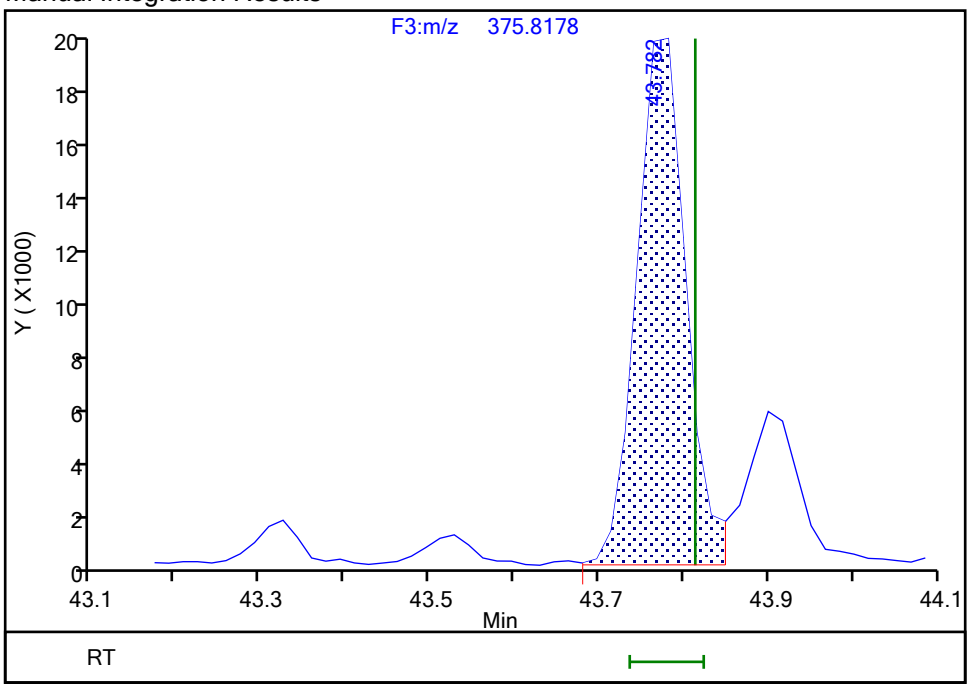
Processing Integration Results

RT: 43.78
Area: 82806
Amount: 4.267429
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 77948
Amount: 4.149499
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:41:02

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

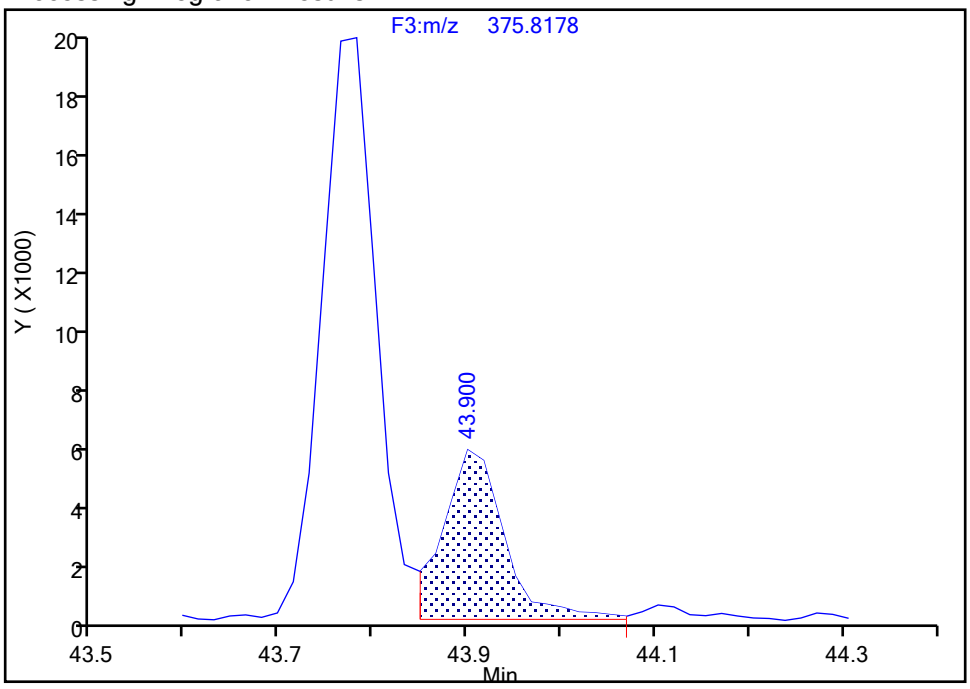
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

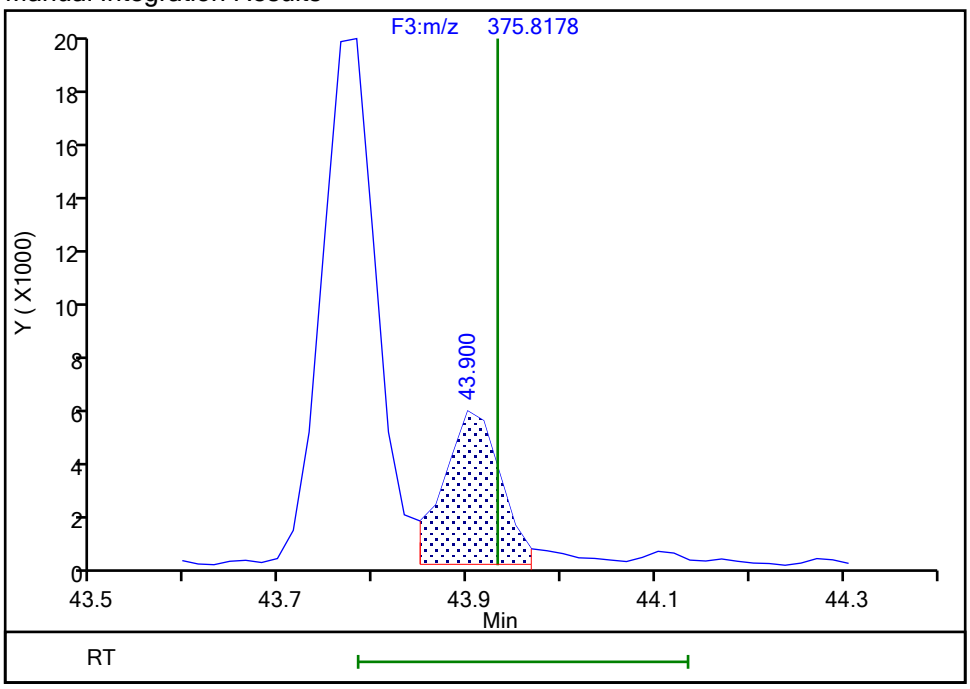
Processing Integration Results

RT: 43.90
Area: 25150
Amount: 1.062795
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 23282
Amount: 0.977168
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:41:12
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

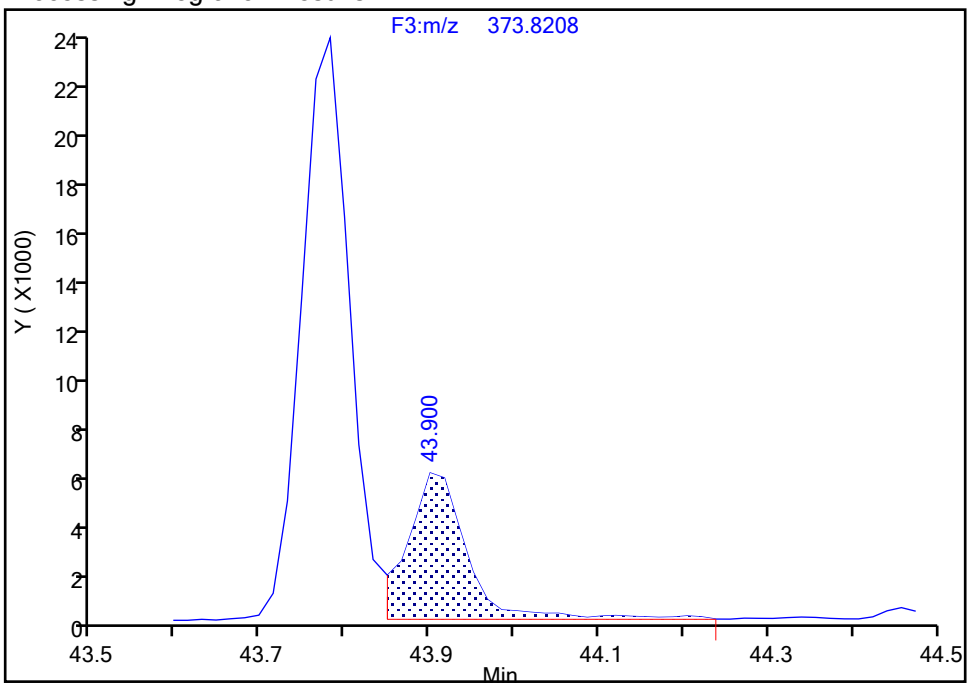
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

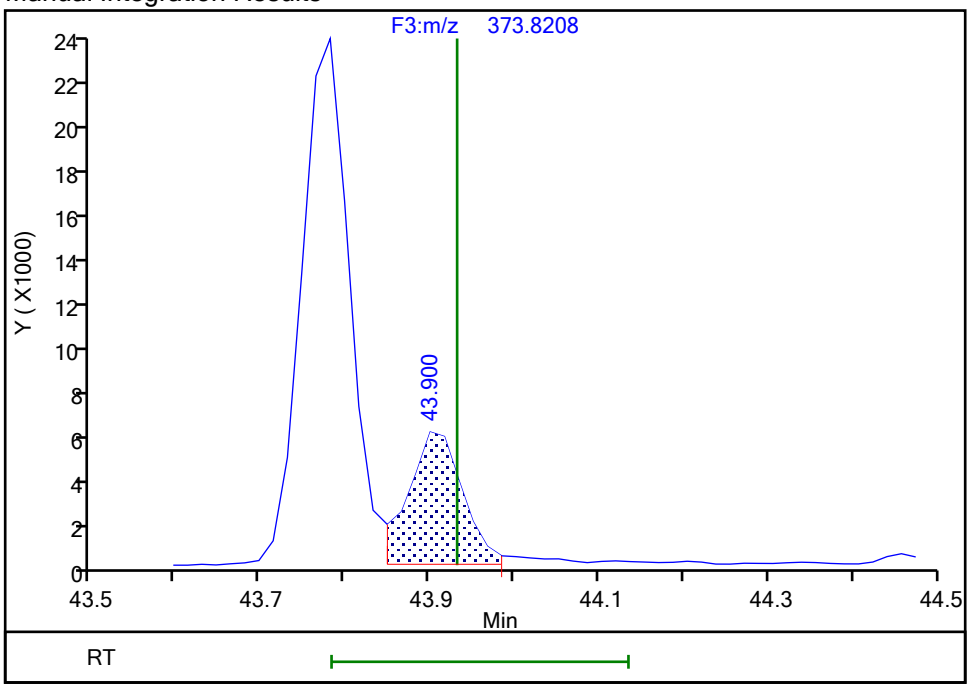
Processing Integration Results

RT: 43.90
Area: 28606
Amount: 1.062795
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 26143
Amount: 0.977168
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:41:15

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

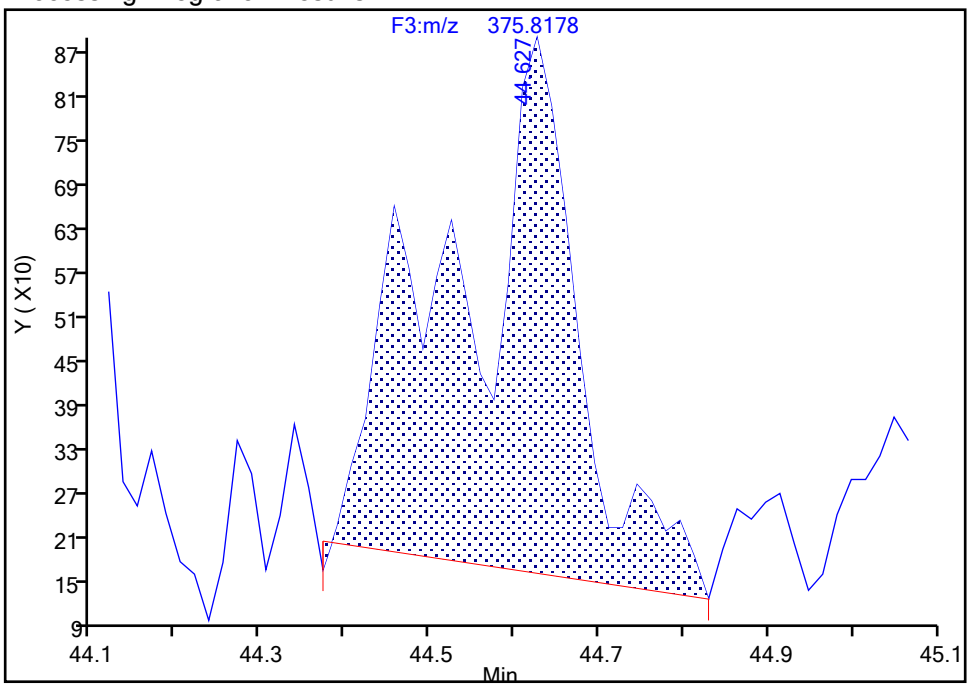
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

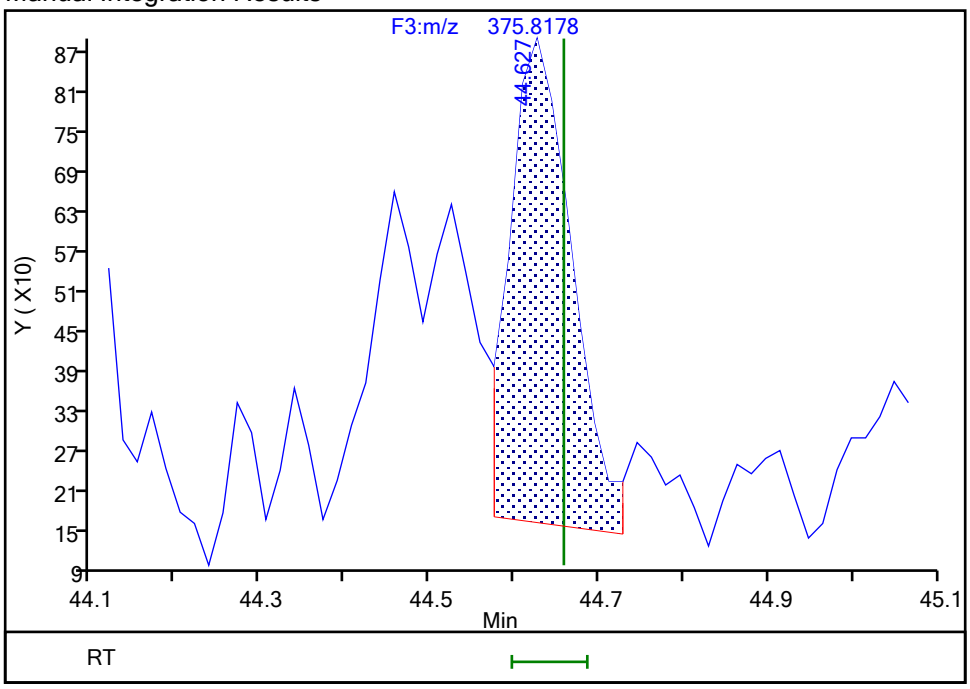
Processing Integration Results

RT: 44.63
Area: 7603
Amount: 0.361701
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 3661
Amount: 0.169898
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:41:32
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

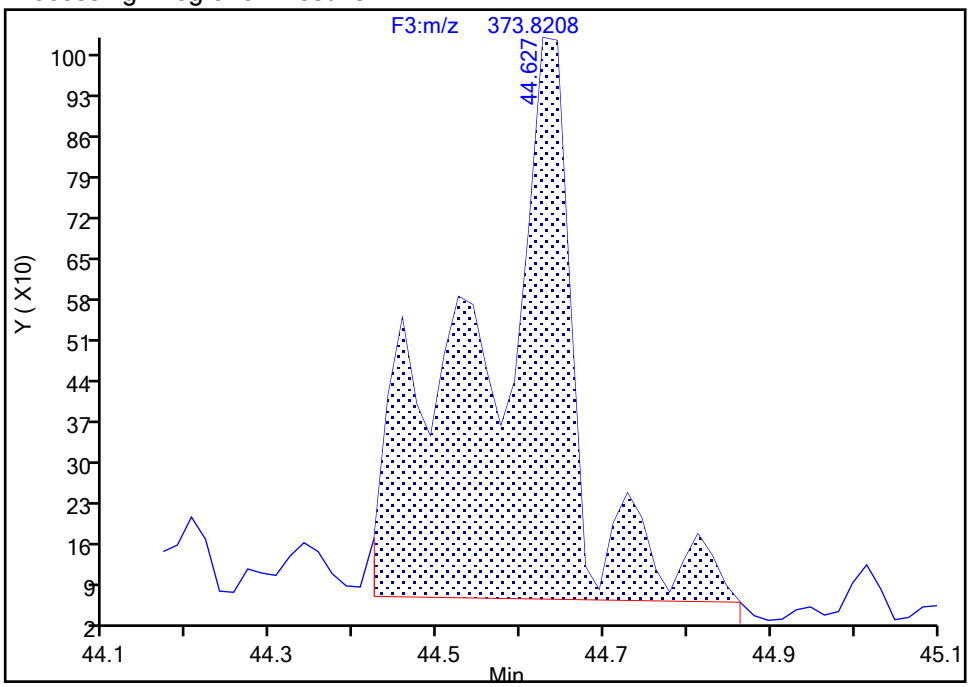
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

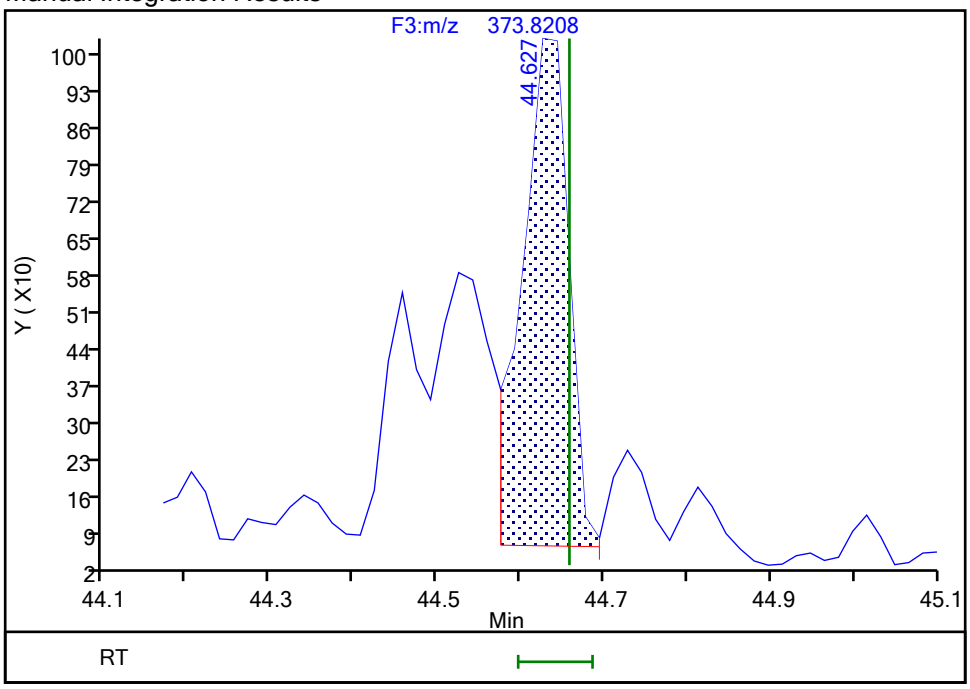
Processing Integration Results

RT: 44.63
Area: 8017
Amount: 0.361701
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 3676
Amount: 0.169898
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:41:41
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

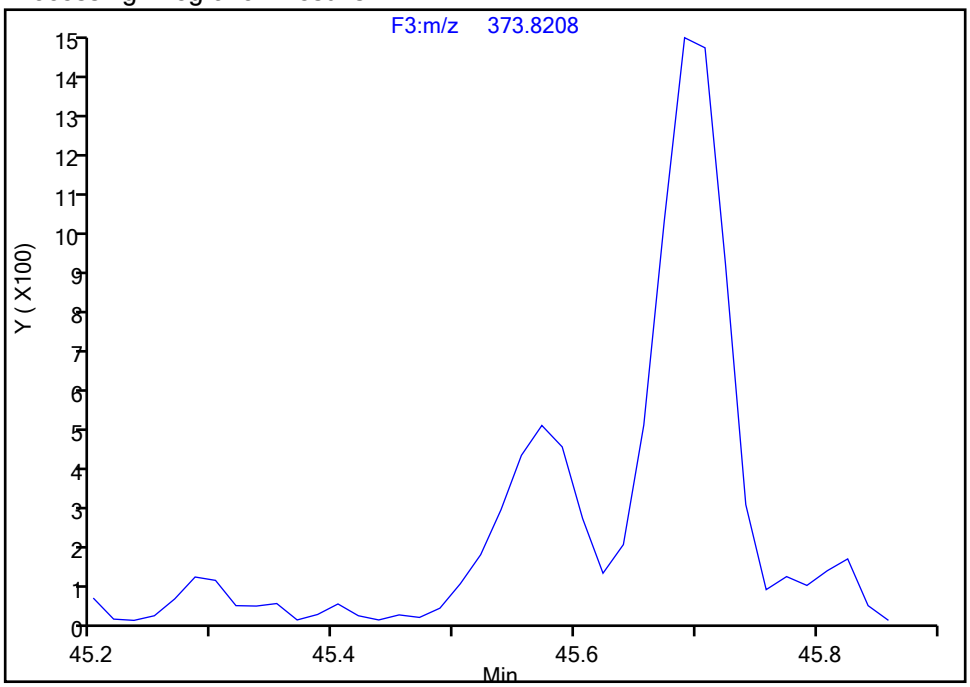
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

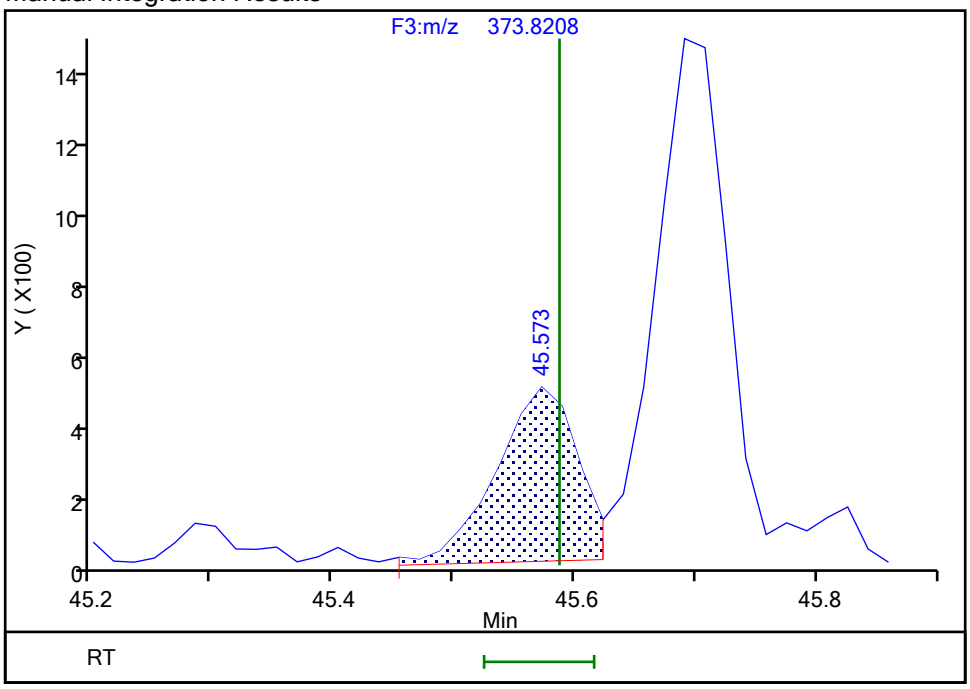
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.57
Area: 2146
Amount: 0.104902
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:43:02
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

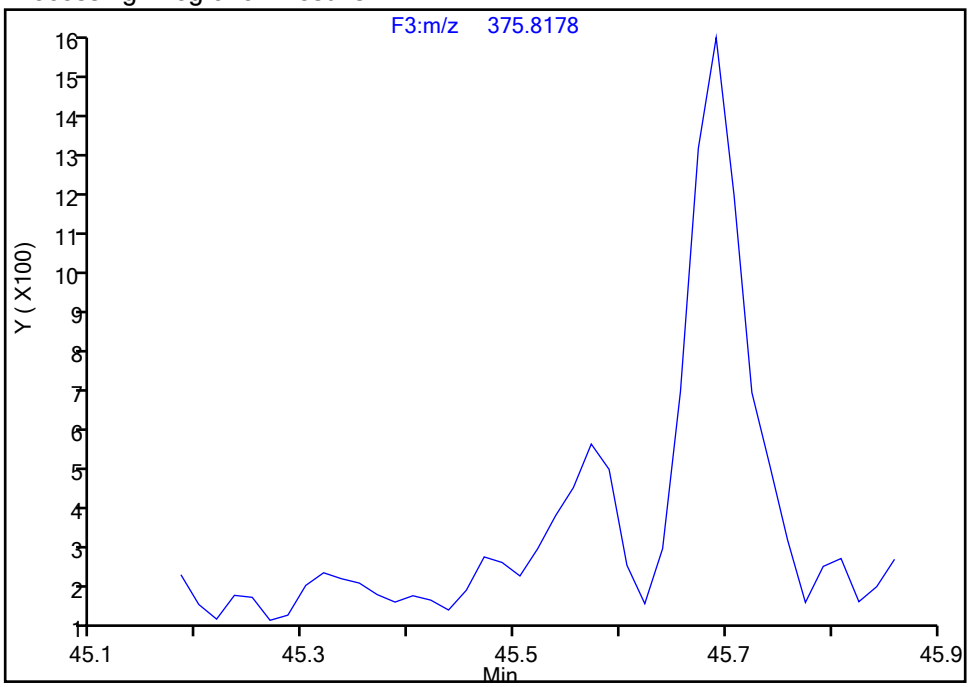
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

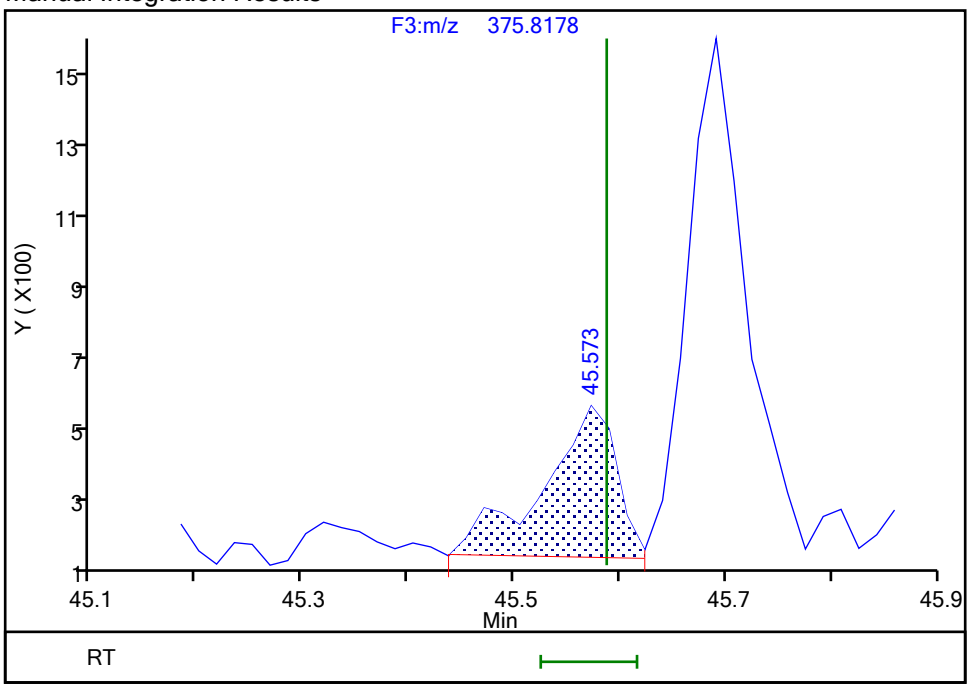
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.57
Area: 2030
Amount: 0.104902
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:43:05
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

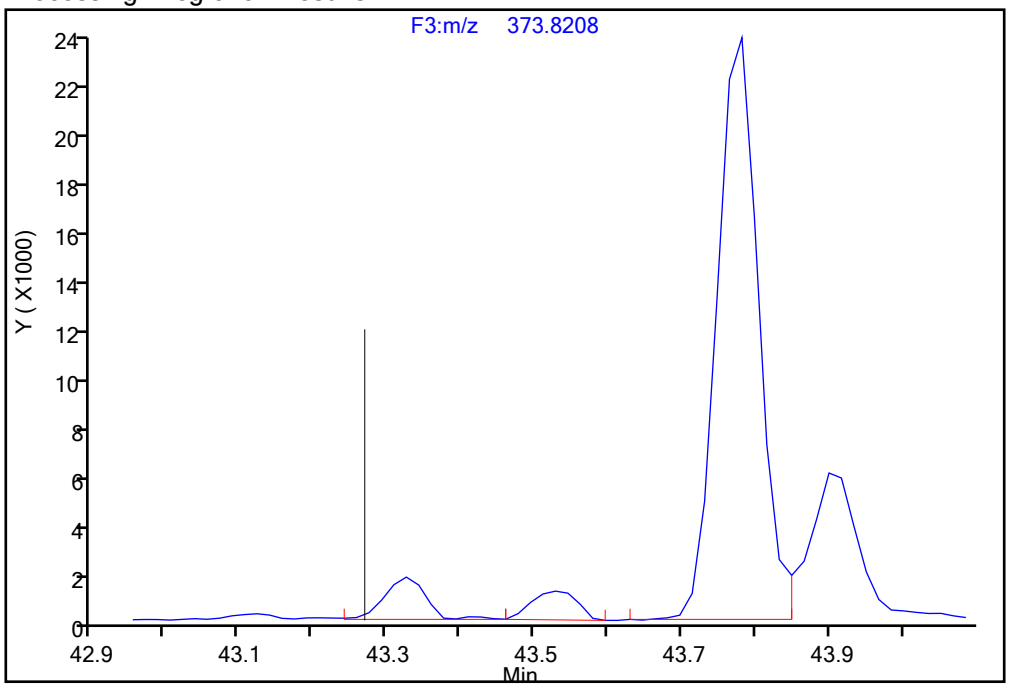
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

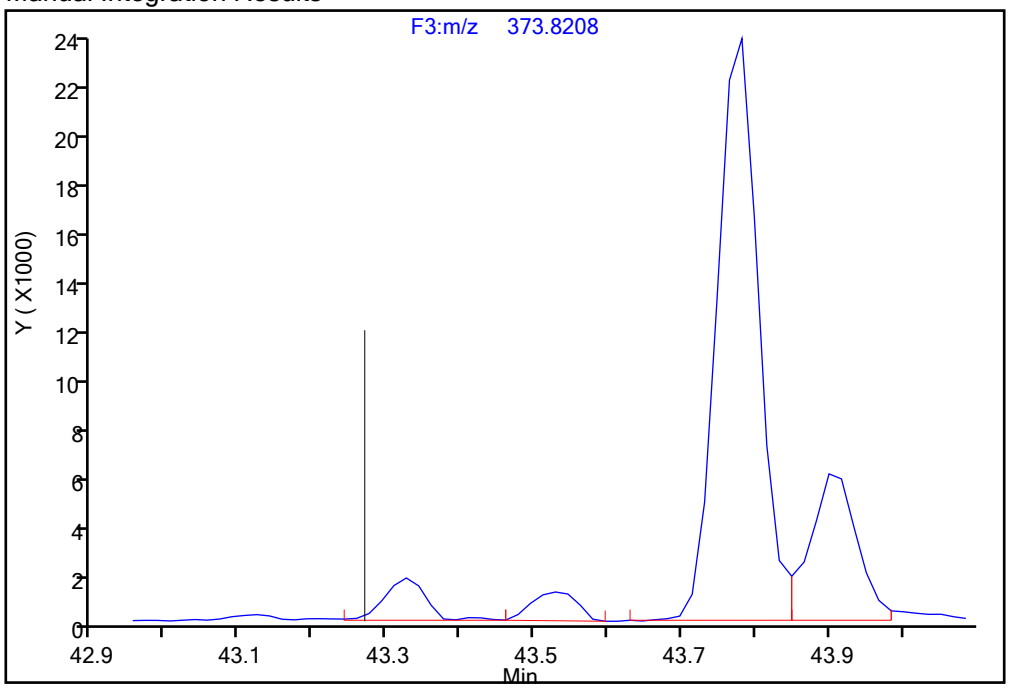
Processing Integration Results

RT = 43.529 Area = 5045



Manual Integration Results

RT = 43.529 Area = 5045



Reviewer: parslyt, 18-Dec-2019 03:44:58

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

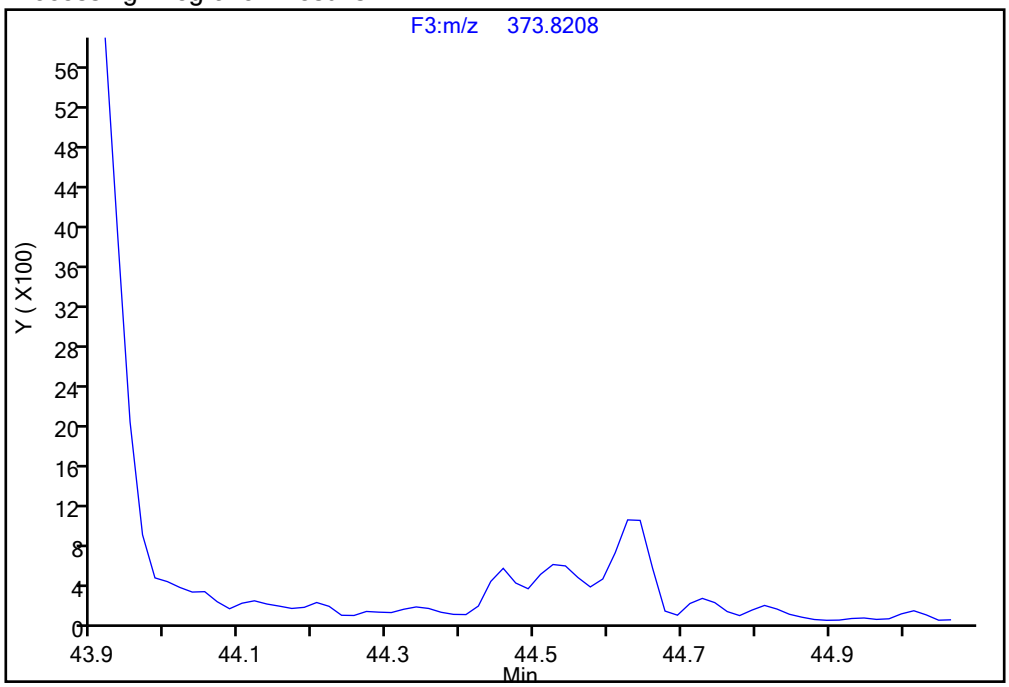
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

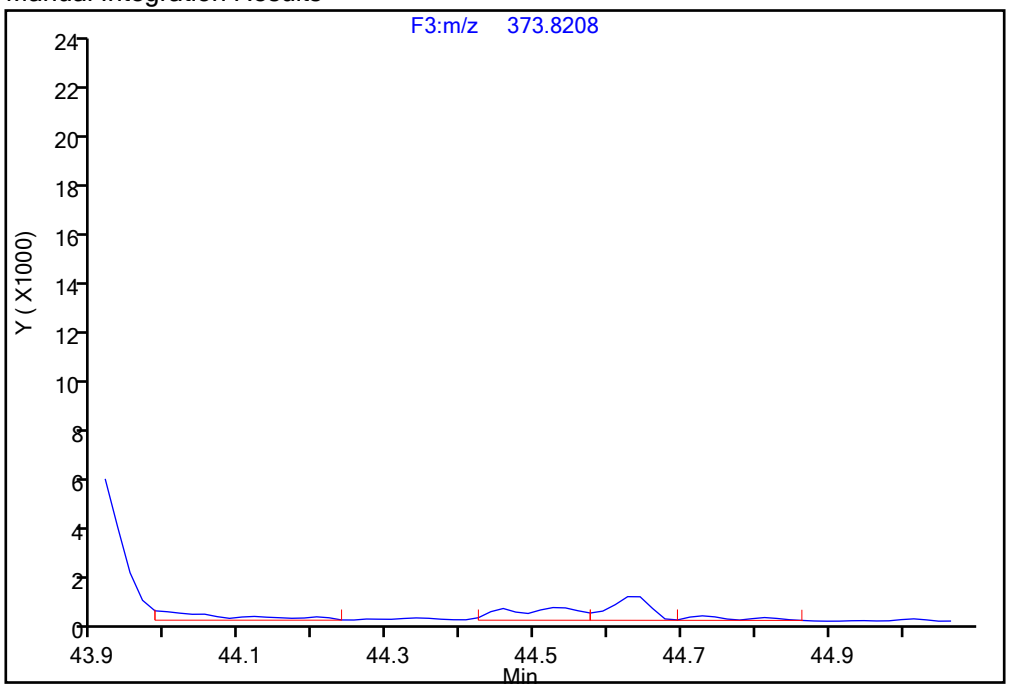
Not Detected
RT: 42.53- 45.77

Processing Integration Results



Manual Integration Results

RT = 44.525 Area = 3497 M



Reviewer: parslyt, 18-Dec-2019 03:44:58
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

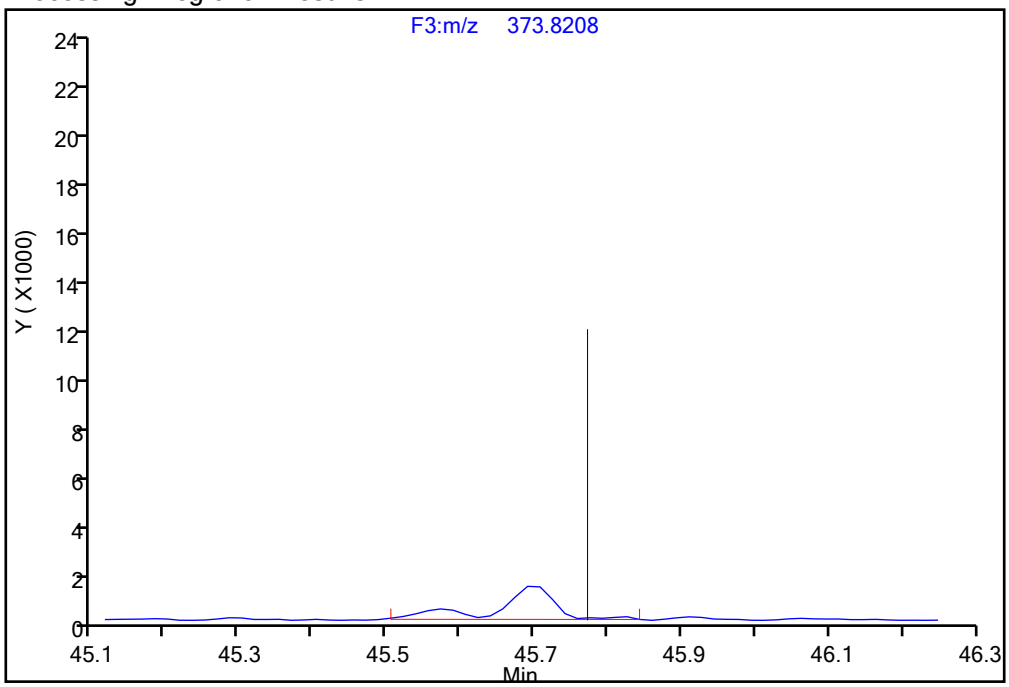
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

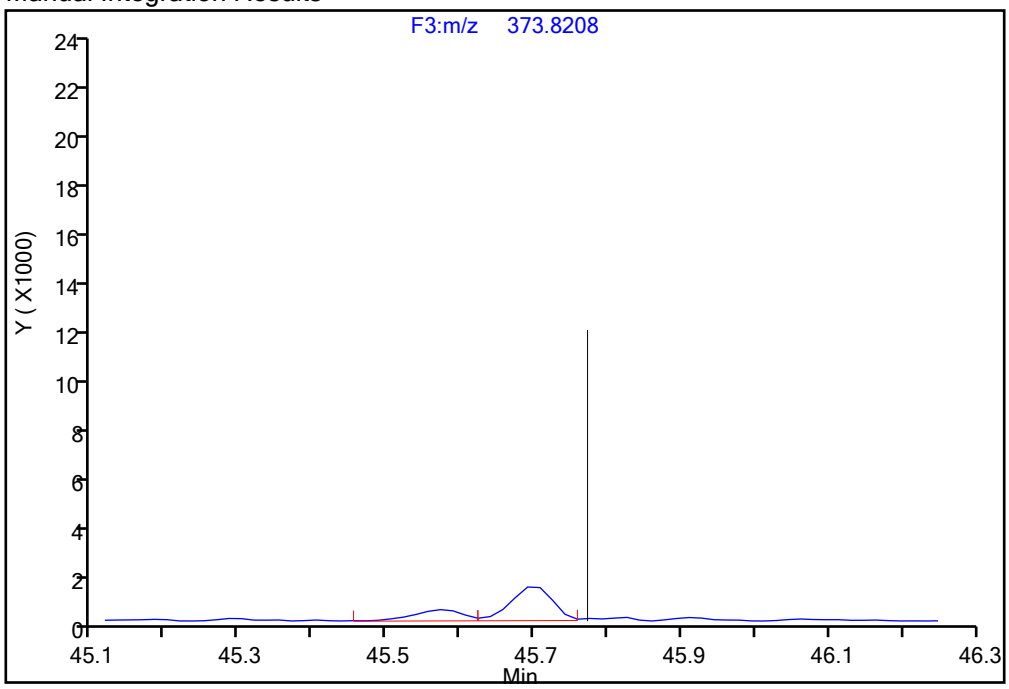
Processing Integration Results

RT = 45.691 Area = 7423



Manual Integration Results

RT = 45.691 Area = 5518 M



Reviewer: parslyt, 18-Dec-2019 03:44:58

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

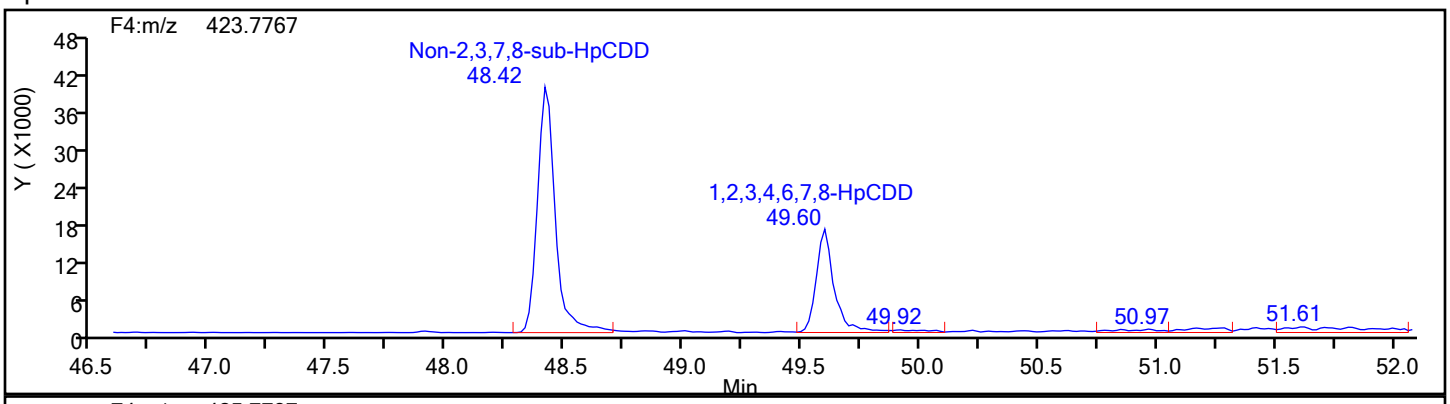
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

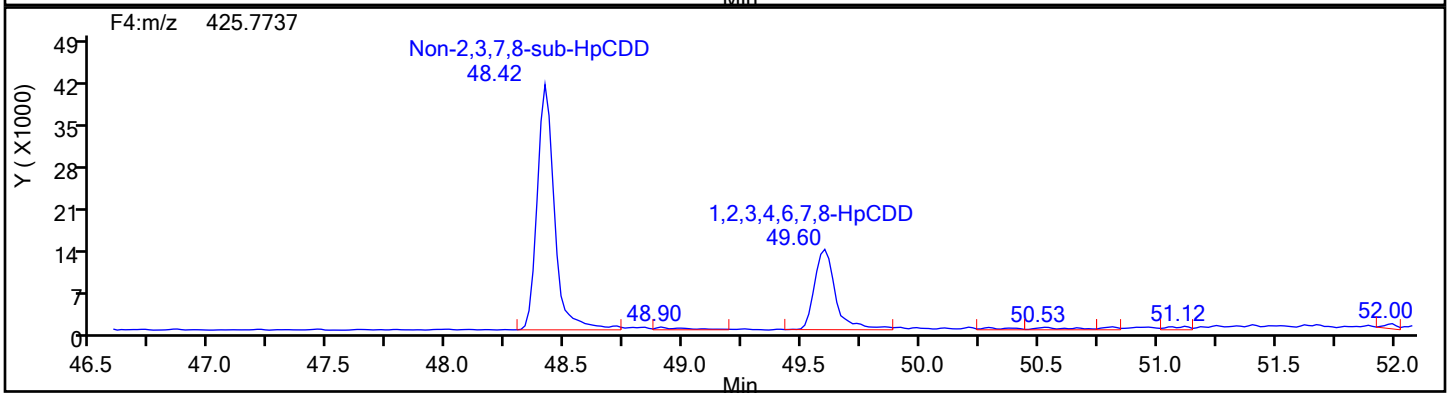
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d

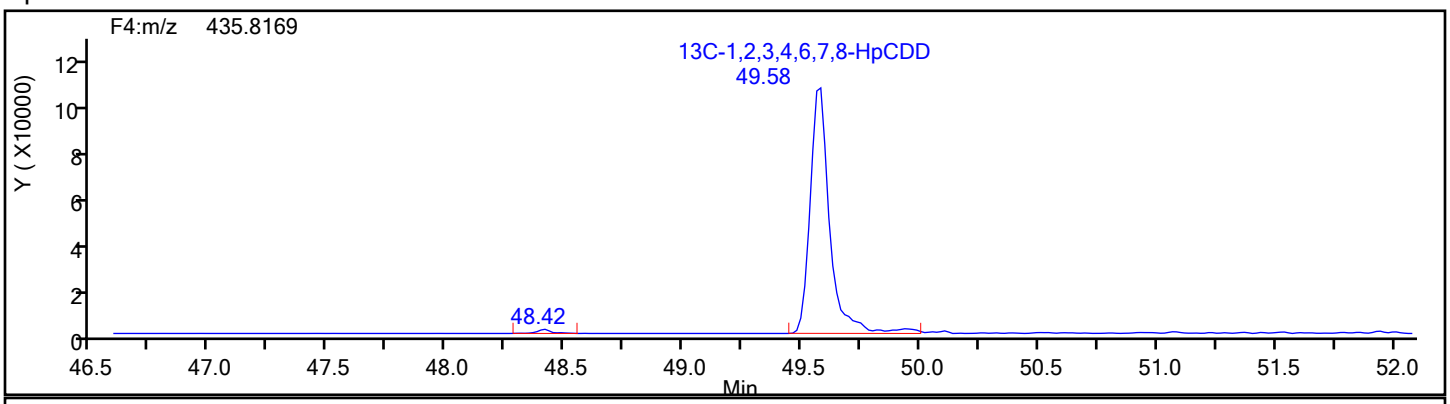
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

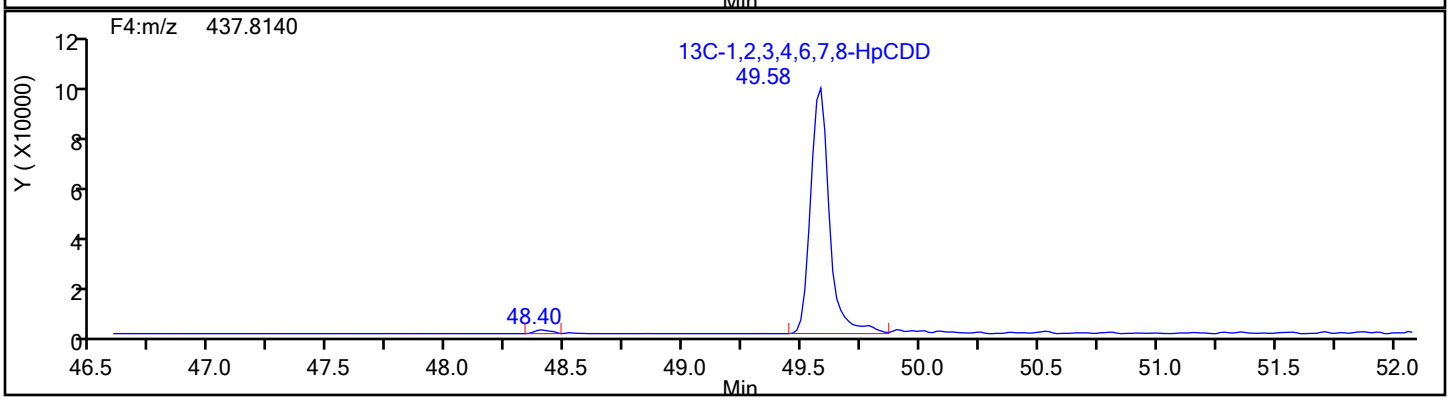
HpCDD





HpCDD Standards



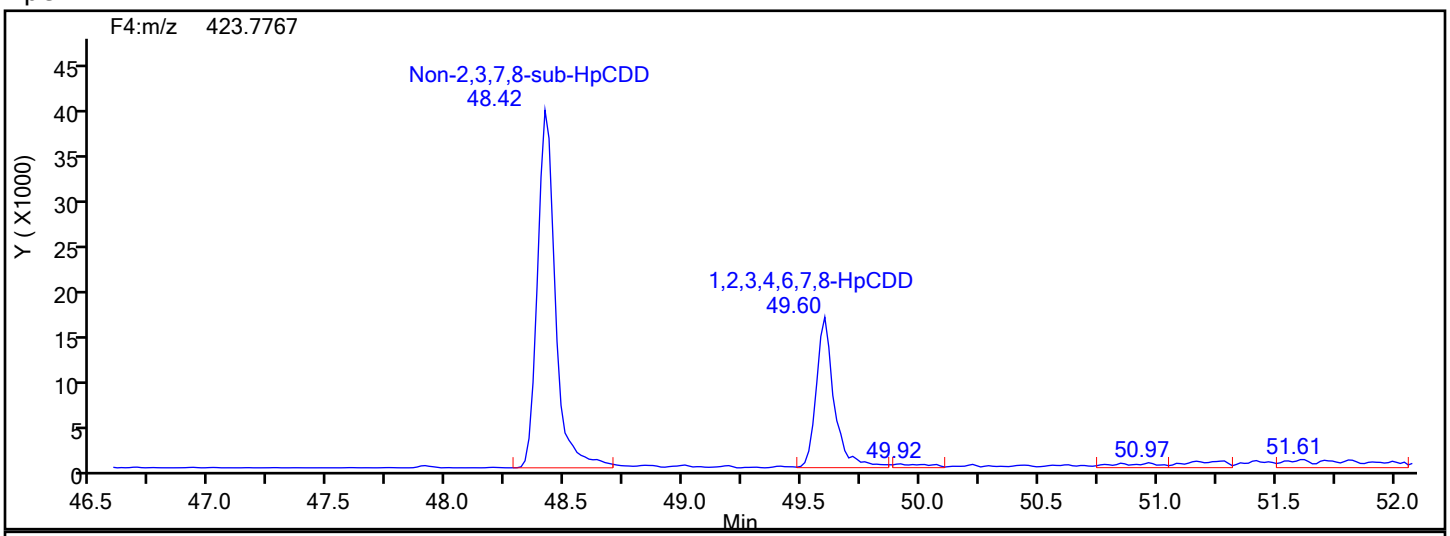


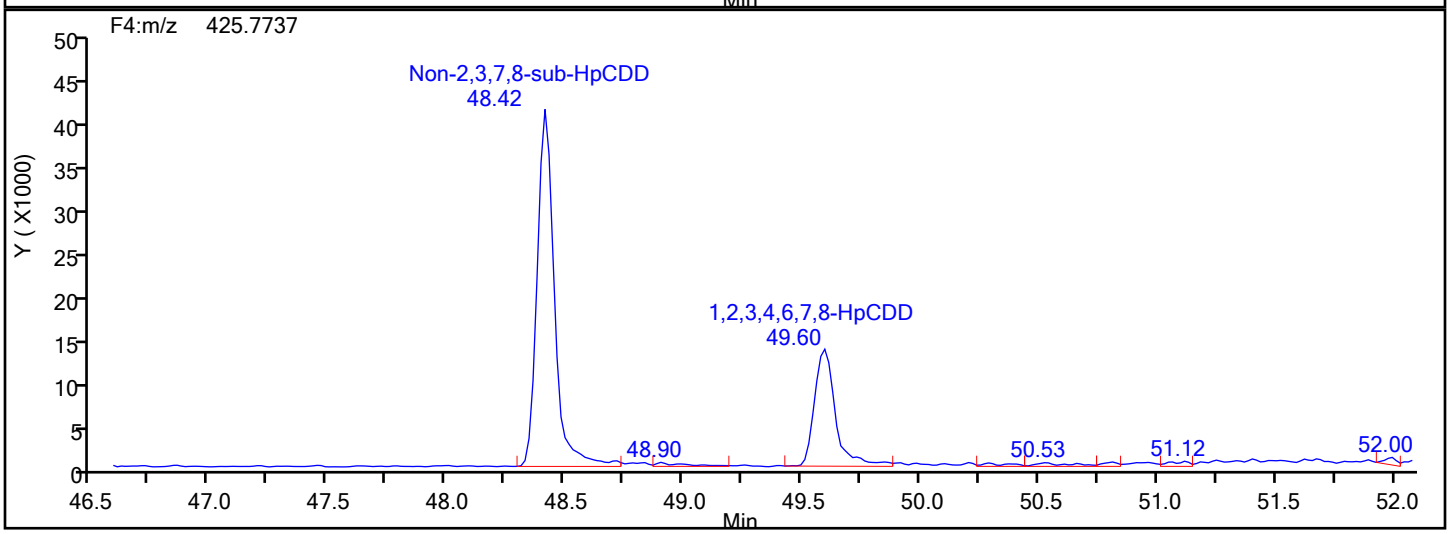
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

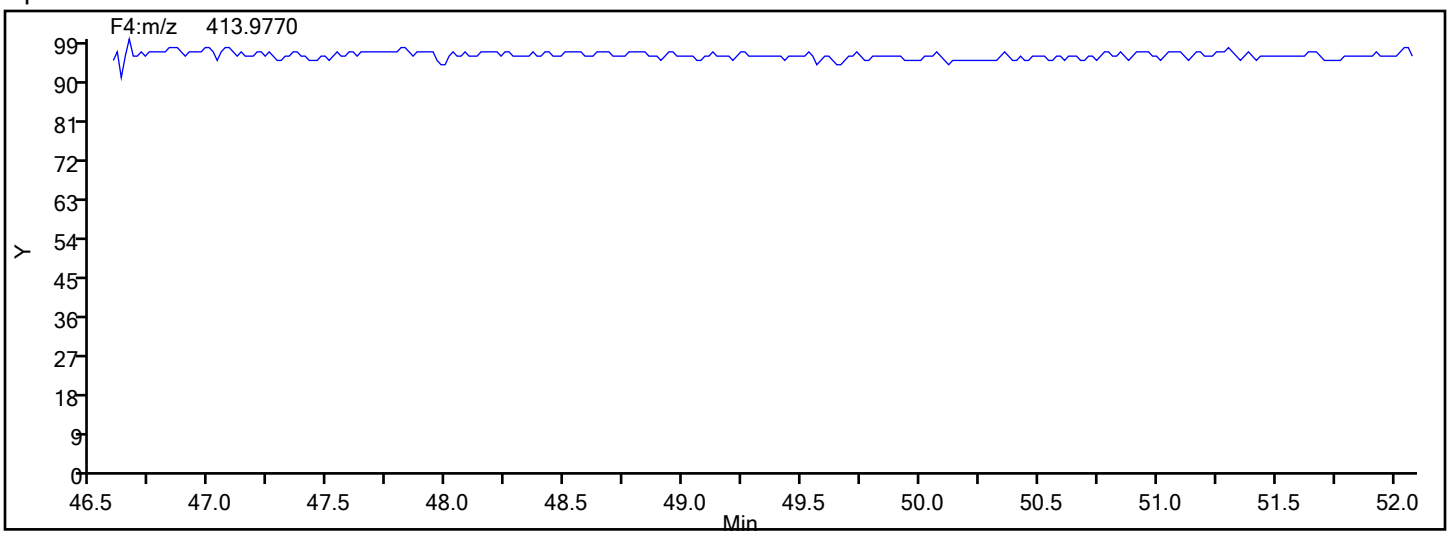
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

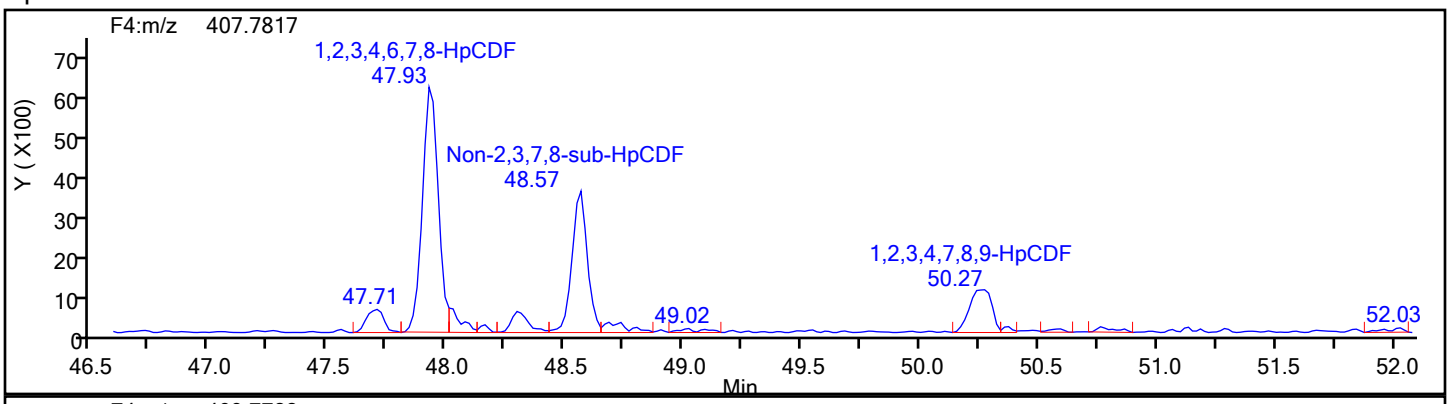


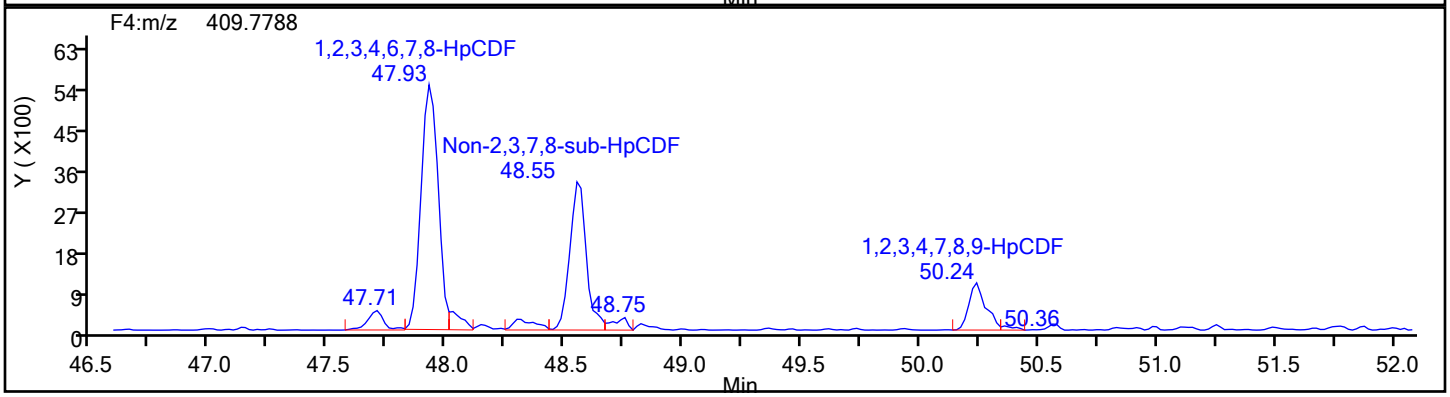
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

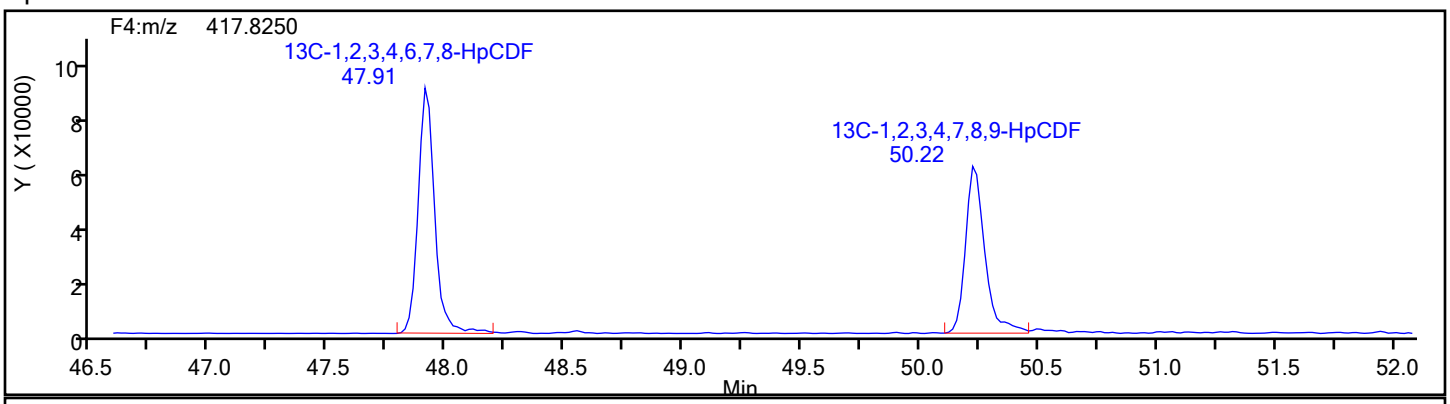
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

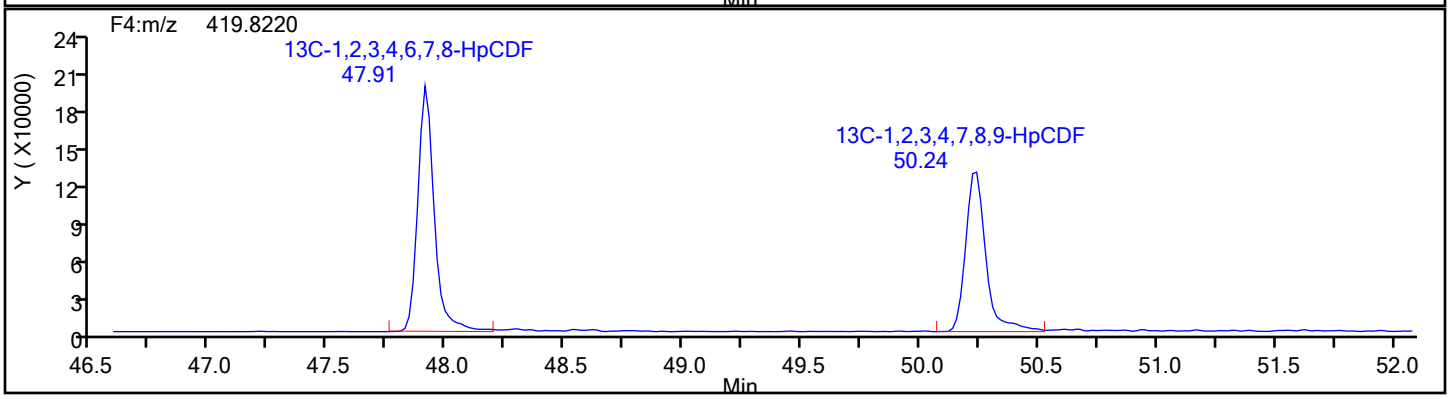
HpCDF





HpCDF Standards



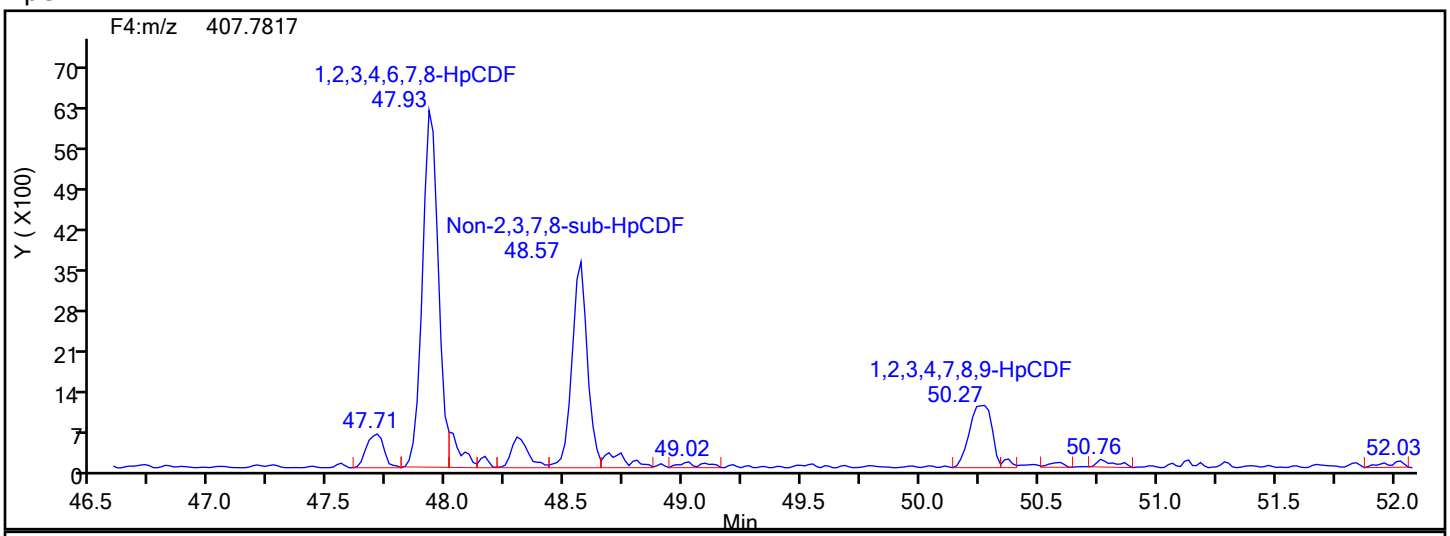


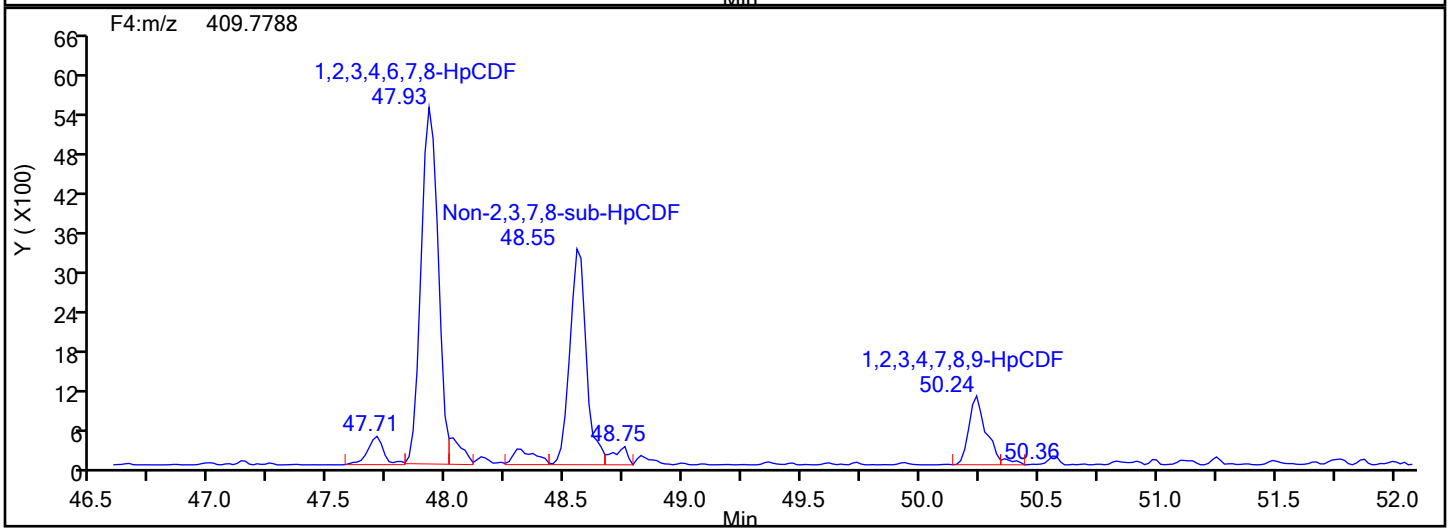
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

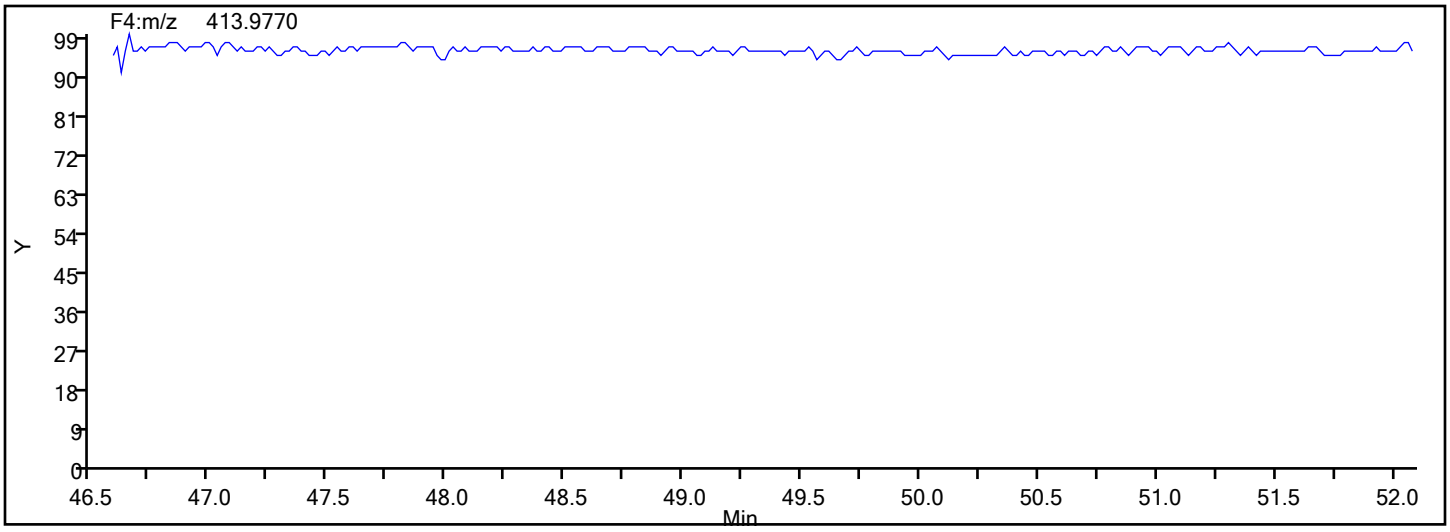
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

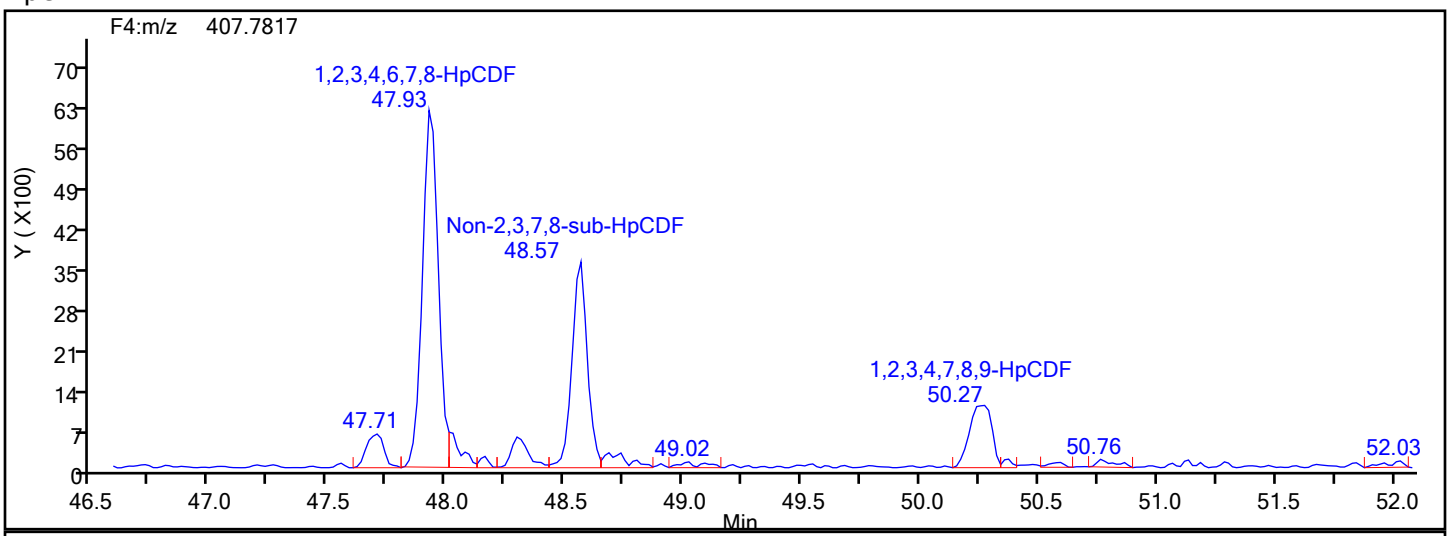


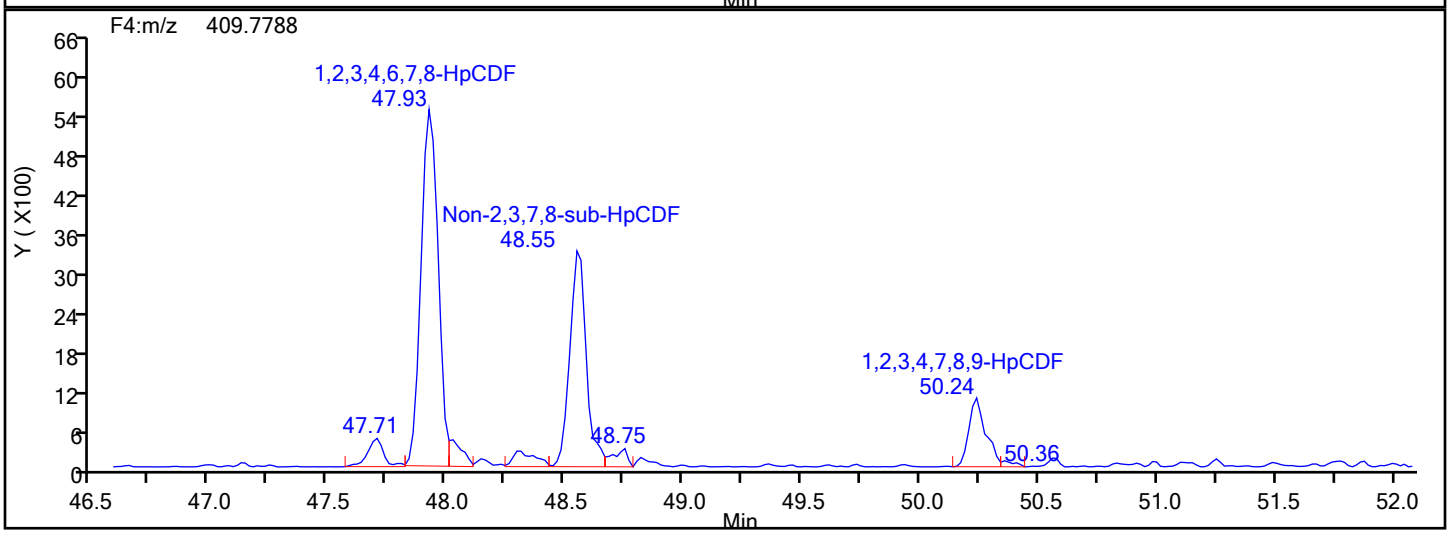
Report Date: 18-Dec-2019 03:49:01 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

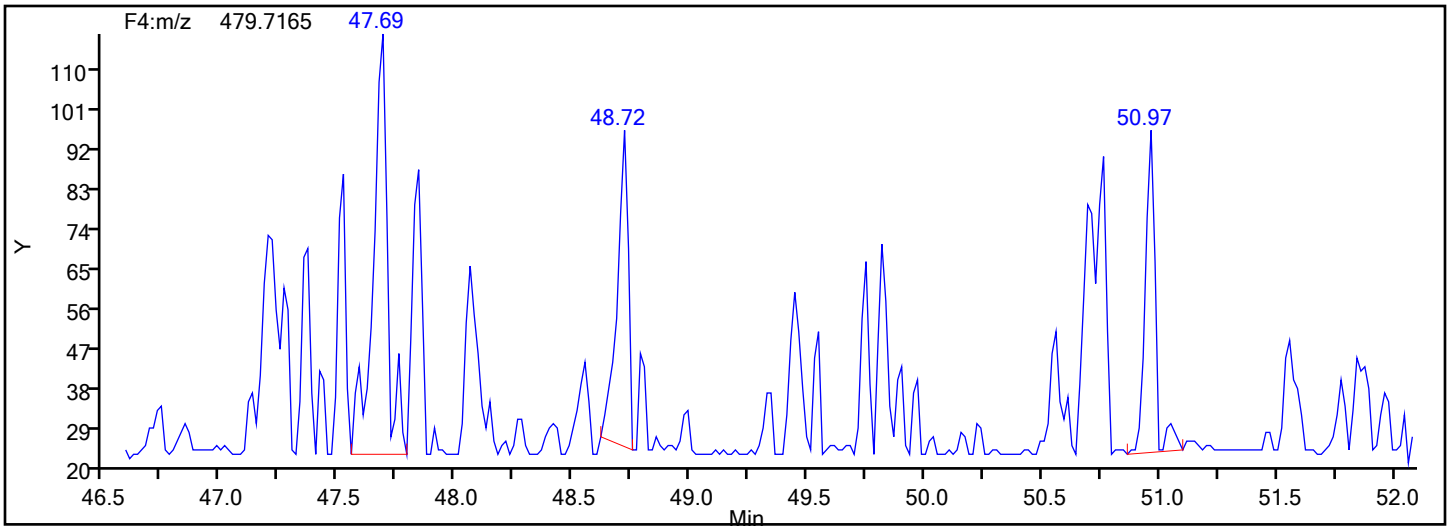
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

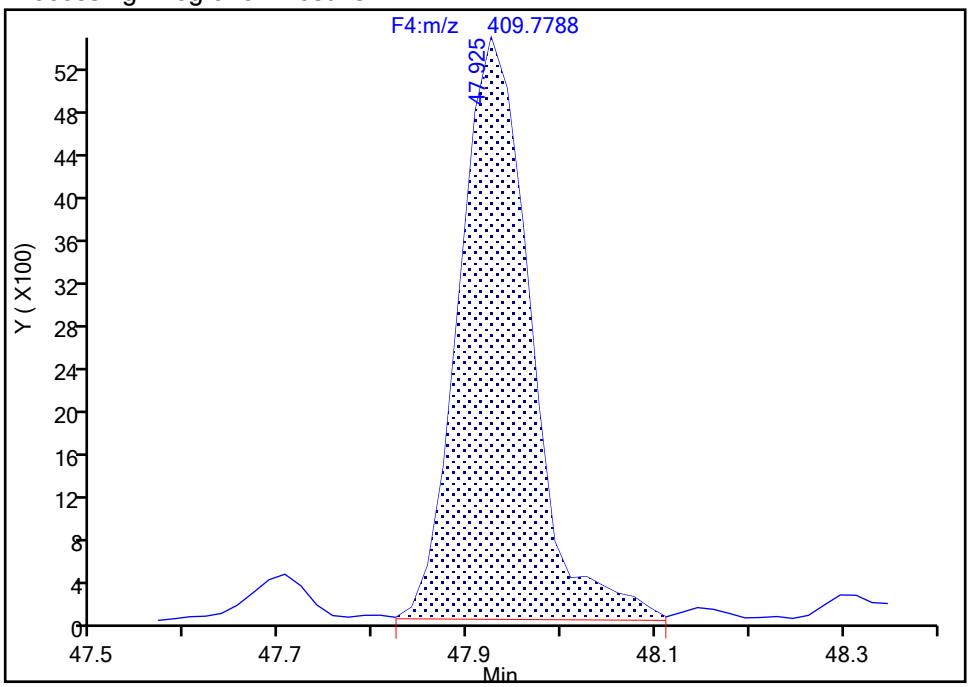
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

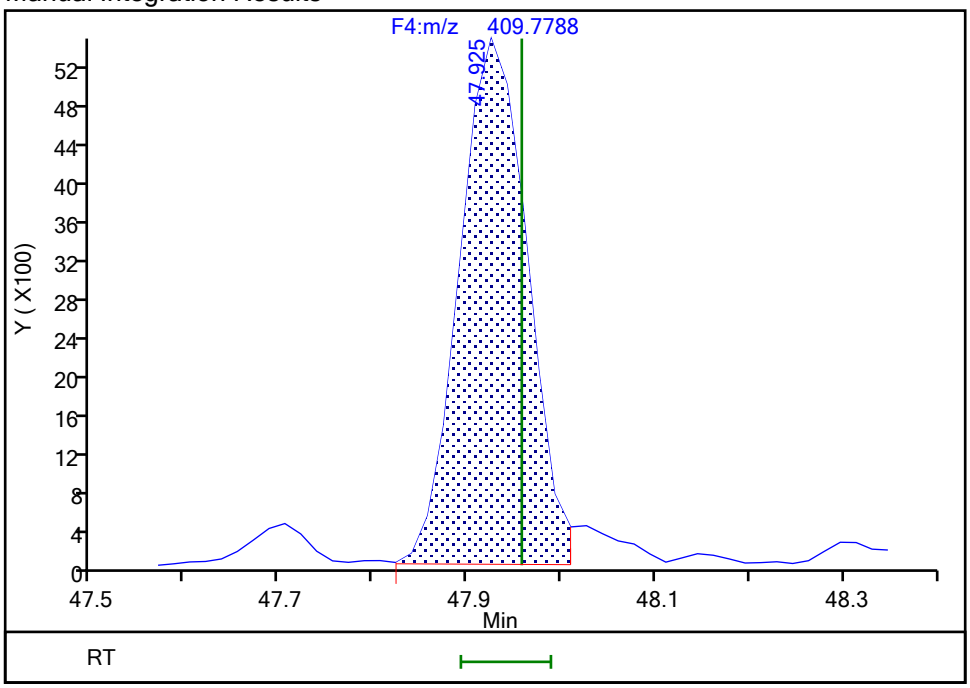
Processing Integration Results

RT: 47.93
Area: 28741
Amount: 1.427178
Amount Units: pg/ul



Manual Integration Results

RT: 47.93
Area: 27197
Amount: 1.339846
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:45:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

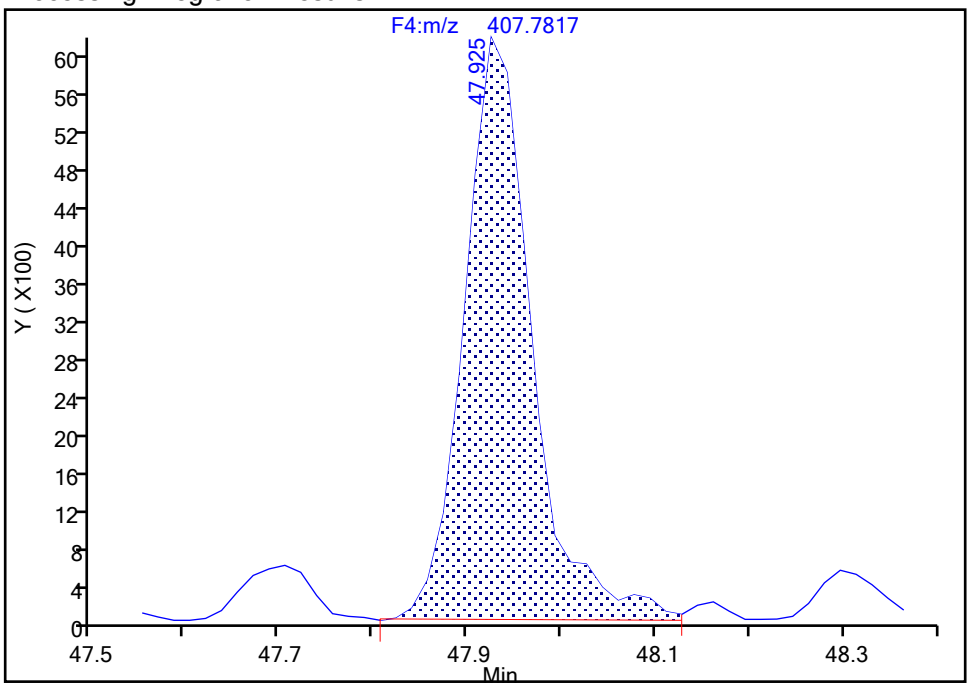
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

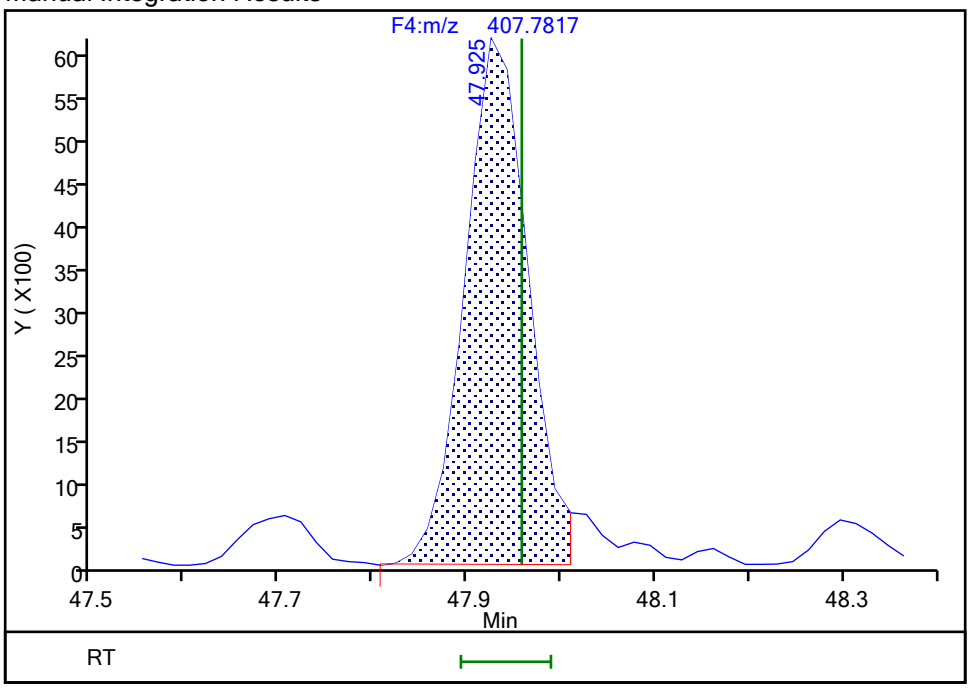
Processing Integration Results

RT: 47.93
Area: 30744
Amount: 1.427178
Amount Units: pg/ul



Manual Integration Results

RT: 47.93
Area: 28648
Amount: 1.339846
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:45:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

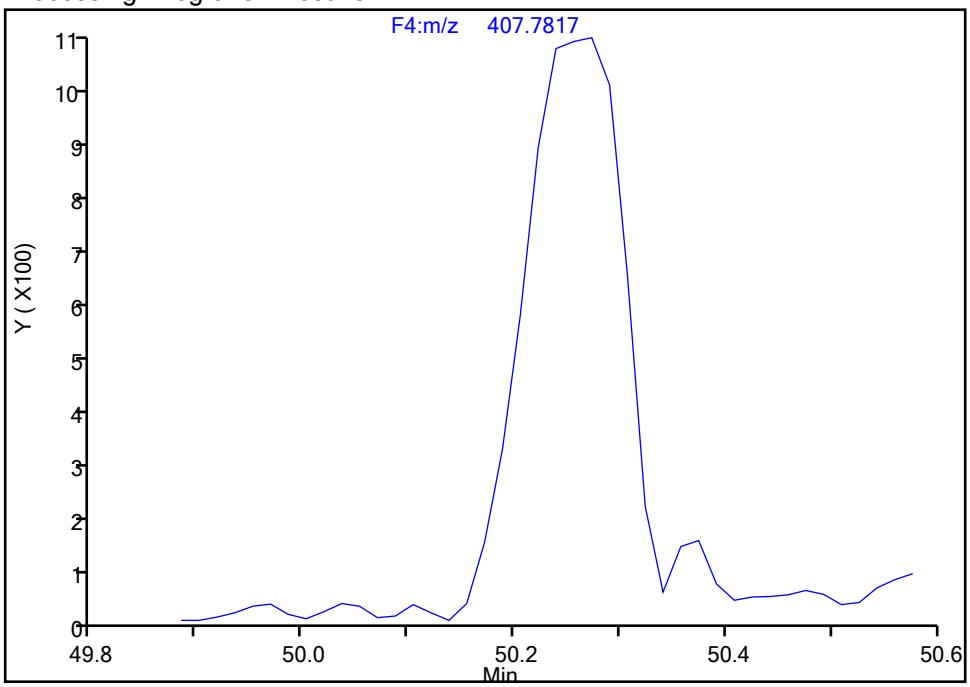
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

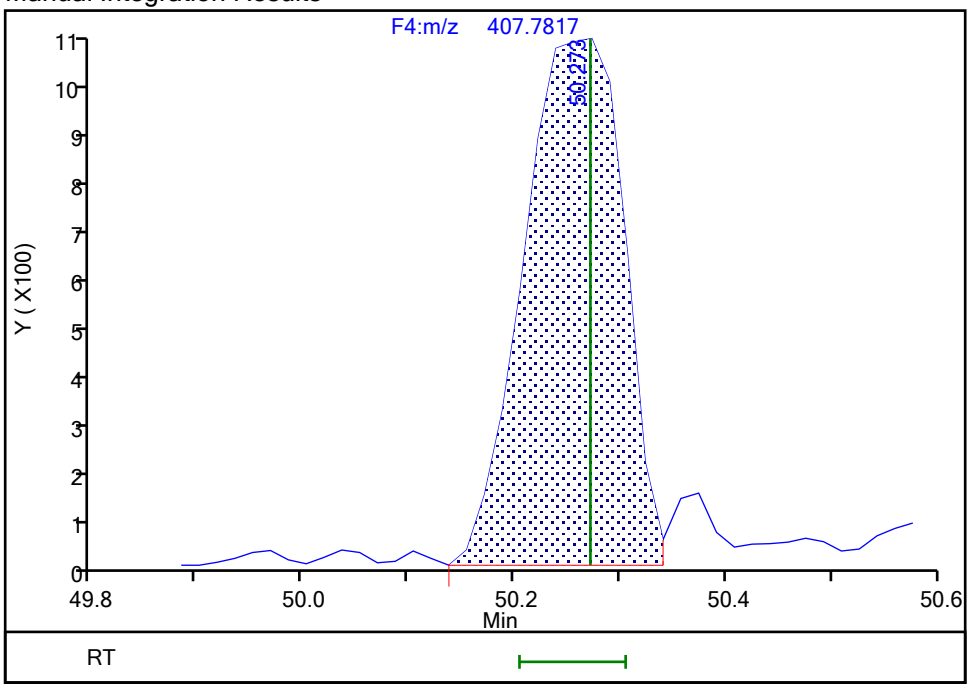
Not Detected
Expected RT: 50.27

Processing Integration Results



Manual Integration Results

RT: 50.27
Area: 7067
Amount: 0.397449
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:46:18
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

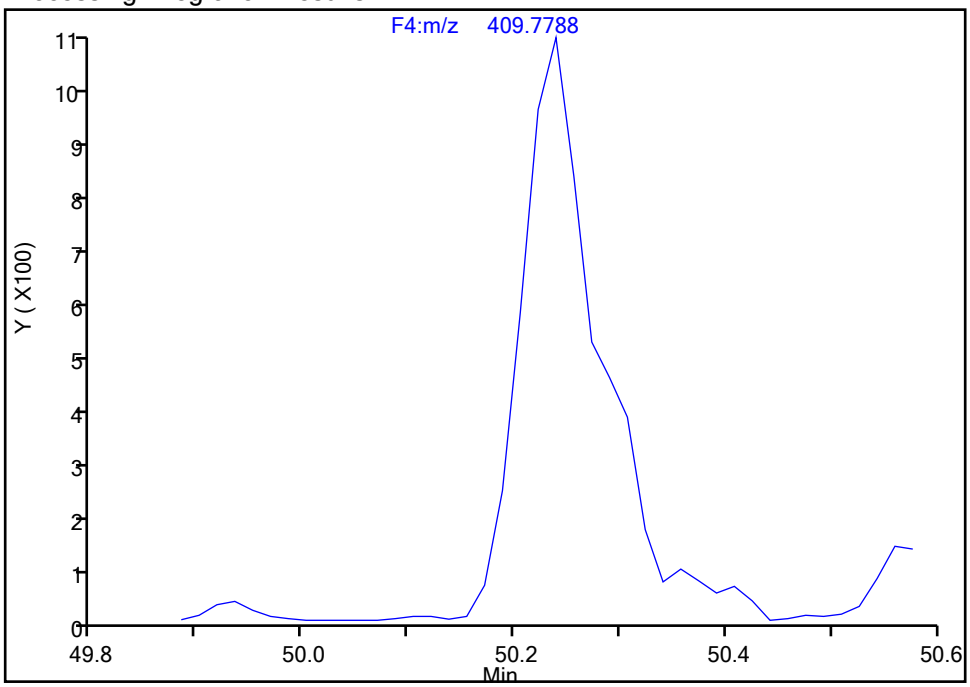
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

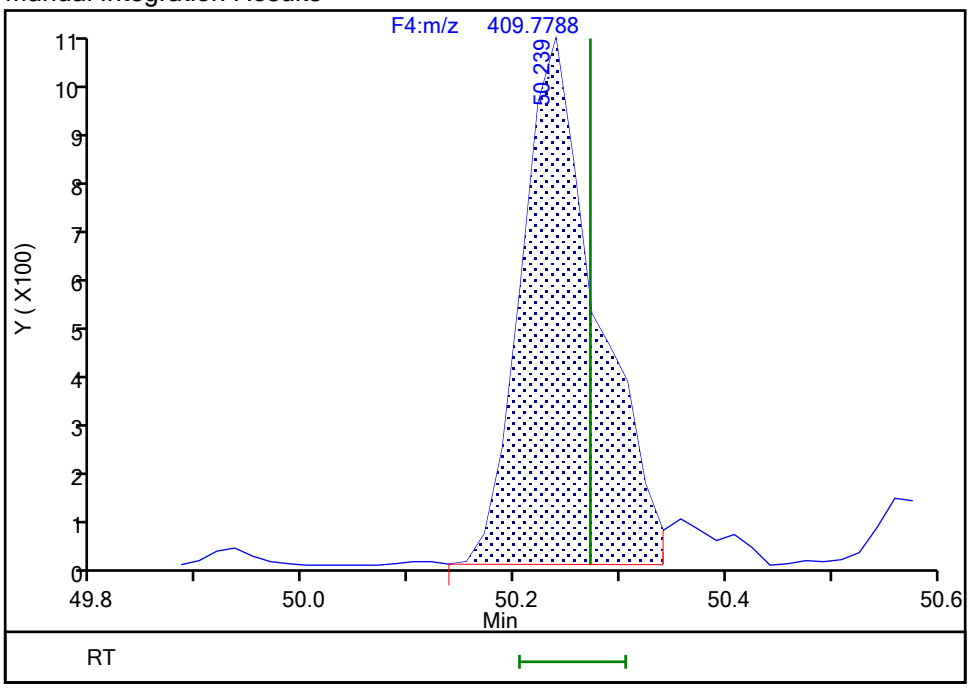
Not Detected
Expected RT: 50.27

Processing Integration Results



Manual Integration Results

RT: 50.24
Area: 5170
Amount: 0.397449
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:46:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

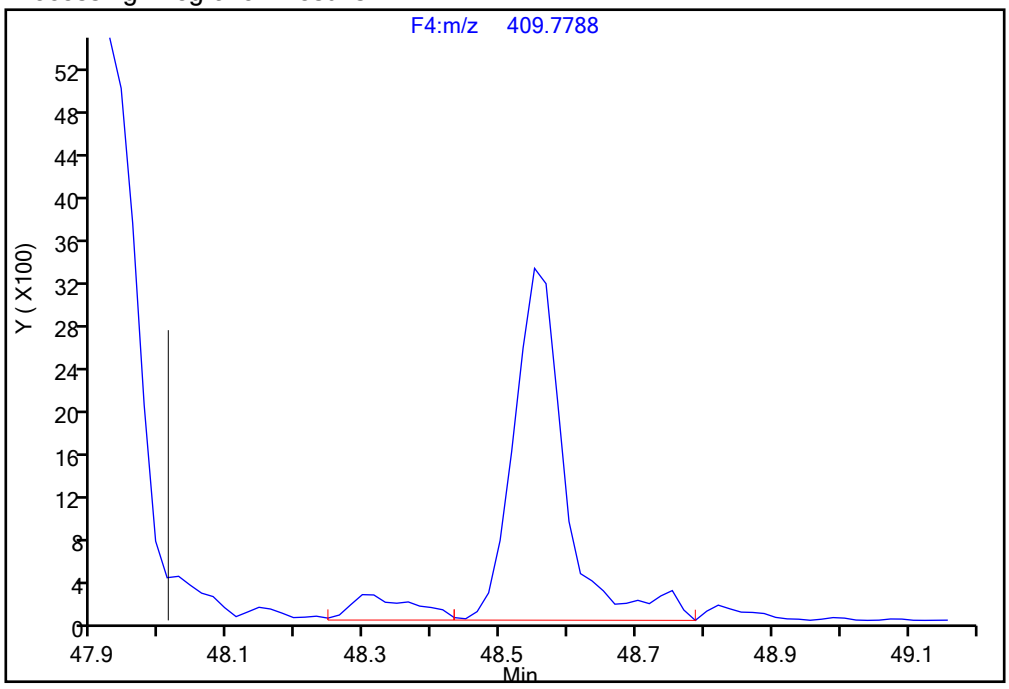
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.79- 52.06)

Signal: 2

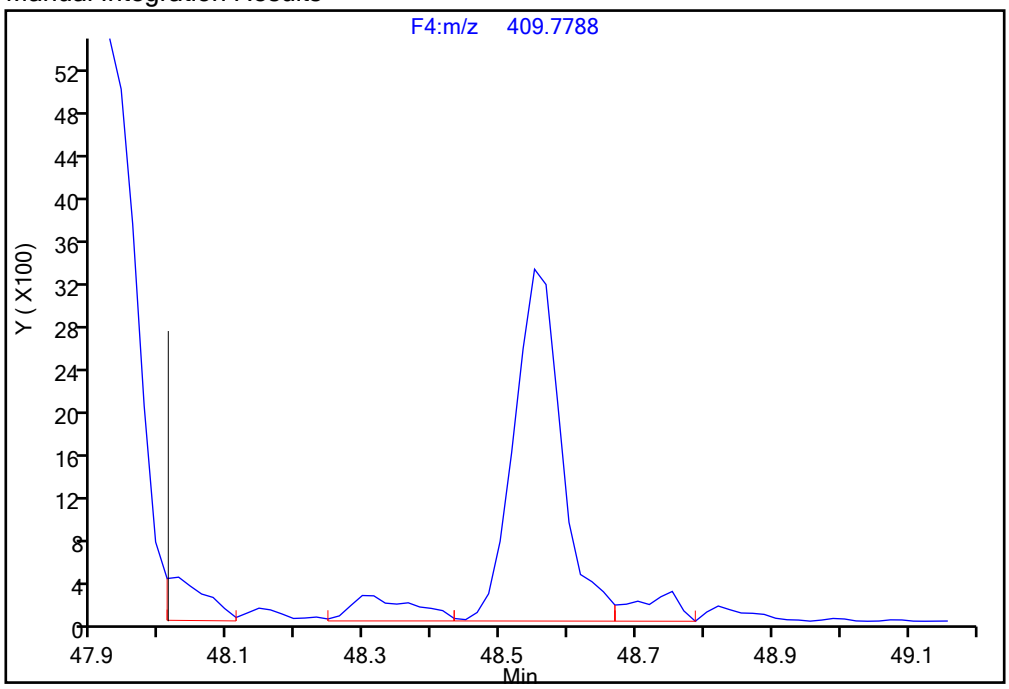
Processing Integration Results

RT = 48.550 Area = 17152



Manual Integration Results

RT = 48.550 Area = 15958 M



Reviewer: parslyt, 18-Dec-2019 03:46:57

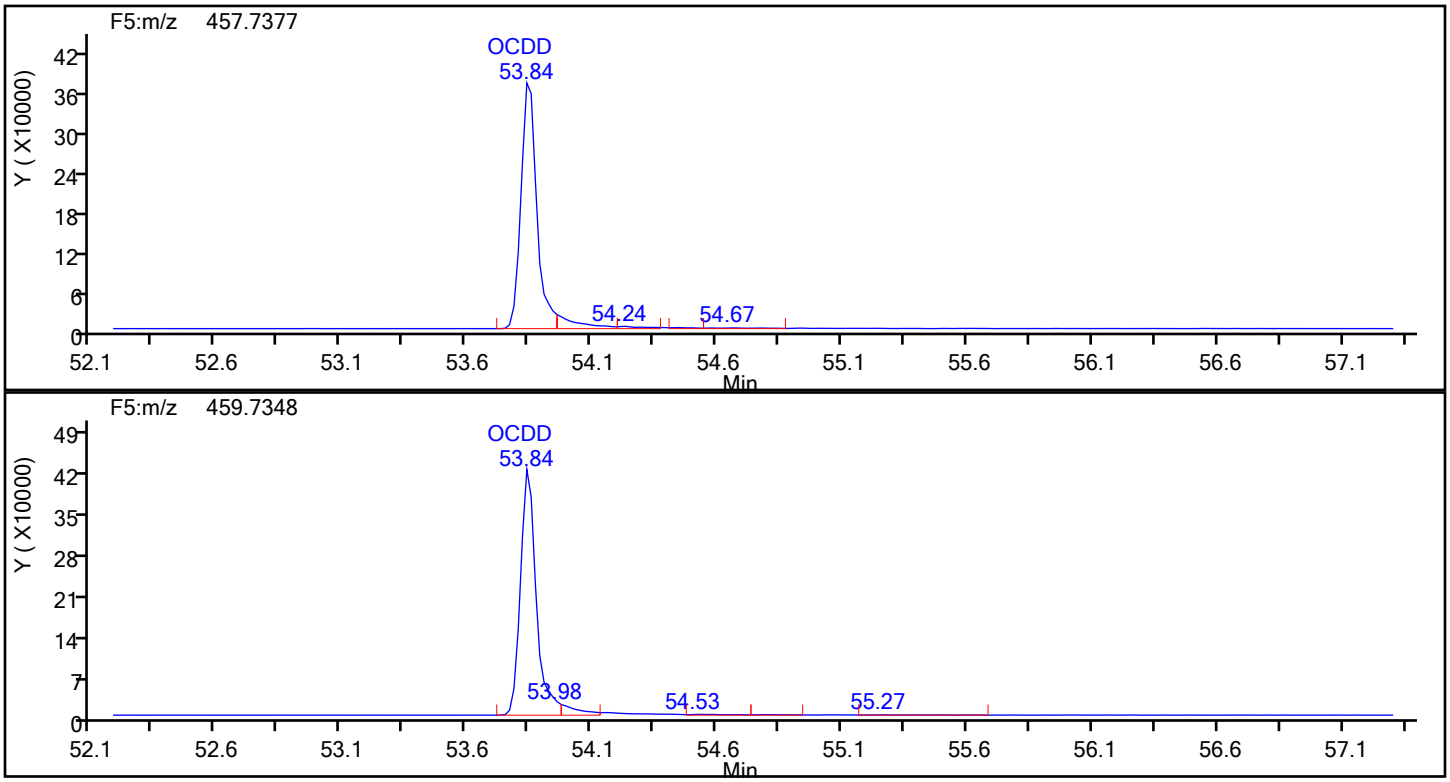
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 03:49:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

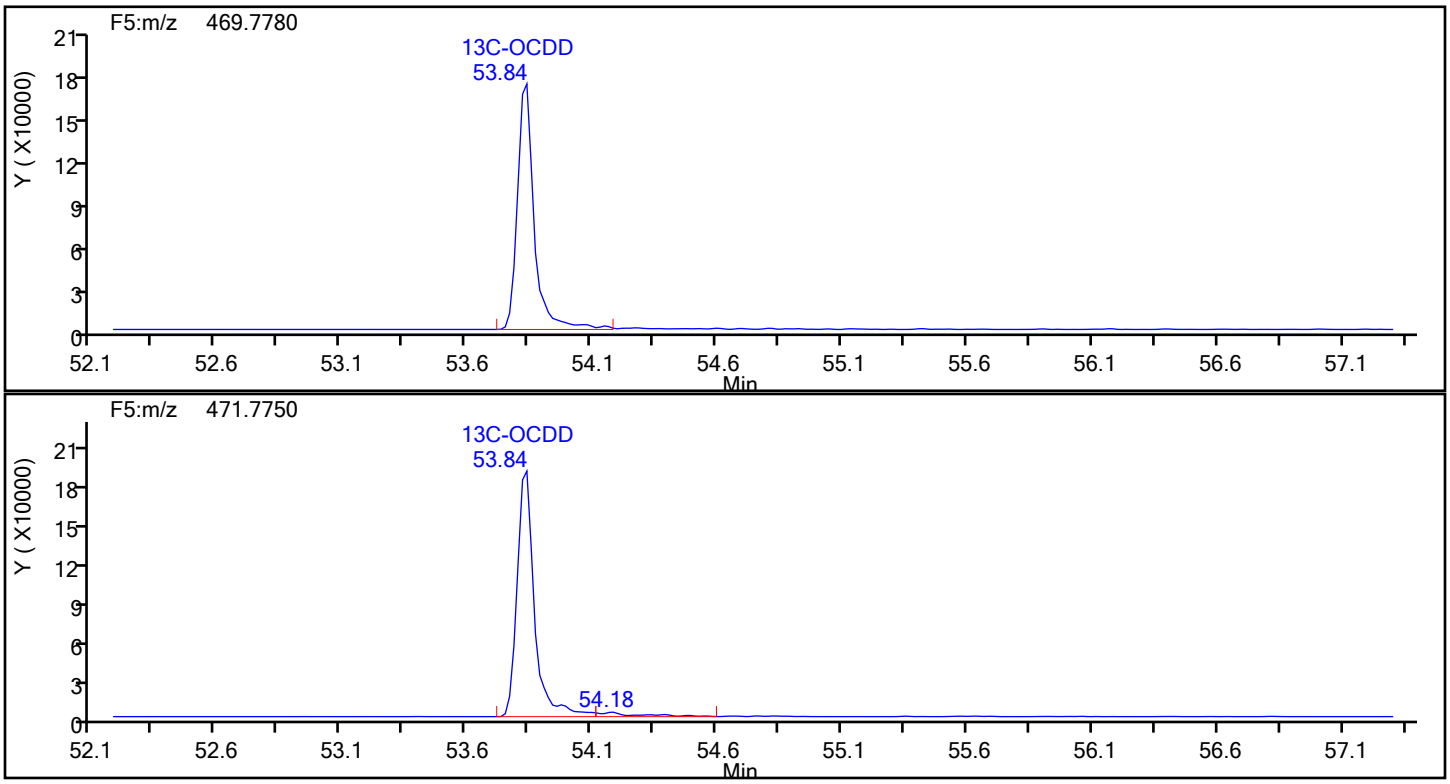
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

OCDD



OCDD Standards

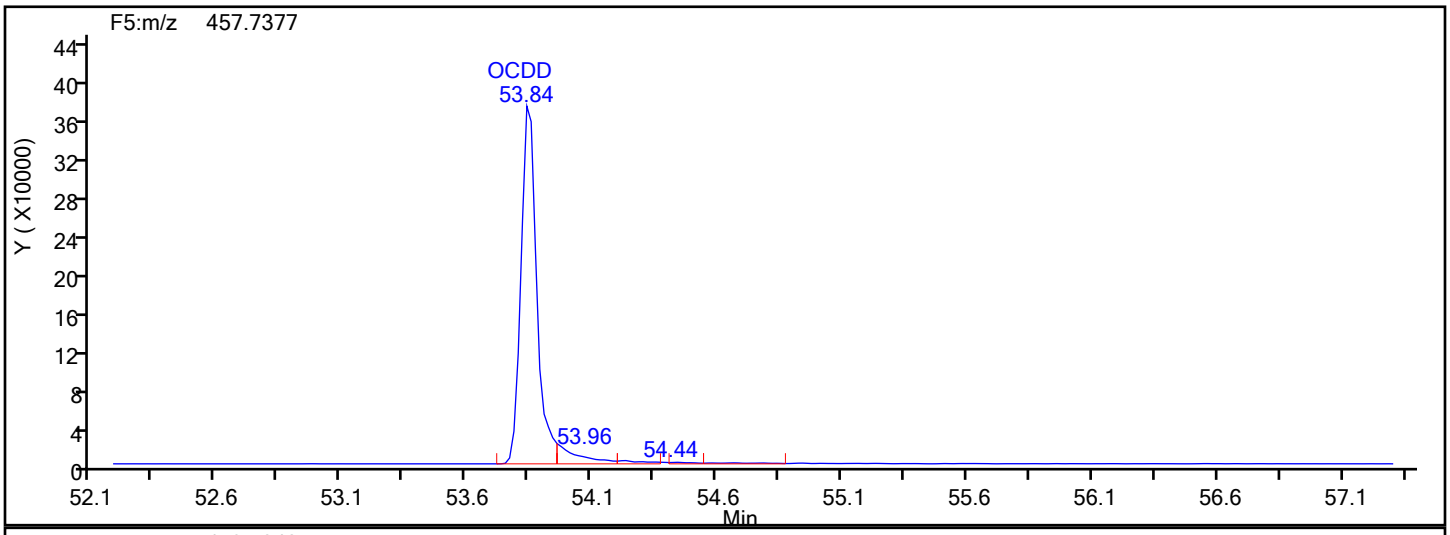


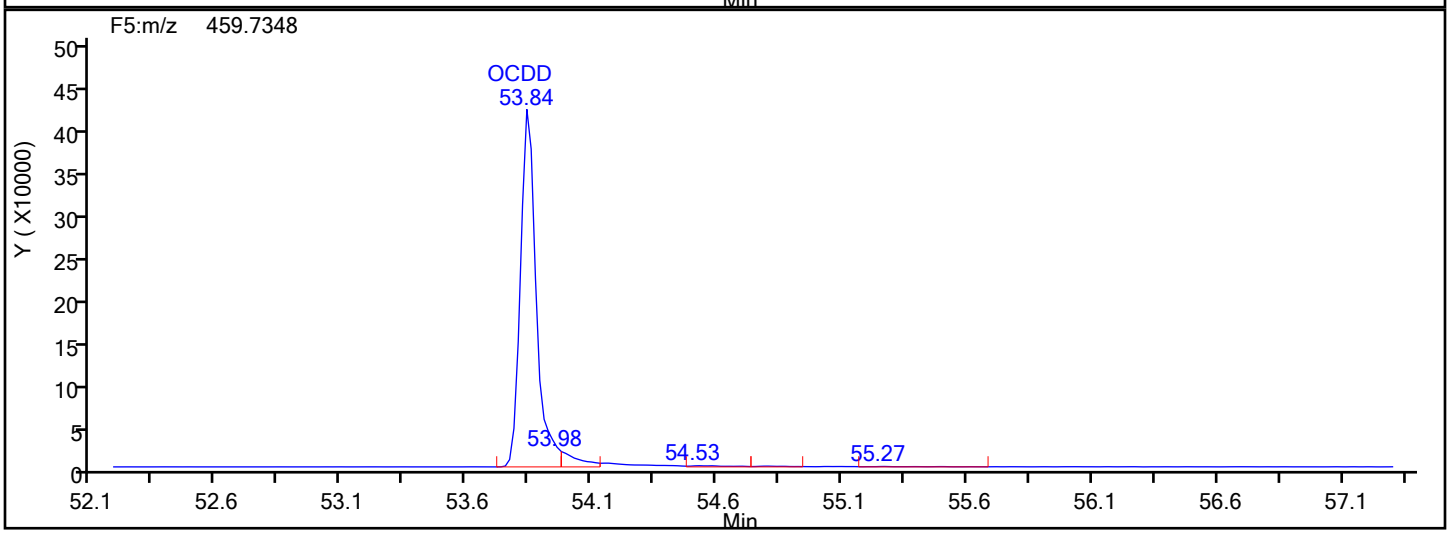
Report Date: 18-Dec-2019 03:49:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

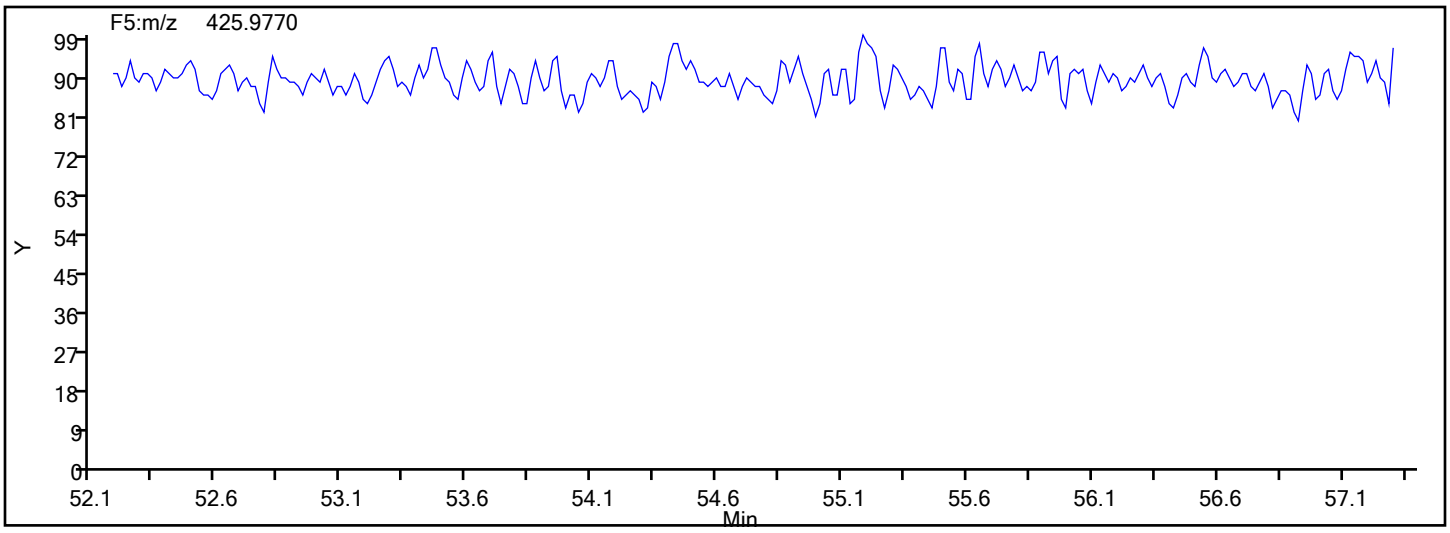
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

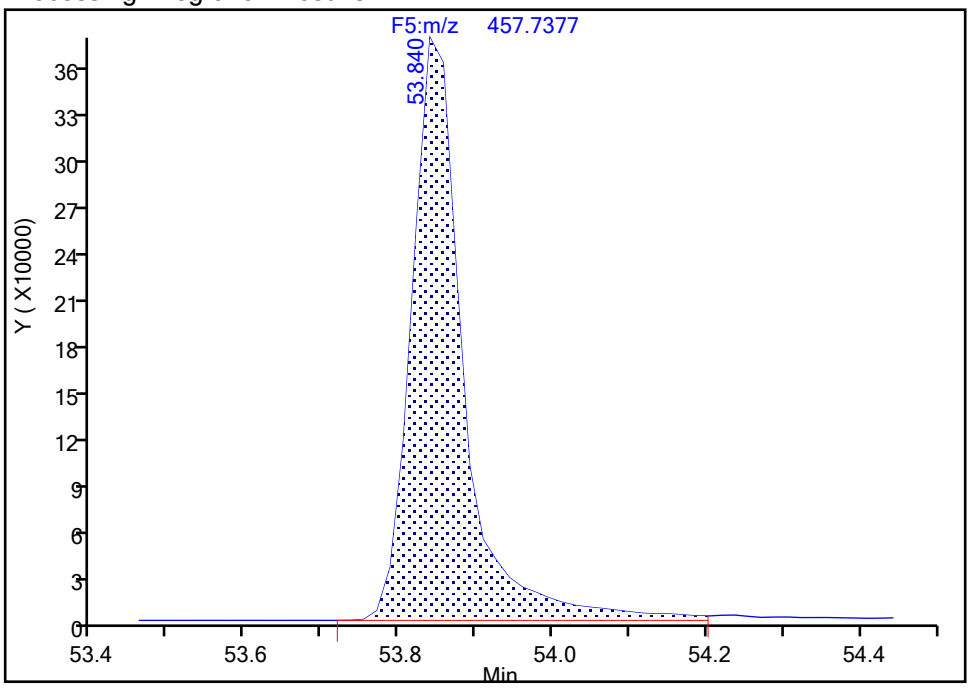
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 1

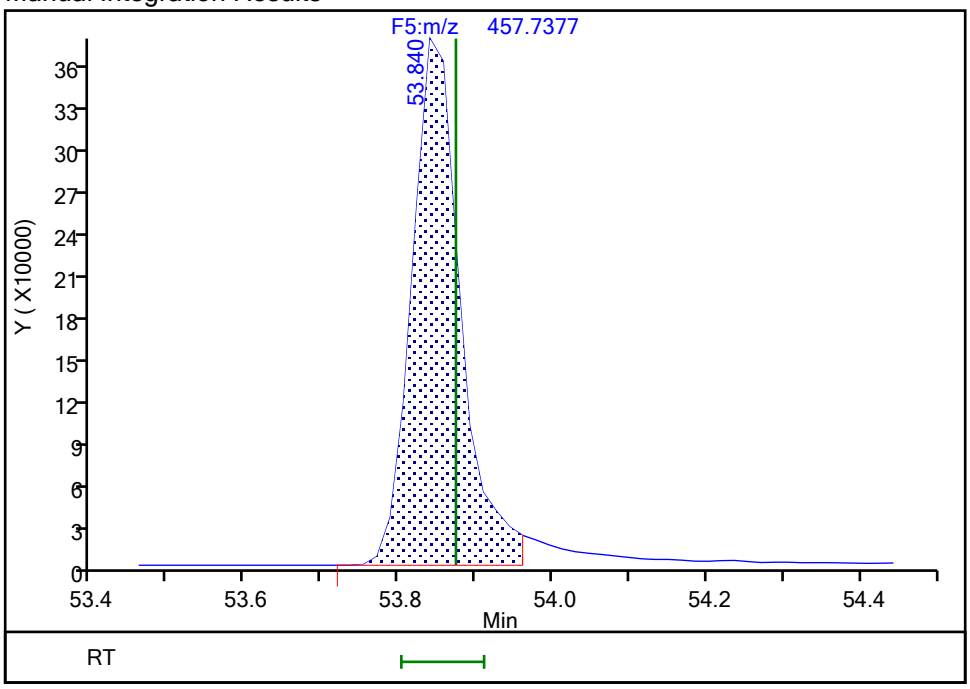
Processing Integration Results

RT: 53.84
Area: 1765197
Amount: 176.2944
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 1648167
Amount: 166.6080
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:48:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

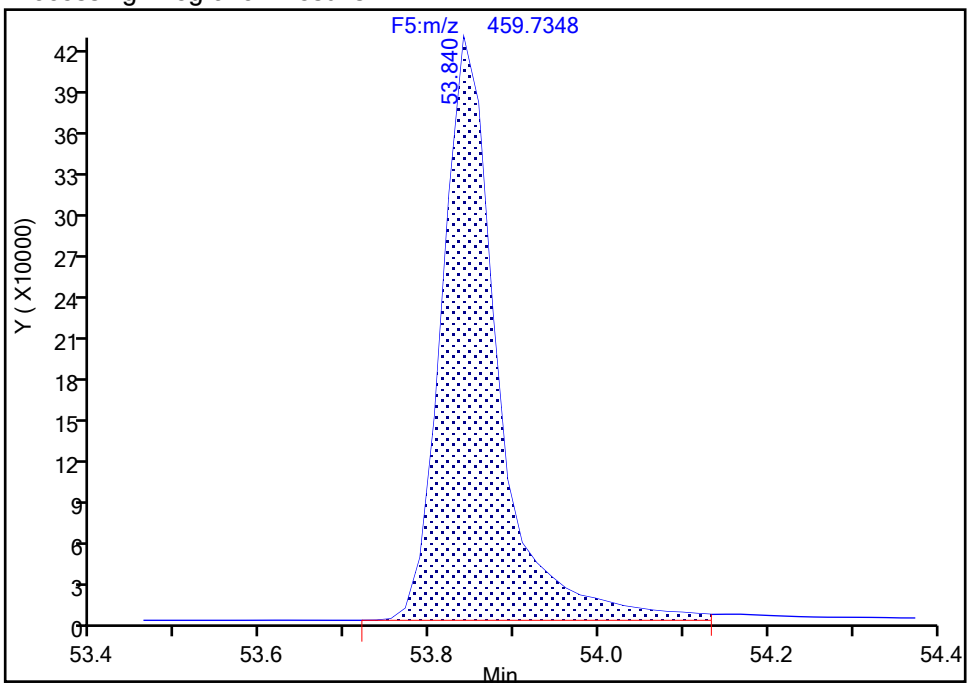
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 2

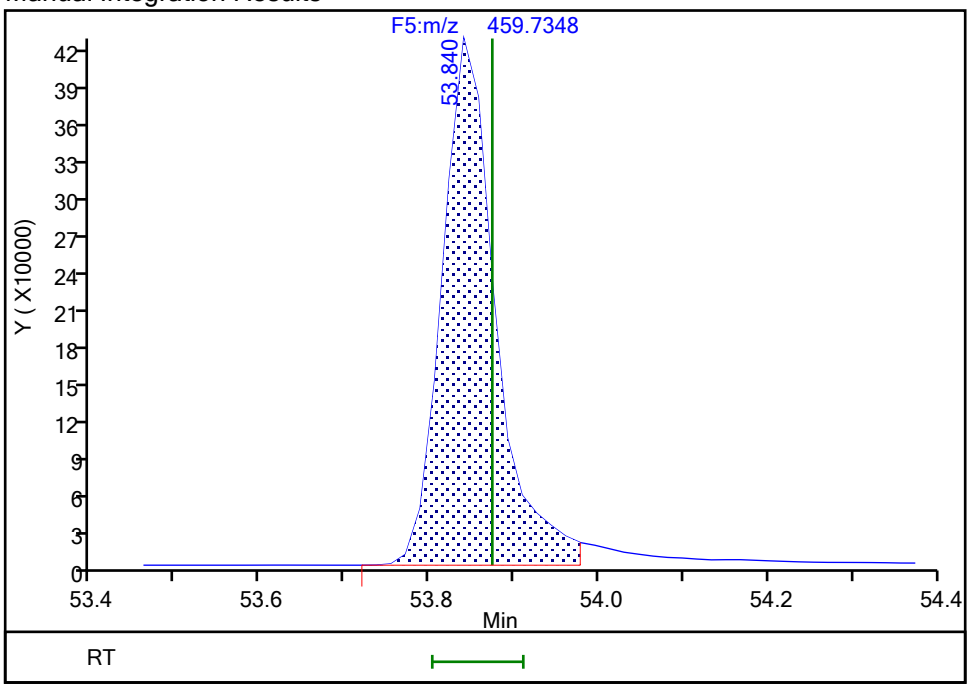
Processing Integration Results

RT: 53.84
Area: 1934379
Amount: 176.2944
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 1848139
Amount: 166.6080
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:48:08

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 03:49:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d

Injection Date: 17-Dec-2019 16:33:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

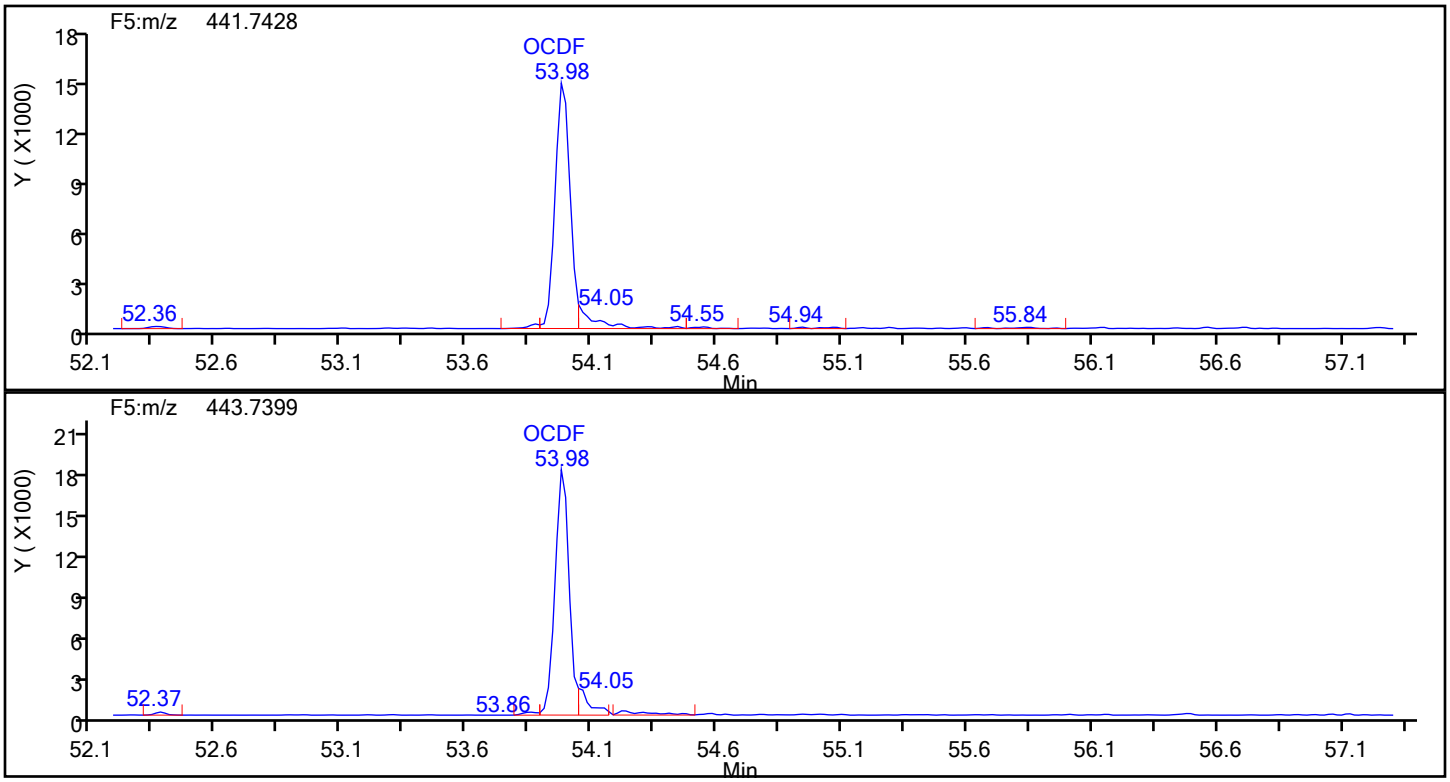
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(0-1)

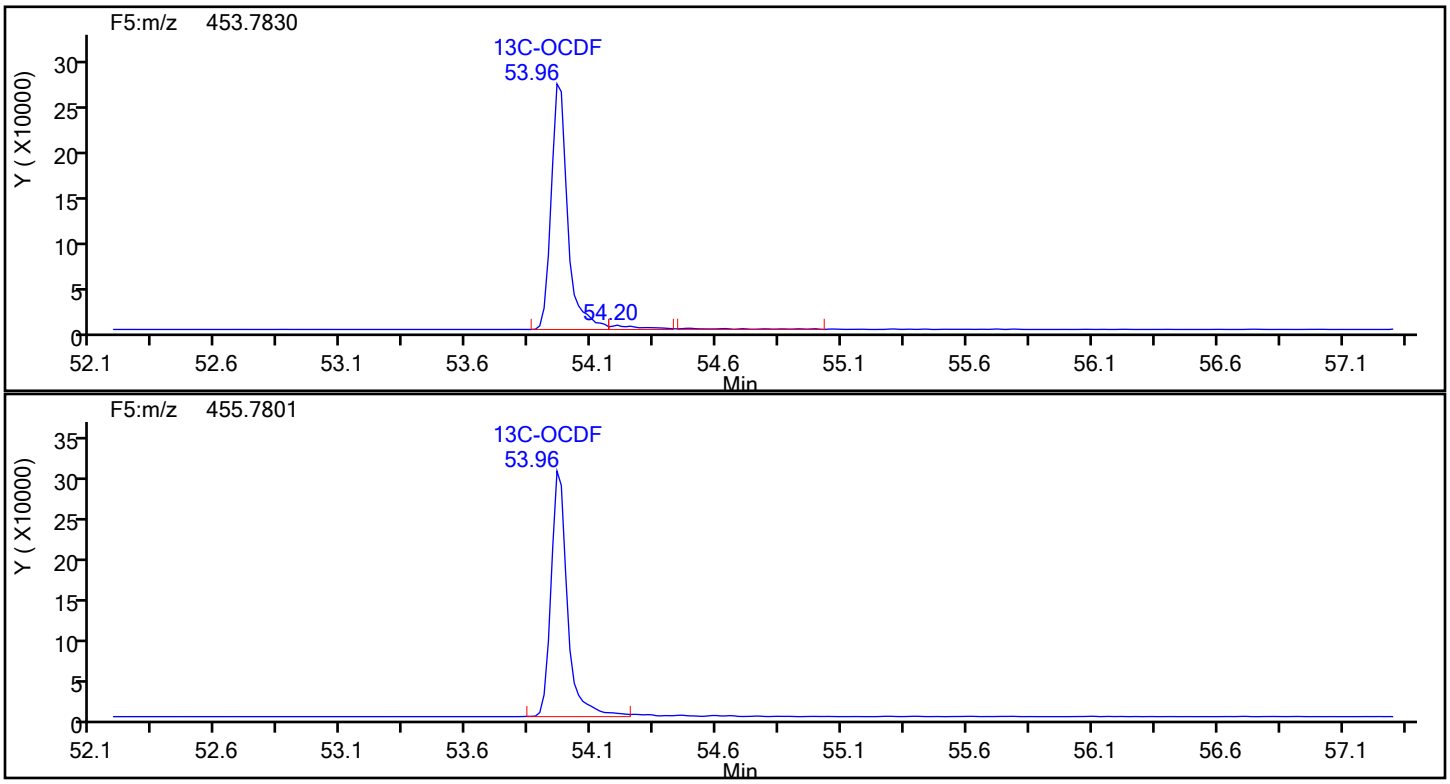
Worklist#: 36146 Sample Line#: 8

Column Type: Column Dia:

OCDF



OCDF Standards

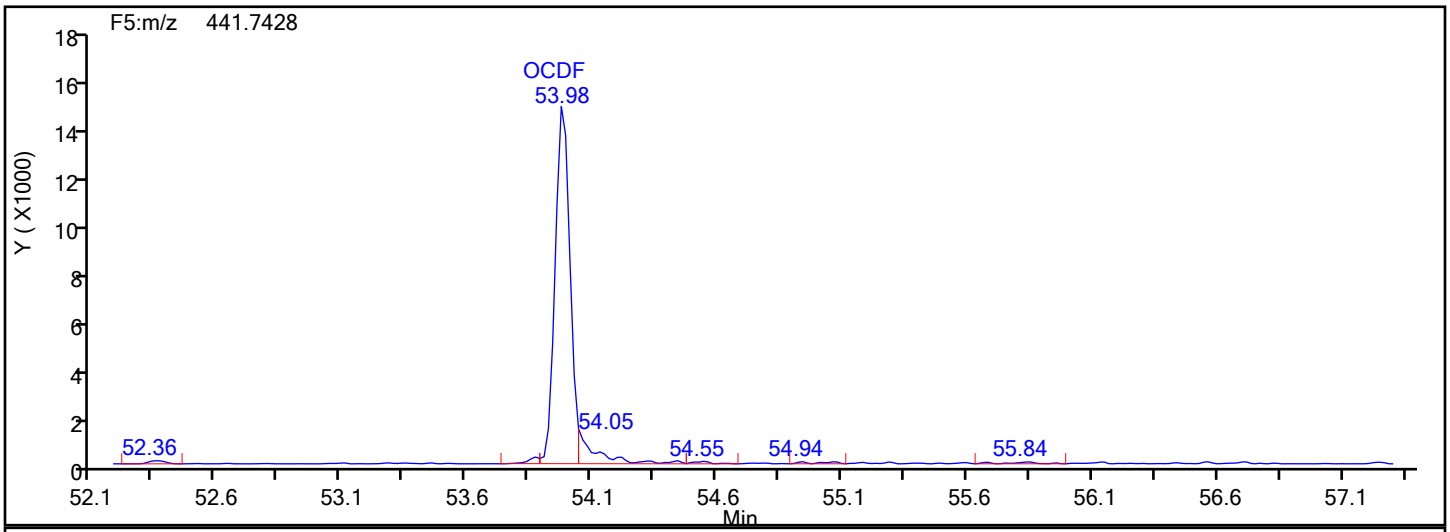


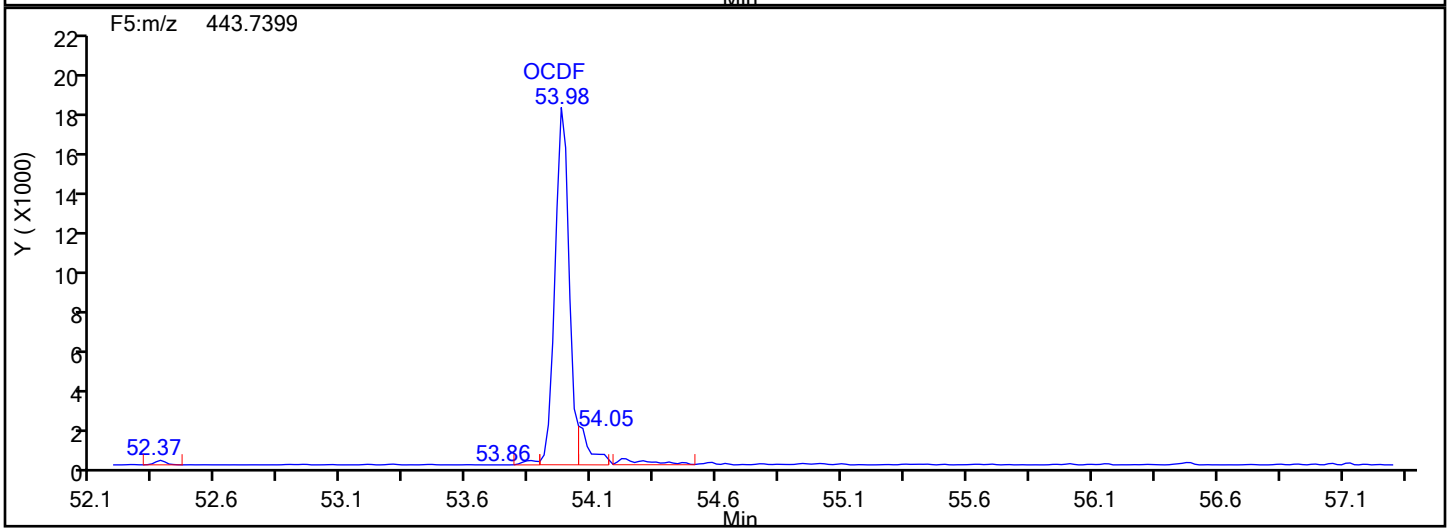
Report Date: 18-Dec-2019 03:49:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

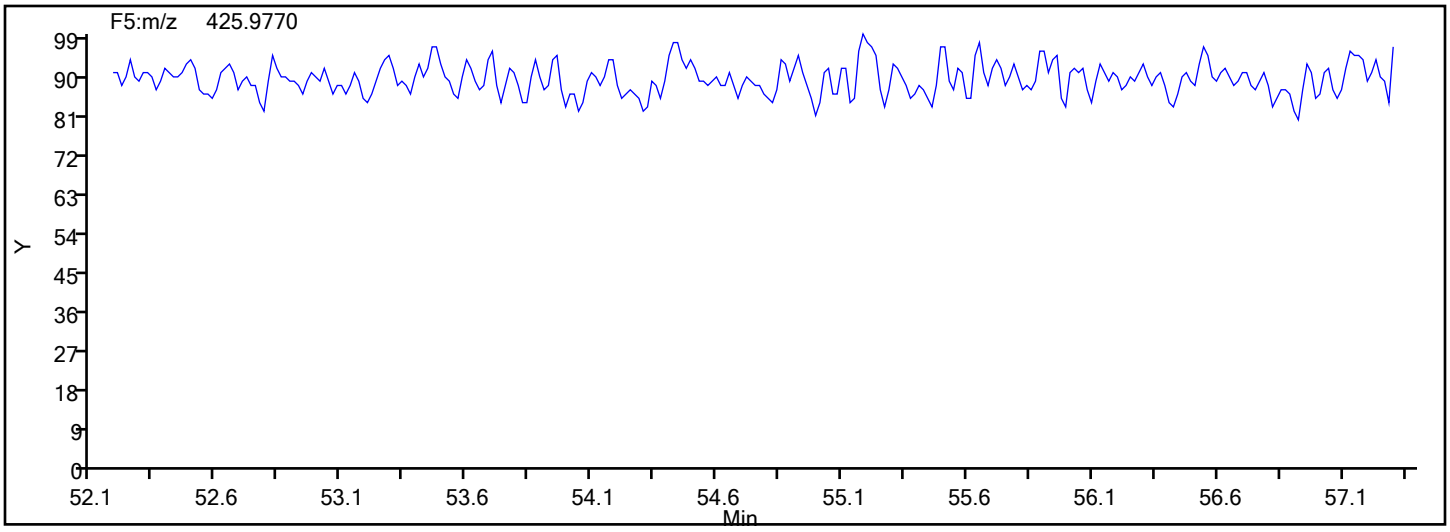
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

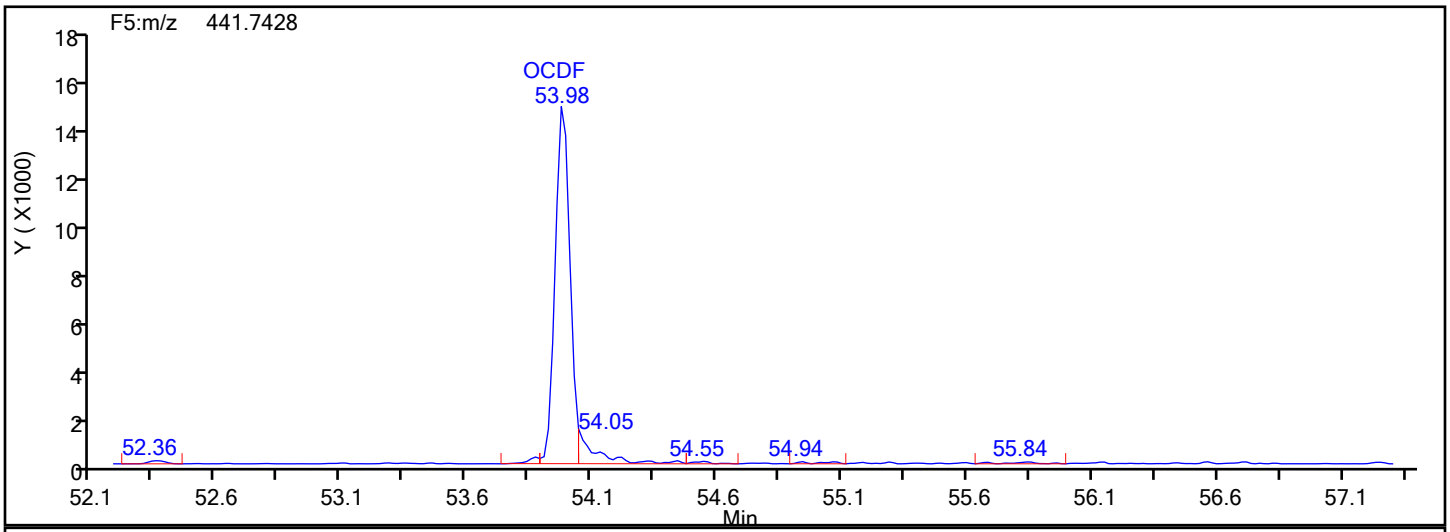


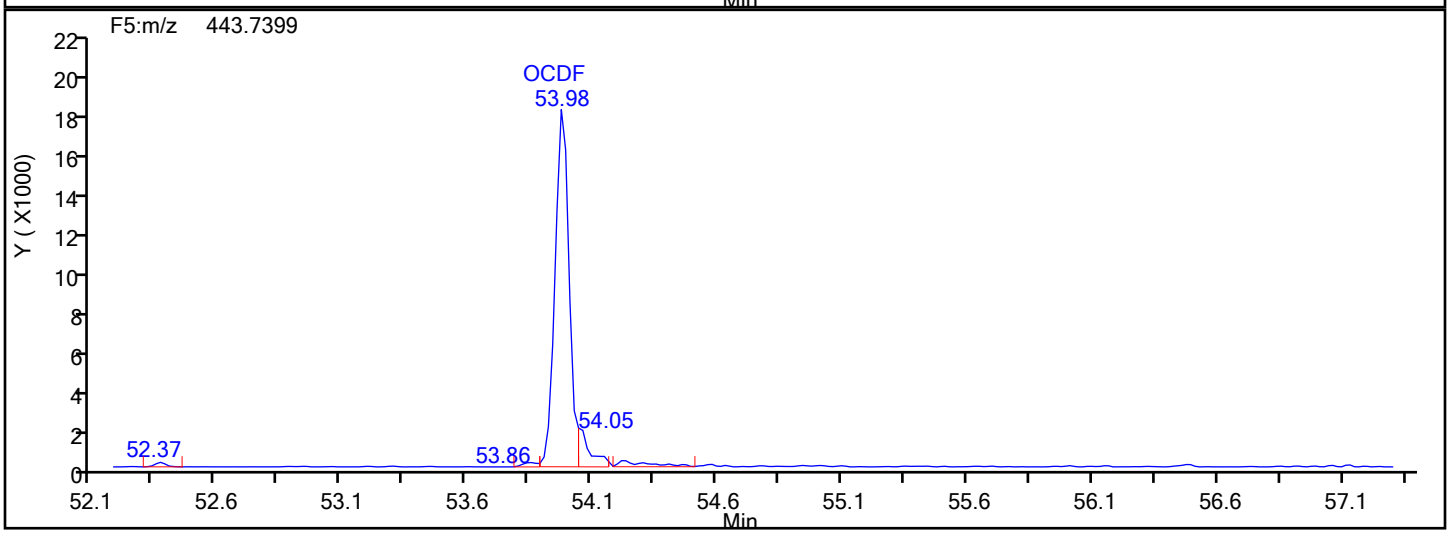
Report Date: 18-Dec-2019 03:49:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

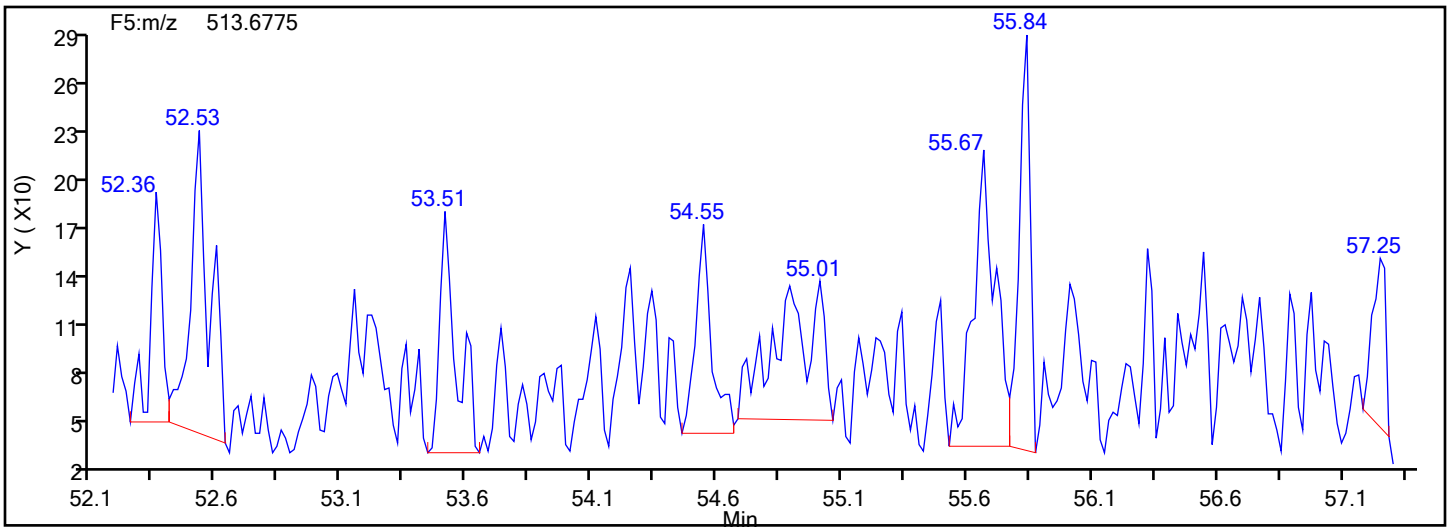
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d		
Injection Date:	17-Dec-2019 16:33:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36146	Sample Line#:	8
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

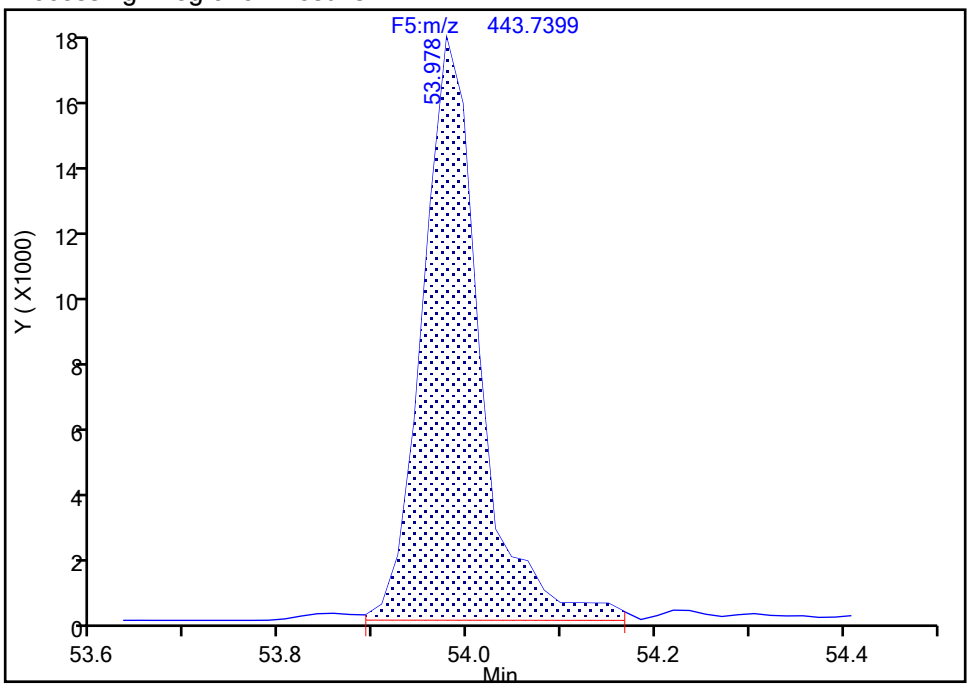
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

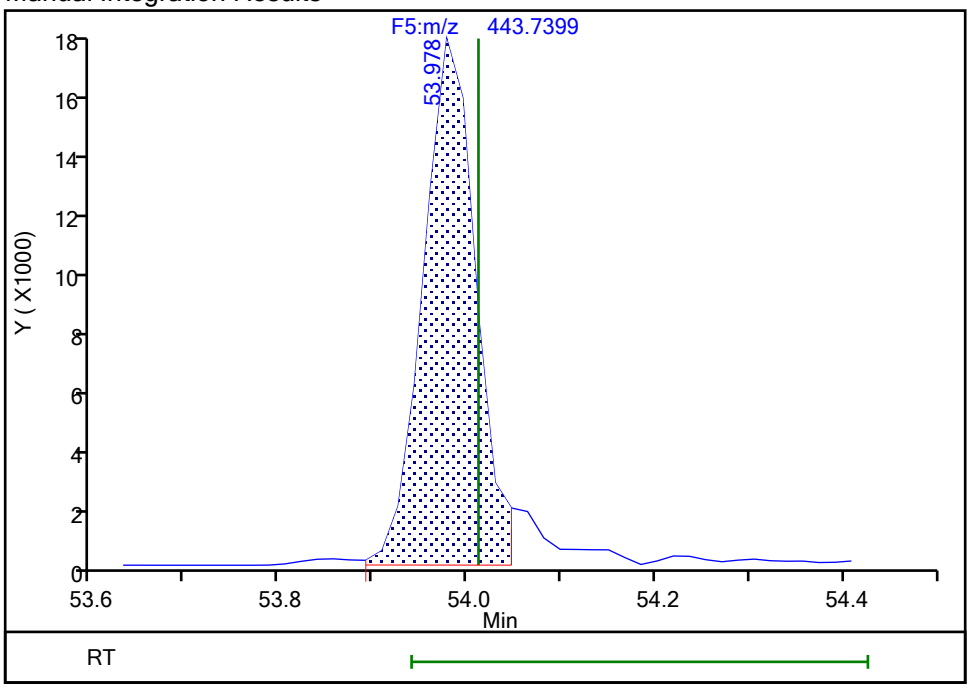
Processing Integration Results

RT: 53.98
Area: 75089
Amount: 4.837068
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 68969
Amount: 4.388229
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:48:25

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

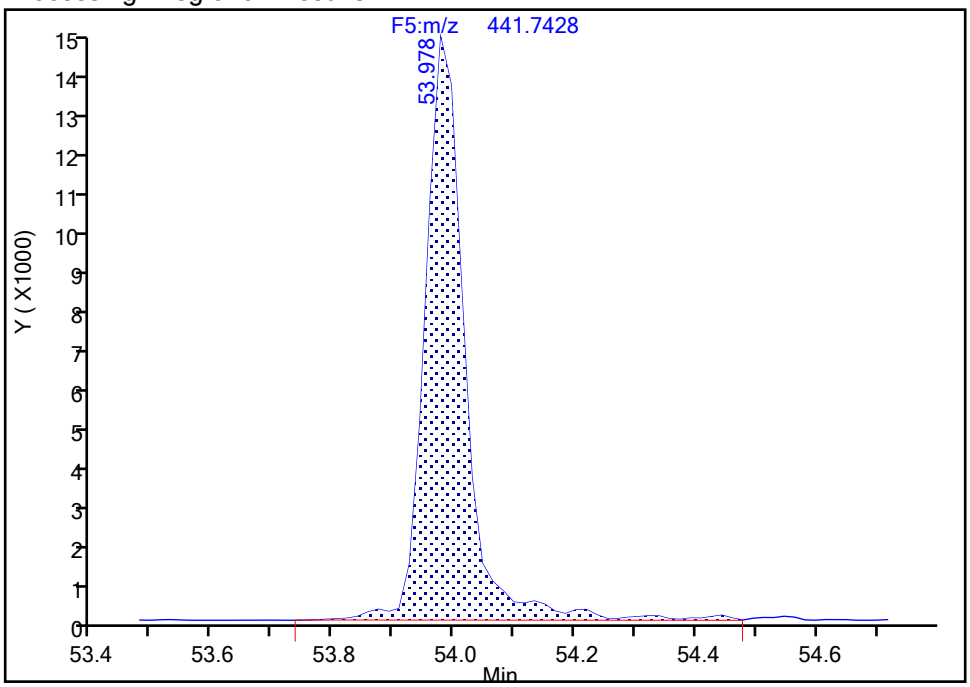
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-9-a.d				
Injection Date:	17-Dec-2019 16:33:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-9-A	Lab Sample ID:	140-17578-9		
Client ID:	11187072-120619-SS-SJSSA06(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

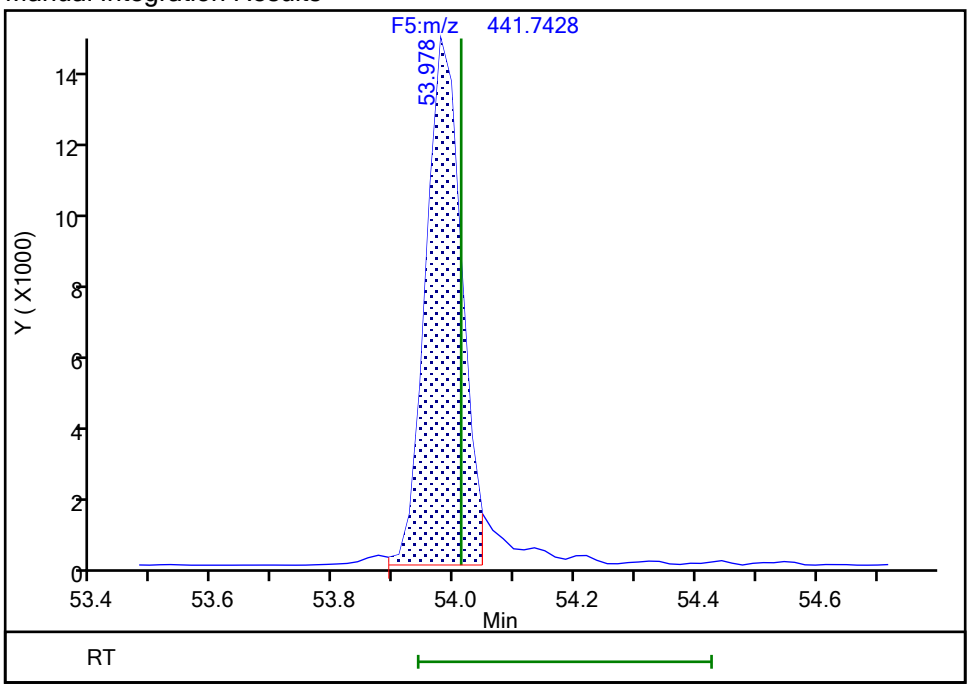
Processing Integration Results

RT: 53.98
Area: 66077
Amount: 4.837068
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 59098
Amount: 4.388229
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:48:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(0-1) Lab Sample ID: 140-17578-9

Matrix: Sediment Lab File ID: 140-17578-a-9-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.37(g) Date Analyzed: 12/18/2019 07:30

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 16.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	270		1.2	0.70

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	63		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 07:30:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-013
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:42	833093	0.81	1.2213	28.8	28.8	0.7575	0.7575		
2,3,7,8-TCDF	22:12	4835869	0.80	1.1100	118.6	118.6	0.3033	0.3033		
D 13C-2,3,7,8-TCDD	19:40	1182709	0.74	1.0031	32.6	32.6	0.6924	0.6924	65.10	
D 13C-2,3,7,8-TCDF	22:11	1836543	0.82	1.6193	31.3	31.3	0.2143	0.2143	62.62	
$ 37Cl4-2,3,7,8-TCDD	19:42	302171		1.1834	7.050	7.050	0.1053	0.1053	70.50	
* 13C-1,2,3,4-TCDD	20:07	3622144	0.79	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-9-a.d
Lims ID: 140-17578-A-9-A
Client ID: 11187072-120619-SS-SJSSA06(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 07:30:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-013
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:39

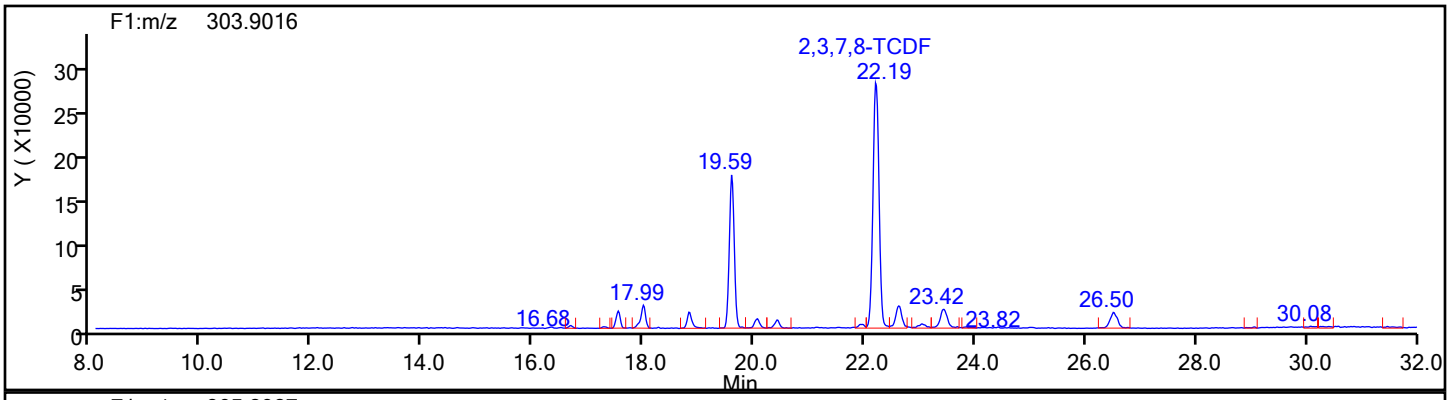
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:42	19:44	-1	1.002	371706	59124	199	497	297		
321.8936	19:42	19:44	-1	1.002	461387	73856	1204	3010	61	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:12	22:14	-3	1.001	2156213	280900	352	880	798		
305.8987	22:12	22:14	-3	1.001	2679656	352138	303	757	1162	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:41	-2	0.977	504791	81640	842	2105	97		
333.9338	19:40	19:41	-2	0.977	677918	107885	707	1767	153	0.74(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:14	-2	1.103	824772	108326	367	917	295		
317.9389	22:11	22:14	-2	1.103	1011771	134751	407	1017	331	0.82(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:42	19:42	-1	0.979	302171	46673	278	695	168		
13C-1,2,3,4-TCDD											
331.9368	20:07	20:09	-2		1595276	240423	842	2105	286		
333.9338	20:07	20:09	-2		2026868	317087	707	1767	448	0.79(0.65-0.89)	

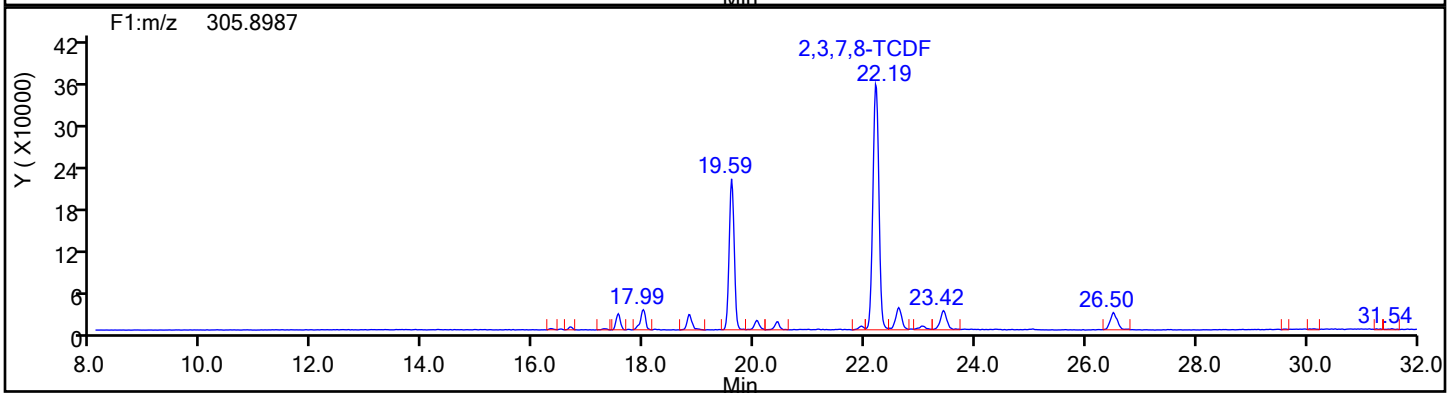
Report Date: 18-Dec-2019 09:06:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

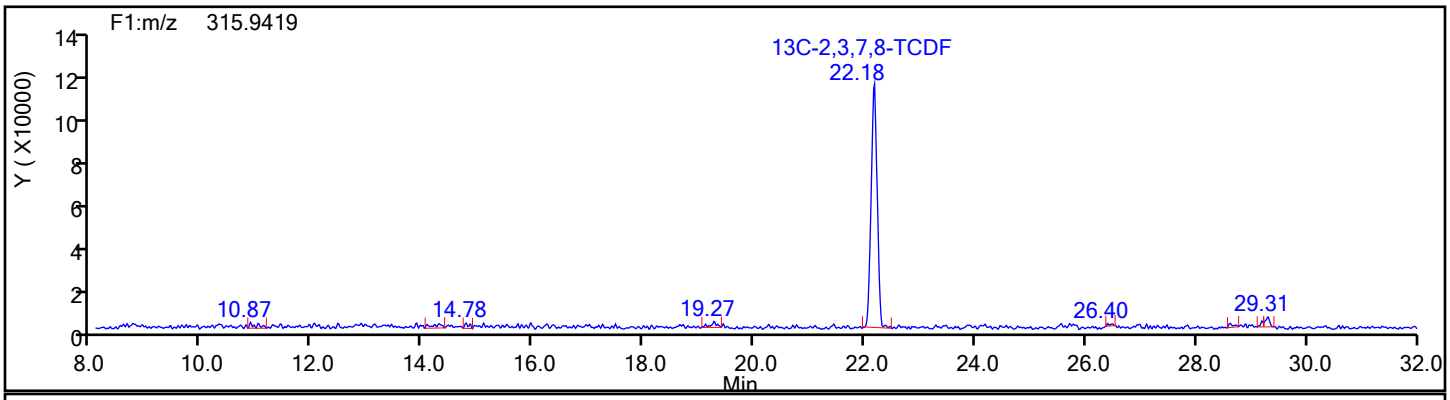
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-9-a.d		
Injection Date:	18-Dec-2019 07:30:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36167	Sample Line#:	13
Column Type:	DB225	Column Dia:	0.32 mm

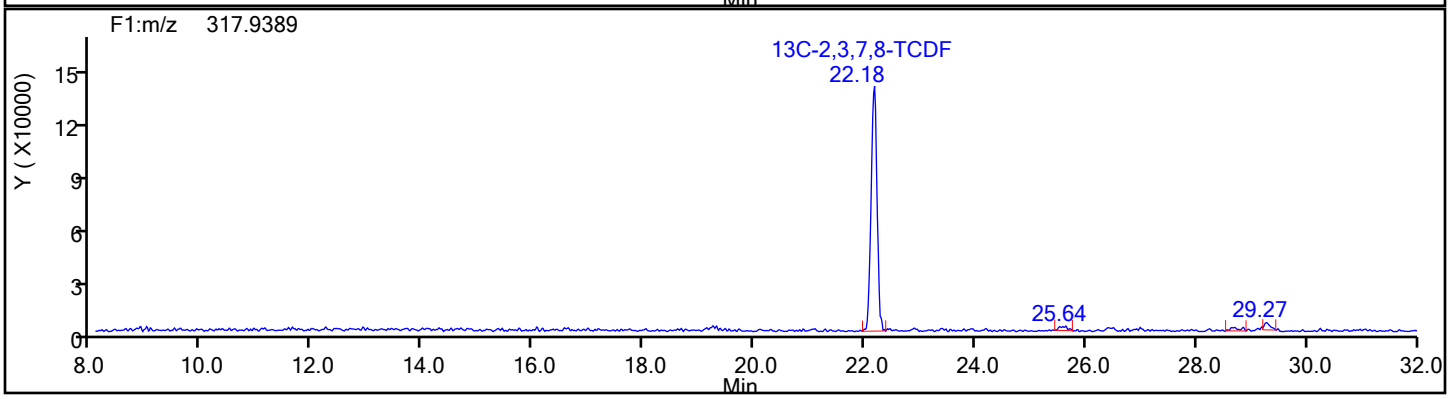
TCDF





TCDF Standards



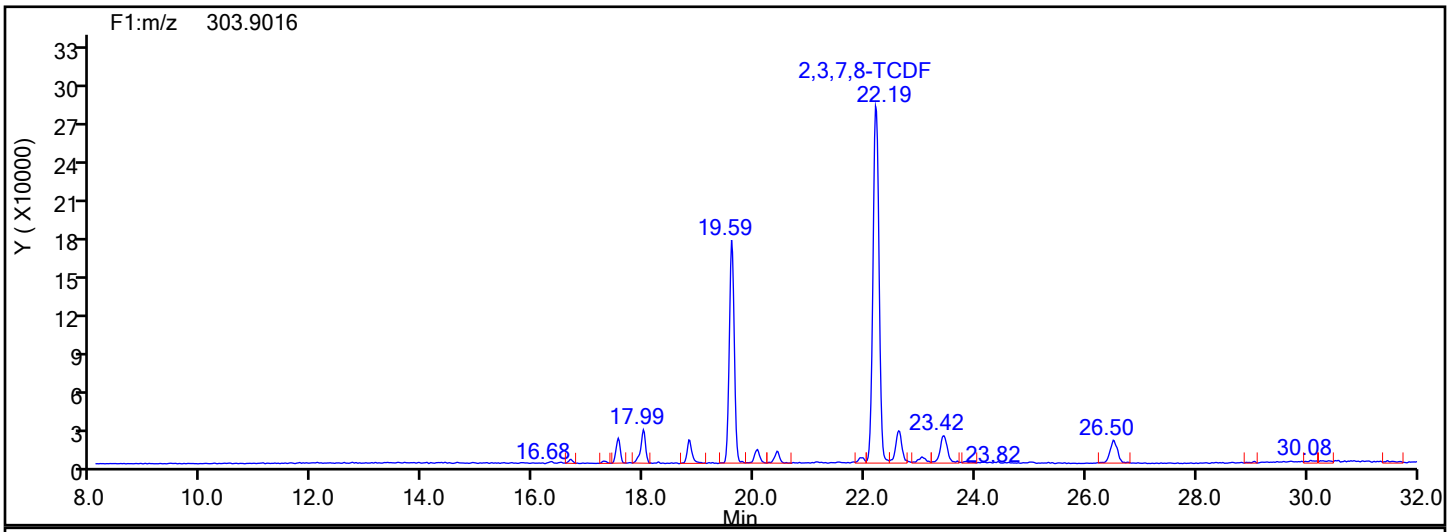


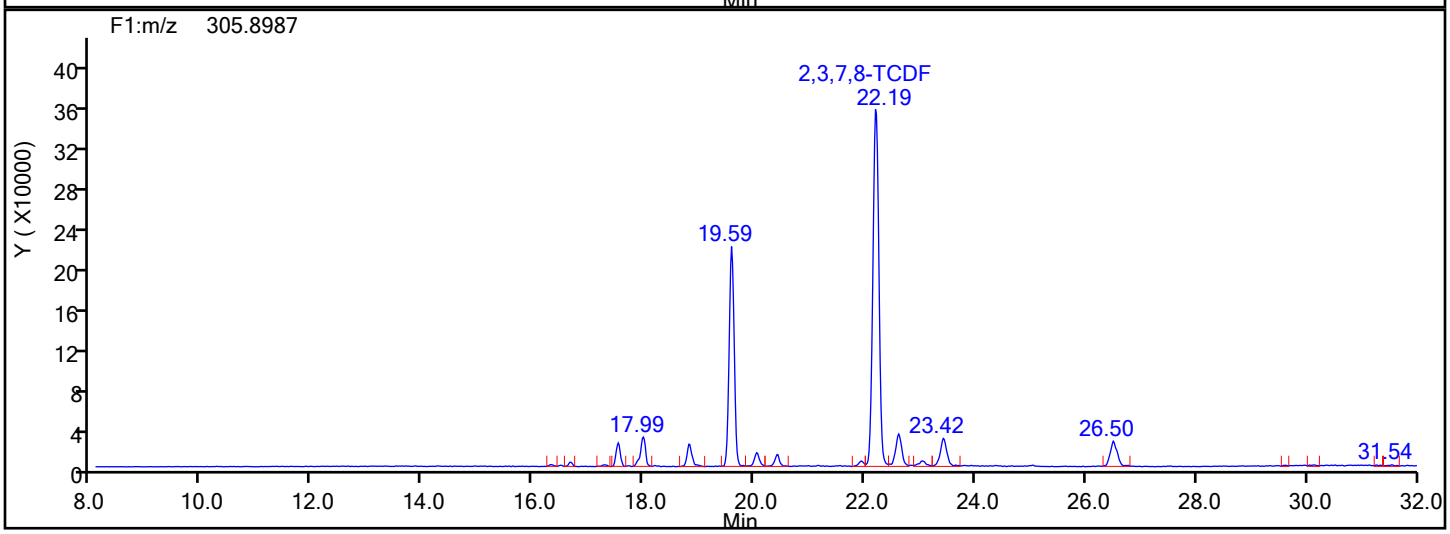
Report Date: 18-Dec-2019 09:06:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

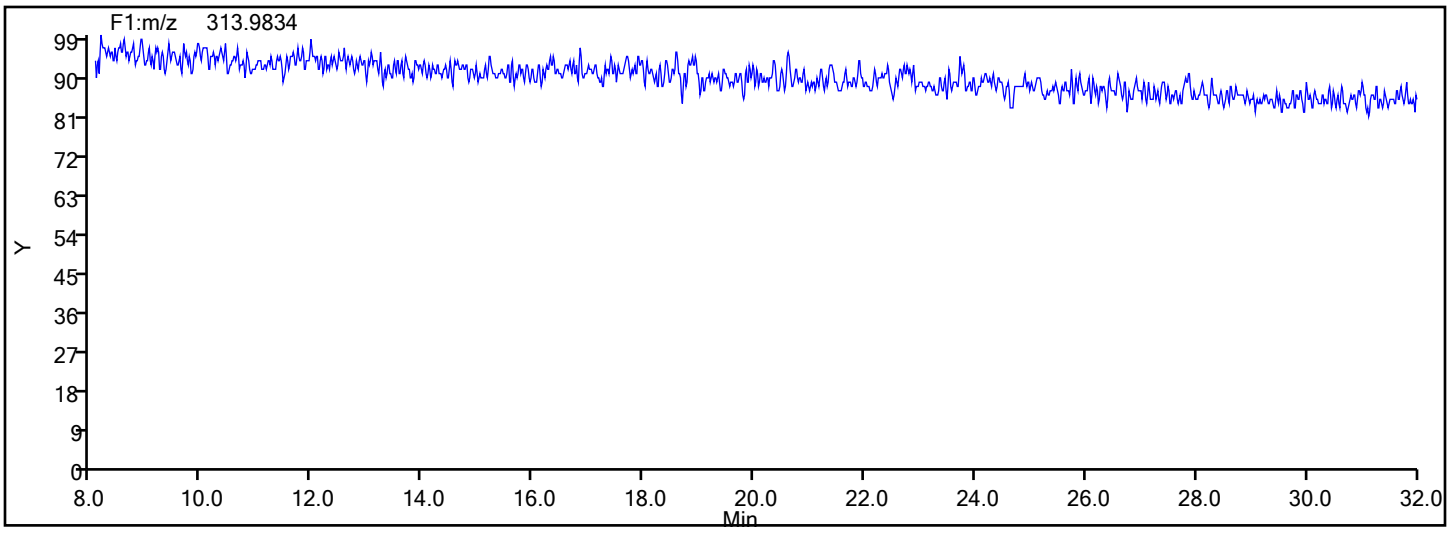
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-9-a.d		
Injection Date:	18-Dec-2019 07:30:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36167	Sample Line#:	13
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

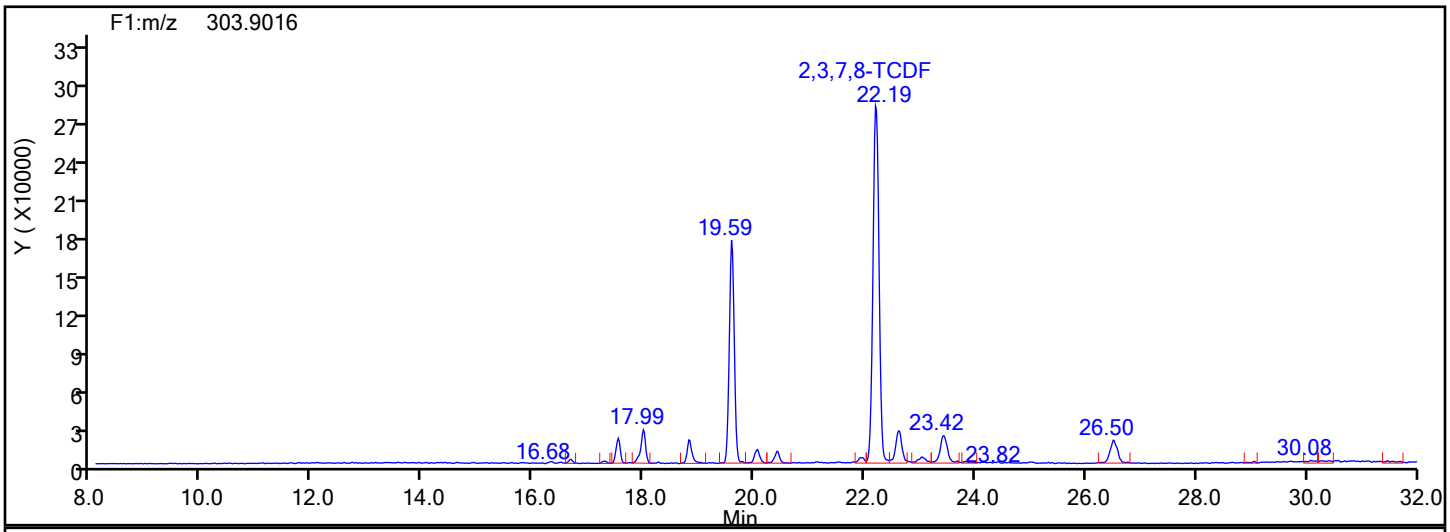


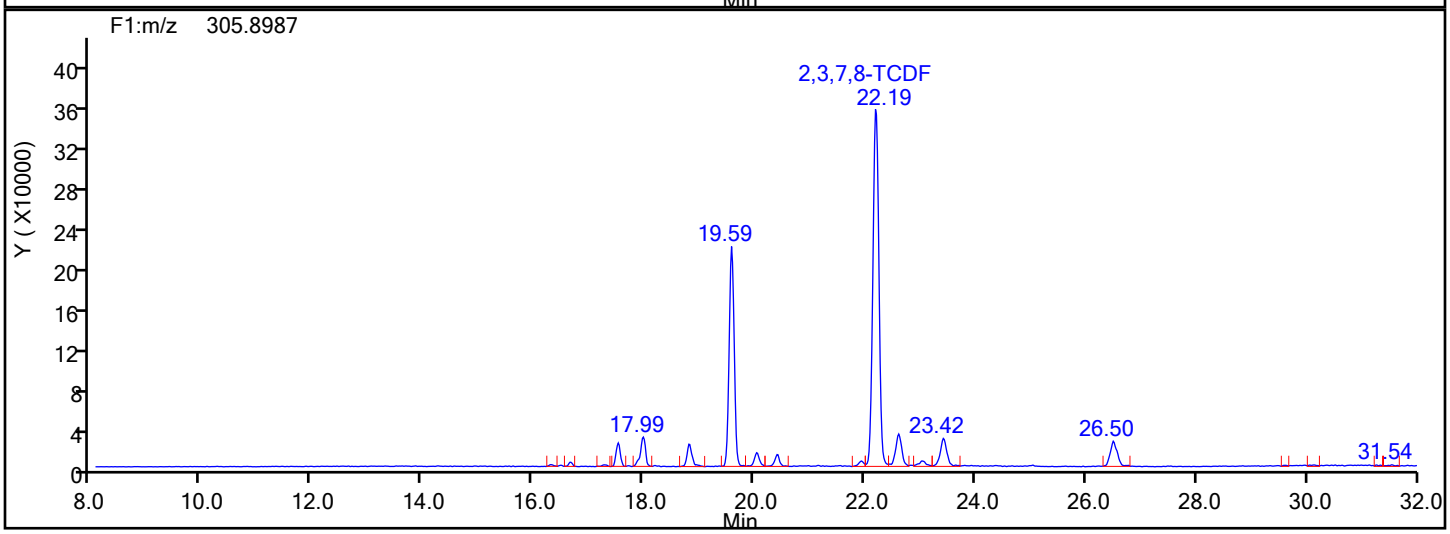
Report Date: 18-Dec-2019 09:06:39 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

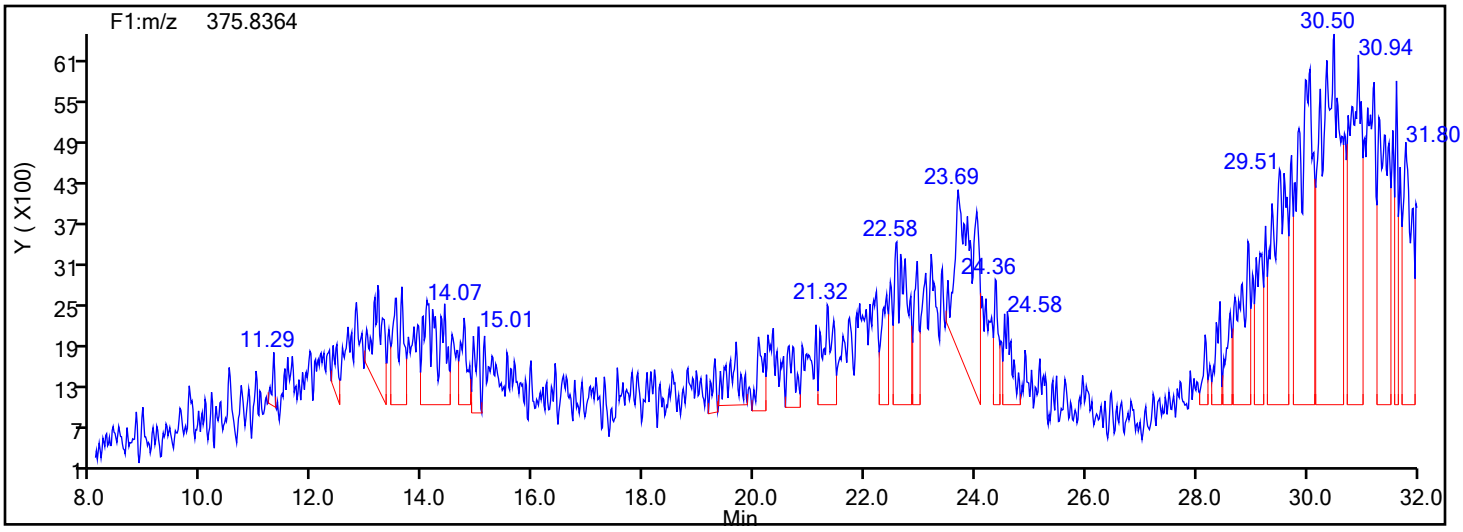
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-9-a.d		
Injection Date:	18-Dec-2019 07:30:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(0-1)		
Worklist#:	36167	Sample Line#:	13
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Matrix: Sediment Lab File ID: 140-17578-a-10-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.19(g) Date Analyzed: 12/17/2019 17:34

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 10.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	83		1.1	0.13
41903-57-5	Total TCDD	94	B q	1.1	0.13
40321-76-4	1,2,3,7,8-PeCDD	0.70	J	5.5	0.036
36088-22-9	Total PeCDD	2.2	J q	5.5	0.036
39227-28-6	1,2,3,4,7,8-HxCDD	0.20	J	5.5	0.026
57653-85-7	1,2,3,6,7,8-HxCDD	0.24	J	5.5	0.025
19408-74-3	1,2,3,7,8,9-HxCDD	0.72	J	5.5	0.024
34465-46-8	Total HxCDD	11	B q	5.5	0.025
35822-46-9	1,2,3,4,6,7,8-HpCDD	9.9	B	5.5	0.10
37871-00-4	Total HpCDD	38	B	5.5	0.10
3268-87-9	OCDD	210	B	11	0.028
30402-14-3	Total TCDF	650	B q	1.1	0.10
57117-41-6	1,2,3,7,8-PeCDF	6.2		5.5	0.041
57117-31-4	2,3,4,7,8-PeCDF	5.1	J	5.5	0.038
30402-15-4	Total PeCDF	20	q	5.5	0.040
70648-26-9	1,2,3,4,7,8-HxCDF	9.2		5.5	0.053
57117-44-9	1,2,3,6,7,8-HxCDF	2.4	J	5.5	0.049
60851-34-5	2,3,4,6,7,8-HxCDF	0.32	J q	5.5	0.055
72918-21-9	1,2,3,7,8,9-HxCDF	0.17	J q	5.5	0.071
55684-94-1	Total HxCDF	15	I q	5.5	0.057
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.7	J B	5.5	0.041
55673-89-7	1,2,3,4,7,8,9-HpCDF	1.0	J B	5.5	0.064
38998-75-3	Total HpCDF	5.3	J B	5.5	0.052
39001-02-0	OCDF	4.8	J B	11	0.046

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Matrix: Sediment Lab File ID: 140-17578-a-10-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.19(g) Date Analyzed: 12/17/2019 17:34

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 10.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	65		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	63		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	61		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	66		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
114423-97-1	13C-OCDD	61		17-157
89059-46-1	13C-2,3,7,8-TCDF	65		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	64		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	65		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	66		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	66		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	65		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	65		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	63		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 17:34:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:10:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 04:10:04

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:46	1272860	0.81	1.1733	37.8	37.8	0.0582	0.0582		
A Non-2,3,7,8-sub-TCDD	29:29	174445	0.77	1.1733	5.359	5.182	0.0582	3.634		RQ
S Total TCDD					43.2	43.0	0.0582	0.0582		RQ
2,3,7,8-TCDF	28:47	8347834	0.80	1.0881	163.1	163.1	0.0466	0.0466		
A Non-2,3,7,8-sub-TCDF	28:12	6840043	0.77	1.0881	133.6	133.6	0.0466	71.8		RQM
S Total TCDF					296.7	296.7	0.0466	0.0466		RQ
1,2,3,7,8-PeCDD	40:33	7617	1.36	1.0434	0.3191	0.3191	0.0165	0.0165		M
A Non-2,3,7,8-sub-PeCDD	39:26	16778	1.55	1.0434	7.702	0.7028	0.0165	0.3032		RQMa
S Total PeCDD					8.021	1.022	0.0165	0.0165		RQ
1,2,3,7,8-PeCDF	38:44	123599	1.61	1.1898	2.843	2.843	0.0187	0.0187		M
2,3,4,7,8-PeCDF	40:00	95552	1.43	1.1095	2.318	2.318	0.0175	0.0175		
A Non-2,3,7,8-sub-PeCDF	38:01	158805	1.55	1.1496	3.885	3.749	0.0180	1.438		RQMa
S Total PeCDF					9.046	8.910	0.0181	0.0181		RQ
1,2,3,4,7,8-HxCDD	44:48	2417	1.10	1.1409	0.0918	0.0918	0.0117	0.0117		
1,2,3,6,7,8-HxCDD	44:55	3260	1.16	1.1481	0.1086	0.1086	0.0116	0.0116		a
1,2,3,7,8,9-HxCDD	45:19	9839	1.30	1.2212	0.3273	0.3273	0.0109	0.0109		
A Non-2,3,7,8-sub-HxCDD	44:19	131115	1.24	1.1700	4.567	4.552	0.0113	3.300		RQMa
S Total HxCDD					5.095	5.080	0.0114	0.0114		RQ
1,2,3,4,7,8-HxCDF	43:47	194720	1.18	1.3629	4.200	4.200	0.0240	0.0240		M
1,2,3,6,7,8-HxCDF	43:55	58023	1.38	1.2762	1.089	1.089	0.0225	0.0225		M
2,3,4,6,7,8-HxCDF	44:38	6924	1.24	1.2654	0.1644	0.1476	0.0251	0.0251		RQM
1,2,3,7,8,9-HxCDF	45:35	3309	1.24	1.2573	0.0875	0.0777	0.0326	0.0326		RQM
A Non-2,3,7,8-sub-HxCDF	44:10	61177	1.24	1.2905	1.406	1.293	0.0256	0.4178		RQM
S Total HxCDF					6.947	6.807	0.0261	0.0261		RQ
1,2,3,4,6,7,8-HpCDD	49:36	117515	1.03	1.1204	4.522	4.522	0.0456	0.0456		
A Non-2,3,7,8-sub-HpCDD	49:03	333533	1.03	1.1204	12.8	12.8	0.0456	12.8		
S Total HpCDD					17.4	17.4	0.0456	0.0456		
1,2,3,4,6,7,8-HpCDF	47:56	55157	1.01	1.4984	1.245	1.245	0.0186	0.0186		
1,2,3,4,7,8,9-HpCDF	50:14	15314	0.93	1.3807	0.4626	0.4626	0.0291	0.0291		
A Non-2,3,7,8-sub-HpCDF	49:56	27791	1.02	1.4395	0.7213	0.7213	0.0228	0.7213		Ma

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					2.429	2.429	0.0238	0.0238		
OCDD	53:51	2127565	0.91	1.2073	94.8	94.8	0.0126	0.0126		M
OCDF	53:59	70031	0.86	1.1162	2.170	2.170	0.0208	0.0208		M
D 13C-2,3,7,8-TCDD	30:43	1434576	0.78	1.0709	32.4	32.4	0.2376	0.2376	64.77	
D 13C-2,3,7,8-TCDF	28:45	2352021	0.79	1.7545	32.4	32.4	0.4066	0.4066	64.82	
D 13C-1,2,3,7,8-PeCDD	40:31	1143979	1.60	0.8743	31.6	31.6	0.3077	0.3077	63.26	
D 13C-1,2,3,7,8-PeCDF	38:43	1827186	1.64	1.3704	32.2	32.2	0.2184	0.2184	64.47	
D 13C-2,3,4,7,8-PeCDF	39:59	1857648	1.52	1.3837	32.5	32.5	0.2163	0.2163	64.91	
D 13C-1,2,3,4,7,8-HxCDD	44:47	1154443	1.36	0.8772	30.4	30.4	0.1089	0.1089	60.83	M
D 13C-1,2,3,6,7,8-HxCDD	44:54	1307305	1.29	0.9171	32.9	32.9	0.1042	0.1042	65.89	Ma
D 13C-1,2,3,4,7,8-HxCDF	43:46	1700760	0.52	1.1892	33.1	33.1	0.2280	0.2280	66.11	
D 13C-1,2,3,6,7,8-HxCDF	43:54	2087833	0.54	1.4625	33.0	33.0	0.1854	0.1854	65.99	
D 13C-2,3,4,6,7,8-HxCDF	44:37	1853498	0.51	1.3197	32.5	32.5	0.2055	0.2055	64.92	
D 13C-1,2,3,7,8,9-HxCDF	45:33	1692521	0.54	1.2001	32.6	32.6	0.2259	0.2259	65.19	
D 13C-1,2,3,4,6,7,8-HpCDD	49:34	1159741	1.07	0.8155	32.9	32.9	0.2357	0.2357	65.74	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	1477871	0.45	1.0496	32.5	32.5	0.1997	0.1997	65.08	
D 13C-1,2,3,4,7,8,9-HpCDF	50:14	1198784	0.46	0.8947	31.0	31.0	0.2343	0.2343	61.93	
D 13C-OCDD	53:50	1858992	0.90	0.7044	61.0	61.0	0.2671	0.2671	61.00	
D 13C-OCDF	53:58	2891545	0.89	1.0615	63.0	63.0	0.1796	0.1796	62.96	
$ 37Cl4-2,3,7,8-TCDD	30:46	364723		1.2266	7.189	7.189	0.1131	0.1131	71.89	
* 13C-1,2,3,4-TCDD	30:14	4136390	0.80	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:18	4326663	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 17:34:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:10:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 04:10:04

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:46	30:51	-4	1.002	570100	58664	52	130	1128		
321.8936	30:47	30:51	-3	1.002	702760	73256	29	72	2526	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	24:53	29:29	-275	0.810	1531	209	52	130	4		
321.8936	24:51	29:29	-277	0.809	2321	300	29	72	10	0.66(0.65-0.89)	
319.8965	25:36	29:29	-232	0.833	1377	255	52	130	5		
	Empc Correction				960	137	52	130	3		
321.8936	25:34	29:29	-234	0.832	1247	179	29	72	6	1.10(0.65-0.89)	
319.8965	27:44	29:29	-104	0.903	9421	1092	52	130	21		
321.8936	27:44	29:29	-104	0.903	10988	1244	29	72	43	0.86(0.65-0.89)	
319.8965	28:41	29:29	-47	0.934	1678	254	52	130	5		
321.8936	28:41	29:29	-47	0.934	3151	393	29	72	14	0.53(0.65-0.89)	
	Empc Correction				2179	329	29	72	11		
319.8965	30:11	29:29	42	0.982	1686	219	52	130	4		
321.8936	30:13	29:29	44	0.984	2247	280	29	72	10	0.75(0.65-0.89)	
319.8965	30:31	29:29	62	0.993	4993	1071	52	130	21		
321.8936	30:31	29:29	62	0.993	9879	1497	29	72	52	0.51(0.65-0.89)	
	Empc Correction				6484	1390	29	72	48		
319.8965	31:51	29:29	142	1.037	53262	5560	52	130	107		
321.8936	31:54	29:29	145	1.038	69068	6656	29	72	230	0.77(0.65-0.89)	
319.8965	32:40	29:29	192	1.064	2751	263	52	130	5		
	Empc Correction				1586	150	52	130	3		
321.8936	32:41	29:29	193	1.064	2061	196	29	72	7	1.33(0.65-0.89)	
319.8965	33:55	29:29	266	1.104	1134	148	52	130	3		
321.8936	33:59	29:29	270	1.106	1599	202	29	72	7	0.71(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDF											
303.9016	28:47	28:49	-4	1.001	3697463	391667	66	165	5934		
305.8987	28:47	28:49	-4	1.001	4650371	489684	43	107	11388	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:19	28:12	-293	0.811	4394	692	66	165	10		
	Empc Correction				3558	589	66	165	9		
305.8987	23:21	28:12	-291	0.812	4622	766	43	107	18	0.95(0.65-0.89)	
303.9016	24:19	28:12	-232	0.846	27965	3648	66	165	55		
305.8987	24:18	28:12	-233	0.845	42823	5197	43	107	121	0.65(0.65-0.89)	
303.9016	25:02	28:12	-190	0.871	166752	21510	66	165	326		
305.8987	25:03	28:12	-189	0.871	208934	25756	43	107	599	0.80(0.65-0.89)	
303.9016	25:45	28:12	-147	0.896	219692	22661	66	165	343		M
305.8987	25:45	28:12	-147	0.896	273251	26823	43	107	624	0.80(0.65-0.89)	
303.9016	26:14	28:12	-119	0.912	30320	3582	66	165	54		
305.8987	26:12	28:12	-120	0.912	39946	5719	43	107	133	0.76(0.65-0.89)	
303.9016	26:25	28:12	-107	0.919	98741	13196	66	165	200		
305.8987	26:25	28:12	-107	0.919	127671	15390	43	107	358	0.77(0.65-0.89)	
303.9016	26:57	28:12	-75	0.937	148263	17936	66	165	272		
305.8987	26:56	28:12	-76	0.937	188159	23465	43	107	546	0.79(0.65-0.89)	
303.9016	27:14	28:12	-58	0.947	15799	1791	66	165	27		
305.8987	27:11	28:12	-61	0.946	20349	2717	43	107	63	0.78(0.65-0.89)	
303.9016	27:41	28:12	-31	0.963	1627719	194873	66	165	2953		M
305.8987	27:41	28:12	-31	0.963	2046931	241062	43	107	5606	0.80(0.65-0.89)	
303.9016	28:19	28:12	6	0.985	85449	9879	66	165	150		
305.8987	28:19	28:12	6	0.985	108244	12603	43	107	293	0.79(0.65-0.89)	
303.9016	30:00	28:12	107	1.043	269892	29243	66	165	443		
305.8987	30:00	28:12	107	1.043	332292	34990	43	107	814	0.81(0.65-0.89)	
303.9016	30:40	28:12	148	1.067	56625	5477	66	165	83		
305.8987	30:38	28:12	146	1.066	70348	6399	43	107	149	0.80(0.65-0.89)	
303.9016	33:50	28:12	337	1.177	274263	28148	66	165	426		
305.8987	33:50	28:12	337	1.177	351435	35662	43	107	829	0.78(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	40:33	40:33	-2	1.001	4387	877	25	62	35		M
357.8516	40:33	40:33	-2	1.001	3230	730	8	20	91	1.36(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	37:35	39:26	-111	0.928	2823	455	25	62	18		
357.8516	37:44	39:26	-102	0.931	166815	29247	8	20	3656	0.02(1.32-1.78)	
	Empc Correction				1821	293	8	20	37		
355.8546	38:26	39:26	-60	0.948	5625	1192	25	62	48		
	Empc Correction				4400	767	25	62	31		
357.8516	38:26	39:26	-60	0.948	2839	495	8	20	62	1.98(1.32-1.78)	
355.8546	39:49	39:26	22	0.983	2516	390	25	62	16		
357.8516	39:49	39:26	22	0.983	2058	480	8	20	60	1.22(1.32-1.78)	
	Empc Correction				1623	251	8	20	31		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
355.8546	41:13	39:26	107	1.017	460	144	25	62	6		a
357.8516	41:14	39:26	108	1.018	729	101	8	20	13	0.63(1.32-1.78)	M
	Empc Correction				296	92	8	20	12		
1,2,3,7,8-PeCDF											M
339.8597	38:44	38:44	-3	1.000	76181	14876	26	65	572		M
341.8567	38:44	38:44	-3	1.000	47418	8412	37	92	227	1.61(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:00	40:01	-3	1.000	56255	12431	26	65	478		
341.8567	40:00	40:01	-3	1.000	39297	8683	37	92	235	1.43(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:40	38:01	-200	0.895	3202	416	26	65	16		
341.8567	34:40	38:01	-200	0.895	2111	320	37	92	9	1.52(1.32-1.78)	
339.8597	37:14	38:01	-47	0.962	36097	5948	26	65	229		
341.8567	37:14	38:01	-47	0.962	24827	3765	37	92	102	1.45(1.32-1.78)	
339.8597	37:32	38:01	-29	0.969	1355	220	26	65	8		
	Empc Correction				1173	280	26	65	11		
341.8567	37:32	38:01	-29	0.969	757	181	37	92	5	1.79(1.32-1.78)	
339.8597	38:14	38:01	13	0.988	4903	571	26	65	22		
341.8567	38:12	38:01	11	0.987	3249	507	37	92	14	1.51(1.32-1.78)	
339.8597	38:40	38:01	39	0.999	7080	2058	26	65	79		M
	Empc Correction				5945	1546	26	65	59		
341.8567	38:37	38:01	36	0.997	3836	998	37	92	27	1.85(1.32-1.78)	
339.8597	38:51	38:01	49	1.003	2068	506	26	65	19		M
	Empc Correction				1319	375	26	65	14		
341.8567	38:54	38:01	53	1.004	851	242	37	92	7	2.43(1.32-1.78)	
339.8597	39:17	38:01	75	1.014	24932	5164	26	65	199		
341.8567	39:17	38:01	75	1.014	16769	3021	37	92	82	1.49(1.32-1.78)	
339.8597	40:15	38:01	134	1.040	13638	2938	26	65	113		
341.8567	40:15	38:01	134	1.040	11526	1920	37	92	52	1.18(1.32-1.78)	
	Empc Correction				8798	1895	37	92	51		
339.8597	41:21	38:01	199	1.068	3889	572	26	65	22		M
341.8567	41:20	38:01	198	1.067	3480	544	37	92	15	1.12(1.32-1.78)	M
	Empc Correction				2509	369	37	92	10		
1,2,3,4,7,8-HxCDD											
389.8158	44:48	44:49	-2	1.000	1267	252	24	60	11		
391.8127	44:48	44:49	-2	1.000	1150	276	9	22	31	1.10(1.05-1.43)	
1,2,3,6,7,8-HxCDD											a
389.8158	44:55	44:55	-2	1.000	1749	446	24	60	19		a
391.8127	44:55	44:55	-2	1.000	1511	421	9	22	47	1.16(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:19	45:18	-2	1.012	5564	908	24	60	38		
391.8127	45:18	45:18	-3	1.011	4275	899	9	22	100	1.30(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQMa
389.8158	43:15	44:19	-63	0.963	53075	13599	24	60	567		M
391.8127	43:14	44:19	-64	0.963	41969	10208	9	22	1134	1.26(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
389.8158	43:50	44:19	-29	0.976	3185	547	24	60	23		a
391.8127	43:49	44:19	-30	0.976	2317	372	9	22	41	1.37(1.05-1.43)	
389.8158	44:06	44:19	-13	0.982	14698	3632	24	60	151		a
391.8127	44:06	44:19	-13	0.982	11084	2782	9	22	309	1.33(1.05-1.43)	
389.8158	44:16	44:19	-3	0.986	2650	484	24	60	20		a
391.8127	44:16	44:19	-3	0.986	2565	505	9	22	56	1.03(1.05-1.43)	
	Empc Correction				2137	390	9	22	43		
1,2,3,4,7,8-HxCDF											M
373.8208	43:47	43:47	-3	1.000	105278	27201	50	125	544		
375.8178	43:47	43:47	-3	1.000	89442	22363	67	167	334	1.18(1.05-1.43)	M
1,2,3,6,7,8-HxCDF											M
373.8208	43:55	43:55	-2	1.000	33596	7479	50	125	150		M
375.8178	43:55	43:55	-2	1.000	24427	6245	67	167	93	1.38(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											RQM
373.8208	44:38	44:38	-2	1.000	3833	1041	50	125	21		
375.8178	44:38	44:38	-2	1.000	3878	904	67	167	13	0.99(1.05-1.43)	M
	Empc Correction				3091	839	67	167	13		
1,2,3,7,8,9-HxCDF											RQM
373.8208	45:35	45:35	-1	1.001	1832	414	50	125	8		M
375.8178	45:35	45:35	-1	1.001	1894	511	67	167	8	0.97(1.05-1.43)	M
	Empc Correction				1477	333	67	167	5		
A Non-2,3,7,8-sub-HxCDF											RQM
373.8208	42:34	44:10	-96	0.970	2613	771	50	125	15		
375.8178	42:33	44:10	-97	0.969	2679	566	67	167	8	0.98(1.05-1.43)	
	Empc Correction				2107	621	67	167	9		
373.8208	42:44	44:10	-86	0.973	10946	2646	50	125	53		
375.8178	42:44	44:10	-86	0.973	12673	2822	67	167	42	0.86(1.05-1.43)	
	Empc Correction				8827	2133	67	167	32		
373.8208	43:20	44:10	-49	0.987	7021	1911	50	125	38		
375.8178	43:19	44:10	-50	0.987	5255	1571	67	167	23	1.34(1.05-1.43)	M
373.8208	43:31	44:10	-38	0.992	3054	996	50	125	20		M
375.8178	43:31	44:10	-38	0.992	3390	793	67	167	12	0.90(1.05-1.43)	M
	Empc Correction				2462	803	67	167	12		
373.8208	44:31	44:10	22	1.014	3176	701	50	125	14		M
375.8178	44:31	44:10	22	1.014	2701	456	67	167	7	1.18(1.05-1.43)	M
373.8208	45:42	44:10	92	1.041	6996	1541	50	125	31		
375.8178	45:42	44:10	92	1.041	6019	1176	67	167	18	1.16(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:35	-2	1.001	59501	10295	37	92	278		
425.7737	49:35	49:35	-3	1.000	58014	10061	48	120	210	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:25	49:03	-37	0.977	169181	32982	37	92	891		
425.7737	48:25	49:03	-37	0.977	164352	30586	48	120	637	1.03(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:56	47:56	-2	1.000	27754	5772	47	117	123		
409.7788	47:56	47:56	-2	1.000	27403	5573	21	52	265	1.01(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8,9-HpCDF											
407.7817	50:14	50:15	-3	1.000	7377	1282	47	117	27		
409.7788	50:15	50:15	-2	1.000	7937	1483	21	52	71	0.93(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											Ma
407.7817	48:35	49:56	-81	1.014	14039	2739	47	117	58		M
409.7788	48:34	49:56	-82	1.013	13752	2788	21	52	133	1.02(0.88-1.20)	
OCDD											M
457.7377	53:51	53:51	-2	1.000	1012232	236067	13	32	18159		M
459.7348	53:51	53:51	-2	1.000	1115333	260985	11	27	23726	0.91(0.76-1.02)	M
OCDF											M
441.7428	53:59	53:59	-2	1.000	32411	8101	18	45	450		M
443.7399	53:59	53:59	-2	1.000	37620	9648	43	107	224	0.86(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:43	30:47	-5	1.016	630879	62448	286	715	218		
333.9338	30:44	30:47	-4	1.017	803697	85555	169	422	506	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:45	28:48	-4	0.951	1035792	118578	531	1327	223		
317.9389	28:45	28:48	-4	0.951	1316229	149439	744	1860	201	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:31	40:33	-3	1.340	703352	147466	270	675	546		
369.8919	40:32	40:33	-2	1.341	440627	90671	211	527	430	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:43	38:45	-3	1.281	1136370	218575	359	897	609		
353.8970	38:43	38:45	-3	1.281	690816	134917	176	440	767	1.64(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	39:59	40:01	-3	1.323	1121914	242653	359	897	676		
353.8970	39:59	40:01	-3	1.323	735734	161030	176	440	915	1.52(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											M
401.8559	44:47	44:47	-2	0.989	665814	173837	232	580	749		M
403.8529	44:47	44:47	-2	0.989	488629	134623	124	310	1086	1.36(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											Ma
401.8559	44:54	44:54	-2	0.991	736724	173507	232	580	748		M
403.8529	44:54	44:54	-2	0.991	570581	135593	124	310	1093	1.29(1.05-1.43)	M
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:46	-2	0.966	583247	157020	345	862	455		
385.8610	43:46	43:46	-2	0.966	1117513	288615	665	1662	434	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:54	-2	0.969	734257	179018	345	862	519		
385.8610	43:54	43:54	-2	0.969	1353576	328850	665	1662	495	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:37	44:37	-2	0.985	626044	157210	345	862	456		
385.8610	44:37	44:37	-2	0.985	1227454	301561	665	1662	453	0.51(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:33	45:33	-2	1.006	591178	123564	345	862	358		
385.8610	45:33	45:33	-2	1.006	1101343	232595	665	1662	350	0.54(0.43-0.59)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:34	49:35	-3	1.094	599177	103268	316	790	327		
437.8140	49:34	49:35	-3	1.094	560564	104020	400	1000	260	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:55	-2	1.058	459177	95535	310	775	308		
419.8220	47:55	47:55	-2	1.058	1018694	210133	471	1177	446	0.45(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:14	50:14	-2	1.109	379567	69730	310	775	225		
419.8220	50:14	50:14	-2	1.109	819217	141634	471	1177	301	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:50	53:50	-2	1.188	879367	187603	376	940	499		
471.7750	53:50	53:50	-2	1.188	979625	206770	325	812	636	0.90(0.76-1.02)	
13C-OCDF											
453.7830	53:58	53:58	-2	1.192	1364253	314915	250	625	1260		
455.7801	53:58	53:58	-2	1.192	1527292	339253	460	1150	738	0.89(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:46	30:49	-4	1.018	364723	38928	248	620	157		
13C-1,2,3,4-TCDD											
331.9368	30:14	30:17	-4		1840305	198937	286	715	696		
333.9338	30:13	30:17	-5		2296085	247834	169	422	1466	0.80(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:18	45:20	-2		2408693	512435	232	580	2209		
403.8529	45:18	45:20	-2		1917970	418835	124	310	3378	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 29.467

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1434576	148003

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1434576	148003

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:53	1531	209	2321	300	0.1144	0.66	
25:36	1377	255	1247	179	0.0779	1.10	RQ
25:36	960	137	1247	179	0.0656		Empc Correction
27:44	9421	1092	10988	1244	0.6063	0.86	
28:41	1678	254	3151	393	0.1434	0.53	RQ
28:41	1678	254	2179	329	0.1146		Empc Correction
30:11	1686	219	2247	280	0.1168	0.75	
30:31	4993	1071	9879	1497	0.4418	0.51	RQ
30:31	4993	1071	6484	1390	0.3409		Empc Correction
31:51	53262	5560	69068	6656	3.63	0.77	
32:40	2751	263	2061	196	0.1429	1.33	RQ
32:40	1586	150	2061	196	0.1083		Empc Correction
33:55	1134	148	1599	202	0.0812	0.71	
Signal Totals:							
	76251	8840	98194	10776			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	180394	20018				0.76	RQ
	174445	19616					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.359 = (180394 * 50.000) / (1434576 * 1.173)
Empc Amount: 5.182 = (174445 * 50.000) / (1434576 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDF, RT: 28.196

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2352021	268017

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2352021	268017

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:19	4394	692	4622	766	0.1761	0.95	RQ
23:19	3558	589	4622	766	0.1598		Empc Correction
24:19	27965	3648	42823	5197	1.38	0.65	
25:02	166752	21510	208934	25756	7.34	0.80	
25:45	219692	22661	273251	26823	9.63	0.80	M
26:14	30320	3582	39946	5719	1.37	0.76	
26:25	98741	13196	127671	15390	4.42	0.77	
26:57	148263	17936	188159	23465	6.57	0.79	
27:14	15799	1791	20349	2717	0.7062	0.78	
27:41	1627719	194873	2046931	241062	71.8	0.80	M
28:19	85449	9879	108244	12603	3.78	0.79	
30:00	269892	29243	332292	34990	11.8	0.81	
30:40	56625	5477	70348	6399	2.48	0.80	
33:50	274263	28148	351435	35662	12.2	0.78	
Signal Totals:							
	3025038	352533	3815005	436549			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6840879	789185				0.79	RQM
	6840043	789082					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 133.645 = (6840879 * 50.000) / (2352021 * 1.088)
Empc Amount: 133.629 = (6840043 * 50.000) / (2352021 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 39.432

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1143979	238137

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1143979	238137

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:35	2823	455	166815	29247	7.11	0.02	RQ
37:35	2823	455	1821	293	0.1945		Empc Correction
38:26	5625	1192	2839	495	0.3545	1.98	RQ
38:26	4400	767	2839	495	0.3032		Empc Correction
39:49	2516	390	2058	480	0.1916	1.22	RQ
39:49	2516	390	1623	251	0.1734		Empc Correction
41:13	460	144	729	101	0.0498	0.63	RQM
41:13	460	144	296	92	0.0317		Empc Correction
Signal Totals:							
	10199	1756	6579	1131			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	183865	32504				0.07	RQM
	16778	2887					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.702 = (183865 * 50.000) / (1143979 * 1.043)
Empc Amount: 0.7028 = (16778 * 50.000) / (1143979 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDF, RT: 38.009

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1827186	353492
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1857648	403683

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1842417	378587

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:40	3202	416	2111	320	0.1254	1.52	
37:14	36097	5948	24827	3765	1.44	1.45	
37:32	1355	220	757	181	0.0499	1.79	RQ
37:32	1173	280	757	181	0.0456		Empc Correction
38:14	4903	571	3249	507	0.1924	1.51	
38:40	7080	2058	3836	998	0.2577	1.85	RQMa
38:40	5945	1546	3836	998	0.2309		Empc Correction
38:51	2068	506	851	242	0.0689	2.43	RQMa
38:51	1319	375	851	242	0.0512		Empc Correction
39:17	24932	5164	16769	3021	0.9844	1.49	
40:15	13638	2938	11526	1920	0.5940	1.18	RQ
40:15	13638	2938	8798	1895	0.5296		Empc Correction
41:21	3889	572	3480	544	0.1740	1.12	RQM
41:21	3889	572	2509	369	0.1510		Empc Correction
Signal Totals:							
	95098	17810	63707	11298			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	164570	29891				1.44	RQMa
	158805	29108					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.885 = (164570 * 50.000) / (1842417 * 1.150)
Empc Amount: 3.749 = (158805 * 50.000) / (1842417 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 44.304

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1154443	308460
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1307305	309100
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1230874	308780

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	53075	13599	41969	10208	3.30	1.26	M
43:50	3185	547	2317	372	0.1910	1.37	a
44:06	14698	3632	11084	2782	0.8951	1.33	a
44:16	2650	484	2565	505	0.1811	1.03	RQa
44:16	2650	484	2137	390	0.1662		Empc Correction
Signal Totals:							
	73608	18262	57507	13752			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	131543	32129				1.27	RQMa
	131115	32014					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.567 = (131543 * 50.000) / (1230874 * 1.170)
Empc Amount: 4.552 = (131115 * 50.000) / (1230874 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDF, RT: 44.151

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1700760	445635
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2087833	507868
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1853498	458771
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1692521	356159

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1833653	442108

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:34	2613	771	2679	566	0.1118	0.98	RQ
42:34	2613	771	2107	621	0.0997		Empc Correction
42:44	10946	2646	12673	2822	0.4991	0.86	RQ
42:44	10946	2646	8827	2133	0.4178		Empc Correction
43:20	7021	1911	5255	1571	0.2594	1.34	M
43:31	3054	996	3390	793	0.1362	0.90	RQM
43:31	3054	996	2462	803	0.1166		Empc Correction
44:31	3176	701	2701	456	0.1242	1.18	M
45:42	6996	1541	6019	1176	0.2750	1.16	
Signal Totals:							
	33806	8566	27371	6760			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	66523	15950				1.03	RQM
	61177	15326					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.406 = (66523 * 50.000) / (1833653 * 1.290)
Empc Amount: 1.293 = (61177 * 50.000) / (1833653 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1159741	207288

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1159741	207288

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	169181	32982	164352	30586	12.8	1.03	
Signal Totals:							
	169181	32982	164352	30586			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	333533	63568				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 12.834 = (333533 * 50.000) / (1159741 * 1.120)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Inject. Date: 17-Dec-2019 17:34:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDF, RT: 49.925

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1477871	305668
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1198784	211364

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1338327	258516

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:35	14039	2739	13752	2788	0.7213	1.02	Ma
Signal Totals:							
	14039	2739	13752	2788			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	27791	5527				1.02	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7213 = (27791 * 50.000) / (1338327 * 1.440)

QC Flag Legend

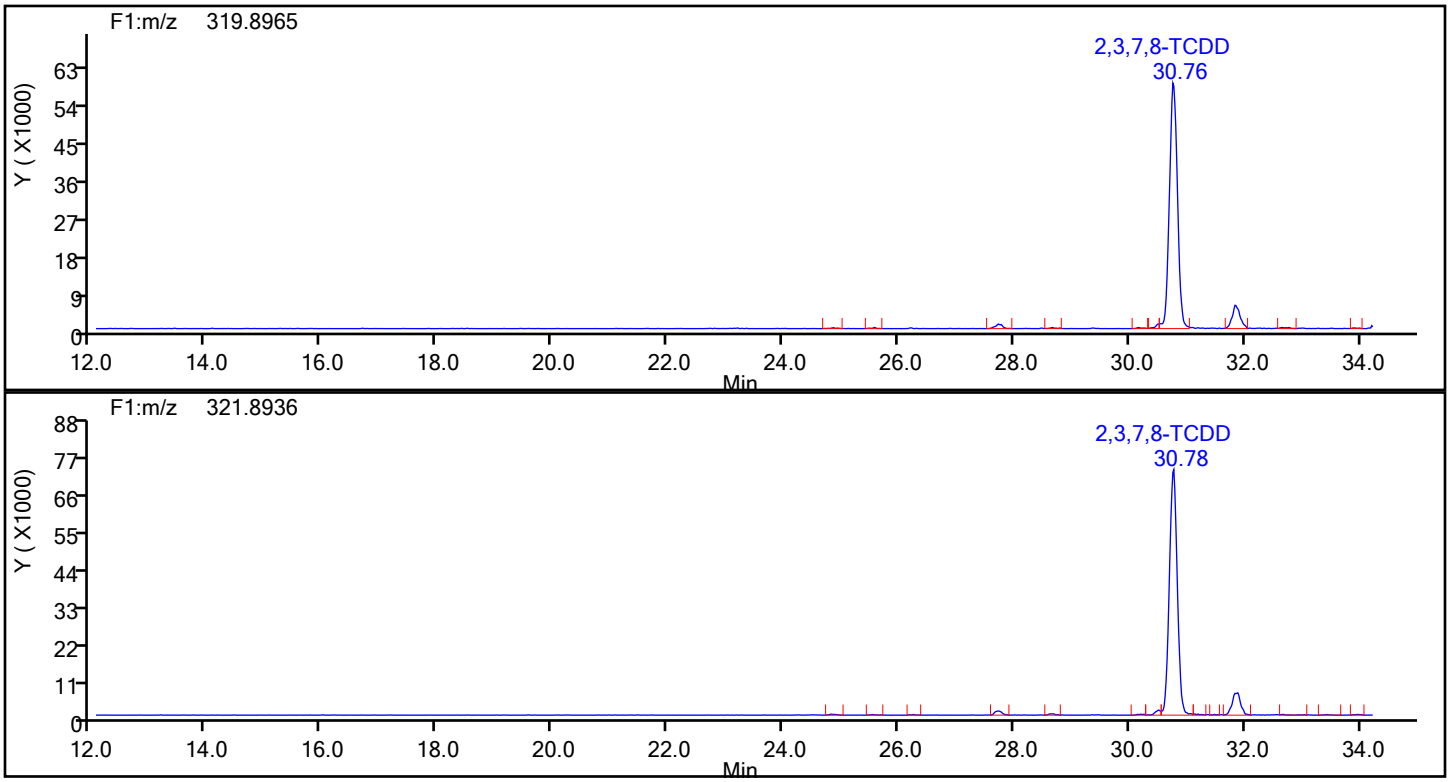
Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

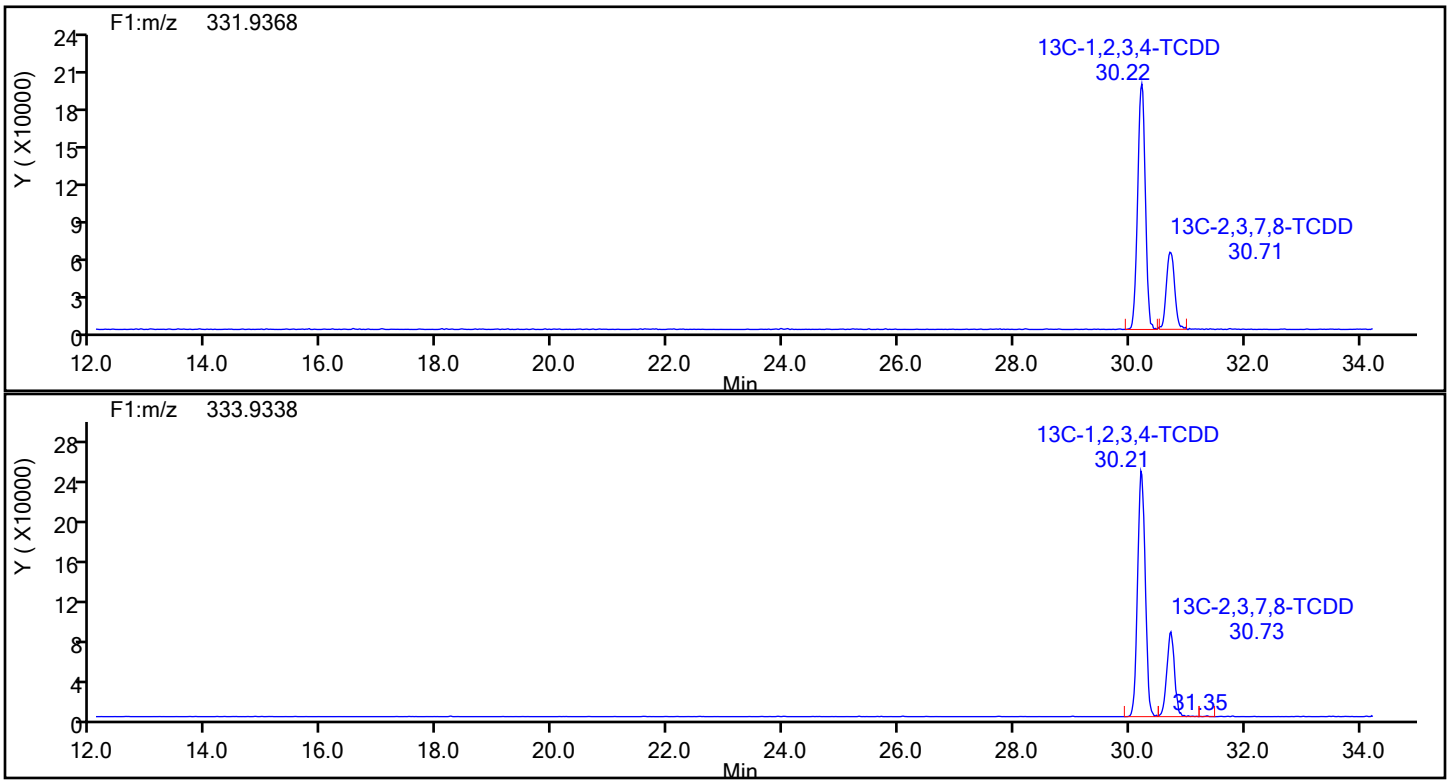
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

TCDD



TCDD Standards

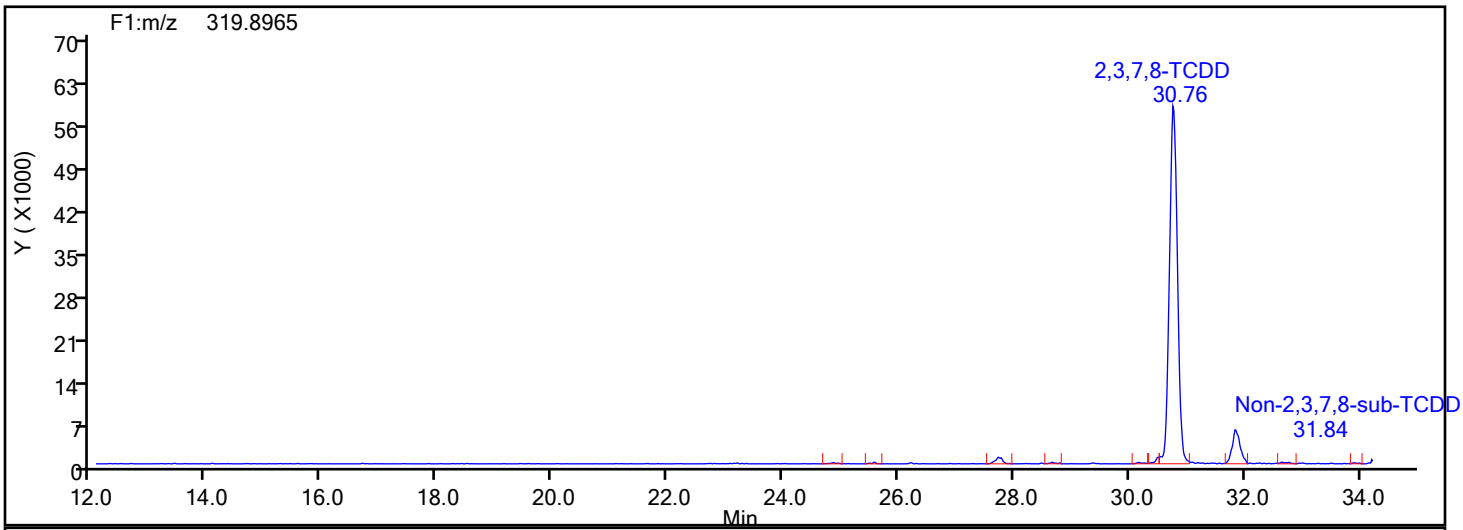


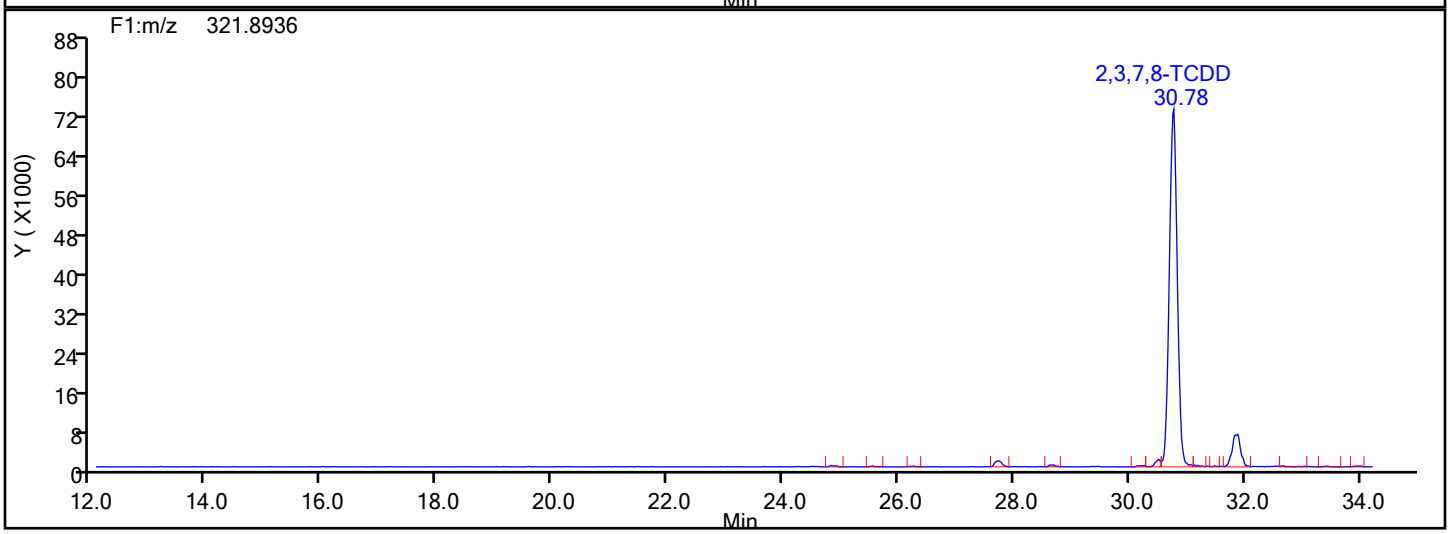
Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

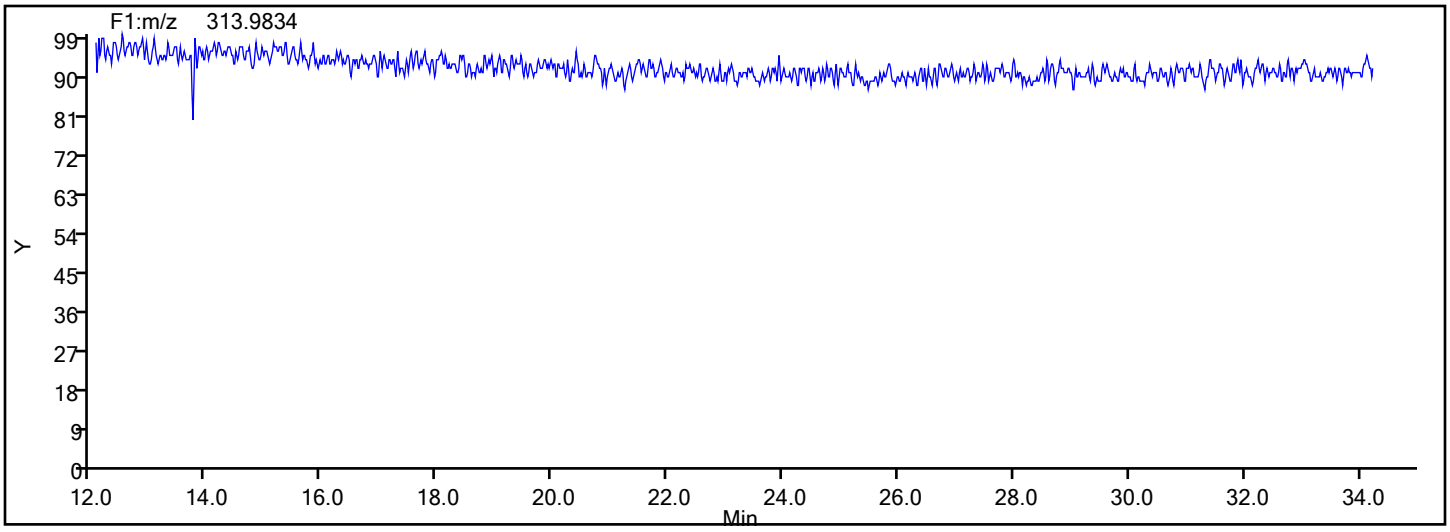
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass

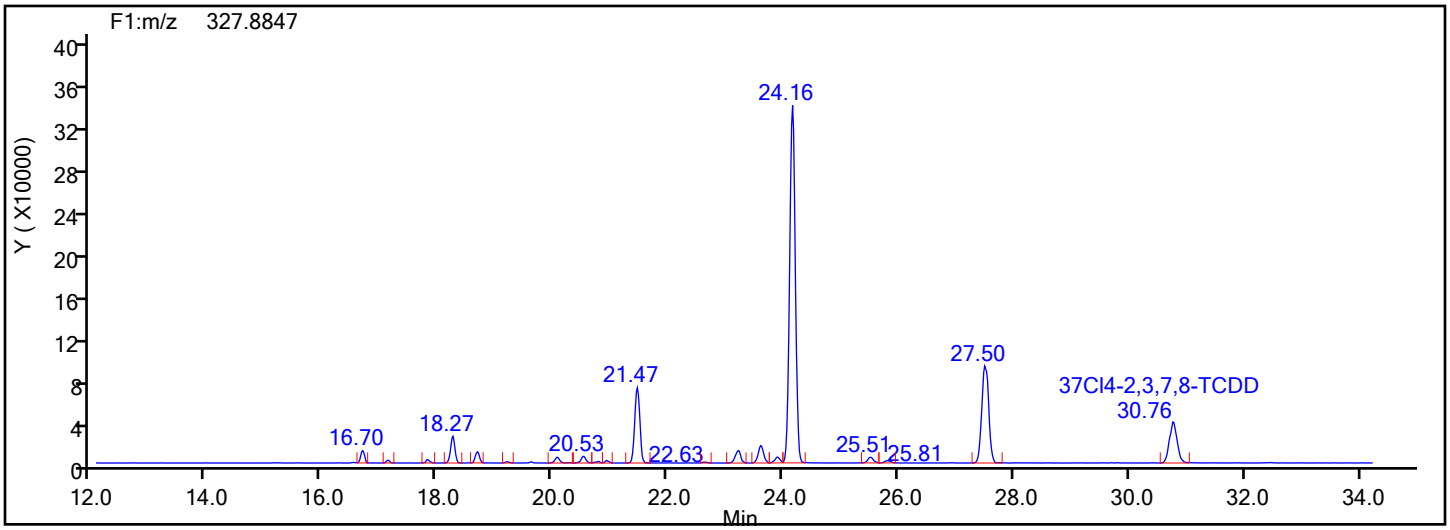


Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

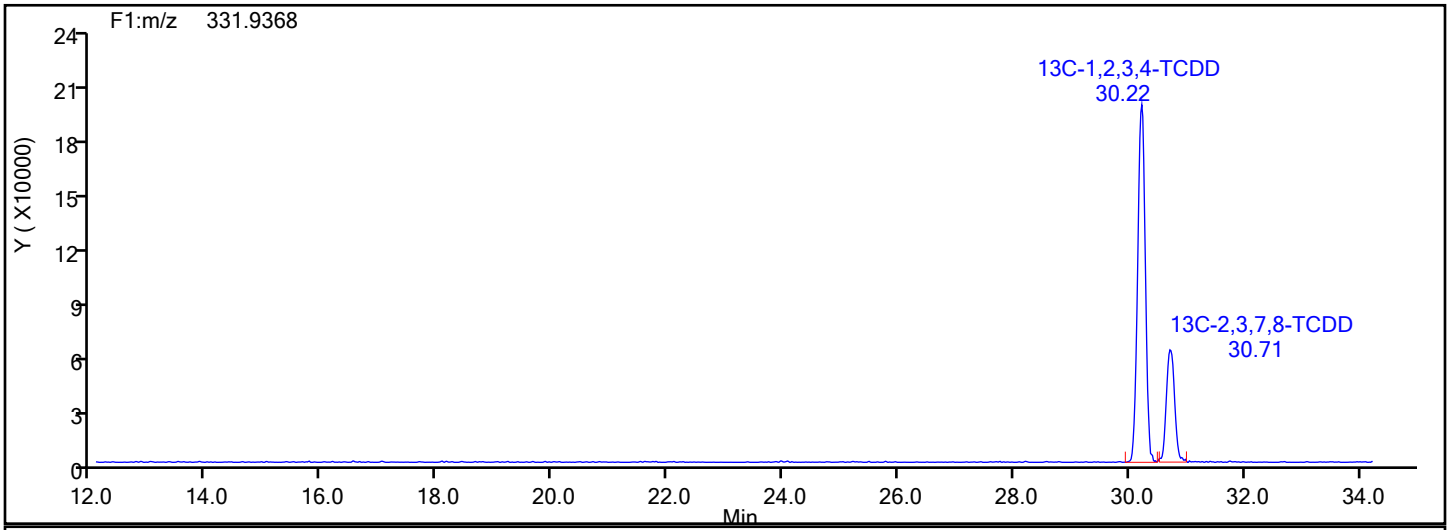
Eurofins TestAmerica, Knoxville

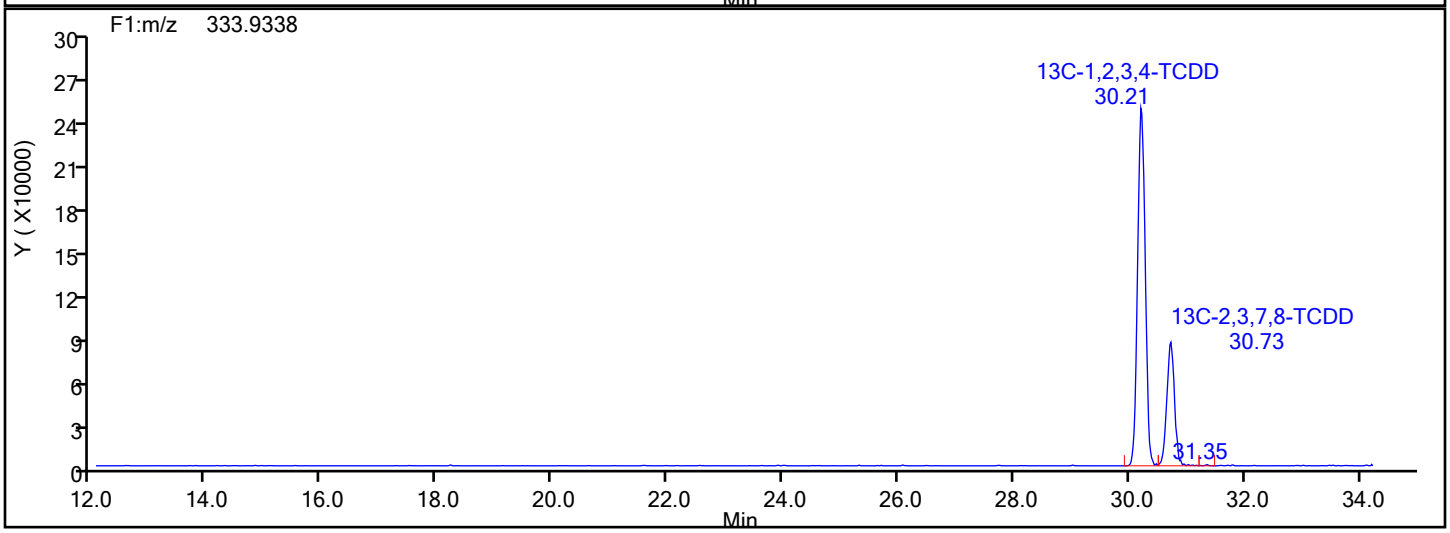
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



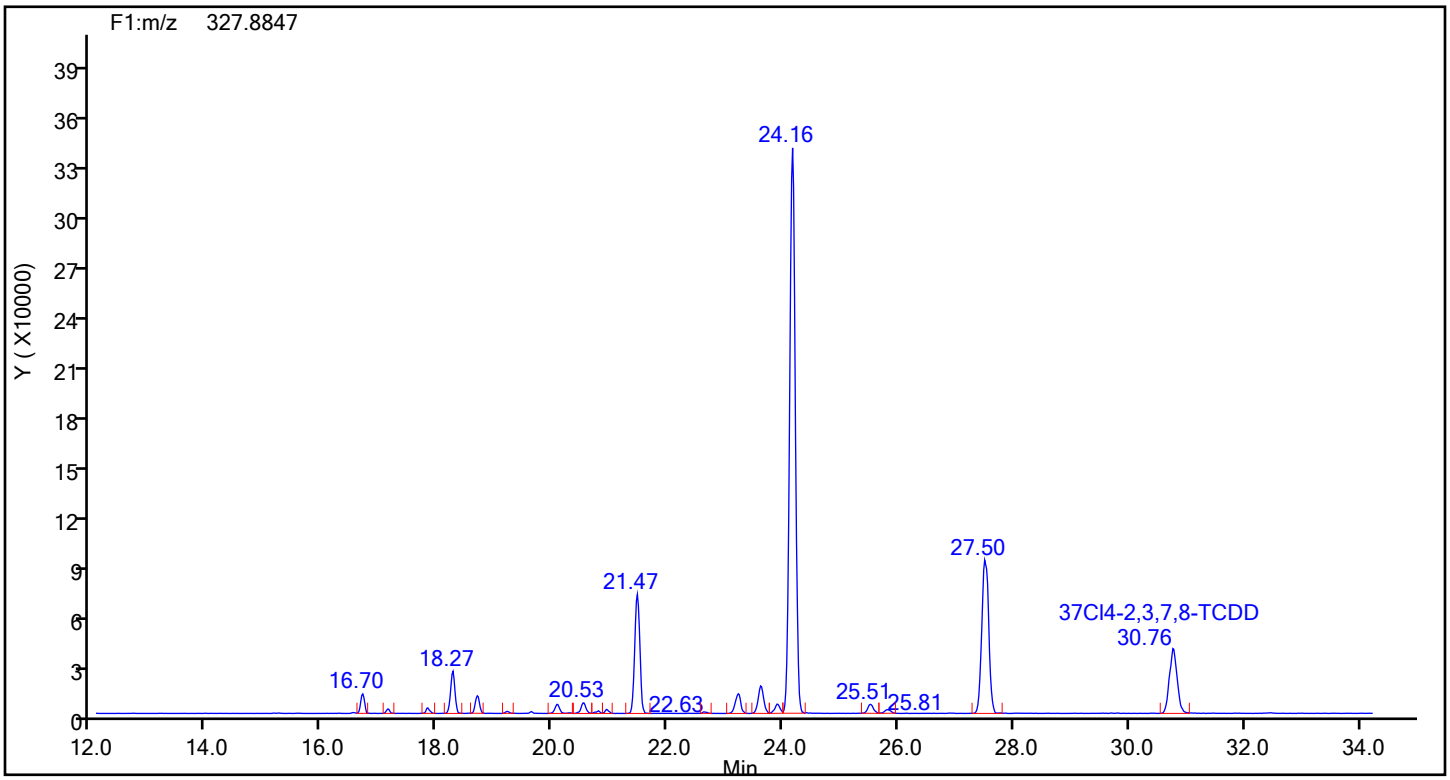


Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

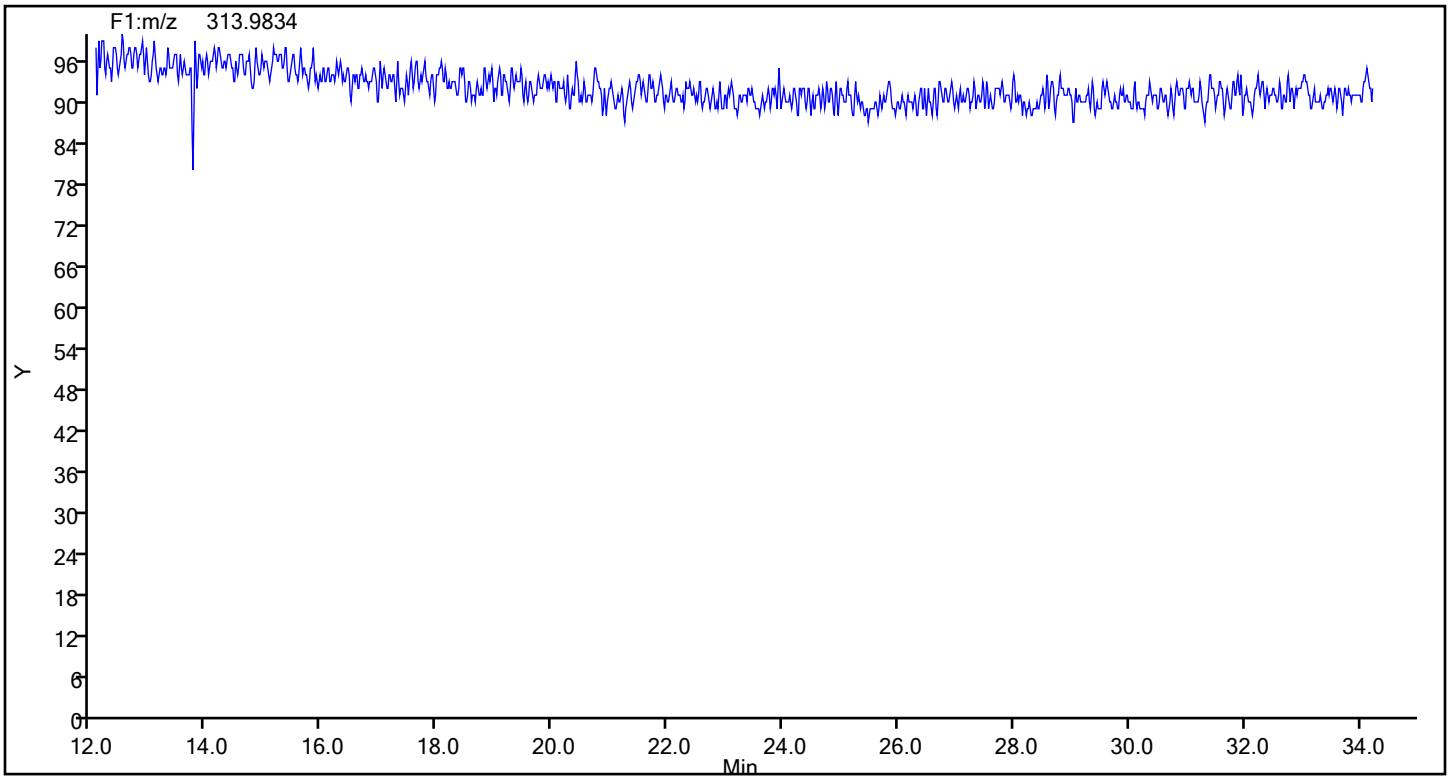
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

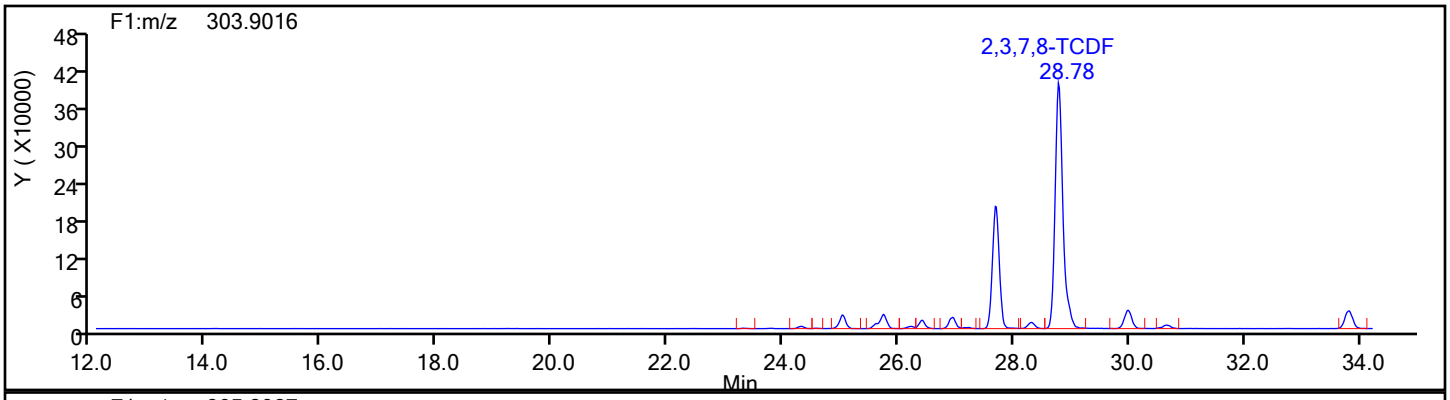


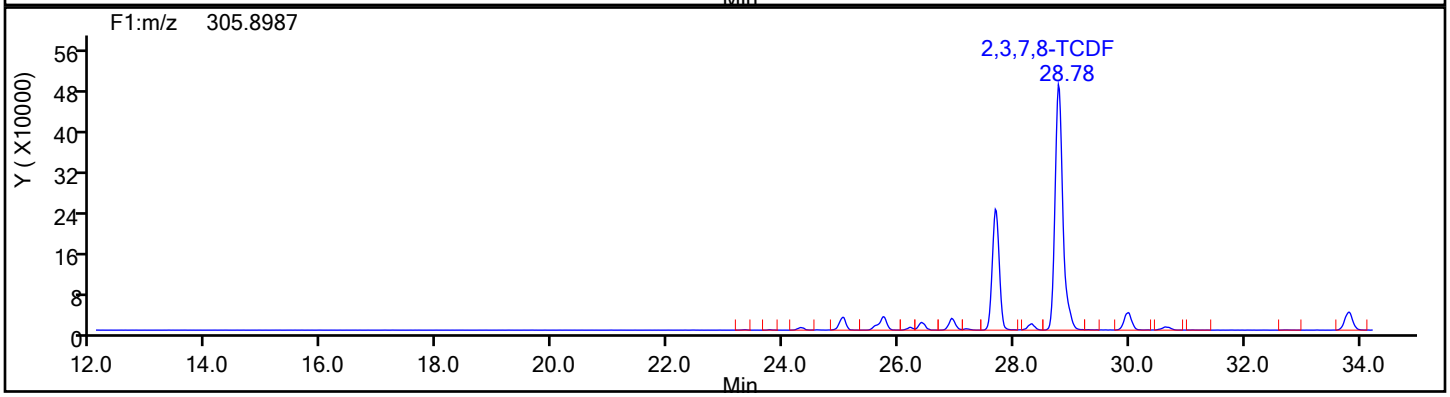
Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

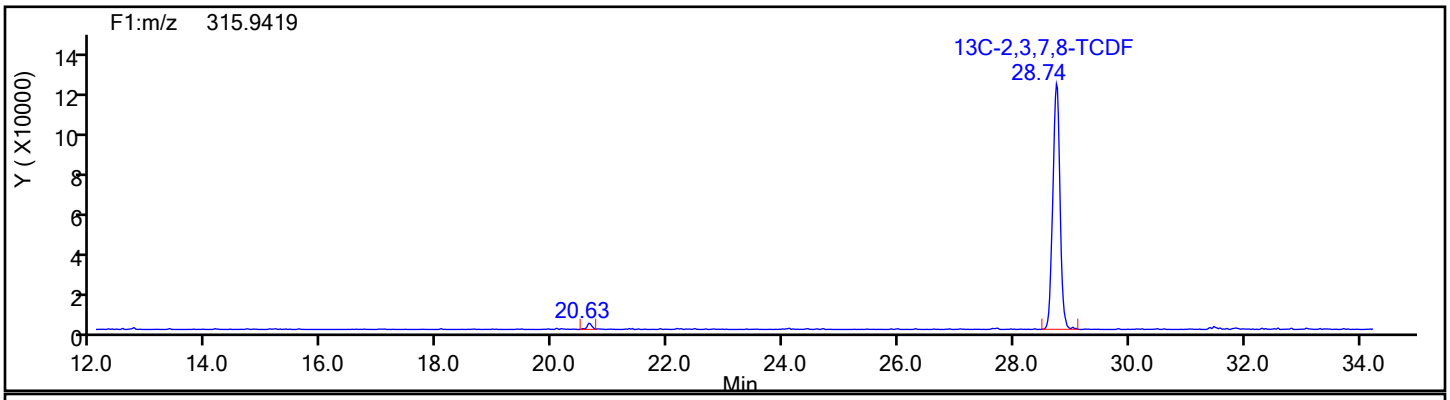
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

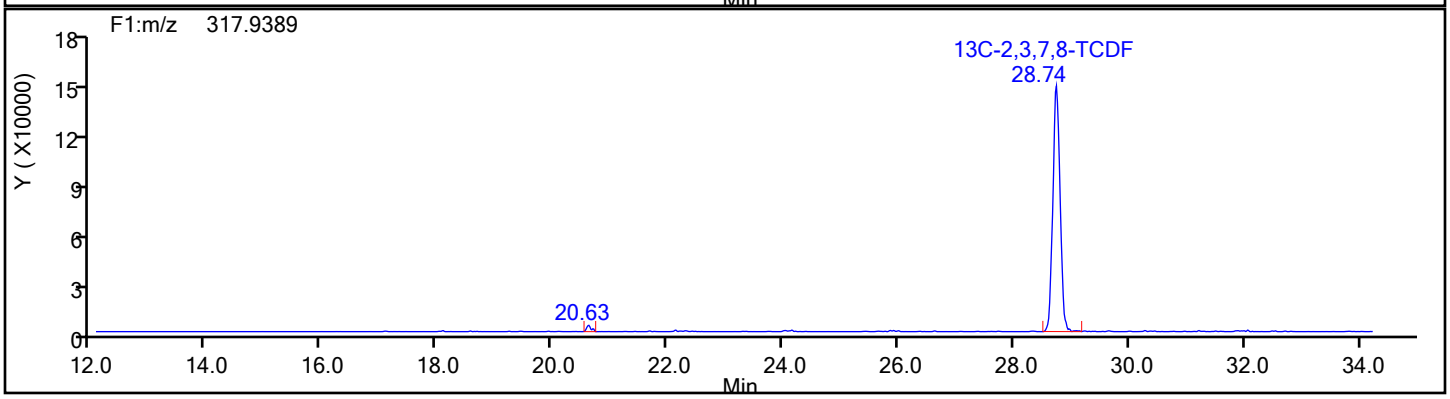
TCDF





TCDF Standards



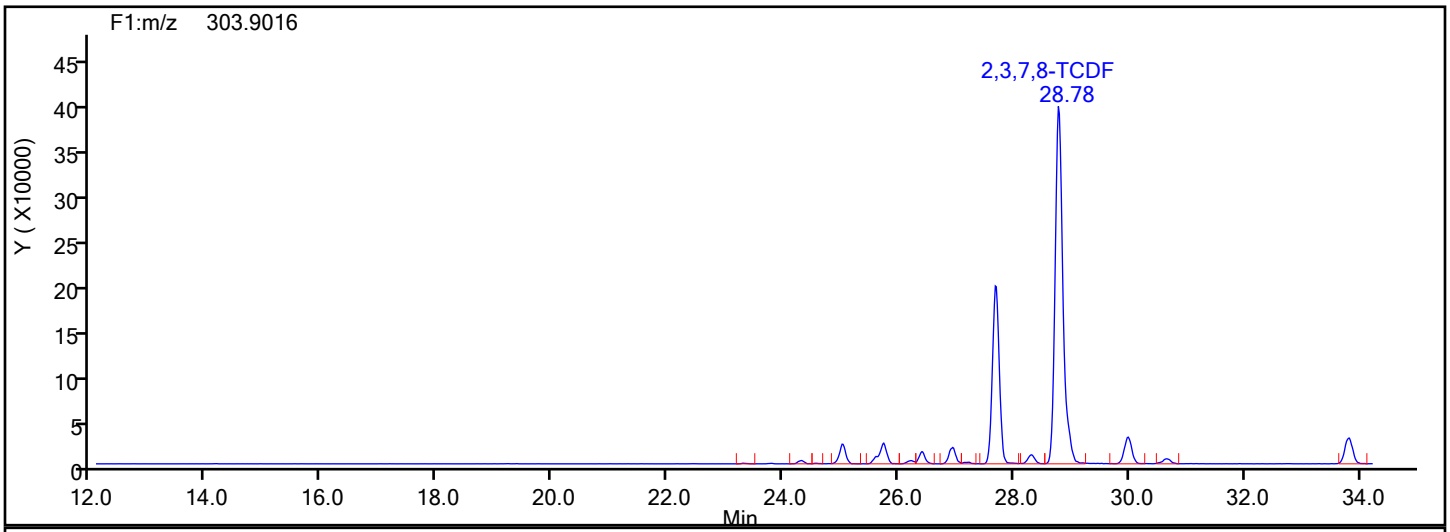


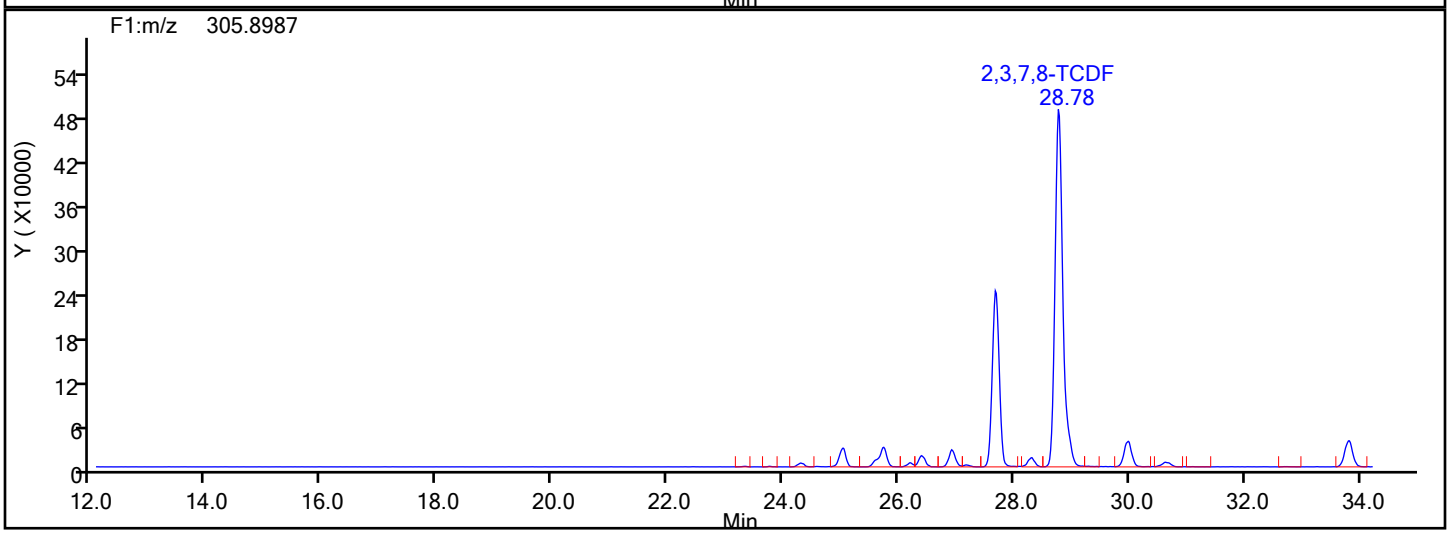
Report Date: 18-Dec-2019 04:10:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

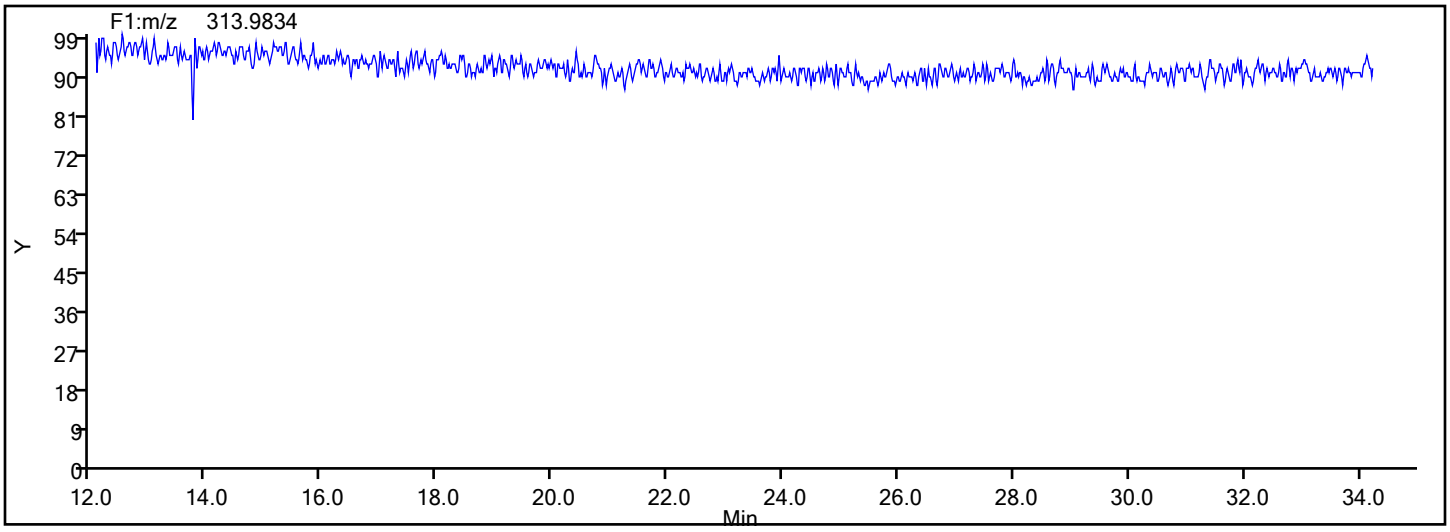
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

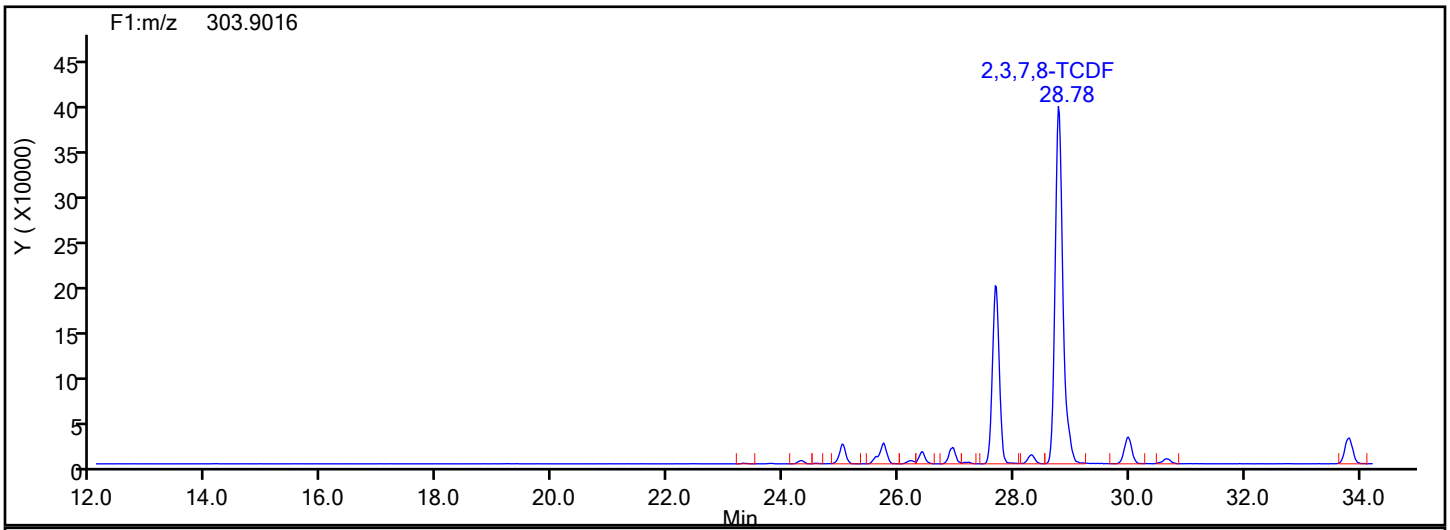


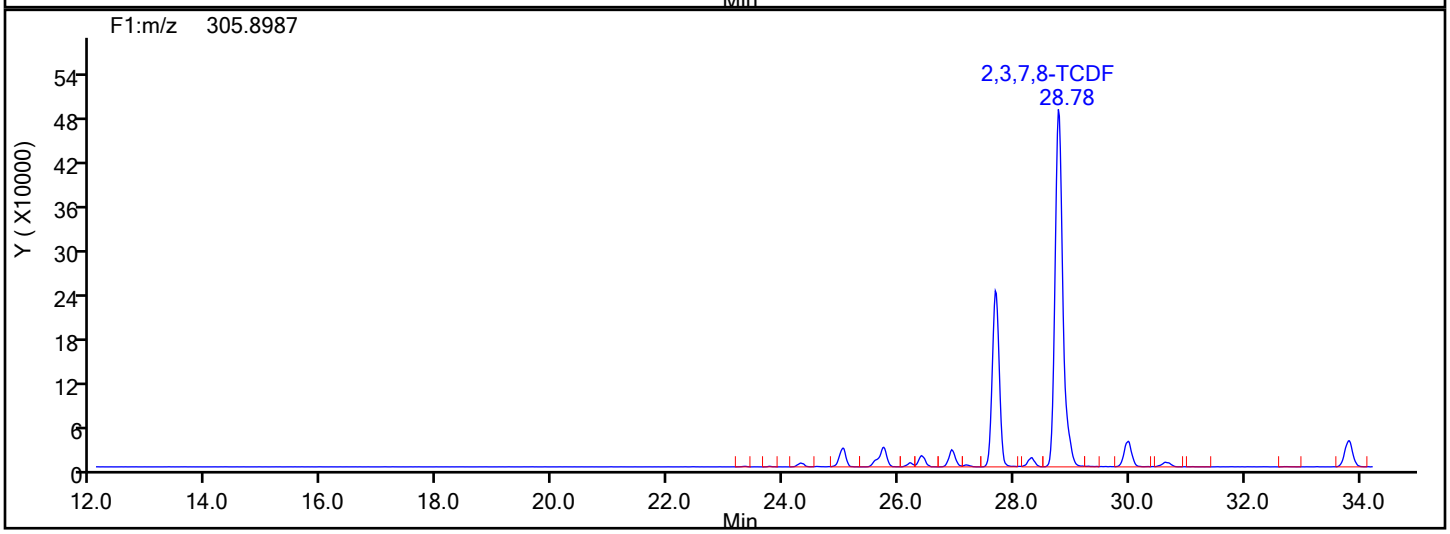
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

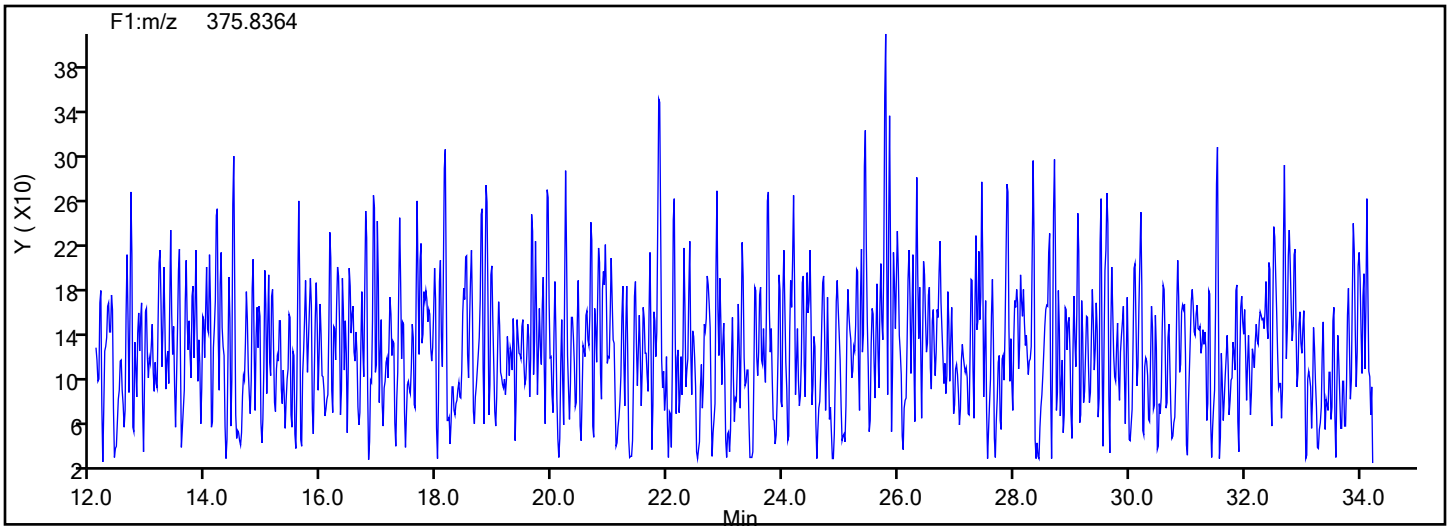
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

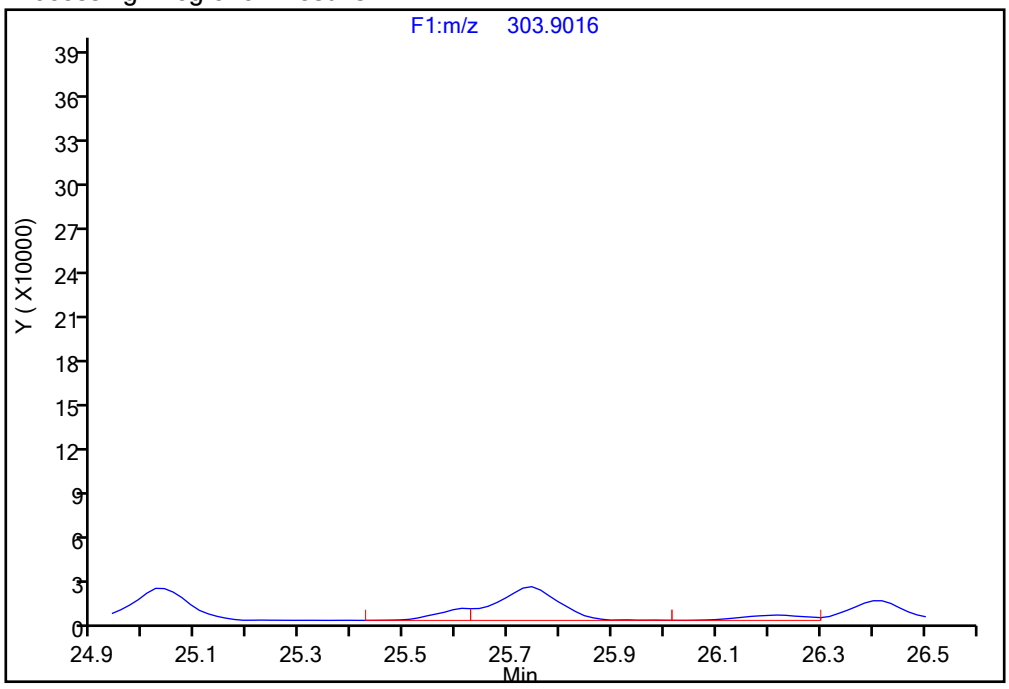
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.45- 33.94)

Signal: 1

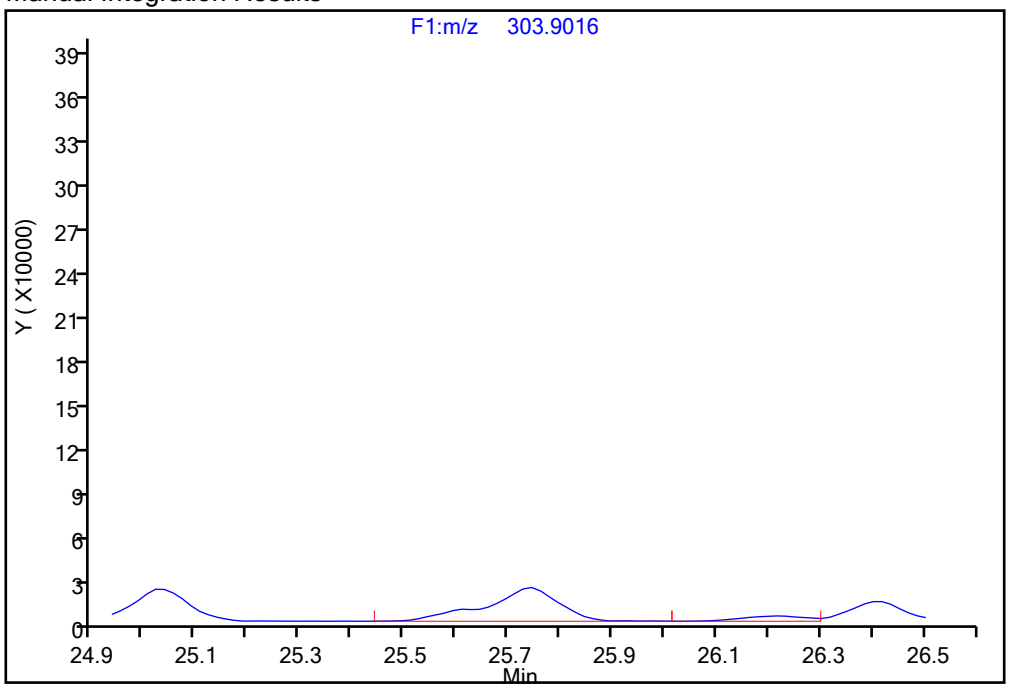
Processing Integration Results

RT = 25.745 Area = 184693



Manual Integration Results

RT = 25.745 Area = 219692 M



Reviewer: parslyt, 18-Dec-2019 03:57:43

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

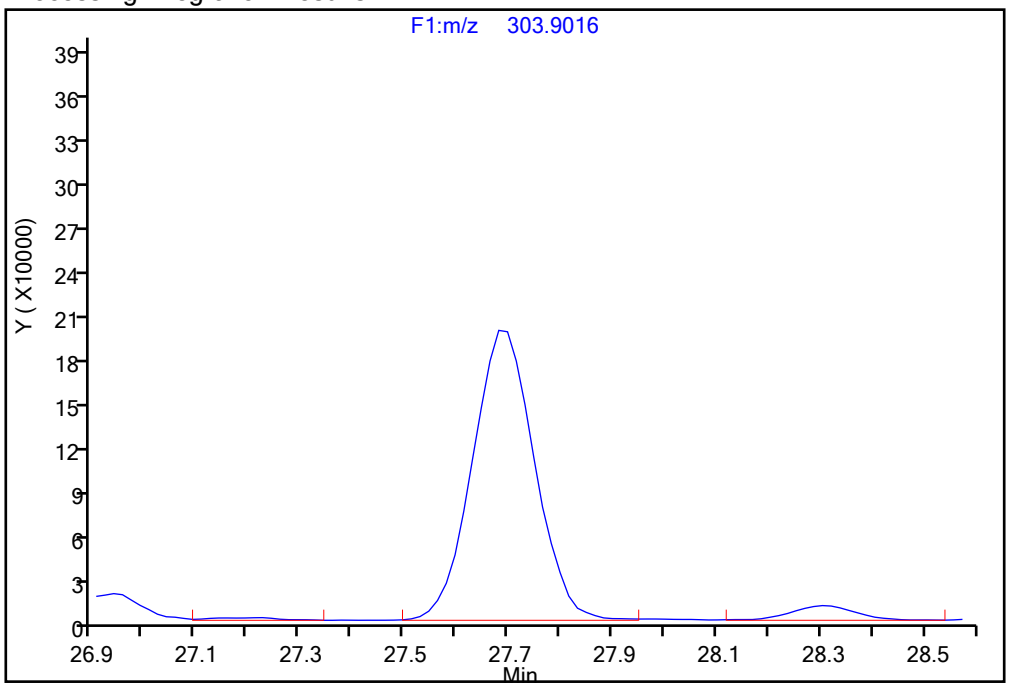
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.45- 33.94)

Signal: 1

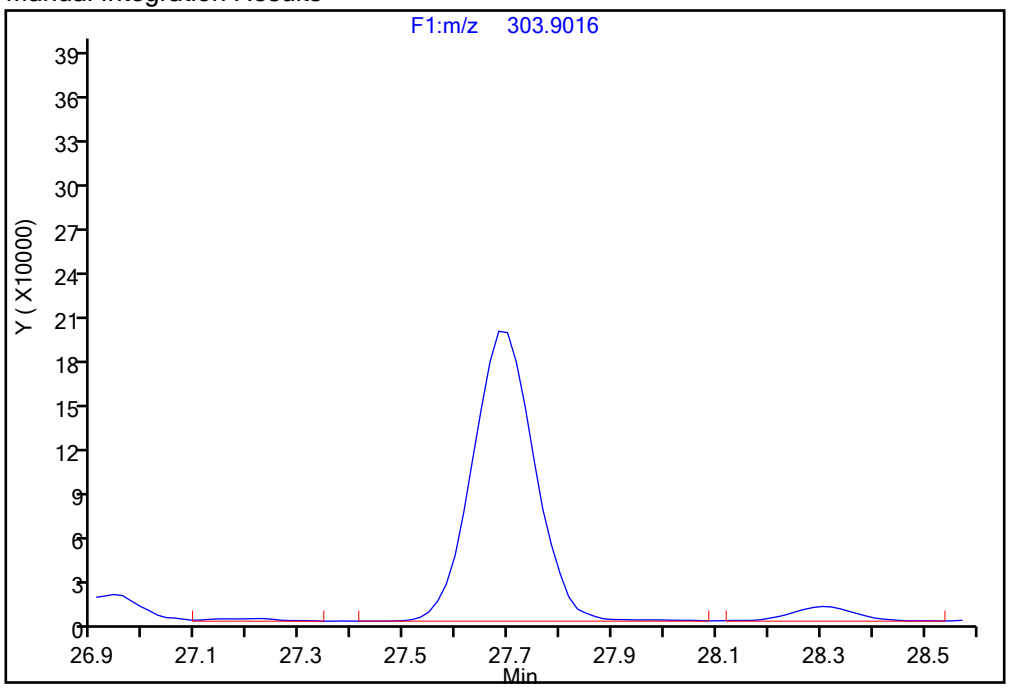
Processing Integration Results

RT = 27.681 Area = 1622142



Manual Integration Results

RT = 27.681 Area = 1627719 M



Reviewer: parslyt, 18-Dec-2019 03:57:43

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d

Injection Date: 17-Dec-2019 17:34:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

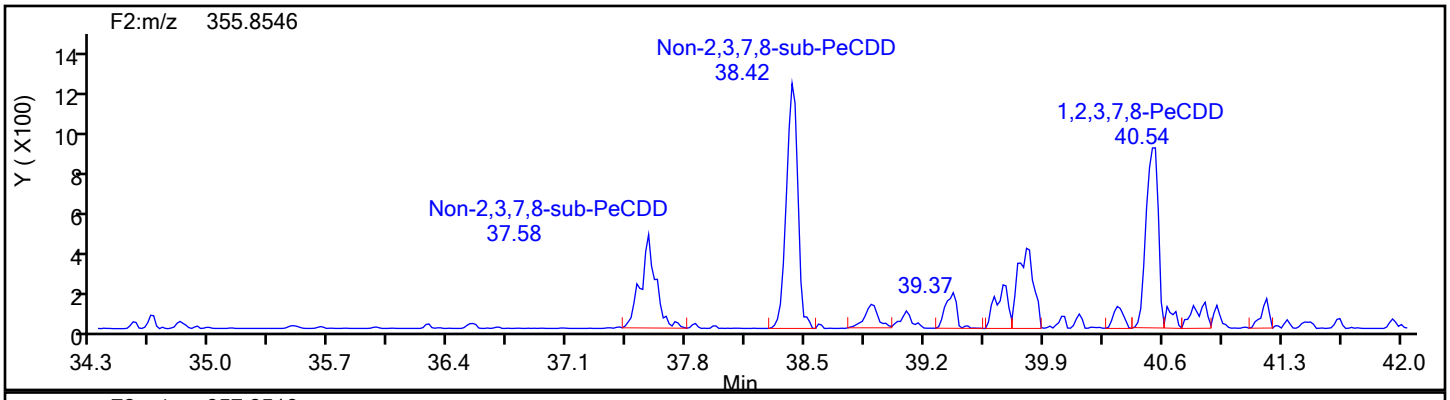
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

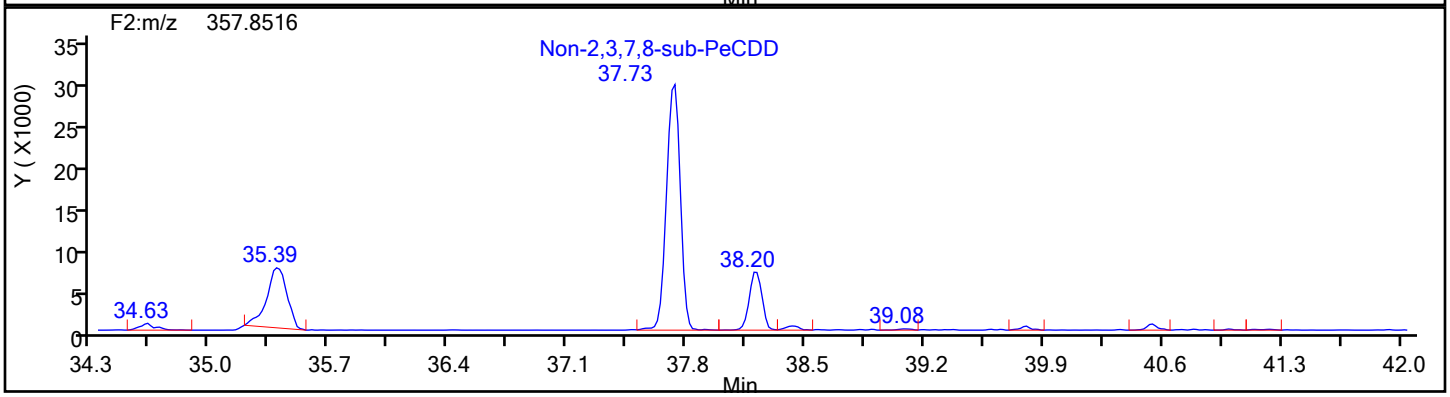
Client ID: 11187072-120619-SS-SJSSA06(1-2)

Worklist#: 36146 Sample Line#: 9

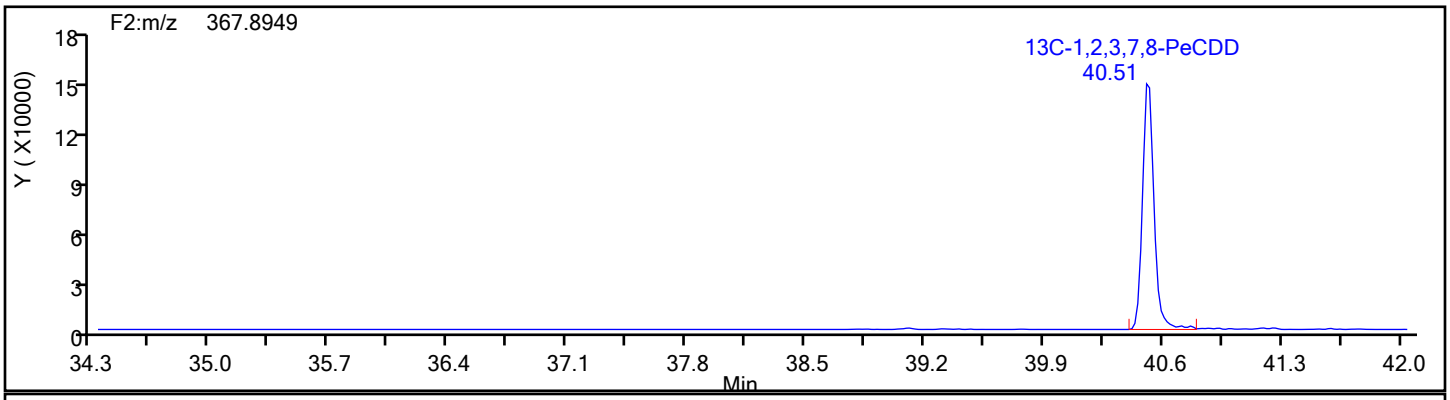
Column Type: Column Dia:

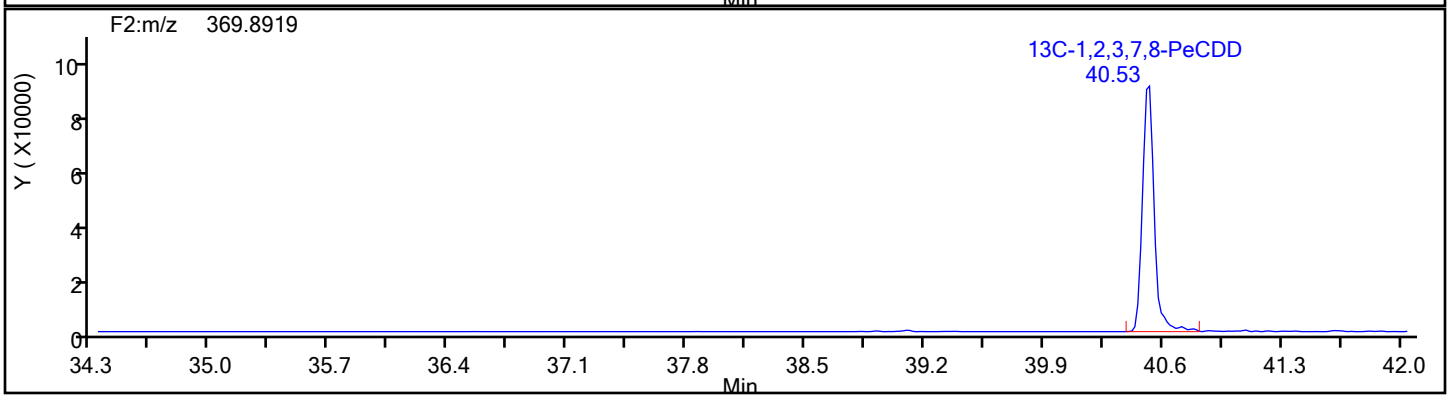
PeCDD





PeCDD Standards



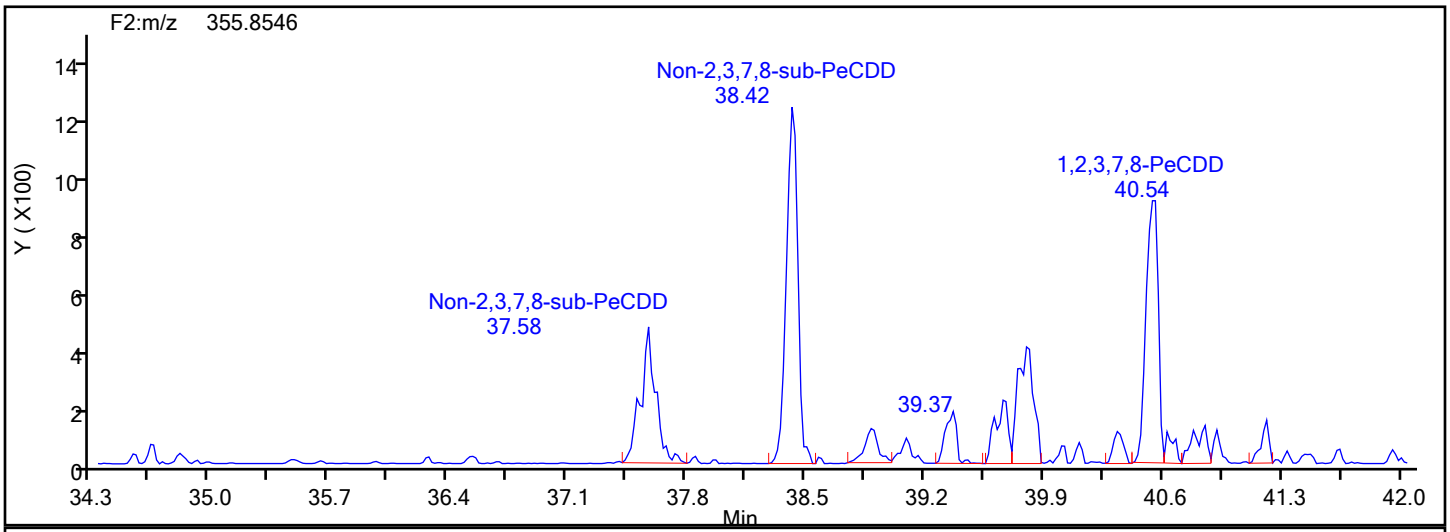


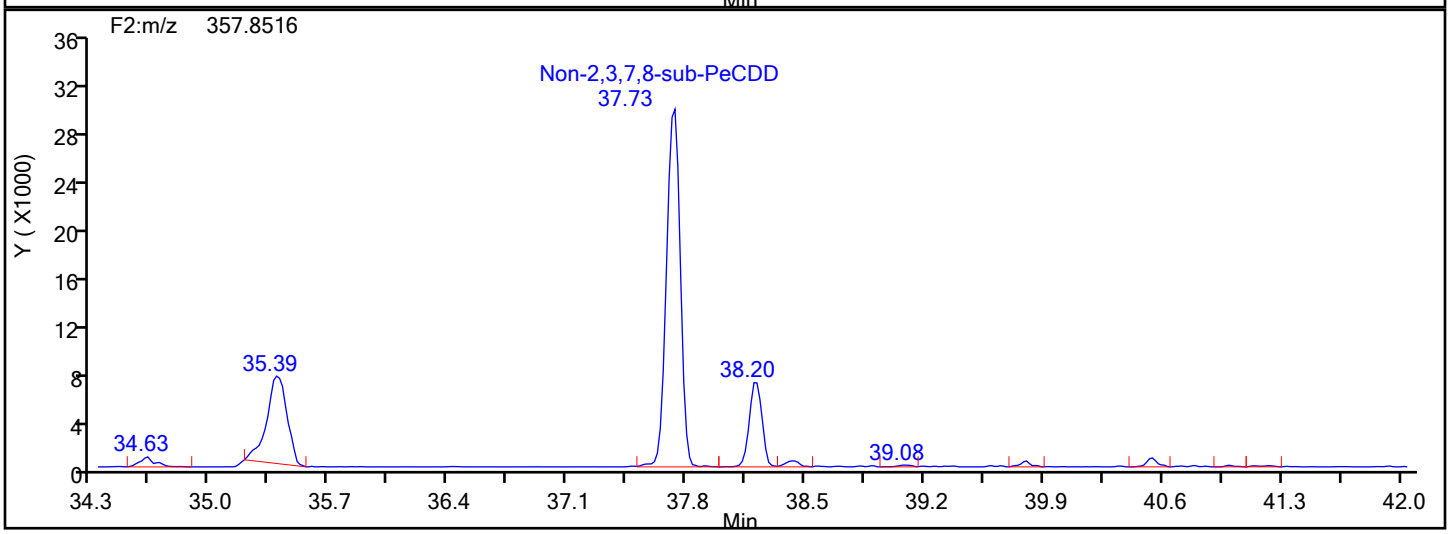
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

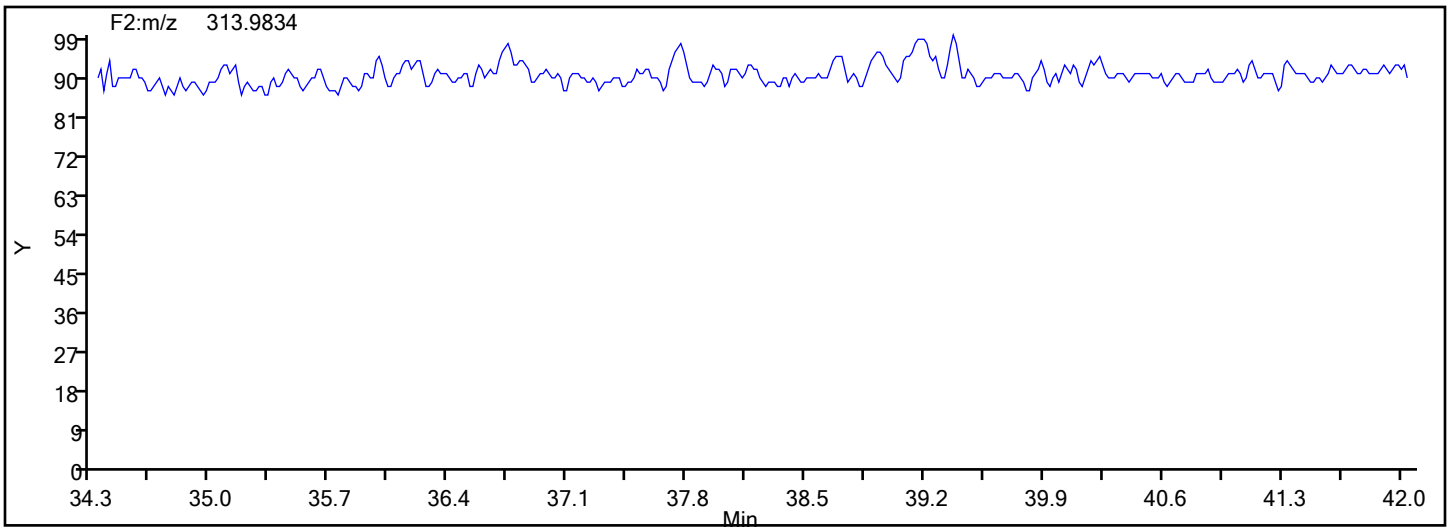
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

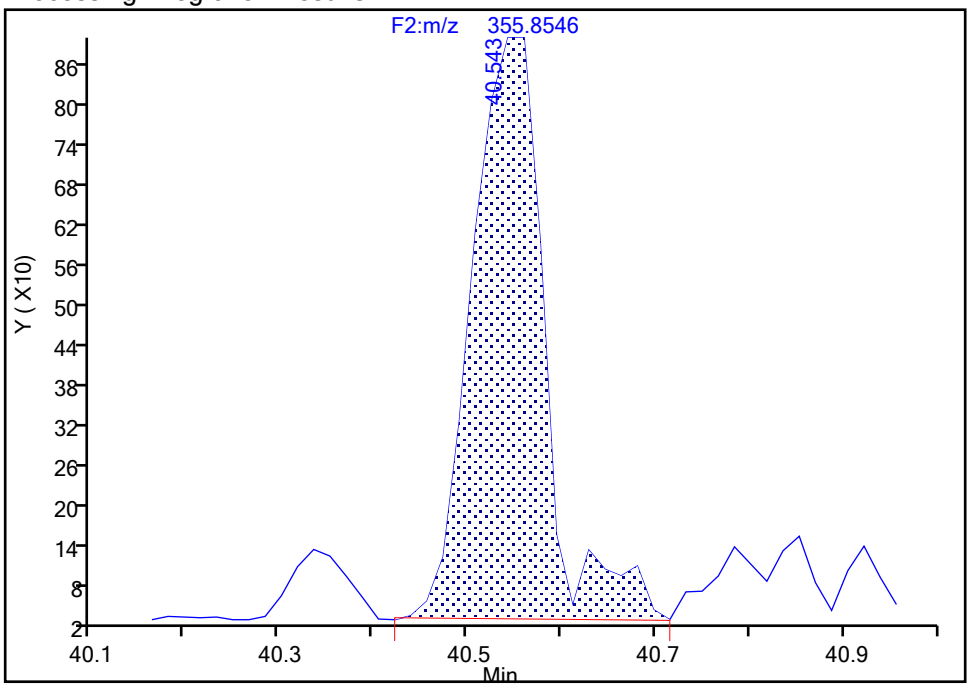
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

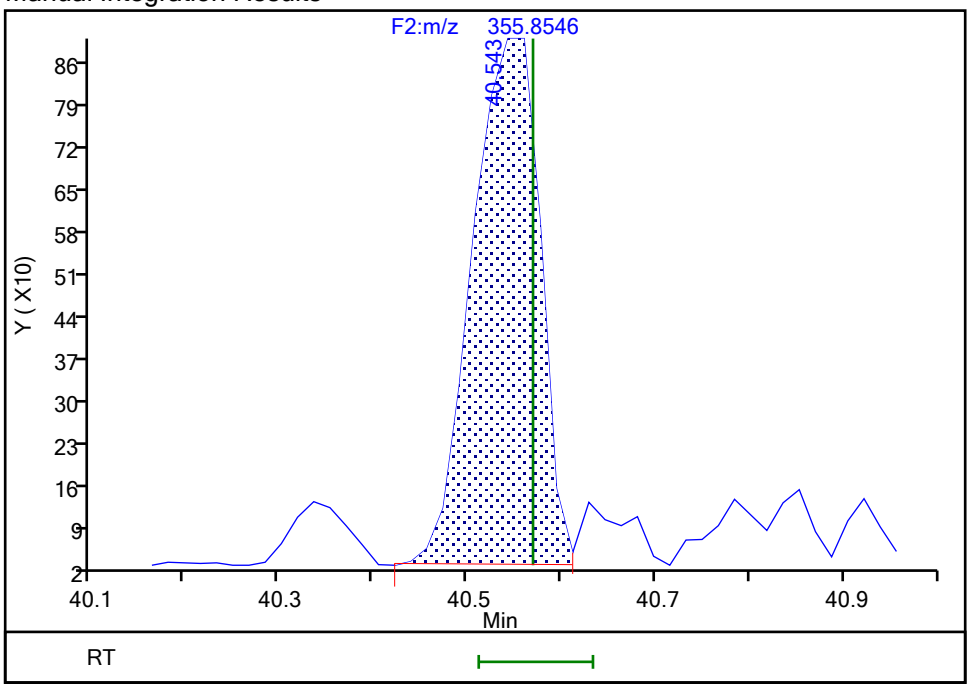
Processing Integration Results

RT: 40.54
Area: 4758
Amount: 0.334608
Amount Units: pg/ul



Manual Integration Results

RT: 40.54
Area: 4387
Amount: 0.319067
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 03:58:31

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

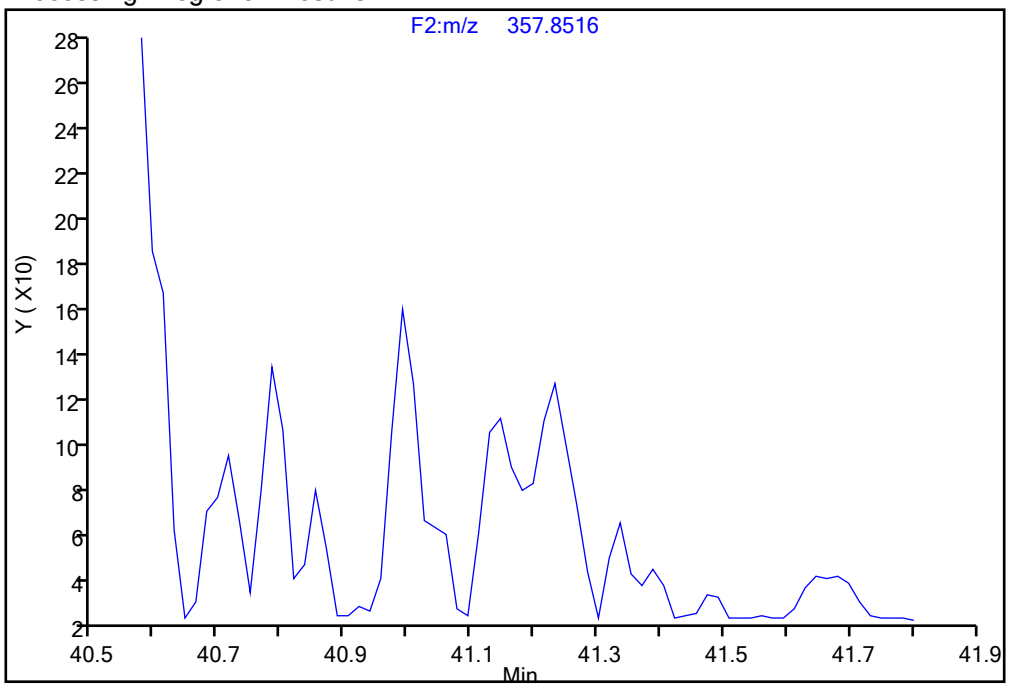
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDD, Signal: 2, m/z: 357.8516, RT: (37.57- 41.29)

Signal: 2

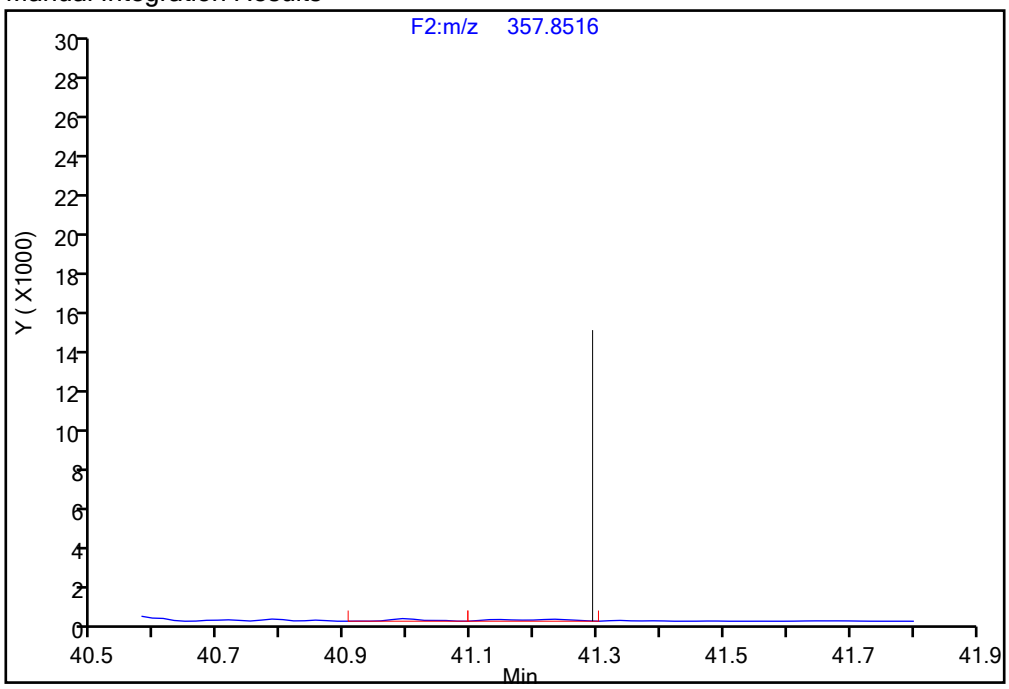
Not Detected
RT: 37.57- 41.29

Processing Integration Results



Manual Integration Results

RT = 41.233 Area = 729 M



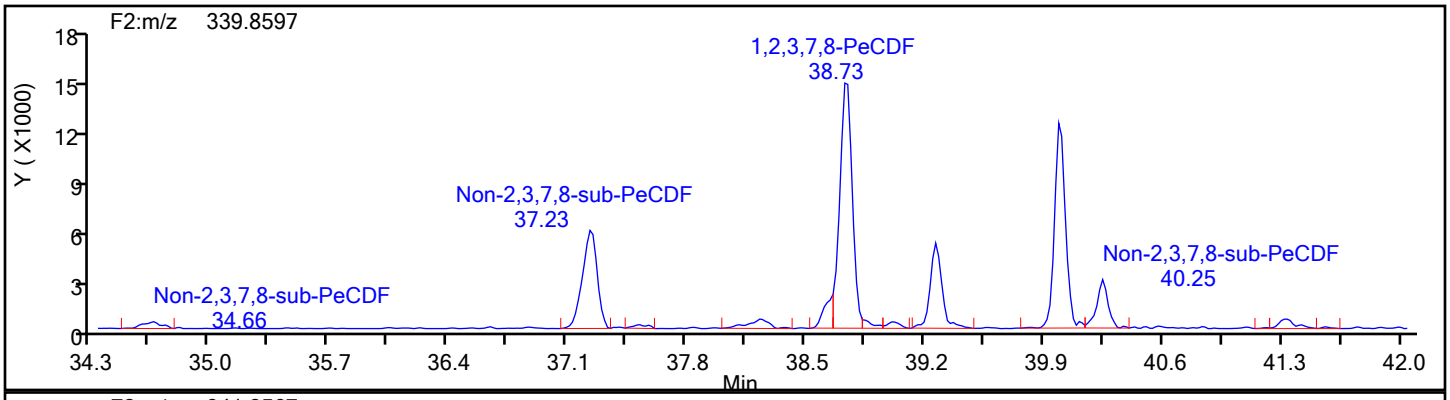
Reviewer: parslyt, 18-Dec-2019 03:59:20
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

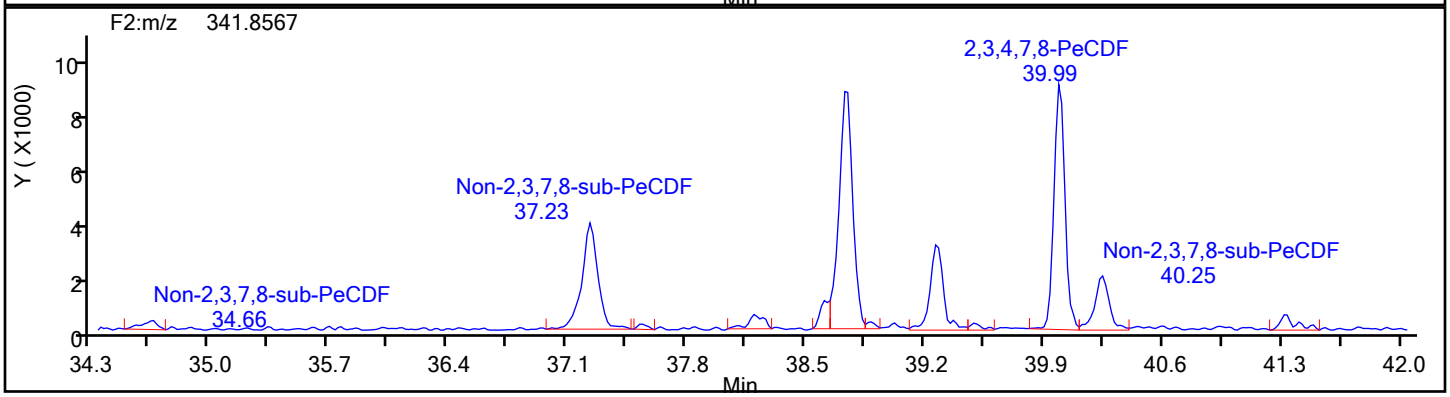
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

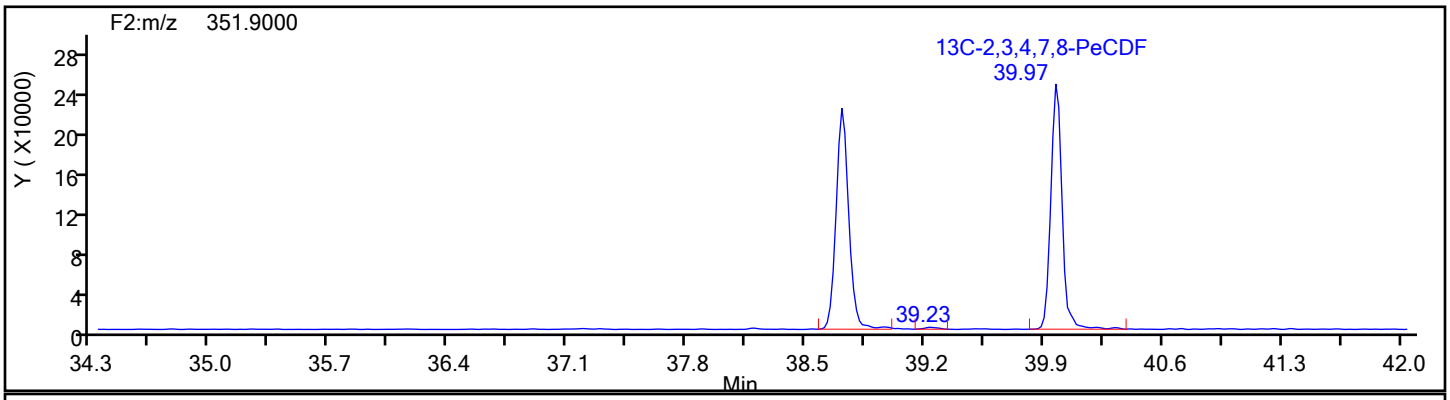
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

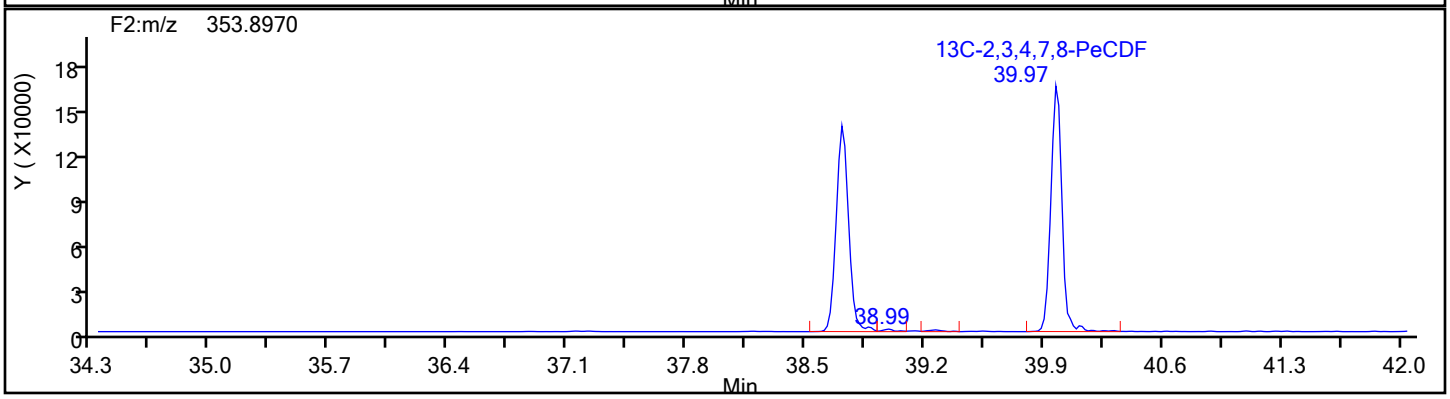
PeCDF





PeCDF Standards



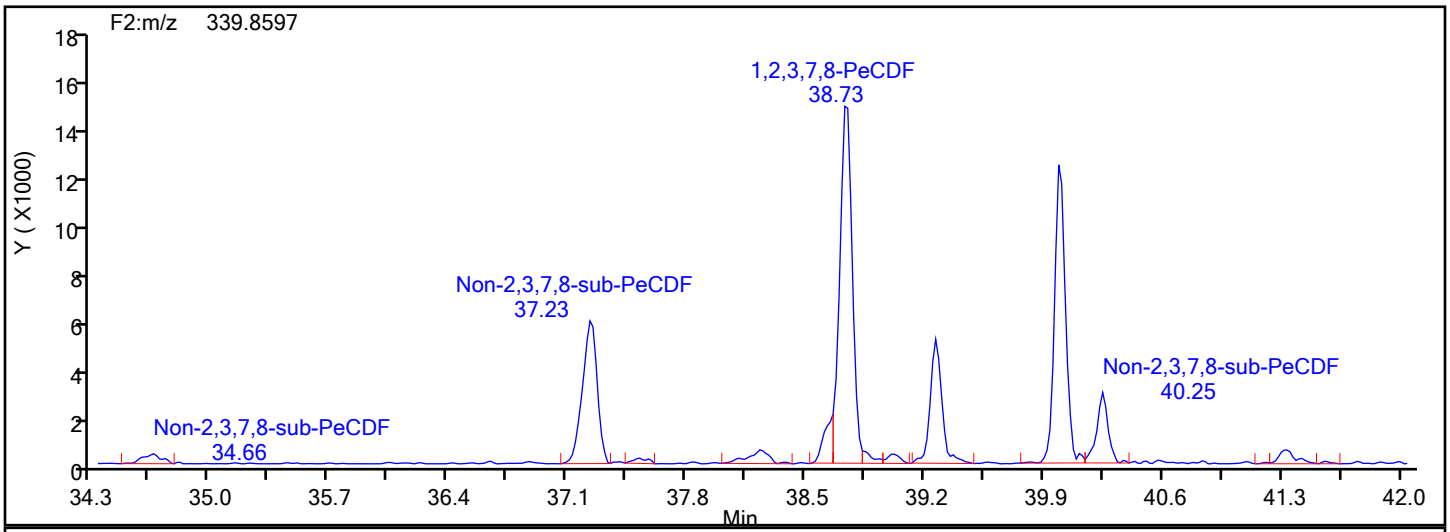


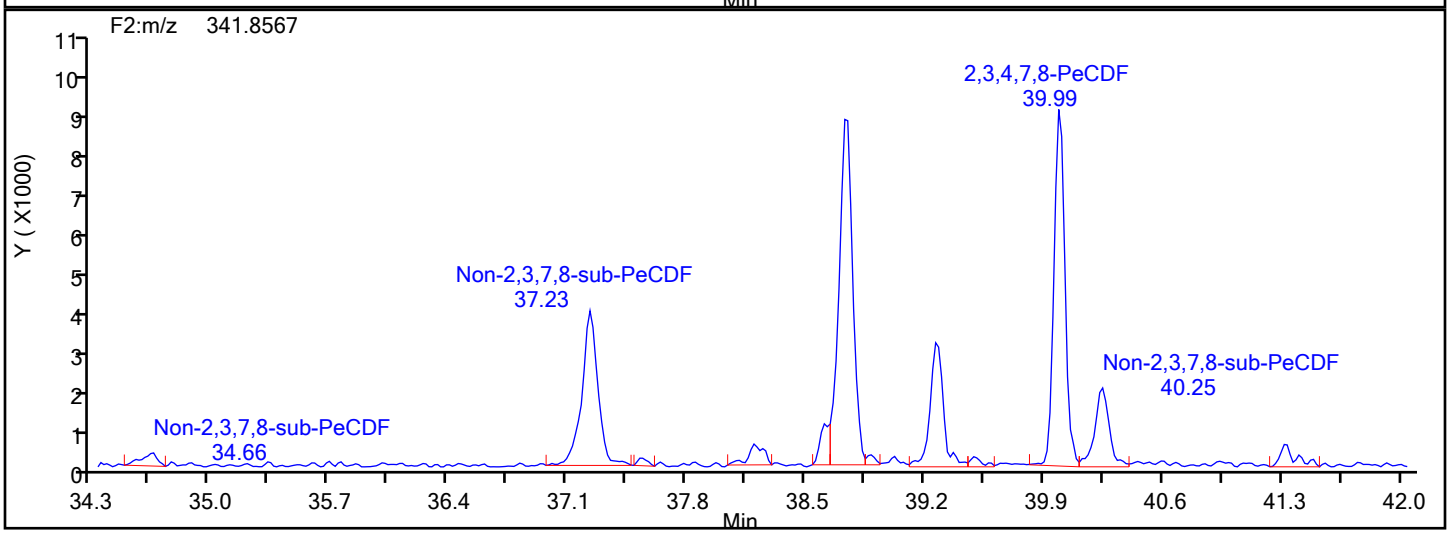
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

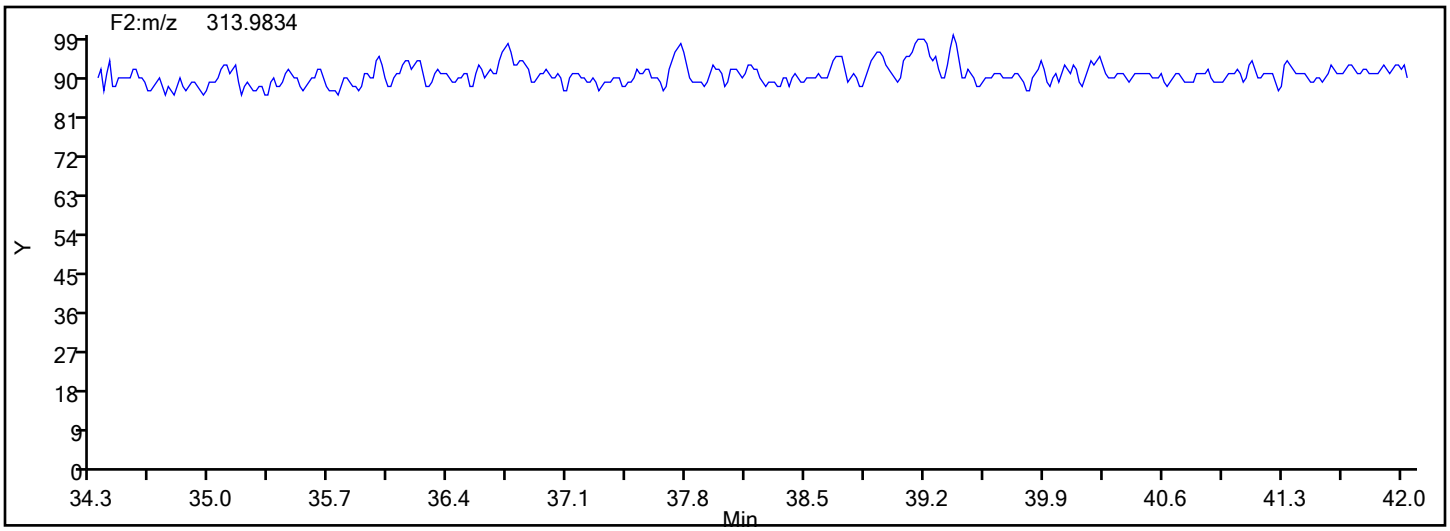
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

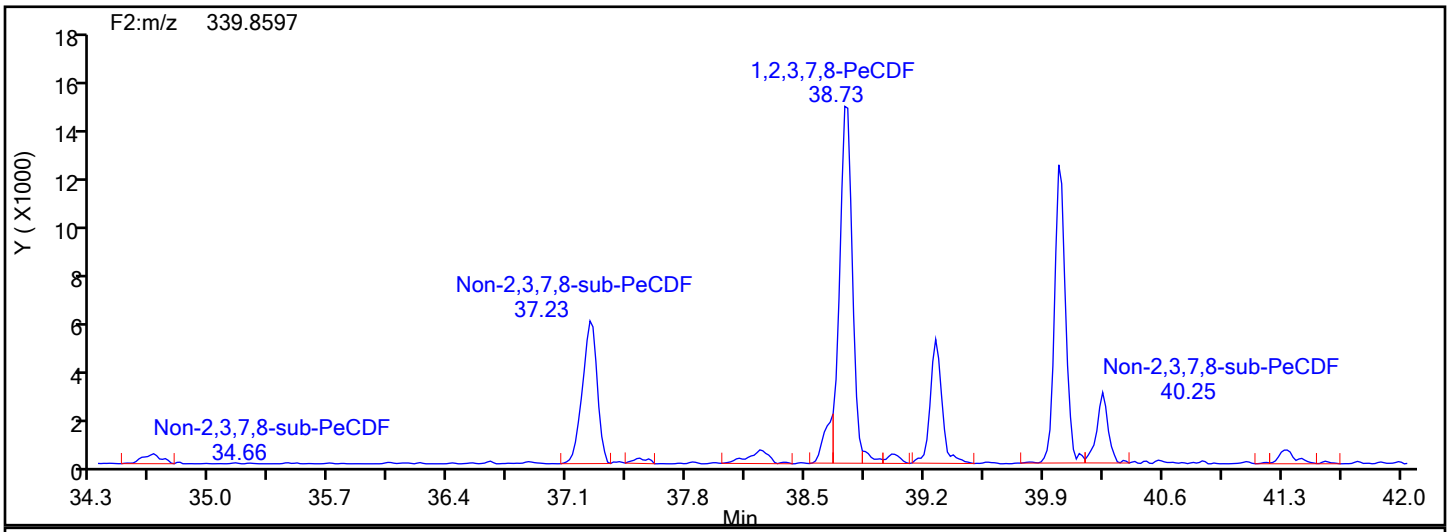


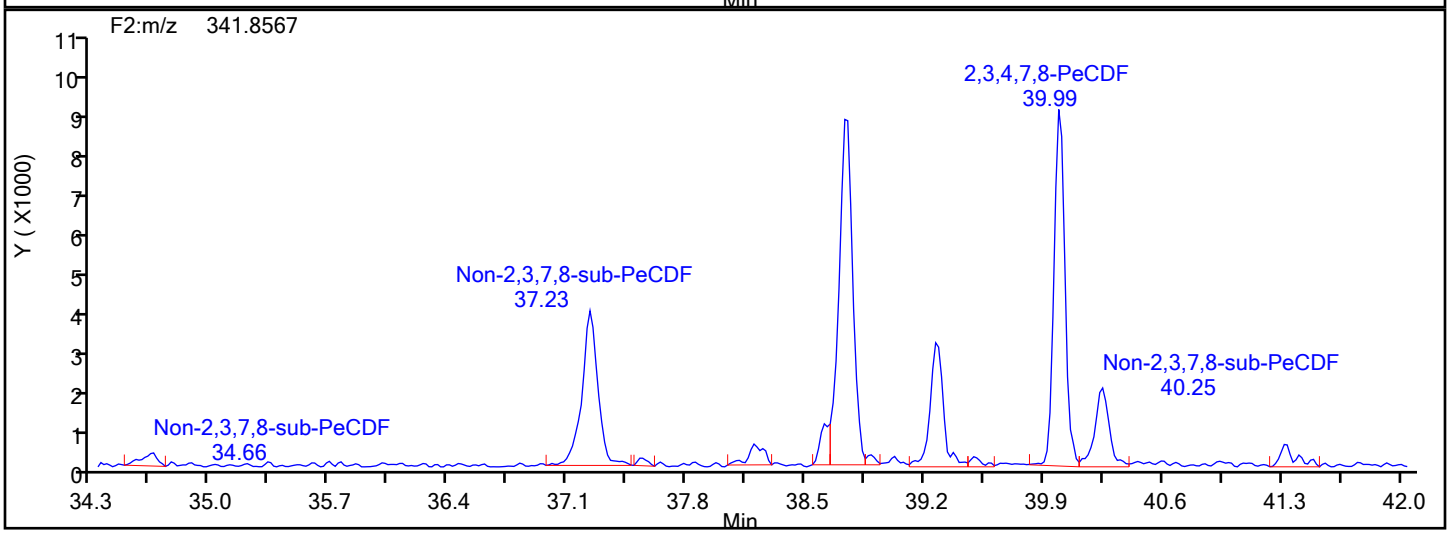
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

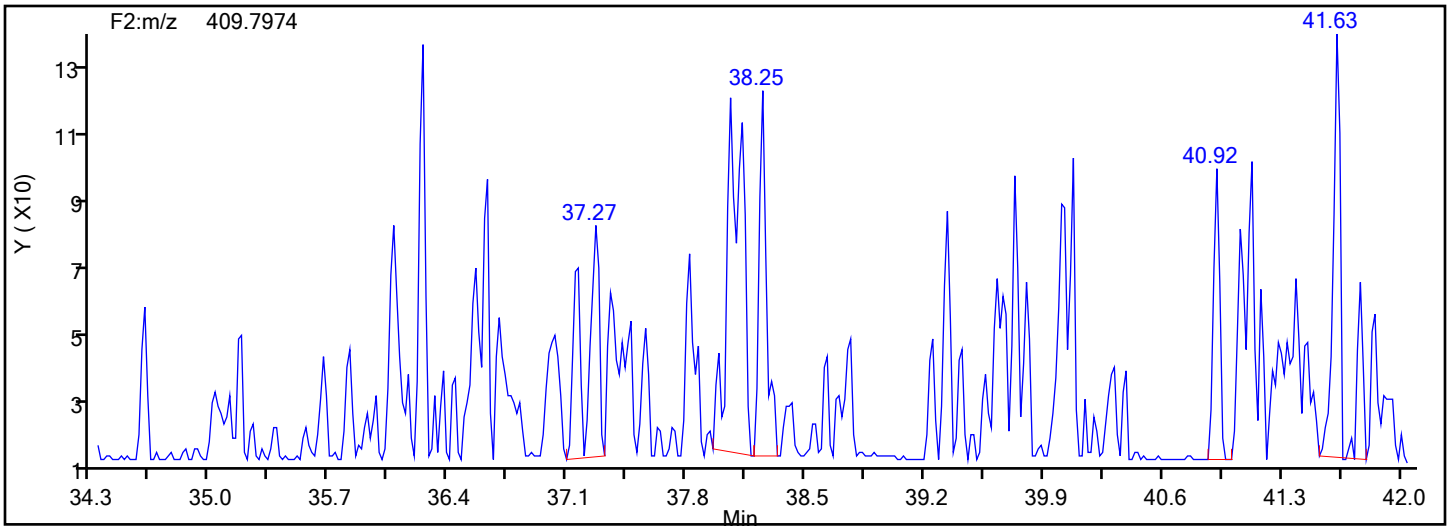
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

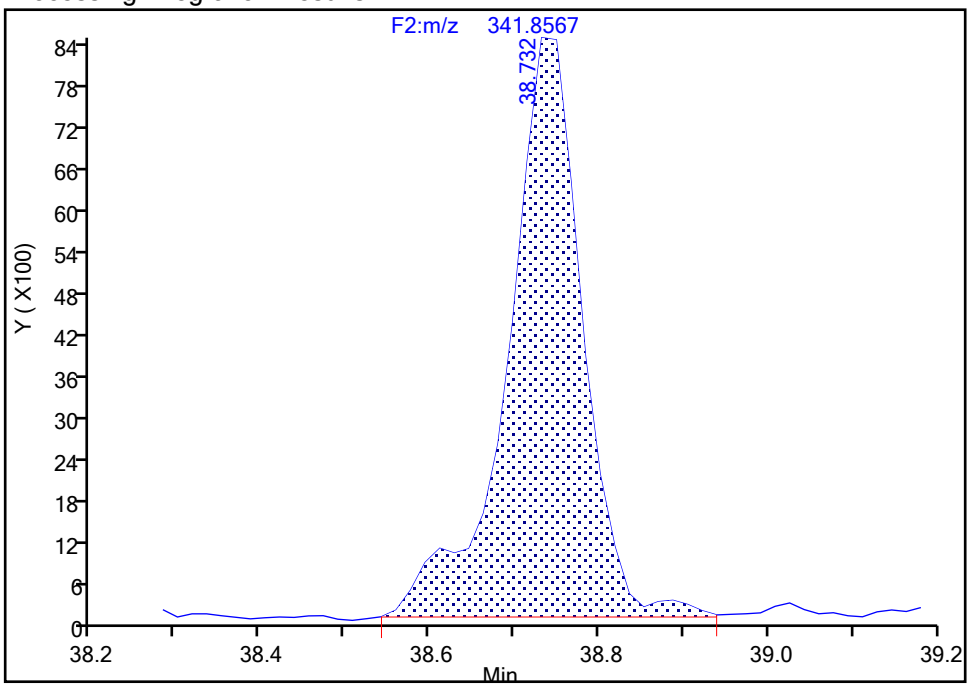
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

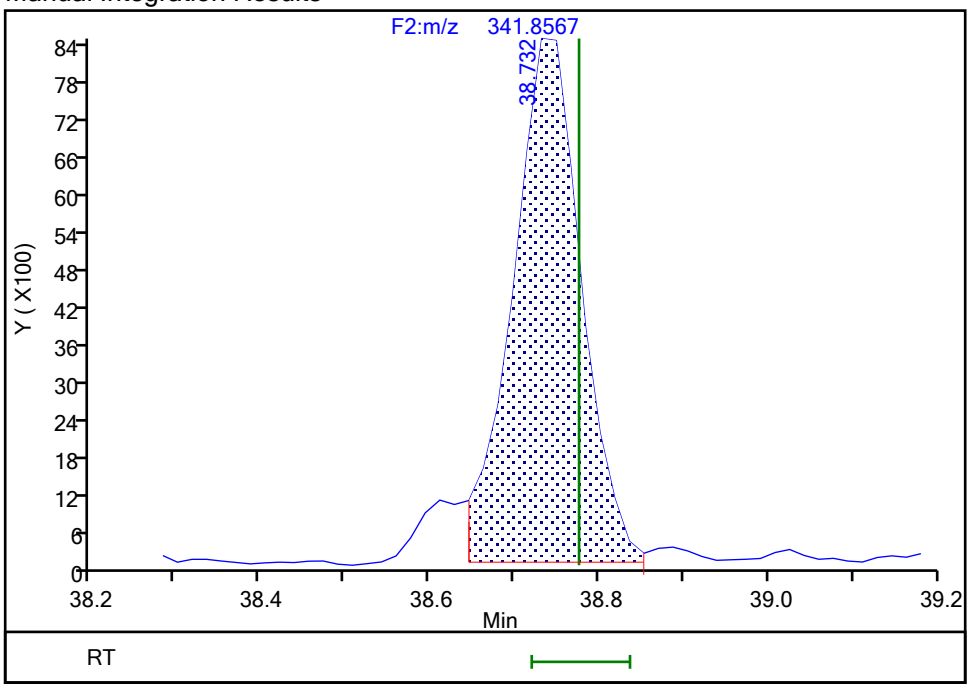
Processing Integration Results

RT: 38.73
Area: 52106
Amount: 3.161288
Amount Units: pg/ul



Manual Integration Results

RT: 38.73
Area: 47418
Amount: 2.842721
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:00:03

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

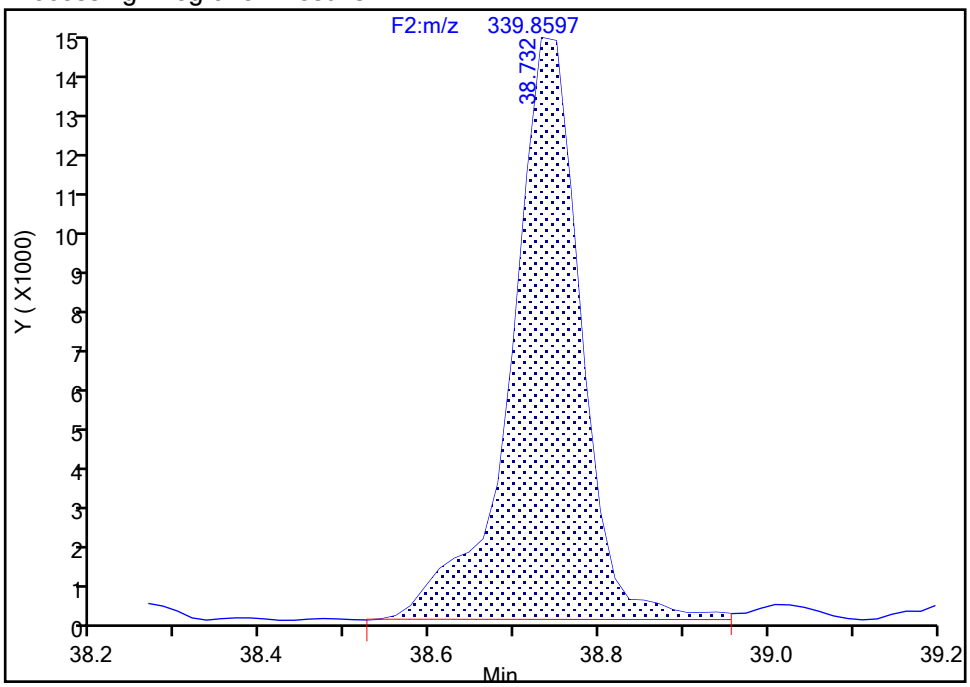
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

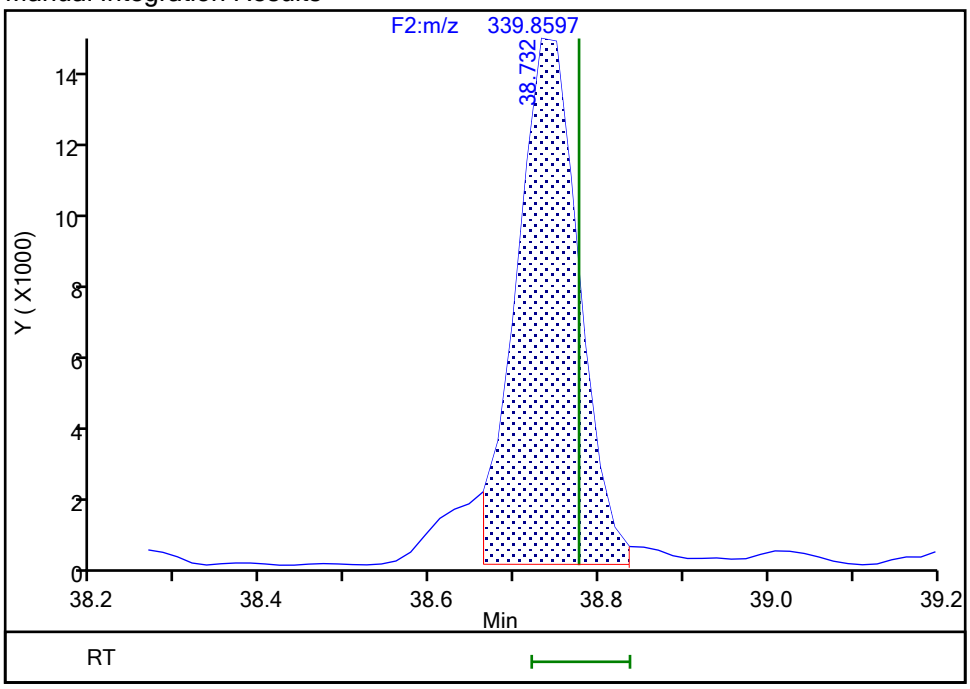
Processing Integration Results

RT: 38.73
Area: 85344
Amount: 3.161288
Amount Units: pg/ul



Manual Integration Results

RT: 38.73
Area: 76181
Amount: 2.842721
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:00:09
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

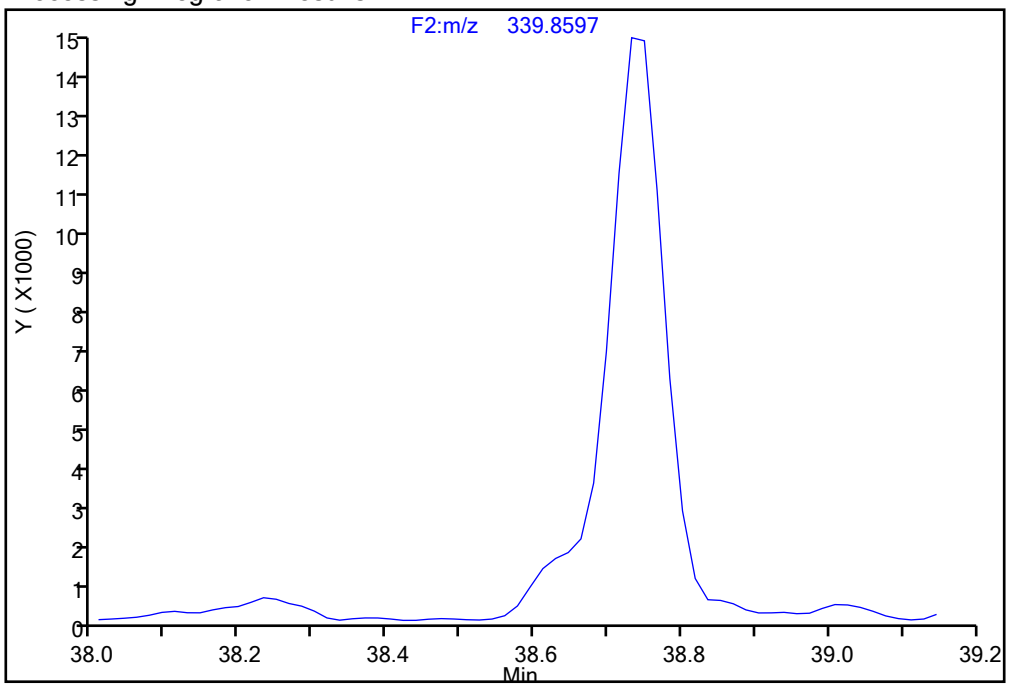
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

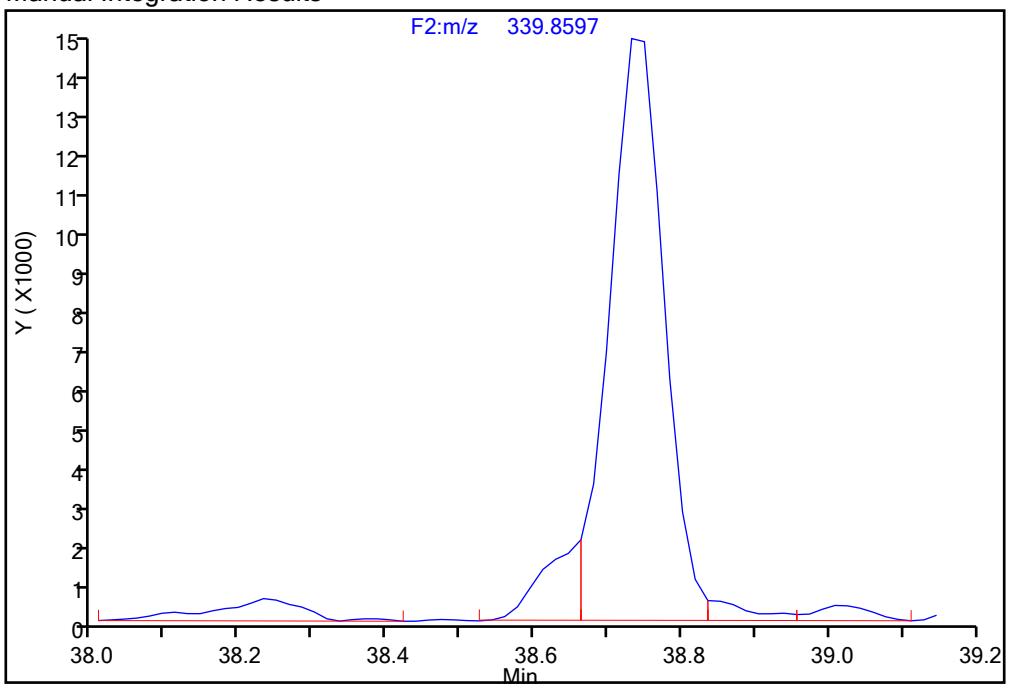
Not Detected
RT: 34.61- 41.41

Processing Integration Results



RT = 38.663 Area = 7080 M

Manual Integration Results



Reviewer: parslyt, 18-Dec-2019 04:01:16
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

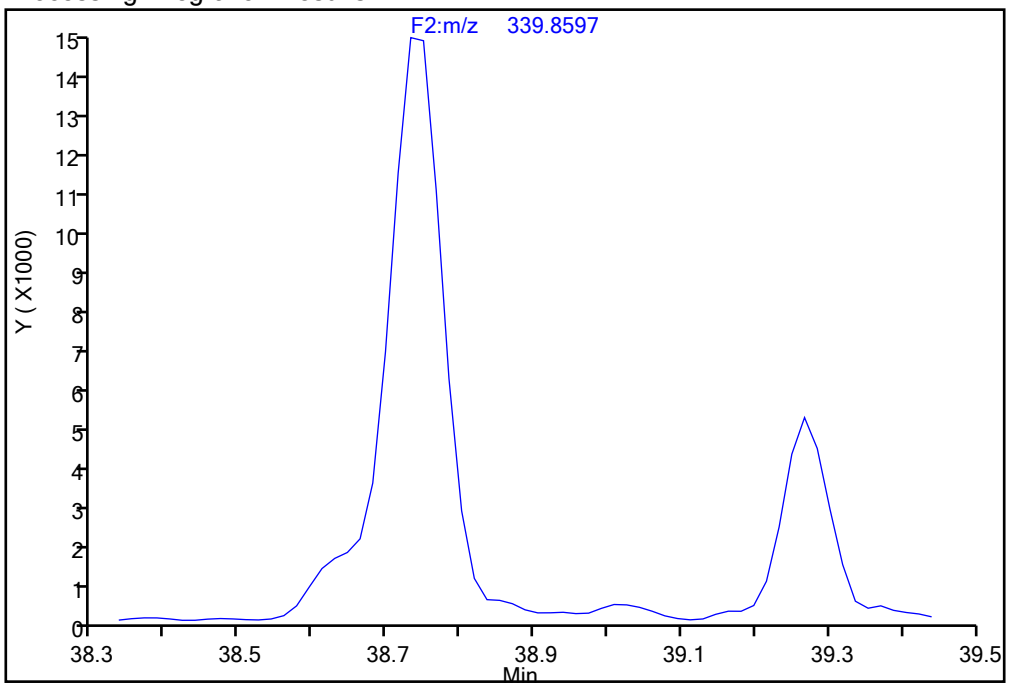
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

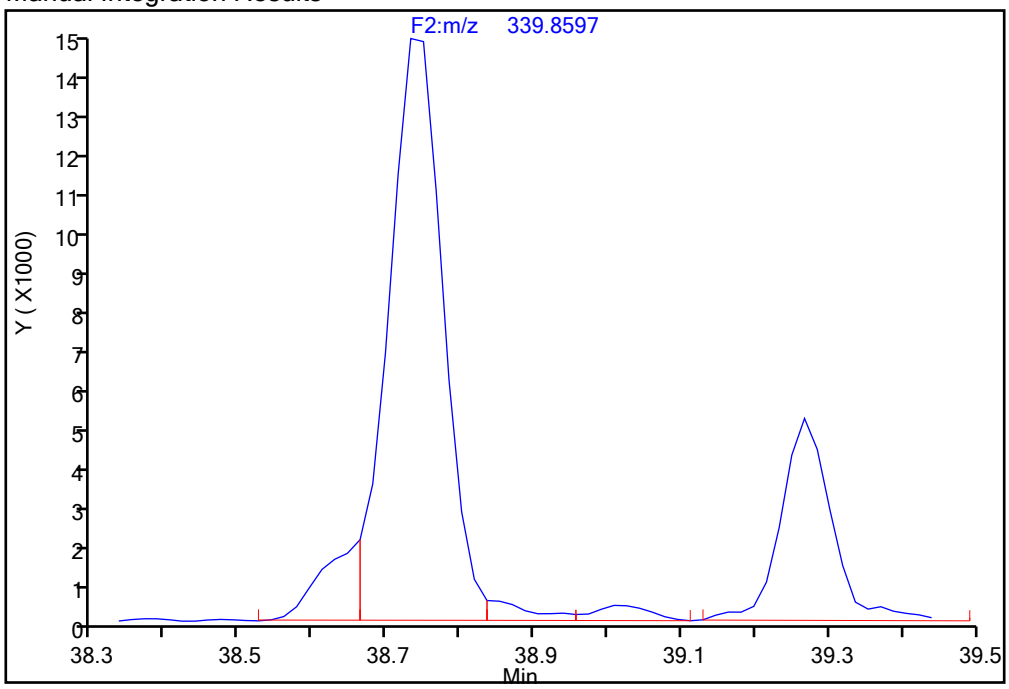
Not Detected
RT: 34.61- 41.41

Processing Integration Results



RT = 38.836 Area = 2068 M

Manual Integration Results



Reviewer: parslyt, 18-Dec-2019 04:01:16
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Eurofins TestAmerica, Knoxville

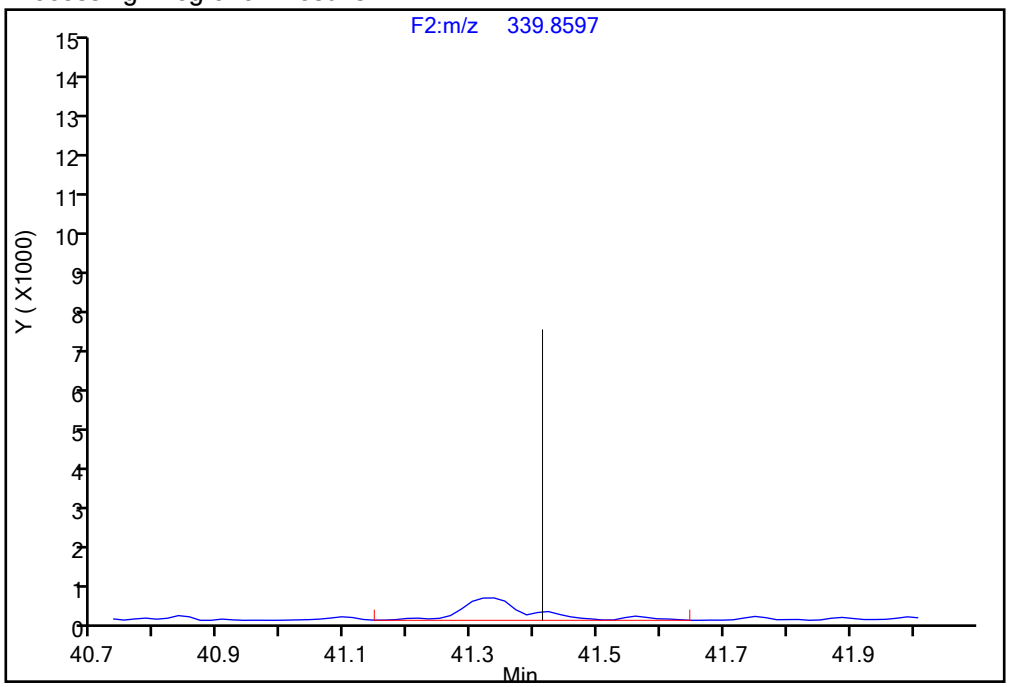
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

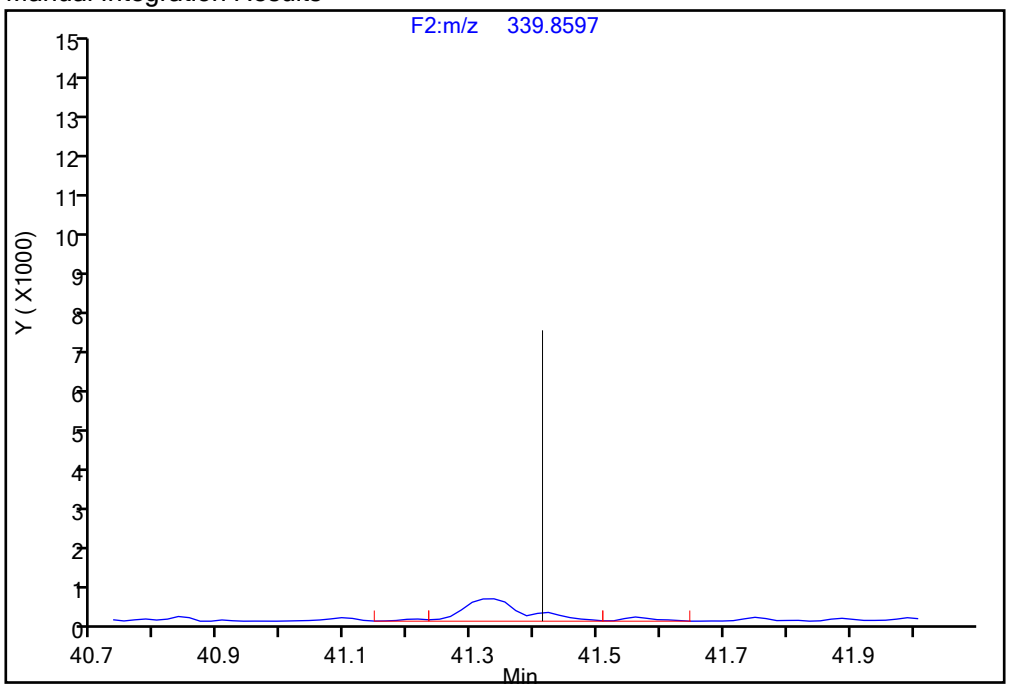
Processing Integration Results

RT = 41.336 Area = 4405



Manual Integration Results

RT = 41.336 Area = 3889 M



Reviewer: parslyt, 18-Dec-2019 04:01:16

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

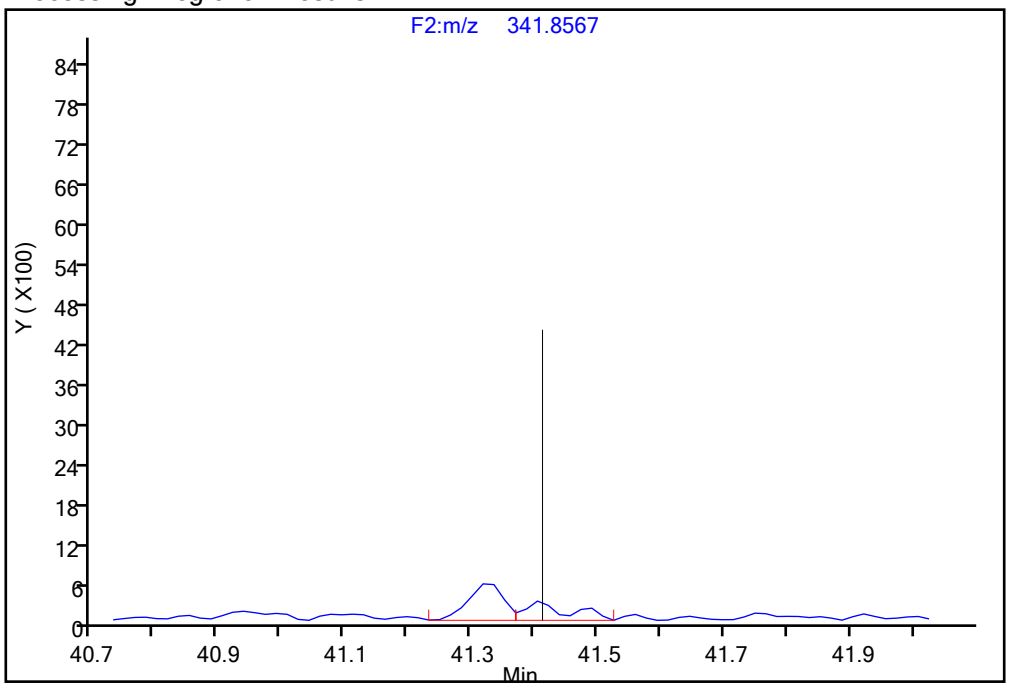
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.61- 41.41)

Signal: 2

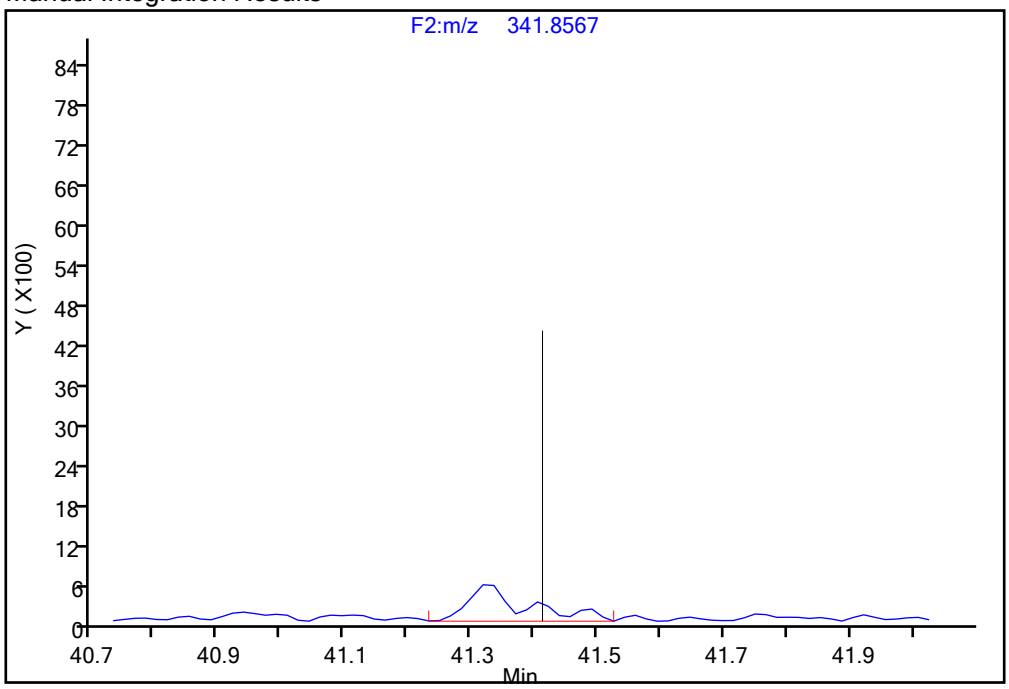
Processing Integration Results

RT = 41.319 Area = 2145



Manual Integration Results

RT = 41.319 Area = 3480 M



Reviewer: parslyt, 18-Dec-2019 04:00:59

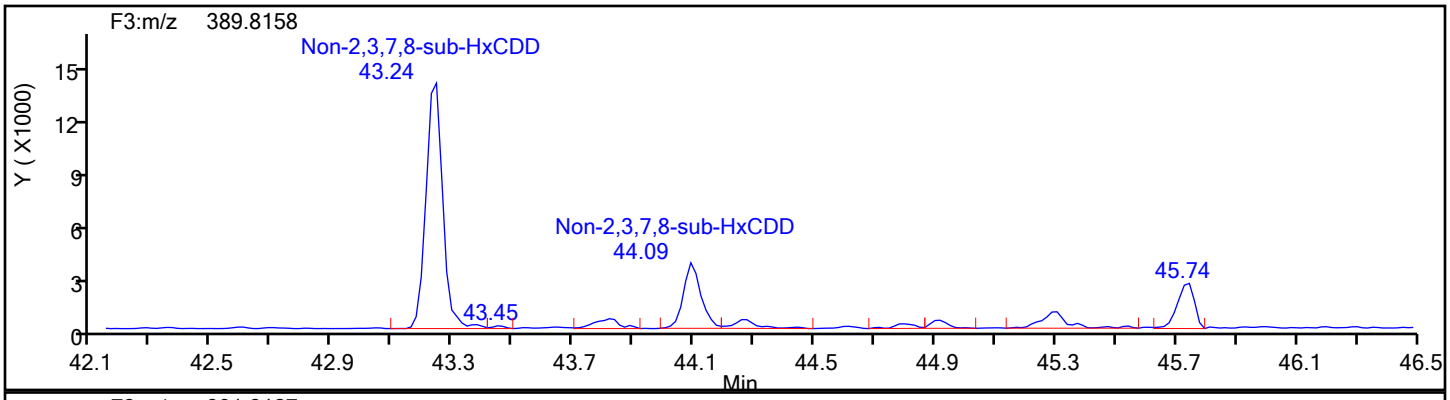
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

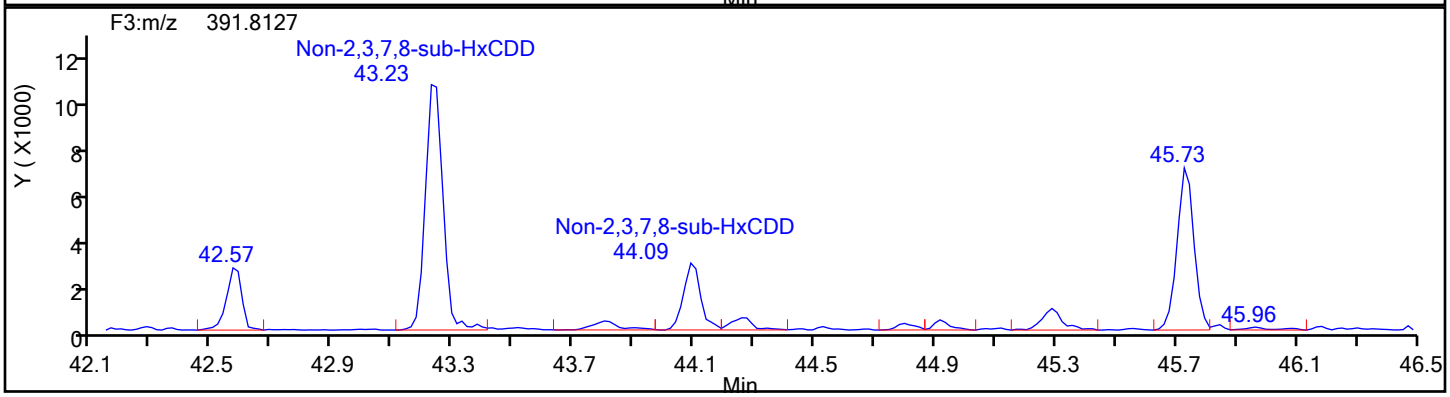
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

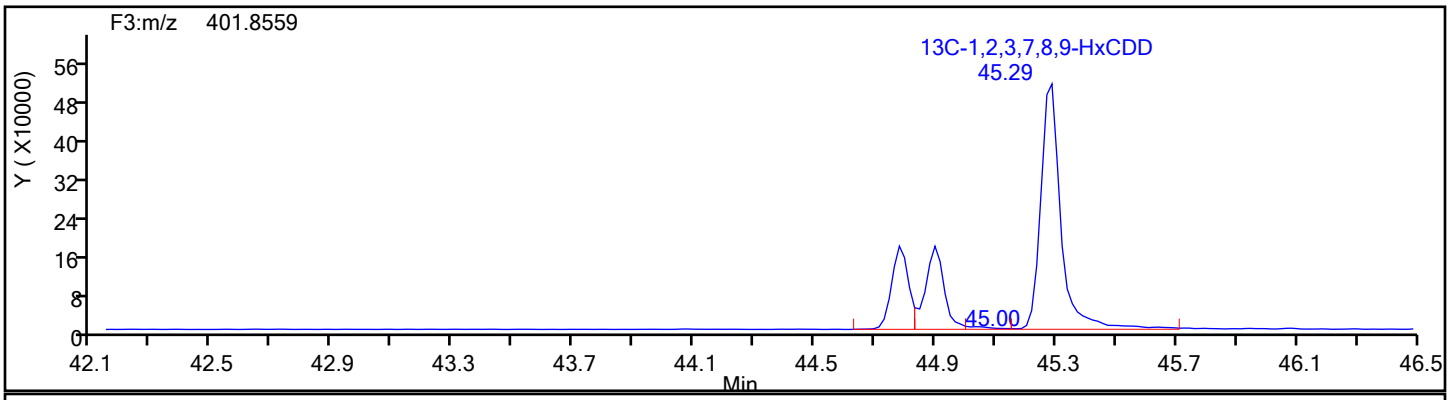
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

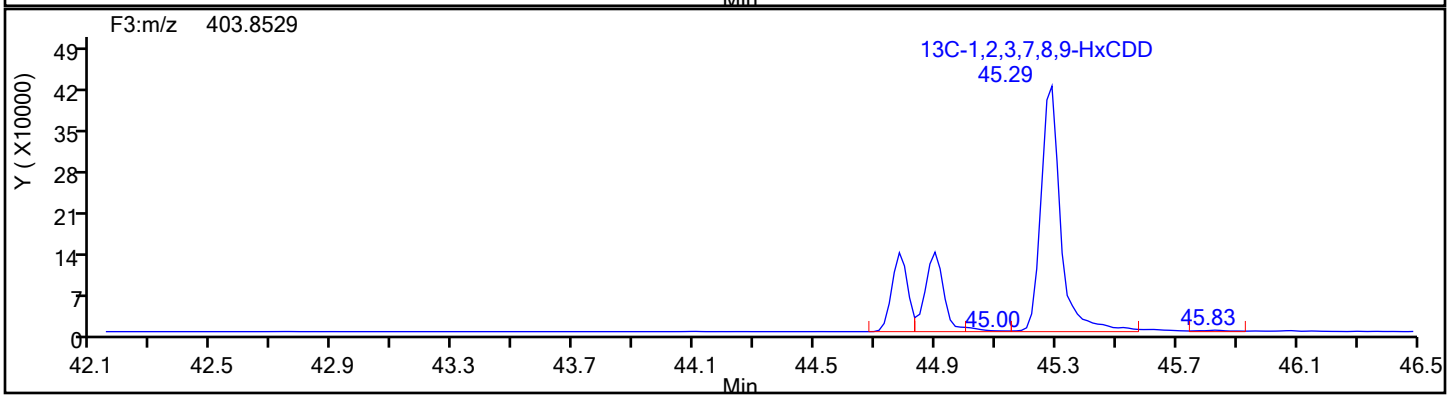
HxCDD





HxCDD Standards



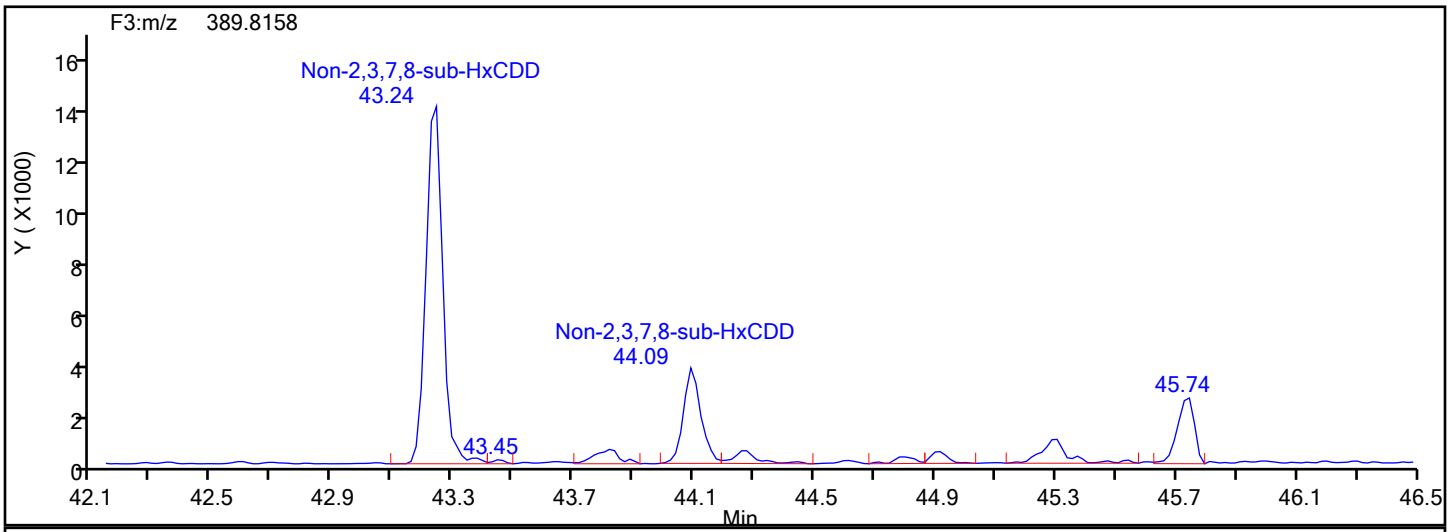


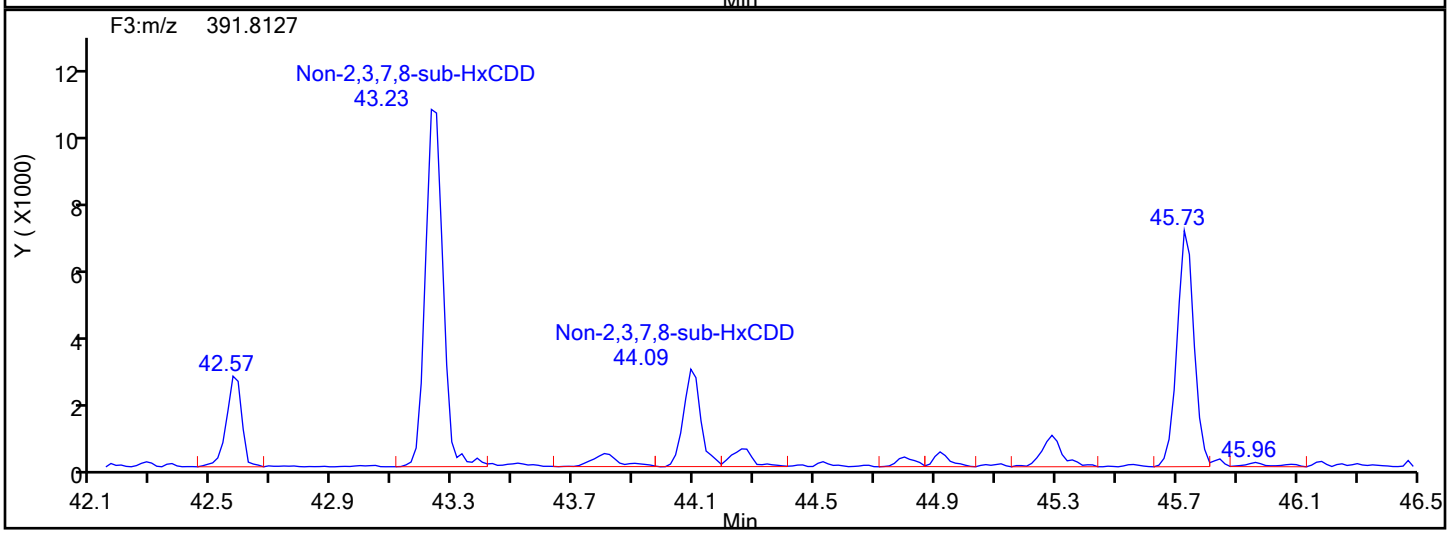
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

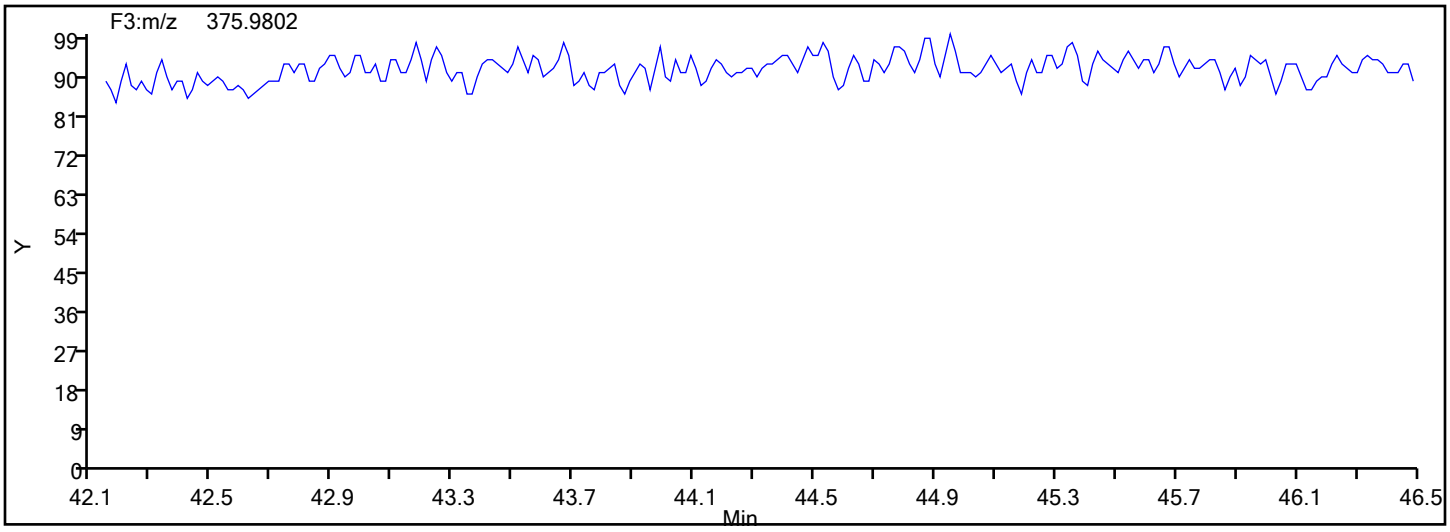
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

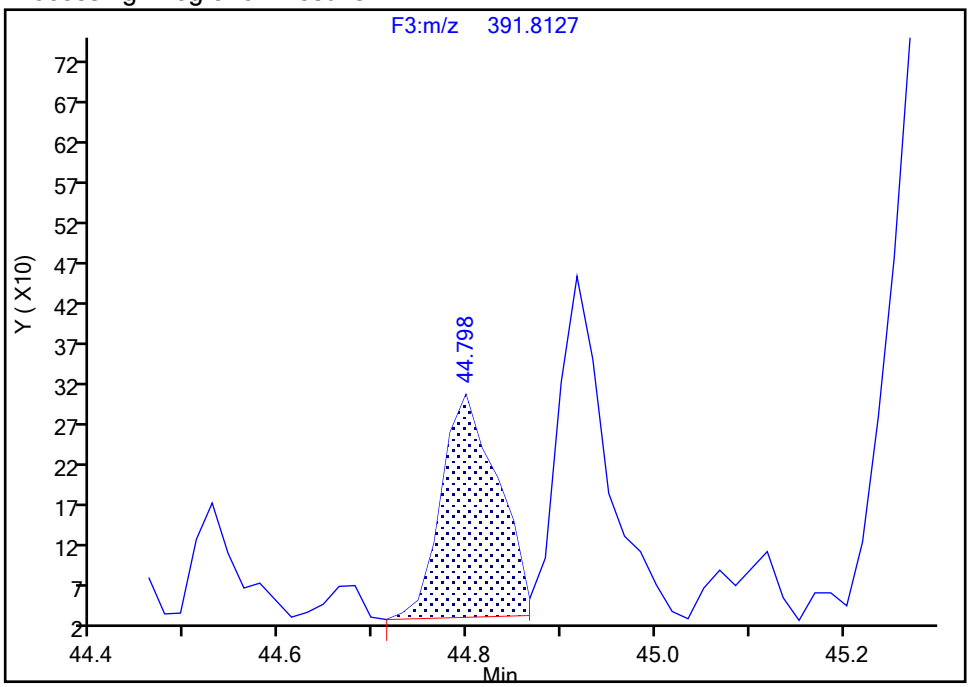
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

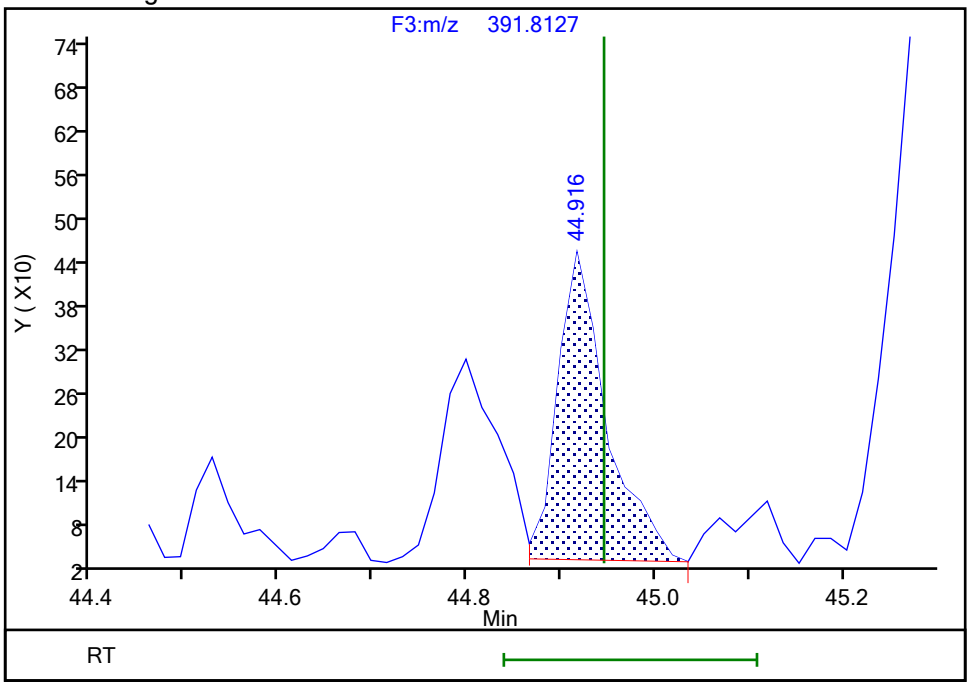
Processing Integration Results

RT: 44.80
Area: 1150
Amount: 0.080516
Amount Units: pg/ul



Manual Integration Results

RT: 44.92
Area: 1511
Amount: 0.108599
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:02:52
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

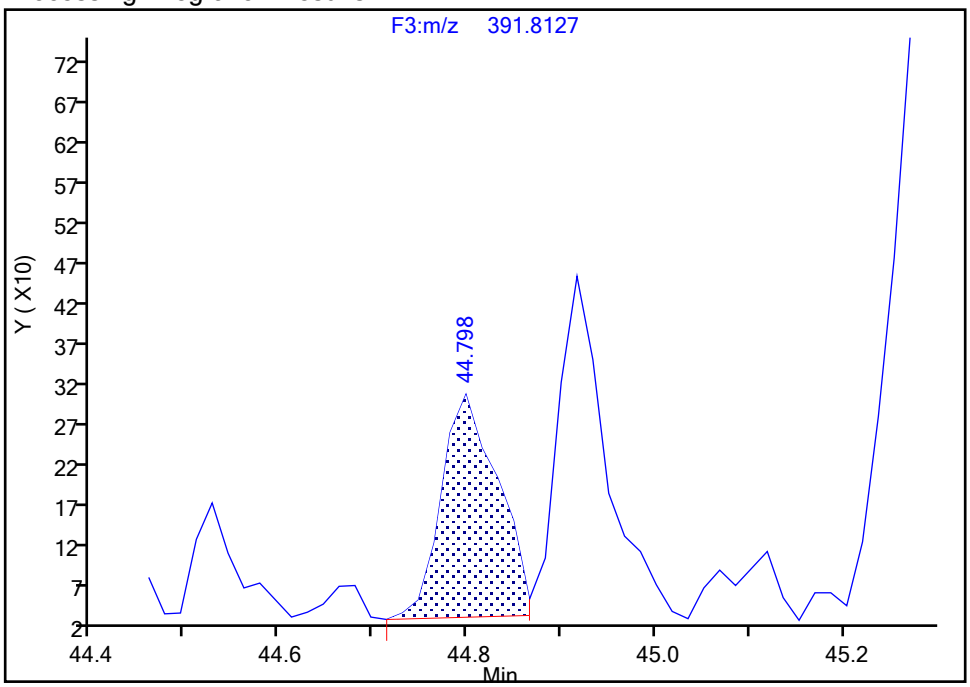
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 44.80
Area: 2417
Amount: 0.080516
Amount Units: pg/ul



Manual Integration Results

RT: 44.92
Area: 3260
Amount: 0.108599
Amount Units: pg/ul
Reviewer: parslyt, 18-Dec-2019 04:02:52
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

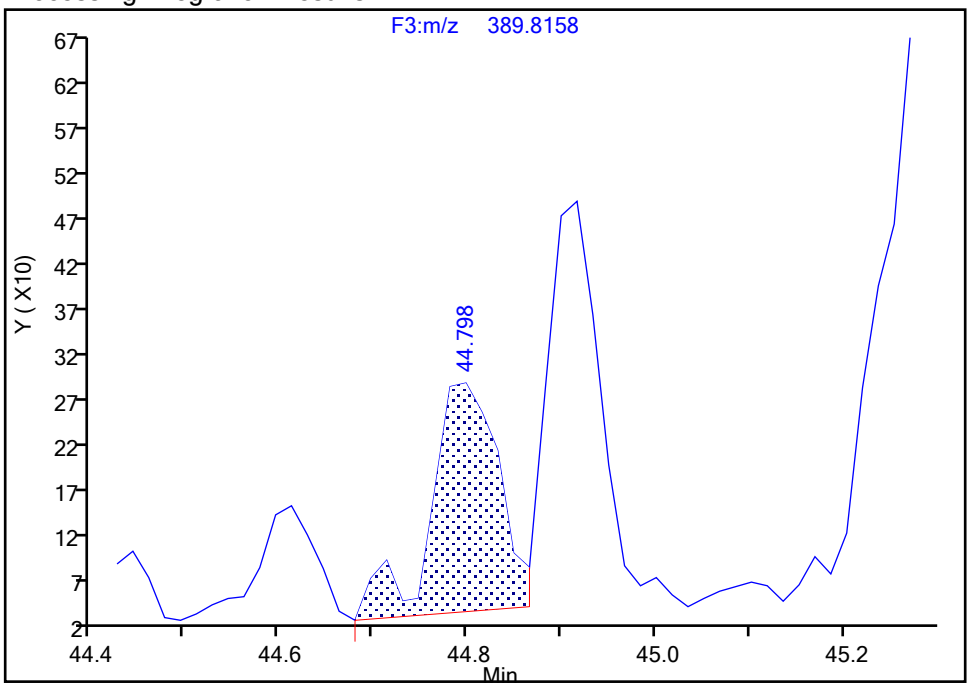
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

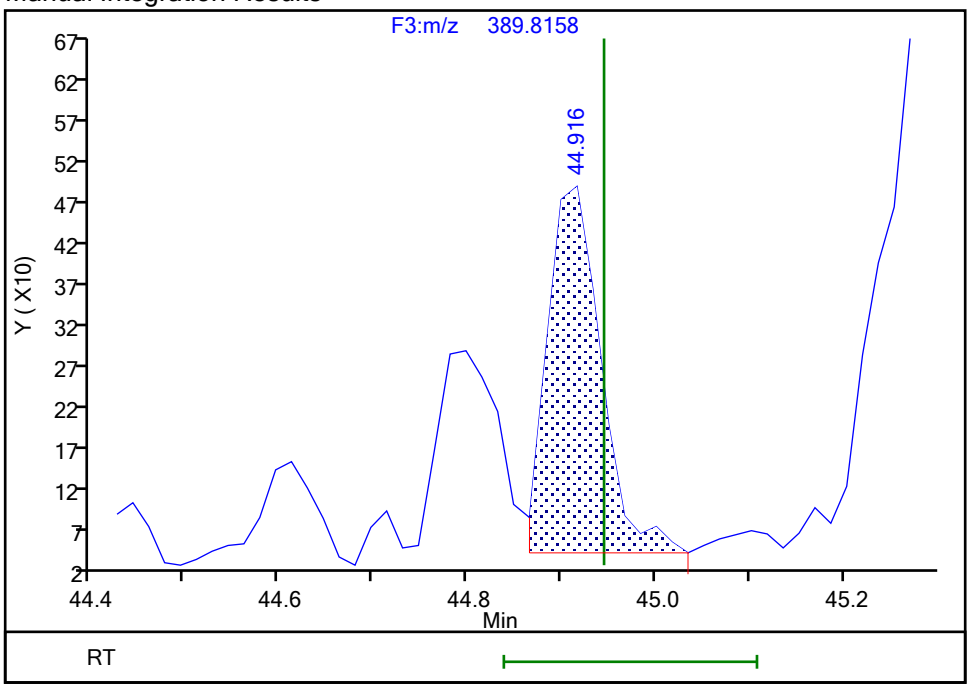
Processing Integration Results

RT: 44.80
Area: 1267
Amount: 0.080516
Amount Units: pg/ul



Manual Integration Results

RT: 44.92
Area: 1749
Amount: 0.108599
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:02:59
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

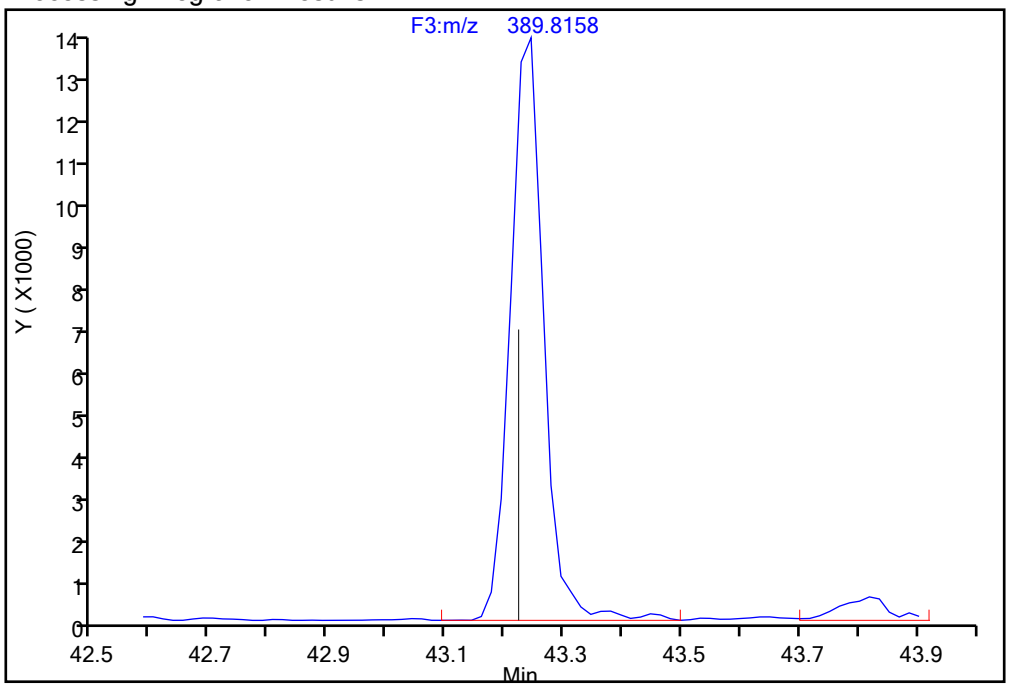
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.22- 45.38)

Signal: 1

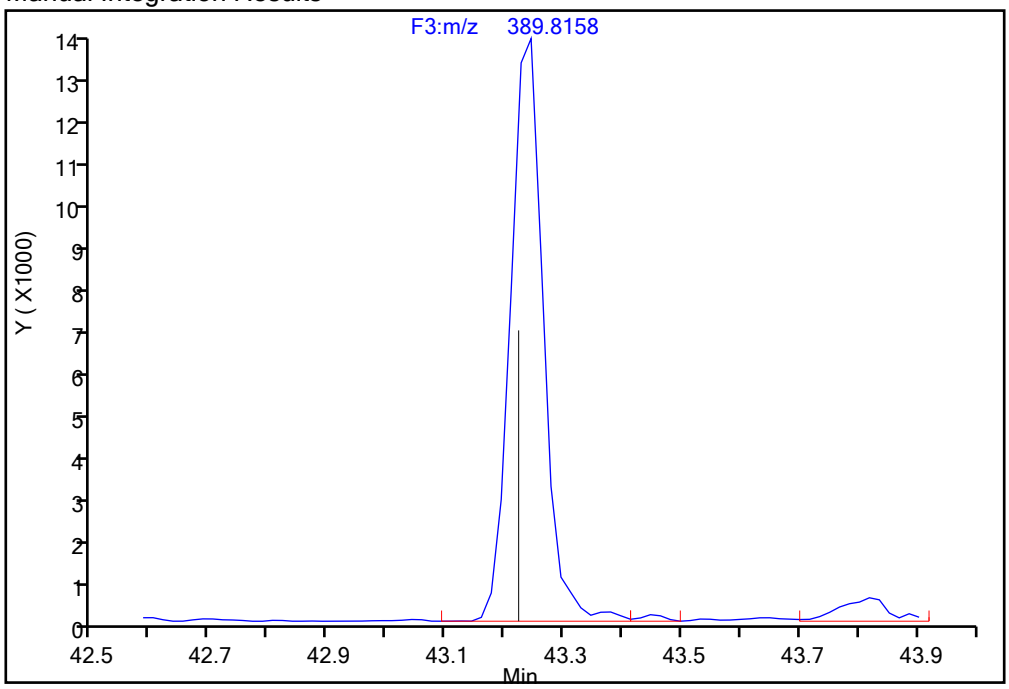
Processing Integration Results

RT = 43.244 Area = 53495



Manual Integration Results

RT = 43.244 Area = 53075 M



Reviewer: parslyt, 18-Dec-2019 04:03:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

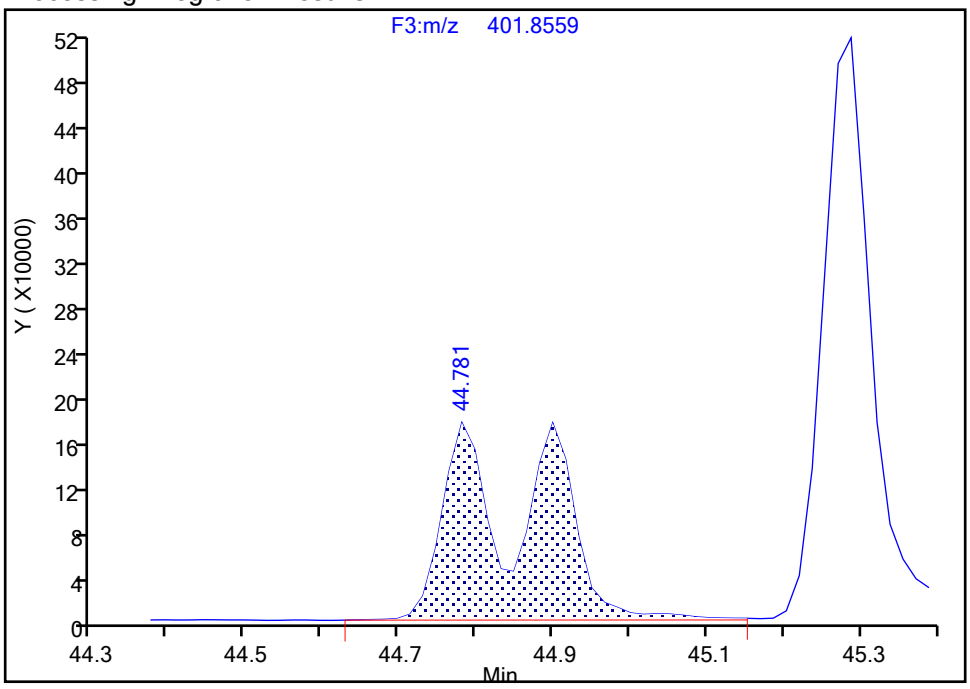
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

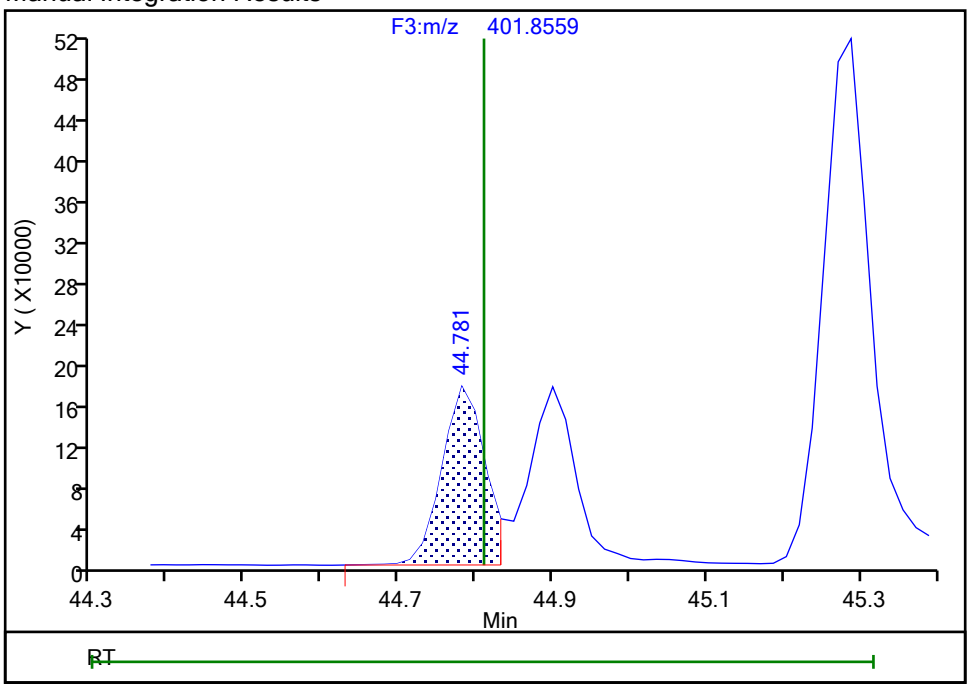
Processing Integration Results

RT: 44.78
Area: 1434487
Amount: 50.670197
Amount Units: pg/ul



Manual Integration Results

RT: 44.78
Area: 665814
Amount: 30.417226
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:02:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 3

Processing Integration Results

RT:	44.78
Area:	1923116
Amount:	48.466522
Amount Units:	pg/ul

Manual Integration Results

RT:	44.90
Area:	1307305
Amount:	32.946804
Amount Units:	pg/ul

Reviewer: parslyt, 18-Dec-2019 04:02:13

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

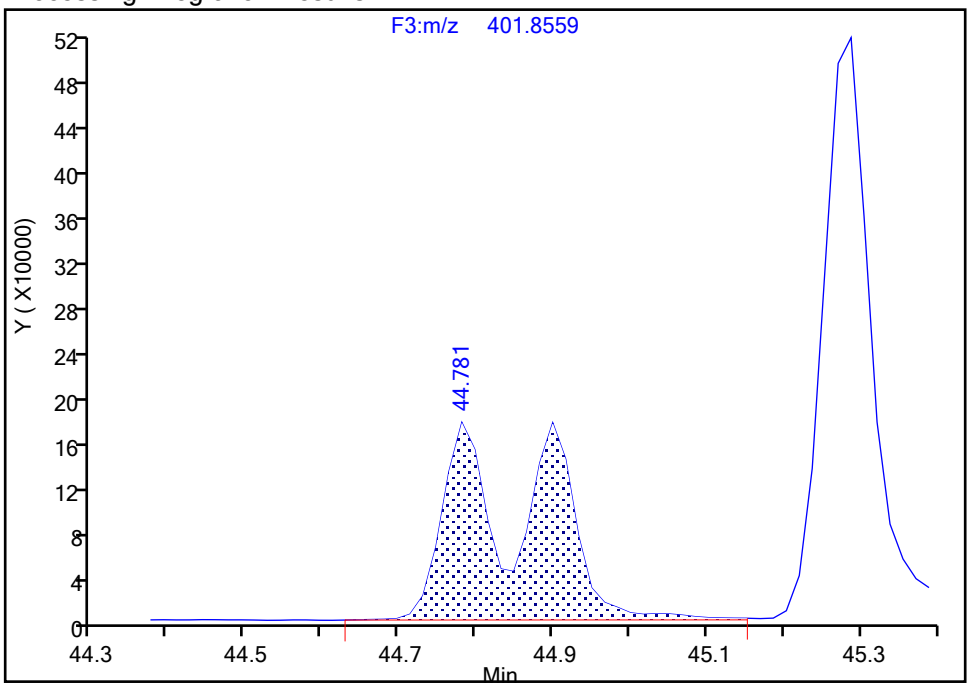
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 1

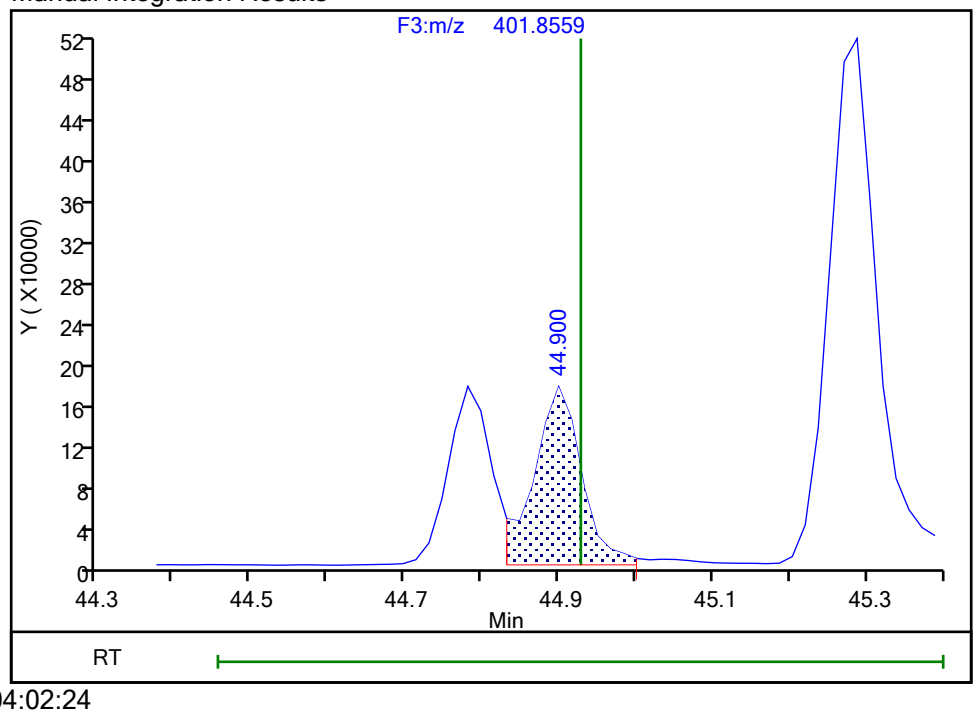
Processing Integration Results

RT: 44.78
Area: 1434487
Amount: 48.466522
Amount Units: pg/ul



Manual Integration Results

RT: 44.90
Area: 736724
Amount: 32.946804
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:02:24

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

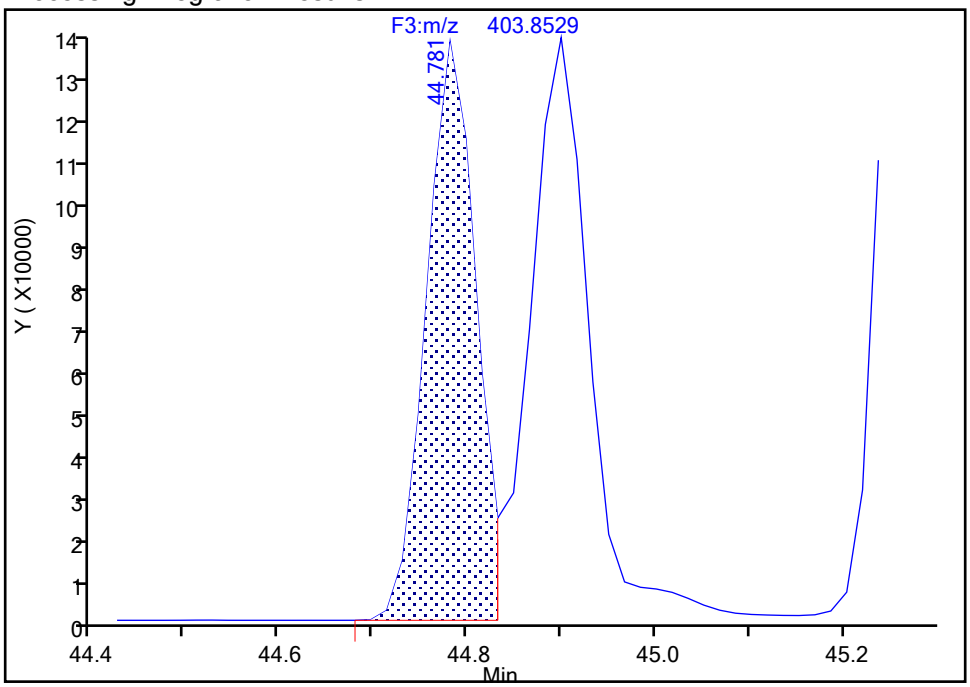
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 2

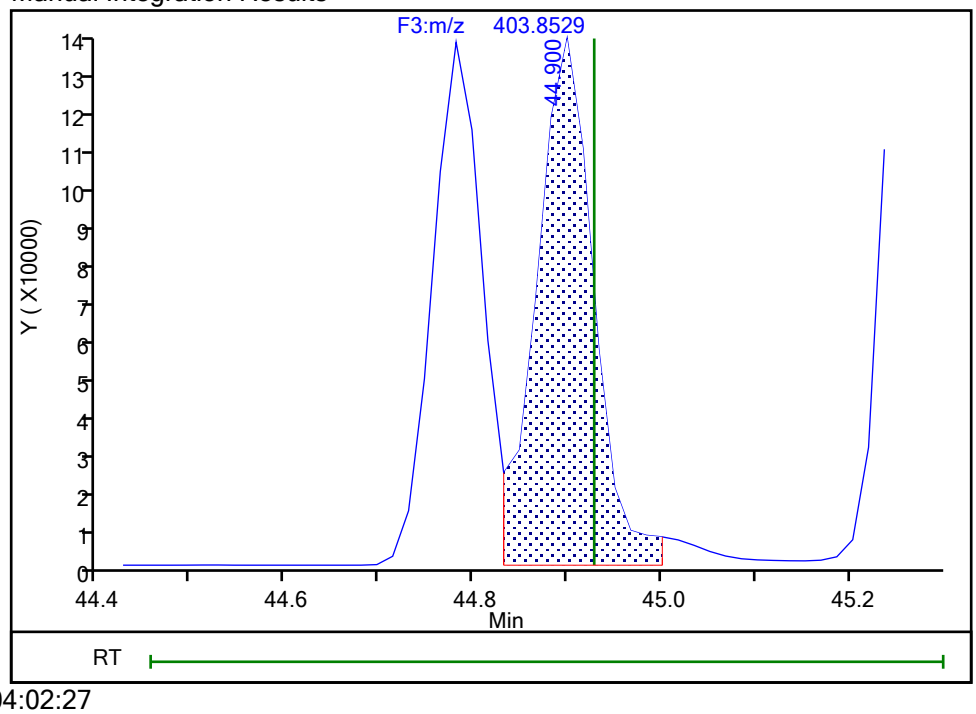
Processing Integration Results

RT: 44.78
Area: 488629
Amount: 48.466522
Amount Units: pg/ul



Manual Integration Results

RT: 44.90
Area: 570581
Amount: 32.946804
Amount Units: pg/ul



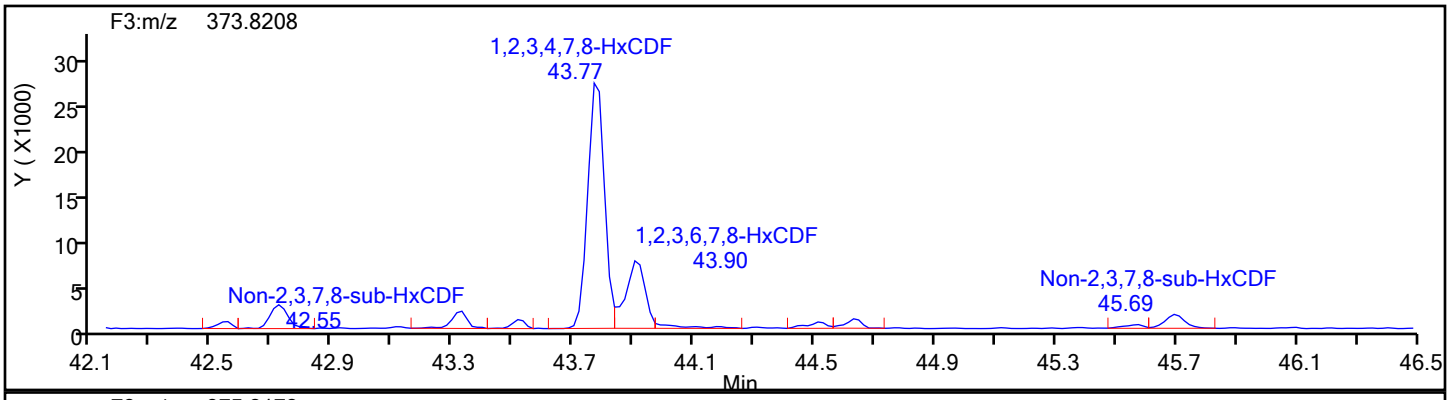
Reviewer: parslyt, 18-Dec-2019 04:02:27
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

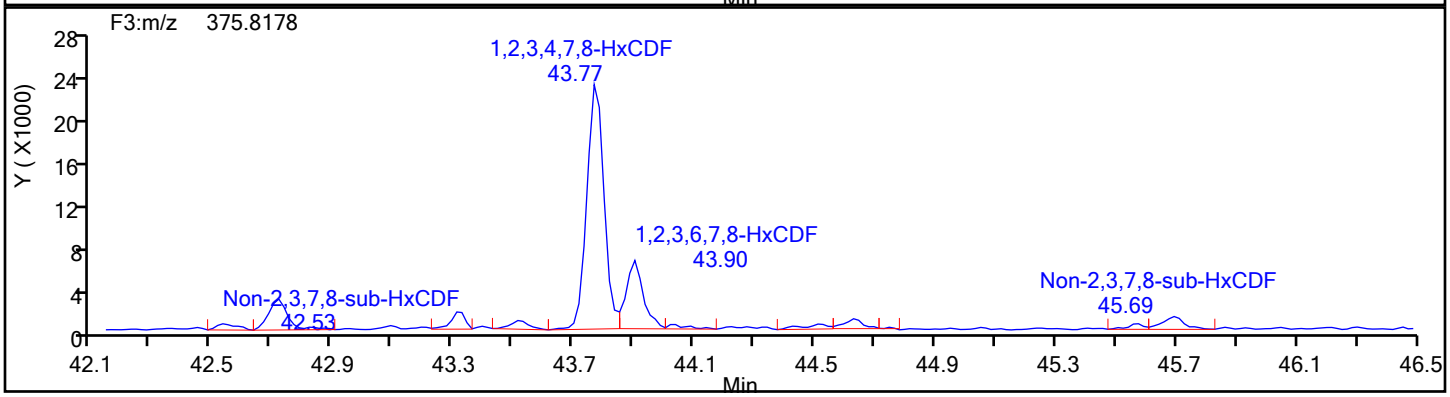
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

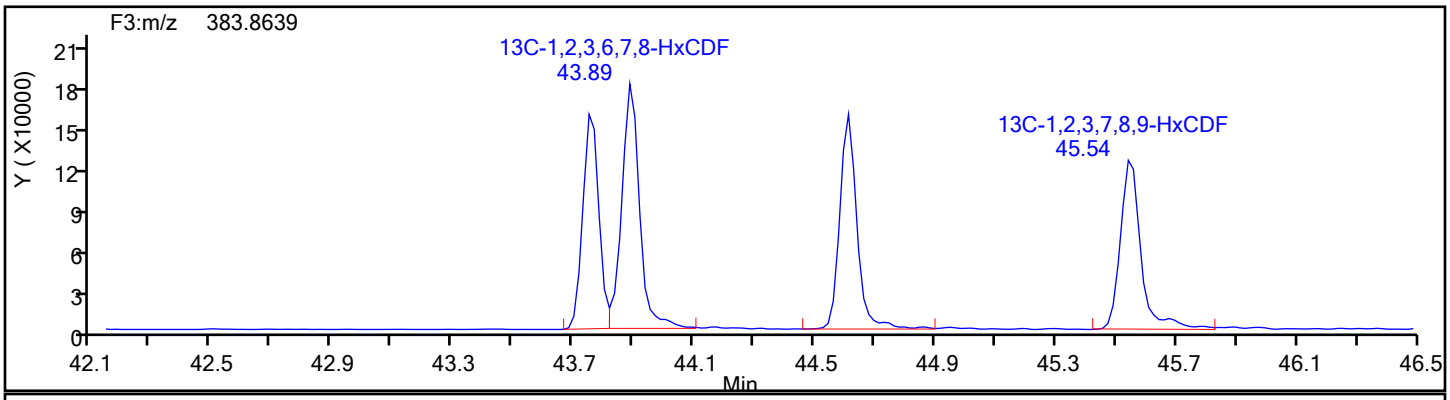
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

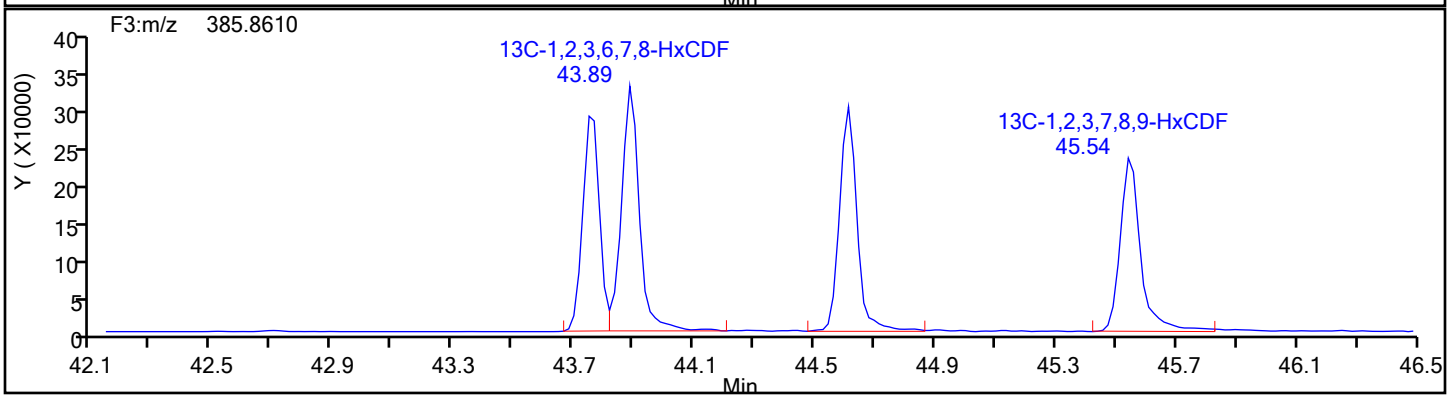
HxCDF





HxCDF Standards



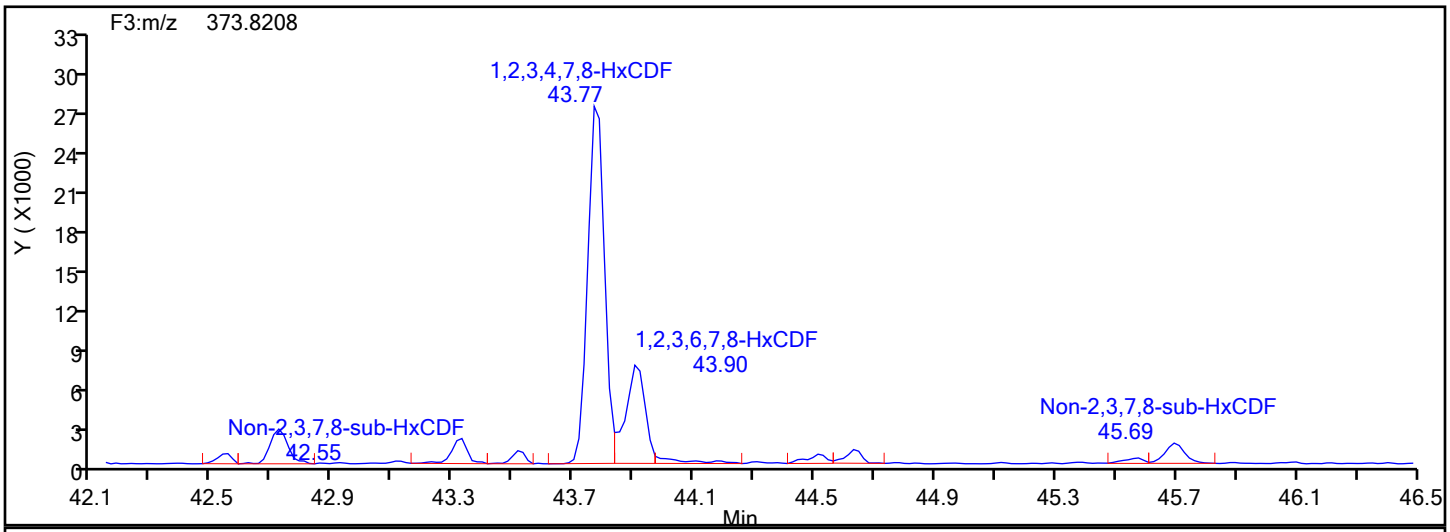


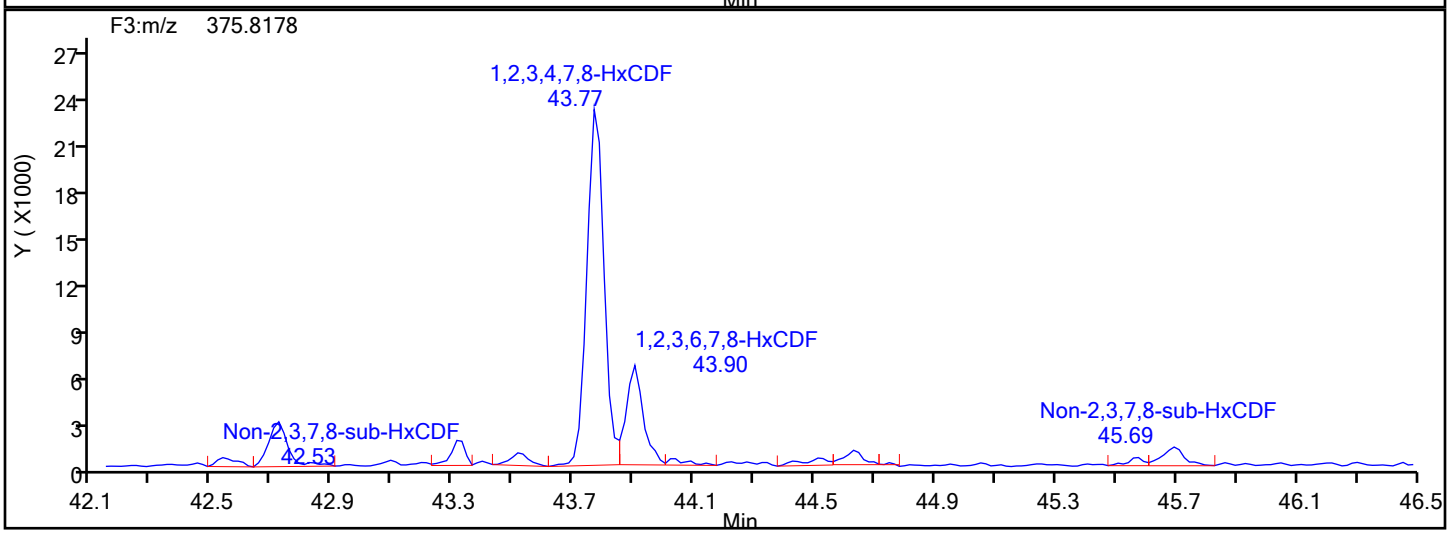
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

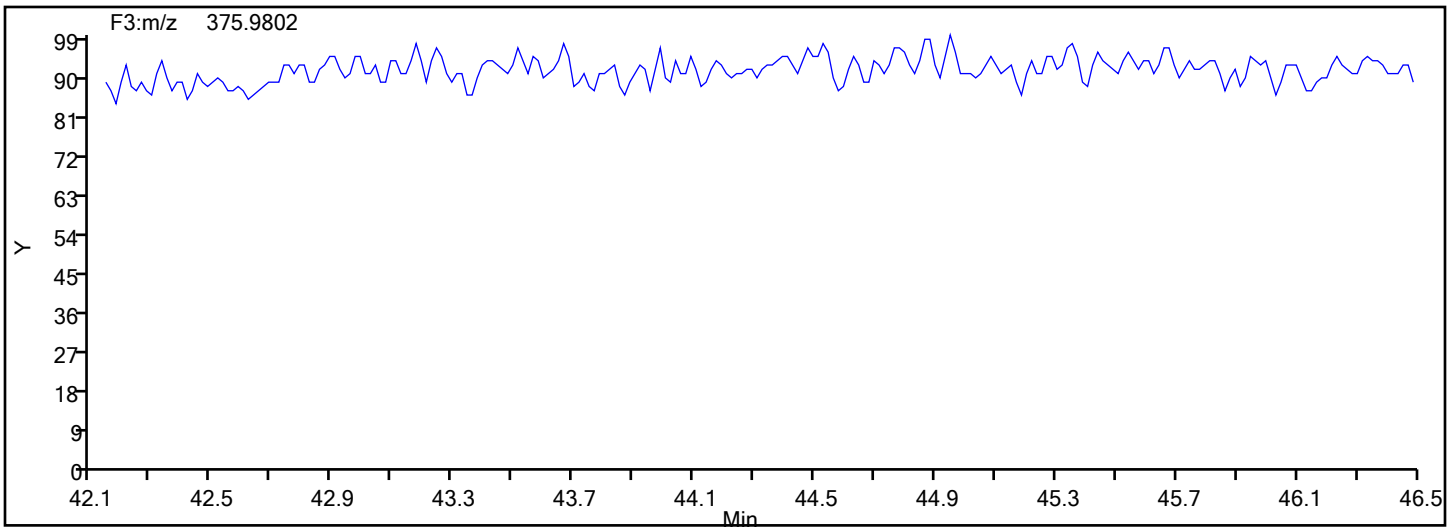
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

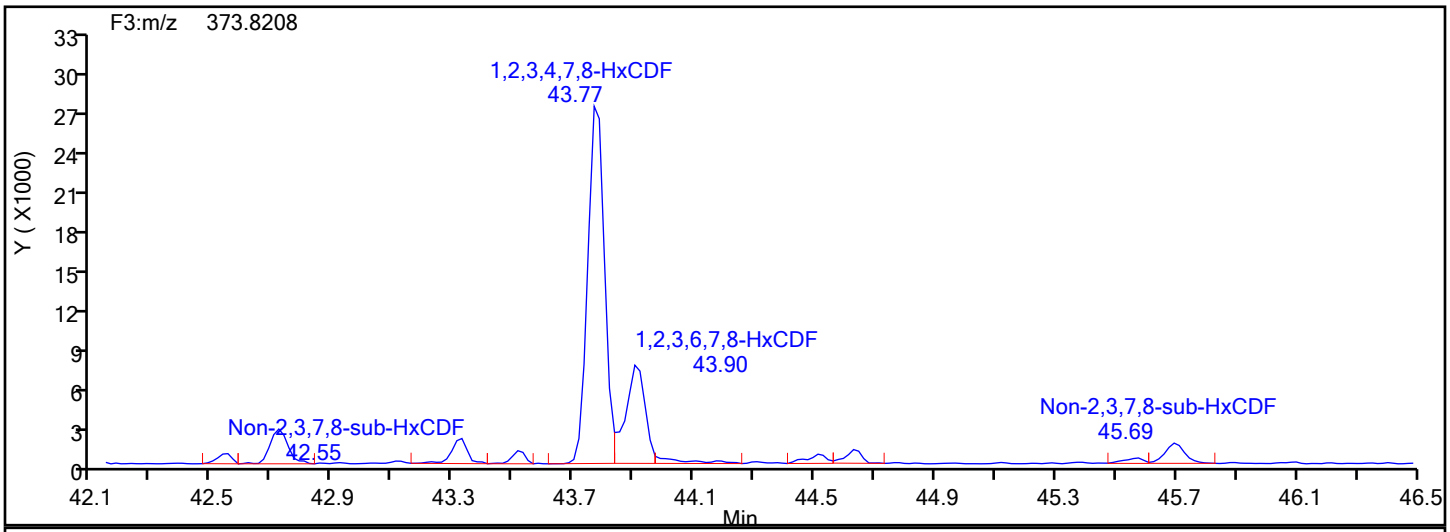


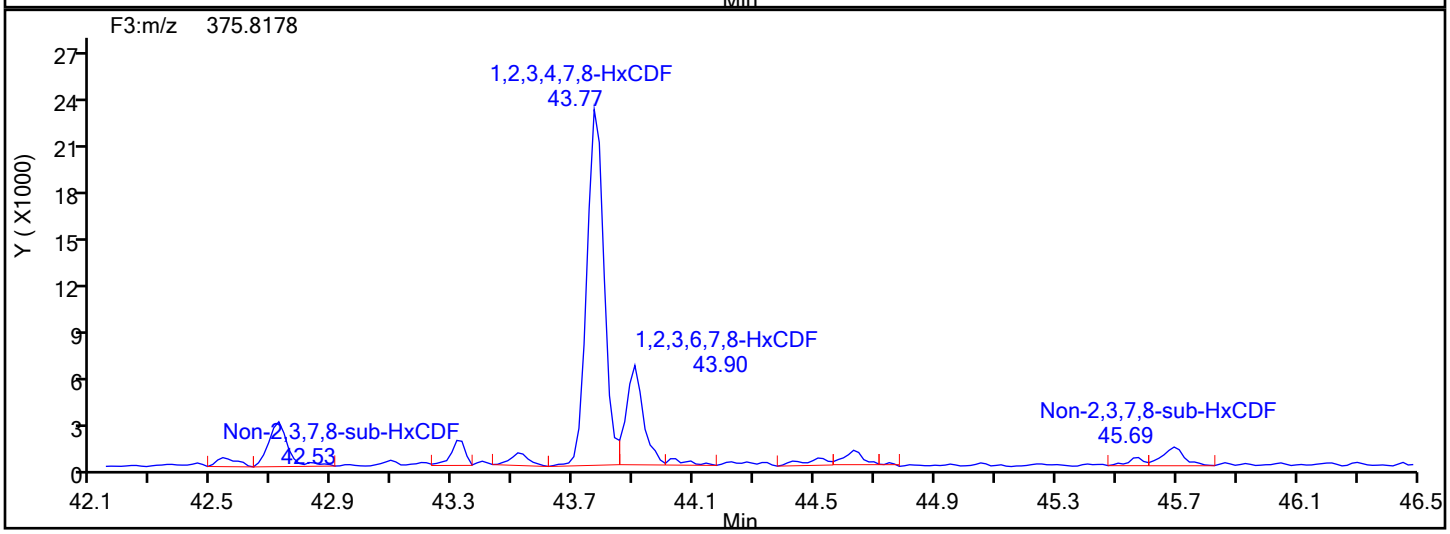
Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

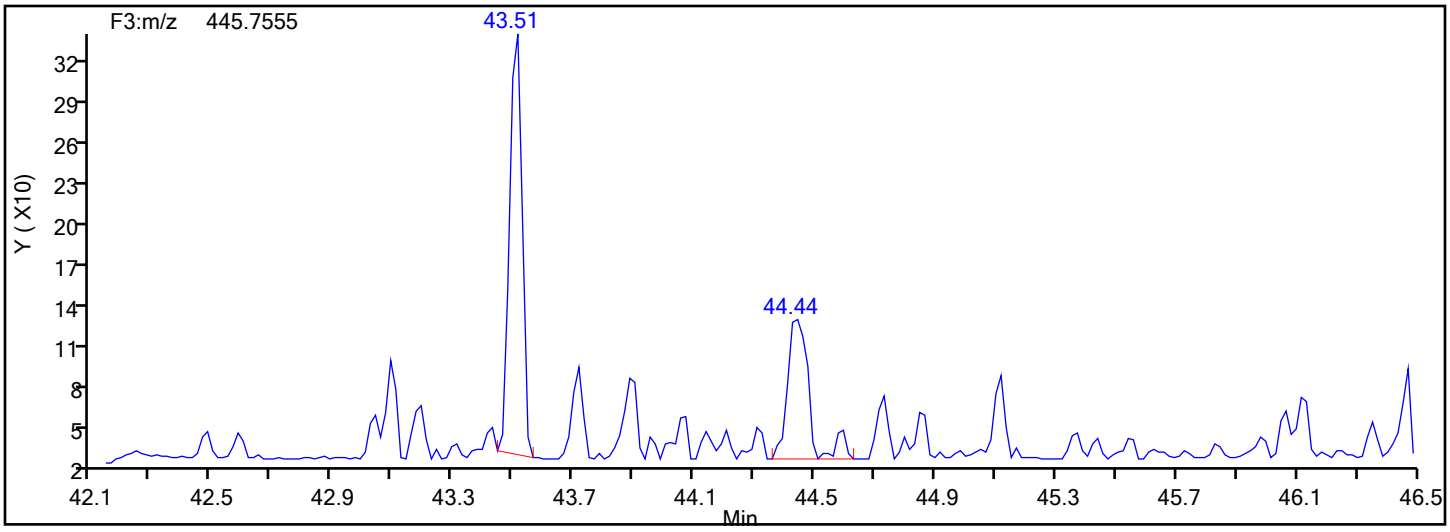
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

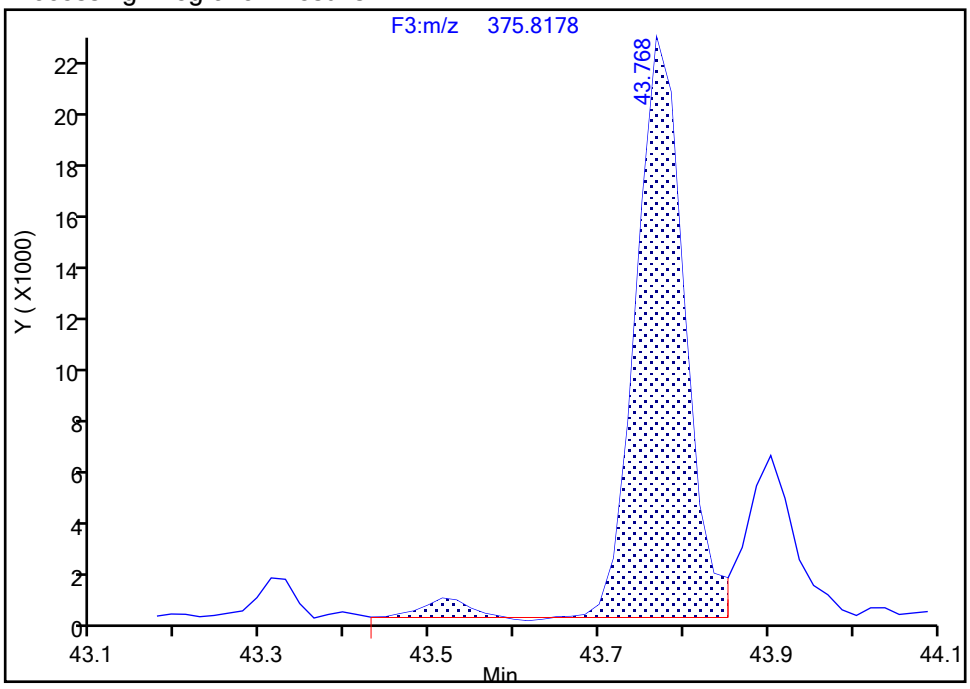
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

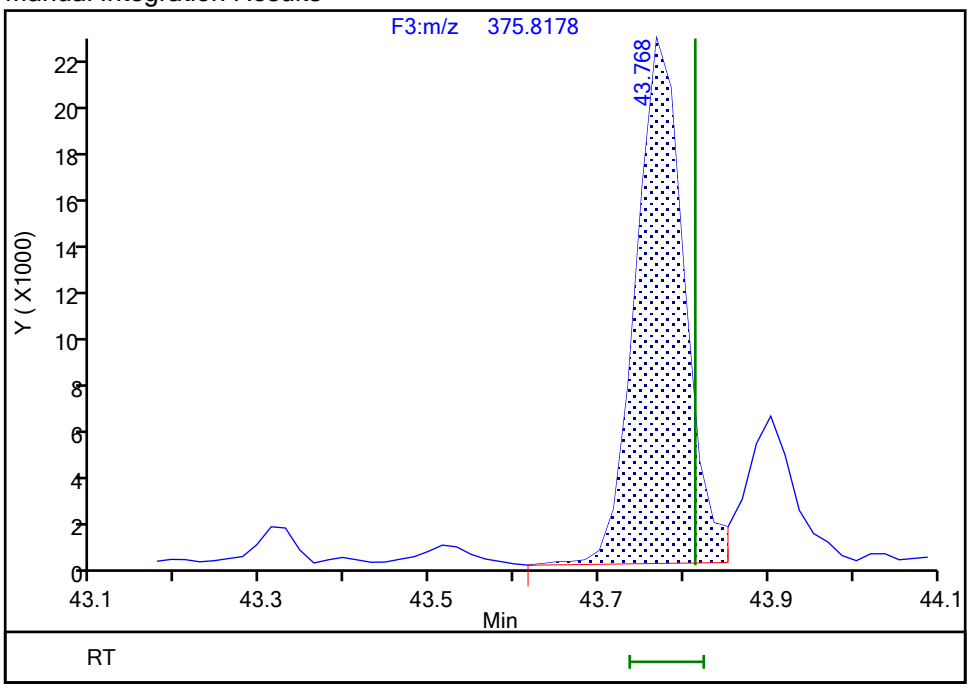
Processing Integration Results

RT: 43.77
Area: 91385
Amount: 4.242150
Amount Units: pg/ul



Manual Integration Results

RT: 43.77
Area: 89442
Amount: 4.200238
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:06:51

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

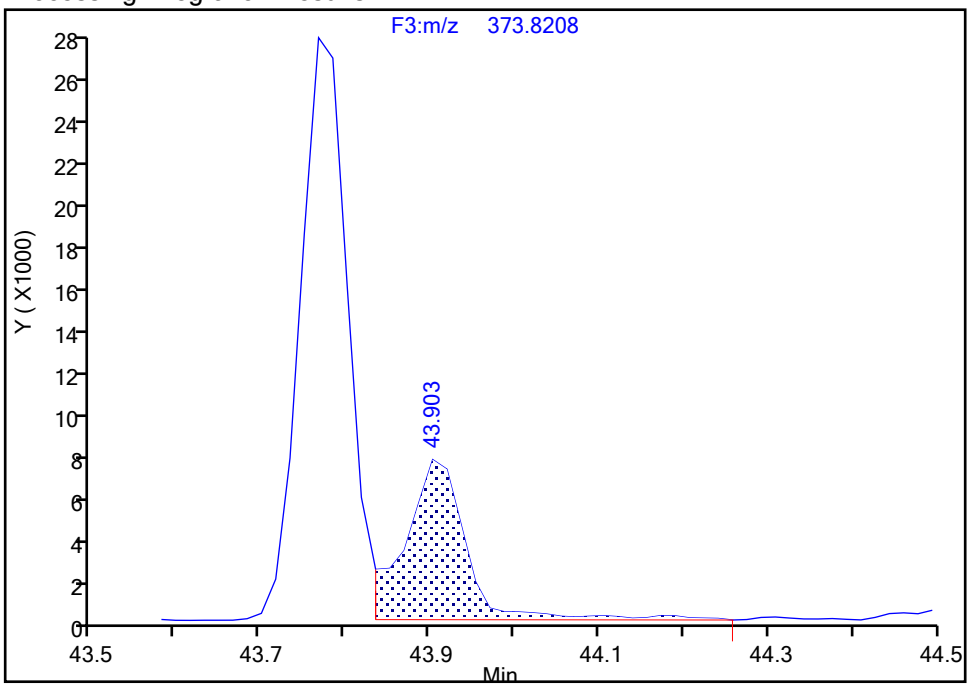
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

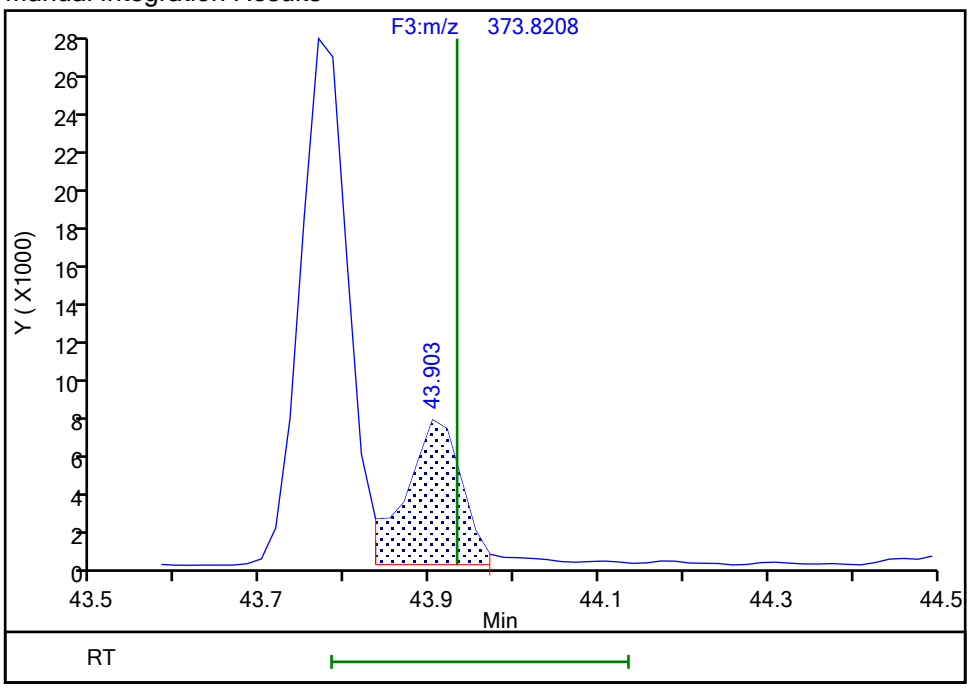
Processing Integration Results

RT: 43.90
Area: 36874
Amount: 1.184618
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 33596
Amount: 1.088786
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:04:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

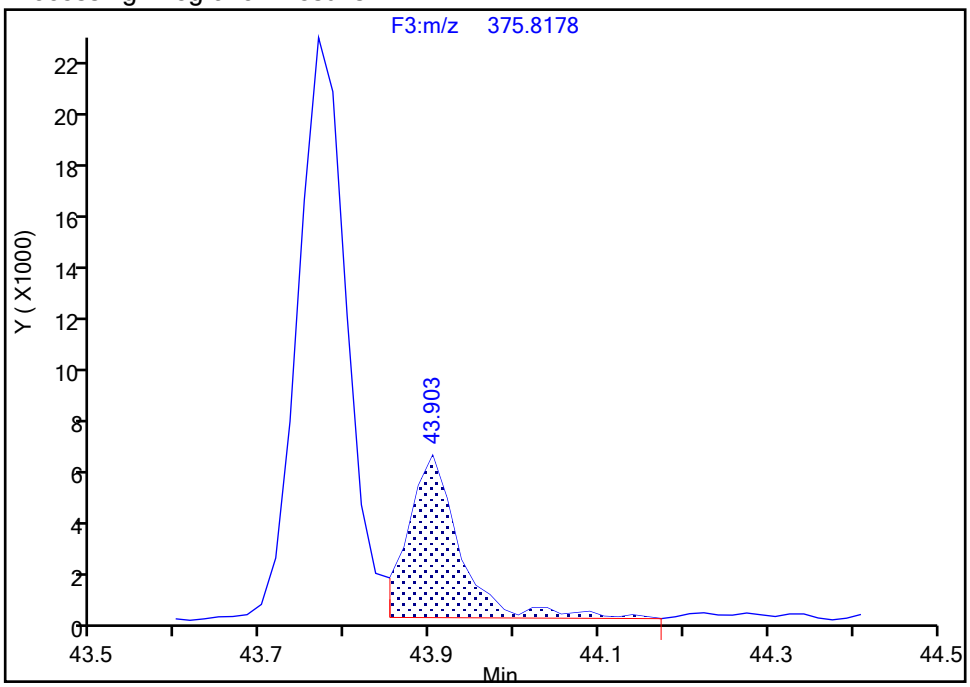
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

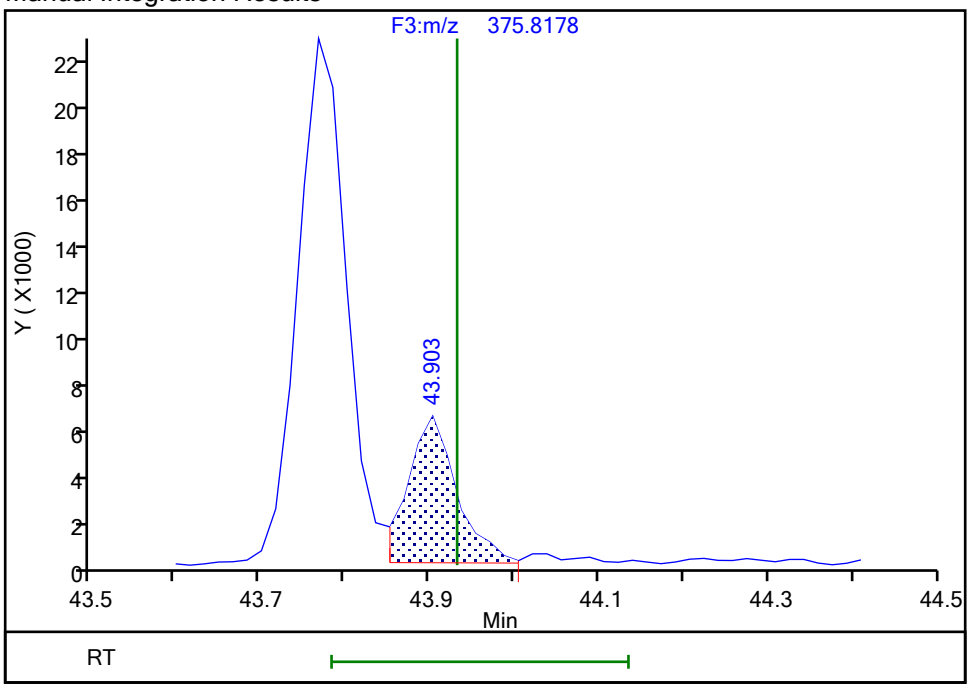
Processing Integration Results

RT: 43.90
Area: 26256
Amount: 1.184618
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 24427
Amount: 1.088786
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:04:12
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

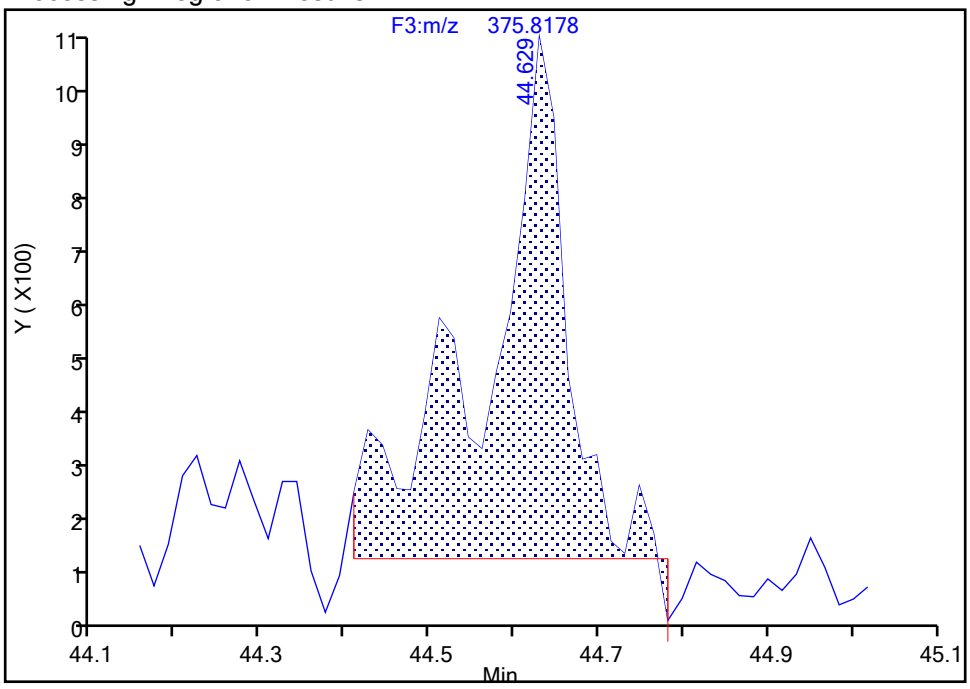
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

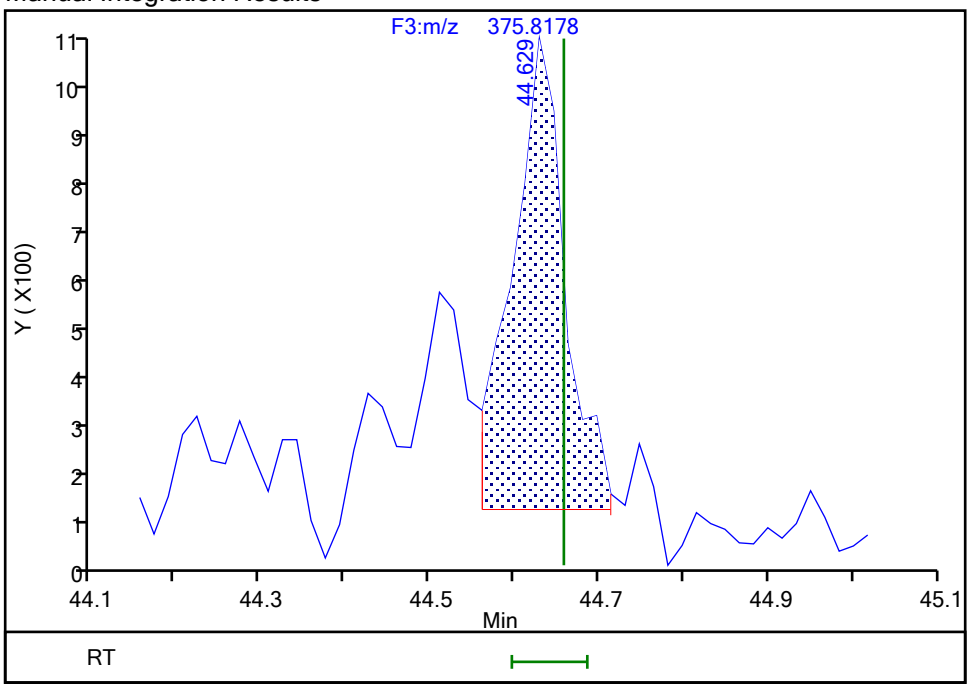
Processing Integration Results

RT: 44.63
Area: 6121
Amount: 0.212203
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 3878
Amount: 0.164386
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:04:26

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

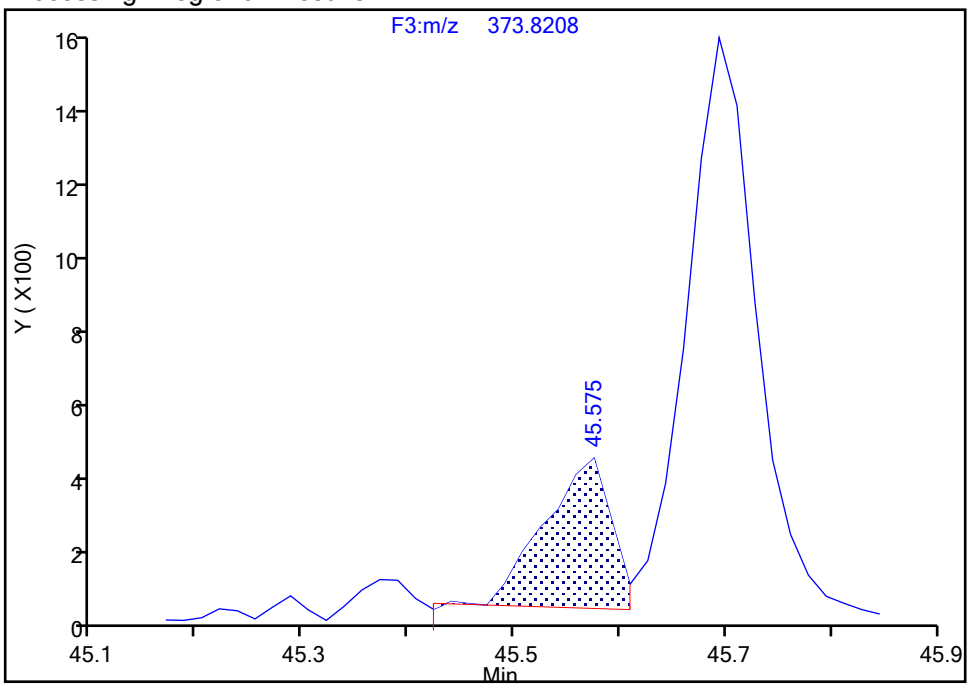
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

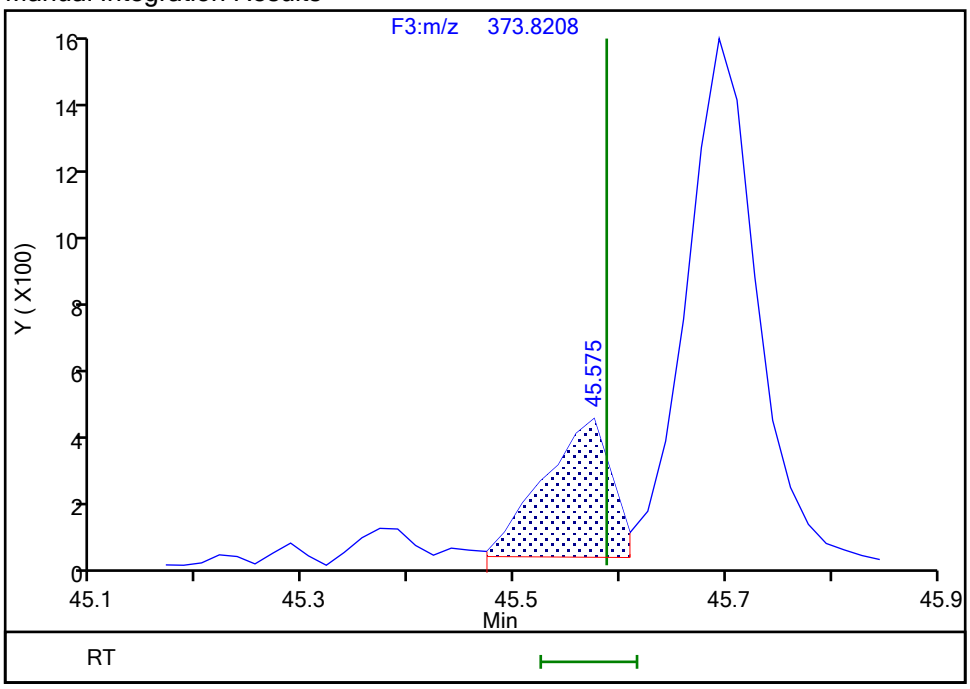
Processing Integration Results

RT: 45.58
Area: 1745
Amount: 0.073165
Amount Units: pg/ul



Manual Integration Results

RT: 45.58
Area: 1832
Amount: 0.087544
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:05:06

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

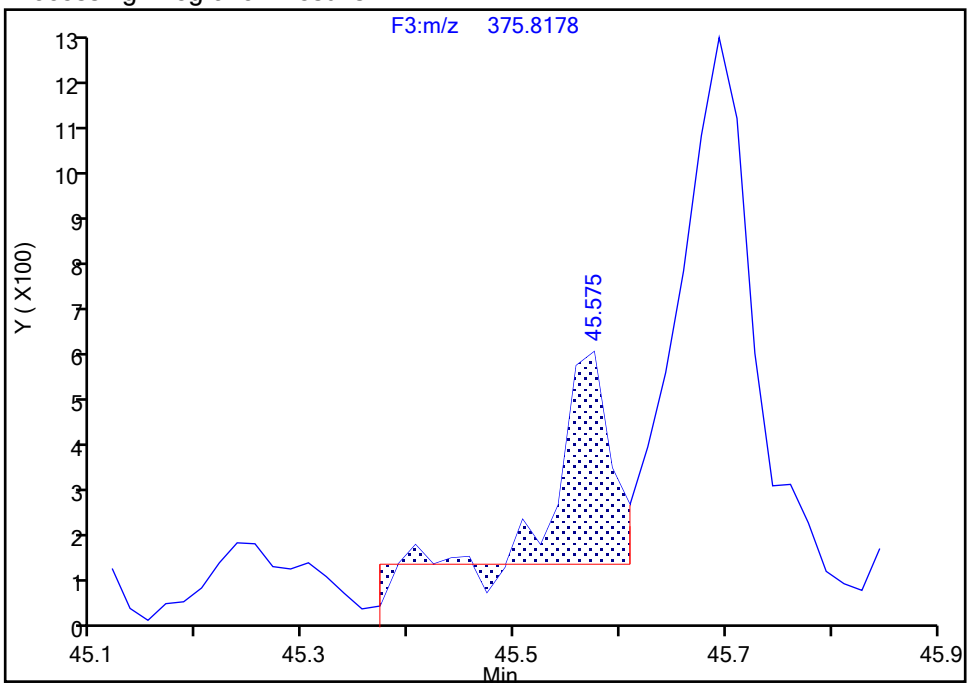
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

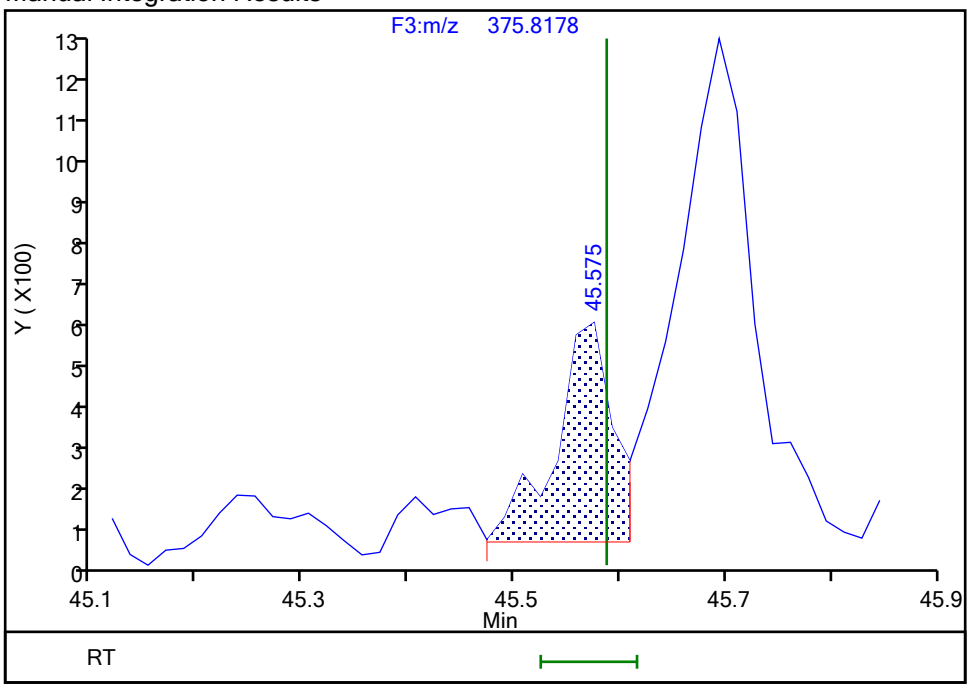
Processing Integration Results

RT: 45.58
Area: 1369
Amount: 0.073165
Amount Units: pg/ul



Manual Integration Results

RT: 45.58
Area: 1894
Amount: 0.087544
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:05:13
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

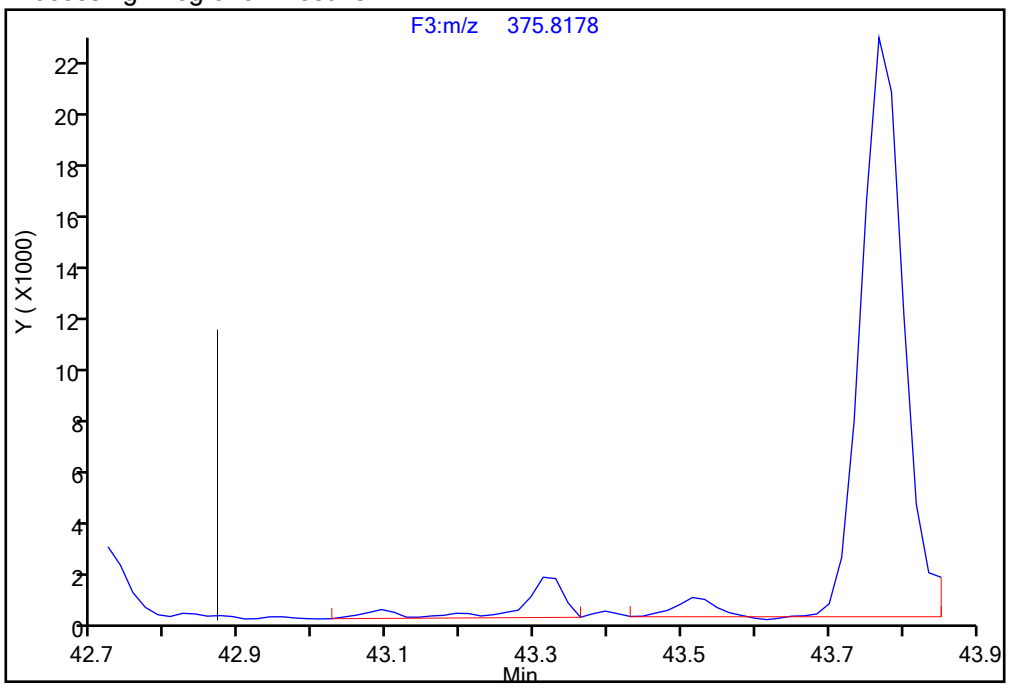
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.53- 45.77)

Signal: 2

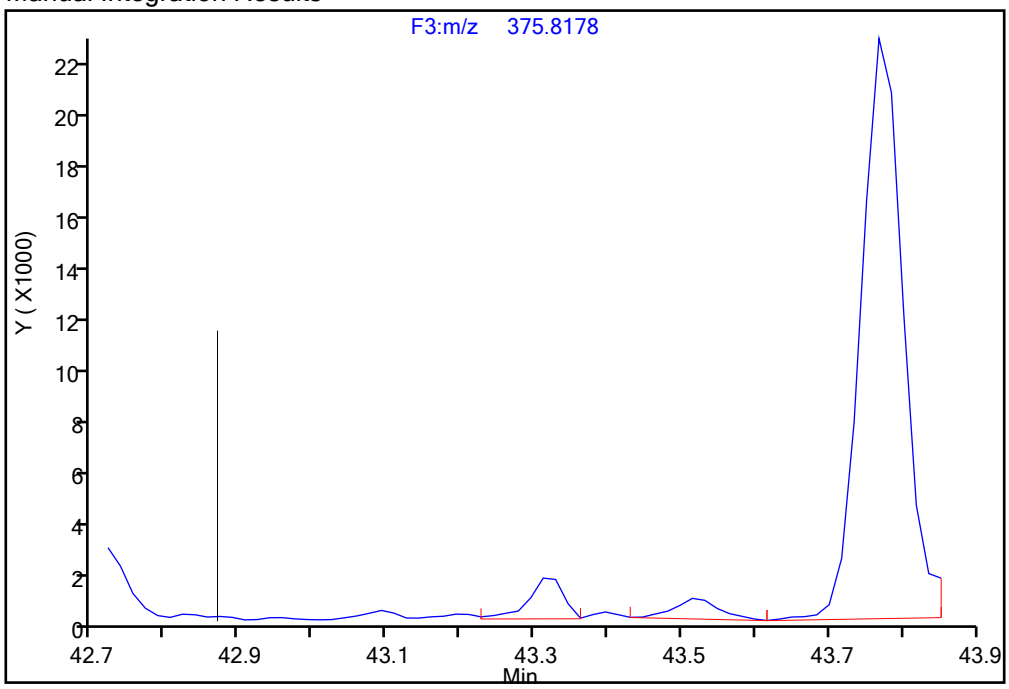
Processing Integration Results

RT = 43.312 Area = 6799



Manual Integration Results

RT = 43.312 Area = 5255 M



Reviewer: parslyt, 18-Dec-2019 04:06:51

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

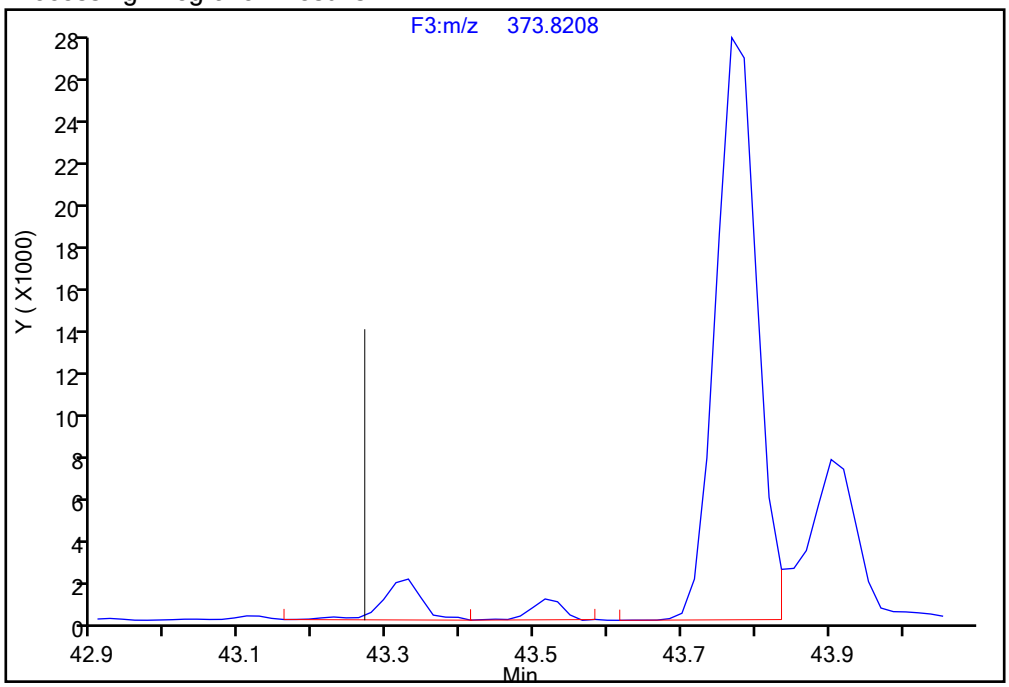
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

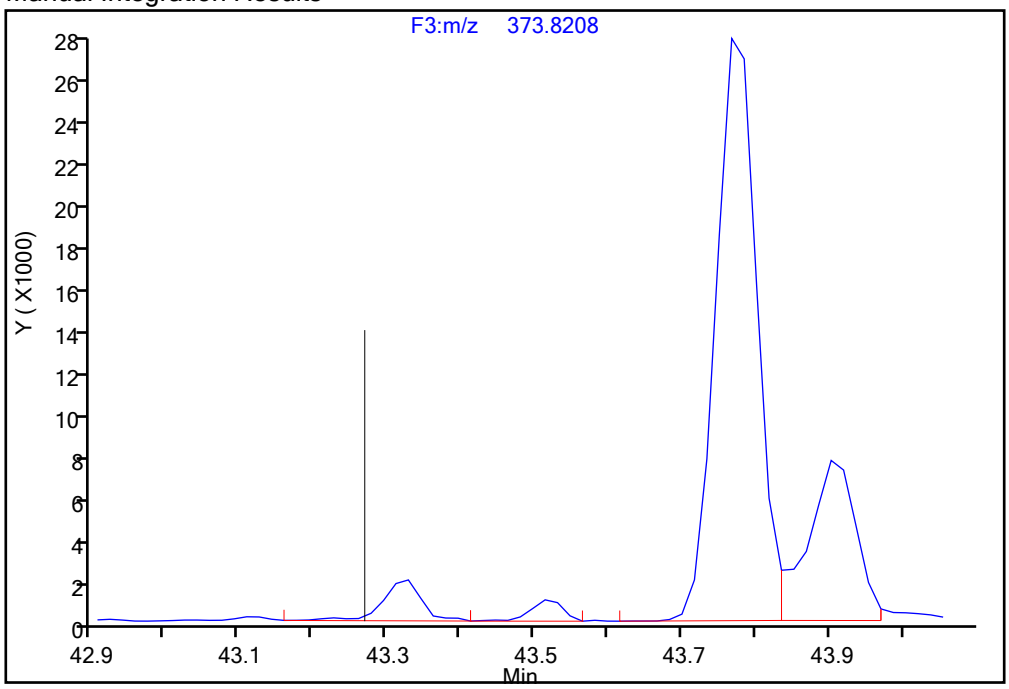
Processing Integration Results

RT = 43.515 Area = 2876



Manual Integration Results

RT = 43.515 Area = 3054 M



Reviewer: parslyt, 18-Dec-2019 04:06:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

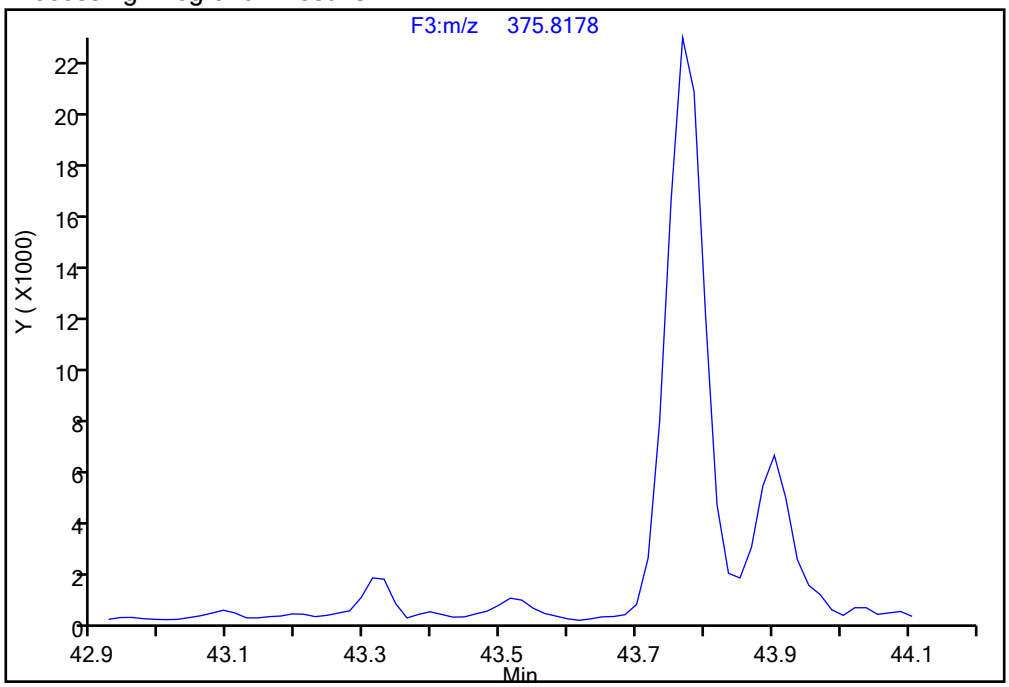
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.53- 45.77)

Signal: 2

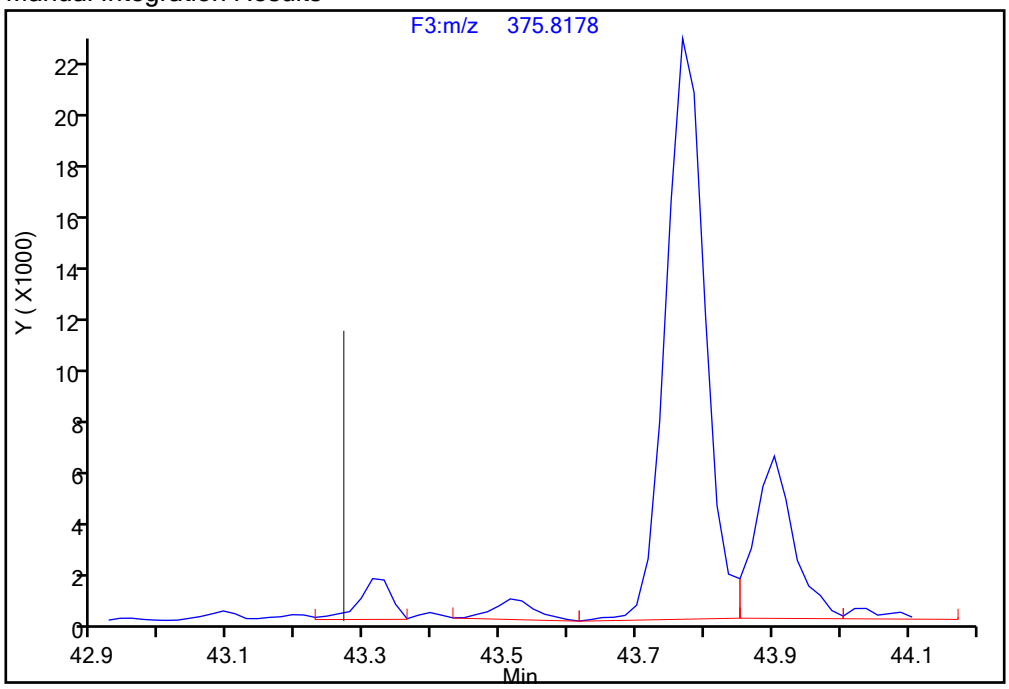
Not Detected
RT: 42.53- 45.77

Processing Integration Results



Manual Integration Results

RT = 43.515 Area = 3390 M



Reviewer: parslyt, 18-Dec-2019 04:06:51
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

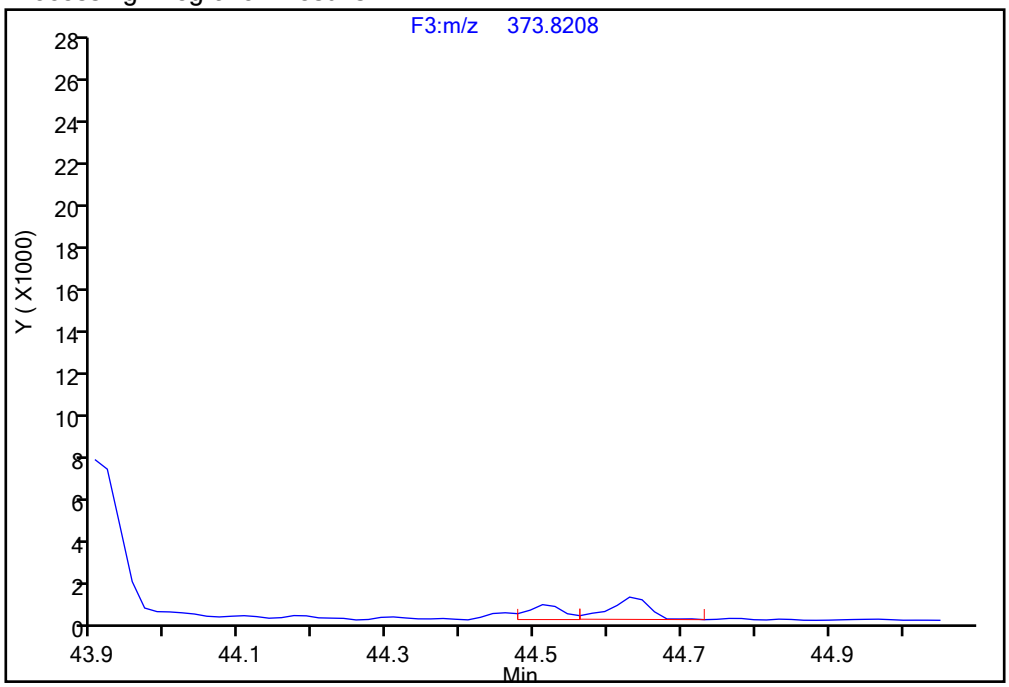
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

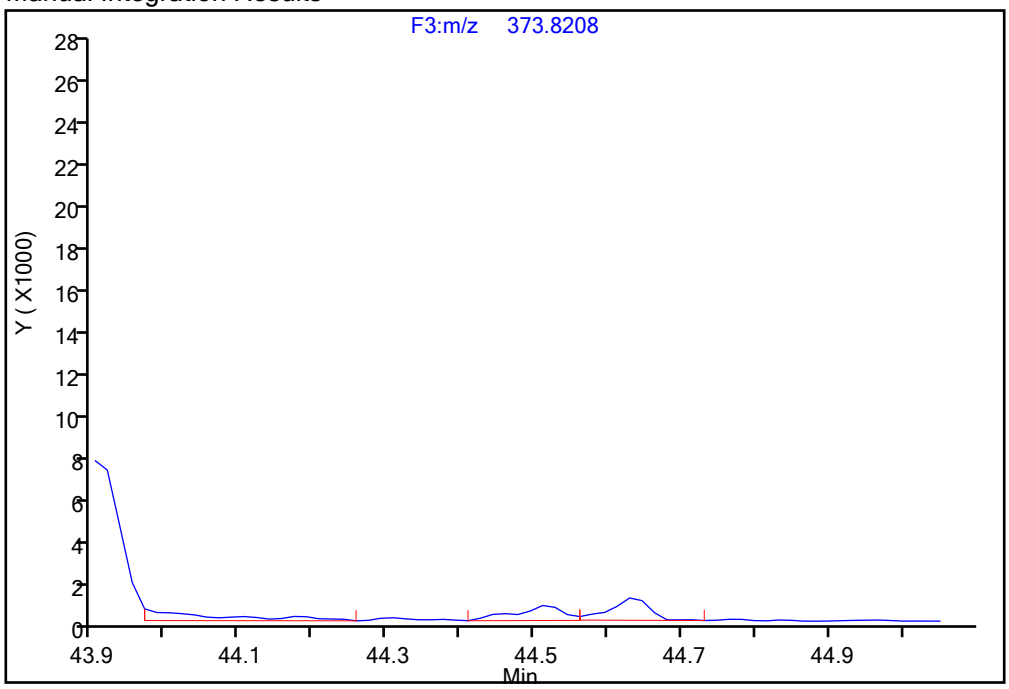
Processing Integration Results

RT = 44.511 Area = 2276



Manual Integration Results

RT = 44.511 Area = 3176 M



Reviewer: parslyt, 18-Dec-2019 04:06:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

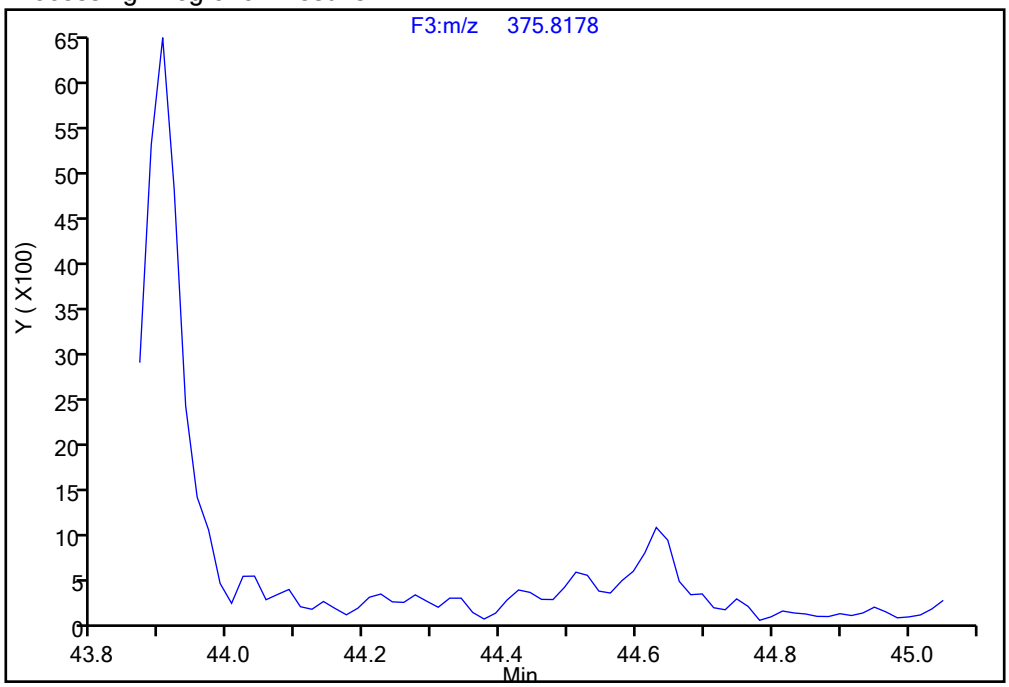
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.53- 45.77)

Signal: 2

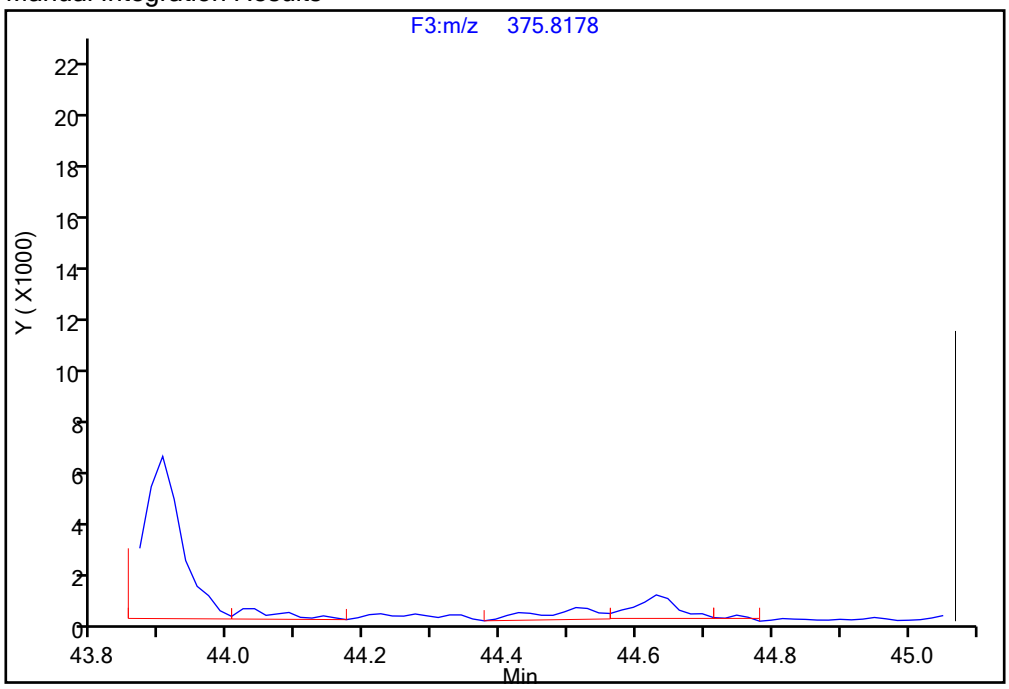
Not Detected
RT: 42.53- 45.77

Processing Integration Results



Manual Integration Results

RT = 44.511 Area = 2701 M



Reviewer: parslyt, 18-Dec-2019 04:06:51
Audit Action: Manually Integrated Audit Reason: Baseline

Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d

Injection Date: 17-Dec-2019 17:34:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

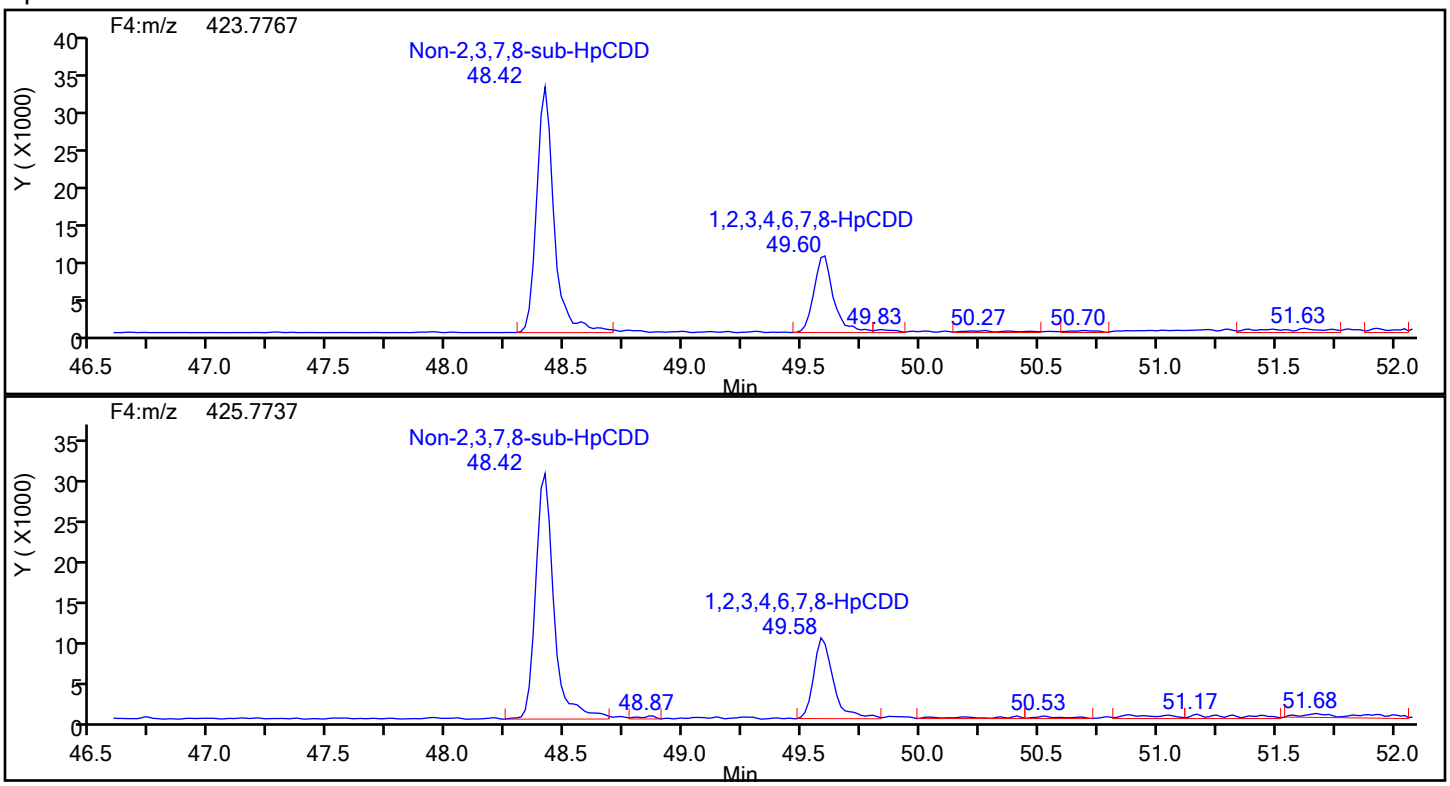
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(1-2)

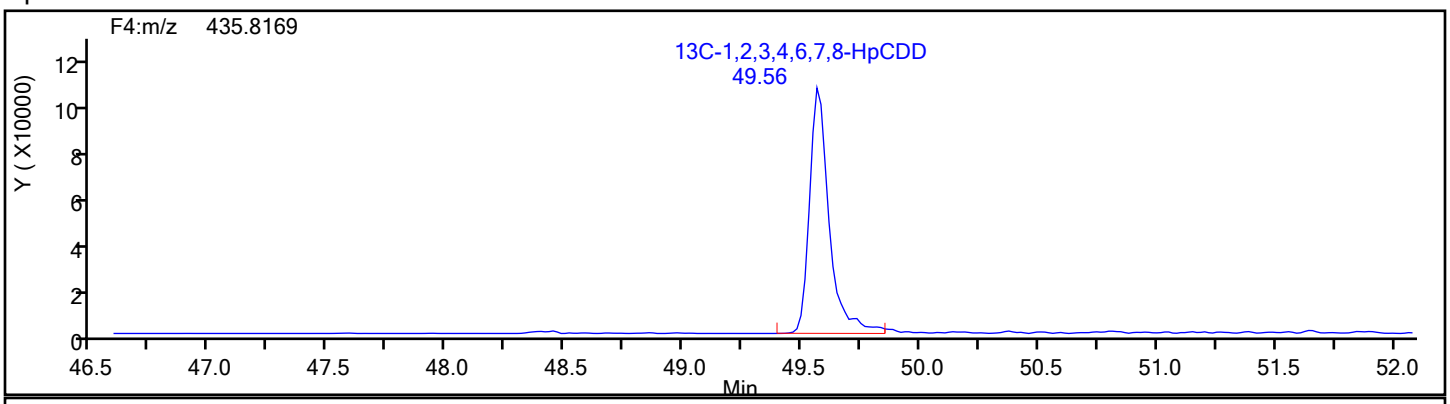
Worklist#: 36146 Sample Line#: 9

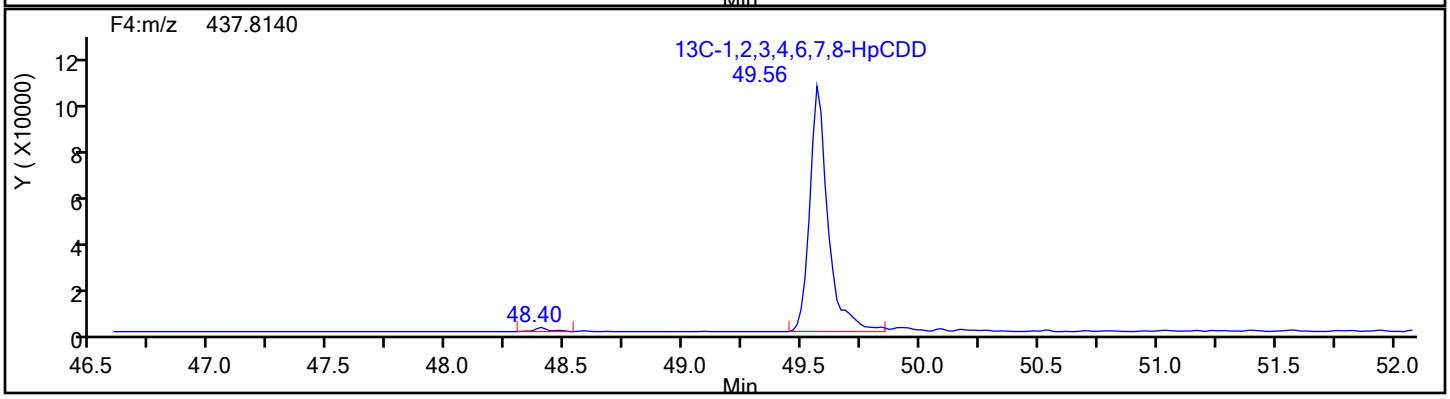
Column Type: Column Dia:

HpCDD



HpCDD Standards





Report Date: 18-Dec-2019 04:10:07 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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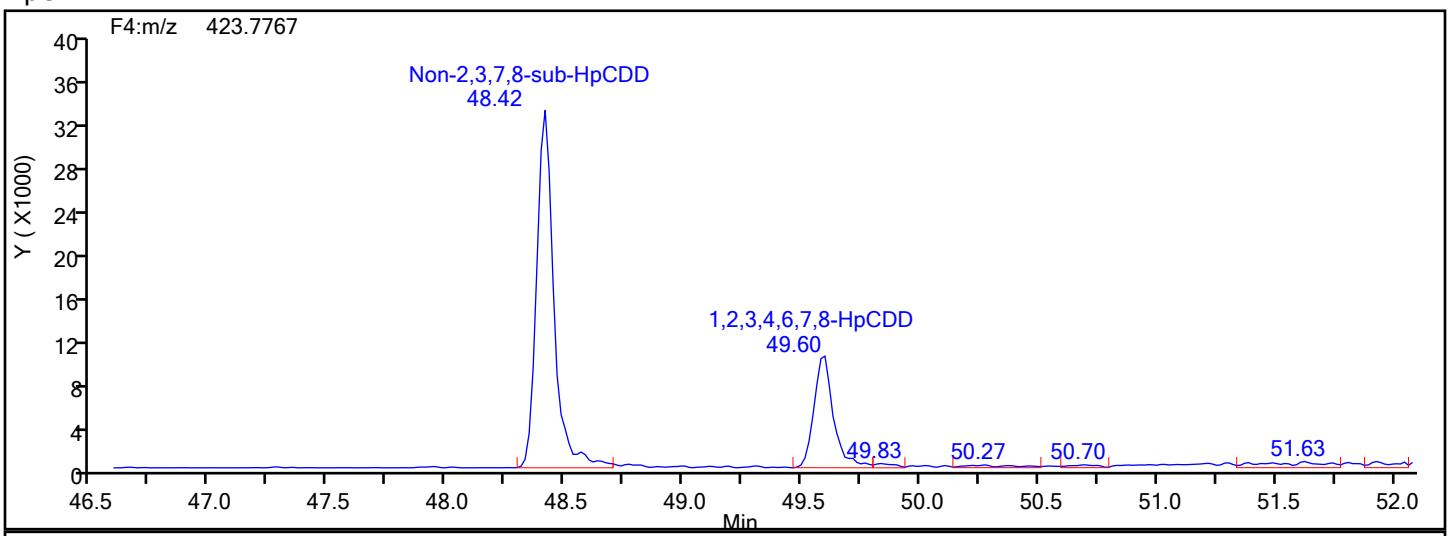
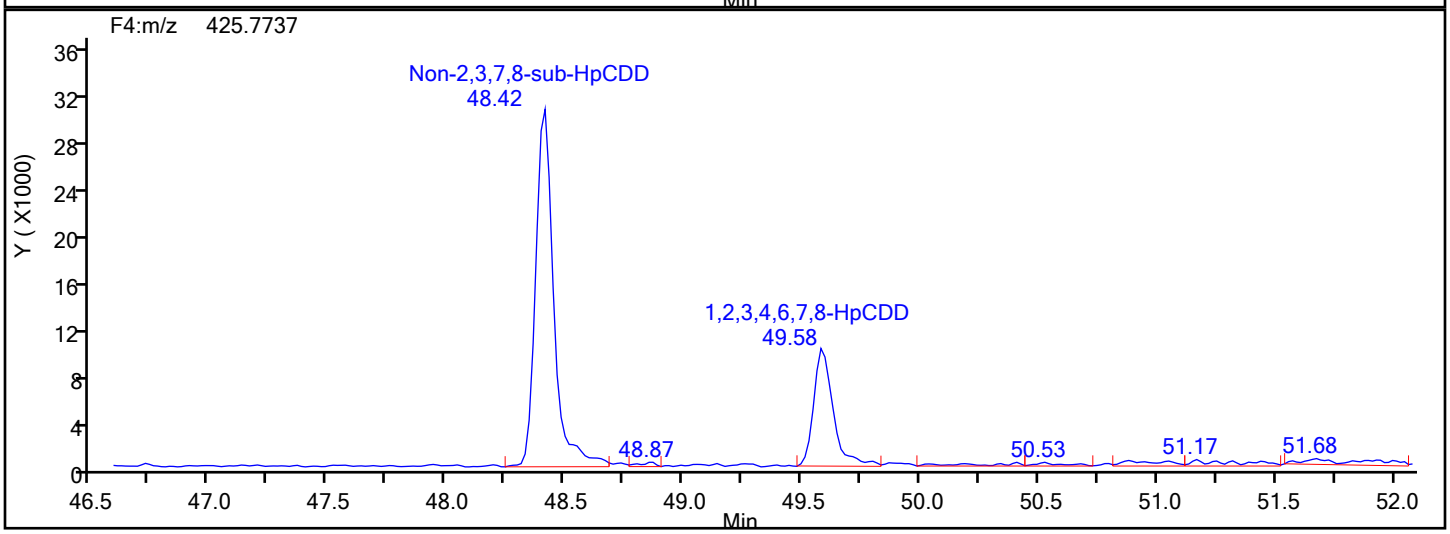
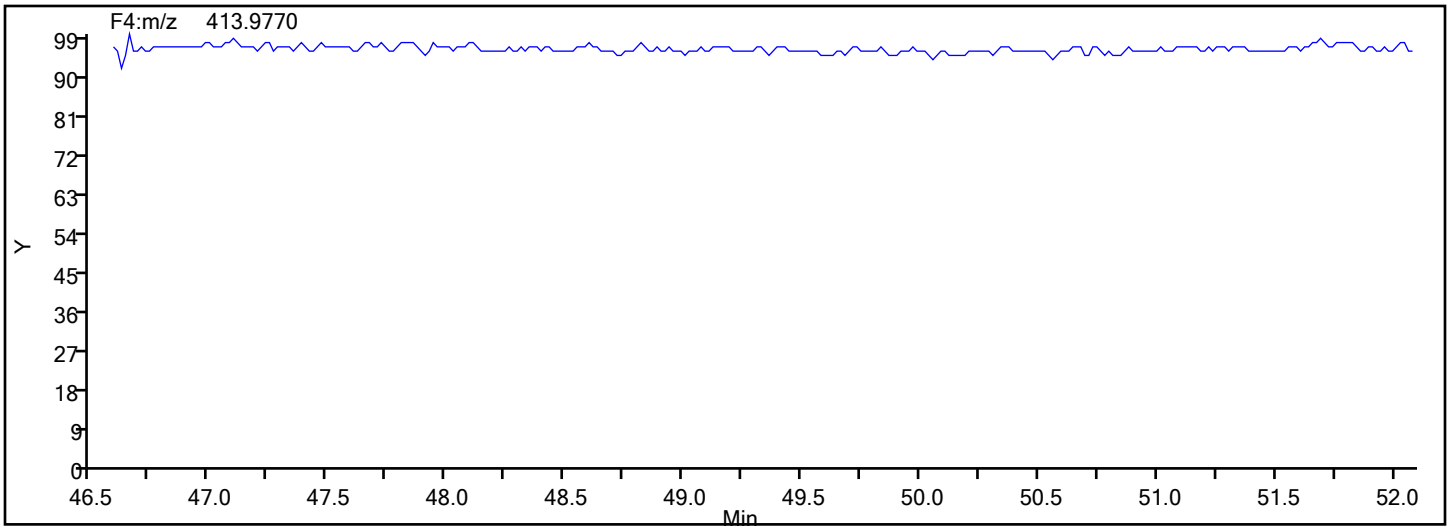
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
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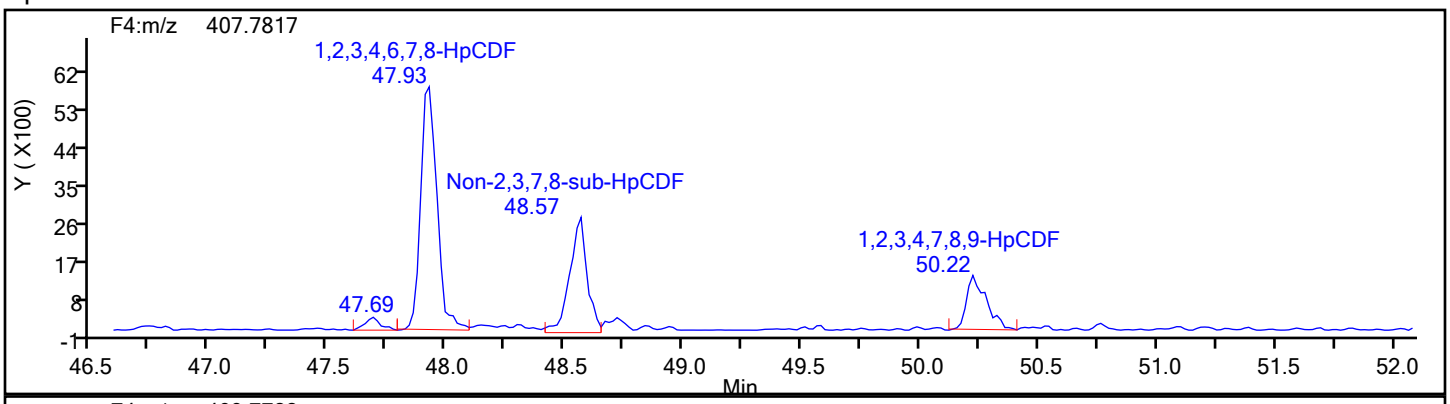
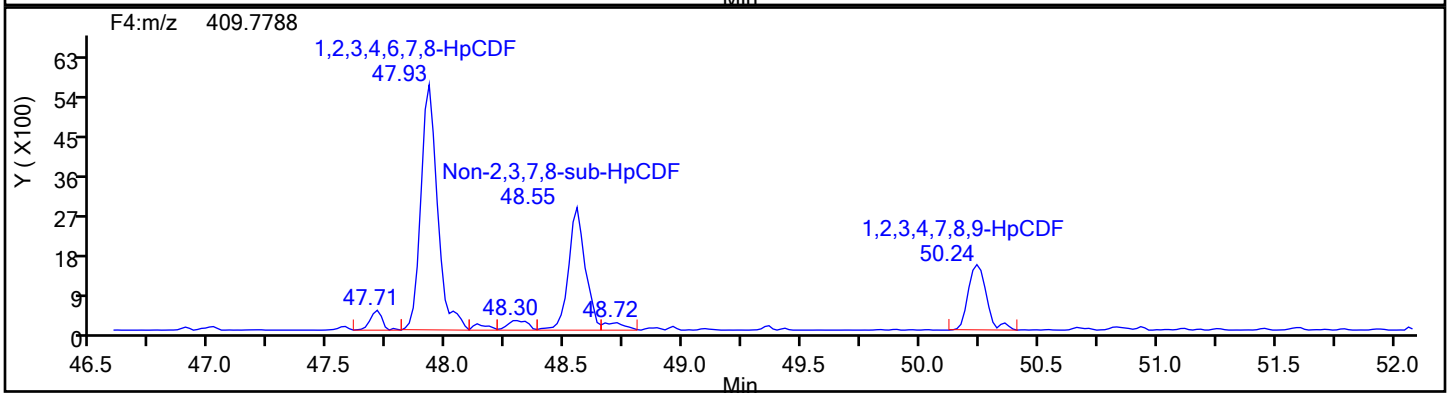
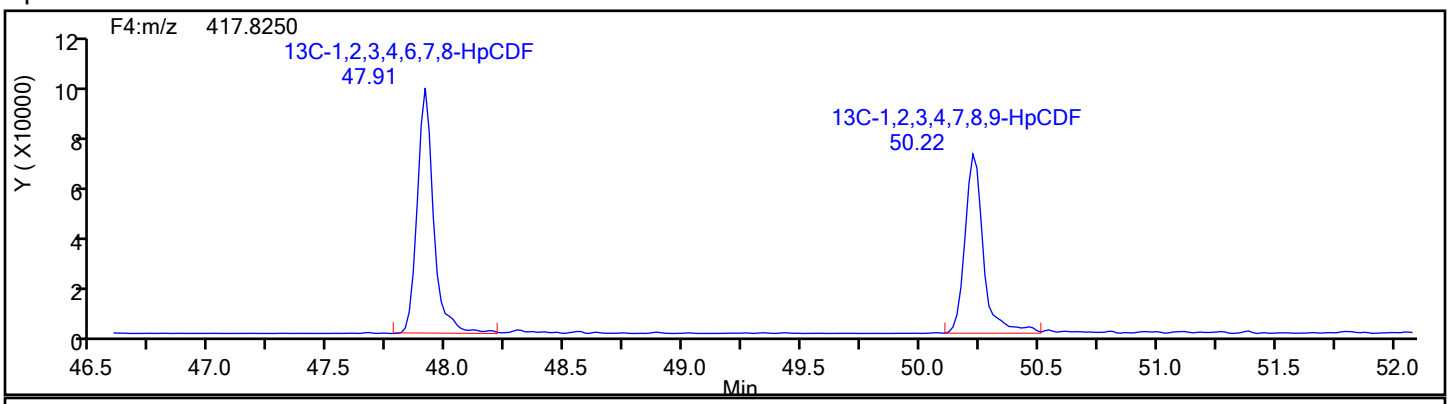
Column Type:		Column Dia:	

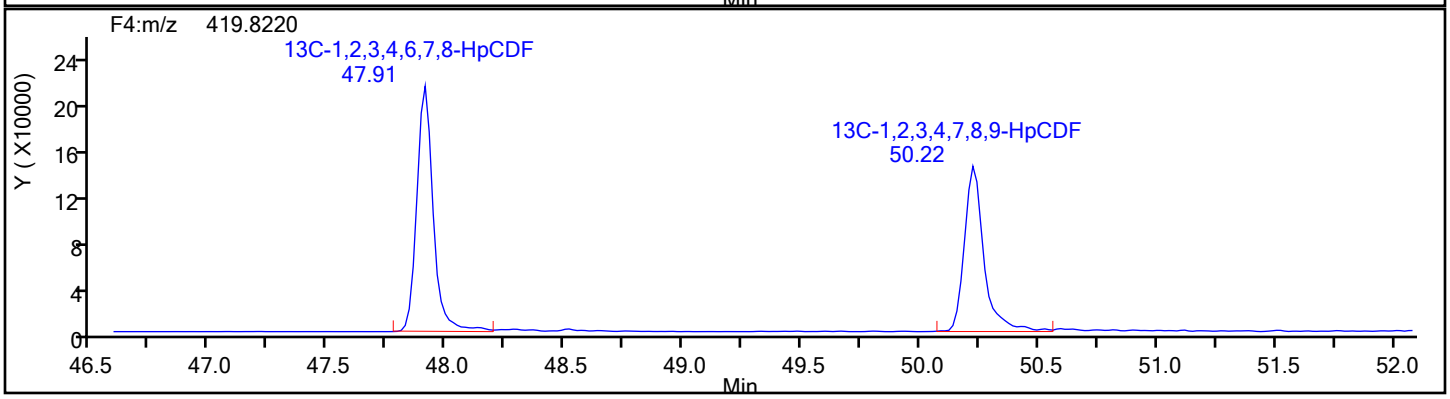
HpCDF





HpCDF Standards





Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
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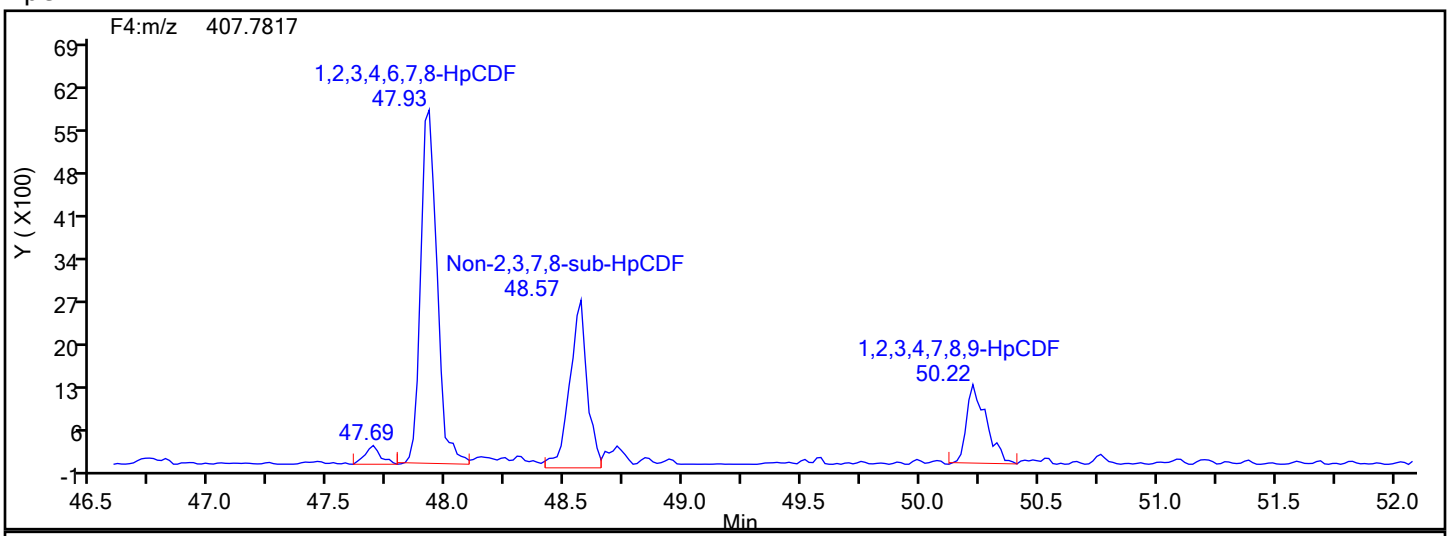
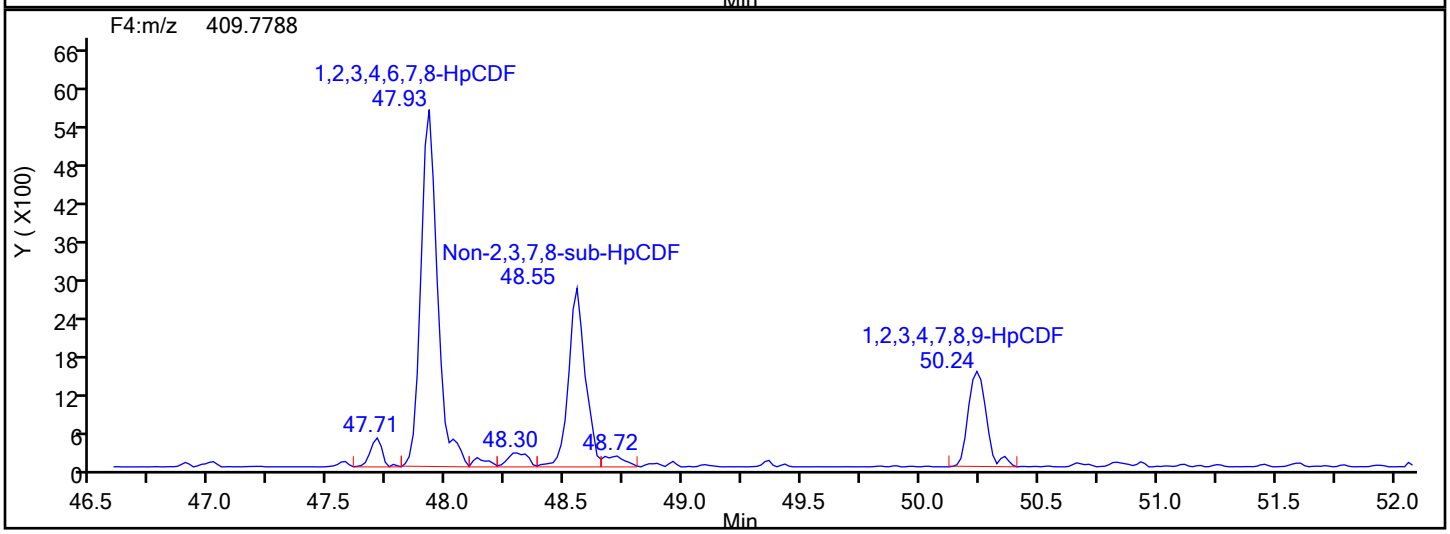
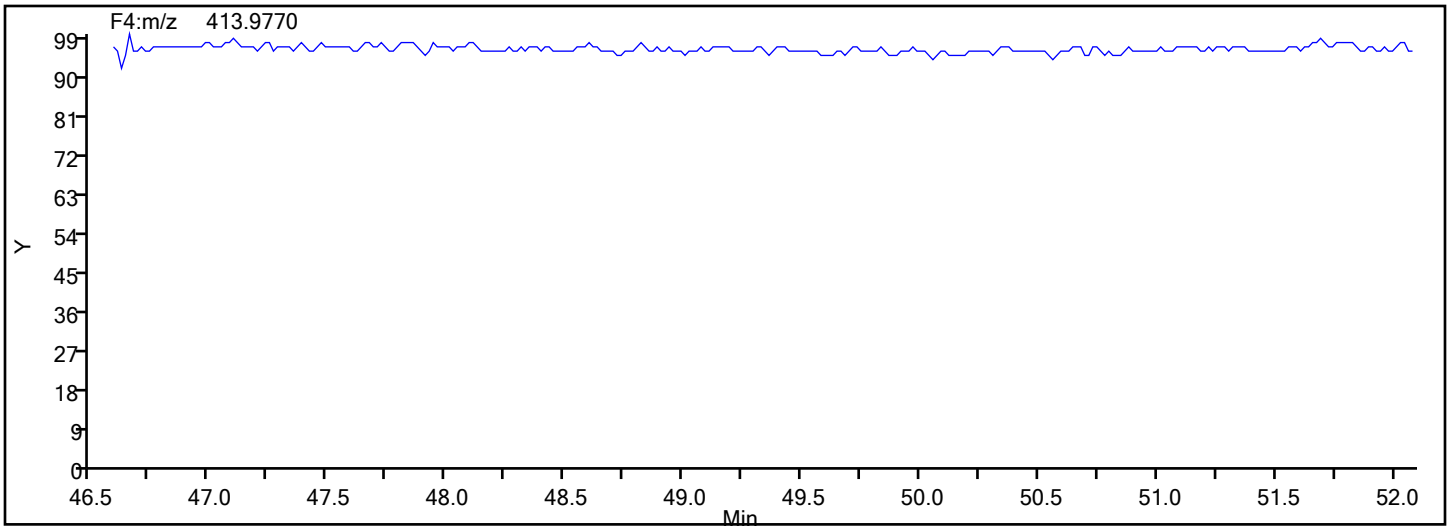
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

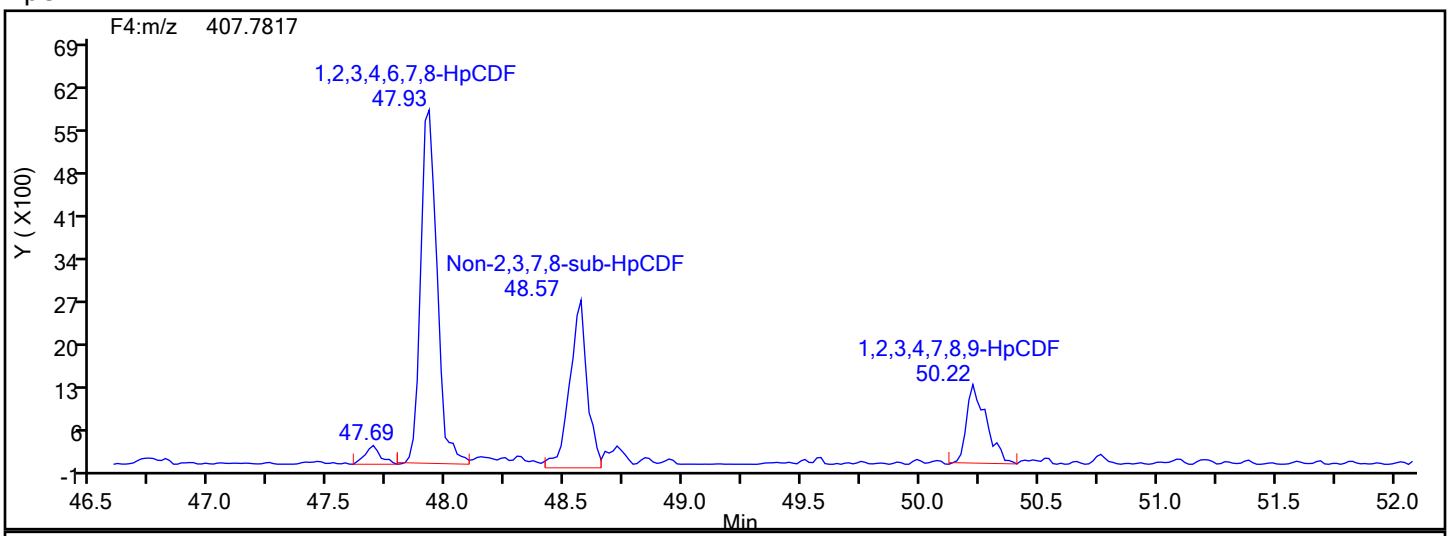


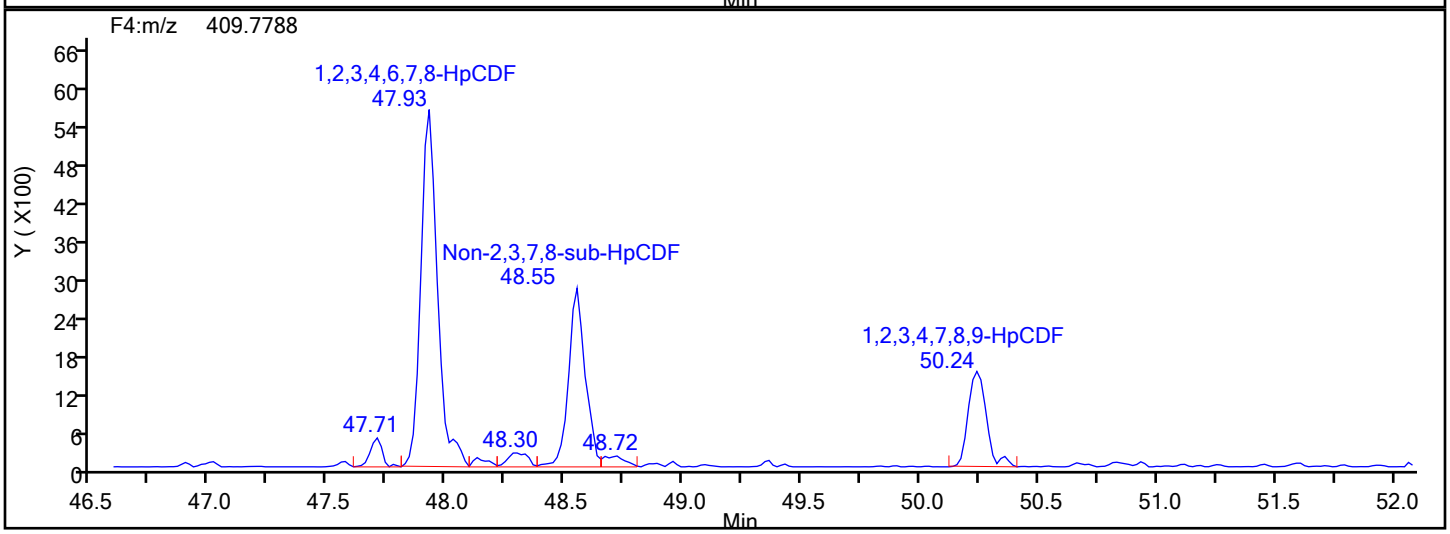
Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

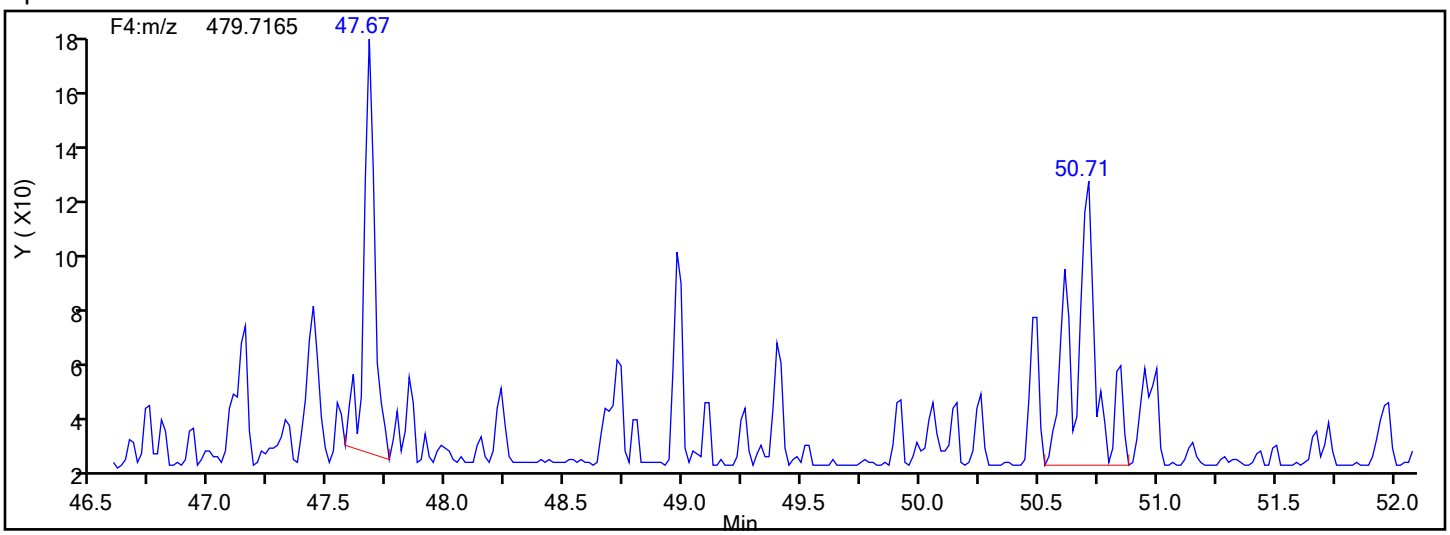
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

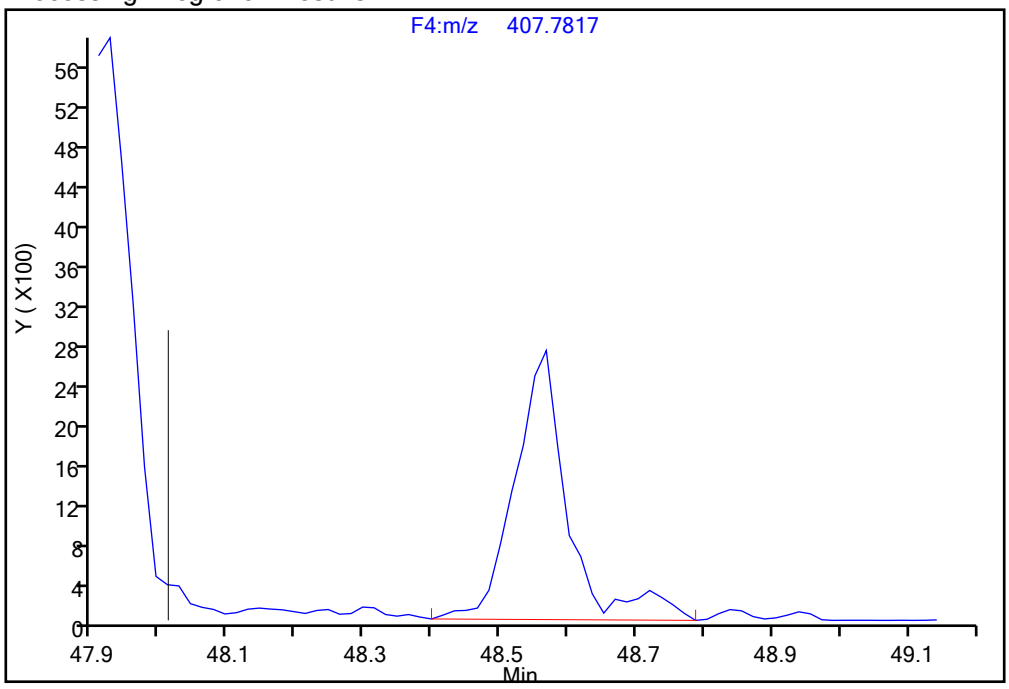
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.79- 52.06)

Signal: 1

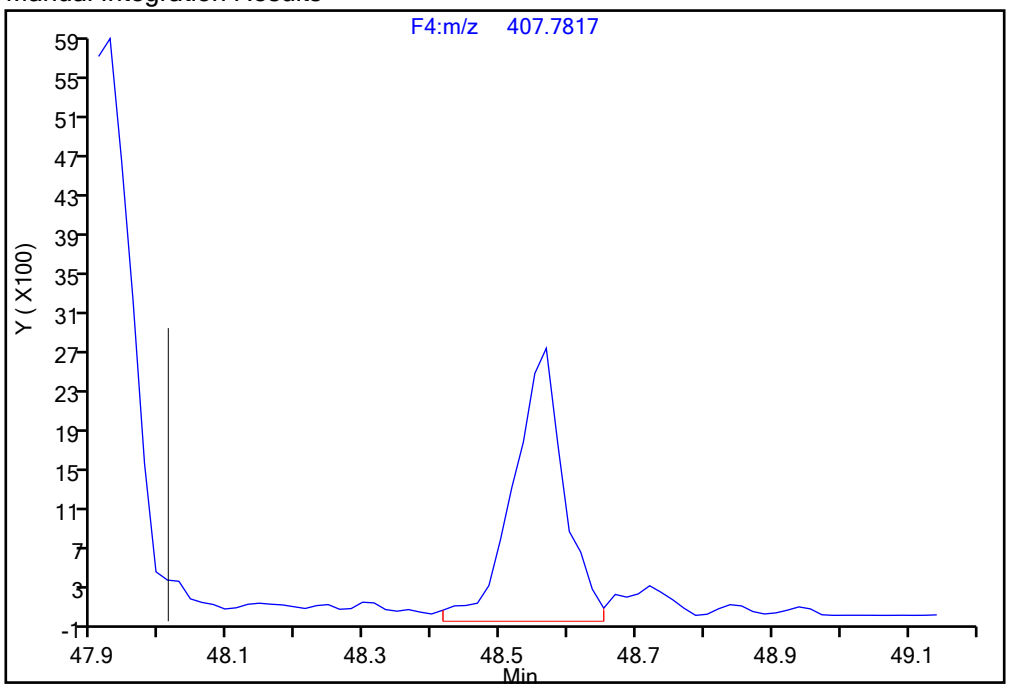
Processing Integration Results

RT = 48.567 Area = 14491



Manual Integration Results

RT = 48.567 Area = 14039 M



Reviewer: parslyt, 18-Dec-2019 04:08:31

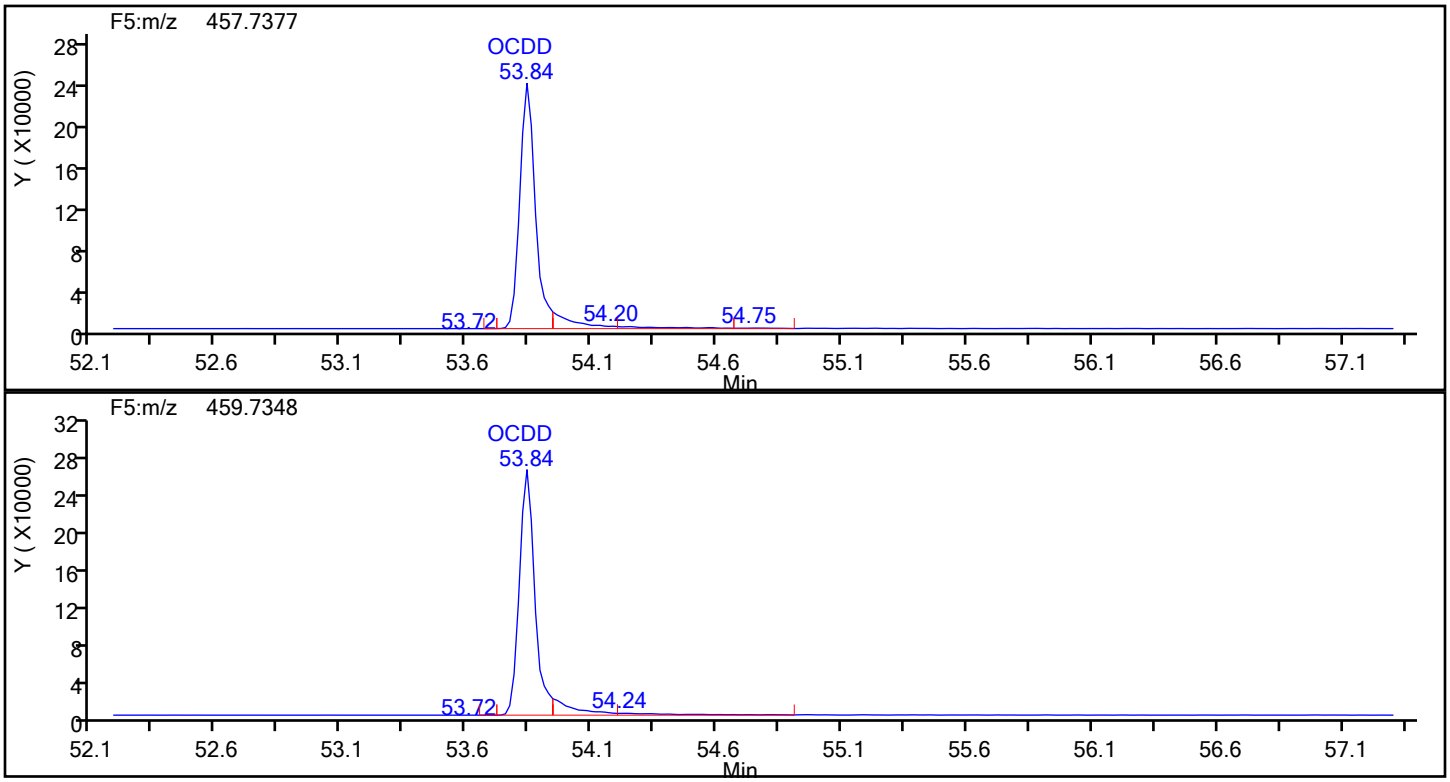
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

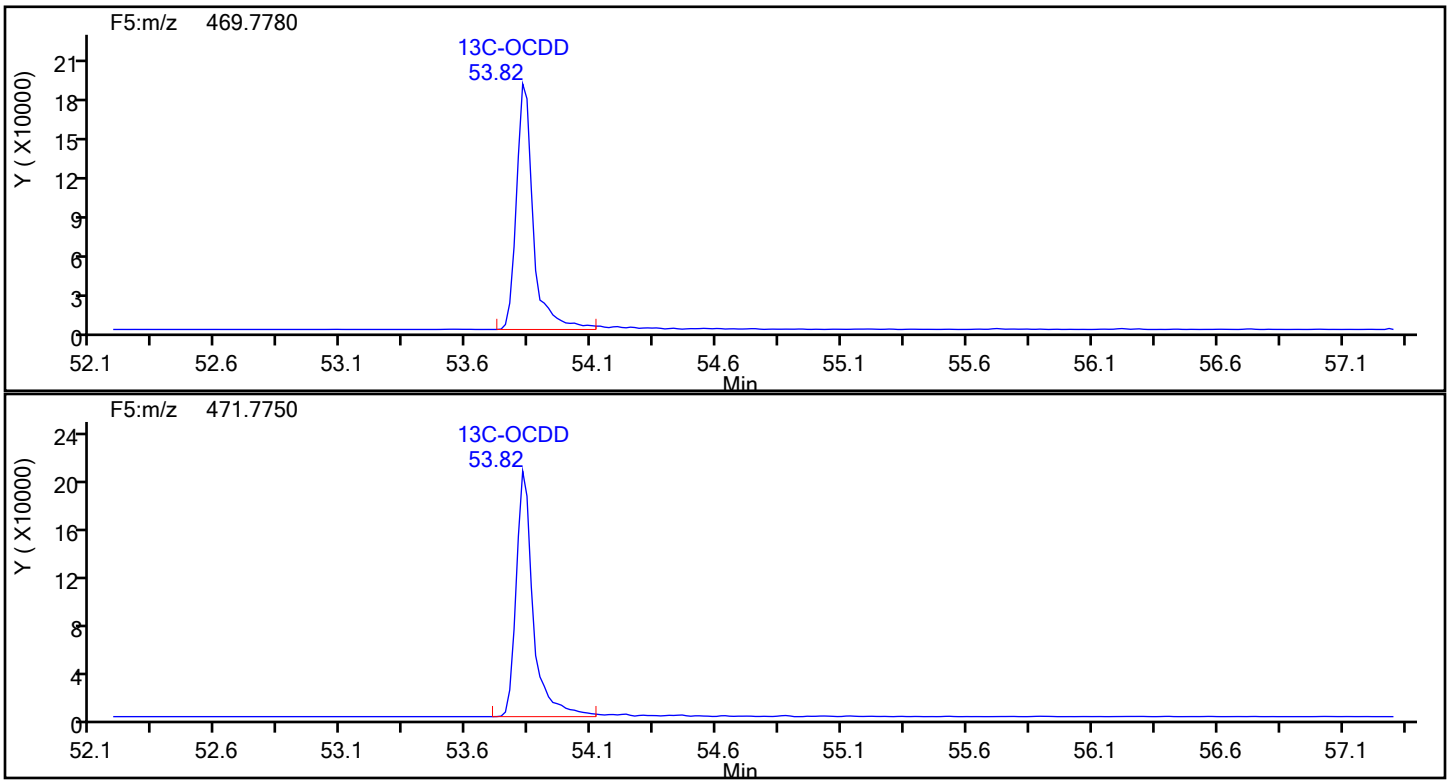
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

OCDD



OCDD Standards



Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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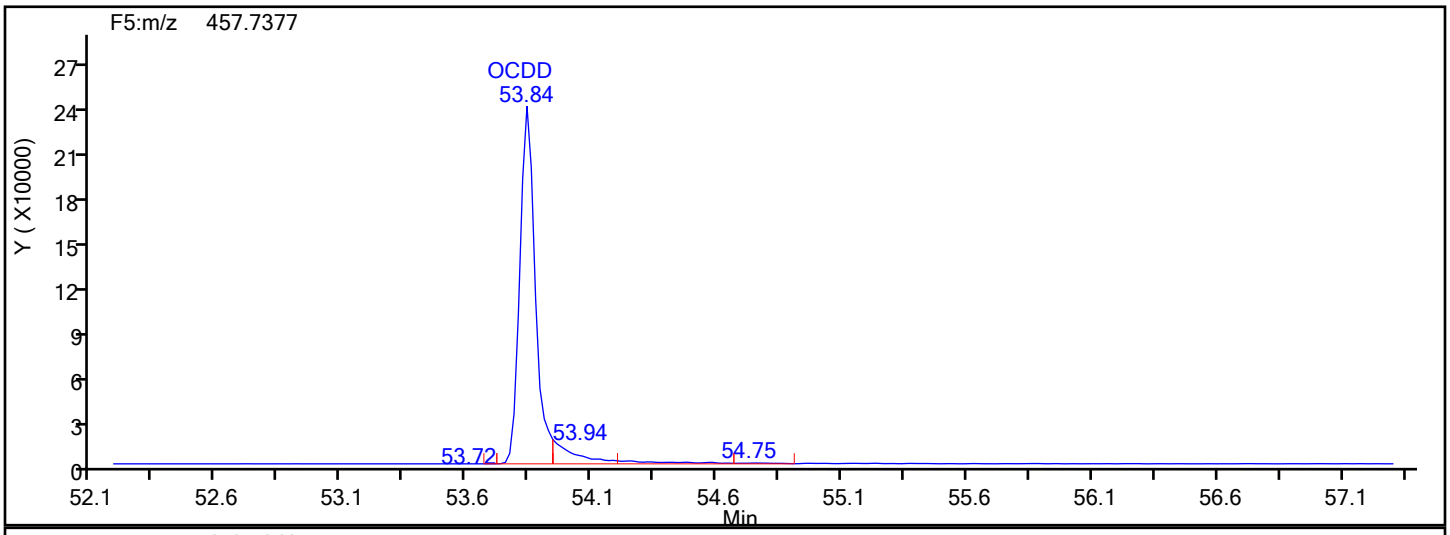
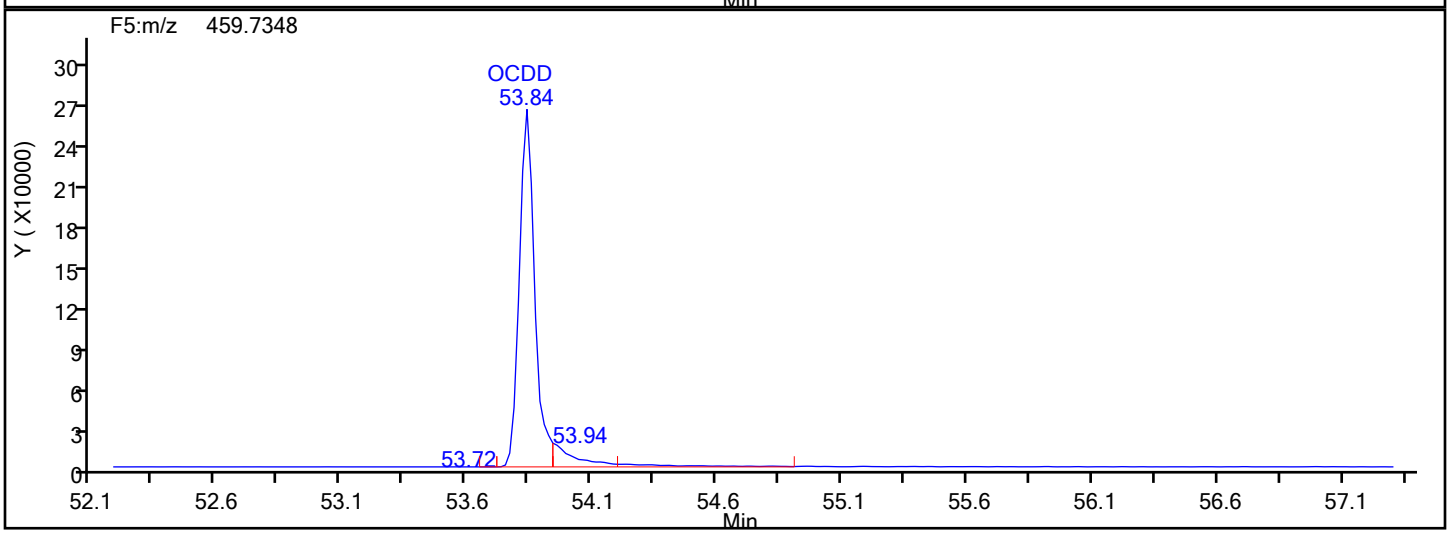
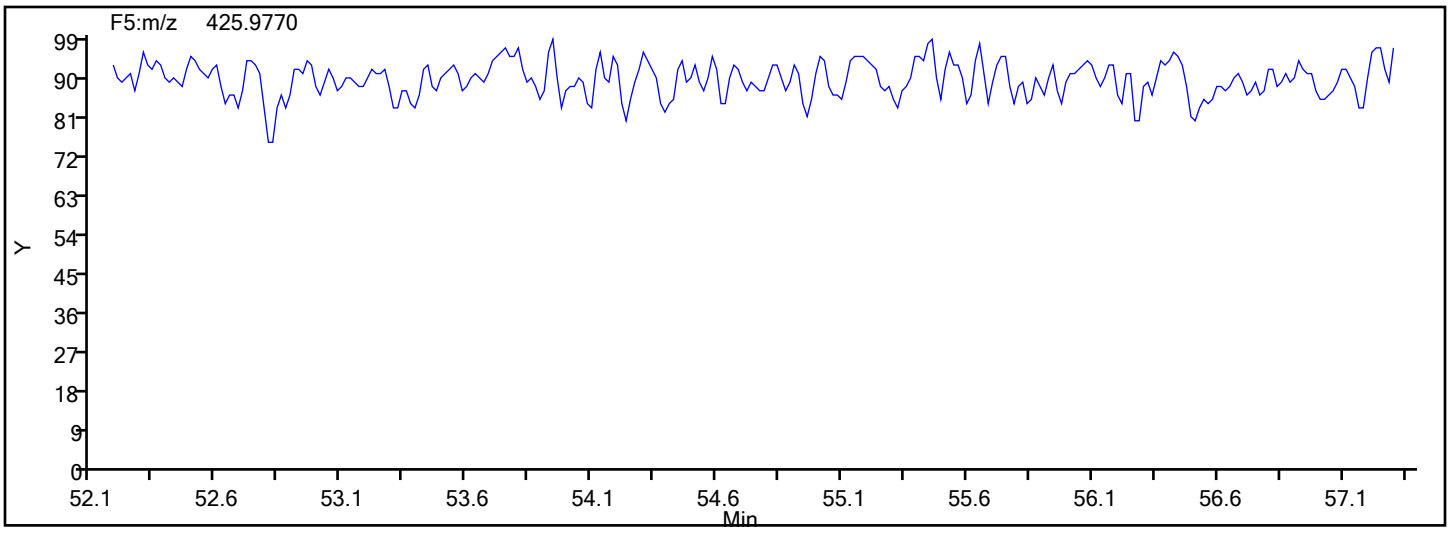
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

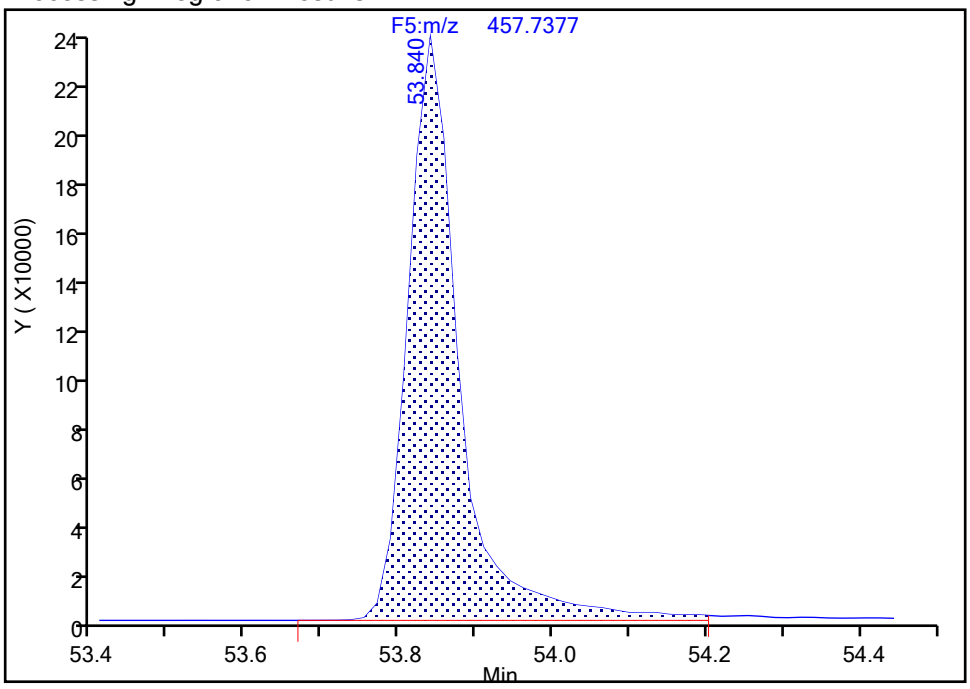
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 1

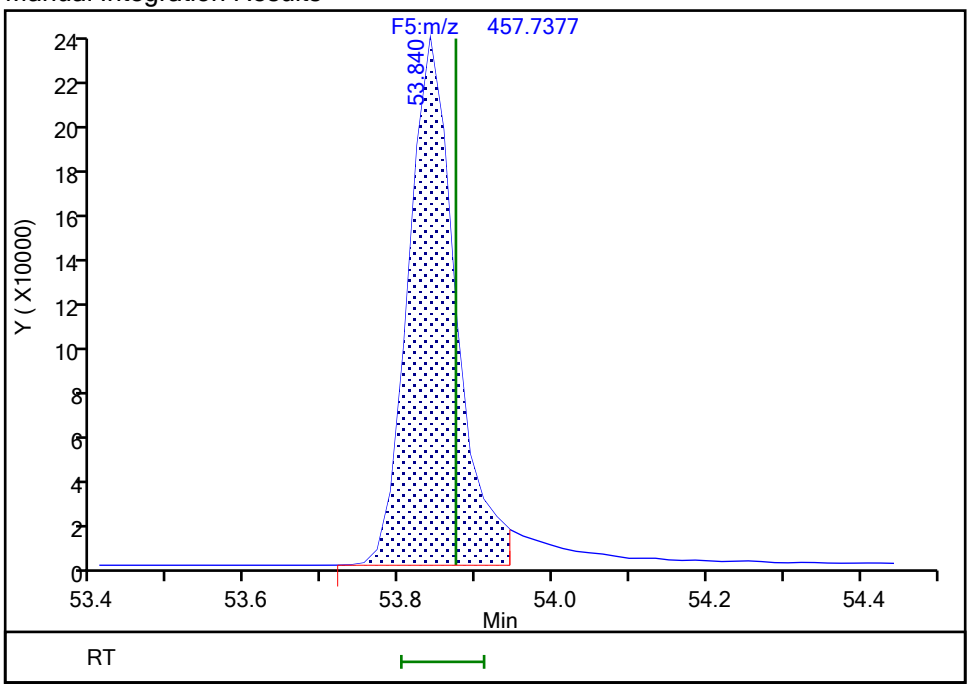
Processing Integration Results

RT: 53.84
Area: 1102499
Amount: 103.3251
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 1012232
Amount: 94.799387
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:09:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

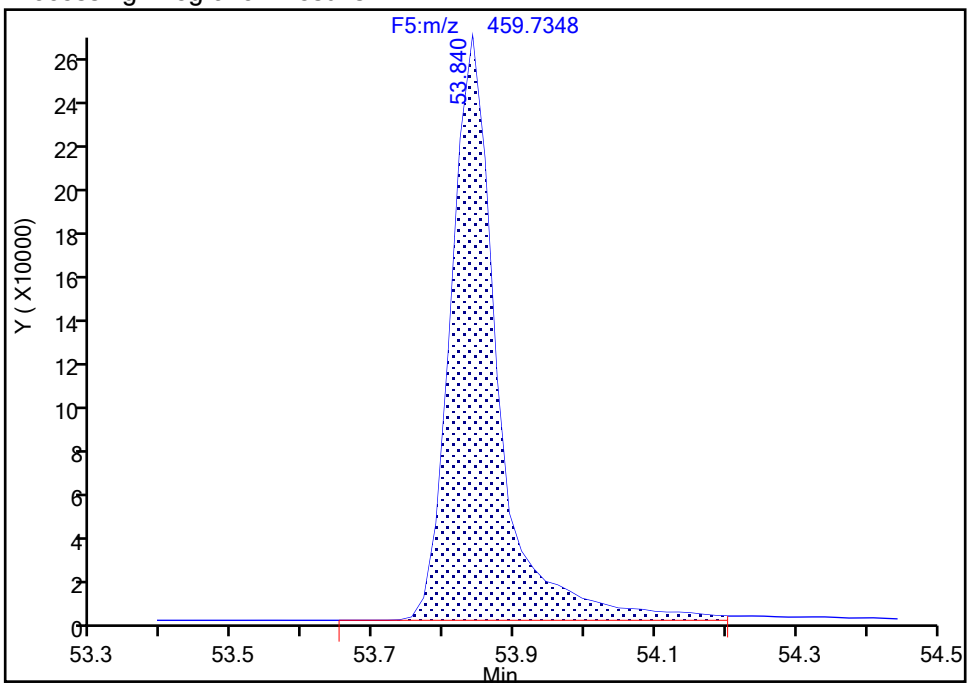
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 2

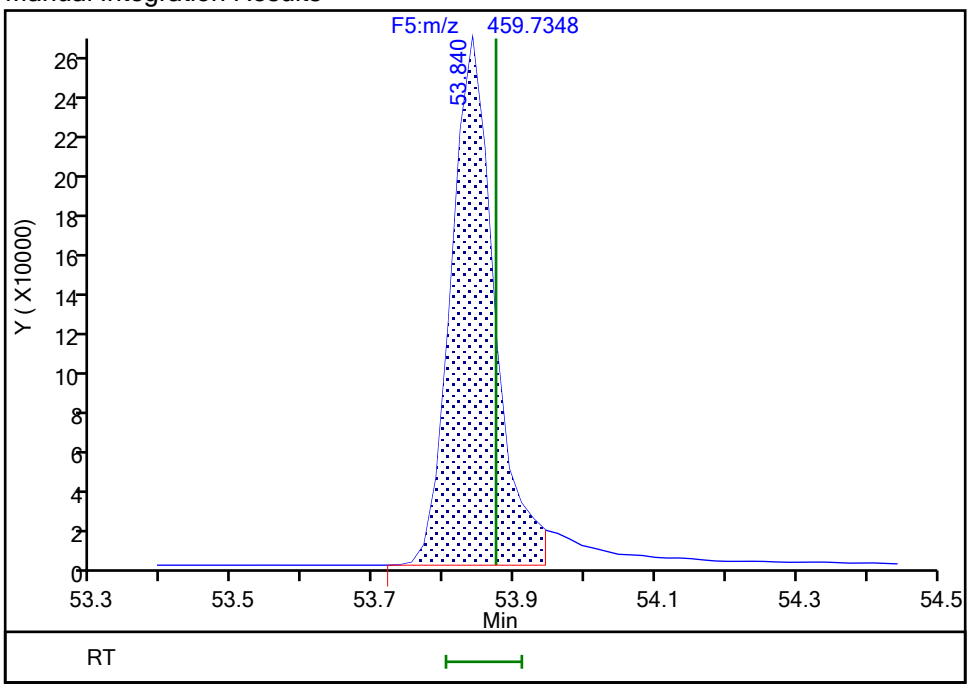
Processing Integration Results

RT: 53.84
Area: 1216406
Amount: 103.3251
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 1115333
Amount: 94.799387
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:09:10
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
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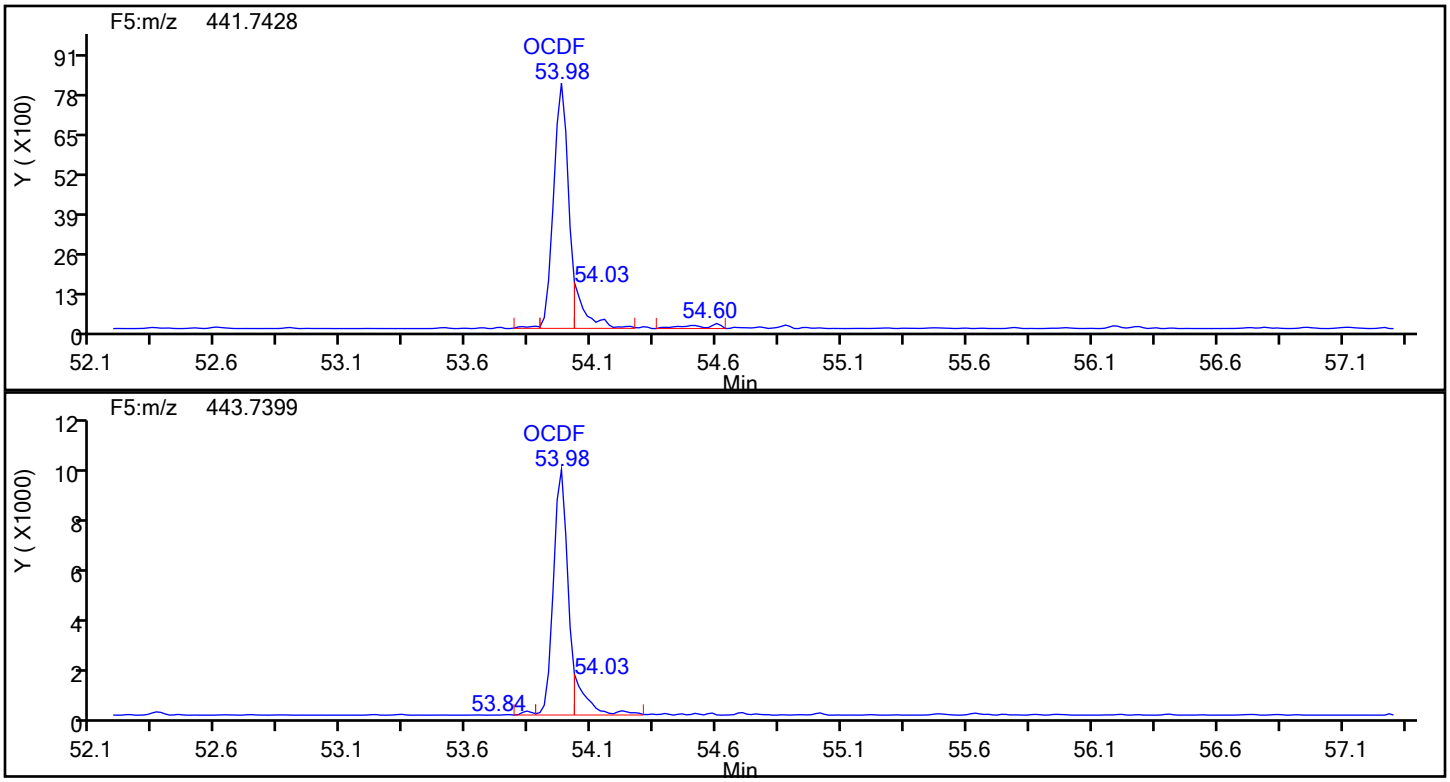
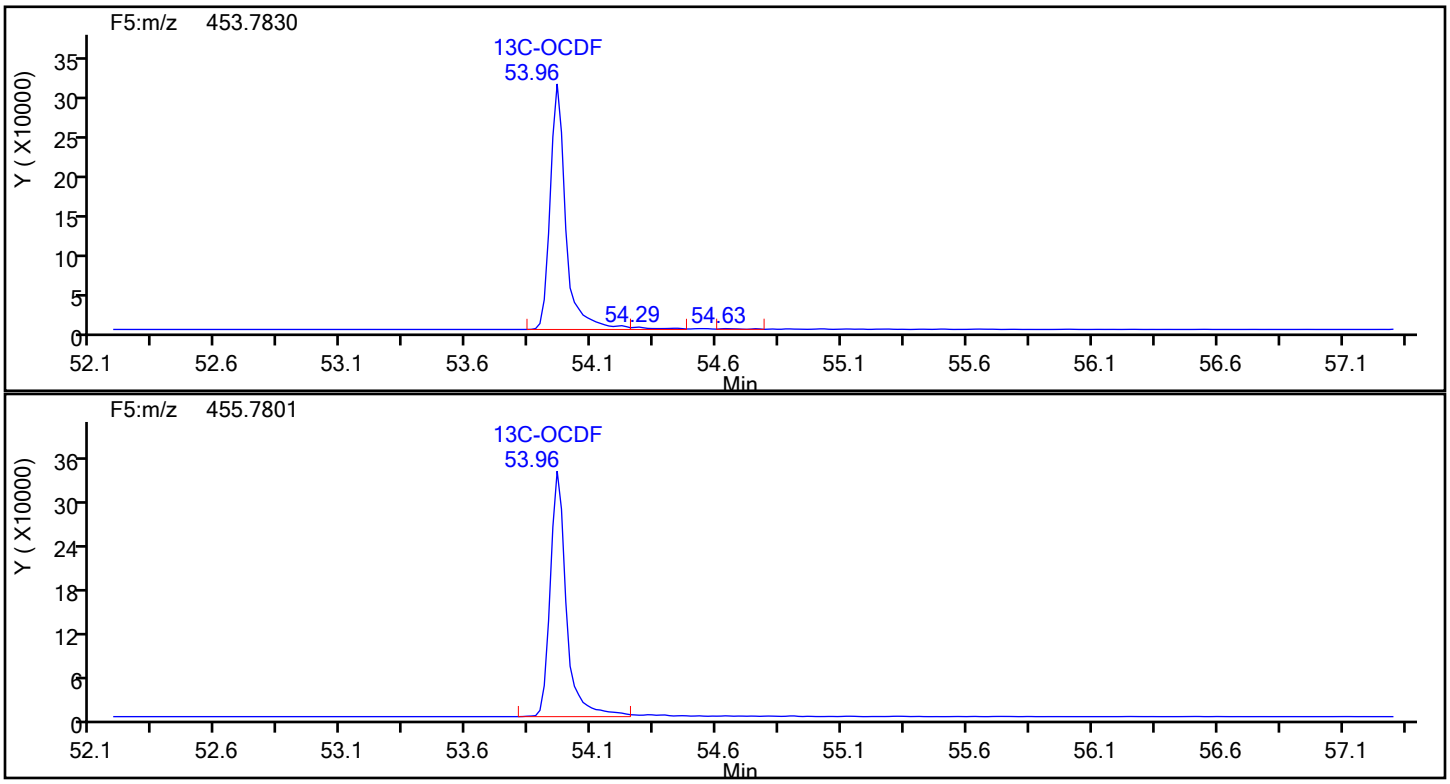
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36146	Sample Line#:	9
Column Type:		Column Dia:	

OCDF



OCDF Standards



Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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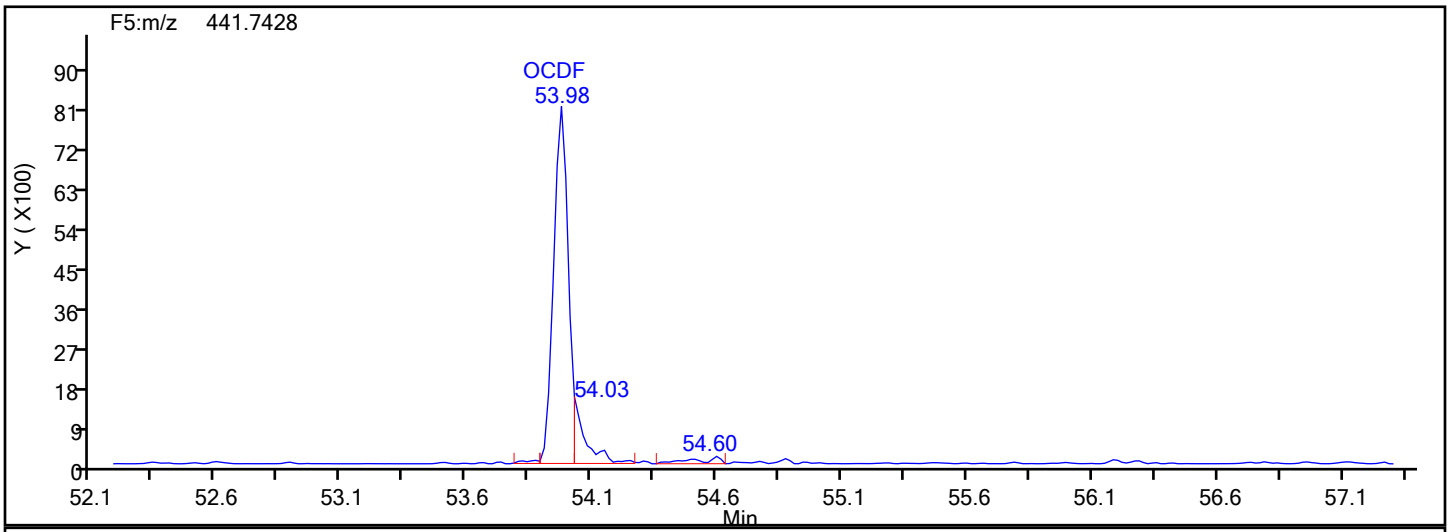
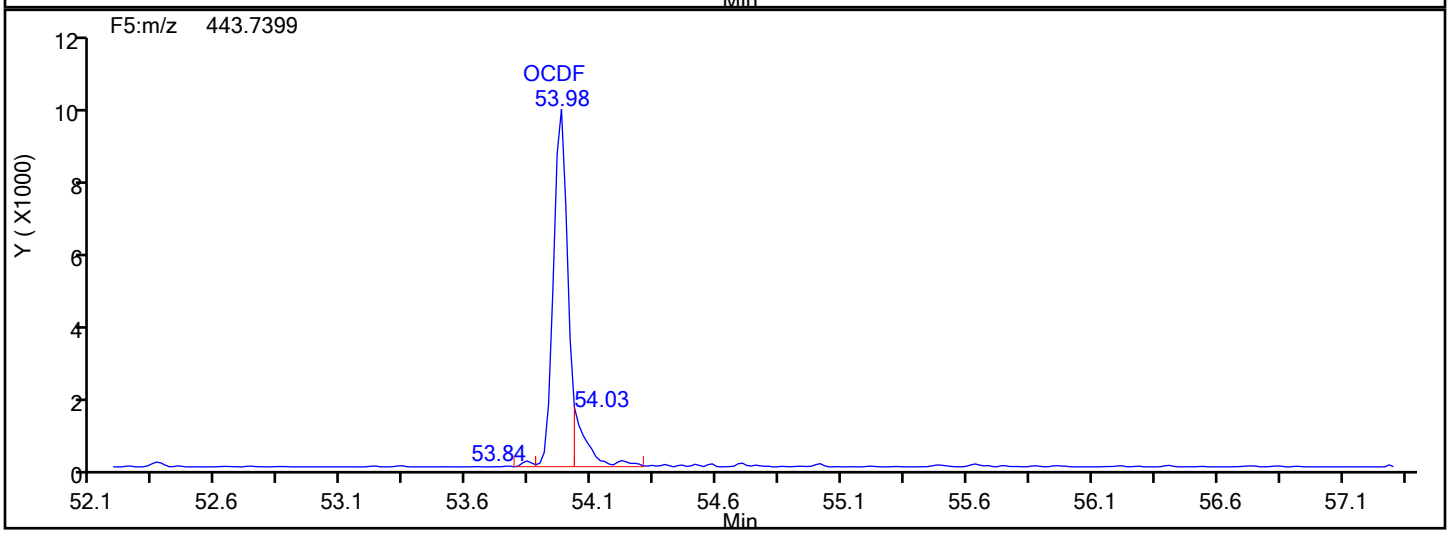
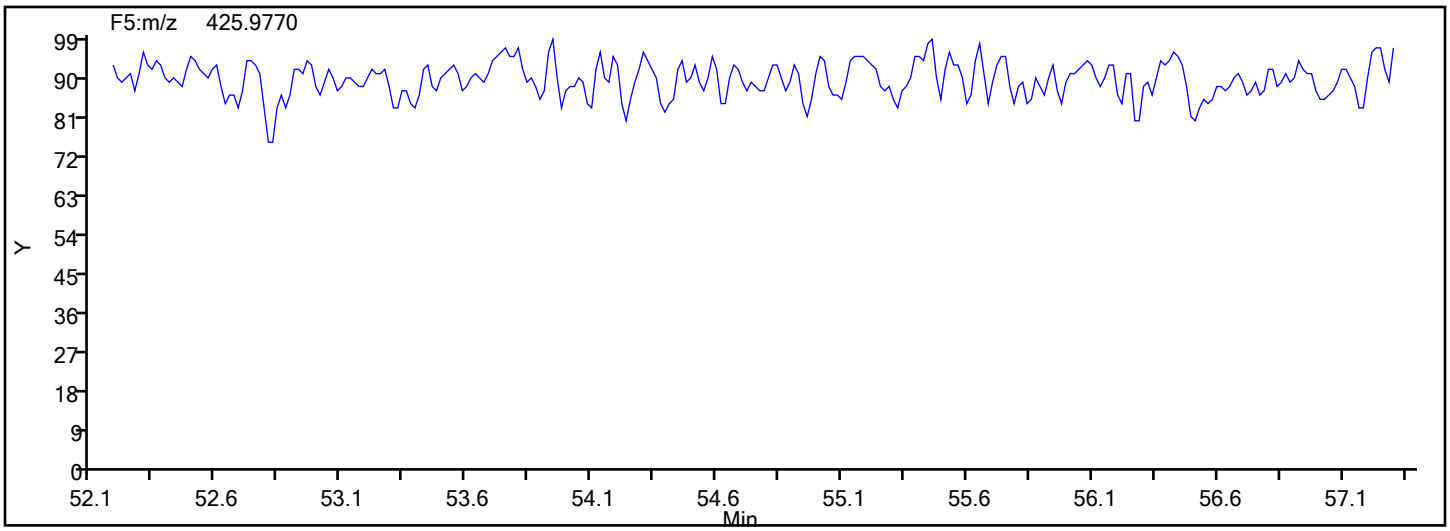
OCDF





OCDF Lock Mass



Report Date: 18-Dec-2019 04:10:08 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d		
Injection Date:	17-Dec-2019 17:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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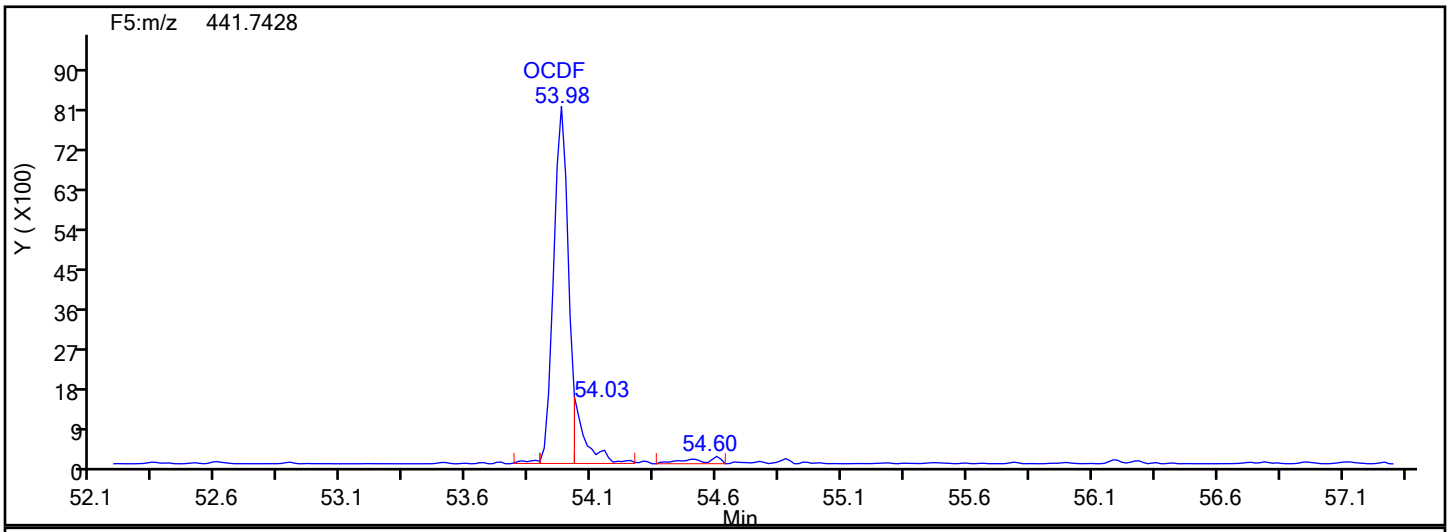
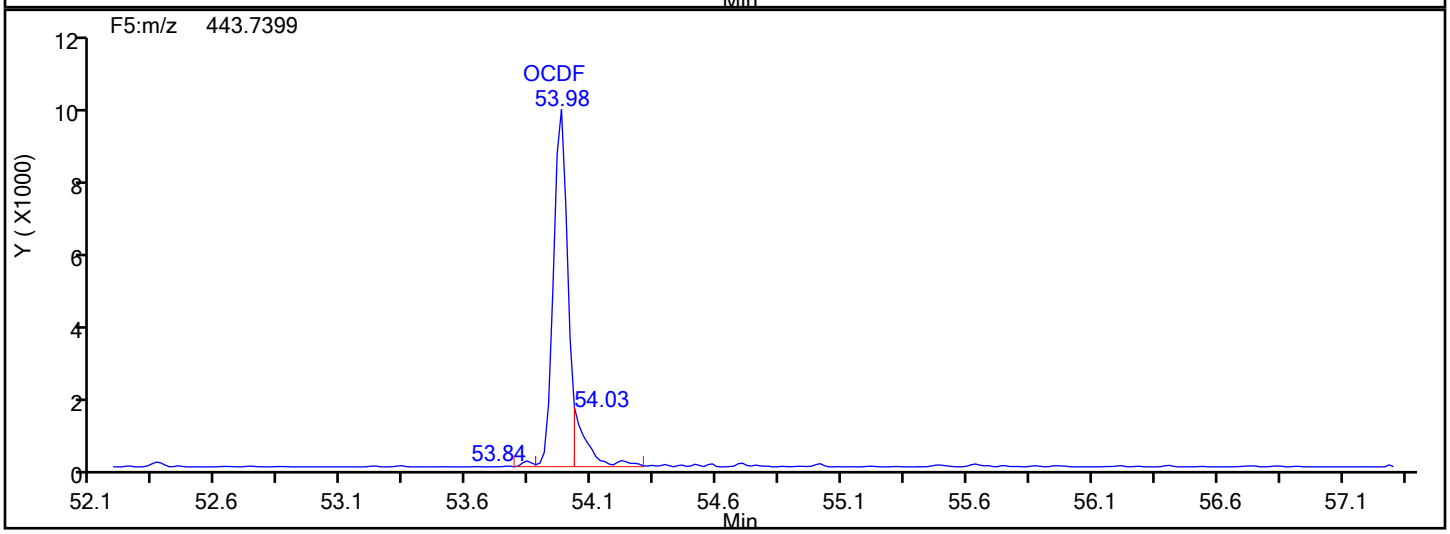
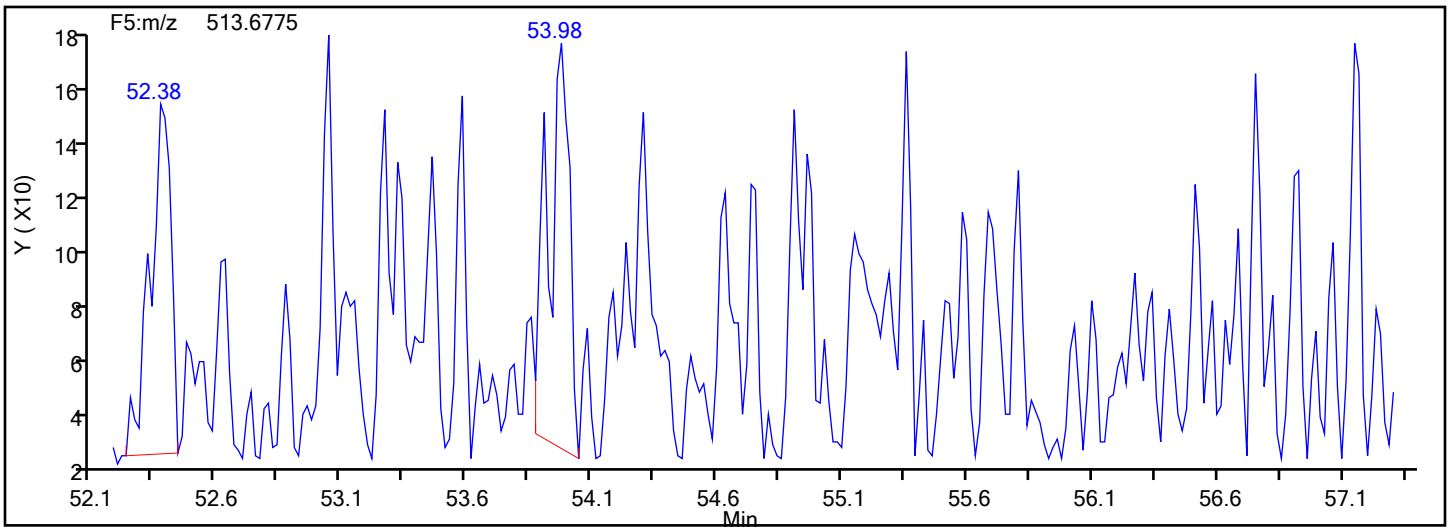
OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

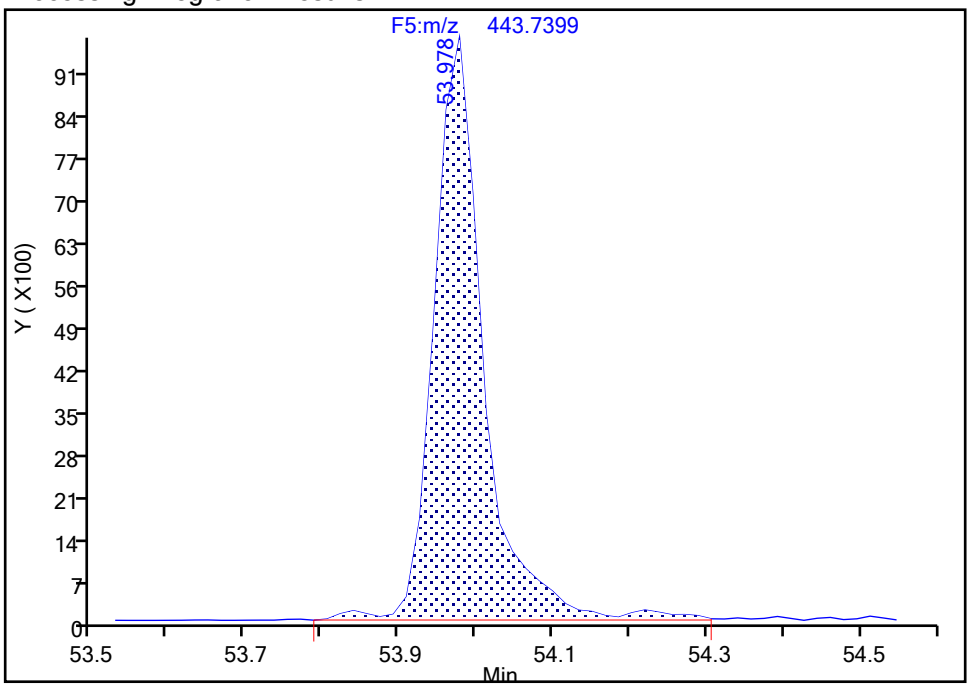
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

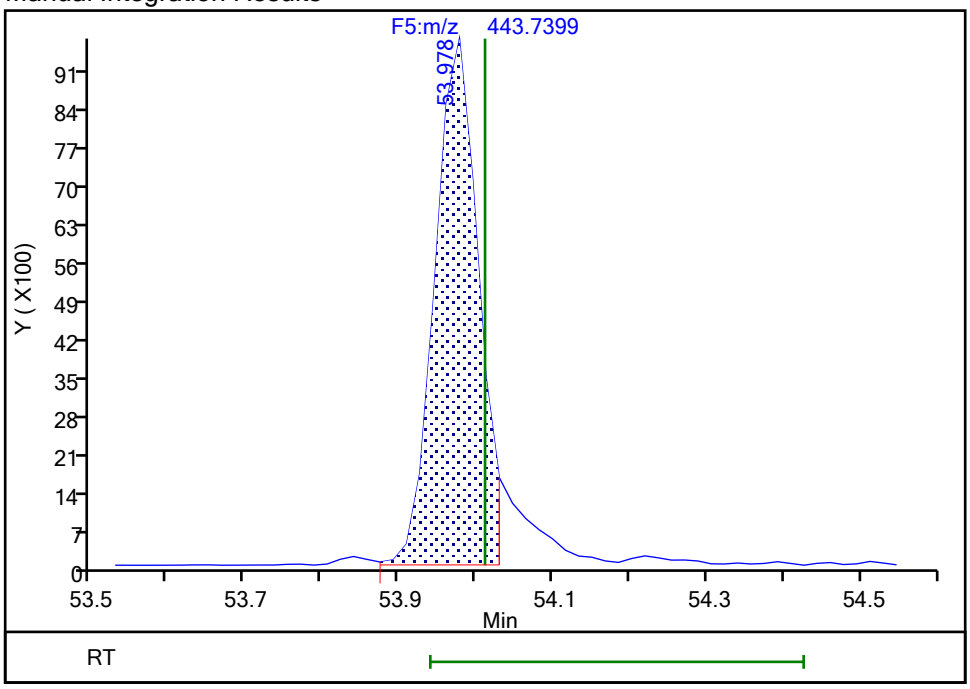
Processing Integration Results

RT: 53.98
Area: 43496
Amount: 2.500795
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 37620
Amount: 2.169853
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:09:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

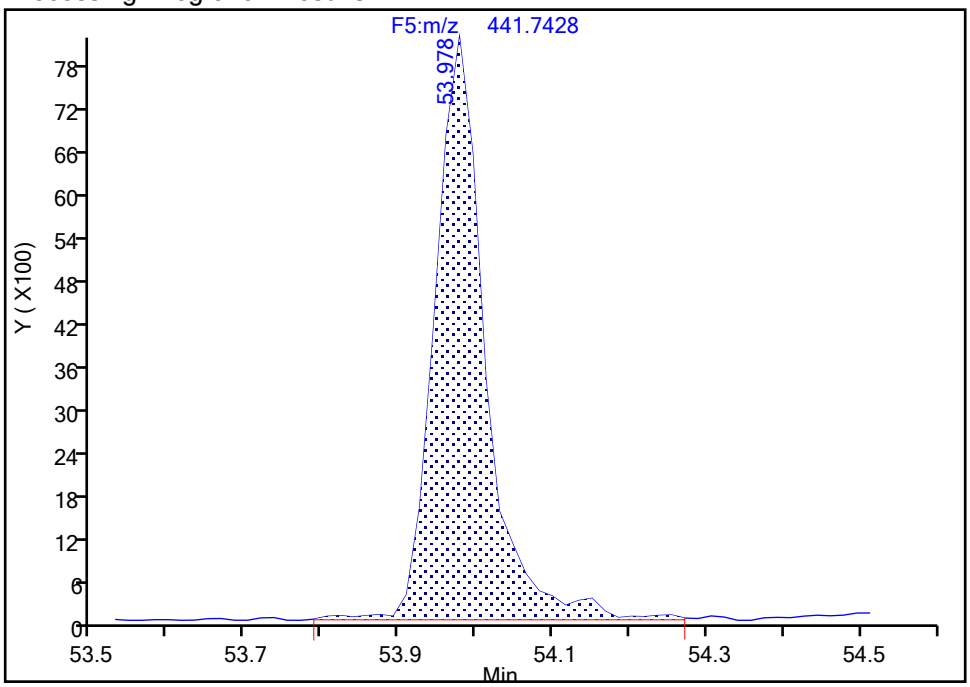
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-10-a.d				
Injection Date:	17-Dec-2019 17:34:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-10-A	Lab Sample ID:	140-17578-10		
Client ID:	11187072-120619-SS-SJSSA06(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

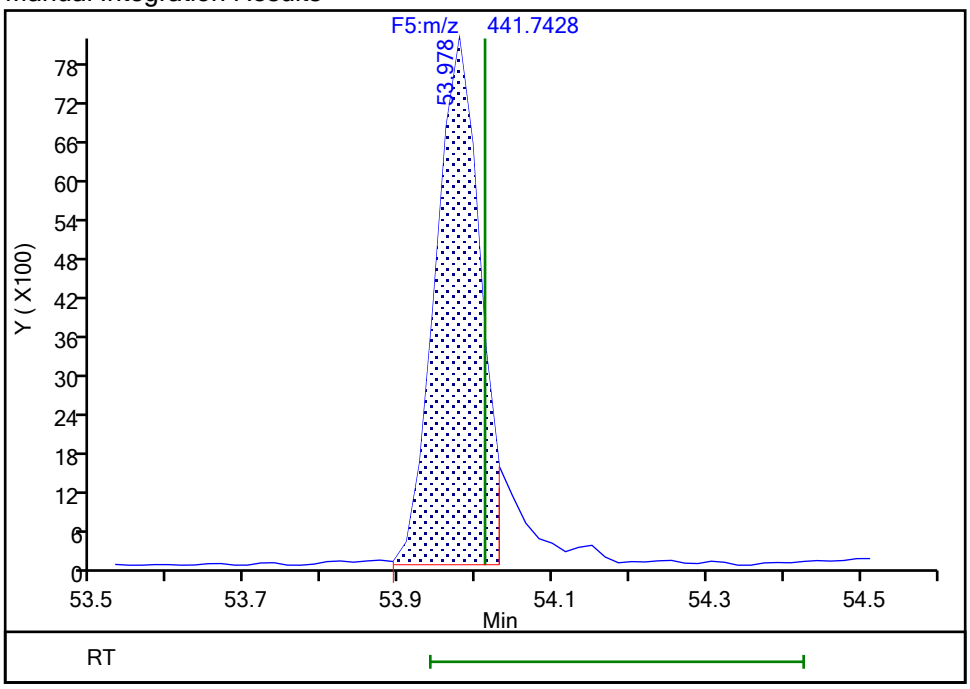
Processing Integration Results

RT: 53.98
Area: 37216
Amount: 2.500795
Amount Units: pg/ul



Manual Integration Results

RT: 53.98
Area: 32411
Amount: 2.169853
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:09:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(1-2) Lab Sample ID: 140-17578-10

Matrix: Sediment Lab File ID: 140-17578-a-10-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.19(g) Date Analyzed: 12/18/2019 08:05

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 10.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	300		1.1	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	63		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:05:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-014
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:57

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	1079371	0.80	1.2213	35.8	35.8	0.2295	0.2295		
2,3,7,8-TCDF	22:14	6078792	0.80	1.1100	134.8	134.8	0.3020	0.3020		
D 13C-2,3,7,8-TCDD	19:41	1232901	0.76	1.0031	30.7	30.7	0.9601	0.9601	61.45	
D 13C-2,3,7,8-TCDF	22:11	2030574	0.83	1.6193	31.3	31.3	0.2481	0.2481	62.69	
$ 37Cl4-2,3,7,8-TCDD	19:43	338824		1.1834	7.157	7.157	0.0701	0.0701	71.57	
* 13C-1,2,3,4-TCDD	20:08	4000361	0.80	1.6E+05	100.0	100.0				

Report Date: 18-Dec-2019 09:06:57 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-10-a.d
Lims ID: 140-17578-A-10-A
Client ID: 11187072-120619-SS-SJSSA06(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:05:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-014
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:05:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:06:57

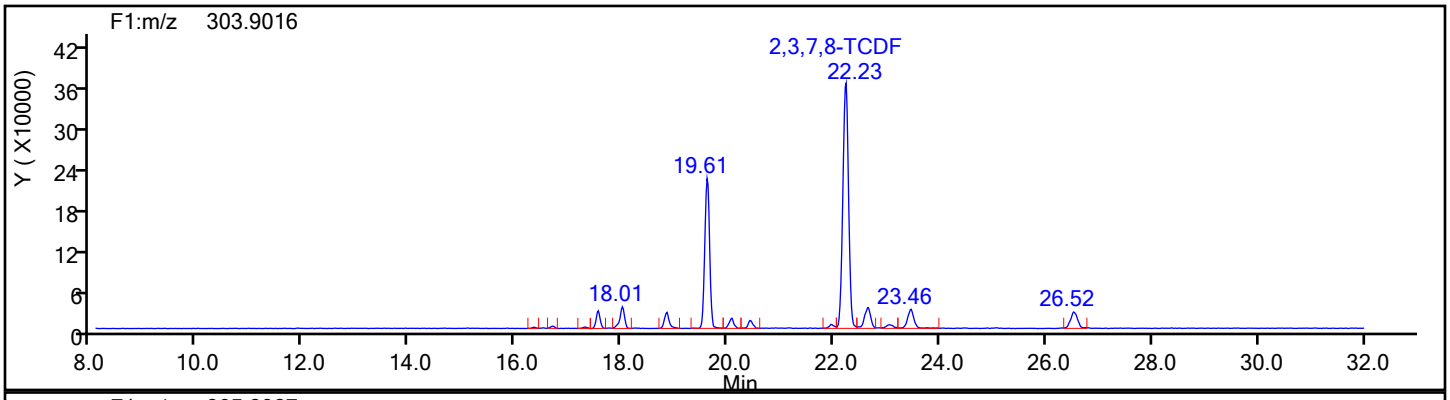
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:44	0	1.002	478749	73812	256	640	288		
321.8936	19:43	19:44	0	1.002	600622	91946	180	450	511	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:14	-1	1.002	2693538	358621	334	835	1074		
305.8987	22:13	22:14	-2	1.002	3385254	451030	377	942	1196	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:41	19:41	-1	0.977	531579	84637	1456	3640	58		
333.9338	19:41	19:41	-1	0.977	701322	109830	982	2455	112	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:14	-2	1.102	918201	114460	581	1452	197		
317.9389	22:11	22:14	-2	1.102	1112373	150608	436	1090	345	0.83(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.979	338824	52155	210	525	248		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:09	-1		1780801	284724	1456	3640	196		
333.9338	20:08	20:09	-1		2219560	348117	982	2455	354	0.80(0.65-0.89)	

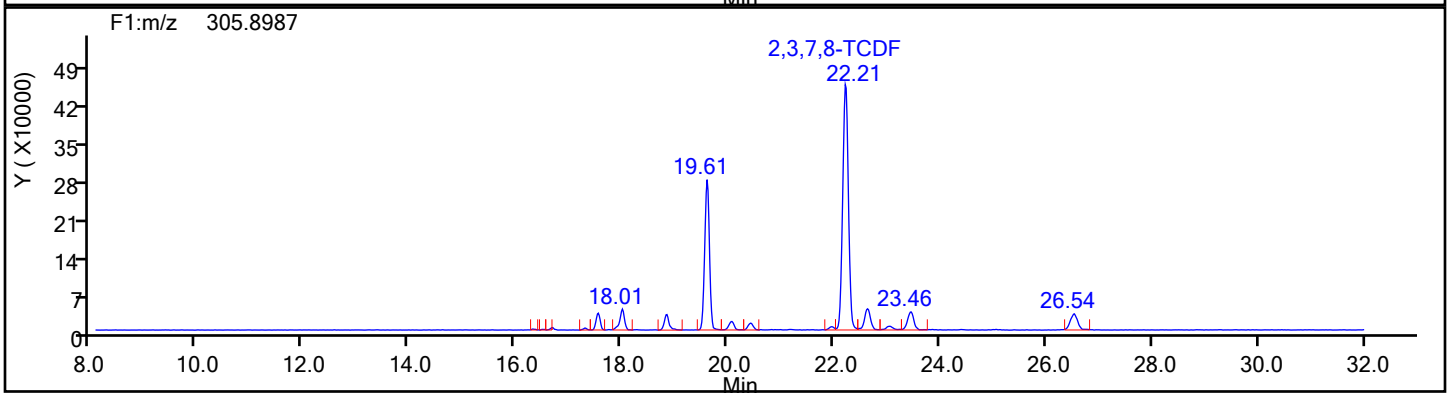
Report Date: 18-Dec-2019 09:06:57 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

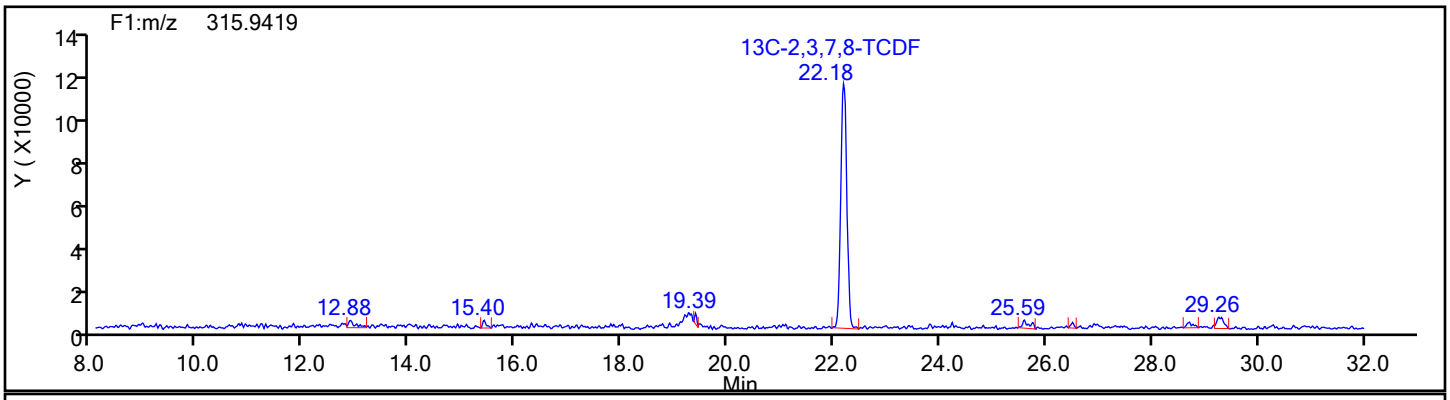
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-10-a.d		
Injection Date:	18-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36167	Sample Line#:	14
Column Type:	DB225	Column Dia:	0.32 mm

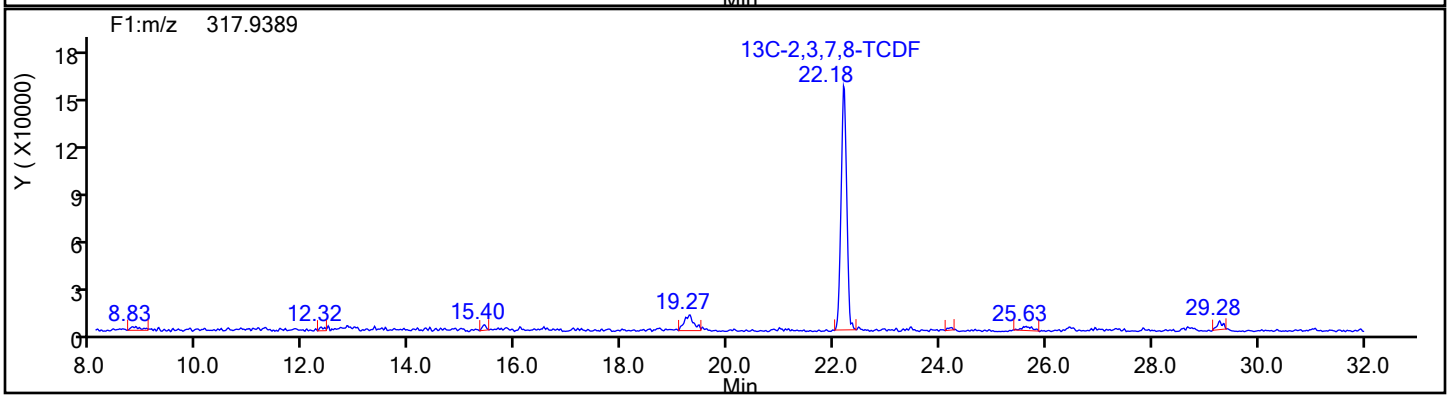
TCDF





TCDF Standards



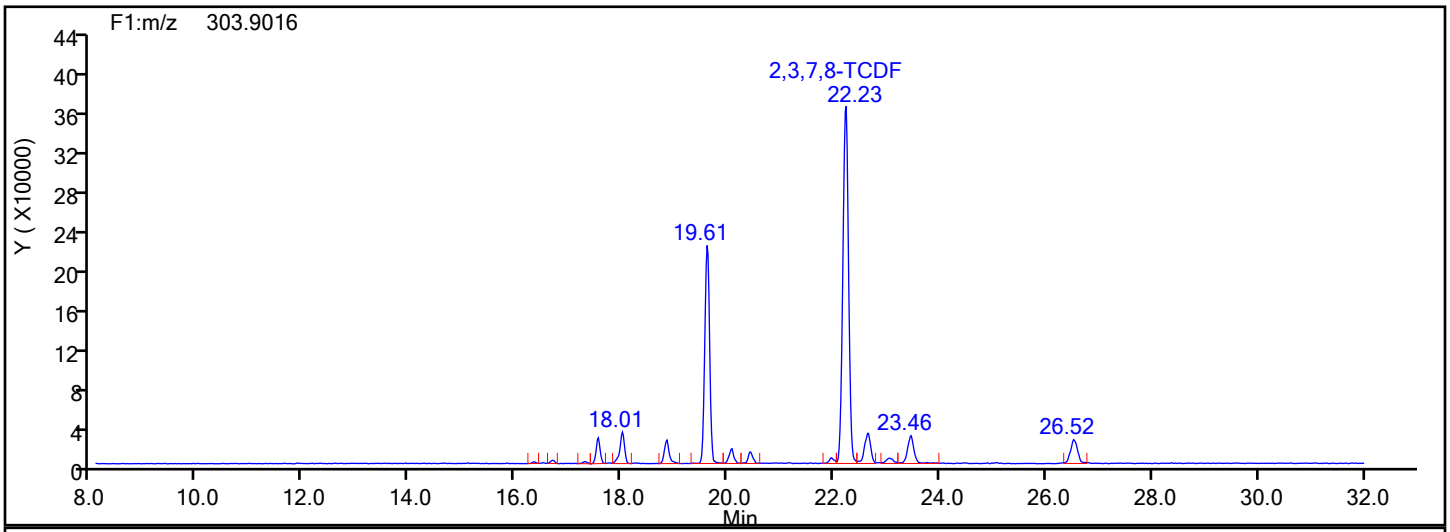


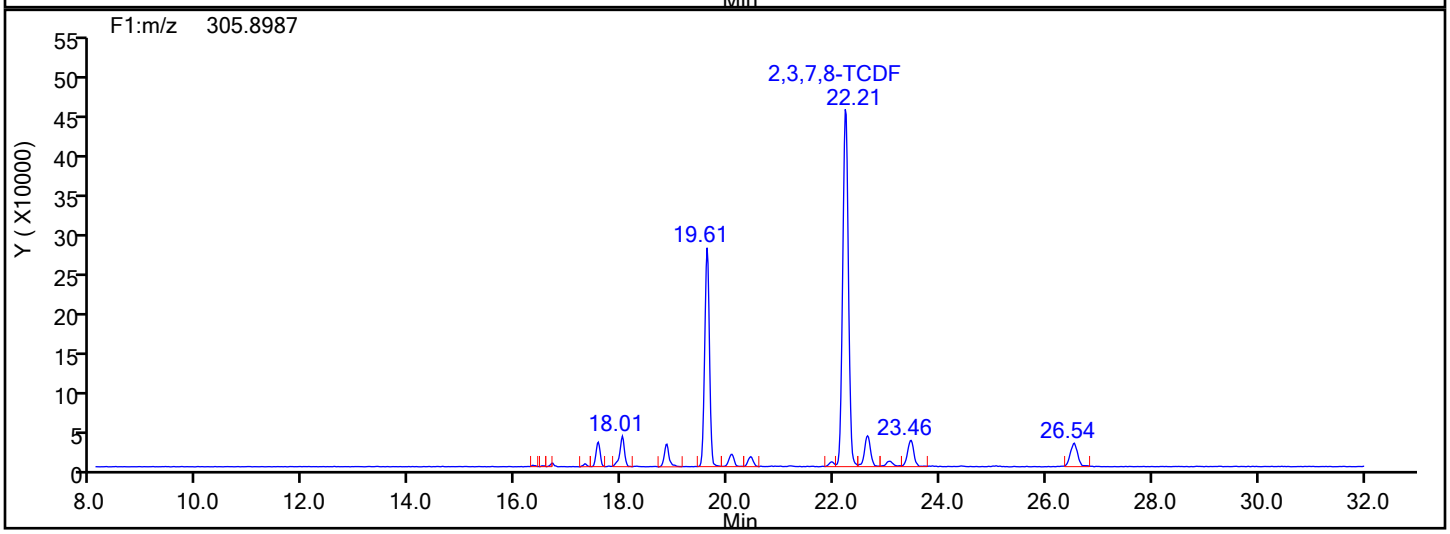
Report Date: 18-Dec-2019 09:06:57 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

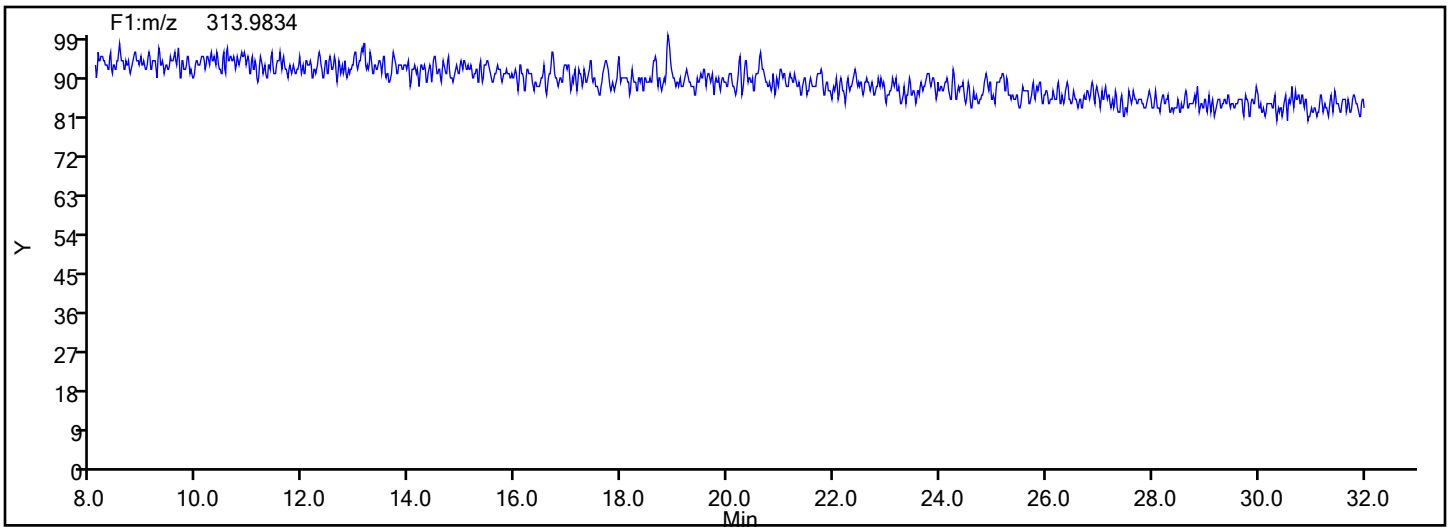
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-10-a.d		
Injection Date:	18-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36167	Sample Line#:	14
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

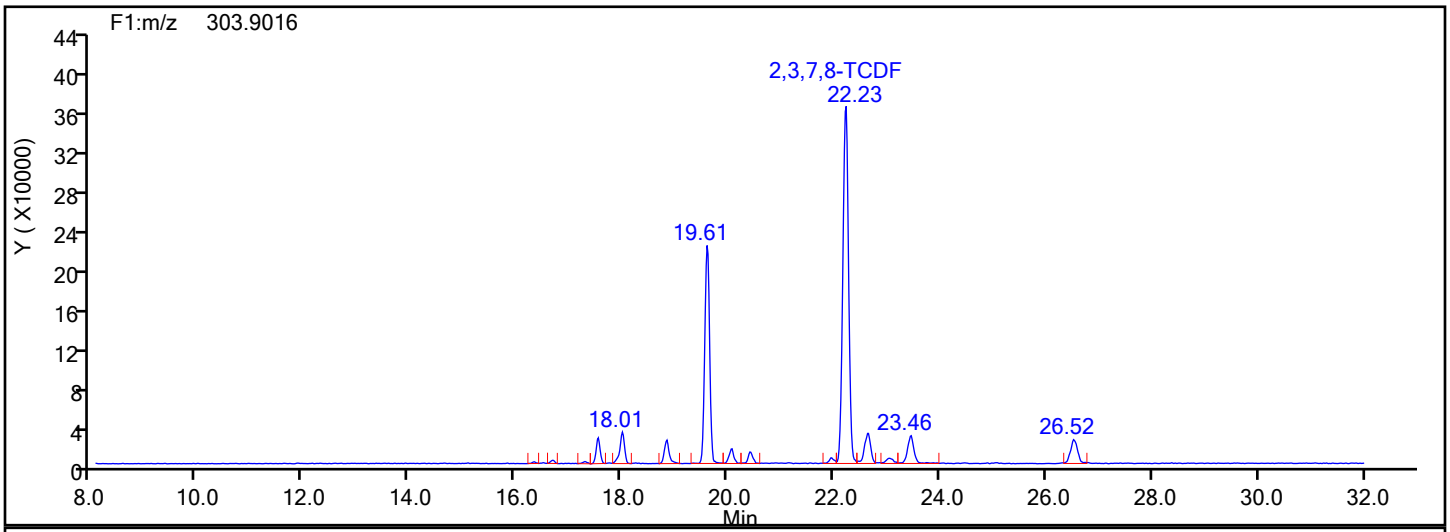


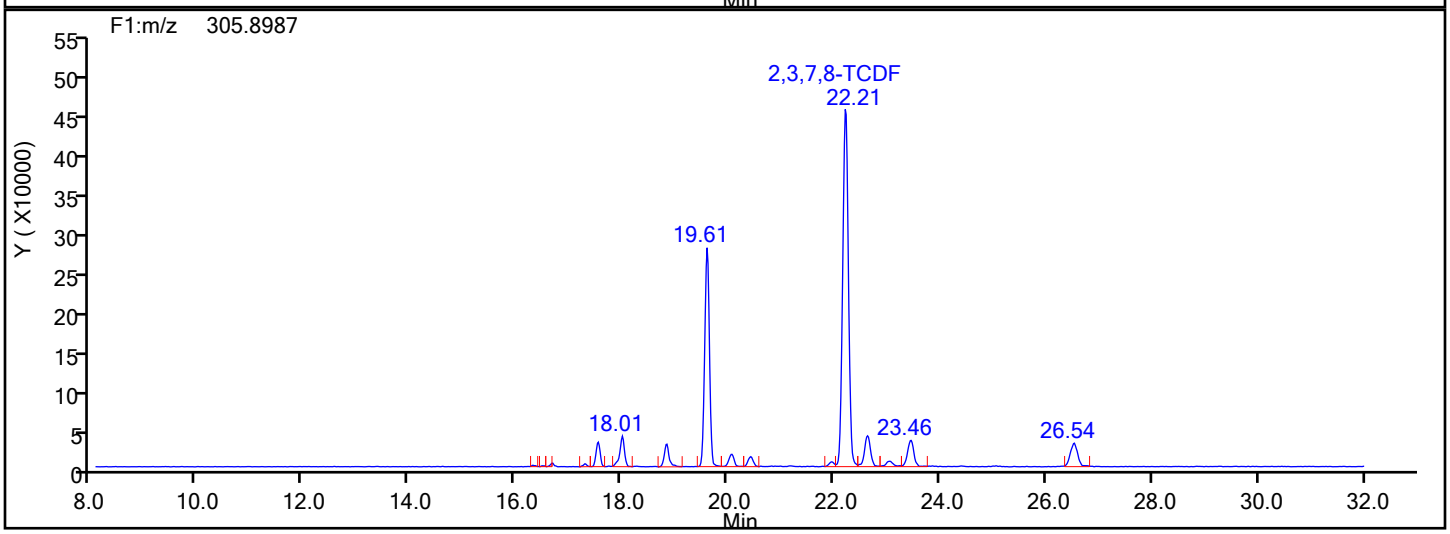
Report Date: 18-Dec-2019 09:06:57 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

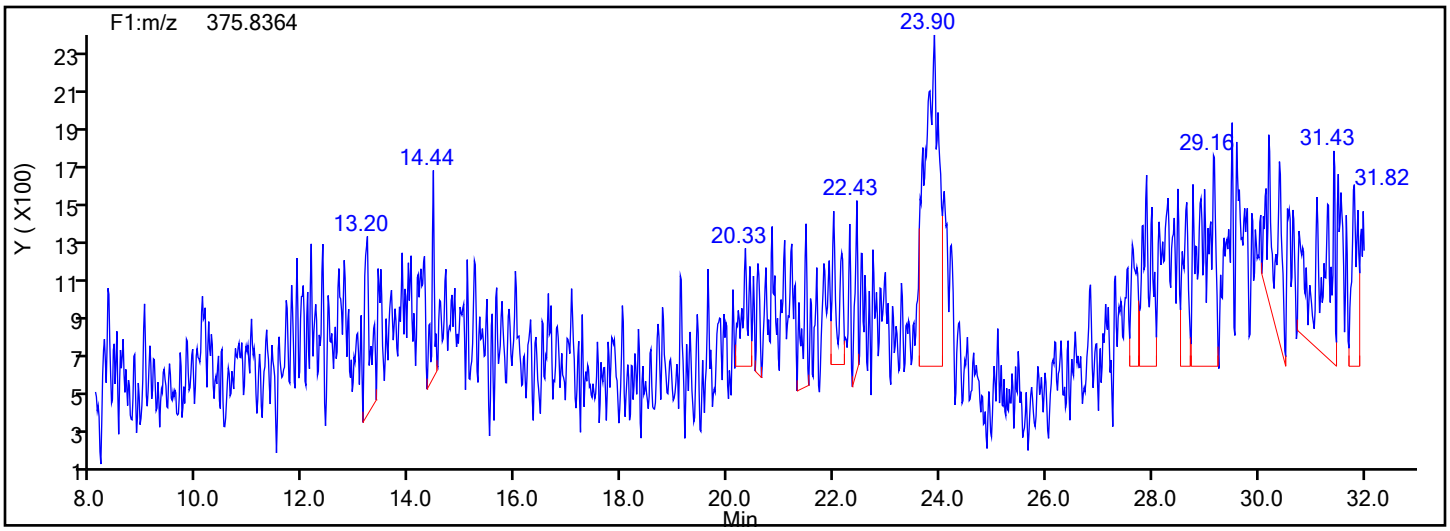
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-10-a.d		
Injection Date:	18-Dec-2019 08:05:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(1-2)		
Worklist#:	36167	Sample Line#:	14
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Matrix: Sediment Lab File ID: 140-17578-a-11-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.31(g) Date Analyzed: 12/17/2019 18:35

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 17.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	82		1.2	0.11
41903-57-5	Total TCDD	94	B q	1.2	0.11
40321-76-4	1,2,3,7,8-PeCDD	0.68	J q	5.9	0.13
36088-22-9	Total PeCDD	2.2	J q	5.9	0.13
39227-28-6	1,2,3,4,7,8-HxCDD	0.16	J	5.9	0.035
57653-85-7	1,2,3,6,7,8-HxCDD	0.42	J q	5.9	0.035
19408-74-3	1,2,3,7,8,9-HxCDD	0.58	J q	5.9	0.033
34465-46-8	Total HxCDD	11	B q	5.9	0.034
35822-46-9	1,2,3,4,6,7,8-HpCDD	9.3	B	5.9	0.089
37871-00-4	Total HpCDD	35	B	5.9	0.089
3268-87-9	OCDD	200	B	12	0.042
30402-14-3	Total TCDF	640	B	1.2	0.15
57117-41-6	1,2,3,7,8-PeCDF	6.2		5.9	0.039
57117-31-4	2,3,4,7,8-PeCDF	5.4	J	5.9	0.041
30402-15-4	Total PeCDF	20	q	5.9	0.040
70648-26-9	1,2,3,4,7,8-HxCDF	9.7		5.9	0.065
57117-44-9	1,2,3,6,7,8-HxCDF	2.3	J	5.9	0.061
60851-34-5	2,3,4,6,7,8-HxCDF	0.37	J	5.9	0.068
72918-21-9	1,2,3,7,8,9-HxCDF	0.15	J q	5.9	0.092
55684-94-1	Total HxCDF	15	q	5.9	0.072
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.8	J B	5.9	0.042
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.93	J B q	5.9	0.071
38998-75-3	Total HpCDF	4.3	J B q	5.9	0.056
39001-02-0	OCDF	3.4	J B	12	0.042

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Matrix: Sediment Lab File ID: 140-17578-a-11-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.31(g) Date Analyzed: 12/17/2019 18:35

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 17.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36146 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	63		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	66		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	68		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
114423-97-1	13C-OCDD	57		17-157
89059-46-1	13C-2,3,7,8-TCDF	64		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	66		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	60		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	68		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	69		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	67		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	65		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		26-138
109719-78-0	13C-OCDF	57		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	71		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 18:35:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:23:14 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 04:23:13

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:45	1183409	0.79	1.1733	34.7	34.7	0.0474	0.0474		
A Non-2,3,7,8-sub-TCDD	29:29	180227	0.77	1.1733	5.348	5.283	0.0474	3.554		RQ
S Total TCDD					40.0	40.0	0.0474	0.0474		RQ
2,3,7,8-TCDF	28:46	7868094	0.79	1.0881	149.8	149.8	0.0635	0.0635		
A Non-2,3,7,8-sub-TCDF	28:12	6535765	0.79	1.0881	124.4	124.4	0.0635	66.9		M
S Total TCDF					274.2	274.2	0.0635	0.0635		
1,2,3,7,8-PeCDD	40:32	7142	1.55	1.0434	0.3252	0.2910	0.0532	0.0532		RQ
A Non-2,3,7,8-sub-PeCDD	39:26	15711	1.55	1.0434	8.205	0.6402	0.0532	0.3729		RQ
S Total PeCDD					8.530	0.9312	0.0532	0.0532		RQ
1,2,3,7,8-PeCDF	38:45	121065	1.76	1.1898	2.631	2.631	0.0165	0.0165		M
2,3,4,7,8-PeCDF	40:00	89509	1.59	1.1095	2.279	2.279	0.0174	0.0174		
A Non-2,3,7,8-sub-PeCDF	38:01	156785	1.55	1.1496	3.819	3.682	0.0169	1.391		RQMa
S Total PeCDF					8.728	8.592	0.0169	0.0169		RQ
1,2,3,4,7,8-HxCDD	44:49	2016	1.09	1.1409	0.0700	0.0700	0.0147	0.0147		
1,2,3,6,7,8-HxCDD	44:55	5549	1.24	1.1481	0.1964	0.1779	0.0150	0.0150		RQ
1,2,3,7,8,9-HxCDD	45:17	7909	1.24	1.2212	0.2873	0.2471	0.0139	0.0139		RQ
A Non-2,3,7,8-sub-HxCDD	44:19	134207	1.24	1.1700	4.439	4.376	0.0145	3.334		RQ
S Total HxCDD					4.992	4.871	0.0145	0.0145		RQ
1,2,3,4,7,8-HxCDF	43:47	197999	1.28	1.3629	4.121	4.121	0.0277	0.0277		
1,2,3,6,7,8-HxCDF	43:54	55208	1.21	1.2762	0.9809	0.9809	0.0259	0.0259		M
2,3,4,6,7,8-HxCDF	44:38	7590	1.35	1.2654	0.1556	0.1556	0.0290	0.0290		
1,2,3,7,8,9-HxCDF	45:33	2684	1.24	1.2573	0.0706	0.0629	0.0392	0.0392		RQM
A Non-2,3,7,8-sub-HxCDF	44:10	48583	1.24	1.2905	1.074	0.992	0.0297	0.3436		RQMa
S Total HxCDF					6.402	6.312	0.0304	0.0304		RQ
1,2,3,4,6,7,8-HpCDD	49:36	105200	1.04	1.1204	3.977	3.977	0.0380	0.0380		
A Non-2,3,7,8-sub-HpCDD	49:03	284510	1.03	1.1204	10.8	10.8	0.0380	10.8		
S Total HpCDD					14.7	14.7	0.0380	0.0380		
1,2,3,4,6,7,8-HpCDF	47:56	54329	1.04	1.4984	1.177	1.177	0.0180	0.0180		
1,2,3,4,7,8,9-HpCDF	50:15	12939	1.04	1.3807	0.4452	0.3938	0.0301	0.0301		RQM
A Non-2,3,7,8-sub-HpCDF	49:56	10179	0.00	1.4395	0.2590	0.2590	0.0227	0.2590		M

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					1.881	1.830	0.0240	0.0240		RQ
OCDD	53:50	1775307	0.90	1.2073	83.2	83.2	0.0180	0.0180		M
OCDF	53:59	42197	0.97	1.1162	1.428	1.428	0.0180	0.0180		M
D 13C-2,3,7,8-TCDD	30:42	1453878	0.79	1.0709	31.7	31.7	0.1876	0.1876	63.44	
D 13C-2,3,7,8-TCDF	28:43	2413604	0.84	1.7545	32.1	32.1	0.3222	0.3222	64.28	
D 13C-1,2,3,7,8-PeCDD	40:31	1176027	1.62	0.8743	31.4	31.4	0.2628	0.2628	62.85	
D 13C-1,2,3,7,8-PeCDF	38:43	1933756	1.57	1.3704	33.0	33.0	0.3106	0.3106	65.94	
D 13C-2,3,4,7,8-PeCDF	39:58	1770215	1.71	1.3837	29.9	29.9	0.3076	0.3076	59.78	
D 13C-1,2,3,4,7,8-HxCDD	44:47	1262920	1.25	0.8772	33.0	33.0	0.1454	0.1454	65.94	
D 13C-1,2,3,6,7,8-HxCDD	44:54	1358406	1.30	0.9171	33.9	33.9	0.1390	0.1390	67.84	
D 13C-1,2,3,4,7,8-HxCDF	43:46	1762782	0.52	1.1892	33.9	33.9	0.2753	0.2753	67.89	
D 13C-1,2,3,6,7,8-HxCDF	43:53	2205013	0.53	1.4625	34.5	34.5	0.2238	0.2238	69.05	
D 13C-2,3,4,6,7,8-HxCDF	44:37	1927903	0.53	1.3197	33.5	33.5	0.2481	0.2481	66.91	
D 13C-1,2,3,7,8,9-HxCDF	45:32	1697282	0.51	1.2001	32.4	32.4	0.2728	0.2728	64.77	
D 13C-1,2,3,4,6,7,8-HpCDD	49:34	1180494	1.04	0.8155	33.1	33.1	0.1736	0.1736	66.30	
D 13C-1,2,3,4,6,7,8-HpCDF	47:54	1540028	0.47	1.0496	33.6	33.6	0.2005	0.2005	67.20	
D 13C-1,2,3,4,7,8,9-HpCDF	50:13	1189946	0.46	0.8947	30.5	30.5	0.2352	0.2352	60.91	
D 13C-OCDD	53:49	1767960	0.91	0.7044	57.5	57.5	0.2338	0.2338	57.47	
D 13C-OCDF	53:58	2646929	0.92	1.0615	57.1	57.1	0.1618	0.1618	57.10	
$ 37Cl4-2,3,7,8-TCDD	30:45	373045		1.2266	7.106	7.106	0.1612	0.1612	71.06	
* 13C-1,2,3,4-TCDD	30:12	4280064	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:17	4366986	1.30	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 18:35:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 04:23:14 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 04:23:13

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:45	30:51	-4	1.002	523424	52624	32	80	1645		
321.8936	30:46	30:51	-3	1.002	659985	66638	35	87	1904	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	24:54	29:29	-274	0.811	1866	305	32	80	10		
	Empc Correction				1477	241	32	80	8		
321.8936	24:52	29:29	-276	0.810	1919	314	35	87	9	0.97(0.65-0.89)	
319.8965	27:43	29:29	-106	0.902	12023	1628	32	80	51		
321.8936	27:44	29:29	-105	0.903	14092	2170	35	87	62	0.85(0.65-0.89)	
319.8965	28:40	29:29	-48	0.934	3094	417	32	80	13		
	Empc Correction				2383	262	32	80	8		
321.8936	28:40	29:29	-48	0.934	3095	341	35	87	10	1.00(0.65-0.89)	
319.8965	30:10	29:29	42	0.982	2581	468	32	80	15		
	Empc Correction				1852	311	32	80	10		
321.8936	30:13	29:29	45	0.984	2406	404	35	87	12	1.07(0.65-0.89)	
319.8965	30:30	29:29	62	0.993	5608	853	32	80	27		
321.8936	30:29	29:29	61	0.993	7045	1212	35	87	35	0.80(0.65-0.89)	
319.8965	31:50	29:29	141	1.037	52061	5184	32	80	162		
321.8936	31:52	29:29	143	1.038	69183	6531	35	87	187	0.75(0.65-0.89)	
319.8965	32:45	29:29	196	1.066	1925	171	32	80	5		
321.8936	32:37	29:29	188	1.062	2394	263	35	87	8	0.80(0.65-0.89)	
319.8965	33:58	29:29	269	1.106	1605	210	32	80	7		
	Empc Correction				1202	165	32	80	5		
321.8936	33:59	29:29	270	1.107	1562	215	35	87	6	1.03(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:46	28:49	-4	1.002	3476145	363337	85	212	4275		
305.8987	28:46	28:49	-4	1.002	4391949	456983	65	162	7031	0.79(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-TCDF											M
303.9016	23:19	28:12	-293	0.812	4131	644	85	212	8		
305.8987	23:18	28:12	-294	0.811	5761	977	65	162	15	0.72(0.65-0.89)	
303.9016	24:18	28:12	-234	0.846	29567	3757	85	212	44		
305.8987	24:20	28:12	-232	0.847	37009	4576	65	162	70	0.80(0.65-0.89)	
303.9016	25:02	28:12	-190	0.872	161607	20453	85	212	241		
305.8987	25:01	28:12	-191	0.871	205880	26262	65	162	404	0.78(0.65-0.89)	
303.9016	25:44	28:12	-148	0.896	209340	21466	85	212	253		
305.8987	25:44	28:12	-148	0.896	254349	24817	65	162	382	0.82(0.65-0.89)	
303.9016	26:13	28:12	-119	0.913	31075	4118	85	212	48		
305.8987	26:12	28:12	-120	0.912	36809	5099	65	162	78	0.84(0.65-0.89)	
303.9016	26:24	28:12	-108	0.919	97113	12180	85	212	143		
305.8987	26:25	28:12	-107	0.920	120588	14807	65	162	228	0.81(0.65-0.89)	
303.9016	26:55	28:12	-77	0.937	142680	17384	85	212	205		
305.8987	26:56	28:12	-76	0.938	178949	19838	65	162	305	0.80(0.65-0.89)	
303.9016	27:11	28:12	-61	0.947	14145	1967	85	212	23		
305.8987	27:10	28:12	-62	0.946	20237	2623	65	162	40	0.70(0.65-0.89)	
303.9016	27:41	28:12	-32	0.964	1557144	187122	85	212	2201		
305.8987	27:41	28:12	-32	0.964	1959247	234489	65	162	3608	0.79(0.65-0.89)	
303.9016	28:18	28:12	6	0.985	81013	8925	85	212	105		
305.8987	28:17	28:12	5	0.985	100537	11689	65	162	180	0.81(0.65-0.89)	
303.9016	29:35	28:12	82	1.030	2916	385	85	212	5		
305.8987	29:35	28:12	82	1.030	4094	620	65	162	10	0.71(0.65-0.89)	
303.9016	29:58	28:12	106	1.043	249111	26085	85	212	307		
305.8987	29:58	28:12	106	1.043	321110	34057	65	162	524	0.78(0.65-0.89)	
303.9016	30:39	28:12	147	1.067	51620	4862	85	212	57		M
305.8987	30:38	28:12	146	1.067	70345	6675	65	162	103	0.73(0.65-0.89)	
303.9016	33:48	28:12	335	1.177	257791	27477	85	212	323		
305.8987	33:48	28:12	335	1.177	331597	34492	65	162	531	0.78(0.65-0.89)	
1,2,3,7,8-PeCDD											RQ
355.8546	40:32	40:33	-2	1.000	5180	1136	11	27	103		
	Empc Correction				4341	1202	11	27	109		
357.8516	40:32	40:33	-2	1.000	2801	776	106	265	7	1.85(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:34	39:26	-112	0.927	3988	674	11	27	61		
357.8516	37:44	39:26	-102	0.931	186072	34891	106	265	329	0.02(1.32-1.78)	
	Empc Correction				2572	434	106	265	4		
355.8546	38:25	39:26	-61	0.948	7709	1590	11	27	145		
	Empc Correction				5562	1292	11	27	117		
357.8516	38:26	39:26	-60	0.949	3589	834	106	265	8	2.15(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:45	38:44	-2	1.001	77219	14885	23	57	647		
341.8567	38:44	38:44	-3	1.000	43846	8555	35	87	244	1.76(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:00	40:01	-2	1.001	54995	11746	23	57	511		
341.8567	40:00	40:01	-2	1.001	34514	7567	35	87	216	1.59(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:41	38:01	-200	0.896	3477	447	23	57	19		
	Empc Correction				2442	539	23	57	23		
341.8567	34:39	38:01	-202	0.895	1576	348	35	87	10	2.21(1.32-1.78)	
339.8597	37:14	38:01	-47	0.962	35827	6076	23	57	264		
341.8567	37:14	38:01	-47	0.962	23425	3635	35	87	104	1.53(1.32-1.78)	
339.8597	37:31	38:01	-30	0.969	1316	259	23	57	11		
341.8567	37:33	38:01	-28	0.970	1638	221	35	87	6	0.80(1.32-1.78)	
	Empc Correction				849	167	35	87	5		
339.8597	38:08	38:01	7	0.985	1451	267	23	57	12		
341.8567	38:04	38:01	3	0.984	1259	261	35	87	7	1.15(1.32-1.78)	
	Empc Correction				936	172	35	87	5		
339.8597	38:13	38:01	12	0.987	3472	632	23	57	27		
341.8567	38:14	38:01	13	0.988	2860	433	35	87	12	1.21(1.32-1.78)	
	Empc Correction				2240	407	35	87	12		
339.8597	38:39	38:01	38	0.998	7362	1934	23	57	84		M
	Empc Correction				6190	1932	23	57	84		
341.8567	38:40	38:01	39	0.999	3994	1247	35	87	36	1.84(1.32-1.78)	
339.8597	39:02	38:01	61	1.008	1555	336	23	57	15		a
341.8567	39:01	38:01	60	1.008	1243	210	35	87	6	1.25(1.32-1.78)	M
	Empc Correction				1003	216	35	87	6		
339.8597	39:17	38:01	76	1.015	23933	4785	23	57	208		
341.8567	39:16	38:01	75	1.014	14157	2642	35	87	75	1.69(1.32-1.78)	
339.8597	40:15	38:01	134	1.040	15281	3247	23	57	141		
341.8567	40:15	38:01	134	1.040	11148	2082	35	87	59	1.37(1.32-1.78)	
339.8597	41:20	38:01	199	1.068	3641	588	23	57	26		
341.8567	41:20	38:01	199	1.068	3987	620	35	87	18	0.91(1.32-1.78)	
	Empc Correction				2349	379	35	87	11		
1,2,3,4,7,8-HxCDD											
389.8158	44:49	44:49	-1	1.001	1050	283	19	47	15		
391.8127	44:48	44:49	-2	1.000	966	297	24	60	12	1.09(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQ
389.8158	44:55	44:55	-2	1.000	3072	728	19	47	38		
391.8127	44:55	44:55	-2	1.000	3055	627	24	60	26	1.01(1.05-1.43)	
	Empc Correction				2477	587	24	60	24		
1,2,3,7,8,9-HxCDD											RQ
389.8158	45:17	45:18	-3	1.011	5666	928	19	47	49		
	Empc Correction				4378	828	19	47	44		
391.8127	45:17	45:18	-3	1.011	3531	668	24	60	28	1.60(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:15	44:19	-64	0.963	54986	14753	19	47	776		
391.8127	43:15	44:19	-64	0.963	47276	12792	24	60	533	1.16(1.05-1.43)	
389.8158	43:49	44:19	-30	0.976	3517	507	19	47	27		
	Empc Correction				1584	406	19	47	21		
391.8127	43:48	44:19	-31	0.976	1278	328	24	60	14	2.75(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
389.8158	44:06	44:19	-12	0.982	14503	3482	19	47	183		
391.8127	44:06	44:19	-12	0.982	10610	2416	24	60	101	1.37(1.05-1.43)	
389.8158	44:16	44:19	-2	0.986	2310	385	19	47	20		
391.8127	44:15	44:19	-3	0.986	1660	279	24	60	12	1.39(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:47	43:47	-2	1.000	111117	27836	47	117	592		
375.8178	43:46	43:47	-3	1.000	86882	20790	91	227	228	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDF											M
373.8208	43:54	43:54	-2	1.000	30271	7267	47	117	155		M
375.8178	43:54	43:54	-2	1.000	24937	5871	91	227	65	1.21(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											
373.8208	44:38	44:38	-2	1.000	4367	1127	47	117	24		
375.8178	44:38	44:38	-2	1.000	3223	824	91	227	9	1.35(1.05-1.43)	
1,2,3,7,8,9-HxCDF											RQM
373.8208	45:33	45:33	-2	1.000	1486	446	47	117	9		
375.8178	45:33	45:33	-2	1.000	1528	354	91	227	4	0.97(1.05-1.43)	M
	Empc Correction				1198	359	91	227	4		
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:32	44:10	-97	0.969	2219	585	47	117	12		a
375.8178	42:33	44:10	-96	0.970	1752	495	91	227	5	1.27(1.05-1.43)	M
373.8208	42:43	44:10	-86	0.973	9320	2562	47	117	55		a
375.8178	42:43	44:10	-86	0.973	9601	2320	91	227	25	0.97(1.05-1.43)	
	Empc Correction				7516	2066	91	227	23		
373.8208	43:19	44:10	-51	0.987	5583	1379	47	117	29		a
375.8178	43:20	44:10	-50	0.987	4069	1267	91	227	14	1.37(1.05-1.43)	
373.8208	43:58	44:10	-11	1.002	2721	728	47	117	15		M
375.8178	43:58	44:10	-11	1.002	2633	834	91	227	9	1.03(1.05-1.43)	
	Empc Correction				2194	587	91	227	6		
373.8208	44:09	44:10	0	1.006	1067	221	47	117	5		M
	Empc Correction				913	262	47	117	6		
375.8178	44:09	44:10	0	1.006	737	212	91	227	2	1.45(1.05-1.43)	
373.8208	45:43	44:10	93	1.042	6399	1495	47	117	32		M
375.8178	45:42	44:10	92	1.041	6527	1329	91	227	15	0.98(1.05-1.43)	
	Empc Correction				5160	1205	91	227	13		
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:35	-2	1.001	53751	9311	34	85	274		
425.7737	49:35	49:35	-3	1.000	51449	9149	37	92	247	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:25	49:03	-38	0.977	144049	27244	34	85	801		
425.7737	48:25	49:03	-38	0.977	140461	25473	37	92	688	1.03(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:56	47:56	-2	1.000	27738	5635	42	105	134		
409.7788	47:56	47:56	-2	1.000	26591	5751	25	62	230	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											RQM
407.7817	50:15	50:15	-1	1.001	8285	1350	42	105	32		M
	Empc Correction				6596	1313	42	105	31		
409.7788	50:14	50:15	-2	1.000	6343	1263	25	62	51	1.31(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											M
407.7817	48:34	49:56	-82	1.014	10179	1915	42	105	46		M
409.7788	48:33	49:56	-83	0.000			25	62		0.00(0.88-1.20)	
OCDD											M
457.7377	53:50	53:50	-2	1.000	839219	192802	19	47	10147		M
459.7348	53:50	53:50	-2	1.000	936088	218773	13	32	16829	0.90(0.76-1.02)	M
OCDF											M
441.7428	53:59	53:59	-2	1.000	20800	4868	28	70	174		M
443.7399	53:59	53:59	-2	1.000	21397	5204	19	47	274	0.97(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:42	30:47	-5	1.017	641531	68960	231	577	299		
333.9338	30:42	30:47	-5	1.017	812347	81129	146	365	556	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:43	28:48	-5	0.951	1102172	122142	418	1045	292		
317.9389	28:44	28:48	-4	0.951	1311432	149077	642	1605	232	0.84(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:31	40:33	-2	1.342	726534	160651	313	782	513		
369.8919	40:31	40:33	-2	1.342	449493	102148	118	295	866	1.62(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:43	38:45	-3	1.282	1180688	221953	474	1185	468		
353.8970	38:43	38:45	-3	1.282	753068	147981	324	810	457	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	39:58	40:01	-3	1.324	1117528	236892	474	1185	500		
353.8970	39:58	40:01	-3	1.324	652687	139483	324	810	431	1.71(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:47	44:47	-2	0.989	702117	180773	274	685	660		
403.8529	44:47	44:47	-2	0.989	560803	138151	216	540	640	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:54	44:54	-2	0.991	767013	175490	274	685	640		
403.8529	44:54	44:54	-2	0.991	591393	136162	216	540	630	1.30(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:46	-1	0.966	605539	159660	503	1257	317		
385.8610	43:46	43:46	-1	0.966	1157243	297136	755	1887	394	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:53	43:54	-2	0.969	768326	178275	503	1257	354		
385.8610	43:53	43:54	-2	0.969	1436687	342815	755	1887	454	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:37	44:37	-2	0.985	670938	161078	503	1257	320		
385.8610	44:37	44:37	-2	0.985	1256965	309321	755	1887	410	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:32	45:33	-2	1.006	571527	116626	503	1257	232		
385.8610	45:32	45:33	-2	1.006	1125755	233787	755	1887	310	0.51(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:34	49:35	-3	1.094	602210	103759	398	995	261		
437.8140	49:34	49:35	-3	1.094	578284	103958	146	365	712	1.04(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:54	47:55	-2	1.058	494051	98550	296	740	333		
419.8220	47:54	47:55	-2	1.058	1045977	211638	513	1282	413	0.47(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:13	50:14	-2	1.109	374192	62742	296	740	212		
419.8220	50:13	50:14	-2	1.109	815754	138279	513	1282	270	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:49	53:50	-2	1.189	843181	172981	318	795	544		
471.7750	53:49	53:50	-2	1.189	924779	195980	315	787	622	0.91(0.76-1.02)	
13C-OCDF											
453.7830	53:58	53:58	-2	1.192	1271086	279600	298	745	938		
455.7801	53:58	53:58	-2	1.192	1375843	303660	362	905	839	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:45	30:49	-4	1.018	373045	38895	371	927	105		
13C-1,2,3,4-TCDD											
331.9368	30:12	30:17	-5		1913431	202457	231	577	876		
333.9338	30:12	30:17	-5		2366633	266302	146	365	1824	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:17	45:20	-2		2466996	546070	274	685	1993		
403.8529	45:17	45:20	-2		1899990	414656	216	540	1920	1.30(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 29.467

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1453878	150089

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1453878	150089

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:54	1866	305	1919	314	0.1109	0.97	RQ
24:54	1477	241	1919	314	0.0995		Empc Correction
27:43	12023	1628	14092	2170	0.7655	0.85	
28:40	3094	417	3095	341	0.1814	1.00	RQ
28:40	2383	262	3095	341	0.1606		Empc Correction
30:10	2581	468	2406	404	0.1462	1.07	RQ
30:10	1852	311	2406	404	0.1248		Empc Correction
30:30	5608	853	7045	1212	0.3709	0.80	
31:50	52061	5184	69183	6531	3.55	0.75	
32:45	1925	171	2394	263	0.1266	0.80	
33:58	1605	210	1562	215	0.0928	1.03	RQ
33:58	1202	165	1562	215	0.0810		Empc Correction
Signal Totals:							
	78531	8815	101696	11450			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	182459	20686				0.79	RQ
	180227	20265					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.348 = (182459 * 50.000) / (1453878 * 1.173)
Empc Amount: 5.283 = (180227 * 50.000) / (1453878 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDF, RT: 28.196

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2413604	271219

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2413604	271219

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:19	4131	644	5761	977	0.1883	0.72	
24:18	29567	3757	37009	4576	1.27	0.80	
25:02	161607	20453	205880	26262	7.00	0.78	
25:44	209340	21466	254349	24817	8.83	0.82	
26:13	31075	4118	36809	5099	1.29	0.84	
26:24	97113	12180	120588	14807	4.14	0.81	
26:55	142680	17384	178949	19838	6.12	0.80	
27:11	14145	1967	20237	2623	0.6546	0.70	
27:41	1557144	187122	1959247	234489	66.9	0.79	
28:18	81013	8925	100537	11689	3.46	0.81	
29:35	2916	385	4094	620	0.1335	0.71	
29:58	249111	26085	321110	34057	10.9	0.78	
30:39	51620	4862	70345	6675	2.32	0.73	M
33:48	257791	27477	331597	34492	11.2	0.78	
Signal Totals:							
	2889253	336825	3646512	421021			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6535765	757846				0.79	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 124.427 = (6535765 * 50.000) / (2413604 * 1.088)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 39.432

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1176027	262799

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1176027	262799

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:34	3988	674	186072	34891	7.74	0.02	RQ
37:34	3988	674	2572	434	0.2673		Empc Correction
38:25	7709	1590	3589	834	0.4604	2.15	RQ
38:25	5562	1292	3589	834	0.3729		Empc Correction
Signal Totals:							
	9550	1966	6161	1268			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	201358	37989				0.06	RQ
	15711	3234					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 8.205 = (201358 * 50.000) / (1176027 * 1.043)
Empc Amount: 0.6402 = (15711 * 50.000) / (1176027 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDF, RT: 38.009

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1933756	369934
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1770215	376375

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1851985	373154

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:41	3477	447	1576	348	0.1187	2.21	RQ
34:41	2442	539	1576	348	0.0944		Empc Correction
37:14	35827	6076	23425	3635	1.39	1.53	
37:31	1316	259	1638	221	0.0694	0.80	RQ
37:31	1316	259	849	167	0.0508		Empc Correction
38:08	1451	267	1259	261	0.0636	1.15	RQ
38:08	1451	267	936	172	0.0561		Empc Correction
38:13	3472	632	2860	433	0.1487	1.21	RQ
38:13	3472	632	2240	407	0.1341		Empc Correction
38:39	7362	1934	3994	1247	0.2667	1.84	RQMa
38:39	6190	1932	3994	1247	0.2392		Empc Correction
39:02	1555	336	1243	210	0.0657	1.25	RQM
39:02	1555	336	1003	216	0.0601		Empc Correction
39:17	23933	4785	14157	2642	0.8945	1.69	
40:15	15281	3247	11148	2082	0.6207	1.37	
41:20	3641	588	3987	620	0.1791	0.91	RQ
41:20	3641	588	2349	379	0.1407		Empc Correction
Signal Totals:							
	95108	18661	61677	11295			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	162602	30270				1.49	RQMa
	156785	29956					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.819 = (162602 * 50.000) / (1851985 * 1.150)
Empc Amount: 3.682 = (156785 * 50.000) / (1851985 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 44.304

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1262920	318924
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1358406	311652
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1310663	315288

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:15	54986	14753	47276	12792	3.33	1.16	
43:49	3517	507	1278	328	0.1563	2.75	RQ
43:49	1584	406	1278	328	0.0933		Empc Correction
44:06	14503	3482	10610	2416	0.8188	1.37	
44:16	2310	385	1660	279	0.1294	1.39	
Signal Totals:							
	73383	19026	60824	15815			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	136140	34942				1.24	RQ
	134207	34841					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.439 = (136140 * 50.000) / (1310663 * 1.170)
Empc Amount: 4.376 = (134207 * 50.000) / (1310663 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDF, RT: 44.151

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1762782	456796
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2205013	521090
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1927903	470399
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1697282	350413

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1898245	449674

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:32	2219	585	1752	495	0.0811	1.27	M
42:43	9320	2562	9601	2320	0.3862	0.97	RQa
42:43	9320	2562	7516	2066	0.3436		Empc Correction
43:19	5583	1379	4069	1267	0.1970	1.37	a
43:58	2721	728	2633	834	0.1093	1.03	RQMa
43:58	2721	728	2194	587	0.1003		Empc Correction
44:09	1067	221	737	212	0.0368	1.45	RnQMa
44:09	913	262	737	212	0.0337		Empc Correction
45:43	6399	1495	6527	1329	0.2638	0.98	RQMa
45:43	6399	1495	5160	1205	0.2359		Empc Correction
Signal Totals:							
	27155	7011	21428	5832			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	52628	13427				1.08	RQMa
	48583	12843					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.074 = (52628 * 50.000) / (1898245 * 1.290)
Empc Amount: 0.992 = (48583 * 50.000) / (1898245 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1180494	207717

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1180494	207717

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:25	144049	27244	140461	25473	10.8	1.03	
Signal Totals:							
	144049	27244	140461	25473			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	284510	52717				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 10.755 = (284510 * 50.000) / (1180494 * 1.120)

Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Inject. Date: 17-Dec-2019 18:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 49.925

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1540028	310188
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1189946	201021

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1364987	255604

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:34	10179	1915	0	0	0.2590	0.00	M
Signal Totals:							
	10179	1915	0	0			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10179	1915				0.00	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2590 = (10179 * 50.000) / (1364987 * 1.440)

QC Flag Legend

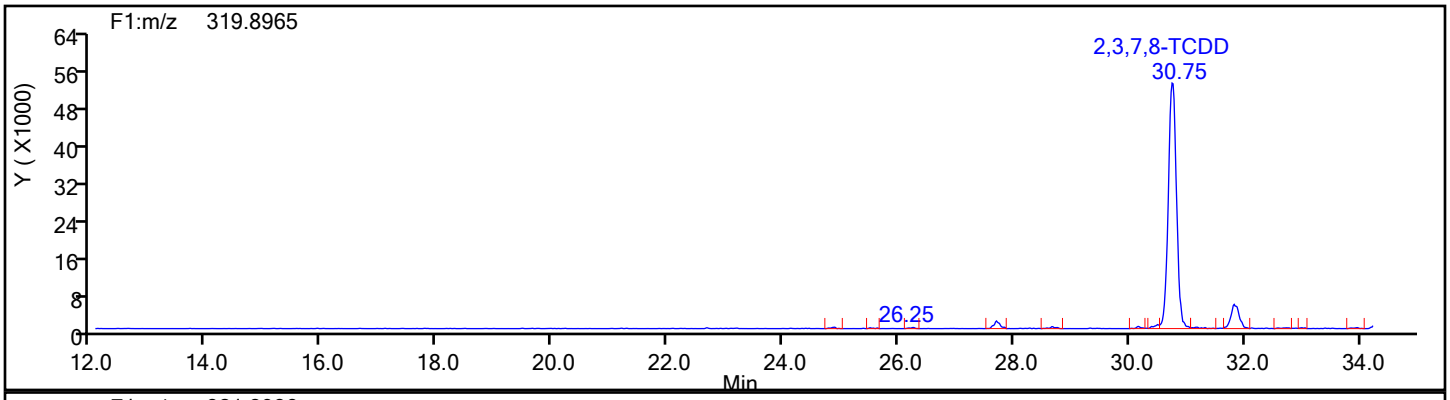
Review Flags
M - Manually Integrated

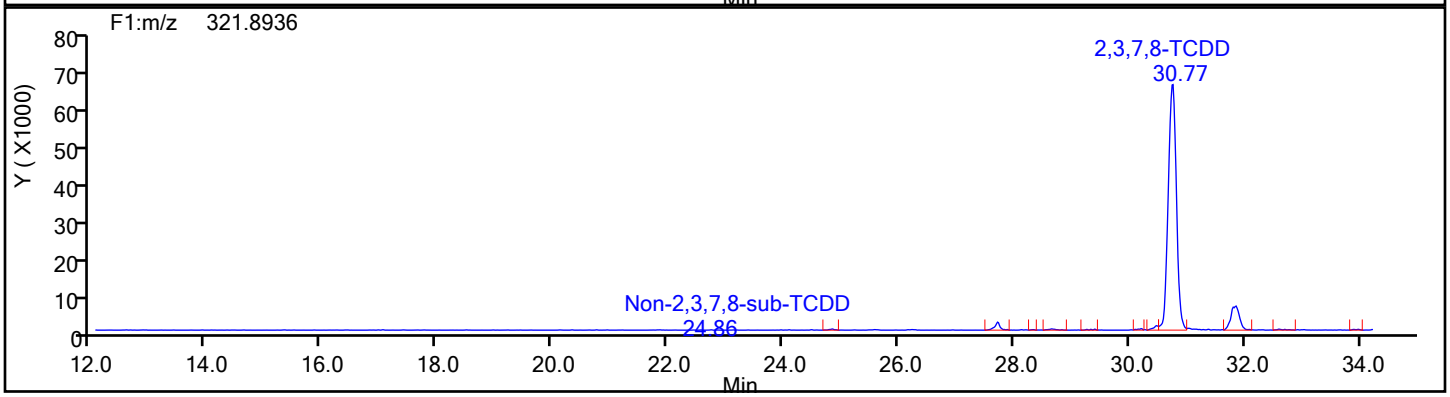
Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

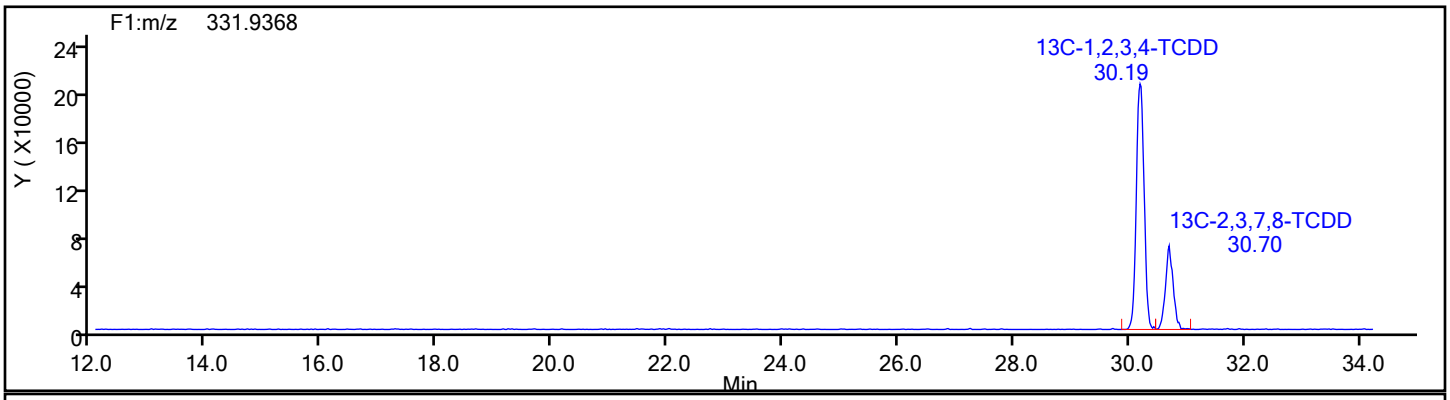
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

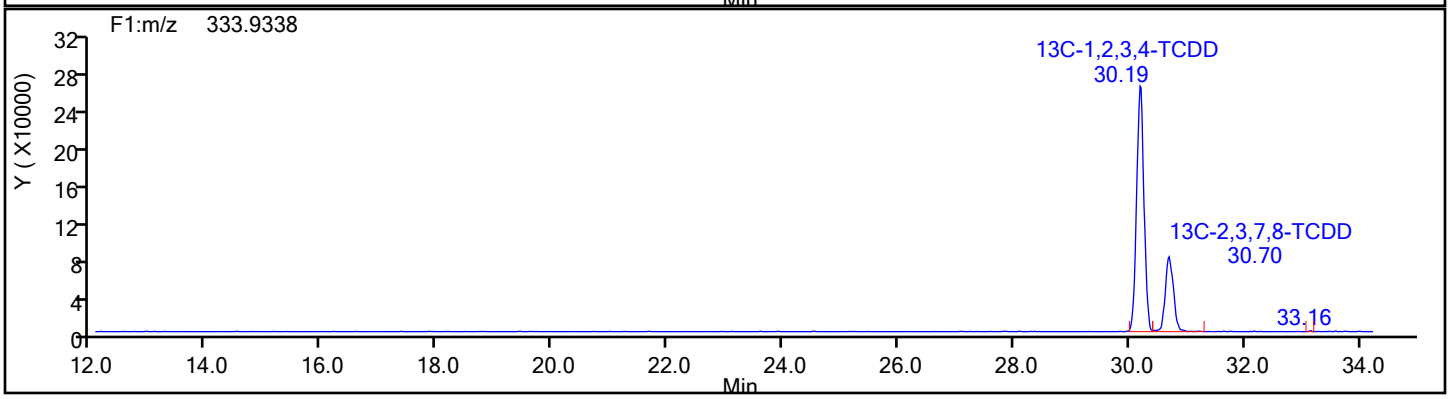
TCDD





TCDD Standards



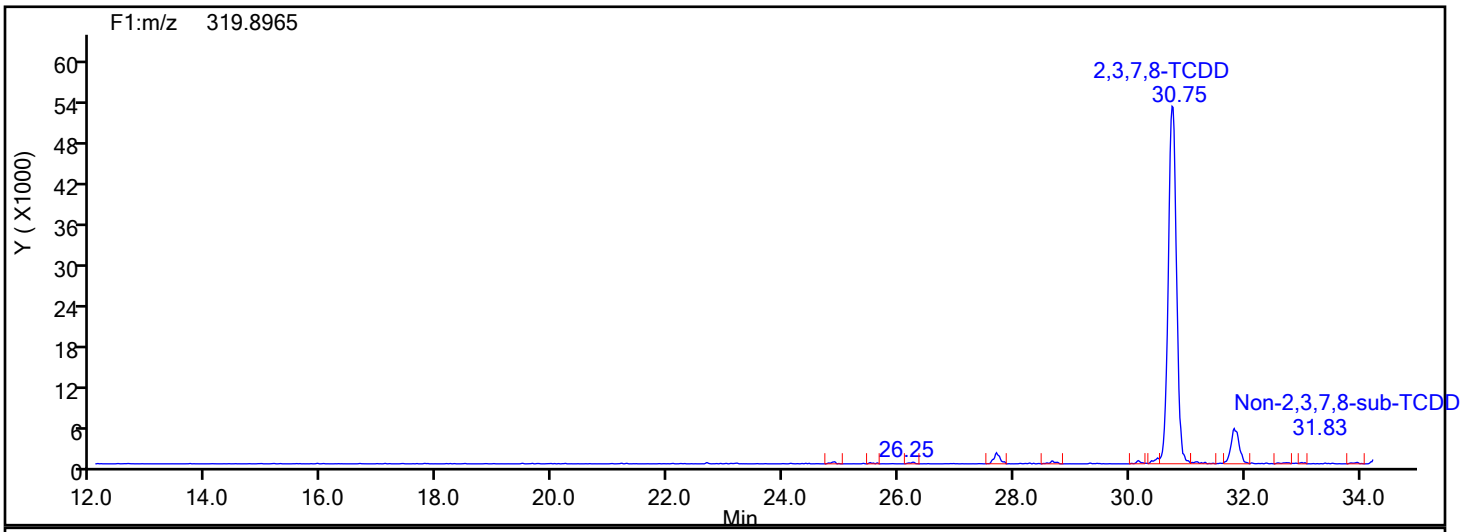


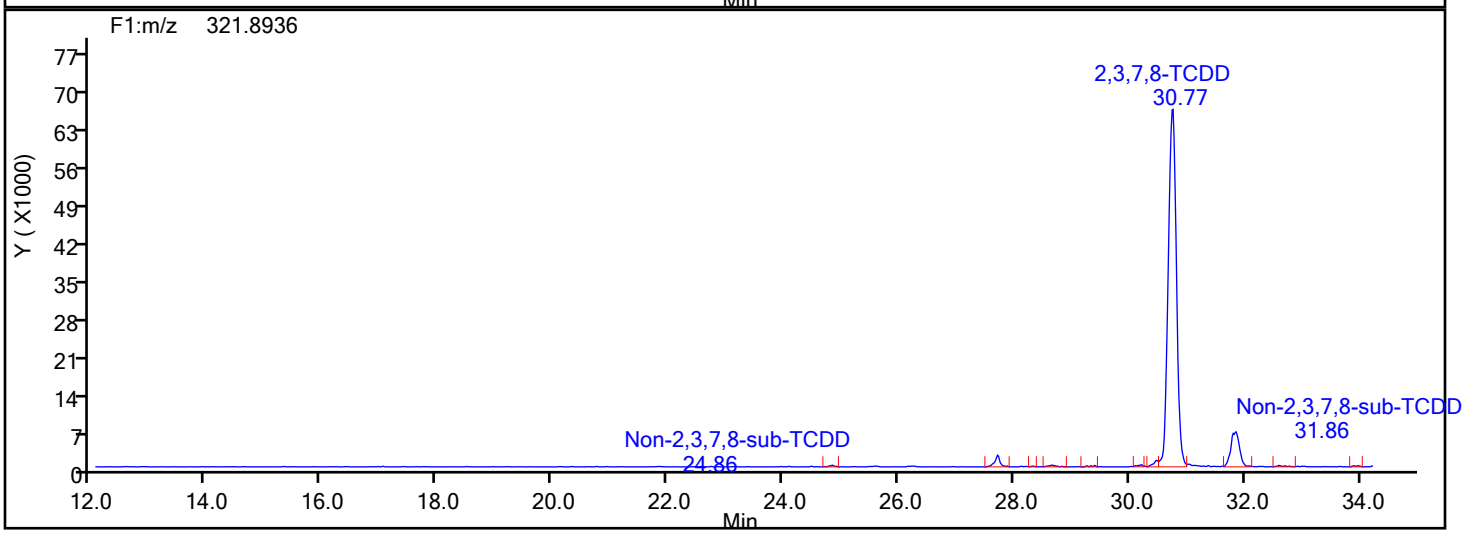
Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

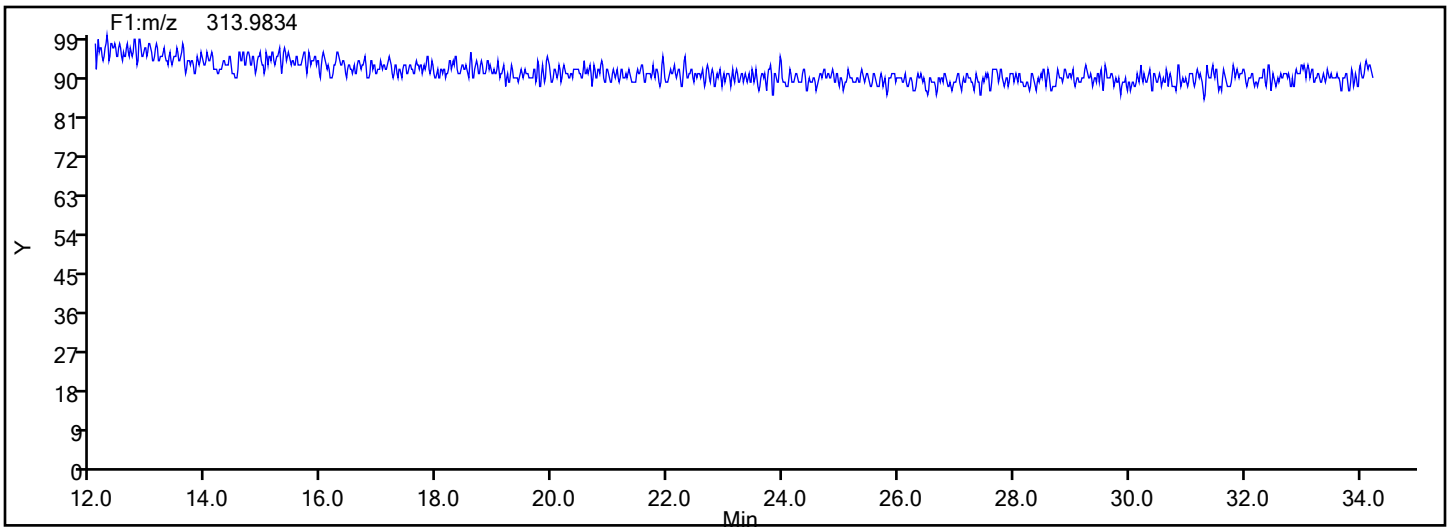
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



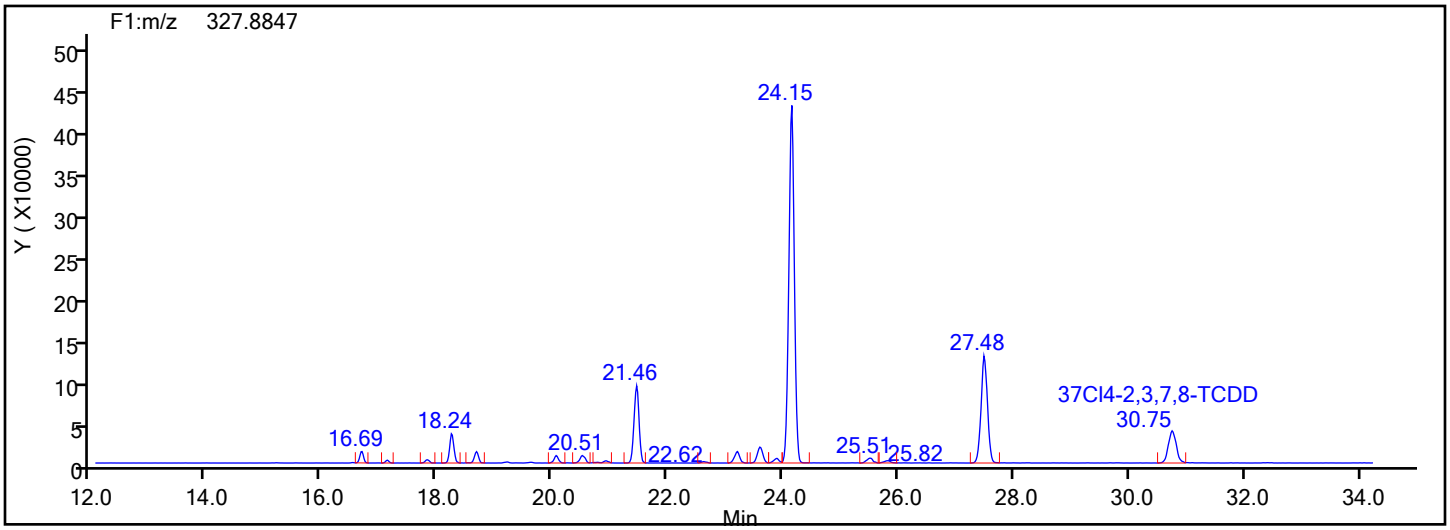
Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

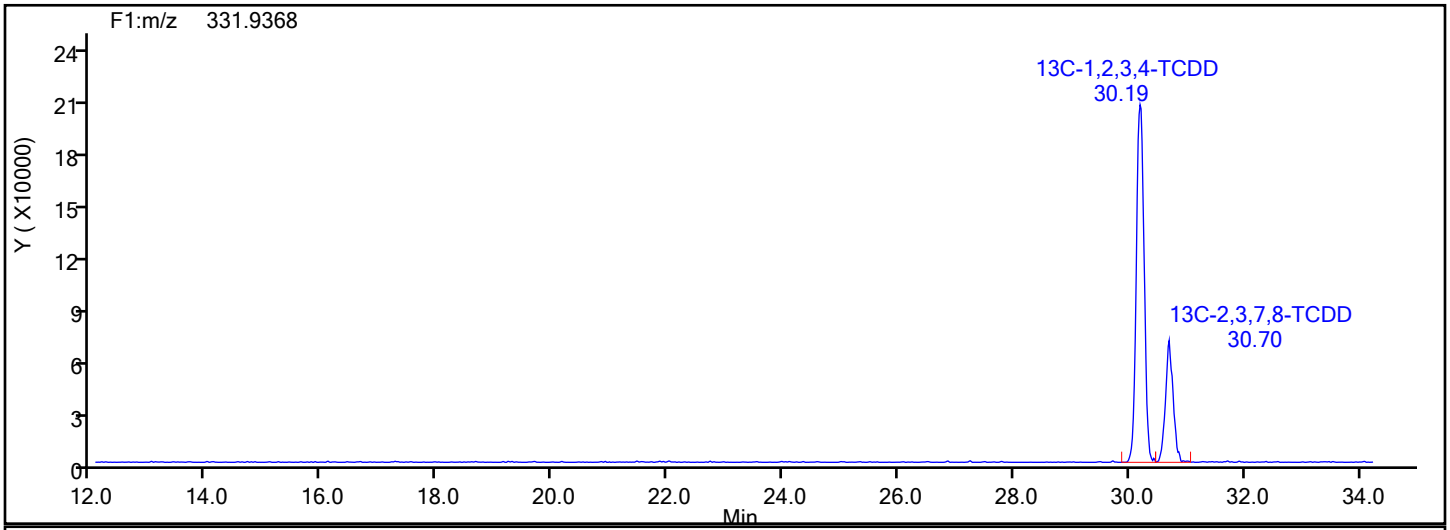
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d

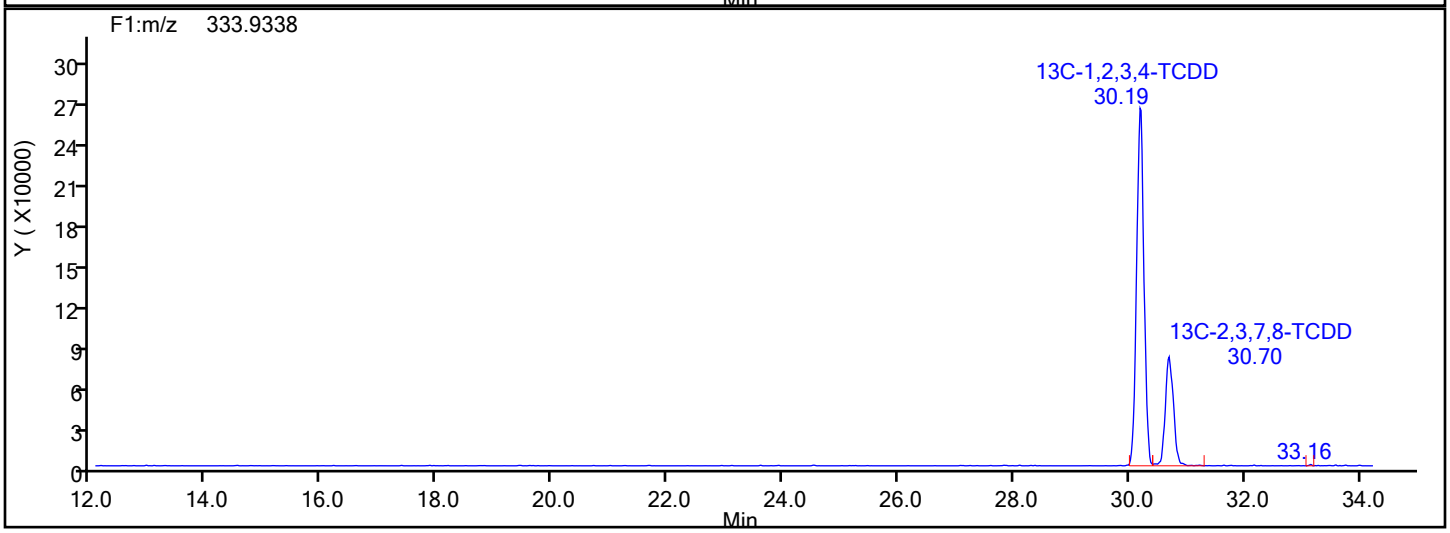
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



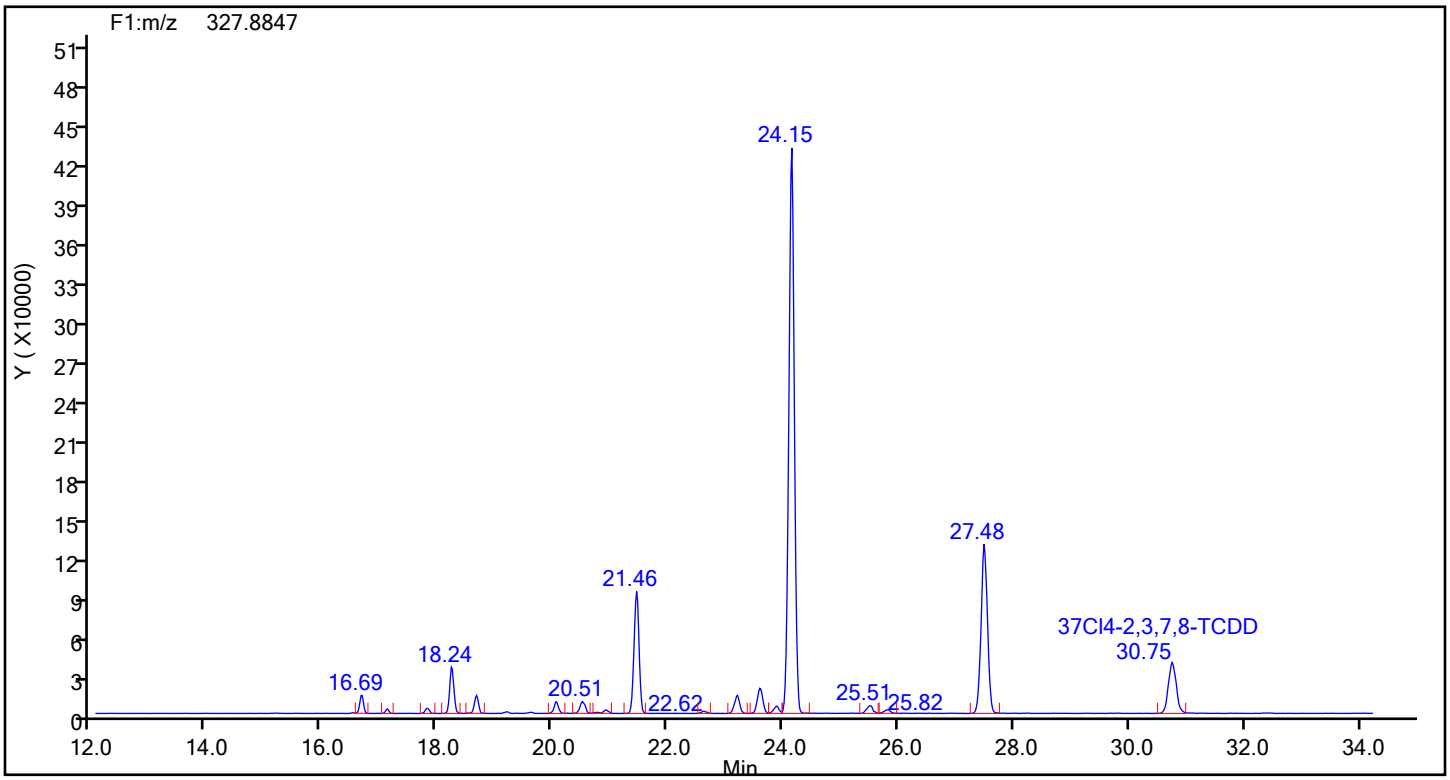


Report Date: 18-Dec-2019 04:23:15 Chrom Revision: 2.3 05-Dec-2019 09:31:18

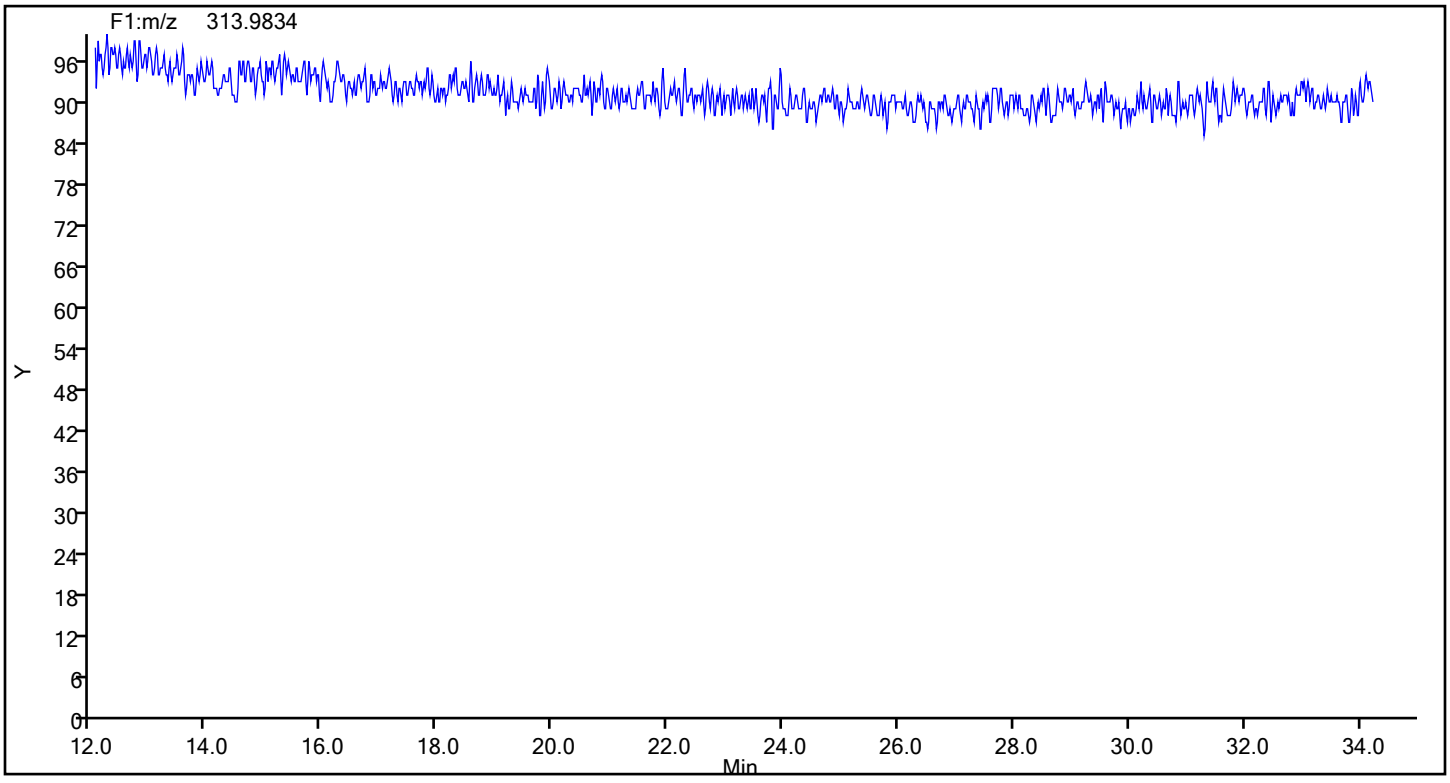
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
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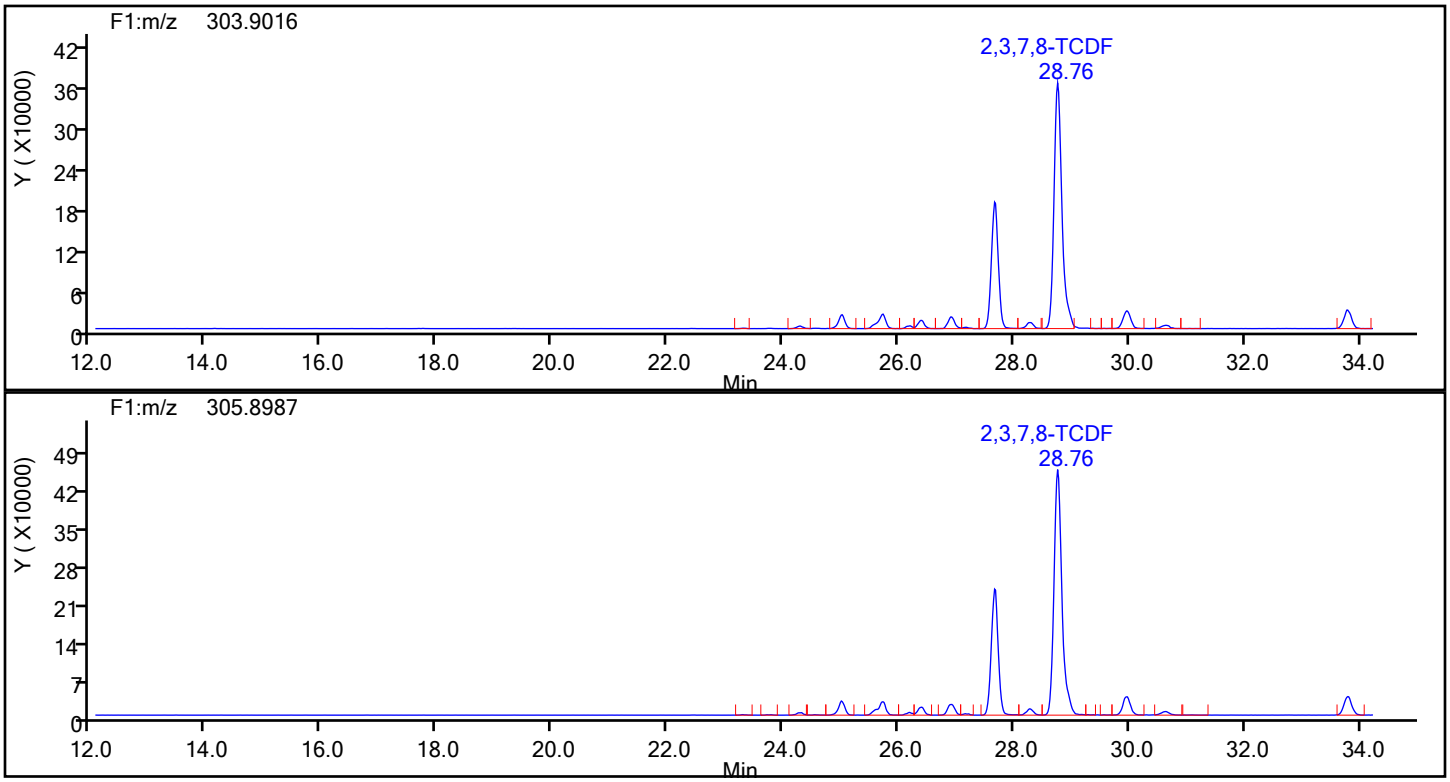
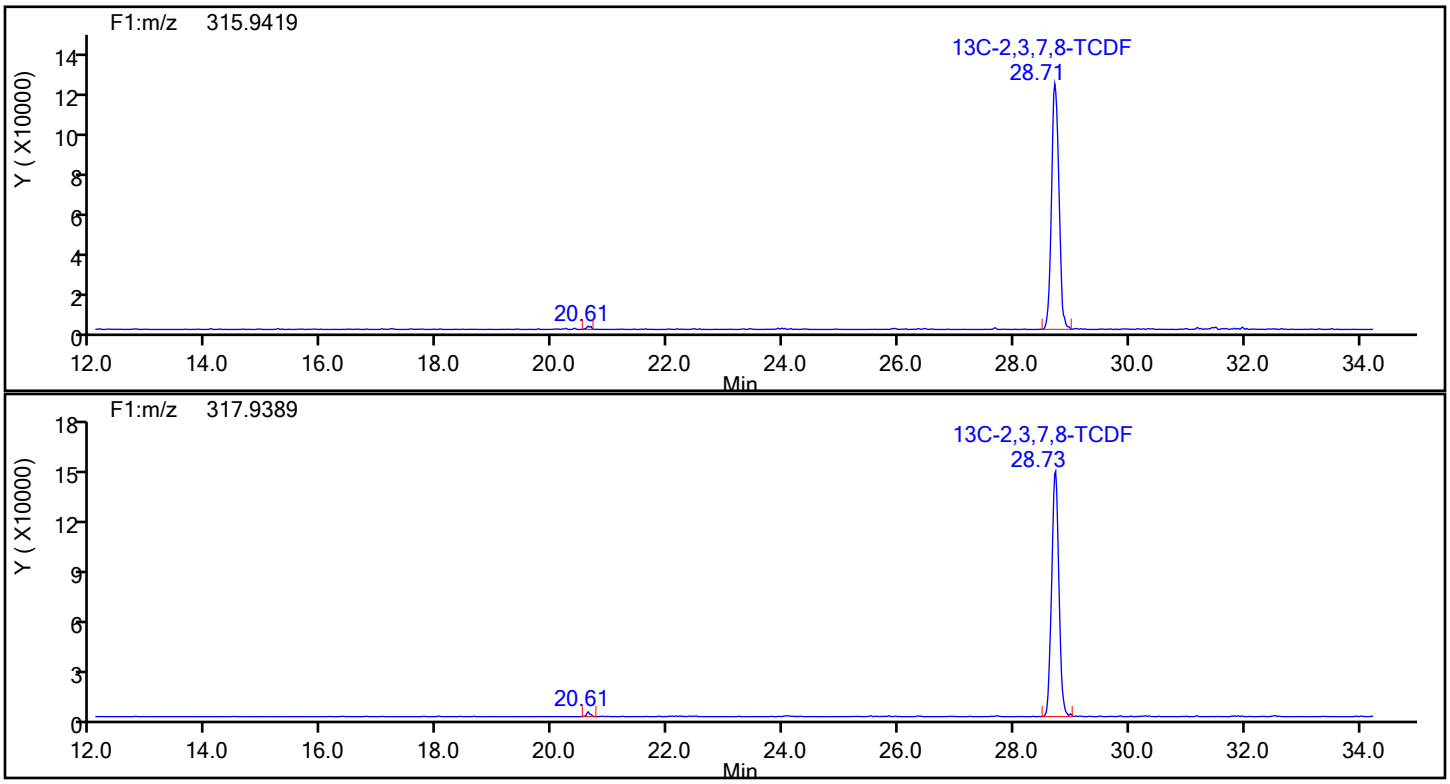
Column Type:		Column Dia:	

TCDF



TCDF Standards



Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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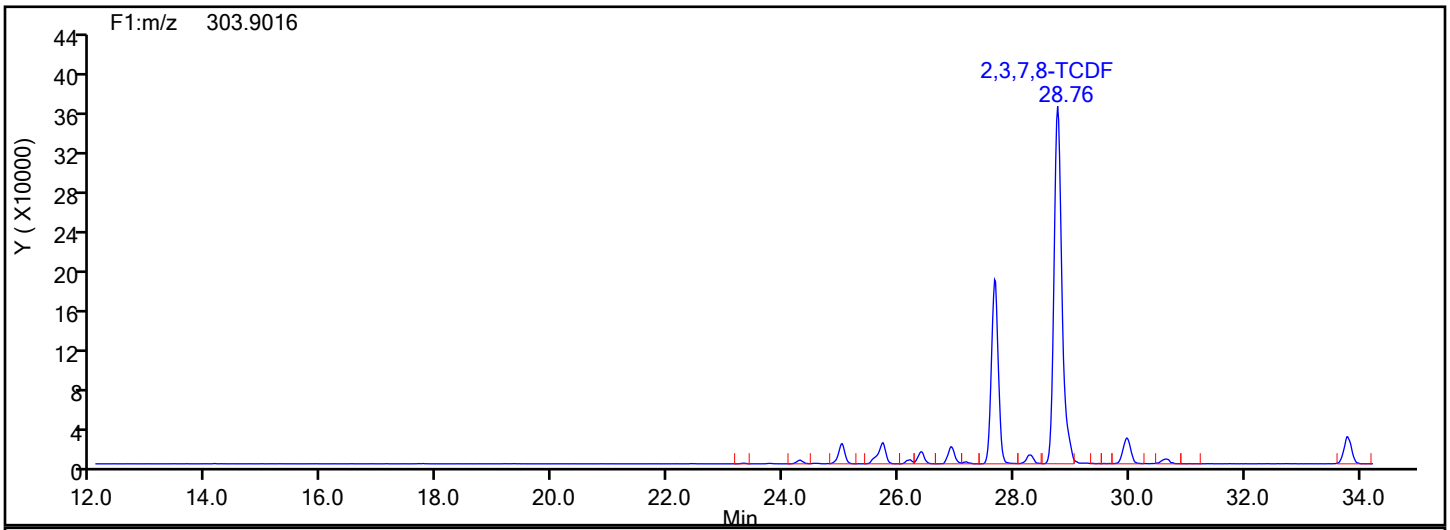
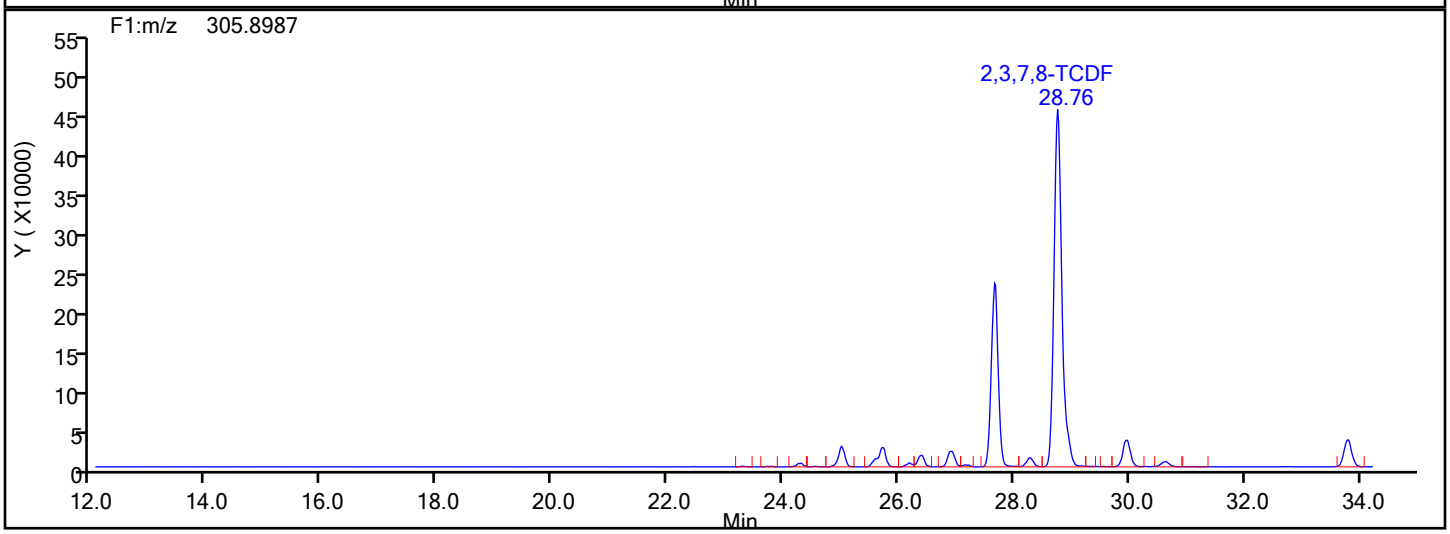
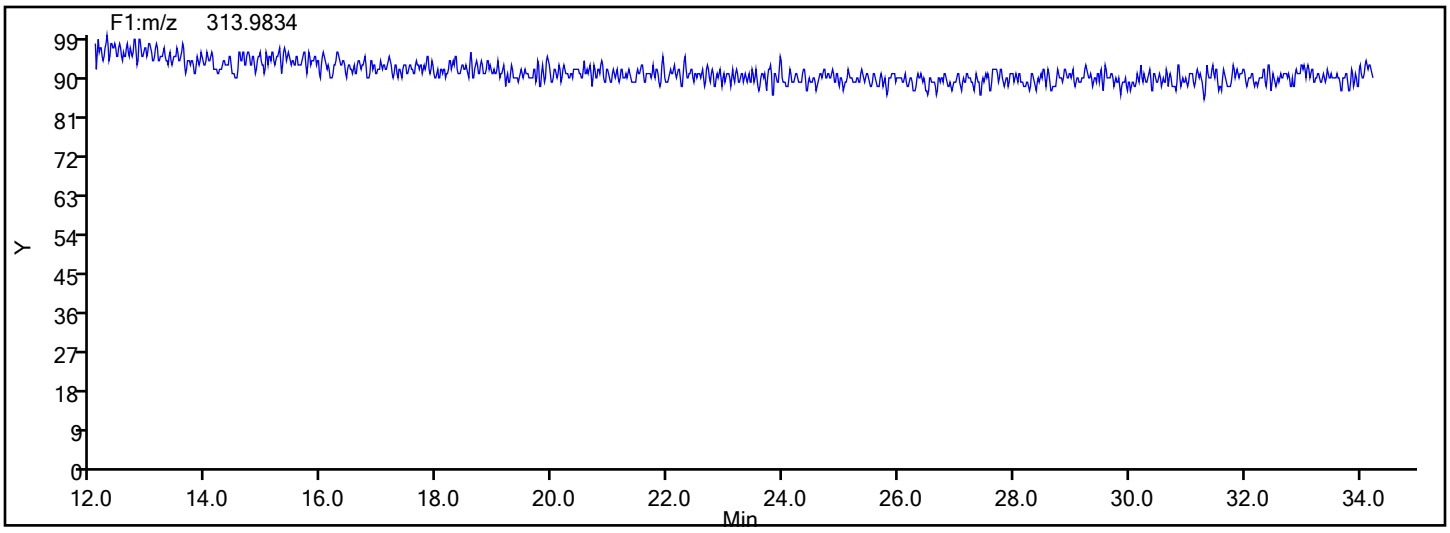
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

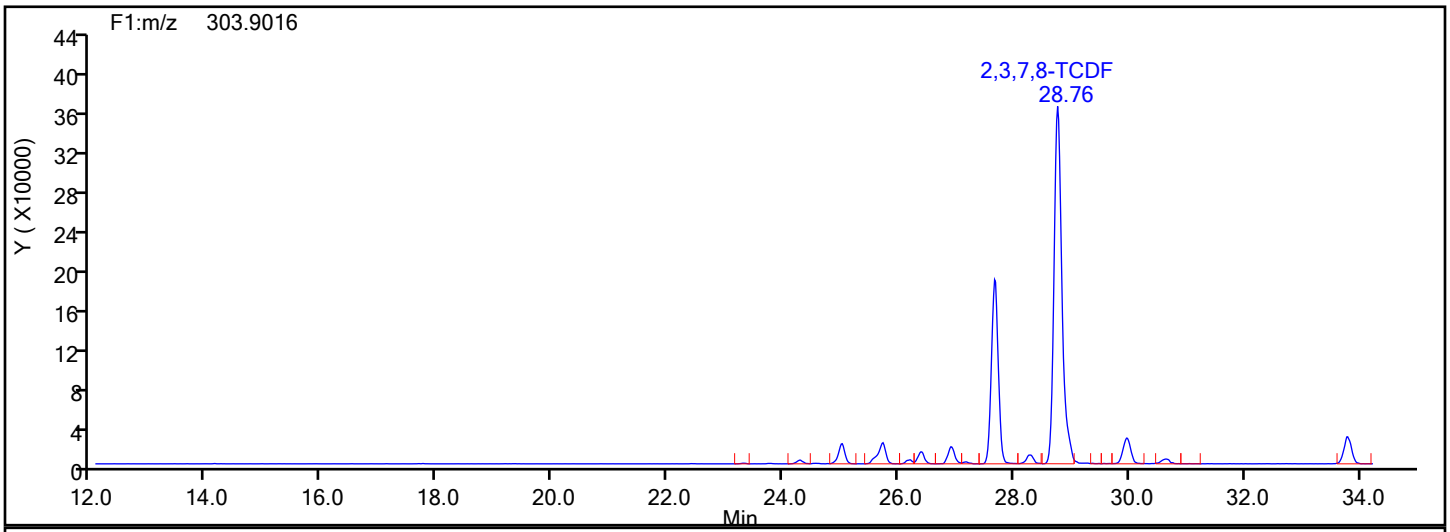


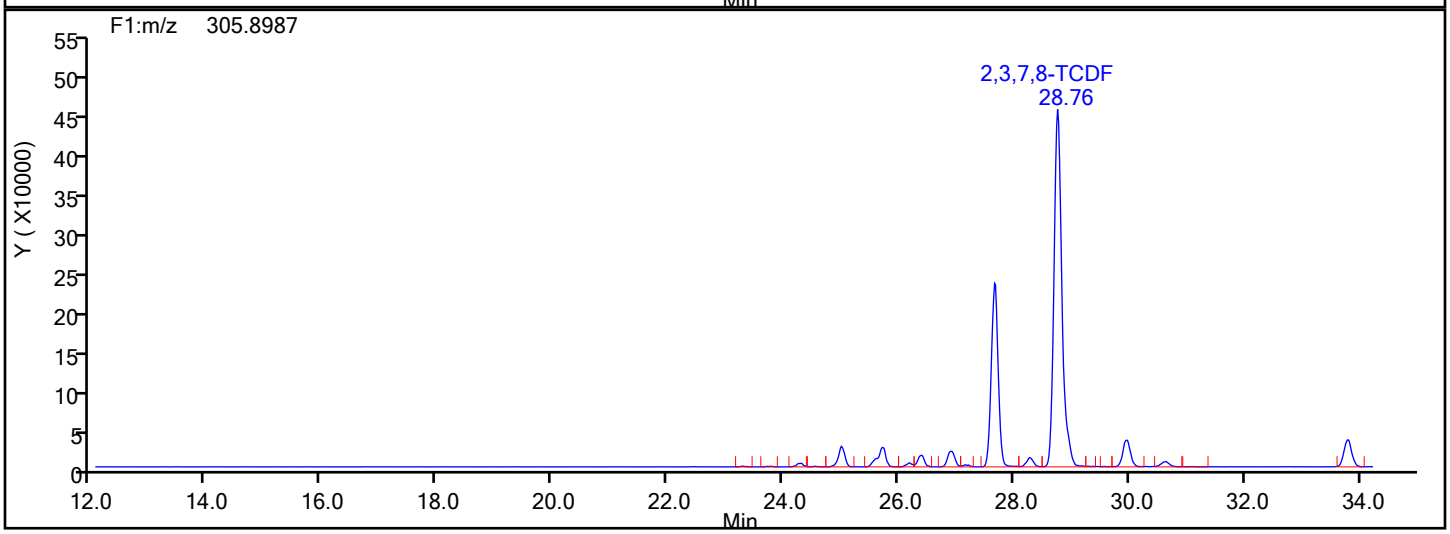
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

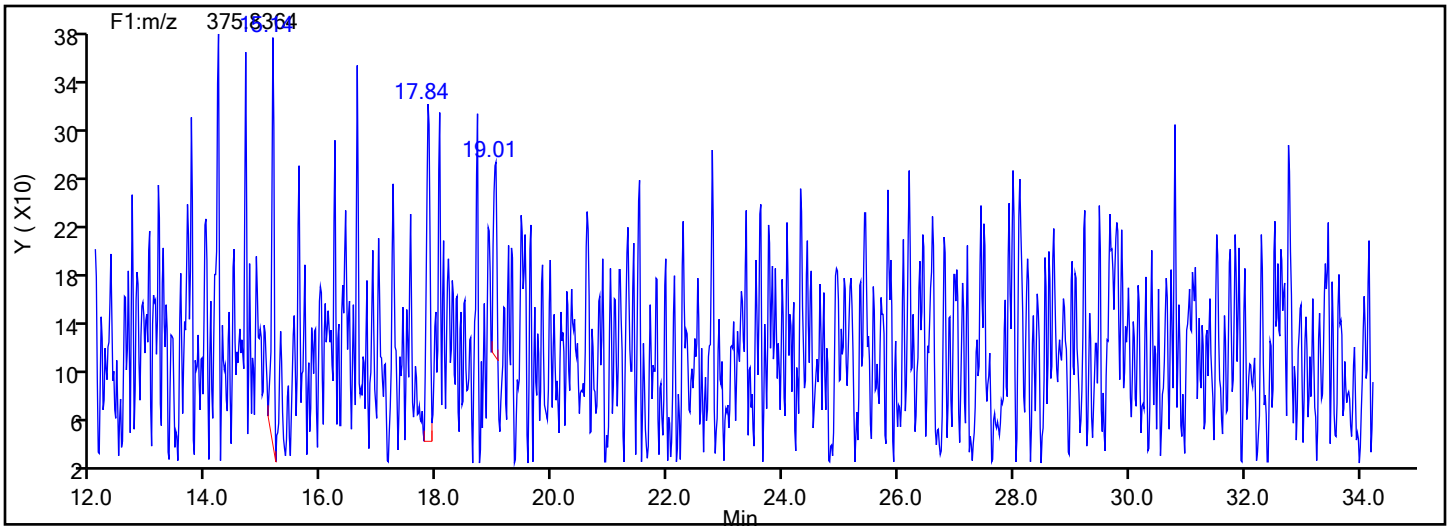
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

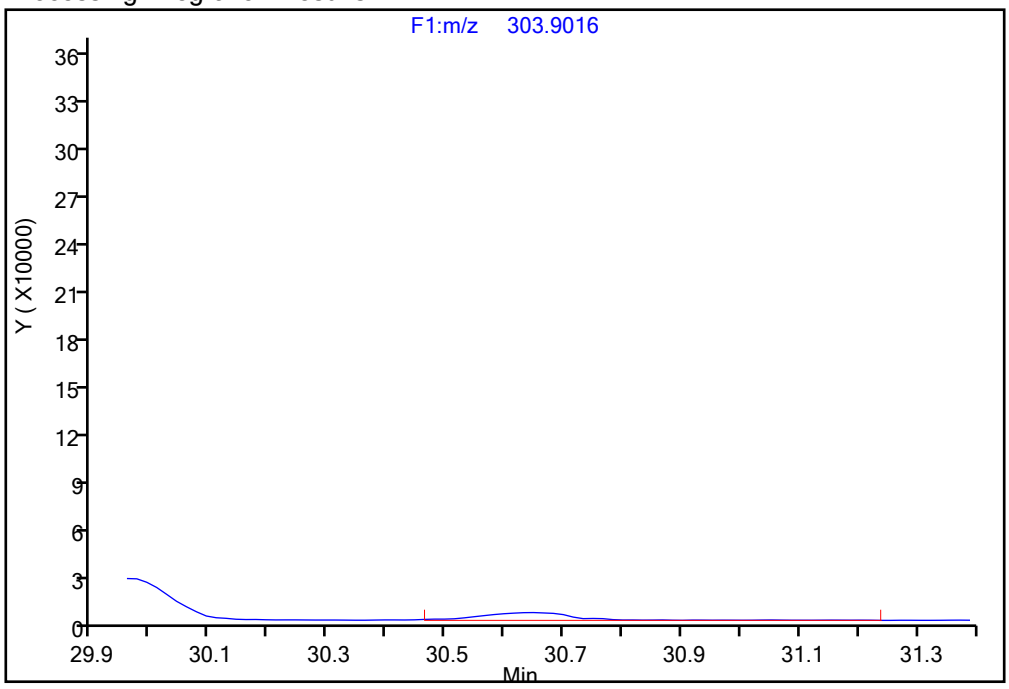
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.45- 33.94)

Signal: 1

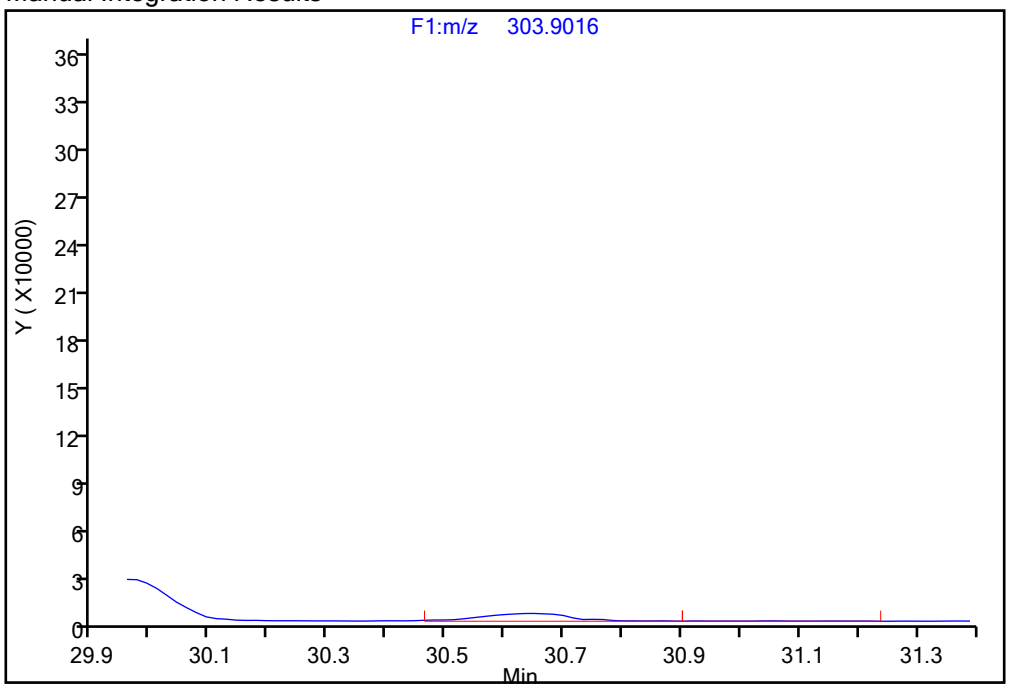
Processing Integration Results

RT = 30.649 Area = 54320



Manual Integration Results

RT = 30.649 Area = 51620 M



Reviewer: parslyt, 18-Dec-2019 04:14:28

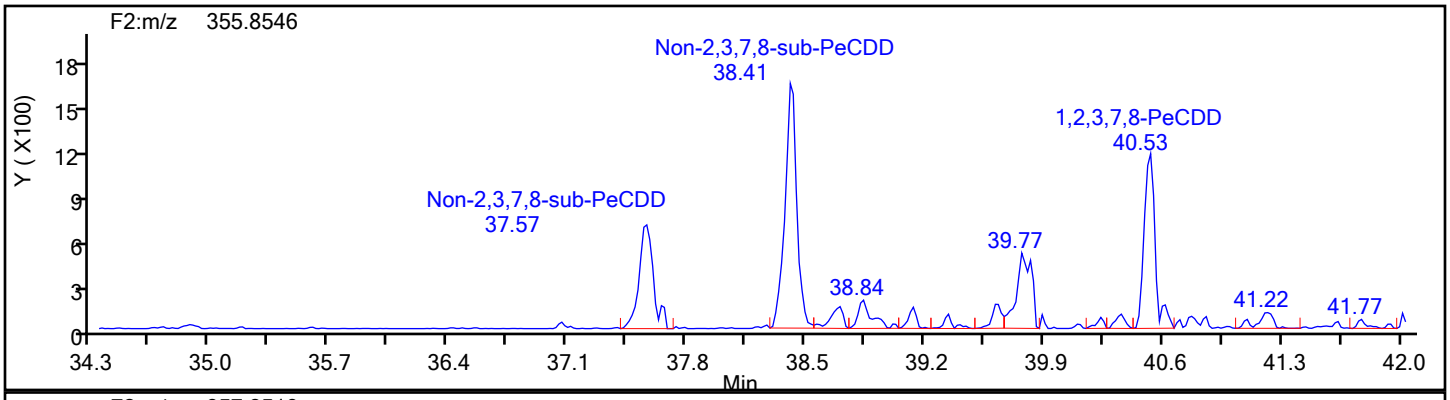
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

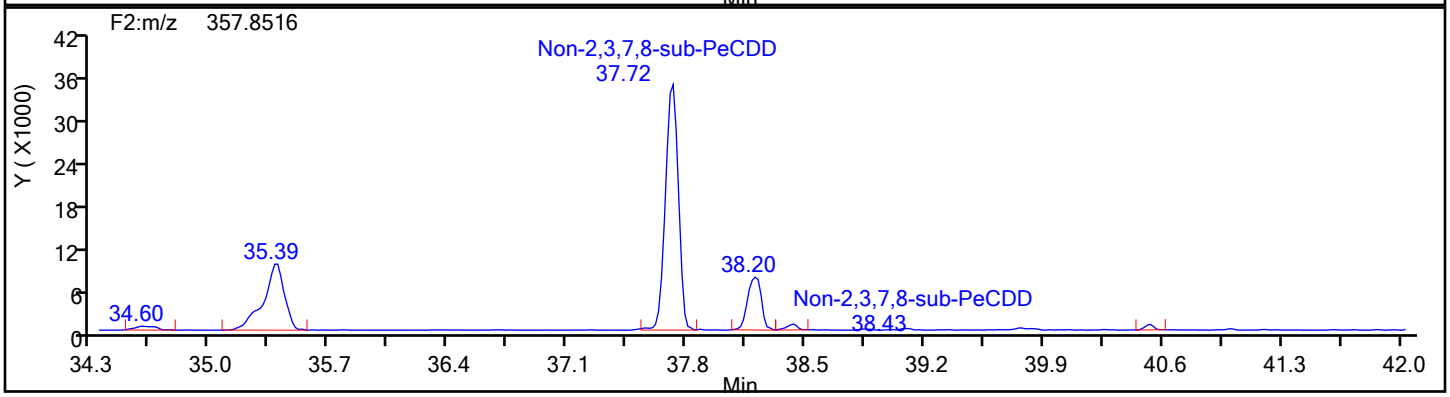
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

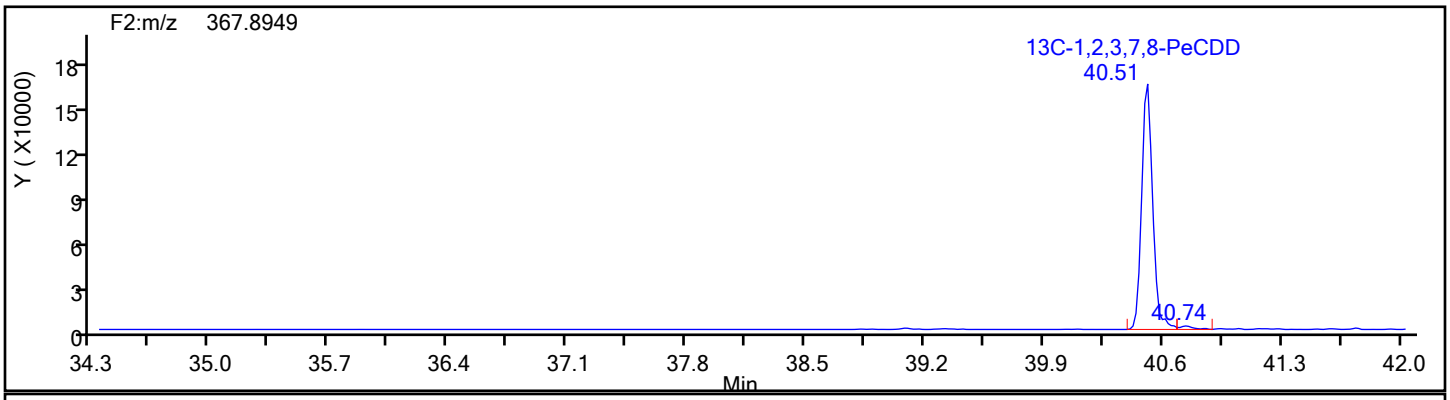
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

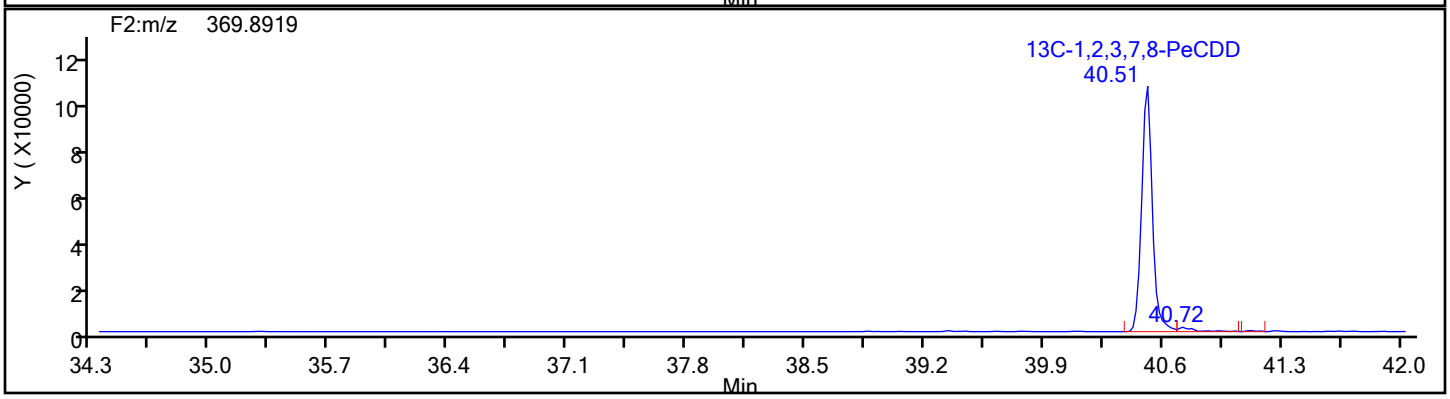
PeCDD





PeCDD Standards





Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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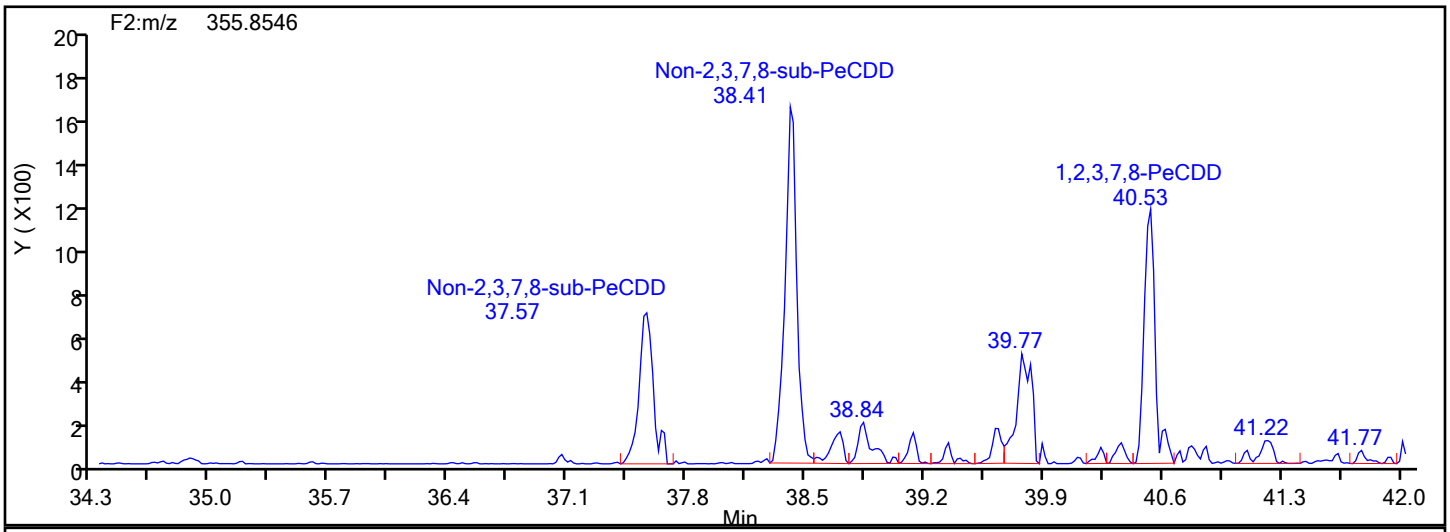
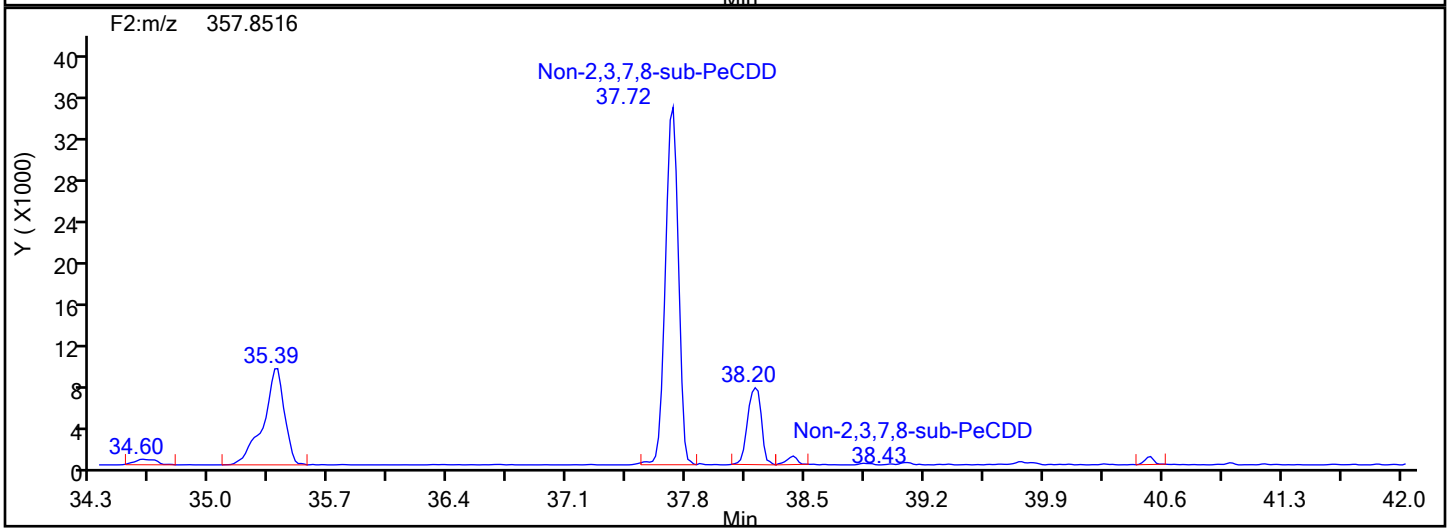
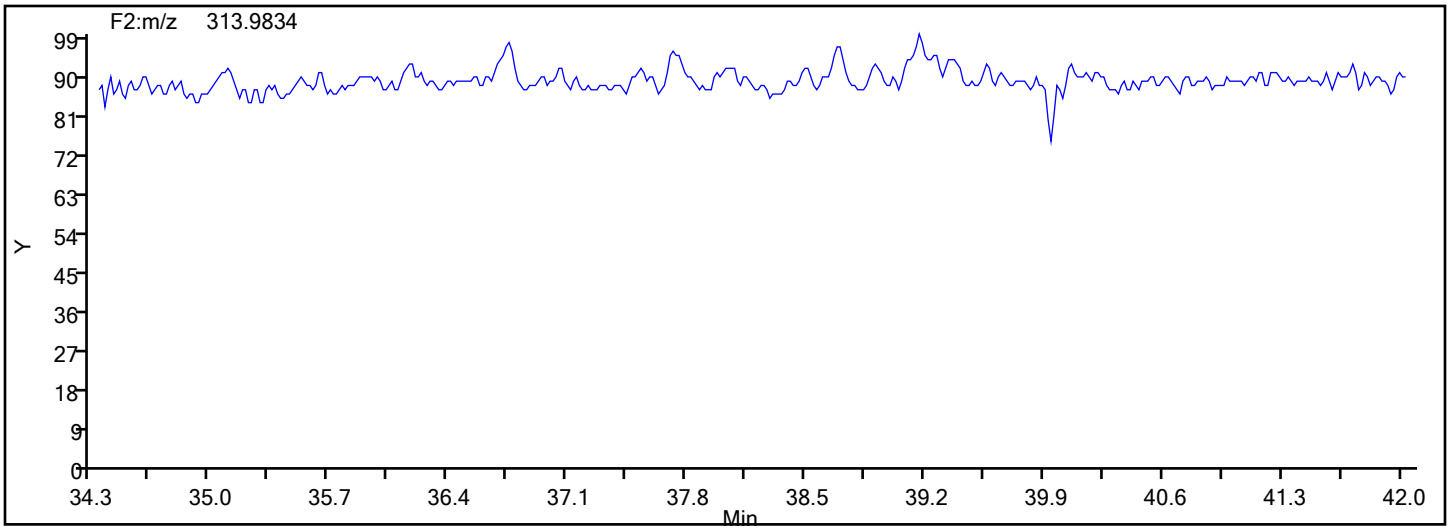
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass

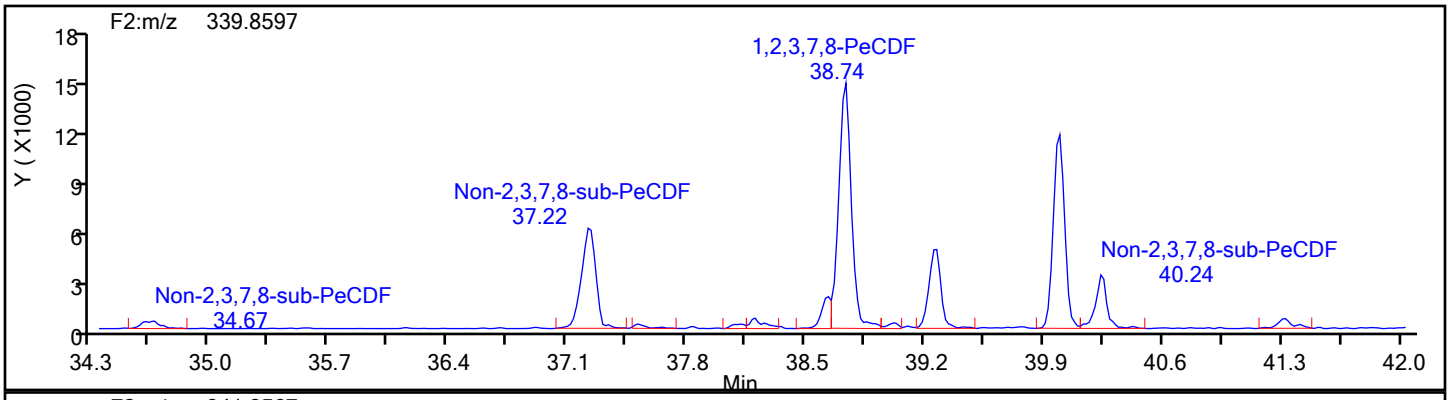


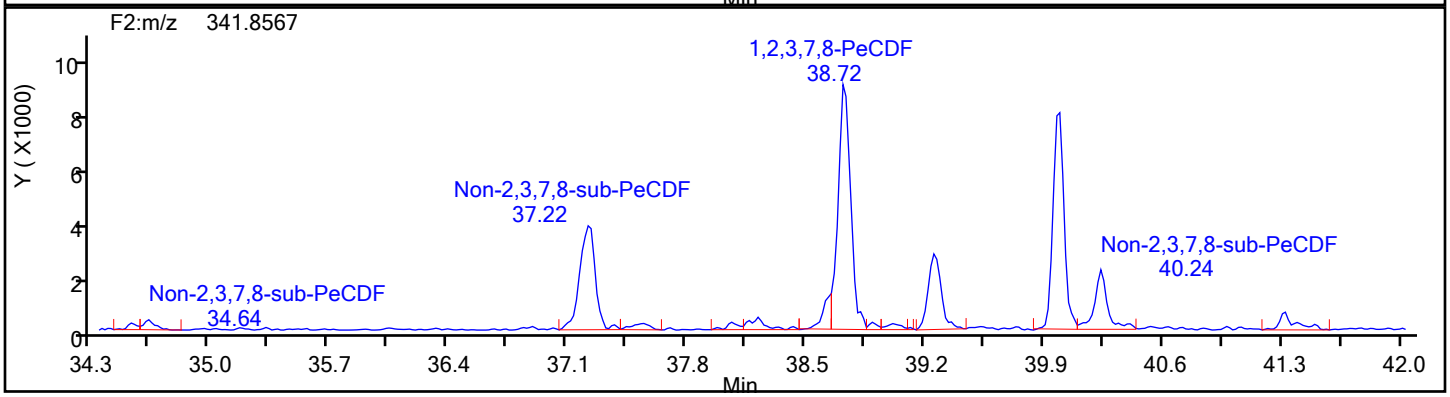
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

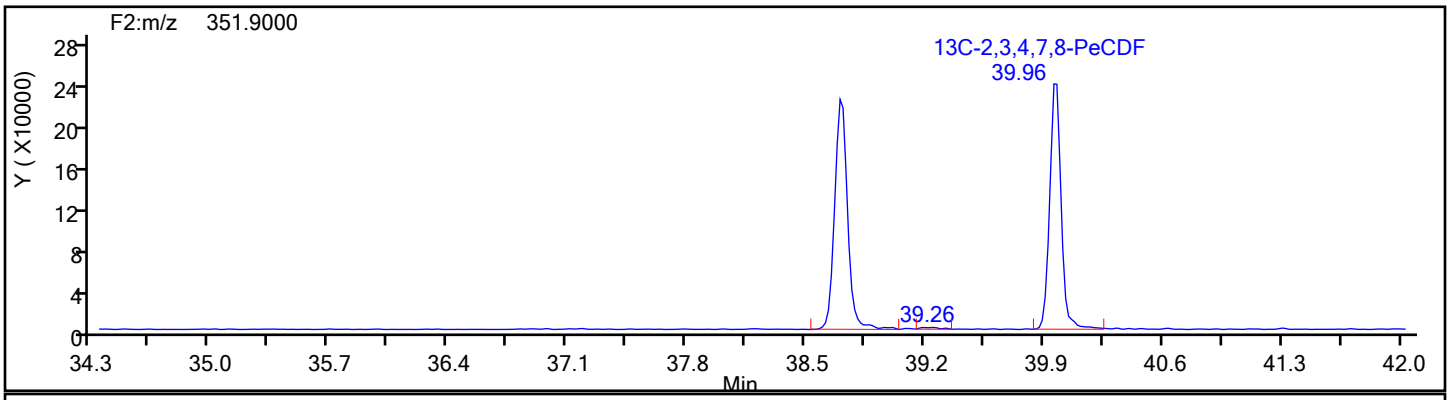
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

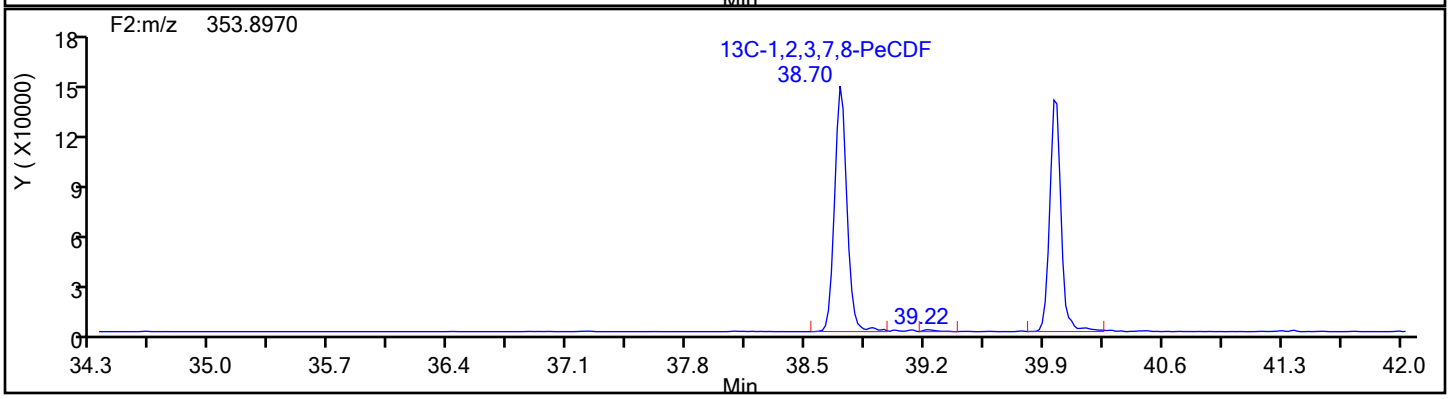
PeCDF





PeCDF Standards



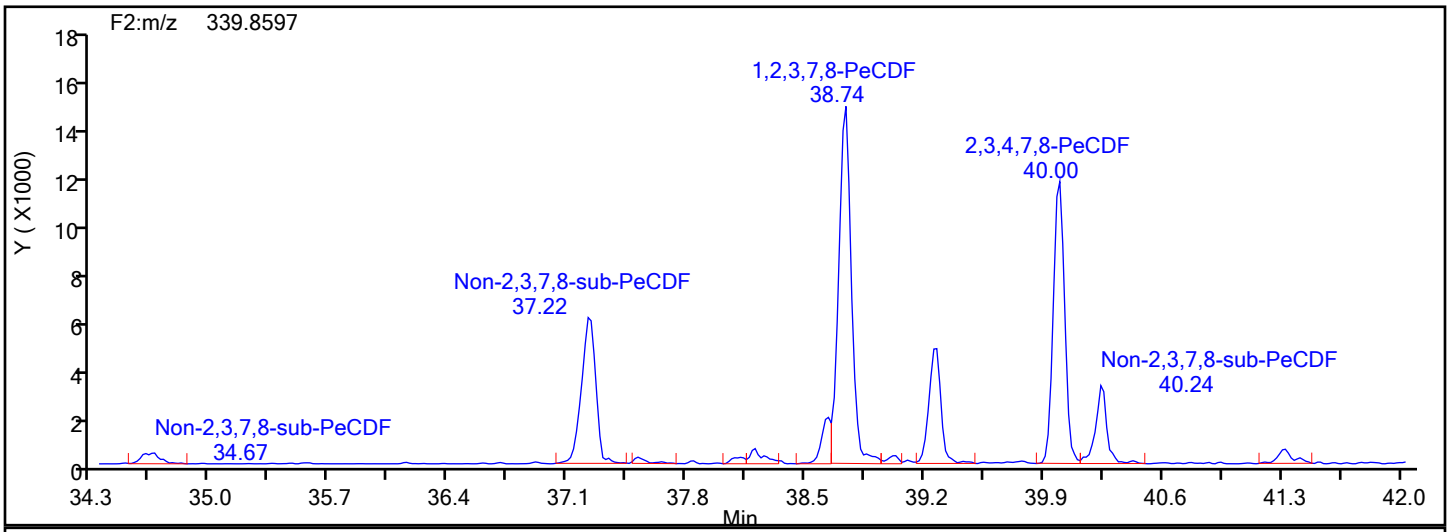


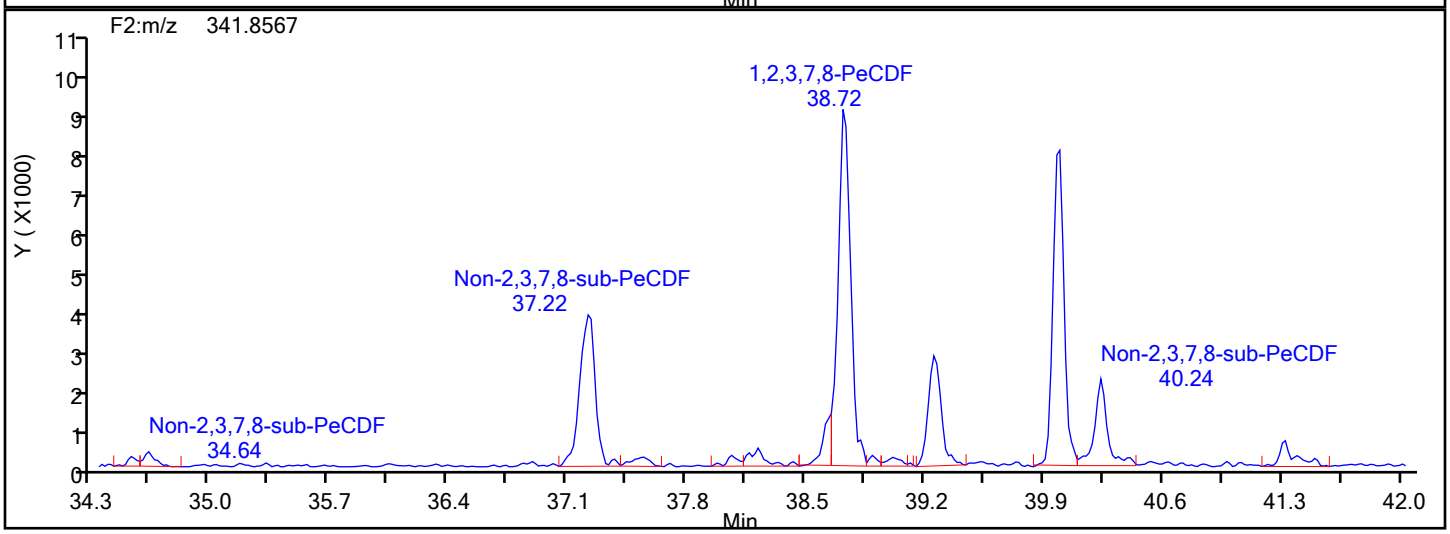
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

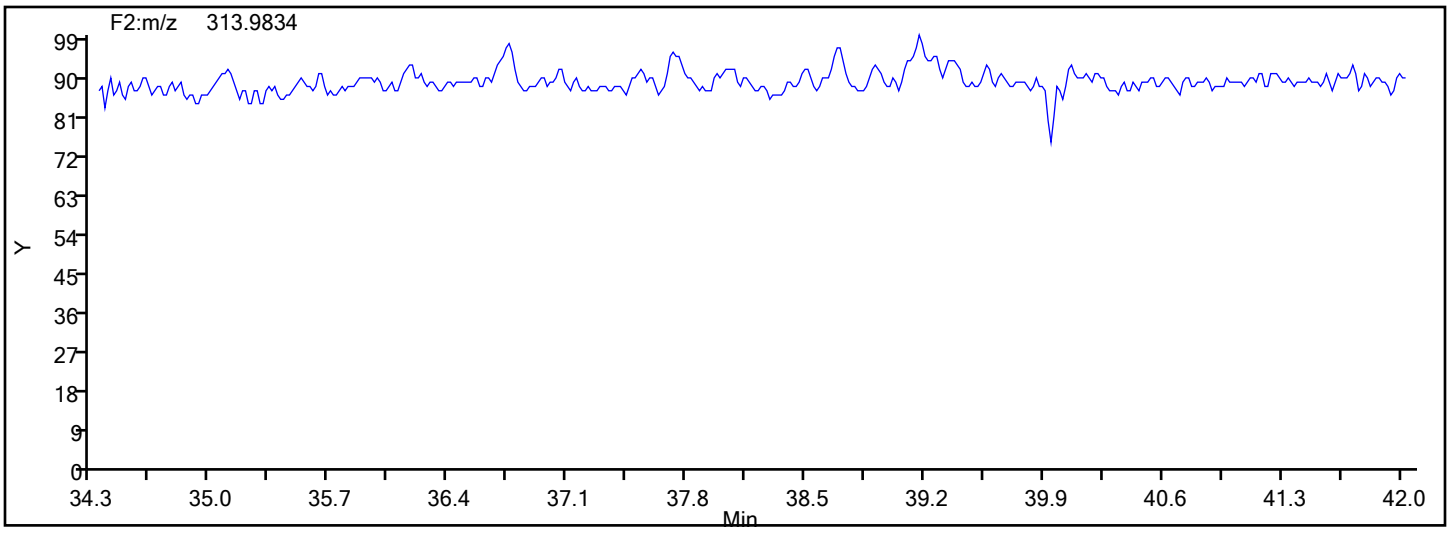
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

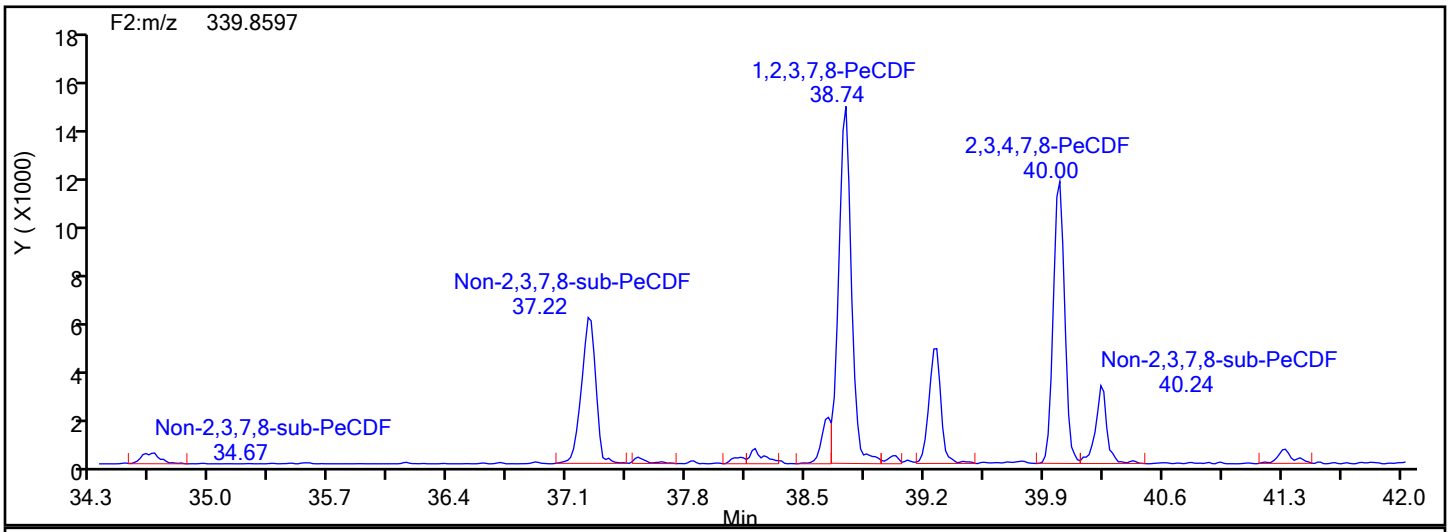


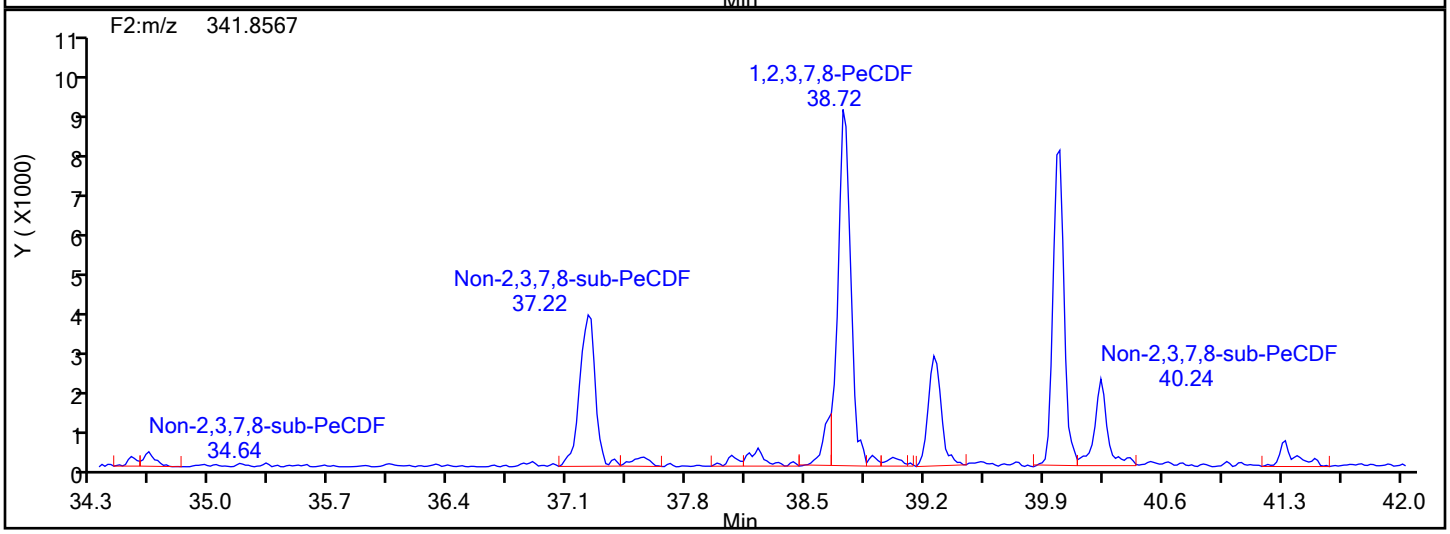
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

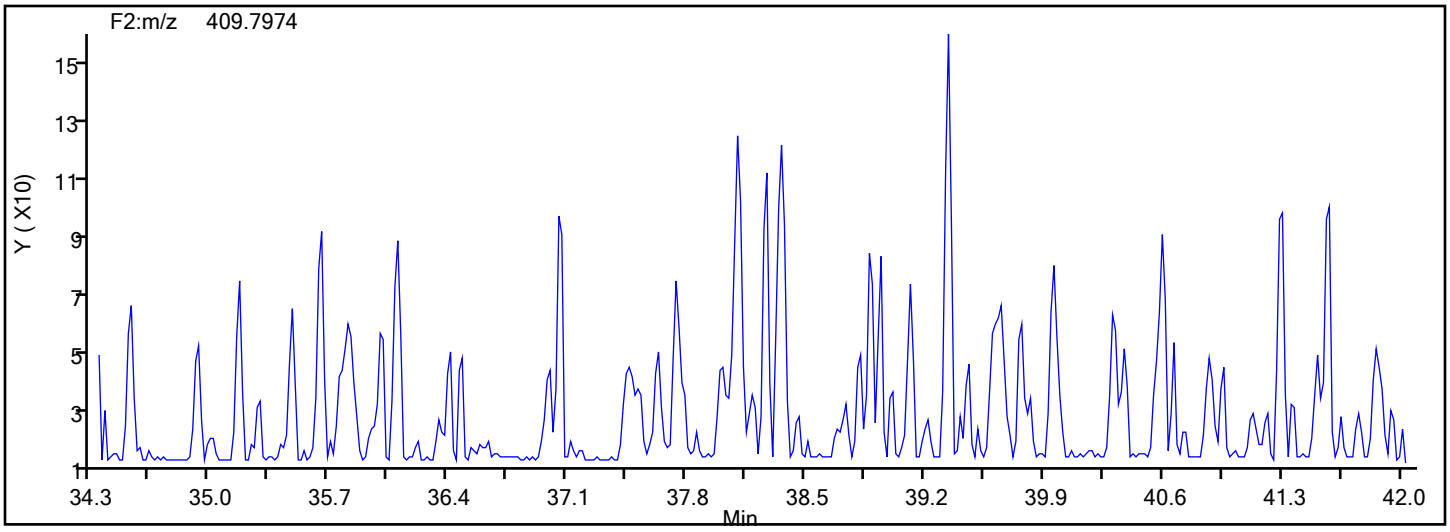
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Eurofins TestAmerica, Knoxville

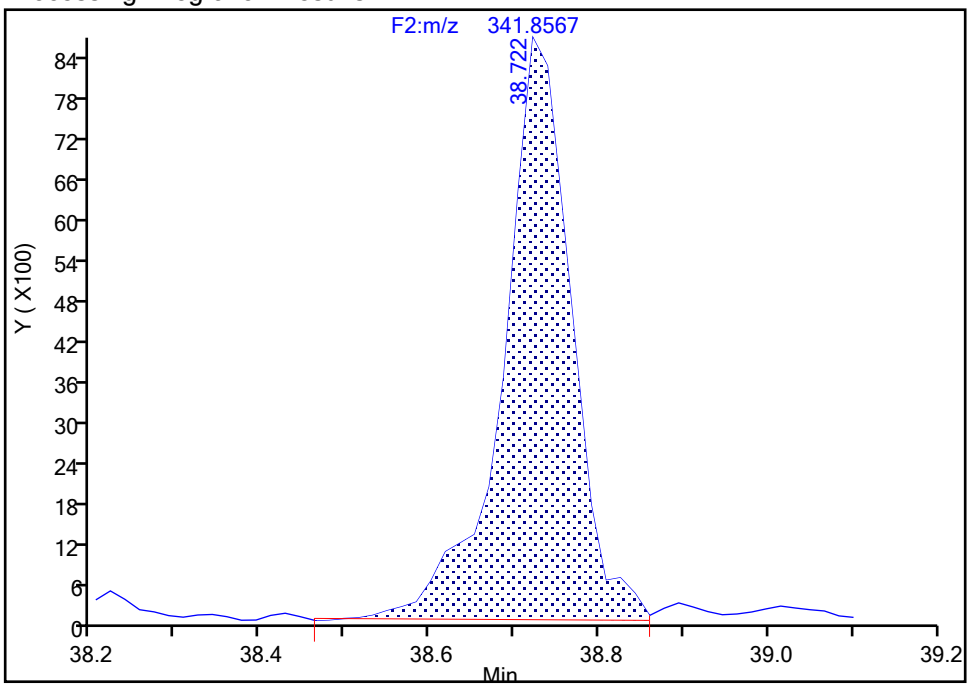
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

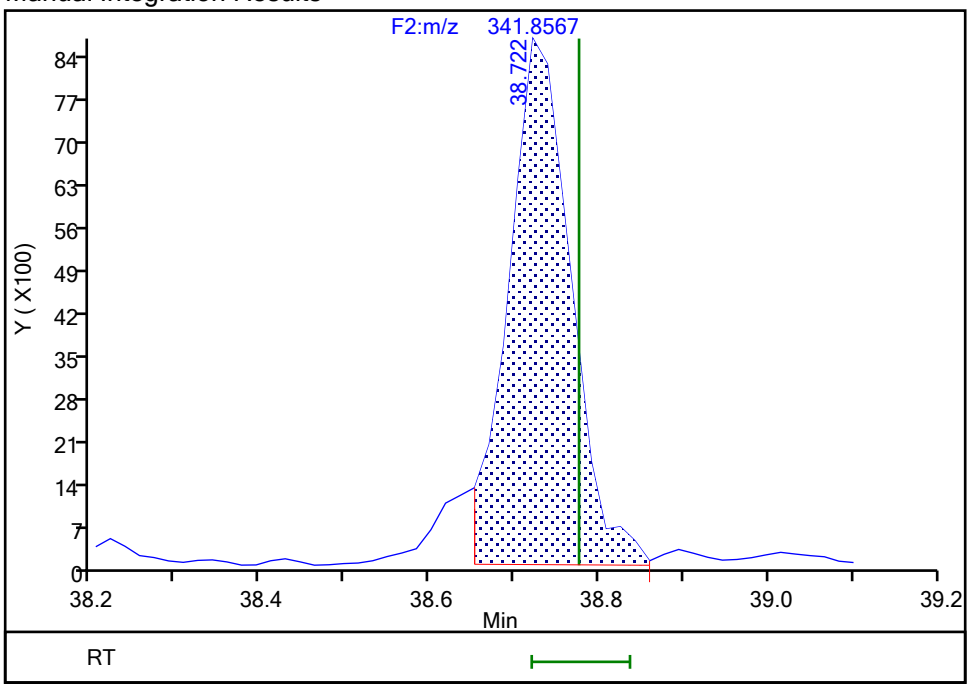
Processing Integration Results

RT: 38.72
Area: 47851
Amount: 2.718026
Amount Units: pg/ul



Manual Integration Results

RT: 38.72
Area: 43846
Amount: 2.630989
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:15:01
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

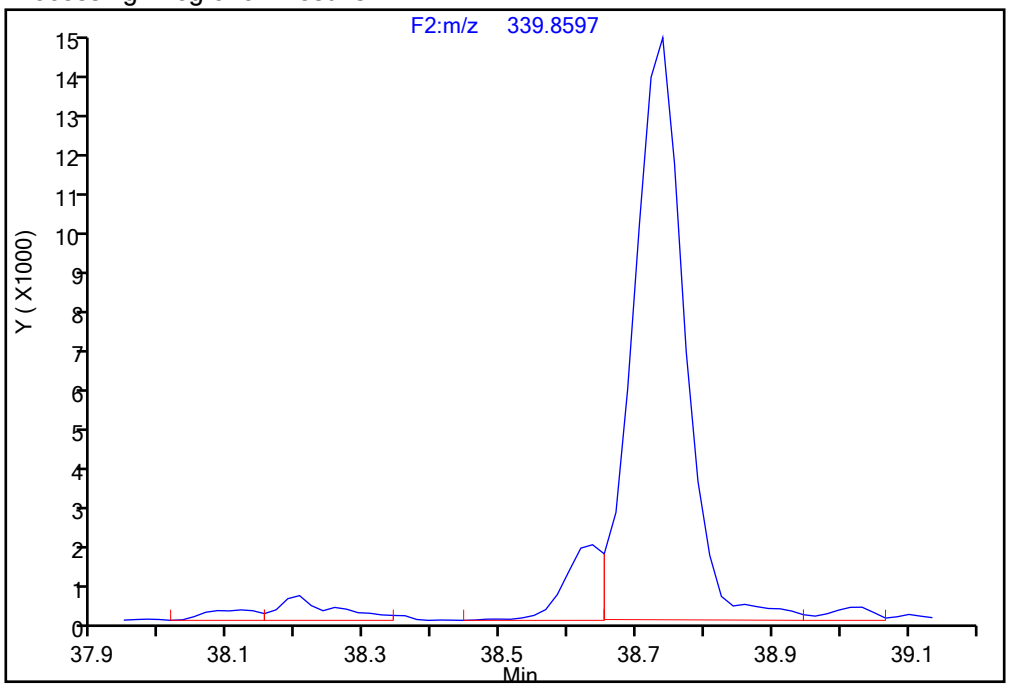
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.61- 41.41)

Signal: 1

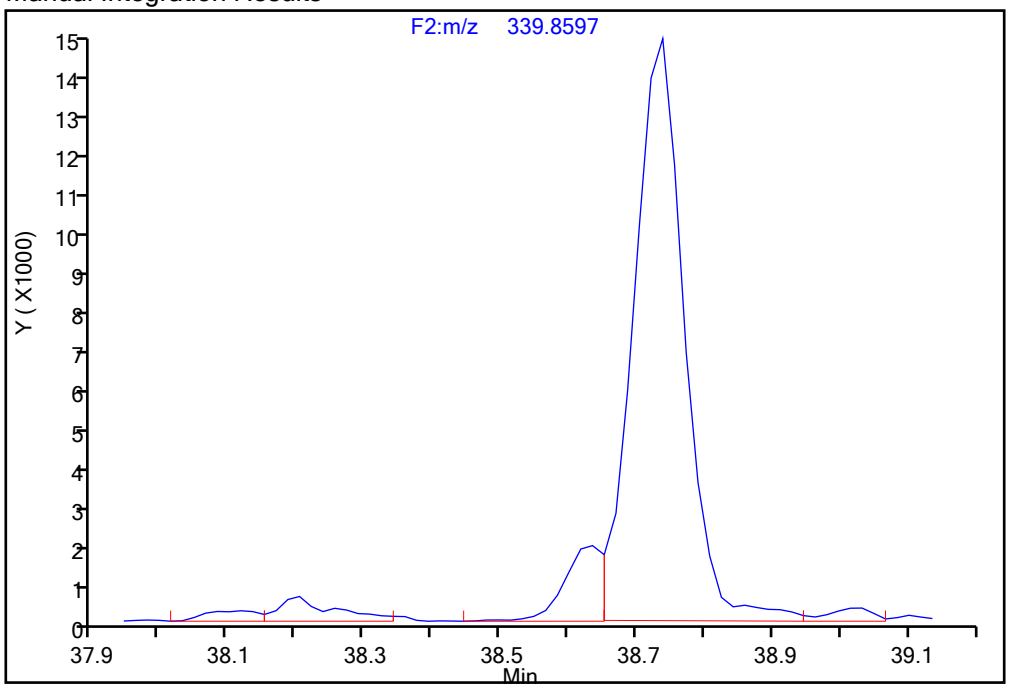
Processing Integration Results

RT = 38.636 Area = 7362



Manual Integration Results

RT = 38.636 Area = 7362



Reviewer: parslyt, 18-Dec-2019 04:15:28

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

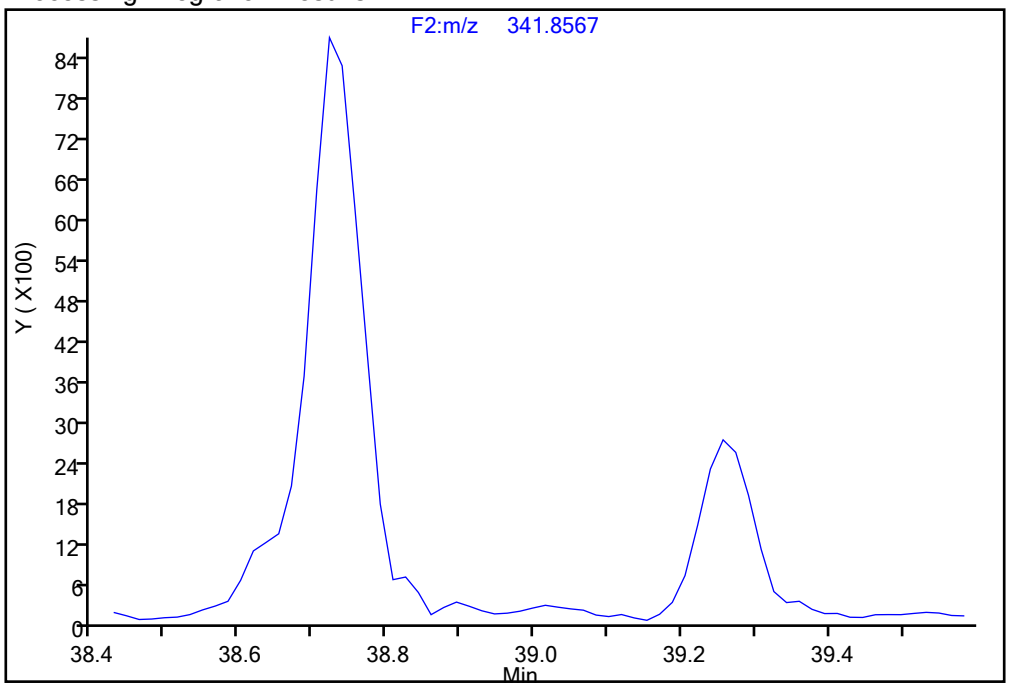
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.61- 41.41)

Signal: 2

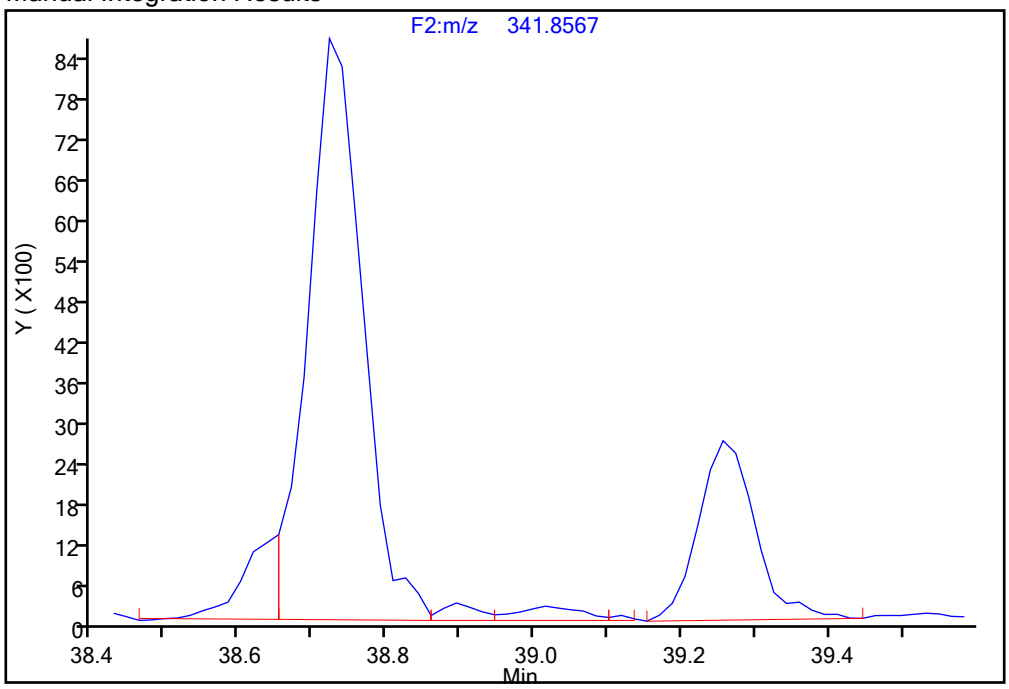
Not Detected
RT: 34.61- 41.41

Processing Integration Results



Manual Integration Results

RT = 39.015 Area = 1243 M



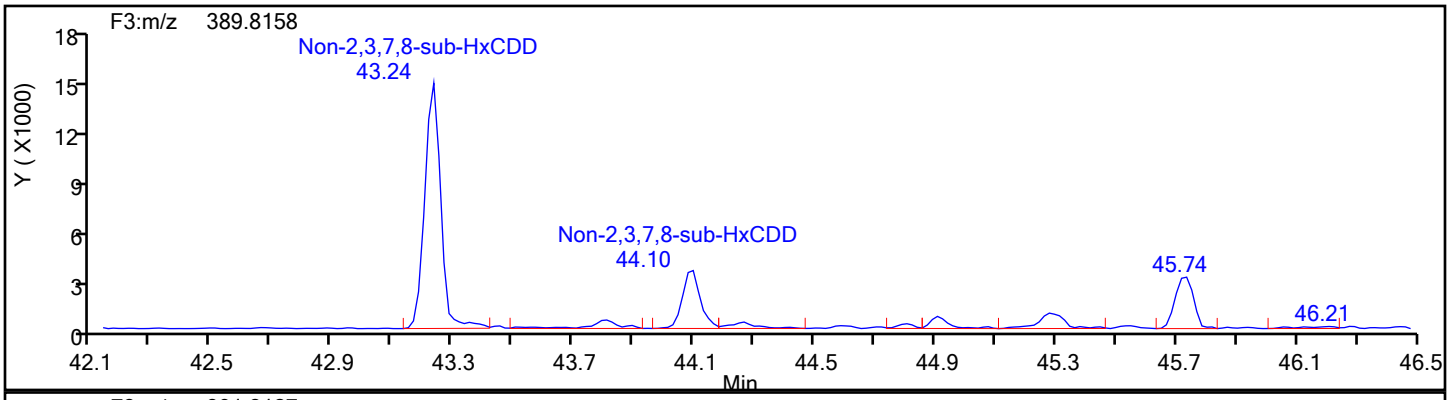
Reviewer: parslyt, 18-Dec-2019 04:15:40
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

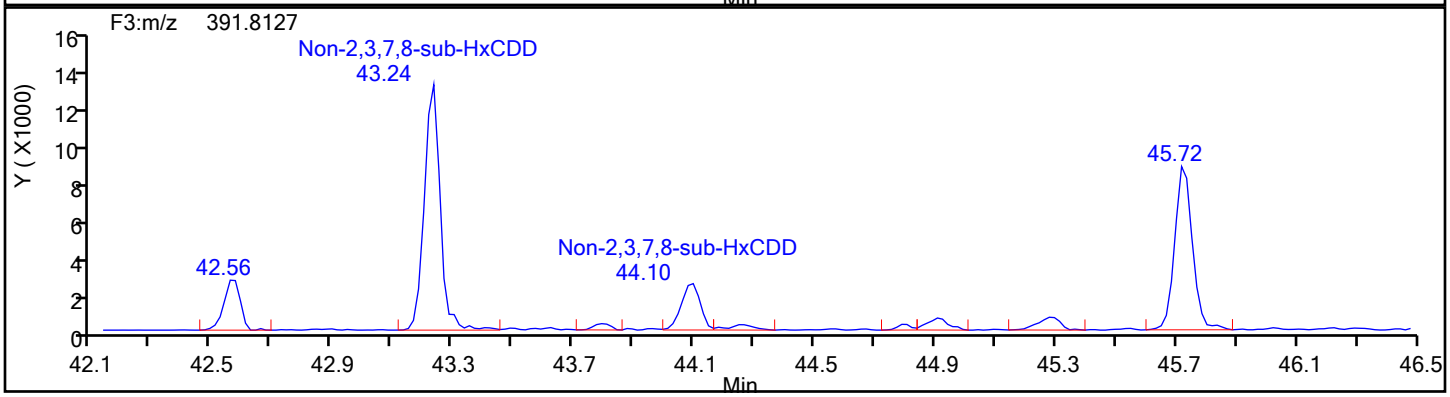
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

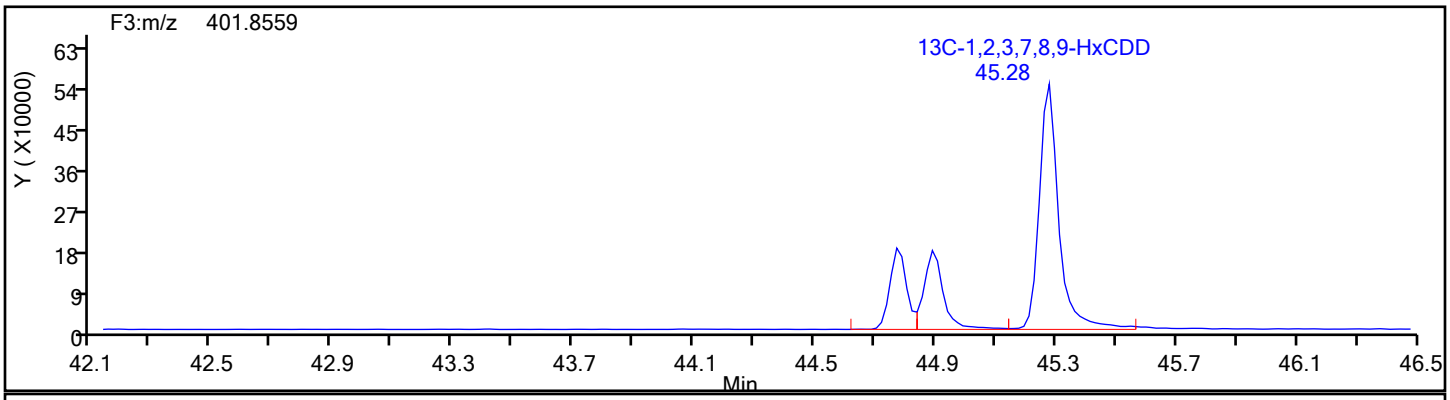
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

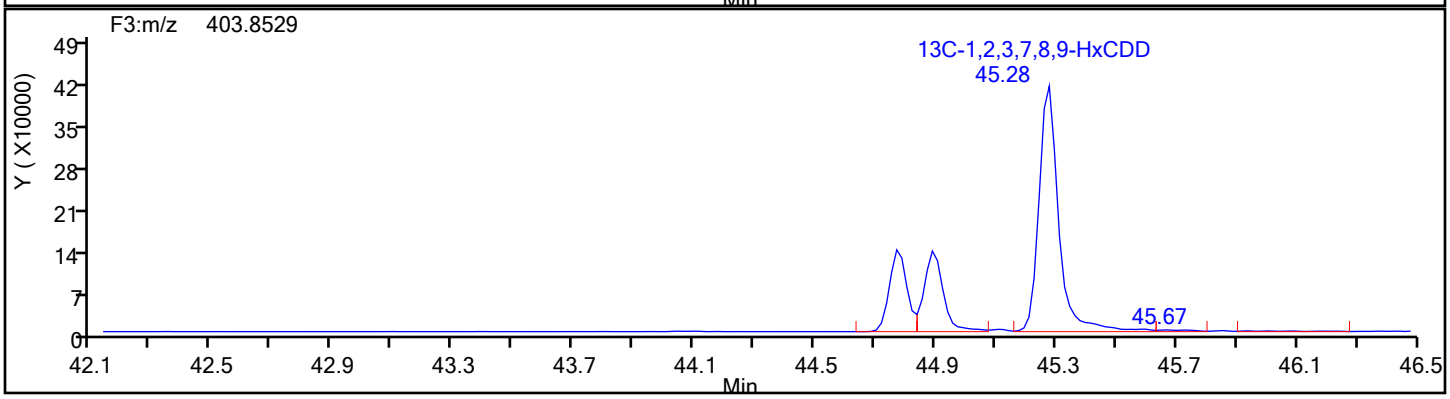
HxCDD





HxCDD Standards



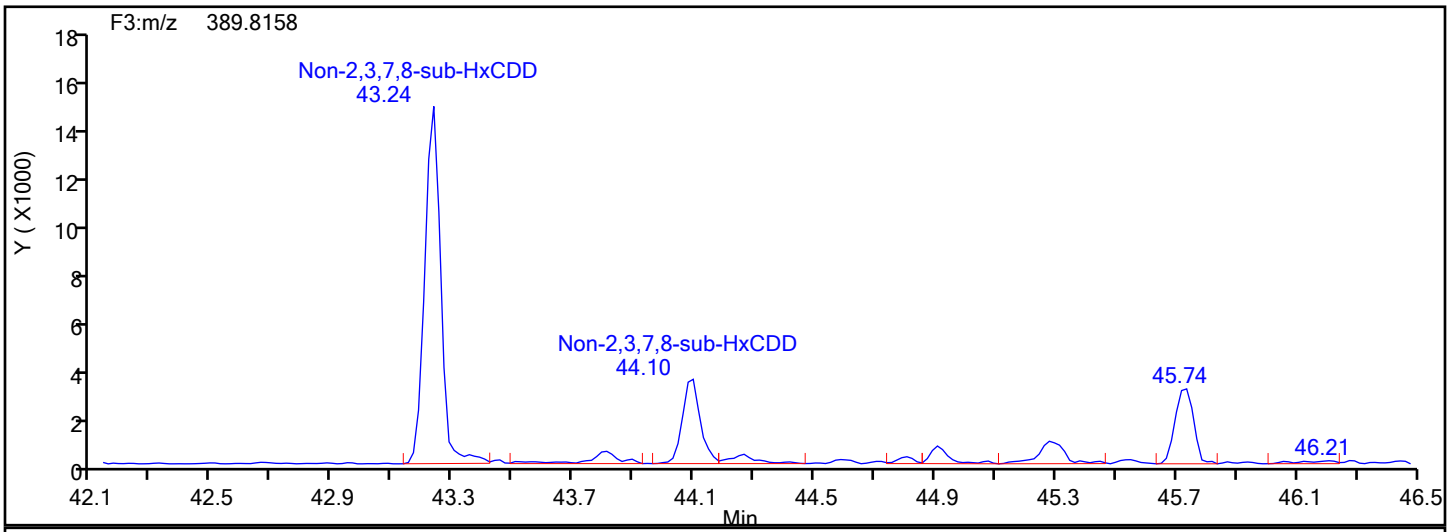


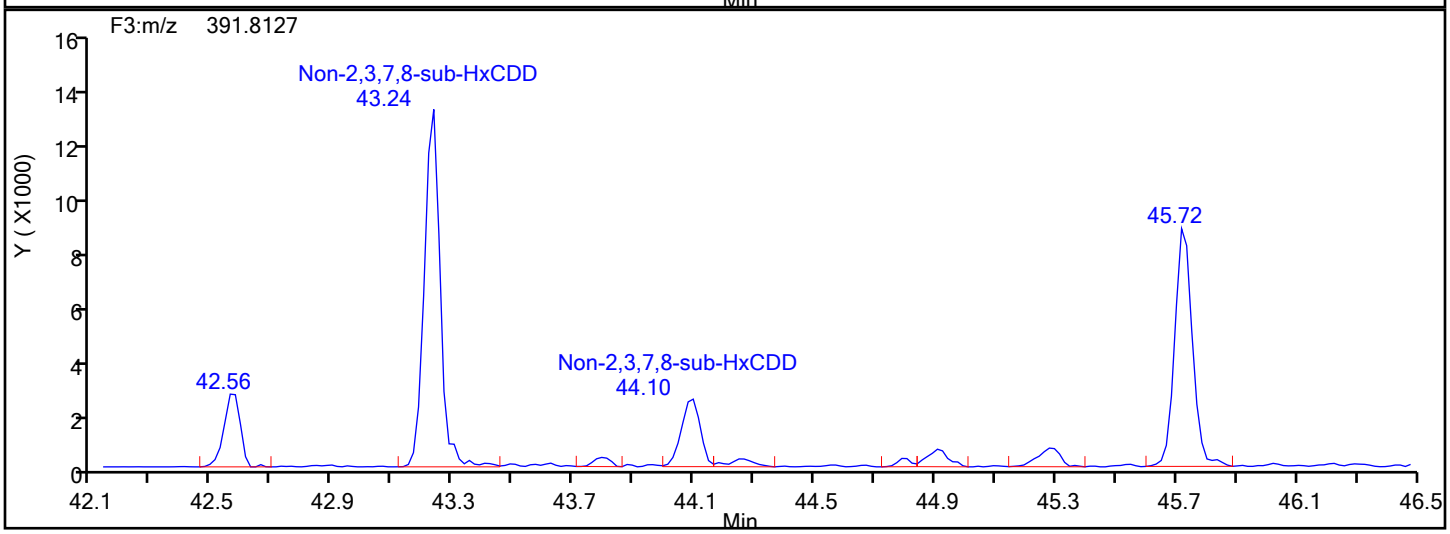
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

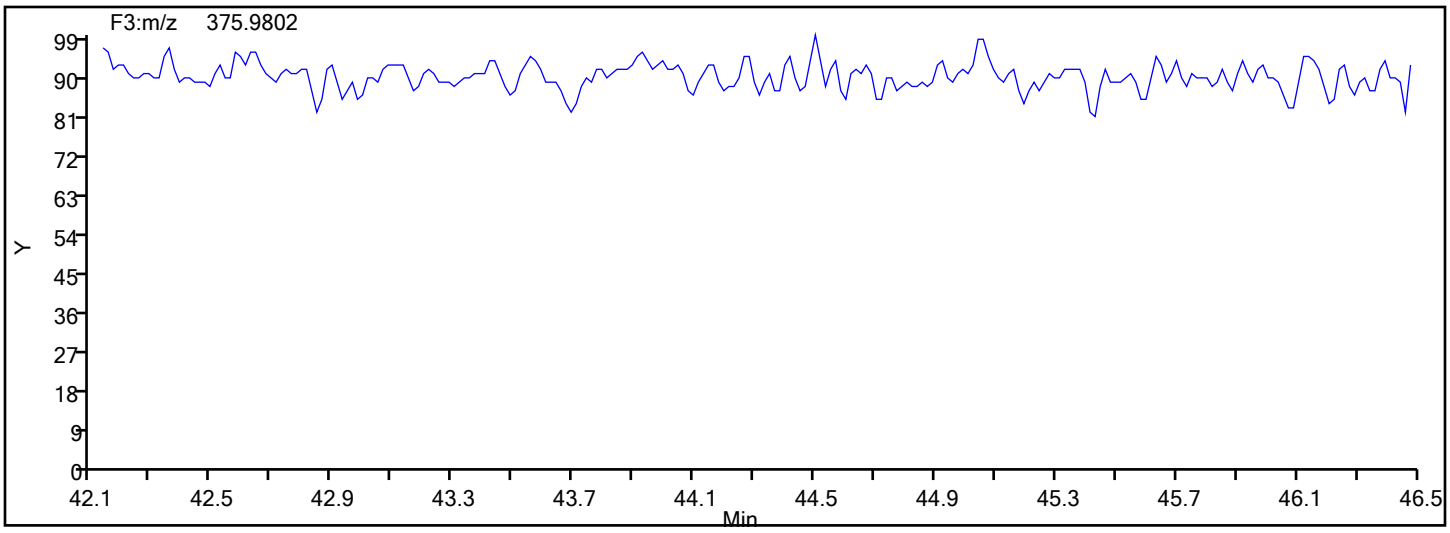
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass

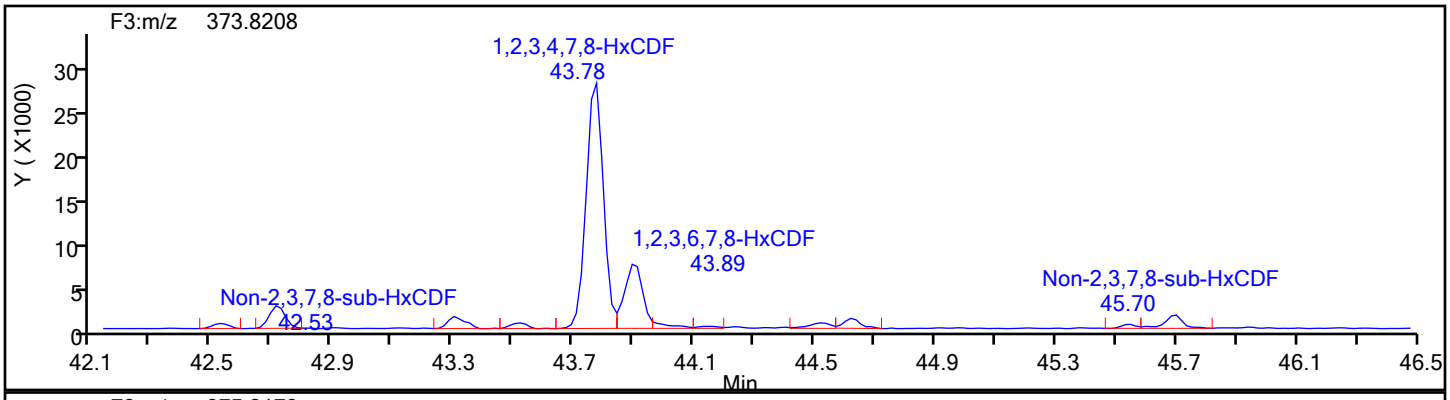


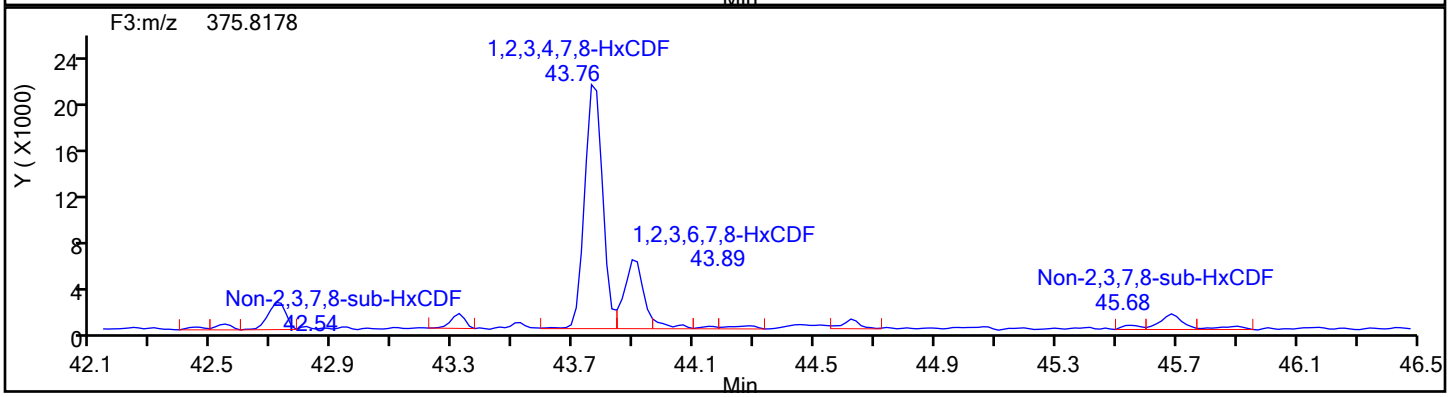
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

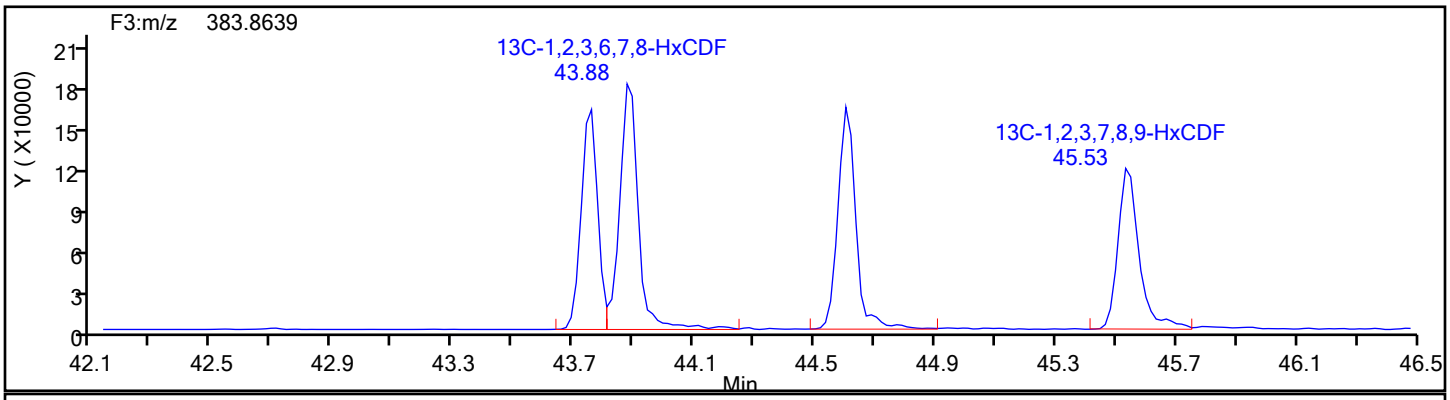
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

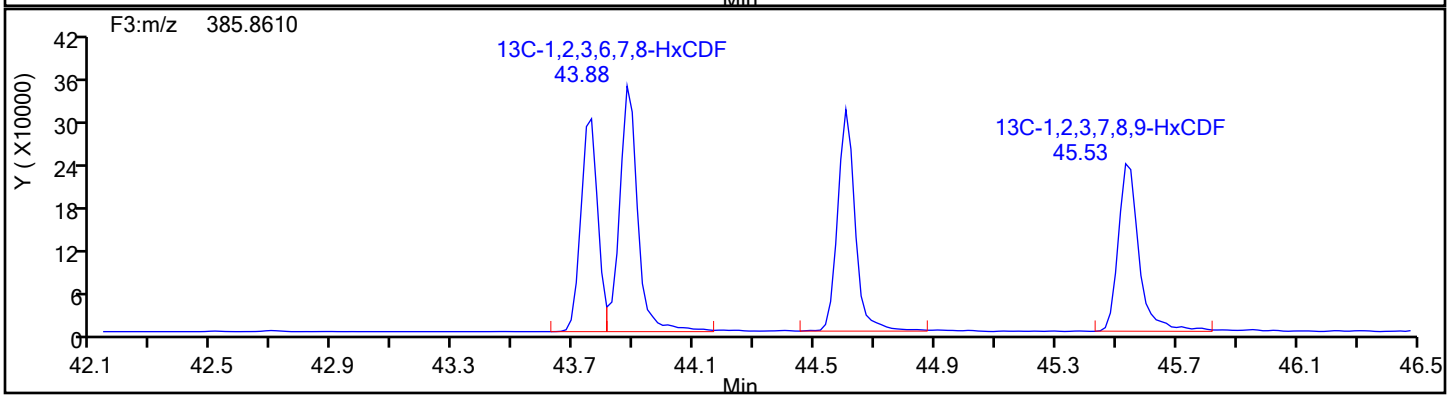
HxCDF





HxCDF Standards



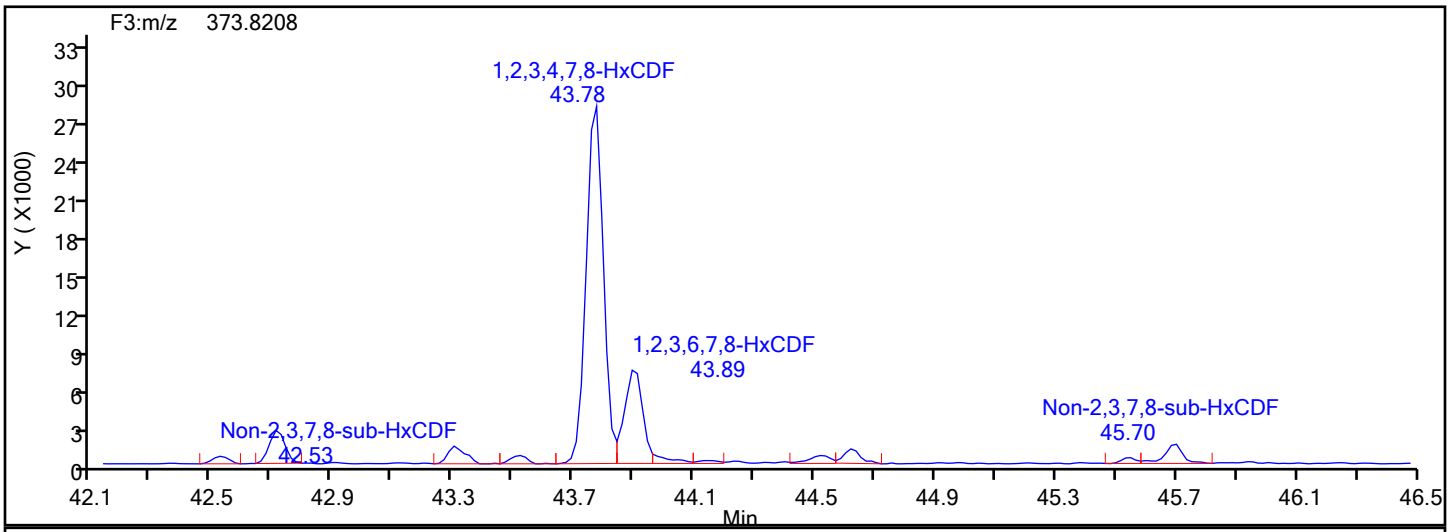


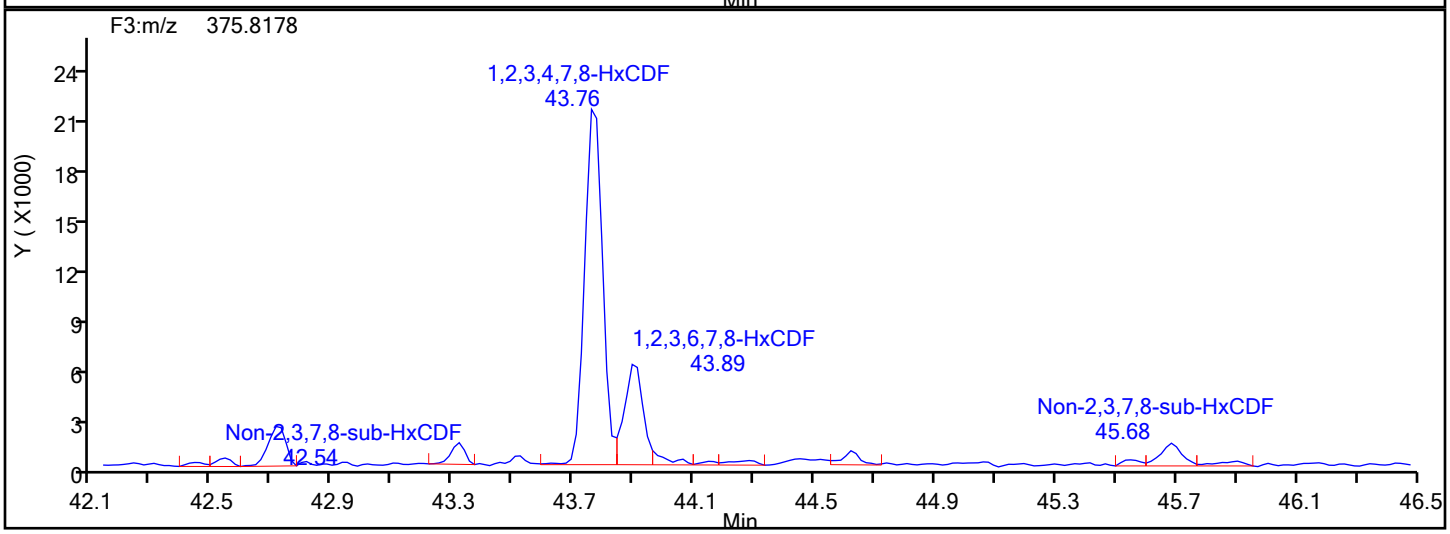
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

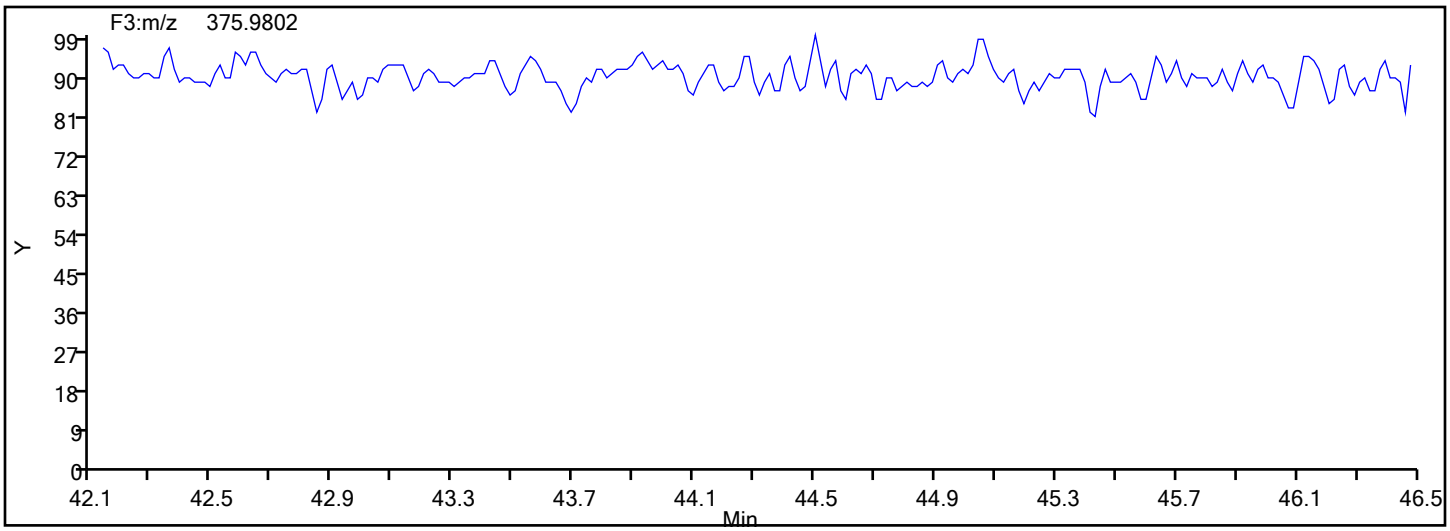
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

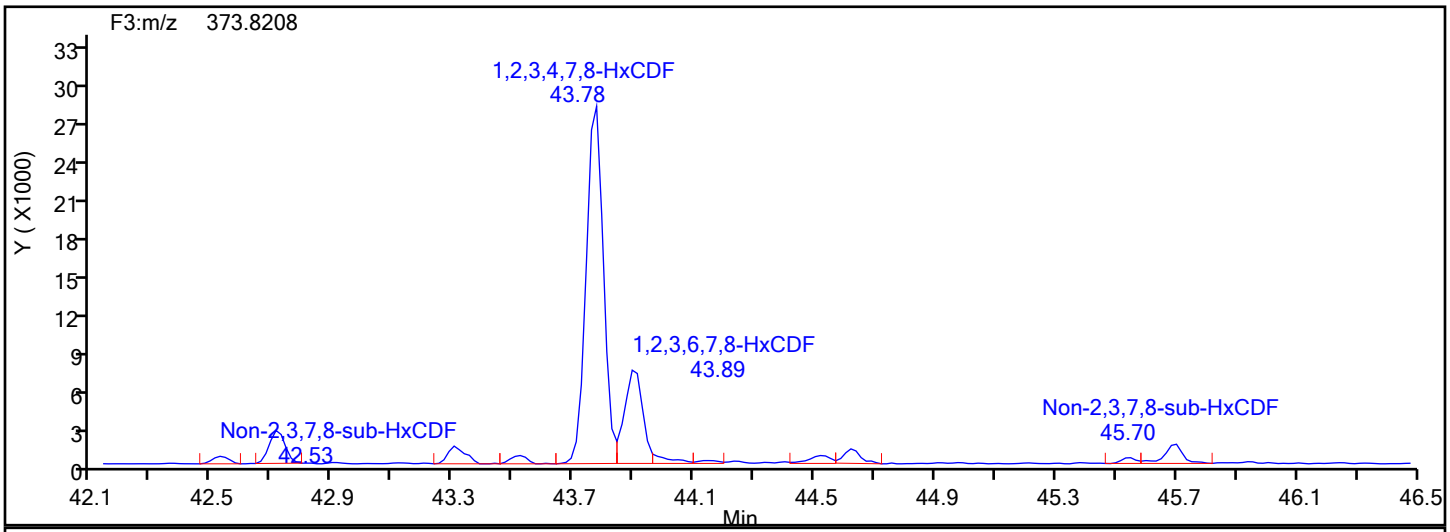


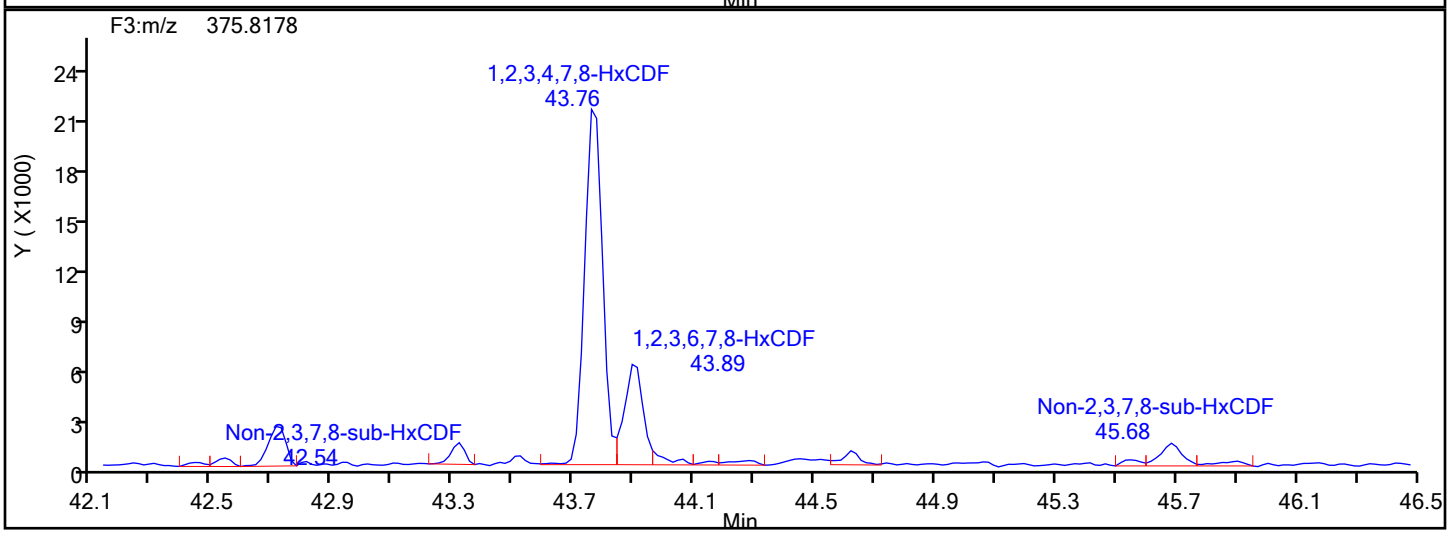
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

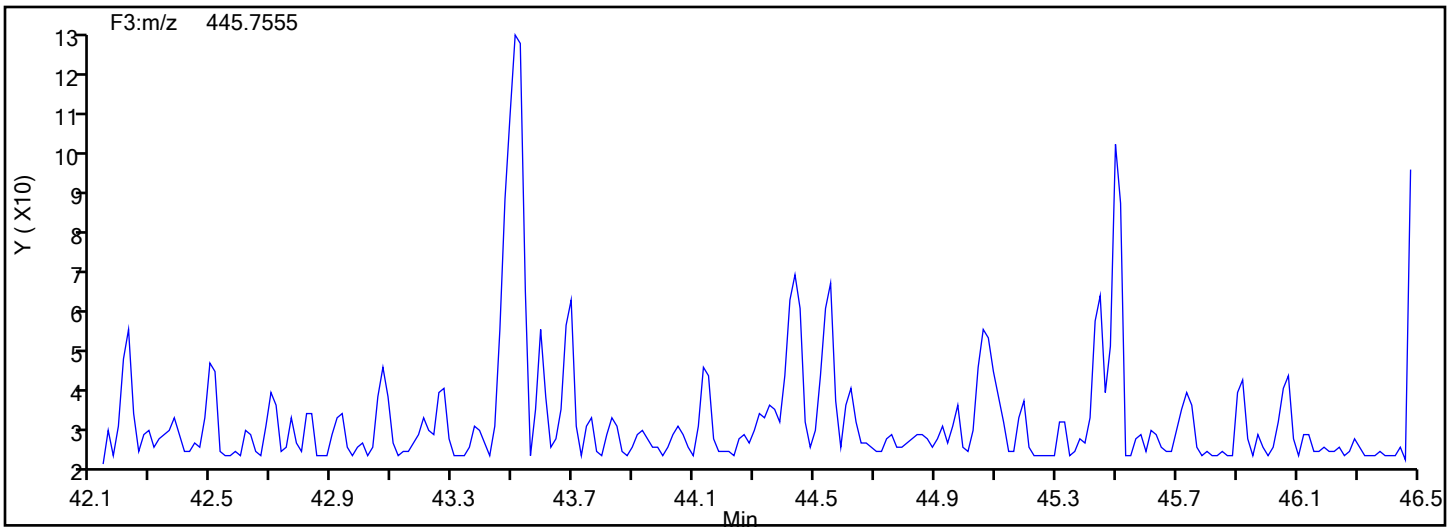
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

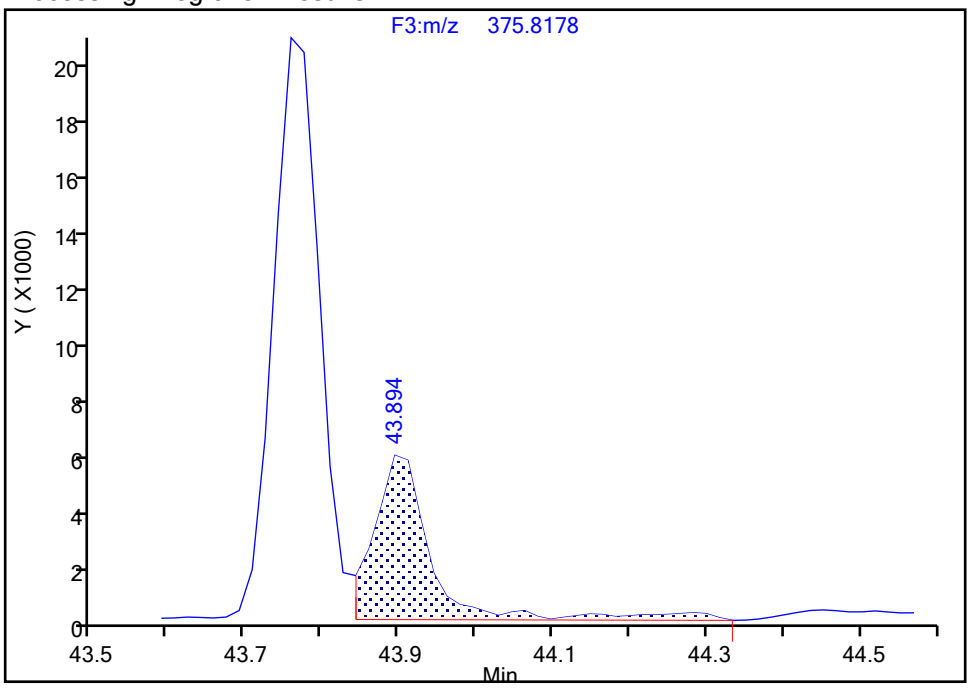
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

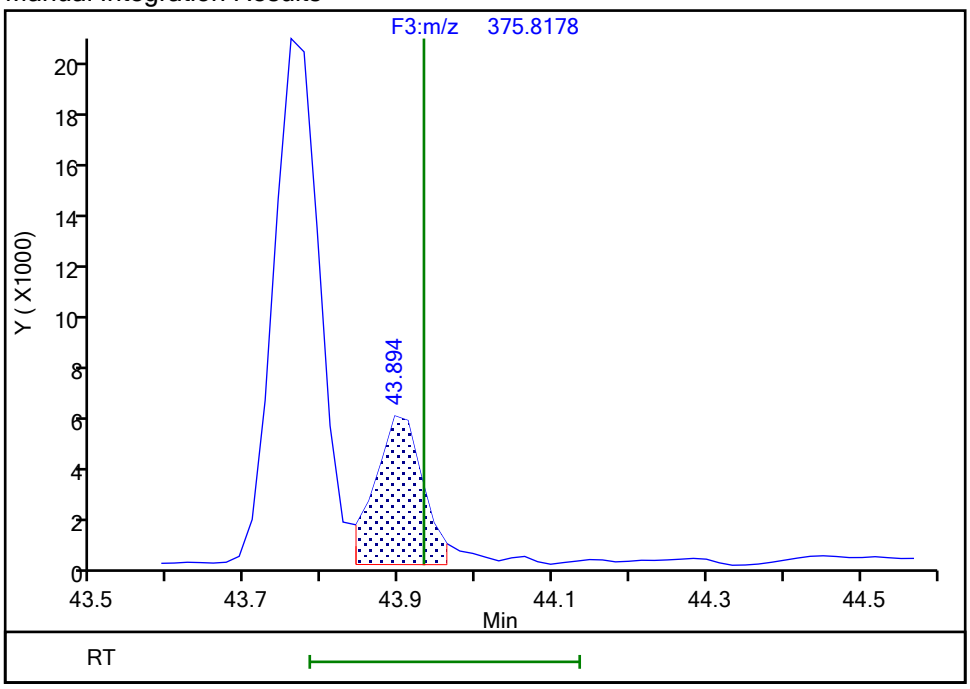
Processing Integration Results

RT: 43.89
Area: 29962
Amount: 1.137495
Amount Units: pg/ul



Manual Integration Results

RT: 43.89
Area: 24937
Amount: 0.980910
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:16:17

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

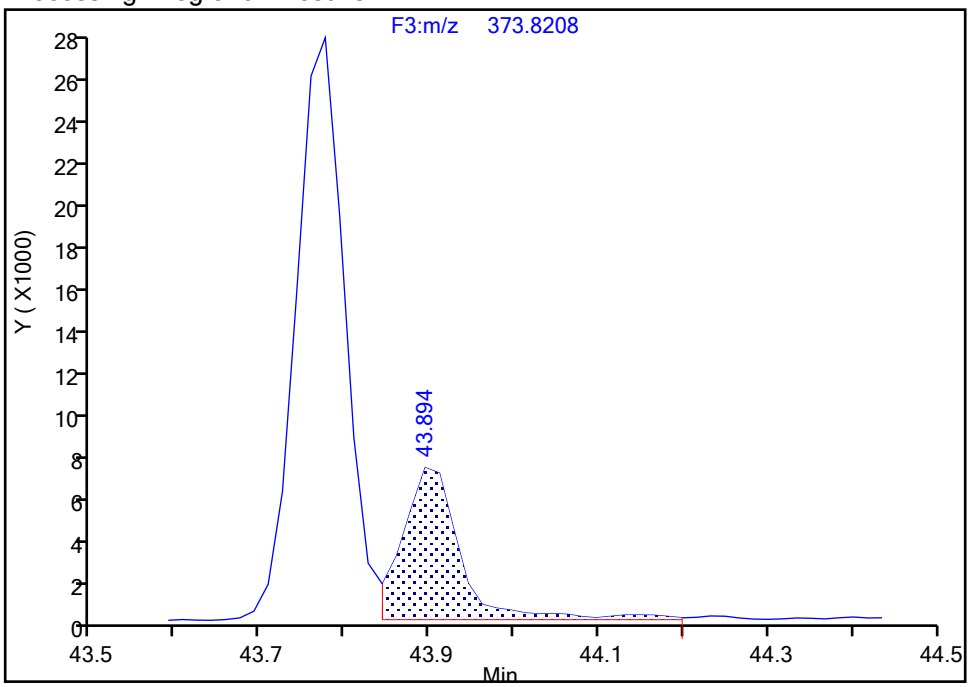
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

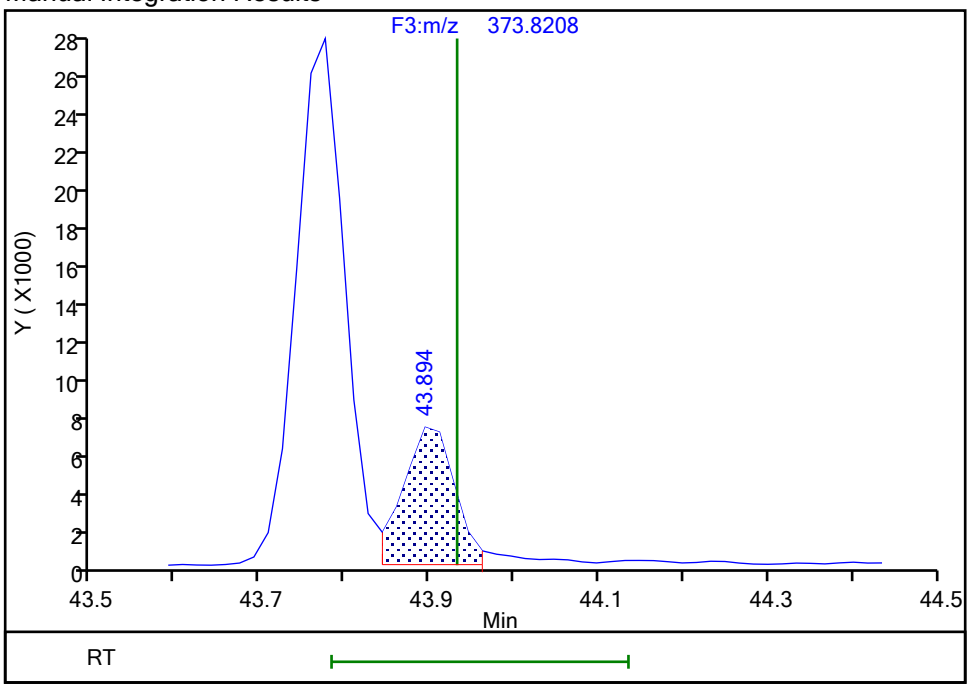
Processing Integration Results

RT: 43.89
Area: 34059
Amount: 1.137495
Amount Units: pg/ul



Manual Integration Results

RT: 43.89
Area: 30271
Amount: 0.980910
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:16:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

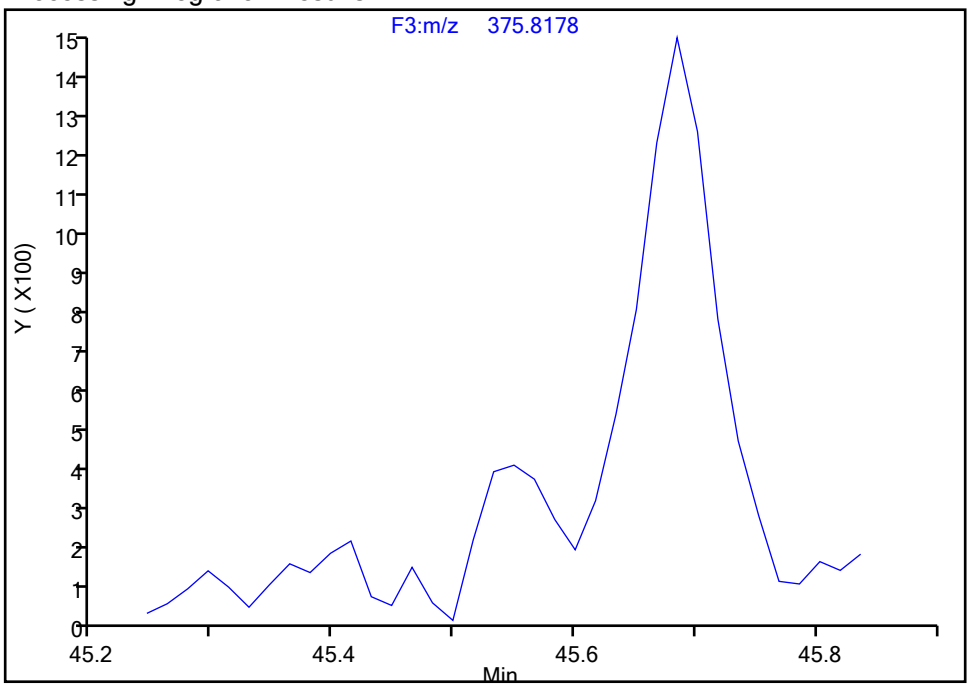
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

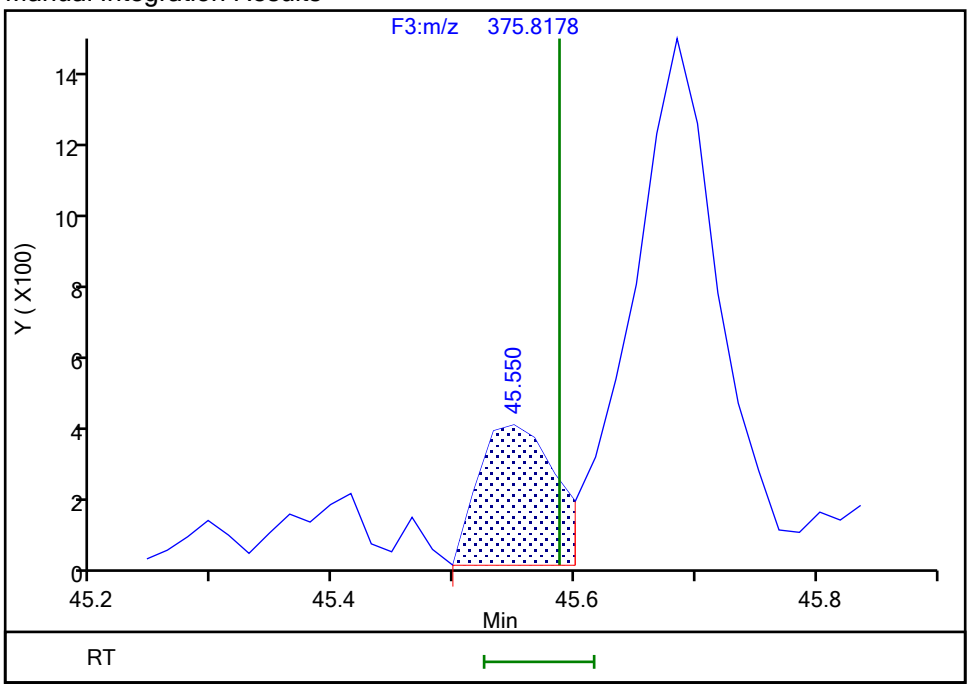
Not Detected
Expected RT: 45.59

Processing Integration Results



Manual Integration Results

RT: 45.55
Area: 1528
Amount: 0.070617
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:16:42
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

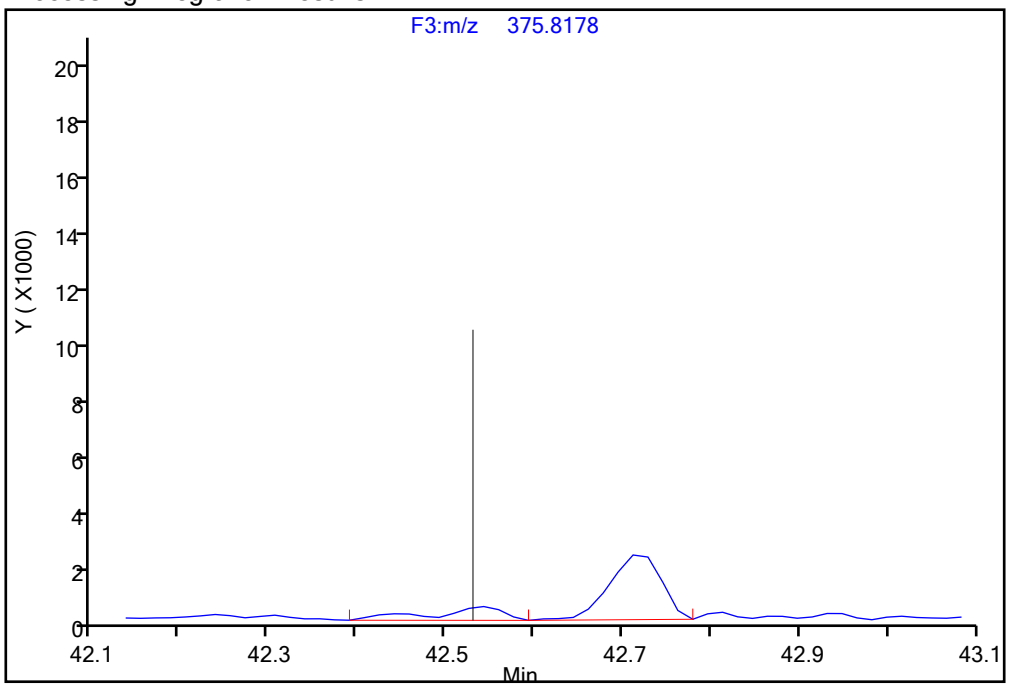
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.53- 45.77)

Signal: 2

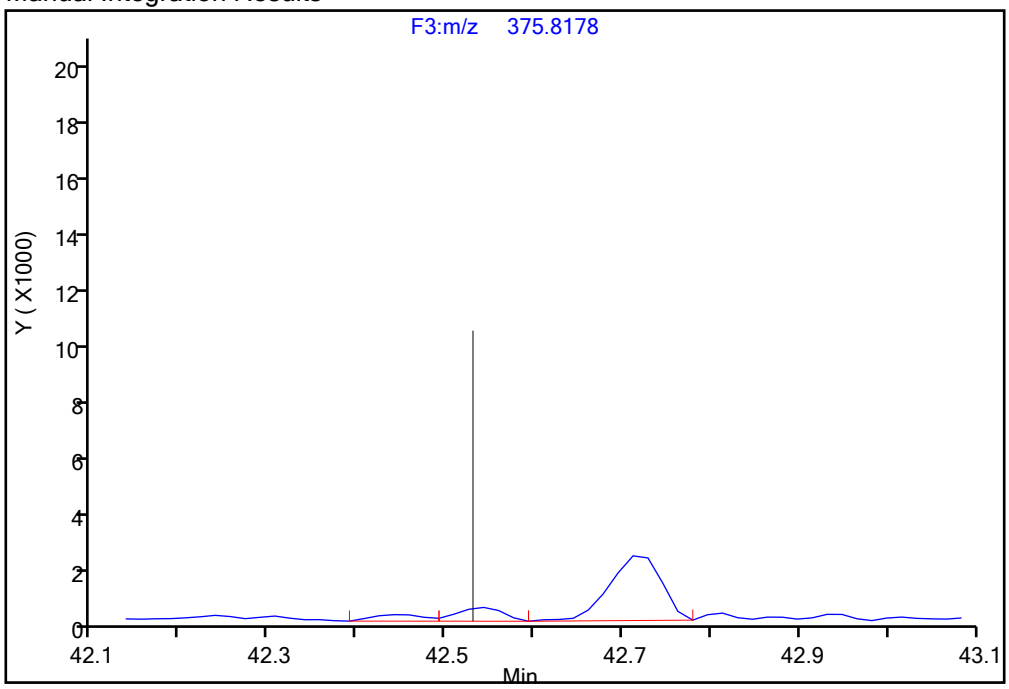
Processing Integration Results

RT = 42.543 Area = 2701



Manual Integration Results

RT = 42.543 Area = 1752 M



Reviewer: parslyt, 18-Dec-2019 04:19:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

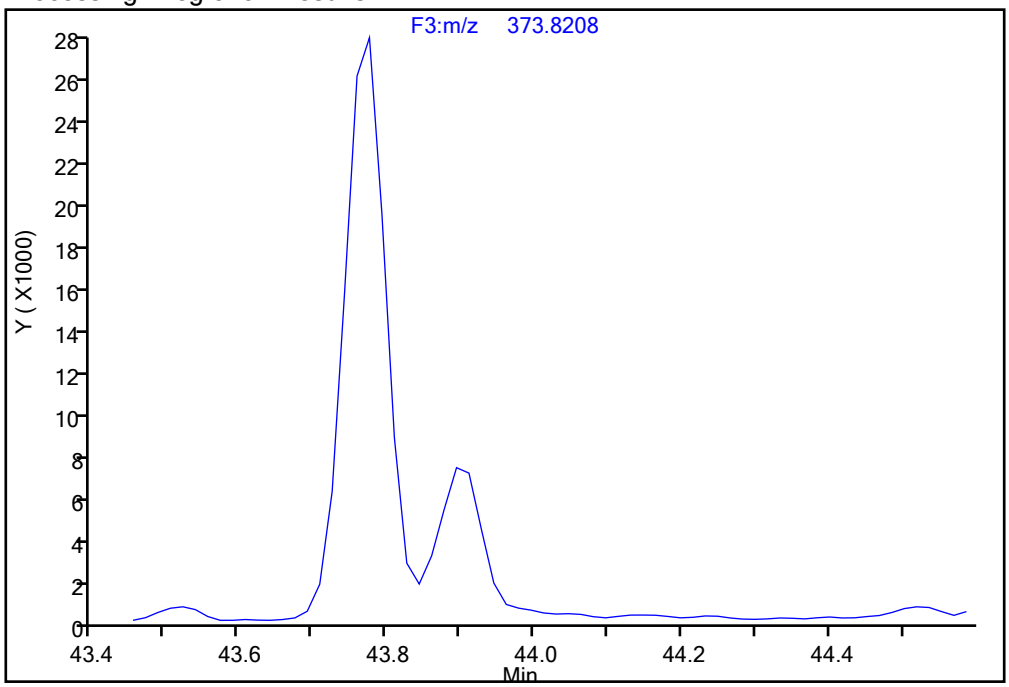
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

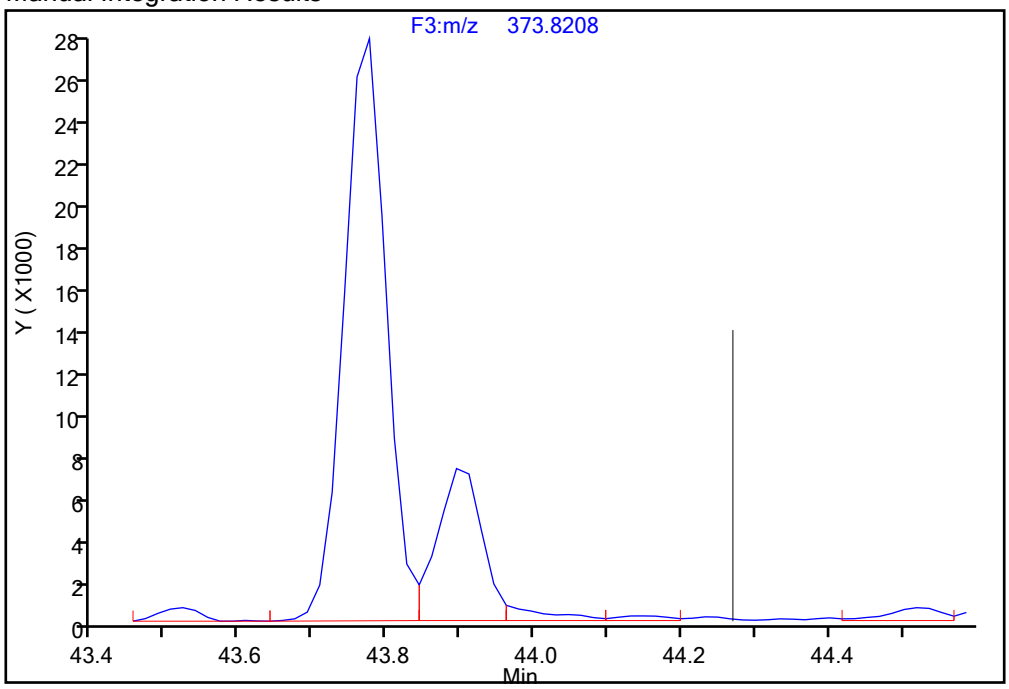
Not Detected
RT: 42.53- 45.77

Processing Integration Results



Manual Integration Results

RT = 43.962 Area = 2721 M



Reviewer: parslyt, 18-Dec-2019 04:18:48
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

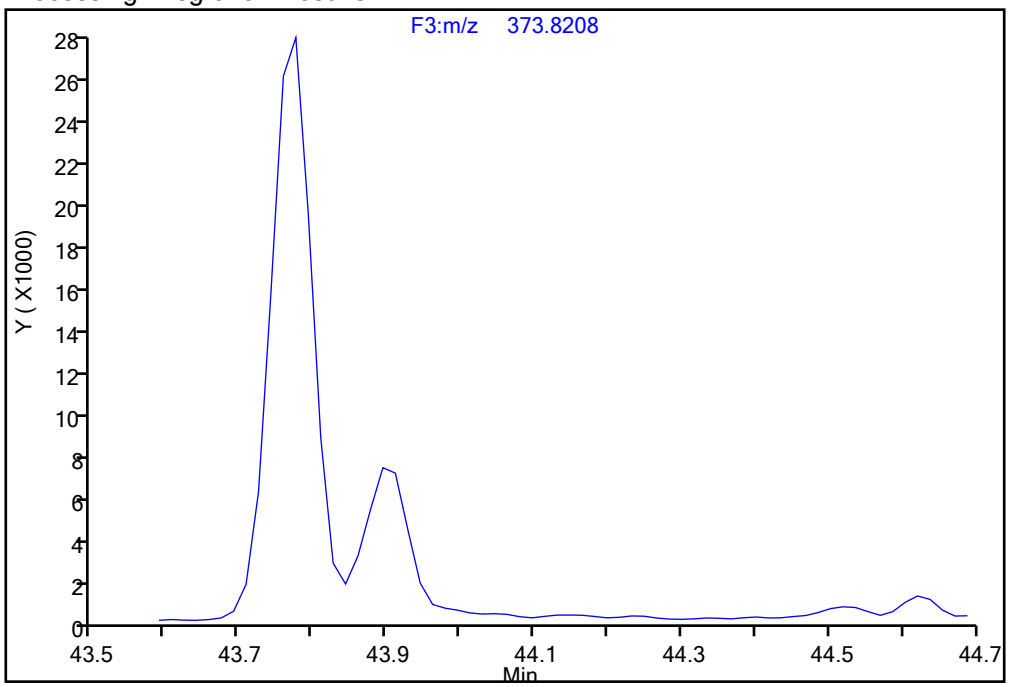
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

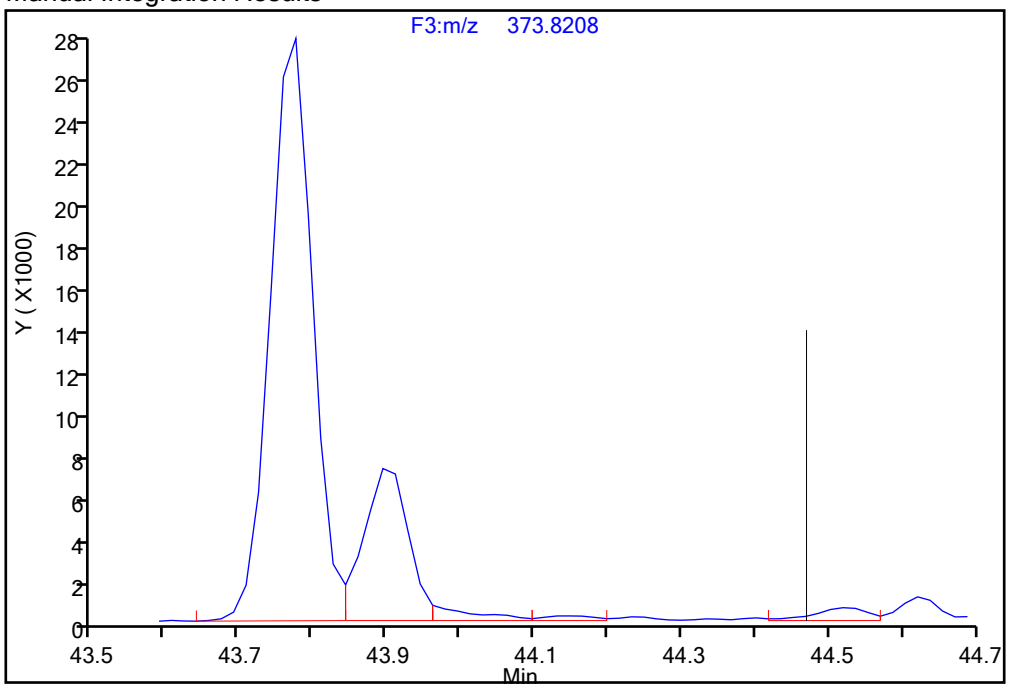
Not Detected
RT: 42.53- 45.77

Processing Integration Results



Manual Integration Results

RT = 44.148 Area = 1067 M



Reviewer: parslyt, 18-Dec-2019 04:18:48

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

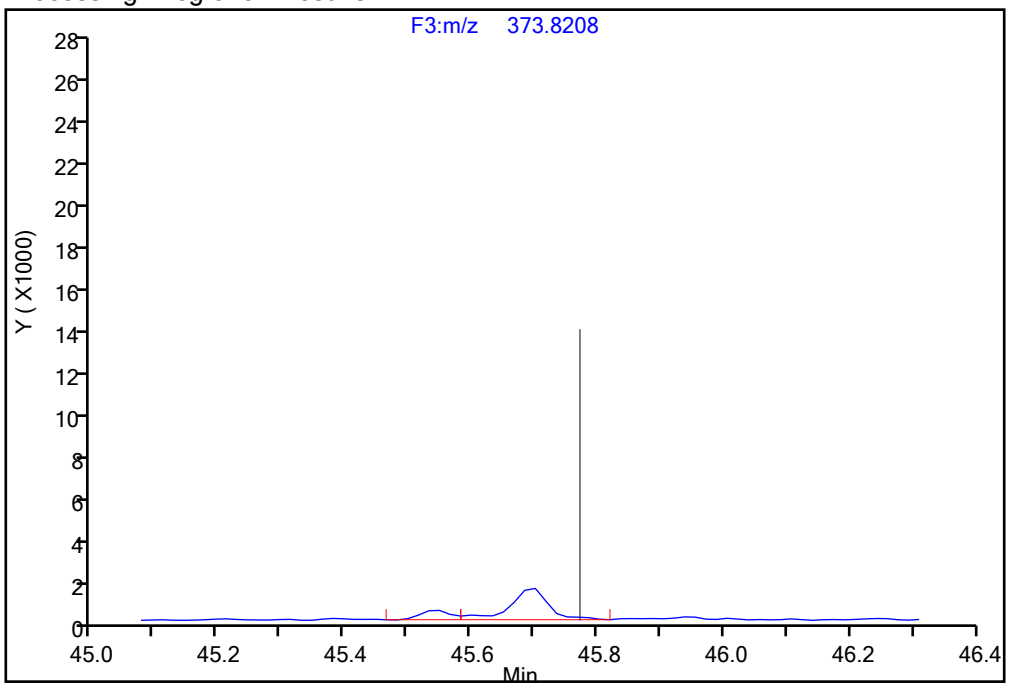
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.53- 45.77)

Signal: 1

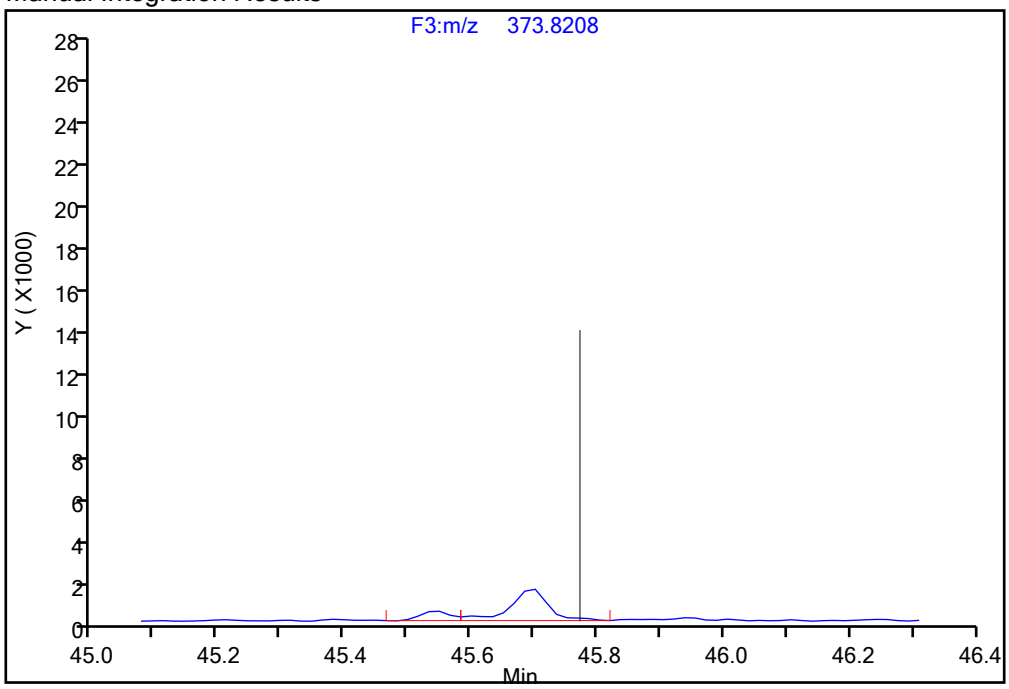
Processing Integration Results

RT = 45.701 Area = 6399



Manual Integration Results

RT = 45.701 Area = 6399



Reviewer: parslyt, 18-Dec-2019 04:18:48

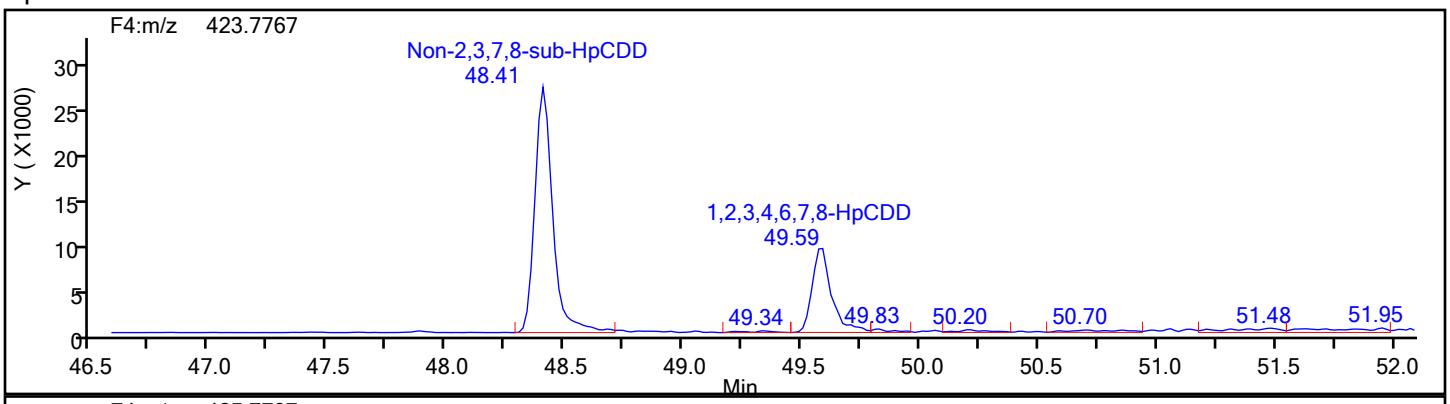
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

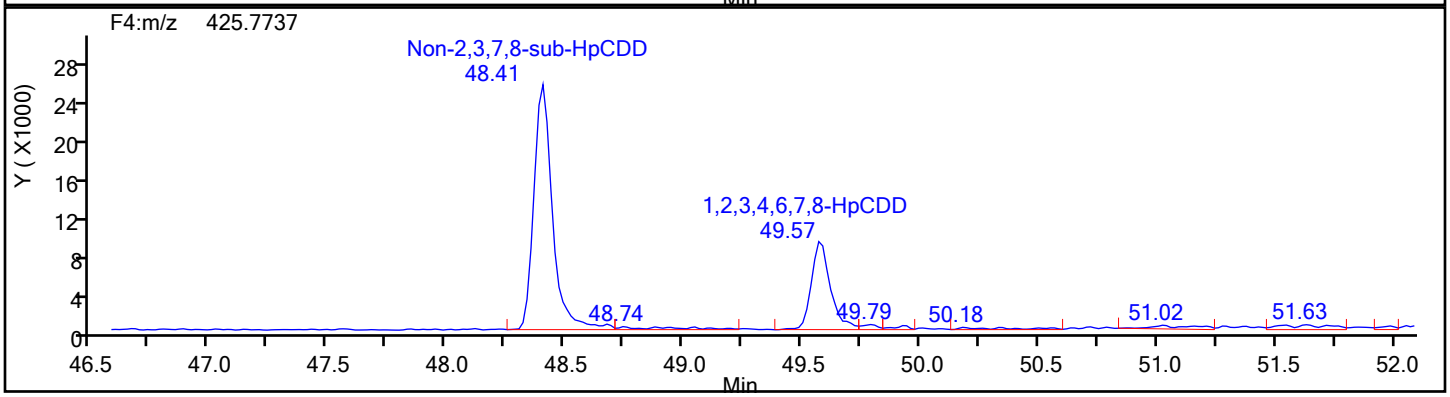
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

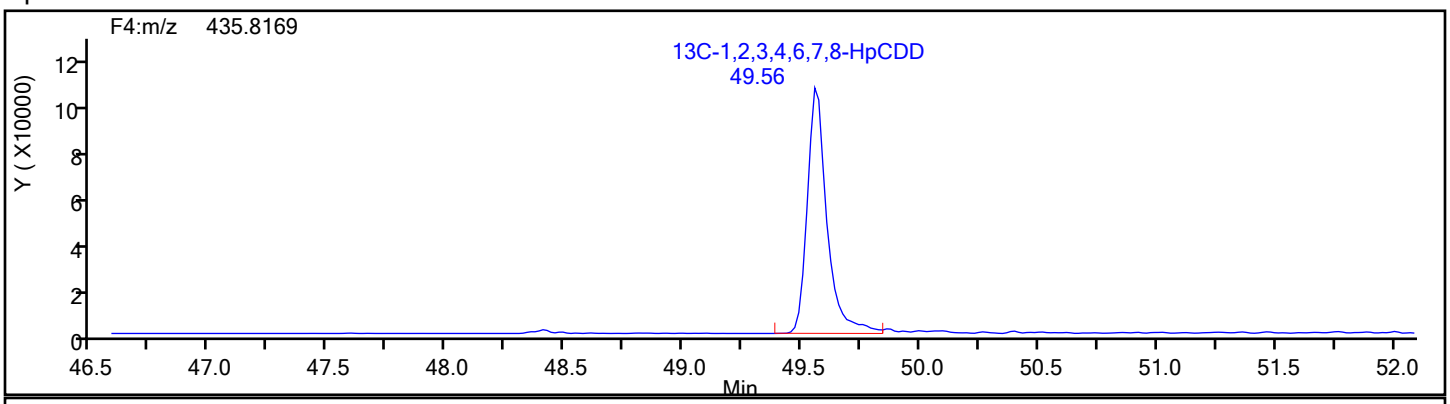
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

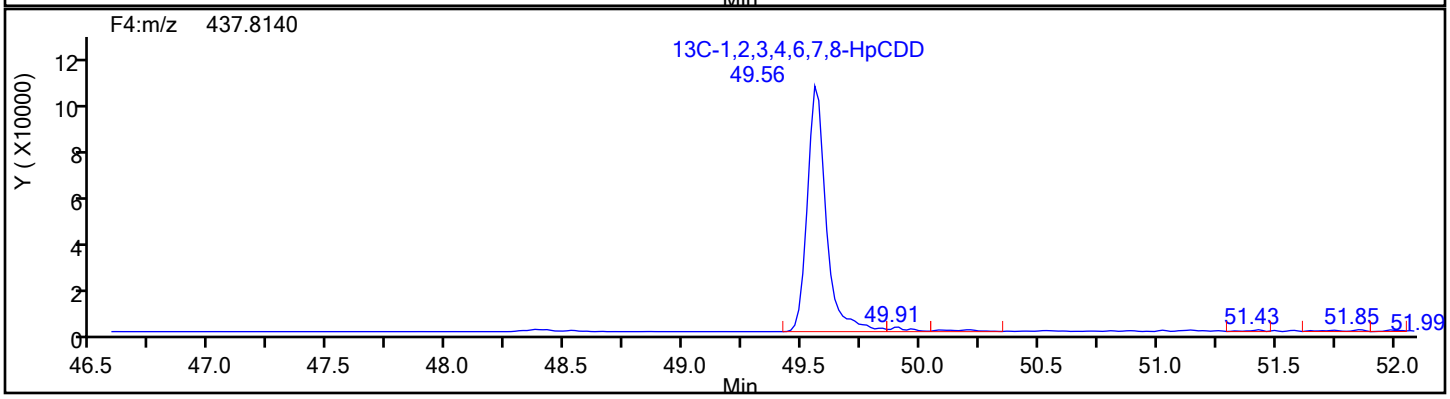
HpCDD





HpCDD Standards



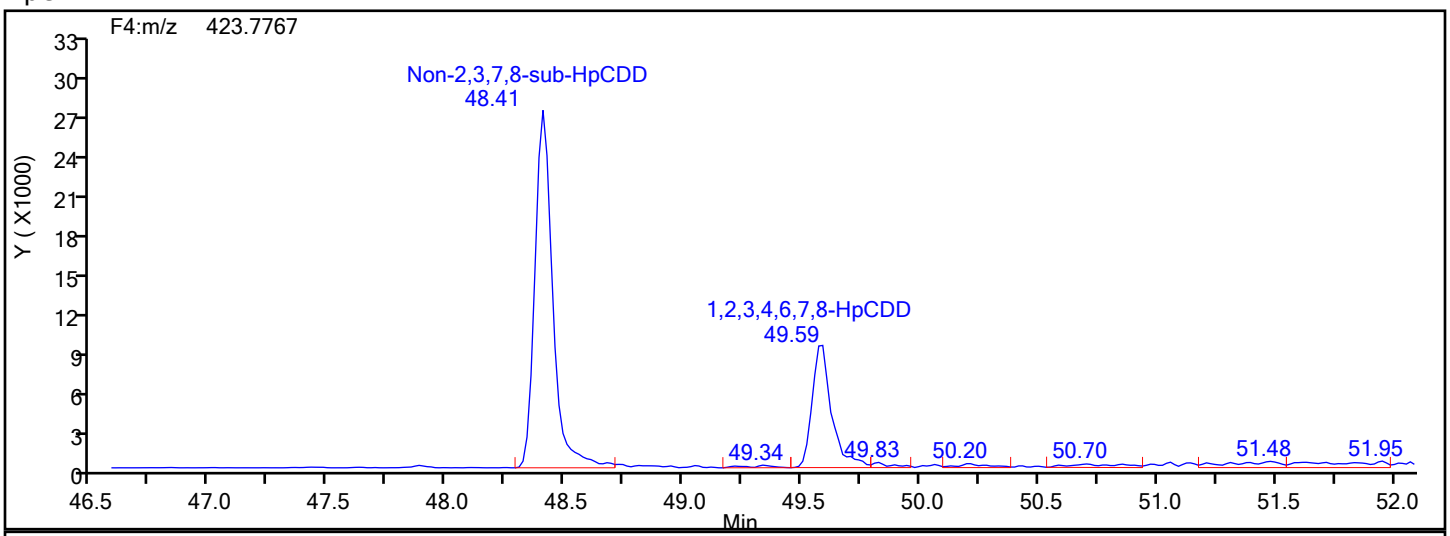


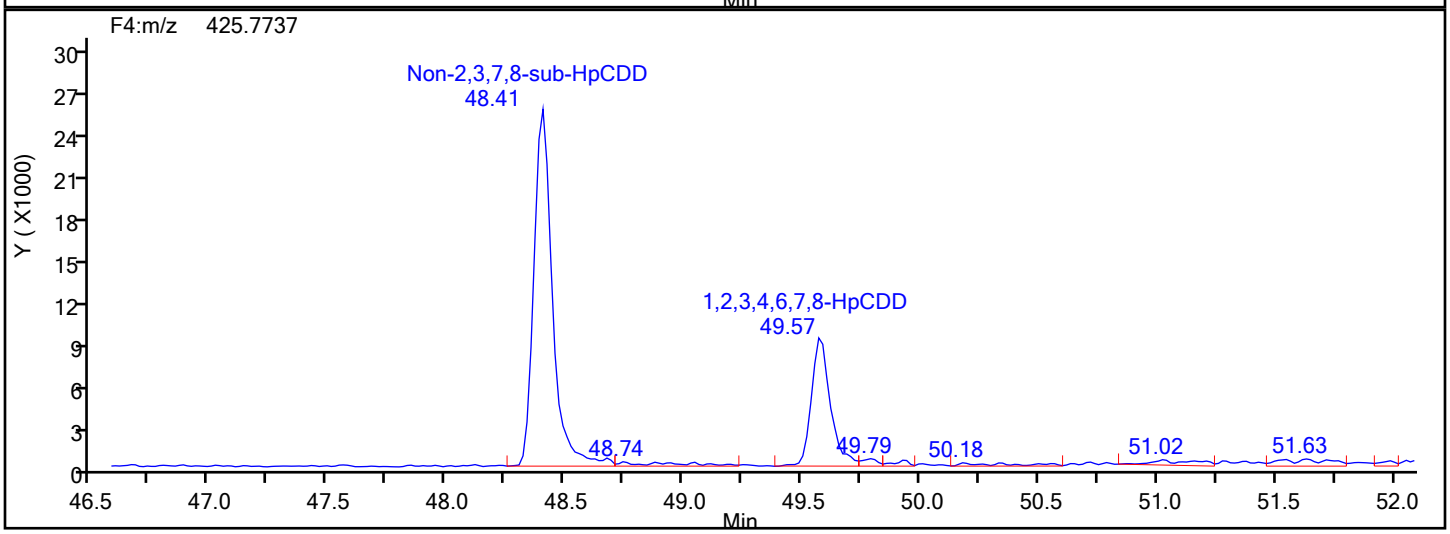
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

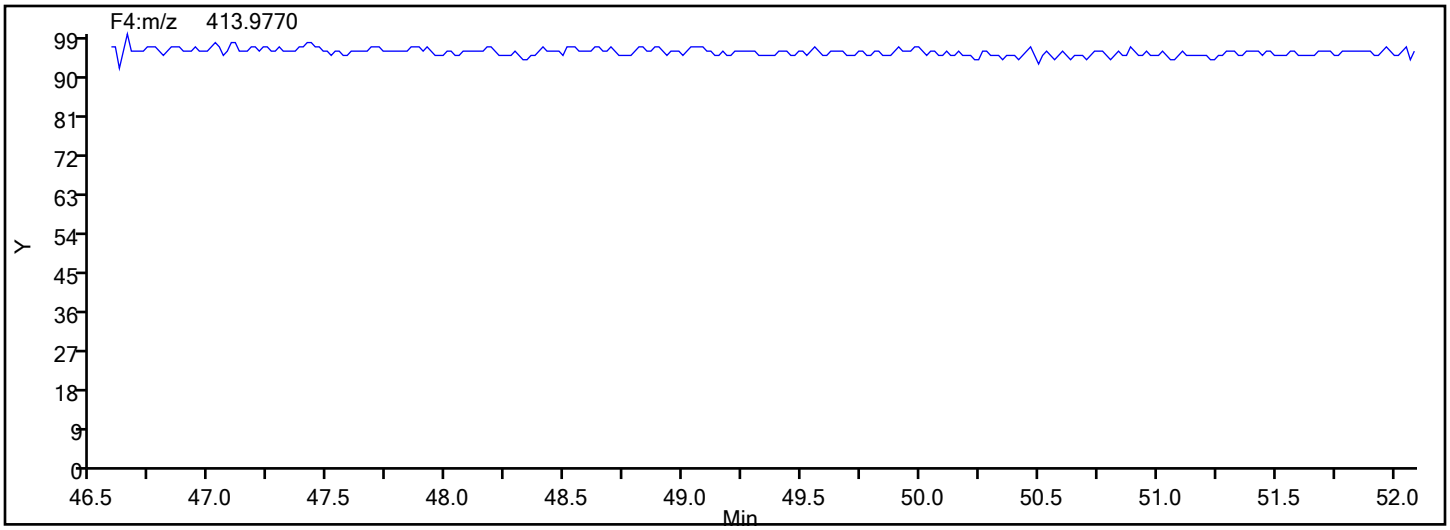
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

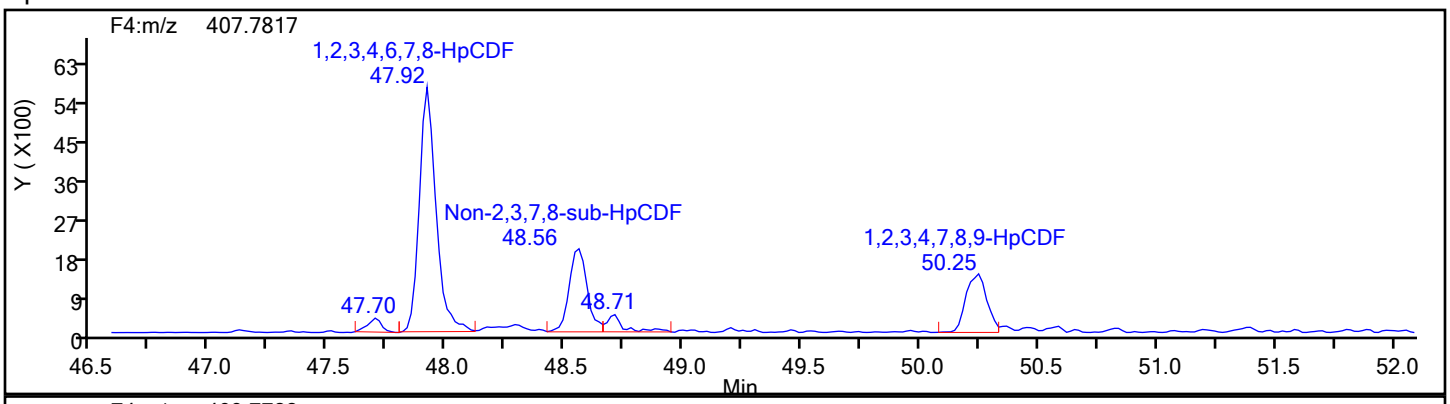


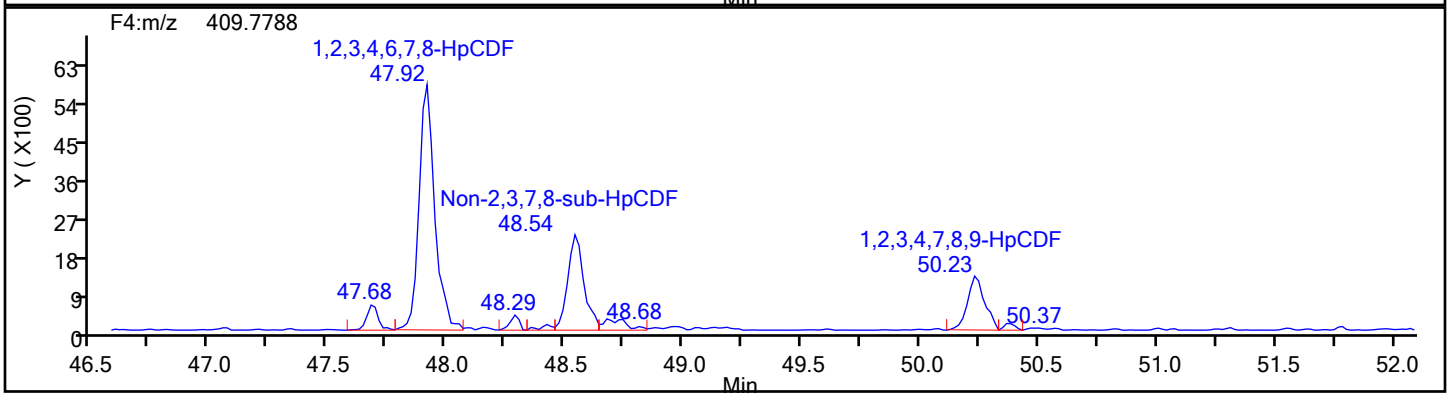
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

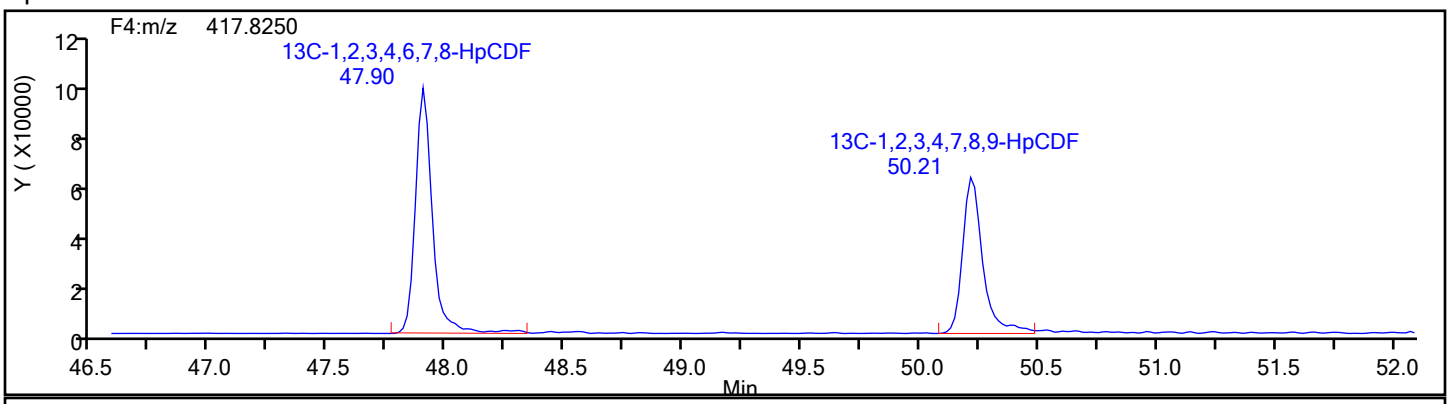
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

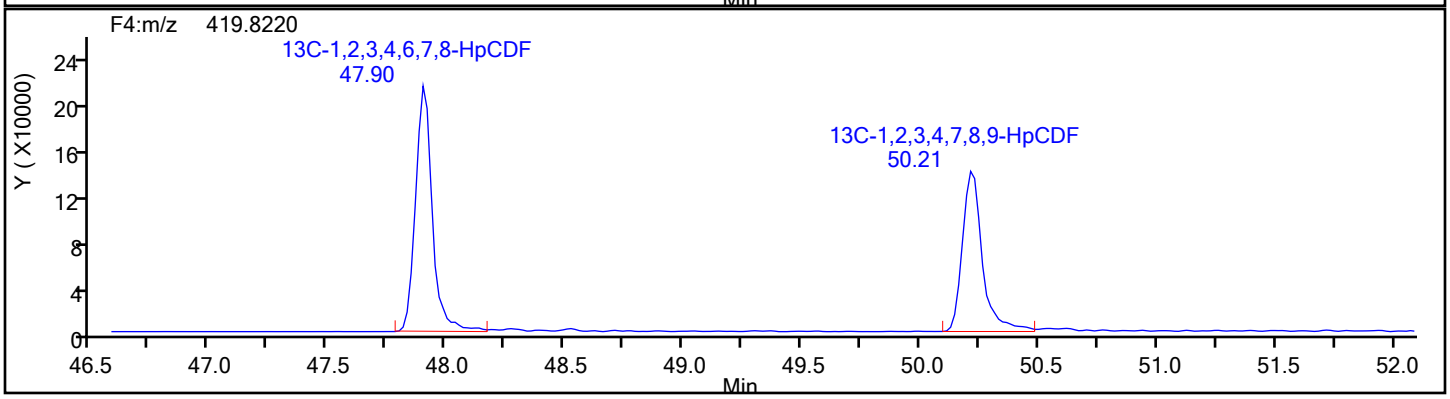
HpCDF





HpCDF Standards



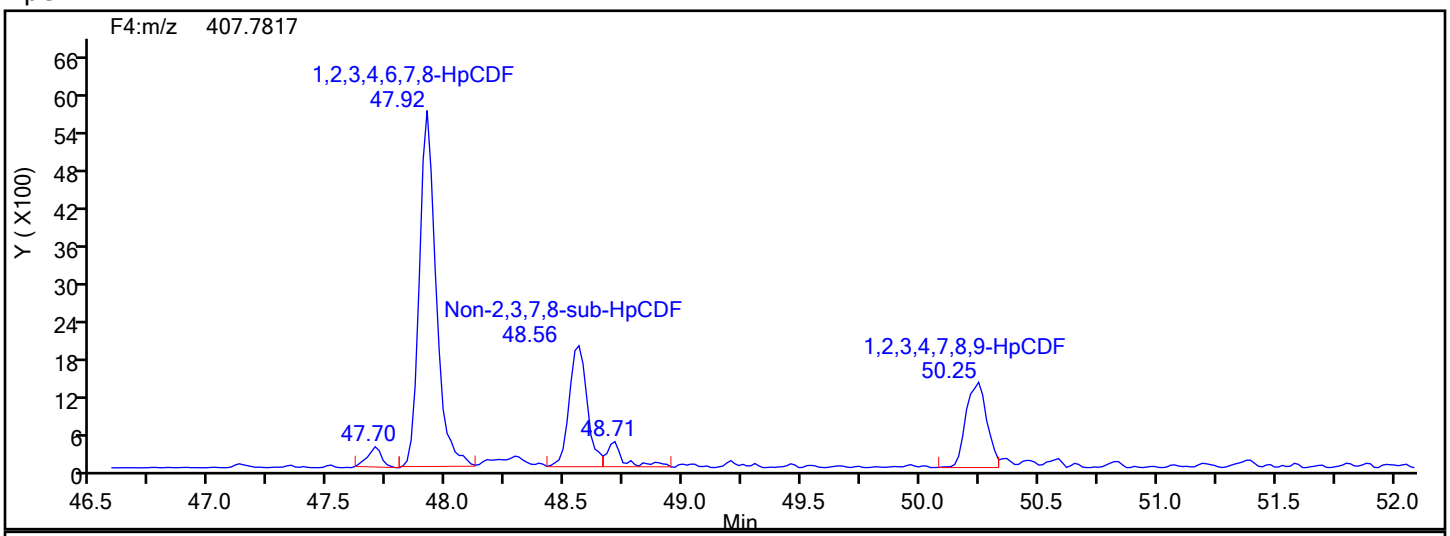


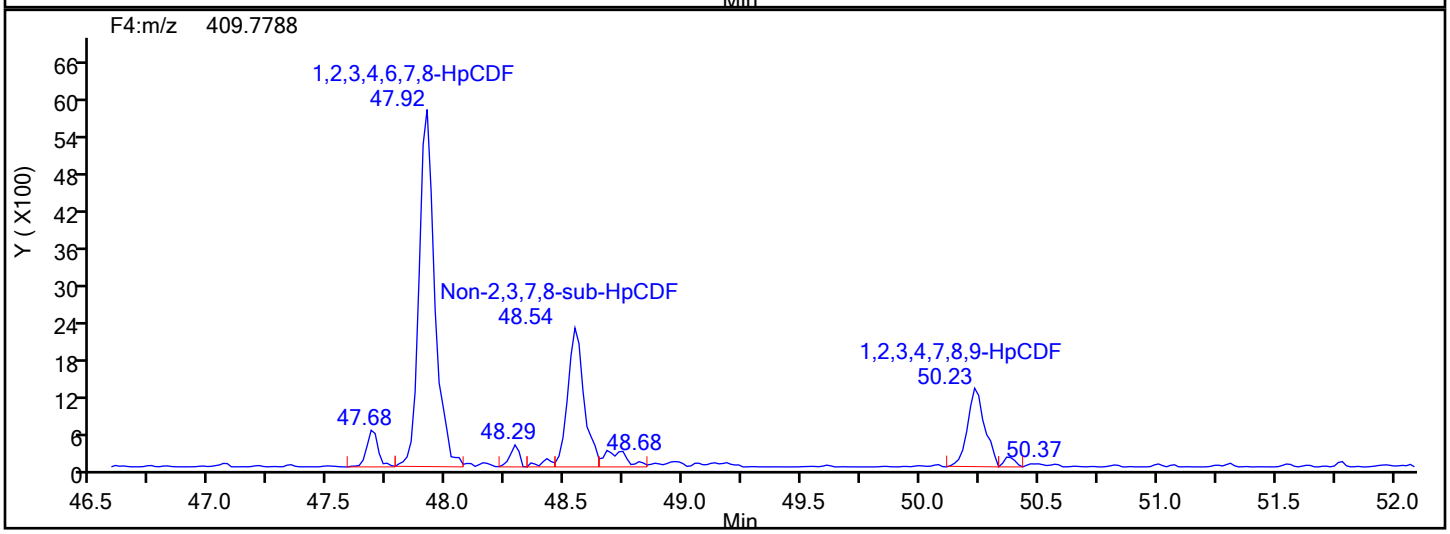
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

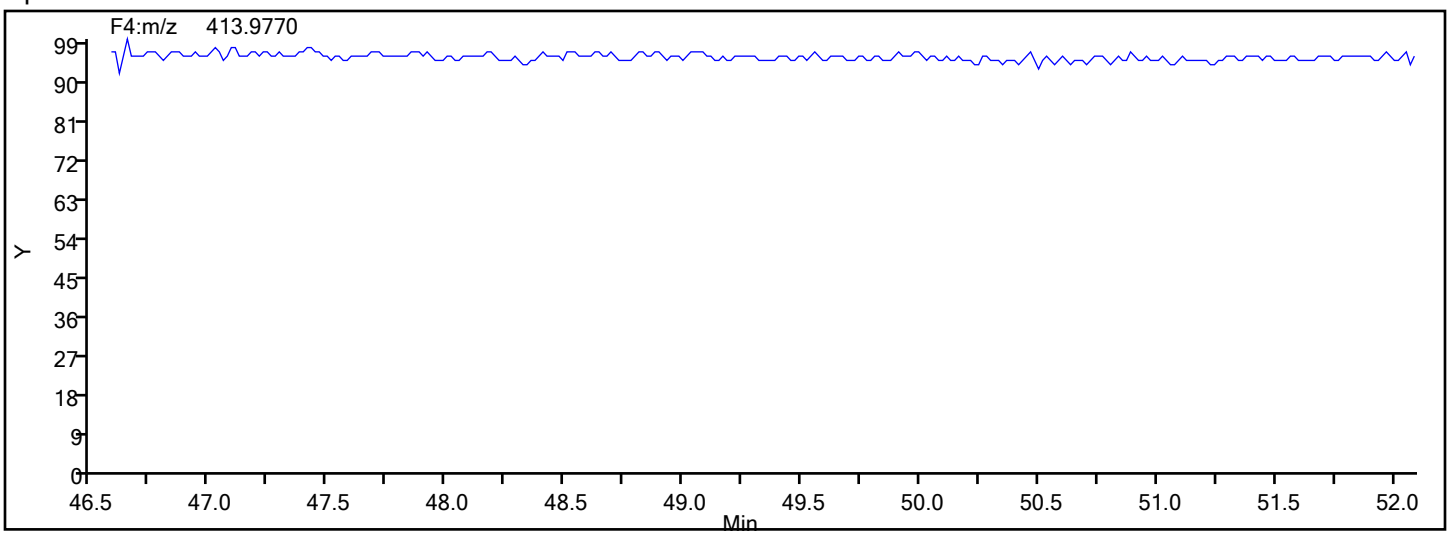
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

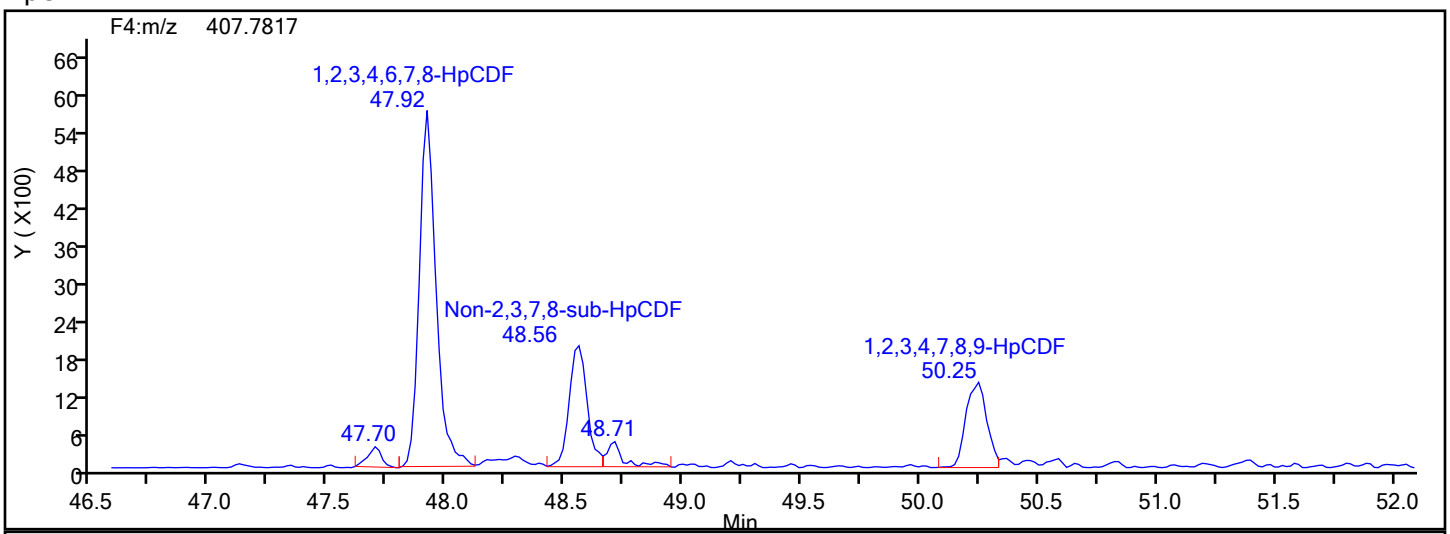


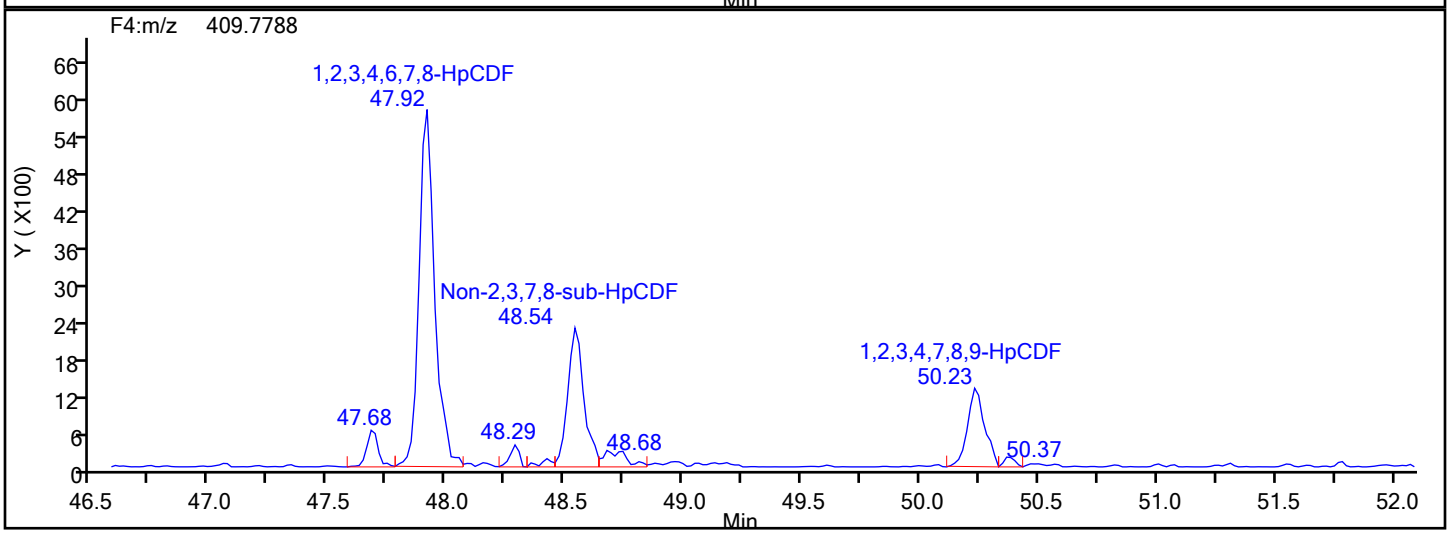
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

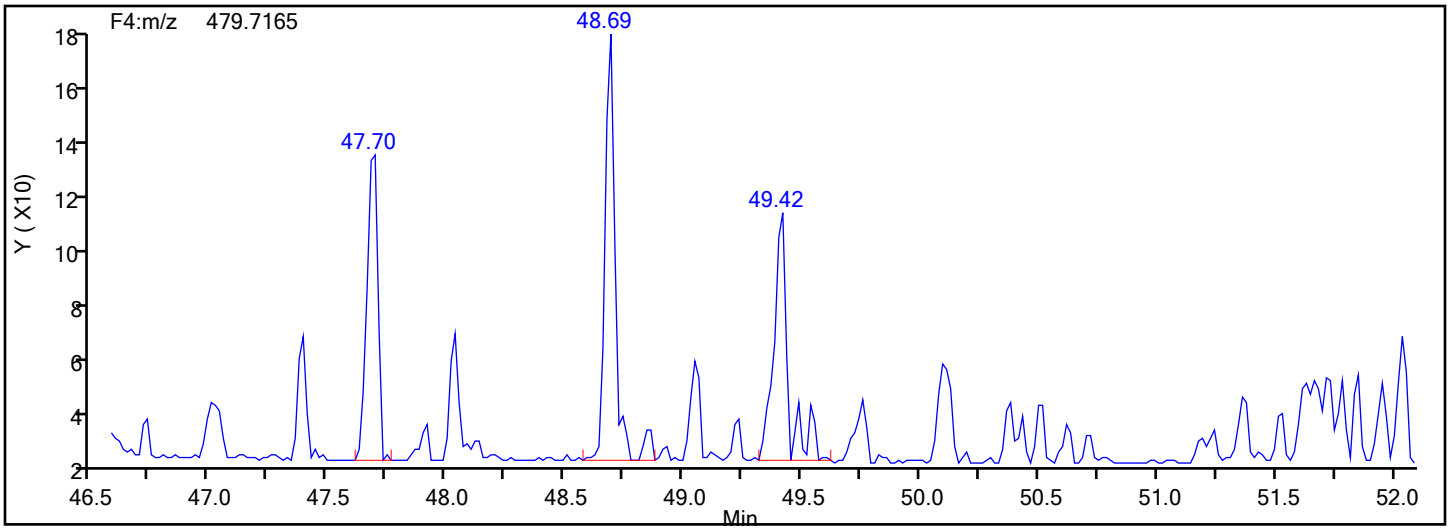
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

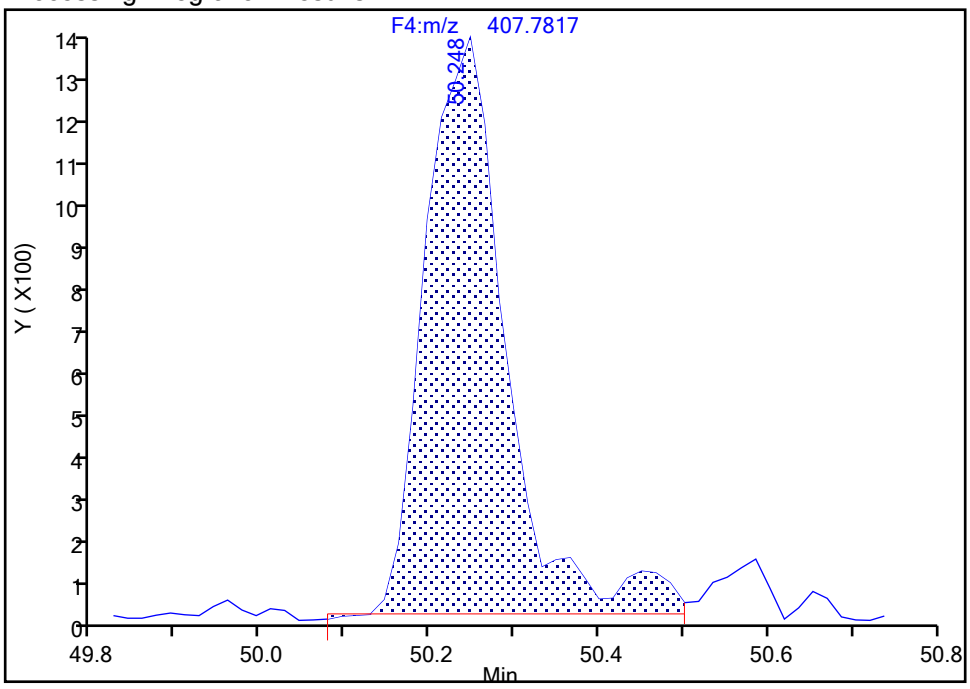
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

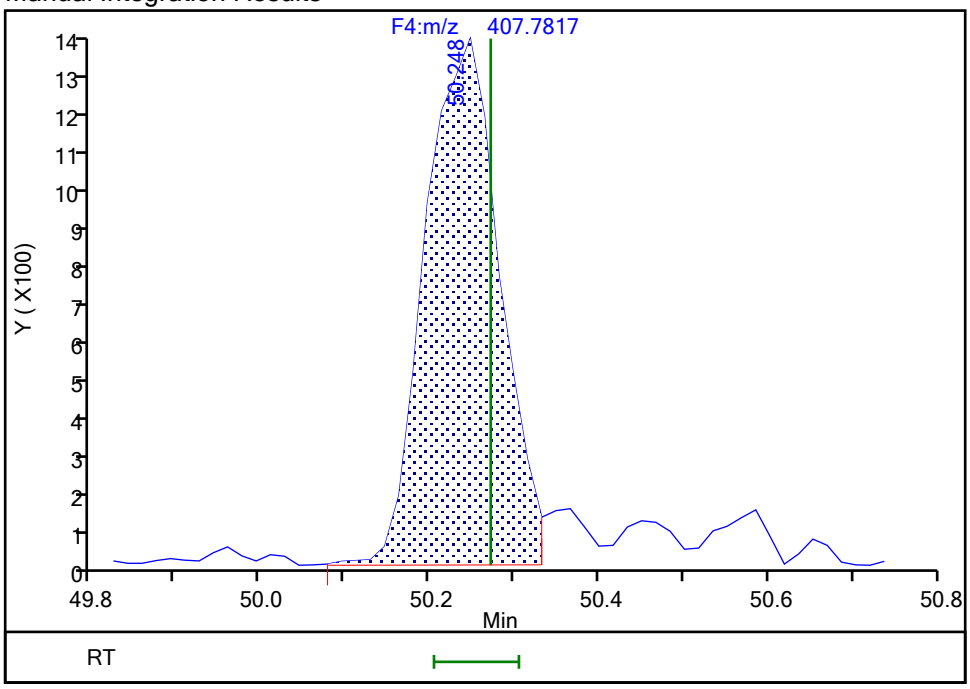
Processing Integration Results

RT: 50.25
Area: 8899
Amount: 0.463855
Amount Units: pg/ul



Manual Integration Results

RT: 50.25
Area: 8285
Amount: 0.445170
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:21:46

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

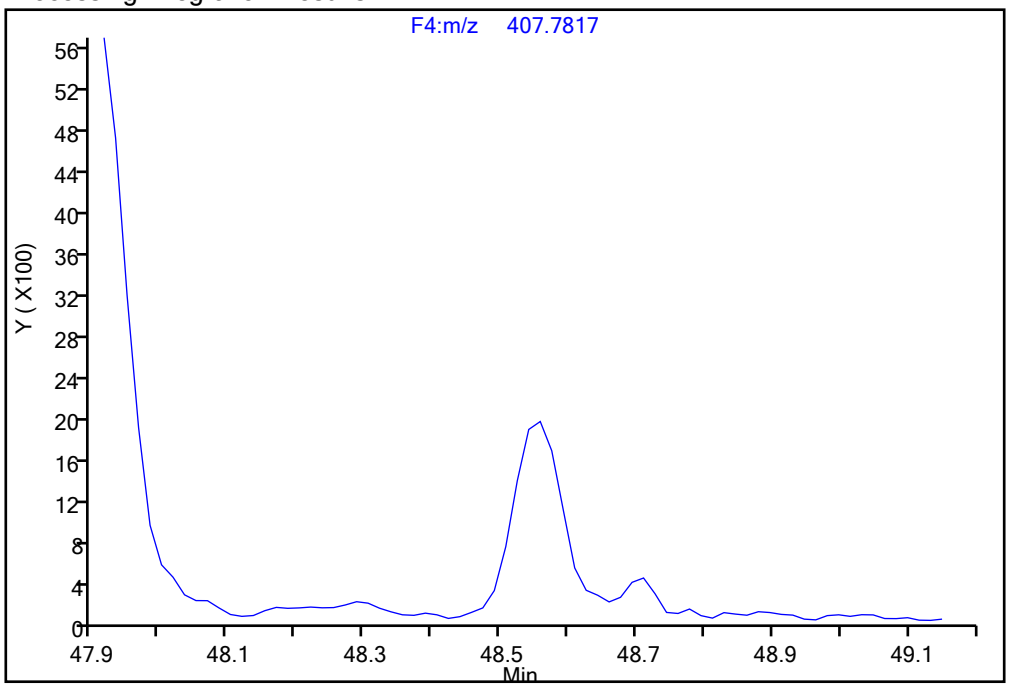
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.79- 52.06)

Signal: 1

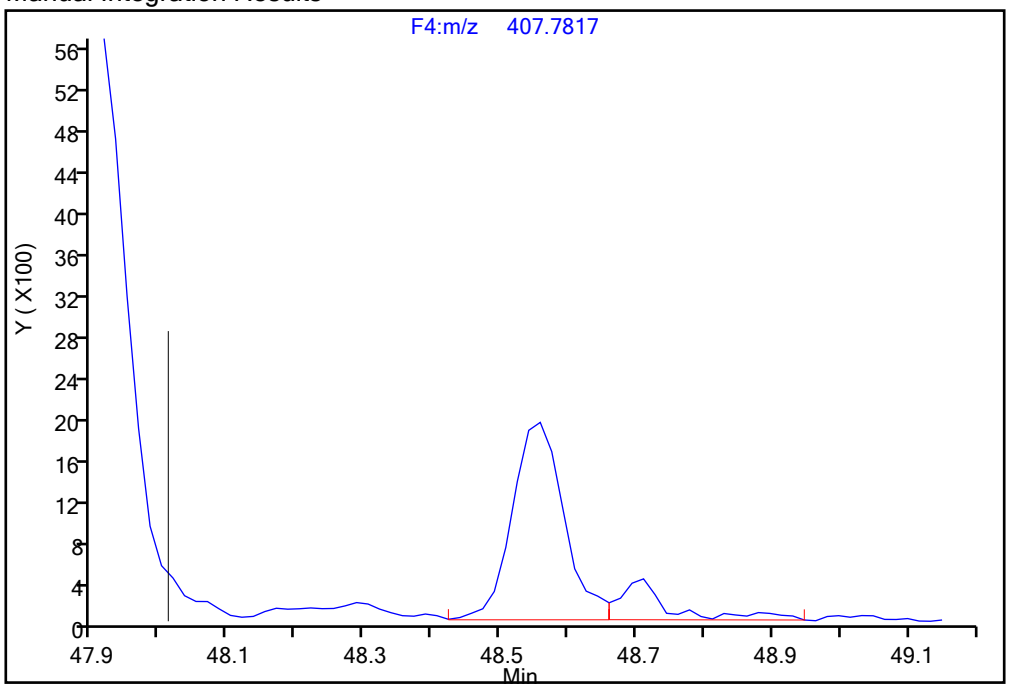
Not Detected
RT: 47.79- 52.06

Processing Integration Results



Manual Integration Results

RT = 48.559 Area = 10179 M



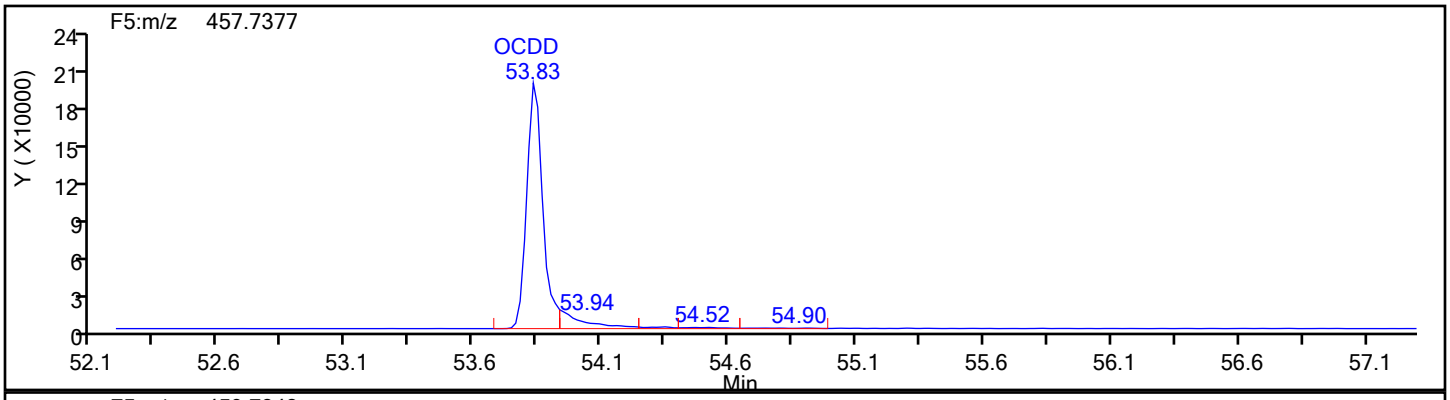
Reviewer: parslyt, 18-Dec-2019 04:20:15
Audit Action: Manually Integrated Audit Reason: Baseline

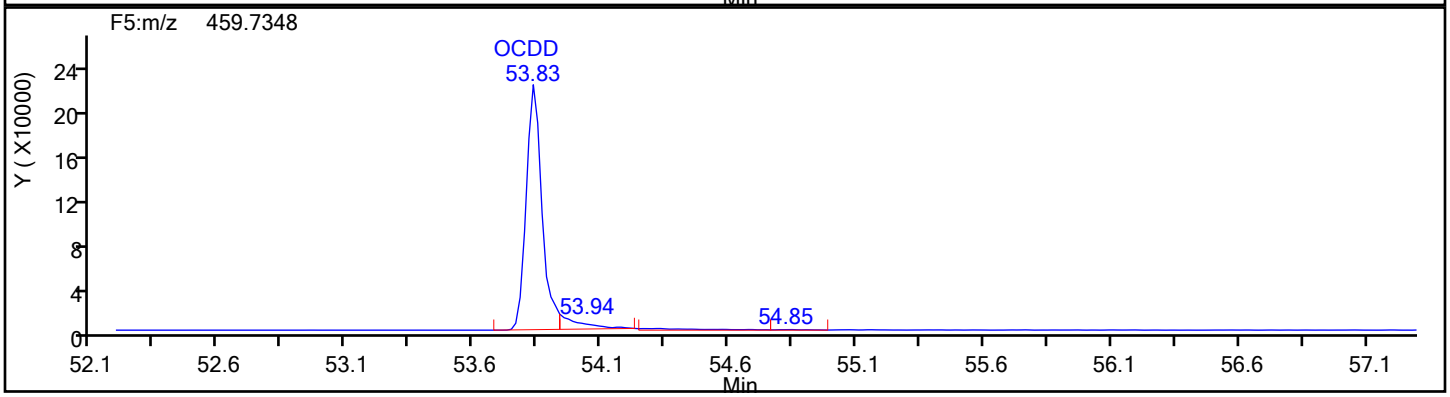
Report Date: 18-Dec-2019 04:23:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

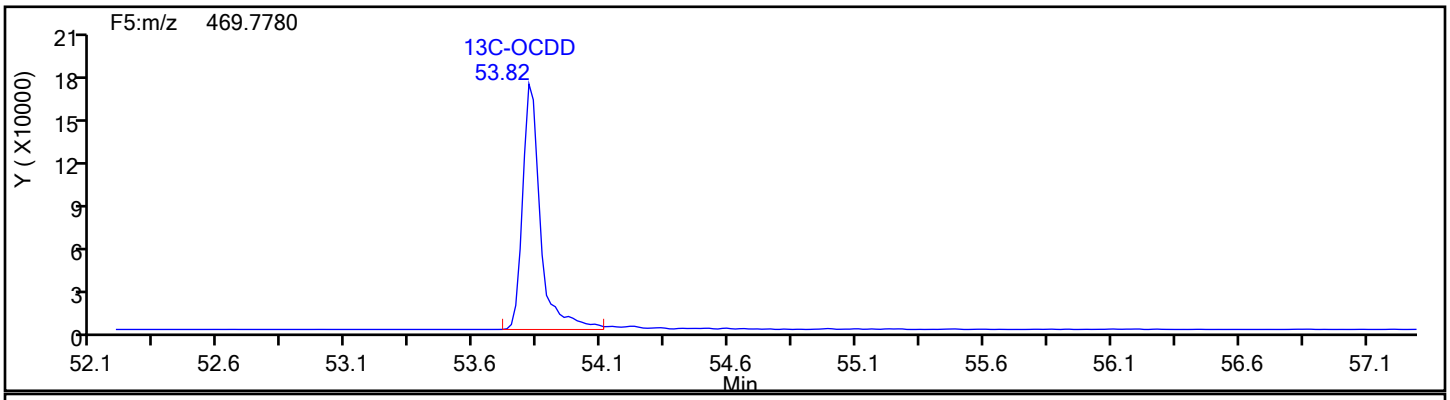
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

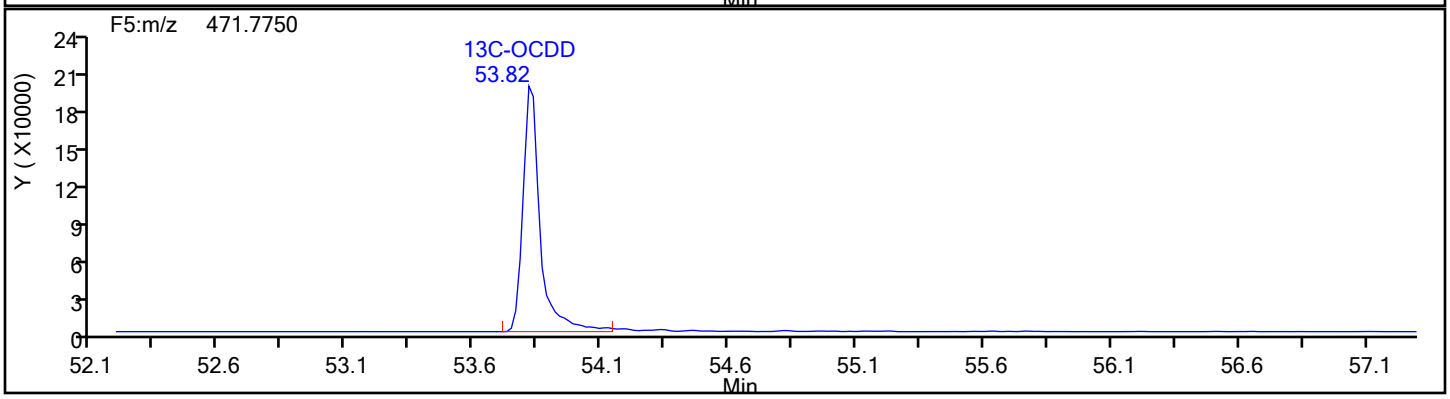
OCDD





OCDD Standards



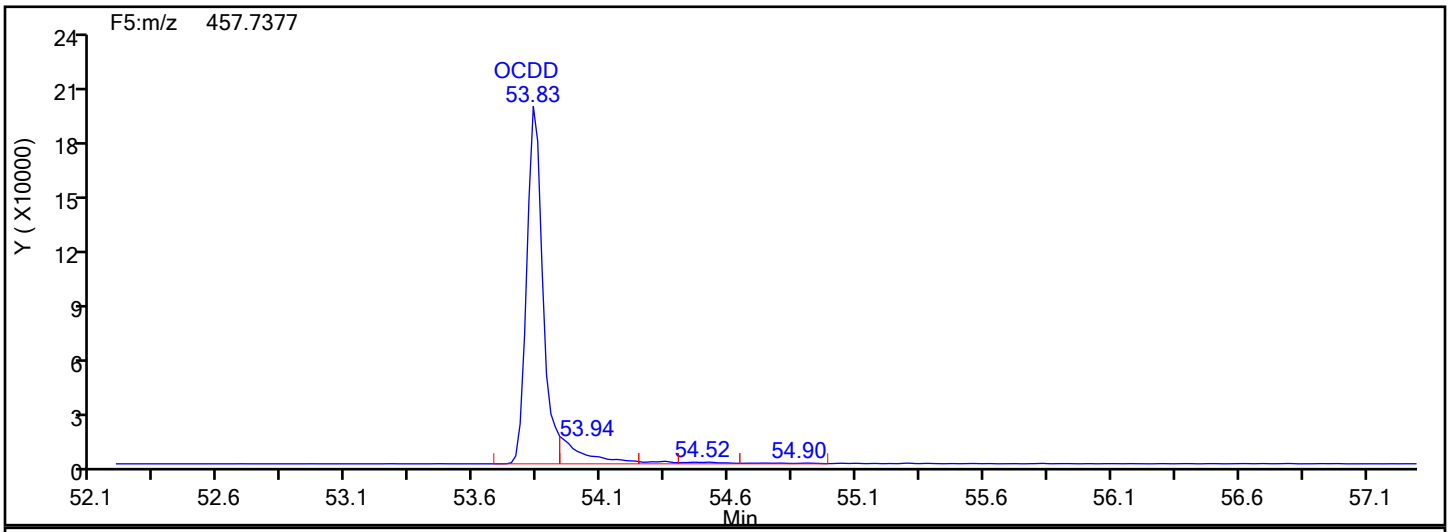


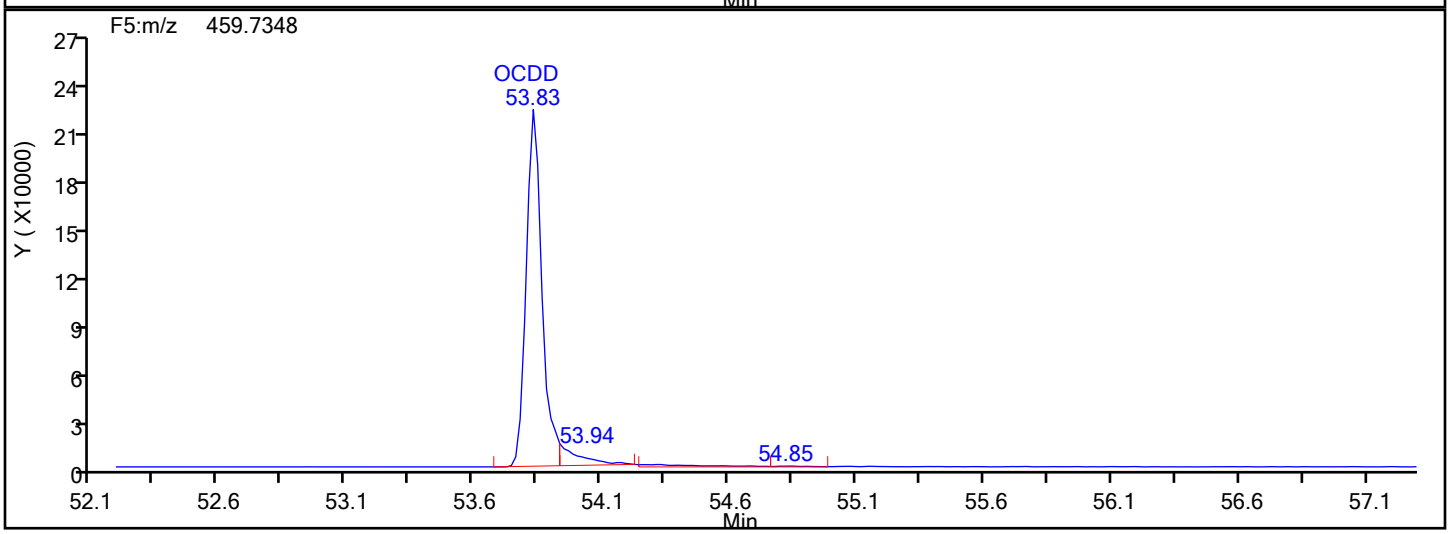
Report Date: 18-Dec-2019 04:23:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

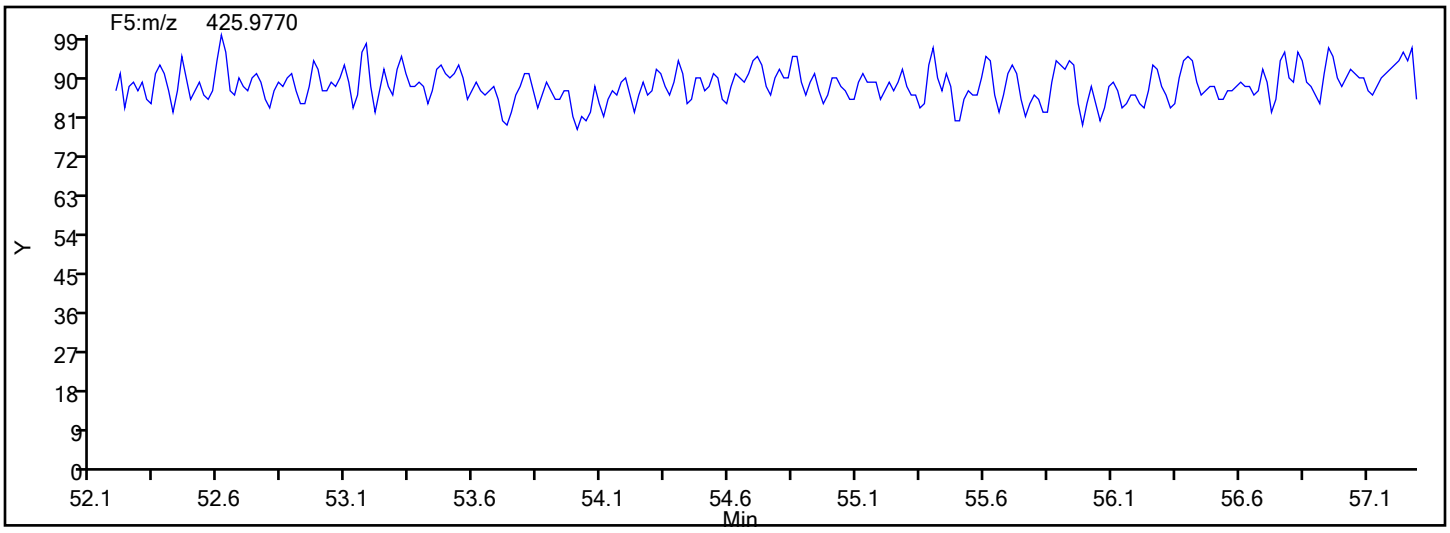
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

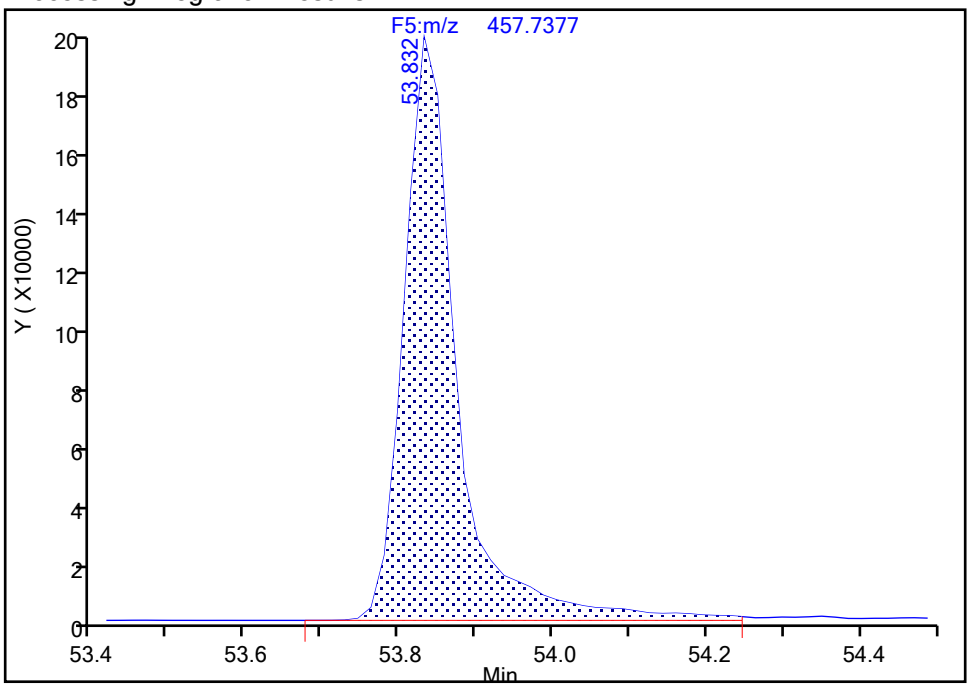
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 1

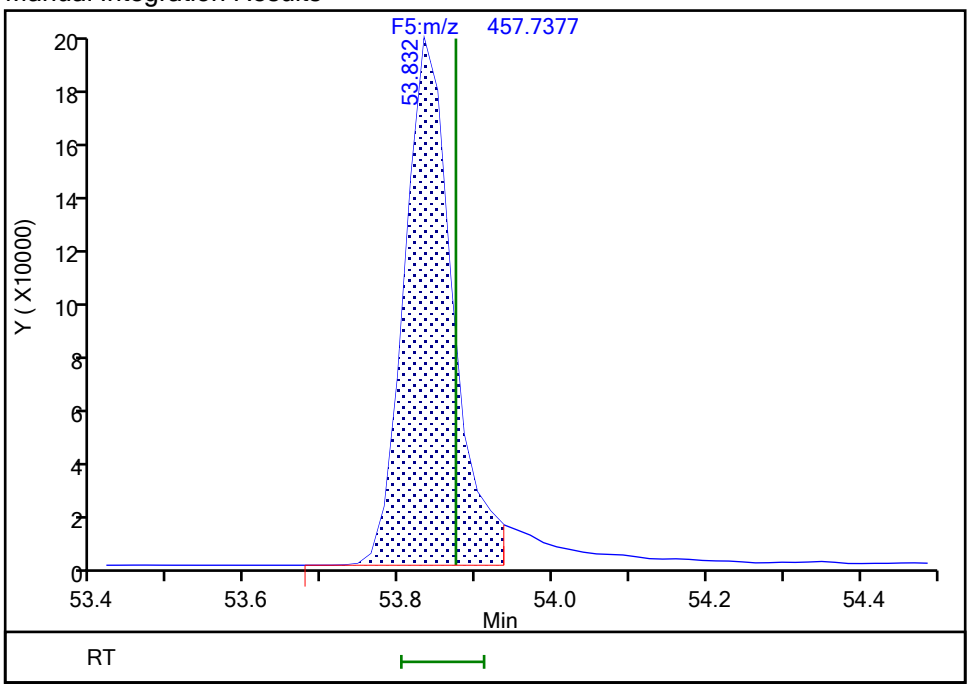
Processing Integration Results

RT: 53.83
Area: 928779
Amount: 90.570042
Amount Units: pg/ul



Manual Integration Results

RT: 53.83
Area: 839219
Amount: 83.176615
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:22:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

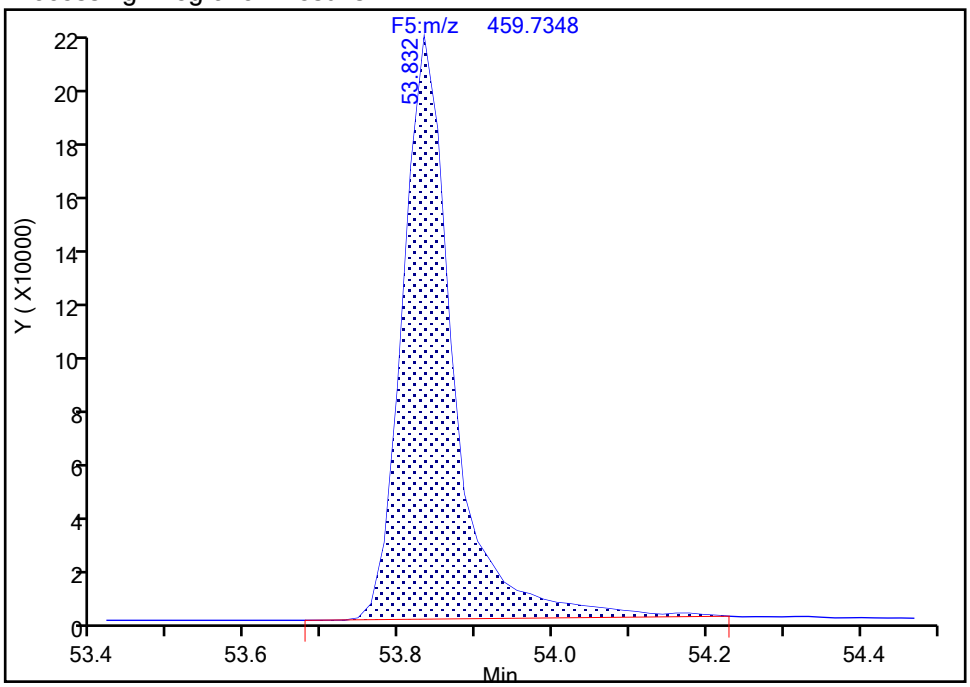
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 2

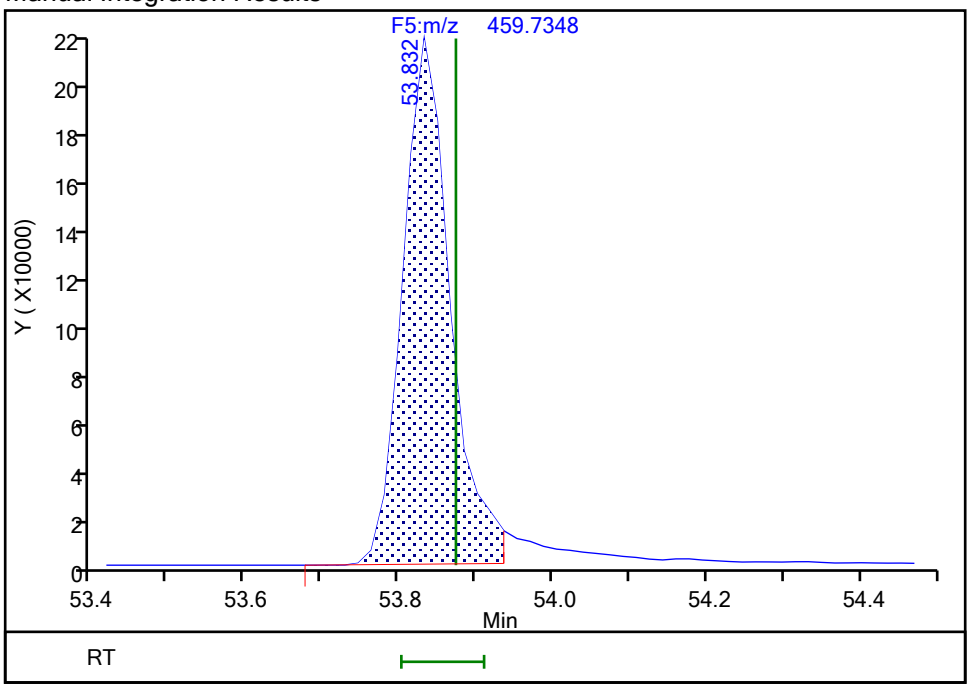
Processing Integration Results

RT: 53.83
Area: 1004332
Amount: 90.570042
Amount Units: pg/ul



Manual Integration Results

RT: 53.83
Area: 936088
Amount: 83.176615
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:22:24

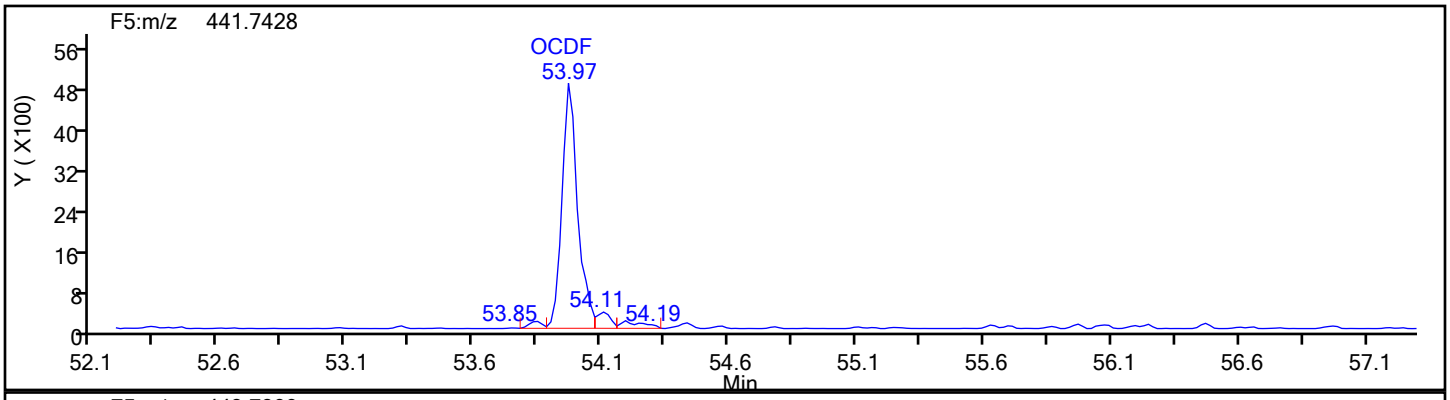
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

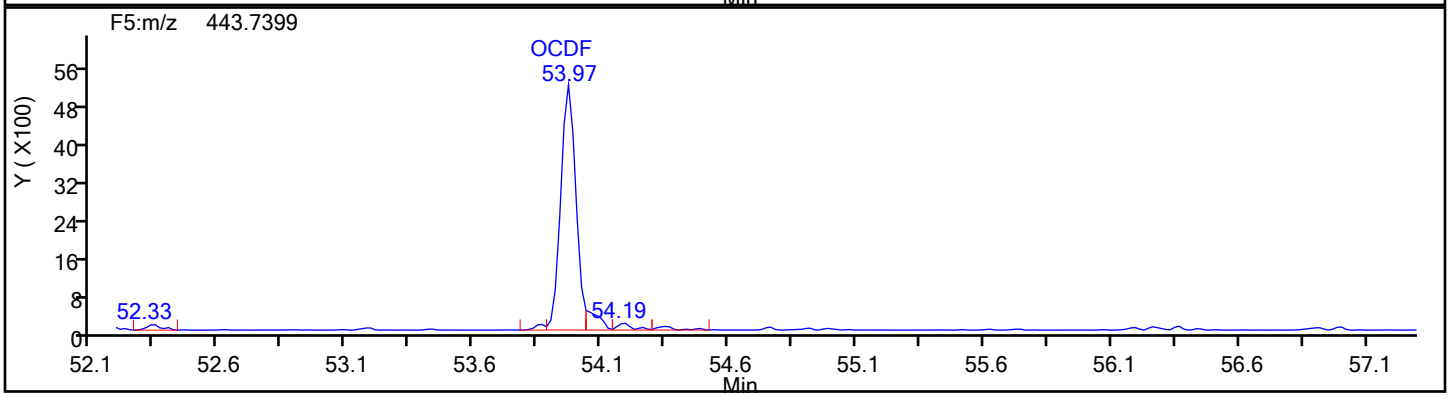
Report Date: 18-Dec-2019 04:23:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

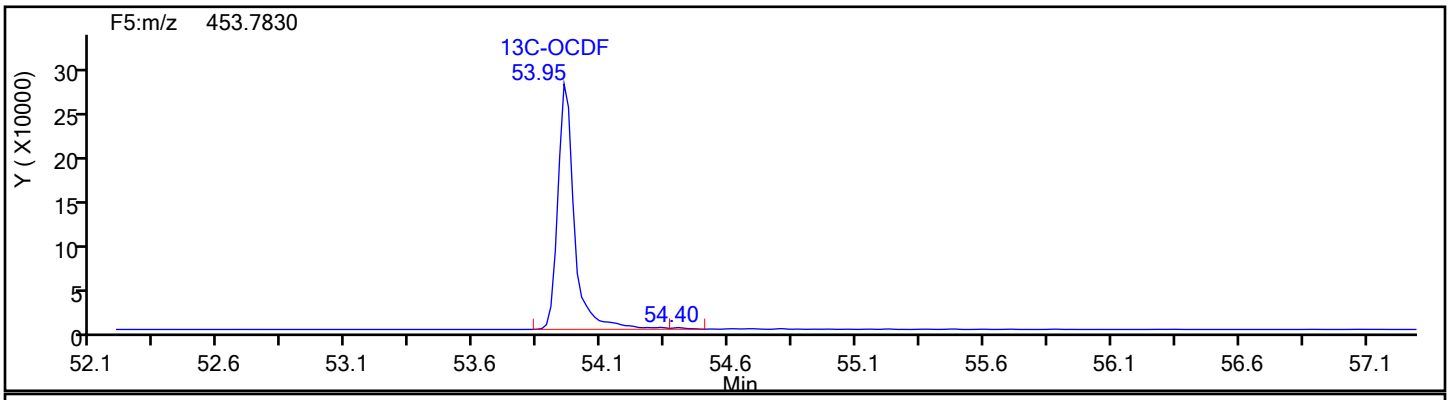
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

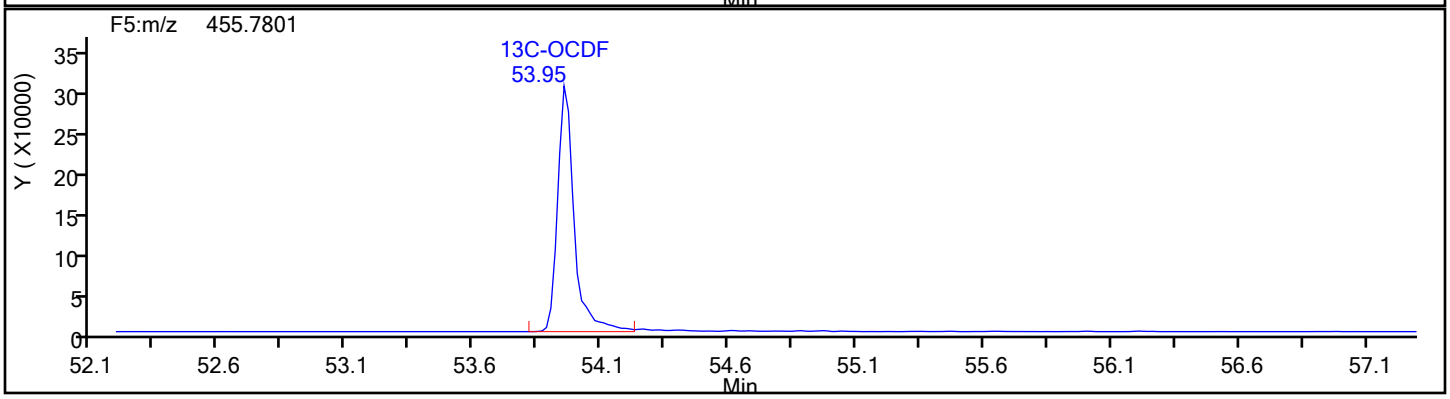
OCDF





OCDF Standards



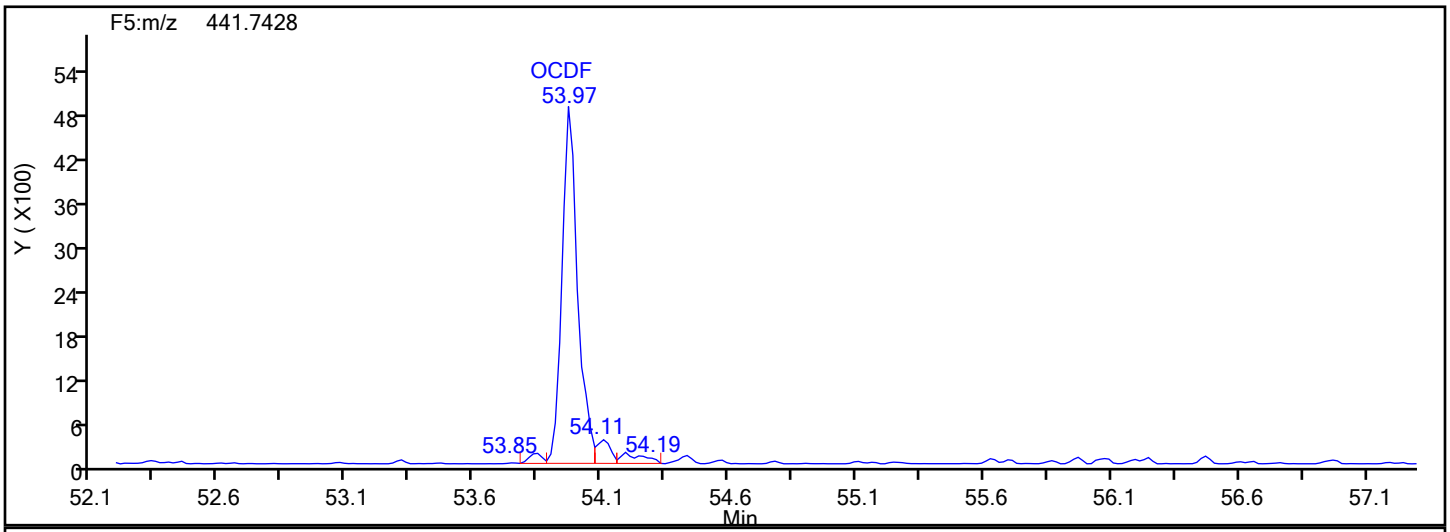


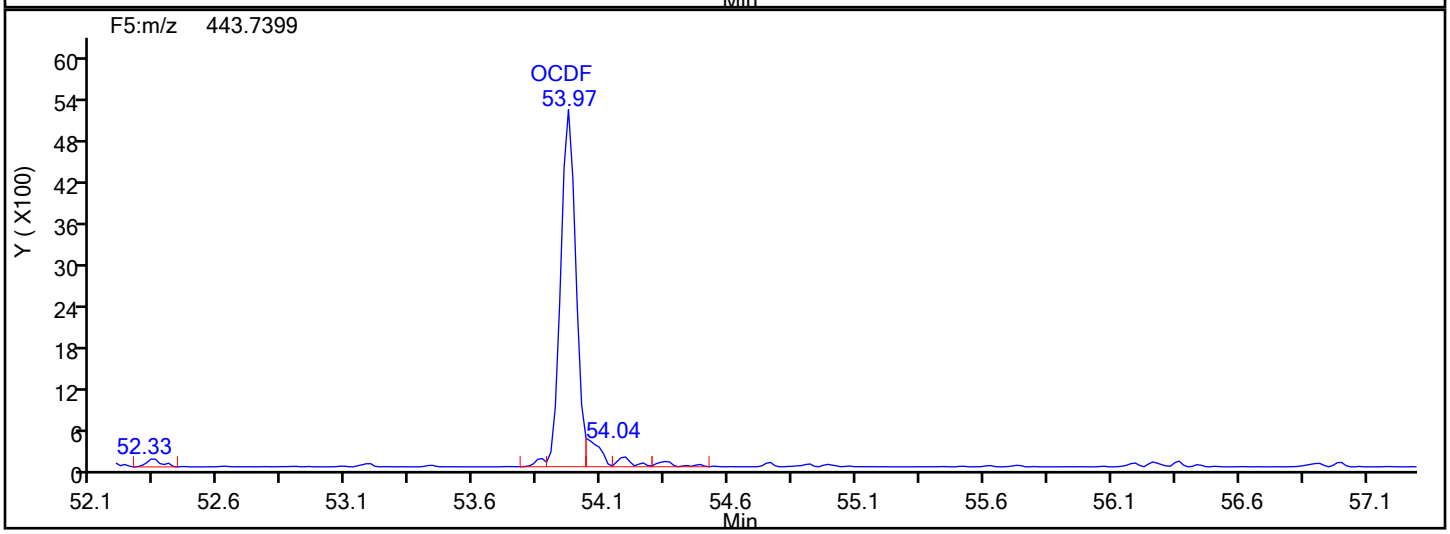
Report Date: 18-Dec-2019 04:23:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

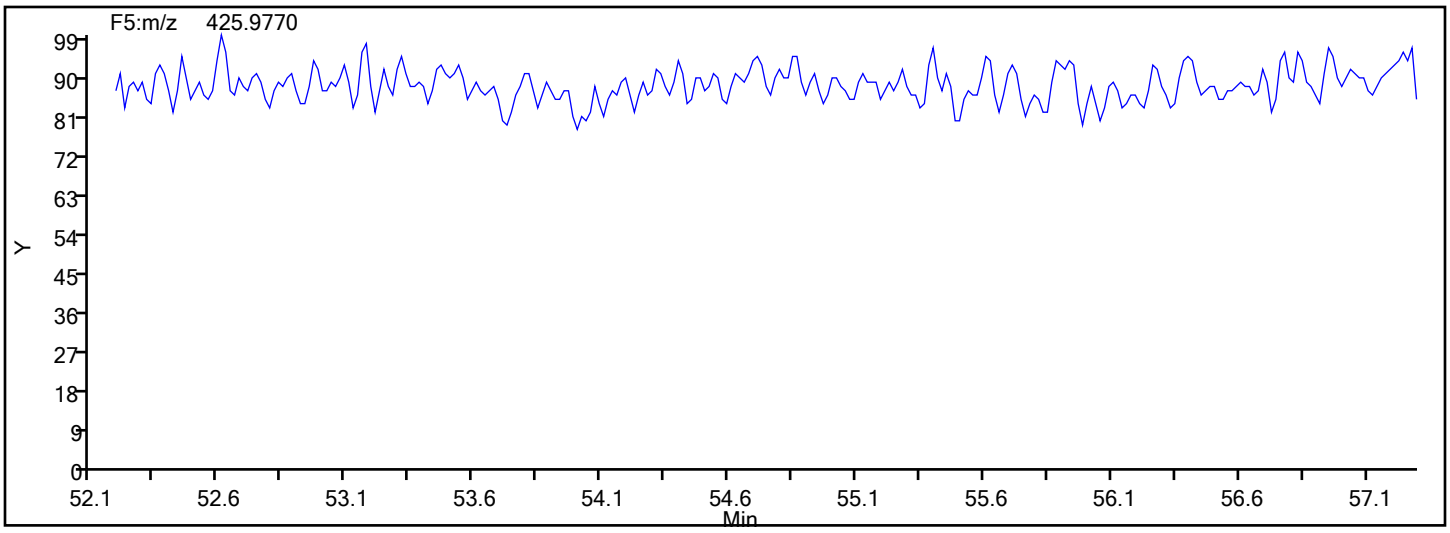
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

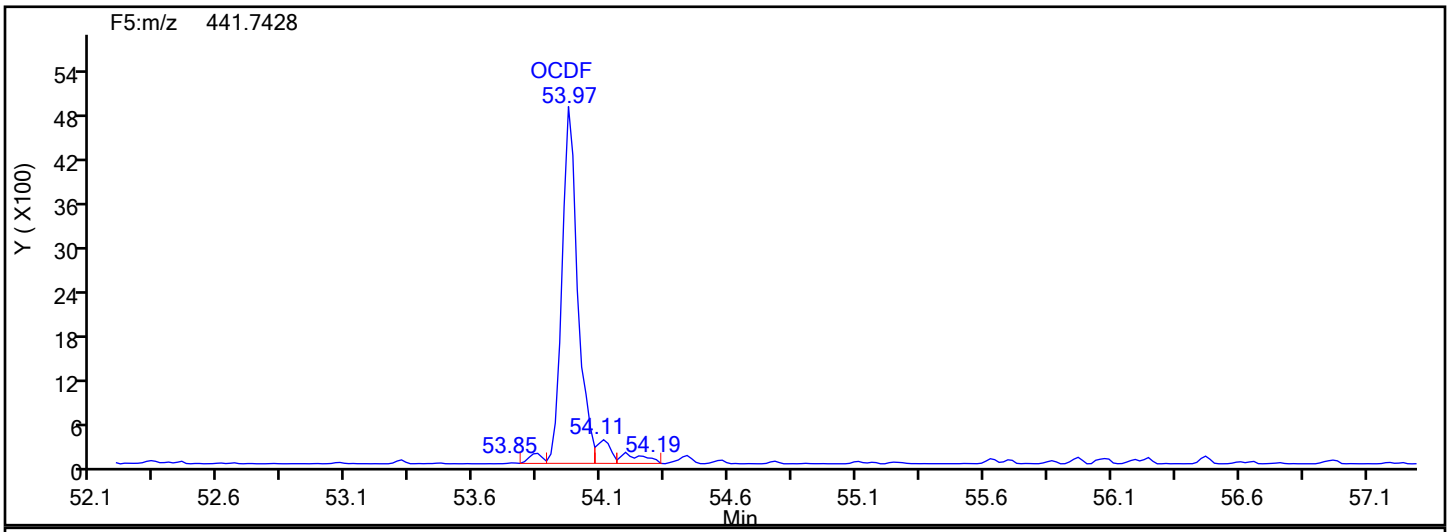


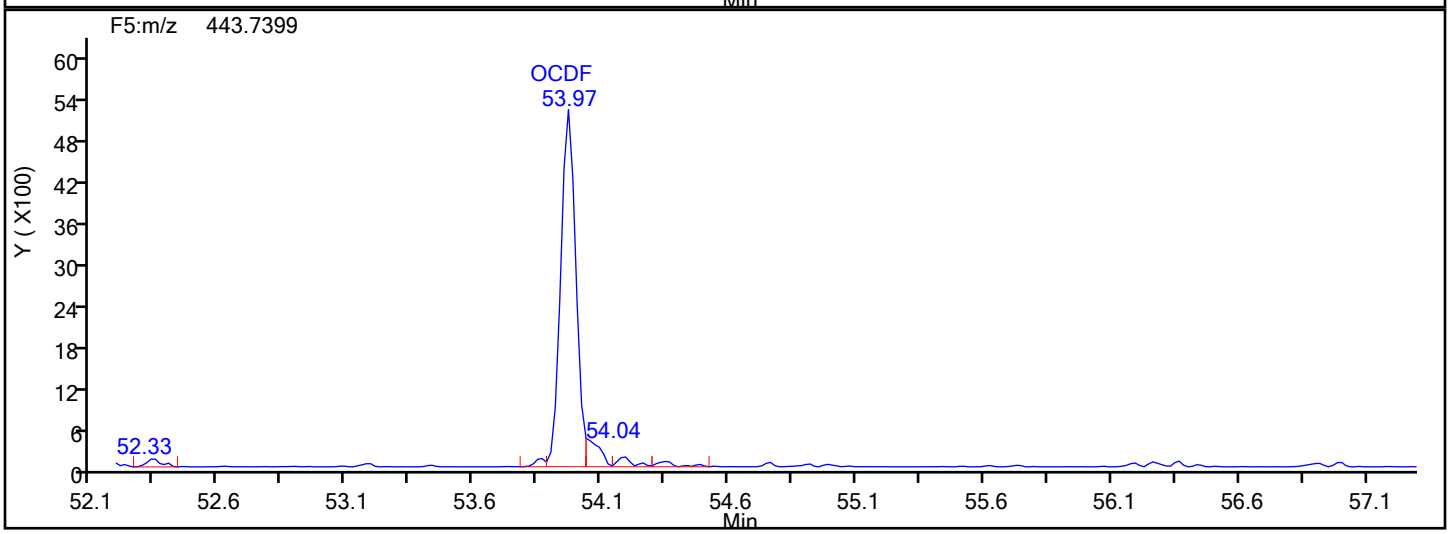
Report Date: 18-Dec-2019 04:23:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

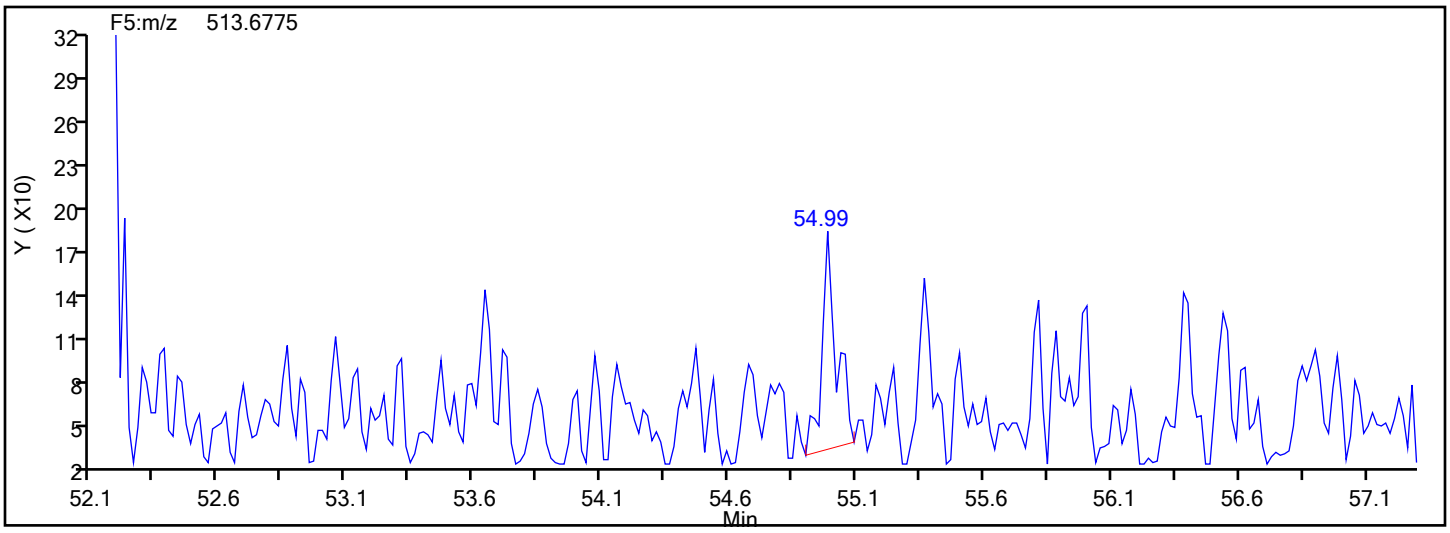
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d		
Injection Date:	17-Dec-2019 18:35:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36146	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

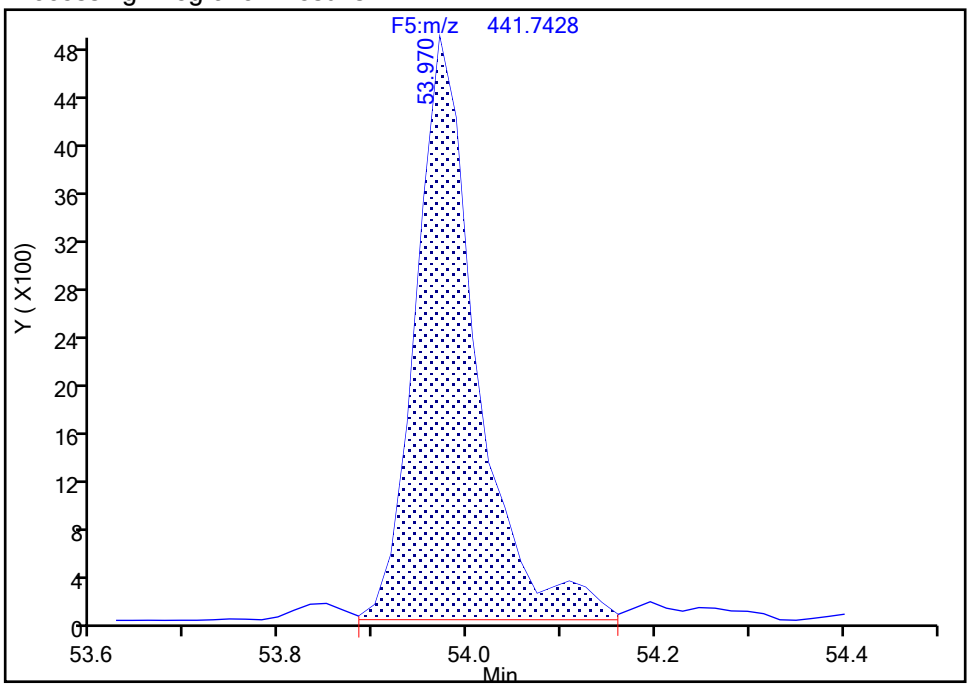
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

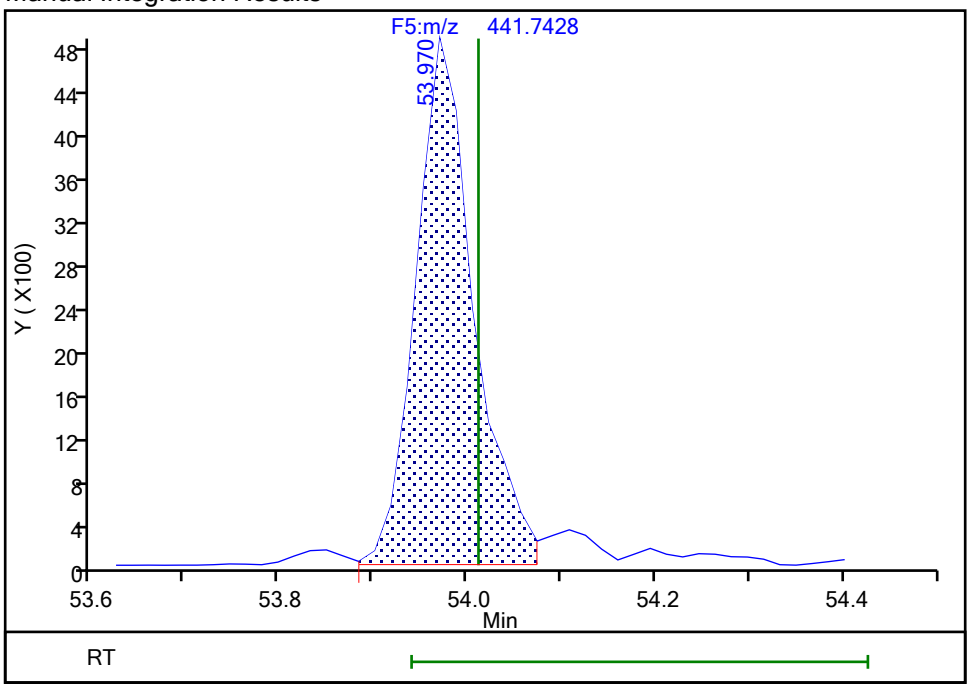
Processing Integration Results

RT: 53.97
Area: 21984
Amount: 1.518233
Amount Units: pg/ul



Manual Integration Results

RT: 53.97
Area: 20800
Amount: 1.428266
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:22:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

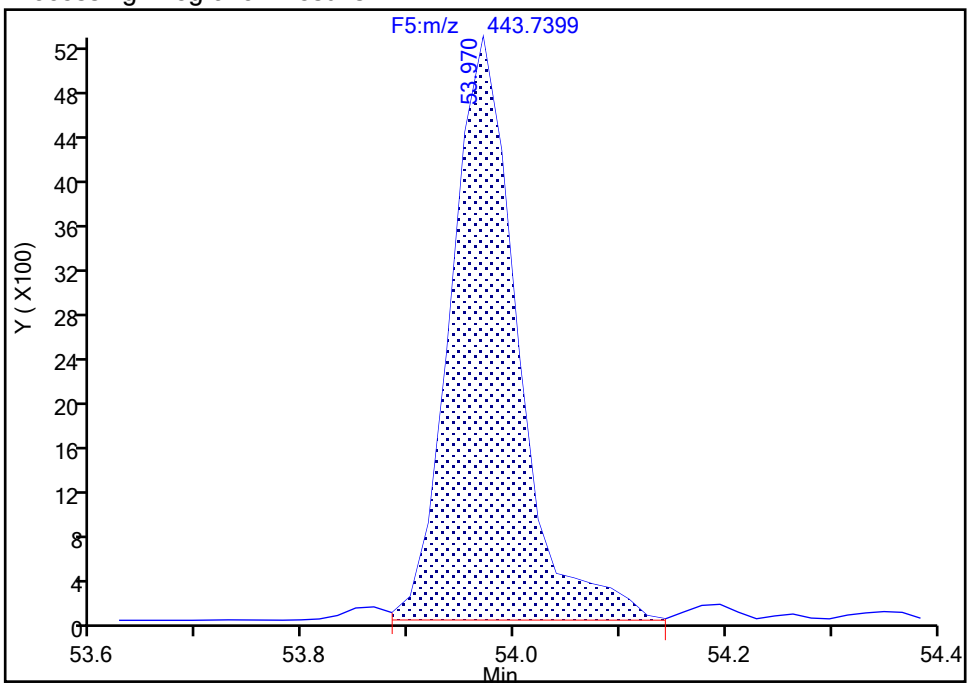
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\140-17578-a-11-a.d				
Injection Date:	17-Dec-2019 18:35:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-11-A	Lab Sample ID:	140-17578-11		
Client ID:	11187072-120619-SS-SJSSA06(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

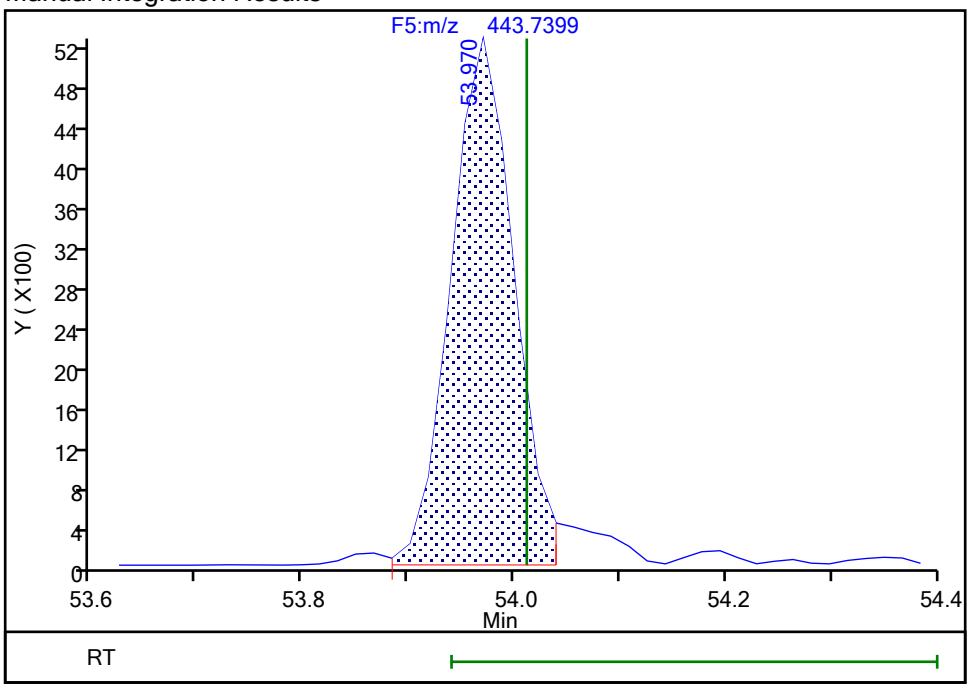
Processing Integration Results

RT: 53.97
Area: 22871
Amount: 1.518233
Amount Units: pg/ul



Manual Integration Results

RT: 53.97
Area: 21397
Amount: 1.428266
Amount Units: pg/ul



Reviewer: parslyt, 18-Dec-2019 04:22:37

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(2-4) Lab Sample ID: 140-17578-11

Matrix: Sediment Lab File ID: 140-17578-a-11-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.31(g) Date Analyzed: 12/18/2019 08:41

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 17.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	290		1.2	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	66		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:41:00 ALS Bottle#: 0 Worklist Smp#: 15
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-015
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 07:17:59 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:24:32

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:41	807782	0.81	1.2213	32.1	32.1	0.3743	0.3743		
2,3,7,8-TCDF	22:13	4543089	0.79	1.1100	122.5	122.5	0.3207	0.3207		
D 13C-2,3,7,8-TCDD	19:40	1031402	0.81	1.0031	32.7	32.7	1.234	1.234	65.48	
D 13C-2,3,7,8-TCDF	22:12	1670082	0.77	1.6193	32.8	32.8	0.3153	0.3153	65.68	
$ 37Cl4-2,3,7,8-TCDD	19:41	280734		1.1834	7.554	7.554	0.1058	0.1058	75.54	
* 13C-1,2,3,4-TCDD	20:08	3140458	0.81	1.6E+05	100.0	100.0				

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-11-a.d
Lims ID: 140-17578-A-11-A
Client ID: 11187072-120619-SS-SJSSA06(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:41:00 ALS Bottle#: 0 Worklist Smp#: 15
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014071-015
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 07:17:59 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:24:32

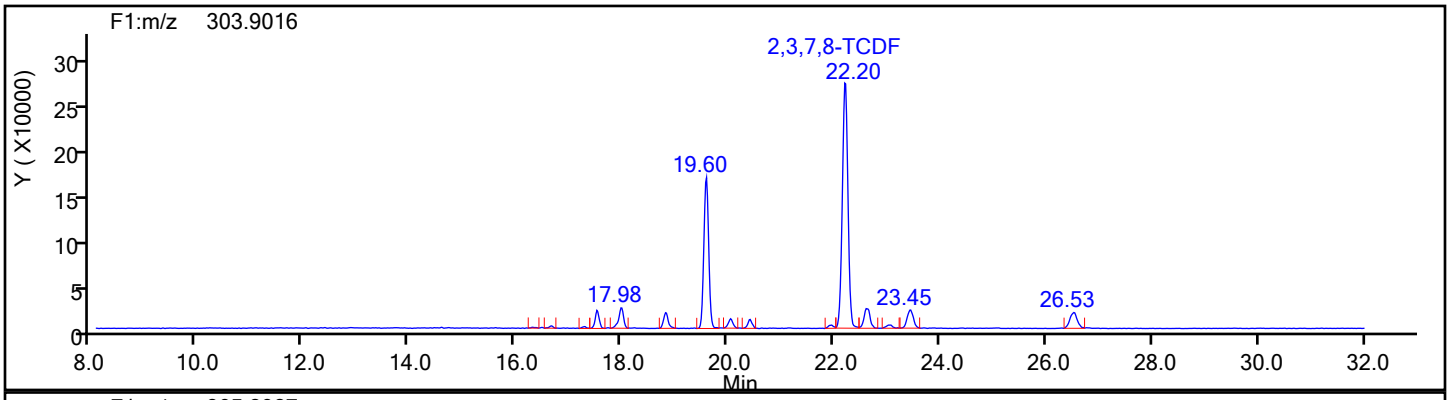
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:41	19:41	-2	1.001	362097	56723	381	952	149		
321.8936	19:41	19:41	-2	1.001	445685	71601	252	630	284	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:13	22:14	-3	1.001	2010083	272892	272	680	1003		
305.8987	22:13	22:14	-3	1.001	2533006	342193	362	905	945	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:40	-2	0.977	461693	78317	873	2182	90		
333.9338	19:40	19:40	-2	0.977	569709	94706	1519	3797	62	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:12	22:11	-2	1.103	724056	91580	538	1345	170		
317.9389	22:11	22:11	-3	1.102	946026	131058	449	1122	292	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:41	19:41	-2	0.978	280734	45540	242	605	188		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:09	-2		1404900	216059	873	2182	247		
333.9338	20:07	20:09	-3		1735558	267072	1519	3797	176	0.81(0.65-0.89)	

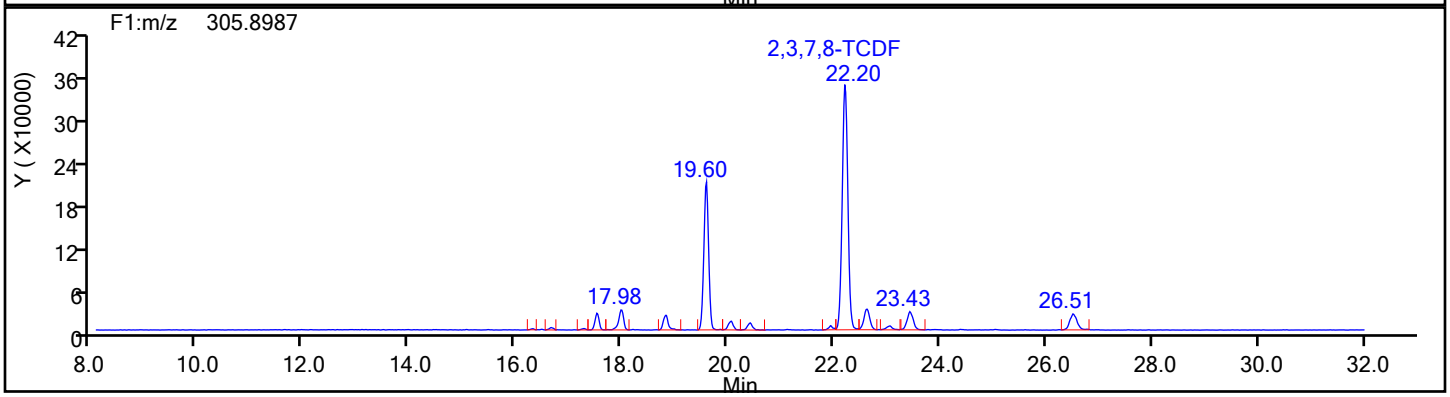
Report Date: 18-Dec-2019 09:24:32 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

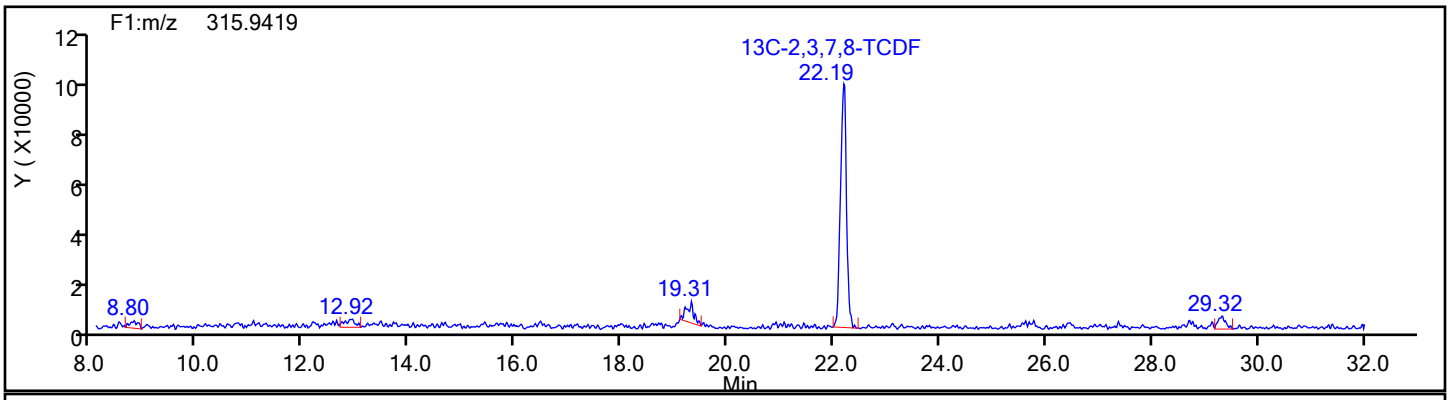
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-11-a.d		
Injection Date:	18-Dec-2019 08:41:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36167	Sample Line#:	15
Column Type:	DB225	Column Dia:	0.32 mm

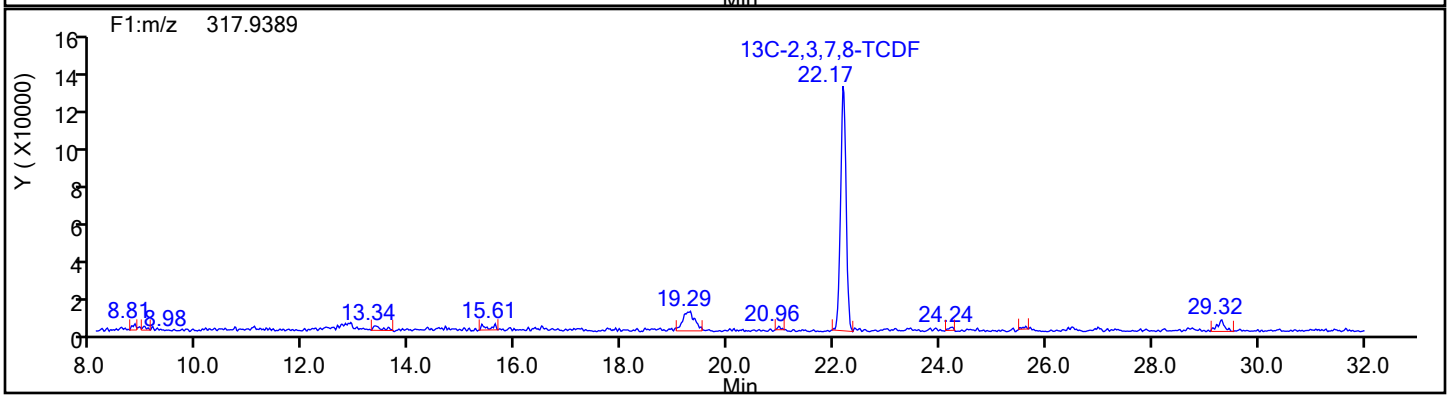
TCDF





TCDF Standards



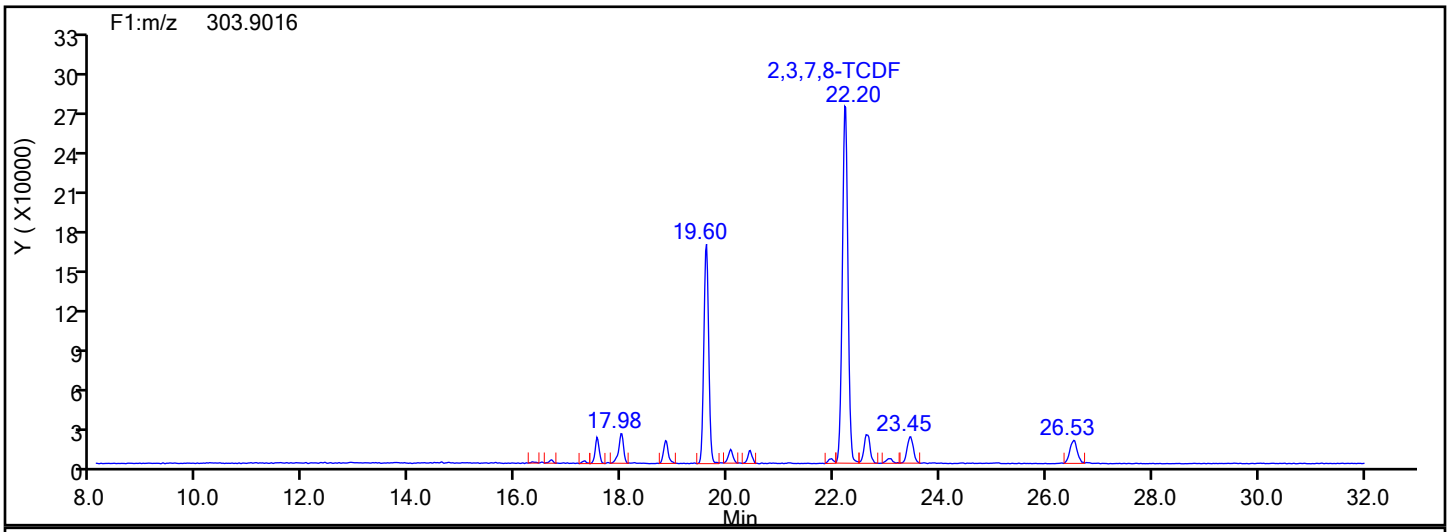


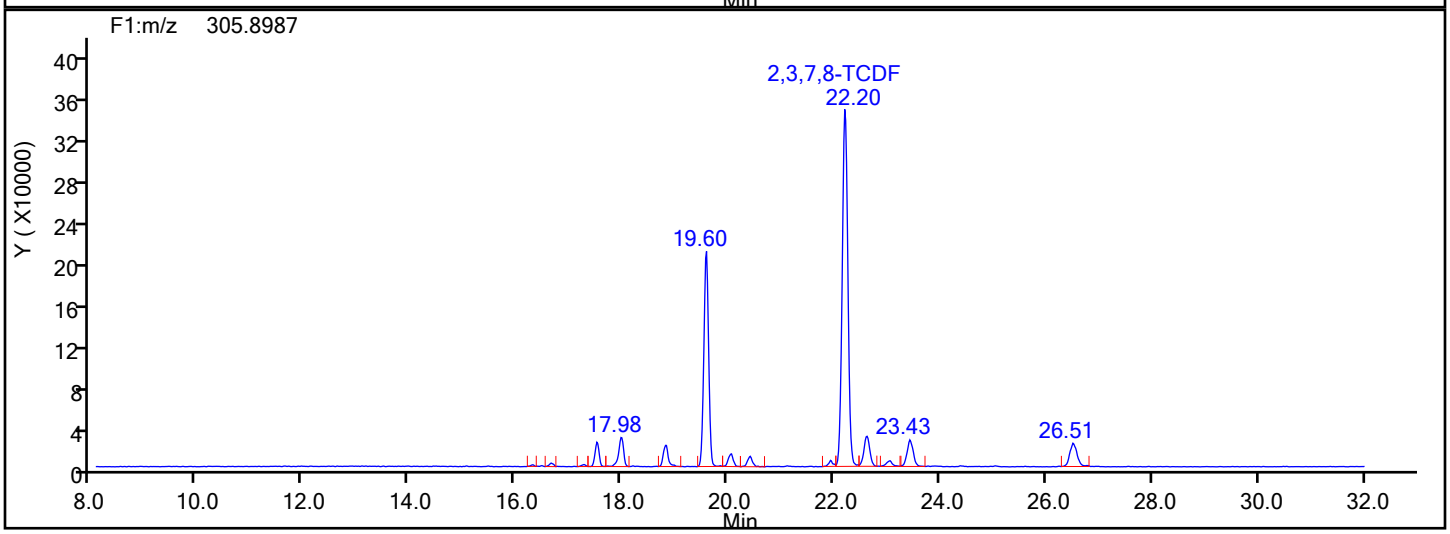
Report Date: 18-Dec-2019 09:24:32 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

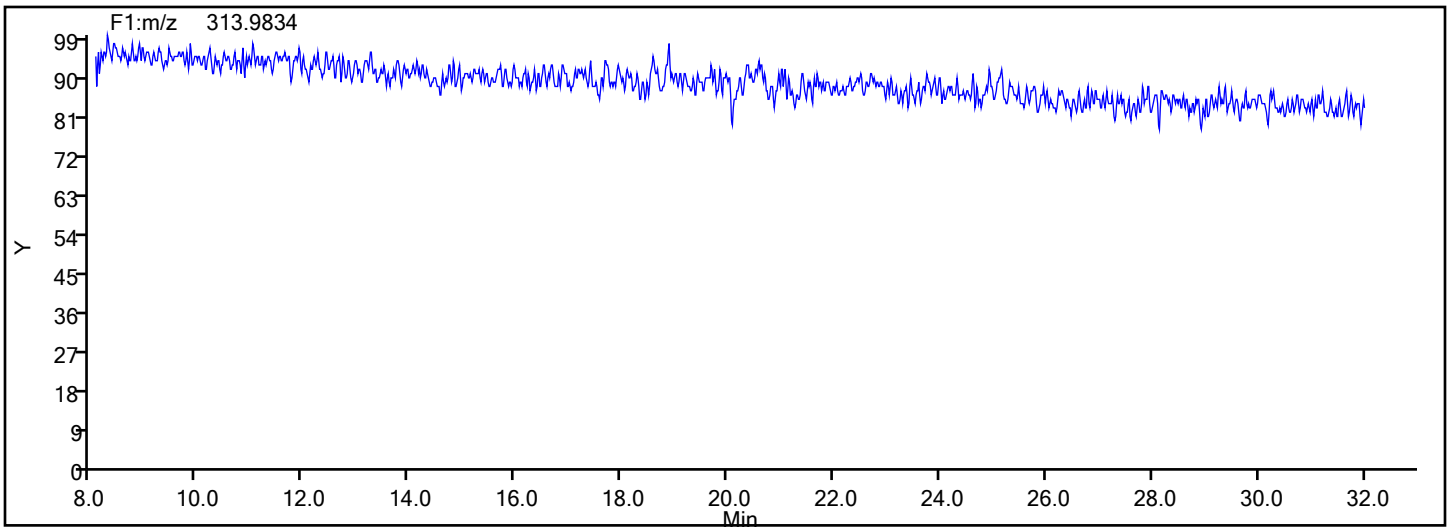
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-11-a.d		
Injection Date:	18-Dec-2019 08:41:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36167	Sample Line#:	15
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

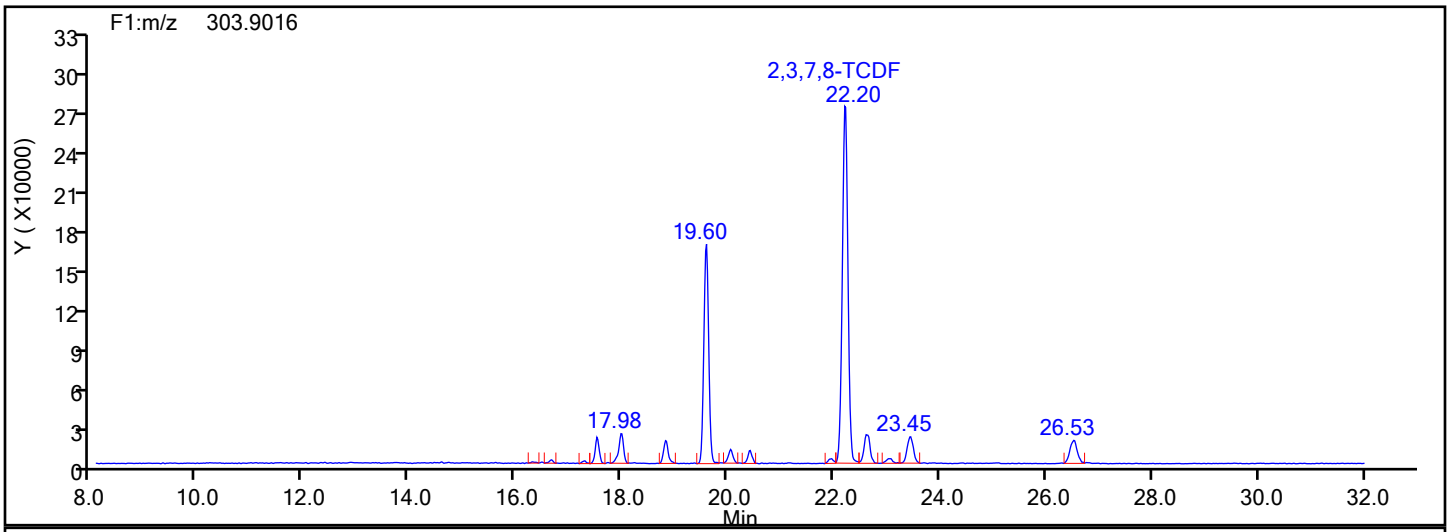


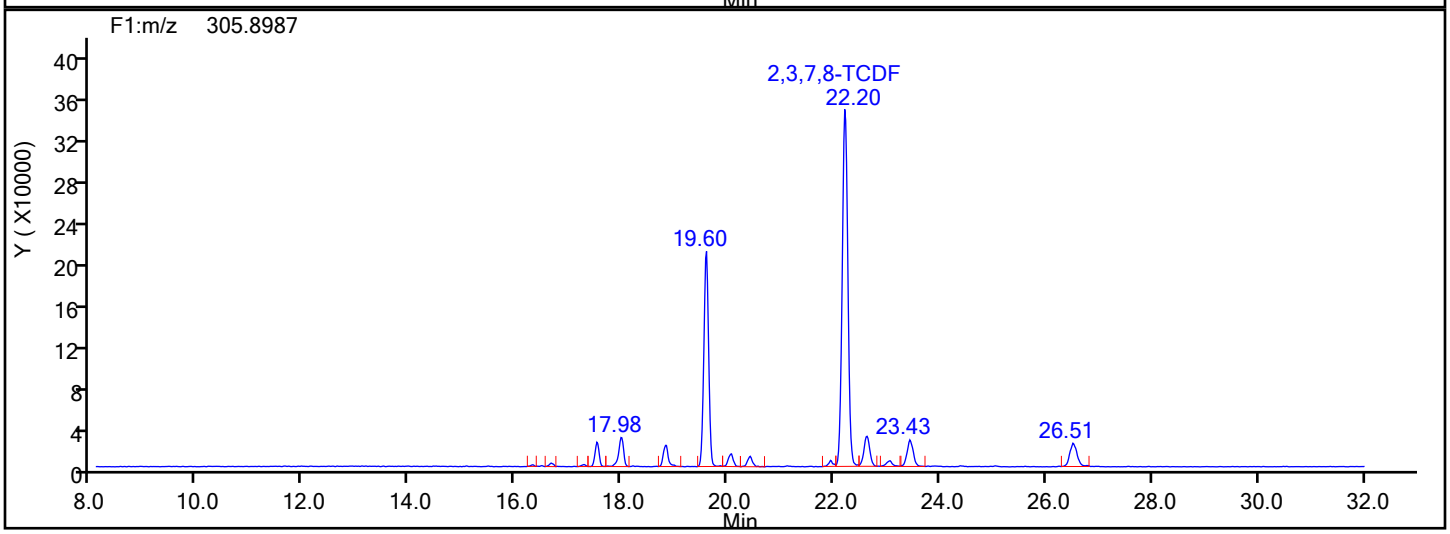
Report Date: 18-Dec-2019 09:24:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

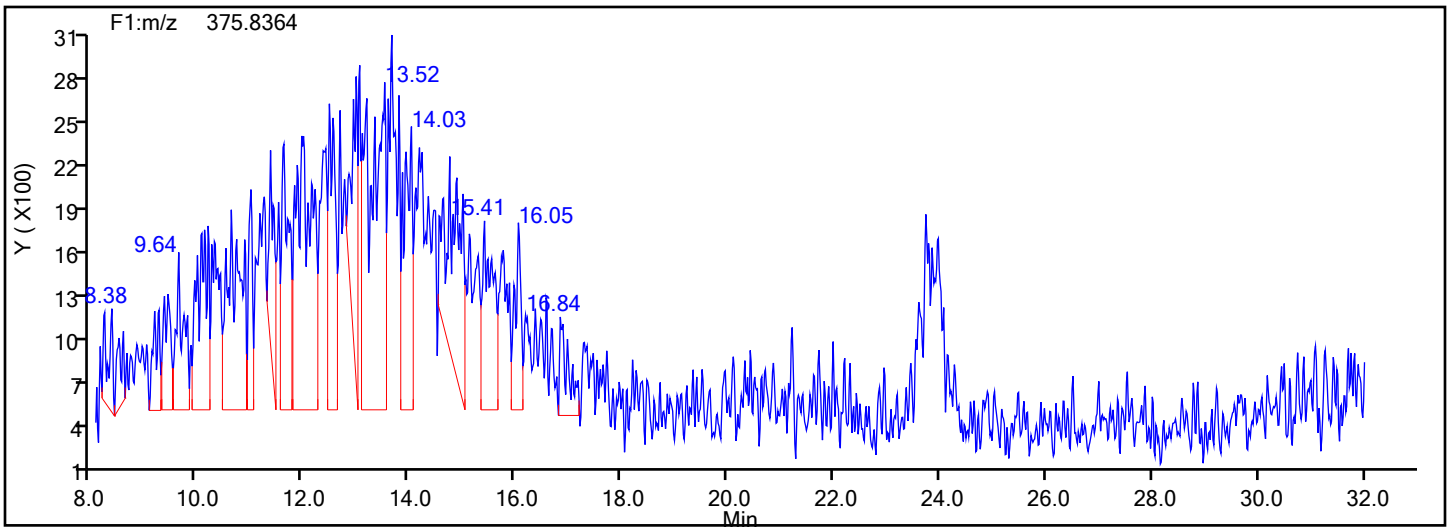
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-11-a.d		
Injection Date:	18-Dec-2019 08:41:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(2-4)		
Worklist#:	36167	Sample Line#:	15
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Matrix: Sediment Lab File ID: 140-17578-a-12-aa.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.90(g) Date Analyzed: 12/18/2019 08:03

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	2800		17	2.4
41903-57-5	Total TCDD	3100	B	17	2.4
40321-76-4	1,2,3,7,8-PeCDD	25	J	83	3.2
36088-22-9	Total PeCDD	28	J q	83	3.2
39227-28-6	1,2,3,4,7,8-HxCDD	ND	F2 F1	83	0.65
57653-85-7	1,2,3,6,7,8-HxCDD	ND		83	0.64
19408-74-3	1,2,3,7,8,9-HxCDD	4.0	J F2	83	0.61
34465-46-8	Total HxCDD	62	J B	83	0.63
35822-46-9	1,2,3,4,6,7,8-HpCDD	75	J B	83	0.62
37871-00-4	Total HpCDD	250	B	83	0.62
3268-87-9	OCDD	1300	B F1	170	0.52
30402-14-3	Total TCDF	17000	B q	17	1.2
57117-41-6	1,2,3,7,8-PeCDF	250	F1	83	0.47
57117-31-4	2,3,4,7,8-PeCDF	170	F1	83	0.44
30402-15-4	Total PeCDF	700	I q	83	0.45
70648-26-9	1,2,3,4,7,8-HxCDF	420	F1	83	2.7
57117-44-9	1,2,3,6,7,8-HxCDF	110	F1	83	2.5
60851-34-5	2,3,4,6,7,8-HxCDF	11	J	83	2.7
72918-21-9	1,2,3,7,8,9-HxCDF	7.3	J q	83	3.4
55684-94-1	Total HxCDF	630	I q	83	2.8
67562-39-4	1,2,3,4,6,7,8-HpCDF	100	F1 B	83	0.081
55673-89-7	1,2,3,4,7,8,9-HpCDF	41	J B	83	0.15
38998-75-3	Total HpCDF	180	B q	83	0.11
39001-02-0	OCDF	46	J B	170	1.4

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Matrix: Sediment Lab File ID: 140-17578-a-12-aa.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.90(g) Date Analyzed: 12/18/2019 08:03

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	69		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	63	q	25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	71		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	71		23-140
114423-97-1	13C-OCDD	76		17-157
89059-46-1	13C-2,3,7,8-TCDF	67		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	61		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	69		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	68		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	62		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	66		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	68		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	76		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	65		26-138
109719-78-0	13C-OCDF	71		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	101		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:03:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-012
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:14:44 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:14:44

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:54	2587472	0.80	1.1733	83.3	83.3	0.0709	0.0709		a
A Non-2,3,7,8-sub-TCDD	29:27	274059	0.80	1.1733	8.825	8.825	0.0709	7.096		
S Total TCDD					92.1	92.1	0.0709	0.0709		
2,3,7,8-TCDF	28:53	13514973	0.79	1.0881	293.4	293.4	0.0362	0.0362		EM
A Non-2,3,7,8-sub-TCDF	28:10	10792802	0.77	1.0881	234.6	234.3	0.0362	128.1		RQa
S Total TCDF					528.0	527.7	0.0362	0.0362		RQ
1,2,3,7,8-PeCDD	40:36	16897	1.60	1.0434	0.7463	0.7463	0.0963	0.0963		
A Non-2,3,7,8-sub-PeCDD	39:24	2503	1.55	1.0434	9.542	0.1105	0.0963	0.1105		RQ
S Total PeCDD					10.3	0.8568	0.0963	0.0963		RQ
1,2,3,7,8-PeCDF	38:48	271330	1.62	1.1898	7.675	7.675	0.0141	0.0141		M
2,3,4,7,8-PeCDF	40:04	196285	1.64	1.1095	5.152	5.152	0.0134	0.0134		
A Non-2,3,7,8-sub-PeCDF	37:59	308098	1.55	1.1496	8.396	8.369	0.0137	3.155		RQMa
S Total PeCDF					21.2	21.2	0.0137	0.0137		RQ
1,2,3,4,7,8-HxCDD	44:49						0.0197	0.0197		
1,2,3,6,7,8-HxCDD	44:56						0.0194	0.0194		
1,2,3,7,8,9-HxCDD	45:19	3570	1.25	1.2212	0.1191	0.1191	0.0183	0.0183		M
A Non-2,3,7,8-sub-HxCDD	44:17	49966	1.30	1.1700	1.740	1.740	0.0191	1.258		
S Total HxCDD					1.860	1.860	0.0191	0.0191		
1,2,3,4,7,8-HxCDF	43:49	537615	1.28	1.3629	12.6	12.6	0.0801	0.0801		
1,2,3,6,7,8-HxCDF	43:57	151735	1.25	1.2762	3.392	3.392	0.0755	0.0755		M
2,3,4,6,7,8-HxCDF	44:41	14491	1.29	1.2654	0.3412	0.3412	0.0827	0.0827		M
1,2,3,7,8,9-HxCDF	45:37	8752	1.24	1.2573	0.2429	0.2202	0.1019	0.1019		RQMa
A Non-2,3,7,8-sub-HxCDF	44:08	105030	1.26	1.2905	2.474	2.474	0.0840	0.9522		Ma
S Total HxCDF					19.0	19.0	0.0850	0.0850		RQ
1,2,3,4,6,7,8-HpCDD	49:39	56778	1.02	1.1204	2.271	2.271	0.0186	0.0186		
A Non-2,3,7,8-sub-HpCDD	49:01	135074	1.02	1.1204	5.404	5.404	0.0186	5.404		Ma
S Total HpCDD					7.675	7.675	0.0186	0.0186		
1,2,3,4,6,7,8-HpCDF	47:59	146112	1.01	1.4984	3.143	3.143	0.002457	0.002457		
1,2,3,4,7,8,9-HpCDF	50:19	38321	1.12	1.3807	1.230	1.230	0.004464	0.004464		M
A Non-2,3,7,8-sub-HpCDF	49:31	42972	1.04	1.4395	1.133	1.114	0.003202	1.057		RQa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					5.505	5.486	0.003461	0.003461		RQ
OCDD	53:54	986884	0.87	1.2073	39.7	39.7	0.0156	0.0156		
OCDF	54:02	44967	0.91	1.1162	1.372	1.372	0.0410	0.0410		
D 13C-2,3,7,8-TCDD	30:48	132346	0.72	1.0709	3.451	3.451	0.1638	0.1638	69.03	
D 13C-2,3,7,8-TCDF	28:51	211644	0.74	1.7545	3.369	3.369	0.3868	0.3868	67.38	
D 13C-1,2,3,7,8-PeCDD	40:35	98384	1.55	0.8743	3.466	3.143	0.3013	0.3013	69.32	RQ
D 13C-1,2,3,7,8-PeCDF	38:47	148560	1.69	1.3704	3.028	3.028	0.1491	0.1491	60.55	
D 13C-2,3,4,7,8-PeCDF	40:03	171686	1.62	1.3837	3.465	3.465	0.1477	0.1477	69.30	
D 13C-1,2,3,4,7,8-HxCDD	44:50	119544	1.09	0.8772	3.522	3.522	0.0360	0.0360	70.43	
D 13C-1,2,3,6,7,8-HxCDD	44:57	125833	1.08	0.9171	3.546	3.546	0.0344	0.0344	70.91	
D 13C-1,2,3,4,7,8-HxCDF	43:48	156989	0.50	1.1892	3.411	3.411	0.1237	0.1237	68.23	
D 13C-1,2,3,6,7,8-HxCDF	43:56	175231	0.54	1.4625	3.096	3.096	0.1006	0.1006	61.92	
D 13C-2,3,4,6,7,8-HxCDF	44:40	167830	0.57	1.3197	3.286	3.286	0.1115	0.1115	65.73	
D 13C-1,2,3,7,8,9-HxCDF	45:37	158033	0.55	1.2001	3.403	3.403	0.1226	0.1226	68.05	
D 13C-1,2,3,4,6,7,8-HpCDD	49:38	111552	1.04	0.8155	3.535	3.535	0.0141	0.0141	70.70	M
D 13C-1,2,3,4,6,7,8-HpCDF	47:58	155150	0.39	1.0496	3.820	3.820	0.3463	0.3463	76.39	
D 13C-1,2,3,4,7,8,9-HpCDF	50:17	112868	0.51	0.8947	3.260	3.260	0.4063	0.4063	65.20	
D 13C-OCDD	53:53	205838	0.91	0.7044	7.551	7.551	0.1401	0.1401	75.51	
D 13C-OCDF	54:01	293552	0.98	1.0615	7.146	7.146	0.0589	0.0589	71.46	
$ 37Cl4-2,3,7,8-TCDD	30:55	44409		1.2266	1.011	1.011	0.2097	0.2097	101	
* 13C-1,2,3,4-TCDD	30:21	358062	0.85	9.1E+04	10.0	10.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	386987	1.36	1E+05	10.0	10.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- E - Exceeded Maximum Amount
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 08:03:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-012
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 09:14:44 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 09:14:44

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	30:54	30:54	5	1.003	1149938	122903	61	152	2015		a
321.8936	30:54	30:54	5	1.003	1437534	153780	35	87	4394	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	27:50	29:27	-96	0.904	6013	873	61	152	14		
321.8936	27:51	29:27	-95	0.904	7363	719	35	87	21	0.82(0.65-0.89)	
319.8965	28:49	29:27	-38	0.935	2407	370	61	152	6		
321.8936	28:45	29:27	-42	0.933	3721	587	35	87	17	0.65(0.65-0.89)	
319.8965	30:41	29:27	74	0.996	14983	2084	61	152	34		
321.8936	30:38	29:27	71	0.995	19208	2343	35	87	67	0.78(0.65-0.89)	
319.8965	31:59	29:27	152	1.038	98183	9820	61	152	161		
321.8936	31:59	29:27	152	1.038	122181	12390	35	87	354	0.80(0.65-0.89)	
2,3,7,8-TCDF											EM
303.9016	28:53	28:53	4	1.001	5974520	620759	59	147	10521		M
305.8987	28:53	28:53	4	1.001	7540453	798655	29	72	27540	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	23:25	28:10	-284	0.812	7067	1061	59	147	18		
305.8987	23:24	28:10	-285	0.811	9432	1274	29	72	44	0.75(0.65-0.89)	
303.9016	24:24	28:10	-225	0.846	46315	6204	59	147	105		
305.8987	24:24	28:10	-225	0.846	61839	7994	29	72	276	0.75(0.65-0.89)	
303.9016	24:40	28:10	-209	0.855	7676	728	59	147	12		
305.8987	24:42	28:10	-207	0.856	9435	1188	29	72	41	0.81(0.65-0.89)	
303.9016	25:06	28:10	-183	0.870	254560	28490	59	147	483		
305.8987	25:07	28:10	-182	0.871	330824	42966	29	72	1482	0.77(0.65-0.89)	
303.9016	25:44	28:10	-146	0.892	73818	13348	59	147	226		
	Empc Correction				60475	12075	59	147	205		
305.8987	25:43	28:10	-147	0.891	78540	15683	29	72	541	0.94(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	25:51	28:10	-139	0.896	259851	33300	59	147	564		
305.8987	25:50	28:10	-140	0.895	337491	40757	29	72	1405	0.77(0.65-0.89)	
303.9016	26:18	28:10	-111	0.912	52537	7109	59	147	120		
305.8987	26:17	28:10	-112	0.911	63198	8155	29	72	281	0.83(0.65-0.89)	
303.9016	26:30	28:10	-99	0.919	163498	20644	59	147	350		
305.8987	26:30	28:10	-99	0.919	211910	26287	29	72	906	0.77(0.65-0.89)	
303.9016	27:02	28:10	-68	0.937	246028	30031	59	147	509		
305.8987	27:02	28:10	-68	0.937	311584	37239	29	72	1284	0.79(0.65-0.89)	
303.9016	27:18	28:10	-52	0.946	28121	4125	59	147	70		
305.8987	27:18	28:10	-52	0.946	32222	3987	29	72	137	0.87(0.65-0.89)	
303.9016	27:47	28:10	-23	0.963	2626293	312929	59	147	5304		
305.8987	27:47	28:10	-23	0.963	3273194	390198	29	72	13455	0.80(0.65-0.89)	
303.9016	28:24	28:10	15	0.985	126920	14416	59	147	244		
305.8987	28:24	28:10	15	0.985	163927	17982	29	72	620	0.77(0.65-0.89)	
303.9016	30:06	28:10	115	1.043	383272	41155	59	147	698		
305.8987	30:06	28:10	115	1.043	490206	52694	29	72	1817	0.78(0.65-0.89)	
303.9016	30:47	28:10	157	1.067	86242	8929	59	147	151		
305.8987	30:47	28:10	157	1.067	118311	11750	29	72	405	0.73(0.65-0.89)	
303.9016	33:55	28:10	344	1.176	422902	44496	59	147	754		a
305.8987	33:56	28:10	345	1.176	528932	55476	29	72	1913	0.80(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:36	40:36	3	1.000	10388	2321	21	52	111		
357.8516	40:36	40:36	3	1.000	6509	1629	174	435	9	1.60(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:39	39:24	-105	0.928	1522	235	21	52	11		
357.8516	37:47	39:24	-97	0.931	214530	39338	174	435	226	0.01(1.32-1.78)	
	Empc Correction				981	151	174	435	1		
1,2,3,7,8-PeCDF											M
339.8597	38:48	38:48	3	1.000	167822	31881	21	52	1518		M
341.8567	38:48	38:48	3	1.000	103508	20668	23	57	899	1.62(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:04	40:04	3	1.000	122009	28314	21	52	1348		
341.8567	40:04	40:04	3	1.000	74276	16166	23	57	703	1.64(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:48	37:59	-190	0.897	3380	437	21	52	21		
341.8567	34:45	37:59	-193	0.896	2451	318	23	57	14	1.38(1.32-1.78)	
339.8597	37:18	37:59	-40	0.962	71276	12257	21	52	584		
341.8567	37:18	37:59	-40	0.962	44897	8045	23	57	350	1.59(1.32-1.78)	
339.8597	38:16	37:59	18	0.987	7929	1083	21	52	52		
341.8567	38:17	37:59	19	0.987	4555	719	23	57	31	1.74(1.32-1.78)	
339.8597	38:44	37:59	45	0.999	16855	4772	21	52	227		M
341.8567	38:44	37:59	45	0.999	11603	3356	23	57	146	1.45(1.32-1.78)	
339.8597	39:06	37:59	67	1.008	4113	602	21	52	29		
341.8567	39:05	37:59	66	1.008	2703	408	23	57	18	1.52(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	39:20	37:59	82	1.014	47783	10547	21	52	502		
341.8567	39:20	37:59	82	1.014	31390	6493	23	57	282	1.52(1.32-1.78)	
339.8597	40:18	37:59	139	1.039	29043	6167	21	52	294		
341.8567	40:18	37:59	139	1.039	19186	3814	23	57	166	1.51(1.32-1.78)	
339.8597	41:23	37:59	204	1.067	7657	1878	21	52	89		a
	Empc Correction				6646	1611	21	52	77		
341.8567	41:22	37:59	203	1.067	4288	1040	23	57	45	1.79(1.32-1.78)	M
1,2,3,4,7,8-HxCDD											
389.8158	44:51						28	70			
391.8127	44:51						25	62			
1,2,3,6,7,8-HxCDD											
389.8158	44:58						28	70			
391.8127	44:58						25	62			
1,2,3,7,8,9-HxCDD											M
389.8158	45:19	45:20	1	1.011	1984	463	28	70	17		
391.8127	45:20	45:20	2	1.011	1586	354	25	62	14	1.25(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											
389.8158	43:17	44:17	-60	0.963	20859	5446	28	70	195		
391.8127	43:17	44:17	-60	0.963	15264	4281	25	62	171	1.37(1.05-1.43)	
389.8158	43:51	44:17	-25	0.976	716	226	28	70	8		
391.8127	43:51	44:17	-25	0.976	630	199	25	62	8	1.14(1.05-1.43)	
389.8158	44:09	44:17	-8	0.982	6677	1697	28	70	61		
391.8127	44:09	44:17	-8	0.982	5820	1278	25	62	51	1.15(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:49	43:49	2	1.000	302310	83457	97	242	860		
375.8178	43:49	43:49	2	1.000	235305	64306	250	625	257	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDF											M
373.8208	43:57	43:57	2	1.000	84194	20526	97	242	212		M
375.8178	43:57	43:57	2	1.000	67541	16481	250	625	66	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											M
373.8208	44:41	44:41	3	1.000	8172	2309	97	242	24		
375.8178	44:41	44:41	3	1.000	6319	1583	250	625	6	1.29(1.05-1.43)	M
1,2,3,7,8,9-HxCDF											RQMa
373.8208	45:37	45:37	2	1.000	4845	1095	97	242	11		M
375.8178	45:37	45:37	2	1.000	4809	1180	250	625	5	1.01(1.05-1.43)	
	Empc Correction				3907	883	250	625	4		
A Non-2,3,7,8-sub-HxCDF											Ma
373.8208	42:46	44:08	-81	0.973	21658	6183	97	242	64		a
375.8178	42:46	44:08	-81	0.973	18773	5200	250	625	21	1.15(1.05-1.43)	
373.8208	43:22	44:08	-46	0.987	11974	3254	97	242	34		a
375.8178	43:22	44:08	-46	0.987	8528	2519	250	625	10	1.40(1.05-1.43)	
373.8208	44:35	44:08	27	1.015	8438	1311	97	242	14		M
375.8178	44:34	44:08	26	1.014	6386	1051	250	625	4	1.32(1.05-1.43)	
373.8208	45:44	44:08	96	1.041	16527	3580	97	242	37		M
375.8178	45:45	44:08	97	1.041	12746	2862	250	625	11	1.30(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	49:39	49:39	3	1.000	28614	5532	6	15	922		
425.7737	49:39	49:39	3	1.000	28164	4679	31	77	151	1.02(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											Ma
423.7767	48:17	49:01	-44	0.000			6	15			
425.7737	48:17	49:01	-44	0.000			31	77		0.00(0.88-1.20)	
423.7767	48:19	49:01	-42	0.000			6	15			
425.7737	48:19	49:01	-42	0.000			31	77		0.00(0.88-1.20)	
423.7767	48:28	49:01	-33	0.977	68055	14100	6	15	2350		M
425.7737	48:28	49:01	-33	0.977	67019	13603	31	77	439	1.02(0.88-1.20)	M
1,2,3,4,6,7,8-HpCDF											
407.7817	47:59	48:00	2	1.000	73500	14820	6	15	2470		
409.7788	47:59	48:00	2	1.000	72612	15602	5	12	3120	1.01(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:19	50:19	3	1.001	20284	4498	6	15	750		M
409.7788	50:19	50:19	3	1.001	18037	3192	5	12	638	1.12(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											RQa
407.7817	48:22	49:31	-69	1.008	1855	257	6	15	43		a
	Empc Correction				1109	268	6	15	45		
409.7788	48:22	49:31	-69	1.008	1067	258	5	12	52	1.74(0.88-1.20)	
407.7817	48:36	49:31	-55	1.013	20542	3764	6	15	627		a
409.7788	48:37	49:31	-54	1.014	20254	4036	5	12	807	1.01(0.88-1.20)	
OCDD											
457.7377	53:54	53:53	3	1.000	459788	102836	19	47	5412		
459.7348	53:54	53:53	3	1.000	527096	111105	15	37	7407	0.87(0.76-1.02)	
OCDF											
441.7428	54:02	54:01	3	1.000	21444	5253	37	92	142		
443.7399	54:02	54:01	3	1.000	23523	4944	89	222	56	0.91(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:51	3	1.015	55614	5676	204	510	28		
333.9338	30:50	30:51	5	1.016	76732	8752	75	187	117	0.72(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:51	28:51	5	0.951	90250	11861	554	1385	21		
317.9389	28:52	28:51	6	0.951	121394	16099	525	1312	31	0.74(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											RQ
367.8949	40:35	40:40	3	1.337	69916	16066	269	672	60		
	Empc Correction				59802	12675	269	672	47		
369.8919	40:34	40:40	2	1.337	38582	8178	150	375	55	1.81(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:47	38:52	3	1.278	93388	20784	166	415	125		
353.8970	38:47	38:52	3	1.278	55172	12098	159	397	76	1.69(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:03	40:08	3	1.320	106106	23394	166	415	141		
353.8970	40:03	40:08	3	1.320	65580	13642	159	397	86	1.62(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:50	44:50	2	0.989	62411	16687	69	172	242		
403.8529	44:50	44:50	2	0.989	57133	12649	41	102	309	1.09(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:57	44:57	2	0.992	65352	15819	69	172	229		
403.8529	44:57	44:57	2	0.992	60481	13841	41	102	338	1.08(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:48	43:48	2	0.966	52537	13123	329	822	40		
385.8610	43:48	43:48	2	0.966	104452	26606	184	460	145	0.50(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:56	2	0.969	61534	15637	329	822	48		
385.8610	43:56	43:56	2	0.969	113697	29339	184	460	159	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:40	44:39	3	0.985	60925	13541	329	822	41		
385.8610	44:40	44:39	3	0.985	106905	27894	184	460	152	0.57(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:37	45:36	3	1.006	56124	12006	329	822	36		
385.8610	45:36	45:36	2	1.006	101909	21836	184	460	119	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											M
435.8169	49:38	49:38	3	1.095	56964	10515	13	32	809		M
437.8140	49:38	49:38	3	1.095	54588	11514	27	67	426	1.04(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:58	47:57	3	1.058	43660	10394	1151	2877	9		
419.8220	47:58	47:57	3	1.058	111490	26271	116	290	226	0.39(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:17	50:17	2	1.109	38049	6537	1151	2877	6		
419.8220	50:18	50:17	3	1.110	74819	15367	116	290	132	0.51(0.37-0.51)	
13C-OCDD											
469.7780	53:53	53:53	2	1.189	98319	19607	187	467	105		
471.7750	53:53	53:53	2	1.189	107519	25535	157	392	163	0.91(0.76-1.02)	
13C-OCDF											
453.7830	54:01	54:01	2	1.192	145494	33644	125	312	269		
455.7801	54:01	54:01	2	1.192	148058	35163	93	232	378	0.98(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:55	30:53	8	1.019	44409	4258	409	1022	10		
13C-1,2,3,4-TCDD											
331.9368	30:21	30:15	6		164909	18837	204	510	92		
333.9338	30:21	30:15	6		193153	20904	75	187	279	0.85(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:17	2		223117	48845	69	172	708		
403.8529	45:19	45:17	2		163870	38277	41	102	934	1.36(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	132346	14428

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		5.000	132346	14428

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
27:50	6013	873	7363	719	0.4307	0.82	
28:49	2407	370	3721	587	0.1973	0.65	
30:41	14983	2084	19208	2343	1.10	0.78	
31:59	98183	9820	122181	12390	7.10	0.80	
Signal Totals:							
	121586	13147	152473	16039			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	274059	29186				0.80	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 8.825 = (274059 * 5.000) / (132346 * 1.173)

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	211644	27960

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		5.000	211644	27960

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:25	7067	1061	9432	1274	0.3582	0.75	
24:24	46315	6204	61839	7994	2.35	0.75	
24:40	7676	728	9435	1188	0.3715	0.81	
25:06	254560	28490	330824	42966	12.7	0.77	
25:44	73818	13348	78540	15683	3.31	0.94	RQ
25:44	60475	12075	78540	15683	3.02		Empc Correction
25:51	259851	33300	337491	40757	13.0	0.77	
26:18	52537	7109	63198	8155	2.51	0.83	
26:30	163498	20644	211910	26287	8.15	0.77	
27:02	246028	30031	311584	37239	12.1	0.79	
27:18	28121	4125	32222	3987	1.31	0.87	
27:47	2626293	312929	3273194	390198	128.1	0.80	
28:24	126920	14416	163927	17982	6.31	0.77	
30:06	383272	41155	490206	52694	19.0	0.78	
30:47	86242	8929	118311	11750	4.44	0.73	
33:55	422902	44496	528932	55476	20.7	0.80	a
Signal Totals:							
	4771757	565692	6021045	713630			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10806145	1280595				0.79	RQa
	10792802	1279322					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 234.610 = (10806145 * 5.000) / (211644 * 1.088)
Empc Amount: 234.321 = (10792802 * 5.000) / (211644 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	108498	24244

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		5.000	108498	24244

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:39	1522	235	214530	39338	9.54	0.01	RQ
37:39	1522	235	981	151	0.1105		Empc Correction
Signal Totals:							
	1522	235	981	151			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	216052	39573				0.01	RQ
	2503	386					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.542 = (216052 * 5.000) / (108498 * 1.043)
Empc Amount: 0.1105 = (2503 * 5.000) / (108498 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	148560	32882
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	171686	37036

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		5.000	160123	34959

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:48	3380	437	2451	318	0.1584	1.38	
37:18	71276	12257	44897	8045	3.16	1.59	
38:16	7929	1083	4555	719	0.3391	1.74	
38:44	16855	4772	11603	3356	0.7730	1.45	Ma
39:06	4113	602	2703	408	0.1851	1.52	
39:20	47783	10547	31390	6493	2.15	1.52	
40:18	29043	6167	19186	3814	1.31	1.51	
41:23	7657	1878	4288	1040	0.3244	1.79	RQM
41:23	6646	1611	4288	1040	0.2970		Empc Correction
Signal Totals:							
	187025	37476	121073	24193			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	309109	61936				1.55	RQMa
	308098	61669					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 8.396 = (309109 * 5.000) / (160123 * 1.150)
Empc Amount: 8.369 = (308098 * 5.000) / (160123 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	119544	29336
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	125833	29660
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		5.000	122688	29498

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	20859	5446	15264	4281	1.26	1.37	
43:51	716	226	630	199	0.0469	1.14	
44:09	6677	1697	5820	1278	0.4353	1.15	
Signal Totals:							
	28252	7369	21714	5758			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	49966	13127				1.30	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.740 = (49966 * 5.000) / (122688 * 1.170)

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	156989	39729
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	175231	44976
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	167830	41435
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	158033	33842

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		5.000	164520	39995

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:46	21658	6183	18773	5200	0.9522	1.15	a
43:22	11974	3254	8528	2519	0.4828	1.40	a
44:35	8438	1311	6386	1051	0.3491	1.32	Ma
45:44	16527	3580	12746	2862	0.6894	1.30	Ma
Signal Totals:							
	58597	14328	46433	11632			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	105030	25960				1.26	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.474 = (105030 * 5.000) / (164520 * 1.290)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	111552	22029

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		5.000	111552	22029

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:17	0	0	0	0		0.00	
48:19	0	0	0	0		0.00	
48:28	68055	14100	67019	13603	5.40	1.02	M
Signal Totals:							
	68055	14100	67019	13603			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	135074	27703				1.02	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.404 = (135074 * 5.000) / (111552 * 1.120)

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 08:03:00 Dil. Factor: 10.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	155150	36665
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	112868	21904

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		5.000	134009	29284

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:22	1855	257	1067	258	0.0757	1.74	RQa
48:22	1109	268	1067	258	0.0564		Empc Correction
48:36	20542	3764	20254	4036	1.06	1.01	a
Signal Totals:							
	21651	4032	21321	4294			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	43718	8315				1.05	RQa
	42972	8326					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.133 = (43718 * 5.000) / (134009 * 1.440)
Empc Amount: 1.114 = (42972 * 5.000) / (134009 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

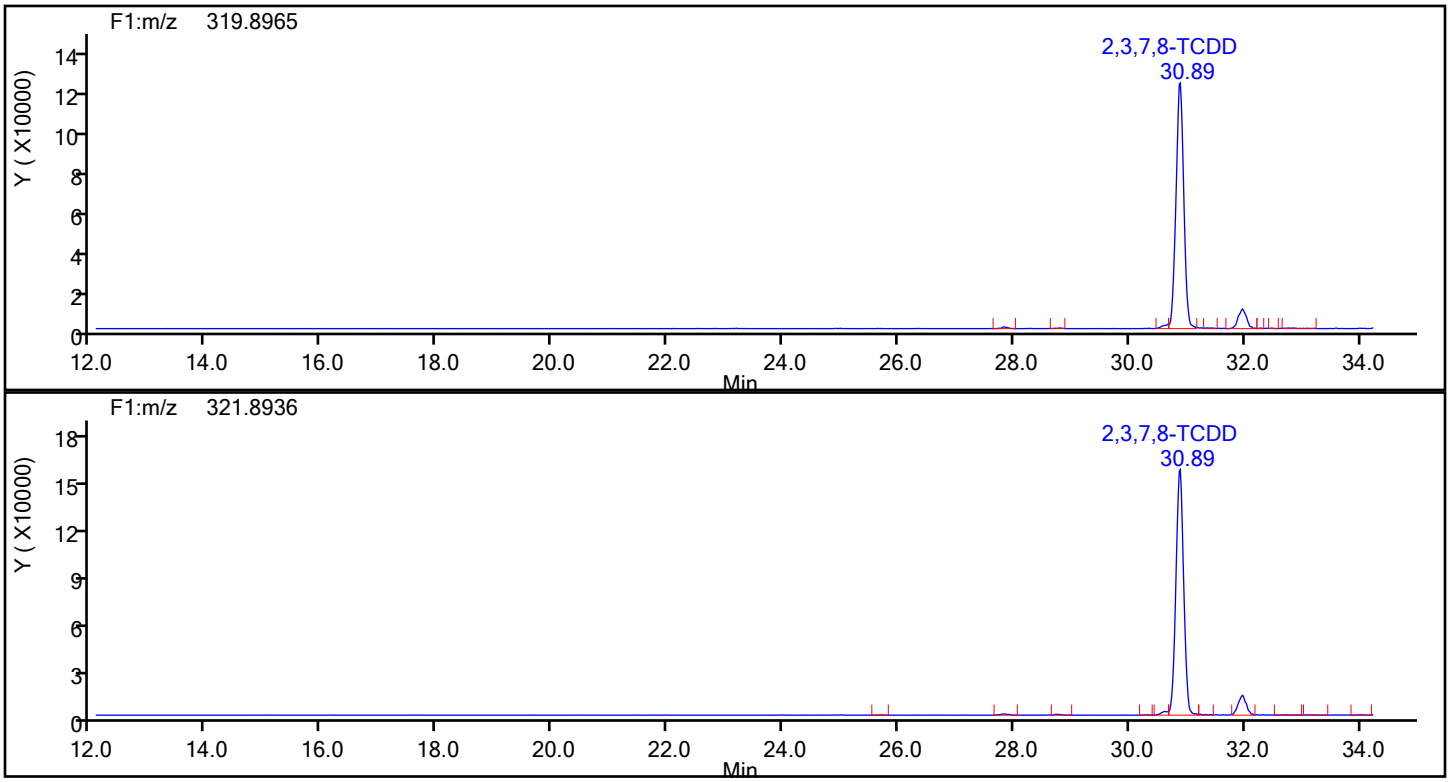
Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

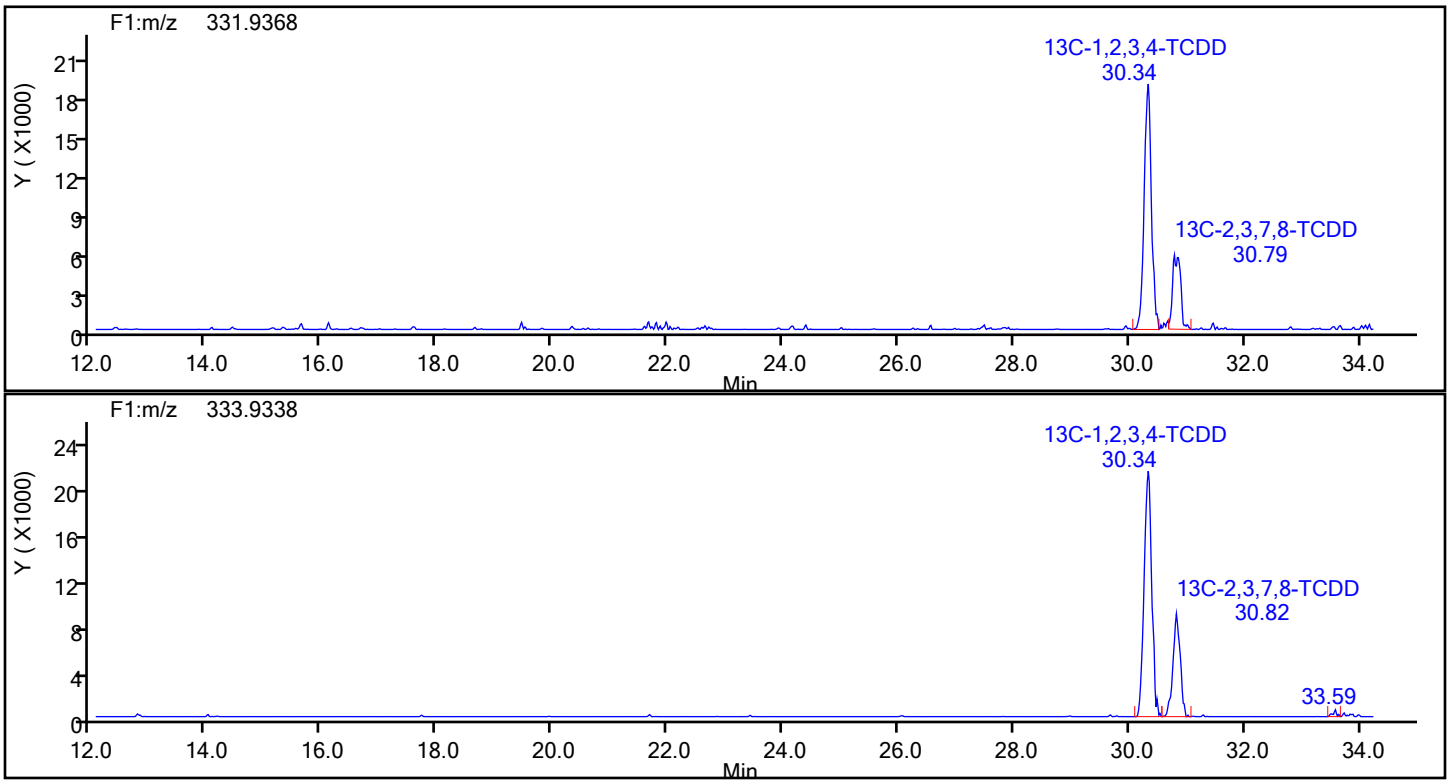
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

TCDD



TCDD Standards

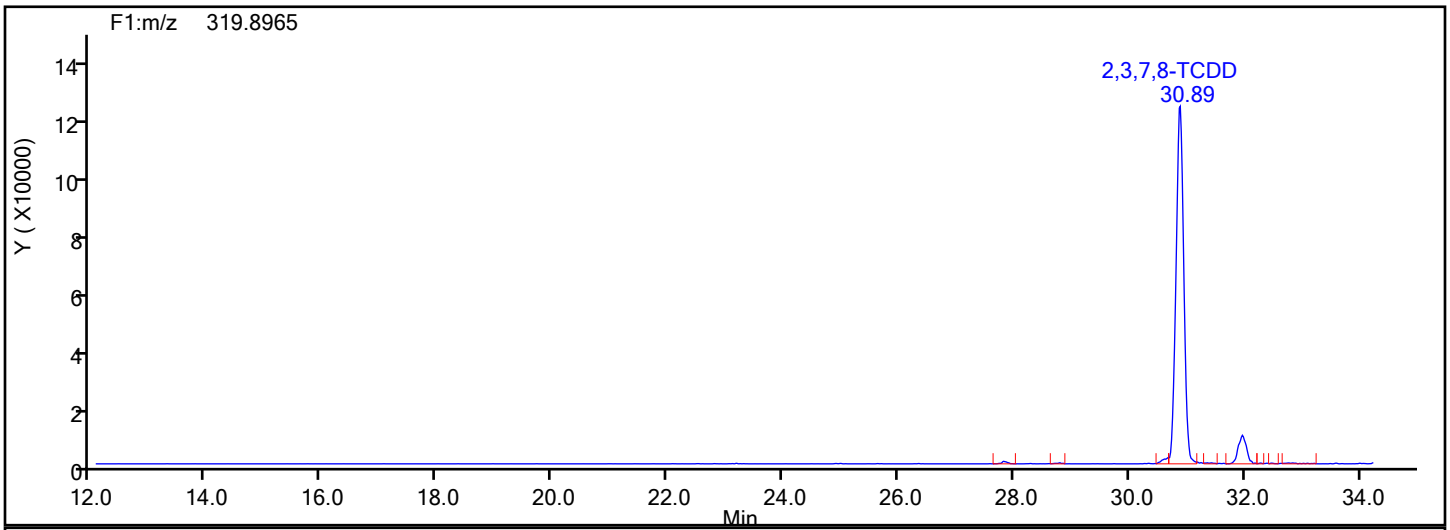


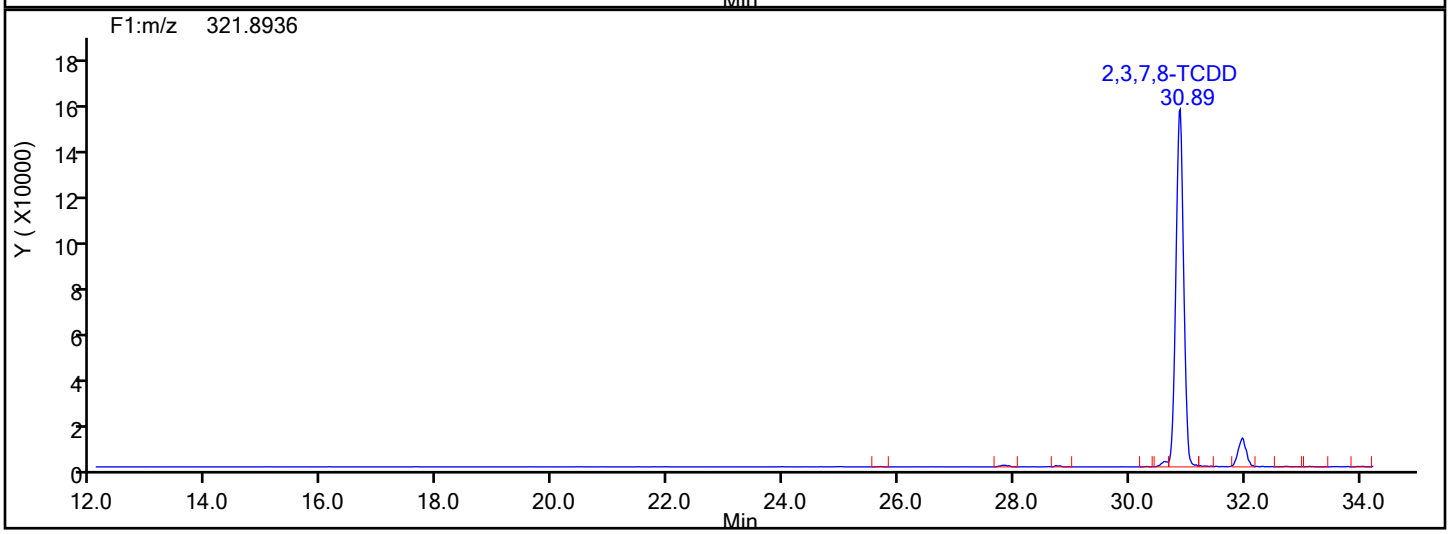
Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

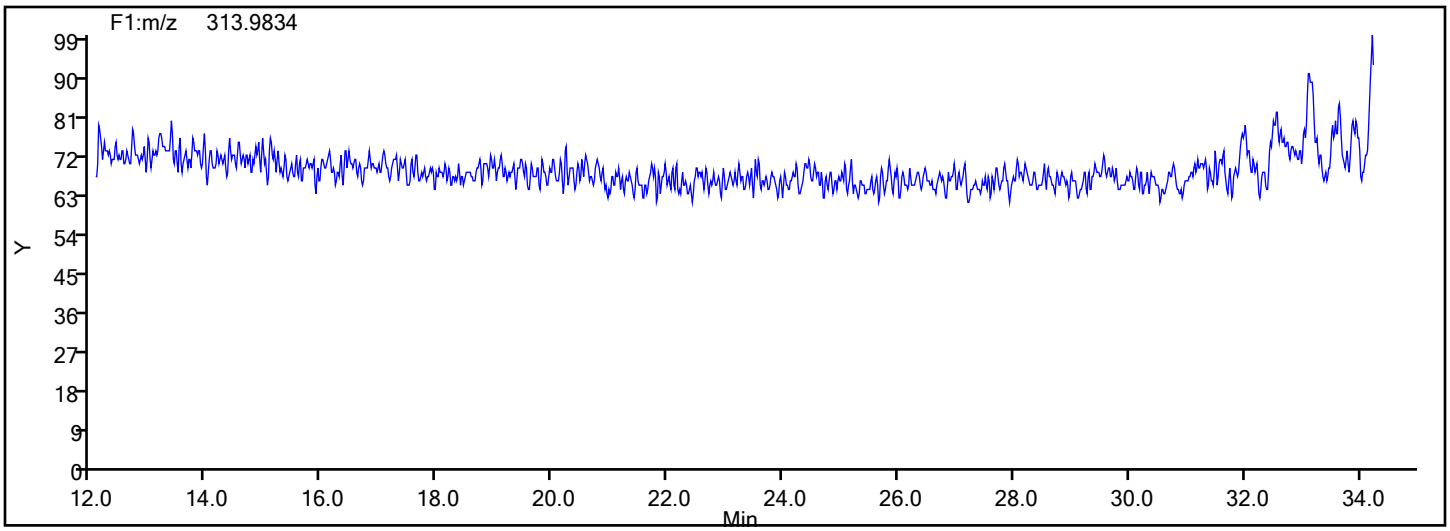
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

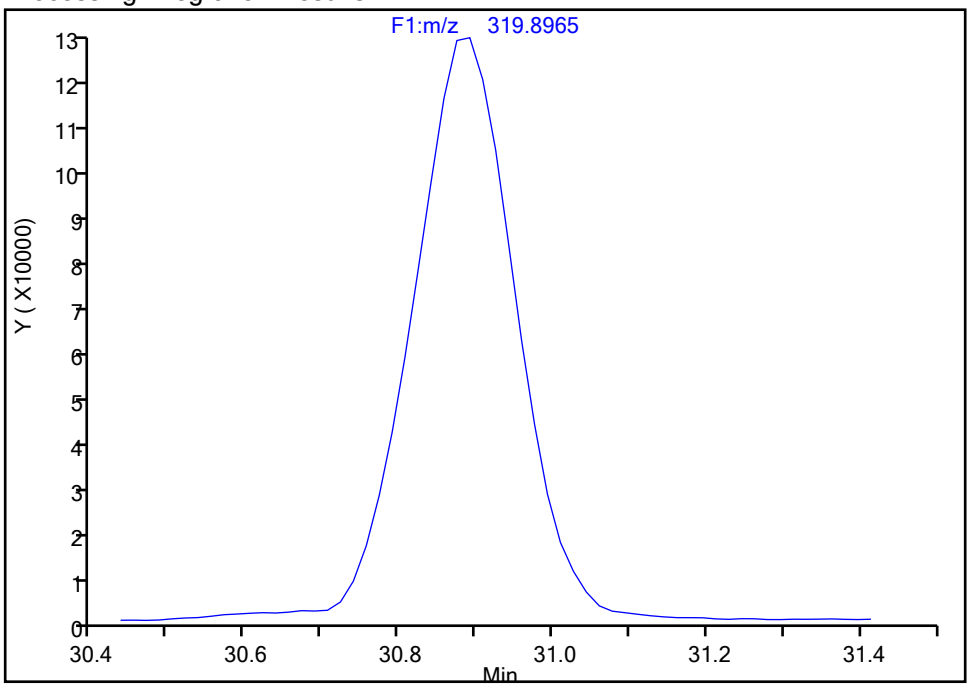
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

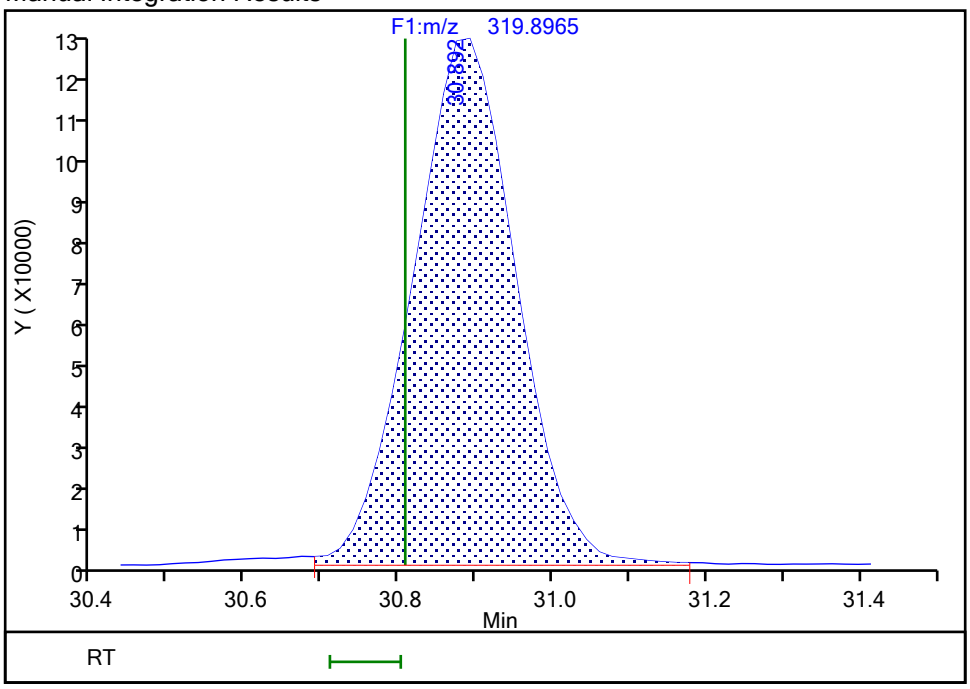
Not Detected
Expected RT: 30.81

Processing Integration Results



Manual Integration Results

RT: 30.89
Area: 1149938
Amount: 83.316491
Amount Units: pg/ul



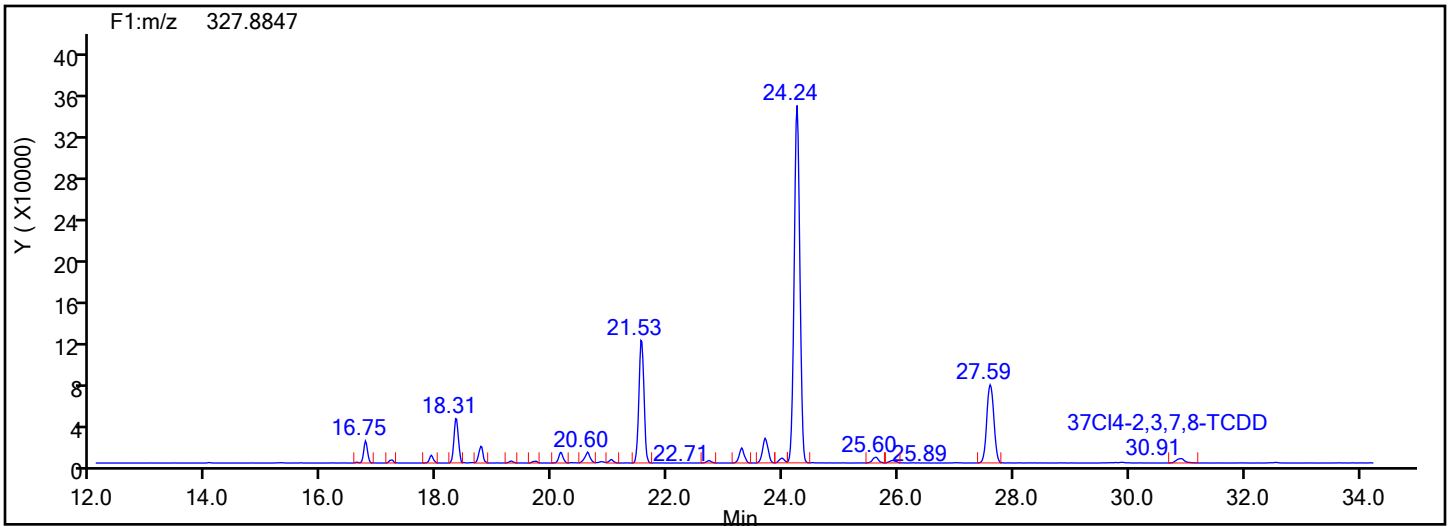
Reviewer: davidsonm, 18-Dec-2019 09:07:53
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

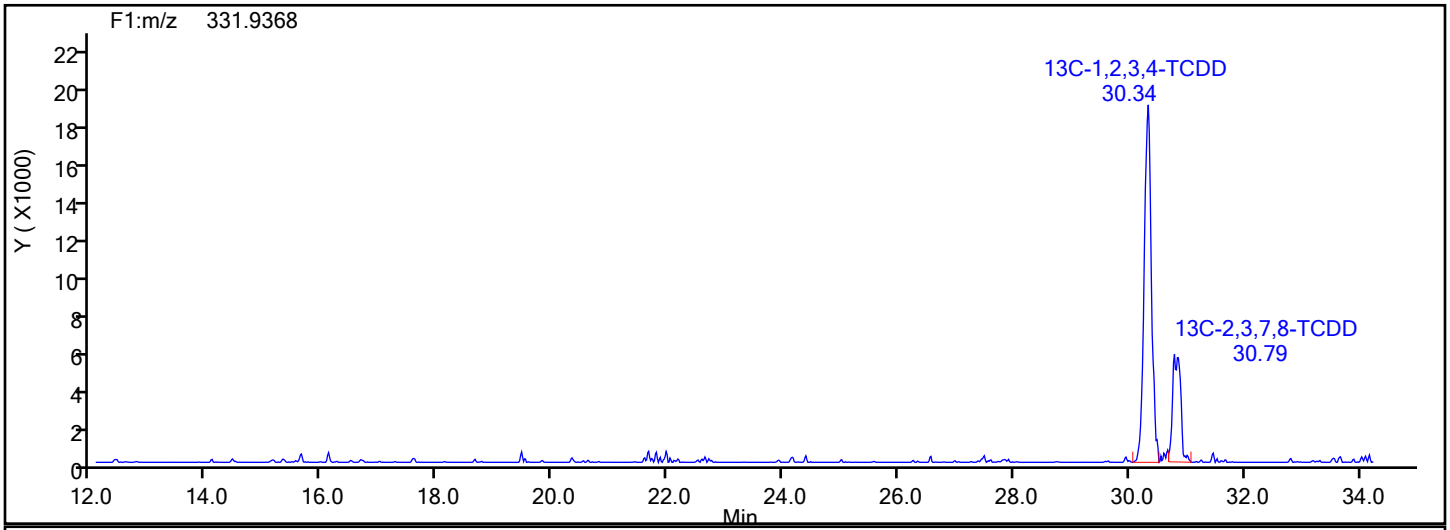
Eurofins TestAmerica, Knoxville

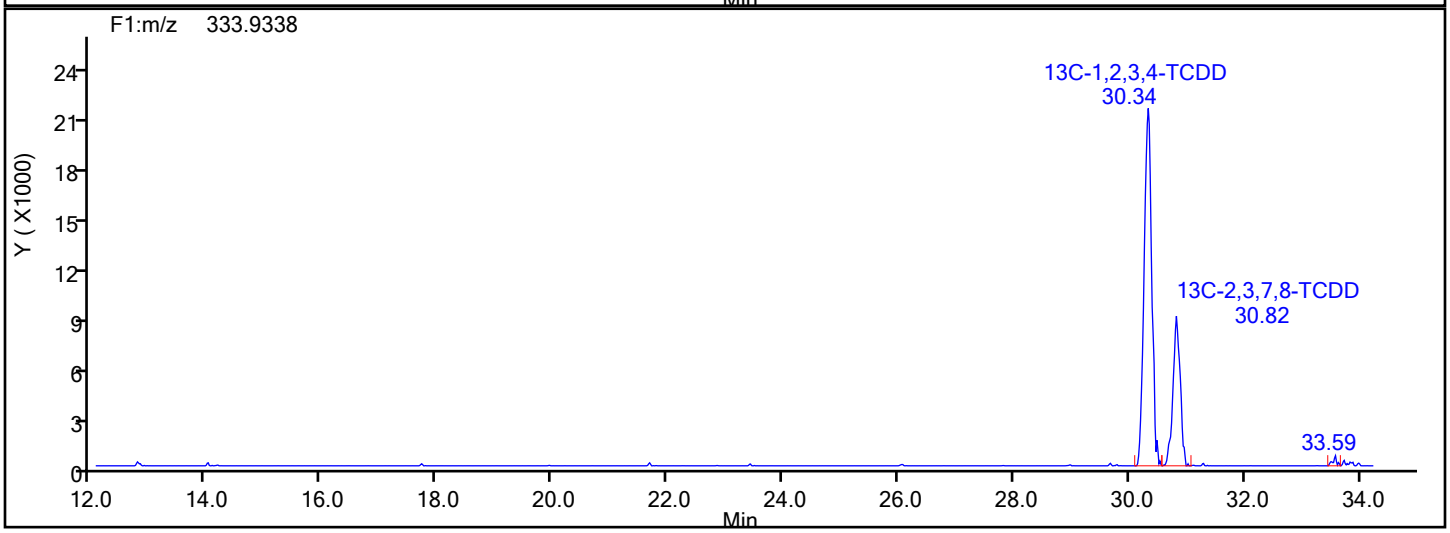
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



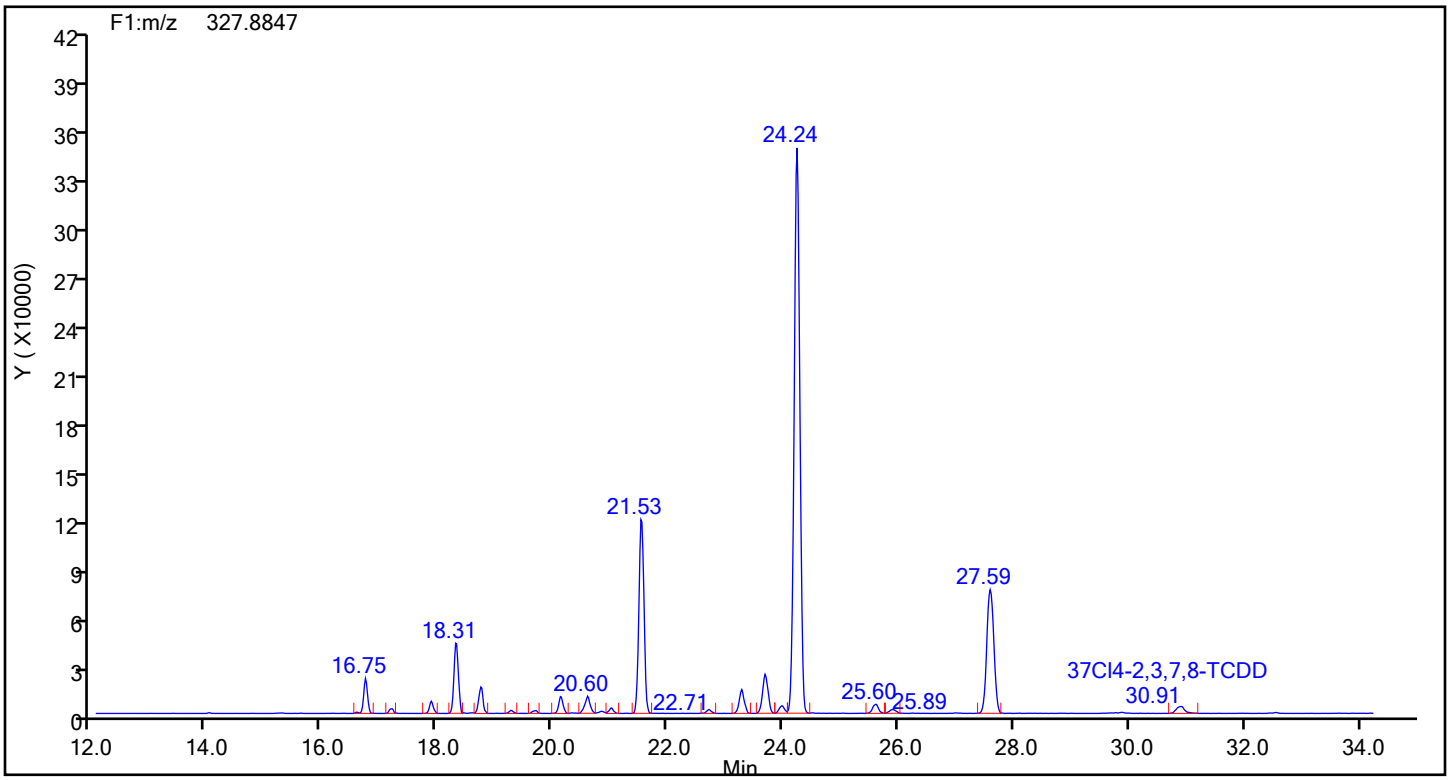


Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

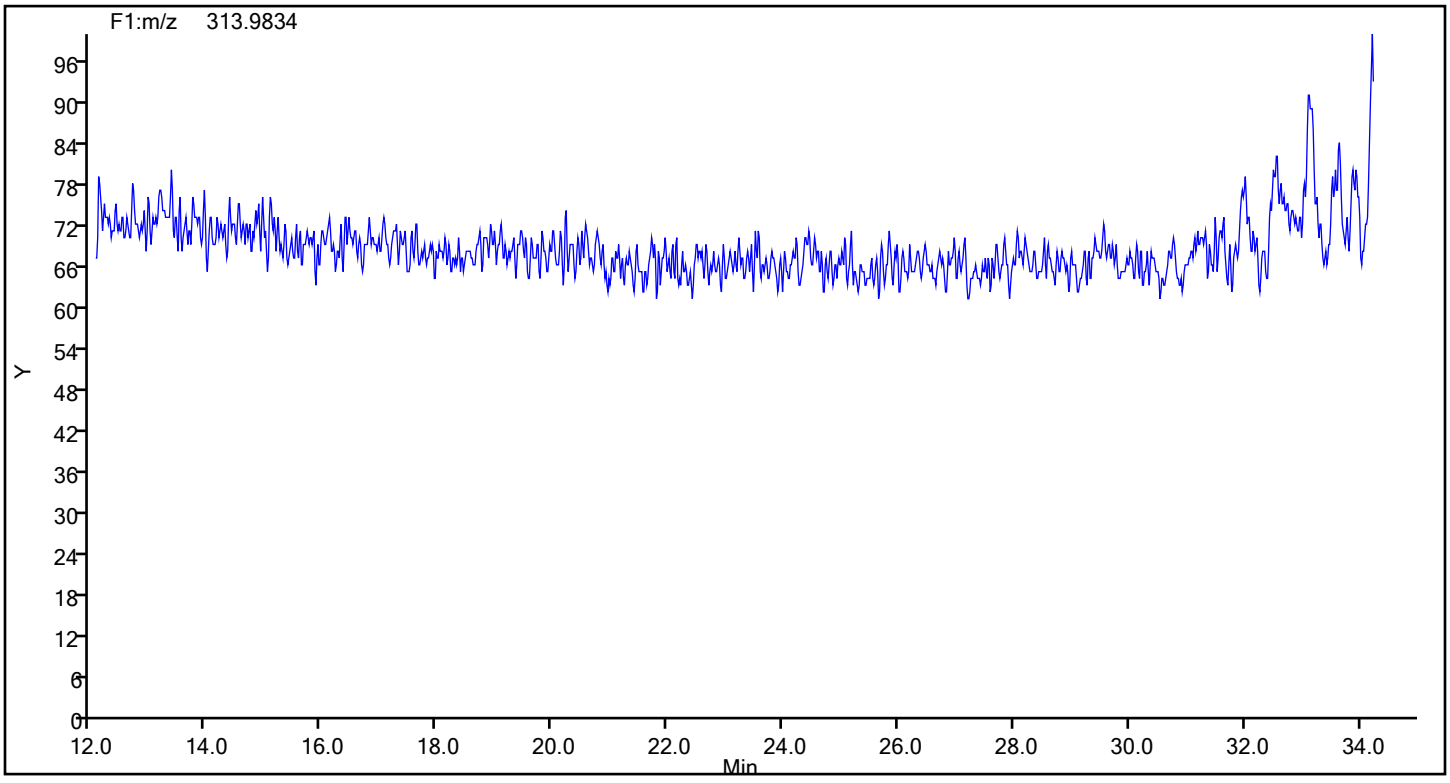
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

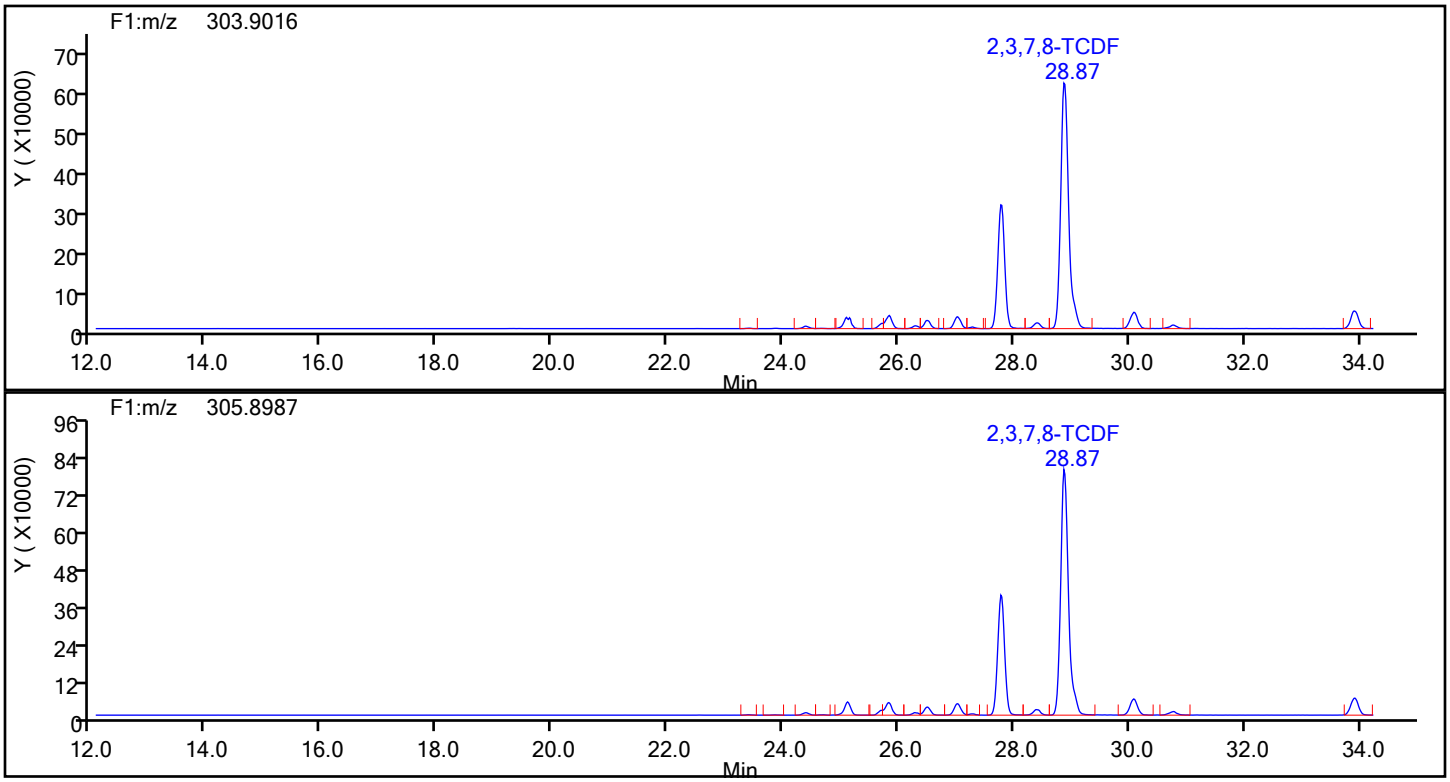


Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

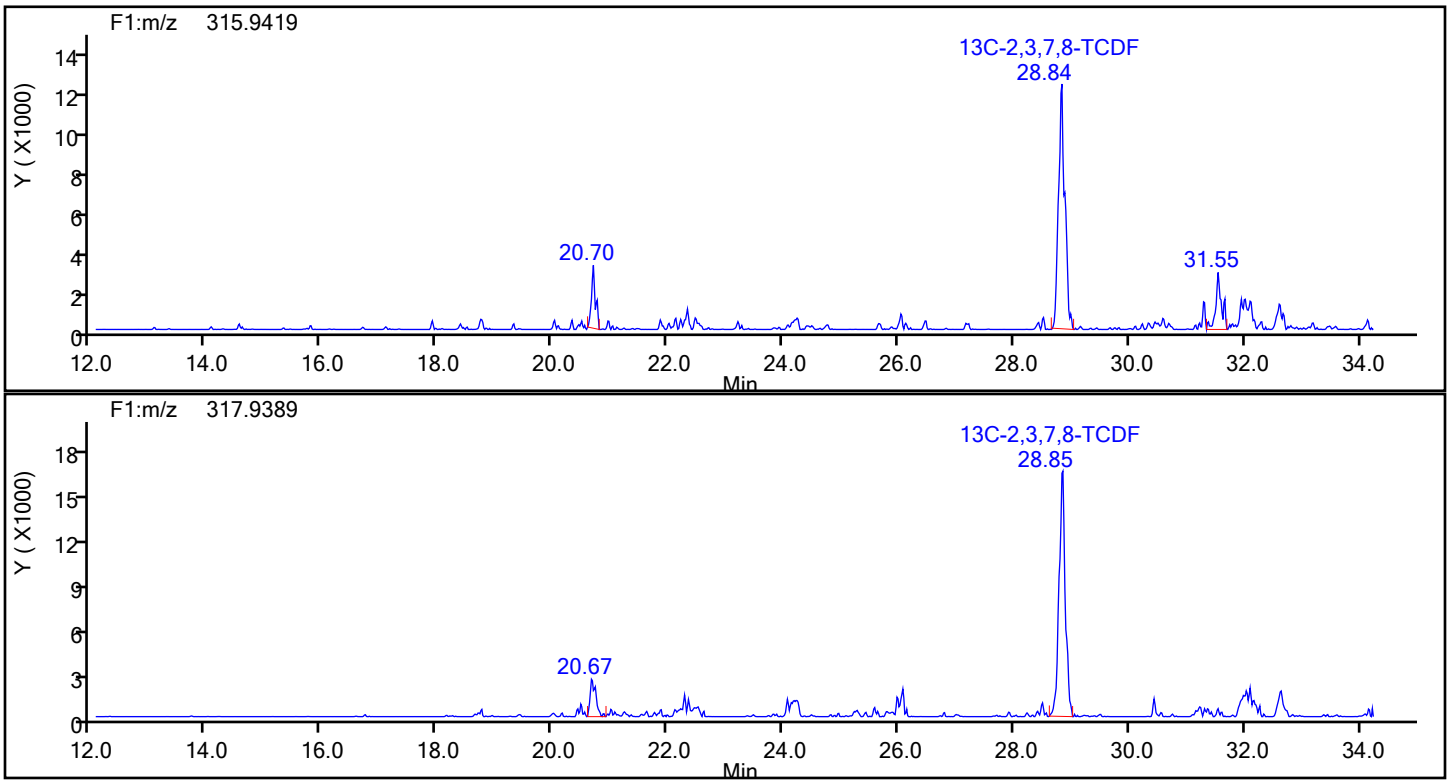
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

TCDF



TCDF Standards

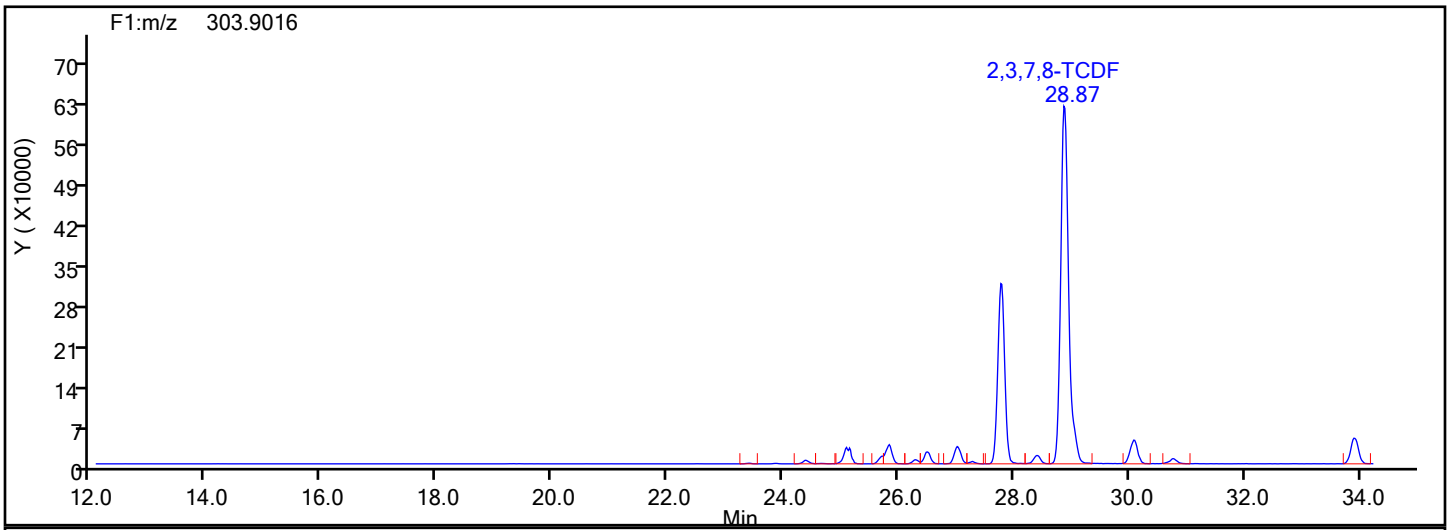


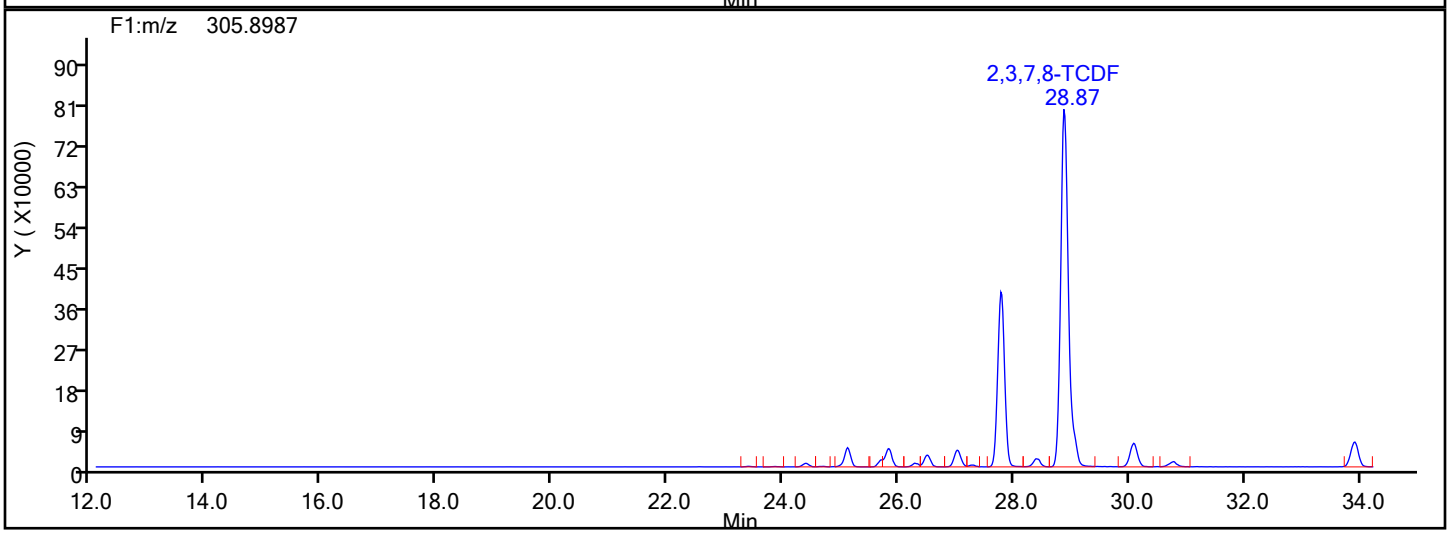
Report Date: 18-Dec-2019 09:14:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

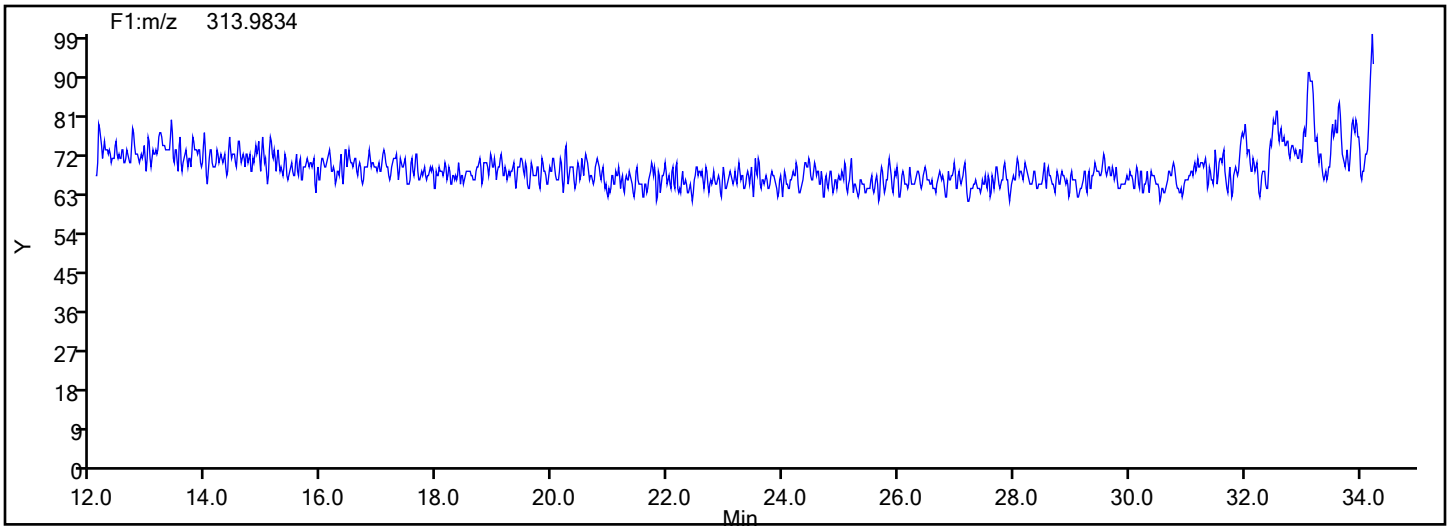
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

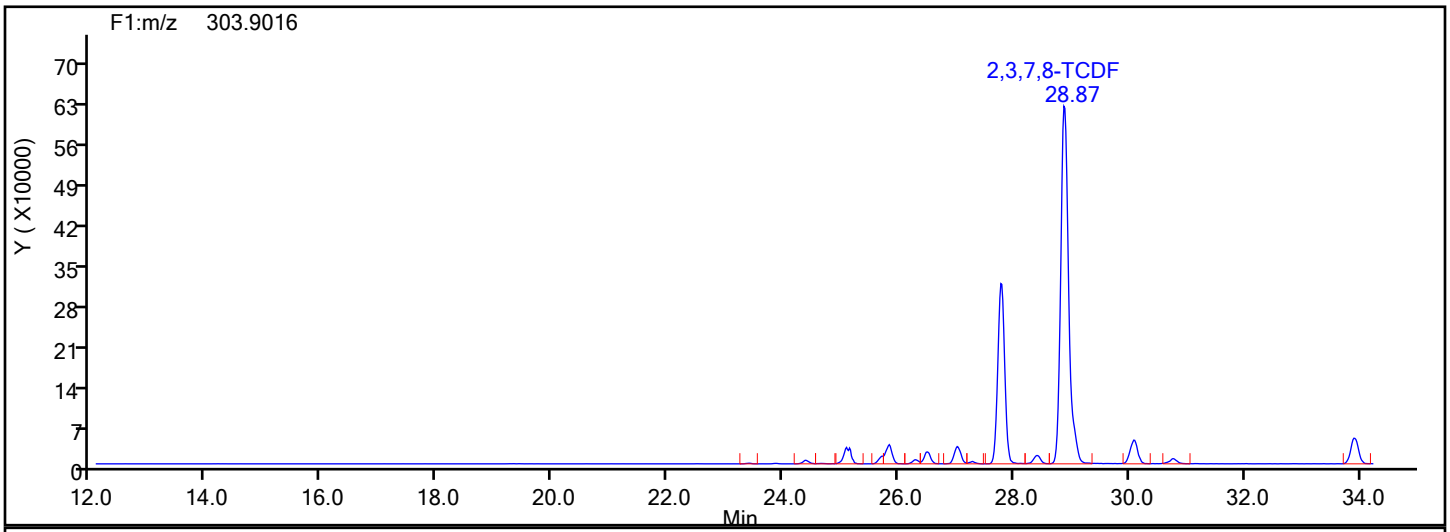


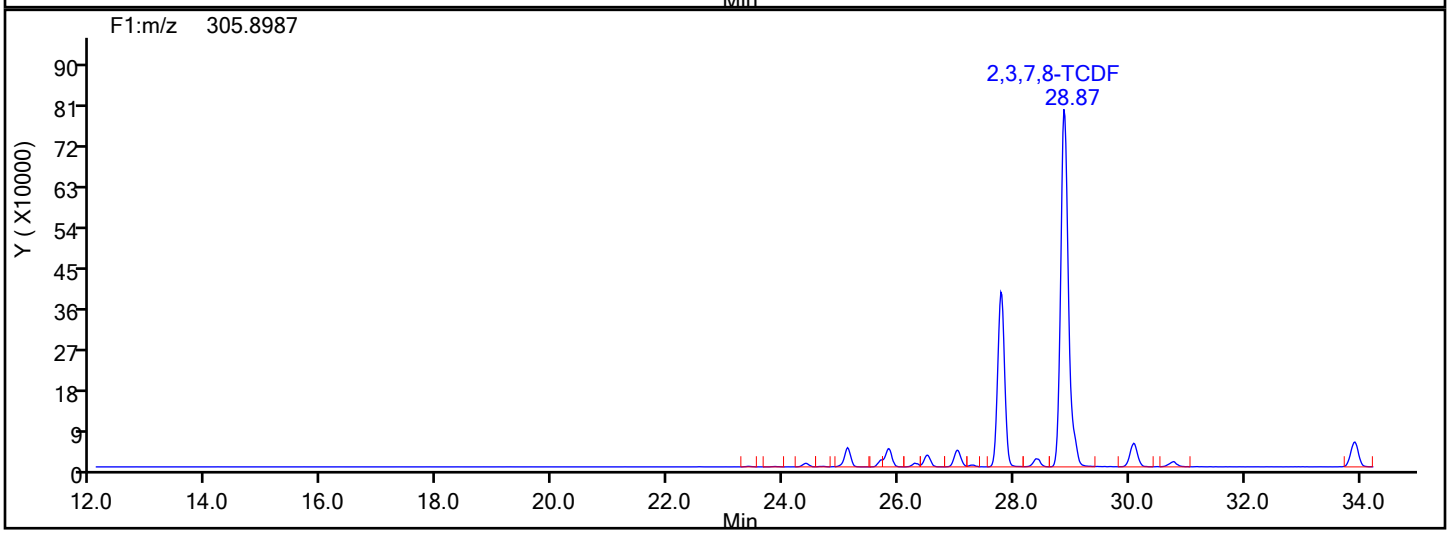
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

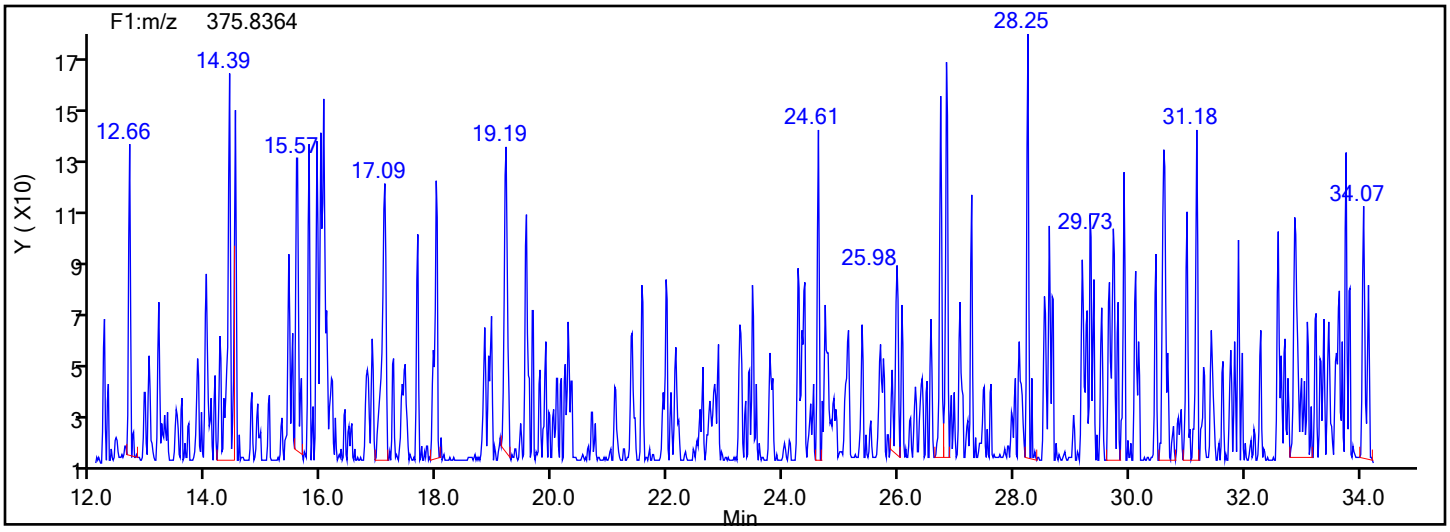
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

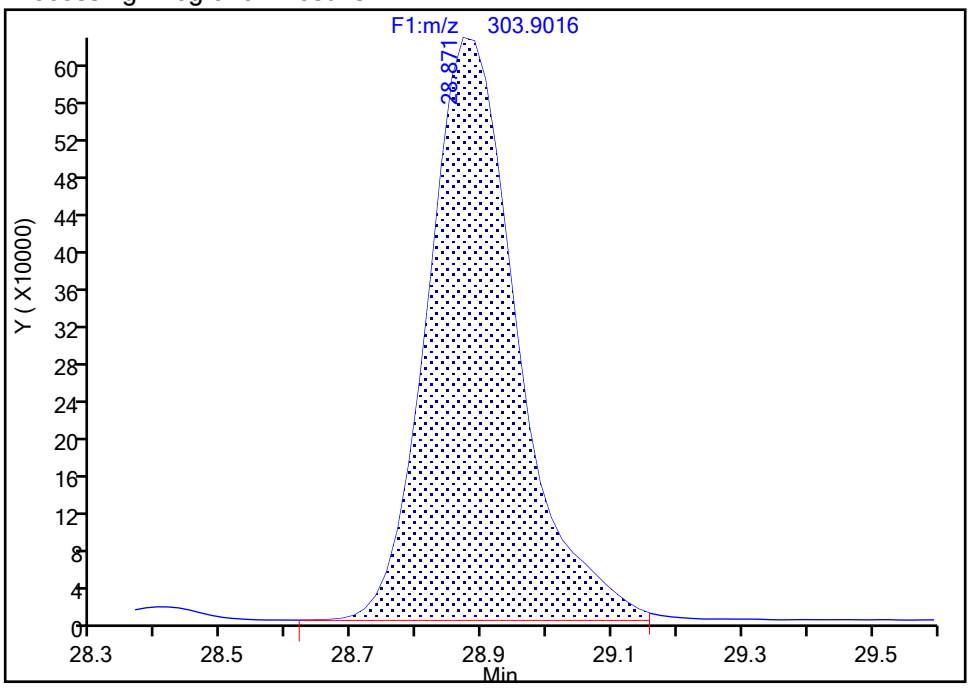
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

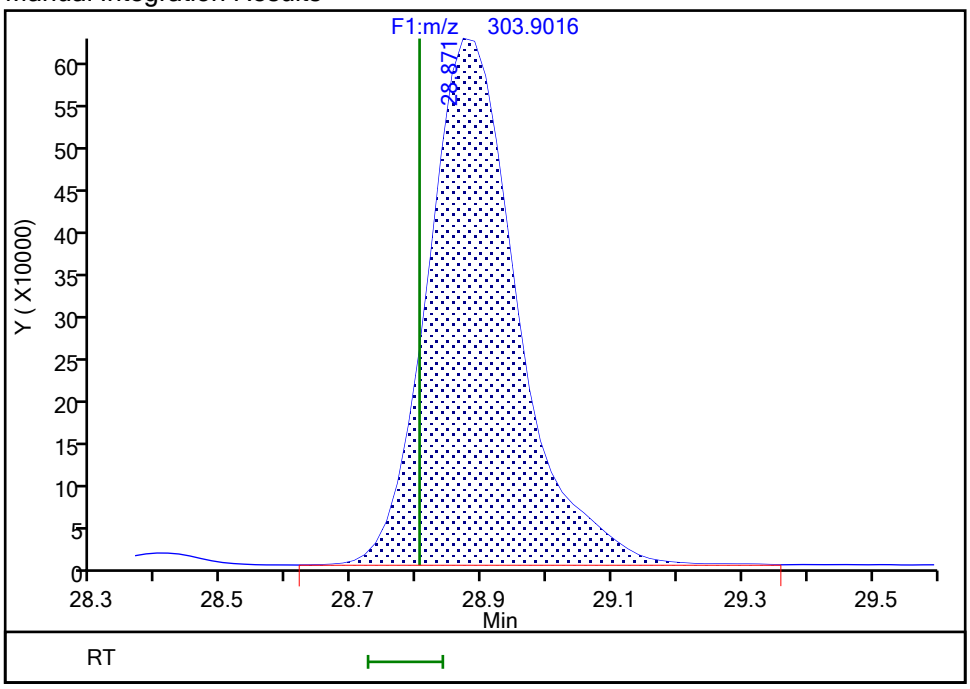
Processing Integration Results

RT: 28.87
Area: 5947737
Amount: 292.8399
Amount Units: pg/ul



Manual Integration Results

RT: 28.87
Area: 5974520
Amount: 293.4214
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:09:13

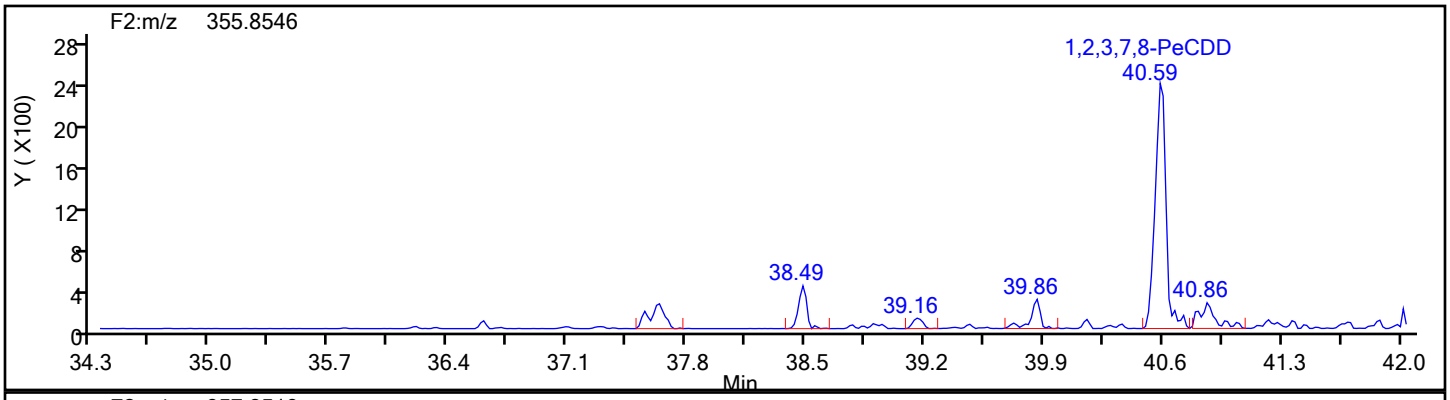
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

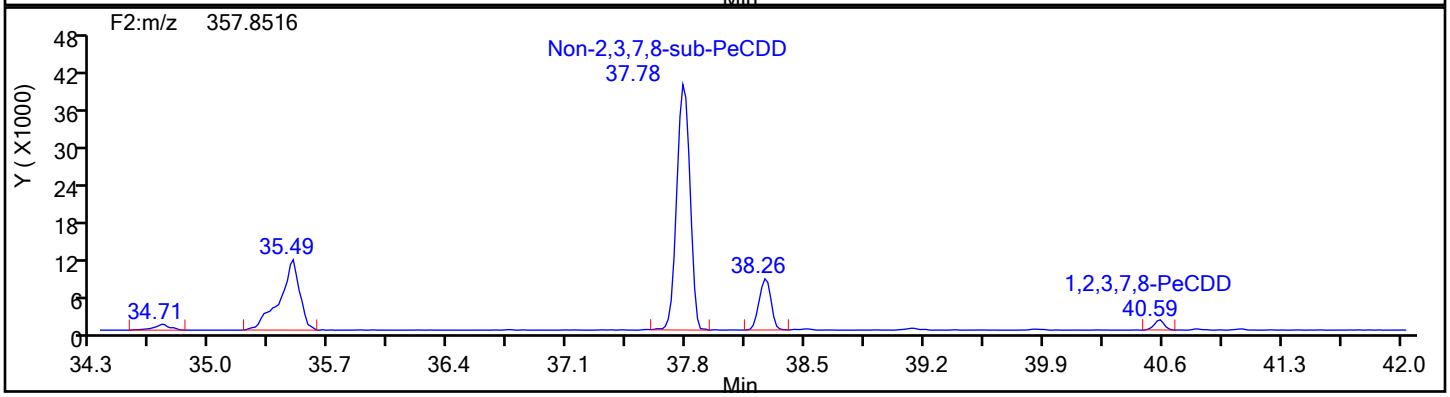
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

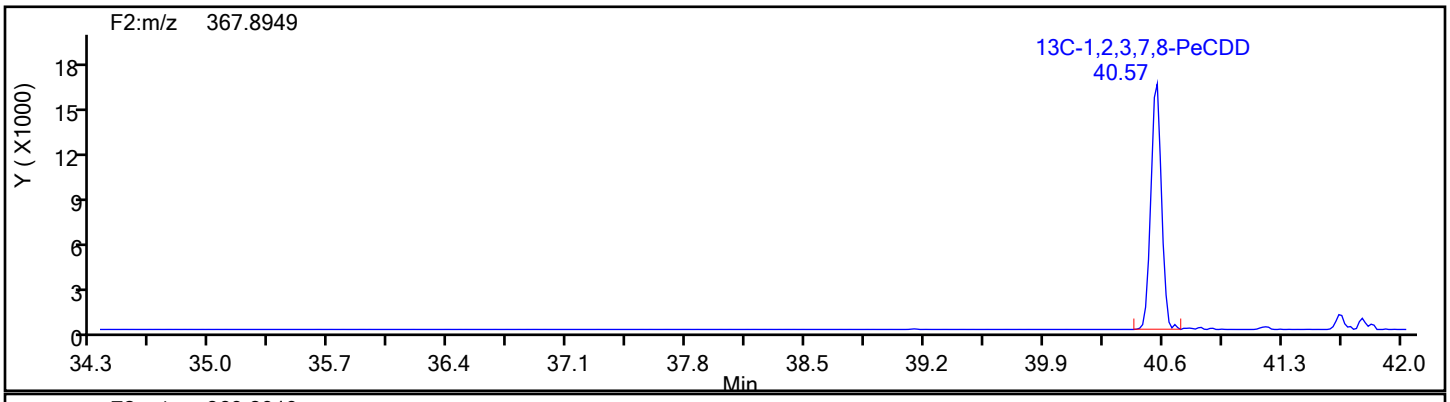
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

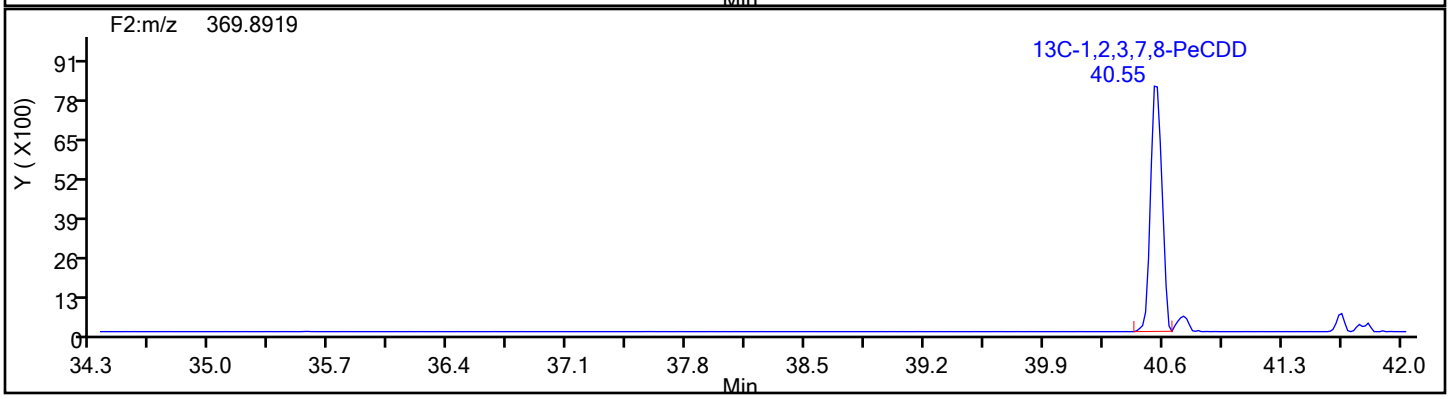
PeCDD





PeCDD Standards



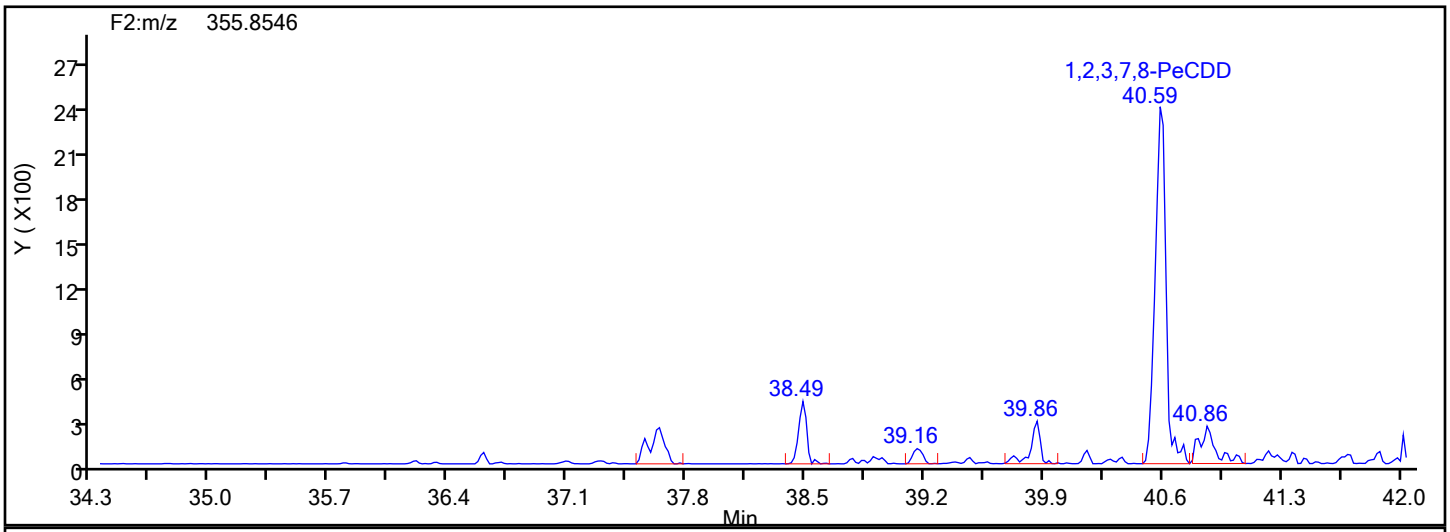


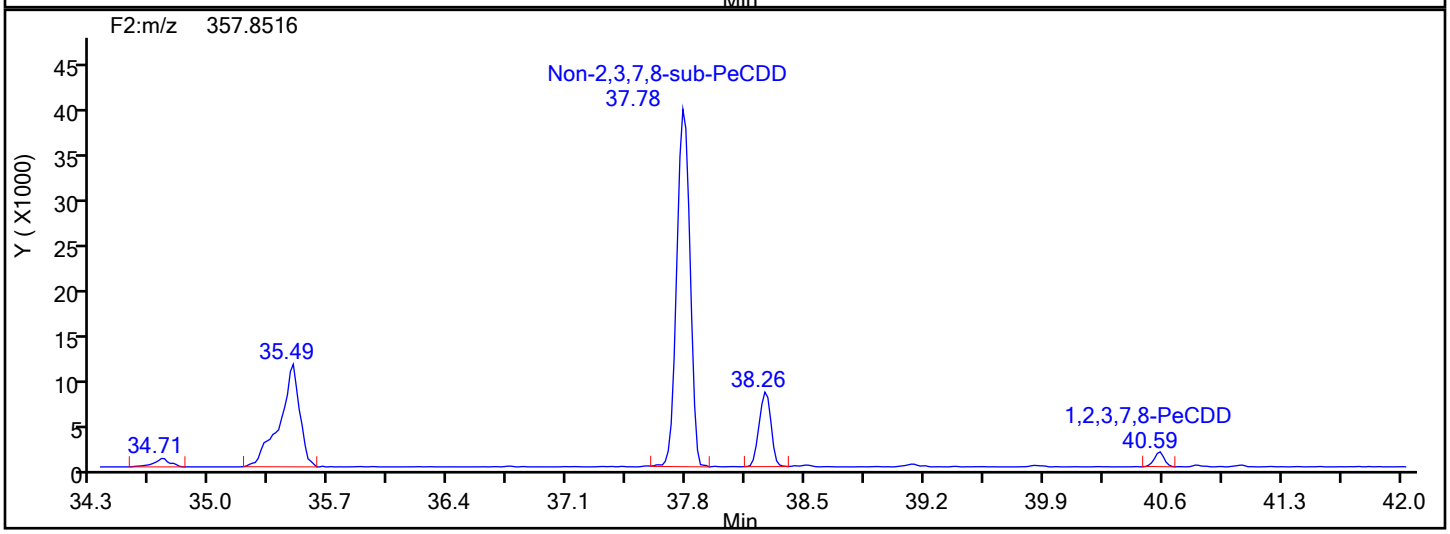
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

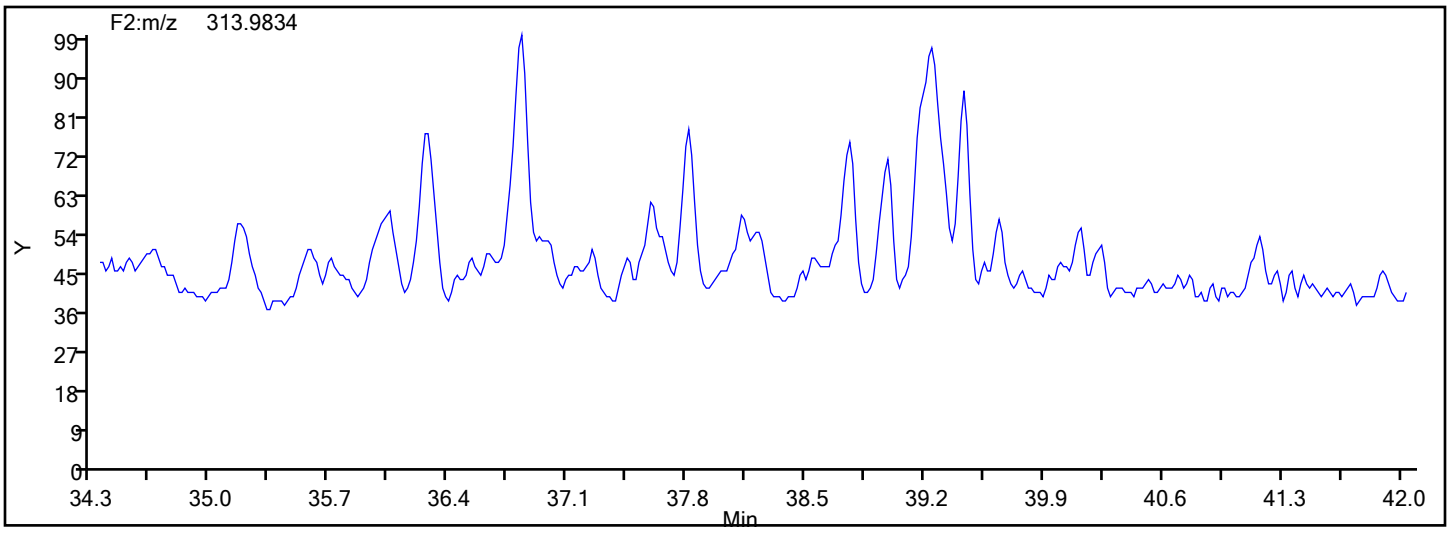
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



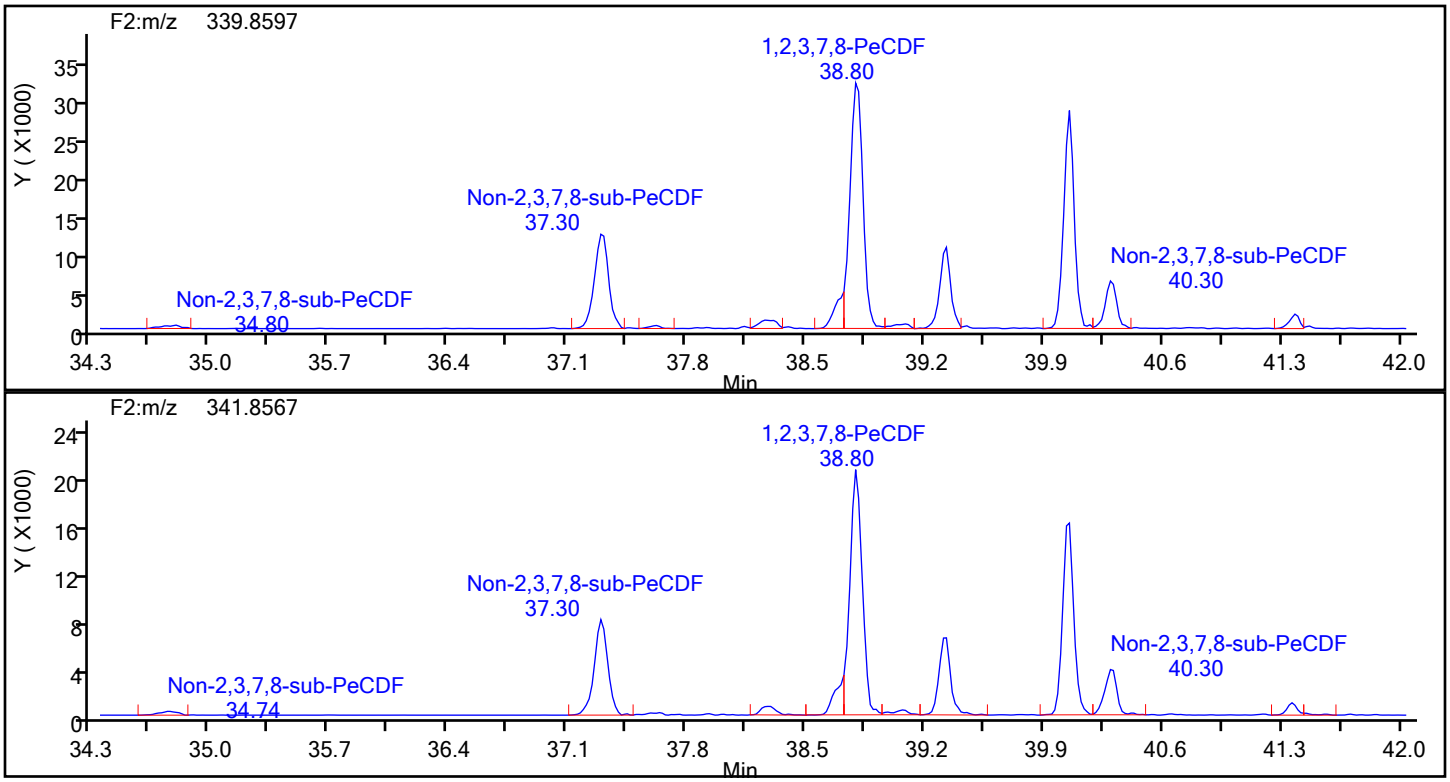
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

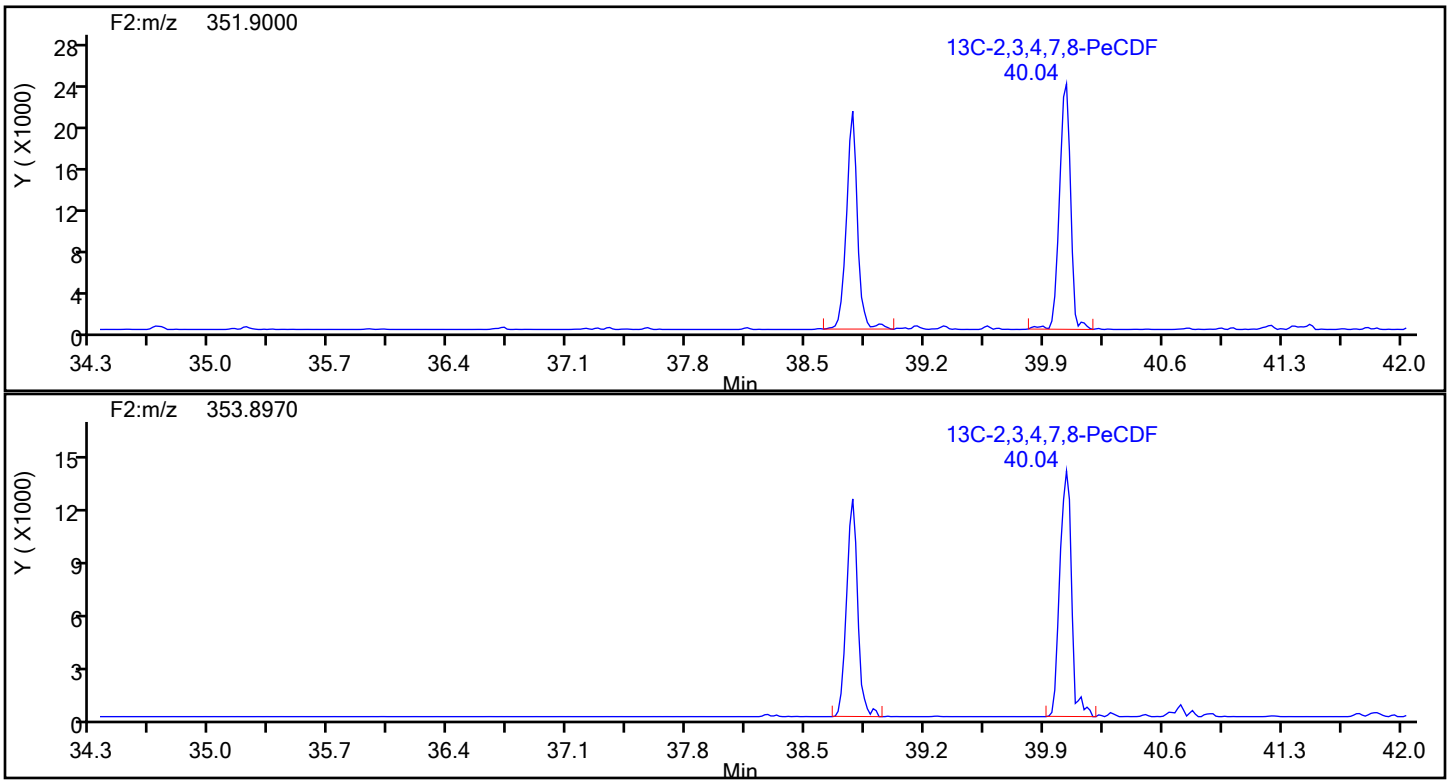
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d

Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

PeCDF



PeCDF Standards

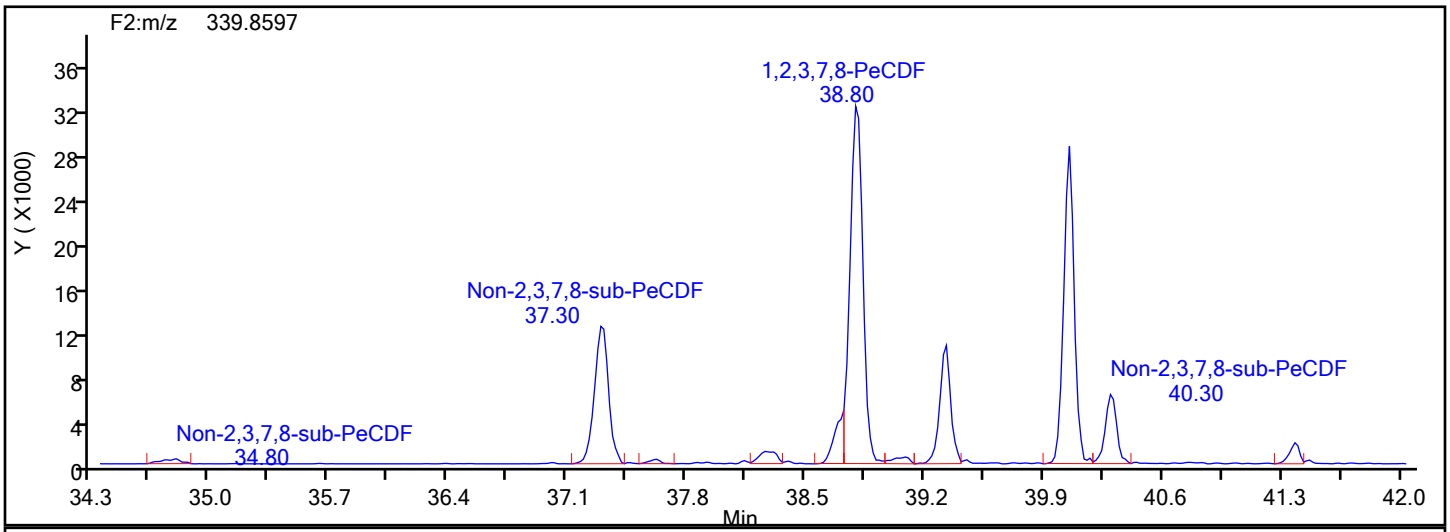


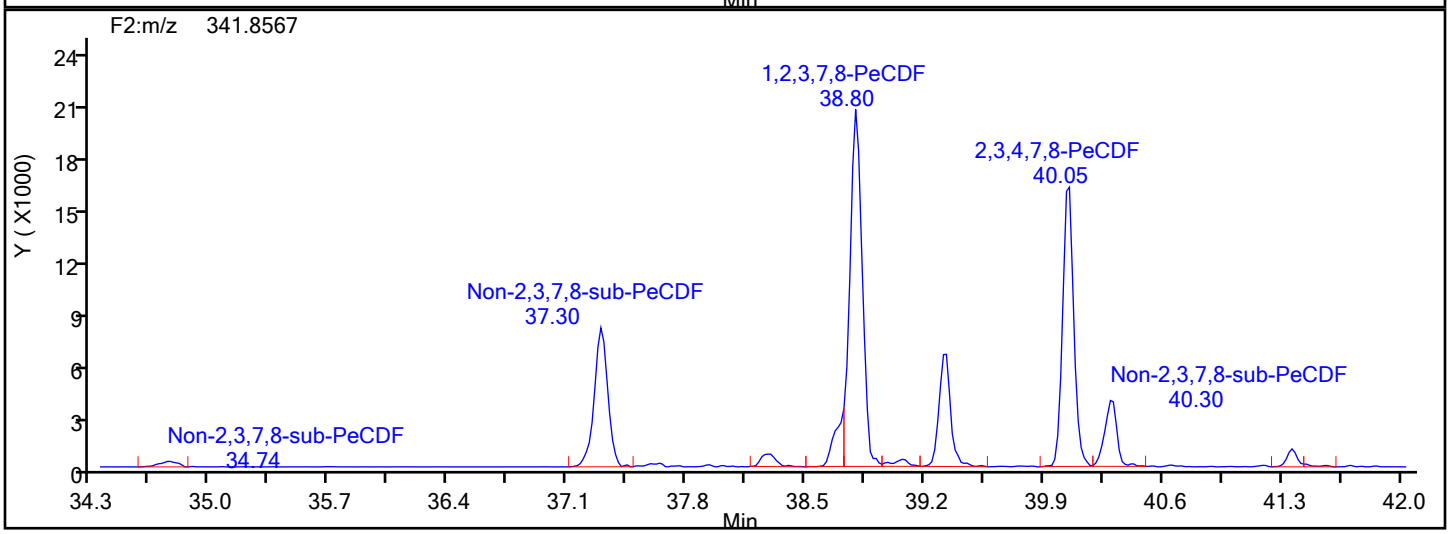
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

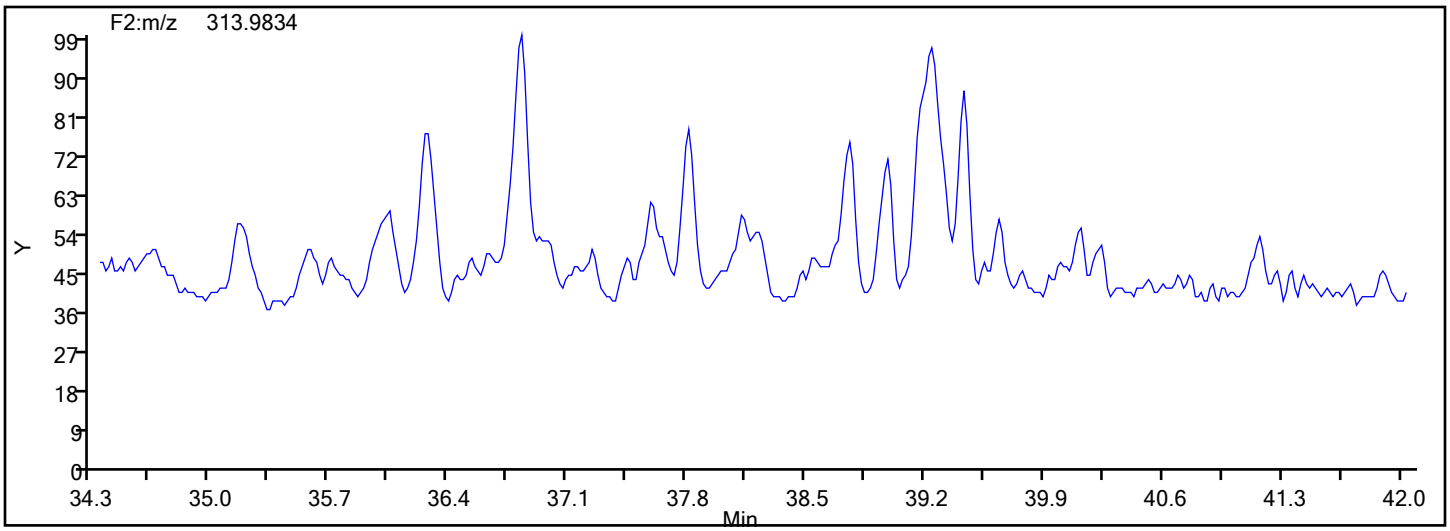
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

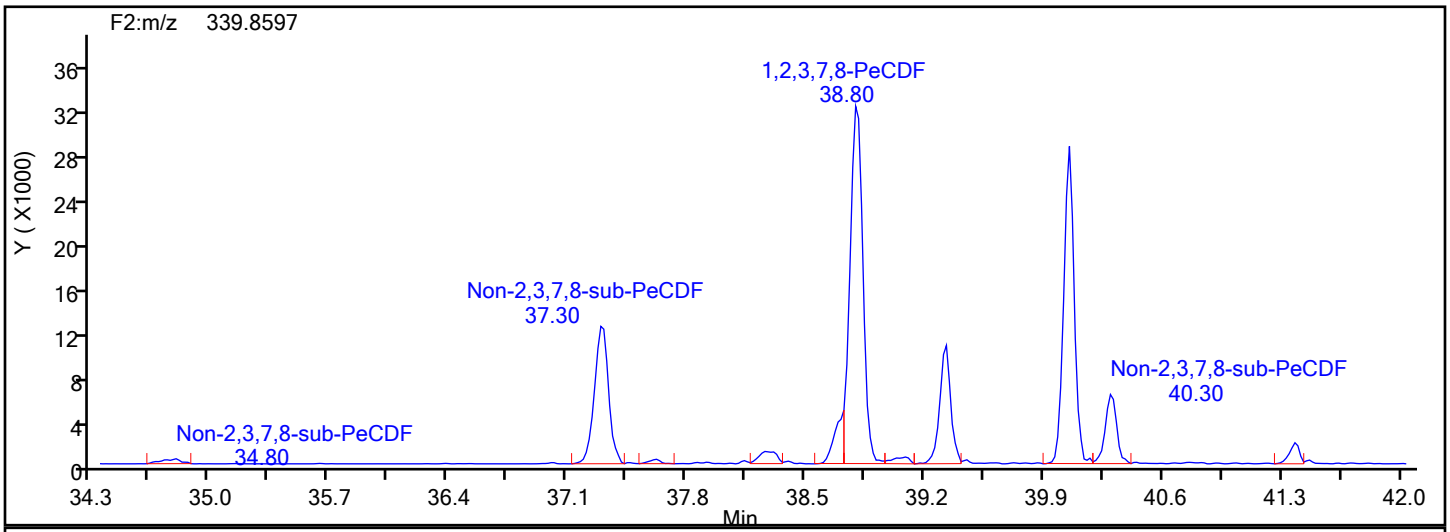


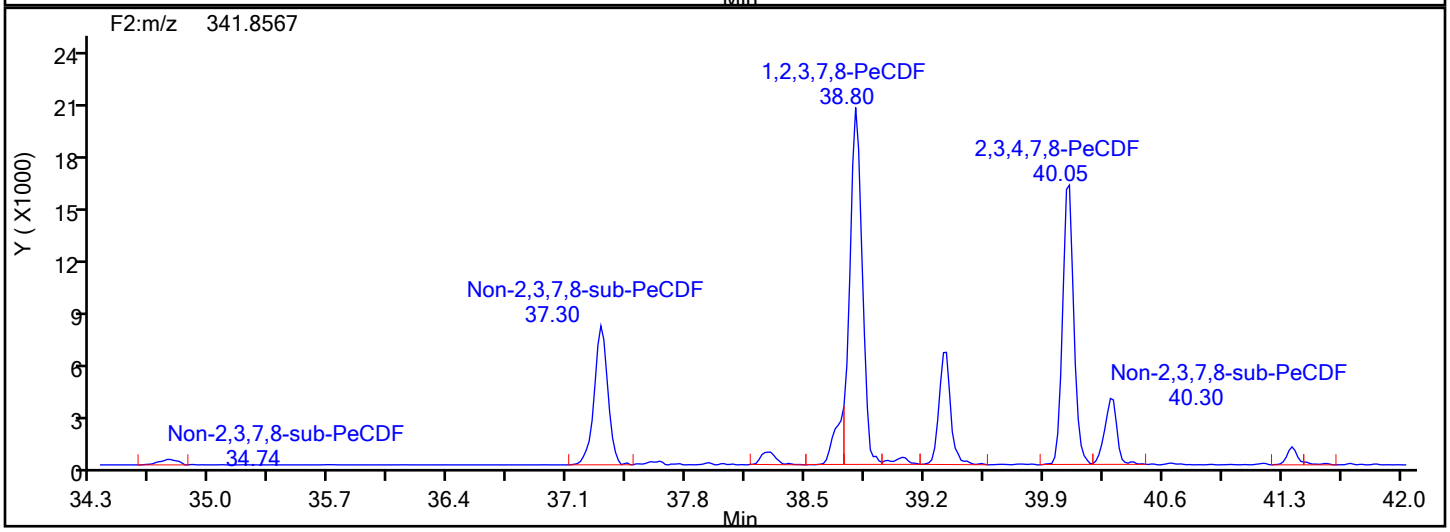
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

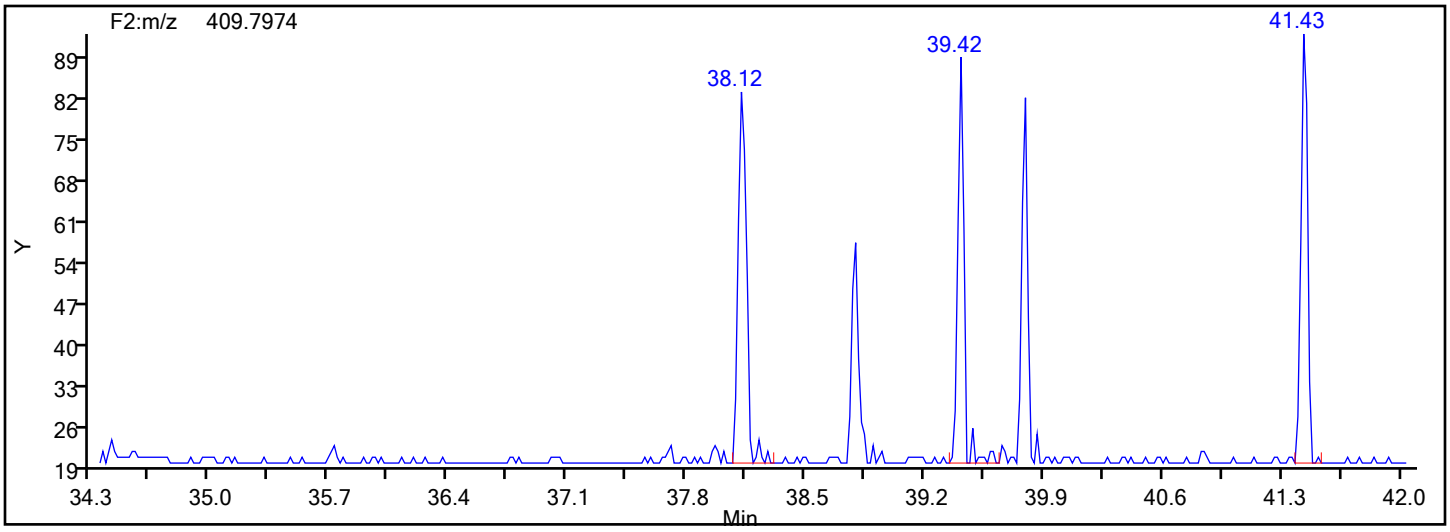
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

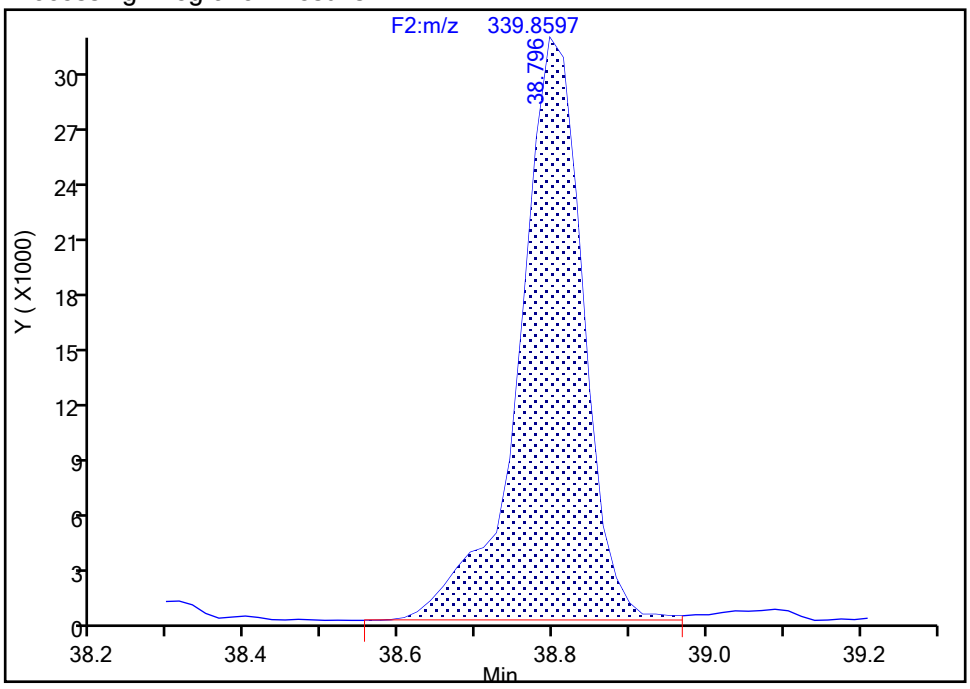
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

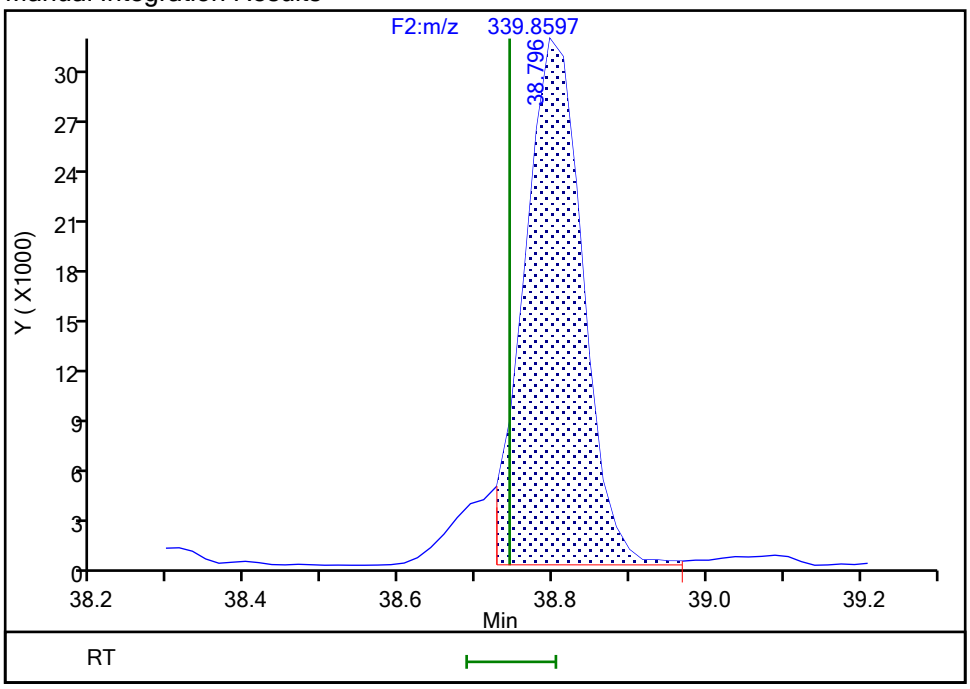
Processing Integration Results

RT: 38.80
Area: 184687
Amount: 8.480646
Amount Units: pg/ul



Manual Integration Results

RT: 38.80
Area: 167822
Amount: 7.675347
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:09:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

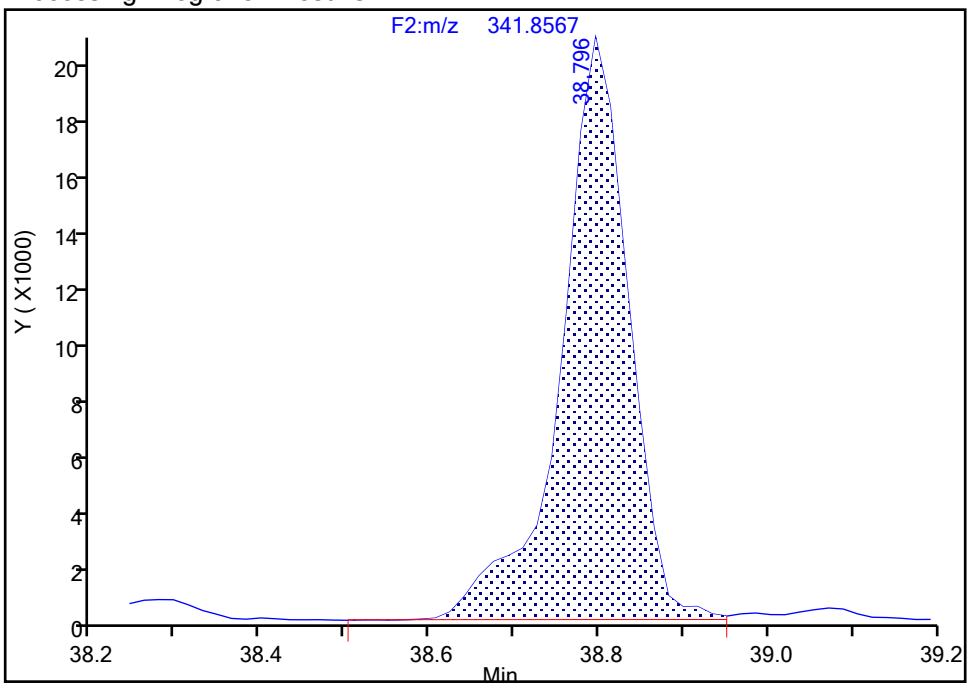
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

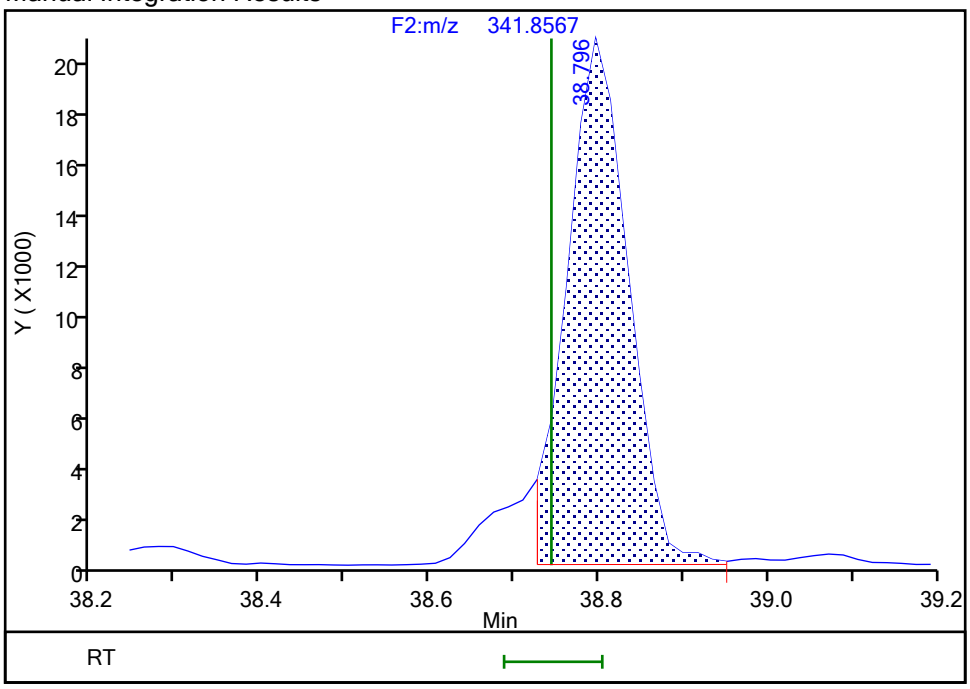
Processing Integration Results

RT: 38.80
Area: 115111
Amount: 8.480646
Amount Units: pg/ul



Manual Integration Results

RT: 38.80
Area: 103508
Amount: 7.675347
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:09:50

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

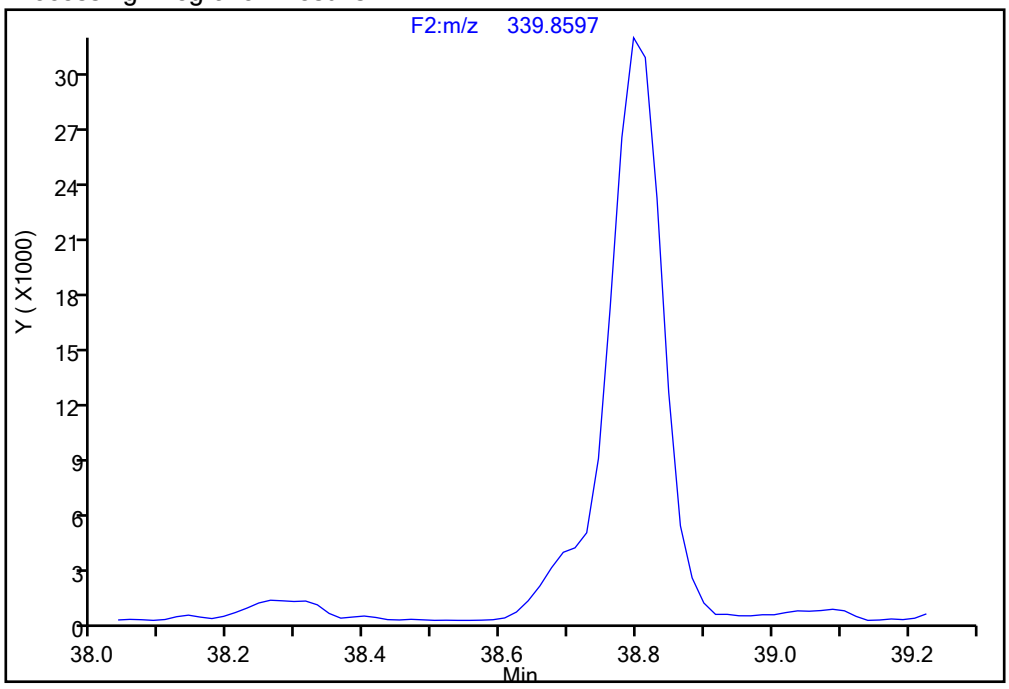
Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

Not Detected

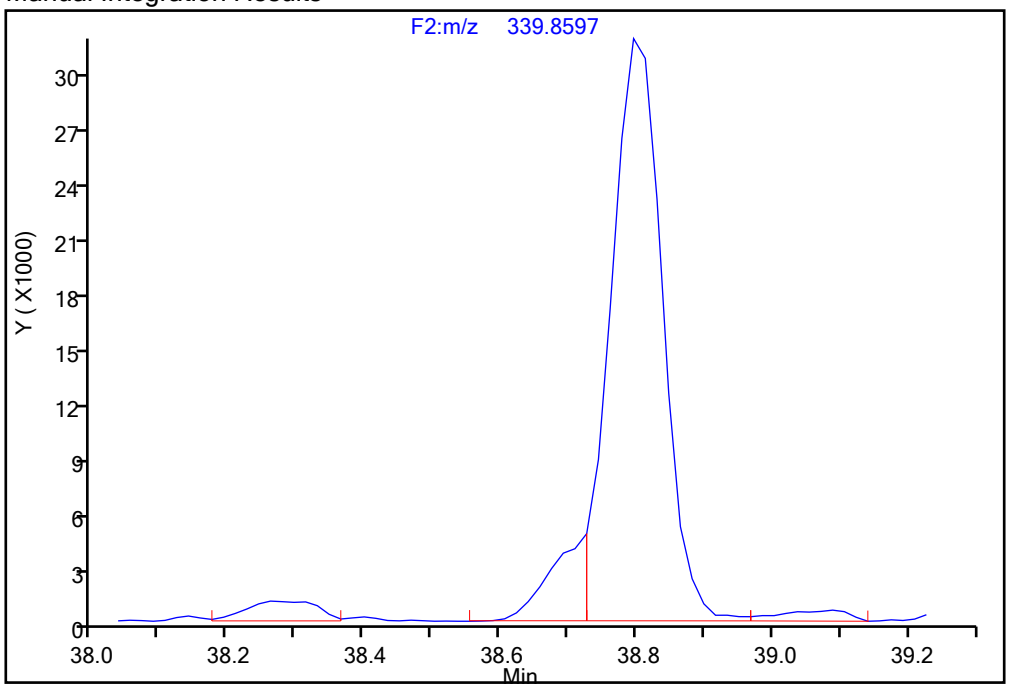
RT: 34.56- 41.38

Processing Integration Results



Manual Integration Results

RT = 38.727 Area = 16855 M



Reviewer: davidsonm, 18-Dec-2019 09:10:02

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

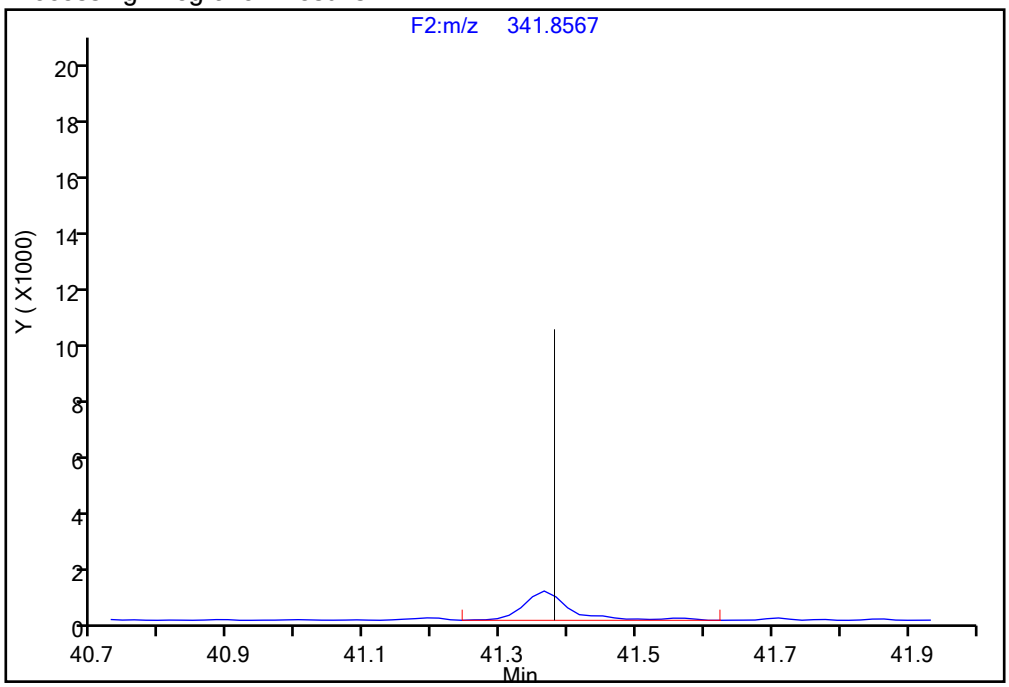
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.56- 41.38)

Signal: 2

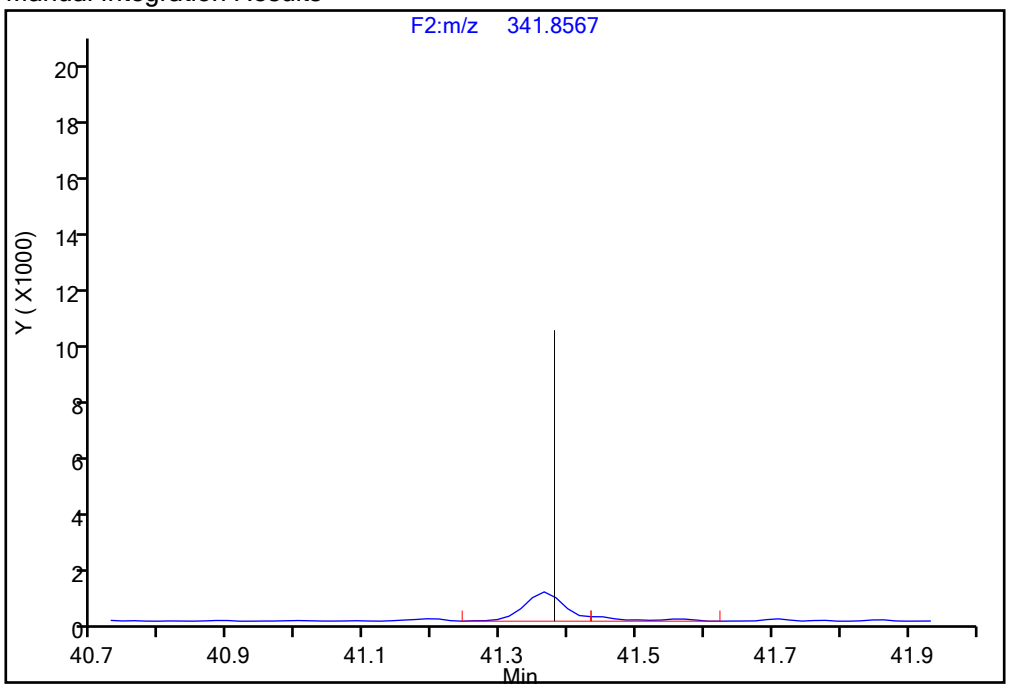
Processing Integration Results

RT = 41.364 Area = 4980



Manual Integration Results

RT = 41.364 Area = 4288 M



Reviewer: davidsonm, 18-Dec-2019 09:10:11

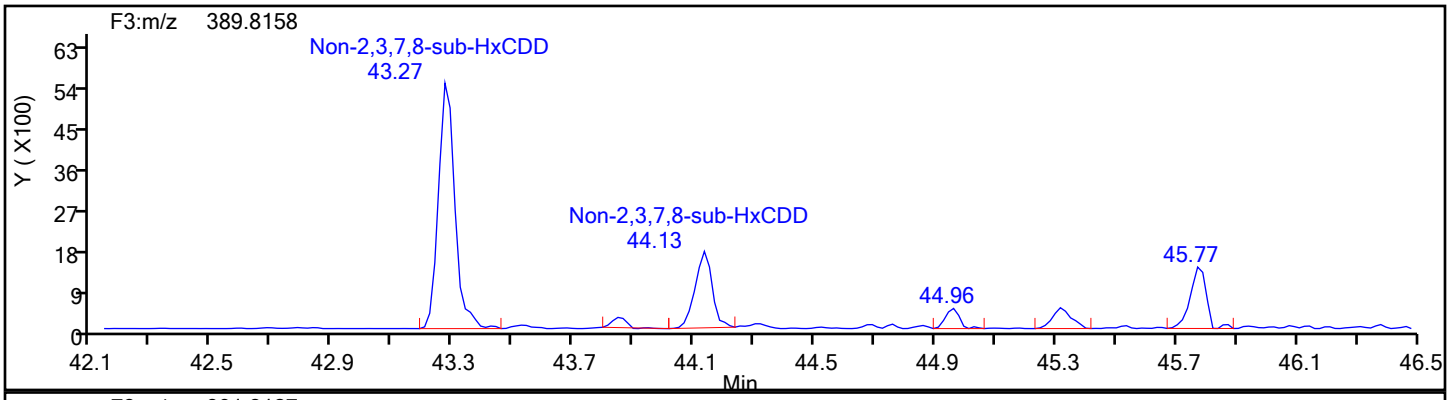
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

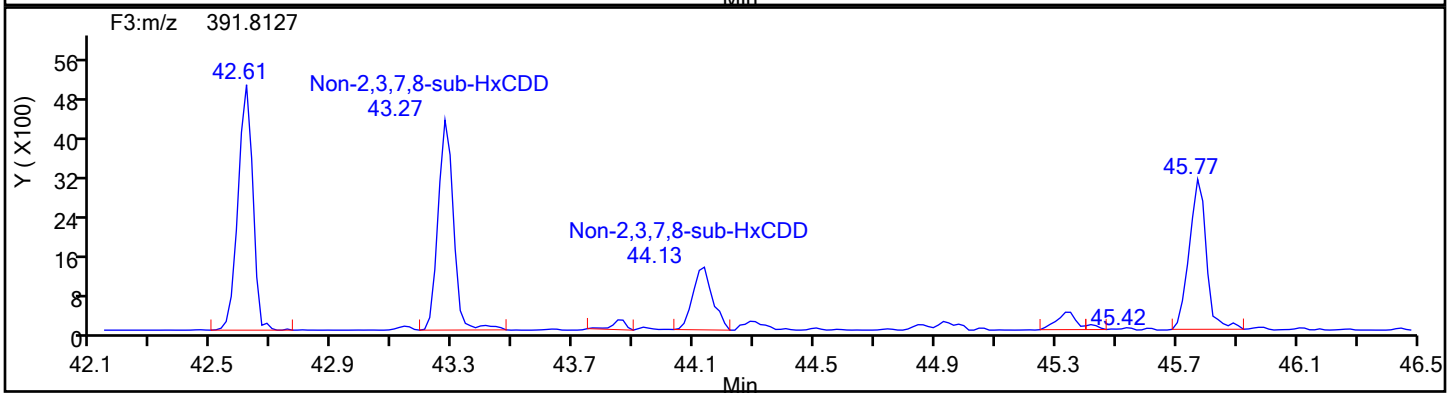
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

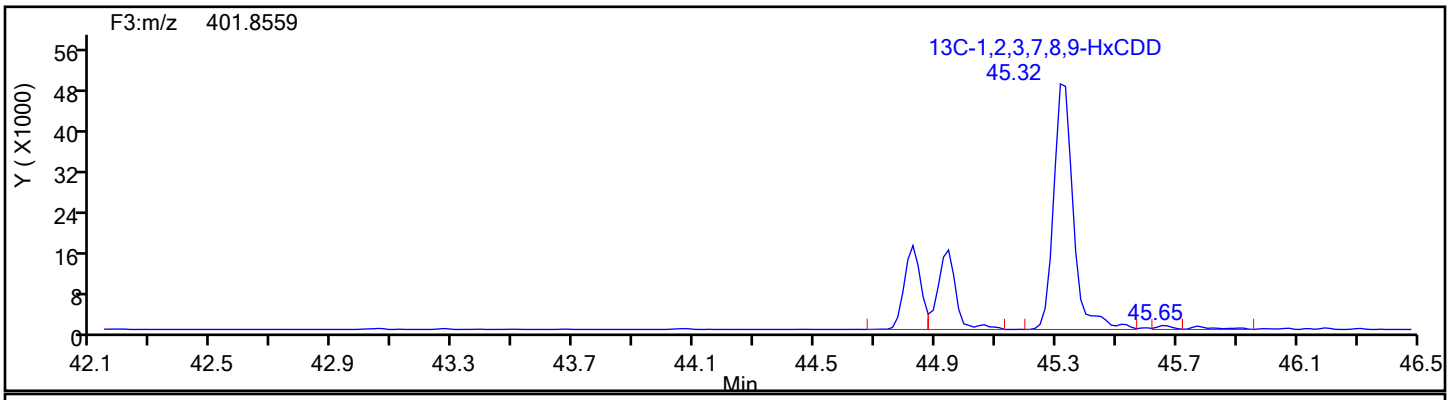
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

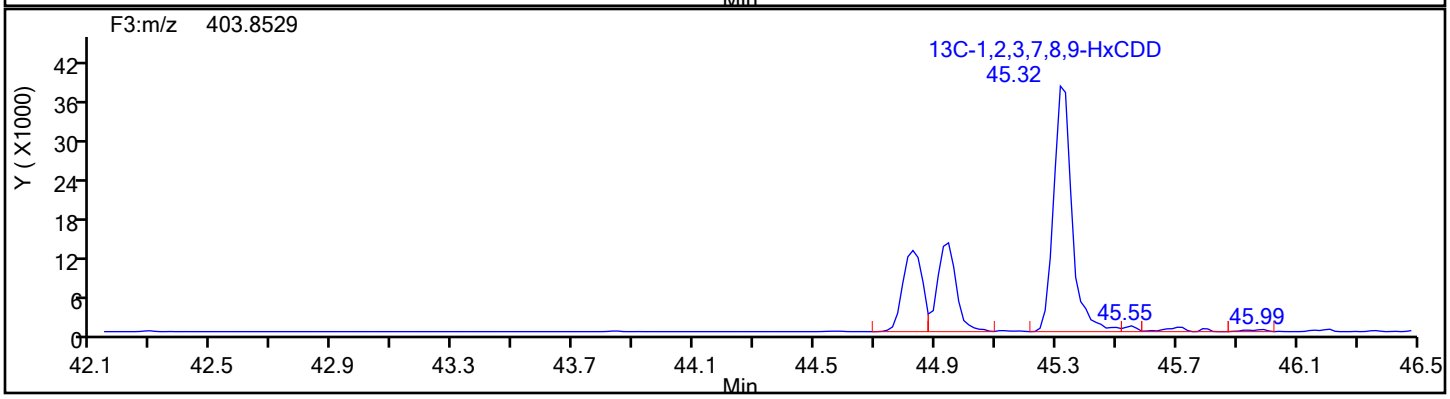
HxCDD





HxCDD Standards



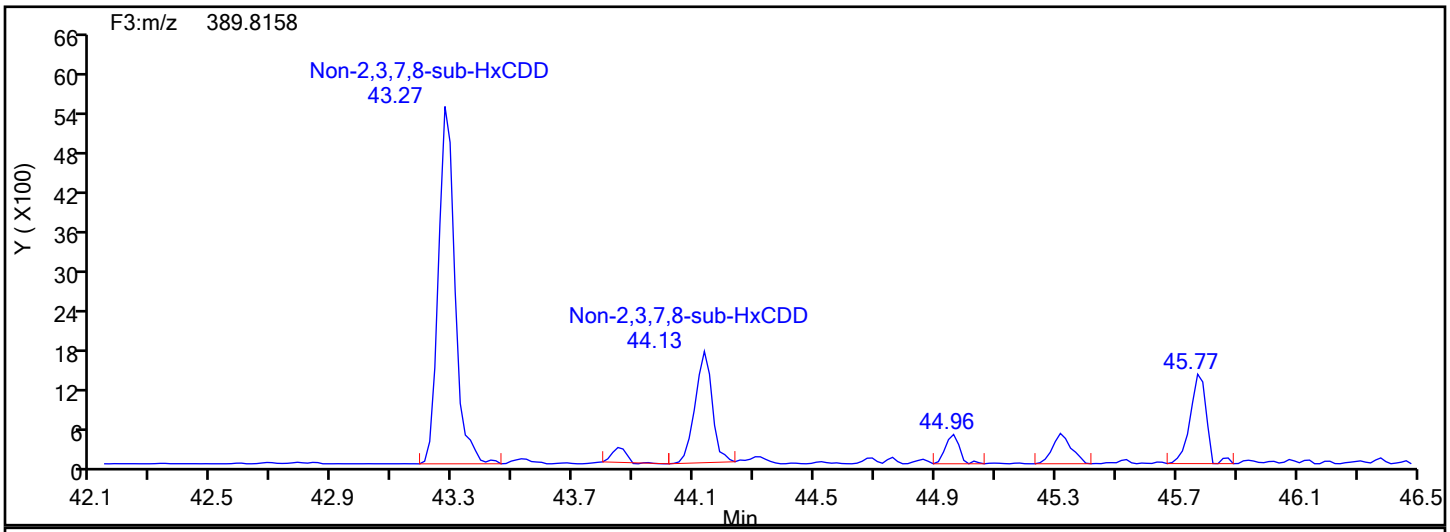


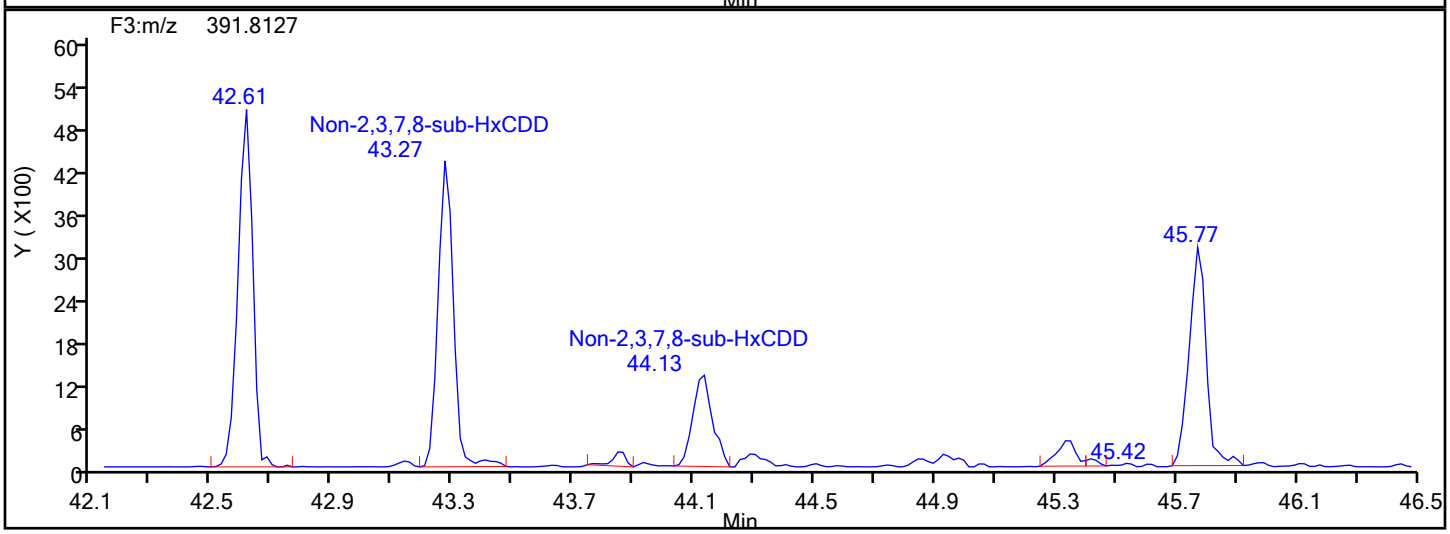
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

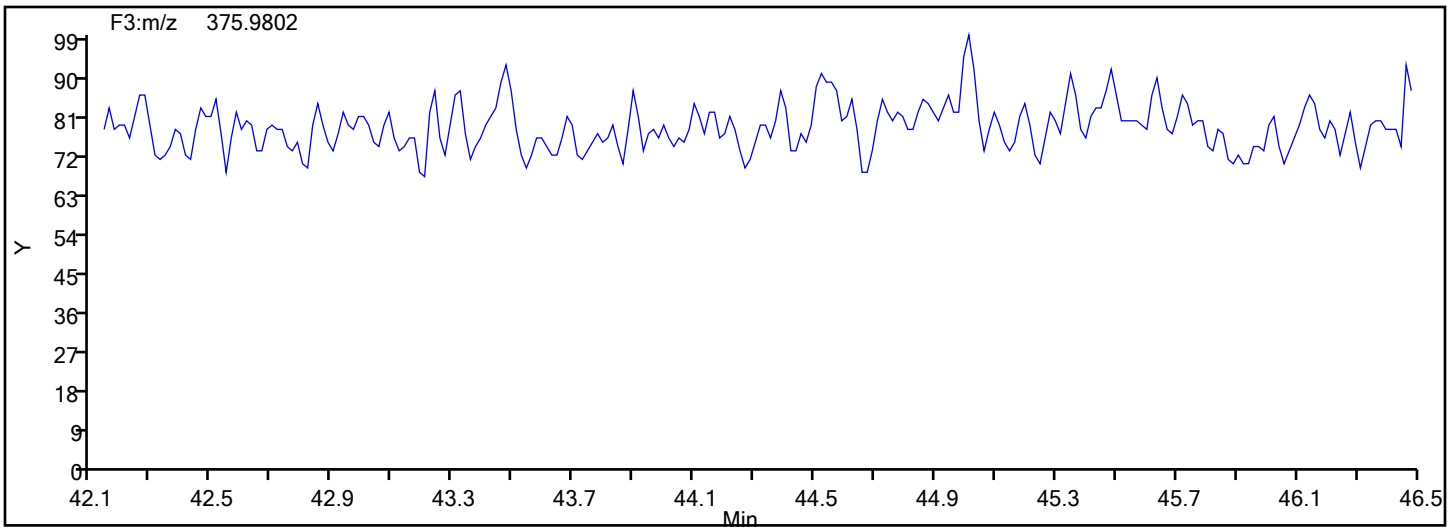
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

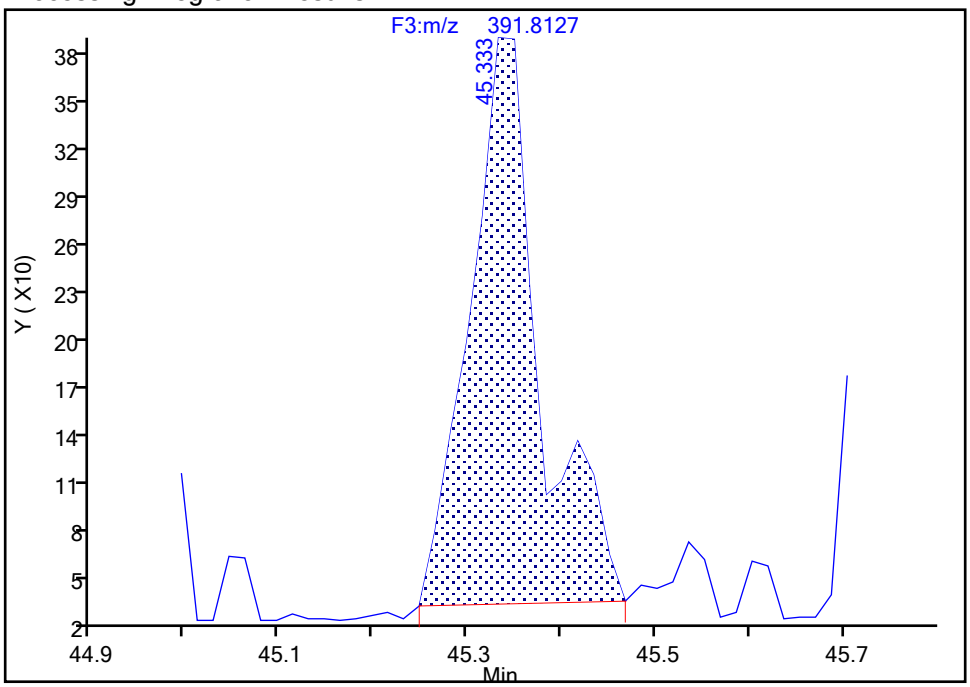
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

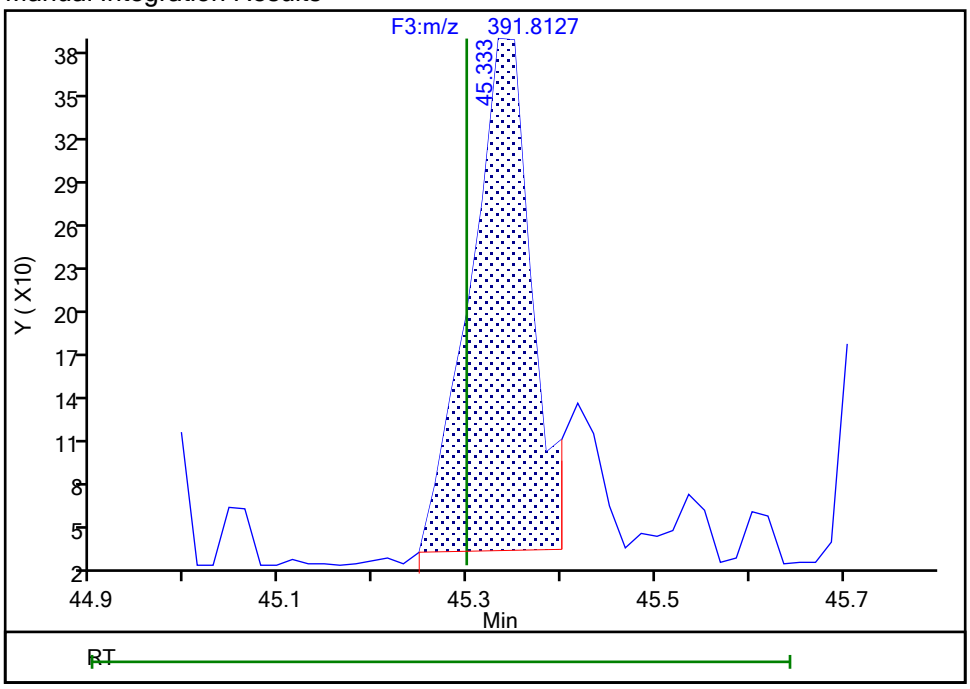
Processing Integration Results

RT: 45.33
Area: 1836
Amount: 0.127484
Amount Units: pg/ul



Manual Integration Results

RT: 45.33
Area: 1586
Amount: 0.119140
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:10:42

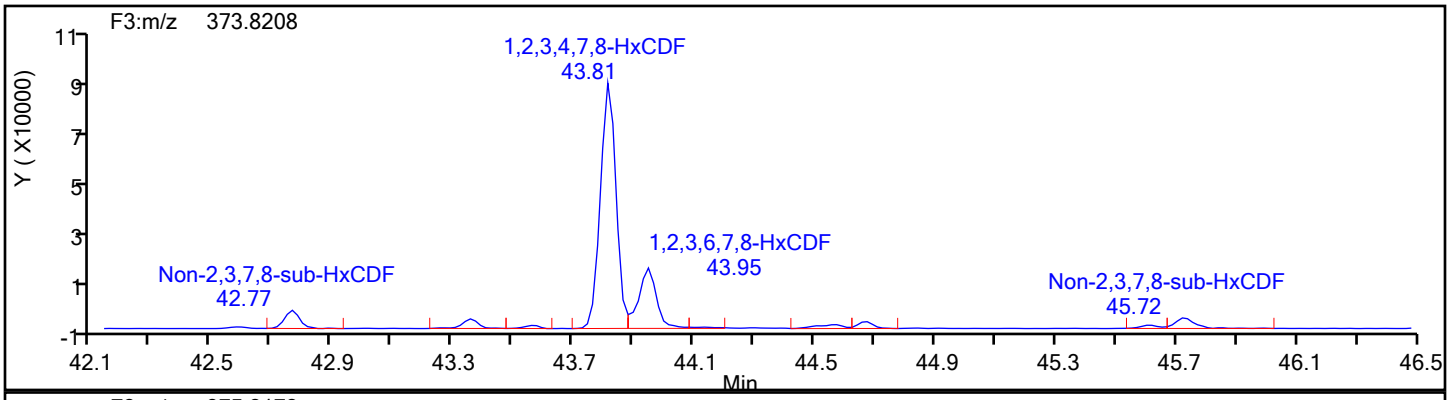
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

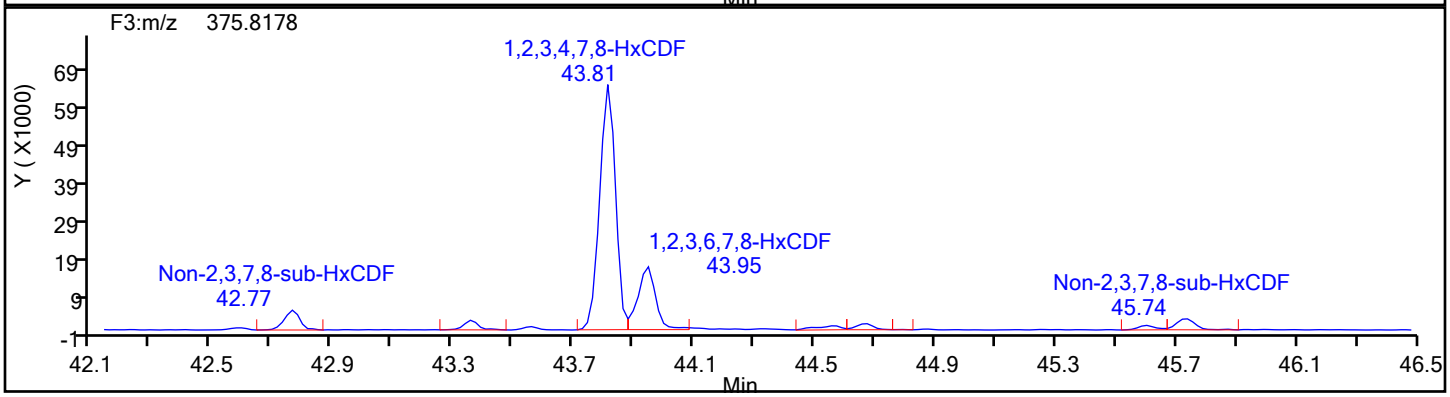
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

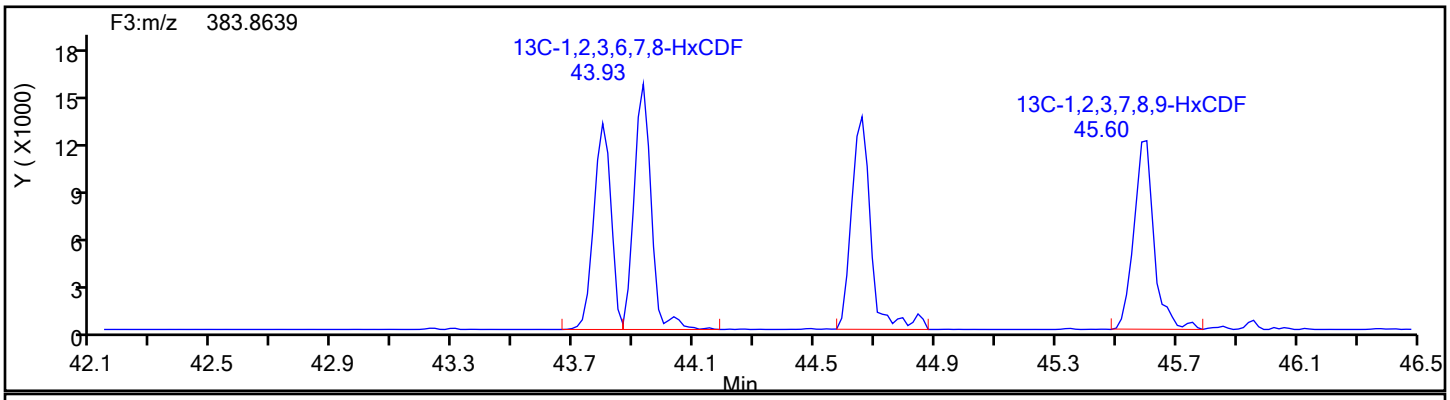
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

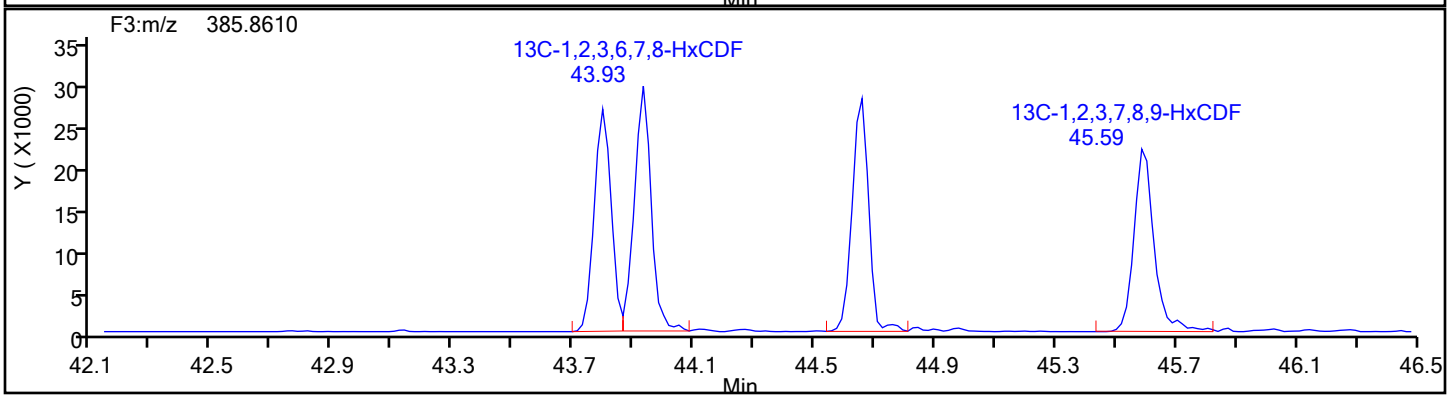
HxCDF





HxCDF Standards



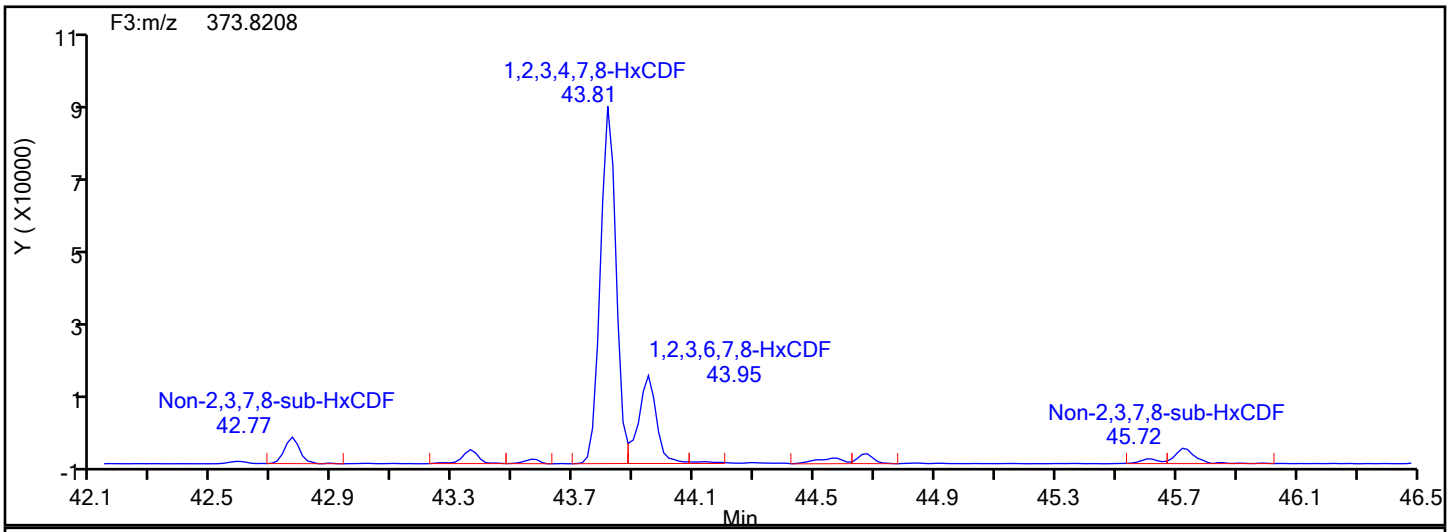


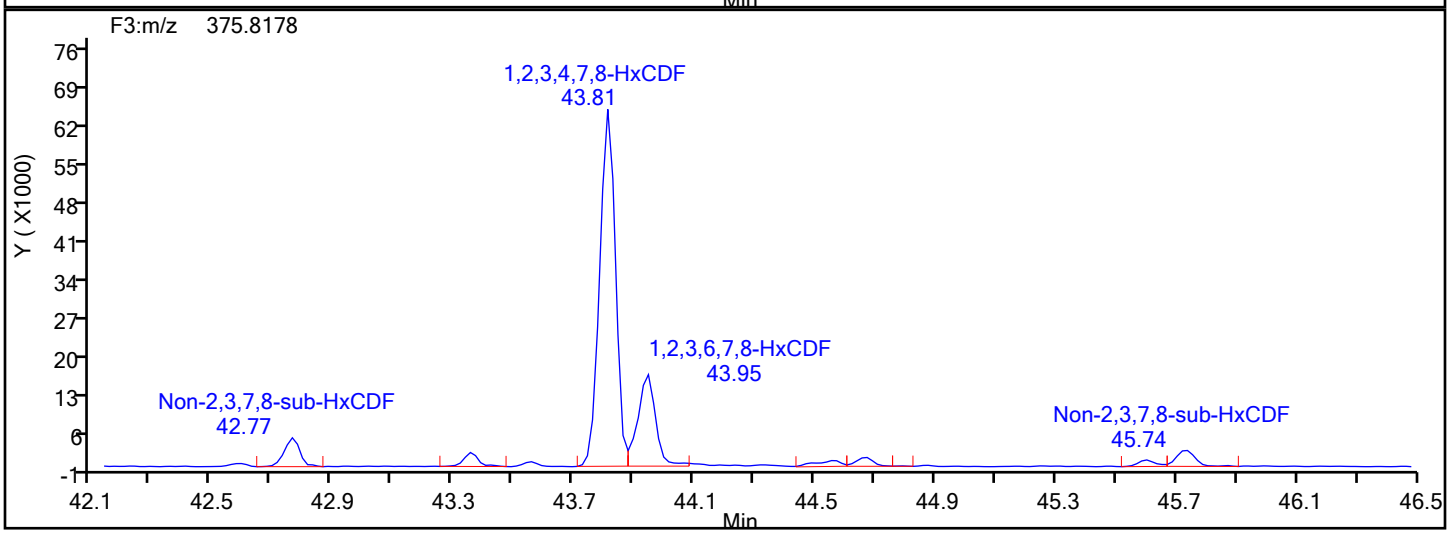
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

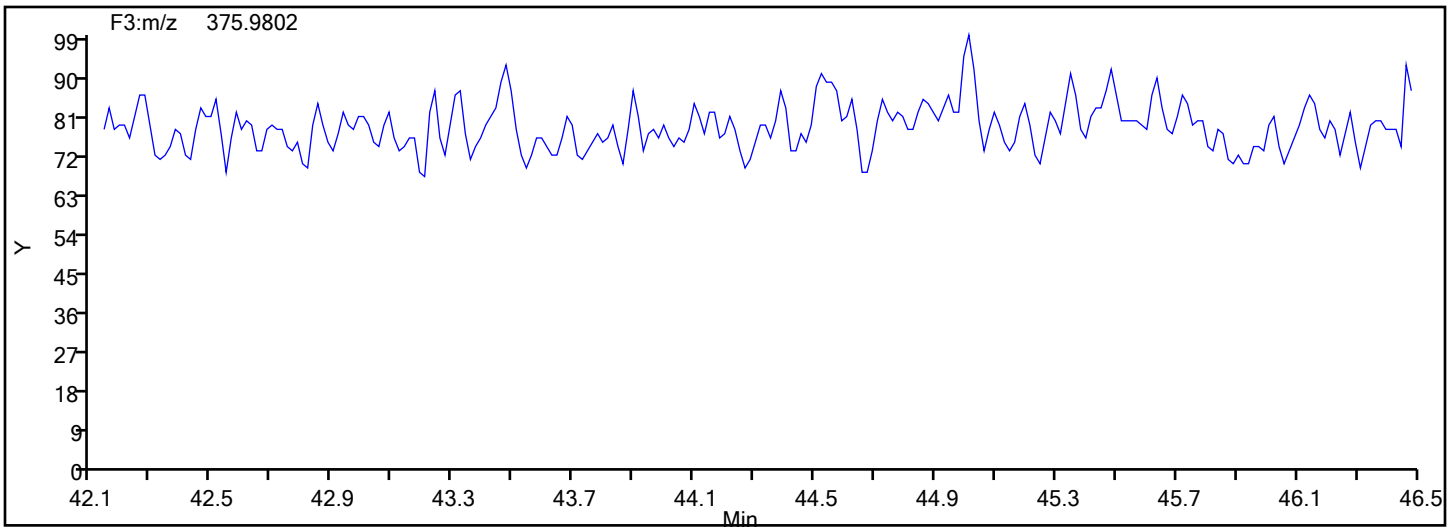
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

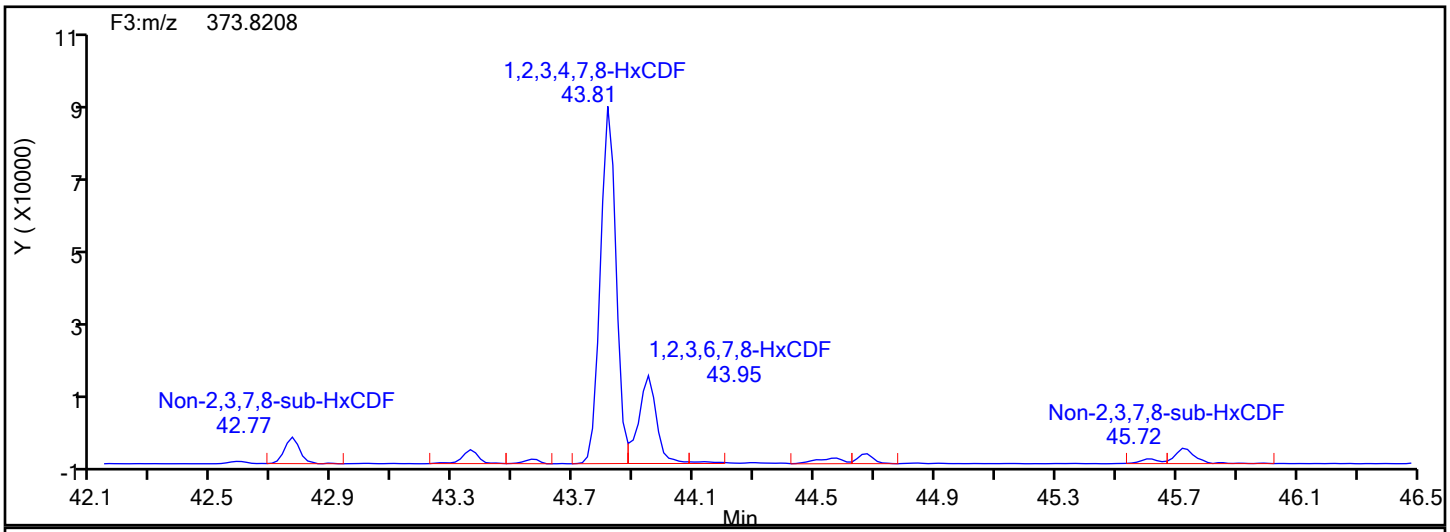


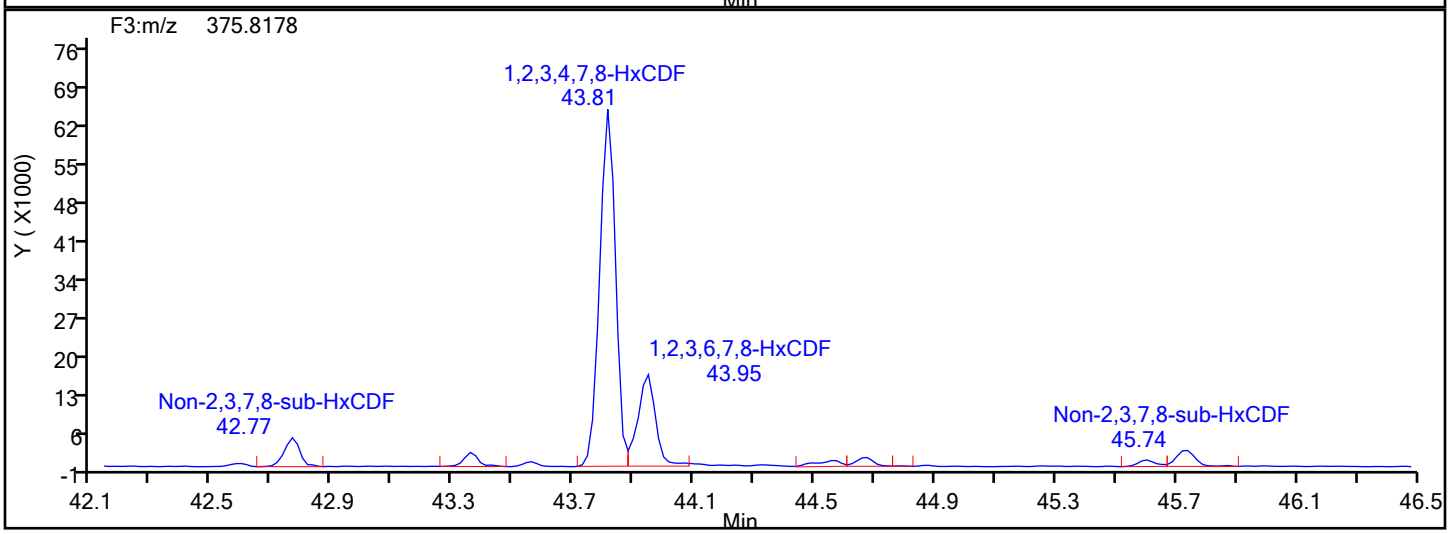
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

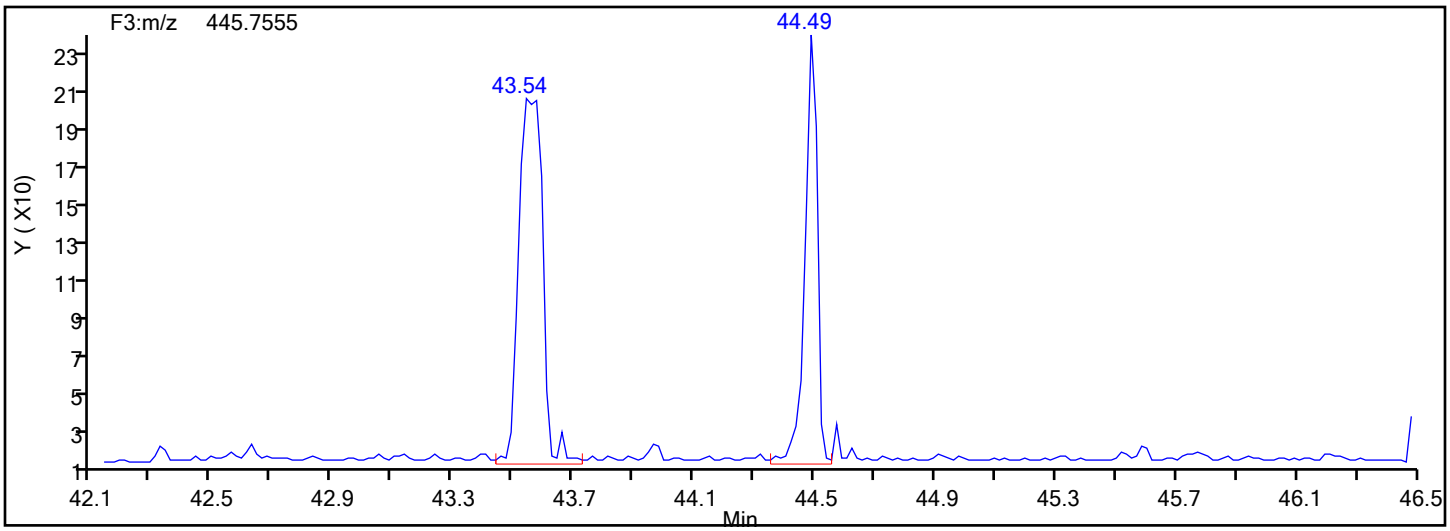
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

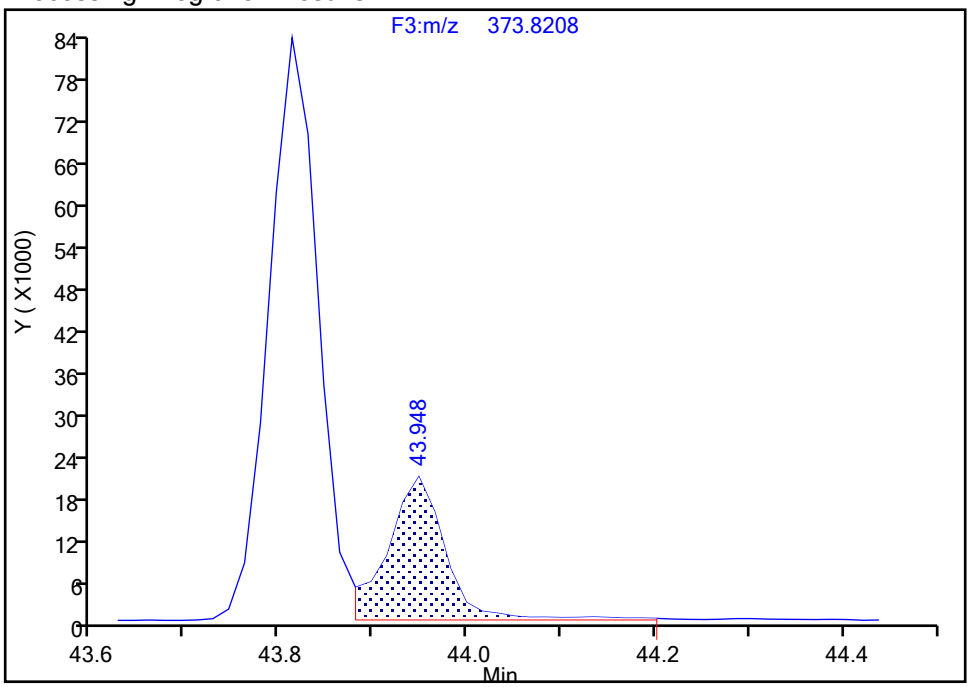
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

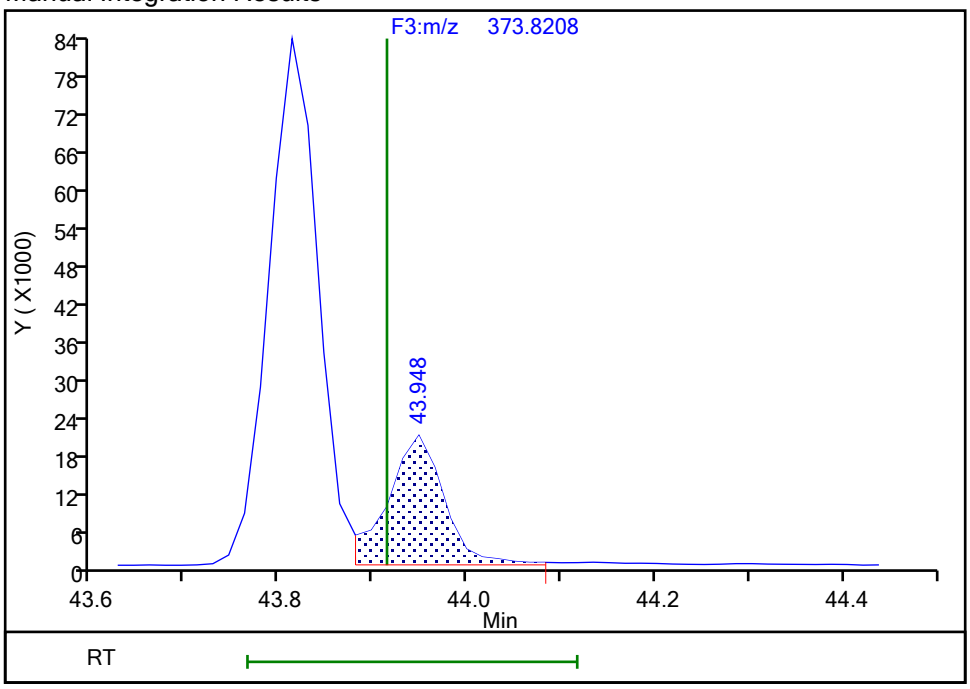
Processing Integration Results

RT: 43.95
Area: 86509
Amount: 3.444205
Amount Units: pg/ul



Manual Integration Results

RT: 43.95
Area: 84194
Amount: 3.392447
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:10:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

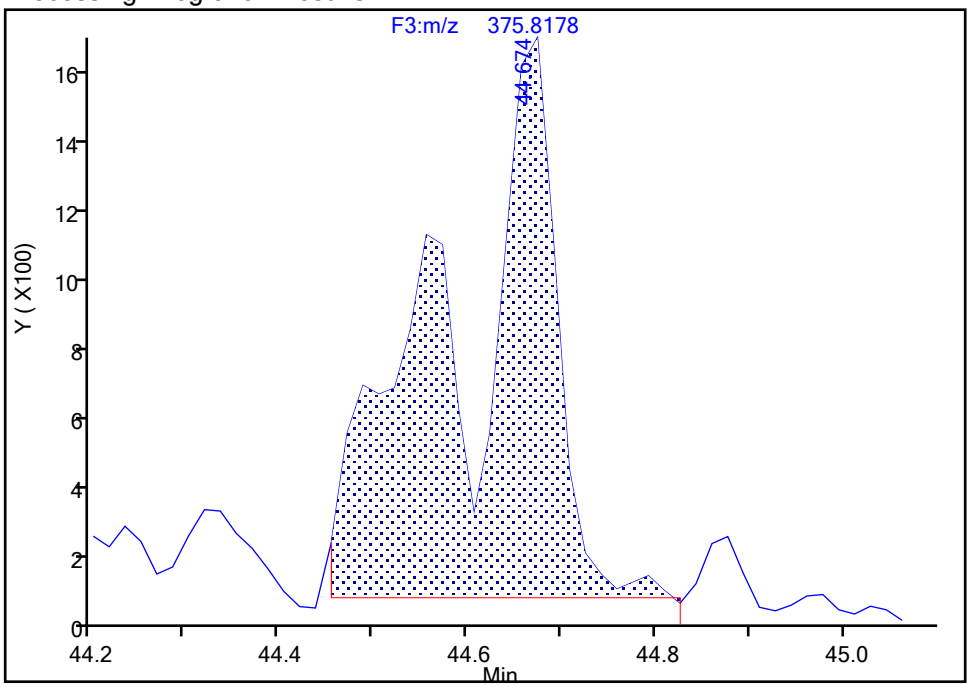
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

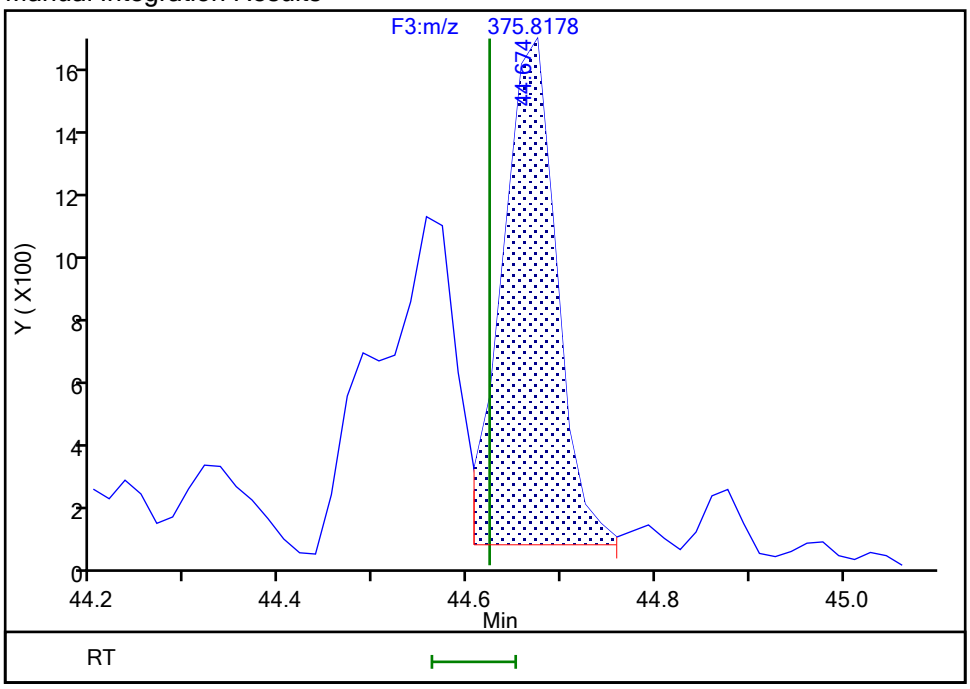
Processing Integration Results

RT: 44.67
Area: 12275
Amount: 0.481401
Amount Units: pg/ul



Manual Integration Results

RT: 44.67
Area: 6319
Amount: 0.341174
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:11:12

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

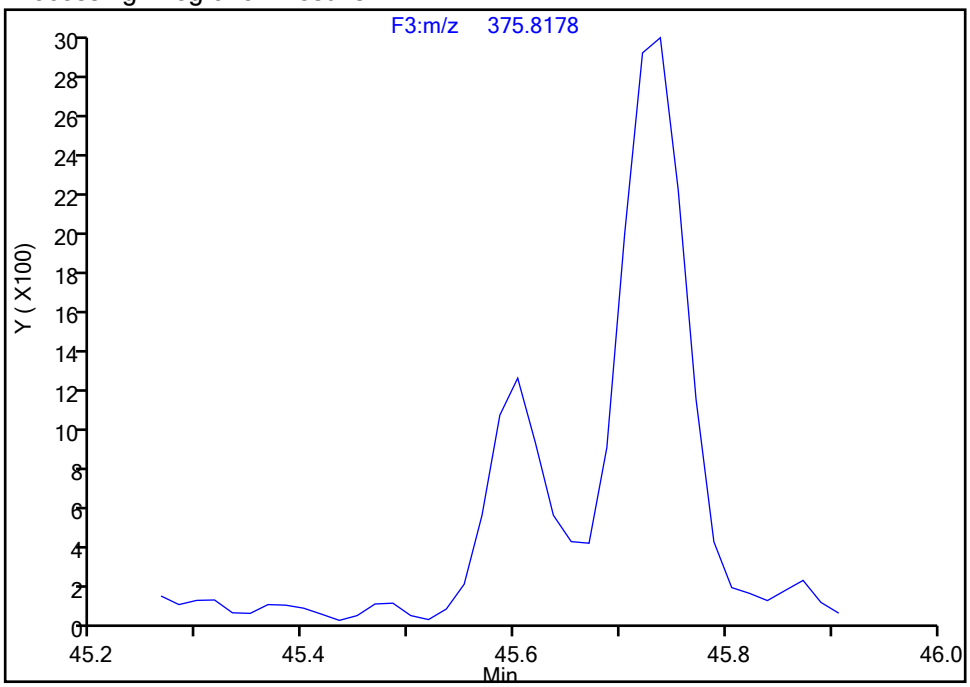
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

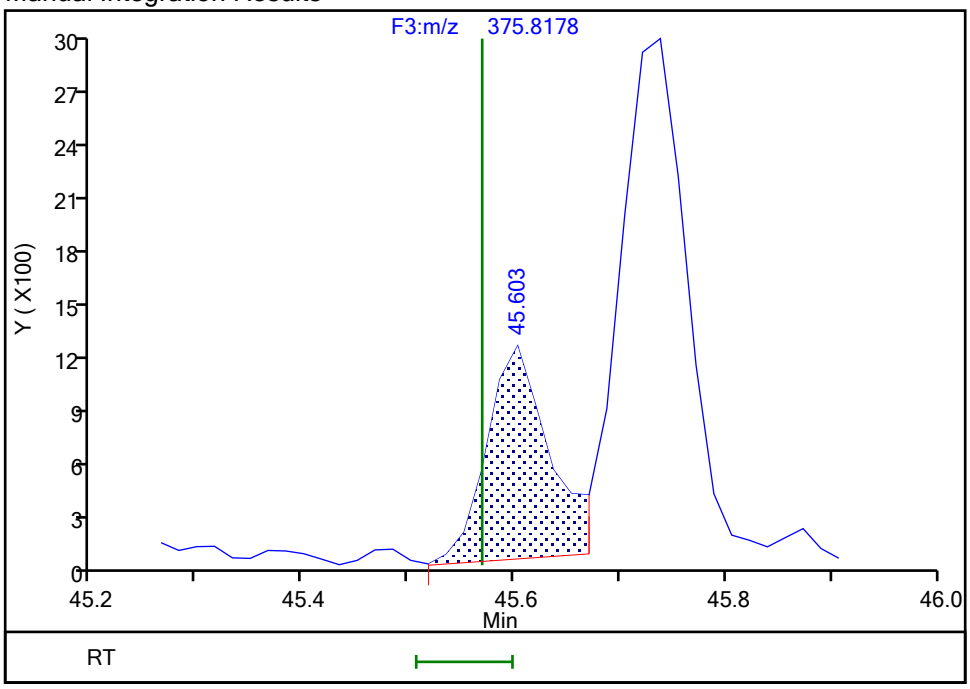
Not Detected
Expected RT: 45.57

Processing Integration Results



Manual Integration Results

RT: 45.60
Area: 4809
Amount: 0.242929
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:11:41
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

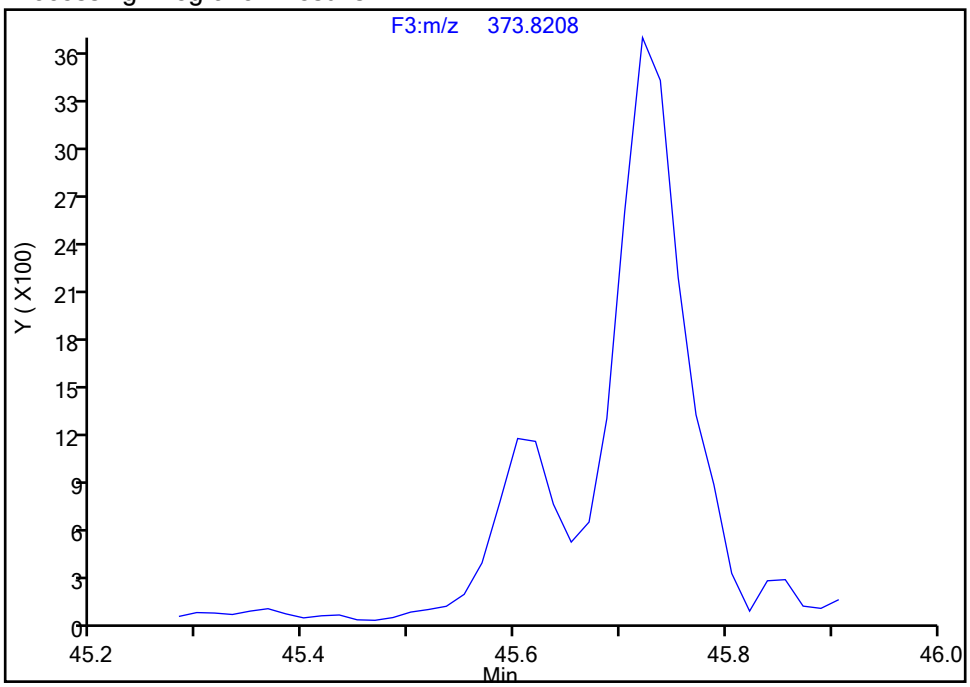
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

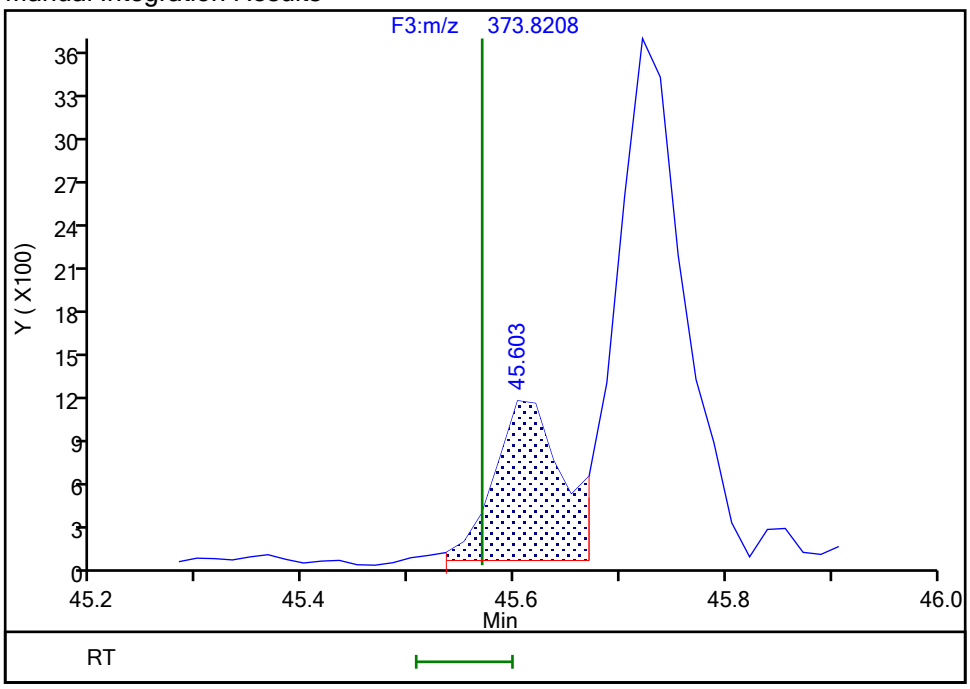
Not Detected
Expected RT: 45.57

Processing Integration Results



Manual Integration Results

RT: 45.60
Area: 4845
Amount: 0.242929
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:13:07
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Eurofins TestAmerica, Knoxville

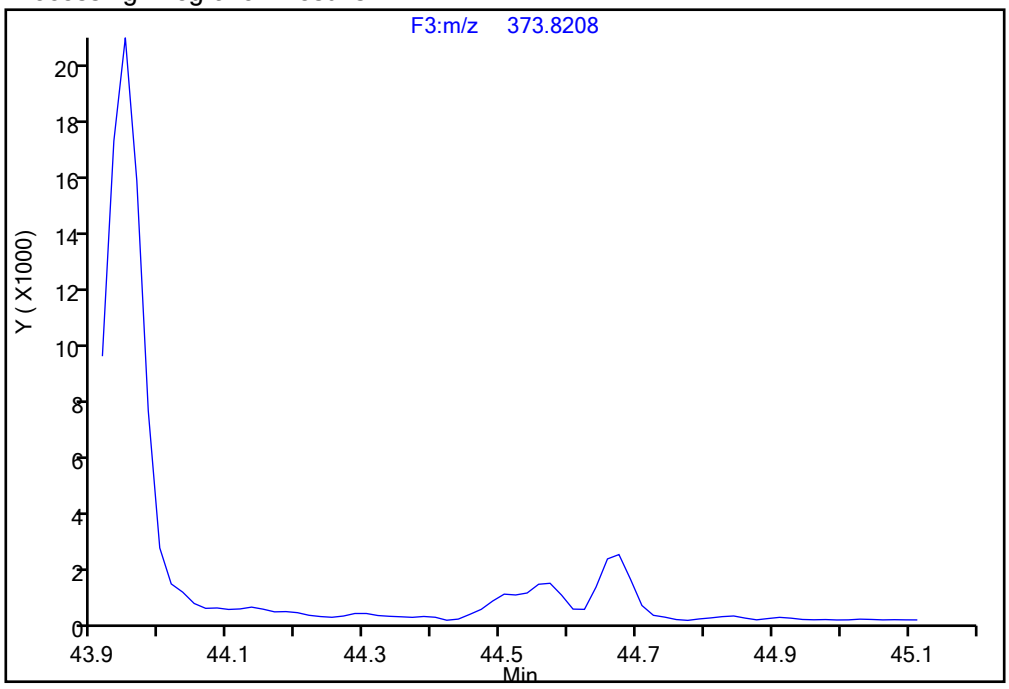
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

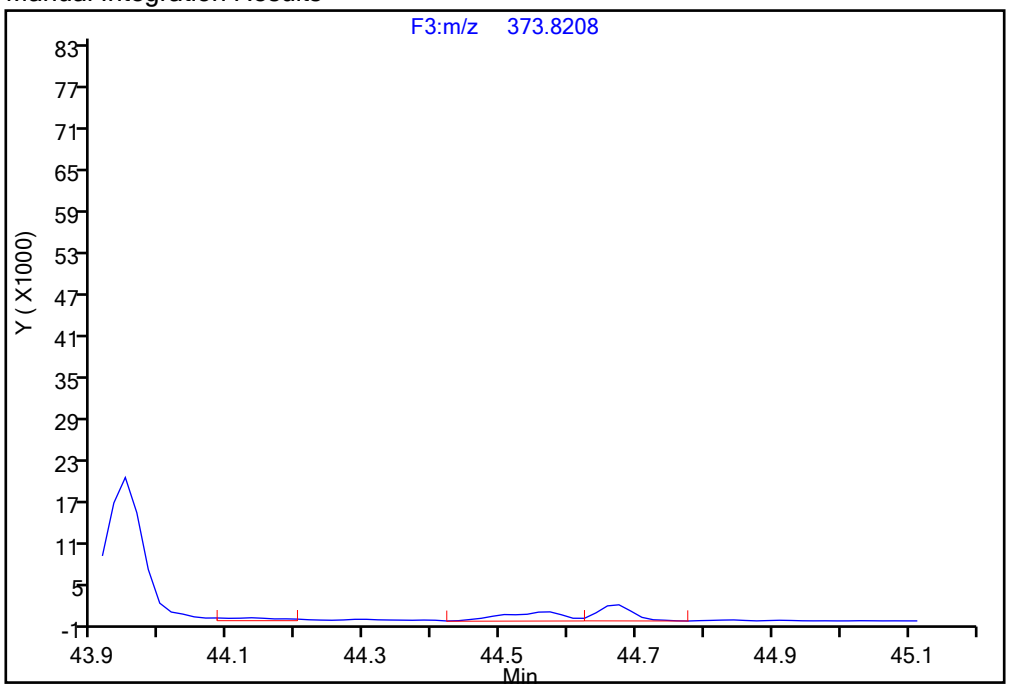
Not Detected
RT: 42.50- 45.75

Processing Integration Results



Manual Integration Results

RT = 44.573 Area = 8438 M



Reviewer: davidsonm, 18-Dec-2019 09:12:47
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

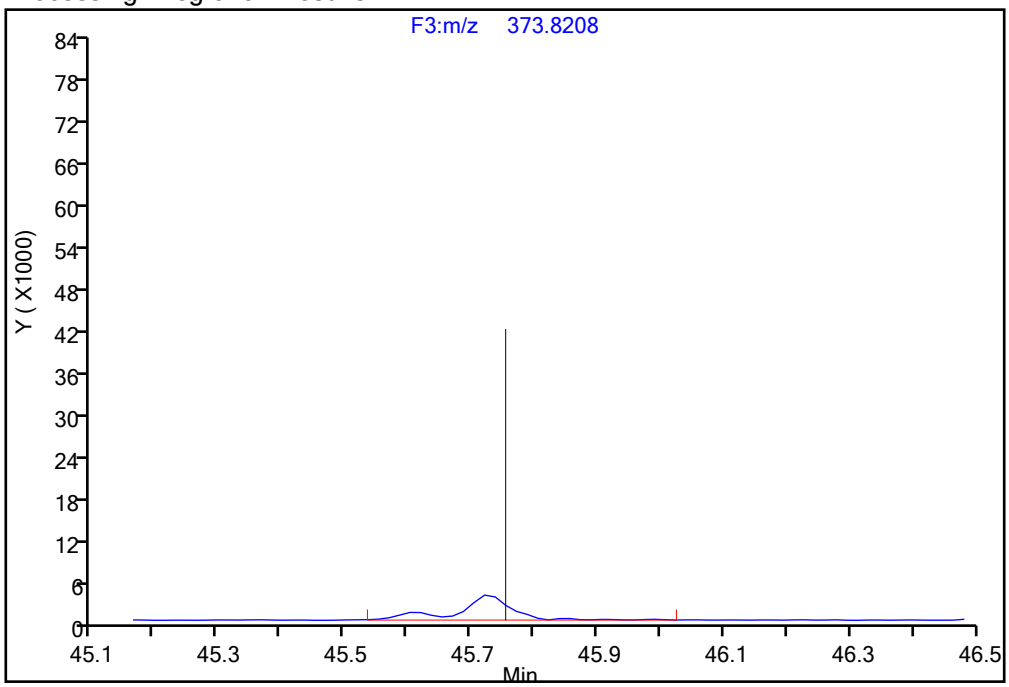
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

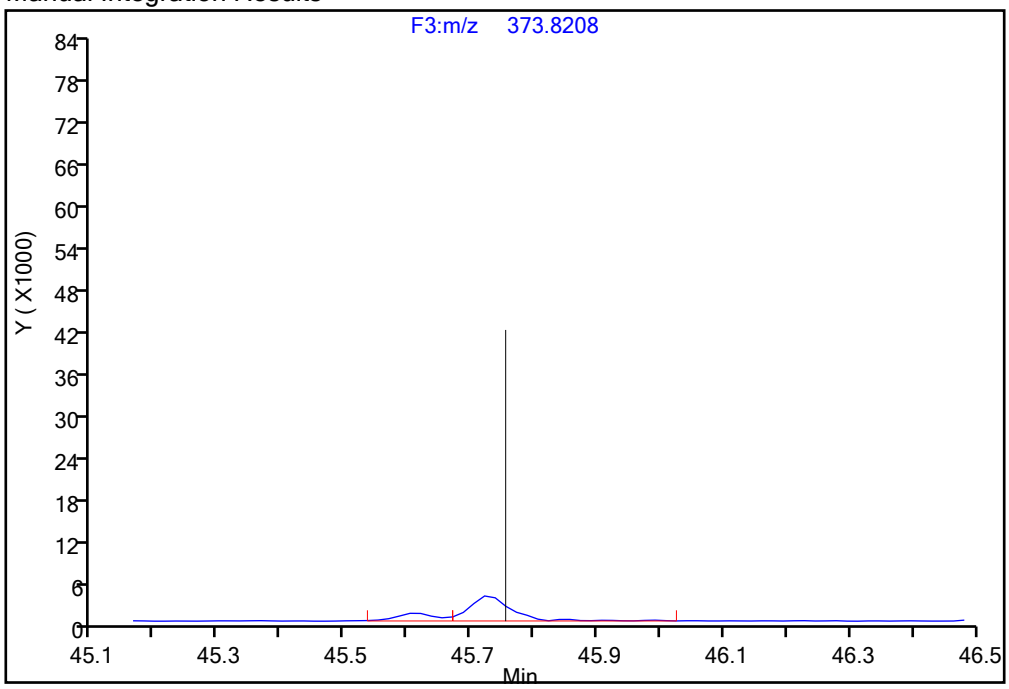
Processing Integration Results

RT = 45.721 Area = 21373



Manual Integration Results

RT = 45.721 Area = 16527 M



Reviewer: davidsonm, 18-Dec-2019 09:12:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d

Injection Date: 18-Dec-2019 08:03:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

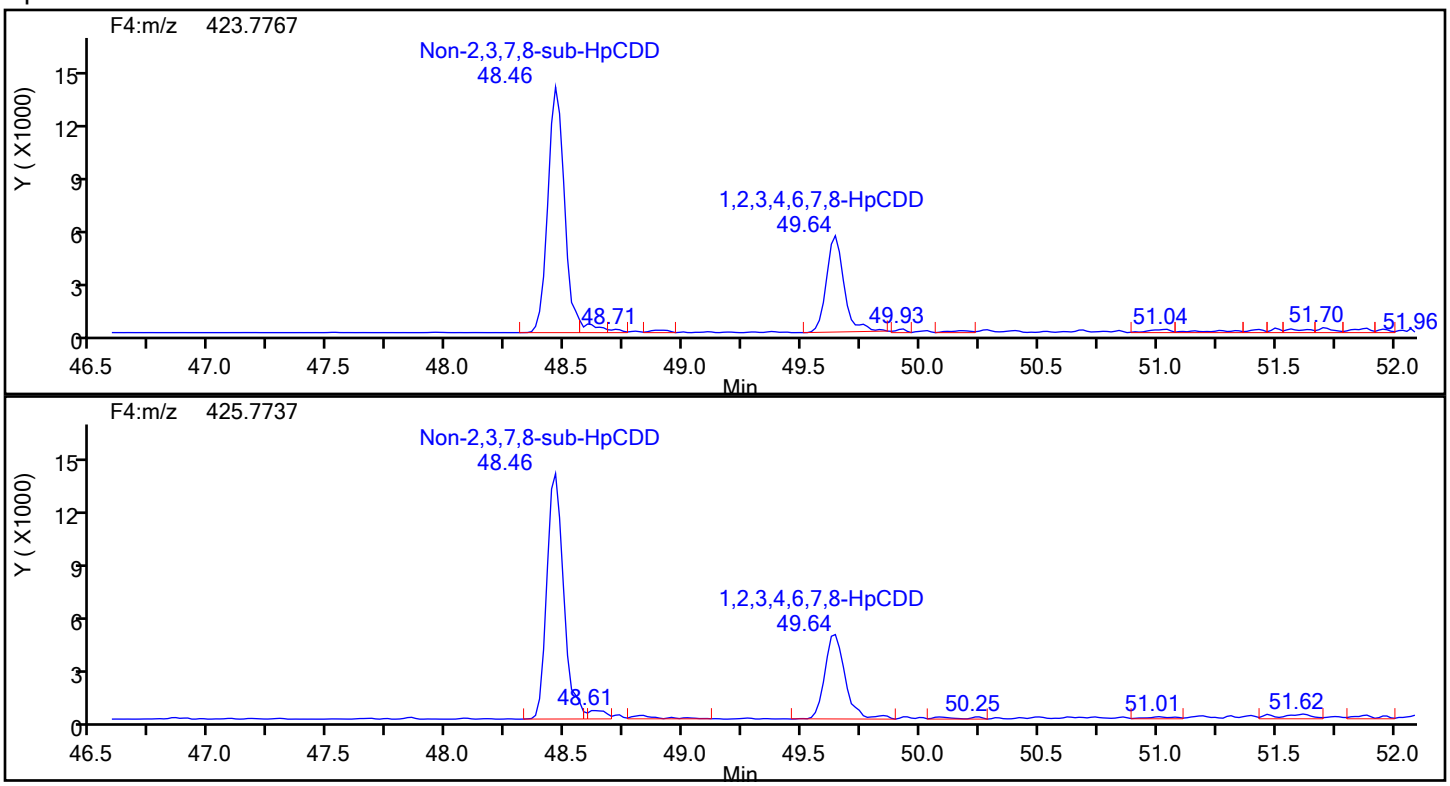
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

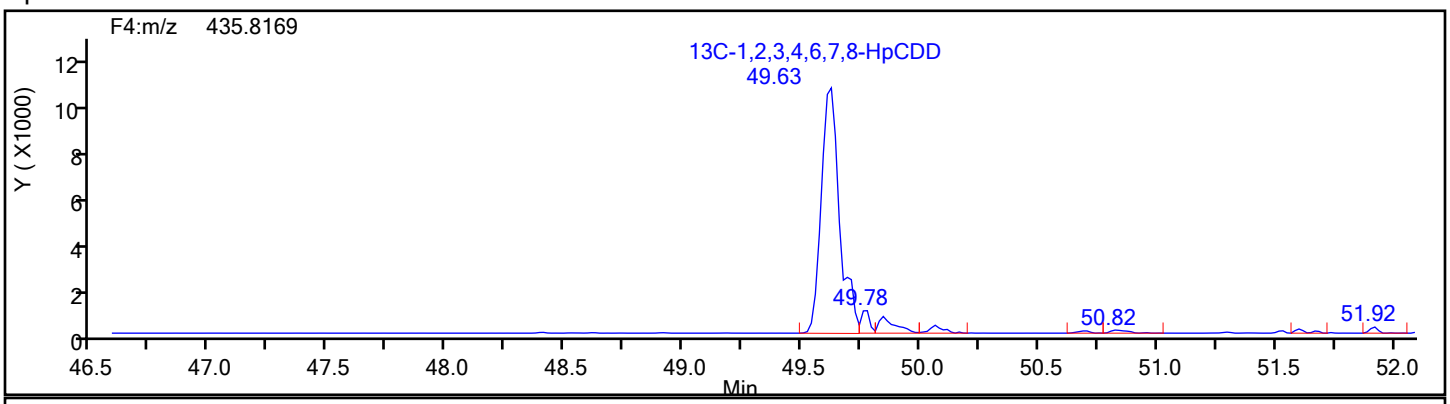
Worklist#: 36166 Sample Line#: 12

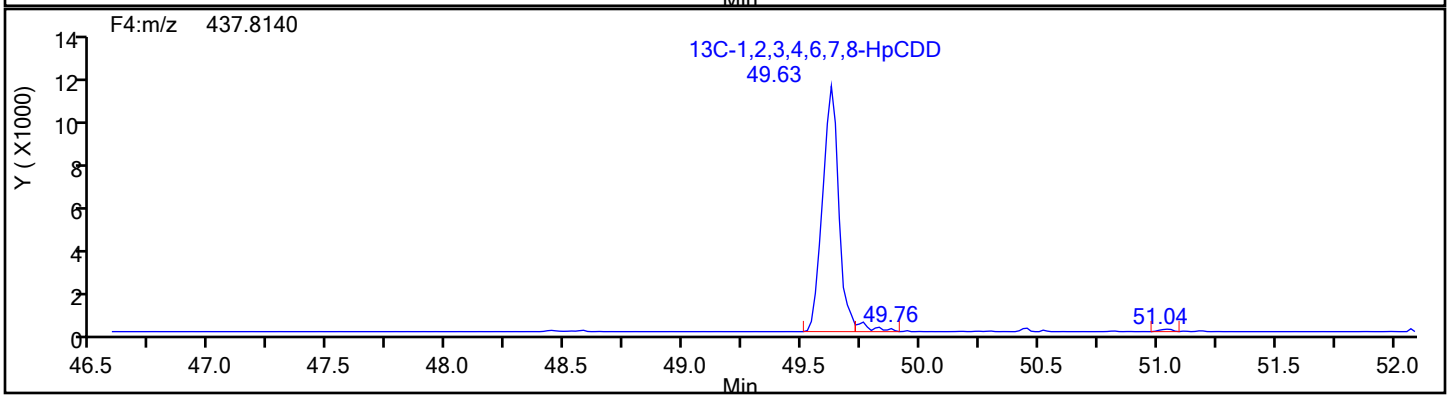
Column Type: Column Dia:

HpCDD



HpCDD Standards



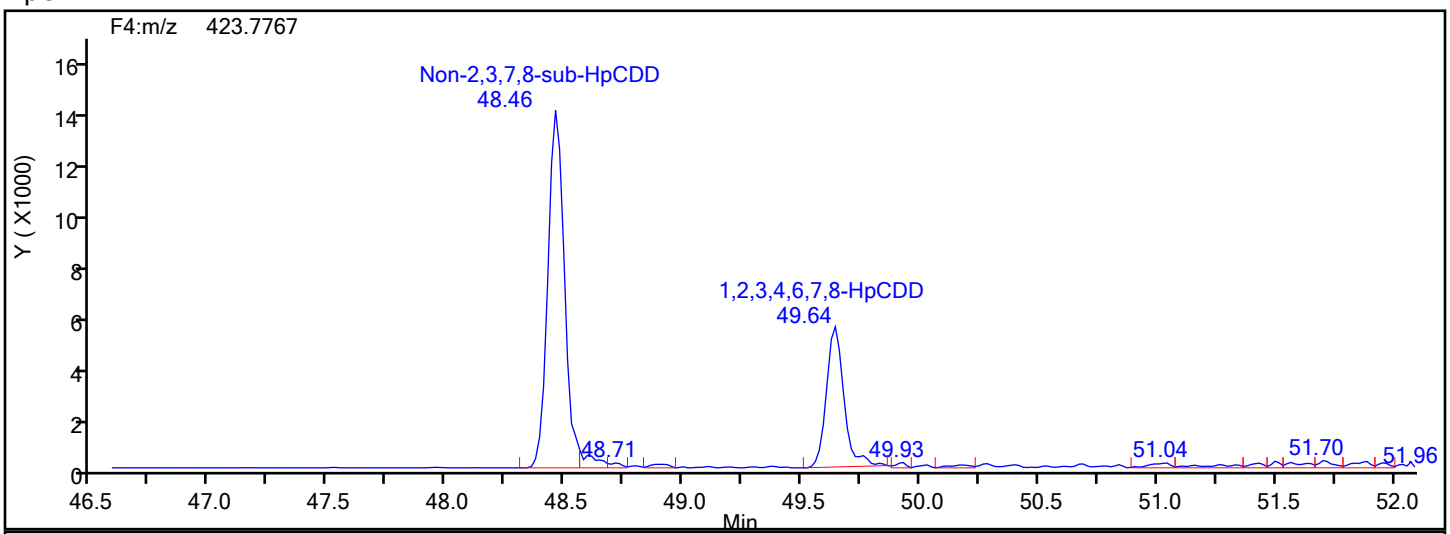


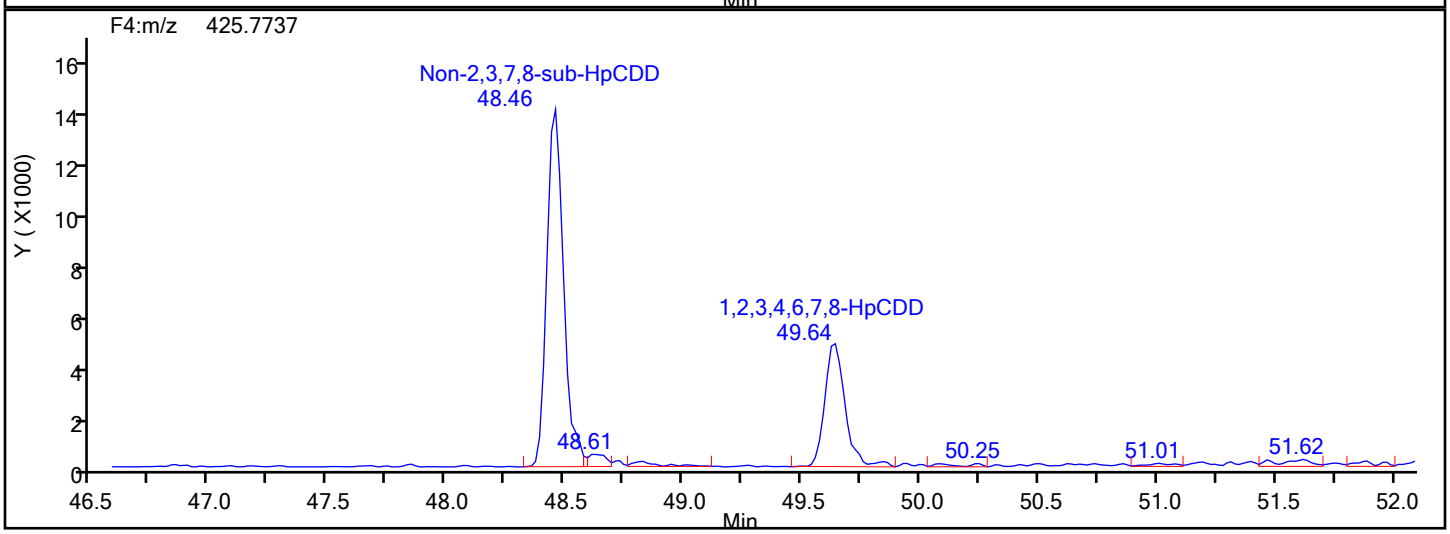
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

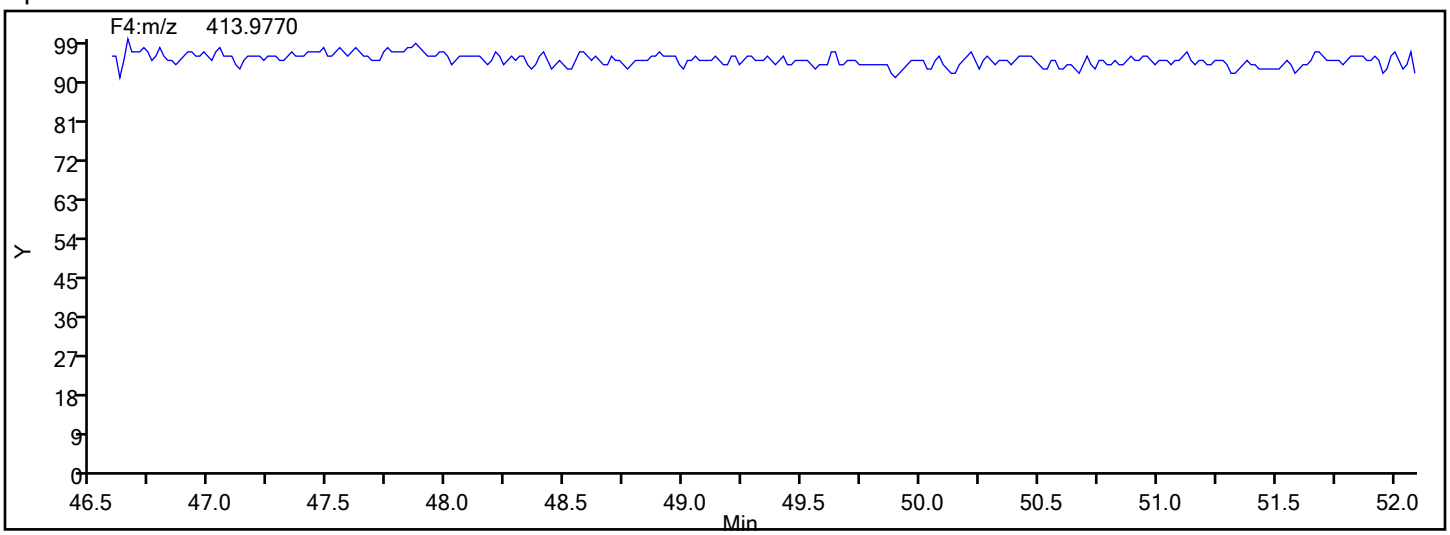
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Eurofins TestAmerica, Knoxville

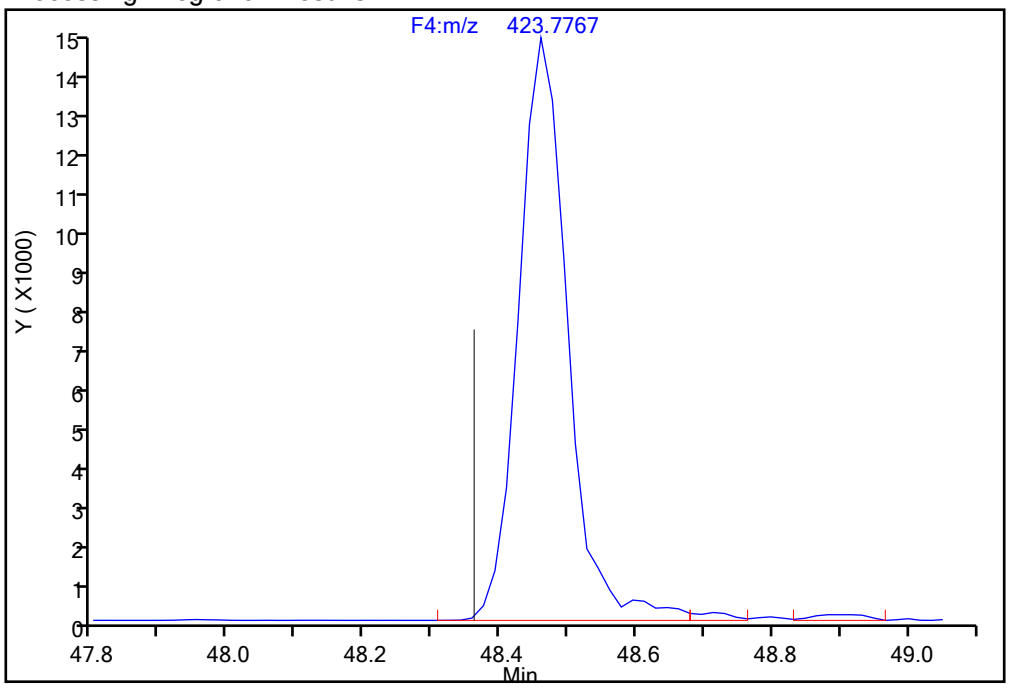
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7767, RT: (48.36- 49.64)

Signal: 1

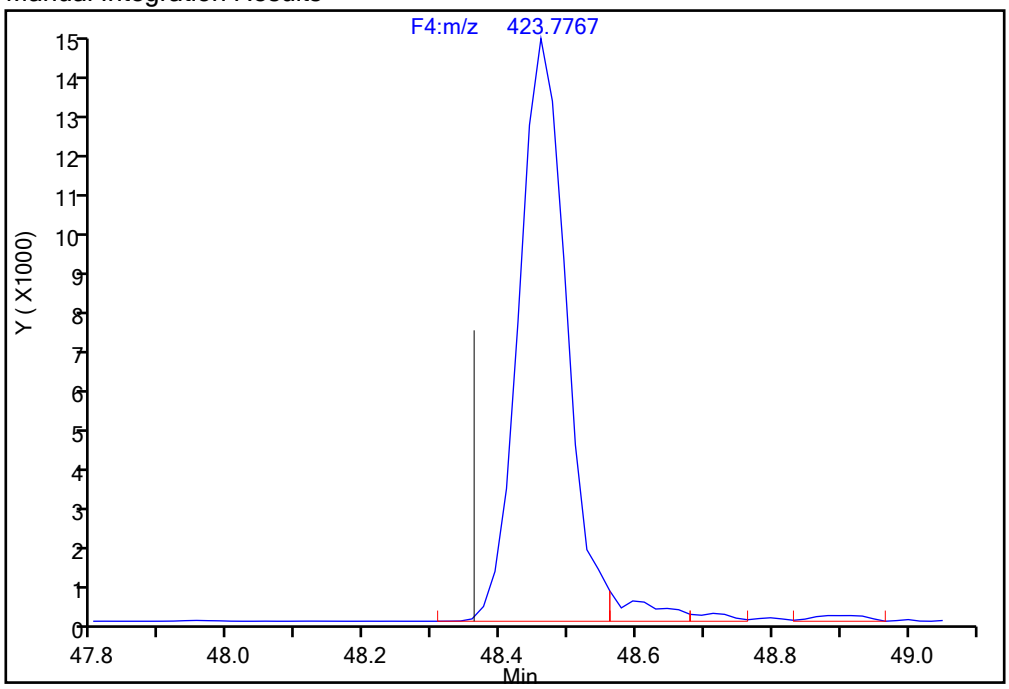
Processing Integration Results

RT = 48.460 Area = 70701



Manual Integration Results

RT = 48.460 Area = 68055 M



Reviewer: davidsonm, 18-Dec-2019 09:13:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

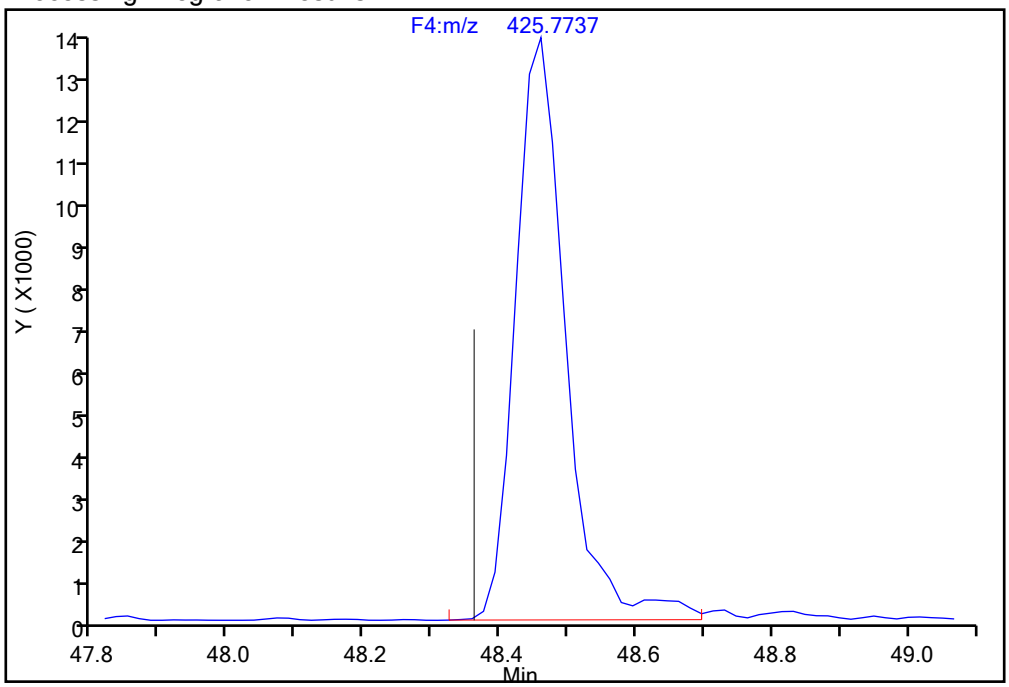
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (48.36- 49.64)

Signal: 2

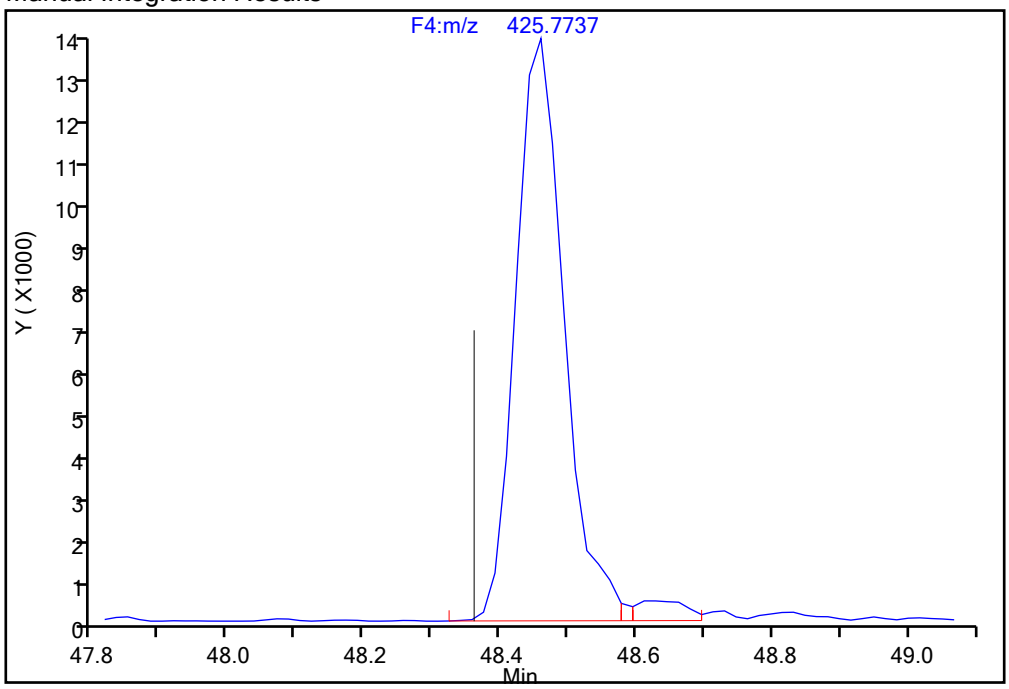
Processing Integration Results

RT = 48.460 Area = 69709



Manual Integration Results

RT = 48.460 Area = 67019 M



Reviewer: davidsonm, 18-Dec-2019 09:13:36

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

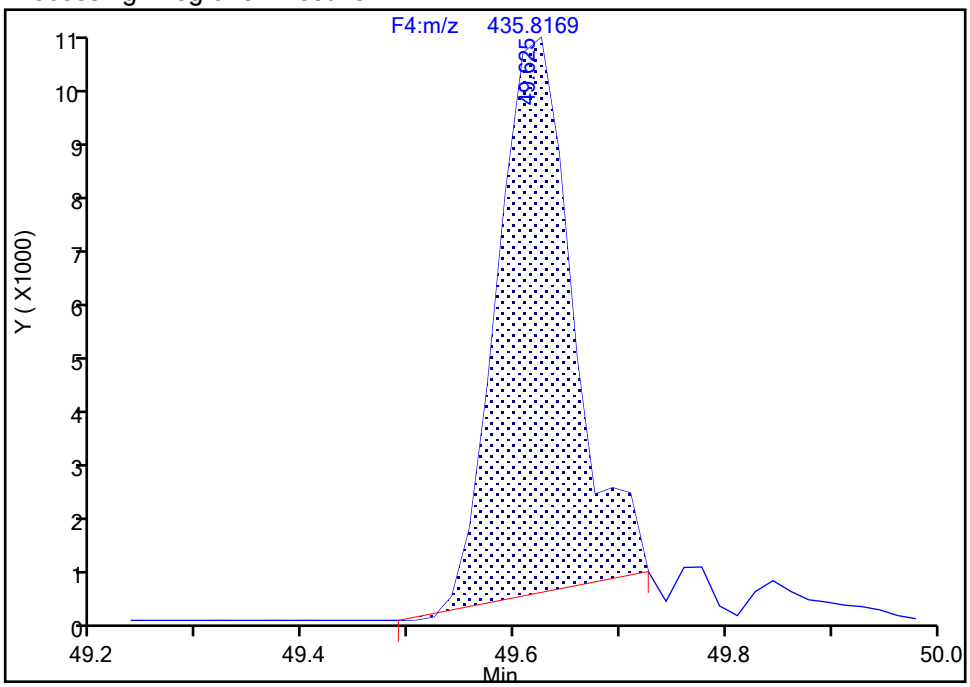
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,6,7,8-HpCDD, CAS: 109719-83-7

Signal: 1

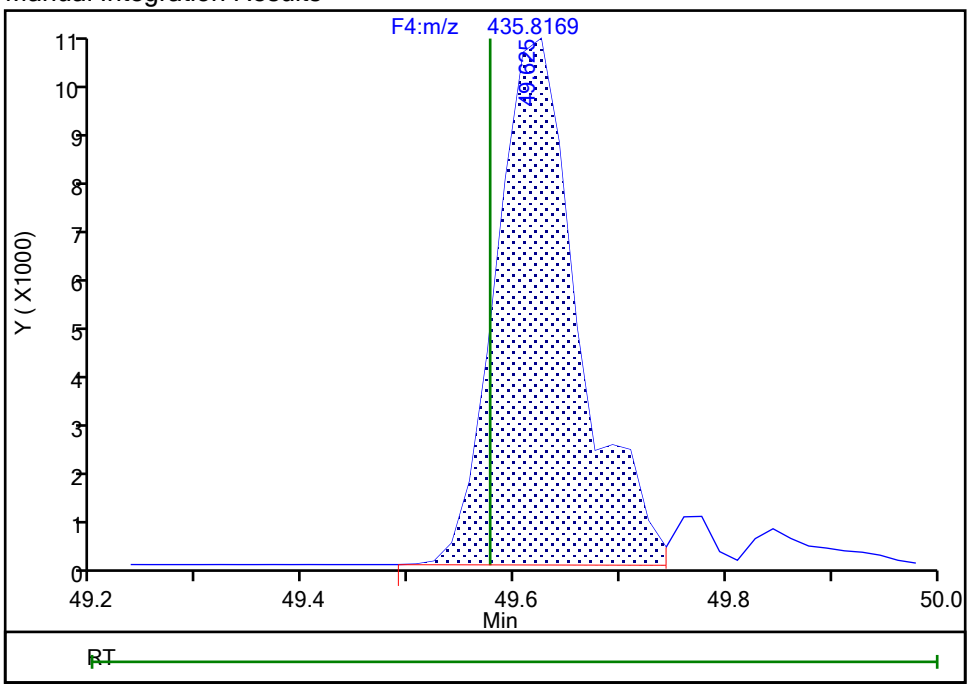
Processing Integration Results

RT: 49.63
Area: 49971
Amount: 3.313216
Amount Units: pg/ul



Manual Integration Results

RT: 49.63
Area: 56964
Amount: 3.534806
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:13:53

Audit Action: Manually Integrated Audit Reason: Baseline

Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d

Injection Date: 18-Dec-2019 08:03:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

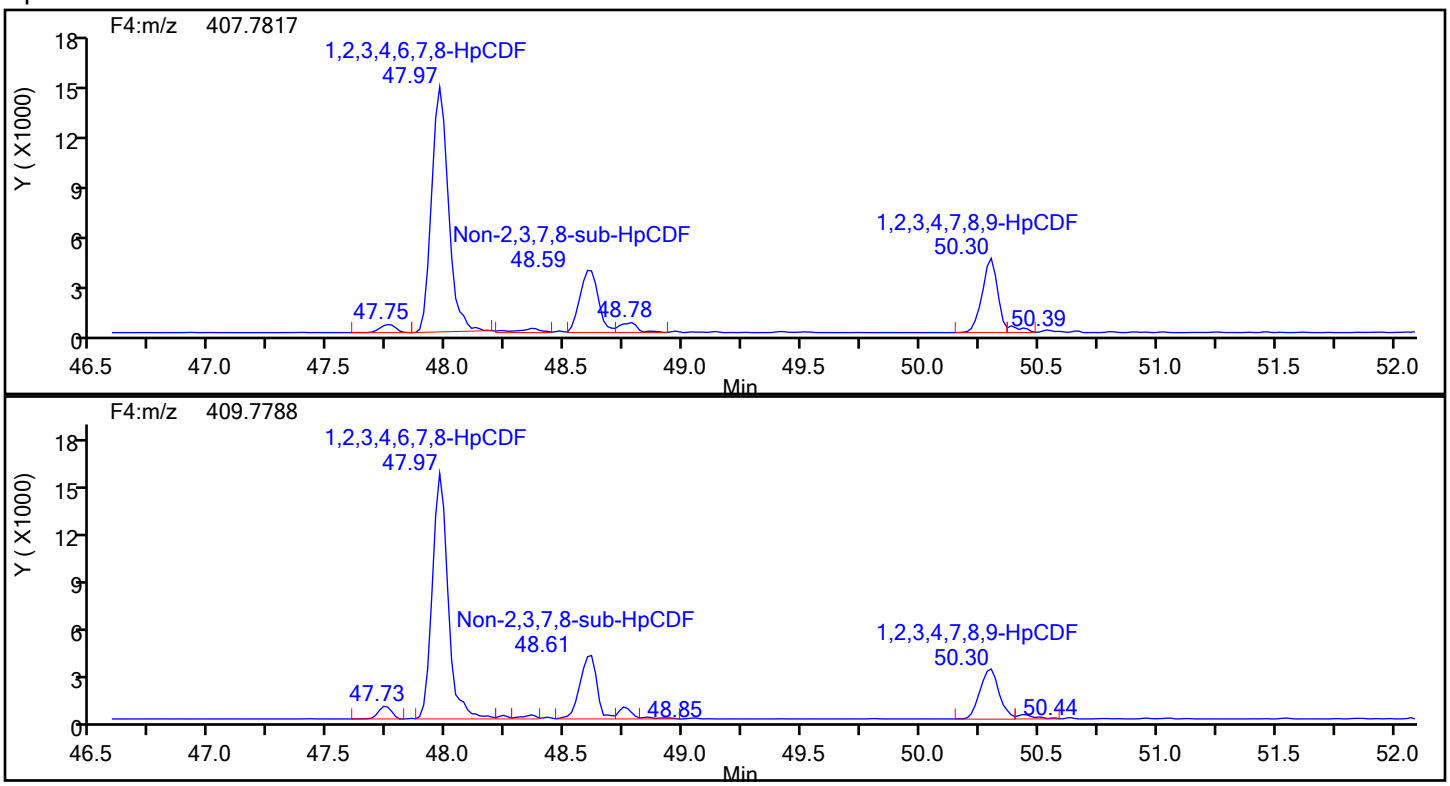
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

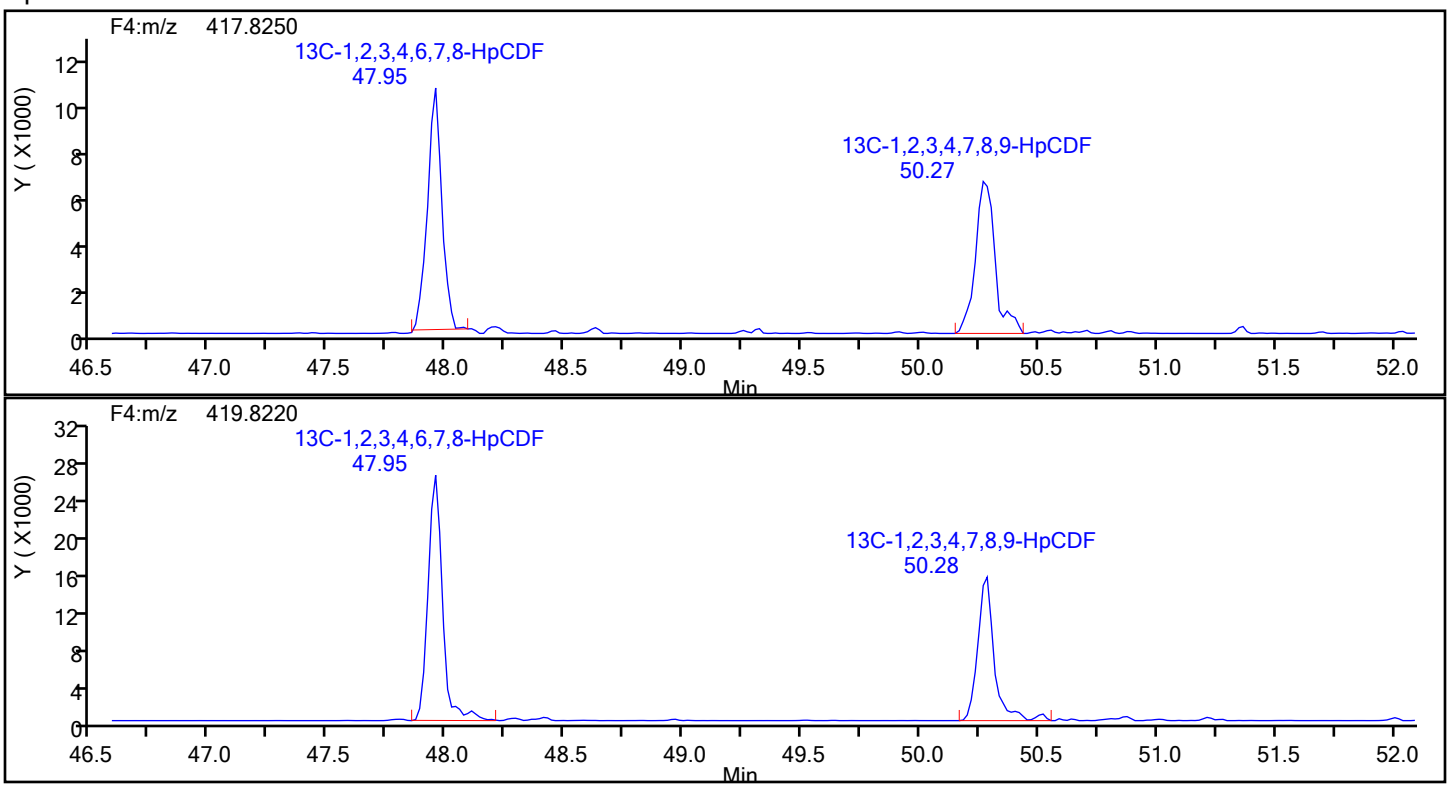
Worklist#: 36166 Sample Line#: 12

Column Type: Column Dia:

HpCDF



HpCDF Standards

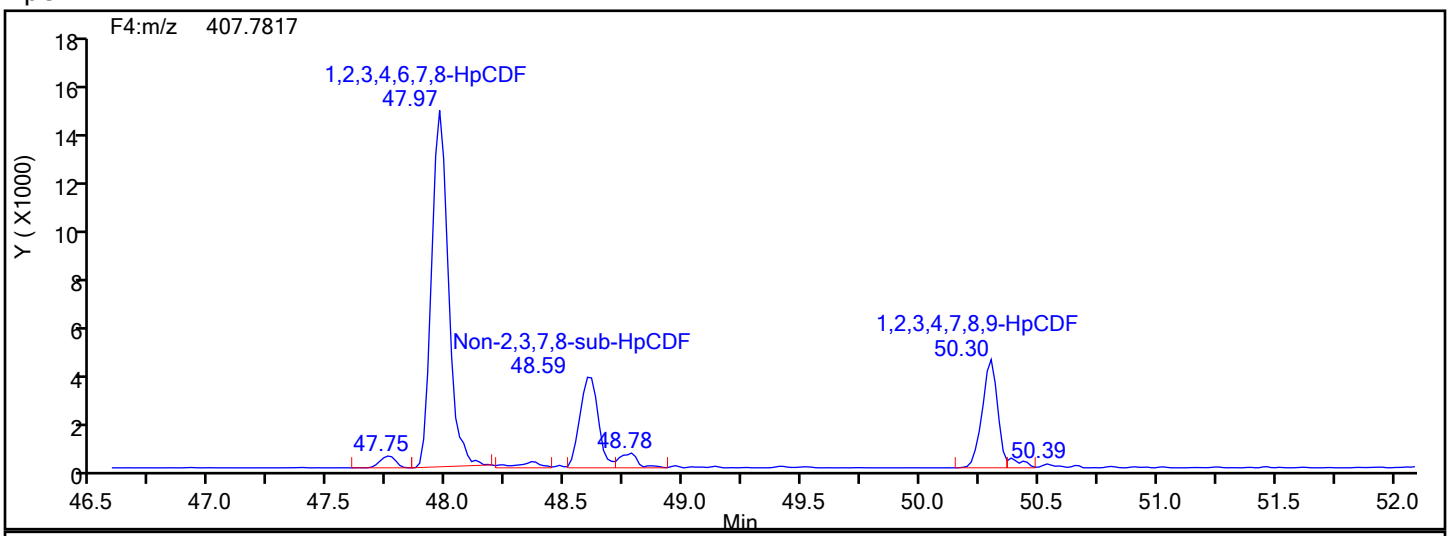


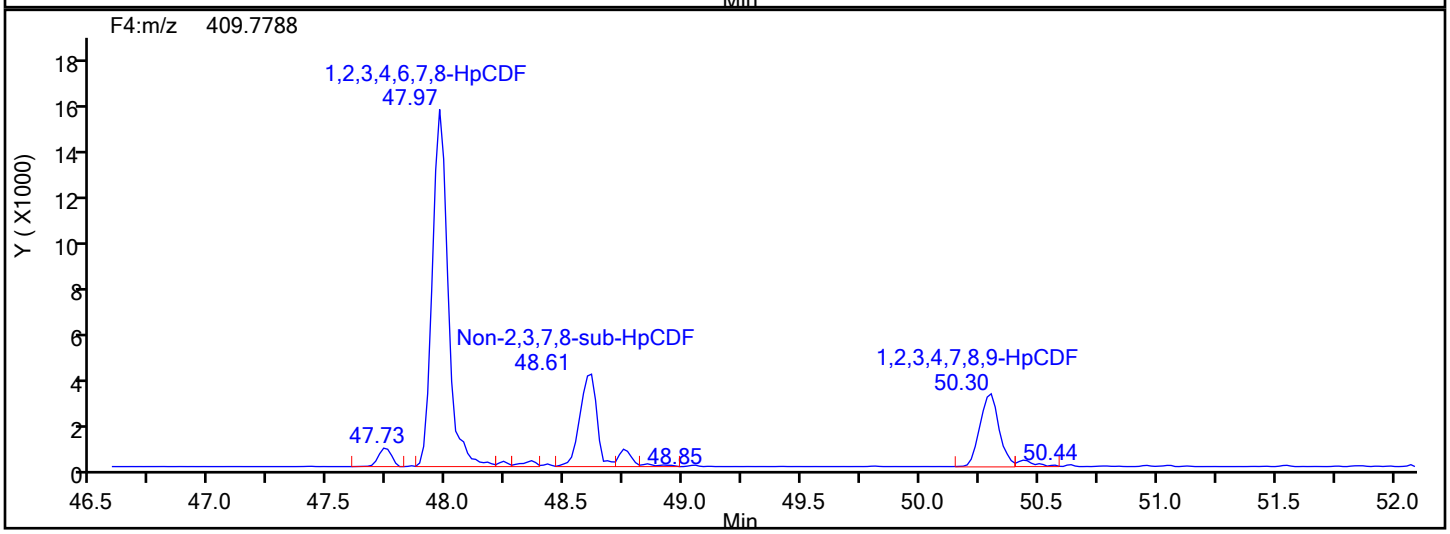
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

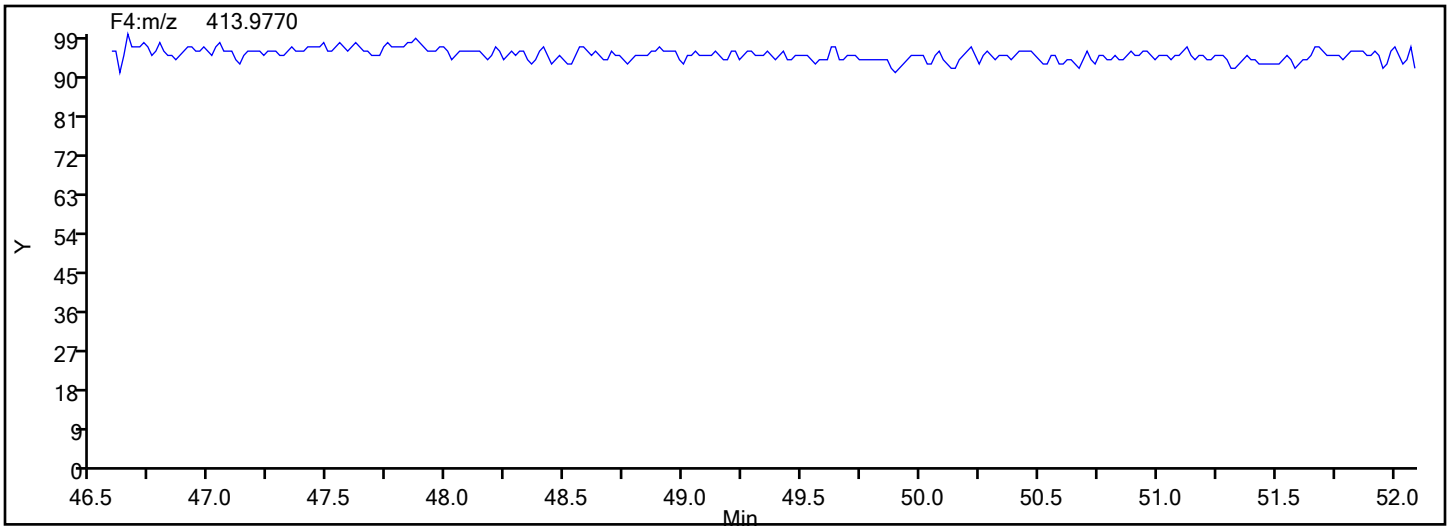
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

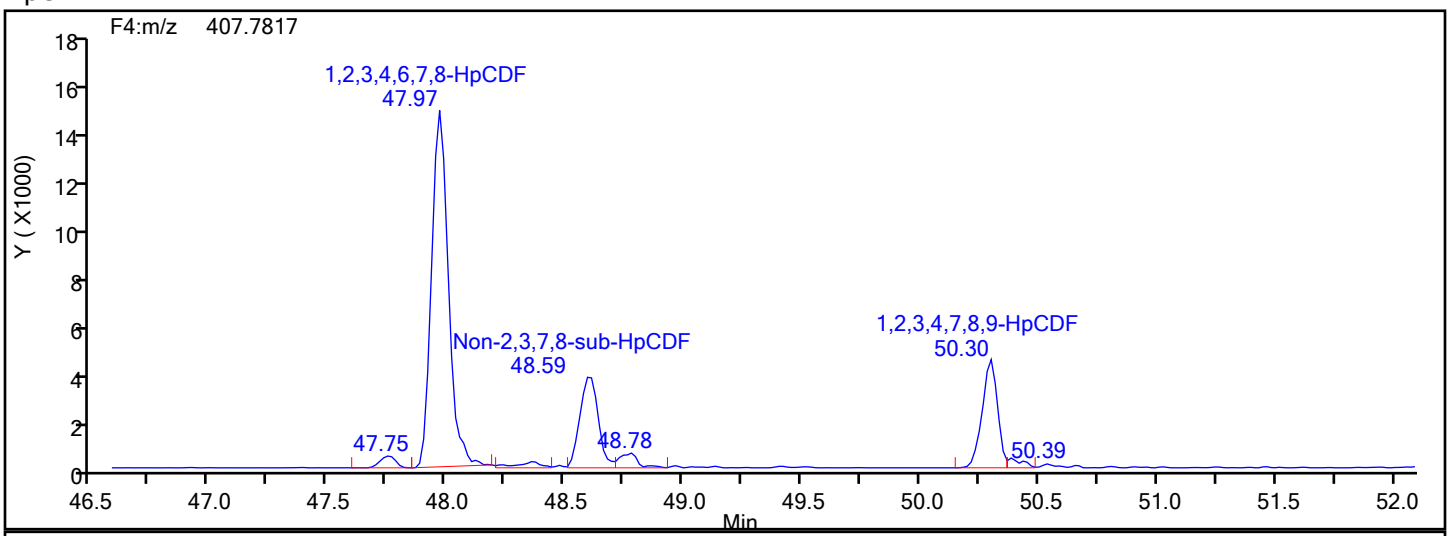


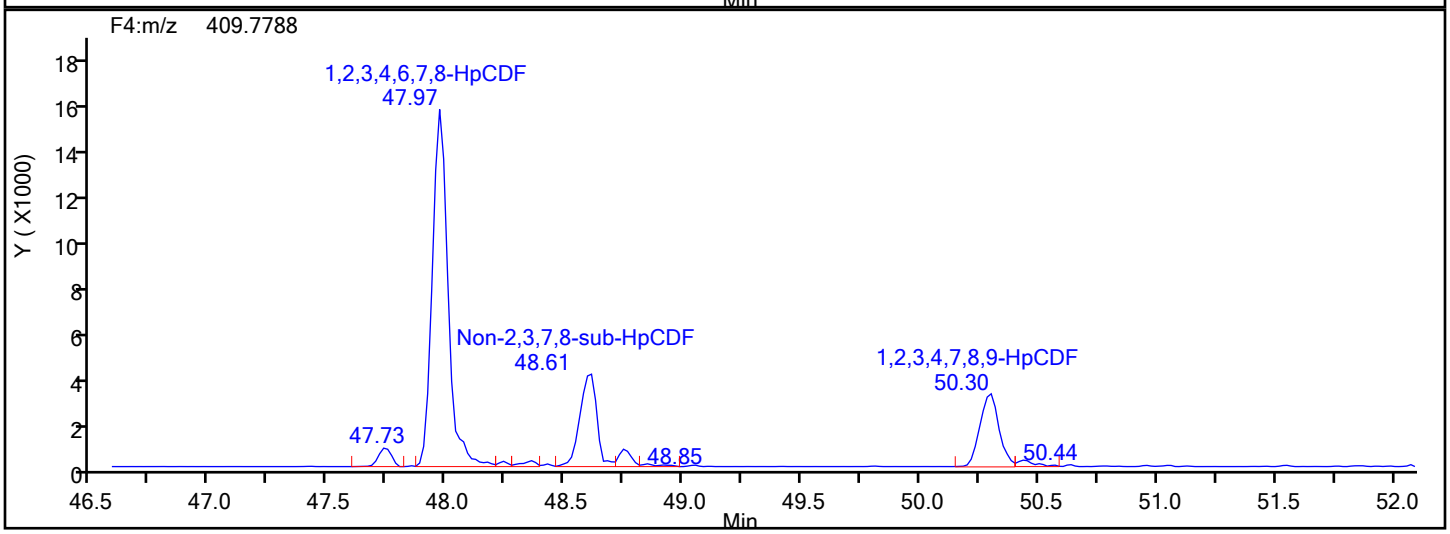
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

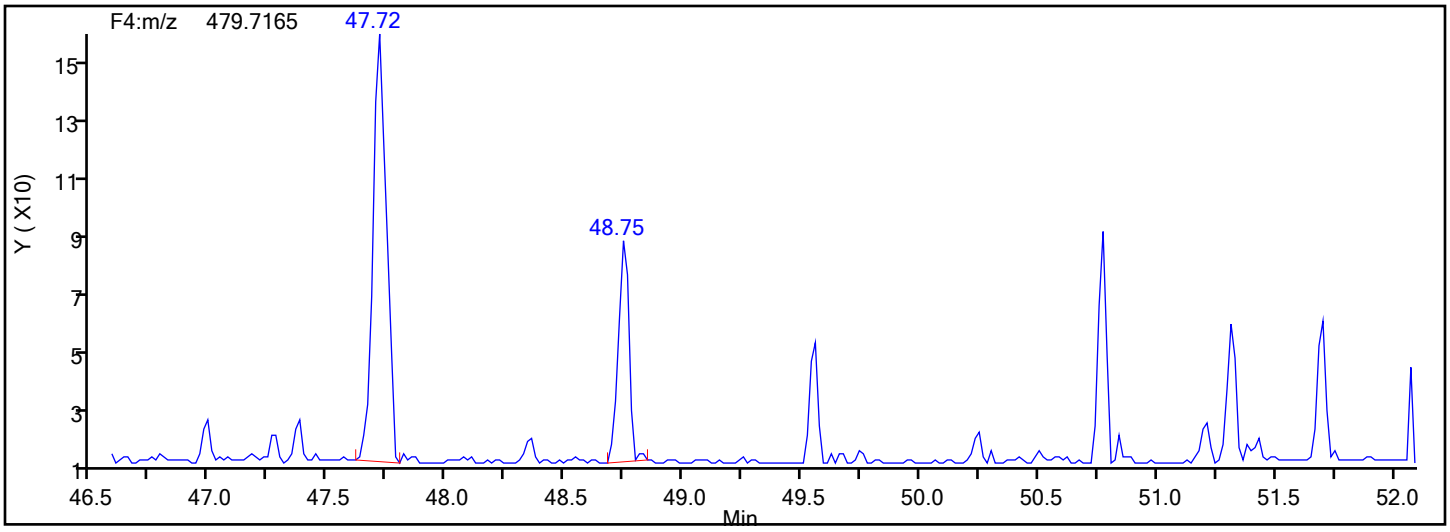
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

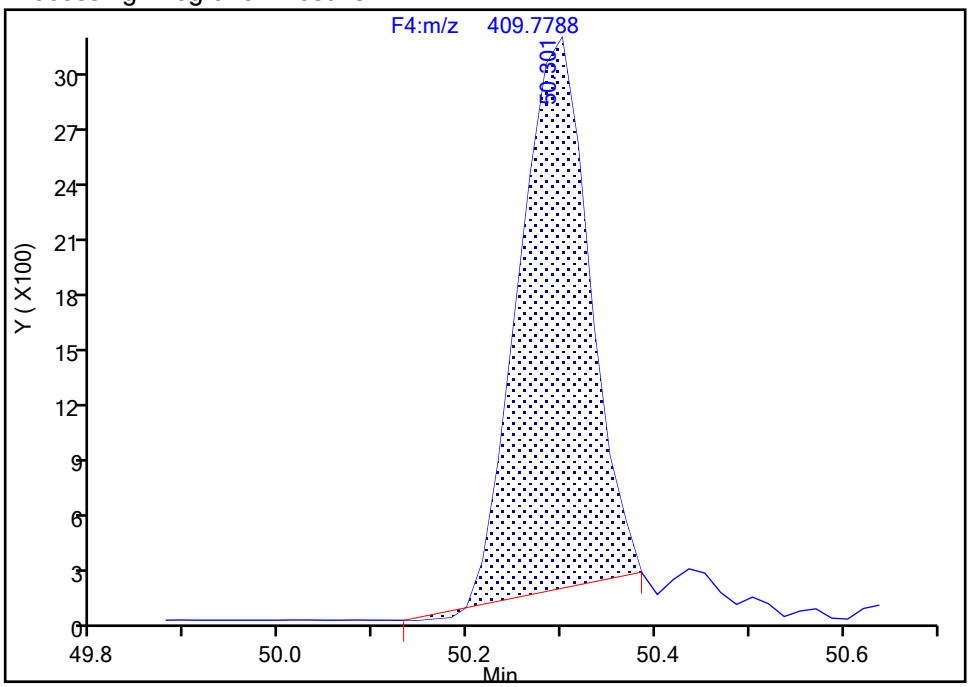
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

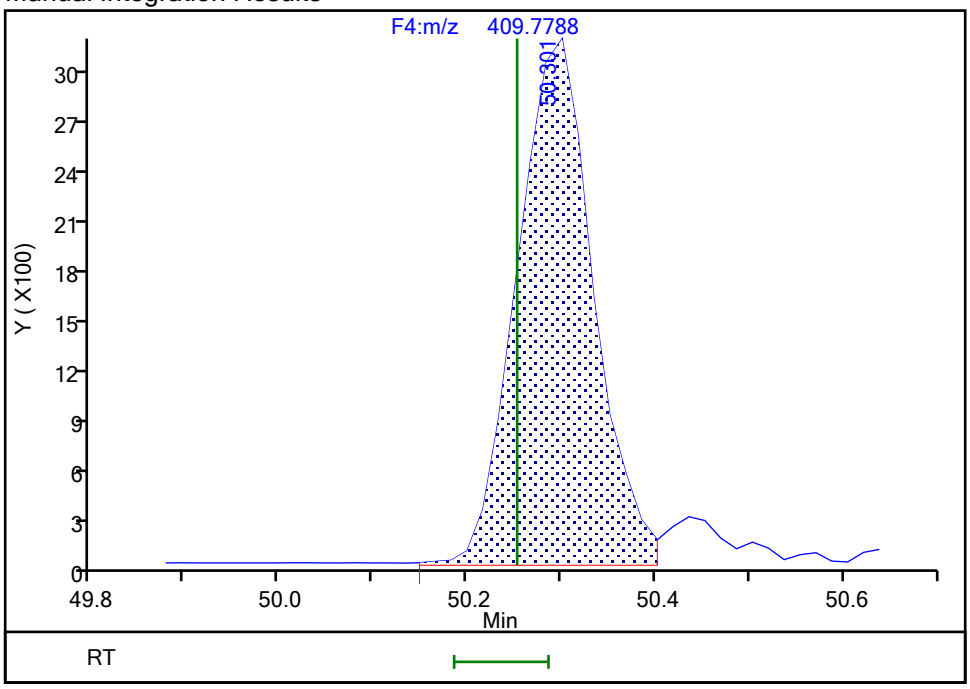
Processing Integration Results

RT: 50.30
Area: 15637
Amount: 1.205965
Amount Units: pg/ul



Manual Integration Results

RT: 50.30
Area: 18037
Amount: 1.229515
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:14:11

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

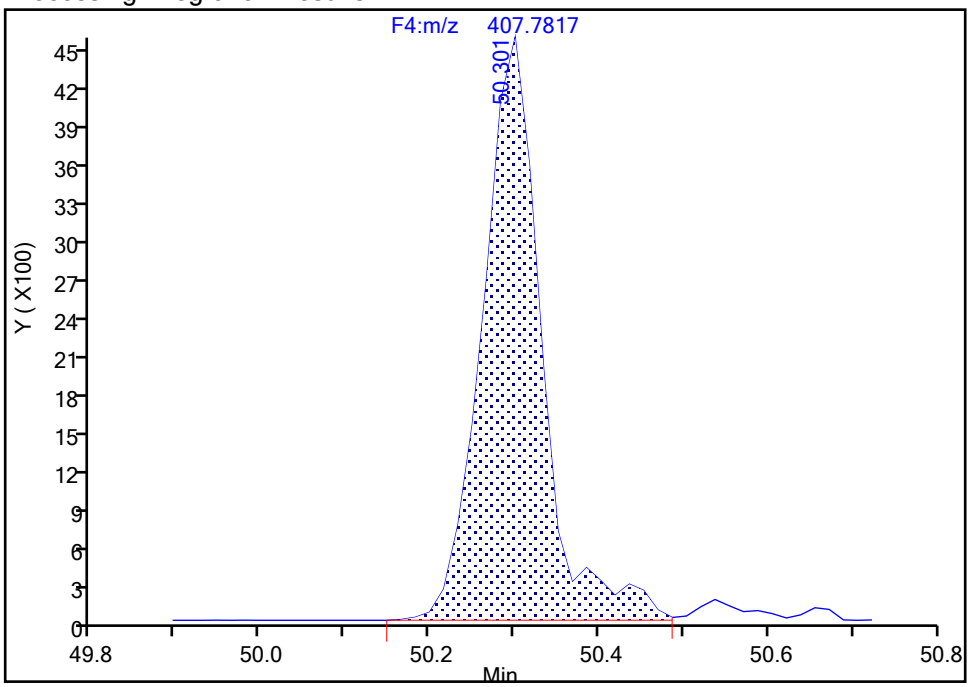
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d				
Injection Date:	18-Dec-2019 08:03:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

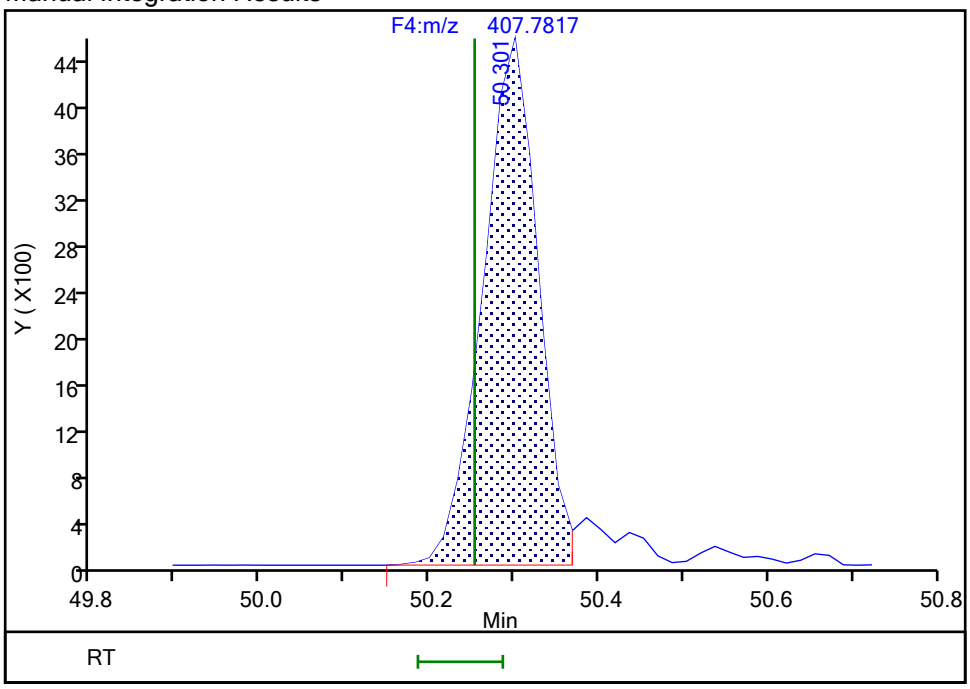
Processing Integration Results

RT: 50.30
Area: 21950
Amount: 1.205965
Amount Units: pg/ul



Manual Integration Results

RT: 50.30
Area: 20284
Amount: 1.229515
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 09:14:21

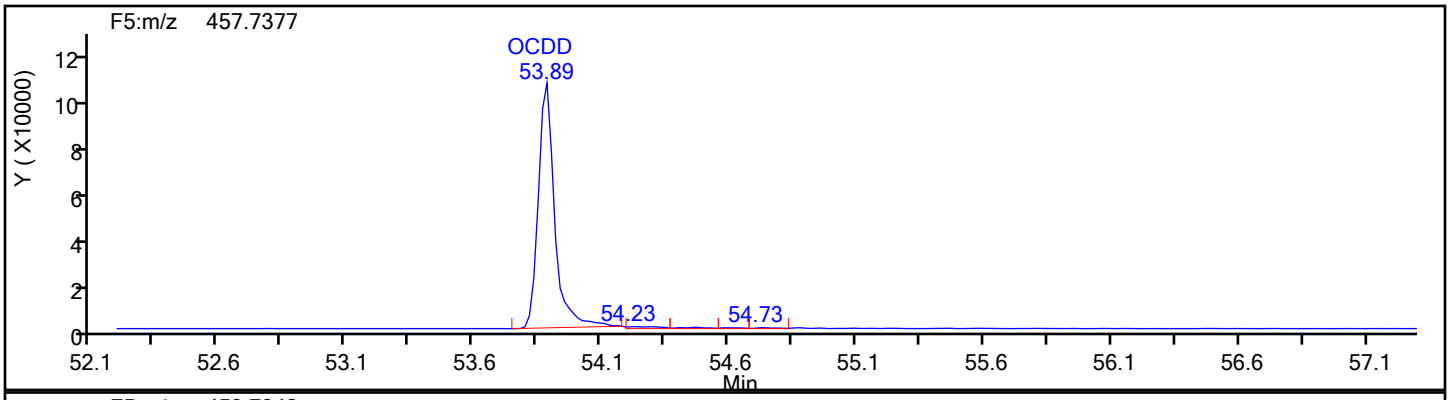
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

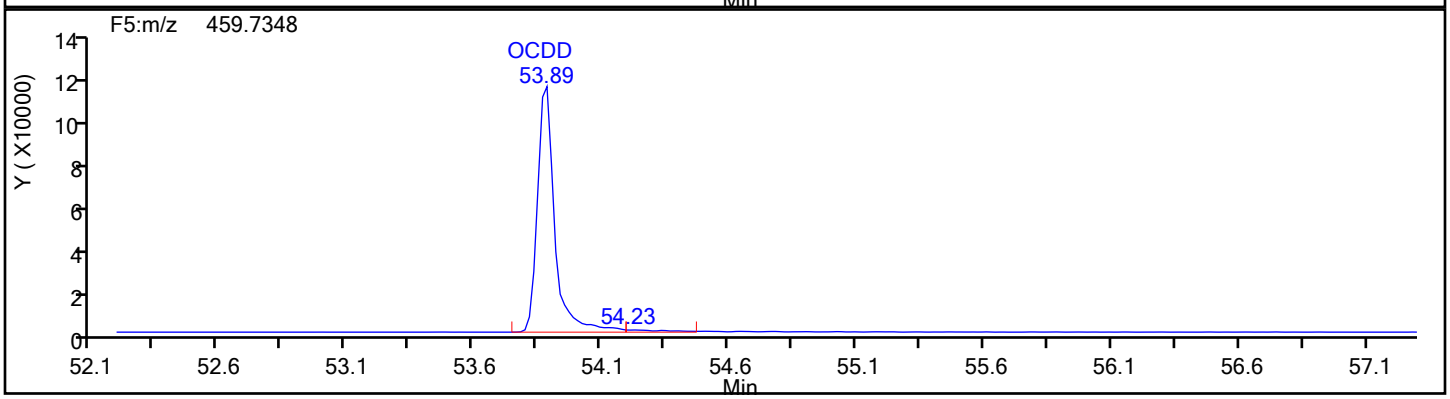
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

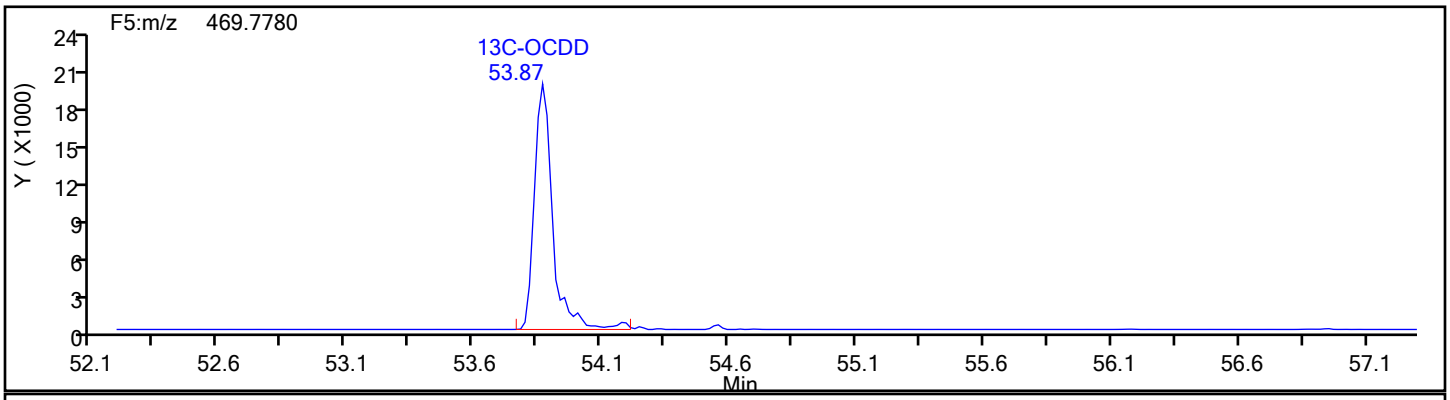
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

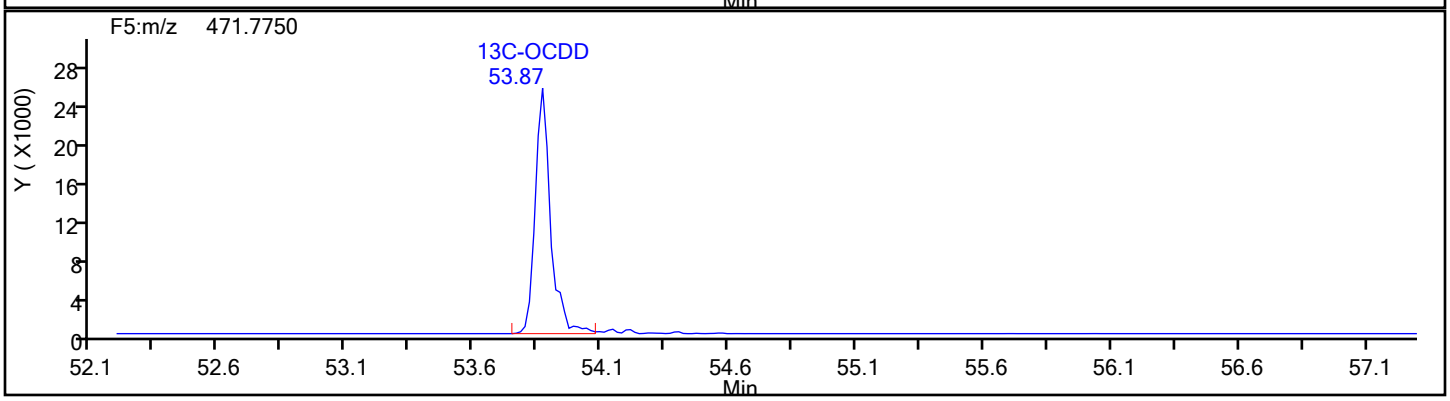
OCDD





OCDD Standards



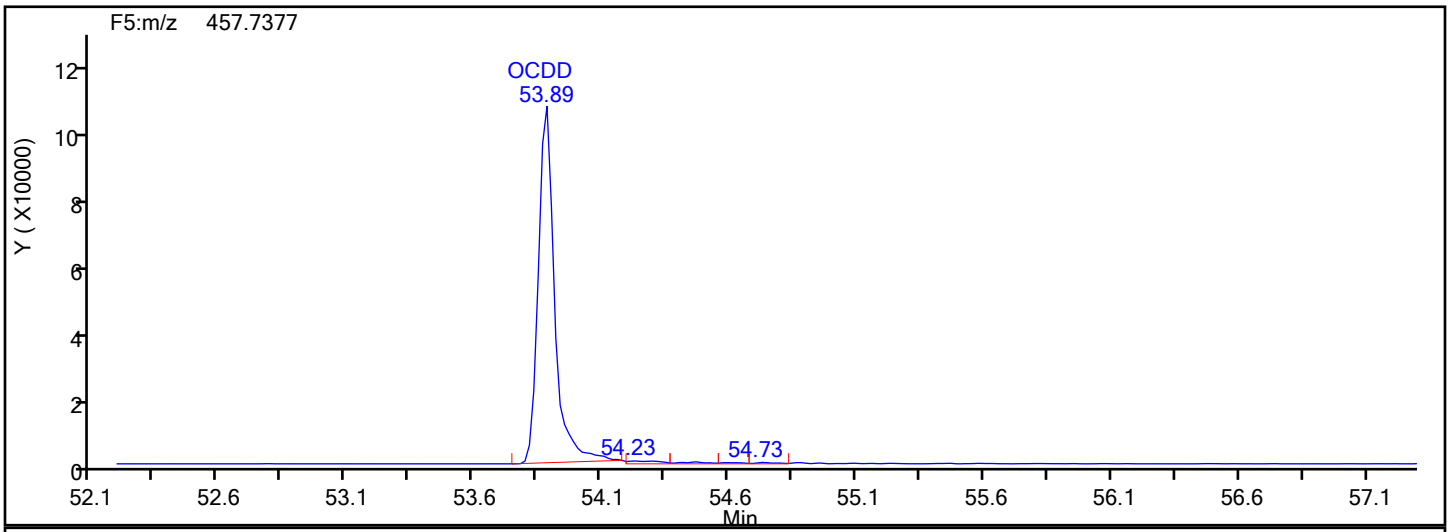


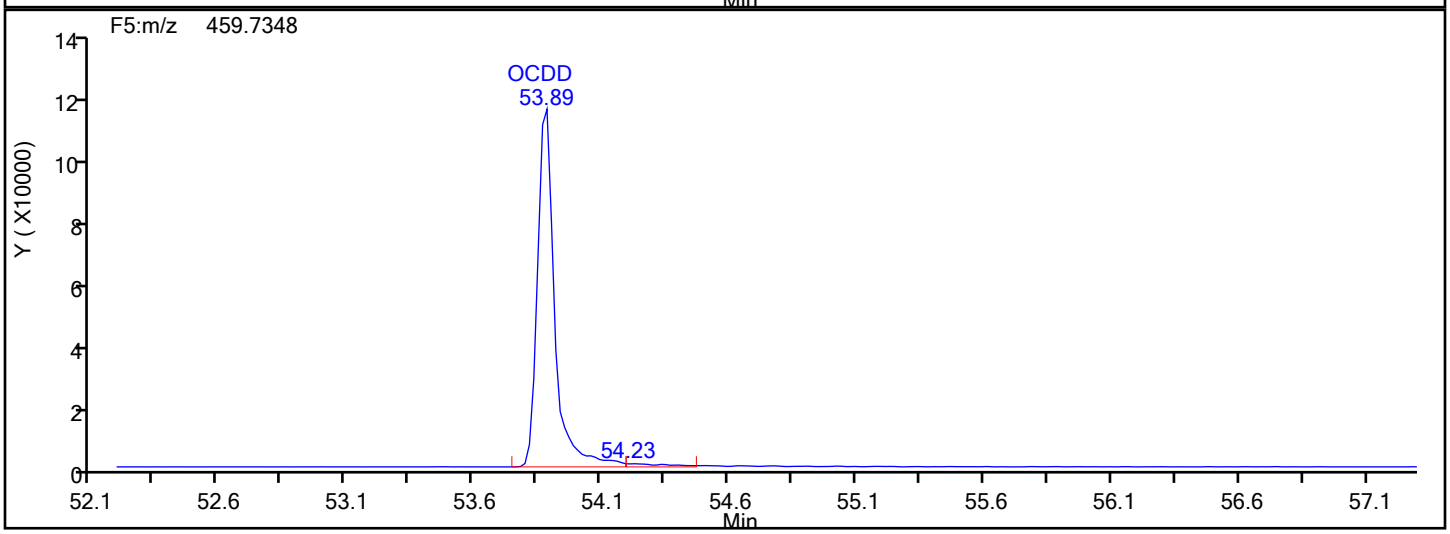
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

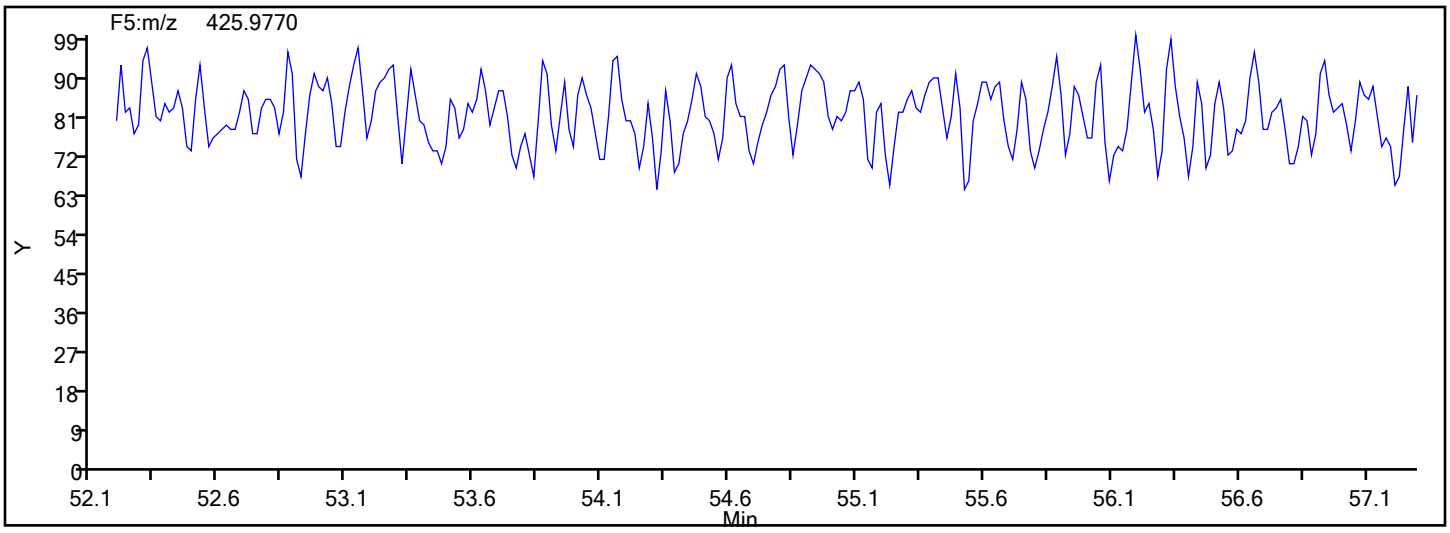
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass

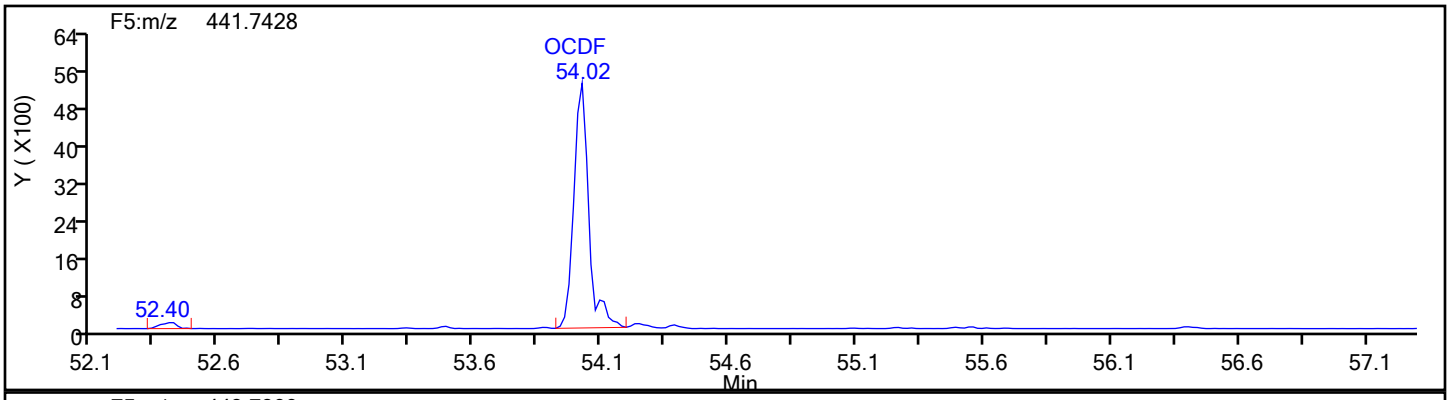


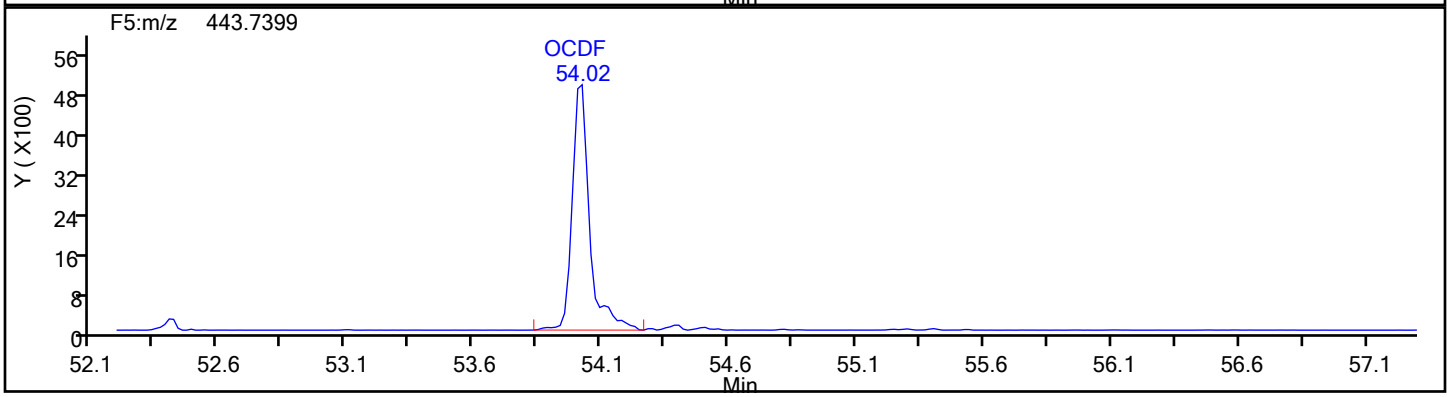
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

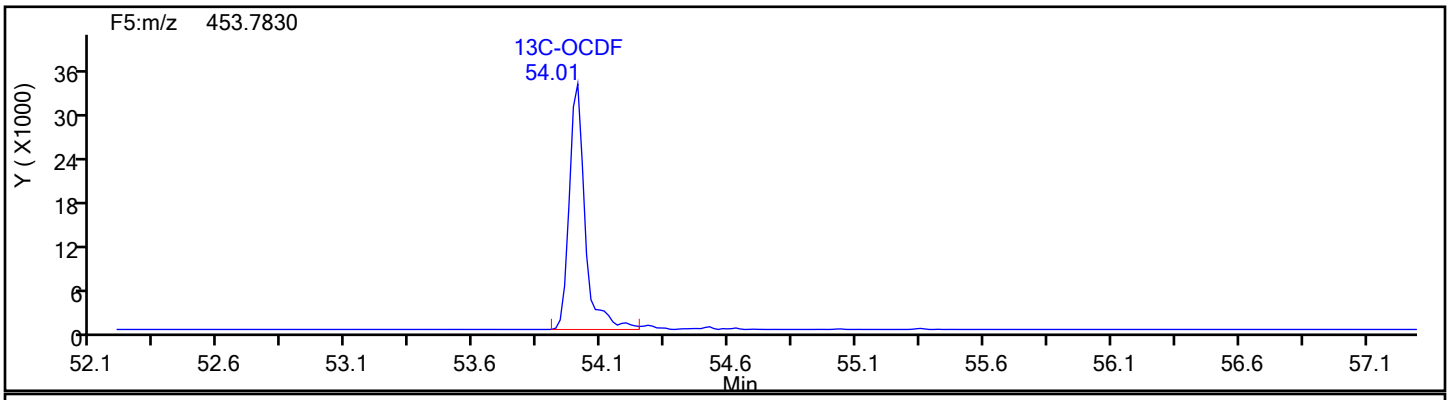
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

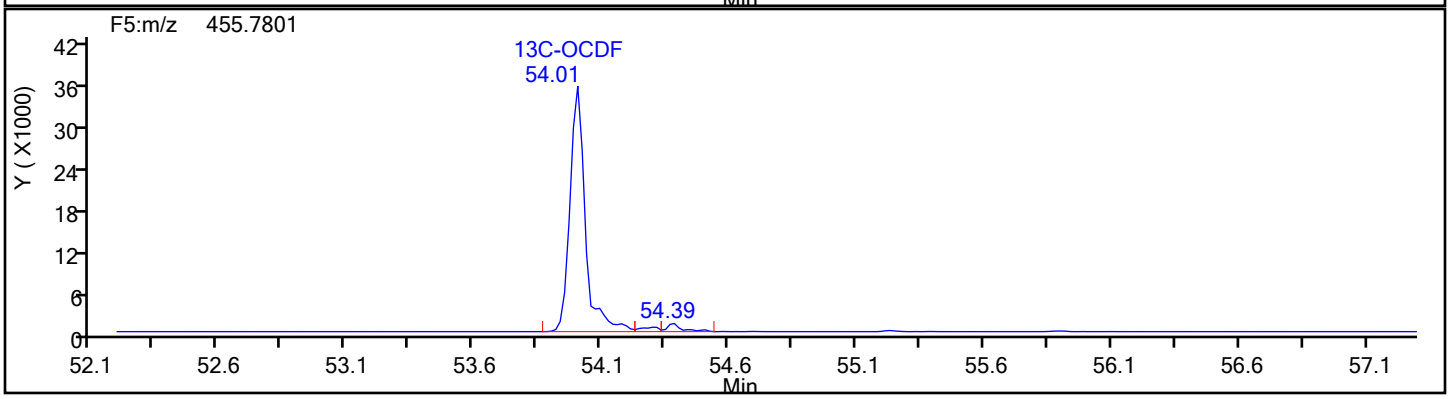
OCDF





OCDF Standards



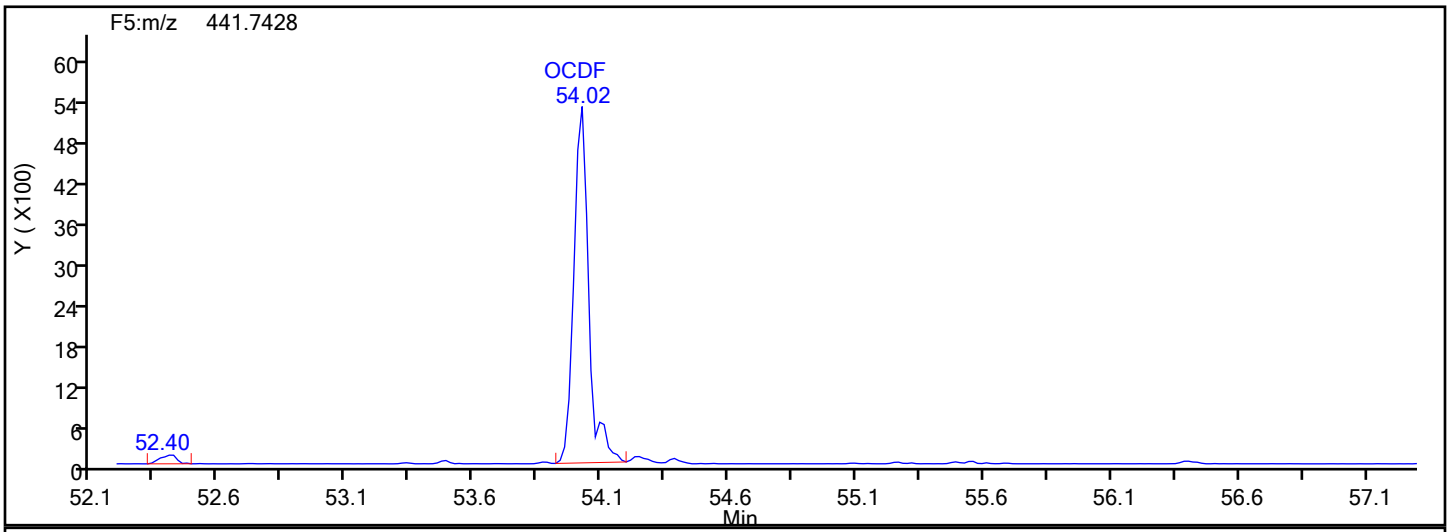


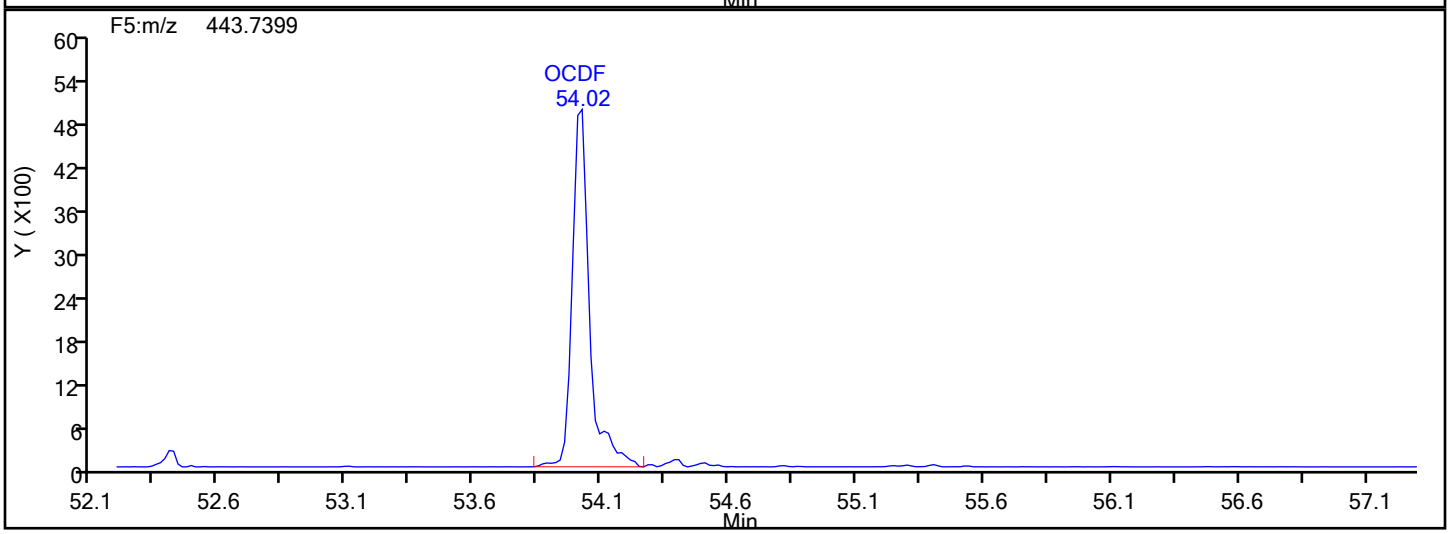
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

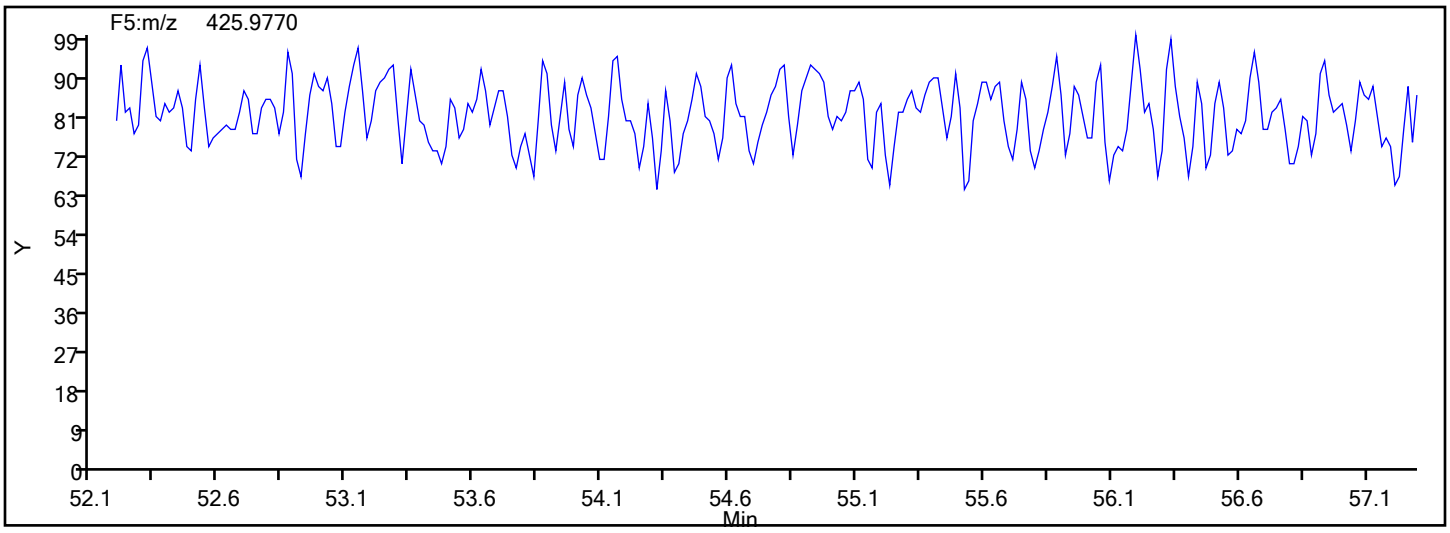
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

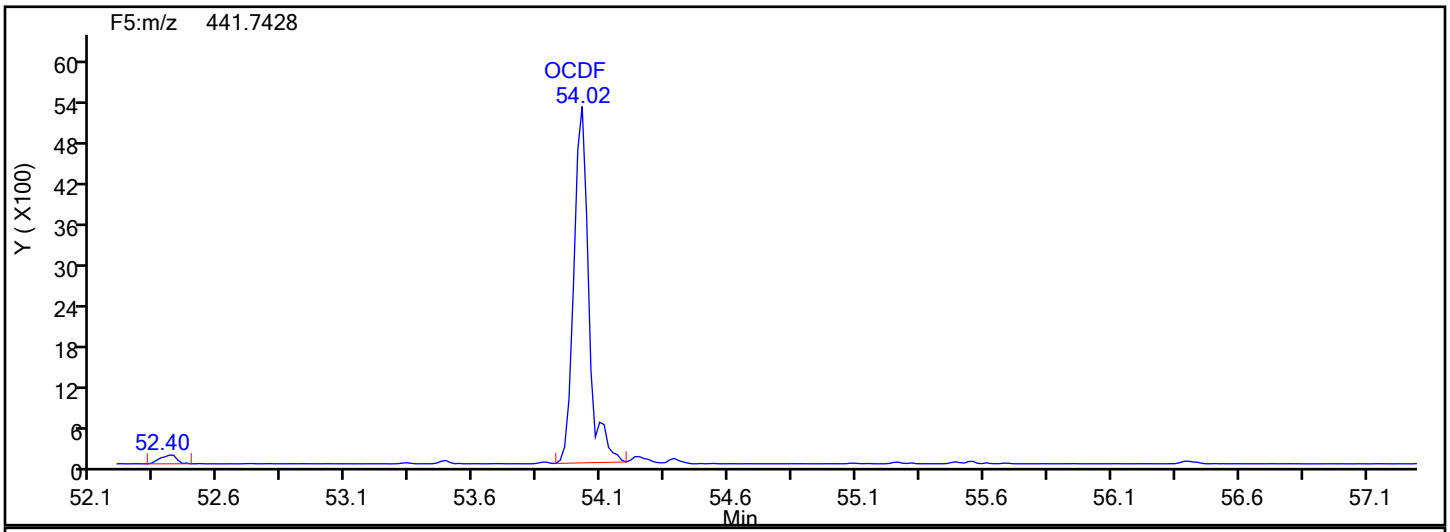


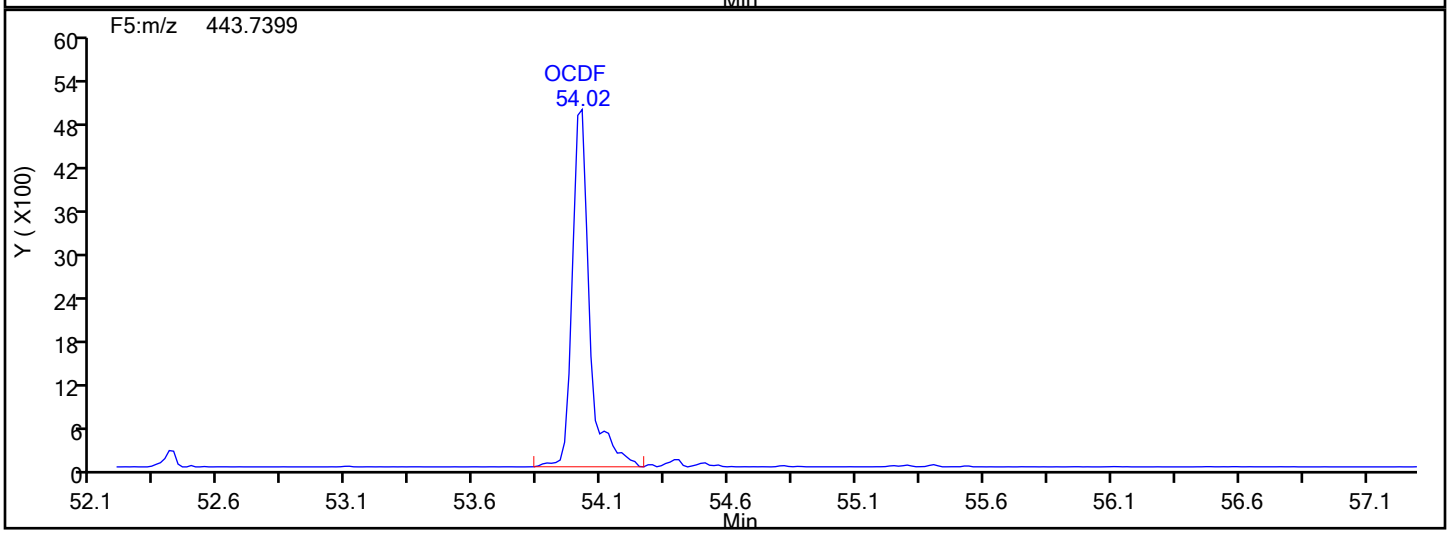
Report Date: 18-Dec-2019 09:14:45 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

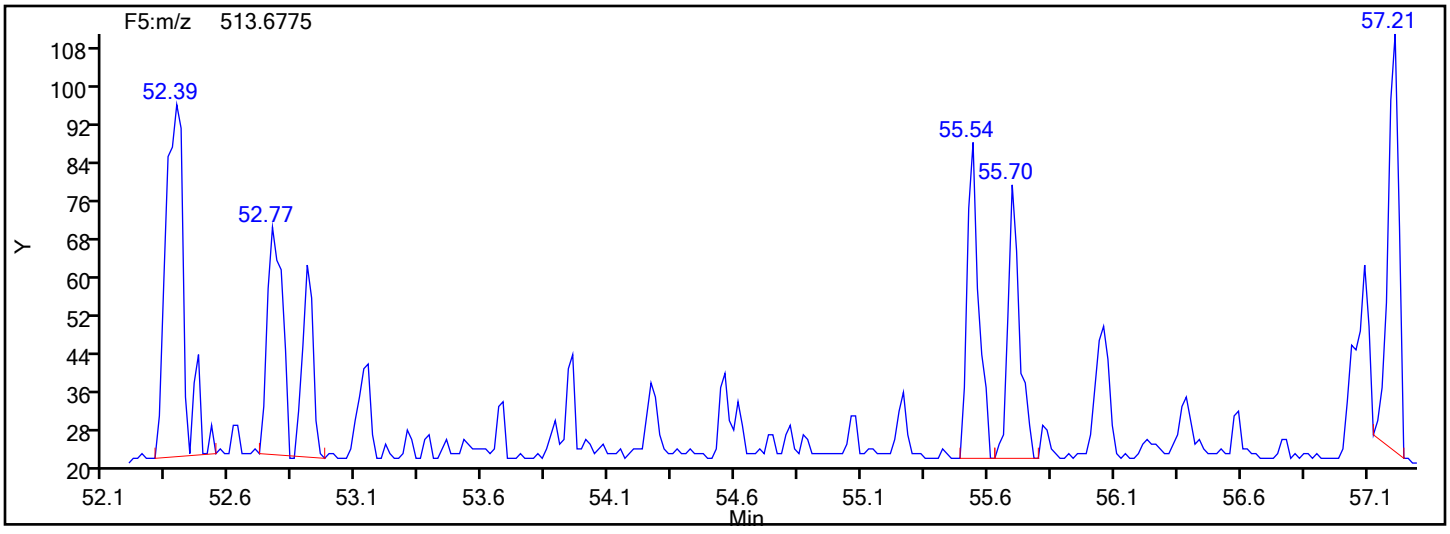
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-aa.d		
Injection Date:	18-Dec-2019 08:03:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	12
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) Lab Sample ID: 140-17578-12

Matrix: Sediment Lab File ID: 140-17578-a-12-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.90(g) Date Analyzed: 12/18/2019 09:16

Con. Extract Vol.: 20(uL) Dilution Factor: 15

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	3900		25	12

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	121		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 09:16:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-016
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 10:05:39 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:05:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:41	1827328	0.81	1.2213	51.4	51.4	0.1960	0.1960		
2,3,7,8-TCDF	22:12	8352964	0.81	1.1100	78.5	78.5	0.2333	0.2333		a
D 13C-2,3,7,8-TCDD	19:39	97025	0.69	1.0031	1.971	1.971	1.209	1.209	59.13	M
D 13C-2,3,7,8-TCDF	22:07	319404	0.73	1.6193	4.019	4.019	0.1785	0.1785	121	
$ 37Cl4-2,3,7,8-TCDD	19:40	34026		1.1834	0.5859	0.5859	0.0694	0.0694	87.88	
* 13C-1,2,3,4-TCDD	20:07	327173	0.82	1.6E+05	6.667	6.667				M

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d
Lims ID: 140-17578-A-12-A
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 09:16:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-016
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 10:05:39 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:05:39

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:41	19:40	-2	1.002	817962	130104	268	670	485		
321.8936	19:41	19:40	-2	1.002	1009366	159957	168	420	952	0.81(0.65-0.89)	
2,3,7,8-TCDF											a
303.9016	22:12	22:12	-3	1.004	3730917	488221	531	1327	919		a
305.8987	22:12	22:12	-3	1.004	4622047	599872	637	1592	942	0.81(0.65-0.89)	
13C-2,3,7,8-TCDD											M
331.9368	19:39	19:38	-3	0.977	39751	6428	1274	3185	5		M
333.9338	19:38	19:38	-4	0.976	57274	8749	1925	4812	5	0.69(0.65-0.89)	M
13C-2,3,7,8-TCDF											
315.9419	22:07	22:11	-6	1.100	135090	16457	306	765	54		
317.9389	22:08	22:11	-5	1.100	184314	21126	457	1142	46	0.73(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:40	19:41	-3	0.977	34026	5744	217	542	26		
13C-1,2,3,4-TCDD											M
331.9368	20:07	20:09	-2		147515	20885	1274	3185	16		M
333.9338	20:06	20:09	-3		179658	23091	1925	4812	12	0.82(0.65-0.89)	

QC Flag Legend

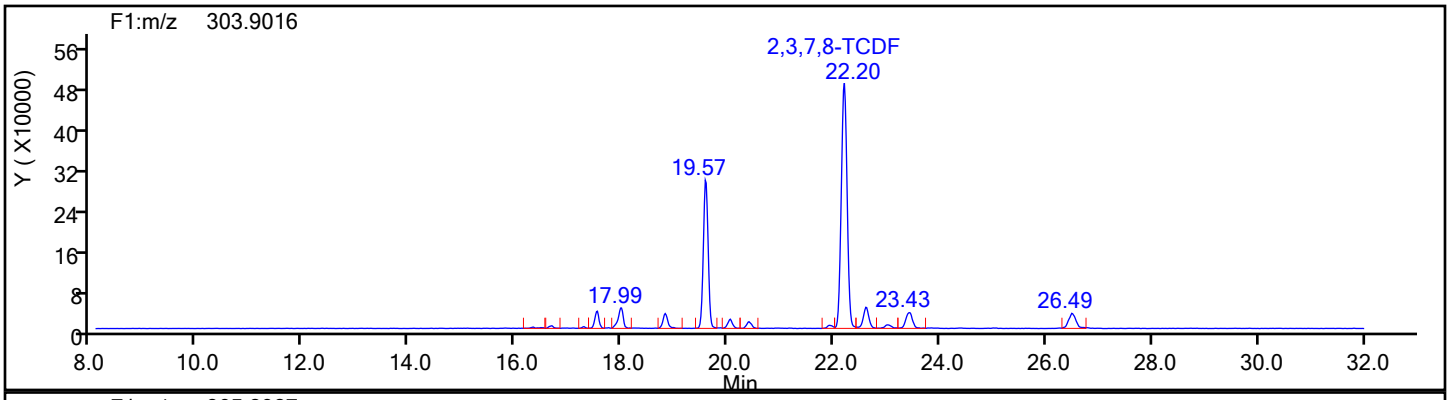
Review Flags
M - Manually Integrated
a - User Assigned ID

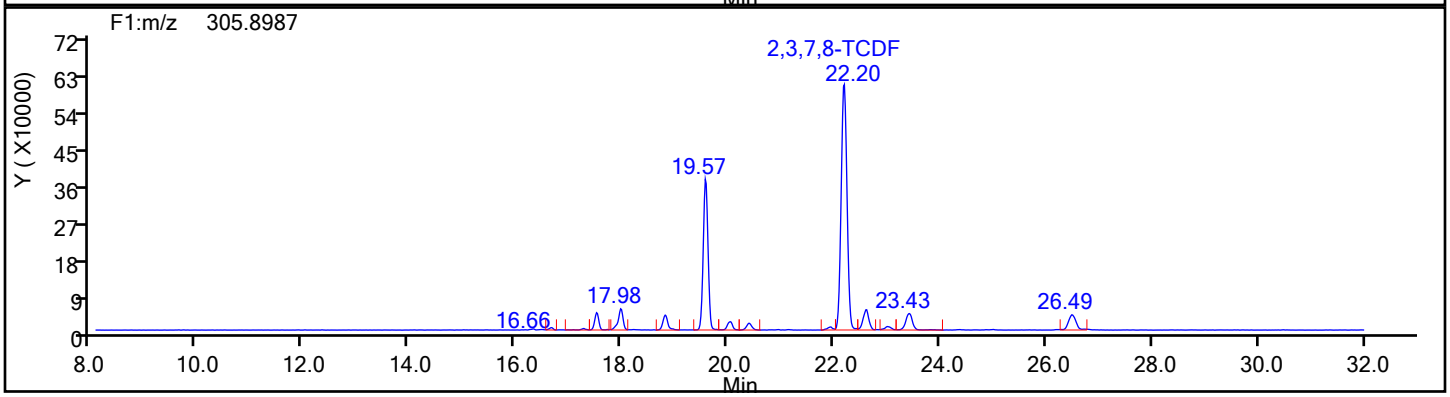
Report Date: 18-Dec-2019 10:05:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

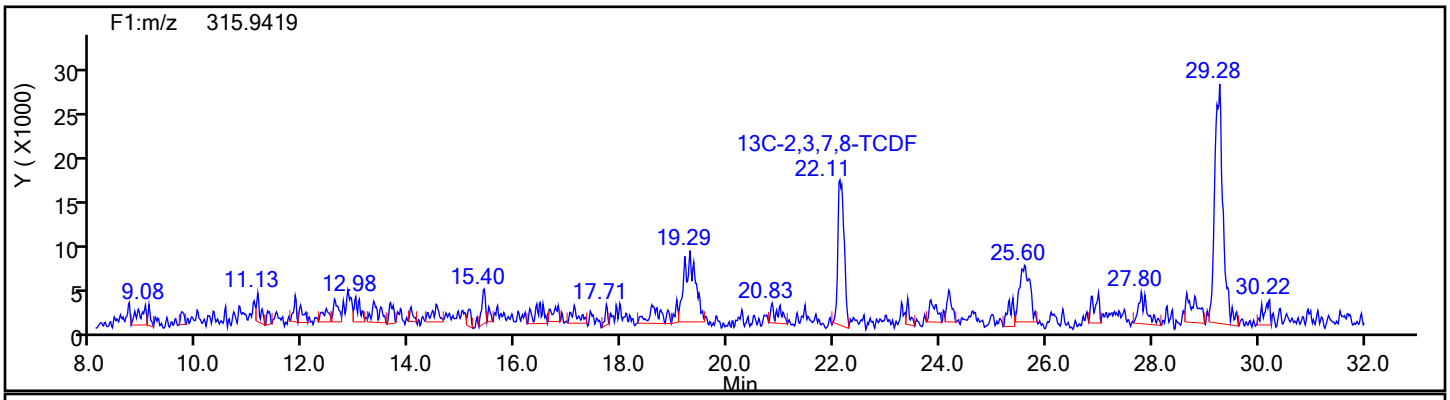
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d		
Injection Date:	18-Dec-2019 09:16:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	16
Column Type:	DB225	Column Dia:	0.32 mm

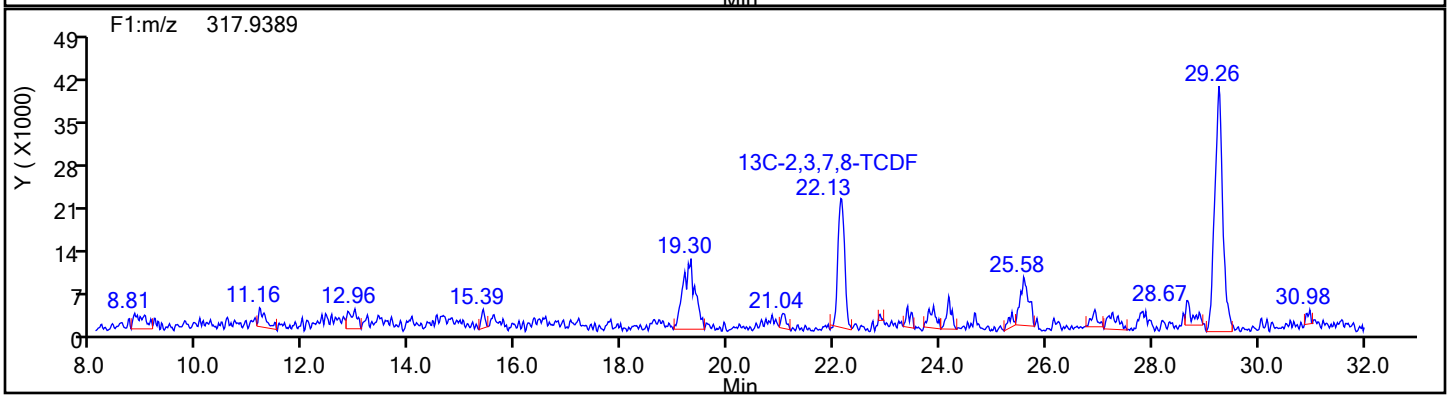
TCDF





TCDF Standards



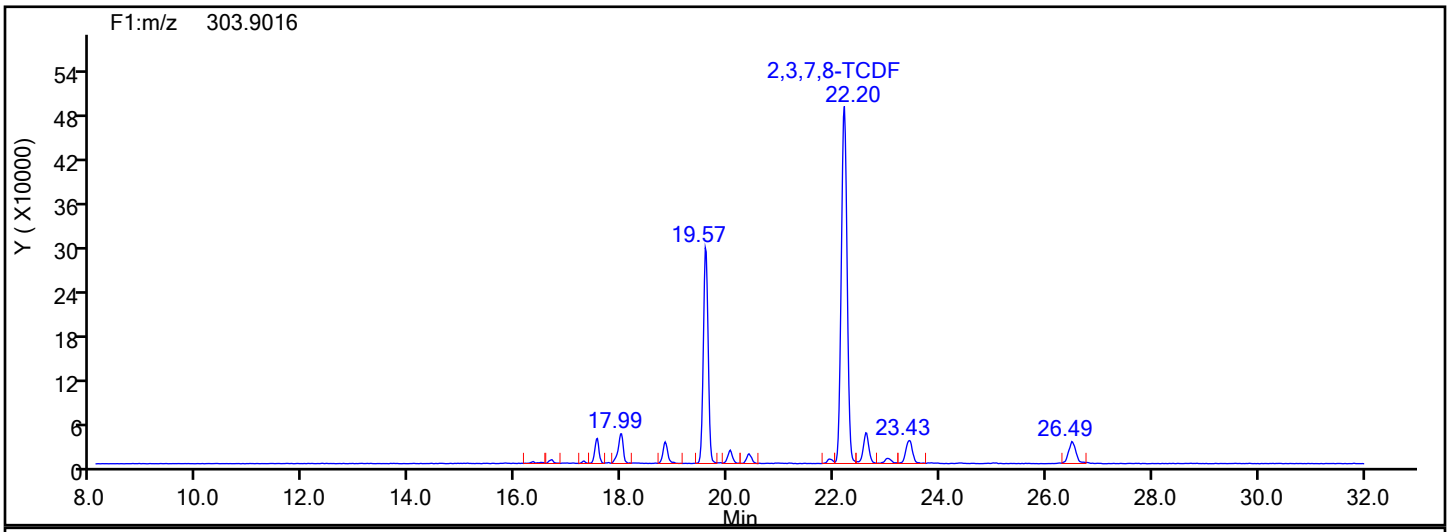


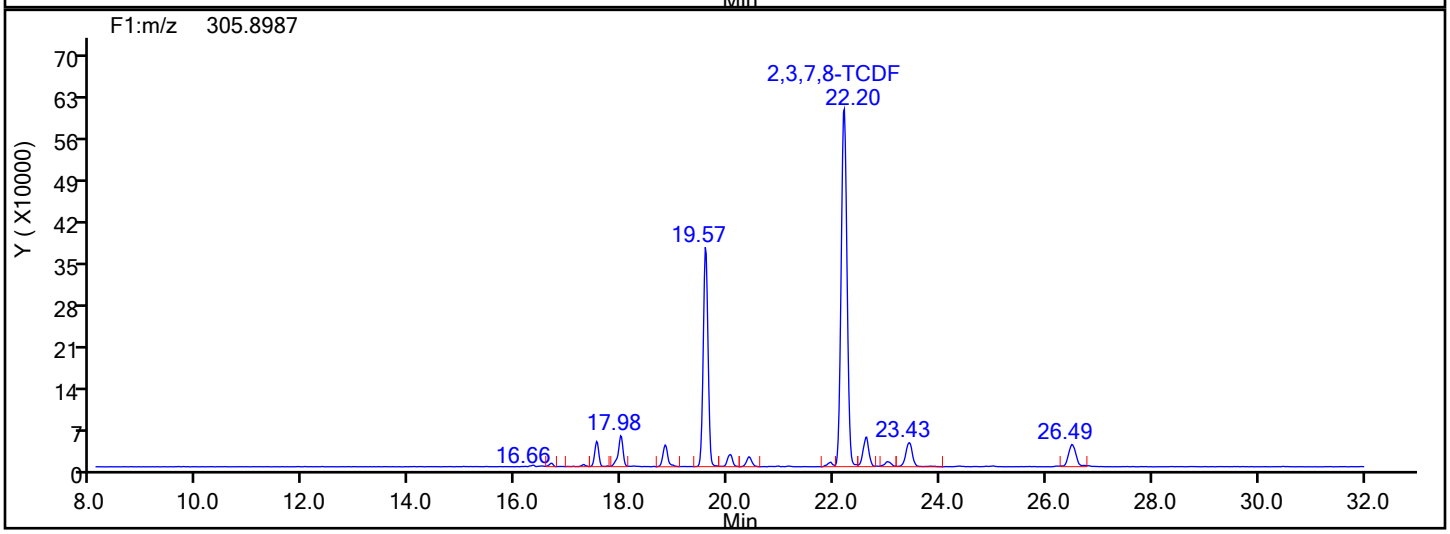
Report Date: 18-Dec-2019 10:05:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

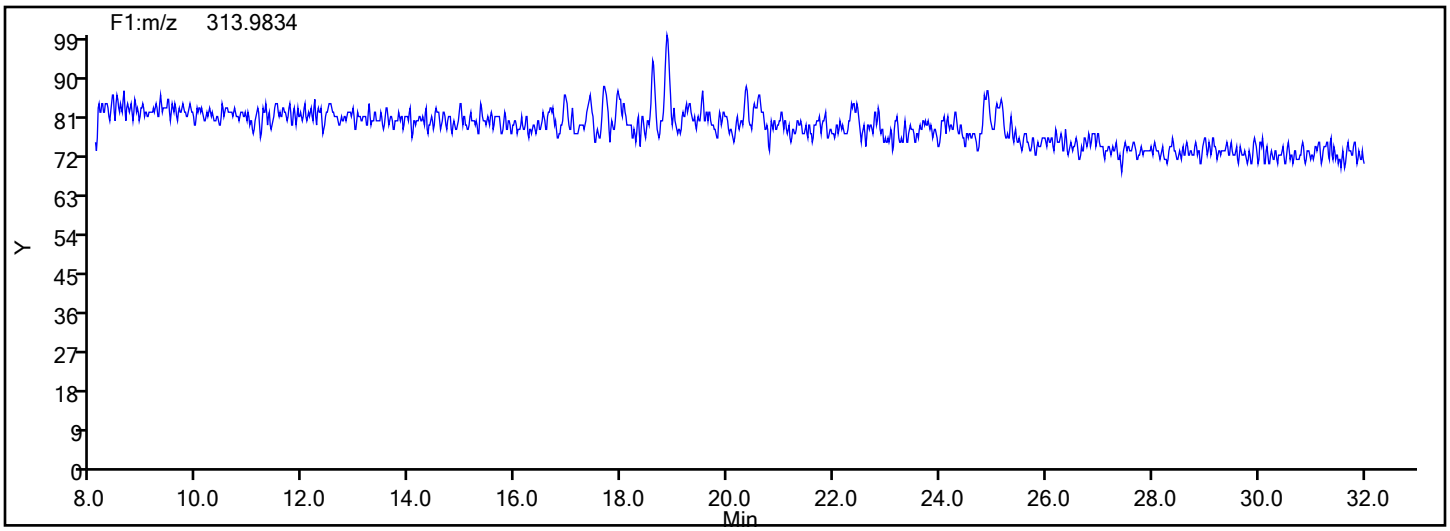
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d		
Injection Date:	18-Dec-2019 09:16:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	16
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

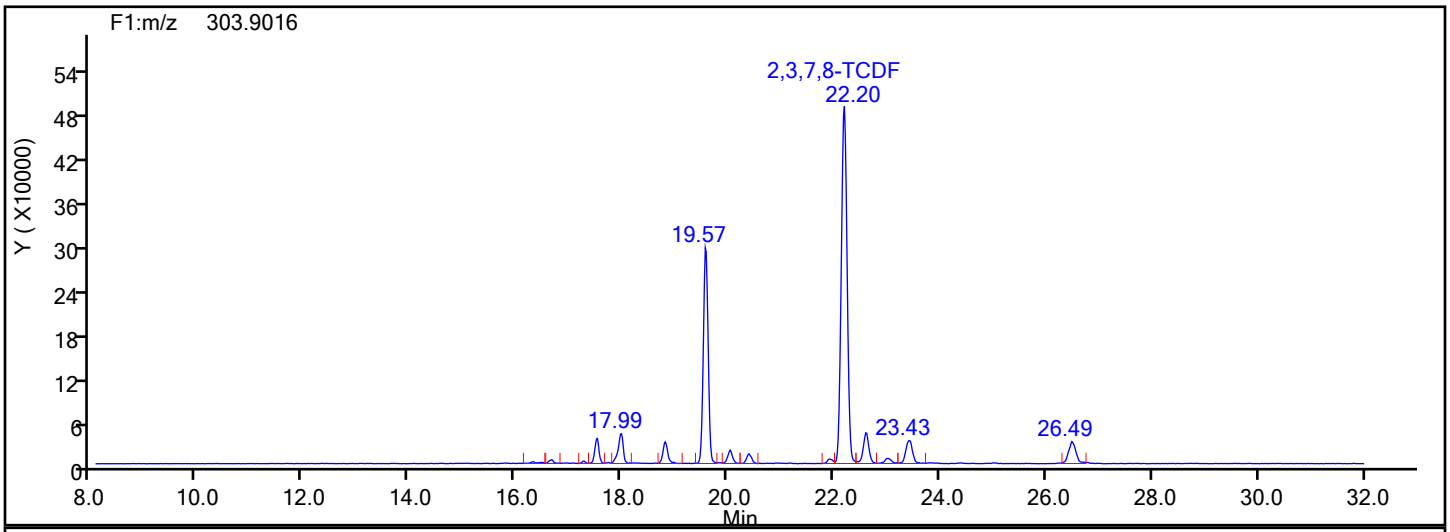


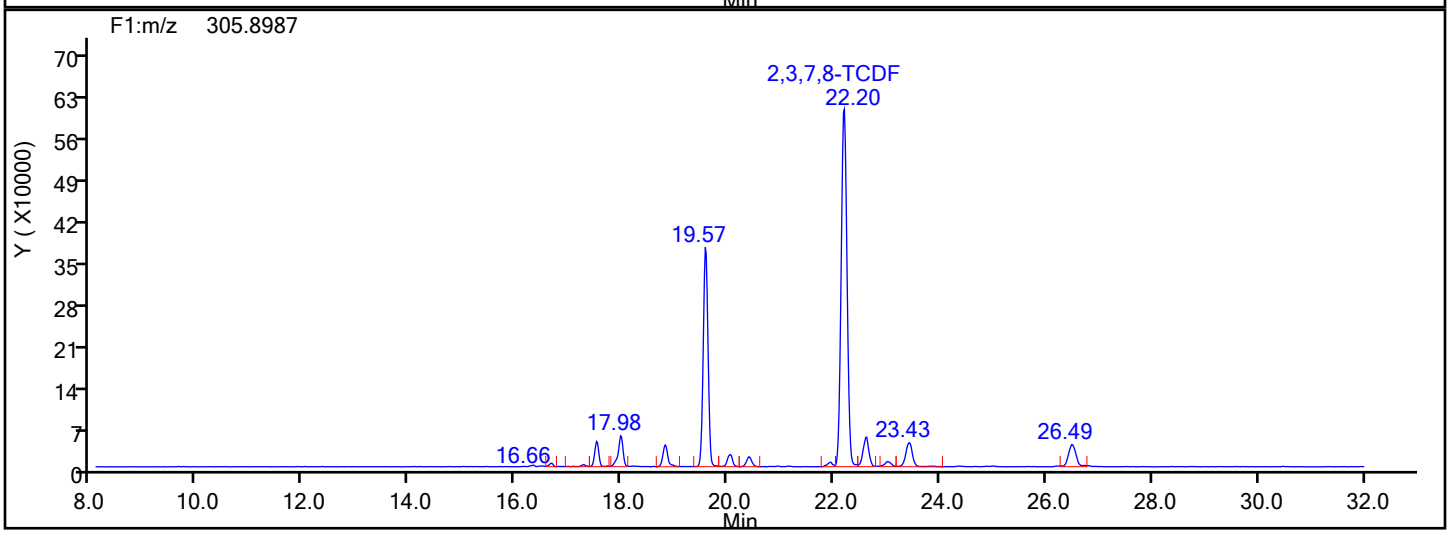
Report Date: 18-Dec-2019 10:05:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

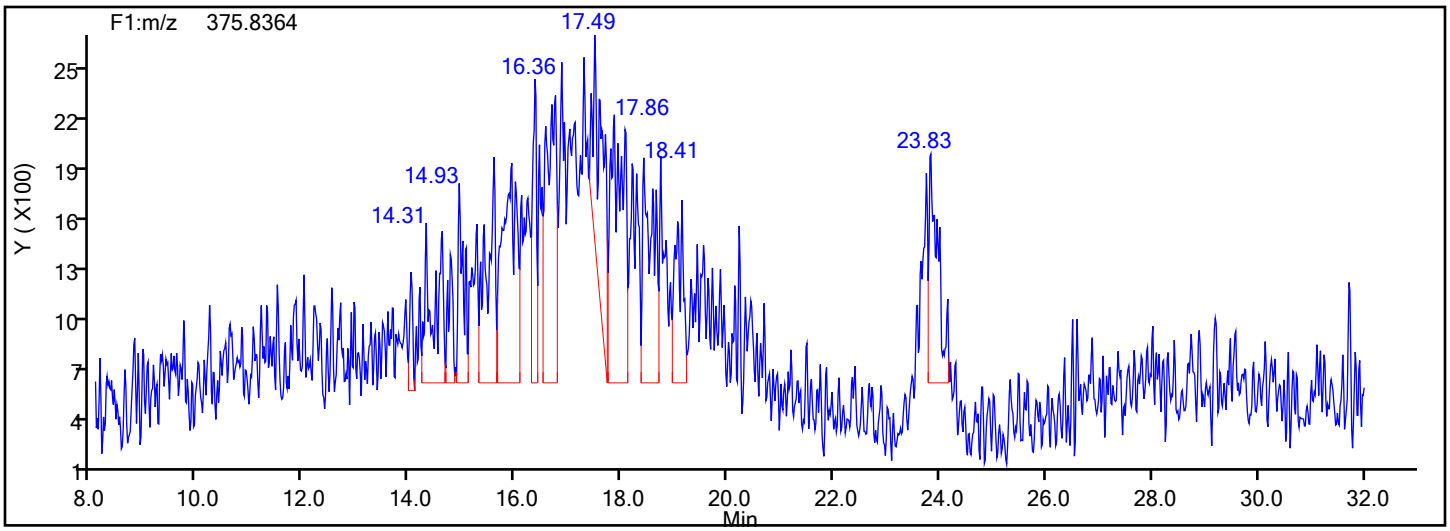
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d		
Injection Date:	18-Dec-2019 09:16:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	16
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

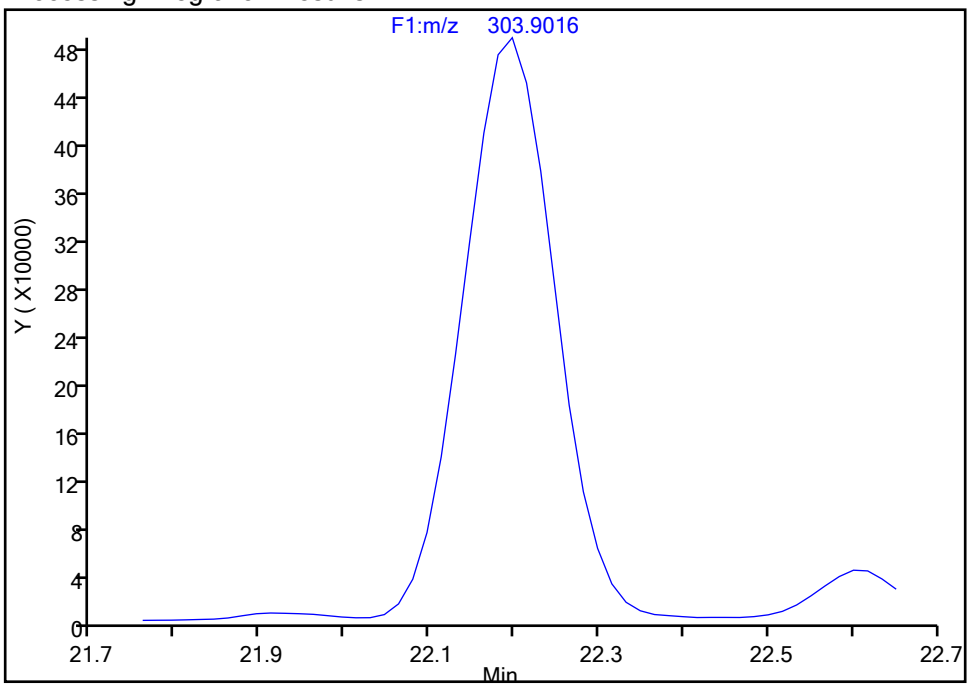
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-a.d				
Injection Date:	18-Dec-2019 09:16:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-12-A	Lab Sample ID:	140-17578-12		
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	16
Injection Vol:	1.0 ul	Dil. Factor:	15.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

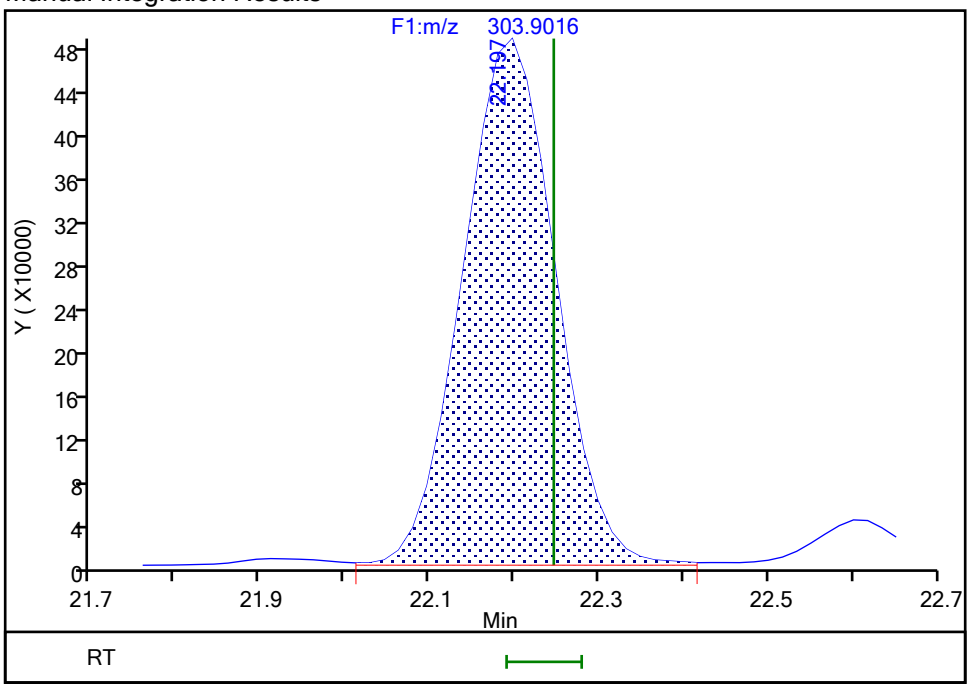
Not Detected
Expected RT: 22.25

Processing Integration Results



Manual Integration Results

RT: 22.20
Area: 3730917
Amount: 78.531440
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:05:28
Audit Action: Assigned Compound ID Audit Reason: Baseline

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Matrix: Sediment Lab File ID: 140-17578-a-13-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.84(g) Date Analyzed: 12/18/2019 02:58

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 45.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	360		1.8	0.56
41903-57-5	Total TCDD	420	B q	1.8	0.56
40321-76-4	1,2,3,7,8-PeCDD	7.7	J	9.2	0.18
36088-22-9	Total PeCDD	11	q	9.2	0.18
39227-28-6	1,2,3,4,7,8-HxCDD	0.71	J q	9.2	0.064
57653-85-7	1,2,3,6,7,8-HxCDD	0.91	J	9.2	0.063
19408-74-3	1,2,3,7,8,9-HxCDD	1.2	J	9.2	0.059
34465-46-8	Total HxCDD	18	B q	9.2	0.062
35822-46-9	1,2,3,4,6,7,8-HpCDD	12	B	9.2	0.25
37871-00-4	Total HpCDD	42	B	9.2	0.25
3268-87-9	OCDD	230	B	18	0.067
30402-14-3	Total TCDF	4500	B q	1.8	0.57
57117-41-6	1,2,3,7,8-PeCDF	160		9.2	0.23
57117-31-4	2,3,4,7,8-PeCDF	190		9.2	0.22
30402-15-4	Total PeCDF	530	I	9.2	0.22
70648-26-9	1,2,3,4,7,8-HxCDF	120		9.2	0.78
57117-44-9	1,2,3,6,7,8-HxCDF	31		9.2	0.77
60851-34-5	2,3,4,6,7,8-HxCDF	9.5		9.2	0.88
72918-21-9	1,2,3,7,8,9-HxCDF	2.8	J	9.2	1.1
55684-94-1	Total HxCDF	190	q	9.2	0.89
67562-39-4	1,2,3,4,6,7,8-HpCDF	19	B	9.2	0.077
55673-89-7	1,2,3,4,7,8,9-HpCDF	9.3	B	9.2	0.12
38998-75-3	Total HpCDF	34	B q	9.2	0.099
39001-02-0	OCDF	9.0	J B	18	0.079

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Matrix: Sediment Lab File ID: 140-17578-a-13-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.84(g) Date Analyzed: 12/18/2019 02:58

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 45.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	65		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	60		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	69		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	71		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	64		23-140
114423-97-1	13C-OCDD	53		17-157
89059-46-1	13C-2,3,7,8-TCDF	65		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	60		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	59		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	71		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	69		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	64		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	64		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	56		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	75		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Sample Type: Client
Inject. Date: 18-Dec-2019 02:58:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:00:20 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:00:20

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:53	1810720	0.79	1.1733	98.7	98.7	0.1516	0.1516		
A Non-2,3,7,8-sub-TCDD	29:27	260045	0.77	1.1733	14.4	14.2	0.1516	11.0		RQM
S Total TCDD					113.0	112.8	0.1516	0.1516		RQ
2,3,7,8-TCDF	28:54	18655580	0.79	1.0881	674.5	674.5	0.1544	0.1544		E
A Non-2,3,7,8-sub-TCDF	28:10	14708045	0.77	1.0881	532.1	531.8	0.1544	306.1		RQM
S Total TCDF					1206.6	1206.3	0.1544	0.1544		RQ
1,2,3,7,8-PeCDD	40:36	25613	1.55	1.0434	2.089	2.089	0.0495	0.0495		M
A Non-2,3,7,8-sub-PeCDD	39:24	11991	1.55	1.0434	1.178	0.9780	0.0495	0.3752		RQ
S Total PeCDD					3.267	3.067	0.0495	0.0495		RQ
1,2,3,7,8-PeCDF	38:49	959024	1.58	1.1898	43.9	43.9	0.0614	0.0614		M
2,3,4,7,8-PeCDF	40:03	1055816	1.58	1.1095	52.5	52.5	0.0584	0.0584		
A Non-2,3,7,8-sub-PeCDF	37:59	969133	1.58	1.1496	46.2	46.2	0.0598	16.1		Ma
S Total PeCDF					142.5	142.5	0.0599	0.0599		
1,2,3,4,7,8-HxCDD	44:52	2681	1.24	1.1409	0.2133	0.1923	0.0173	0.0173		RQ
1,2,3,6,7,8-HxCDD	44:59	3692	1.22	1.1481	0.2452	0.2452	0.0170	0.0170		
1,2,3,7,8,9-HxCDD	45:21	4939	1.29	1.2212	0.3193	0.3193	0.0161	0.0161		M
A Non-2,3,7,8-sub-HxCDD	44:17	60444	1.24	1.1700	4.137	4.078	0.0168	3.123		RQ
S Total HxCDD					4.915	4.834	0.0168	0.0168		RQ
1,2,3,4,7,8-HxCDF	43:50	775527	1.28	1.3629	33.1	33.1	0.2122	0.2122		
1,2,3,6,7,8-HxCDF	43:57	220210	1.29	1.2762	8.455	8.455	0.2087	0.2087		M
2,3,4,6,7,8-HxCDF	44:40	56558	1.27	1.2654	2.573	2.573	0.2383	0.2383		M
1,2,3,7,8,9-HxCDF	45:37	14672	1.40	1.2573	0.7466	0.7466	0.3089	0.3089		
A Non-2,3,7,8-sub-HxCDF	44:08	162375	1.24	1.2905	7.241	7.127	0.2366	2.547		RQMa
S Total HxCDF					52.1	52.0	0.2420	0.2420		RQ
1,2,3,4,6,7,8-HpCDD	49:39	40023	0.99	1.1204	3.380	3.380	0.0679	0.0679		M
A Non-2,3,7,8-sub-HpCDD	49:01	94199	1.02	1.1204	7.955	7.955	0.0679	7.955		M
S Total HpCDD					11.3	11.3	0.0679	0.0679		
1,2,3,4,6,7,8-HpCDF	47:59	106043	1.02	1.4984	5.167	5.167	0.0209	0.0209		
1,2,3,4,7,8,9-HpCDF	50:18	39036	1.06	1.3807	2.530	2.530	0.0327	0.0327		M
A Non-2,3,7,8-sub-HpCDF	49:31	28781	1.04	1.4395	1.631	1.608	0.0257	1.448		RQM

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					9.329	9.305	0.0268	0.0268		RQ
OCDD	53:53	561407	0.98	1.2073	61.4	61.4	0.0181	0.0181		
OCDF	54:02	32461	0.80	1.1162	2.423	2.423	0.0214	0.0214		M
D 13C-2,3,7,8-TCDD	30:50	782002	0.79	1.0709	32.7	32.7	0.4139	0.4139	65.33	
D 13C-2,3,7,8-TCDF	28:51	1270842	0.79	1.7545	32.4	32.4	0.4533	0.4533	64.81	
D 13C-1,2,3,7,8-PeCDD	40:34	587529	1.60	0.8743	30.1	30.1	0.8992	0.8992	60.13	
D 13C-1,2,3,7,8-PeCDF	38:47	918521	1.57	1.3704	30.0	30.0	0.4705	0.4705	59.97	
D 13C-2,3,4,7,8-PeCDF	40:02	906700	1.62	1.3837	29.3	29.3	0.4660	0.4660	58.63	
D 13C-1,2,3,4,7,8-HxCDD	44:50	611032	1.35	0.8772	34.4	34.4	0.1658	0.1658	68.73	
D 13C-1,2,3,6,7,8-HxCDD	44:57	655832	1.40	0.9171	35.3	35.3	0.1585	0.1585	70.56	
D 13C-1,2,3,4,7,8-HxCDF	43:49	860542	0.54	1.1892	35.7	35.7	0.2371	0.2371	71.40	
D 13C-1,2,3,6,7,8-HxCDF	43:56	1020389	0.51	1.4625	34.4	34.4	0.1928	0.1928	68.85	
D 13C-2,3,4,6,7,8-HxCDF	44:39	868613	0.53	1.3197	32.5	32.5	0.2136	0.2136	64.95	
D 13C-1,2,3,7,8,9-HxCDF	45:36	781523	0.55	1.2001	32.1	32.1	0.2349	0.2349	64.26	
D 13C-1,2,3,4,6,7,8-HpCDD	49:38	528434	1.09	0.8155	32.0	32.0	0.1674	0.1674	63.94	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	684825	0.44	1.0496	32.2	32.2	0.2061	0.2061	64.38	
D 13C-1,2,3,4,7,8,9-HpCDF	50:18	558668	0.46	0.8947	30.8	30.8	0.2418	0.2418	61.61	
D 13C-OCDD	53:52	757045	0.97	0.7044	53.0	53.0	0.5288	0.5288	53.02	
D 13C-OCDF	54:01	1200319	0.88	1.0615	55.8	55.8	0.2676	0.2676	55.79	
$ 37Cl4-2,3,7,8-TCDD	30:54	206561		1.2266	7.534	7.534	0.5336	0.5336	75.34	
* 13C-1,2,3,4-TCDD	30:21	2235277	0.84	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:20	2026879	1.34	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- E - Exceeded Maximum Amount
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Sample Type: Client
Inject. Date: 18-Dec-2019 02:58:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:00:20 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:00:20

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:53	30:52	5	1.002	801302	84539	62	155	1364		
321.8936	30:53	30:52	5	1.002	1009418	103645	57	142	1818	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	24:57	29:27	-269	0.809	1862	330	62	155	5		
321.8936	24:57	29:27	-269	0.809	2498	404	57	142	7	0.75(0.65-0.89)	
319.8965	27:52	29:27	-95	0.903	9916	1080	62	155	17		
	Empc Correction				8242	940	62	155	15		
321.8936	27:50	29:27	-97	0.902	10704	1221	57	142	21	0.93(0.65-0.89)	
319.8965	28:47	29:27	-39	0.933	4339	467	62	155	8		
	Empc Correction				3306	456	62	155	7		
321.8936	28:47	29:27	-39	0.933	4294	593	57	142	10	1.01(0.65-0.89)	M
319.8965	30:20	29:27	53	0.984	1281	259	62	155	4		
321.8936	30:19	29:27	52	0.983	2247	236	57	142	4	0.57(0.65-0.89)	
	Empc Correction				1663	336	57	142	6		
319.8965	30:39	29:27	73	0.994	10842	1571	62	155	25		
321.8936	30:38	29:27	72	0.993	13701	2375	57	142	42	0.79(0.65-0.89)	
319.8965	31:59	29:27	152	1.037	91974	8896	62	155	143		
321.8936	31:59	29:27	152	1.037	109678	10714	57	142	188	0.84(0.65-0.89)	
2,3,7,8-TCDF											E
303.9016	28:54	28:50	6	1.002	8245015	885018	136	340	6507		
305.8987	28:54	28:50	6	1.002	10410565	1101394	60	150	18357	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:25	28:10	-284	0.811	9245	1363	136	340	10		
305.8987	23:26	28:10	-283	0.812	11456	1791	60	150	30	0.81(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	23:53	28:10	-256	0.828	8962	1450	136	340	11		
305.8987	23:52	28:10	-257	0.827	10314	1607	60	150	27	0.87(0.65-0.89)	
303.9016	24:25	28:10	-225	0.846	54128	7121	136	340	52		
305.8987	24:25	28:10	-225	0.846	67047	8657	60	150	144	0.81(0.65-0.89)	
303.9016	24:43	28:10	-207	0.856	7791	1161	136	340	9		
305.8987	24:43	28:10	-207	0.856	9033	1286	60	150	21	0.86(0.65-0.89)	
303.9016	25:08	28:10	-182	0.871	400106	51994	136	340	382		
305.8987	25:08	28:10	-182	0.871	500837	65397	60	150	1090	0.80(0.65-0.89)	
303.9016	25:51	28:10	-138	0.896	418803	39906	136	340	293		M
305.8987	25:51	28:10	-138	0.896	528885	50873	60	150	848	0.79(0.65-0.89)	M
303.9016	26:20	28:10	-110	0.912	50848	6443	136	340	47		
	Empc Correction				42056	6038	136	340	44		
305.8987	26:19	28:10	-111	0.912	54619	7842	60	150	131	0.93(0.65-0.89)	
303.9016	26:31	28:10	-99	0.919	206498	26287	136	340	193		
305.8987	26:31	28:10	-99	0.919	252442	30945	60	150	516	0.82(0.65-0.89)	
303.9016	27:02	28:10	-68	0.937	304890	36782	136	340	270		
305.8987	27:02	28:10	-68	0.937	388078	46388	60	150	773	0.79(0.65-0.89)	
303.9016	27:18	28:10	-51	0.946	30639	3367	136	340	25		
305.8987	27:16	28:10	-53	0.945	44617	4973	60	150	83	0.69(0.65-0.89)	M
303.9016	27:48	28:10	-22	0.963	3745786	441480	136	340	3246		
305.8987	27:48	28:10	-22	0.963	4720035	558806	60	150	9313	0.79(0.65-0.89)	
303.9016	28:25	28:10	15	0.985	162527	18757	136	340	138		
305.8987	28:25	28:10	15	0.985	213071	25628	60	150	427	0.76(0.65-0.89)	
303.9016	30:06	28:10	116	1.043	478316	51600	136	340	379		
305.8987	30:06	28:10	116	1.043	624839	66750	60	150	1113	0.77(0.65-0.89)	
303.9016	30:46	28:10	156	1.067	110478	9641	136	340	71		
305.8987	30:47	28:10	157	1.067	140550	12545	60	150	209	0.79(0.65-0.89)	
303.9016	33:56	28:10	346	1.176	514102	52836	136	340	389		M
305.8987	33:56	28:10	346	1.176	647895	66339	60	150	1106	0.79(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	40:36	40:36	4	1.001	15555	3502	29	72	121		M
357.8516	40:35	40:36	3	1.000	10058	2217	26	65	85	1.55(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:40	39:24	-104	0.929	1579	357	29	72	12		
357.8516	37:39	39:24	-105	0.928	1259	344	26	65	13	1.25(1.32-1.78)	
	Empc Correction				1018	230	26	65	9		
355.8546	38:30	39:24	-54	0.949	3852	764	29	72	26		
	Empc Correction				2796	643	29	72	22		
357.8516	38:30	39:24	-54	0.949	1804	415	26	65	16	2.14(1.32-1.78)	
355.8546	39:10	39:24	-14	0.966	822	156	29	72	5		
357.8516	39:08	39:24	-16	0.965	1686	371	26	65	14	0.49(1.32-1.78)	
	Empc Correction				530	100	26	65	4		
355.8546	39:53	39:24	28	0.983	2122	366	29	72	13		
357.8516	39:51	39:24	26	0.982	1320	272	26	65	10	1.61(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											M
339.8597	38:49	38:49	4	1.001	587695	115379	53	132	2177		M
341.8567	38:49	38:49	4	1.001	371329	71718	51	127	1406	1.58(1.32-1.78)	M
2,3,4,7,8-PeCDF											
339.8597	40:03	40:02	3	1.000	646722	142449	53	132	2688		
341.8567	40:03	40:02	3	1.000	409094	92361	51	127	1811	1.58(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											Ma
339.8597	34:45	37:59	-194	0.896	5126	646	53	132	12		
341.8567	34:46	37:59	-193	0.896	3524	512	51	127	10	1.45(1.32-1.78)	
339.8597	37:19	37:59	-40	0.962	203262	34666	53	132	654		
341.8567	37:19	37:59	-40	0.962	130823	22150	51	127	434	1.55(1.32-1.78)	
339.8597	37:38	37:59	-20	0.971	4988	768	53	132	14		
341.8567	37:37	37:59	-21	0.970	3138	618	51	127	12	1.59(1.32-1.78)	
339.8597	38:19	37:59	20	0.988	13772	2033	53	132	38		
341.8567	38:19	37:59	20	0.988	8092	1095	51	127	21	1.70(1.32-1.78)	
339.8597	38:44	37:59	45	0.999	40375	13949	53	132	263		M
341.8567	38:44	37:59	45	0.999	29298	8465	51	127	166	1.38(1.32-1.78)	
339.8597	39:06	37:59	68	1.008	11243	1976	53	132	37		
341.8567	39:05	37:59	67	1.008	7401	1304	51	127	26	1.52(1.32-1.78)	
339.8597	39:20	37:59	81	1.014	210440	44875	53	132	847		
341.8567	39:20	37:59	81	1.014	126797	26480	51	127	519	1.66(1.32-1.78)	
339.8597	40:19	37:59	140	1.040	80912	15796	53	132	298		
341.8567	40:19	37:59	140	1.040	52185	9456	51	127	185	1.55(1.32-1.78)	
339.8597	41:23	37:59	204	1.067	24006	5488	53	132	104		
341.8567	41:23	37:59	204	1.067	13751	3409	51	127	67	1.75(1.32-1.78)	
1,2,3,4,7,8-HxCDD											RQ
389.8158	44:52	44:49	3	1.001	1777	420	13	32	32		
	Empc Correction				1484	450	13	32	35		
391.8127	44:51	44:49	2	1.000	1197	363	12	30	30	1.48(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:59	44:56	3	1.001	2030	506	13	32	39		
391.8127	44:58	44:56	2	1.000	1662	392	12	30	33	1.22(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	45:21	45:21	3	1.012	2779	546	13	32	42		M
391.8127	45:20	45:21	2	1.011	2160	437	12	30	36	1.29(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:17	44:17	-59	0.963	25596	6637	13	32	511		
391.8127	43:17	44:17	-59	0.963	20689	5642	12	30	470	1.24(1.05-1.43)	
389.8158	43:50	44:17	-27	0.975	1201	235	13	32	18		
391.8127	43:51	44:17	-26	0.976	1249	342	12	30	29	0.96(1.05-1.43)	
	Empc Correction				968	189	12	30	16		
389.8158	44:08	44:17	-9	0.982	5794	1216	13	32	94		
391.8127	44:08	44:17	-9	0.982	5080	1216	12	30	101	1.14(1.05-1.43)	
389.8158	44:21	44:17	5	0.987	618	167	13	32	13		
391.8127	44:19	44:17	3	0.986	1101	246	12	30	21	0.56(1.05-1.43)	
	Empc Correction				498	134	12	30	11		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDF											
373.8208	43:50	43:48	3	1.000	434754	116403	332	830	351		
375.8178	43:49	43:48	2	1.000	340773	90218	189	472	477	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDF											M
373.8208	43:57	43:57	2	1.000	123866	28031	332	830	84		M
375.8178	43:57	43:57	2	1.000	96344	23183	189	472	123	1.29(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											M
373.8208	44:40	44:40	3	1.000	31686	8261	332	830	25		M
375.8178	44:40	44:40	3	1.000	24872	6162	189	472	33	1.27(1.05-1.43)	M
1,2,3,7,8,9-HxCDF											
373.8208	45:37	45:36	3	1.000	8563	2148	332	830	6		
375.8178	45:37	45:36	3	1.000	6109	1519	189	472	8	1.40(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	42:36	44:08	-92	0.970	4295	1347	332	830	4		M
375.8178	42:35	44:08	-93	0.969	3003	862	189	472	5	1.43(1.05-1.43)	M
373.8208	42:46	44:08	-82	0.973	32209	8323	332	830	25		
375.8178	42:46	44:08	-82	0.973	25811	6850	189	472	36	1.25(1.05-1.43)	
373.8208	43:22	44:08	-46	0.987	12995	3527	332	830	11		
375.8178	43:22	44:08	-46	0.987	10379	2966	189	472	16	1.25(1.05-1.43)	
373.8208	44:01	44:08	-7	1.002	5680	1914	332	830	6		M
375.8178	44:02	44:08	-6	1.002	5858	1564	189	472	8	0.97(1.05-1.43)	
	Empc Correction				4580	1543	189	472	8		
373.8208	44:34	44:08	26	1.015	9294	2300	332	830	7		M
	Empc Correction				7969	2227	332	830	7		
375.8178	44:34	44:08	26	1.015	6427	1796	189	472	10	1.45(1.05-1.43)	
373.8208	45:44	44:08	96	1.041	28193	6330	332	830	19		
375.8178	45:44	44:08	96	1.041	20834	4661	189	472	25	1.35(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											M
423.7767	49:39	49:40	3	1.000	19926	3579	22	55	163		
425.7737	49:40	49:40	4	1.001	20097	3652	37	92	99	0.99(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDD											M
423.7767	47:55	49:01	-65	0.000			22	55			
425.7737	47:55	49:01	-65	0.000			37	92		0.00(0.88-1.20)	
423.7767	48:29	49:01	-32	0.977	47640	9581	22	55	436		M
425.7737	48:29	49:01	-32	0.977	46559	8766	37	92	237	1.02(0.88-1.20)	M
1,2,3,4,6,7,8-HpCDF											
407.7817	47:59	47:58	3	1.001	53545	11933	21	52	568		
409.7788	47:59	47:58	3	1.001	52498	11767	15	37	784	1.02(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:18	50:18	3	1.000	20101	3498	21	52	167		M
409.7788	50:18	50:18	3	1.000	18935	3800	15	37	253	1.06(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											RQM
407.7817	48:20	49:31	-71	1.008	1878	221	21	52	11		
	Empc Correction				1460	289	21	52	14		
409.7788	48:24	49:31	-67	1.009	1404	278	15	37	19	1.34(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
407.7817	48:38	49:31	-53	1.014	13759	3042	21	52	145		M
409.7788	48:36	49:31	-55	1.013	12158	2423	15	37	162	1.13(0.88-1.20)	M
OCDD											
457.7377	53:53	53:51	3	1.000	277203	63169	3	7	21056		
459.7348	53:53	53:51	3	1.000	284204	66205	12	30	5517	0.98(0.76-1.02)	
OCDF											M
441.7428	54:02	54:02	3	1.000	14420	3401	18	45	189		M
443.7399	54:02	54:02	3	1.000	18041	4321	9	22	480	0.80(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:50	30:47	6	1.016	344056	36230	254	635	143		
333.9338	30:50	30:47	6	1.016	437946	47259	170	425	278	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:51	28:47	6	0.951	562841	65052	328	820	198		
317.9389	28:52	28:47	7	0.951	708001	80812	433	1082	187	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:34	3	1.337	361272	81776	488	1220	168		
369.8919	40:34	40:34	3	1.337	226257	50820	264	660	193	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:47	38:46	3	1.278	560601	109140	446	1115	245		
353.8970	38:47	38:46	3	1.278	357920	68764	171	427	402	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	40:02	3	1.319	560982	123189	446	1115	276		
353.8970	40:02	40:02	3	1.319	345718	77318	171	427	452	1.62(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:50	44:49	2	0.989	350626	91020	203	507	448		
403.8529	44:50	44:49	2	0.989	260406	66224	72	180	920	1.35(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:57	44:56	2	0.991	382731	91951	203	507	453		
403.8529	44:57	44:56	2	0.991	273101	66413	72	180	922	1.40(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:49	43:47	3	0.966	300870	77392	197	492	393		
385.8610	43:49	43:47	3	0.966	559672	147732	336	840	440	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:55	2	0.969	343825	84570	197	492	429		
385.8610	43:56	43:55	2	0.969	676564	159869	336	840	476	0.51(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:38	3	0.985	300895	75314	197	492	382		
385.8610	44:39	44:38	3	0.985	567718	140545	336	840	418	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:36	45:35	3	1.006	277140	58633	197	492	298		
385.8610	45:36	45:35	3	1.006	504383	108987	336	840	324	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:38	49:36	3	1.095	276102	48898	158	395	309		
437.8140	49:38	49:36	3	1.095	252332	47783	100	250	478	1.09(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:56	3	1.058	208942	42510	156	390	273		
419.8220	47:58	47:56	4	1.058	475883	100883	253	632	399	0.44(0.37-0.51)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:18	50:16	4	1.110	176098	32812	156	390	210		
419.8220	50:17	50:16	3	1.109	382570	66797	253	632	264	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	2	1.188	372838	84482	428	1070	197		
471.7750	53:52	53:52	2	1.188	384207	84649	276	690	307	0.97(0.76-1.02)	
13C-OCDF											
453.7830	54:01	54:00	2	1.191	560881	129395	337	842	384		
455.7801	54:01	54:00	2	1.191	639438	151380	200	500	757	0.88(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:54	30:49	8	1.018	206561	21438	626	1565	34		
13C-1,2,3,4-TCDD											
331.9368	30:21	30:15	7		1022661	107253	254	635	422		
333.9338	30:20	30:15	6		1212616	131870	170	425	776	0.84(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:17	3		1161842	269043	203	507	1325		
403.8529	45:20	45:17	3		865037	203442	72	180	2826	1.34(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	782002	83489

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	782002	83489

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:57	1862	330	2498	404	0.2376	0.75	
27:52	9916	1080	10704	1221	1.12	0.93	RQ
27:52	8242	940	10704	1221	1.03		Empc Correction
28:47	4339	467	4294	593	0.4705	1.01	RQM
28:47	3306	456	4294	593	0.4142		Empc Correction
30:20	1281	259	2247	236	0.1923	0.57	RQ
30:20	1281	259	1663	336	0.1604		Empc Correction
30:39	10842	1571	13701	2375	1.34	0.79	
31:59	91974	8896	109678	10714	11.0	0.84	
Signal Totals:							
	117507	12452	142538	15643			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	263336	28146				0.84	RQM
	260045	28095					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 14.351 = (263336 * 50.000) / (782002 * 1.173)
Empc Amount: 14.171 = (260045 * 50.000) / (782002 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	1270842	145864

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	1270842	145864

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:25	9245	1363	11456	1791	0.7485	0.81	
23:53	8962	1450	10314	1607	0.6970	0.87	
24:25	54128	7121	67047	8657	4.38	0.81	
24:43	7791	1161	9033	1286	0.6083	0.86	
25:08	400106	51994	500837	65397	32.6	0.80	
25:51	418803	39906	528885	50873	34.3	0.79	M
26:20	50848	6443	54619	7842	3.81	0.93	RQ
26:20	42056	6038	54619	7842	3.50		Empc Correction
26:31	206498	26287	252442	30945	16.6	0.82	
27:02	304890	36782	388078	46388	25.1	0.79	
27:18	30639	3367	44617	4973	2.72	0.69	M
27:48	3745786	441480	4720035	558806	306.1	0.79	
28:25	162527	18757	213071	25628	13.6	0.76	
30:06	478316	51600	624839	66750	39.9	0.77	
30:46	110478	9641	140550	12545	9.08	0.79	
33:56	514102	52836	647895	66339	42.0	0.79	M
Signal Totals:							
	6494327	749783	8213718	949827			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	14716837	1700015				0.79	RQM
	14708045	1699610					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 532.115 = (14716837 * 50.000) / (1270842 * 1.088)
Empc Amount: 531.797 = (14708045 * 50.000) / (1270842 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	587529	132596

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	587529	132596

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:40	1579	357	1259	344	0.2315	1.25	RQ
37:40	1579	357	1018	230	0.2118		Empc Correction
38:30	3852	764	1804	415	0.4613	2.14	RQ
38:30	2796	643	1804	415	0.3752		Empc Correction
39:10	822	156	1686	371	0.2046	0.49	RQ
39:10	822	156	530	100	0.1103		Empc Correction
39:53	2122	366	1320	272	0.2807	1.61	
Signal Totals:							
	7319	1522	4672	1017			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	14444	3045				1.38	RQ
	11991	2539					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.178 = (14444 * 50.000) / (587529 * 1.043)
Empc Amount: 0.9780 = (11991 * 50.000) / (587529 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	918521	177904
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	906700	200507

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	912610	189205

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:45	5126	646	3524	512	0.4122	1.45	
37:19	203262	34666	130823	22150	15.9	1.55	
37:38	4988	768	3138	618	0.3873	1.59	
38:19	13772	2033	8092	1095	1.04	1.70	
38:44	40375	13949	29298	8465	3.32	1.38	Ma
39:06	11243	1976	7401	1304	0.8885	1.52	
39:20	210440	44875	126797	26480	16.1	1.66	
40:19	80912	15796	52185	9456	6.34	1.55	
41:23	24006	5488	13751	3409	1.80	1.75	
Signal Totals:							
	594124	120197	375009	73489			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	969133	193686				1.58	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 46.186 = (969133 * 50.000) / (912610 * 1.150)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	611032	157244
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	655832	158364
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	633432	157804

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	25596	6637	20689	5642	3.12	1.24	
43:50	1201	235	1249	342	0.1653	0.96	RQ
43:50	1201	235	968	189	0.1463		Empc Correction
44:08	5794	1216	5080	1216	0.7336	1.14	
44:21	618	167	1101	246	0.1160	0.56	RQ
44:21	618	167	498	134	0.0753		Empc Correction
Signal Totals:							
	33209	8255	27235	7181			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	61328	15701				1.18	RQ
	60444	15436					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.137 = (61328 * 50.000) / (633432 * 1.170)
Empc Amount: 4.078 = (60444 * 50.000) / (633432 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	860542	225124
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	1020389	244439
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	868613	215859
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	781523	167620

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	882766	213260

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:36	4295	1347	3003	862	0.3203	1.43	M
42:46	32209	8323	25811	6850	2.55	1.25	
43:22	12995	3527	10379	2966	1.03	1.25	
44:01	5680	1914	5858	1564	0.5064	0.97	RQMa
44:01	5680	1914	4580	1543	0.4503		Empc Correction
44:34	9294	2300	6427	1796	0.6900	1.45	RQMa
44:34	7969	2227	6427	1796	0.6319		Empc Correction
45:44	28193	6330	20834	4661	2.15	1.35	
Signal Totals:							
	91341	23668	71034	18678			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	164978	42440				1.28	RQMa
	162375	42346					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.241 = (164978 * 50.000) / (882766 * 1.290)
Empc Amount: 7.127 = (162375 * 50.000) / (882766 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	528434	96681

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	528434	96681

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
47:55	0	0	0	0		0.00	
48:29	47640	9581	46559	8766	7.96	1.02	M
Signal Totals:							
	47640	9581	46559	8766			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	94199	18347				1.02	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.955 = (94199 * 50.000) / (528434 * 1.120)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Inject. Date: 18-Dec-2019 02:58:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	684825	143393
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	558668	99609

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	621746	121501

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:20	1878	221	1404	278	0.1833	1.34	RQ
48:20	1460	289	1404	278	0.1600		Empc Correction
48:38	13759	3042	12158	2423	1.45	1.13	M
Signal Totals:							
	15219	3331	13562	2701			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	29199	5964				1.15	RQM
	28781	6032					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.631 = (29199 * 50.000) / (621746 * 1.440)
Empc Amount: 1.608 = (28781 * 50.000) / (621746 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

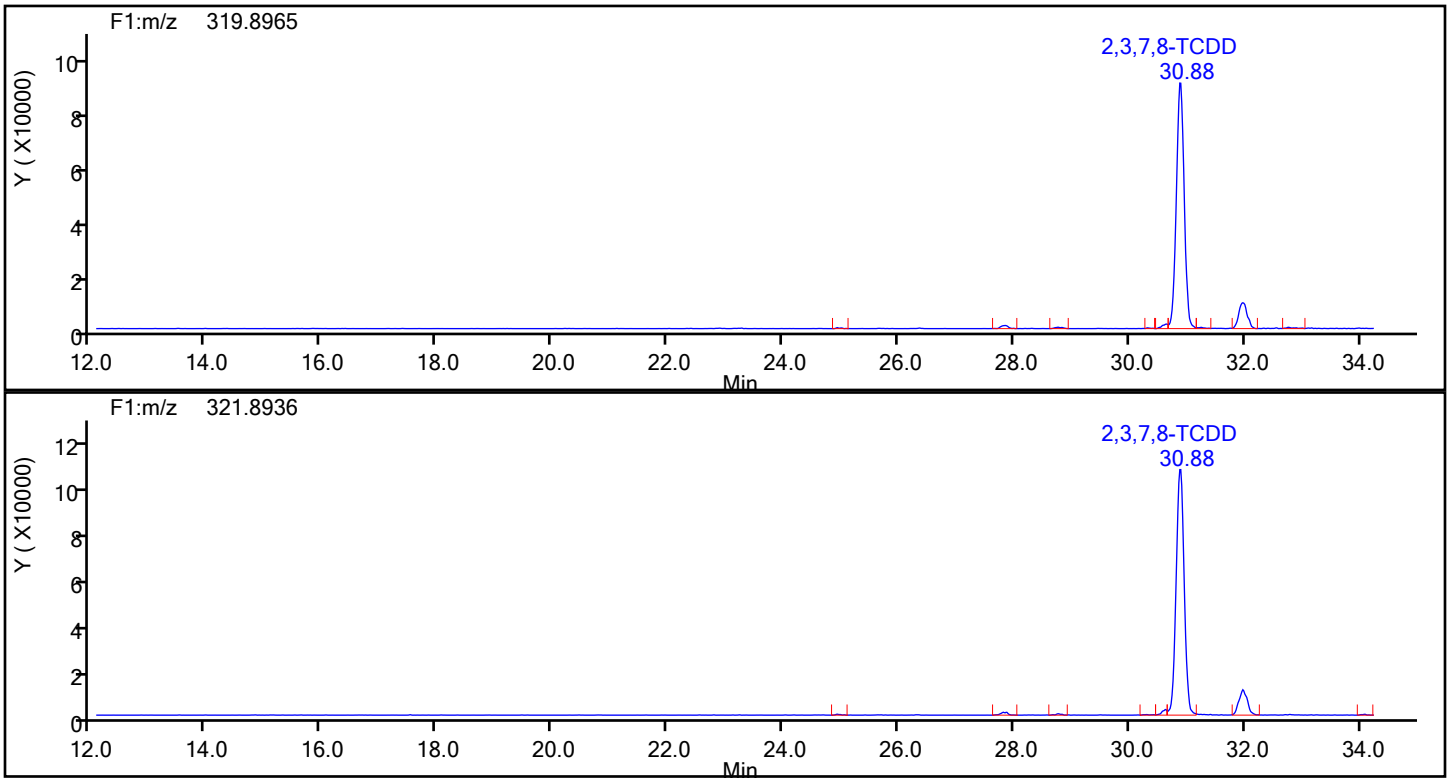
Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

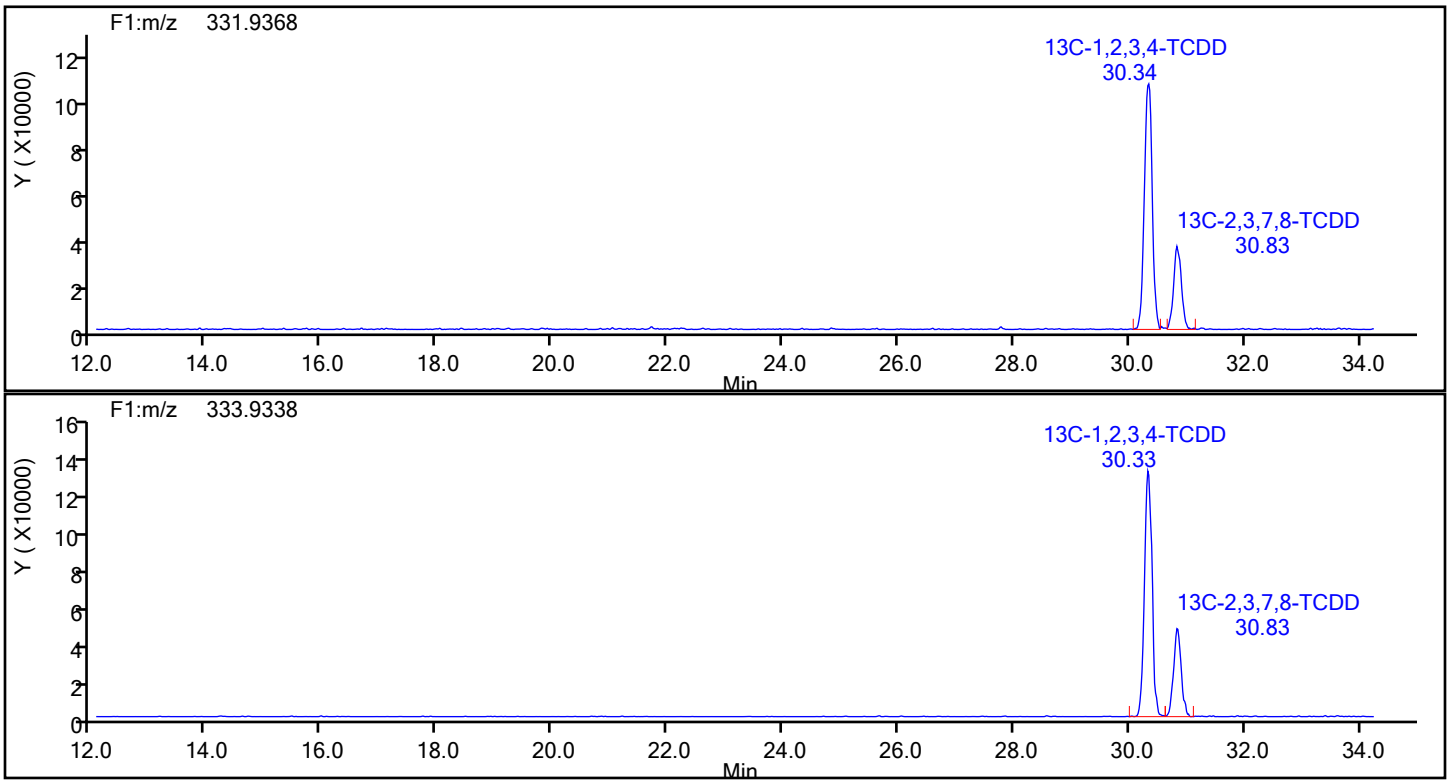
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

TCDD



TCDD Standards

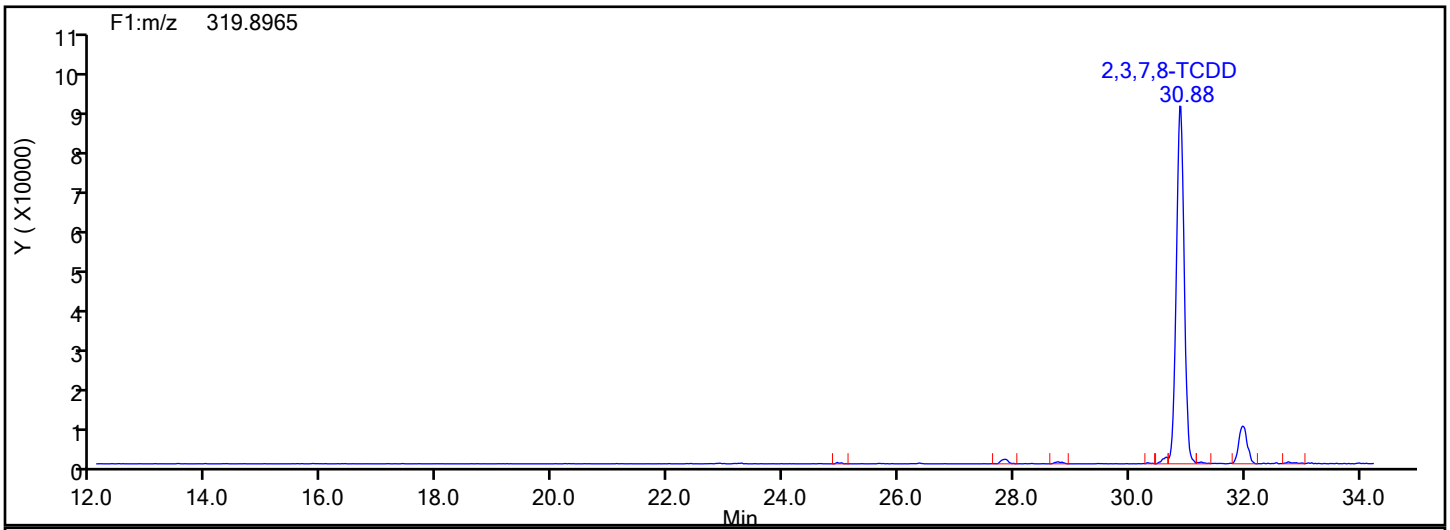


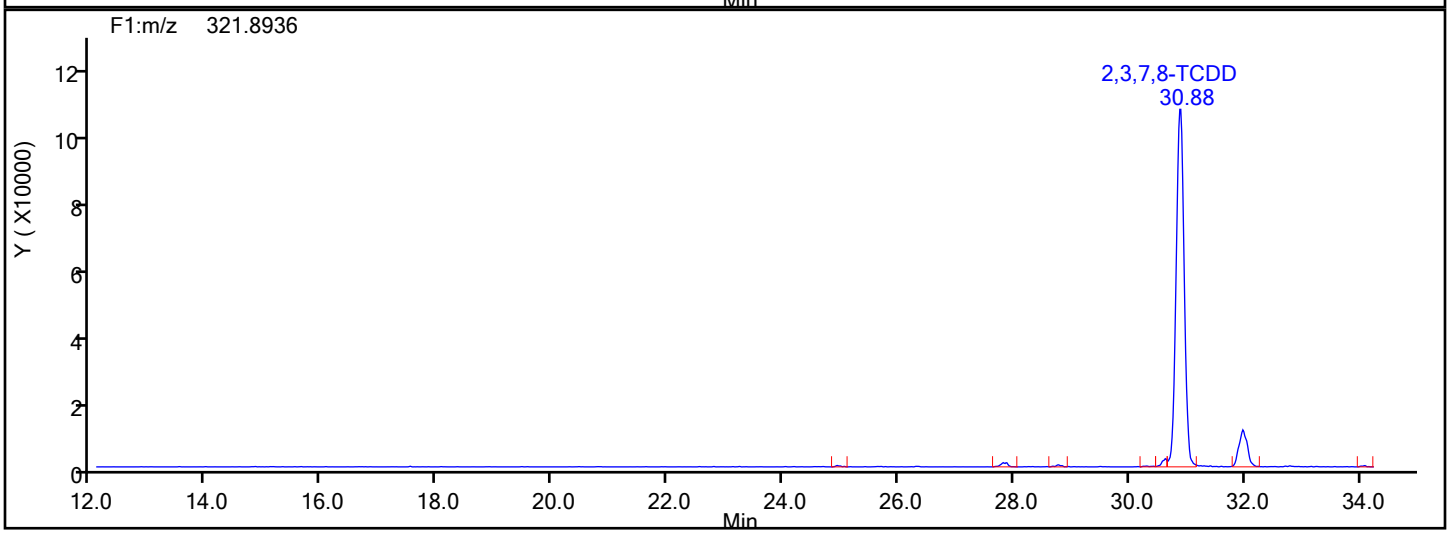
Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

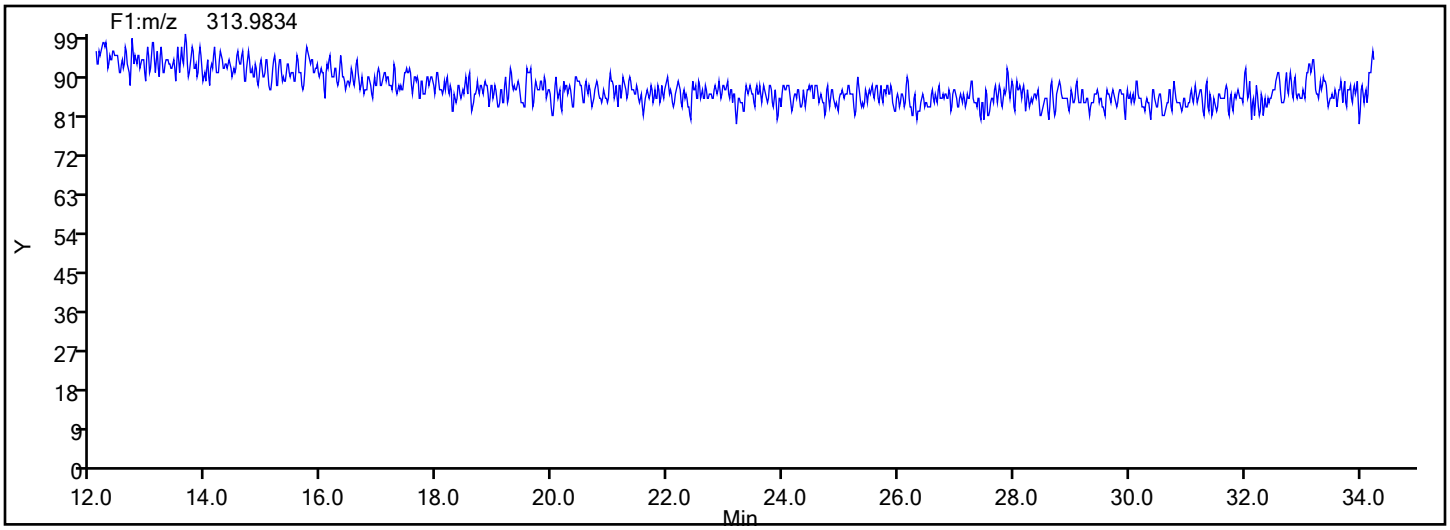
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

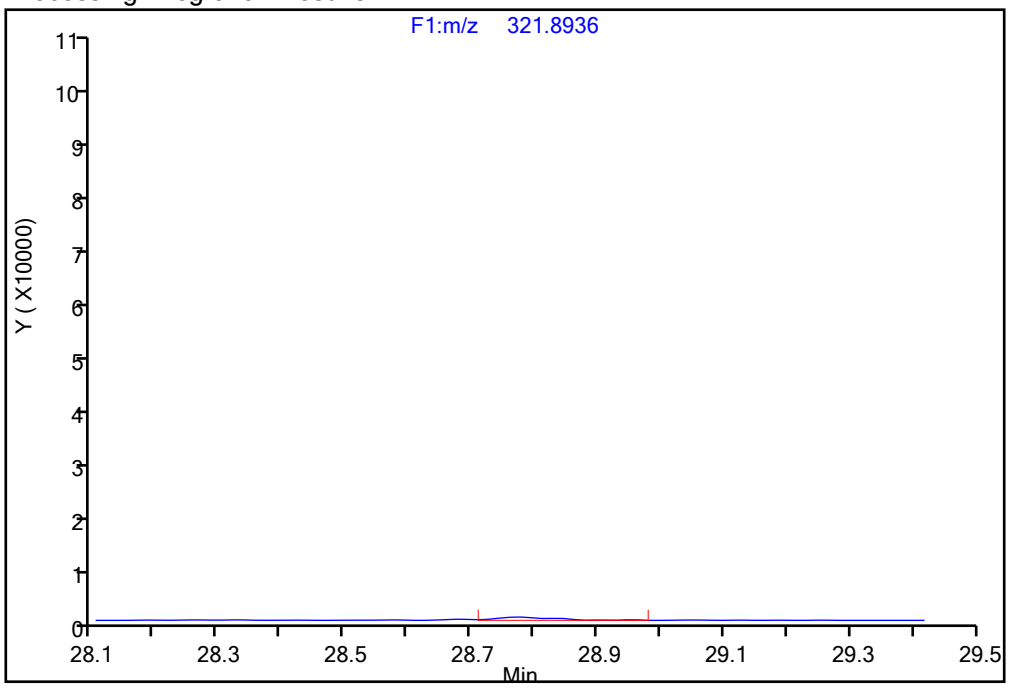
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

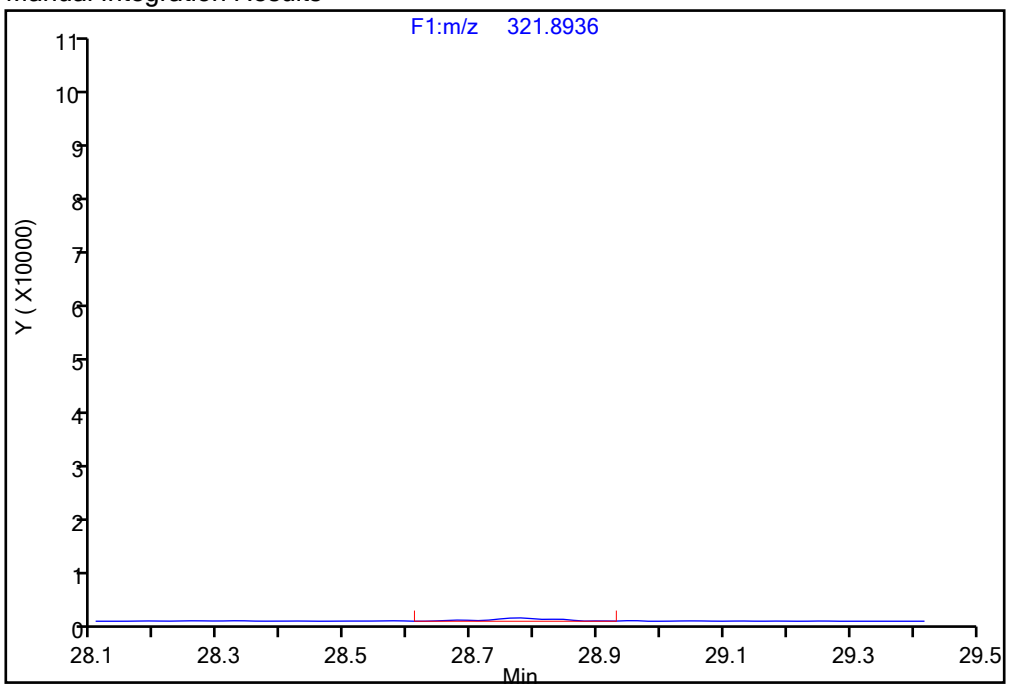
Processing Integration Results

RT = 28.778 Area = 3733



Manual Integration Results

RT = 28.778 Area = 4294 M



Reviewer: davidsonm, 18-Dec-2019 07:54:40

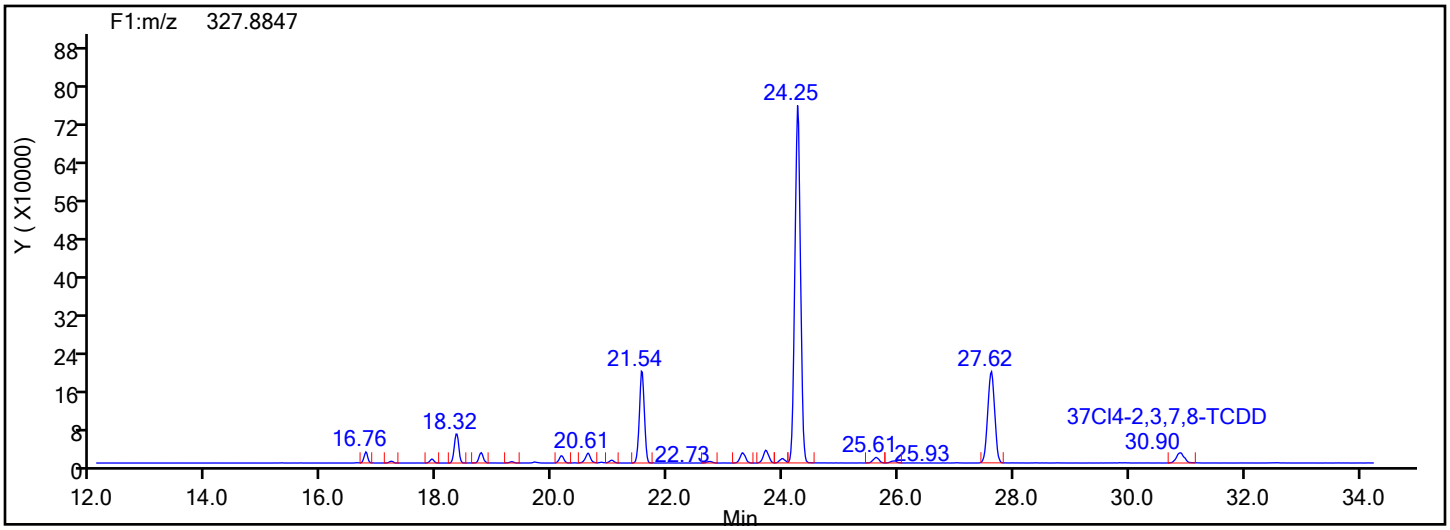
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

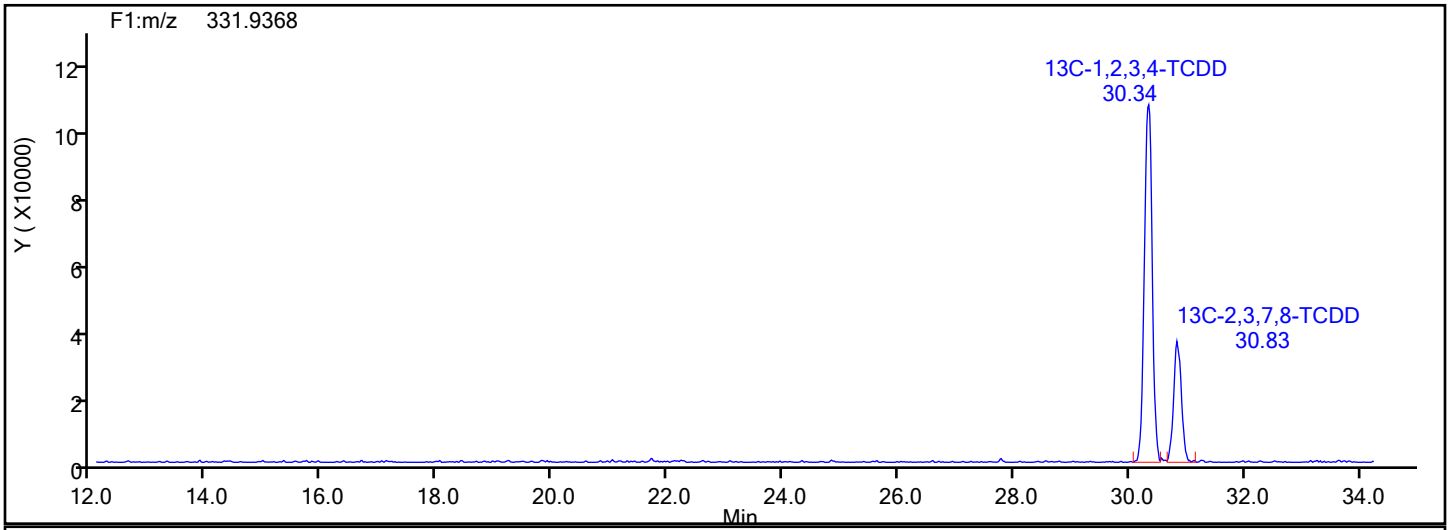
Eurofins TestAmerica, Knoxville

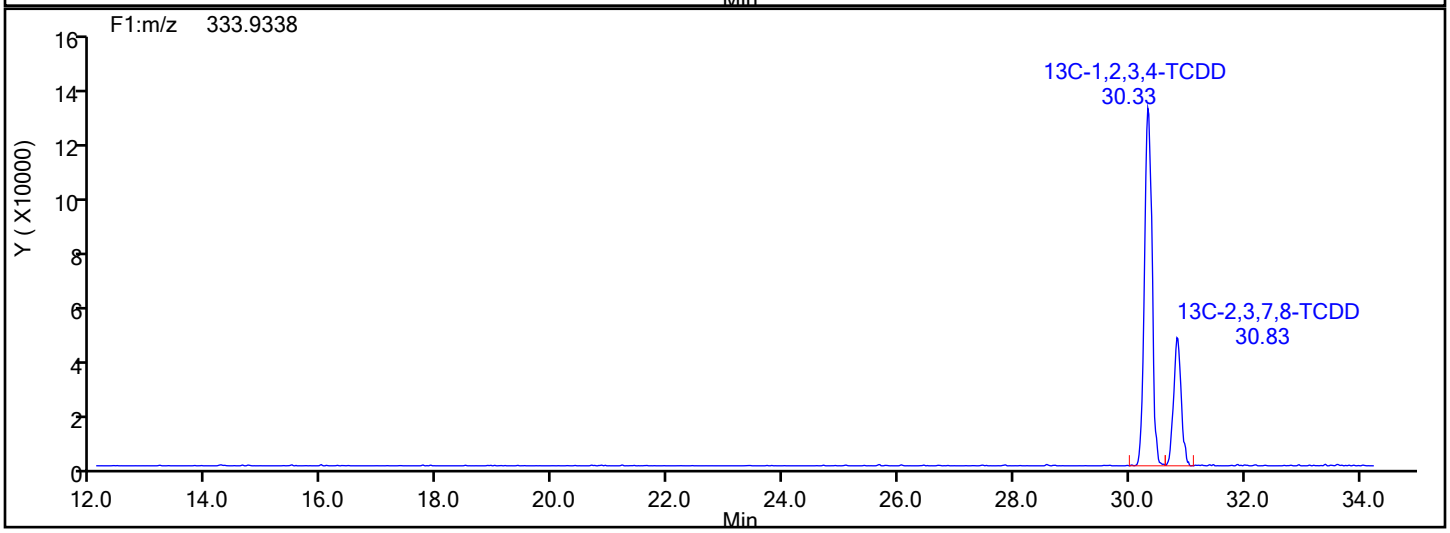
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



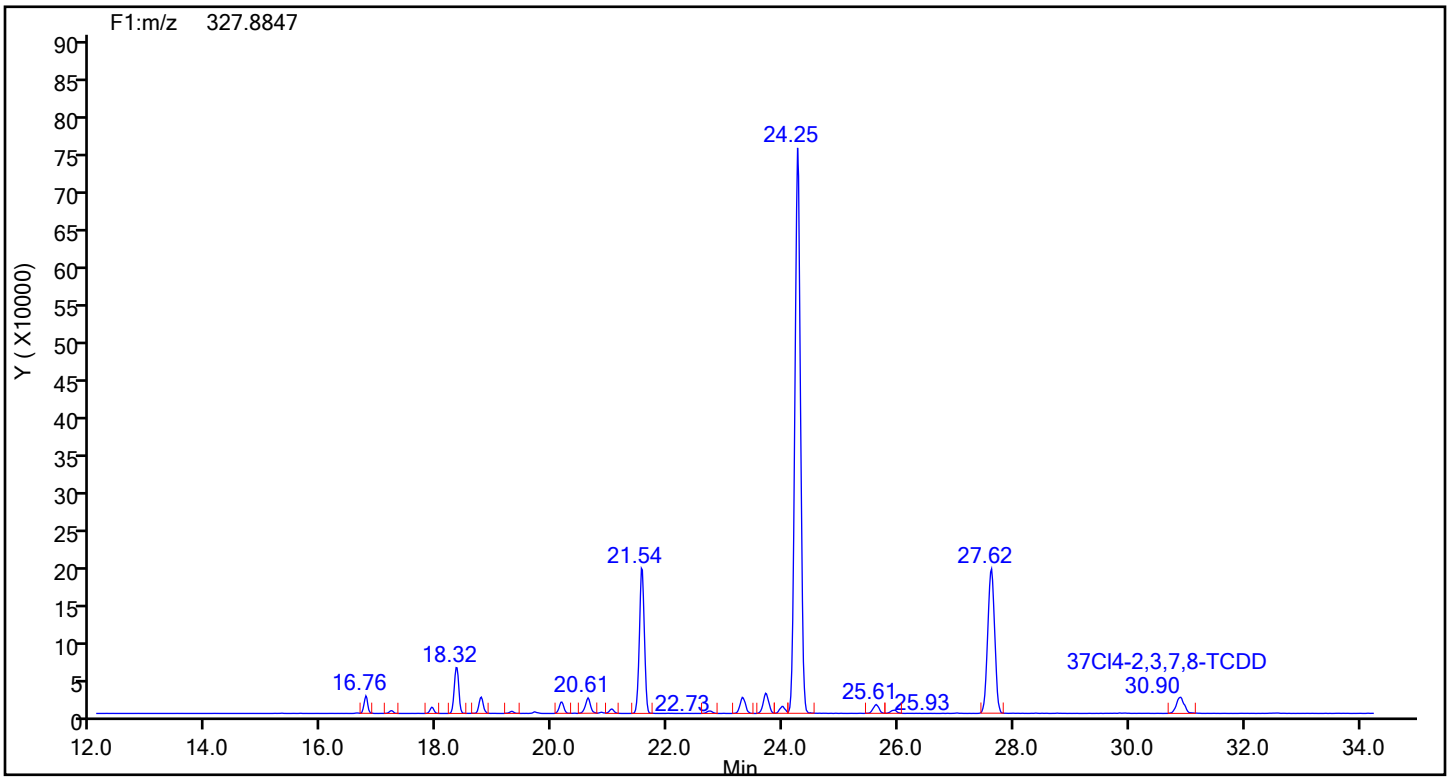


Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

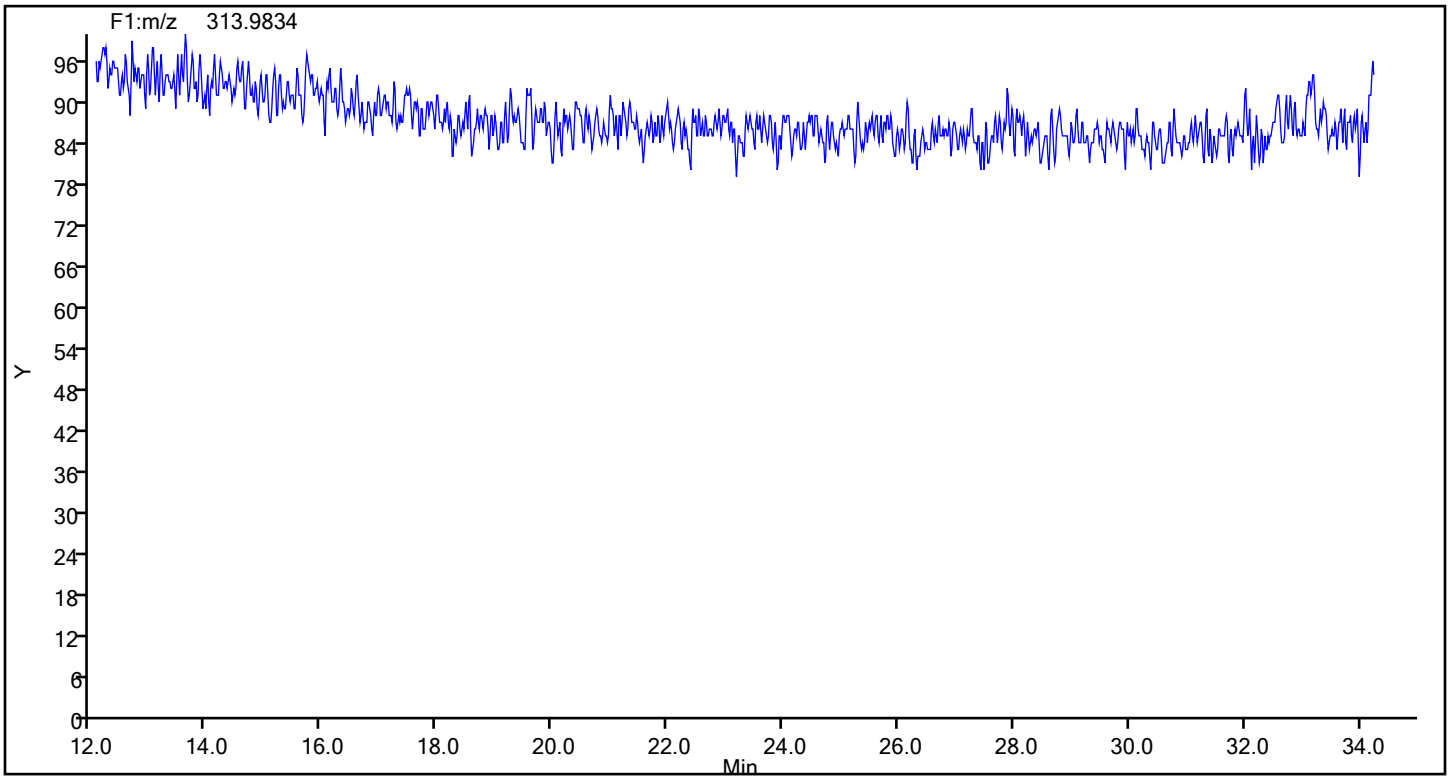
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

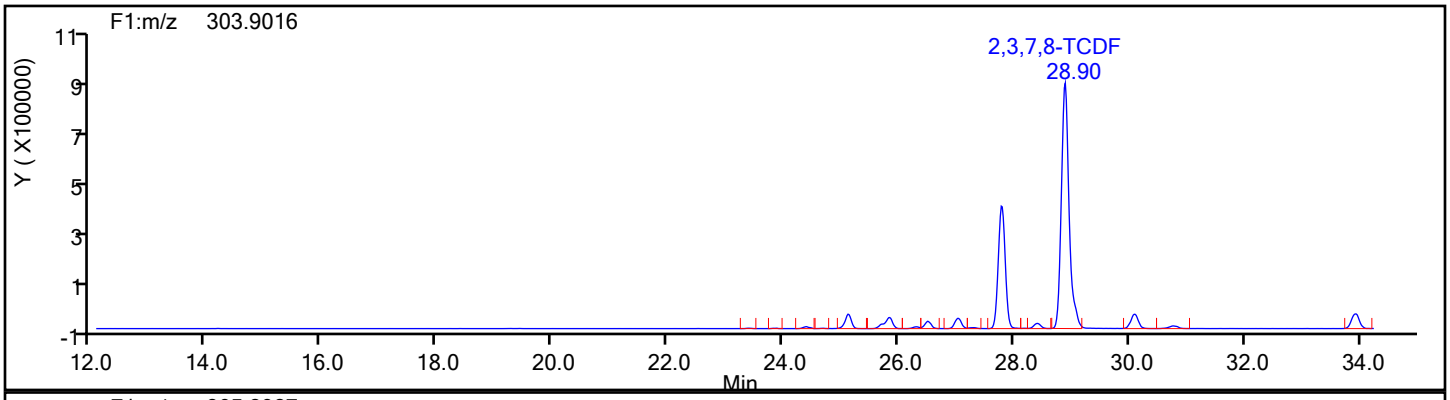


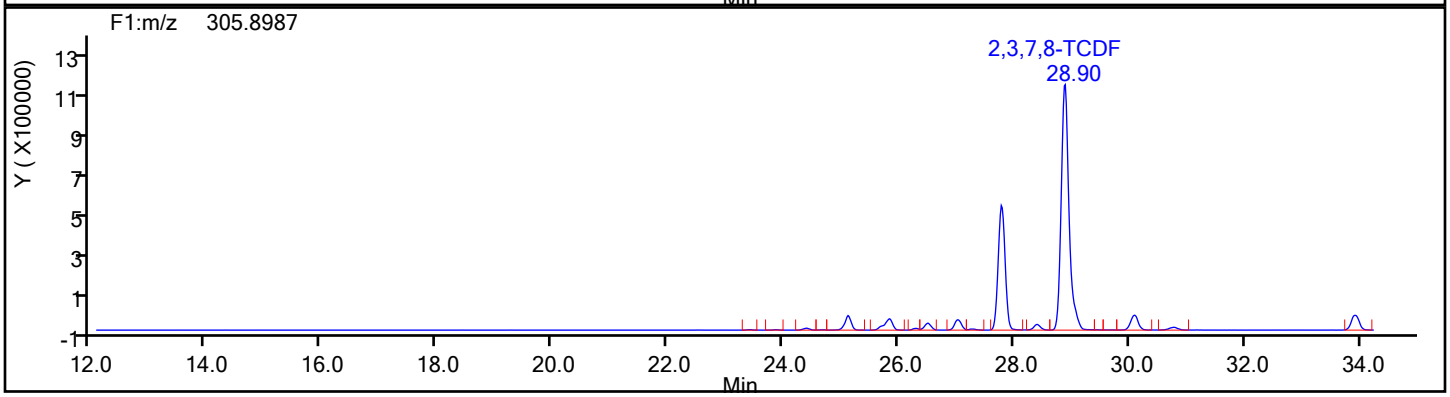
Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

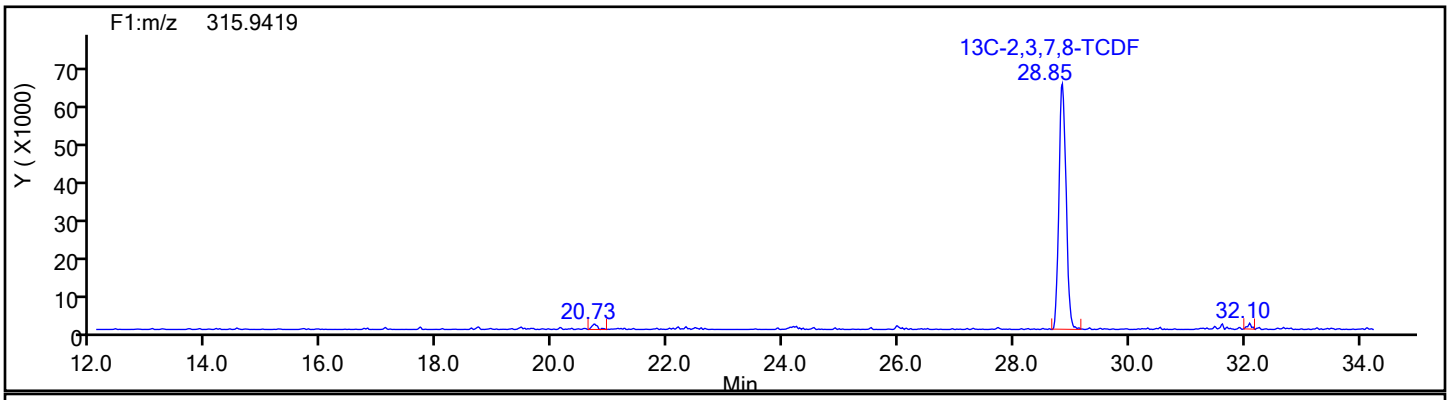
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

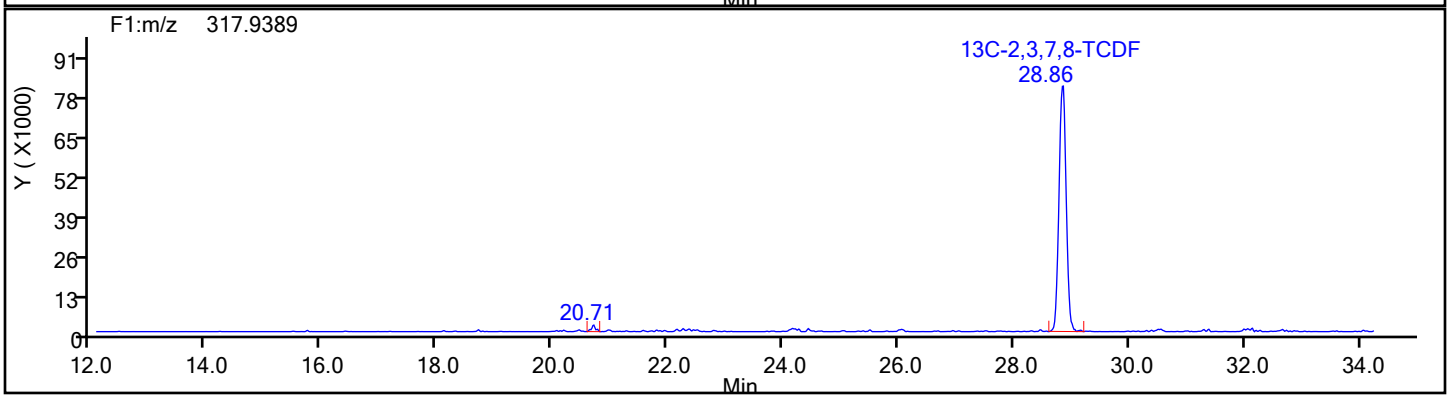
TCDF





TCDF Standards



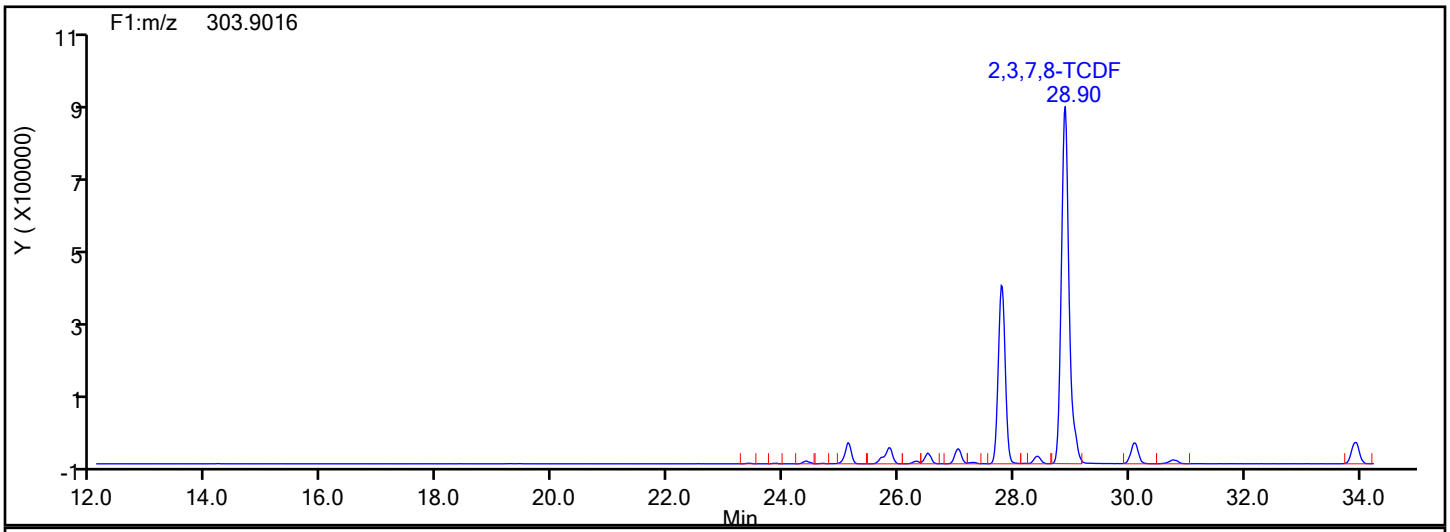


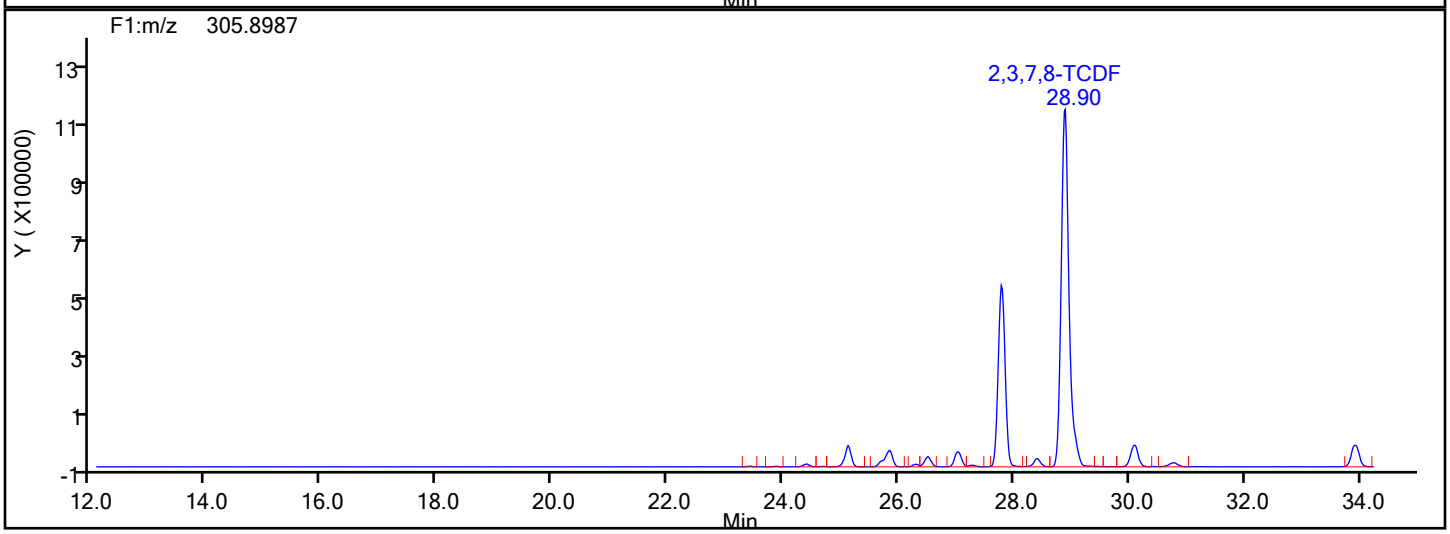
Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

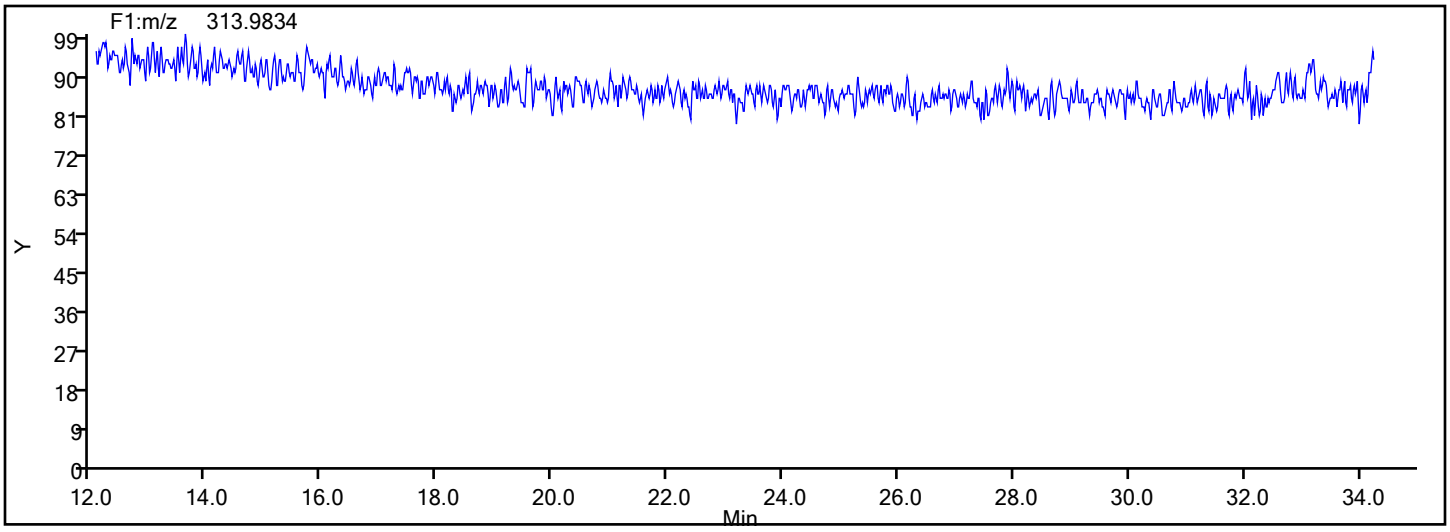
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

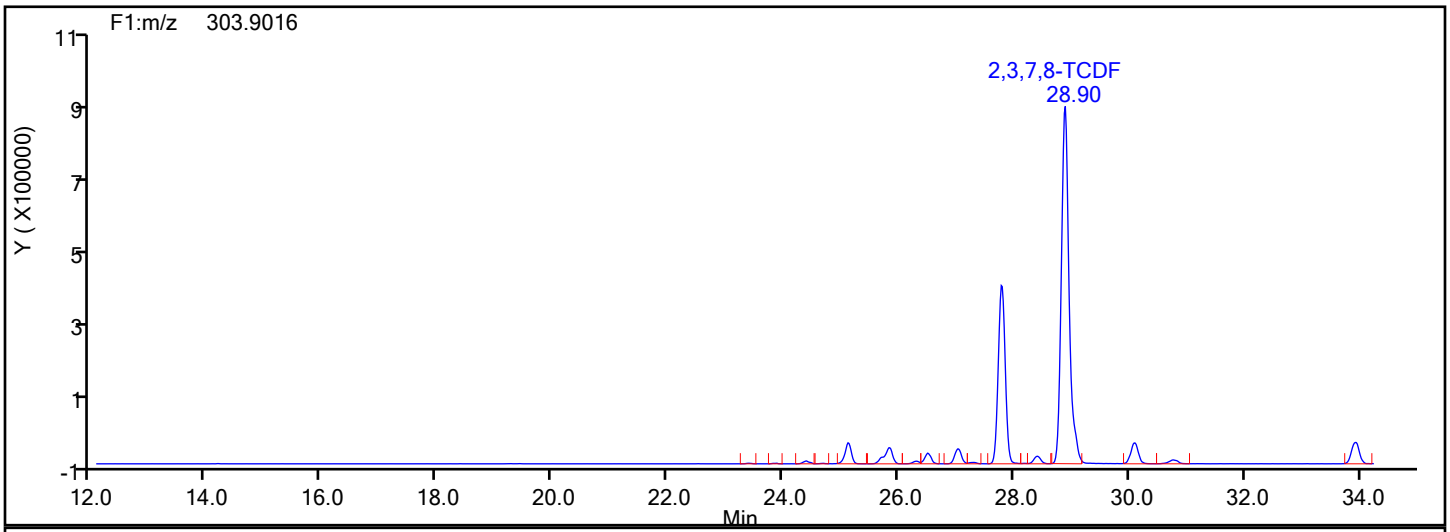


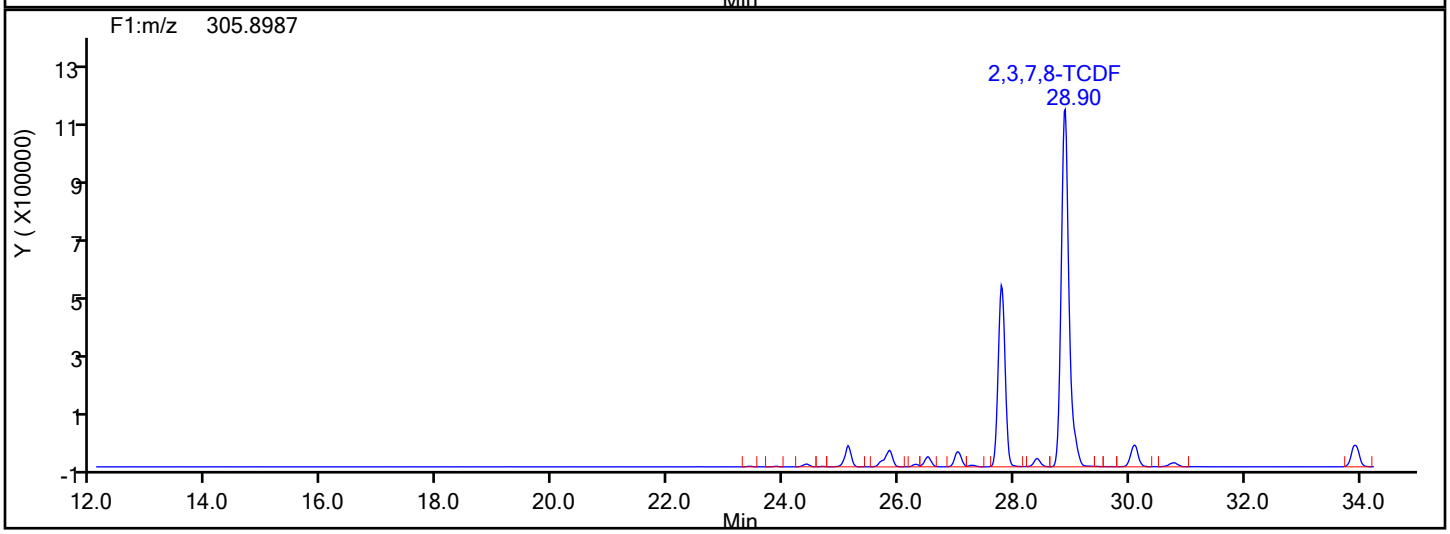
Report Date: 18-Dec-2019 08:00:23 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

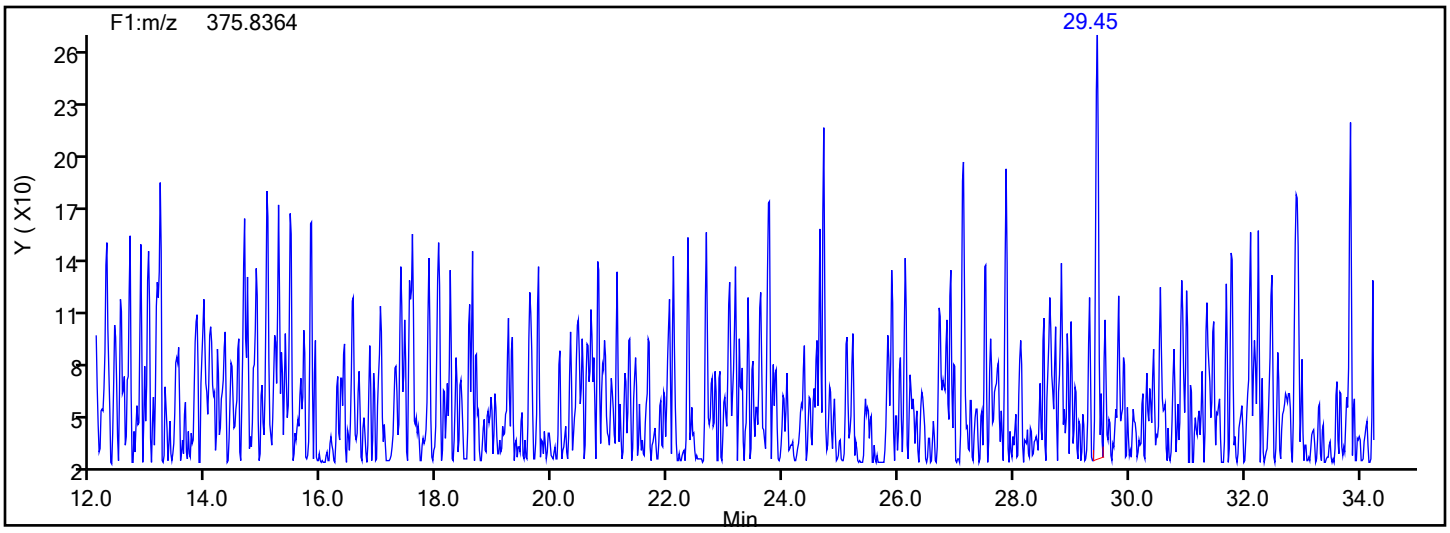
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

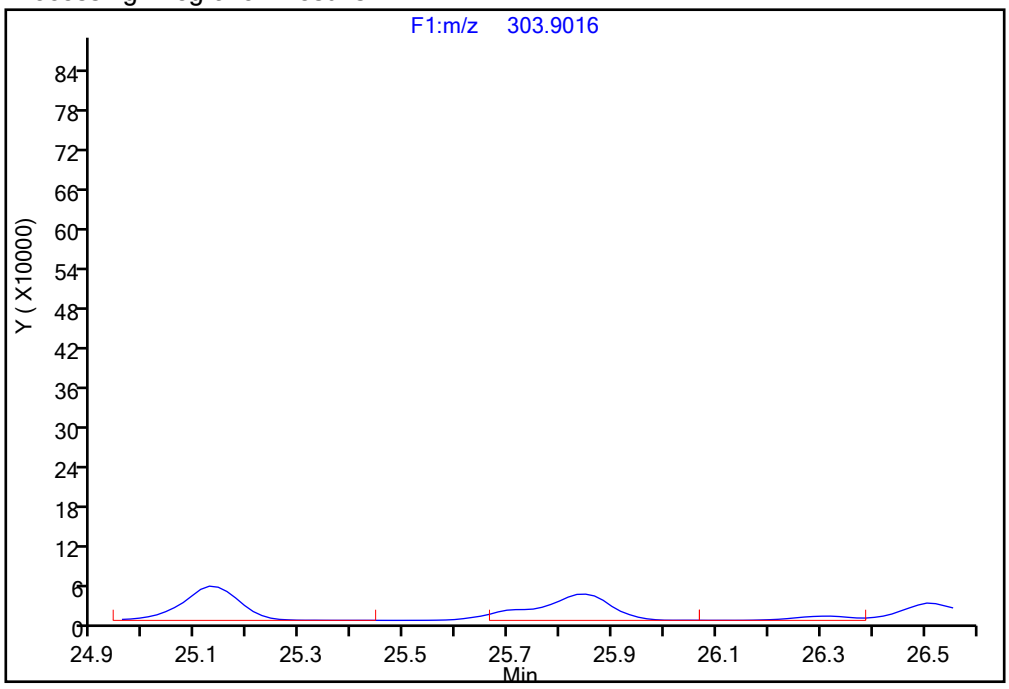
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

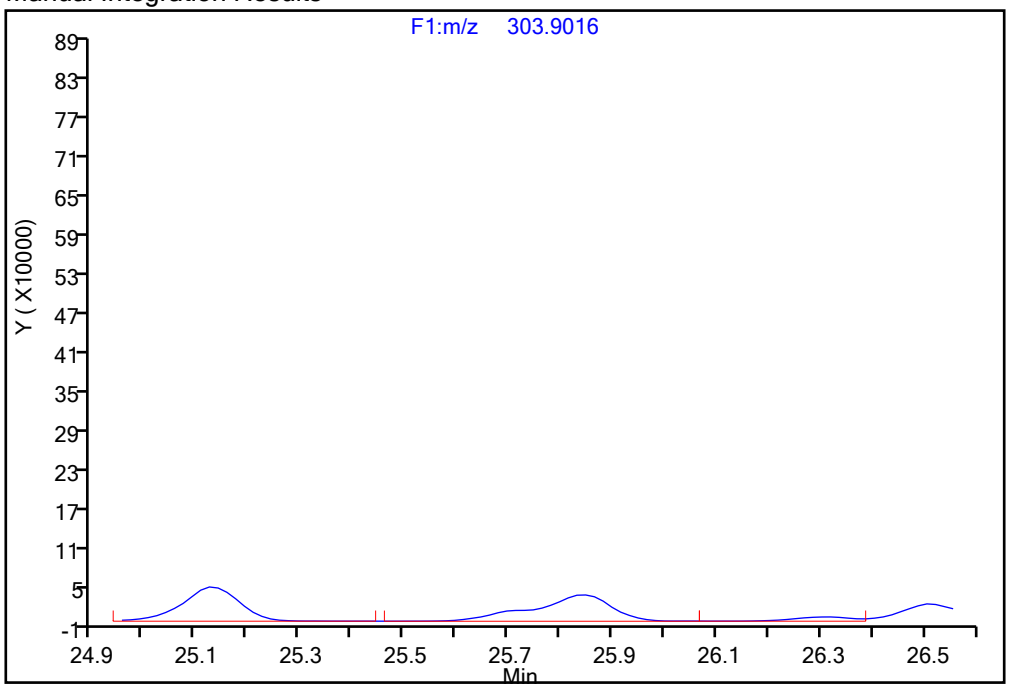
Processing Integration Results

RT = 25.849 Area = 395407



Manual Integration Results

RT = 25.849 Area = 418803 M



Reviewer: davidsonm, 18-Dec-2019 07:55:12

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

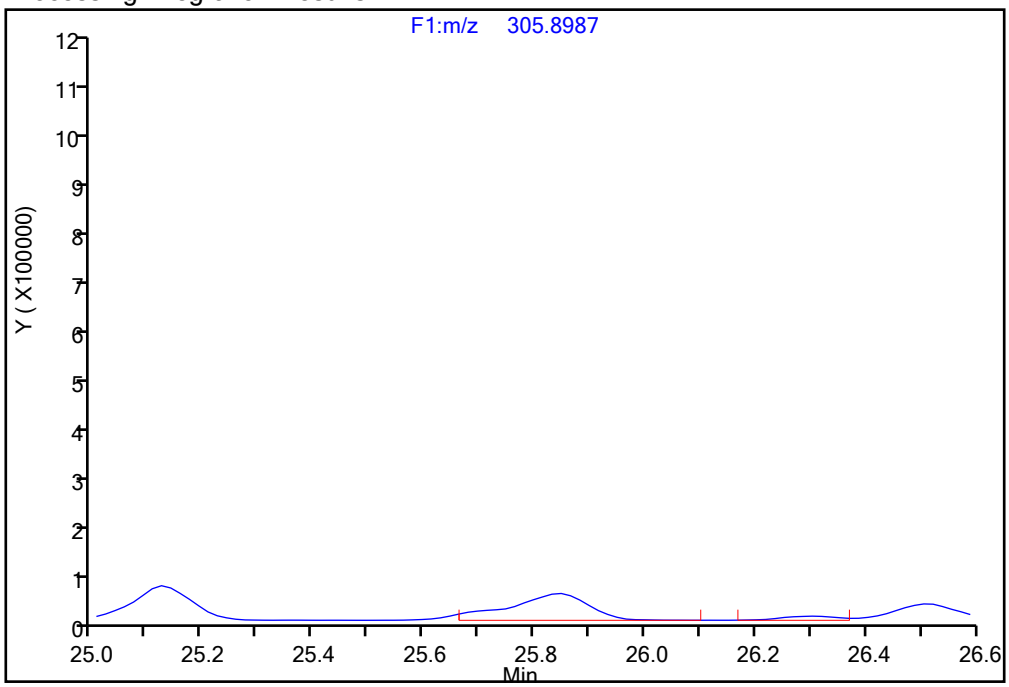
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

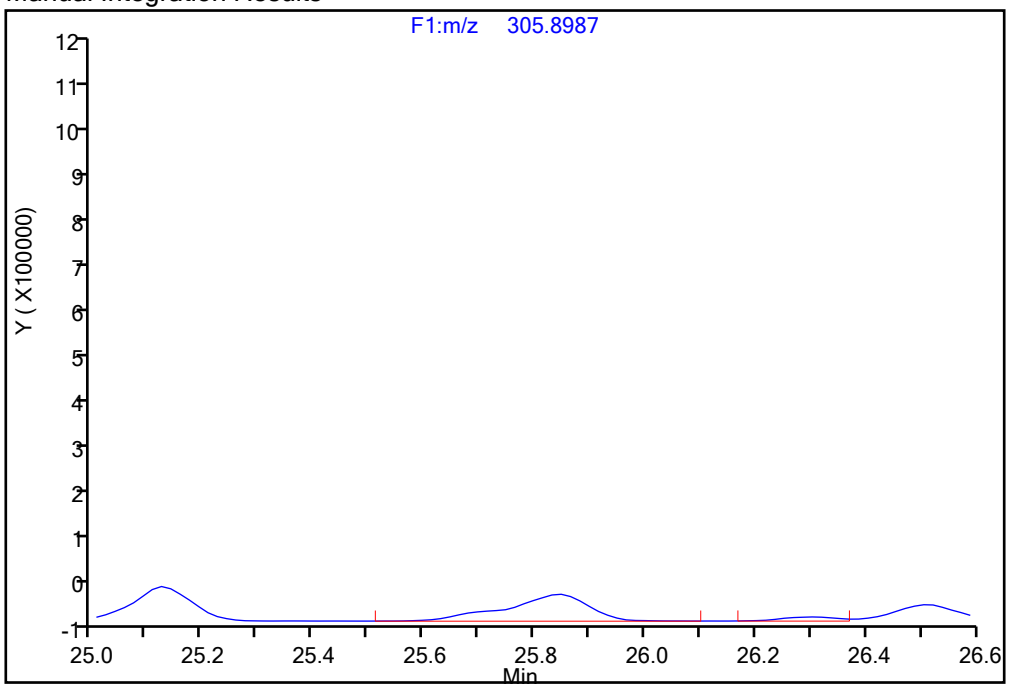
Processing Integration Results

RT = 25.849 Area = 499274



Manual Integration Results

RT = 25.849 Area = 528885 M



Reviewer: davidsonm, 18-Dec-2019 07:55:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

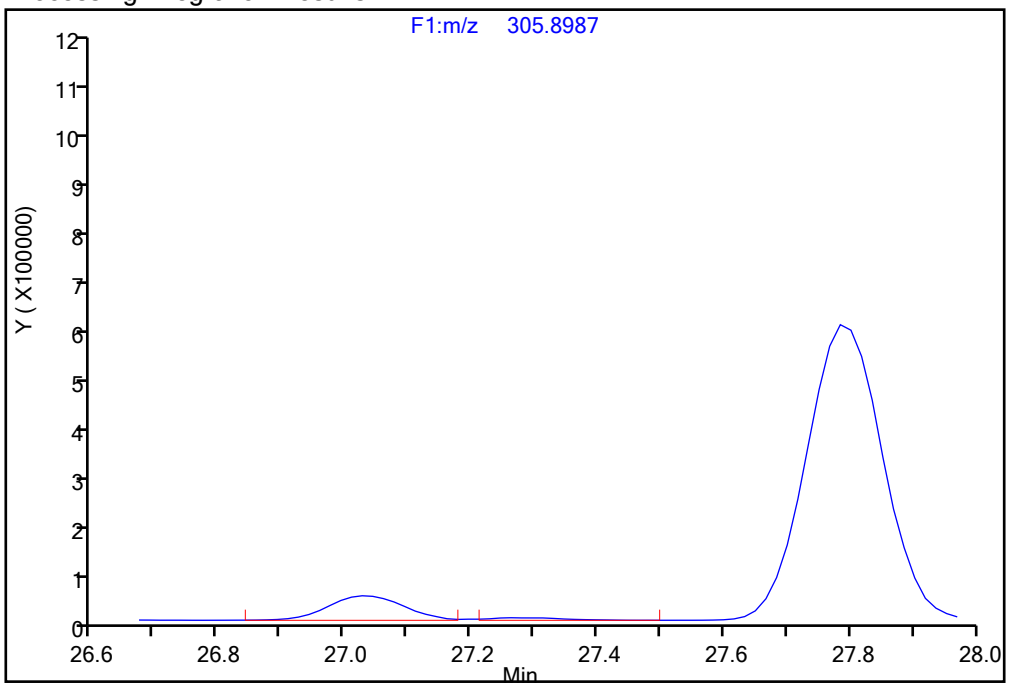
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

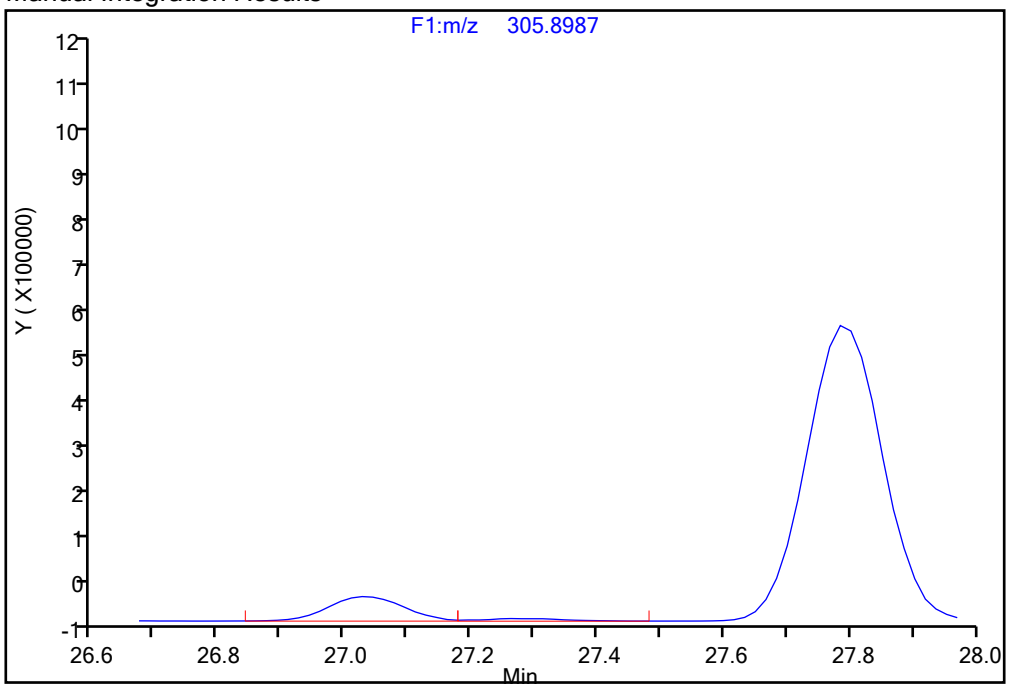
Processing Integration Results

RT = 27.263 Area = 38135



Manual Integration Results

RT = 27.263 Area = 44617 M



Reviewer: davidsonm, 18-Dec-2019 07:55:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

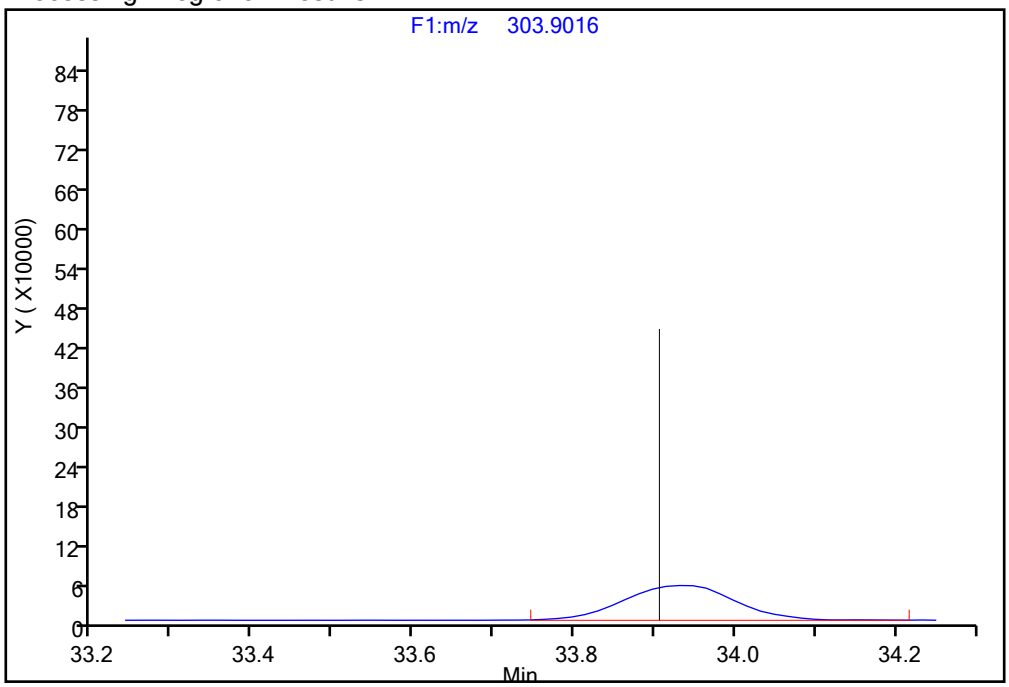
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

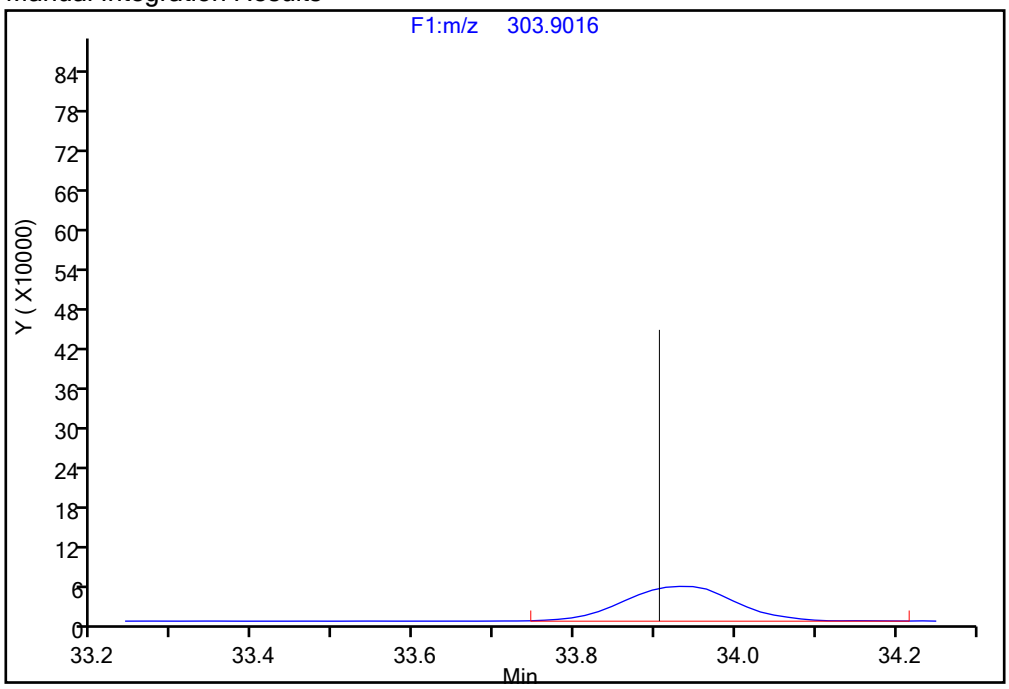
Processing Integration Results

RT = 33.931 Area = 514102



Manual Integration Results

RT = 33.931 Area = 514102



Reviewer: davidsonm, 18-Dec-2019 07:55:12

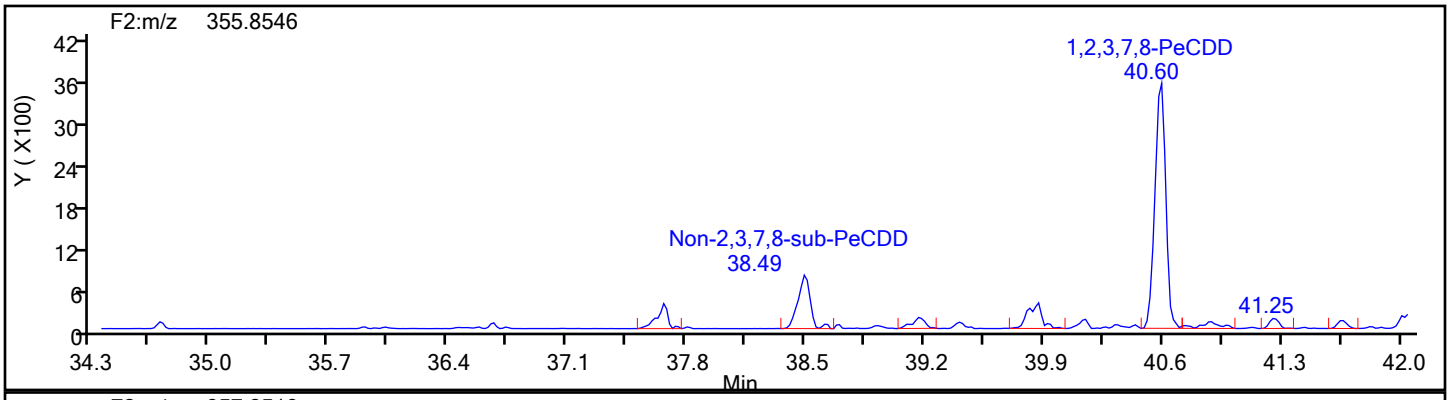
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

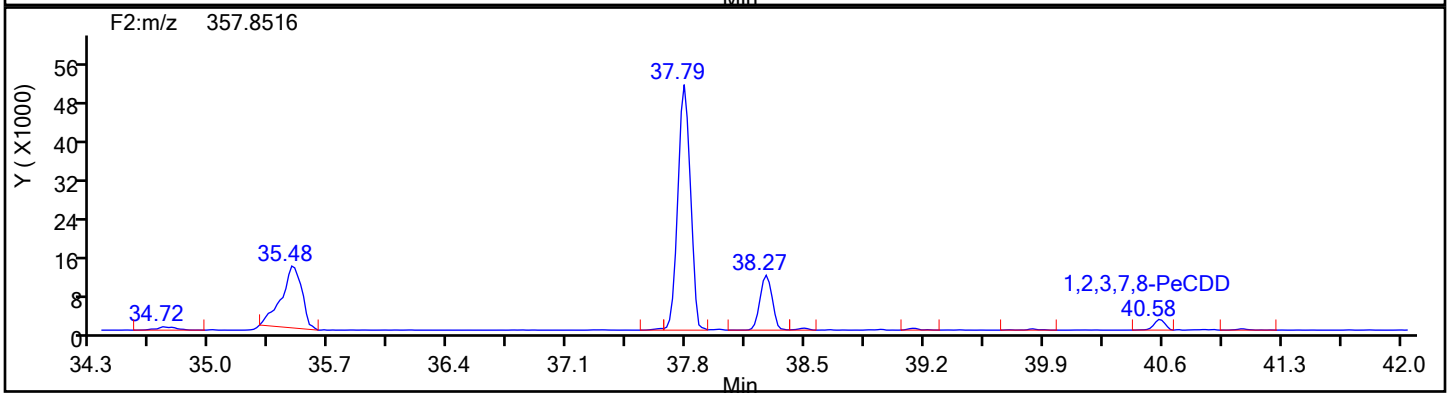
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

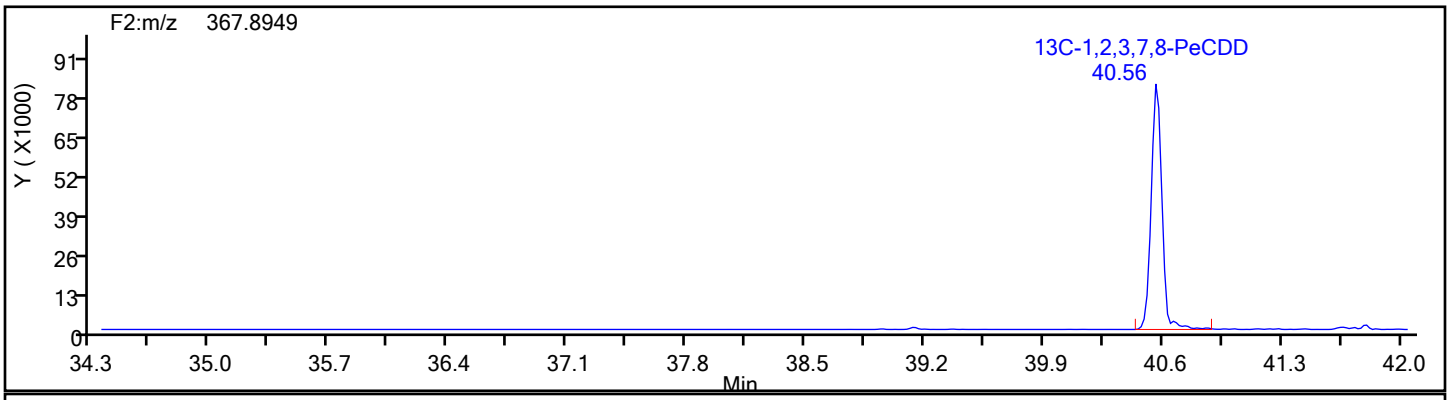
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

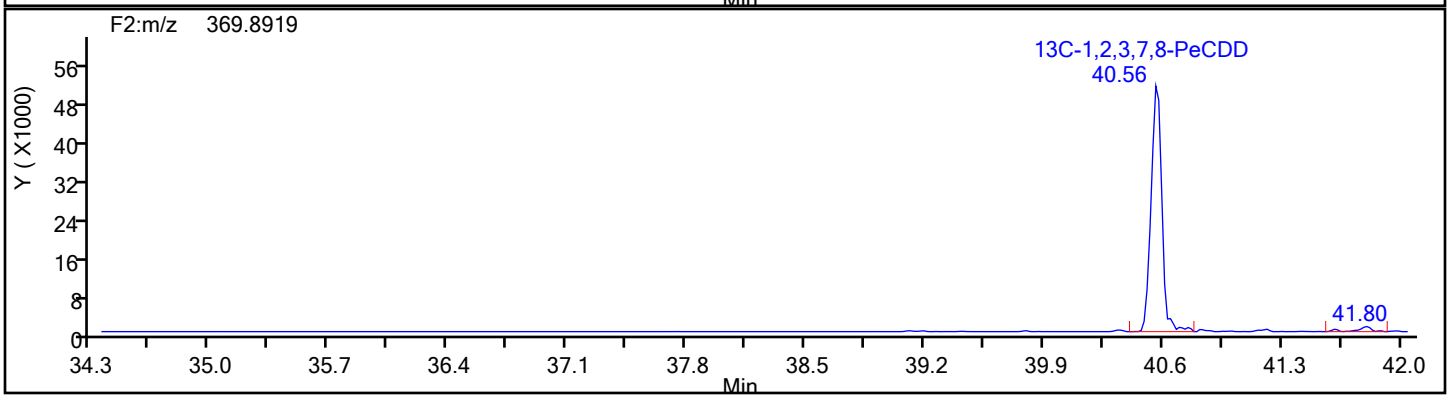
PeCDD





PeCDD Standards



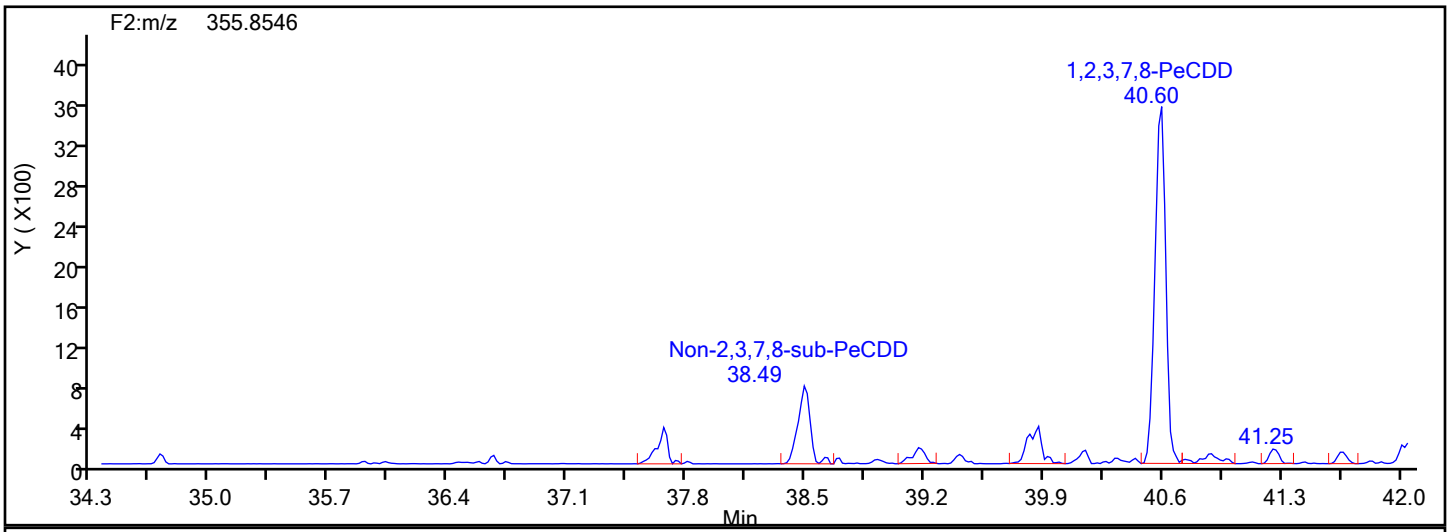


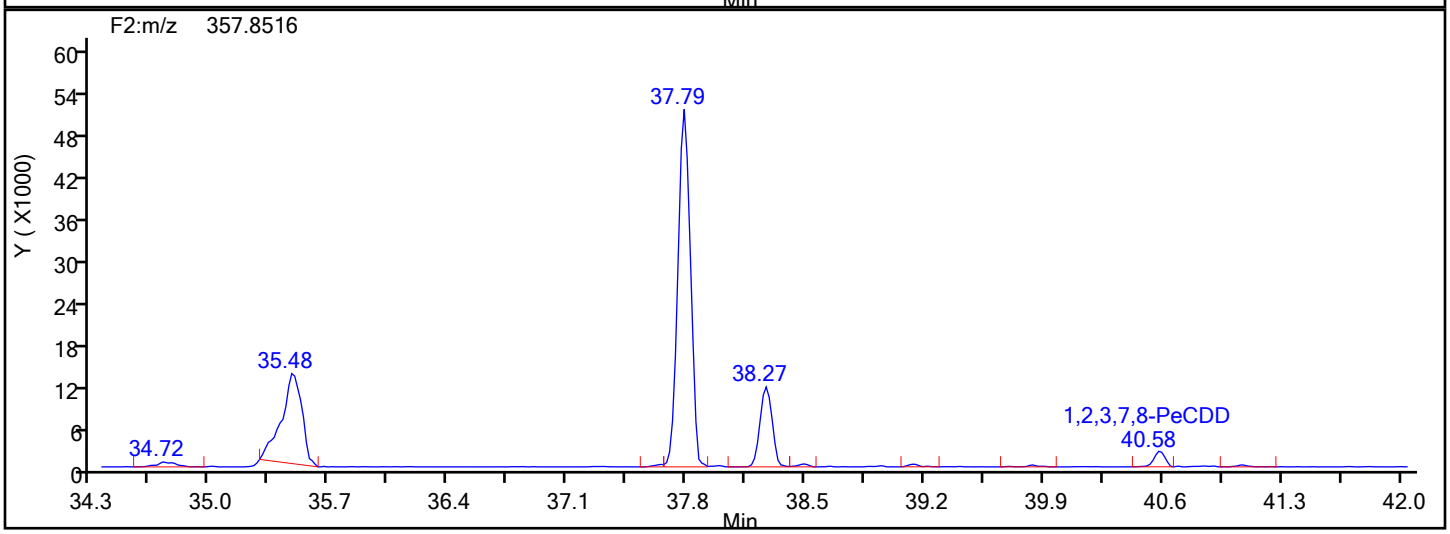
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

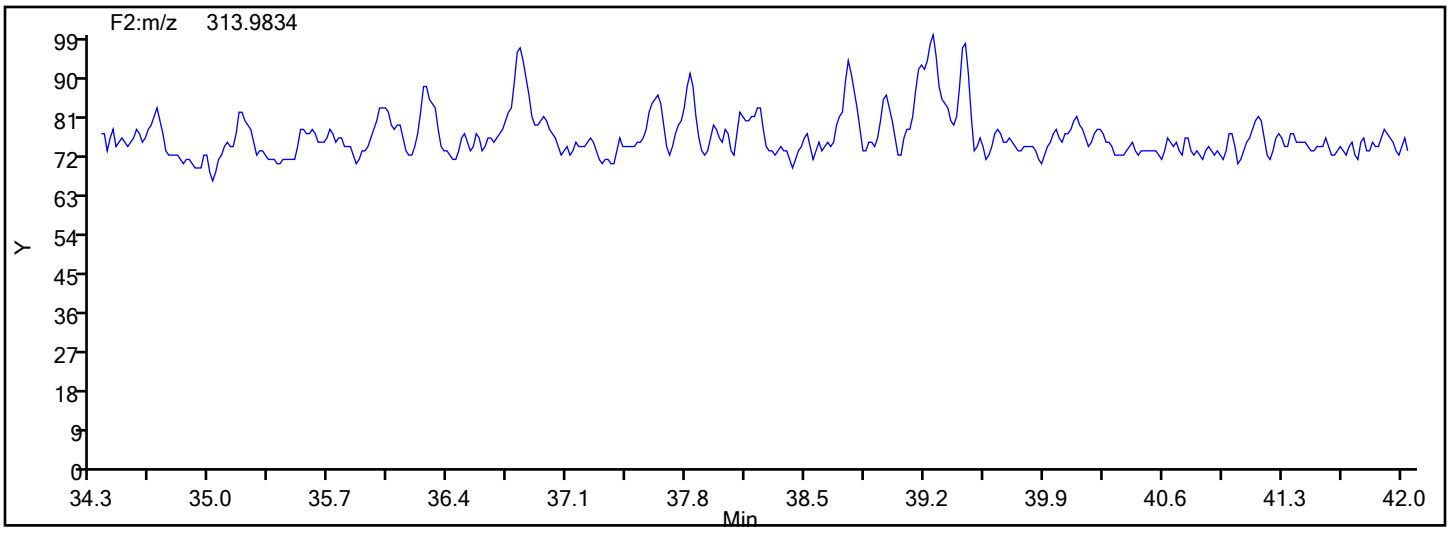
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

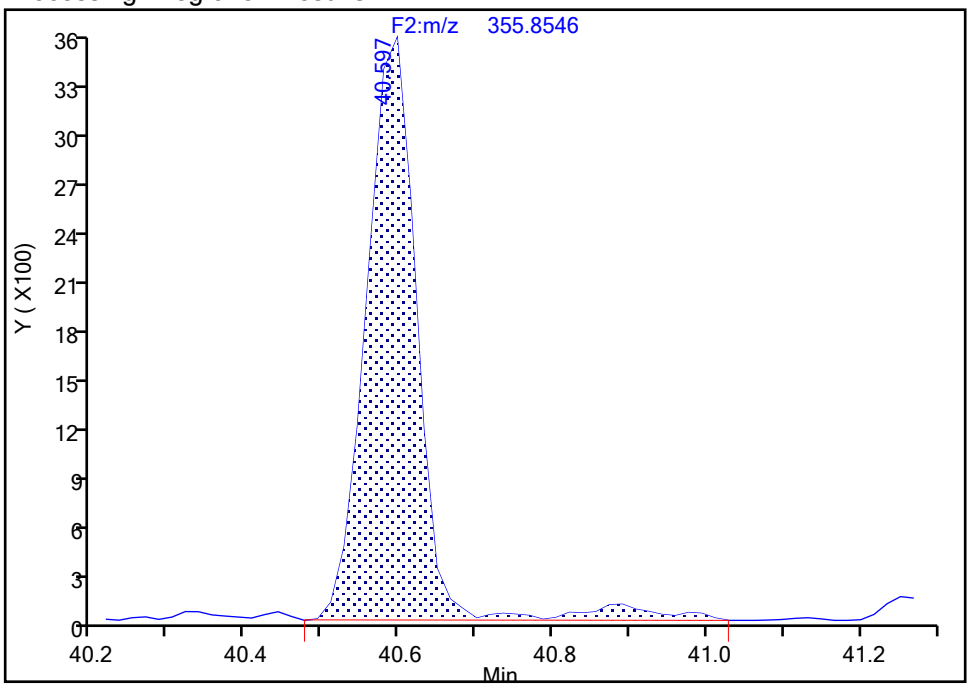
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

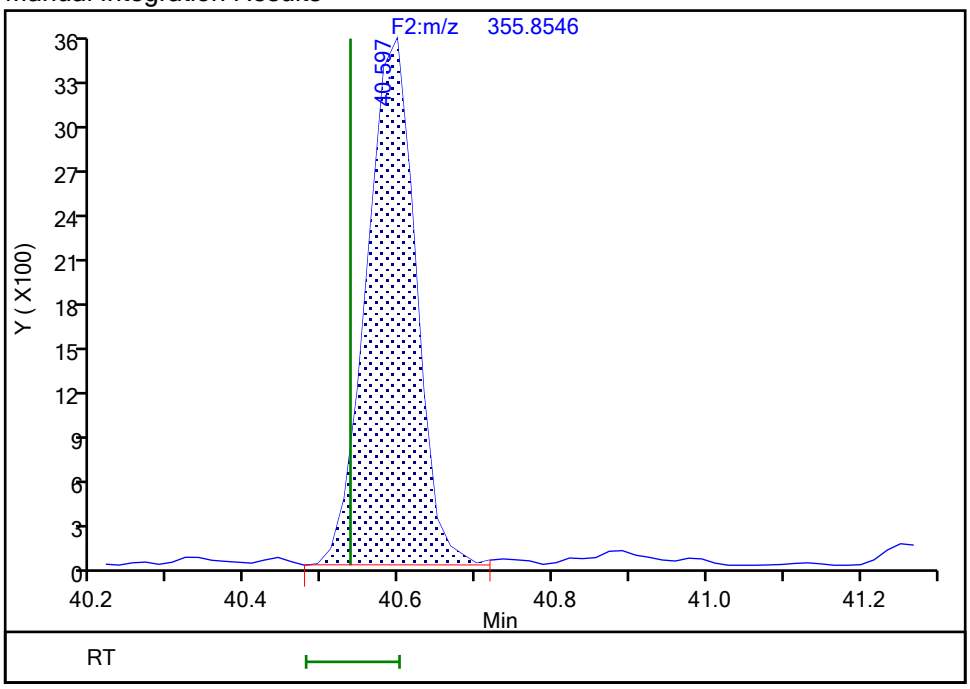
Processing Integration Results

RT: 40.60
Area: 16334
Amount: 2.152580
Amount Units: pg/ul



Manual Integration Results

RT: 40.60
Area: 15555
Amount: 2.089044
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:56:57

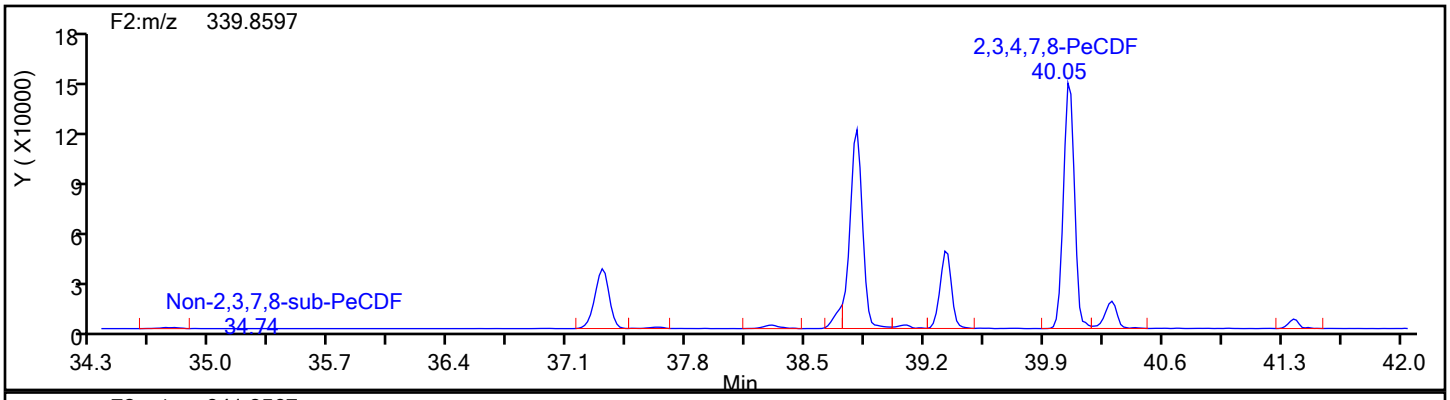
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

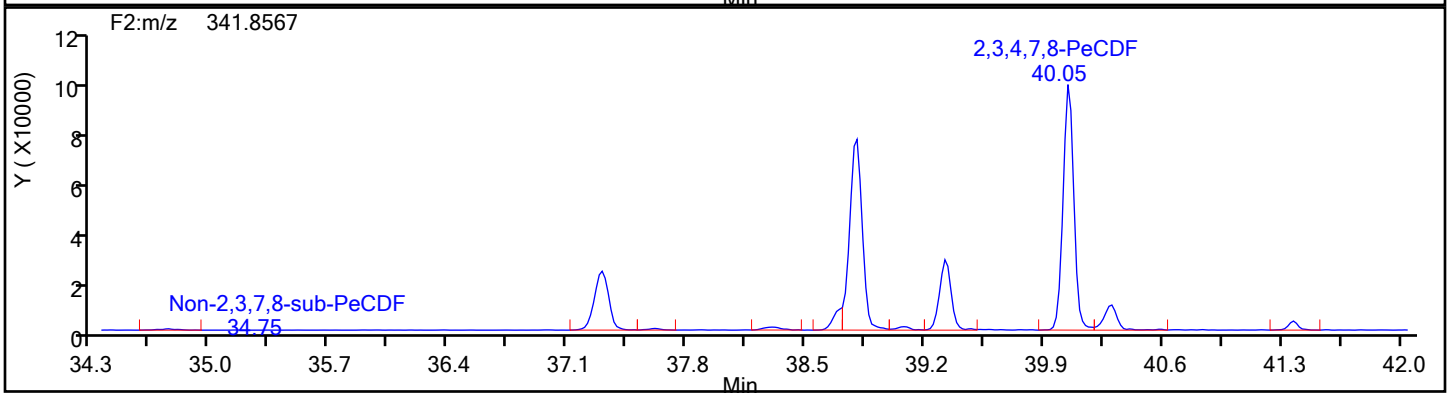
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

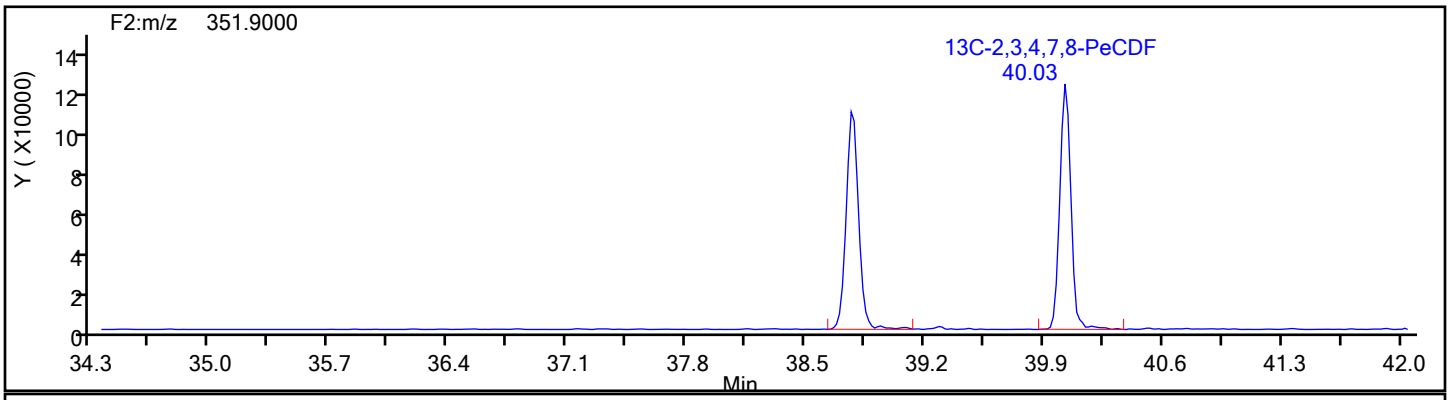
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

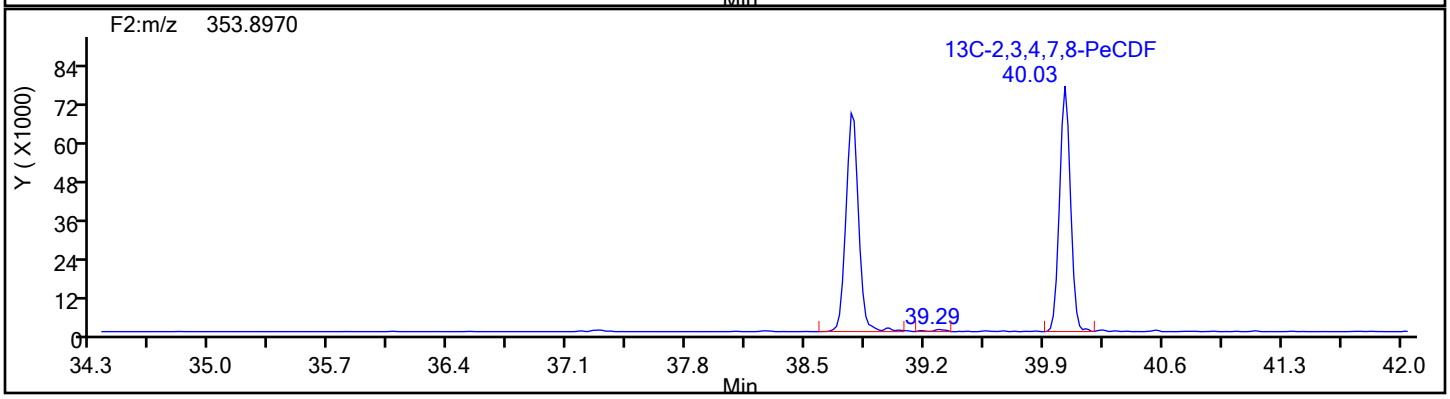
PeCDF





PeCDF Standards



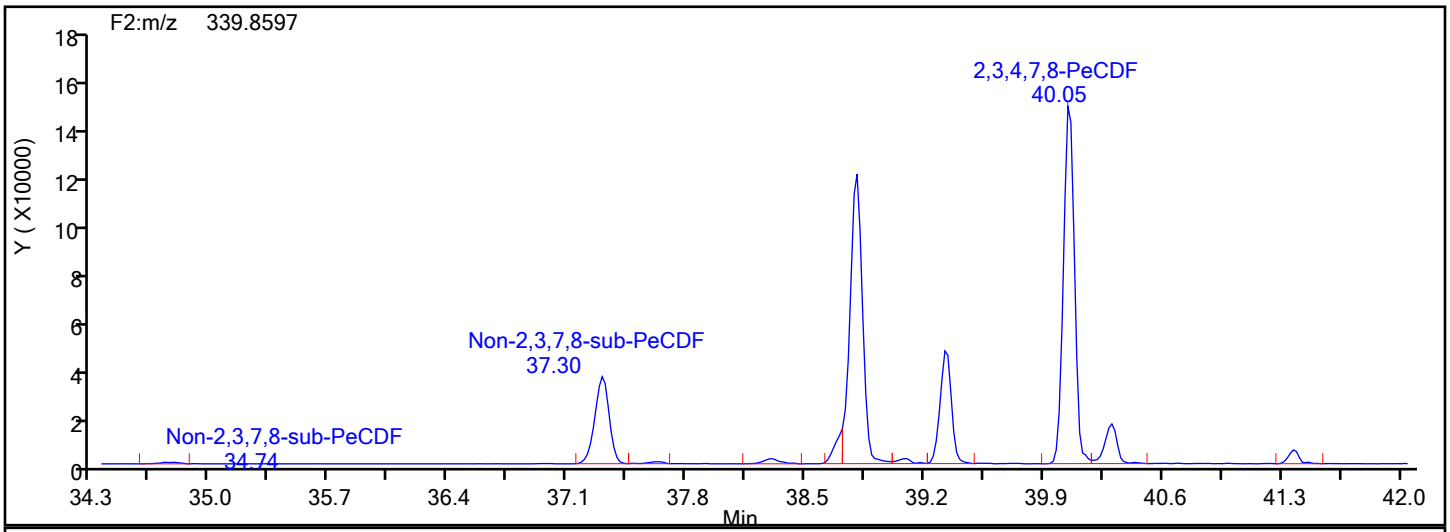


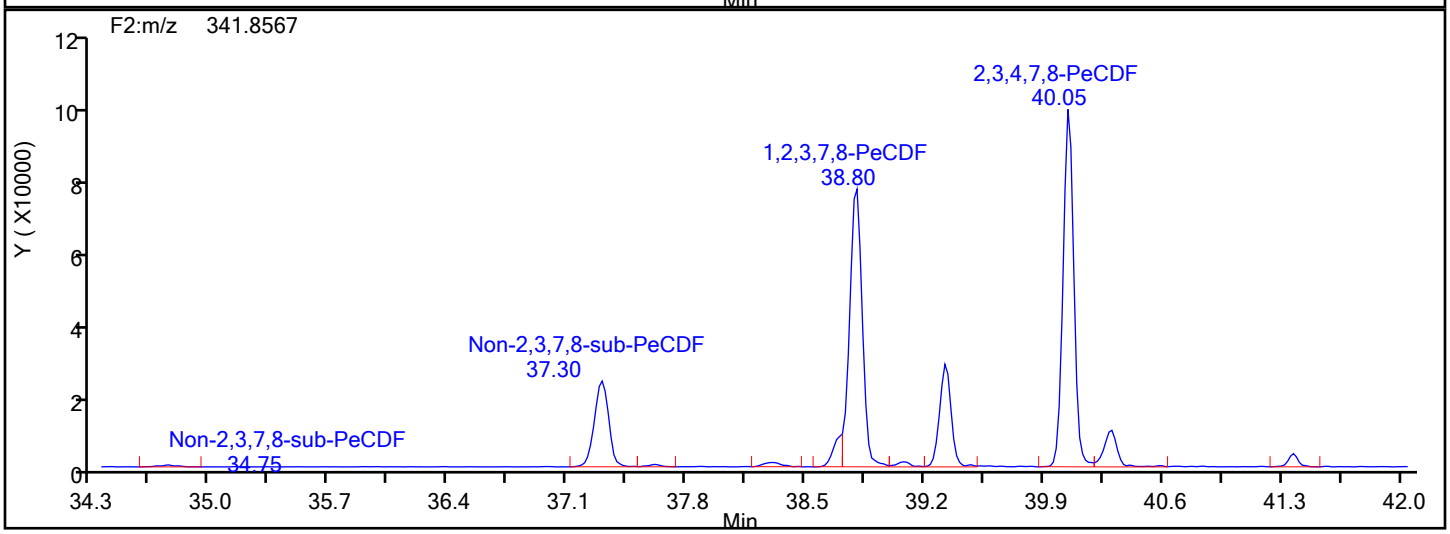
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

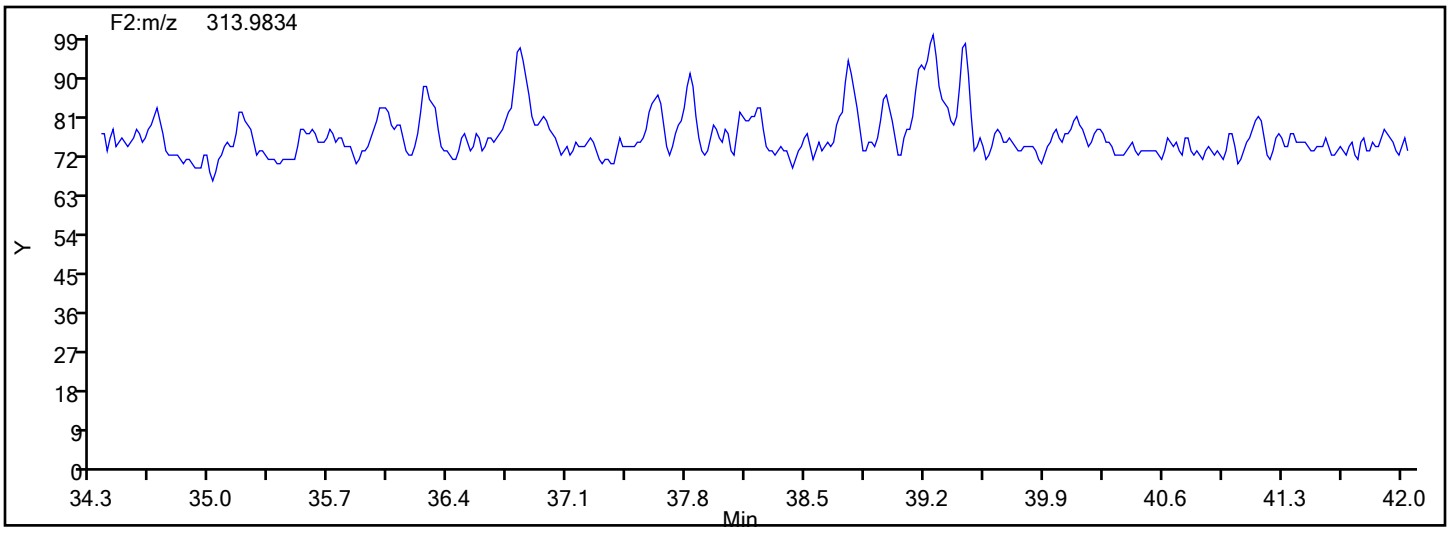
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

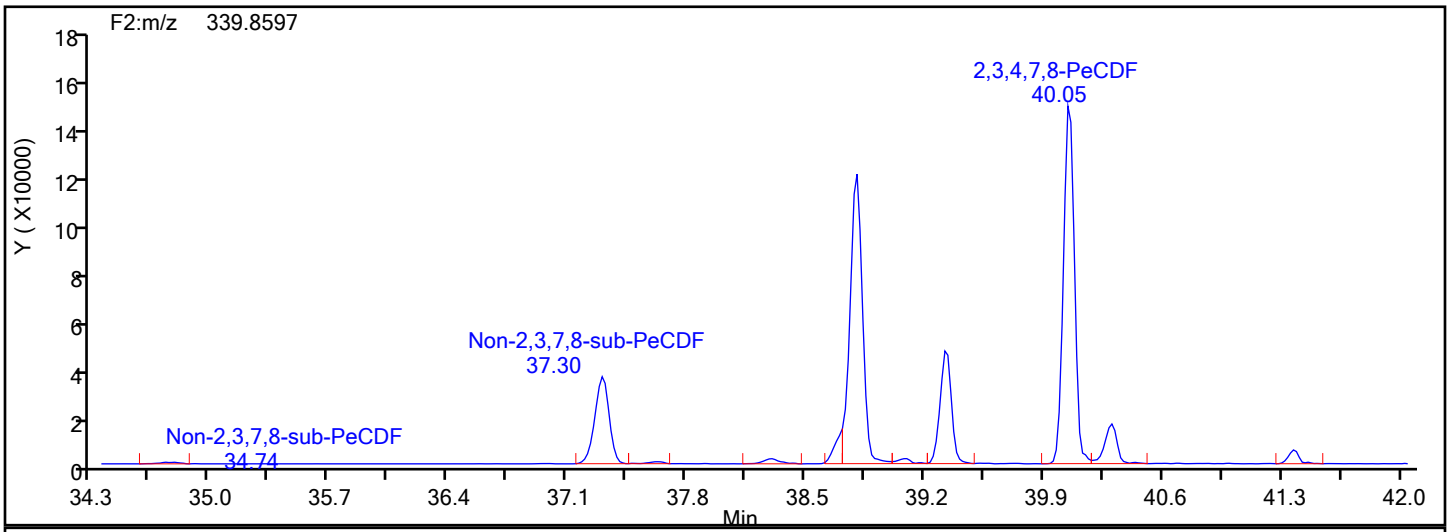


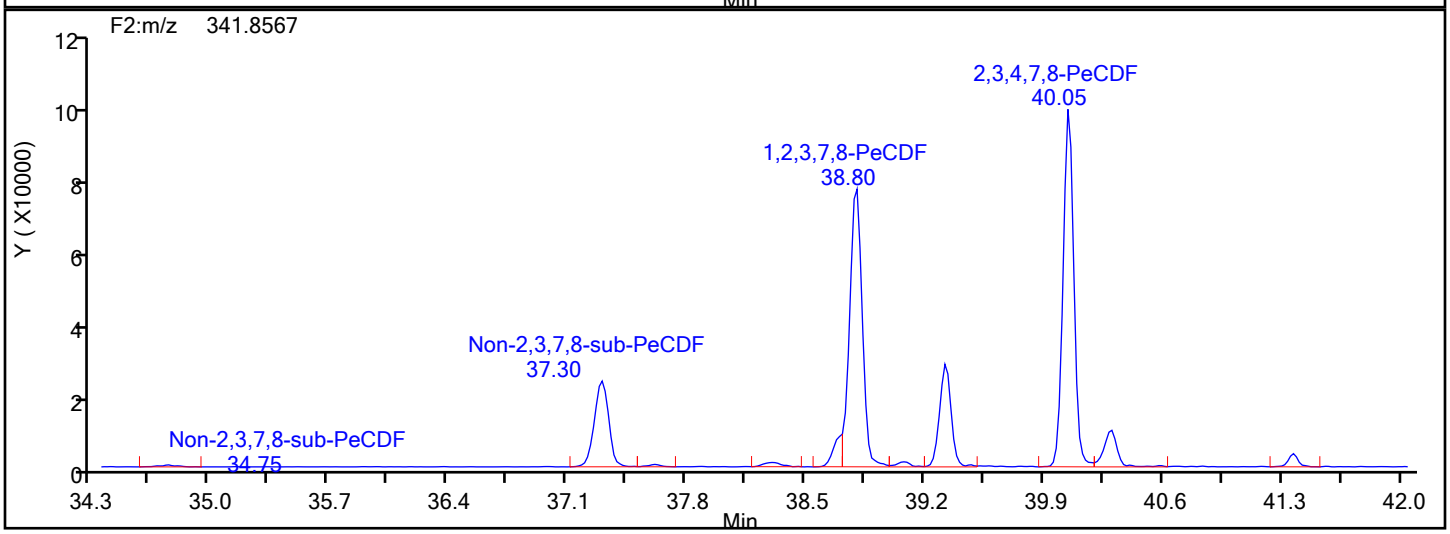
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

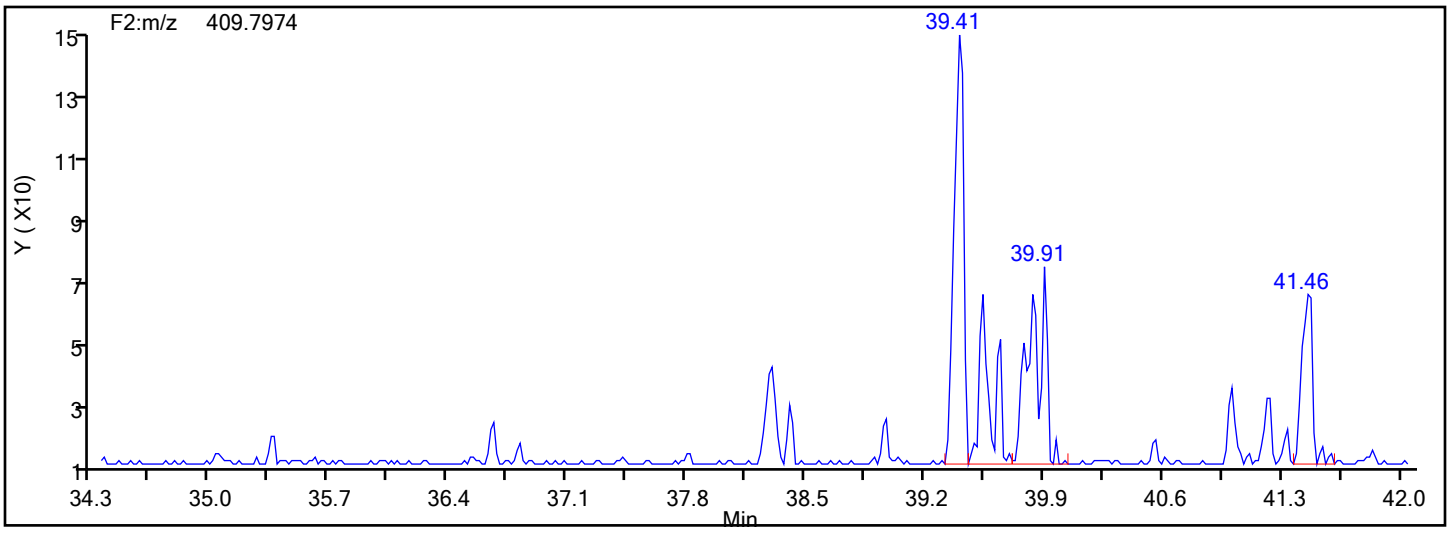
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

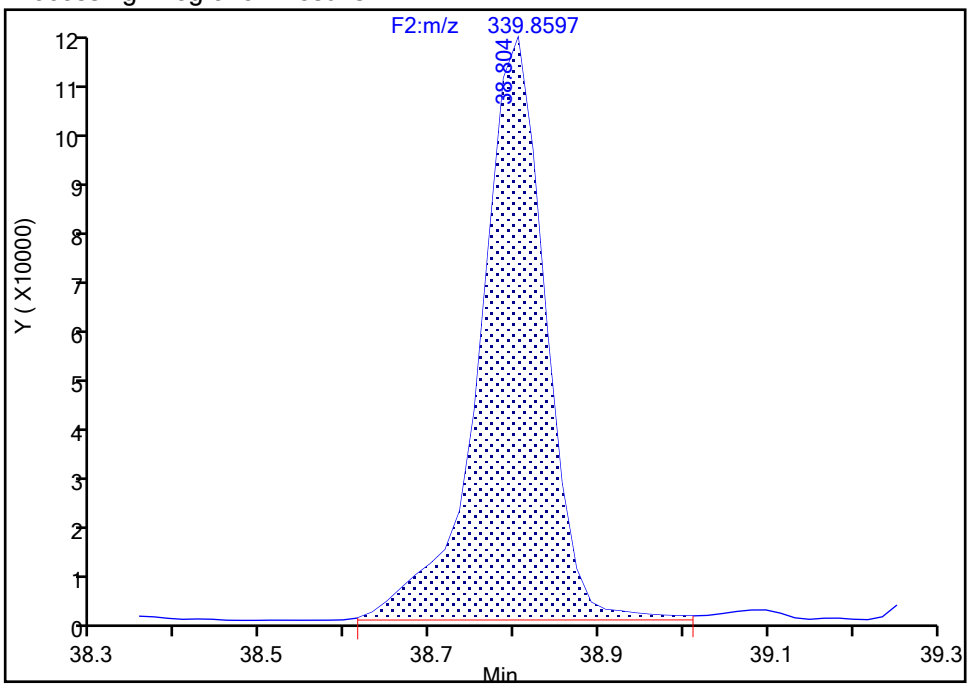
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

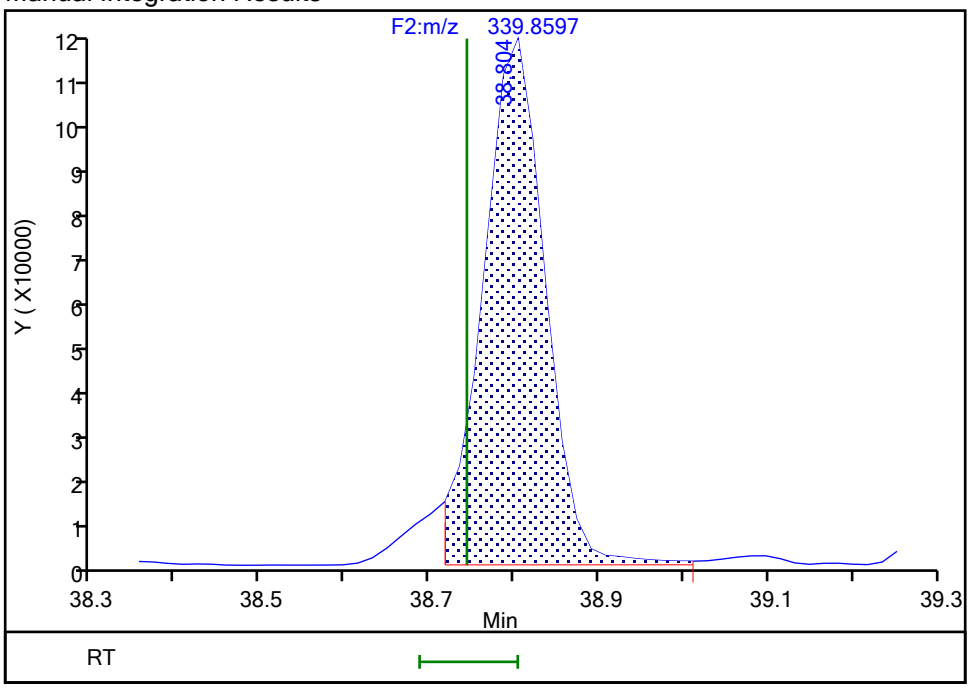
Processing Integration Results

RT: 38.80
Area: 628066
Amount: 47.065397
Amount Units: pg/ul



Manual Integration Results

RT: 38.80
Area: 587695
Amount: 43.877559
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:57:16

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

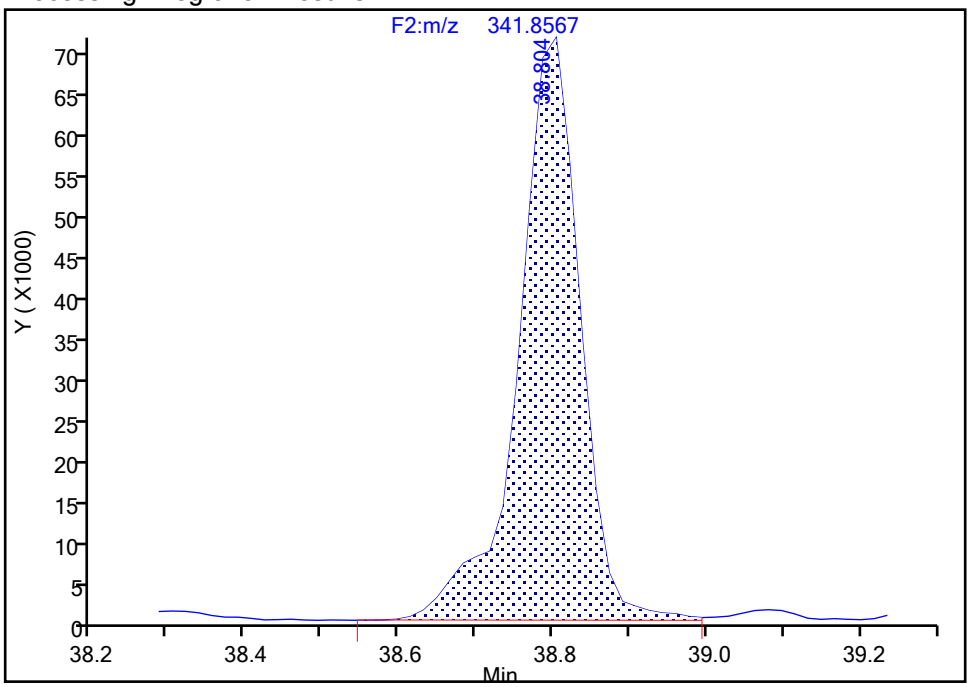
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

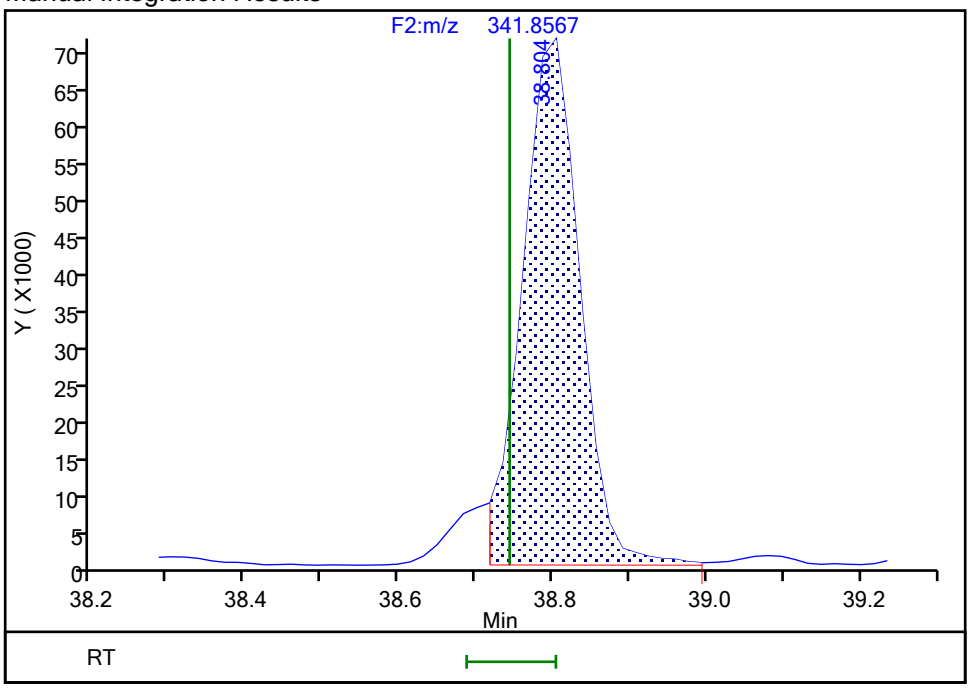
Processing Integration Results

RT: 38.80
Area: 400634
Amount: 47.065397
Amount Units: pg/ul



Manual Integration Results

RT: 38.80
Area: 371329
Amount: 43.877559
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:57:19

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

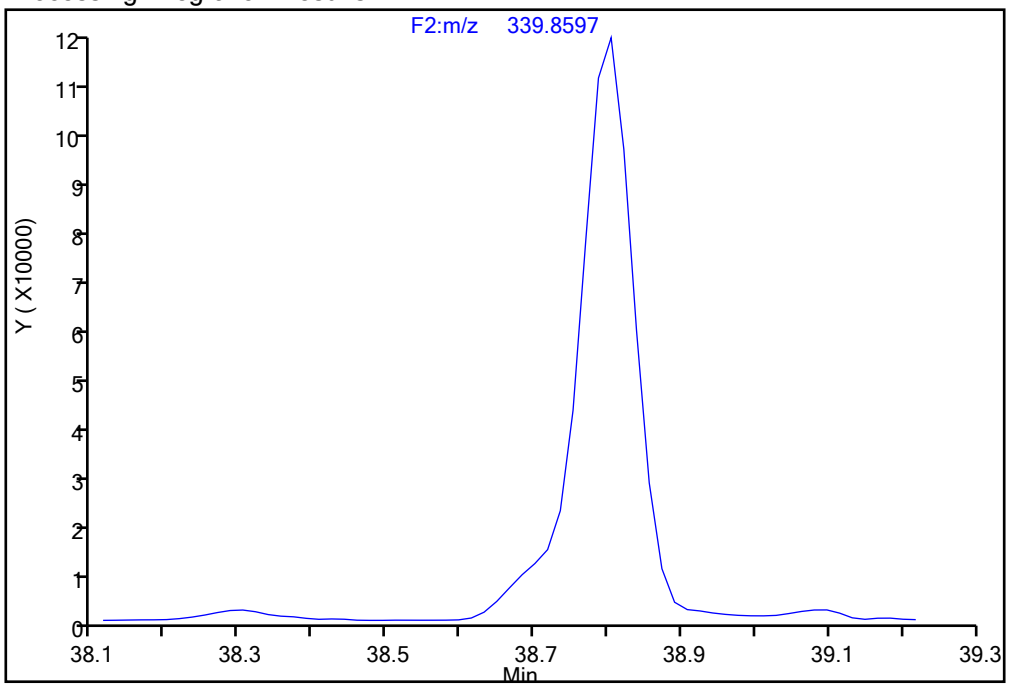
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

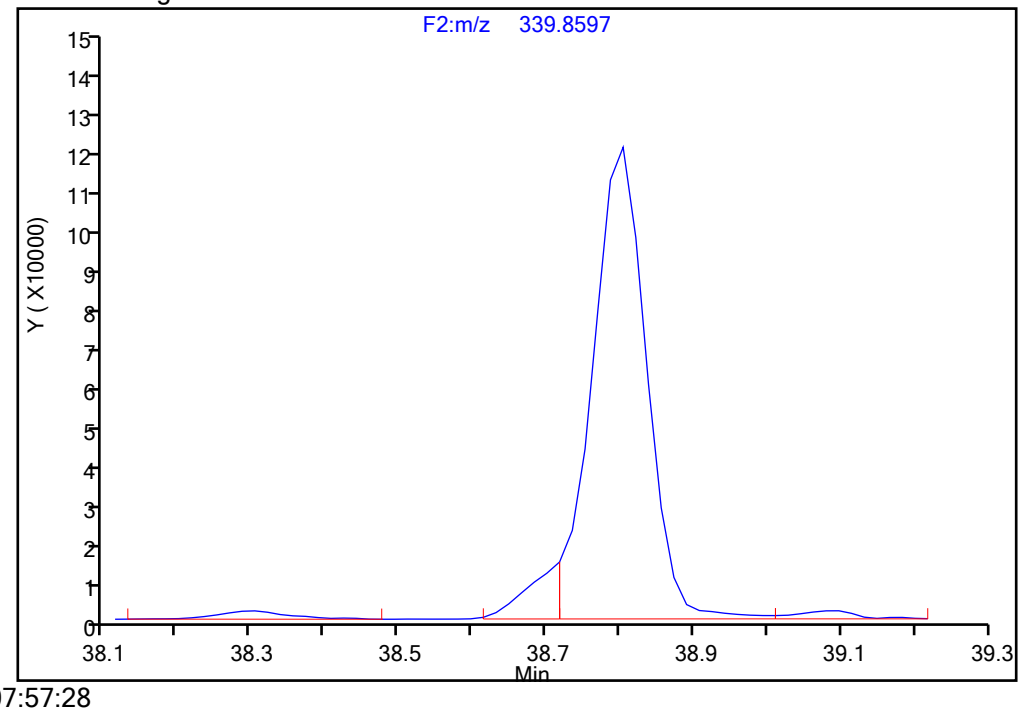
Not Detected
RT: 34.56- 41.38

Processing Integration Results



RT = 38.718 Area = 40375 M

Manual Integration Results



Reviewer: davidsonm, 18-Dec-2019 07:57:28
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d

Injection Date: 18-Dec-2019 02:58:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

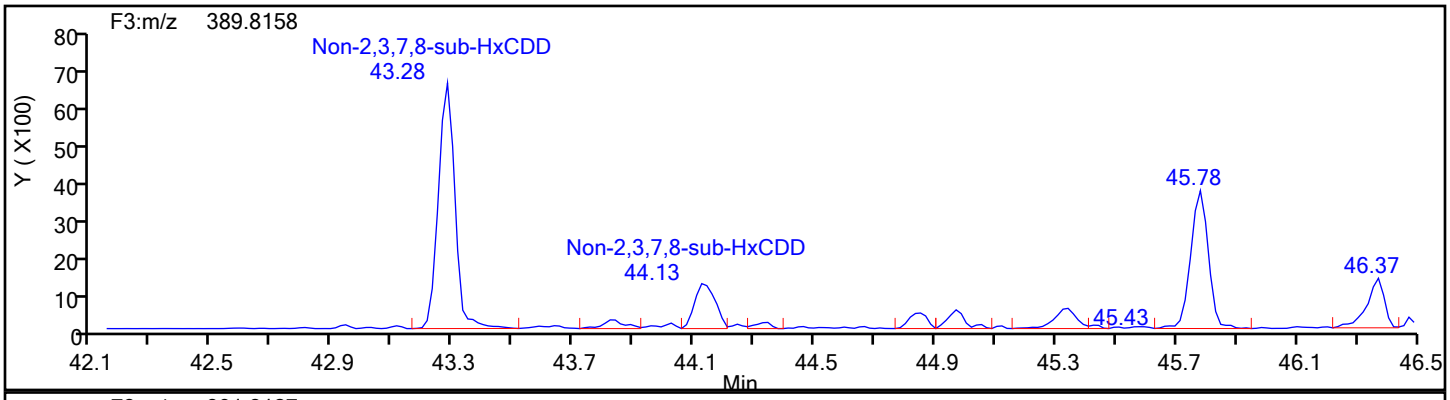
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

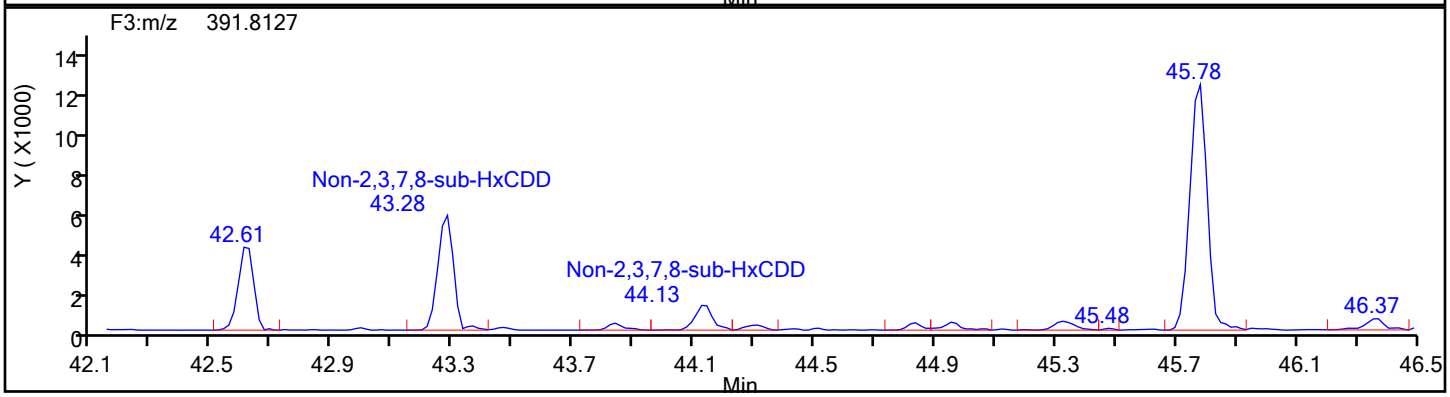
Client ID: 11187072-120619-SS-DUP1

Worklist#: 36166 Sample Line#: 7

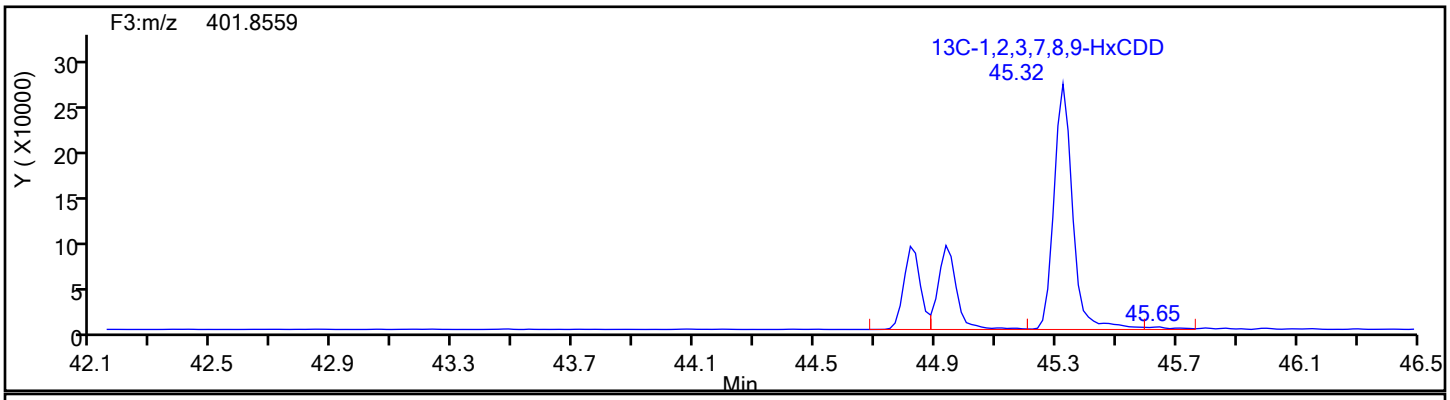
Column Type: Column Dia:

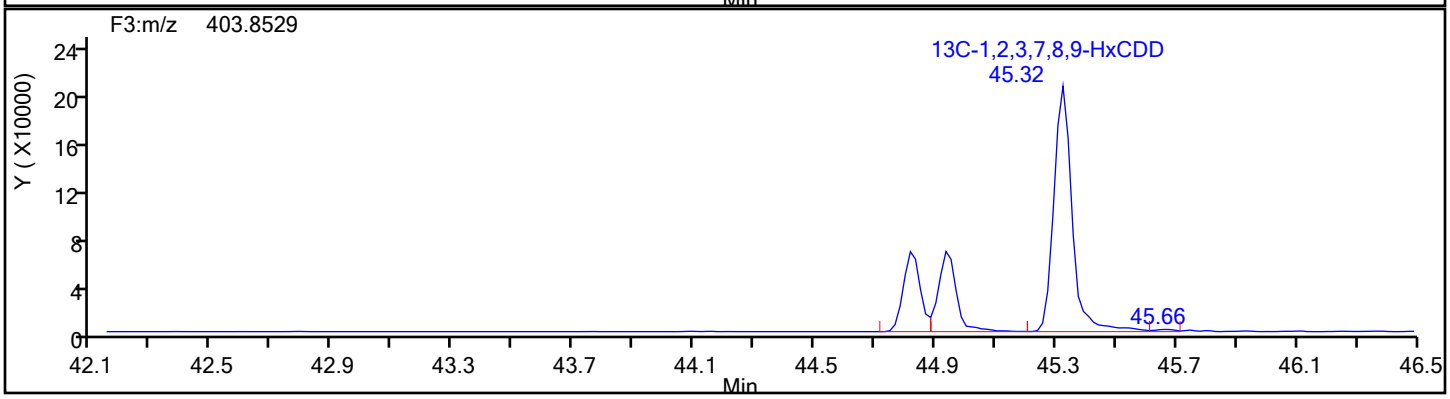
HxCDD





HxCDD Standards



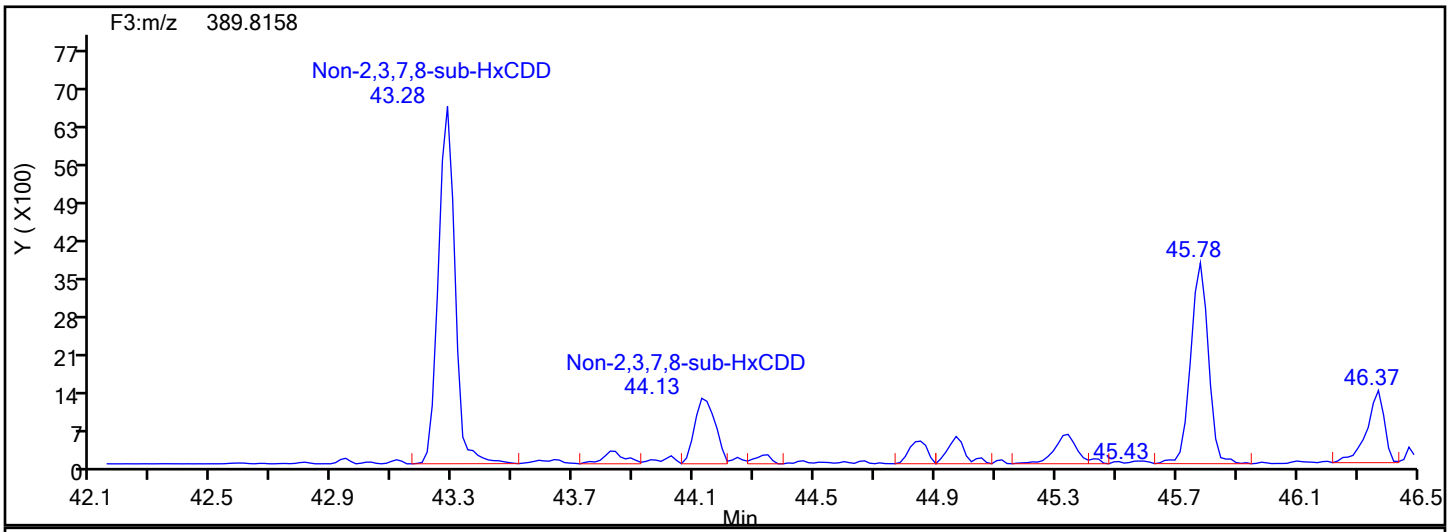


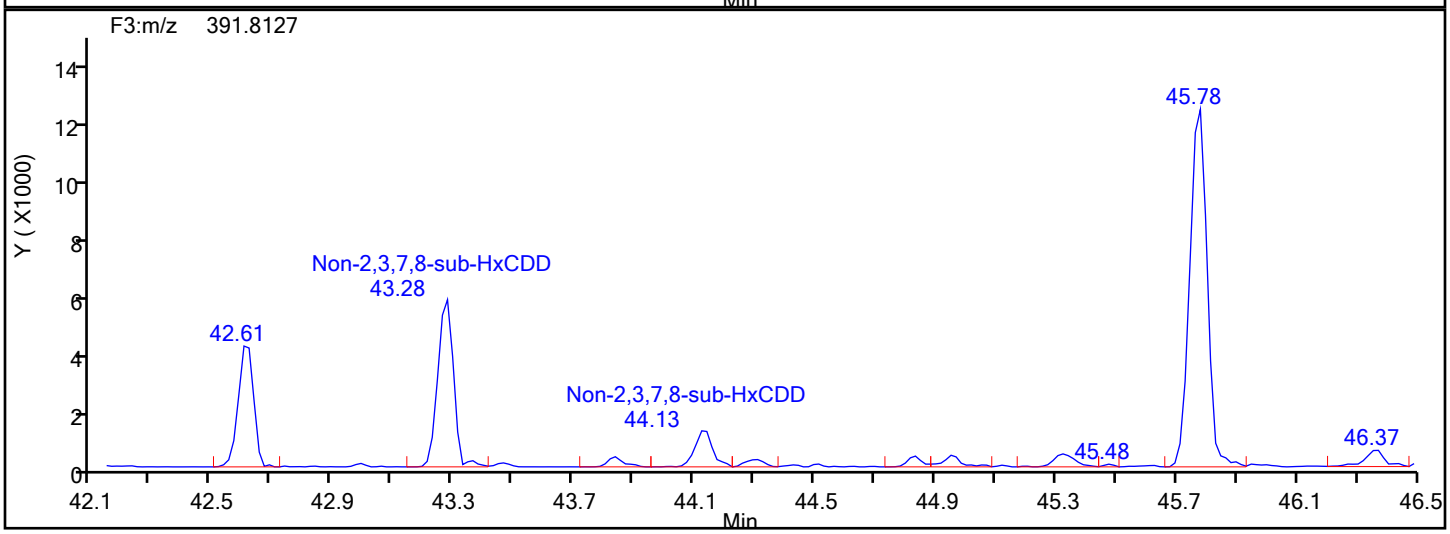
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

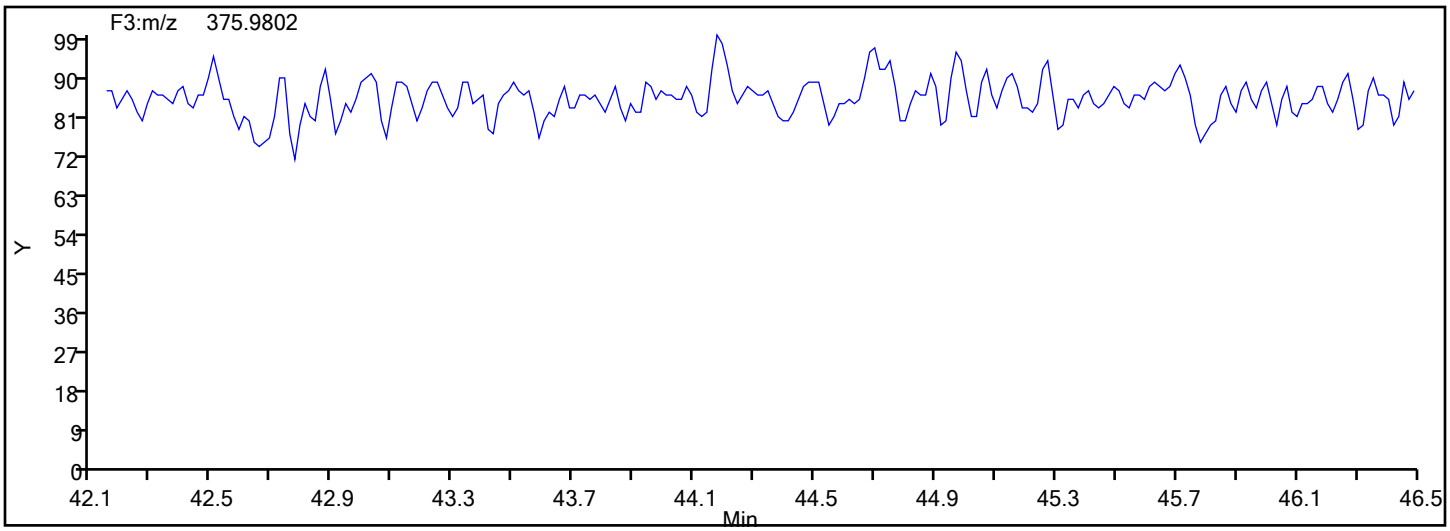
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

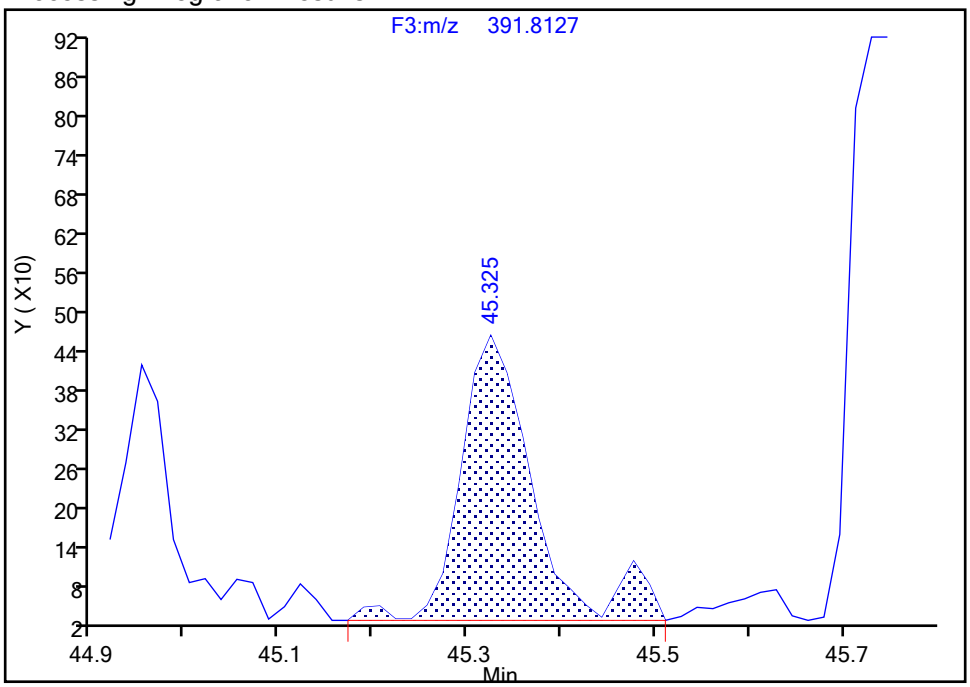
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

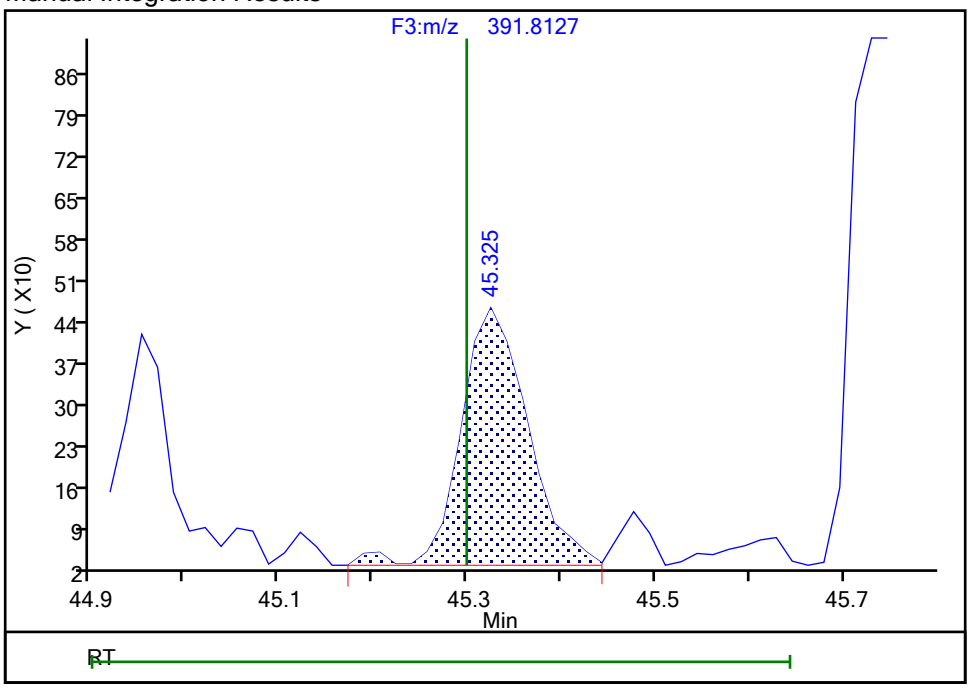
Processing Integration Results

RT: 45.32
Area: 2359
Amount: 0.346528
Amount Units: pg/ul



Manual Integration Results

RT: 45.32
Area: 2160
Amount: 0.319251
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:57:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

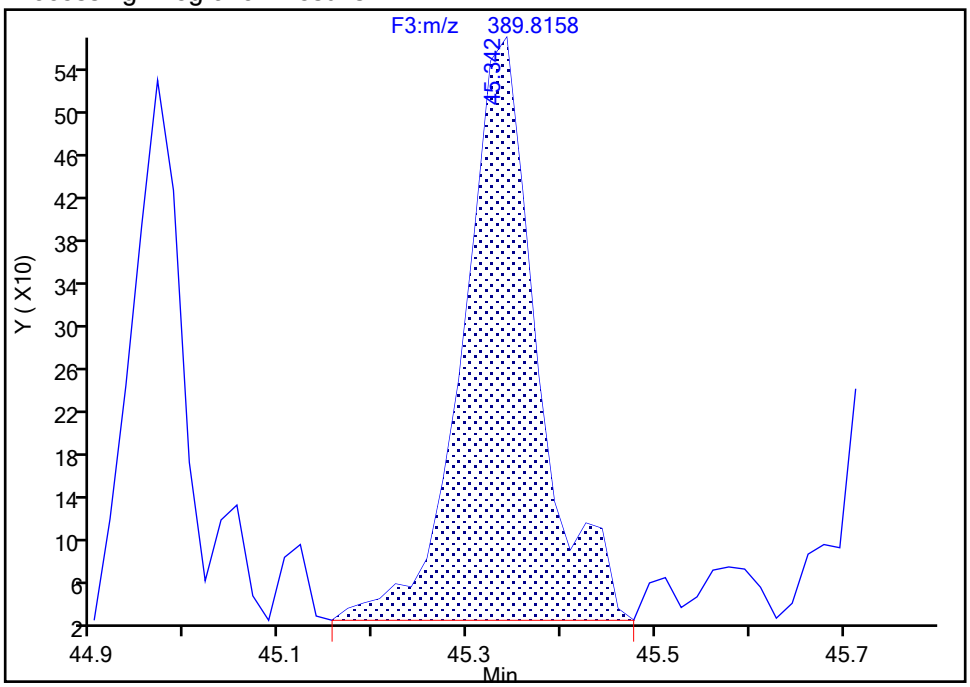
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

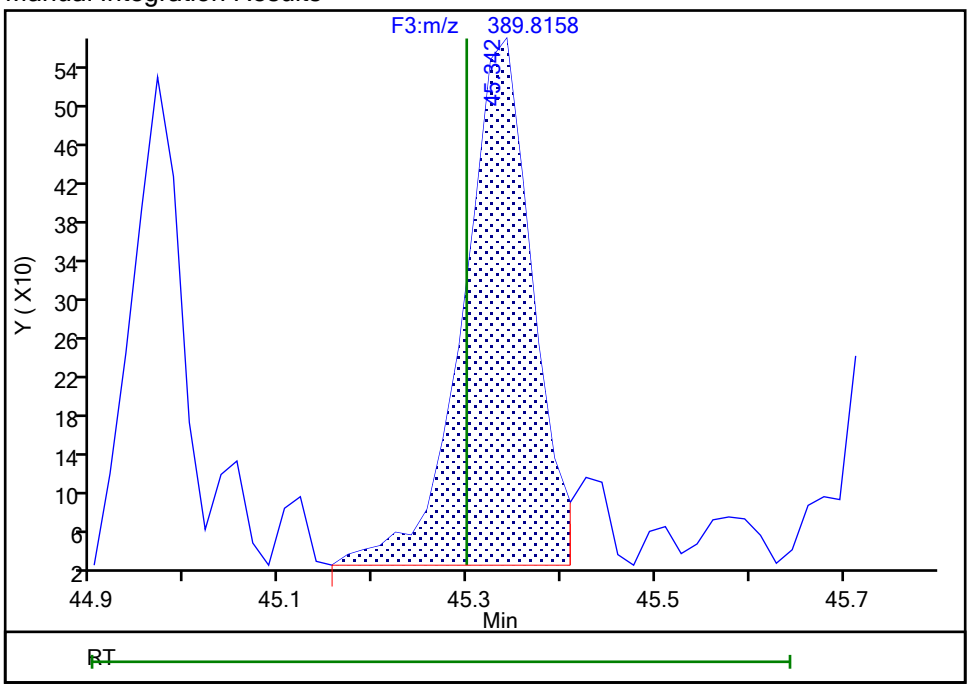
Processing Integration Results

RT: 45.34
Area: 3002
Amount: 0.346528
Amount Units: pg/ul



Manual Integration Results

RT: 45.34
Area: 2779
Amount: 0.319251
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:57:58

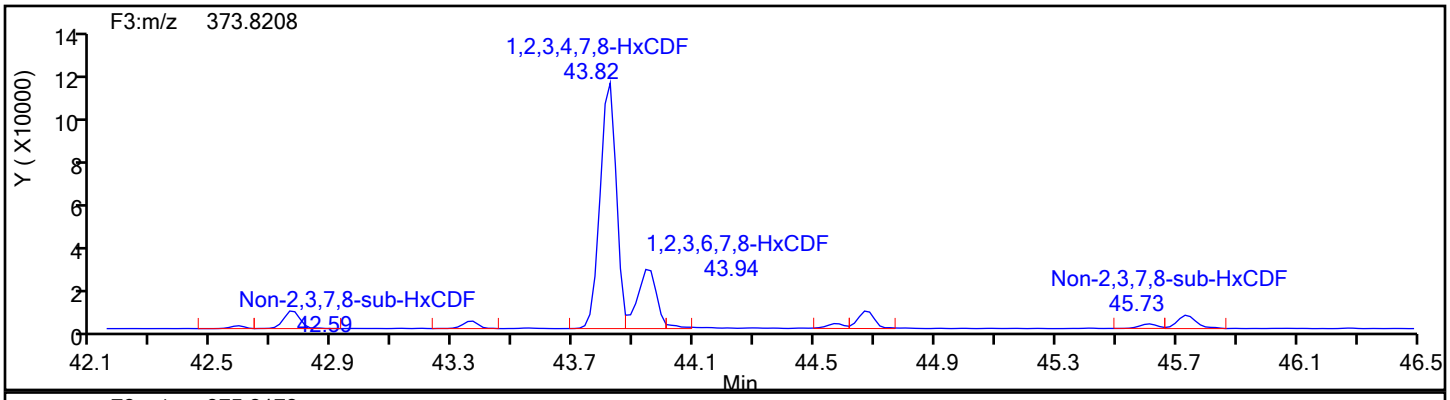
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

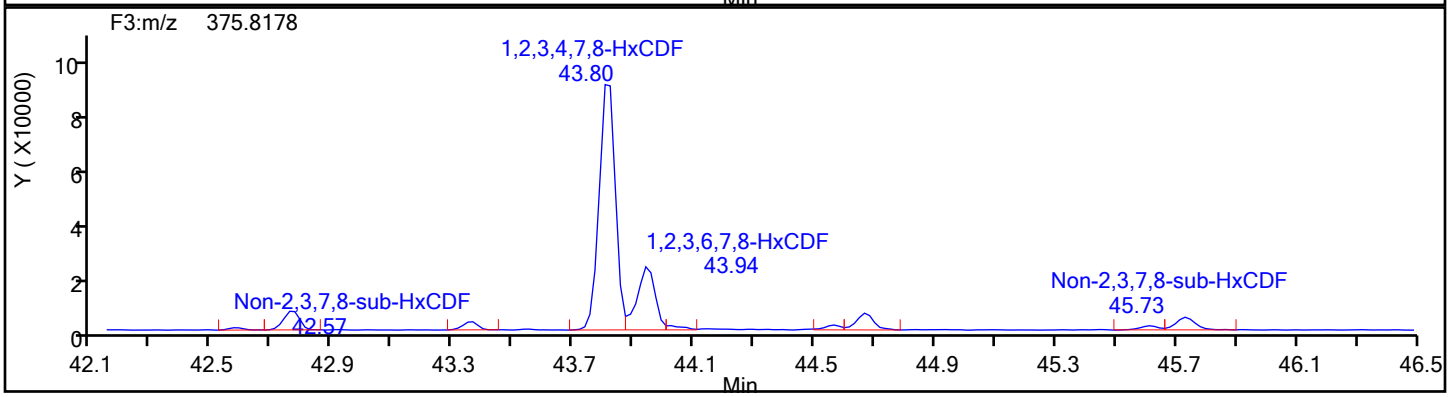
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

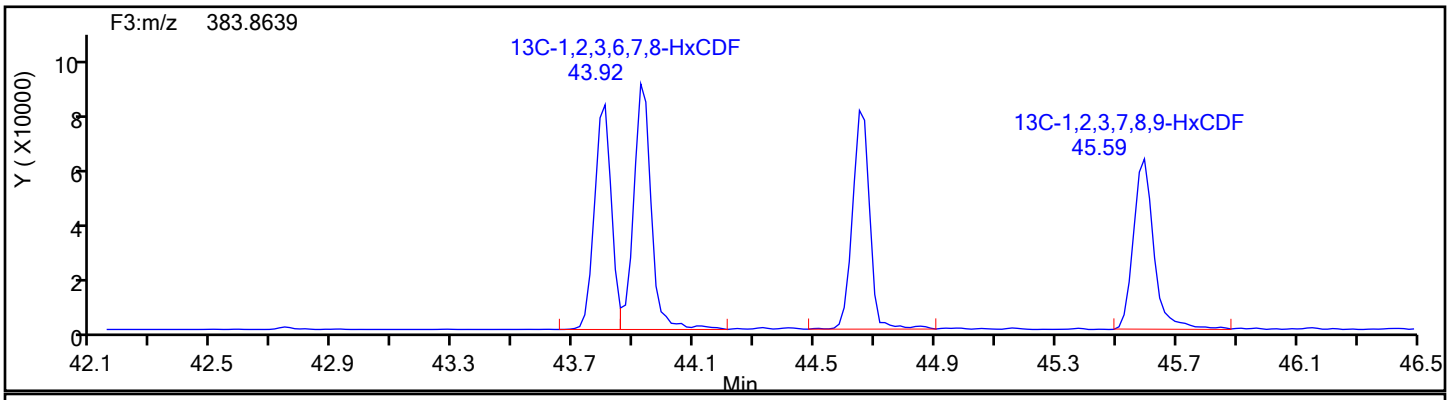
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

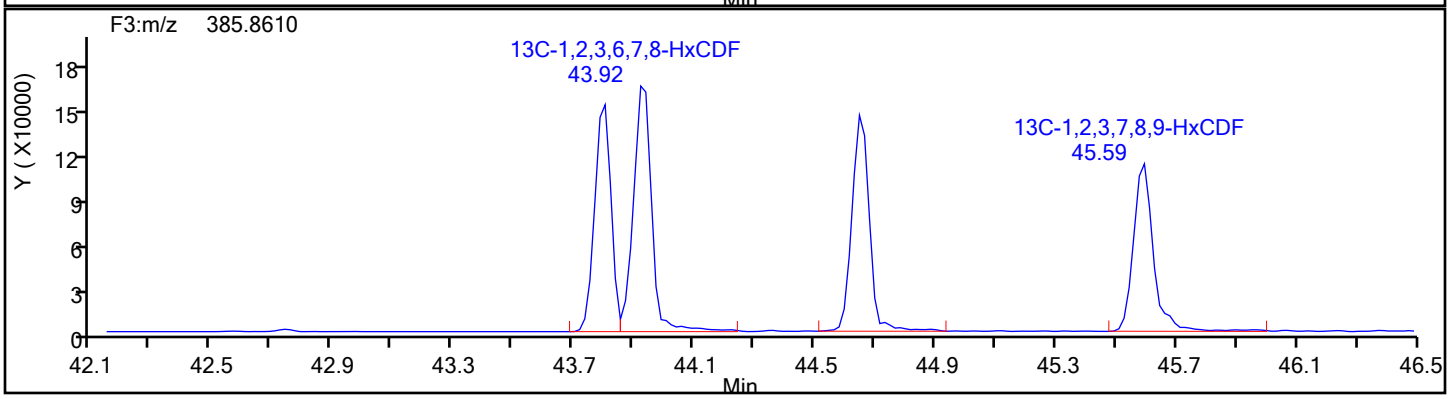
HxCDF





HxCDF Standards



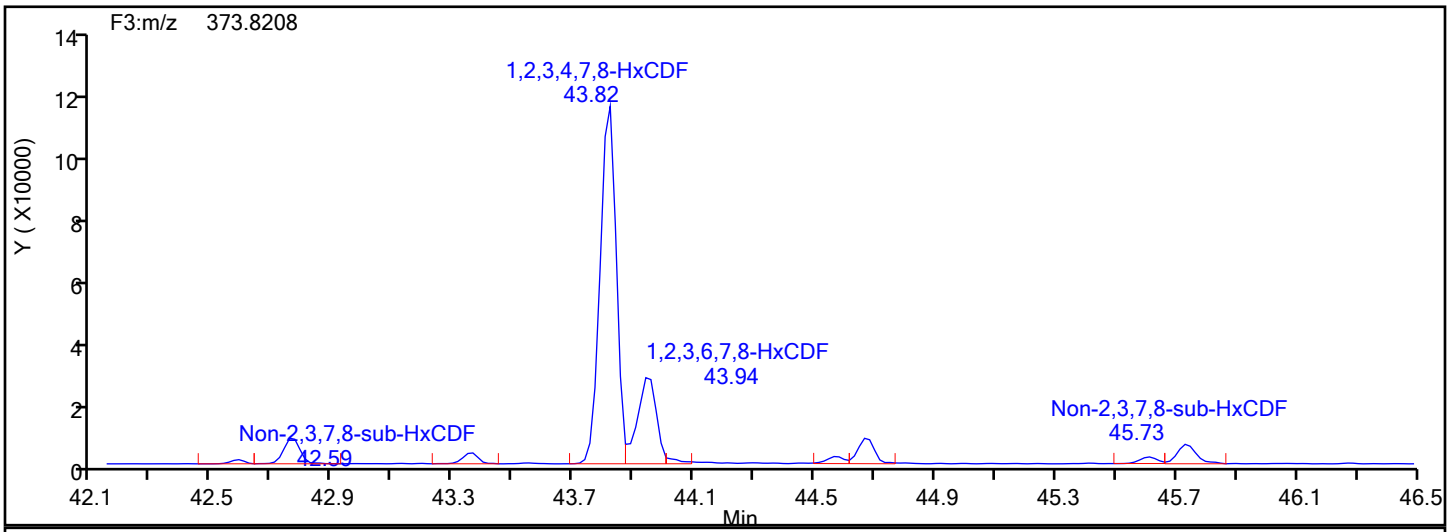


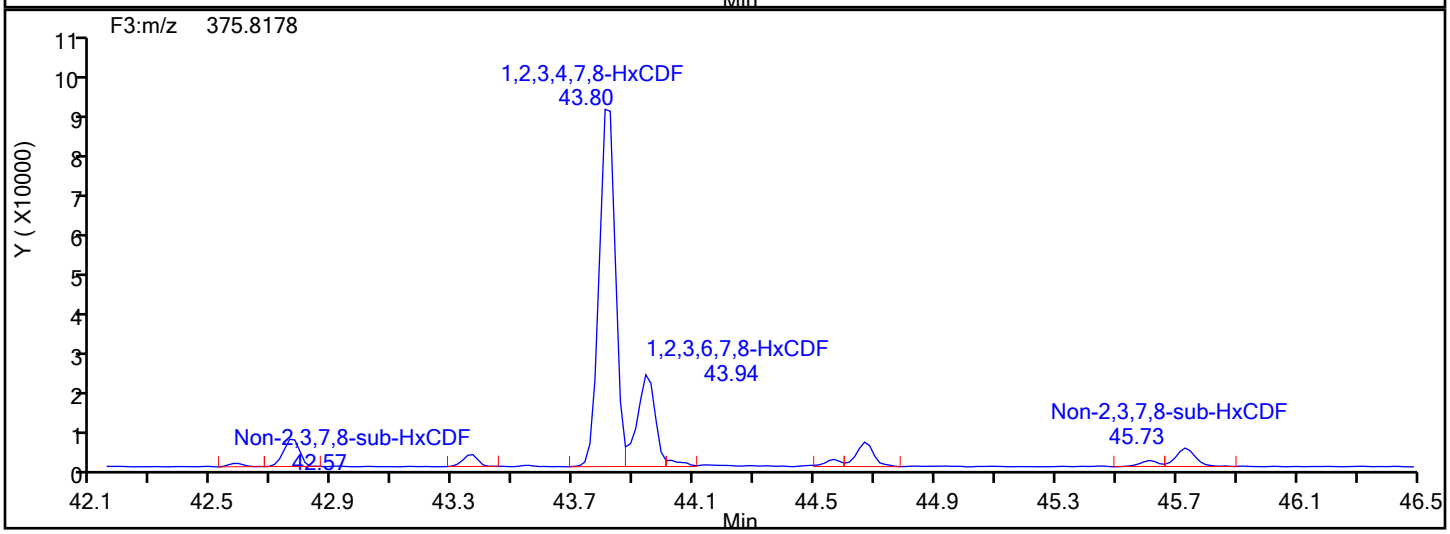
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

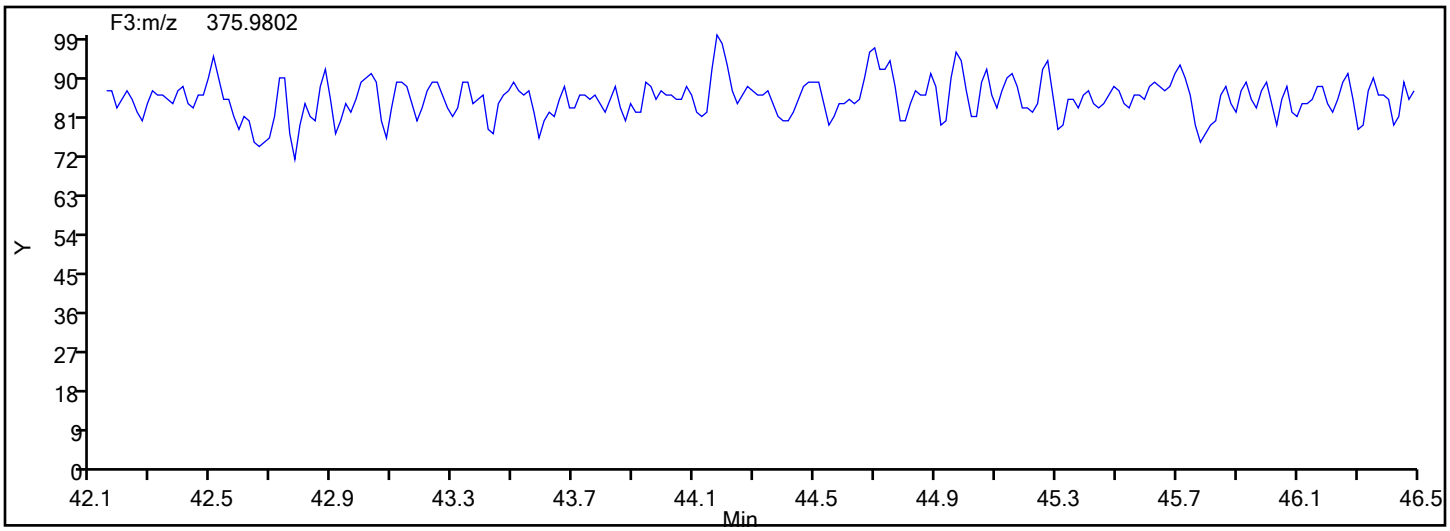
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

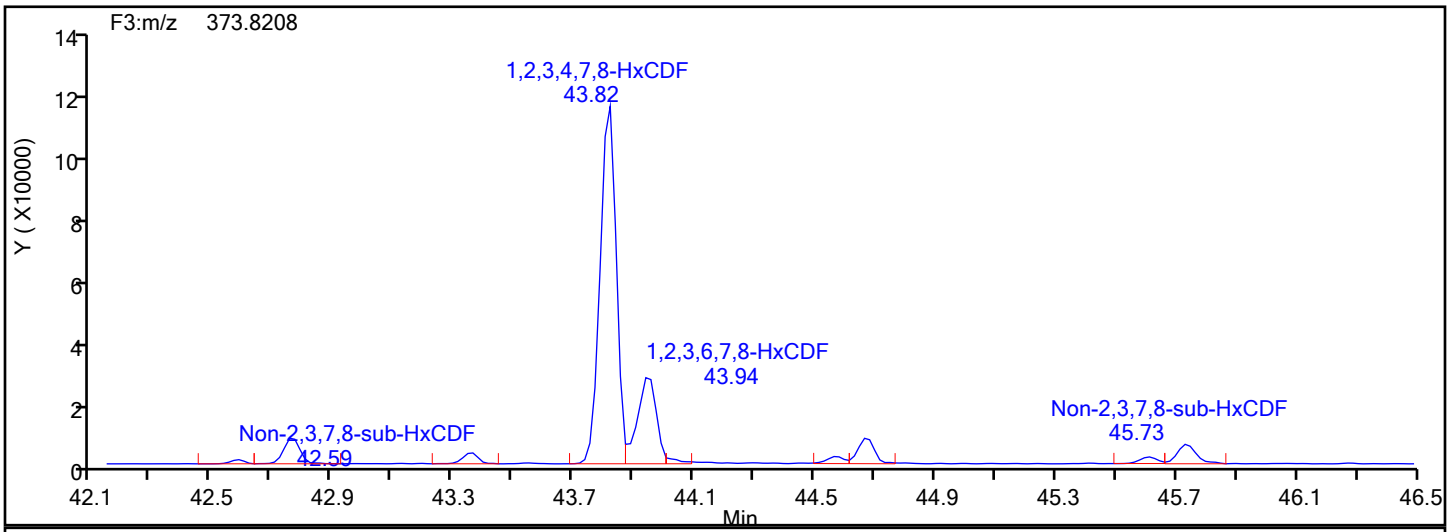


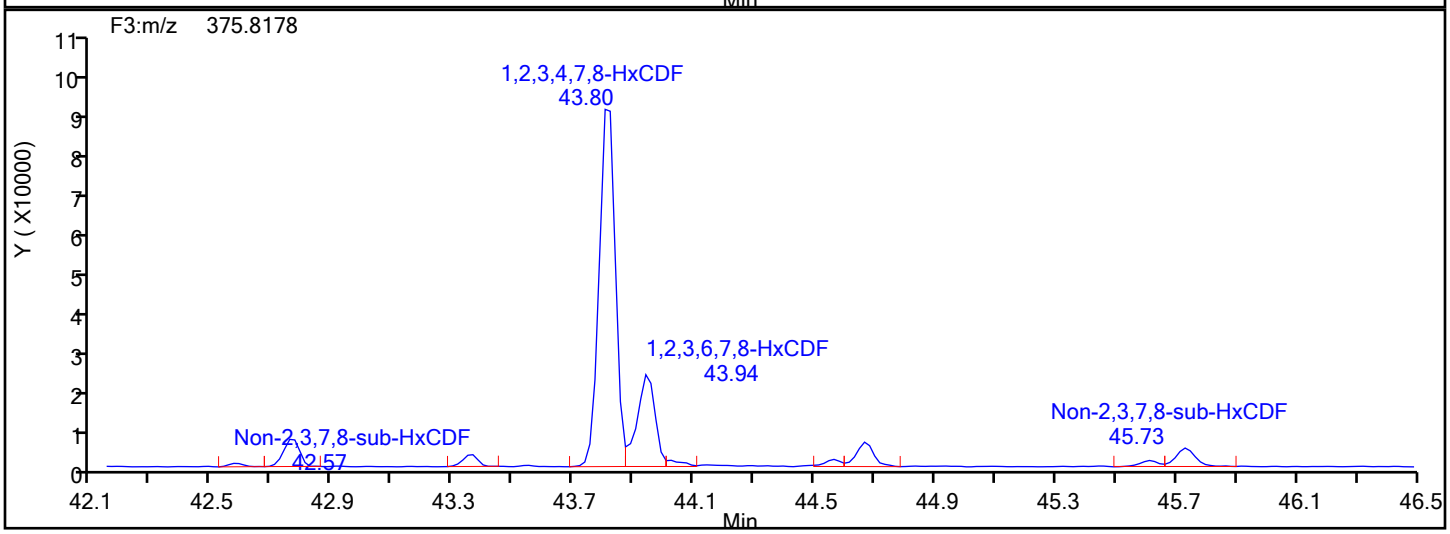
Report Date: 18-Dec-2019 08:00:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

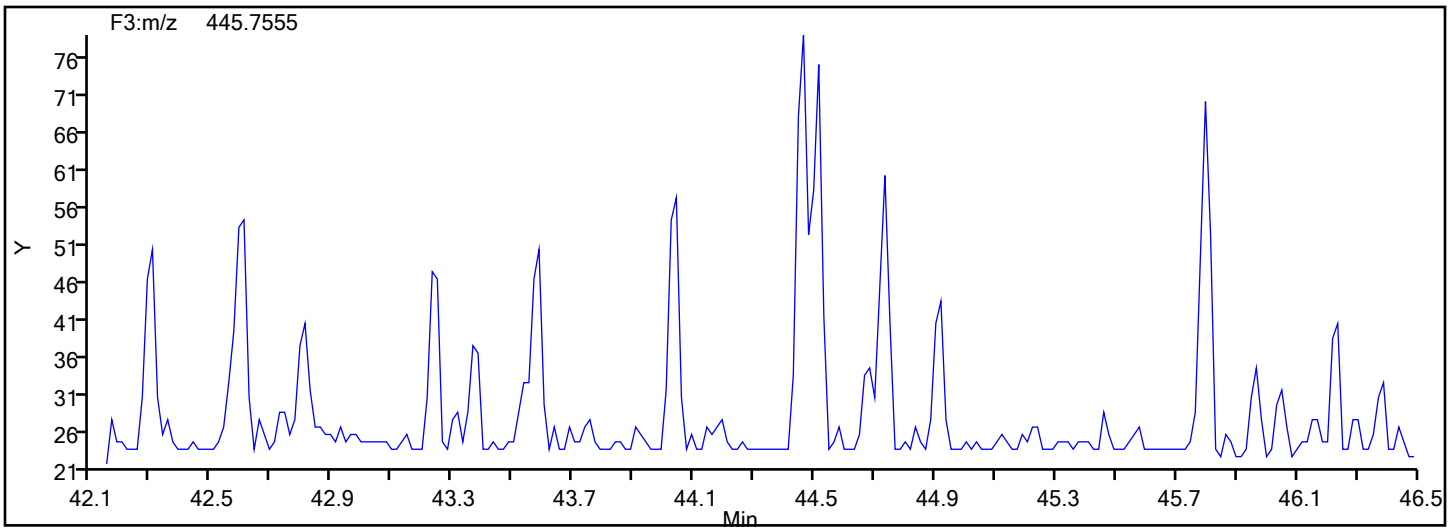
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

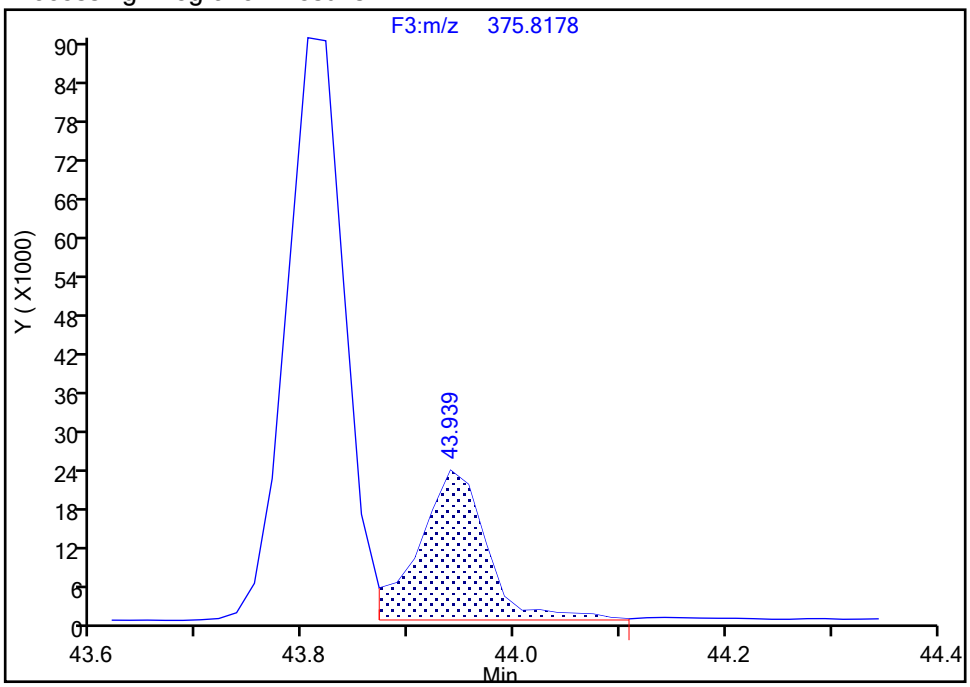
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

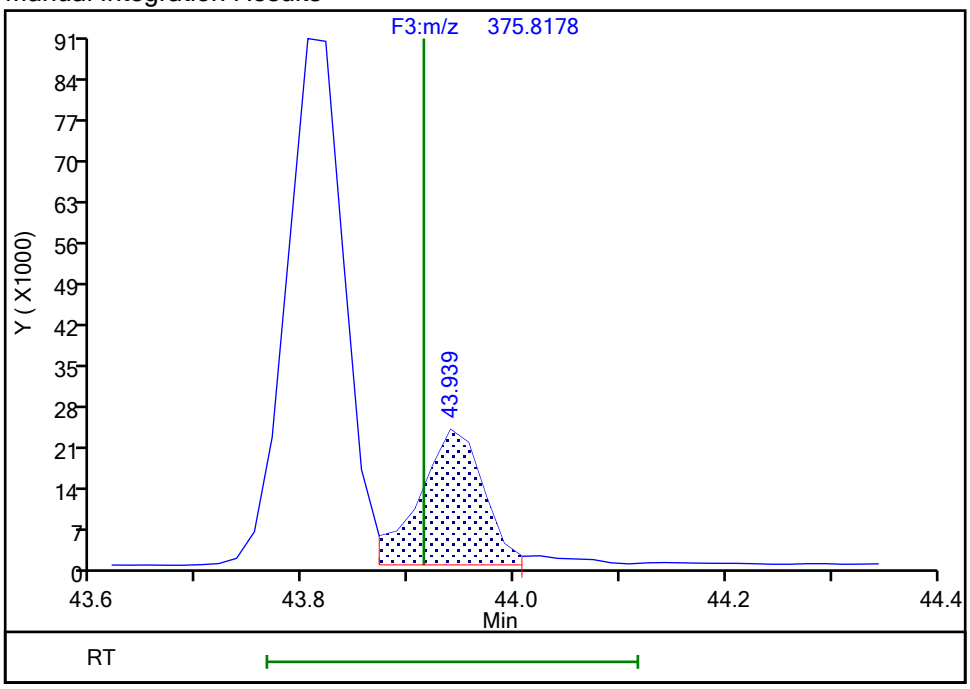
Processing Integration Results

RT: 43.94
Area: 102203
Amount: 8.897958
Amount Units: pg/ul



Manual Integration Results

RT: 43.94
Area: 96344
Amount: 8.454920
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:58:11

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

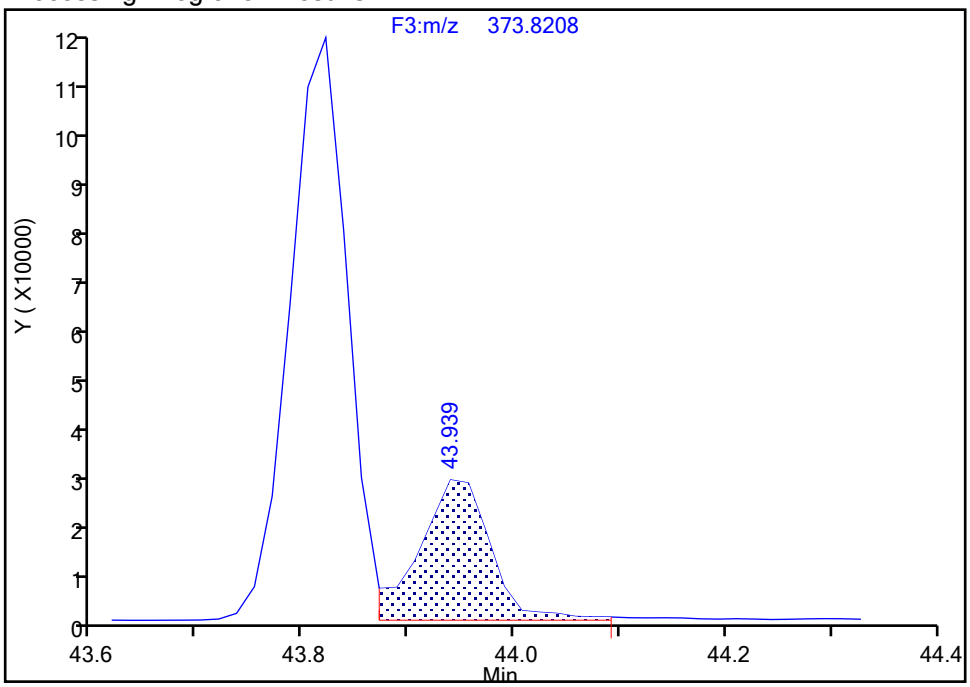
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

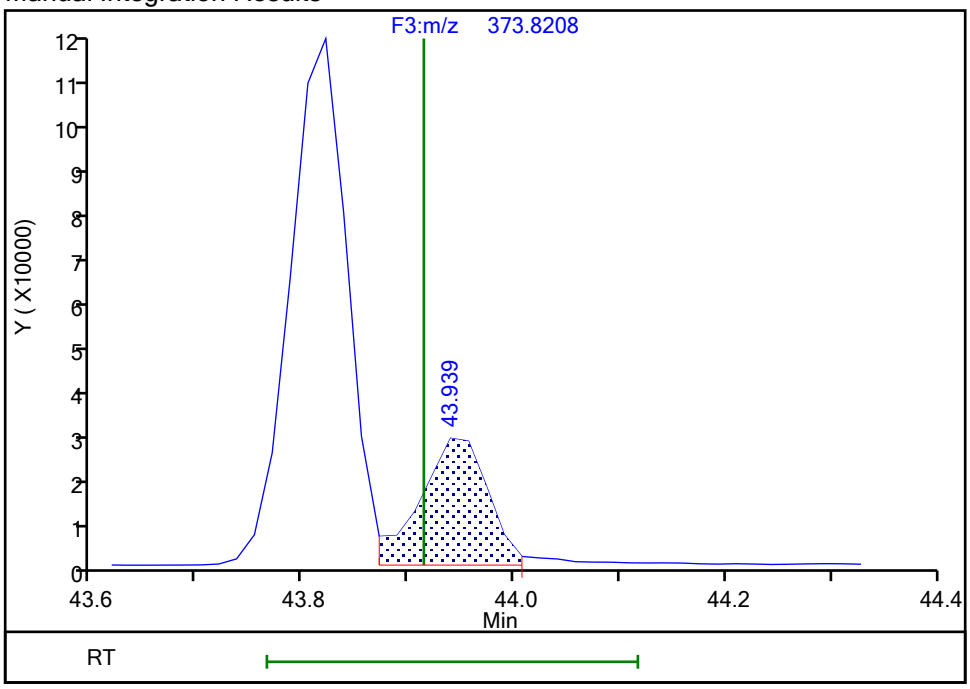
Processing Integration Results

RT: 43.94
Area: 129546
Amount: 8.897958
Amount Units: pg/ul



Manual Integration Results

RT: 43.94
Area: 123866
Amount: 8.454920
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:58:14

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

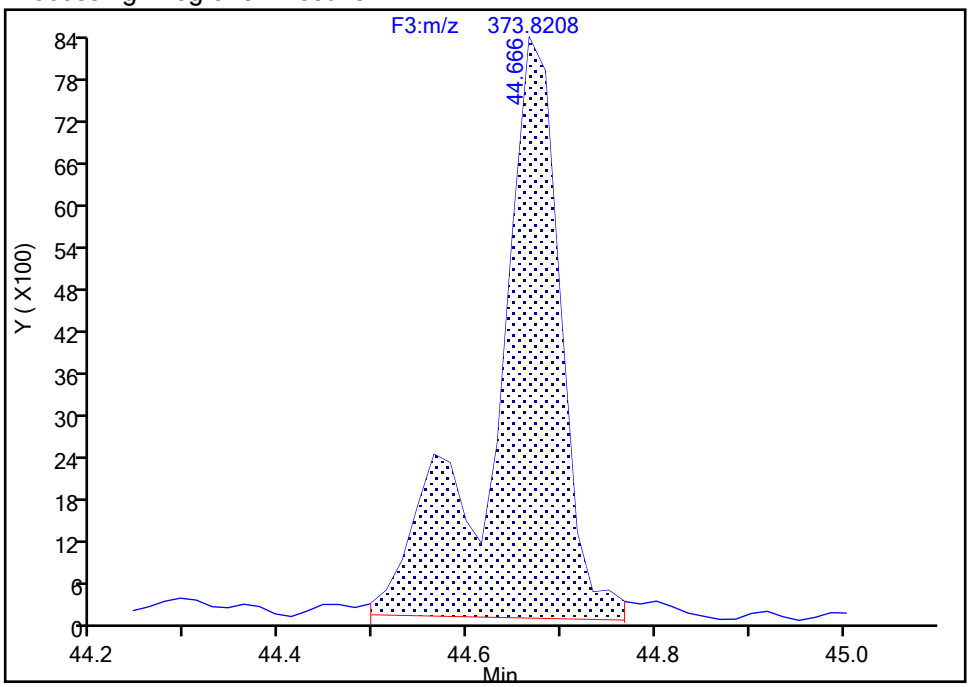
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

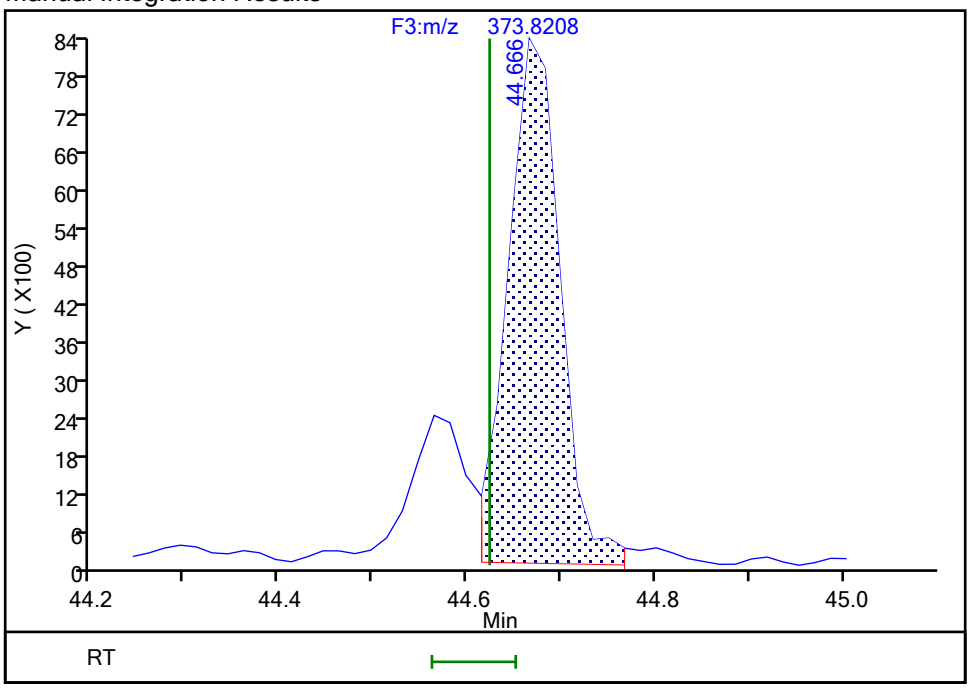
Processing Integration Results

RT: 44.67
Area: 40991
Amount: 3.288642
Amount Units: pg/ul



Manual Integration Results

RT: 44.67
Area: 31686
Amount: 2.572849
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:58:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

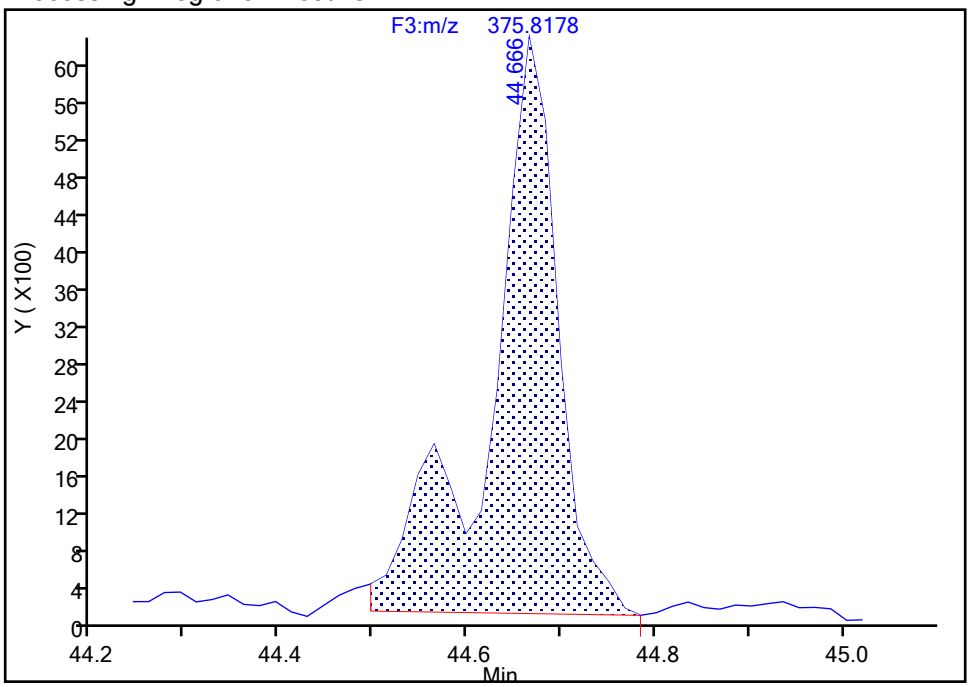
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

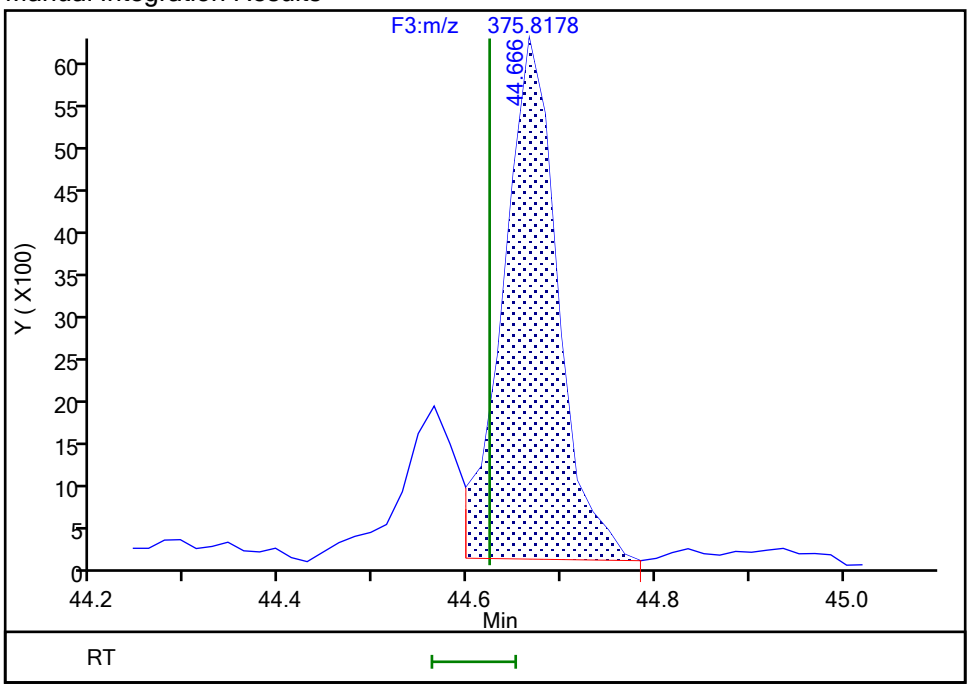
Processing Integration Results

RT: 44.67
Area: 31302
Amount: 3.288642
Amount Units: pg/ul



Manual Integration Results

RT: 44.67
Area: 24872
Amount: 2.572849
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:58:24

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

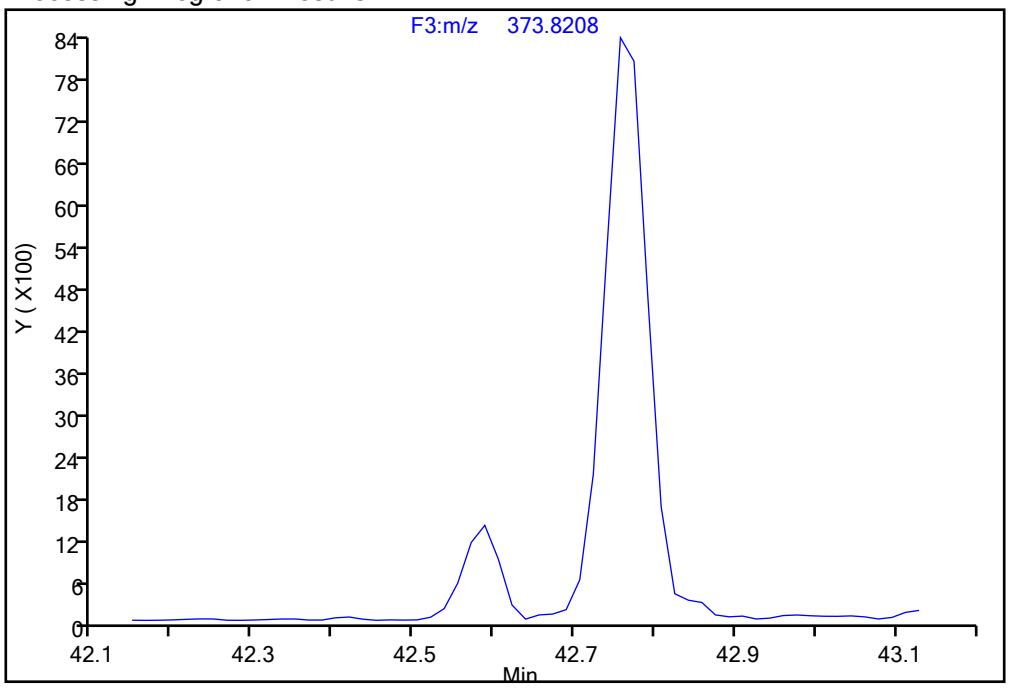
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

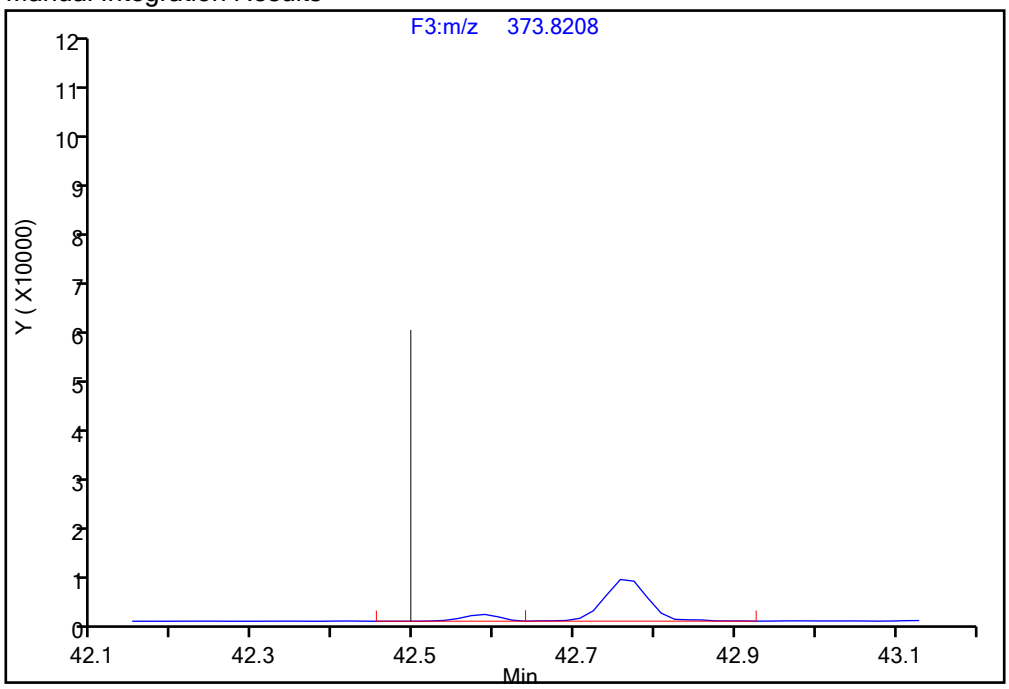
Not Detected
RT: 42.50- 45.75

Processing Integration Results



Manual Integration Results

RT = 42.588 Area = 4295 M



Reviewer: davidsonm, 18-Dec-2019 07:58:51
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

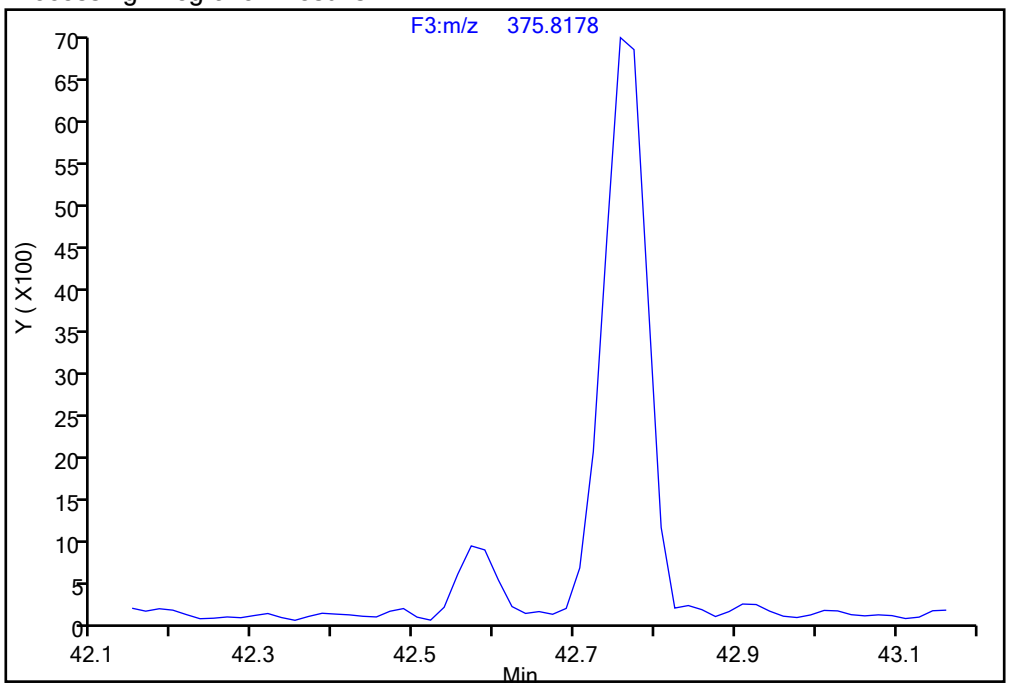
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.50- 45.75)

Signal: 2

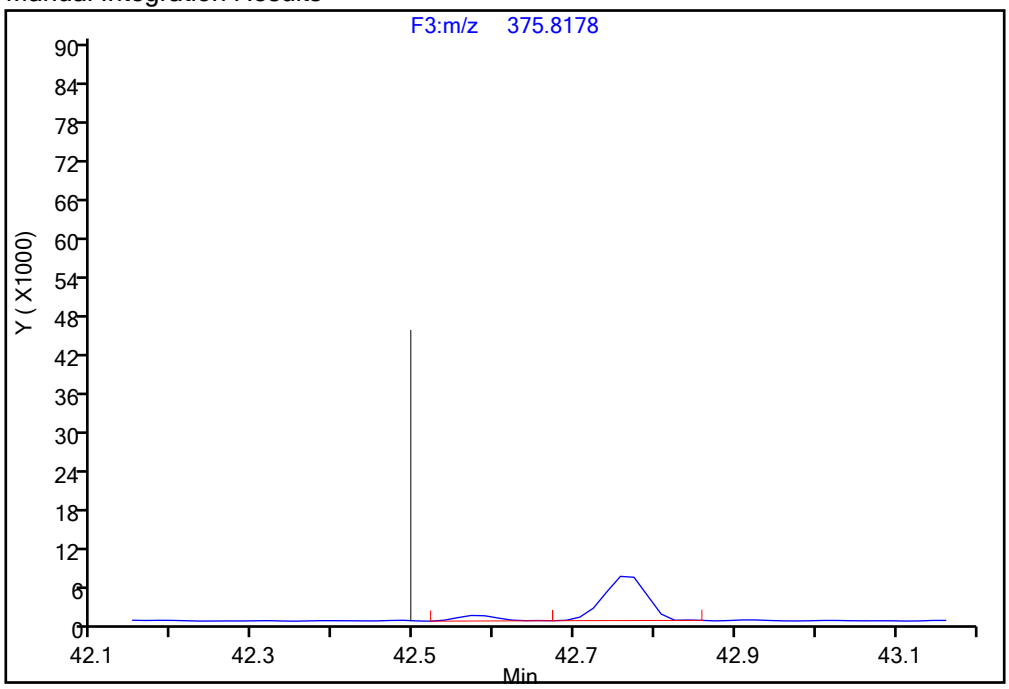
Not Detected
RT: 42.50- 45.75

Processing Integration Results



Manual Integration Results

RT = 42.571 Area = 3003 M



Reviewer: davidsonm, 18-Dec-2019 07:58:56
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

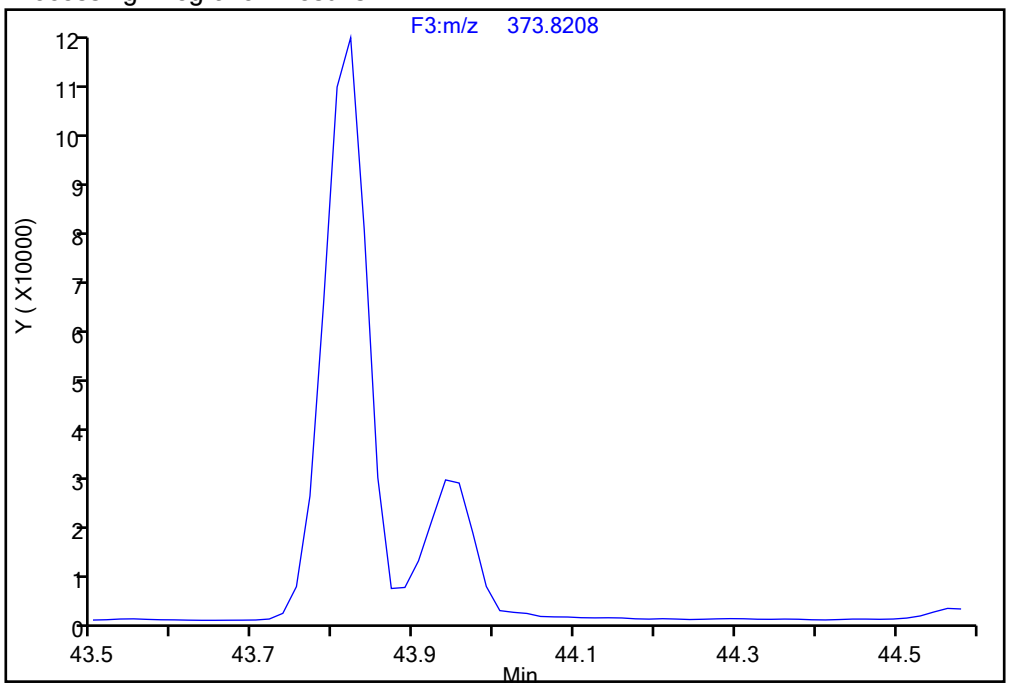
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

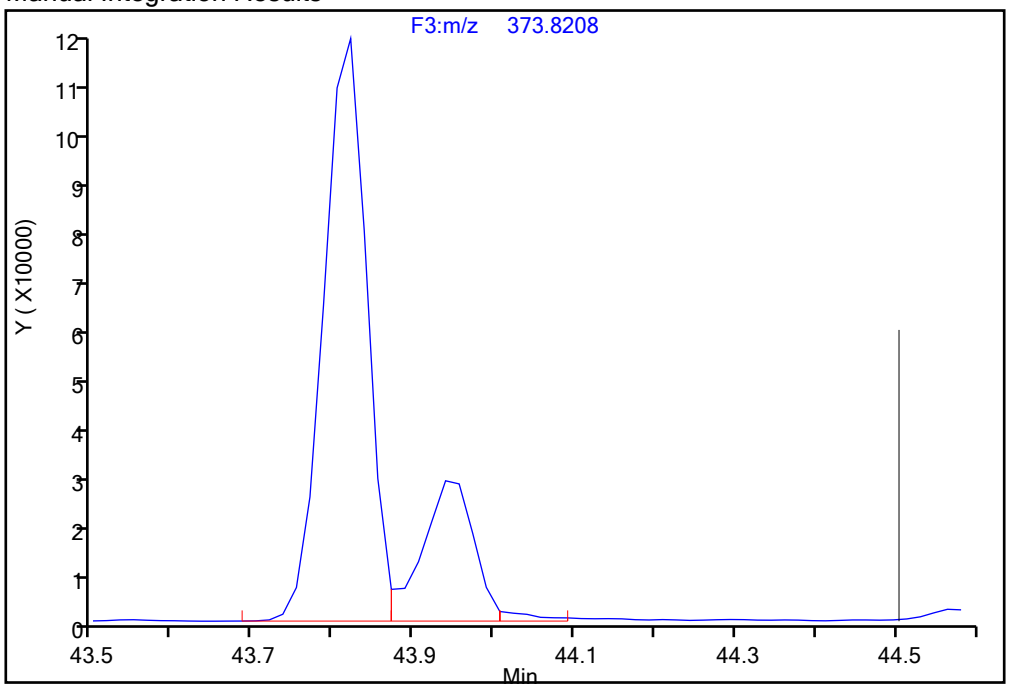
Not Detected
RT: 42.50- 45.75

Processing Integration Results



Manual Integration Results

RT = 44.007 Area = 5680 M



Reviewer: davidsonm, 18-Dec-2019 07:58:51
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

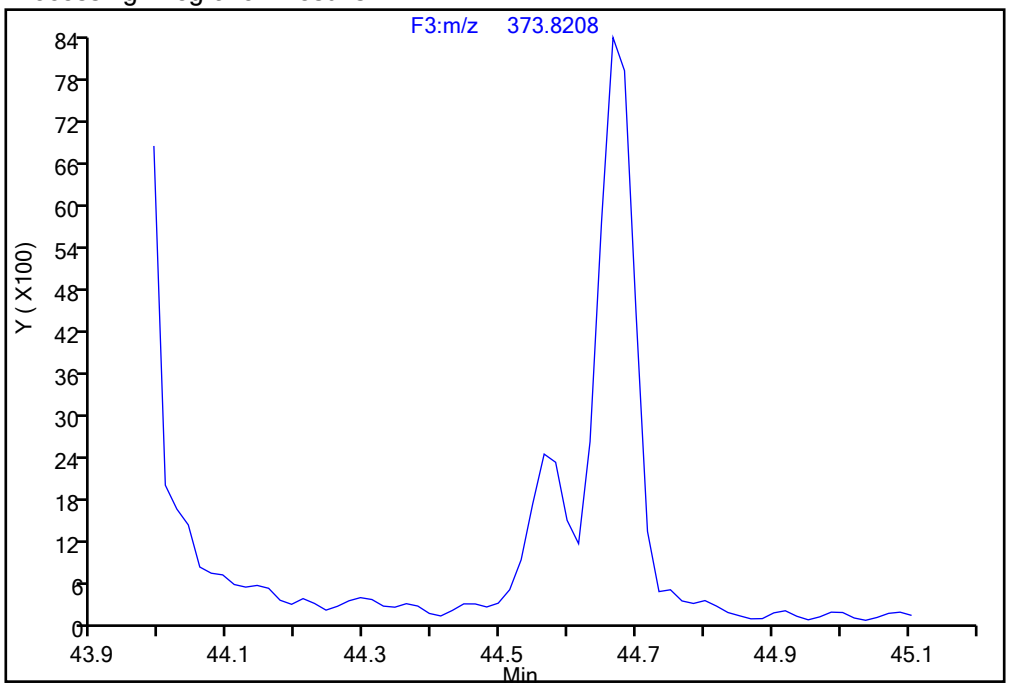
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

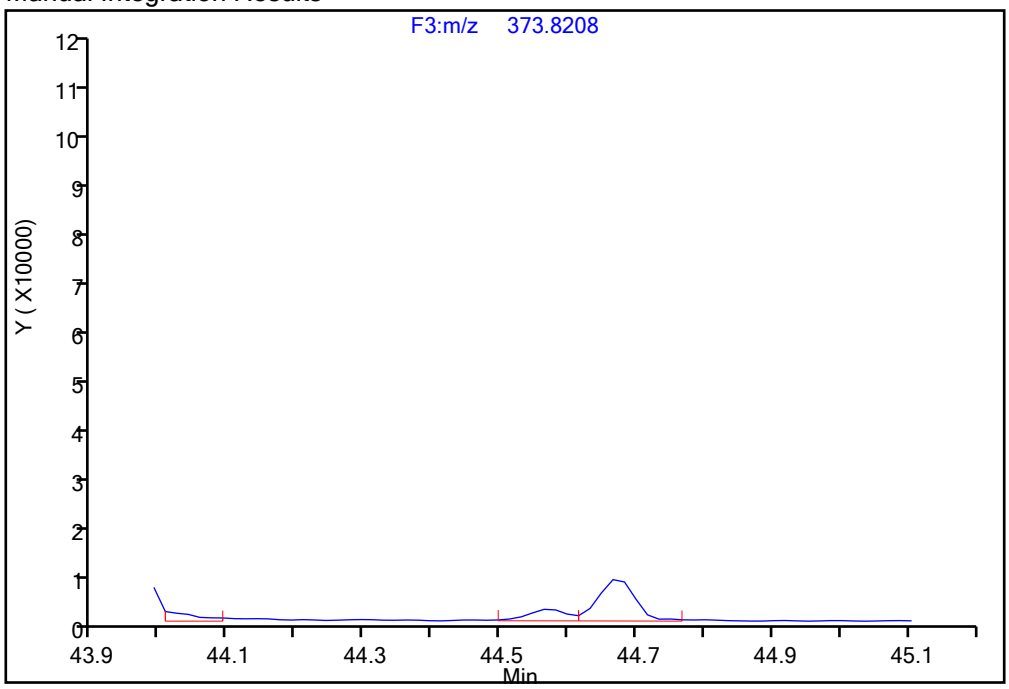
Not Detected
RT: 42.50- 45.75

Processing Integration Results



Manual Integration Results

RT = 44.564 Area = 9294 M



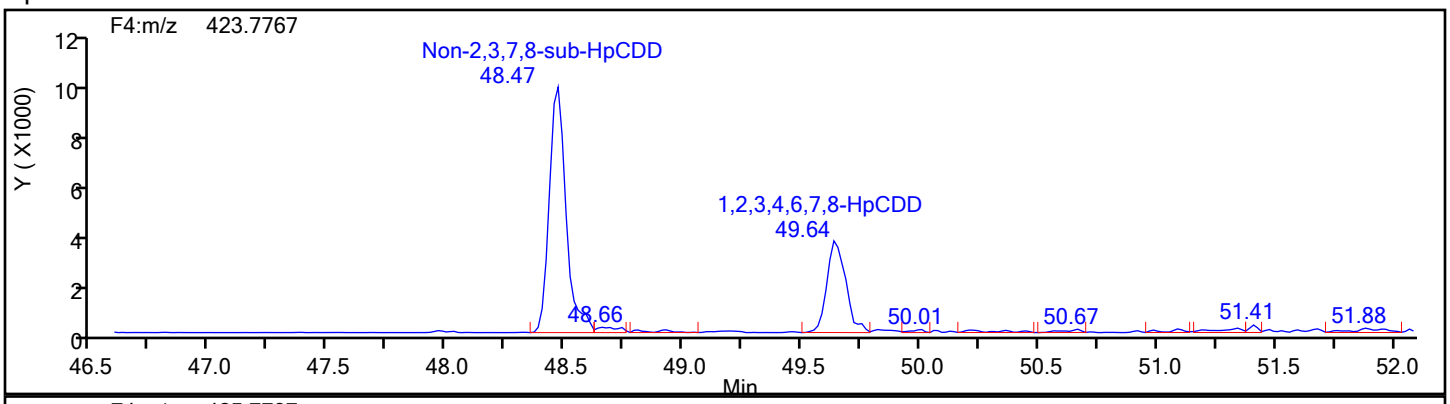
Reviewer: davidsonm, 18-Dec-2019 07:58:51
Audit Action: Manually Integrated Audit Reason: Baseline

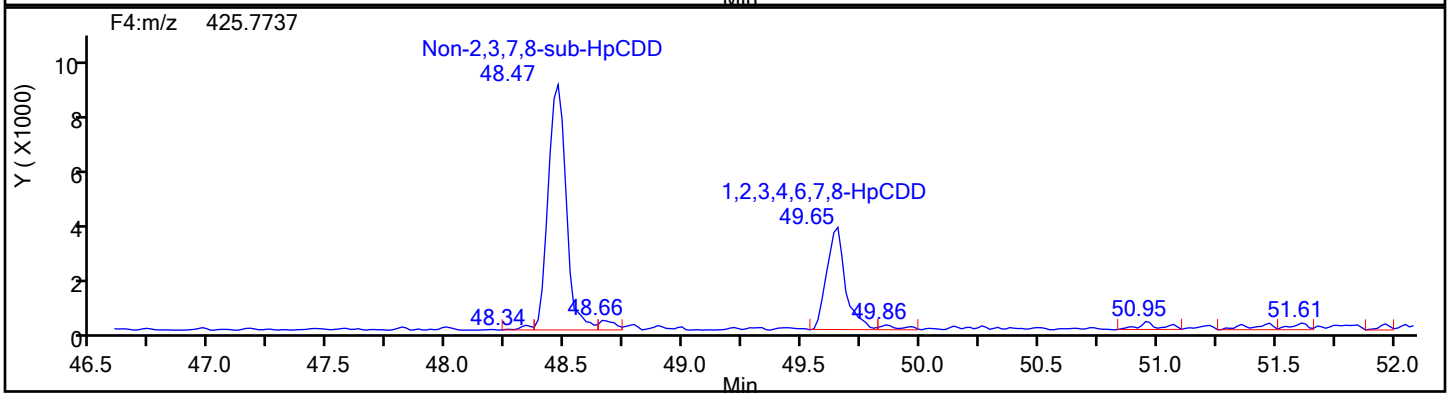
Report Date: 18-Dec-2019 08:00:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

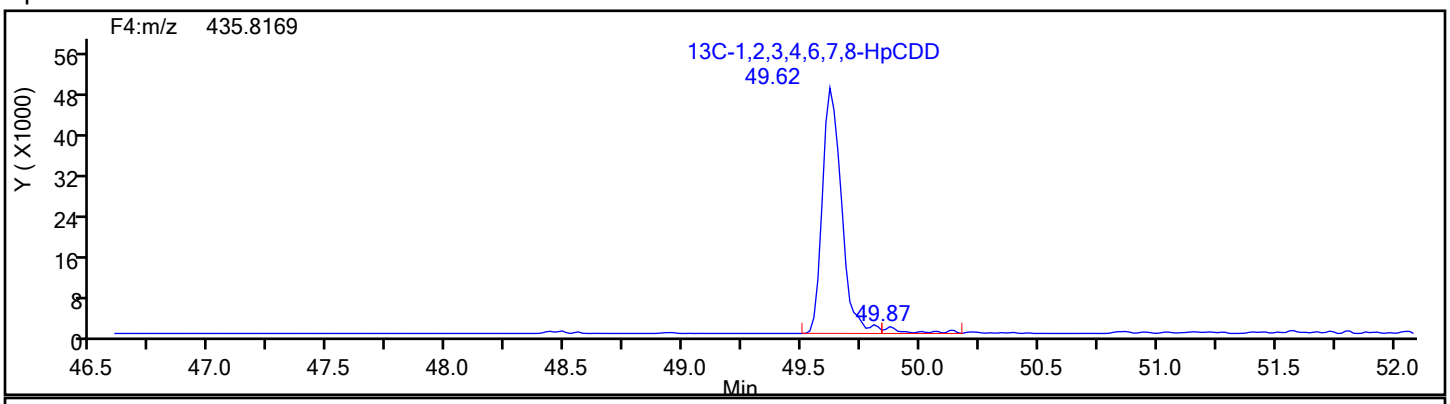
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

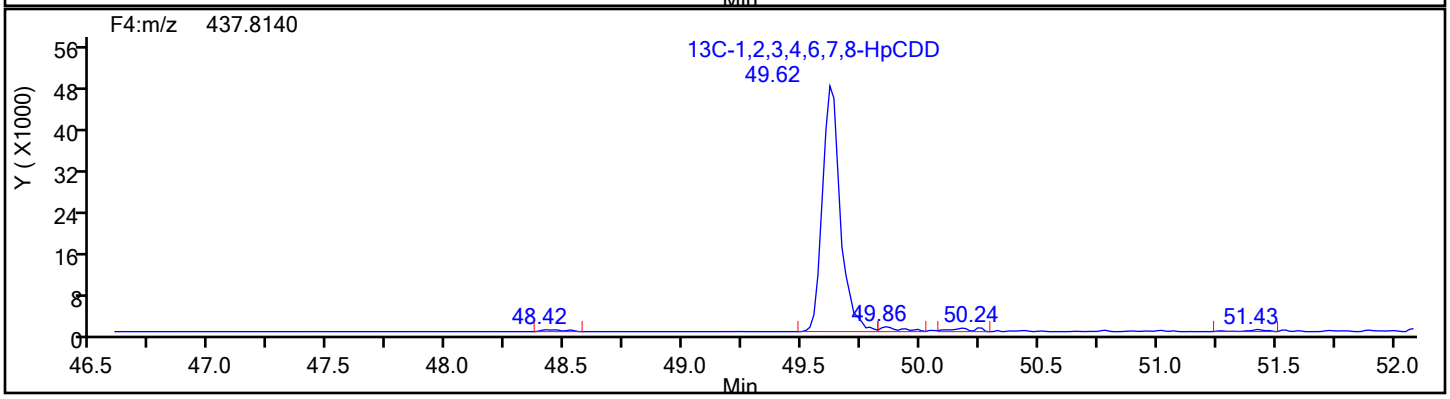
HpCDD





HpCDD Standards



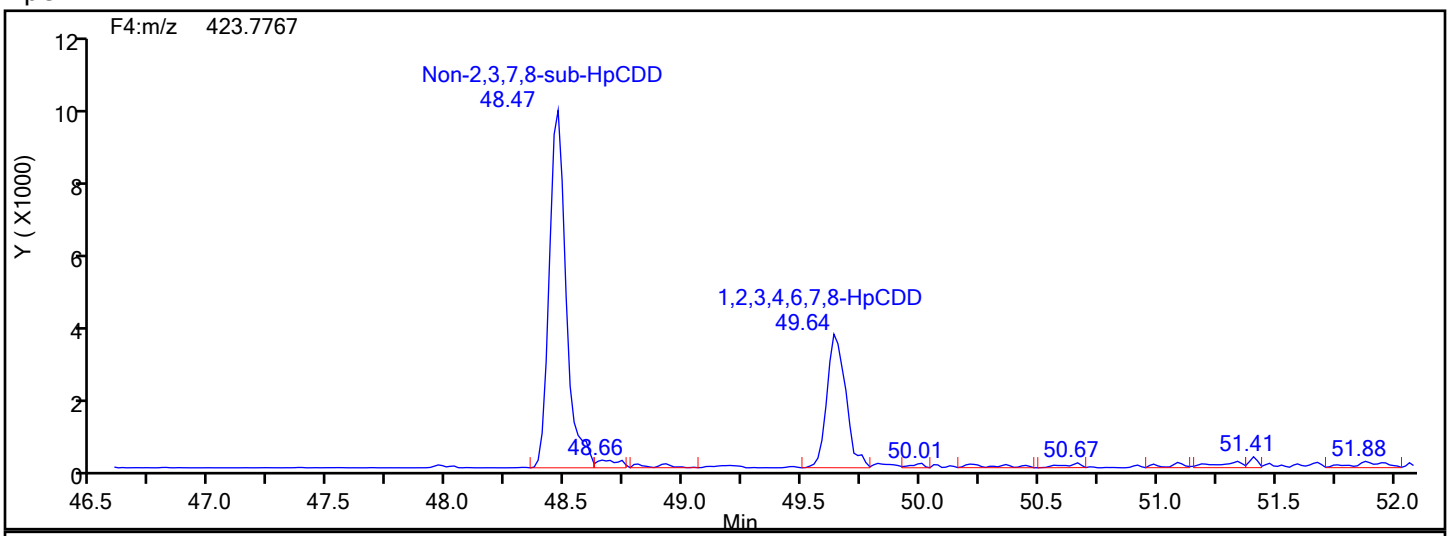


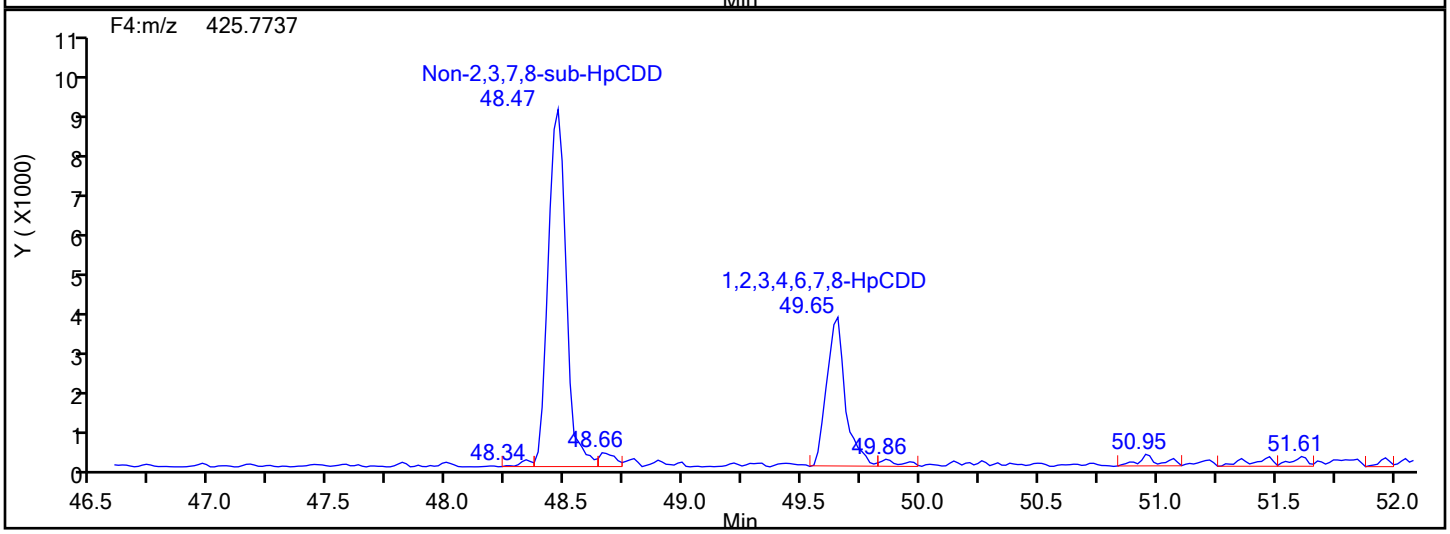
Report Date: 18-Dec-2019 08:00:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

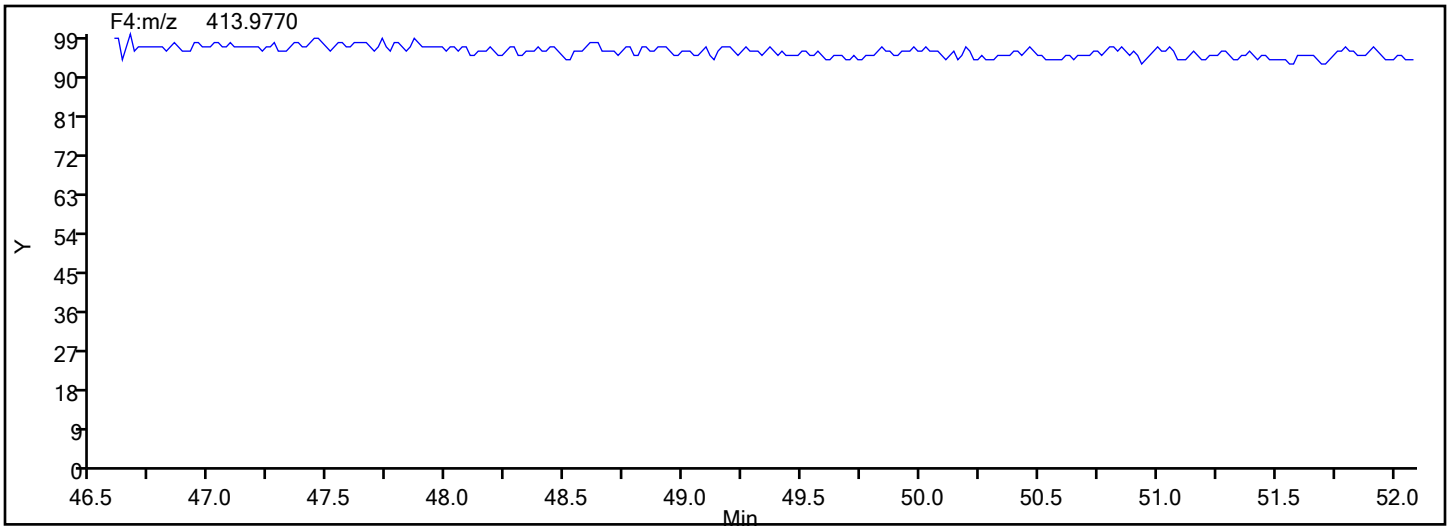
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

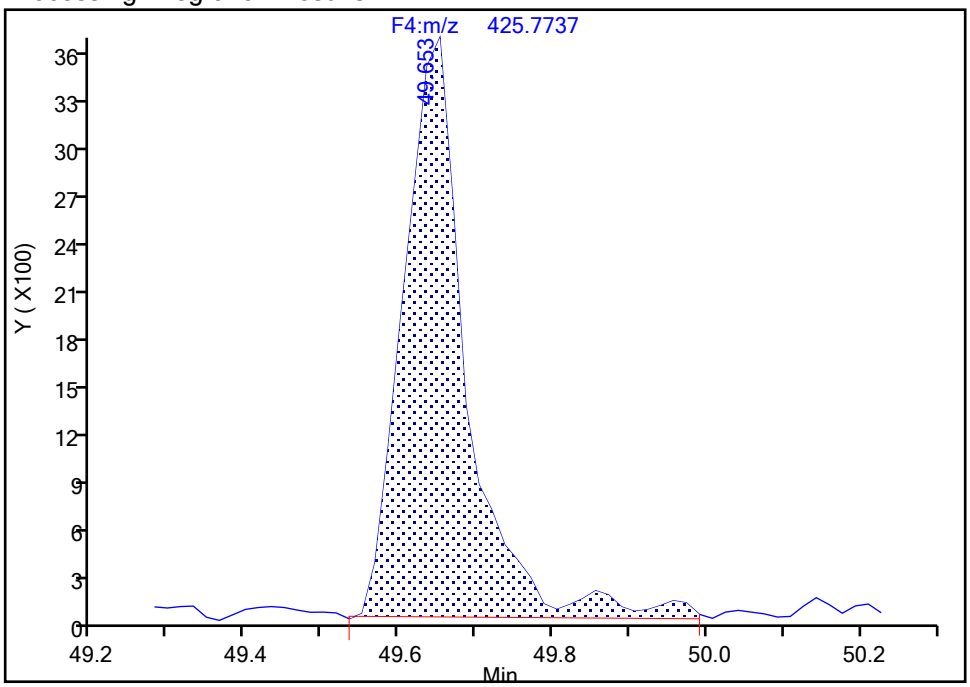
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 2

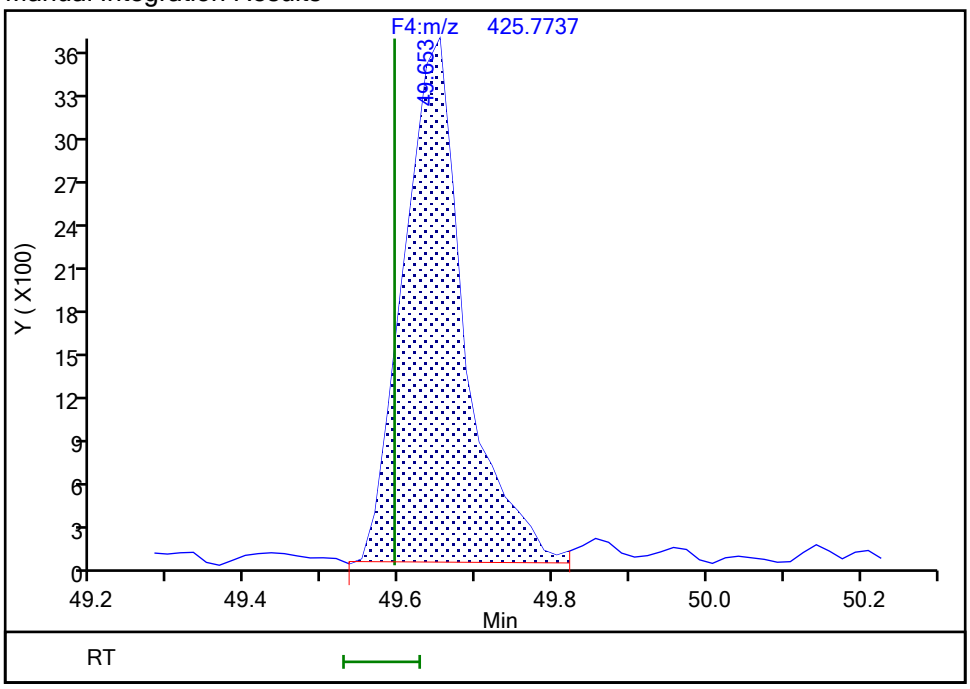
Processing Integration Results

RT: 49.65
Area: 21068
Amount: 3.461925
Amount Units: pg/ul



Manual Integration Results

RT: 49.65
Area: 20097
Amount: 3.379924
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:59:26

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

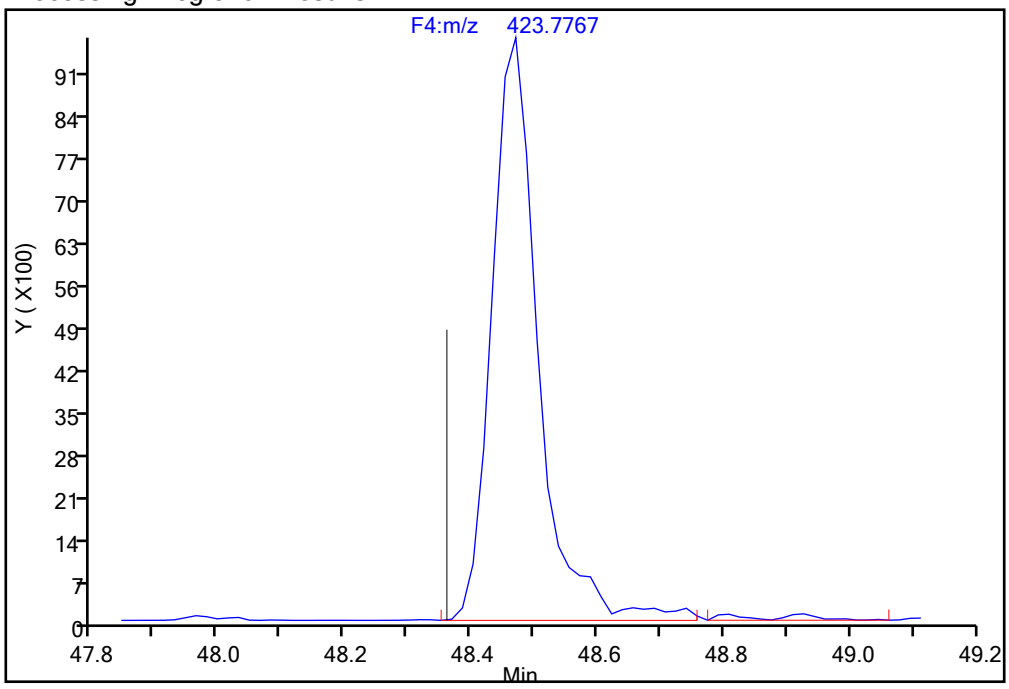
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7767, RT: (48.36- 49.64)

Signal: 1

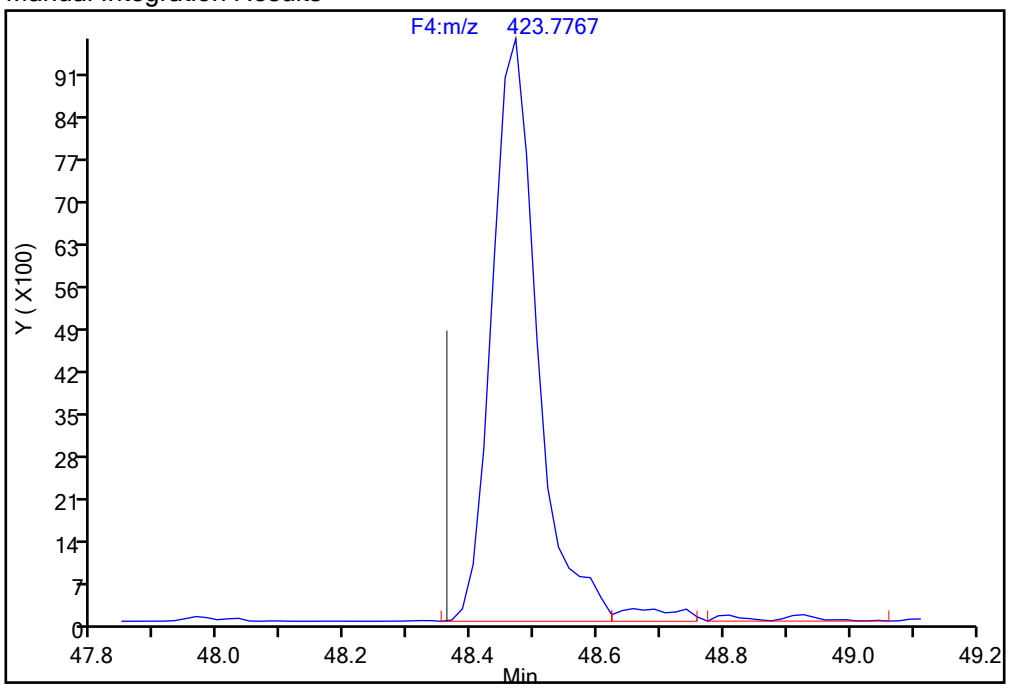
Processing Integration Results

RT = 48.470 Area = 49003



Manual Integration Results

RT = 48.470 Area = 47640 M



Reviewer: davidsonm, 18-Dec-2019 07:59:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

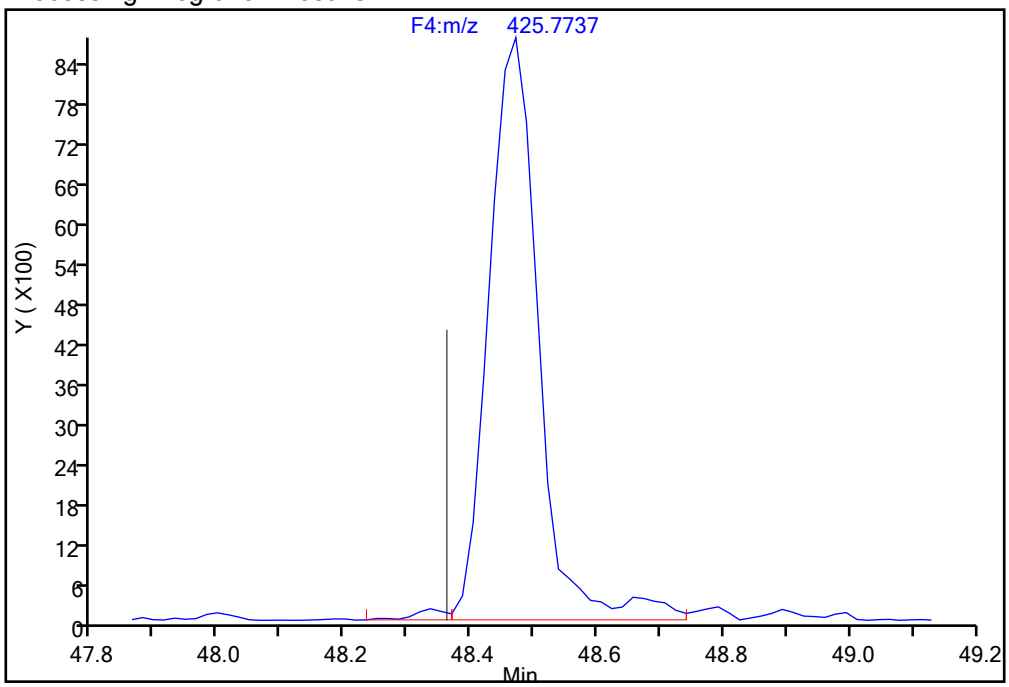
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (48.36- 49.64)

Signal: 2

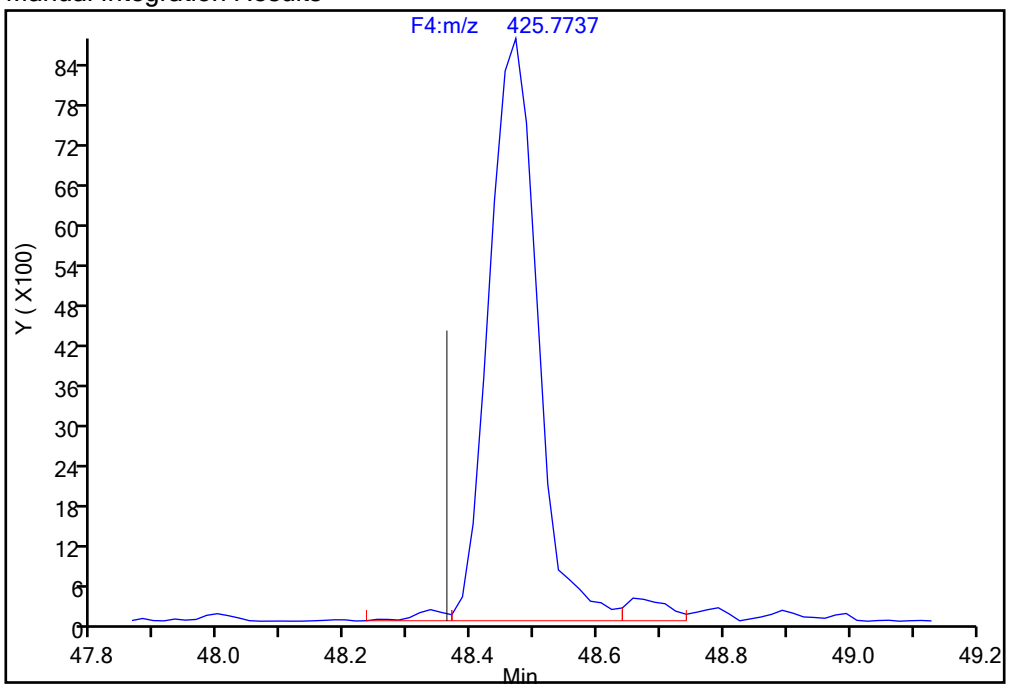
Processing Integration Results

RT = 48.470 Area = 48065



Manual Integration Results

RT = 48.470 Area = 46559 M



Reviewer: davidsonm, 18-Dec-2019 07:59:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

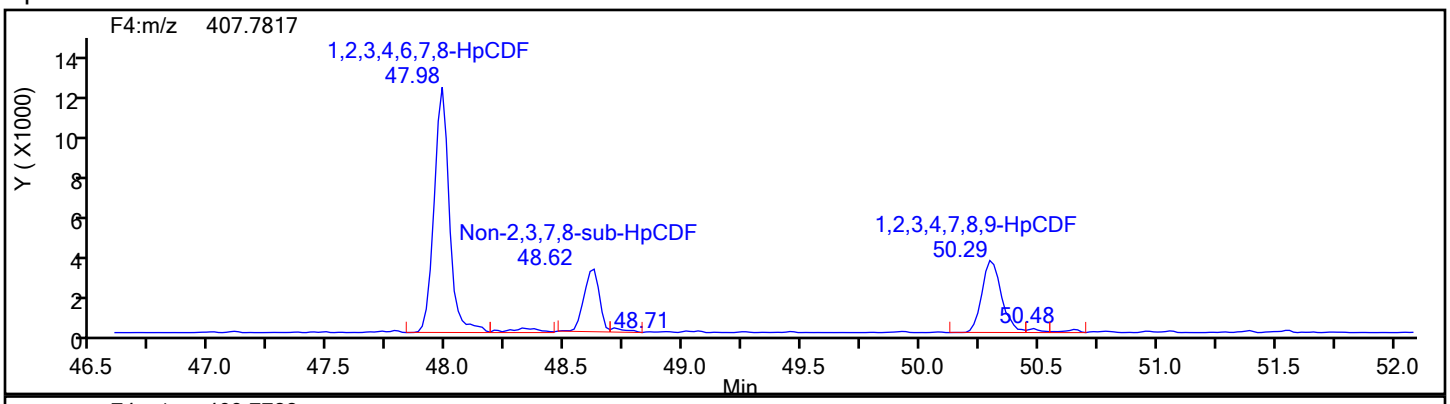
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

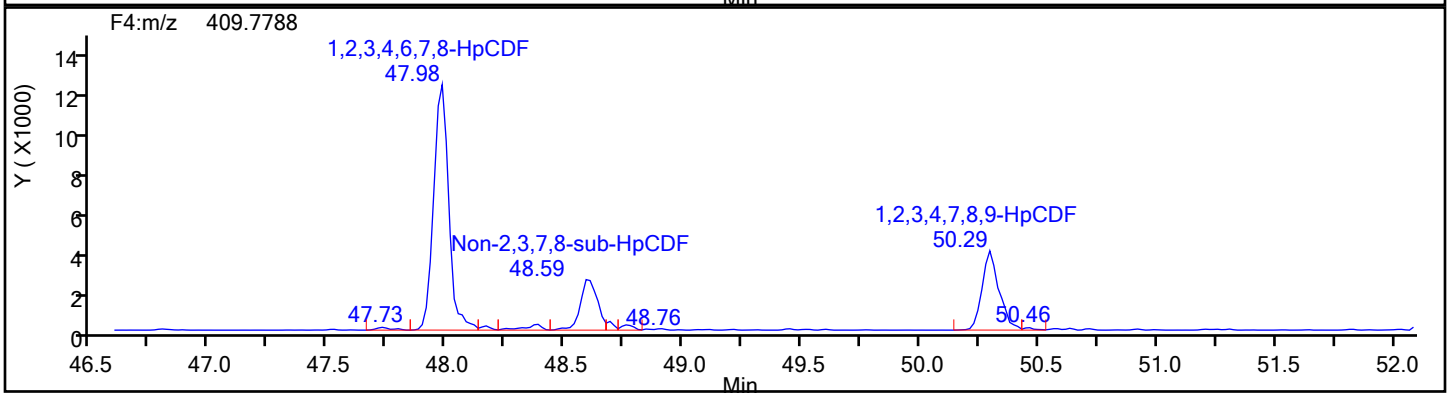
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d

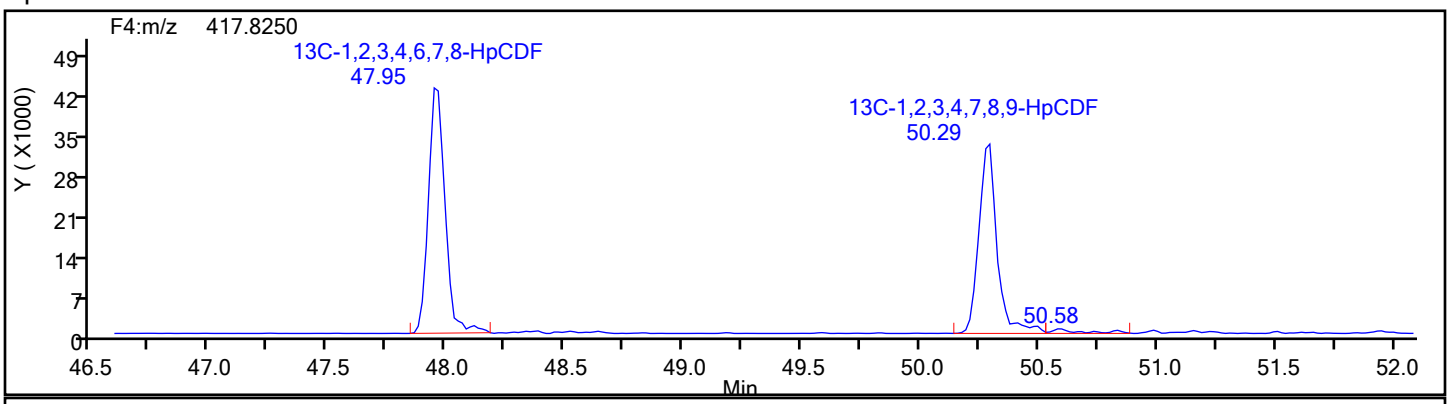
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

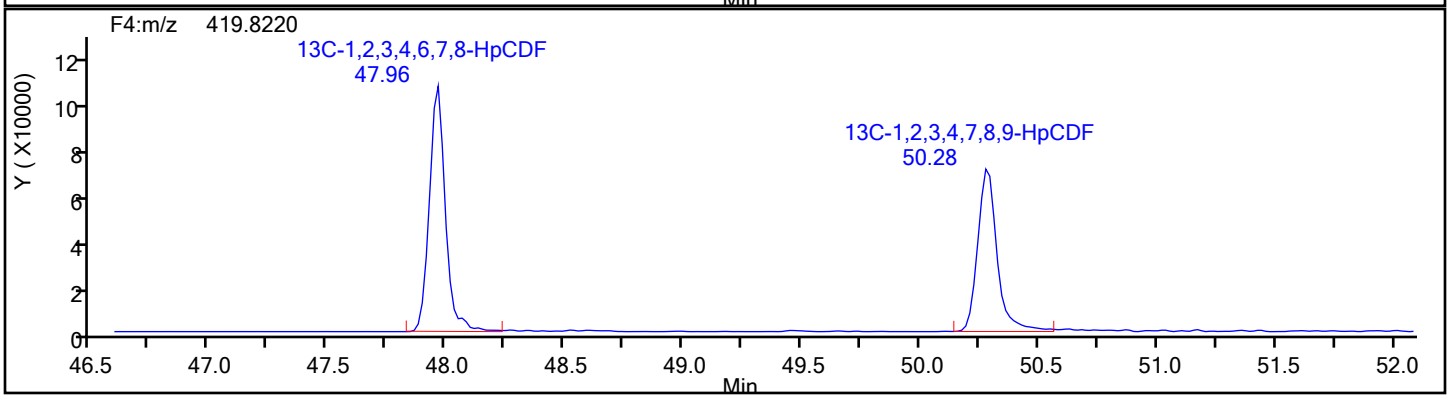
HpCDF





HpCDF Standards

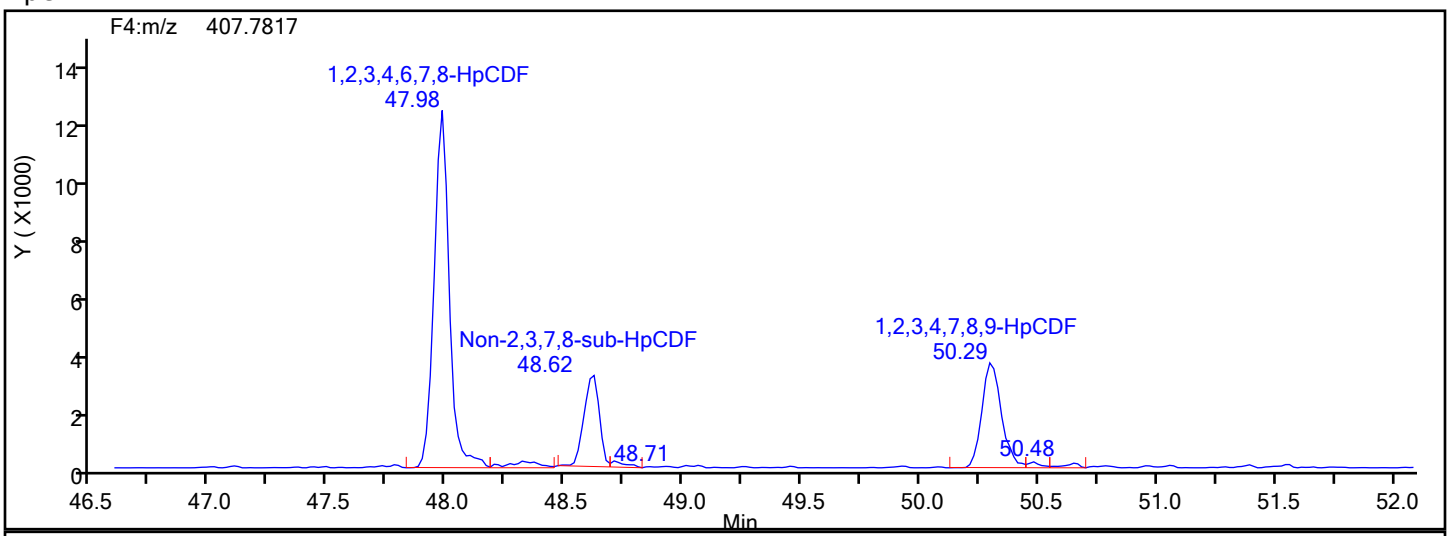


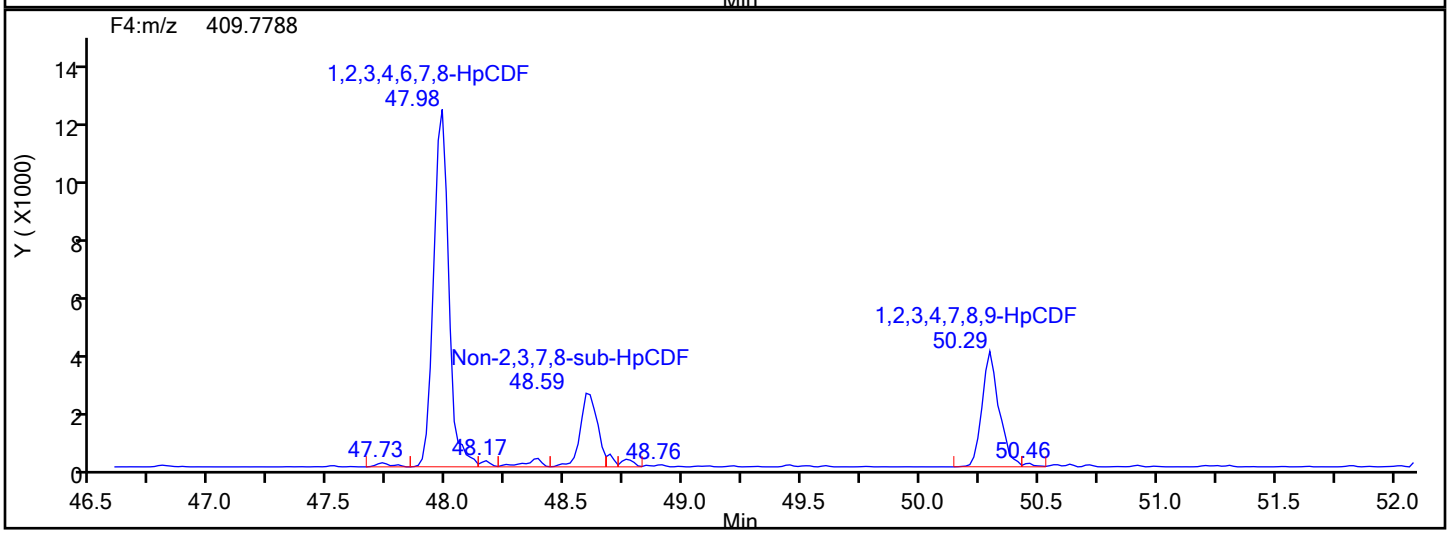


Eurofins TestAmerica, Knoxville

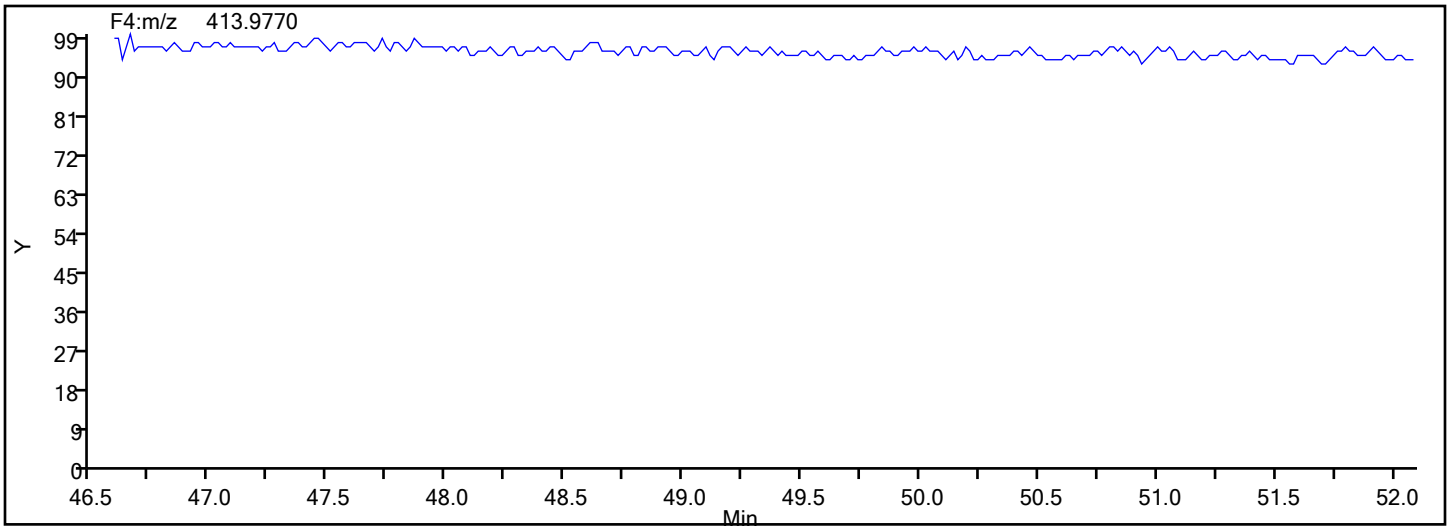
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





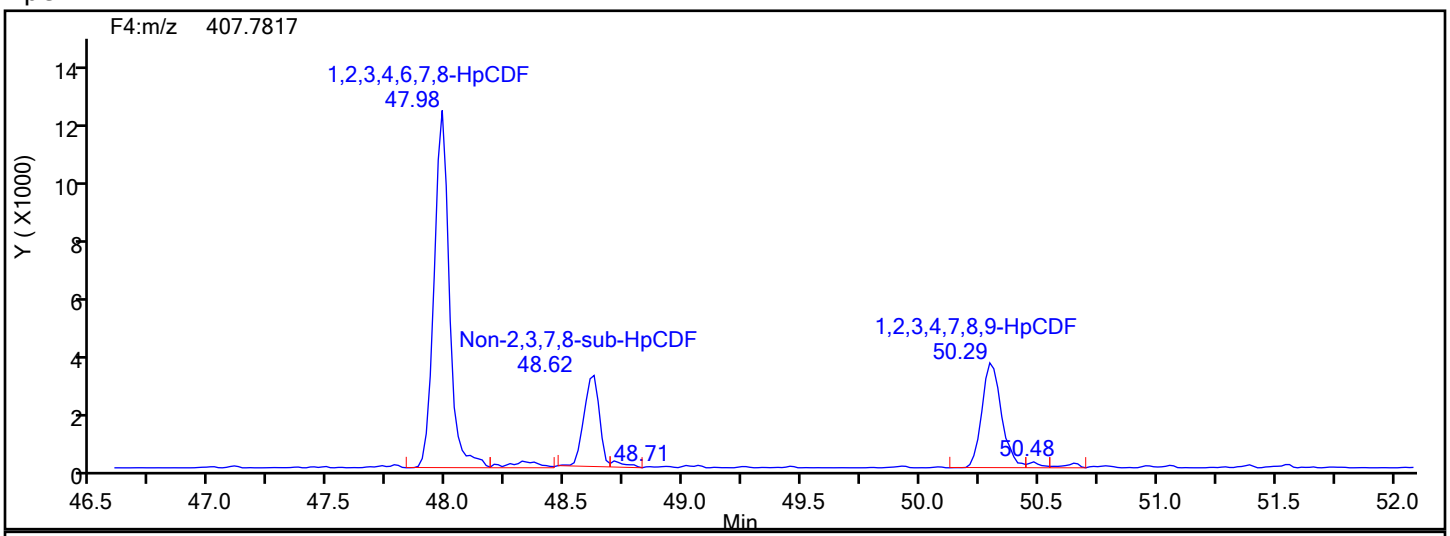
HpCDF Lock Mass

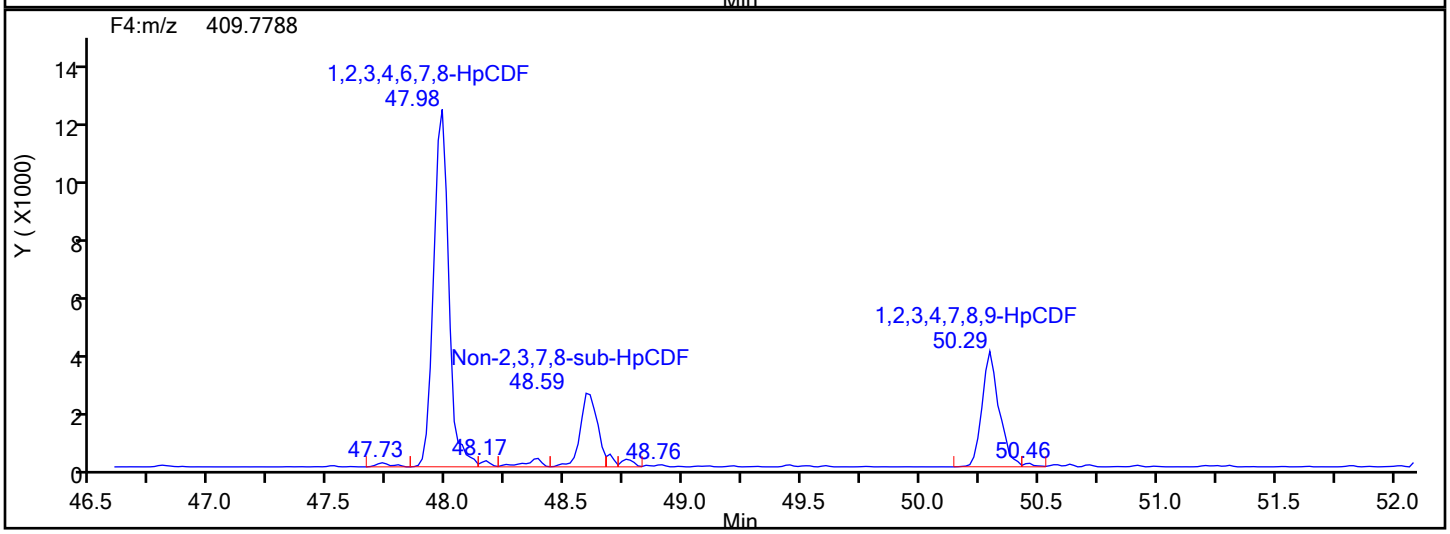


Eurofins TestAmerica, Knoxville

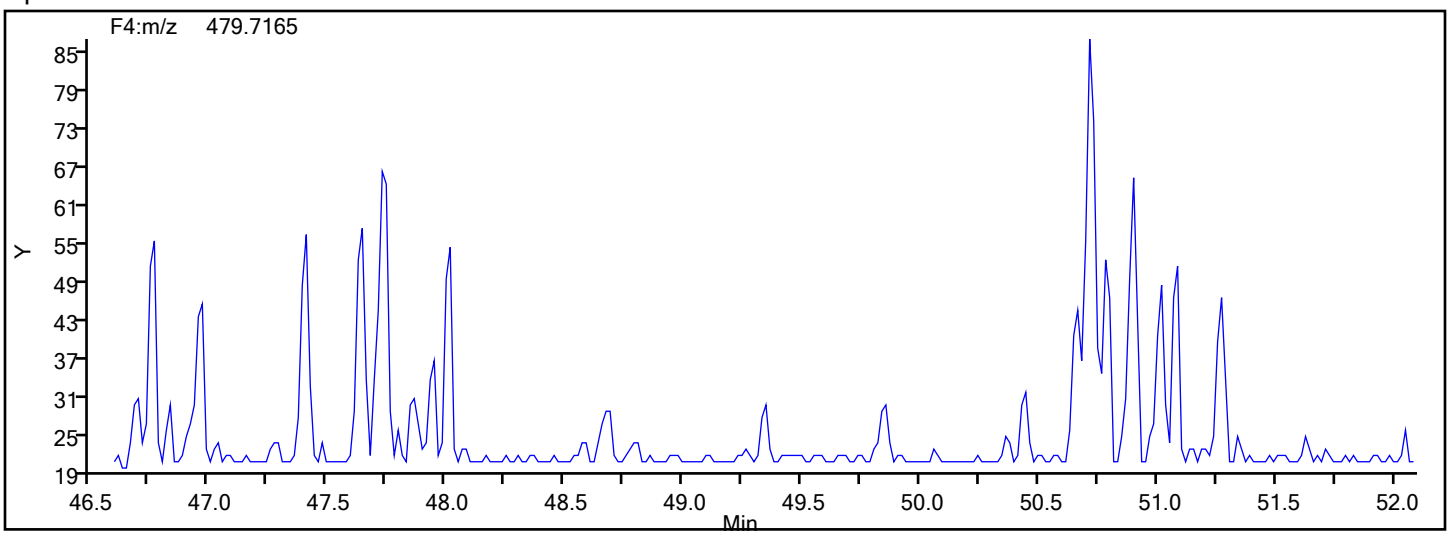
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

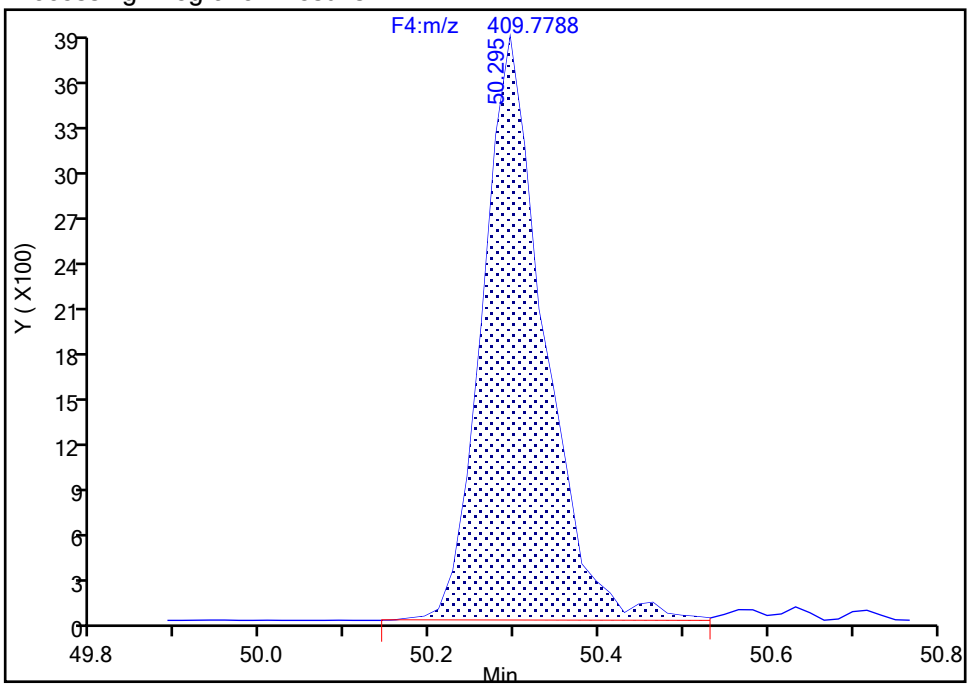
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

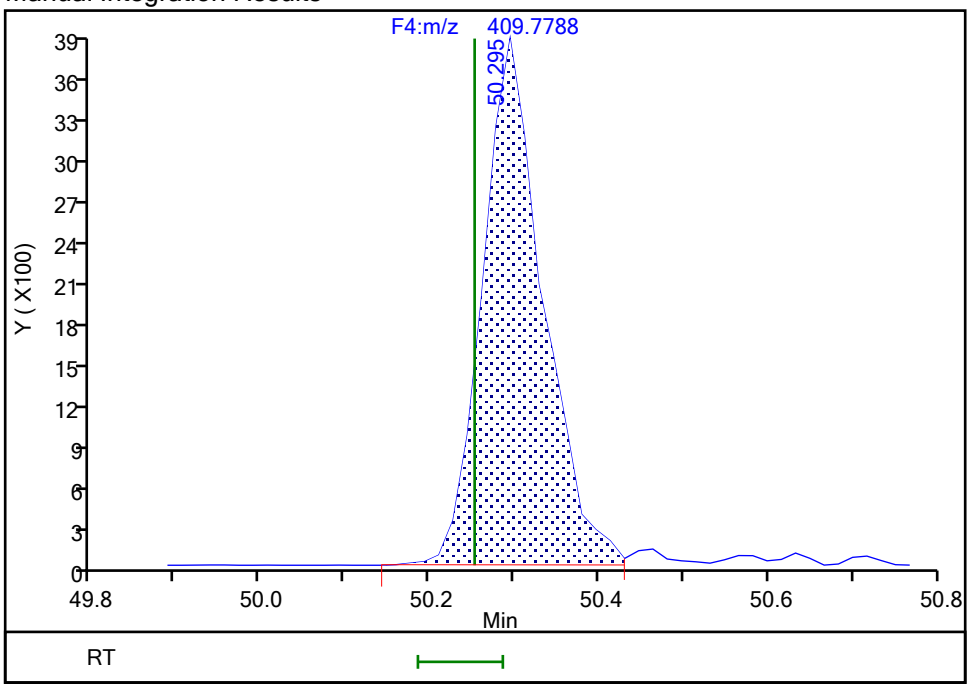
Processing Integration Results

RT: 50.29
Area: 19300
Amount: 2.598599
Amount Units: pg/ul



Manual Integration Results

RT: 50.29
Area: 18935
Amount: 2.530342
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:59:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

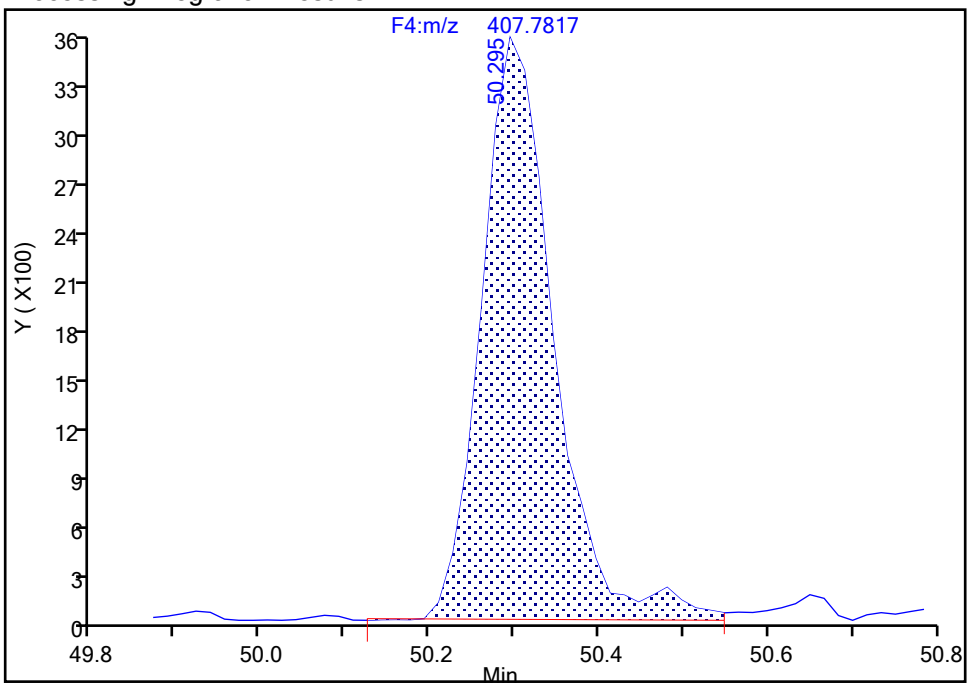
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

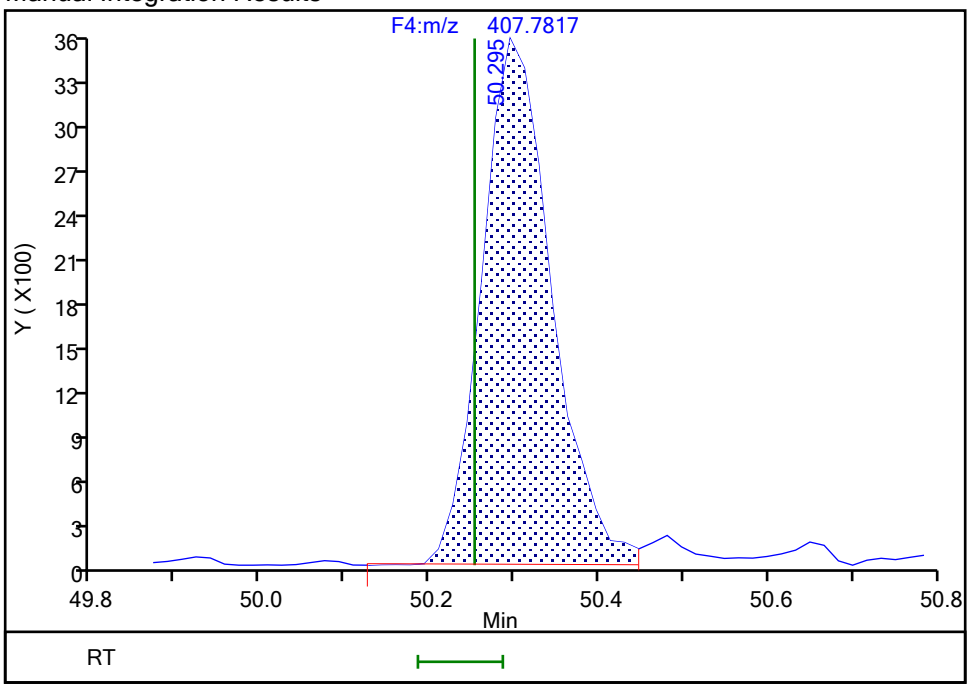
Processing Integration Results

RT: 50.29
Area: 20789
Amount: 2.598599
Amount Units: pg/ul



Manual Integration Results

RT: 50.29
Area: 20101
Amount: 2.530342
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:59:41

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

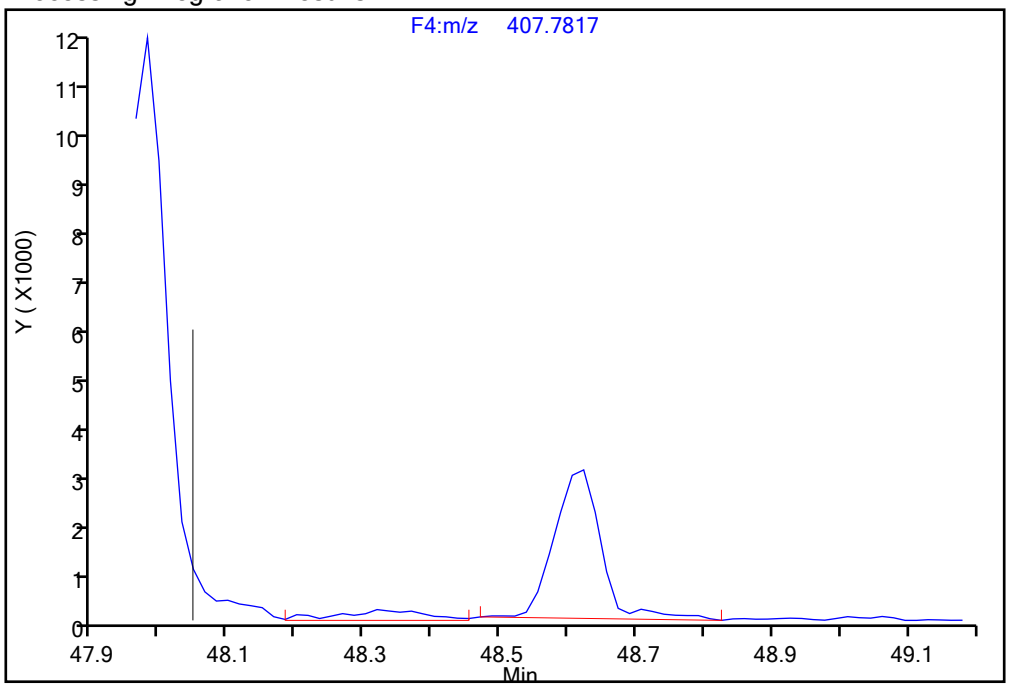
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.75- 51.27)

Signal: 1

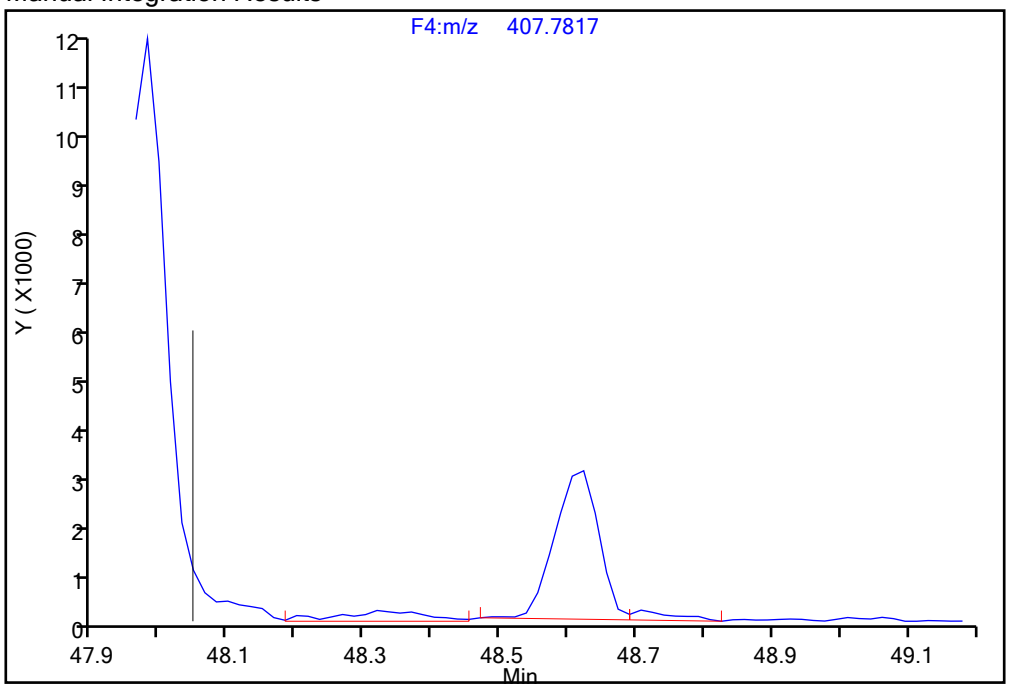
Processing Integration Results

RT = 48.623 Area = 14610



Manual Integration Results

RT = 48.623 Area = 13759 M



Reviewer: davidsonm, 18-Dec-2019 07:59:45

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

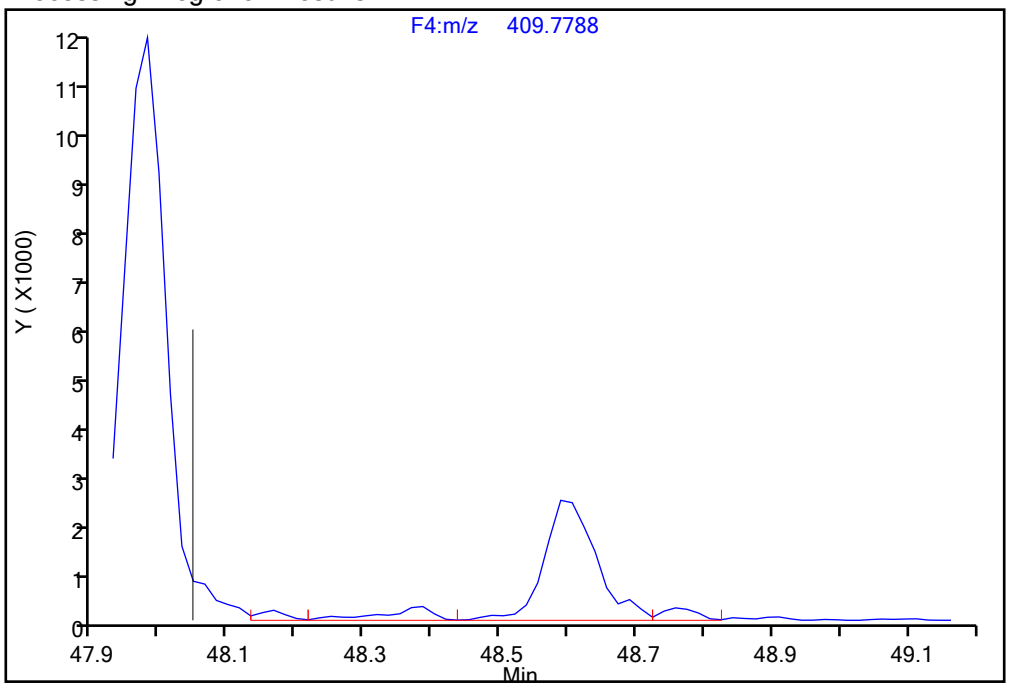
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.75- 51.27)

Signal: 2

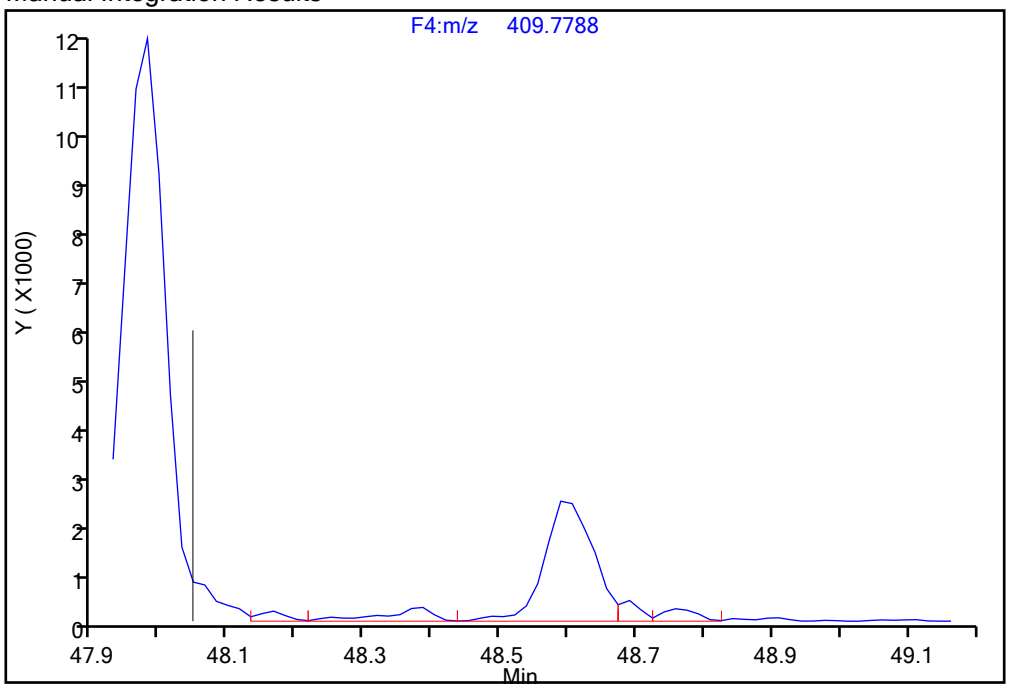
Processing Integration Results

RT = 48.589 Area = 13011



Manual Integration Results

RT = 48.589 Area = 12158 M



Reviewer: davidsonm, 18-Dec-2019 07:59:47

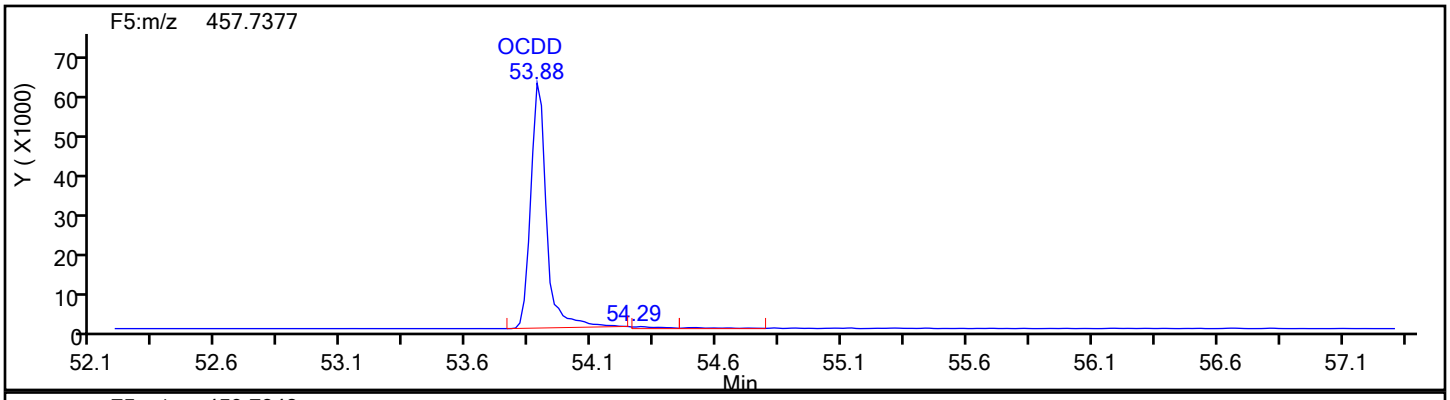
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

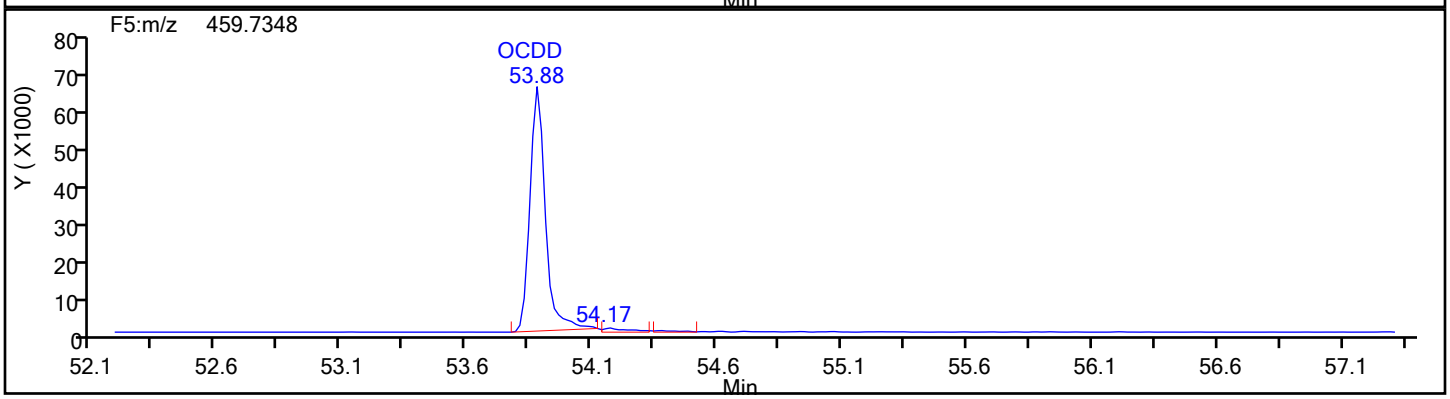
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

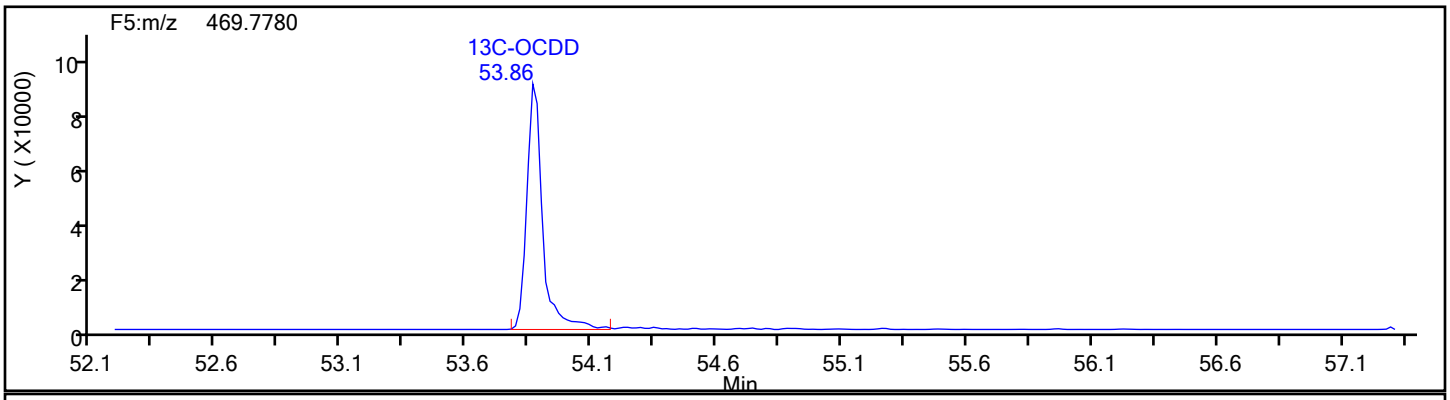
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

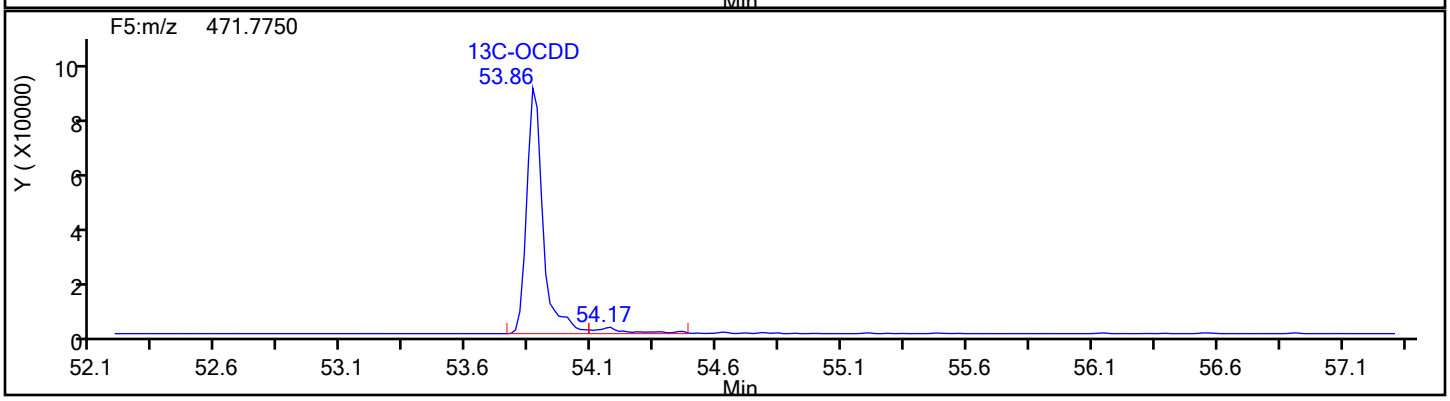
OCDD





OCDD Standards



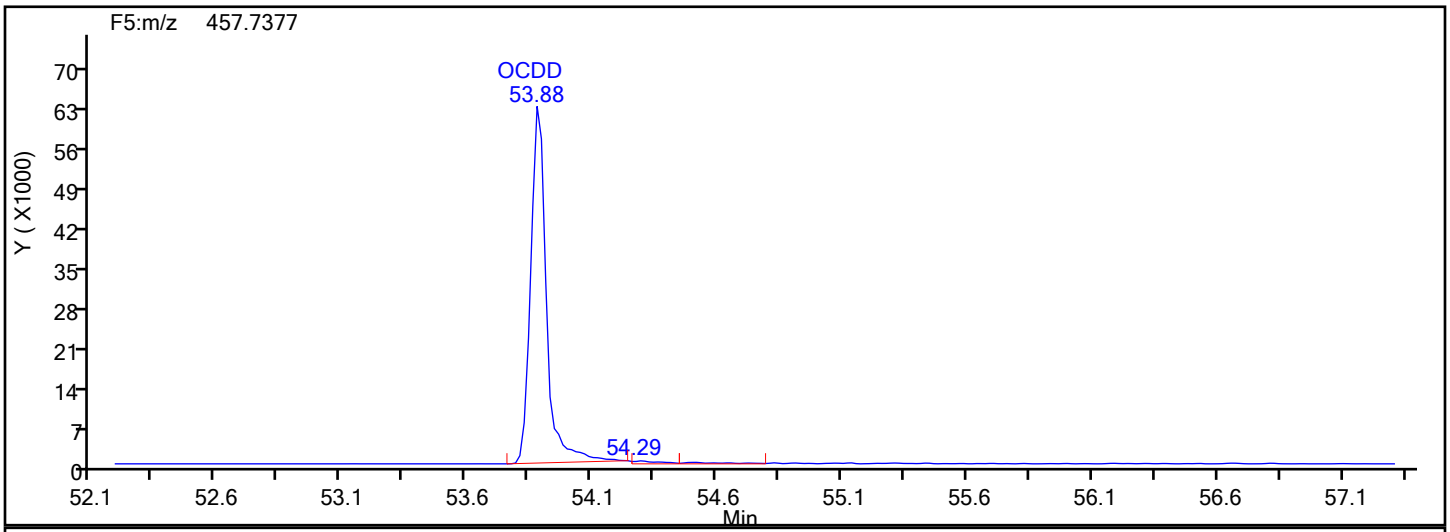


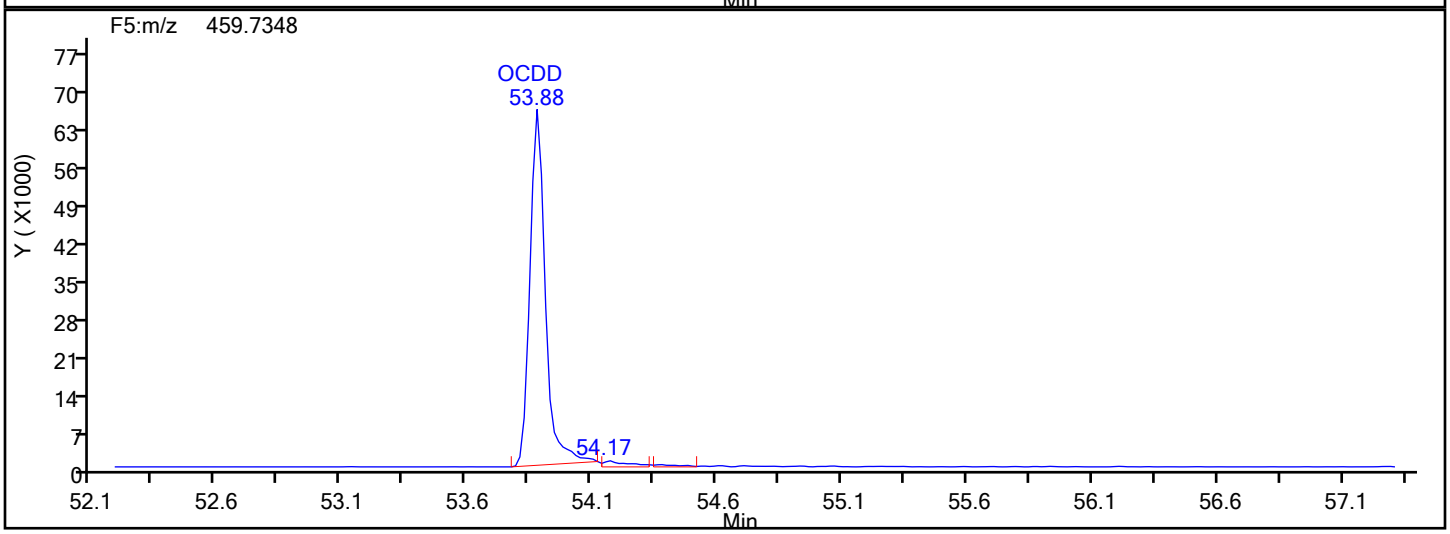
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

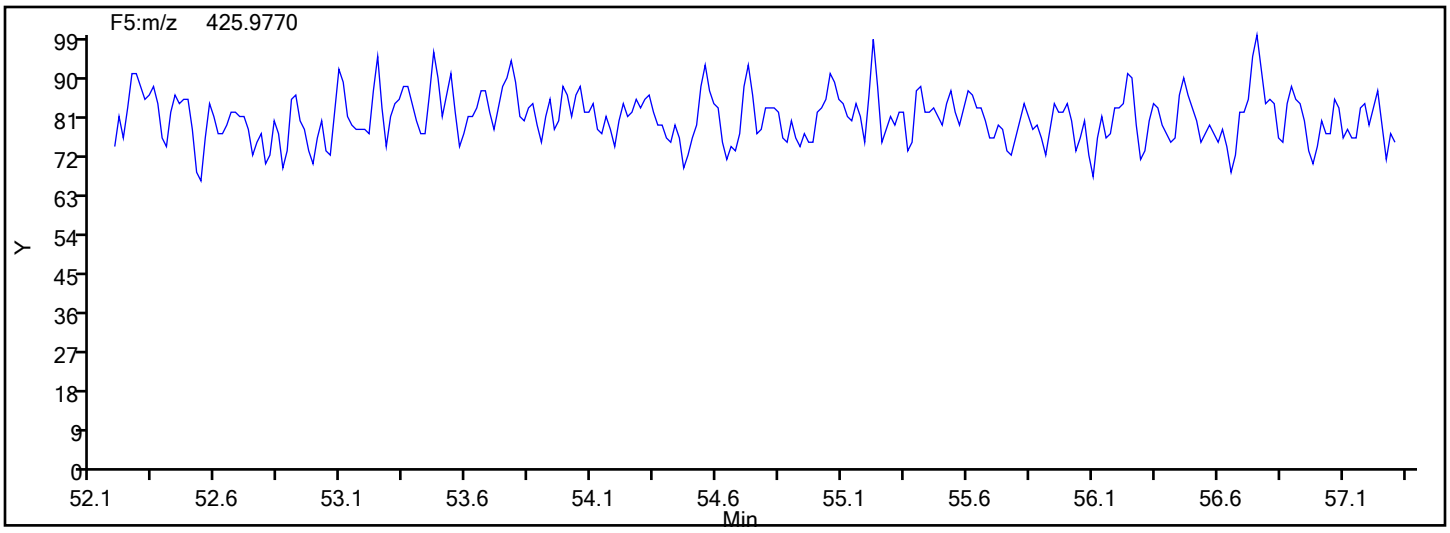
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



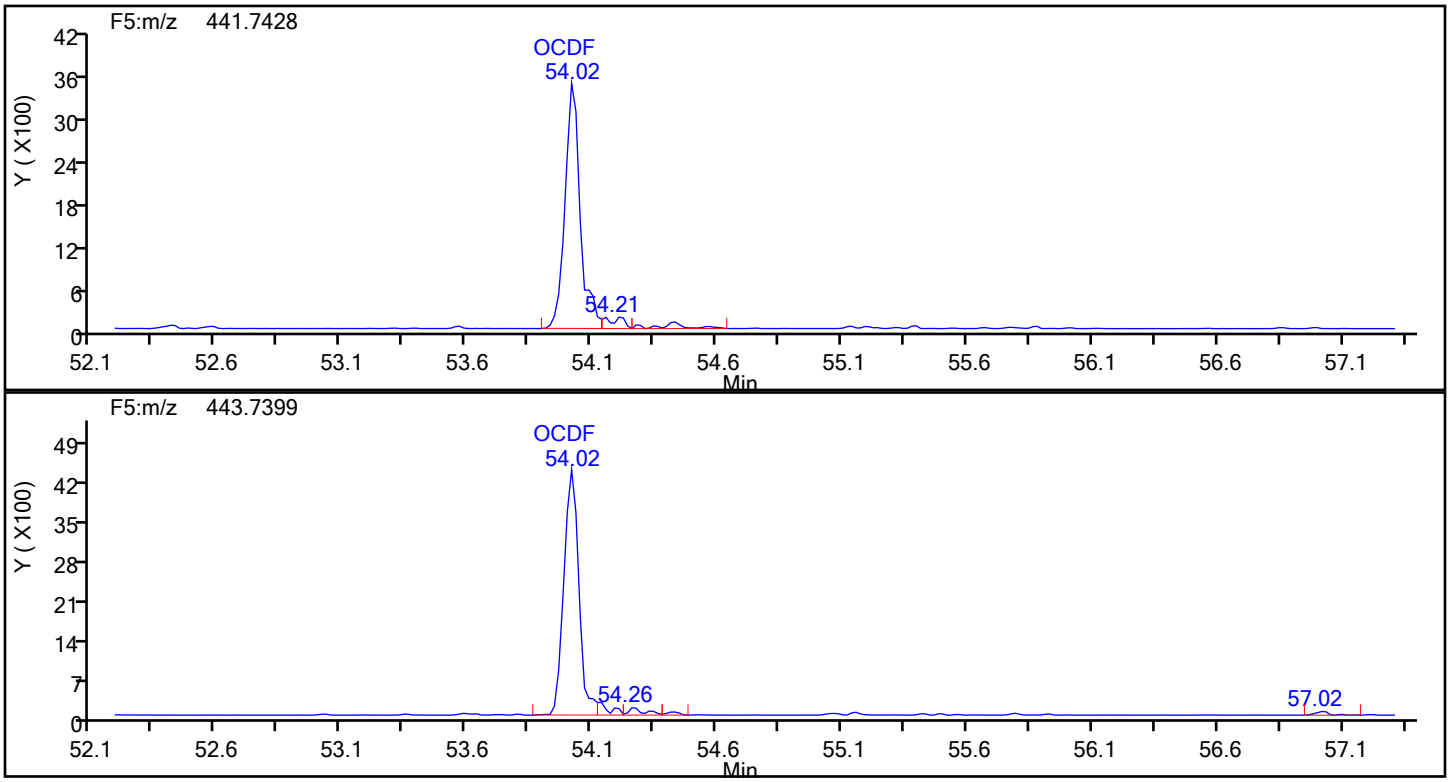
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

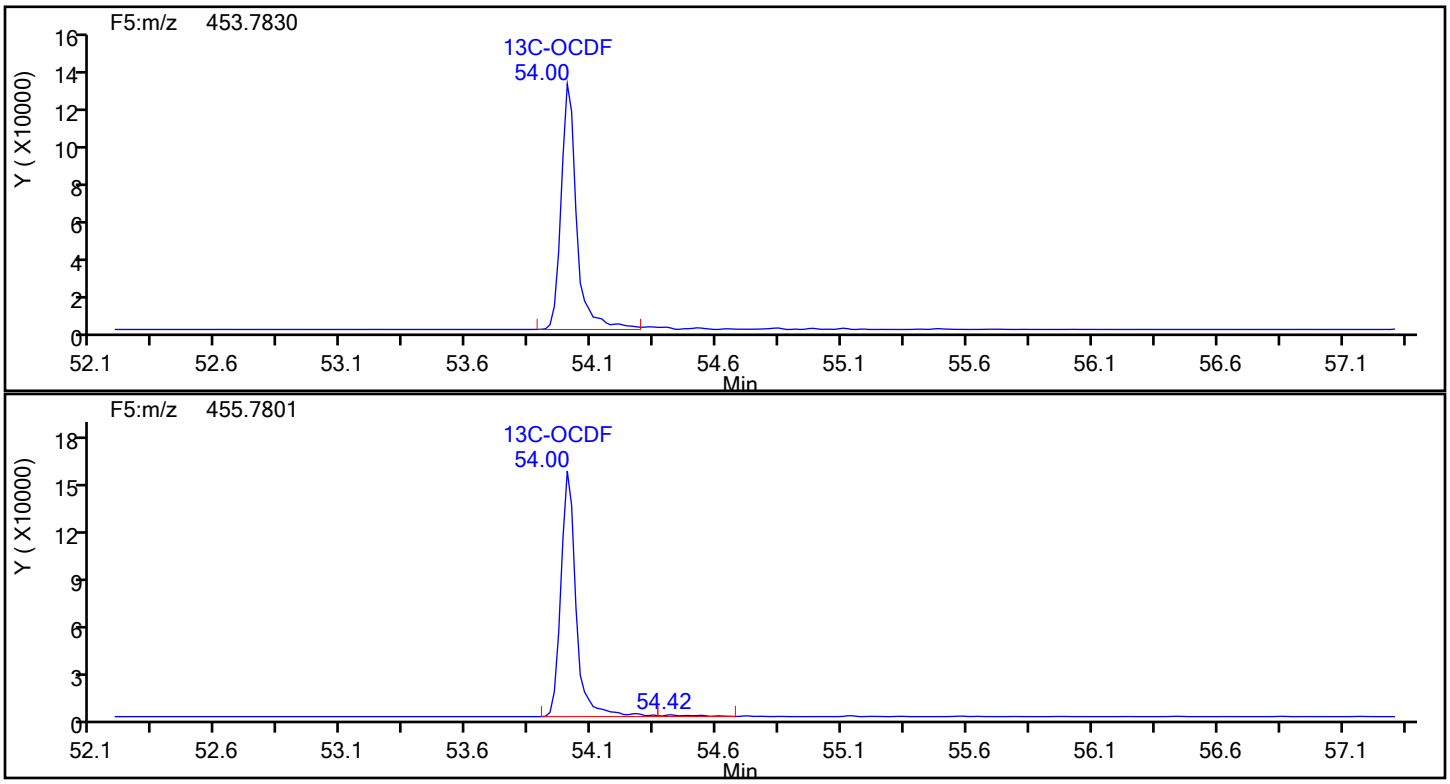
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d

Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

OCDF



OCDF Standards

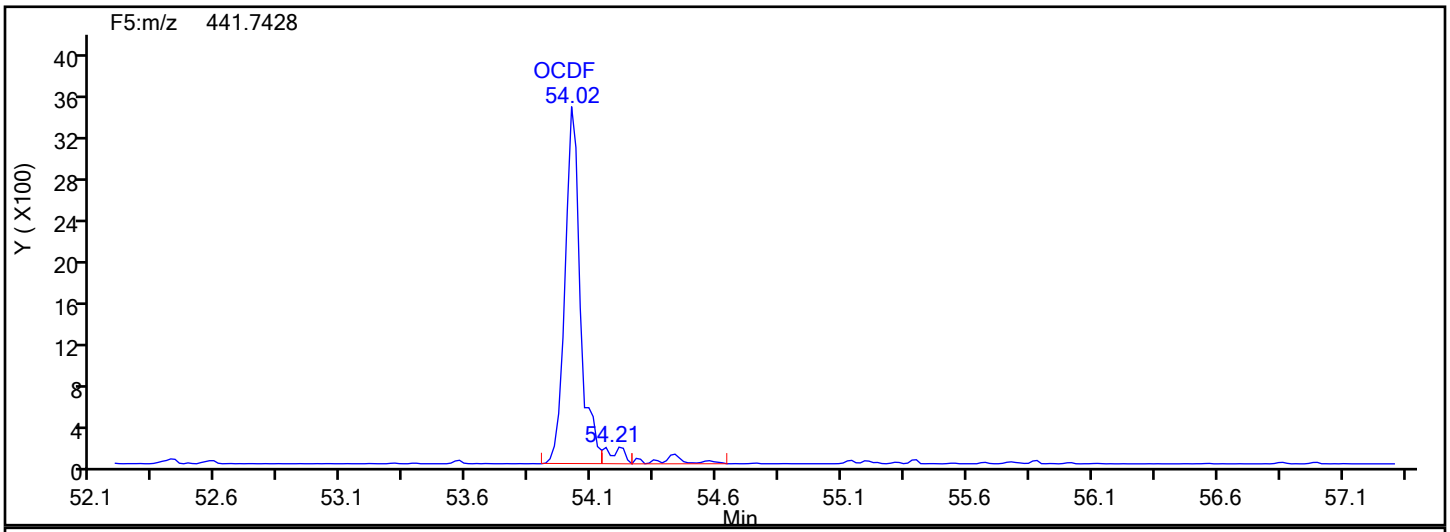


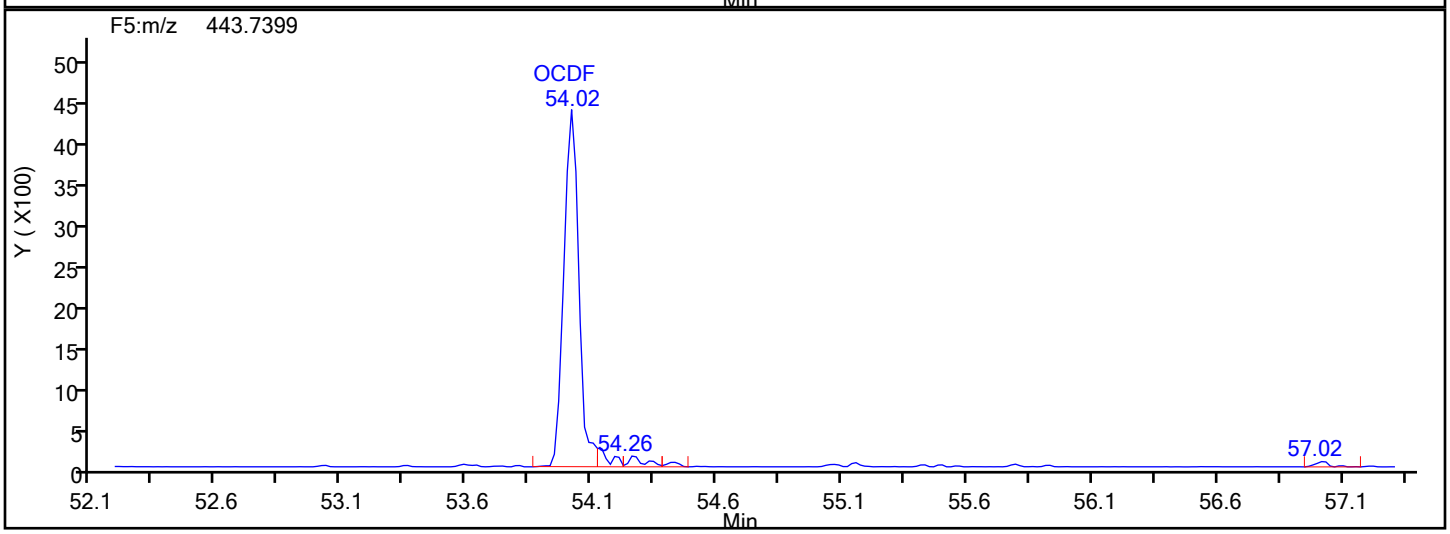
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

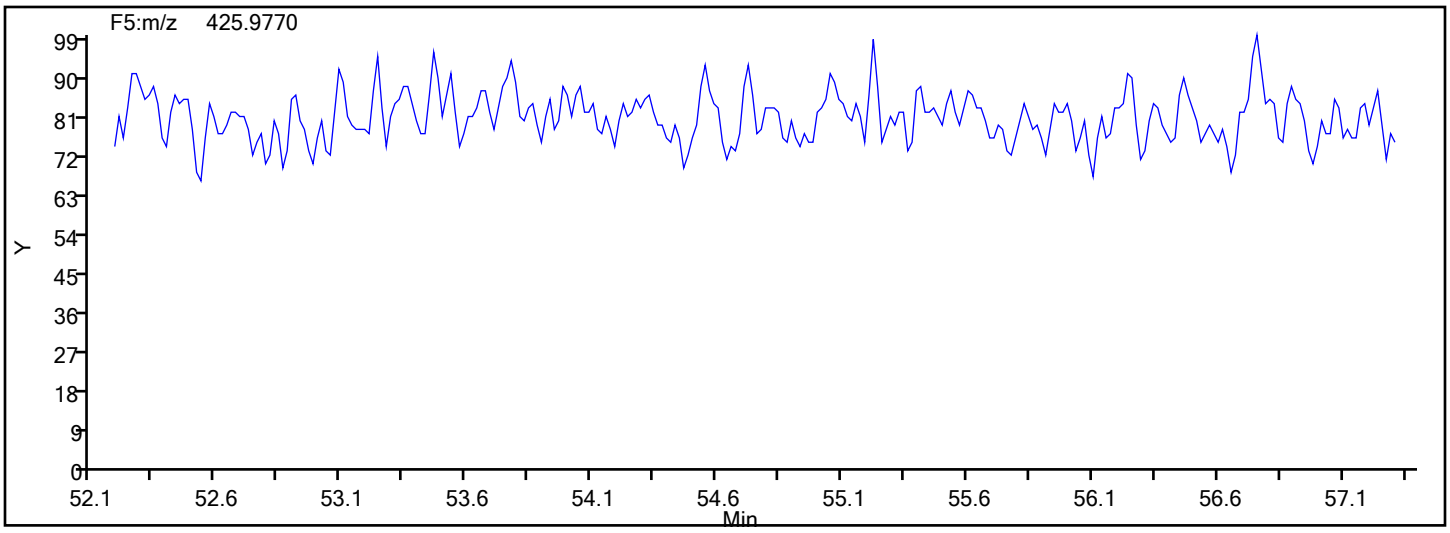
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

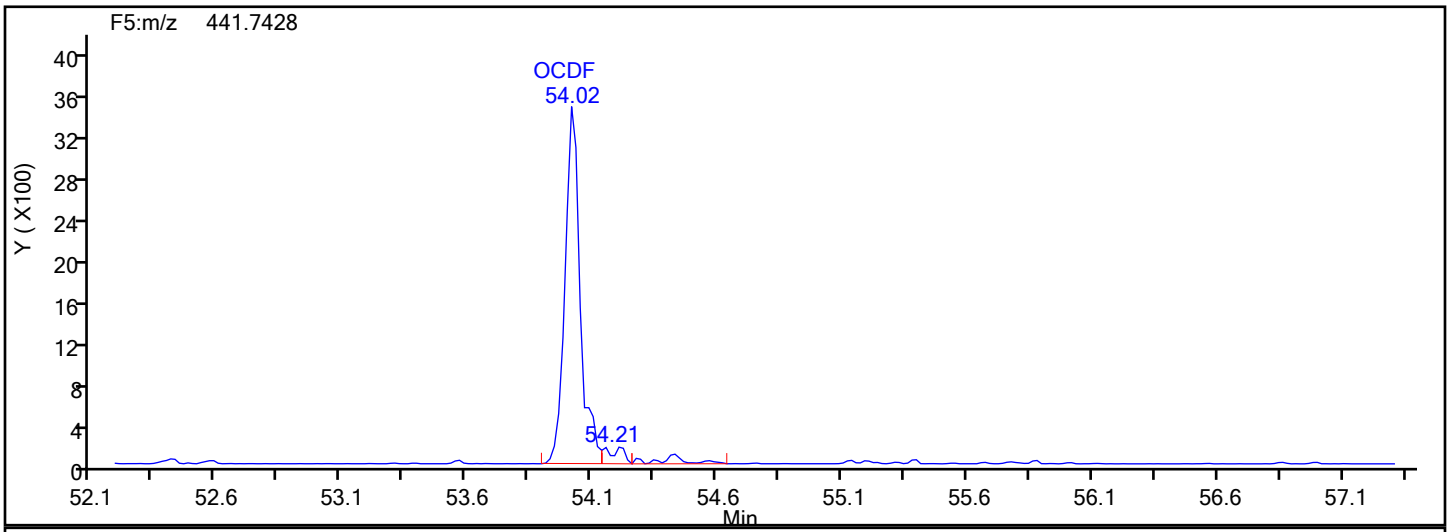


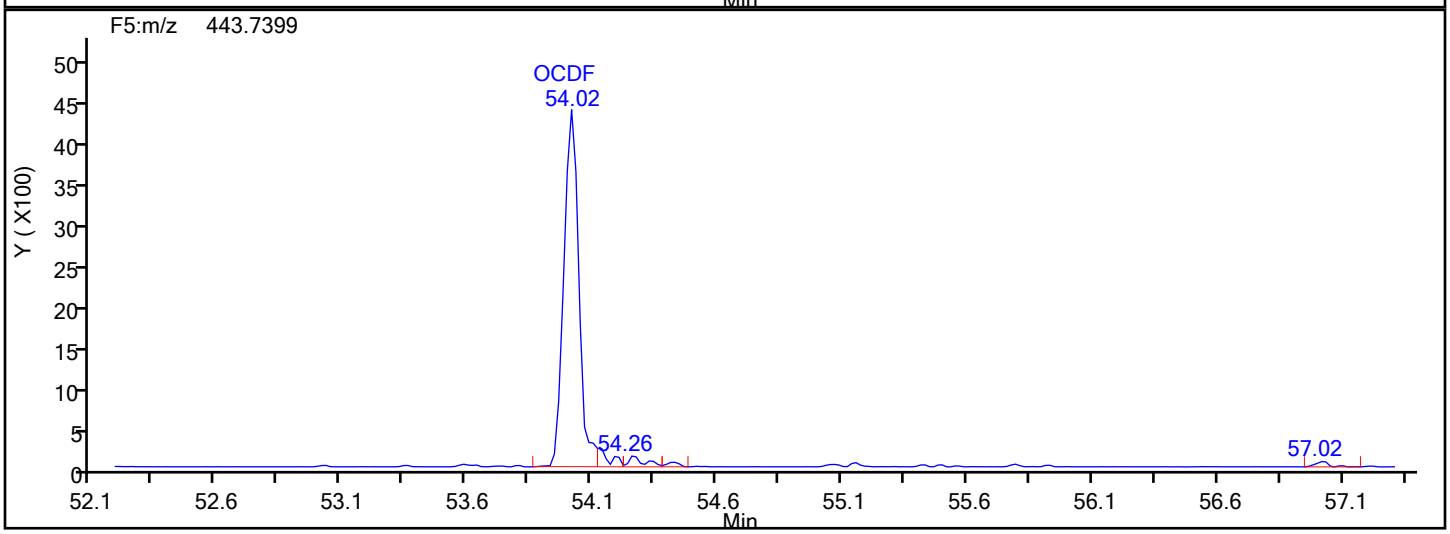
Report Date: 18-Dec-2019 08:00:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

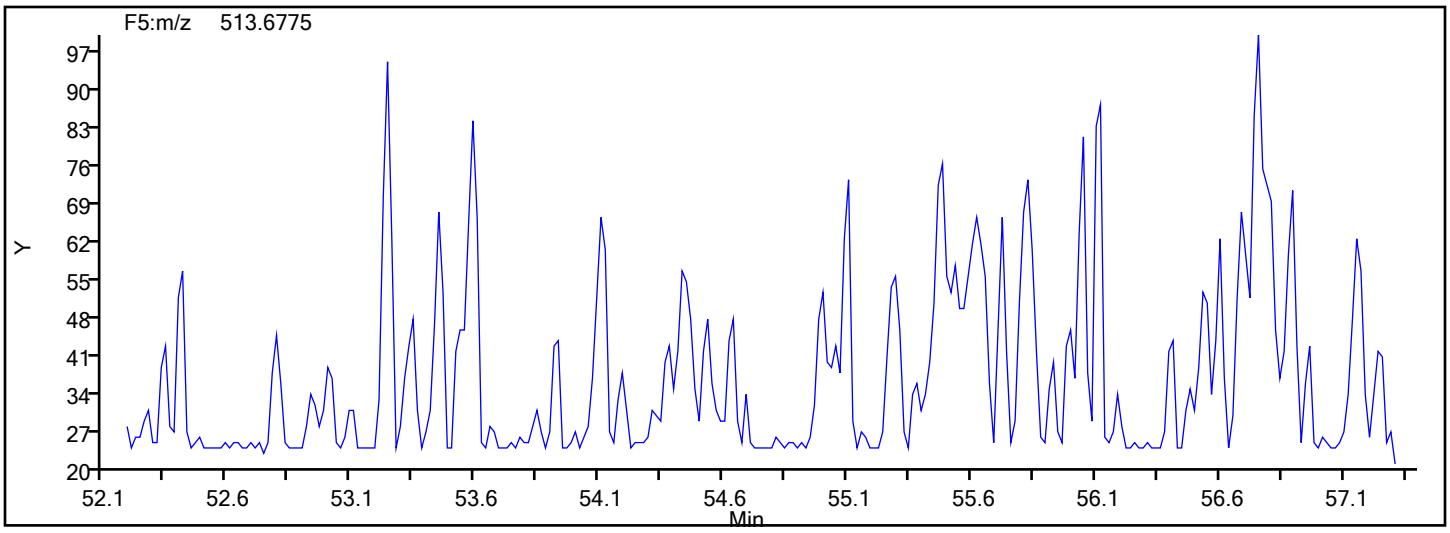
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 02:58:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36166	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

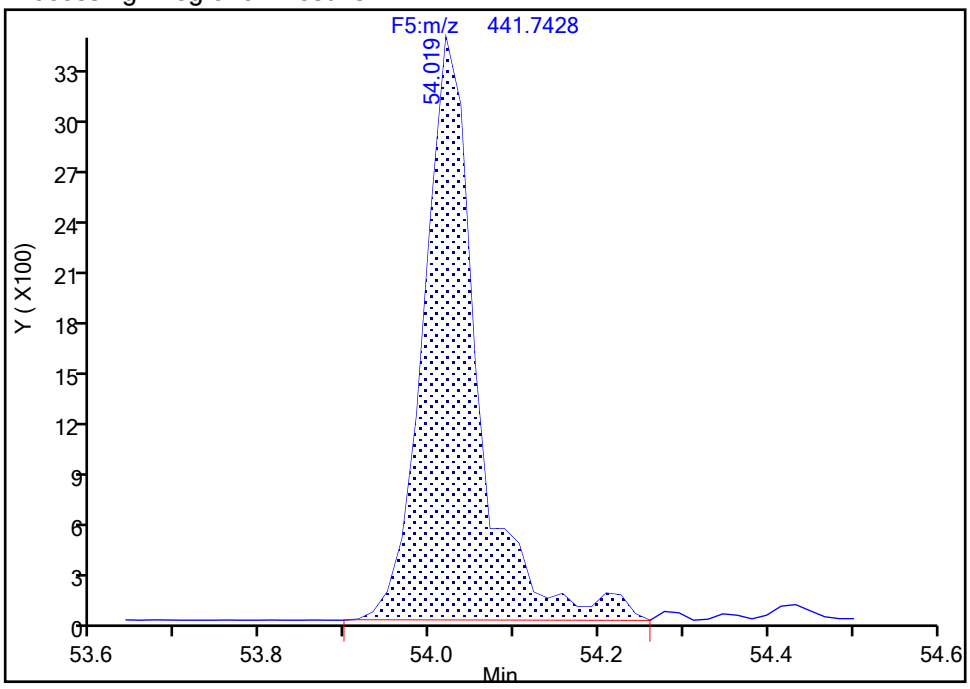
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

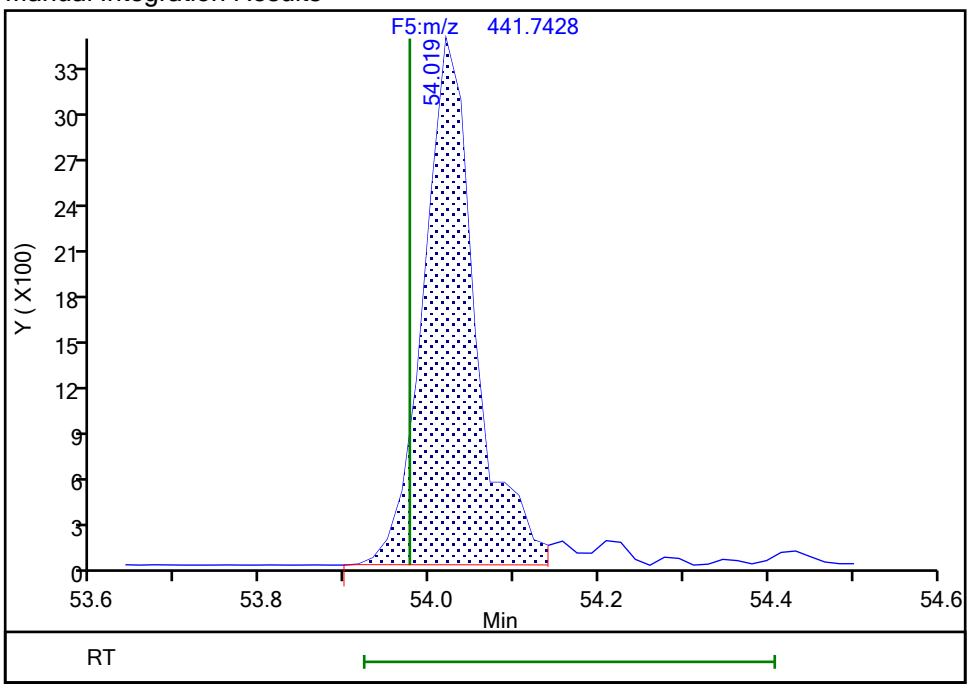
Processing Integration Results

RT: 54.02
Area: 15167
Amount: 2.533216
Amount Units: pg/ul



Manual Integration Results

RT: 54.02
Area: 14420
Amount: 2.422898
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:00:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

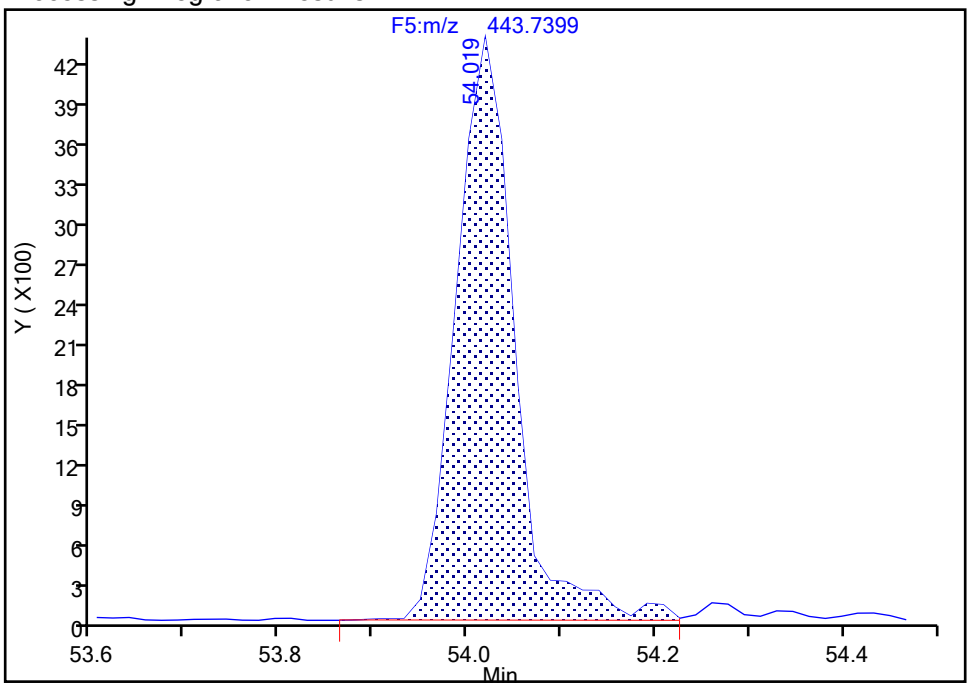
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-13-a.d				
Injection Date:	18-Dec-2019 02:58:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-13-A	Lab Sample ID:	140-17578-13		
Client ID:	11187072-120619-SS-DUP1				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

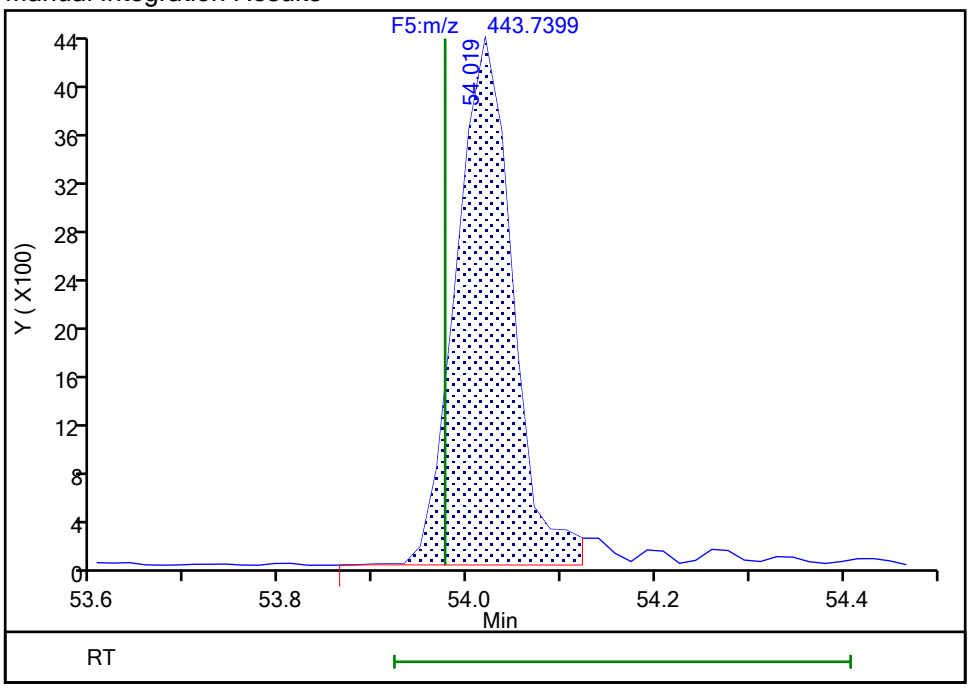
Processing Integration Results

RT: 54.02
Area: 18772
Amount: 2.533216
Amount Units: pg/ul



Manual Integration Results

RT: 54.02
Area: 18041
Amount: 2.422898
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:00:08

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-DUP1 Lab Sample ID: 140-17578-13

Matrix: Sediment Lab File ID: 140-17578-a-13-a.d

Analysis Method: 1613B Date Collected: 12/06/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.84(g) Date Analyzed: 12/18/2019 19:48

Con. Extract Vol.: 20(uL) Dilution Factor: 5

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 45.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36178 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	1900		9.2	3.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	74		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Sample Type: Client
Inject. Date: 18-Dec-2019 19:48:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 5.0000
Sample Info:
Misc. Info.: 140-0014075-010
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 20:45:38 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 20:46:01

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:41	418749	0.76	1.2213	17.5	17.5	0.2786	0.2786		
2,3,7,8-TCDF	22:12	3968205	0.79	1.1100	105.4	105.4	0.1755	0.1755		
D 13C-2,3,7,8-TCDD	19:40	196060	0.81	1.0031	6.937	6.937	0.2849	0.2849	69.37	
D 13C-2,3,7,8-TCDF	22:10	339297	0.81	1.6193	7.437	7.437	0.1615	0.1615	74.37	
$ 37Cl4-2,3,7,8-TCDD	19:40	54605		1.1834	1.638	1.638	0.0962	0.0962	81.89	
* 13C-1,2,3,4-TCDD	20:07	563484	0.84	1.6E+05	20.0	20.0				

Report Date: 18-Dec-2019 20:46:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-13-a.d
Lims ID: 140-17578-A-13-A
Client ID: 11187072-120619-SS-DUP1
Sample Type: Client
Inject. Date: 18-Dec-2019 19:48:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 5.0000
Sample Info:
Misc. Info.: 140-0014075-010
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 20:45:38 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 20:46:01

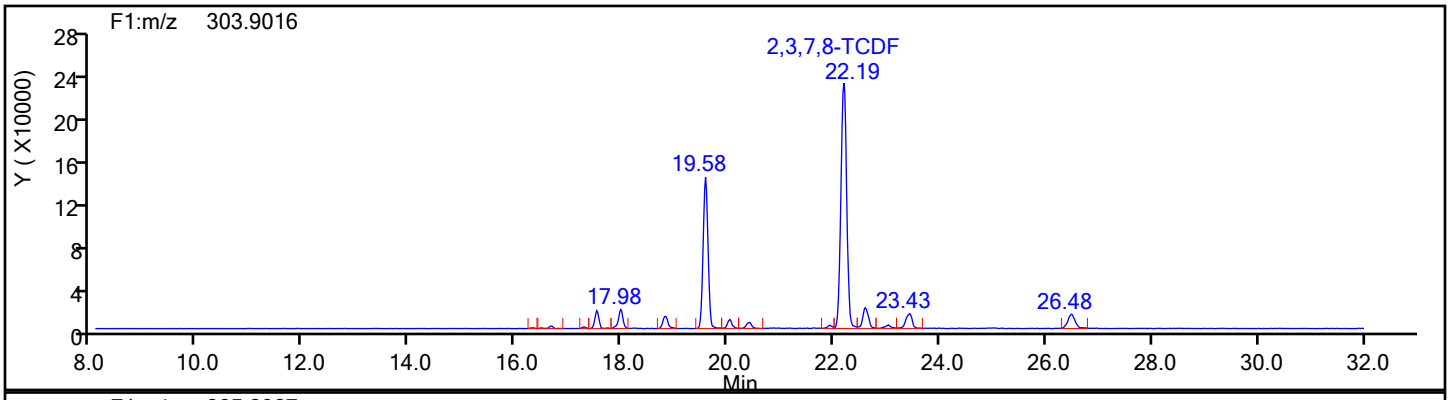
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:41	19:42	-2	1.001	181289	29784	95	237	314		
321.8936	19:41	19:42	-2	1.001	237460	35836	326	815	110	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:12	22:13	-2	1.002	1755921	230249	197	492	1169		
305.8987	22:12	22:13	-2	1.002	2212284	291613	171	427	1705	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:39	-1	0.978	87971	13424	258	645	52		
333.9338	19:39	19:39	-2	0.977	108089	17489	236	590	74	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:10	22:10	-2	1.102	151377	21849	258	645	85		
317.9389	22:09	22:10	-3	1.101	187920	25365	194	485	131	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:40	19:41	-3	0.978	54605	9262	197	492	47		
13C-1,2,3,4-TCDD											
331.9368	20:07	20:08	-2		257012	39213	258	645	152		
333.9338	20:05	20:08	-3		306472	47216	236	590	200	0.84(0.65-0.89)	

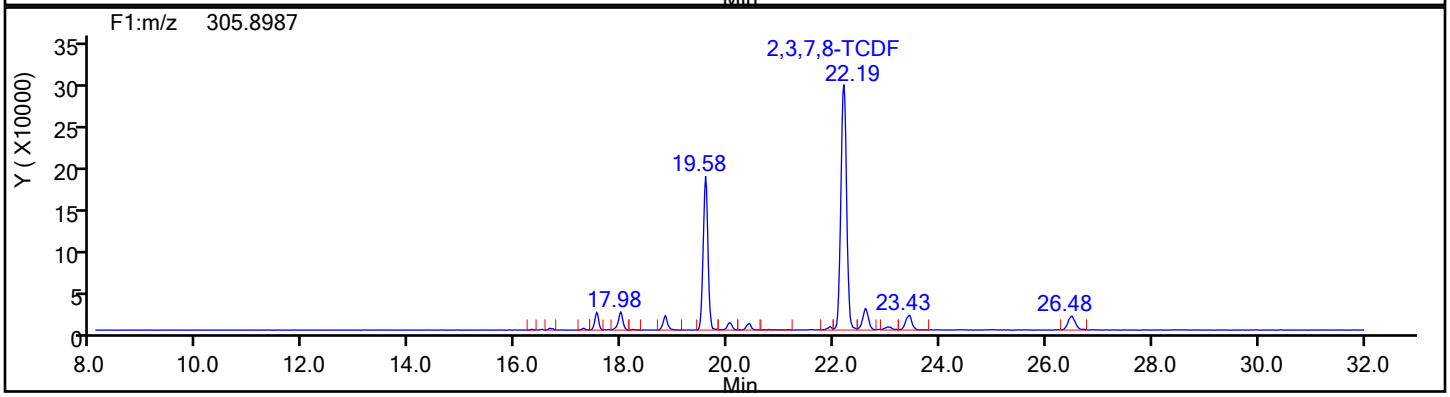
Report Date: 18-Dec-2019 20:46:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

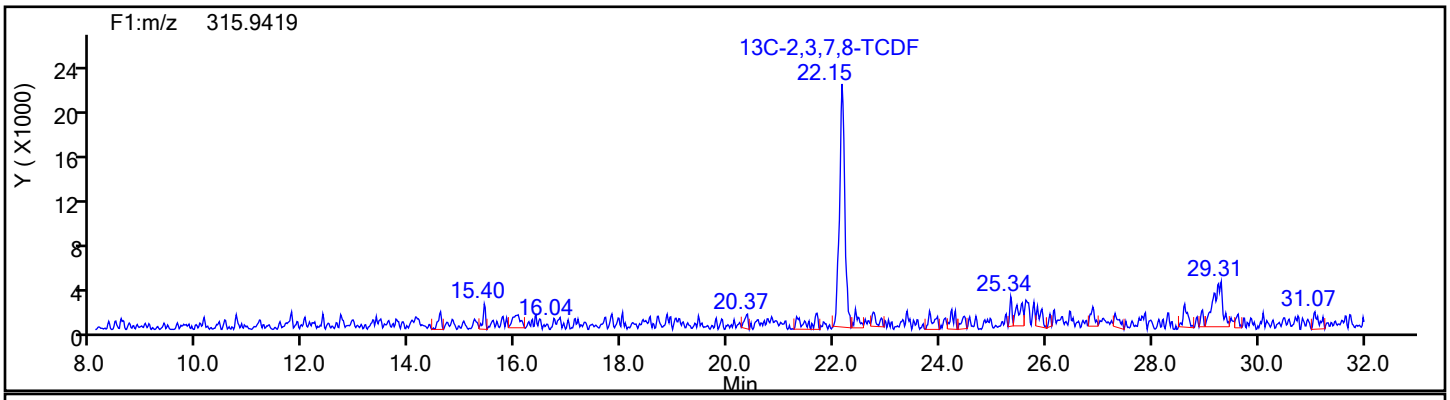
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 19:48:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36178	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

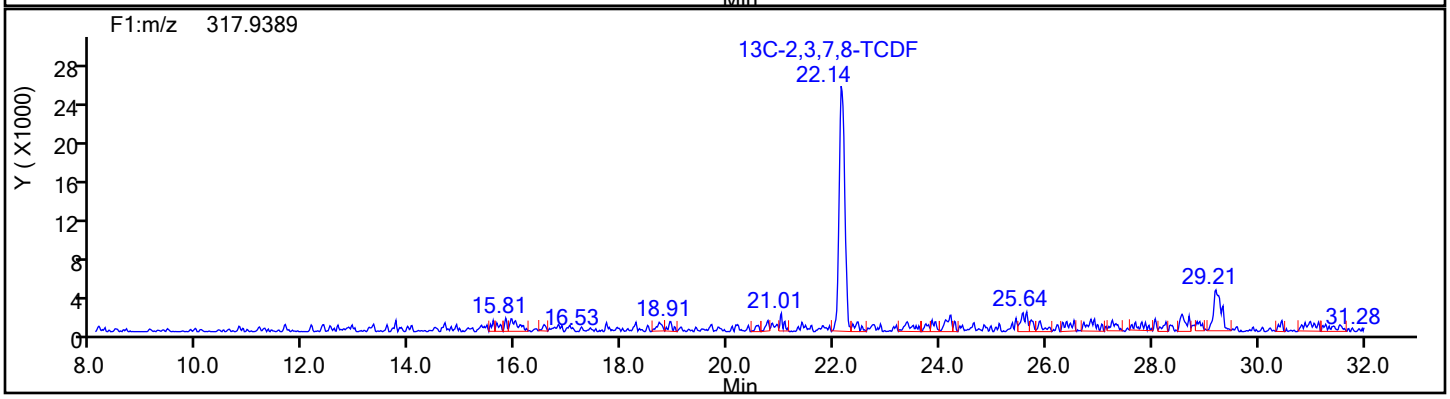
TCDF





TCDF Standards



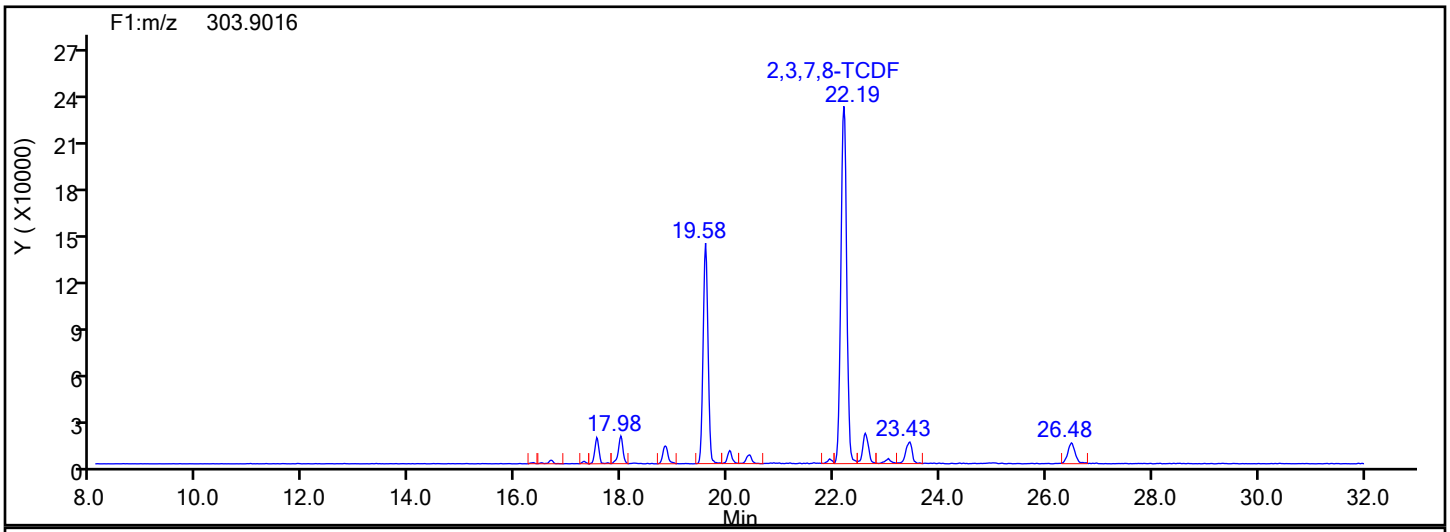


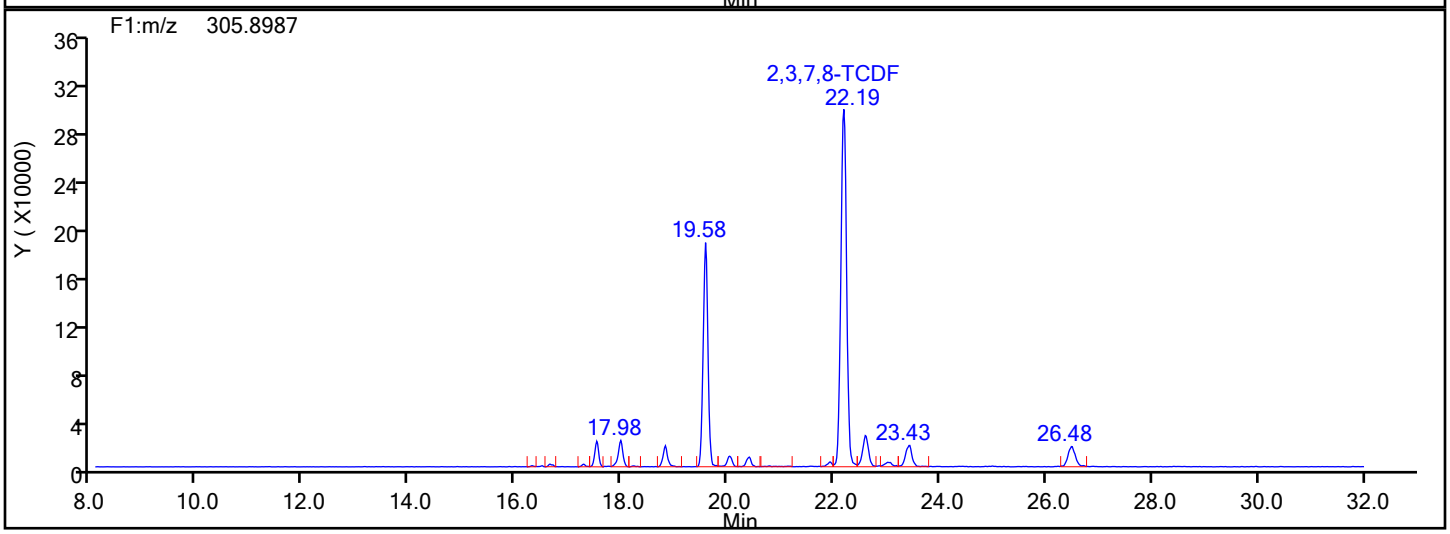
Report Date: 18-Dec-2019 20:46:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

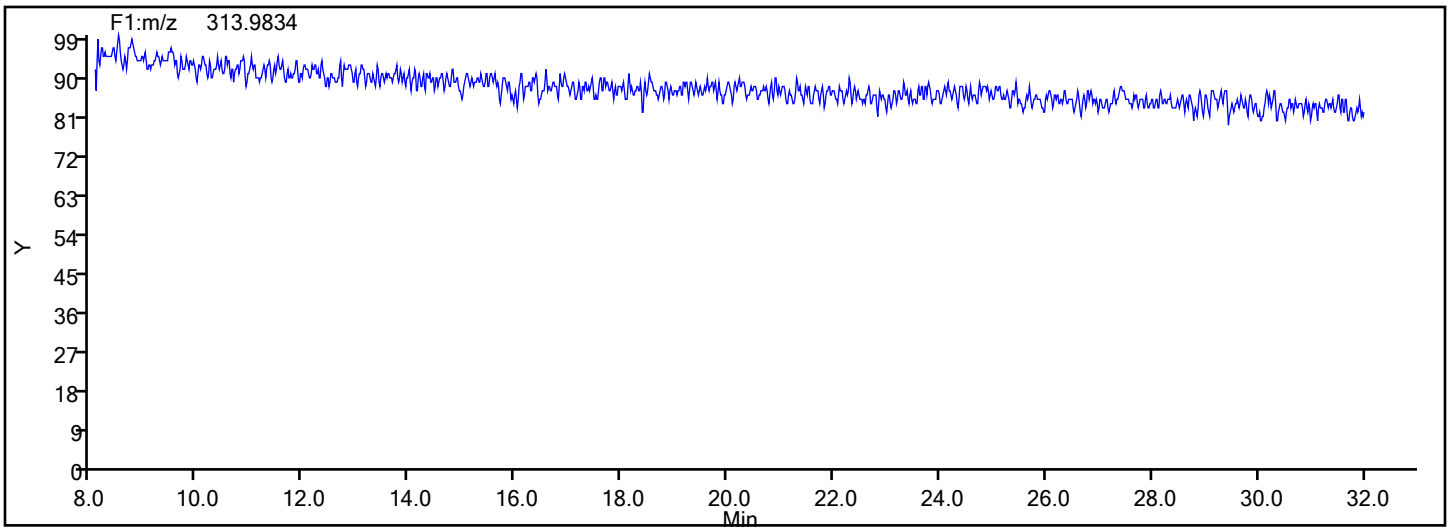
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 19:48:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36178	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

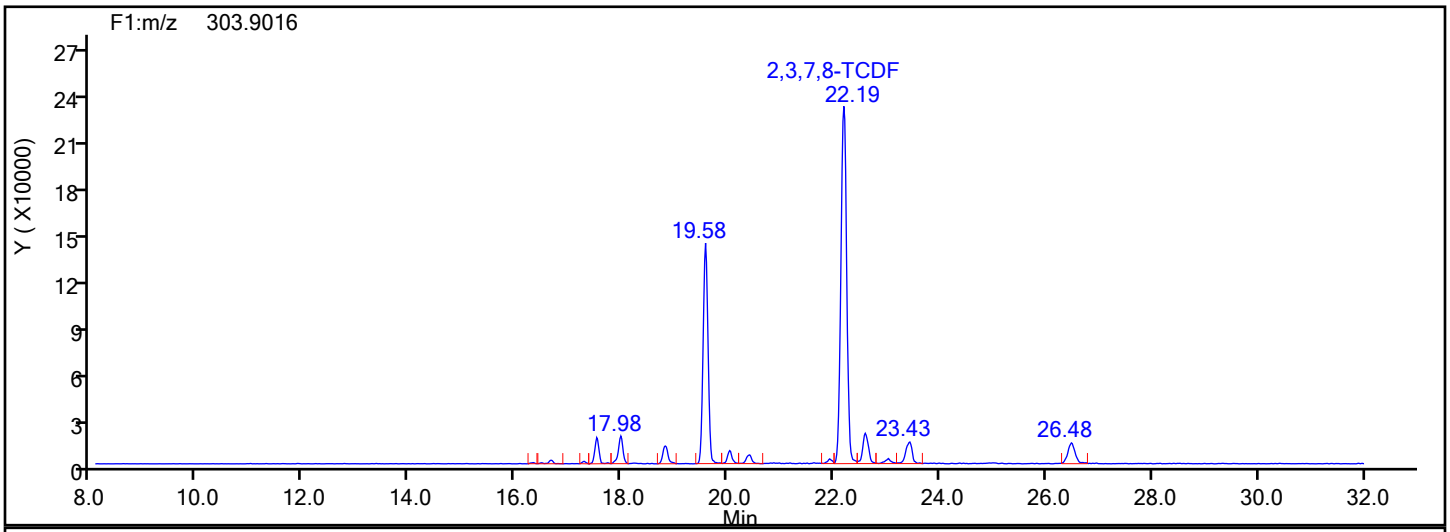


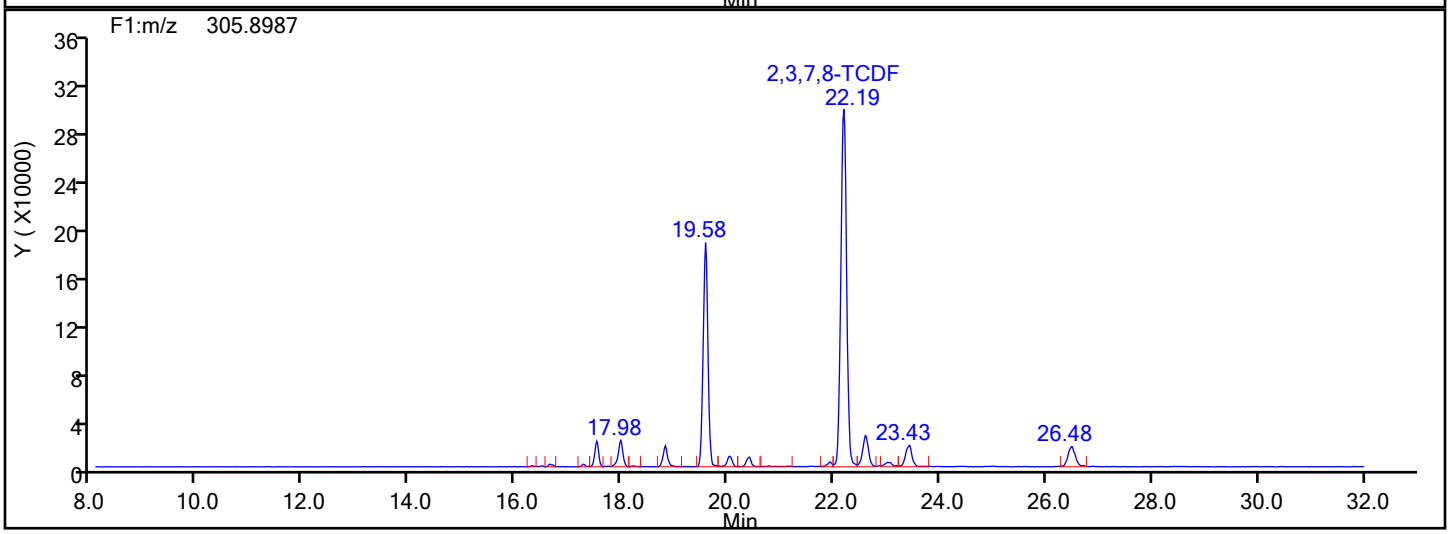
Report Date: 18-Dec-2019 20:46:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

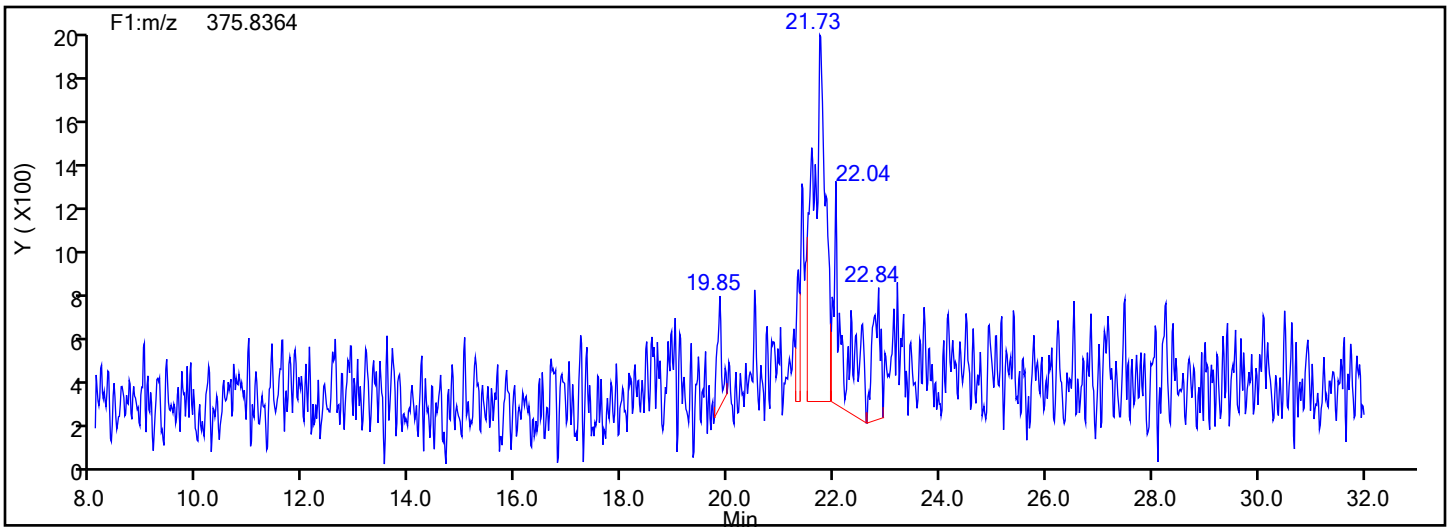
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-13-a.d		
Injection Date:	18-Dec-2019 19:48:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-DUP1		
Worklist#:	36178	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) Lab Sample ID: 140-17578-14

Matrix: Sediment Lab File ID: 140-17578-a-14-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.27(g) Date Analyzed: 12/18/2019 03:59

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	6.8		1.3	0.099
41903-57-5	Total TCDD	20	B q	1.3	0.099
40321-76-4	1,2,3,7,8-PeCDD	0.42	J q	6.4	0.063
36088-22-9	Total PeCDD	11	q	6.4	0.063
39227-28-6	1,2,3,4,7,8-HxCDD	0.39	J q	6.4	0.13
57653-85-7	1,2,3,6,7,8-HxCDD	1.1	J	6.4	0.13
19408-74-3	1,2,3,7,8,9-HxCDD	2.3	J	6.4	0.12
34465-46-8	Total HxCDD	51	B q	6.4	0.13
35822-46-9	1,2,3,4,6,7,8-HpCDD	44	B	6.4	0.21
37871-00-4	Total HpCDD	150	B	6.4	0.21
3268-87-9	OCDD	1000	B	13	0.061
30402-14-3	Total TCDF	49	I B q	1.3	0.14
57117-41-6	1,2,3,7,8-PeCDF	1.3	J	6.4	0.18
57117-31-4	2,3,4,7,8-PeCDF	1.2	J	6.4	0.17
30402-15-4	Total PeCDF	6.1	J I q	6.4	0.17
70648-26-9	1,2,3,4,7,8-HxCDF	2.3	J	6.4	0.16
57117-44-9	1,2,3,6,7,8-HxCDF	0.73	J I q	6.4	0.15
60851-34-5	2,3,4,6,7,8-HxCDF	0.25	J	6.4	0.17
72918-21-9	1,2,3,7,8,9-HxCDF	ND		6.4	0.20
55684-94-1	Total HxCDF	8.7	I q	6.4	0.17
67562-39-4	1,2,3,4,6,7,8-HpCDF	4.2	J B	6.4	0.071
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.77	J B	6.4	0.10
38998-75-3	Total HpCDF	11	B	6.4	0.086
39001-02-0	OCDF	25	B	13	0.017

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) Lab Sample ID: 140-17578-14

Matrix: Sediment Lab File ID: 140-17578-a-14-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.27(g) Date Analyzed: 12/18/2019 03:59

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	60		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	63		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	62		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	66		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	67		23-140
114423-97-1	13C-OCDD	63		17-157
89059-46-1	13C-2,3,7,8-TCDF	61		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	60		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	62		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	65		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	64		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	65		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	65		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	64		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	67		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:59:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:34:31 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:34:31

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:53	44452	0.74	1.1733	2.638	2.638	0.0385	0.0385		M
A Non-2,3,7,8-sub-TCDD	29:27	89462	0.77	1.1733	5.436	5.309	0.0385	3.550		RQM
S Total TCDD					8.073	7.947	0.0385	0.0385		RQ
2,3,7,8-TCDF	28:52	272173	0.83	1.0881	10.4	10.4	0.0556	0.0556		
A Non-2,3,7,8-sub-TCDF	28:10	227959	0.77	1.0881	8.841	8.715	0.0556	4.224		RQMa
S Total TCDF					19.2	19.1	0.0556	0.0556		RQ
1,2,3,7,8-PeCDD	40:34	2139	1.55	1.0434	0.2399	0.1654	0.0245	0.0245		RQ
A Non-2,3,7,8-sub-PeCDD	39:24	51780	1.55	1.0434	4.205	4.005	0.0245	2.059		RQ
S Total PeCDD					4.445	4.170	0.0245	0.0245		RQ
1,2,3,7,8-PeCDF	38:48	10817	1.70	1.1898	0.4931	0.4931	0.0683	0.0683		M
2,3,4,7,8-PeCDF	40:03	9656	1.55	1.1095	0.4525	0.4525	0.0649	0.0649		M
A Non-2,3,7,8-sub-PeCDF	37:59	30882	1.55	1.1496	1.571	1.426	0.0665	0.3991		RQMa
S Total PeCDF					2.517	2.372	0.0666	0.0666		RQ
1,2,3,4,7,8-HxCDD	44:51	2186	1.24	1.1409	0.1986	0.1504	0.0515	0.0515		RQMa
1,2,3,6,7,8-HxCDD	44:58	7127	1.40	1.1481	0.4350	0.4350	0.0506	0.0506		M
1,2,3,7,8,9-HxCDD	45:19	14575	1.09	1.2212	0.8839	0.8839	0.0478	0.0478		M
A Non-2,3,7,8-sub-HxCDD	44:17	288867	1.27	1.1700	18.3	18.3	0.0499	14.3		
S Total HxCDD					19.8	19.8	0.0500	0.0500		RQ
1,2,3,4,7,8-HxCDF	43:49	22150	1.28	1.3629	0.8981	0.8981	0.0631	0.0631		
1,2,3,6,7,8-HxCDF	43:57	8050	1.24	1.2762	0.3264	0.2857	0.0590	0.0590		RQM
2,3,4,6,7,8-HxCDF	44:41	2478	1.39	1.2654	0.0971	0.0971	0.0648	0.0648		
1,2,3,7,8,9-HxCDF	45:35						0.0787	0.0787		
A Non-2,3,7,8-sub-HxCDF	44:08	54023	1.24	1.2905	2.258	2.130	0.0657	0.7646		RQM
S Total HxCDF					3.579	3.411	0.0664	0.0664		RQ
1,2,3,4,6,7,8-HpCDD	49:39	247390	1.12	1.1204	17.3	17.3	0.0815	0.0815		
A Non-2,3,7,8-sub-HpCDD	49:01	595495	1.08	1.1204	41.7	41.7	0.0815	41.7		
S Total HpCDD					59.0	59.0	0.0815	0.0815		
1,2,3,4,6,7,8-HpCDF	47:58	38767	1.07	1.4984	1.625	1.625	0.0276	0.0276		
1,2,3,4,7,8,9-HpCDF	50:18	5356	0.90	1.3807	0.3007	0.3007	0.0393	0.0393		M
A Non-2,3,7,8-sub-HpCDF	49:31	45434	1.03	1.4395	2.190	2.190	0.0326	1.966		a

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					4.116	4.116	0.0335	0.0335		
OCDD	53:53	5036880	0.90	1.2073	404.4	404.4	0.0237	0.0237		
OCDF	54:02	171879	0.89	1.1162	9.663	9.663	0.006614	0.006614		M
D 13C-2,3,7,8-TCDD	30:49	718126	0.83	1.0709	30.0	30.0	0.3519	0.3519	59.95	
D 13C-2,3,7,8-TCDF	28:48	1201910	0.83	1.7545	30.6	30.6	0.4138	0.4138	61.24	
D 13C-1,2,3,7,8-PeCDD	40:34	619546	1.63	0.8743	31.7	31.7	0.4404	0.4404	63.35	
D 13C-1,2,3,7,8-PeCDF	38:47	921899	1.68	1.3704	30.1	30.1	0.4198	0.4198	60.14	
D 13C-2,3,4,7,8-PeCDF	40:02	961656	1.64	1.3837	31.1	31.1	0.4158	0.4158	62.13	
D 13C-1,2,3,4,7,8-HxCDD	44:50	636815	1.32	0.8772	31.0	31.0	0.1071	0.1071	62.01	
D 13C-1,2,3,6,7,8-HxCDD	44:57	713552	1.25	0.9171	33.2	33.2	0.1024	0.1024	66.46	
D 13C-1,2,3,4,7,8-HxCDF	43:48	904789	0.52	1.1892	32.5	32.5	0.2772	0.2772	64.99	
D 13C-1,2,3,6,7,8-HxCDF	43:56	1103912	0.50	1.4625	32.2	32.2	0.2254	0.2254	64.47	
D 13C-2,3,4,6,7,8-HxCDF	44:40	1008507	0.57	1.3197	32.6	32.6	0.2498	0.2498	65.27	
D 13C-1,2,3,7,8,9-HxCDF	45:35	914146	0.57	1.2001	32.5	32.5	0.2747	0.2747	65.06	
D 13C-1,2,3,4,6,7,8-HpCDD	49:37	637196	1.15	0.8155	33.4	33.4	0.2874	0.2874	66.74	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	795917	0.45	1.0496	32.4	32.4	0.2224	0.2224	64.77	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	645115	0.49	0.8947	30.8	30.8	0.2609	0.2609	61.59	
D 13C-OCDD	53:52	1031789	0.89	0.7044	62.6	62.6	0.2530	0.2530	62.56	
D 13C-OCDF	54:01	1593531	0.92	1.0615	64.1	64.1	0.2093	0.2093	64.12	
$ 37Cl4-2,3,7,8-TCDD	30:50	184872		1.2266	6.737	6.737	0.1269	0.1269	67.37	
* 13C-1,2,3,4-TCDD	30:18	2237255	0.80	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	2341526	1.32	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 03:59:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-008
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:34:31 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:34:31

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	30:53	30:53	5	1.002	18903	1870	11	27	170		M
321.8936	30:51	30:53	2	1.001	25549	2827	17	42	166	0.74(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	24:55	29:27	-271	0.808	928	143	11	27	13		
321.8936	24:56	29:27	-270	0.809	1708	245	17	42	14	0.54(0.65-0.89)	
	Empc Correction				1205	185	17	42	11		
319.8965	25:41	29:27	-225	0.833	1197	170	11	27	15		
321.8936	25:40	29:27	-226	0.833	1894	362	17	42	21	0.63(0.65-0.89)	
	Empc Correction				1554	220	17	42	13		
319.8965	26:21	29:27	-186	0.855	1585	216	11	27	20		
321.8936	26:20	29:27	-187	0.854	1959	440	17	42	26	0.81(0.65-0.89)	
319.8965	27:48	29:27	-99	0.902	25223	2881	11	27	262		
321.8936	27:49	29:27	-98	0.902	34606	4069	17	42	239	0.73(0.65-0.89)	
319.8965	28:18	29:27	-69	0.918	1266	171	11	27	16		
	Empc Correction				918	140	11	27	13		
321.8936	28:22	29:27	-65	0.920	1193	182	17	42	11	1.06(0.65-0.89)	M
319.8965	29:31	29:27	4	0.957	805	124	11	27	11		M
321.8936	29:27	29:27	0	0.955	1404	260	17	42	15	0.57(0.65-0.89)	
	Empc Correction				1045	161	17	42	9		
319.8965	30:20	29:27	53	0.984	3947	456	11	27	41		
321.8936	30:18	29:27	51	0.983	4807	620	17	42	36	0.82(0.65-0.89)	
319.8965	30:39	29:27	73	0.995	1666	206	11	27	19		M
	Empc Correction				1081	130	11	27	12		
321.8936	30:33	29:27	67	0.991	1405	170	17	42	10	1.19(0.65-0.89)	M

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	32:02	29:27	155	1.039	1561	194	11	27	18		
321.8936	31:55	29:27	148	1.036	2031	351	17	42	21	0.77(0.65-0.89)	M
319.8965	34:04	29:27	277	1.105	1107	162	11	27	15		M
321.8936	34:03	29:27	276	1.105	1305	177	17	42	10	0.85(0.65-0.89)	M
2,3,7,8-TCDF											
303.9016	28:52	28:52	4	1.002	123513	12463	33	82	378		
305.8987	28:52	28:52	4	1.002	148660	14960	32	80	468	0.83(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	23:51	28:10	-258	0.828	2060	437	33	82	13		
305.8987	23:53	28:10	-256	0.829	3025	403	32	80	13	0.68(0.65-0.89)	
303.9016	24:21	28:10	-228	0.846	1600	334	33	82	10		
305.8987	24:22	28:10	-227	0.846	1997	402	32	80	13	0.80(0.65-0.89)	
303.9016	25:06	28:10	-184	0.871	5055	995	33	82	30		
305.8987	25:06	28:10	-184	0.871	7736	861	32	80	27	0.65(0.65-0.89)	
303.9016	25:38	28:10	-151	0.890	491	174	33	82	5		
305.8987	25:39	28:10	-150	0.891	1769	501	32	80	16	0.28(0.65-0.89)	
	Empc Correction				637	225	32	80	7		
303.9016	25:49	28:10	-140	0.896	7431	1088	33	82	33		
305.8987	25:50	28:10	-139	0.897	10149	1501	32	80	47	0.73(0.65-0.89)	
303.9016	26:30	28:10	-100	0.920	4766	591	33	82	18		M
	Empc Correction				3739	424	33	82	13		
305.8987	26:30	28:10	-100	0.920	4857	551	32	80	17	0.98(0.65-0.89)	
303.9016	27:02	28:10	-68	0.939	4775	560	33	82	17		
305.8987	27:02	28:10	-68	0.939	5754	793	32	80	25	0.83(0.65-0.89)	
303.9016	27:14	28:10	-55	0.946	1255	174	33	82	5		M
	Empc Correction				747	133	33	82	4		
305.8987	27:14	28:10	-55	0.946	971	173	32	80	5	1.29(0.65-0.89)	
303.9016	27:46	28:10	-24	0.964	49435	5726	33	82	174		
305.8987	27:47	28:10	-23	0.964	61040	7639	32	80	239	0.81(0.65-0.89)	
303.9016	28:22	28:10	12	0.985	3682	378	33	82	11		
305.8987	28:24	28:10	14	0.986	4783	437	32	80	14	0.77(0.65-0.89)	M
303.9016	30:02	28:10	112	1.043	7466	888	33	82	27		
305.8987	30:04	28:10	114	1.044	9822	1216	32	80	38	0.76(0.65-0.89)	
303.9016	30:42	28:10	152	1.066	1774	281	33	82	9		
305.8987	30:43	28:10	153	1.067	2942	321	32	80	10	0.60(0.65-0.89)	
	Empc Correction				2303	364	32	80	11		
303.9016	32:52	28:10	281	1.141	3608	435	33	82	13		
305.8987	32:53	28:10	282	1.142	4745	571	32	80	18	0.76(0.65-0.89)	
303.9016	33:53	28:10	343	1.177	7759	869	33	82	26		
305.8987	33:54	28:10	344	1.177	10518	1093	32	80	34	0.74(0.65-0.89)	
1,2,3,7,8-PeCDD											RQ
355.8546	40:34	40:35	2	1.000	2262	469	19	47	25		
	Empc Correction				1300	353	19	47	19		
357.8516	40:34	40:35	2	1.000	839	228	10	25	23	2.70(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:38	39:24	-106	0.928	6832	1060	19	47	56		
	Empc Correction				5731	1080	19	47	57		
357.8516	37:37	39:24	-107	0.927	3698	697	10	25	70	1.85(1.32-1.78)	
355.8546	38:29	39:24	-55	0.949	15759	3276	19	47	172		
357.8516	38:29	39:24	-55	0.949	10866	1818	10	25	182	1.45(1.32-1.78)	
355.8546	38:55	39:24	-29	0.959	598	163	19	47	9		
357.8516	38:53	39:24	-31	0.958	614	106	10	25	11	0.97(1.32-1.78)	
	Empc Correction				385	105	10	25	11		
355.8546	39:11	39:24	-14	0.966	897	186	19	47	10		
357.8516	39:07	39:24	-17	0.964	954	140	10	25	14	0.94(1.32-1.78)	
	Empc Correction				578	120	10	25	12		
355.8546	39:24	39:24	0	0.971	675	162	19	47	9		
357.8516	39:25	39:24	1	0.972	390	83	10	25	8	1.73(1.32-1.78)	
355.8546	39:42	39:24	17	0.978	770	201	19	47	11		
357.8516	39:43	39:24	18	0.979	852	190	10	25	19	0.90(1.32-1.78)	
	Empc Correction				496	129	10	25	13		
355.8546	39:50	39:24	25	0.982	6142	932	19	47	49		
357.8516	39:51	39:24	26	0.982	4110	572	10	25	57	1.49(1.32-1.78)	
355.8546	41:16	39:24	111	1.017	943	304	19	47	16		
	Empc Correction				416	71	19	47	4		
357.8516	41:17	39:24	112	1.017	269	46	10	25	5	3.51(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	38:48	38:47	3	1.000	6814	1480	73	182	20		M
341.8567	38:47	38:47	2	1.000	4003	771	44	110	18	1.70(1.32-1.78)	M
2,3,4,7,8-PeCDF											M
339.8597	40:03	40:02	3	1.000	5866	1214	73	182	17		M
341.8567	40:02	40:02	2	1.000	3790	840	44	110	19	1.55(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	34:42	37:59	-197	0.895	3912	449	73	182	6		M
	Empc Correction				3160	491	73	182	7		
341.8567	34:42	37:59	-197	0.895	2039	317	44	110	7	1.92(1.32-1.78)	M
339.8597	37:16	37:59	-43	0.961	5253	812	73	182	11		
341.8567	37:14	37:59	-45	0.960	4736	561	44	110	13	1.11(1.32-1.78)	
	Empc Correction				3389	523	44	110	12		
339.8597	38:08	37:59	10	0.984	3834	529	73	182	7		
	Empc Correction				2896	390	73	182	5		
341.8567	38:13	37:59	14	0.985	1869	252	44	110	6	2.05(1.32-1.78)	
339.8597	38:41	37:59	42	0.997	687	202	73	182	3		M
341.8567	38:42	37:59	43	0.998	515	137	44	110	3	1.33(1.32-1.78)	
339.8597	39:20	37:59	81	1.014	4011	396	73	182	5		
341.8567	39:26	37:59	87	1.017	2794	328	44	110	7	1.44(1.32-1.78)	
339.8597	40:17	37:59	138	1.039	1788	293	73	182	4		M
341.8567	40:17	37:59	138	1.039	1239	223	44	110	5	1.44(1.32-1.78)	M
339.8597	41:25	37:59	206	1.068	755	248	73	182	3		M
341.8567	41:23	37:59	204	1.067	588	136	44	110	3	1.28(1.32-1.78)	M
	Empc Correction				487	160	44	110	4		

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDD											RQMa
389.8158	44:51	44:51	2	1.000	1910	600	47	117	13		M
	Empc Correction				1210	374	47	117	8		
391.8127	44:51	44:51	2	1.000	976	302	31	77	10	1.96(1.05-1.43)	
1,2,3,6,7,8-HxCDD											M
389.8158	44:58	44:58	2	1.000	4155	1114	47	117	24		M
391.8127	44:58	44:58	2	1.000	2972	790	31	77	25	1.40(1.05-1.43)	M
1,2,3,7,8,9-HxCDD											M
389.8158	45:19	45:19	1	1.011	7600	1344	47	117	29		M
391.8127	45:20	45:19	2	1.011	6975	1265	31	77	41	1.09(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											
389.8158	43:17	44:17	-60	0.963	126395	32782	47	117	697		
391.8127	43:17	44:17	-60	0.963	99954	26138	31	77	843	1.26(1.05-1.43)	
389.8158	43:51	44:17	-26	0.976	3414	941	47	117	20		
391.8127	43:51	44:17	-26	0.976	2514	611	31	77	20	1.36(1.05-1.43)	
389.8158	44:08	44:17	-8	0.982	28334	6760	47	117	144		
391.8127	44:08	44:17	-8	0.982	21572	5490	31	77	177	1.31(1.05-1.43)	
389.8158	44:18	44:17	2	0.986	3637	794	47	117	17		
391.8127	44:19	44:17	3	0.986	3047	671	31	77	22	1.19(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:49	43:50	2	1.000	12422	3229	99	247	33		
375.8178	43:49	43:50	2	1.000	9728	2388	66	165	36	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDF											RQM
373.8208	43:57	43:57	2	1.000	5602	1475	99	247	15		
	Empc Correction				4456	1378	99	247	14		
375.8178	43:57	43:57	2	1.000	3594	1112	66	165	17	1.56(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											
373.8208	44:41	44:40	3	1.000	1440	468	99	247	5		
375.8178	44:41	44:40	3	1.000	1038	390	66	165	6	1.39(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	45:36						99	247			
375.8178	45:36						66	165			
A Non-2,3,7,8-sub-HxCDF											RQM
373.8208	42:35	44:08	-93	0.969	2059	549	99	247	6		
375.8178	42:36	44:08	-92	0.970	1810	456	66	165	7	1.14(1.05-1.43)	
373.8208	42:46	44:08	-82	0.973	7725	2164	99	247	22		
375.8178	42:46	44:08	-82	0.973	7672	1895	66	165	29	1.01(1.05-1.43)	M
	Empc Correction				6229	1745	66	165	26		
373.8208	43:22	44:08	-46	0.987	5801	1582	99	247	16		
375.8178	43:22	44:08	-46	0.987	5357	1456	66	165	22	1.08(1.05-1.43)	
373.8208	43:34	44:08	-34	0.992	12541	3307	99	247	33		
	Empc Correction				10737	3096	99	247	31		
375.8178	43:34	44:08	-34	0.992	8659	2497	66	165	38	1.45(1.05-1.43)	
373.8208	44:29	44:08	21	1.013	3019	643	99	247	6		
375.8178	44:29	44:08	21	1.013	2627	624	66	165	9	1.15(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	49:39	49:38	3	1.001	130699	22784	18	45	1266		
425.7737	49:38	49:38	2	1.000	116691	19237	70	175	275	1.12(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:28	49:01	-33	0.977	309404	60280	18	45	3349		
425.7737	48:28	49:01	-33	0.977	286091	57063	70	175	815	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:59	2	1.000	20052	3927	32	80	123		
409.7788	47:58	47:59	2	1.000	18715	3740	22	55	170	1.07(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:18	50:18	3	1.001	2541	552	32	80	17		M
409.7788	50:16	50:18	1	1.000	2815	497	22	55	23	0.90(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											a
407.7817	48:21	49:31	-70	1.008	2253	431	32	80	13		a
409.7788	48:21	49:31	-70	1.008	2405	385	22	55	18	0.94(0.88-1.20)	
407.7817	48:36	49:31	-55	1.013	20804	4617	32	80	144		a
409.7788	48:36	49:31	-55	1.013	19972	4424	22	55	201	1.04(0.88-1.20)	
OCDD											
457.7377	53:53	53:52	3	1.000	2391337	536979	13	32	41306		
459.7348	53:53	53:52	3	1.000	2645543	588427	14	35	42031	0.90(0.76-1.02)	
OCDF											M
441.7428	54:02	54:01	3	1.000	80822	19473	5	12	3895		
443.7399	54:01	54:01	2	1.000	91057	20760	6	15	3460	0.89(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:49	30:48	5	1.017	325088	34986	215	537	163		
333.9338	30:47	30:48	2	1.016	393038	42550	155	387	275	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:48	28:49	3	0.951	546730	60677	361	902	168		
317.9389	28:49	28:49	4	0.951	655180	73314	352	880	208	0.83(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:36	3	1.339	384094	85718	195	487	440		
369.8919	40:34	40:36	3	1.339	235452	55391	183	457	303	1.63(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:47	38:48	3	1.280	577417	116437	303	757	384		
353.8970	38:47	38:48	3	1.280	344482	63110	262	655	241	1.68(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	40:04	3	1.321	597662	126564	303	757	418		
353.8970	40:02	40:04	3	1.321	363994	76094	262	655	290	1.64(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:50	44:50	2	0.989	362891	97427	101	252	965		
403.8529	44:50	44:50	2	0.989	273924	68596	93	232	738	1.32(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:57	44:58	2	0.992	395728	94232	101	252	933		
403.8529	44:57	44:58	2	0.992	317824	73618	93	232	792	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:48	43:49	2	0.966	309238	79891	330	825	242		
385.8610	43:48	43:49	2	0.966	595551	159601	351	877	455	0.52(0.43-0.59)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:57	2	0.969	370141	92840	330	825	281		
385.8610	43:56	43:57	2	0.969	733771	180531	351	877	514	0.50(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:40	44:39	3	0.985	364642	89036	330	825	270		
385.8610	44:40	44:39	3	0.985	643865	162195	351	877	462	0.57(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:36	2	1.006	330510	74439	330	825	226		
385.8610	45:35	45:36	2	1.006	583636	133673	351	877	381	0.57(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:37	49:38	2	1.095	341465	63755	306	765	208		
437.8140	49:37	49:38	2	1.095	295731	56696	178	445	319	1.15(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	3	1.058	245602	49591	155	387	320		
419.8220	47:57	47:57	3	1.058	550315	113650	327	817	348	0.45(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:17	2	1.109	211622	39419	155	387	254		
419.8220	50:16	50:17	2	1.109	433493	84862	327	817	260	0.49(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:54	2	1.189	486817	113181	148	370	765		
471.7750	53:52	53:54	2	1.189	544972	121256	220	550	551	0.89(0.76-1.02)	
13C-OCDF											
453.7830	54:01	54:02	2	1.192	764728	171111	261	652	656		
455.7801	54:01	54:02	2	1.192	828803	194604	198	495	983	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:50	30:50	4	1.018	184872	20260	153	382	132		
13C-1,2,3,4-TCDD											
331.9368	30:18	30:15	4		995831	115143	215	537	536		
333.9338	30:17	30:15	2		1241424	130280	155	387	841	0.80(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:17	2		1332920	290635	101	252	2878		
403.8529	45:19	45:17	2		1008606	225588	93	232	2426	1.32(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	718126	77536

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	718126	77536

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:55	928	143	1708	245	0.1564	0.54	RQ
24:55	928	143	1205	185	0.1266		Empc Correction
25:41	1197	170	1894	362	0.1834	0.63	RQ
25:41	1197	170	1554	220	0.1633		Empc Correction
26:21	1585	216	1959	440	0.2103	0.81	
27:48	25223	2881	34606	4069	3.55	0.73	
28:18	1266	171	1193	182	0.1459	1.06	RQM
28:18	918	140	1193	182	0.1253		Empc Correction
29:31	805	124	1404	260	0.1311	0.57	RQM
29:31	805	124	1045	161	0.1098		Empc Correction
30:20	3947	456	4807	620	0.5195	0.82	
30:39	1666	206	1405	170	0.1822	1.19	RQM
30:39	1081	130	1405	170	0.1475		Empc Correction
32:02	1561	194	2031	351	0.2132	0.77	M
34:04	1107	162	1305	177	0.1431	0.85	M
Signal Totals:							
	38352	4616	51110	6575			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	91597	11599				0.75	RQM
	89462	11191					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.436 = (91597 * 50.000) / (718126 * 1.173)
Empc Amount: 5.309 = (89462 * 50.000) / (718126 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	1201910	133991

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	1201910	133991

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:51	2060	437	3025	403	0.1944	0.68	
24:21	1600	334	1997	402	0.1375	0.80	
25:06	5055	995	7736	861	0.4890	0.65	
25:38	491	174	1769	501	0.0864	0.28	RQ
25:38	491	174	637	225	0.0431		Empc Correction
25:49	7431	1088	10149	1501	0.6721	0.73	
26:30	4766	591	4857	551	0.3679	0.98	RQM
26:30	3739	424	4857	551	0.3286		Empc Correction
27:02	4775	560	5754	793	0.4025	0.83	
27:14	1255	174	971	173	0.0851	1.29	RQMa
27:14	747	133	971	173	0.0657		Empc Correction
27:46	49435	5726	61040	7639	4.22	0.81	
28:22	3682	378	4783	437	0.3236	0.77	M
30:02	7466	888	9822	1216	0.6609	0.76	
30:42	1774	281	2942	321	0.1803	0.60	RQ
30:42	1774	281	2303	364	0.1559		Empc Correction
32:52	3608	435	4745	571	0.3193	0.76	
33:53	7759	869	10518	1093	0.6987	0.74	
Signal Totals:	99622	12722	128337	16229			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	231265	29392				0.78	RQMa
	227959	28951					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 8.841 = (231265 * 50.000) / (1201910 * 1.088)
Empc Amount: 8.715 = (227959 * 50.000) / (1201910 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	619546	141109

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	619546	141109

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:38	6832	1060	3698	697	0.8145	1.85	RQ
37:38	5731	1080	3698	697	0.7293		Empc Correction
38:29	15759	3276	10866	1818	2.06	1.45	
38:55	598	163	614	106	0.0937	0.97	RQ
38:55	598	163	385	105	0.0760		Empc Correction
39:11	897	186	954	140	0.1432	0.94	RQ
39:11	897	186	578	120	0.1141		Empc Correction
39:24	675	162	390	83	0.0824	1.73	
39:42	770	201	852	190	0.1255	0.90	RQ
39:42	770	201	496	129	0.0979		Empc Correction
39:50	6142	932	4110	572	0.7930	1.49	
41:16	943	304	269	46	0.0937	3.51	RQ
41:16	416	71	269	46	0.0530		Empc Correction
Signal Totals:							
	30988	6071	20792	3570			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	54369	9936				1.50	RQ
	51780	9641					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.205 = (54369 * 50.000) / (619546 * 1.043)
Empc Amount: 4.005 = (51780 * 50.000) / (619546 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	921899	179547
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	961656	202658

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	941777	191102

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:42	3912	449	2039	317	0.2748	1.92	RQM
34:42	3160	491	2039	317	0.2401		Empc Correction
37:16	5253	812	4736	561	0.4613	1.11	RQ
37:16	5253	812	3389	523	0.3991		Empc Correction
38:08	3834	529	1869	252	0.2634	2.05	RQ
38:08	2896	390	1869	252	0.2201		Empc Correction
38:41	687	202	515	137	0.0555	1.33	Ma
39:20	4011	396	2794	328	0.3143	1.44	
40:17	1788	293	1239	223	0.1398	1.44	M
41:25	755	248	588	136	0.0620	1.28	RQM
41:25	755	248	487	160	0.0574		Empc Correction
Signal Totals:							
	18550	2832	12332	1940			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	34020	4883				1.47	RQMa
	30882	4772					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.571 = (34020 * 50.000) / (941777 * 1.150)
Empc Amount: 1.426 = (30882 * 50.000) / (941777 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	636815	166023
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	713552	167850
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	675183	166936

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	126395	32782	99954	26138	14.3	1.26	
43:51	3414	941	2514	611	0.3752	1.36	
44:08	28334	6760	21572	5490	3.16	1.31	
44:18	3637	794	3047	671	0.4230	1.19	
Signal Totals:							
	161780	41277	127087	32910			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	288867	74187				1.27	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 18.283 = (288867 * 50.000) / (675183 * 1.170)

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	904789	239492
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	1103912	273371
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1008507	251231
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	914146	208112

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	982838	243051

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:35	2059	549	1810	456	0.1525	1.14	
42:46	7725	2164	7672	1895	0.6070	1.01	RQM
42:46	7725	2164	6229	1745	0.5501		Empc Correction
43:22	5801	1582	5357	1456	0.4399	1.08	
43:34	12541	3307	8659	2497	0.8358	1.45	RQ
43:34	10737	3096	8659	2497	0.7646		Empc Correction
44:29	3019	643	2627	624	0.2226	1.15	
Signal Totals:							
	29341	8034	24682	6778			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	57270	15173				1.19	RQM
	54023	14812					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.258 = (57270 * 50.000) / (982838 * 1.290)
Empc Amount: 2.130 = (54023 * 50.000) / (982838 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	637196	120451

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	637196	120451

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:28	309404	60280	286091	57063	41.7	1.08	
Signal Totals:							
	309404	60280	286091	57063			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	595495	117343				1.08	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 41.705 = (595495 * 50.000) / (637196 * 1.120)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Inject. Date: 18-Dec-2019 03:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	795917	163241
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	645115	124281

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	720516	143761

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	2253	431	2405	385	0.2245	0.94	a
48:36	20804	4617	19972	4424	1.97	1.04	a
Signal Totals:	23057	5048	22377	4809			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	45434	9857				1.03	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.190 = (45434 * 50.000) / (720516 * 1.440)

QC Flag Legend

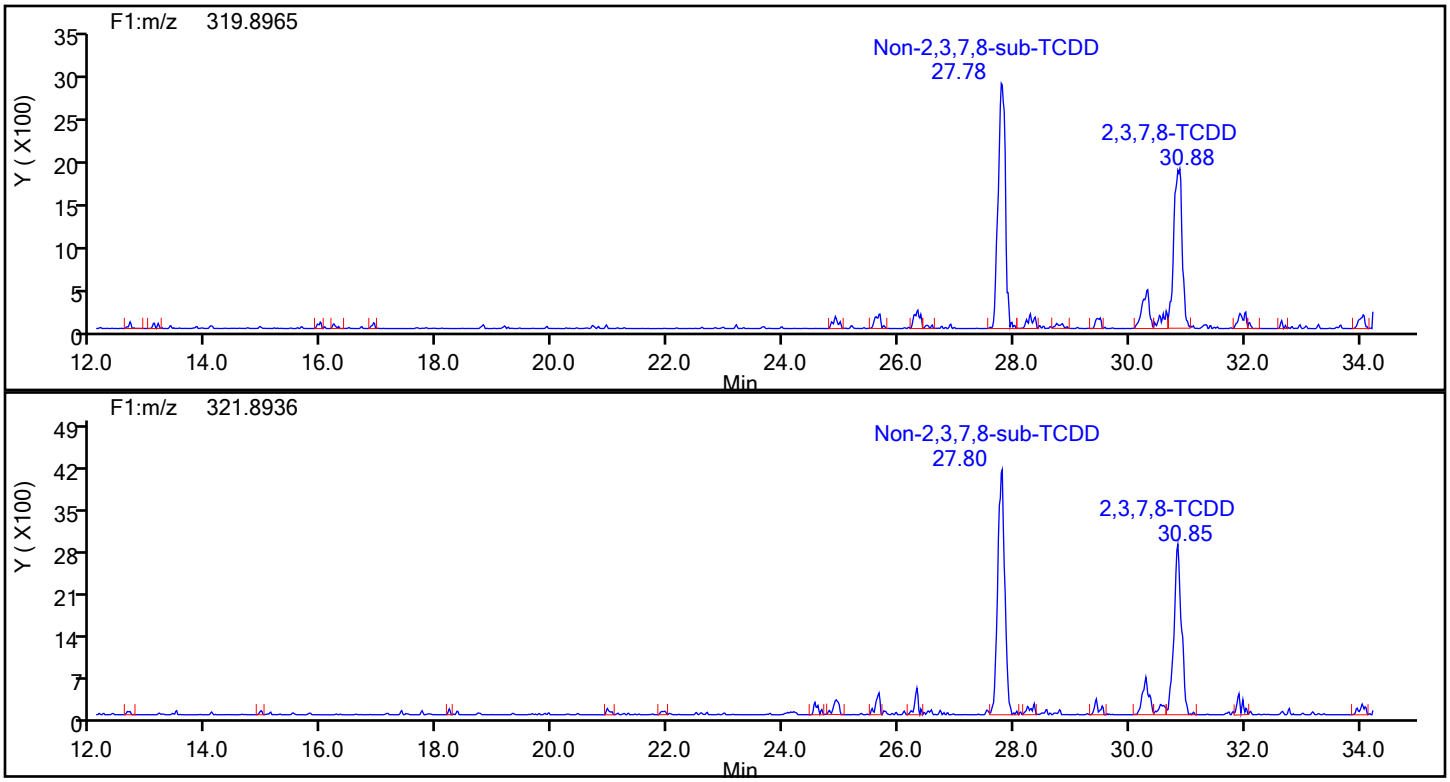
Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

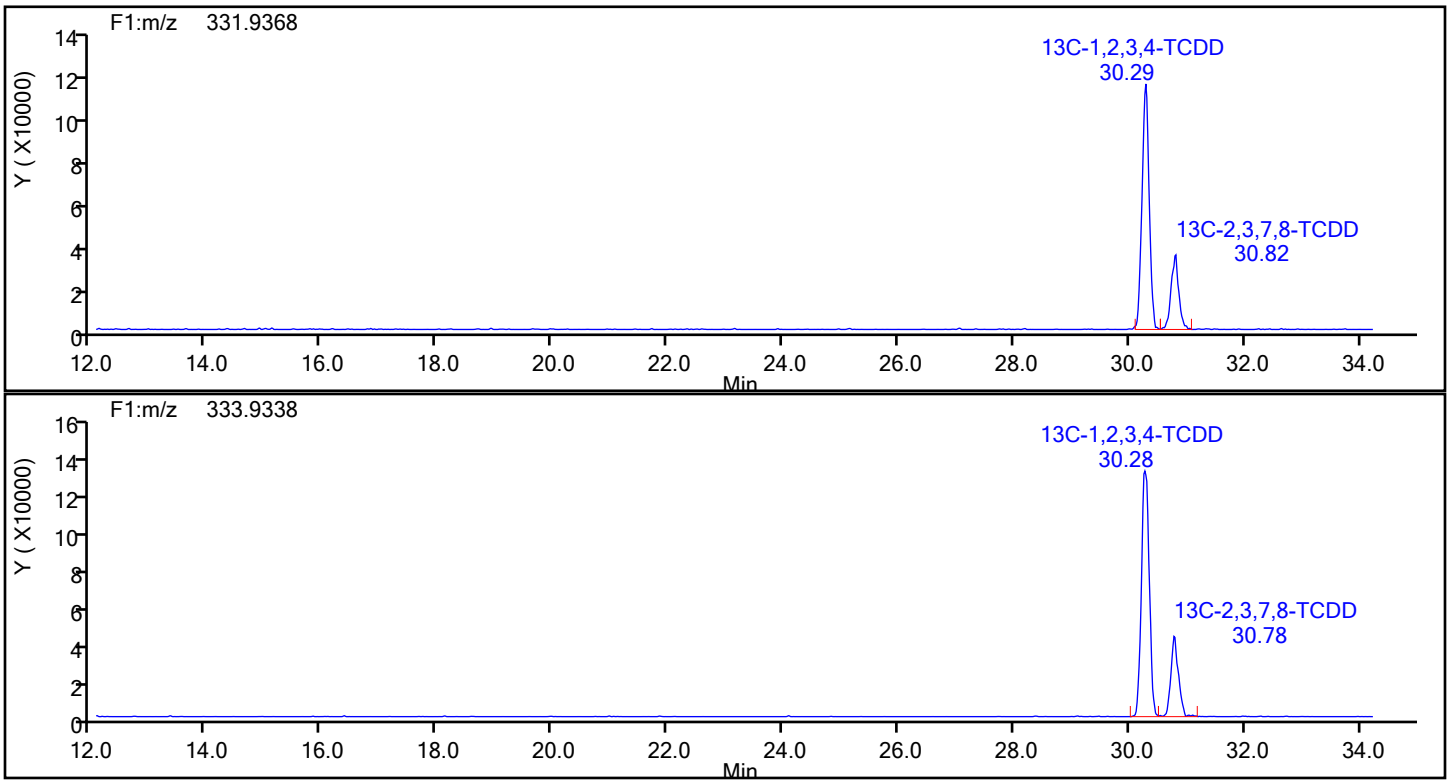
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

TCDD



TCDD Standards

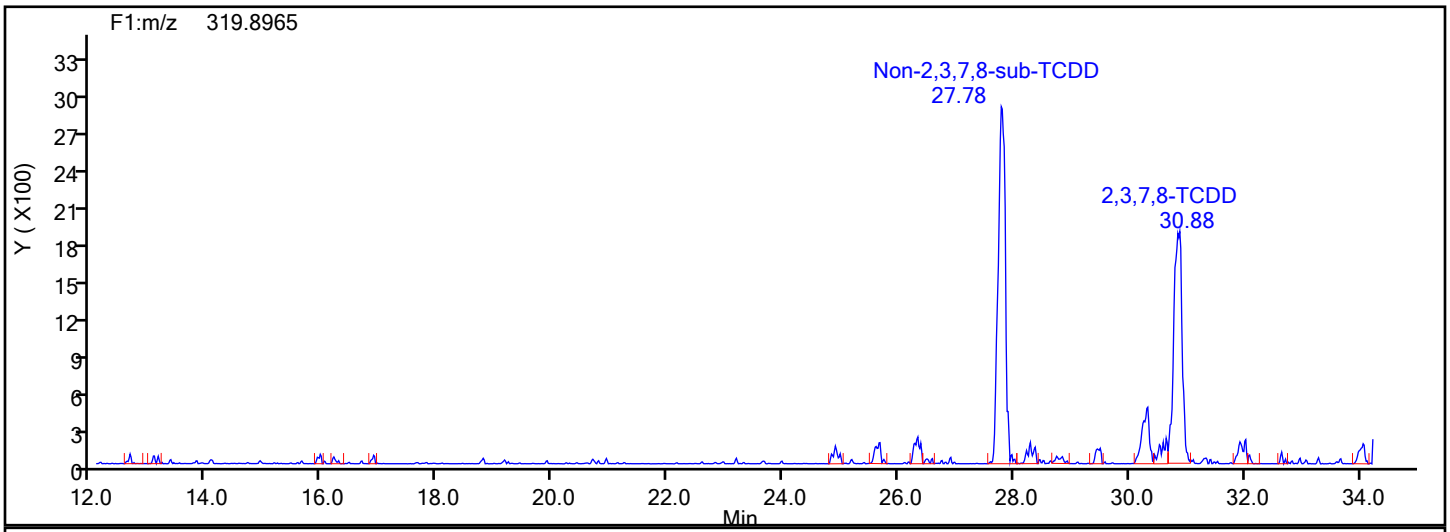


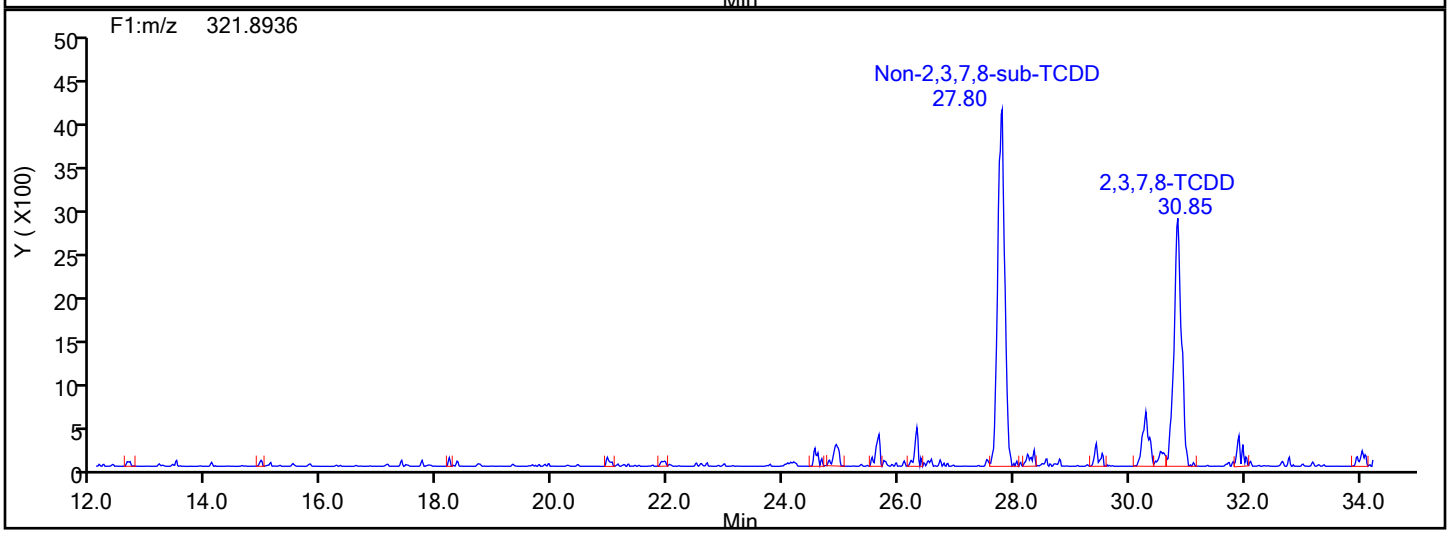
Report Date: 18-Dec-2019 08:34:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

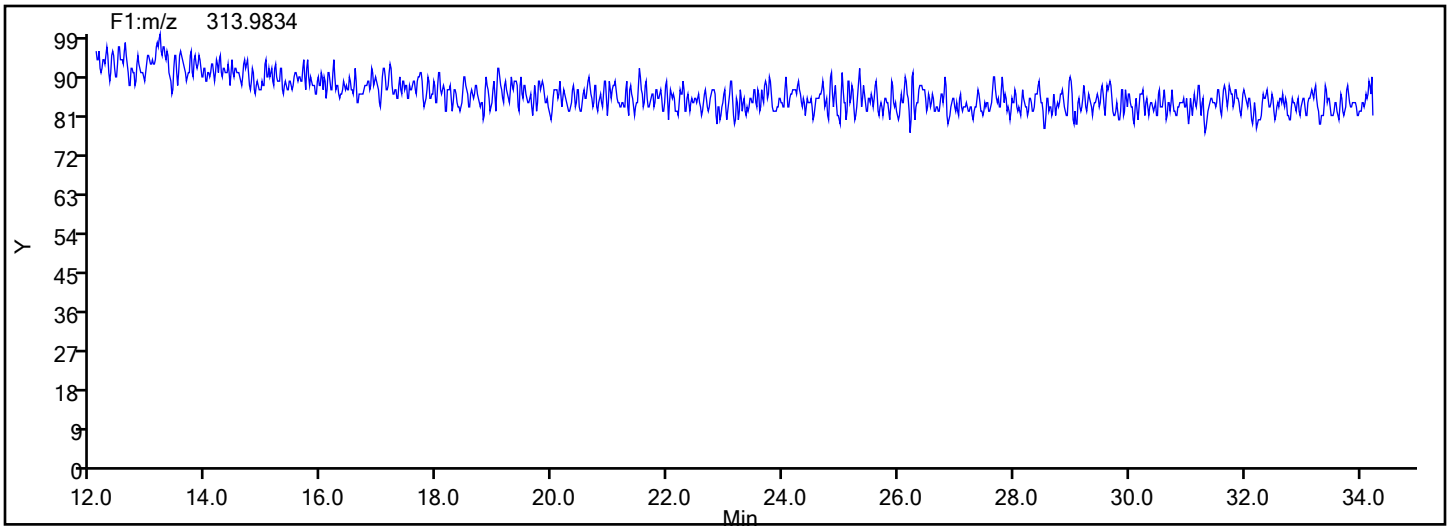
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

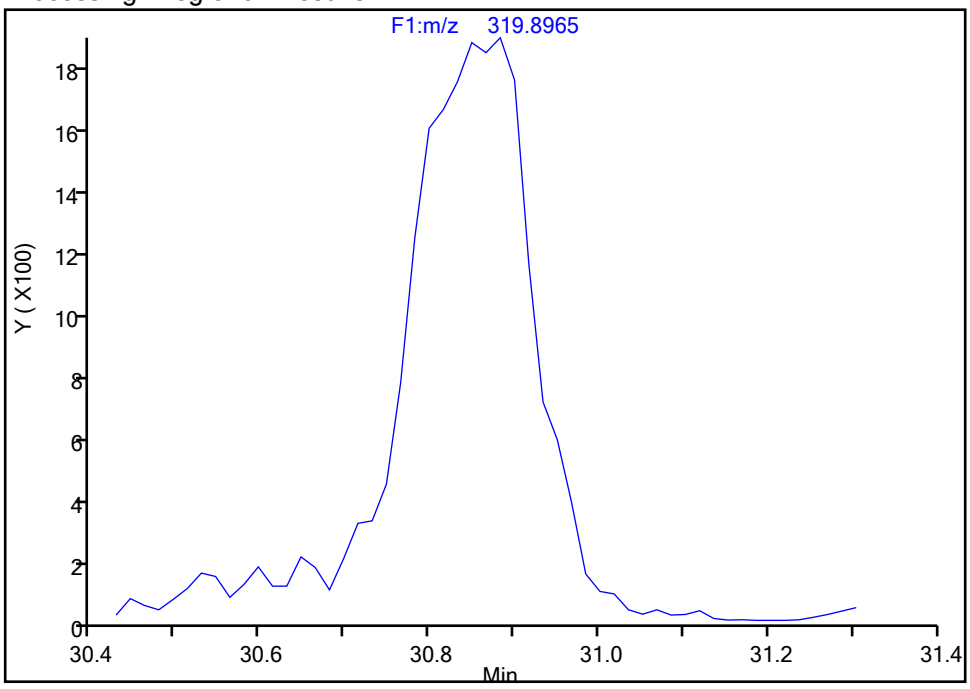
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

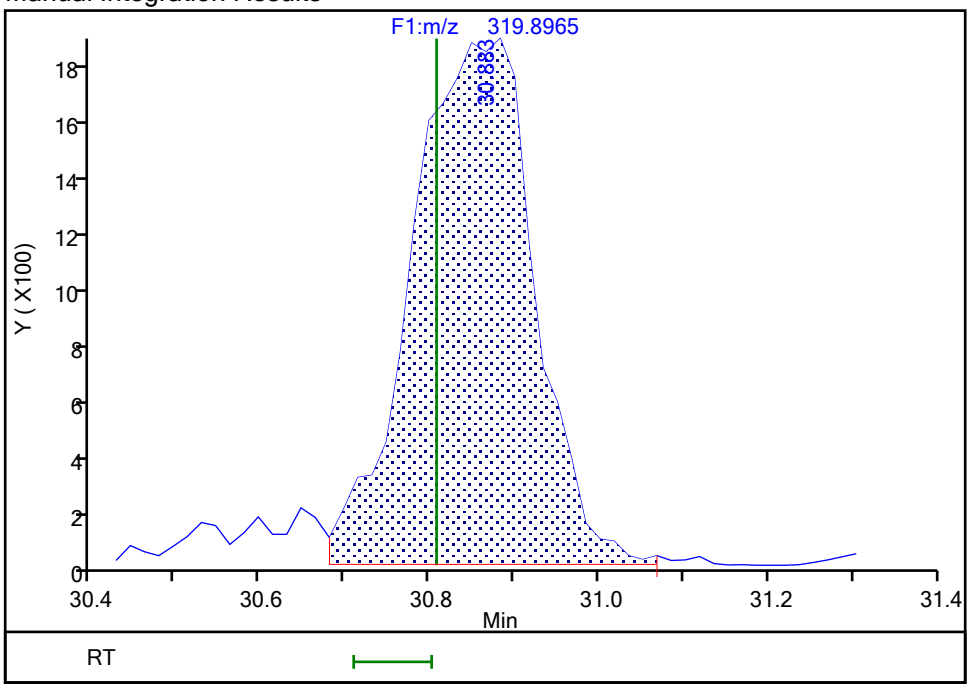
Not Detected
Expected RT: 30.81

Processing Integration Results



Manual Integration Results

RT: 30.88
Area: 18903
Amount: 2.637891
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:26:27
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

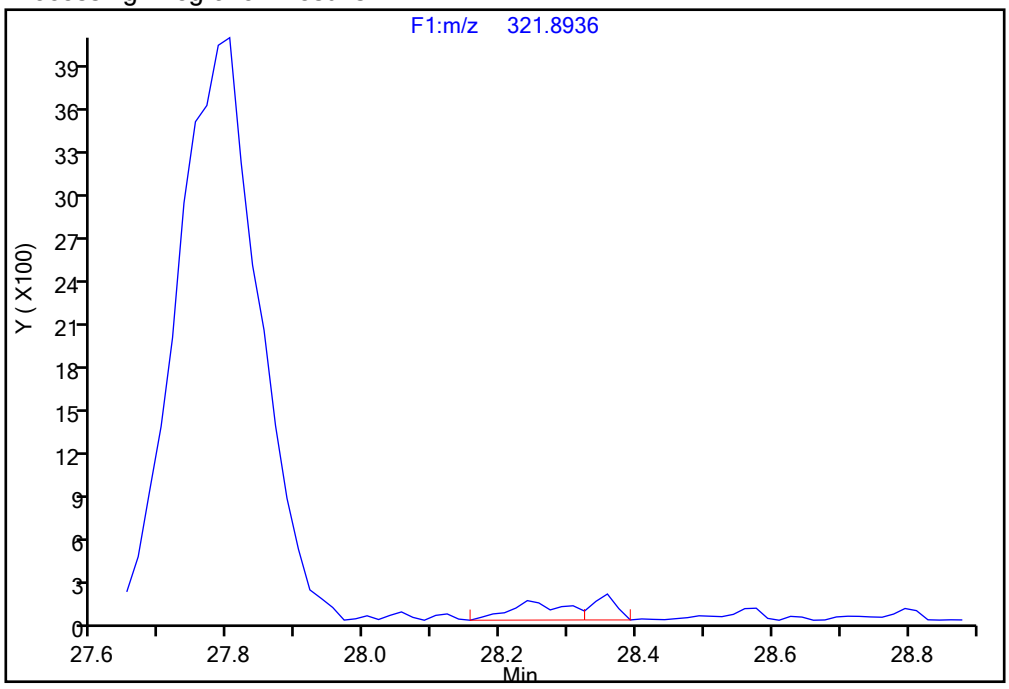
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

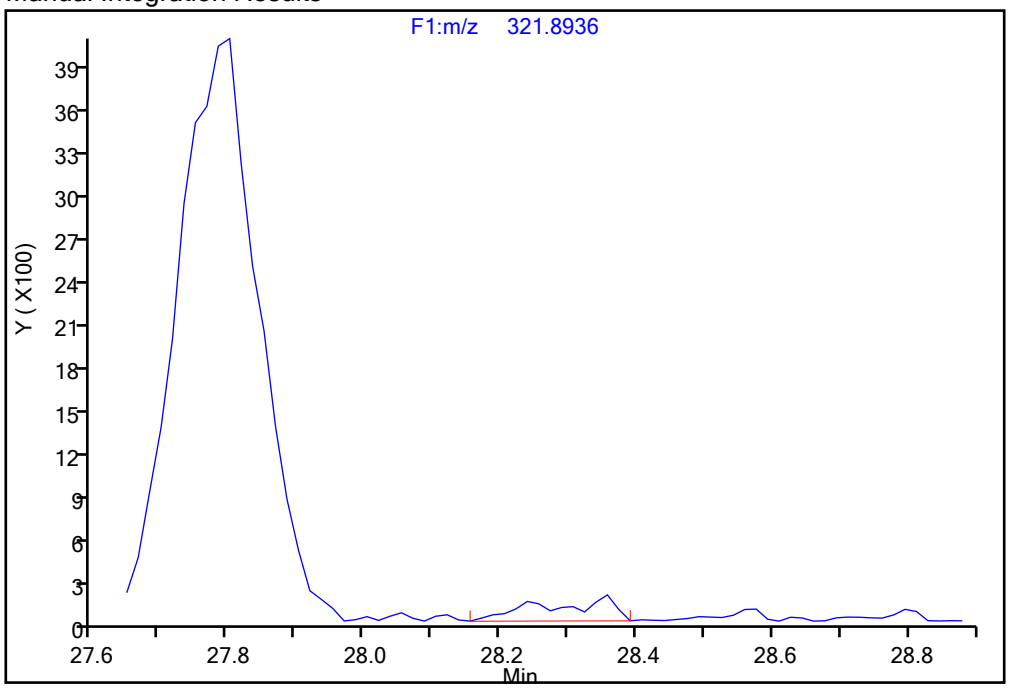
Processing Integration Results

RT = 28.357 Area = 425



Manual Integration Results

RT = 28.357 Area = 1193 M



Reviewer: davidsonm, 18-Dec-2019 08:28:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

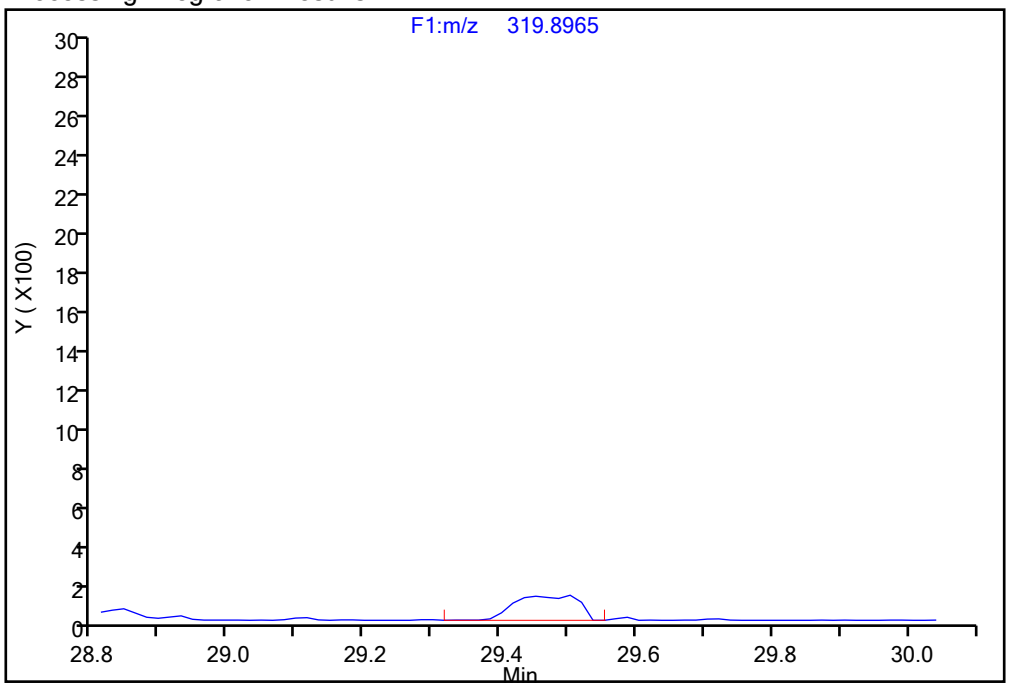
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

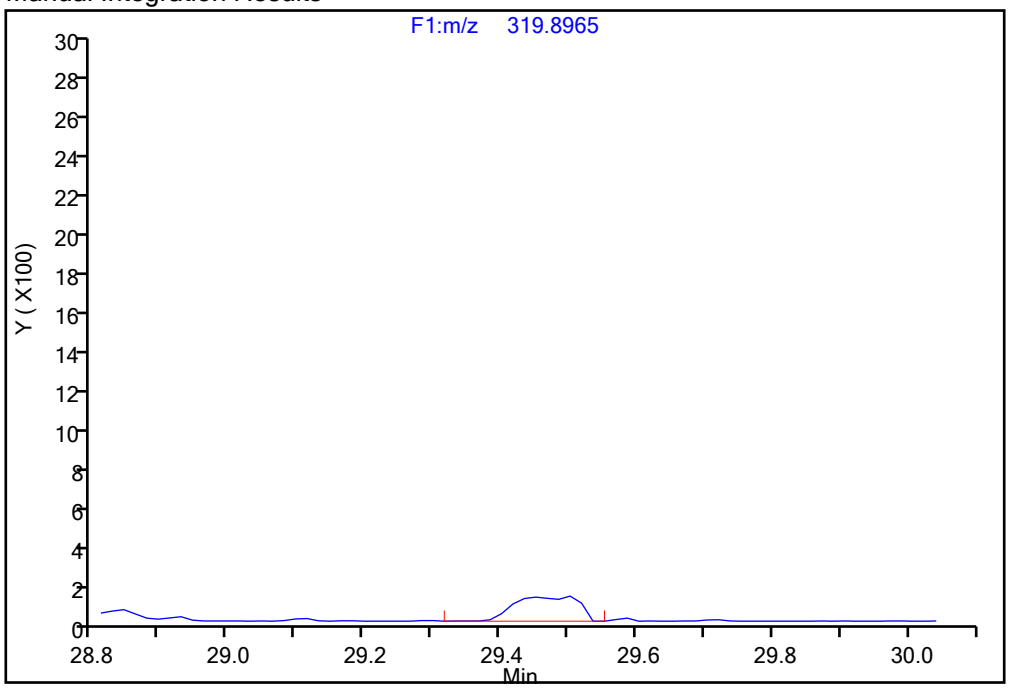
Processing Integration Results

RT = 29.503 Area = 805



Manual Integration Results

RT = 29.503 Area = 805



Reviewer: davidsonm, 18-Dec-2019 08:27:51

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

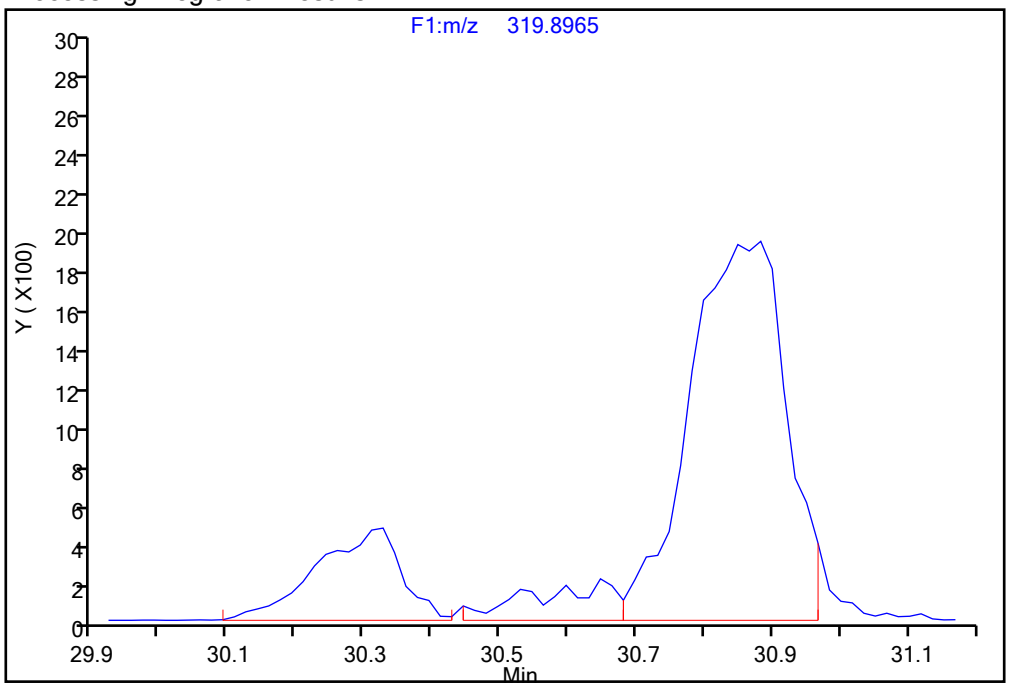
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

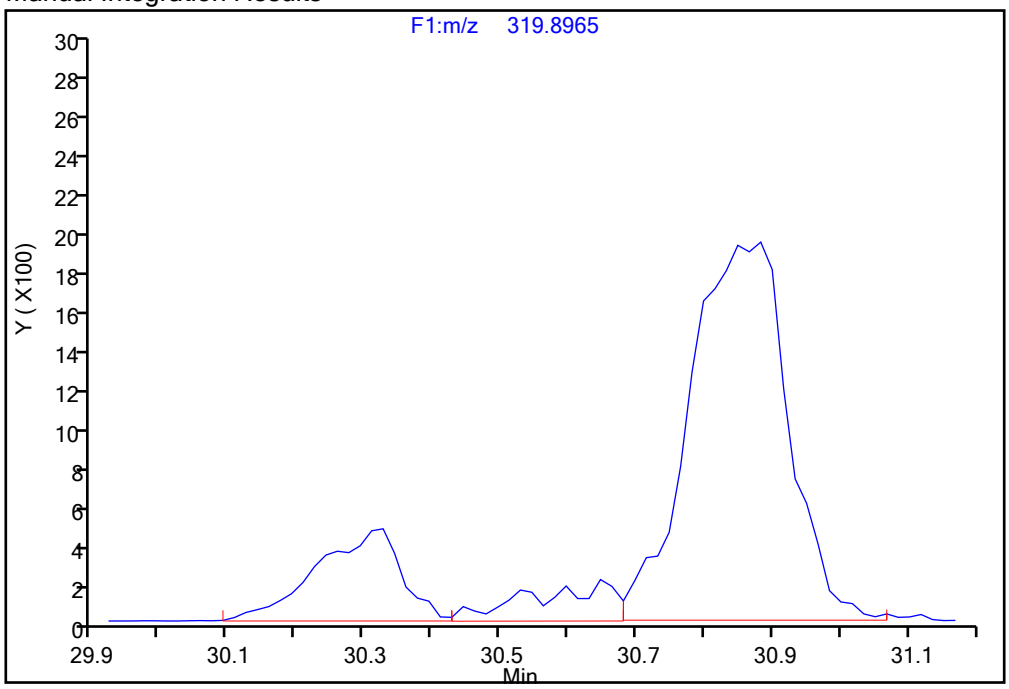
Processing Integration Results

RT = 30.647 Area = 1614



Manual Integration Results

RT = 30.647 Area = 1666 M



Reviewer: davidsonm, 18-Dec-2019 08:27:51

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

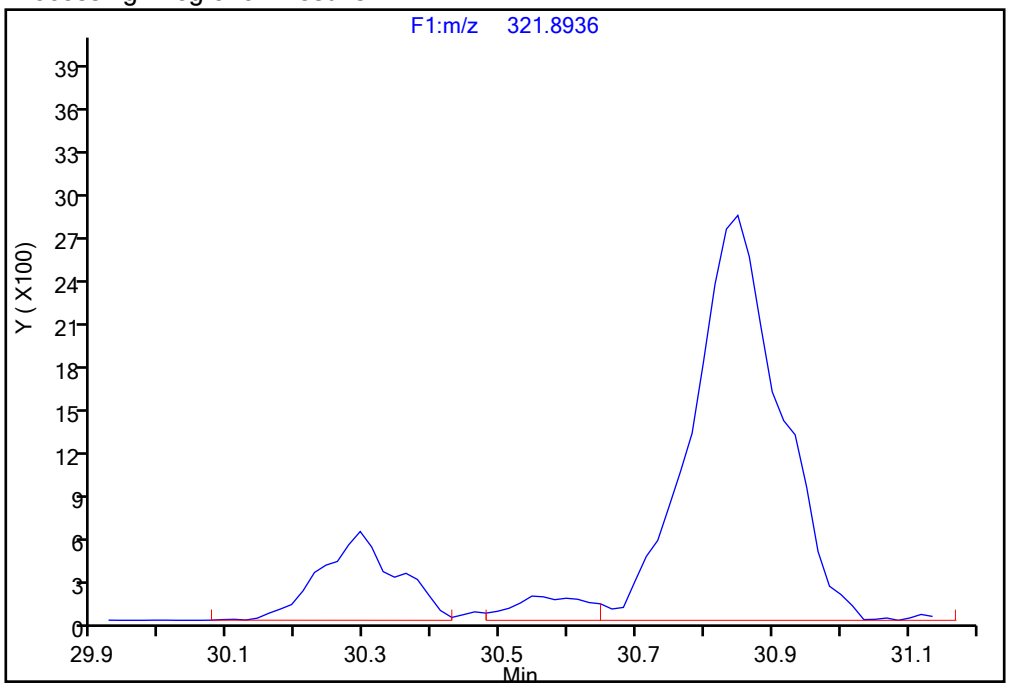
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

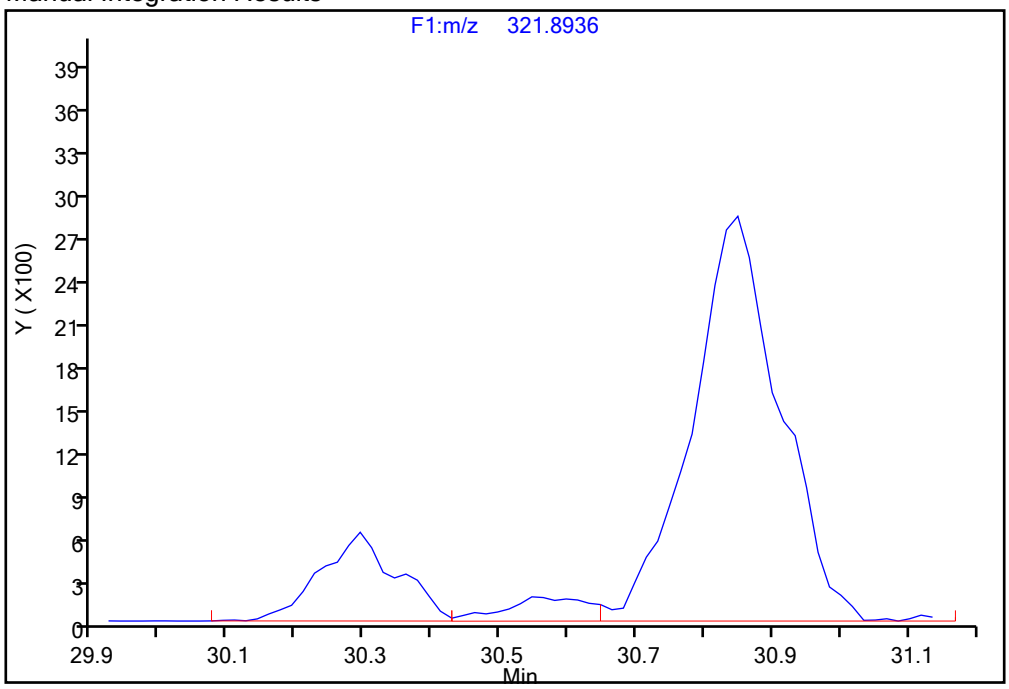
Processing Integration Results

RT = 30.546 Area = 1264



Manual Integration Results

RT = 30.546 Area = 1405 M



Reviewer: davidsonm, 18-Dec-2019 08:28:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

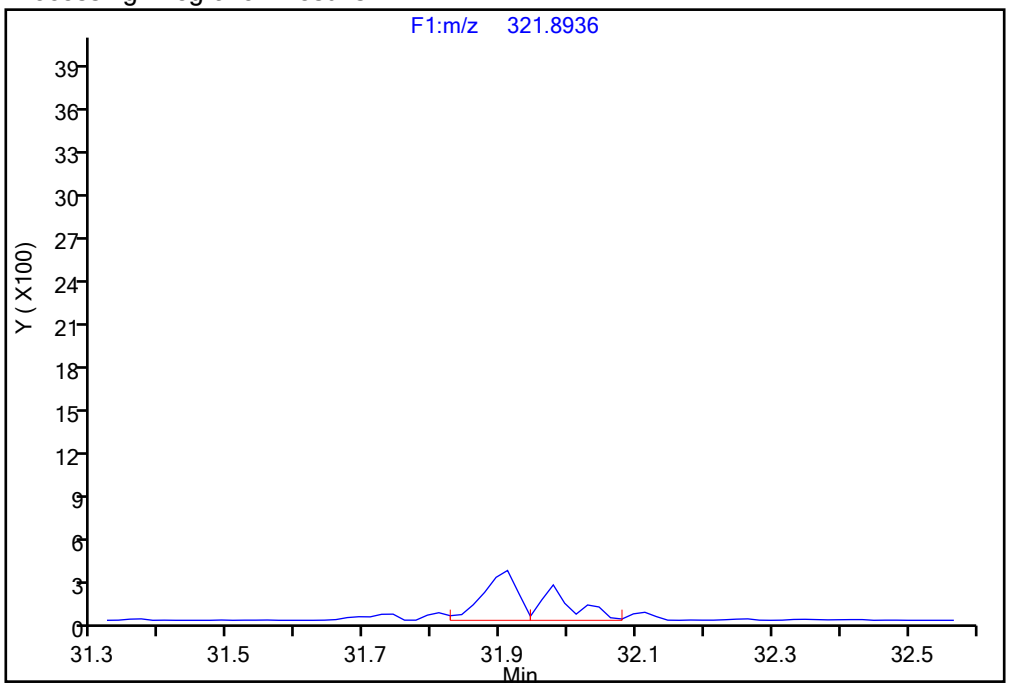
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

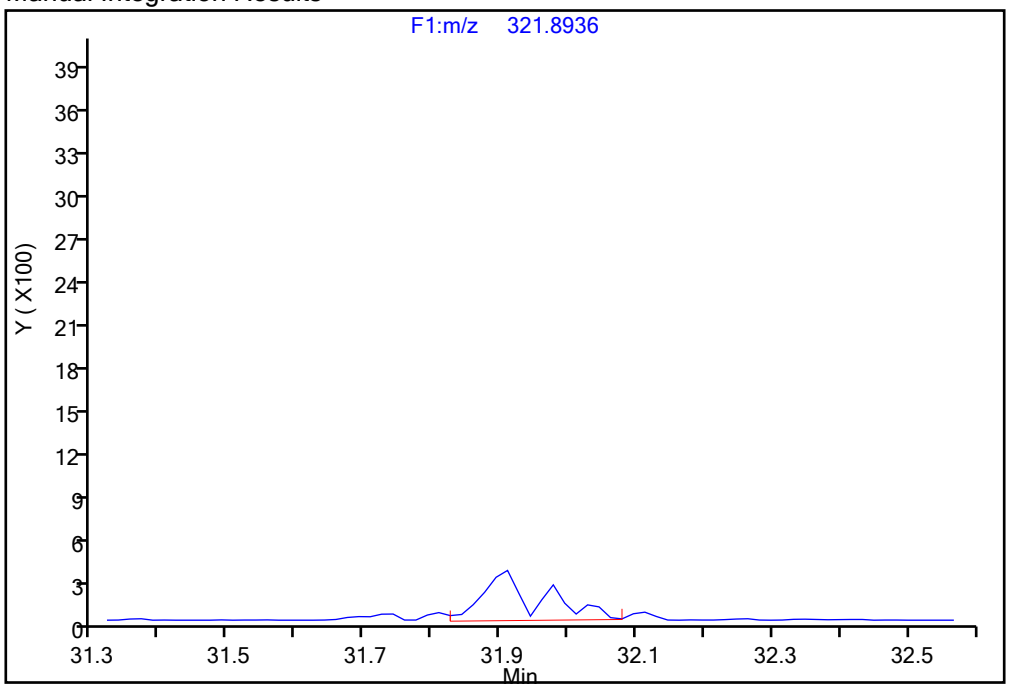
Processing Integration Results

RT = 31.910 Area = 1220



Manual Integration Results

RT = 31.910 Area = 2031 M



Reviewer: davidsonm, 18-Dec-2019 08:28:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

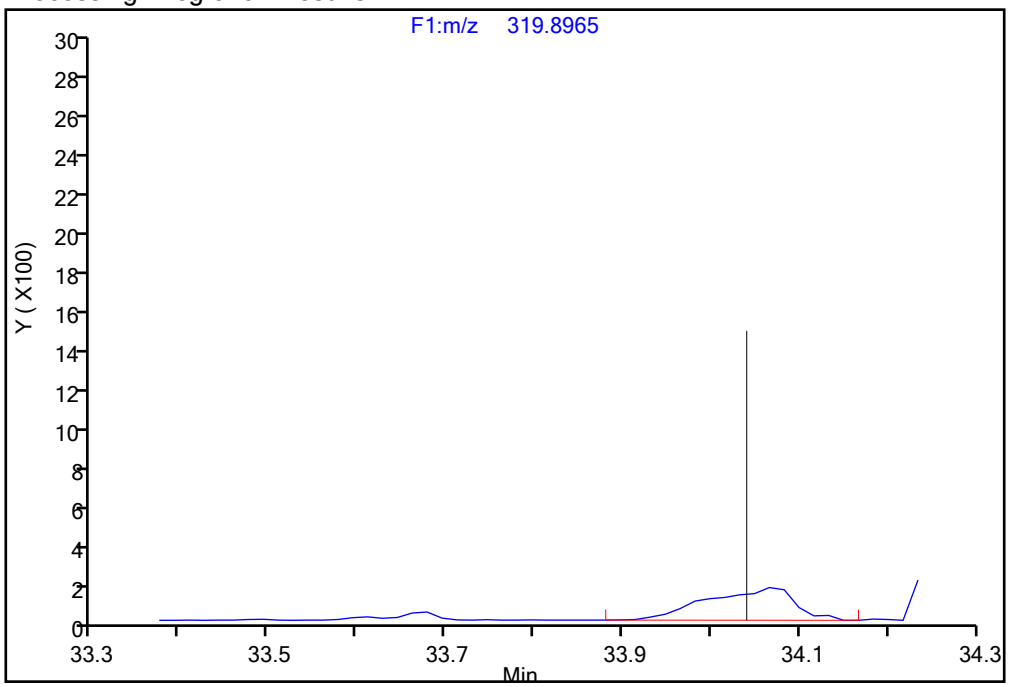
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

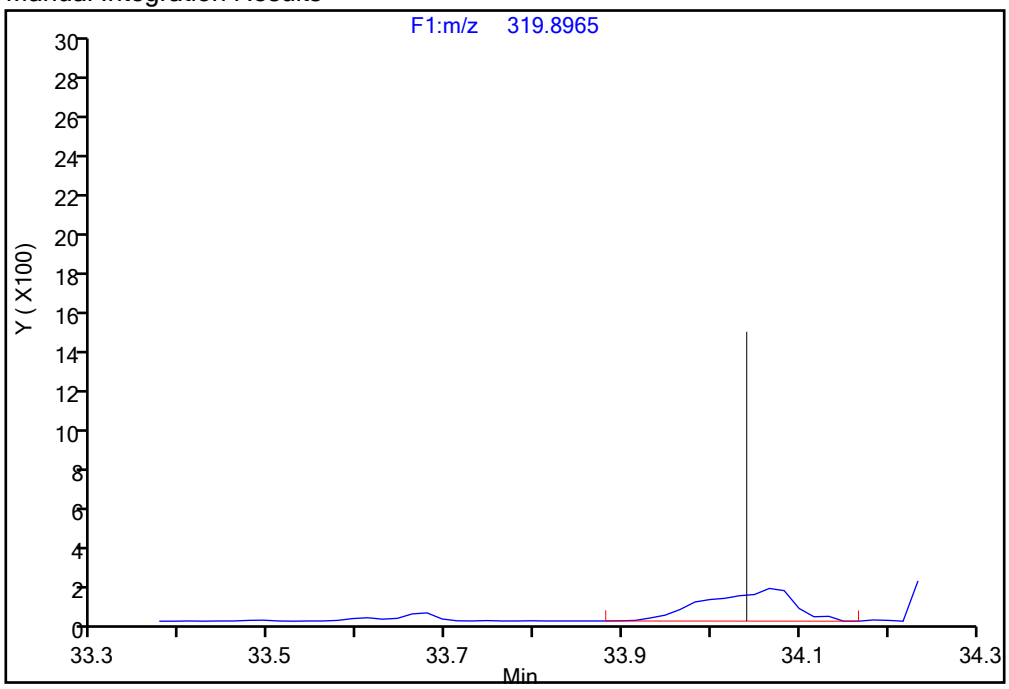
Processing Integration Results

RT = 34.066 Area = 1107



Manual Integration Results

RT = 34.066 Area = 1107



Reviewer: davidsonm, 18-Dec-2019 08:27:51

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

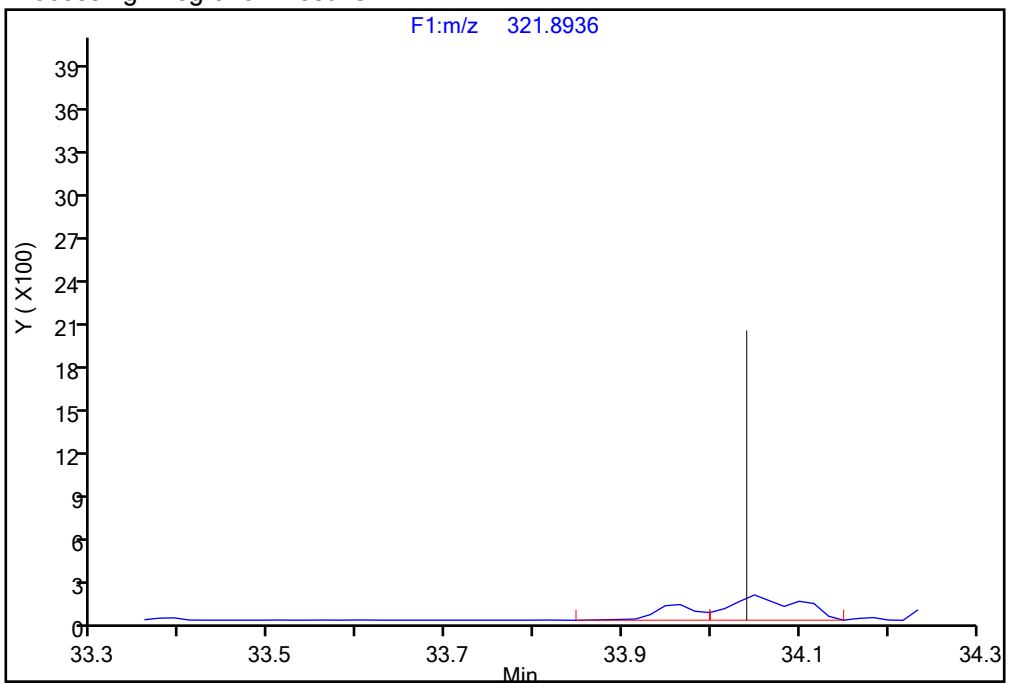
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

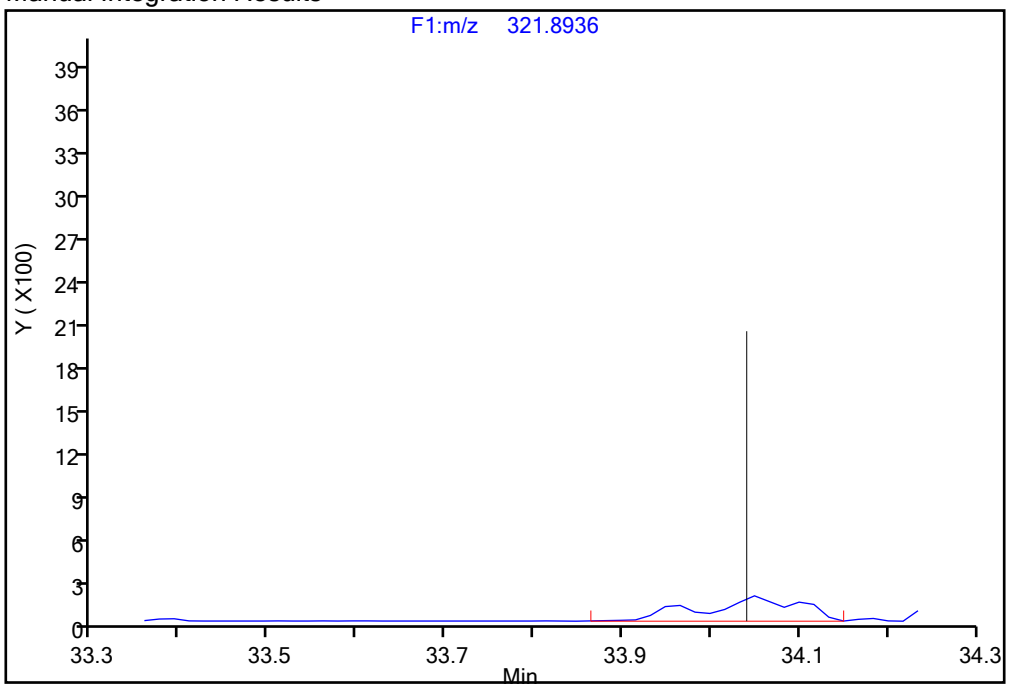
Processing Integration Results

RT = 34.049 Area = 930



Manual Integration Results

RT = 34.049 Area = 1305 M



Reviewer: davidsonm, 18-Dec-2019 08:28:05

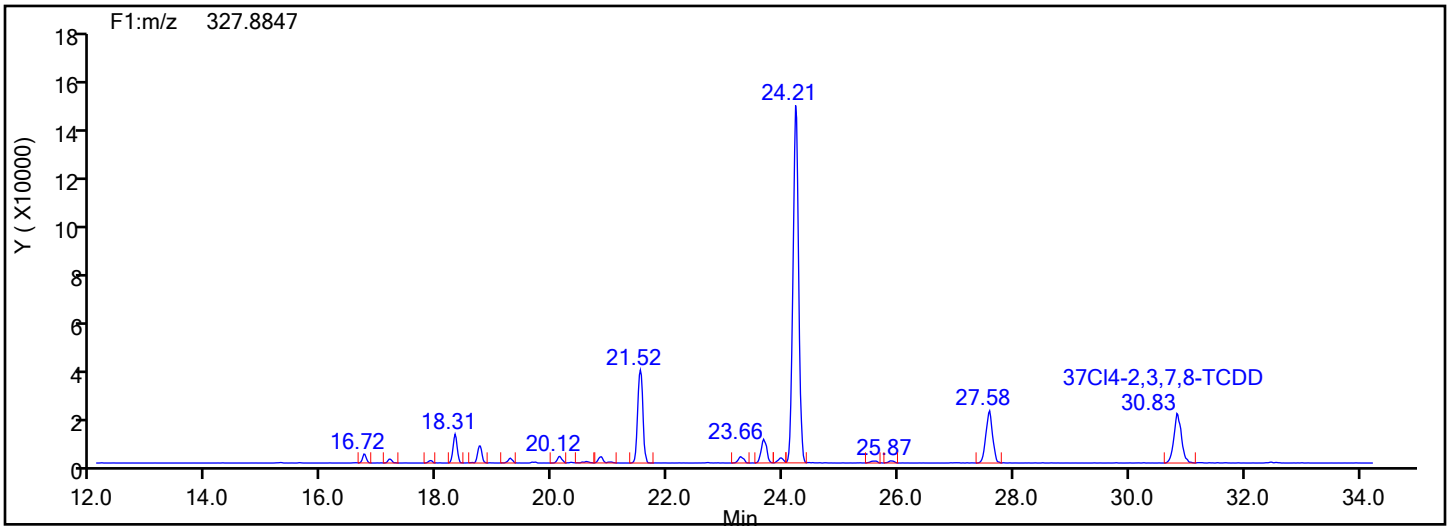
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

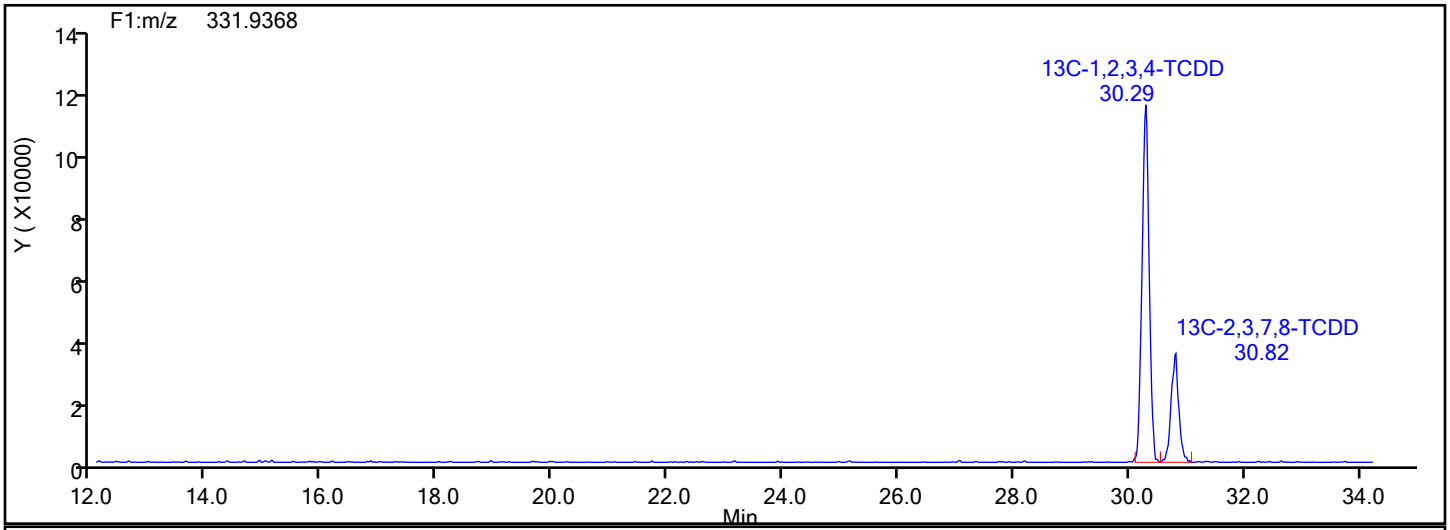
Eurofins TestAmerica, Knoxville

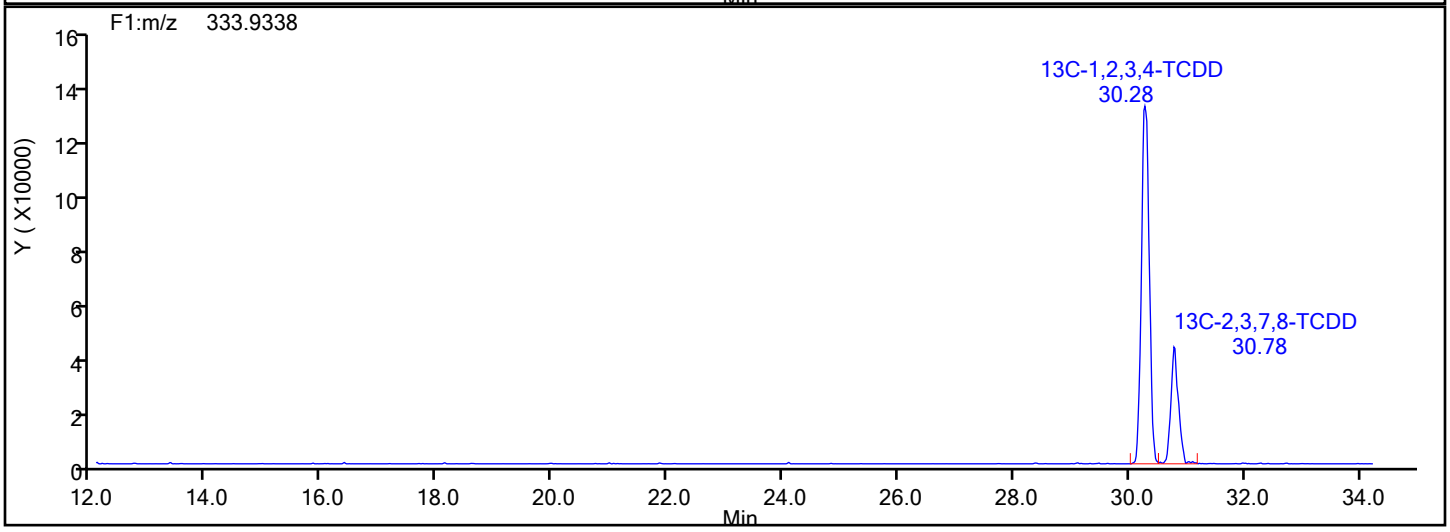
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



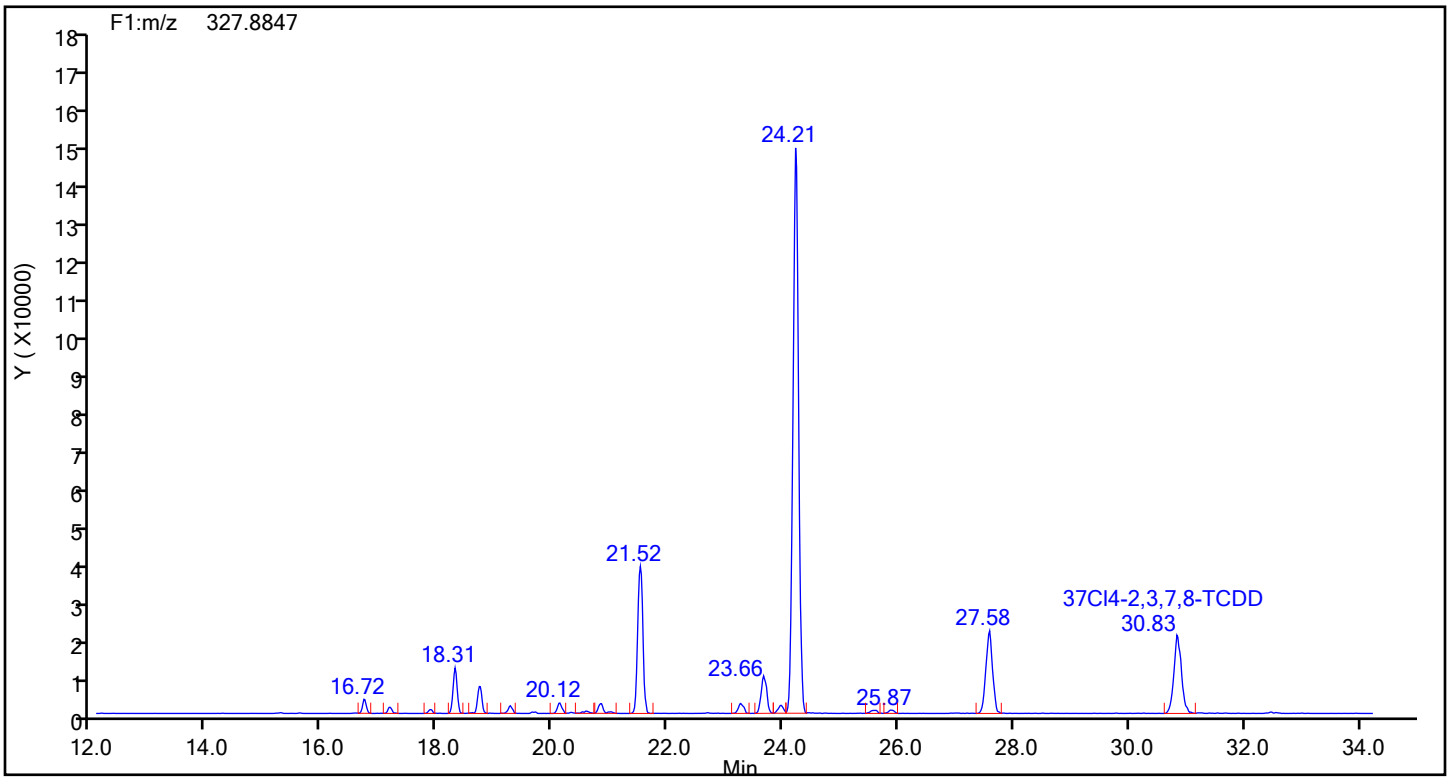


Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

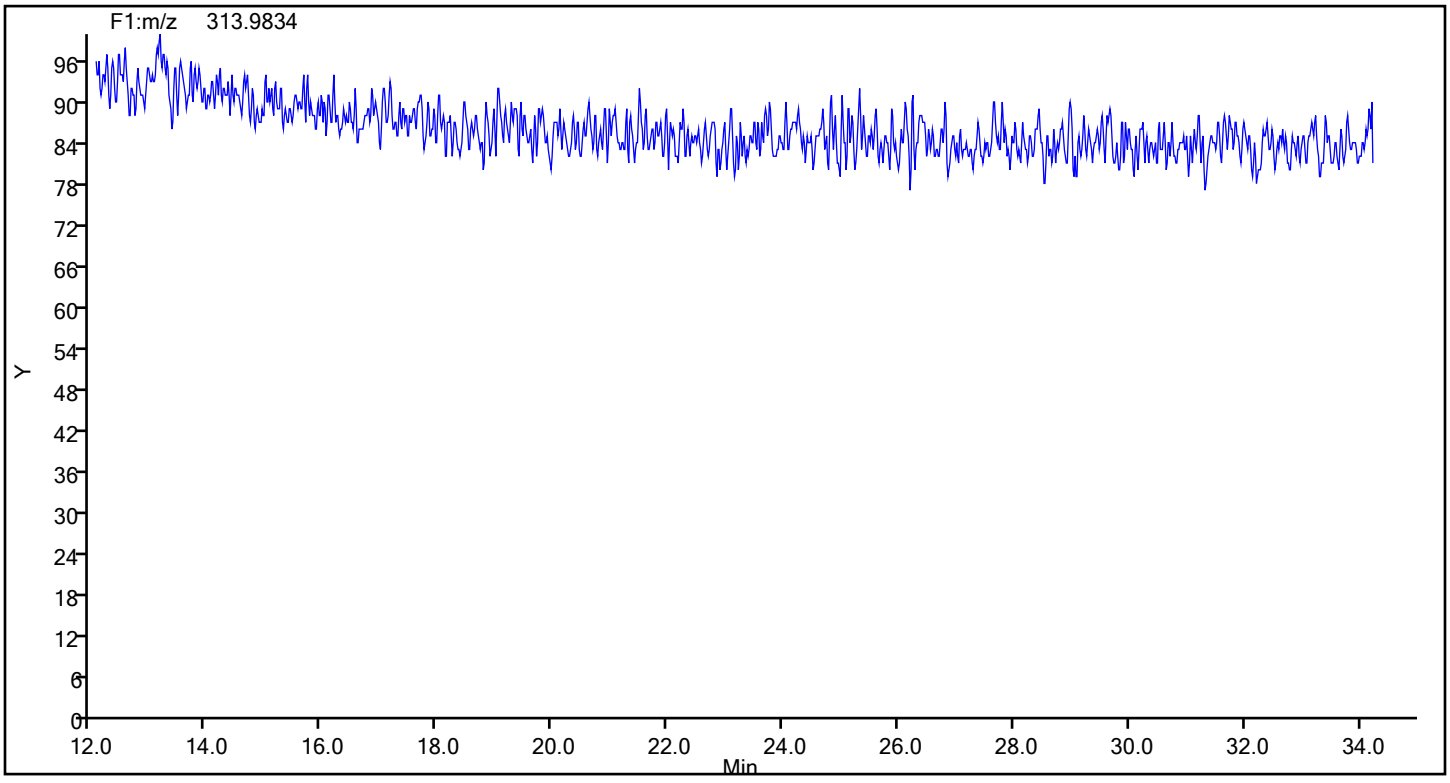
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

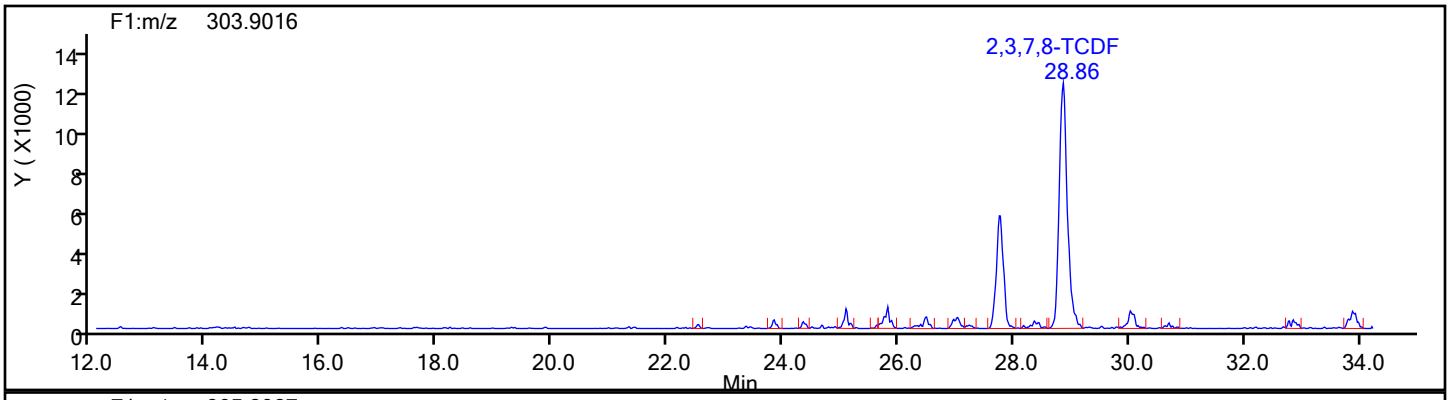


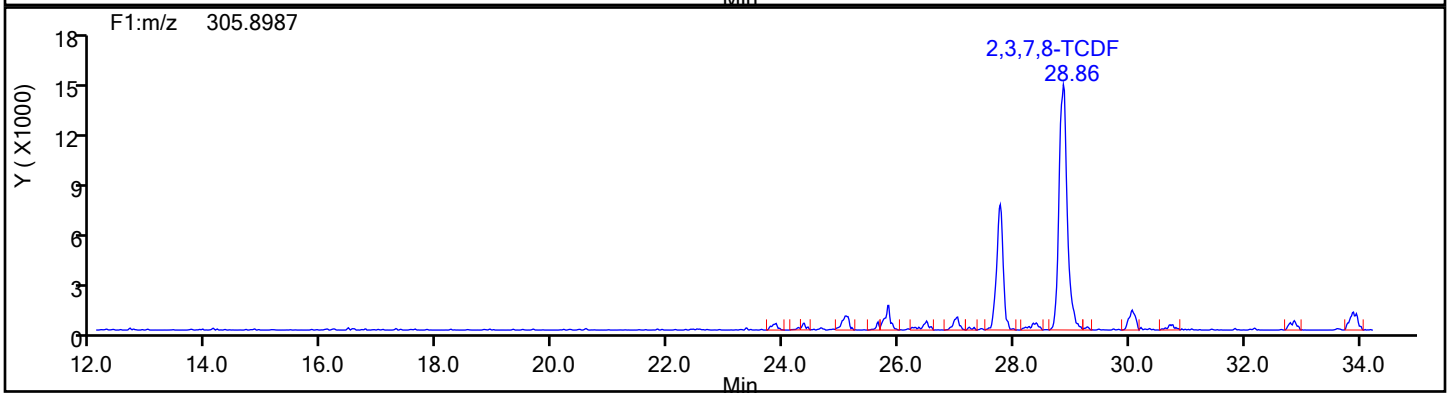
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

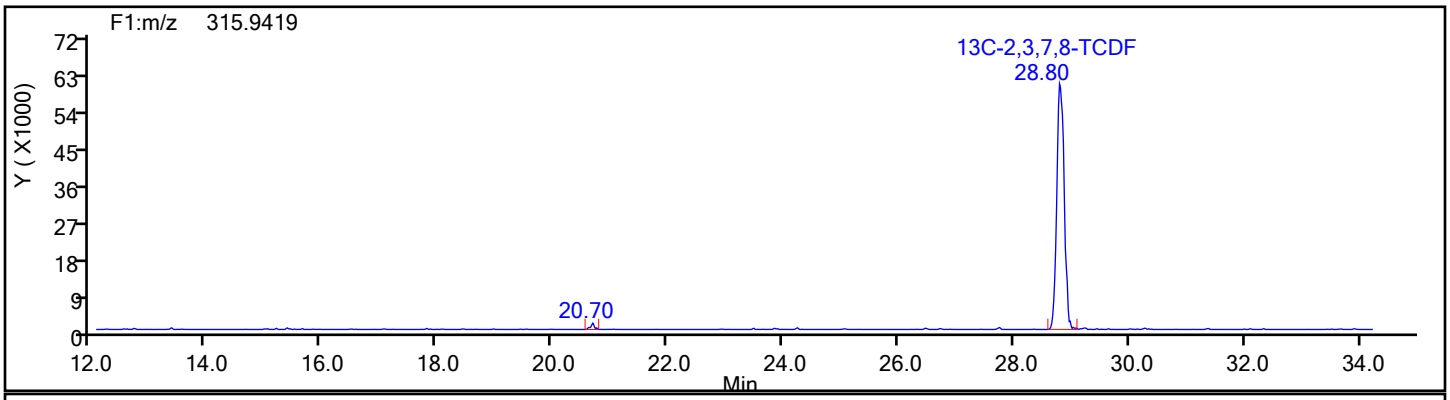
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

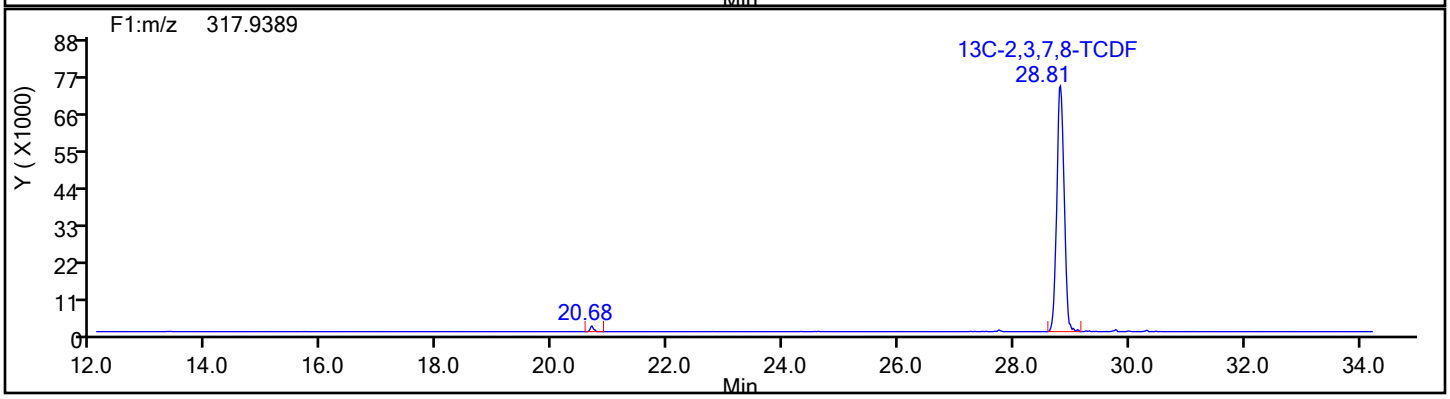
TCDF





TCDF Standards



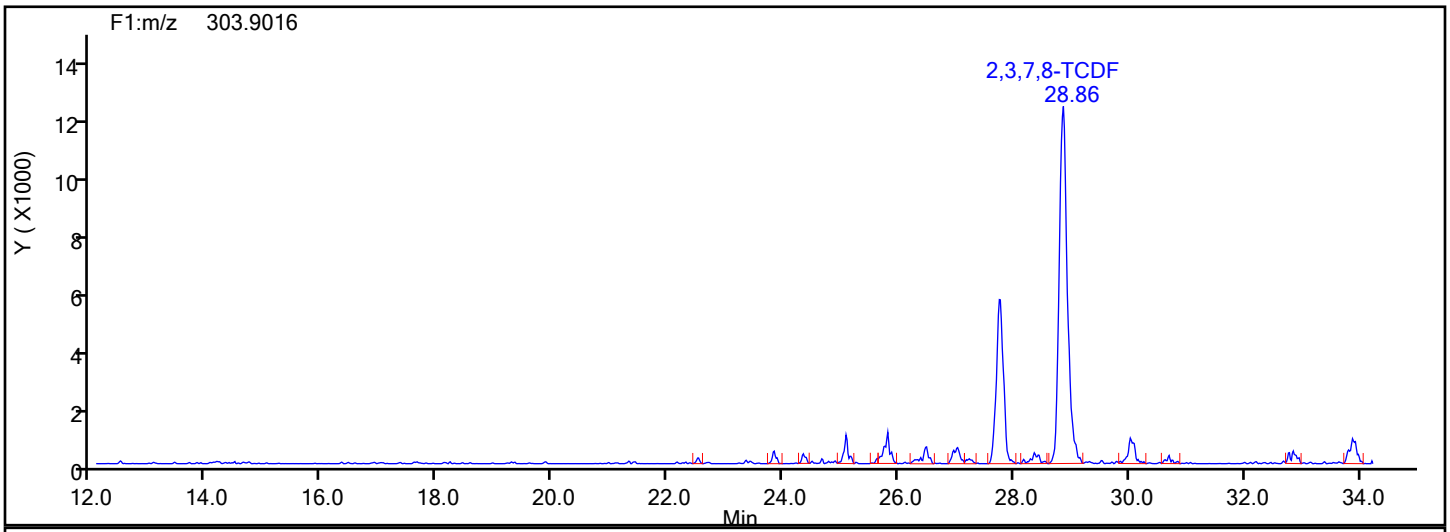


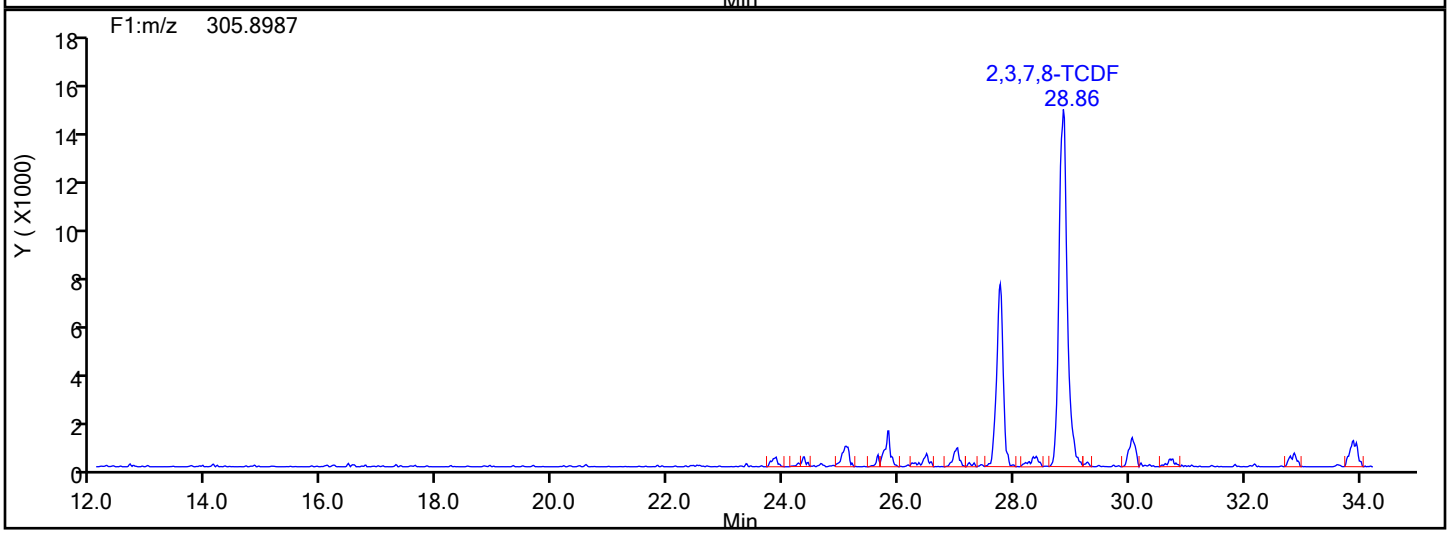
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

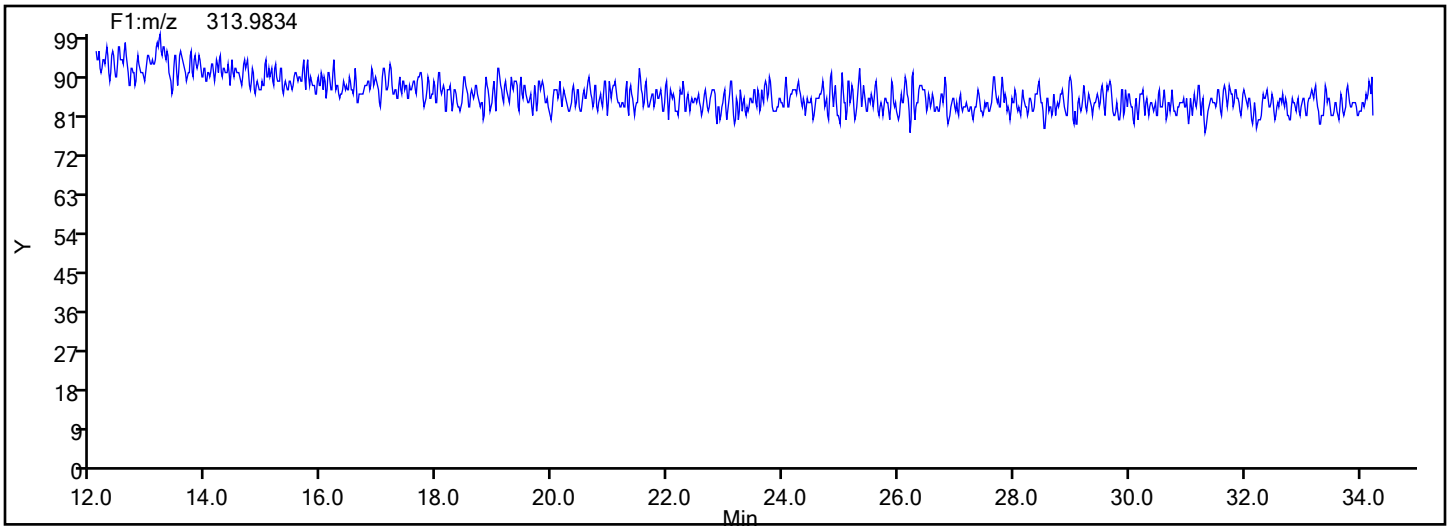
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

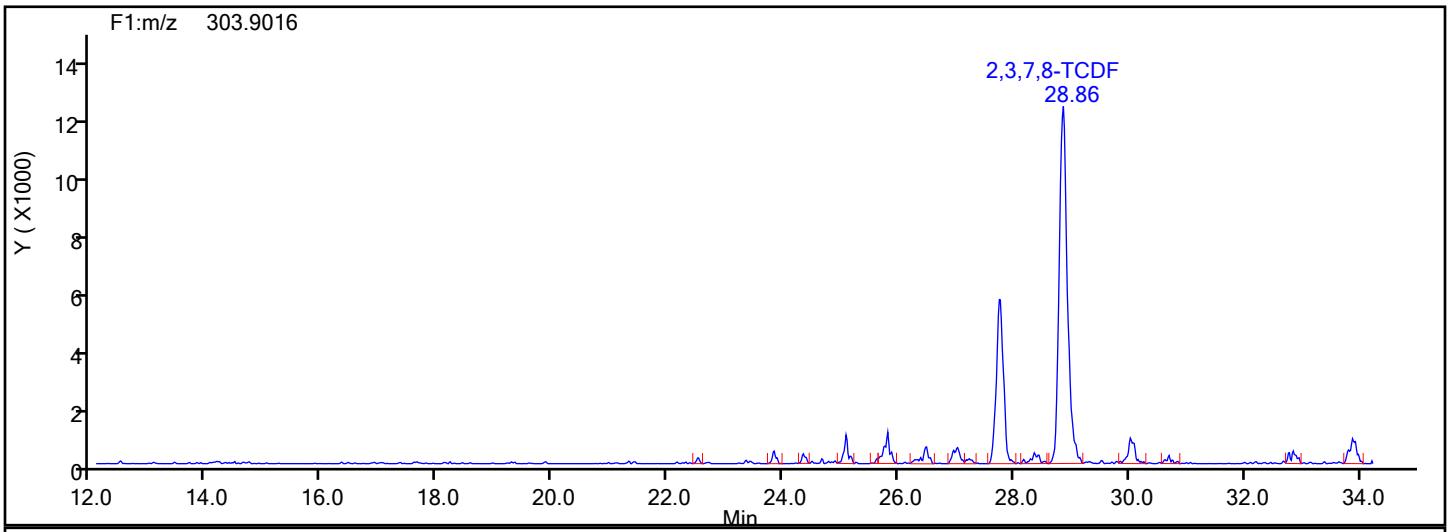


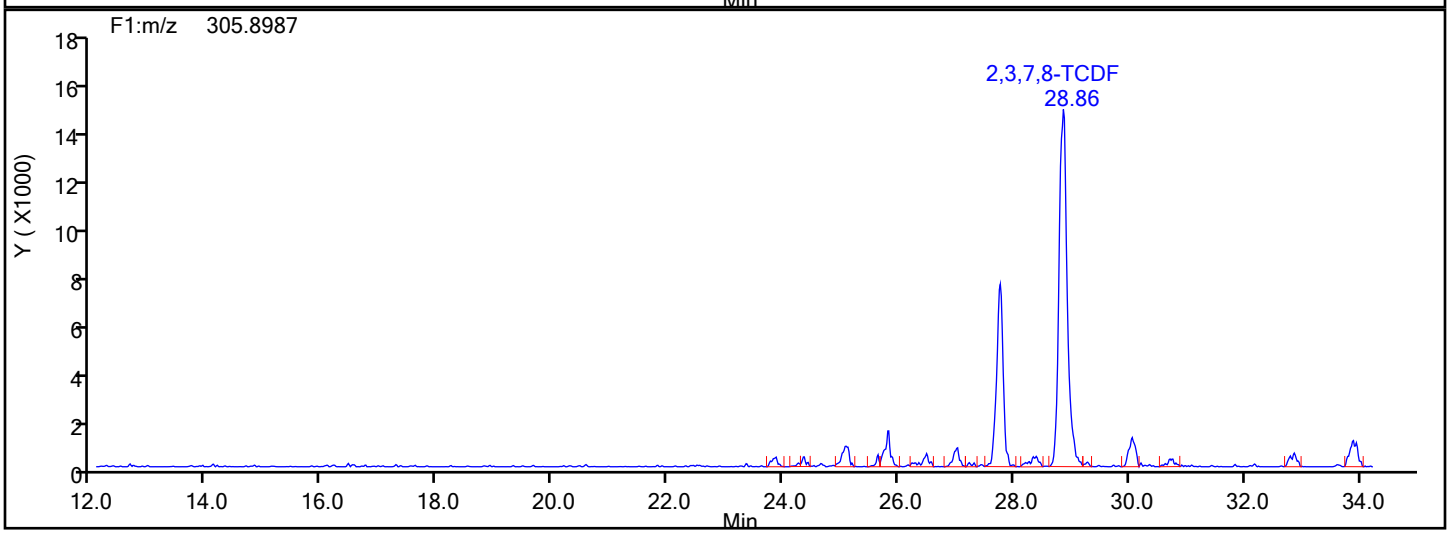
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

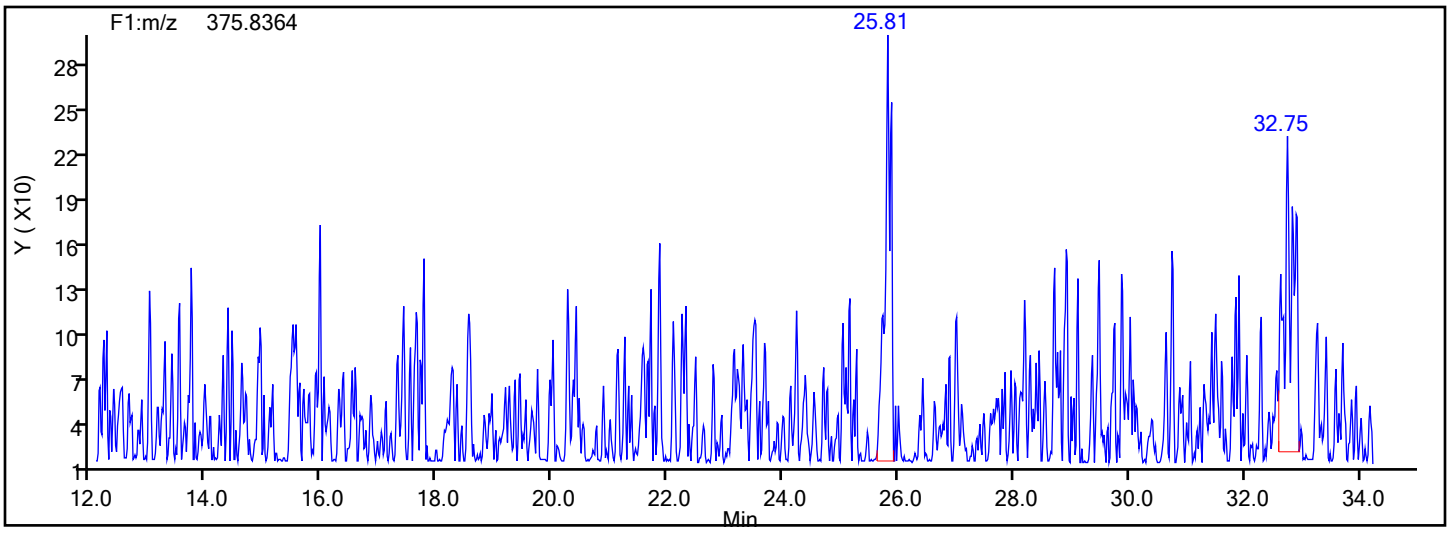
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

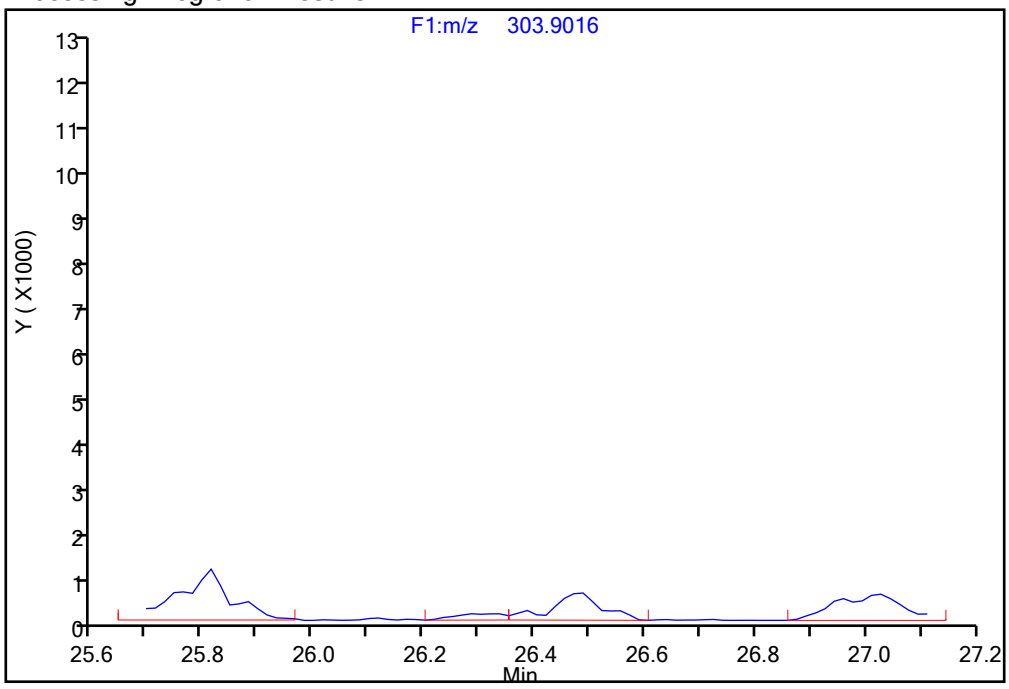
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

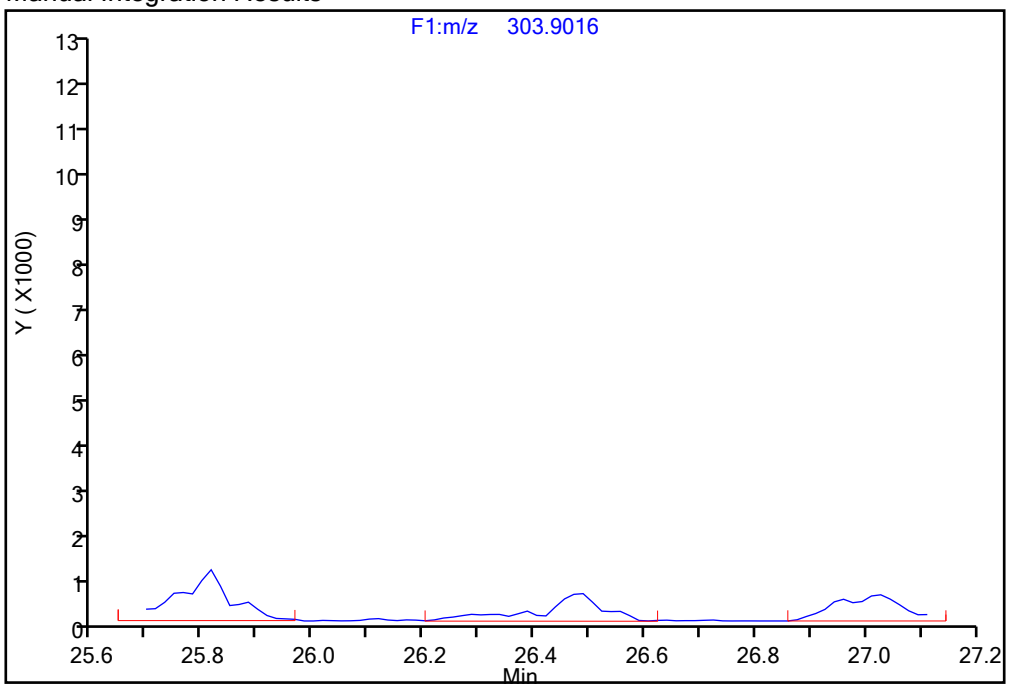
Processing Integration Results

RT = 26.488 Area = 3683



Manual Integration Results

RT = 26.488 Area = 4766 M



Reviewer: davidsonm, 18-Dec-2019 08:29:41

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

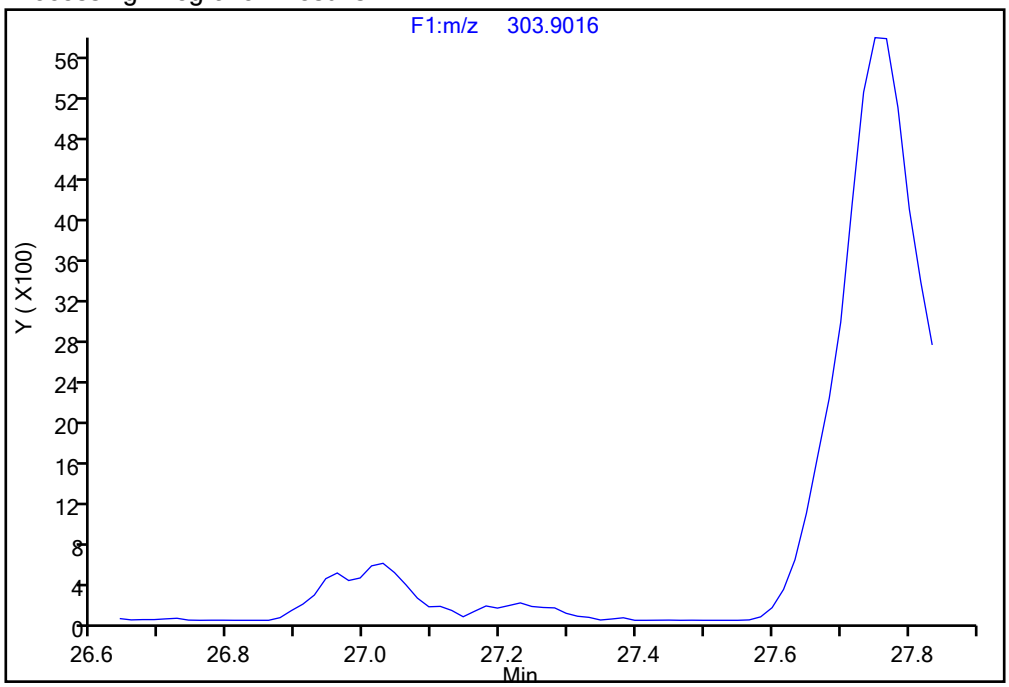
Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

Not Detected

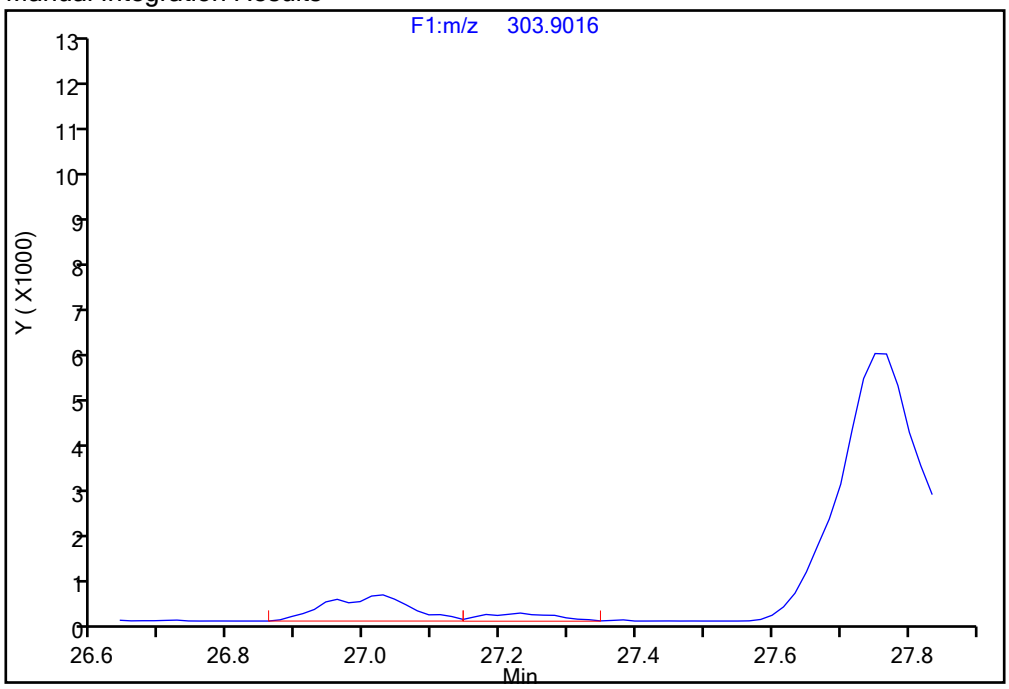
RT: 22.41- 33.91

Processing Integration Results



Manual Integration Results

RT = 27.229 Area = 1255 M



Reviewer: davidsonm, 18-Dec-2019 08:29:41

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

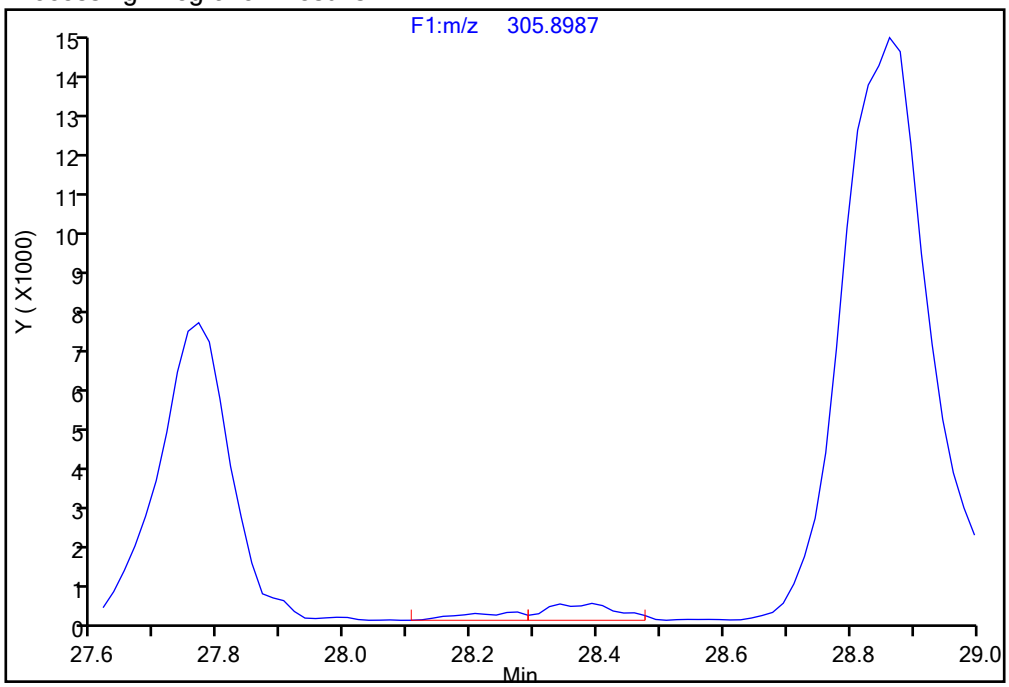
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

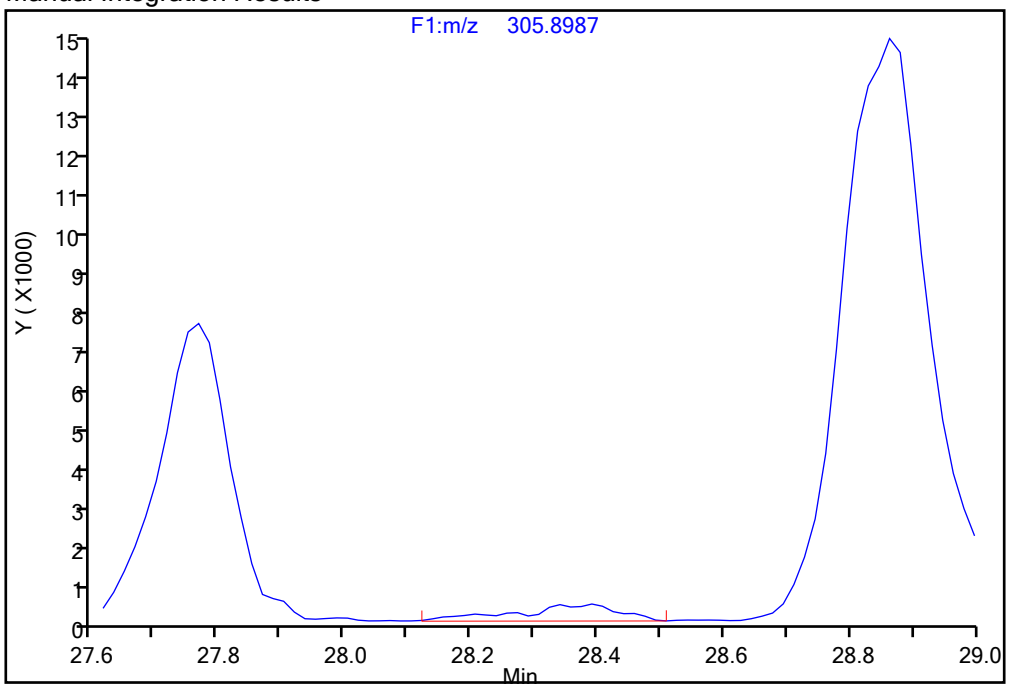
Processing Integration Results

RT = 28.391 Area = 3244



Manual Integration Results

RT = 28.391 Area = 4783 M



Reviewer: davidsonm, 18-Dec-2019 08:29:07

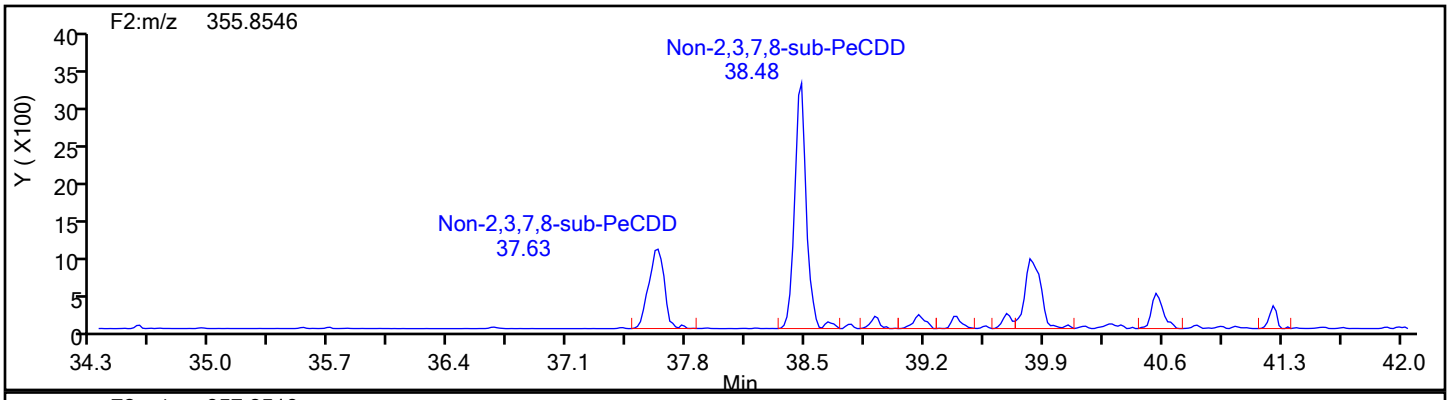
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

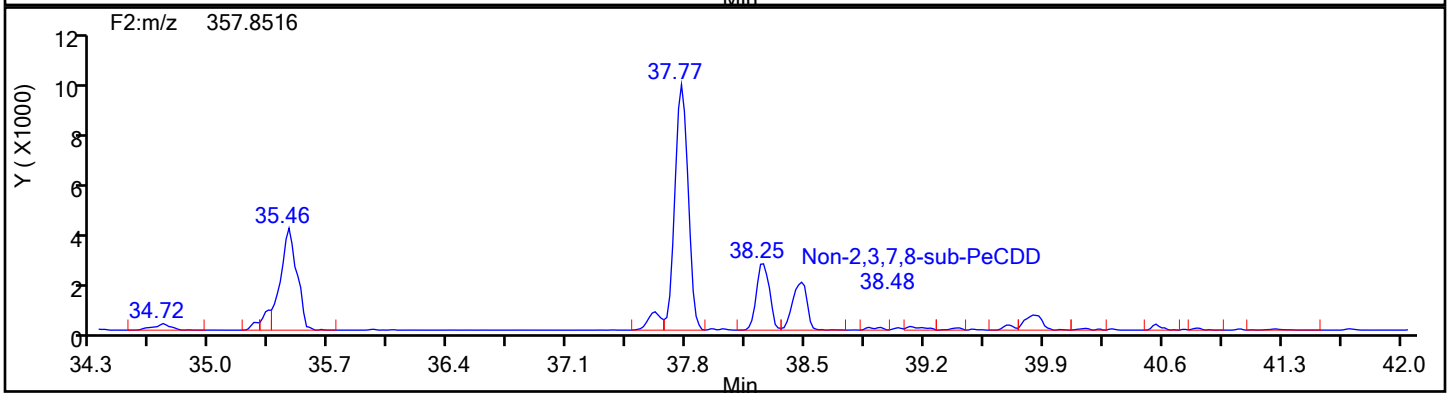
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

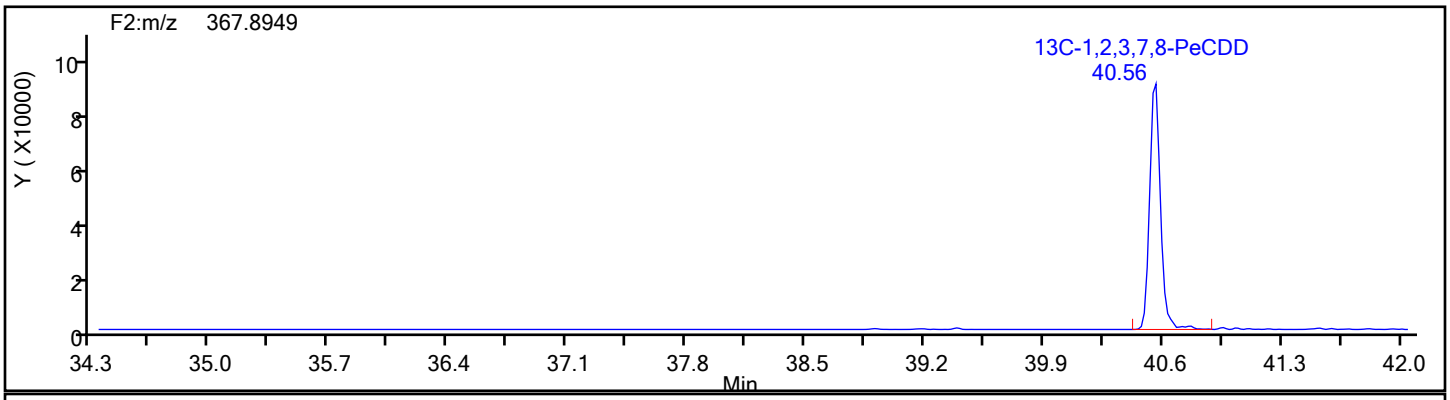
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

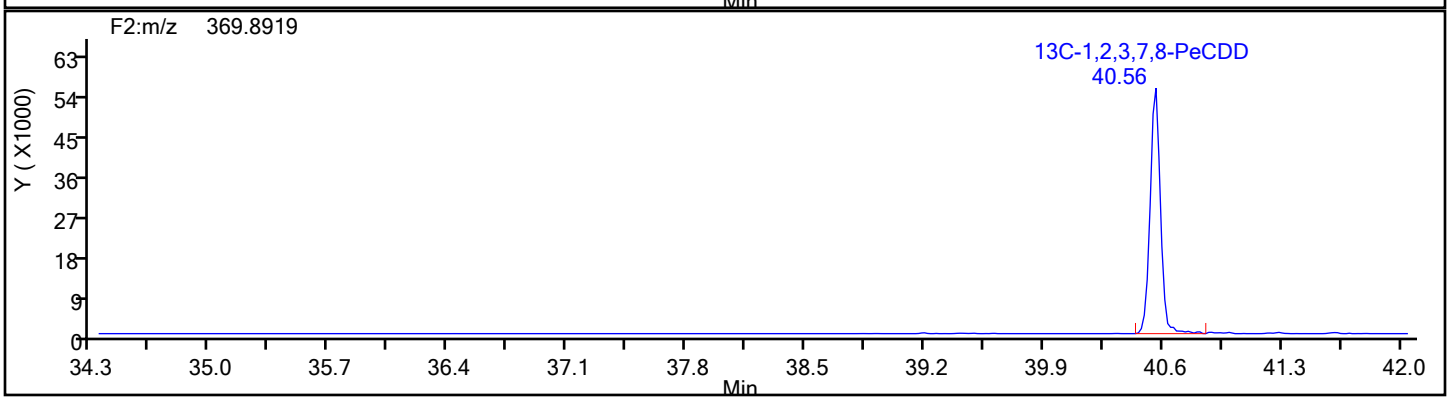
PeCDD





PeCDD Standards



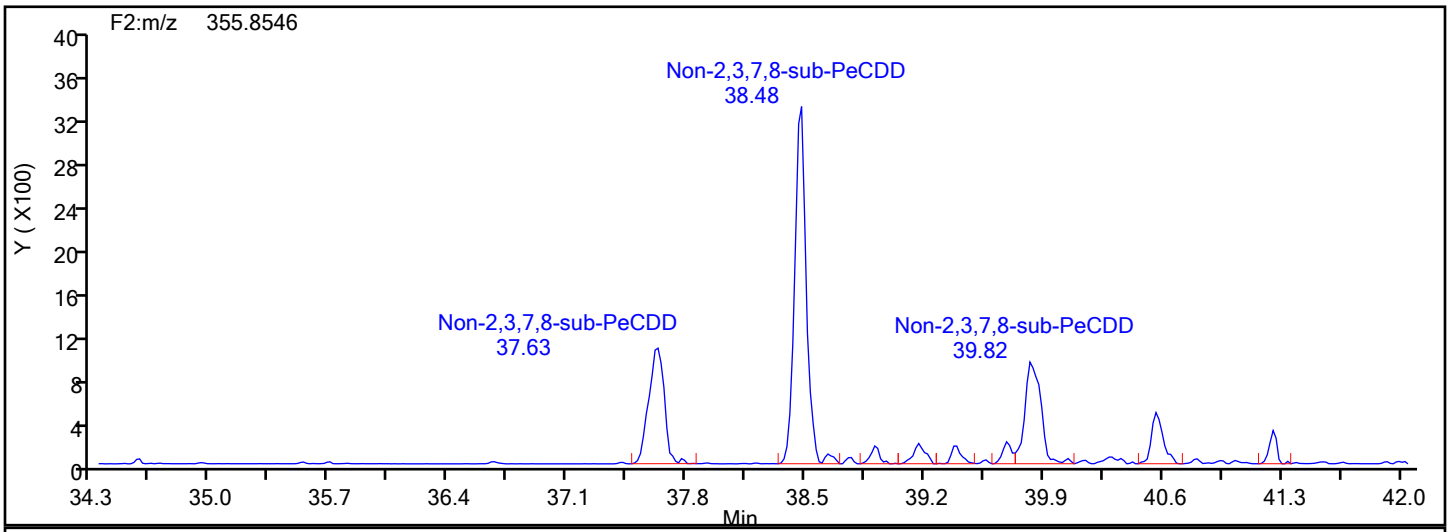


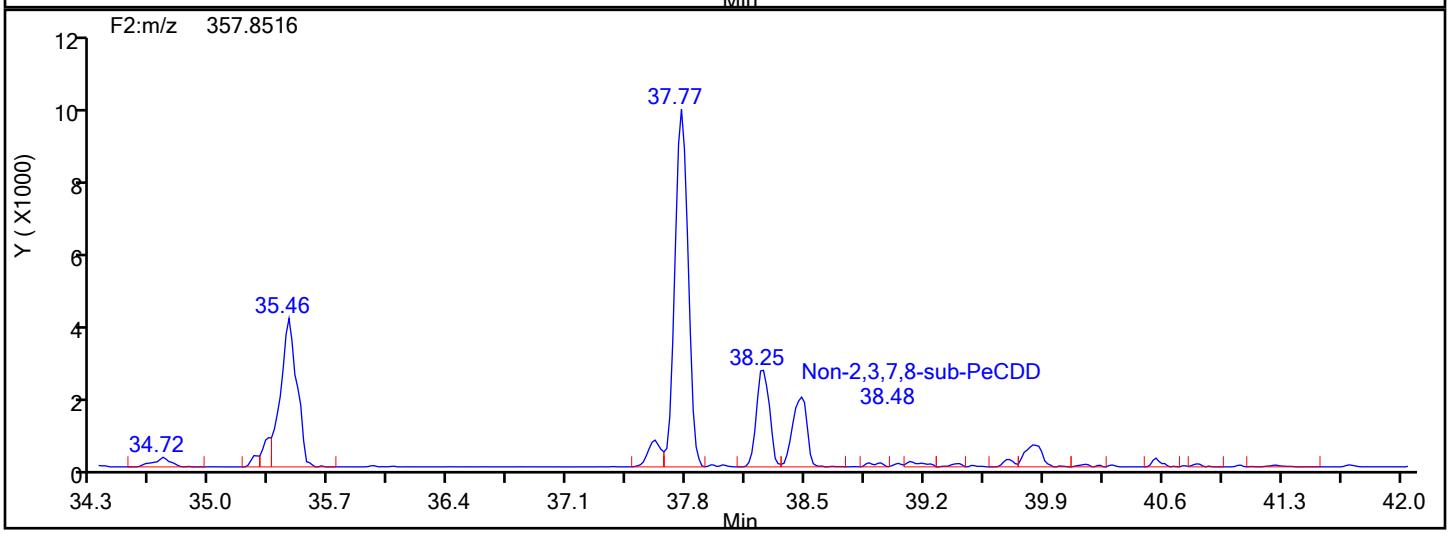
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

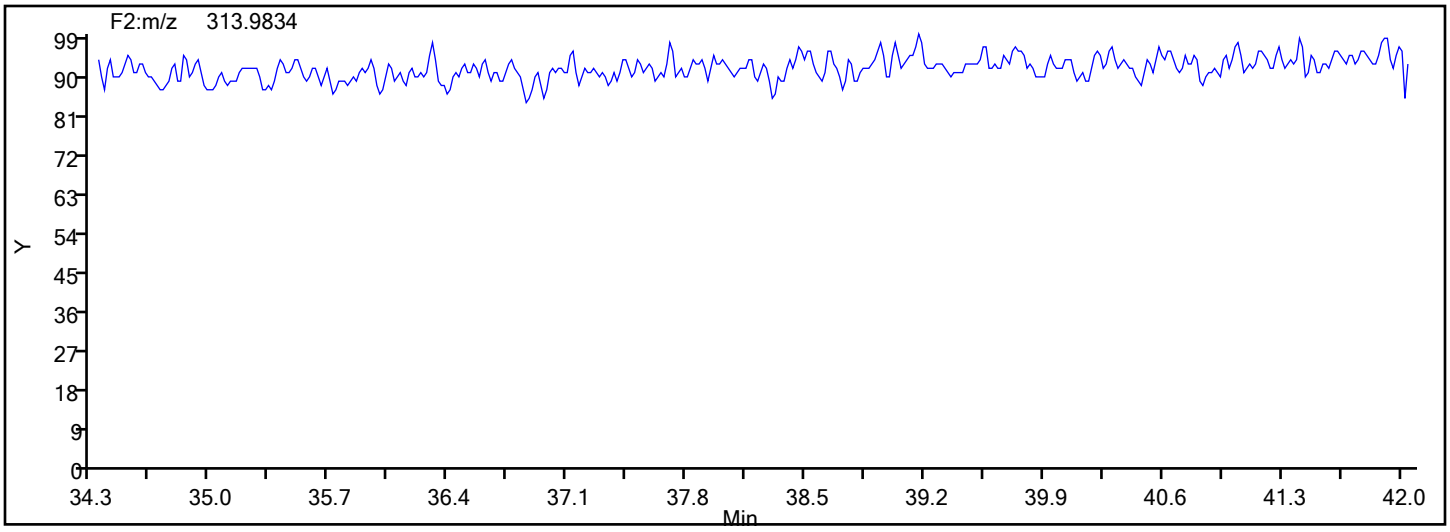
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass

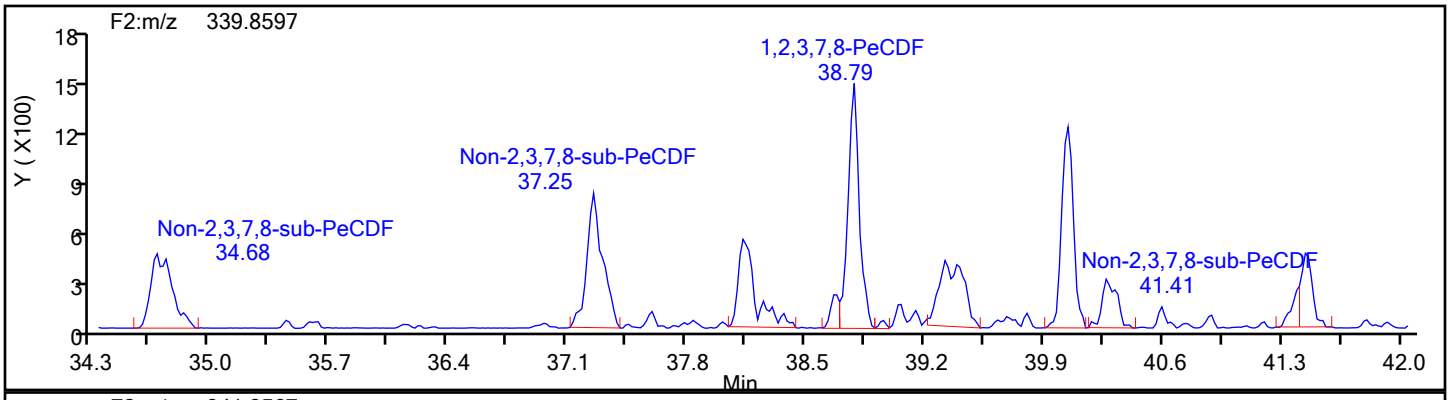


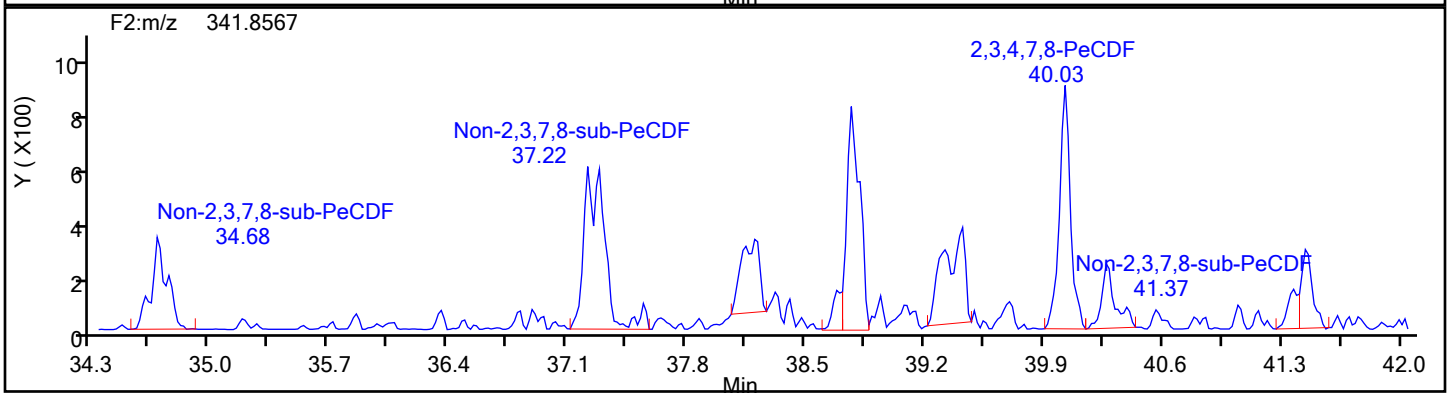
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

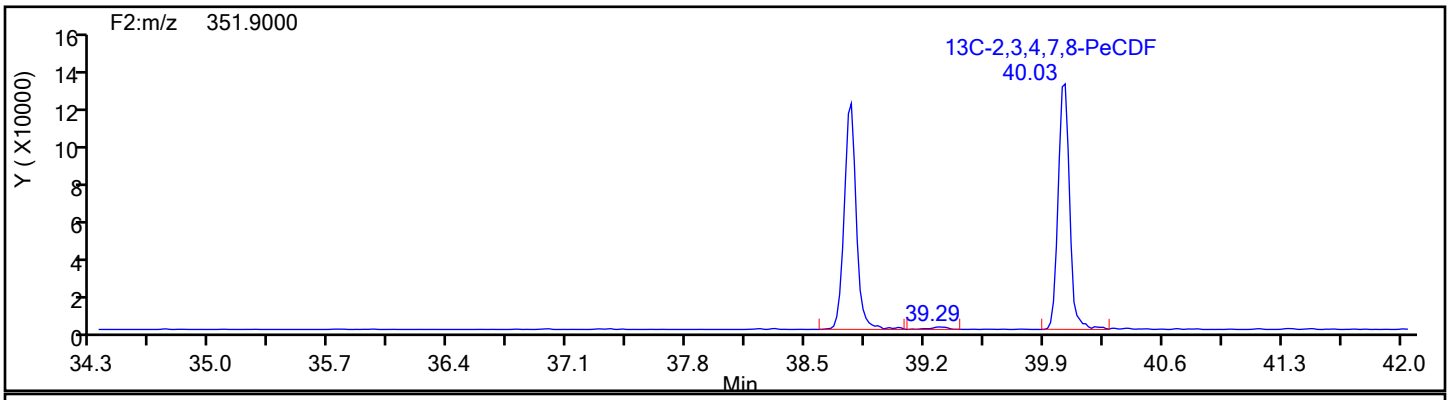
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

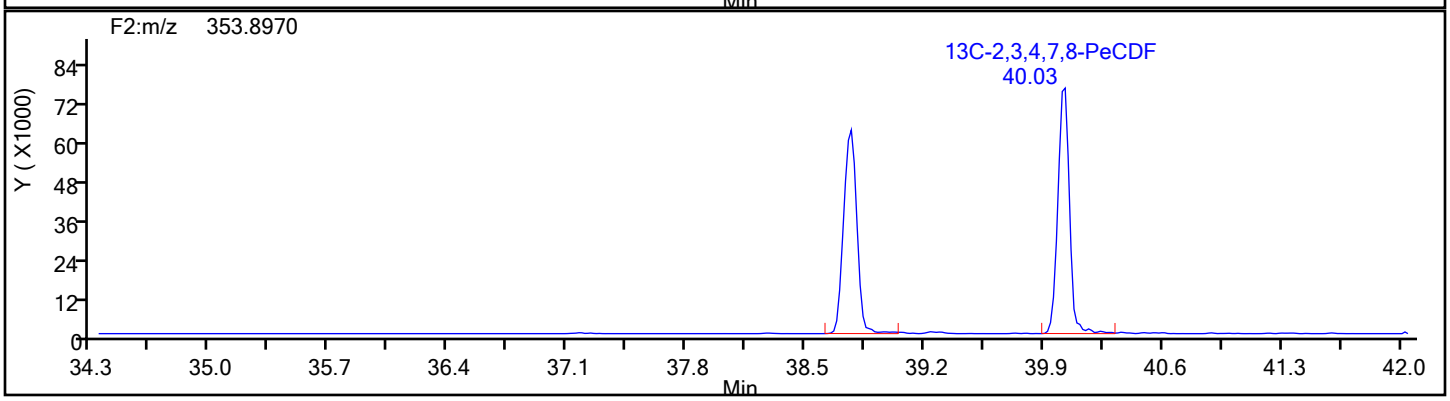
PeCDF





PeCDF Standards



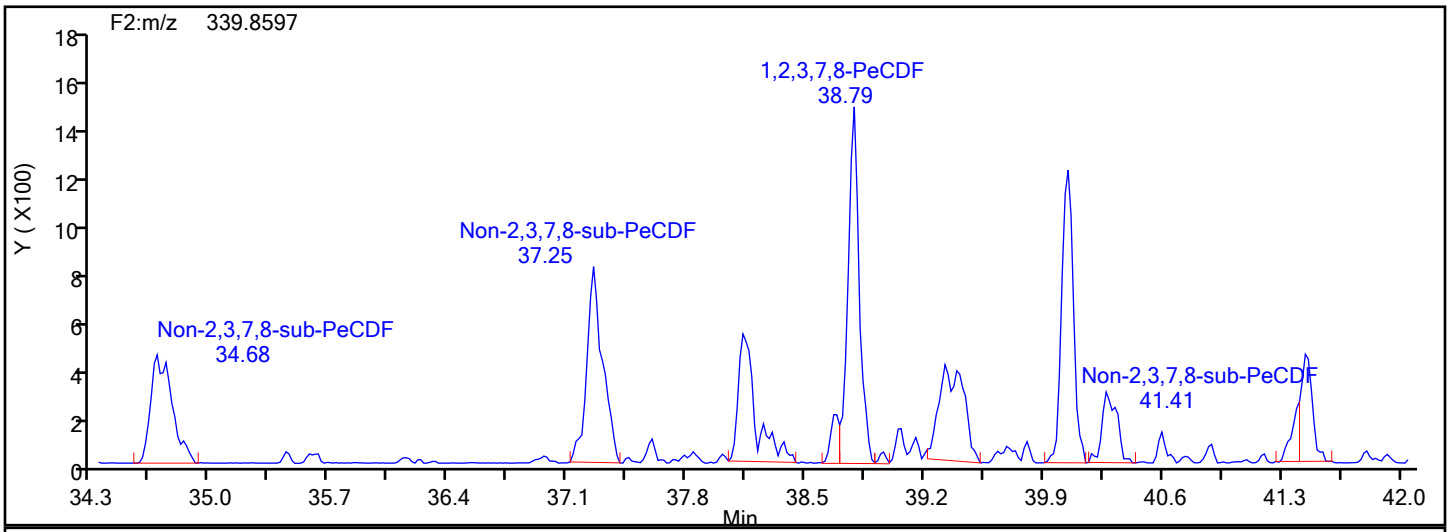


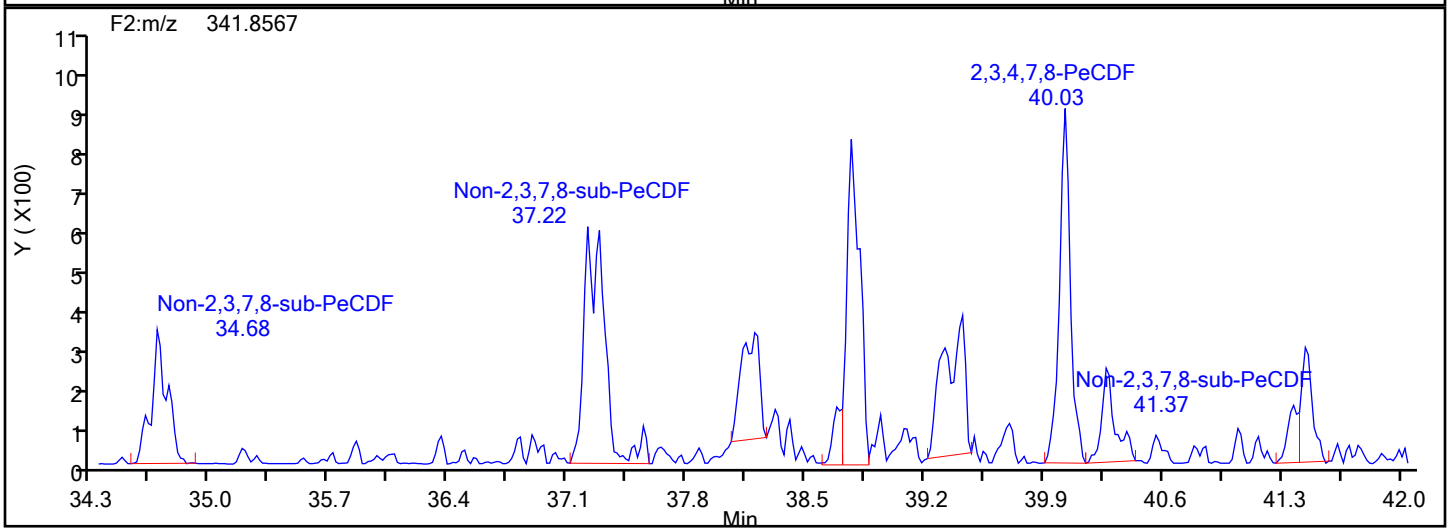
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

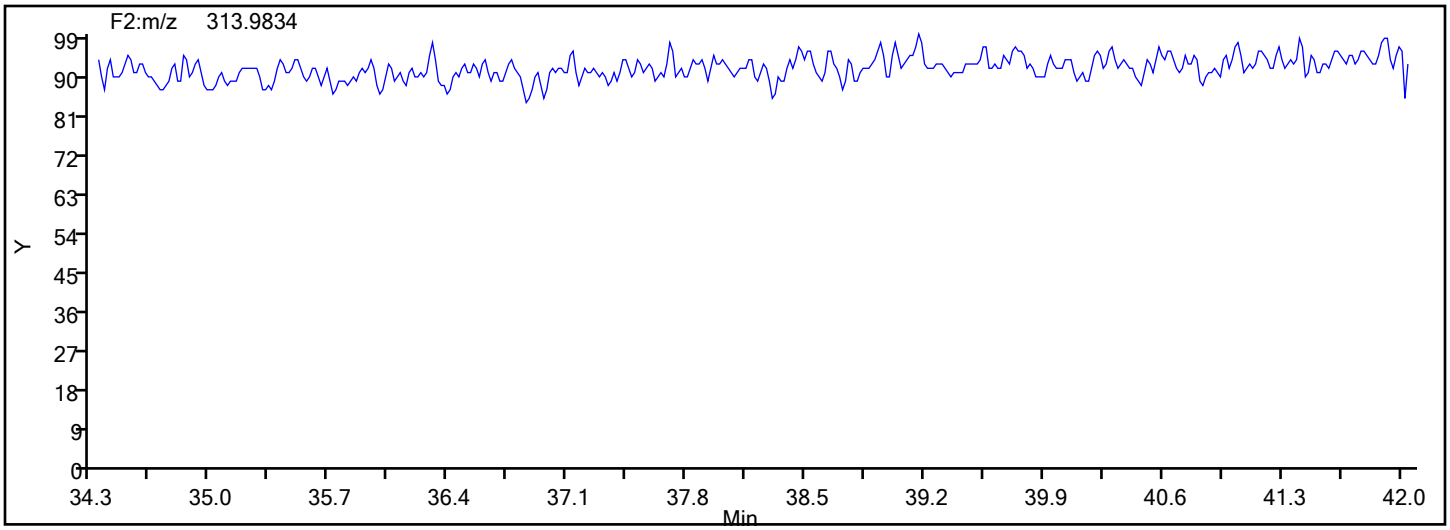
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

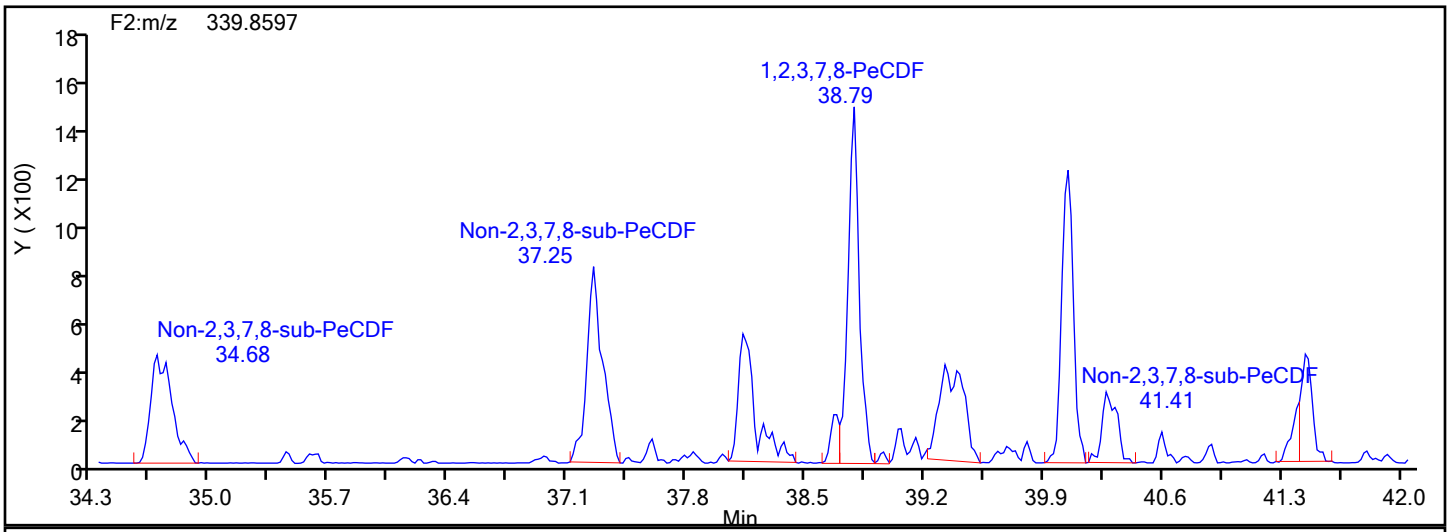


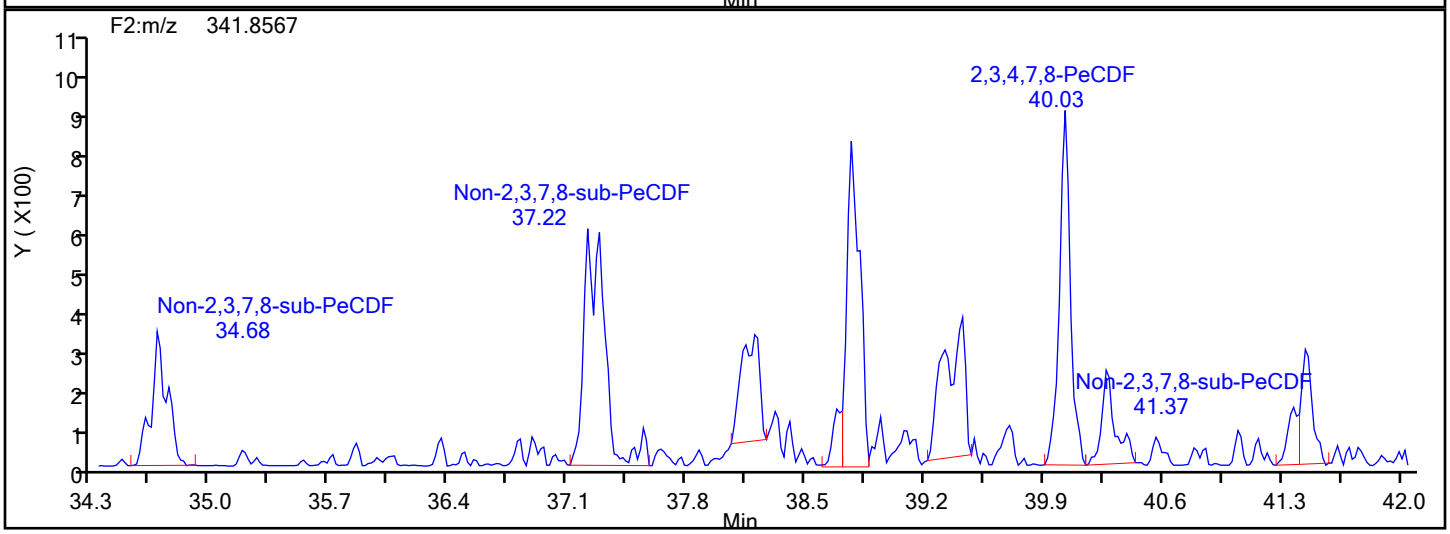
Report Date: 18-Dec-2019 08:34:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

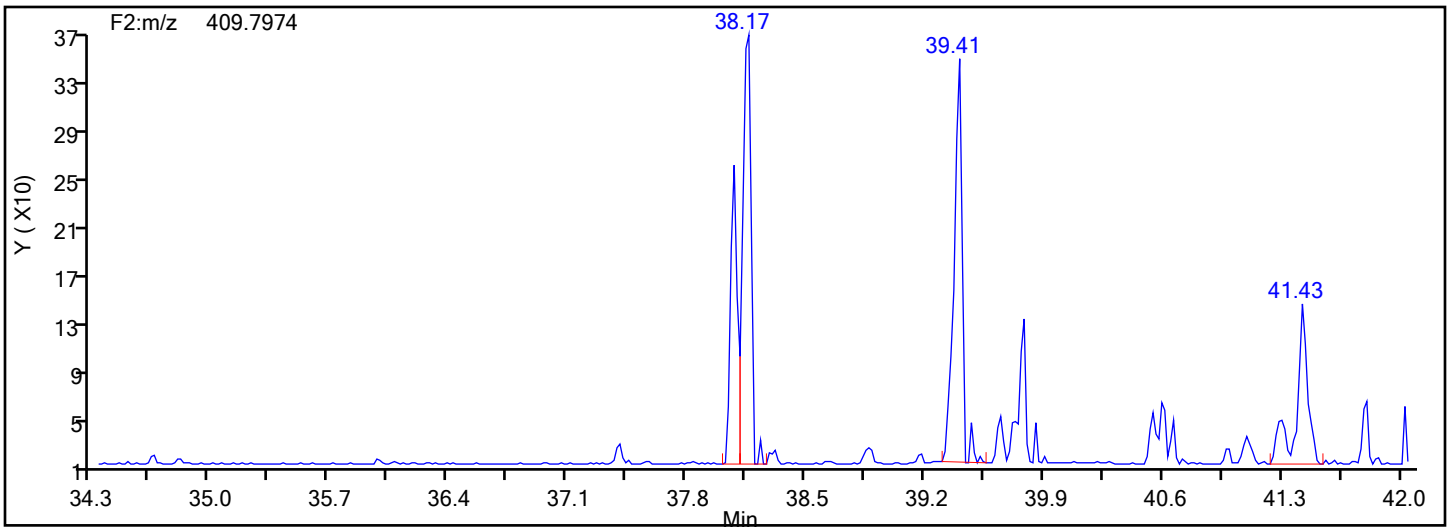
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

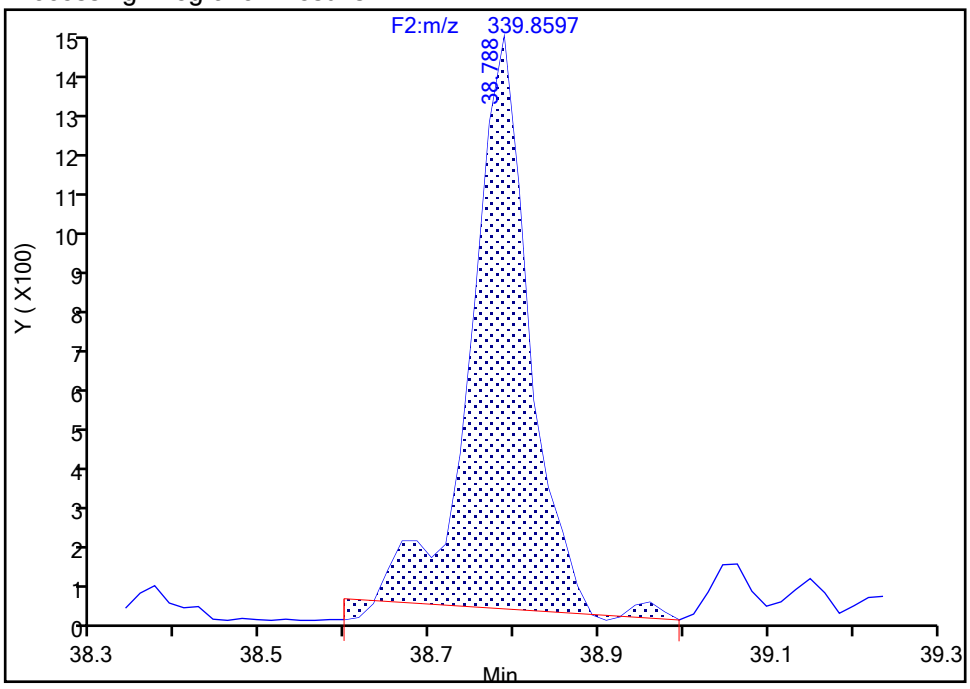
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

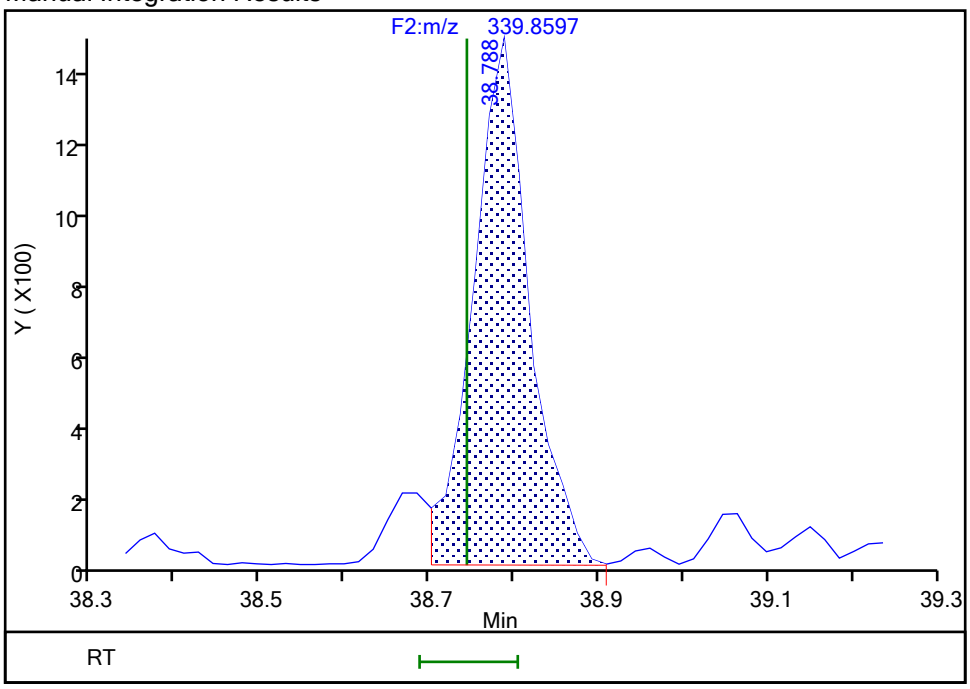
Processing Integration Results

RT: 38.79
Area: 6930
Amount: 0.499426
Amount Units: pg/ul



Manual Integration Results

RT: 38.79
Area: 6814
Amount: 0.493089
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:30:33

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

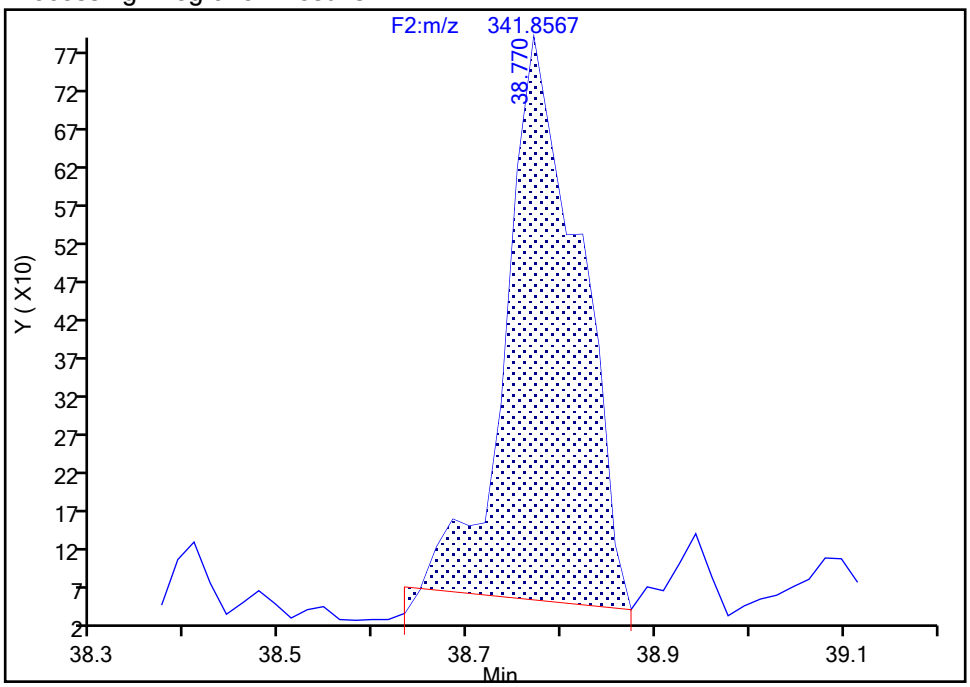
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

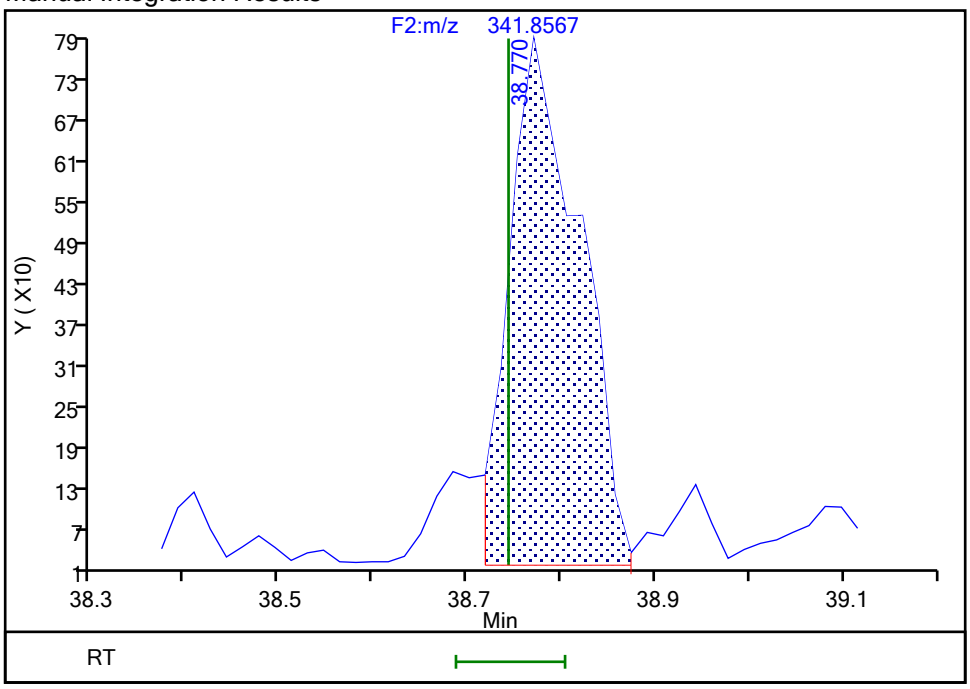
Processing Integration Results

RT: 38.77
Area: 4026
Amount: 0.499426
Amount Units: pg/ul



Manual Integration Results

RT: 38.77
Area: 4003
Amount: 0.493089
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:30:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

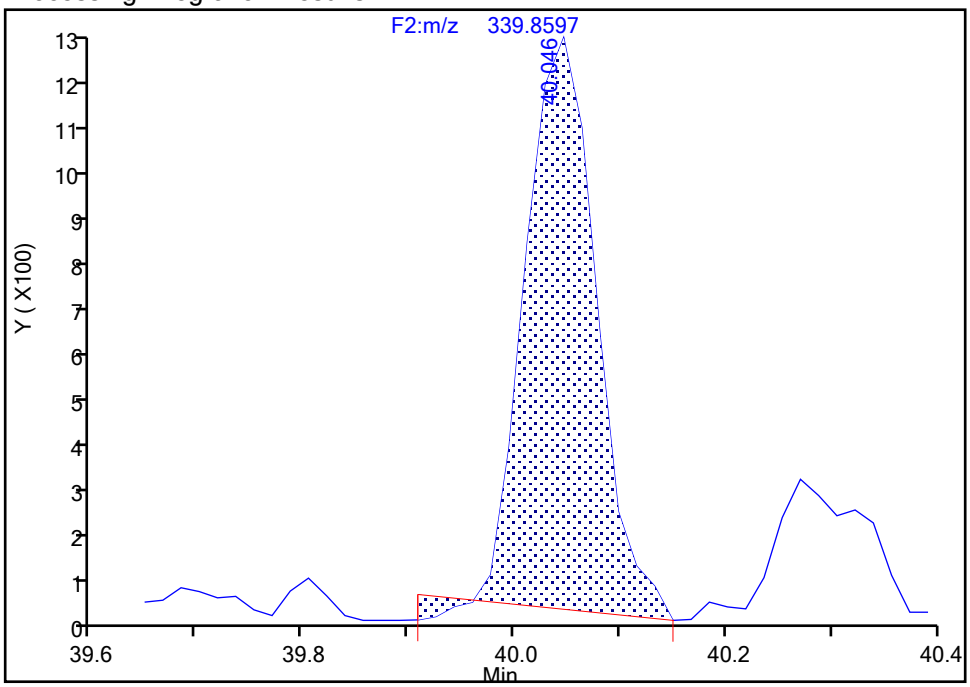
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 1

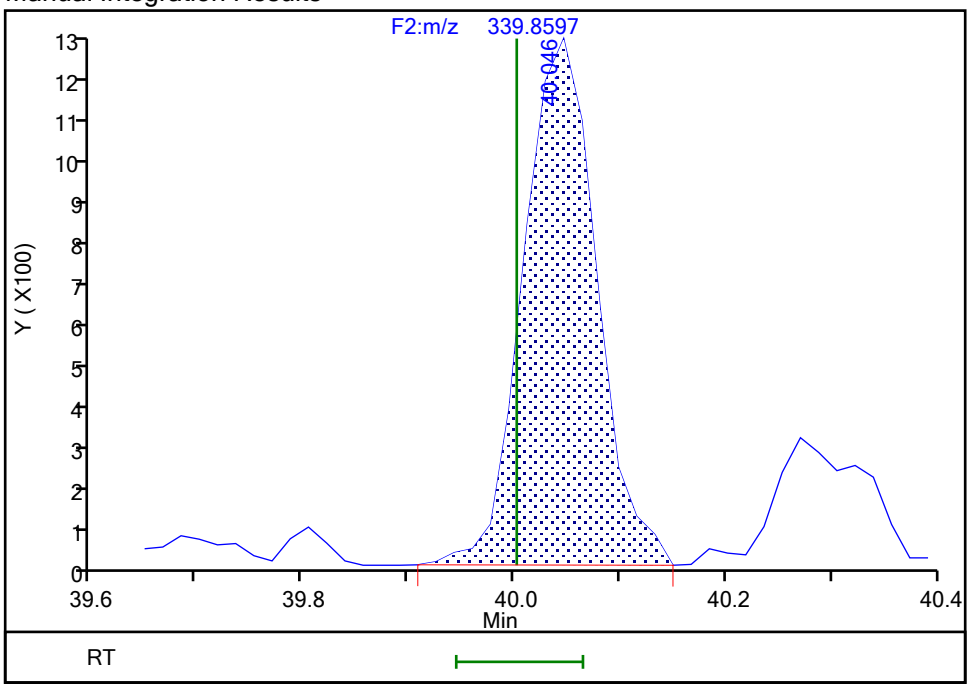
Processing Integration Results

RT: 40.05
Area: 5482
Amount: 0.418867
Amount Units: pg/ul



Manual Integration Results

RT: 40.05
Area: 5866
Amount: 0.452515
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:30:48

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

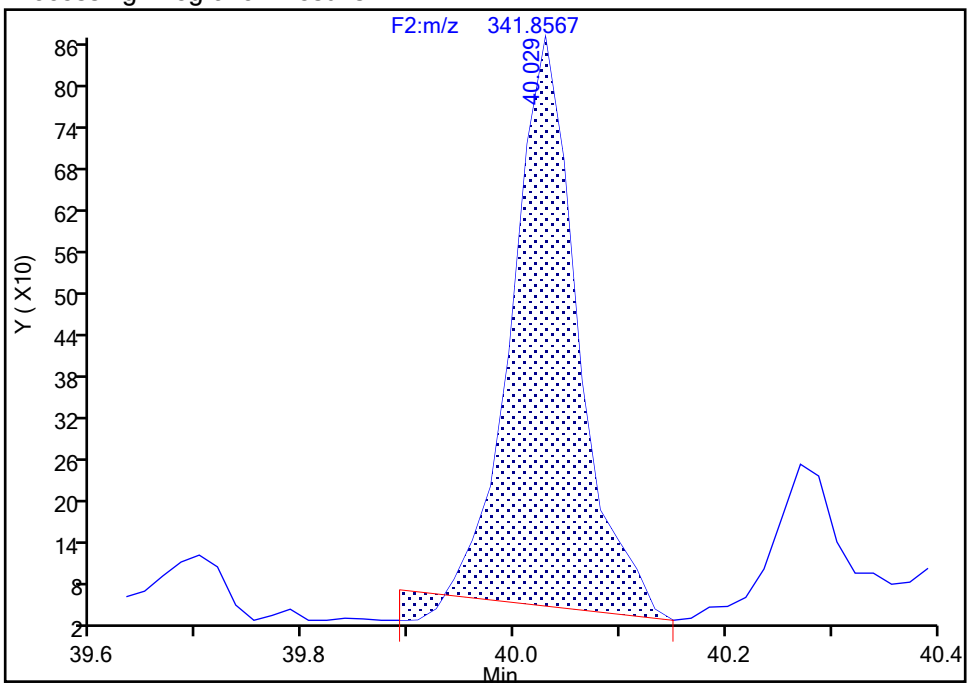
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

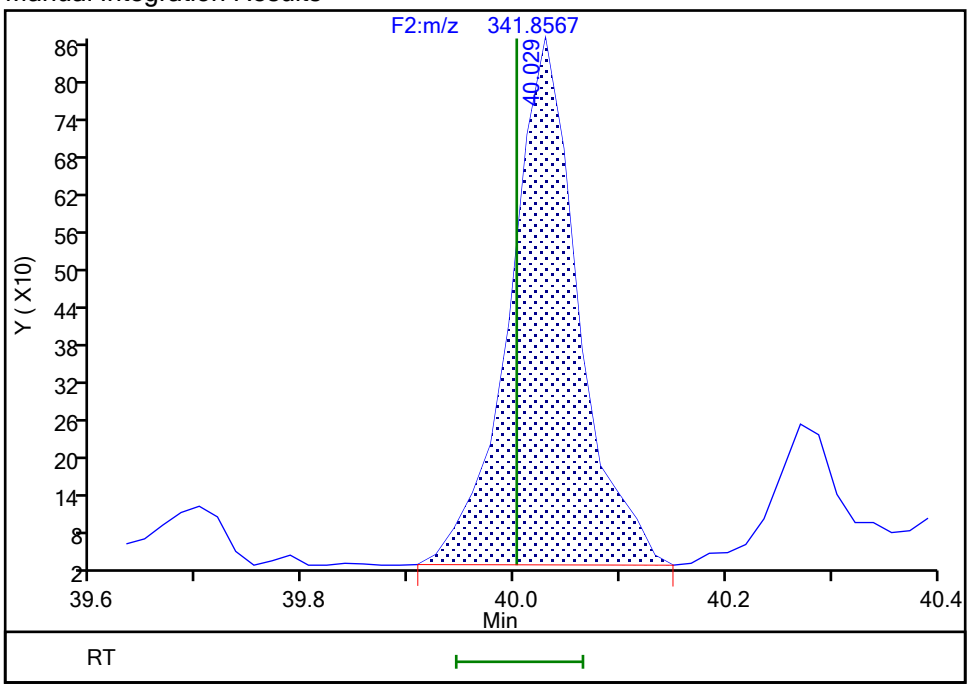
Processing Integration Results

RT: 40.03
Area: 3456
Amount: 0.418867
Amount Units: pg/ul



Manual Integration Results

RT: 40.03
Area: 3790
Amount: 0.452515
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:30:51

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

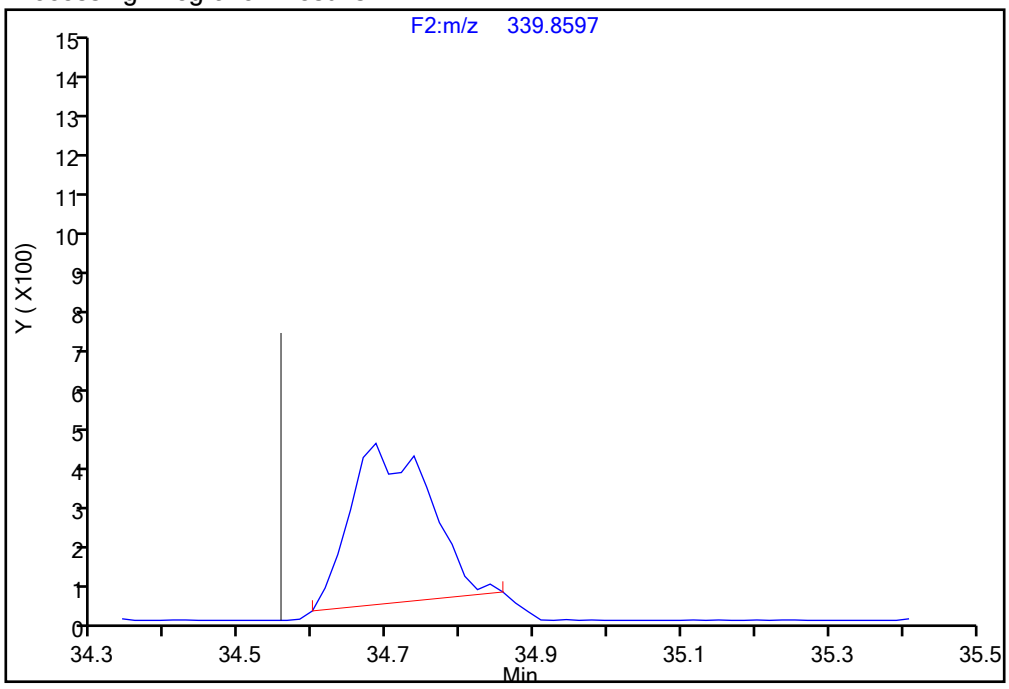
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

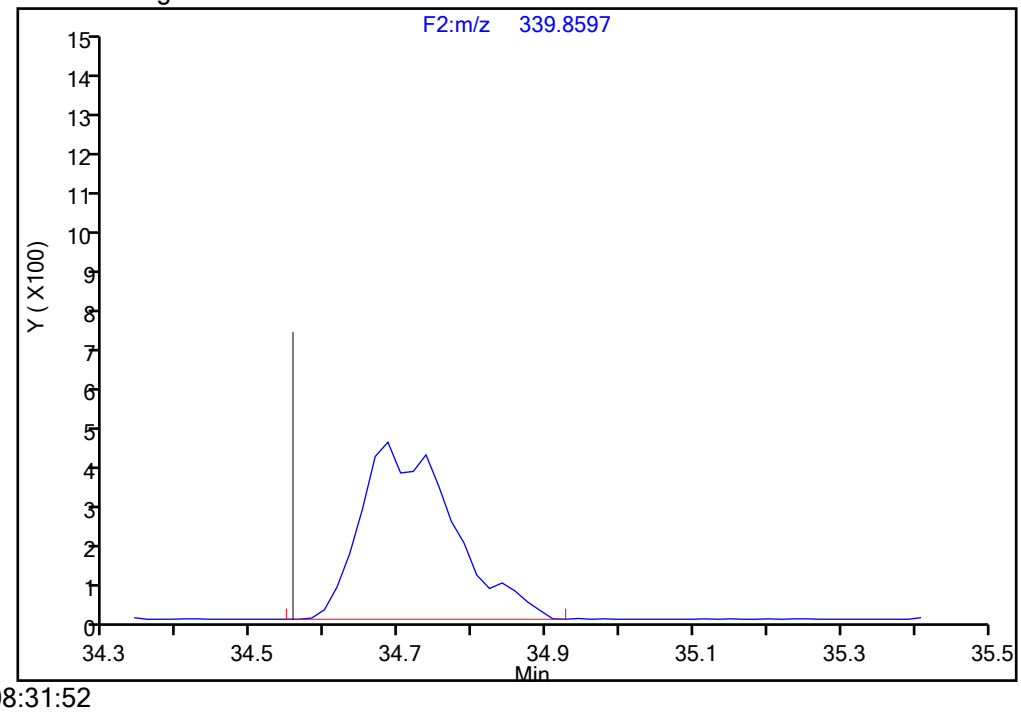
Processing Integration Results

RT = 34.685 Area = 3045



Manual Integration Results

RT = 34.685 Area = 3912 M



Reviewer: davidsonm, 18-Dec-2019 08:31:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

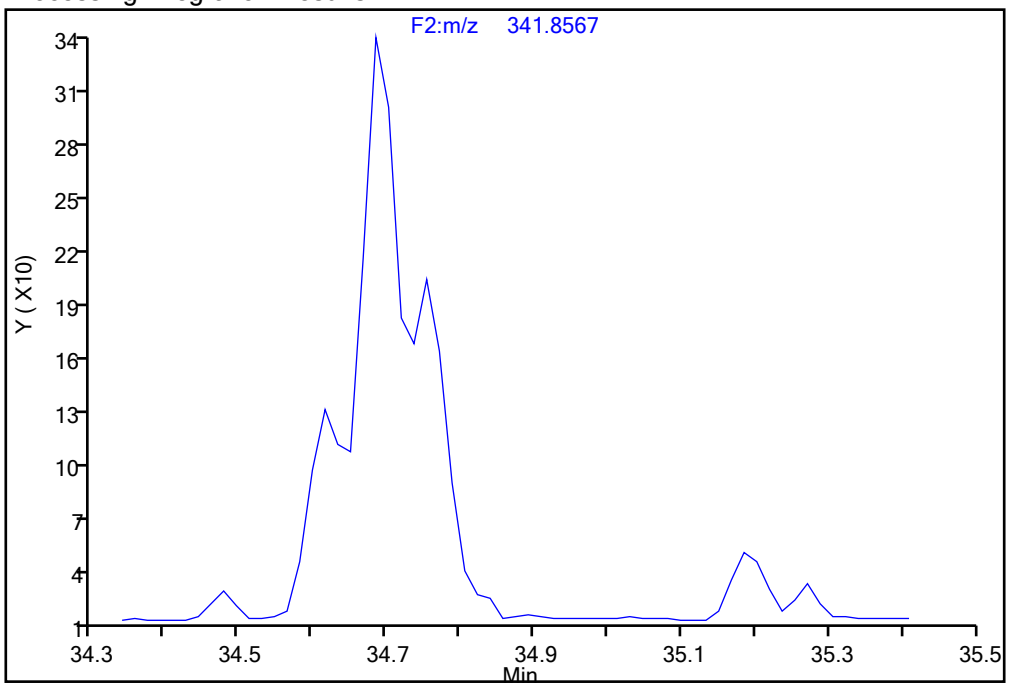
Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.56- 41.38)

Signal: 2

Not Detected

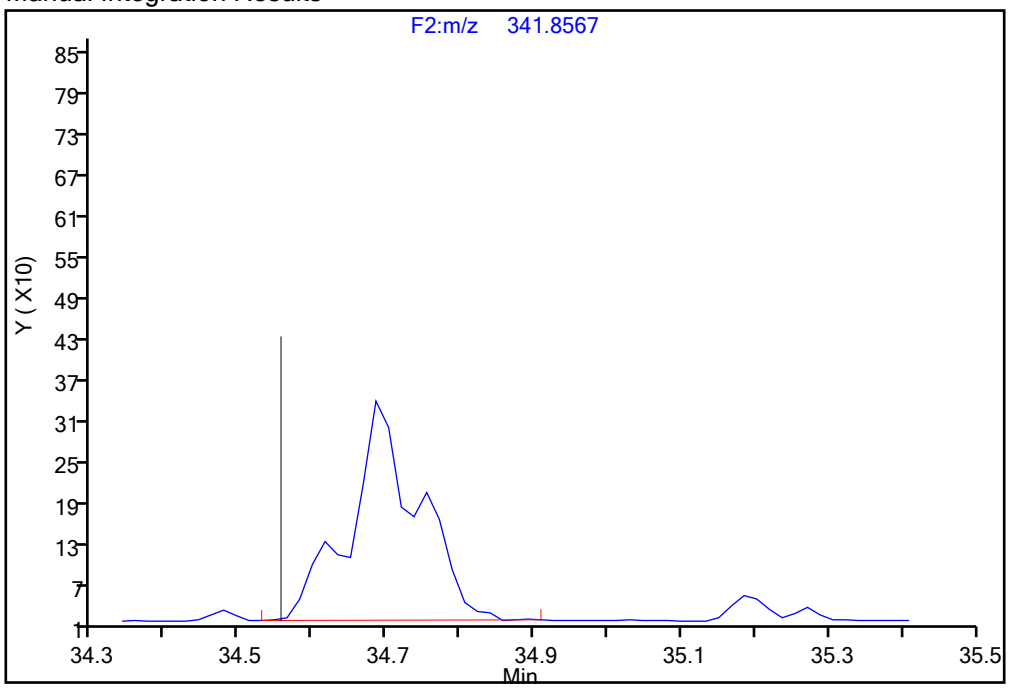
RT: 34.56- 41.38

Processing Integration Results



Manual Integration Results

RT = 34.685 Area = 2039 M



Reviewer: davidsonm, 18-Dec-2019 08:31:45

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

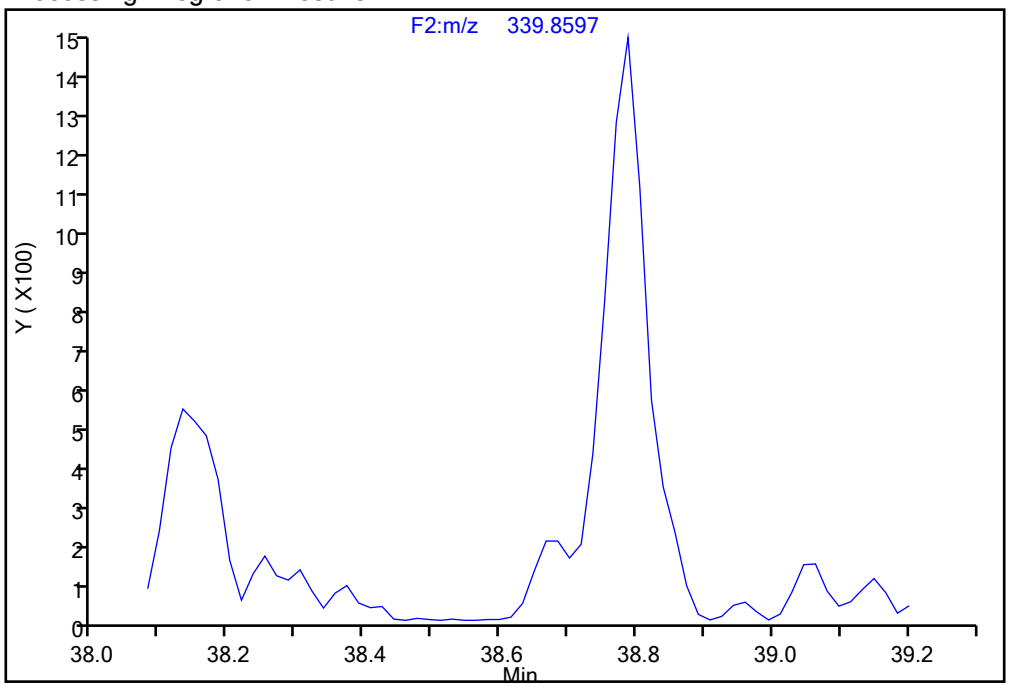
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

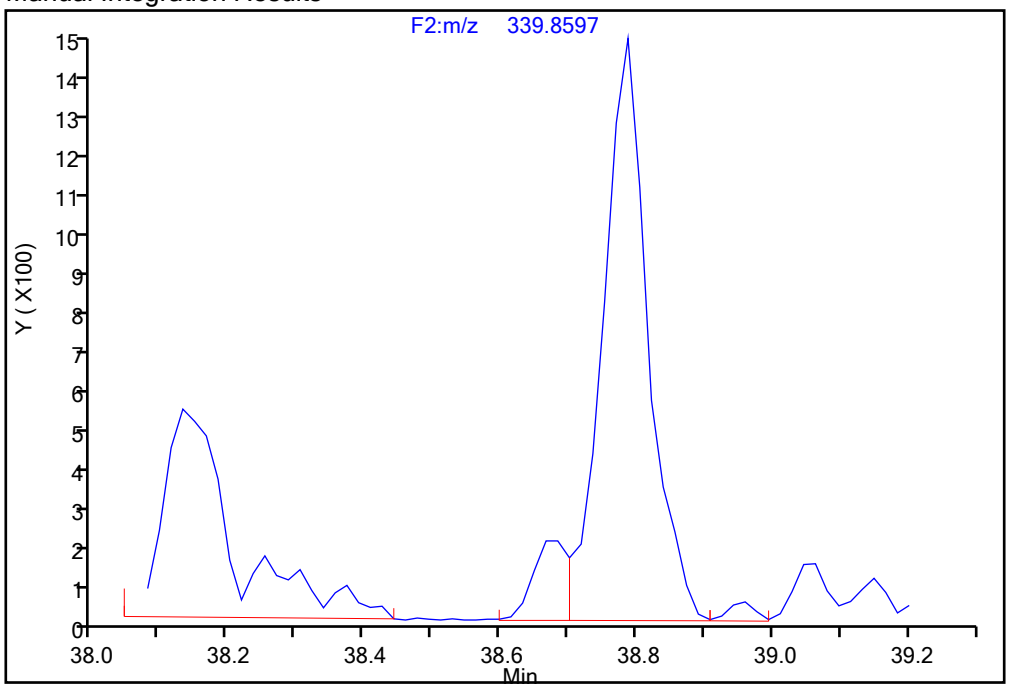
Not Detected
RT: 34.56- 41.38

Processing Integration Results



RT = 38.667 Area = 687 M

Manual Integration Results



Reviewer: davidsonm, 18-Dec-2019 08:31:52
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

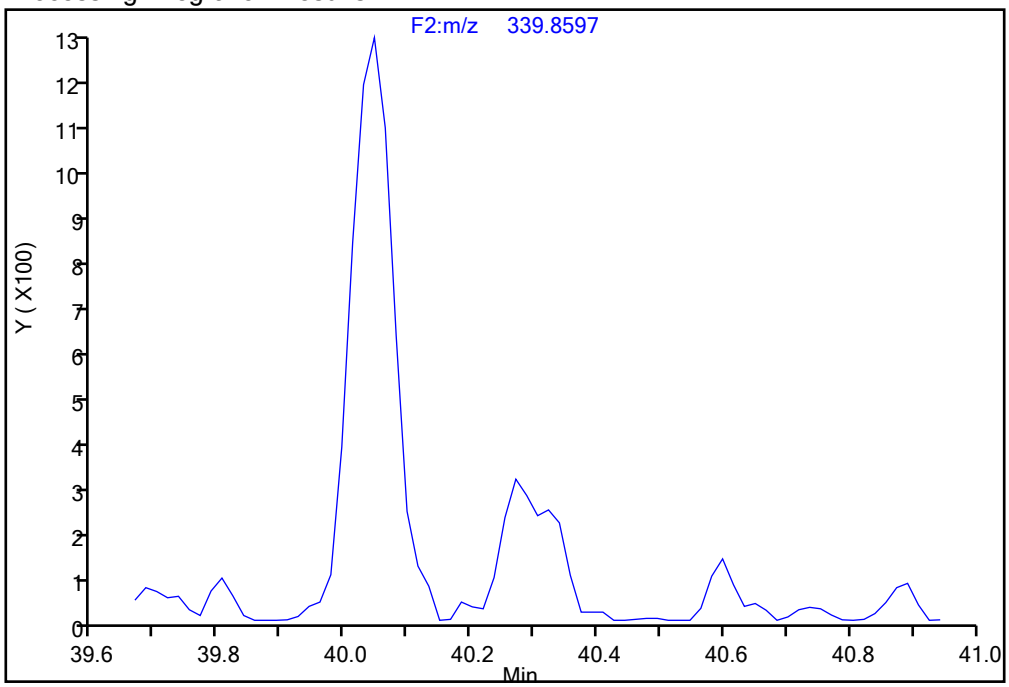
Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

Not Detected

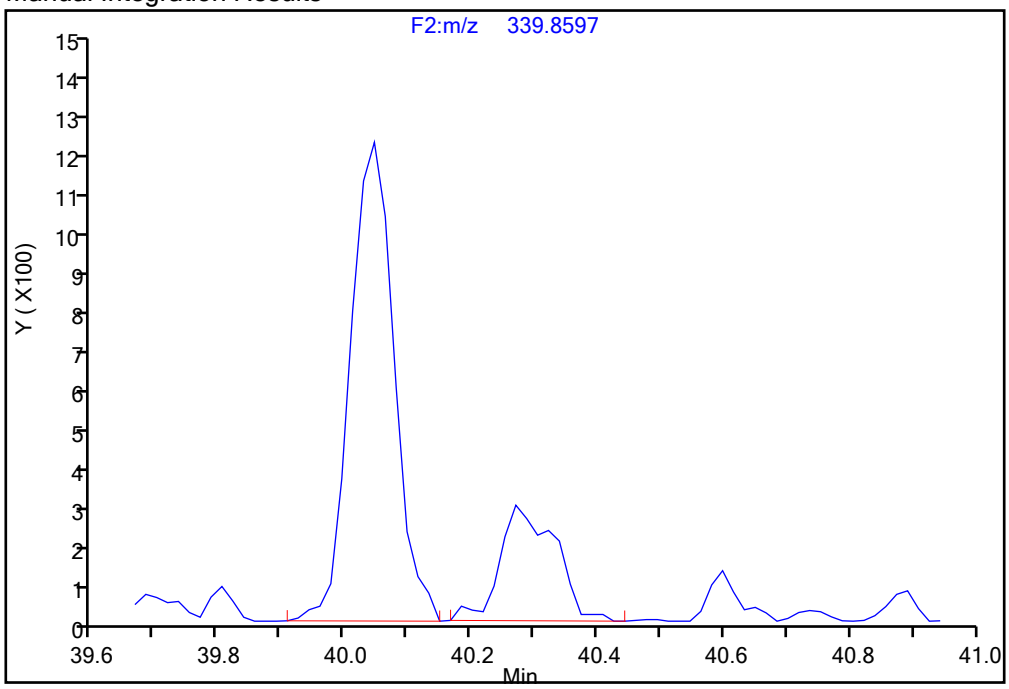
RT: 34.56- 41.38

Processing Integration Results



RT = 40.271 Area = 1788 M

Manual Integration Results



Reviewer: davidsonm, 18-Dec-2019 08:31:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

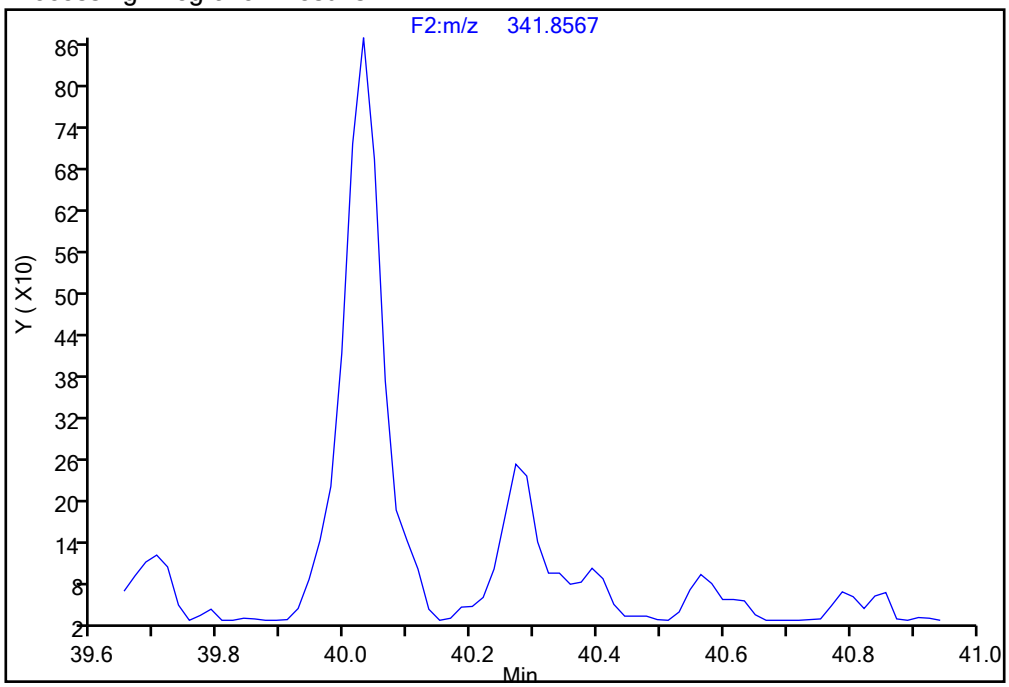
Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.56- 41.38)

Signal: 2

Not Detected

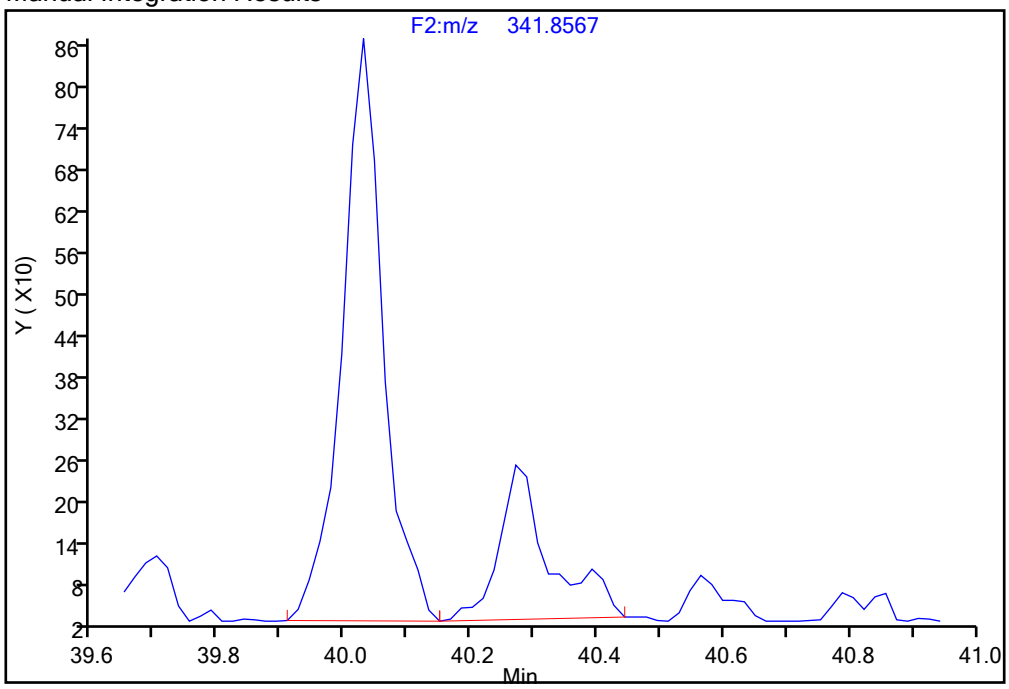
RT: 34.56- 41.38

Processing Integration Results



Manual Integration Results

RT = 40.271 Area = 1239 M



Reviewer: davidsonm, 18-Dec-2019 08:31:45

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

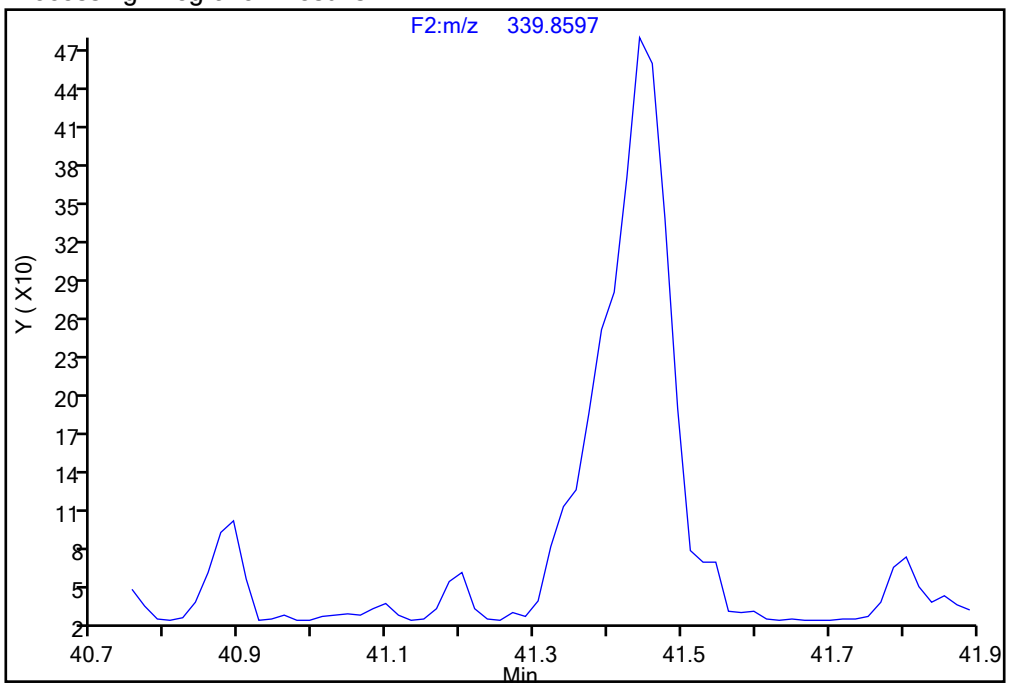
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (34.56- 41.38)

Signal: 1

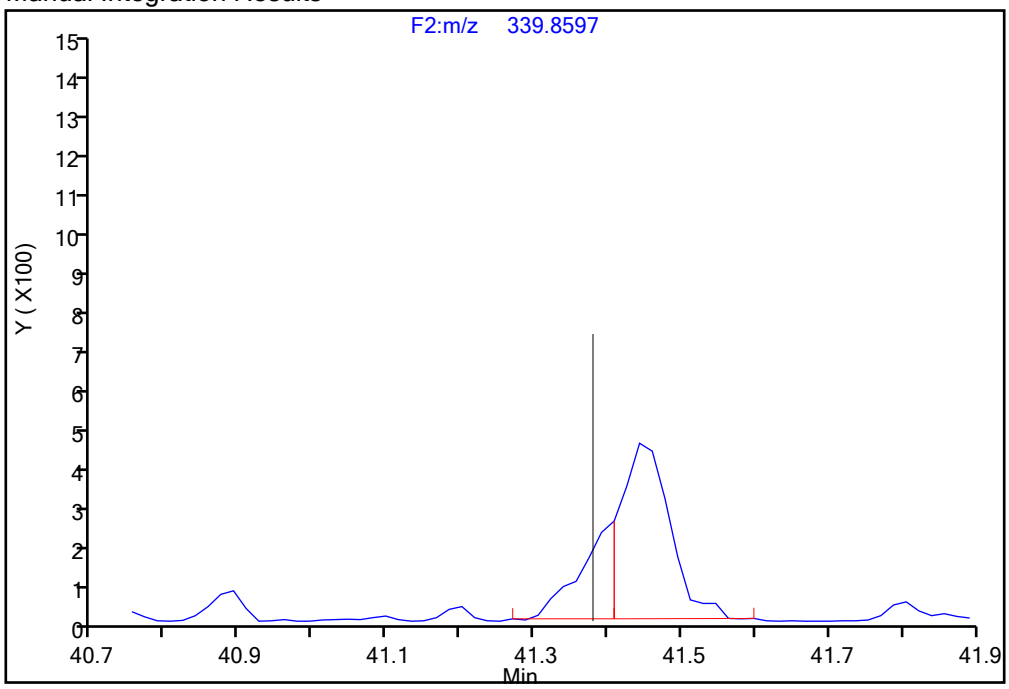
Not Detected
RT: 34.56- 41.38

Processing Integration Results



Manual Integration Results

RT = 41.408 Area = 755 M



Reviewer: davidsonm, 18-Dec-2019 08:31:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

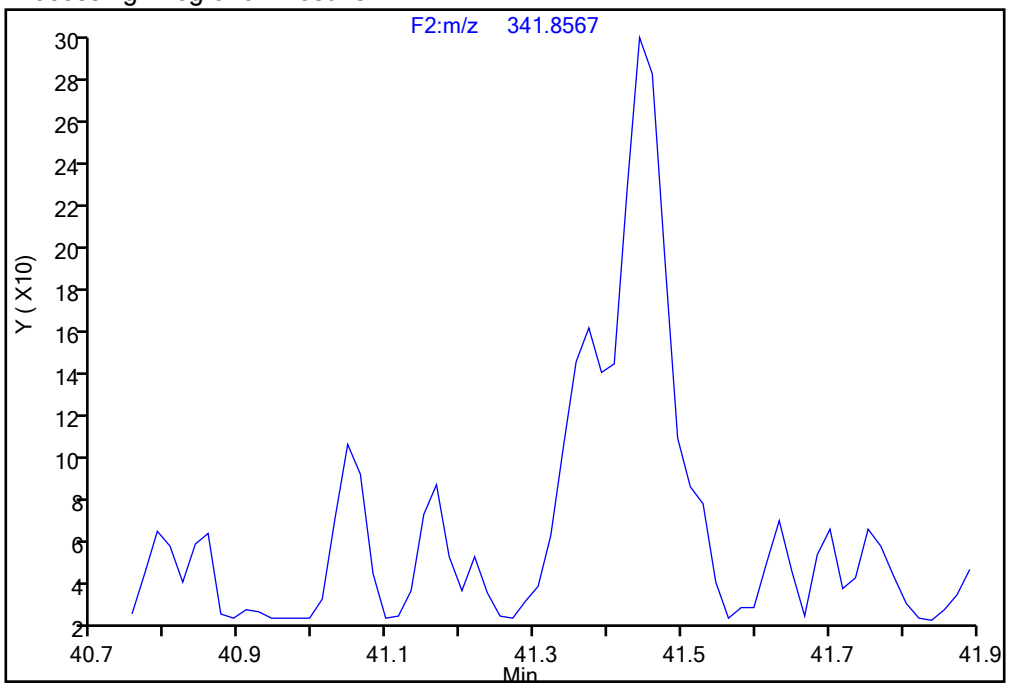
Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.56- 41.38)

Signal: 2

Not Detected

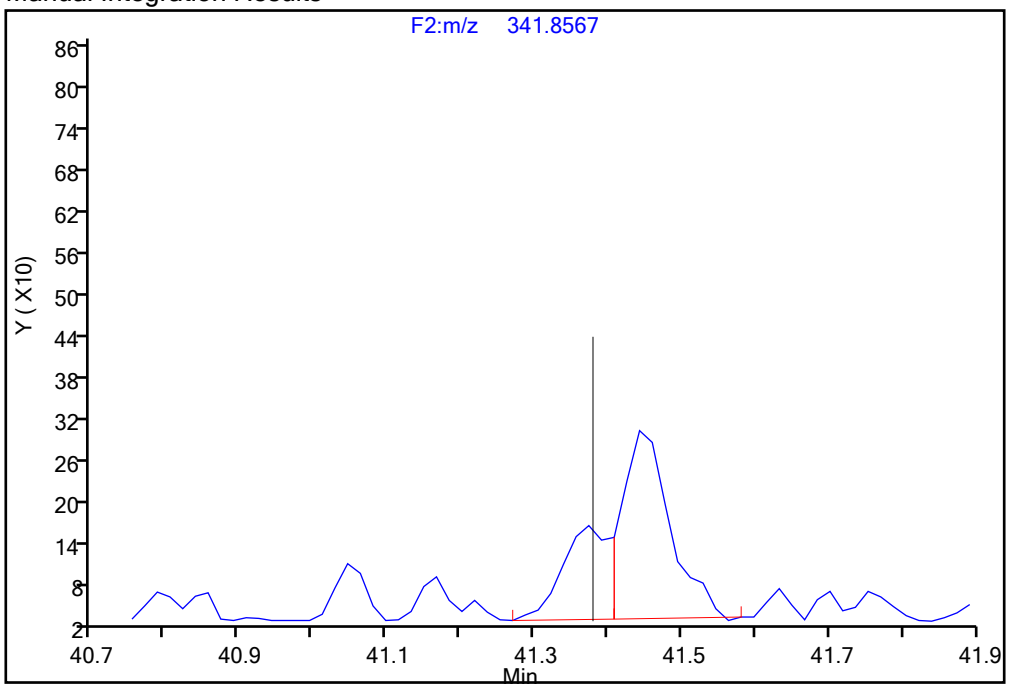
RT: 34.56- 41.38

Processing Integration Results



Manual Integration Results

RT = 41.374 Area = 588 M



Reviewer: davidsonm, 18-Dec-2019 08:31:45

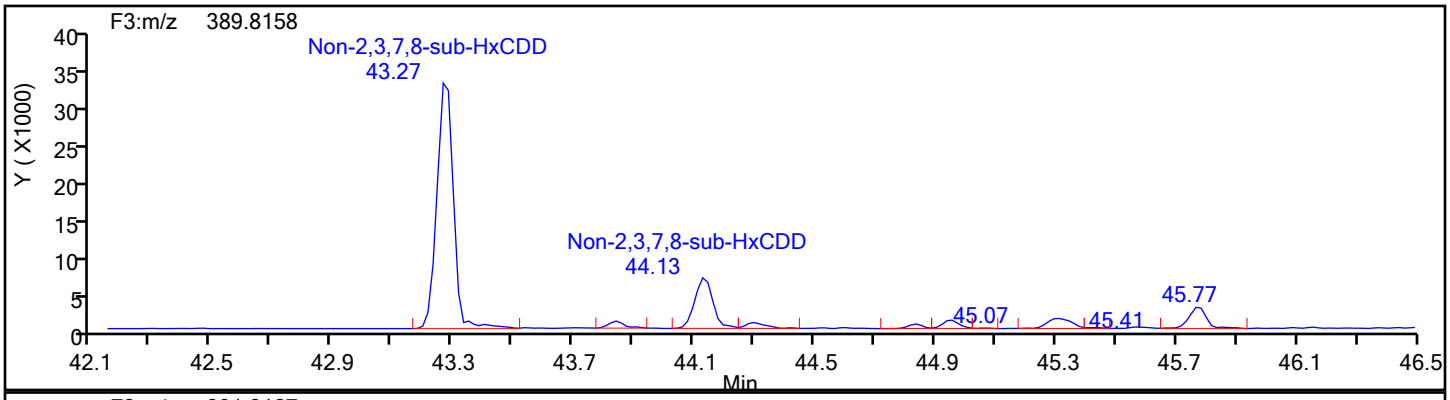
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

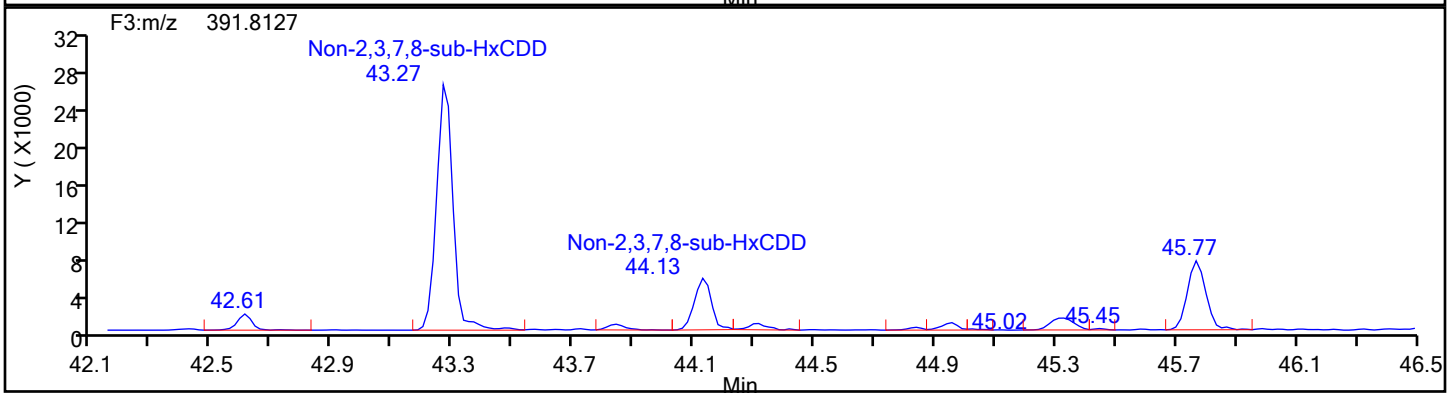
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

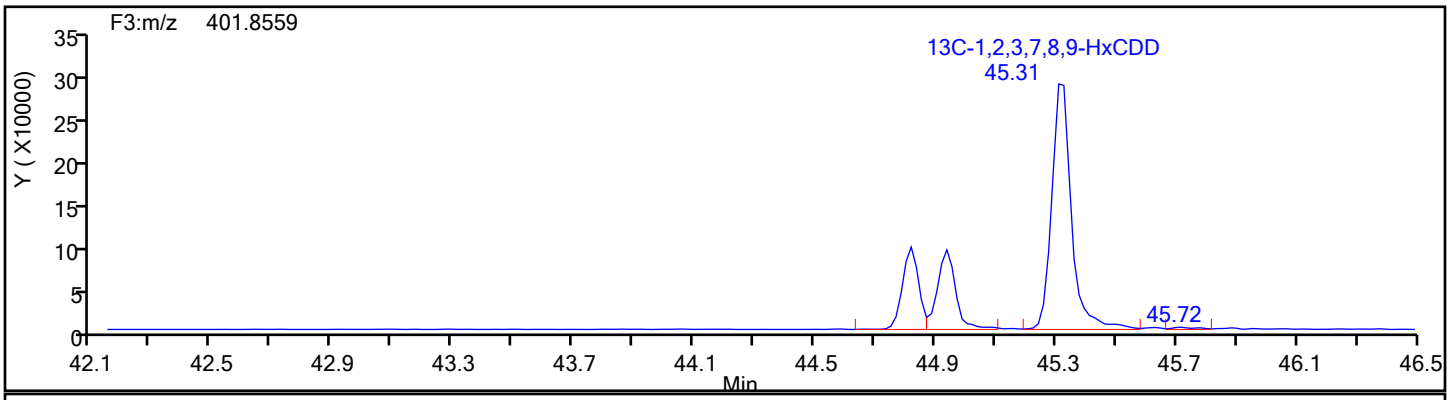
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

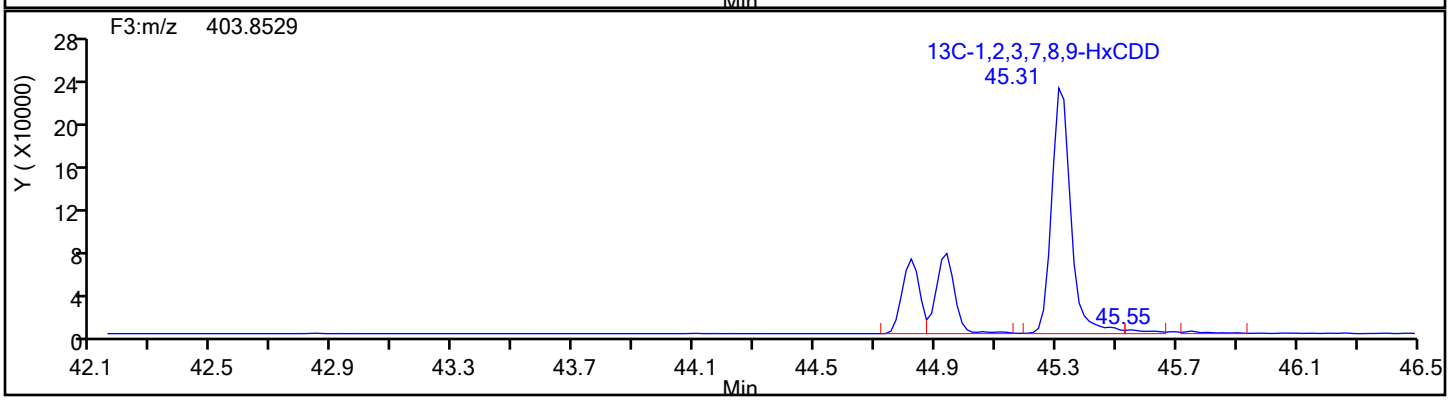
HxCDD





HxCDD Standards



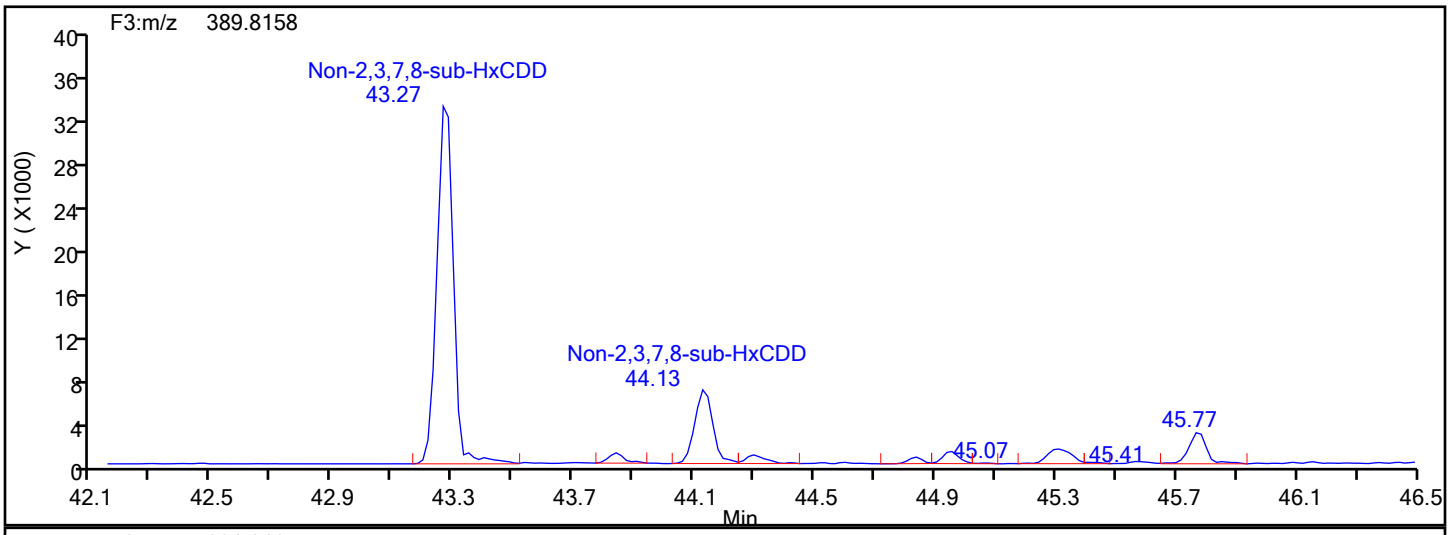


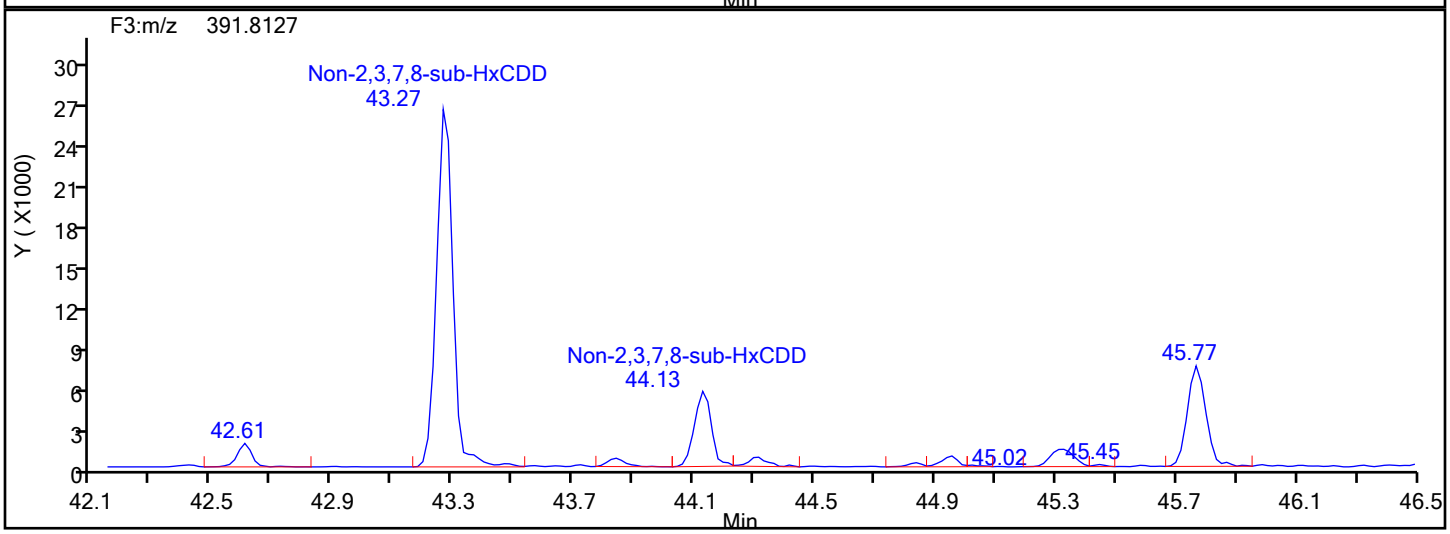
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

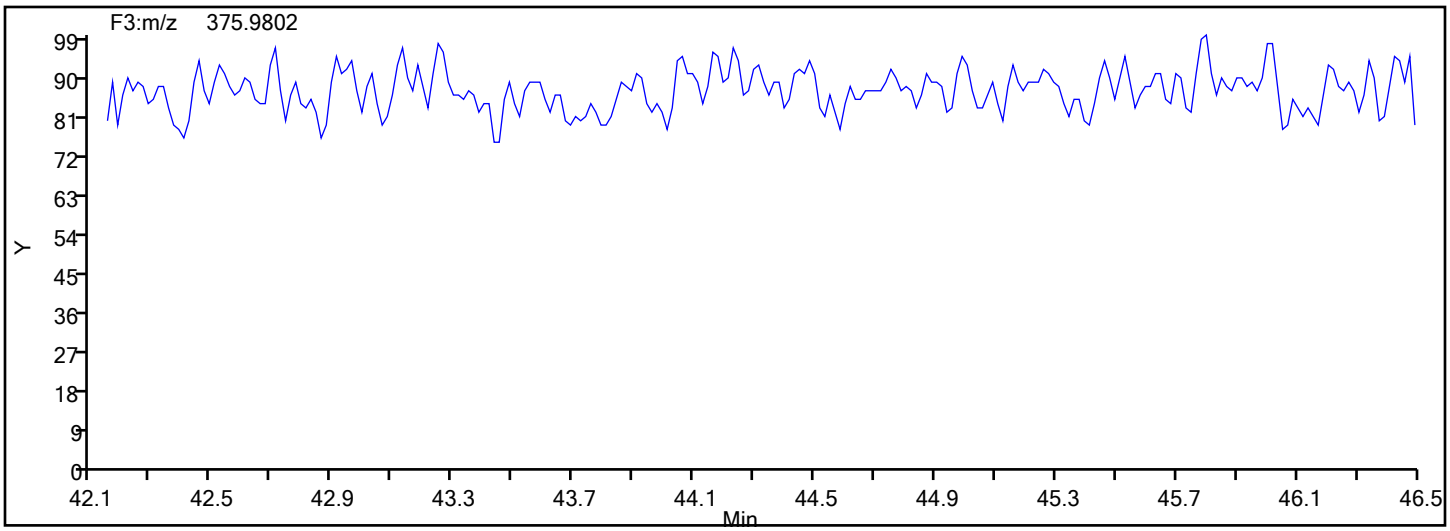
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

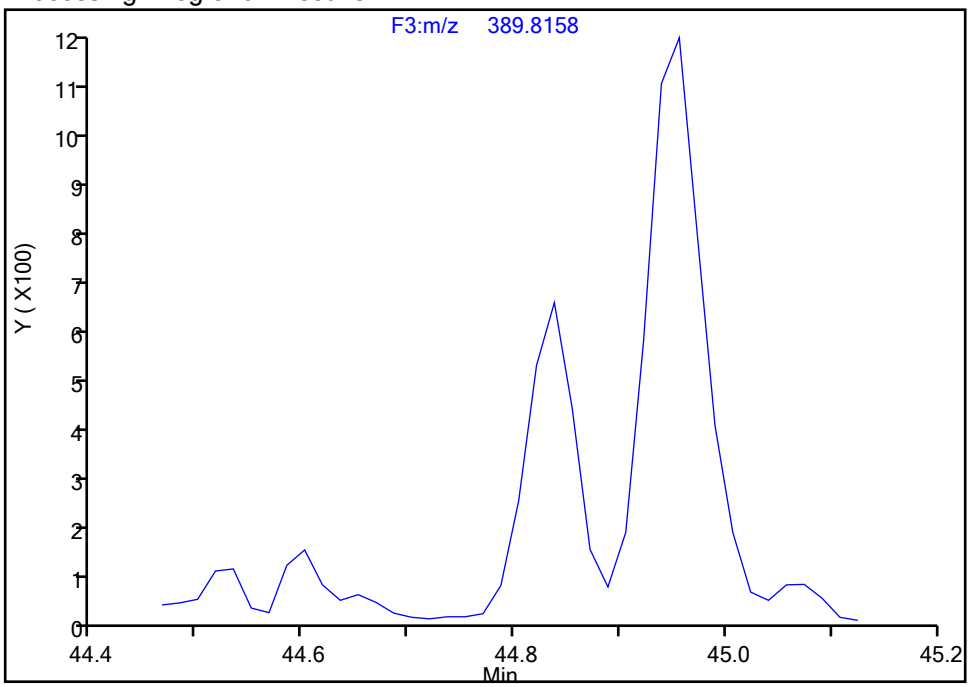
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

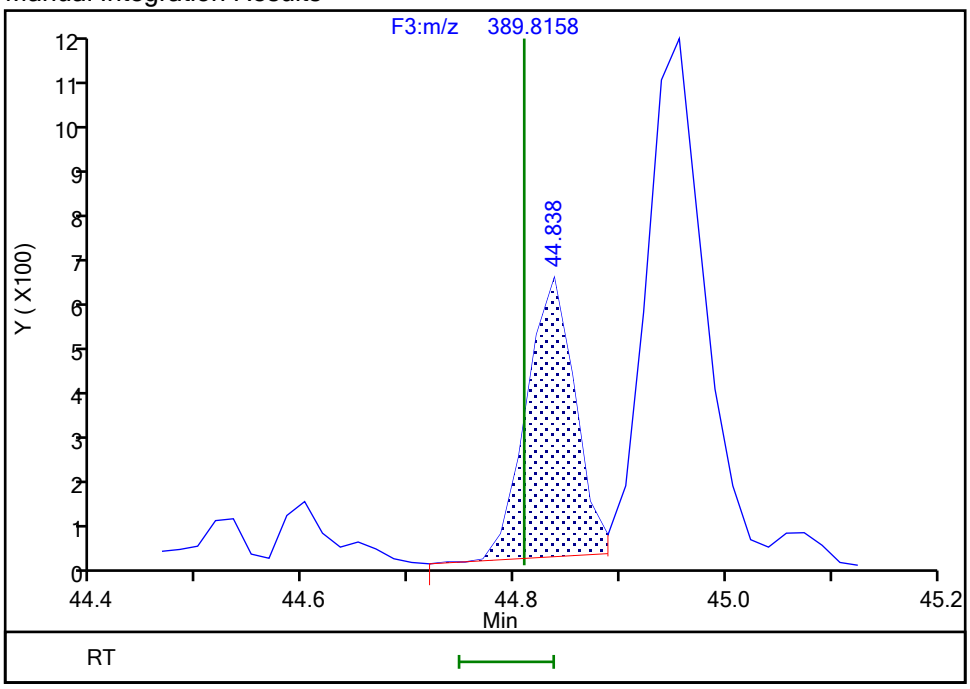
Not Detected
Expected RT: 44.81

Processing Integration Results



Manual Integration Results

RT: 44.84
Area: 1910
Amount: 0.198621
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:32:56
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

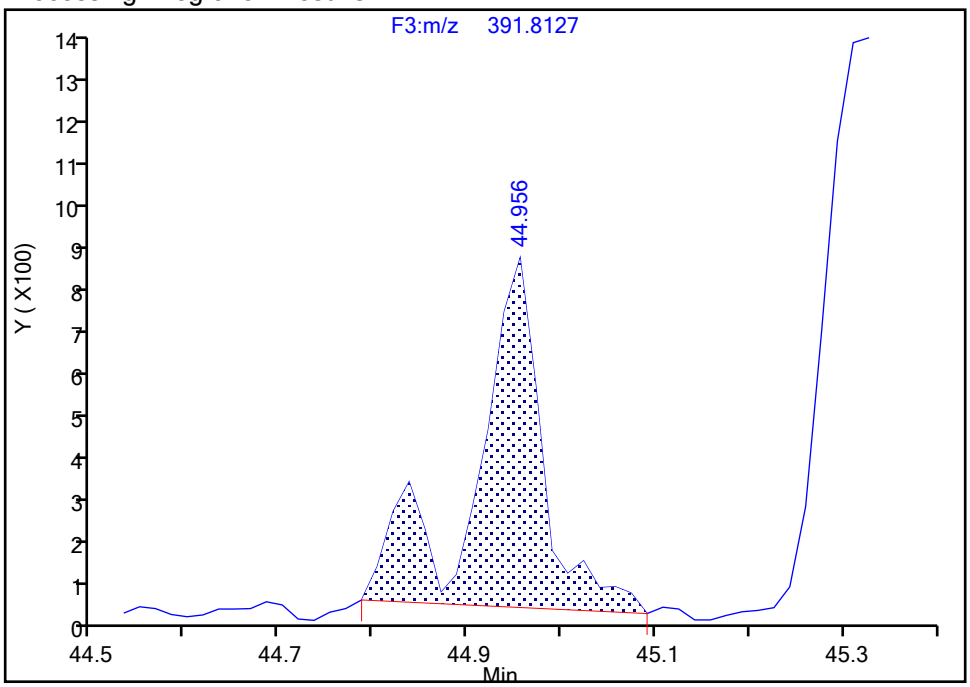
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

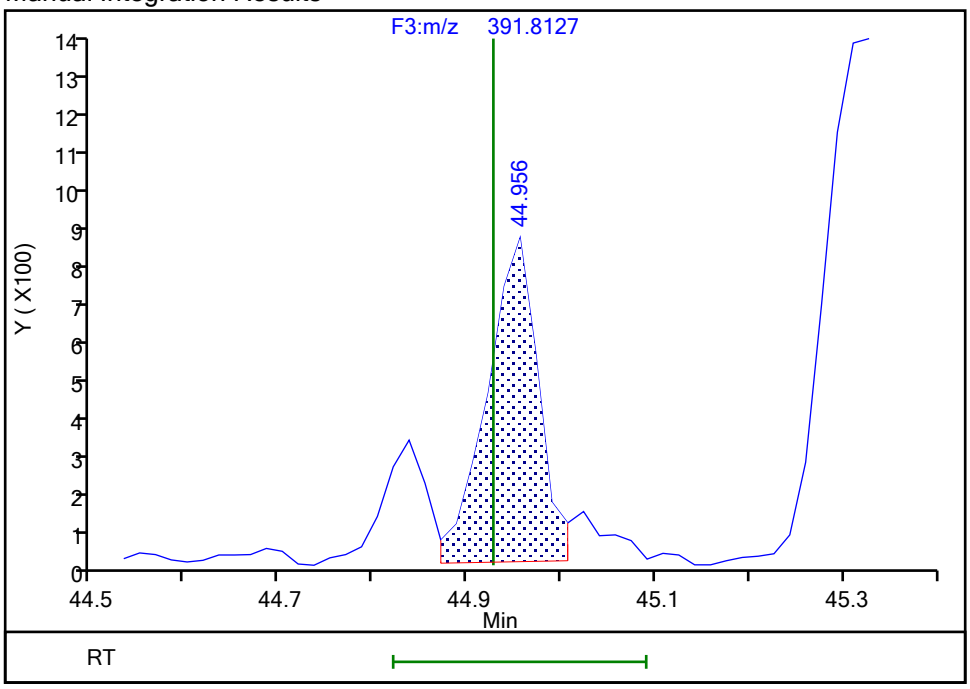
Processing Integration Results

RT: 44.96
Area: 3820
Amount: 0.499487
Amount Units: pg/ul



Manual Integration Results

RT: 44.96
Area: 2972
Amount: 0.434976
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:32:49

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

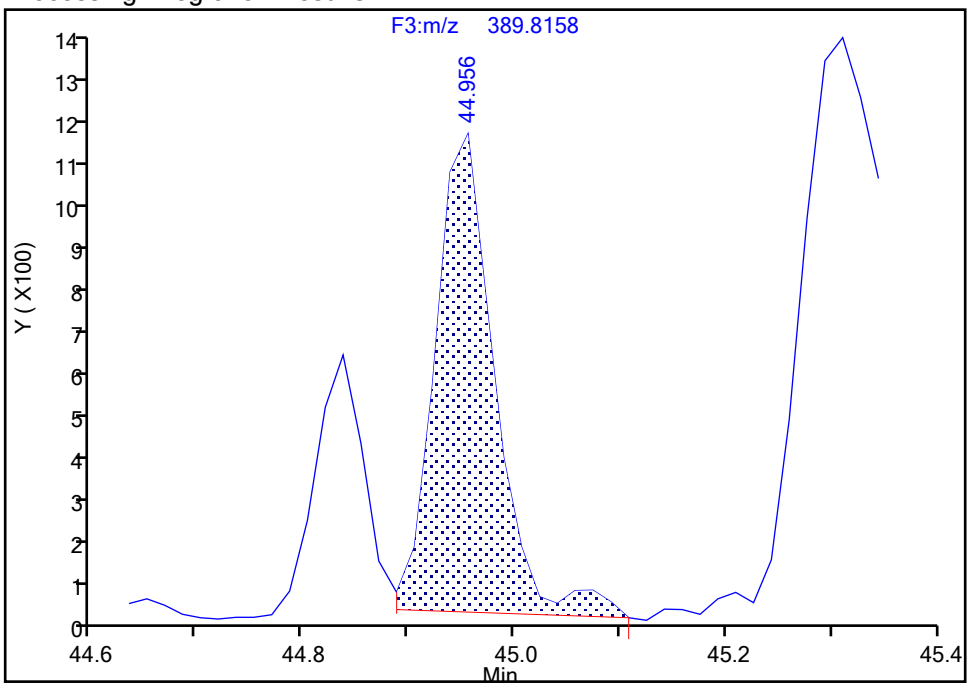
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

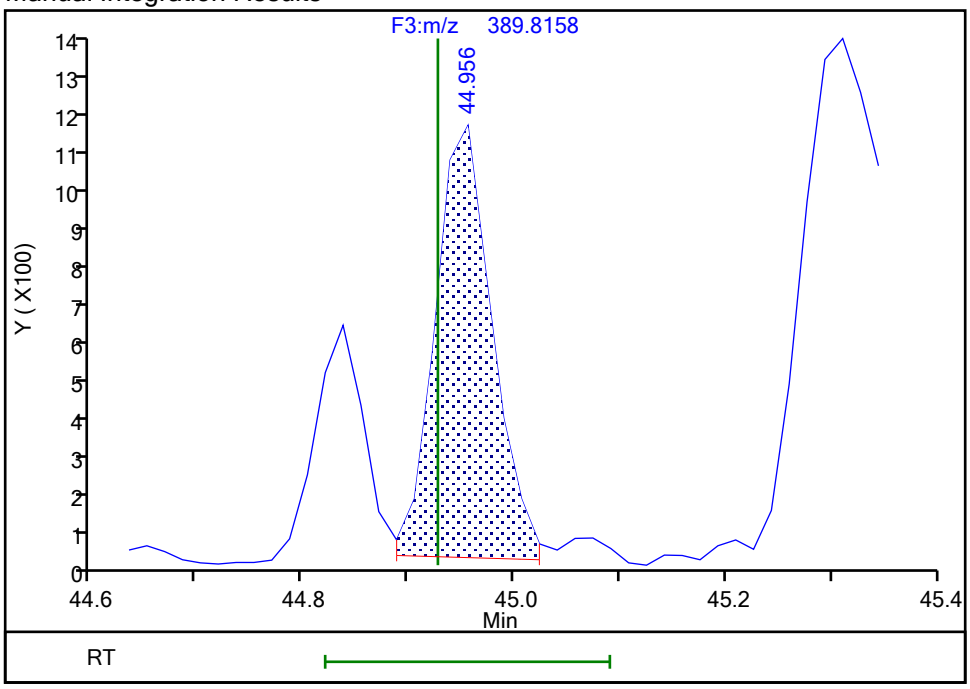
Processing Integration Results

RT: 44.96
Area: 4364
Amount: 0.499487
Amount Units: pg/ul



Manual Integration Results

RT: 44.96
Area: 4155
Amount: 0.434976
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:32:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

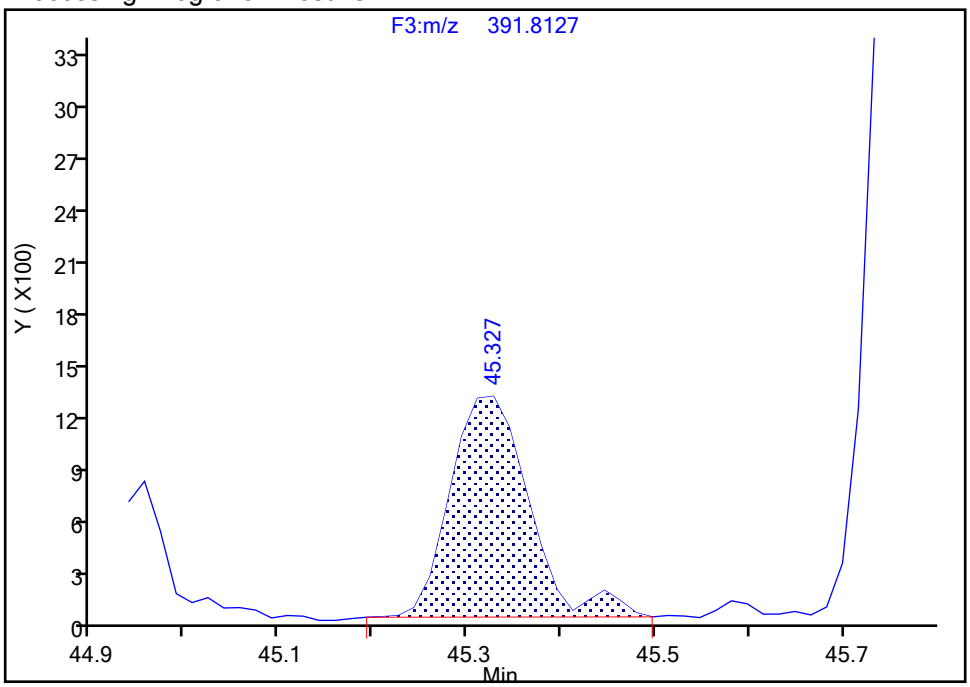
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

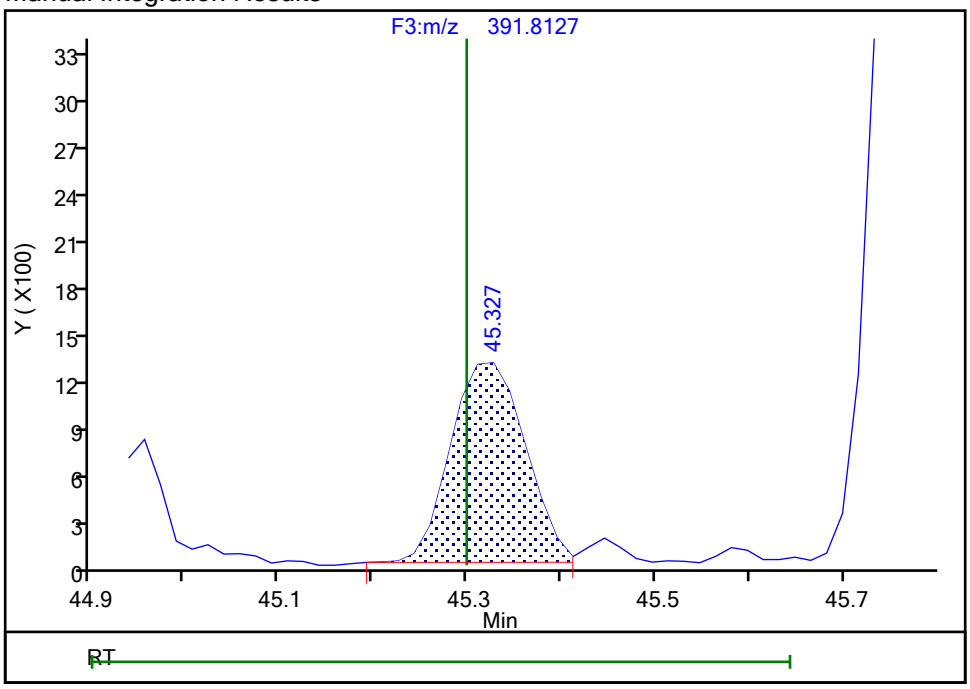
Processing Integration Results

RT: 45.33
Area: 7359
Amount: 0.934307
Amount Units: pg/ul



Manual Integration Results

RT: 45.33
Area: 6975
Amount: 0.883853
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:33:03

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

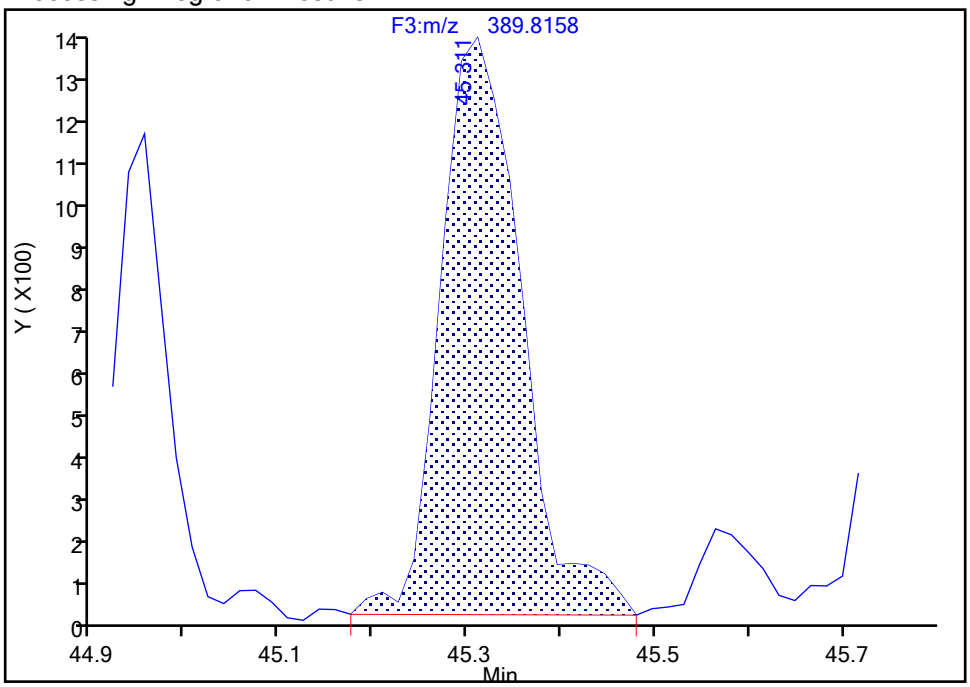
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

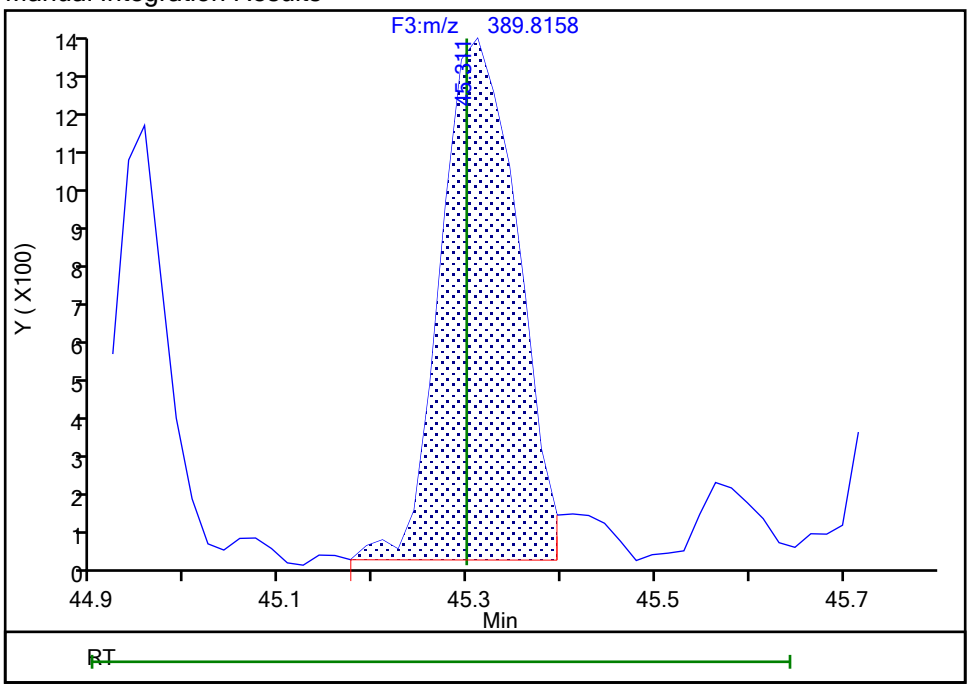
Processing Integration Results

RT: 45.31
Area: 8048
Amount: 0.934307
Amount Units: pg/ul



Manual Integration Results

RT: 45.31
Area: 7600
Amount: 0.883853
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:33:05

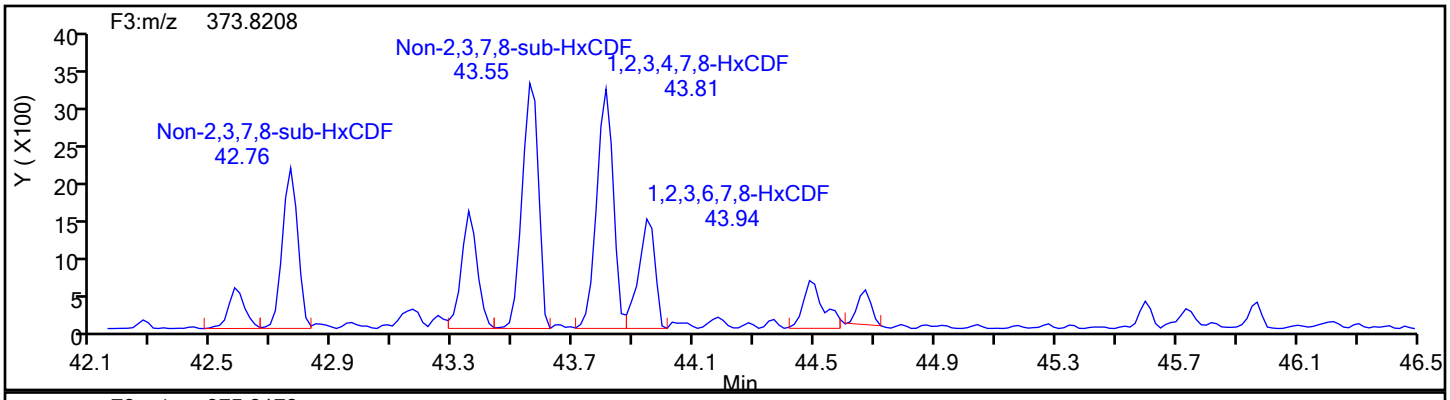
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

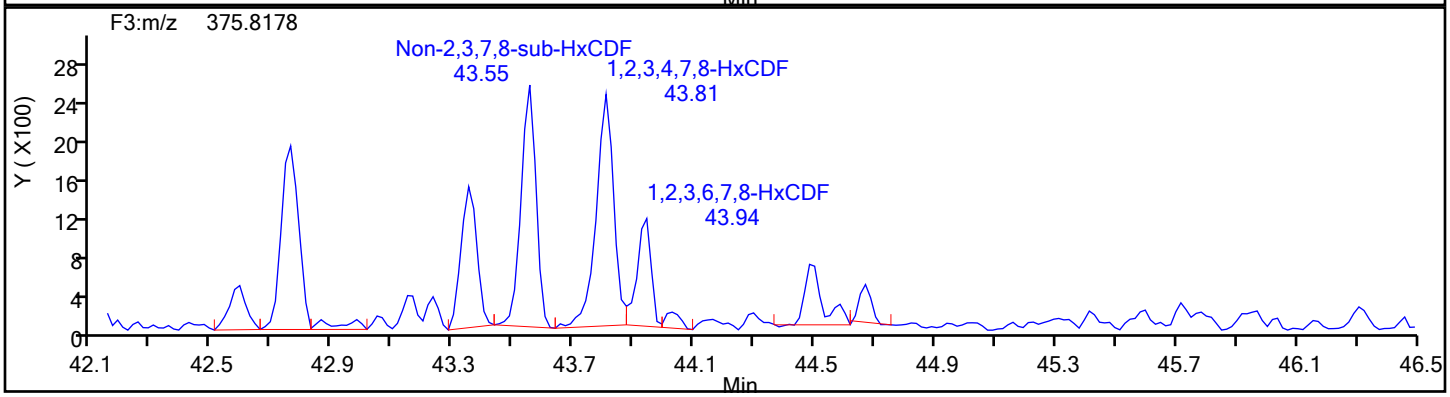
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

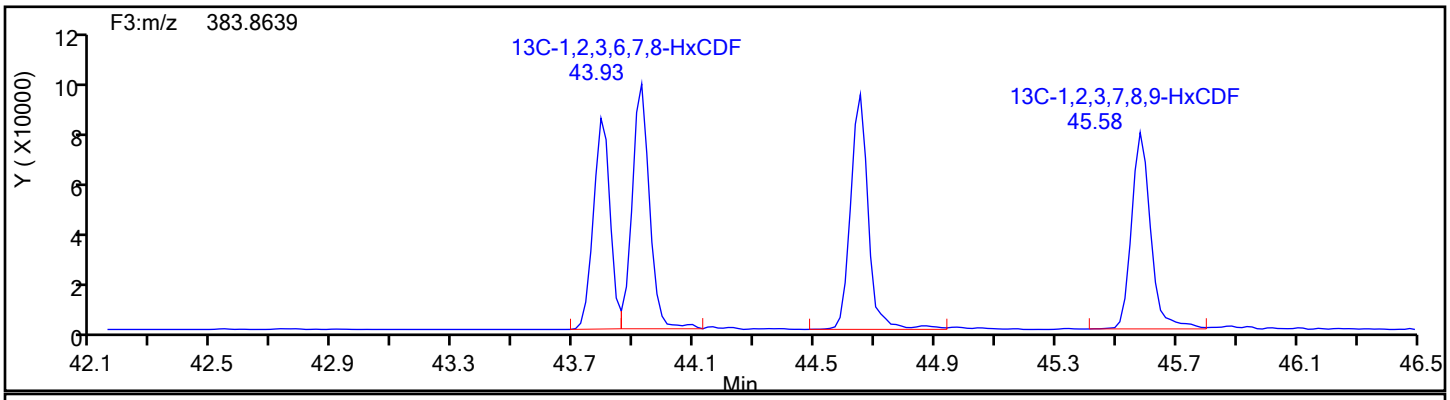
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

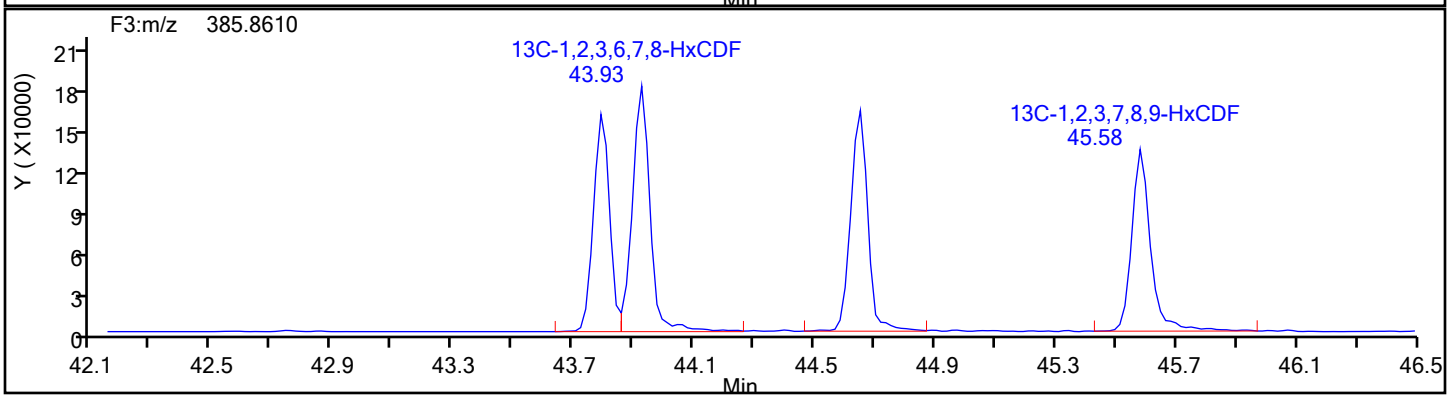
HxCDF





HxCDF Standards



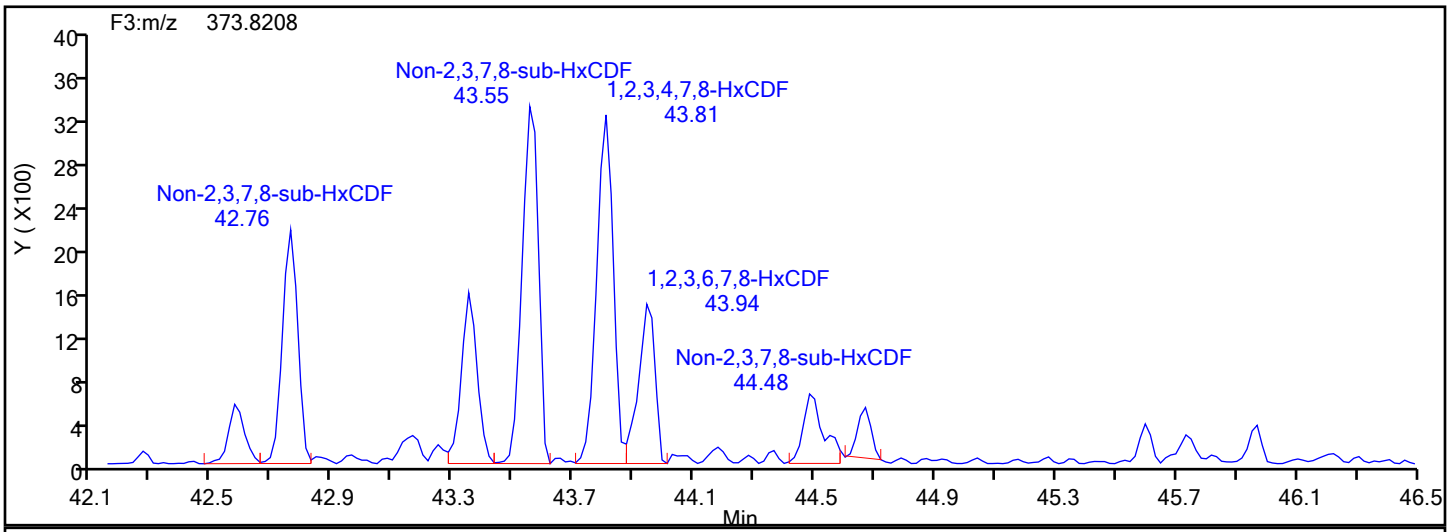


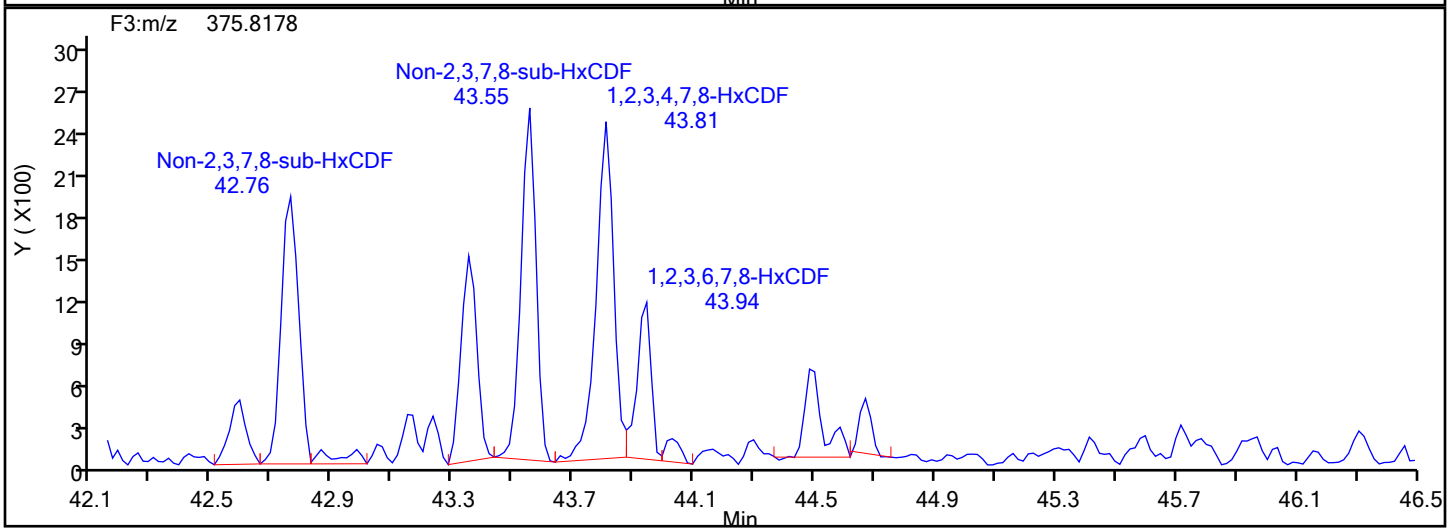
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

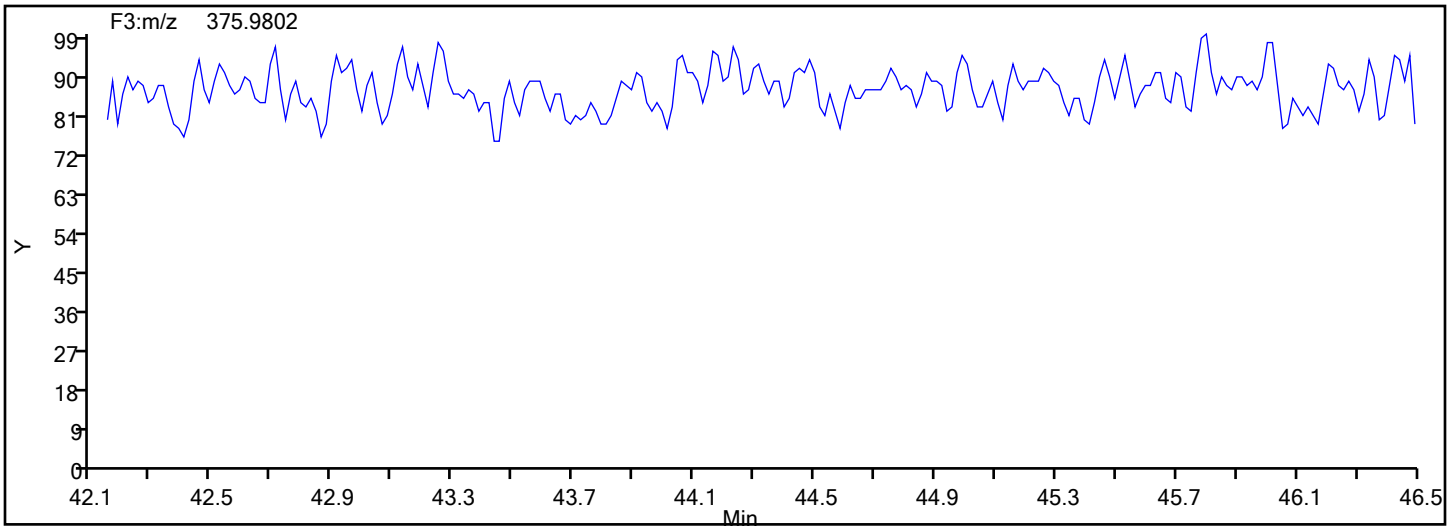
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

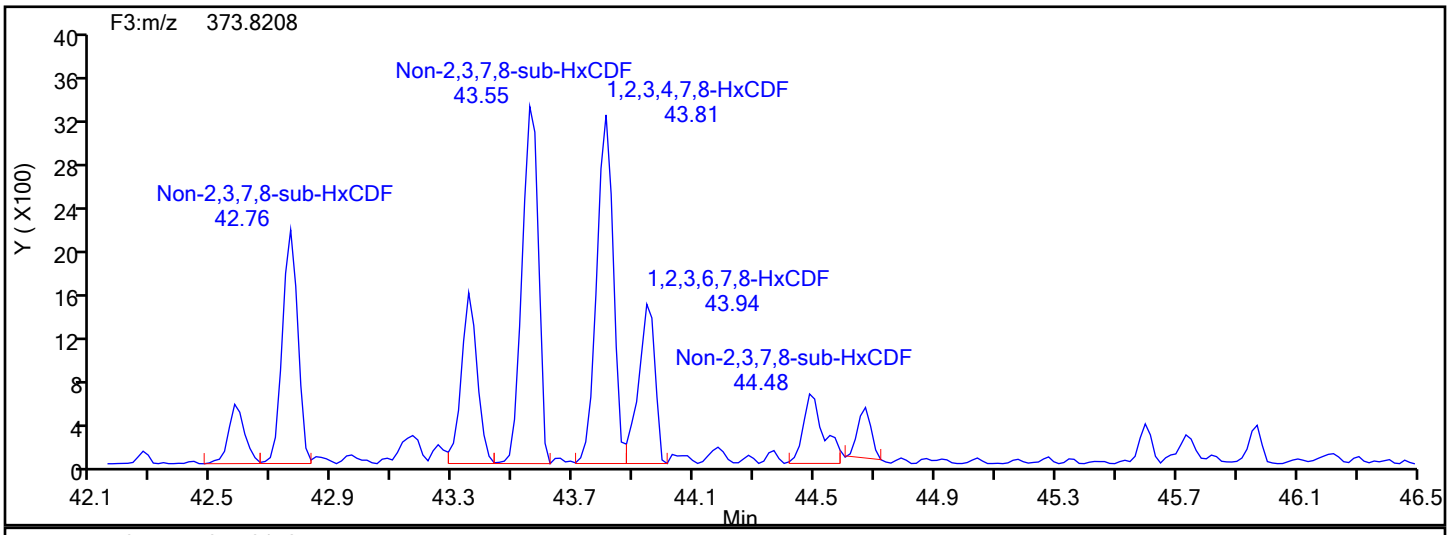


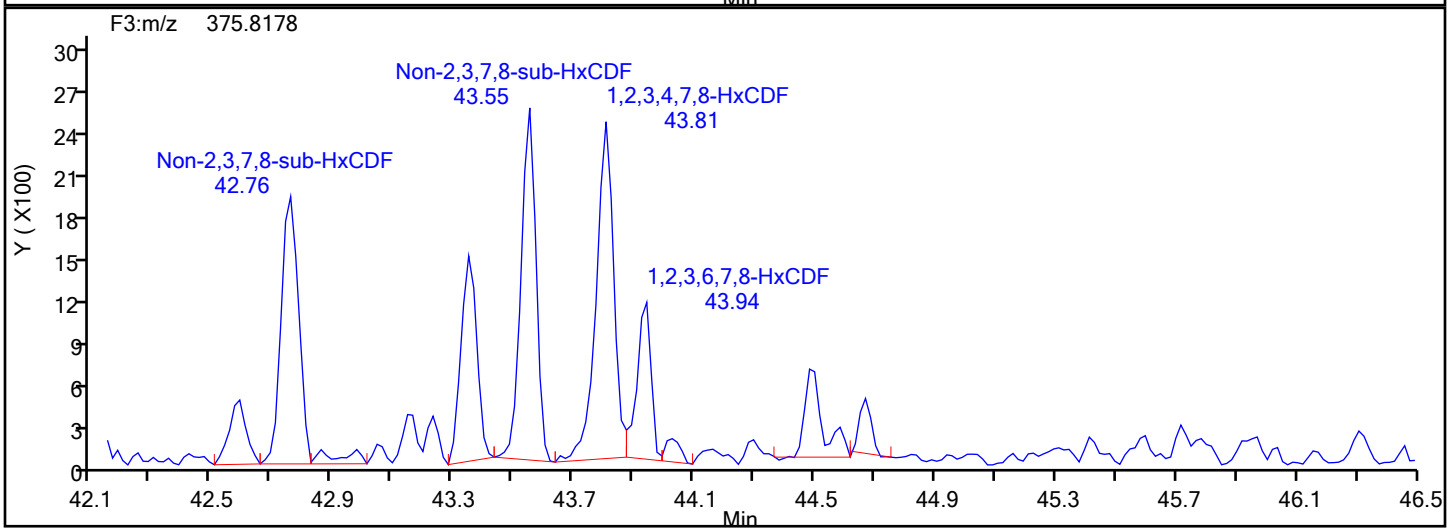
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

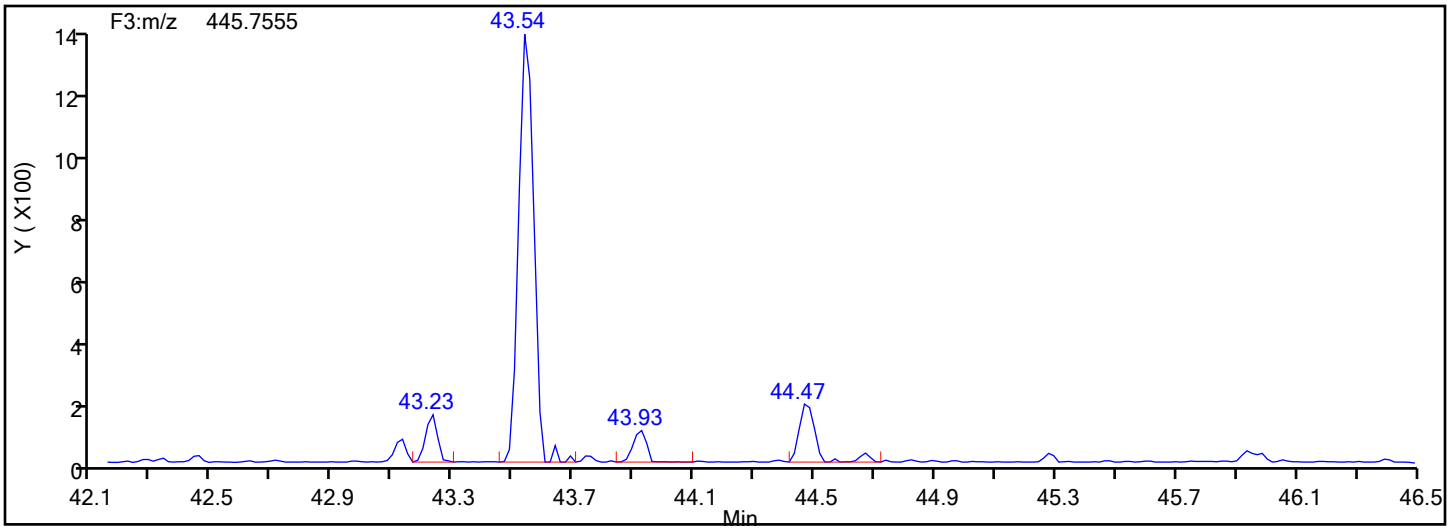
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

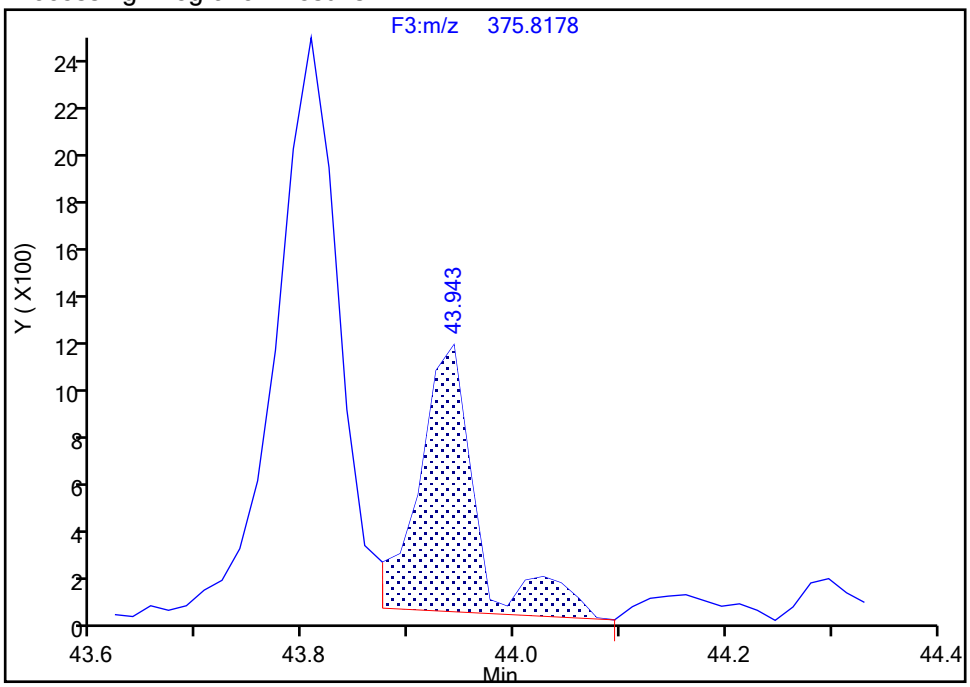
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

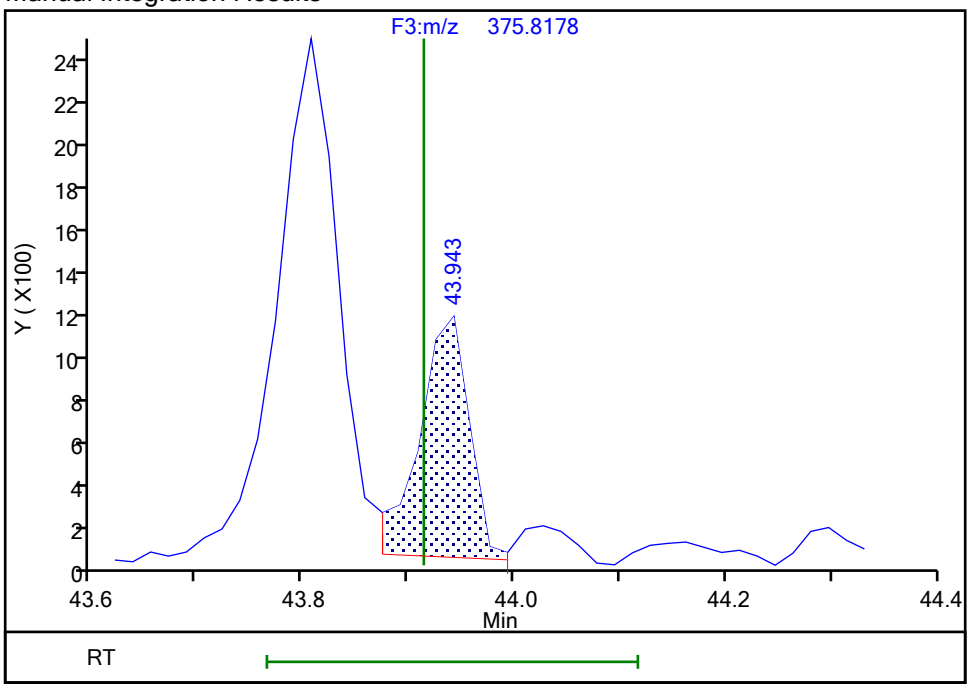
Processing Integration Results

RT: 43.94
Area: 4159
Amount: 0.346416
Amount Units: pg/ul



Manual Integration Results

RT: 43.94
Area: 3594
Amount: 0.326364
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:33:15

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

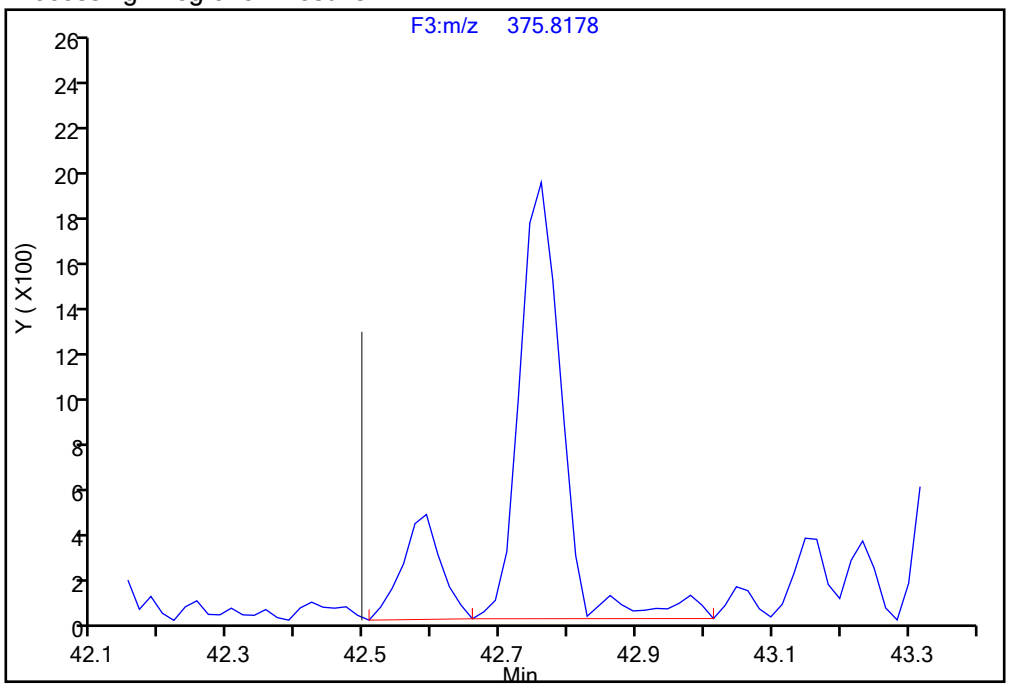
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.50- 45.75)

Signal: 2

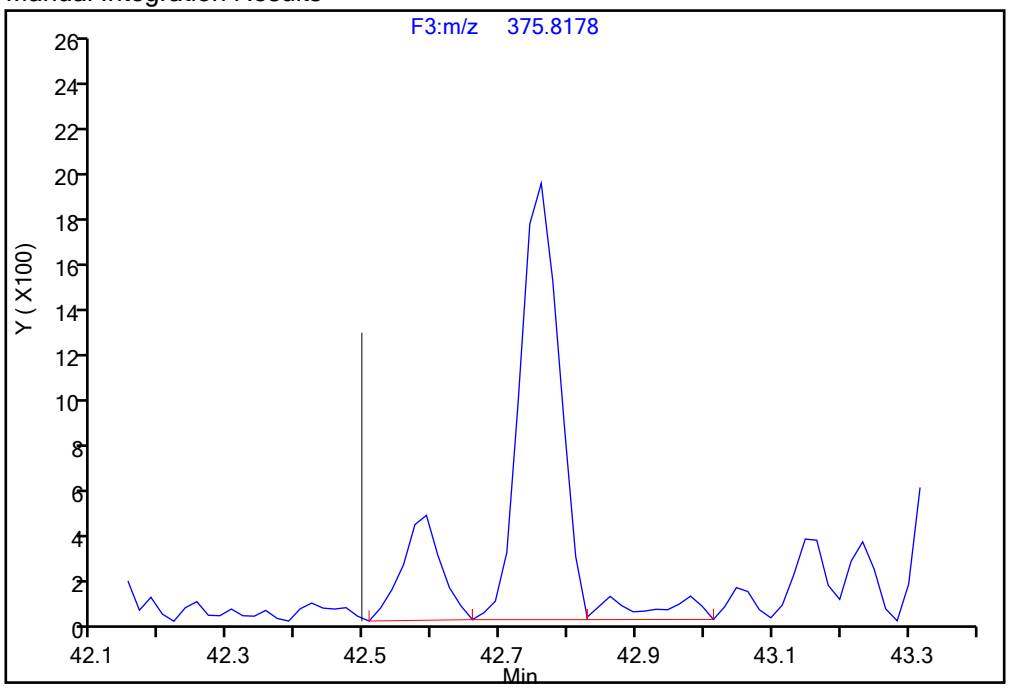
Processing Integration Results

RT = 42.760 Area = 8280



Manual Integration Results

RT = 42.760 Area = 7672 M



Reviewer: davidsonm, 18-Dec-2019 08:33:24

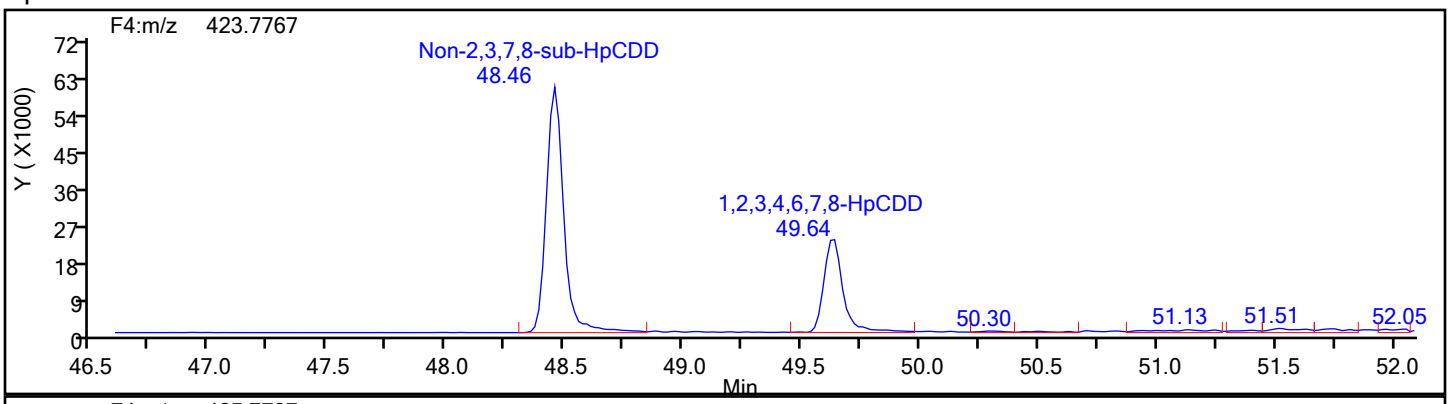
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

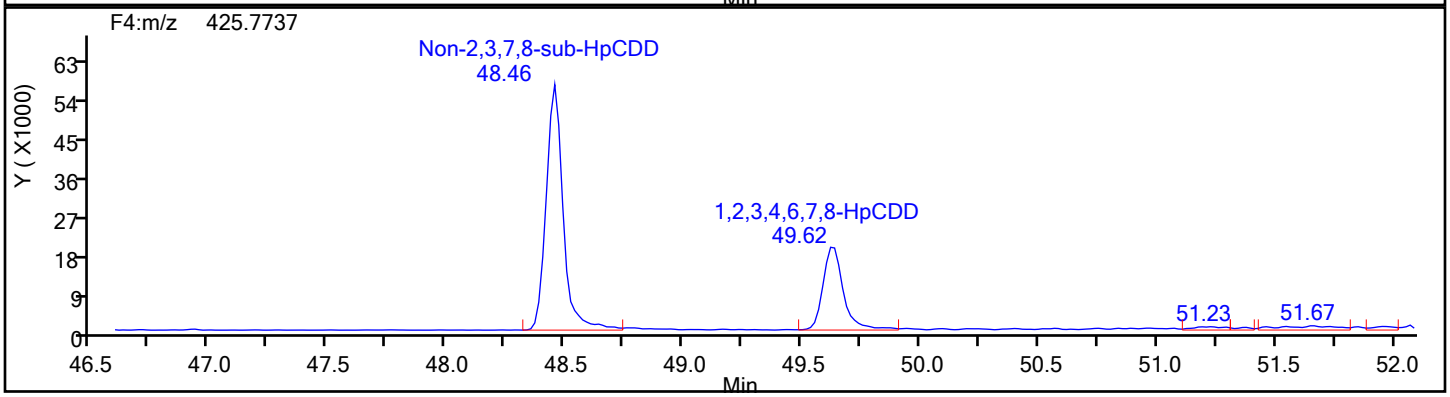
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

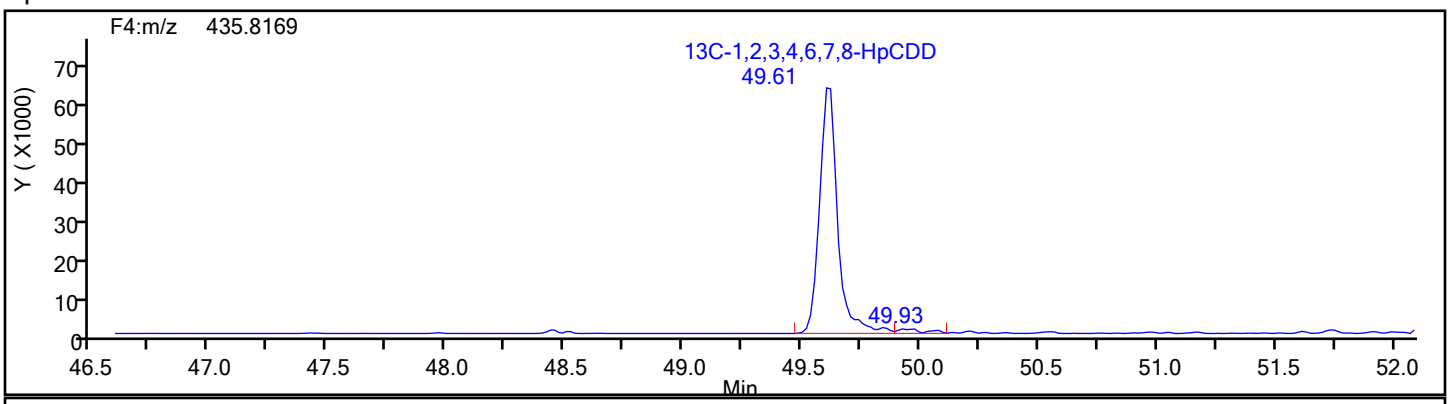
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

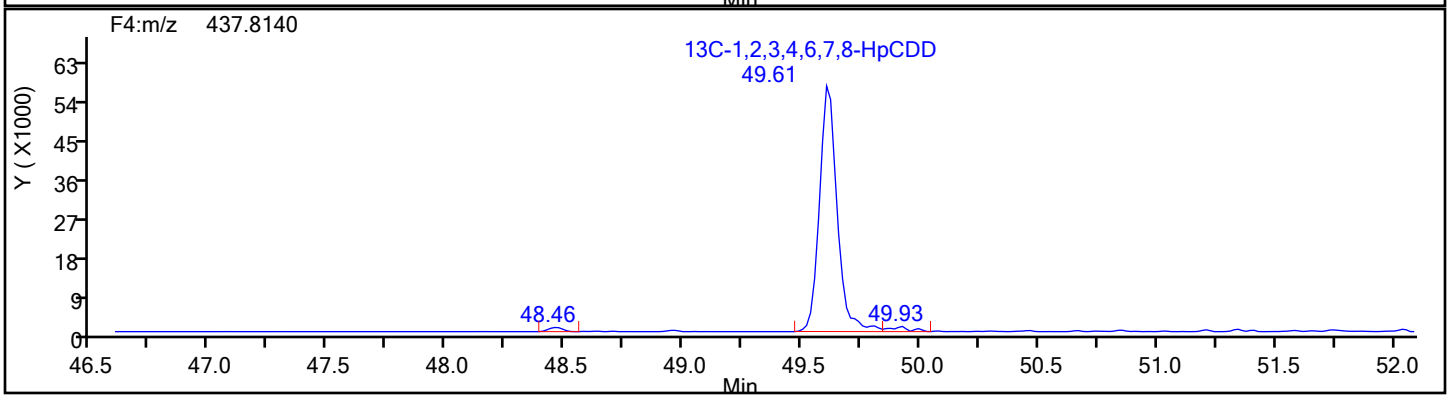
HpCDD





HpCDD Standards



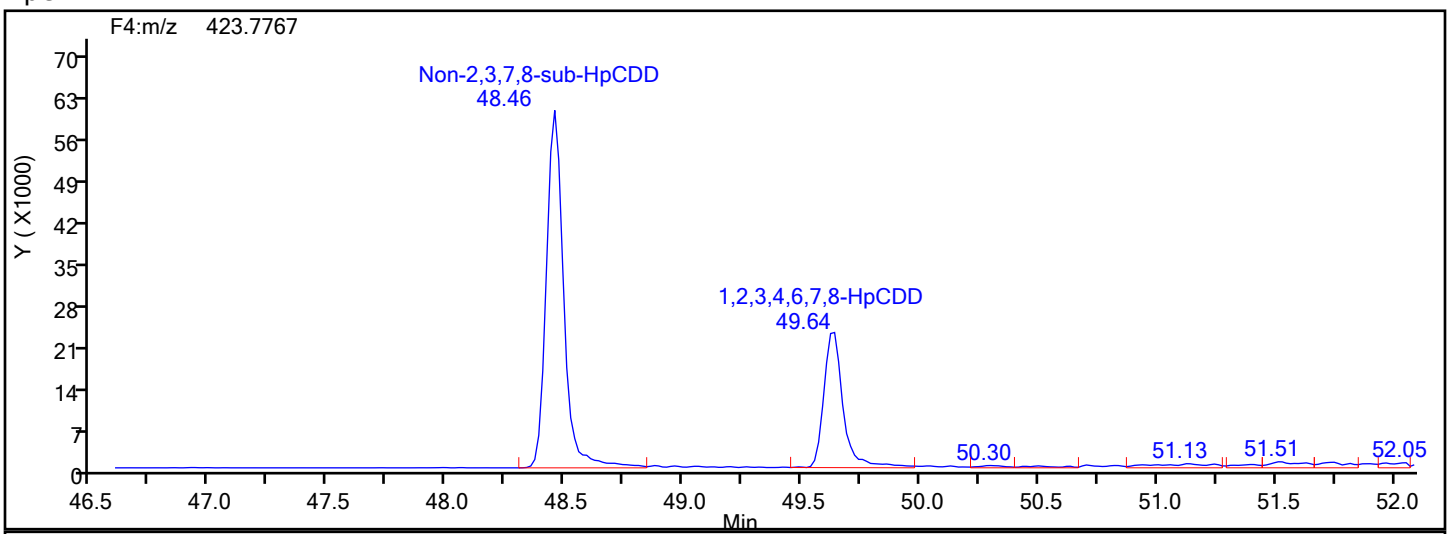


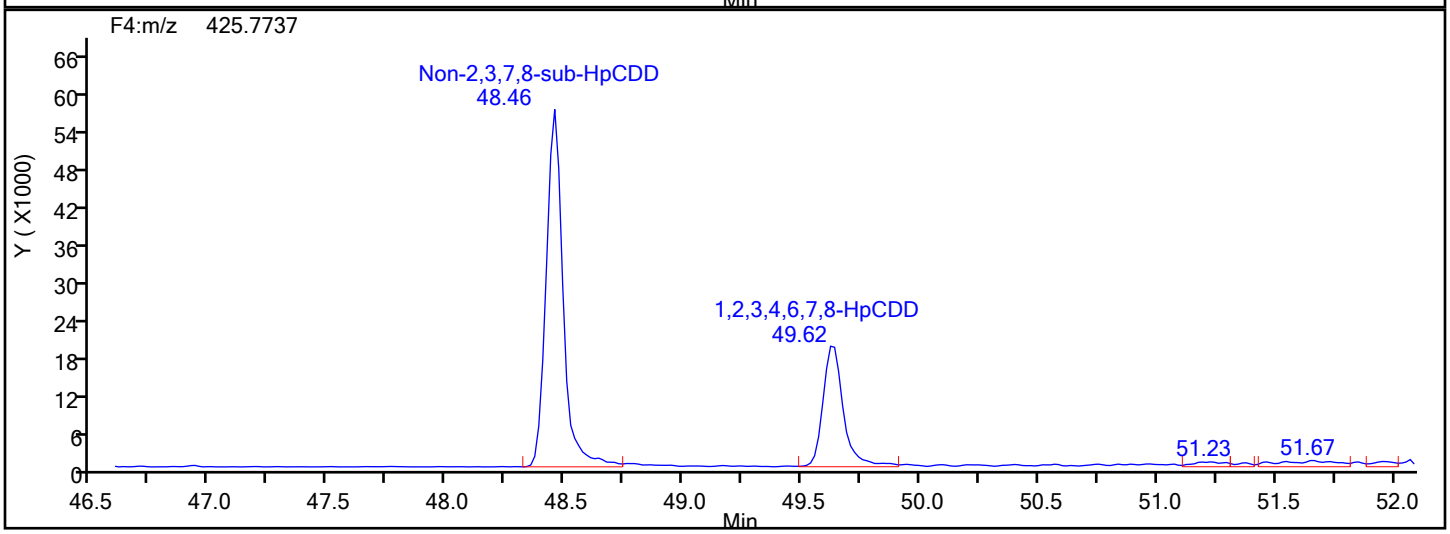
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

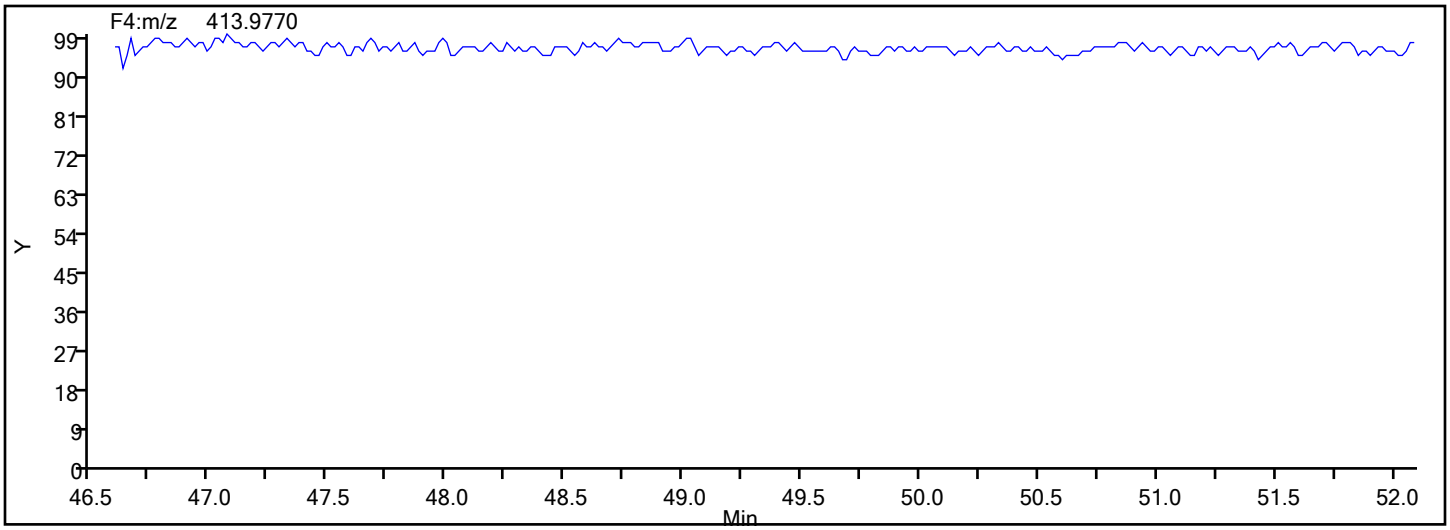
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
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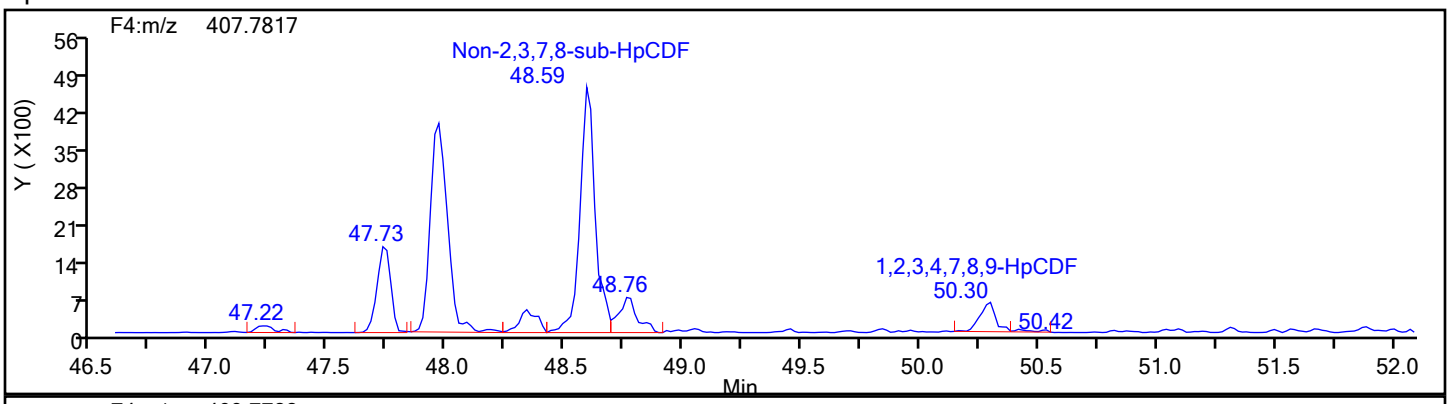
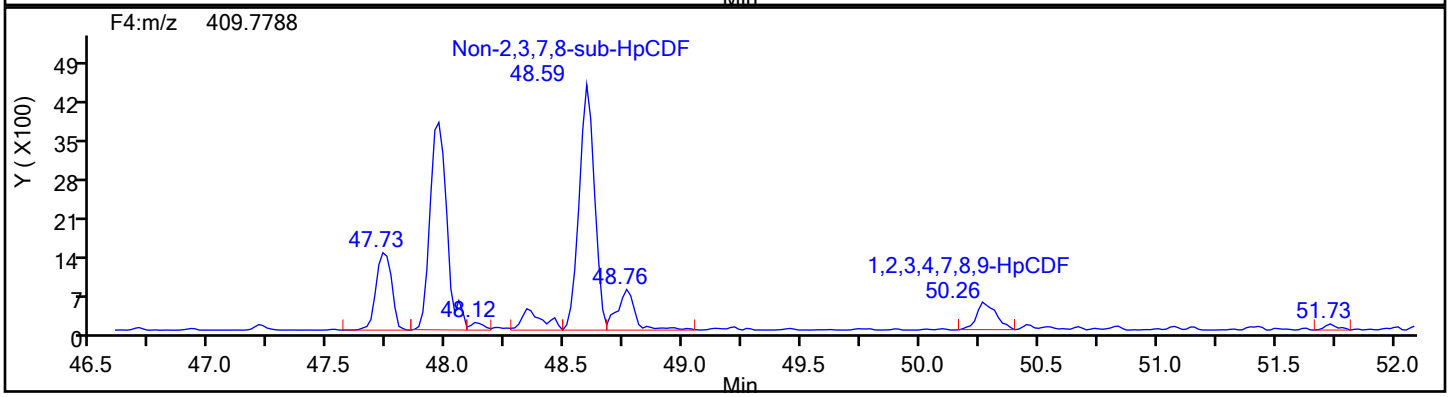
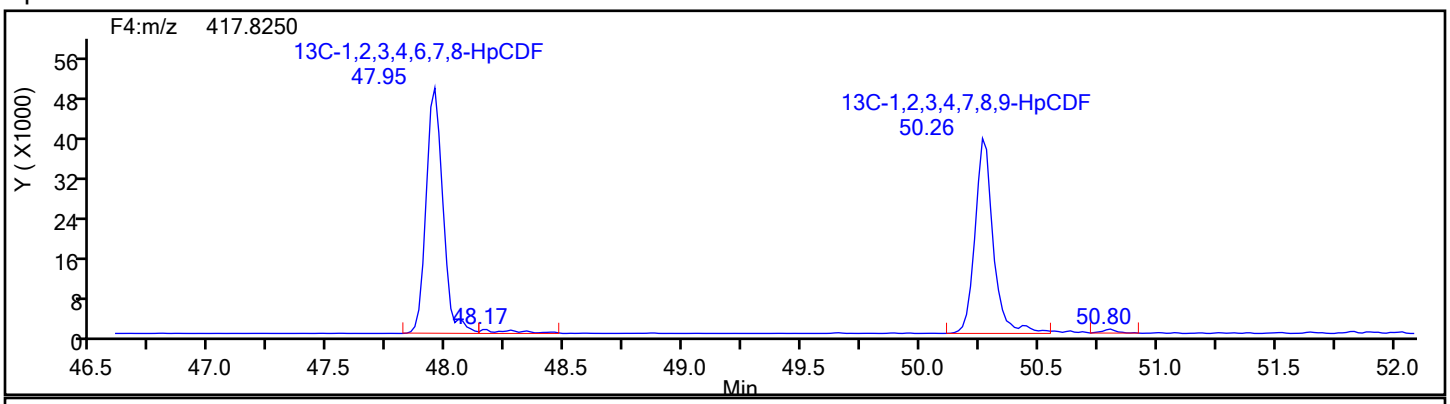
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

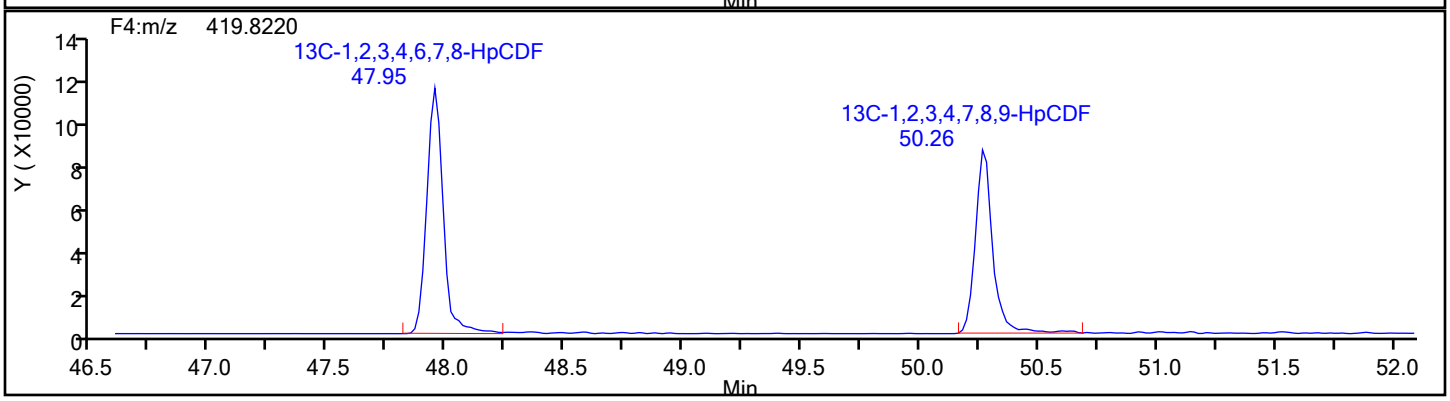
HpCDF





HpCDF Standards





Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
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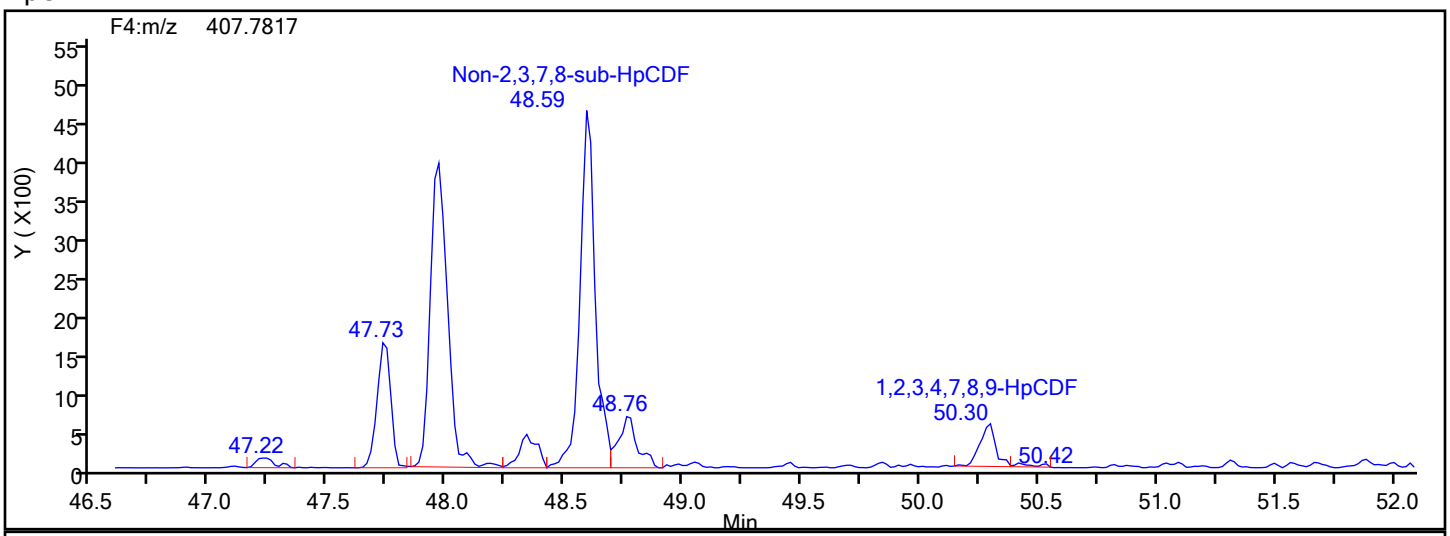
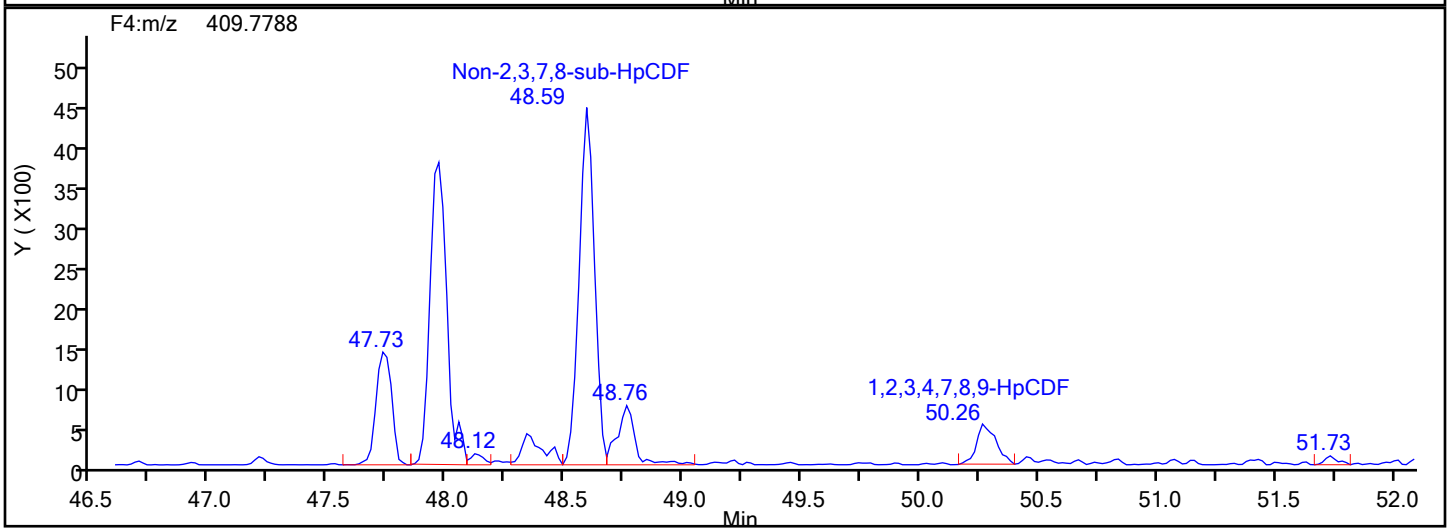
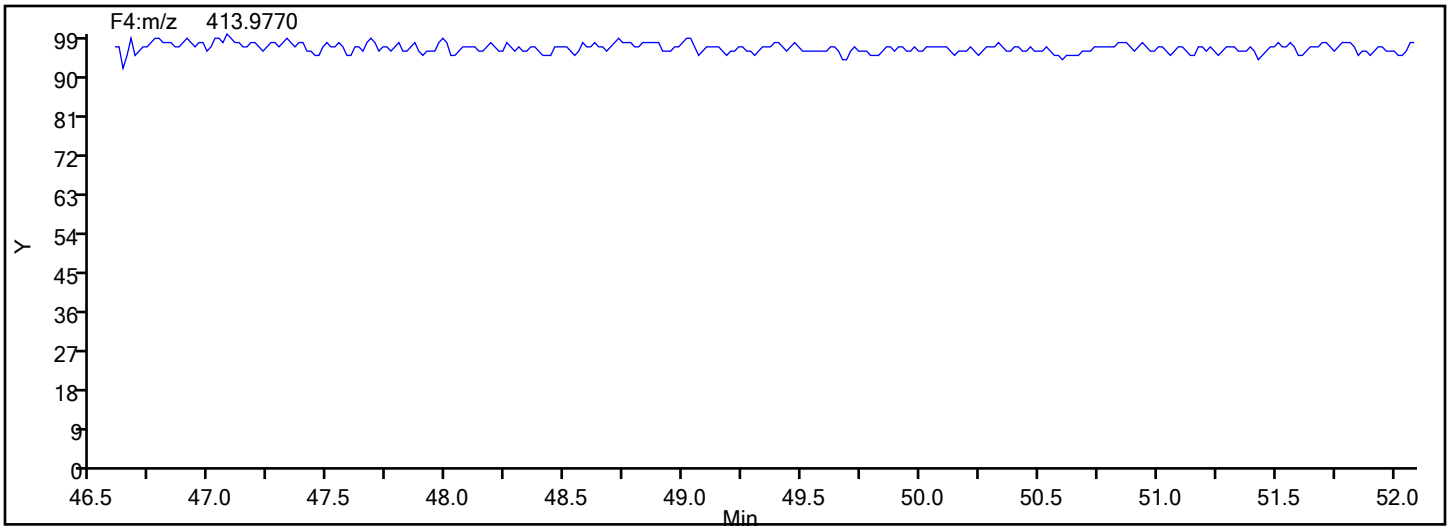
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

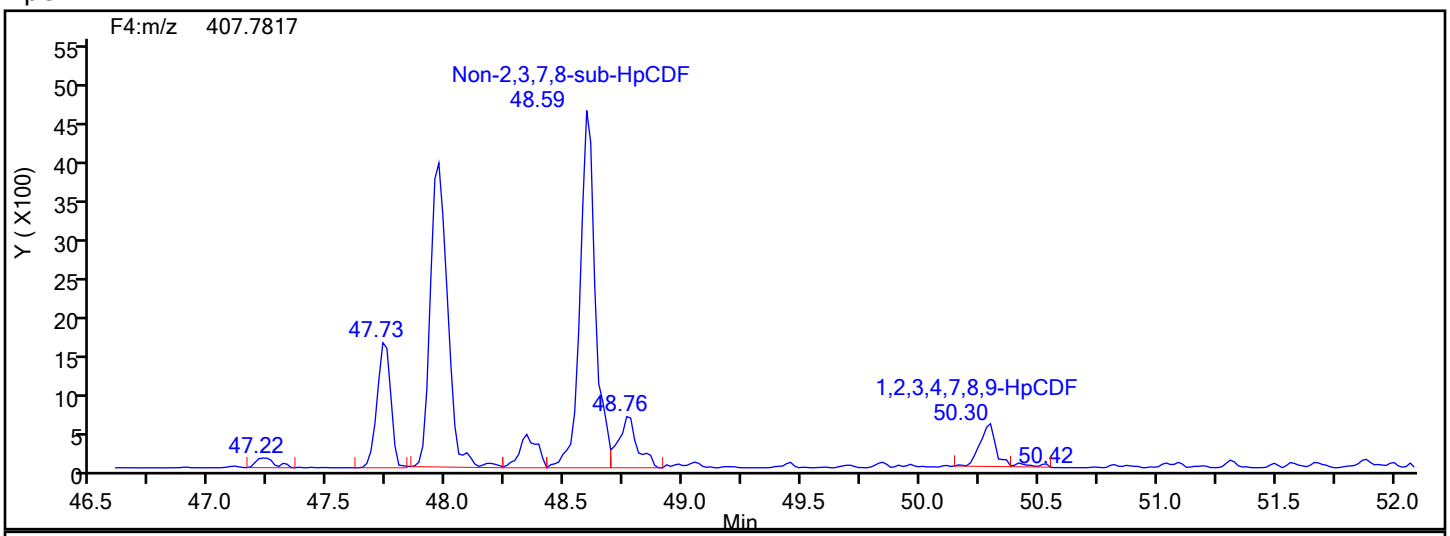


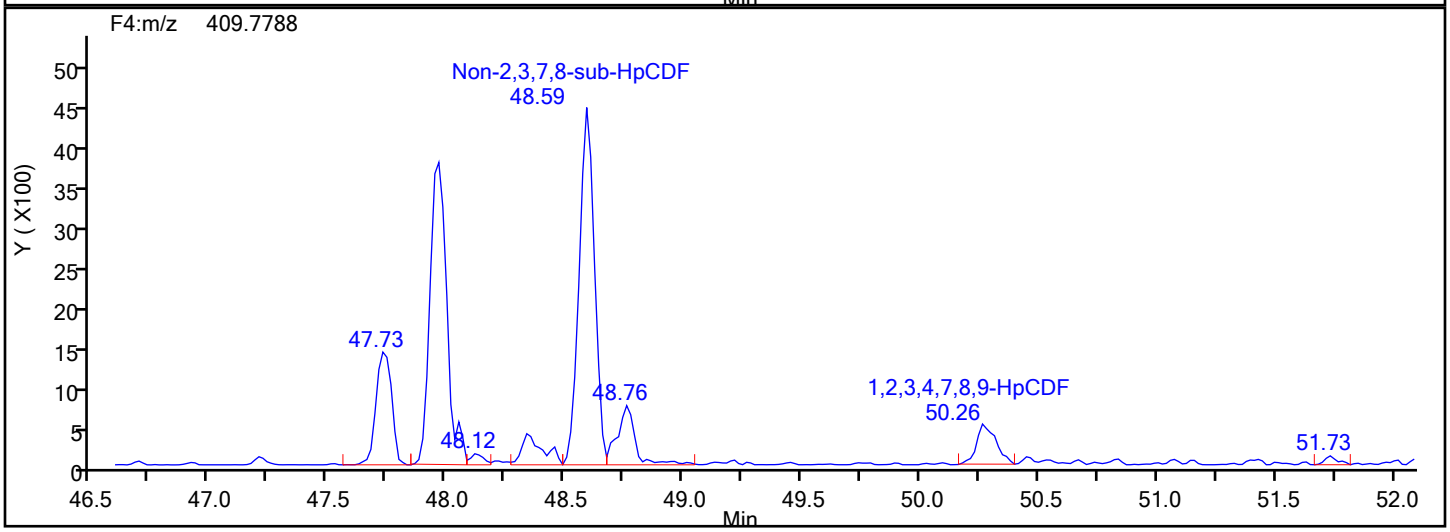
Report Date: 18-Dec-2019 08:34:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

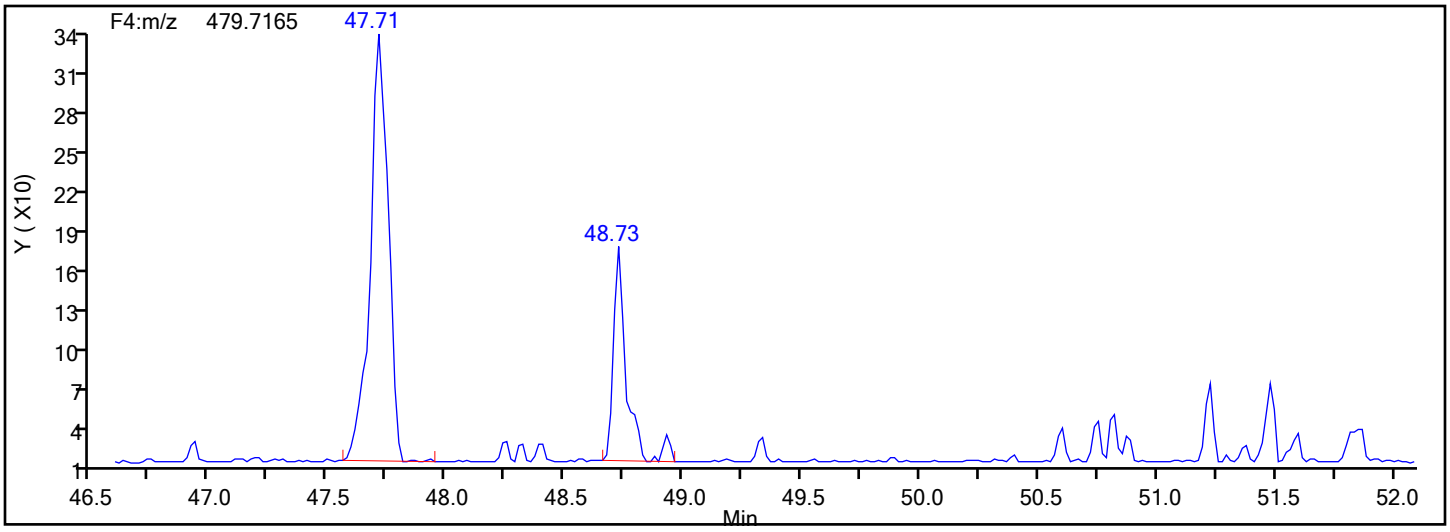
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

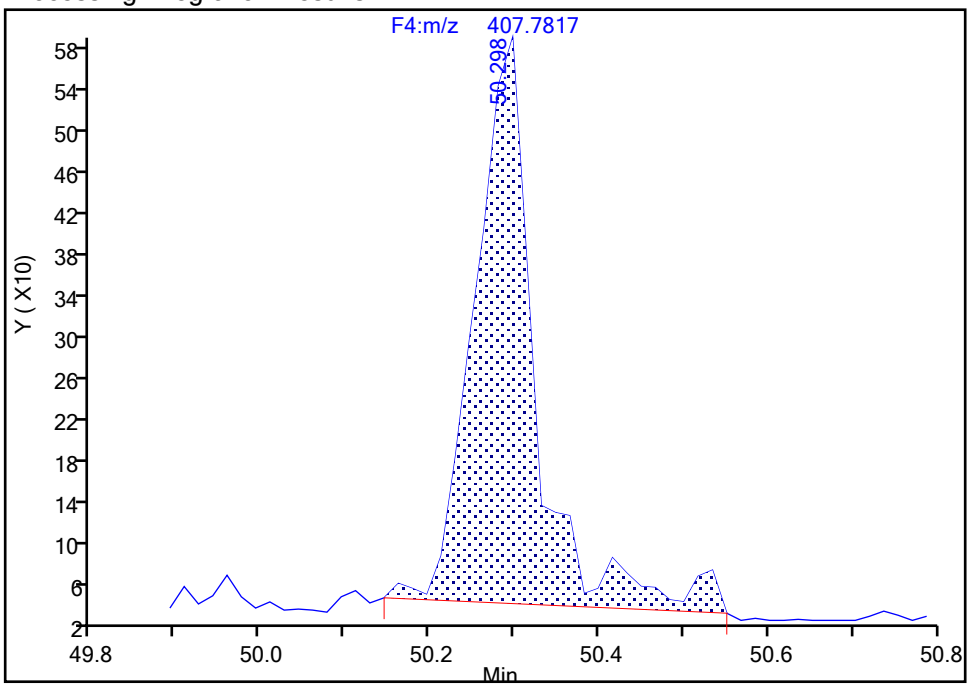
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

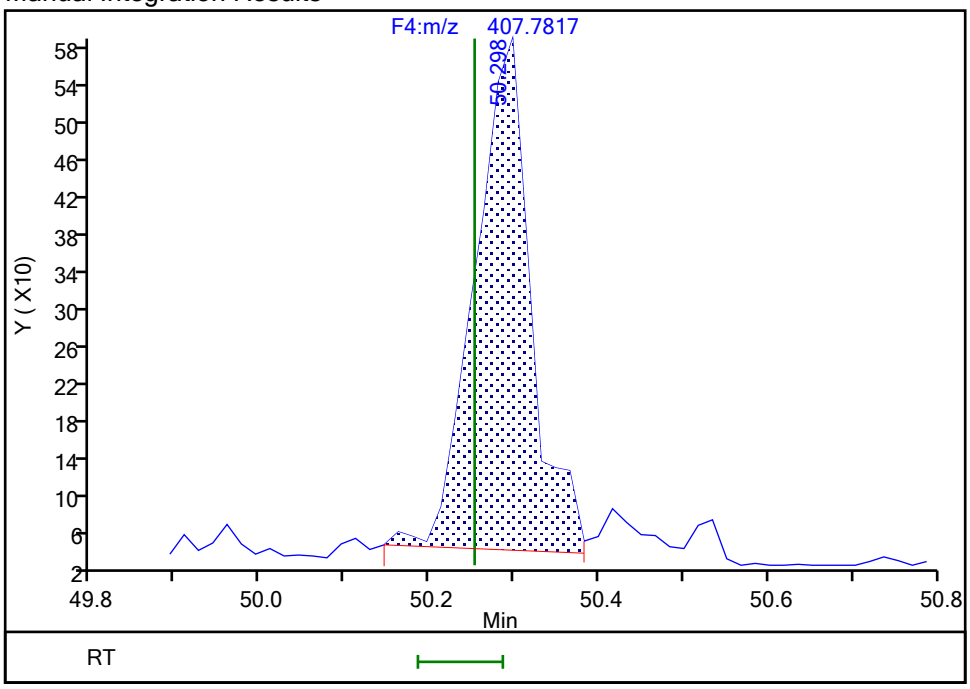
Processing Integration Results

RT: 50.30
Area: 2791
Amount: 0.314691
Amount Units: pg/ul



Manual Integration Results

RT: 50.30
Area: 2541
Amount: 0.300657
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:33:53

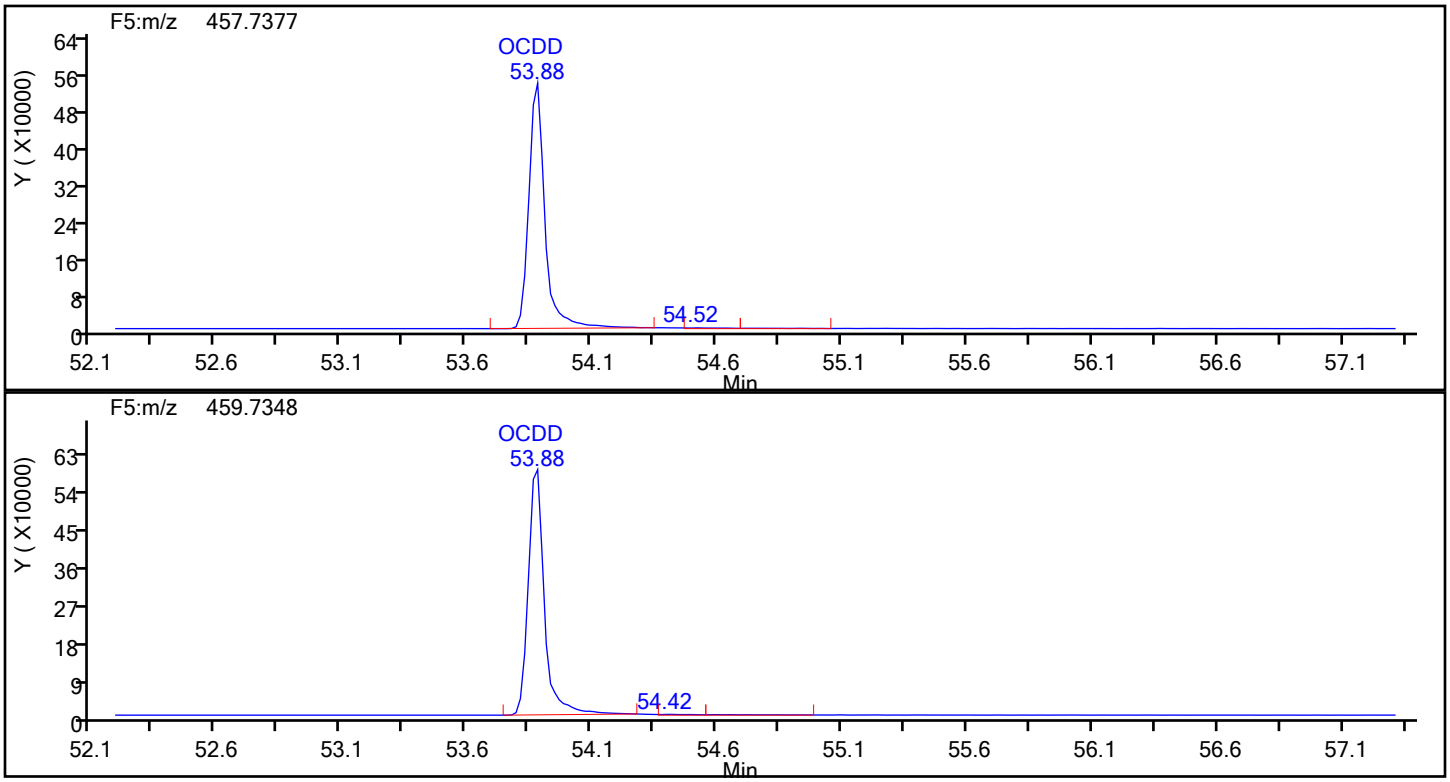
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:34:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

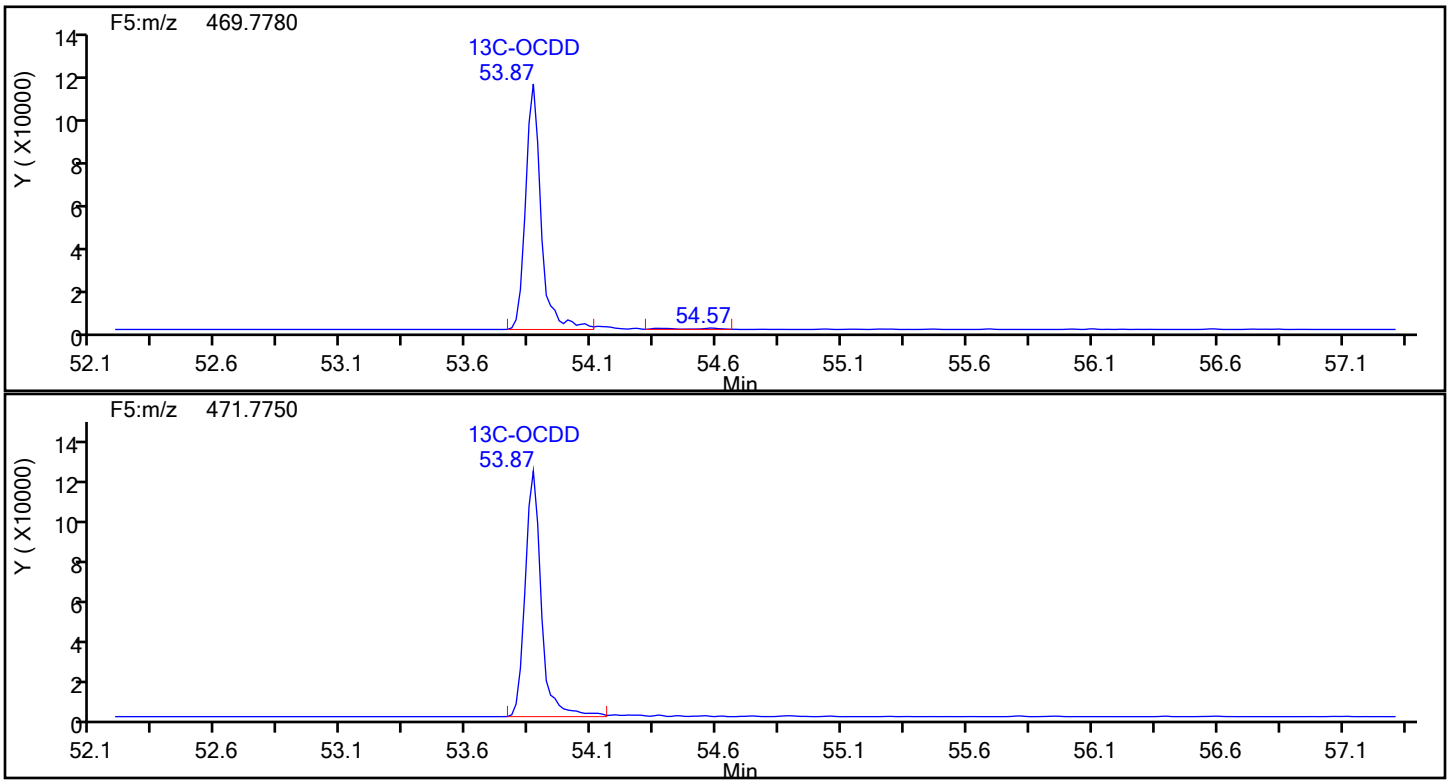
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

OCDD



OCDD Standards

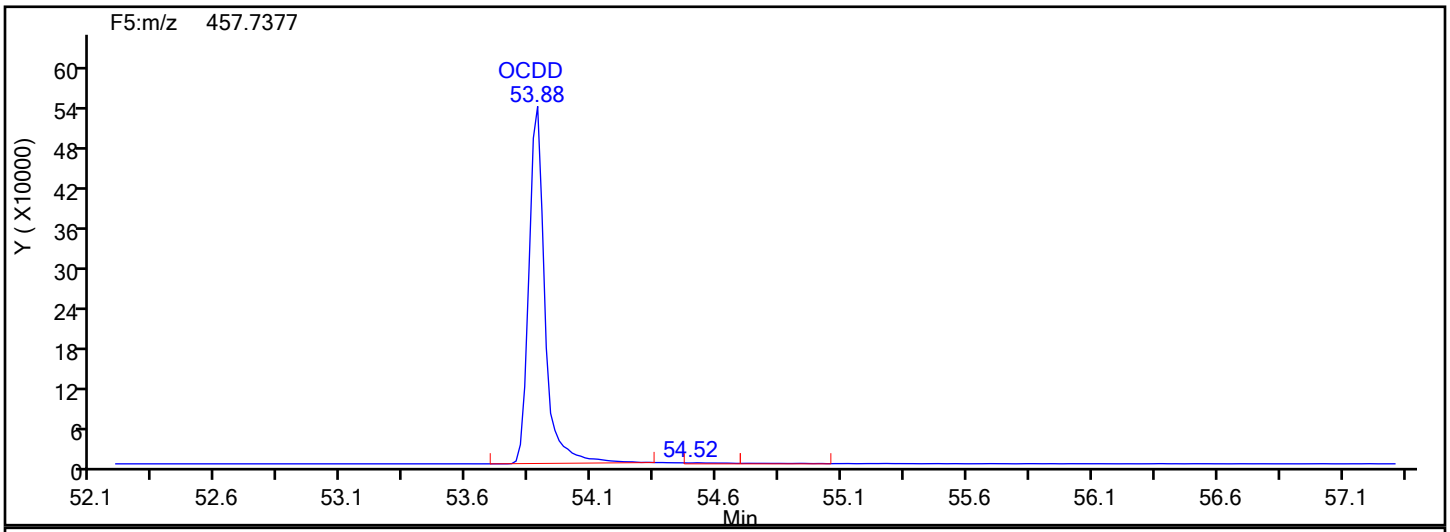


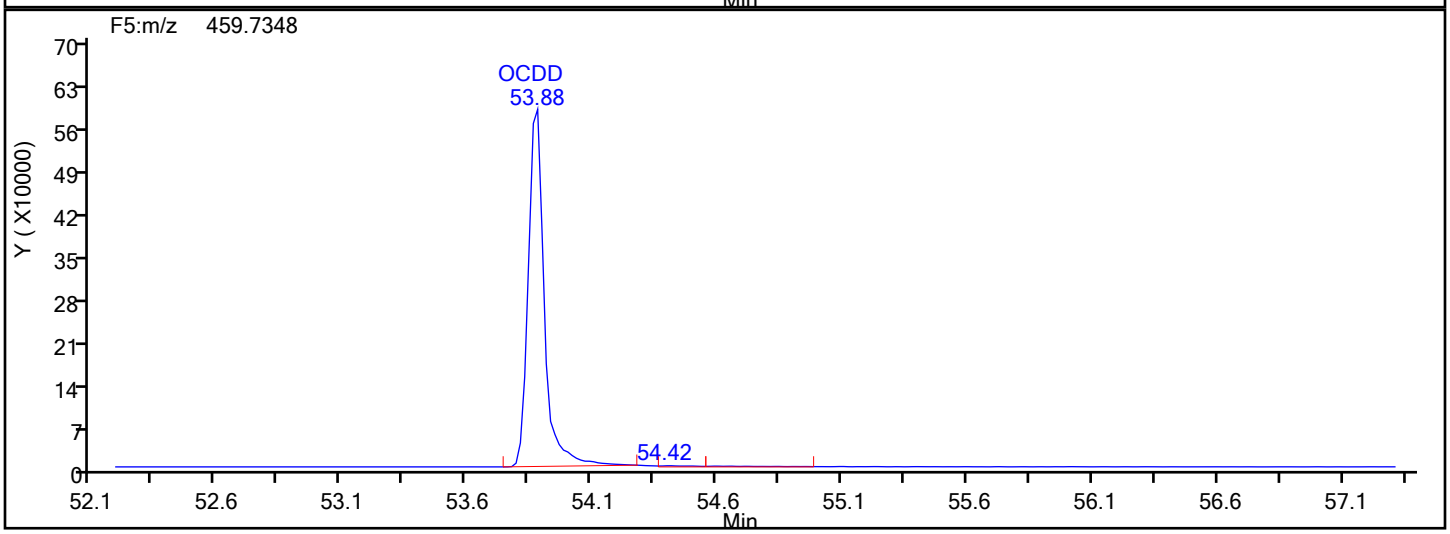
Report Date: 18-Dec-2019 08:34:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

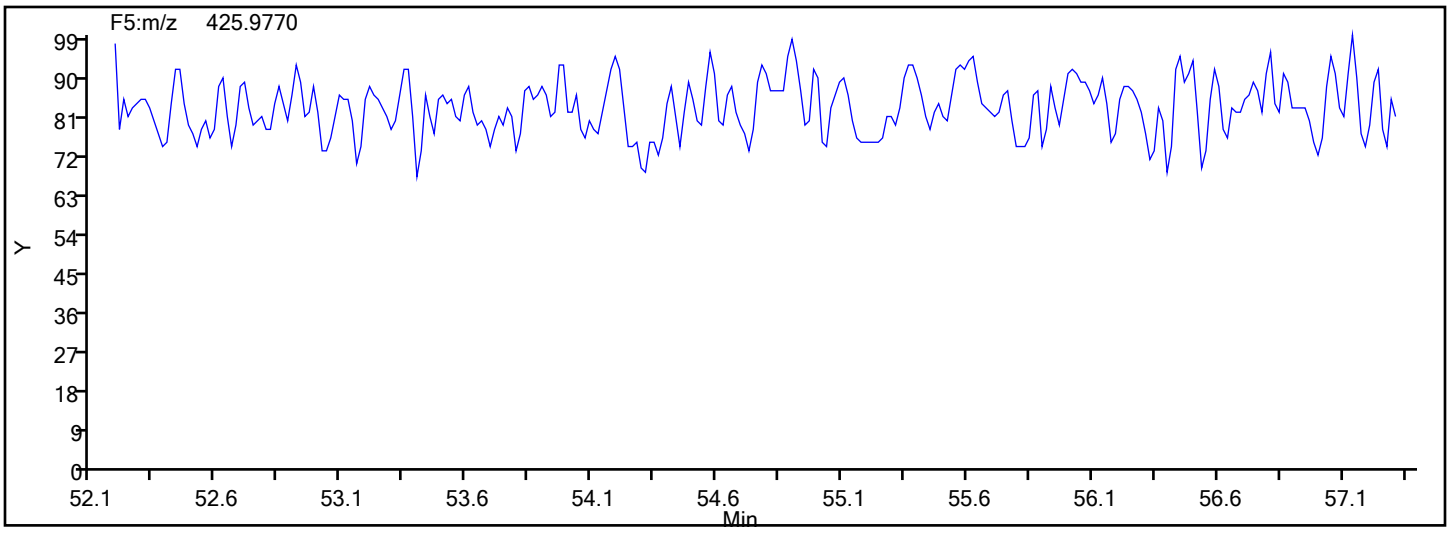
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 18-Dec-2019 08:34:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d

Injection Date: 18-Dec-2019 03:59:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

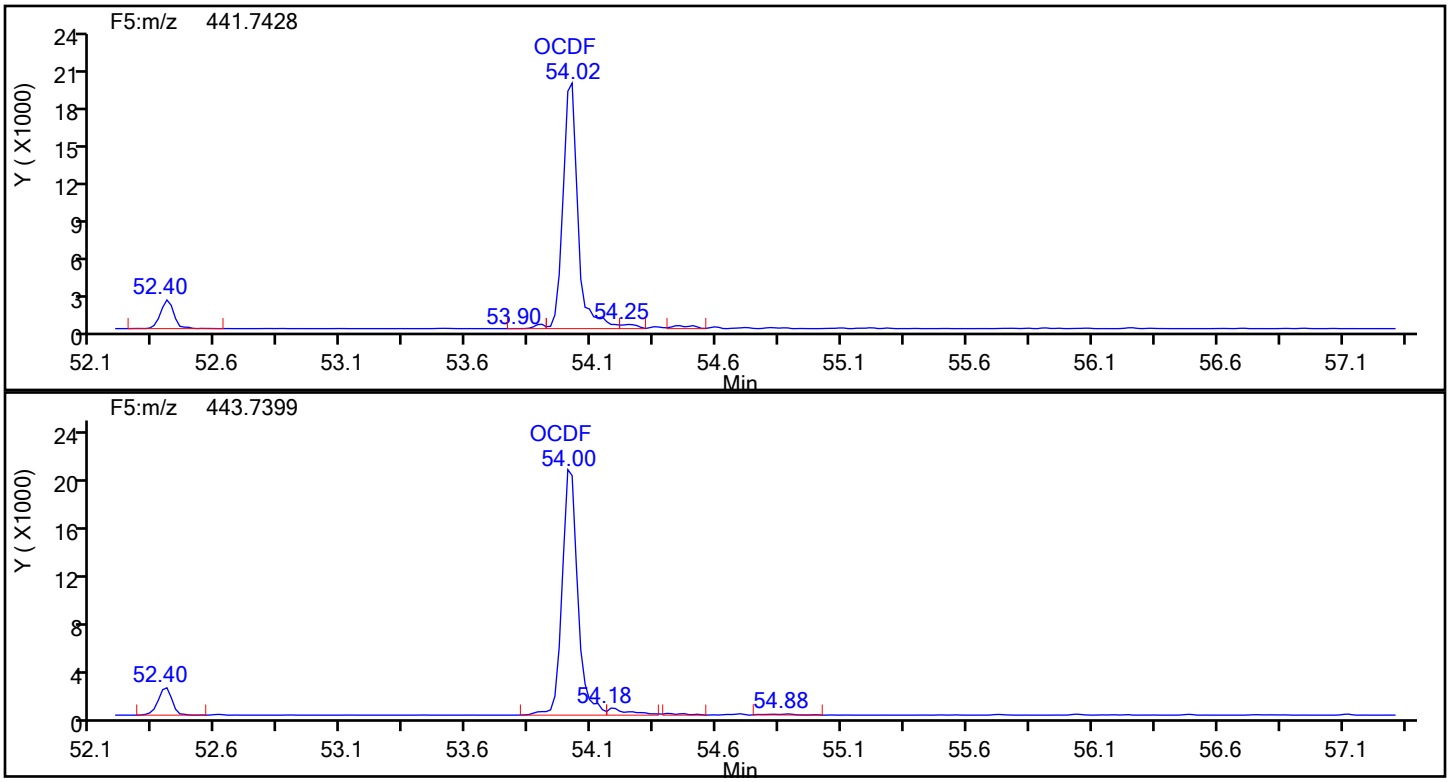
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120719-SS-SJSSA02(2-4)

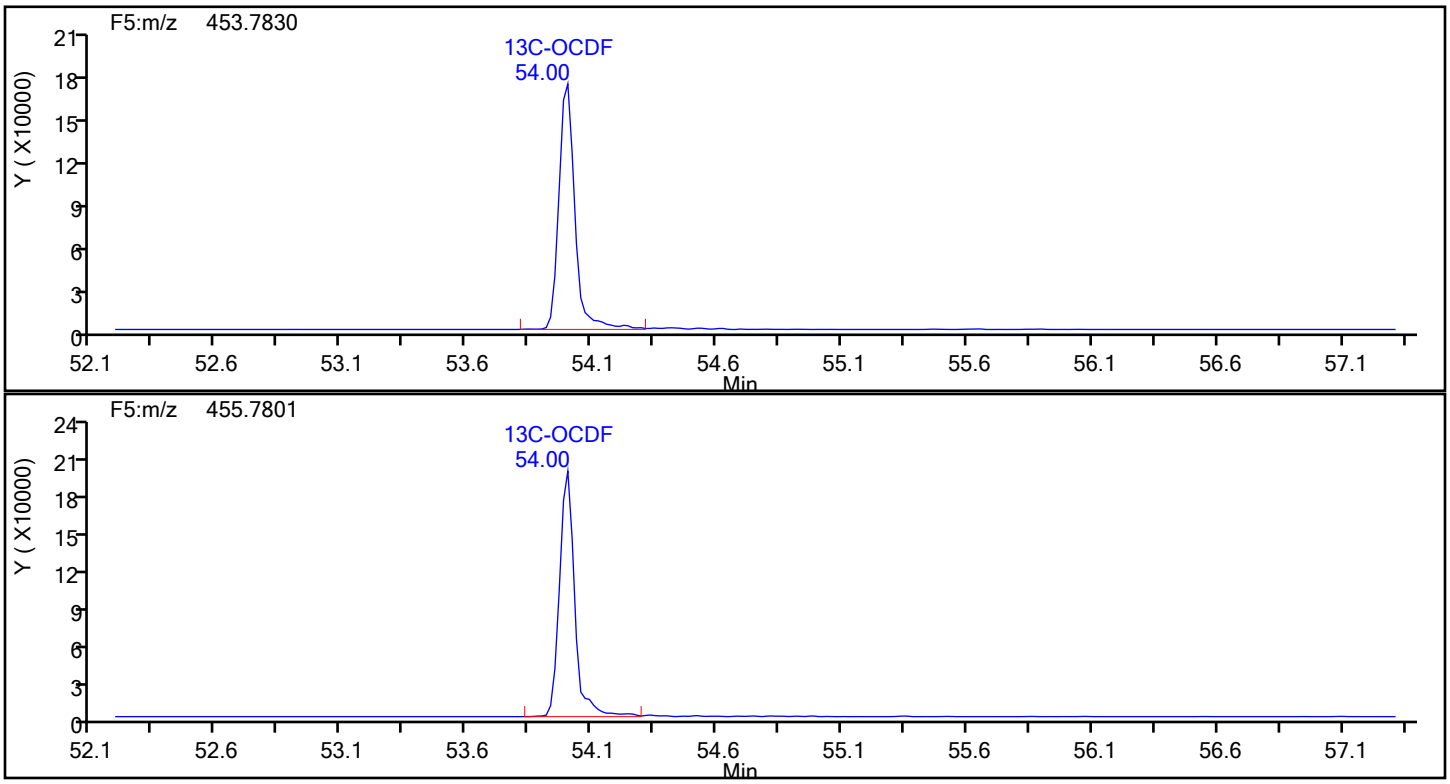
Worklist#: 36166 Sample Line#: 8

Column Type: Column Dia:

OCDF



OCDF Standards

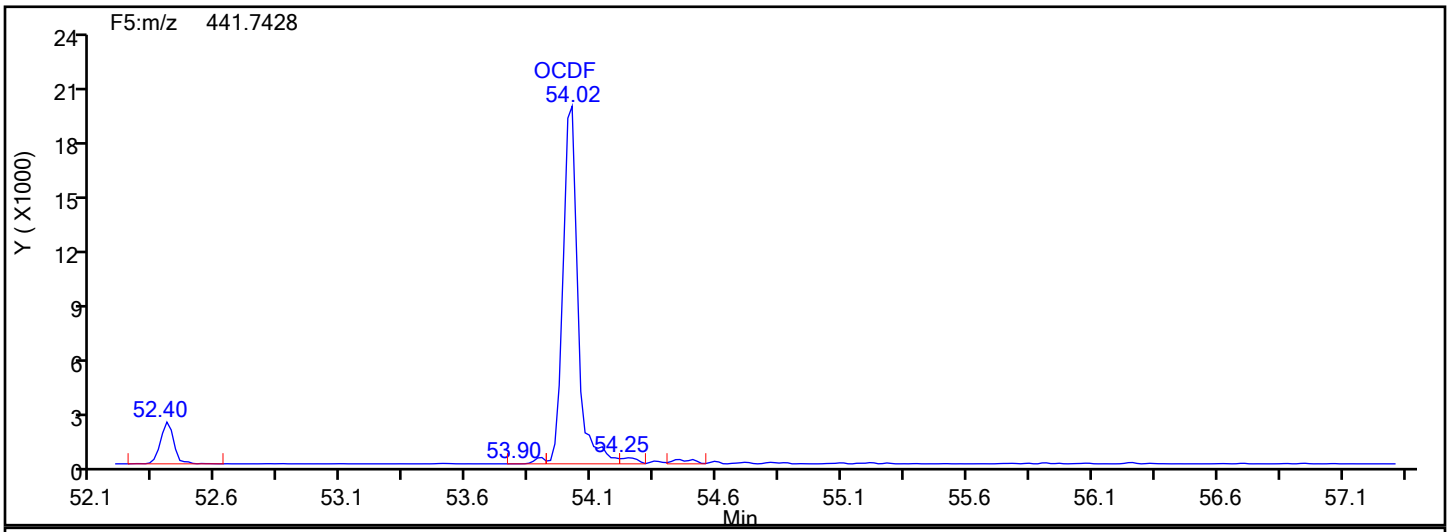


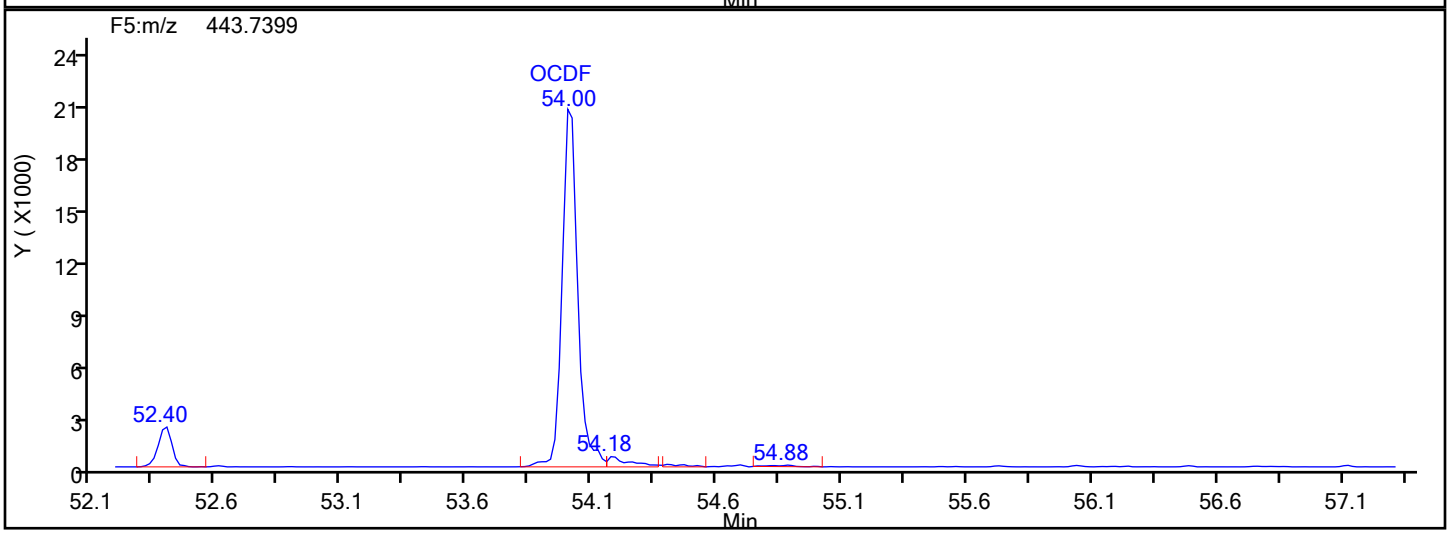
Report Date: 18-Dec-2019 08:34:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

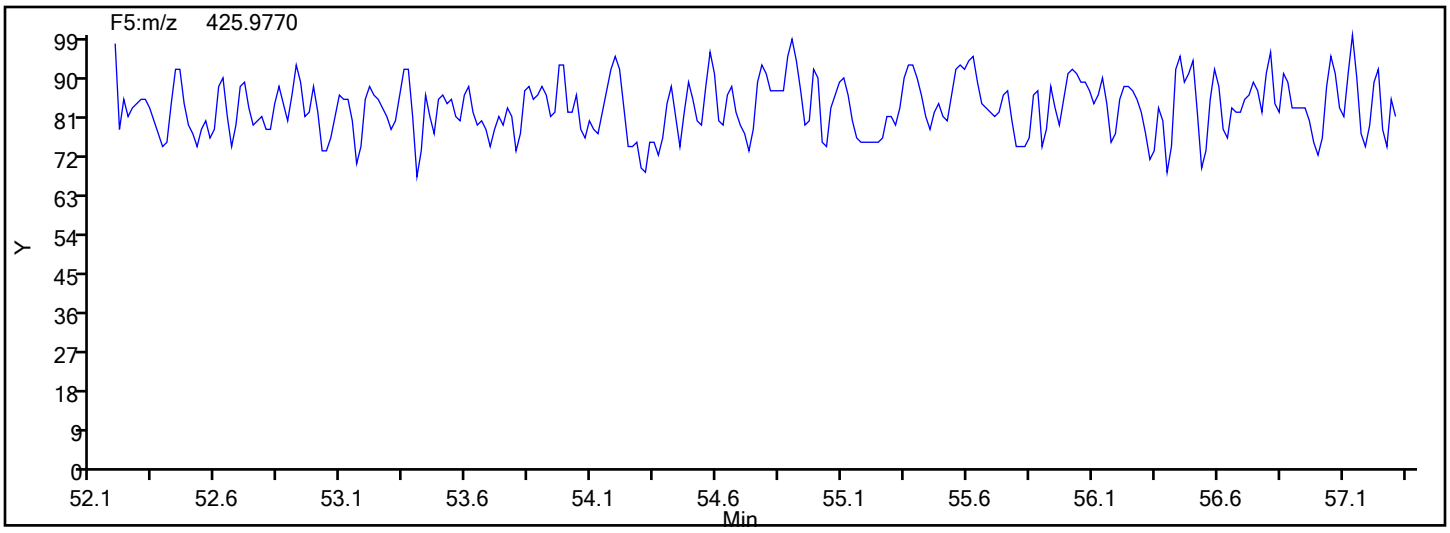
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

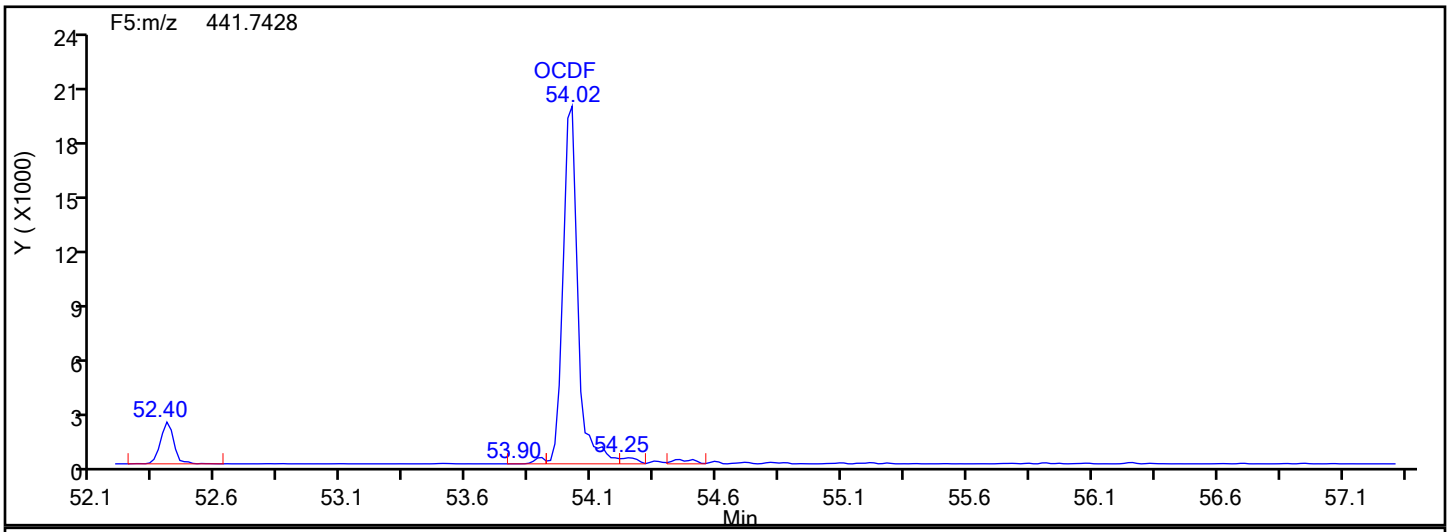


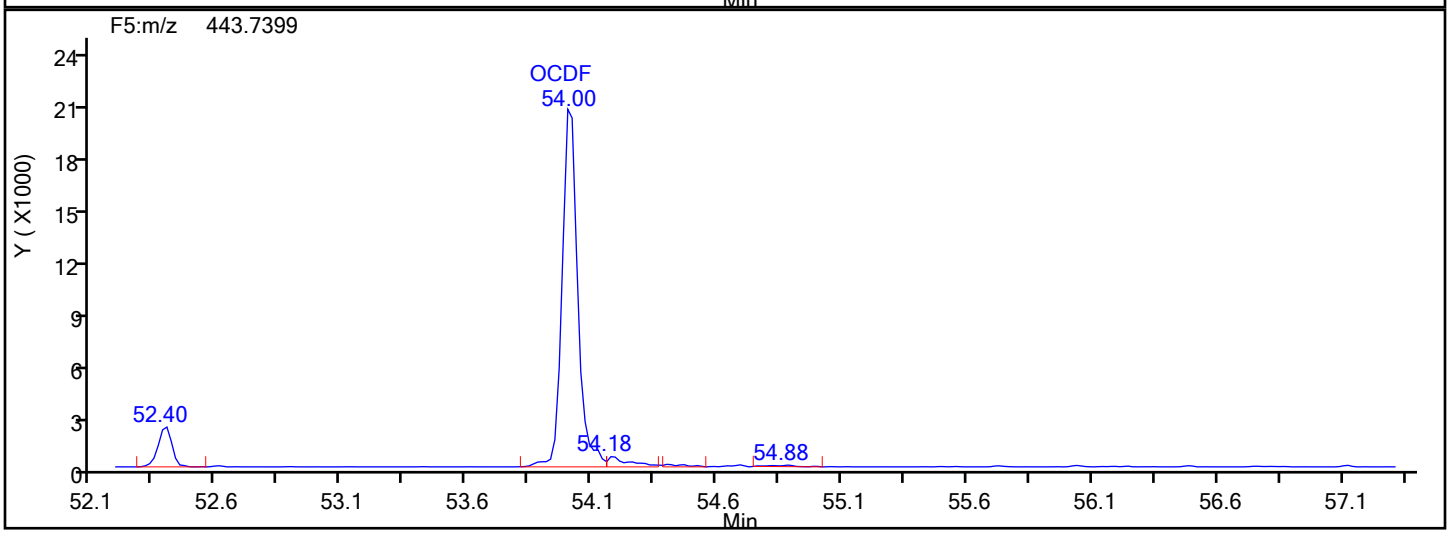
Report Date: 18-Dec-2019 08:34:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

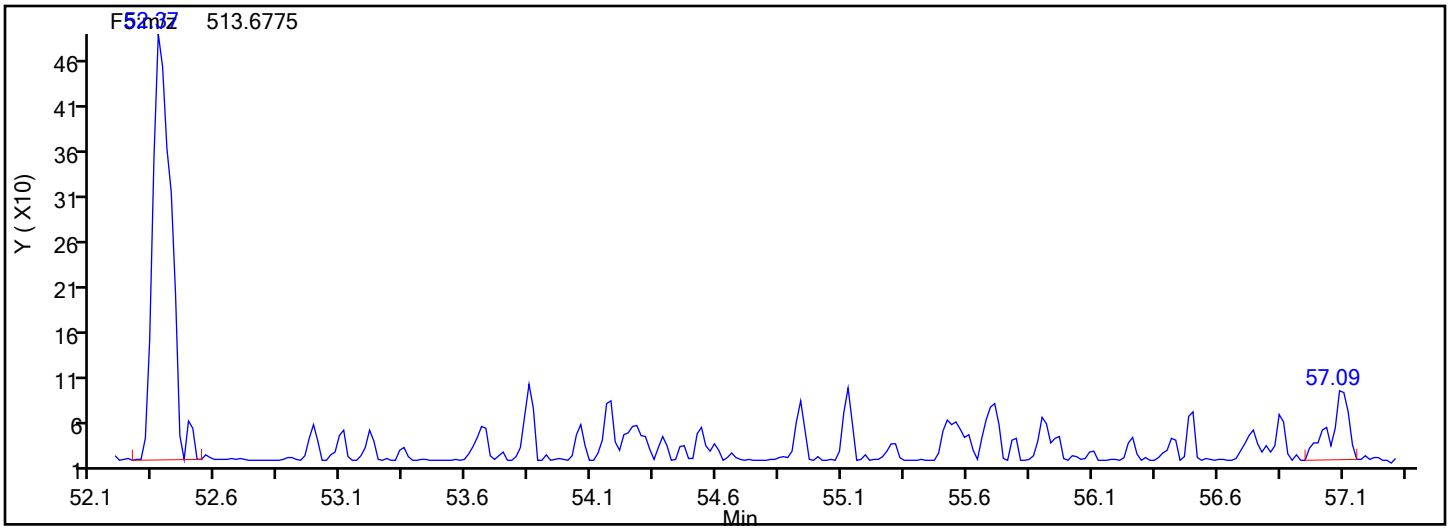
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 03:59:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36166	Sample Line#:	8
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

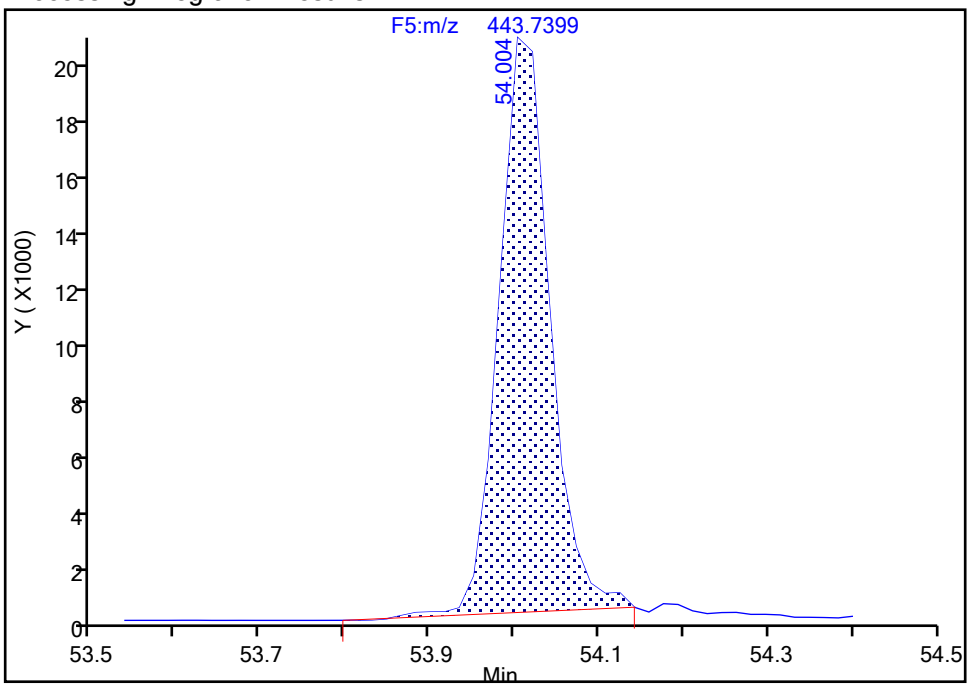
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 03:59:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

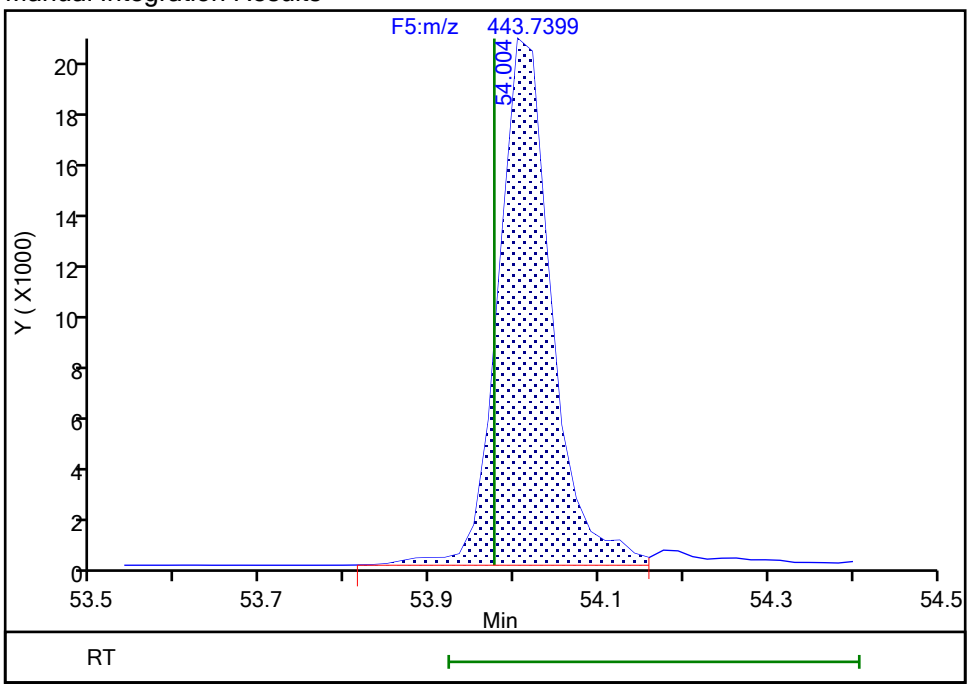
Processing Integration Results

RT: 54.00
Area: 85834
Amount: 9.369801
Amount Units: pg/ul



Manual Integration Results

RT: 54.00
Area: 91057
Amount: 9.663451
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:34:24

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(2-4) Lab Sample ID: 140-17578-14

Matrix: Sediment Lab File ID: 140-17578-a-14-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.27(g) Date Analyzed: 12/18/2019 15:25

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36178 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	18		1.3	0.19

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	57		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 15:25:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-009
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 20:45:38 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 20:45:38

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	65081	0.70	1.2213	2.331	2.331	0.1432	0.1432		
2,3,7,8-TCDF	22:13	267931	0.81	1.1100	7.118	7.118	0.0723	0.0723		Ma
D 13C-2,3,7,8-TCDD	19:41	1142896	0.78	1.0031	31.2	31.2	0.4315	0.4315	62.47	
D 13C-2,3,7,8-TCDF	22:11	1695399	0.78	1.6193	28.7	28.7	0.2145	0.2145	57.40	
$ 37Cl4-2,3,7,8-TCDD	19:42	288093		1.1834	6.674	6.674	0.0844	0.0844	66.74	
* 13C-1,2,3,4-TCDD	20:07	3647963	0.79	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d
Lims ID: 140-17578-A-14-A
Client ID: 11187072-120719-SS-SJSSA02(2-4)
Sample Type: Client
Inject. Date: 18-Dec-2019 15:25:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-009
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 20:45:38 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 20:45:38

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:42	0	1.002	26753	4455	113	282	39		
321.8936	19:41	19:42	-2	1.000	38328	5564	139	347	40	0.70(0.65-0.89)	
2,3,7,8-TCDF											Ma
303.9016	22:13	22:13	0	1.002	119665	14799	71	177	208		M
305.8987	22:13	22:13	0	1.002	148266	19959	84	210	238	0.81(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:41	19:39	0	0.978	502556	81652	532	1330	153		
333.9338	19:41	19:39	0	0.978	640340	98410	451	1127	218	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:10	0	1.103	745361	103401	432	1080	239		
317.9389	22:11	22:10	0	1.103	950038	137722	357	892	386	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:42	19:41	-1	0.979	288093	43136	227	567	190		
13C-1,2,3,4-TCDD											
331.9368	20:07	20:08	-1		1610249	251640	532	1330	473		
333.9338	20:07	20:08	-1		2037714	316044	451	1127	701	0.79(0.65-0.89)	

QC Flag Legend

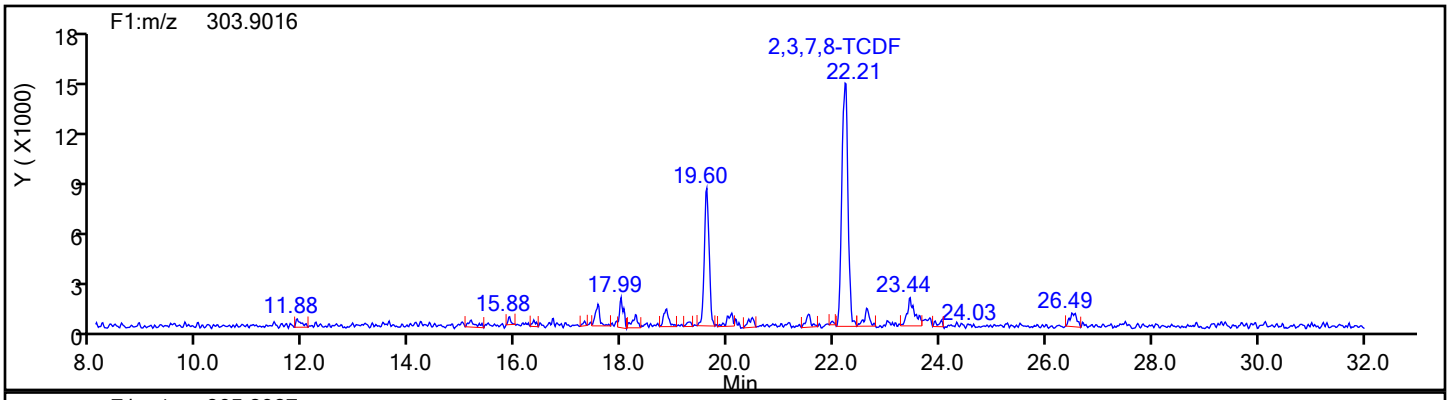
Review Flags
M - Manually Integrated
a - User Assigned ID

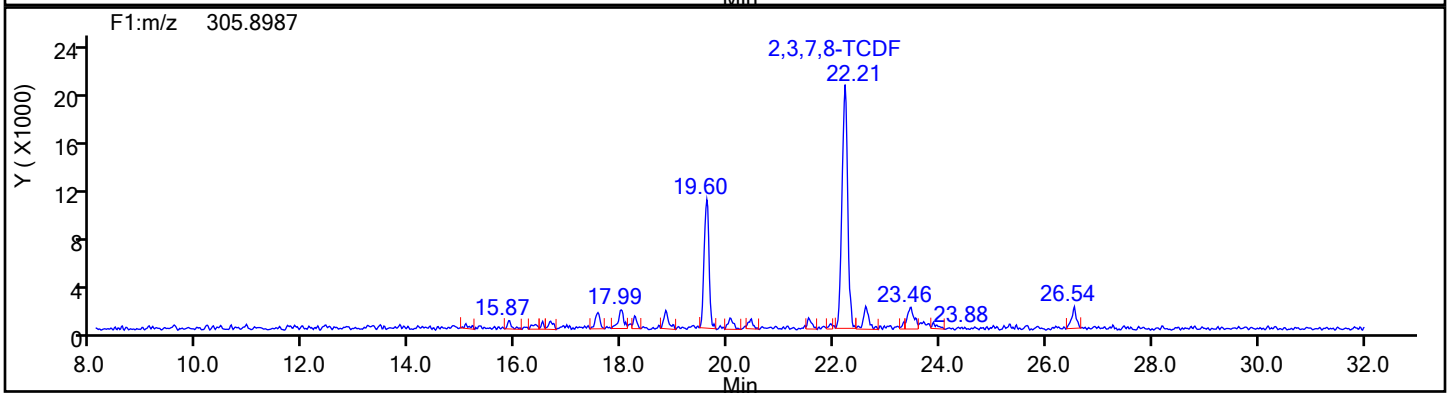
Report Date: 18-Dec-2019 20:45:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

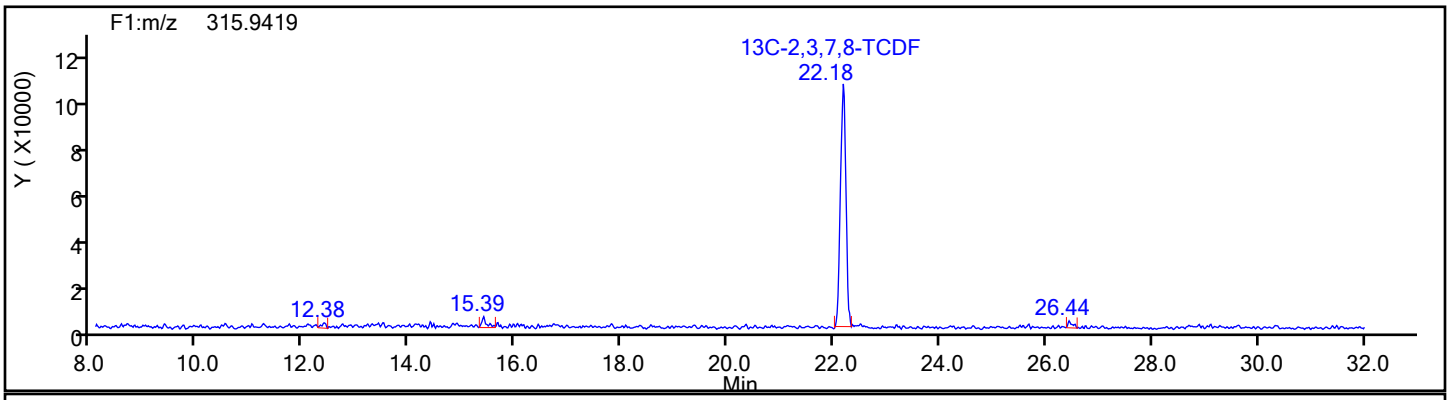
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 15:25:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36178	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

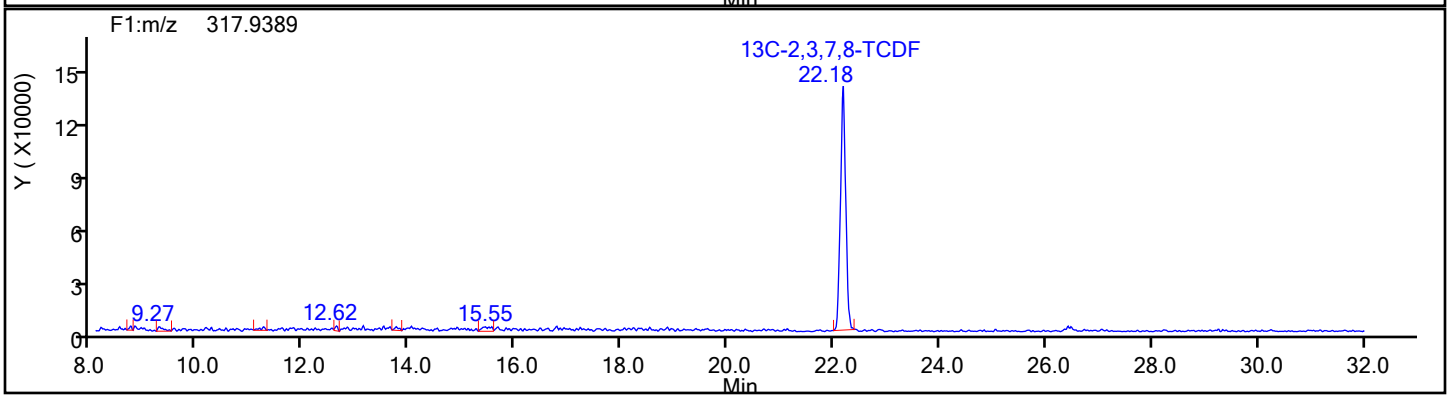
TCDF





TCDF Standards



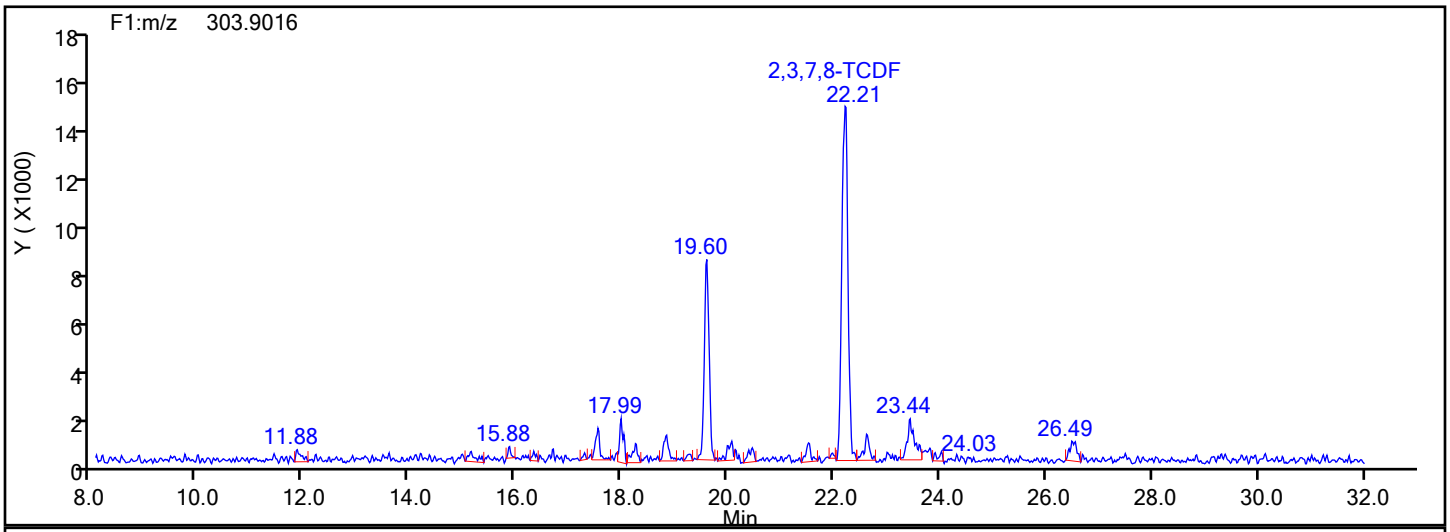


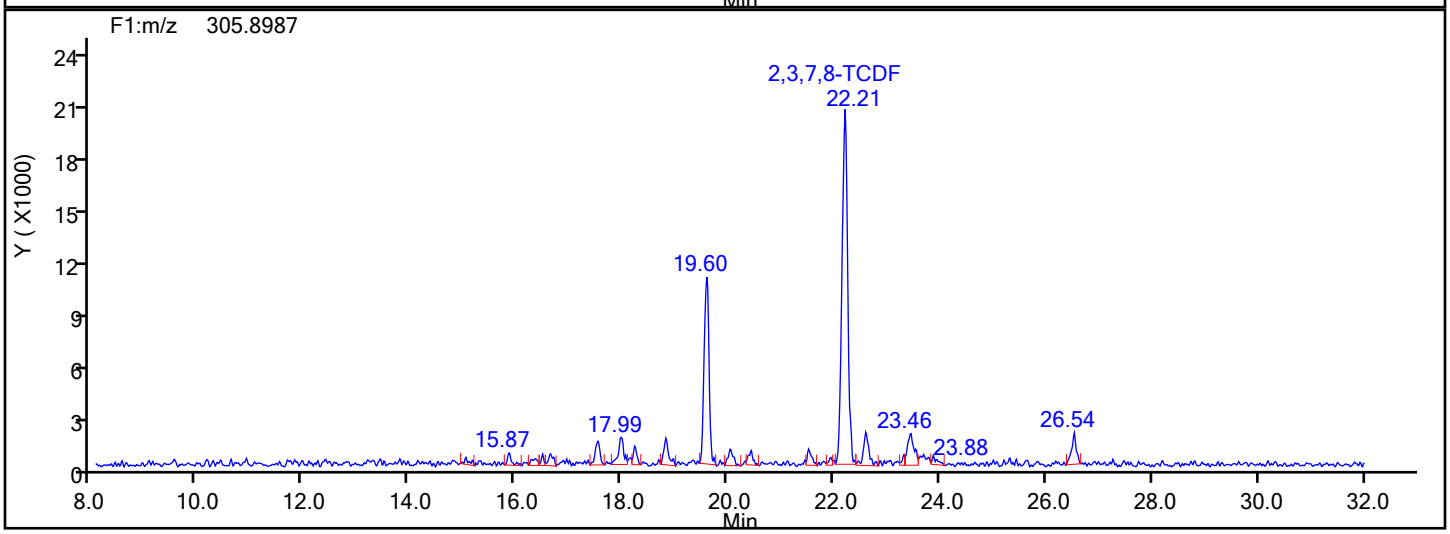
Report Date: 18-Dec-2019 20:45:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

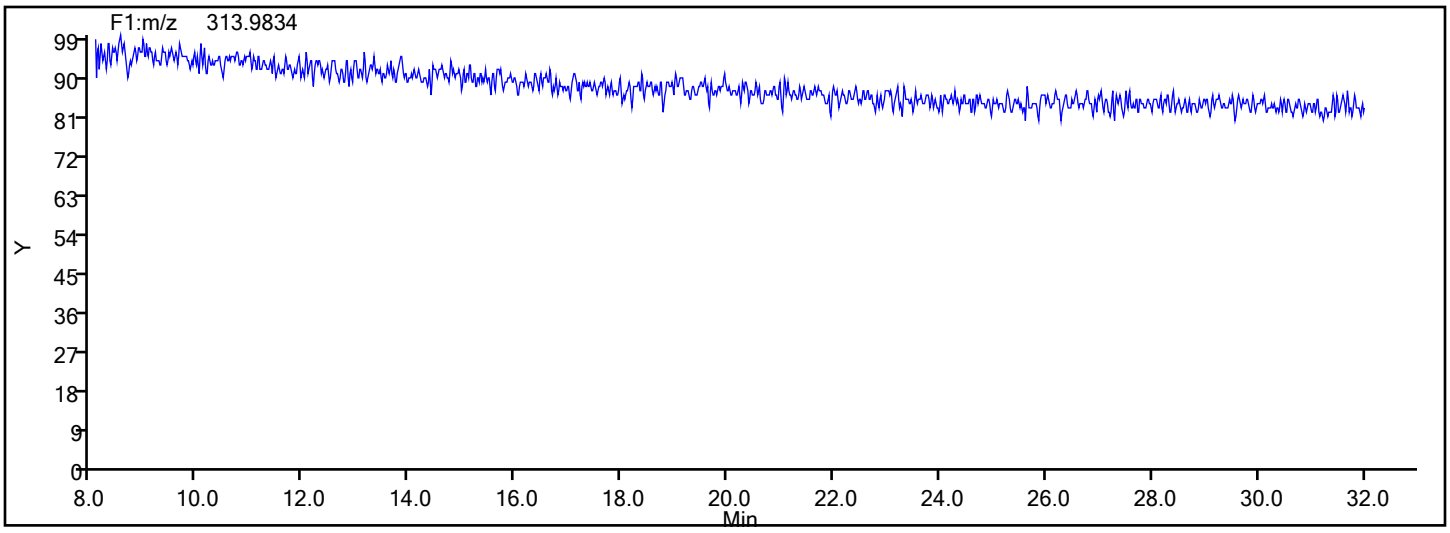
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 15:25:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36178	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

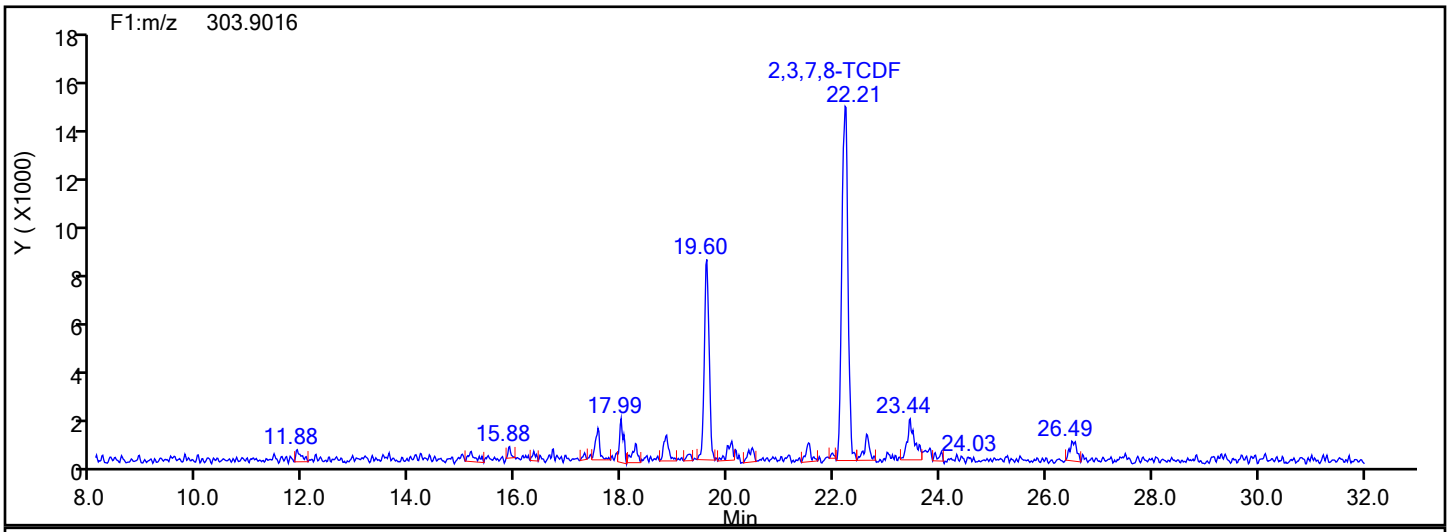


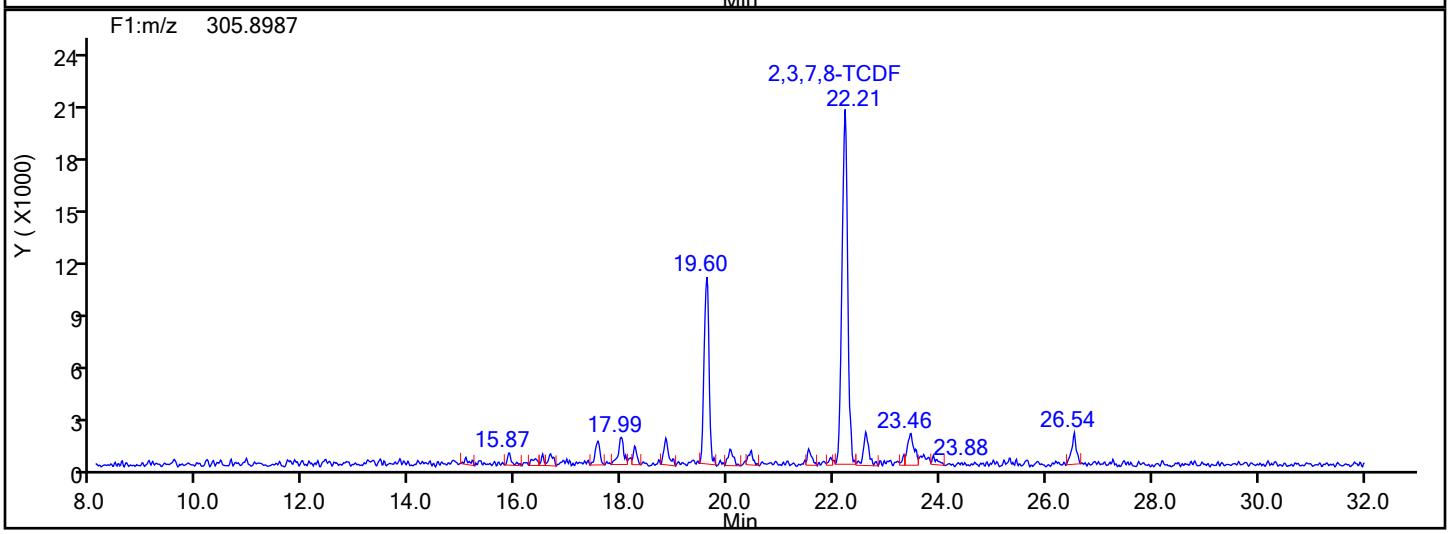
Report Date: 18-Dec-2019 20:45:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

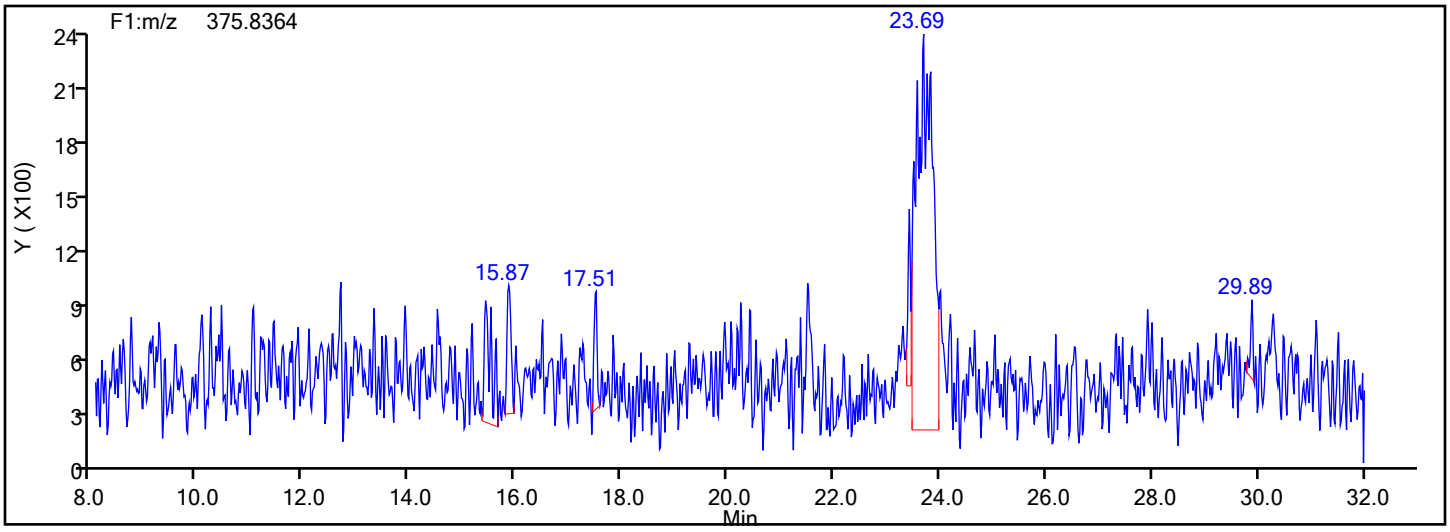
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d		
Injection Date:	18-Dec-2019 15:25:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(2-4)		
Worklist#:	36178	Sample Line#:	9
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

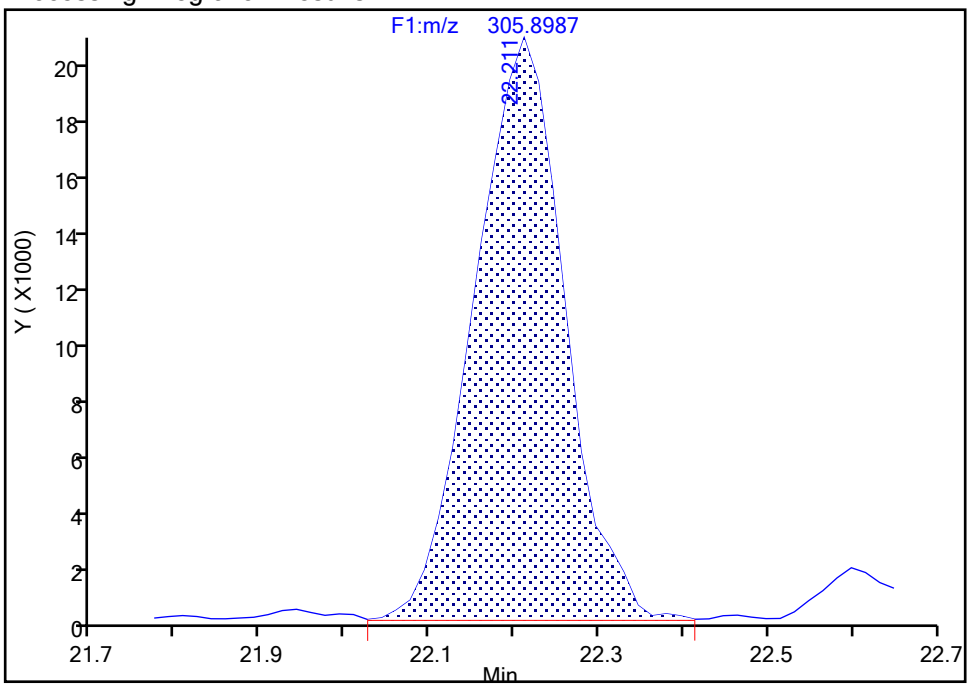
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 15:25:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

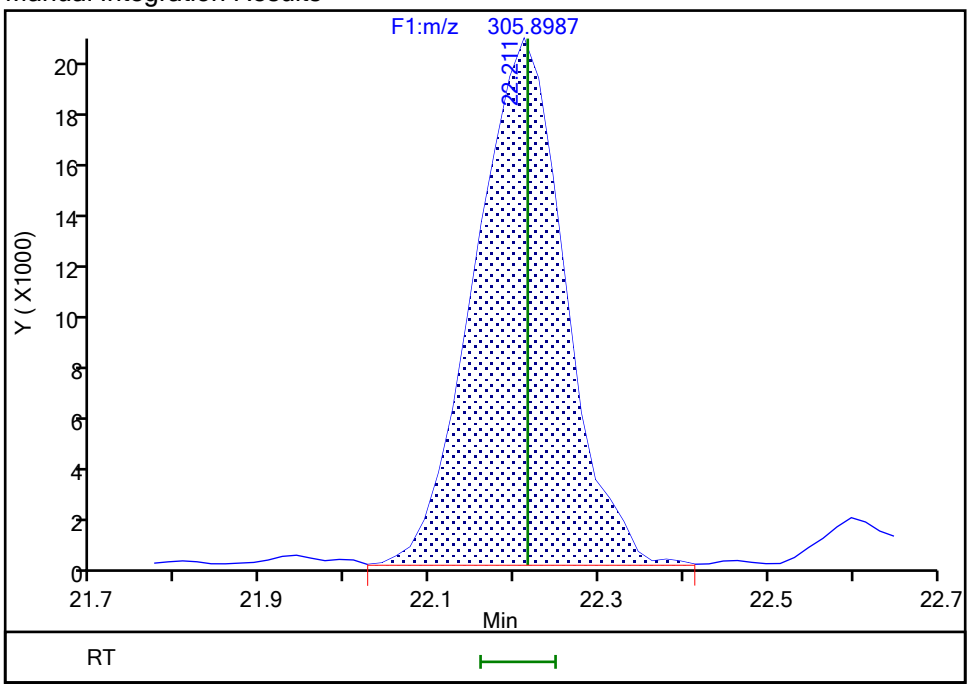
Processing Integration Results

RT: 22.21
Area: 148266
Amount: 5.594951
Amount Units: pg/ul



Manual Integration Results

RT: 22.21
Area: 148266
Amount: 7.118453
Amount Units: pg/ul



Reviewer: mcwhirterl, 18-Dec-2019 20:45:15

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

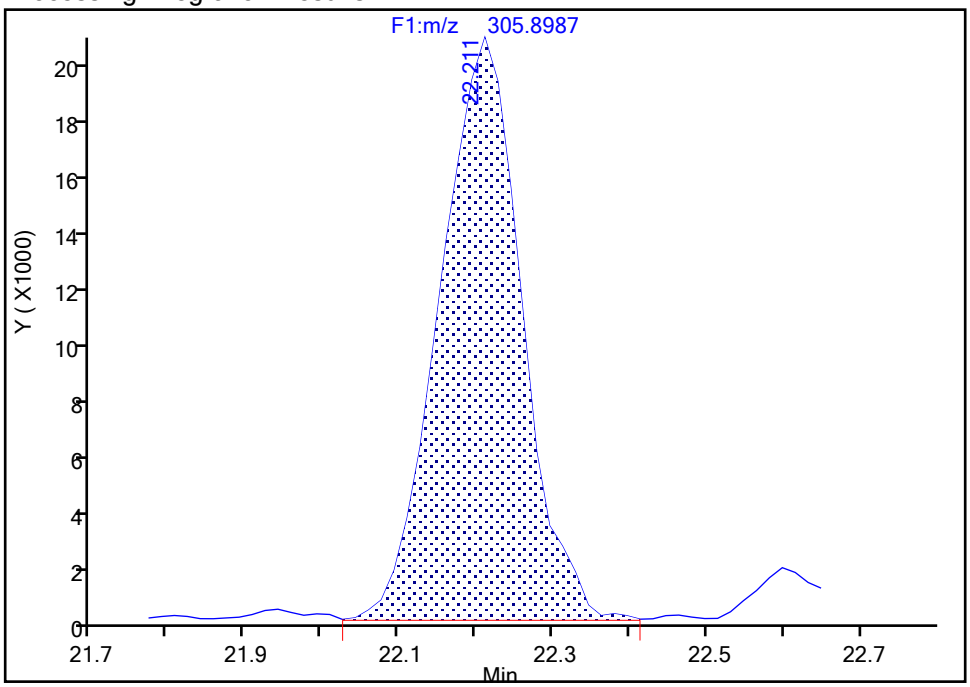
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 15:25:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 3

Processing Integration Results

RT: 22.21
Area: 210588
Amount: 5.594951
Amount Units: pg/ul



Manual Integration Results

RT: 22.21
Area: 267931
Amount: 7.118453
Amount Units: pg/ul
Reviewer: mcwhirterl, 18-Dec-2019 20:45:15
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

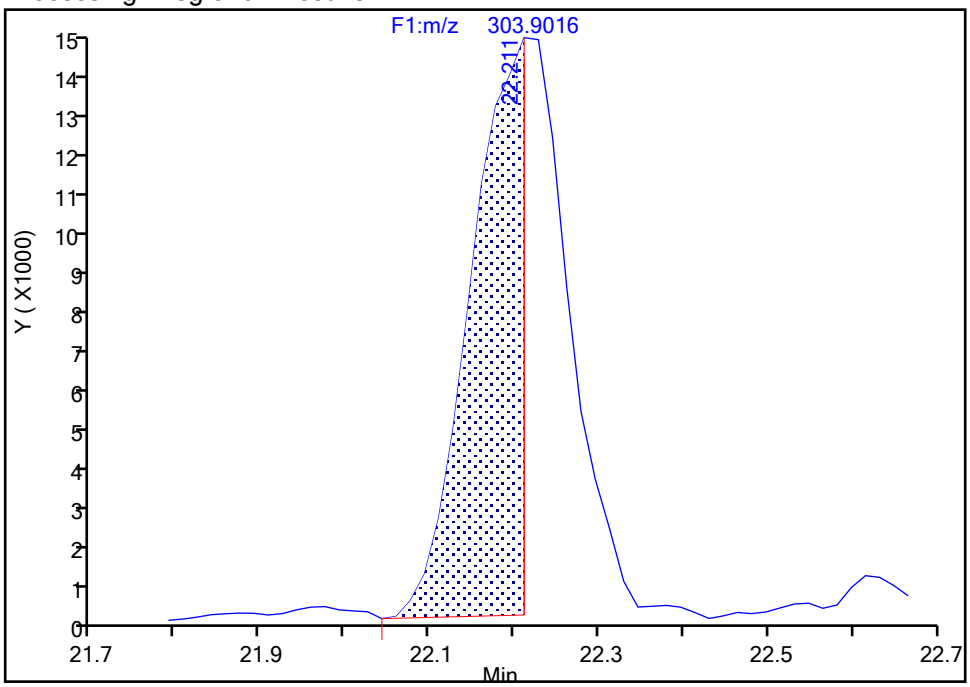
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-14-a.d				
Injection Date:	18-Dec-2019 15:25:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-14-A	Lab Sample ID:	140-17578-14		
Client ID:	11187072-120719-SS-SJSSA02(2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

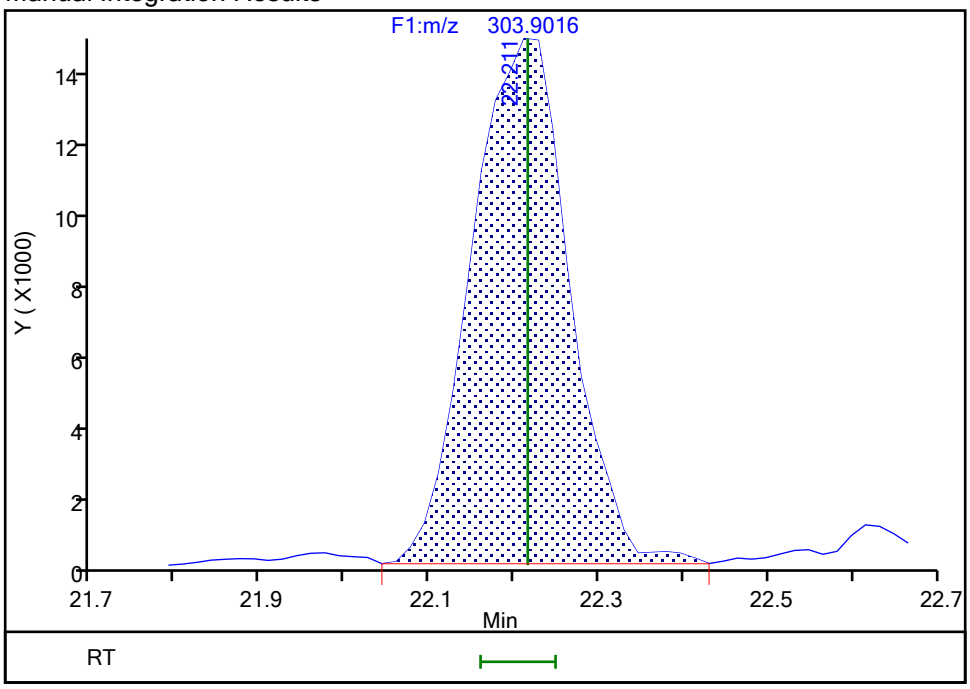
Processing Integration Results

RT: 22.21
Area: 62322
Amount: 5.594951
Amount Units: pg/ul



Manual Integration Results

RT: 22.21
Area: 119665
Amount: 7.118453
Amount Units: pg/ul



Reviewer: mcwhirterl, 18-Dec-2019 20:45:17

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) Lab Sample ID: 140-17578-15

Matrix: Sediment Lab File ID: 140-17578-a-15-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:05

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.13(g) Date Analyzed: 12/18/2019 05:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 20.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	0.62	J q	1.2	0.081
41903-57-5	Total TCDD	5.2	B q	1.2	0.081
40321-76-4	1,2,3,7,8-PeCDD	ND		6.2	0.080
36088-22-9	Total PeCDD	4.6	J q	6.2	0.080
39227-28-6	1,2,3,4,7,8-HxCDD	0.39	J	6.2	0.091
57653-85-7	1,2,3,6,7,8-HxCDD	0.54	J	6.2	0.088
19408-74-3	1,2,3,7,8,9-HxCDD	1.0	J q	6.2	0.084
34465-46-8	Total HxCDD	26	B q	6.2	0.088
35822-46-9	1,2,3,4,6,7,8-HpCDD	22	B	6.2	0.17
37871-00-4	Total HpCDD	70	B	6.2	0.17
3268-87-9	OCDD	450	B	12	0.022
30402-14-3	Total TCDF	5.0	B q	1.2	0.079
57117-41-6	1,2,3,7,8-PeCDF	ND		6.2	0.10
57117-31-4	2,3,4,7,8-PeCDF	0.26	J	6.2	0.10
30402-15-4	Total PeCDF	0.88	J I q	6.2	0.10
70648-26-9	1,2,3,4,7,8-HxCDF	0.42	J	6.2	0.079
57117-44-9	1,2,3,6,7,8-HxCDF	0.23	J	6.2	0.075
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.2	0.081
72918-21-9	1,2,3,7,8,9-HxCDF	ND		6.2	0.11
55684-94-1	Total HxCDF	2.2	J I q	6.2	0.087
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.90	J B	6.2	0.043
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		6.2	0.062
38998-75-3	Total HpCDF	2.3	J B q	6.2	0.053
39001-02-0	OCDF	5.3	J B	12	0.099

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) Lab Sample ID: 140-17578-15

Matrix: Sediment Lab File ID: 140-17578-a-15-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:05

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.13(g) Date Analyzed: 12/18/2019 05:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 20.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	67		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	62		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	68		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	67		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
114423-97-1	13C-OCDD	57		17-157
89059-46-1	13C-2,3,7,8-TCDF	66		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	63		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	60		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	69		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	69		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	69		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	68		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	64		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	62		26-138
109719-78-0	13C-OCDF	62		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	71		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:00:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:43:16 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:43:16

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:50	3665	0.77	1.1733	0.2699	0.2504	0.0328	0.0328		RQ
A Non-2,3,7,8-sub-TCDD	29:27	27034	0.77	1.1733	1.971	1.847	0.0328	1.099		RQMa
S Total TCDD					2.241	2.098	0.0328	0.0328		RQ
2,3,7,8-TCDF	28:51	19532	0.82	1.0881	0.8923	0.8923	0.0318	0.0318		M
A Non-2,3,7,8-sub-TCDF	28:10	25067	0.77	1.0881	1.371	1.145	0.0318	0.3100		RQMa
S Total TCDF					2.264	2.037	0.0318	0.0318		RQ
1,2,3,7,8-PeCDD	40:33						0.0323	0.0323		
A Non-2,3,7,8-sub-PeCDD	39:24	18507	1.55	1.0434	2.032	1.872	0.0323	0.9603		RQ
S Total PeCDD					2.032	1.872	0.0323	0.0323		RQ
1,2,3,7,8-PeCDF	38:45						0.0406	0.0406		
2,3,4,7,8-PeCDF	40:03	1684	1.59	1.1095	0.1049	0.1049	0.0407	0.0407		M
A Non-2,3,7,8-sub-PeCDF	37:59	4287	1.55	1.1496	0.2758	0.2521	0.0406	0.1296		RQ
S Total PeCDF					0.3807	0.3570	0.0407	0.0407		RQ
1,2,3,4,7,8-HxCDD	44:50	1867	1.11	1.1409	0.1562	0.1562	0.0368	0.0368		Ma
1,2,3,6,7,8-HxCDD	44:56	2722	1.27	1.1481	0.2188	0.2188	0.0357	0.0357		M
1,2,3,7,8,9-HxCDD	45:19	5340	1.24	1.2212	0.5264	0.4104	0.0339	0.0339		RQM
A Non-2,3,7,8-sub-HxCDD	44:17	121451	1.24	1.1700	9.878	9.742	0.0354	7.537		RQ
S Total HxCDD					10.8	10.5	0.0355	0.0355		RQ
1,2,3,4,7,8-HxCDF	43:47	3338	1.27	1.3629	0.1694	0.1694	0.0319	0.0319		M
1,2,3,6,7,8-HxCDF	43:56	2106	1.11	1.2762	0.0928	0.0928	0.0304	0.0304		Ma
2,3,4,6,7,8-HxCDF	44:38						0.0327	0.0327		
1,2,3,7,8,9-HxCDF	45:35						0.0458	0.0458		
A Non-2,3,7,8-sub-HxCDF	44:08	12914	1.24	1.2905	0.7010	0.6401	0.0343	0.2435		RQ
S Total HxCDF					0.9632	0.9023	0.0352	0.0352		RQ
1,2,3,4,6,7,8-HpCDD	49:37	94564	1.05	1.1204	8.891	8.891	0.0678	0.0678		
A Non-2,3,7,8-sub-HpCDD	49:01	207933	1.06	1.1204	19.6	19.6	0.0678	19.6		a
S Total HpCDD					28.4	28.4	0.0678	0.0678		
1,2,3,4,6,7,8-HpCDF	47:57	6425	0.96	1.4984	0.3616	0.3616	0.0174	0.0174		M
1,2,3,4,7,8,9-HpCDF	50:16						0.0250	0.0250		
A Non-2,3,7,8-sub-HpCDF	49:31	8753	1.04	1.4395	0.5850	0.5645	0.0207	0.5338		RQa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					0.9466	0.9261	0.0212	0.0212		RQ
OCDD	53:52	1558829	0.91	1.2073	183.6	183.6	0.008868	0.008868		
OCDF	54:00	27503	0.91	1.1162	2.150	2.150	0.0400	0.0400		M
D 13C-2,3,7,8-TCDD	30:49	623629	0.82	1.0709	33.4	33.4	0.3408	0.3408	66.73	
D 13C-2,3,7,8-TCDF	28:49	1005829	0.77	1.7545	32.8	32.8	0.4339	0.4339	65.69	
D 13C-1,2,3,7,8-PeCDD	40:33	473866	1.69	0.8743	31.1	31.1	0.5507	0.5507	62.11	
D 13C-1,2,3,7,8-PeCDF	38:45	756046	1.61	1.3704	31.6	31.6	0.4088	0.4088	63.22	
D 13C-2,3,4,7,8-PeCDF	40:01	723245	1.54	1.3837	29.9	29.9	0.4049	0.4049	59.89	
D 13C-1,2,3,4,7,8-HxCDD	44:48	523831	1.33	0.8772	34.1	34.1	0.1001	0.1001	68.14	
D 13C-1,2,3,6,7,8-HxCDD	44:55	541664	1.31	0.9171	33.7	33.7	0.0958	0.0958	67.40	
D 13C-1,2,3,4,7,8-HxCDF	43:46	722710	0.54	1.1892	34.7	34.7	0.3038	0.3038	69.35	
D 13C-1,2,3,6,7,8-HxCDF	43:55	889302	0.51	1.4625	34.7	34.7	0.2471	0.2471	69.39	
D 13C-2,3,4,6,7,8-HxCDF	44:38	798507	0.52	1.3197	34.5	34.5	0.2738	0.2738	69.05	
D 13C-1,2,3,7,8,9-HxCDF	45:35	716501	0.52	1.2001	34.1	34.1	0.3011	0.3011	68.13	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	474640	1.06	0.8155	33.2	33.2	0.2262	0.2262	66.42	
D 13C-1,2,3,4,6,7,8-HpCDF	47:56	592884	0.47	1.0496	32.2	32.2	0.3478	0.3478	64.46	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	484219	0.43	0.8947	30.9	30.9	0.4081	0.4081	61.76	
D 13C-OCDD	53:51	703254	0.93	0.7044	57.0	57.0	0.3854	0.3854	56.96	
D 13C-OCDF	53:59	1146010	0.86	1.0615	61.6	61.6	0.3362	0.3362	61.60	
$ 37Cl4-2,3,7,8-TCDD	30:51	152365		1.2266	7.117	7.117	0.0736	0.0736	71.17	
* 13C-1,2,3,4-TCDD	30:18	1745368	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	1752669	1.28	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 18-Dec-2019 08:43:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 05:00:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-009
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:43:16 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:43:16

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQ
319.8965	30:50	30:53	1	1.001	1879	364	11	27	33		
	Empc Correction				1594	223	11	27	20		
321.8936	30:52	30:53	3	1.002	2071	290	10	25	29	0.91(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	24:55	29:27	-271	0.809	562	84	11	27	8		M
321.8936	24:55	29:27	-271	0.809	993	192	10	25	19	0.57(0.65-0.89)	
	Empc Correction				729	109	10	25	11		
319.8965	26:18	29:27	-188	0.854	772	88	11	27	8		
321.8936	26:17	29:27	-189	0.853	1781	255	10	25	26	0.43(0.65-0.89)	M
	Empc Correction				1002	114	10	25	11		
319.8965	27:48	29:27	-98	0.902	6555	882	11	27	80		
321.8936	27:47	29:27	-99	0.902	9523	1169	10	25	117	0.69(0.65-0.89)	
319.8965	30:19	29:27	52	0.984	2408	242	11	27	22		M
	Empc Correction				2065	405	11	27	37		
321.8936	30:18	29:27	51	0.983	2683	526	10	25	53	0.90(0.65-0.89)	M
319.8965	30:36	29:27	69	0.993	1022	150	11	27	14		M
321.8936	30:45	29:27	78	0.998	1247	171	10	25	17	0.82(0.65-0.89)	M
319.8965	32:00	29:27	153	1.038	302	71	11	27	6		
	Empc Correction				244	35	11	27	3		
321.8936	32:02	29:27	155	1.039	318	46	10	25	5	0.95(0.65-0.89)	
319.8965	34:04	29:27	277	1.105	136	54	11	27	5		a
321.8936	34:03	29:27	276	1.105	541	130	10	25	13	0.25(0.65-0.89)	
	Empc Correction				176	70	10	25	7		
2,3,7,8-TCDF											M
303.9016	28:51	28:52	2	1.001	8818	1045	14	35	75		M
305.8987	28:53	28:52	4	1.002	10714	1146	19	47	60	0.82(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	23:50	28:10	-260	0.827	2036	376	14	35	27		
	Empc Correction				1349	176	14	35	13		
305.8987	23:52	28:10	-258	0.828	1752	229	19	47	12	1.16(0.65-0.89)	
303.9016	24:19	28:10	-230	0.844	819	89	14	35	6		M
305.8987	24:25	28:10	-224	0.847	1189	158	19	47	8	0.69(0.65-0.89)	
303.9016	25:07	28:10	-182	0.872	1379	118	14	35	8		M
	Empc Correction				870	98	14	35	7		
305.8987	25:07	28:10	-182	0.872	1131	128	19	47	7	1.22(0.65-0.89)	
303.9016	25:50	28:10	-140	0.897	740	81	14	35	6		M
305.8987	25:51	28:10	-139	0.897	1539	221	19	47	12	0.48(0.65-0.89)	M
	Empc Correction				961	105	19	47	6		
303.9016	26:27	28:10	-102	0.918	933	113	14	35	8		M
305.8987	26:32	28:10	-97	0.921	1053	121	19	47	6	0.89(0.65-0.89)	M
303.9016	27:04	28:10	-66	0.939	594	128	14	35	9		
305.8987	27:02	28:10	-68	0.938	751	121	19	47	6	0.79(0.65-0.89)	
303.9016	27:47	28:10	-23	0.964	2952	493	14	35	35		M
305.8987	27:45	28:10	-25	0.963	5634	586	19	47	31	0.52(0.65-0.89)	
	Empc Correction				3833	640	19	47	34		
303.9016	28:28	28:10	18	0.988	404	59	14	35	4		
305.8987	28:13	28:10	4	0.980	1149	124	19	47	7	0.35(0.65-0.89)	M
	Empc Correction				524	76	19	47	4		
303.9016	30:04	28:10	114	1.044	1041	147	14	35	11		
305.8987	30:02	28:10	112	1.043	1376	176	19	47	9	0.76(0.65-0.89)	
303.9016	32:54	28:10	284	1.142	1216	175	14	35	13		
305.8987	32:52	28:10	282	1.141	2333	338	19	47	18	0.52(0.65-0.89)	M
	Empc Correction				1579	227	19	47	12		
1,2,3,7,8-PeCDD											
355.8546	40:35						10	25			
357.8516	40:35						19	47			
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:37	39:24	-107	0.928	2180	475	10	25	48		
357.8516	37:37	39:24	-107	0.928	1412	308	19	47	16	1.54(1.32-1.78)	
355.8546	38:29	39:24	-56	0.949	6809	1532	10	25	153		
	Empc Correction				5772	1292	10	25	129		
357.8516	38:28	39:24	-57	0.949	3724	834	19	47	44	1.83(1.32-1.78)	
355.8546	39:09	39:24	-15	0.966	339	70	10	25	7		
357.8516	39:08	39:24	-16	0.965	426	119	19	47	6	0.80(1.32-1.78)	
	Empc Correction				218	45	19	47	2		
355.8546	39:41	39:24	17	0.979	612	190	10	25	19		
357.8516	39:40	39:24	16	0.978	733	253	19	47	13	0.83(1.32-1.78)	
	Empc Correction				394	122	19	47	6		
355.8546	39:49	39:24	25	0.982	2390	370	10	25	37		
357.8516	39:50	39:24	26	0.983	1466	331	19	47	17	1.63(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	38:47						35	87			
341.8567	38:47						22	55			
2,3,4,7,8-PeCDF											M
339.8597	40:03	40:02	2	1.001	1034	184	35	87	5		M
341.8567	40:02	40:02	1	1.000	650	135	22	55	6	1.59(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	37:15	37:59	-43	0.961	1401	224	35	87	6		
341.8567	37:15	37:59	-43	0.961	803	128	22	55	6	1.74(1.32-1.78)	
339.8597	39:26	37:59	87	1.017	1669	344	35	87	10		
	Empc Correction				1266	362	35	87	10		
341.8567	39:24	37:59	85	1.016	817	234	22	55	11	2.04(1.32-1.78)	
1,2,3,4,7,8-HxCDD											Ma
389.8158	44:50	44:49	1	1.001	981	250	14	35	18		M
391.8127	44:49	44:49	0	1.000	886	382	30	75	13	1.11(1.05-1.43)	M
1,2,3,6,7,8-HxCDD											M
389.8158	44:56	44:56	0	1.000	1525	458	14	35	33		M
391.8127	44:56	44:56	0	1.000	1197	345	30	75	12	1.27(1.05-1.43)	M
1,2,3,7,8,9-HxCDD											RQM
389.8158	45:19	45:19	0	1.011	4465	887	14	35	63		
	Empc Correction				2956	517	14	35	37		
391.8127	45:19	45:19	0	1.011	2384	417	30	75	14	1.87(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	43:16	44:17	-60	0.963	52507	14203	14	35	1015		
391.8127	43:16	44:17	-60	0.963	41457	10826	30	75	361	1.27(1.05-1.43)	
389.8158	43:51	44:17	-26	0.976	2895	502	14	35	36		
	Empc Correction				1801	391	14	35	28		
391.8127	43:51	44:17	-26	0.976	1453	316	30	75	11	1.99(1.05-1.43)	
389.8158	44:08	44:17	-9	0.982	12640	2604	14	35	186		
391.8127	44:08	44:17	-9	0.982	9148	2168	30	75	72	1.38(1.05-1.43)	
389.8158	44:19	44:17	2	0.986	1354	323	14	35	23		
391.8127	44:16	44:17	-1	0.985	1695	249	30	75	8	0.80(1.05-1.43)	
	Empc Correction				1091	260	30	75	9		
1,2,3,4,7,8-HxCDF											M
373.8208	43:47	43:49	0	1.000	1867	343	16	40	21		M
375.8178	43:49	43:49	1	1.001	1471	325	51	127	6	1.27(1.05-1.43)	M
1,2,3,6,7,8-HxCDF											Ma
373.8208	43:56	43:56	0	1.000	1109	329	16	40	21		M
375.8178	43:57	43:56	1	1.001	997	251	51	127	5	1.11(1.05-1.43)	M
2,3,4,6,7,8-HxCDF											
373.8208	44:40						16	40			
375.8178	44:40						51	127			
1,2,3,7,8,9-HxCDF											
373.8208	45:36						16	40			
375.8178	45:36						51	127			

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDF											RQ
373.8208	42:45	44:08	-83	0.973	1156	347	16	40	22		
375.8178	42:45	44:08	-83	0.973	1019	209	51	127	4	1.13(1.05-1.43)	
373.8208	43:21	44:08	-47	0.987	1462	363	16	40	23		
375.8178	43:21	44:08	-47	0.987	1860	289	51	127	6	0.79(1.05-1.43)	
	Empc Correction				1179	292	51	127	6		
373.8208	43:32	44:08	-36	0.992	2889	836	16	40	52		
375.8178	43:33	44:08	-35	0.992	2023	649	51	127	13	1.43(1.05-1.43)	
373.8208	44:29	44:08	21	1.013	1764	504	16	40	32		
375.8178	44:28	44:08	20	1.013	1971	490	51	127	10	0.89(1.05-1.43)	
	Empc Correction				1422	406	51	127	8		
1,2,3,4,6,7,8-HpCDD											
423.7767	49:37	49:38	1	1.000	48380	8264	20	50	413		
425.7737	49:37	49:38	1	1.000	46184	8530	30	75	284	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											a
423.7767	48:26	49:01	-34	0.977	106984	21181	20	50	1059		a
425.7737	48:26	49:01	-34	0.977	100949	20573	30	75	686	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:57	47:57	0	1.000	3155	685	24	60	29		M
409.7788	47:58	47:57	1	1.001	3270	803	1	2	803	0.96(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											
407.7817	50:17						24	60			
409.7788	50:17						1	2			
A Non-2,3,7,8-sub-HpCDF											RQa
407.7817	48:20	49:31	-71	1.008	561	86	24	60	4		a
	Empc Correction				243	58	24	60	2		
409.7788	48:22	49:31	-69	1.009	234	56	1	2	56	2.40(0.88-1.20)	
407.7817	48:36	49:31	-55	1.014	4447	1028	24	60	43		a
409.7788	48:35	49:31	-56	1.013	3829	809	1	2	809	1.16(0.88-1.20)	
OCDD											
457.7377	53:52	53:52	1	1.000	741940	161243	1	2	161243		
459.7348	53:52	53:52	1	1.000	816889	181801	6	15	30300	0.91(0.76-1.02)	
OCDF											M
441.7428	54:00	54:00	1	1.000	13072	3272	35	87	93		M
443.7399	54:00	54:00	1	1.000	14431	3676	10	25	368	0.91(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:49	30:48	4	1.017	281215	33461	178	445	188		
333.9338	30:49	30:48	4	1.017	342414	34177	100	250	342	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:49	28:49	3	0.951	439020	49343	239	597	206		
317.9389	28:50	28:49	4	0.952	566809	69221	341	852	203	0.77(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:33	40:36	1	1.339	297675	65611	165	412	398		
369.8919	40:33	40:36	1	1.339	176191	41371	202	505	205	1.69(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:48	1	1.279	466509	89875	212	530	424		
353.8970	38:45	38:48	1	1.279	289537	57123	215	537	266	1.61(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	40:04	1	1.321	438262	93437	212	530	441		
353.8970	40:01	40:04	1	1.321	284983	63689	215	537	296	1.54(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:50	0	0.989	299274	74514	113	282	659		
403.8529	44:48	44:50	0	0.989	224557	56603	27	67	2096	1.33(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:58	0	0.991	307629	75309	113	282	666		
403.8529	44:55	44:58	0	0.991	234035	58905	27	67	2182	1.31(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:49	0	0.966	251982	69567	243	607	286		
385.8610	43:46	43:49	0	0.966	470728	122531	333	832	368	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:57	0	0.969	302084	73297	243	607	302		
385.8610	43:55	43:57	0	0.969	587218	142134	333	832	427	0.51(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:38	44:39	1	0.985	272581	68274	243	607	281		
385.8610	44:38	44:39	1	0.985	525926	133382	333	832	401	0.52(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:36	1	1.006	244058	49106	243	607	202		
385.8610	45:34	45:36	0	1.006	472443	95879	333	832	288	0.52(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:38	1	1.095	244609	42512	199	497	214		
437.8140	49:36	49:38	1	1.095	230031	39766	95	237	419	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:56	47:57	1	1.058	188514	38642	276	690	140		
419.8220	47:57	47:57	2	1.058	404370	80007	306	765	261	0.47(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:17	1	1.109	144909	25777	276	690	93		
419.8220	50:16	50:17	1	1.109	339310	64040	306	765	209	0.43(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:54	0	1.188	339008	76096	211	527	361		
471.7750	53:51	53:54	0	1.188	364246	82702	222	555	373	0.93(0.76-1.02)	
13C-OCDF											
453.7830	53:59	54:02	0	1.192	529007	120740	300	750	402		
455.7801	53:59	54:02	0	1.192	617003	130278	269	672	484	0.86(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:51	30:50	4	1.018	152365	16039	69	172	232		
13C-1,2,3,4-TCDD											
331.9368	30:18	30:15	3		783432	82594	178	445	464		
333.9338	30:18	30:15	3		961936	107853	100	250	1079	0.81(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:17	1		982779	226815	113	282	2007		
403.8529	45:19	45:17	1		769890	171707	27	67	6360	1.28(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	623629	67638

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	623629	67638

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:55	562	84	993	192	0.1063	0.57	RQM
24:55	562	84	729	109	0.0882		Empc Correction
26:18	772	88	1781	255	0.1745	0.43	RQM
26:18	772	88	1002	114	0.1212		Empc Correction
27:48	6555	882	9523	1169	1.10	0.69	
30:19	2408	242	2683	526	0.3479	0.90	RQM
30:19	2065	405	2683	526	0.3245		Empc Correction
30:36	1022	150	1247	171	0.1551	0.82	M
32:00	302	71	318	46	0.0424	0.95	RQ
32:00	244	35	318	46	0.0384		Empc Correction
34:04	136	54	541	130	0.0463	0.25	RQa
34:04	136	54	176	70	0.0213		Empc Correction
Signal Totals:							
	11356	1698	15678	2205			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28843	4060				0.69	RQMa
	27034	3903					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.971 = (28843 * 50.000) / (623629 * 1.173)
Empc Amount: 1.847 = (27034 * 50.000) / (623629 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	1005829	118564

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	1005829	118564

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:50	2036	376	1752	229	0.1730	1.16	RQ
23:50	1349	176	1752	229	0.1417		Empc Correction
24:19	819	89	1189	158	0.0917	0.69	Ma
25:07	1379	118	1131	128	0.1147	1.22	RQM
25:07	870	98	1131	128	0.0914		Empc Correction
25:50	740	81	1539	221	0.1041	0.48	RQM
25:50	740	81	961	105	0.0777		Empc Correction
26:27	933	113	1053	121	0.0907	0.89	M
27:04	594	128	751	121	0.0614	0.79	
27:47	2952	493	5634	586	0.3922	0.52	RQM
27:47	2952	493	3833	640	0.3100		Empc Correction
28:28	404	59	1149	124	0.0709	0.35	RQM
28:28	404	59	524	76	0.0424		Empc Correction
30:04	1041	147	1376	176	0.1104	0.76	
32:54	1216	175	2333	338	0.1621	0.52	RQM
32:54	1216	175	1579	227	0.1277		Empc Correction
Signal Totals:							
	10918	1559	14149	1981			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	30021	3981				0.68	RQMa
	25067	3540					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.371 = (30021 * 50.000) / (1005829 * 1.088)
Empc Amount: 1.145 = (25067 * 50.000) / (1005829 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:43:16 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	473866	106982

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	473866	106982

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:37	2180	475	1412	308	0.3632	1.54	
38:29	6809	1532	3724	834	1.07	1.83	RQ
38:29	5772	1292	3724	834	0.9603		Empc Correction
39:09	339	70	426	119	0.0774	0.80	RQ
39:09	339	70	218	45	0.0563		Empc Correction
39:41	612	190	733	253	0.1360	0.83	RQ
39:41	612	190	394	122	0.1017		Empc Correction
39:49	2390	370	1466	331	0.3899	1.63	
Signal Totals:							
	11293	2397	7214	1640			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	20091	4482				1.59	RQ
	18507	4037					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.032 = (20091 * 50.000) / (473866 * 1.043)
Empc Amount: 1.872 = (18507 * 50.000) / (473866 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	756046	146998
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	723245	157126

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	739645	152062

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:15	1401	224	803	128	0.1296	1.74	
39:26	1669	344	817	234	0.1462	2.04	RQ
39:26	1266	362	817	234	0.1225		Empc Correction
Signal Totals:							
	2667	586	1620	362			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4690	930				1.90	RQ
	4287	948					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2758 = (4690 * 50.000) / (739645 * 1.150)
Empc Amount: 0.2521 = (4287 * 50.000) / (739645 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	523831	131117
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	541664	134214
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	532747	132665

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:16	52507	14203	41457	10826	7.54	1.27	
43:51	2895	502	1453	316	0.3488	1.99	RQ
43:51	1801	391	1453	316	0.2610		Empc Correction
44:08	12640	2604	9148	2168	1.75	1.38	
44:19	1354	323	1695	249	0.2446	0.80	RQ
44:19	1354	323	1091	260	0.1961		Empc Correction
Signal Totals:							
	68302	17521	53149	13570			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	123149	31191				1.29	RQ
	121451	31091					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.878 = (123149 * 50.000) / (532747 * 1.170)
Empc Amount: 9.742 = (121451 * 50.000) / (532747 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	722710	192098
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	889302	215431
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	798507	201656
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	716501	144985

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	781755	188542

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:45	1156	347	1019	209	0.1078	1.13	
43:21	1462	363	1860	289	0.1646	0.79	RQ
43:21	1462	363	1179	292	0.1309		Empc Correction
43:32	2889	836	2023	649	0.2435	1.43	
44:29	1764	504	1971	490	0.1851	0.89	RQ
44:29	1764	504	1422	406	0.1579		Empc Correction
Signal Totals:							
	7271	2050	5643	1556			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	14144	3687				1.06	RQ
	12914	3606					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7010 = (14144 * 50.000) / (781755 * 1.290)
Empc Amount: 0.6401 = (12914 * 50.000) / (781755 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	474640	82278

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	474640	82278

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:26	106984	21181	100949	20573	19.6	1.06	a
Signal Totals:							
	106984	21181	100949	20573			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	207933	41754				1.06	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 19.550 = (207933 * 50.000) / (474640 * 1.120)

QC Flag Legend

Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Inject. Date: 18-Dec-2019 05:00:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	592884	118649
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	484219	89817

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	538551	104233

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:20	561	86	234	56	0.0513	2.40	RQa
48:20	243	58	234	56	0.0308		Empc Correction
48:36	4447	1028	3829	809	0.5338	1.16	a
Signal Totals:							
	4690	1086	4063	865			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9071	1979				1.23	RQa
	8753	1951					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5850 = (9071 * 50.000) / (538551 * 1.440)
Empc Amount: 0.5645 = (8753 * 50.000) / (538551 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

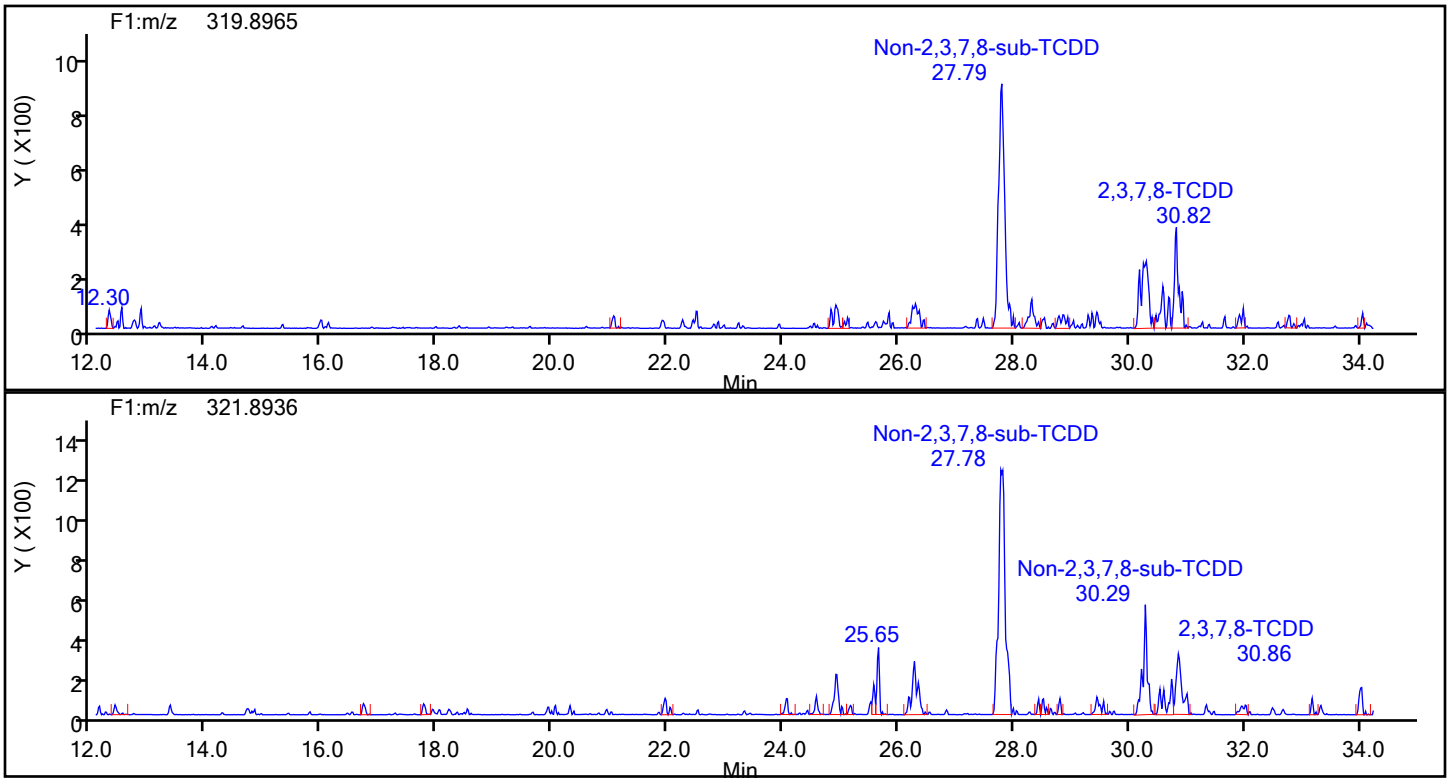
Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

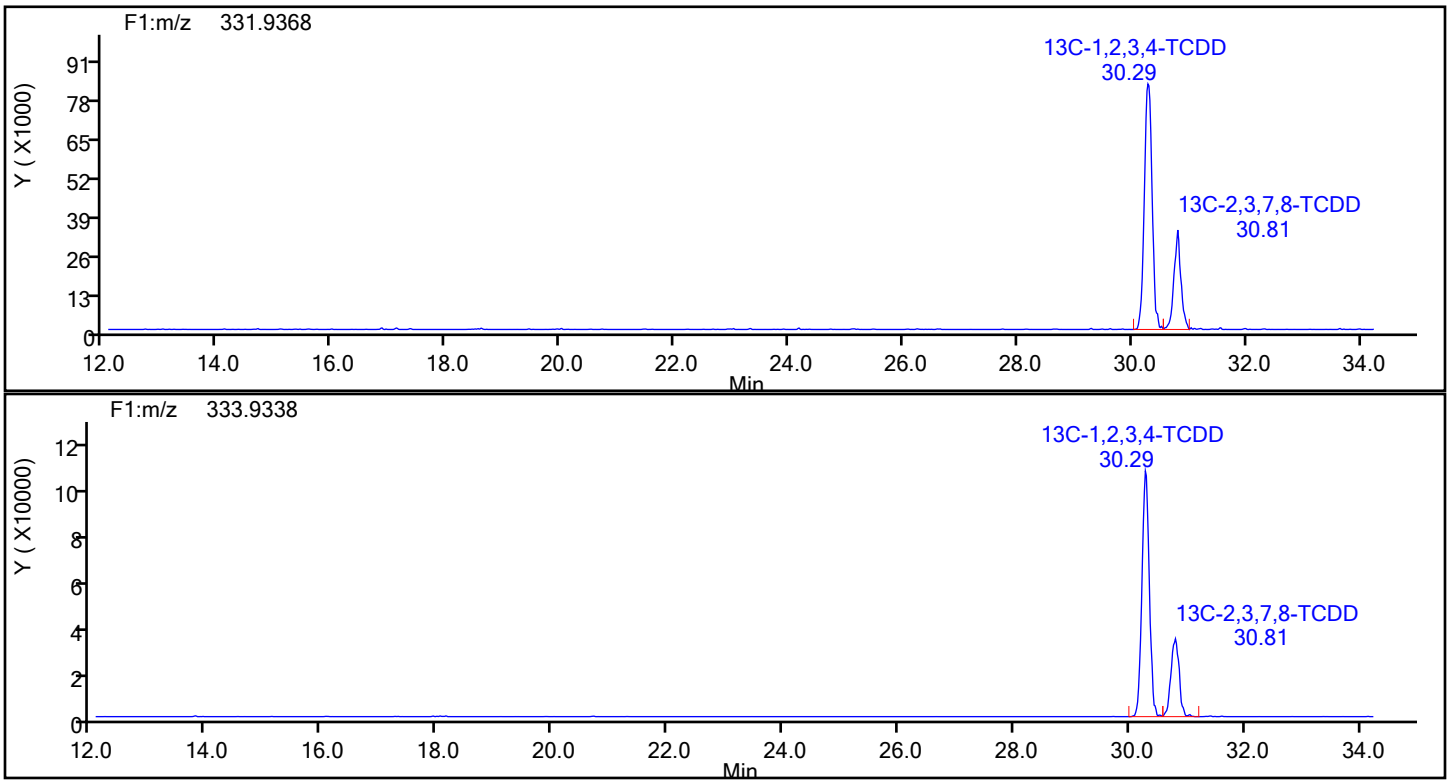
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

TCDD



TCDD Standards

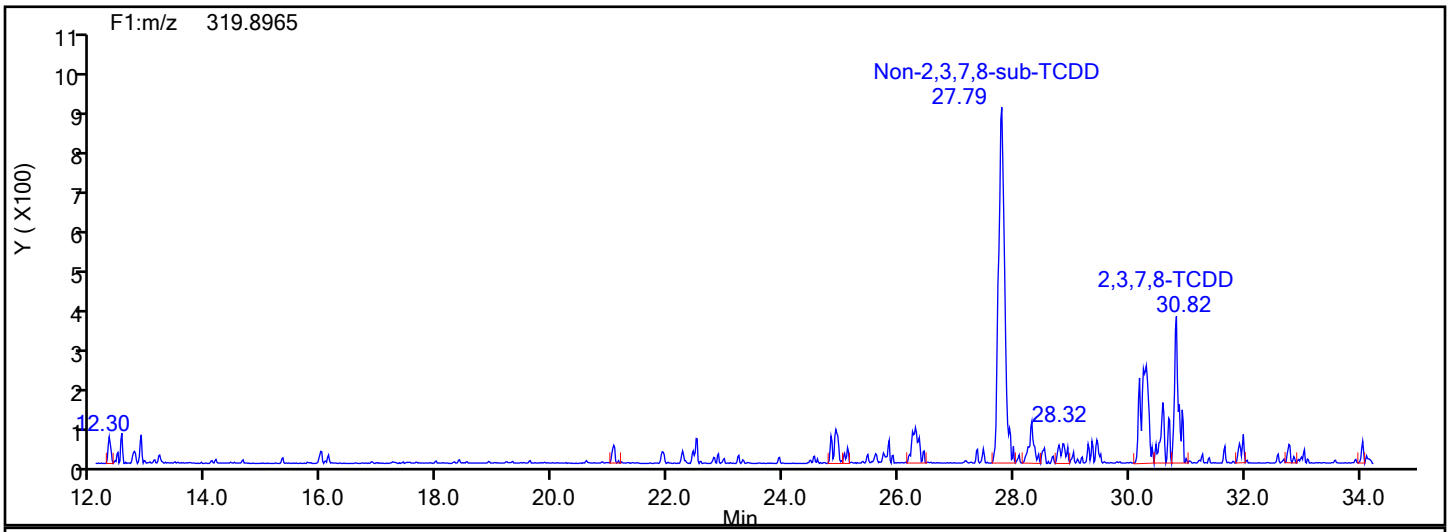


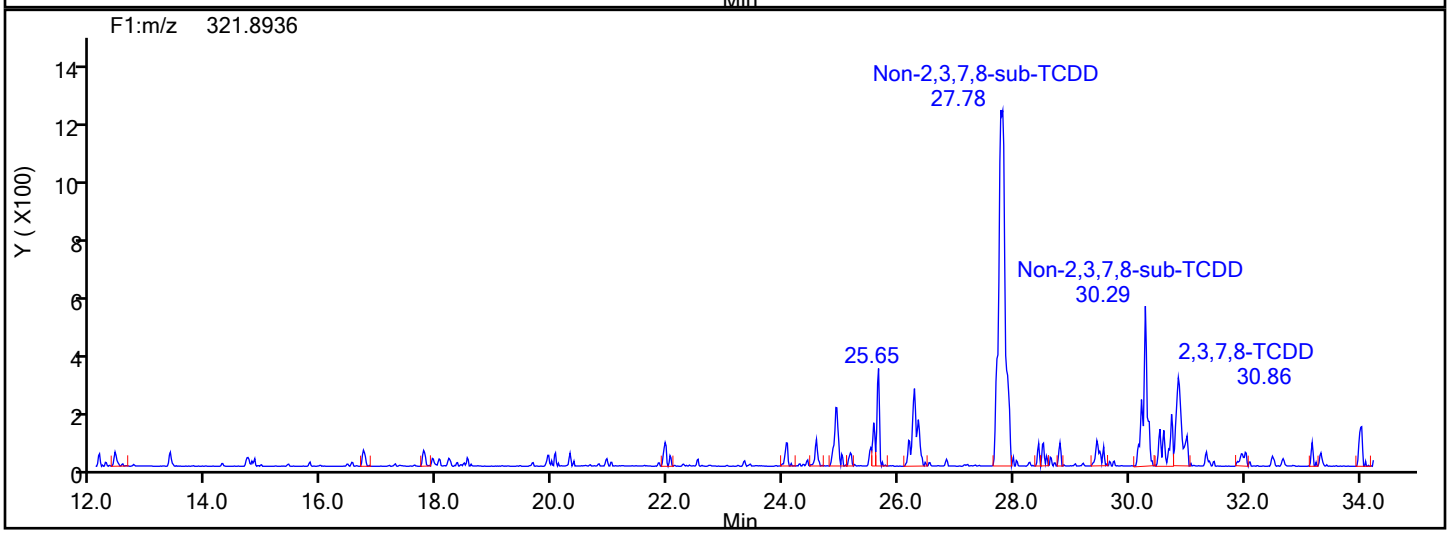
Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

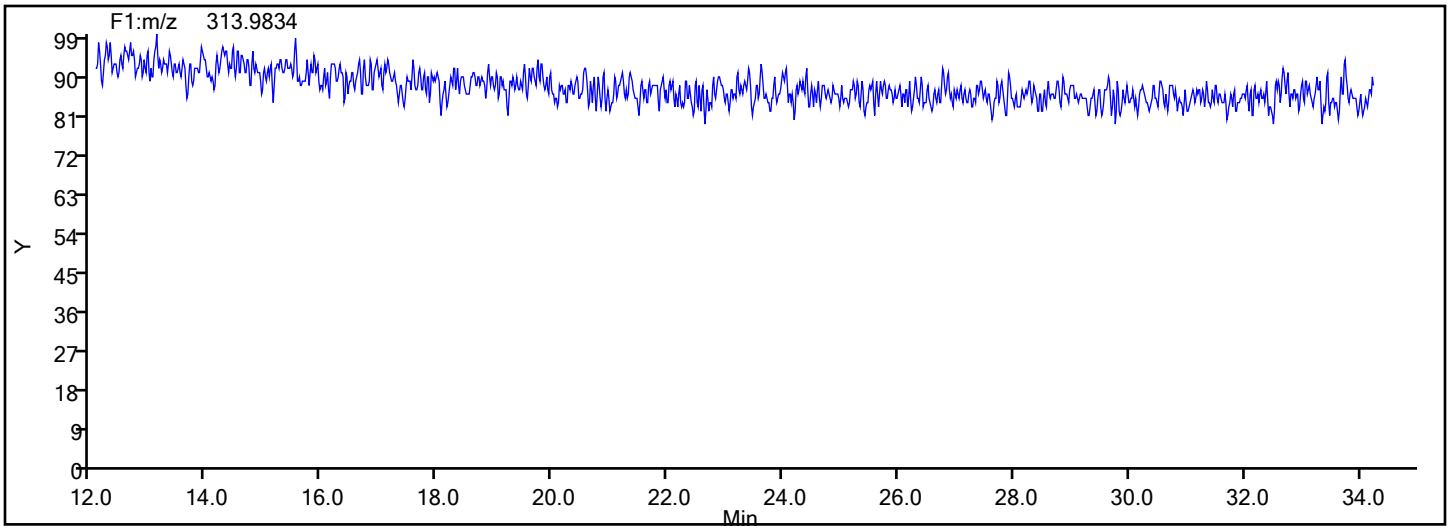
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

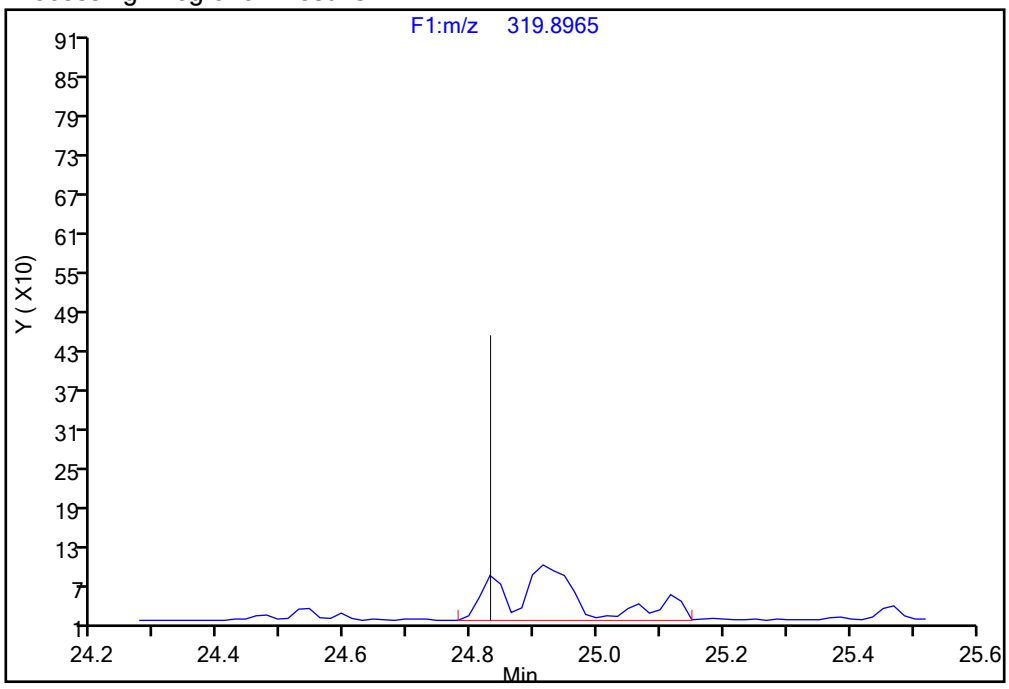
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

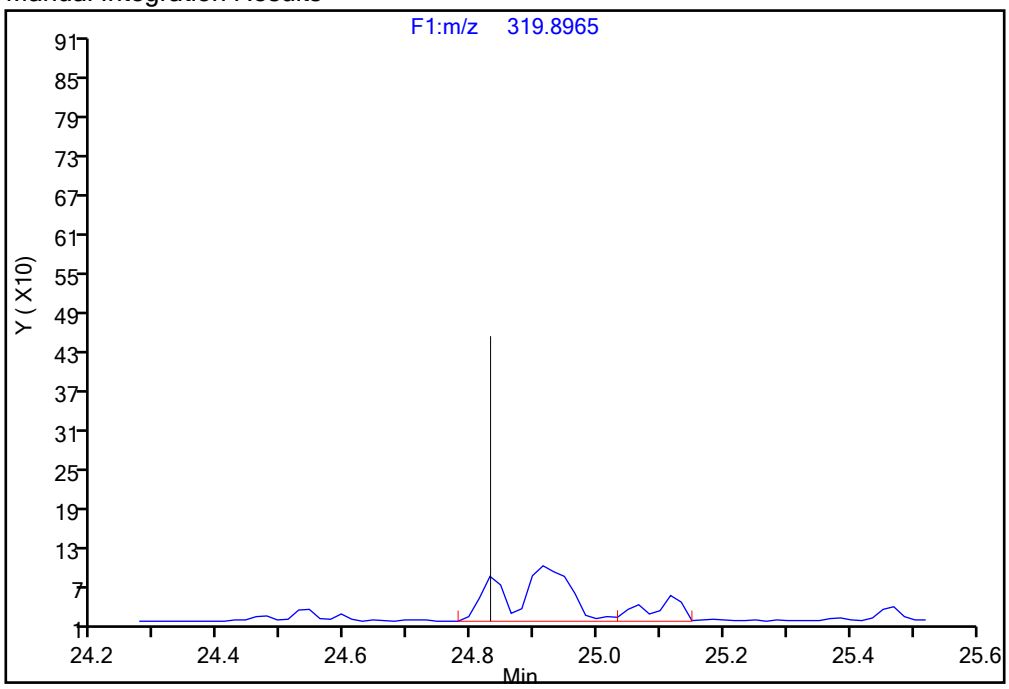
Processing Integration Results

RT = 24.914 Area = 705



Manual Integration Results

RT = 24.914 Area = 562 M



Reviewer: davidsonm, 18-Dec-2019 08:37:14

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

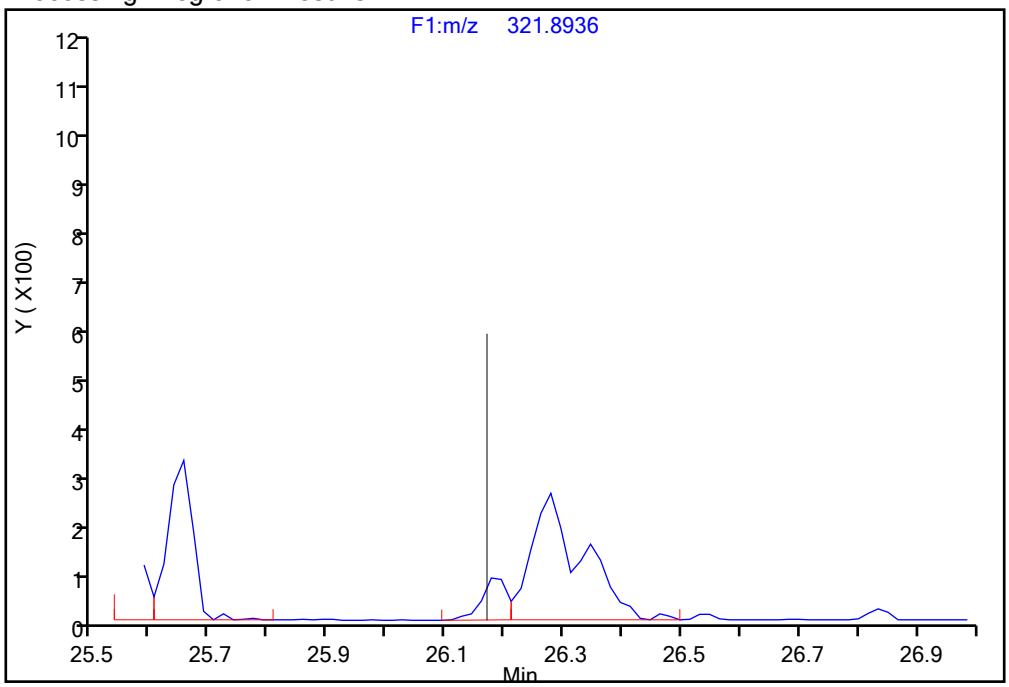
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

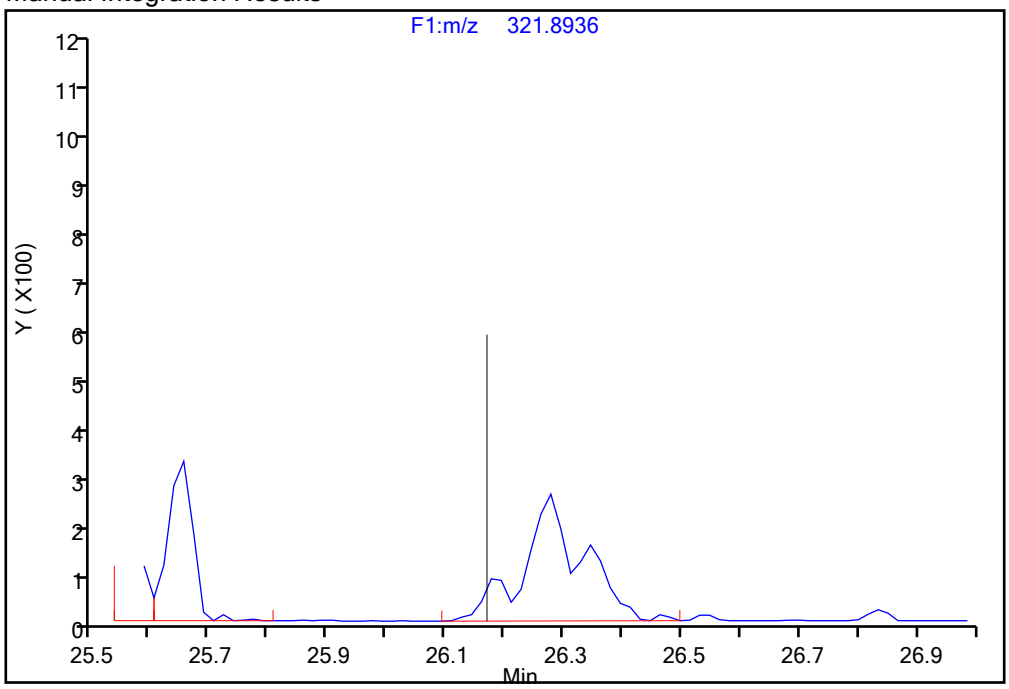
Processing Integration Results

RT = 26.278 Area = 1527



Manual Integration Results

RT = 26.278 Area = 1781 M



Reviewer: davidsonm, 18-Dec-2019 08:36:59

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

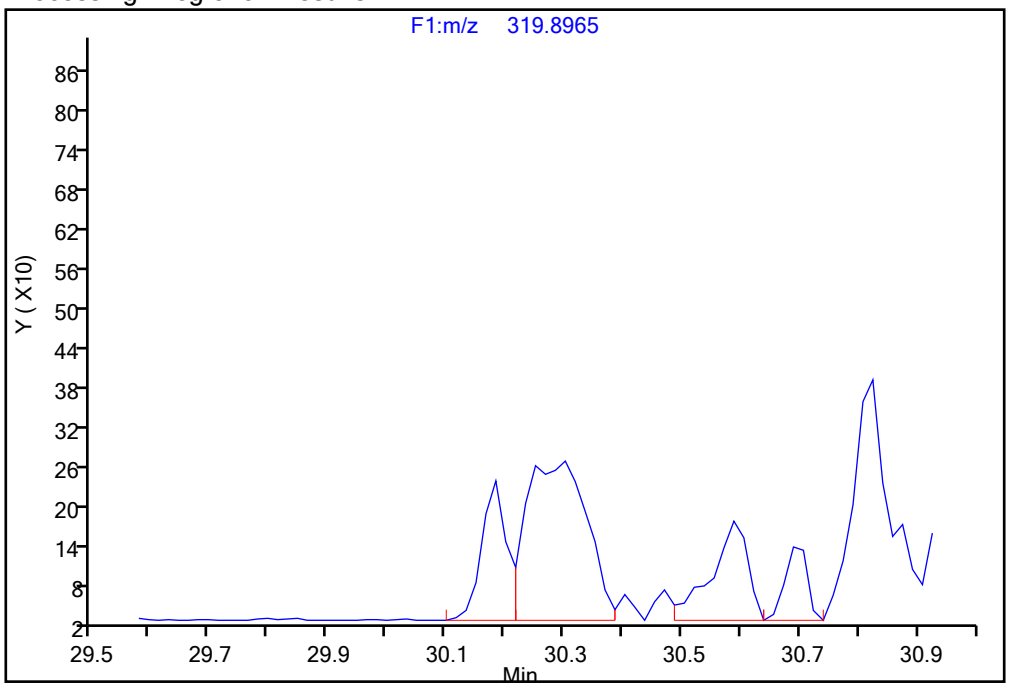
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

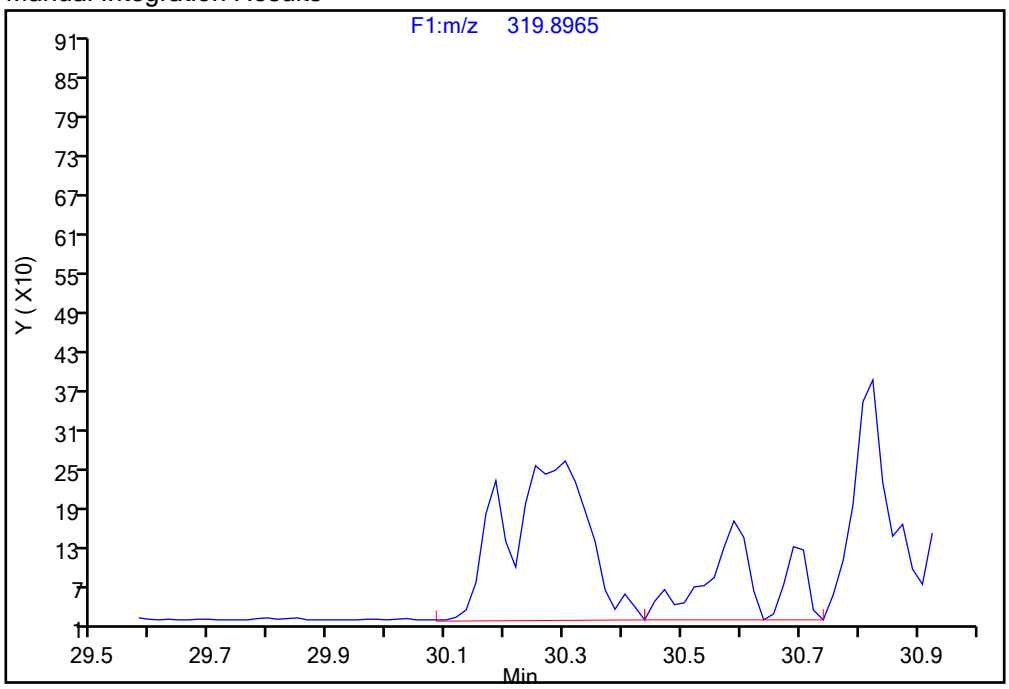
Processing Integration Results

RT = 30.302 Area = 1706



Manual Integration Results

RT = 30.302 Area = 2408 M



Reviewer: davidsonm, 18-Dec-2019 08:37:14

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

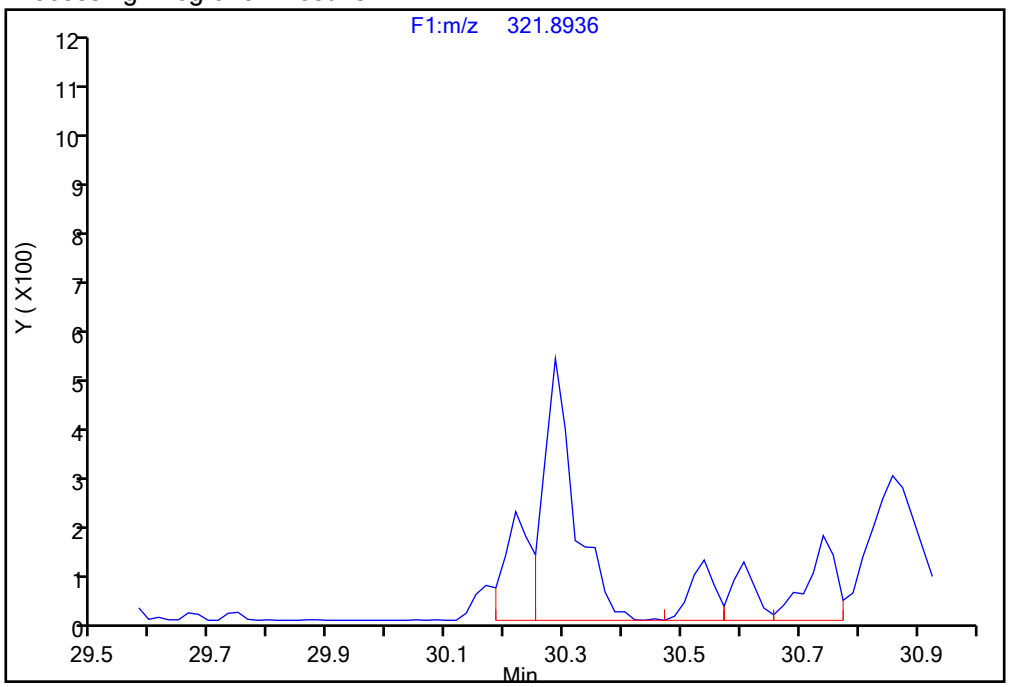
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

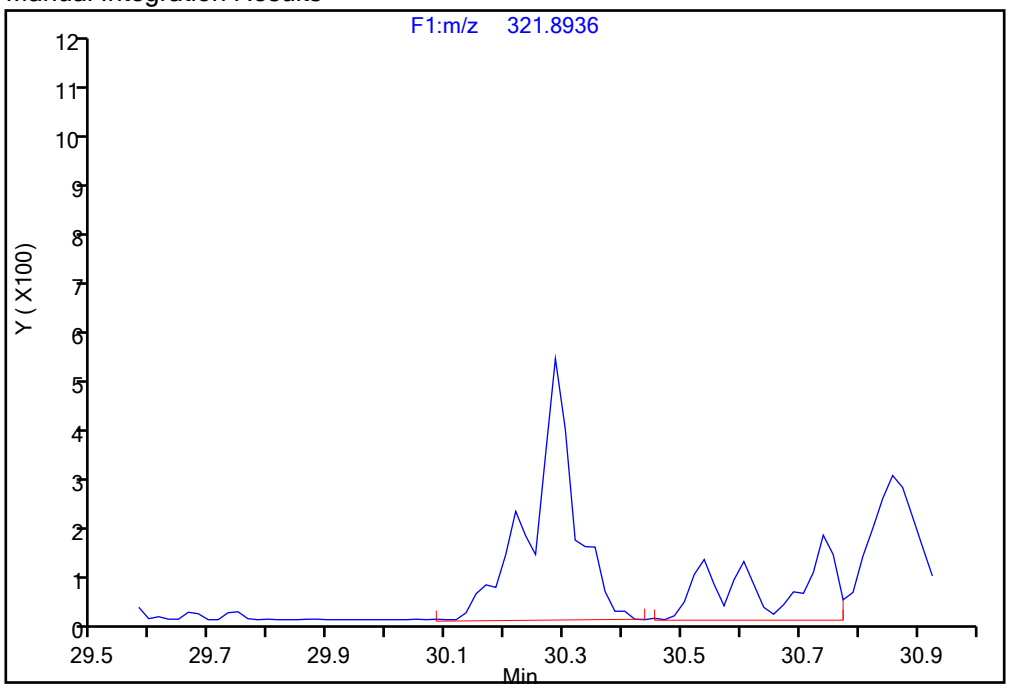
Processing Integration Results

RT = 30.286 Area = 1871



Manual Integration Results

RT = 30.286 Area = 2683 M



Reviewer: davidsonm, 18-Dec-2019 08:36:59

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

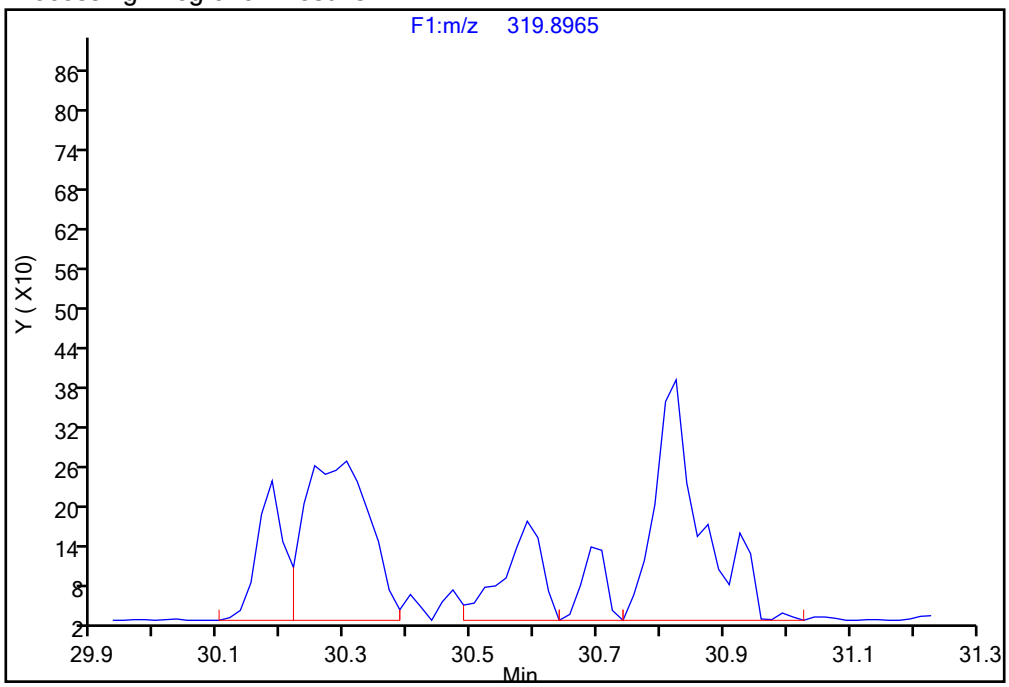
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

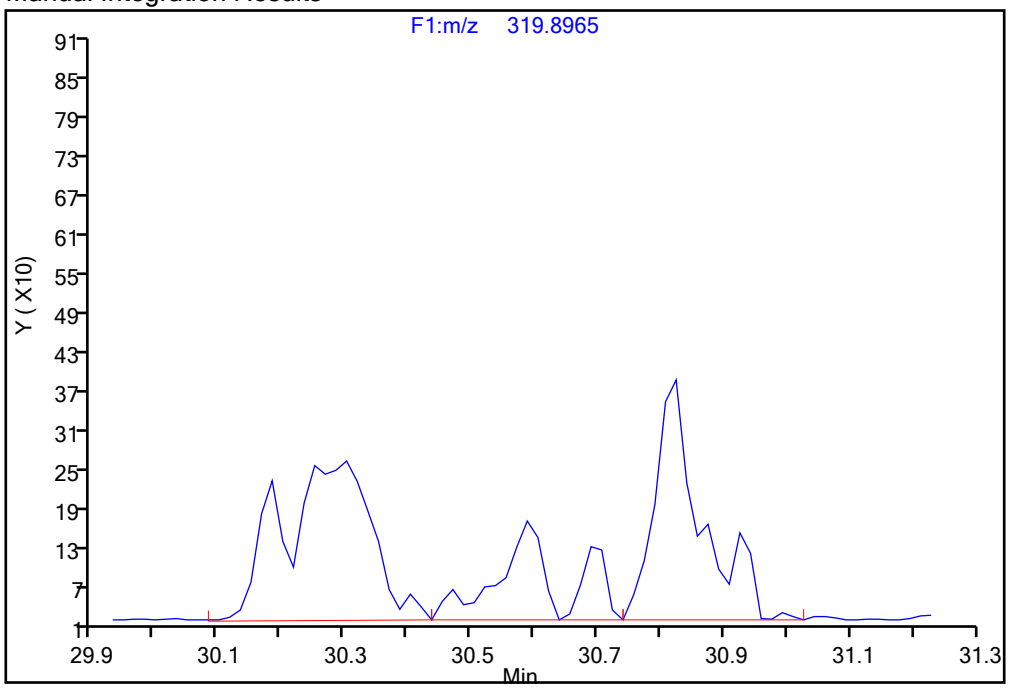
Processing Integration Results

RT = 30.589 Area = 638



Manual Integration Results

RT = 30.589 Area = 1022 M



Reviewer: davidsonm, 18-Dec-2019 08:37:14

Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

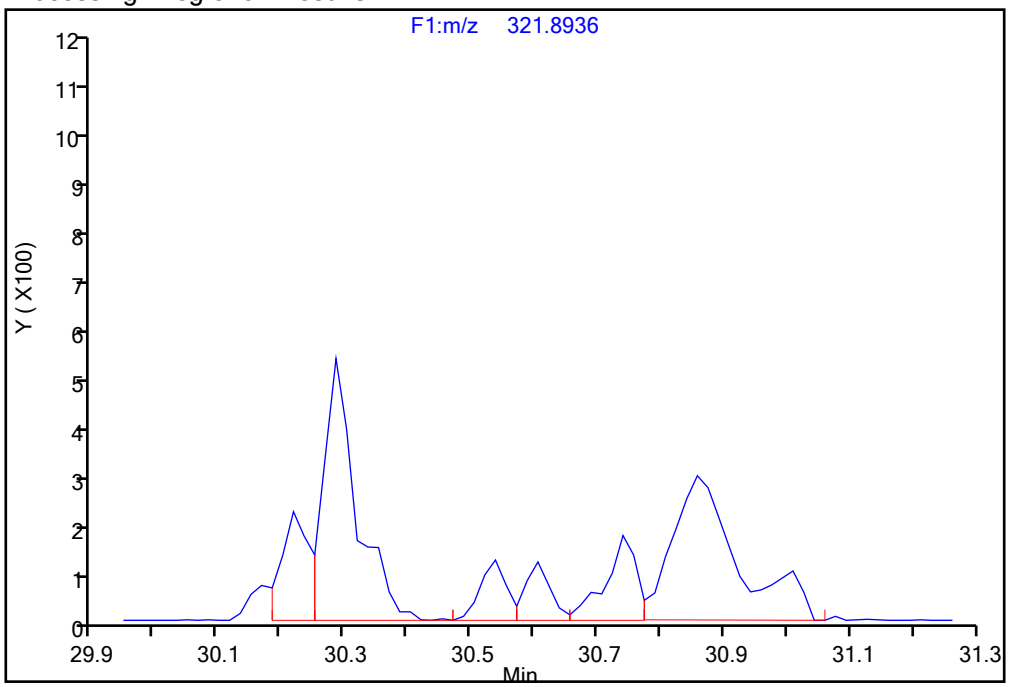
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

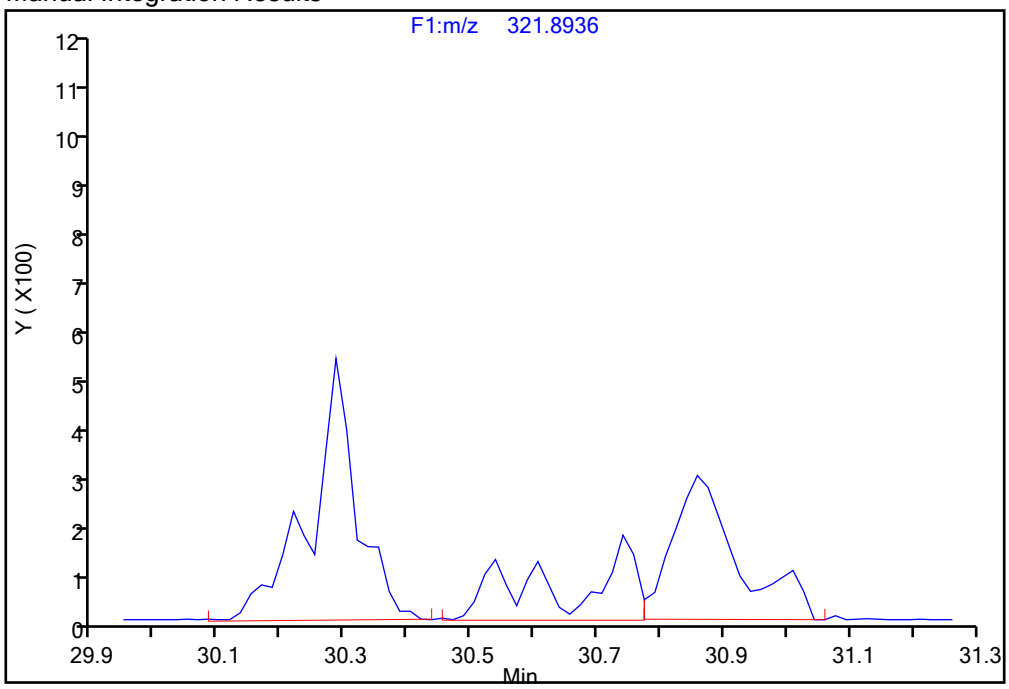
Processing Integration Results

RT = 30.740 Area = 566



Manual Integration Results

RT = 30.740 Area = 1247 M



Reviewer: davidsonm, 18-Dec-2019 08:36:59

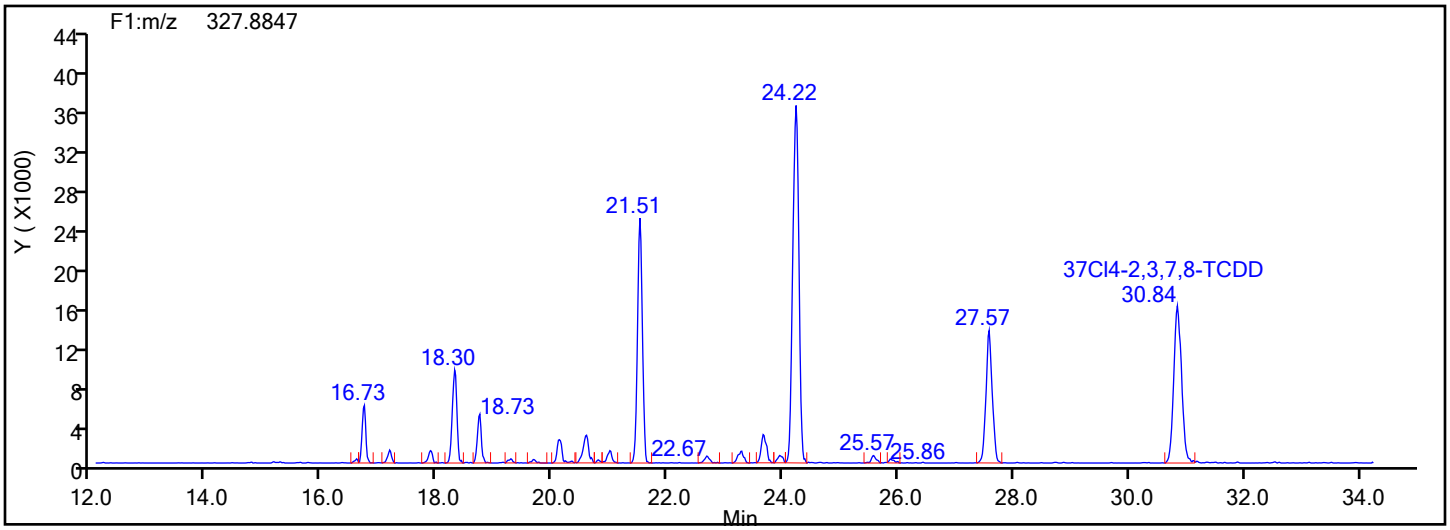
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

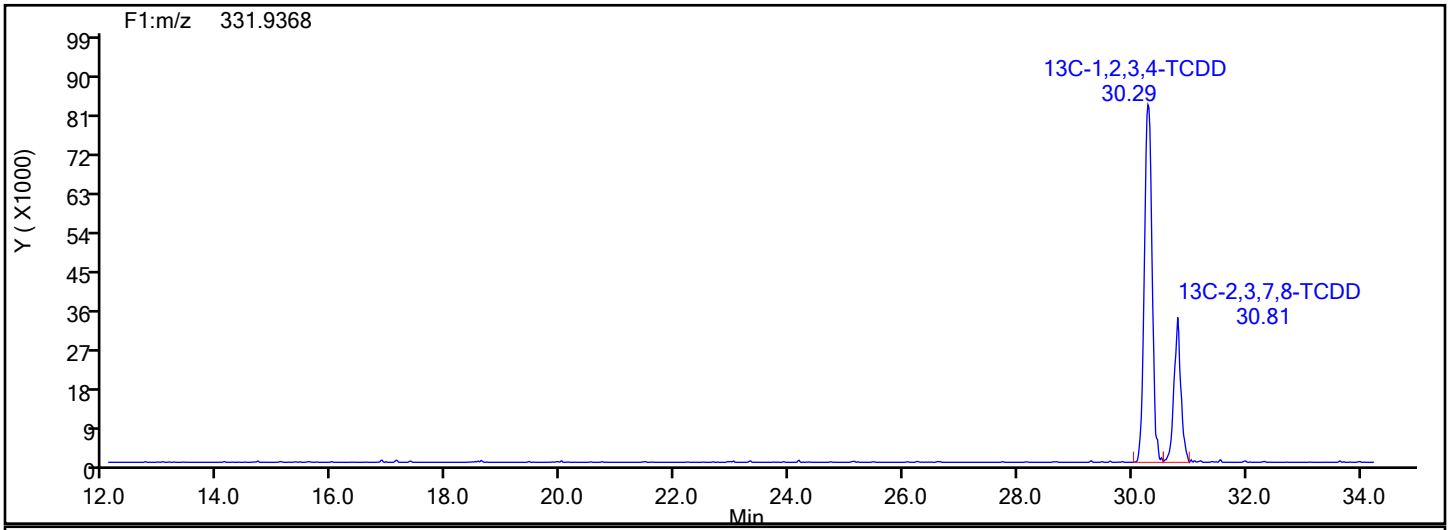
Eurofins TestAmerica, Knoxville

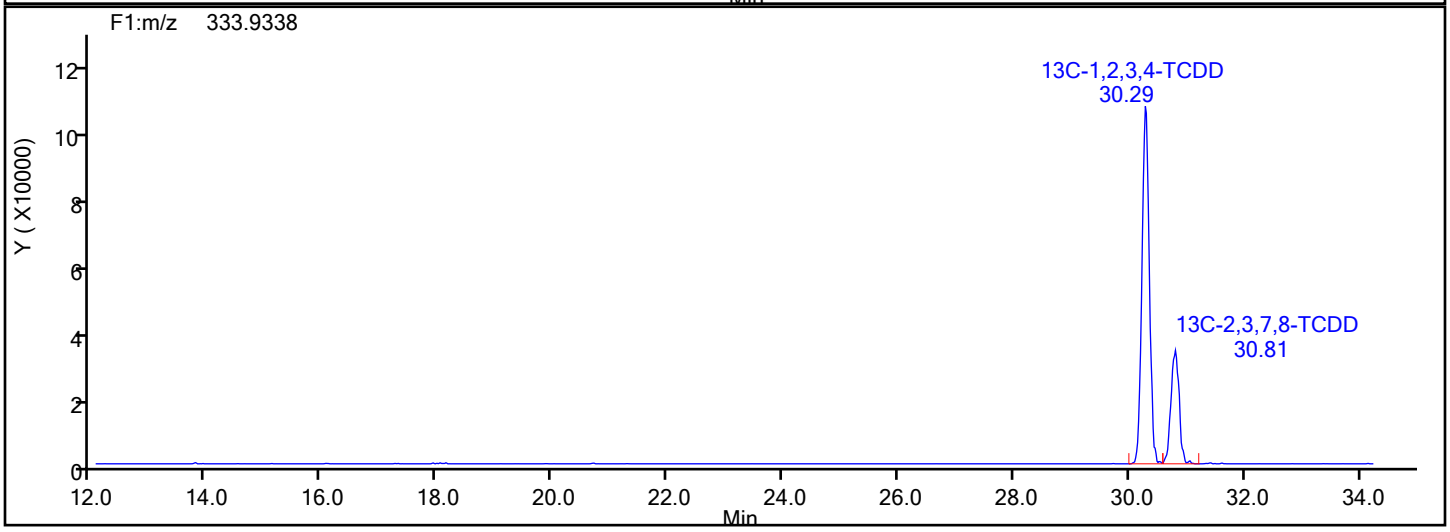
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



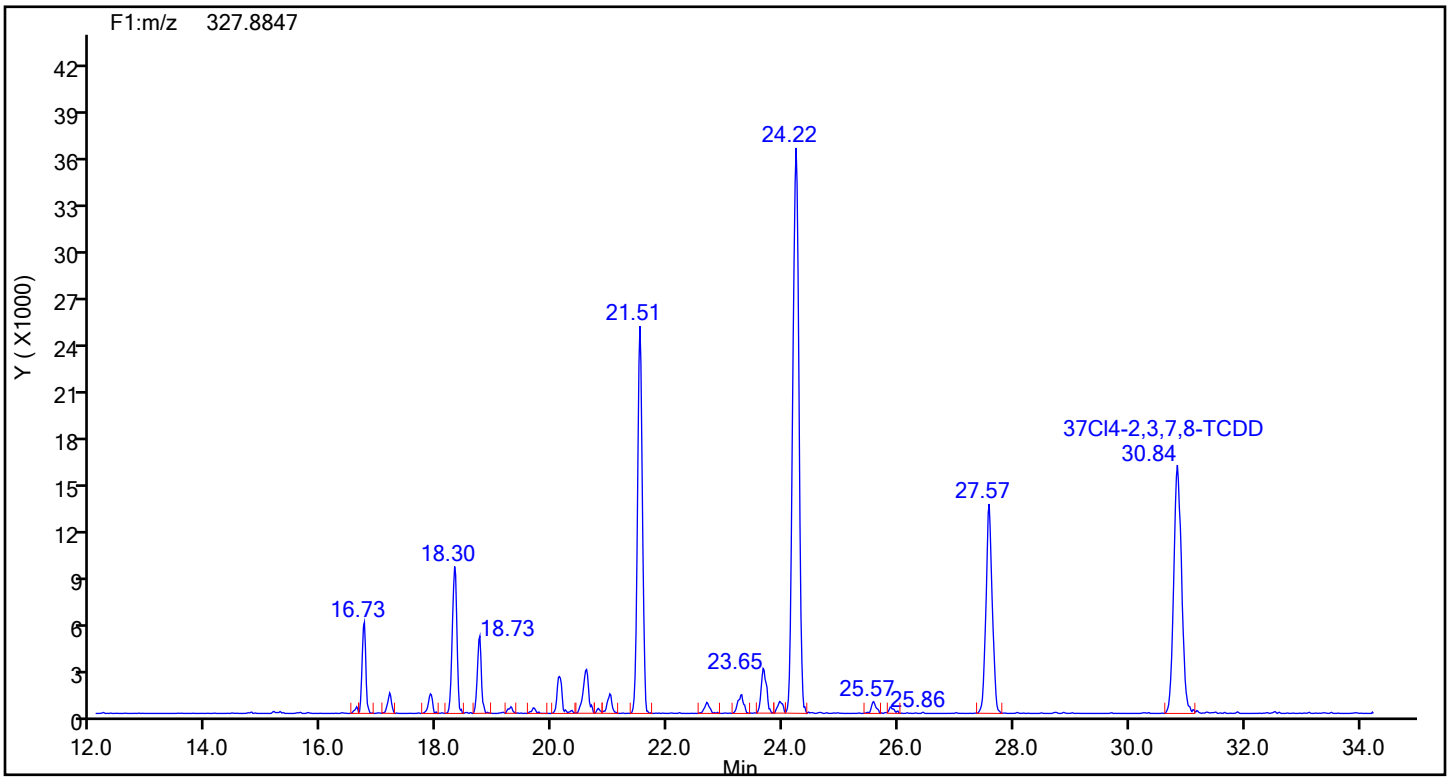


Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

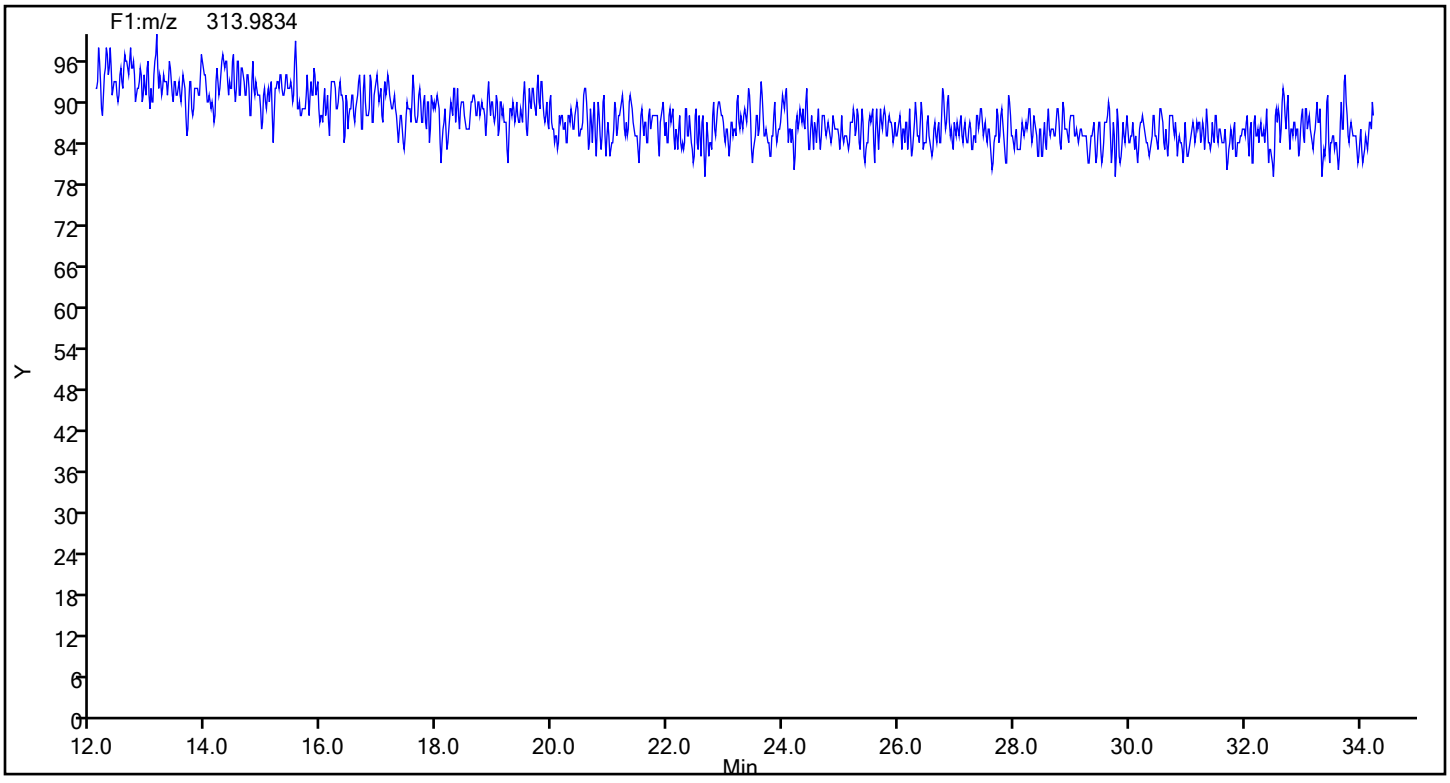
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

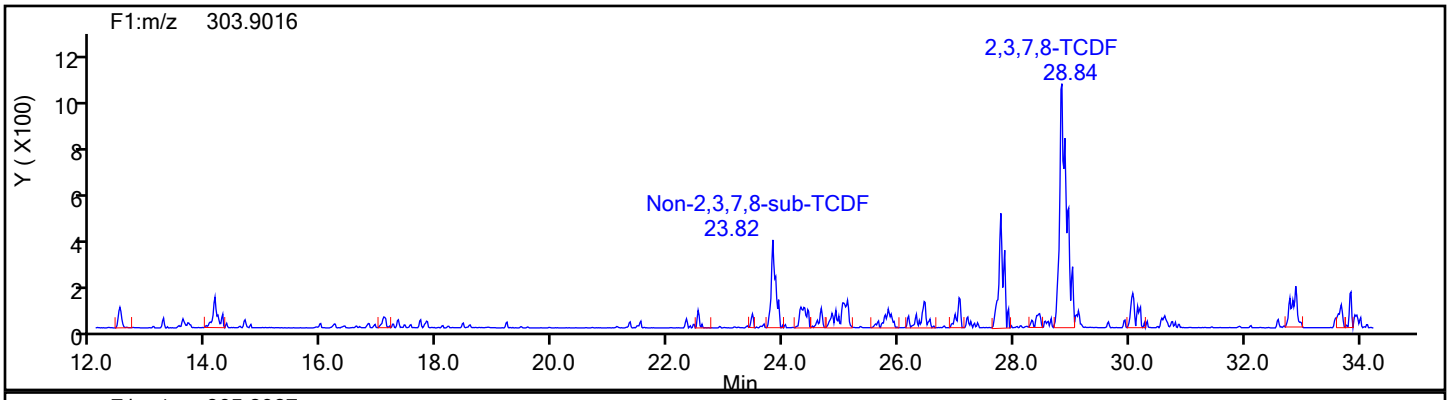


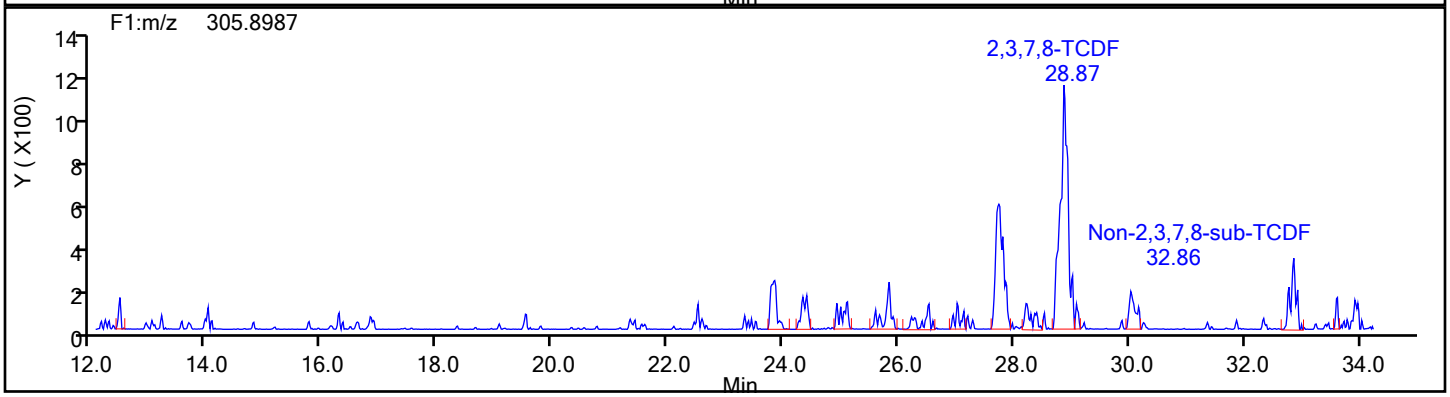
Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

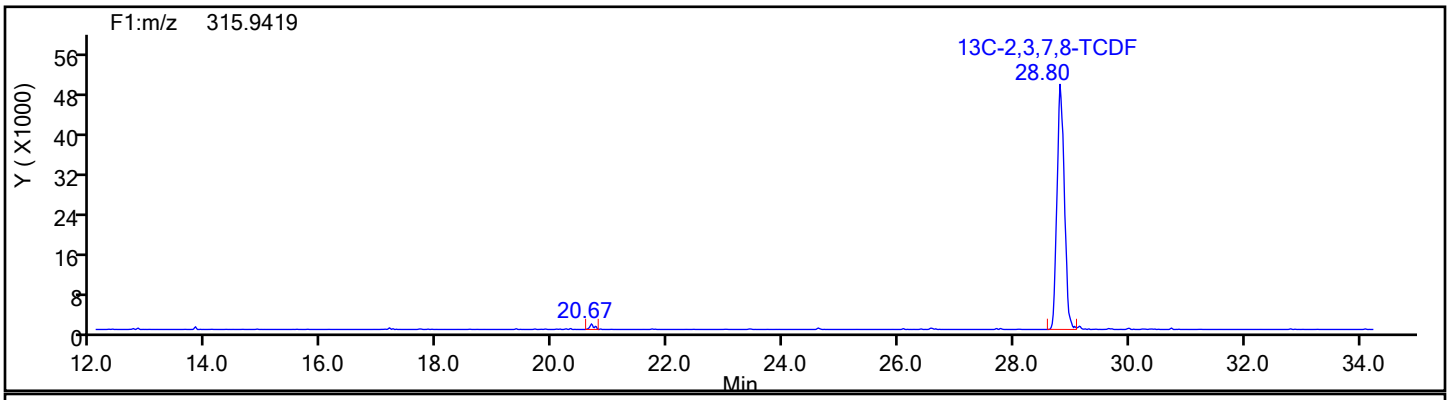
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

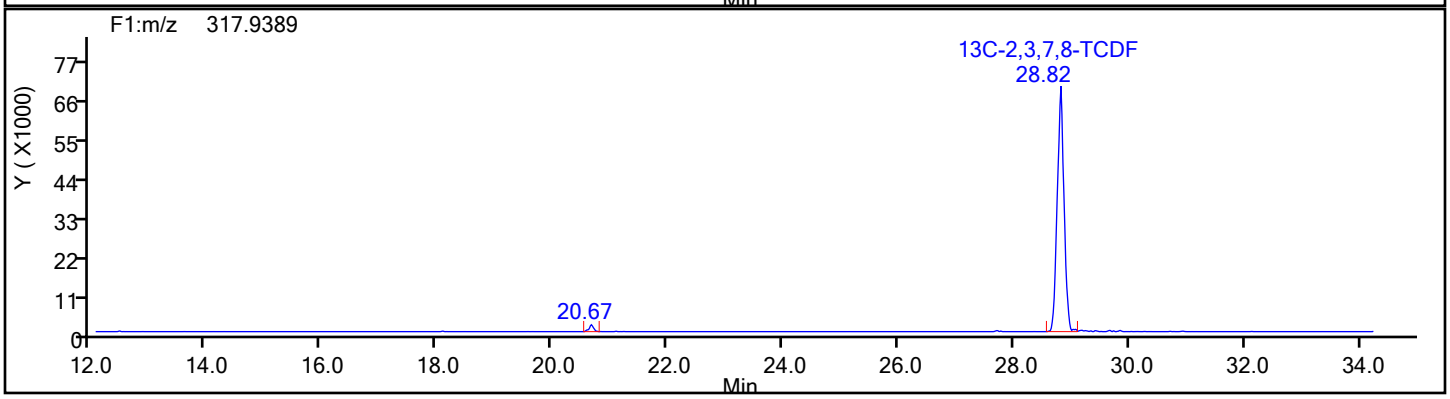
TCDF





TCDF Standards



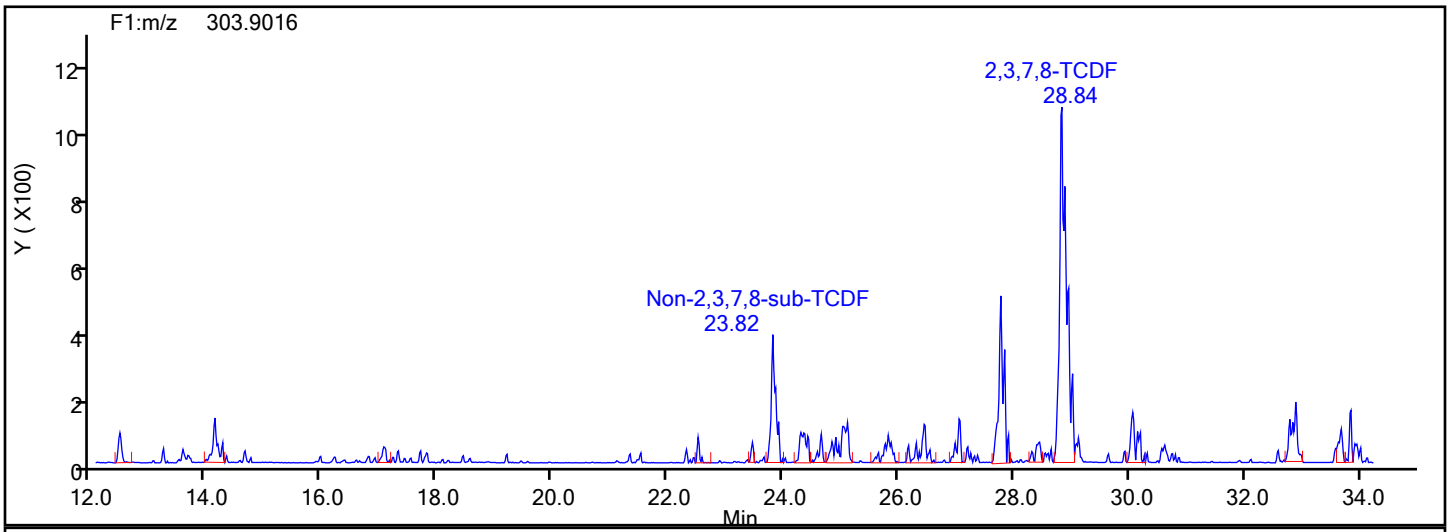


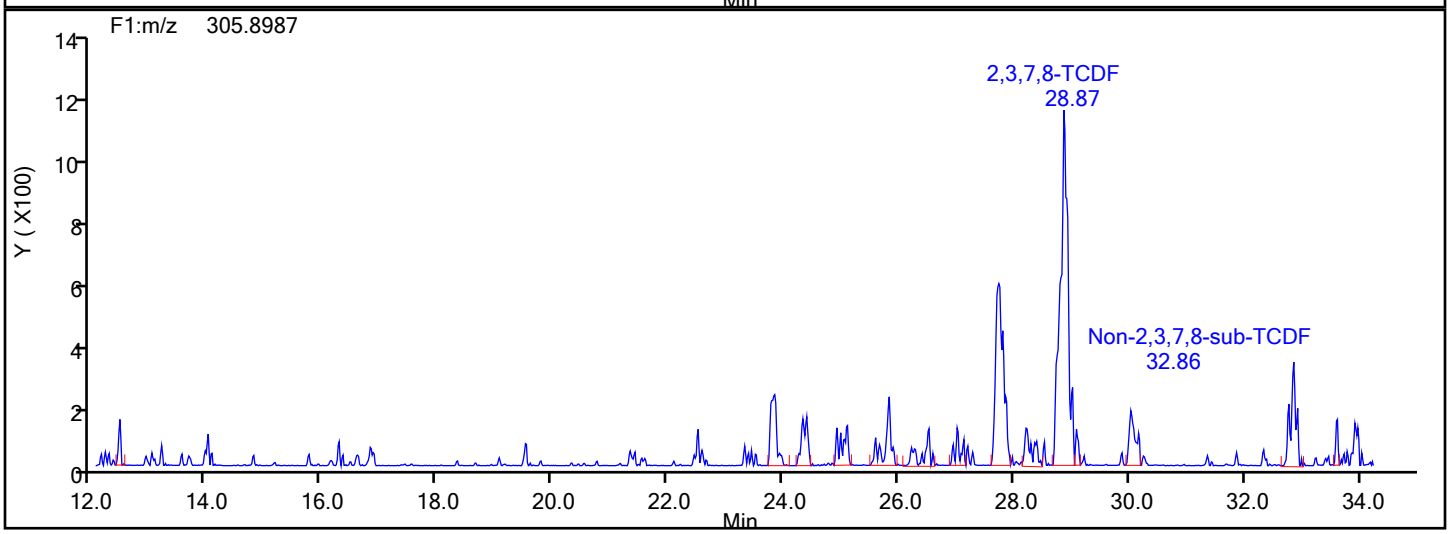
Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

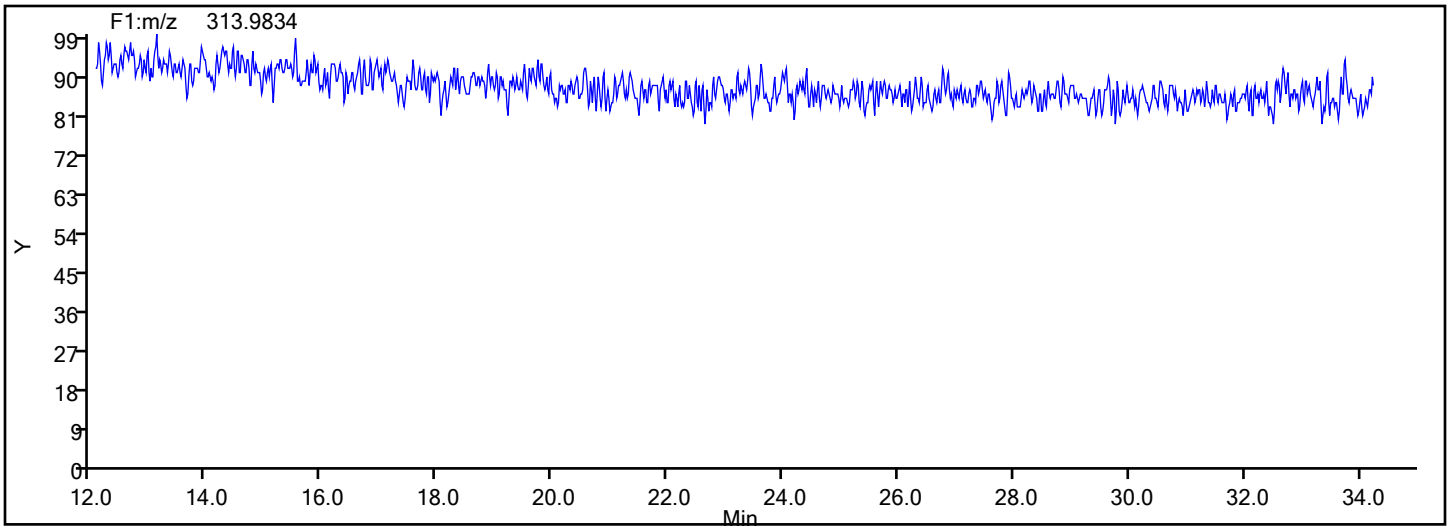
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

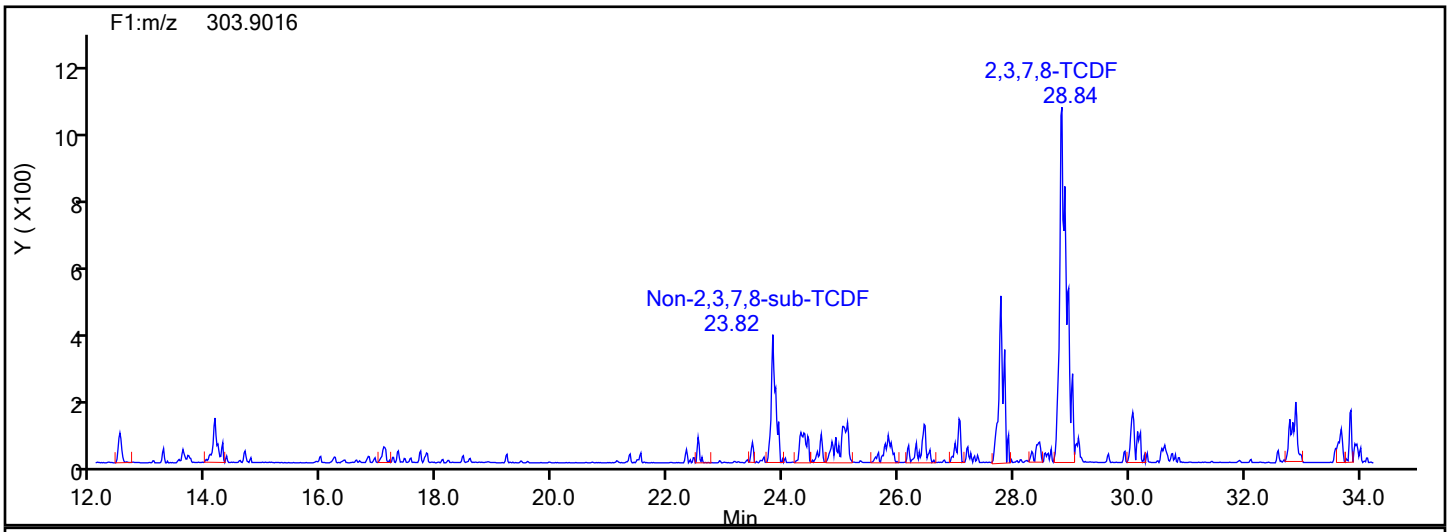


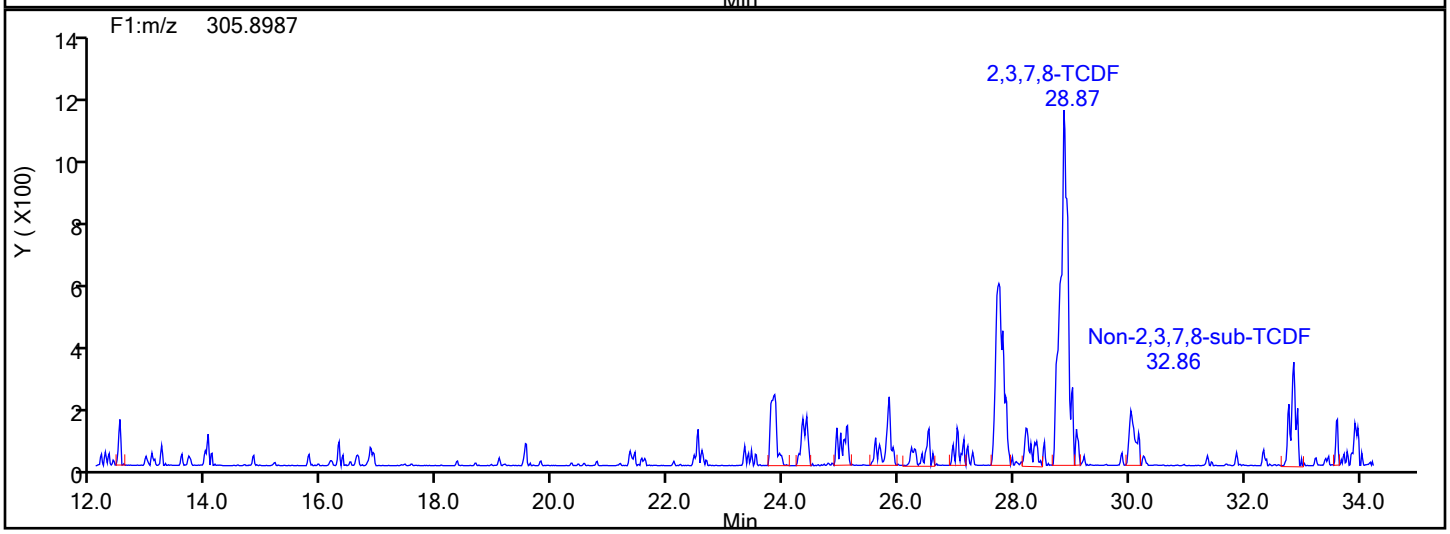
Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

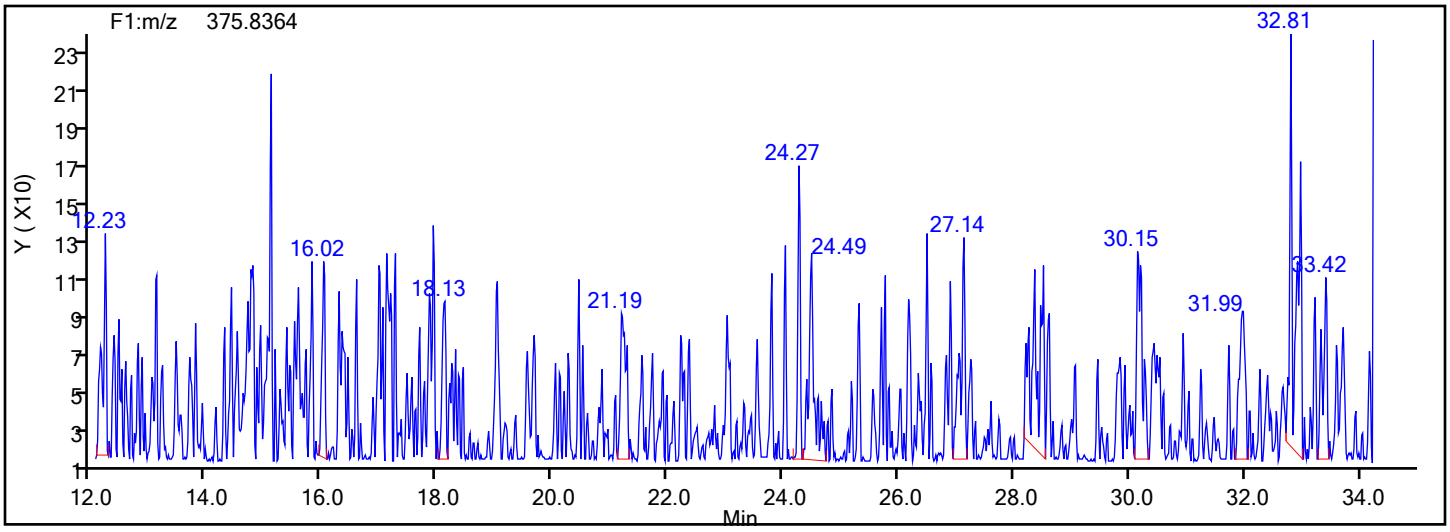
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

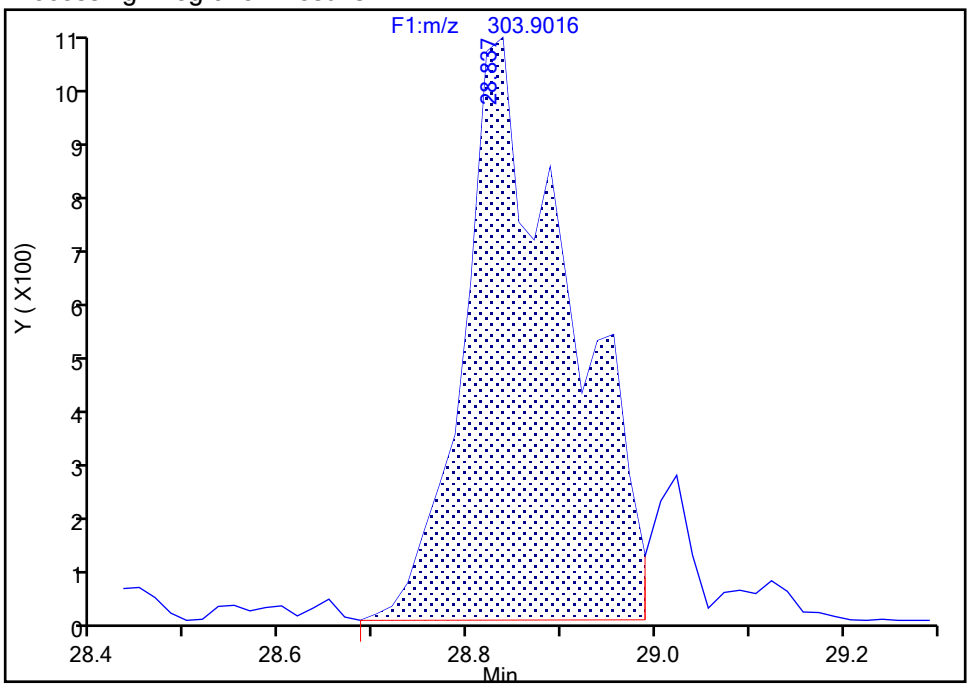
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

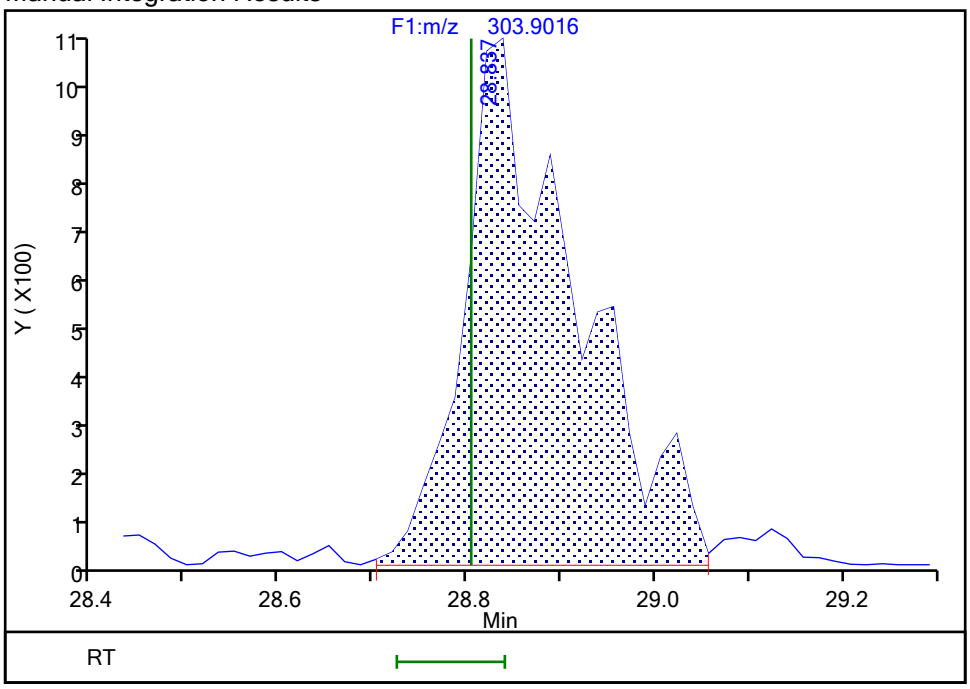
Processing Integration Results

RT: 28.84
Area: 8126
Amount: 0.860675
Amount Units: pg/ul



Manual Integration Results

RT: 28.84
Area: 8818
Amount: 0.892288
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:33:57

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

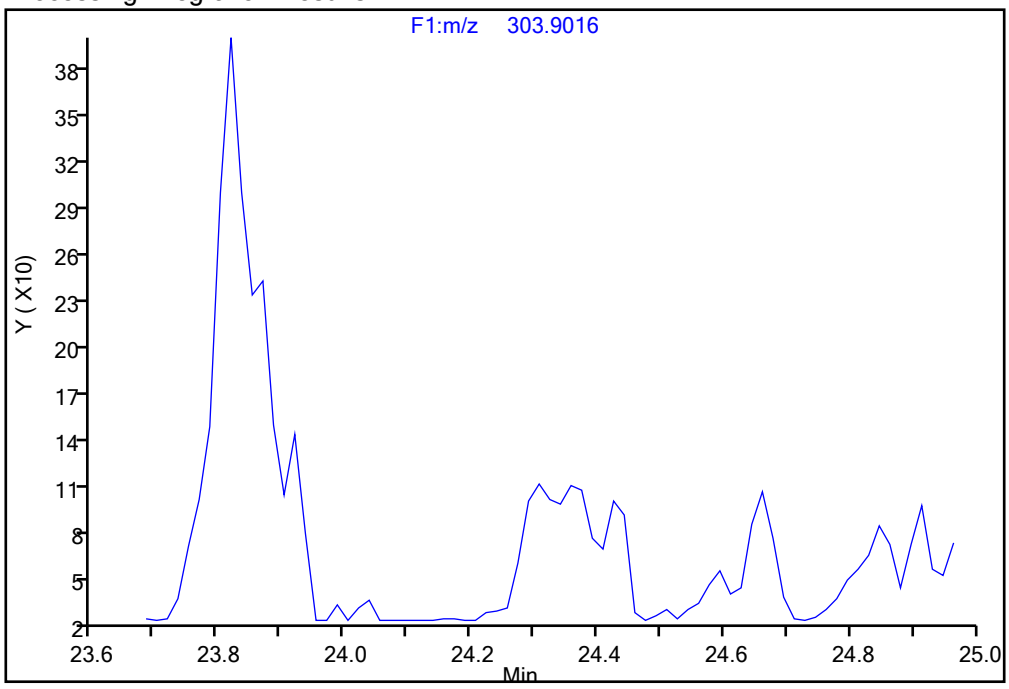
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

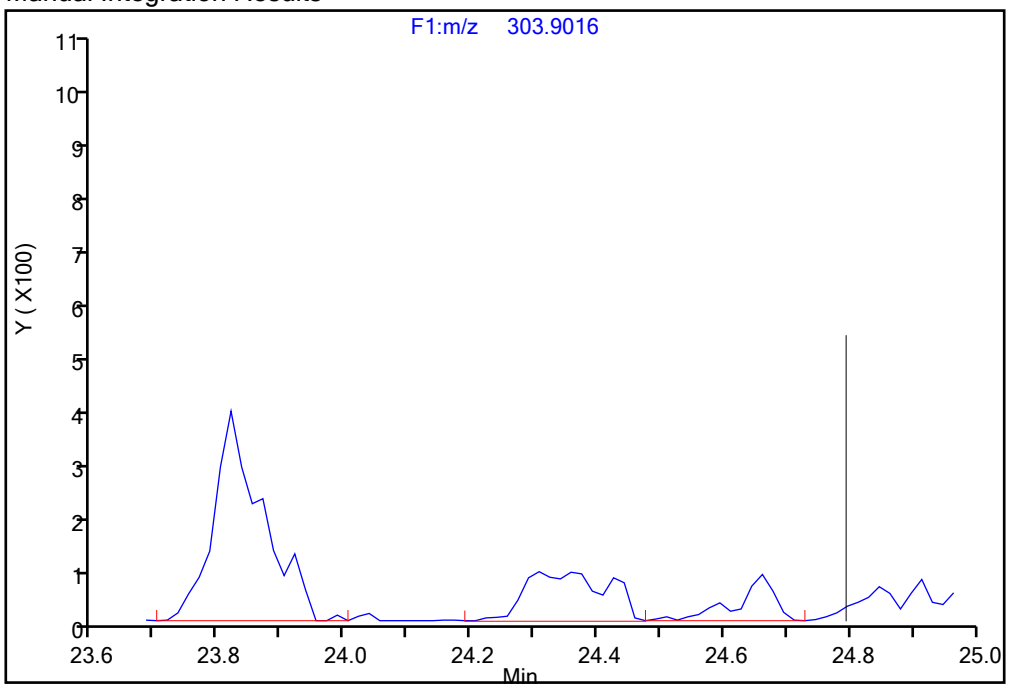
Not Detected
RT: 22.41- 33.91

Processing Integration Results



Manual Integration Results

RT = 24.308 Area = 819 M



Reviewer: davidsonm, 18-Dec-2019 08:39:35
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

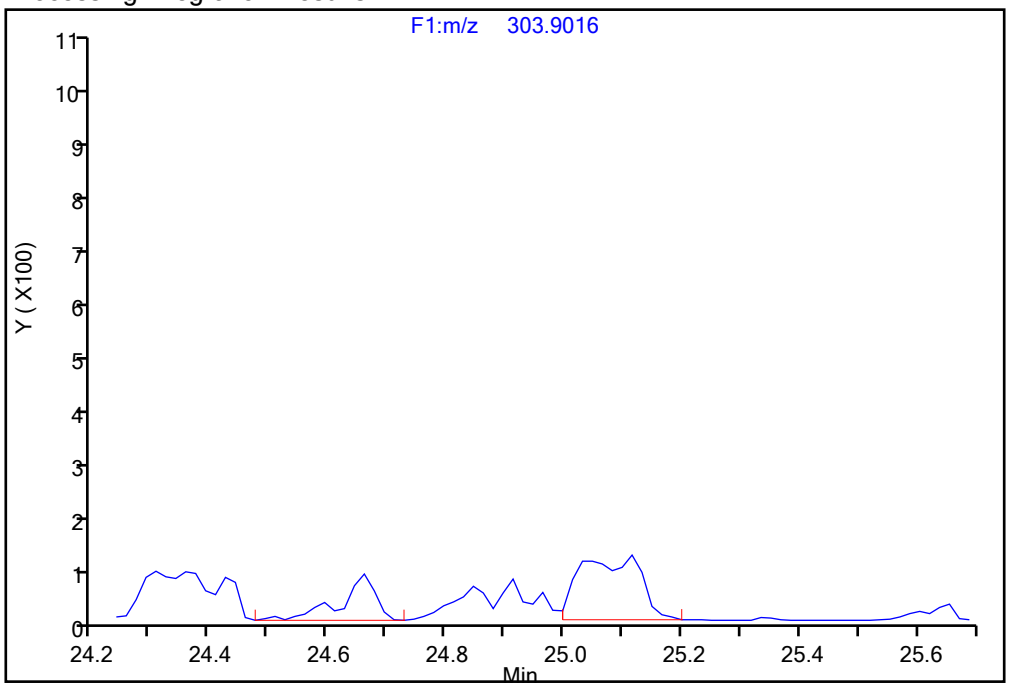
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

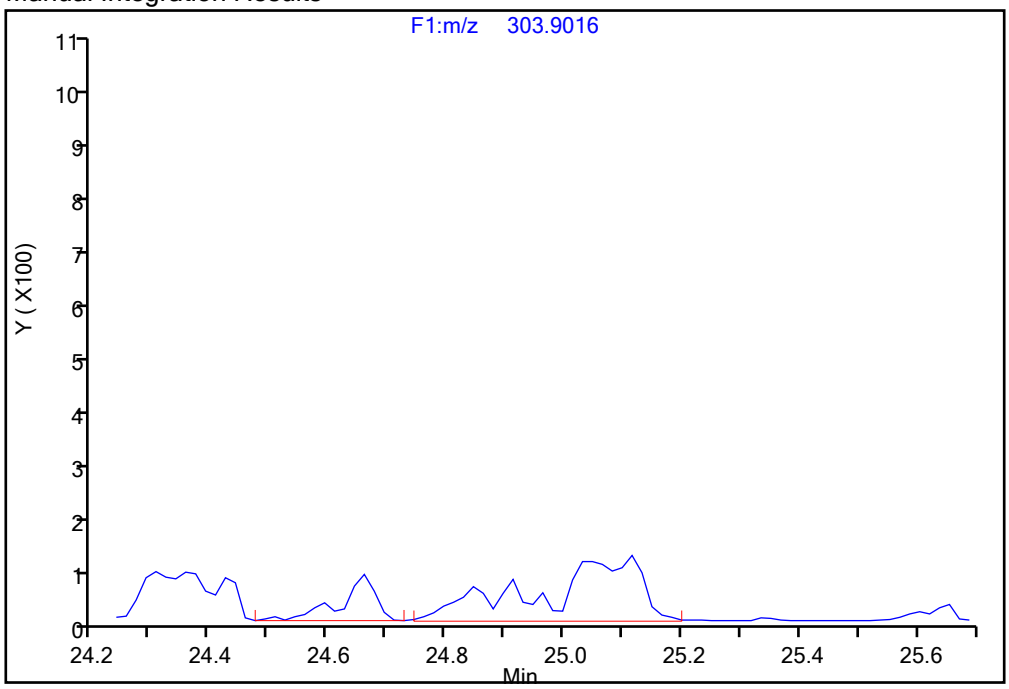
Processing Integration Results

RT = 25.116 Area = 819



Manual Integration Results

RT = 25.116 Area = 1379 M



Reviewer: davidsonm, 18-Dec-2019 08:39:35

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

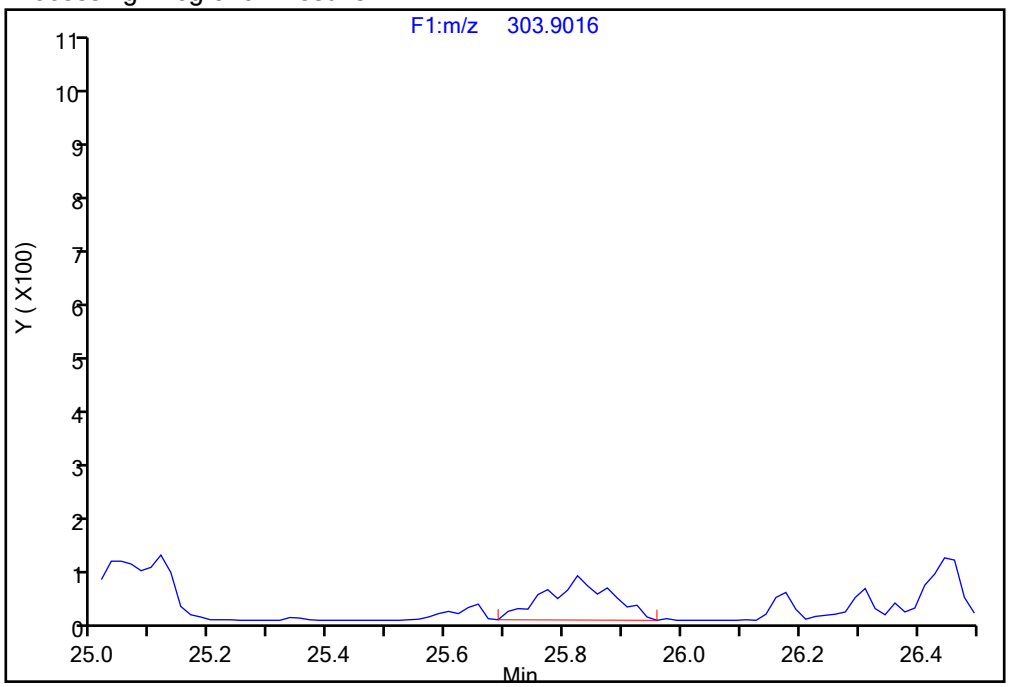
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

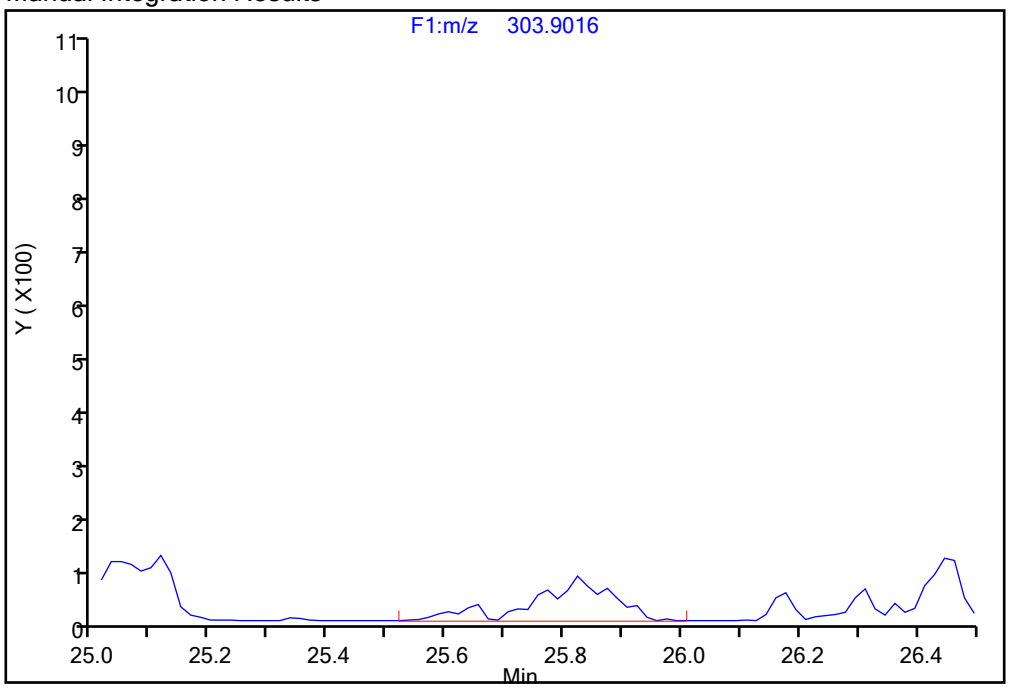
Processing Integration Results

RT = 25.823 Area = 594



Manual Integration Results

RT = 25.823 Area = 740 M



Reviewer: davidsonm, 18-Dec-2019 08:39:35

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

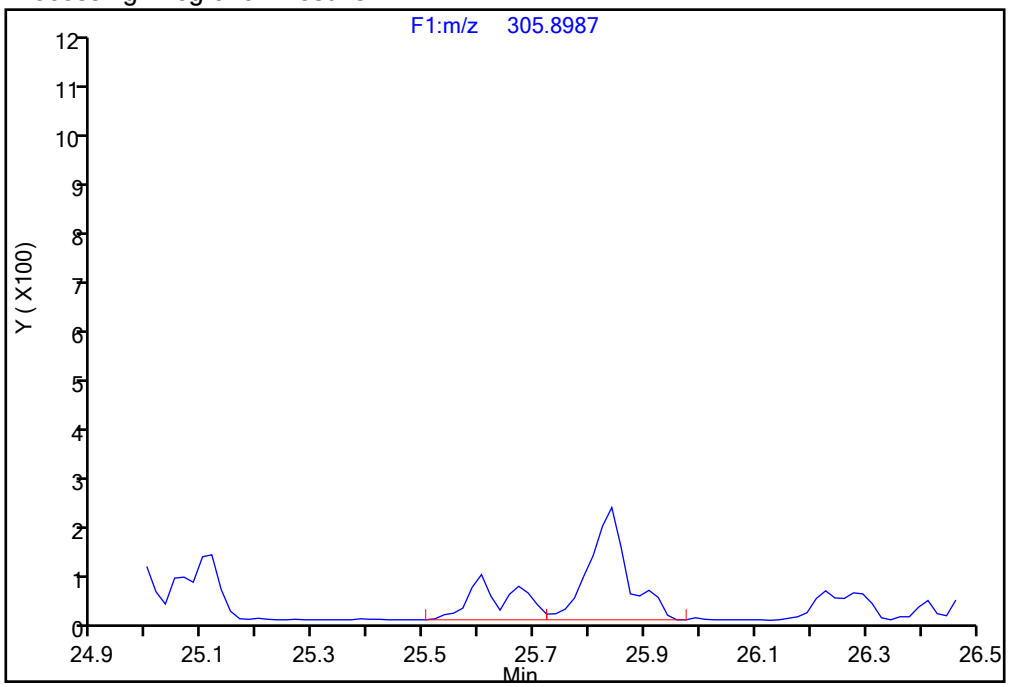
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

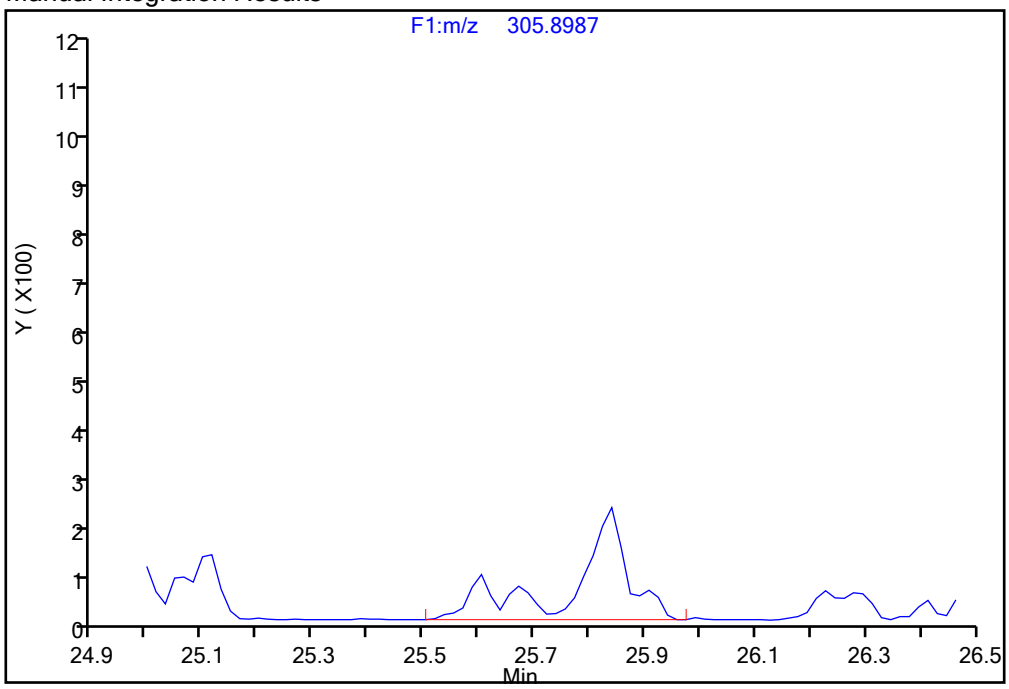
Processing Integration Results

RT = 25.840 Area = 1062



Manual Integration Results

RT = 25.840 Area = 1539 M



Reviewer: davidsonm, 18-Dec-2019 08:38:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

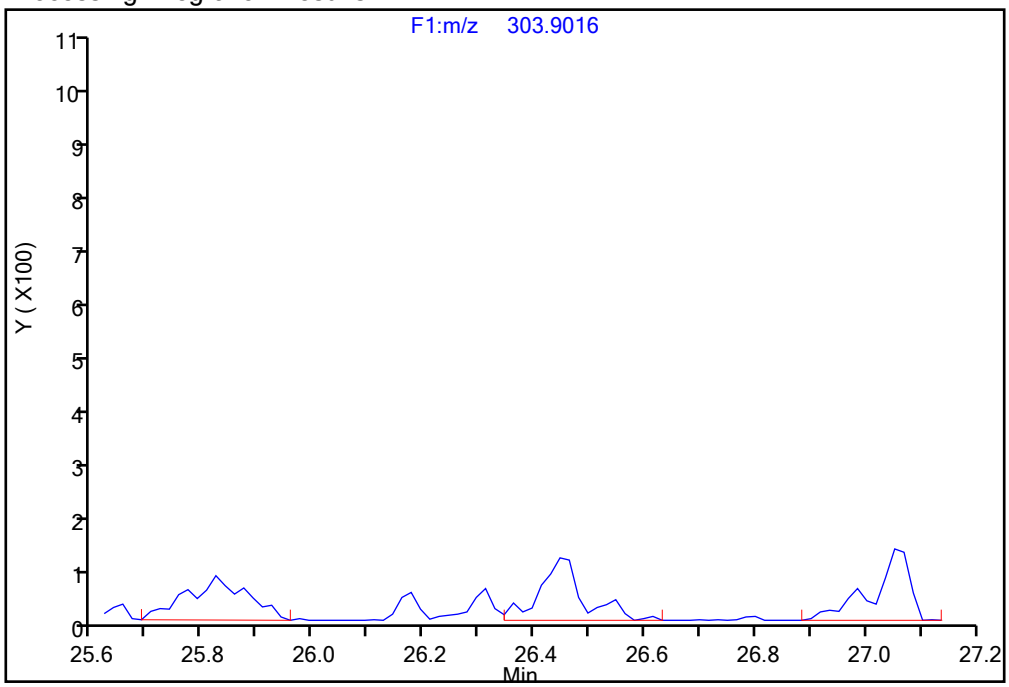
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

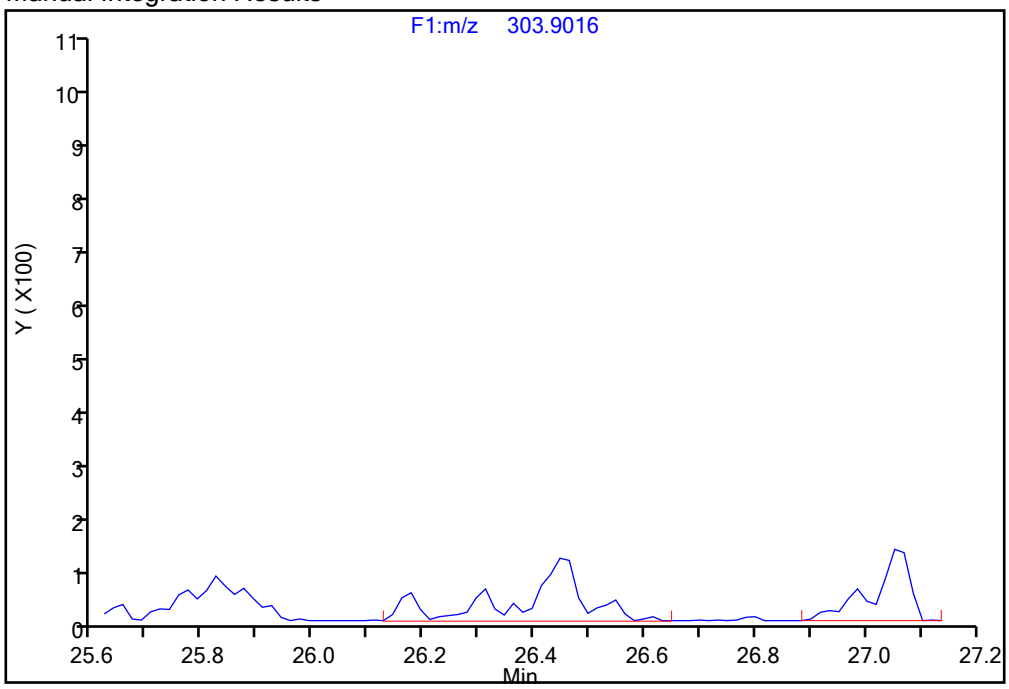
Processing Integration Results

RT = 26.446 Area = 609



Manual Integration Results

RT = 26.446 Area = 933 M



Reviewer: davidsonm, 18-Dec-2019 08:39:35

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

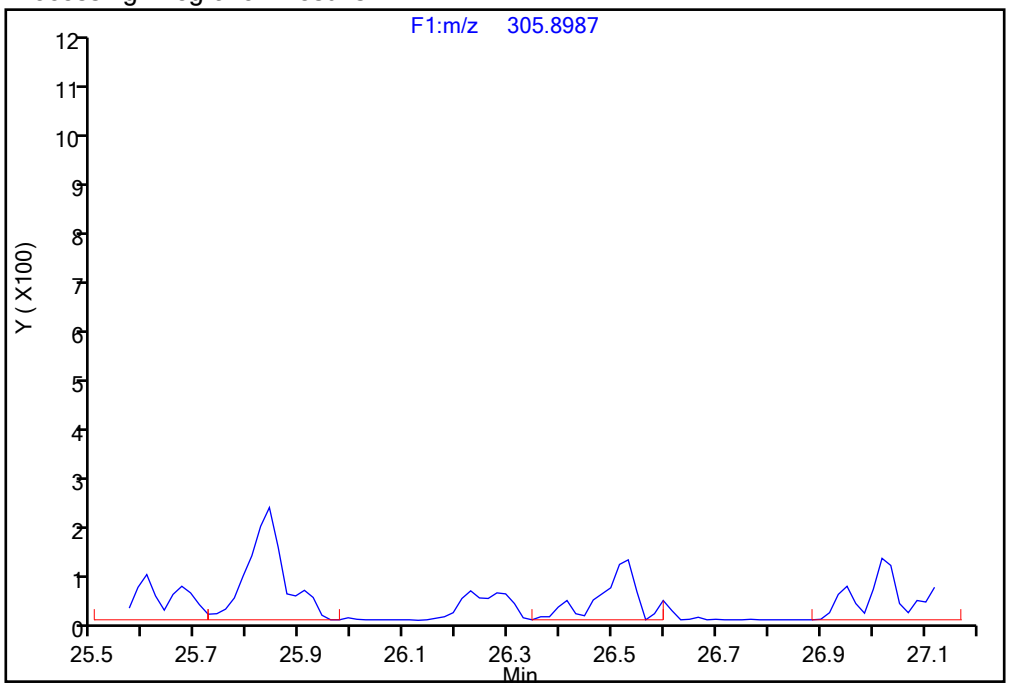
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

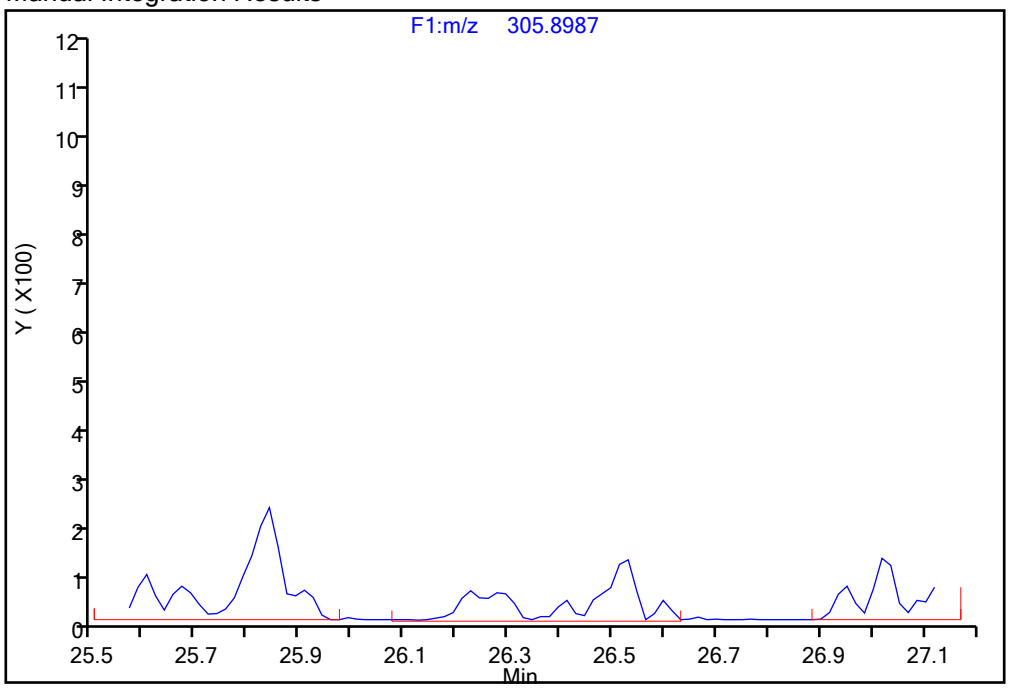
Processing Integration Results

RT = 26.530 Area = 566



Manual Integration Results

RT = 26.530 Area = 1053 M



Reviewer: davidsonm, 18-Dec-2019 08:38:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

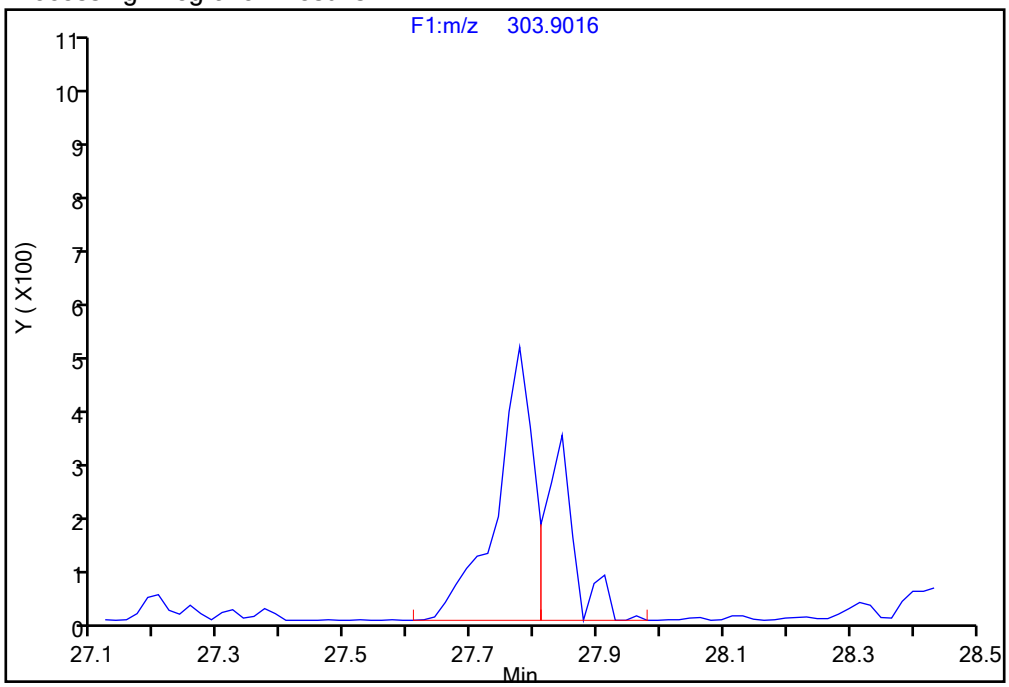
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

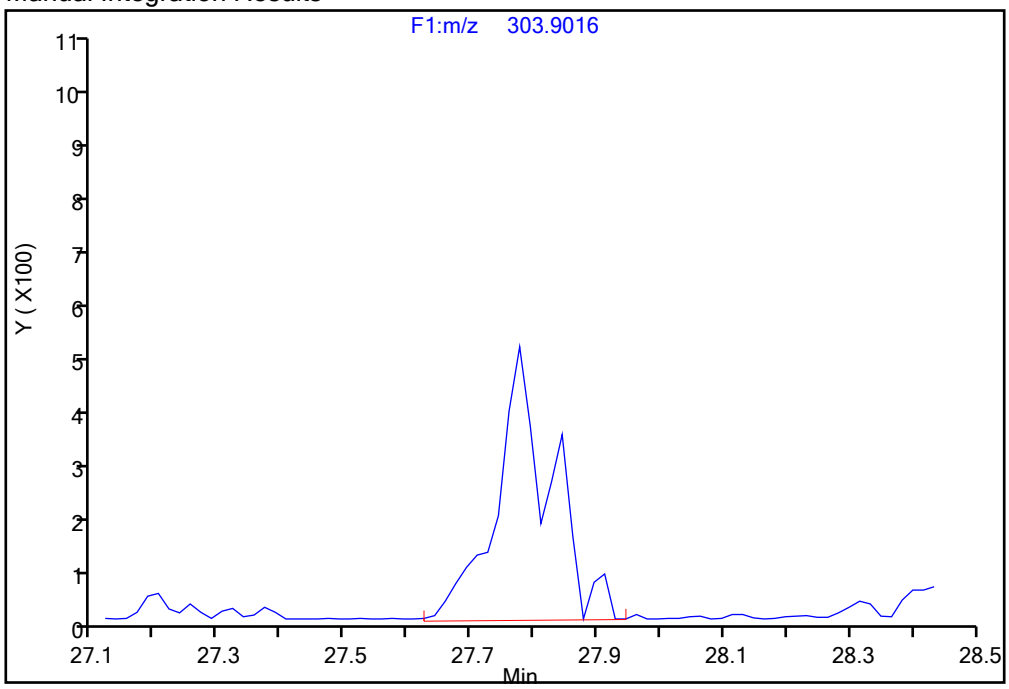
Processing Integration Results

RT = 27.777 Area = 1933



Manual Integration Results

RT = 27.777 Area = 2952 M



Reviewer: davidsonm, 18-Dec-2019 08:39:35

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

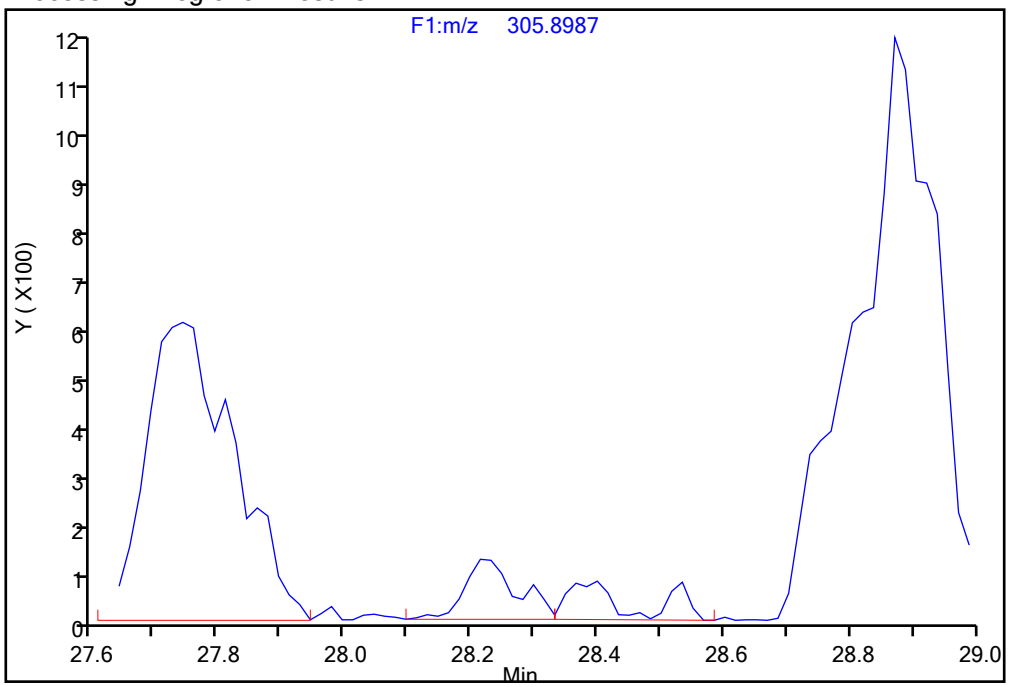
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

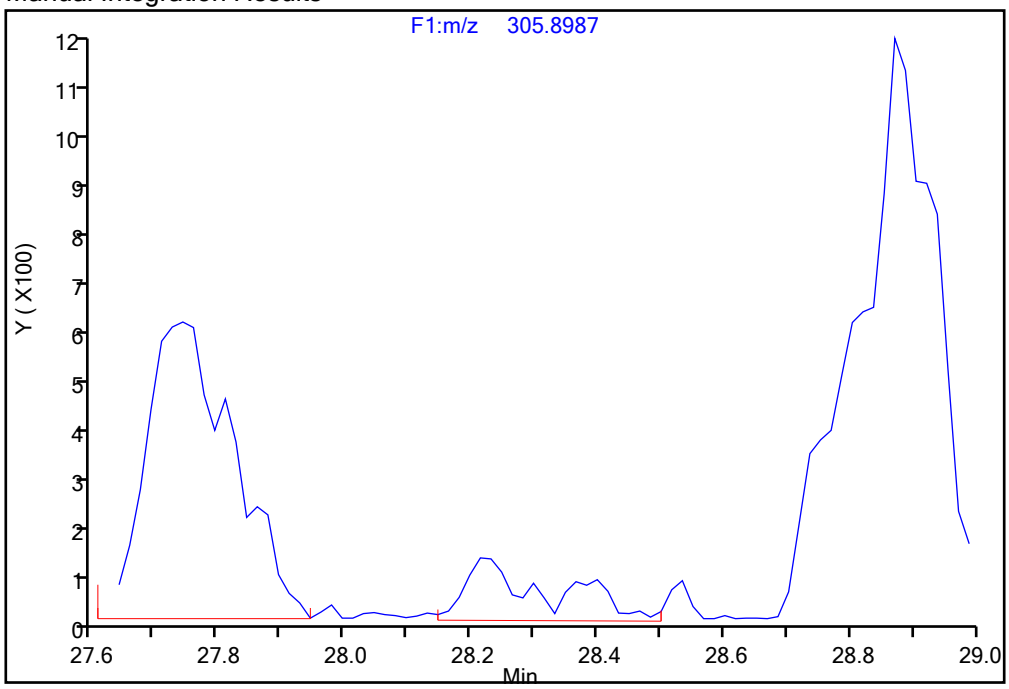
Processing Integration Results

RT = 28.214 Area = 680



Manual Integration Results

RT = 28.214 Area = 1149 M



Reviewer: davidsonm, 18-Dec-2019 08:38:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

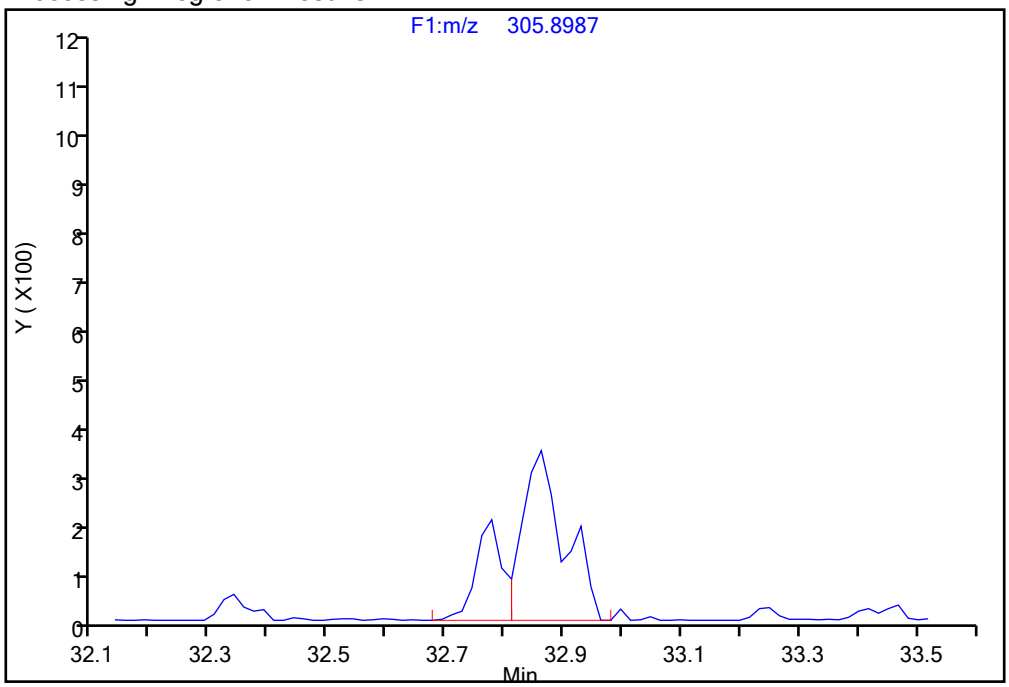
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

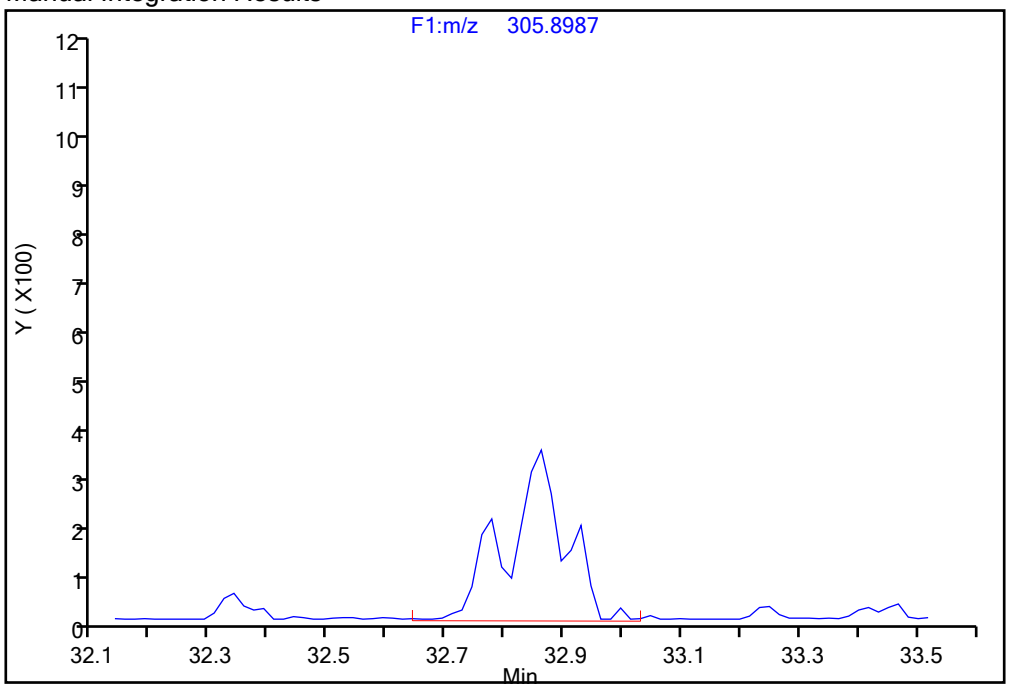
Processing Integration Results

RT = 32.862 Area = 1619



Manual Integration Results

RT = 32.862 Area = 2333 M



Reviewer: davidsonm, 18-Dec-2019 08:38:46

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

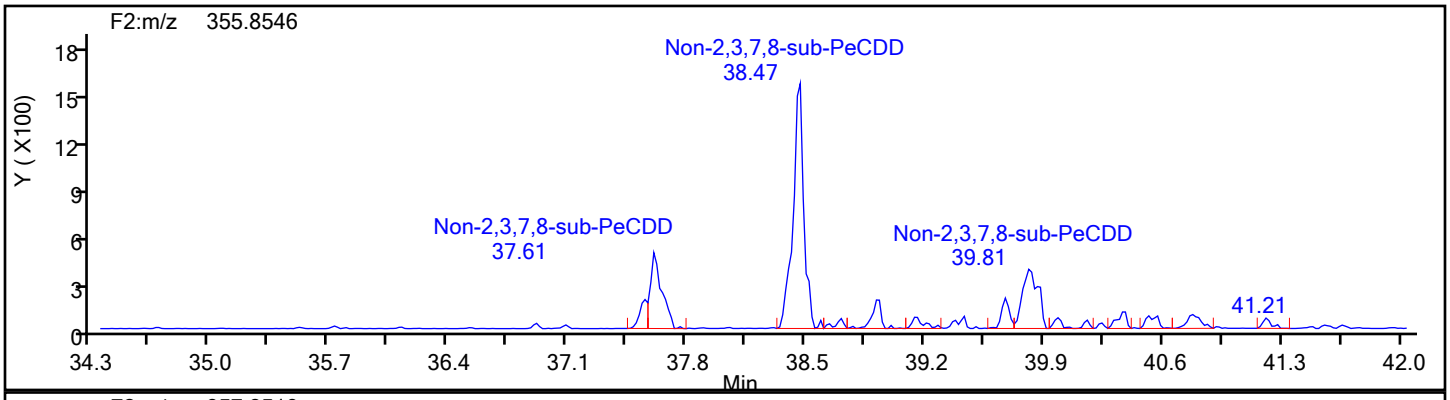
Report Date: 18-Dec-2019 08:43:17 Chrom Revision: 2.3 05-Dec-2019 09:31:18

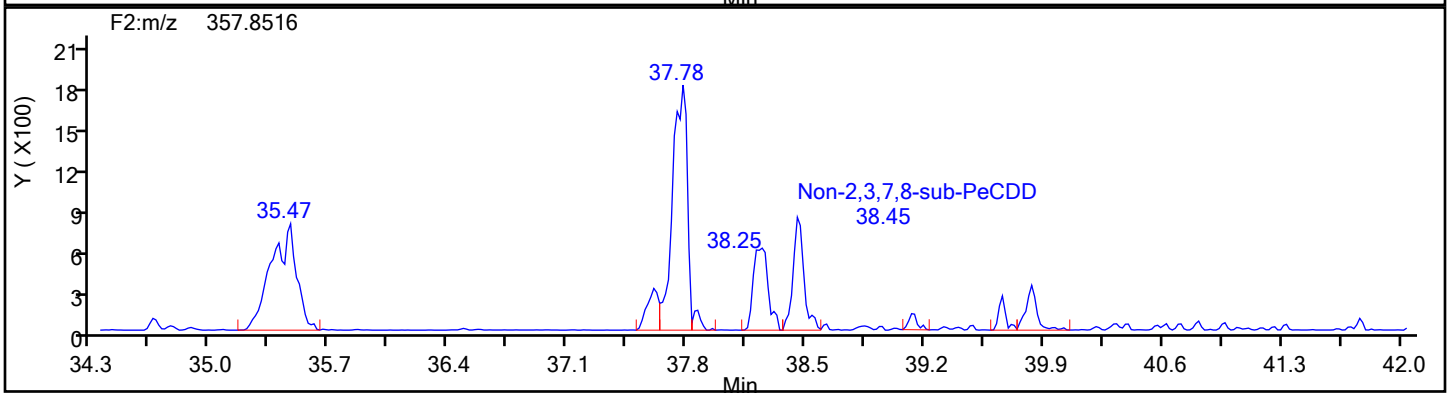
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d

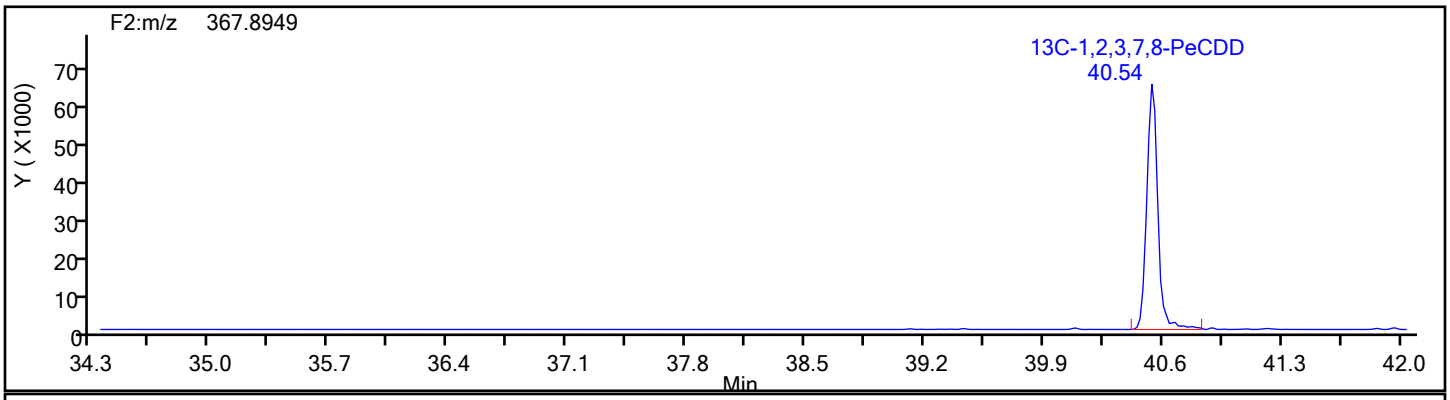
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

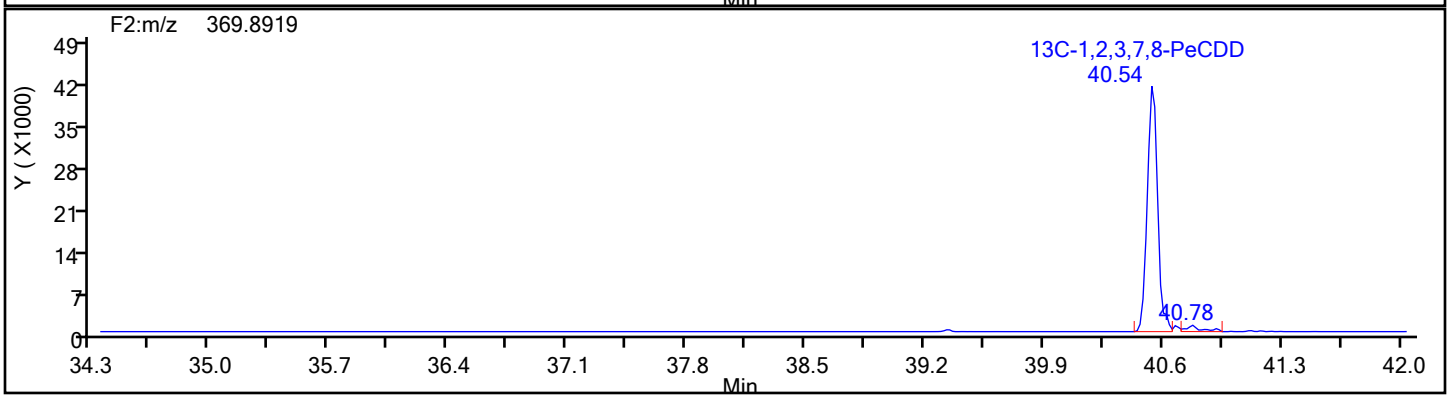
PeCDD





PeCDD Standards



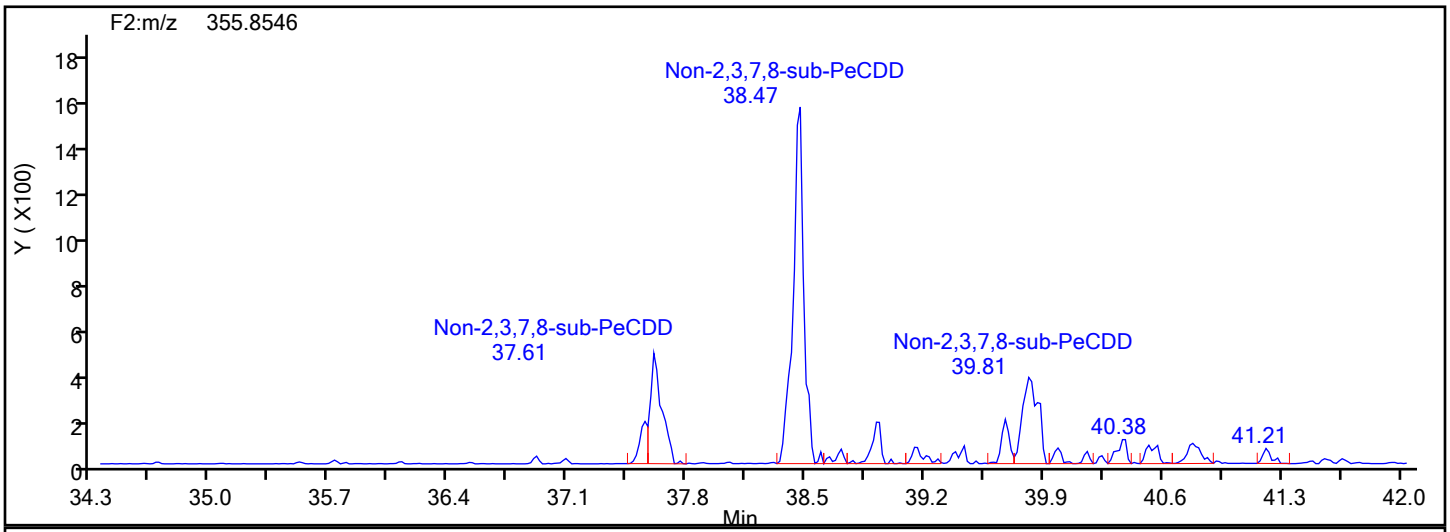


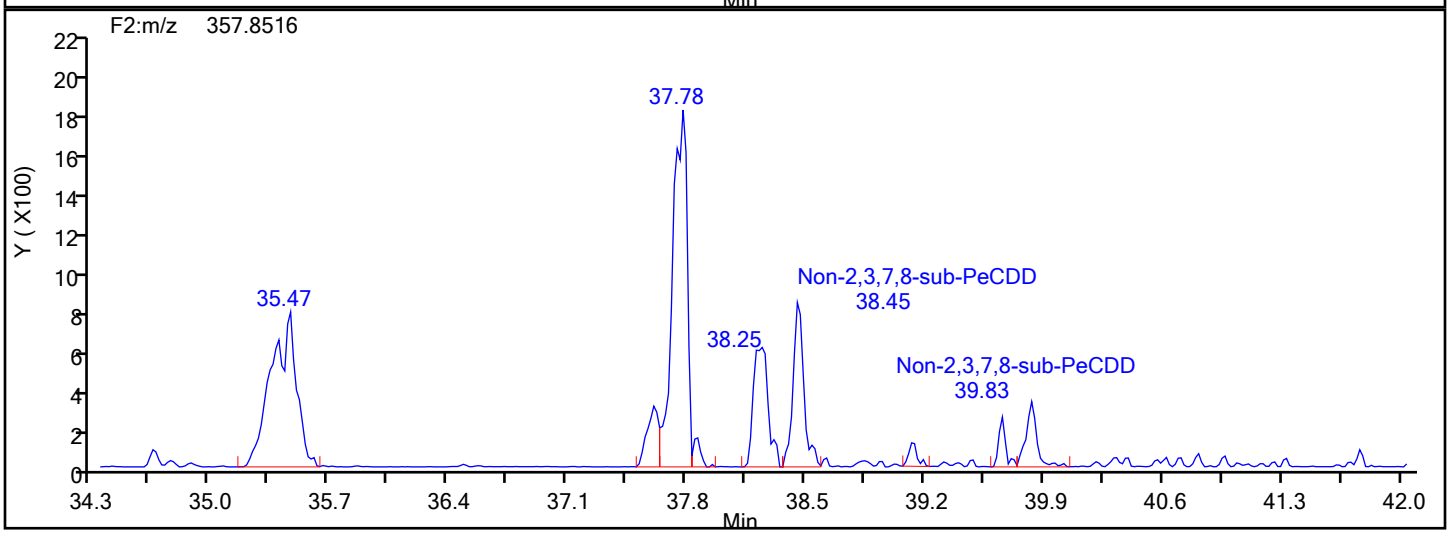
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

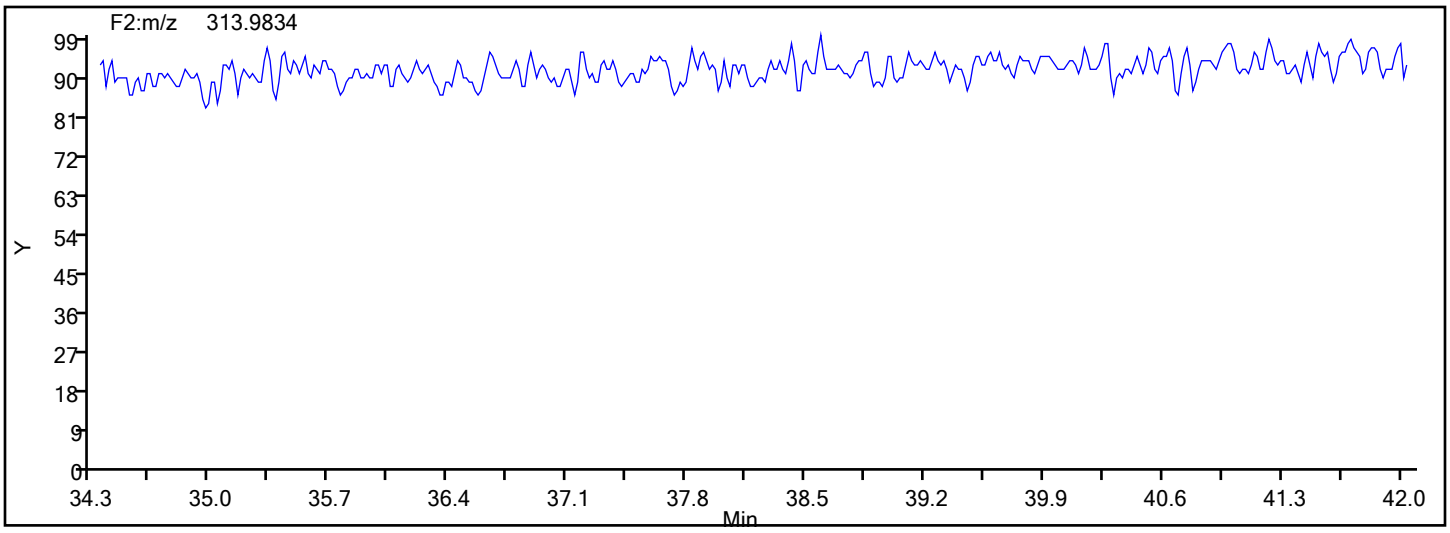
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



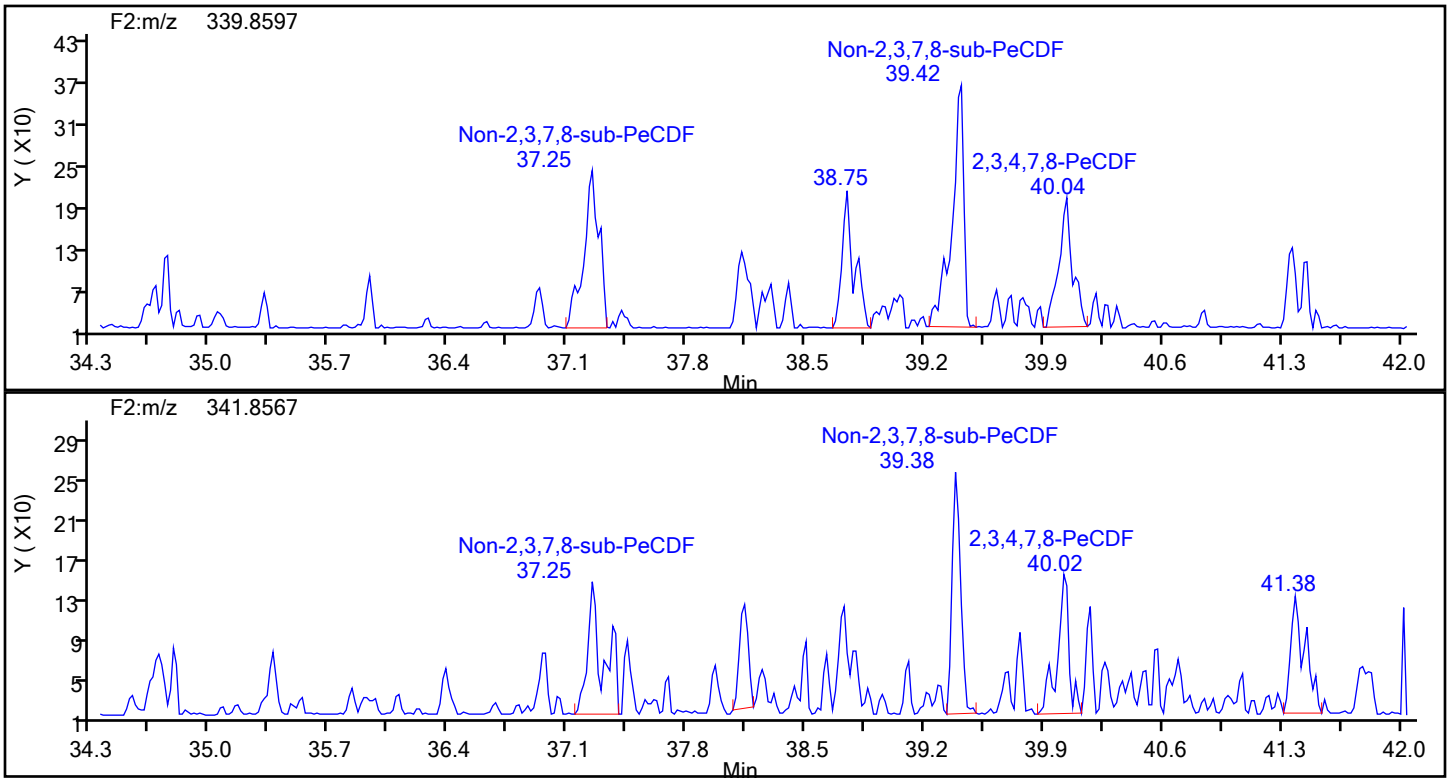
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

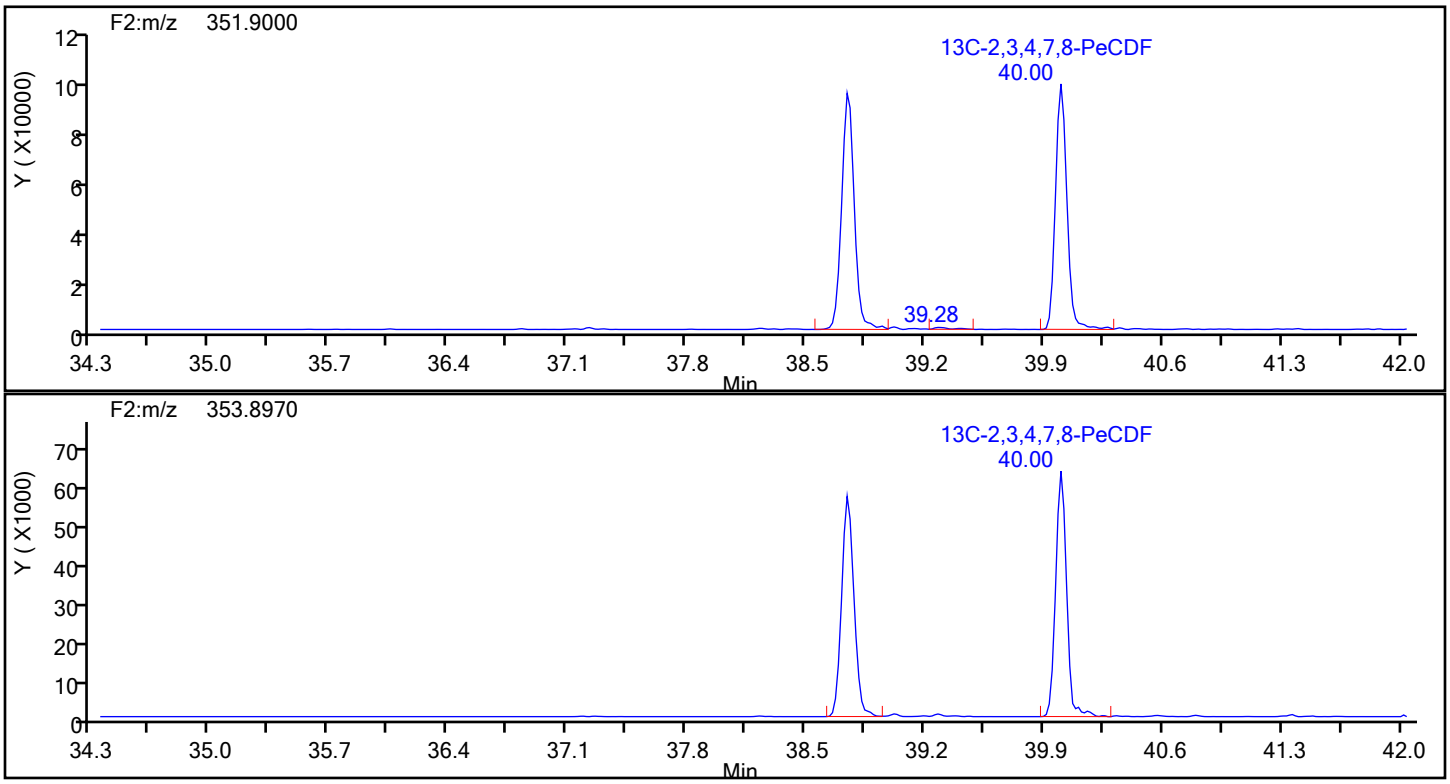
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d

Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF



PeCDF Standards

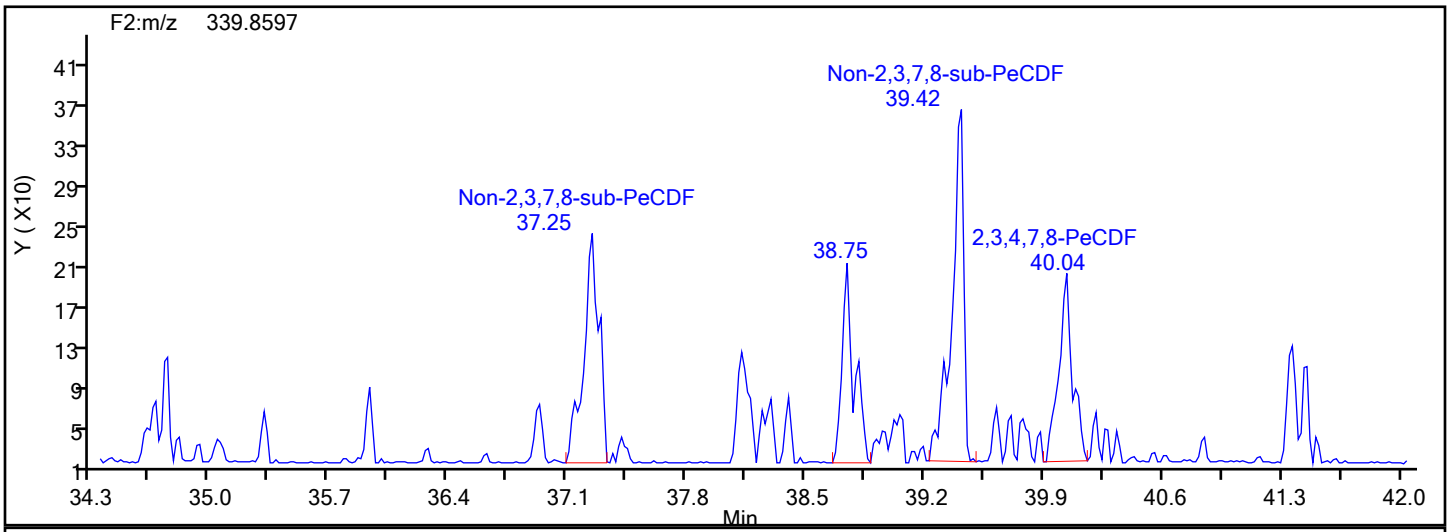


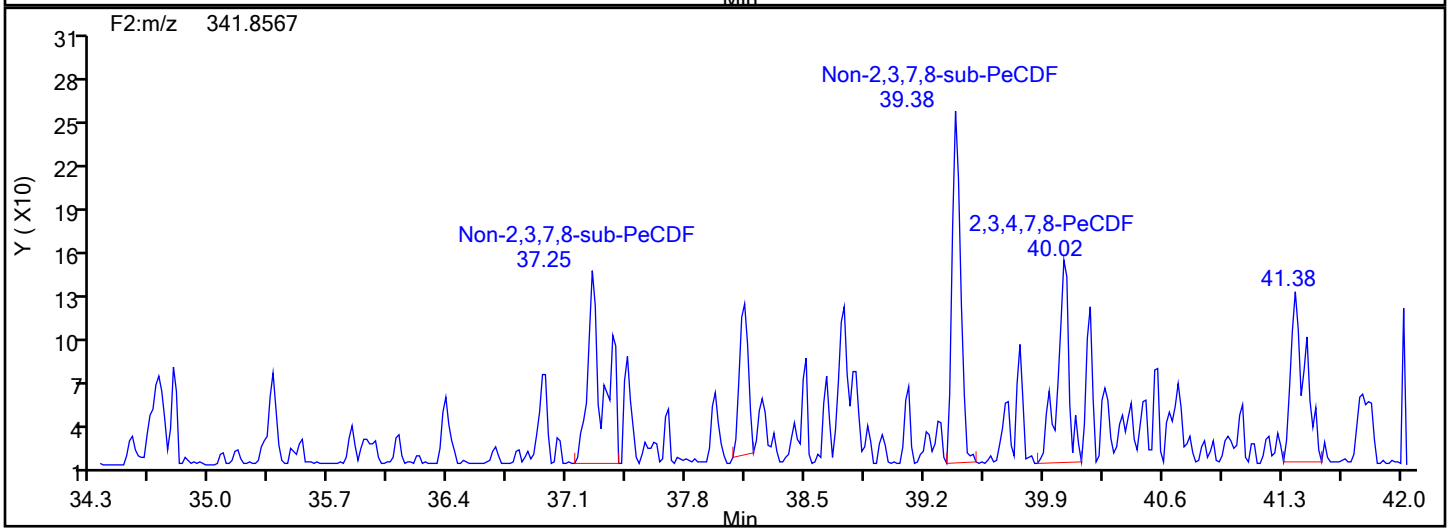
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

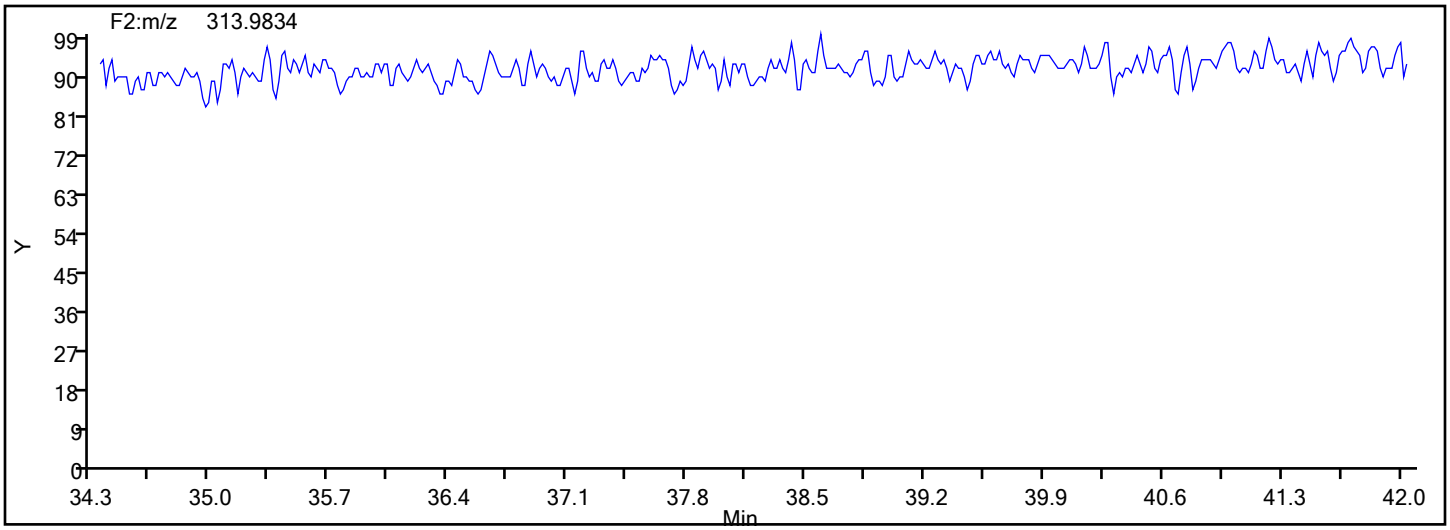
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





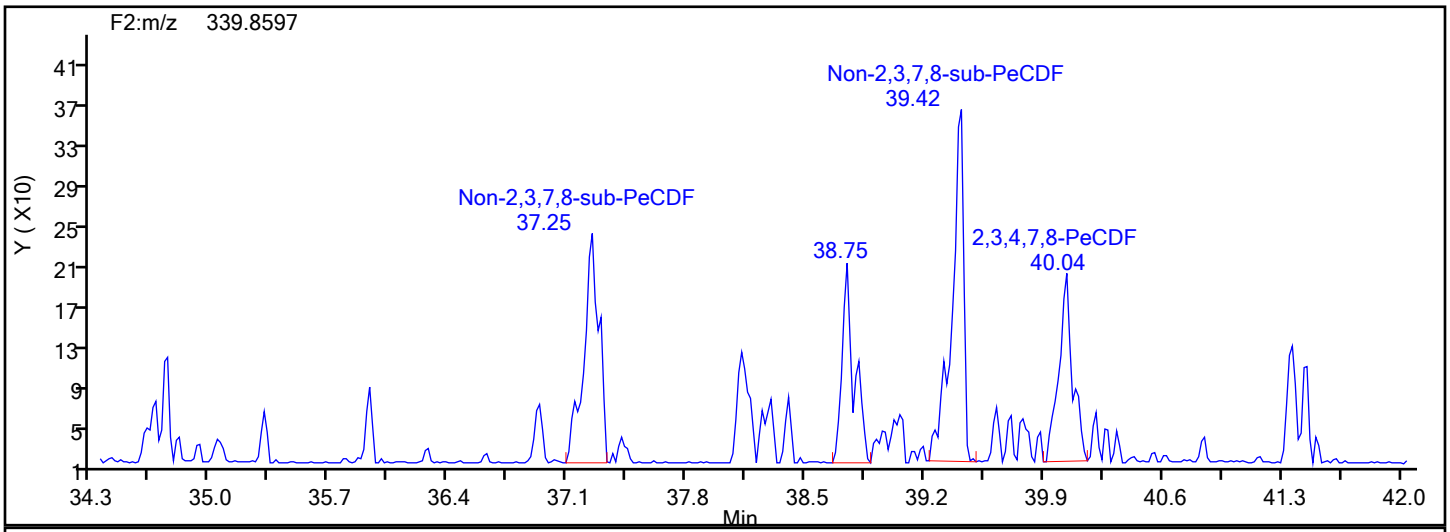
PeCDF Lock Mass

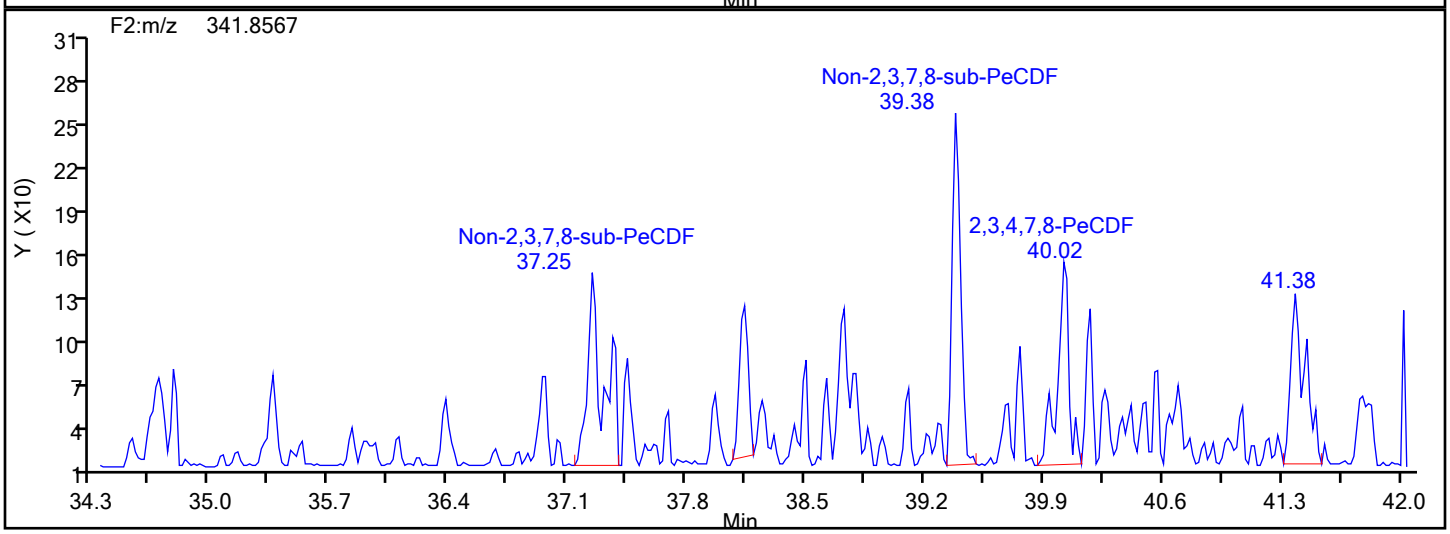


Eurofins TestAmerica, Knoxville

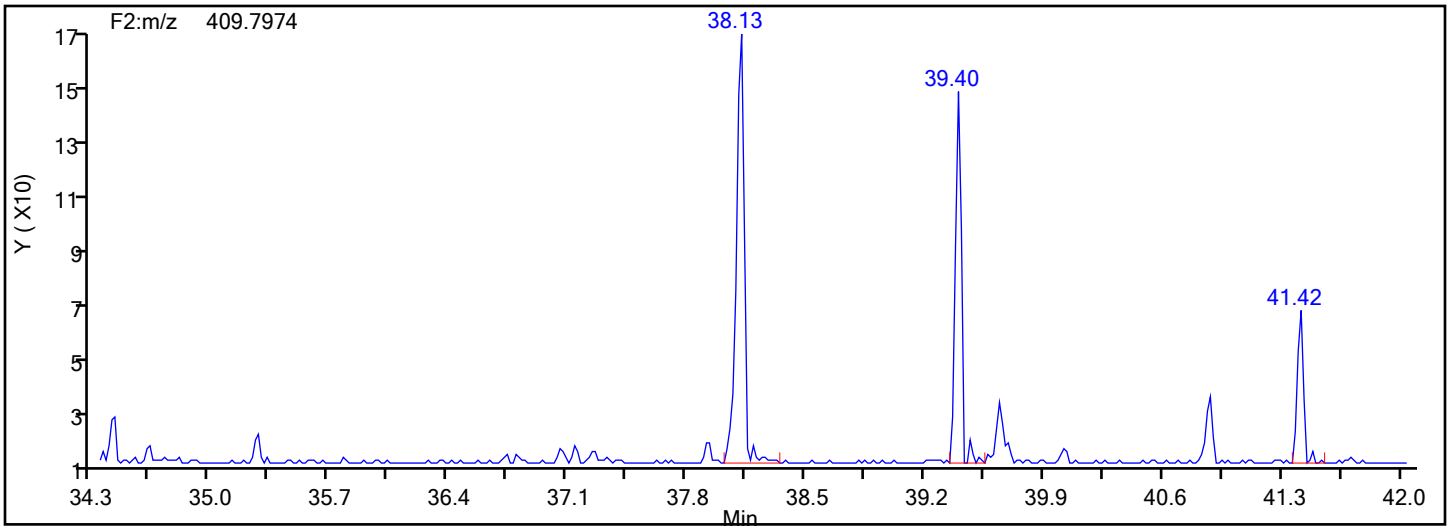
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

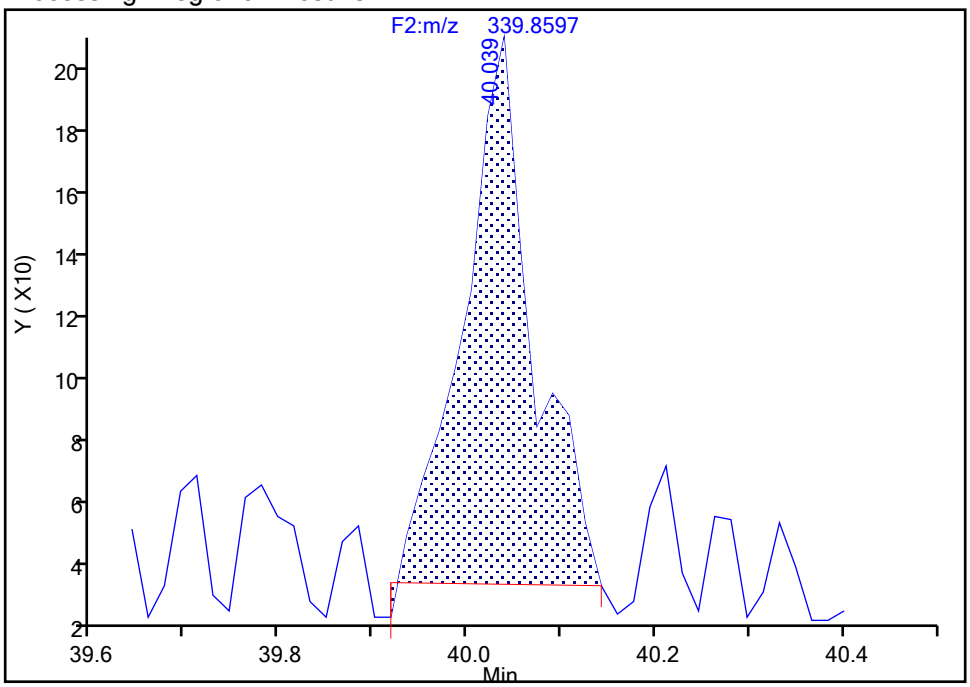
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 1

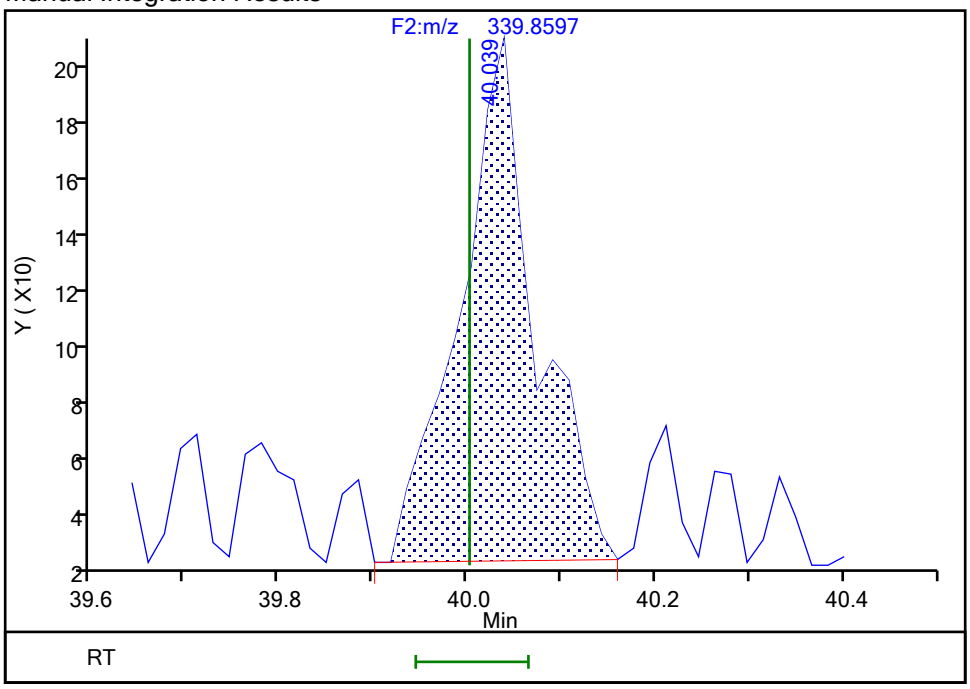
Processing Integration Results

RT: 40.04
Area: 895
Amount: 0.087112
Amount Units: pg/ul



Manual Integration Results

RT: 40.04
Area: 1034
Amount: 0.104933
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:08

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

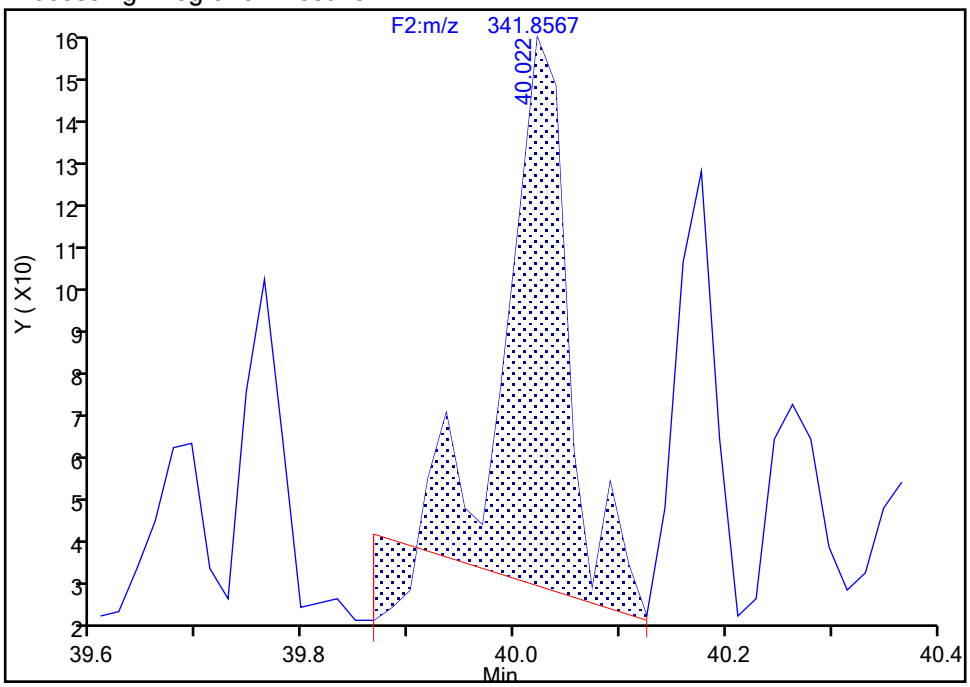
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

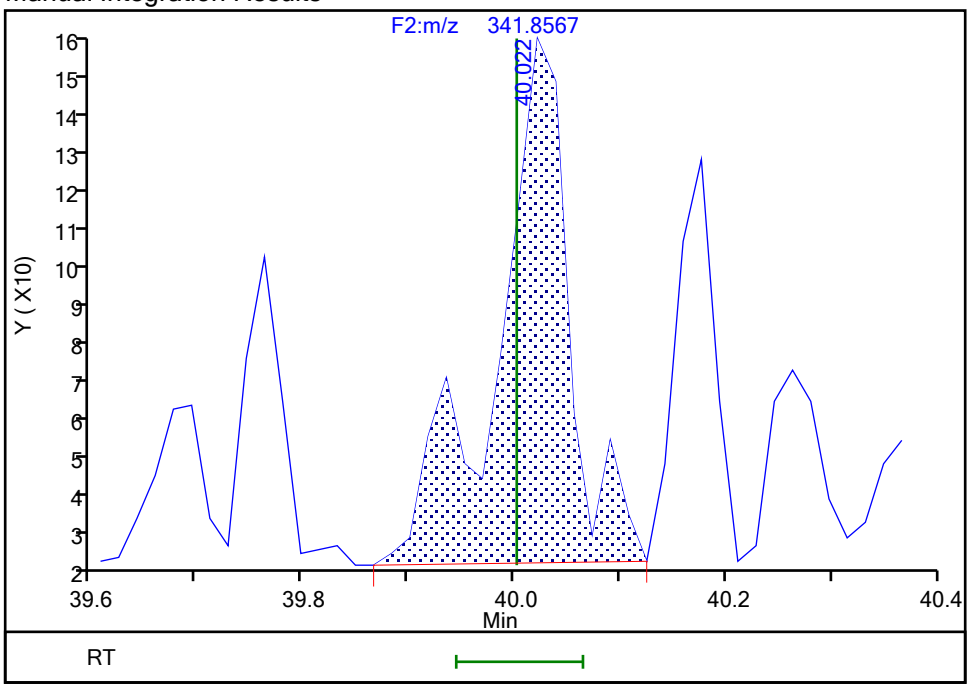
Processing Integration Results

RT: 40.02
Area: 503
Amount: 0.087112
Amount Units: pg/ul



Manual Integration Results

RT: 40.02
Area: 650
Amount: 0.104933
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:12

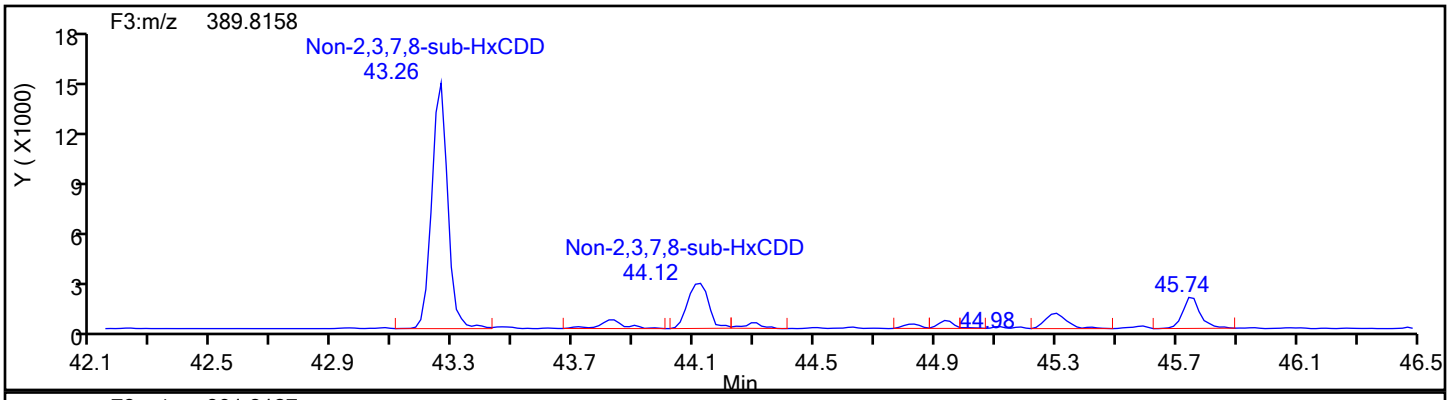
Audit Action: Manually Integrated Audit Reason: Baseline

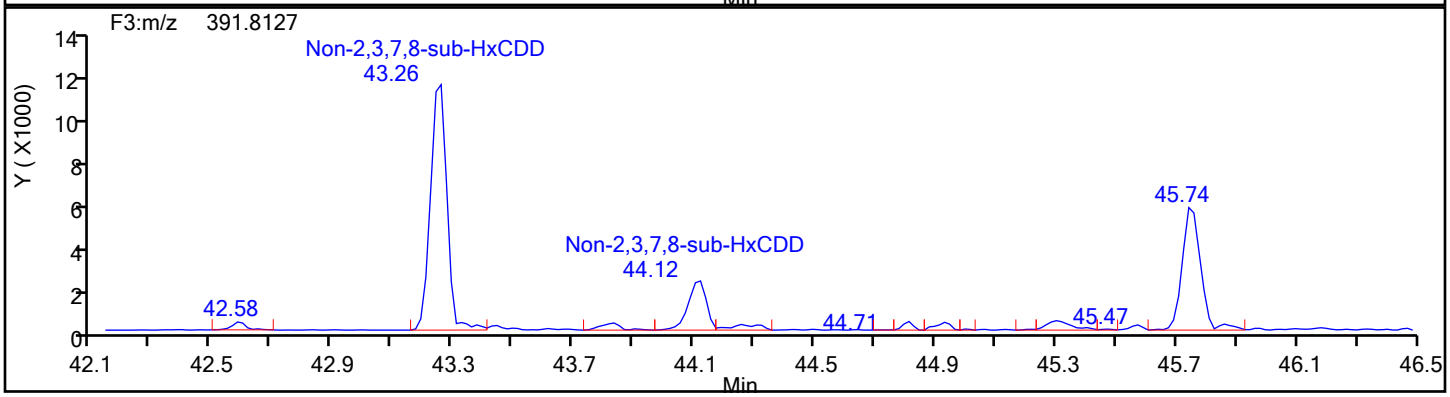
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

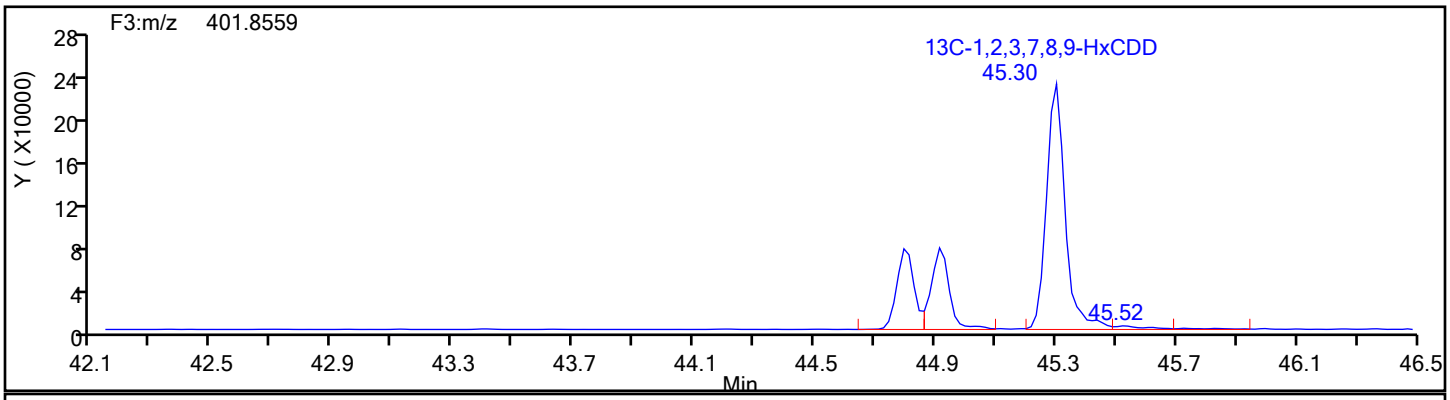
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

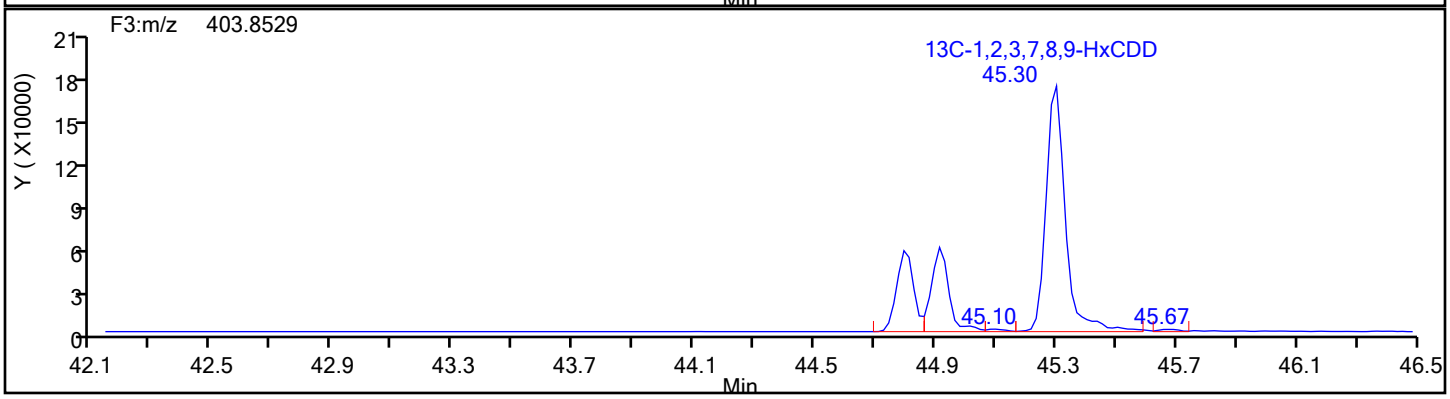
HxCDD





HxCDD Standards



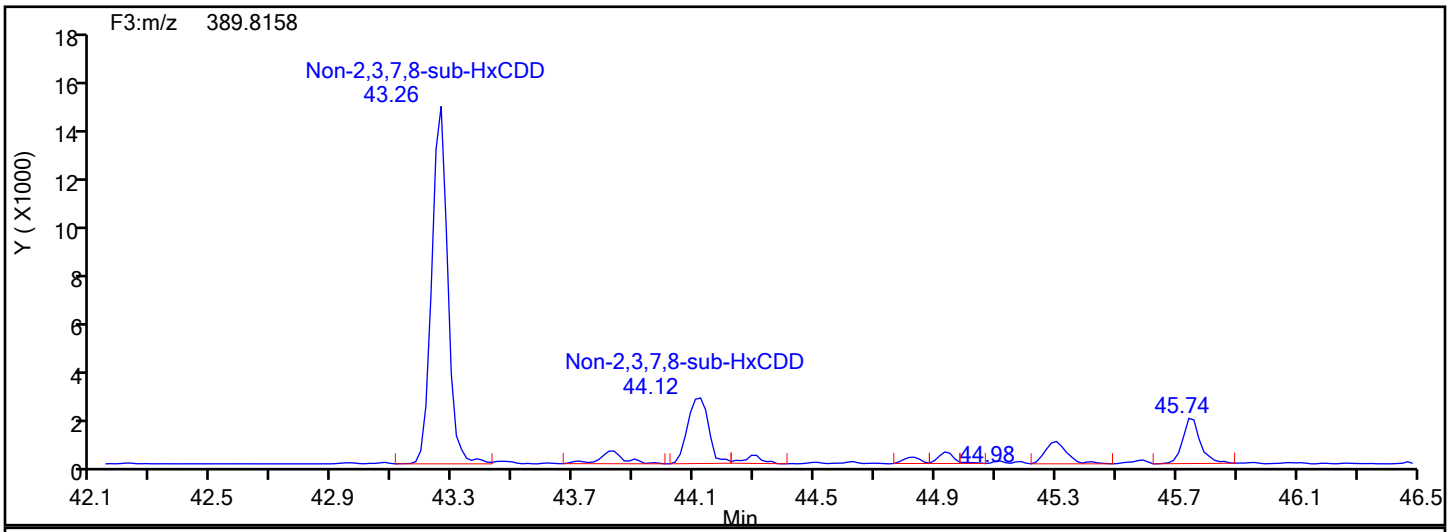


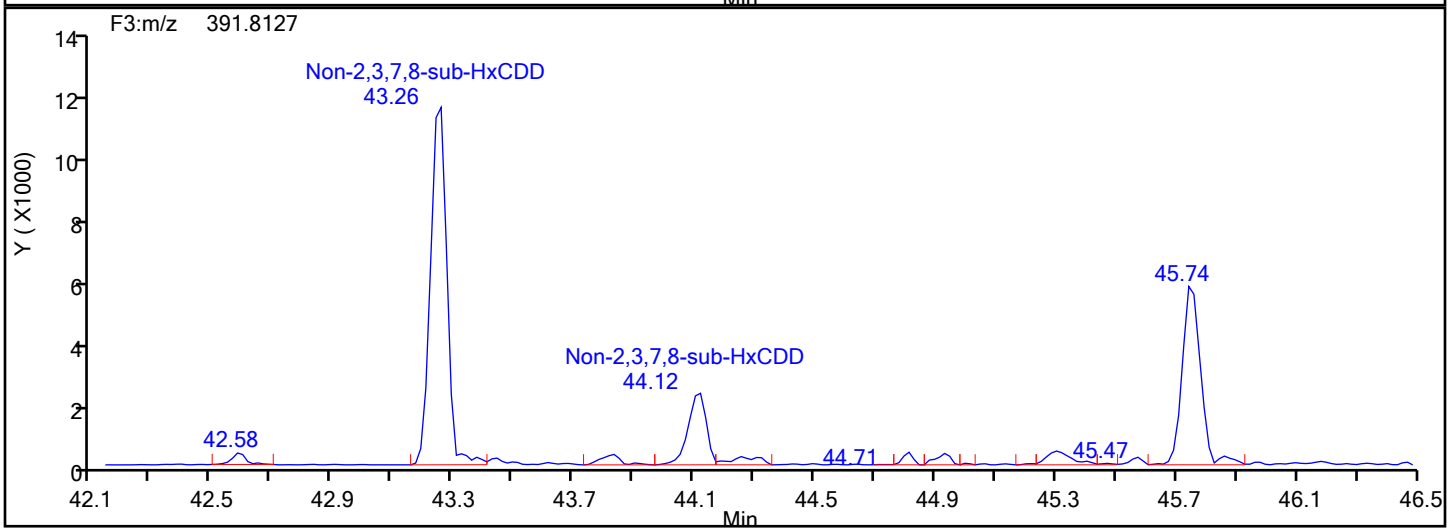
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

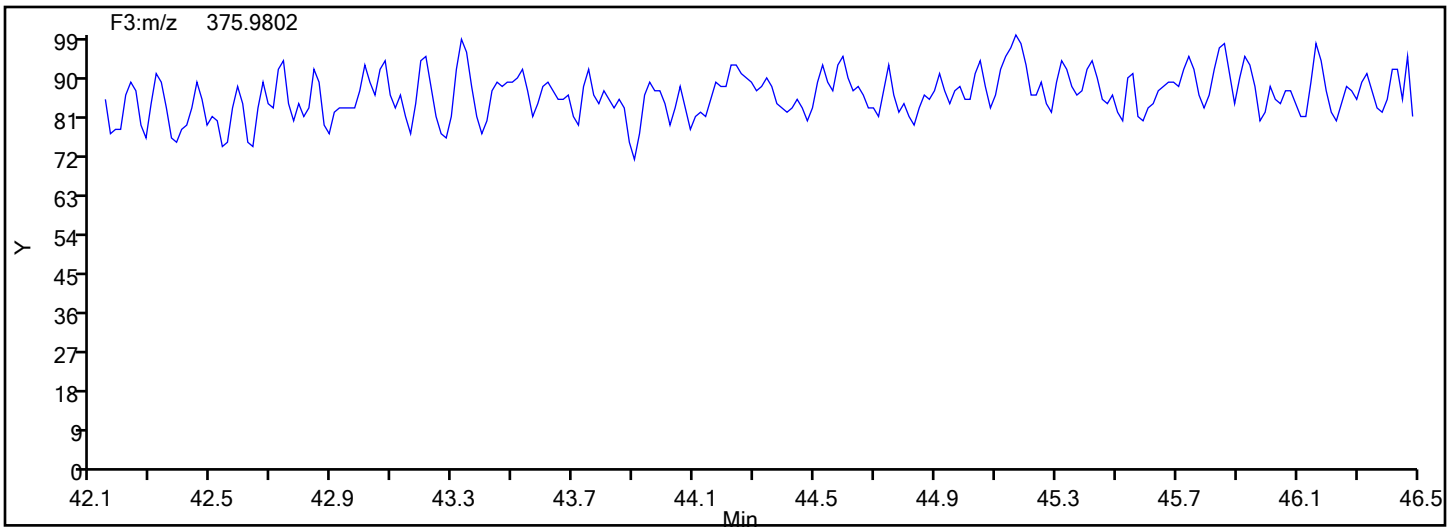
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

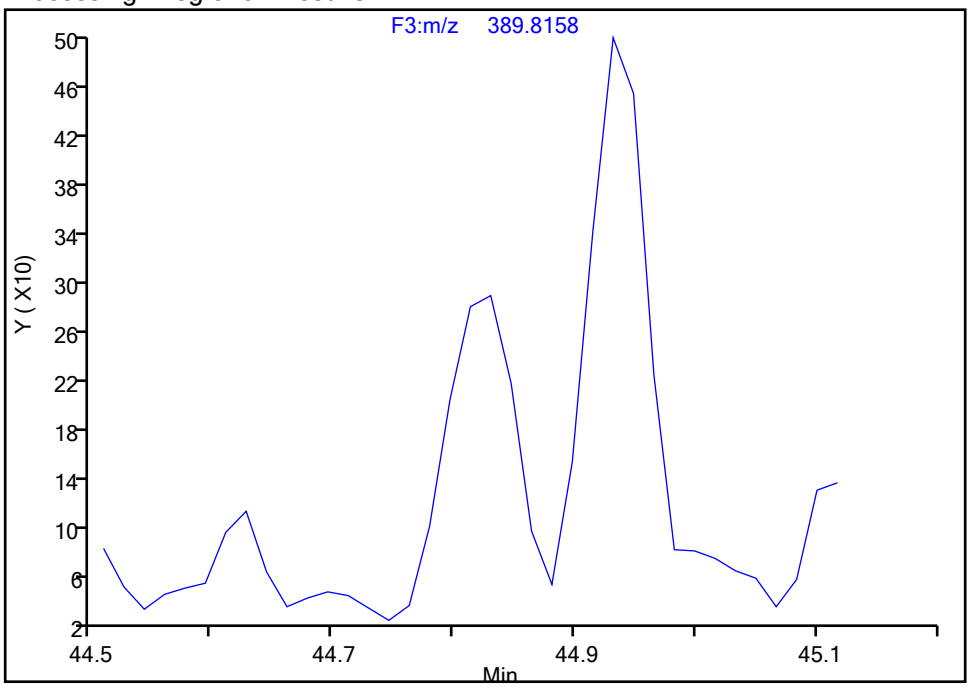
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

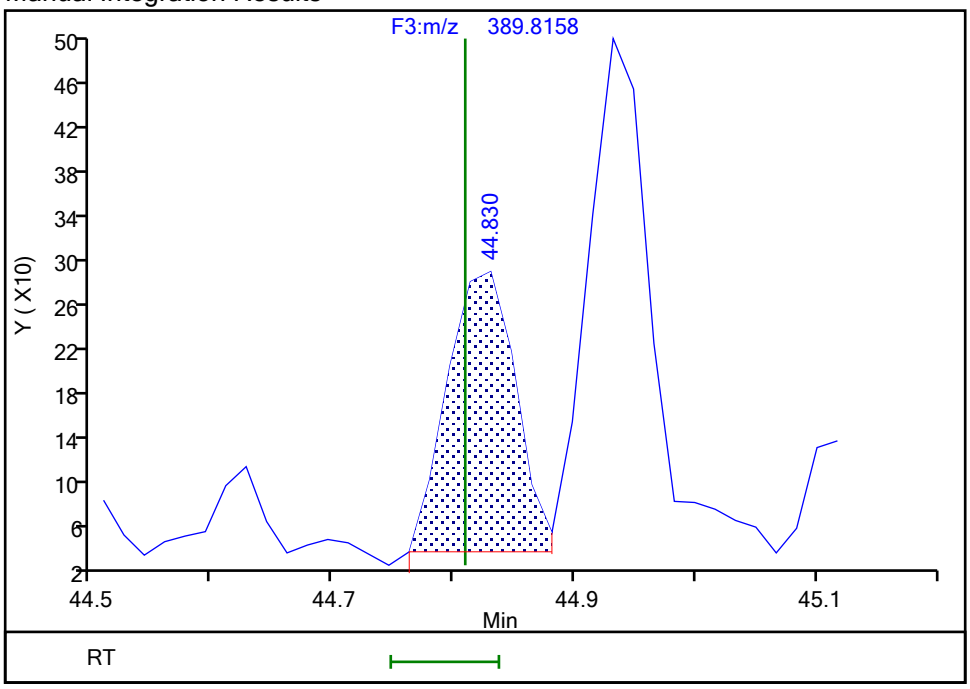
Not Detected
Expected RT: 44.81

Processing Integration Results



Manual Integration Results

RT: 44.83
Area: 981
Amount: 0.156205
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:56
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

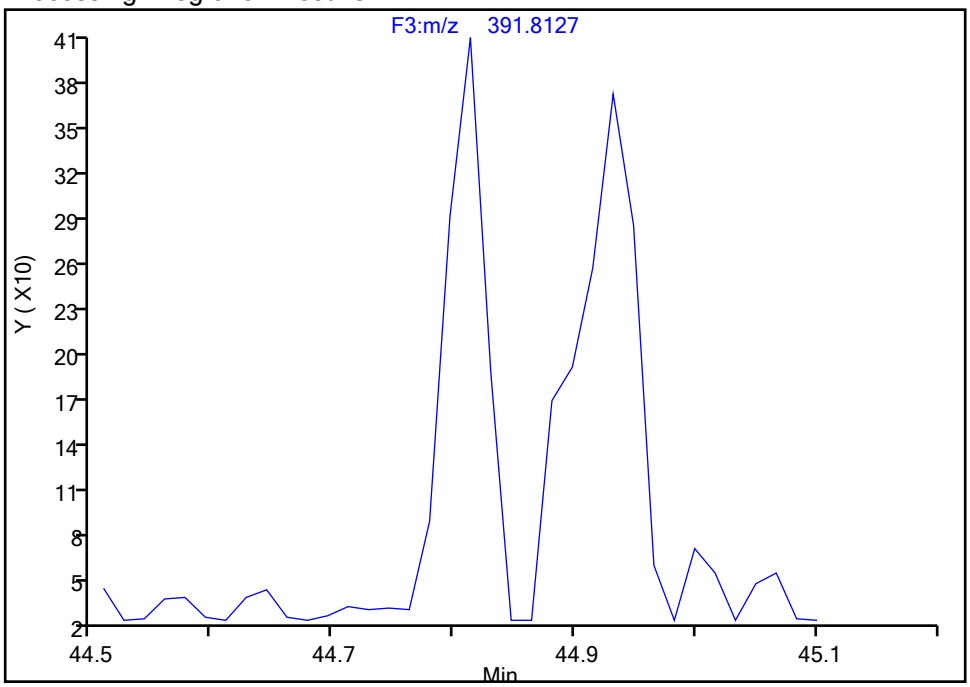
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

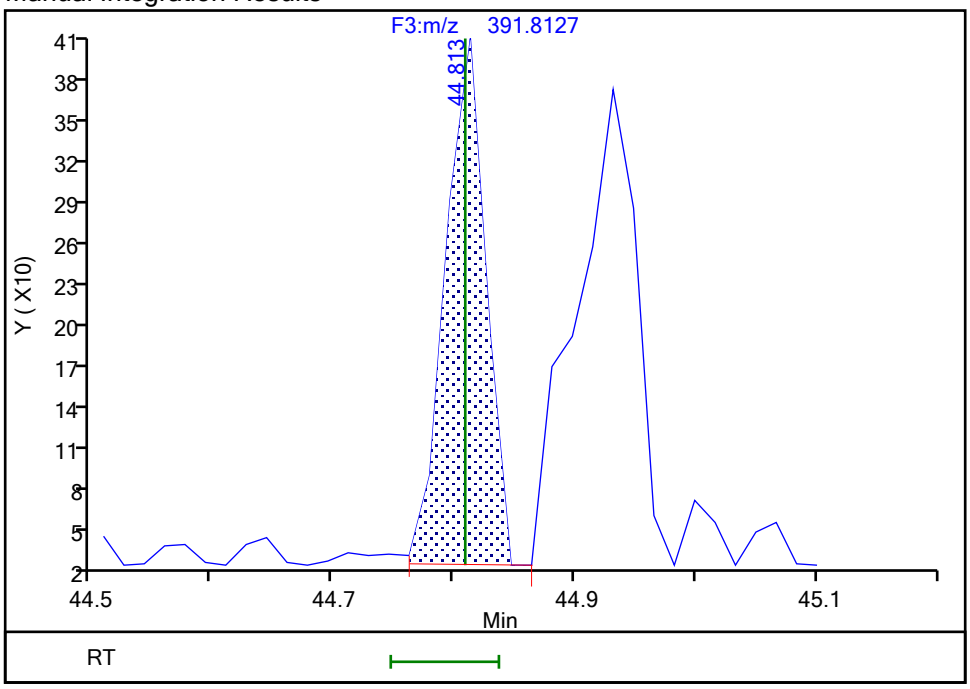
Not Detected
Expected RT: 44.81

Processing Integration Results



Manual Integration Results

RT: 44.81
Area: 886
Amount: 0.156205
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:58
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

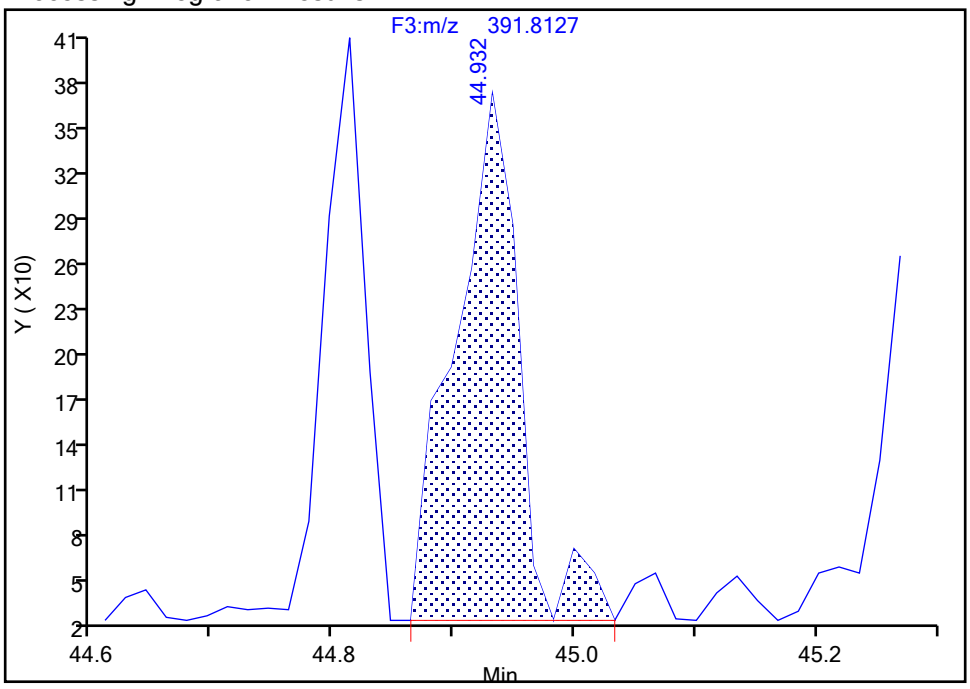
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

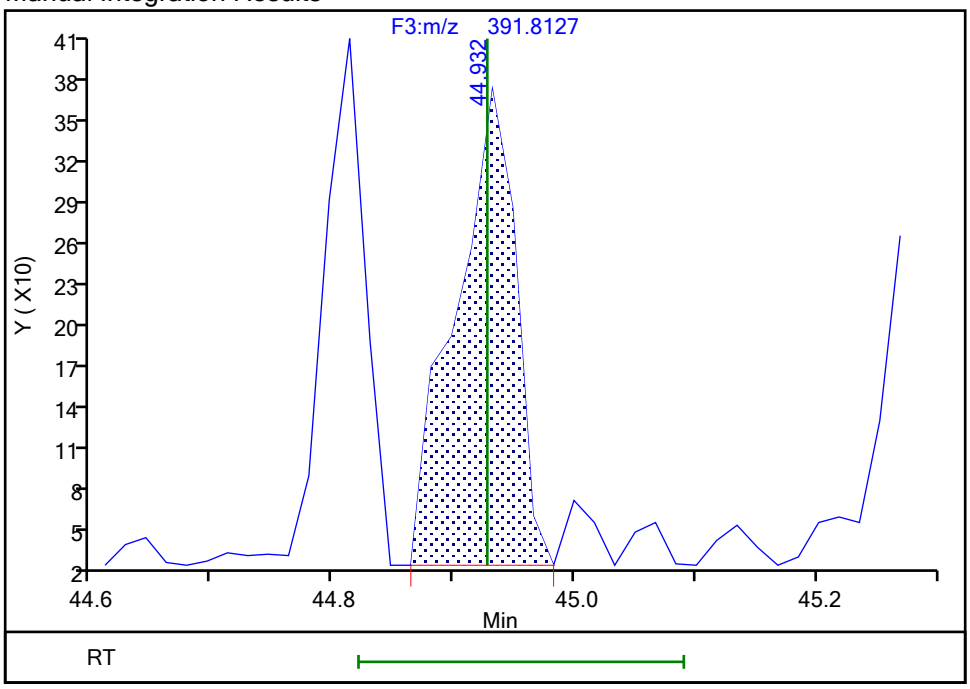
Processing Integration Results

RT: 44.93
Area: 1276
Amount: 0.317337
Amount Units: pg/ul



Manual Integration Results

RT: 44.93
Area: 1197
Amount: 0.218848
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:49

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

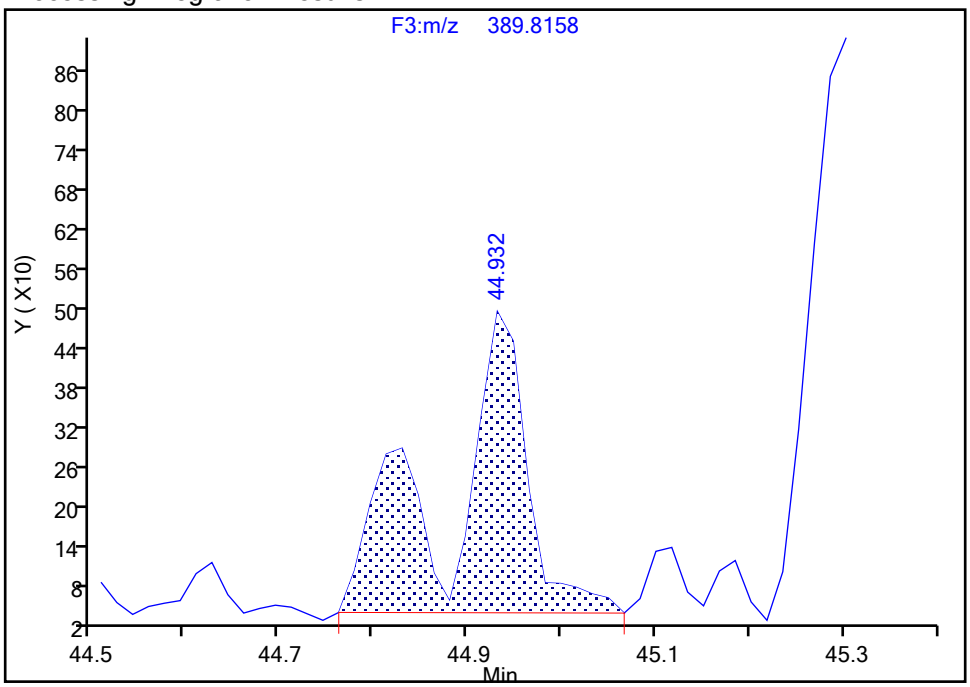
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

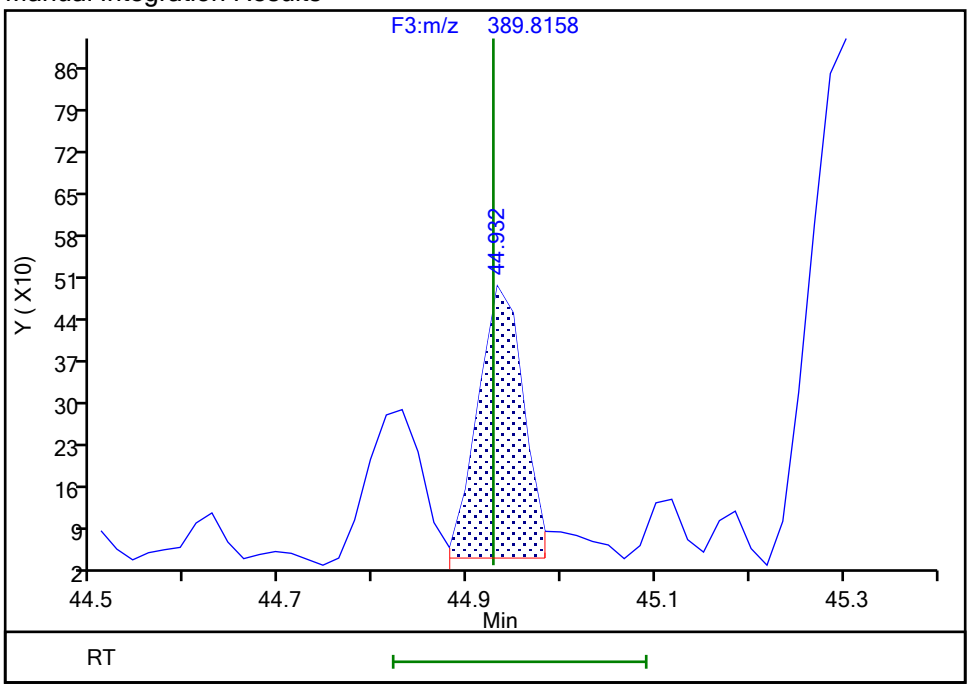
Processing Integration Results

RT: 44.93
Area: 2671
Amount: 0.317337
Amount Units: pg/ul



Manual Integration Results

RT: 44.93
Area: 1525
Amount: 0.218848
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:40:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

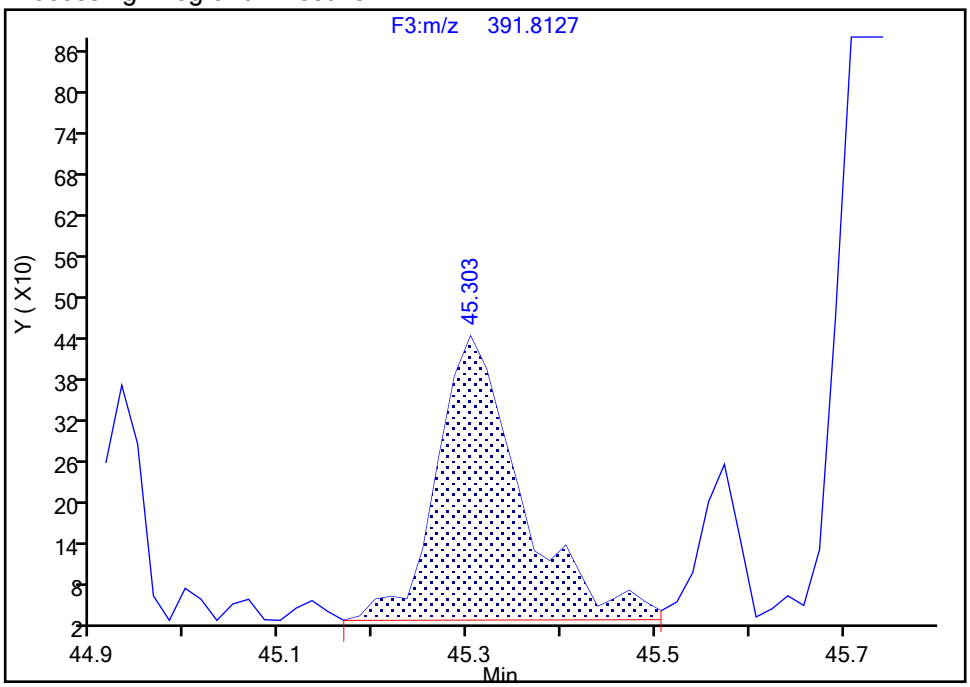
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

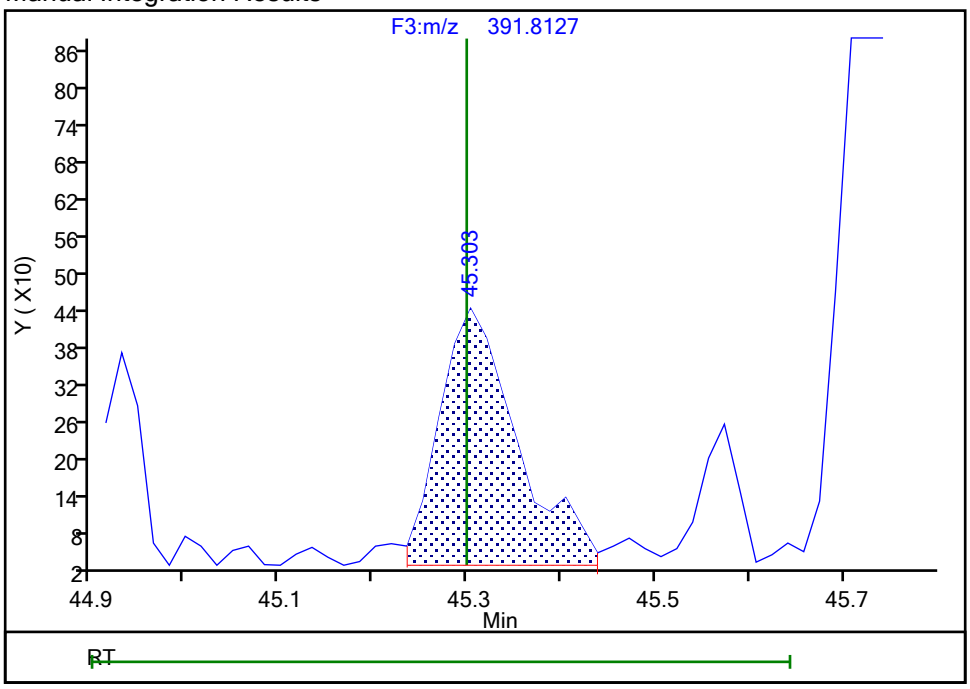
Processing Integration Results

RT: 45.30
Area: 2583
Amount: 0.541674
Amount Units: pg/ul



Manual Integration Results

RT: 45.30
Area: 2384
Amount: 0.526380
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:41:10

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d

Injection Date: 18-Dec-2019 05:00:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

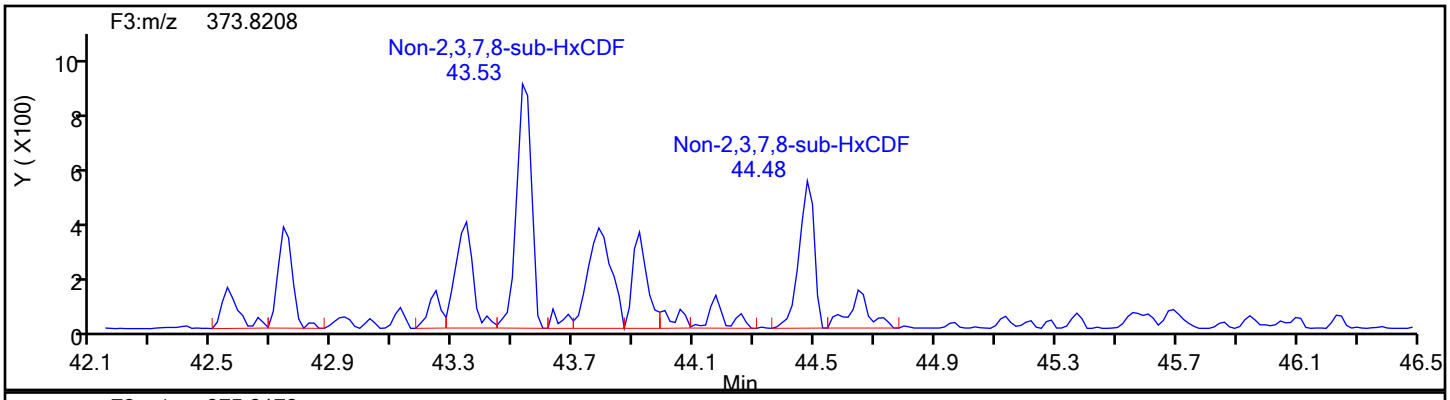
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

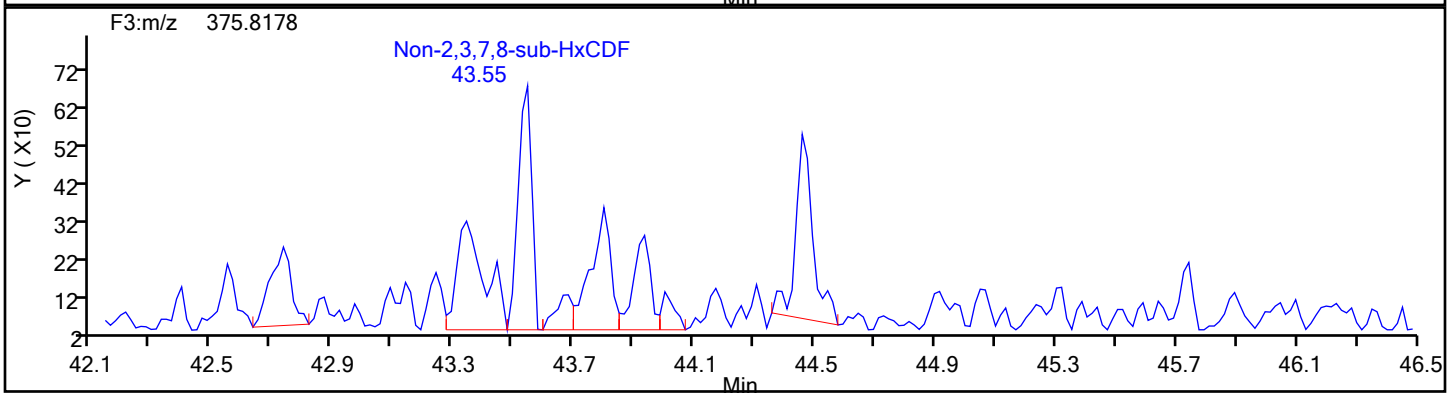
Client ID: 11187072-120719-SS-SJSSA02(4-6)

Worklist#: 36166 Sample Line#: 9

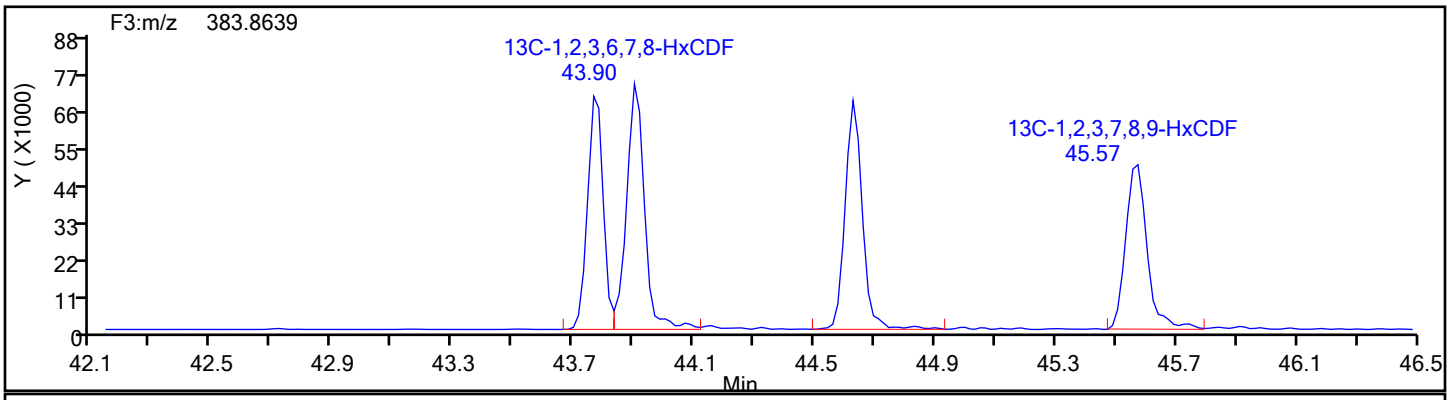
Column Type: Column Dia:

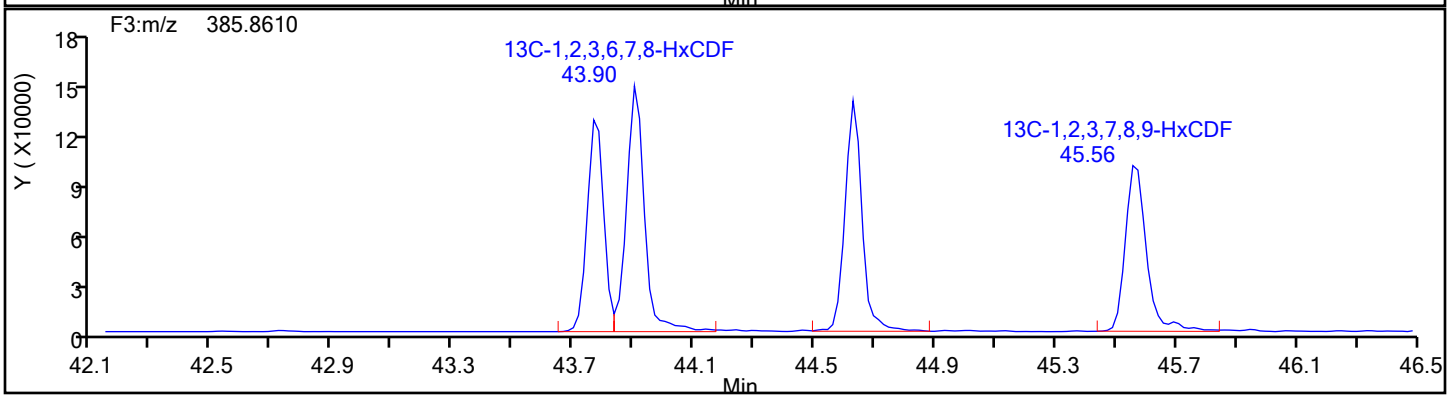
HxCDF





HxCDF Standards



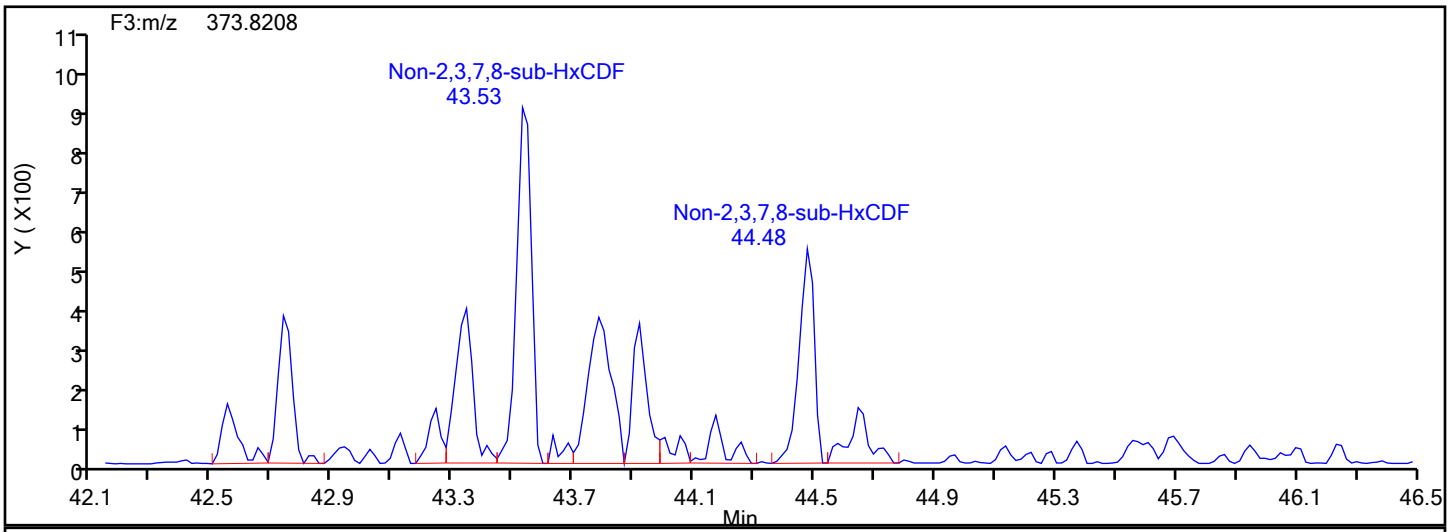


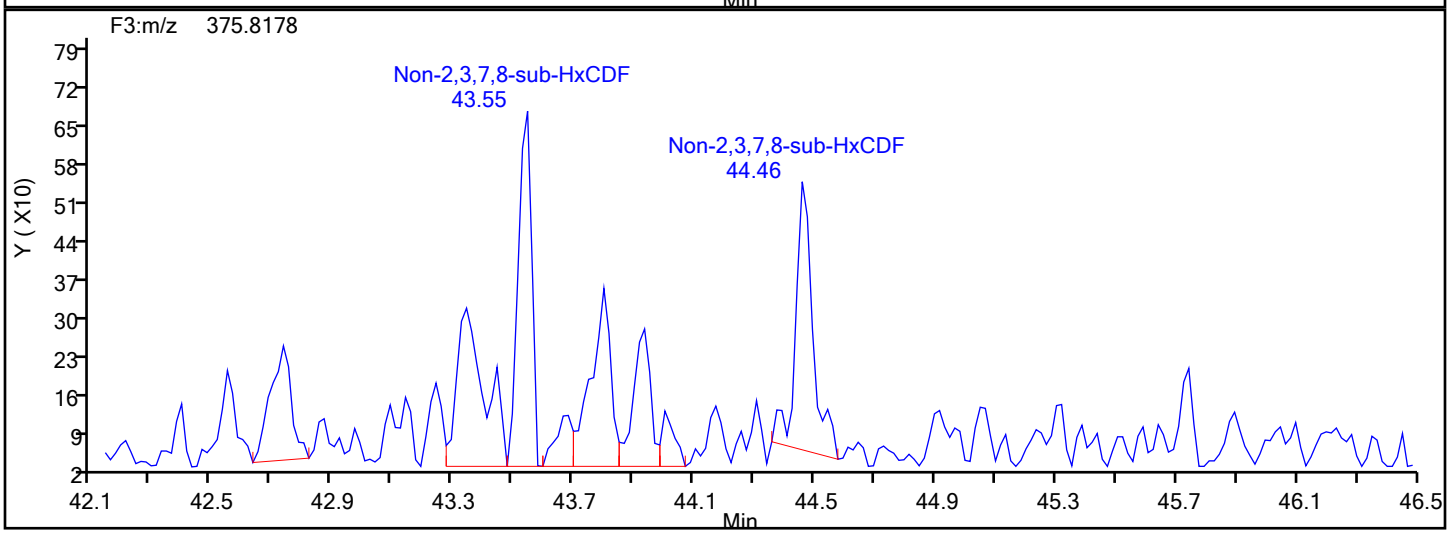
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

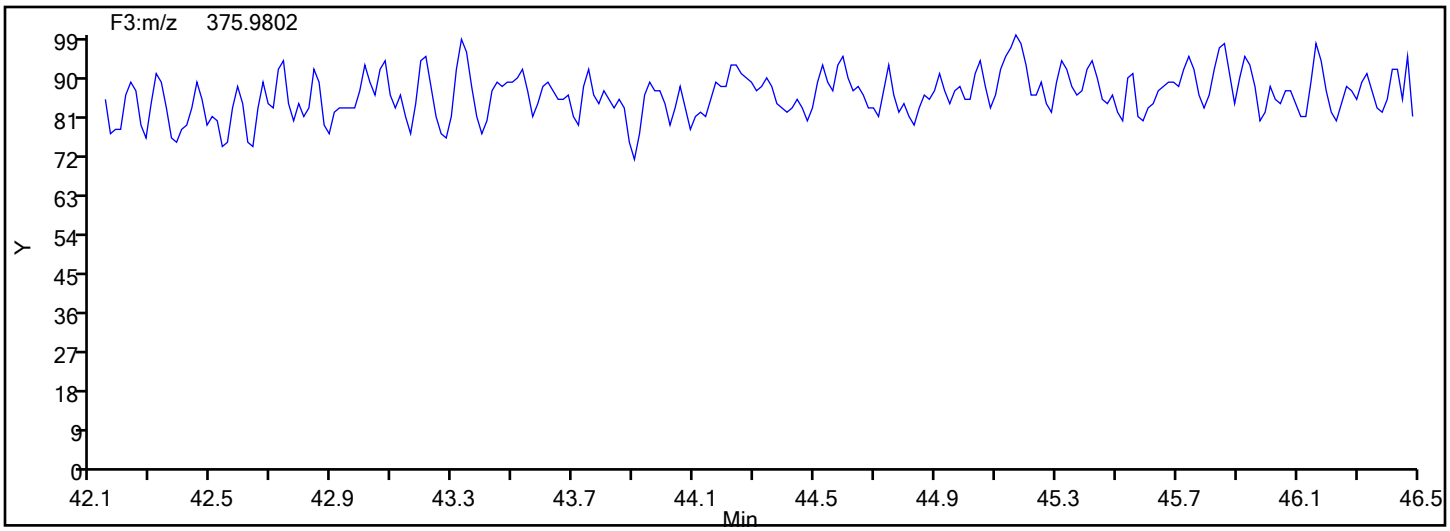
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

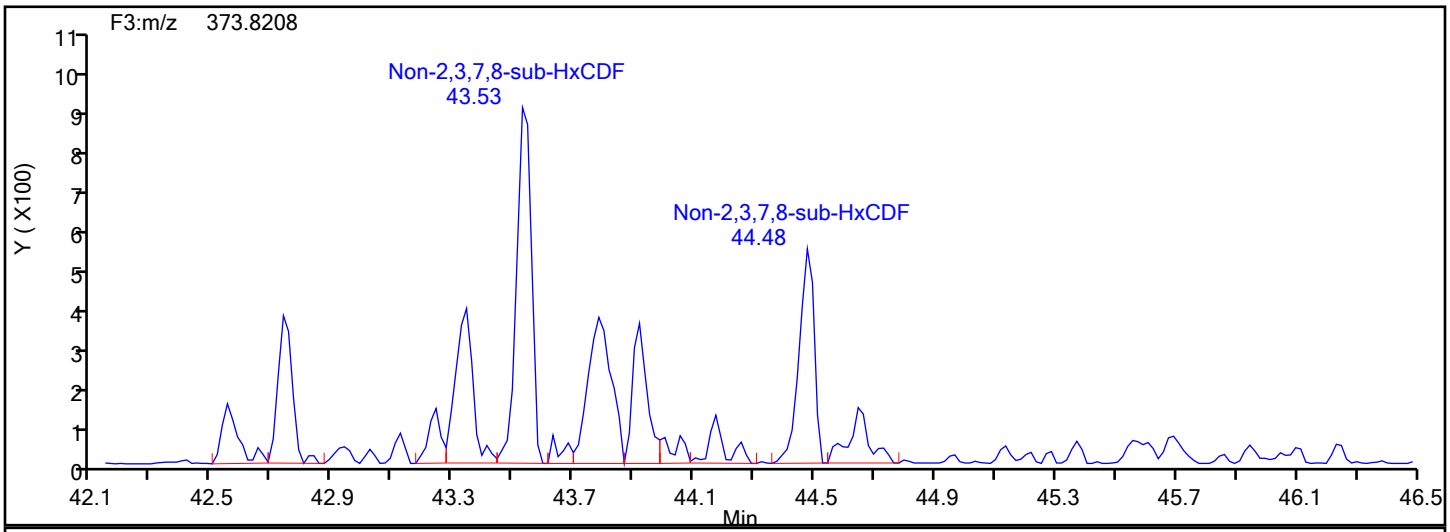


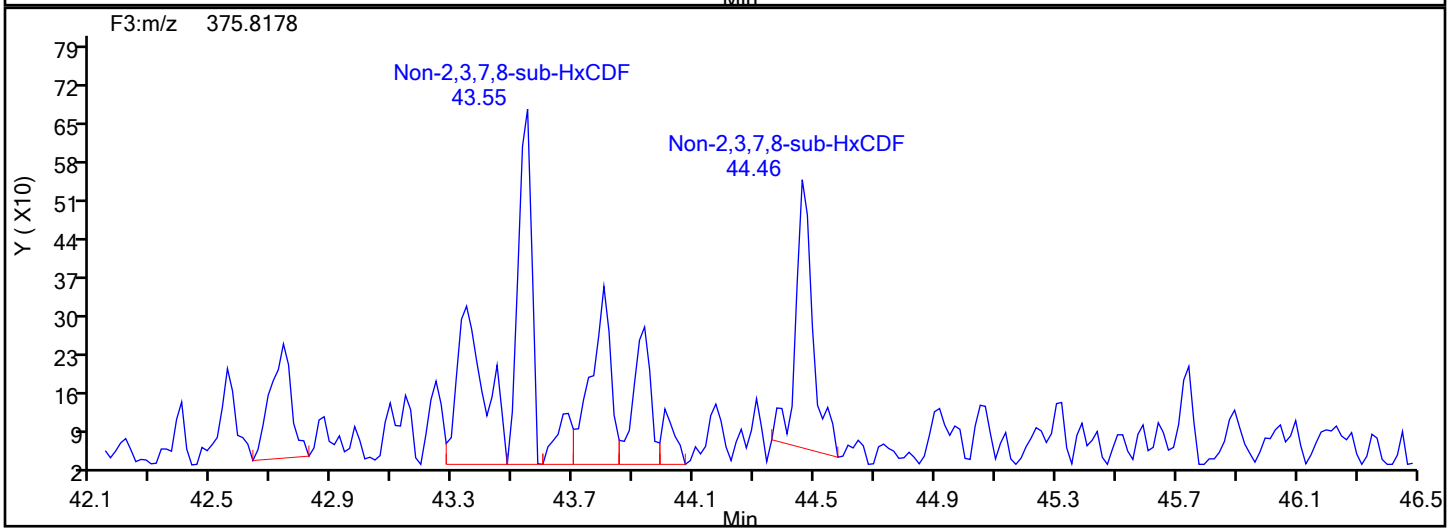
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

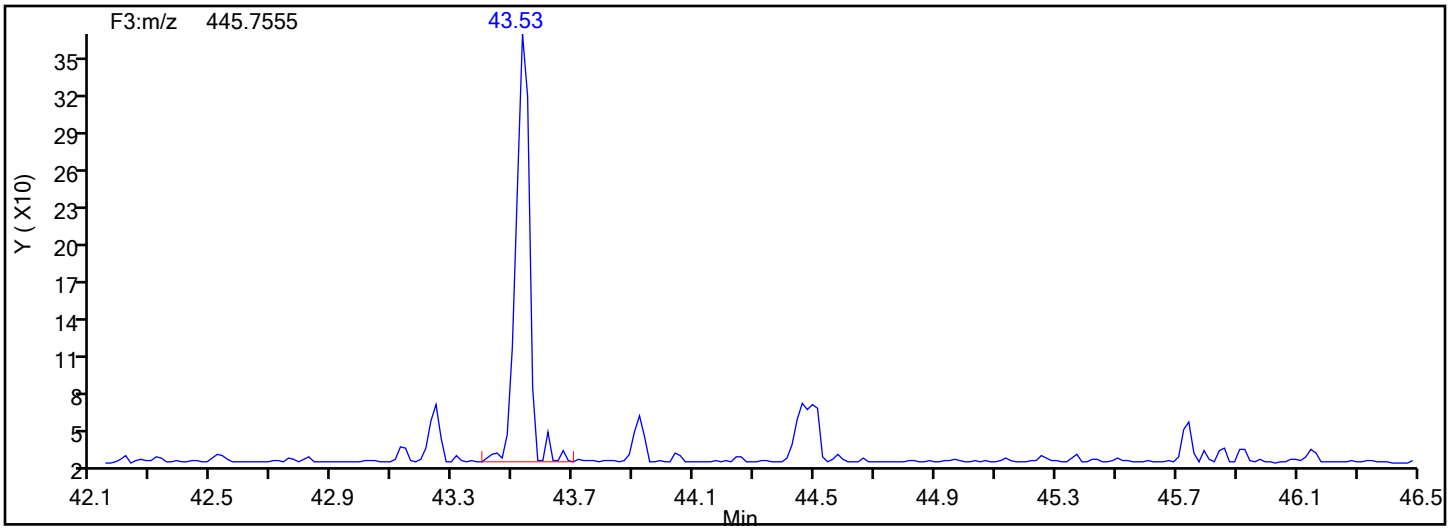
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

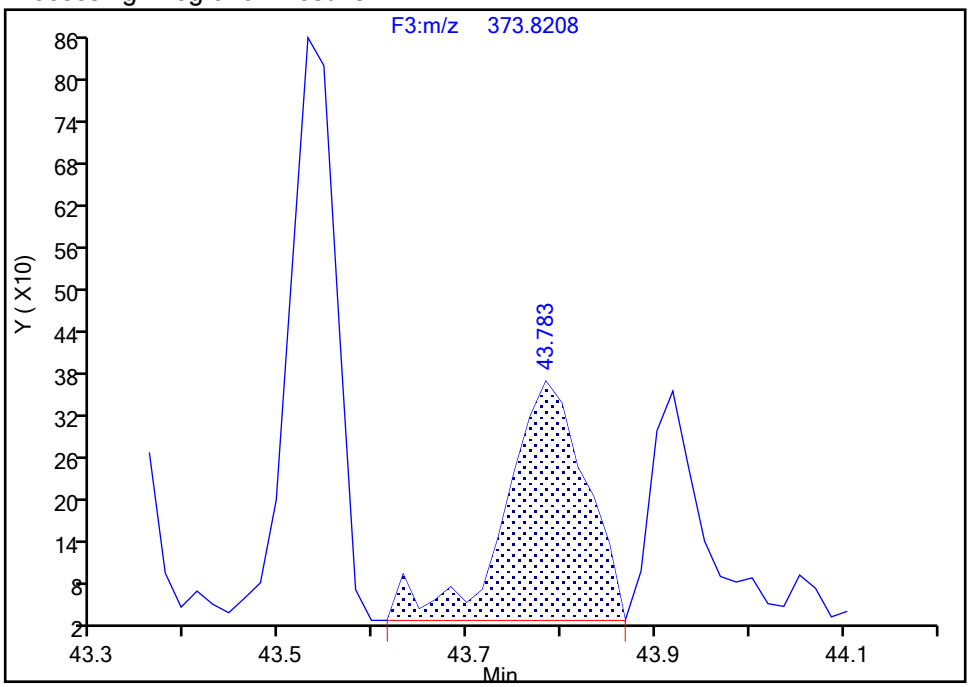
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

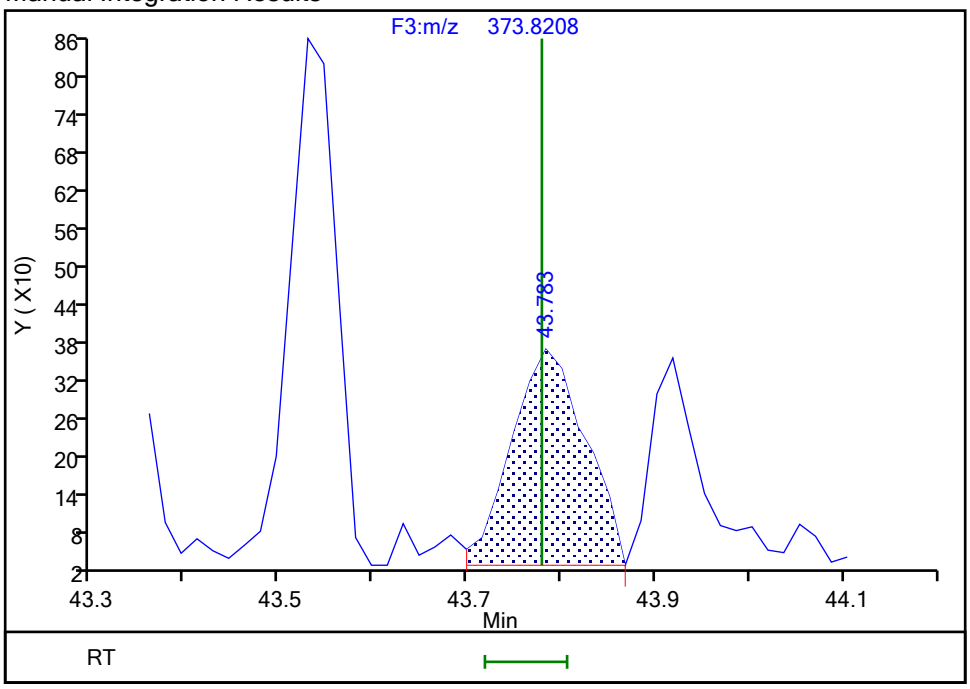
Processing Integration Results

RT: 43.78
Area: 2041
Amount: 0.192796
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 1867
Amount: 0.169445
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:41:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

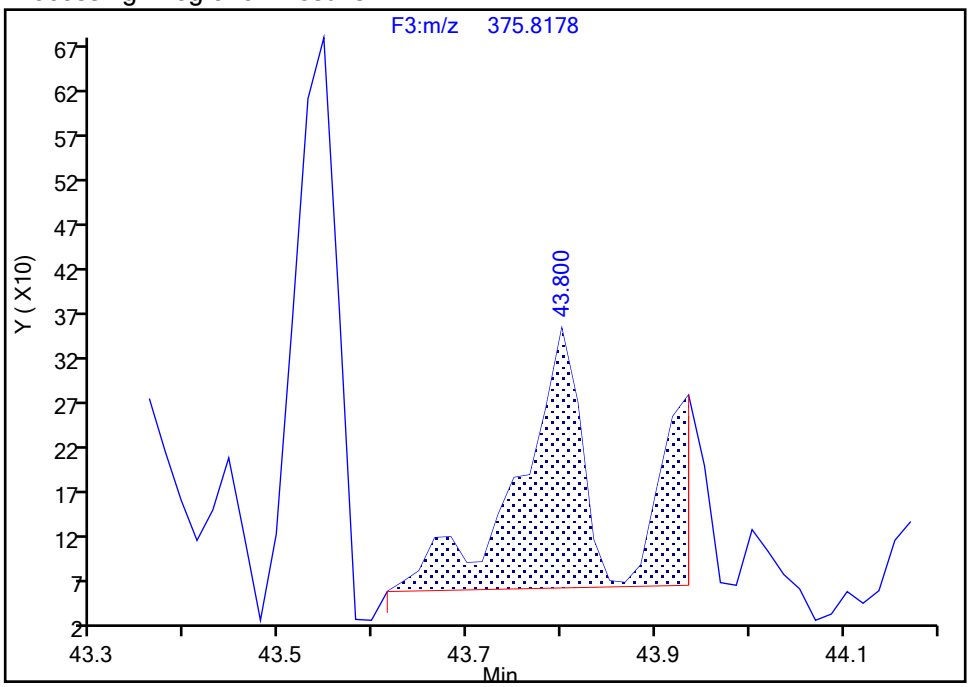
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

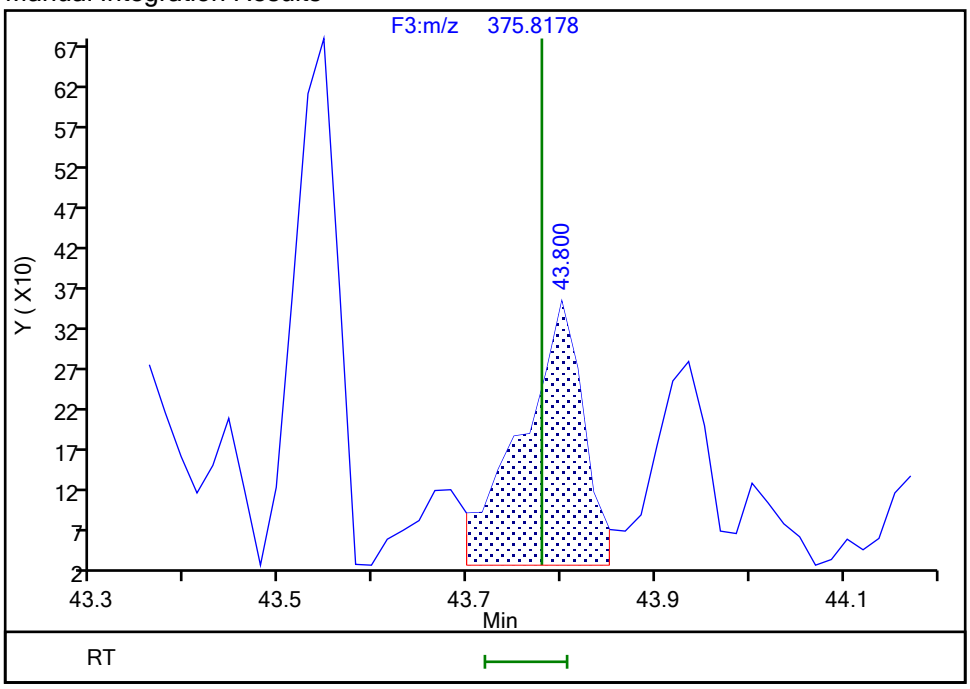
Processing Integration Results

RT: 43.80
Area: 1757
Amount: 0.192796
Amount Units: pg/ul



Manual Integration Results

RT: 43.80
Area: 1471
Amount: 0.169445
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:41:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 3

Processing Integration Results

RT:	43.78
Area:	3798
Amount:	0.167318
Amount Units:	pg/ul

Manual Integration Results

RT:	43.92
Area:	2106
Amount:	0.092778
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 08:41:51

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

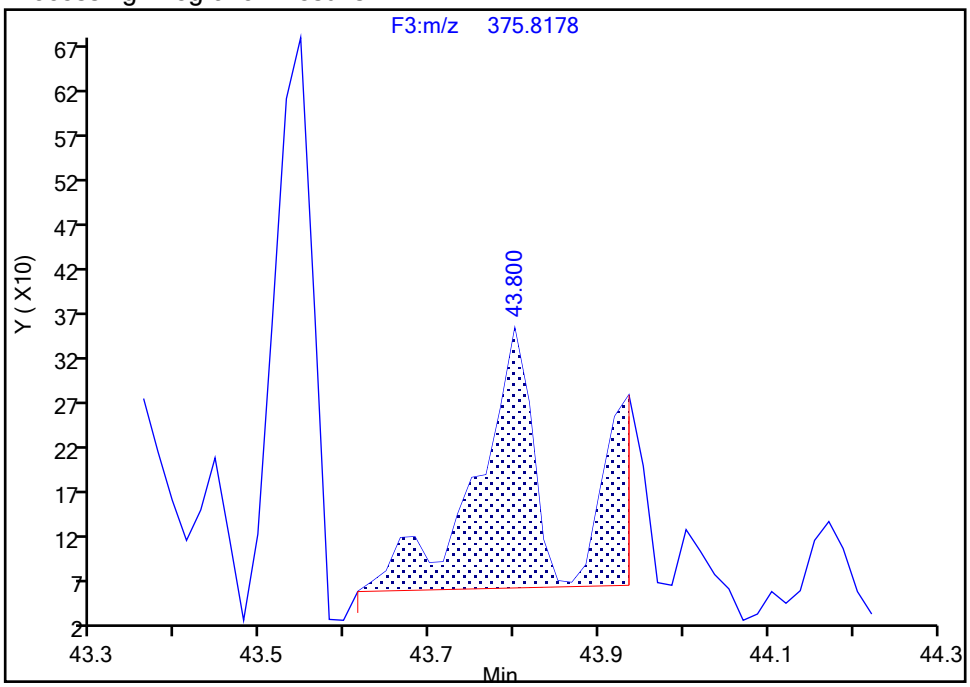
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

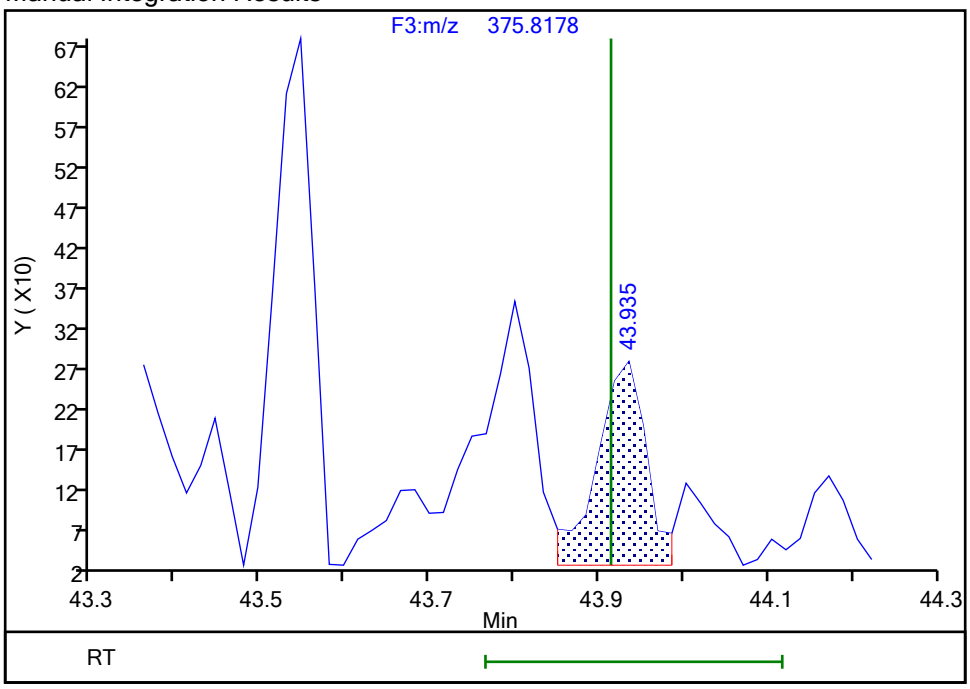
Processing Integration Results

RT: 43.80
Area: 1757
Amount: 0.167318
Amount Units: pg/ul



Manual Integration Results

RT: 43.94
Area: 997
Amount: 0.092778
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:41:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

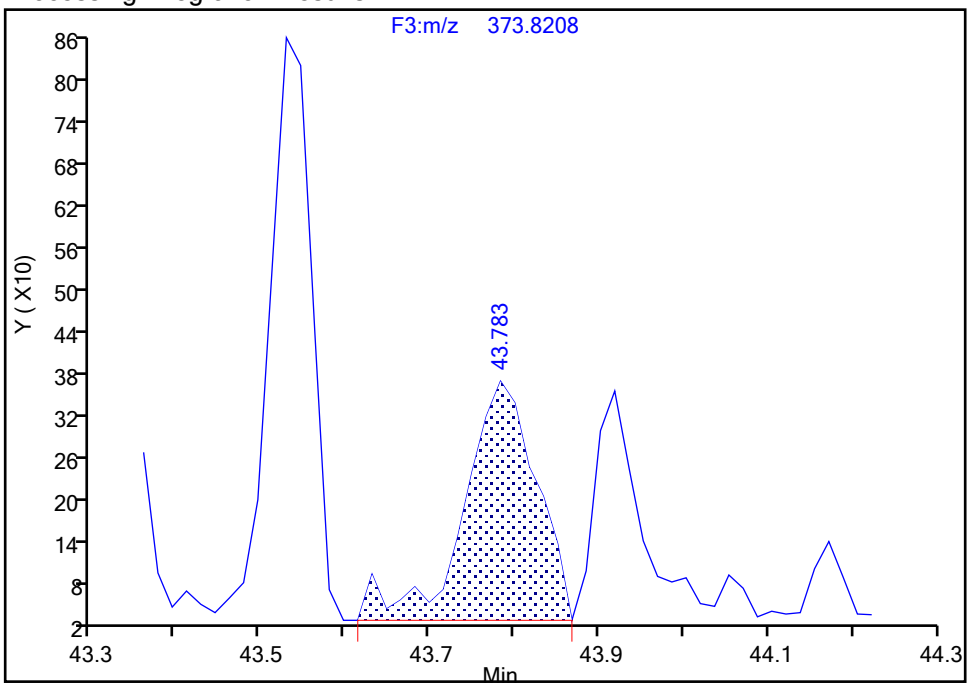
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

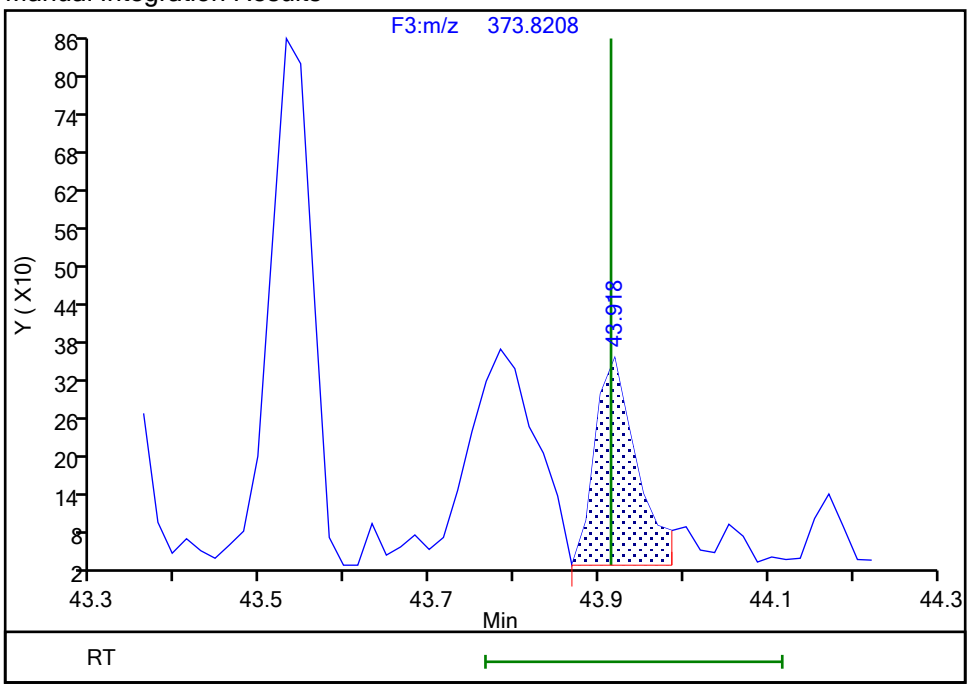
Processing Integration Results

RT: 43.78
Area: 2041
Amount: 0.167318
Amount Units: pg/ul



Manual Integration Results

RT: 43.92
Area: 1109
Amount: 0.092778
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:41:57

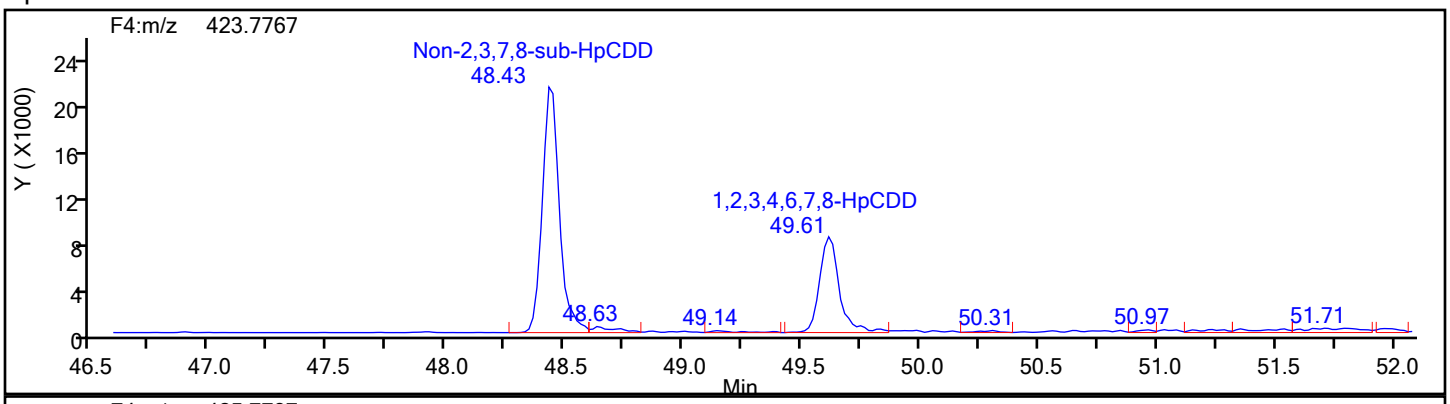
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

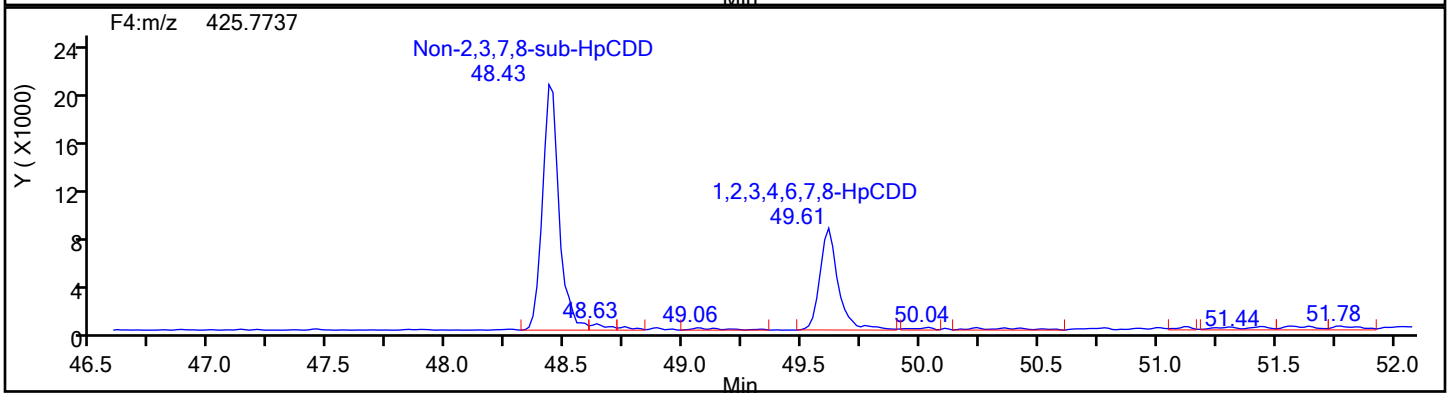
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

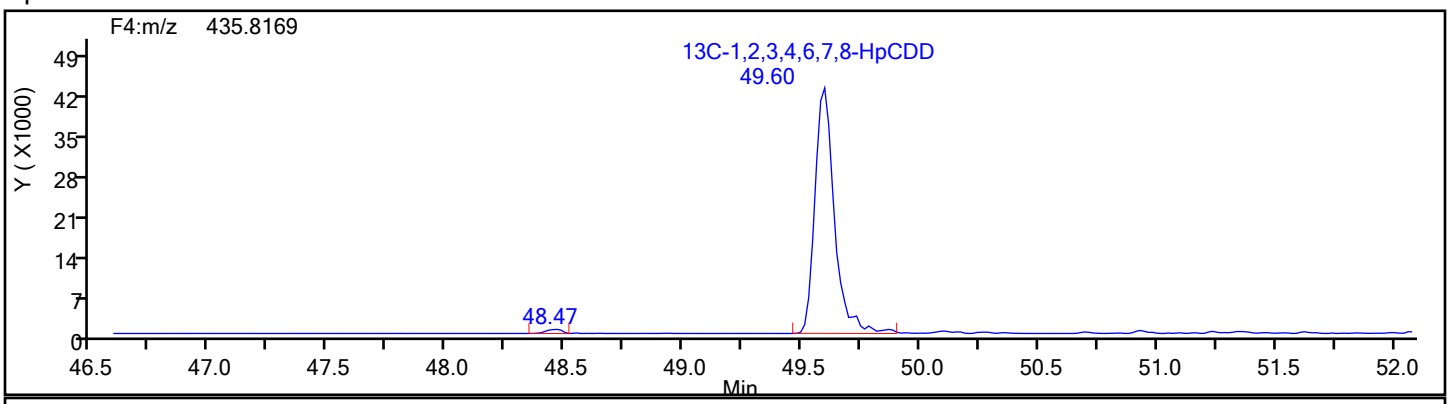
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

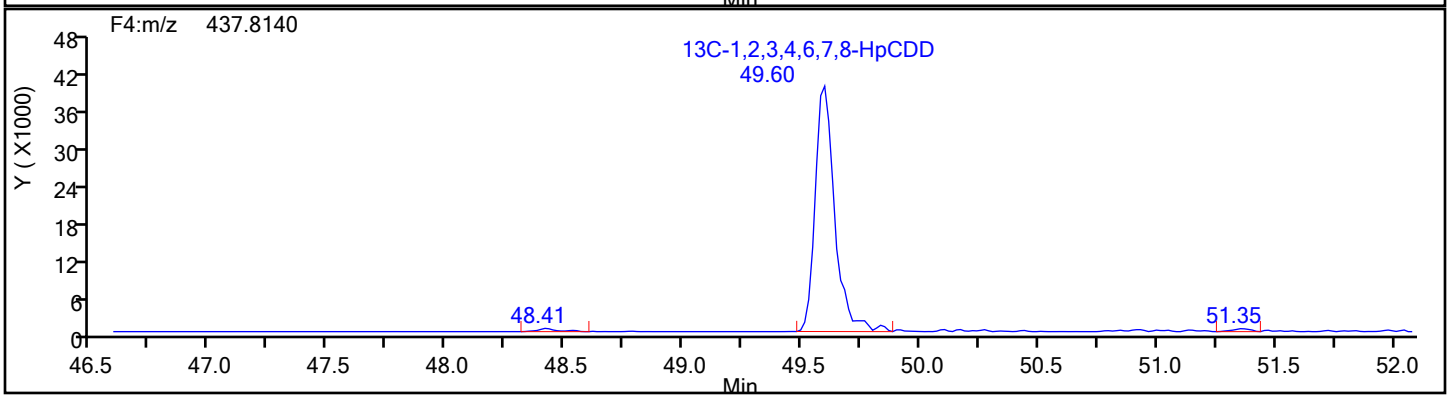
HpCDD





HpCDD Standards



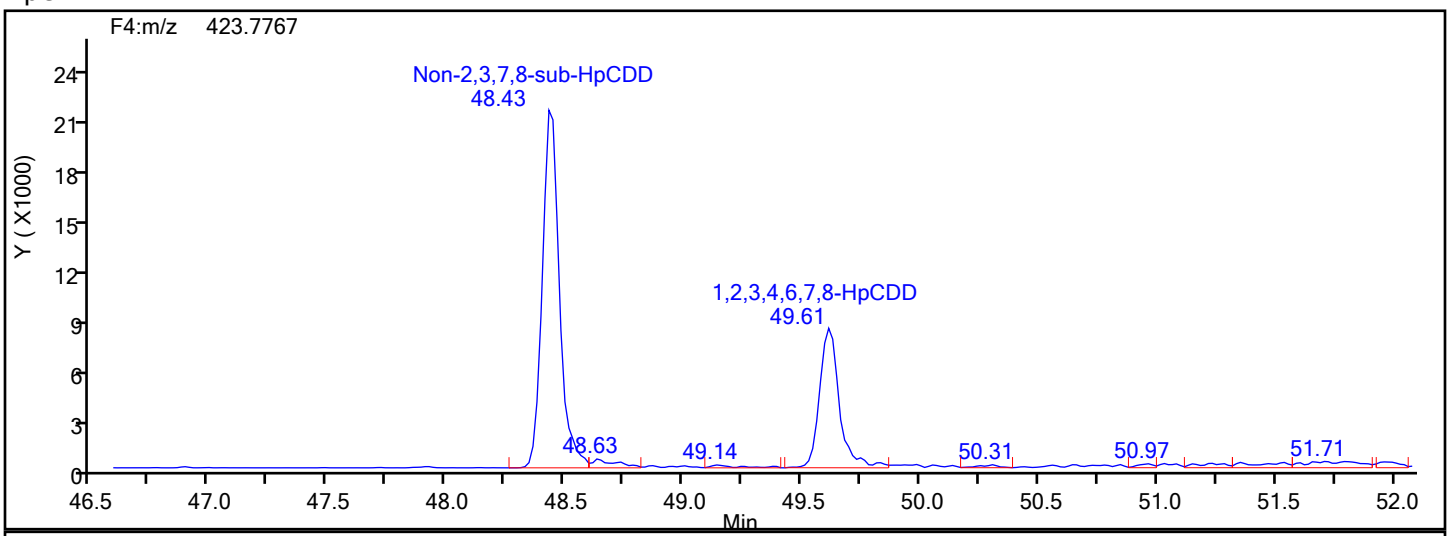


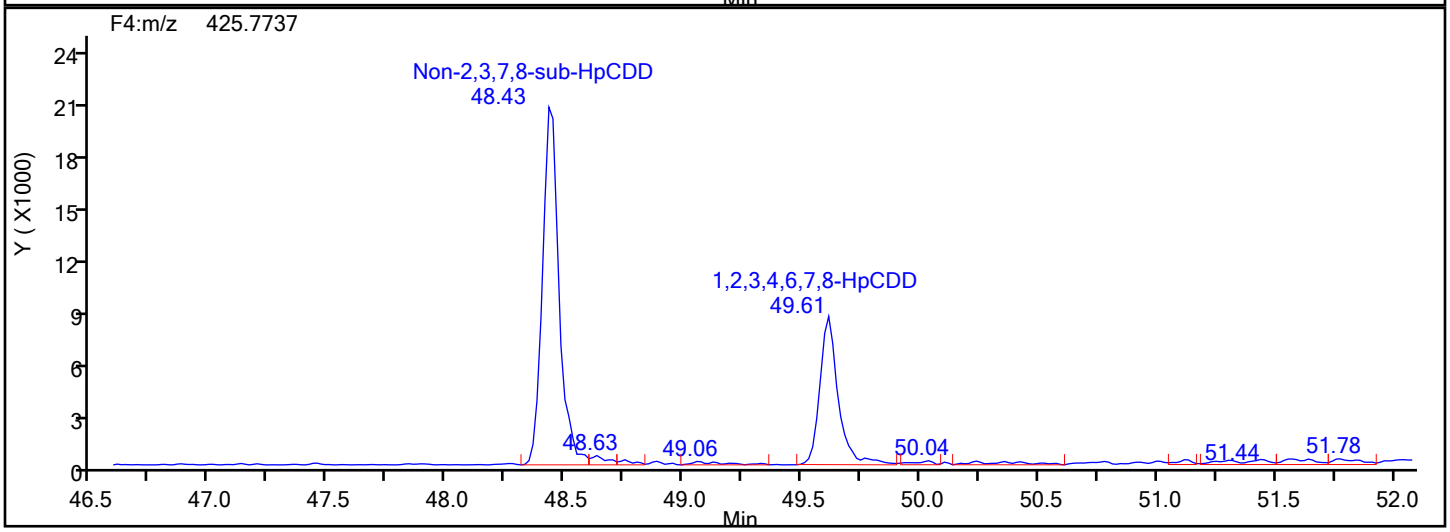
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

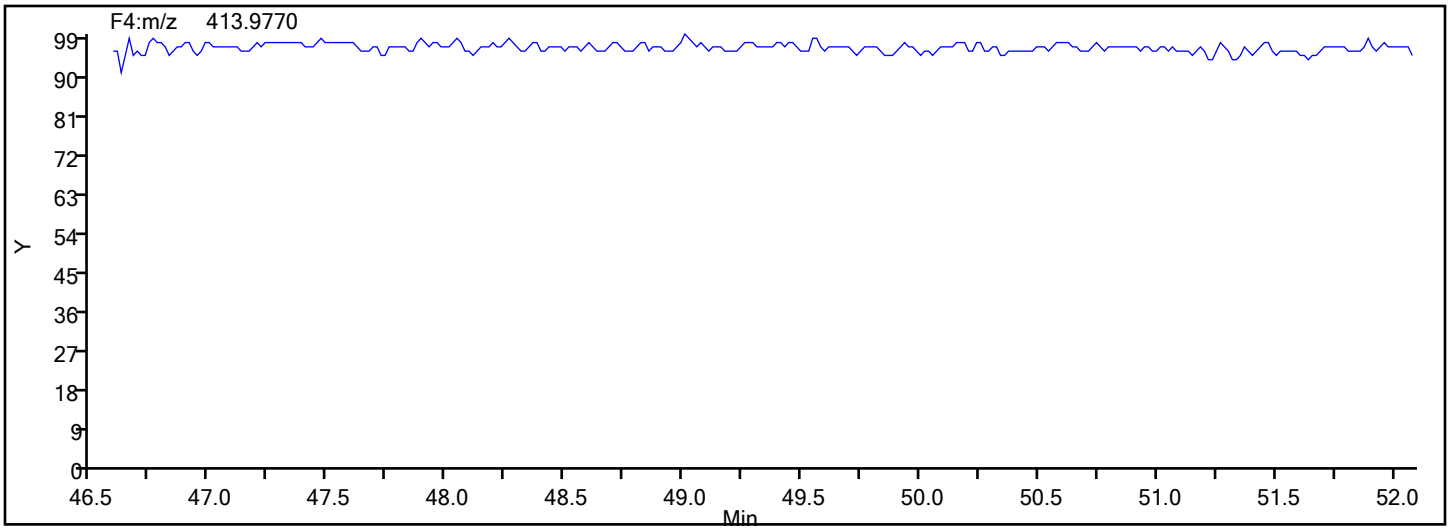
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

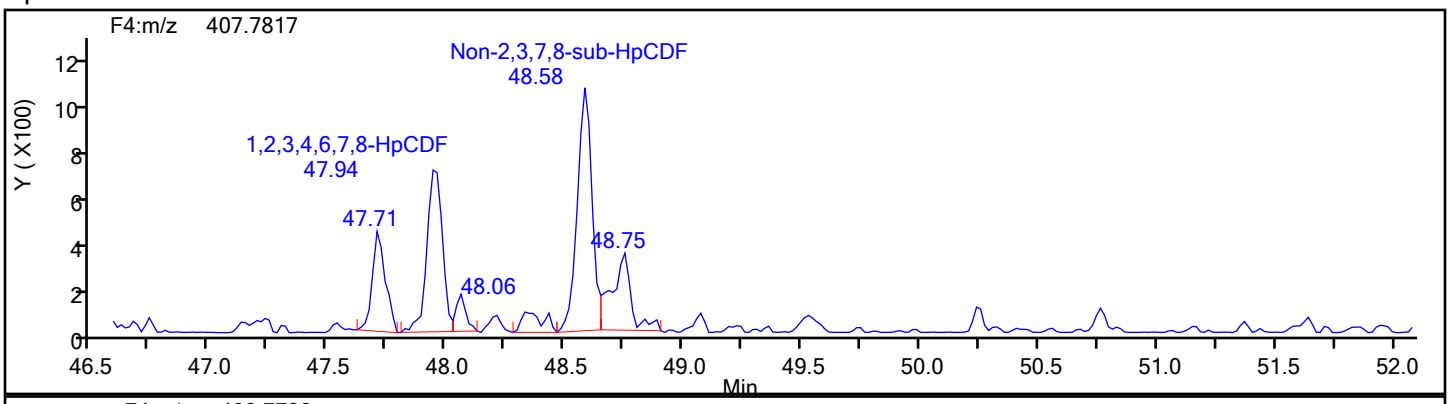


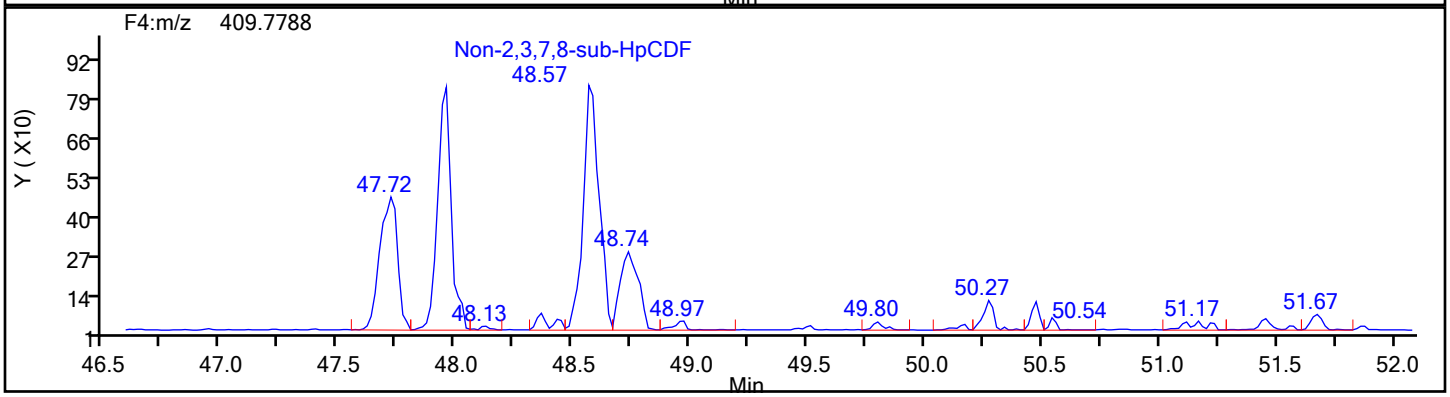
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

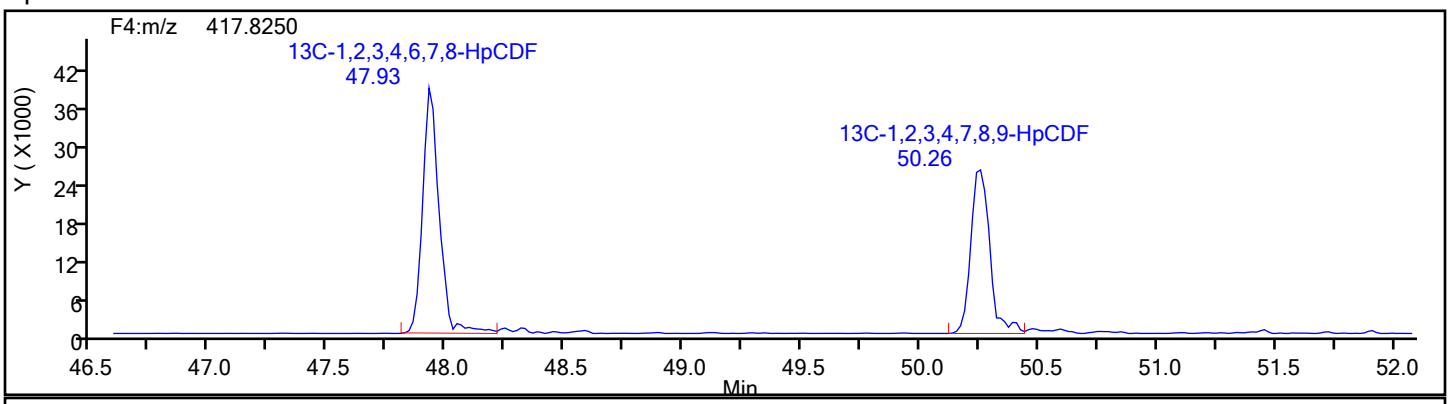
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

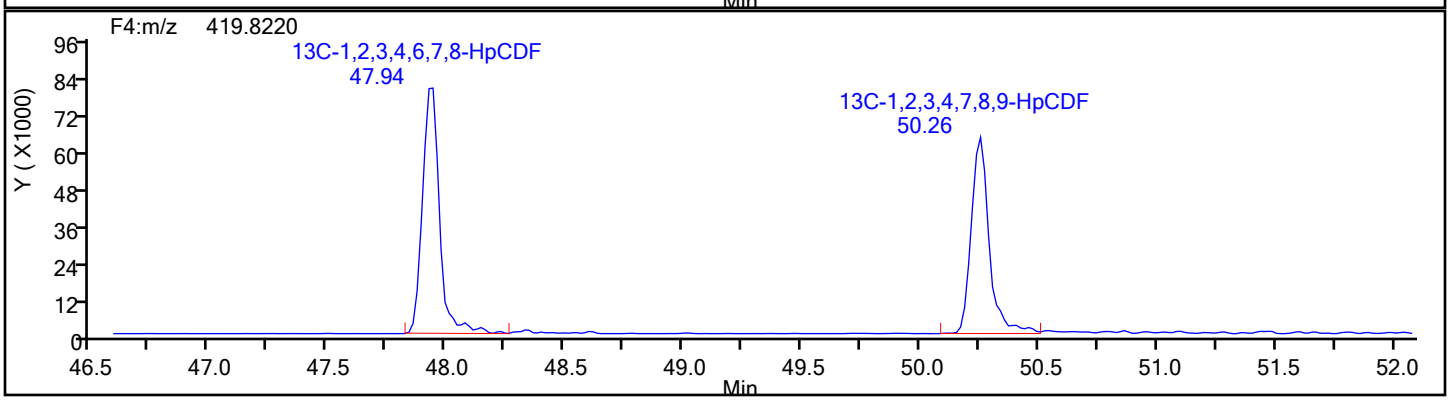
HpCDF





HpCDF Standards



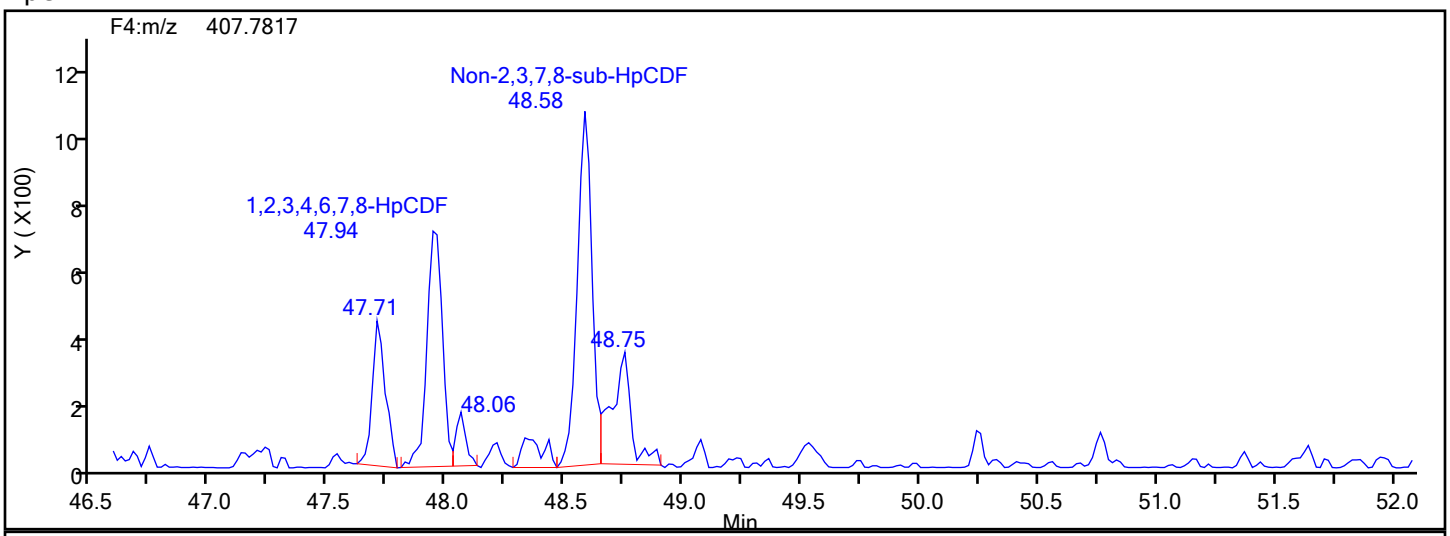


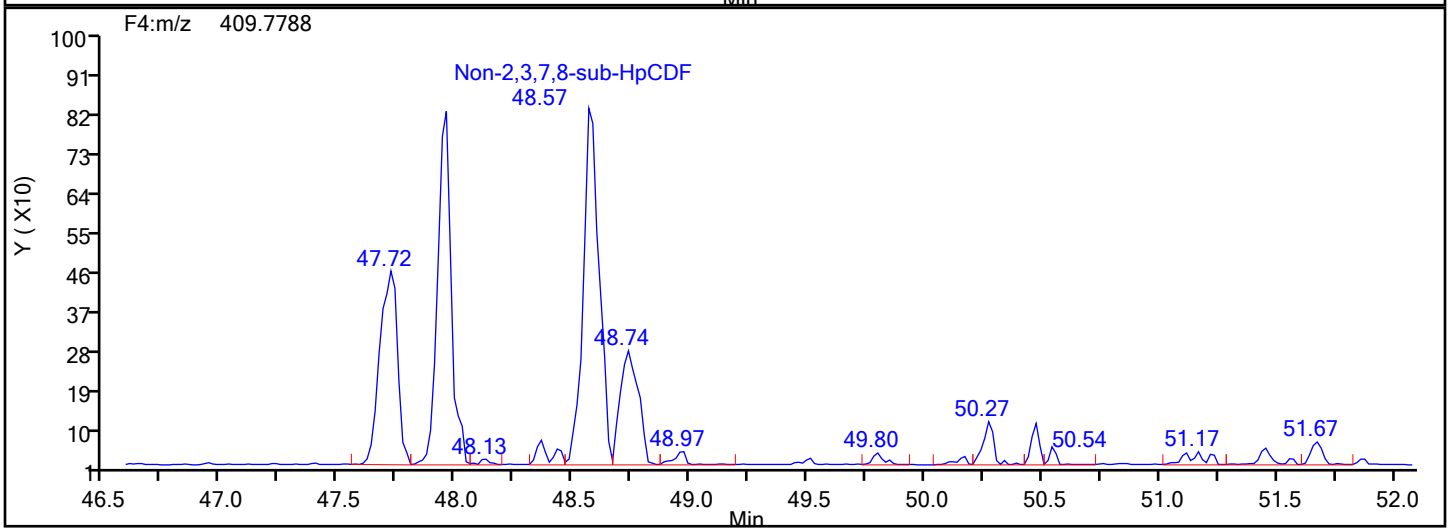
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

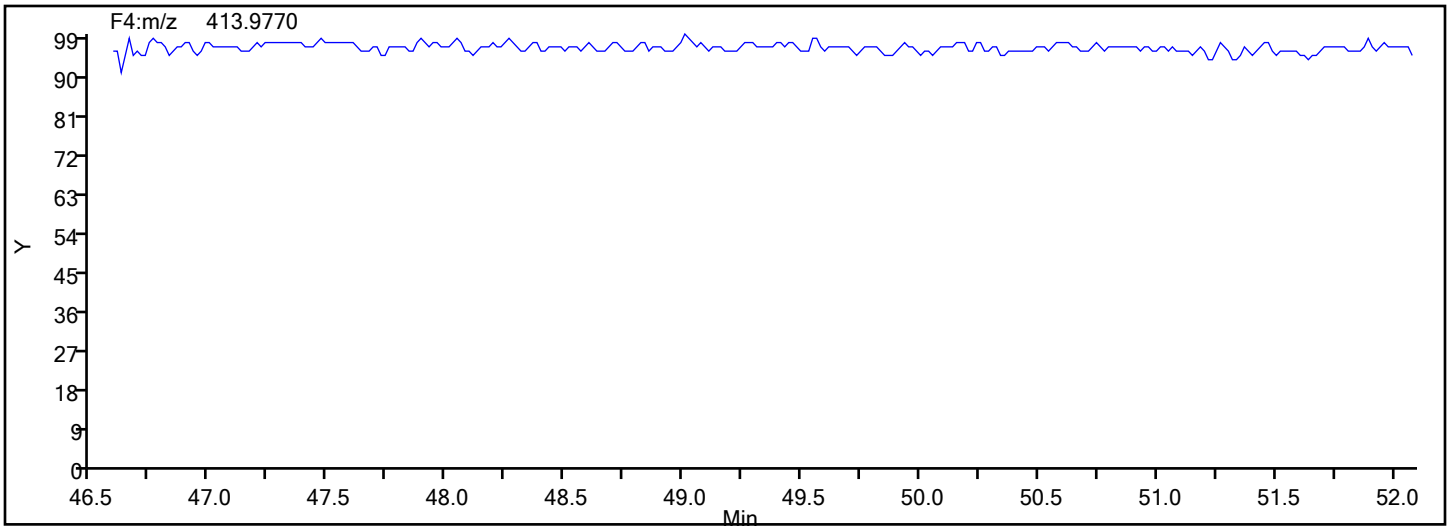
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass



Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
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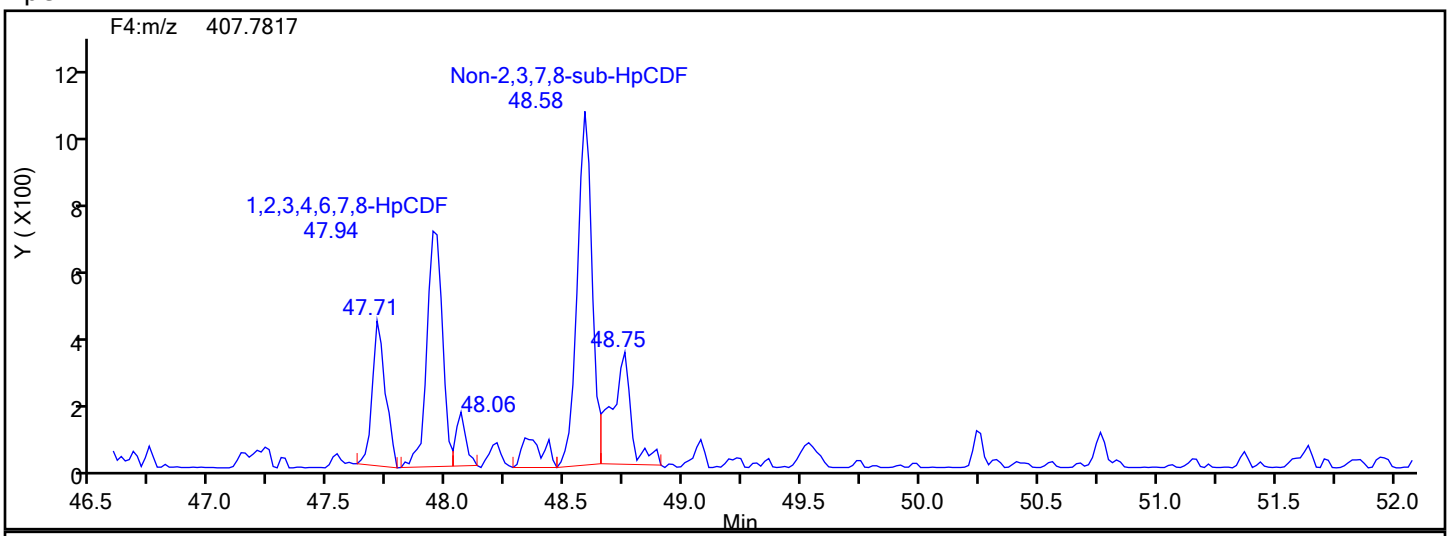
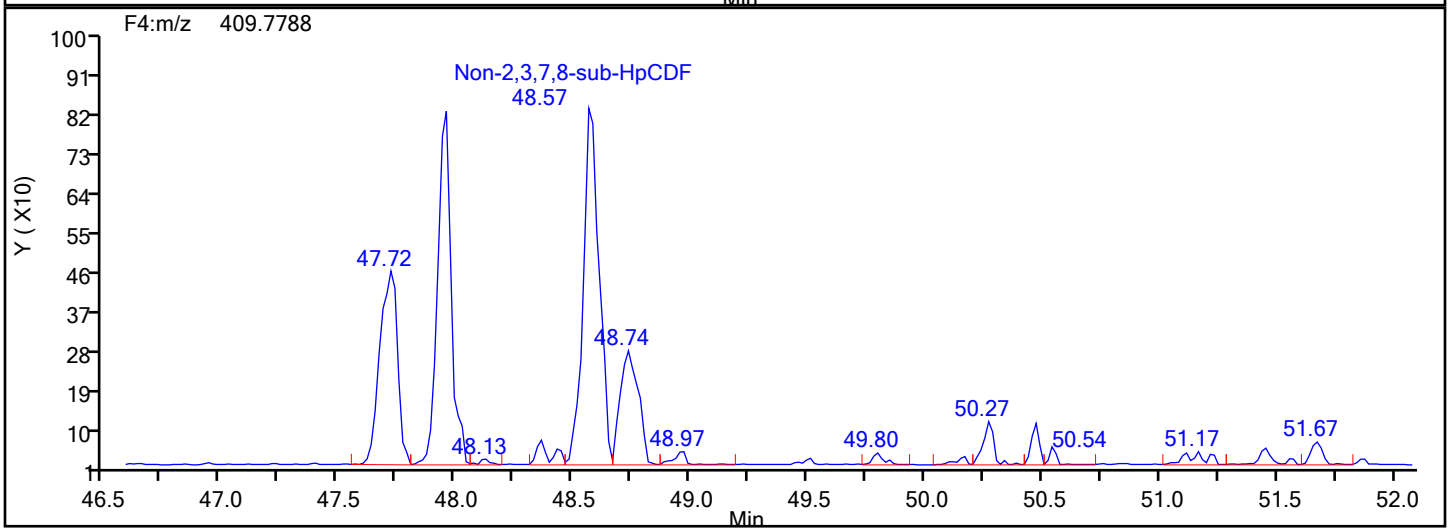
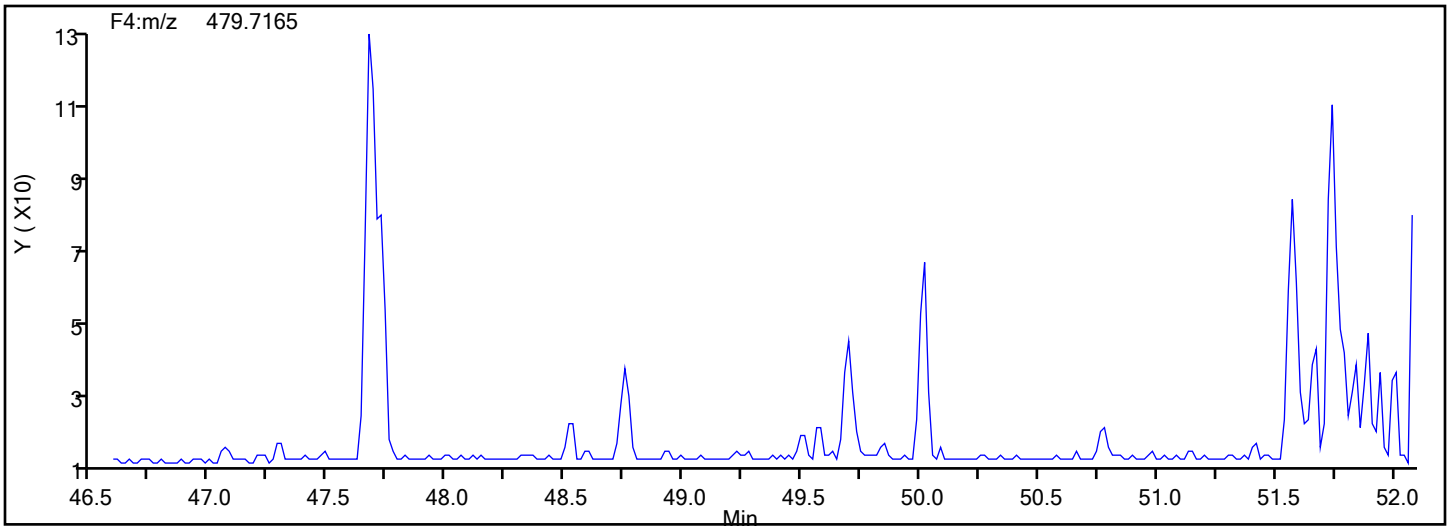
HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

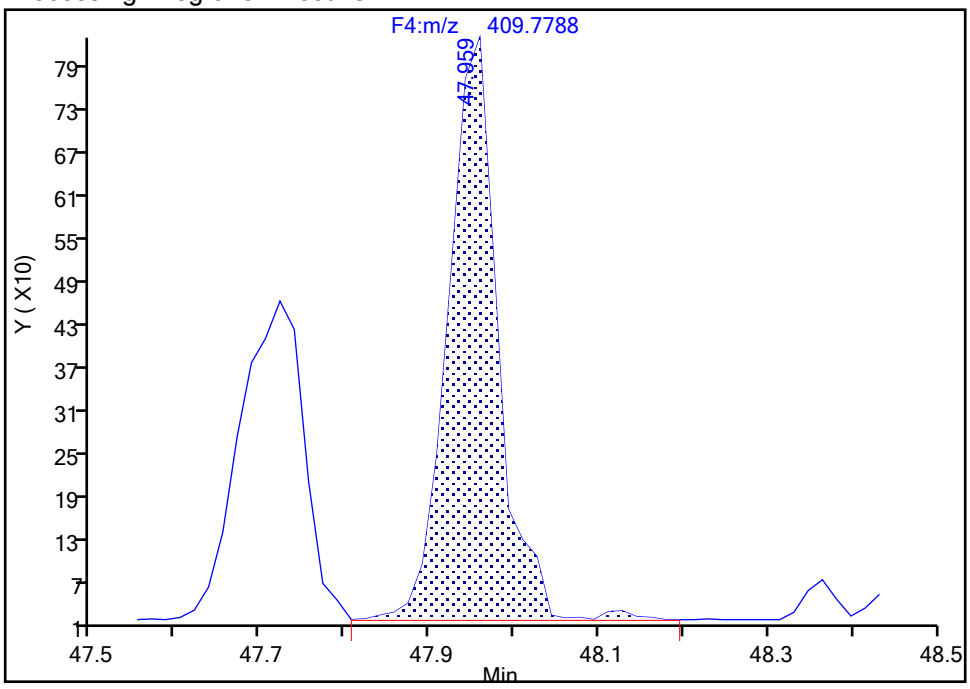
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

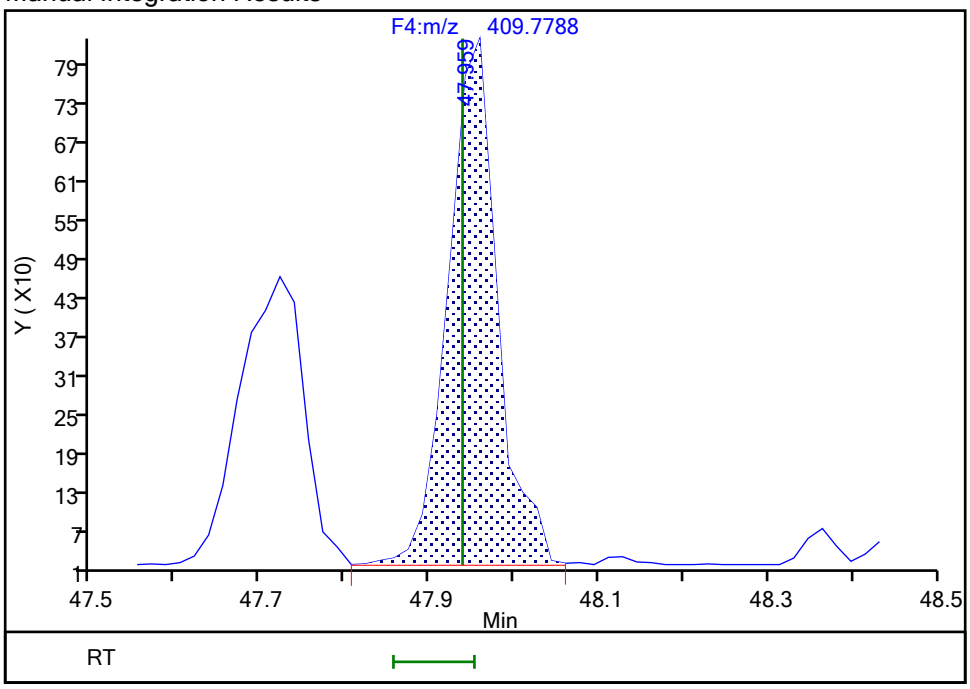
Processing Integration Results

RT: 47.96
Area: 3313
Amount: 0.389032
Amount Units: pg/ul



Manual Integration Results

RT: 47.96
Area: 3270
Amount: 0.361622
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:42:36

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

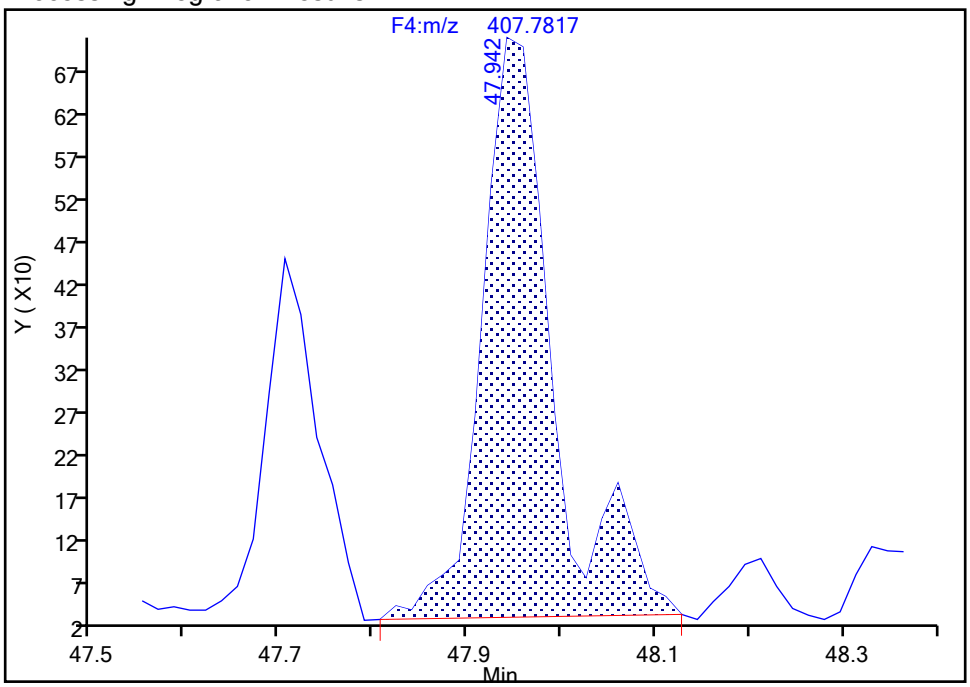
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

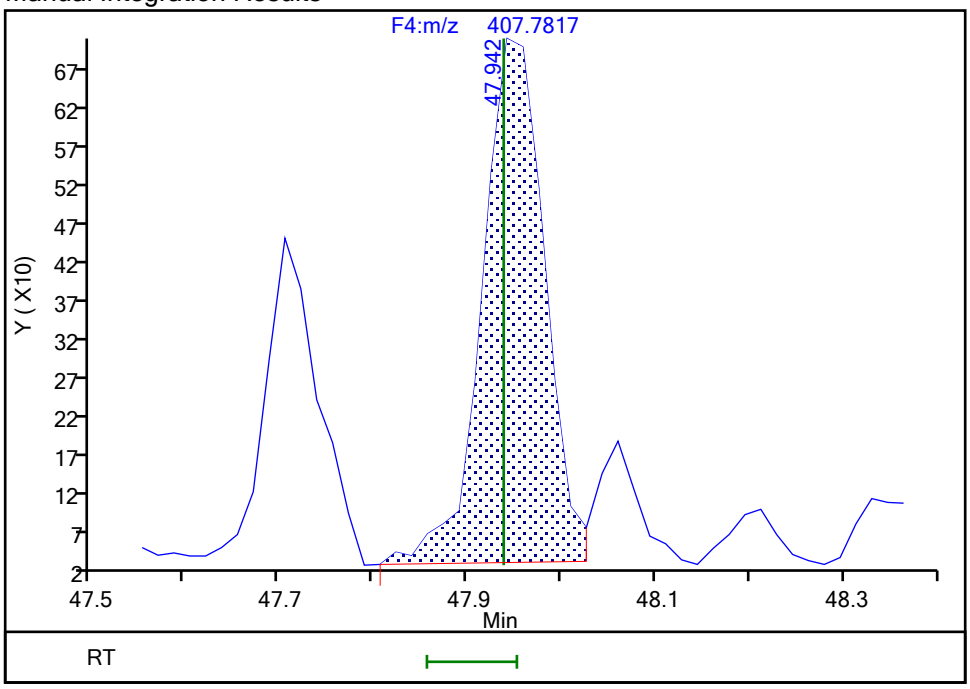
Processing Integration Results

RT: 47.94
Area: 3599
Amount: 0.389032
Amount Units: pg/ul



Manual Integration Results

RT: 47.94
Area: 3155
Amount: 0.361622
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:42:38

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
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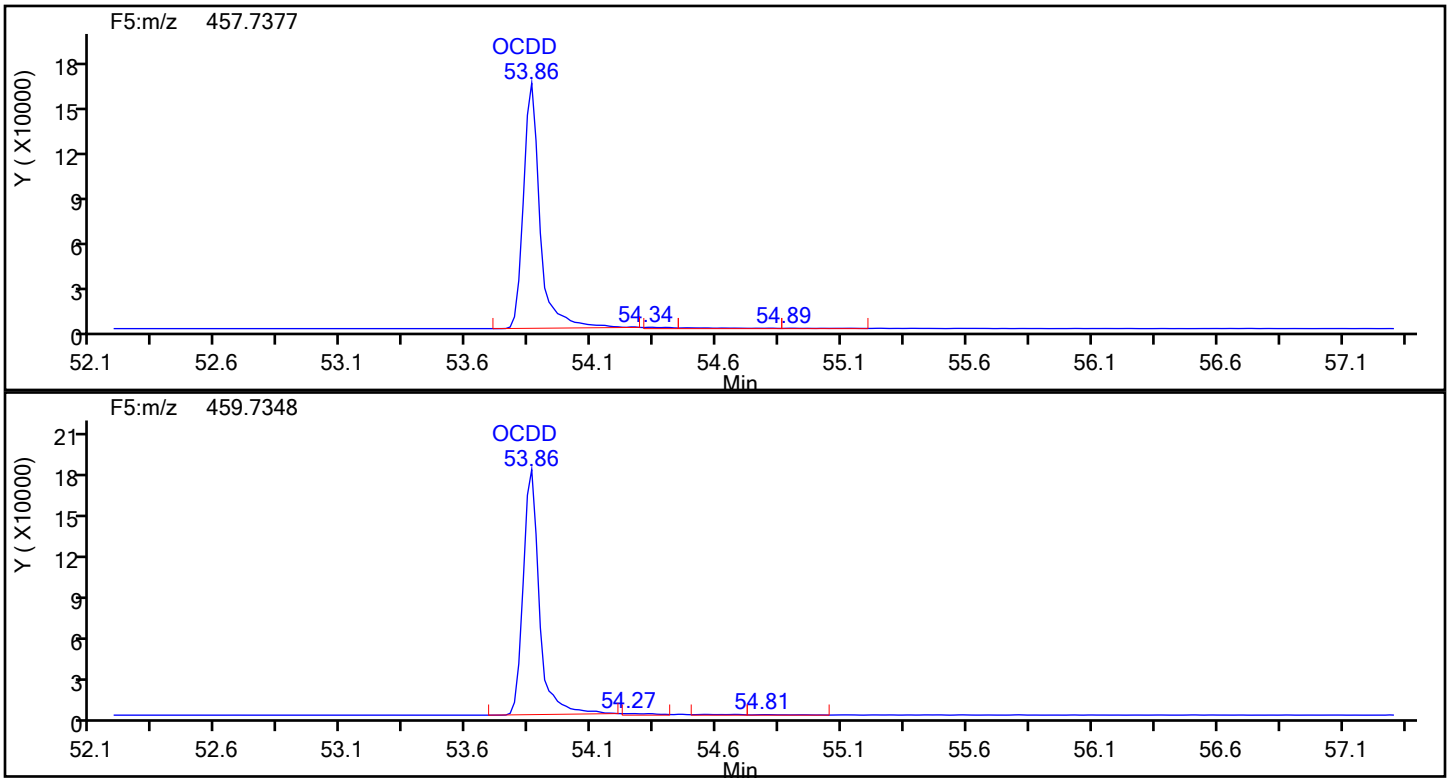
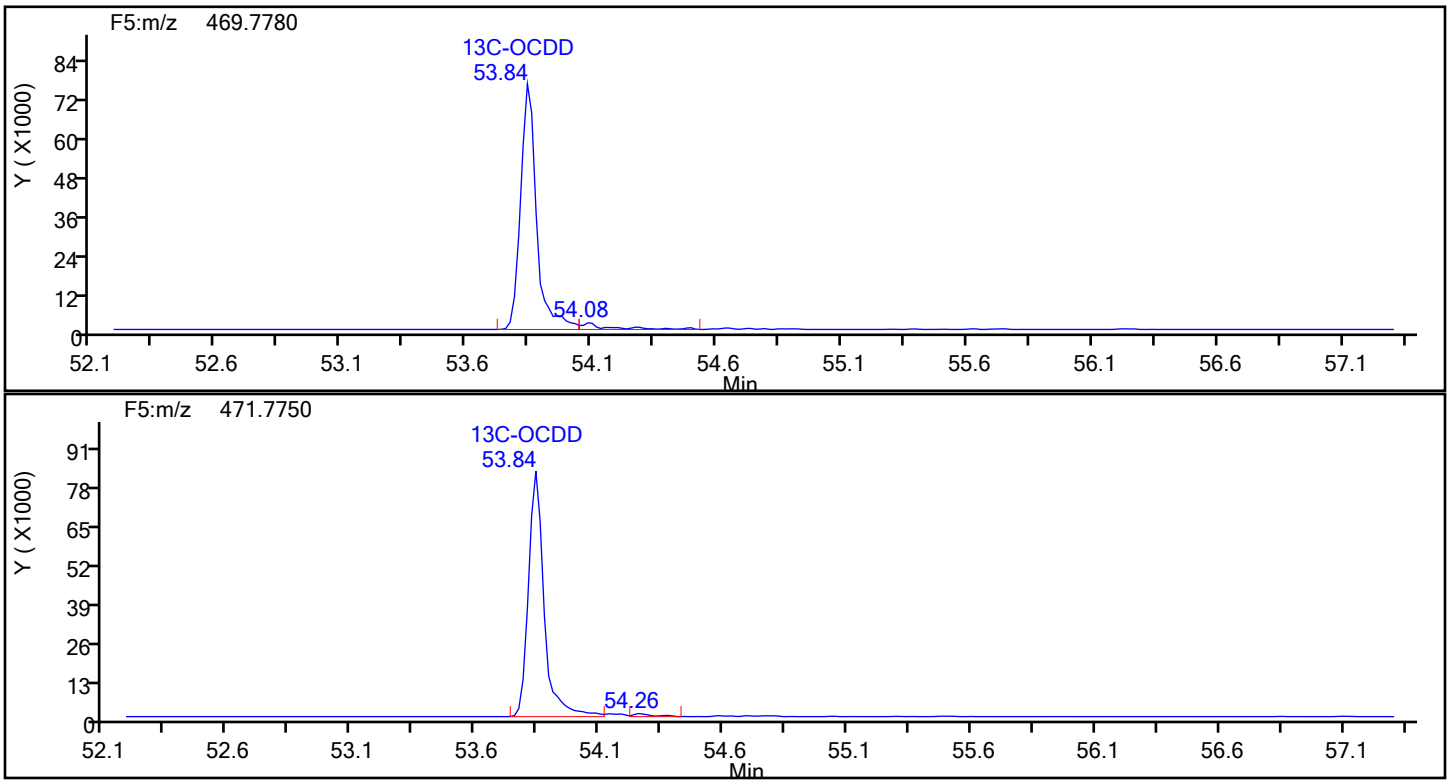
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

OCDD



OCDD Standards



Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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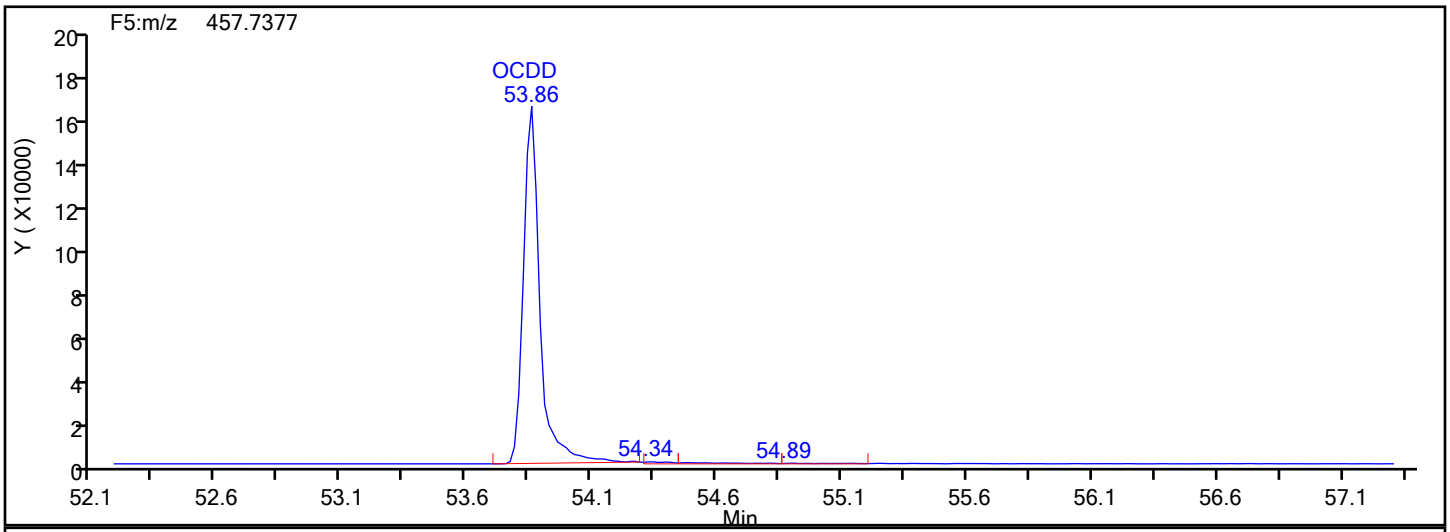
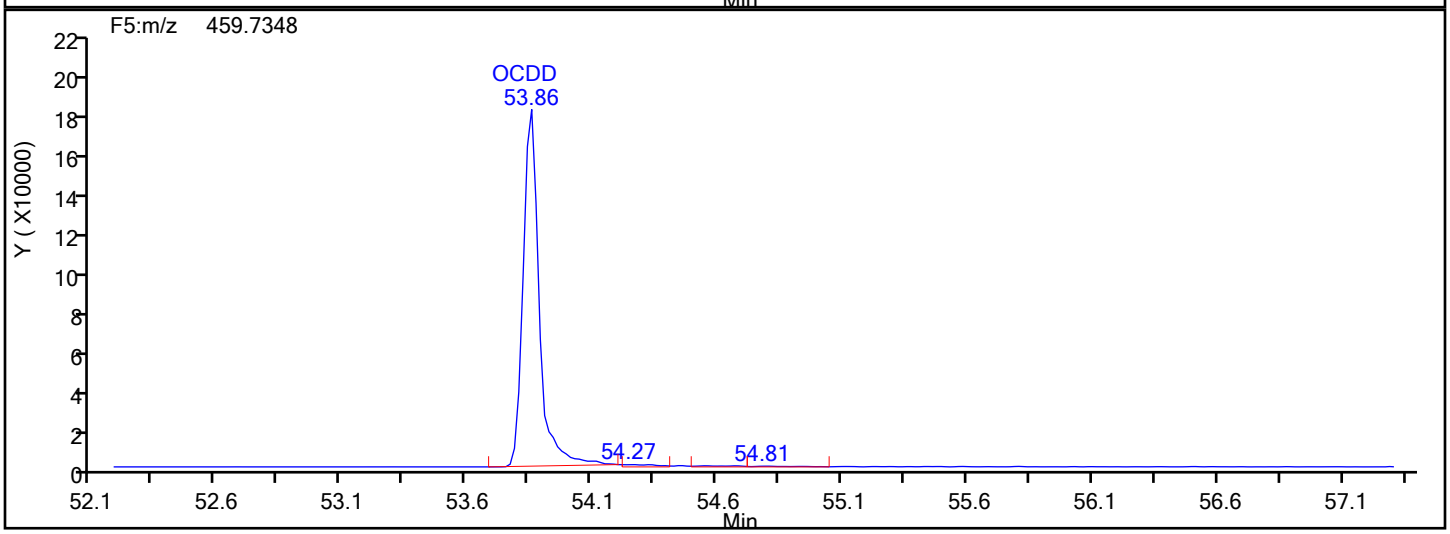
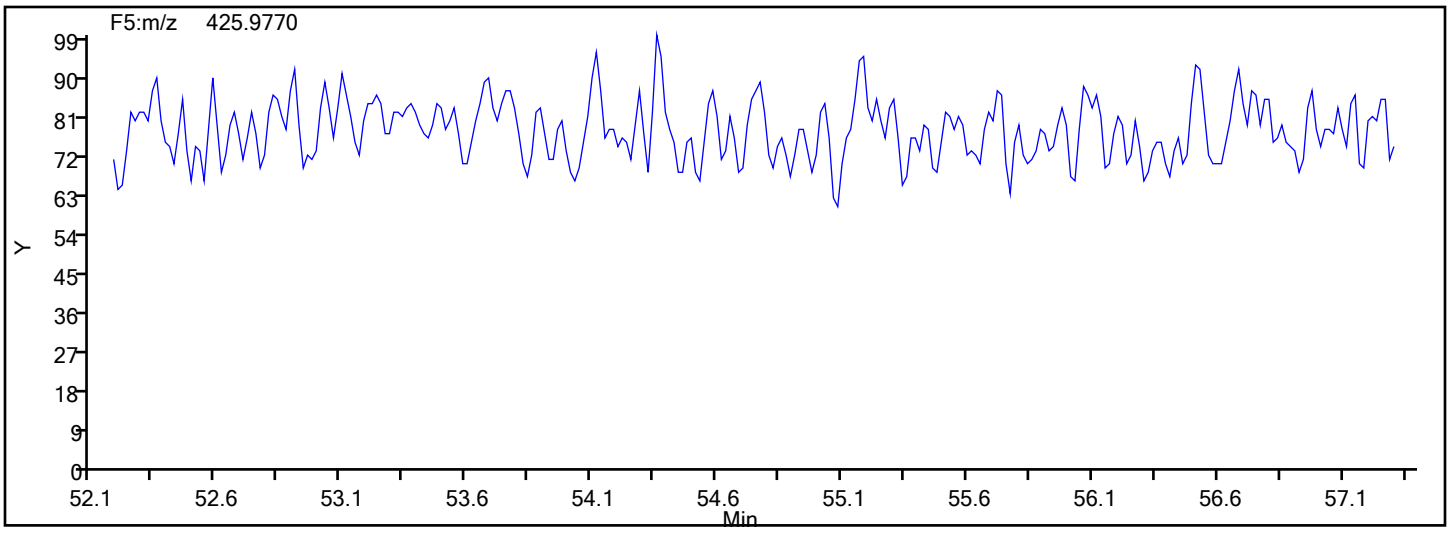
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d

Injection Date: 18-Dec-2019 05:00:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

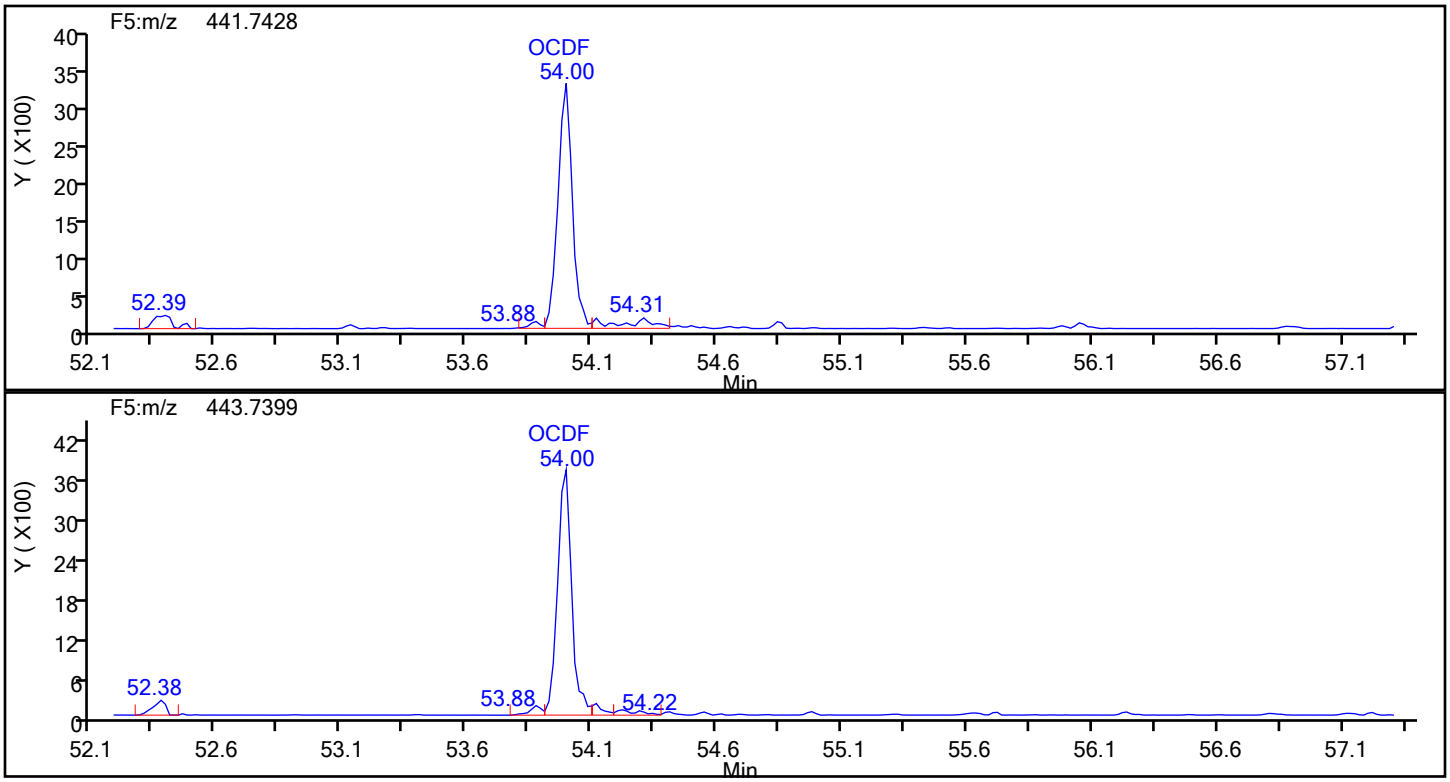
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120719-SS-SJSSA02(4-6)

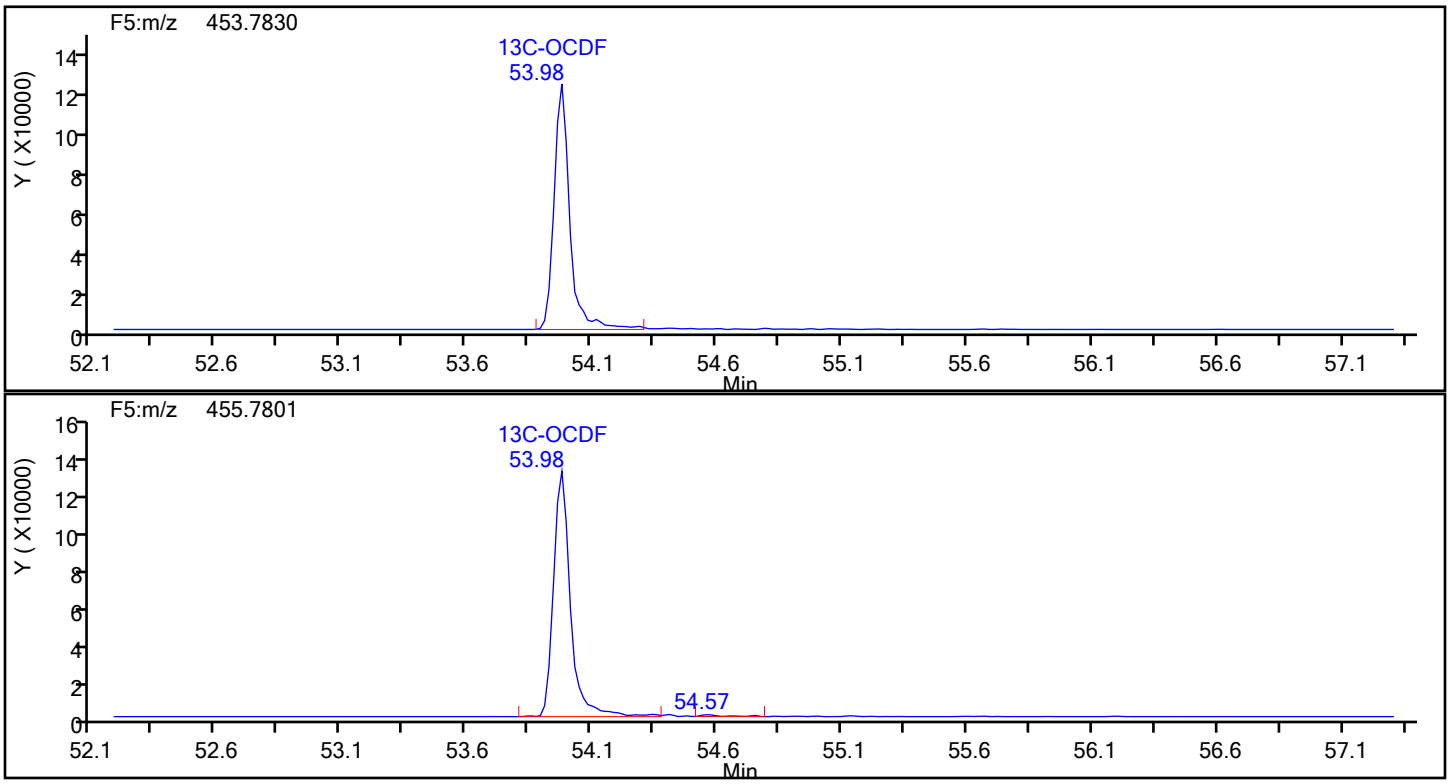
Worklist#: 36166 Sample Line#: 9

Column Type: Column Dia:

OCDF



OCDF Standards

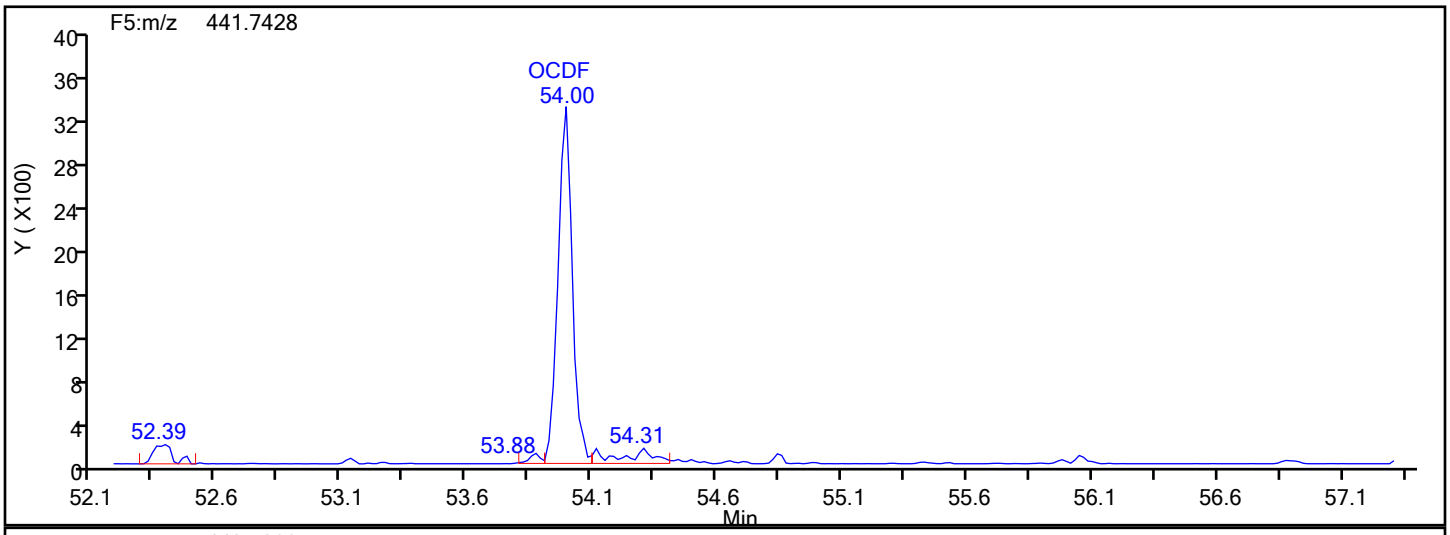


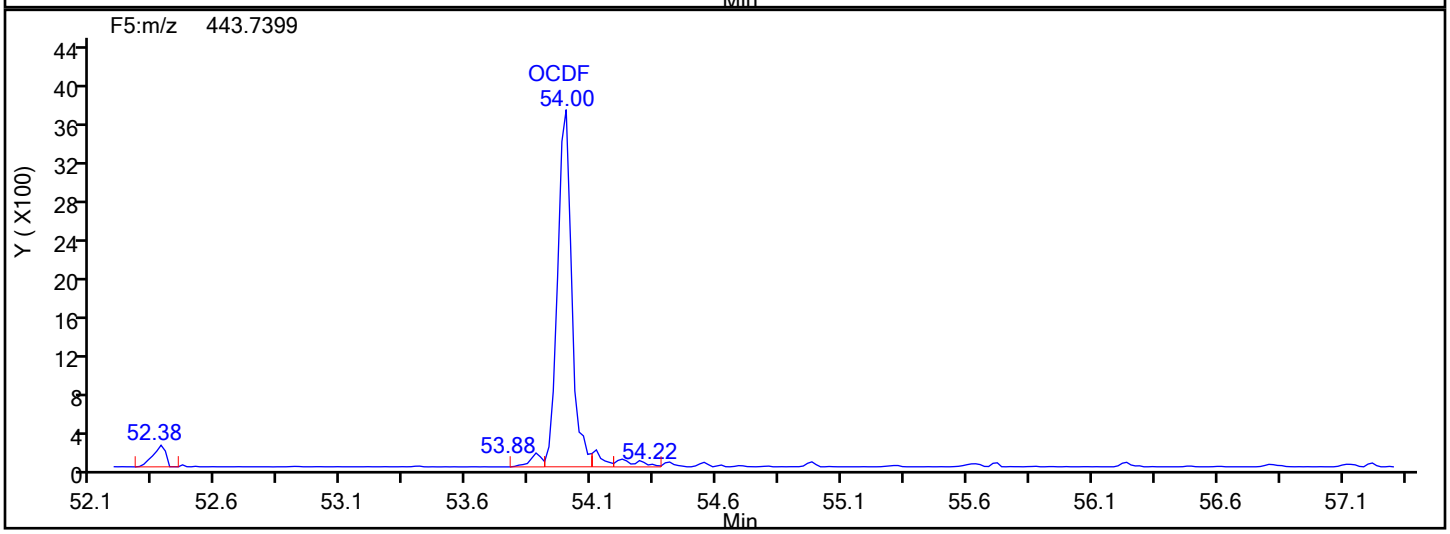
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

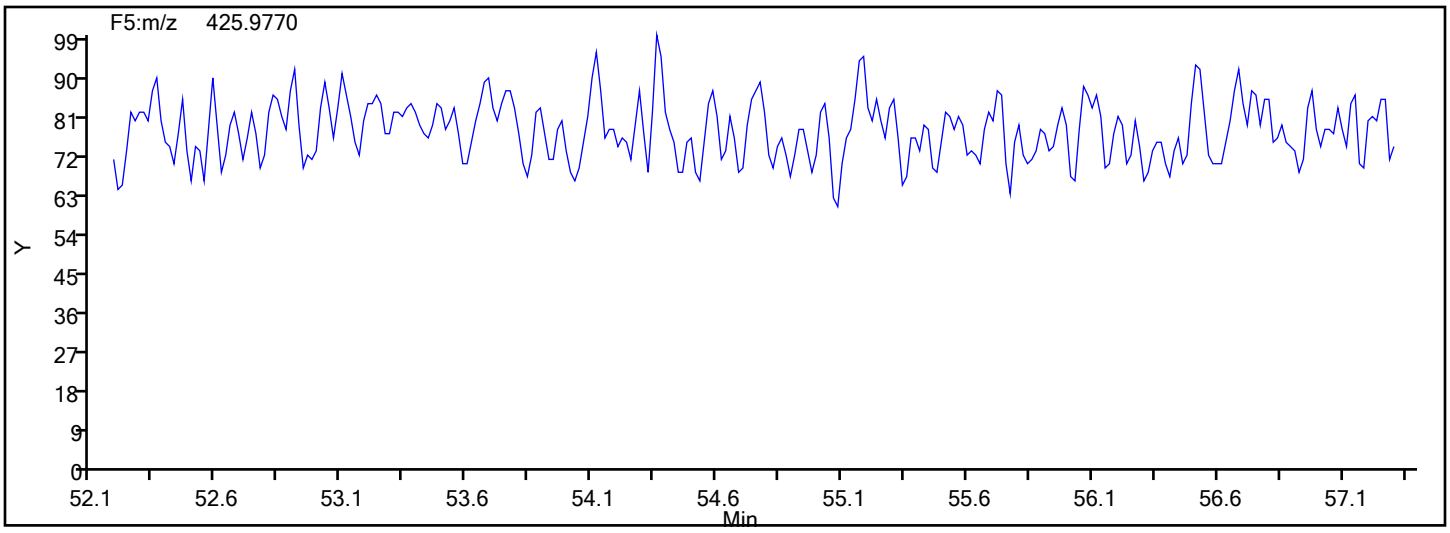
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

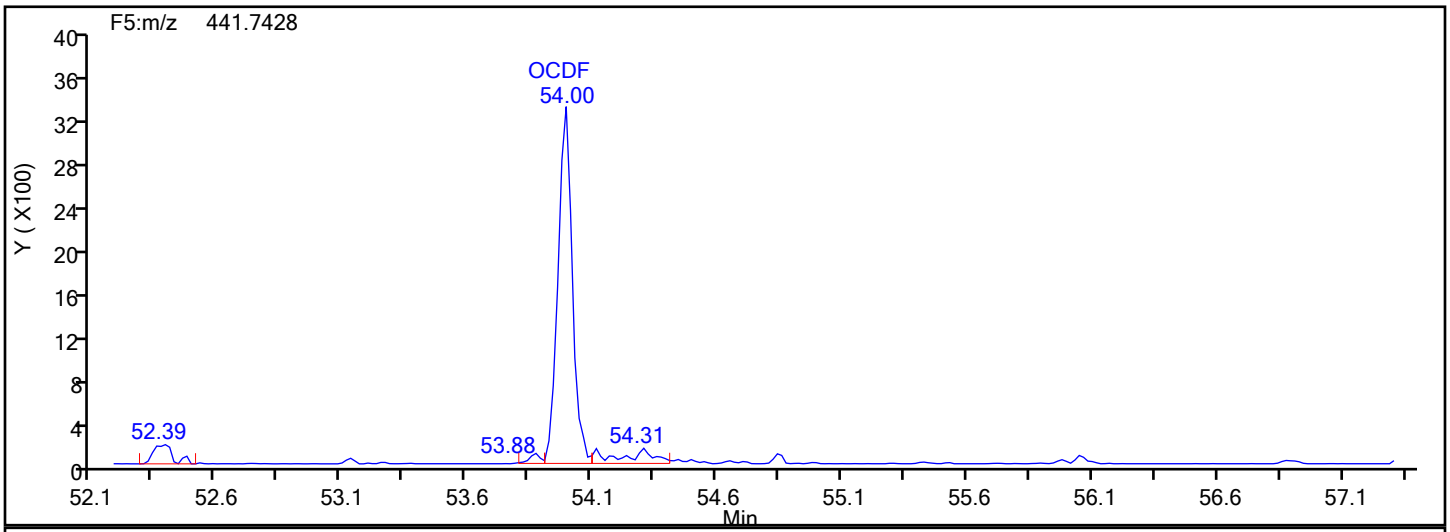


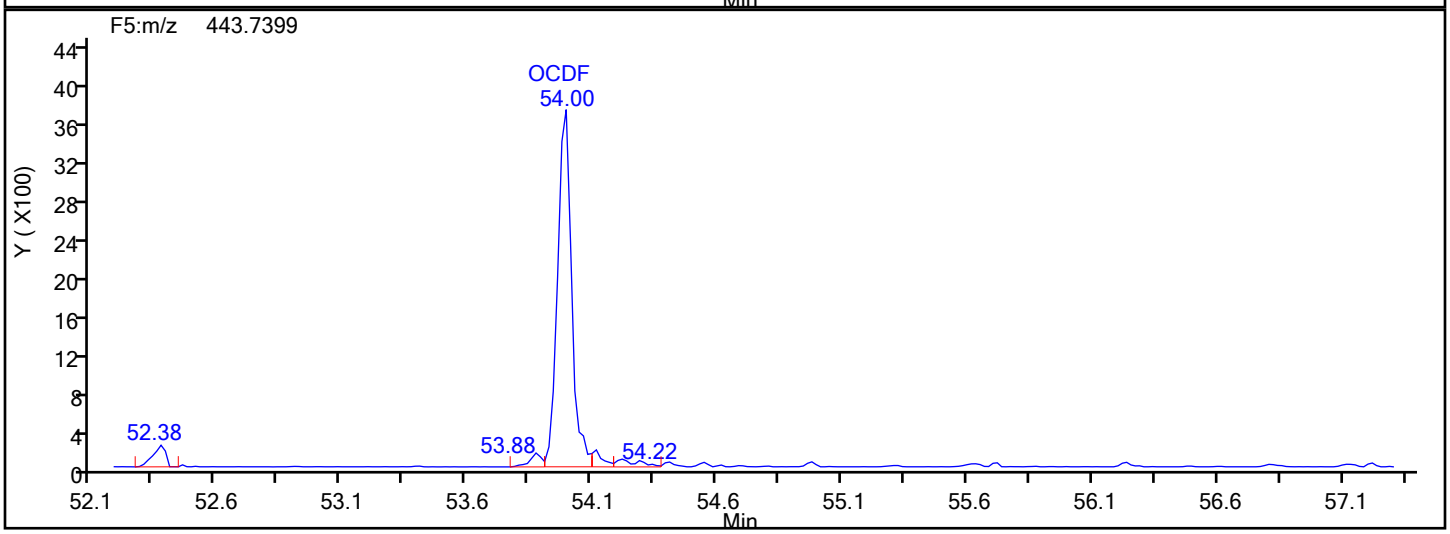
Report Date: 18-Dec-2019 08:43:18 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

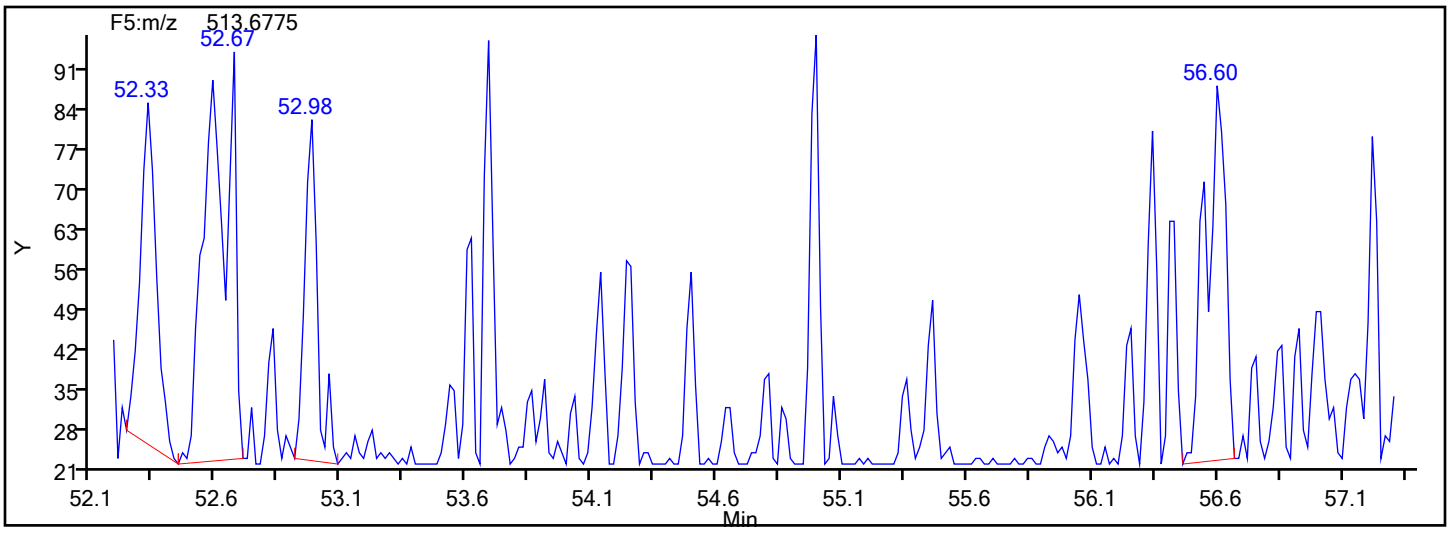
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 05:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36166	Sample Line#:	9
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

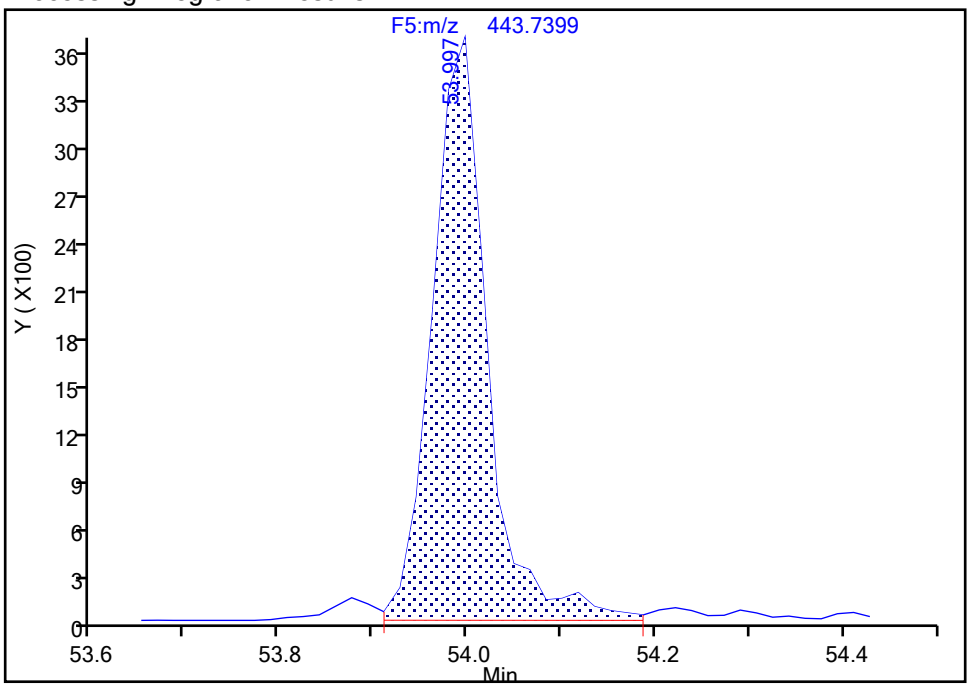
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

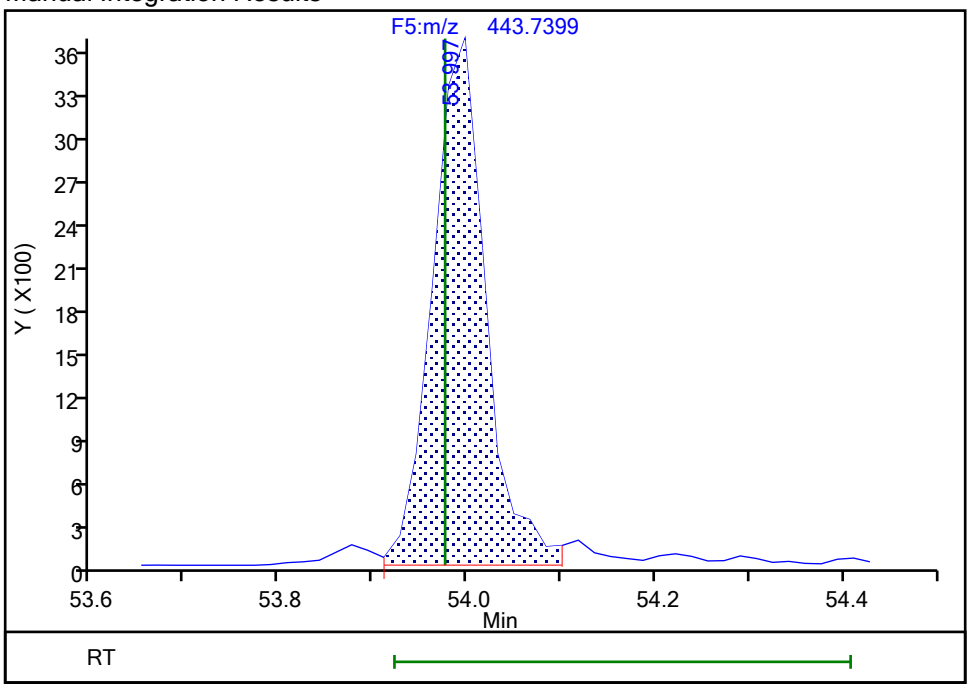
Processing Integration Results

RT: 54.00
Area: 14906
Amount: 2.304202
Amount Units: pg/ul



Manual Integration Results

RT: 54.00
Area: 14431
Amount: 2.150115
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:43:00

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

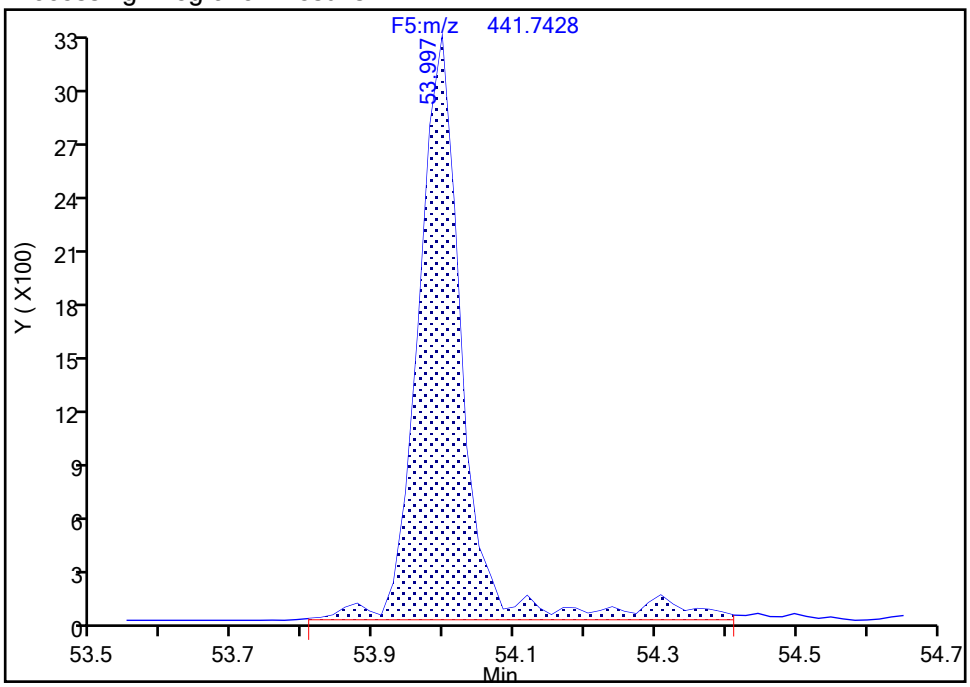
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 05:00:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

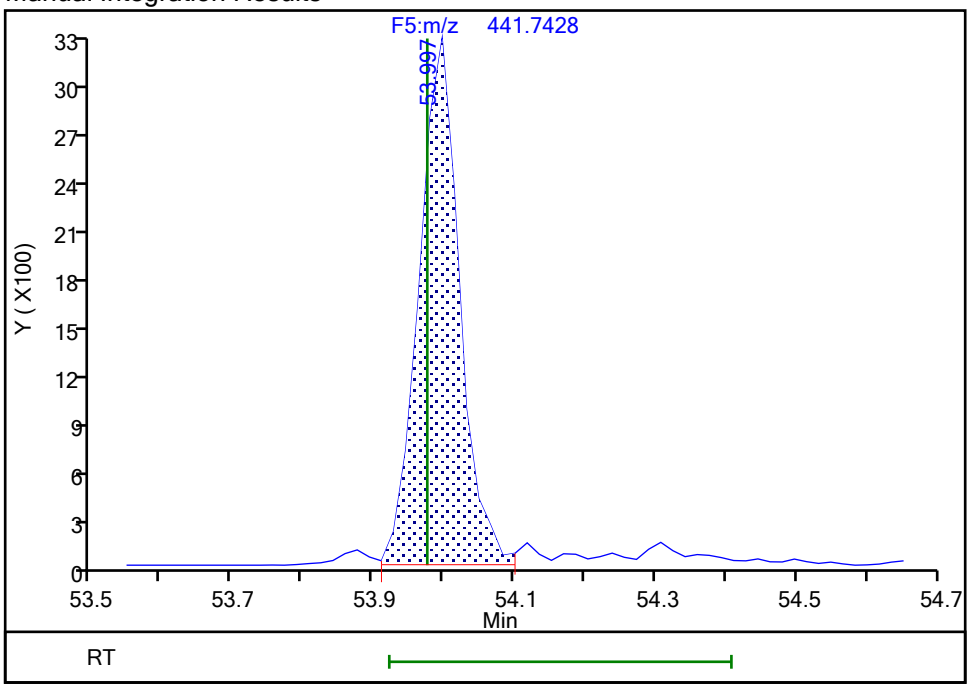
Processing Integration Results

RT: 54.00
Area: 14568
Amount: 2.304202
Amount Units: pg/ul



Manual Integration Results

RT: 54.00
Area: 13072
Amount: 2.150115
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:43:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(4-6) Lab Sample ID: 140-17578-15

Matrix: Sediment Lab File ID: 140-17578-a-15-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 12:05

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.13(g) Date Analyzed: 12/18/2019 13:39

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 20.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36178 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	2.0		1.2	0.18

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	62		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 13:39:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-006
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:05:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:05:42

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	20805	0.77	1.2213	1.024	0.8562	0.1438	0.1438		RQa
2,3,7,8-TCDF	22:12	25605	0.79	1.1100	0.8106	0.8106	0.0721	0.0721		
D 13C-2,3,7,8-TCDD	19:40	994753	0.78	1.0031	34.8	34.8	0.3710	0.3710	69.60	
D 13C-2,3,7,8-TCDF	22:10	1422906	0.79	1.6193	30.8	30.8	0.3098	0.3098	61.67	a
$ 37Cl4-2,3,7,8-TCDD	19:42	237571		1.1834	7.045	7.045	0.0915	0.0915	70.45	
* 13C-1,2,3,4-TCDD	20:06	2849685	0.79	1.6E+05	100.0	100.0				

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d
Lims ID: 140-17578-A-15-A
Client ID: 11187072-120719-SS-SJSSA02(4-6)
Sample Type: Client
Inject. Date: 18-Dec-2019 13:39:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-006
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:05:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:05:42

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQa
319.8965	19:43	19:43	0	1.003	9051	881	90	225	10		a
321.8936	19:47	19:43	4	1.006	15828	1675	134	335	13	0.57(0.65-0.89)	
	Empc Correction				11754	1144	134	335	9		
2,3,7,8-TCDF											
303.9016	22:12	22:13	-1	1.002	11320	1320	80	200	17		
305.8987	22:12	22:13	-1	1.002	14285	1704	46	115	37	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:39	-1	0.978	435254	68987	324	810	213		
333.9338	19:40	19:39	-1	0.978	559499	90449	322	805	281	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	22:10	22:10	-1	1.103	629916	88615	337	842	263		a
317.9389	22:10	22:10	-1	1.103	792990	108308	534	1335	203	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:42	19:41	-1	0.980	237571	38518	188	470	205		
13C-1,2,3,4-TCDD											
331.9368	20:06	20:08	-2		1259633	194466	324	810	600		
333.9338	20:07	20:08	-1		1590052	239509	322	805	744	0.79(0.65-0.89)	

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 15:05:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d

Injection Date: 18-Dec-2019 13:39:00 Injection Vol: 1.0 ul

Instrument ID: D12C Operator ID: Xcalibur_System

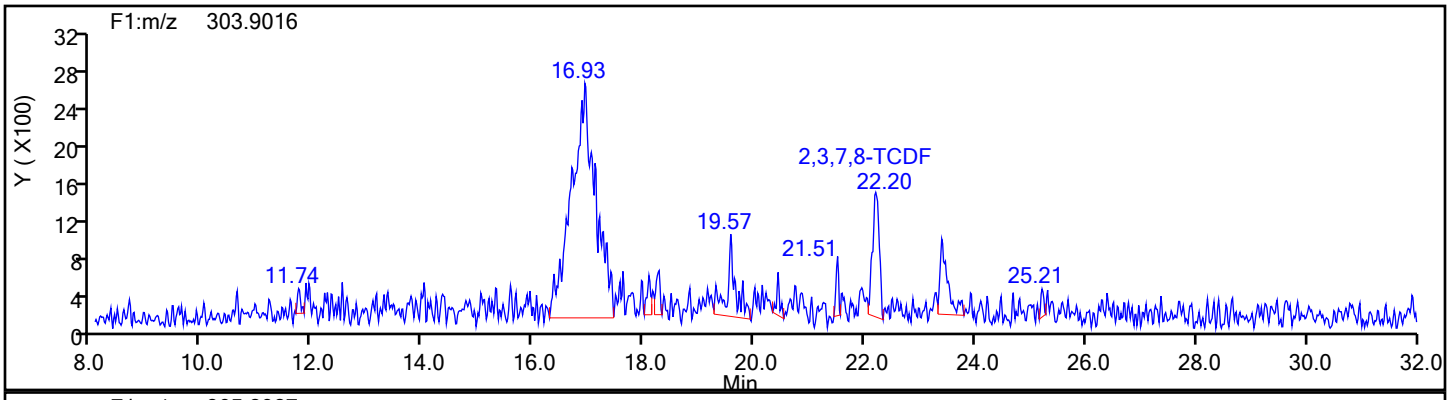
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL

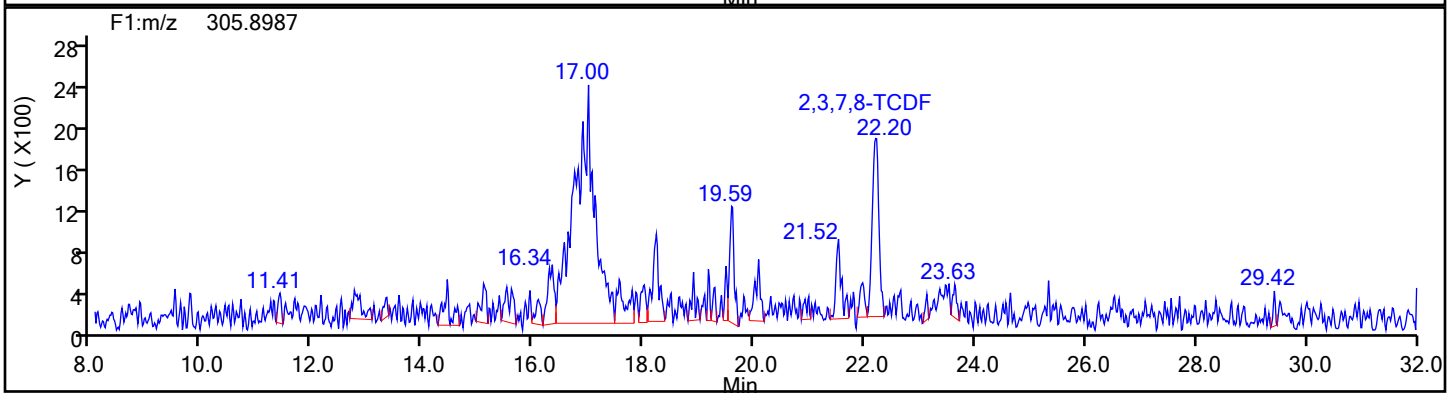
Client ID: 11187072-120719-SS-SJSSA02(4-6)

Worklist#: 36178 Sample Line#: 6

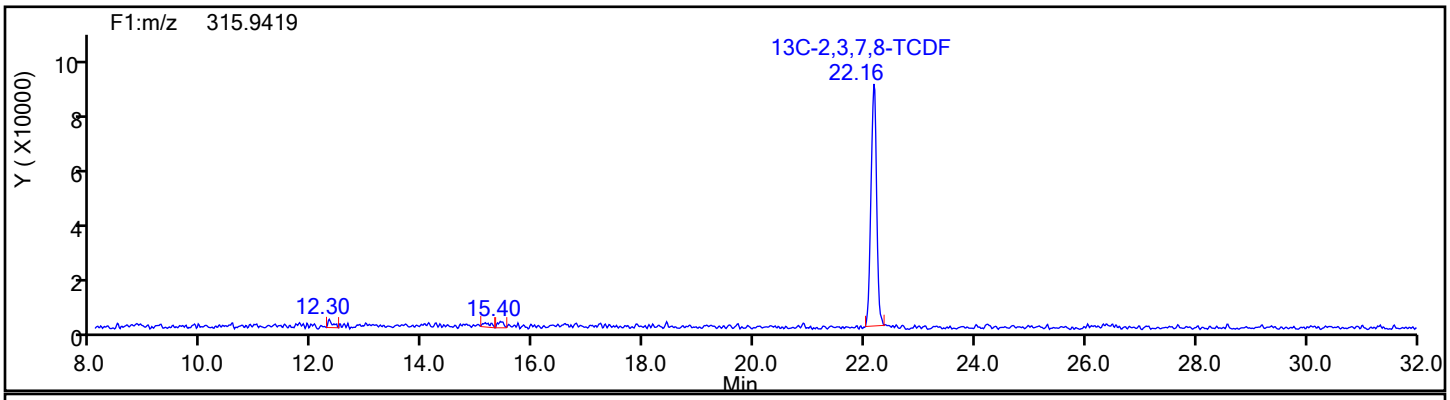
Column Type: DB225 Column Dia: 0.32 mm

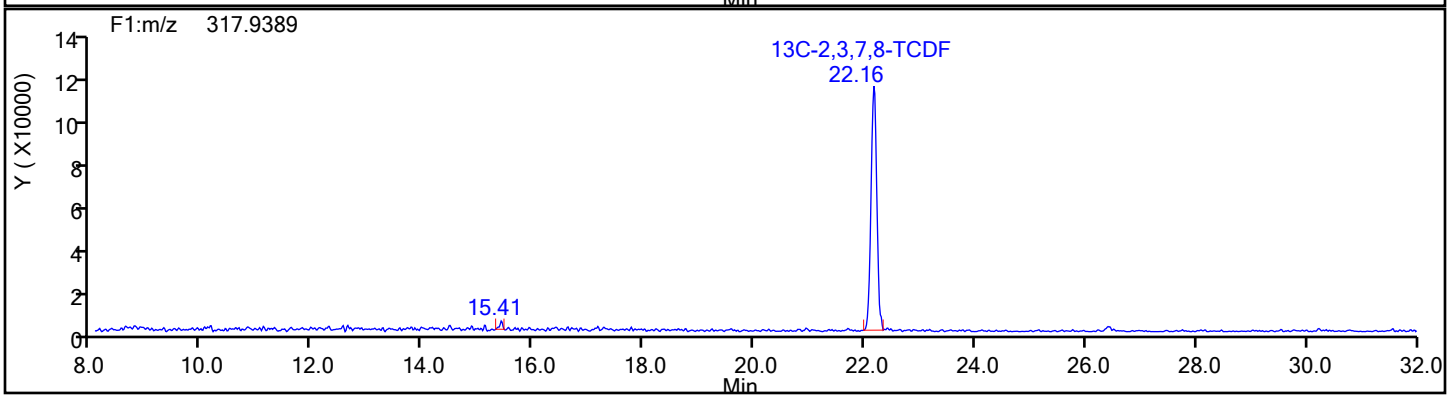
TCDF





TCDF Standards



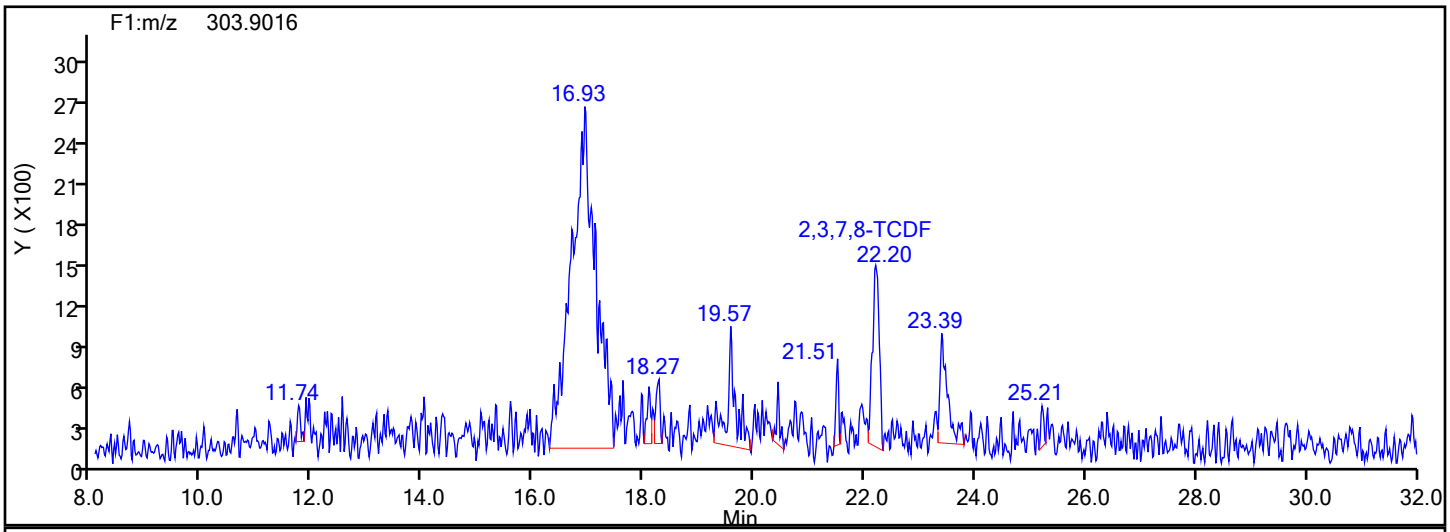


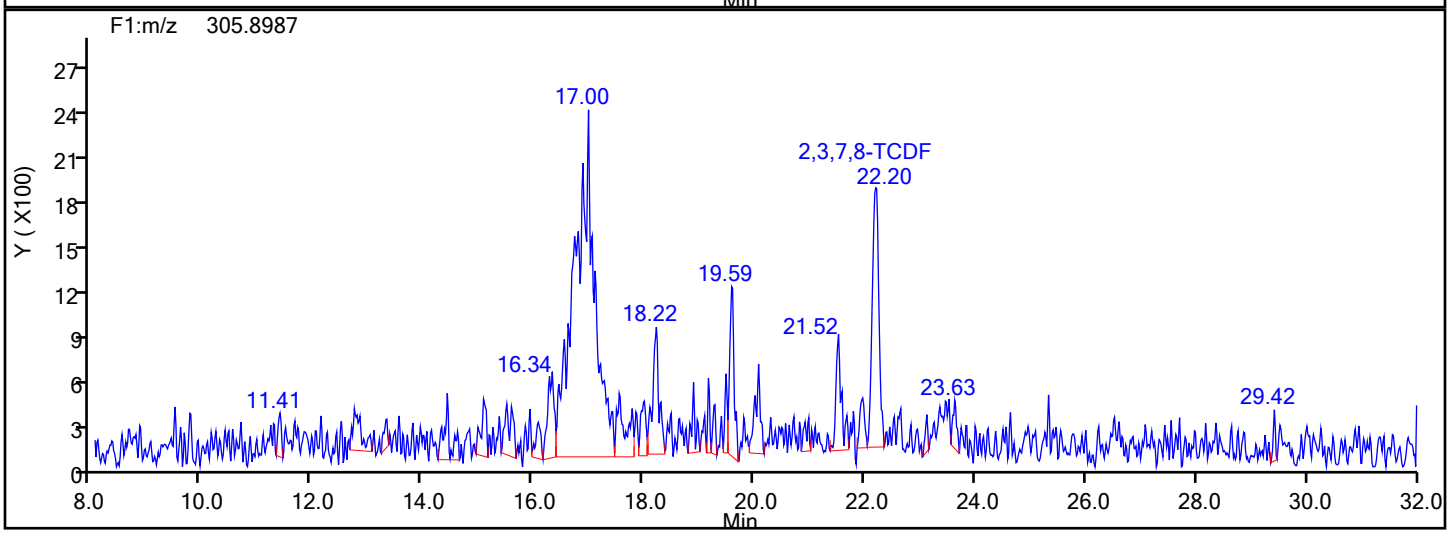
Report Date: 18-Dec-2019 15:05:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

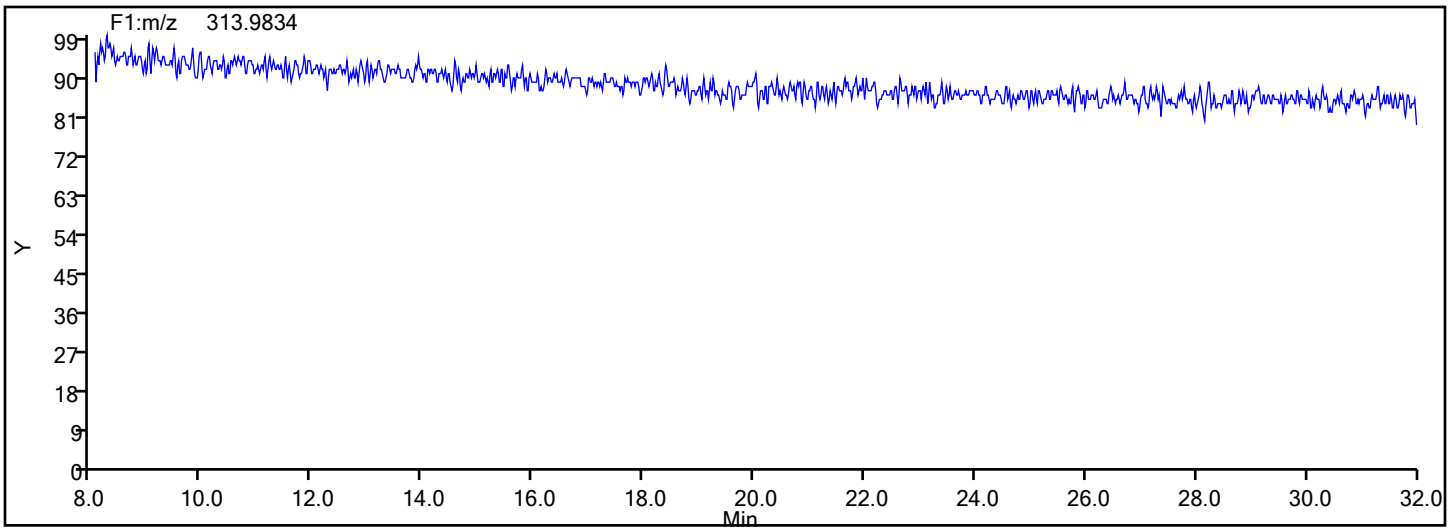
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 13:39:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36178	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

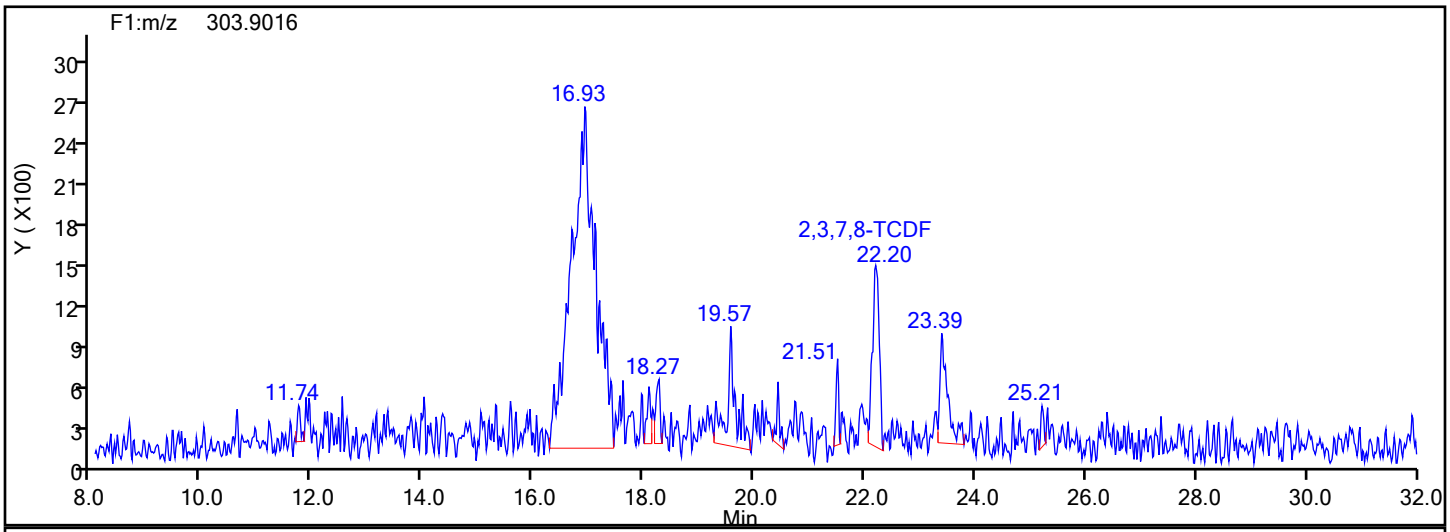


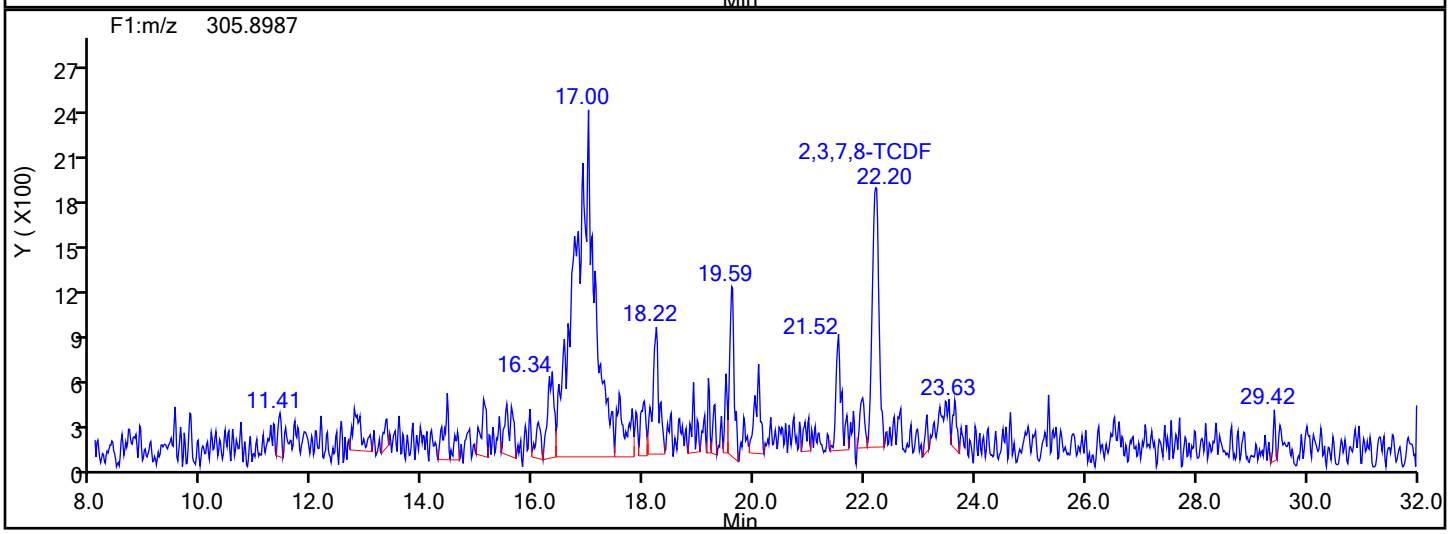
Report Date: 18-Dec-2019 15:05:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

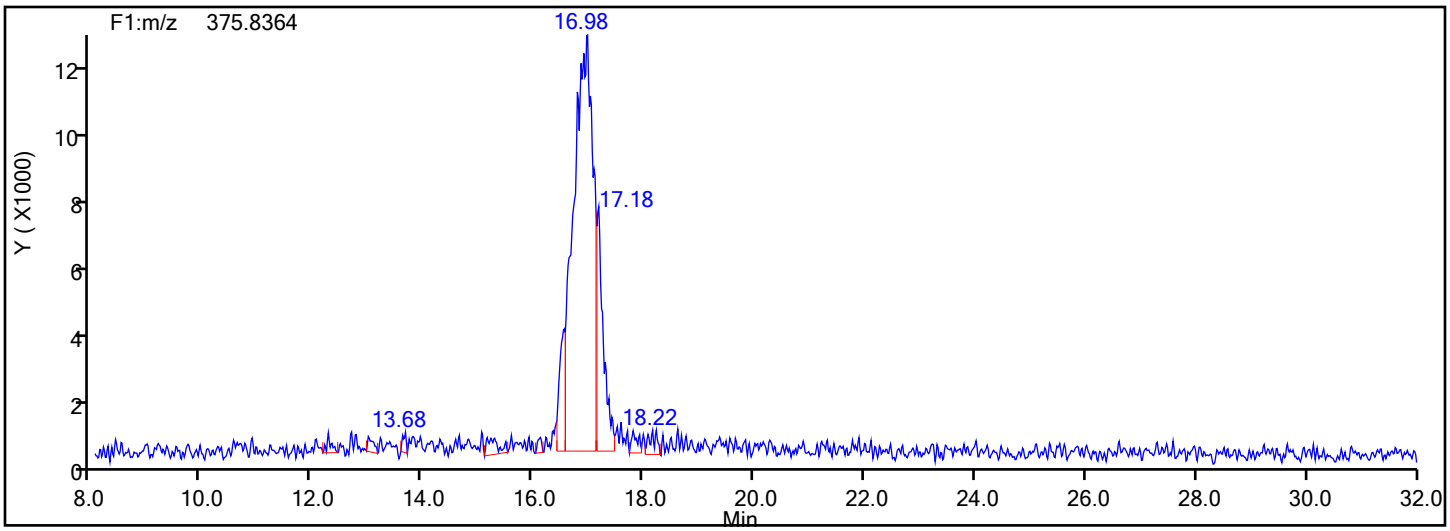
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d		
Injection Date:	18-Dec-2019 13:39:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(4-6)		
Worklist#:	36178	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

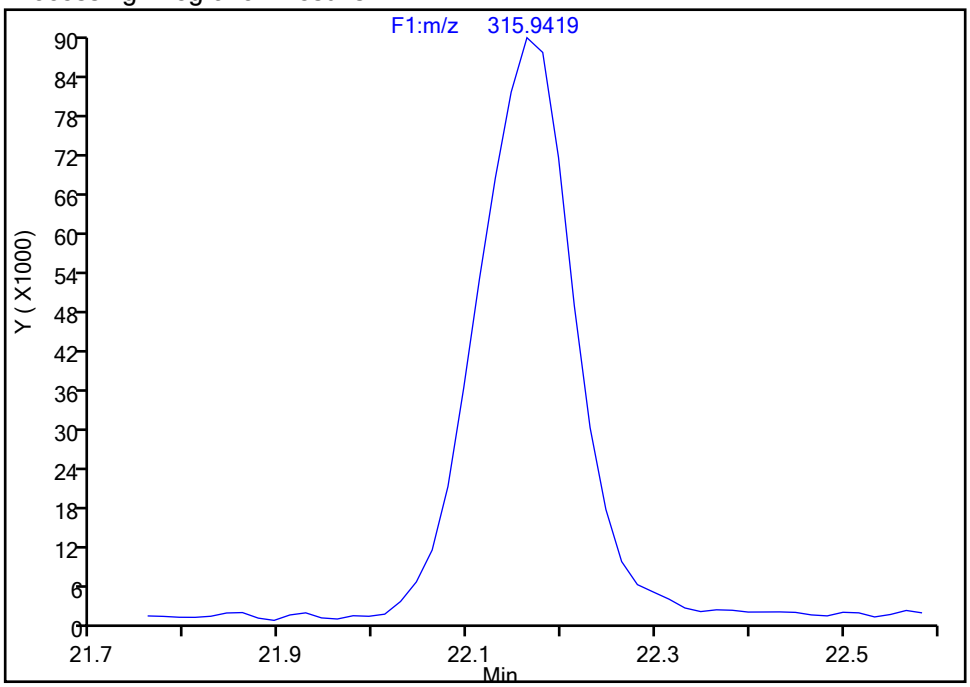
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-15-a.d				
Injection Date:	18-Dec-2019 13:39:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-15-A	Lab Sample ID:	140-17578-15		
Client ID:	11187072-120719-SS-SJSSA02(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

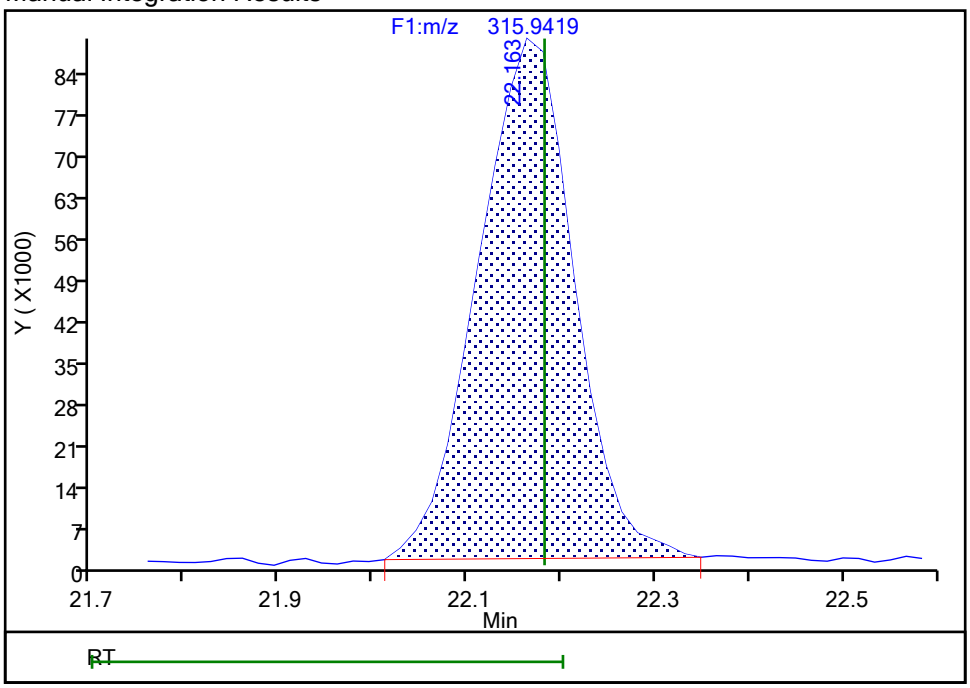
Not Detected
Expected RT: 22.18

Processing Integration Results



Manual Integration Results

RT: 22.16
Area: 629916
Amount: 30.836213
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 15:05:29
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Matrix: Sediment Lab File ID: 140-17578-a-16-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:50

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.89(g) Date Analyzed: 12/18/2019 06:01

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1.1	J q	1.4	0.12
41903-57-5	Total TCDD	7.0	B q	1.4	0.12
40321-76-4	1,2,3,7,8-PeCDD	ND		7.1	0.062
36088-22-9	Total PeCDD	4.3	J q	7.1	0.062
39227-28-6	1,2,3,4,7,8-HxCDD	ND		7.1	0.14
57653-85-7	1,2,3,6,7,8-HxCDD	0.32	J q	7.1	0.14
19408-74-3	1,2,3,7,8,9-HxCDD	0.80	J	7.1	0.13
34465-46-8	Total HxCDD	18	B q	7.1	0.14
35822-46-9	1,2,3,4,6,7,8-HpCDD	14	B q	7.1	0.090
37871-00-4	Total HpCDD	48	B q	7.1	0.090
3268-87-9	OCDD	400	B	14	0.0088
30402-14-3	Total TCDF	7.7	B q	1.4	0.094
57117-41-6	1,2,3,7,8-PeCDF	ND		7.1	0.095
57117-31-4	2,3,4,7,8-PeCDF	ND		7.1	0.092
30402-15-4	Total PeCDF	ND		7.1	0.095
70648-26-9	1,2,3,4,7,8-HxCDF	ND		7.1	0.094
57117-44-9	1,2,3,6,7,8-HxCDF	ND		7.1	0.092
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.1	0.097
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.1	0.13
55684-94-1	Total HxCDF	0.85	J I q	7.1	0.10
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.67	J B	7.1	0.039
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.083	J B q	7.1	0.061
38998-75-3	Total HpCDF	1.5	J B q	7.1	0.050
39001-02-0	OCDF	3.8	J B	14	0.018

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Matrix: Sediment Lab File ID: 140-17578-a-16-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:50

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.89(g) Date Analyzed: 12/18/2019 06:01

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	66		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	74		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	73		23-140
114423-97-1	13C-OCDD	63		17-157
89059-46-1	13C-2,3,7,8-TCDF	65		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	66		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	64		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	67		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	70		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	70		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	69		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	70		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	64		26-138
109719-78-0	13C-OCDF	65		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:01:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:48:46 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 07:34:42

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:53	5784	0.77	1.1733	0.4459	0.3959	0.0412	0.0412		RQM
A Non-2,3,7,8-sub-TCDD	29:27	30441	0.77	1.1733	2.360	2.084	0.0412	1.695		RQMa
S Total TCDD					2.806	2.479	0.0412	0.0412		RQ
2,3,7,8-TCDF	28:51	34283	0.77	1.0881	1.528	1.528	0.0332	0.0332		M
A Non-2,3,7,8-sub-TCDF	28:10	26145	0.77	1.0881	1.237	1.165	0.0332	0.5741		RQMa
S Total TCDF					2.765	2.693	0.0332	0.0332		RQ
1,2,3,7,8-PeCDD	40:33						0.0217	0.0217		
A Non-2,3,7,8-sub-PeCDD	39:24	16291	1.55	1.0434	1.526	1.496	0.0217	0.9663		RQ
S Total PeCDD					1.526	1.496	0.0217	0.0217		RQ
1,2,3,7,8-PeCDF	38:45						0.0333	0.0333		
2,3,4,7,8-PeCDF	40:01						0.0325	0.0325		
A Non-2,3,7,8-sub-PeCDF	37:59						0.0329	0.0329		
S Total PeCDF							0.0333	0.0333		
1,2,3,4,7,8-HxCDD	44:49						0.0501	0.0501		
1,2,3,6,7,8-HxCDD	44:57	1718	1.24	1.1481	0.1401	0.1123	0.0479	0.0479		RQ
1,2,3,7,8,9-HxCDD	45:19	4330	1.17	1.2212	0.2804	0.2804	0.0459	0.0459		
A Non-2,3,7,8-sub-HxCDD	44:17	85762	1.24	1.1700	5.819	5.797	0.0479	4.824		RQM
S Total HxCDD					6.239	6.190	0.0479	0.0479		RQ
1,2,3,4,7,8-HxCDF	43:47						0.0332	0.0332		
1,2,3,6,7,8-HxCDF	43:55						0.0322	0.0322		
2,3,4,6,7,8-HxCDF	44:38						0.0342	0.0342		
1,2,3,7,8,9-HxCDF	45:35						0.0462	0.0462		
A Non-2,3,7,8-sub-HxCDF	44:08	6742	1.24	1.2905	0.3219	0.2980	0.0357	0.1472		RQM
S Total HxCDF					0.3219	0.2980	0.0365	0.0365		RQ
1,2,3,4,6,7,8-HpCDD	49:37	62691	1.04	1.1204	5.248	4.809	0.0318	0.0318		RQ
A Non-2,3,7,8-sub-HpCDD	49:01	157854	0.98	1.1204	12.1	12.1	0.0318	12.1		a
S Total HpCDD					17.4	16.9	0.0318	0.0318		RQ
1,2,3,4,6,7,8-HpCDF	47:57	5047	0.98	1.4984	0.2347	0.2347	0.0136	0.0136		
1,2,3,4,7,8,9-HpCDF	50:17	454	1.04	1.3807	0.0360	0.0291	0.0215	0.0215		RQM
A Non-2,3,7,8-sub-HpCDF	49:31	4562	0.95	1.4395	0.2470	0.2470	0.0168	0.2470		Ma

Report Date: 18-Dec-2019 08:48:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					0.5177	0.5108	0.0175	0.0175		RQ
OCDD	53:52	1459099	0.91	1.2073	139.5	139.5	0.003101	0.003101		
OCDF	54:00	20227	0.89	1.1162	1.344	1.344	0.006387	0.006387		
D 13C-2,3,7,8-TCDD	30:48	622620	0.75	1.0709	32.2	32.2	0.3632	0.3632	64.42	
D 13C-2,3,7,8-TCDF	28:47	1031087	0.77	1.7545	32.6	32.6	0.2128	0.2128	65.12	
D 13C-1,2,3,7,8-PeCDD	40:33	521950	1.69	0.8743	33.1	33.1	0.4460	0.4460	66.15	
D 13C-1,2,3,7,8-PeCDF	38:45	811829	1.67	1.3704	32.8	32.8	0.4843	0.4843	65.64	
D 13C-2,3,4,7,8-PeCDF	40:01	802722	1.61	1.3837	32.1	32.1	0.4797	0.4797	64.28	
D 13C-1,2,3,4,7,8-HxCDD	44:48	598394	1.31	0.8772	34.8	34.8	0.0960	0.0960	69.53	
D 13C-1,2,3,6,7,8-HxCDD	44:55	666059	1.35	0.9171	37.0	37.0	0.0918	0.0918	74.02	
D 13C-1,2,3,4,7,8-HxCDF	43:47	783348	0.50	1.1892	33.6	33.6	0.3311	0.3311	67.14	
D 13C-1,2,3,6,7,8-HxCDF	43:55	1001332	0.52	1.4625	34.9	34.9	0.2692	0.2692	69.78	
D 13C-2,3,4,6,7,8-HxCDF	44:38	907217	0.54	1.3197	35.0	35.0	0.2984	0.2984	70.07	
D 13C-1,2,3,7,8,9-HxCDF	45:35	814330	0.53	1.2001	34.6	34.6	0.3281	0.3281	69.16	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	581808	1.13	0.8155	36.4	36.4	0.2356	0.2356	72.72	
D 13C-1,2,3,4,6,7,8-HpCDF	47:56	717543	0.46	1.0496	34.8	34.8	0.3456	0.3456	69.67	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	565586	0.46	0.8947	32.2	32.2	0.4054	0.4054	64.43	
D 13C-OCDD	53:51	866152	0.93	0.7044	62.7	62.7	0.4442	0.4442	62.66	
D 13C-OCDF	53:59	1348441	0.91	1.0615	64.7	64.7	0.2161	0.2161	64.74	
$ 37Cl4-2,3,7,8-TCDD	30:51	159825		1.2266	7.219	7.219	0.0685	0.0685	72.19	
* 13C-1,2,3,4-TCDD	30:16	1804965	0.84	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:18	1962320	1.29	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 18-Dec-2019 08:48:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 06:01:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-010
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:48:46 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 07:34:42

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQM
319.8965	30:53	30:50	4	1.003	3247	437	9	22	49		M
	Empc Correction				2516	481	9	22	53		
321.8936	30:50	30:50	1	1.001	3268	625	17	42	37	0.99(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	25:36	29:27	-231	0.831	318	36	9	22	4		
321.8936	25:38	29:27	-229	0.832	667	126	17	42	7	0.48(0.65-0.89)	
	Empc Correction				412	46	17	42	3		
319.8965	26:21	29:27	-185	0.856	698	92	9	22	10		
	Empc Correction				455	90	9	22	10		
321.8936	26:20	29:27	-186	0.855	591	118	17	42	7	1.18(0.65-0.89)	M
319.8965	27:47	29:27	-100	0.902	13484	1795	9	22	199		
	Empc Correction				10776	1288	9	22	143		
321.8936	27:47	29:27	-100	0.902	13995	1673	17	42	98	0.96(0.65-0.89)	
319.8965	29:26	29:27	-1	0.956	330	113	9	22	13		M
321.8936	29:24	29:27	-3	0.955	417	81	17	42	5	0.79(0.65-0.89)	
319.8965	30:19	29:27	53	0.985	2208	273	9	22	30		M
	Empc Correction				1369	194	9	22	22		
321.8936	30:16	29:27	50	0.983	1778	253	17	42	15	1.24(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	28:51	28:52	2	1.002	14919	1696	16	40	106		M
305.8987	28:50	28:52	1	1.001	19364	1966	18	45	109	0.77(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	23:48	28:10	-261	0.827	371	75	16	40	5		
305.8987	23:50	28:10	-259	0.828	562	131	18	45	7	0.66(0.65-0.89)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	25:06	28:10	-183	0.872	775	126	16	40	8		
	Empc Correction				495	69	16	40	4		
305.8987	25:04	28:10	-185	0.871	643	90	18	45	5	1.21(0.65-0.89)	
303.9016	25:51	28:10	-139	0.898	991	144	16	40	9		
305.8987	25:50	28:10	-140	0.897	1481	226	18	45	13	0.67(0.65-0.89)	M
303.9016	26:30	28:10	-100	0.920	709	85	16	40	5		
	Empc Correction				430	81	16	40	5		
305.8987	26:32	28:10	-98	0.922	559	106	18	45	6	1.27(0.65-0.89)	
303.9016	27:00	28:10	-69	0.938	594	116	16	40	7		
305.8987	26:59	28:10	-70	0.937	981	192	18	45	11	0.61(0.65-0.89)	
	Empc Correction				771	150	18	45	8		
303.9016	27:45	28:10	-25	0.964	5961	892	16	40	56		
305.8987	27:44	28:10	-26	0.963	6921	760	18	45	42	0.86(0.65-0.89)	
303.9016	28:24	28:10	14	0.987	552	103	16	40	6		M
305.8987	28:23	28:10	13	0.986	1190	234	18	45	13	0.46(0.65-0.89)	
	Empc Correction				716	133	18	45	7		
303.9016	30:00	28:10	110	1.042	1236	239	16	40	15		
305.8987	30:05	28:10	115	1.045	1876	359	18	45	20	0.66(0.65-0.89)	
303.9016	32:51	28:10	281	1.141	864	124	16	40	8		
305.8987	32:49	28:10	279	1.140	1490	228	18	45	13	0.58(0.65-0.89)	
	Empc Correction				1122	161	18	45	9		
1,2,3,7,8-PeCDD											
355.8546	40:35						5	12			
357.8516	40:35						16	40			
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:37	39:24	-107	0.928	1646	408	5	12	82		
357.8516	37:36	39:24	-108	0.927	1150	225	16	40	14	1.43(1.32-1.78)	
355.8546	38:26	39:24	-58	0.948	6630	973	5	12	195		
357.8516	38:27	39:24	-57	0.949	3895	702	16	40	44	1.70(1.32-1.78)	
355.8546	39:50	39:24	26	0.983	2134	314	5	12	63		
	Empc Correction				1805	353	5	12	71		
357.8516	39:51	39:24	27	0.983	1165	228	16	40	14	1.83(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:46						33	82			
341.8567	38:46						18	45			
2,3,4,7,8-PeCDF											
339.8597	40:02						33	82			
341.8567	40:02						18	45			
A Non-2,3,7,8-sub-PeCDF											
339.8597	37:59						33	82			
341.8567	37:59						18	45			
1,2,3,4,7,8-HxCDD											
389.8158	44:49						43	107			
391.8127	44:49						26	65			
1,2,3,6,7,8-HxCDD											RQ
389.8158	44:57	44:56	1	1.001	1376	264	43	107	6		
	Empc Correction				951	257	43	107	6		
391.8127	44:56	44:56	0	1.000	767	208	26	65	8	1.79(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDD											
389.8158	45:19	45:19	1	1.012	2330	405	43	107	9		
391.8127	45:19	45:19	1	1.012	2000	383	26	65	15	1.17(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	43:16	44:17	-61	0.963	37785	10007	43	107	233		
391.8127	43:16	44:17	-61	0.963	33585	8903	26	65	342	1.13(1.05-1.43)	
389.8158	43:51	44:17	-25	0.976	1294	269	43	107	6		
	Empc Correction				972	270	43	107	6		
391.8127	43:50	44:17	-26	0.976	784	218	26	65	8	1.65(1.05-1.43)	
389.8158	44:07	44:17	-9	0.982	6671	1759	43	107	41		
391.8127	44:07	44:17	-9	0.982	5965	1276	26	65	49	1.12(1.05-1.43)	M
1,2,3,4,7,8-HxCDF											
373.8208	43:49						31	77			
375.8178	43:49						47	117			
1,2,3,6,7,8-HxCDF											
373.8208	43:56						31	77			
375.8178	43:56						47	117			
2,3,4,6,7,8-HxCDF											
373.8208	44:39						31	77			
375.8178	44:39						47	117			
1,2,3,7,8,9-HxCDF											
373.8208	45:36						31	77			
375.8178	45:36						47	117			
A Non-2,3,7,8-sub-HxCDF											RQM
373.8208	42:44	44:08	-83	0.973	1025	239	31	77	8		M
375.8178	42:46	44:08	-81	0.974	1027	243	47	117	5	1.00(1.05-1.43)	
	Empc Correction				826	192	47	117	4		
373.8208	43:21	44:08	-47	0.987	864	194	31	77	6		
375.8178	43:21	44:08	-47	0.987	1035	187	47	117	4	0.83(1.05-1.43)	
	Empc Correction				696	156	47	117	3		
373.8208	43:33	44:08	-35	0.992	1849	560	31	77	18		M
375.8178	43:33	44:08	-35	0.992	1482	385	47	117	8	1.25(1.05-1.43)	M
1,2,3,4,6,7,8-HpCDD											RQ
423.7767	49:37	49:38	1	1.000	37684	7168	16	40	448		
	Empc Correction				31960	5961	16	40	373		
425.7737	49:36	49:38	0	1.000	30731	5732	15	37	382	1.23(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											a
423.7767	48:27	49:01	-33	0.977	78080	14937	16	40	934		a
425.7737	48:26	49:01	-34	0.976	79774	14758	15	37	984	0.98(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:57	47:57	0	1.000	2494	443	19	47	23		
409.7788	47:58	47:57	1	1.001	2553	606	5	12	121	0.98(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											RQM
407.7817	50:17	50:17	1	1.000	339	114	19	47	6		M
	Empc Correction				231	76	19	47	4		
409.7788	50:18	50:17	2	1.001	223	74	5	12	15	1.52(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											Ma
407.7817	48:29	49:31	-62	0.000			19	47			
409.7788	48:29	49:31	-62	0.000			5	12		0.00(0.88-1.20)	
407.7817	48:36	49:31	-55	1.014	2220	504	19	47	27		M
409.7788	48:35	49:31	-56	1.014	2342	554	5	12	111	0.95(0.88-1.20)	
OCDD											
457.7377	53:52	53:52	1	1.000	696135	154372	1	2	154372		
459.7348	53:52	53:52	1	1.000	762964	173782	2	5	86891	0.91(0.76-1.02)	
OCDF											
441.7428	54:00	54:00	1	1.000	9520	2271	6	15	379		
443.7399	54:00	54:00	1	1.000	10707	2539	3	7	846	0.89(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:48	3	1.017	267082	28594	259	647	110		
333.9338	30:48	30:48	3	1.017	355538	38596	41	102	941	0.75(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:47	28:49	2	0.951	447178	50107	123	307	407		
317.9389	28:49	28:49	3	0.952	583909	67692	165	412	410	0.77(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:33	40:36	1	1.339	327878	72308	189	472	383		
369.8919	40:33	40:36	1	1.339	194072	42348	112	280	378	1.69(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:48	1	1.280	507465	102468	274	685	374		
353.8970	38:45	38:48	1	1.280	304364	57711	238	595	242	1.67(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	40:04	1	1.322	495412	107762	274	685	393		
353.8970	40:01	40:04	1	1.322	307310	68250	238	595	287	1.61(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:50	0	0.989	339589	86963	87	217	1000		
403.8529	44:49	44:50	1	0.989	258805	63582	65	162	978	1.31(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:58	0	0.991	382747	90165	87	217	1036		
403.8529	44:55	44:58	0	0.991	283312	66313	65	162	1020	1.35(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:49	1	0.966	261425	73815	321	802	230		
385.8610	43:47	43:49	1	0.966	521923	141877	390	975	364	0.50(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:57	1	0.969	343334	81379	321	802	254		
385.8610	43:55	43:57	1	0.969	657998	155529	390	975	399	0.52(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:38	44:39	1	0.985	316272	79479	321	802	248		
385.8610	44:38	44:39	1	0.985	590945	145897	390	975	374	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:36	1	1.006	280484	59946	321	802	187		
385.8610	45:35	45:36	1	1.006	533846	107849	390	975	277	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:38	1	1.095	309042	59714	255	637	234		
437.8140	49:36	49:38	1	1.095	272766	48431	92	230	526	1.13(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:56	47:57	1	1.058	224868	45304	242	605	187		
419.8220	47:56	47:57	1	1.058	492675	102050	413	1032	247	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:17	1	1.109	177453	33069	242	605	137		
419.8220	50:16	50:17	1	1.109	388133	68155	413	1032	165	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:54	0	1.188	417099	90670	263	657	345		
471.7750	53:51	53:54	0	1.188	449053	96313	302	755	319	0.93(0.76-1.02)	
13C-OCDF											
453.7830	53:59	54:02	0	1.192	640858	144221	165	412	874		
455.7801	53:59	54:02	0	1.192	707583	164377	249	622	660	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:51	30:50	4	1.019	159825	17102	65	162	263		
13C-1,2,3,4-TCDD											
331.9368	30:16	30:15	2		825757	86127	259	647	333		
333.9338	30:16	30:15	2		979208	106713	41	102	2603	0.84(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:18	45:17	1		1105146	252943	87	217	2907		
403.8529	45:18	45:17	1		857174	198372	65	162	3052	1.29(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	622620	67190

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	622620	67190

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
25:36	318	36	667	126	0.0674	0.48	RQ
25:36	318	36	412	46	0.0500		Empc Correction
26:21	698	92	591	118	0.0882	1.18	RQM
26:21	455	90	591	118	0.0716		Empc Correction
27:47	13484	1795	13995	1673	1.88	0.96	RQ
27:47	10776	1288	13995	1673	1.70		Empc Correction
29:26	330	113	417	81	0.0511	0.79	M
30:19	2208	273	1778	253	0.2728	1.24	RQM
30:19	1369	194	1778	253	0.2154		Empc Correction
Signal Totals:							
	13248	1721	17193	2171			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	34486	4560				0.98	RQM
	30441	3892					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.360 = (34486 * 50.000) / (622620 * 1.173)
Empc Amount: 2.084 = (30441 * 50.000) / (622620 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:48:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	1031087	117799

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	1031087	117799

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:48	371	75	562	131	0.0416	0.66	
25:06	775	126	643	90	0.0632	1.21	RQ
25:06	495	69	643	90	0.0507		Empc Correction
25:51	991	144	1481	226	0.1102	0.67	M
26:30	709	85	559	106	0.0565	1.27	RQ
26:30	430	81	559	106	0.0441		Empc Correction
27:00	594	116	981	192	0.0702	0.61	RQ
27:00	594	116	771	150	0.0608		Empc Correction
27:45	5961	892	6921	760	0.5741	0.86	
28:24	552	103	1190	234	0.0776	0.46	RQMa
28:24	552	103	716	133	0.0565		Empc Correction
30:00	1236	239	1876	359	0.1387	0.66	
32:51	864	124	1490	228	0.1049	0.58	RQ
32:51	864	124	1122	161	0.0885		Empc Correction
Signal Totals:							
	11494	1843	14651	2116			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	27756	4230				0.77	RQMa
	26145	3959					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.237 = (27756 * 50.000) / (1031087 * 1.088)
Empc Amount: 1.165 = (26145 * 50.000) / (1031087 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:48:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	521950	114656

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	521950	114656

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:37	1646	408	1150	225	0.2567	1.43	
38:26	6630	973	3895	702	0.9663	1.70	
39:50	2134	314	1165	228	0.3029	1.83	RQ
39:50	1805	353	1165	228	0.2727		Empc Correction
Signal Totals:							
	10081	1734	6210	1155			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	16620	2850				1.68	RQ
	16291	2889					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.526 = (16620 * 50.000) / (521950 * 1.043)
Empc Amount: 1.496 = (16291 * 50.000) / (521950 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	598394	150545
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	666059	156478
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	632226	153511

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:16	37785	10007	33585	8903	4.82	1.13	
43:51	1294	269	784	218	0.1405	1.65	RQ
43:51	972	270	784	218	0.1187		Empc Correction
44:07	6671	1759	5965	1276	0.8541	1.12	M
Signal Totals:							
	45428	12036	40334	10397			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	86084	22432				1.13	RQM
	85762	22433					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.819 = (86084 * 50.000) / (632226 * 1.170)
Empc Amount: 5.797 = (85762 * 50.000) / (632226 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:48:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	783348	215692
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	1001332	236908
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	907217	225376
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	814330	167795

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	876556	211442

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:44	1025	239	1027	243	0.0907	1.00	RQM
42:44	1025	239	826	192	0.0818		Empc Correction
43:21	864	194	1035	187	0.0839	0.83	RQ
43:21	864	194	696	156	0.0690		Empc Correction
43:33	1849	560	1482	385	0.1472	1.25	M
Signal Totals:							
	3738	993	3004	733			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	7282	1808				1.05	RQM
	6742	1726					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3219 = (7282 * 50.000) / (876556 * 1.290)
Empc Amount: 0.2980 = (6742 * 50.000) / (876556 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	581808	108145

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	581808	108145

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	78080	14937	79774	14758	12.1	0.98	a
Signal Totals:							
	78080	14937	79774	14758			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	157854	29695				0.98	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 12.108 = (157854 * 50.000) / (581808 * 1.120)

QC Flag Legend

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Inject. Date: 18-Dec-2019 06:01:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	717543	147354
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	565586	101224

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	641564	124289

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:29	0	0	0	0		0.00	
48:36	2220	504	2342	554	0.2470	0.95	M
Signal Totals:							
	2220	504	2342	554			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4562	1058				0.95	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2470 = (4562 * 50.000) / (641564 * 1.440)

QC Flag Legend

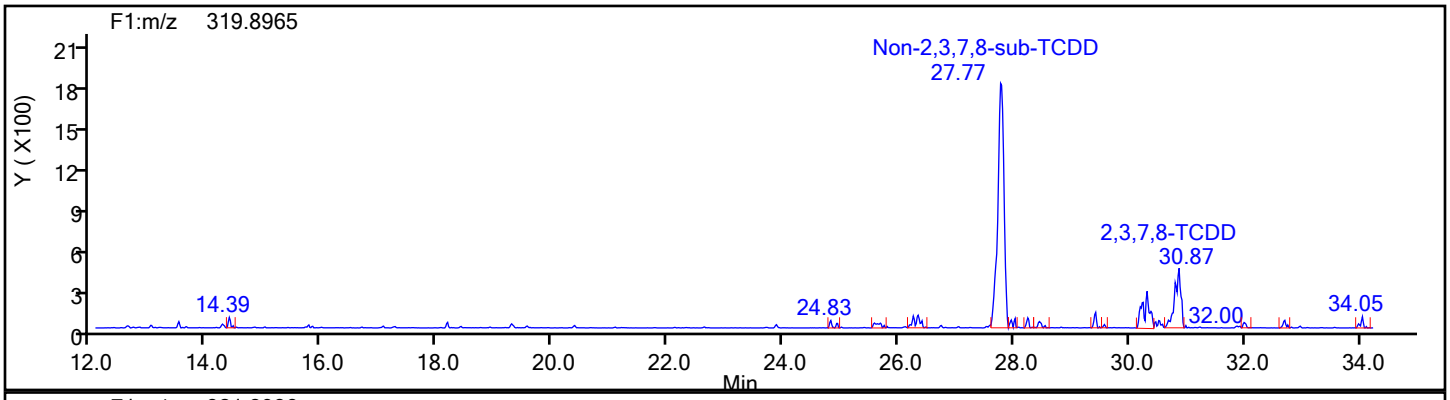
Review Flags
M - Manually Integrated

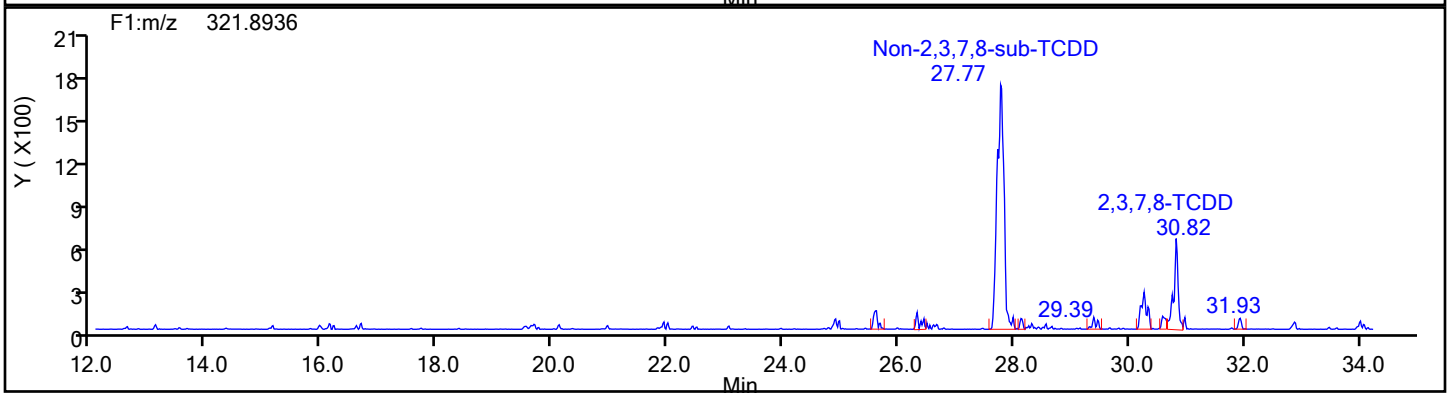
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

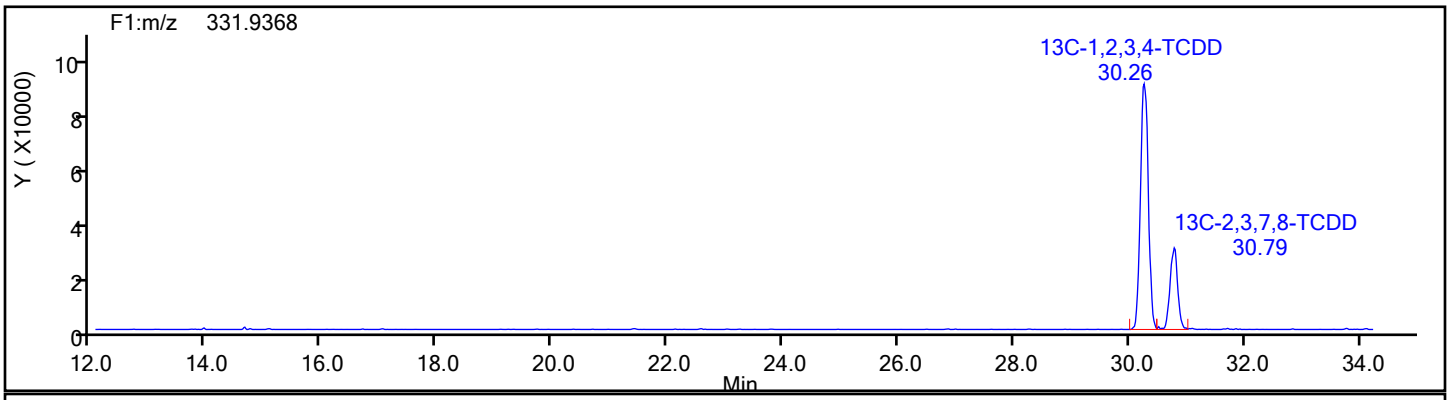
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

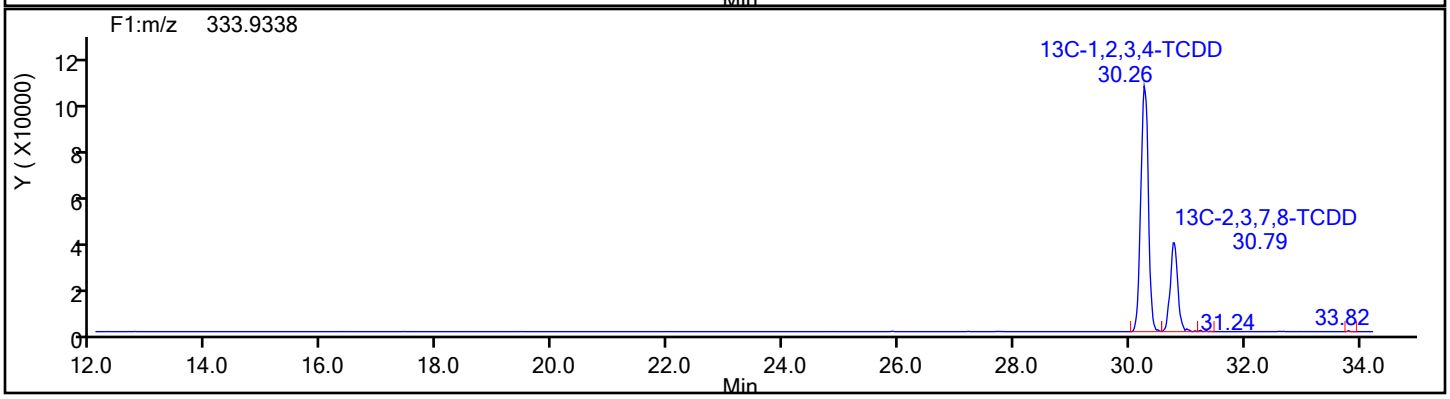
TCDD





TCDD Standards



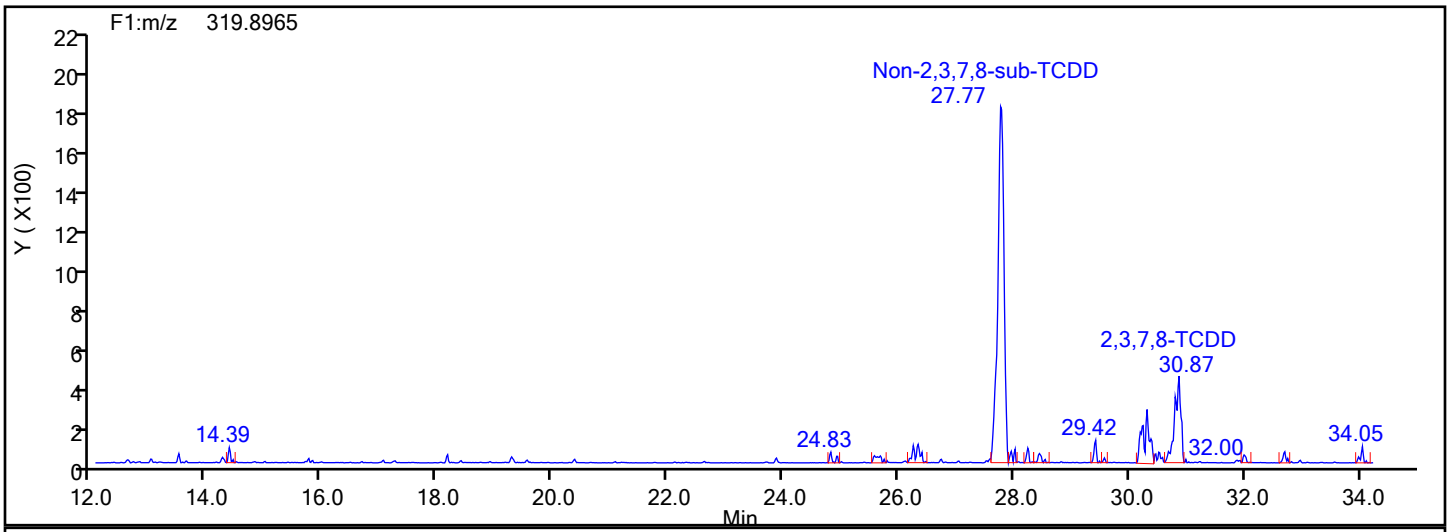


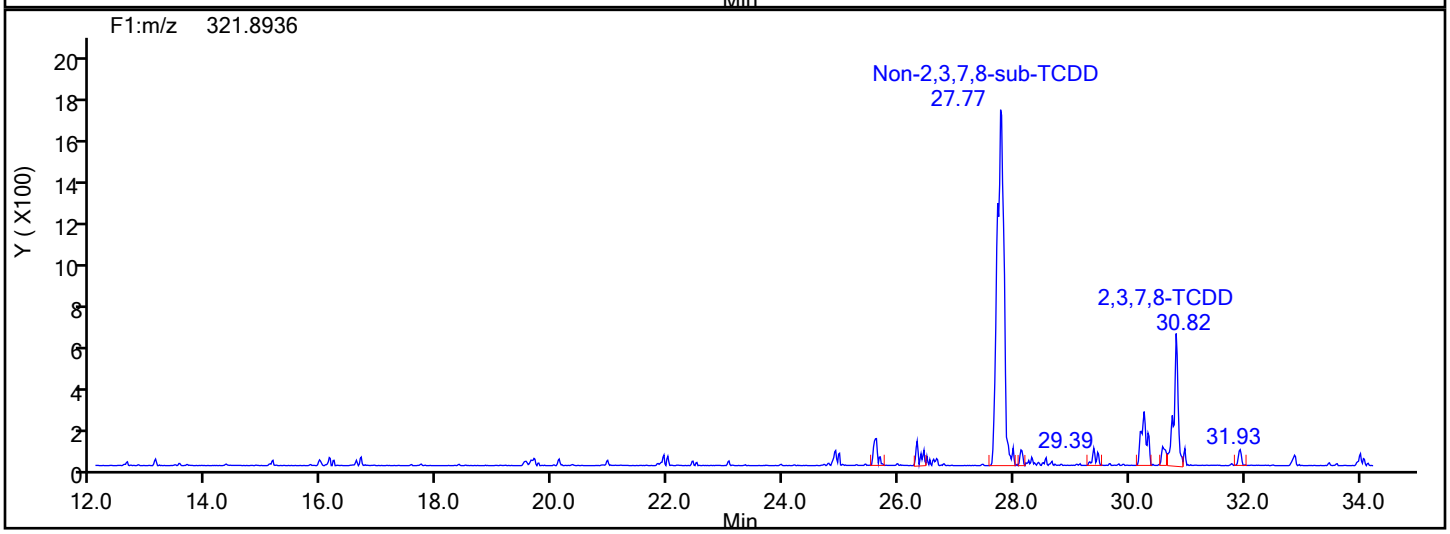
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

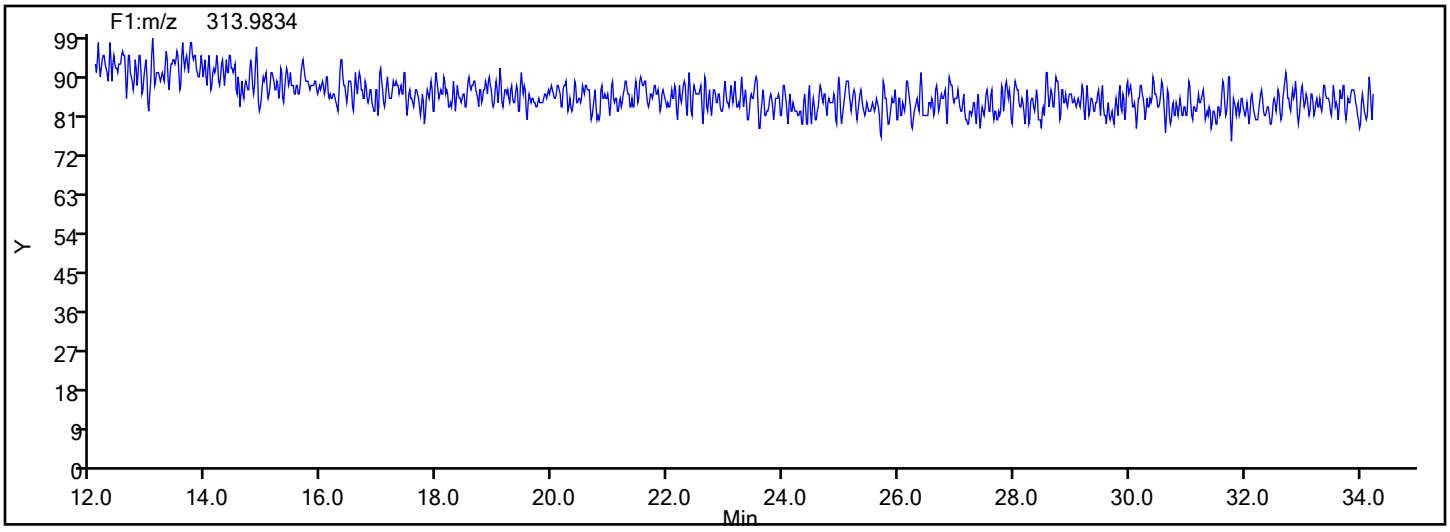
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

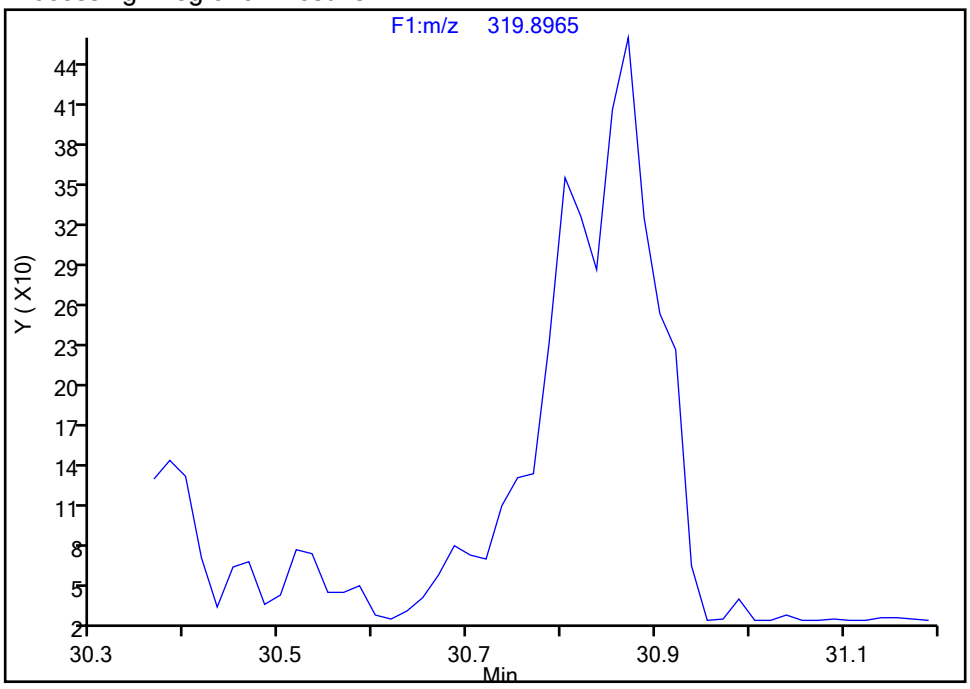
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

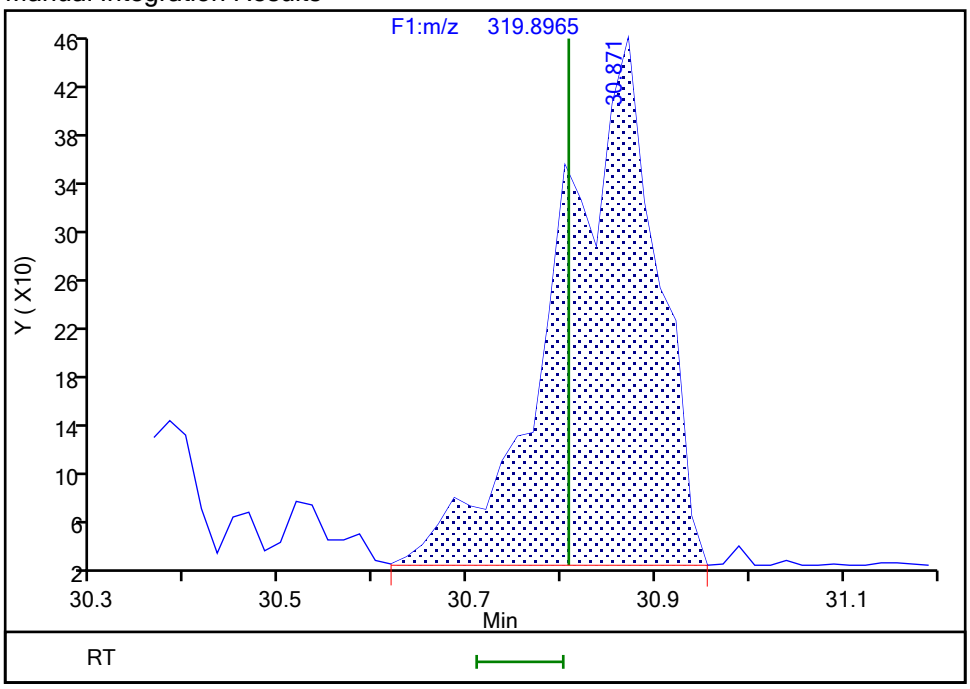
Not Detected
Expected RT: 30.81

Processing Integration Results



Manual Integration Results

RT: 30.87
Area: 3247
Amount: 0.445921
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:44:20
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

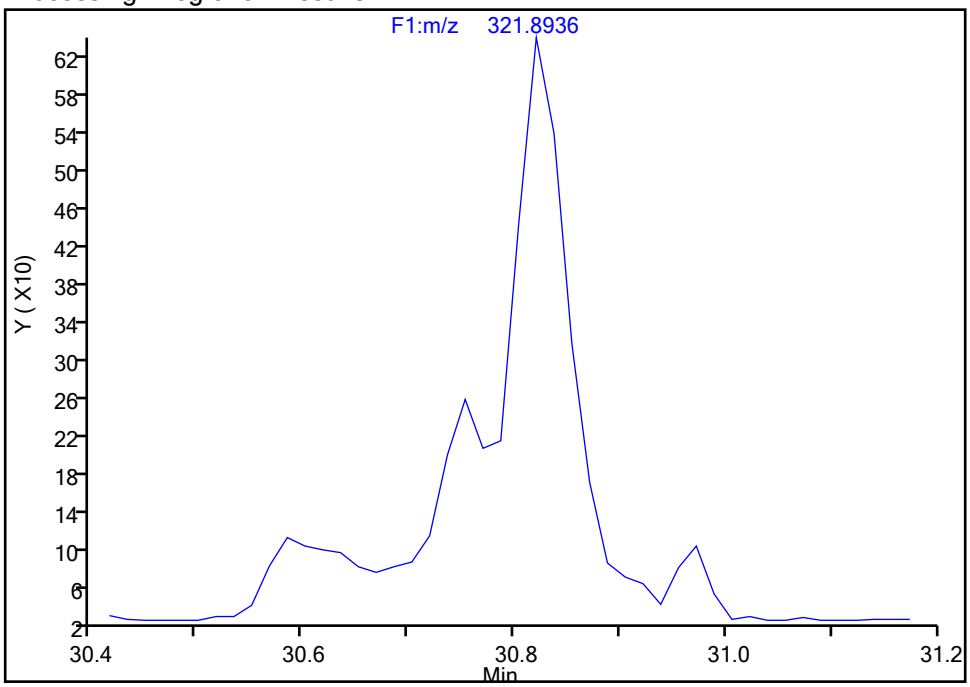
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

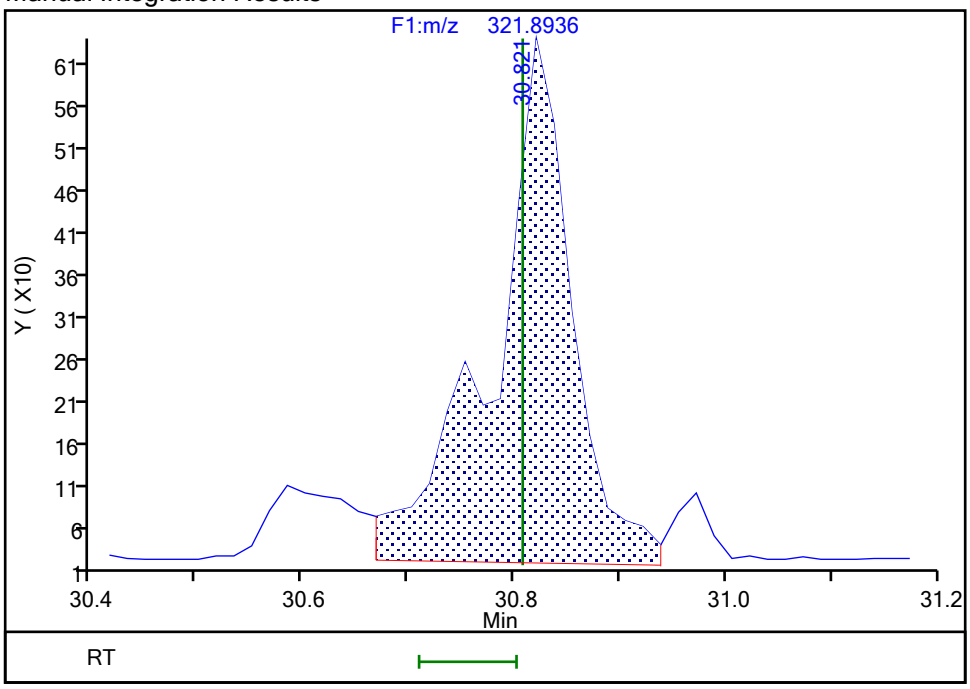
Not Detected
Expected RT: 30.81

Processing Integration Results



Manual Integration Results

RT: 30.82
Area: 3268
Amount: 0.445921
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:44:27
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

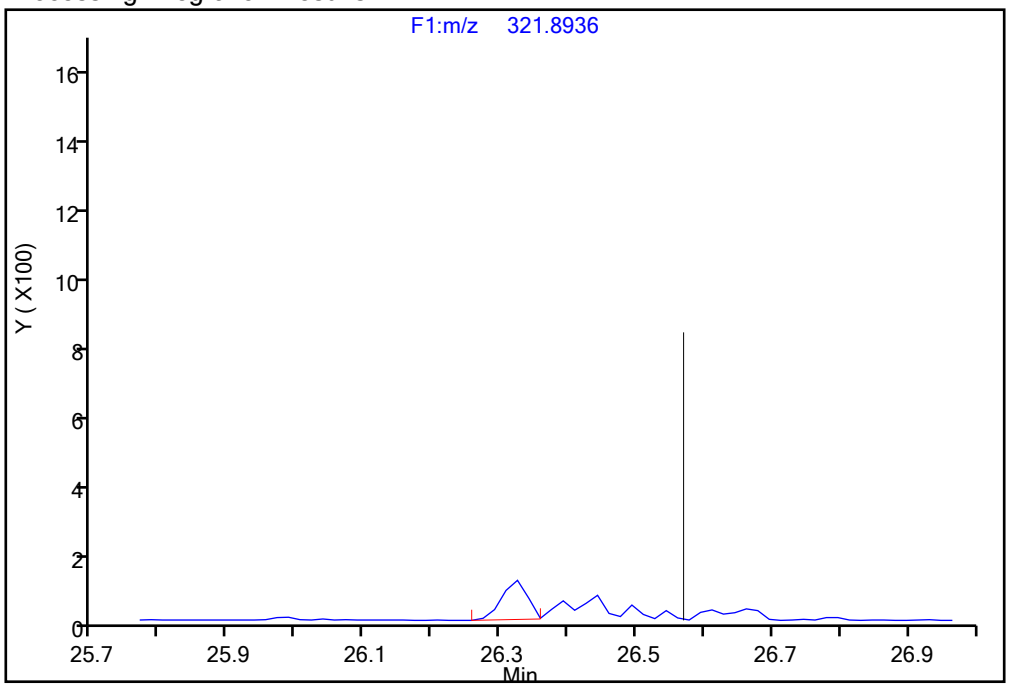
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

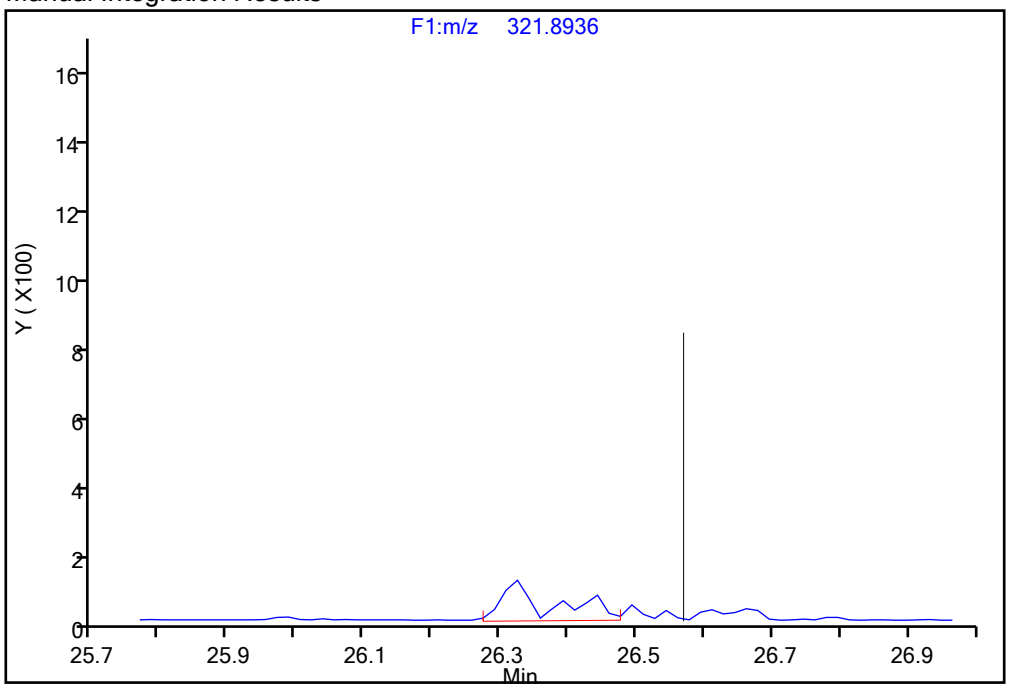
Processing Integration Results

RT = 26.325 Area = 295



Manual Integration Results

RT = 26.325 Area = 591 M



Reviewer: davidsonm, 18-Dec-2019 08:44:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

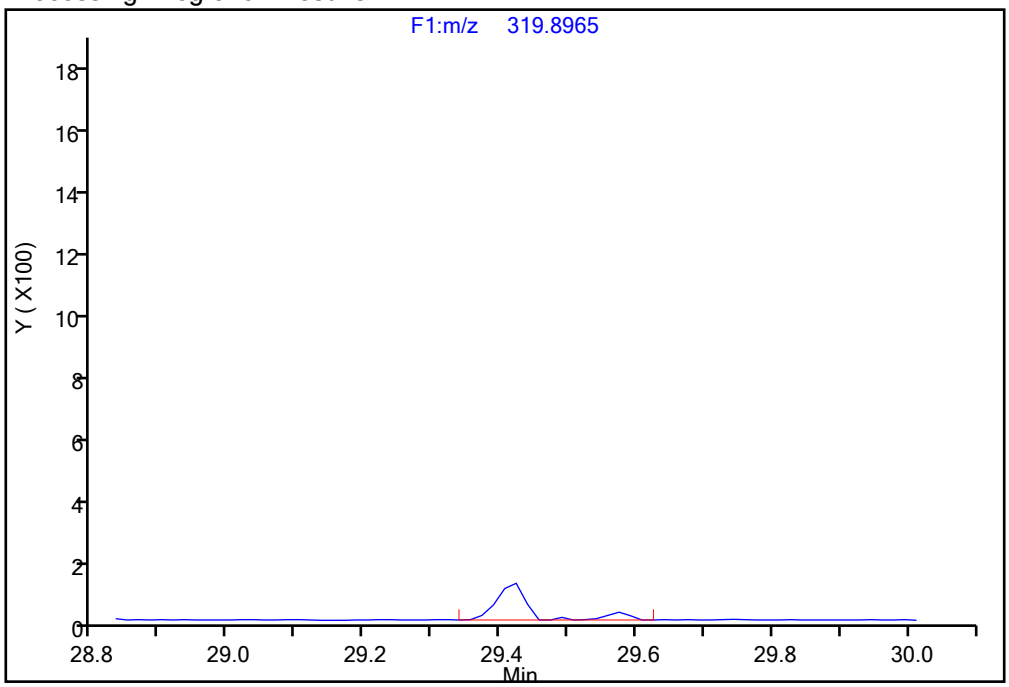
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

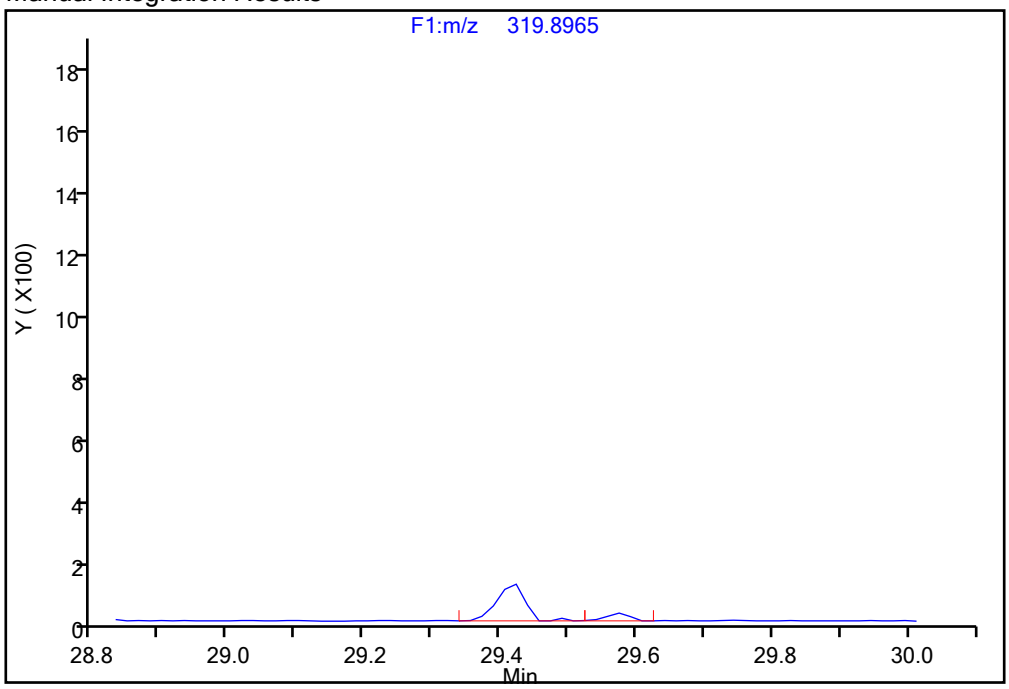
Processing Integration Results

RT = 29.423 Area = 386



Manual Integration Results

RT = 29.423 Area = 330 M



Reviewer: davidsonm, 18-Dec-2019 08:45:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

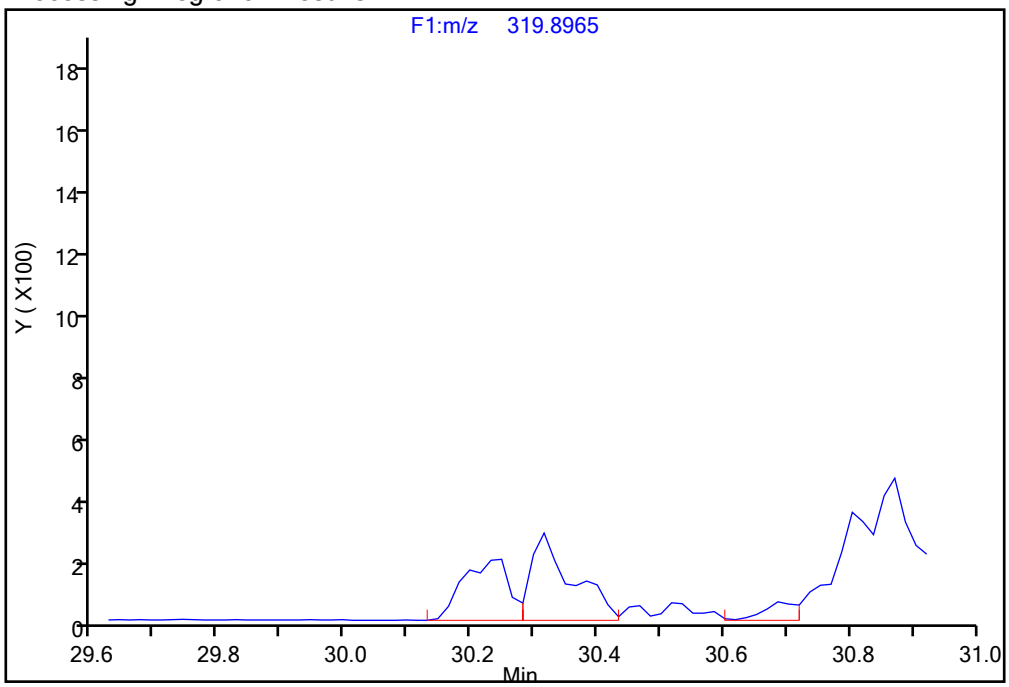
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

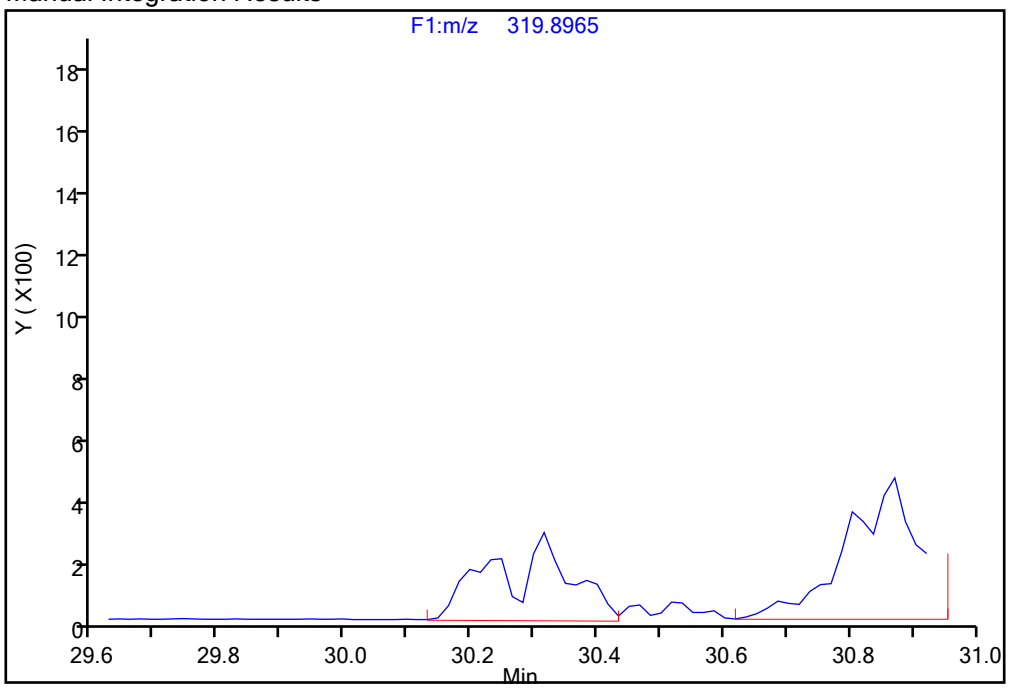
Processing Integration Results

RT = 30.315 Area = 1197



Manual Integration Results

RT = 30.315 Area = 2208 M



Reviewer: davidsonm, 18-Dec-2019 08:45:42

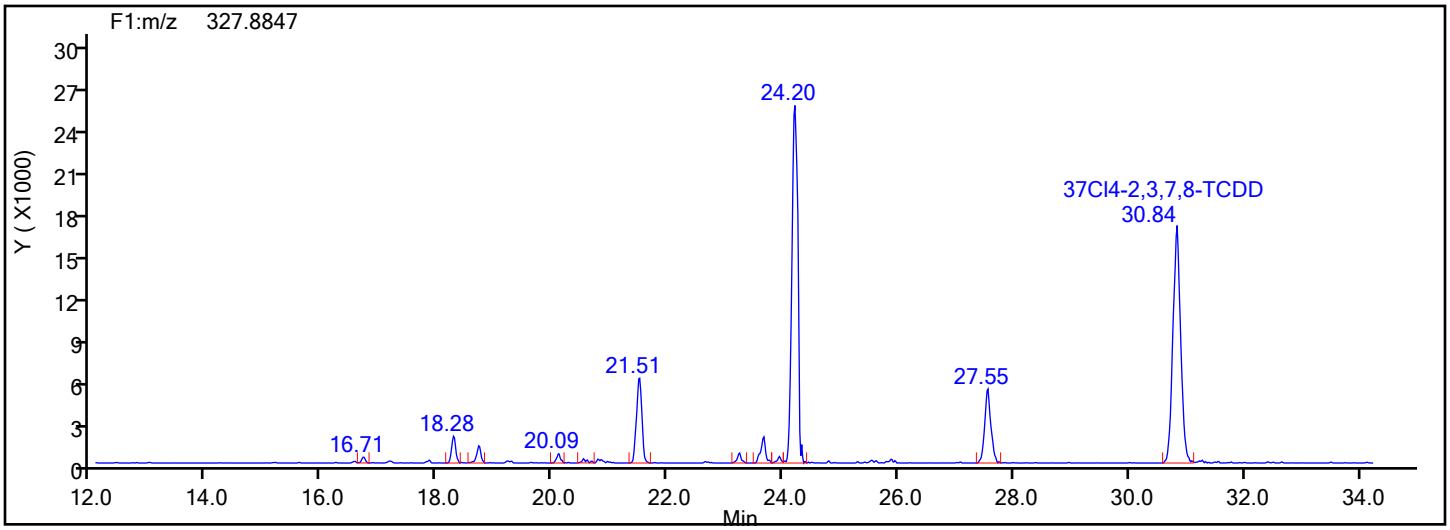
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

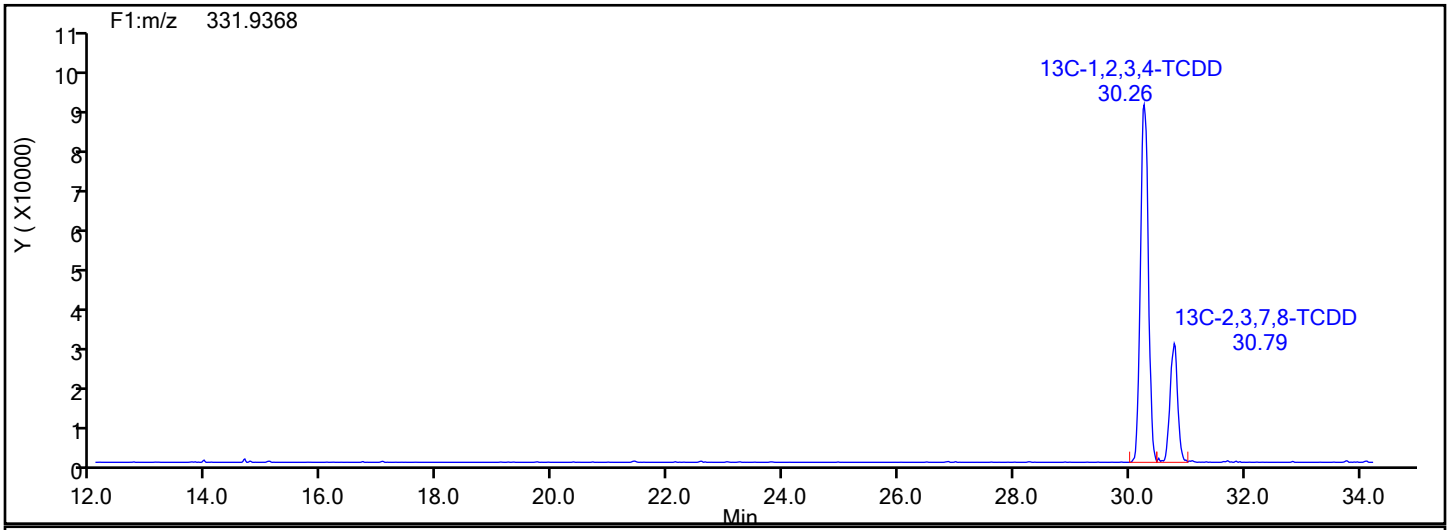
Eurofins TestAmerica, Knoxville

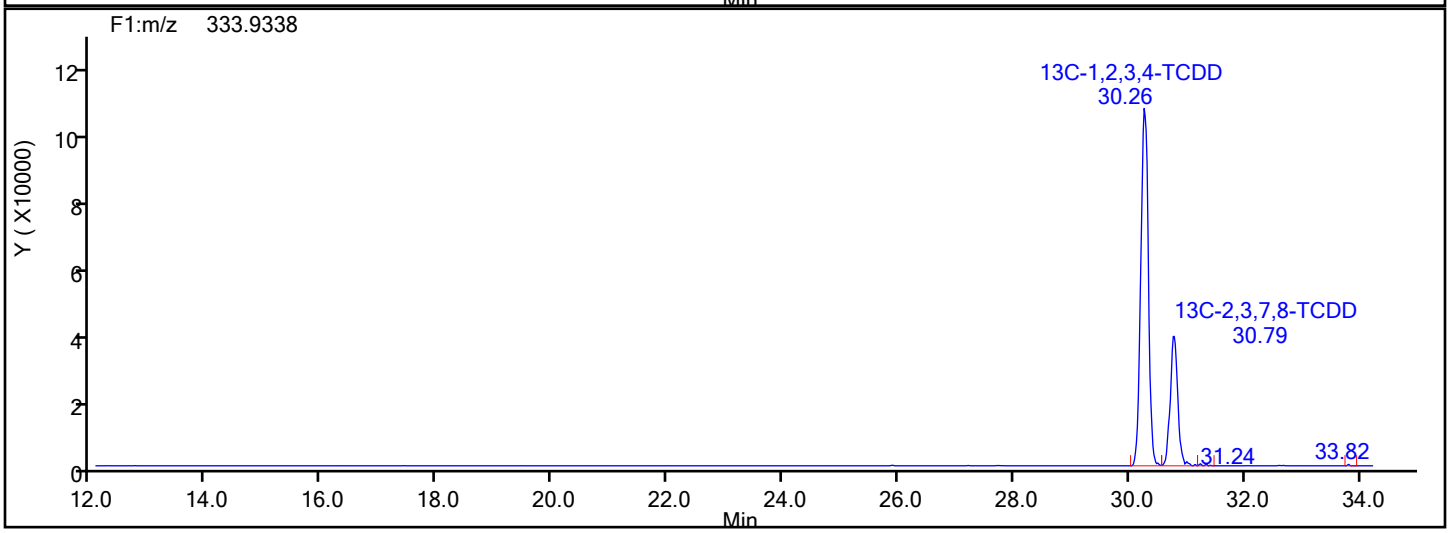
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



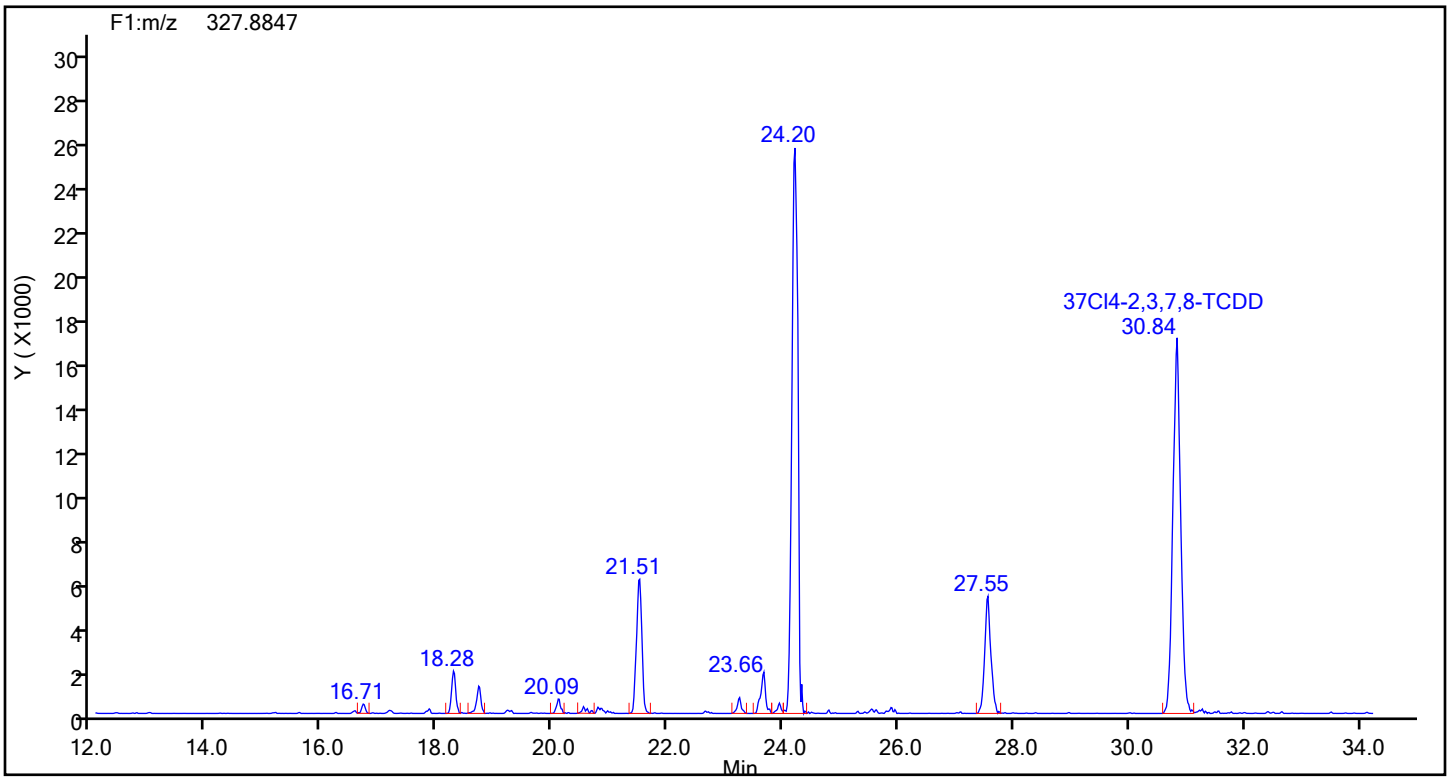


Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

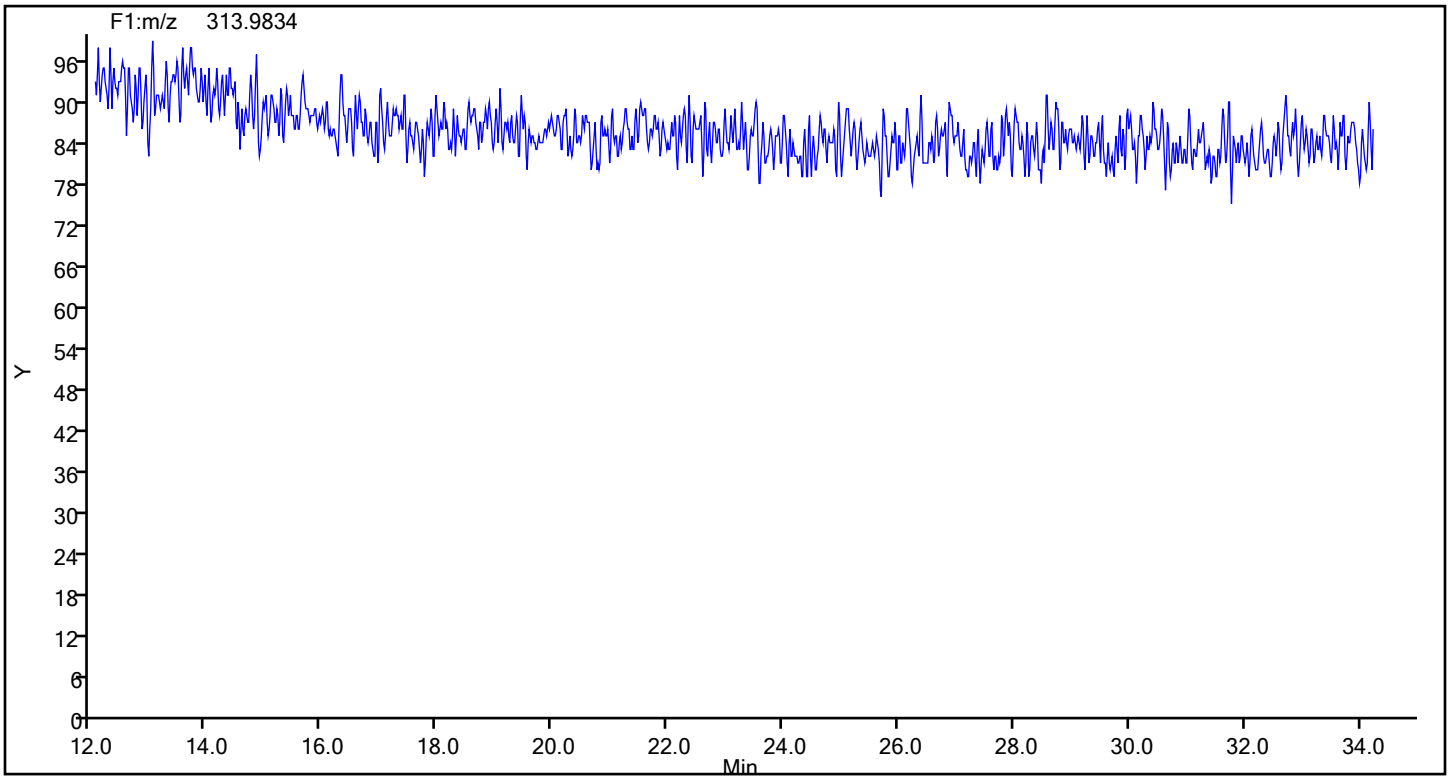
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

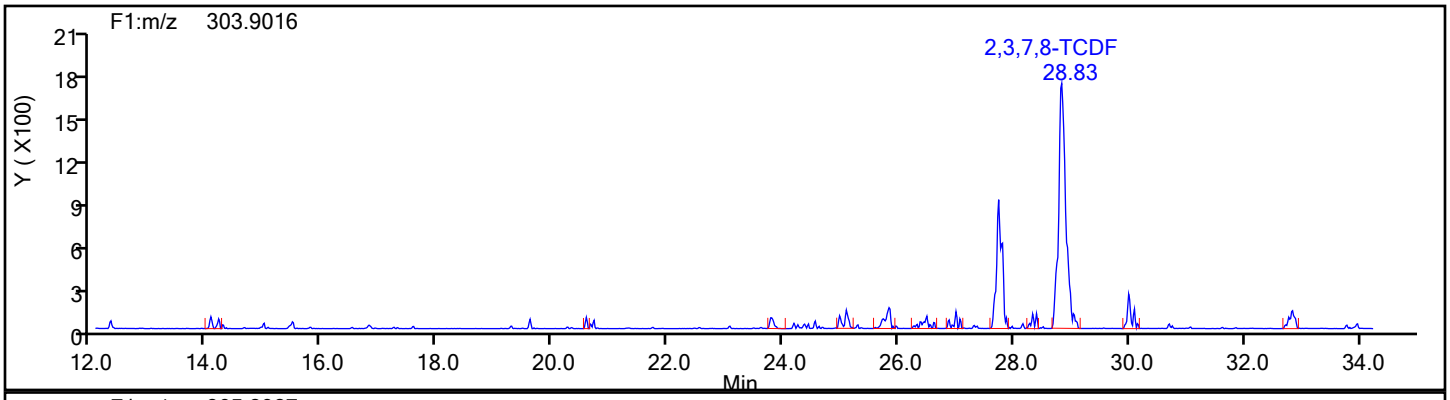


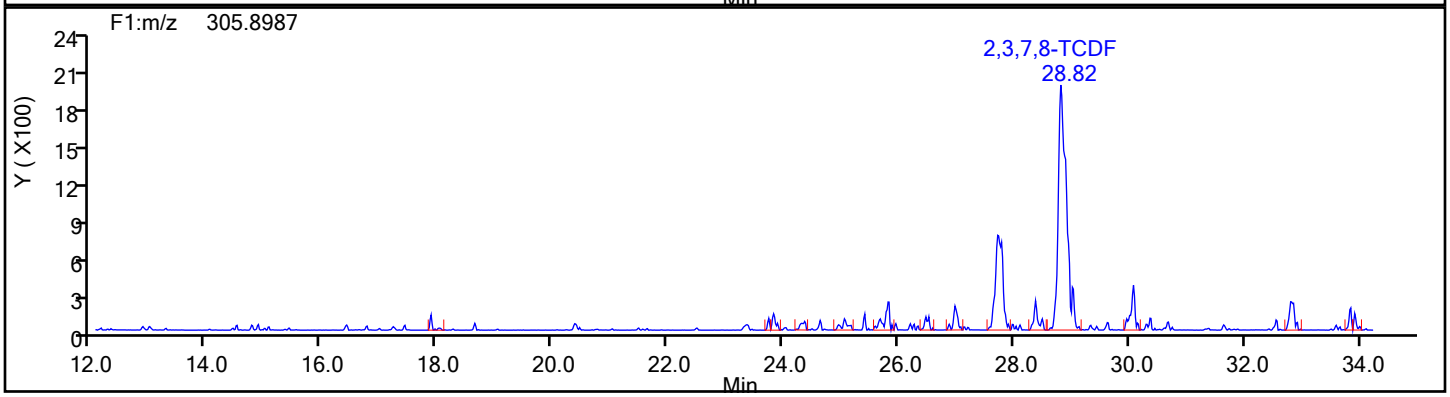
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

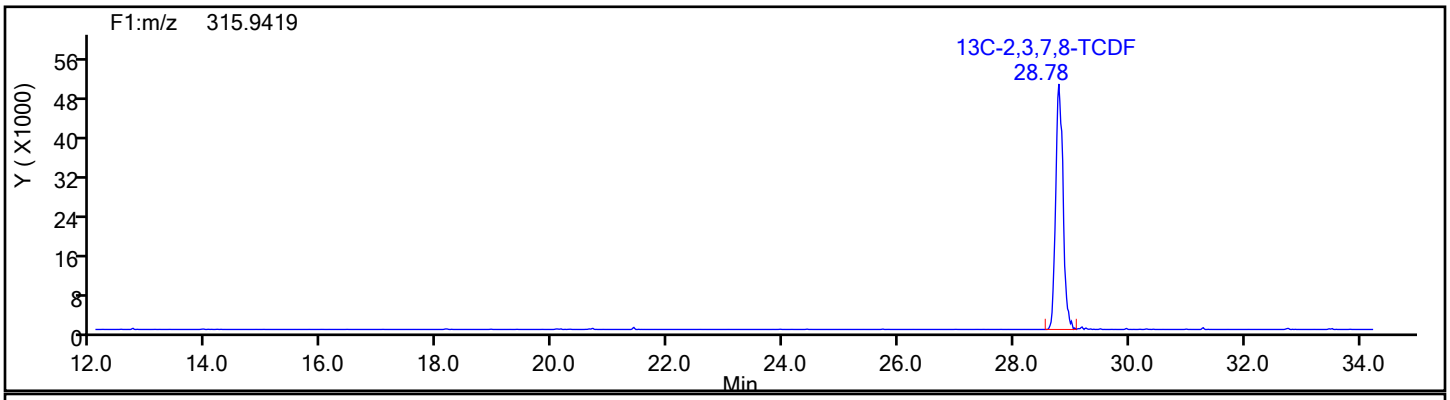
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

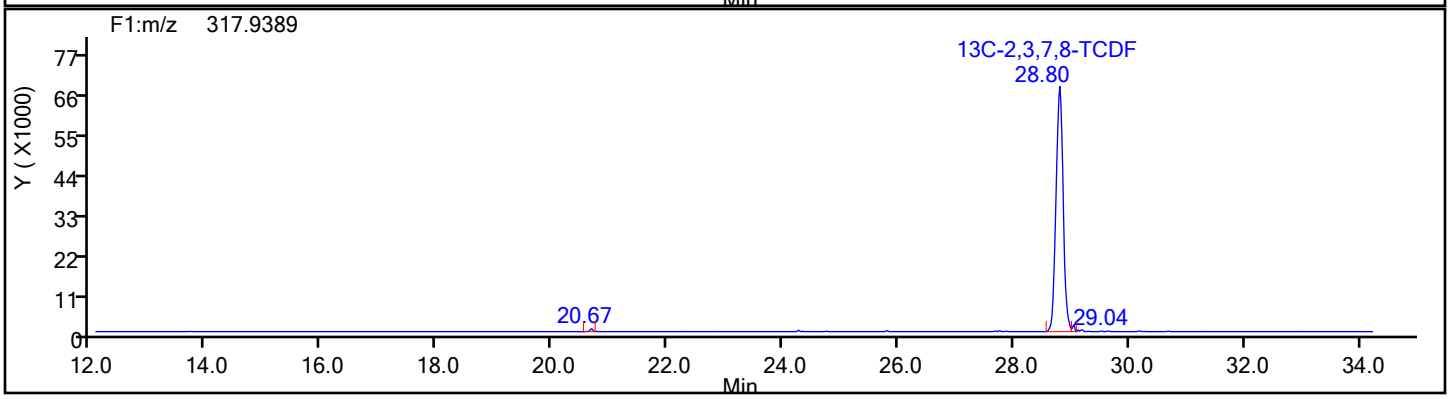
TCDF





TCDF Standards



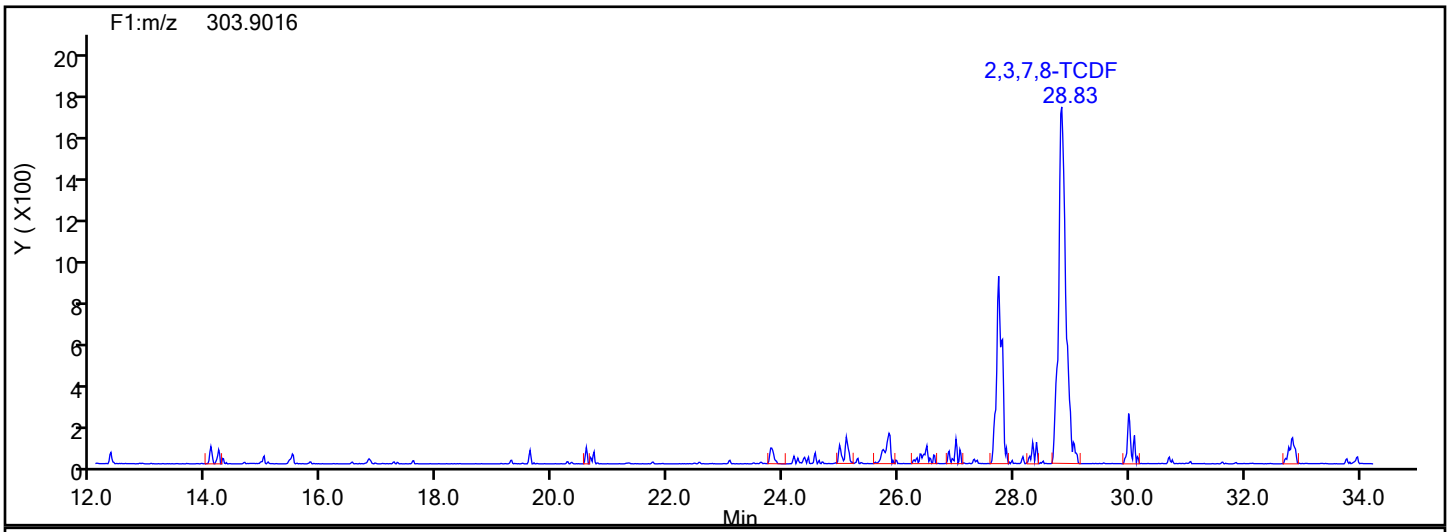


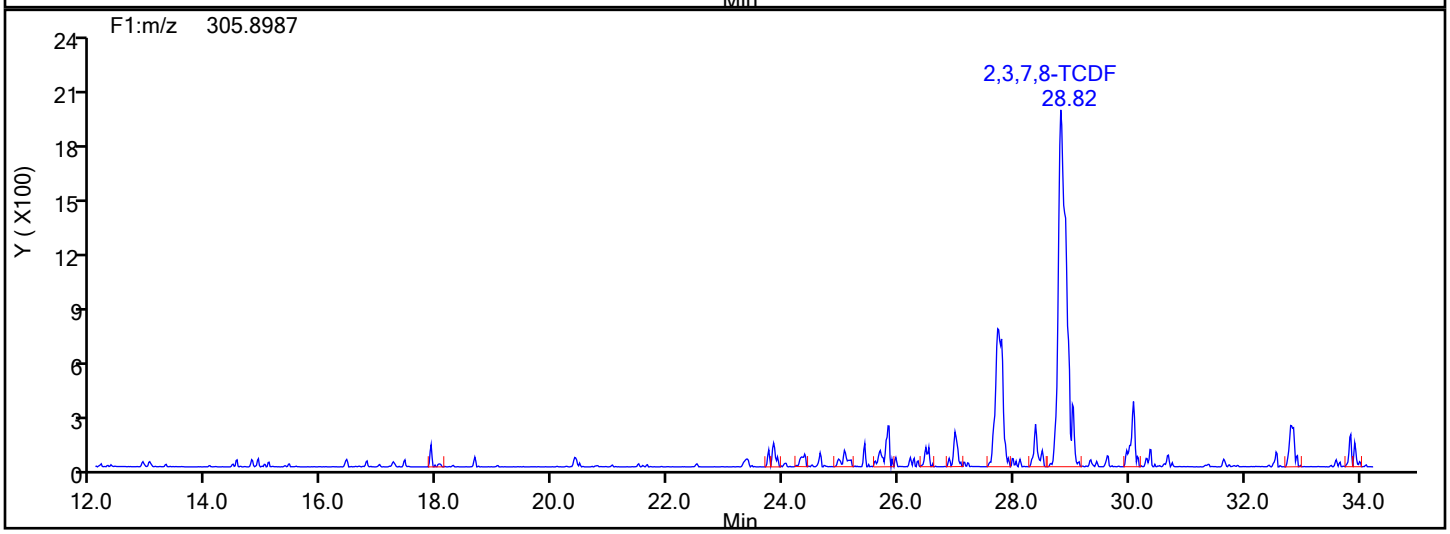
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

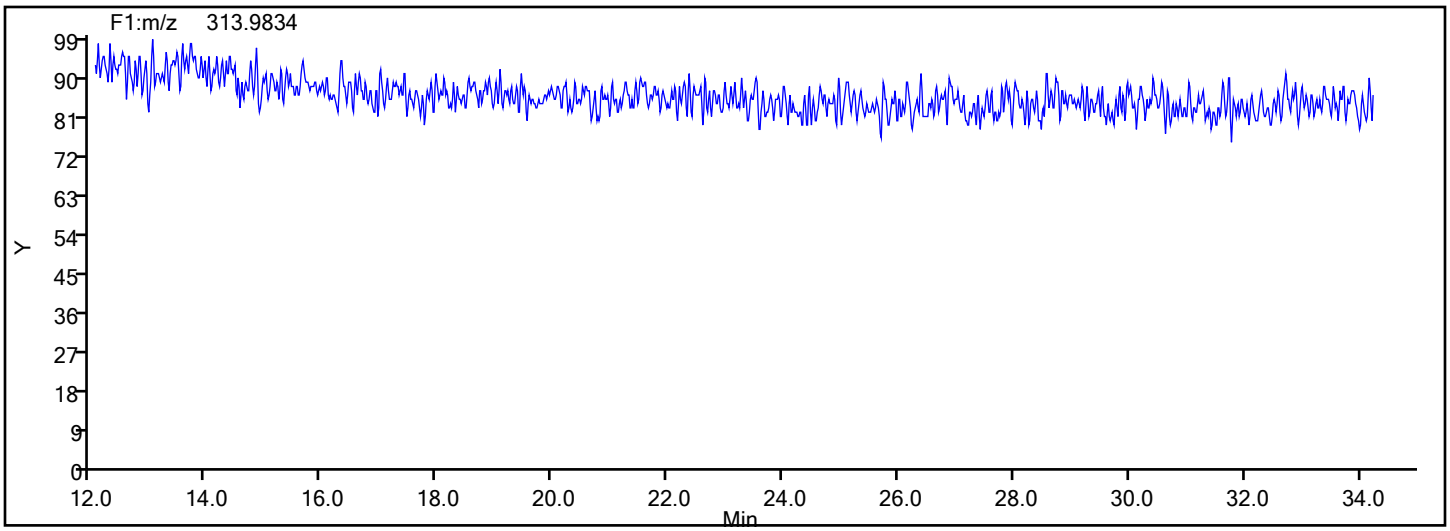
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

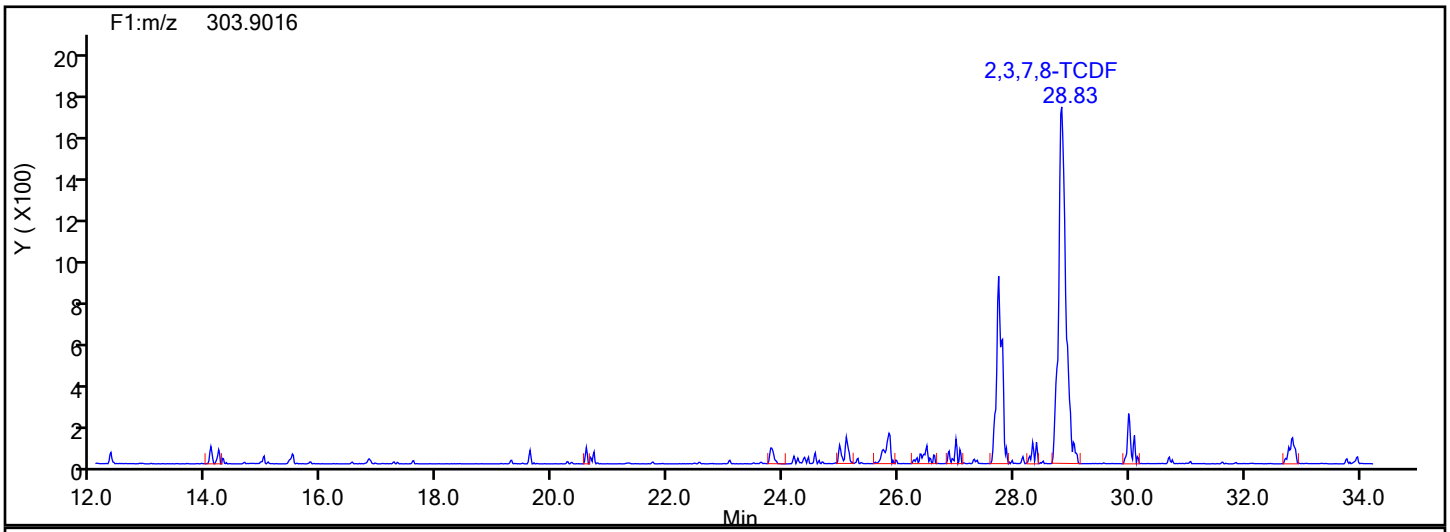


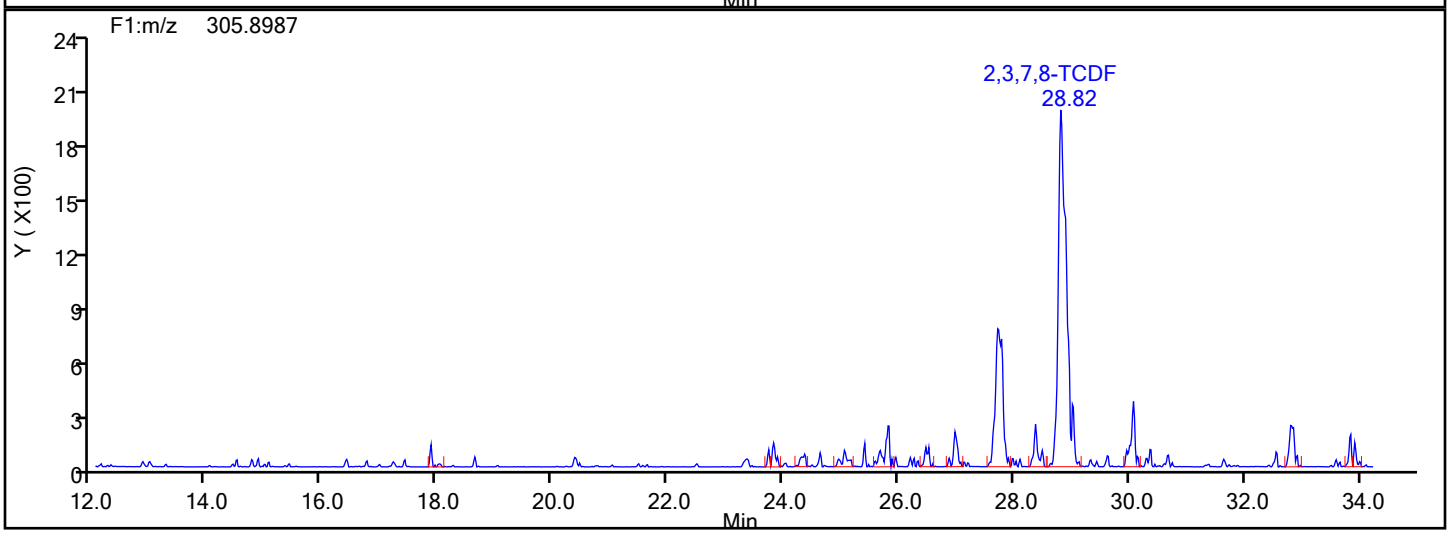
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

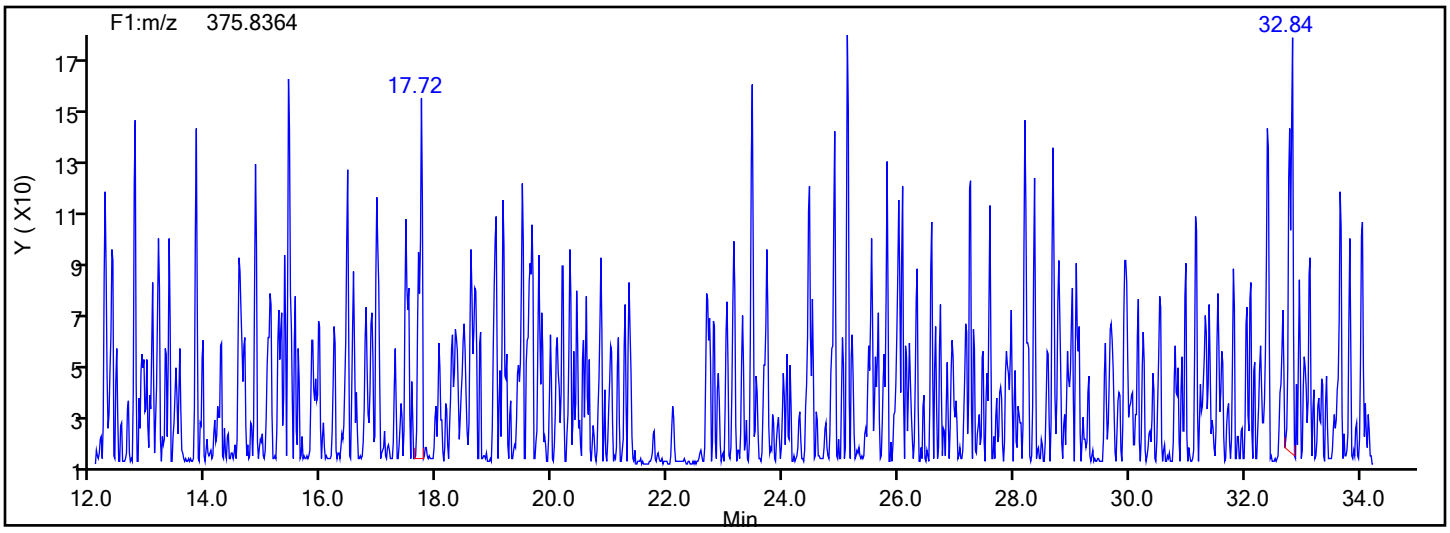
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

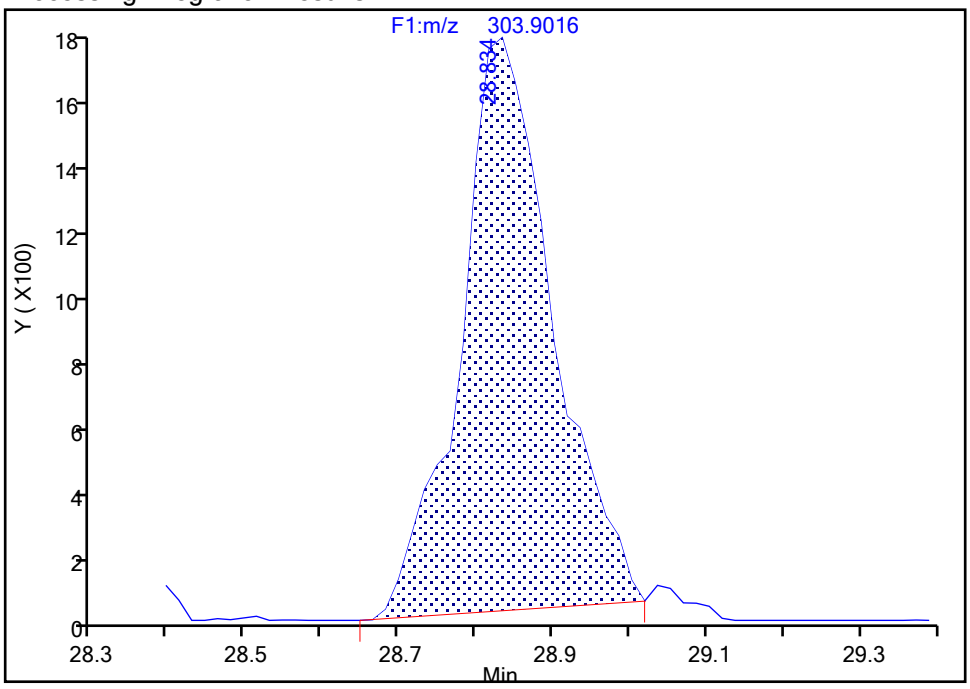
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

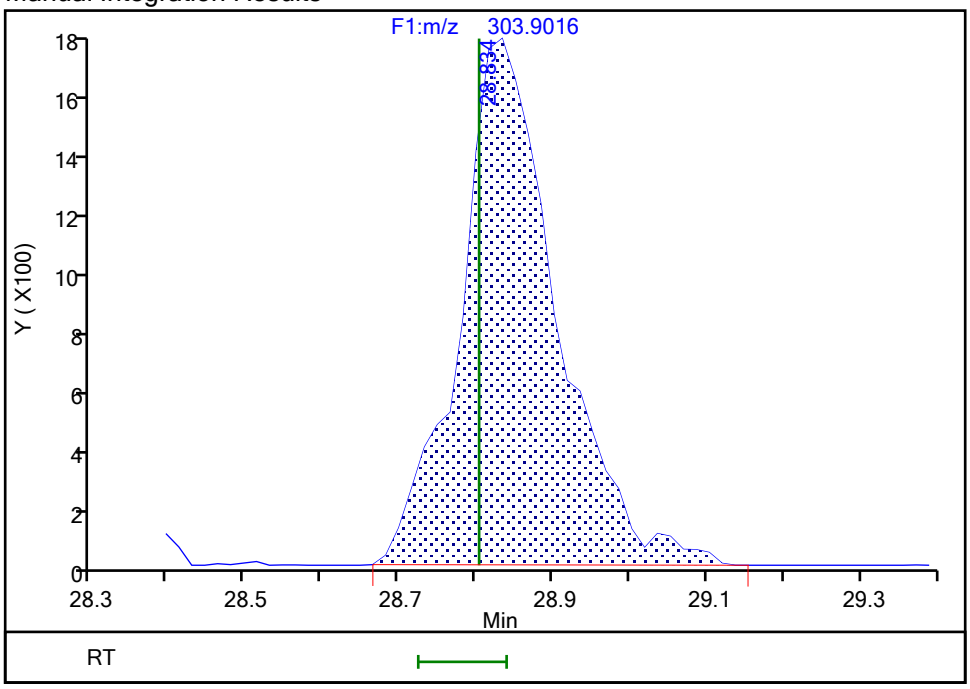
Processing Integration Results

RT: 28.83
Area: 13953
Amount: 1.358187
Amount Units: pg/ul



Manual Integration Results

RT: 28.83
Area: 14919
Amount: 1.527798
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:34:29

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

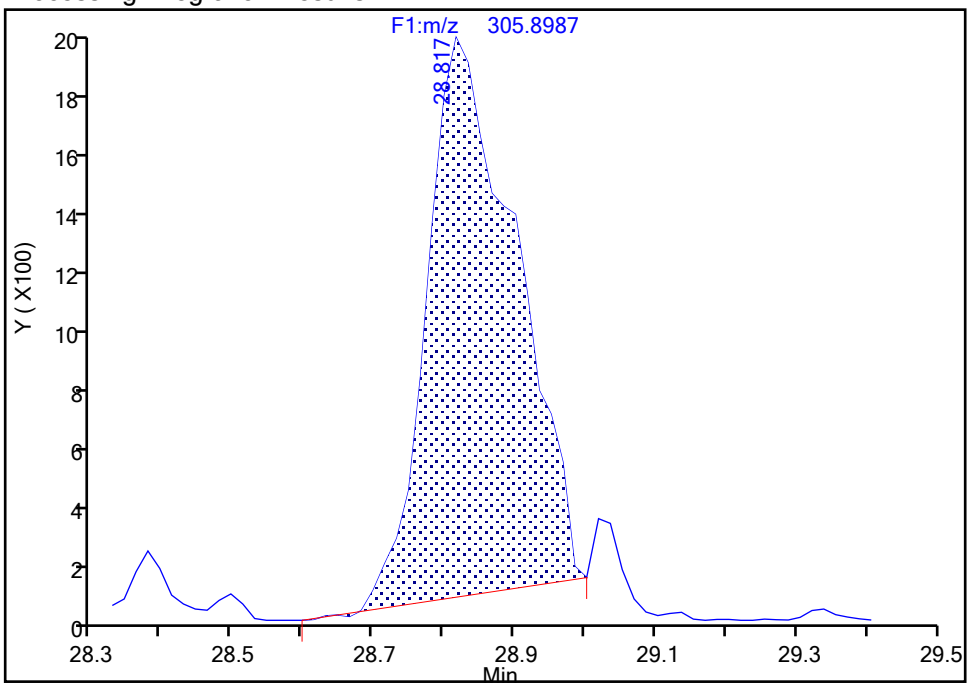
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

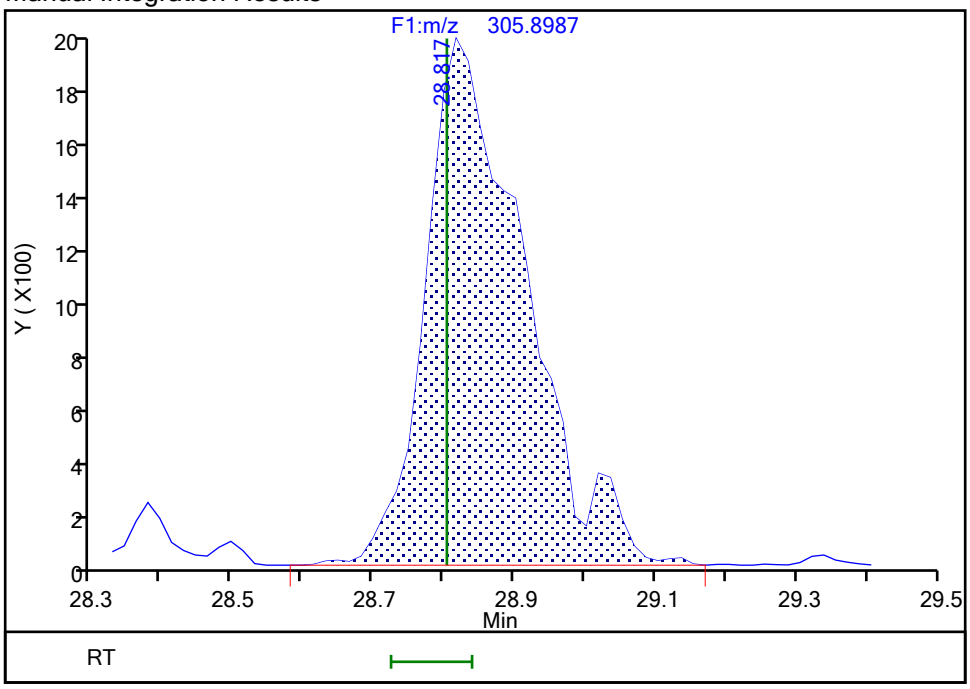
Processing Integration Results

RT: 28.82
Area: 16524
Amount: 1.358187
Amount Units: pg/ul



Manual Integration Results

RT: 28.82
Area: 19364
Amount: 1.527798
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 07:34:33

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

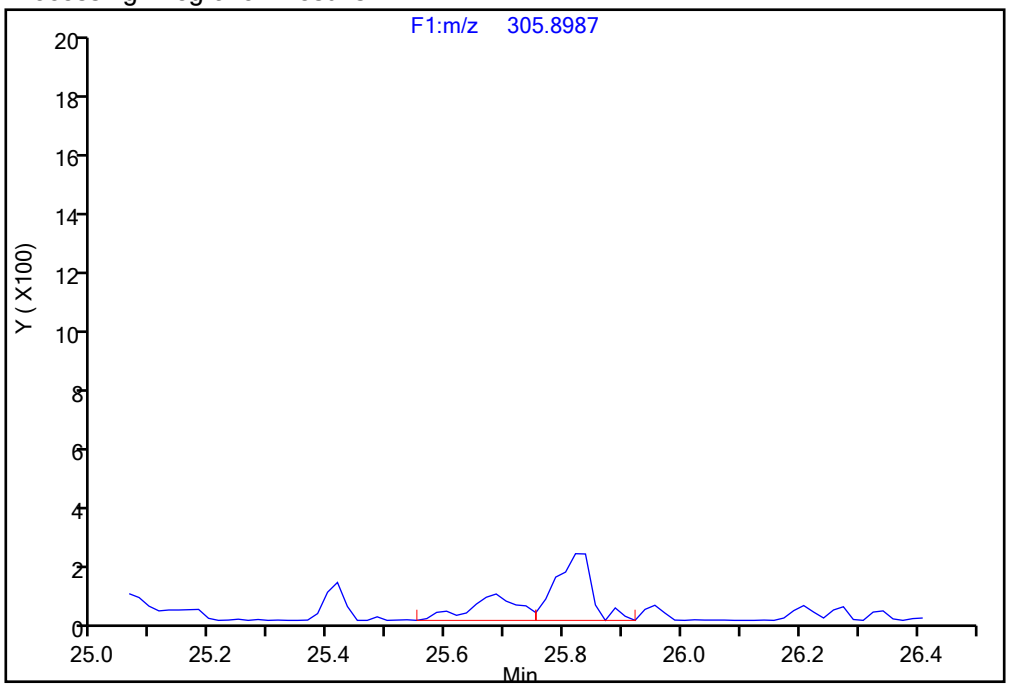
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

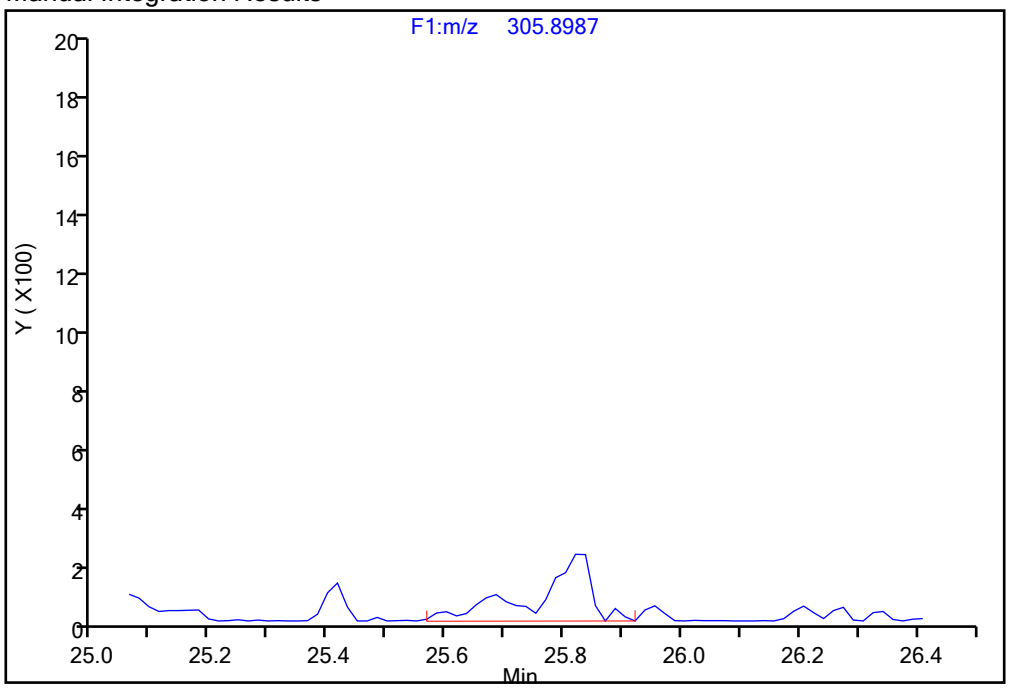
Processing Integration Results

RT = 25.820 Area = 961



Manual Integration Results

RT = 25.820 Area = 1481 M



Reviewer: davidsonm, 18-Dec-2019 08:46:21

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

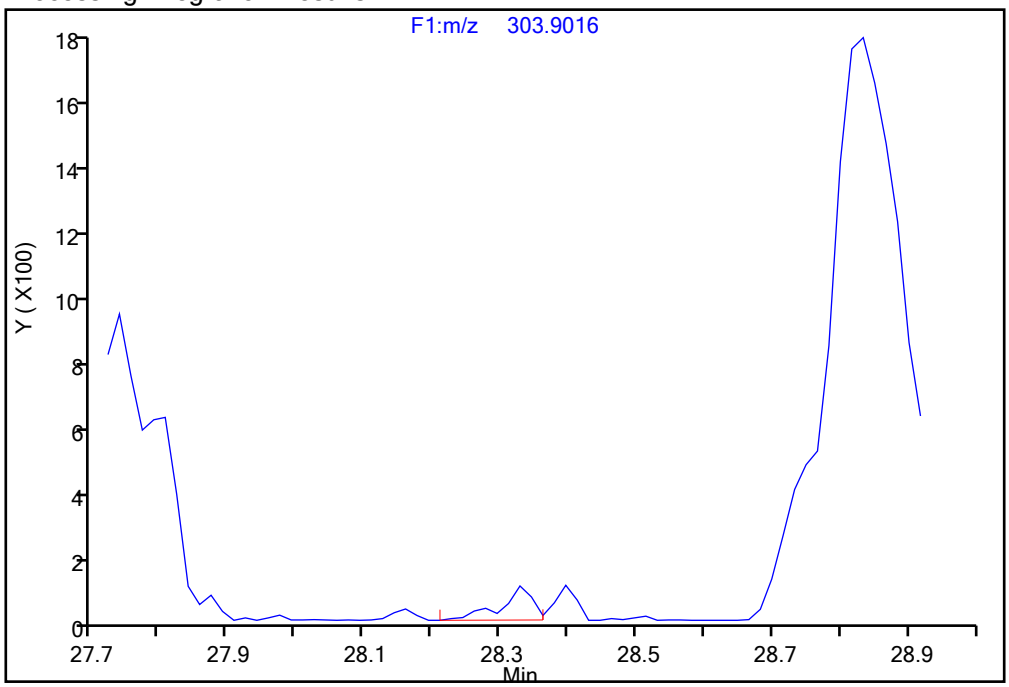
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

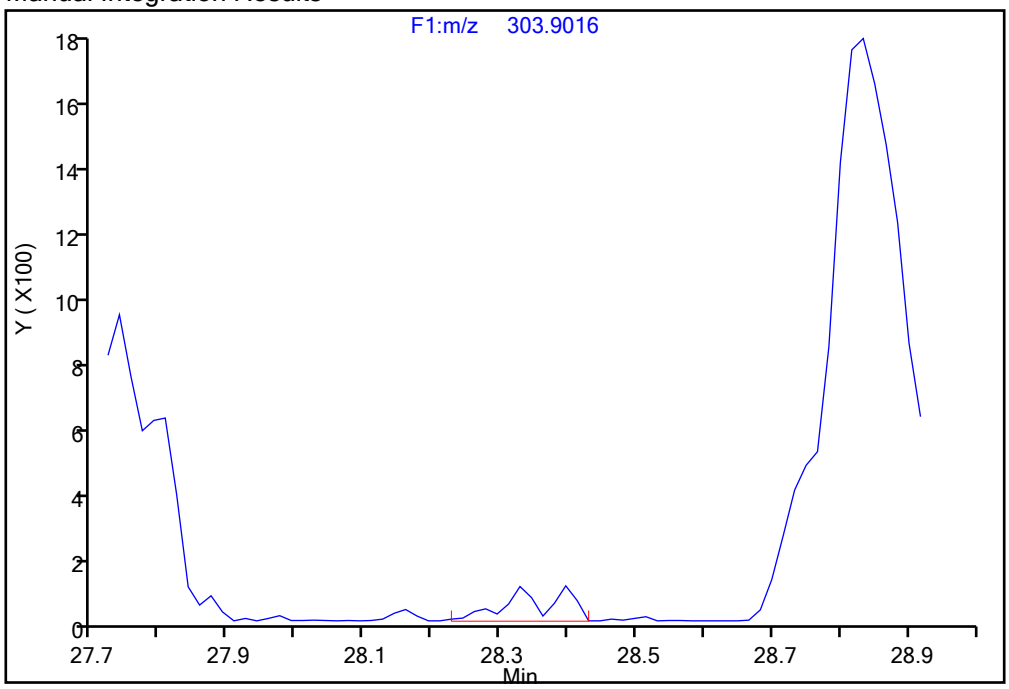
Processing Integration Results

RT = 28.329 Area = 317



Manual Integration Results

RT = 28.396 Area = 552 M



Reviewer: davidsonm, 18-Dec-2019 08:46:41

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Incomplete Integration

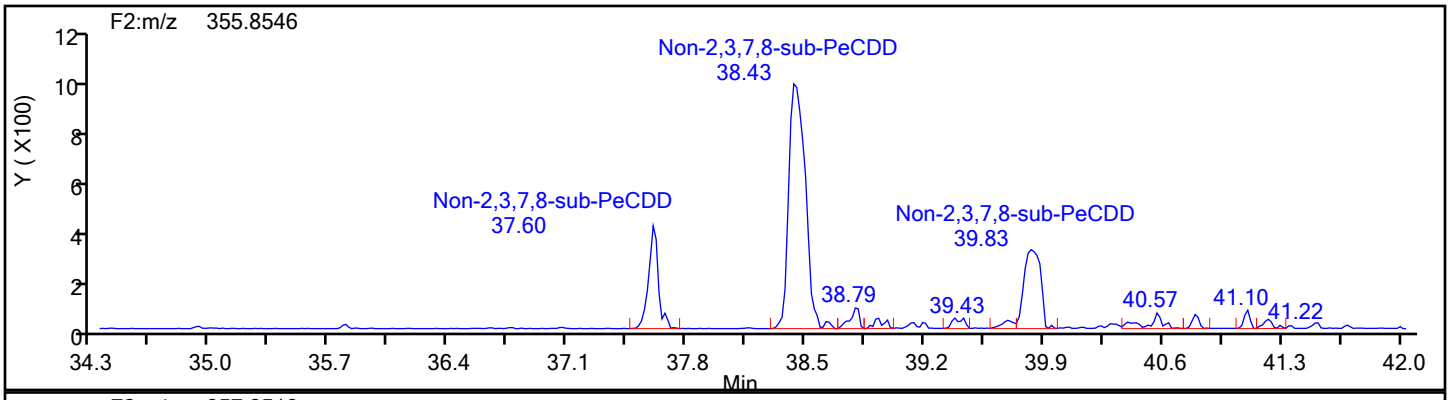
Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

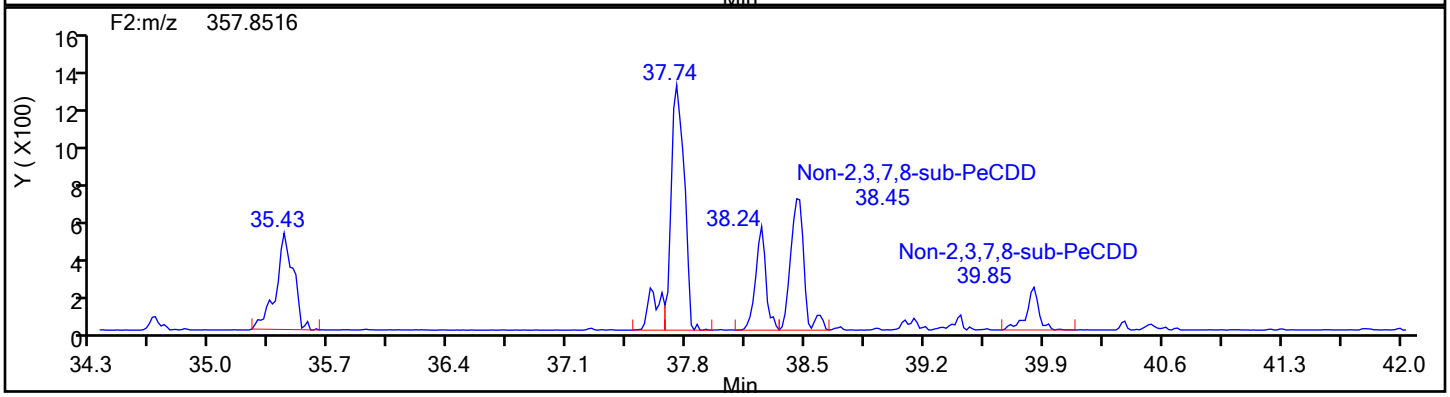
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d

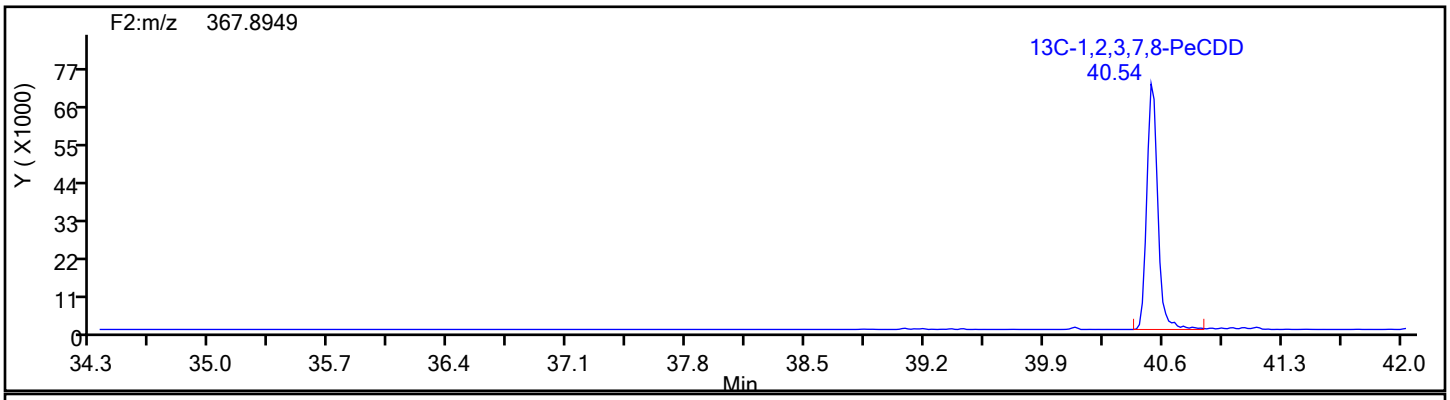
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

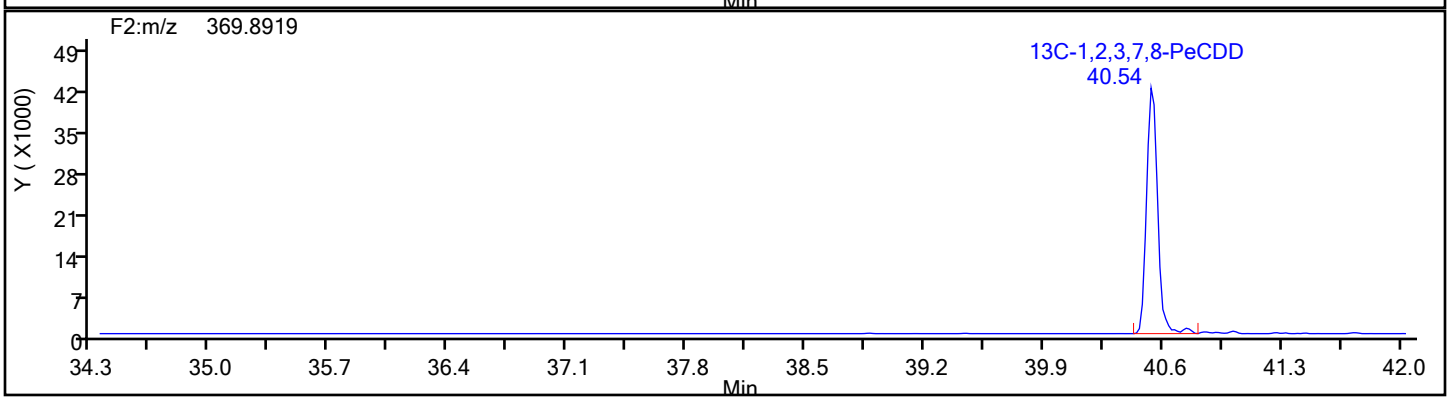
PeCDD





PeCDD Standards





Report Date: 18-Dec-2019 08:48:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
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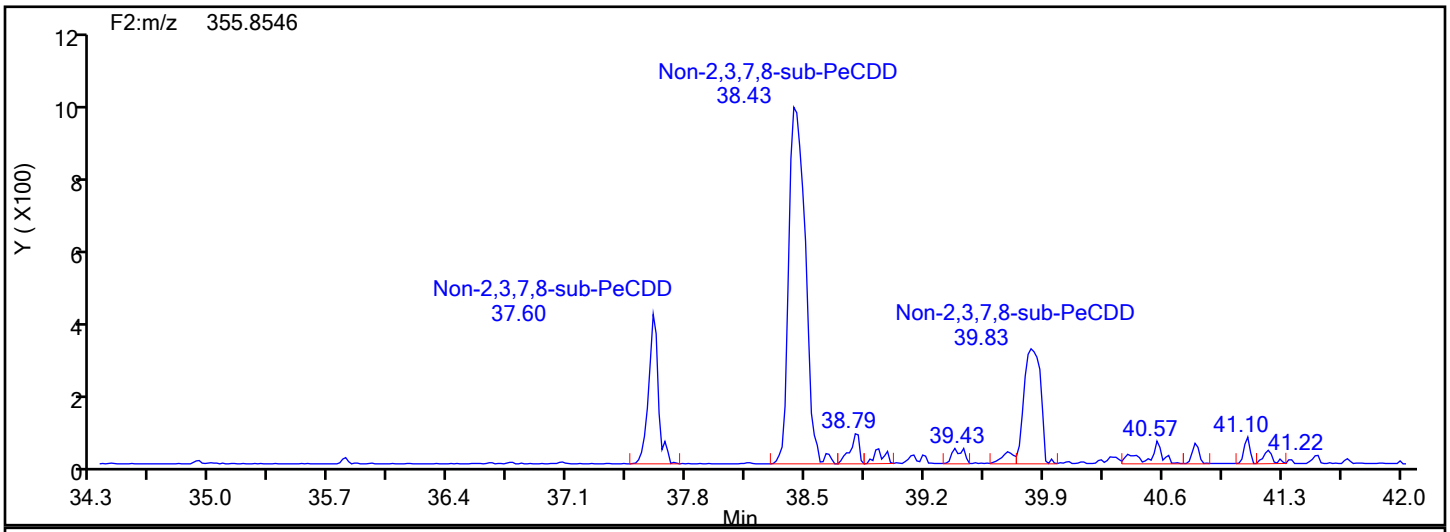
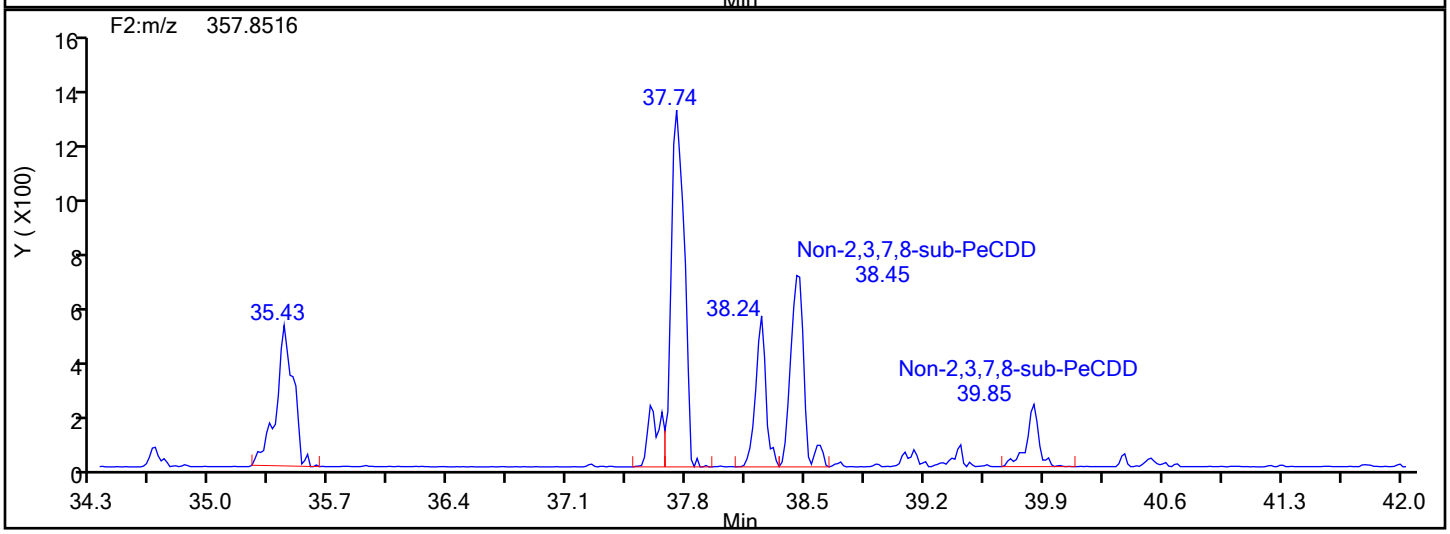
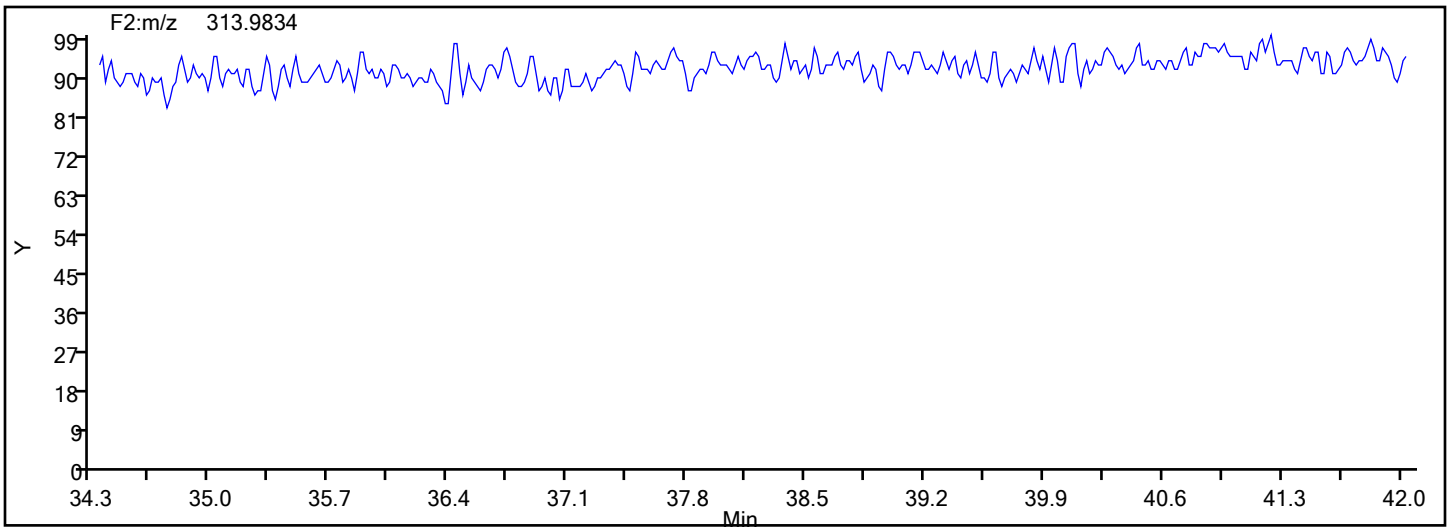
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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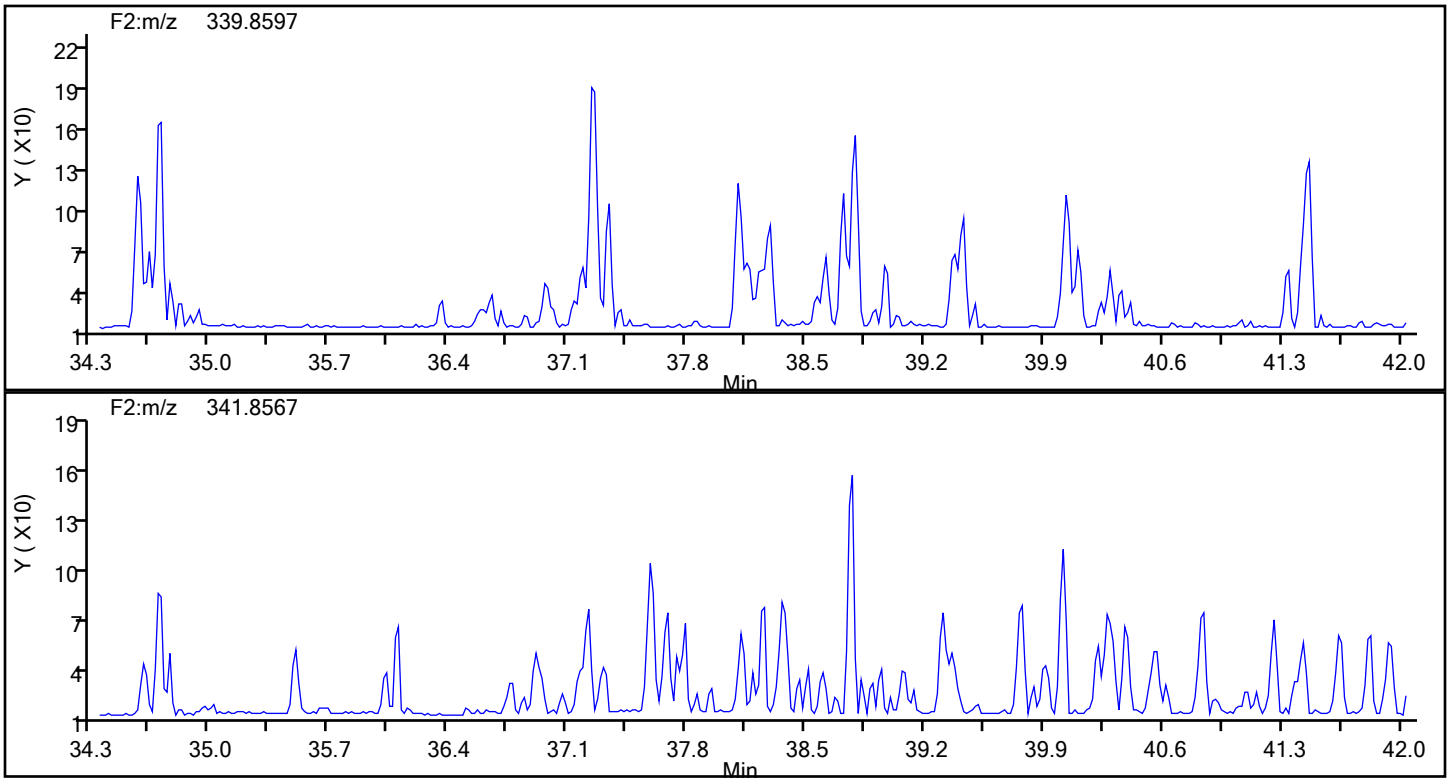
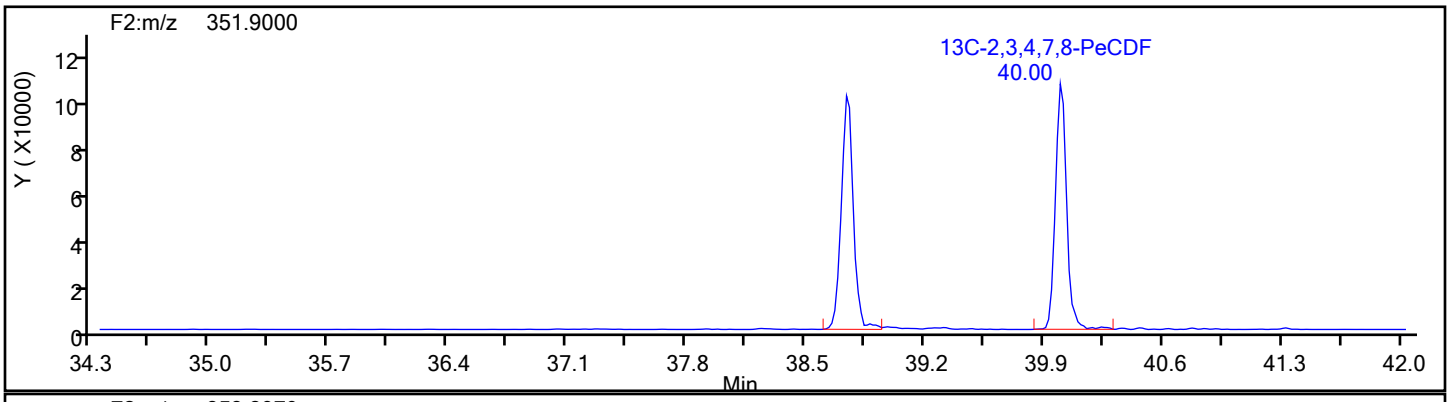
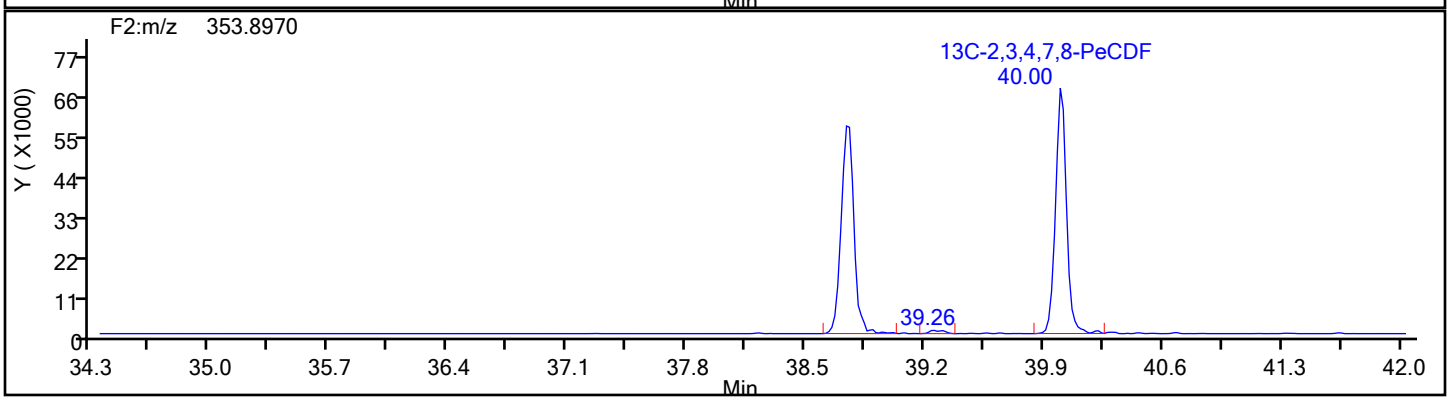
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF



PeCDF Standards





Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
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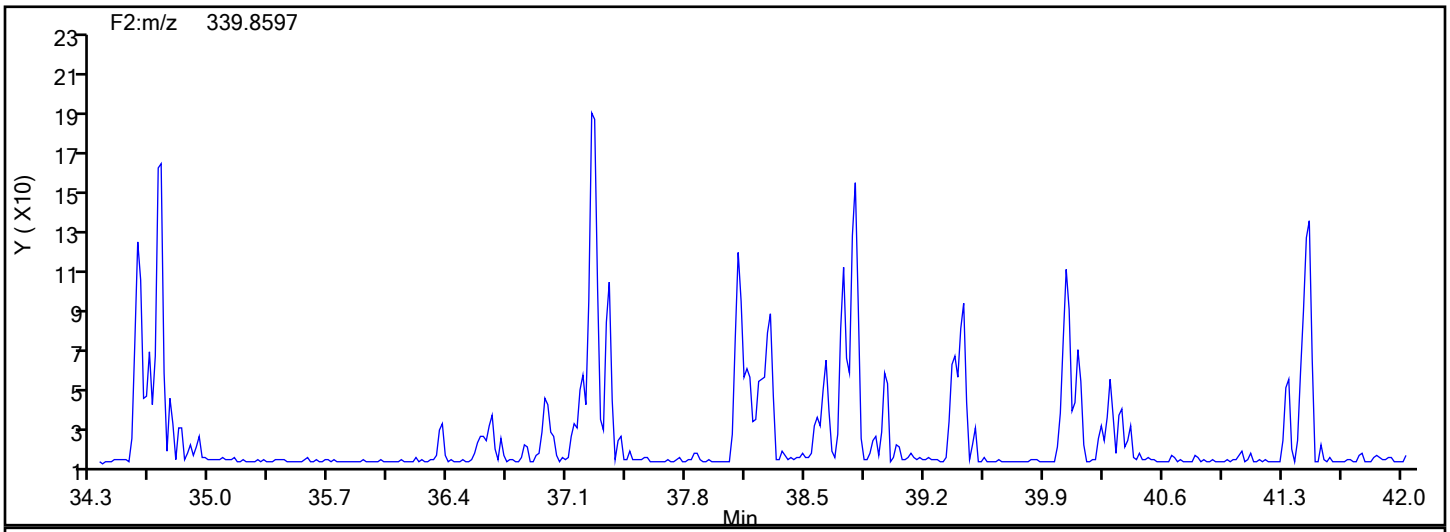
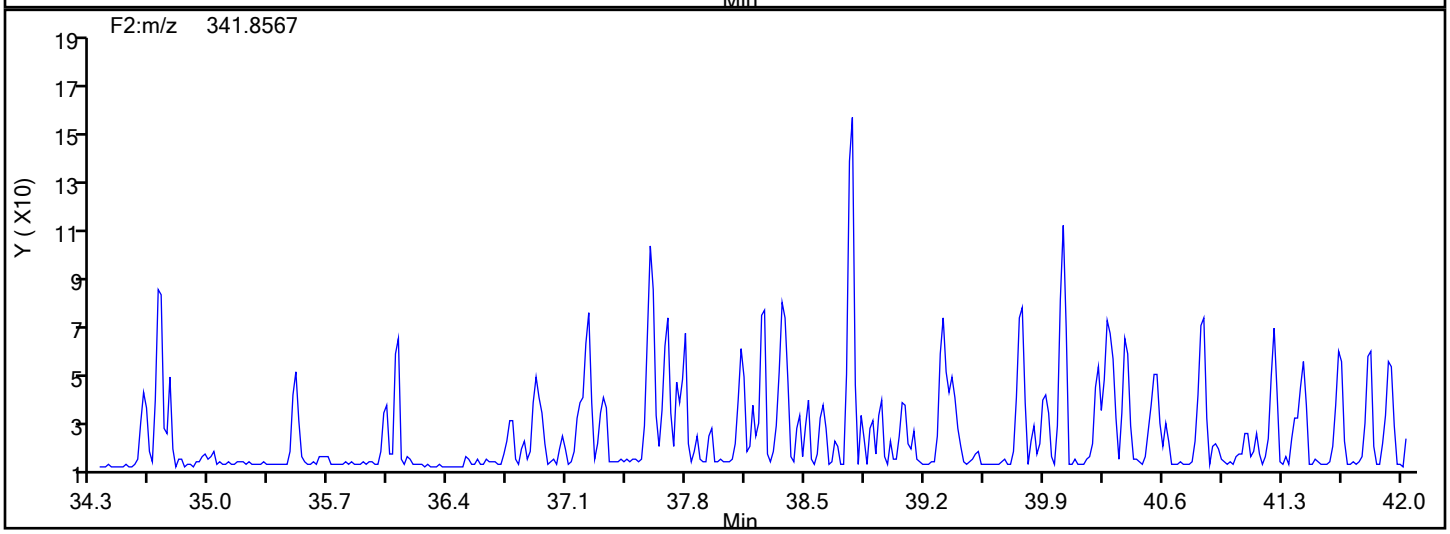
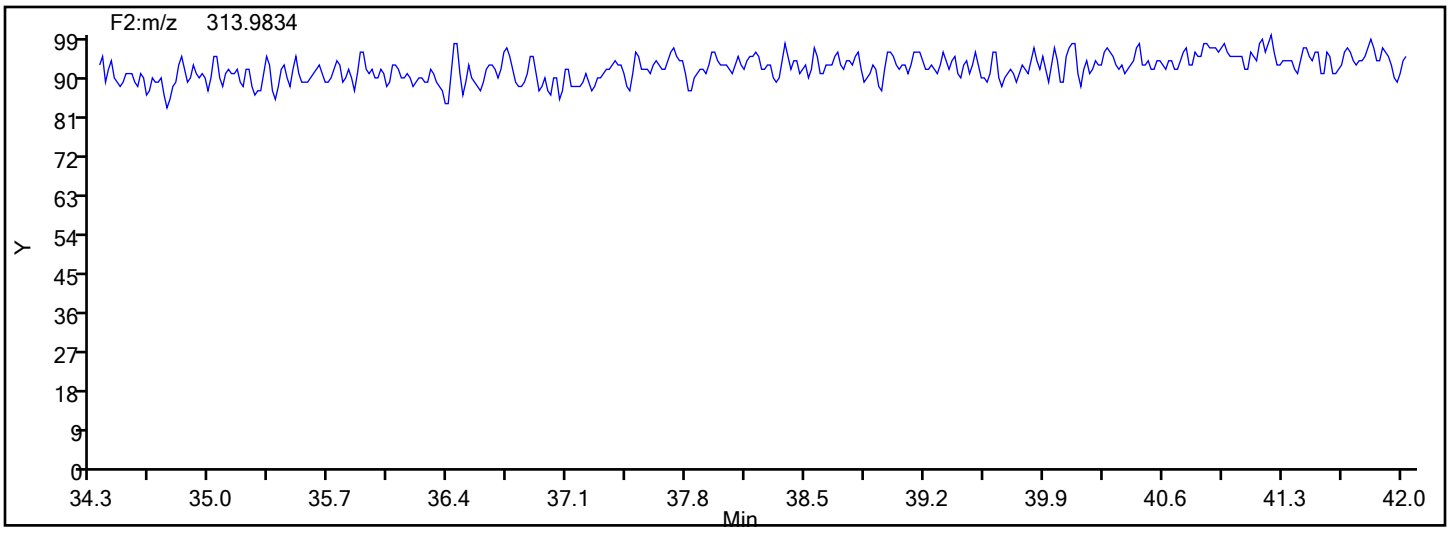
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass



Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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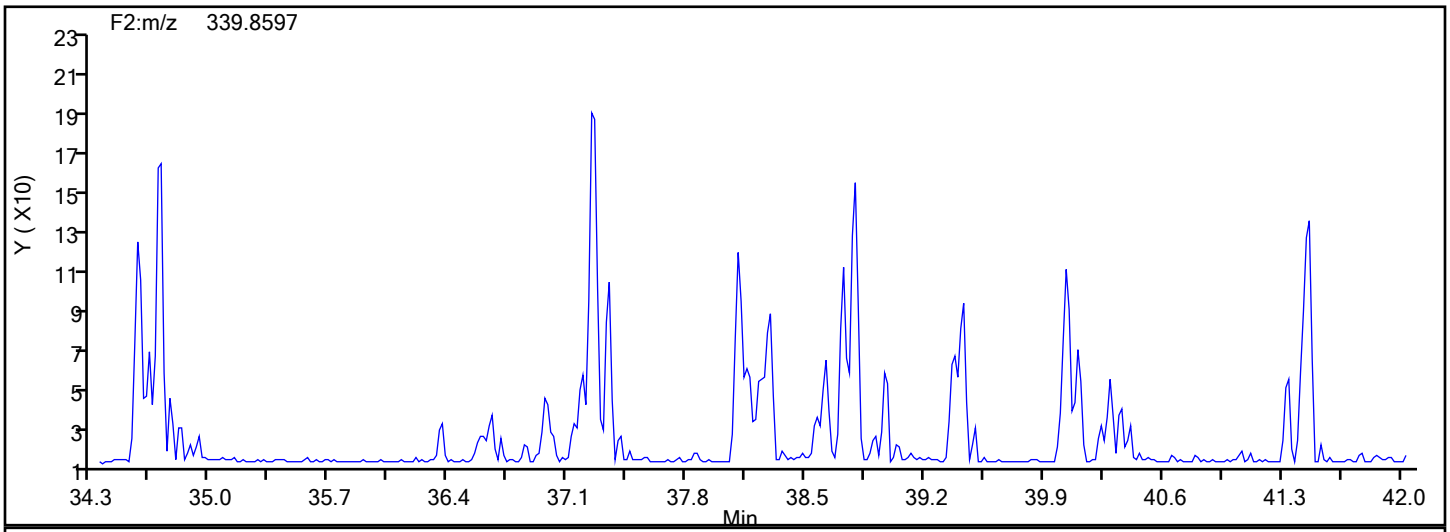
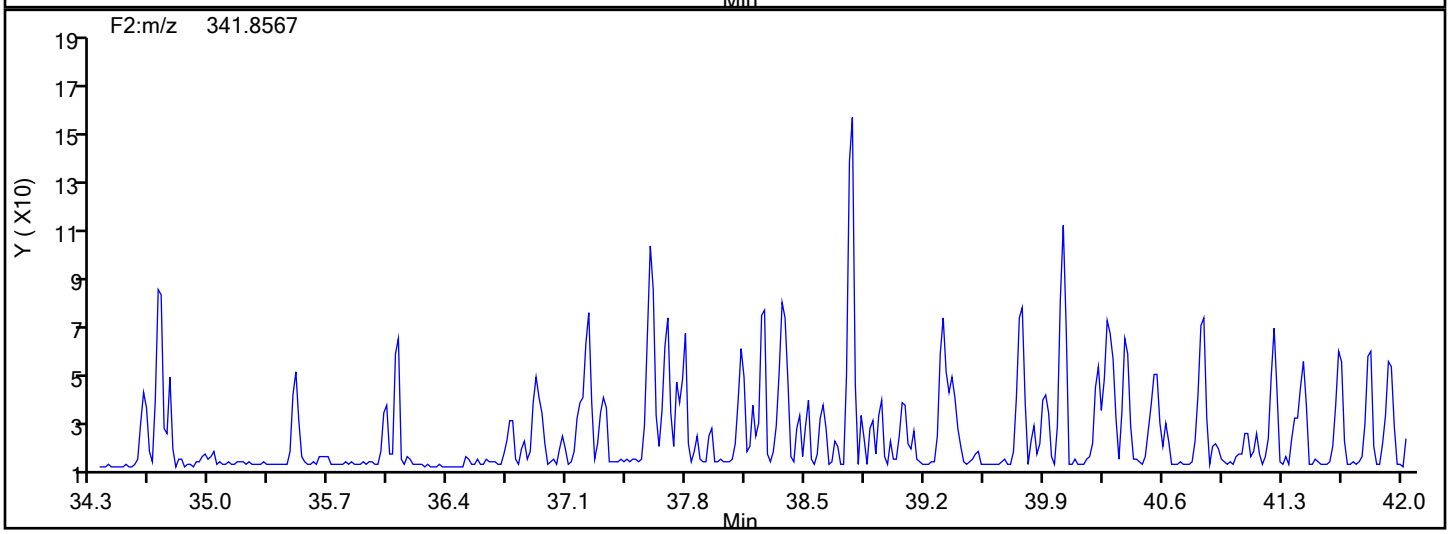
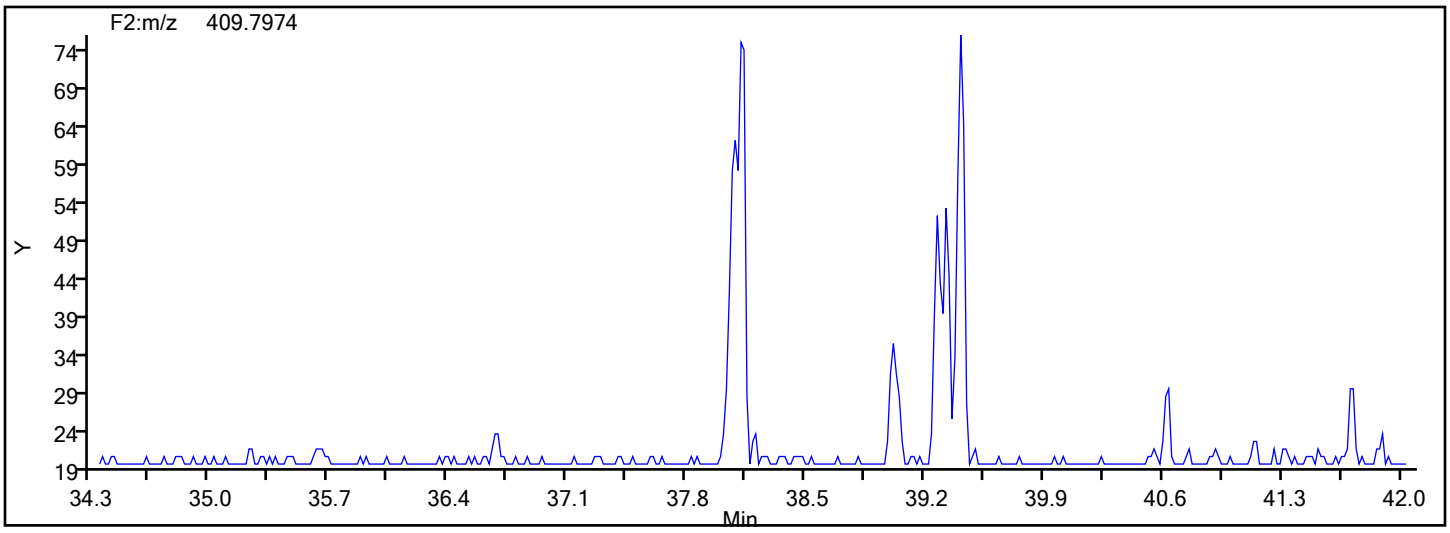
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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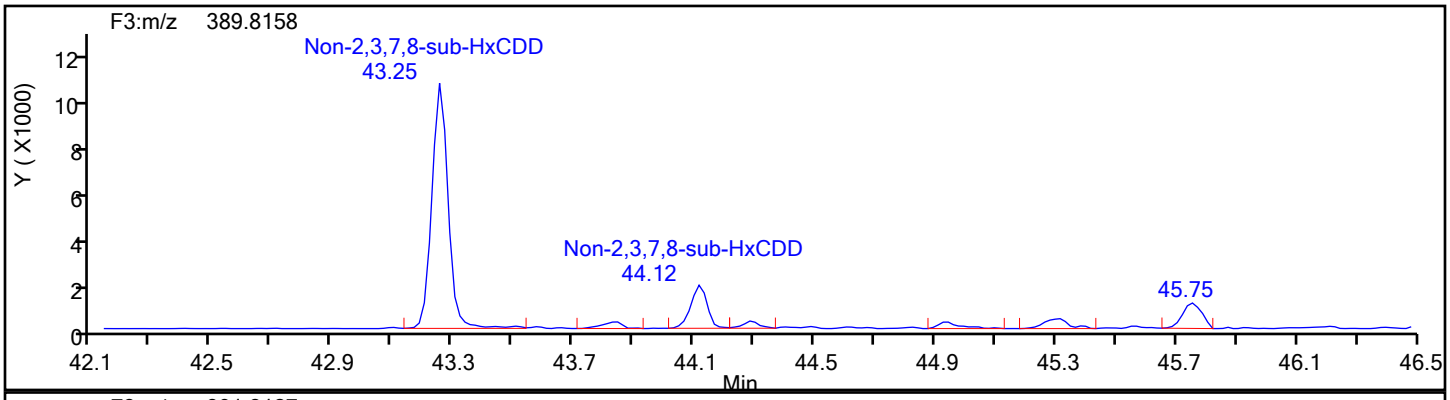
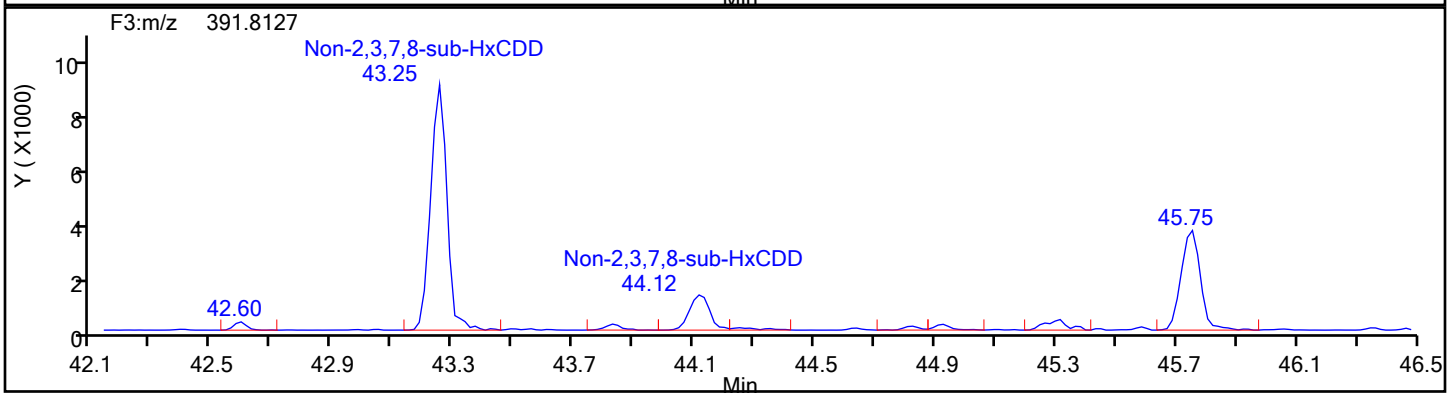
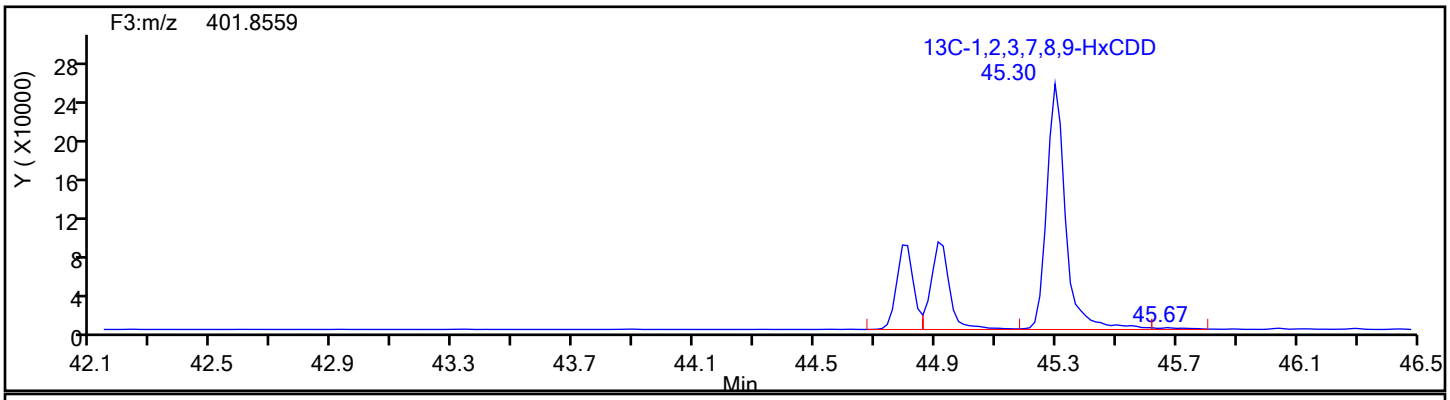
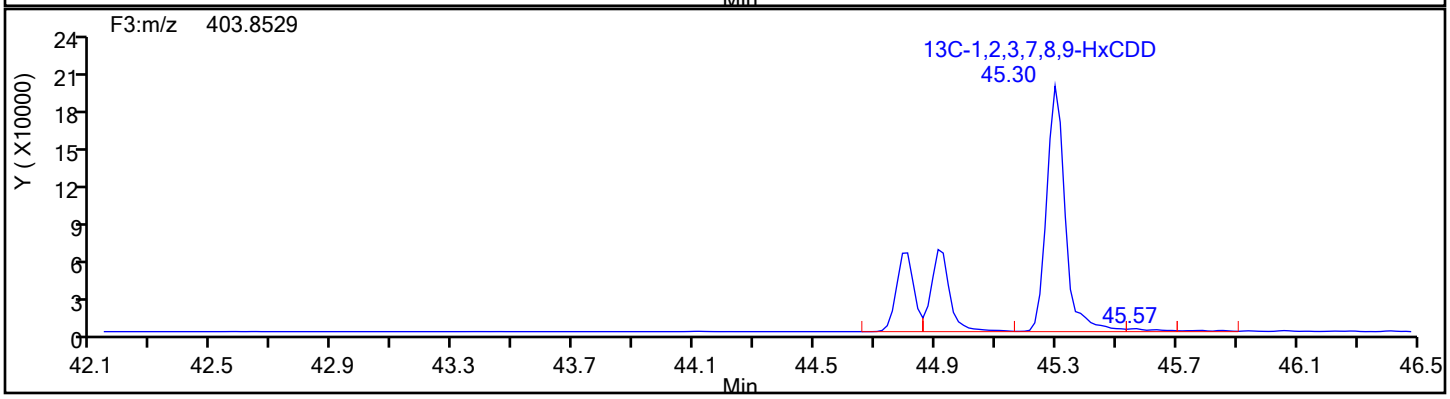
HxCDD





HxCDD Standards





Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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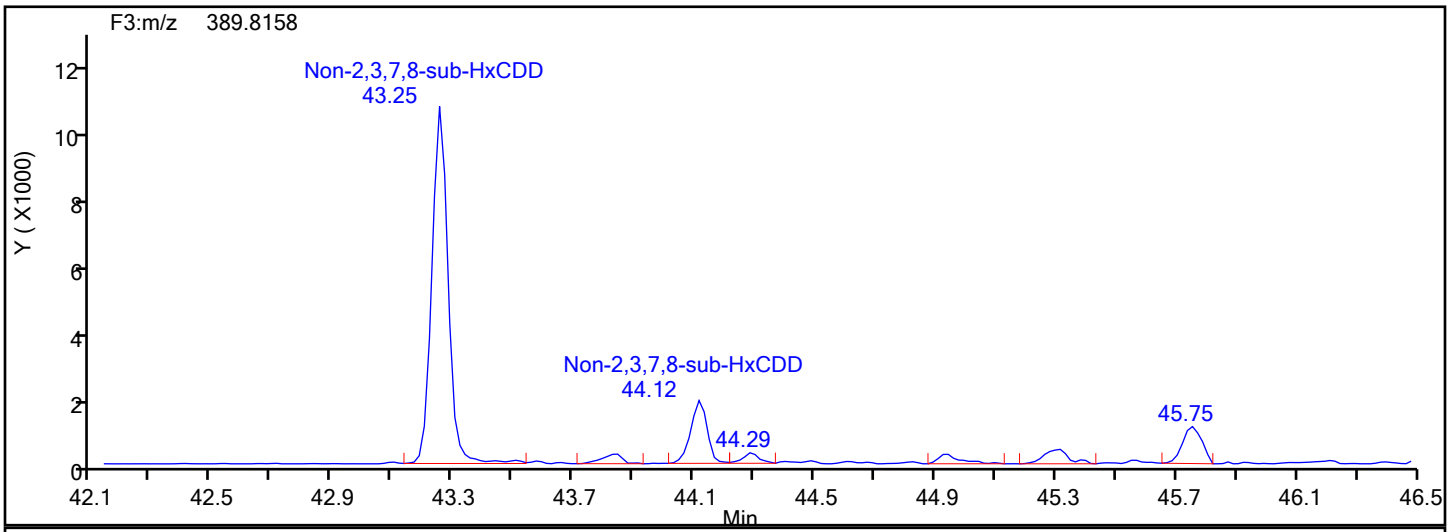
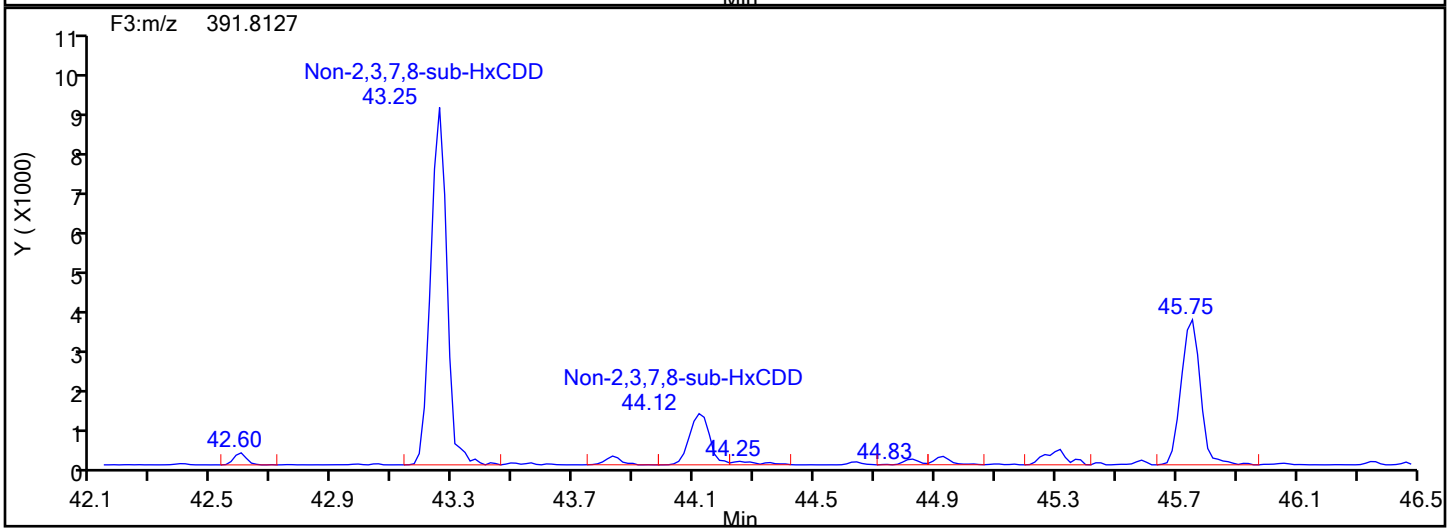
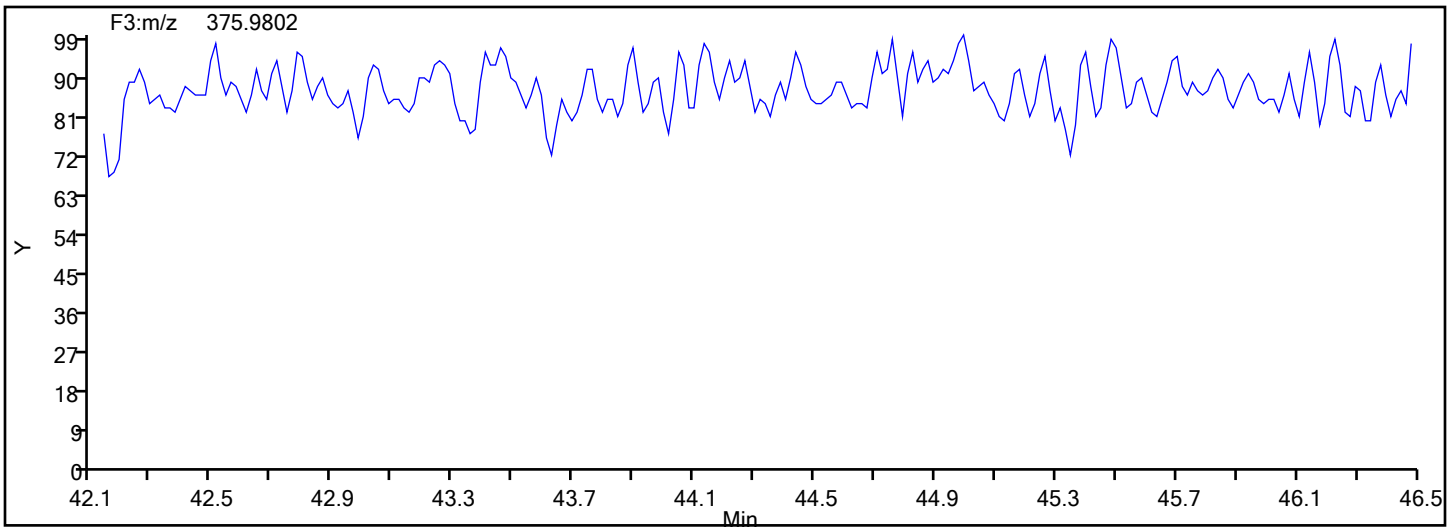
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

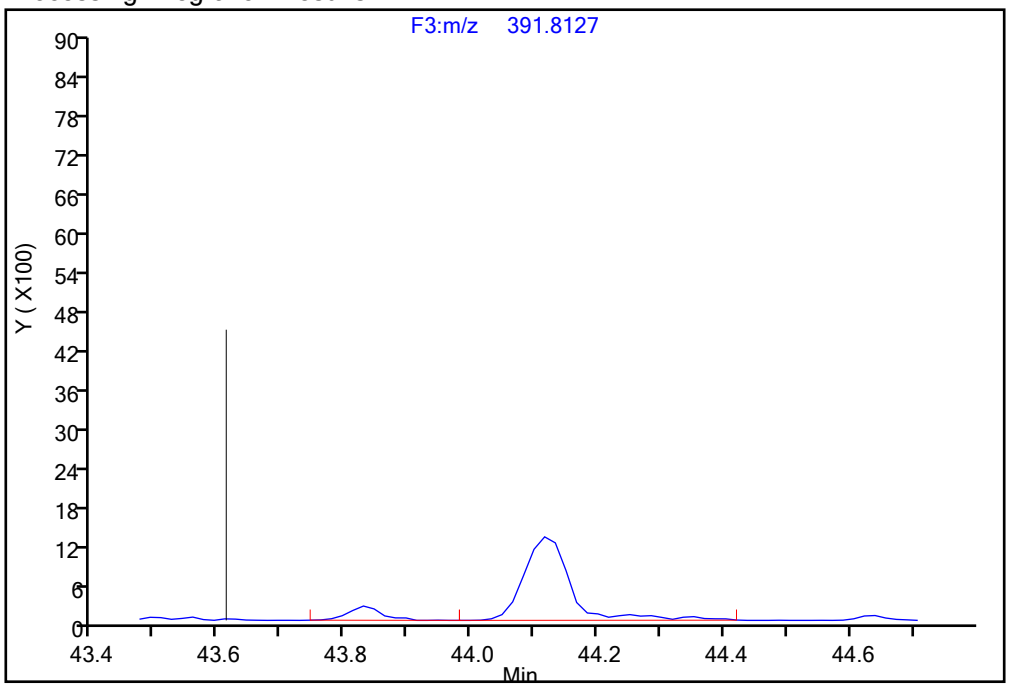
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.19- 45.35)

Signal: 2

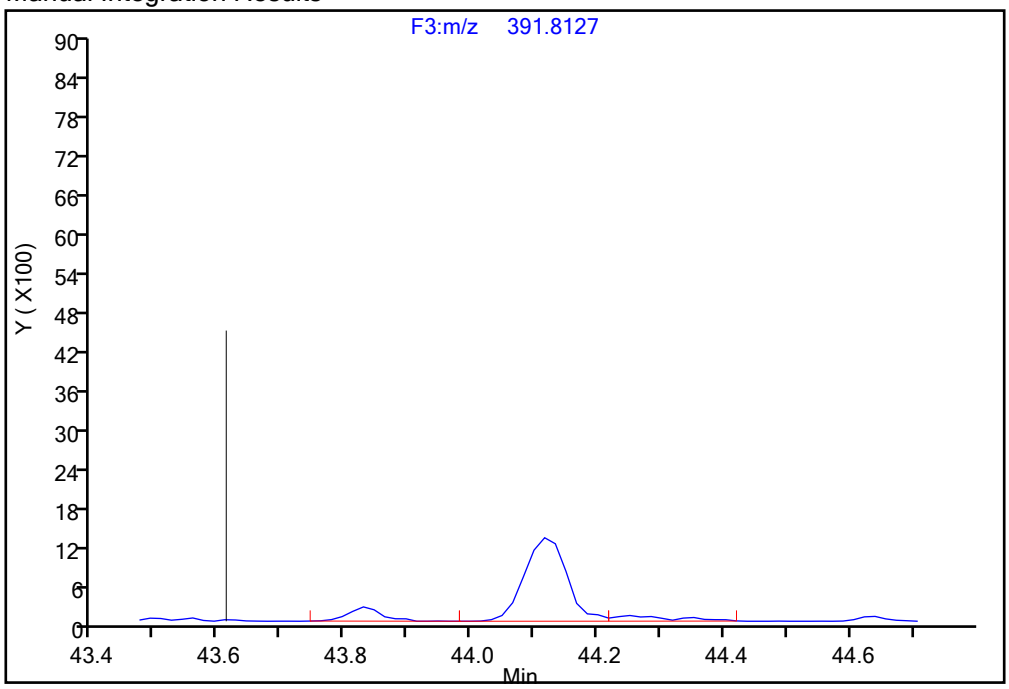
Processing Integration Results

RT = 44.116 Area = 6503



Manual Integration Results

RT = 44.116 Area = 5965 M



Reviewer: davidsonm, 18-Dec-2019 08:47:27

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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Worklist#:	36166	Sample Line#:	10
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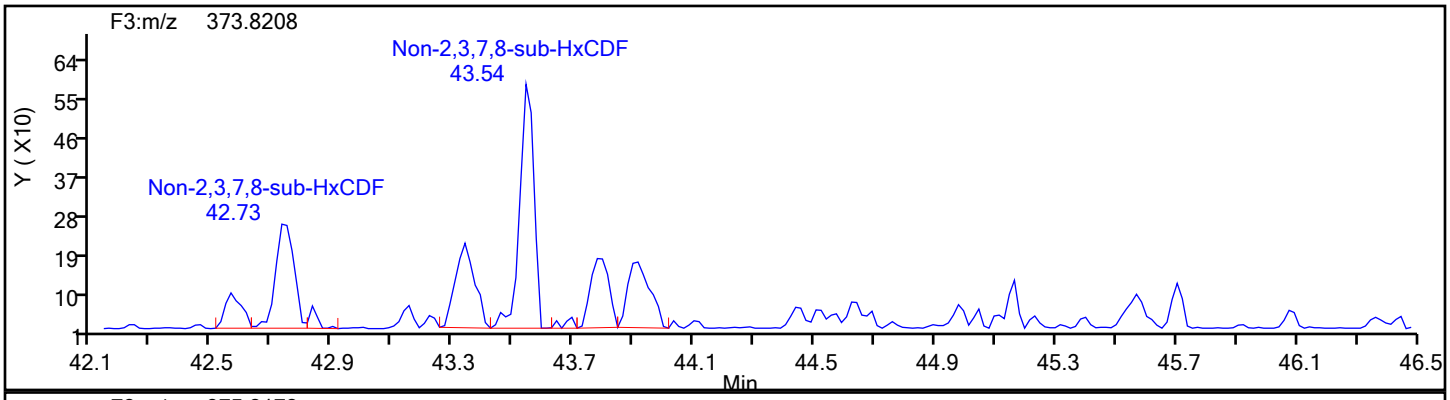
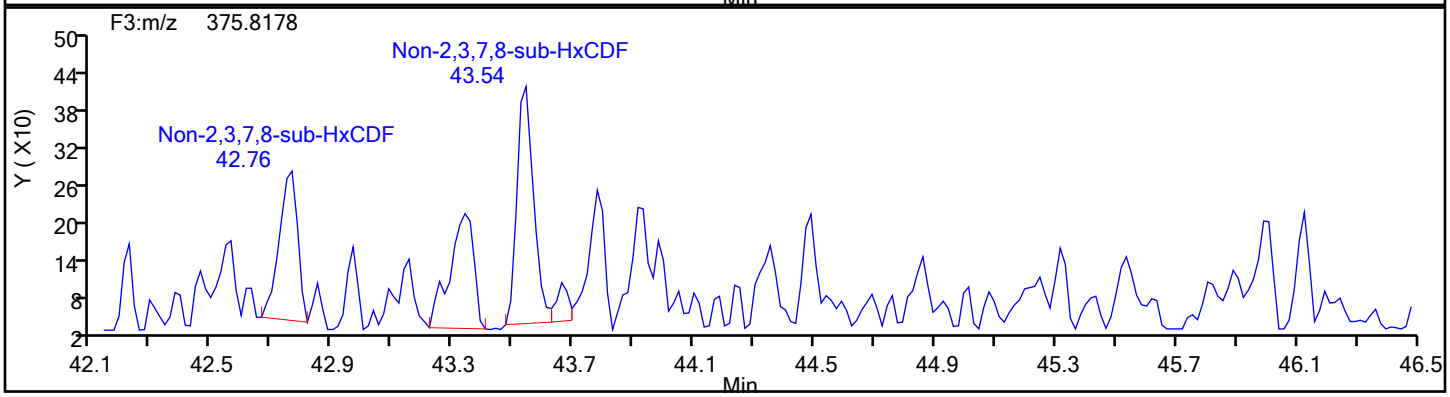
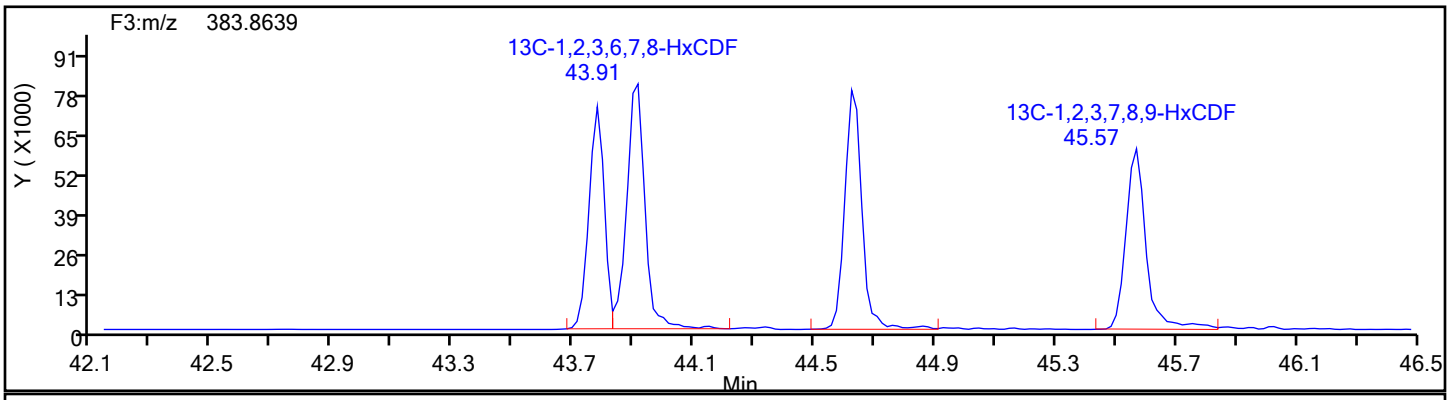
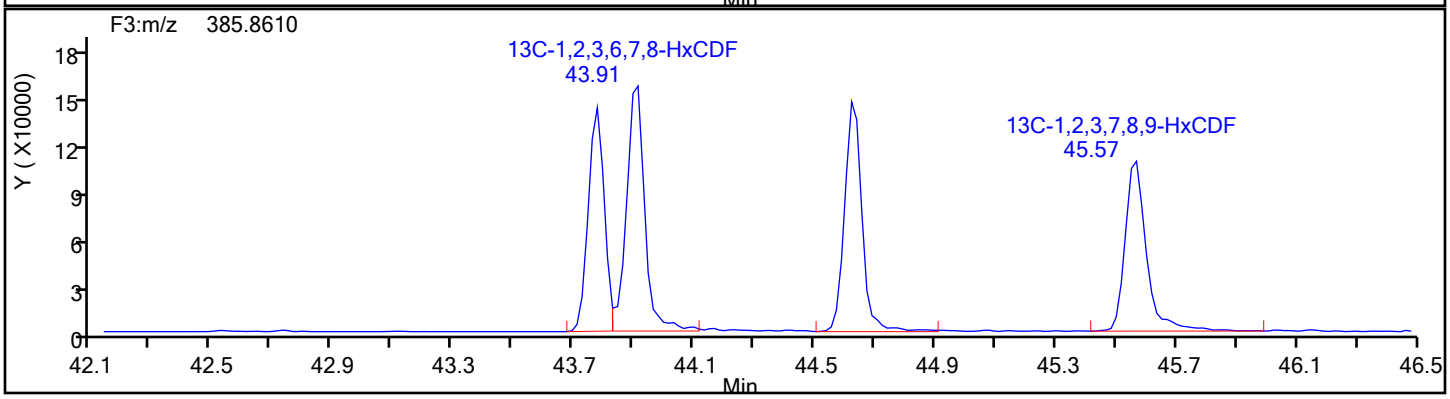
HxCDF





HxCDF Standards





Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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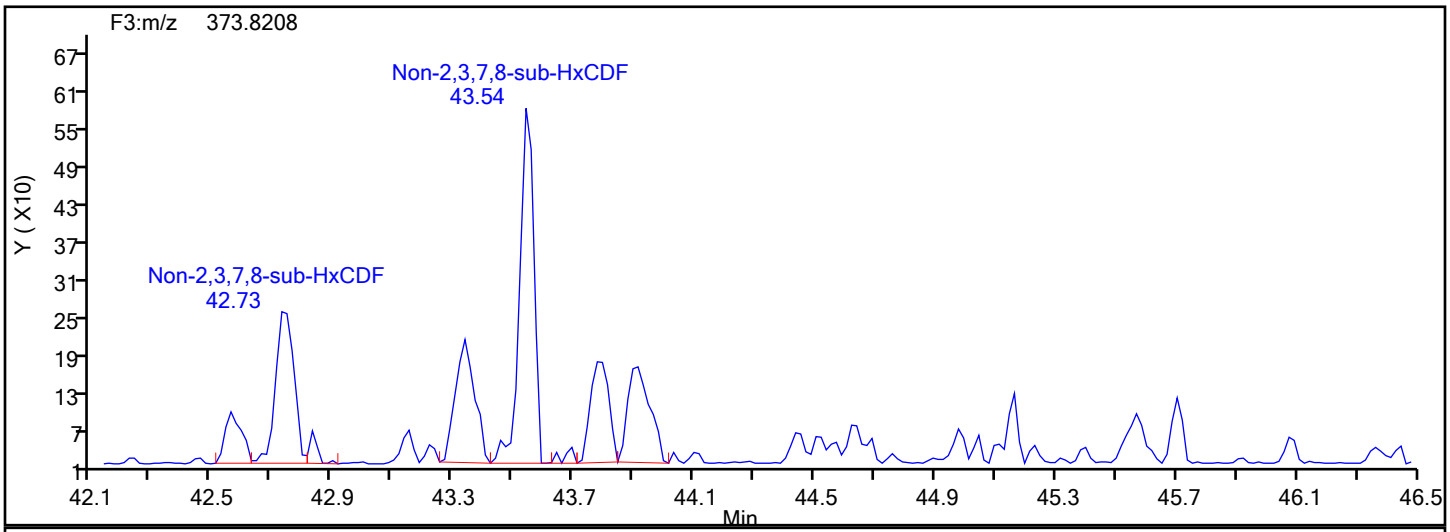
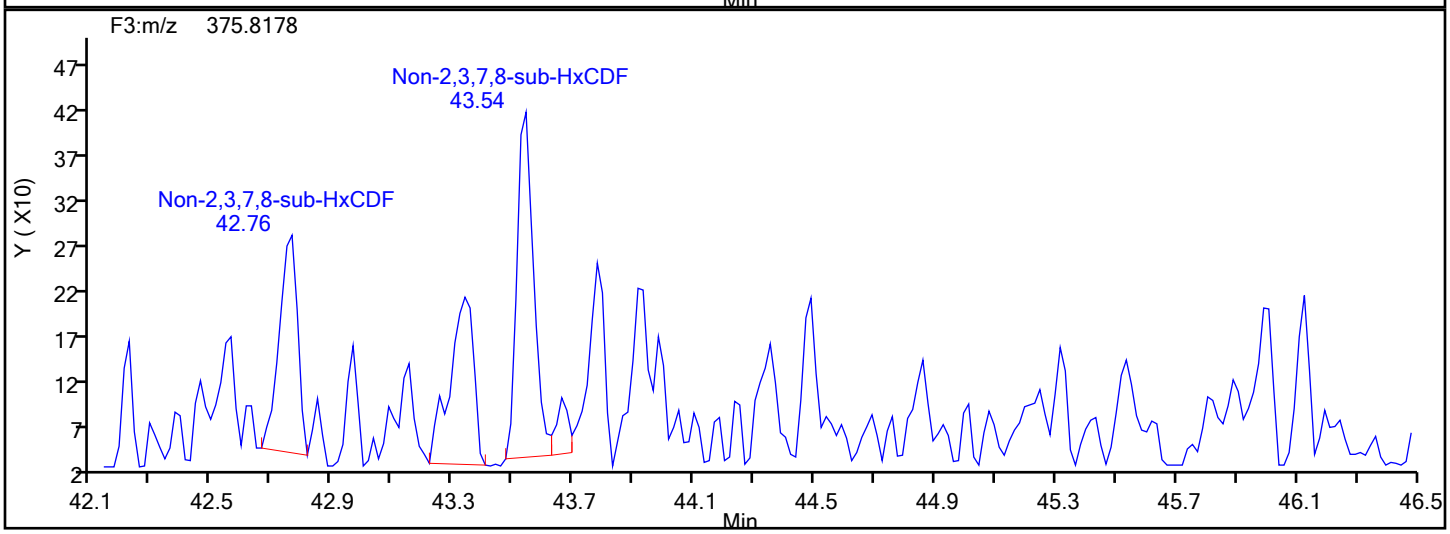
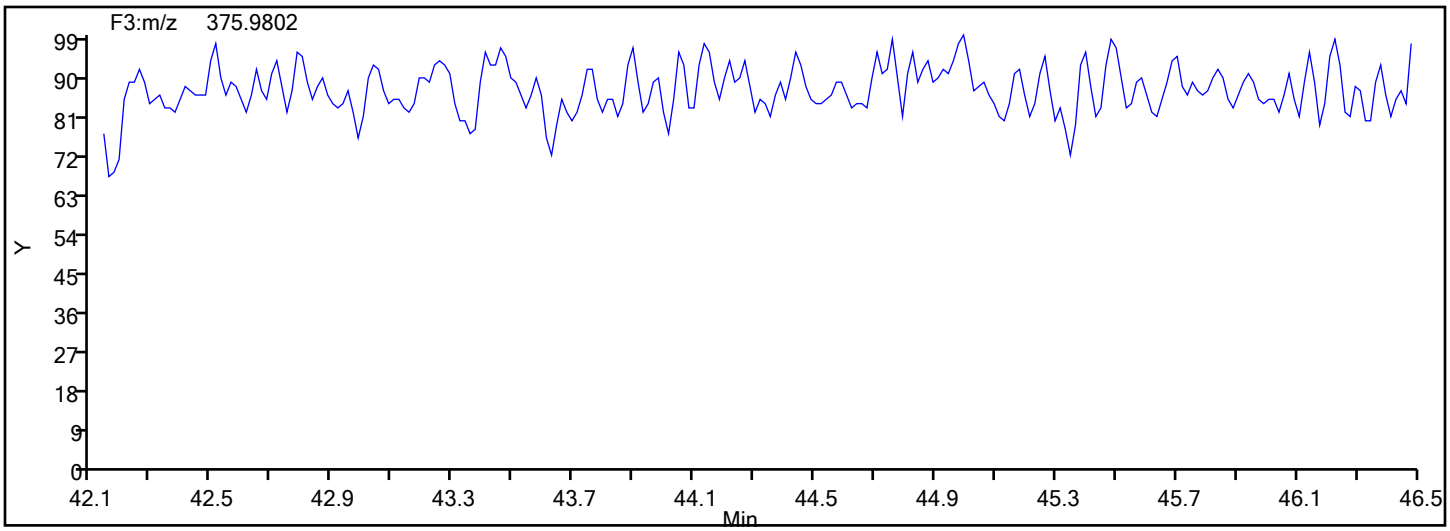
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

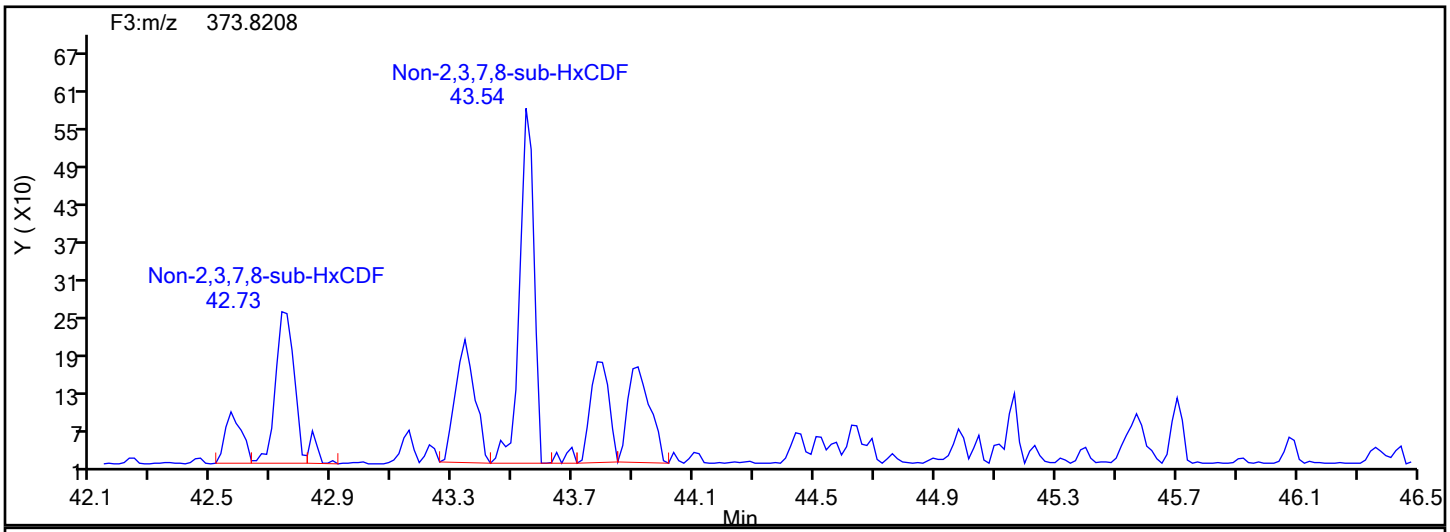


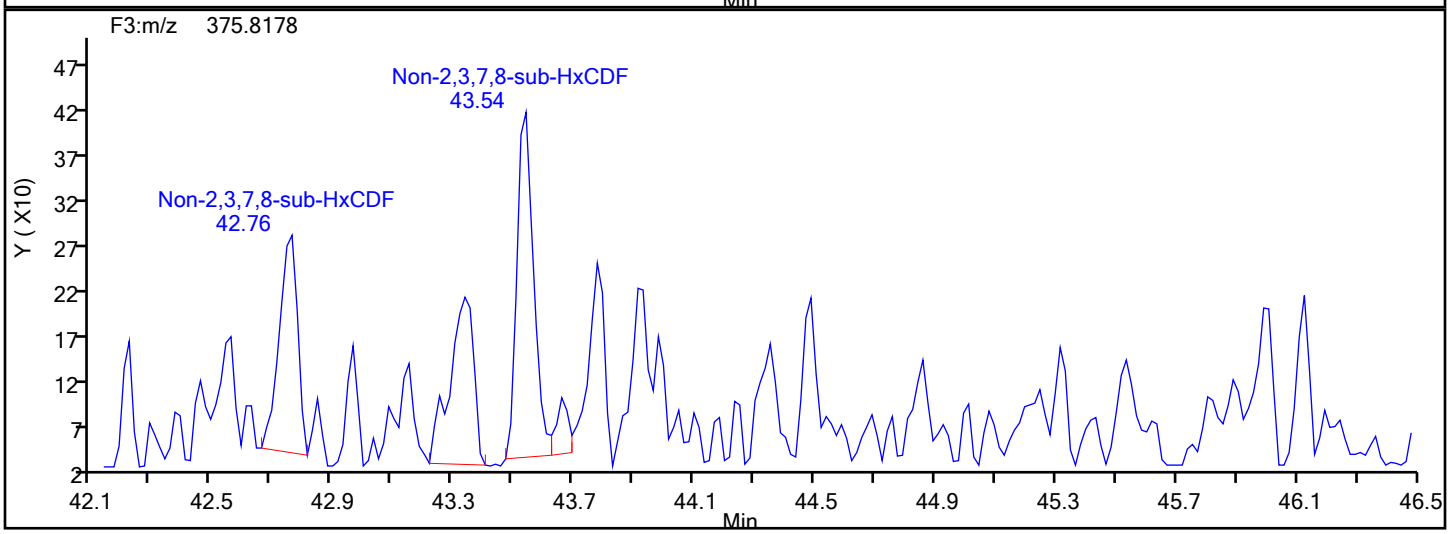
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

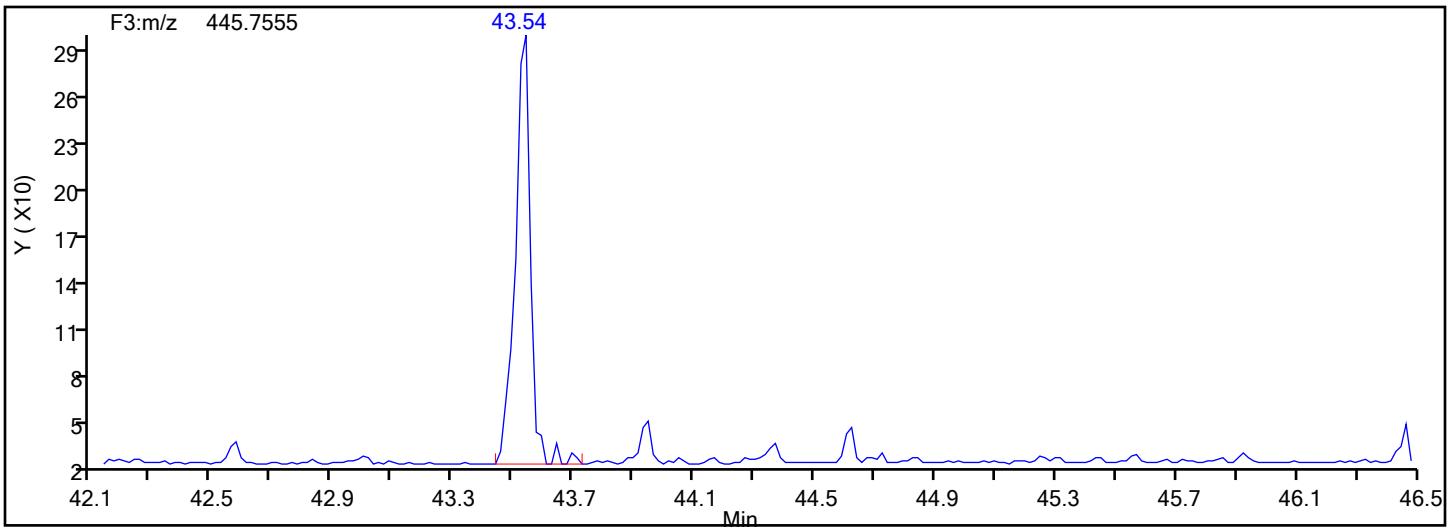
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

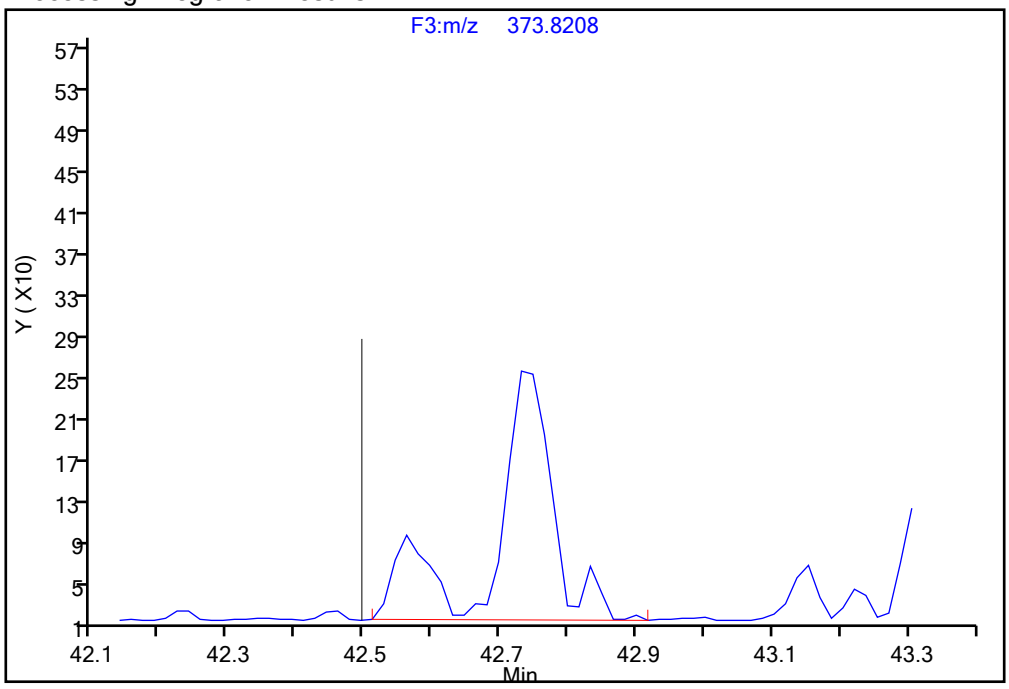
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

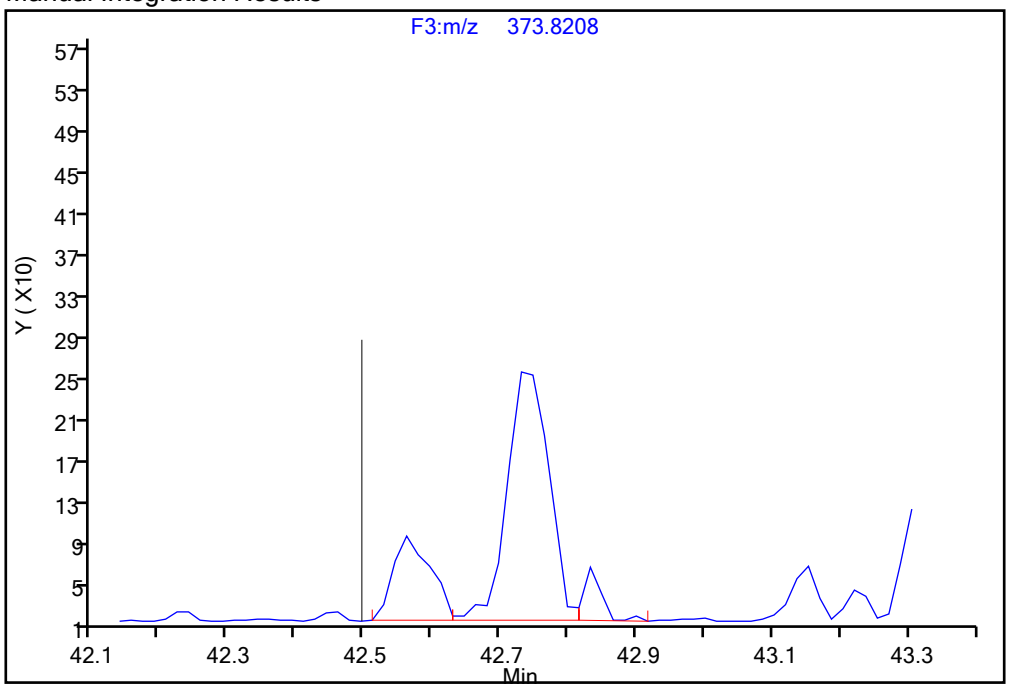
Processing Integration Results

RT = 42.731 Area = 1435



Manual Integration Results

RT = 42.731 Area = 1025 M



Reviewer: davidsonm, 18-Dec-2019 08:47:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

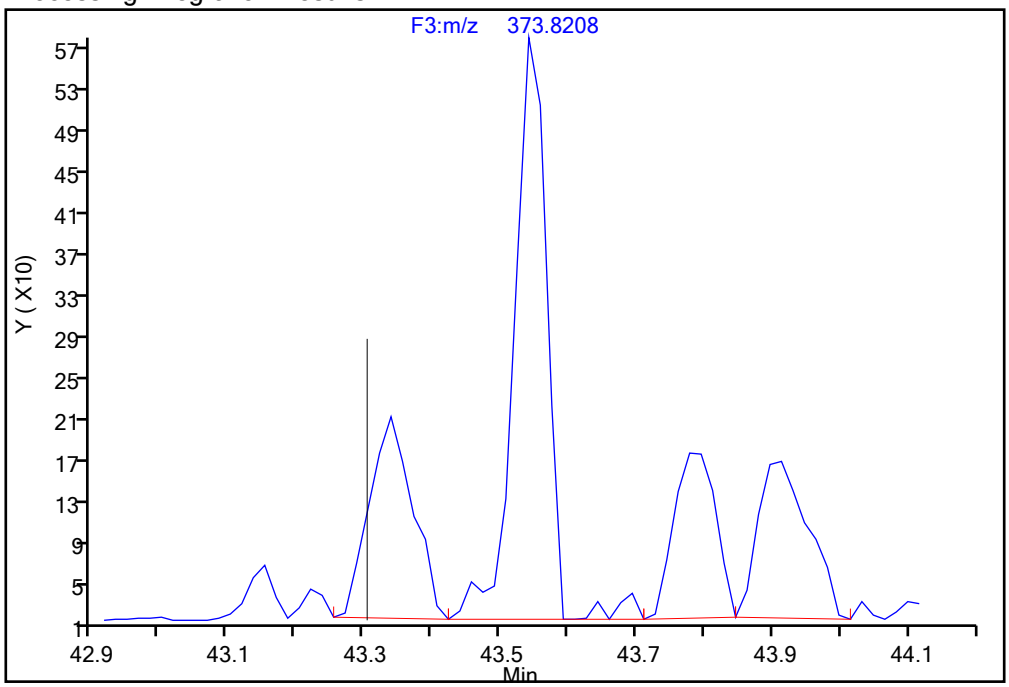
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (42.50- 45.75)

Signal: 1

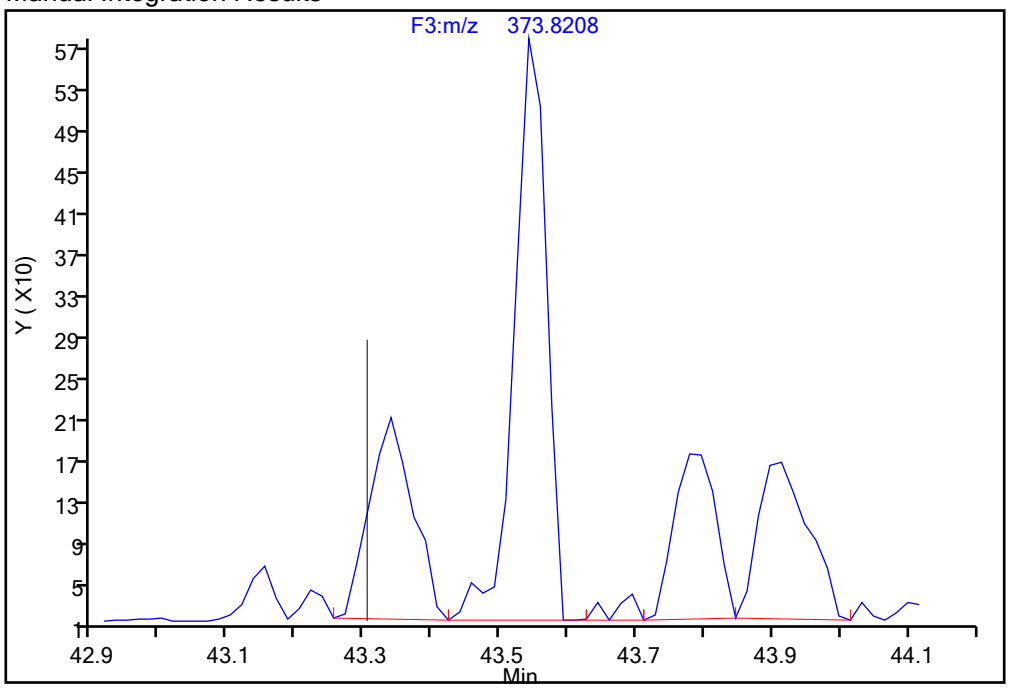
Processing Integration Results

RT = 43.542 Area = 1909



Manual Integration Results

RT = 43.542 Area = 1849 M



Reviewer: davidsonm, 18-Dec-2019 08:47:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

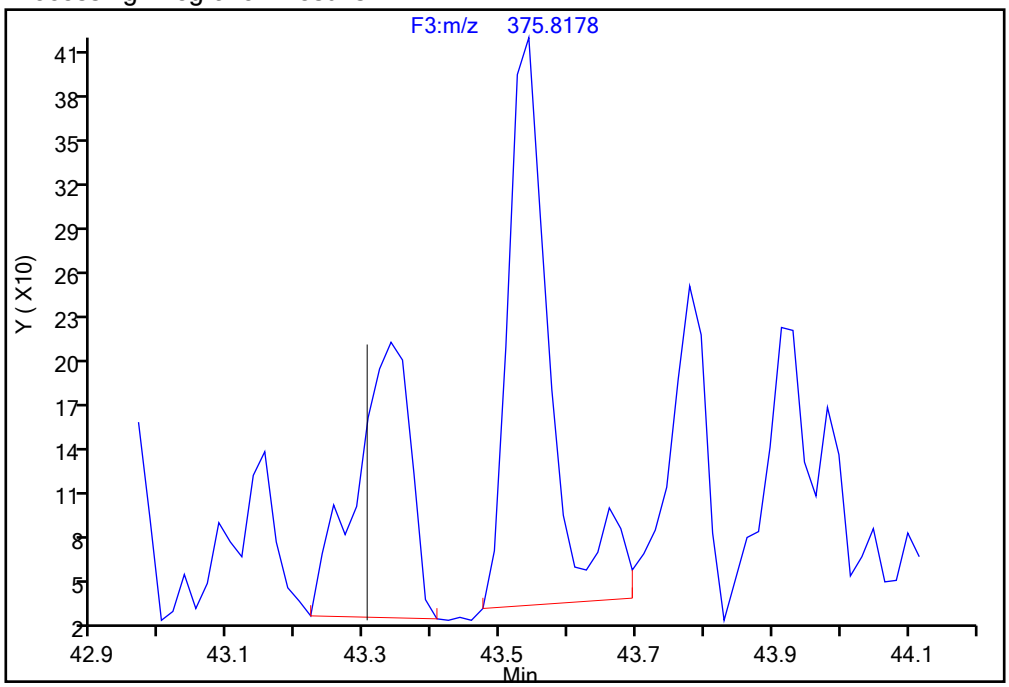
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDF, Signal: 2, m/z: 375.8178, RT: (42.50- 45.75)

Signal: 2

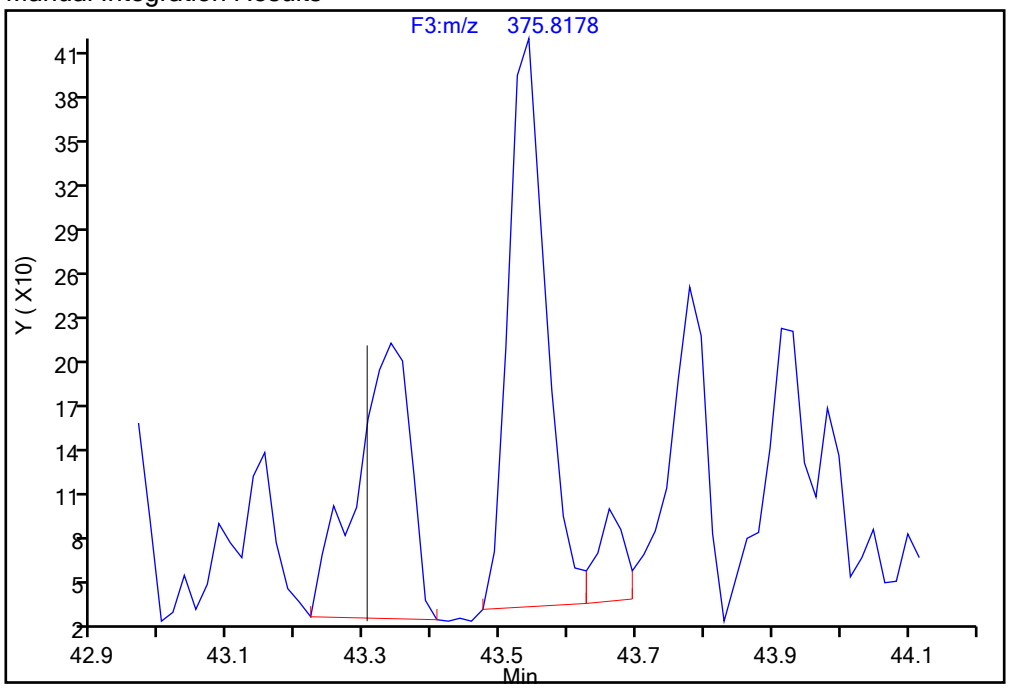
Processing Integration Results

RT = 43.542 Area = 1643



Manual Integration Results

RT = 43.542 Area = 1482 M



Reviewer: davidsonm, 18-Dec-2019 08:47:48

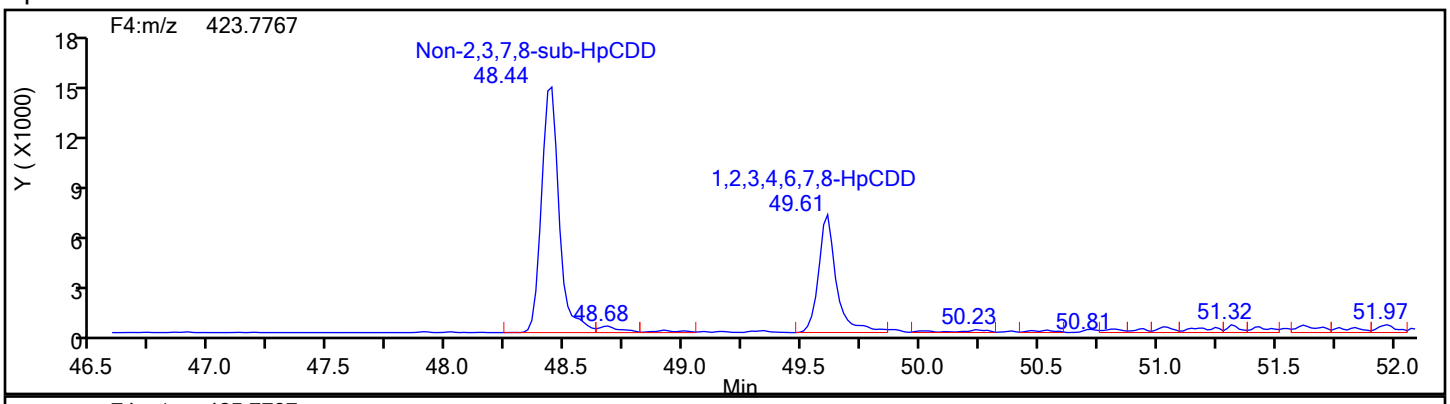
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

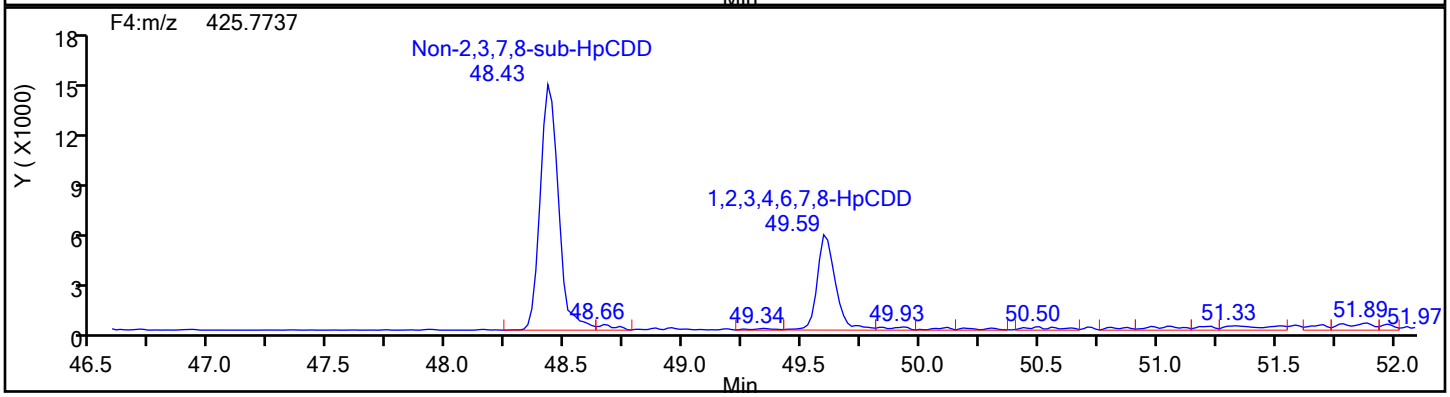
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

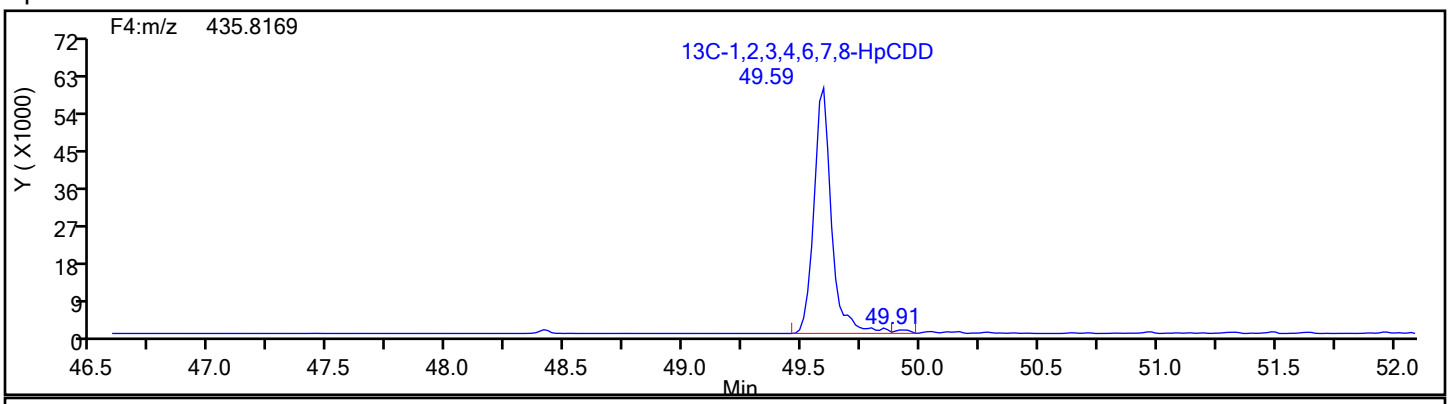
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

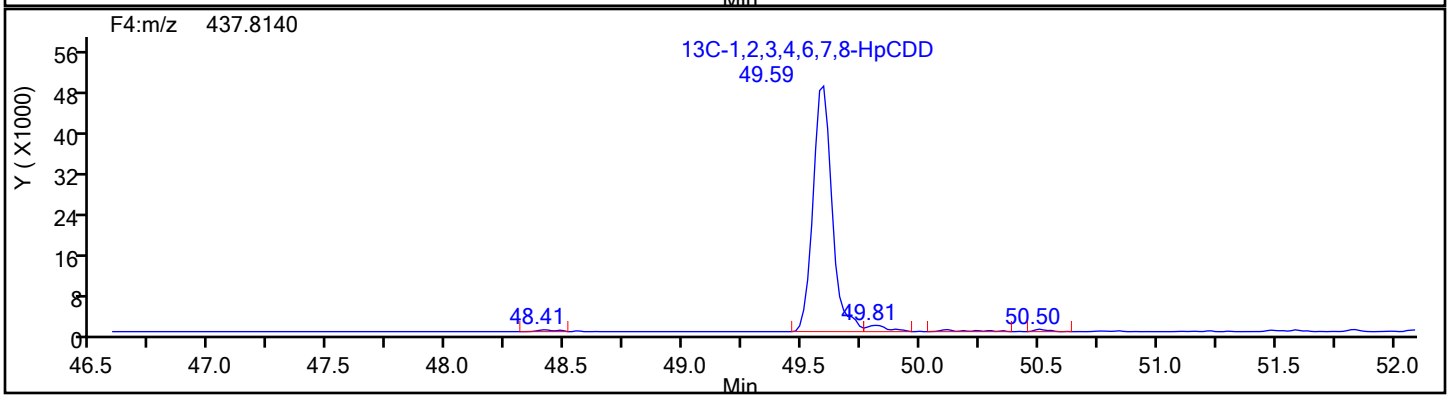
HpCDD





HpCDD Standards



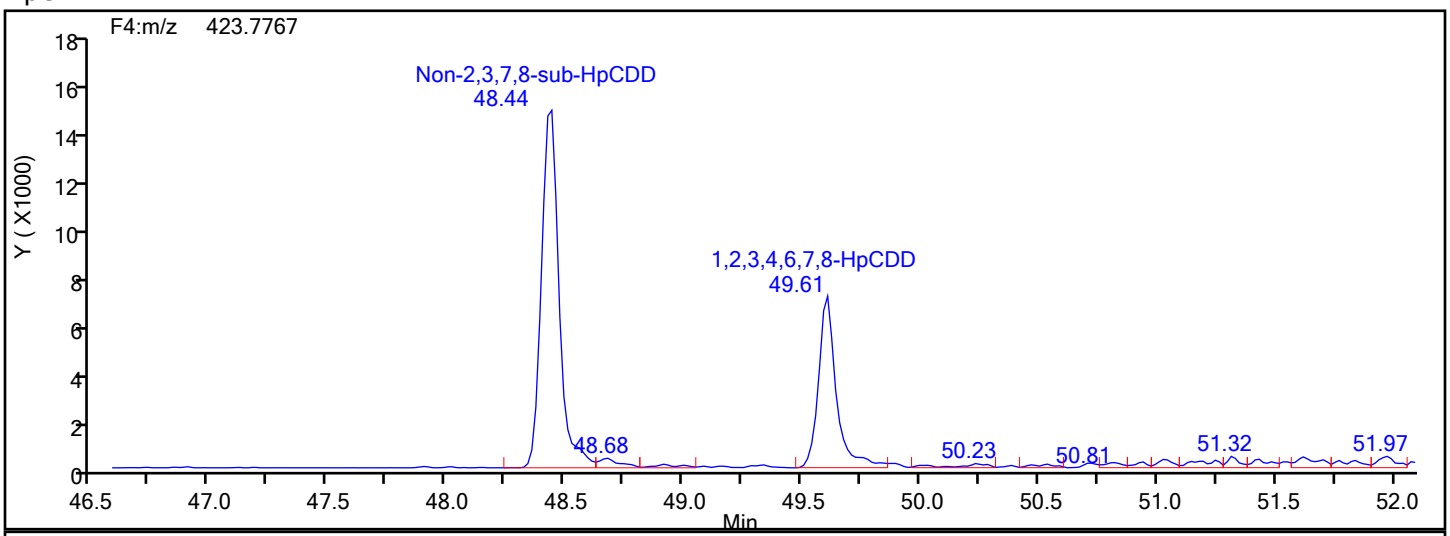


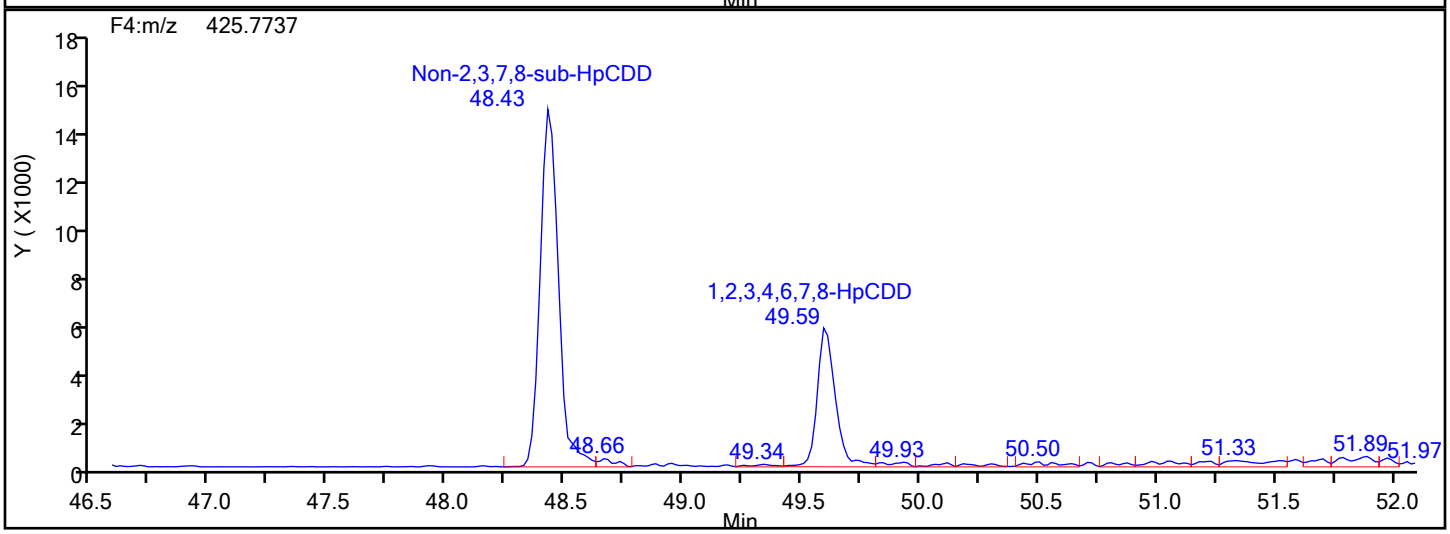
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

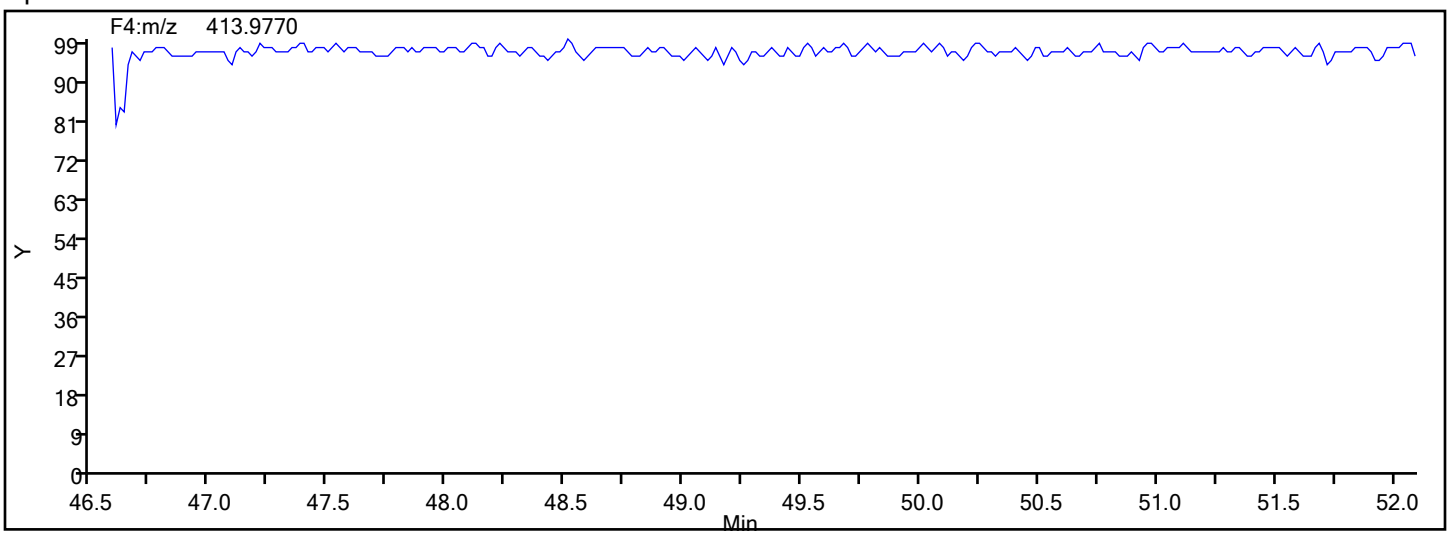
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

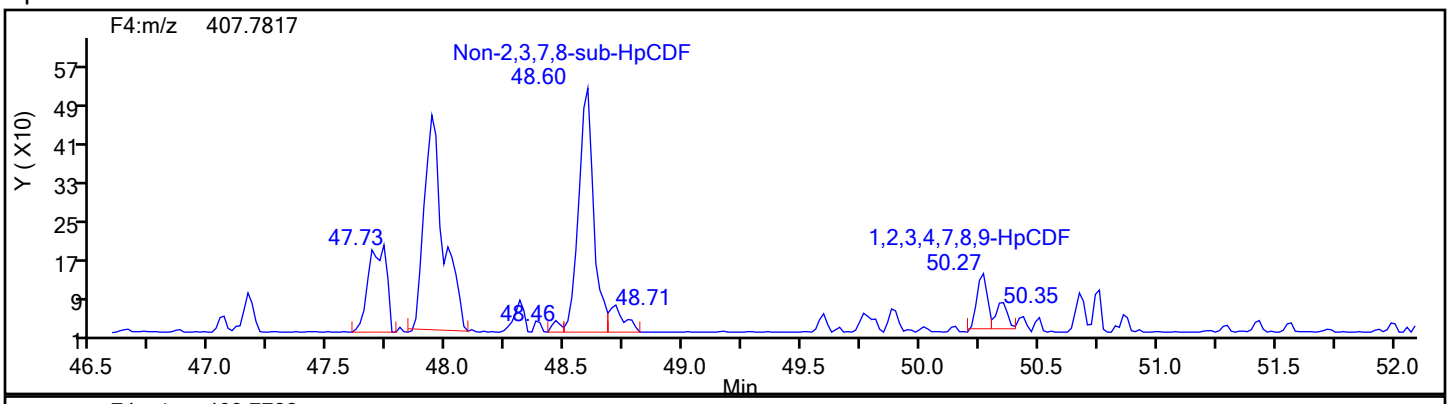


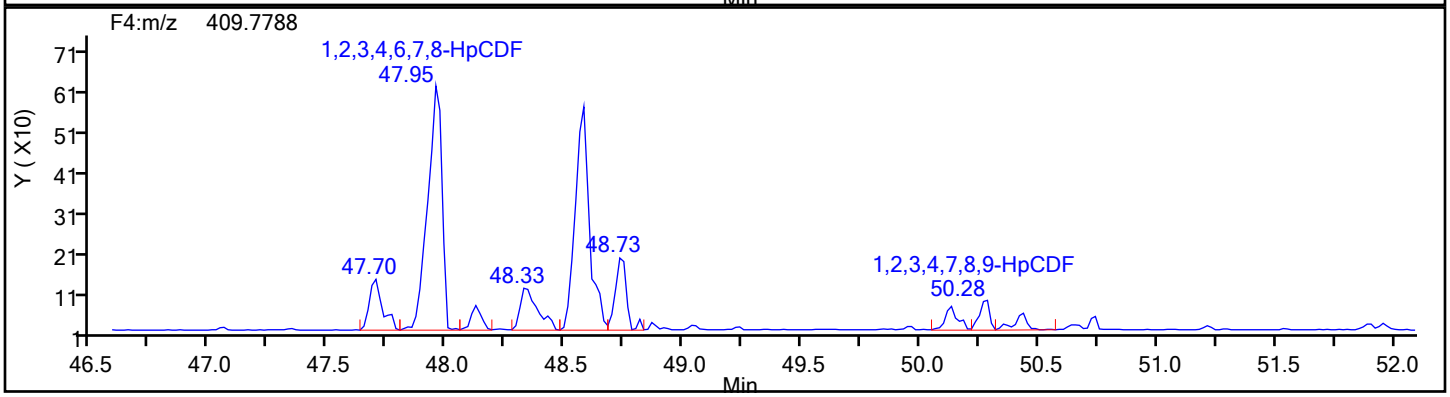
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

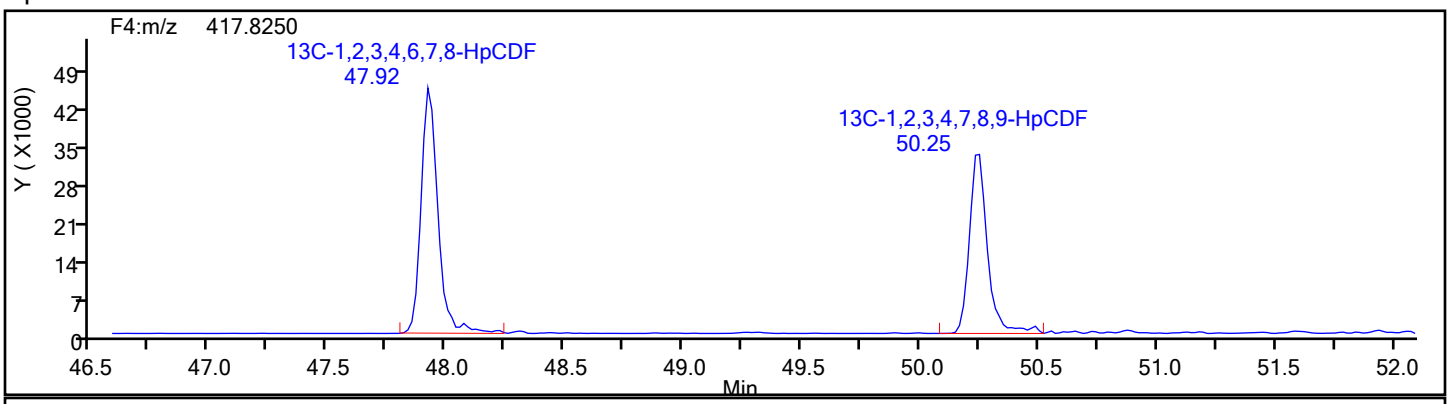
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

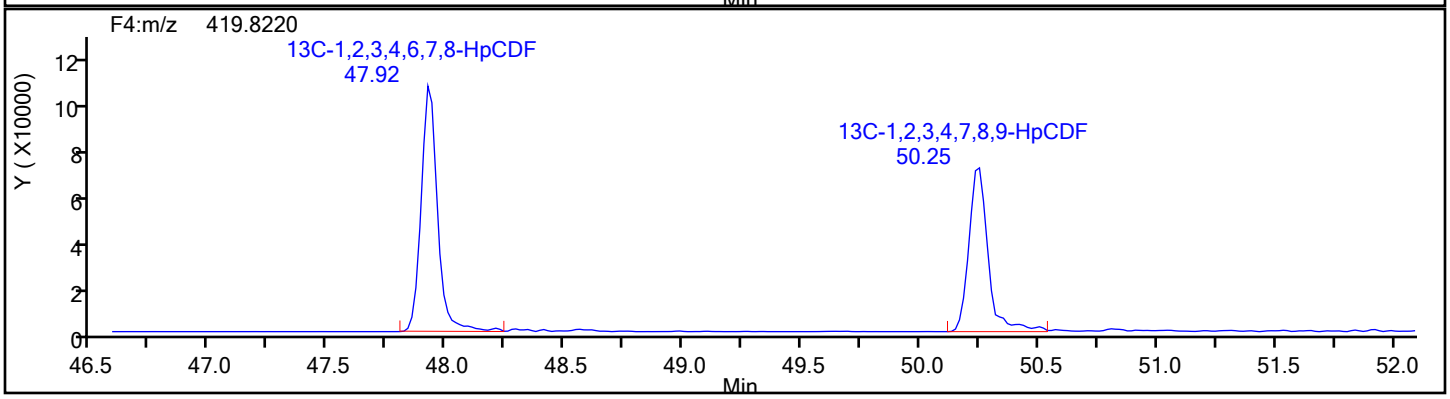
HpCDF





HpCDF Standards



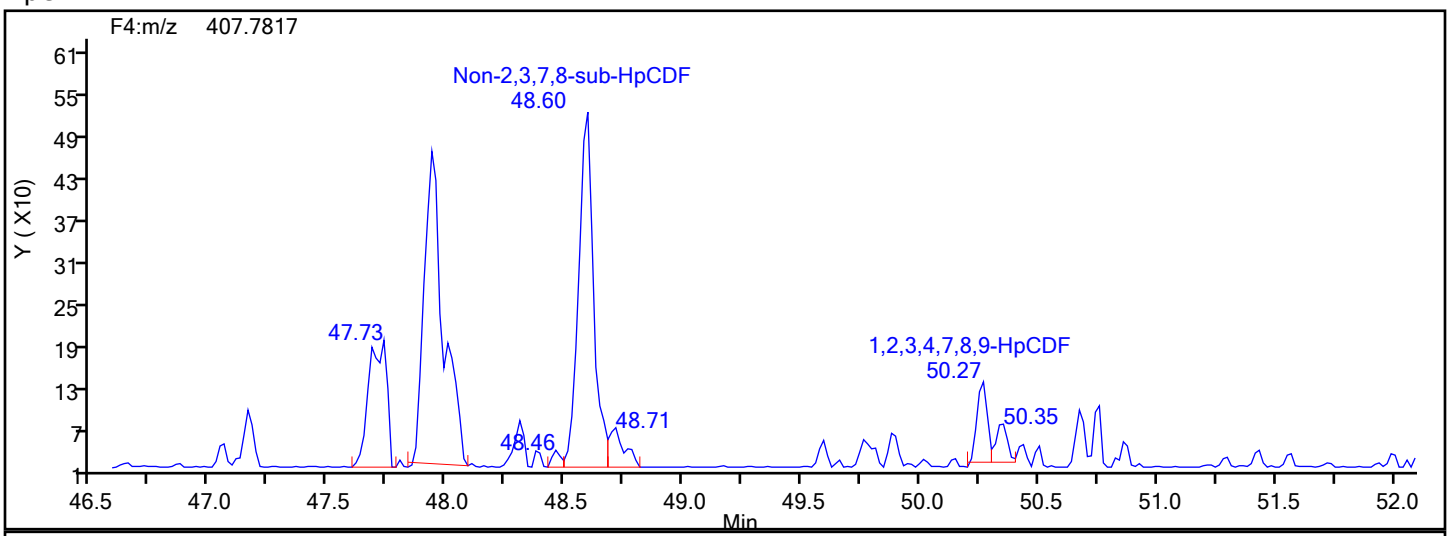


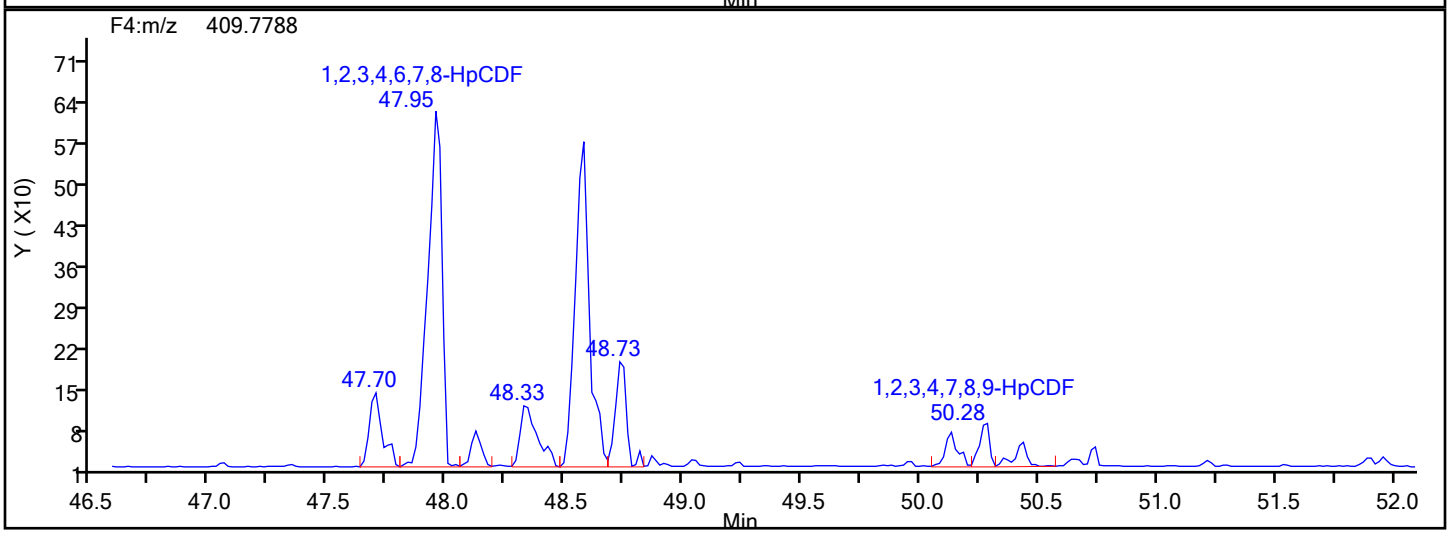
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

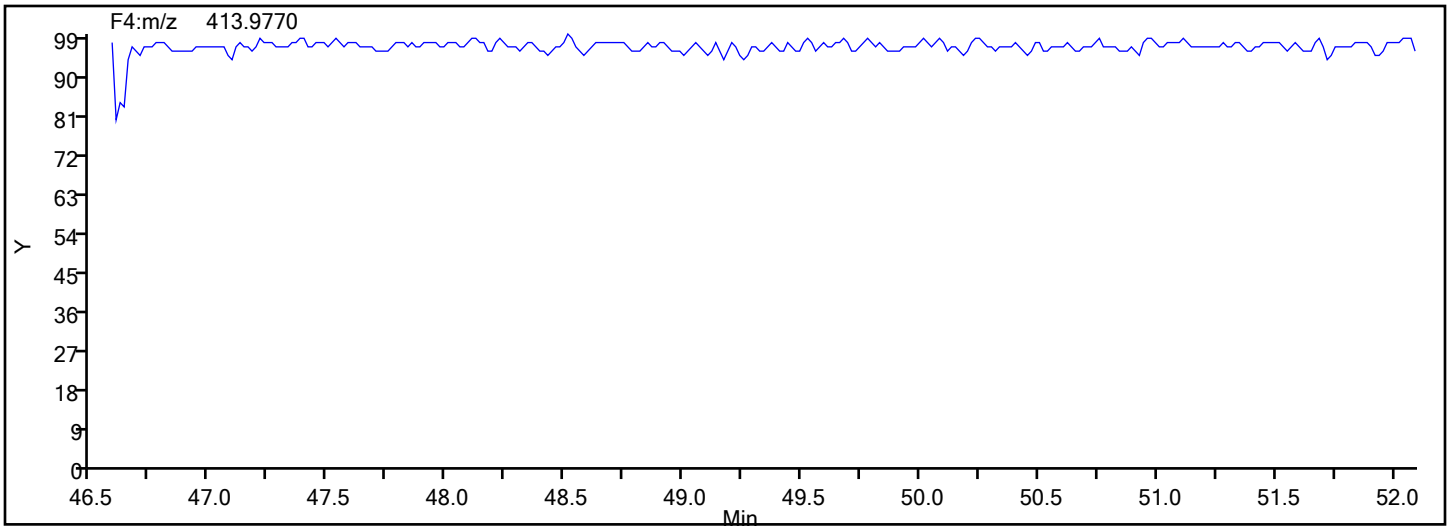
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

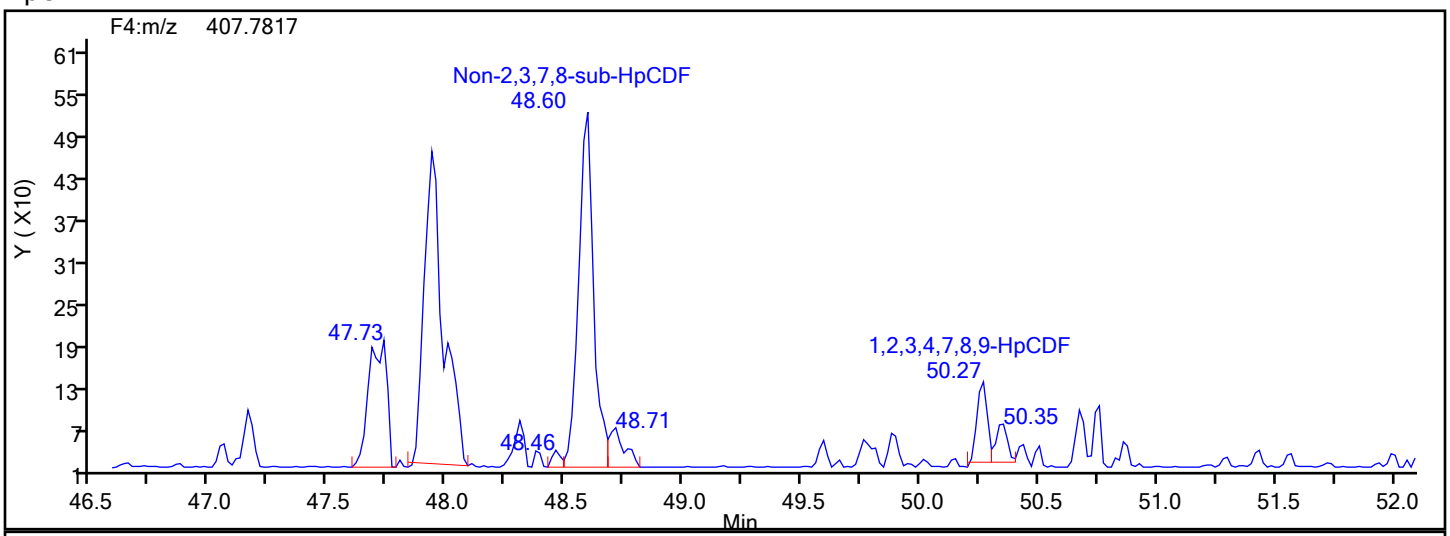


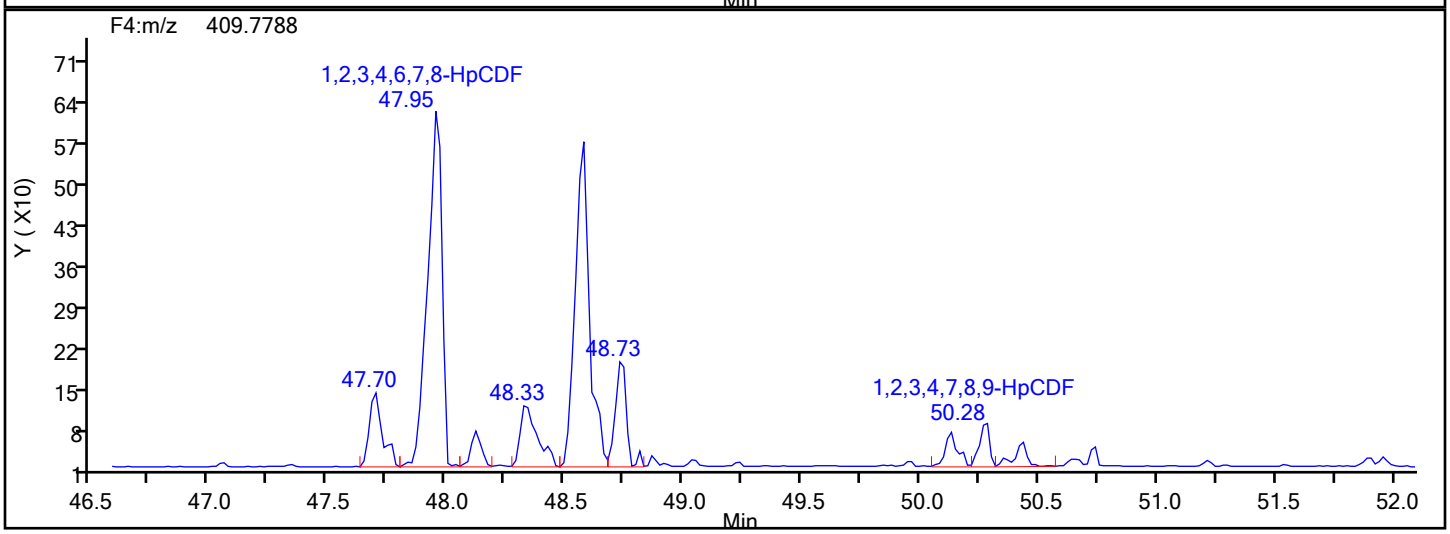
Report Date: 18-Dec-2019 08:48:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

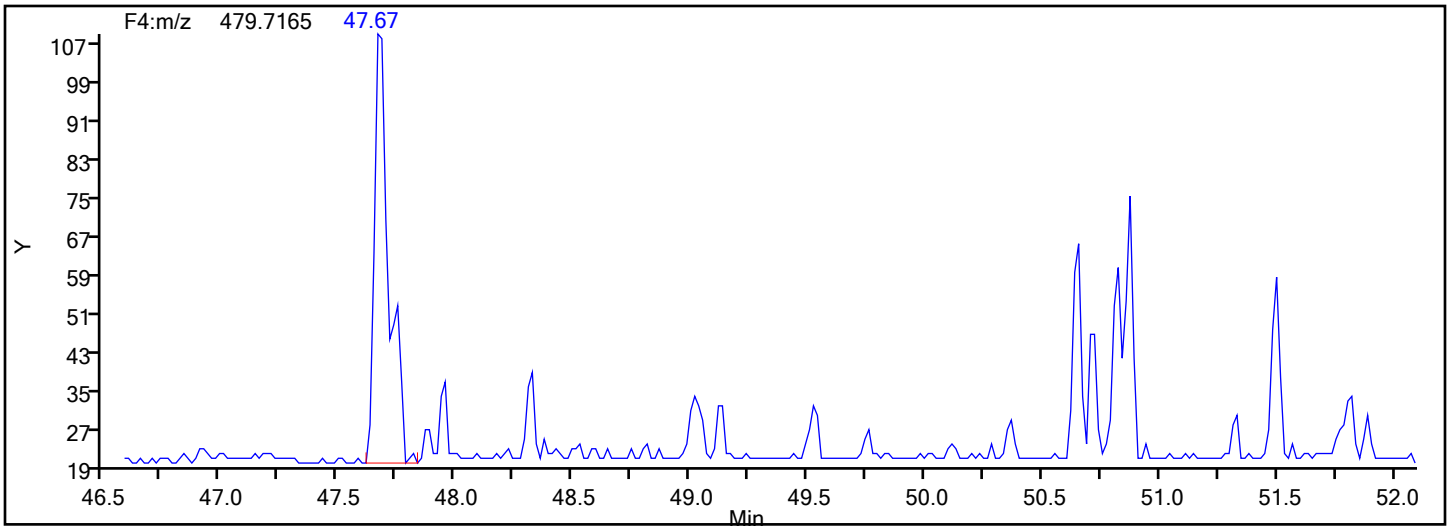
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

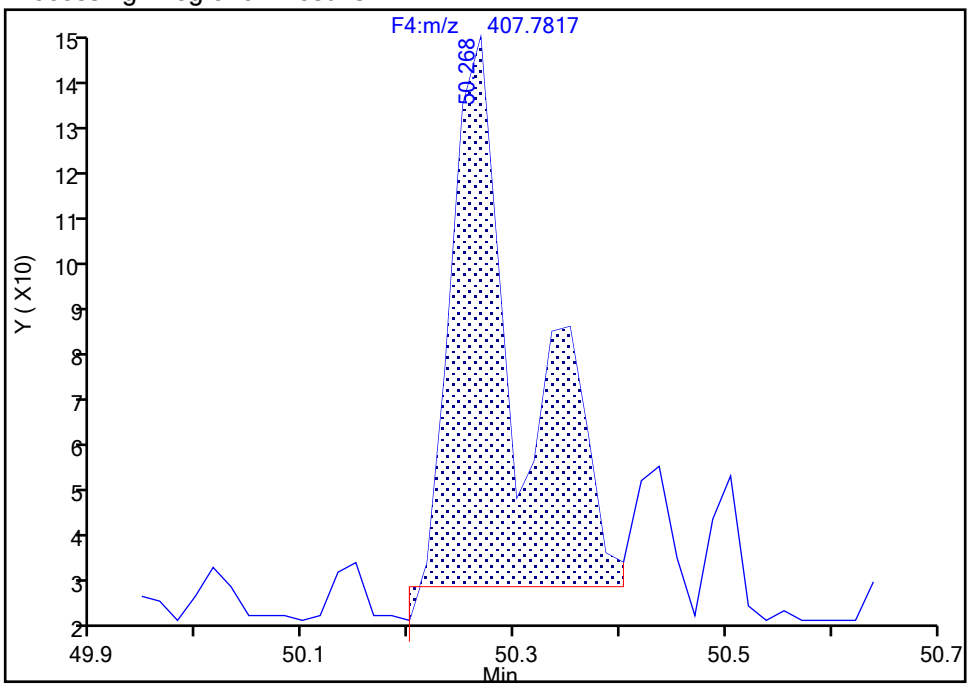
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

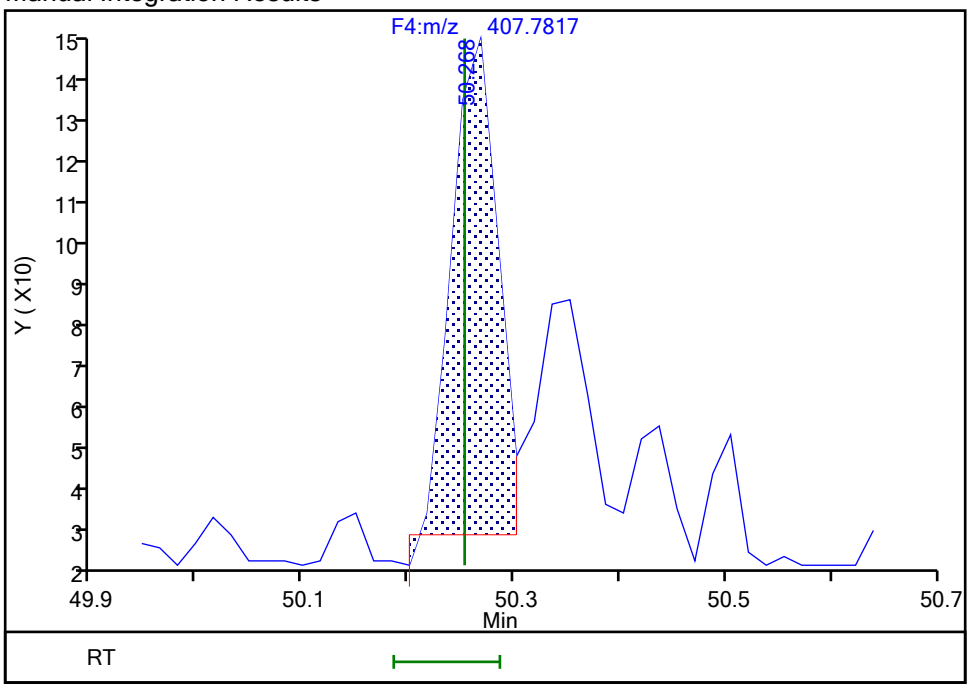
Processing Integration Results

RT: 50.27
Area: 525
Amount: 0.047893
Amount Units: pg/ul



Manual Integration Results

RT: 50.27
Area: 339
Amount: 0.035984
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:48:17

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

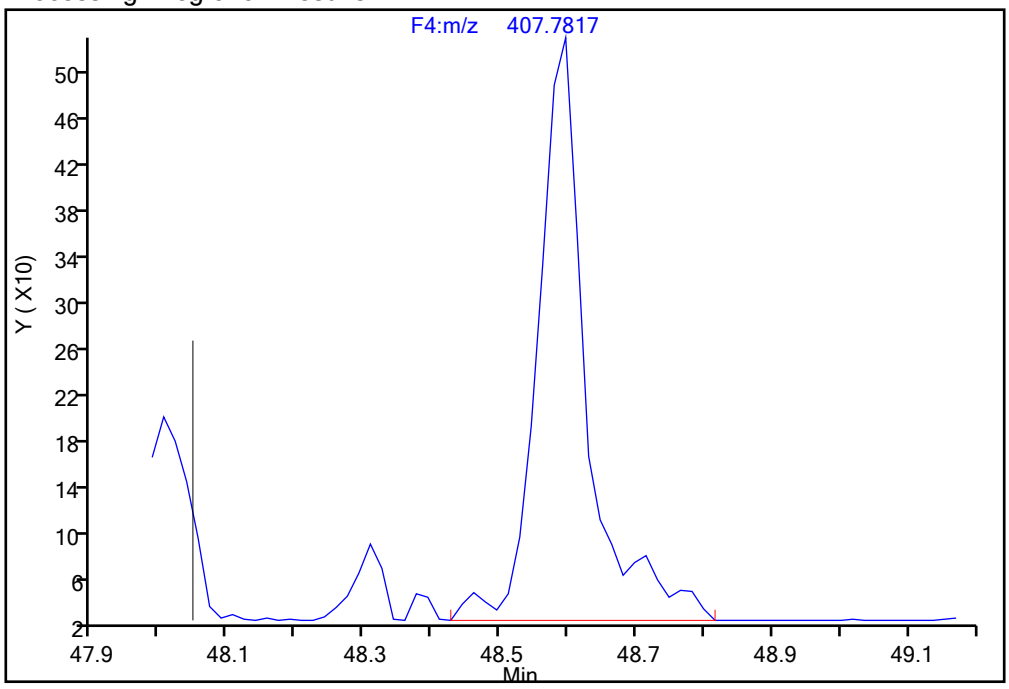
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 06:01:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.75- 51.27)

Signal: 1

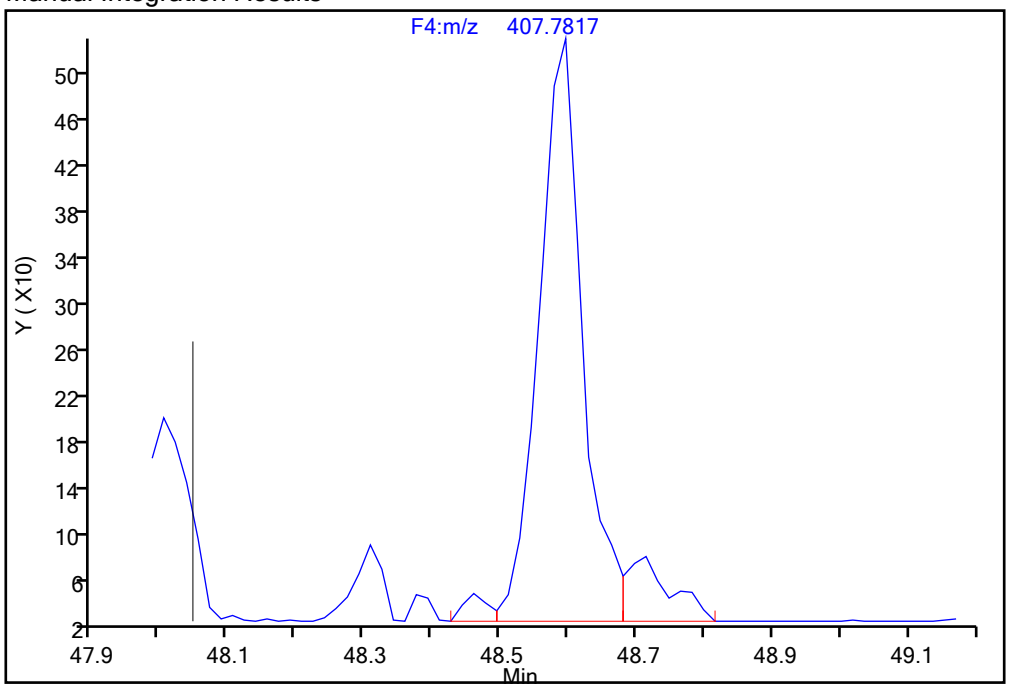
Processing Integration Results

RT = 48.596 Area = 2524



Manual Integration Results

RT = 48.596 Area = 2220 M



Reviewer: davidsonm, 18-Dec-2019 08:48:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 08:48:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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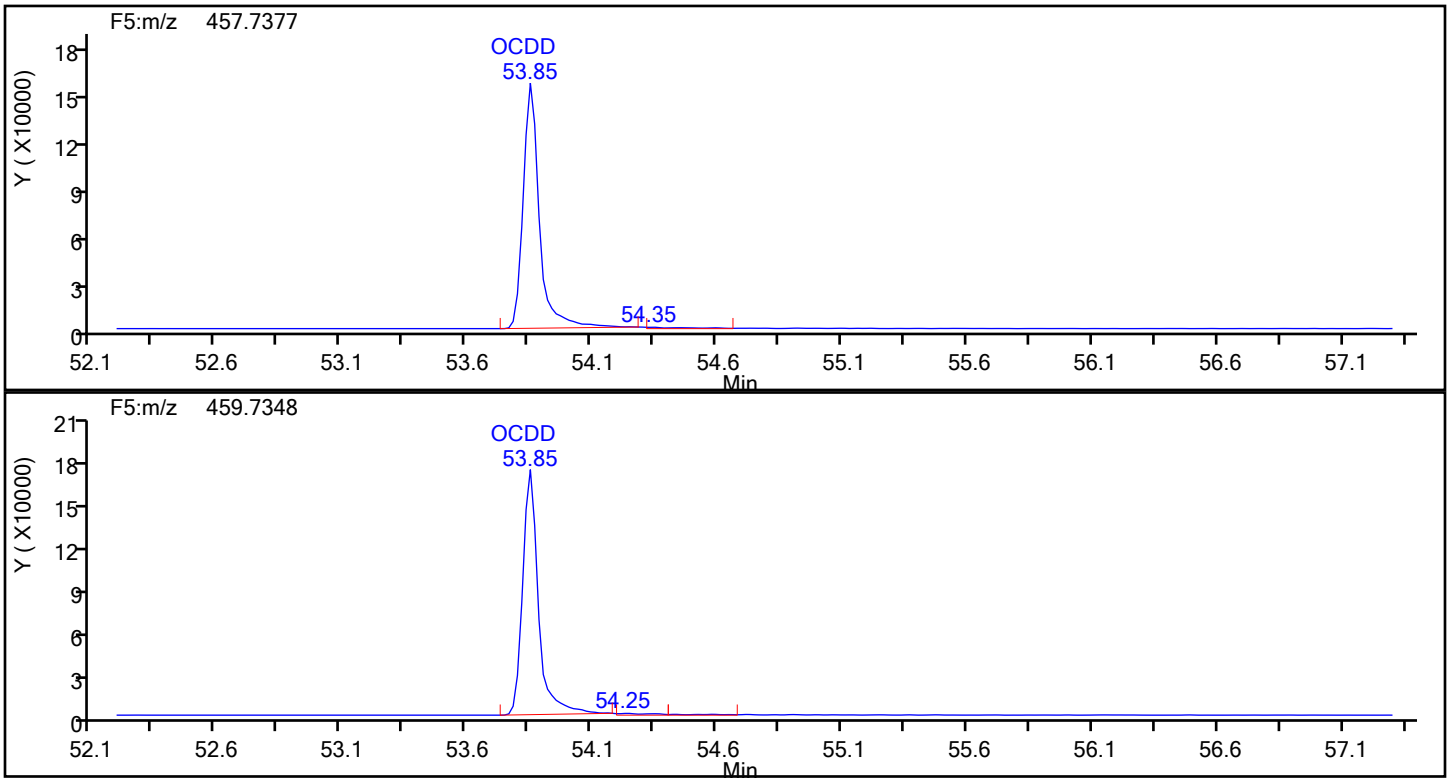
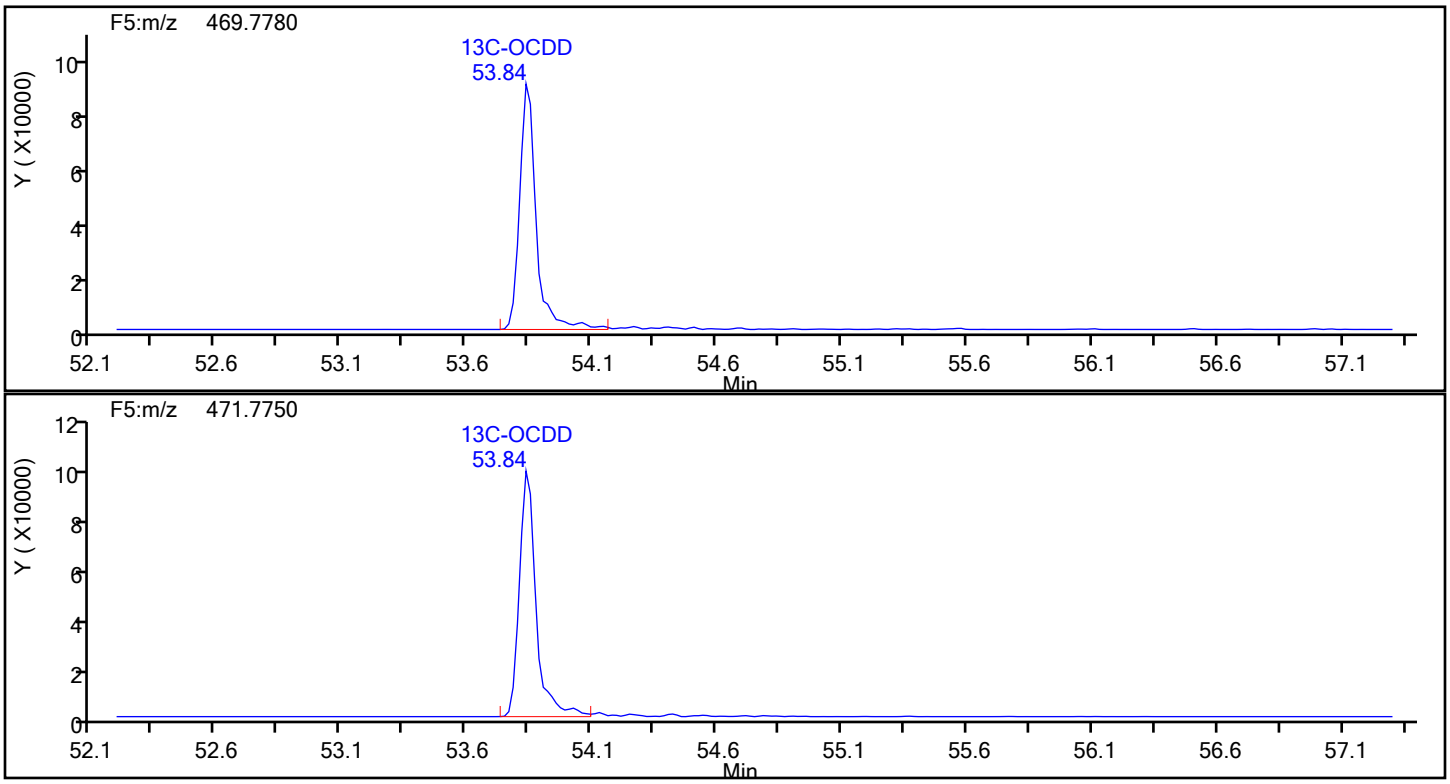
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

OCDD



OCDD Standards



Report Date: 18-Dec-2019 08:48:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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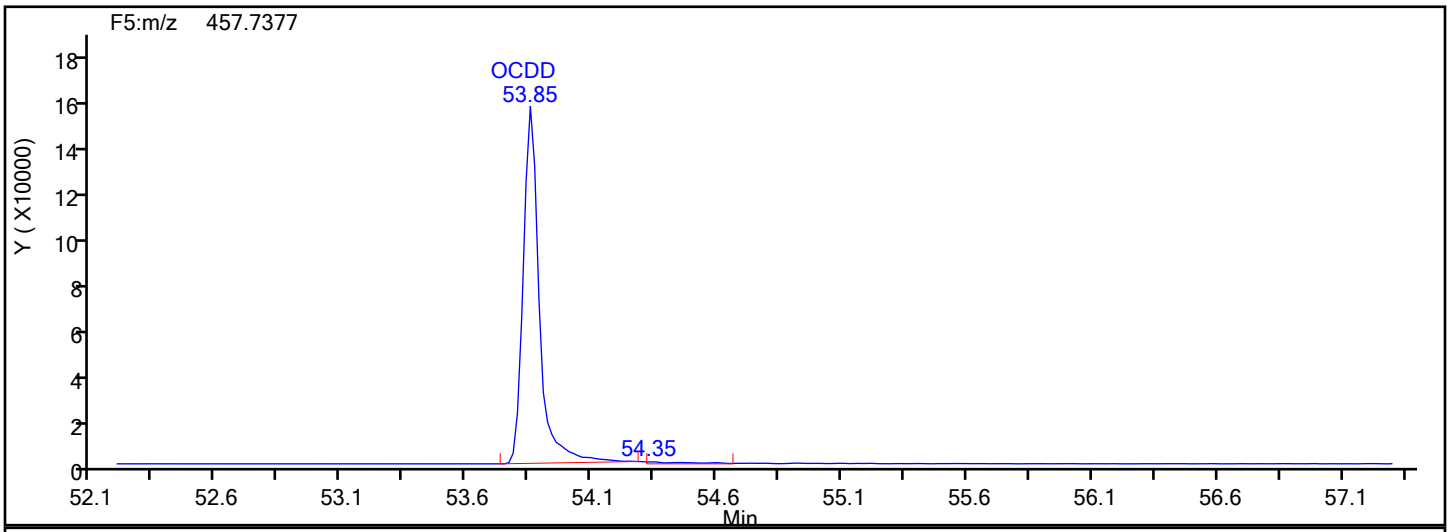
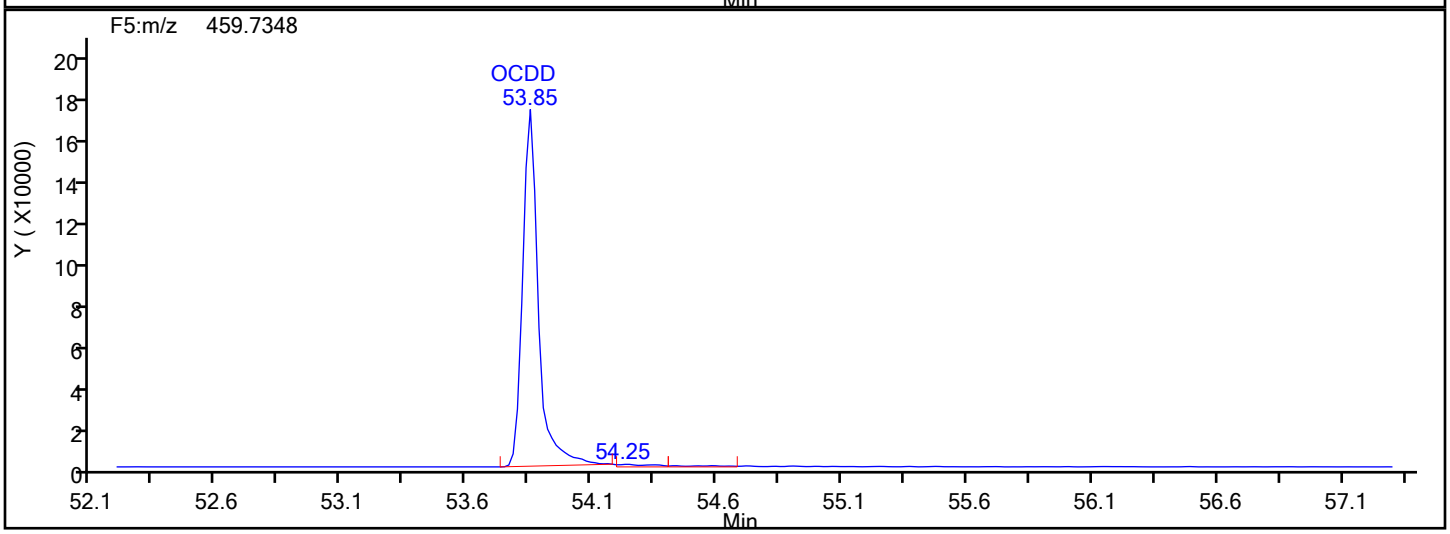
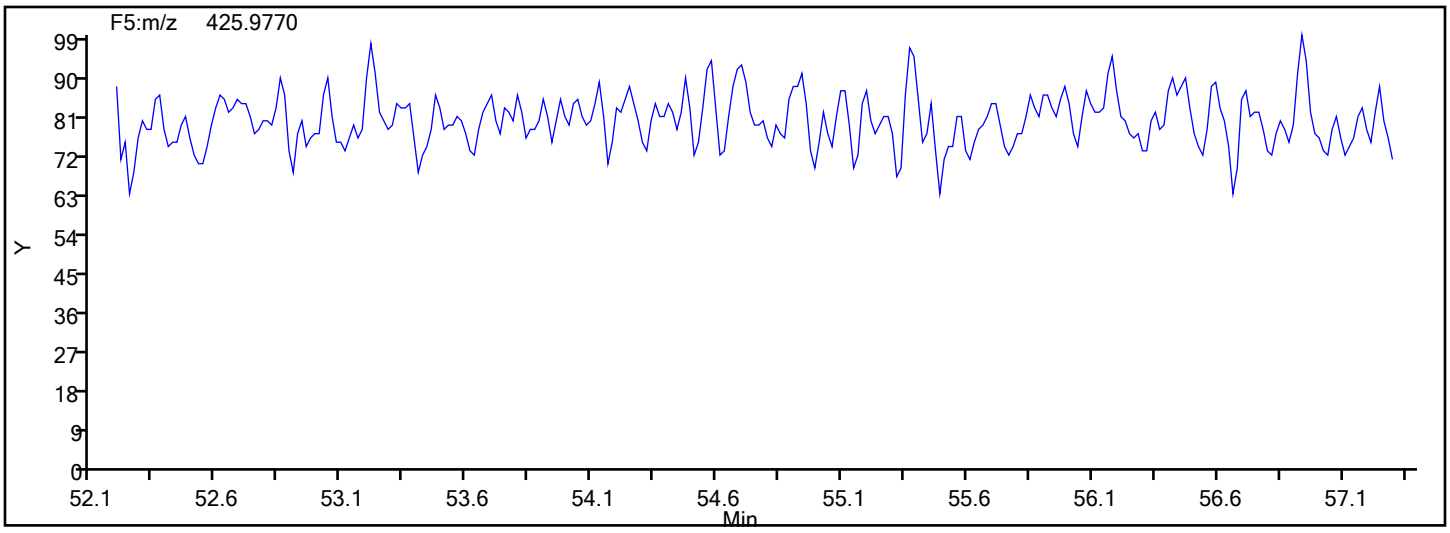
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 18-Dec-2019 08:48:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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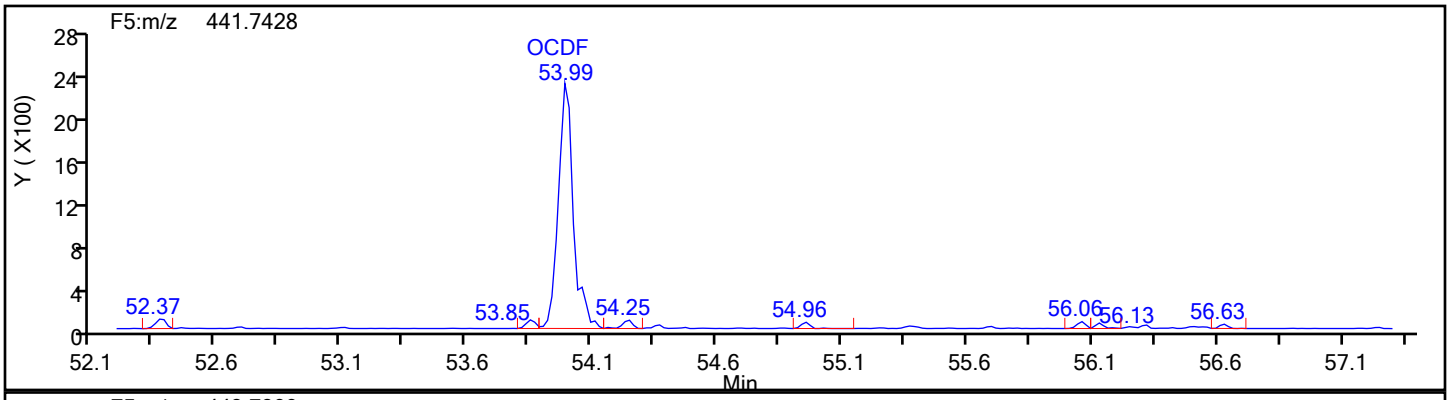
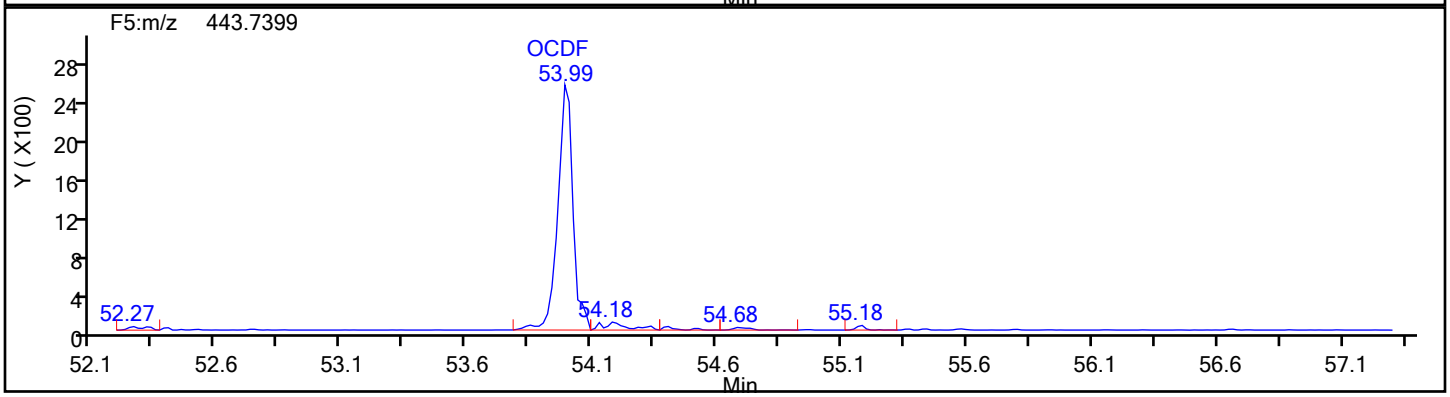
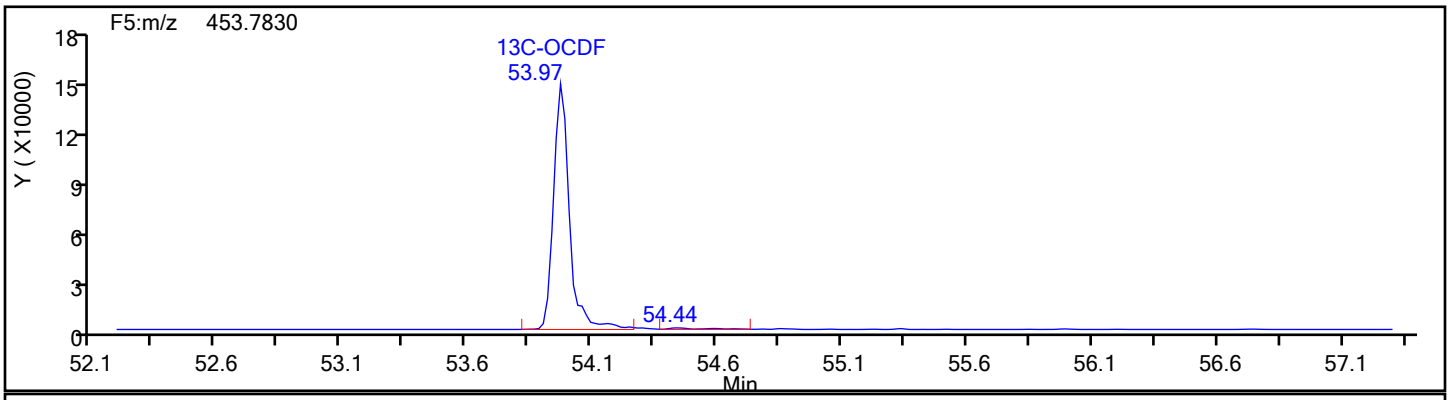
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

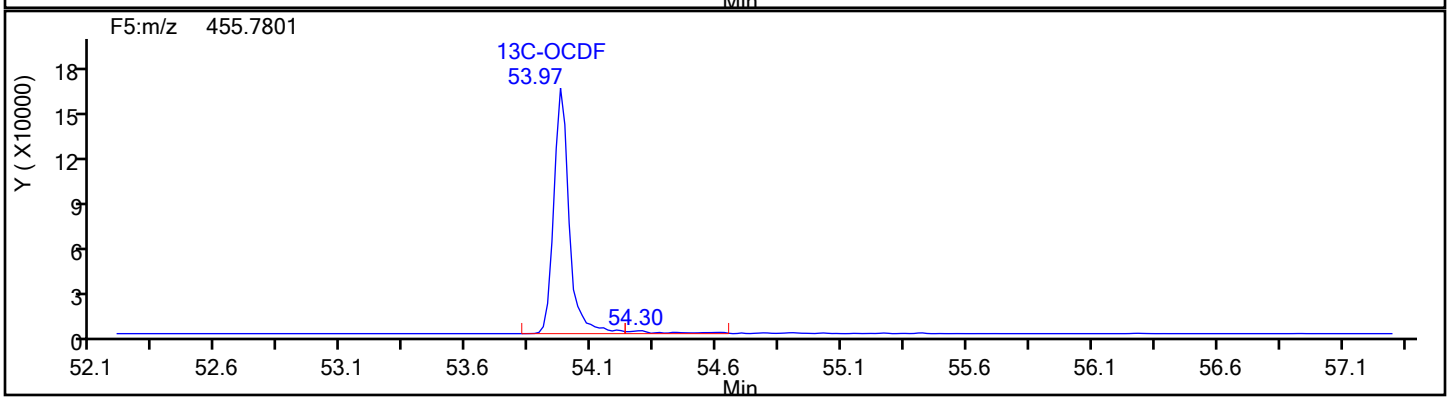
OCDF





OCDF Standards



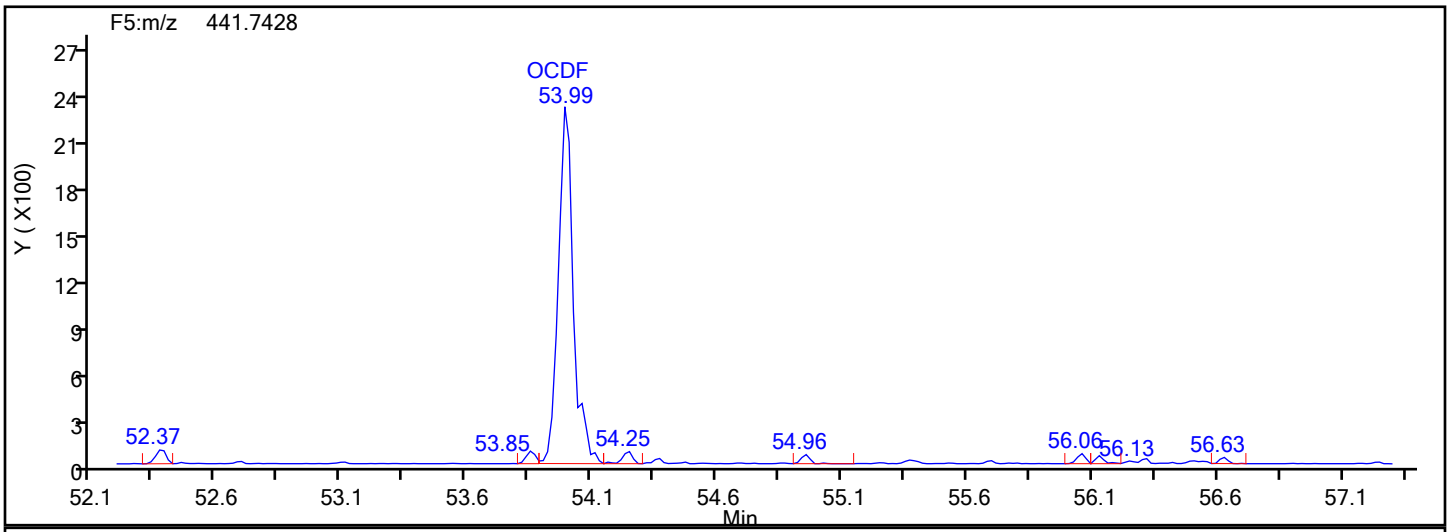


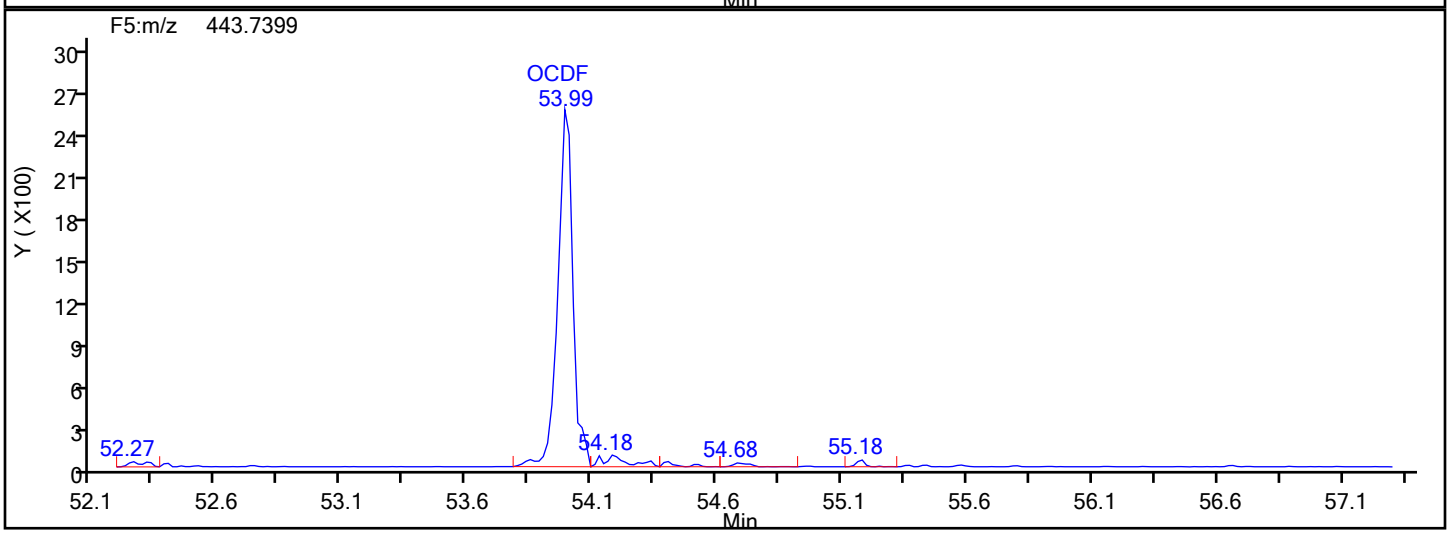
Report Date: 18-Dec-2019 08:48:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

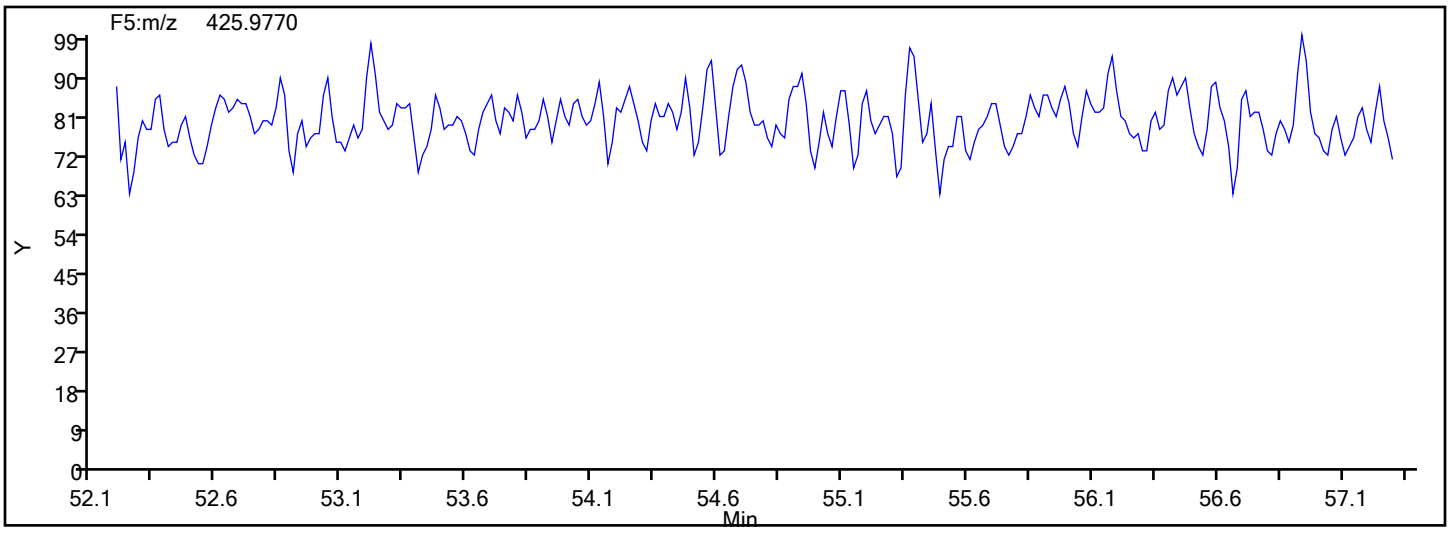
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

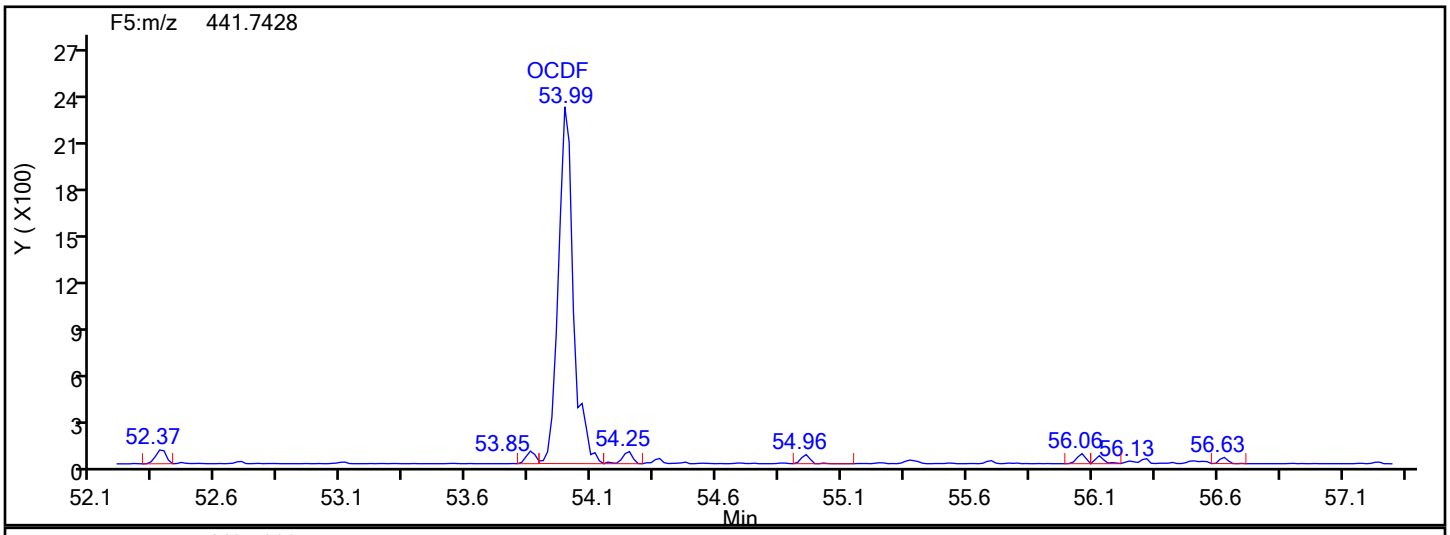


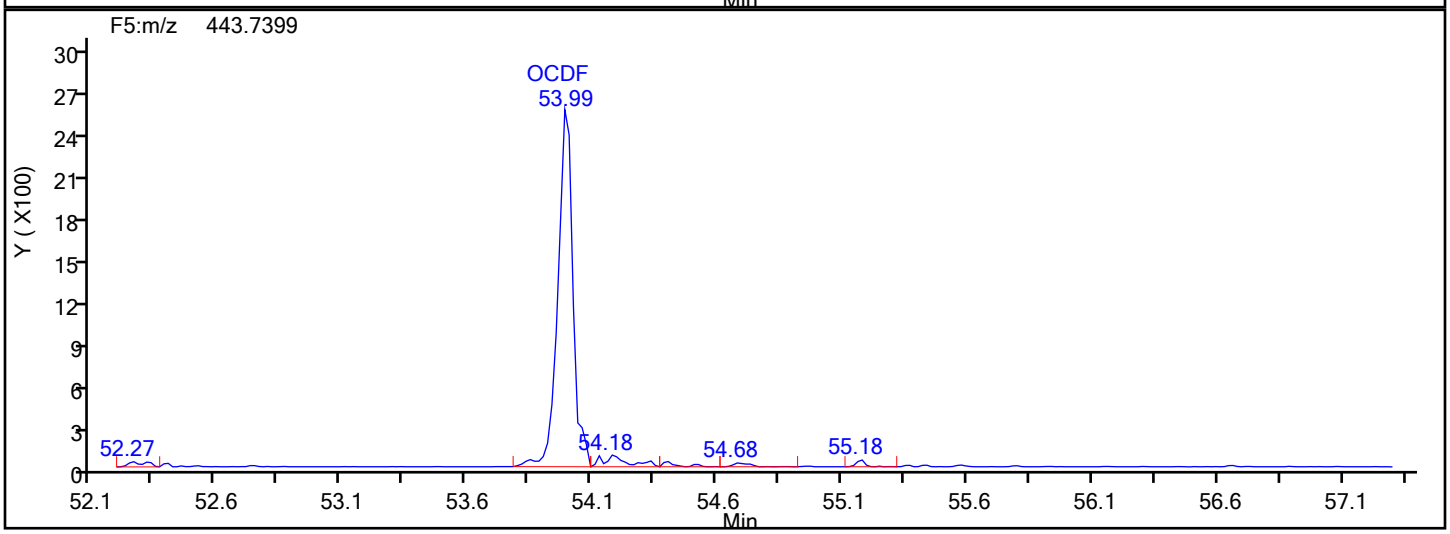
Report Date: 18-Dec-2019 08:48:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

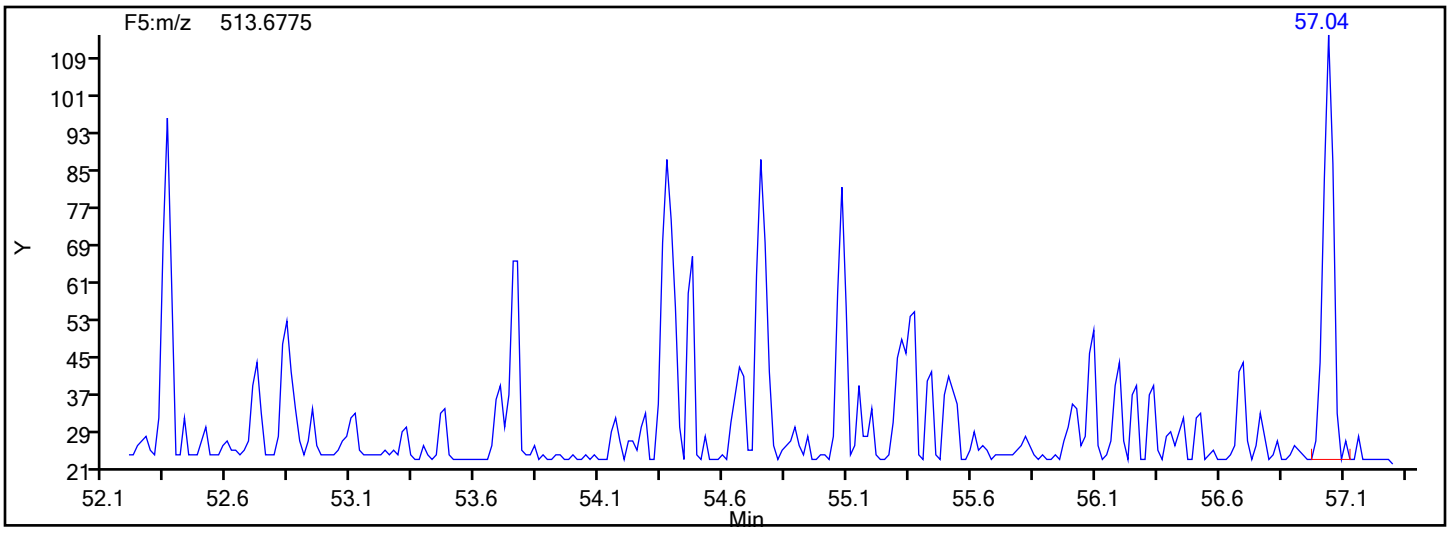
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 06:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36166	Sample Line#:	10
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(0-1) Lab Sample ID: 140-17578-16

Matrix: Sediment Lab File ID: 140-17578-a-16-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:50

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.89(g) Date Analyzed: 12/18/2019 14:14

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 28.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36178 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	3.6	q	1.4	0.17

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	61		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 14:14:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-007
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:06:39 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:06:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:42	12695	0.69	1.2213	0.4584	0.4584	0.1281	0.1281		
2,3,7,8-TCDF	22:12	46554	0.77	1.1100	1.384	1.284	0.0602	0.0602		RQM
D 13C-2,3,7,8-TCDD	19:40	1133689	0.83	1.0031	34.3	34.3	0.3593	0.3593	68.66	
D 13C-2,3,7,8-TCDF	22:11	1633617	0.79	1.6193	30.6	30.6	0.2729	0.2729	61.29	a
$ 37Cl4-2,3,7,8-TCDD	19:41	280880		1.1834	7.210	7.210	0.0444	0.0444	72.10	
* 13C-1,2,3,4-TCDD	20:06	3292180	0.79	1.6E+05	100.0	100.0				

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d
Lims ID: 140-17578-A-16-A
Client ID: 11187072-120719-SS-SJSSA02(0-1)
Sample Type: Client
Inject. Date: 18-Dec-2019 14:14:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-007
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:06:39 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:06:39

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:42	19:43	-1	1.002	5197	938	98	245	10		
321.8936	19:43	19:43	0	1.003	7498	874	133	332	7	0.69(0.65-0.89)	
2,3,7,8-TCDF											RQM
303.9016	22:12	22:12	-1	1.001	23889	2956	60	150	49		M
	Empc Correction				20252	2854	60	150	48		
305.8987	22:13	22:12	0	1.002	26302	3707	56	140	66	0.91(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:40	19:39	-1	0.978	512903	83526	380	950	220		
333.9338	19:40	19:39	-1	0.978	620786	100919	381	952	265	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	22:11	22:11	0	1.104	719938	90559	290	725	312		a
317.9389	22:10	22:11	-1	1.103	913679	126264	643	1607	196	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:41	19:41	-2	0.979	280880	45777	111	277	412		
13C-1,2,3,4-TCDD											
331.9368	20:06	20:08	-2		1448198	229279	380	950	603		
333.9338	20:06	20:08	-2		1843982	298472	381	952	783	0.79(0.65-0.89)	

QC Flag Legend

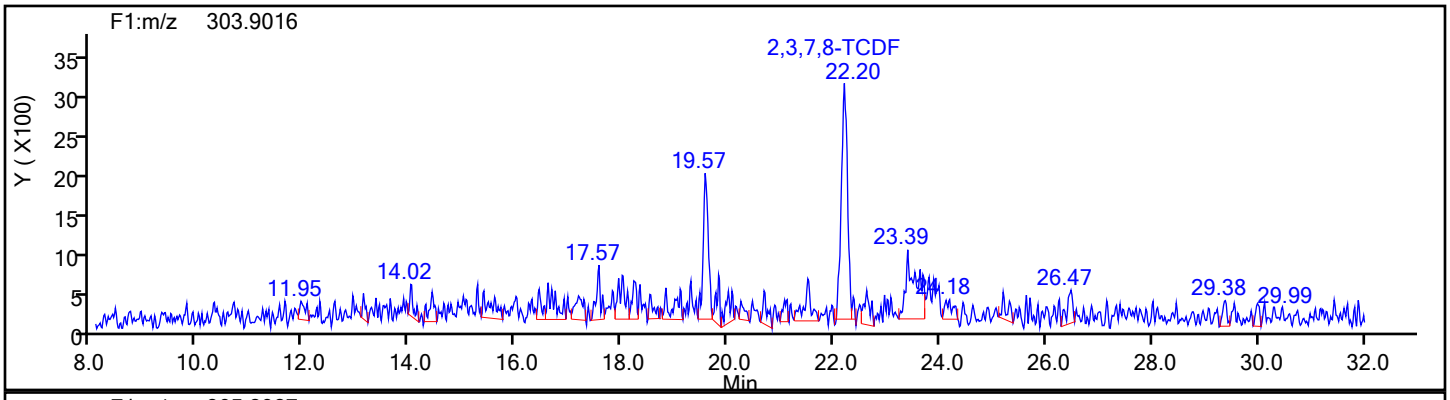
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated
a - User Assigned ID

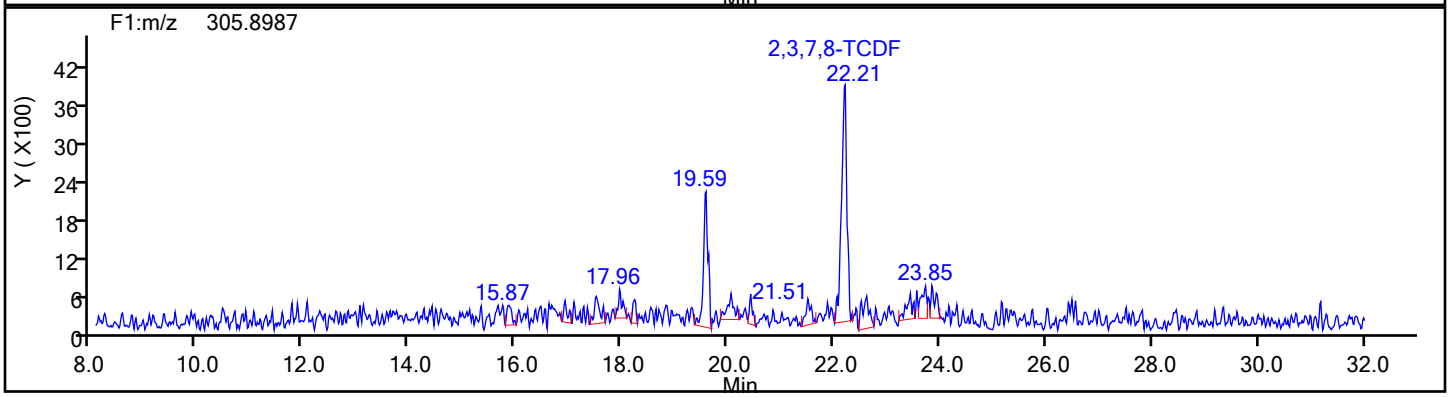
Report Date: 18-Dec-2019 15:06:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

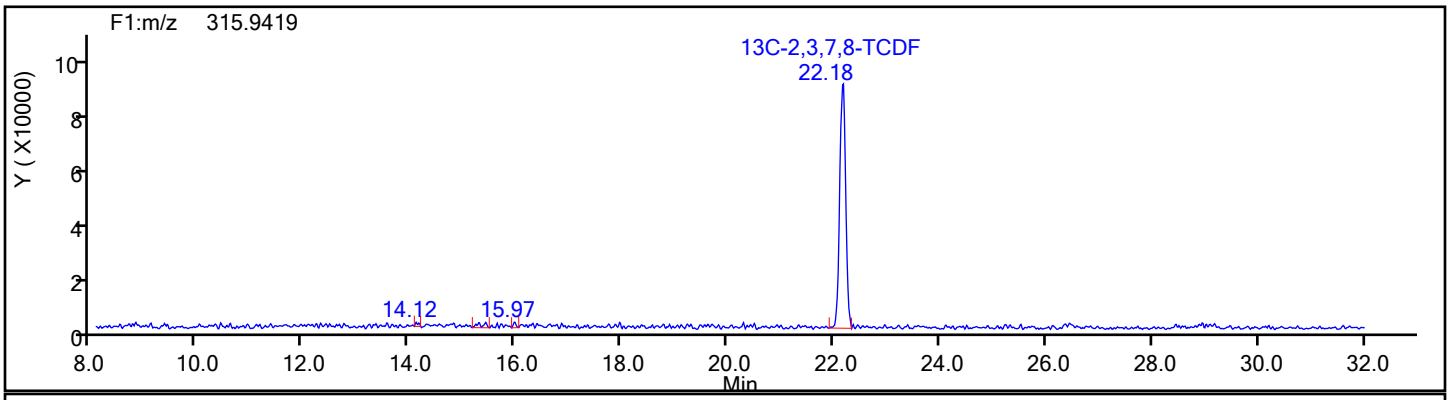
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 14:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36178	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

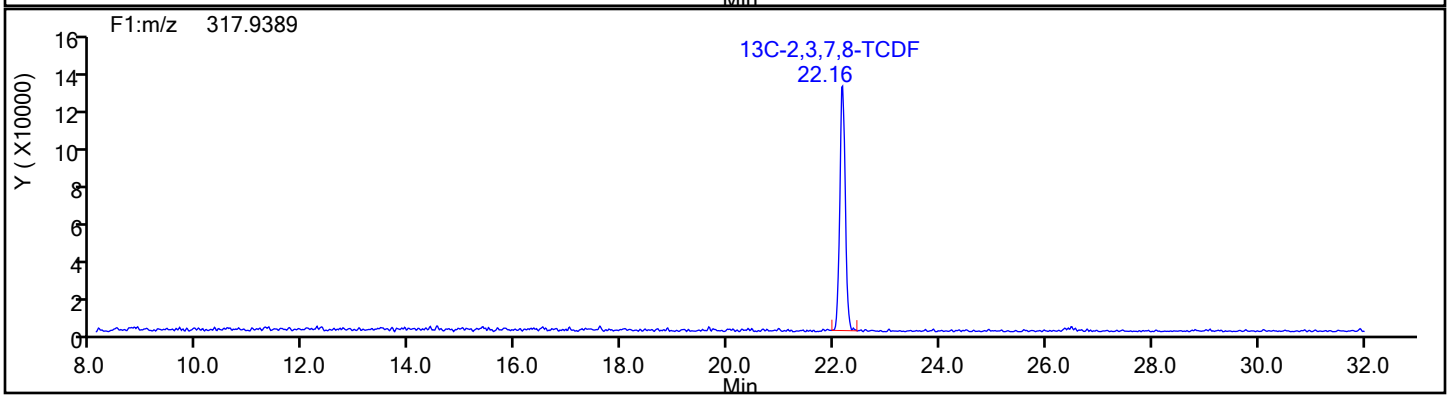
TCDF





TCDF Standards



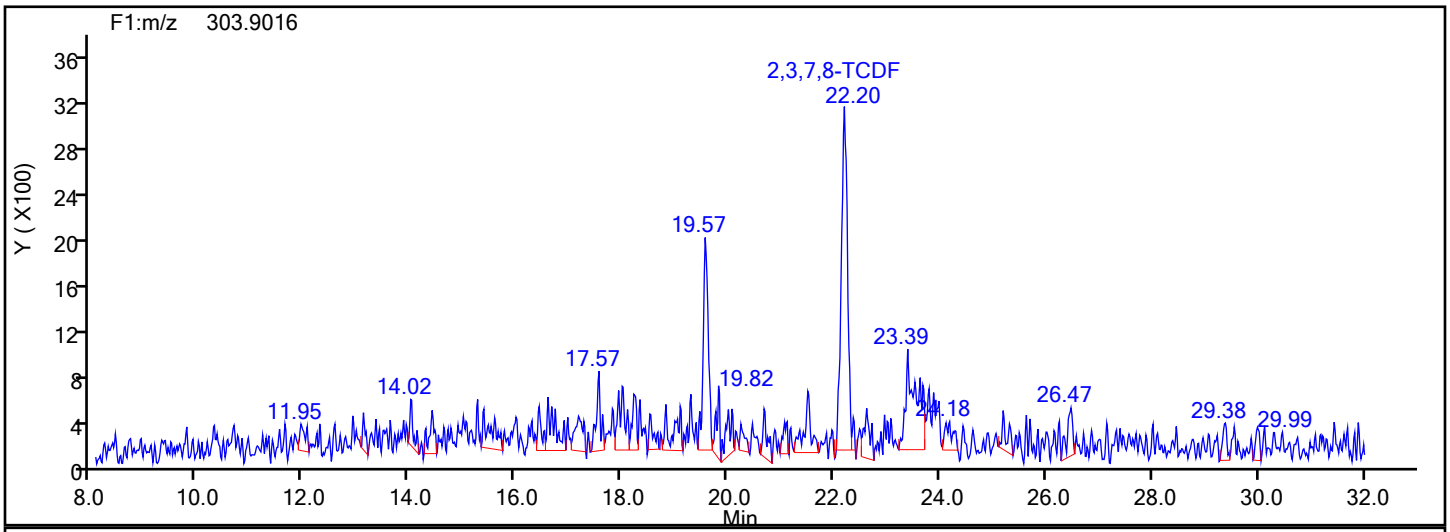


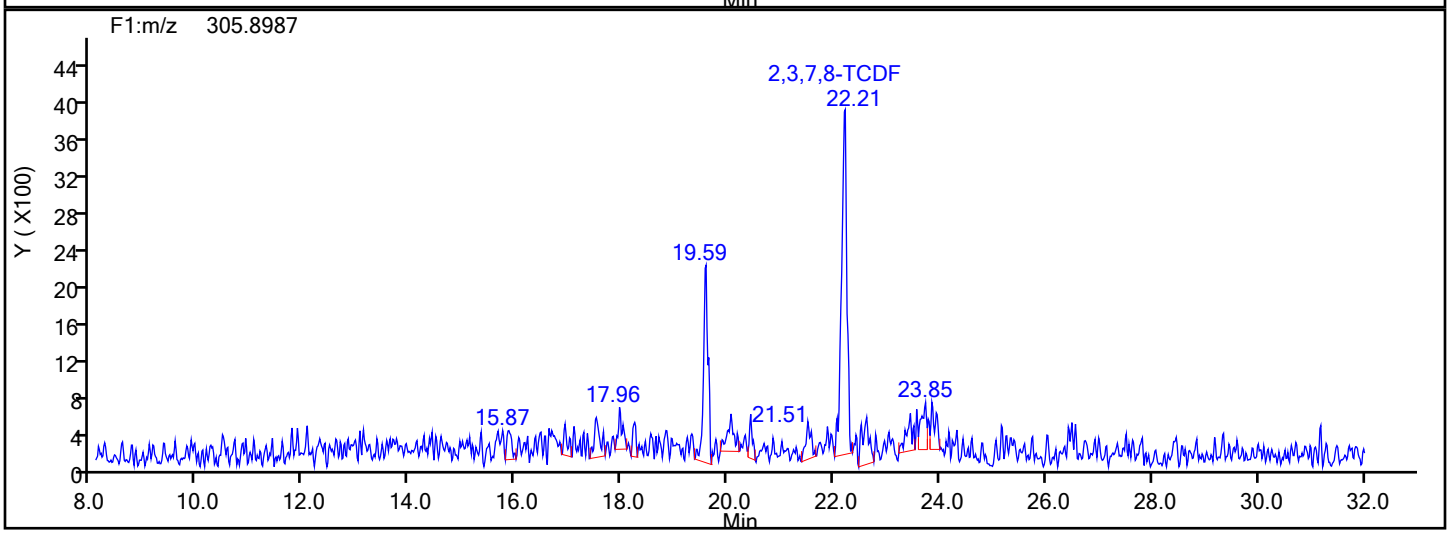
Report Date: 18-Dec-2019 15:06:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

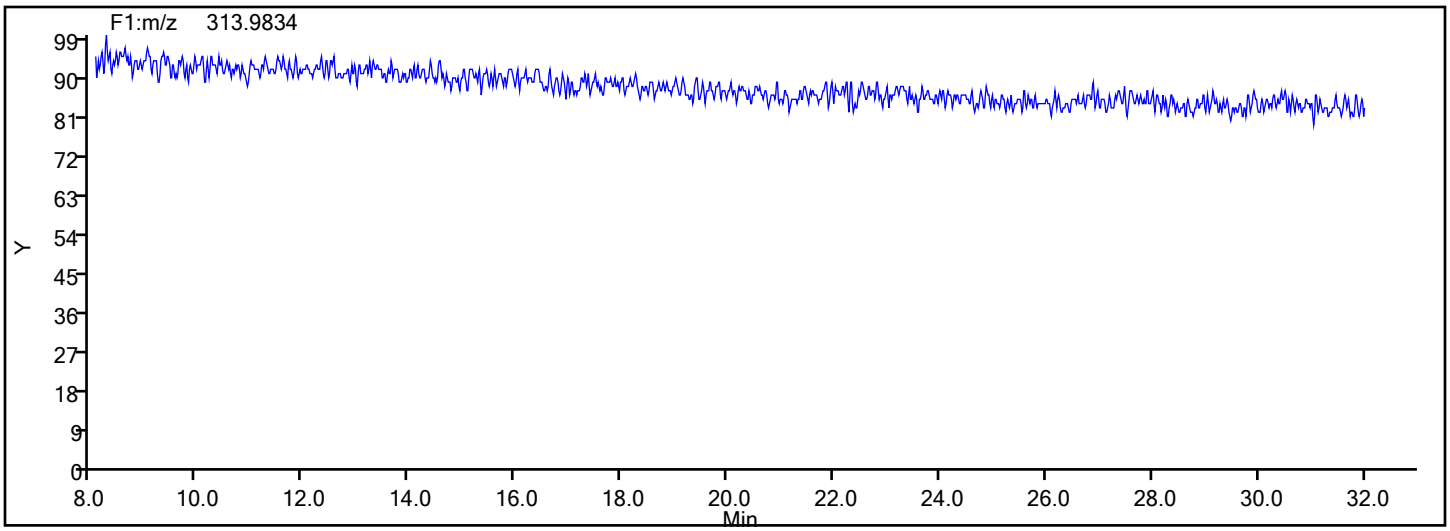
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 14:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36178	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

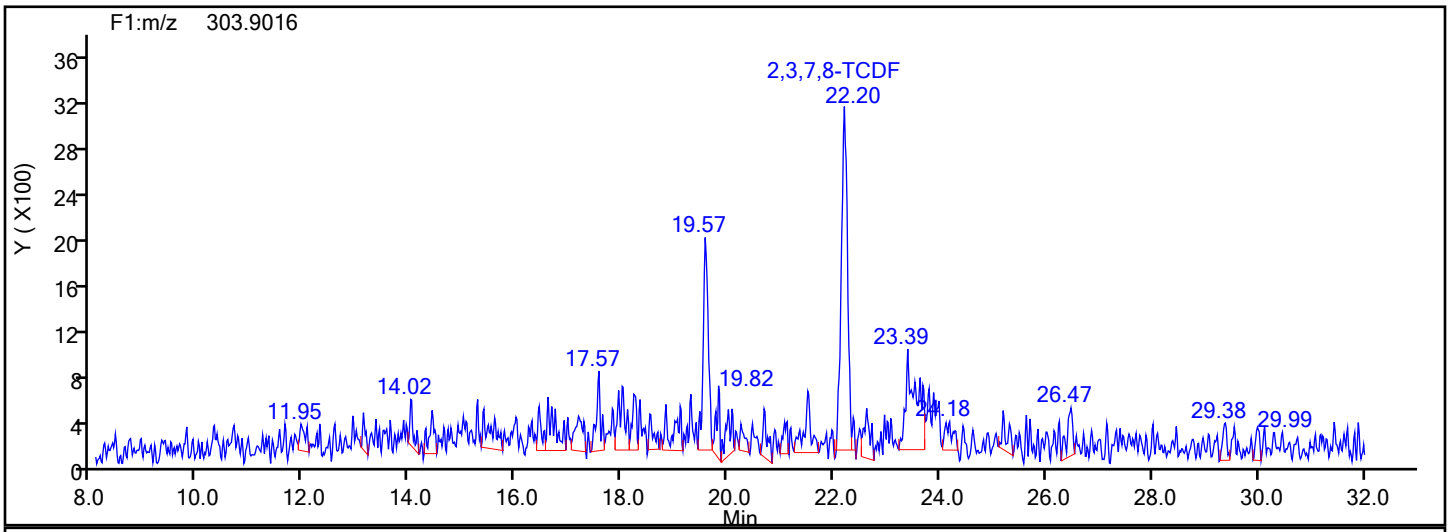


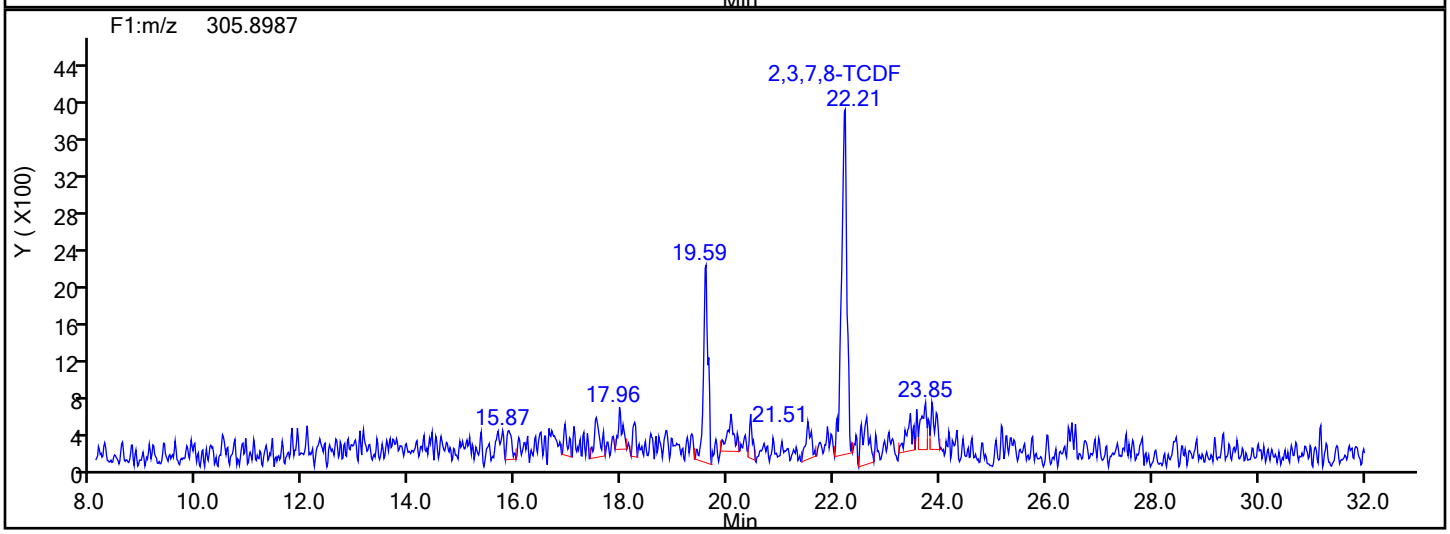
Report Date: 18-Dec-2019 15:06:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

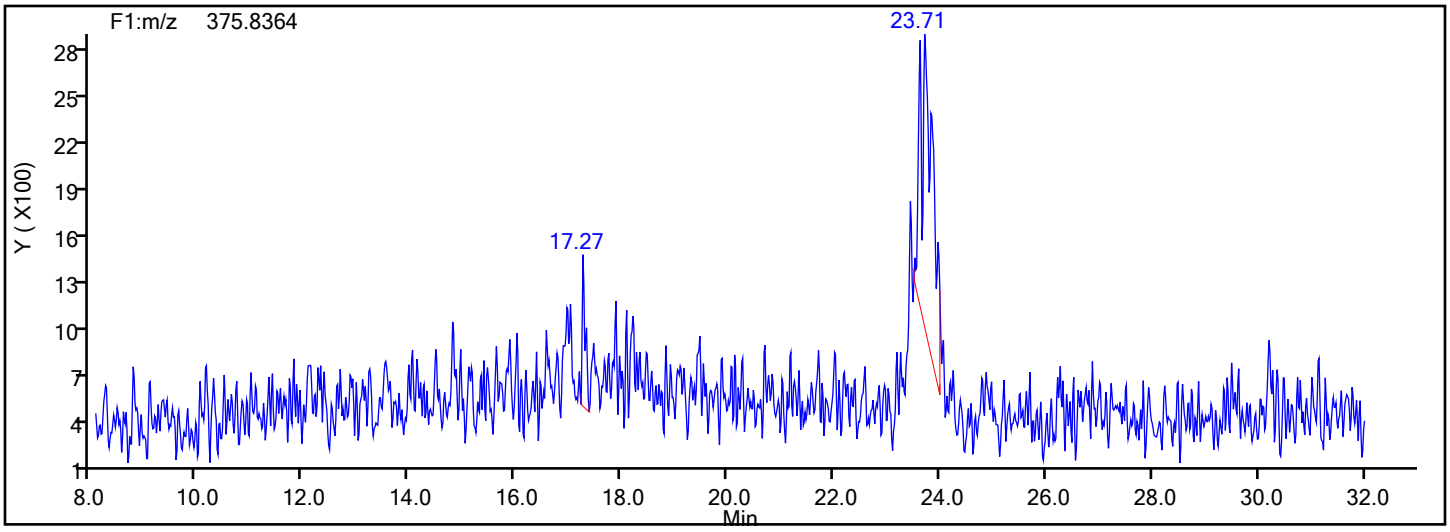
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d		
Injection Date:	18-Dec-2019 14:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(0-1)		
Worklist#:	36178	Sample Line#:	7
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

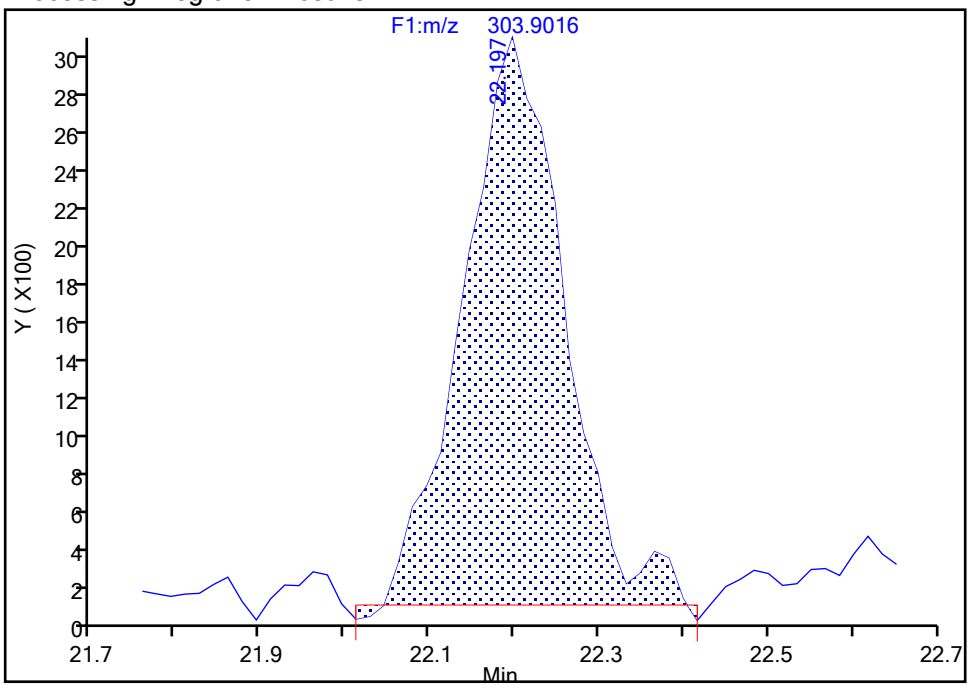
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 14:14:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

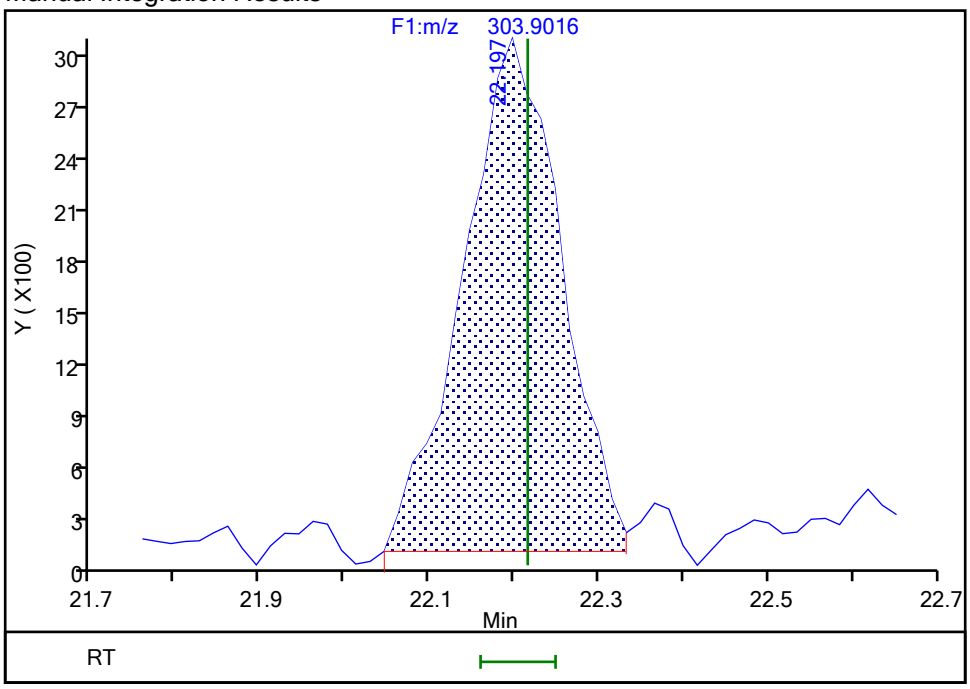
Processing Integration Results

RT: 22.20
Area: 24536
Amount: 1.401757
Amount Units: pg/ul



Manual Integration Results

RT: 22.20
Area: 23889
Amount: 1.383917
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 15:06:27

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

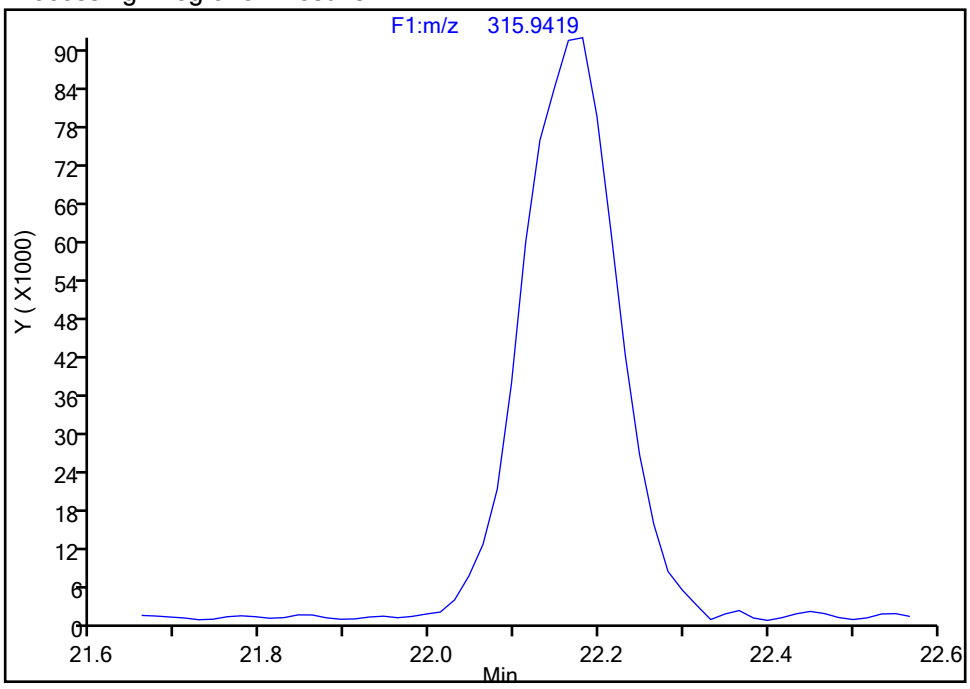
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-16-a.d				
Injection Date:	18-Dec-2019 14:14:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-16-A	Lab Sample ID:	140-17578-16		
Client ID:	11187072-120719-SS-SJSSA02(0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

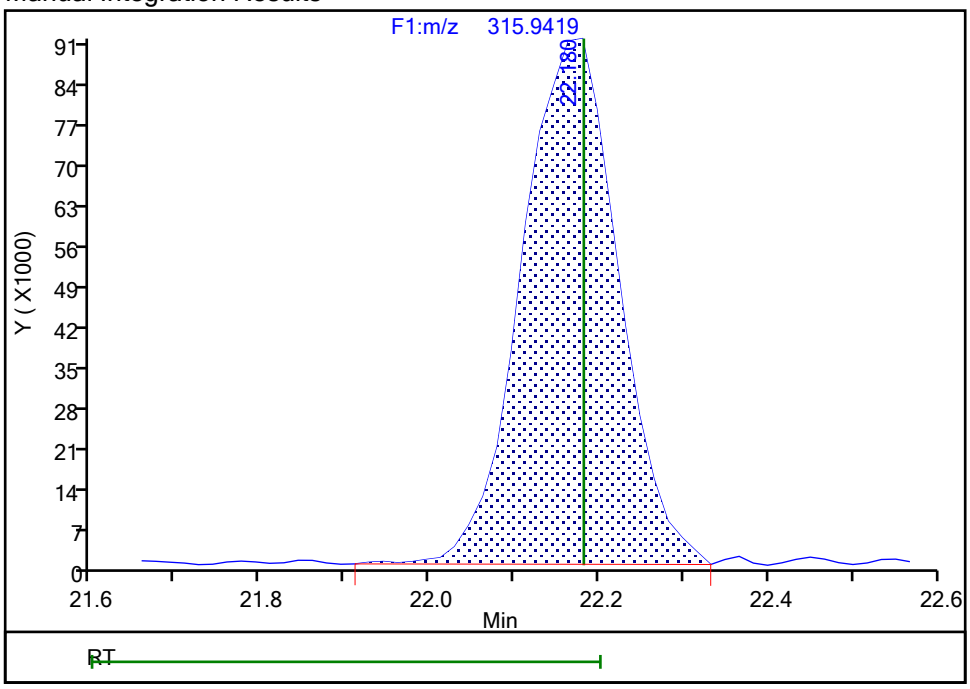
Not Detected
Expected RT: 22.18

Processing Integration Results



Manual Integration Results

RT: 22.18
Area: 719938
Amount: 30.644204
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 15:06:06
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Matrix: Sediment Lab File ID: 140-17578-a-17-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:55

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.55(g) Date Analyzed: 12/18/2019 07:02

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1.1	J	1.4	0.093
41903-57-5	Total TCDD	11	B q	1.4	0.093
40321-76-4	1,2,3,7,8-PeCDD	0.17	J q	7.0	0.065
36088-22-9	Total PeCDD	8.8	q	7.0	0.065
39227-28-6	1,2,3,4,7,8-HxCDD	0.33	J q	7.0	0.17
57653-85-7	1,2,3,6,7,8-HxCDD	0.42	J	7.0	0.17
19408-74-3	1,2,3,7,8,9-HxCDD	1.4	J	7.0	0.16
34465-46-8	Total HxCDD	34	B q	7.0	0.17
35822-46-9	1,2,3,4,6,7,8-HpCDD	21	B	7.0	0.17
37871-00-4	Total HpCDD	77	B	7.0	0.17
3268-87-9	OCDD	510	B	14	0.024
30402-14-3	Total TCDF	6.8	B q	1.4	0.072
57117-41-6	1,2,3,7,8-PeCDF	ND		7.0	0.063
57117-31-4	2,3,4,7,8-PeCDF	ND		7.0	0.061
30402-15-4	Total PeCDF	1.1	J q	7.0	0.062
70648-26-9	1,2,3,4,7,8-HxCDF	1.1	J	7.0	0.084
57117-44-9	1,2,3,6,7,8-HxCDF	0.35	J	7.0	0.087
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.0	0.084
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.0	0.12
55684-94-1	Total HxCDF	3.1	J I q	7.0	0.094
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.6	J B	7.0	0.10
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.52	J B	7.0	0.17
38998-75-3	Total HpCDF	4.8	J B q	7.0	0.13
39001-02-0	OCDF	4.3	J B q	14	0.12

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Matrix: Sediment Lab File ID: 140-17578-a-17-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:55

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.55(g) Date Analyzed: 12/18/2019 07:02

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	59		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	63		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	66		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	68		23-140
114423-97-1	13C-OCDD	59		17-157
89059-46-1	13C-2,3,7,8-TCDF	61		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	61		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	67		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	67		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	69		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	66		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	68		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		26-138
109719-78-0	13C-OCDF	60		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	67		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 07:02:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-011
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:56:47 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:56:47

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:55	4988	0.74	1.1733	0.3940	0.3940	0.0333	0.0333		M
A Non-2,3,7,8-sub-TCDD	29:27	46829	0.77	1.1733	3.874	3.699	0.0333	2.698		RQM
S Total TCDD					4.268	4.093	0.0333	0.0333		RQ
2,3,7,8-TCDF	28:53	26419	0.82	1.0881	1.323	1.323	0.0257	0.0257		M
A Non-2,3,7,8-sub-TCDF	28:10	22366	0.77	1.0881	1.325	1.120	0.0257	0.5538		RQM
S Total TCDF					2.648	2.443	0.0257	0.0257		RQ
1,2,3,7,8-PeCDD	40:35	595	1.55	1.0434	0.0718	0.0604	0.0235	0.0235		RQM
A Non-2,3,7,8-sub-PeCDD	39:24	30499	1.55	1.0434	3.151	3.097	0.0235	1.915		RQ
S Total PeCDD					3.222	3.157	0.0235	0.0235		RQ
1,2,3,7,8-PeCDF	38:45						0.0227	0.0227		
2,3,4,7,8-PeCDF	40:01						0.0218	0.0218		
A Non-2,3,7,8-sub-PeCDF	37:59	6656	1.55	1.1496	0.4766	0.3927	0.0222	0.1554		RQM
S Total PeCDF					0.4766	0.3927	0.0223	0.0223		RQ
1,2,3,4,7,8-HxCDD	44:50	1397	1.24	1.1409	0.1351	0.1179	0.0618	0.0618		RQMa
1,2,3,6,7,8-HxCDD	45:00	2009	1.27	1.1481	0.1522	0.1522	0.0616	0.0616		M
1,2,3,7,8,9-HxCDD	45:20	6679	1.17	1.2212	0.4997	0.4997	0.0579	0.0579		M
A Non-2,3,7,8-sub-HxCDD	44:17	148681	1.24	1.1700	11.7	11.6	0.0604	9.640		RQM
S Total HxCDD					12.5	12.4	0.0604	0.0604		RQ
1,2,3,4,7,8-HxCDF	43:49	8085	1.36	1.3629	0.4114	0.4114	0.0303	0.0303		
1,2,3,6,7,8-HxCDF	43:57	2821	1.14	1.2762	0.1259	0.1259	0.0314	0.0314		M
2,3,4,6,7,8-HxCDF	44:38						0.0303	0.0303		
1,2,3,7,8,9-HxCDF	45:38						0.0423	0.0423		U
A Non-2,3,7,8-sub-HxCDF	44:08	11675	1.24	1.2905	0.6875	0.5783	0.0330	0.3133		RQ
S Total HxCDF					1.225	1.116	0.0336	0.0336		RQ
1,2,3,4,6,7,8-HpCDD	49:38	82978	1.04	1.1204	7.447	7.447	0.0607	0.0607		
A Non-2,3,7,8-sub-HpCDD	49:01	223875	1.08	1.1204	20.1	20.1	0.0607	20.1		
S Total HpCDD					27.5	27.5	0.0607	0.0607		
1,2,3,4,6,7,8-HpCDF	47:58	17794	1.08	1.4984	0.9310	0.9310	0.0363	0.0363		M
1,2,3,4,7,8,9-HpCDF	50:16	2547	1.11	1.3807	0.1868	0.1868	0.0597	0.0597		
A Non-2,3,7,8-sub-HpCDF	49:31	9686	1.04	1.4395	0.6584	0.5946	0.0455	0.3878		RQMa

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					1.776	1.712	0.0480	0.0480		RQ
OCDD	53:53	1645010	0.93	1.2073	182.1	182.1	0.008518	0.008518		
OCDF	54:01	19604	0.89	1.1162	1.690	1.541	0.0445	0.0445		RQM
D 13C-2,3,7,8-TCDD	30:48	539542	0.77	1.0709	29.3	29.3	0.2303	0.2303	58.58	
D 13C-2,3,7,8-TCDF	28:49	917736	0.76	1.7545	30.4	30.4	0.5289	0.5289	60.81	
D 13C-1,2,3,7,8-PeCDD	40:34	471957	1.56	0.8743	31.4	31.4	0.3069	0.3069	62.76	
D 13C-1,2,3,7,8-PeCDF	38:47	724239	1.58	1.3704	30.7	30.7	0.5288	0.5288	61.44	
D 13C-2,3,4,7,8-PeCDF	40:02	750275	1.44	1.3837	31.5	31.5	0.5237	0.5237	63.04	
D 13C-1,2,3,4,7,8-HxCDD	44:49	519405	1.20	0.8772	33.0	33.0	0.1554	0.1554	65.91	
D 13C-1,2,3,6,7,8-HxCDD	44:57	575024	1.39	0.9171	34.9	34.9	0.1486	0.1486	69.79	
D 13C-1,2,3,4,7,8-HxCDF	43:49	720904	0.53	1.1892	33.7	33.7	0.3611	0.3611	67.48	
D 13C-1,2,3,6,7,8-HxCDF	43:56	878091	0.52	1.4625	33.4	33.4	0.2936	0.2936	66.83	
D 13C-2,3,4,6,7,8-HxCDF	44:39	820768	0.54	1.3197	34.6	34.6	0.3254	0.3254	69.23	
D 13C-1,2,3,7,8,9-HxCDF	45:36	708856	0.52	1.2001	32.9	32.9	0.3578	0.3578	65.75	
D 13C-1,2,3,4,6,7,8-HpCDD	49:37	497219	1.02	0.8155	33.9	33.9	0.1805	0.1805	67.87	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	637775	0.47	1.0496	33.8	33.8	0.2666	0.2666	67.63	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	493743	0.49	0.8947	30.7	30.7	0.3128	0.3128	61.42	
D 13C-OCDD	53:52	748358	0.93	0.7044	59.1	59.1	0.3552	0.3552	59.13	
D 13C-OCDF	54:00	1139533	0.97	1.0615	59.7	59.7	0.2811	0.2811	59.75	
$ 37Cl4-2,3,7,8-TCDD	30:51	141627		1.2266	6.712	6.712	0.0265	0.0265	67.12	
* 13C-1,2,3,4-TCDD	30:18	1720205	0.79	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:20	1796792	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 07:02:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-011
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 08:56:47 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 08:56:47

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	30:55	30:55	6	1.004	2117	223	8	20	28		M
321.8936	30:54	30:55	5	1.003	2871	417	10	25	42	0.74(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	24:58	29:27	-268	0.810	717	125	8	20	16		
	Empc Correction				582	88	8	20	11		
321.8936	24:57	29:27	-269	0.810	756	115	10	25	12	0.95(0.65-0.89)	
319.8965	25:39	29:27	-227	0.833	554	194	8	20	24		
321.8936	25:40	29:27	-226	0.833	870	144	10	25	14	0.64(0.65-0.89)	
	Empc Correction				719	251	10	25	25		
319.8965	26:19	29:27	-188	0.854	1067	158	8	20	20		M
321.8936	26:20	29:27	-187	0.855	2041	472	10	25	47	0.52(0.65-0.89)	M
	Empc Correction				1385	205	10	25	21		
319.8965	27:50	29:27	-97	0.903	15032	1780	8	20	223		
321.8936	27:48	29:27	-99	0.902	19124	2481	10	25	248	0.79(0.65-0.89)	
319.8965	28:20	29:27	-67	0.920	400	66	8	20	8		
321.8936	28:19	29:27	-68	0.919	495	74	10	25	7	0.81(0.65-0.89)	M
319.8965	28:38	29:27	-48	0.929	283	64	8	20	8		
	Empc Correction				179	41	8	20	5		
321.8936	28:38	29:27	-48	0.929	233	54	10	25	5	1.21(0.65-0.89)	M
319.8965	28:47	29:27	-39	0.934	168	30	8	20	4		M
321.8936	28:46	29:27	-40	0.934	506	141	10	25	14	0.33(0.65-0.89)	
	Empc Correction				218	38	10	25	4		
319.8965	30:20	29:27	53	0.985	1936	251	8	20	31		M
321.8936	30:16	29:27	49	0.983	3247	371	10	25	37	0.60(0.65-0.89)	
	Empc Correction				2514	325	10	25	33		

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	31:57	29:27	150	1.037	170	58	8	20	7		
321.8936	31:58	29:27	151	1.038	190	58	10	25	6	0.89(0.65-0.89)	
319.8965	34:04	29:27	277	1.106	482	111	8	20	14		M
321.8936	34:07	29:27	280	1.108	774	119	10	25	12	0.62(0.65-0.89)	M
	Empc Correction				625	144	10	25	14		
2,3,7,8-TCDF											M
303.9016	28:53	28:52	4	1.002	11893	1251	9	22	139		
305.8987	28:52	28:52	3	1.002	14526	1569	15	37	105	0.82(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	23:49	28:10	-260	0.826	503	94	9	22	10		
	Empc Correction				338	76	9	22	8		
305.8987	23:52	28:10	-257	0.828	440	100	15	37	7	1.14(0.65-0.89)	
303.9016	24:23	28:10	-226	0.846	212	40	9	22	4		
305.8987	24:23	28:10	-226	0.846	1059	167	15	37	11	0.20(0.65-0.89)	
	Empc Correction				275	51	15	37	3		
303.9016	25:07	28:10	-183	0.871	263	64	9	22	7		
305.8987	25:05	28:10	-185	0.870	932	160	15	37	11	0.28(0.65-0.89)	
	Empc Correction				341	83	15	37	6		
303.9016	25:42	28:10	-147	0.892	1066	130	9	22	14		M
	Empc Correction				843	167	9	22	19		
305.8987	25:48	28:10	-141	0.895	1096	217	15	37	14	0.97(0.65-0.89)	
303.9016	26:18	28:10	-112	0.912	638	58	9	22	6		M
	Empc Correction				398	70	9	22	8		
305.8987	26:22	28:10	-108	0.915	517	91	15	37	6	1.23(0.65-0.89)	M
303.9016	27:01	28:10	-69	0.937	564	125	9	22	14		
	Empc Correction				349	70	9	22	8		
305.8987	26:59	28:10	-71	0.936	454	92	15	37	6	1.24(0.65-0.89)	
303.9016	27:47	28:10	-23	0.964	5737	705	9	22	78		
	Empc Correction				4811	646	9	22	72		
305.8987	27:48	28:10	-22	0.964	6249	839	15	37	56	0.92(0.65-0.89)	
303.9016	30:05	28:10	115	1.044	686	89	9	22	10		
305.8987	30:07	28:10	117	1.045	900	145	15	37	10	0.76(0.65-0.89)	M
303.9016	32:48	28:10	277	1.138	1757	294	9	22	33		
	Empc Correction				1014	133	9	22	15		
305.8987	32:55	28:10	284	1.142	1317	173	15	37	12	1.33(0.65-0.89)	
303.9016	33:49	28:10	339	1.174	1027	153	9	22	17		M
	Empc Correction				810	109	9	22	12		
305.8987	33:53	28:10	343	1.176	1053	142	15	37	9	0.98(0.65-0.89)	M
1,2,3,7,8-PeCDD											RQM
355.8546	40:35	40:35	2	1.000	362	77	1	2	77		M
357.8516	40:35	40:35	2	1.000	345	84	20	50	4	1.05(1.32-1.78)	
	Empc Correction				233	49	20	50	2		
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	37:38	39:24	-106	0.928	2923	497	1	2	497		
357.8516	37:37	39:24	-107	0.927	1900	341	20	50	17	1.54(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
355.8546	38:29	39:24	-55	0.949	11364	2150	1	2	2150		
357.8516	38:29	39:24	-55	0.949	7499	1687	20	50	84	1.52(1.32-1.78)	
355.8546	39:11	39:24	-13	0.966	388	108	1	2	108		
357.8516	39:11	39:24	-13	0.966	598	163	20	50	8	0.65(1.32-1.78)	
	Empc Correction				250	69	20	50	3		
355.8546	39:44	39:24	20	0.980	768	140	1	2	140		
357.8516	39:42	39:24	18	0.979	678	188	20	50	9	1.13(1.32-1.78)	
	Empc Correction				495	90	20	50	5		
355.8546	39:52	39:24	27	0.983	3136	701	1	2	701		
357.8516	39:51	39:24	26	0.982	1776	292	20	50	15	1.77(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:46						10	25			
341.8567	38:46						21	52			
2,3,4,7,8-PeCDF											
339.8597	40:02						10	25			
341.8567	40:02						21	52			
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	37:18	37:59	-41	0.962	2174	387	10	25	39		
	Empc Correction				1601	280	10	25	28		
341.8567	37:18	37:59	-41	0.962	1033	181	21	52	9	2.10(1.32-1.78)	
339.8597	38:16	37:59	17	0.987	1825	181	10	25	18		
	Empc Correction				1396	247	10	25	25		
341.8567	38:18	37:59	19	0.988	901	160	21	52	8	2.03(1.32-1.78)	
339.8597	39:20	37:59	81	1.014	1049	134	10	25	13		
341.8567	39:20	37:59	81	1.014	1097	201	21	52	10	0.96(1.32-1.78)	M
	Empc Correction				676	86	21	52	4		
1,2,3,4,7,8-HxCDD											RQMa
389.8158	44:50	44:50	1	1.000	977	301	50	125	6		M
	Empc Correction				773	224	50	125	4		
391.8127	44:50	44:50	1	1.000	624	181	27	67	7	1.57(1.05-1.43)	
1,2,3,6,7,8-HxCDD											M
389.8158	45:00	44:58	3	1.001	1123	248	50	125	5		
391.8127	44:58	44:58	1	1.000	886	227	27	67	8	1.27(1.05-1.43)	M
1,2,3,7,8,9-HxCDD											M
389.8158	45:20	45:19	1	1.011	3605	609	50	125	12		
391.8127	45:19	45:19	0	1.011	3074	666	27	67	25	1.17(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	43:17	44:17	-59	0.963	68334	18985	50	125	380		M
391.8127	43:17	44:17	-59	0.963	55105	14616	27	67	541	1.24(1.05-1.43)	M
389.8158	43:51	44:17	-26	0.976	1425	293	50	125	6		
391.8127	43:52	44:17	-25	0.976	1321	294	27	67	11	1.08(1.05-1.43)	
389.8158	44:09	44:17	-8	0.982	11146	2680	50	125	54		
391.8127	44:09	44:17	-8	0.982	8645	2123	27	67	79	1.29(1.05-1.43)	
389.8158	44:19	44:17	2	0.986	2165	461	50	125	9		
	Empc Correction				1497	244	50	125	5		
391.8127	44:17	44:17	0	0.985	1208	197	27	67	7	1.79(1.05-1.43)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDF											
373.8208	43:49	43:49	1	1.000	4661	826	30	75	28		
375.8178	43:50	43:49	2	1.000	3424	806	34	85	24	1.36(1.05-1.43)	
1,2,3,6,7,8-HxCDF											M
373.8208	43:57	43:57	1	1.000	1502	400	30	75	13		M
375.8178	43:57	43:57	1	1.000	1319	297	34	85	9	1.14(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:39						30	75			
375.8178	44:39						34	85			
1,2,3,7,8,9-HxCDF											U
373.8208	45:36						30	75			
375.8178	45:36						34	85			
A Non-2,3,7,8-sub-HxCDF											RQ
373.8208	42:35	44:08	-93	0.969	1457	365	30	75	12		
	Empc Correction				980	293	30	75	10		
375.8178	42:36	44:08	-92	0.970	791	237	34	85	7	1.84(1.05-1.43)	
373.8208	42:46	44:08	-82	0.973	3438	790	30	75	26		
375.8178	42:46	44:08	-82	0.973	2886	548	34	85	16	1.19(1.05-1.43)	
373.8208	43:22	44:08	-46	0.987	1652	353	30	75	12		
	Empc Correction				705	187	30	75	6		
375.8178	43:21	44:08	-47	0.987	569	151	34	85	4	2.90(1.05-1.43)	
373.8208	43:34	44:08	-33	0.992	1277	438	30	75	15		
375.8178	43:33	44:08	-34	0.992	1808	544	34	85	16	0.71(1.05-1.43)	
	Empc Correction				1029	353	34	85	10		
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:38	2	1.000	42270	7193	14	35	514		
425.7737	49:38	49:38	2	1.000	40708	7120	34	85	209	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:28	49:01	-33	0.977	116432	23387	14	35	1671		
425.7737	48:28	49:01	-33	0.977	107443	22854	34	85	672	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	47:58	47:58	1	1.000	9253	1960	32	80	61		M
409.7788	47:58	47:58	1	1.000	8541	2129	27	67	79	1.08(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:16	50:17	0	1.000	1341	240	32	80	8		
409.7788	50:17	50:17	1	1.000	1206	229	27	67	8	1.11(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											RQMa
407.7817	48:21	49:31	-69	1.008	1718	380	32	80	12		a
409.7788	48:20	49:31	-70	1.008	2068	414	27	67	15	0.83(0.88-1.20)	
	Empc Correction				1651	365	27	67	14		
407.7817	48:36	49:31	-55	1.013	3841	838	32	80	26		M
	Empc Correction				3220	623	32	80	19		
409.7788	48:38	49:31	-53	1.014	3097	600	27	67	22	1.24(0.88-1.20)	M
OCDD											
457.7377	53:53	53:52	2	1.000	792597	174940	2	5	87470		
459.7348	53:53	53:52	2	1.000	852413	193490	5	12	38698	0.93(0.76-1.02)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDF											RQM
441.7428	54:01	54:01	2	1.000	11121	2721	27	67	101		M
	Empc Correction				9231	2025	27	67	75		
443.7399	54:01	54:01	2	1.000	10373	2276	23	57	99	1.07(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:48	30:48	3	1.017	234238	25291	130	325	195		
333.9338	30:48	30:48	3	1.017	305304	32312	52	130	621	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:49	28:49	3	0.951	395343	50255	344	860	146		
317.9389	28:49	28:49	3	0.951	522393	57041	341	852	167	0.76(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:36	2	1.339	287653	64345	117	292	550		
369.8919	40:34	40:36	2	1.339	184304	41862	81	202	517	1.56(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:47	38:48	2	1.280	443221	86750	295	737	294		
353.8970	38:47	38:48	2	1.280	281018	56058	240	600	234	1.58(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	40:04	2	1.321	442824	94852	295	737	322		
353.8970	40:02	40:04	2	1.321	307451	64007	240	600	267	1.44(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:50	1	0.989	283076	76128	98	245	777		
403.8529	44:49	44:50	1	0.989	236329	59990	128	320	469	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:57	44:58	1	0.991	334030	75970	98	245	775		
403.8529	44:57	44:58	1	0.991	240994	59695	128	320	466	1.39(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:49	43:49	2	0.966	250939	66688	413	1032	161		
385.8610	43:49	43:49	2	0.966	469965	126887	299	747	424	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:57	1	0.969	299383	67371	413	1032	163		
385.8610	43:56	43:57	1	0.969	578708	132302	299	747	442	0.52(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	2	0.985	286434	71268	413	1032	173		
385.8610	44:39	44:39	2	0.985	534334	137254	299	747	459	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:36	45:36	2	1.006	241142	49852	413	1032	121		
385.8610	45:36	45:36	2	1.006	467714	100606	299	747	336	0.52(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:37	49:38	2	1.095	250720	44912	78	195	576		
437.8140	49:36	49:38	1	1.094	246499	43374	166	415	261	1.02(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	2	1.058	204150	43348	140	350	310		
419.8220	47:57	47:57	2	1.058	433625	91765	324	810	283	0.47(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:17	1	1.109	161801	30742	140	350	220		
419.8220	50:16	50:17	1	1.109	331942	58462	324	810	180	0.49(0.37-0.51)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-OCDD											
469.7780	53:52	53:54	1	1.188	361016	79628	246	615	324		
471.7750	53:52	53:54	1	1.188	387342	85680	169	422	507	0.93(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:02	1	1.191	559794	123652	294	735	421		
455.7801	54:00	54:02	1	1.191	579739	127884	201	502	636	0.97(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:51	30:50	4	1.018	141627	14926	24	60	622		
13C-1,2,3,4-TCDD											
331.9368	30:18	30:15	3		761306	82639	130	325	636		
333.9338	30:18	30:15	3		958899	101850	52	130	1959	0.79(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:17	2		1002173	233980	98	245	2388		
403.8529	45:20	45:17	2		794619	180546	128	320	1411	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	539542	57603

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	539542	57603

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:58	717	125	756	115	0.1163	0.95	RQ
24:58	582	88	756	115	0.1057		Empc Correction
25:39	554	194	870	144	0.1125	0.64	RQ
25:39	554	194	719	251	0.1005		Empc Correction
26:19	1067	158	2041	472	0.2455	0.52	RQM
26:19	1067	158	1385	205	0.1937		Empc Correction
27:50	15032	1780	19124	2481	2.70	0.79	
28:20	400	66	495	74	0.0707	0.81	M
28:38	283	64	233	54	0.0408	1.21	RQM
28:38	179	41	233	54	0.0325		Empc Correction
28:47	168	30	506	141	0.0532	0.33	RQM
28:47	168	30	218	38	0.0305		Empc Correction
30:20	1936	251	3247	371	0.4094	0.60	RQM
30:20	1936	251	2514	325	0.3515		Empc Correction
31:57	170	58	190	58	0.0284	0.89	
34:04	482	111	774	119	0.0992	0.62	RQM
34:04	482	111	625	144	0.0874		Empc Correction
Signal Totals:							
	20570	2777	26259	3745			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	49045	6866				0.74	RQM
	46829	6522					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.874 = (49045 * 50.000) / (539542 * 1.173)
Empc Amount: 3.699 = (46829 * 50.000) / (539542 * 1.173)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	917736	107296

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	917736	107296

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:49	503	94	440	100	0.0472	1.14	RQ
23:49	338	76	440	100	0.0390		Empc Correction
24:23	212	40	1059	167	0.0636	0.20	RQ
24:23	212	40	275	51	0.0244		Empc Correction
25:07	263	64	932	160	0.0598	0.28	RQ
25:07	263	64	341	83	0.0302		Empc Correction
25:42	1066	130	1096	217	0.1082	0.97	RQM
25:42	843	167	1096	217	0.0971		Empc Correction
26:18	638	58	517	91	0.0578	1.23	RQM
26:18	398	70	517	91	0.0458		Empc Correction
27:01	564	125	454	92	0.0510	1.24	RQ
27:01	349	70	454	92	0.0402		Empc Correction
27:47	5737	705	6249	839	0.6001	0.92	RQ
27:47	4811	646	6249	839	0.5538		Empc Correction
30:05	686	89	900	145	0.0794	0.76	M
32:48	1757	294	1317	173	0.1539	1.33	RQ
32:48	1014	133	1317	173	0.1167		Empc Correction
33:49	1027	153	1053	142	0.1041	0.98	RQM
33:49	810	109	1053	142	0.0933		Empc Correction
Signal Totals:							
	9724	1464	12642	1933			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	26470	3878				0.89	RQM
	22366	3397					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.325 = (26470 * 50.000) / (917736 * 1.088)
Empc Amount: 1.120 = (22366 * 50.000) / (917736 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	471957	106207

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	471957	106207

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:38	2923	497	1900	341	0.4897	1.54	
38:29	11364	2150	7499	1687	1.92	1.52	
39:11	388	108	598	163	0.1001	0.65	RQ
39:11	388	108	250	69	0.0648		Empc Correction
39:44	768	140	678	188	0.1468	1.13	RQ
39:44	768	140	495	90	0.1282		Empc Correction
39:52	3136	701	1776	292	0.4987	1.77	
Signal Totals:							
	18579	3596	11920	2479			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	31030	6267				1.49	RQ
	30499	6075					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.151 = (31030 * 50.000) / (471957 * 1.043)
Empc Amount: 3.097 = (30499 * 50.000) / (471957 * 1.043)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	724239	142808
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	750275	158859

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	737257	150833

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:18	2174	387	1033	181	0.1892	2.10	RQ
37:18	1601	280	1033	181	0.1554		Empc Correction
38:16	1825	181	901	160	0.1608	2.03	RQ
38:16	1396	247	901	160	0.1355		Empc Correction
39:20	1049	134	1097	201	0.1266	0.96	RQM
39:20	1049	134	676	86	0.1018		Empc Correction
Signal Totals:							
	4046	661	2610	427			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	8079	1244				1.67	RQM
	6656	1088					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4766 = (8079 * 50.000) / (737257 * 1.150)
Empc Amount: 0.3927 = (6656 * 50.000) / (737257 * 1.150)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	519405	136118
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	575024	135665
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	547214	135891

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	68334	18985	55105	14616	9.64	1.24	M
43:51	1425	293	1321	294	0.2144	1.08	
44:09	11146	2680	8645	2123	1.55	1.29	
44:19	2165	461	1208	197	0.2634	1.79	RQM
44:19	1497	244	1208	197	0.2112		Empc Correction
Signal Totals:							
	82402	22202	66279	17230			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	149349	39649				1.25	RQM
	148681	39432					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 11.663 = (149349 * 50.000) / (547214 * 1.170)
Empc Amount: 11.611 = (148681 * 50.000) / (547214 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	720904	193575
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	878091	199673
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	820768	208522
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	708856	150458

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	782154	188057

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:35	1457	365	791	237	0.1114	1.84	RQ
42:35	980	293	791	237	0.0877		Empc Correction
42:46	3438	790	2886	548	0.3133	1.19	
43:22	1652	353	569	151	0.1100	2.90	RQ
43:22	705	187	569	151	0.0631		Empc Correction
43:34	1277	438	1808	544	0.1528	0.71	RQ
43:34	1277	438	1029	353	0.1142		Empc Correction
Signal Totals:							
	6400	1708	5275	1289			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	13878	3426				1.29	RQ
	11675	2997					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6875 = (13878 * 50.000) / (782154 * 1.290)
Empc Amount: 0.5783 = (11675 * 50.000) / (782154 * 1.290)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	497219	88286

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	497219	88286

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:28	116432	23387	107443	22854	20.1	1.08	
Signal Totals:							
	116432	23387	107443	22854			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	223875	46241				1.08	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 20.093 = (223875 * 50.000) / (497219 * 1.120)

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Inject. Date: 18-Dec-2019 07:02:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	637775	135113
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	493743	89204

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	565759	112158

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	1718	380	2068	414	0.2324	0.83	RQa
48:21	1718	380	1651	365	0.2068		Empc Correction
48:36	3841	838	3097	600	0.4259	1.24	RQM
48:36	3220	623	3097	600	0.3878		Empc Correction
Signal Totals:							
	4938	1003	4748	965			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10724	2232				1.08	RQMa
	9686	1968					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6584 = (10724 * 50.000) / (565759 * 1.440)
Empc Amount: 0.5946 = (9686 * 50.000) / (565759 * 1.440)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

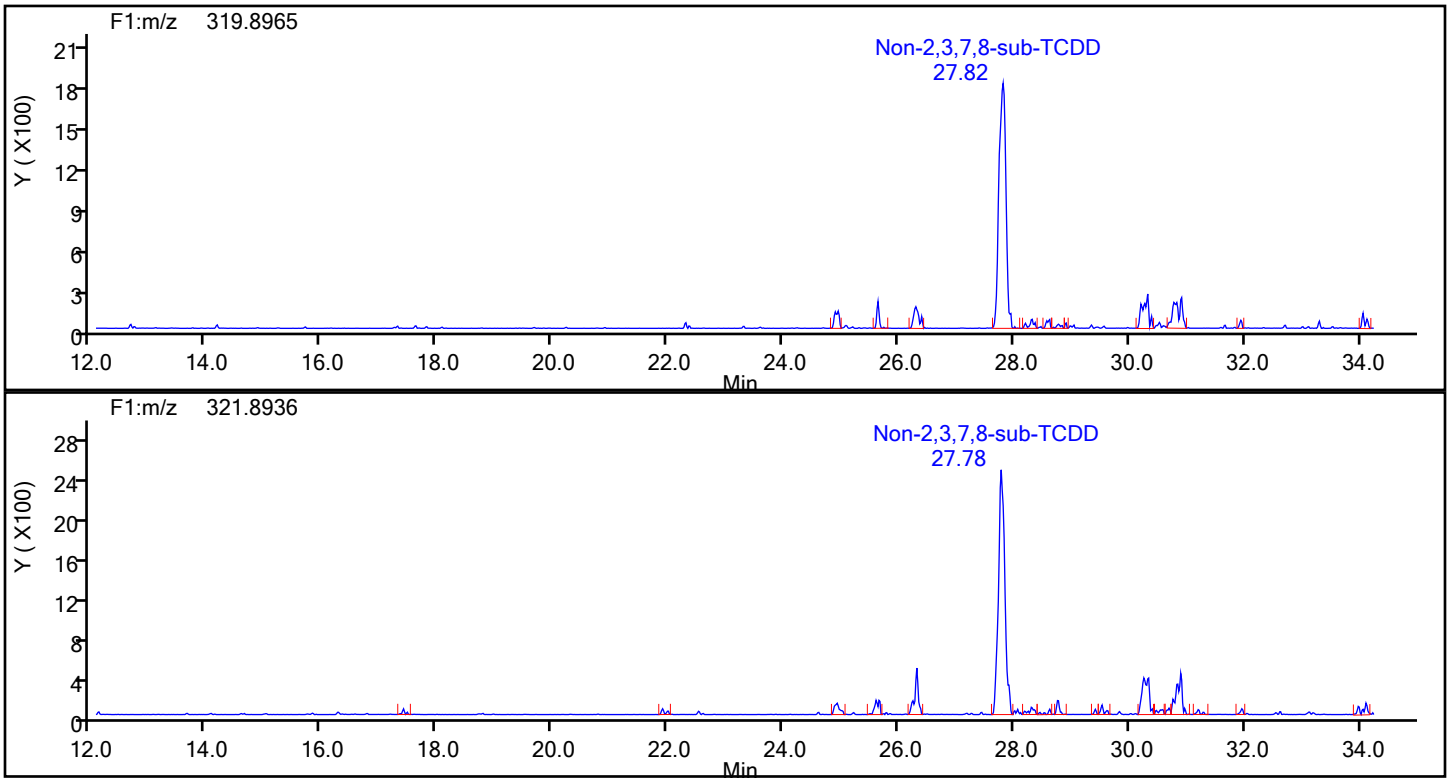
Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

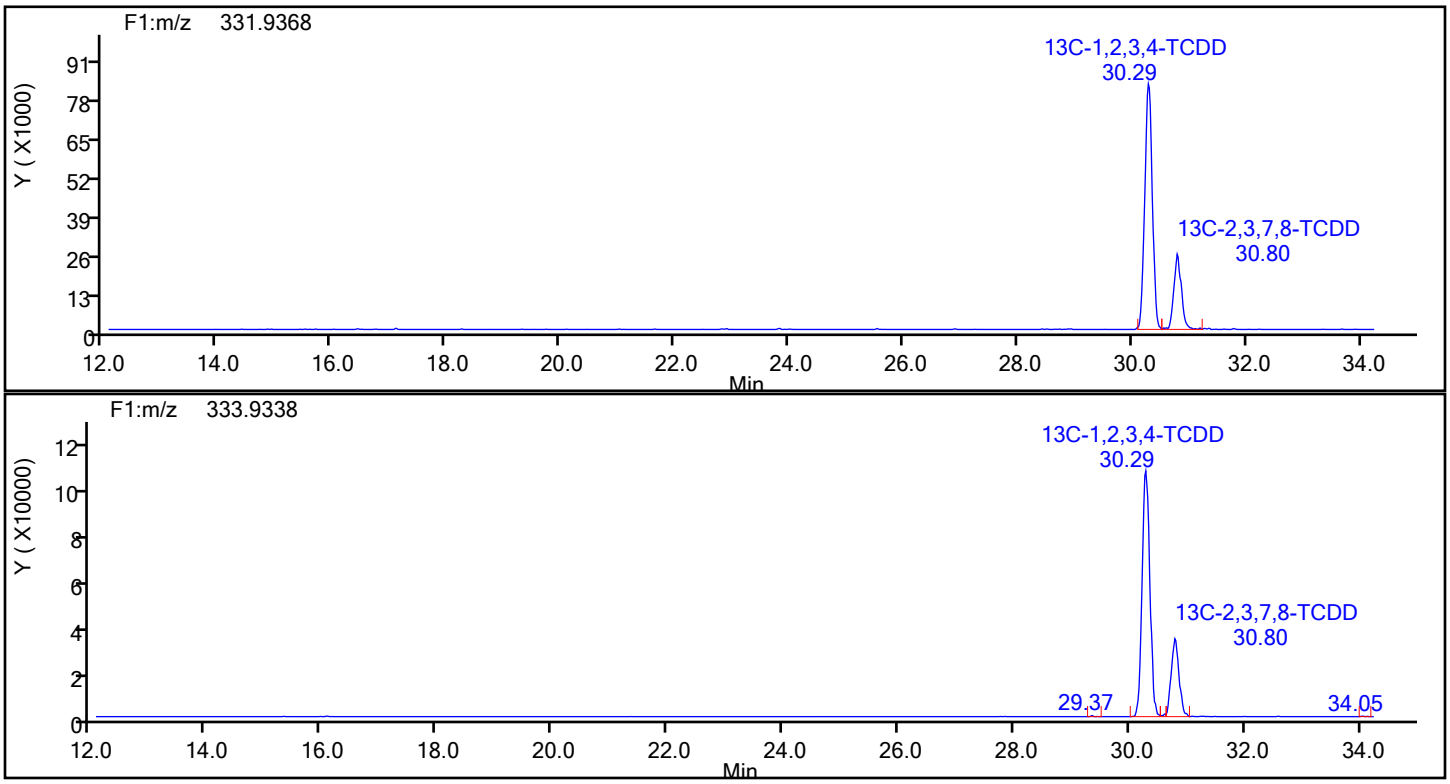
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

TCDD



TCDD Standards

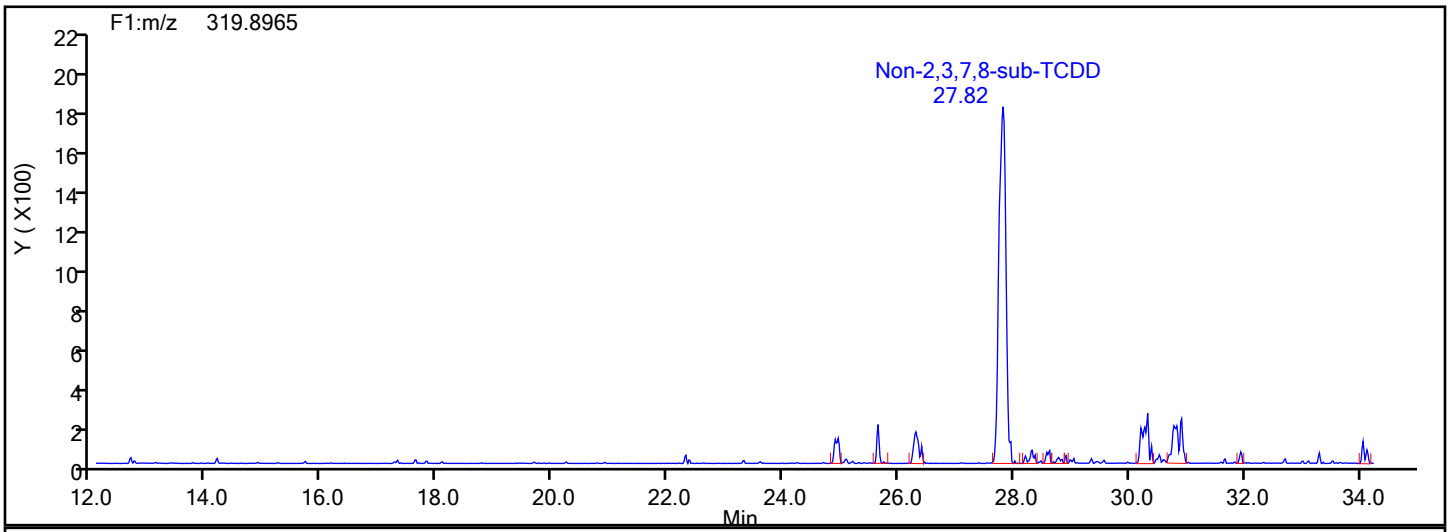


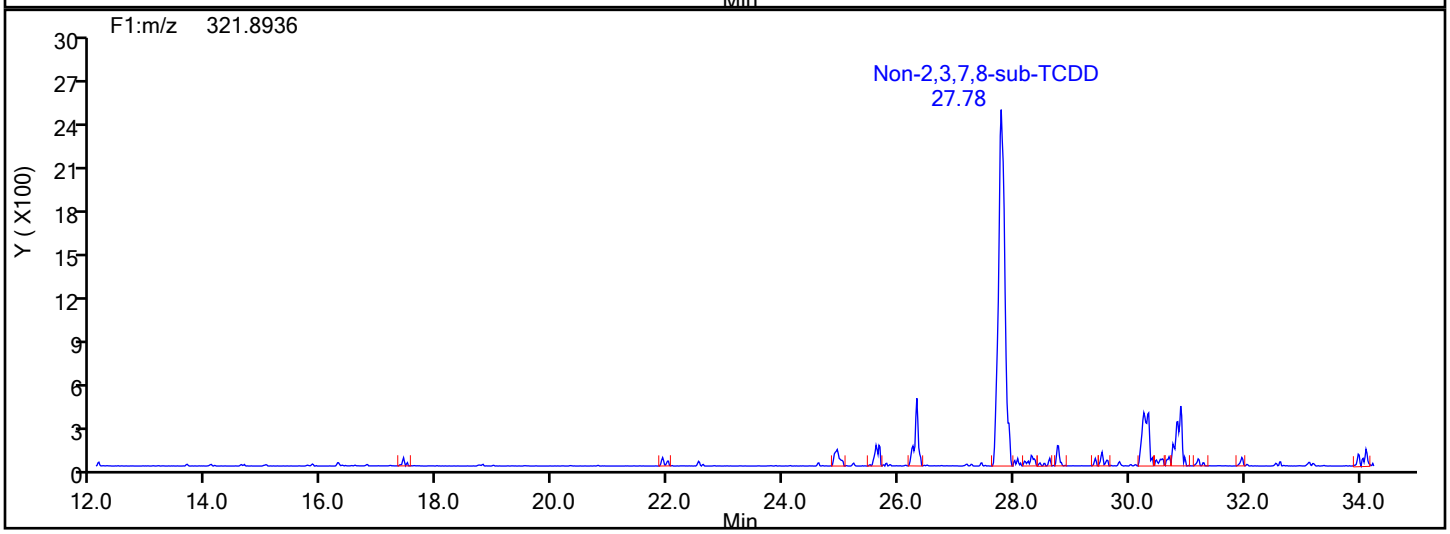
Report Date: 18-Dec-2019 08:56:47 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

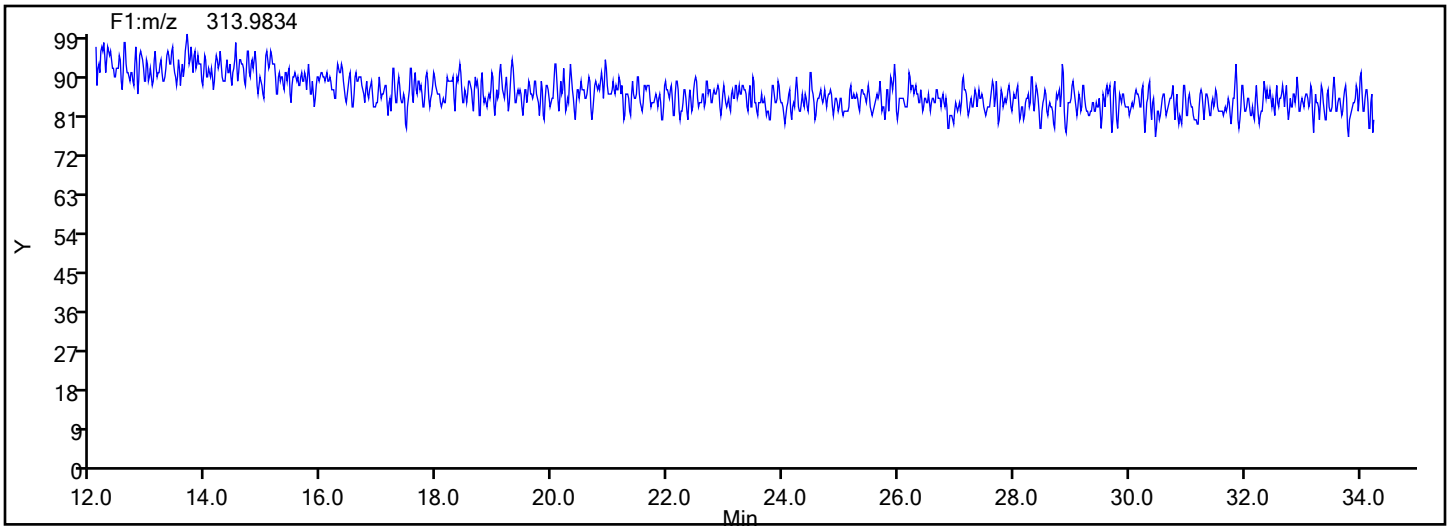
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

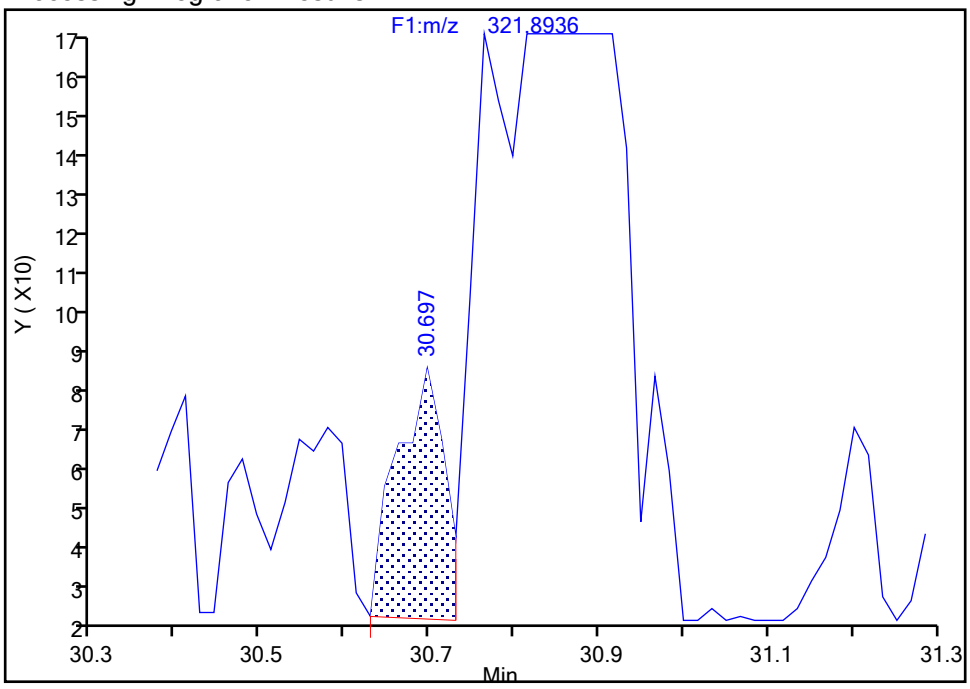
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

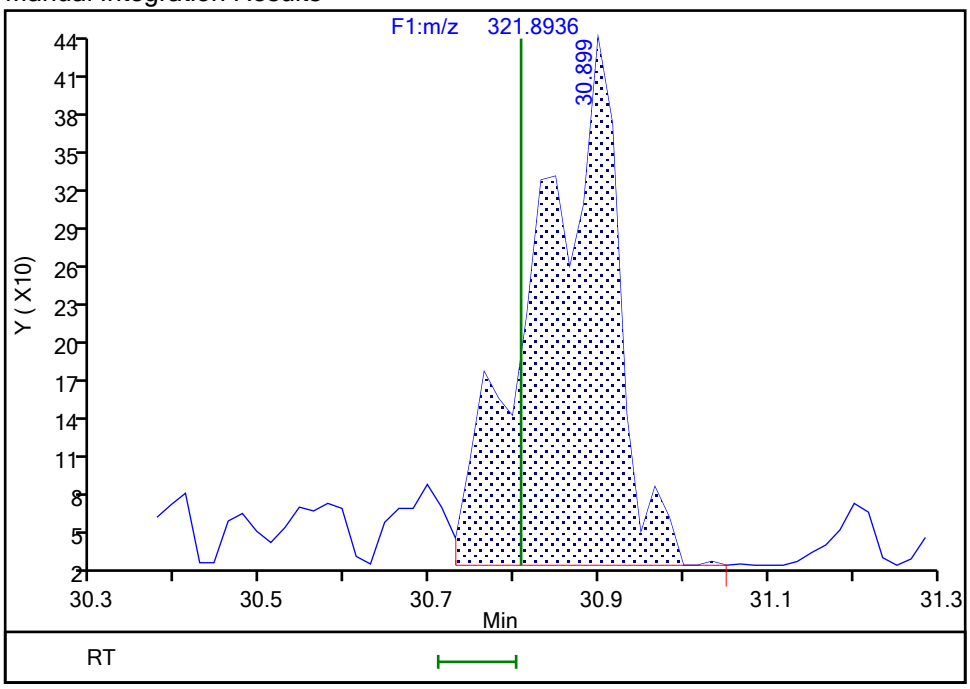
Processing Integration Results

RT: 30.70
Area: 244
Amount: 0.143278
Amount Units: pg/ul



Manual Integration Results

RT: 30.90
Area: 2871
Amount: 0.393974
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:49:10
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

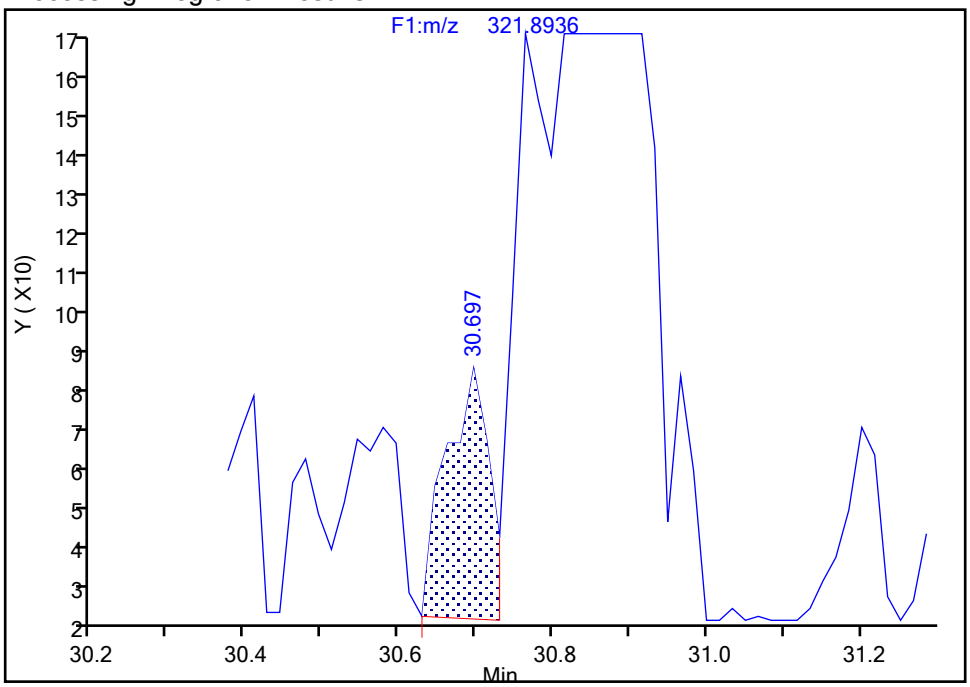
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 3

Processing Integration Results

RT: 30.78
Area: 1814
Amount: 0.143278
Amount Units: pg/ul



Manual Integration Results

RT: 30.92
Area: 4988
Amount: 0.393974
Amount Units: pg/ul
Reviewer: davidsonm, 18-Dec-2019 08:49:10
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

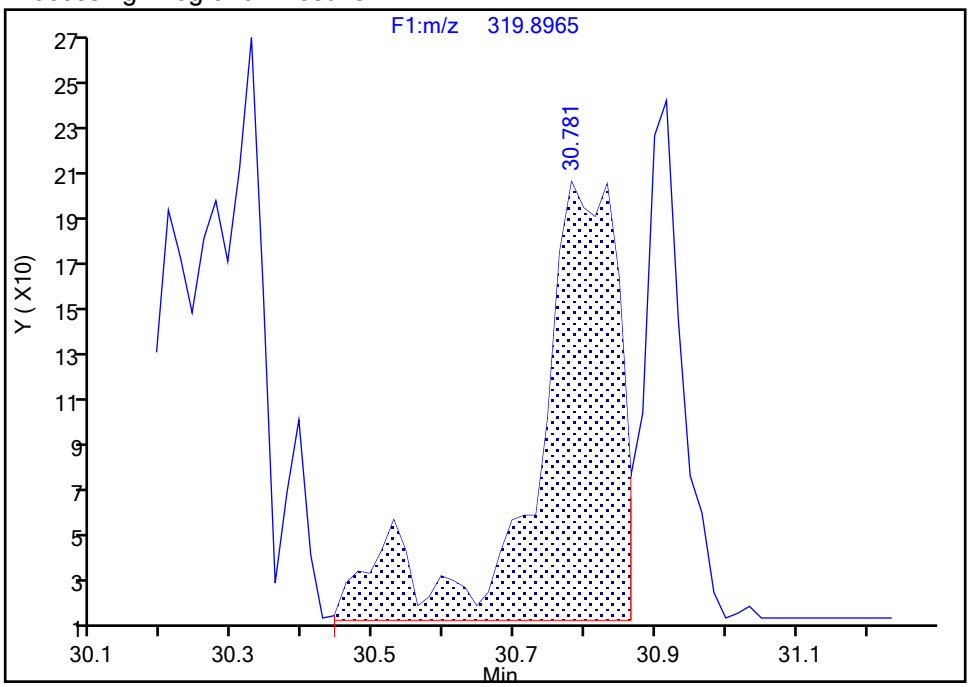
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

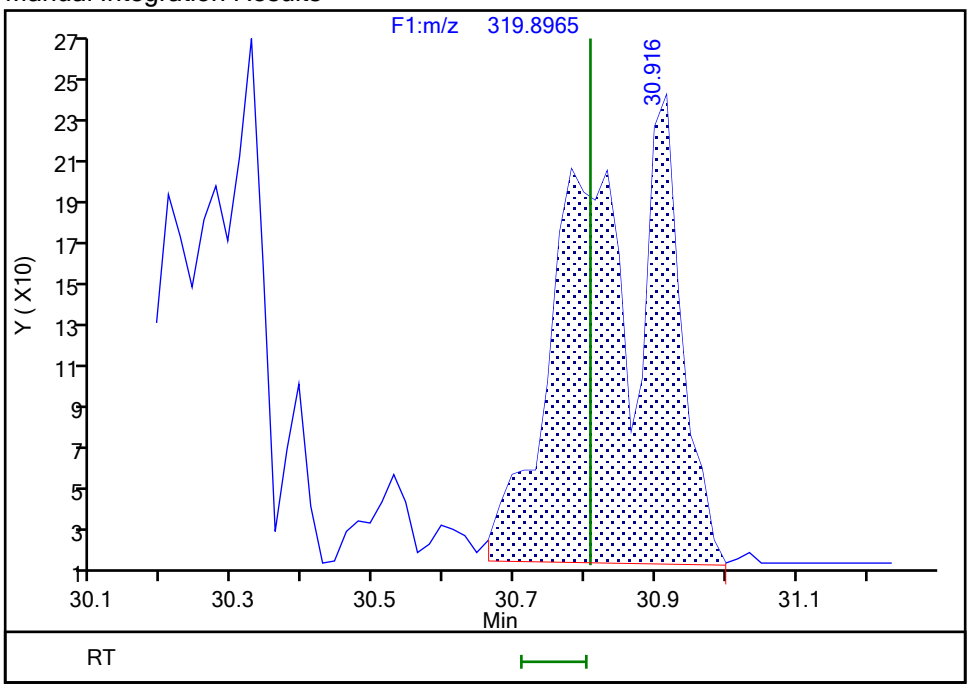
Processing Integration Results

RT: 30.78
Area: 1570
Amount: 0.143278
Amount Units: pg/ul



Manual Integration Results

RT: 30.92
Area: 2117
Amount: 0.393974
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:49:25

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

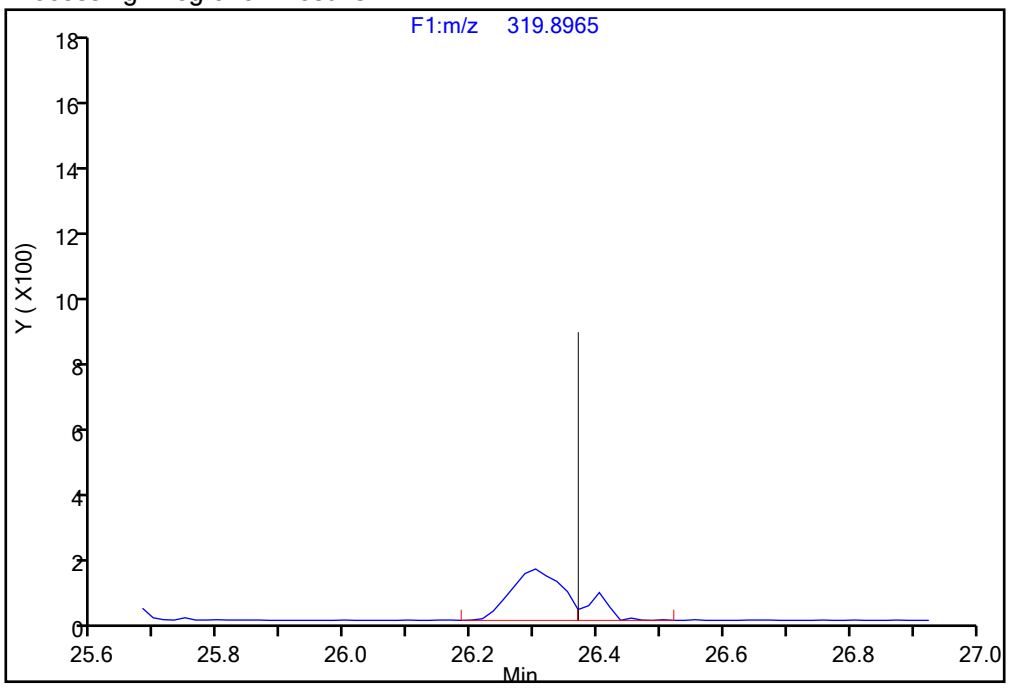
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

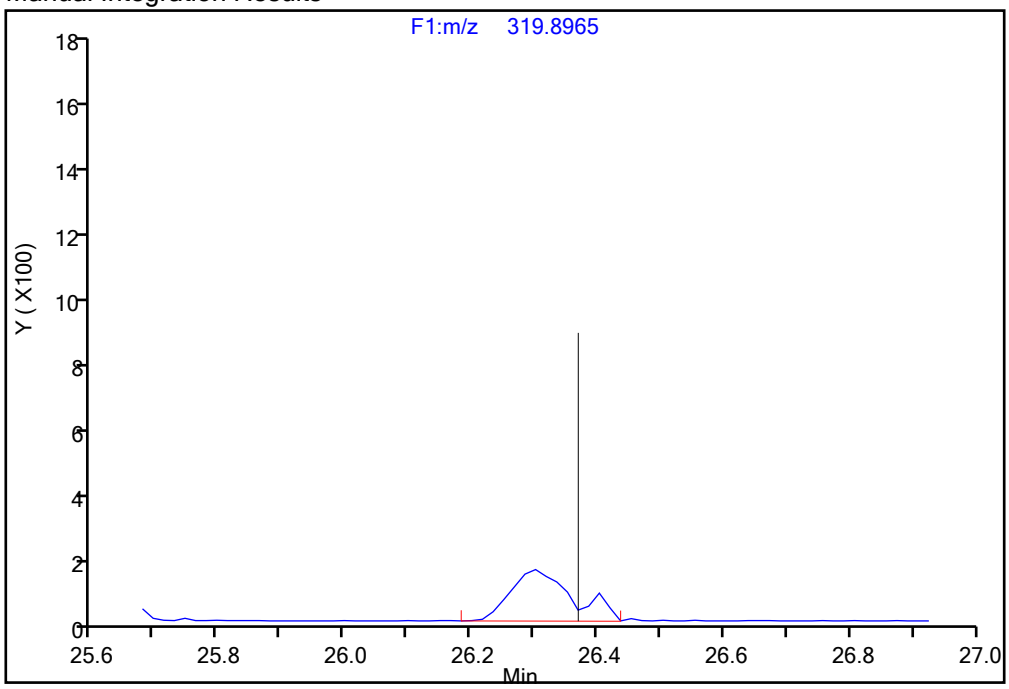
Processing Integration Results

RT = 26.302 Area = 871



Manual Integration Results

RT = 26.302 Area = 1067 M



Reviewer: davidsonm, 18-Dec-2019 08:51:01

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

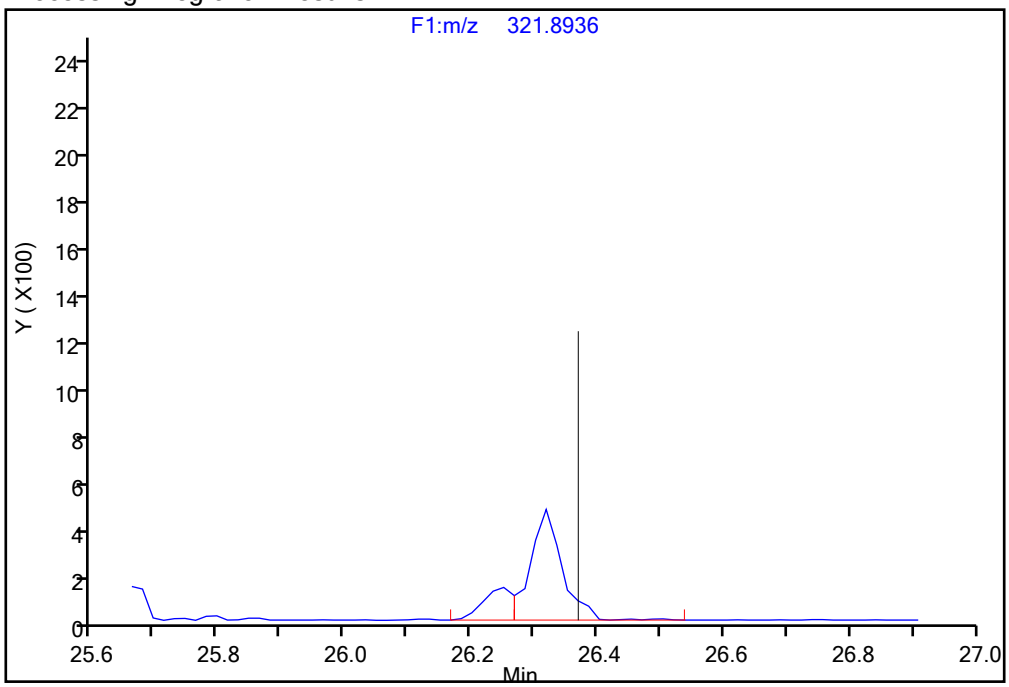
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

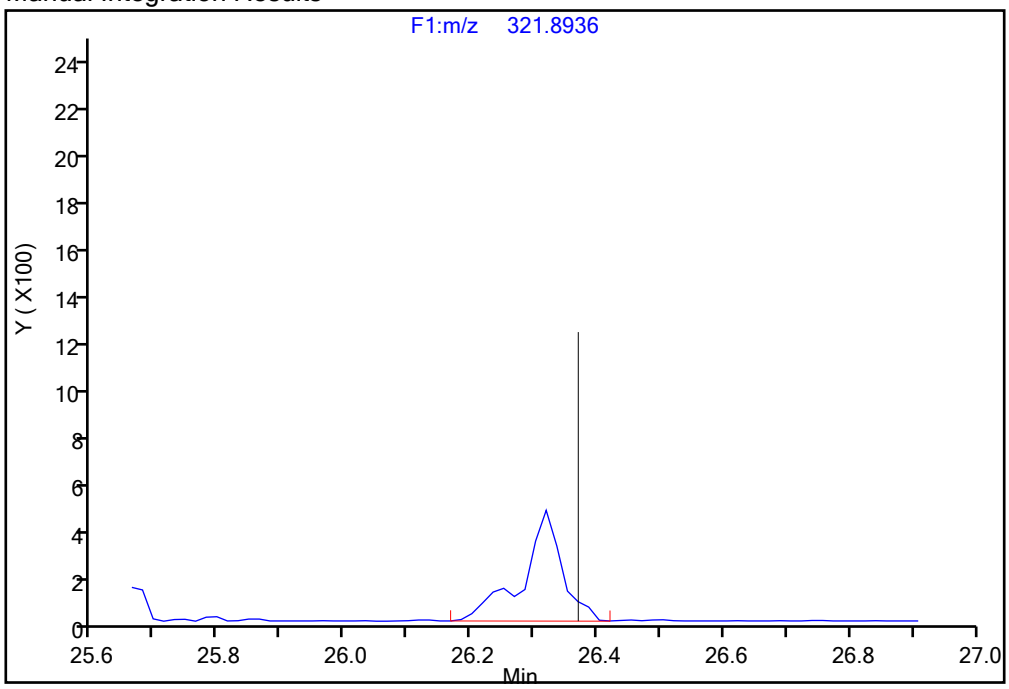
Processing Integration Results

RT = 26.319 Area = 1619



Manual Integration Results

RT = 26.319 Area = 2041 M



Reviewer: davidsonm, 18-Dec-2019 08:51:09

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

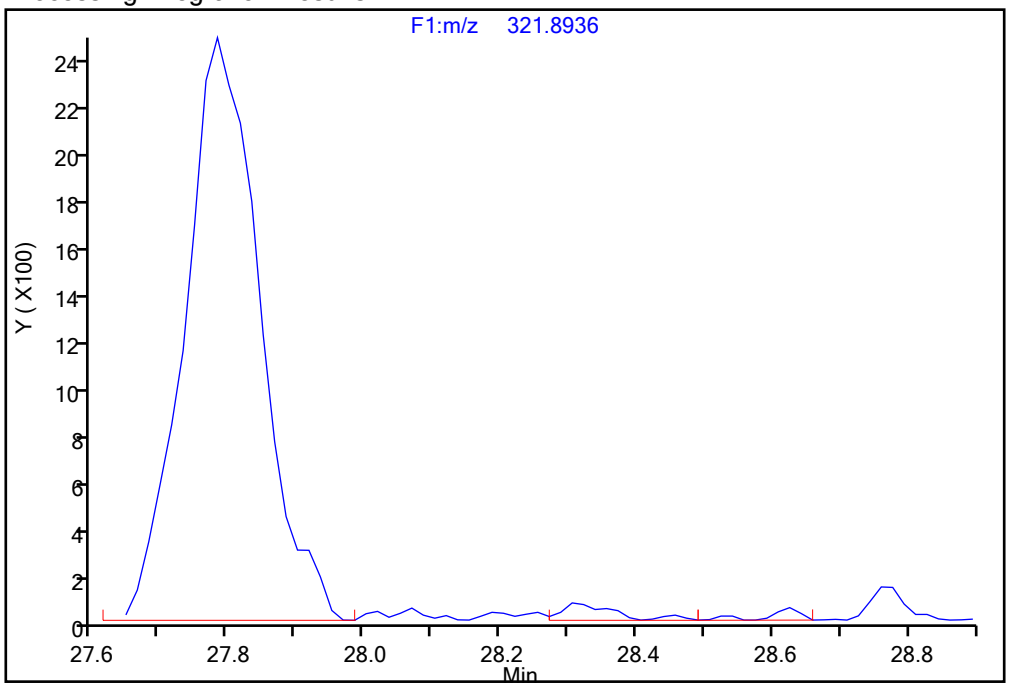
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

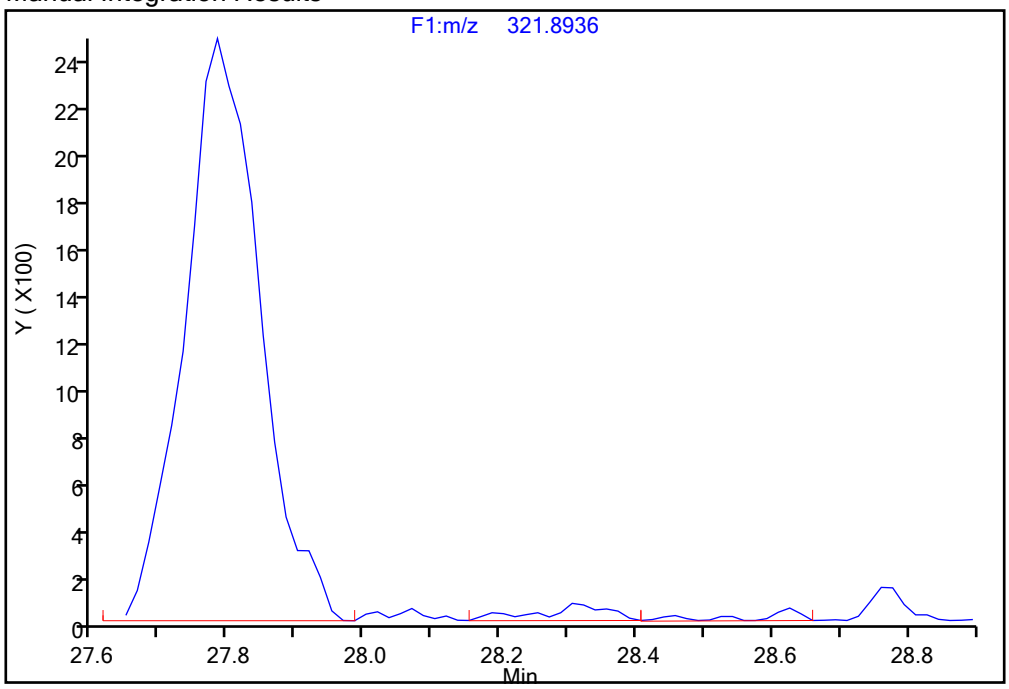
Processing Integration Results

RT = 28.306 Area = 388



Manual Integration Results

RT = 28.306 Area = 495 M



Reviewer: davidsonm, 18-Dec-2019 08:51:09

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

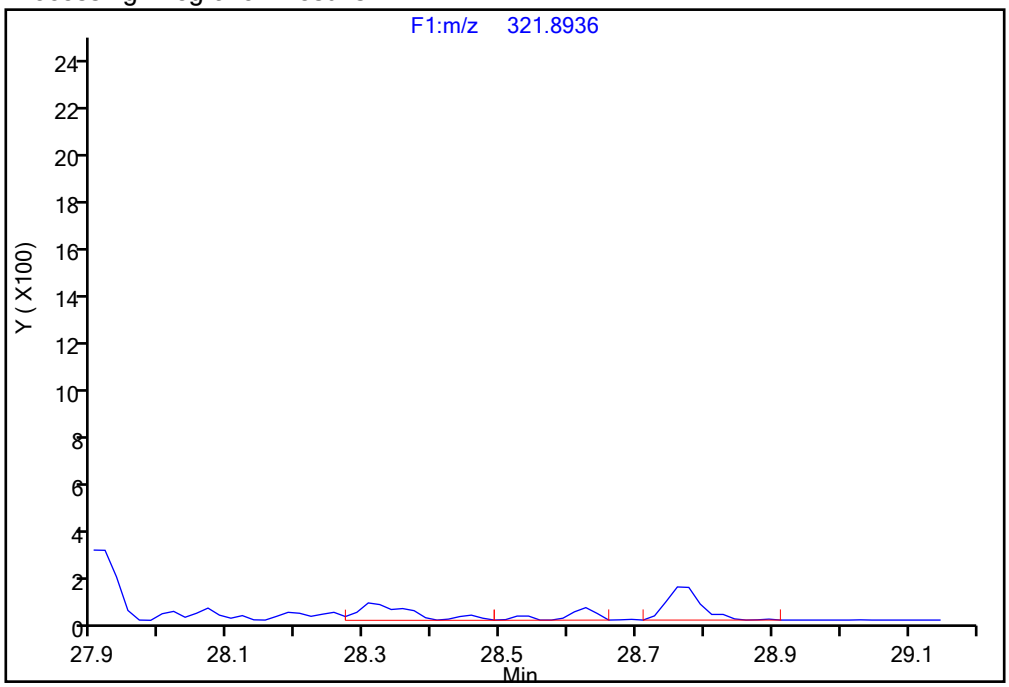
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

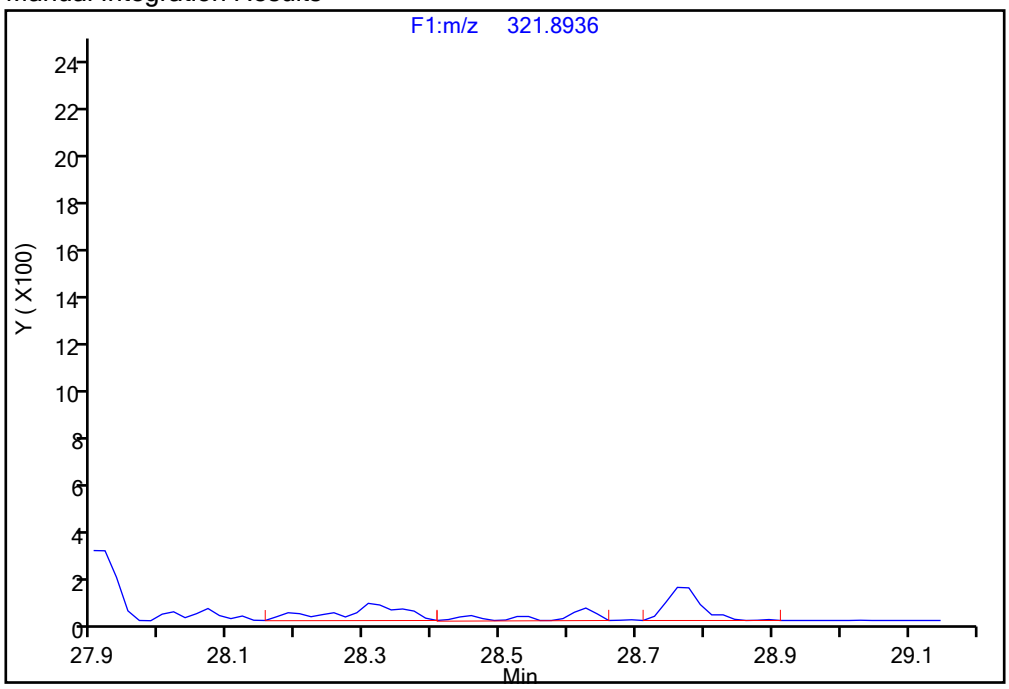
Processing Integration Results

RT = 28.626 Area = 166



Manual Integration Results

RT = 28.626 Area = 233 M



Reviewer: davidsonm, 18-Dec-2019 08:51:09

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

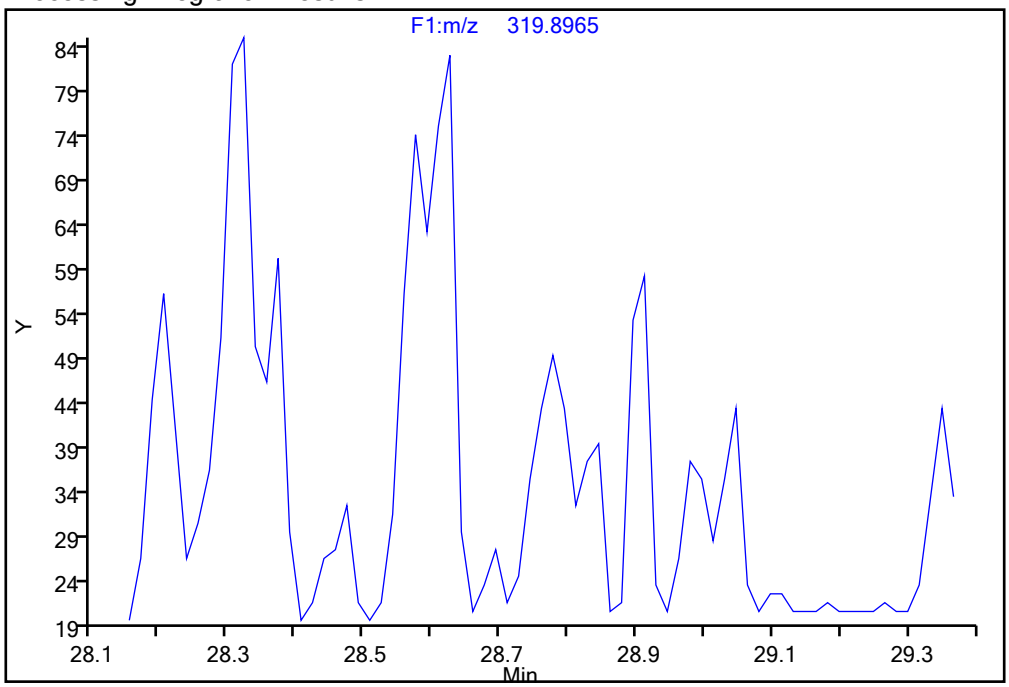
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

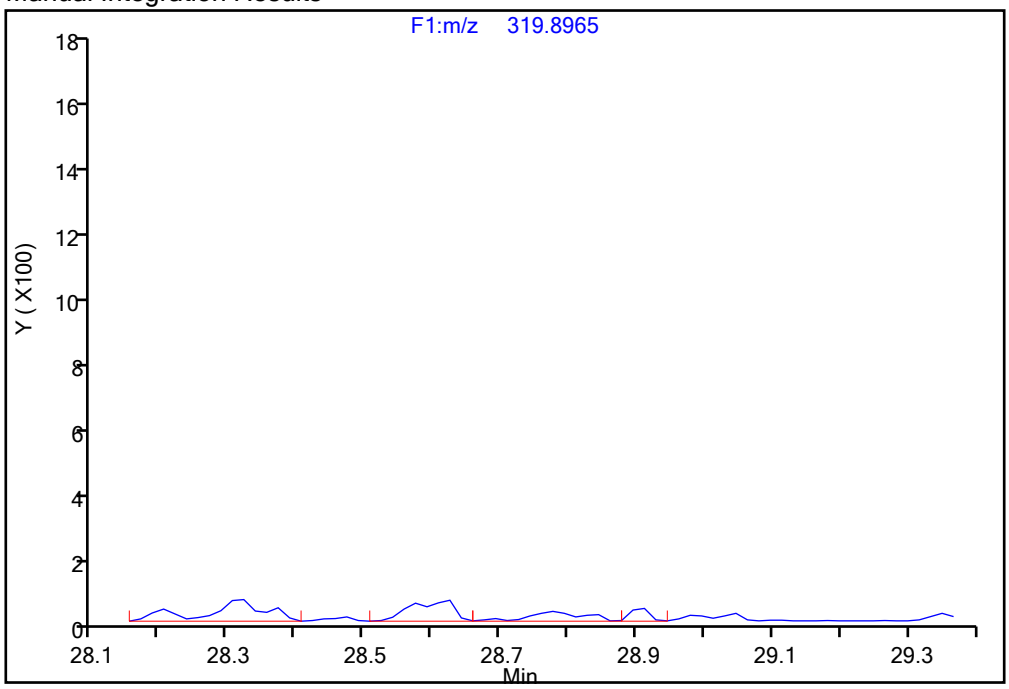
Not Detected
RT: 24.83- 34.04

Processing Integration Results



Manual Integration Results

RT = 28.777 Area = 168 M



Reviewer: davidsonm, 18-Dec-2019 08:51:01
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

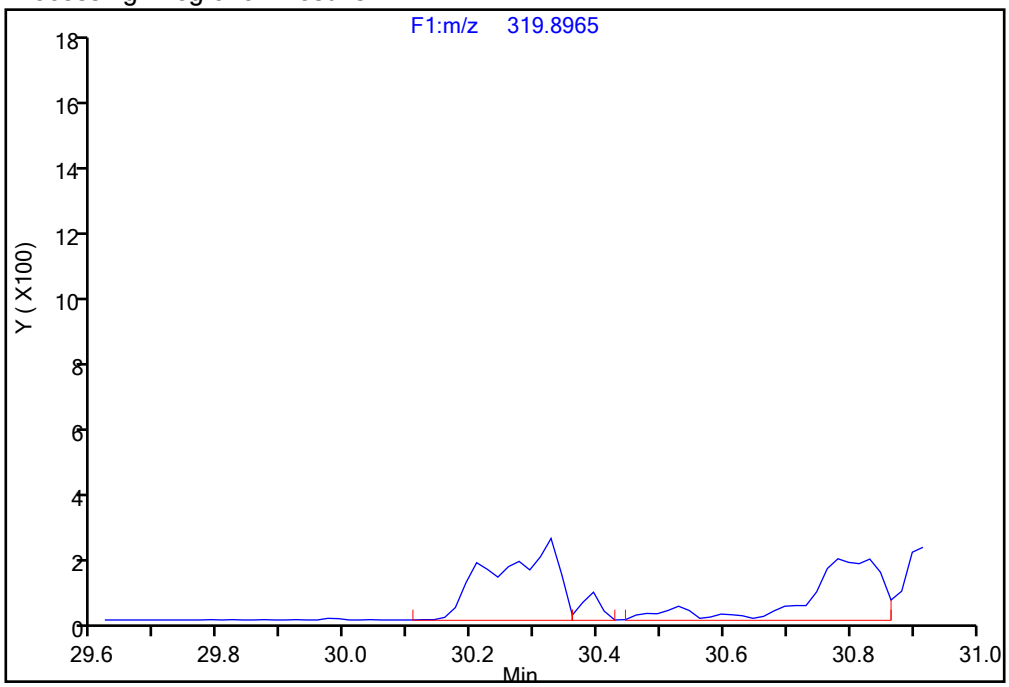
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

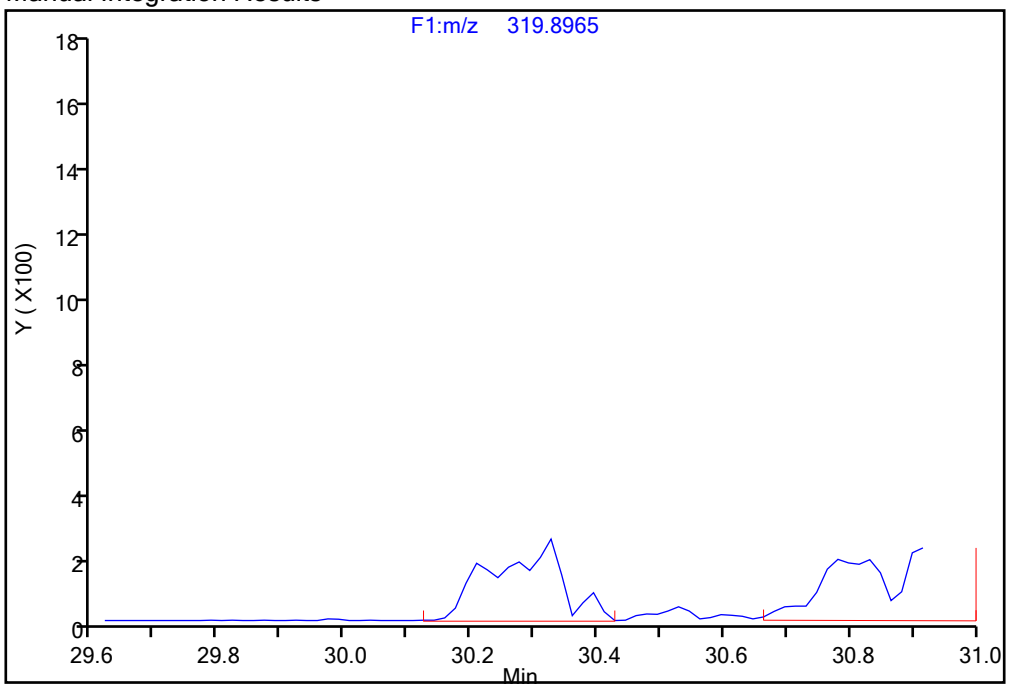
Processing Integration Results

RT = 30.326 Area = 1740



Manual Integration Results

RT = 30.326 Area = 1936 M



Reviewer: davidsonm, 18-Dec-2019 08:51:01

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

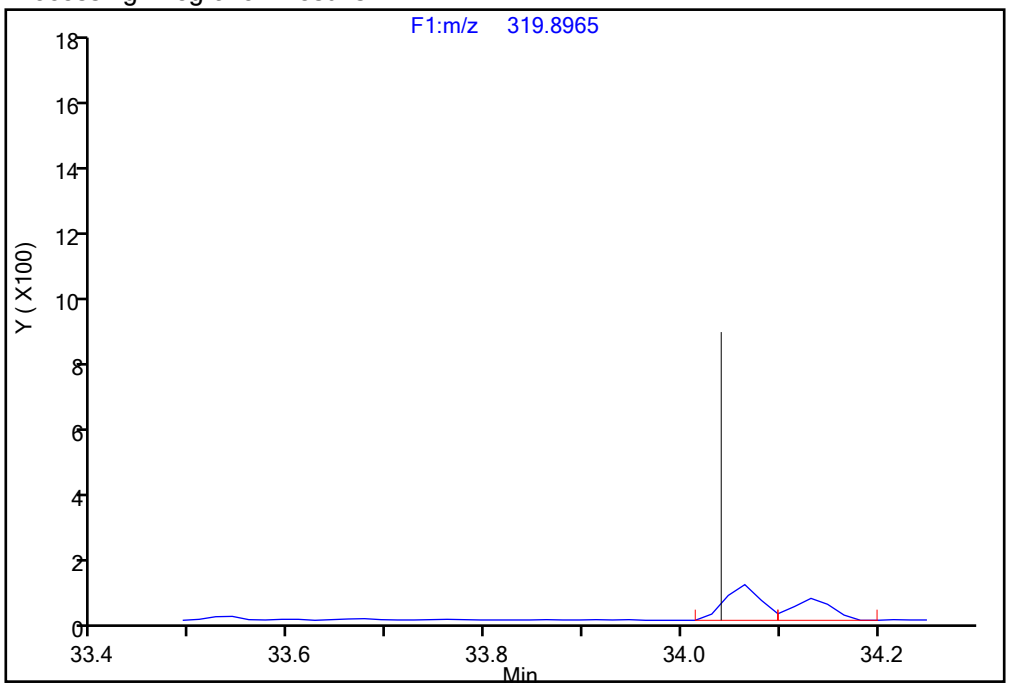
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (24.83- 34.04)

Signal: 1

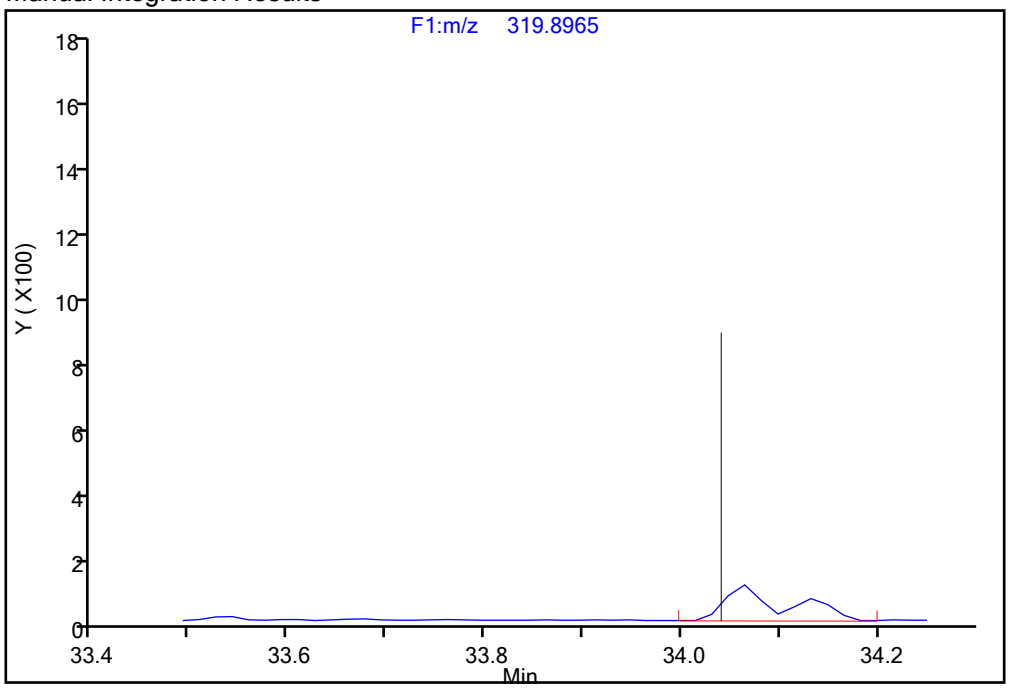
Processing Integration Results

RT = 34.064 Area = 277



Manual Integration Results

RT = 34.064 Area = 482 M



Reviewer: davidsonm, 18-Dec-2019 08:51:01

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

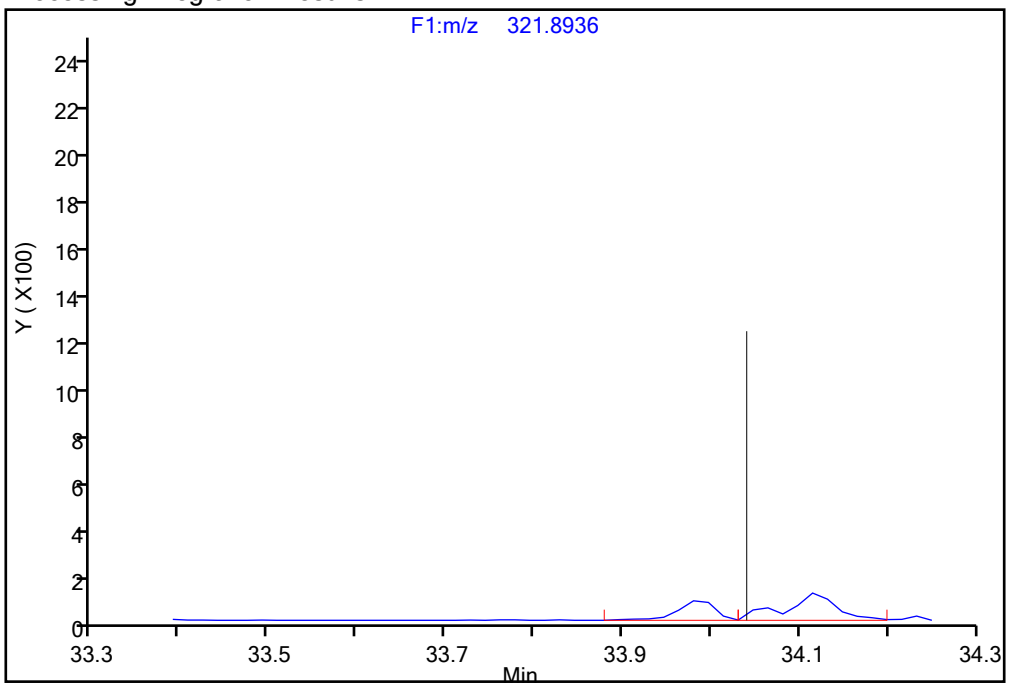
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (24.83- 34.04)

Signal: 2

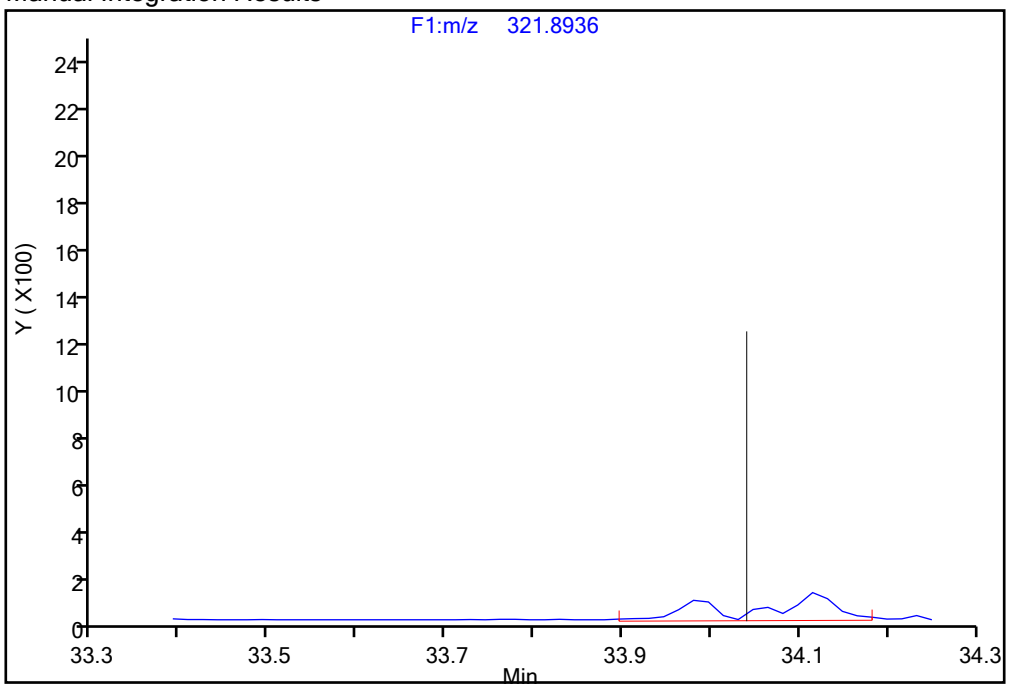
Processing Integration Results

RT = 34.115 Area = 463



Manual Integration Results

RT = 34.115 Area = 774 M



Reviewer: davidsonm, 18-Dec-2019 08:51:09

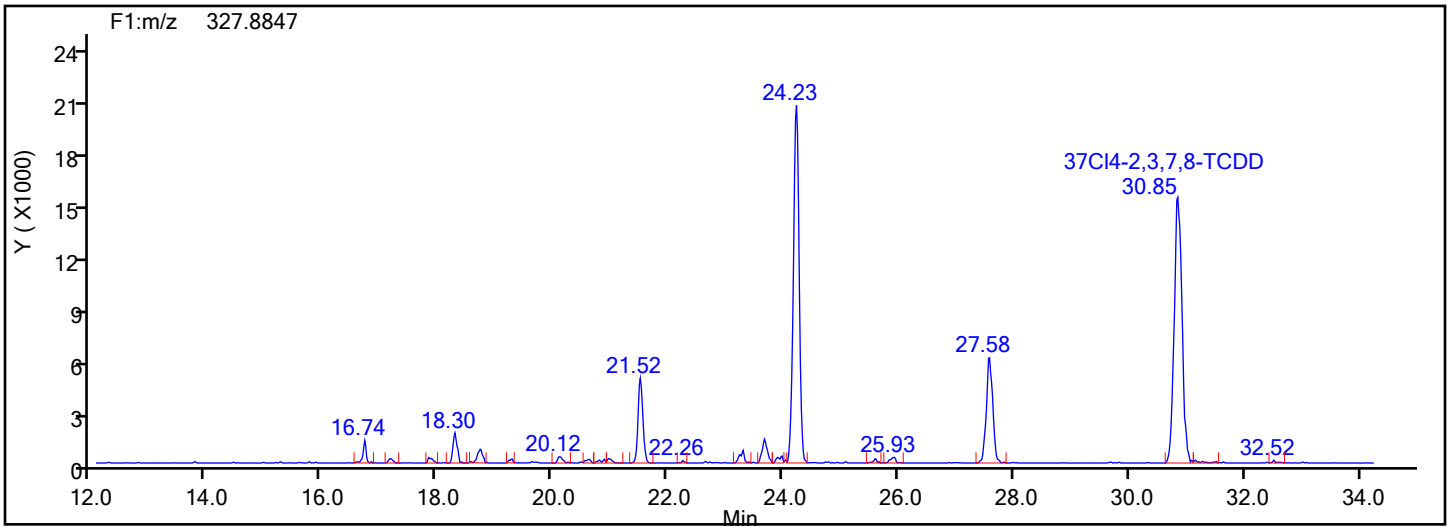
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

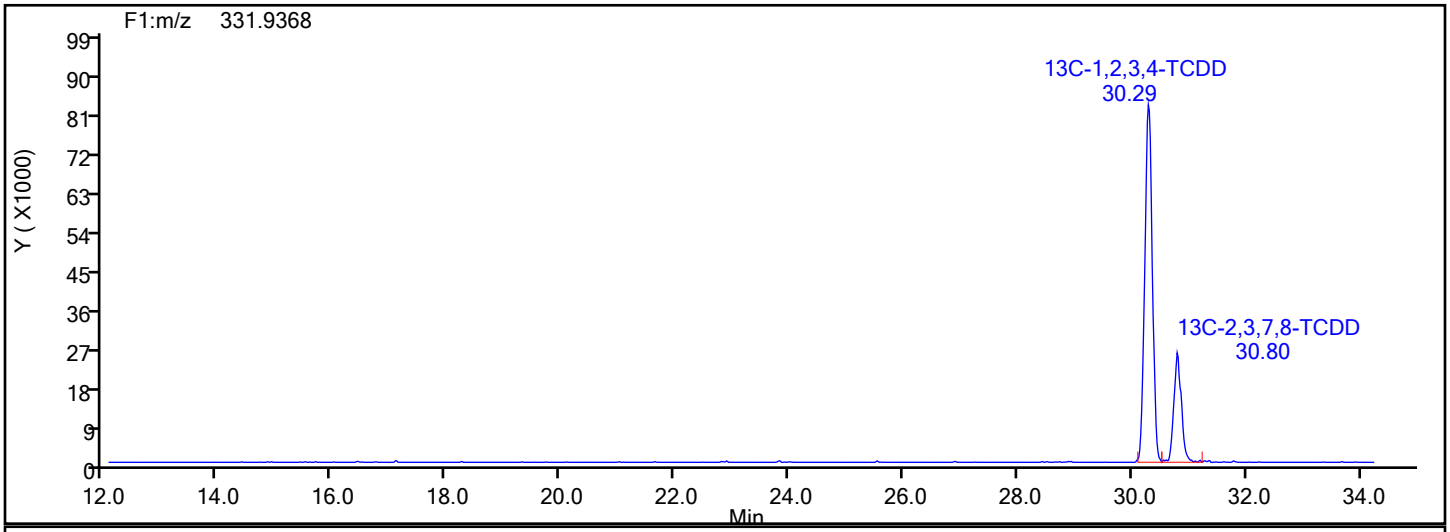
Eurofins TestAmerica, Knoxville

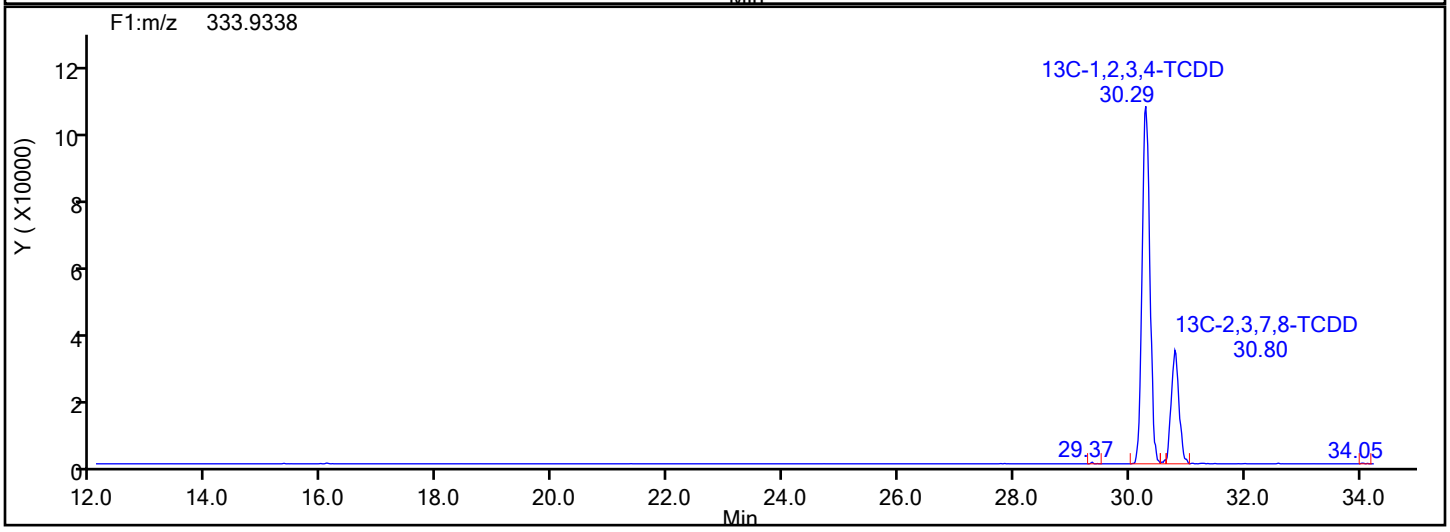
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



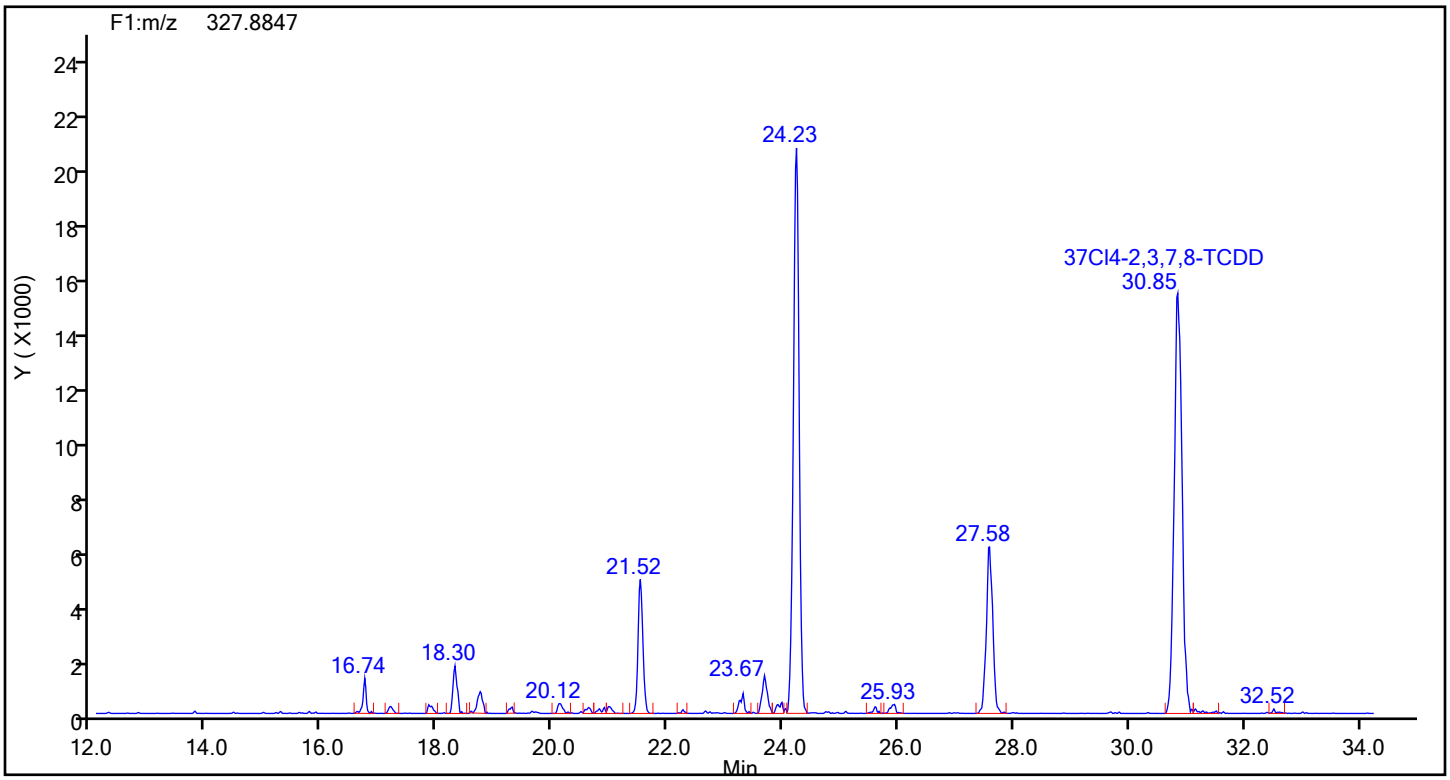


Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

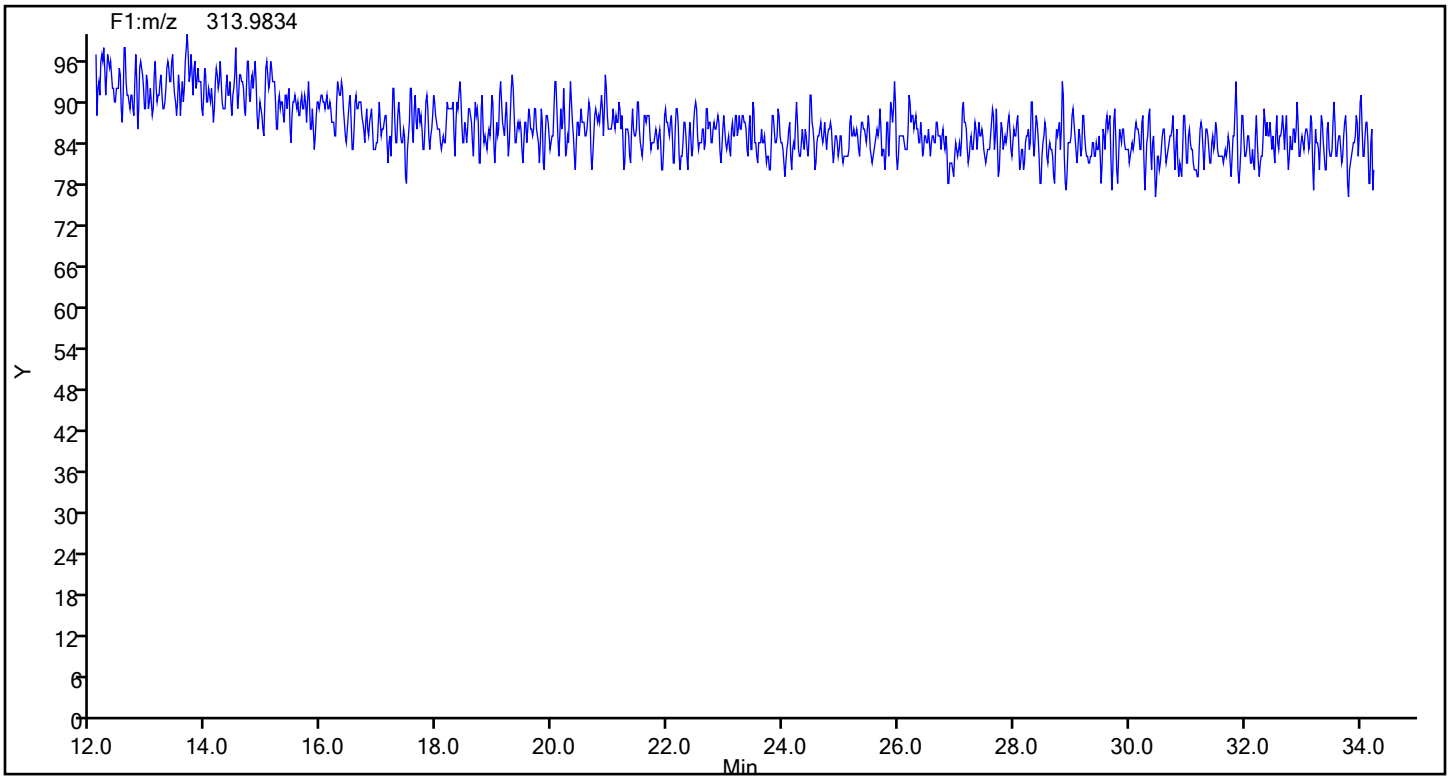
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

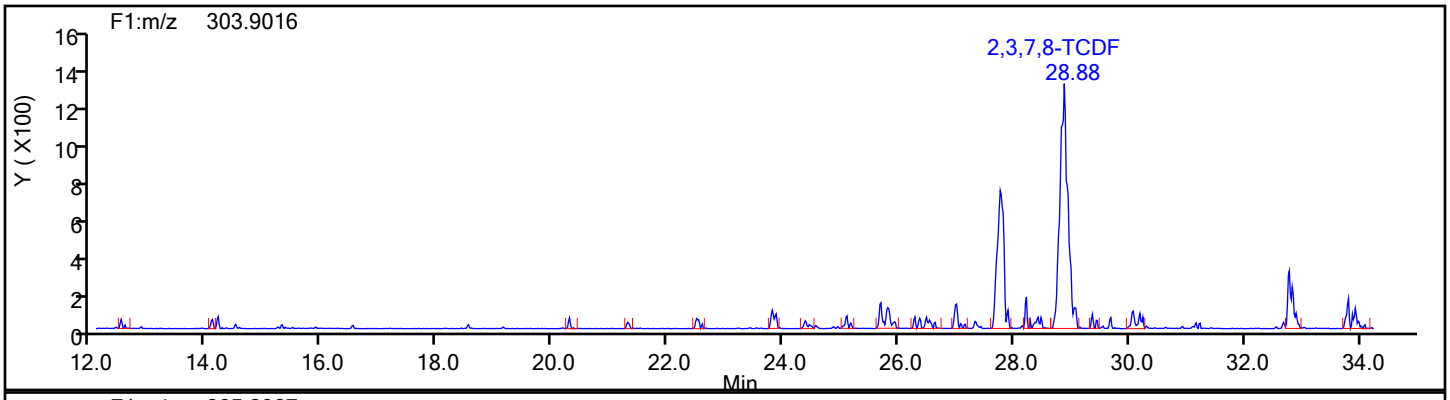


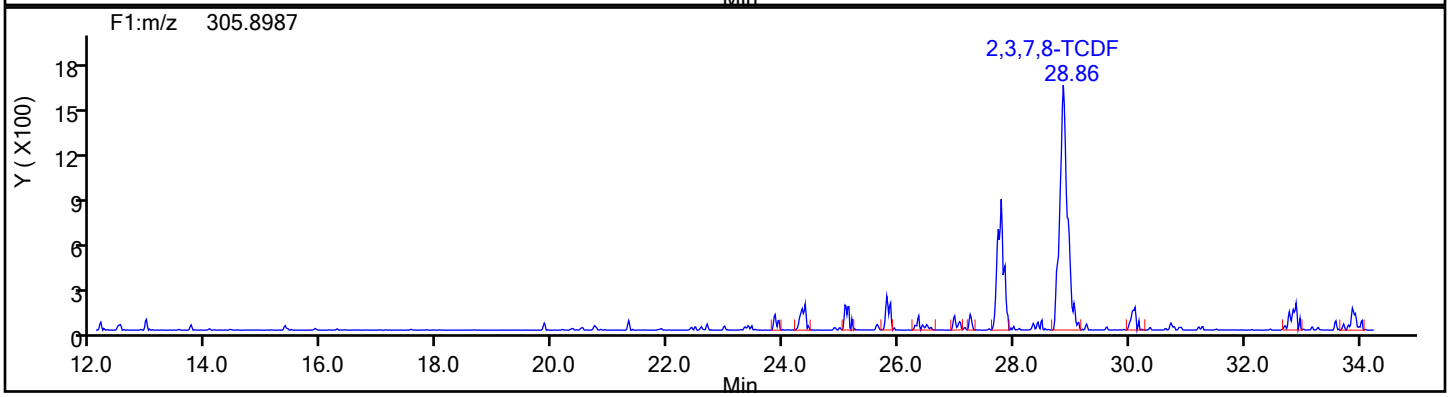
Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

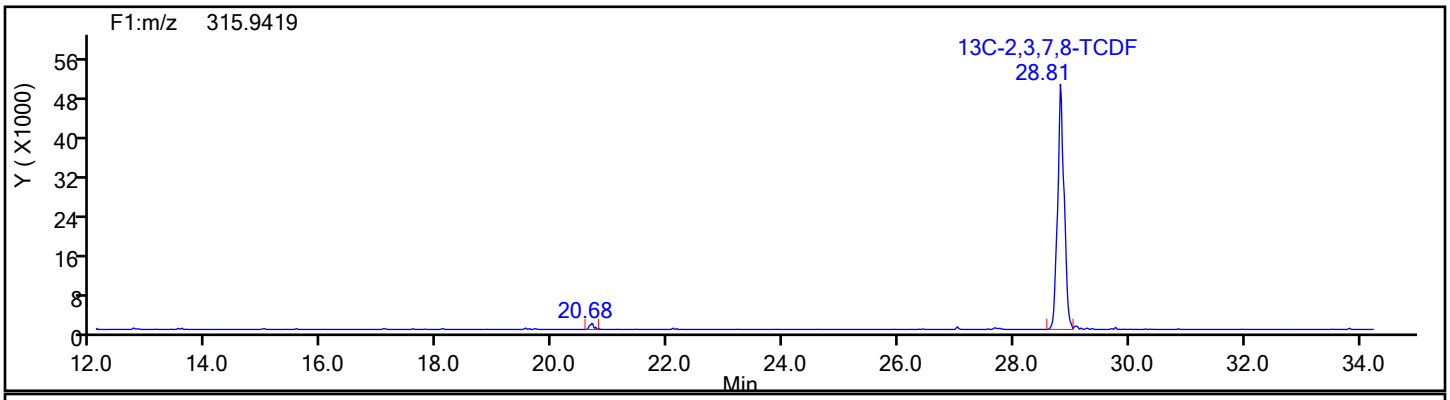
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

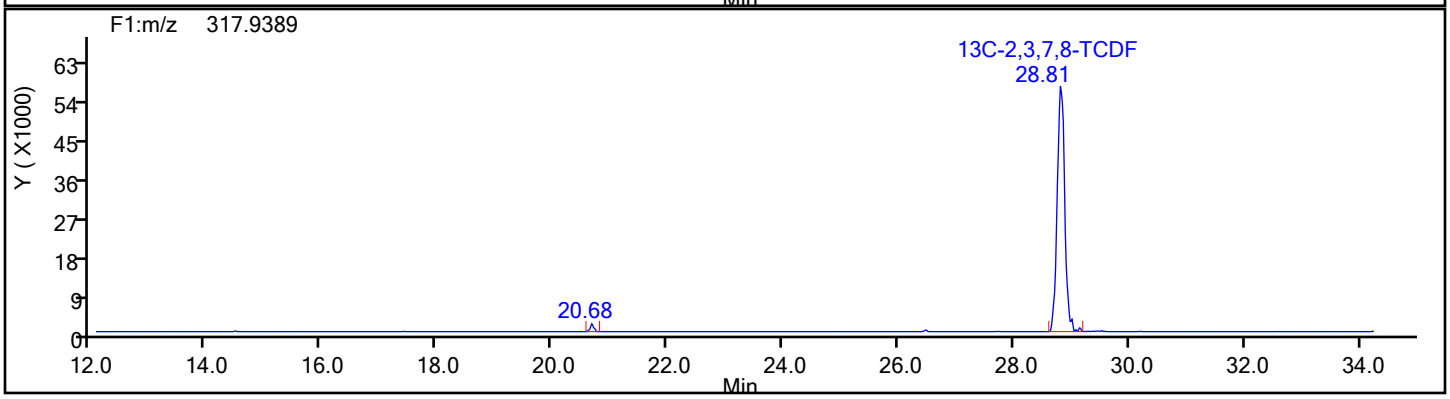
TCDF





TCDF Standards



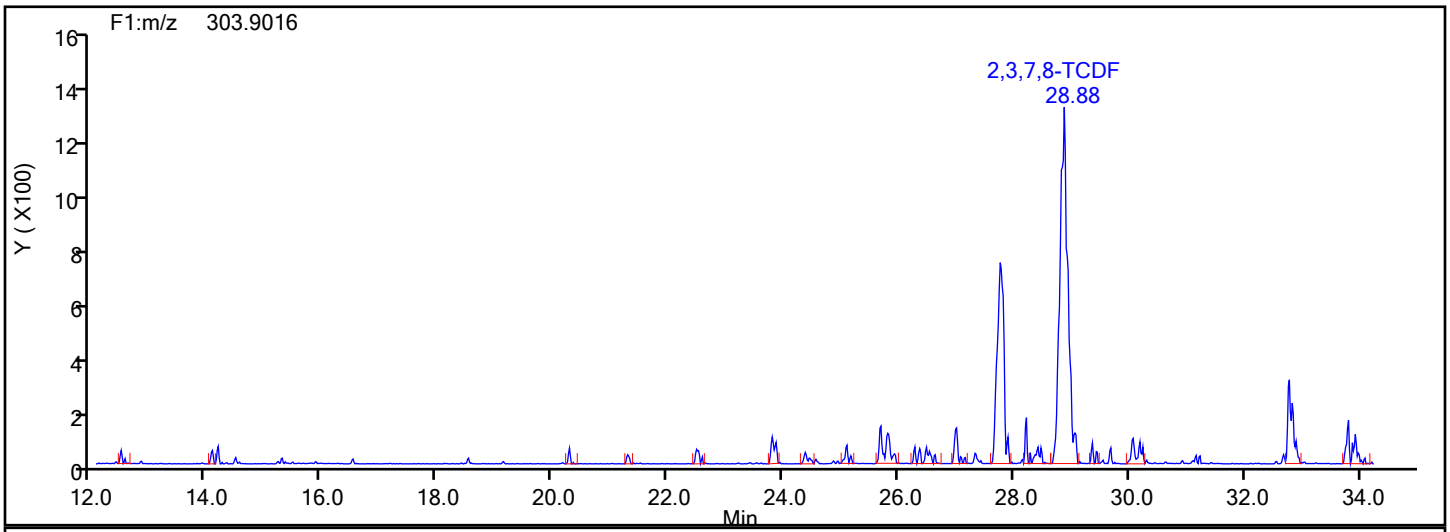


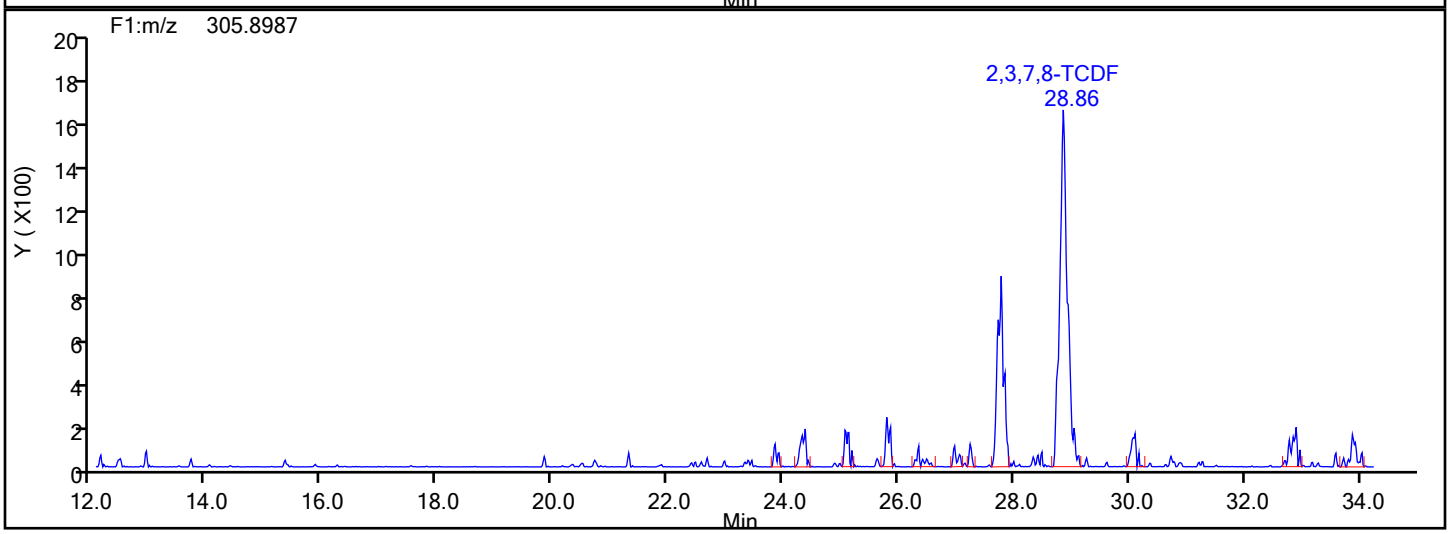
Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

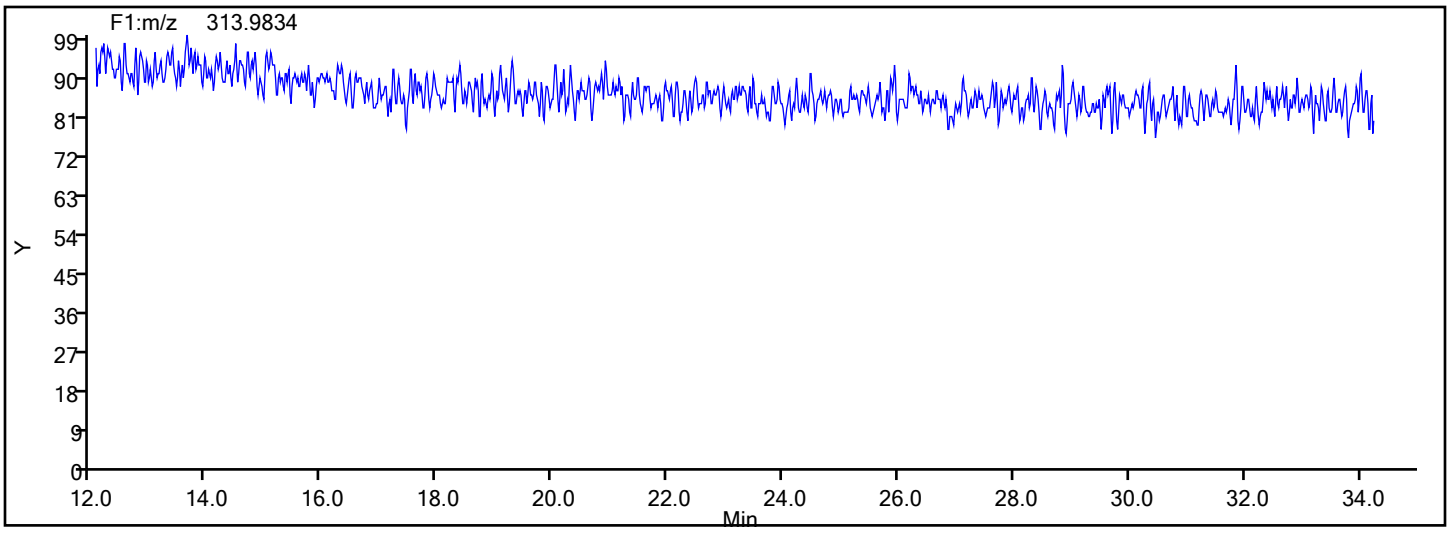
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

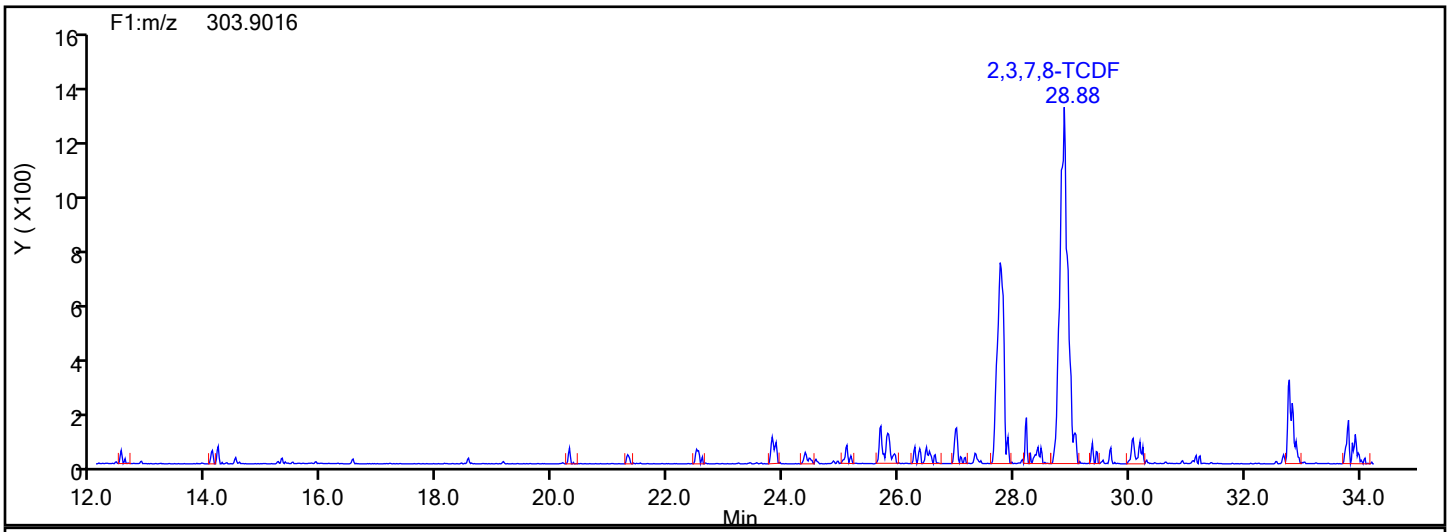


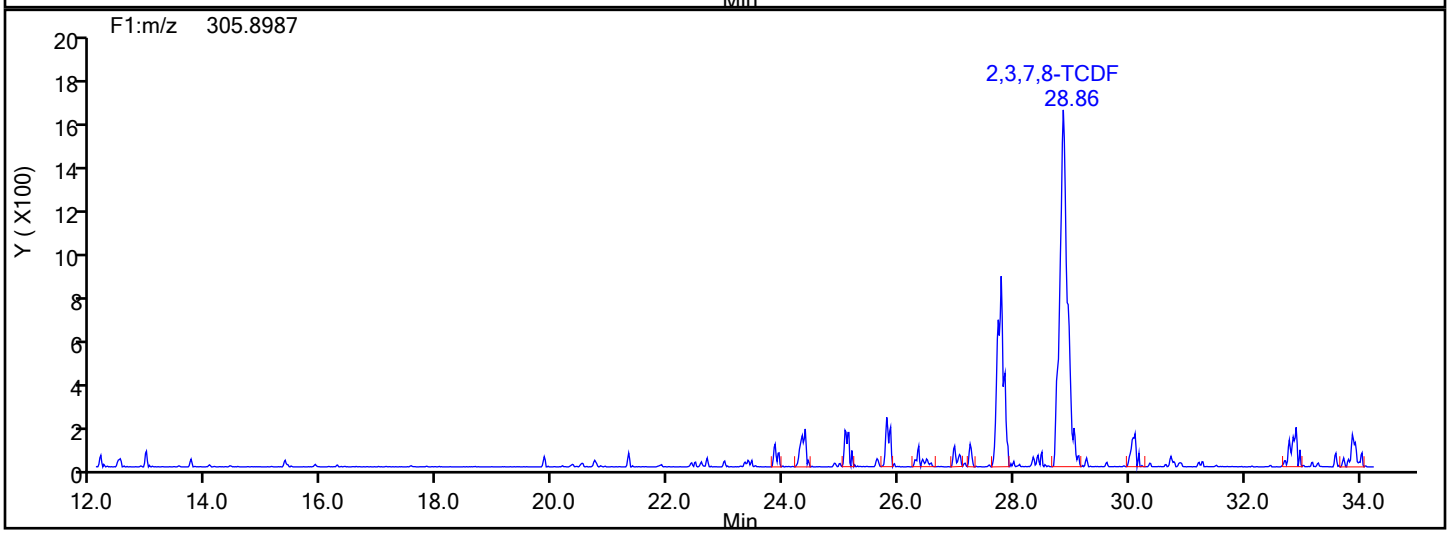
Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

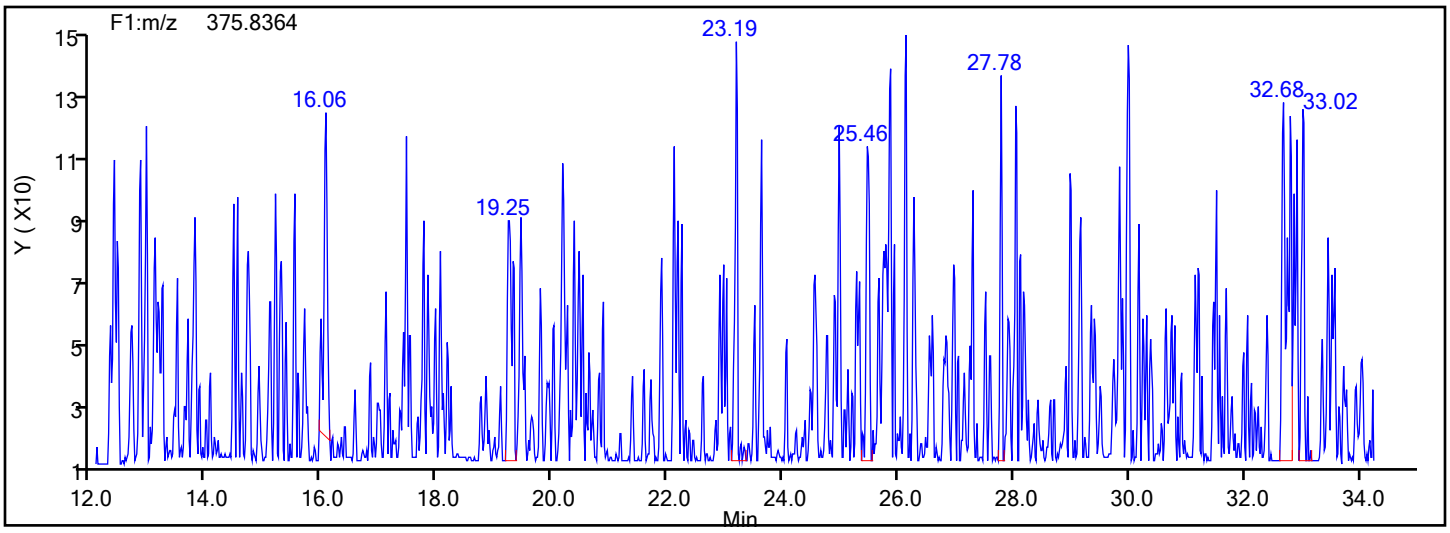
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

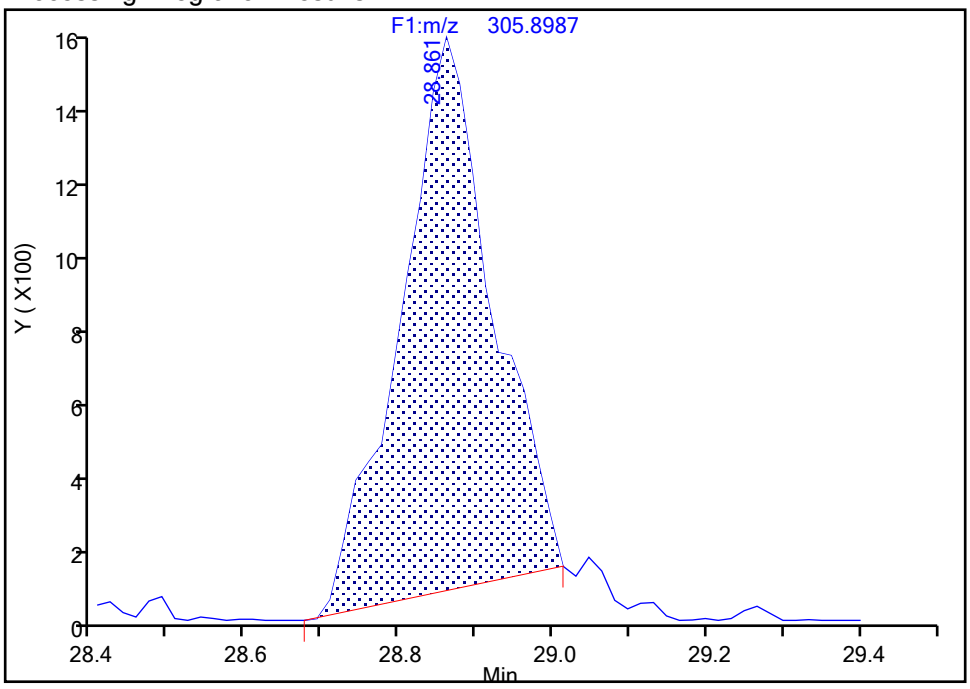
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

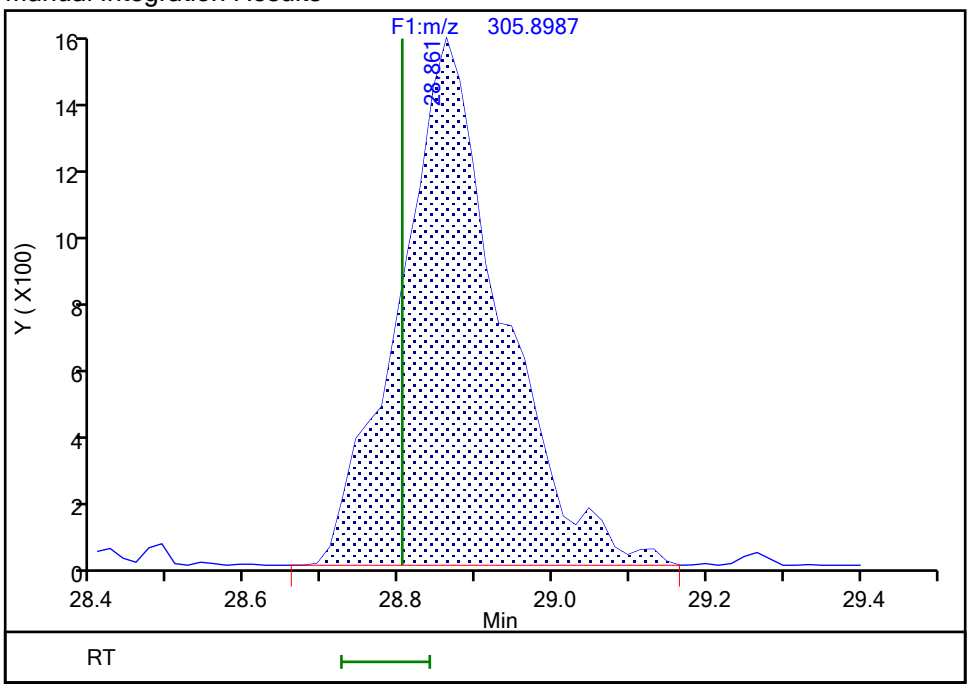
Processing Integration Results

RT: 28.86
Area: 12358
Amount: 1.214212
Amount Units: pg/ul



Manual Integration Results

RT: 28.86
Area: 14526
Amount: 1.322760
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:51:47

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

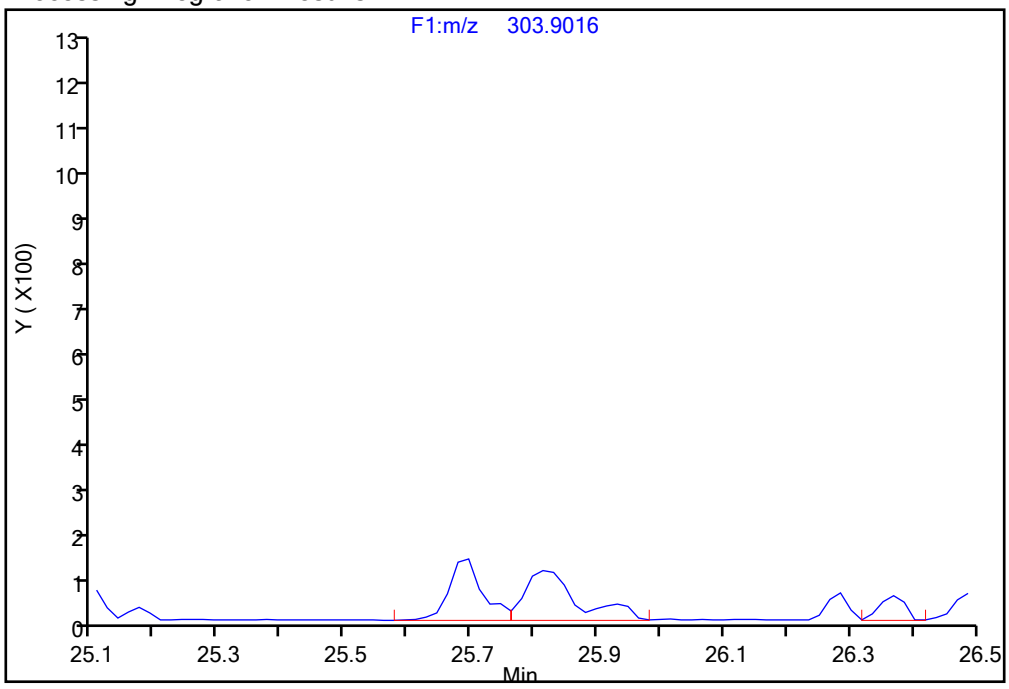
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

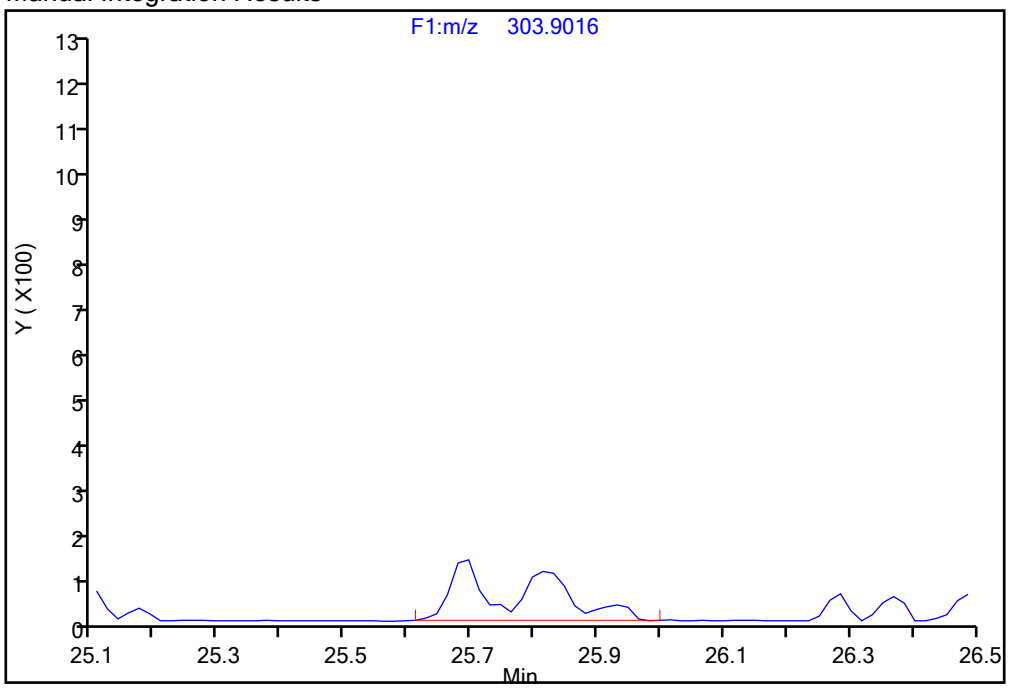
Processing Integration Results

RT = 25.696 Area = 492



Manual Integration Results

RT = 25.696 Area = 1066 M



Reviewer: davidsonm, 18-Dec-2019 08:52:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

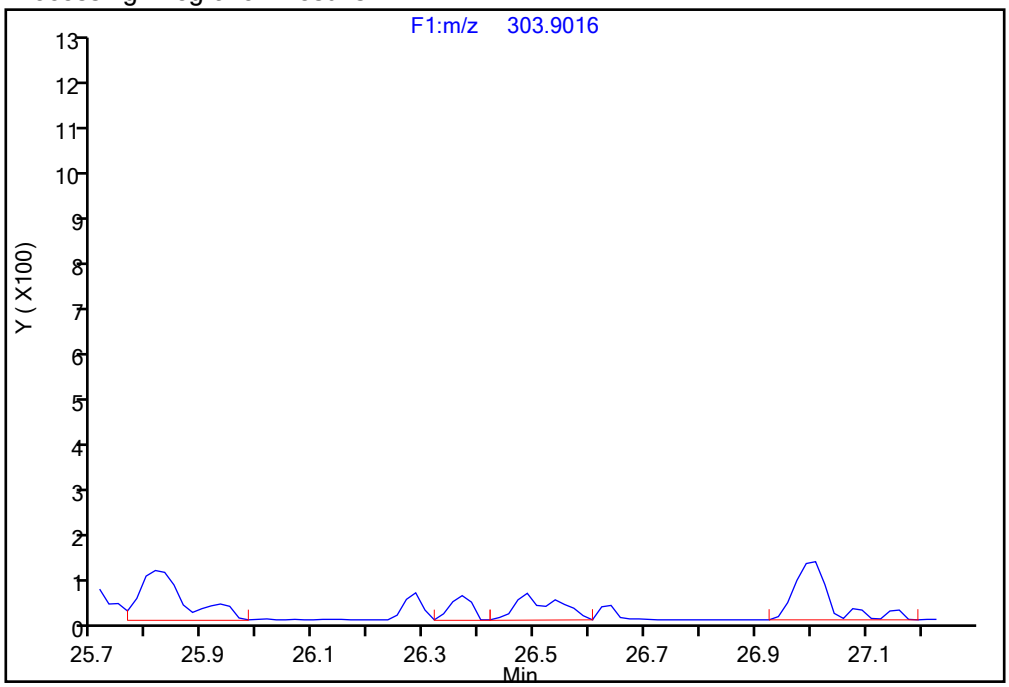
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

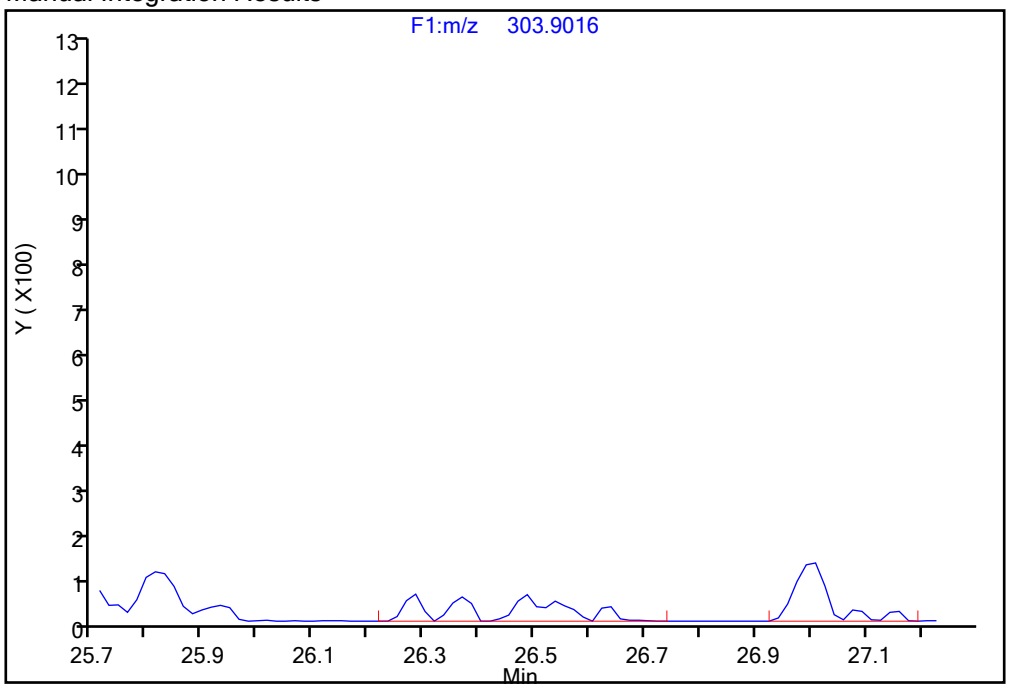
Processing Integration Results

RT = 26.369 Area = 149



Manual Integration Results

RT = 26.285 Area = 638 M



Reviewer: davidsonm, 18-Dec-2019 08:52:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

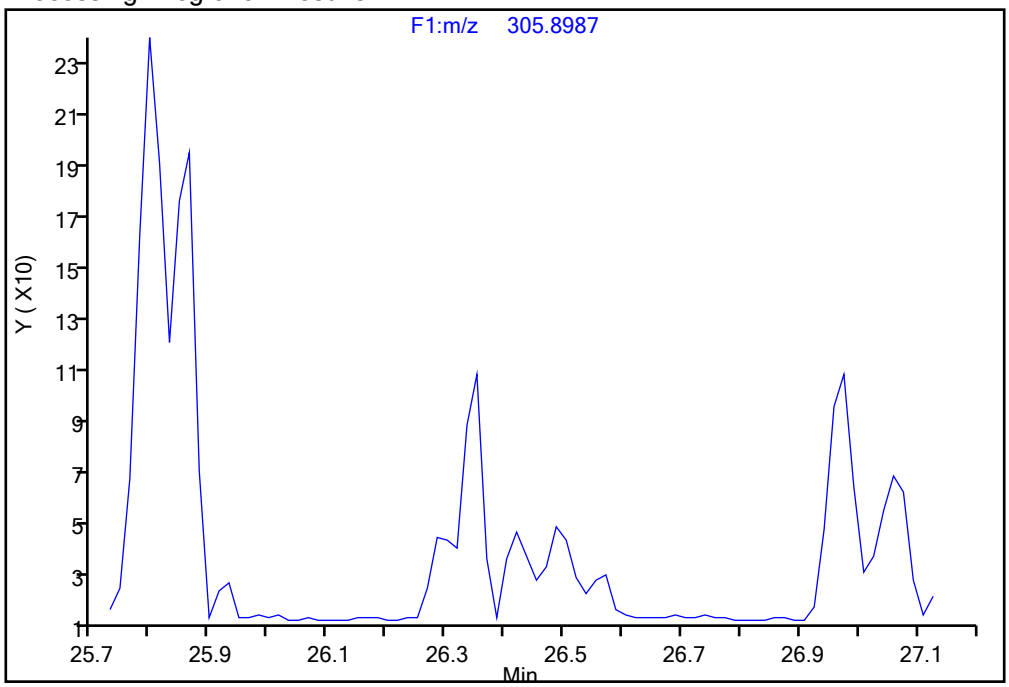
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

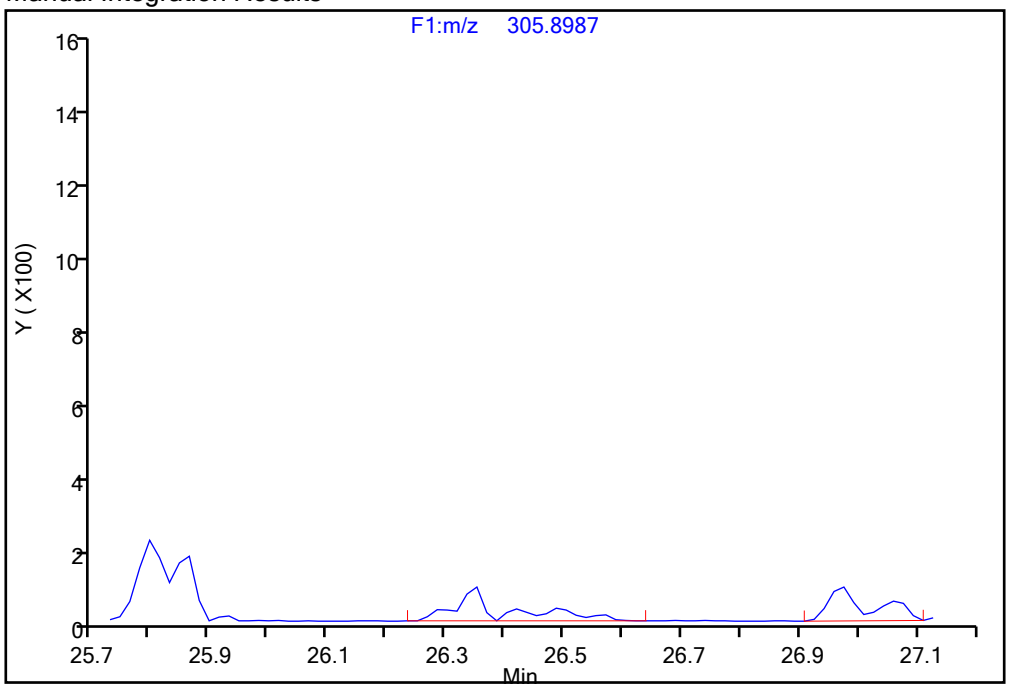
Not Detected
RT: 22.41- 33.91

Processing Integration Results



Manual Integration Results

RT = 26.352 Area = 517 M



Reviewer: davidsonm, 18-Dec-2019 08:52:40
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

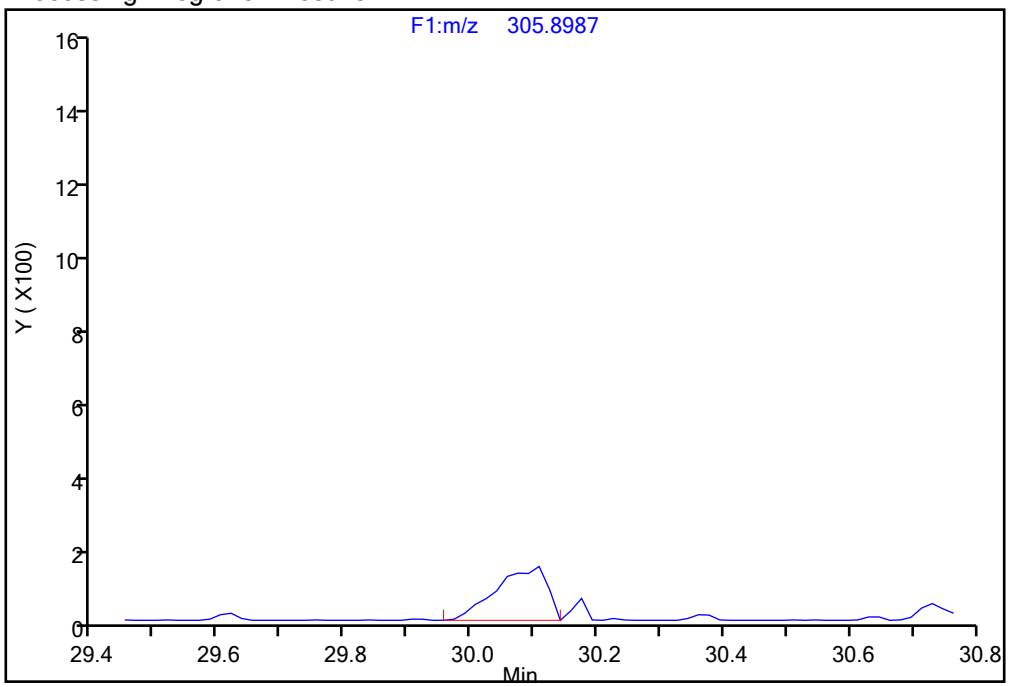
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

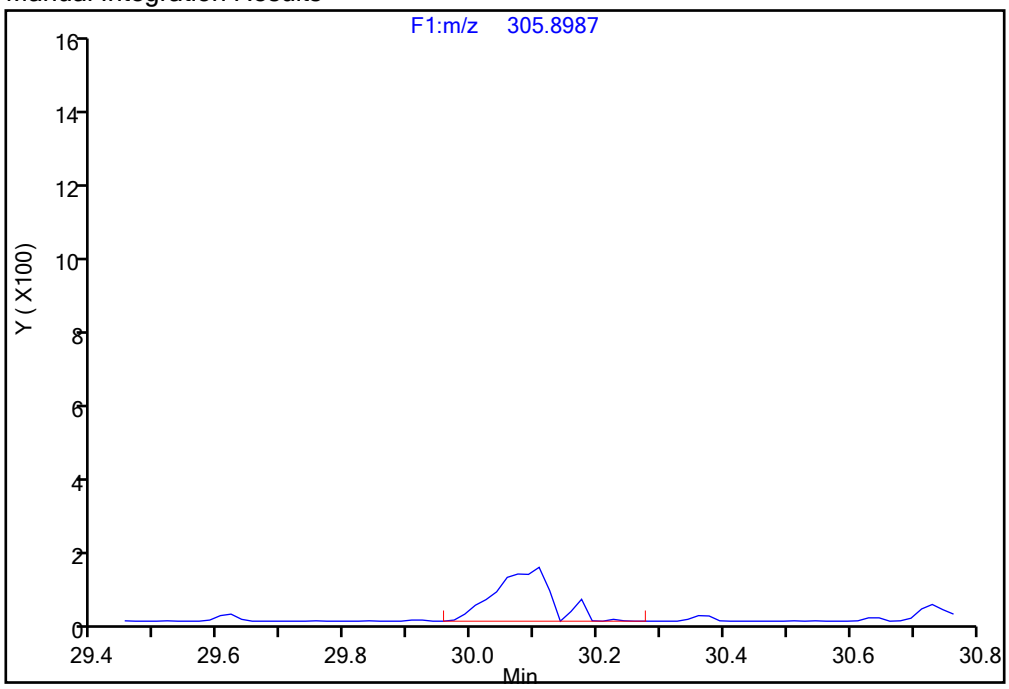
Processing Integration Results

RT = 30.107 Area = 807



Manual Integration Results

RT = 30.107 Area = 900 M



Reviewer: davidsonm, 18-Dec-2019 08:52:40

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

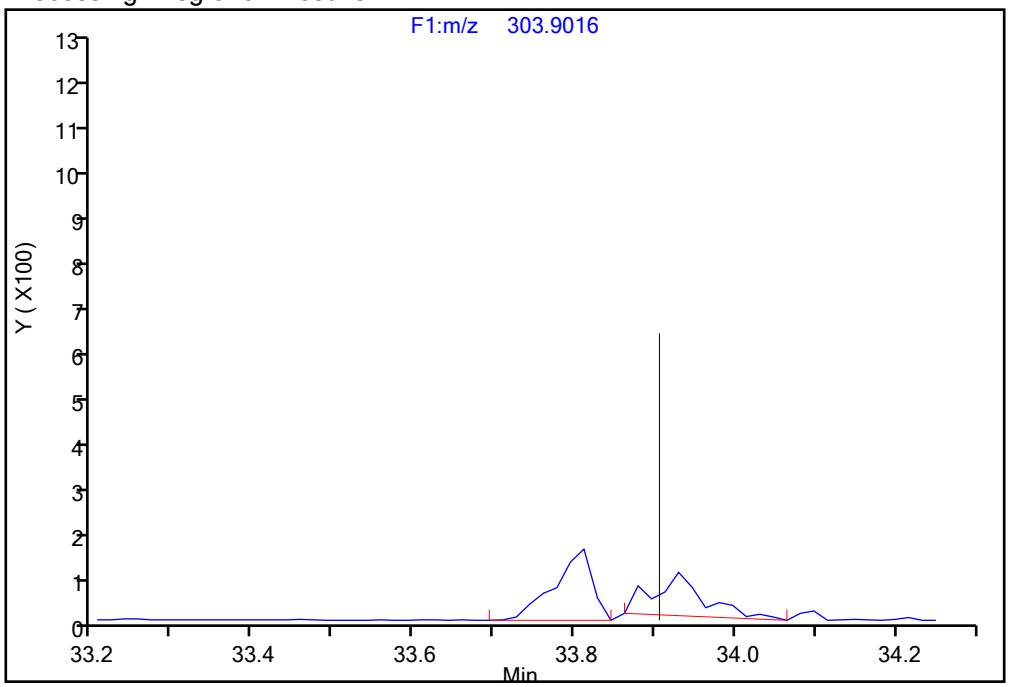
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (22.41- 33.91)

Signal: 1

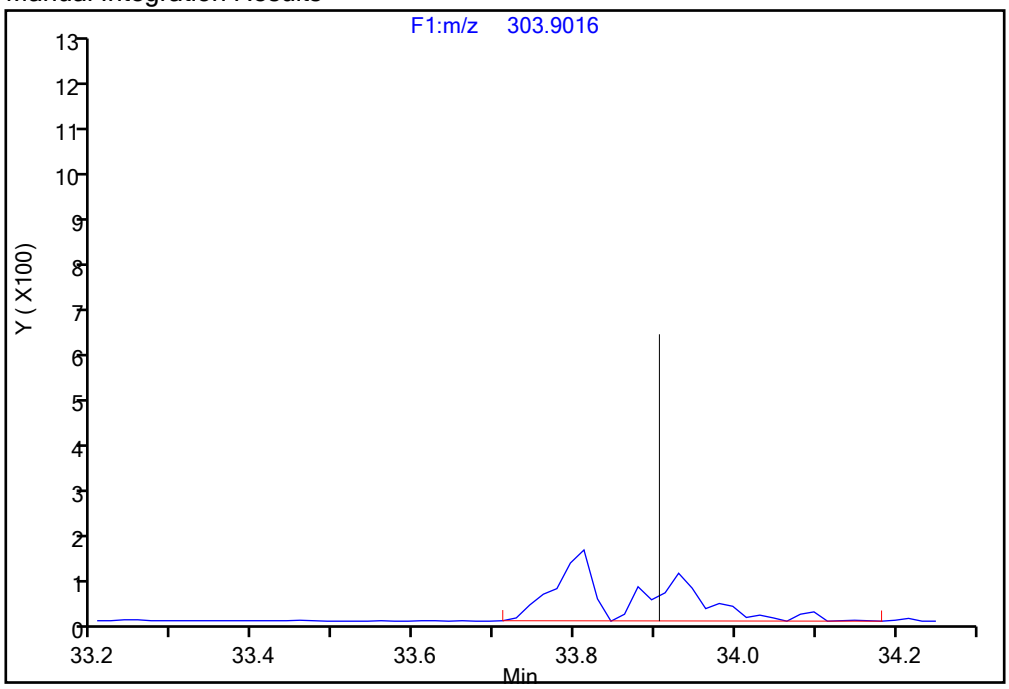
Processing Integration Results

RT = 33.812 Area = 502



Manual Integration Results

RT = 33.812 Area = 1027 M



Reviewer: davidsonm, 18-Dec-2019 08:52:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

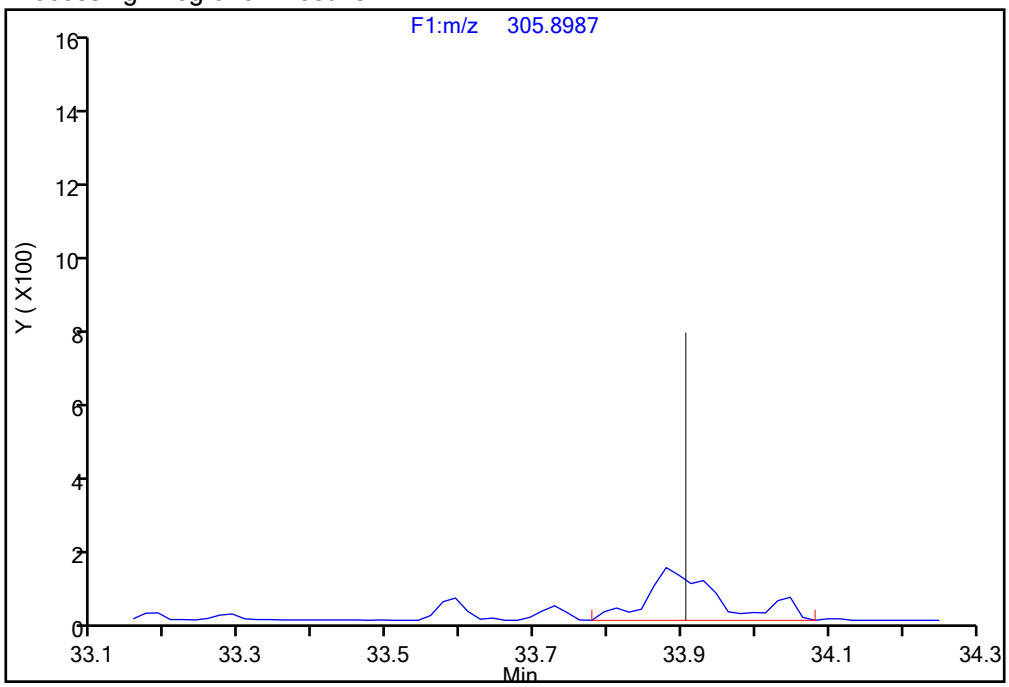
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (22.41- 33.91)

Signal: 2

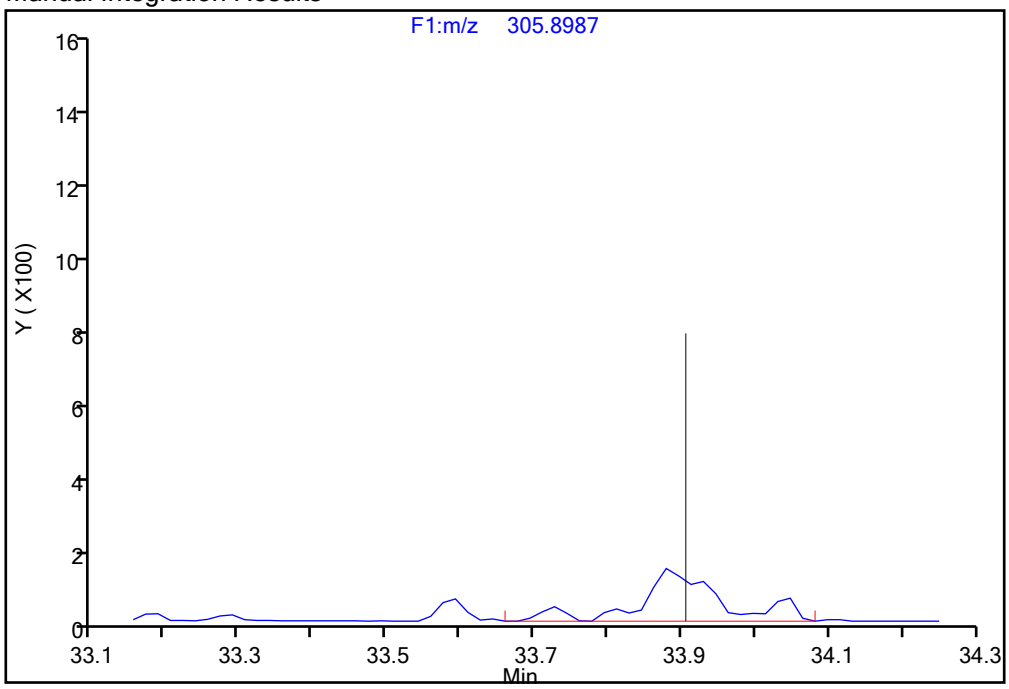
Processing Integration Results

RT = 33.879 Area = 958



Manual Integration Results

RT = 33.879 Area = 1053 M



Reviewer: davidsonm, 18-Dec-2019 08:52:40

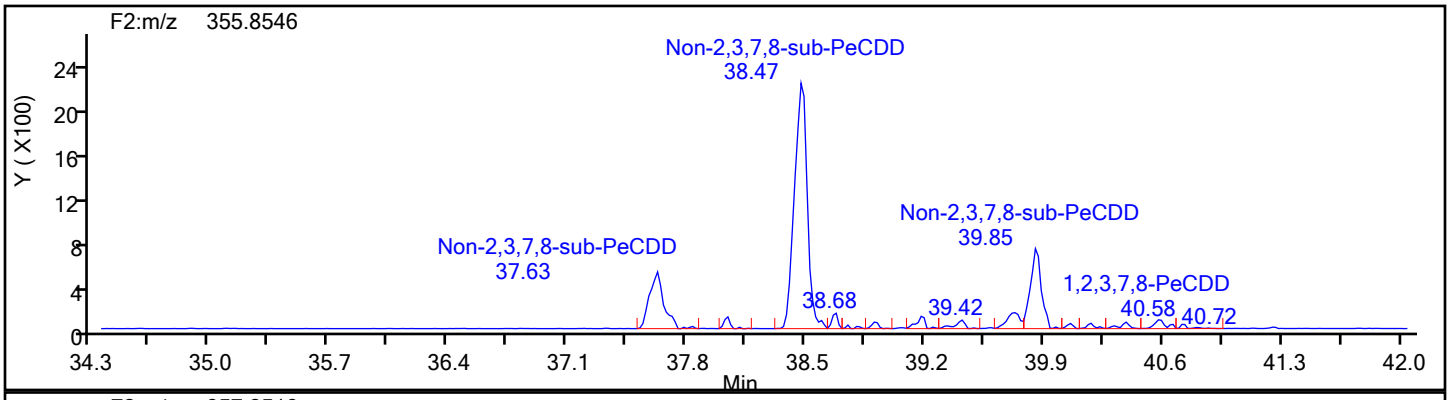
Audit Action: Manually Integrated Audit Reason: Baseline

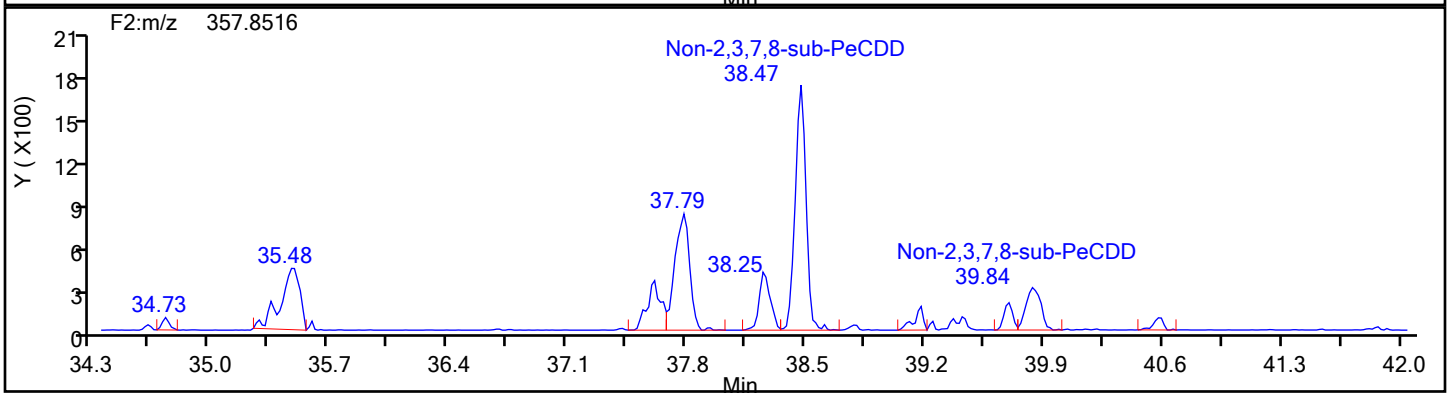
Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

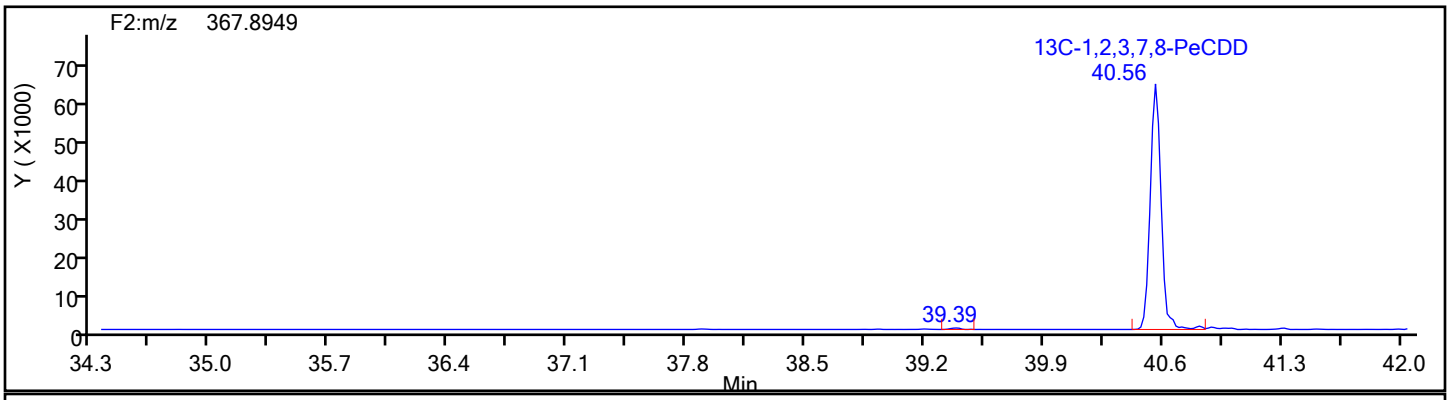
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

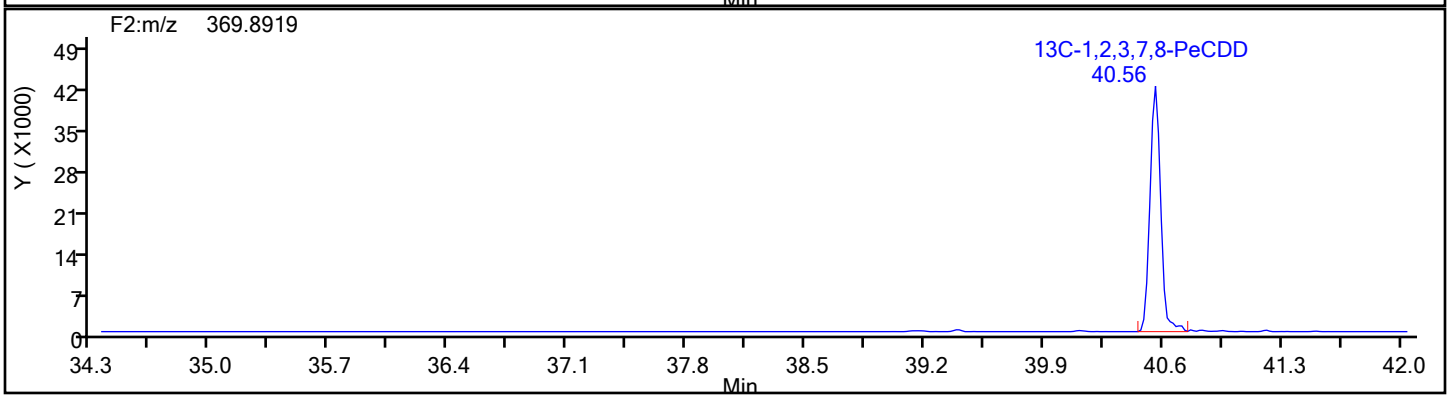
PeCDD





PeCDD Standards



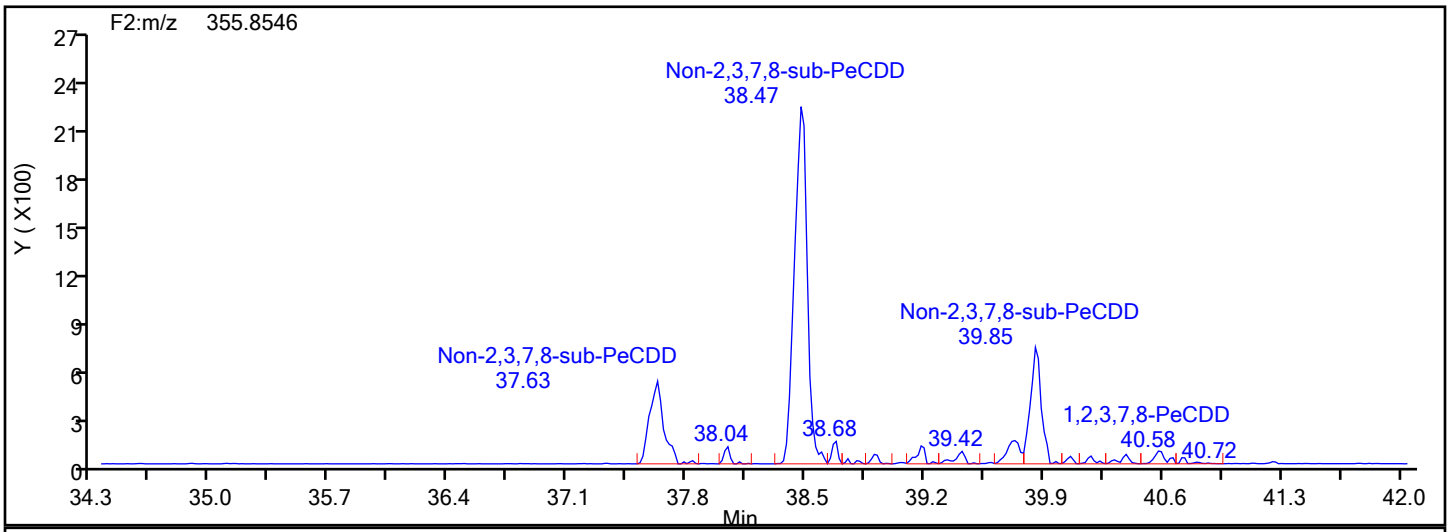


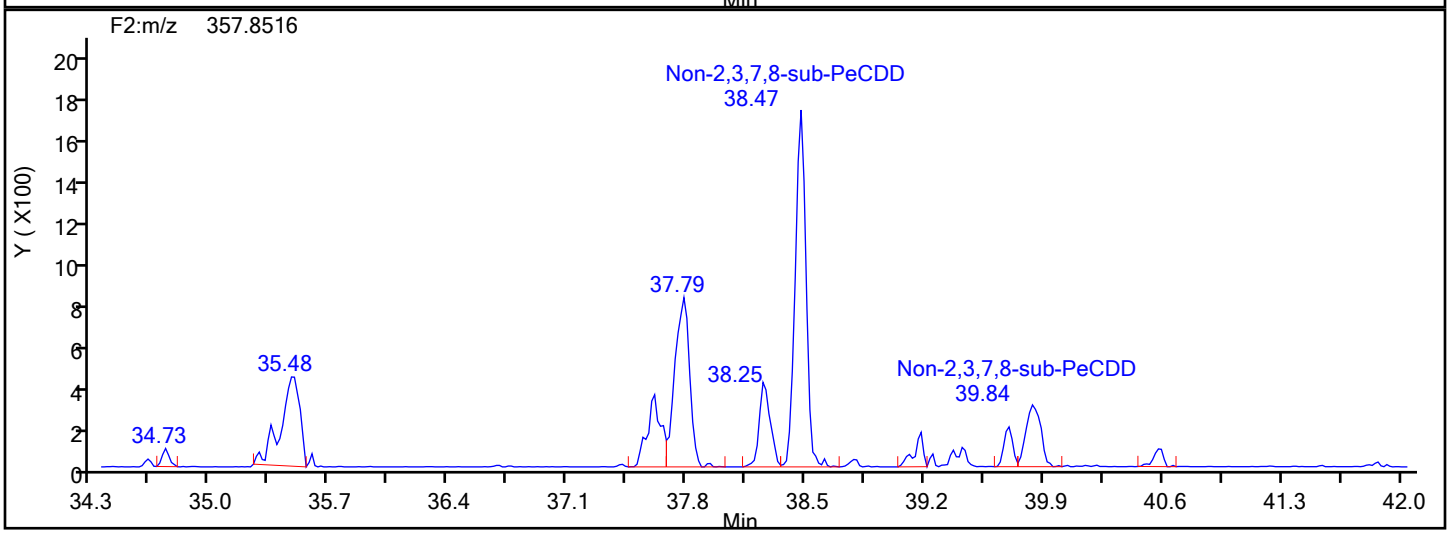
Report Date: 18-Dec-2019 08:56:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

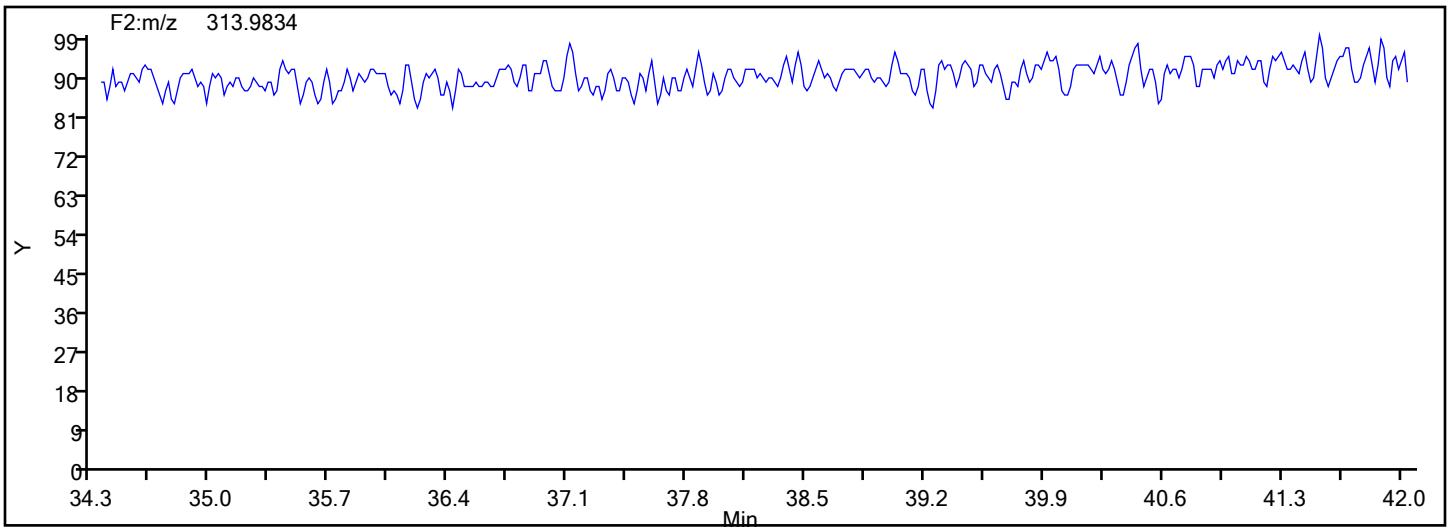
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

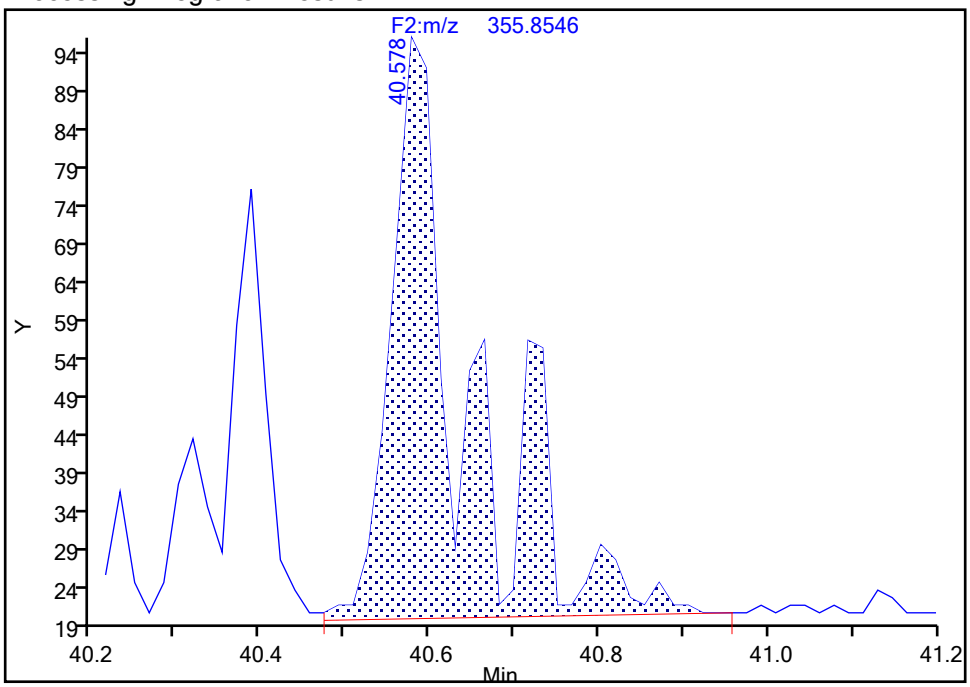
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

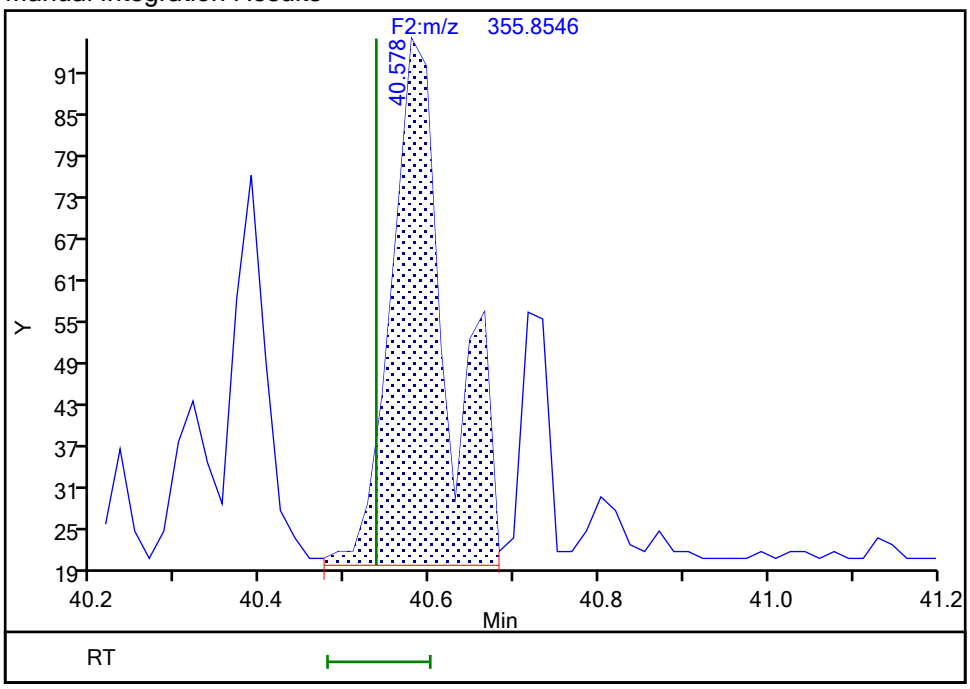
Processing Integration Results

RT: 40.58
Area: 473
Amount: 0.083055
Amount Units: pg/ul



Manual Integration Results

RT: 40.58
Area: 362
Amount: 0.071785
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:53:30

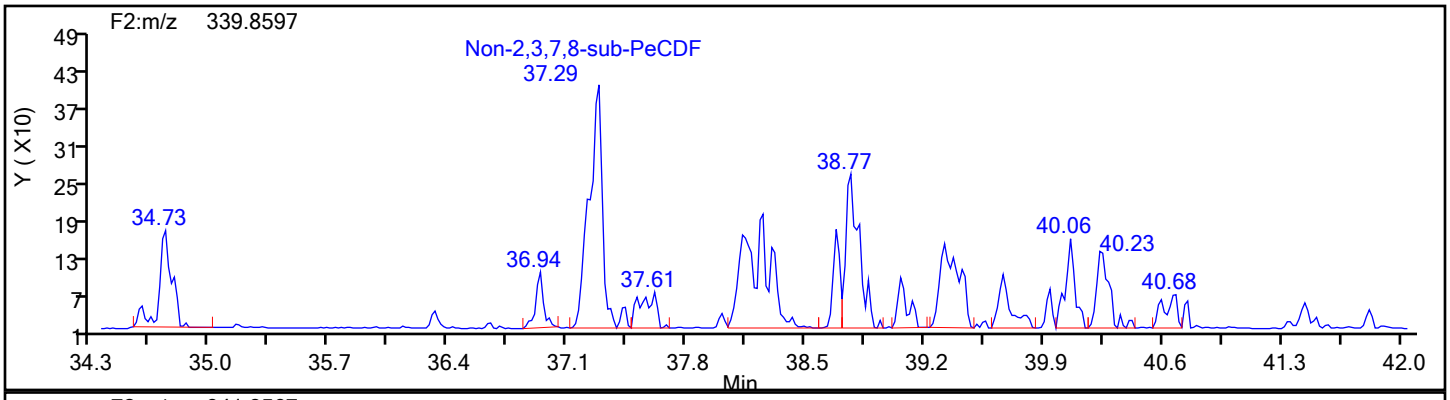
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

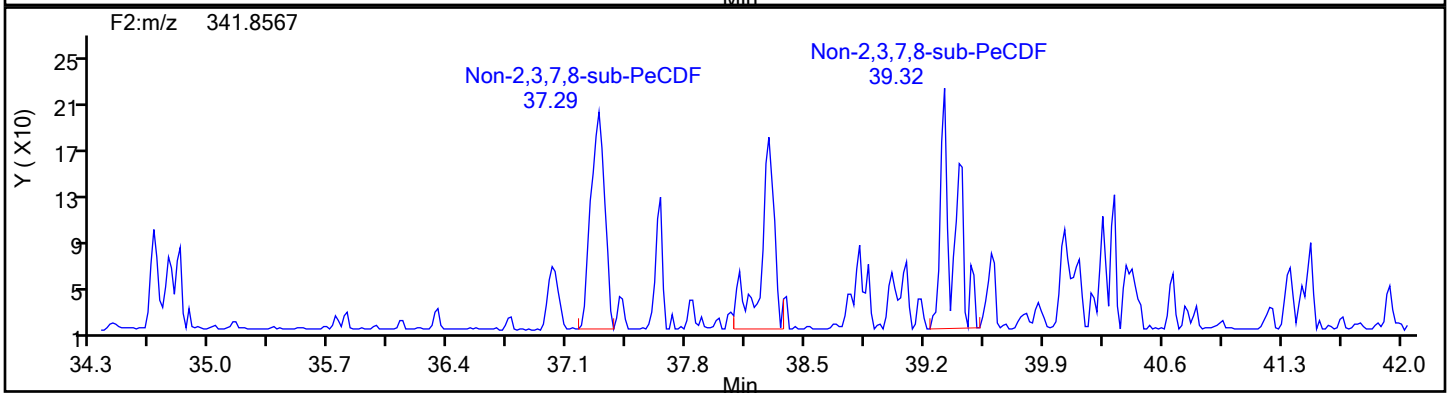
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

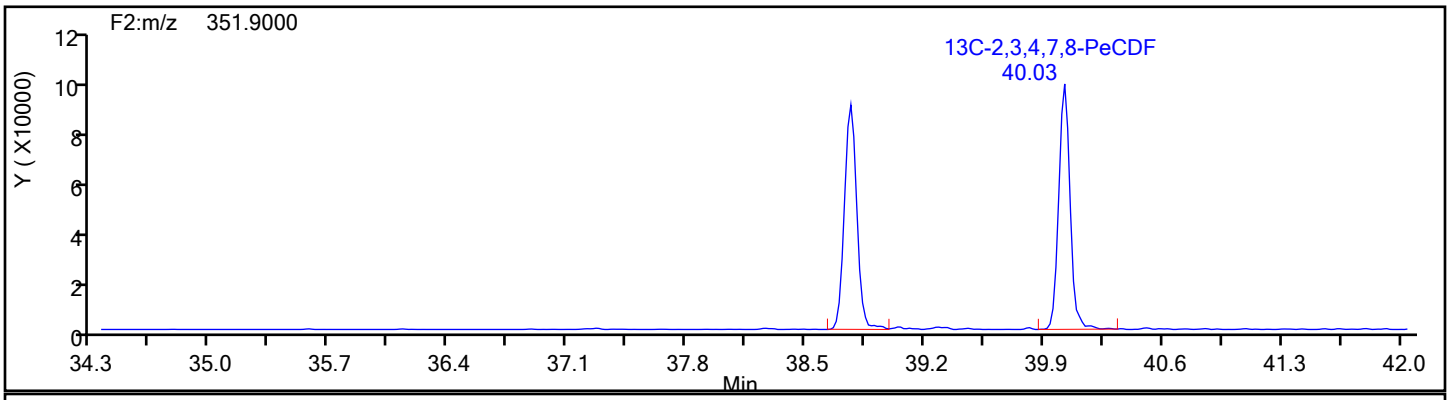
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

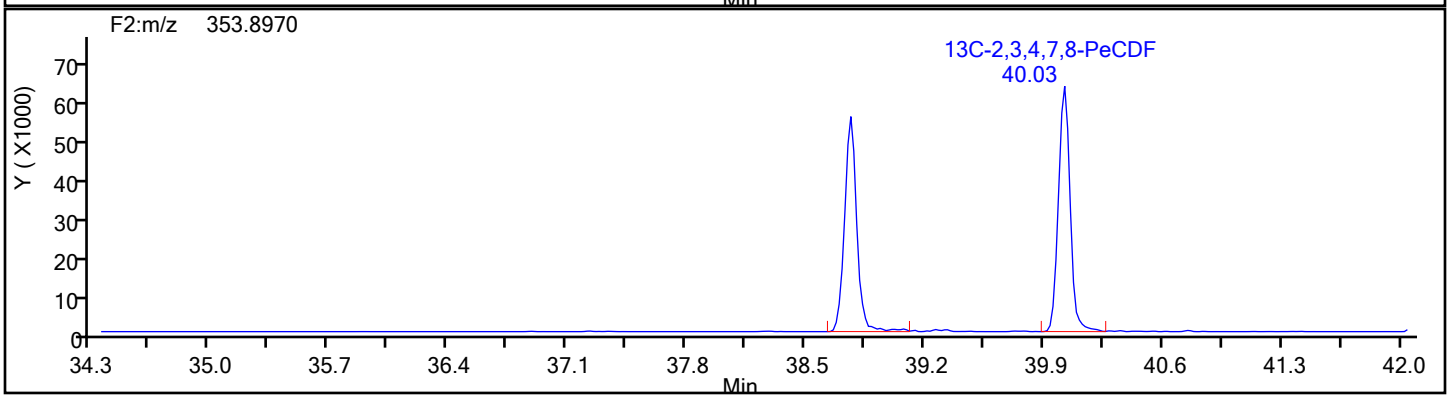
PeCDF





PeCDF Standards



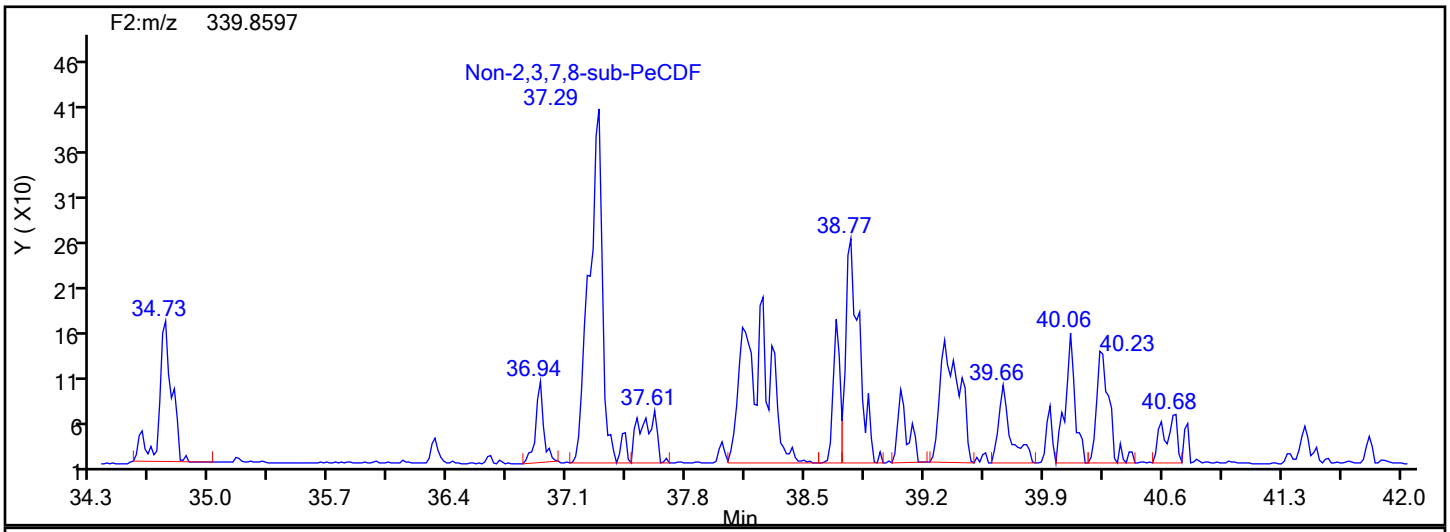


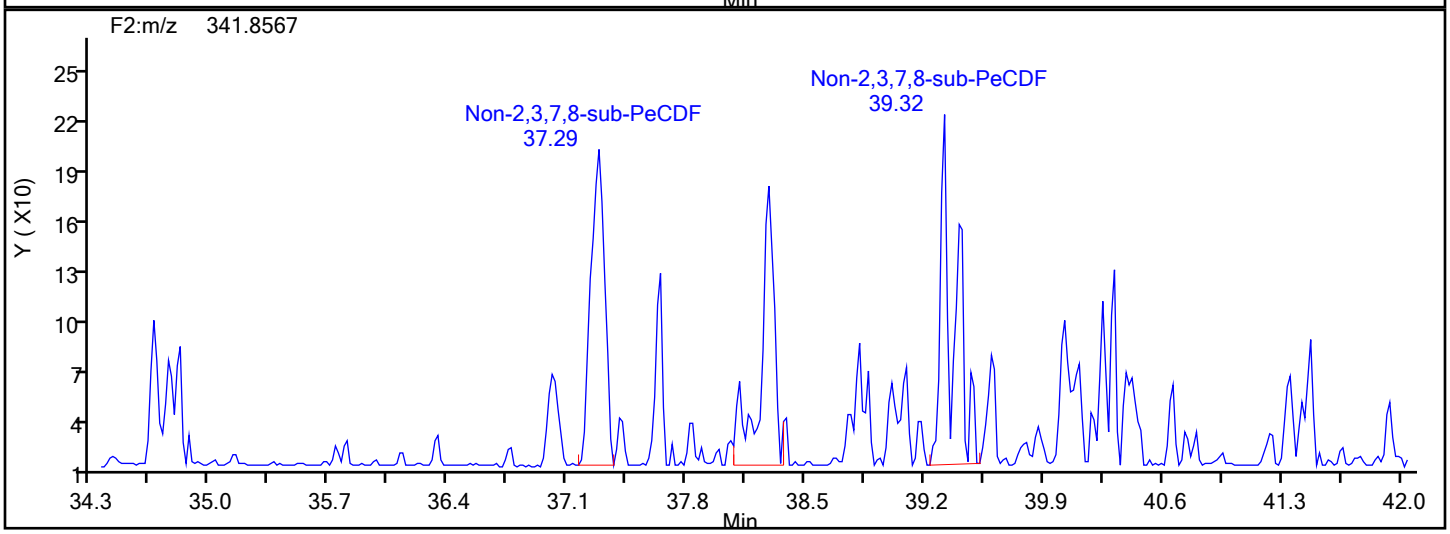
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

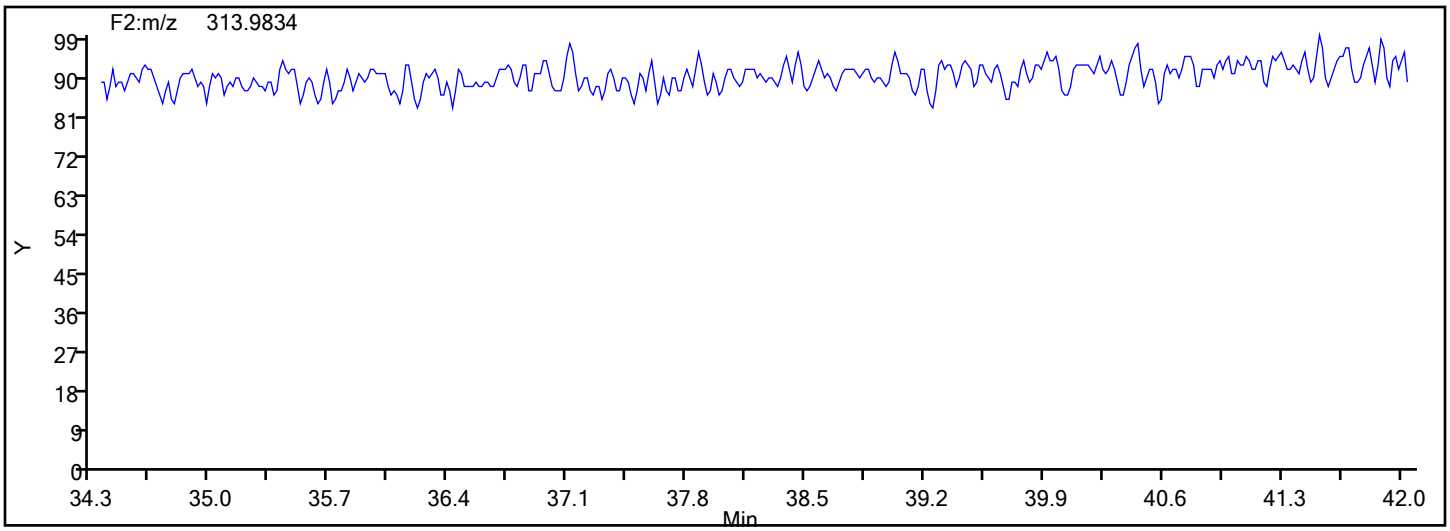
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

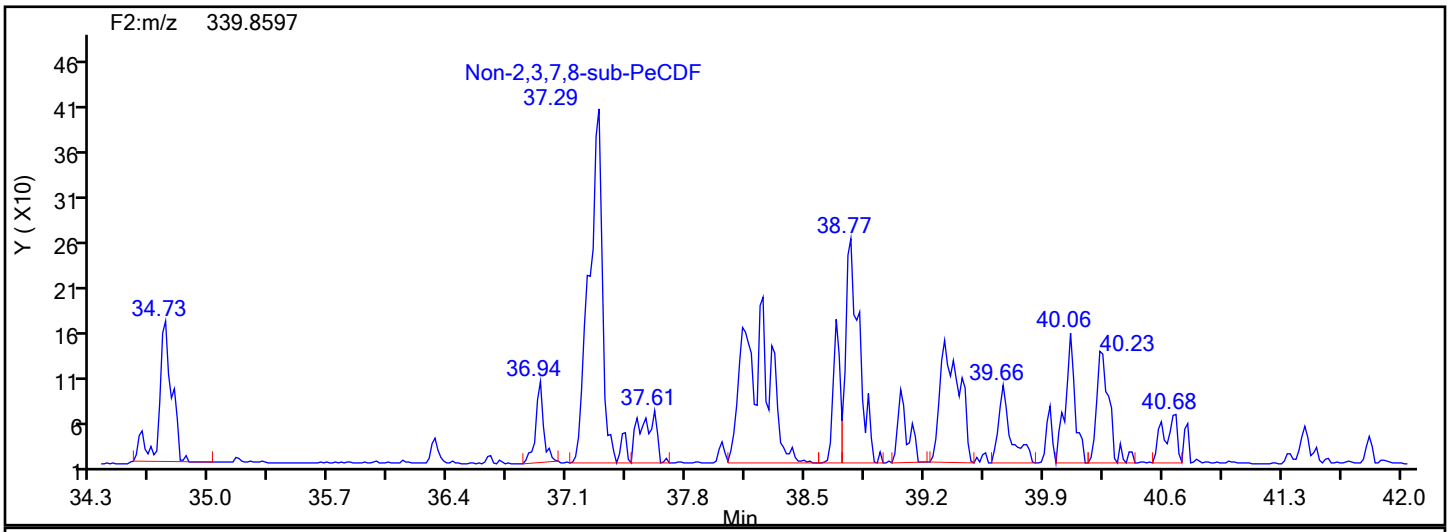


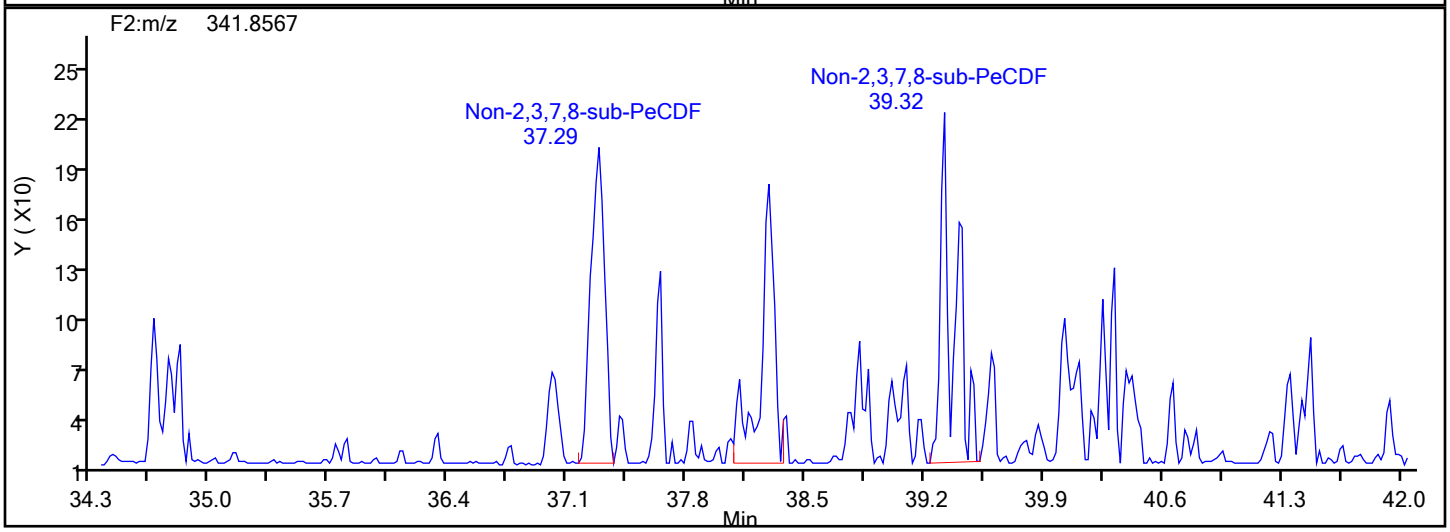
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

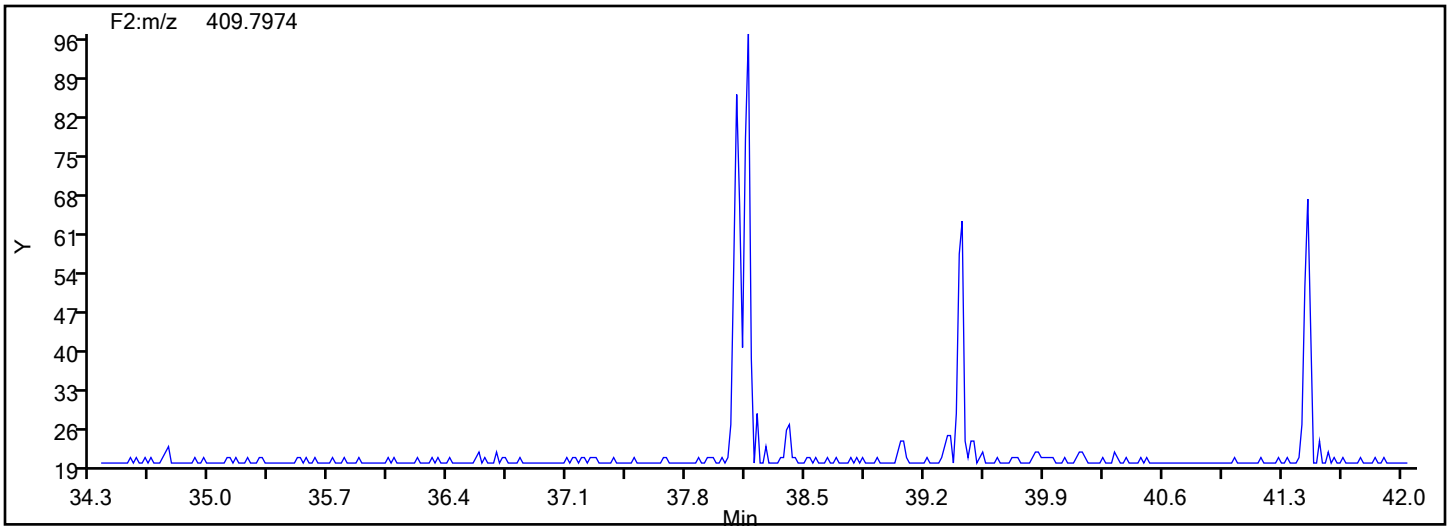
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

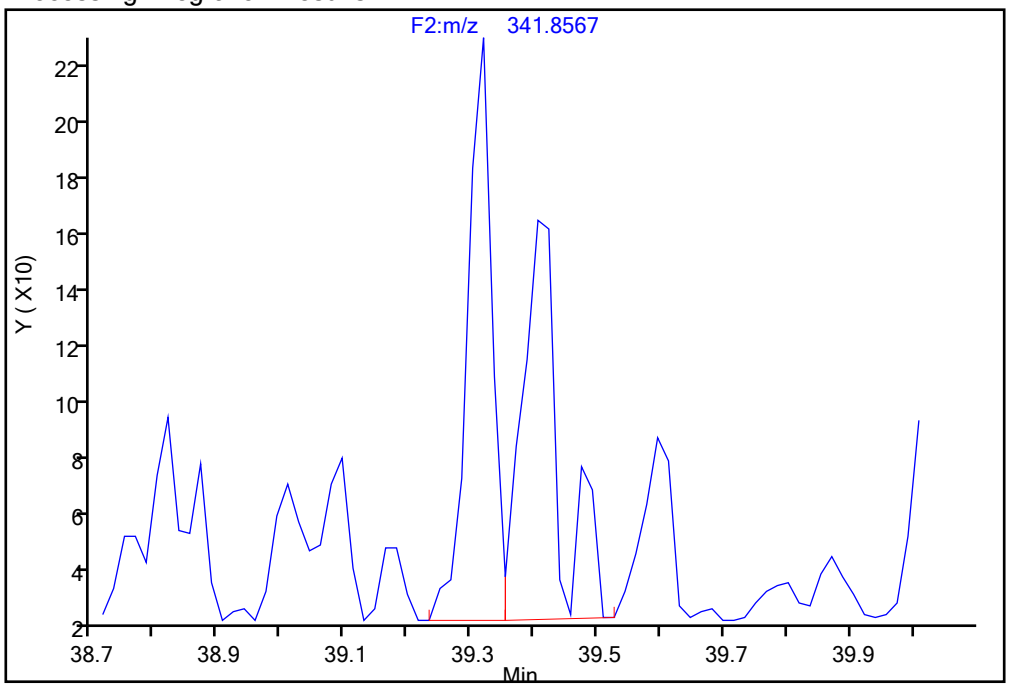
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (34.56- 41.38)

Signal: 2

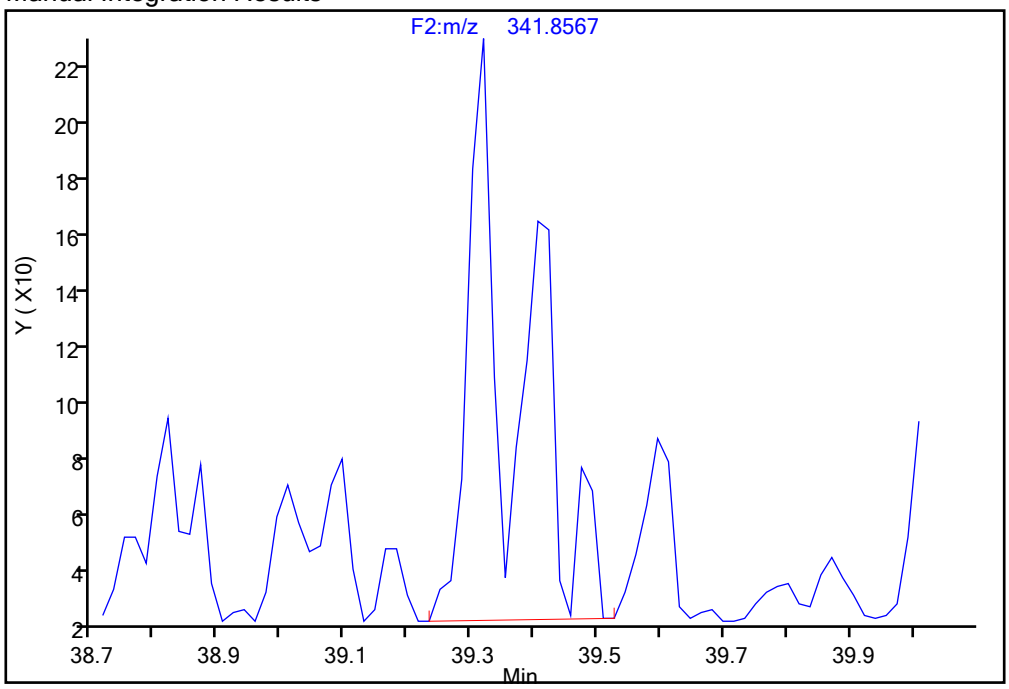
Processing Integration Results

RT = 39.319 Area = 541



Manual Integration Results

RT = 39.319 Area = 1097 M



Reviewer: davidsonm, 18-Dec-2019 08:53:54

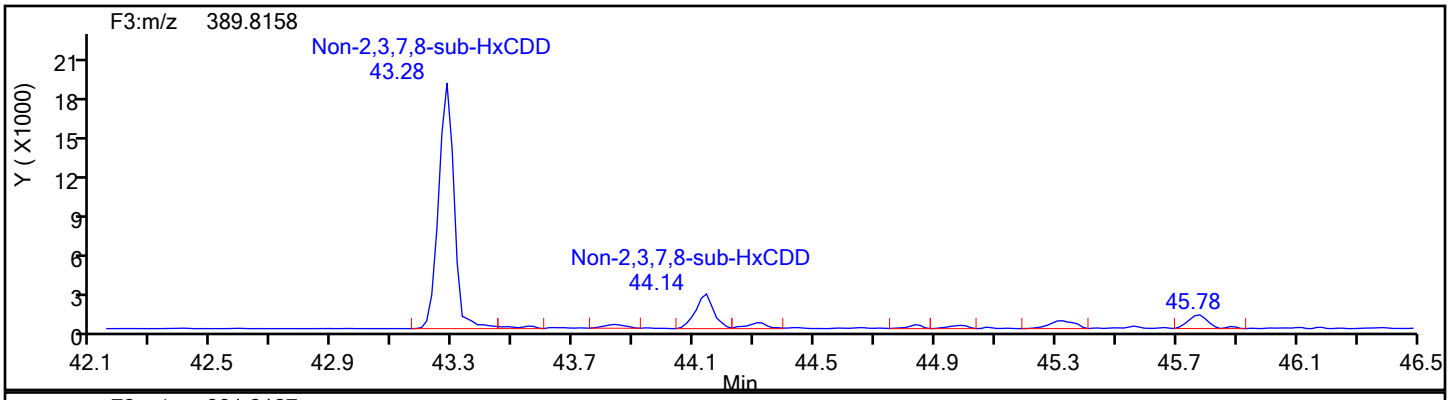
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

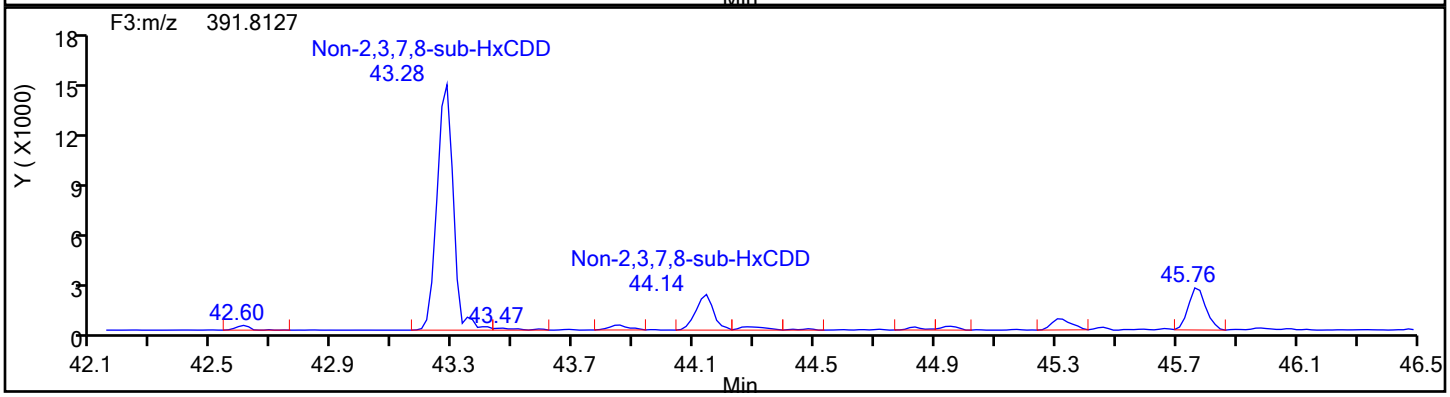
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

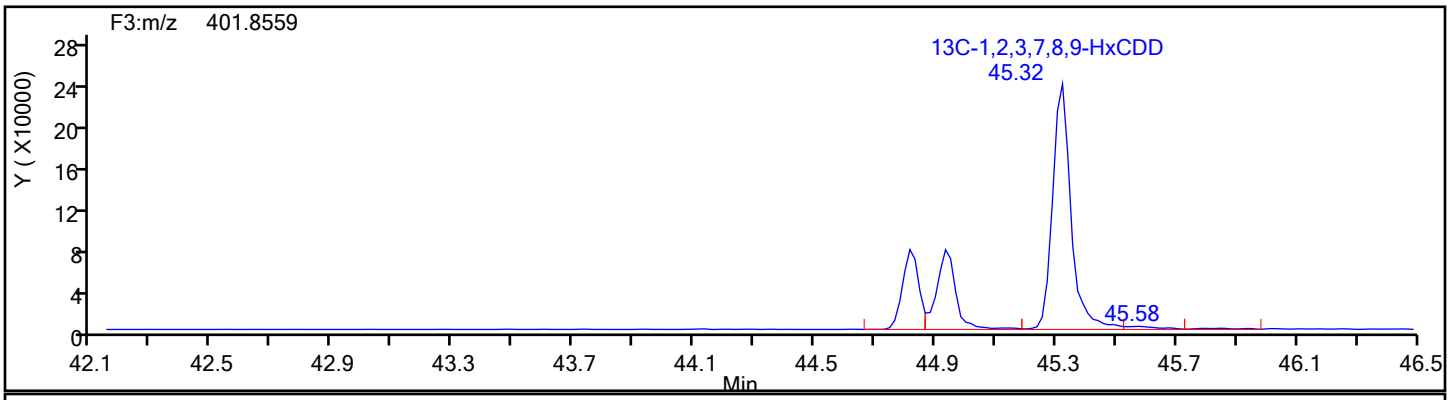
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

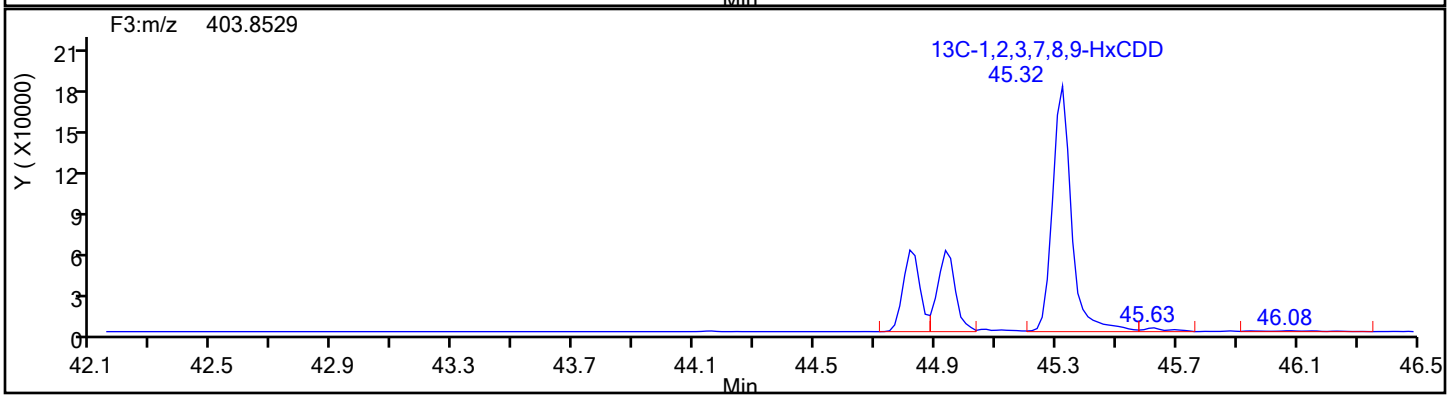
HxCDD





HxCDD Standards



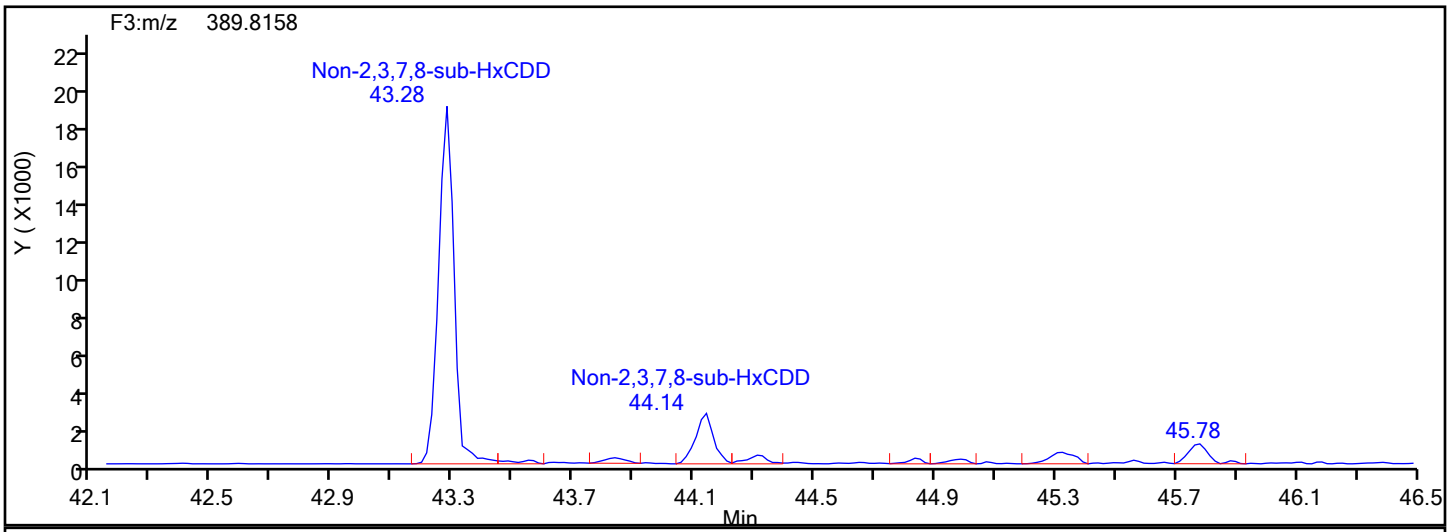


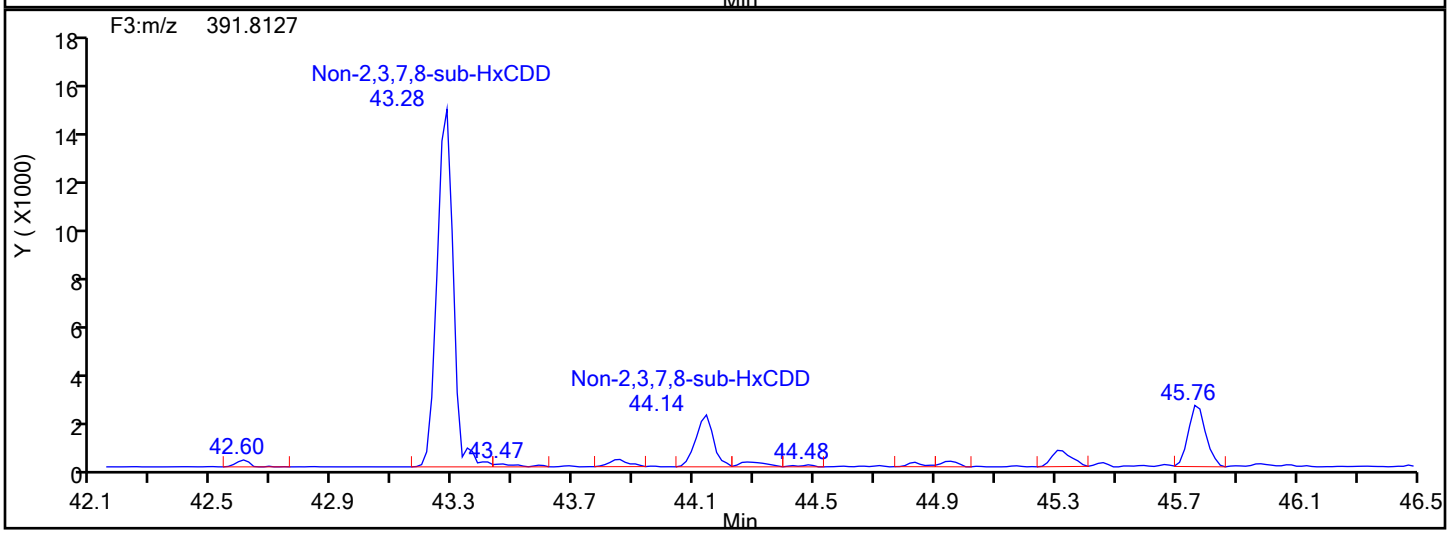
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

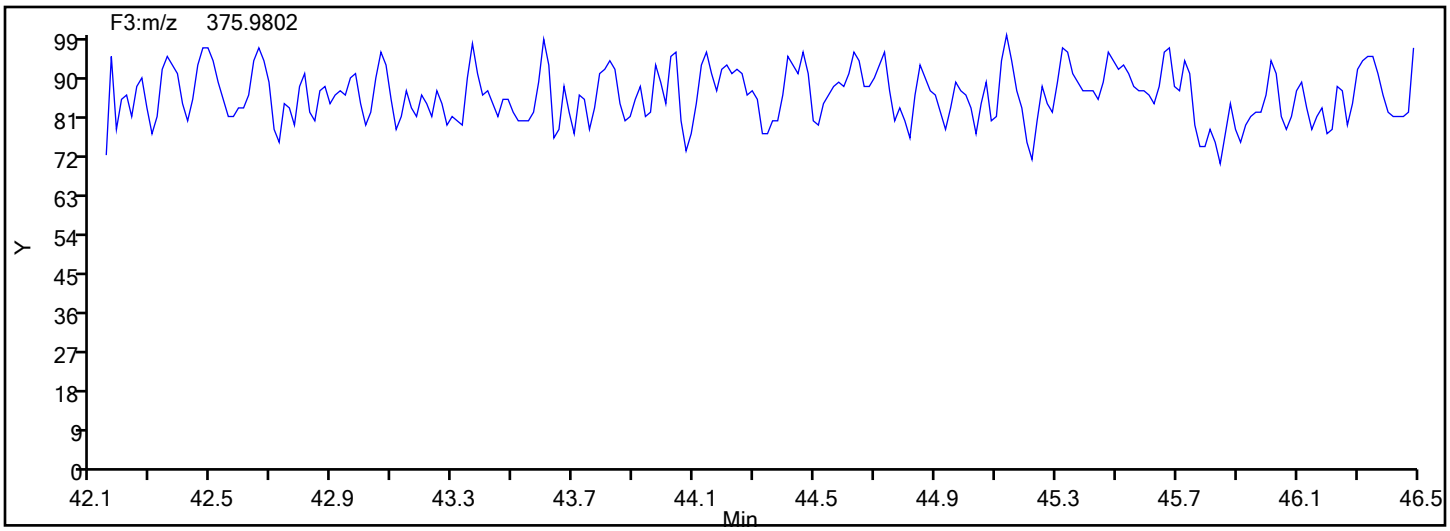
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

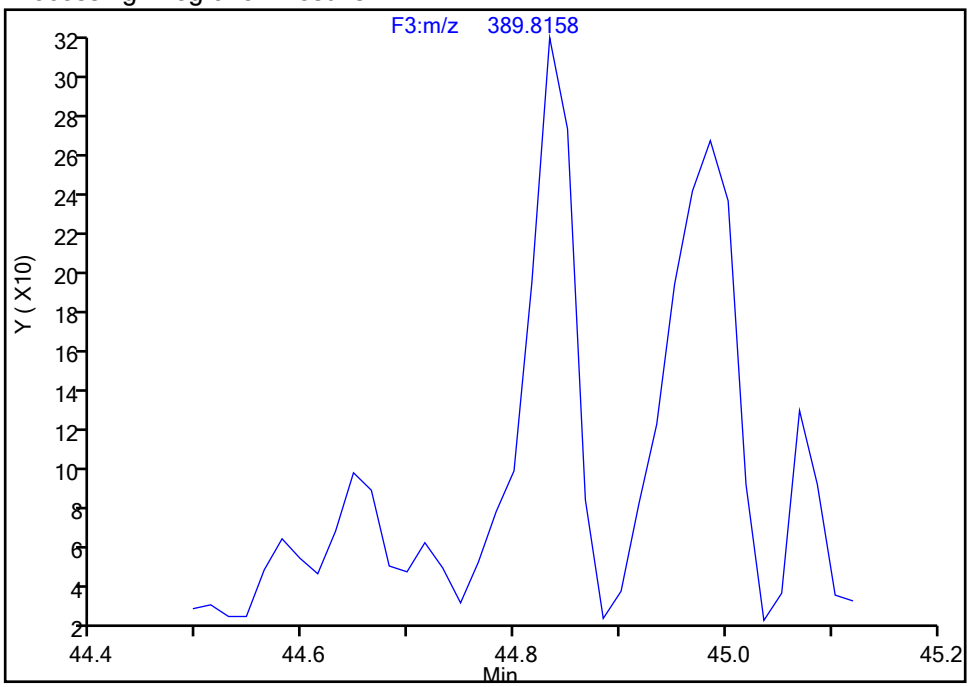
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

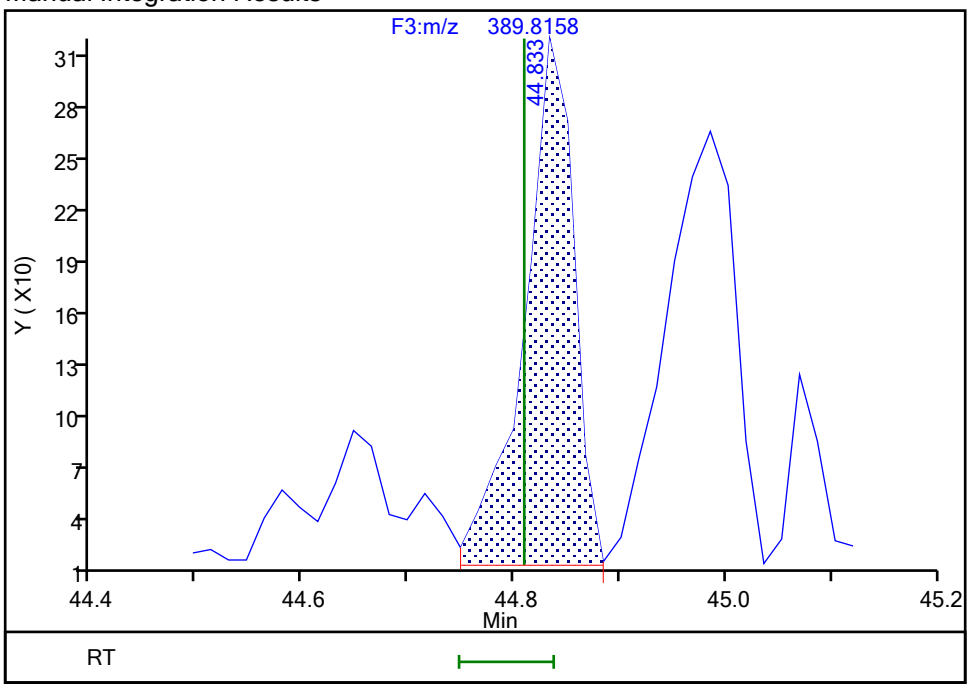
Not Detected
Expected RT: 44.81

Processing Integration Results



Manual Integration Results

RT: 44.83
Area: 977
Amount: 0.135091
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:54:31
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

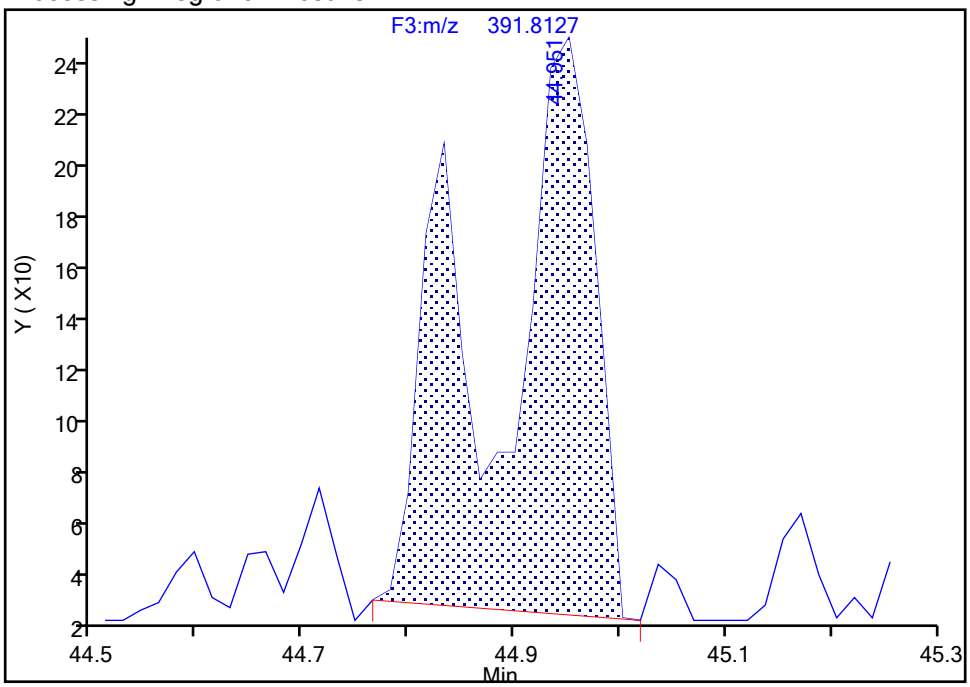
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

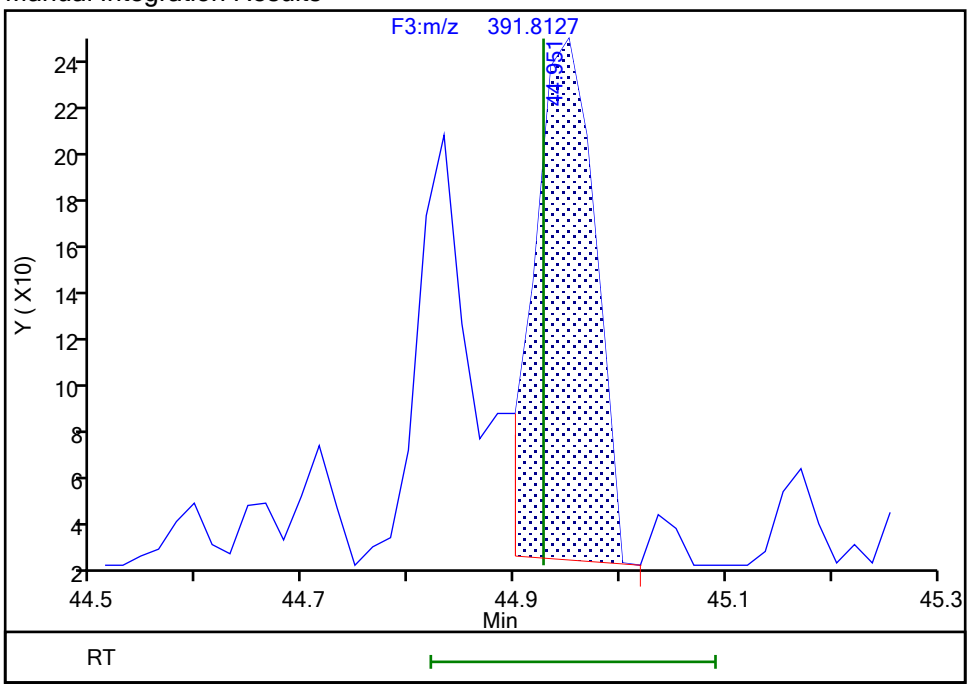
Processing Integration Results

RT: 44.95
Area: 1512
Amount: 0.199562
Amount Units: pg/ul



Manual Integration Results

RT: 44.95
Area: 886
Amount: 0.152152
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:54:25

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

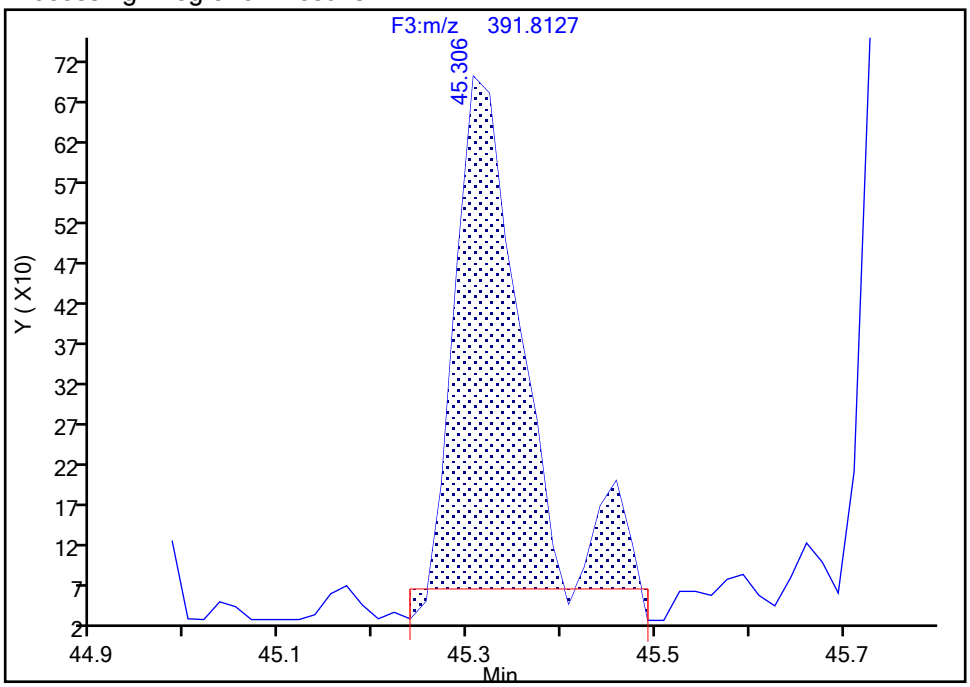
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

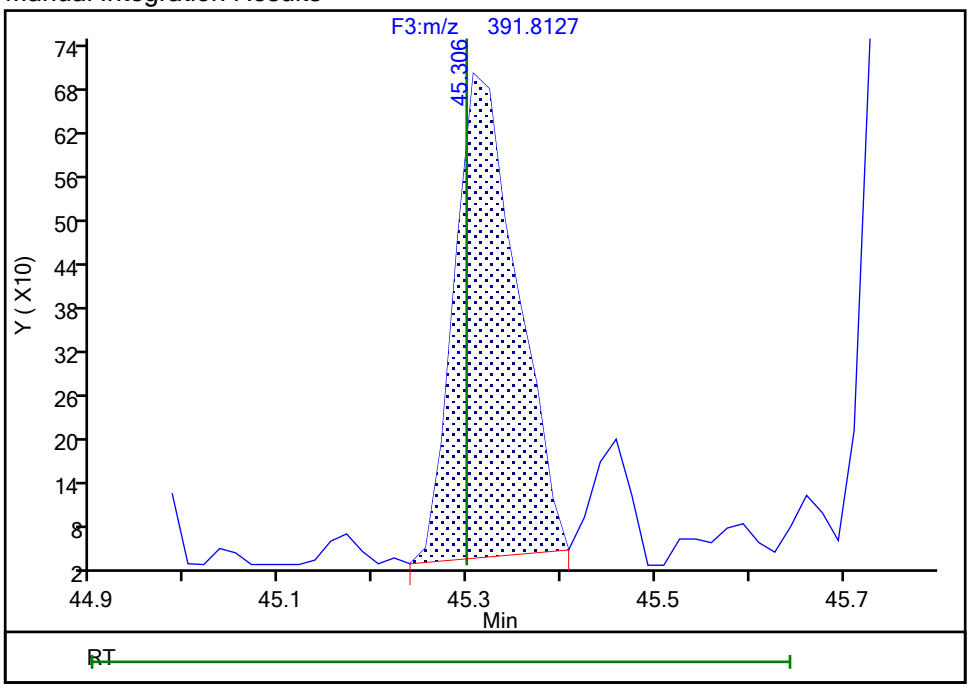
Processing Integration Results

RT: 45.31
Area: 3091
Amount: 0.501016
Amount Units: pg/ul



Manual Integration Results

RT: 45.31
Area: 3074
Amount: 0.499744
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:54:42

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

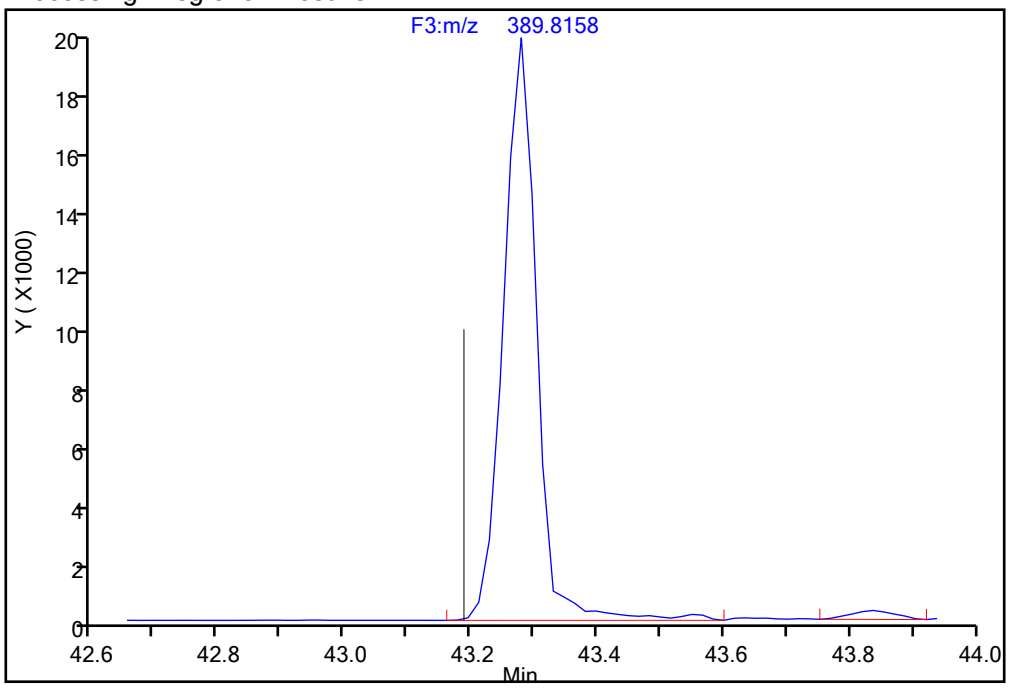
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.19- 45.35)

Signal: 1

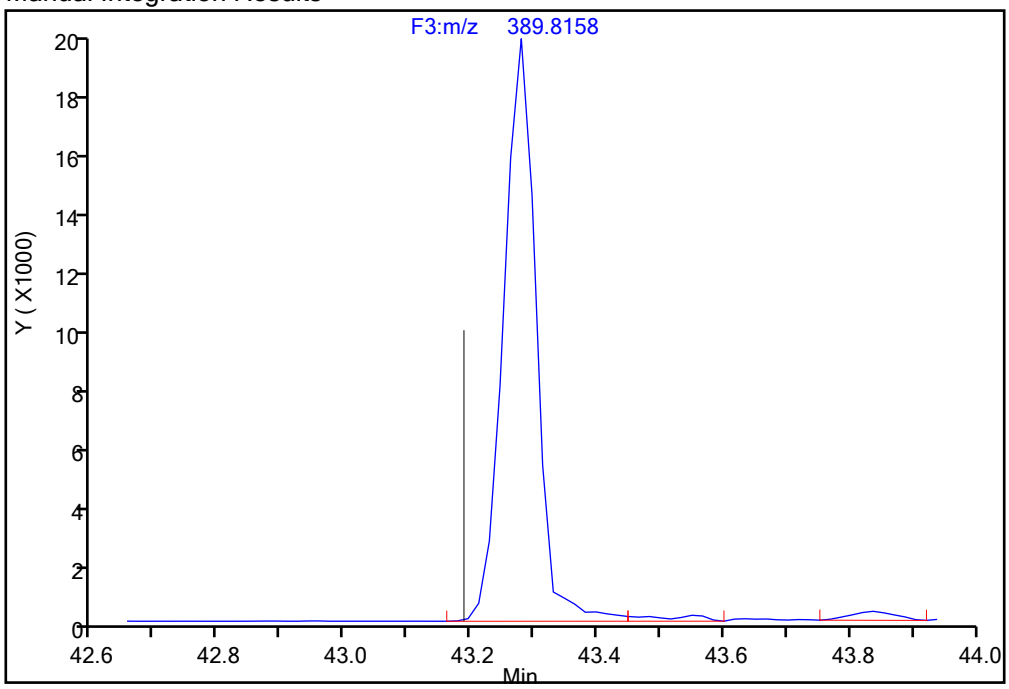
Processing Integration Results

RT = 43.279 Area = 69413



Manual Integration Results

RT = 43.279 Area = 68334 M



Reviewer: davidsonm, 18-Dec-2019 08:54:57

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

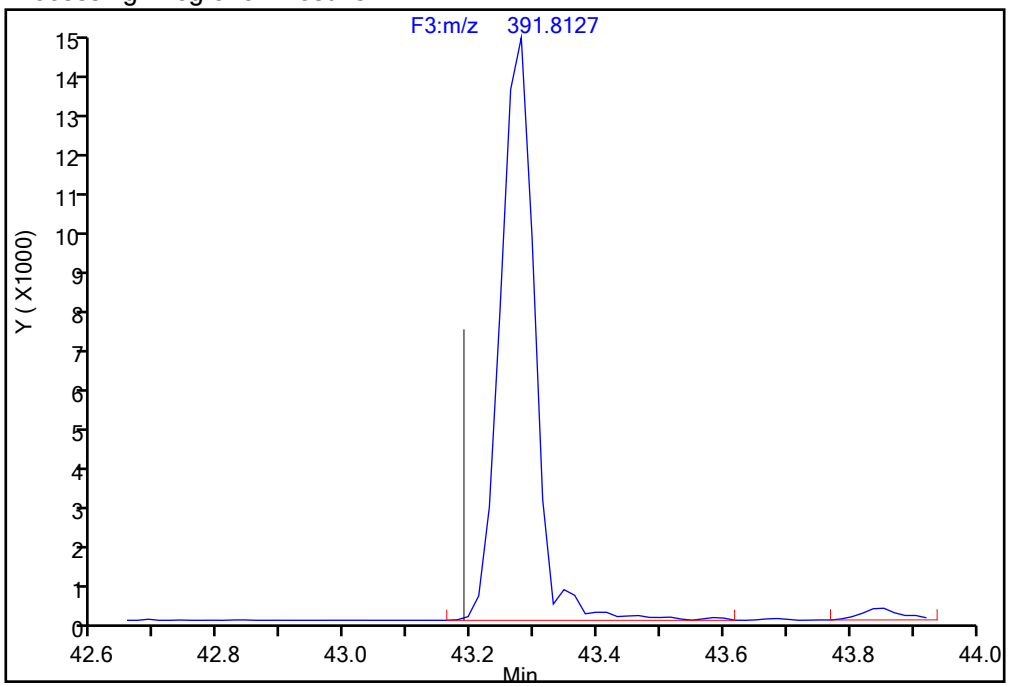
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.19- 45.35)

Signal: 2

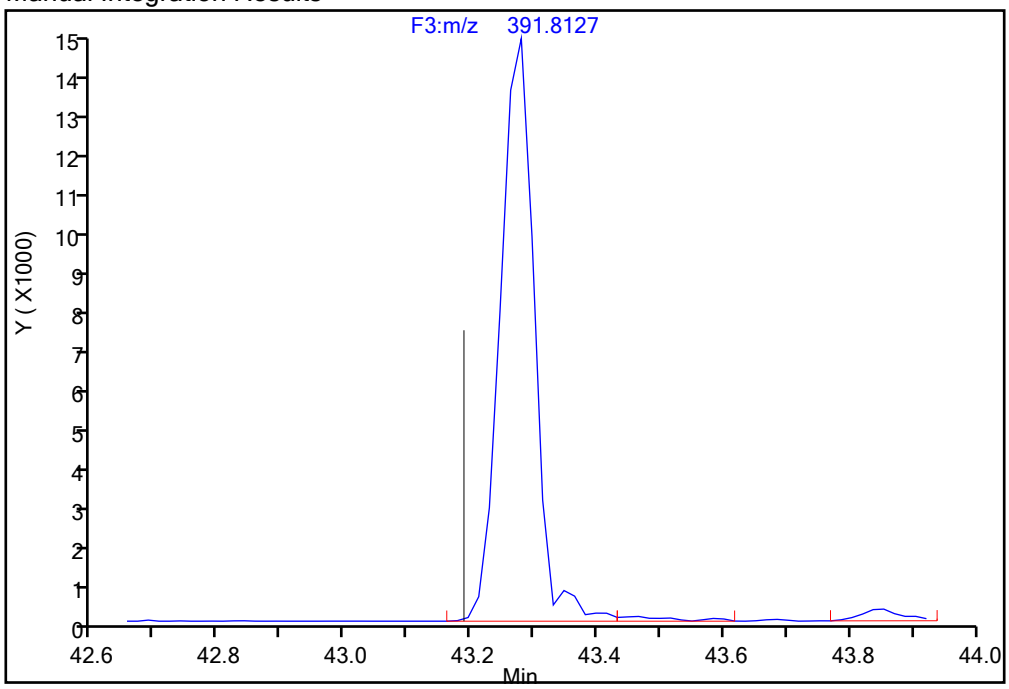
Processing Integration Results

RT = 43.279 Area = 55807



Manual Integration Results

RT = 43.279 Area = 55105 M



Reviewer: davidsonm, 18-Dec-2019 08:55:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

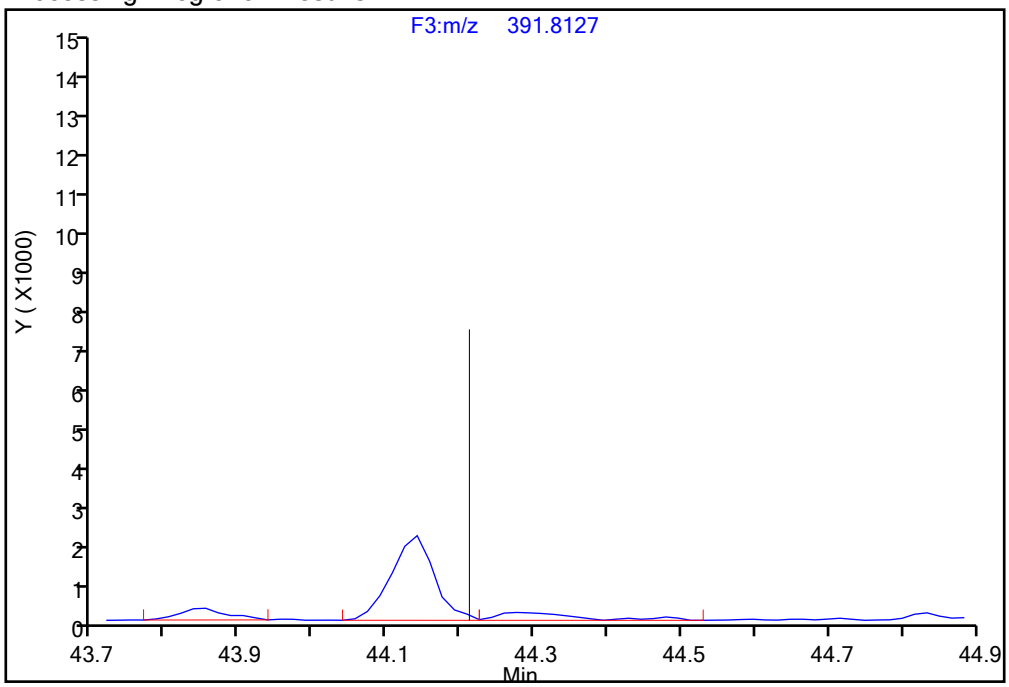
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.19- 45.35)

Signal: 2

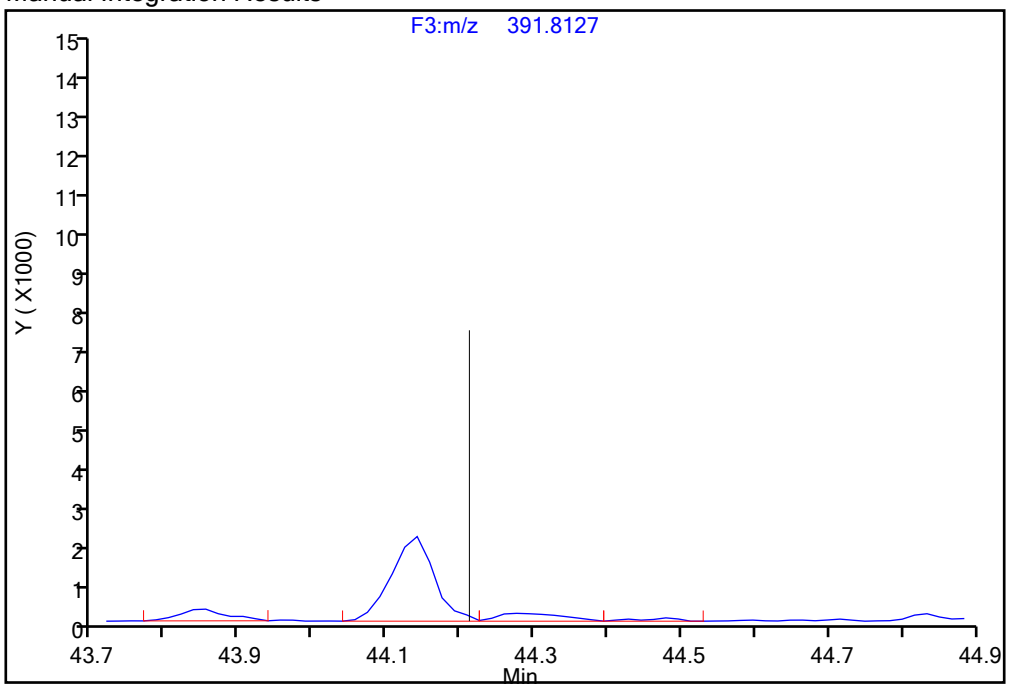
Processing Integration Results

RT = 44.276 Area = 1500



Manual Integration Results

RT = 44.276 Area = 1208 M



Reviewer: davidsonm, 18-Dec-2019 08:55:04

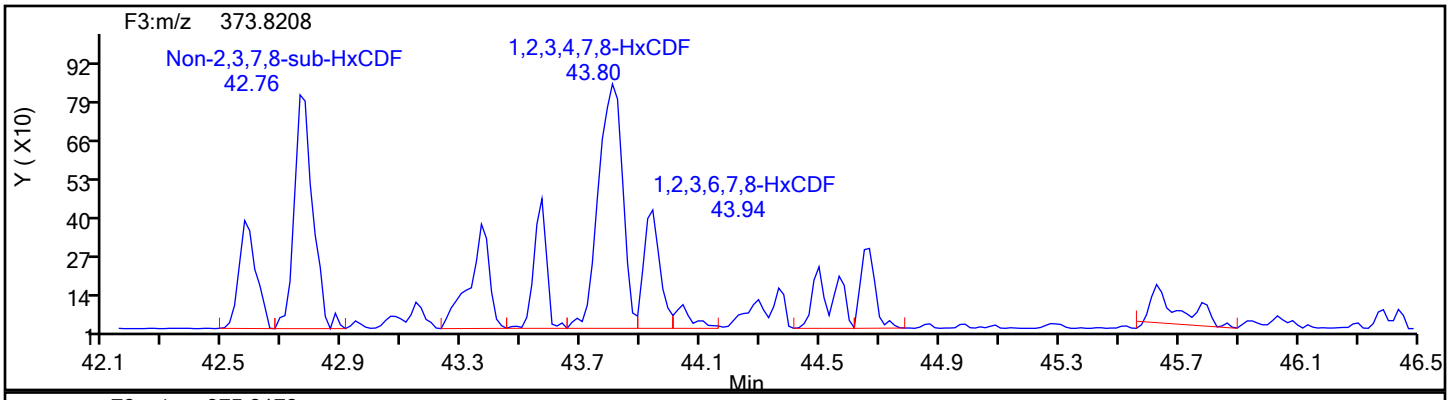
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

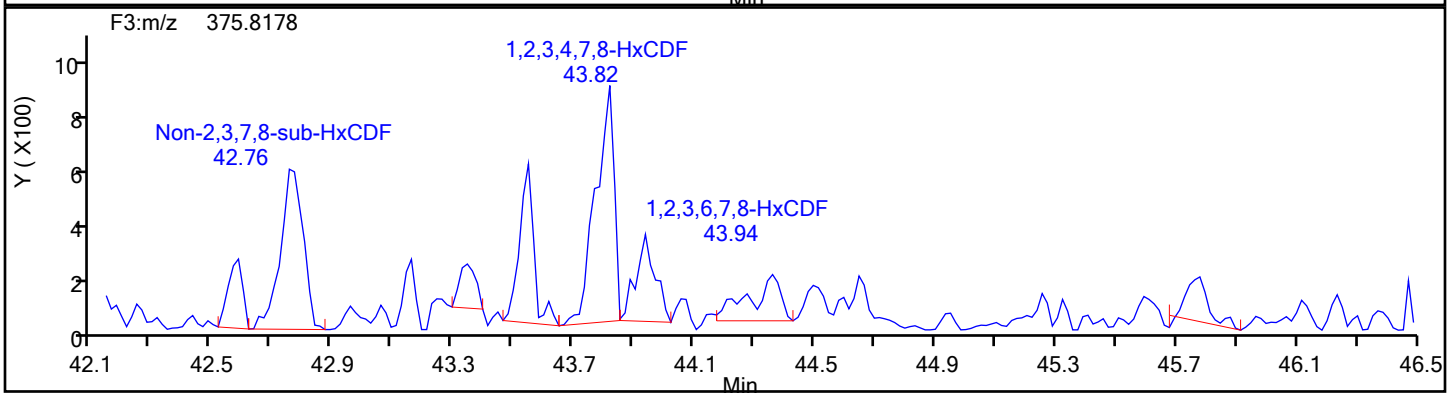
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

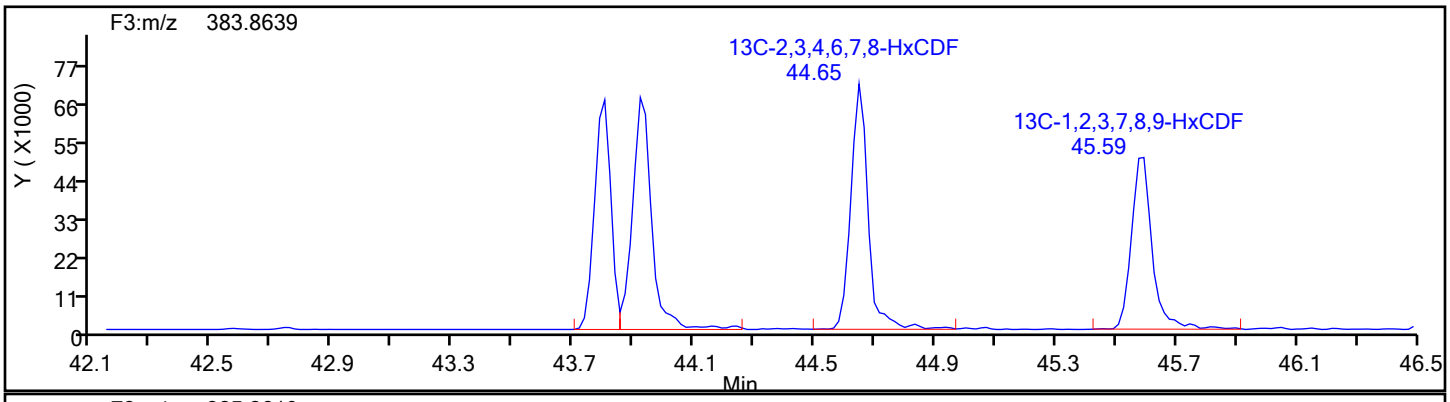
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

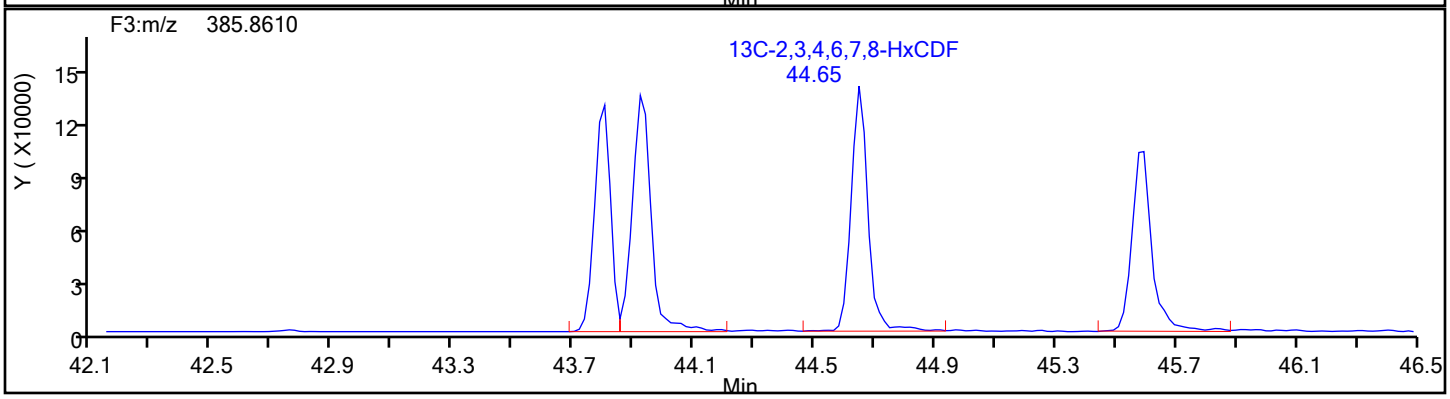
HxCDF





HxCDF Standards



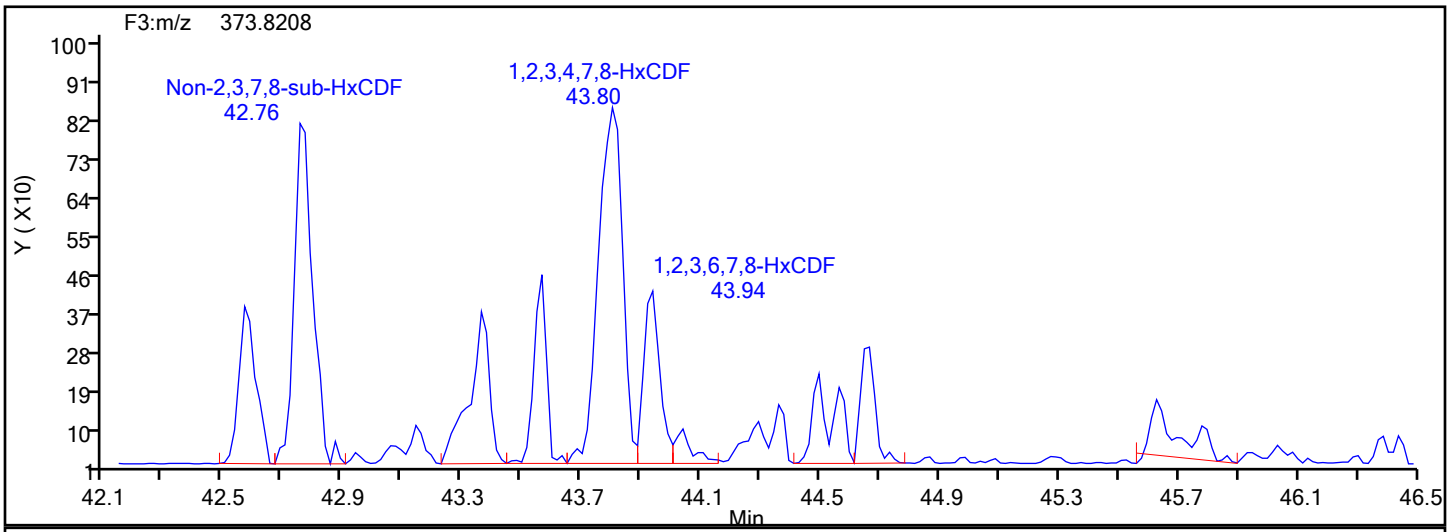


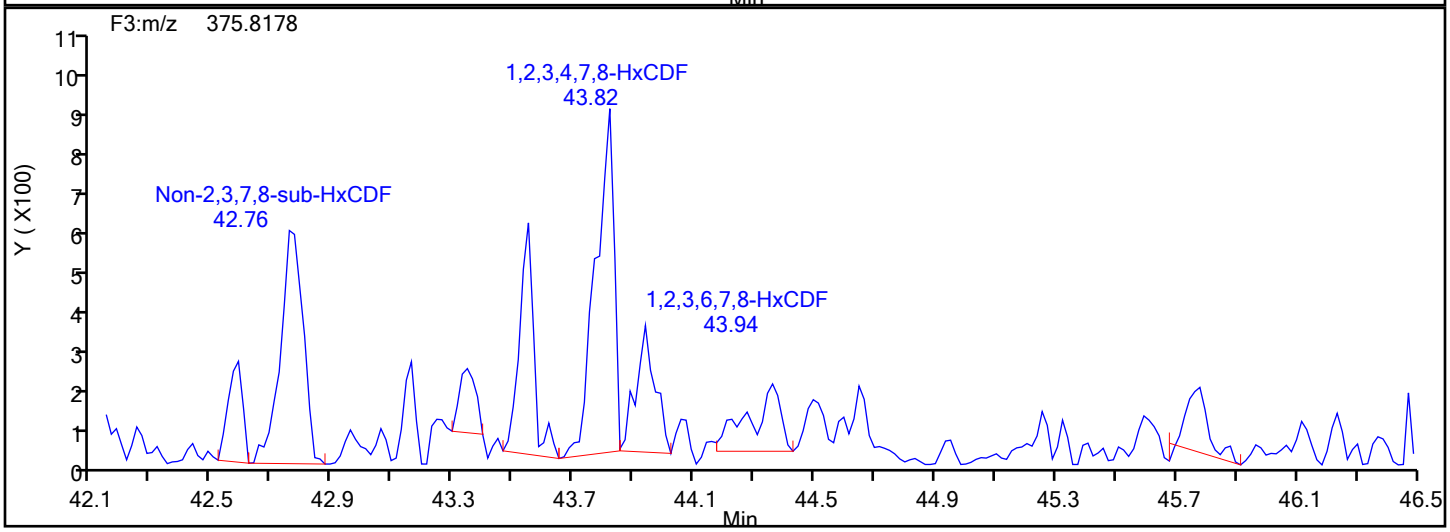
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

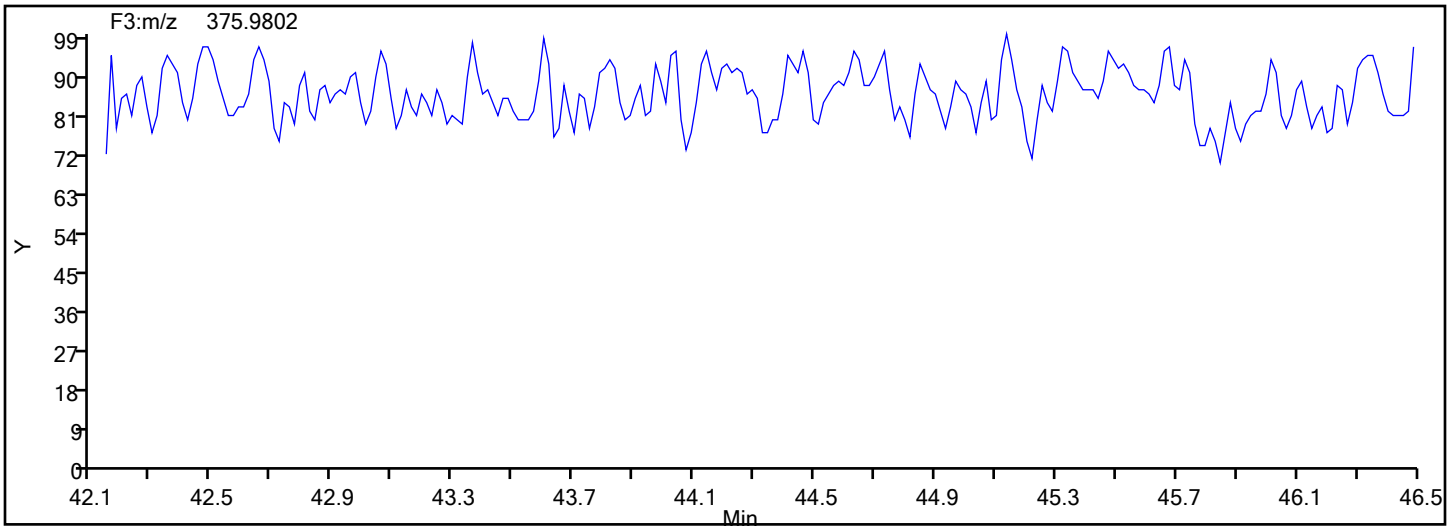
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

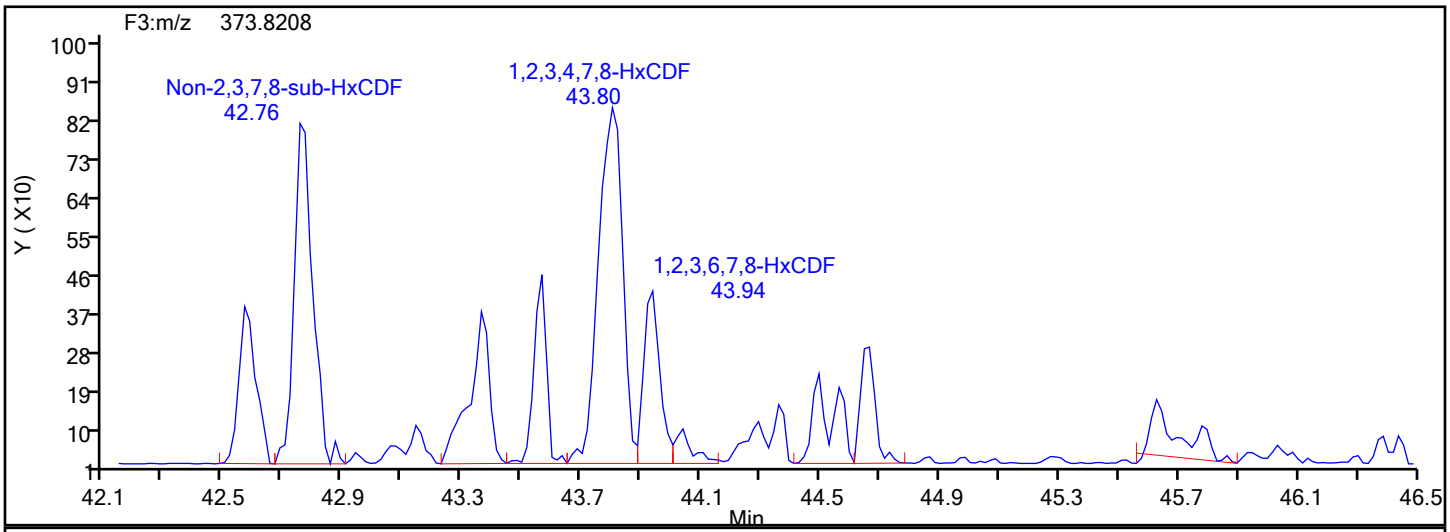


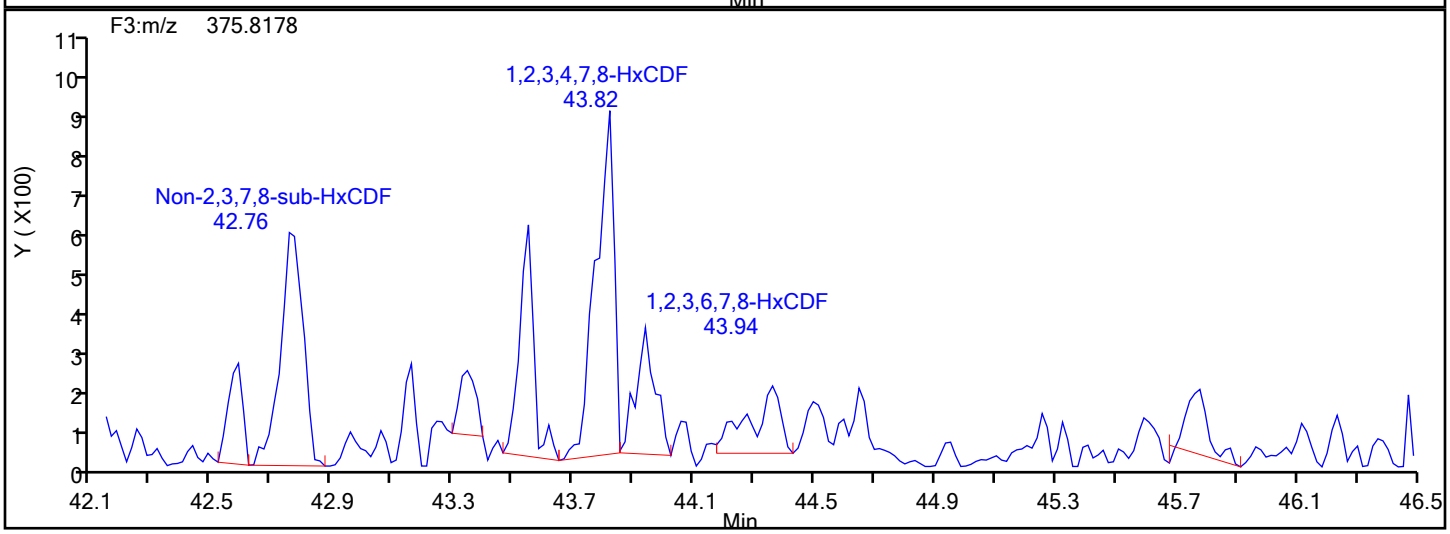
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

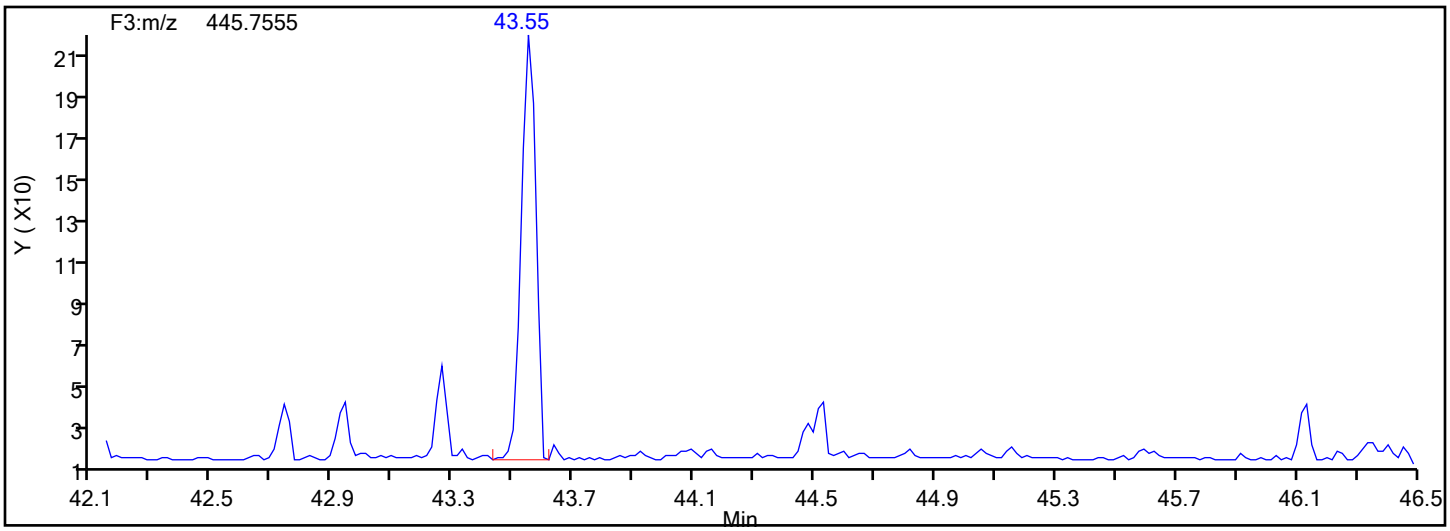
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

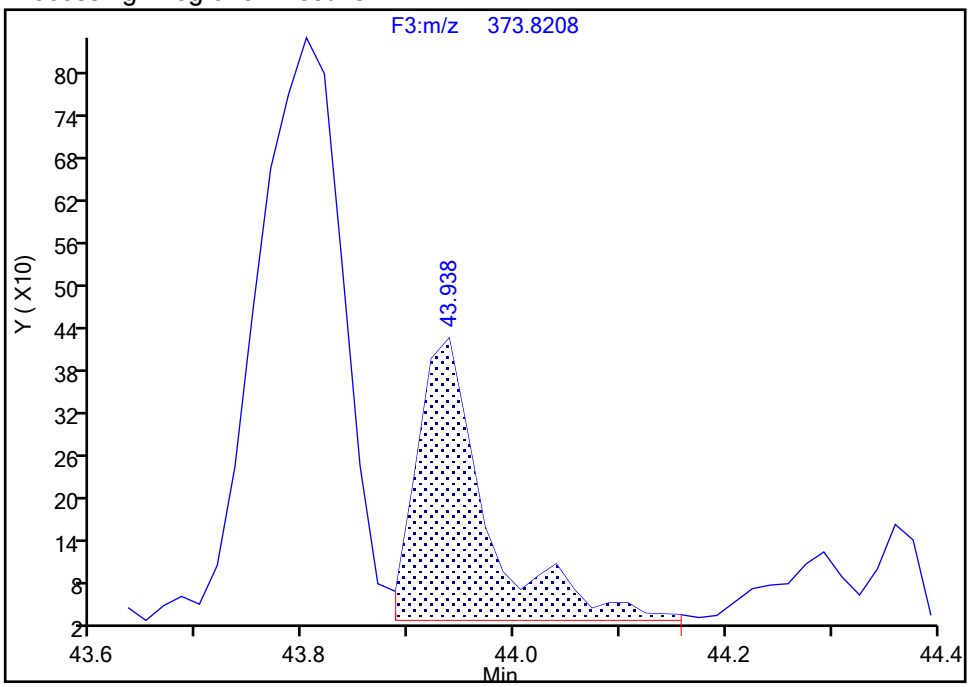
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

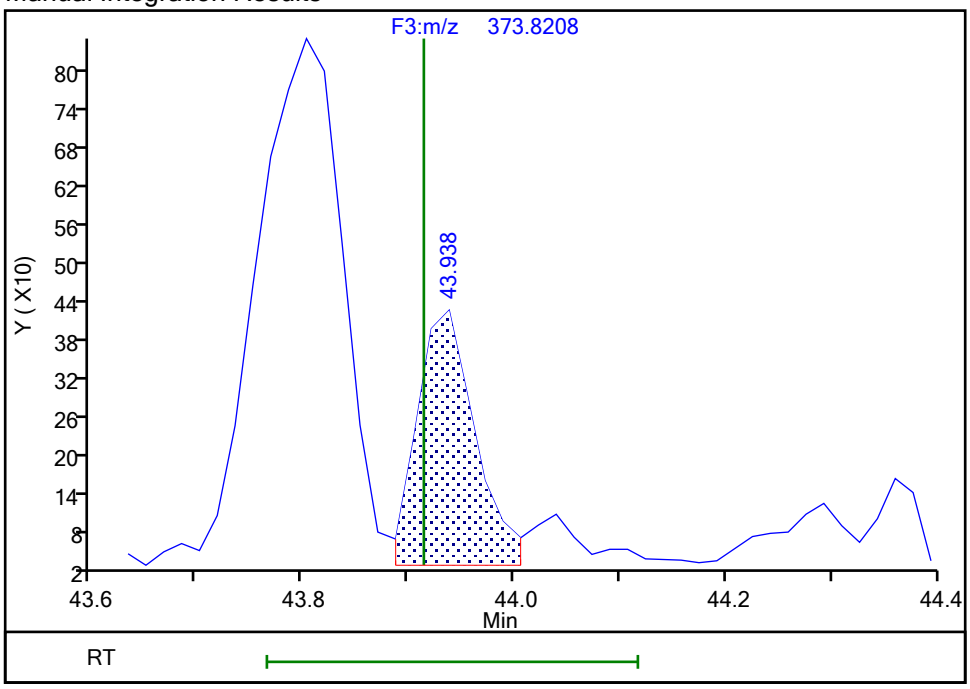
Processing Integration Results

RT: 43.94
Area: 1805
Amount: 0.139383
Amount Units: pg/ul



Manual Integration Results

RT: 43.94
Area: 1502
Amount: 0.125864
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:55:14

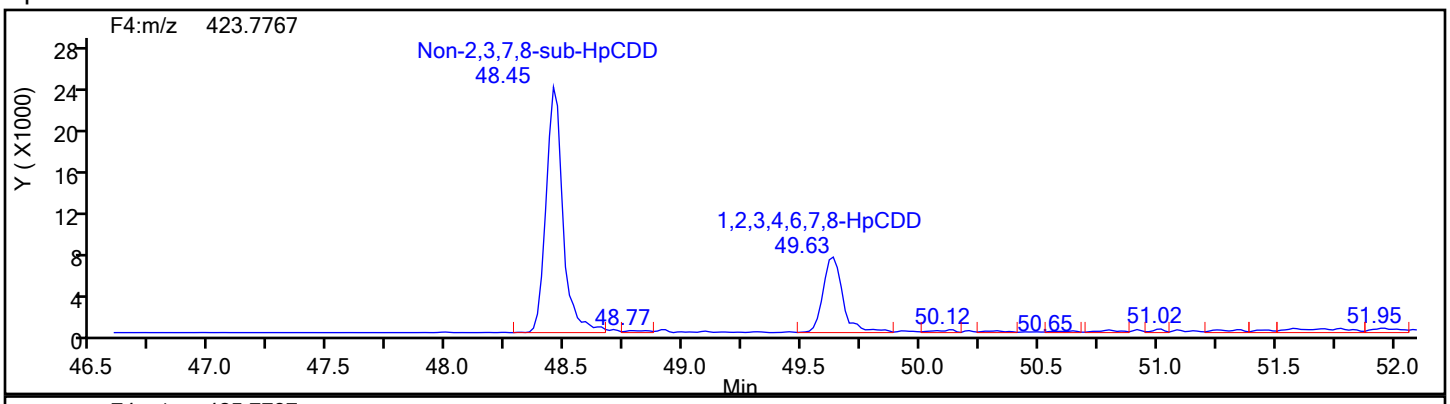
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

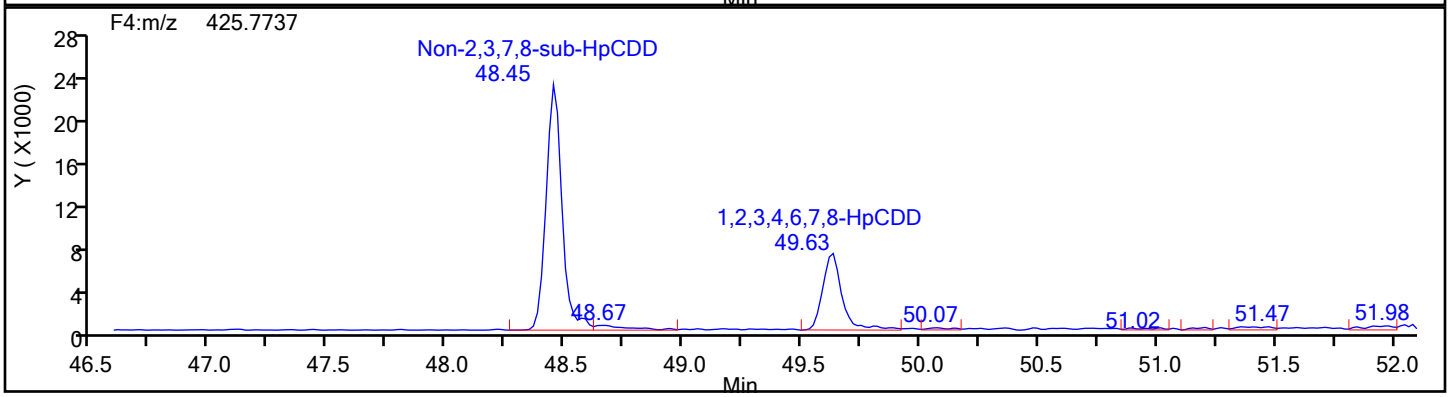
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

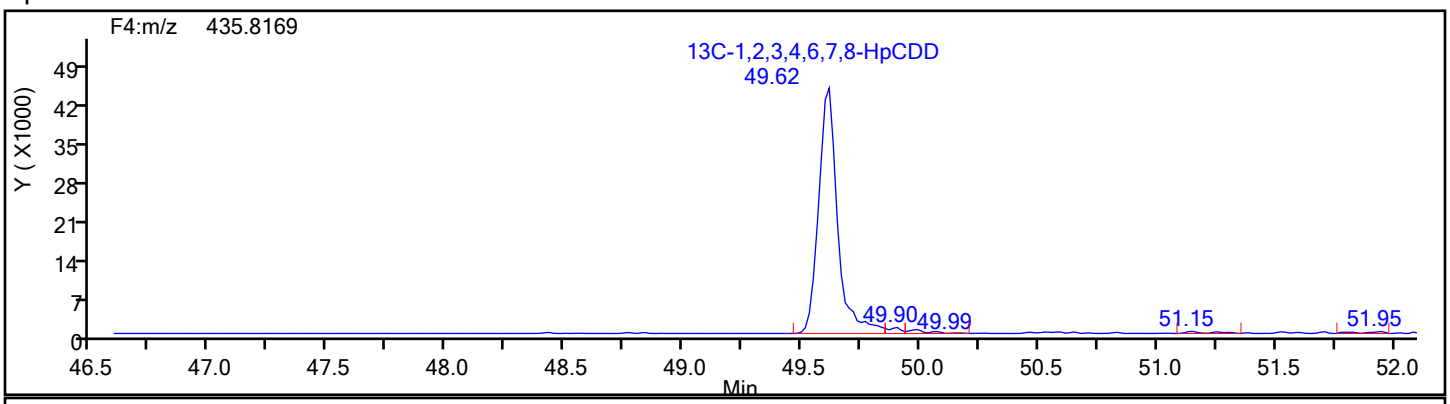
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

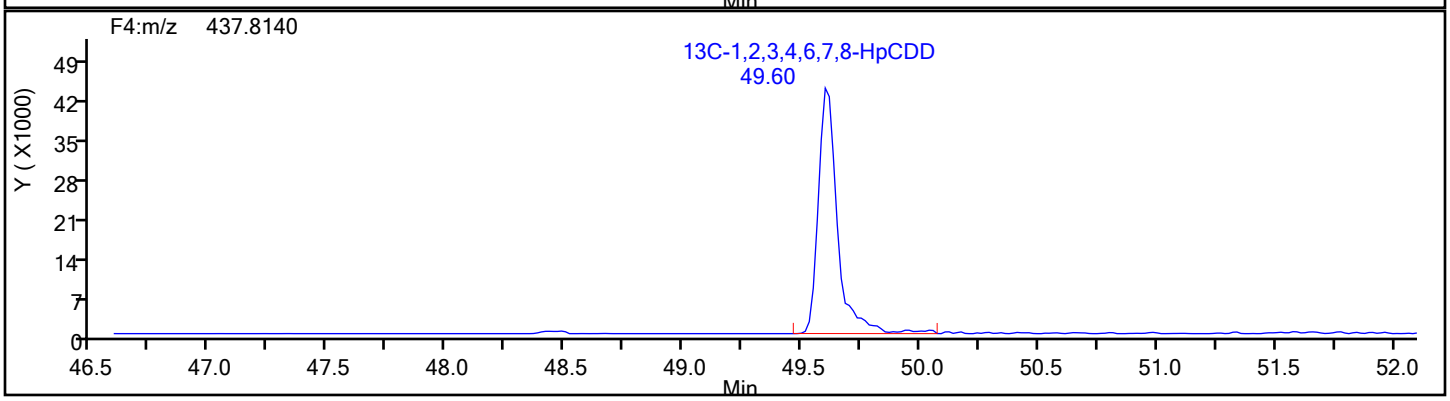
HpCDD





HpCDD Standards



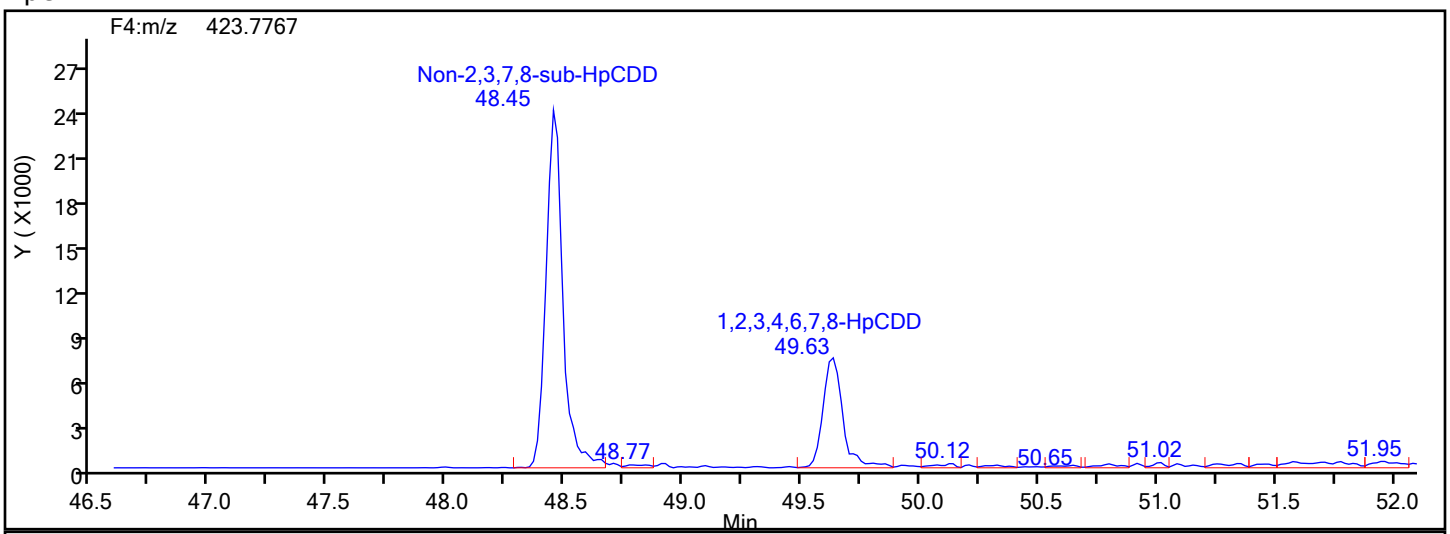


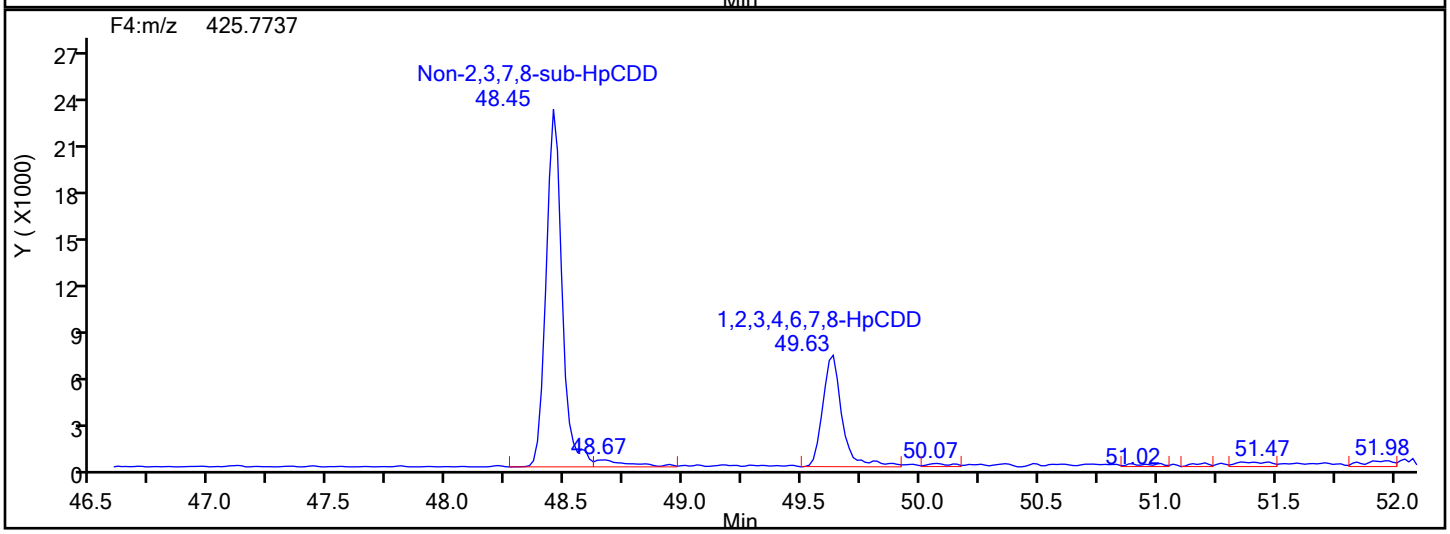
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

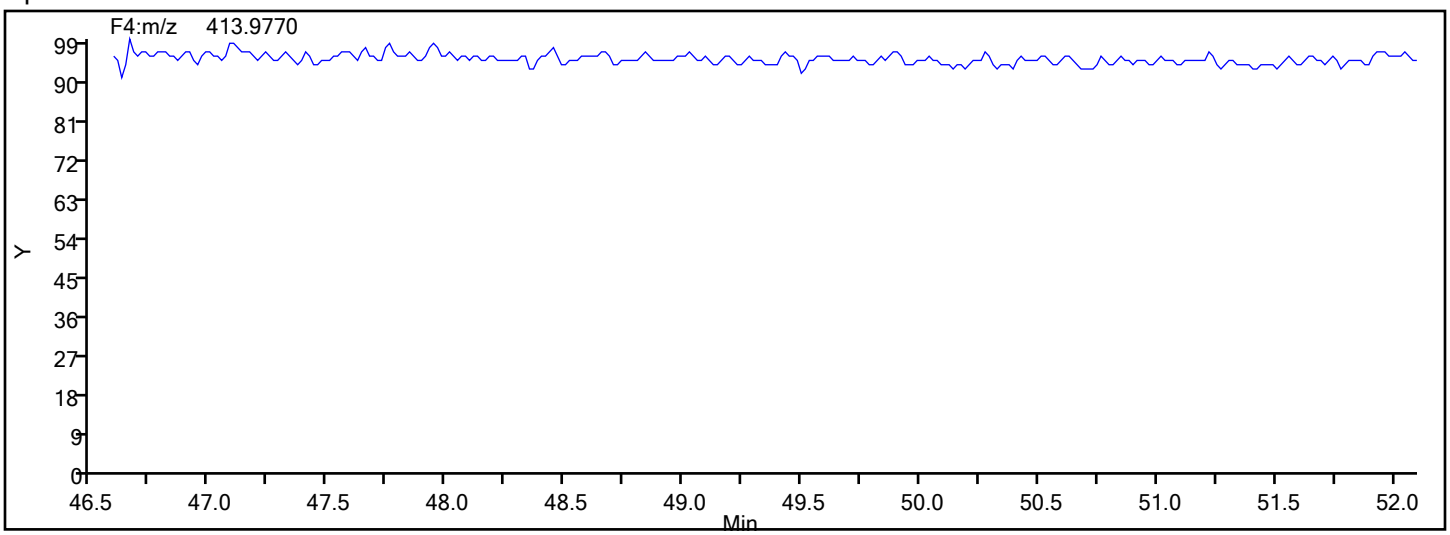
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

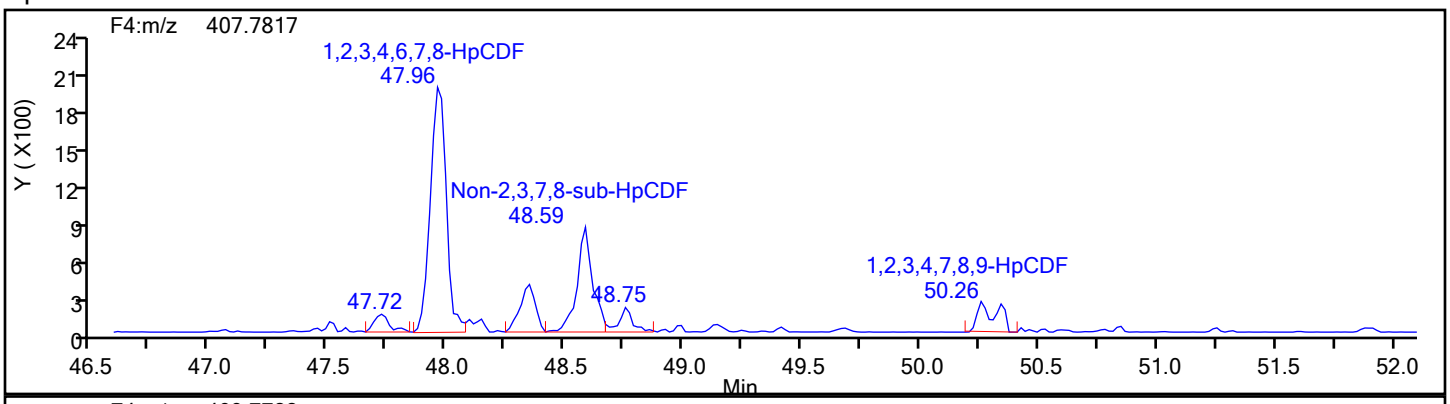


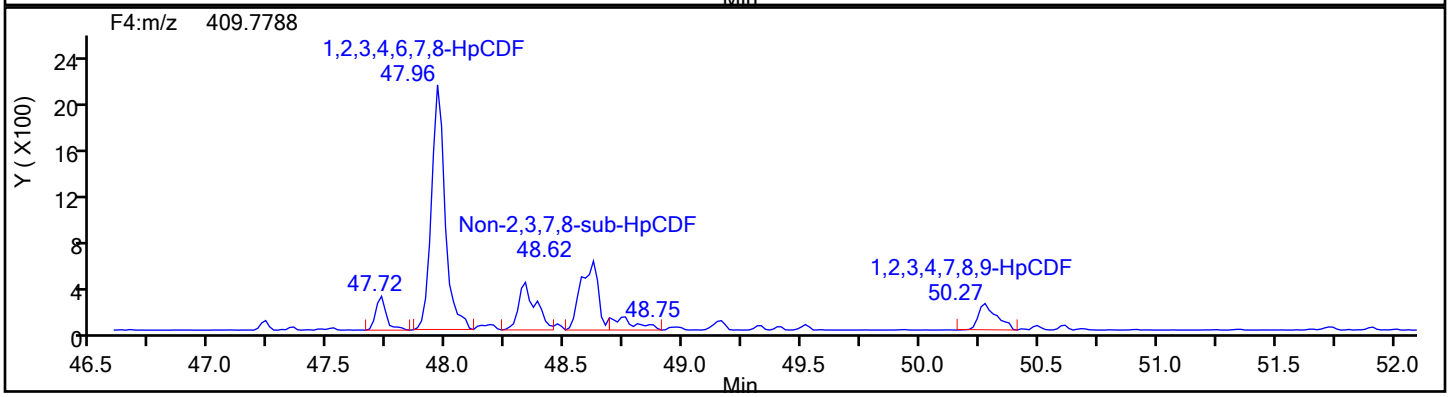
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

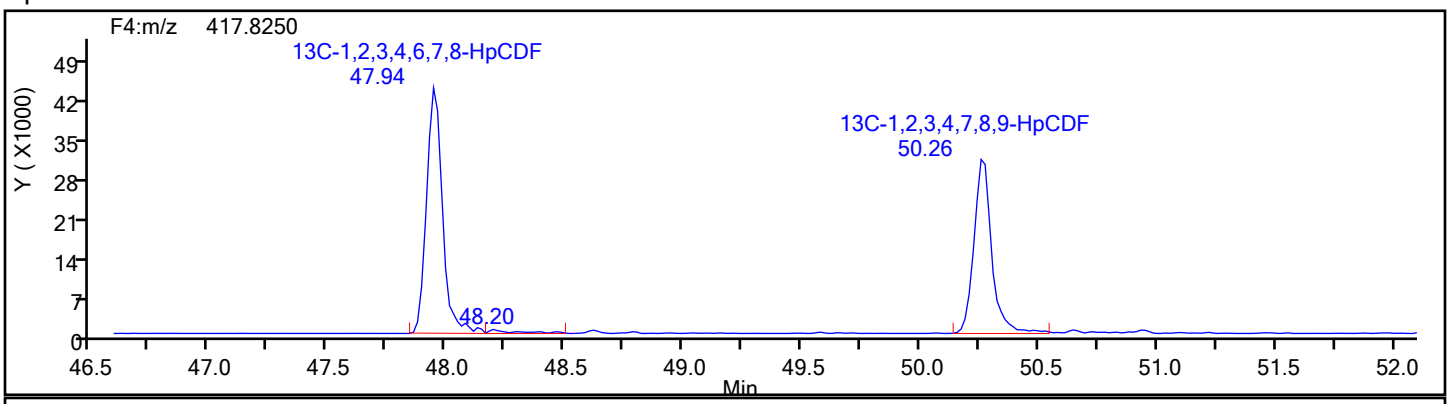
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

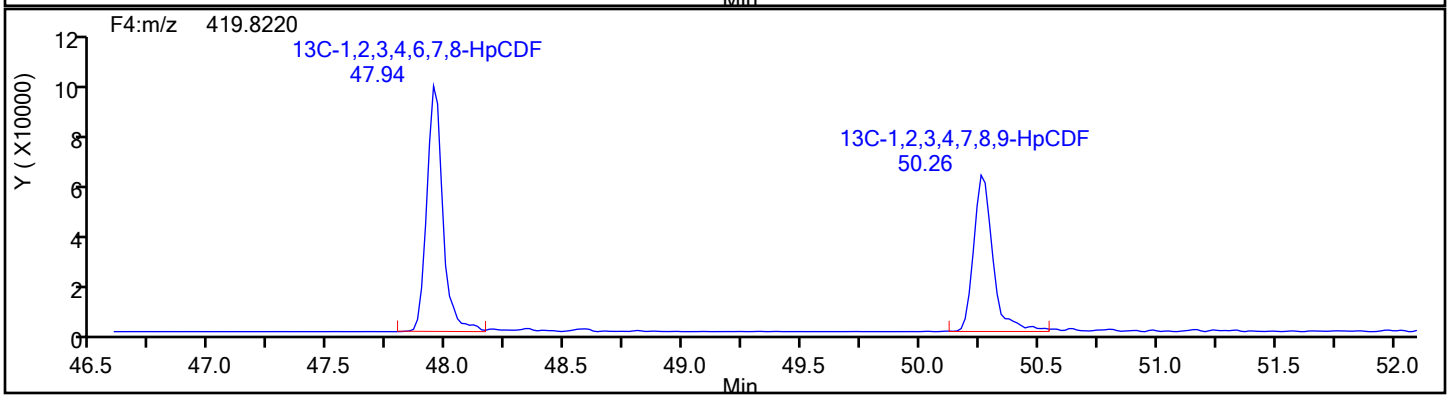
HpCDF





HpCDF Standards



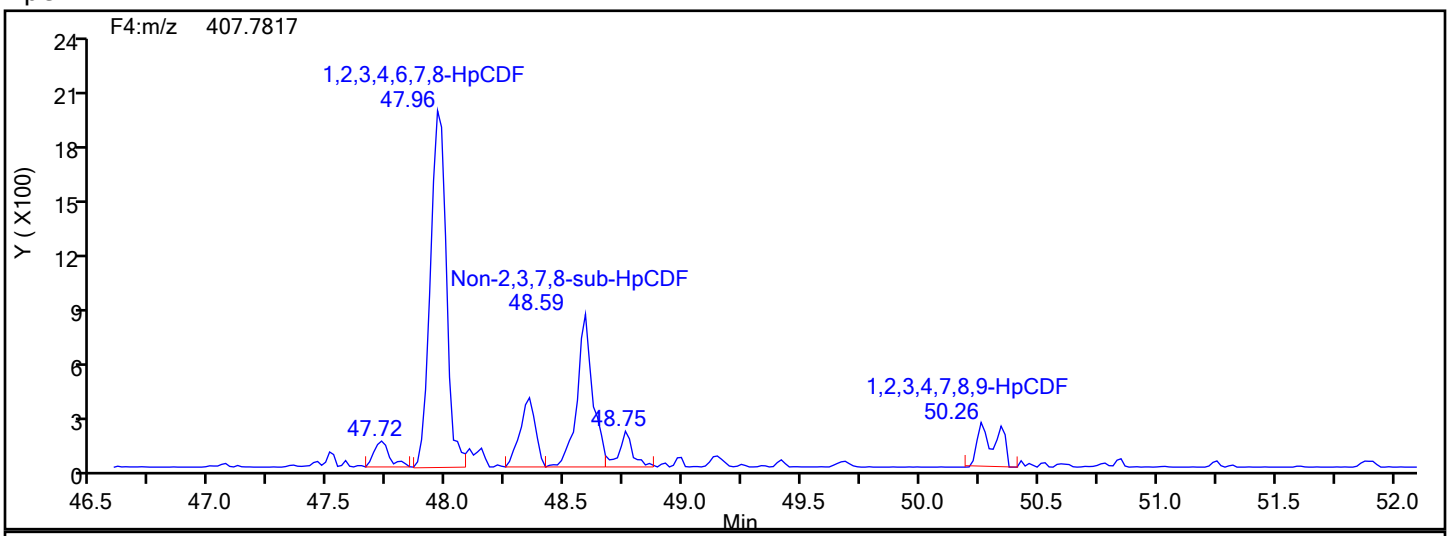


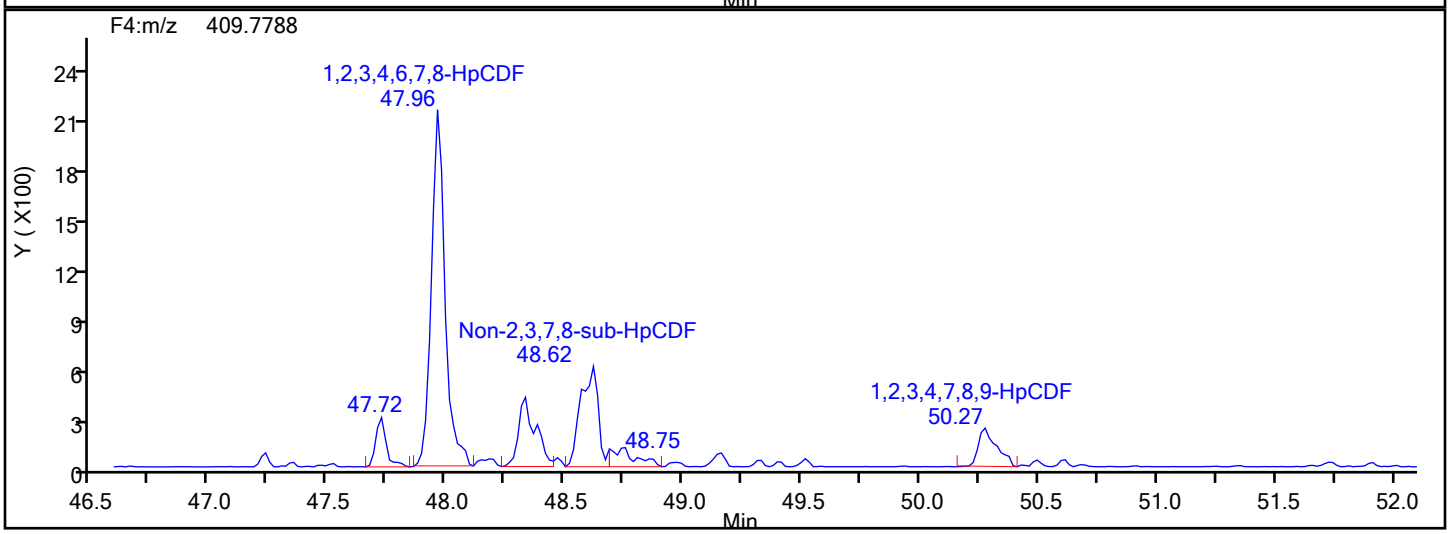
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

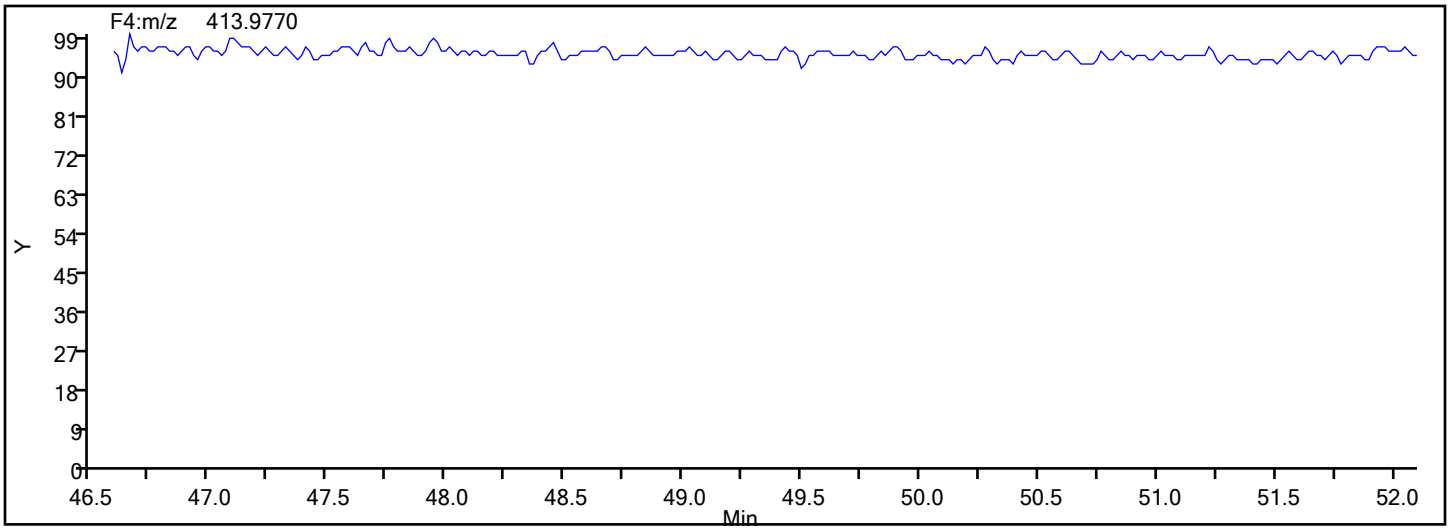
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

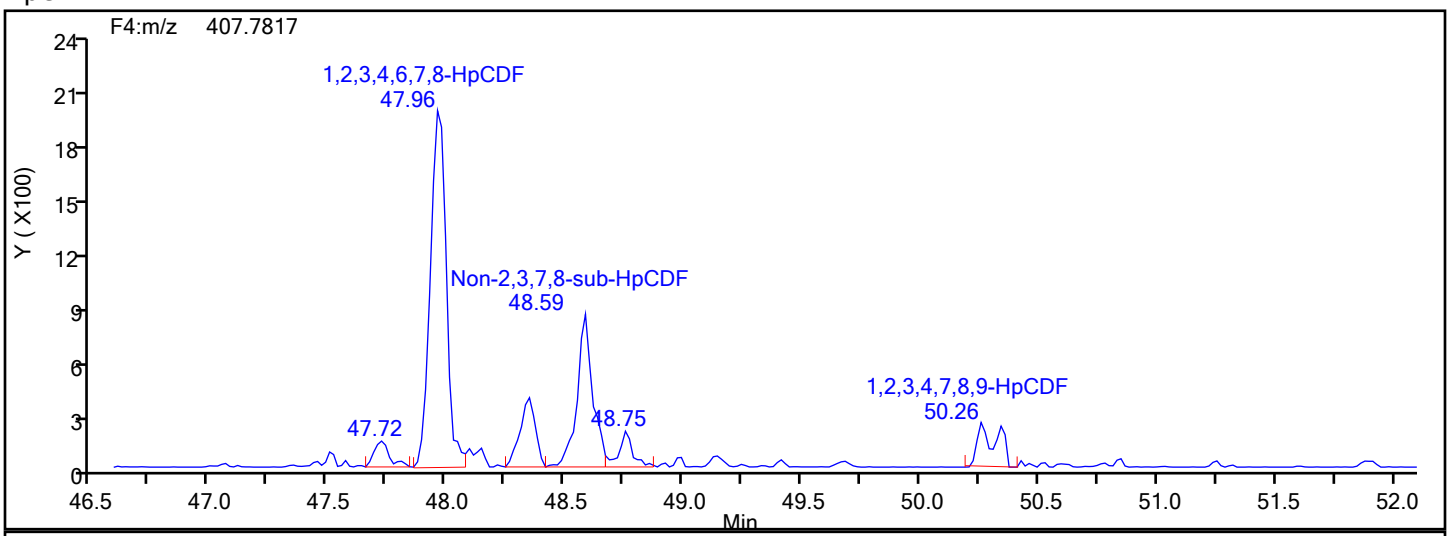


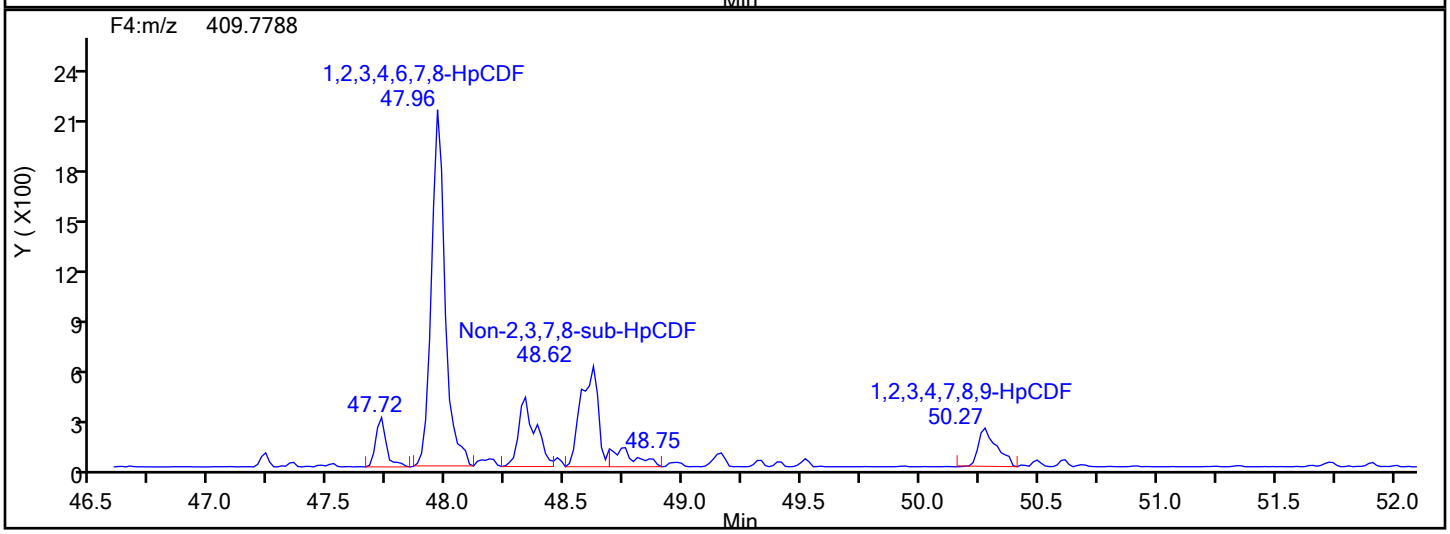
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

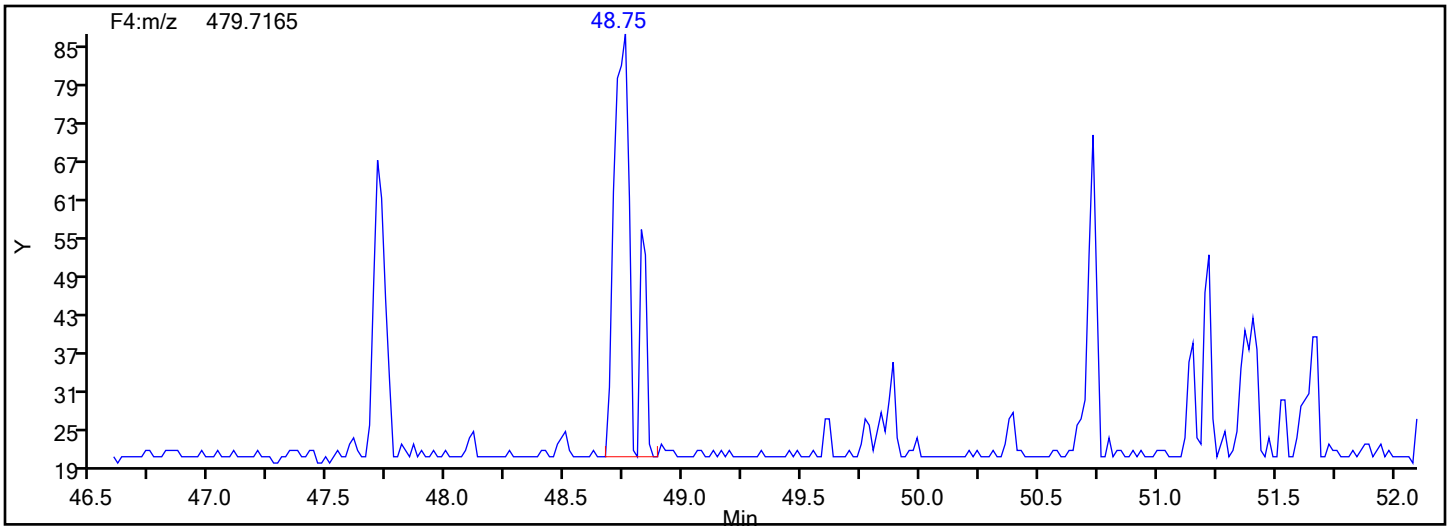
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

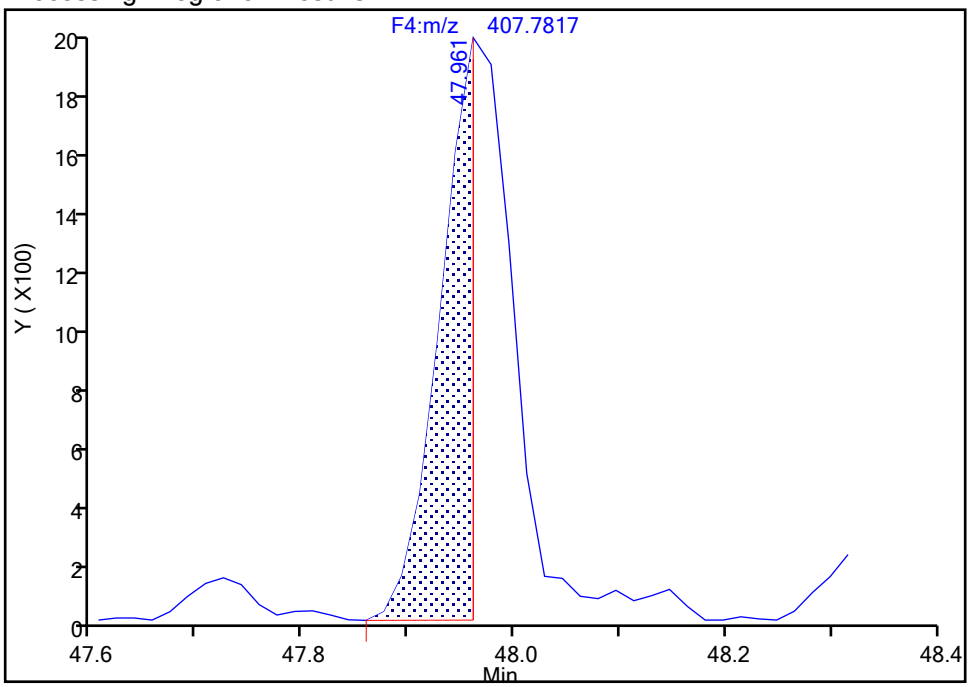
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

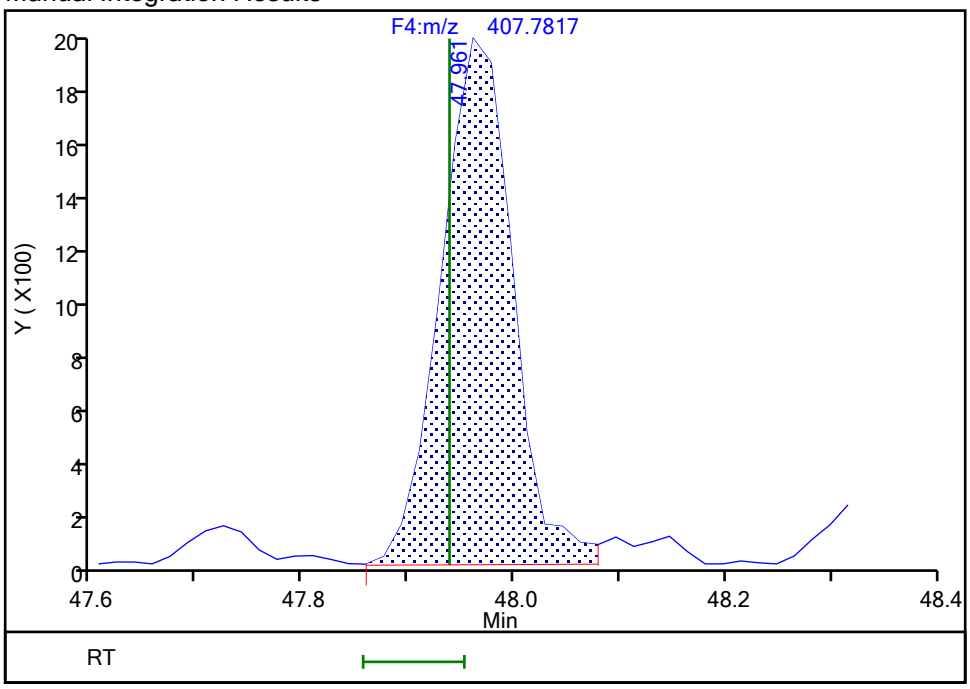
Processing Integration Results

RT: 47.96
Area: 4146
Amount: 0.663808
Amount Units: pg/ul



Manual Integration Results

RT: 47.96
Area: 9253
Amount: 0.931016
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:56:06

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

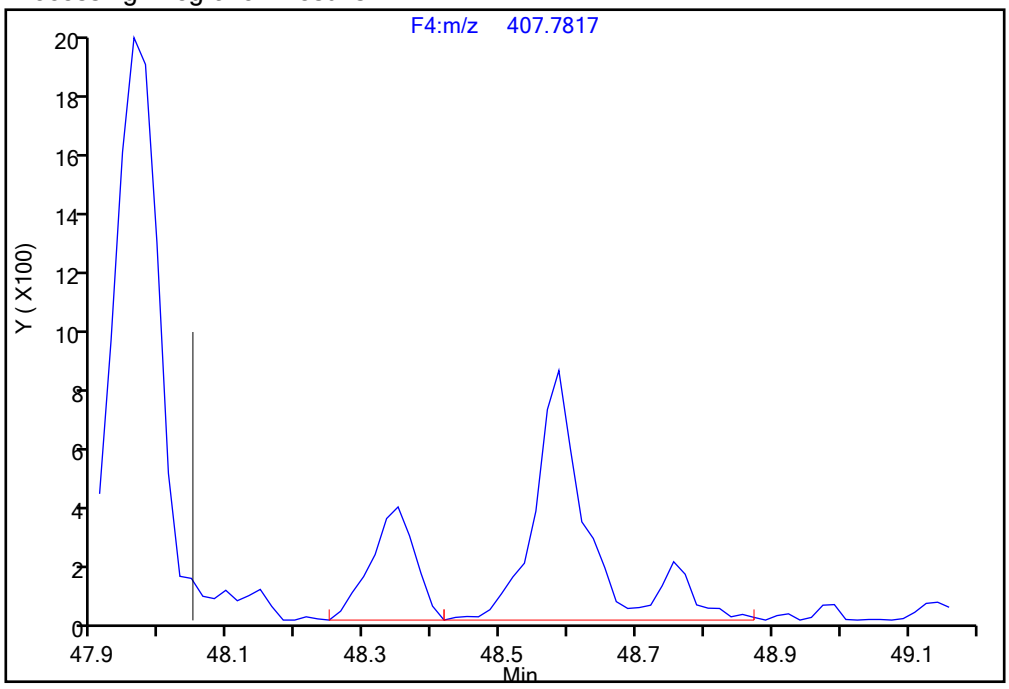
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (47.75- 51.27)

Signal: 1

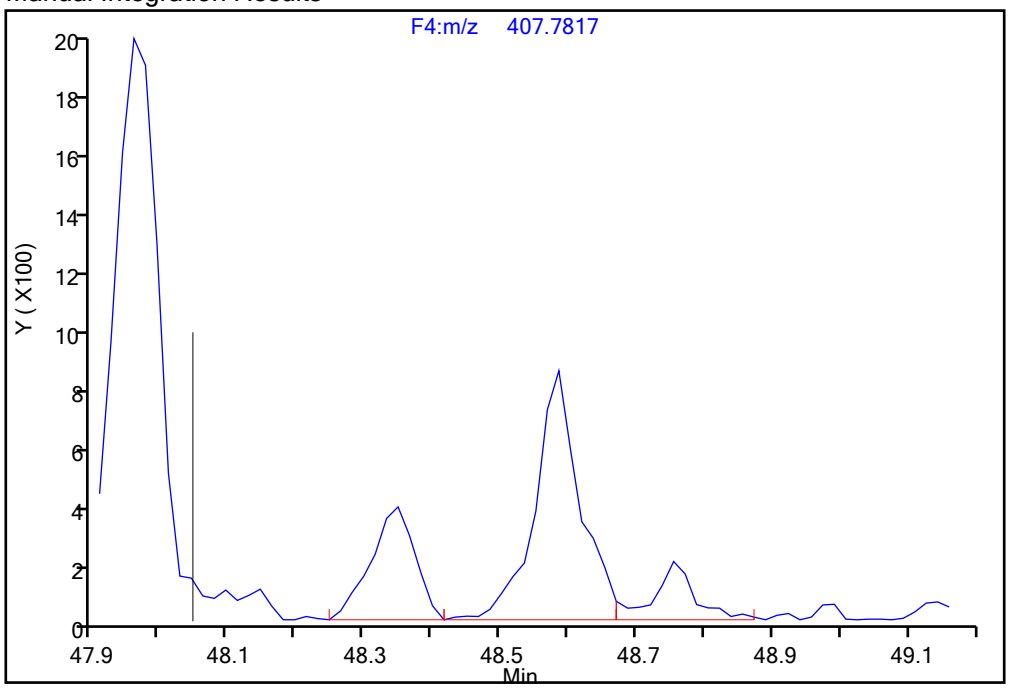
Processing Integration Results

RT = 48.586 Area = 4644



Manual Integration Results

RT = 48.586 Area = 3841 M



Reviewer: davidsonm, 18-Dec-2019 08:56:27

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

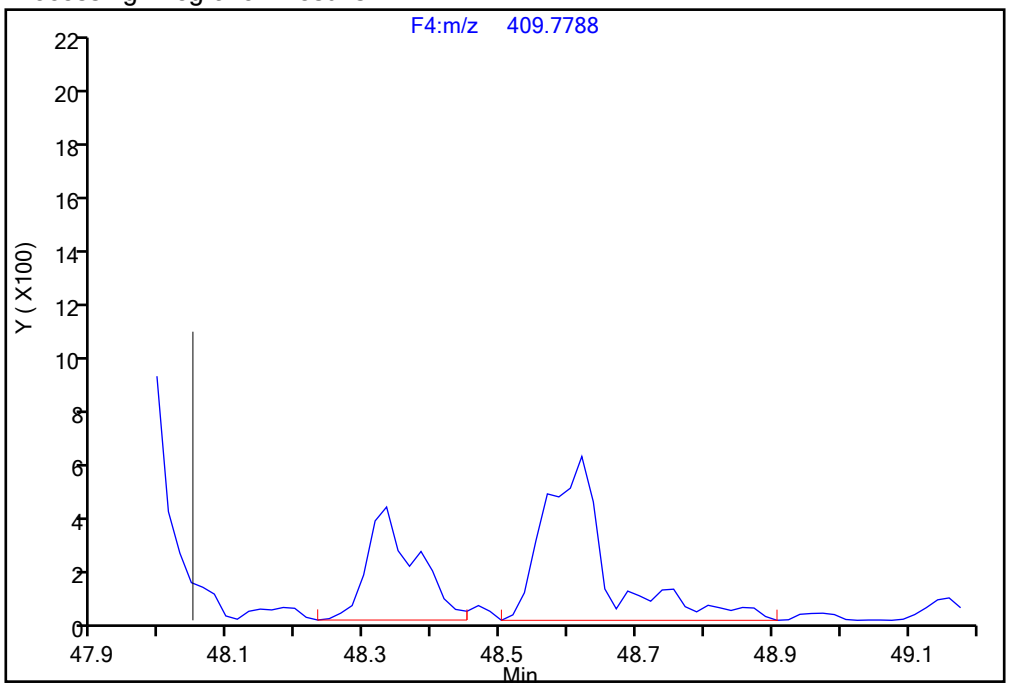
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (47.75- 51.27)

Signal: 2

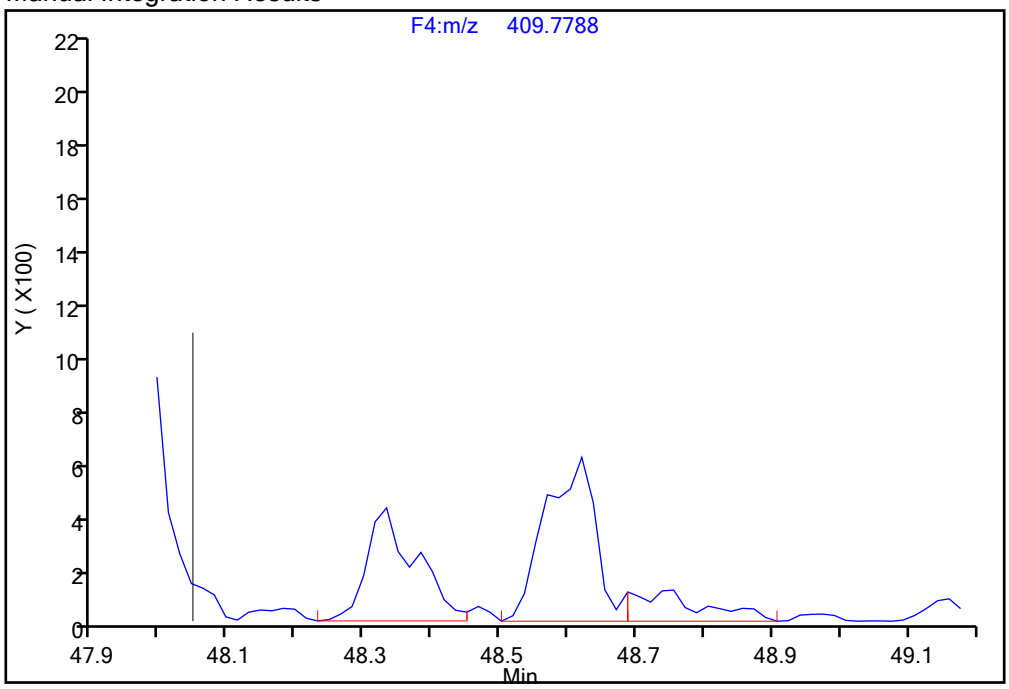
Processing Integration Results

RT = 48.620 Area = 3870



Manual Integration Results

RT = 48.620 Area = 3097 M



Reviewer: davidsonm, 18-Dec-2019 08:56:24

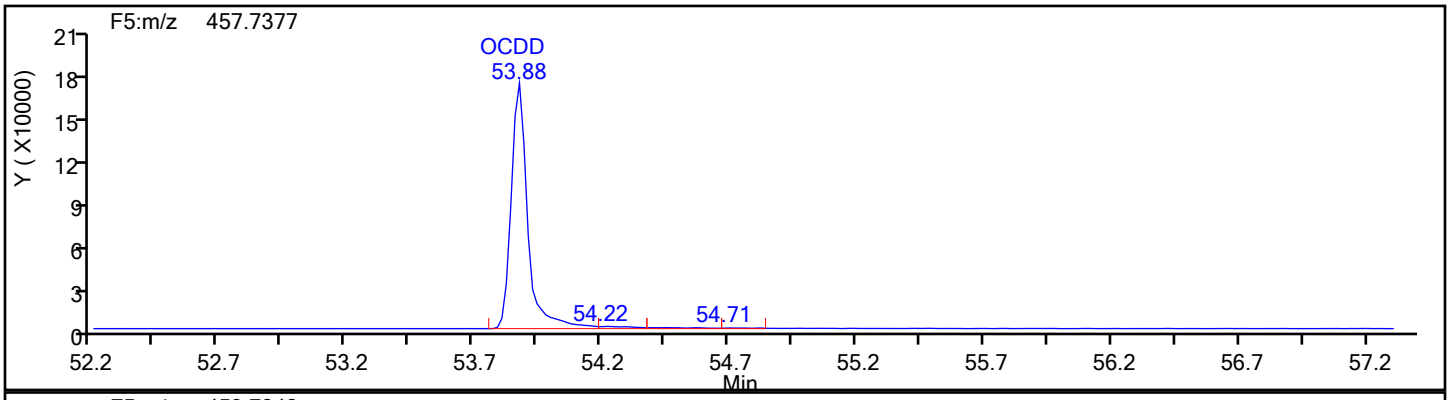
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

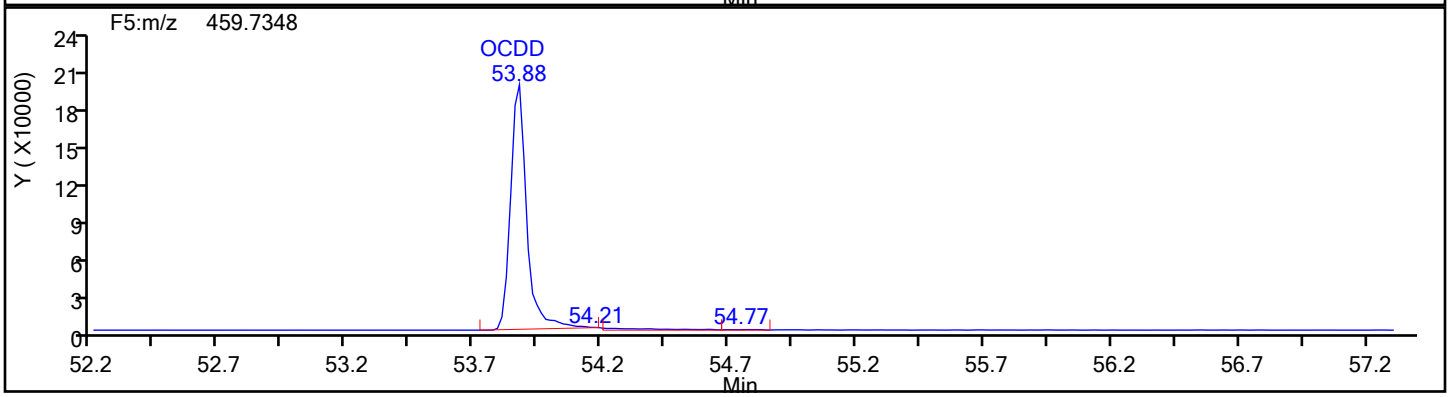
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

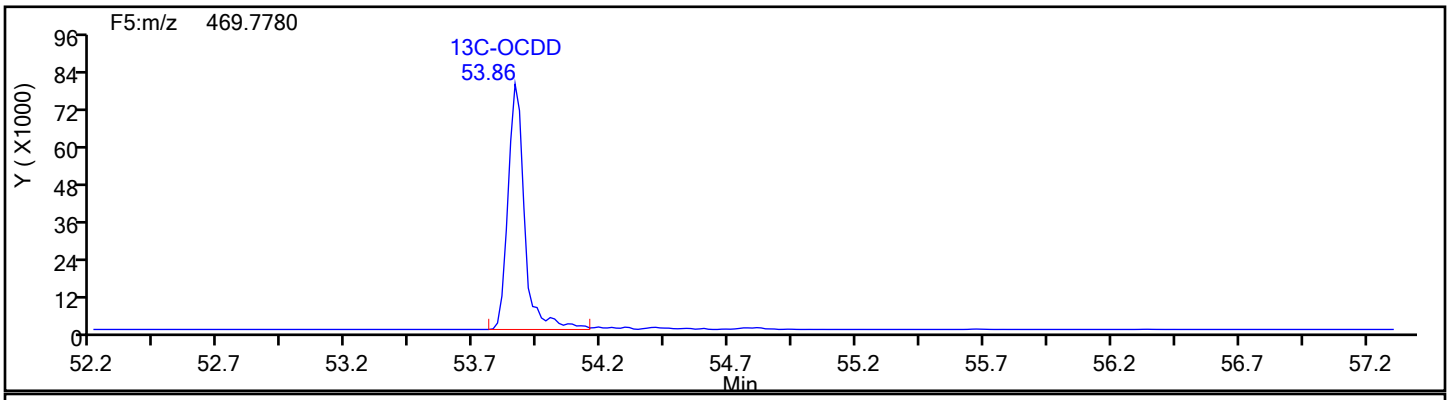
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

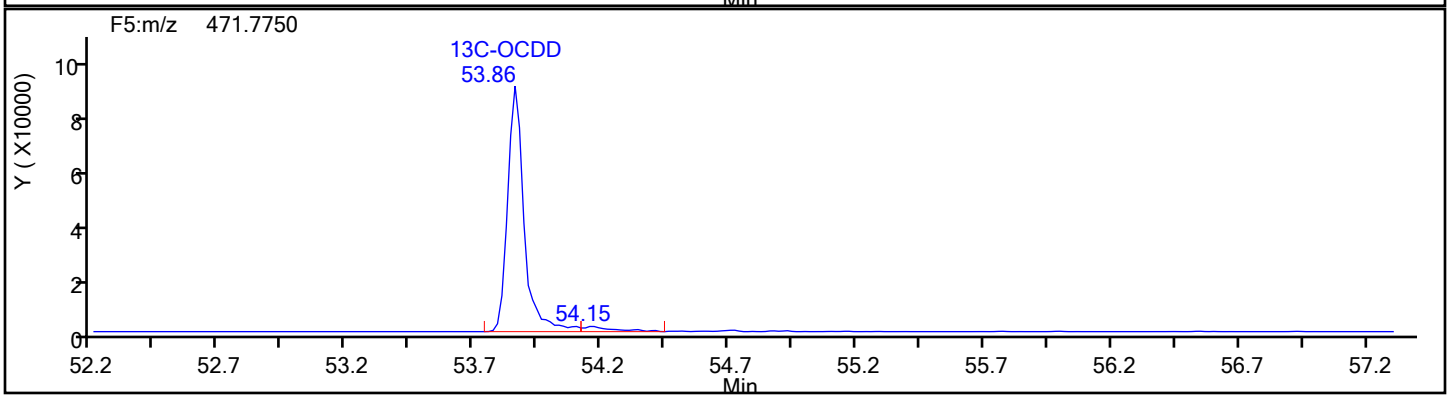
OCDD





OCDD Standards



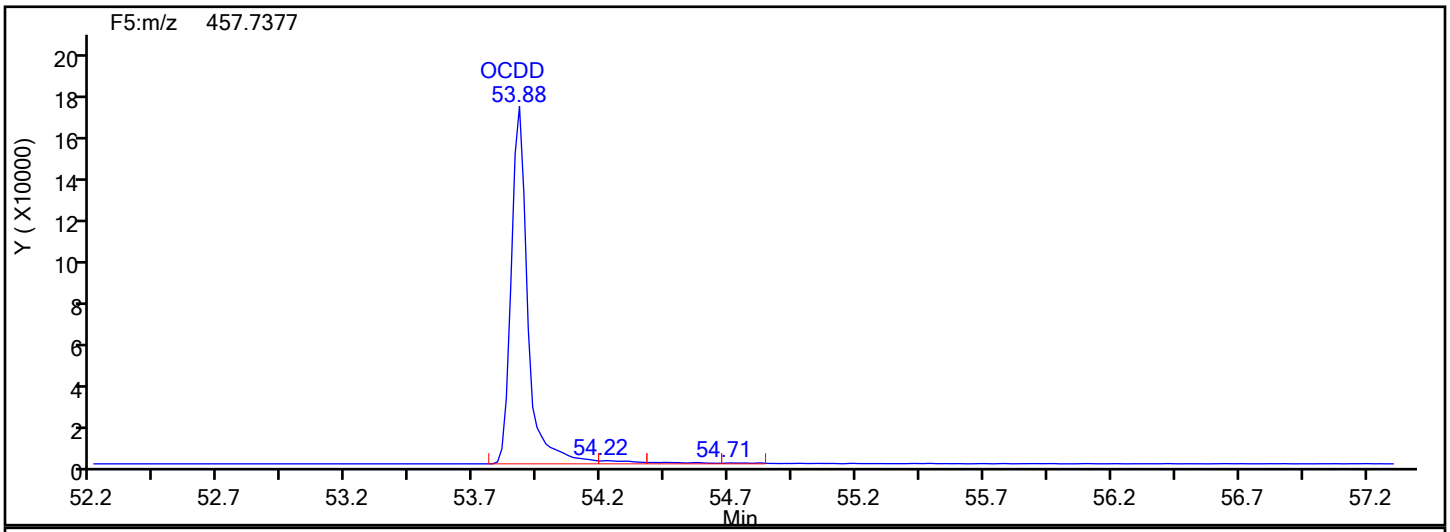


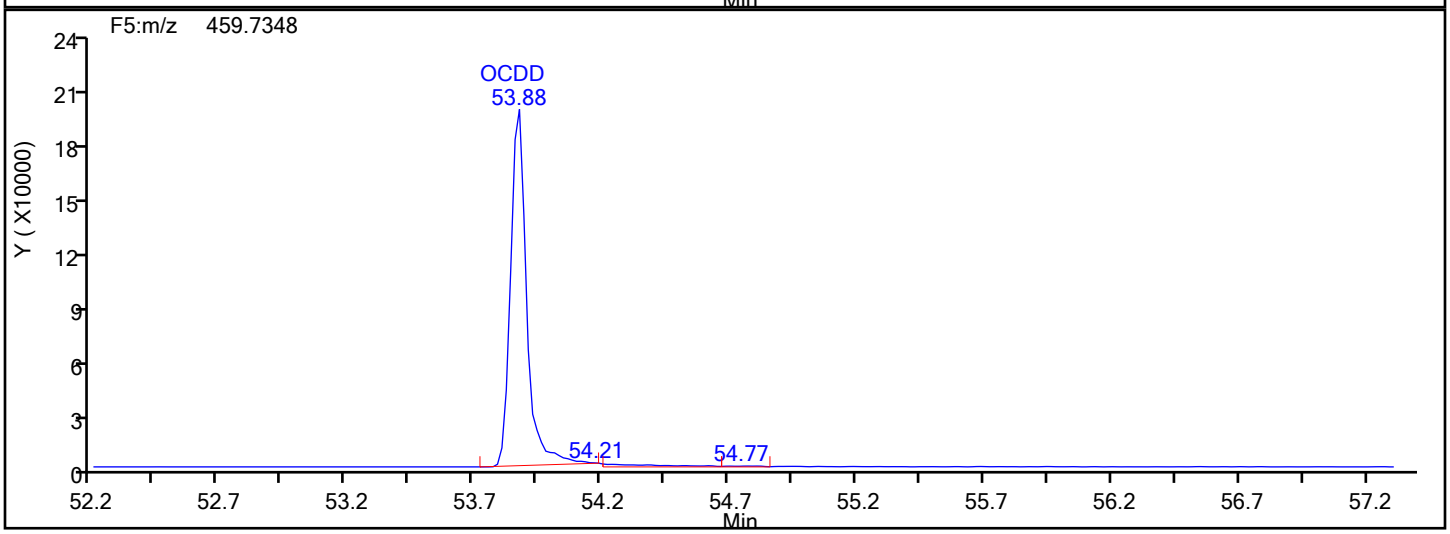
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

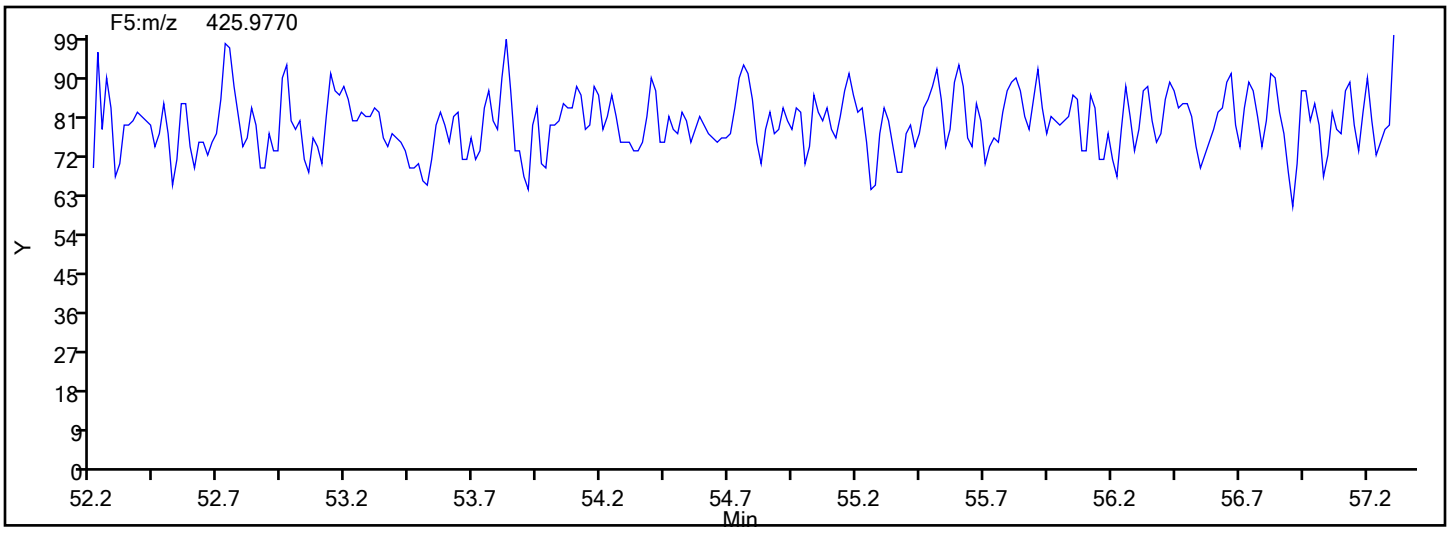
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass

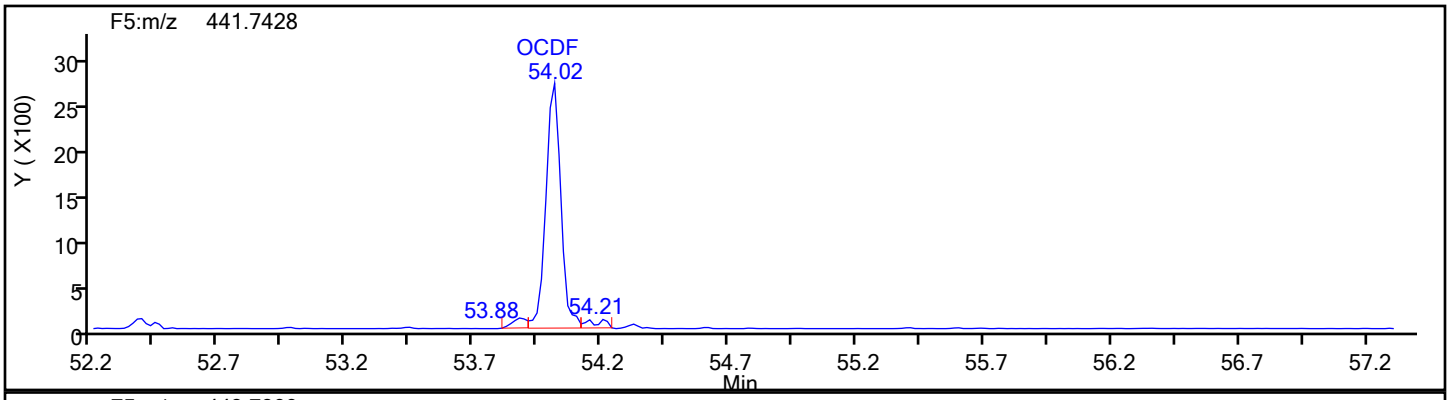


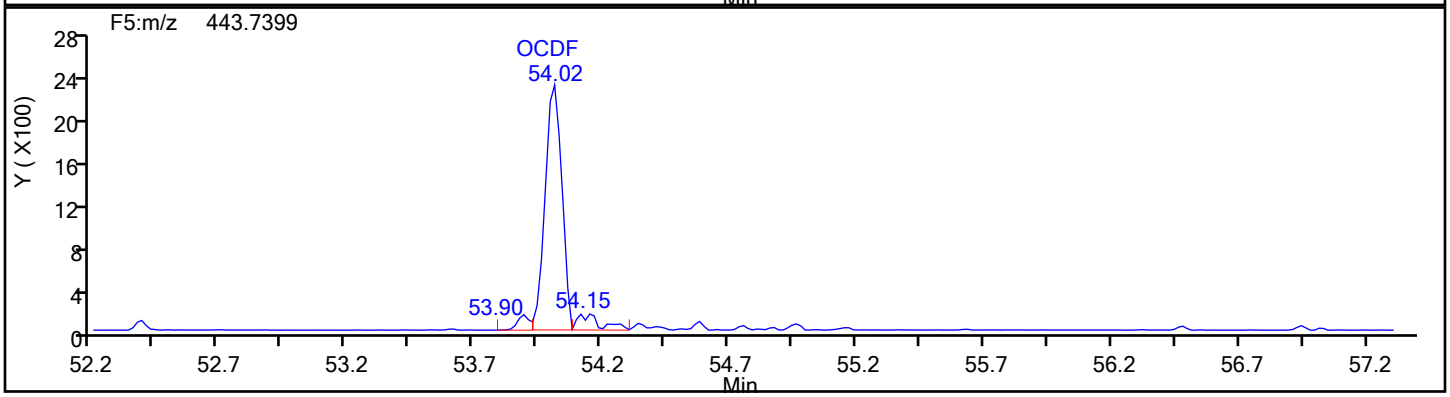
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

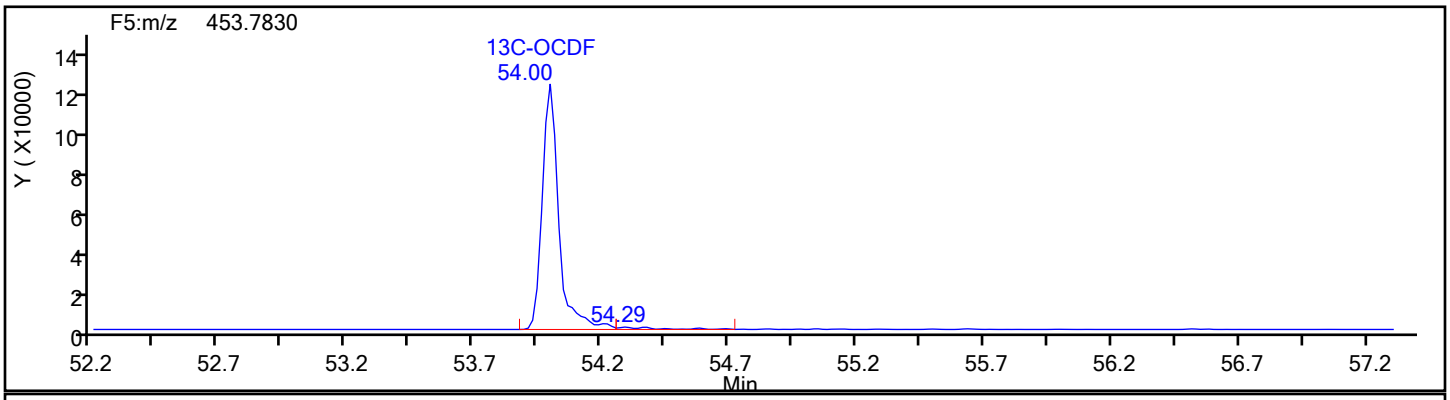
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

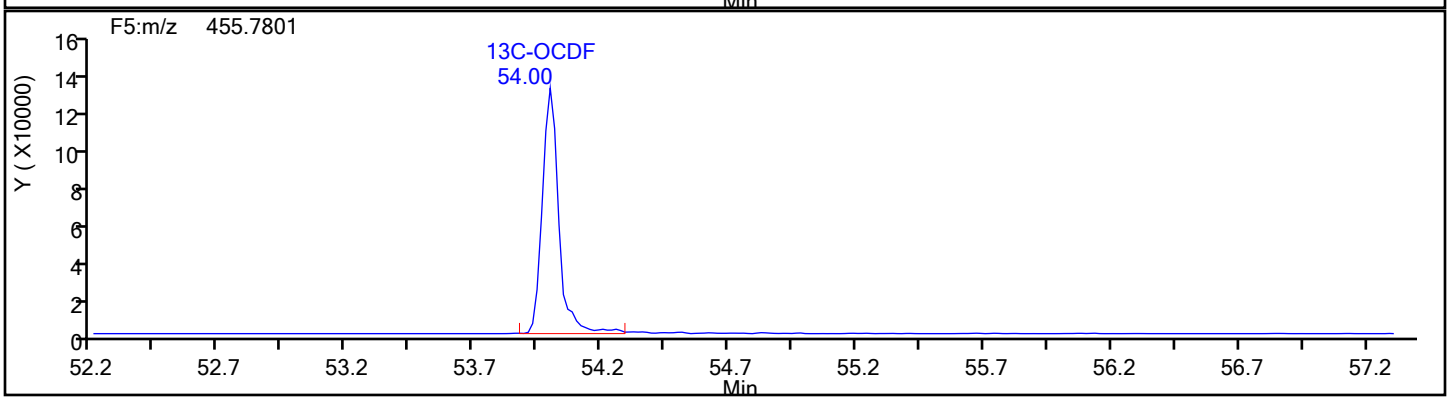
OCDF





OCDF Standards



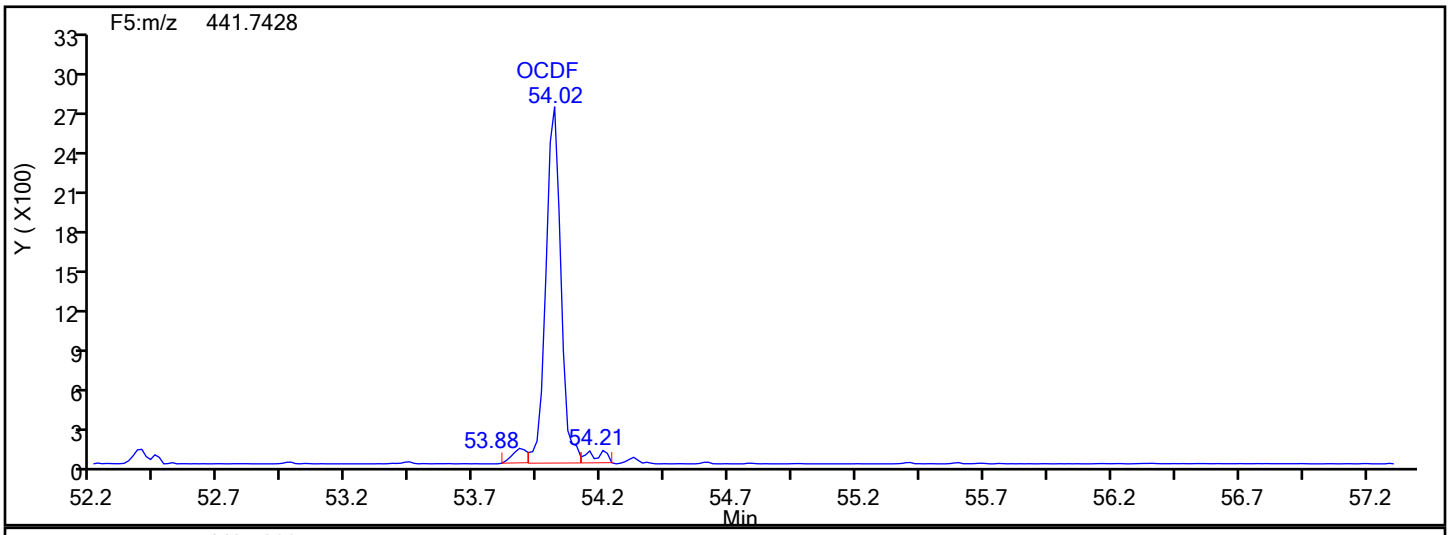


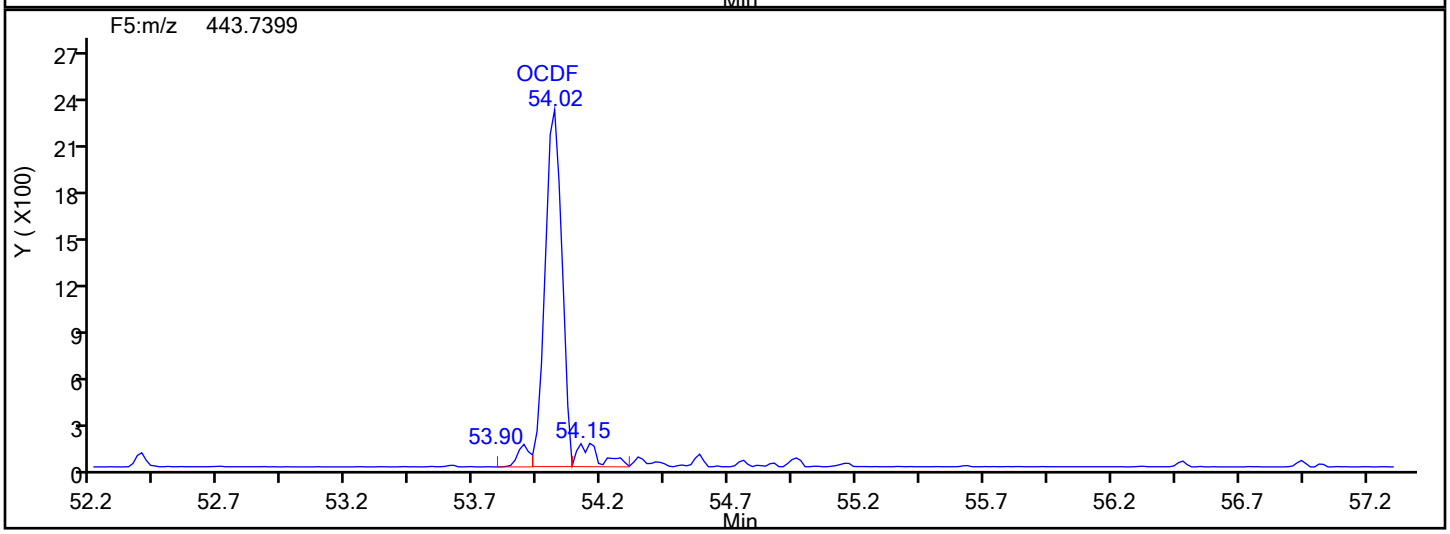
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

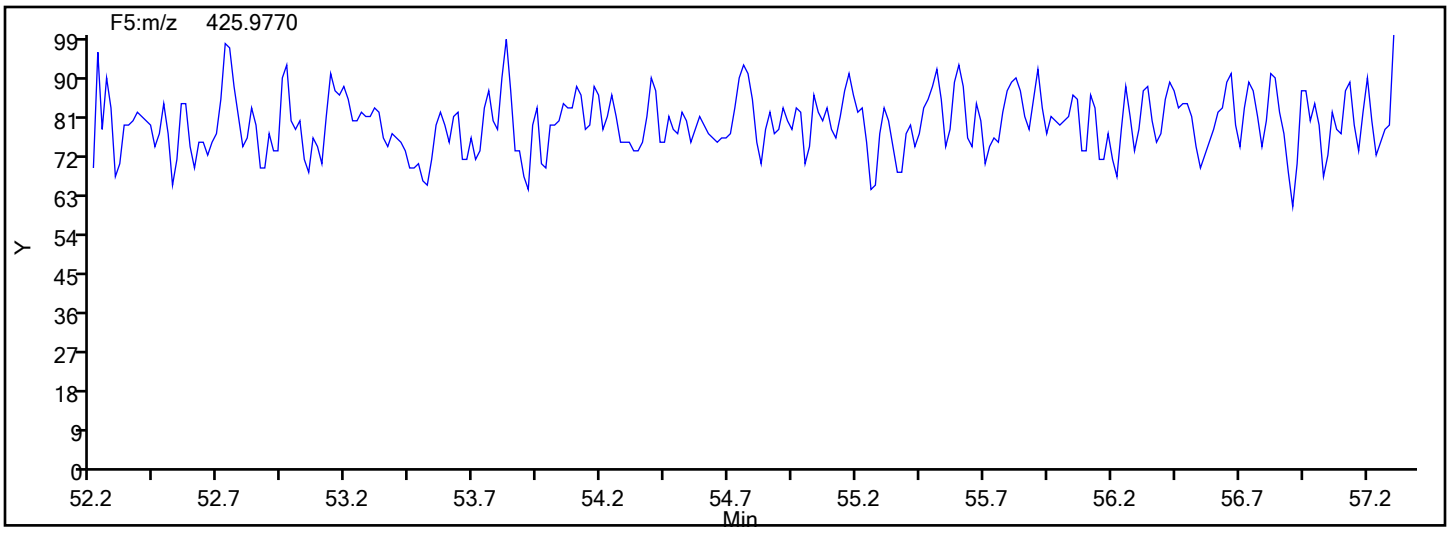
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

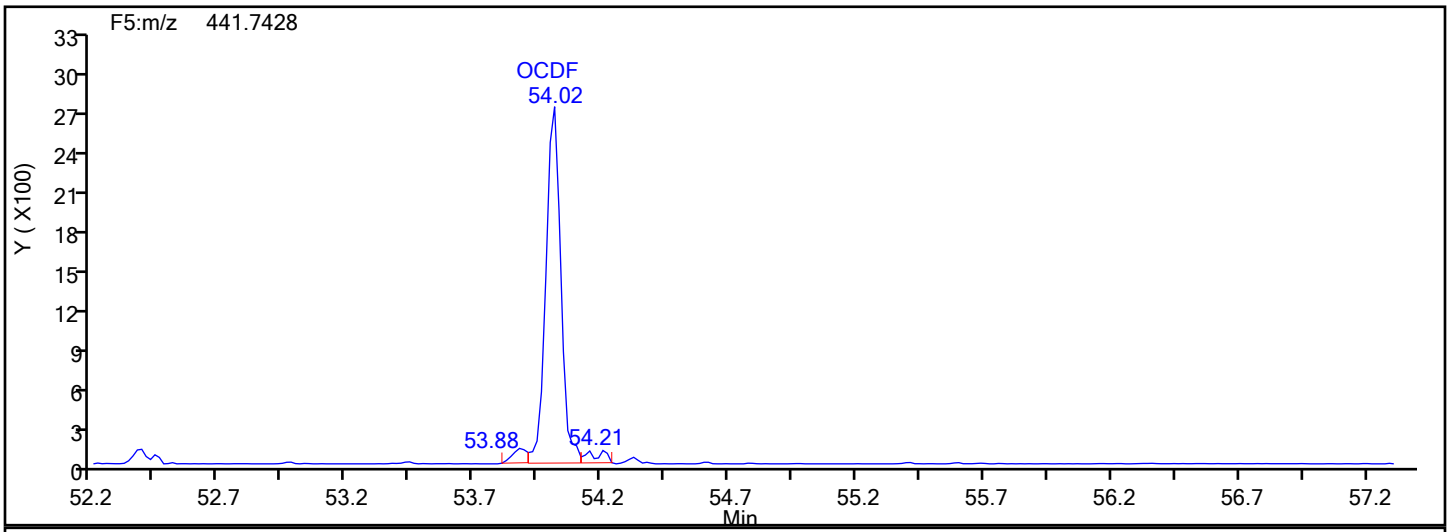


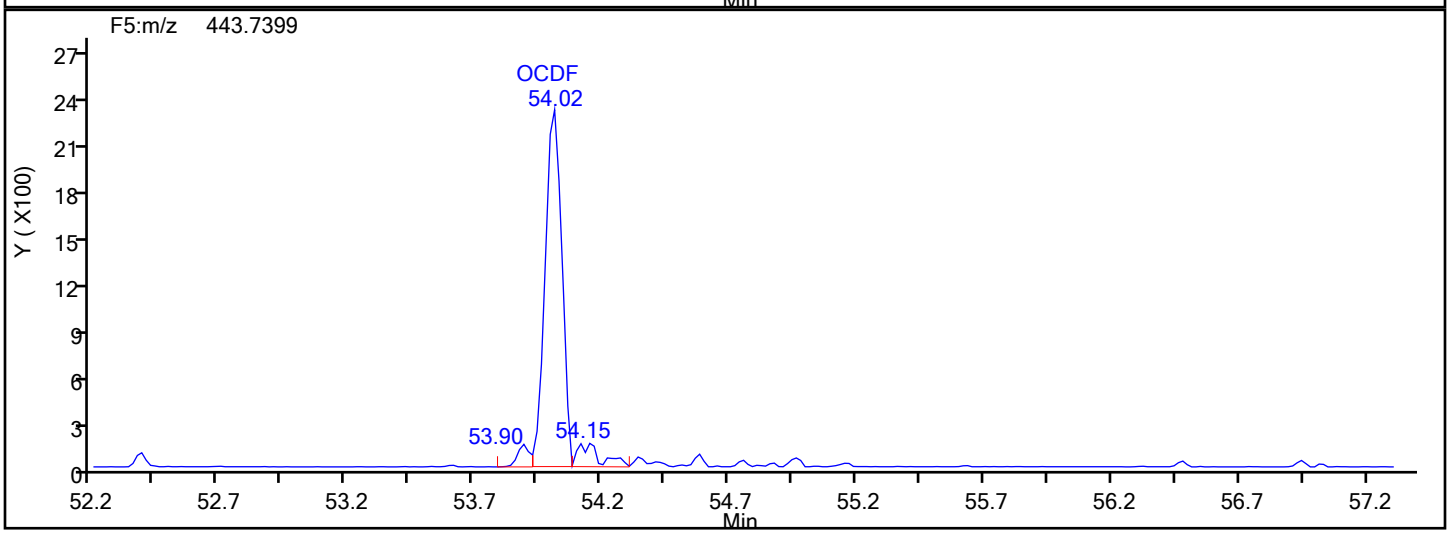
Report Date: 18-Dec-2019 08:56:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

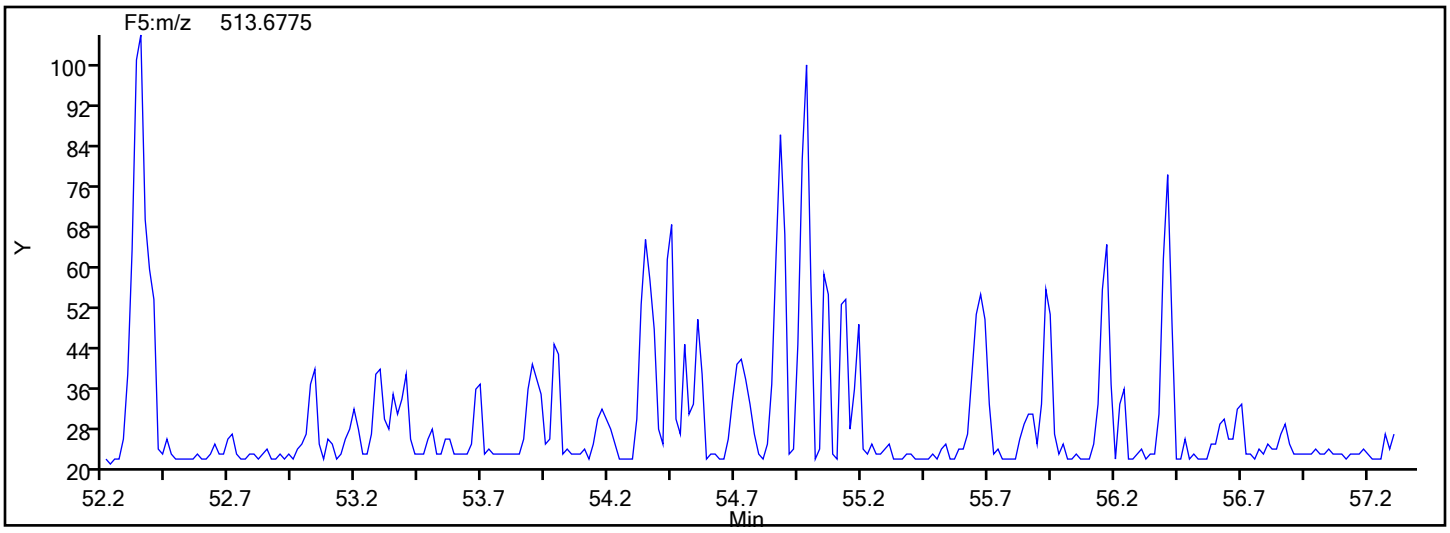
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 07:02:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36166	Sample Line#:	11
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

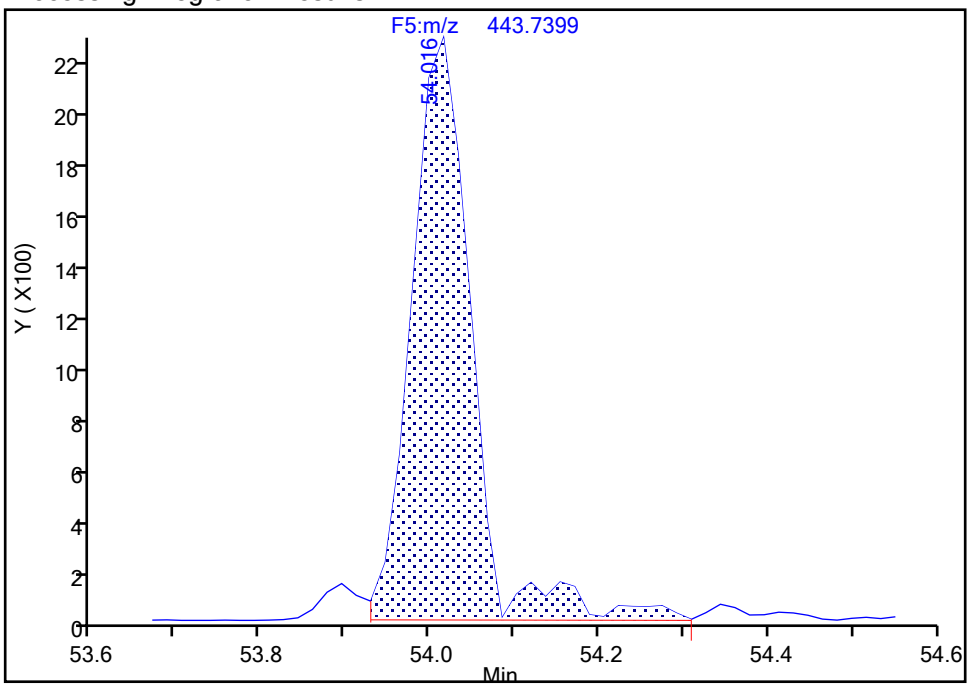
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

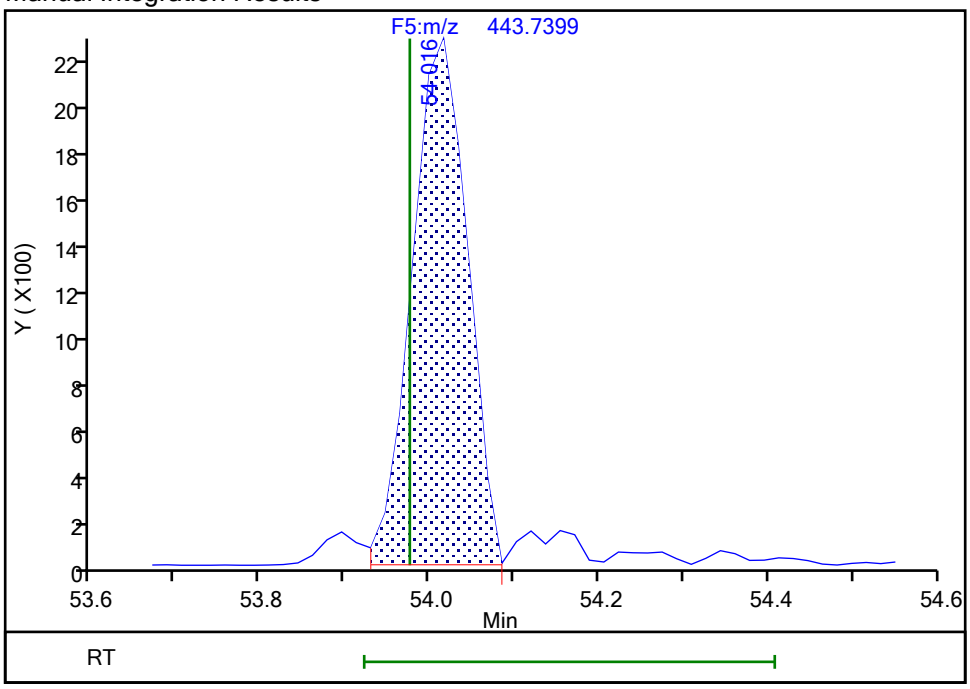
Processing Integration Results

RT: 54.02
Area: 11315
Amount: 1.796666
Amount Units: pg/ul



Manual Integration Results

RT: 54.02
Area: 10373
Amount: 1.689897
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:56:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

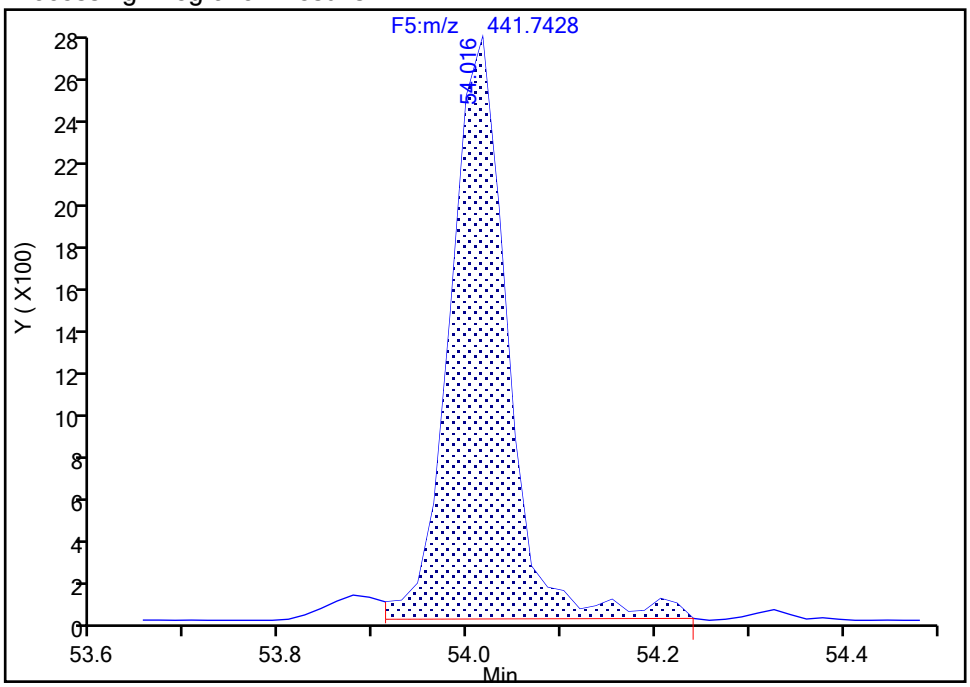
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 07:02:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 1

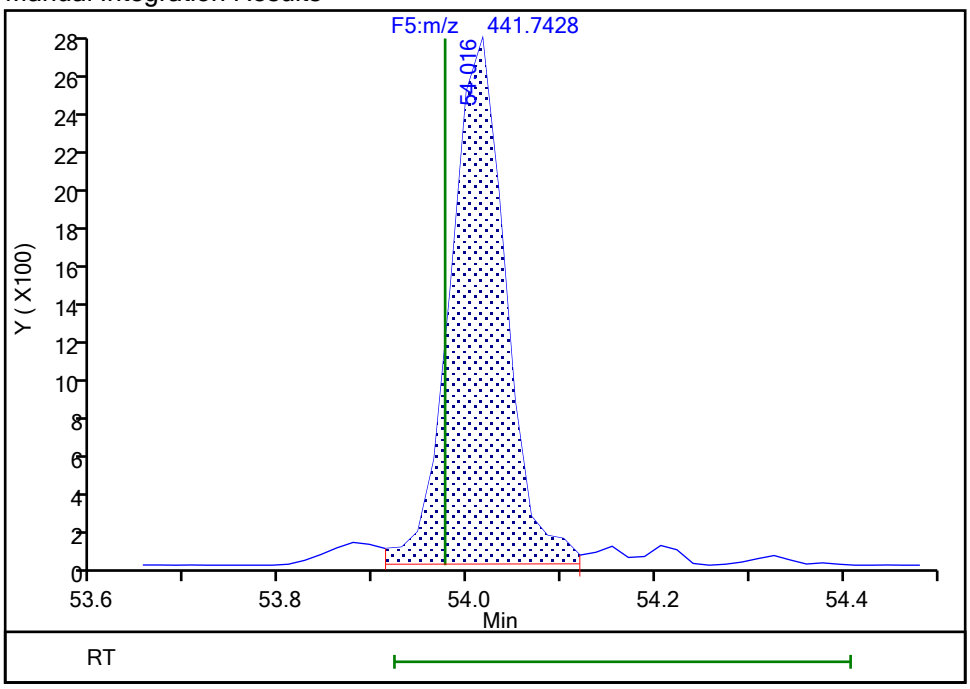
Processing Integration Results

RT: 54.02
Area: 11537
Amount: 1.796666
Amount Units: pg/ul



Manual Integration Results

RT: 54.02
Area: 11121
Amount: 1.689897
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 08:56:38

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA02(1-2) Lab Sample ID: 140-17578-17

Matrix: Sediment Lab File ID: 140-17578-a-17-a.d

Analysis Method: 1613B Date Collected: 12/07/2019 11:55

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.55(g) Date Analyzed: 12/18/2019 14:50

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36178 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	3.2		1.4	0.28

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	60		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 14:50:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-008
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:47:36 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\ical5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:47:36

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:40	5467	0.77	1.2213	0.2876	0.2306	0.1555	0.1555		RQ
2,3,7,8-TCDF	22:10	36211	0.74	1.1100	1.154	1.154	0.1003	0.1003		M
D 13C-2,3,7,8-TCDD	19:39	970388	0.80	1.0031	33.4	33.4	0.4429	0.4429	66.76	
D 13C-2,3,7,8-TCDF	22:09	1413623	0.84	1.6193	30.1	30.1	0.2843	0.2843	60.25	
$ 37Cl4-2,3,7,8-TCDD	19:41	242525		1.1834	7.072	7.072	0.0484	0.0484	70.72	
* 13C-1,2,3,4-TCDD	20:06	2897907	0.81	1.6E+05	100.0	100.0				

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d
Lims ID: 140-17578-A-17-A
Client ID: 11187072-120719-SS-SJSSA02(1-2)
Sample Type: Client
Inject. Date: 18-Dec-2019 14:50:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014075-008
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 15:47:36 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 15:47:36

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											RQ
319.8965	19:40	19:41	-3	1.001	3728	722	103	257	7		
	Empc Correction				2378	464	103	257	5		
321.8936	19:41	19:41	-2	1.002	3089	603	128	320	5	1.21(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	22:10	22:10	-3	1.001	15371	2095	101	252	21		M
305.8987	22:11	22:10	-2	1.002	20840	2724	66	165	41	0.74(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:39	19:39	-2	0.977	432424	70803	379	947	187		
333.9338	19:39	19:39	-2	0.977	537964	81152	450	1125	180	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:09	22:09	-2	1.102	646406	86211	526	1315	164		
317.9389	22:09	22:09	-2	1.102	767217	101145	333	832	304	0.84(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:41	19:41	-2	0.979	242525	37950	107	267	355		
13C-1,2,3,4-TCDD											
331.9368	20:06	20:08	-2		1295907	205044	379	947	541		
333.9338	20:06	20:08	-2		1602000	261359	450	1125	581	0.81(0.65-0.89)	

QC Flag Legend

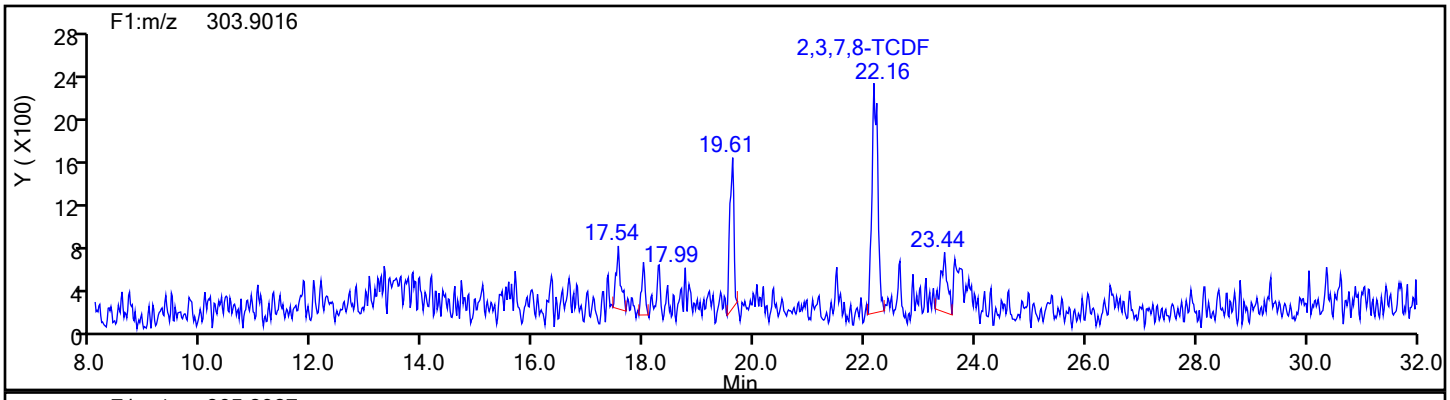
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated

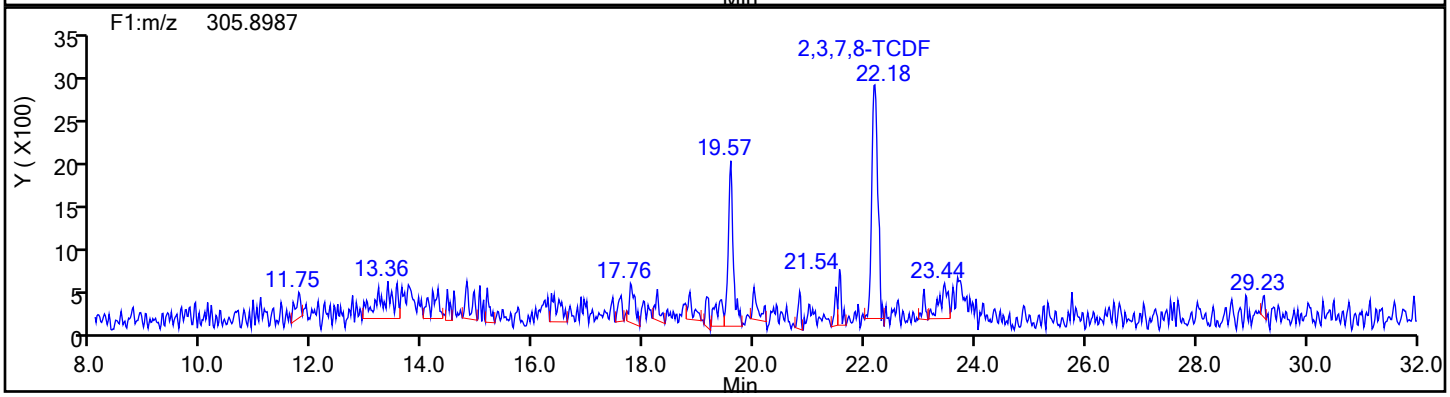
Report Date: 18-Dec-2019 15:47:37 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

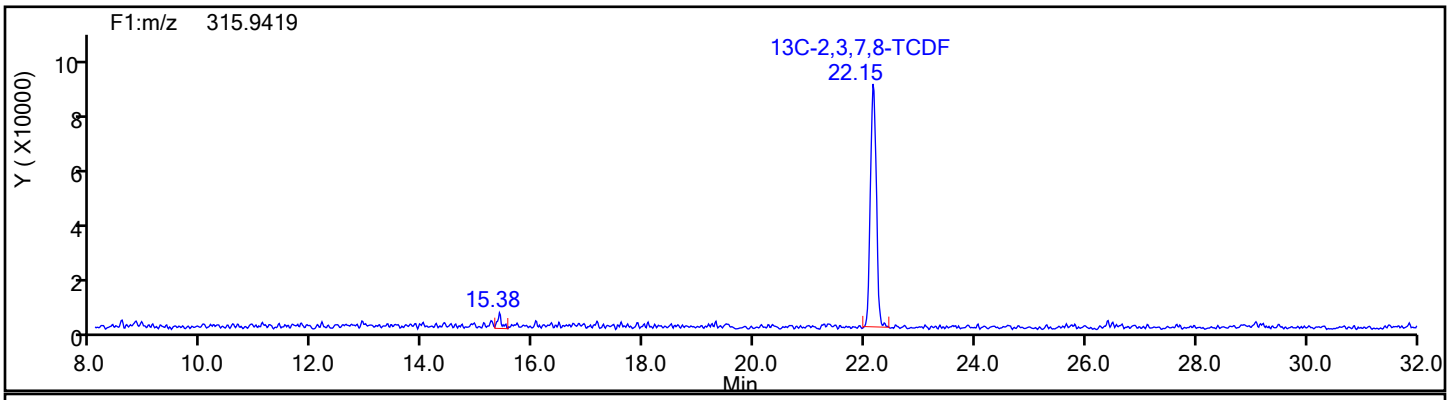
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 14:50:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36178	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

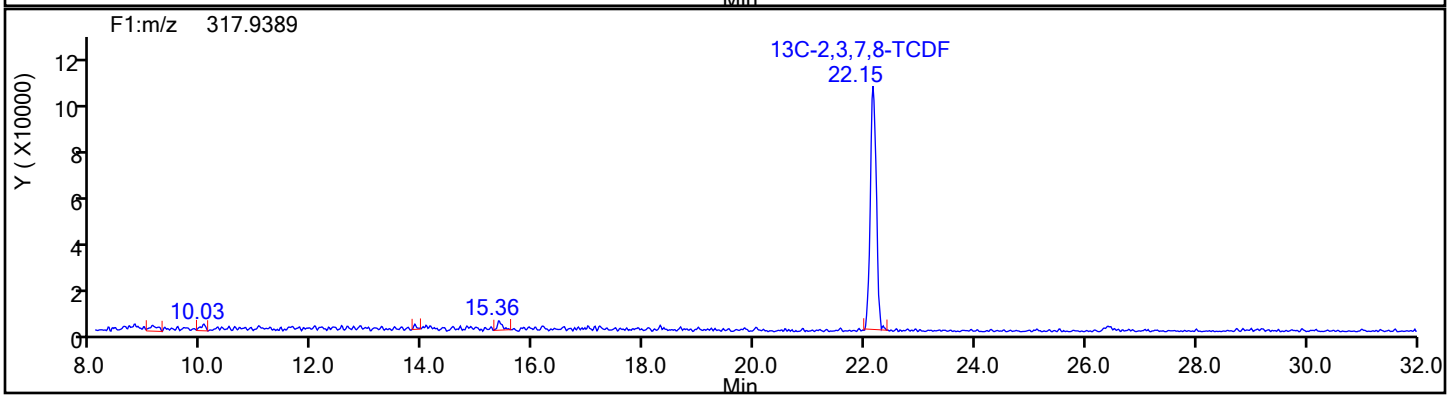
TCDF





TCDF Standards



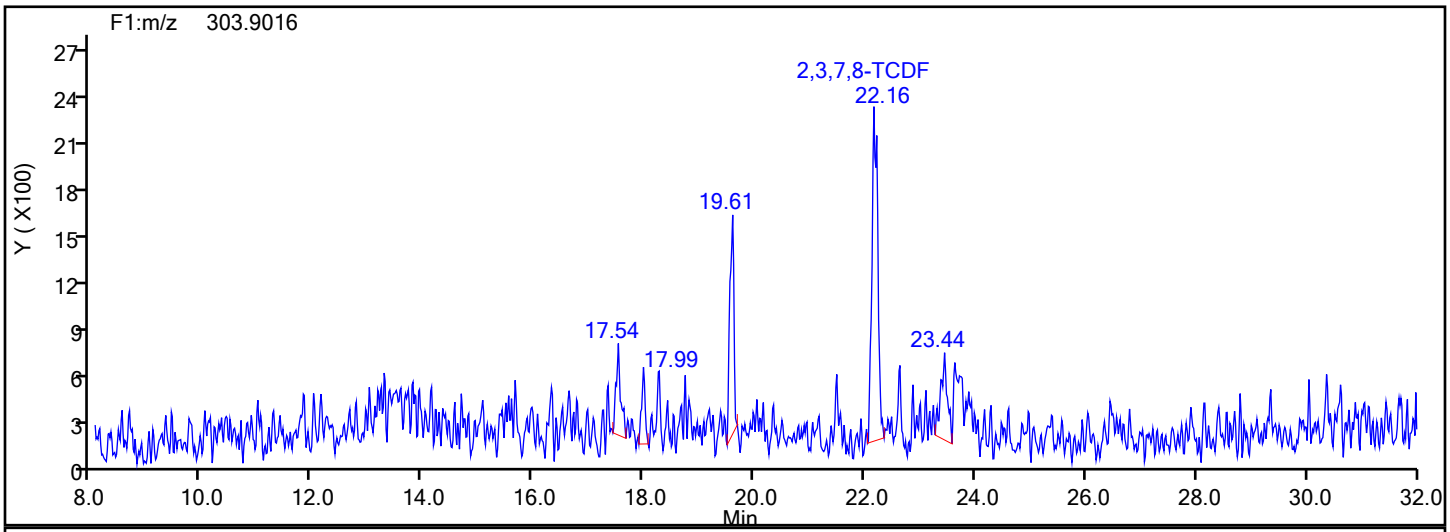


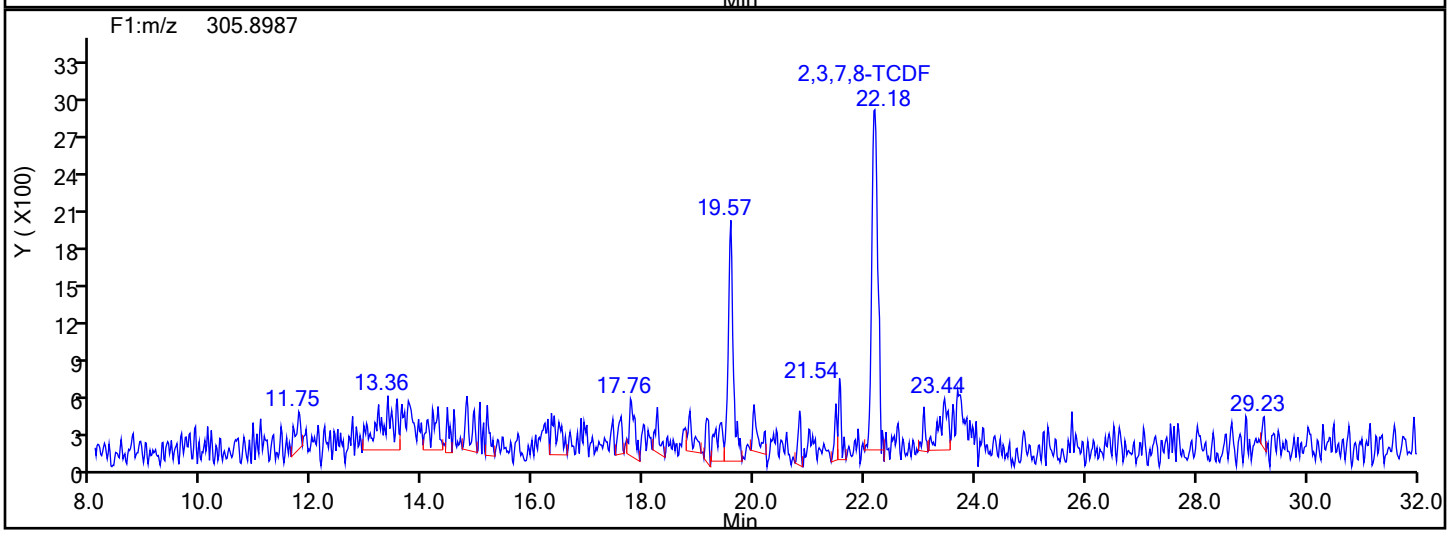
Report Date: 18-Dec-2019 15:47:37 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

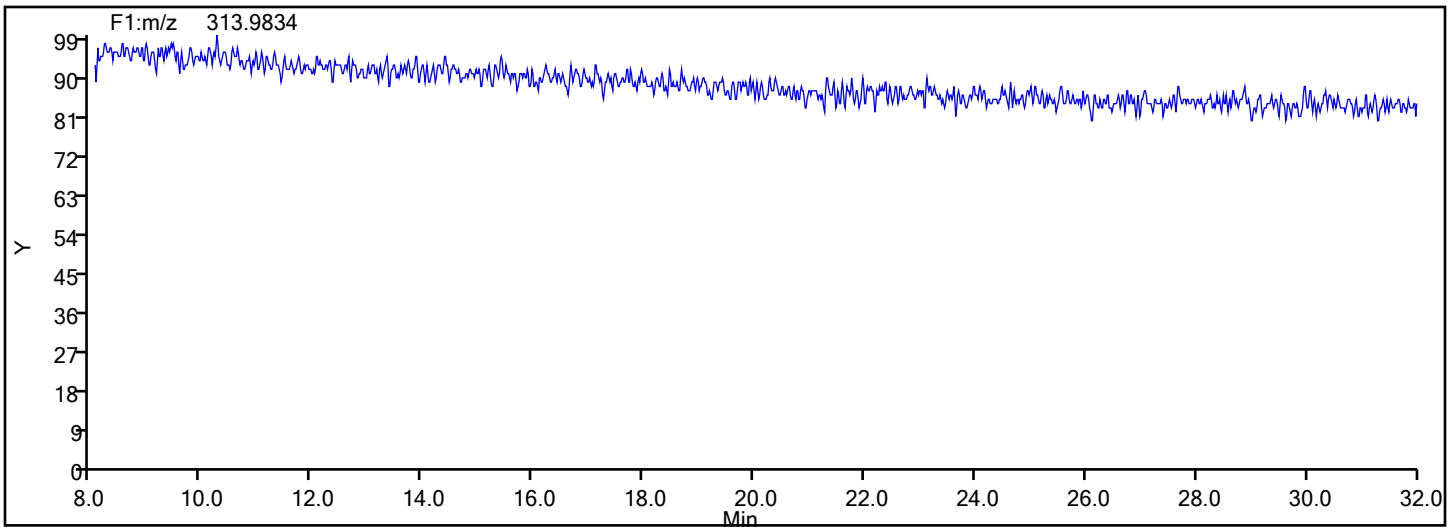
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 14:50:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36178	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

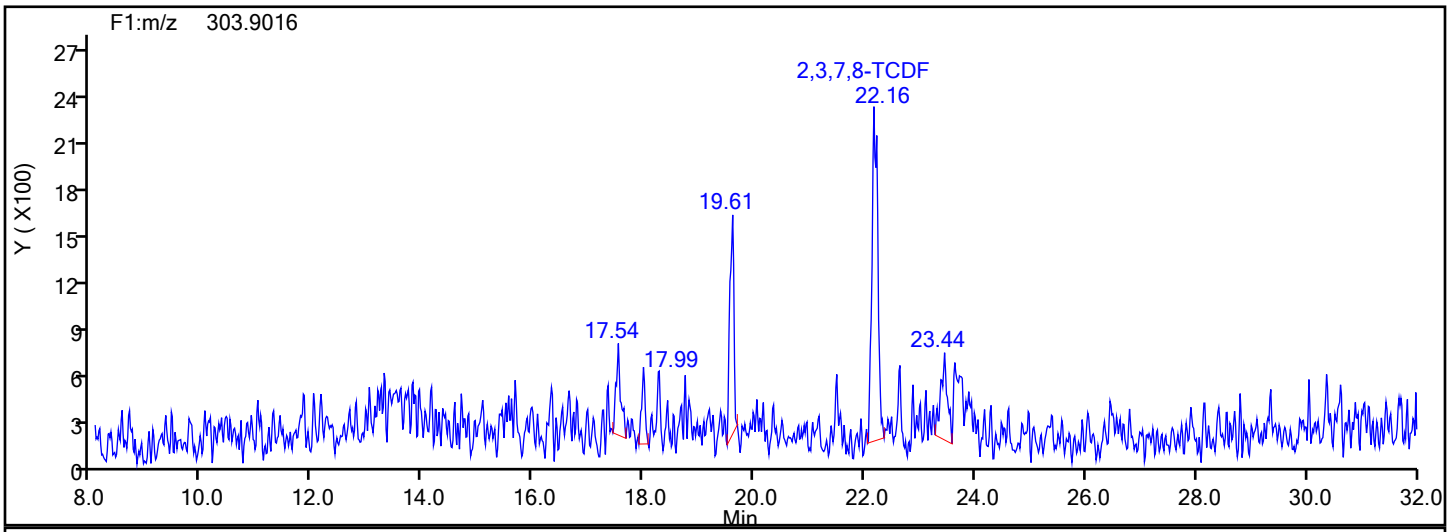


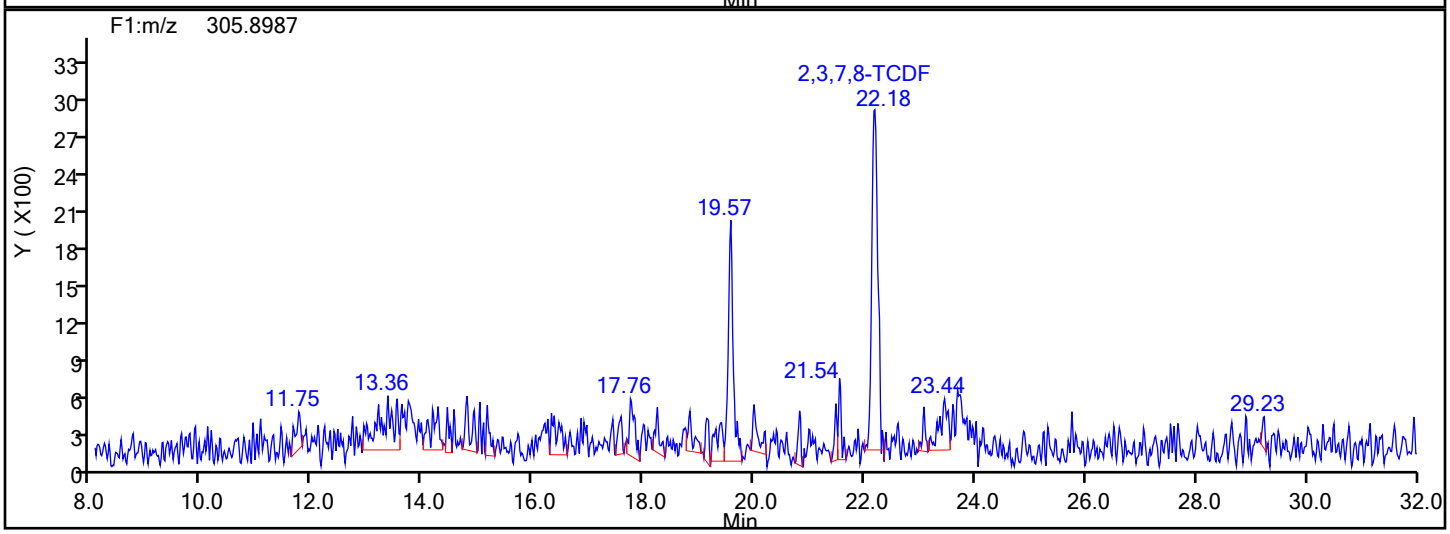
Report Date: 18-Dec-2019 15:47:37 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

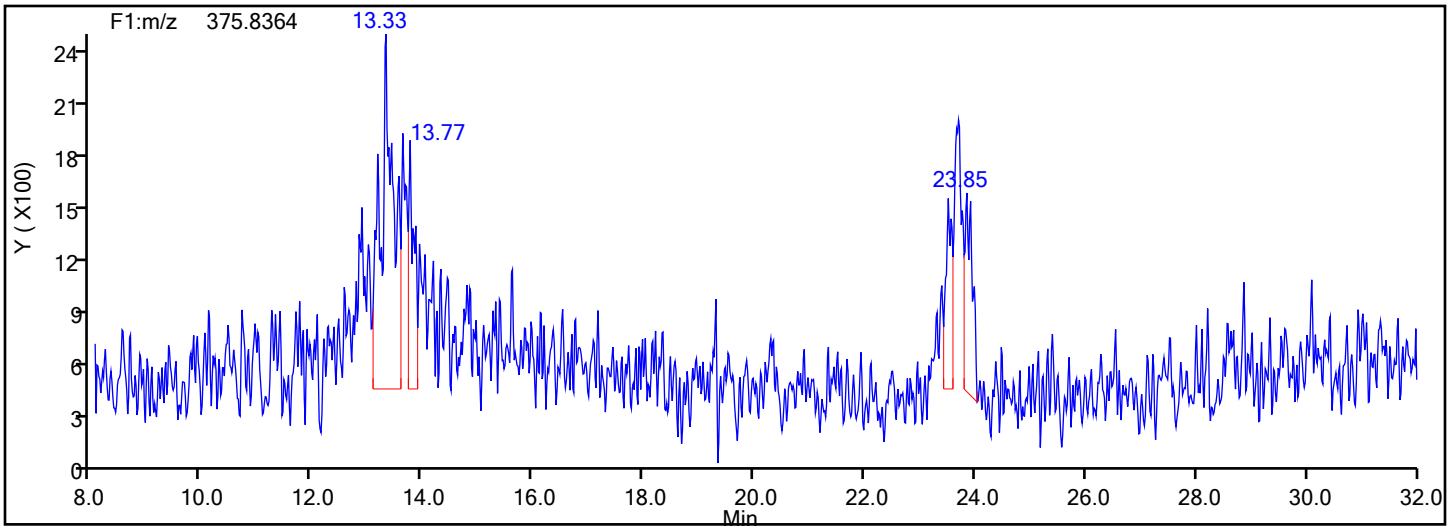
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d		
Injection Date:	18-Dec-2019 14:50:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA02(1-2)		
Worklist#:	36178	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville

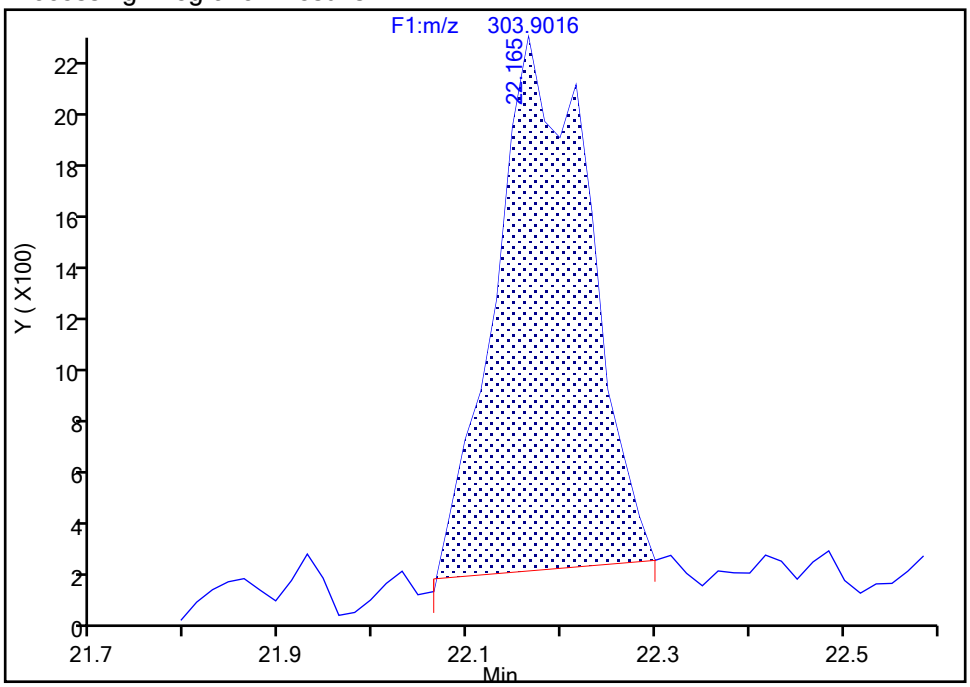
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\140-17578-a-17-a.d				
Injection Date:	18-Dec-2019 14:50:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-17-A	Lab Sample ID:	140-17578-17		
Client ID:	11187072-120719-SS-SJSSA02(1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

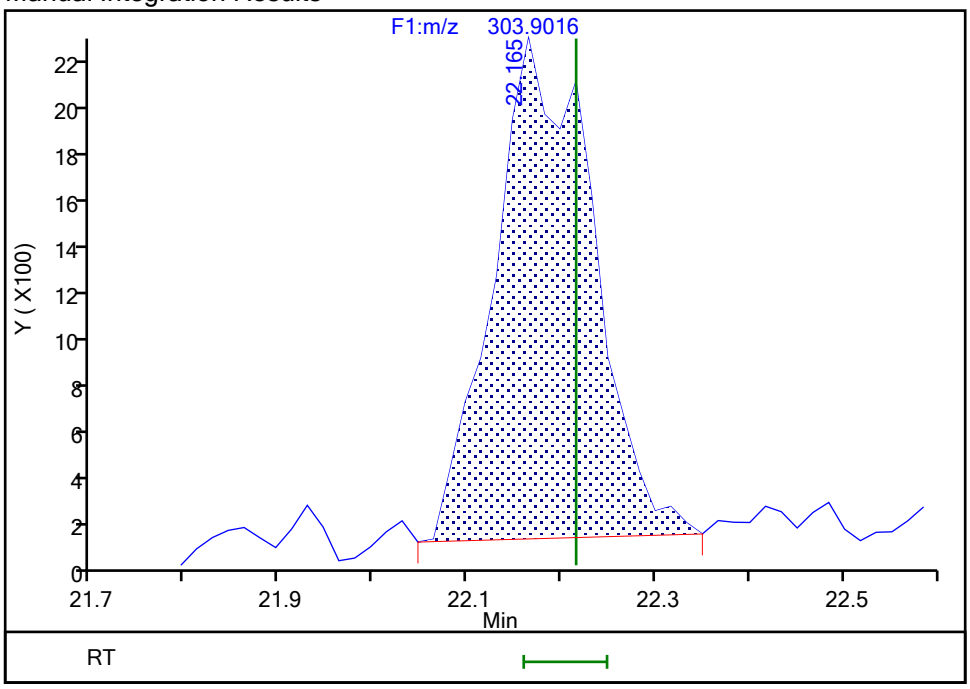
Processing Integration Results

RT: 22.16
Area: 14016
Amount: 1.110653
Amount Units: pg/ul



Manual Integration Results

RT: 22.16
Area: 15371
Amount: 1.153829
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 15:47:25
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 29777

SDG No.:

Instrument ID: D12C GC Column: DB 225 ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/03/2019 02:43 Calibration End Date: 05/03/2019 06:14 Calibration ID: 1936

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-29777/4	icl1_190503024318.d
Level 2	IC 140-29777/6	icl2_190503033522.d
Level 3	IC 140-29777/8	icl3_190503042827.d
Level 4	IC 140-29777/10	icl4_190503052133.d
Level 5	IC 140-29777/12	icl5_190503061437.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDD	1.4197	1.2107	1.2107	1.1667	1.0989	AveID		1.2213				9.8		20.0			
2,3,7,8-TCDF	1.1406	1.1668	1.1463	1.0475	1.0490	AveID		1.1100				5.2		20.0			
13C-2,3,7,8-TCDD	0.9999	1.0004	1.0114	0.9724	1.0314	Ave		1.0031				2.1		35.0			
13C-2,3,7,8-TCDF	1.5983	1.6265	1.6109	1.6559	1.6047	Ave		1.6193				1.4		35.0			
37Cl4-2,3,7,8-TCDD	1.3526	1.2060	1.1928	1.0839	1.0817	Ave		1.1834				9.4					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 29777

SDG No.:

Instrument ID: D12C GC Column: DB 225 ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/03/2019 02:43 Calibration End Date: 05/03/2019 06:14 Calibration ID: 1936

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-29777/4	icl1_190503024318.d
Level 2	IC 140-29777/6	icl2_190503033522.d
Level 3	IC 140-29777/8	icl3_190503042827.d
Level 4	IC 140-29777/10	icl4_190503052133.d
Level 5	IC 140-29777/12	icl5_190503061437.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDD		AveID	65691	276142	5218562	3292892	20341590	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDF		AveID	84370	432649	7870303	5034300	30209841	0.500	2.00	10.0	40.0	200
13C-2,3,7,8-TCDD	13CTC	Ave	9254426	11404000	43104812	7055950	9255730	100	100	100	100	100
13C-2,3,7,8-TCDF	13CTC	Ave	14793464	18540424	68656093	12015584	14399916	100	100	100	100	100
37Cl4-2,3,7,8-TCDD	13CTC	Ave	62595	274951	5083567	3145878	19413307	0.500	2.00	10.0	40.0	200

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

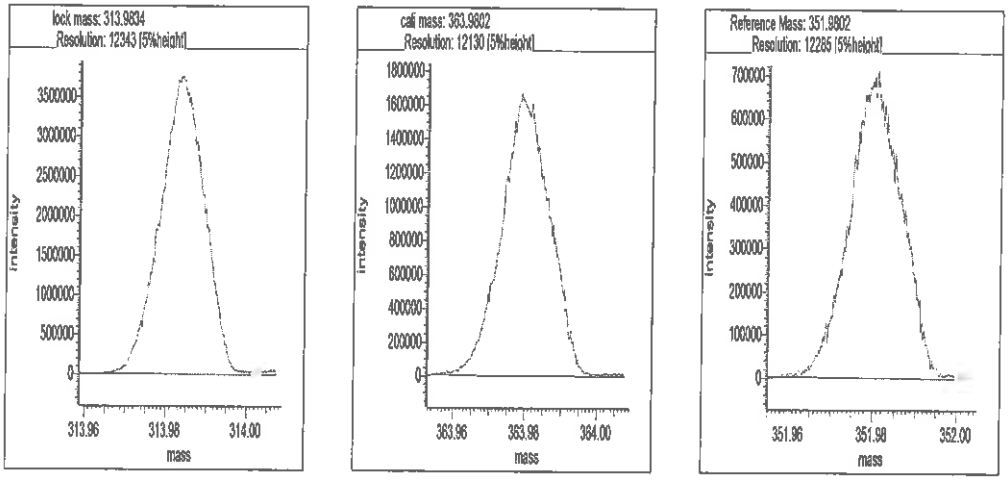
Resolution Check Report (DFS SN: 3097)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Date:	03 May 2019 01:15
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

Segment 1

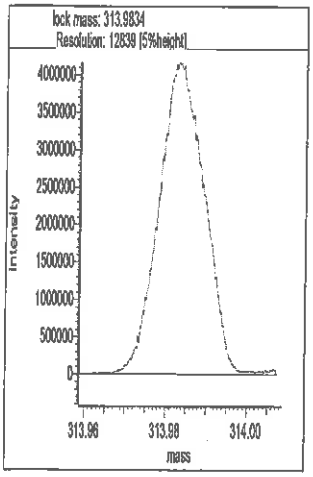
Lock mass 313.9834 [m/z] Resolution: 12343 [5%height]
Cali. mass 363.9802 [m/z] Resolution: 12130 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12285 [5%height]

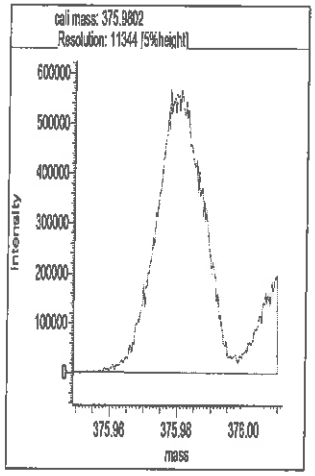


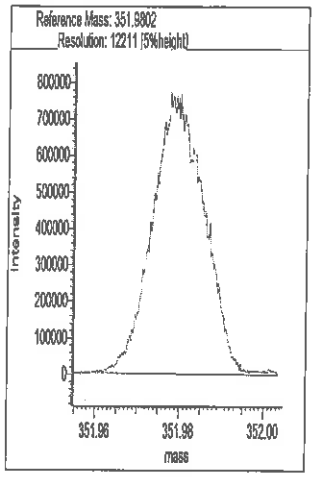
Segment 2

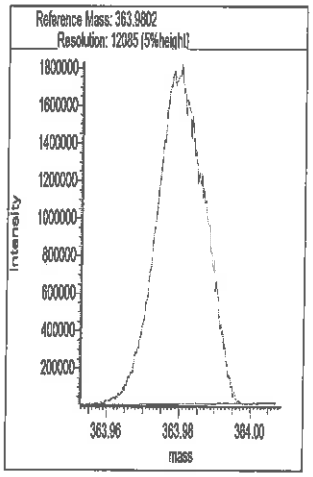
Lock mass 313.9834 [m/z] Resolution: 12839 [5%height]
Cali. mass 375.9802 [m/z] Resolution: 11344 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12211 [5%height]
Ref. mass 363.9802 [m/z] Resolution: 12085 [5%height]
Ref. mass 401.9770 [m/z] Resolution: 11967 [5%height]

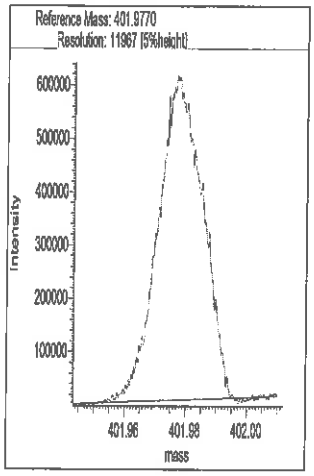
d2190503ical











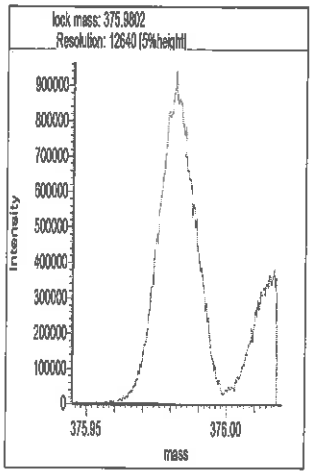
Segment 3

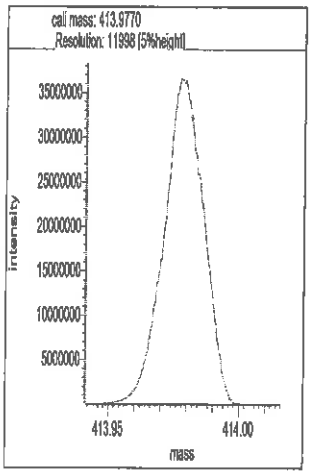
Lock mass 375.9802 [m/z] Resolution: 12640 [5%height]

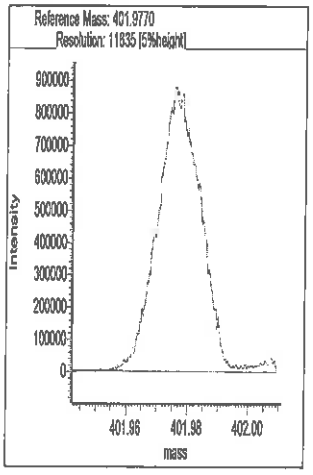
Cali. mass 413.9770 [m/z] Resolution: 11998 [5%height]

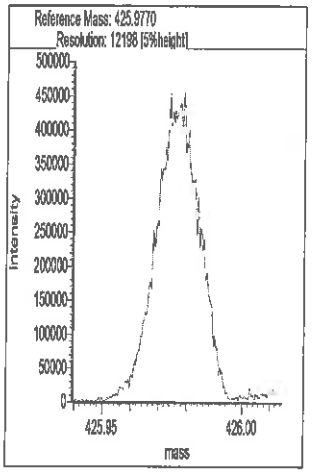
Ref. mass 401.9770 [m/z] Resolution: 11635 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 12198 [5%height]







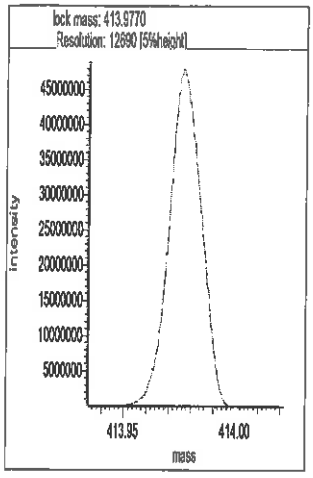


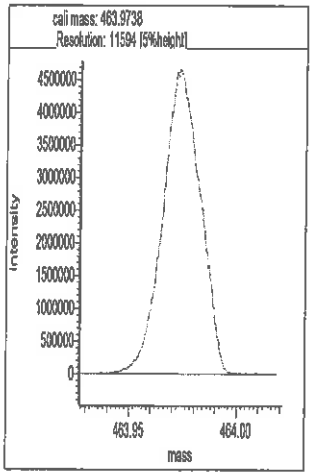
Segment 4

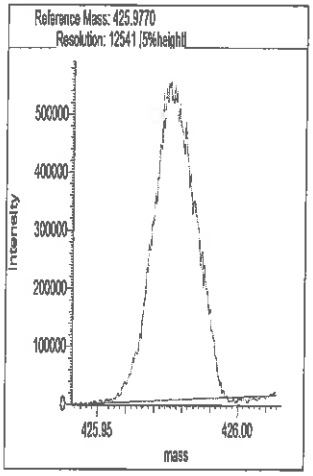
Lock mass 413.9770 [m/z] Resolution: 12690 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11594 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 12541 [5%height]





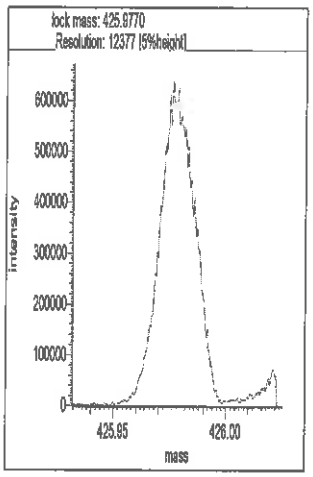


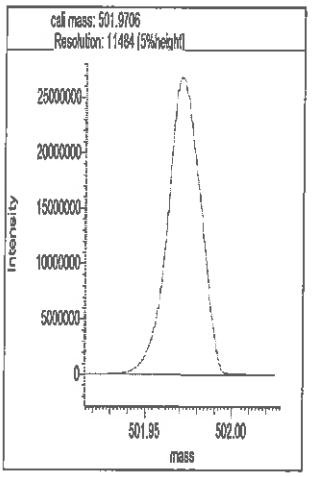
Segment 5

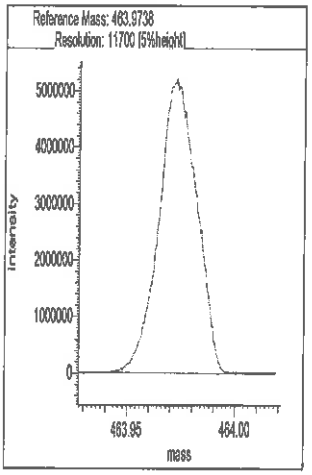
Lock mass 425.9770 [m/z] Resolution: 12377 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11484 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11700 [5%height]







Reports

```
01:28:30:  Peak matching procedure started
01:28:30:
01:28:31:  Reference mass: 313.98336
01:28:31:  Sample mass: 364.0
01:28:32:
01:28:32:  Finding reference mass
01:28:33:  Finding sample mass
01:28:33:
01:28:39:  [1]    363.9803 amu, mean: 363.9803
01:28:42:  [2]    363.9812 amu, mean: 363.9808      SD: 0.68 mmu or: 1.87 ppm
01:28:45:  [3]    363.9810 amu, mean: 363.9808      SD: 0.51 mmu or: 1.39 ppm
01:28:49:  [4]    363.9806 amu, mean: 363.9808      SD: 0.43 mmu or: 1.17 ppm
01:28:52:  [5]    363.9803 amu, mean: 363.9807      SD: 0.43 mmu or: 1.18 ppm
01:28:55:  [6]    363.9802 amu, mean: 363.9806      SD: 0.44 mmu or: 1.21 ppm
01:28:58:  [7]    363.9813 amu, mean: 363.9807      SD: 0.48 mmu or: 1.33 ppm
01:29:01:  [8]    363.9807 amu, mean: 363.9807      SD: 0.45 mmu or: 1.23 ppm
01:29:04:  [9]    363.9805 amu, mean: 363.9807      SD: 0.42 mmu or: 1.17 ppm
01:29:07:  [10]    363.9803 amu, mean: 363.9806     SD: 0.42 mmu or: 1.16 ppm
01:29:09:
01:29:09:  Stop requested. Please wait for procedure to finish.
01:29:09:
01:29:10:  [11]    363.9804 amu, mean: 363.9806     SD: 0.41 mmu or: 1.12 ppm
01:29:12:
01:29:12:  Peakmatching stopped
```

Signature LL 5-3-19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-May-2019 02:43:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-004
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:46:43 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:09:36

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:27	65691	0.78	1.2213	0.5812	0.5812	0.0461	0.0461	116	M
2,3,7,8-TCDF	24:23	84370	0.84	1.1100	0.5138	0.5138	0.0305	0.0305	103	
D 13C-2,3,7,8-TCDD	21:24	9254426	0.80	1.0031	99.7	99.7	0.2150	0.2150	99.68	a
D 13C-2,3,7,8-TCDF	24:20	14793464	0.81	1.6193	98.7	98.7	0.2919	0.2919	98.71	a
$ 37Cl4-2,3,7,8-TCDD	21:26	62595		1.1834	0.5715	0.5715	0.0273	0.0273	114	M
* 13C-1,2,3,4-TCDD	21:58	9255545	0.81	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

61L11613OP_00002 Amount Added: 20.00 Units: uL

Report Date: 03-May-2019 13:46:43 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-May-2019 02:43:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-004
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:46:43 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:09:36

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	21:27	21:25	2	1.002	28817	3806	93	232	41		M
321.8936	21:27	21:25	2	1.002	36874	5547	212	530	26	0.78(0.65-0.89)	M
2,3,7,8-TCDF											
303.9016	24:23	24:23	0	1.002	38574	4415	143	357	31		
305.8987	24:23	24:23	0	1.002	45796	5519	97	242	57	0.84(0.65-0.89)	
13C-2,3,7,8-TCDD											a
331.9368	21:24	21:22	2	0.974	4109811	594111	540	1350	1100		a
333.9338	21:24	21:22	2	0.974	5144615	760255	583	1457	1304	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:20	24:21	-1	1.107	6627216	784085	1263	3157	621		a
317.9389	24:21	24:21	0	1.108	8166248	988215	1198	2995	825	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											M
327.8847	21:26	21:24	2	0.975	62595	8781	168	420	52		M
13C-1,2,3,4-TCDD											
331.9368	21:58	21:56	2		4149605	592187	540	1350	1097		
333.9338	21:58	21:56	2		5105940	709163	583	1457	1216	0.81(0.65-0.89)	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

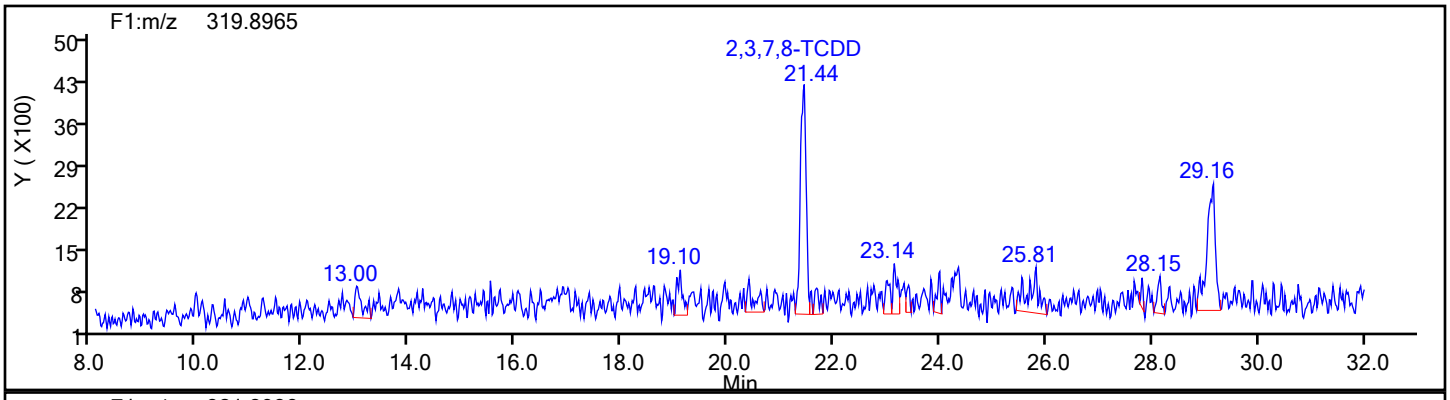
61L11613OP_00002 Amount Added: 20.00 Units: uL

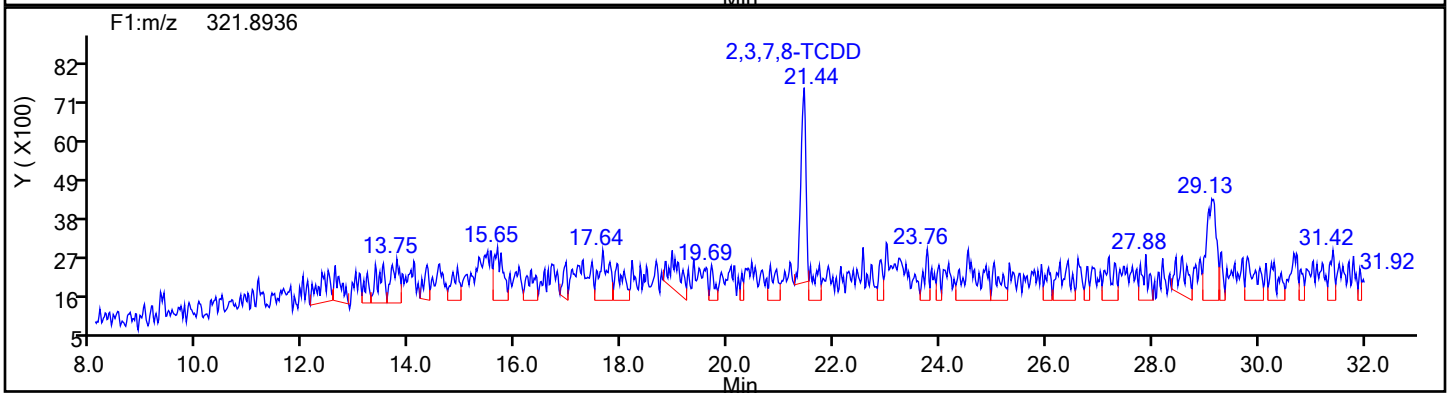
Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

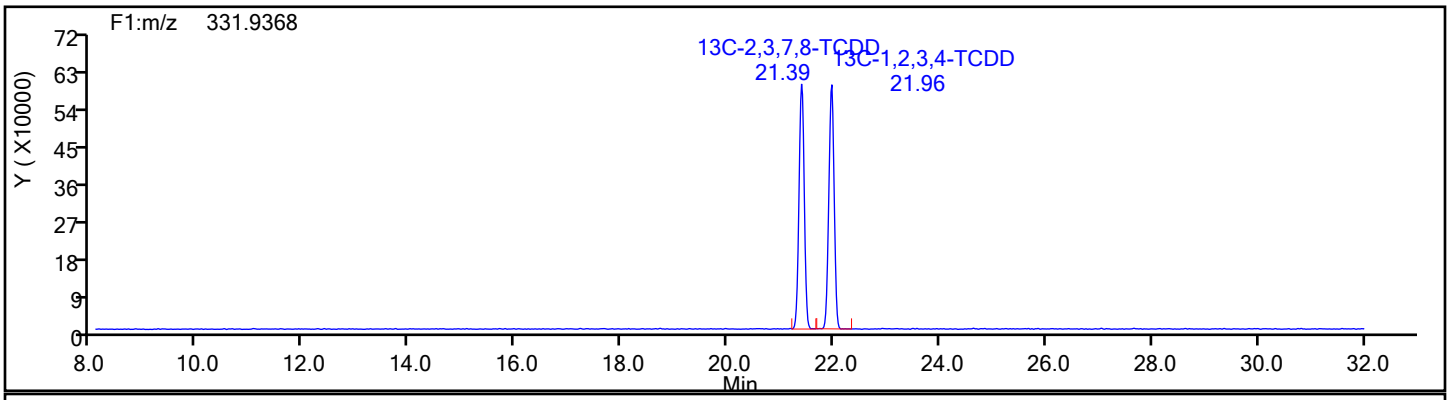
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

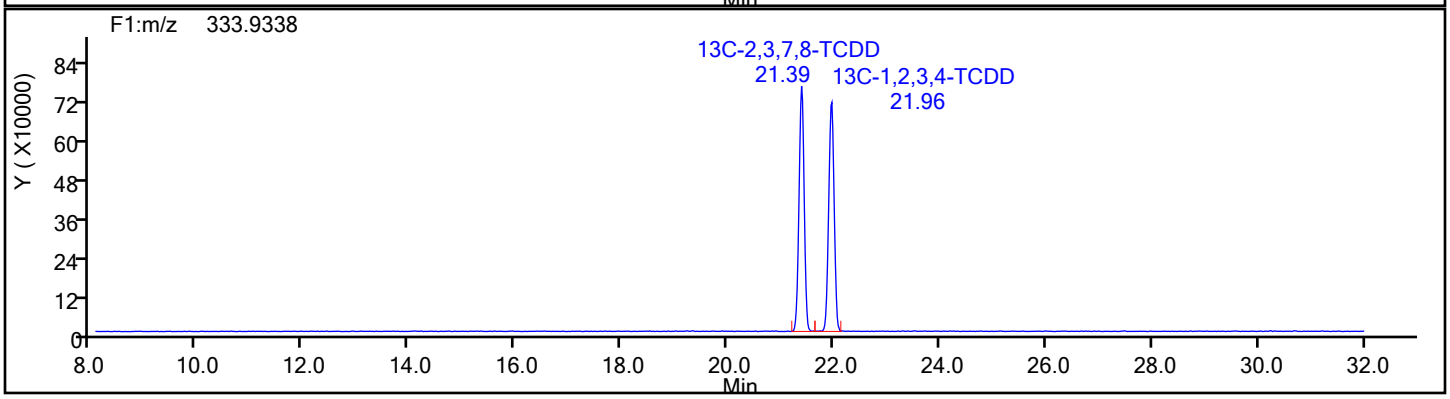
TCDD





TCDD Standards



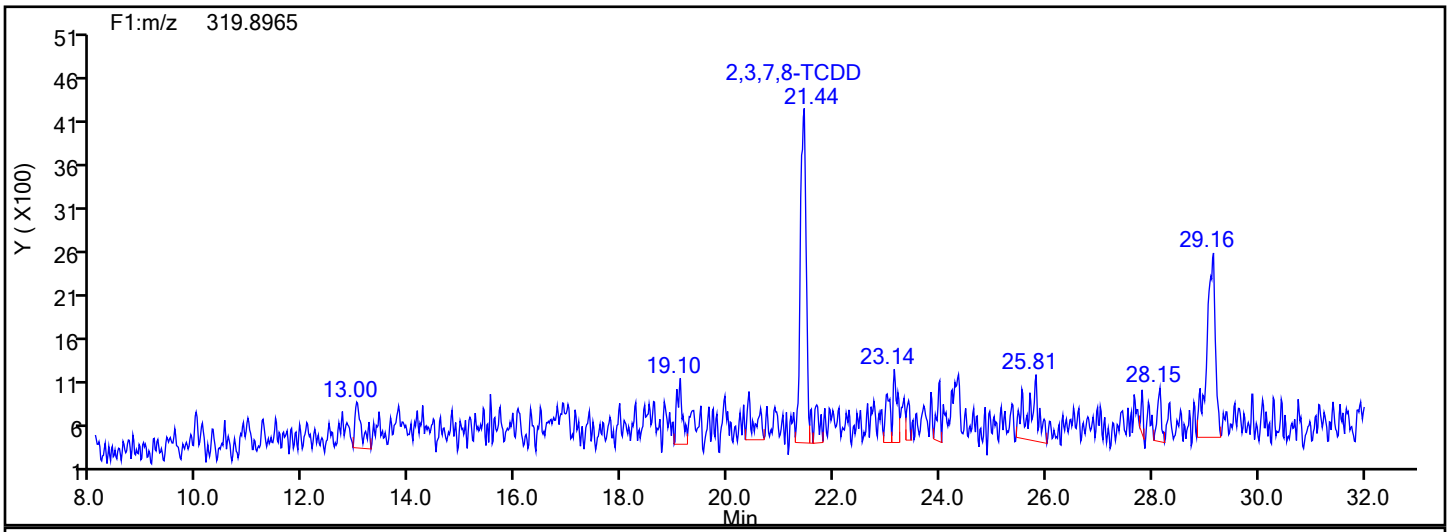


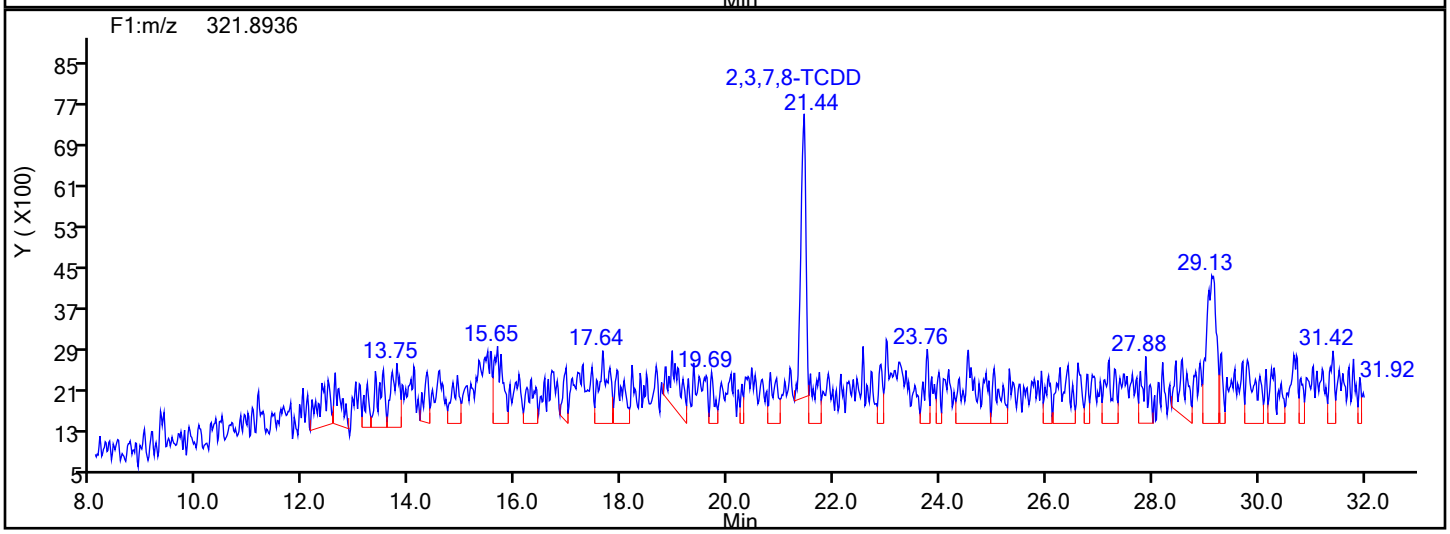
Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

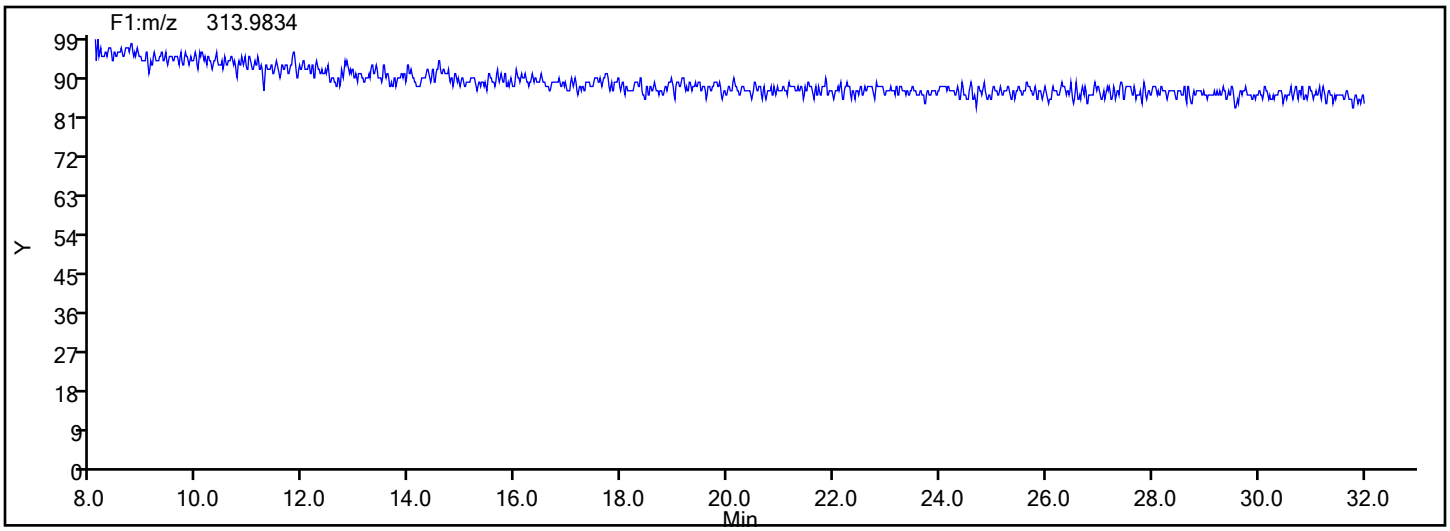
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

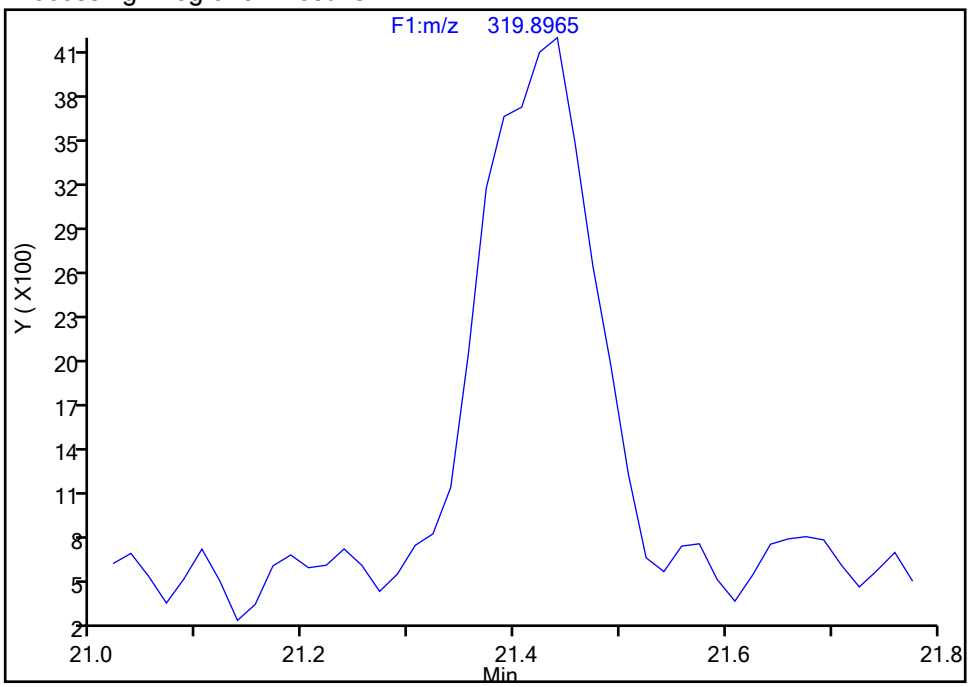
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d
Injection Date: 03-May-2019 02:43:00 Instrument ID: D12C
Lims ID: IC L1
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

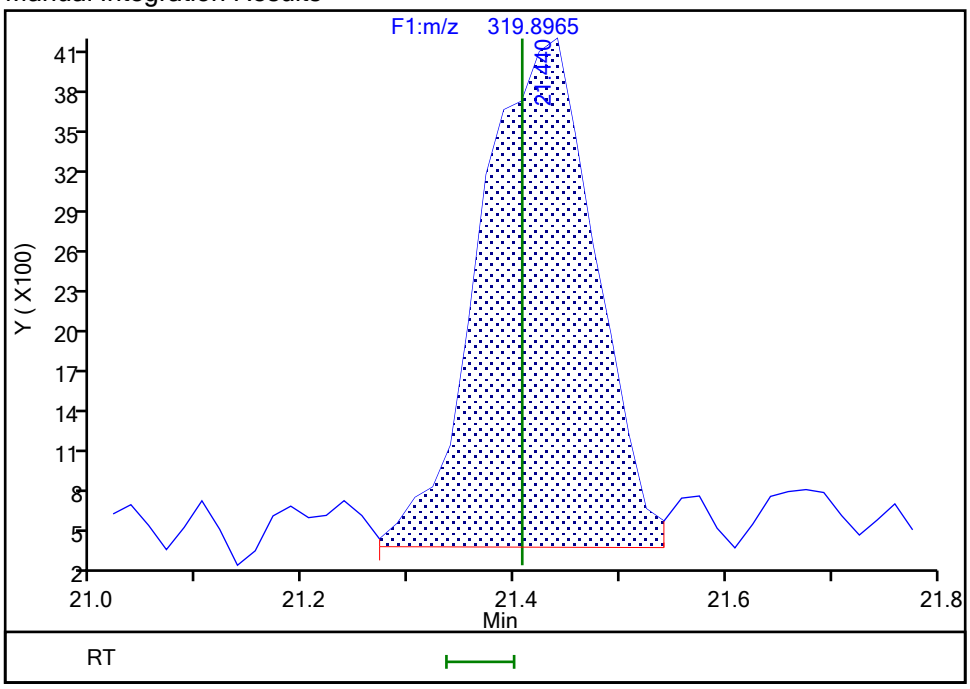
Not Detected
Expected RT: 21.41

Processing Integration Results



Manual Integration Results

RT: 21.44
Area: 28817
Amount: 0.581199
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:09:20
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

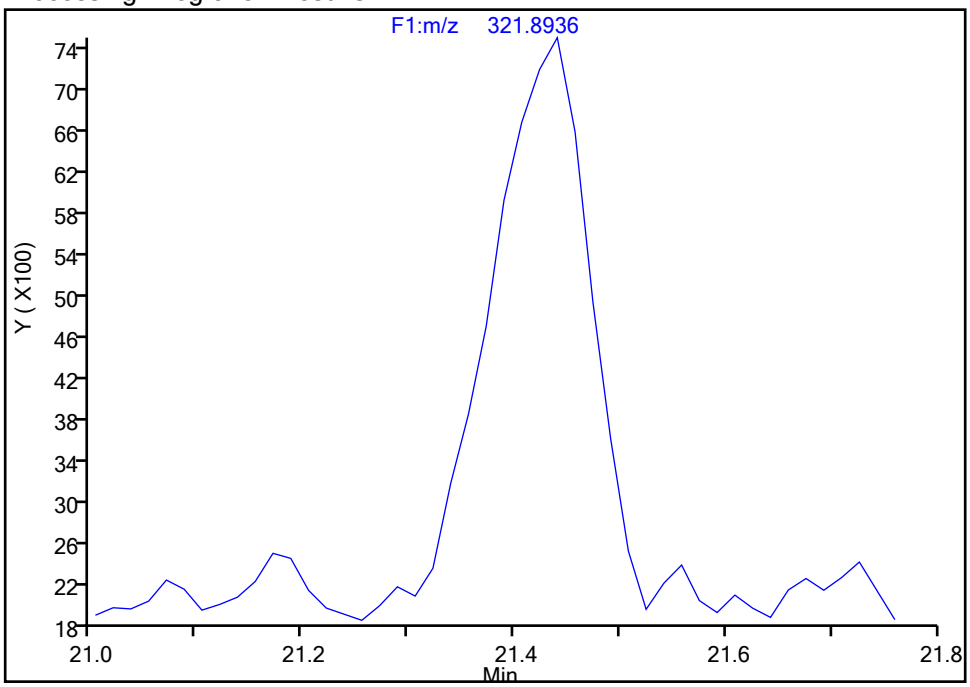
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d
Injection Date: 03-May-2019 02:43:00 Instrument ID: D12C
Lims ID: IC L1
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

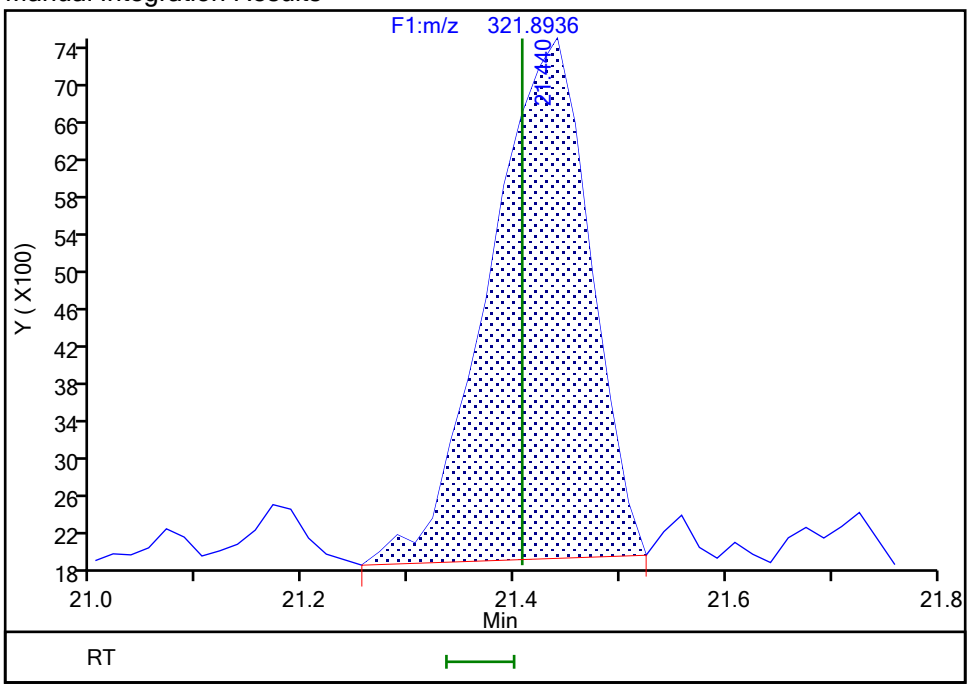
Not Detected
Expected RT: 21.41

Processing Integration Results



Manual Integration Results

RT: 21.44
Area: 36874
Amount: 0.581199
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:45:36
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

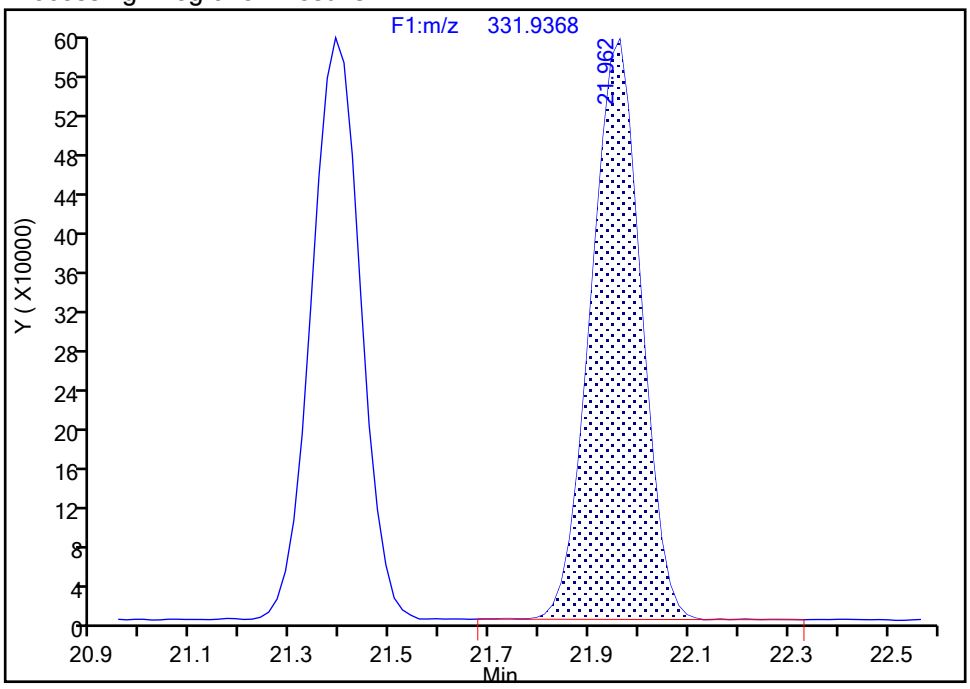
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d				
Injection Date:	03-May-2019 02:43:00	Instrument ID:	D12C		
Lims ID:	IC L1				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

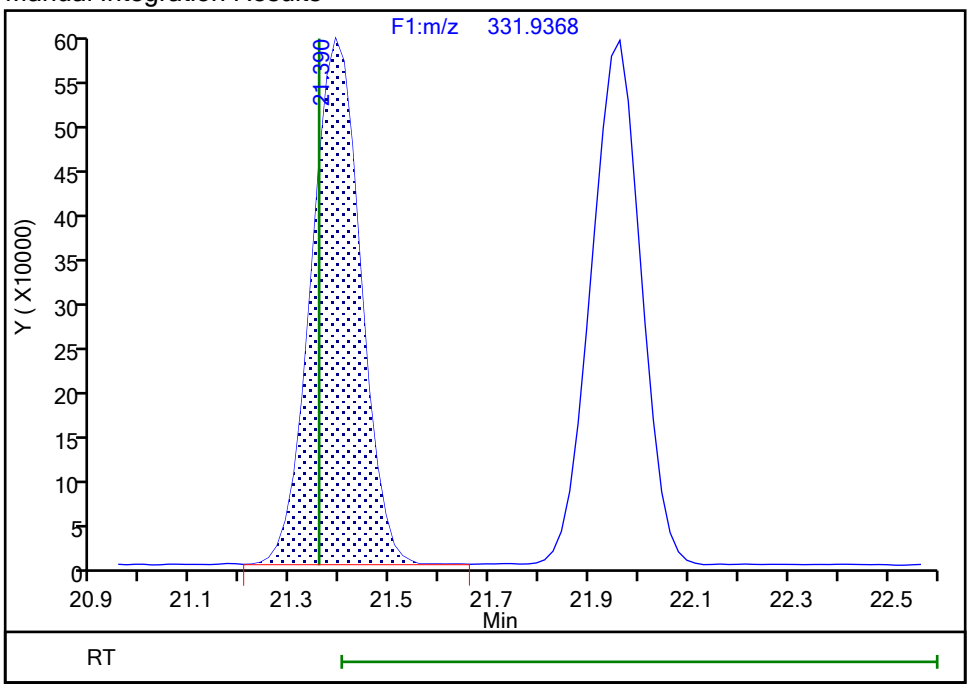
Processing Integration Results

RT: 21.96
Area: 4141983
Amount: 99.936599
Amount Units: pg/ul



Manual Integration Results

RT: 21.39
Area: 4109811
Amount: 99.678115
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:06:59

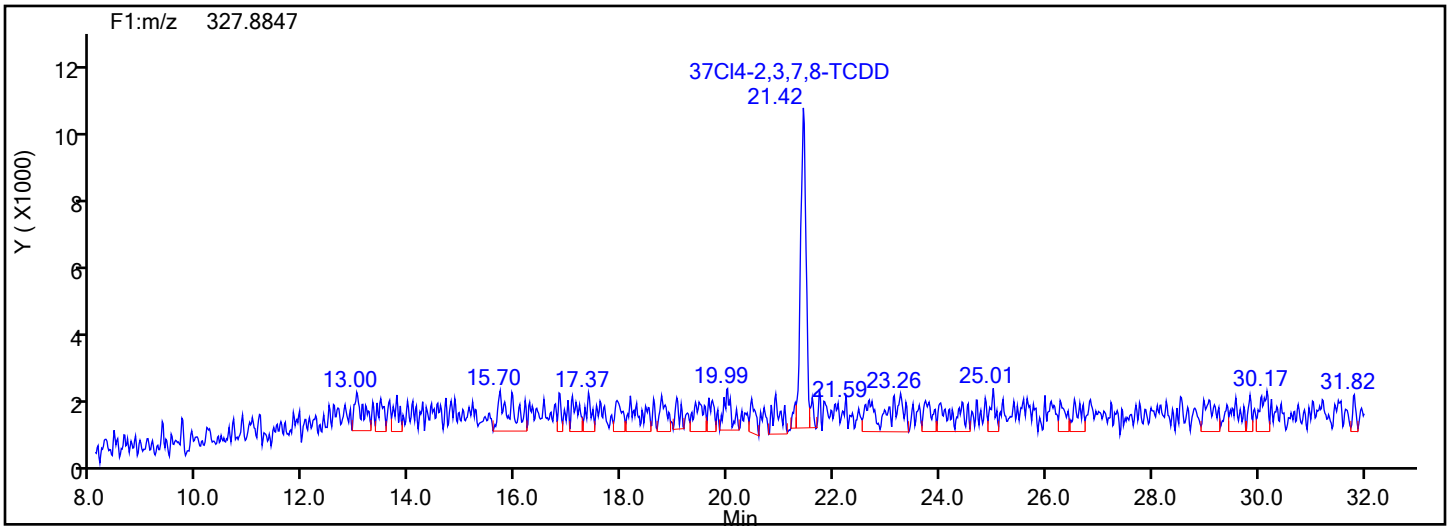
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

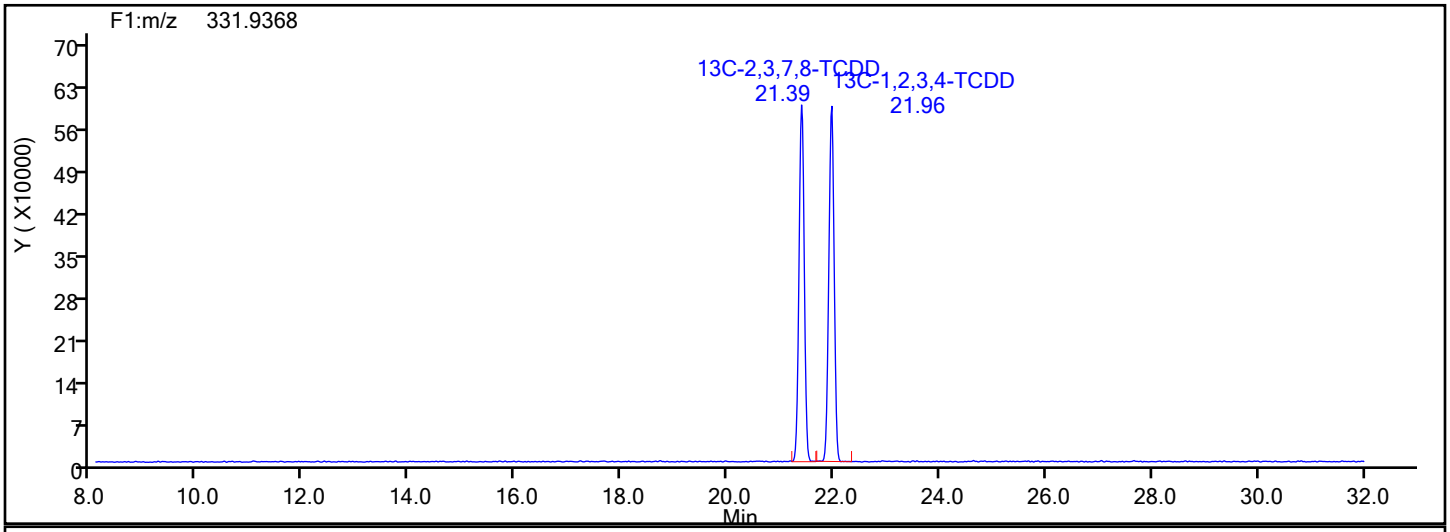
Eurofins TestAmerica, Knoxville

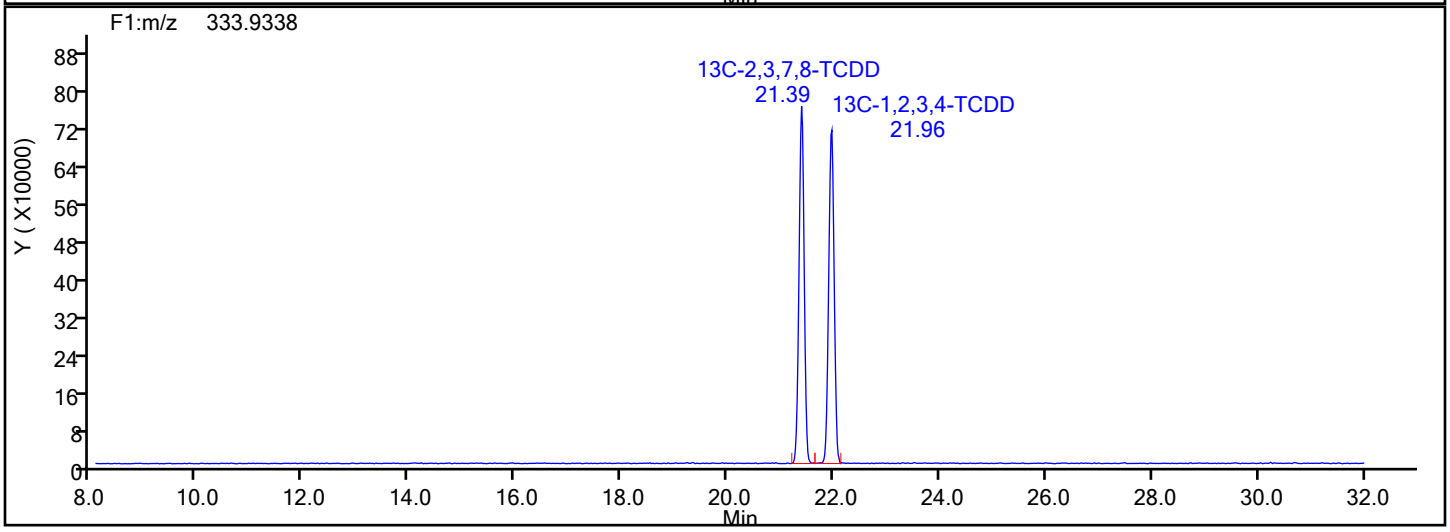
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



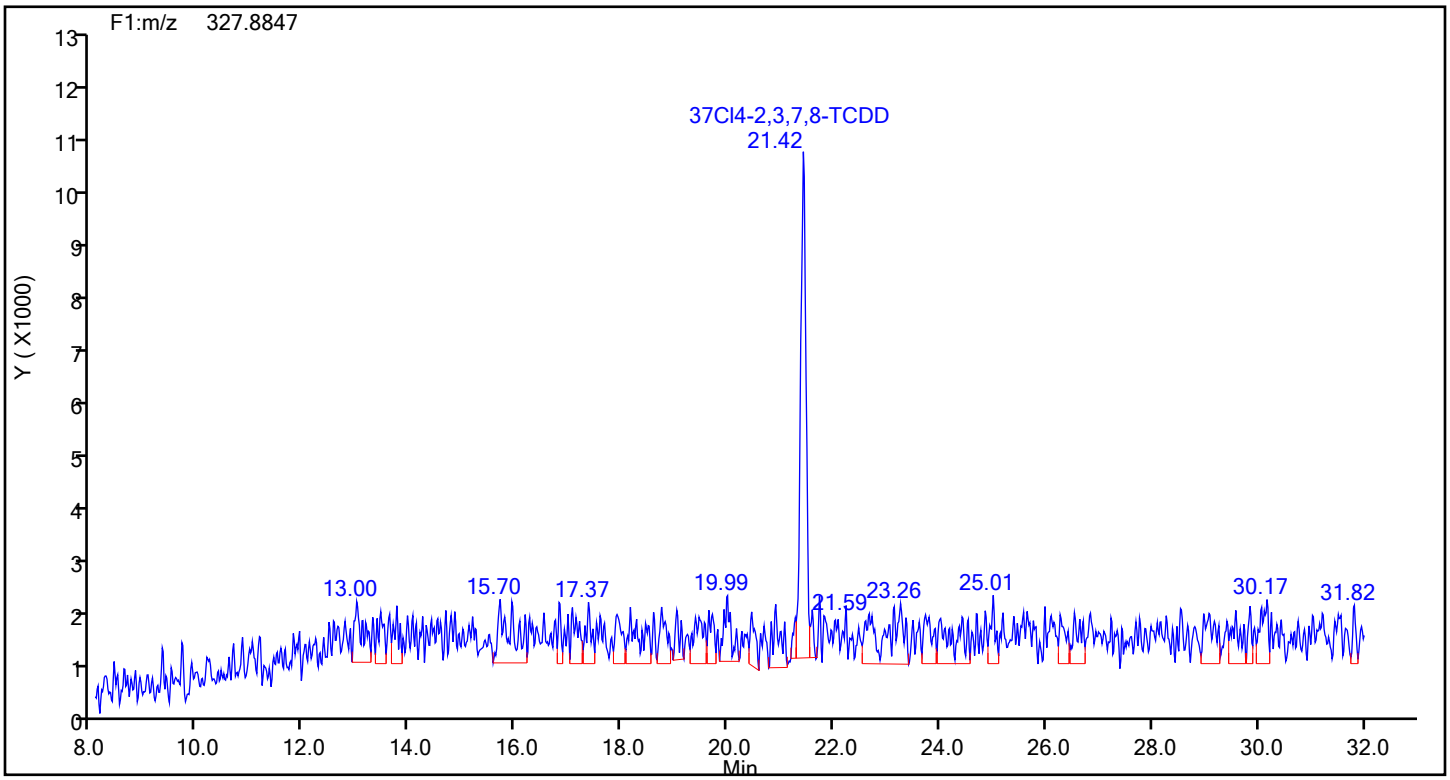


Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

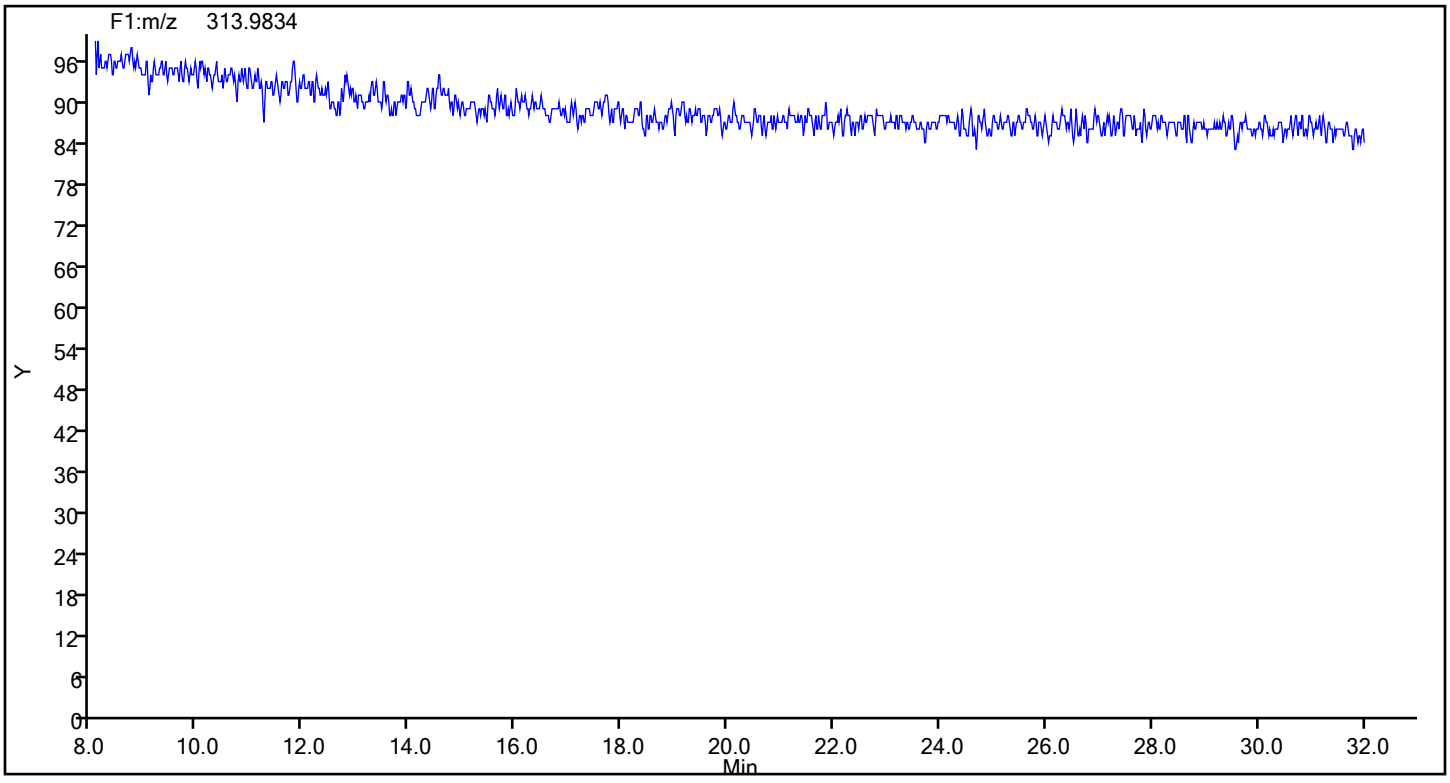
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

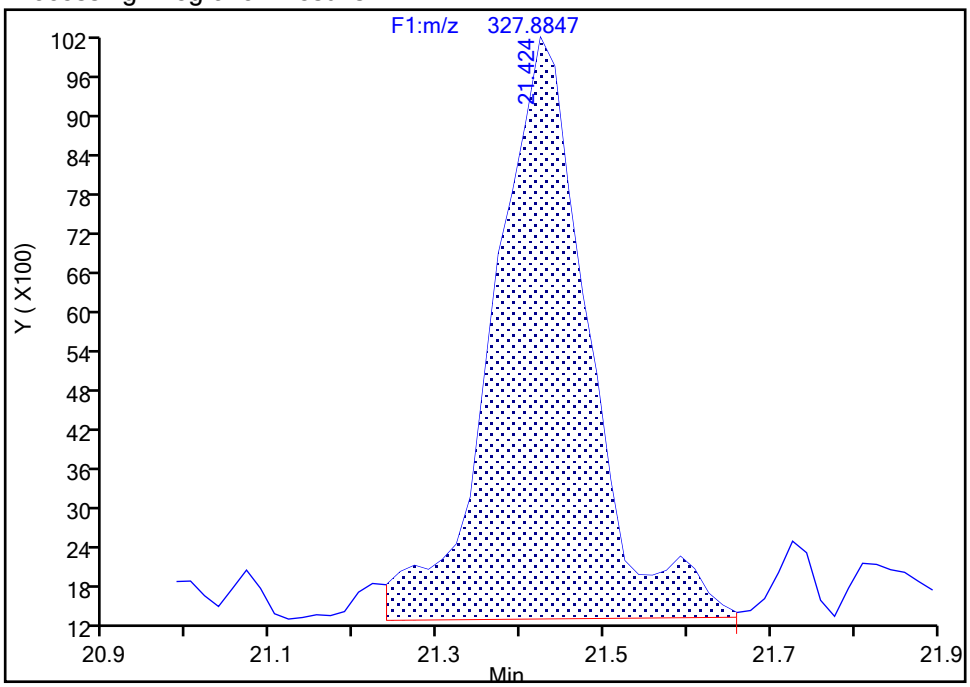
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d				
Injection Date:	03-May-2019 02:43:00	Instrument ID:	D12C		
Lims ID:	IC L1				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

37Cl4-2,3,7,8-TCDD, CAS: 85508-50-5

Signal: 1

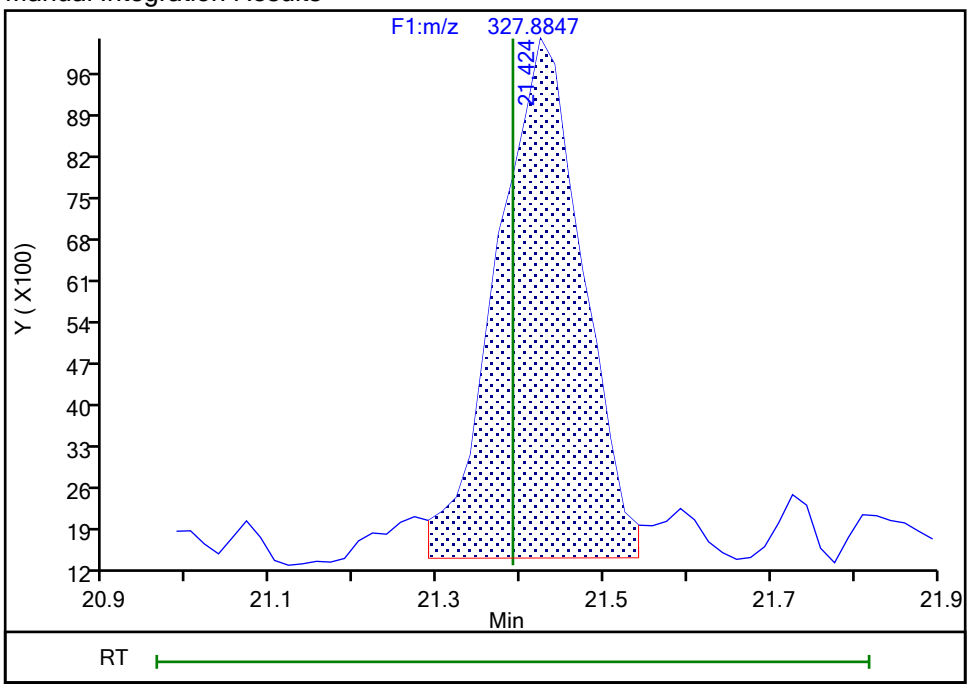
Processing Integration Results

RT: 21.42
Area: 70722
Amount: 0.625927
Amount Units: pg/ul



Manual Integration Results

RT: 21.42
Area: 62595
Amount: 0.571492
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:46:07
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

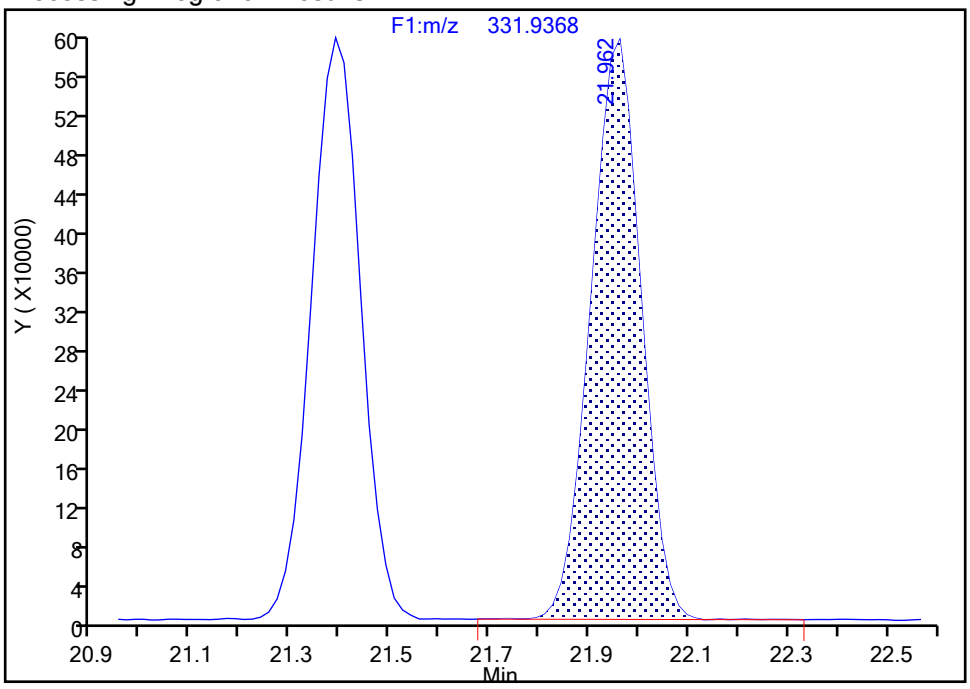
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d
Injection Date: 03-May-2019 02:43:00 Instrument ID: D12C
Lims ID: IC L1
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

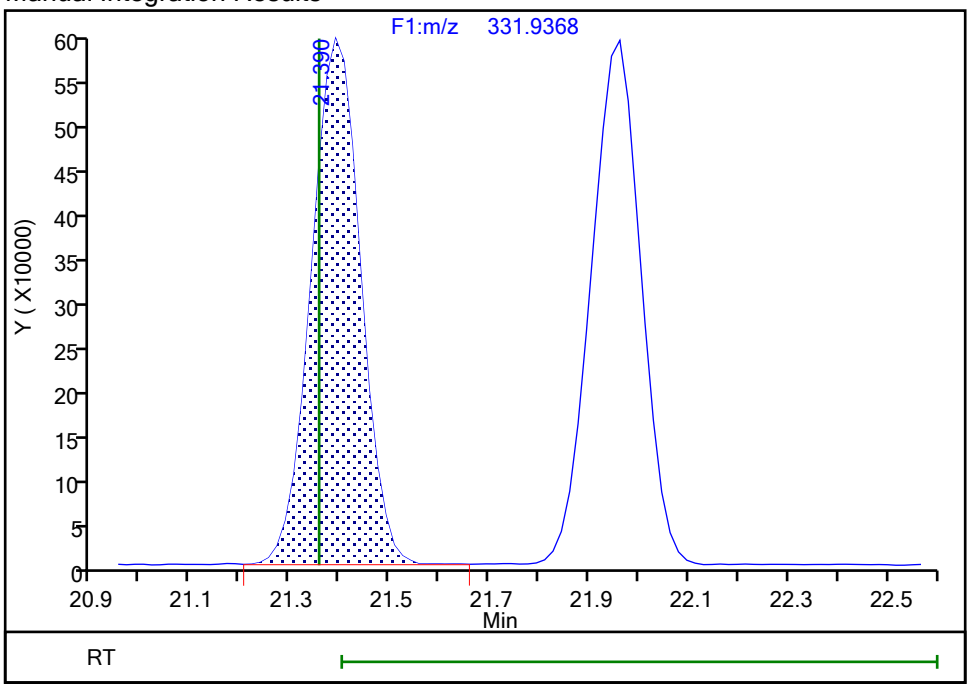
Processing Integration Results

RT: 21.96
Area: 4141983
Amount: 99.936599
Amount Units: pg/ul



Manual Integration Results

RT: 21.39
Area: 4109811
Amount: 99.678115
Amount Units: pg/ul



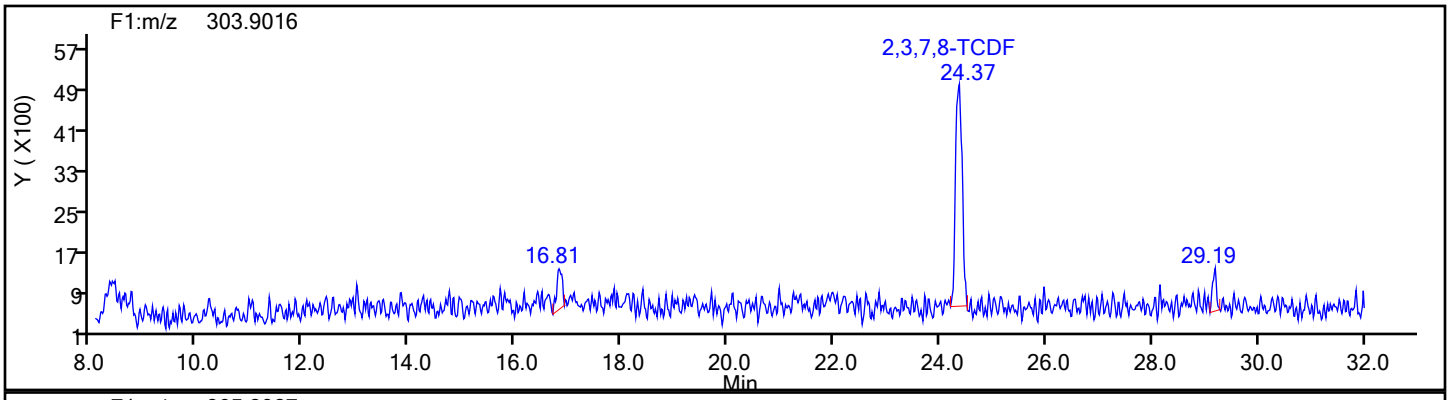
Reviewer: reynoldk, 03-May-2019 09:06:59
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

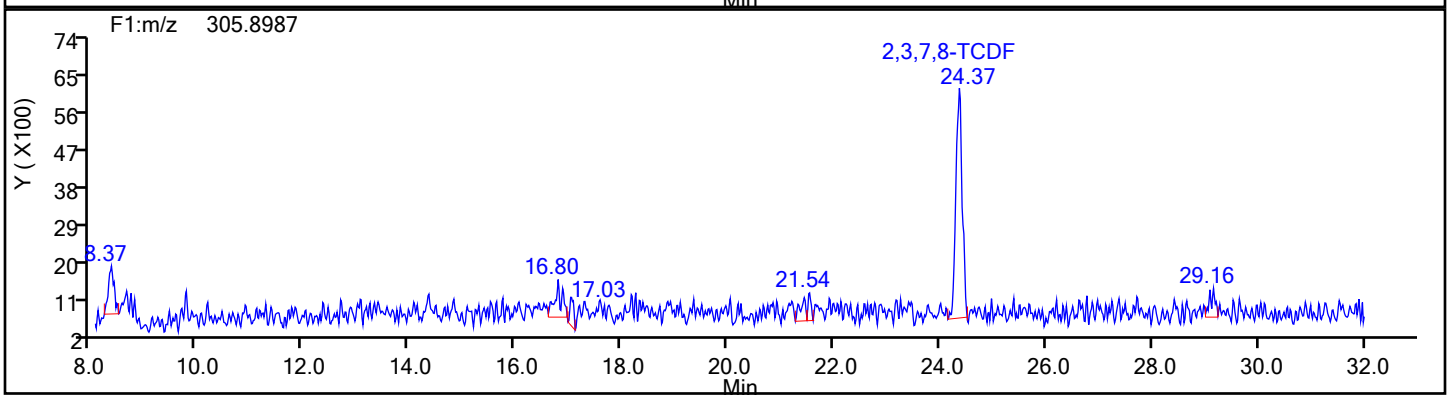
Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

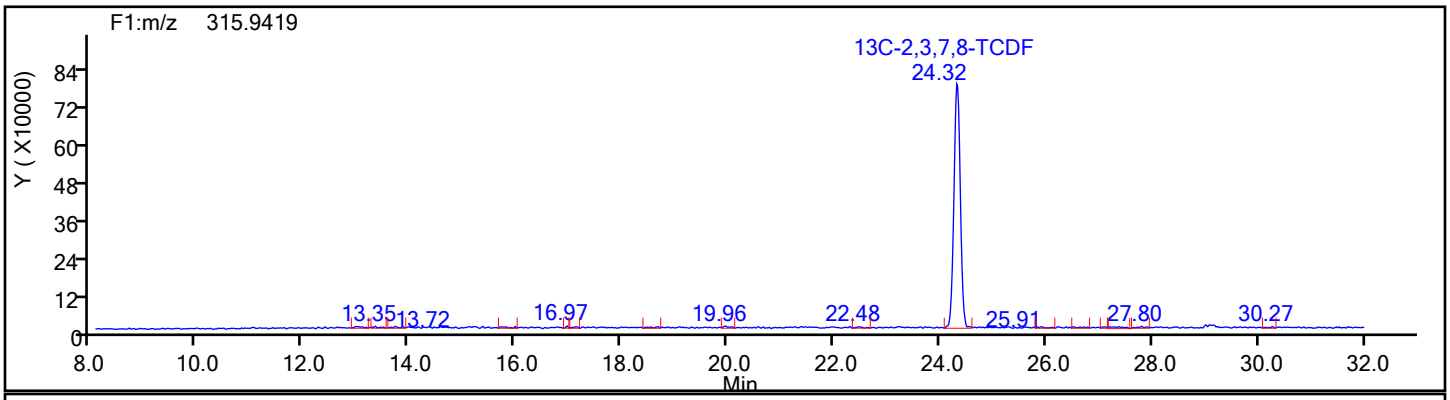
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

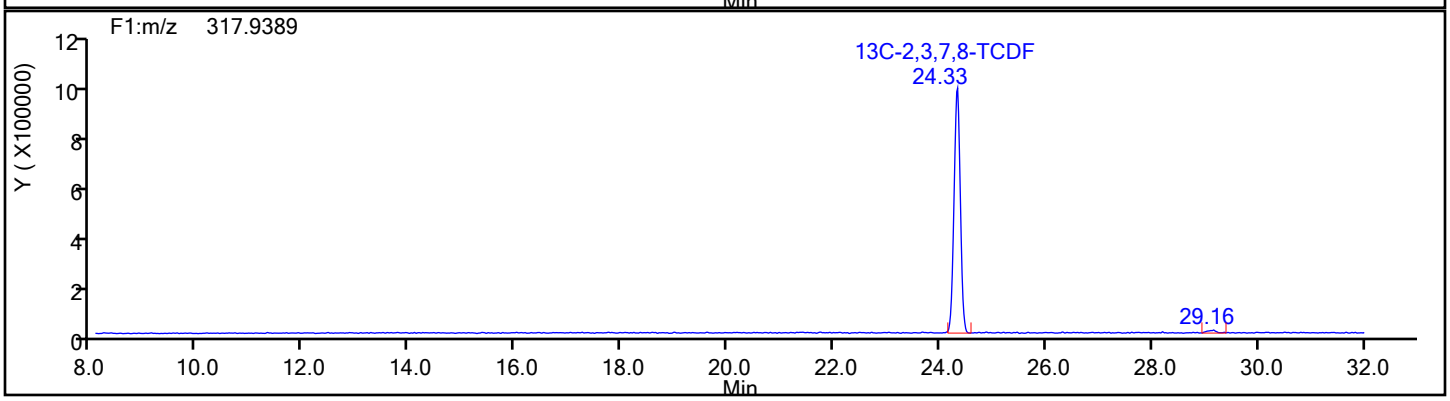
TCDF





TCDF Standards



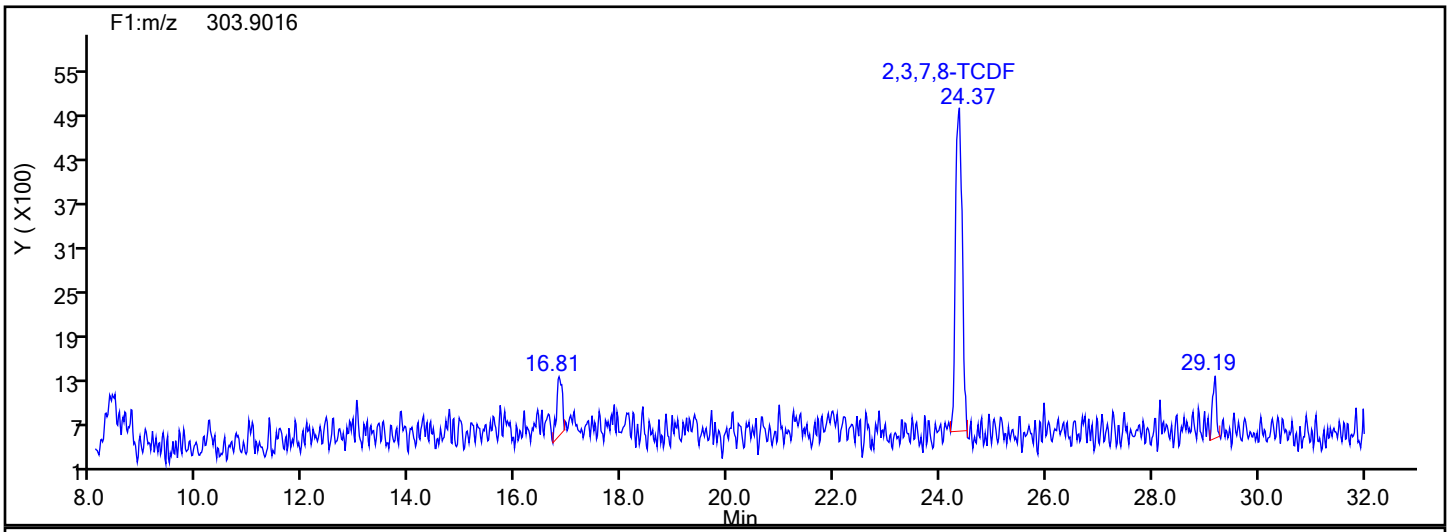


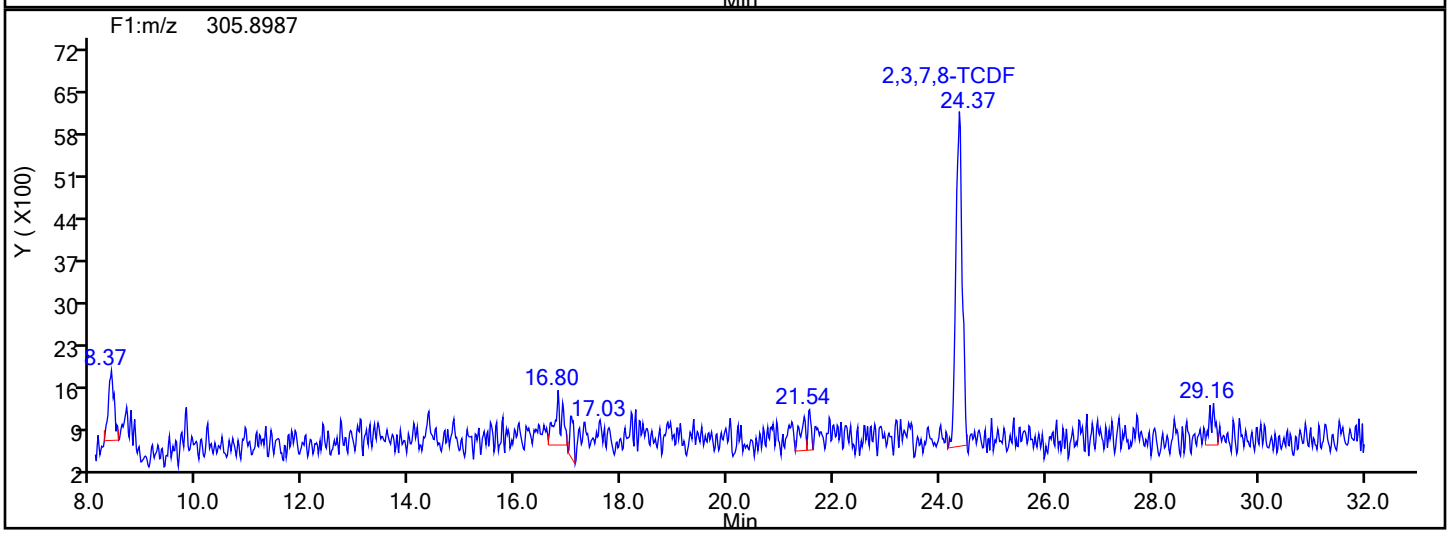
Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

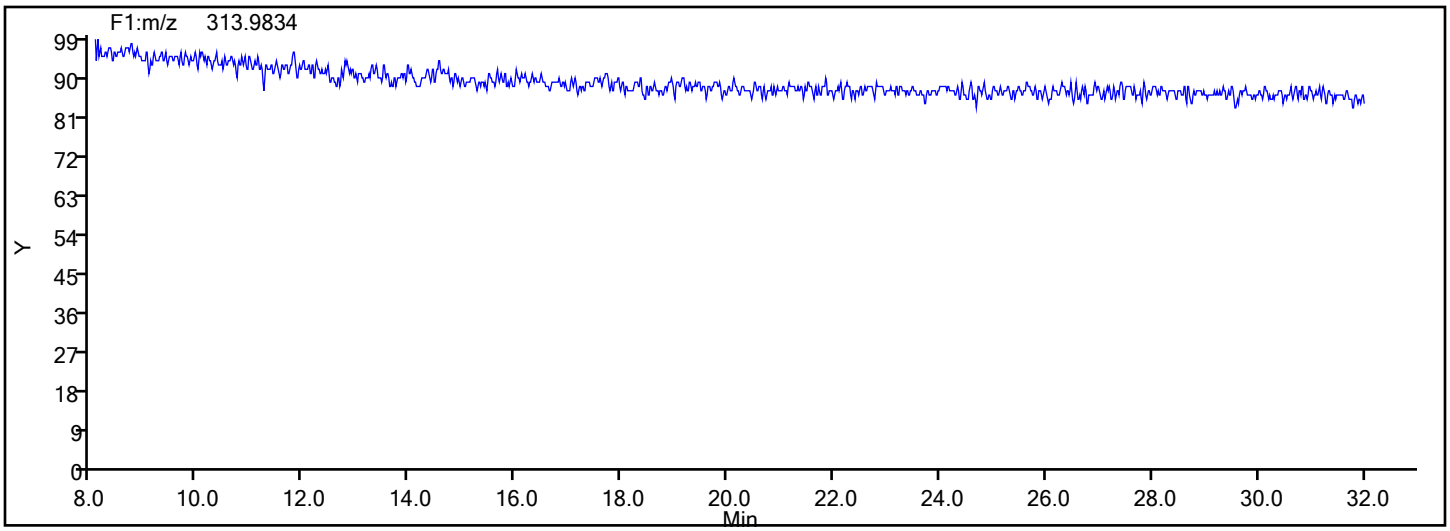
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

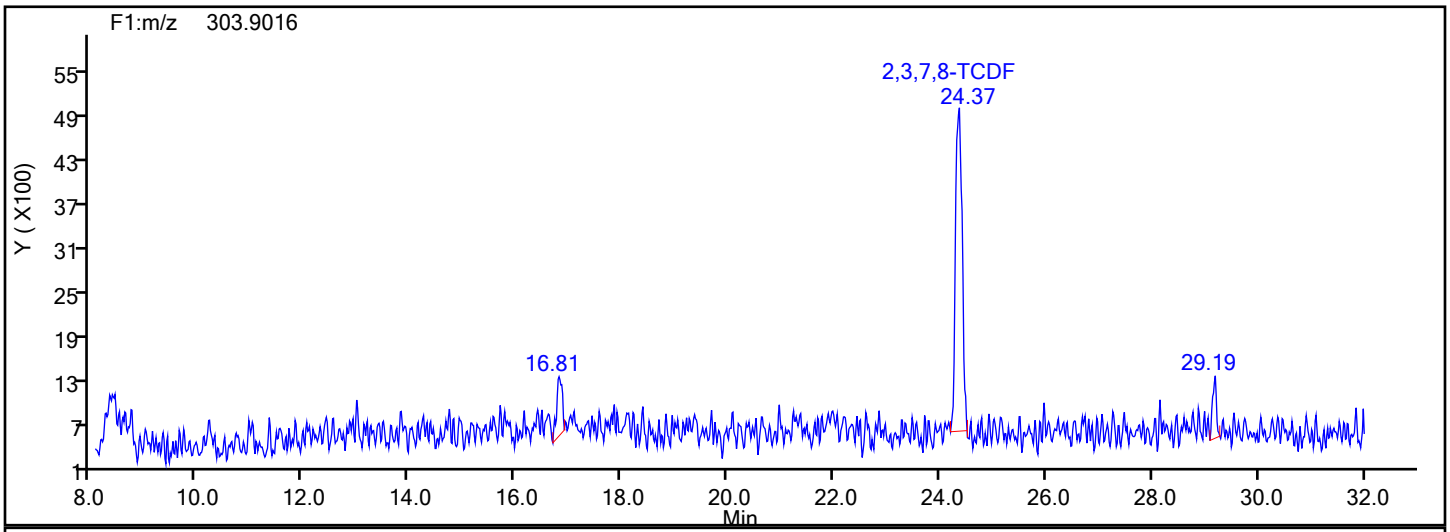


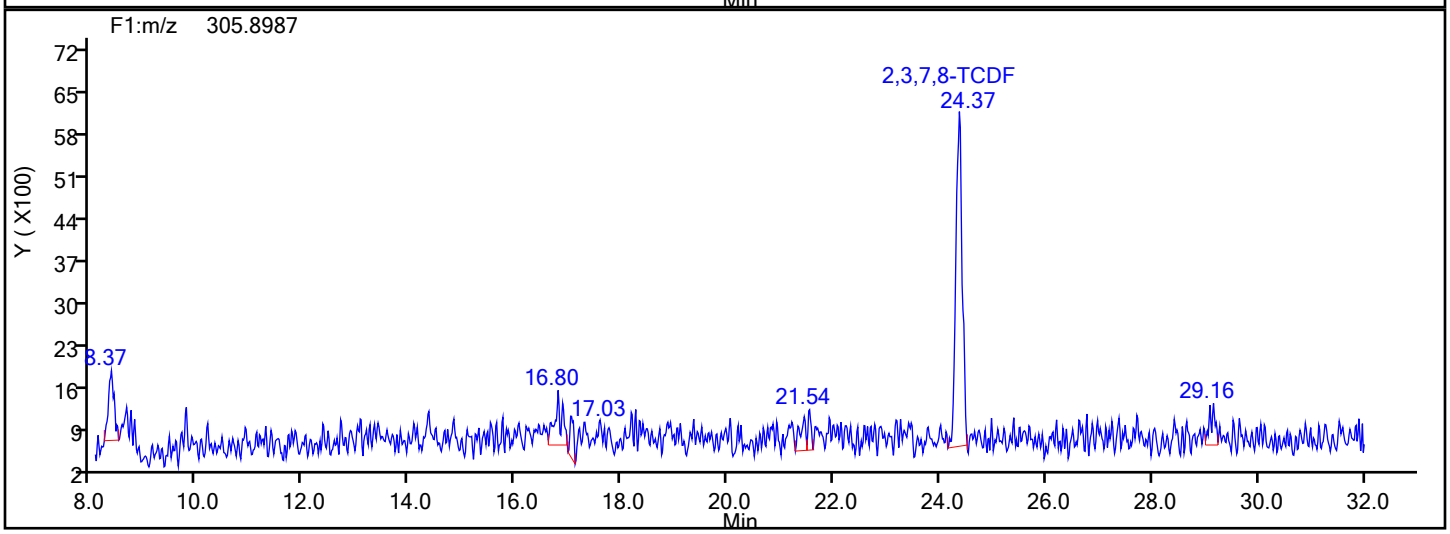
Report Date: 03-May-2019 13:46:44 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

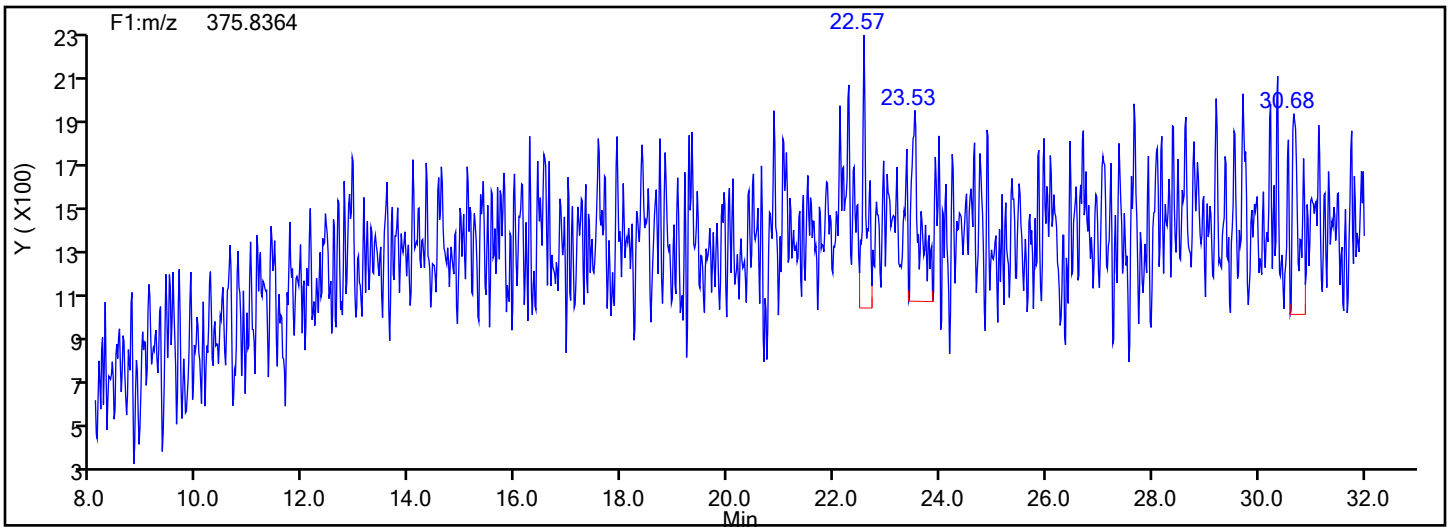
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d		
Injection Date:	03-May-2019 02:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	4
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

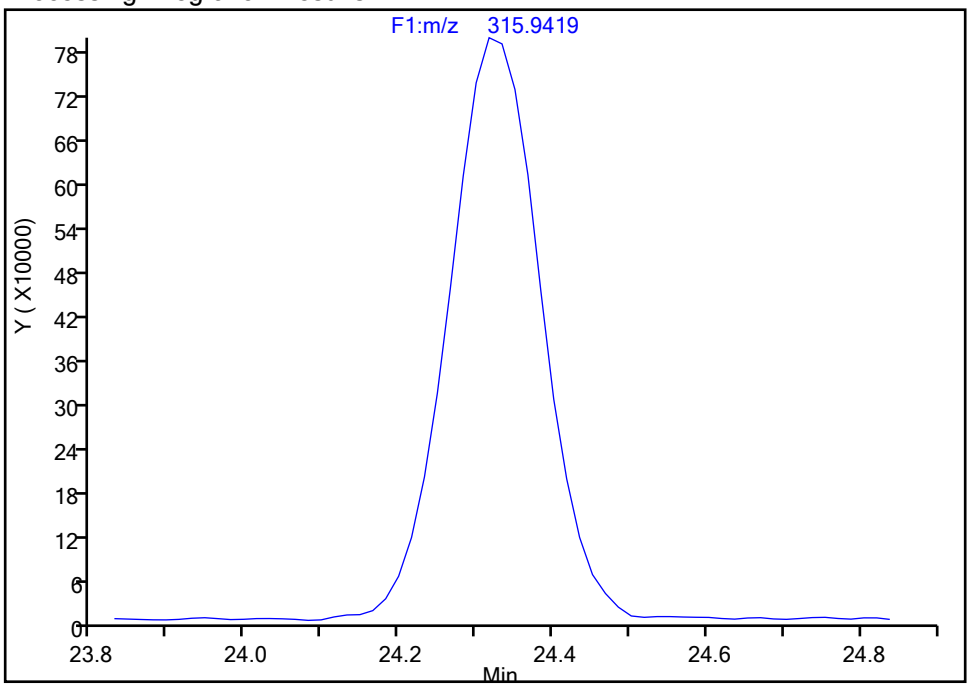
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl1_190503024318.d				
Injection Date:	03-May-2019 02:43:00	Instrument ID:	D12C		
Lims ID:	IC L1				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

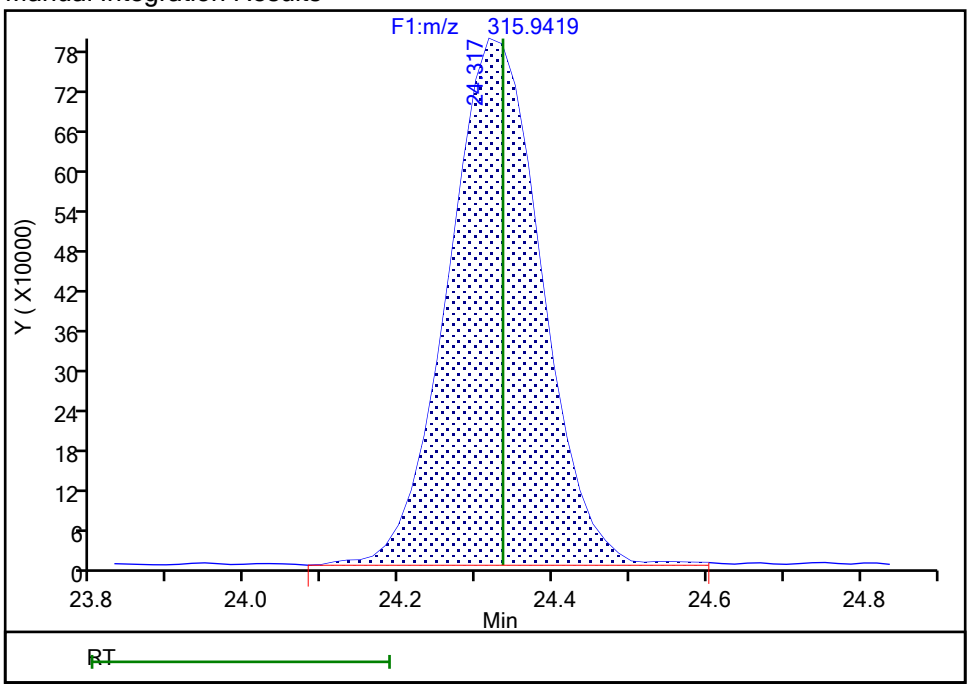
Not Detected
Expected RT: 24.33

Processing Integration Results



Manual Integration Results

RT: 24.32
Area: 6627216
Amount: 98.707366
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:07:09
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-May-2019 03:35:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-006
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:11 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:11:47

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:26	276142	0.82	1.2213	1.983	1.983	0.0940	0.0940	99.13	a
2,3,7,8-TCDF	24:21	432649	0.77	1.1100	2.102	2.102	0.0325	0.0325	105	M
D 13C-2,3,7,8-TCDD	21:24	11404000	0.81	1.0031	99.7	99.7	0.2629	0.2629	99.73	a
D 13C-2,3,7,8-TCDF	24:19	18540424	0.81	1.6193	100.4	100.4	0.3026	0.3026	100	a
$ 37Cl4-2,3,7,8-TCDD	21:26	274951		1.1834	2.038	2.038	0.0279	0.0279	102	M
* 13C-1,2,3,4-TCDD	21:57	11399282	0.81	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

61L21613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 03-May-2019 13:47:11 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-May-2019 03:35:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-006
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:11 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:11:47

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	21:26	21:25	1	1.002	124157	17160	308	770	56		a
321.8936	21:26	21:25	1	1.002	151985	21444	431	1077	50	0.82(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	24:21	24:23	-1	1.001	188635	22585	153	382	148		M
305.8987	24:21	24:23	-1	1.001	244014	28755	166	415	173	0.77(0.65-0.89)	M
13C-2,3,7,8-TCDD											a
331.9368	21:24	21:22	2	0.975	5112033	725076	771	1927	940		a
333.9338	21:23	21:22	1	0.974	6291967	884266	859	2147	1029	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:19	24:21	-1	1.108	8320826	988770	1641	4102	603		a
317.9389	24:19	24:21	-1	1.108	10219598	1221409	1387	3467	881	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											M
327.8847	21:26	21:24	2	0.976	274951	39315	204	510	193		M
13C-1,2,3,4-TCDD											
331.9368	21:57	21:56	1		5086944	692197	771	1927	898		
333.9338	21:57	21:56	1		6312338	852942	859	2147	993	0.81(0.65-0.89)	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

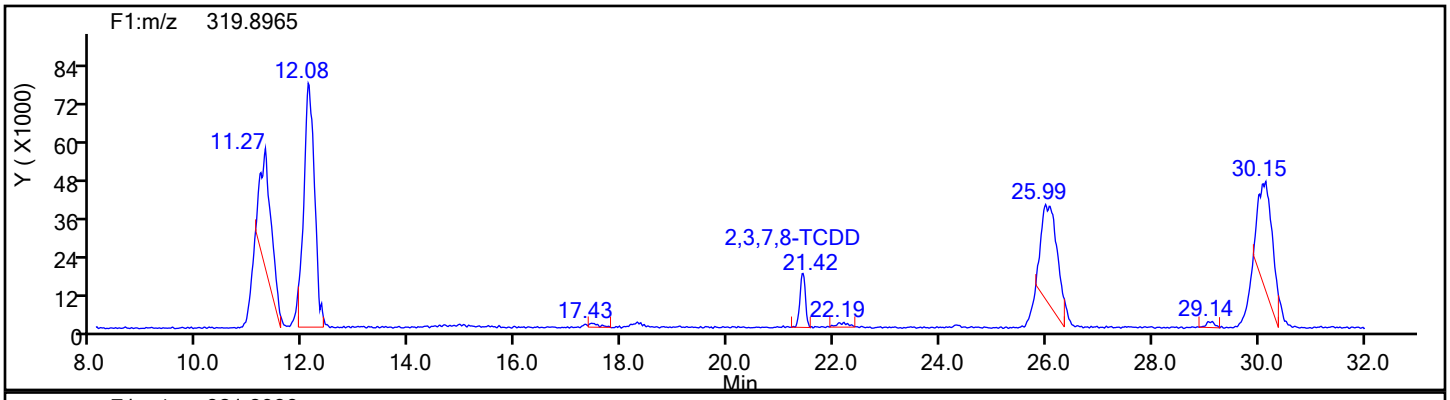
61L21613OP_00001 Amount Added: 20.00 Units: uL

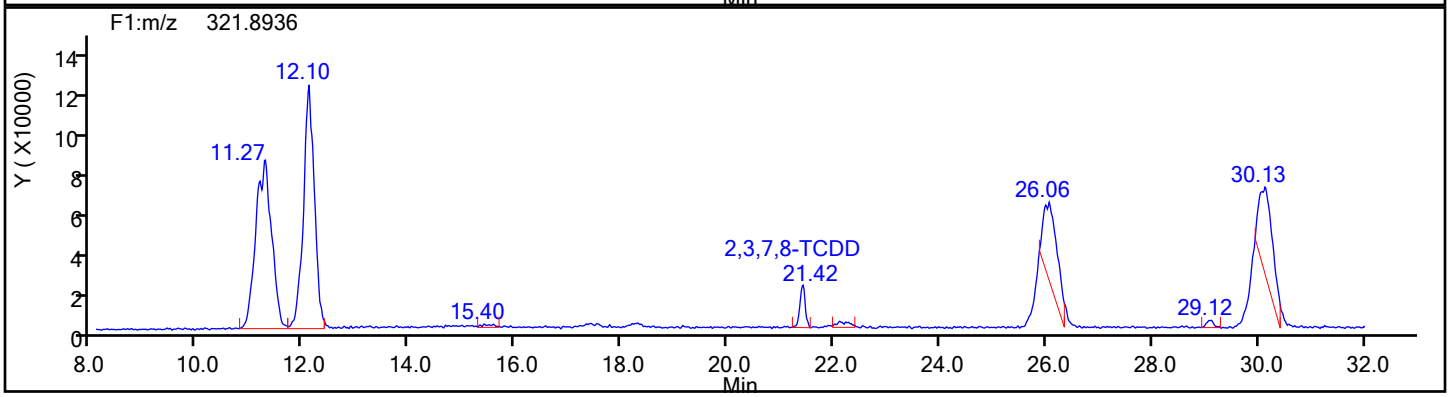
Report Date: 03-May-2019 13:47:11 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

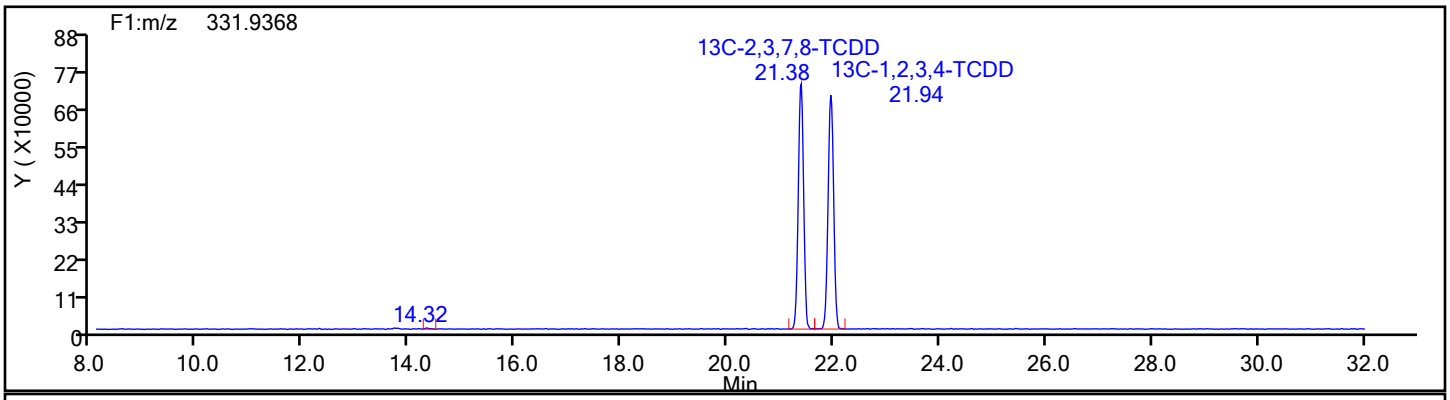
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

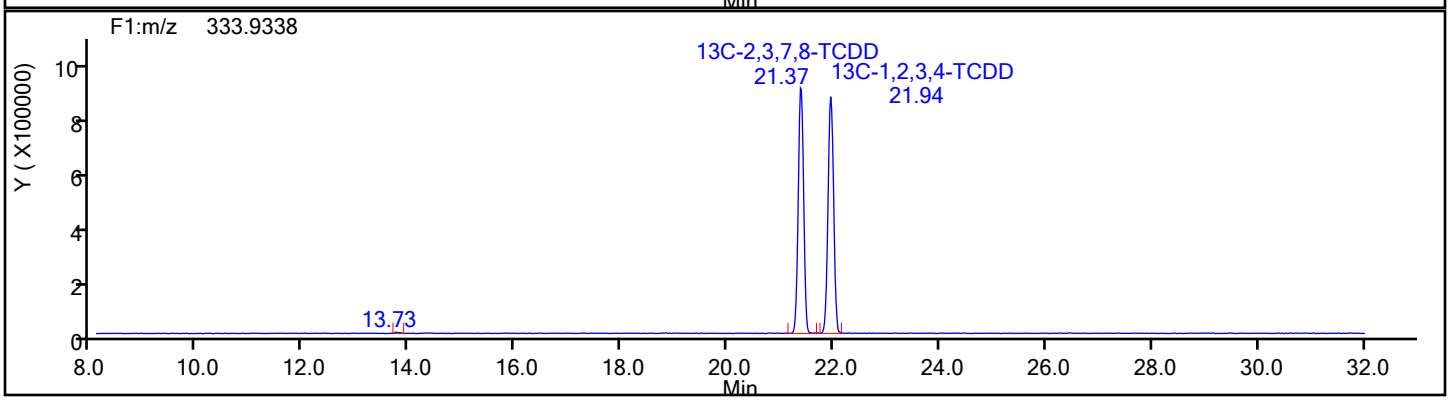
TCDD





TCDD Standards



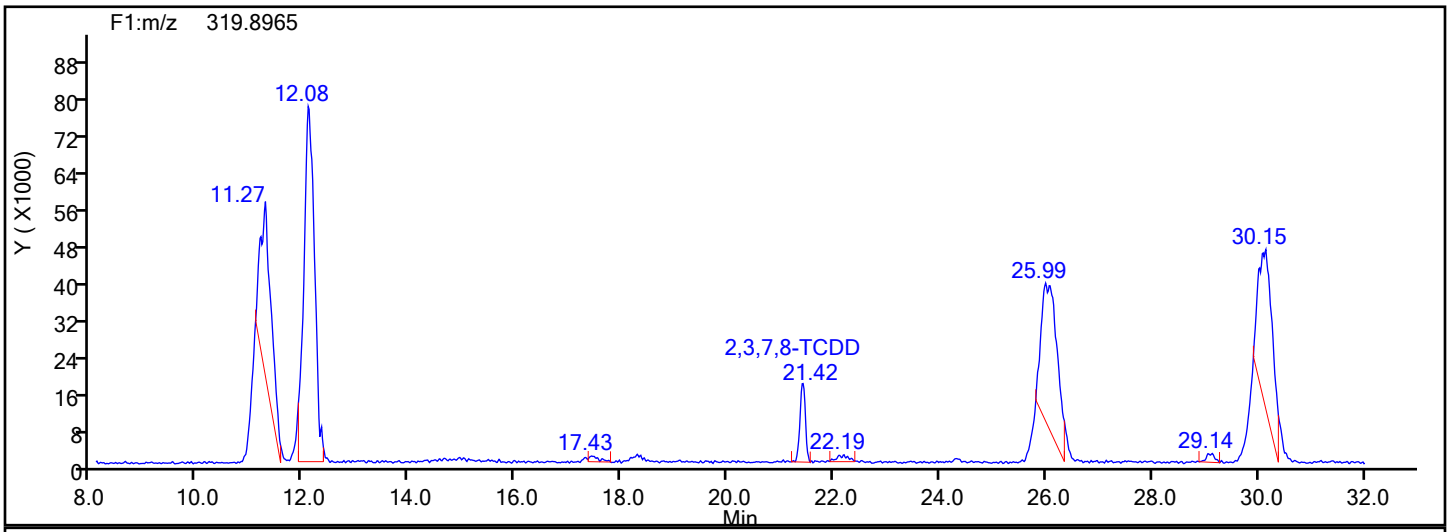


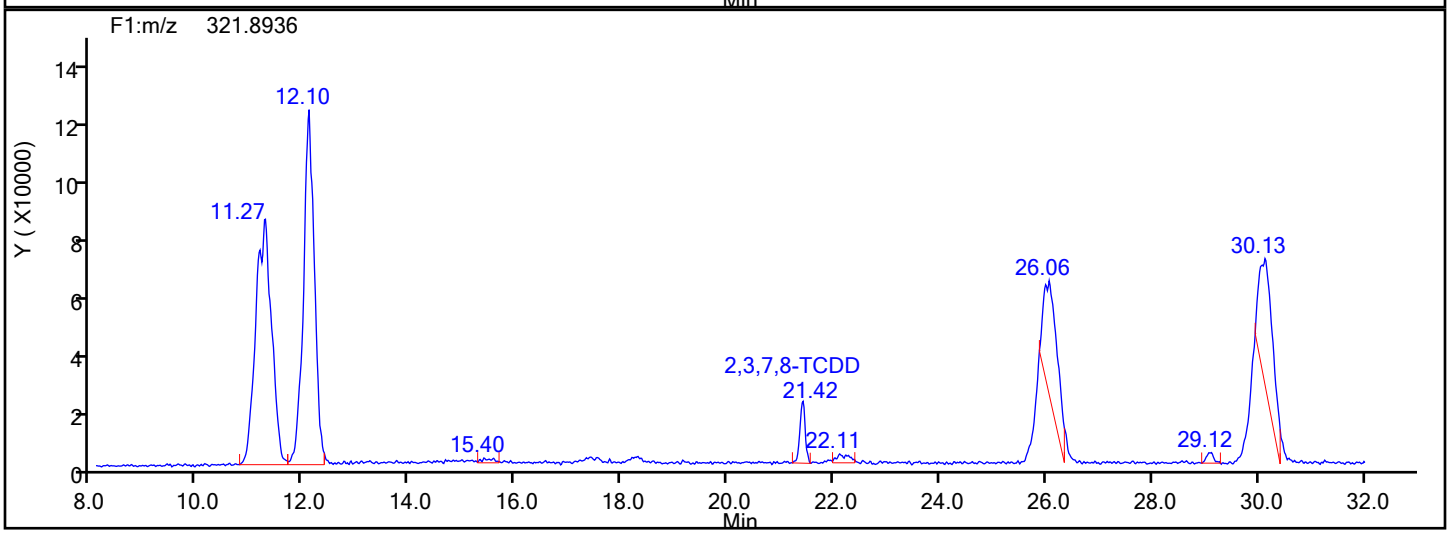
Report Date: 03-May-2019 13:47:11 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

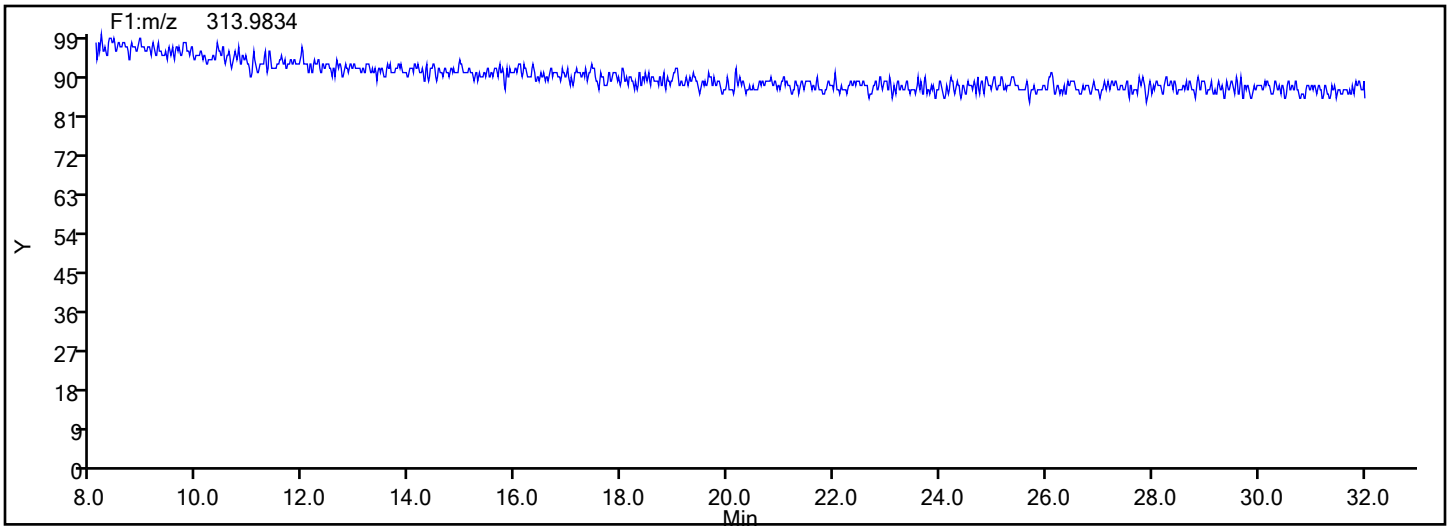
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

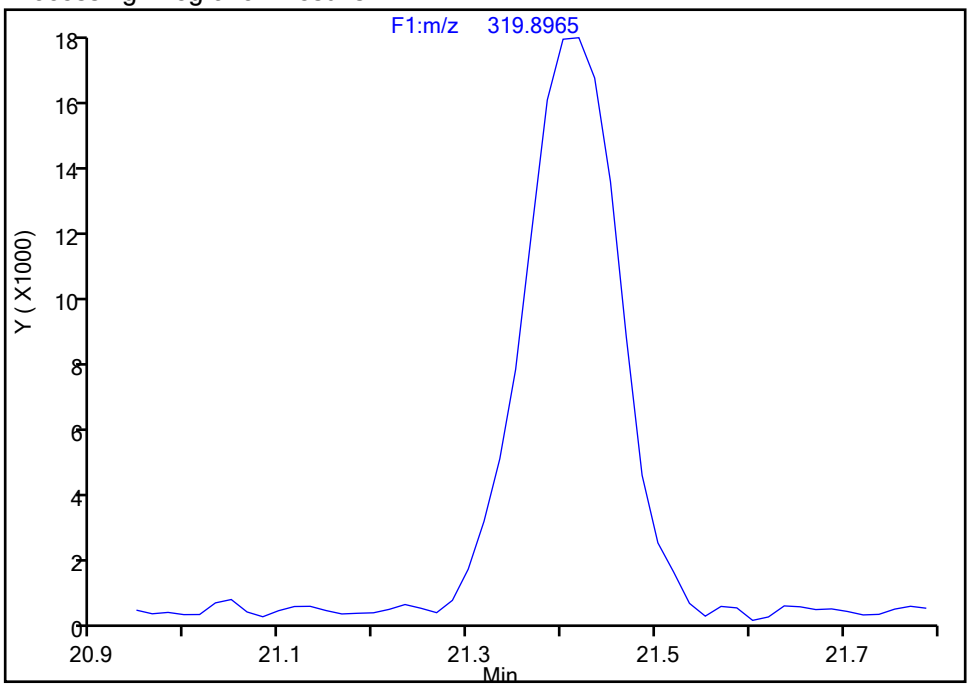
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d				
Injection Date:	03-May-2019 03:35:00	Instrument ID:	D12C		
Lims ID:	IC L2				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

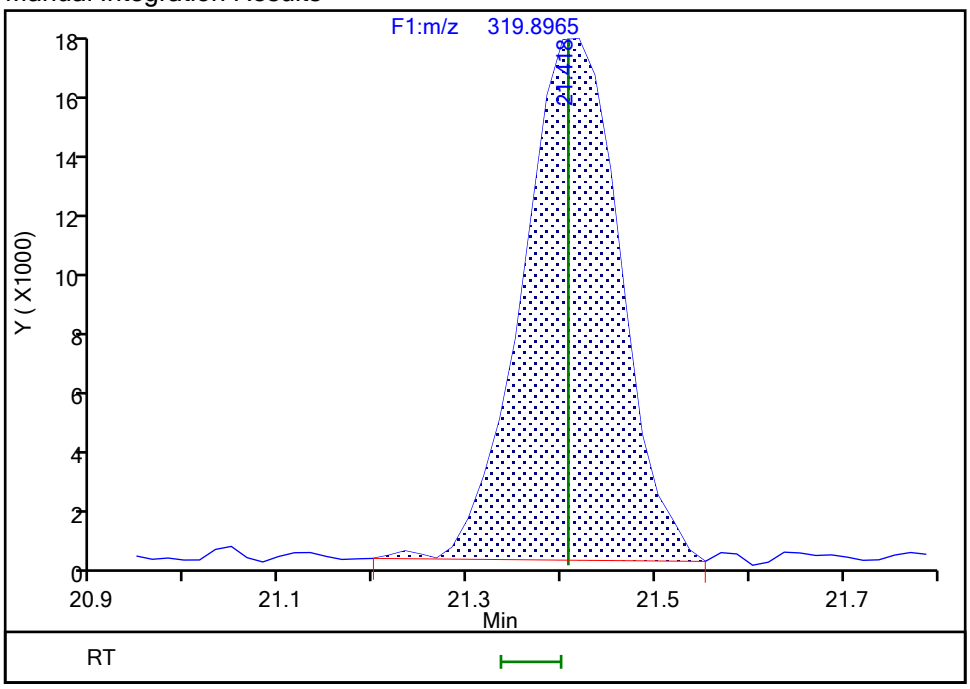
Not Detected
Expected RT: 21.41

Processing Integration Results



Manual Integration Results

RT: 21.42
Area: 124157
Amount: 1.982639
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:11:27
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

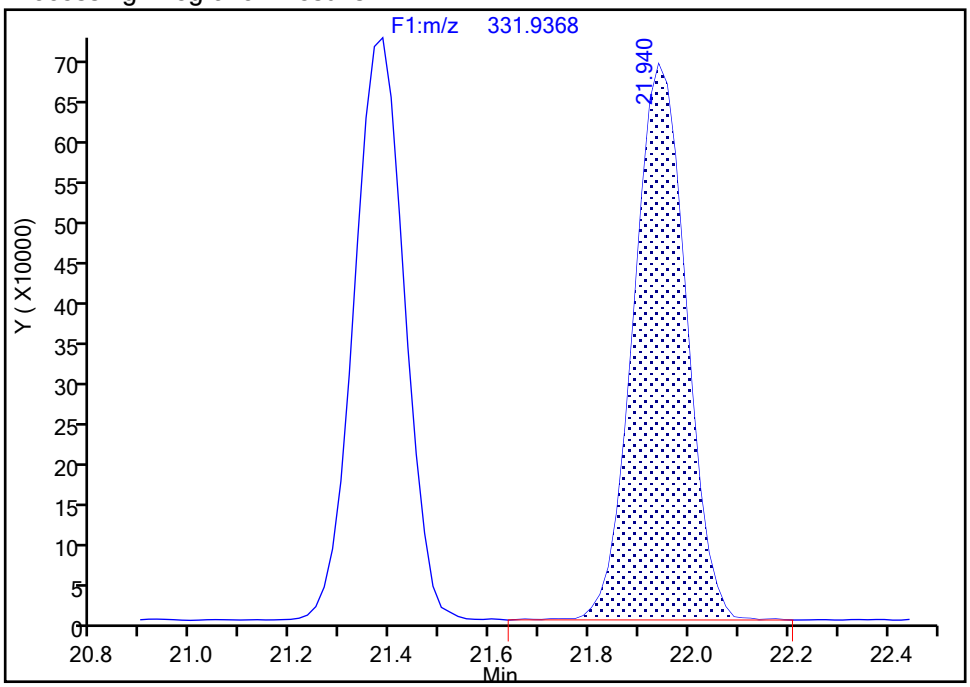
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d
Injection Date: 03-May-2019 03:35:00 Instrument ID: D12C
Lims ID: IC L2
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

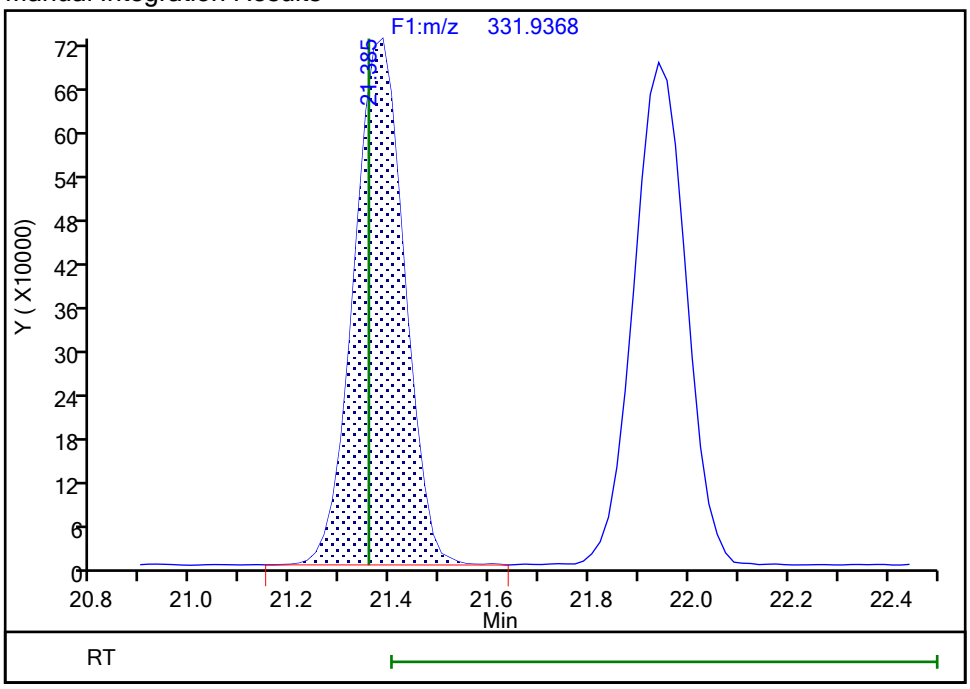
Processing Integration Results

RT: 21.94
Area: 5081404
Amount: 99.953017
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 5112033
Amount: 99.731428
Amount Units: pg/ul



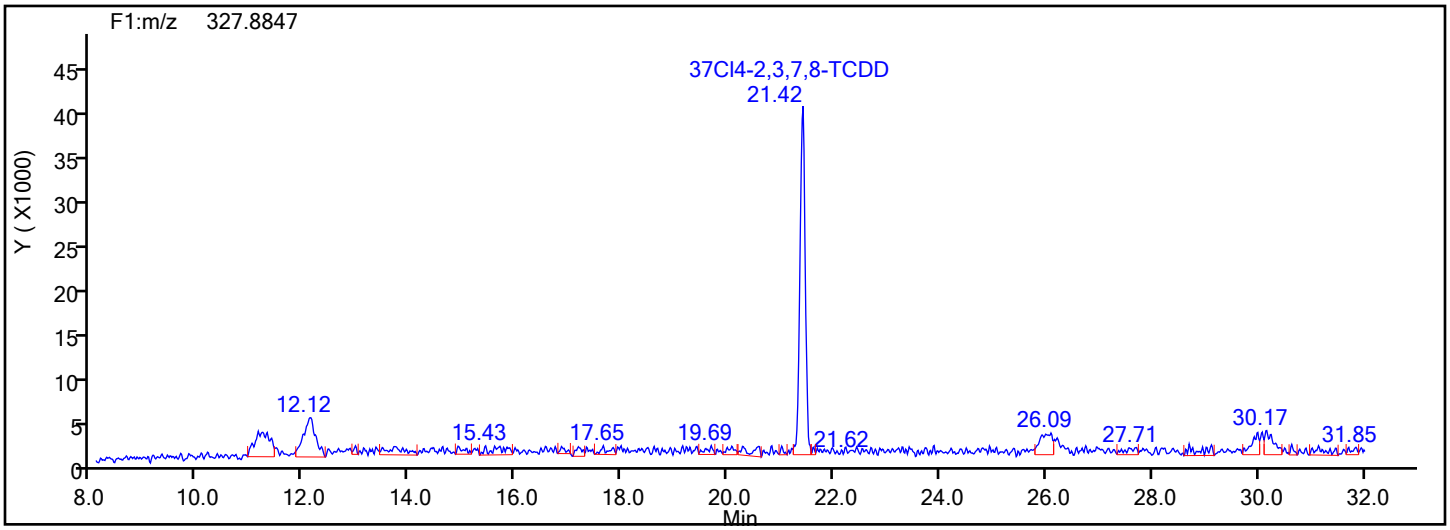
Reviewer: reynoldk, 03-May-2019 09:09:46
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:47:12 Chrom Revision: 2.3 18-Apr-2019 13:31:50

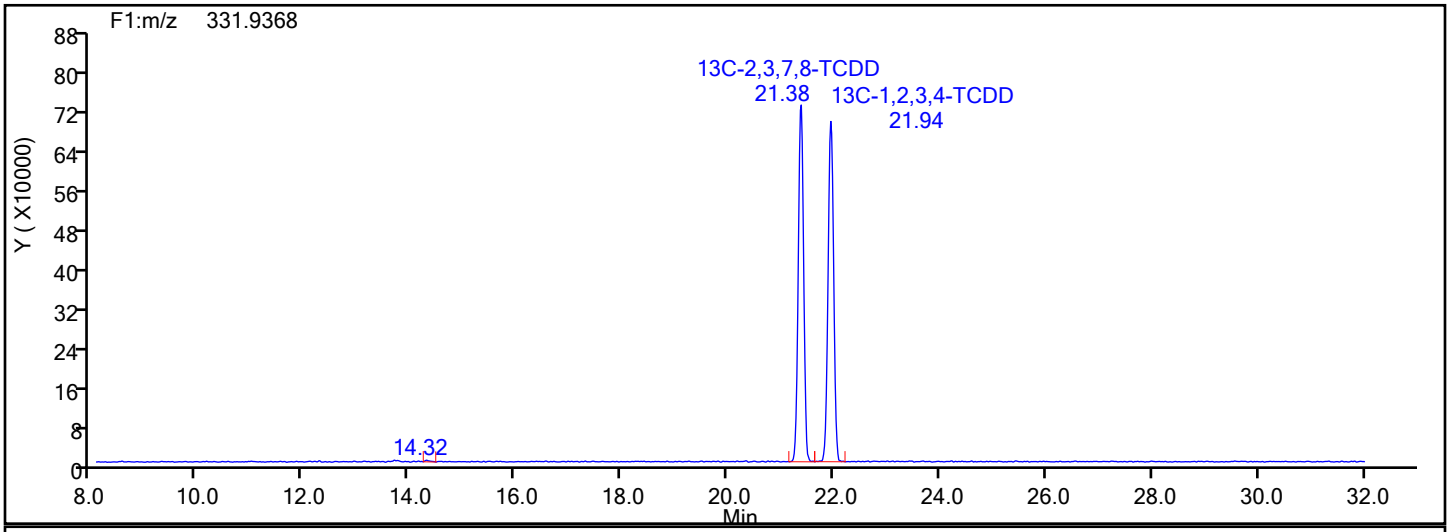
Eurofins TestAmerica, Knoxville

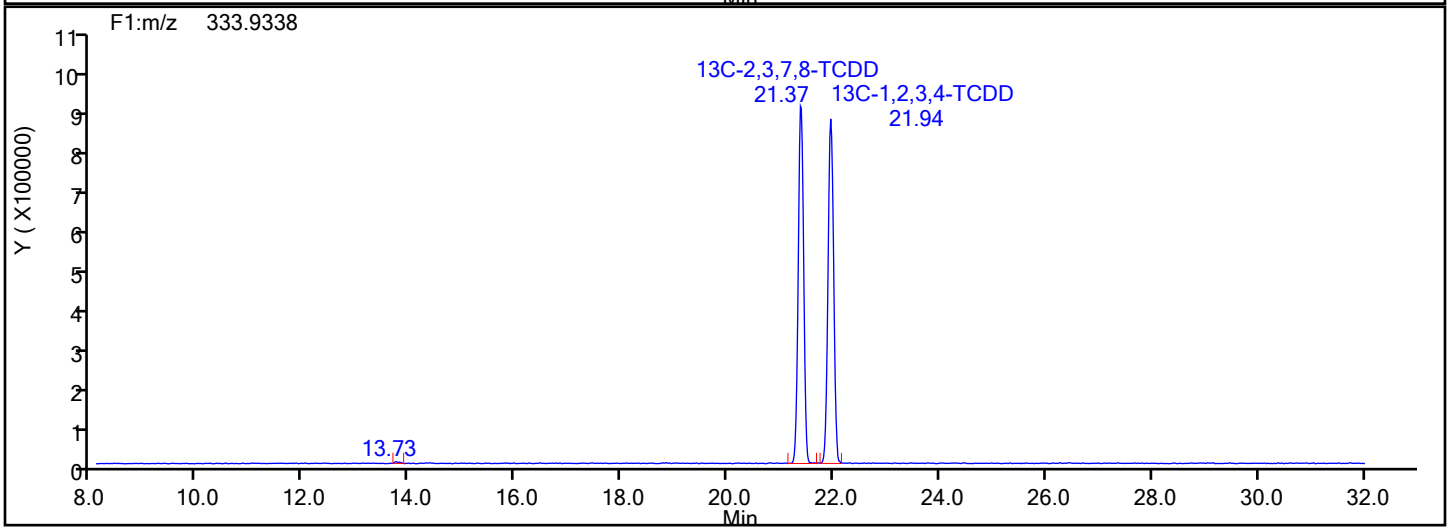
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



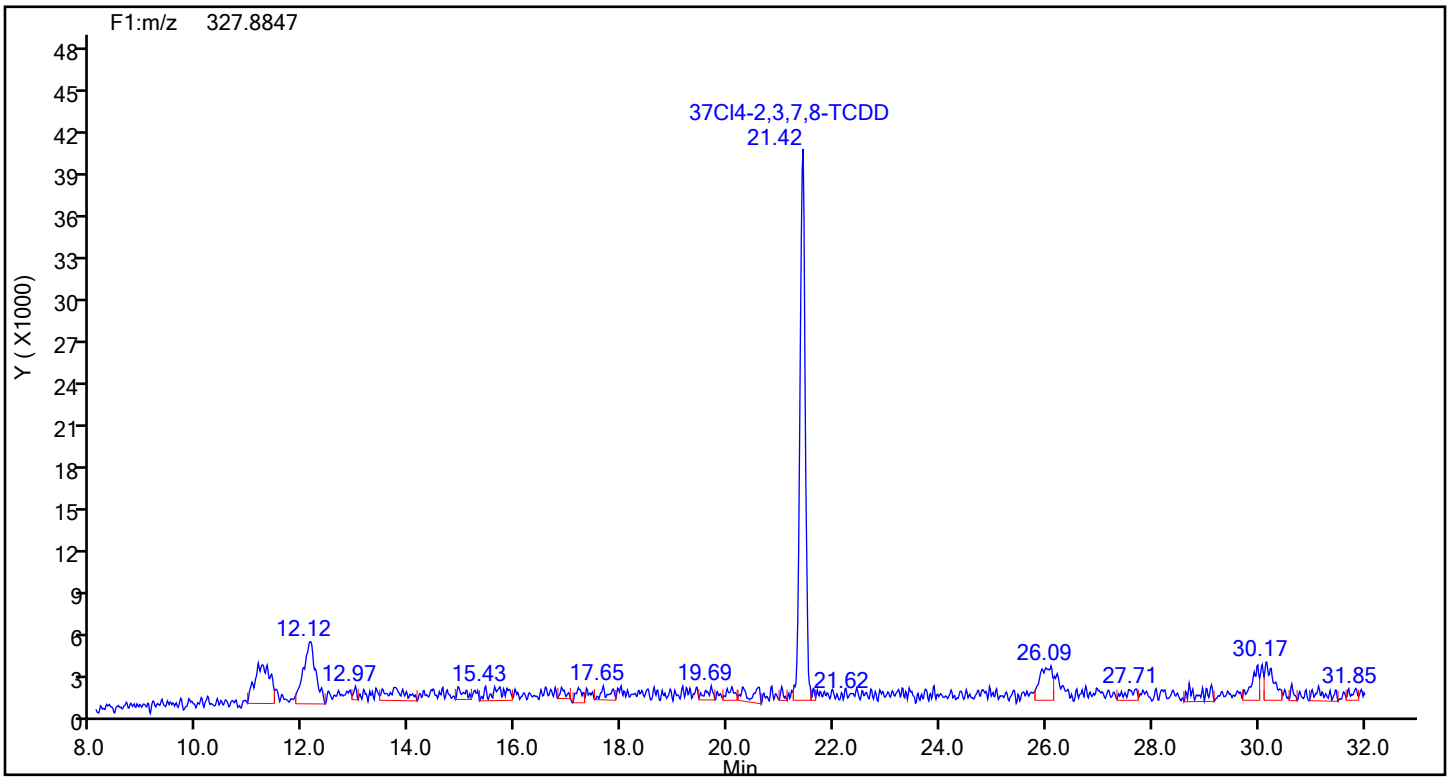


Report Date: 03-May-2019 13:47:12 Chrom Revision: 2.3 18-Apr-2019 13:31:50

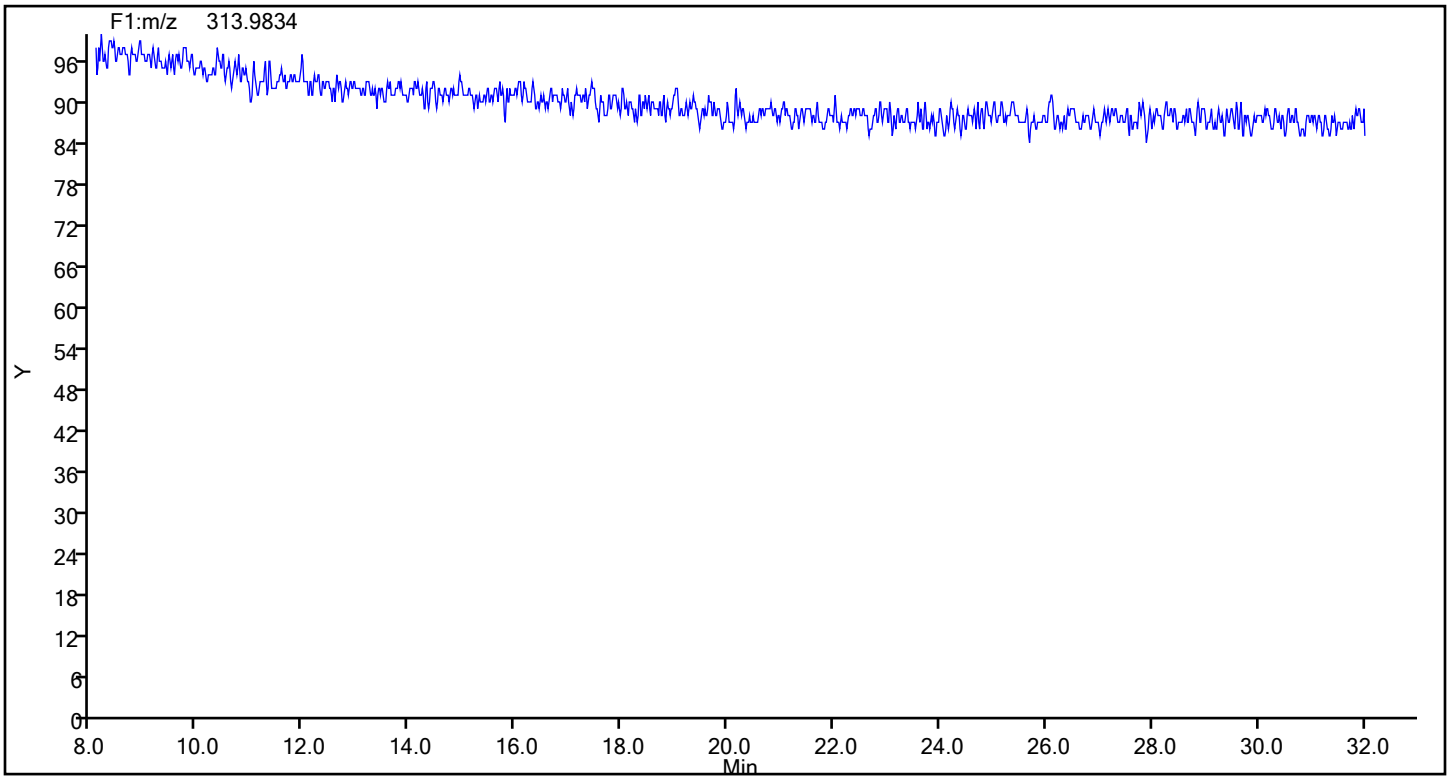
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

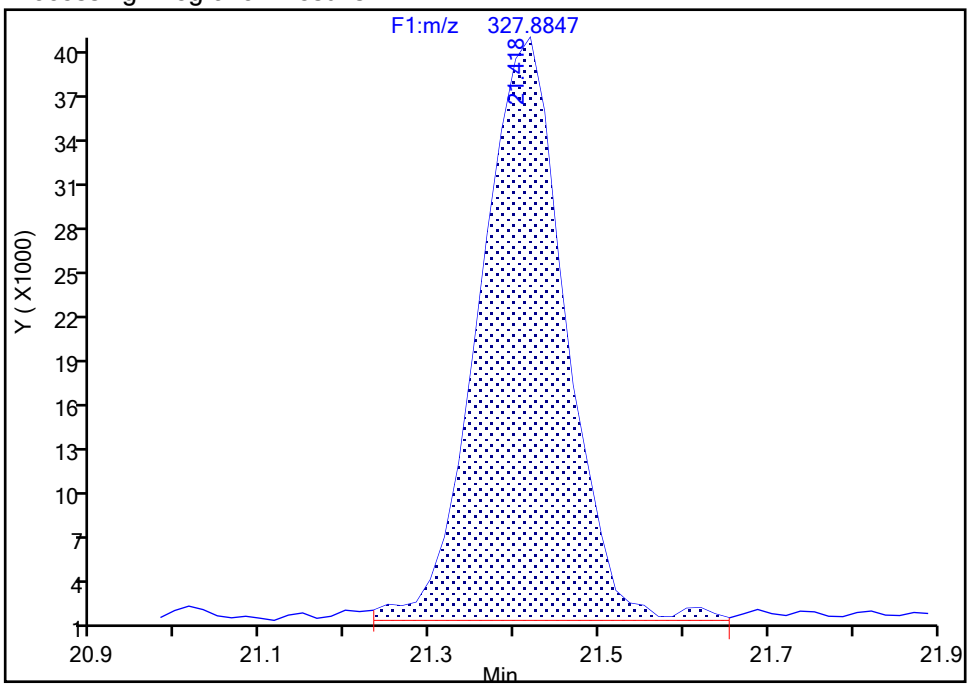
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d				
Injection Date:	03-May-2019 03:35:00	Instrument ID:	D12C		
Lims ID:	IC L2				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

37Cl4-2,3,7,8-TCDD, CAS: 85508-50-5

Signal: 1

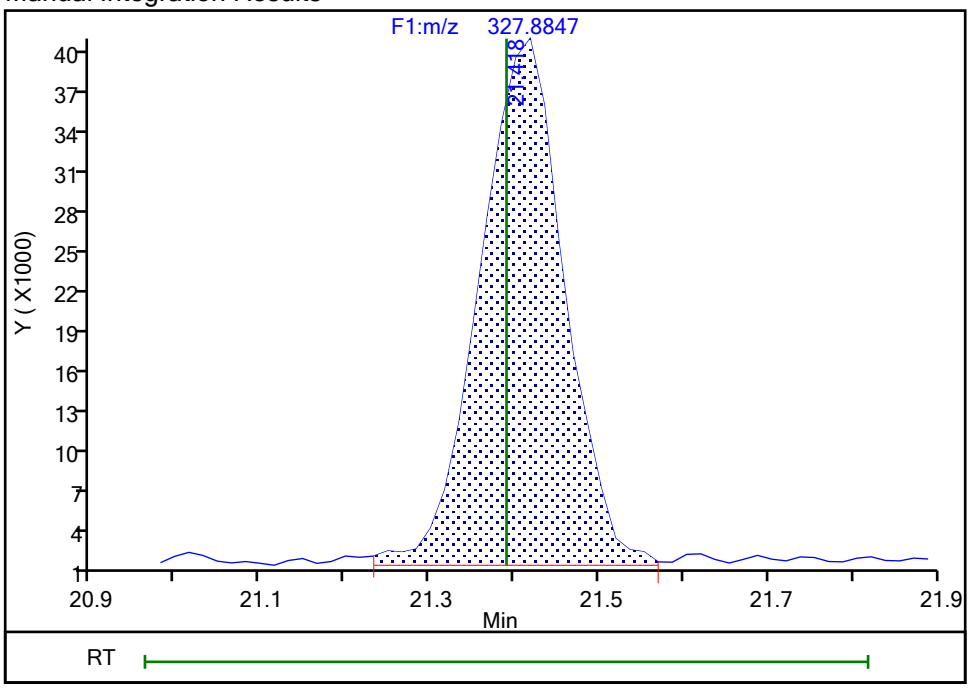
Processing Integration Results

RT: 21.42
Area: 277508
Amount: 2.053279
Amount Units: pg/ul



Manual Integration Results

RT: 21.42
Area: 274951
Amount: 2.038216
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 10:26:48
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

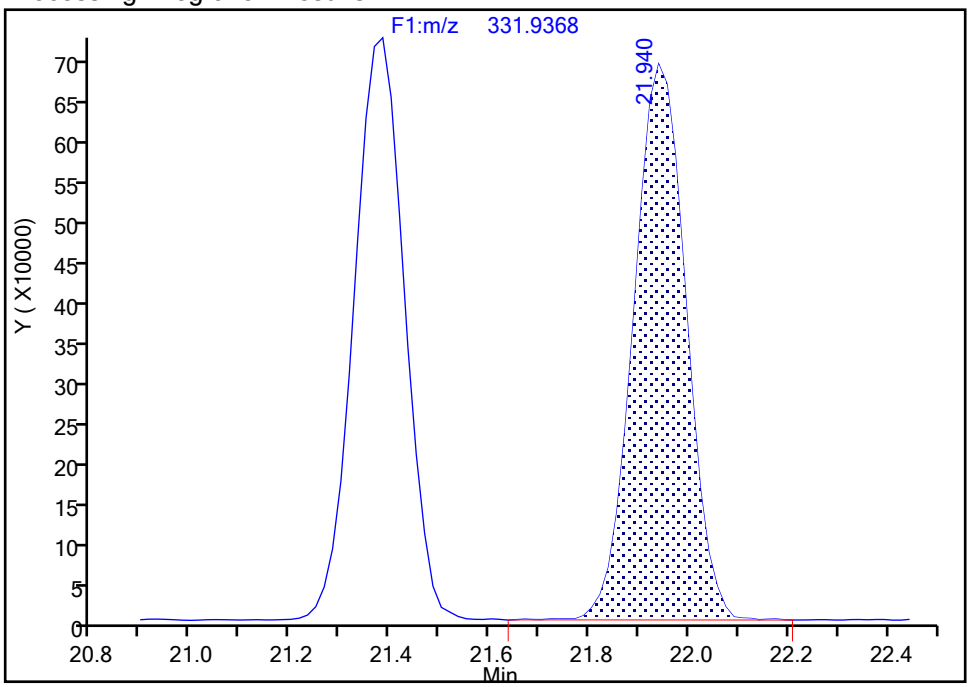
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d				
Injection Date:	03-May-2019 03:35:00	Instrument ID:	D12C		
Lims ID:	IC L2				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

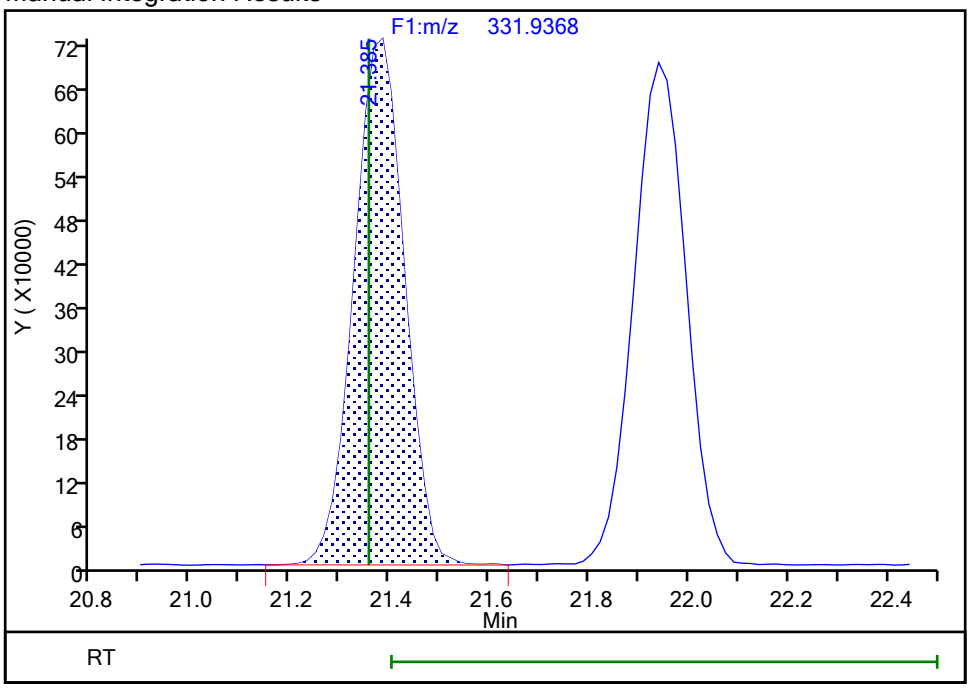
Processing Integration Results

RT: 21.94
Area: 5081404
Amount: 99.953017
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 5112033
Amount: 99.731428
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:09:46

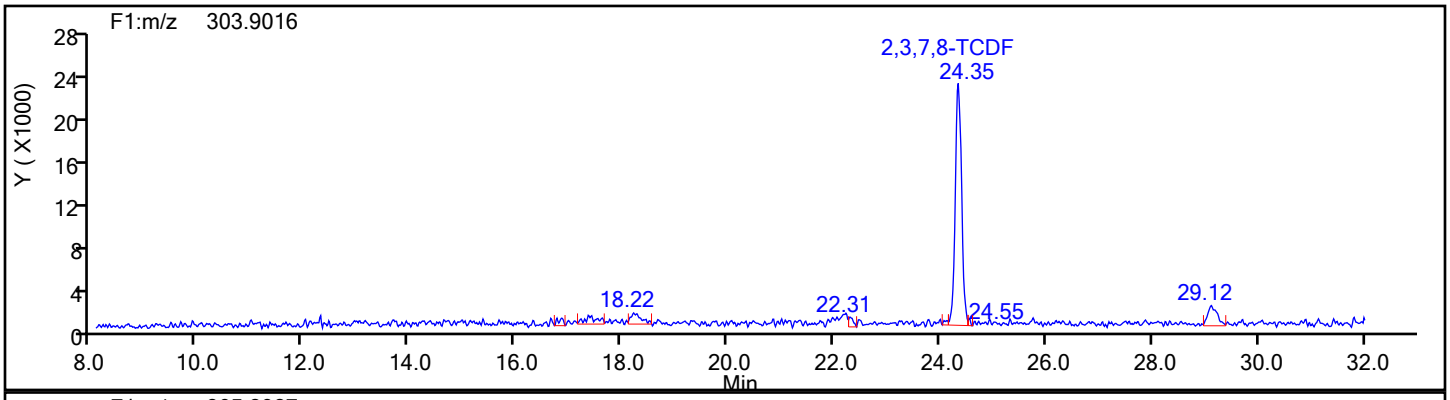
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

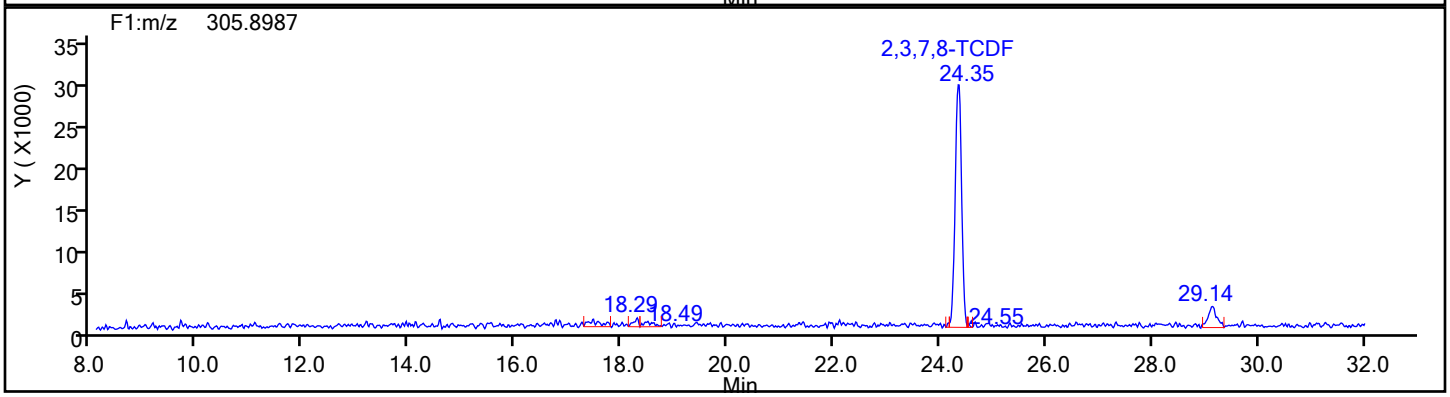
Report Date: 03-May-2019 13:47:12 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

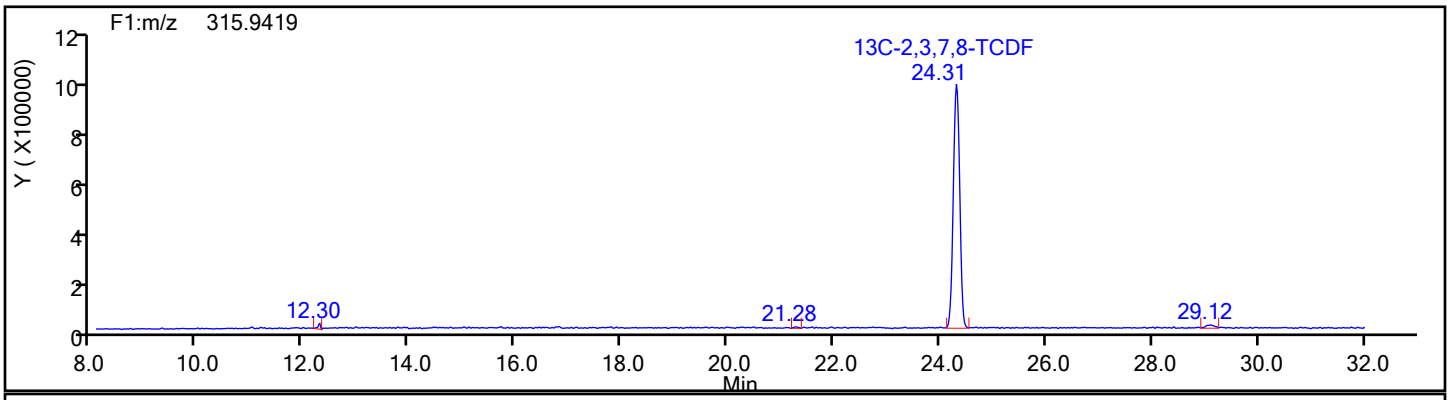
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

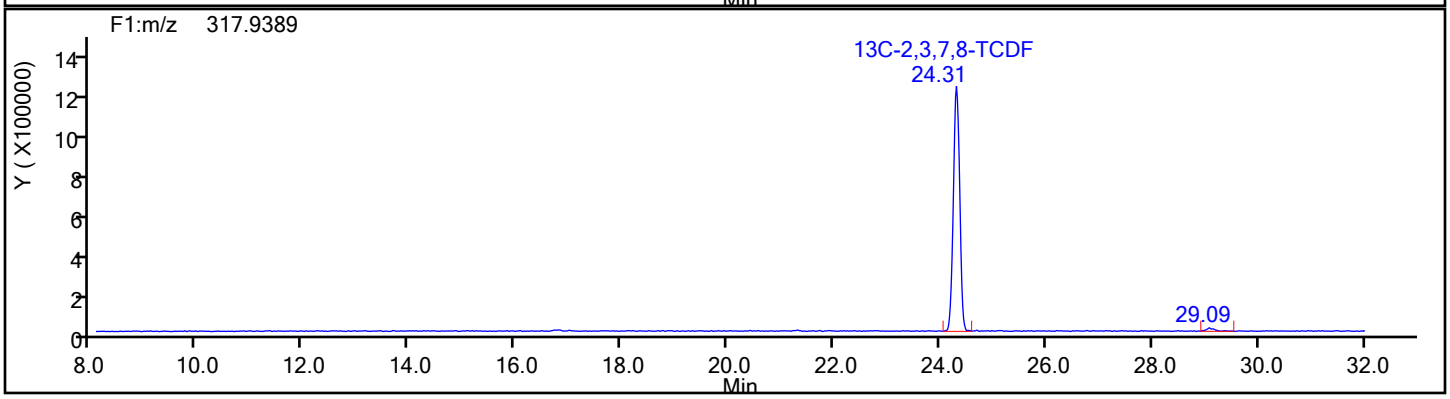
TCDF





TCDF Standards



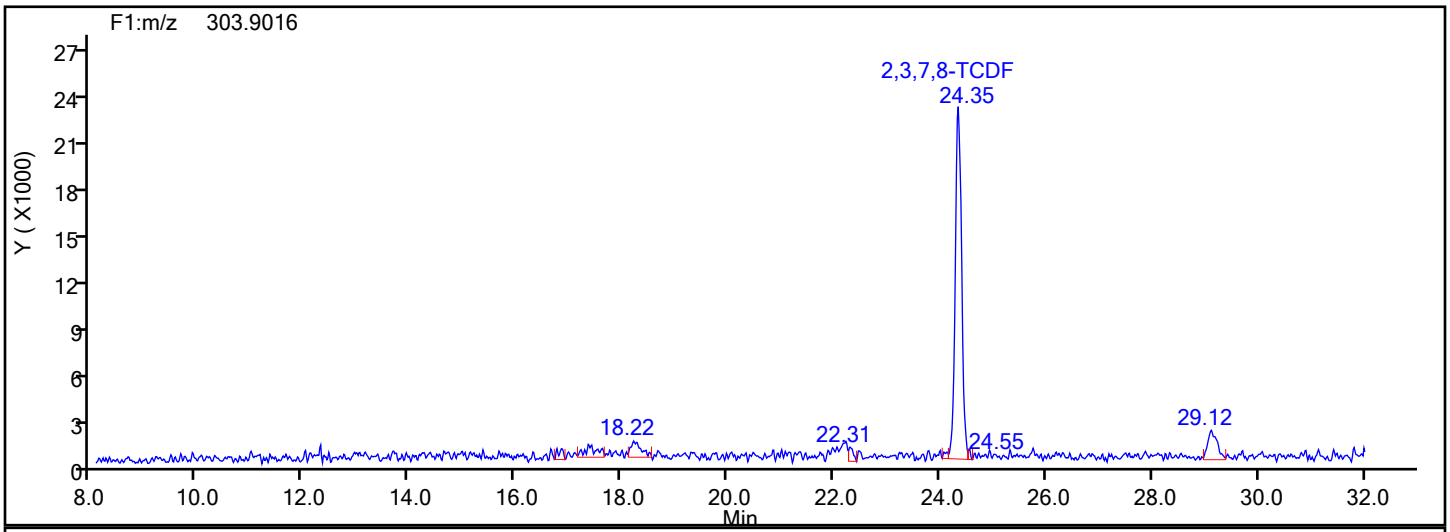


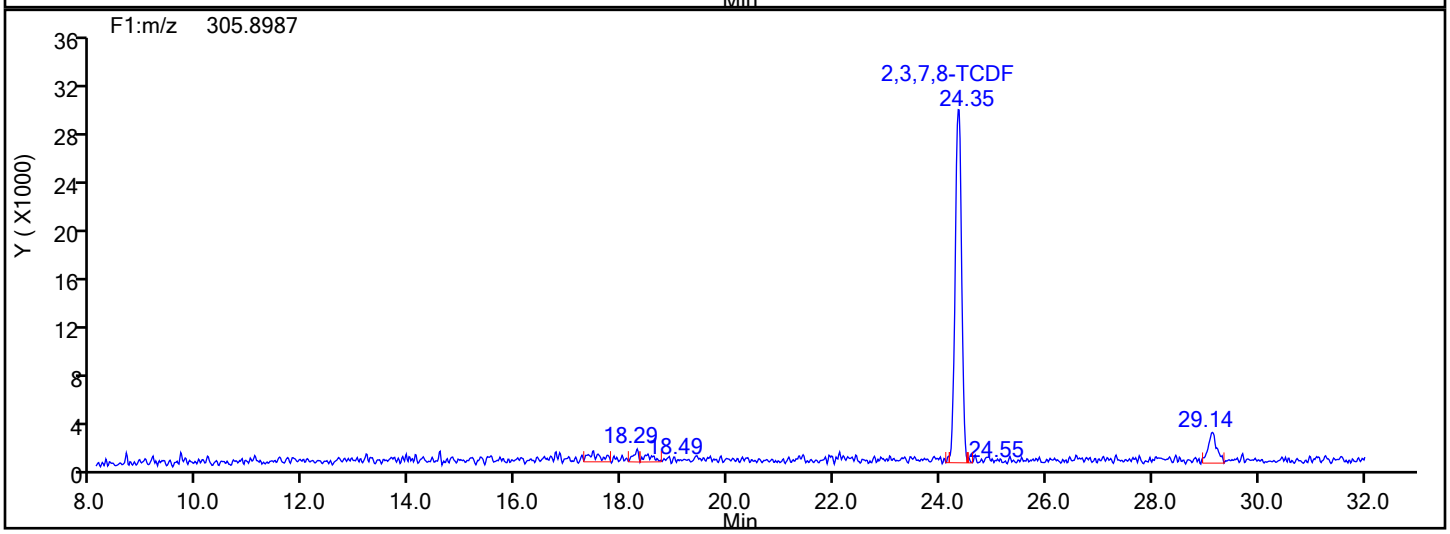
Report Date: 03-May-2019 13:47:12 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

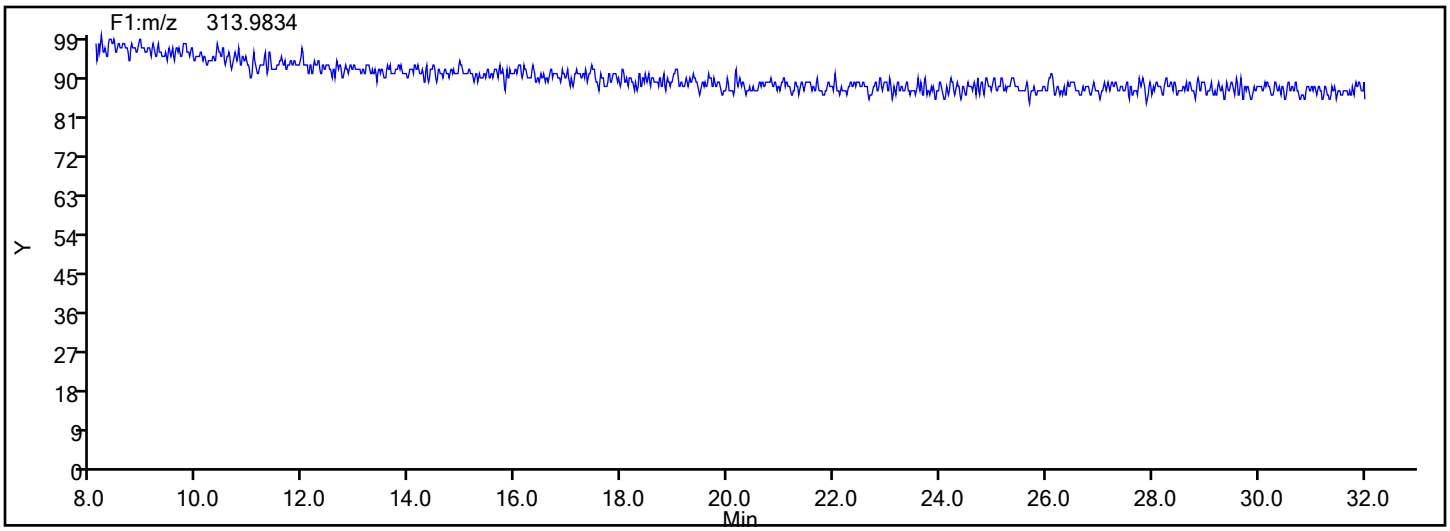
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

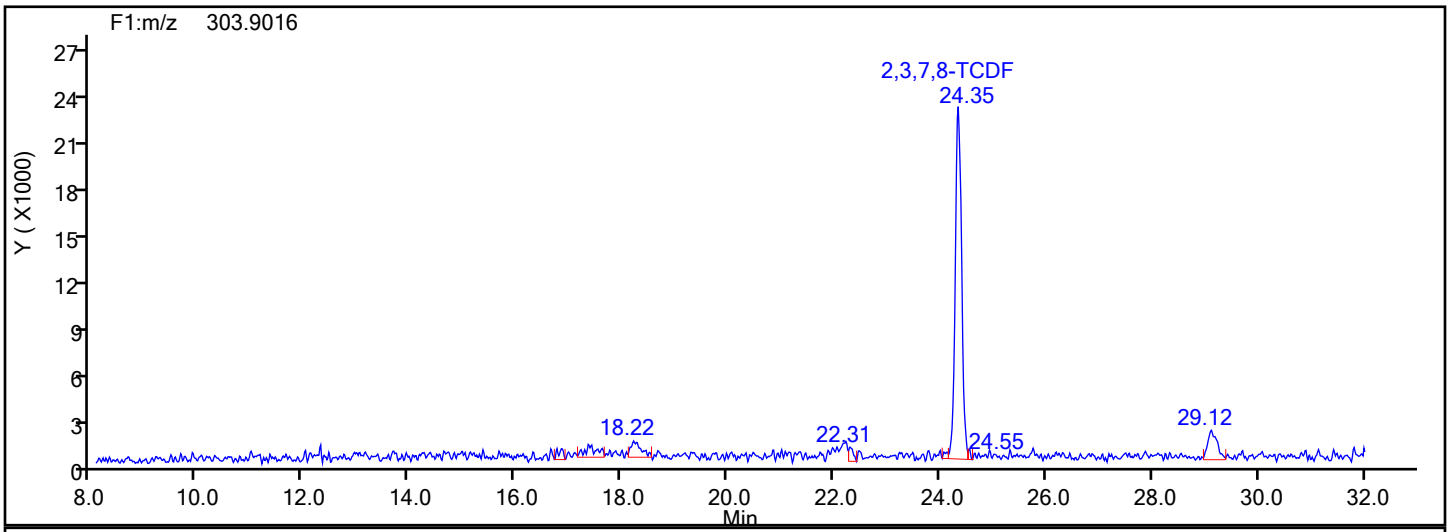


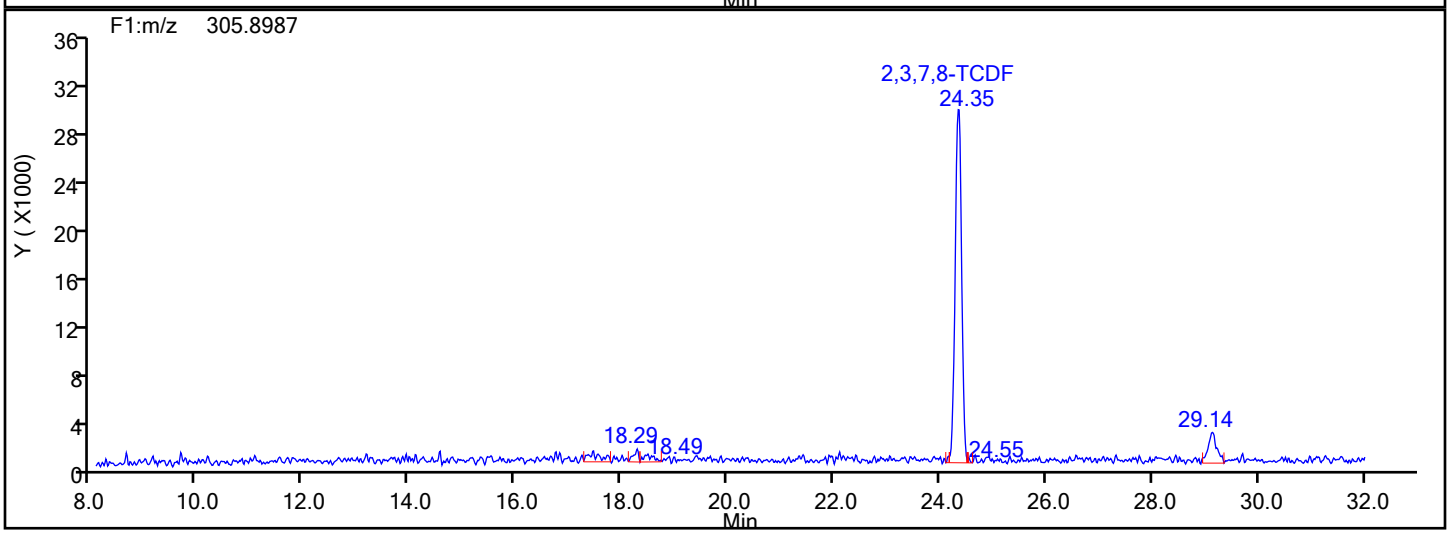
Report Date: 03-May-2019 13:47:12 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

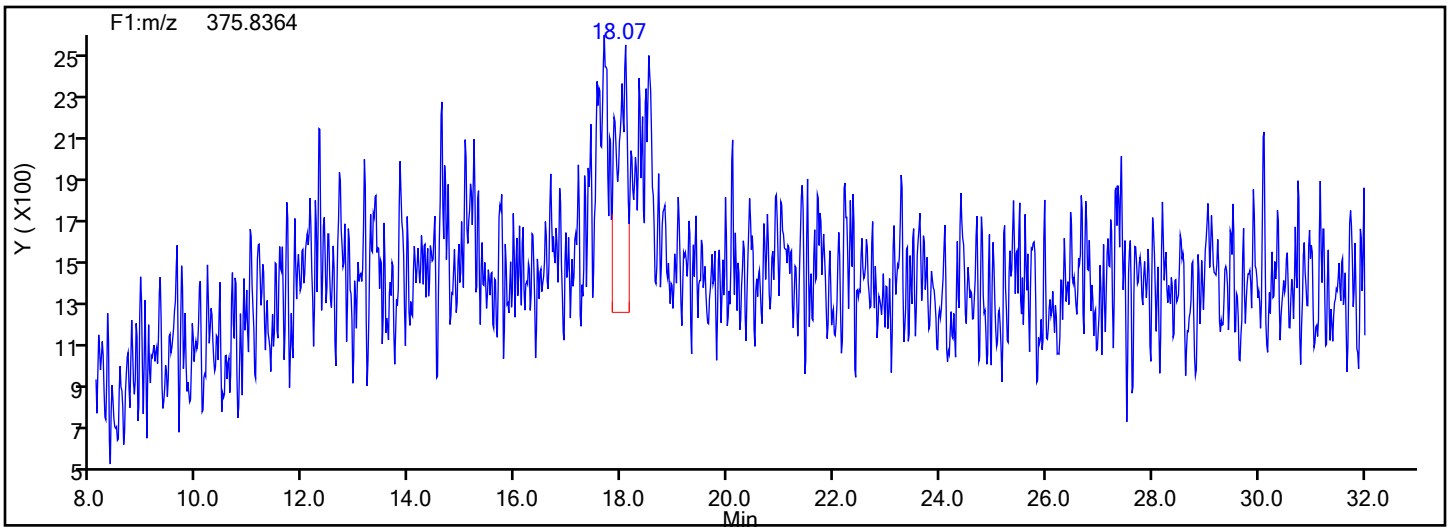
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d		
Injection Date:	03-May-2019 03:35:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	6
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

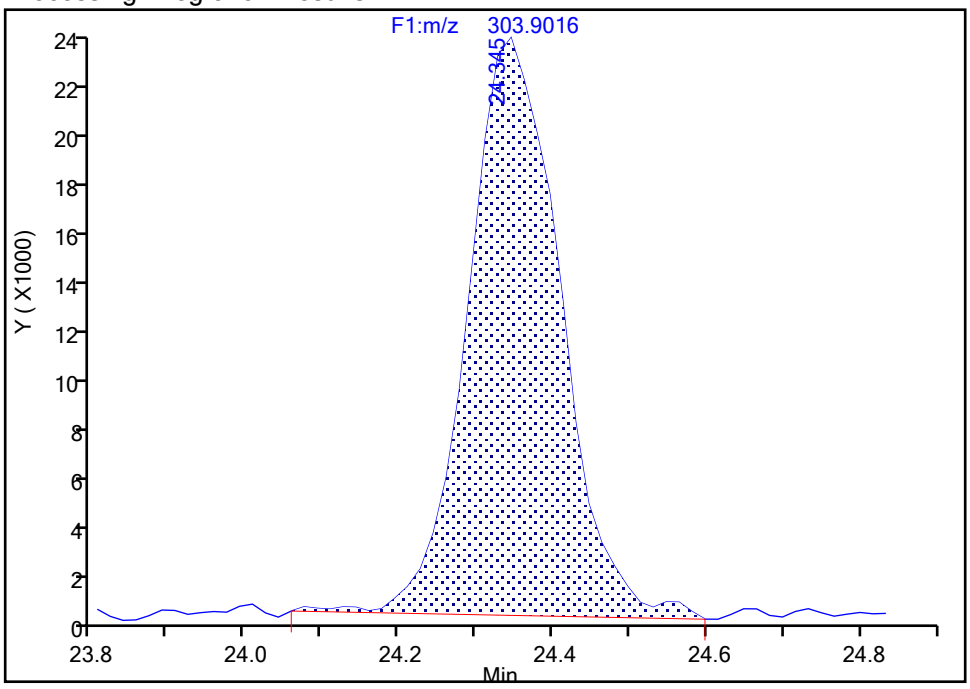
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d
Injection Date: 03-May-2019 03:35:00 Instrument ID: D12C
Lims ID: IC L2
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

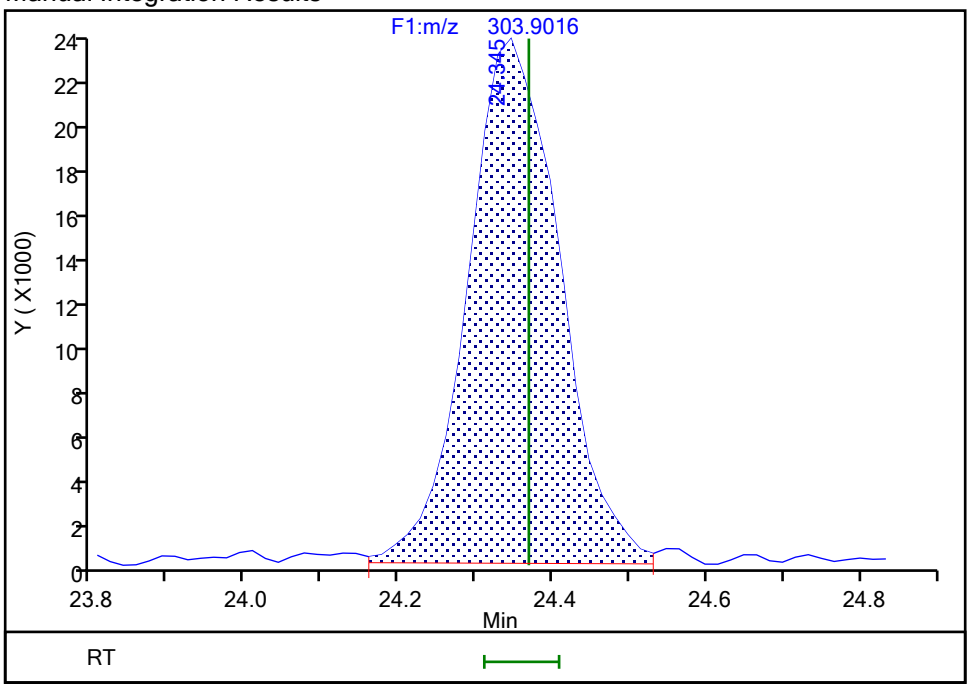
Processing Integration Results

RT: 24.35
Area: 188828
Amount: 2.112705
Amount Units: pg/ul



Manual Integration Results

RT: 24.35
Area: 188635
Amount: 2.102232
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:30:51
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

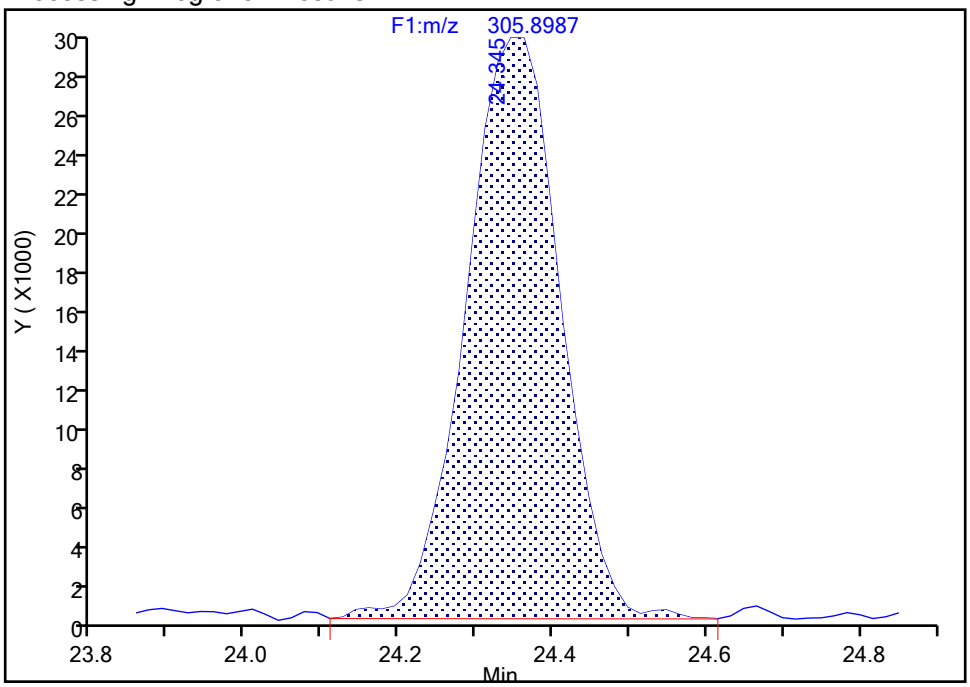
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d				
Injection Date:	03-May-2019 03:35:00	Instrument ID:	D12C		
Lims ID:	IC L2				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

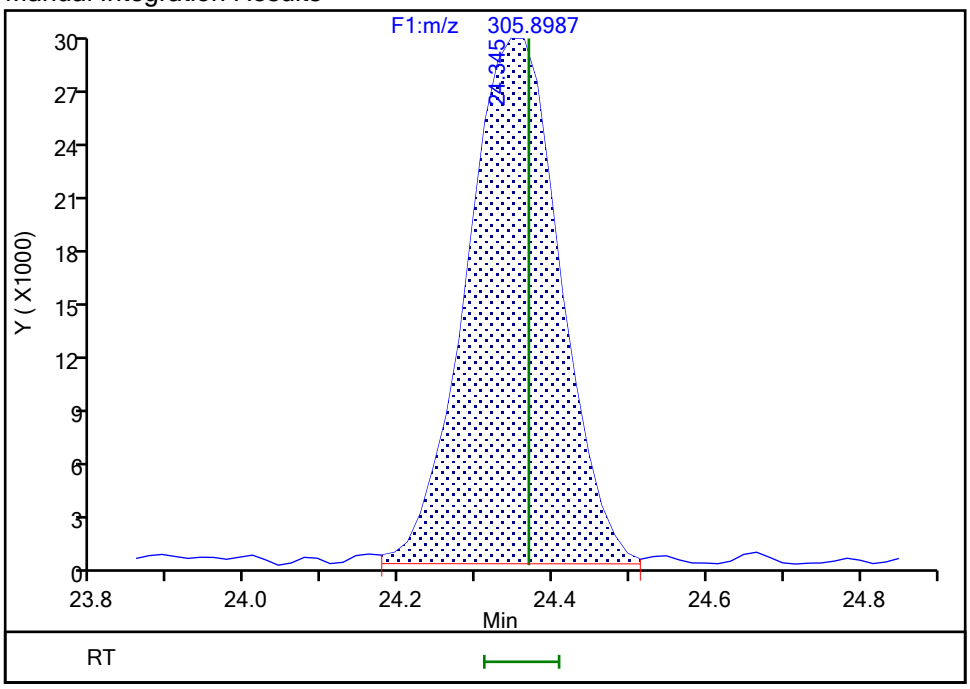
Processing Integration Results

RT: 24.35
Area: 246631
Amount: 2.112705
Amount Units: pg/ul



Manual Integration Results

RT: 24.35
Area: 244014
Amount: 2.102232
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 10:27:14
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

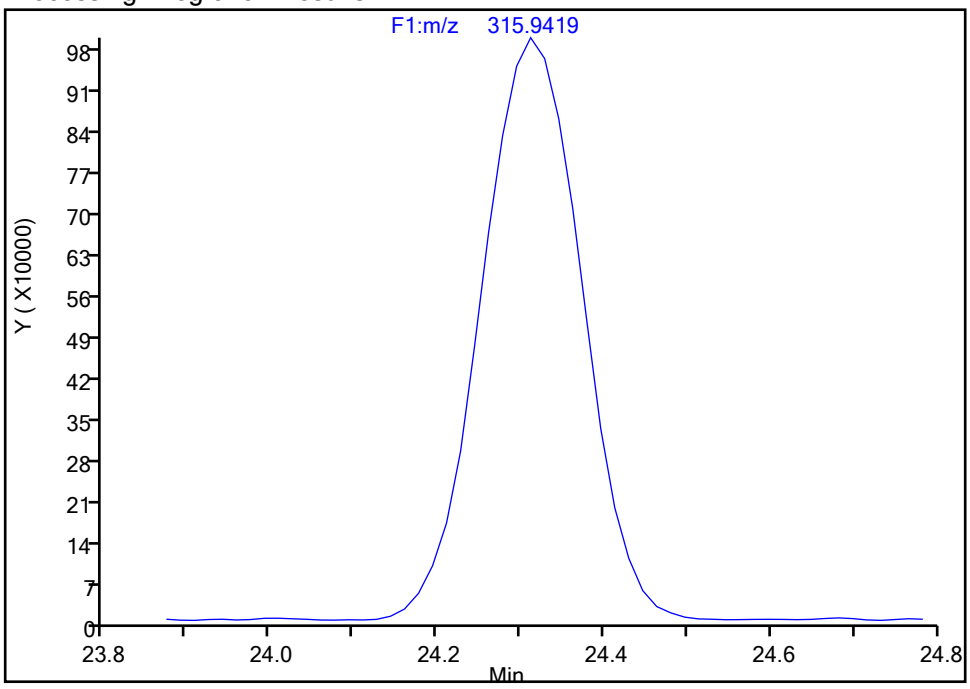
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl2_190503033522.d				
Injection Date:	03-May-2019 03:35:00	Instrument ID:	D12C		
Lims ID:	IC L2				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

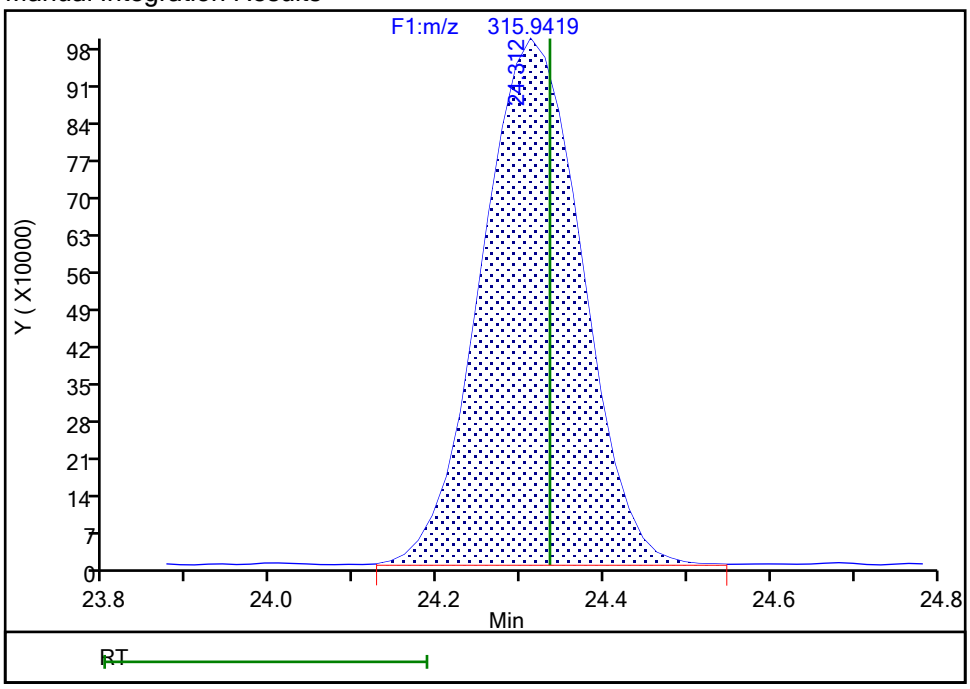
Not Detected
Expected RT: 24.33

Processing Integration Results



Manual Integration Results

RT: 24.31
Area: 8320826
Amount: 100.4440
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:11:16
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-May-2019 04:28:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-008
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:27 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:15:29

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:26	5218562	0.79	1.2213	9.913	9.913	0.0771	0.0771	99.13	a
2,3,7,8-TCDF	24:22	7870303	0.80	1.1100	10.3	10.3	0.0196	0.0196	103	M
D 13C-2,3,7,8-TCDD	21:24	43104812	0.81	1.0031	100.8	100.8	0.0809	0.0809	101	a
D 13C-2,3,7,8-TCDF	24:19	68656093	0.80	1.6193	99.5	99.5	0.0815	0.0815	99.49	a
$ 37Cl4-2,3,7,8-TCDD	21:26	5083567		1.1834	10.1	10.1	0.0140	0.0140	101	
* 13C-1,2,3,4-TCDD	21:58	42618673	0.82	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

61L31613OP_00006 Amount Added: 20.00 Units: uL

Report Date: 03-May-2019 13:47:27 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-May-2019 04:28:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-008
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:27 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:15:29

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	21:26	21:26	0	1.002	2307387	322209	344	860	937		a
321.8936	21:26	21:26	0	1.002	2911175	413665	1950	4875	212	0.79(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	24:22	24:22	0	1.002	3491150	427647	441	1102	970		M
305.8987	24:22	24:22	0	1.002	4379153	530029	278	695	1907	0.80(0.65-0.89)	M
13C-2,3,7,8-TCDD											a
331.9368	21:24	21:24	0	0.974	19300369	2703904	712	1780	3798		a
333.9338	21:24	21:24	0	0.974	23804443	3382711	1232	3080	2746	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:19	24:19	0	1.107	30559871	3643965	1725	4312	2112		a
317.9389	24:20	24:19	1	1.108	38096222	4628102	1434	3585	3227	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21:26	21:26	0	0.975	5083567	715052	396	990	1806		
13C-1,2,3,4-TCDD											
331.9368	21:58	21:58	0		19140147	2673121	712	1780	3754		
333.9338	21:58	21:58	0		23478526	3313512	1232	3080	2690	0.82(0.65-0.89)	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

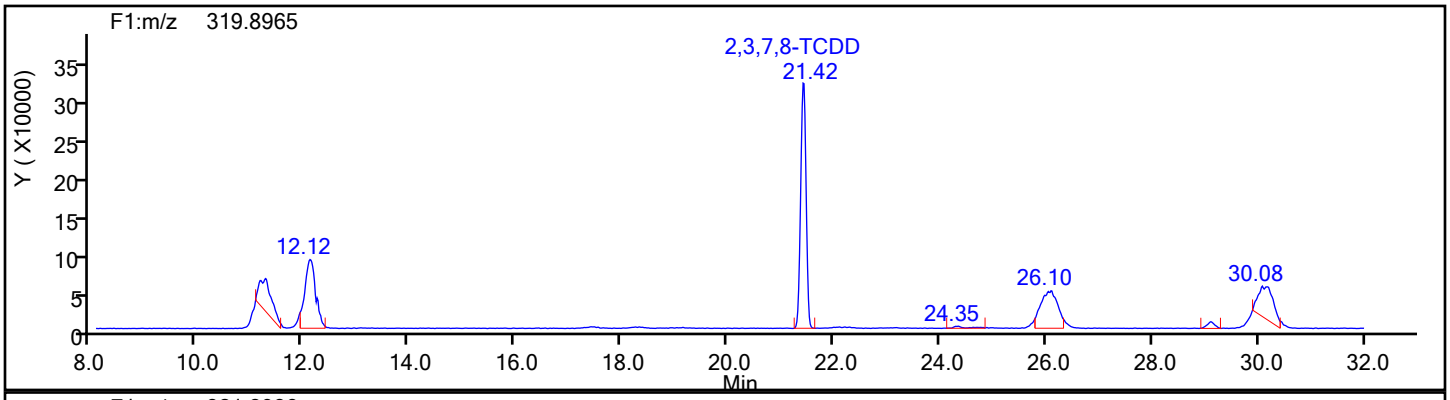
61L31613OP_00006 Amount Added: 20.00 Units: uL

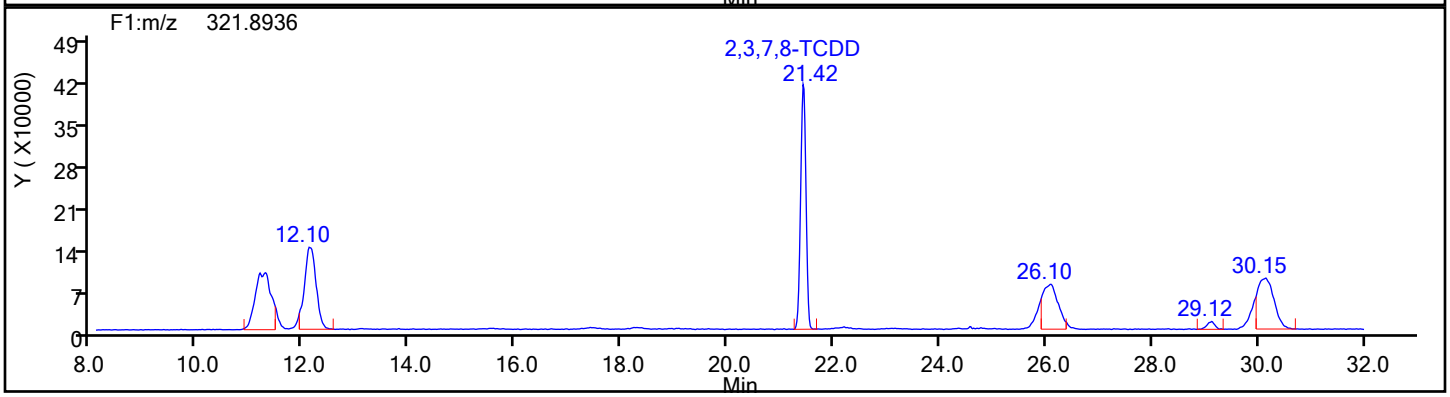
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

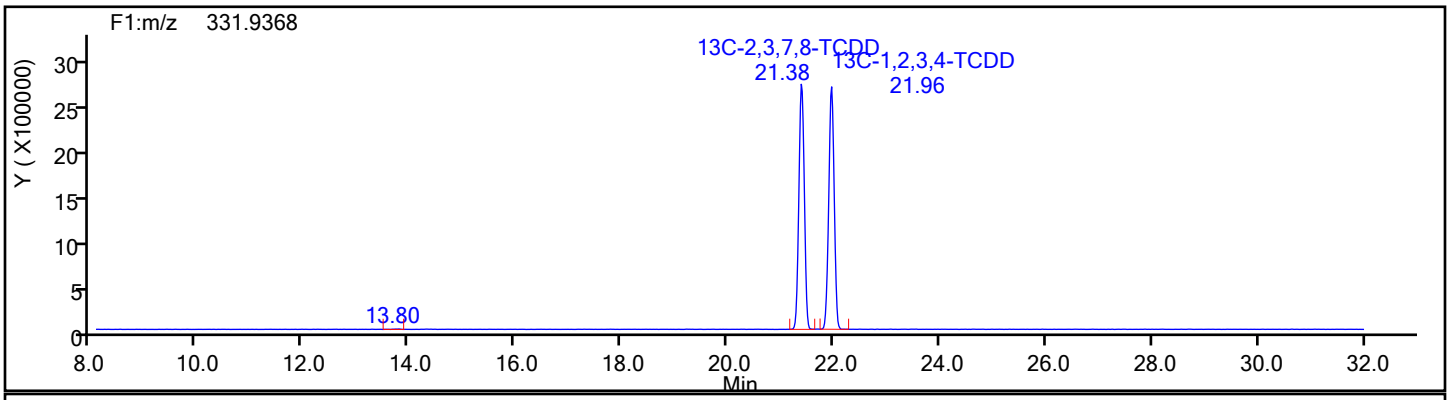
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

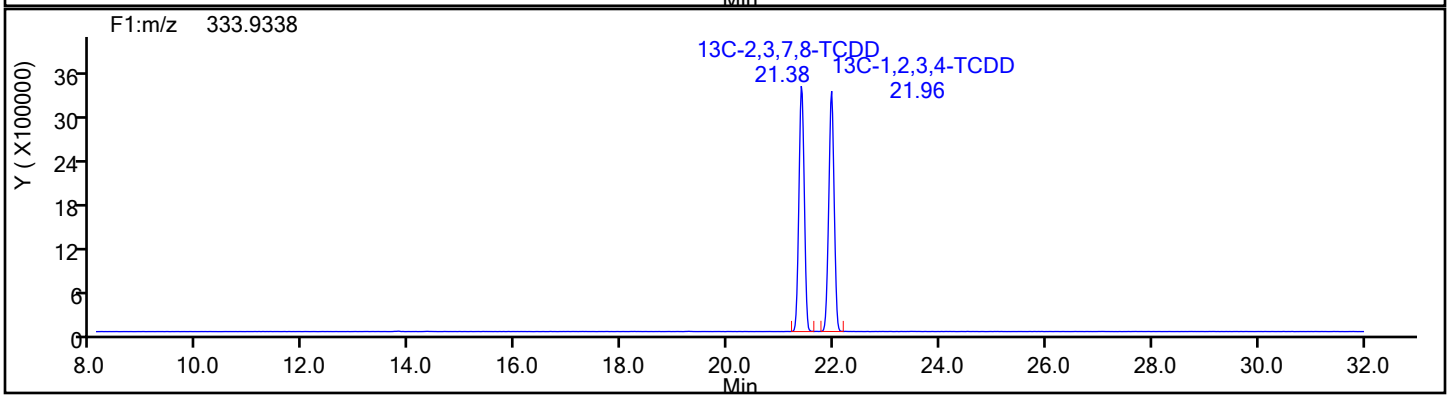
TCDD





TCDD Standards



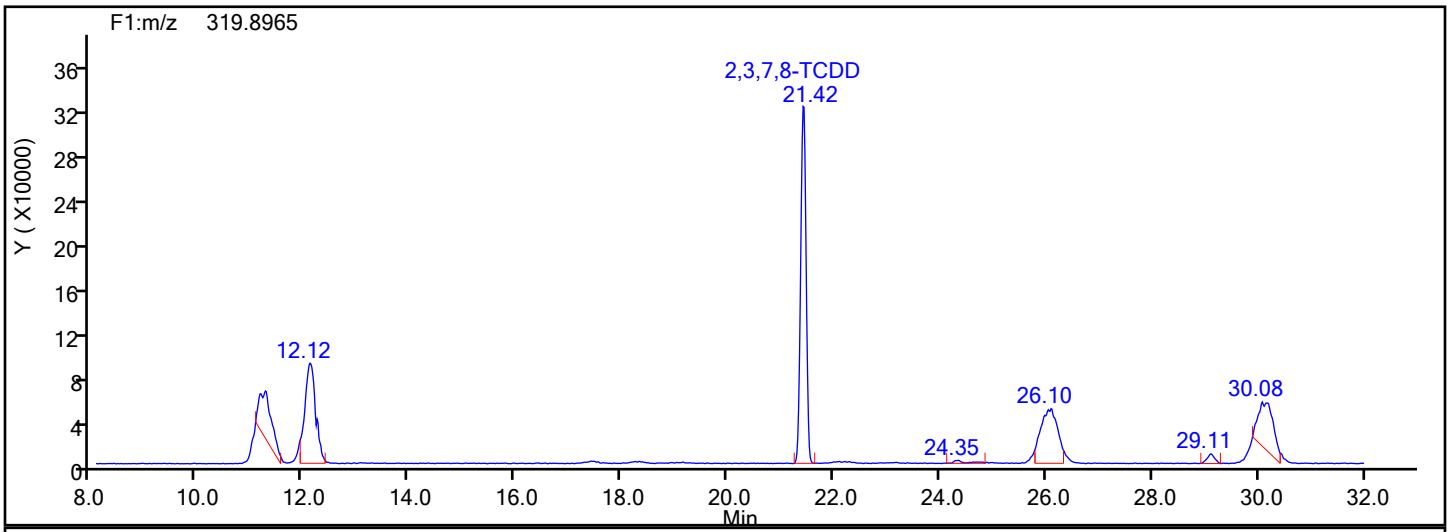


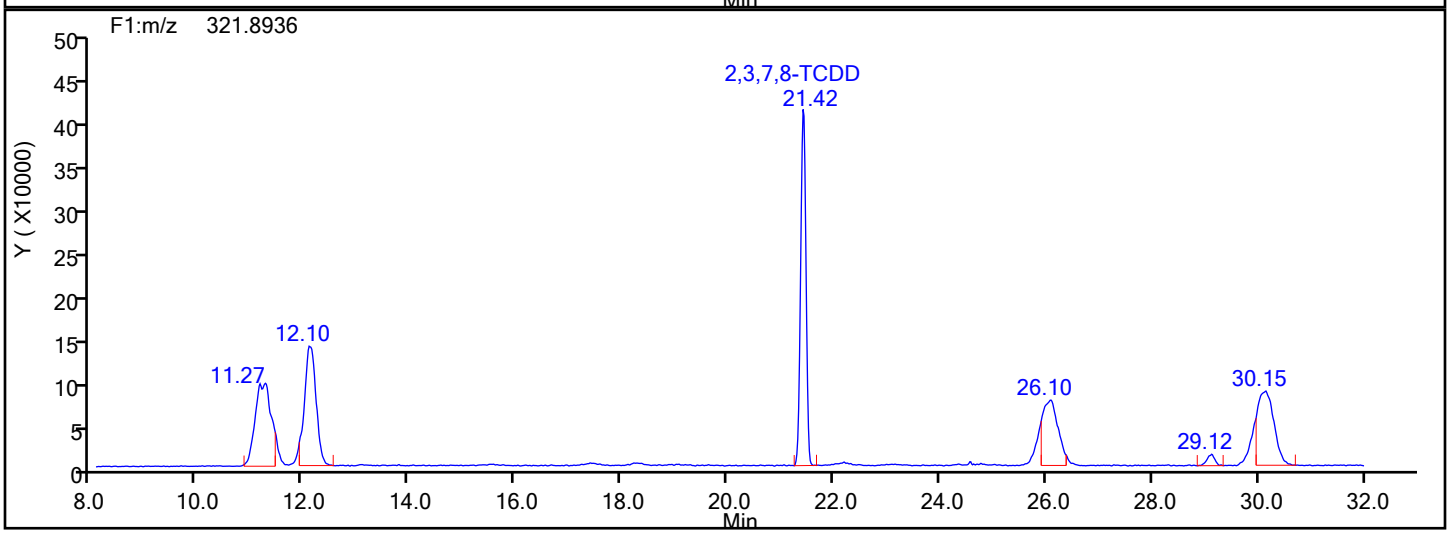
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

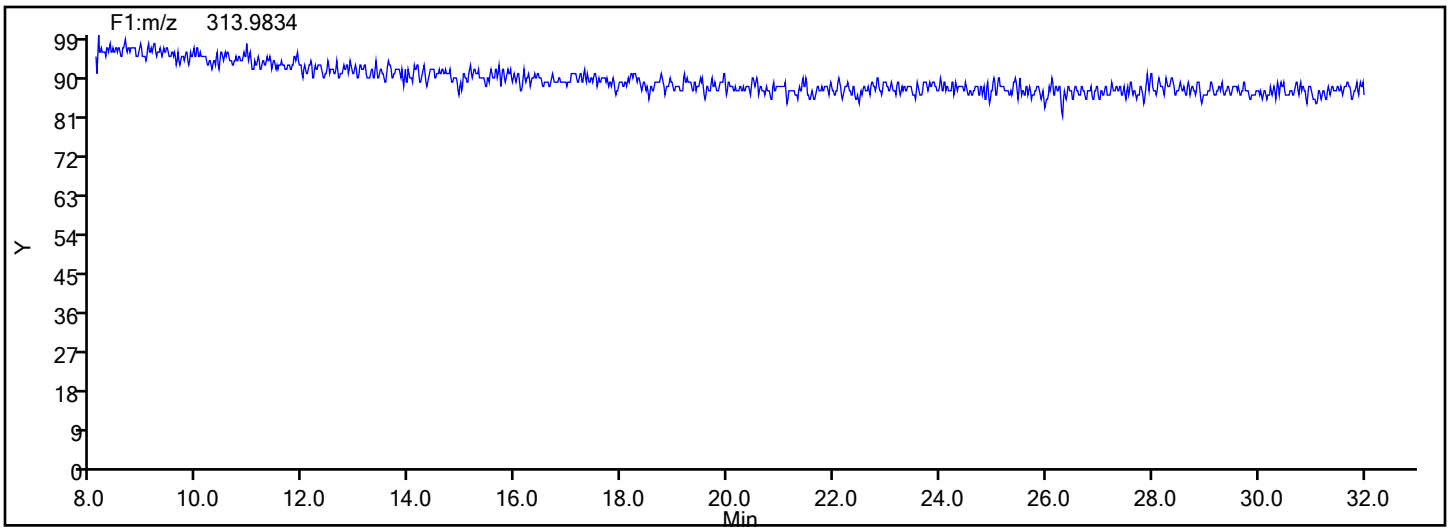
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

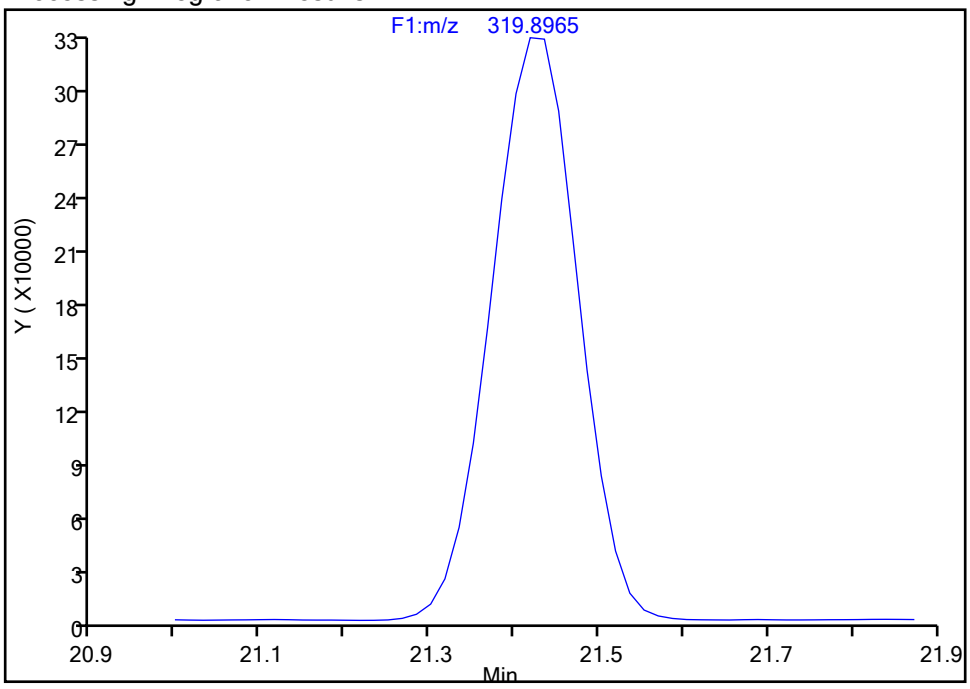
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

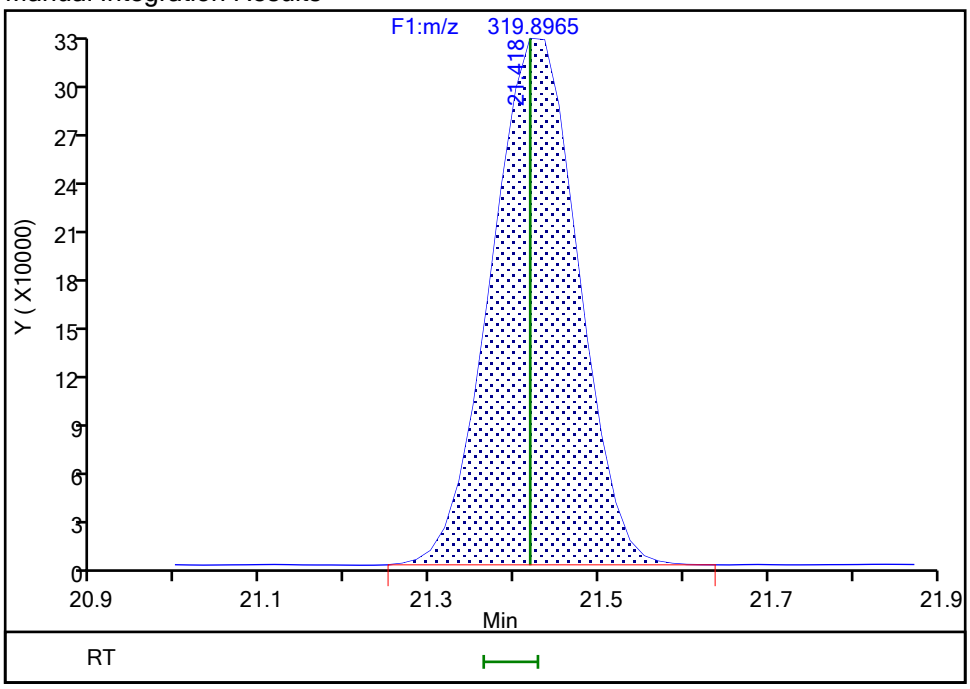
Not Detected
Expected RT: 21.42

Processing Integration Results



Manual Integration Results

RT: 21.42
Area: 2307387
Amount: 9.912733
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:13:12
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

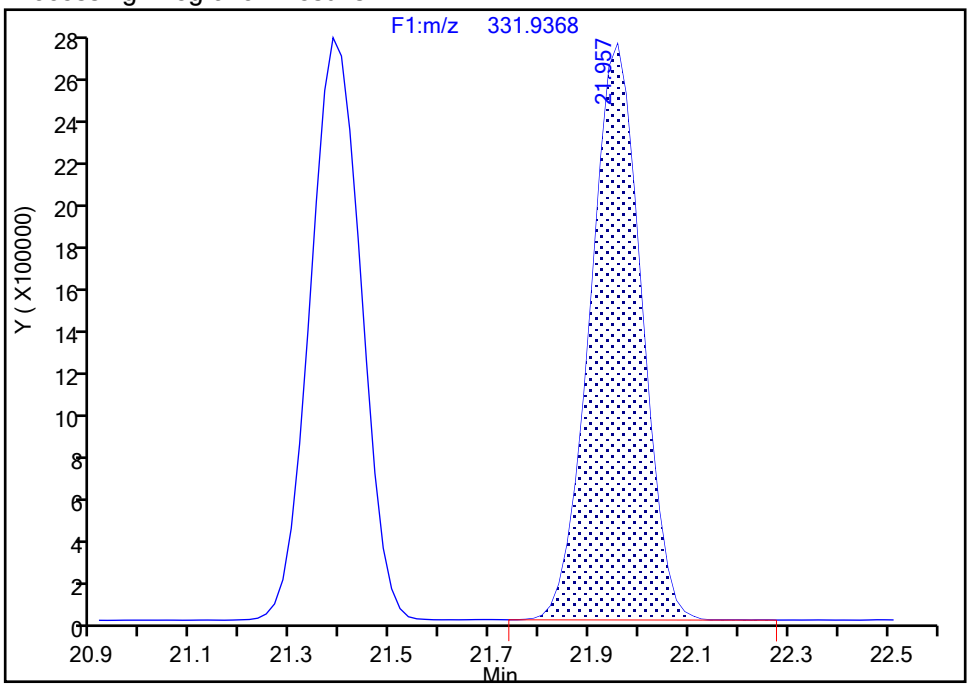
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

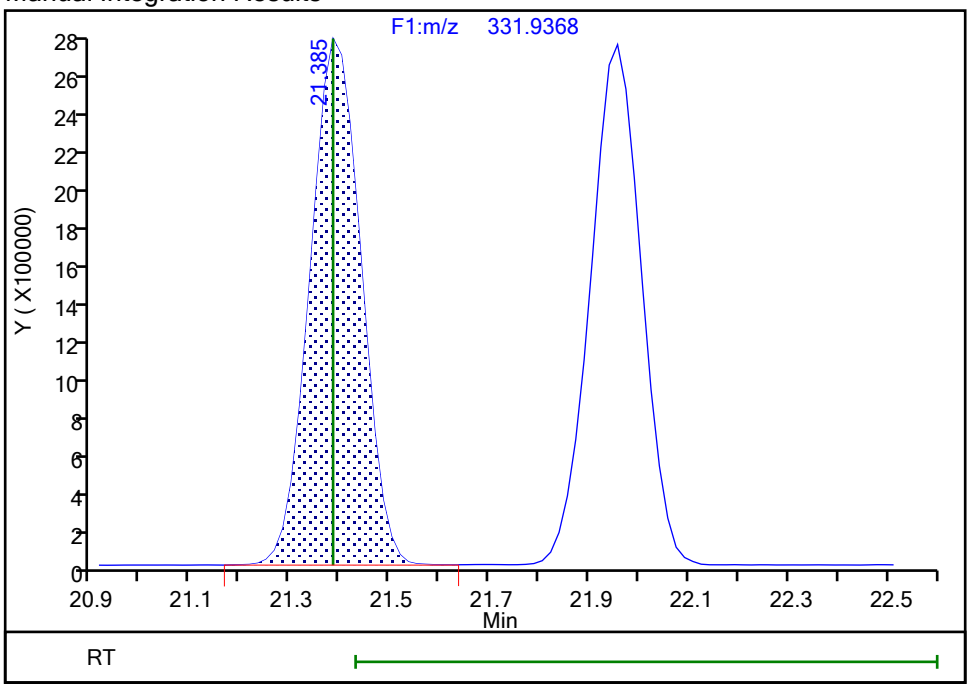
Processing Integration Results

RT: 21.96
Area: 19117389
Amount: 99.903946
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 19300369
Amount: 100.8273
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:13:35

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

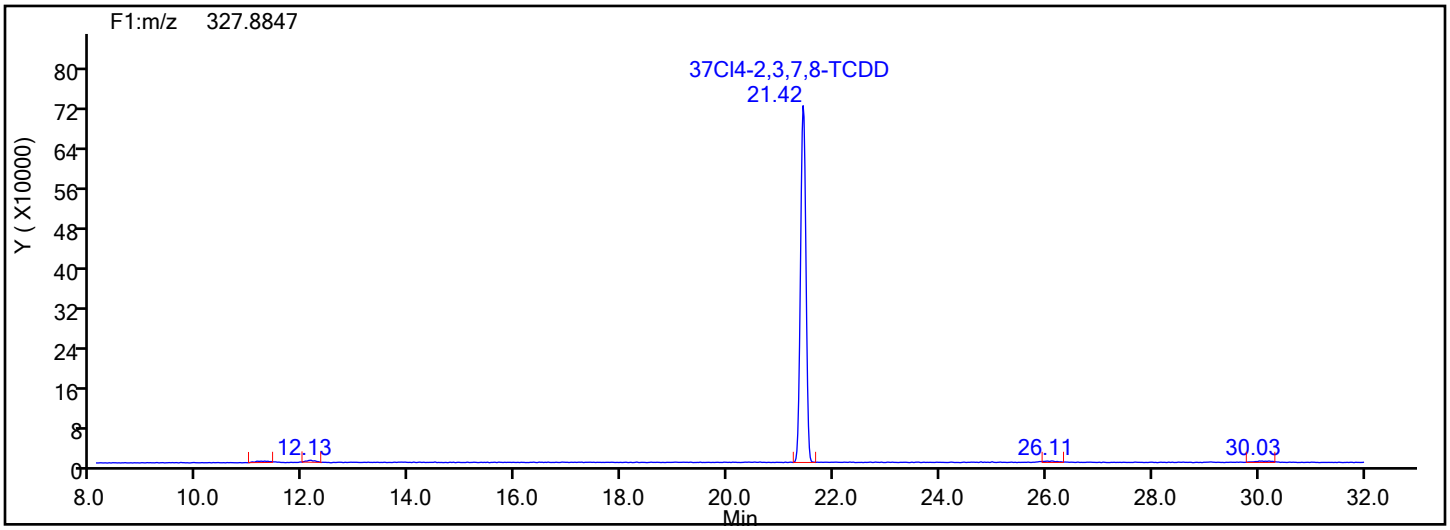
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

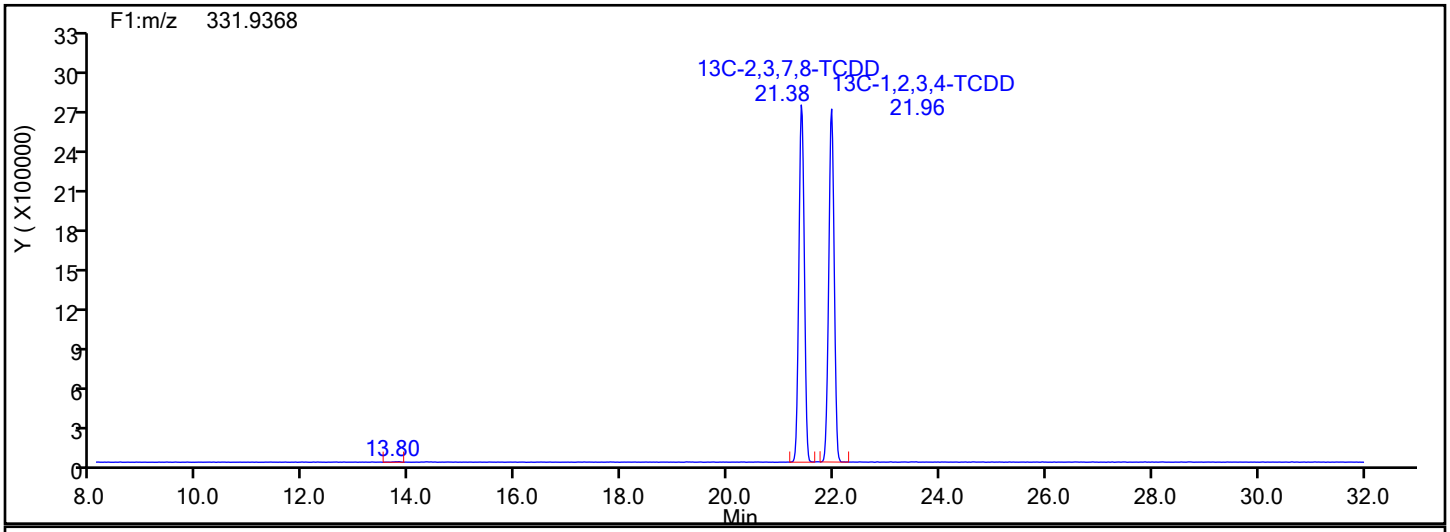
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d

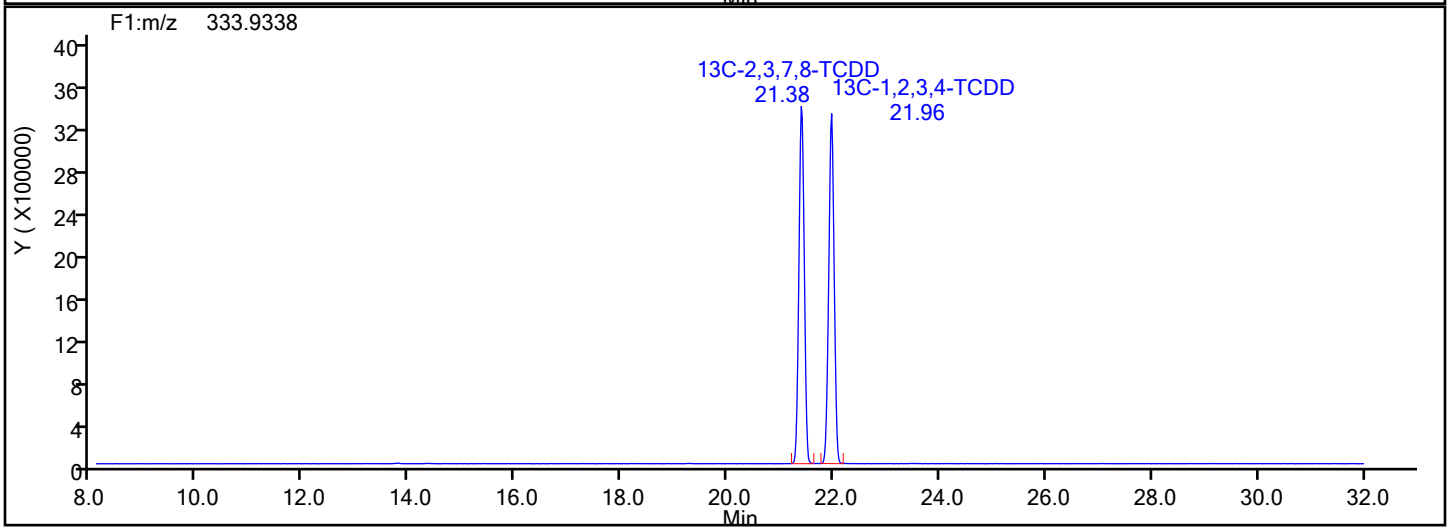
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



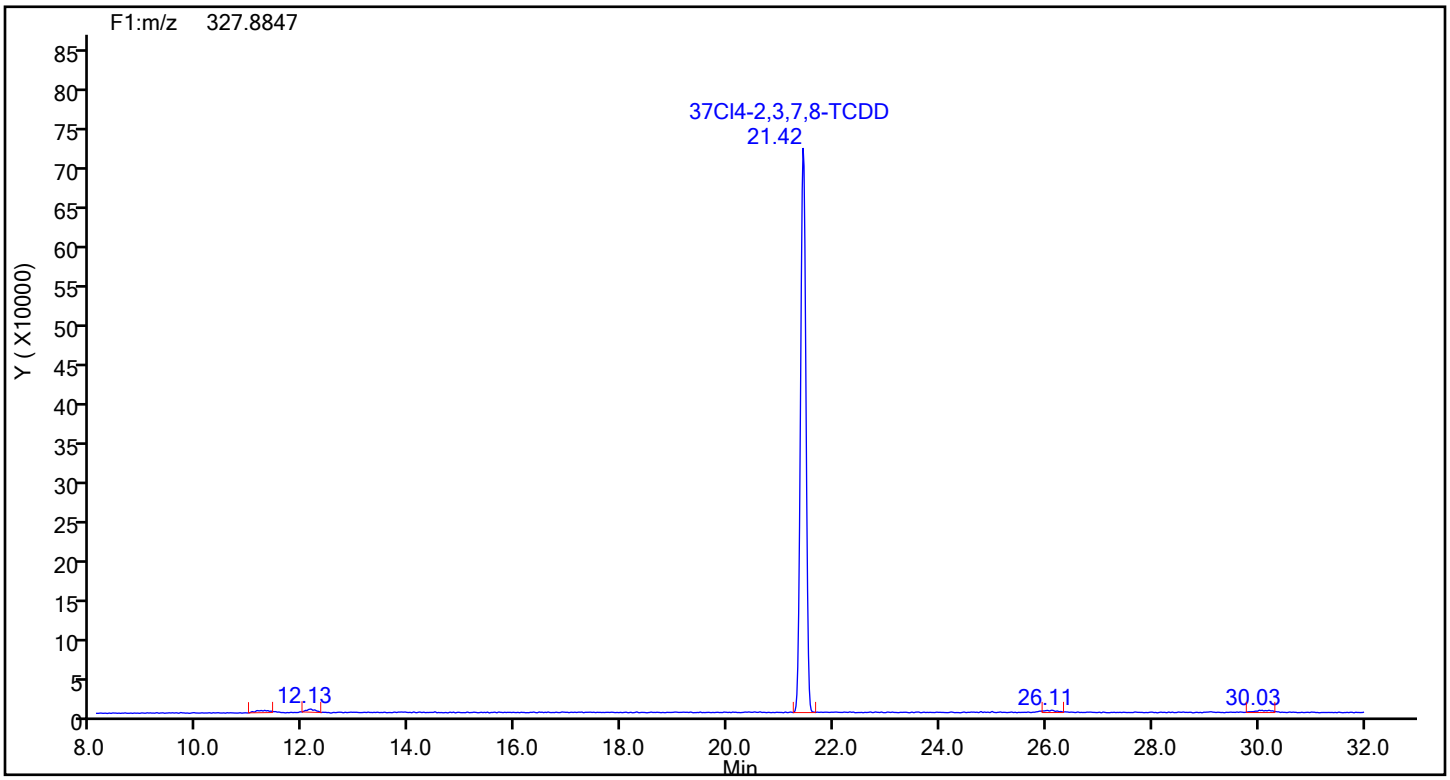


Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

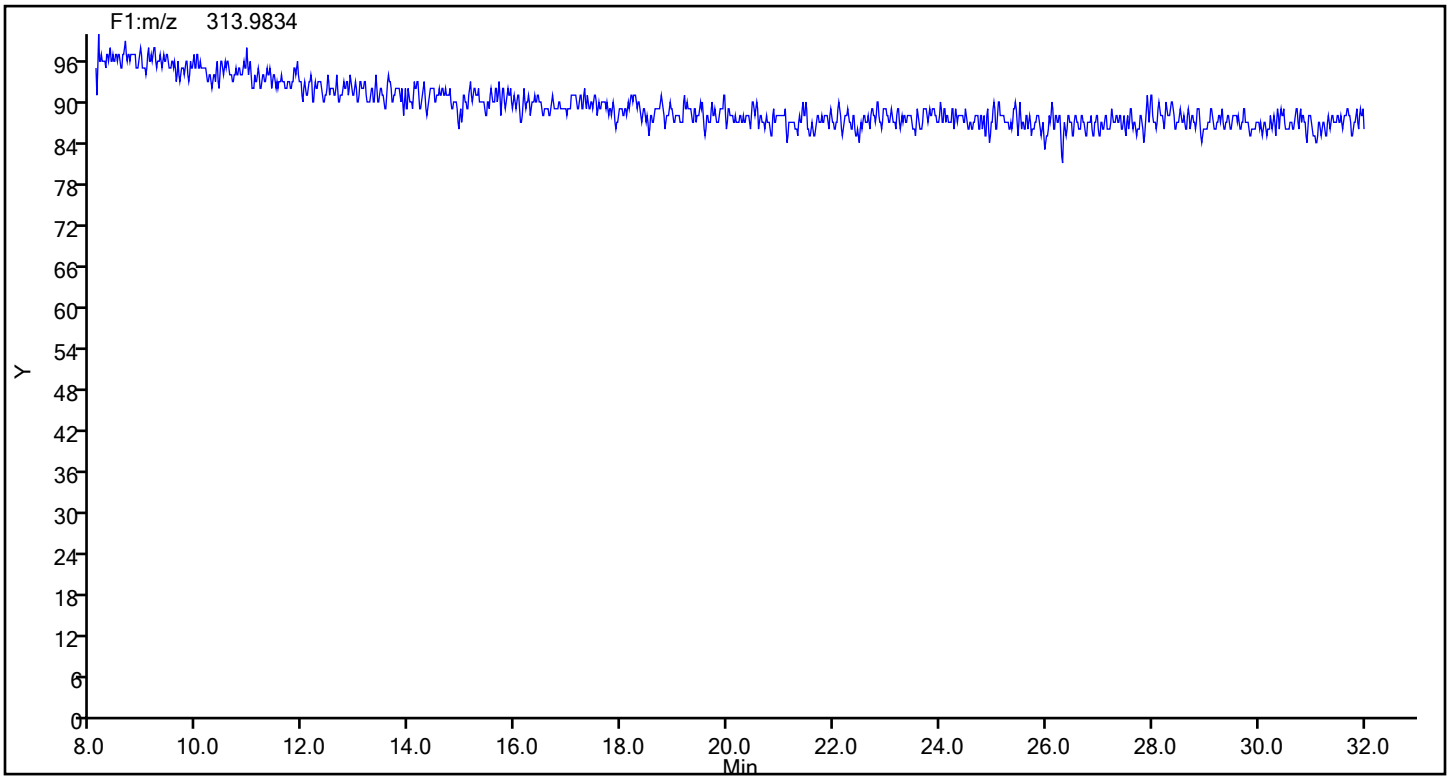
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

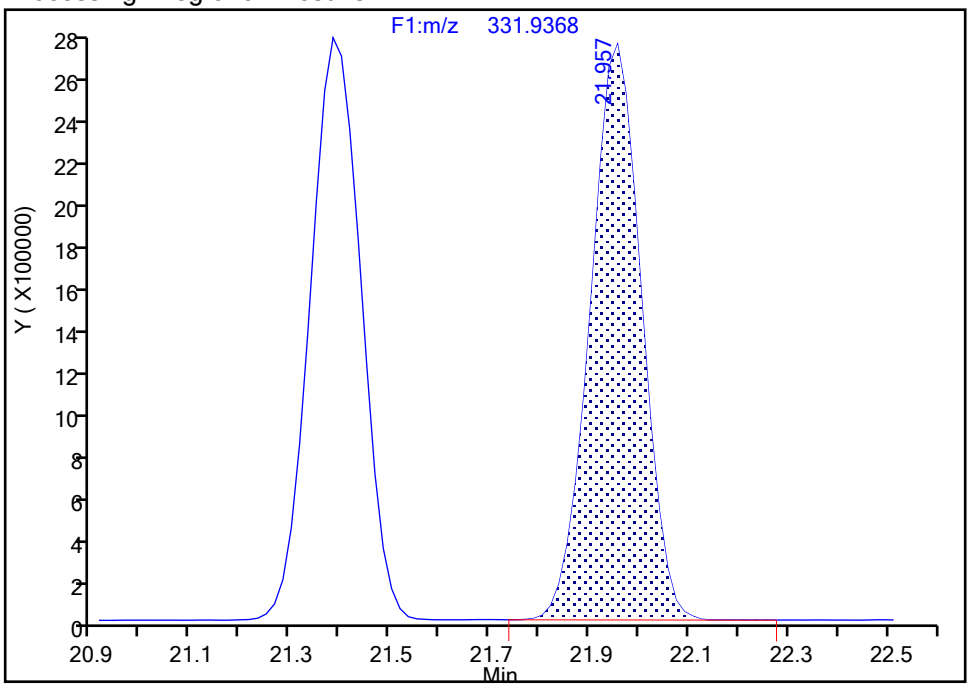
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

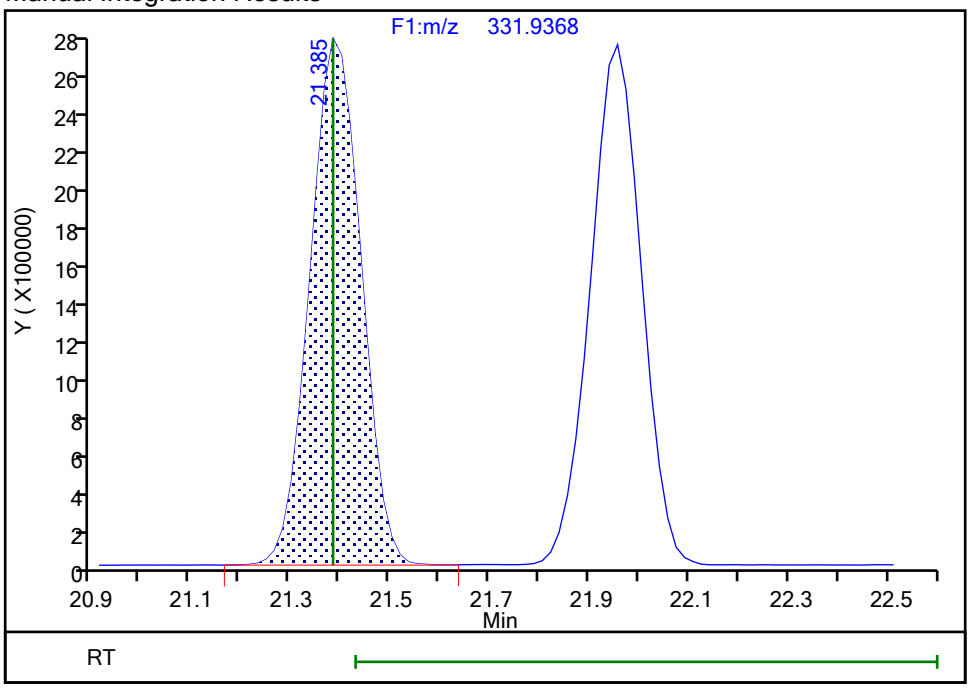
Processing Integration Results

RT: 21.96
Area: 19117389
Amount: 99.903946
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 19300369
Amount: 100.8273
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:13:35

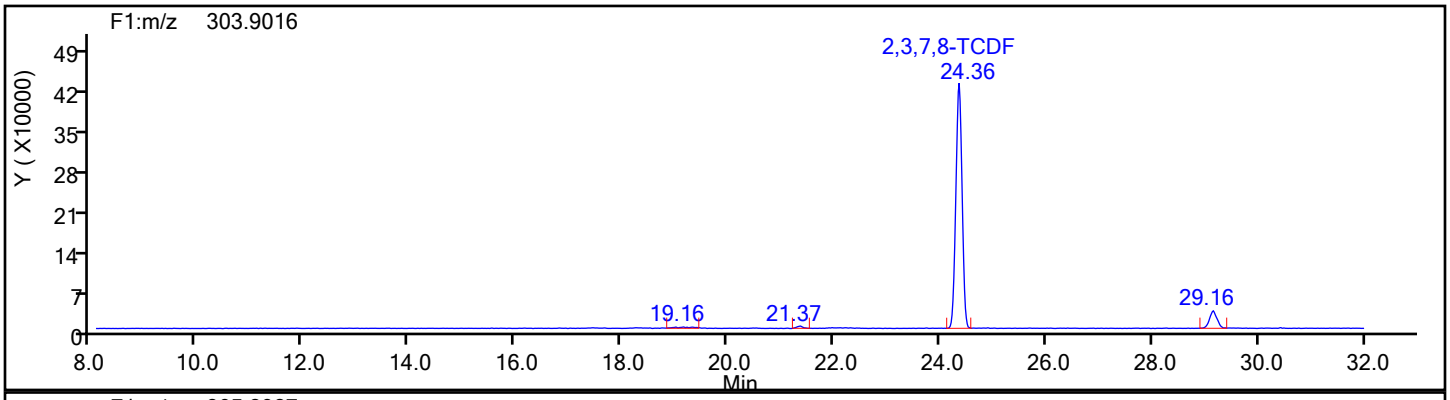
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

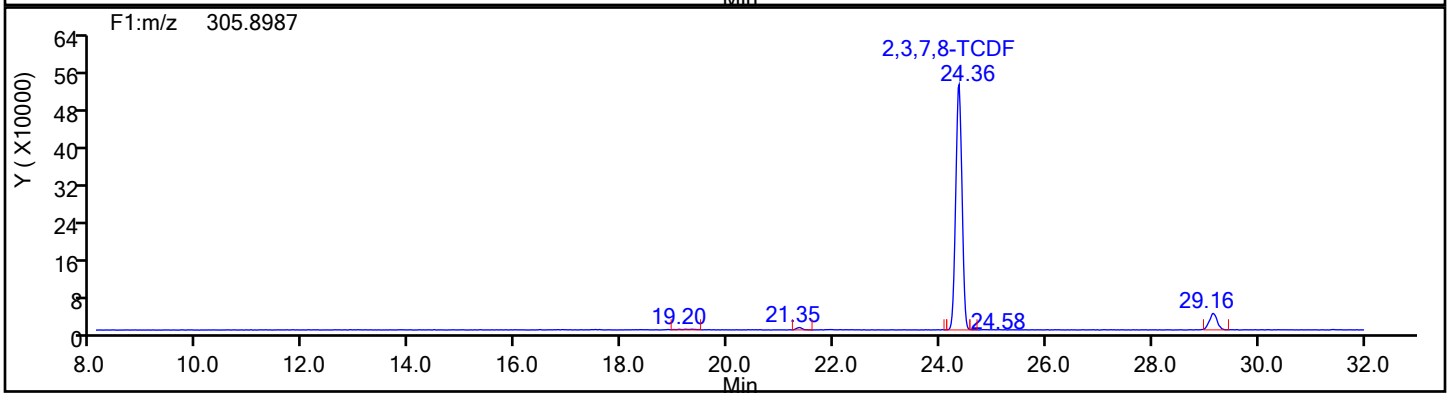
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

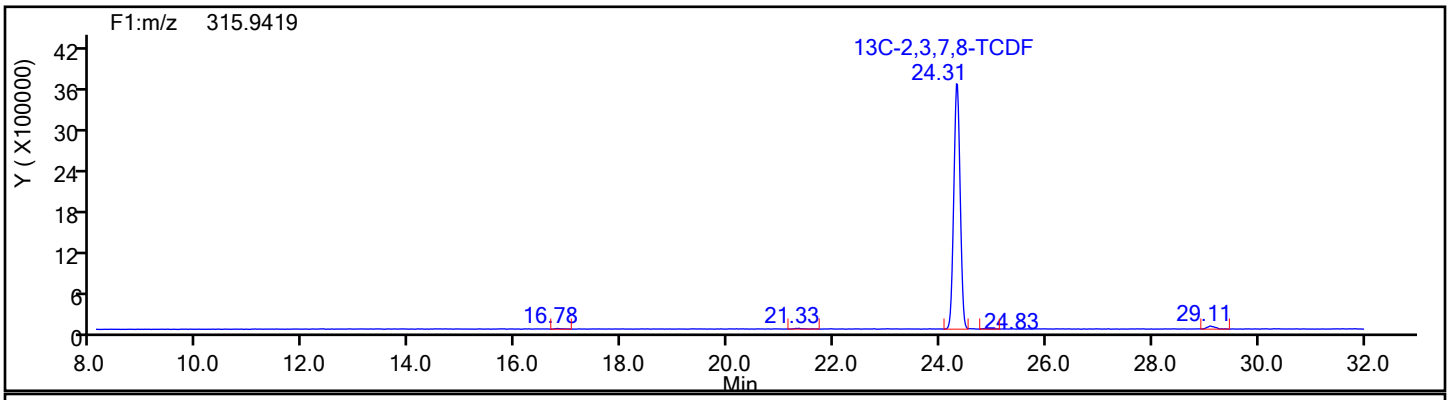
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

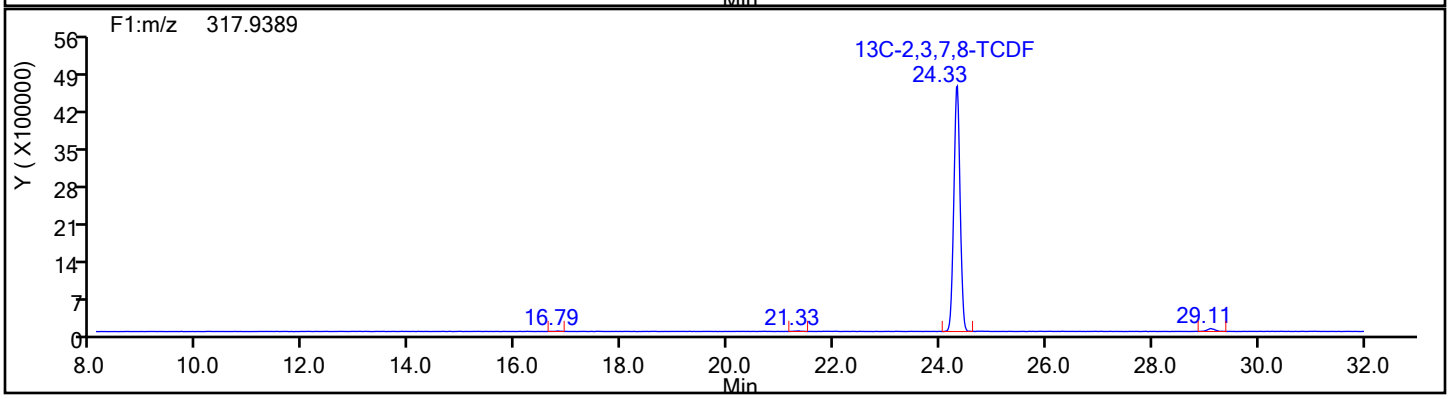
TCDF





TCDF Standards



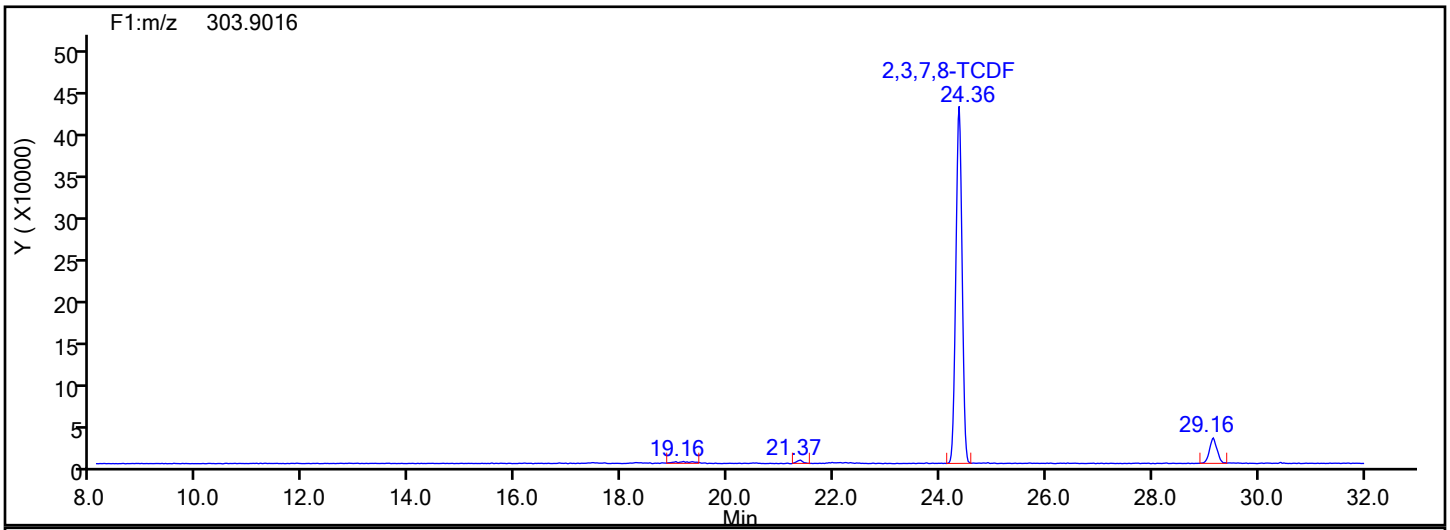


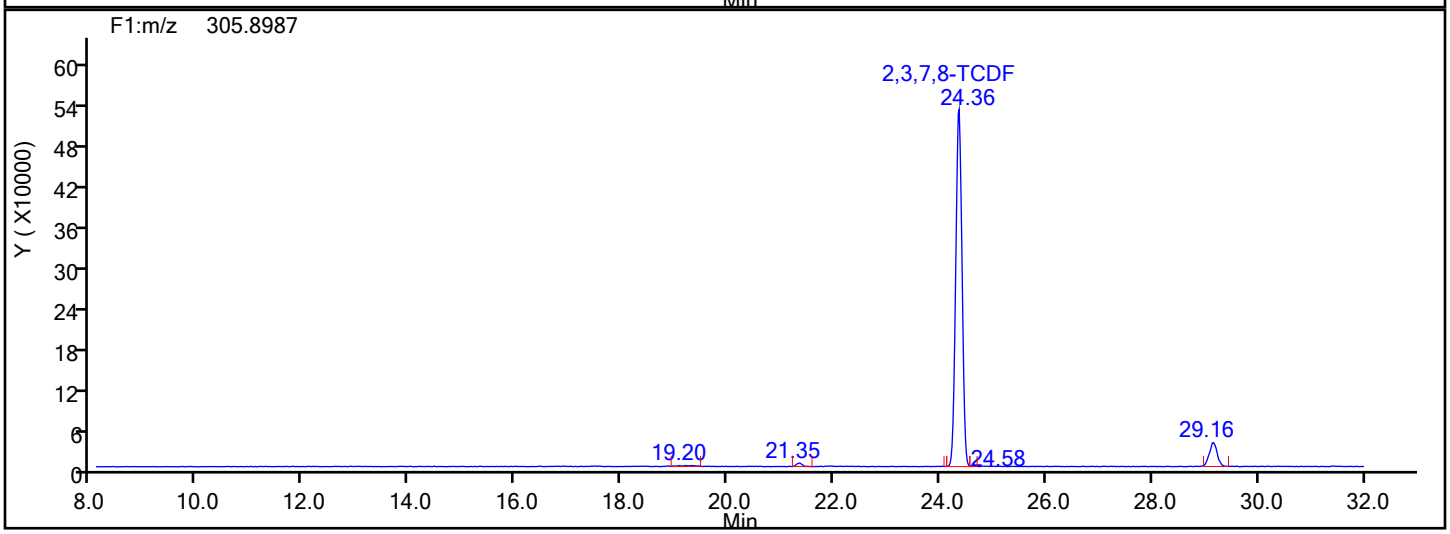
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

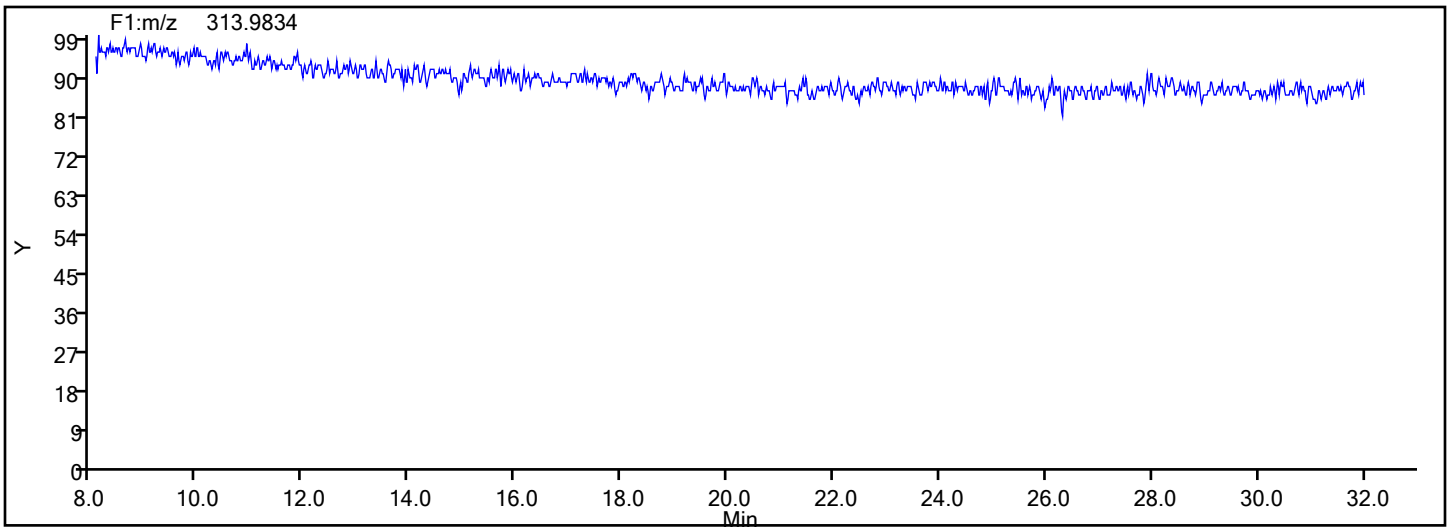
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

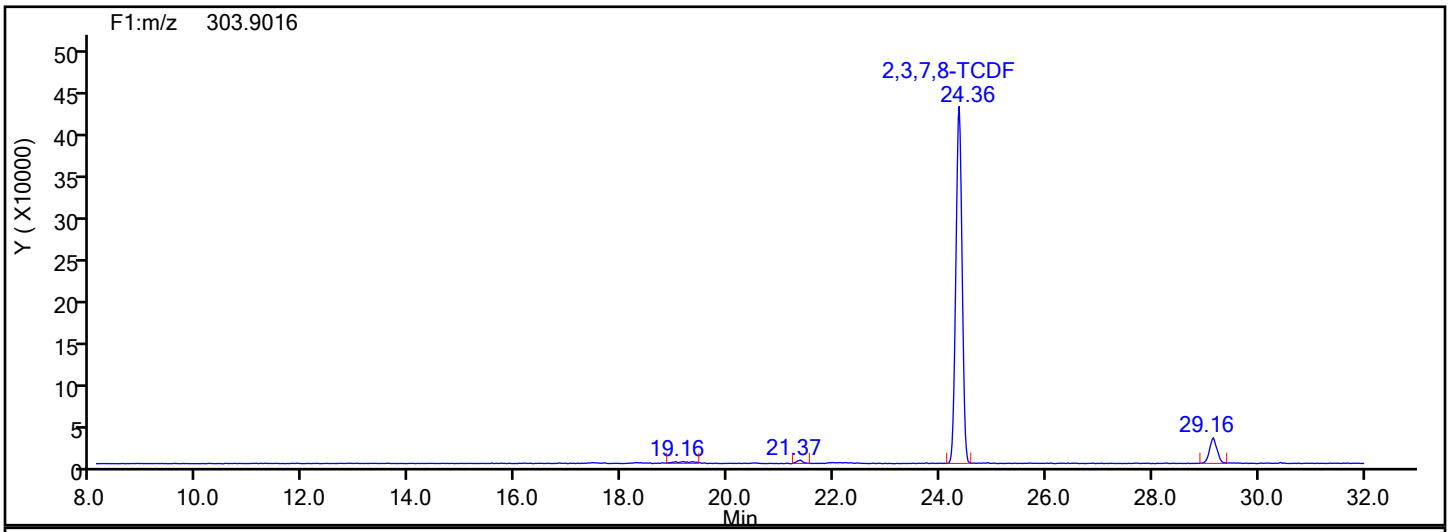


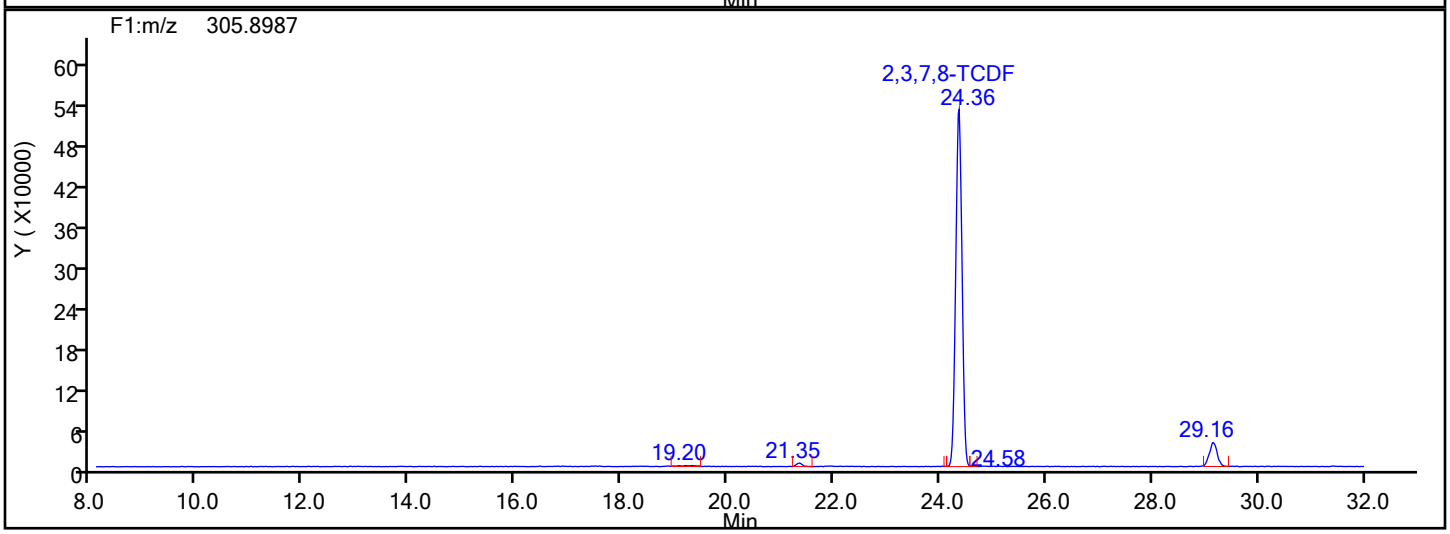
Report Date: 03-May-2019 13:47:28 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

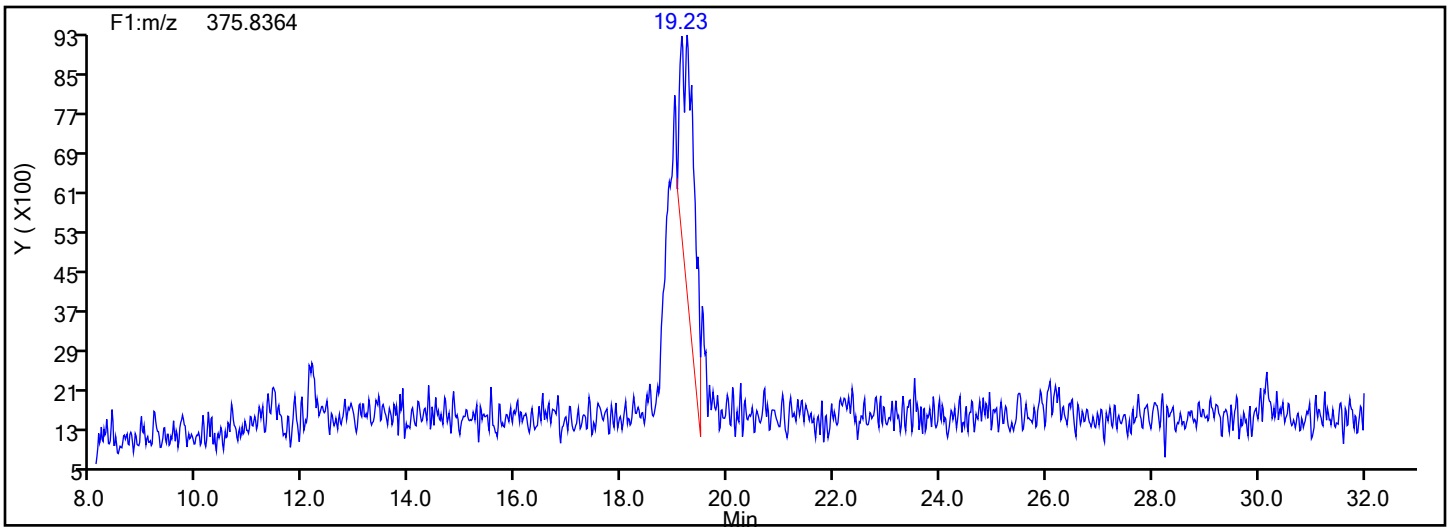
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d		
Injection Date:	03-May-2019 04:28:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	8
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

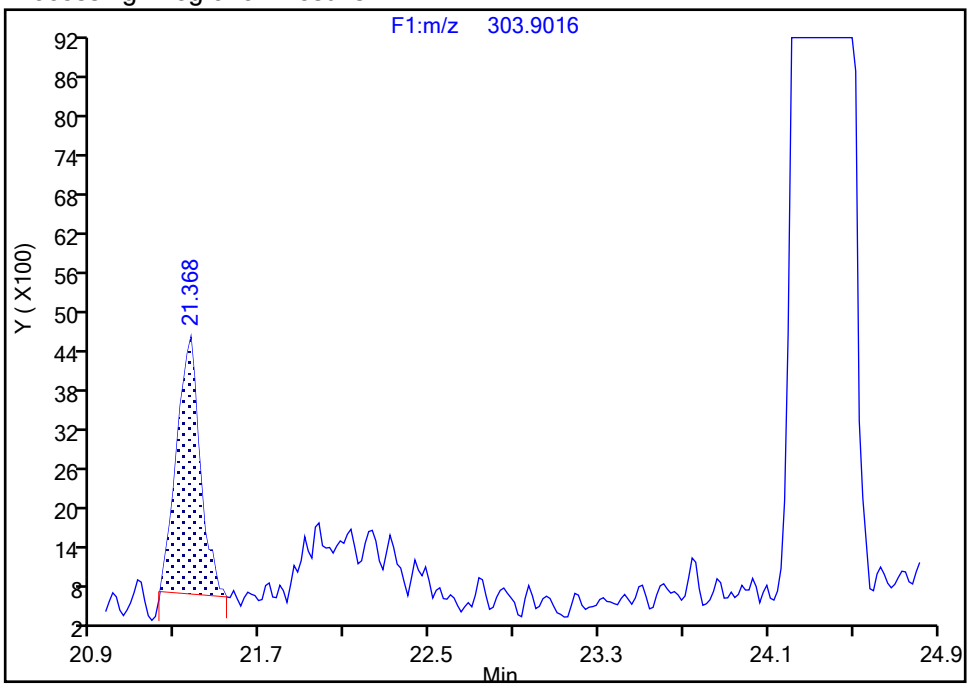
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

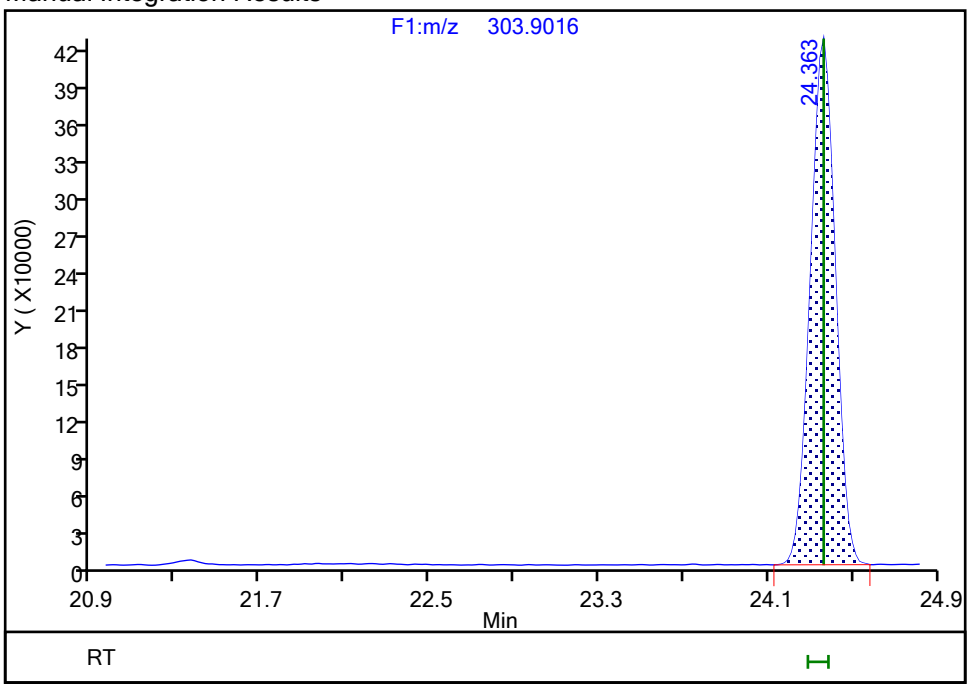
Processing Integration Results

RT: 21.37
Area: 29839
Amount: 0.131832
Amount Units: pg/ul



Manual Integration Results

RT: 24.36
Area: 3491150
Amount: 10.327065
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 10:28:21

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

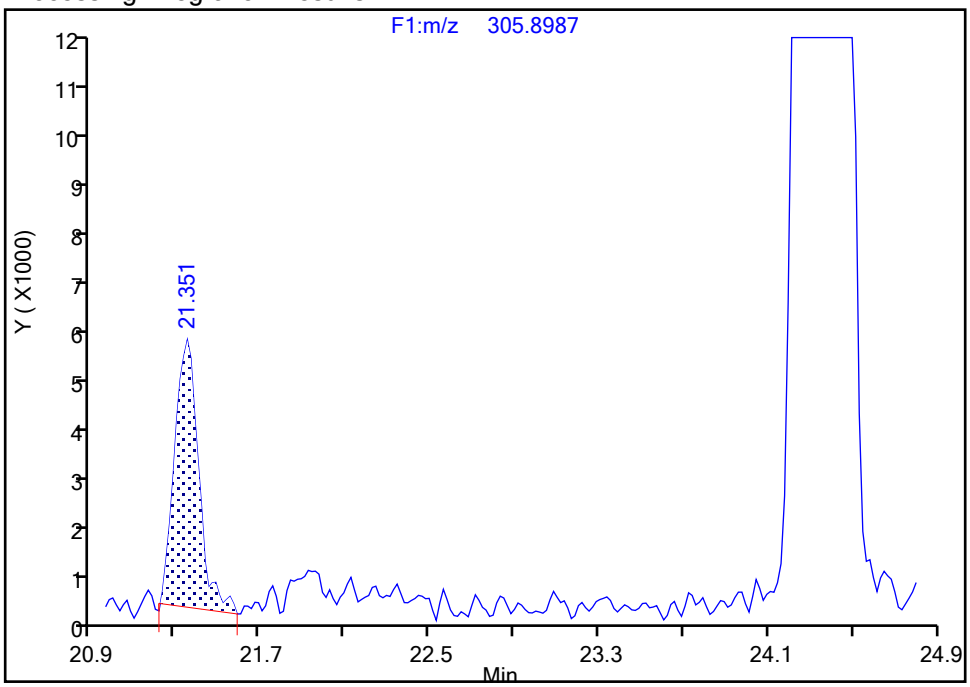
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

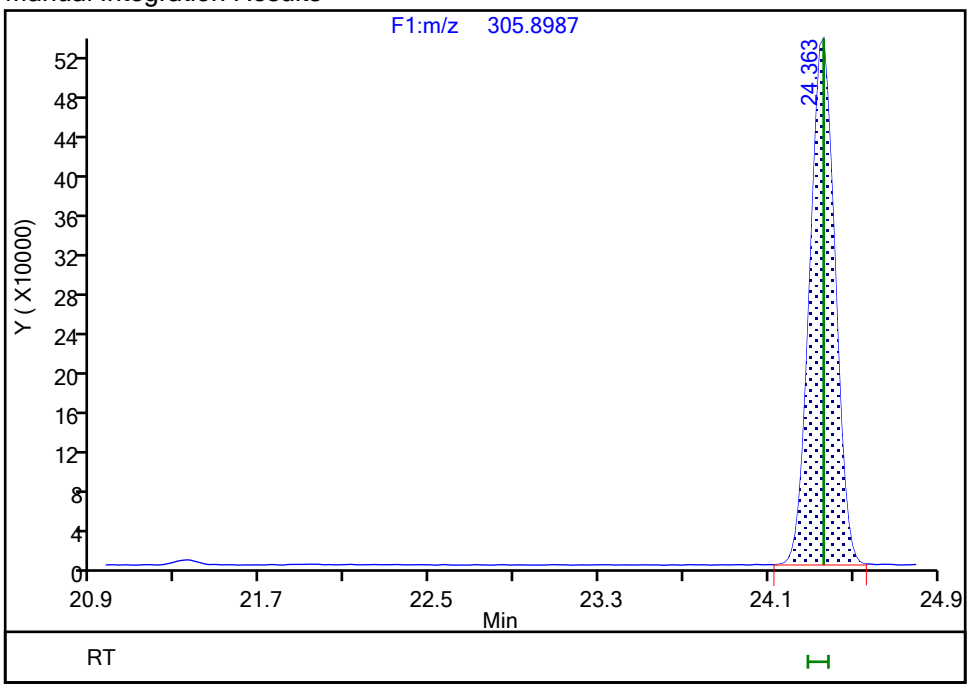
Processing Integration Results

RT: 21.35
Area: 40313
Amount: 0.131832
Amount Units: pg/ul



Manual Integration Results

RT: 24.36
Area: 4379153
Amount: 10.327065
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 10:28:31
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

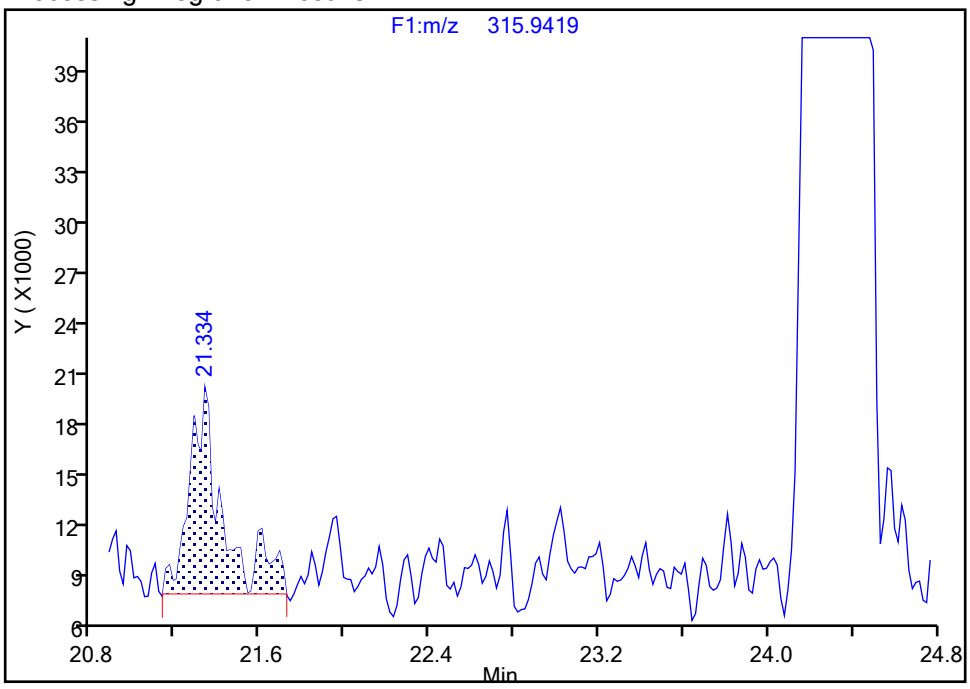
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl3_190503042827.d				
Injection Date:	03-May-2019 04:28:00	Instrument ID:	D12C		
Lims ID:	IC L3				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

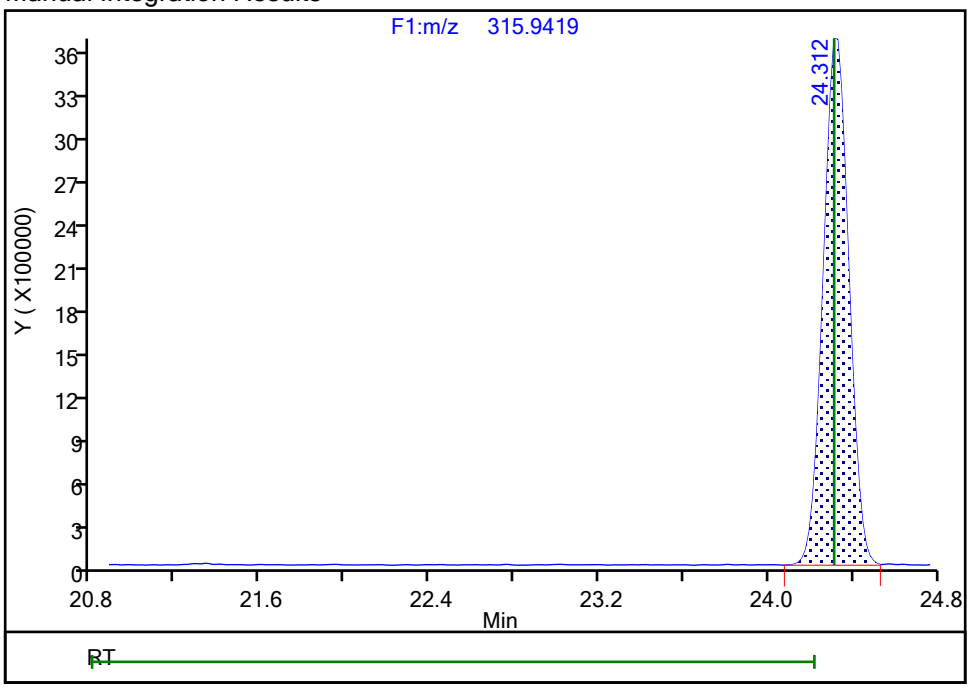
Processing Integration Results

RT: 21.33
Area: 127985
Amount: 0.477610
Amount Units: pg/ul



Manual Integration Results

RT: 24.31
Area: 30559871
Amount: 99.485742
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:13:23

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-May-2019 05:21:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-010
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:45 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:16:26

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:25	3292892	0.79	1.2213	38.2	38.2	2.231	2.231	95.53	a
2,3,7,8-TCDF	24:21	5034300	0.80	1.1100	37.7	37.7	0.0998	0.0998	94.36	a
D 13C-2,3,7,8-TCDD	21:23	7055950	0.80	1.0031	96.9	96.9	0.3581	0.3581	96.94	a
D 13C-2,3,7,8-TCDF	24:19	12015584	0.81	1.6193	102.3	102.3	0.4251	0.4251	102	a
$ 37Cl4-2,3,7,8-TCDD	21:25	3145878		1.1834	36.6	36.6	0.1303	0.1303	91.59	
* 13C-1,2,3,4-TCDD	21:56	7256041	0.83	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

61L41613OP_00002 Amount Added: 20.00 Units: uL

Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-May-2019 05:21:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-010
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:47:45 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:16:26

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	21:25	21:26	-1	1.002	1453237	218757	4336	10840	50		a
321.8936	21:25	21:26	-1	1.002	1839655	274559	6776	16940	41	0.79(0.65-0.89)	
2,3,7,8-TCDF											a
303.9016	24:21	24:22	-2	1.001	2241396	266422	383	957	696		a
305.8987	24:21	24:22	-2	1.001	2792904	332927	264	660	1261	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											a
331.9368	21:23	21:24	-1	0.975	3136410	449604	660	1650	681		a
333.9338	21:23	21:24	-1	0.975	3919540	569771	784	1960	727	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:19	24:19	-1	1.108	5391173	657229	1491	3727	441		a
317.9389	24:19	24:19	-1	1.108	6624411	802401	1276	3190	629	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21:25	21:26	-1	0.976	3145878	467273	620	1550	754		
13C-1,2,3,4-TCDD											
331.9368	21:56	21:58	-2		3289165	453480	660	1650	687		
333.9338	21:56	21:58	-2		3966876	551428	784	1960	703	0.83(0.65-0.89)	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

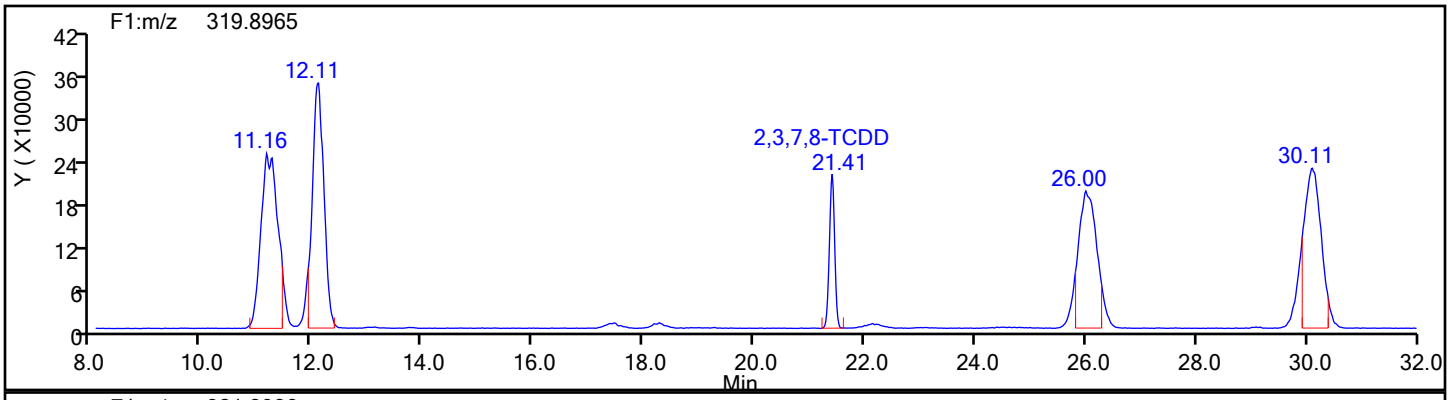
61L41613OP_00002 Amount Added: 20.00 Units: uL

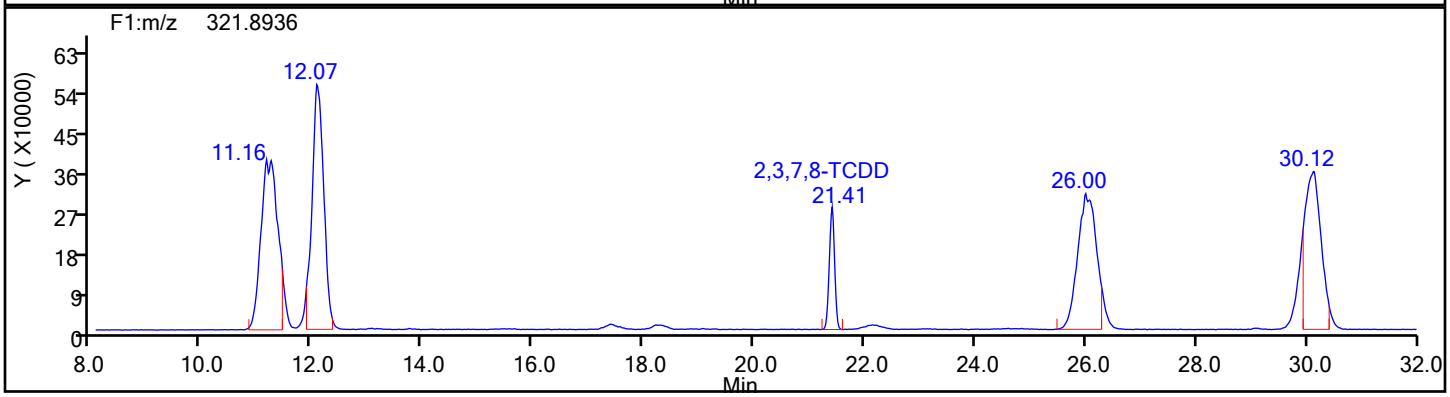
Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

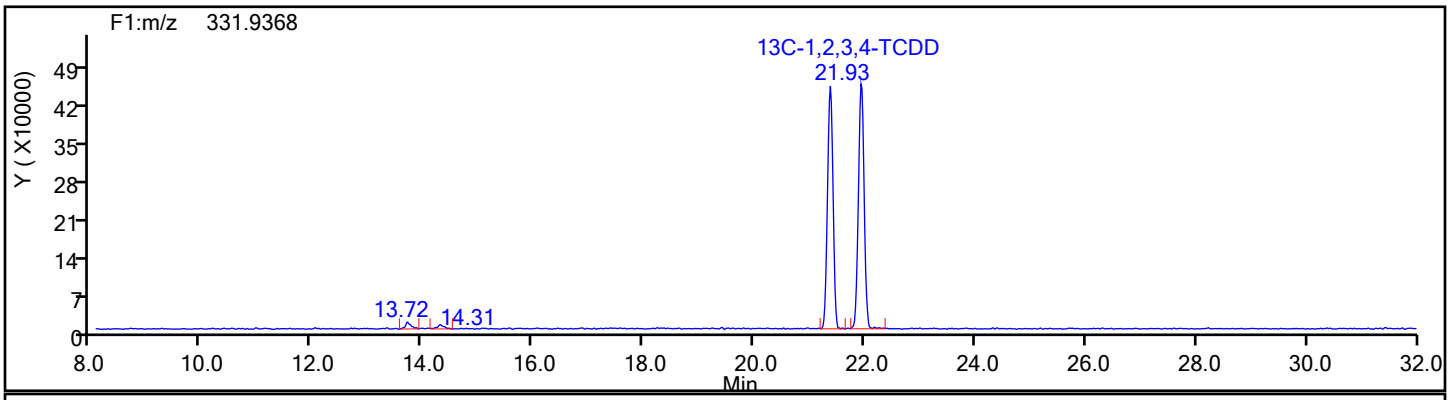
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

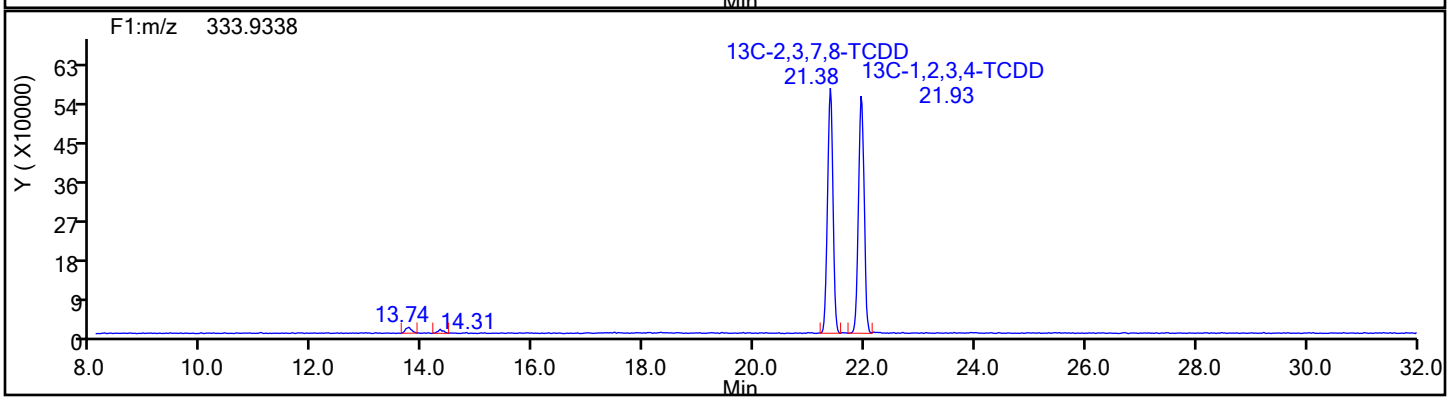
TCDD





TCDD Standards



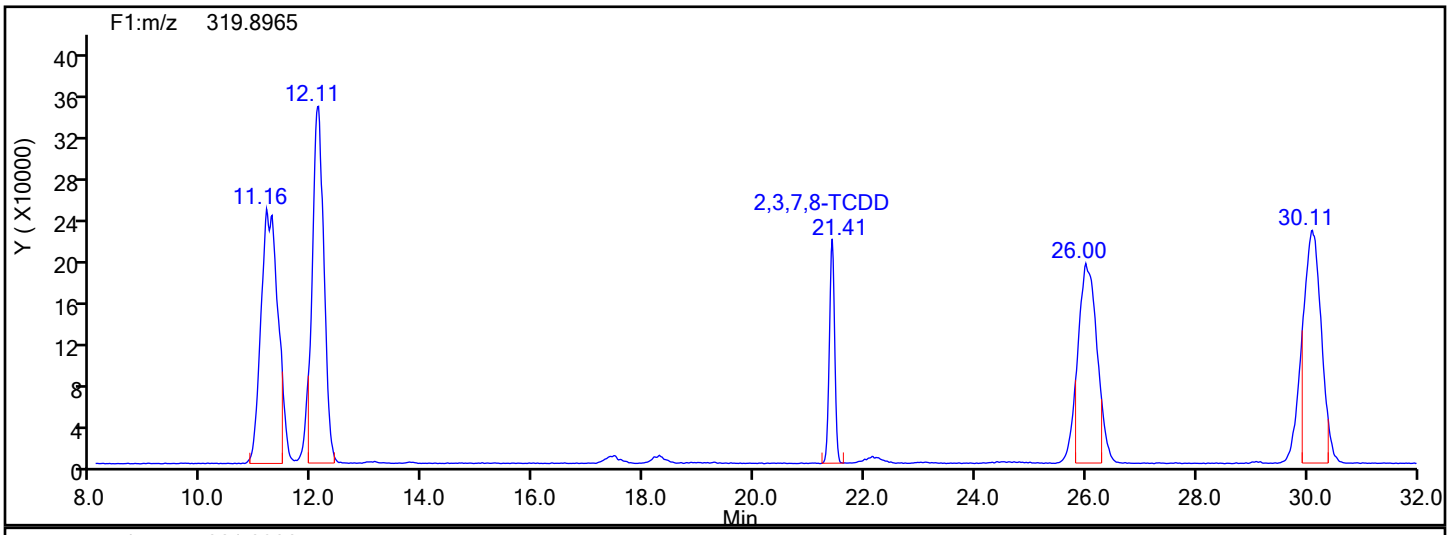


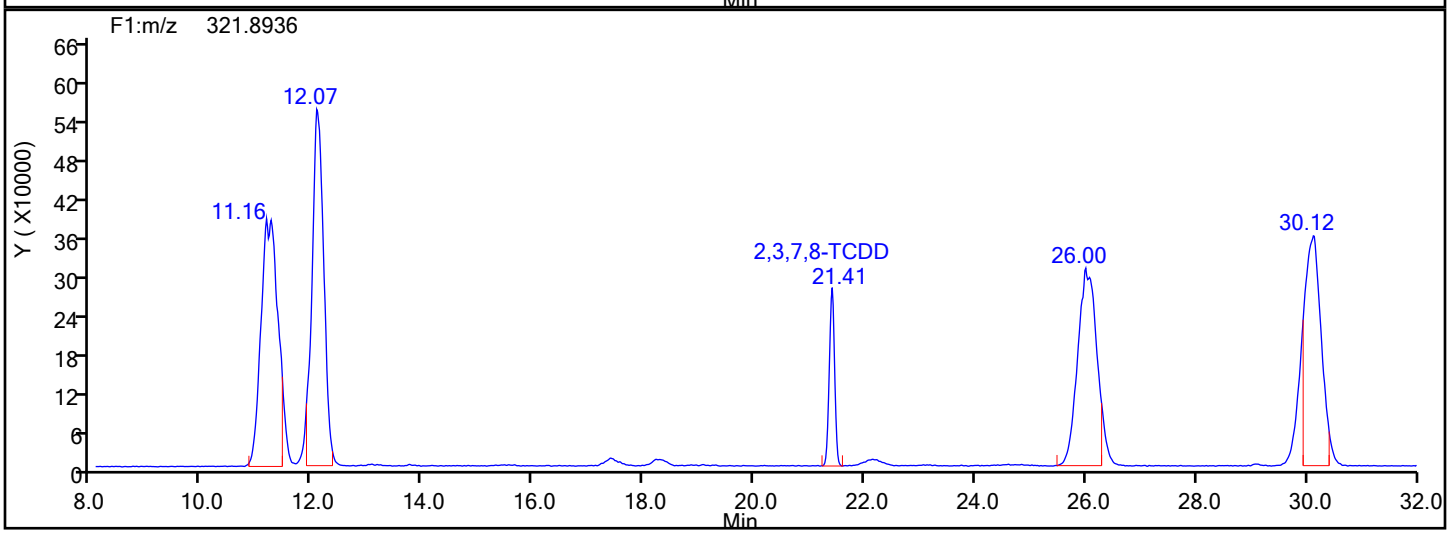
Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

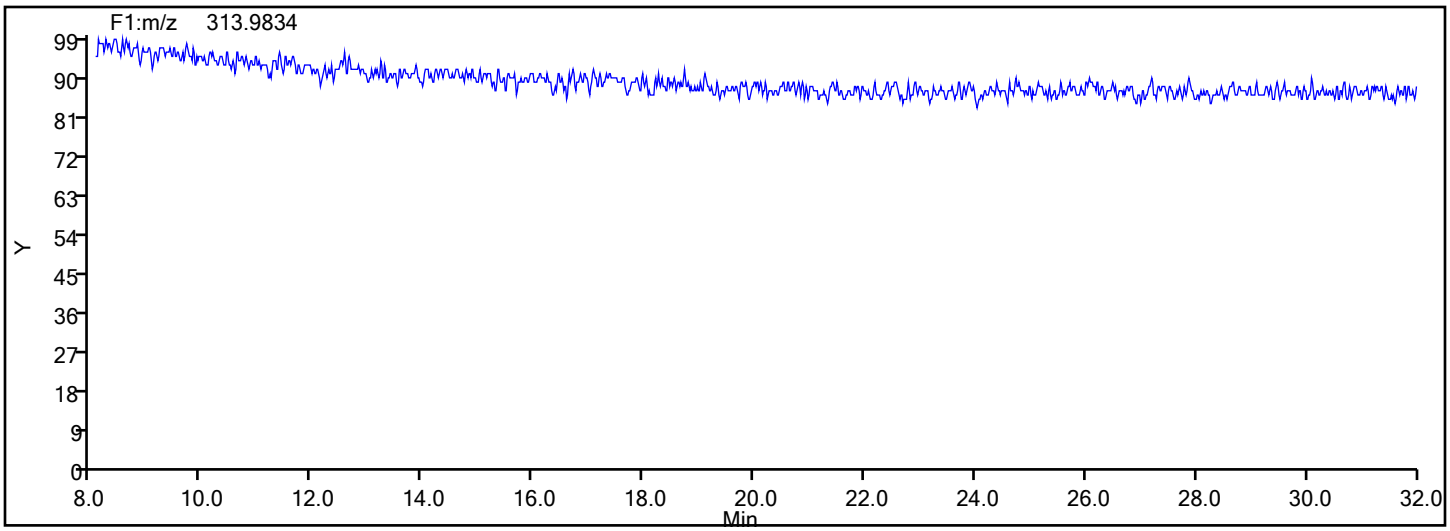
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

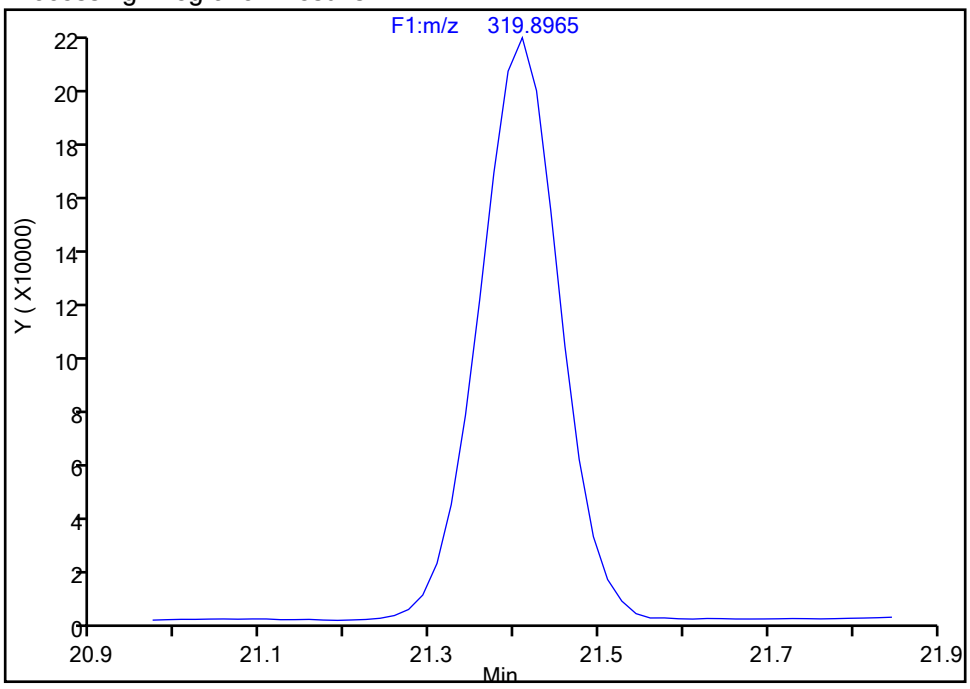
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d
Injection Date: 03-May-2019 05:21:00 Instrument ID: D12C
Lims ID: IC L4
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

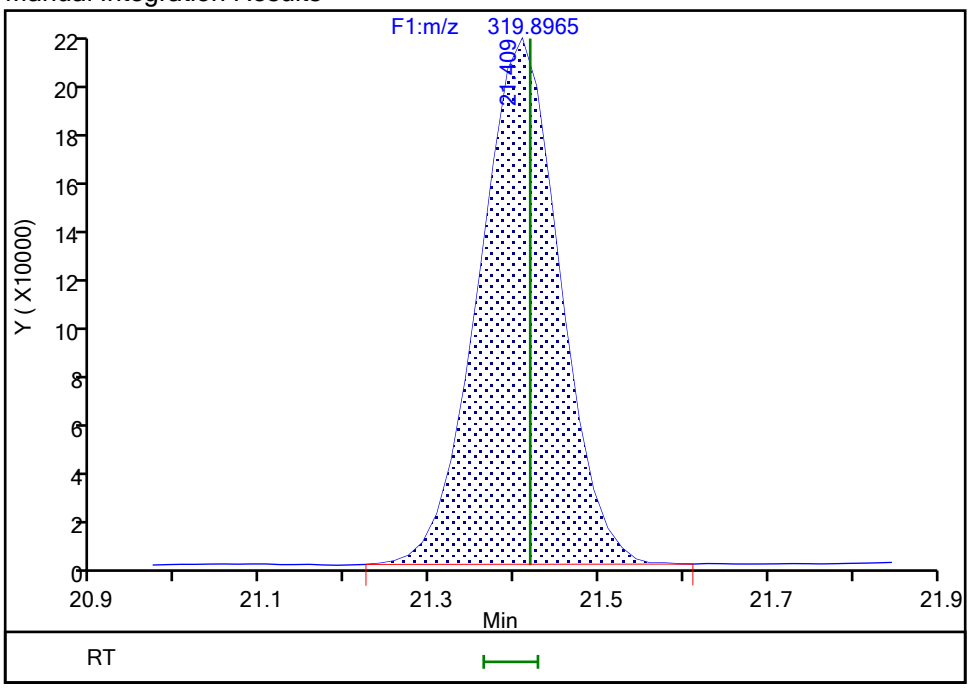
Not Detected
Expected RT: 21.42

Processing Integration Results



Manual Integration Results

RT: 21.41
Area: 1453237
Amount: 38.211167
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:16:10
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

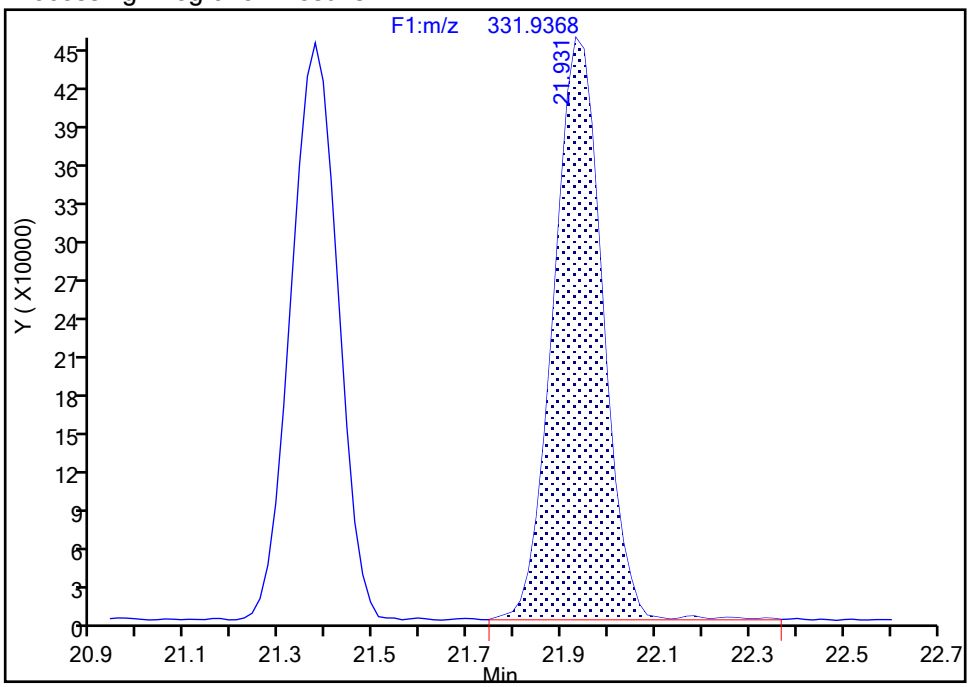
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d
Injection Date: 03-May-2019 05:21:00 Instrument ID: D12C
Lims ID: IC L4
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

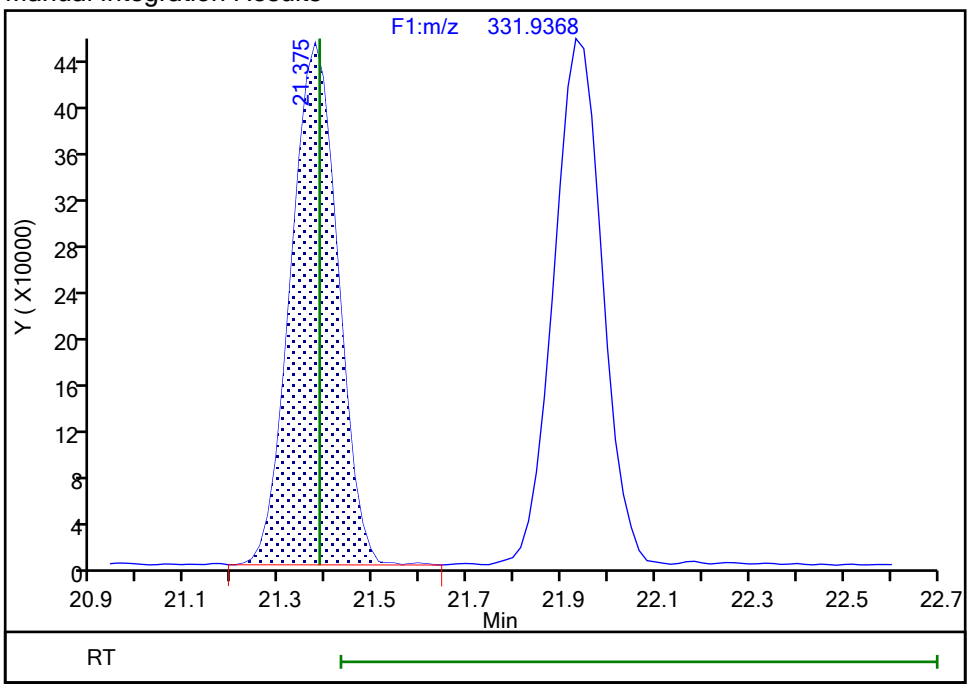
Processing Integration Results

RT: 21.93
Area: 3289165
Amount: 99.755387
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 3136410
Amount: 96.941133
Amount Units: pg/ul



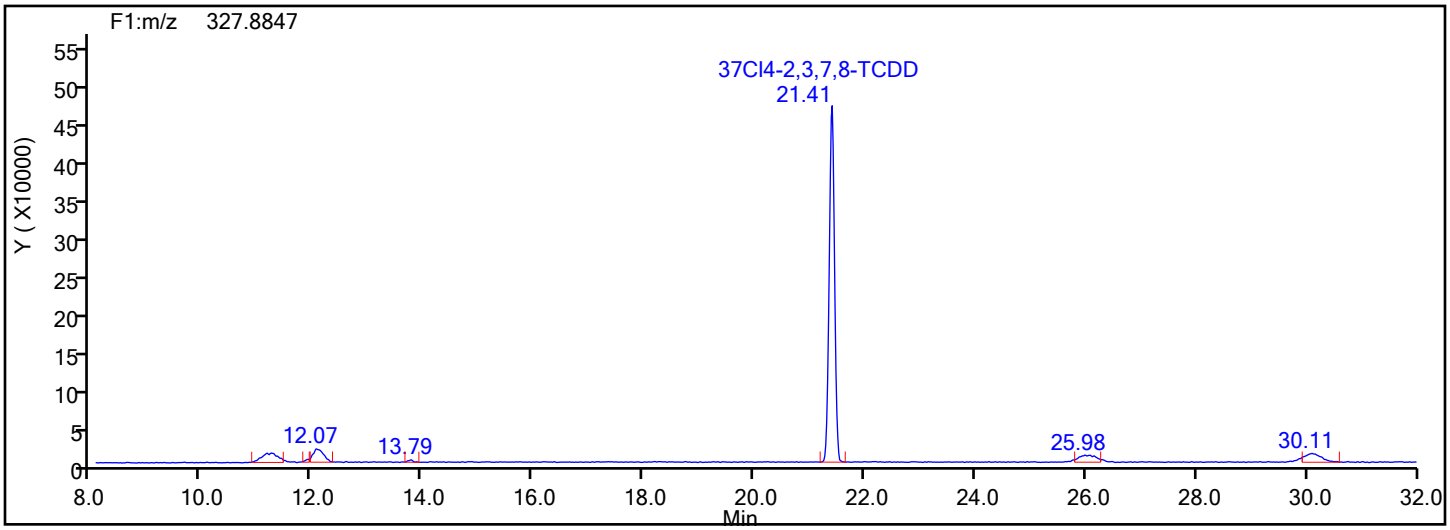
Reviewer: reynoldk, 03-May-2019 09:15:45
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

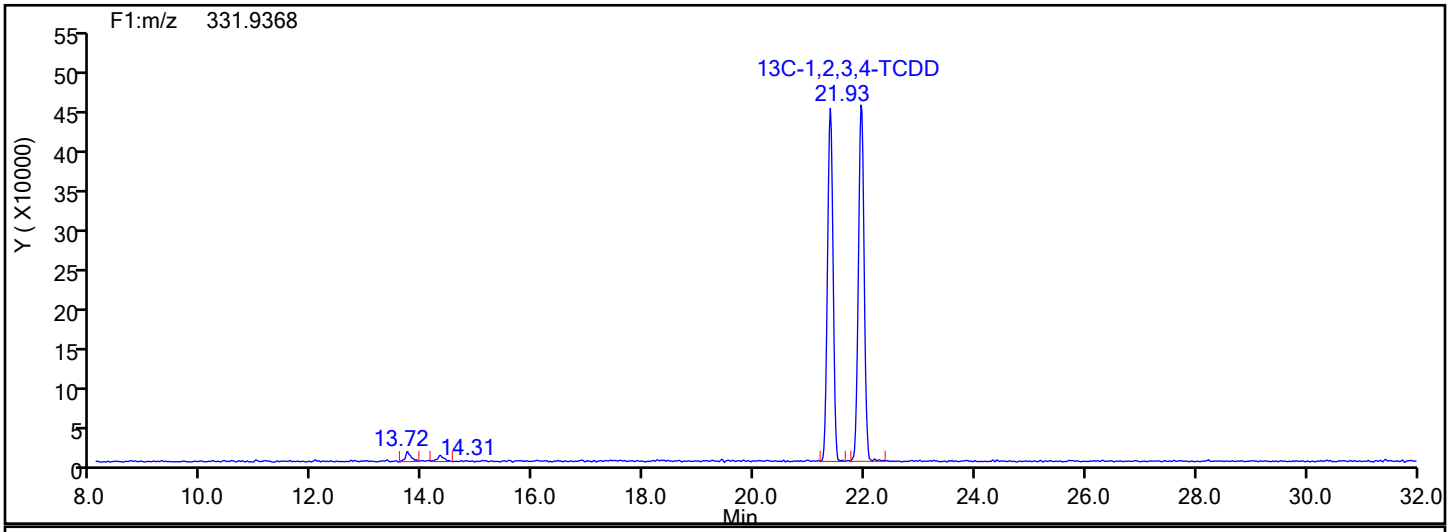
Eurofins TestAmerica, Knoxville

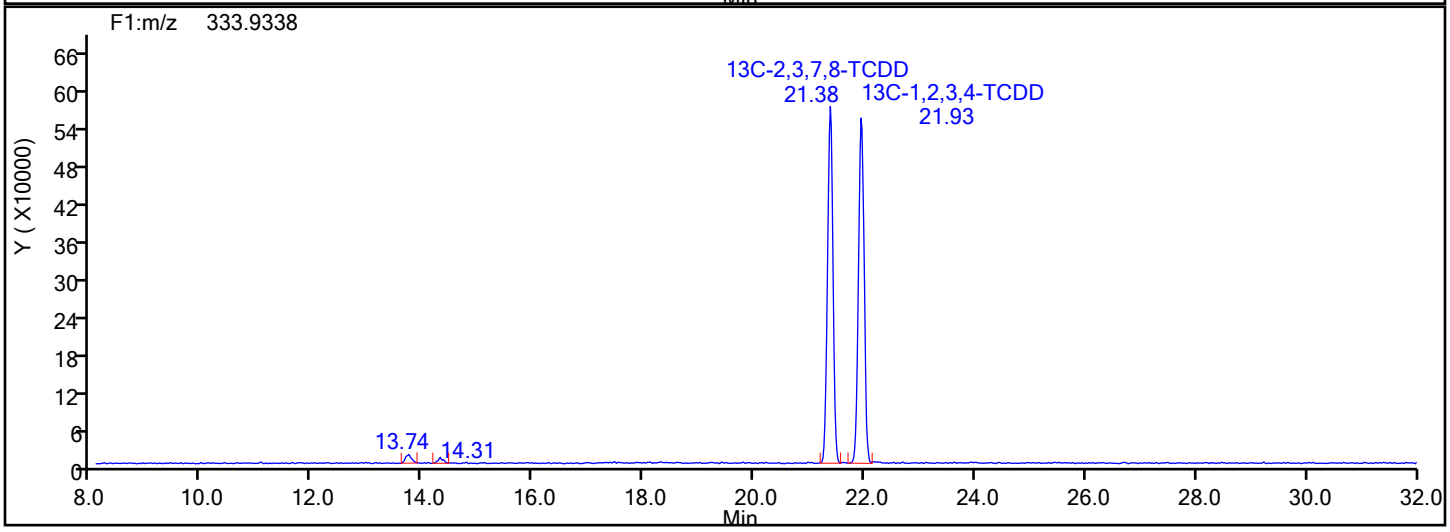
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



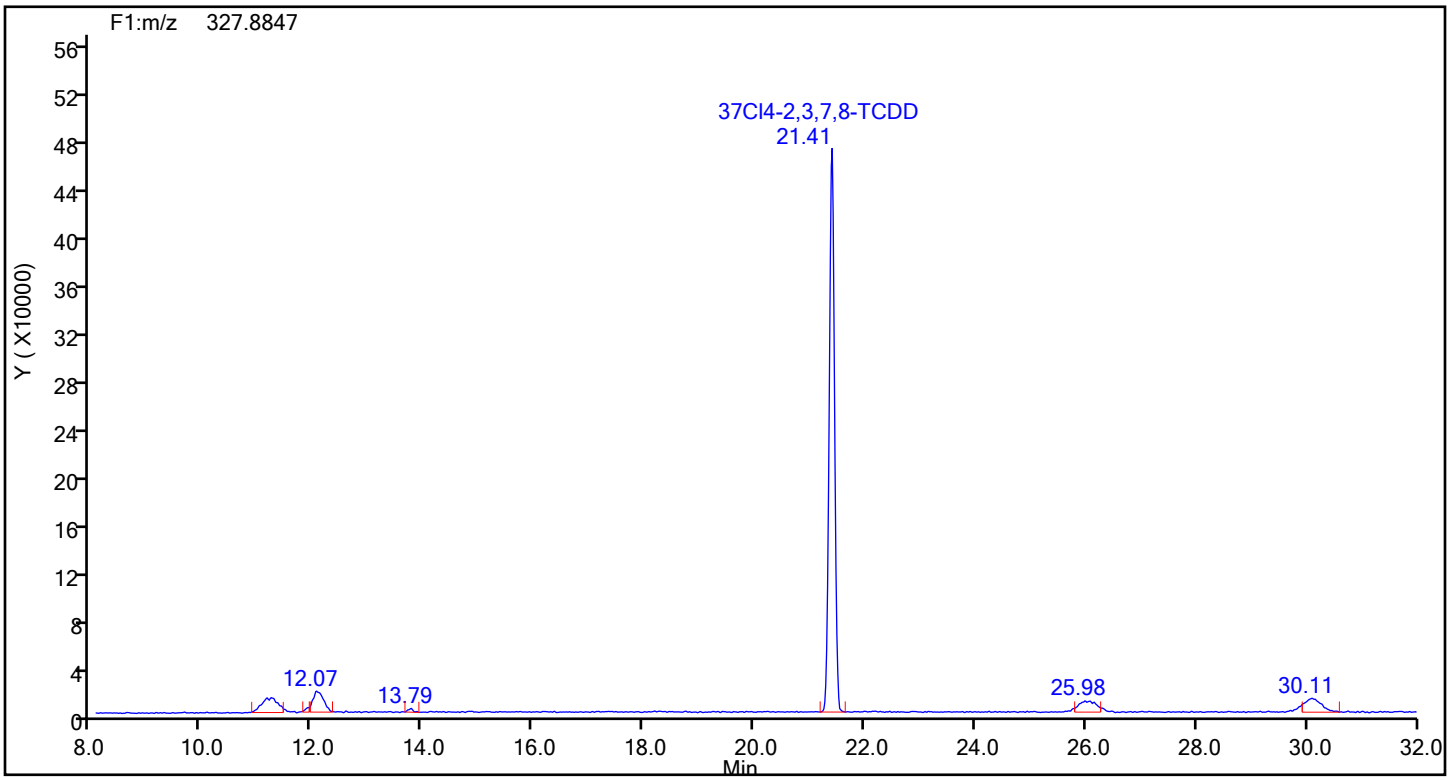


Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

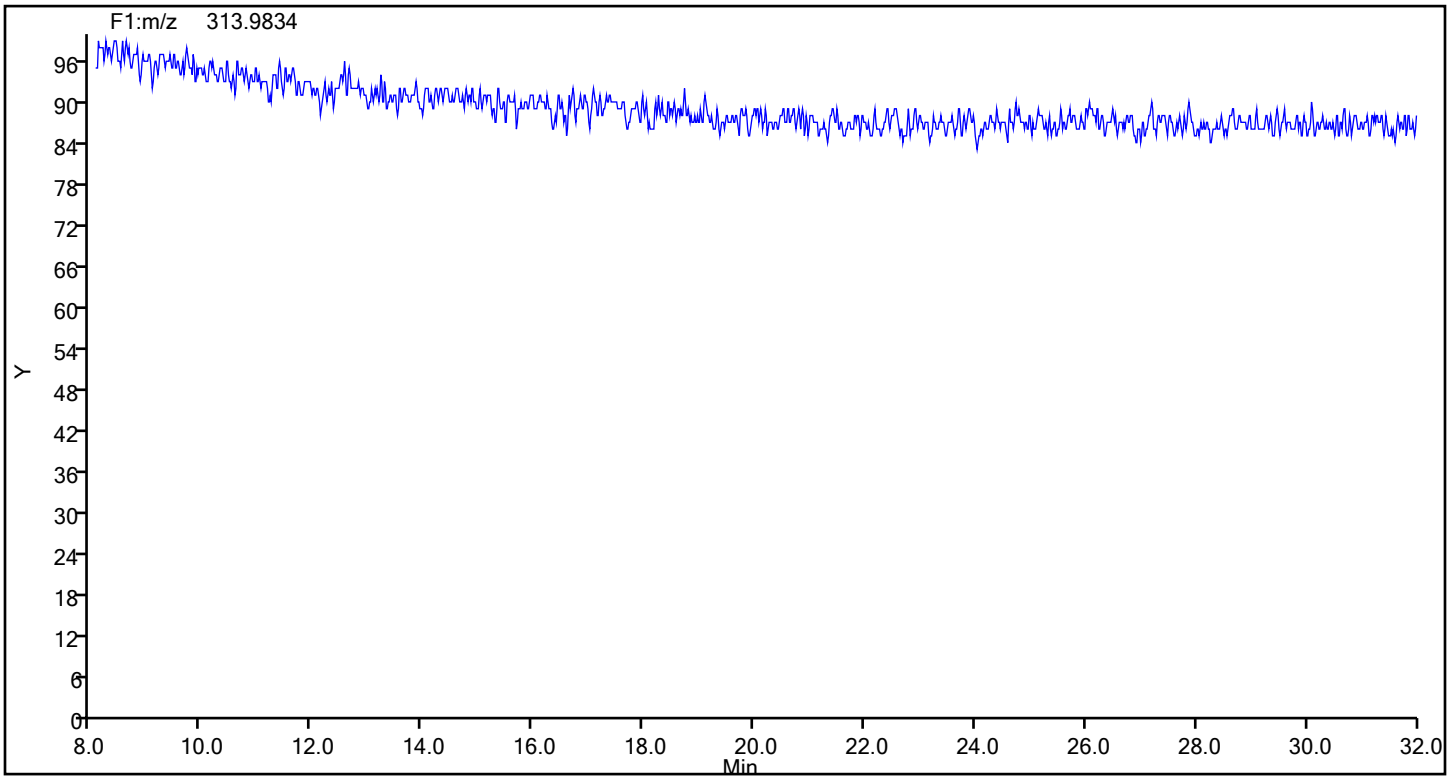
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

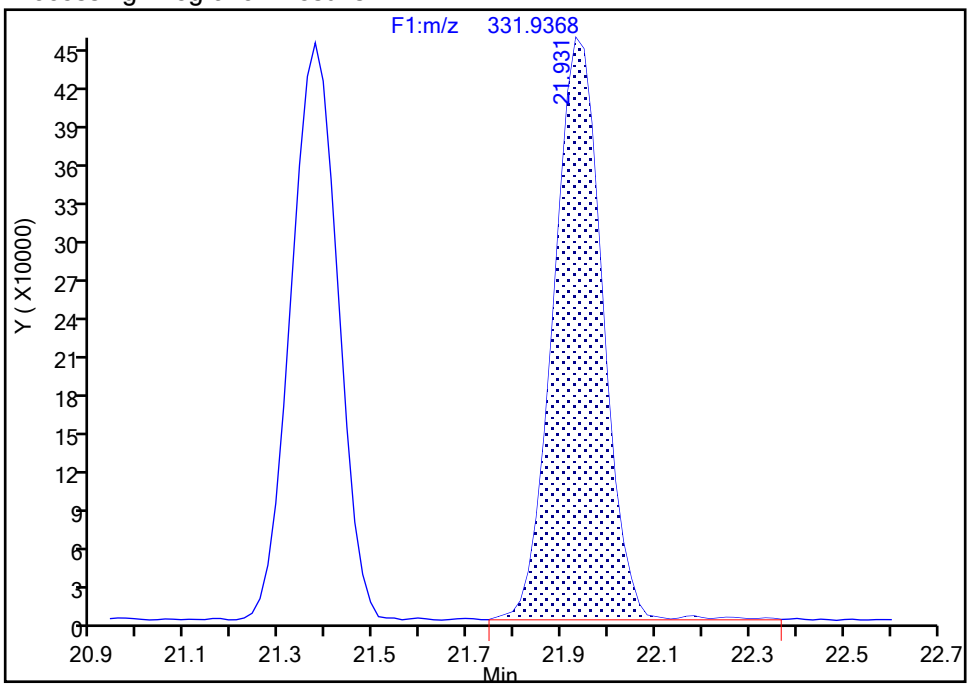
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d
Injection Date: 03-May-2019 05:21:00 Instrument ID: D12C
Lims ID: IC L4
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

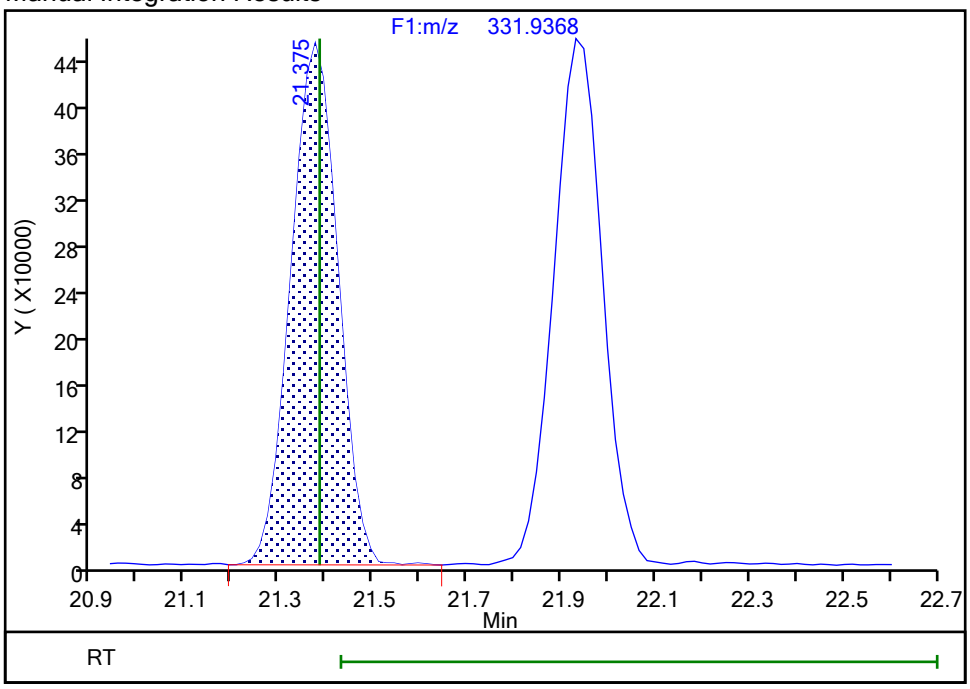
Processing Integration Results

RT: 21.93
Area: 3289165
Amount: 99.755387
Amount Units: pg/ul



Manual Integration Results

RT: 21.38
Area: 3136410
Amount: 96.941133
Amount Units: pg/ul



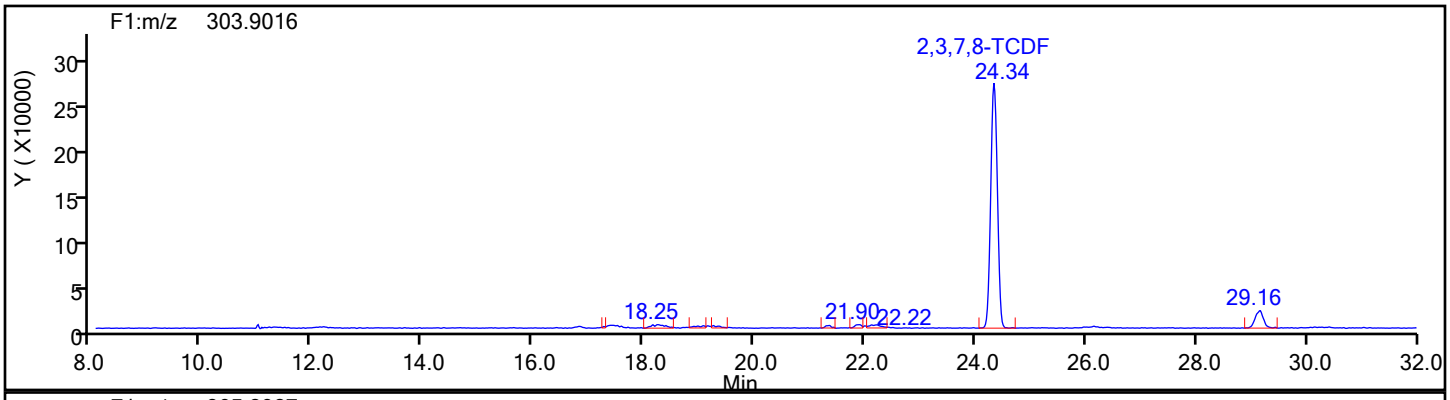
Reviewer: reynoldk, 03-May-2019 09:15:45
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

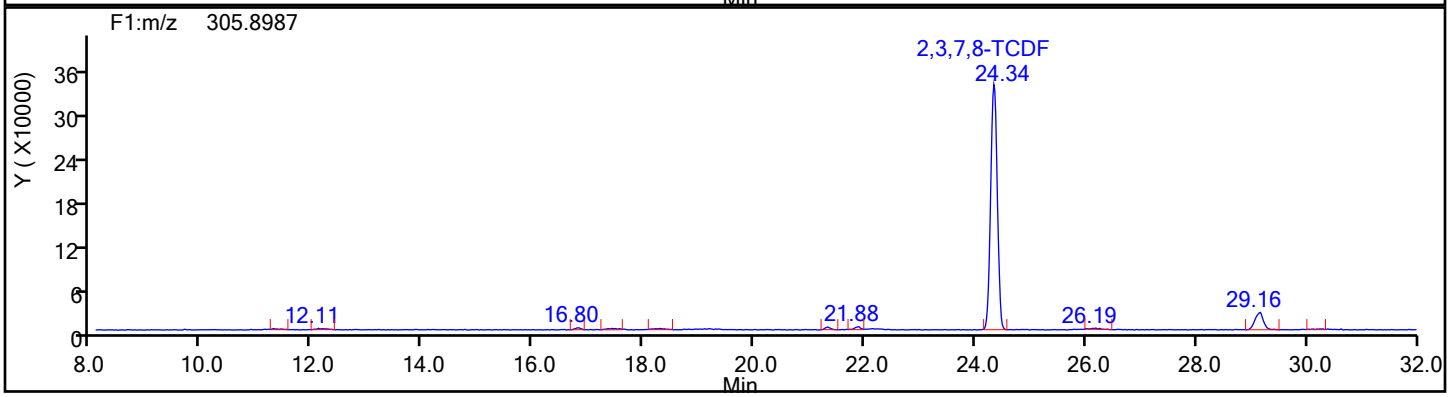
Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

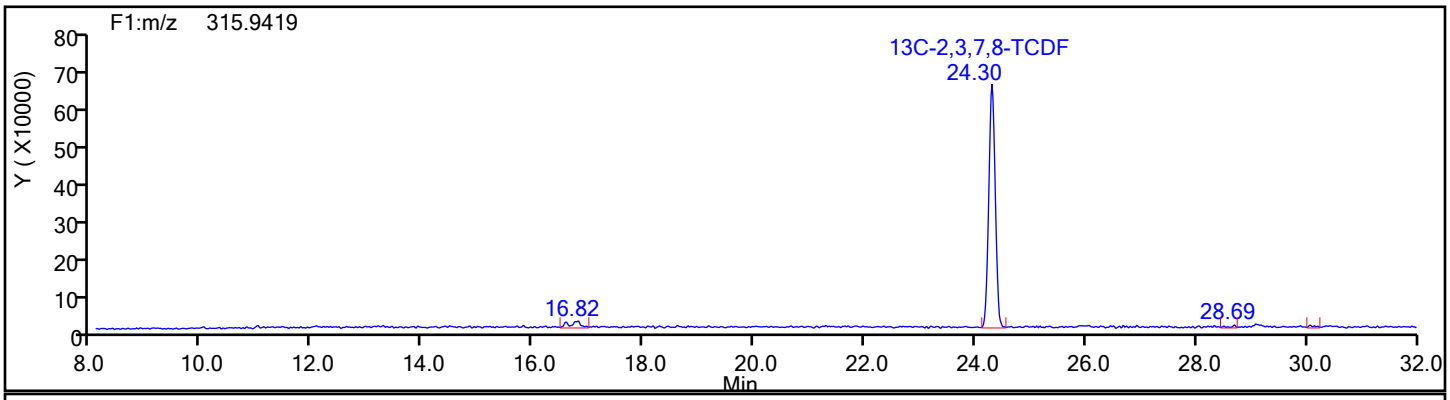
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

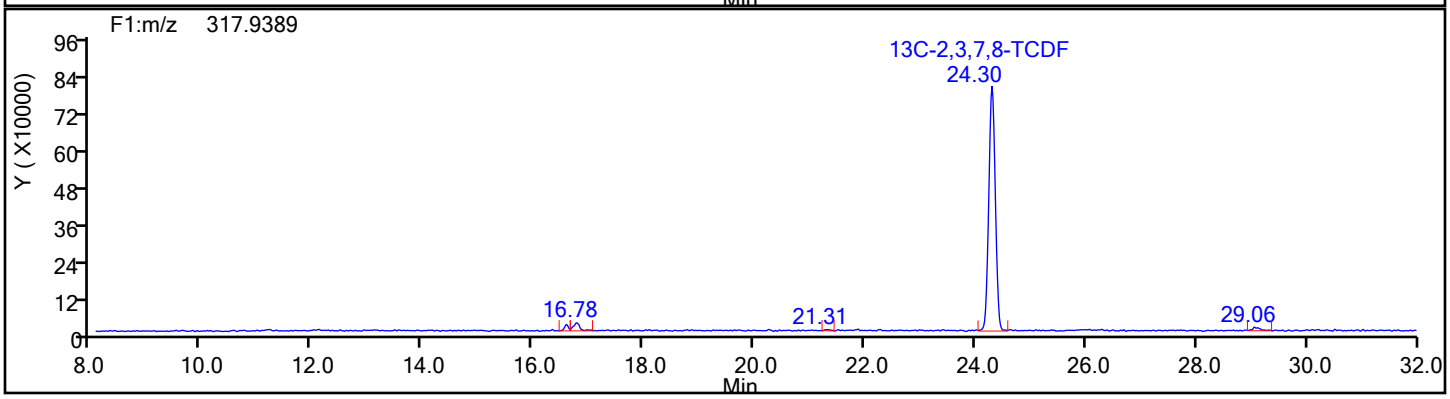
TCDF





TCDF Standards



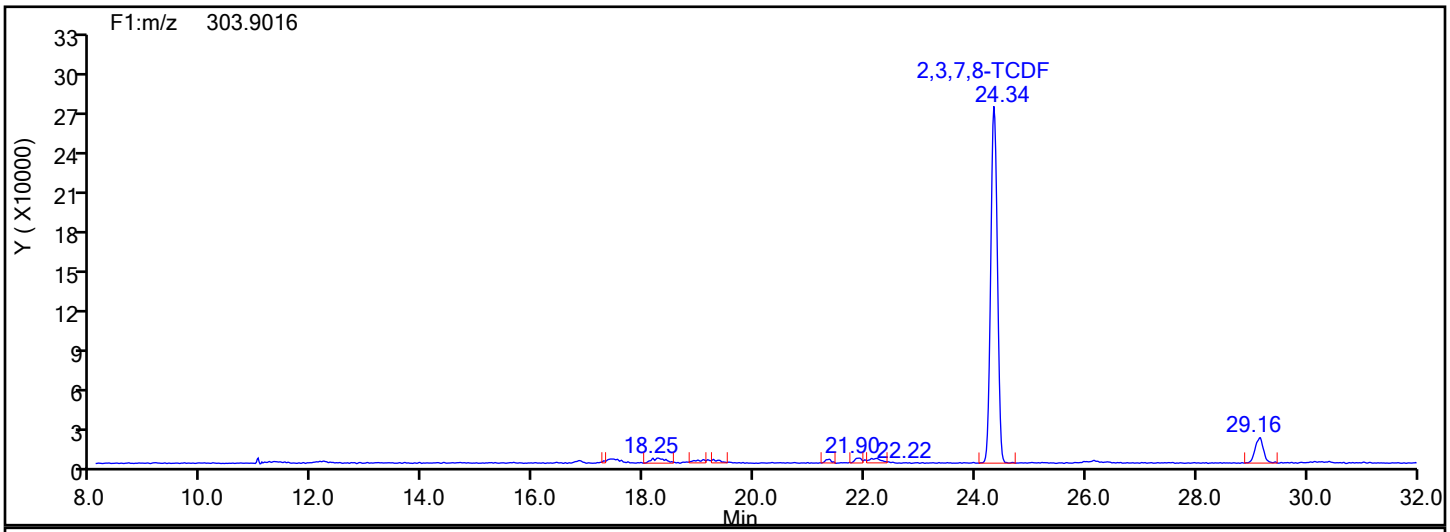


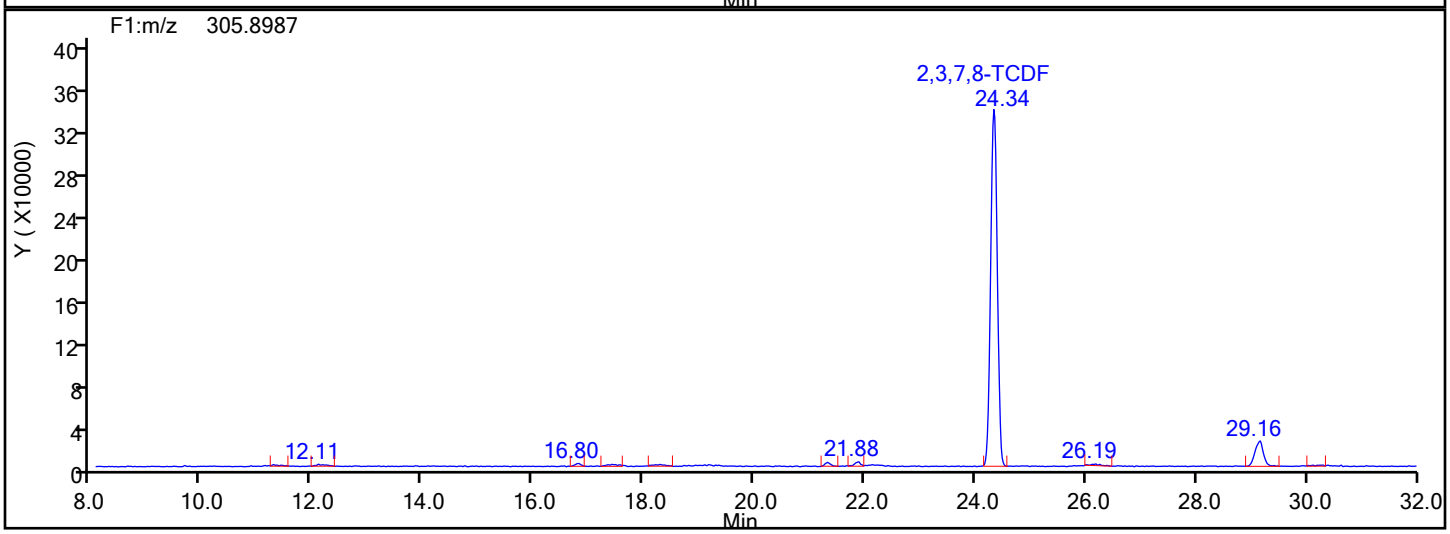
Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

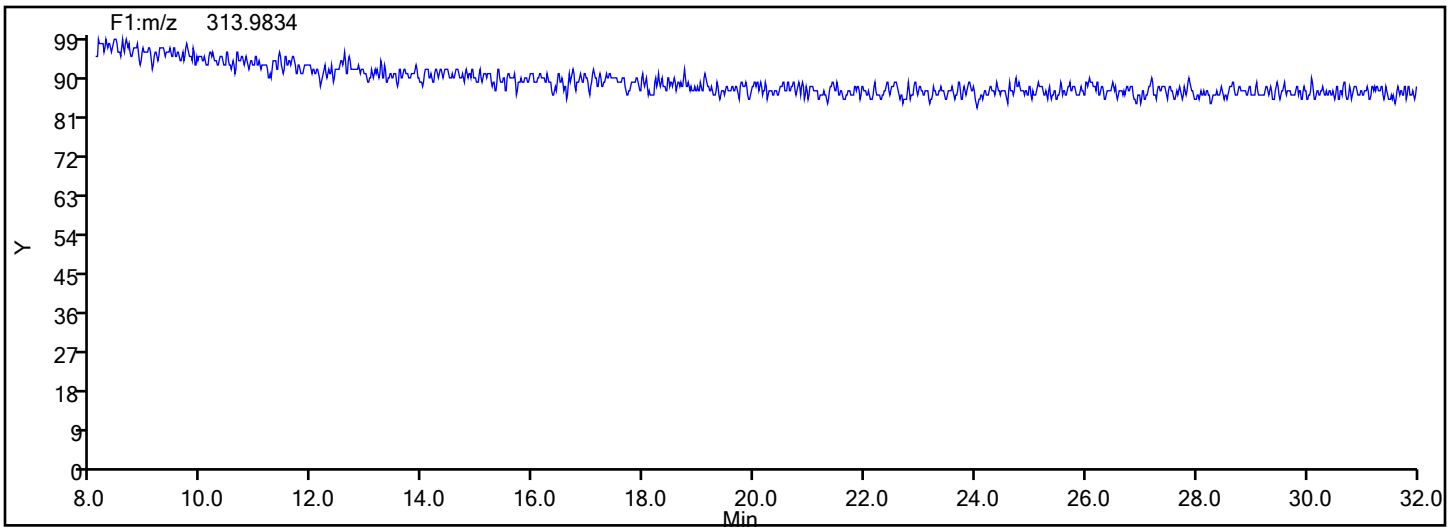
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

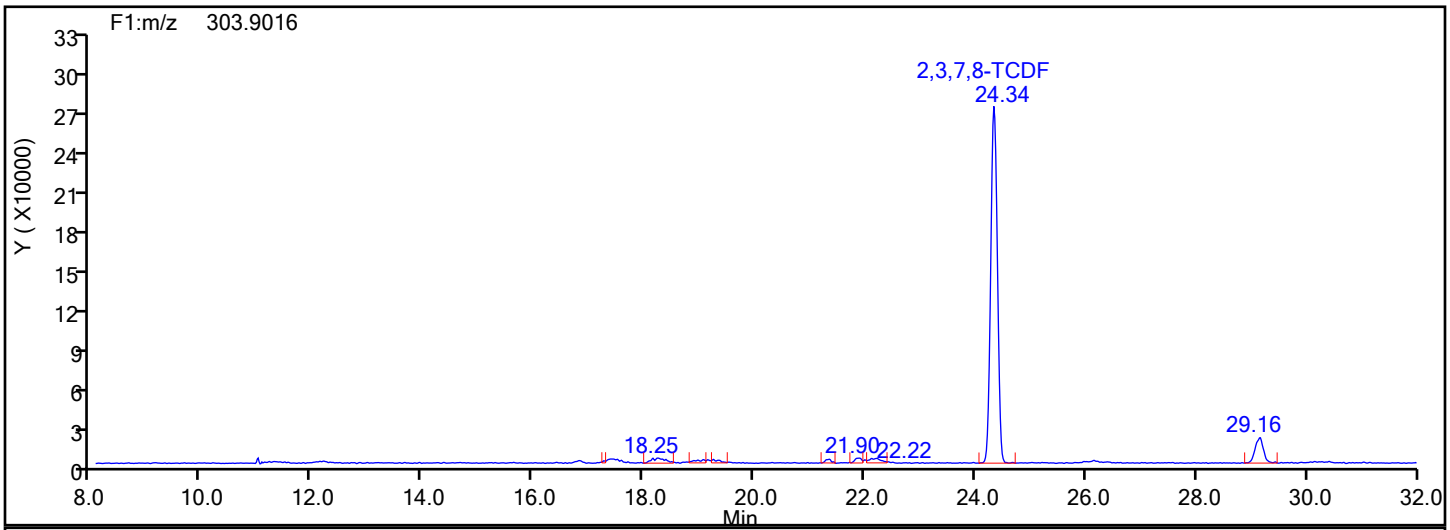


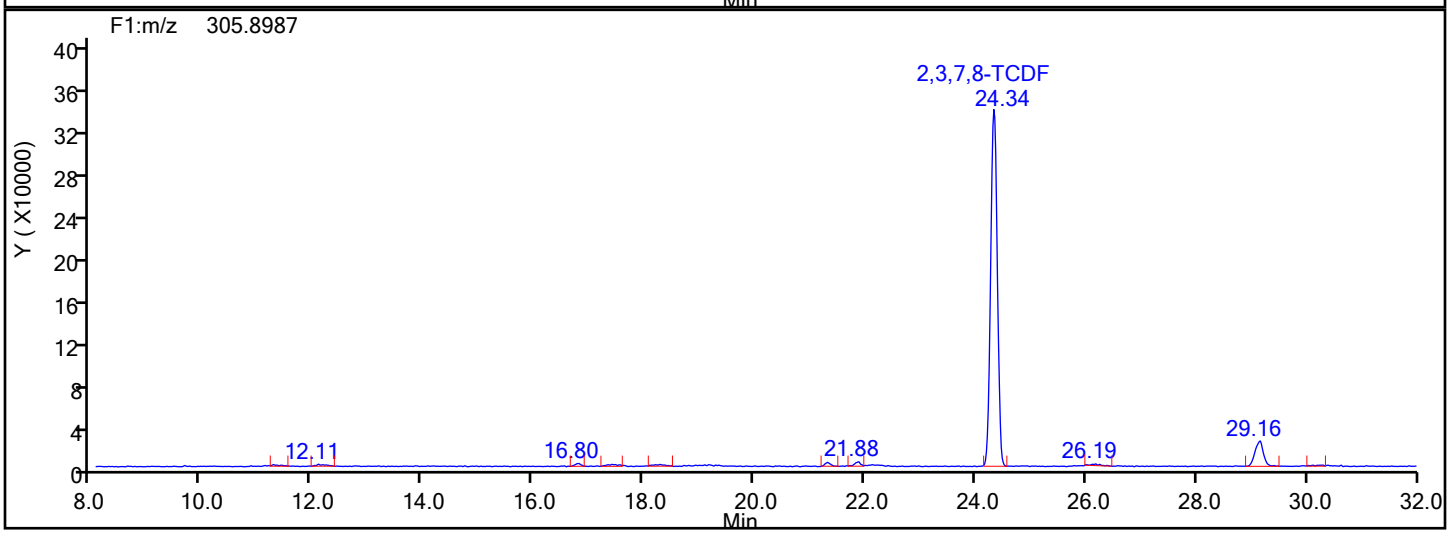
Report Date: 03-May-2019 13:47:46 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

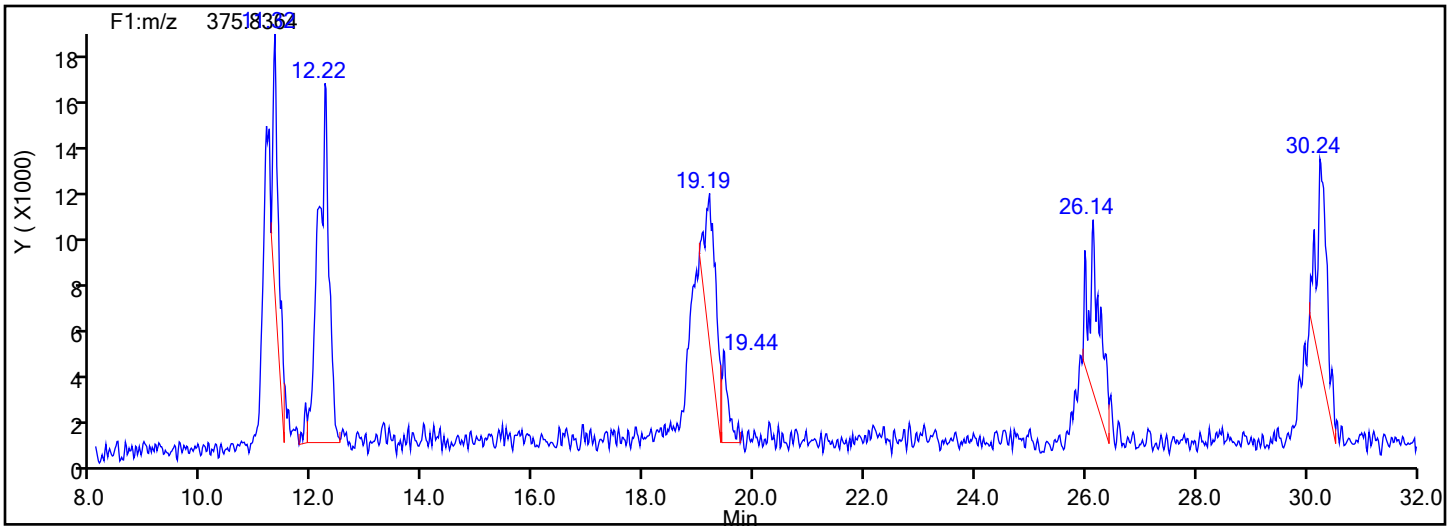
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d		
Injection Date:	03-May-2019 05:21:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	10
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

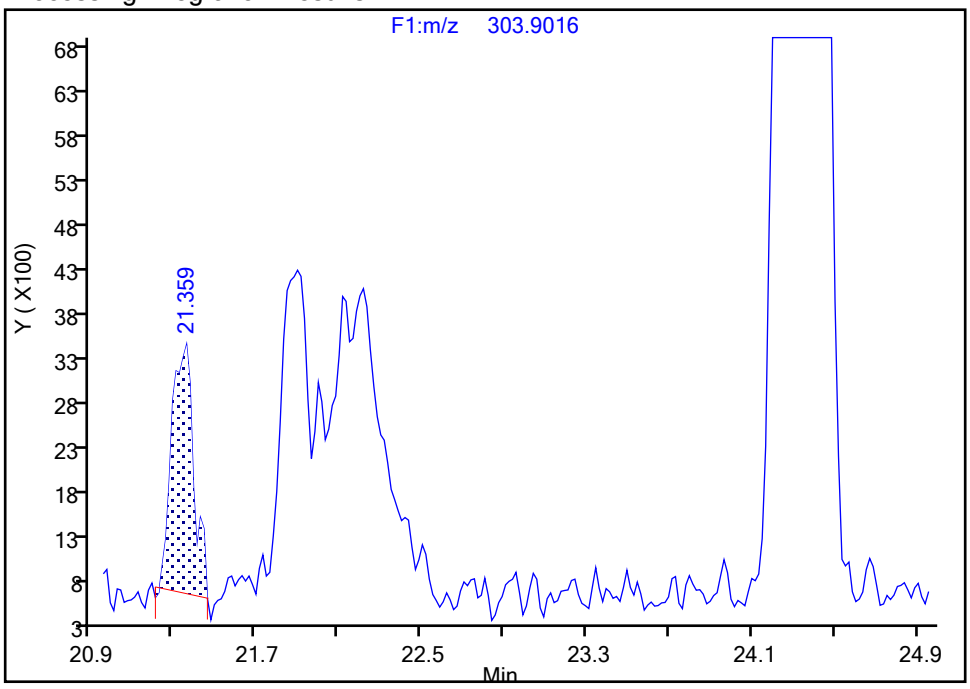
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d				
Injection Date:	03-May-2019 05:21:00	Instrument ID:	D12C		
Lims ID:	IC L4				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

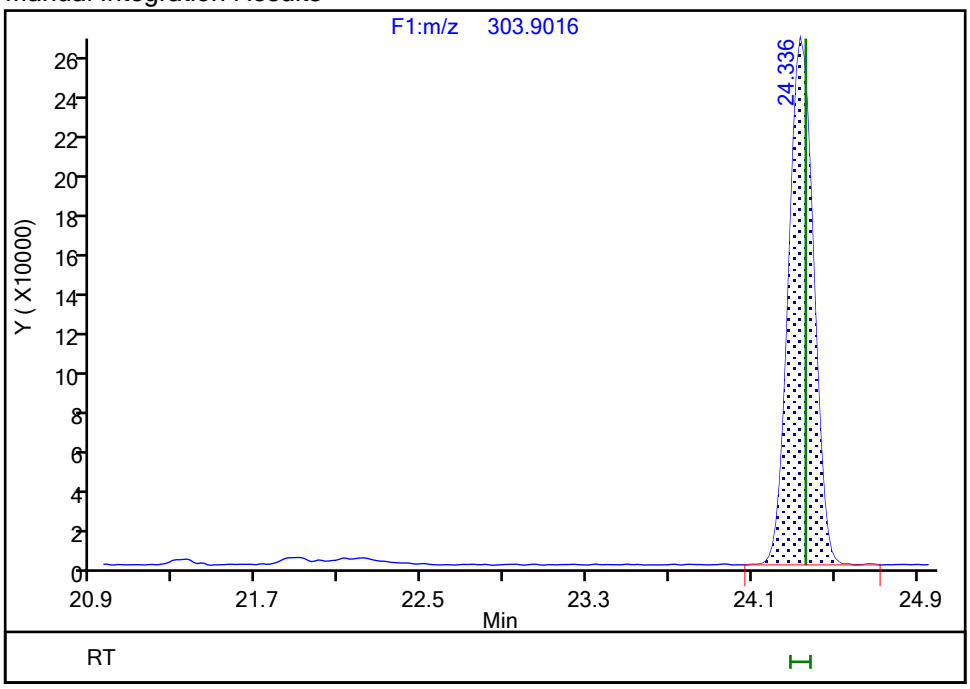
Processing Integration Results

RT: 21.36
Area: 20373
Amount: 0.427585
Amount Units: pg/ul



Manual Integration Results

RT: 24.34
Area: 2241396
Amount: 37.744942
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:16:05

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

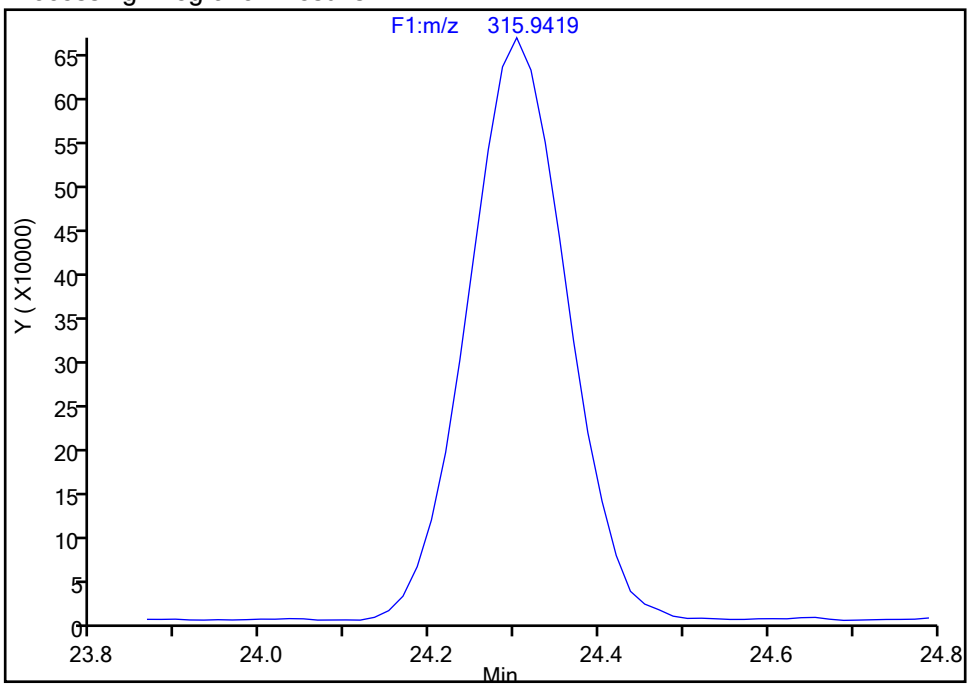
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl4_190503052133.d				
Injection Date:	03-May-2019 05:21:00	Instrument ID:	D12C		
Lims ID:	IC L4				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

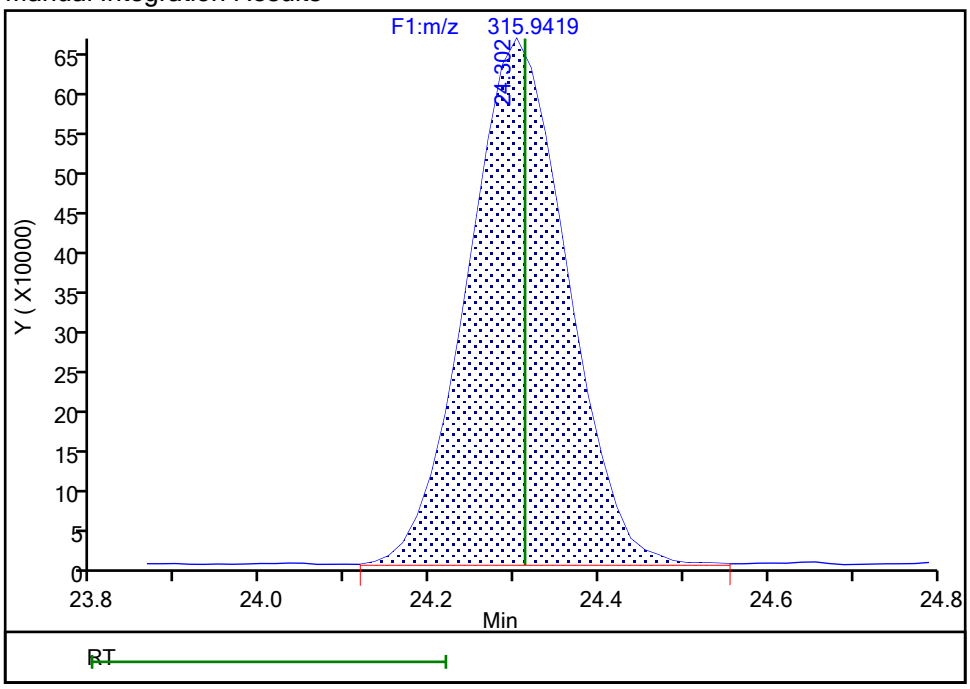
Not Detected
Expected RT: 24.31

Processing Integration Results



Manual Integration Results

RT: 24.30
Area: 5391173
Amount: 102.2650
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:15:52
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-May-2019 06:14:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-012
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:48:20 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:27:37

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:23	20341590	0.80	1.2213	179.9	179.9	0.6494	0.6494	89.97	Ma
2,3,7,8-TCDF	24:19	30209841	0.80	1.1100	189.0	189.0	0.1471	0.1471	94.50	M
D 13C-2,3,7,8-TCDD	21:21	9255730	0.79	1.0031	102.8	102.8	0.4534	0.4534	103	a
D 13C-2,3,7,8-TCDF	24:17	14399916	0.81	1.6193	99.1	99.1	0.3494	0.3494	99.10	a
$ 37Cl4-2,3,7,8-TCDD	21:23	19413307		1.1834	182.8	182.8	0.0764	0.0764	91.40	
* 13C-1,2,3,4-TCDD	21:56	8973810	0.80	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

61L51613OP_00001 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-May-2019 06:14:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-012
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:48:20 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 09:27:37

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											Ma
319.8965	21:23	21:26	-2	1.002	9040060	1338859	1623	4057	825		a
321.8936	21:23	21:26	-2	1.002	11301530	1650420	2749	6872	600	0.80(0.65-0.89)	M
2,3,7,8-TCDF											M
303.9016	24:19	24:22	-3	1.001	13469845	1626000	527	1317	3085		M
305.8987	24:19	24:22	-3	1.001	16739996	2031658	603	1507	3369	0.80(0.65-0.89)	M
13C-2,3,7,8-TCDD											a
331.9368	21:21	21:24	-2	0.974	4096212	613489	1318	3295	465		a
333.9338	21:21	21:24	-2	0.974	5159518	764609	900	2250	850	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:17	24:19	-2	1.107	6432836	768984	1542	3855	499		a
317.9389	24:17	24:19	-2	1.107	7967080	960705	1217	3042	789	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21:23	21:26	-2	0.975	19413307	2866095	441	1102	6499		
13C-1,2,3,4-TCDD											
331.9368	21:56	21:58	-2		4000736	548304	1318	3295	416		
333.9338	21:56	21:58	-2		4973074	670770	900	2250	745	0.80(0.65-0.89)	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

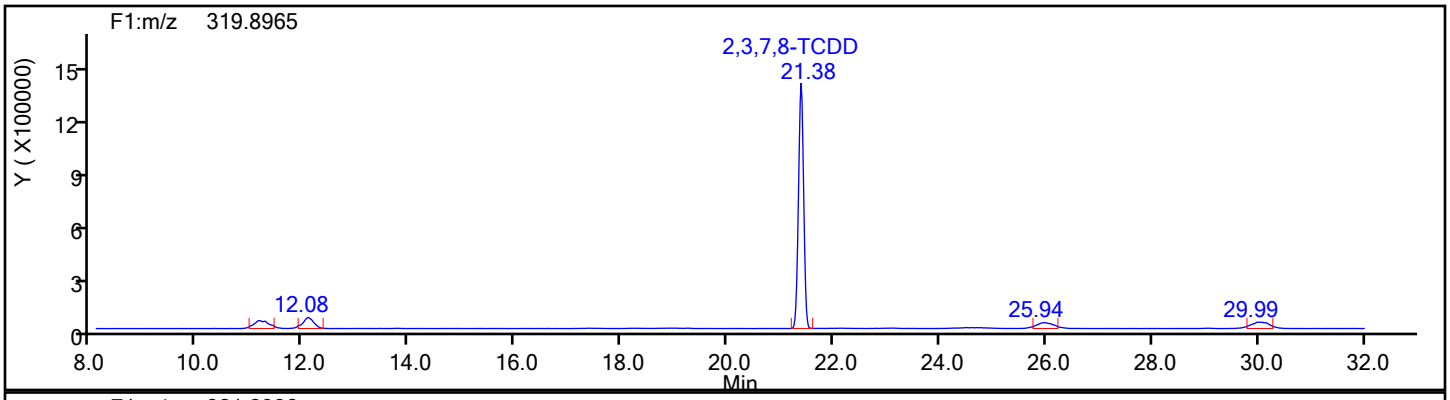
61L51613OP_00001 Amount Added: 20.00 Units: uL

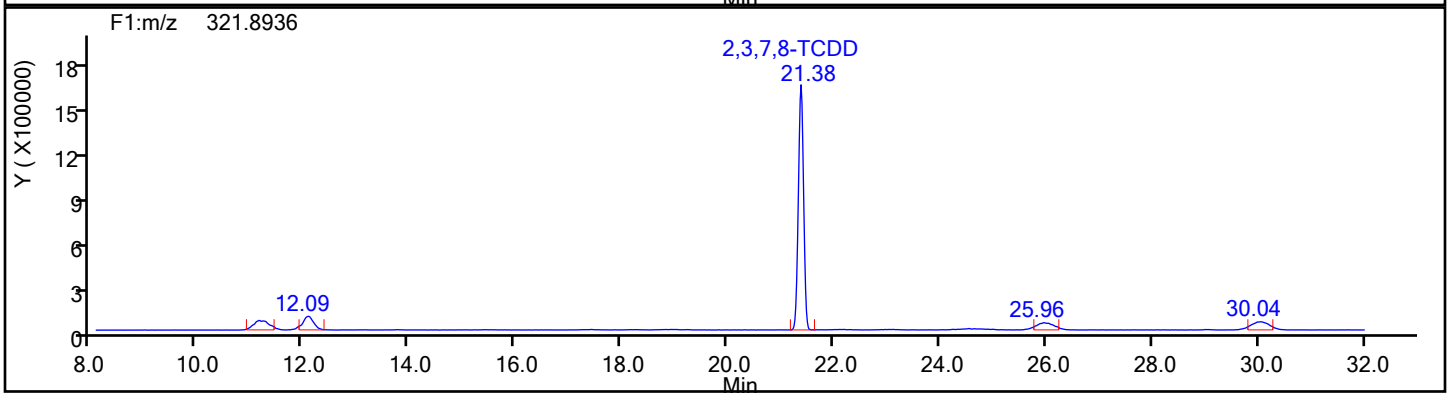
Report Date: 03-May-2019 13:48:20 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

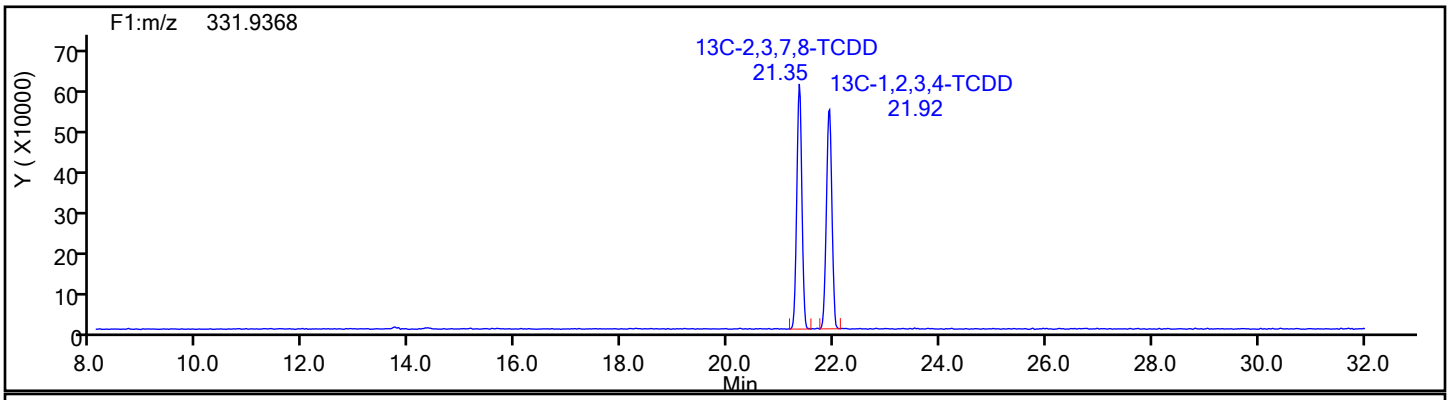
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

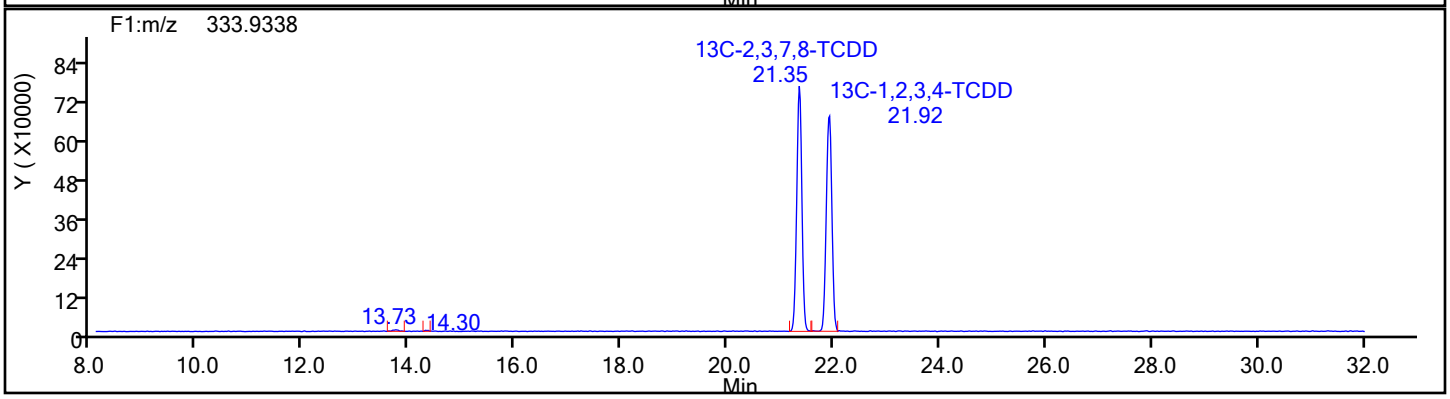
TCDD





TCDD Standards



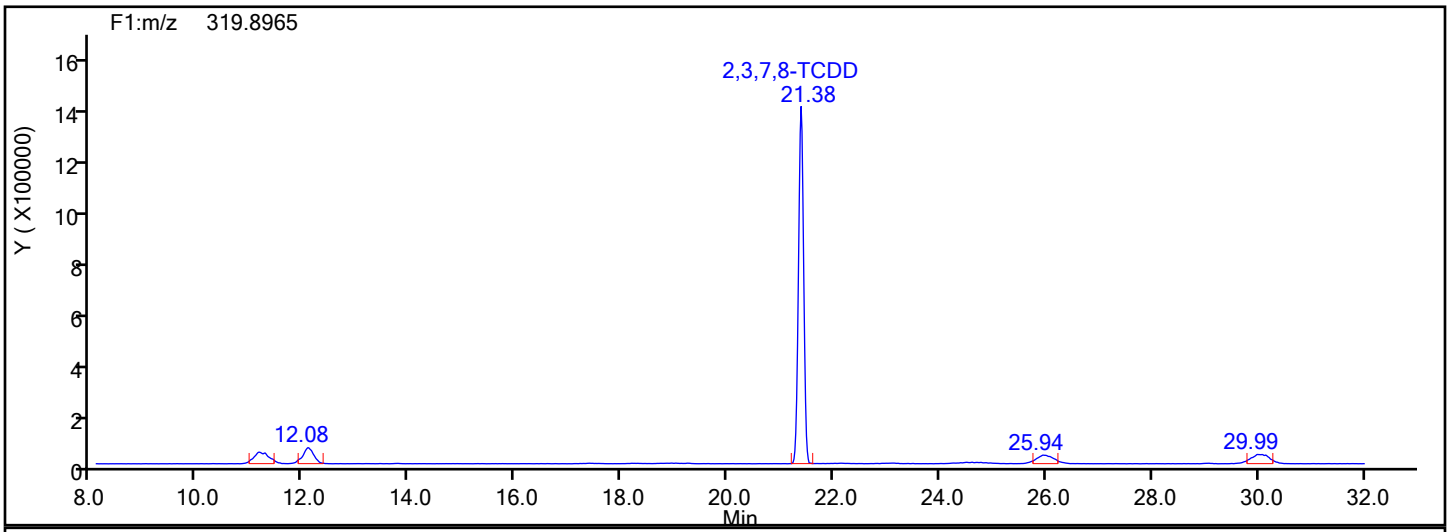


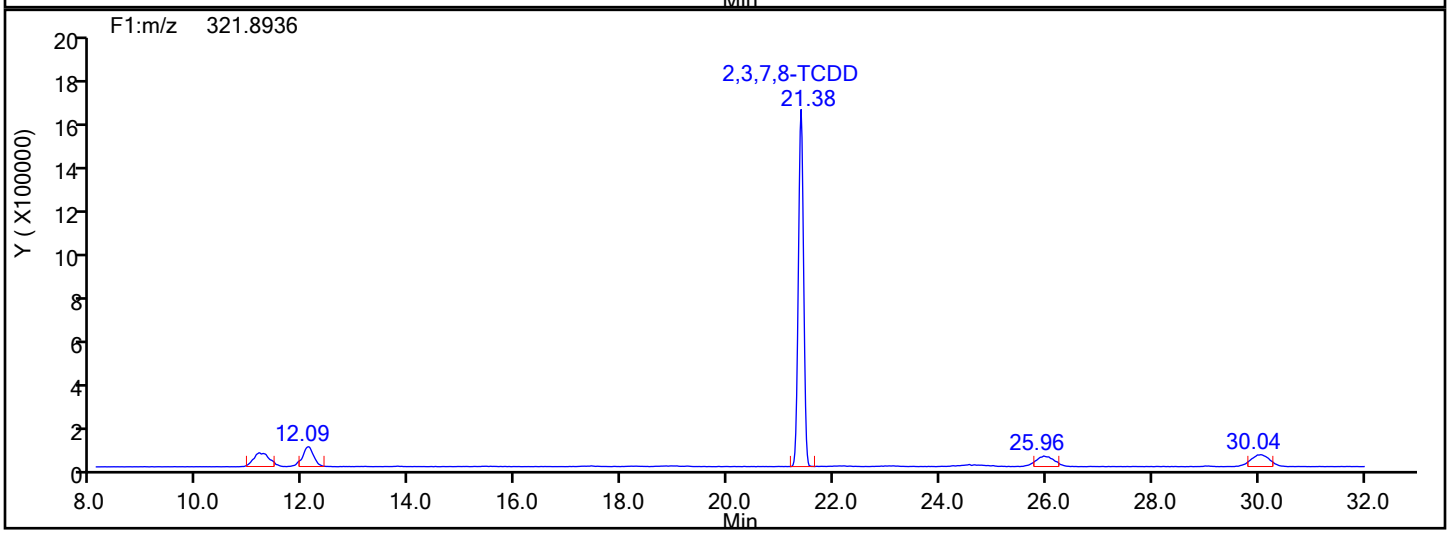
Report Date: 03-May-2019 13:48:20 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

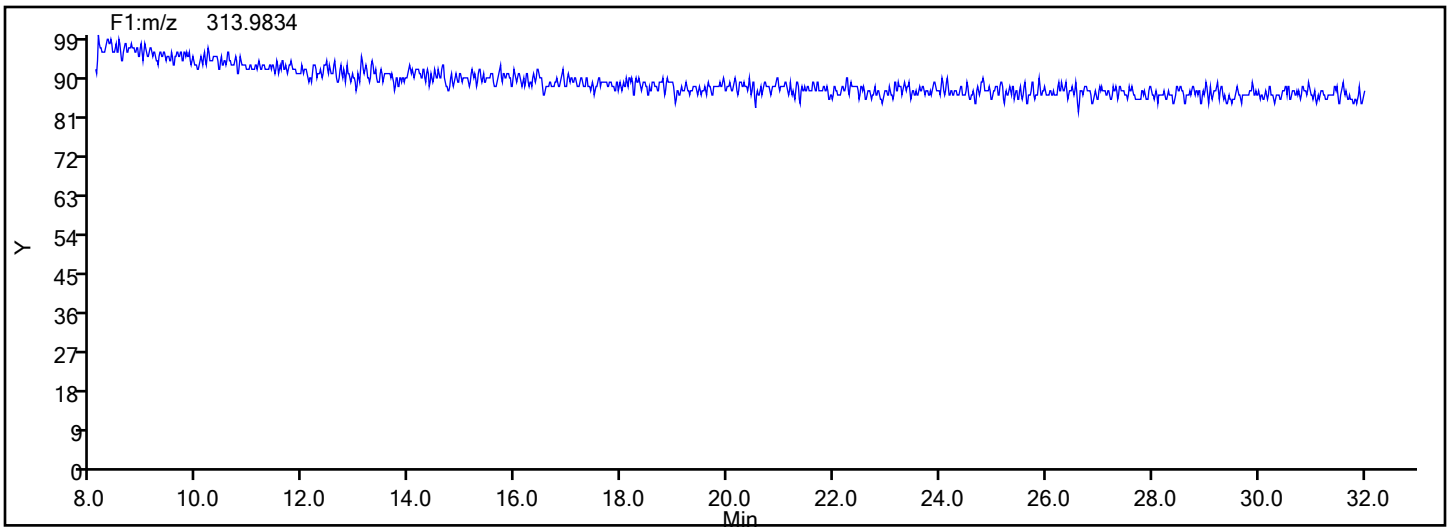
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

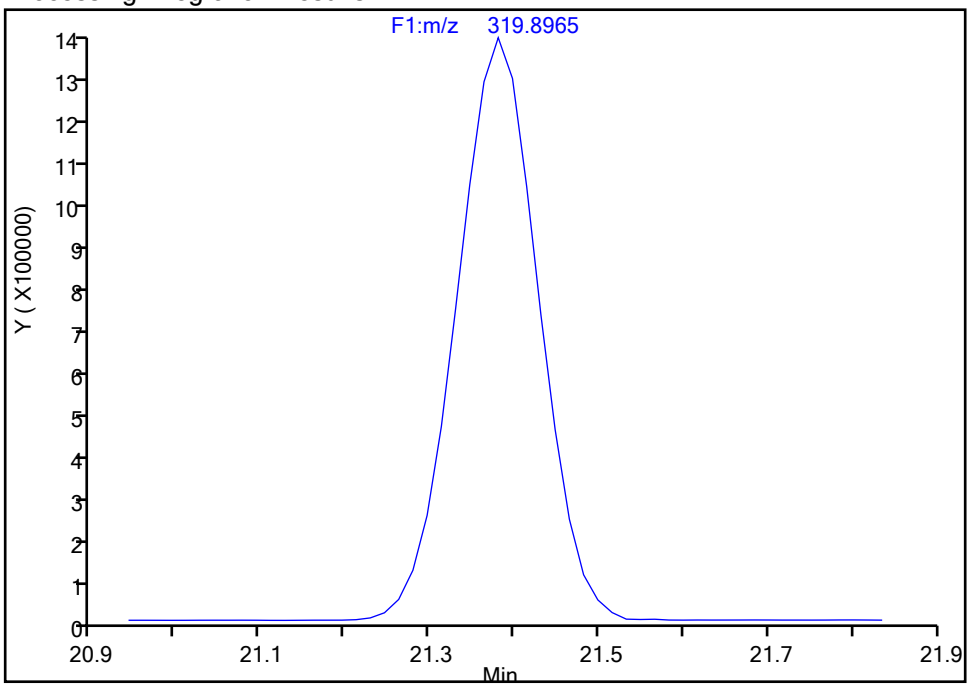
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

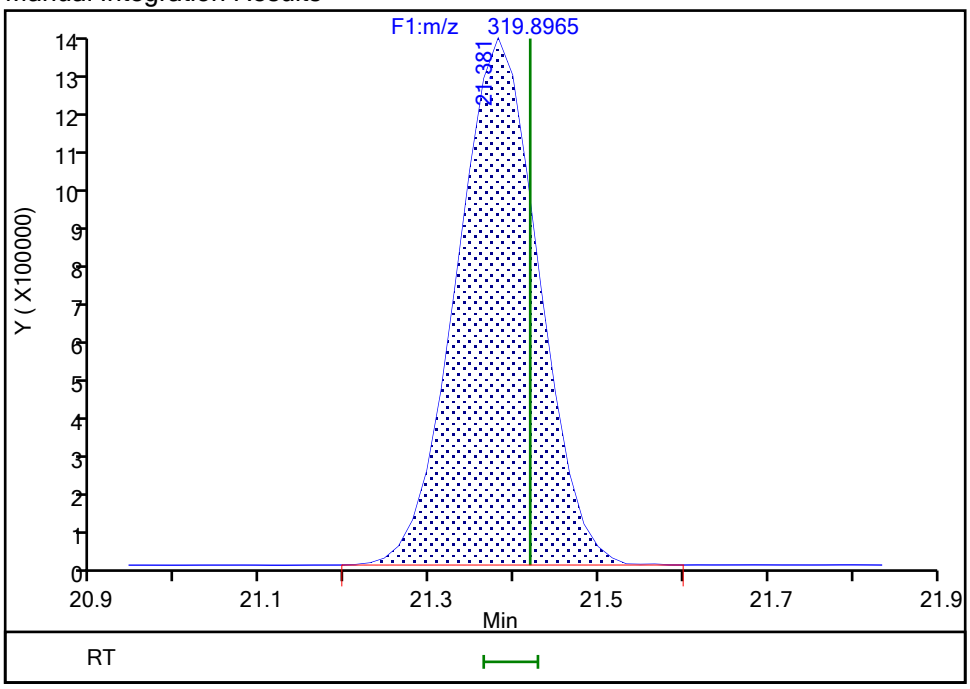
Not Detected
Expected RT: 21.42

Processing Integration Results



Manual Integration Results

RT: 21.38
Area: 9040060
Amount: 179.9461
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:17:01
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

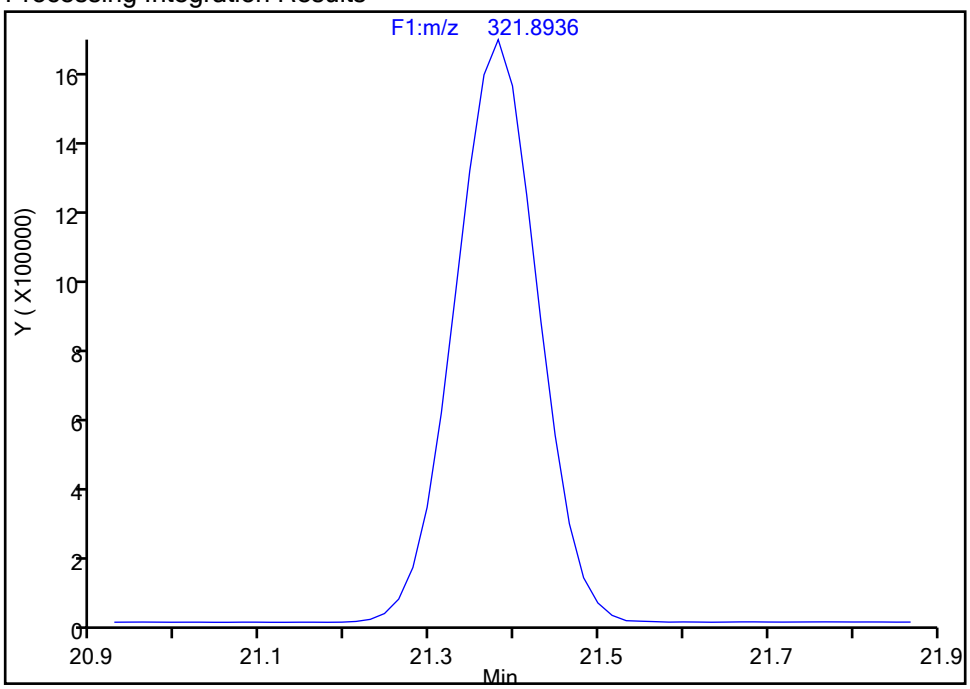
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

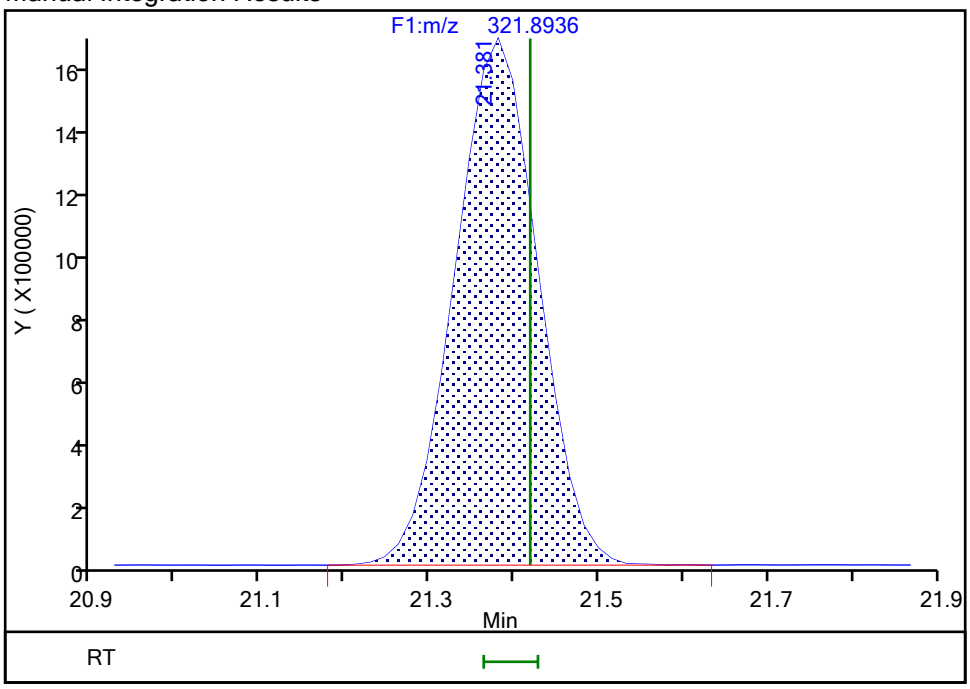
Not Detected
Expected RT: 21.42

Processing Integration Results



Manual Integration Results

RT: 21.38
Area: 11301530
Amount: 179.9461
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:34:40
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

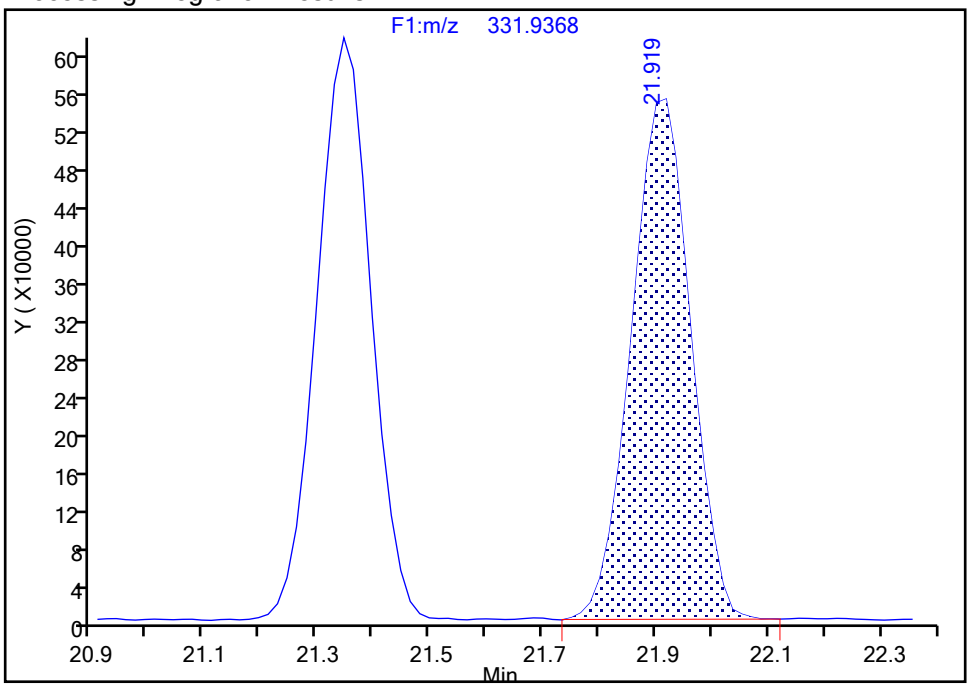
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

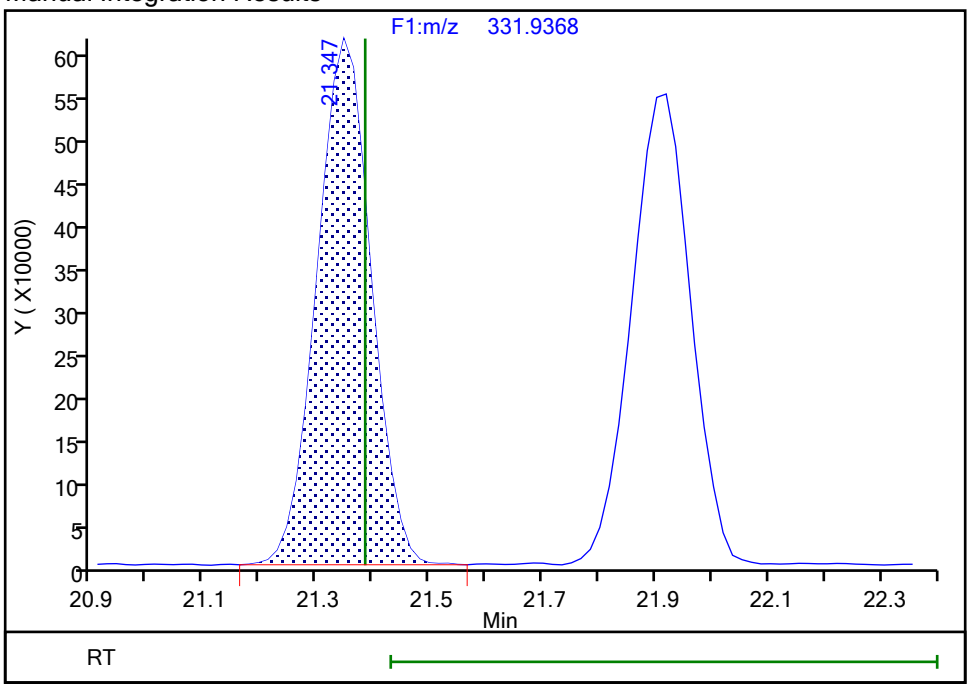
Processing Integration Results

RT: 21.92
Area: 4000736
Amount: 100.3635
Amount Units: pg/ul



Manual Integration Results

RT: 21.35
Area: 4096212
Amount: 102.8220
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:16:39

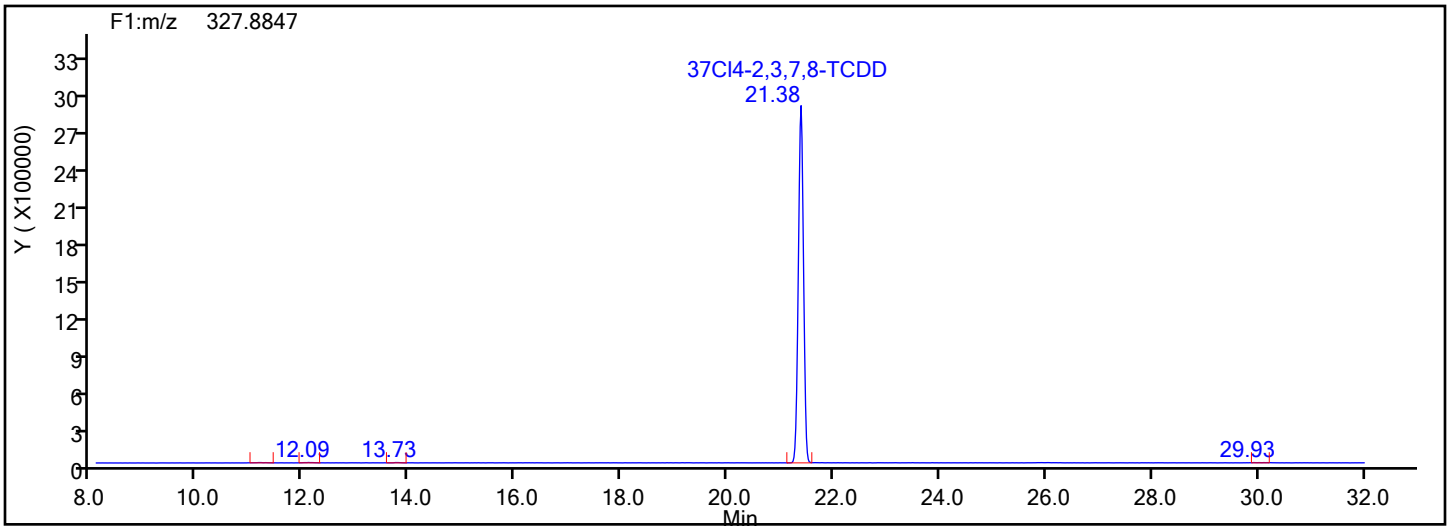
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:48:21 Chrom Revision: 2.3 18-Apr-2019 13:31:50

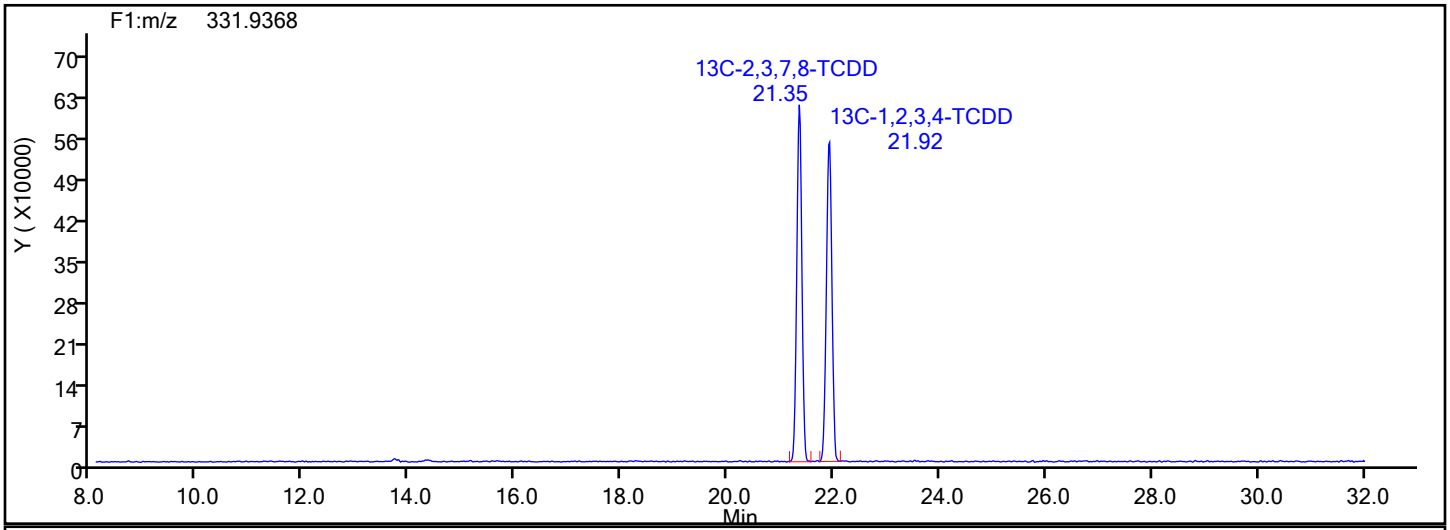
Eurofins TestAmerica, Knoxville

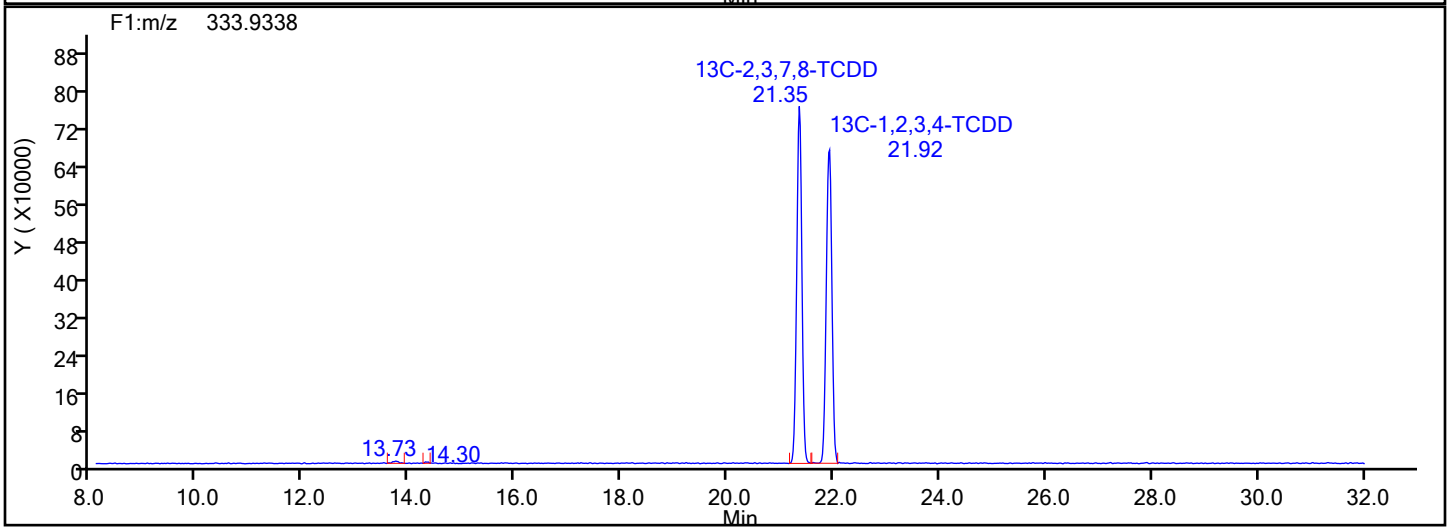
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



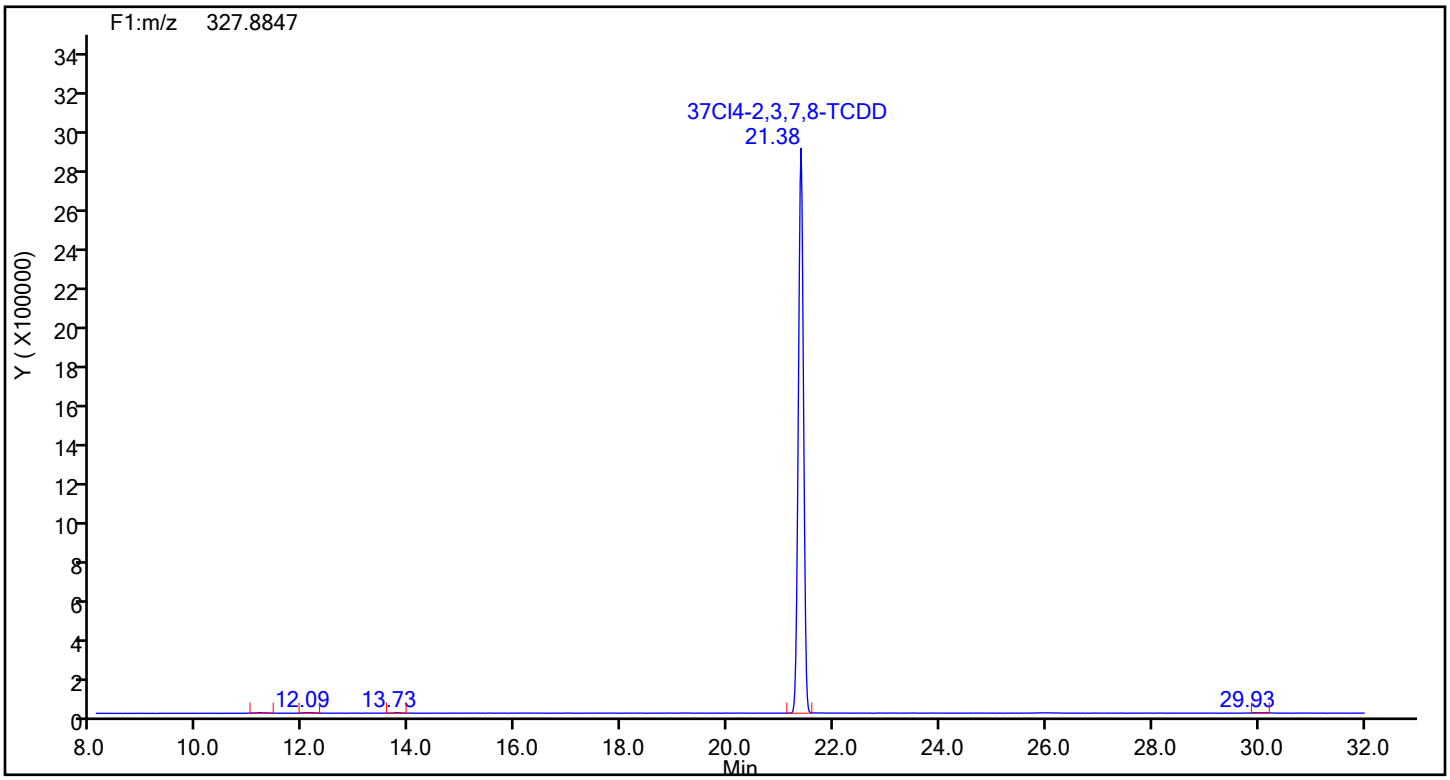


Report Date: 03-May-2019 13:48:21 Chrom Revision: 2.3 18-Apr-2019 13:31:50

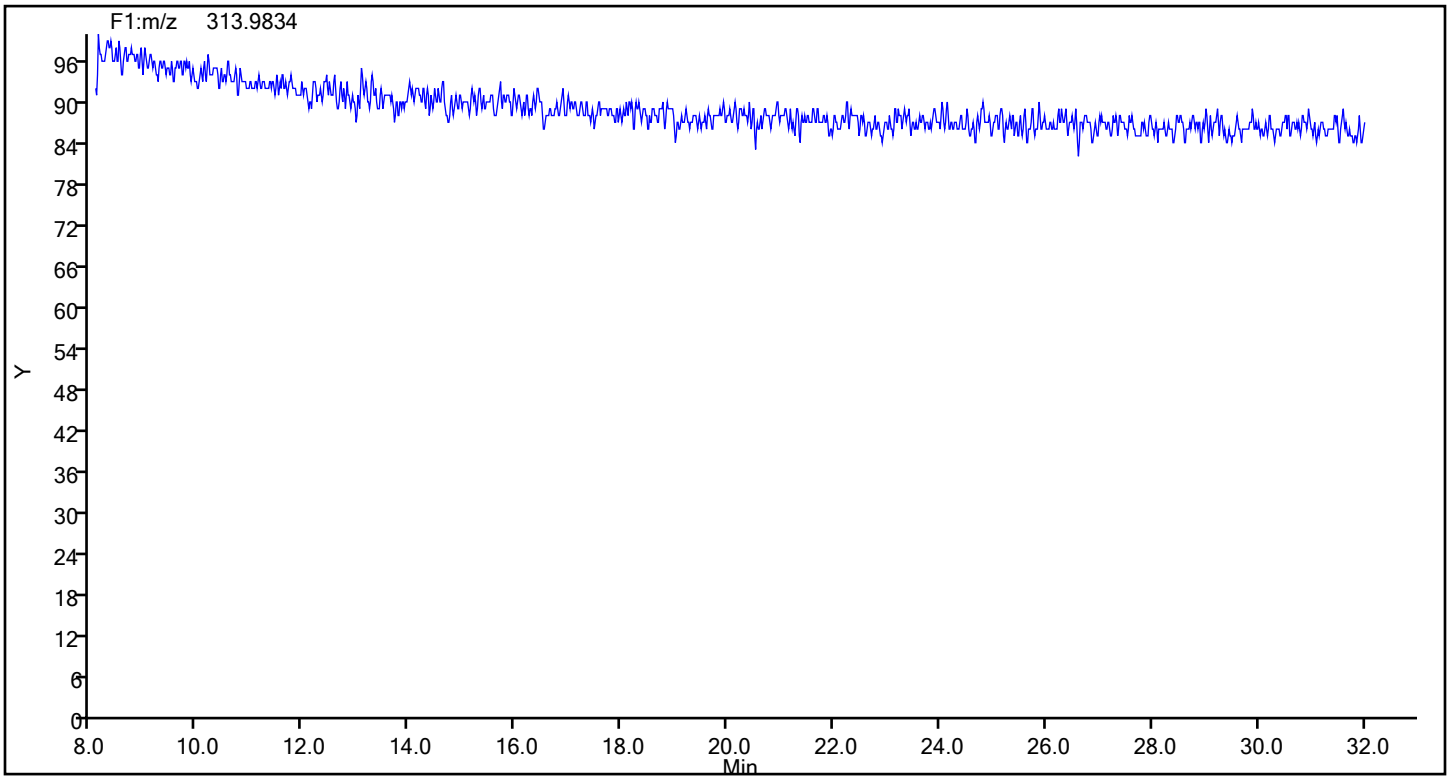
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

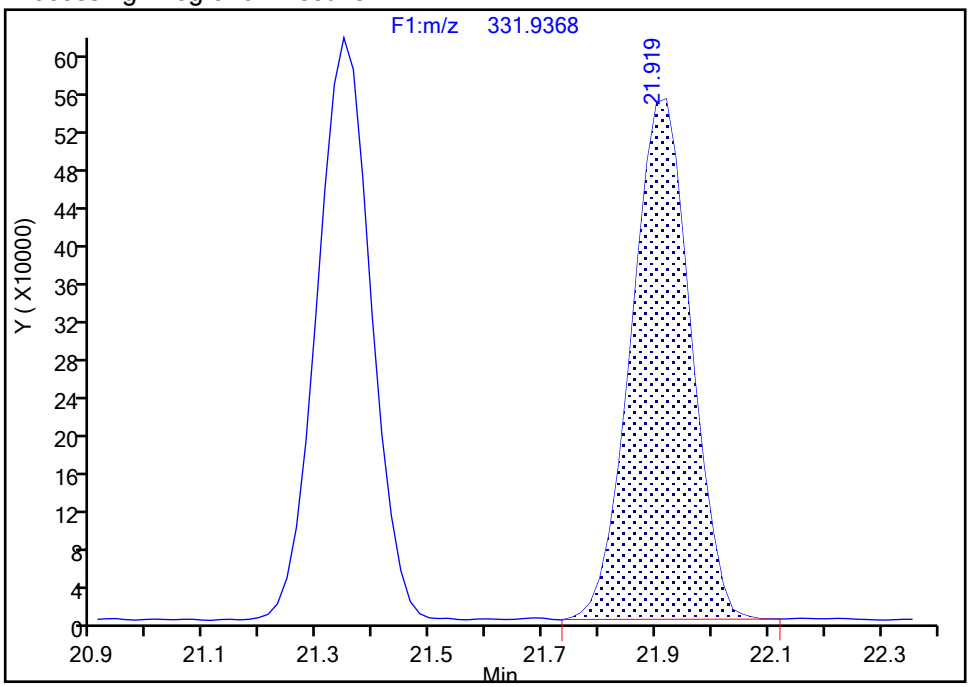
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d
Injection Date: 03-May-2019 06:14:00 Instrument ID: D12C
Lims ID: IC L5
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

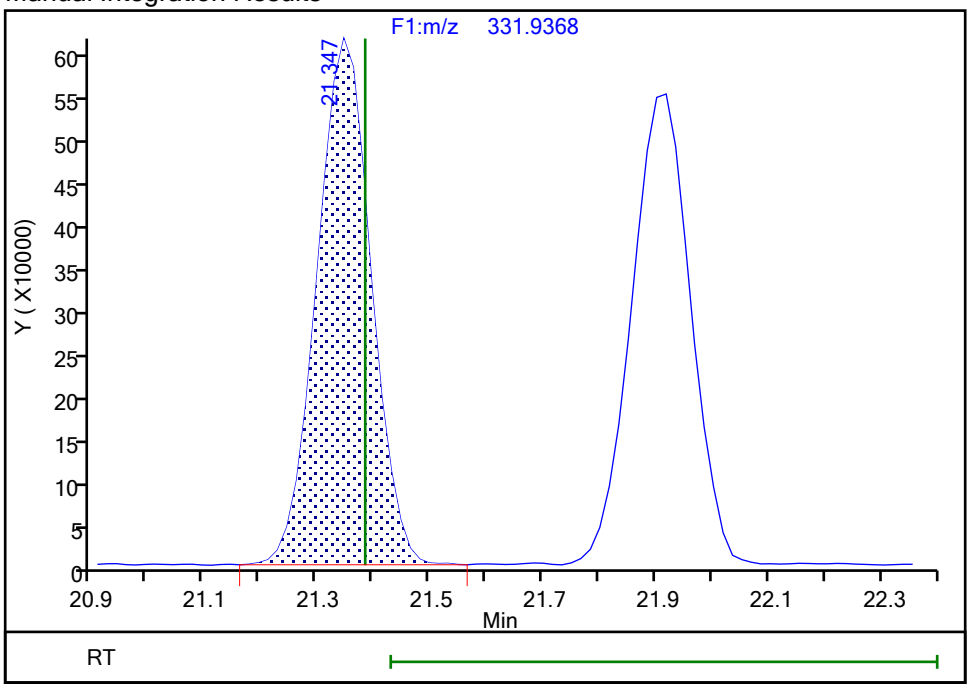
Processing Integration Results

RT: 21.92
Area: 4000736
Amount: 100.3635
Amount Units: pg/ul



Manual Integration Results

RT: 21.35
Area: 4096212
Amount: 102.8220
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:16:39
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:48:21 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Injection Date: 03-May-2019 06:14:00 Injection Vol: 1.0 ul

Instrument ID: D12C Operator ID: Xcalibur_System

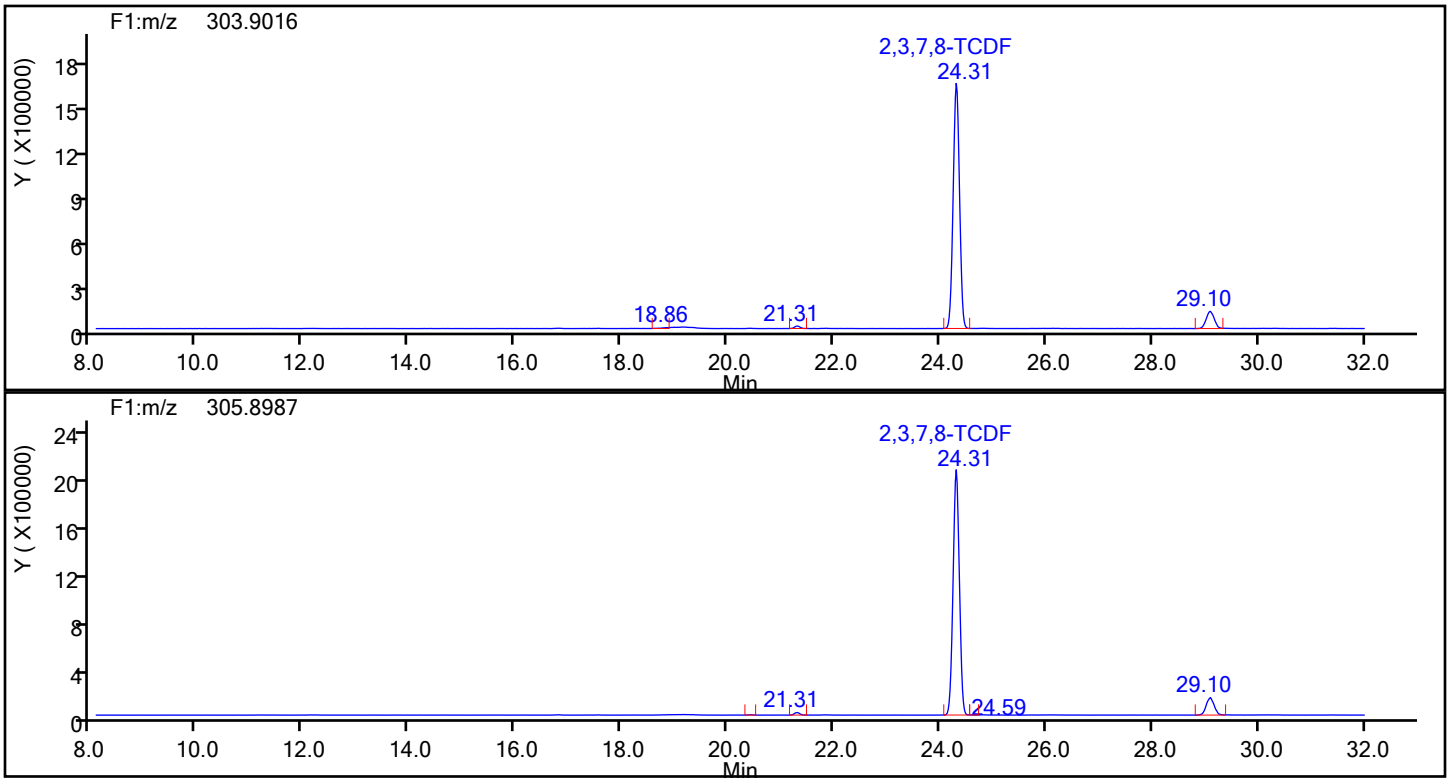
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL

Client ID:

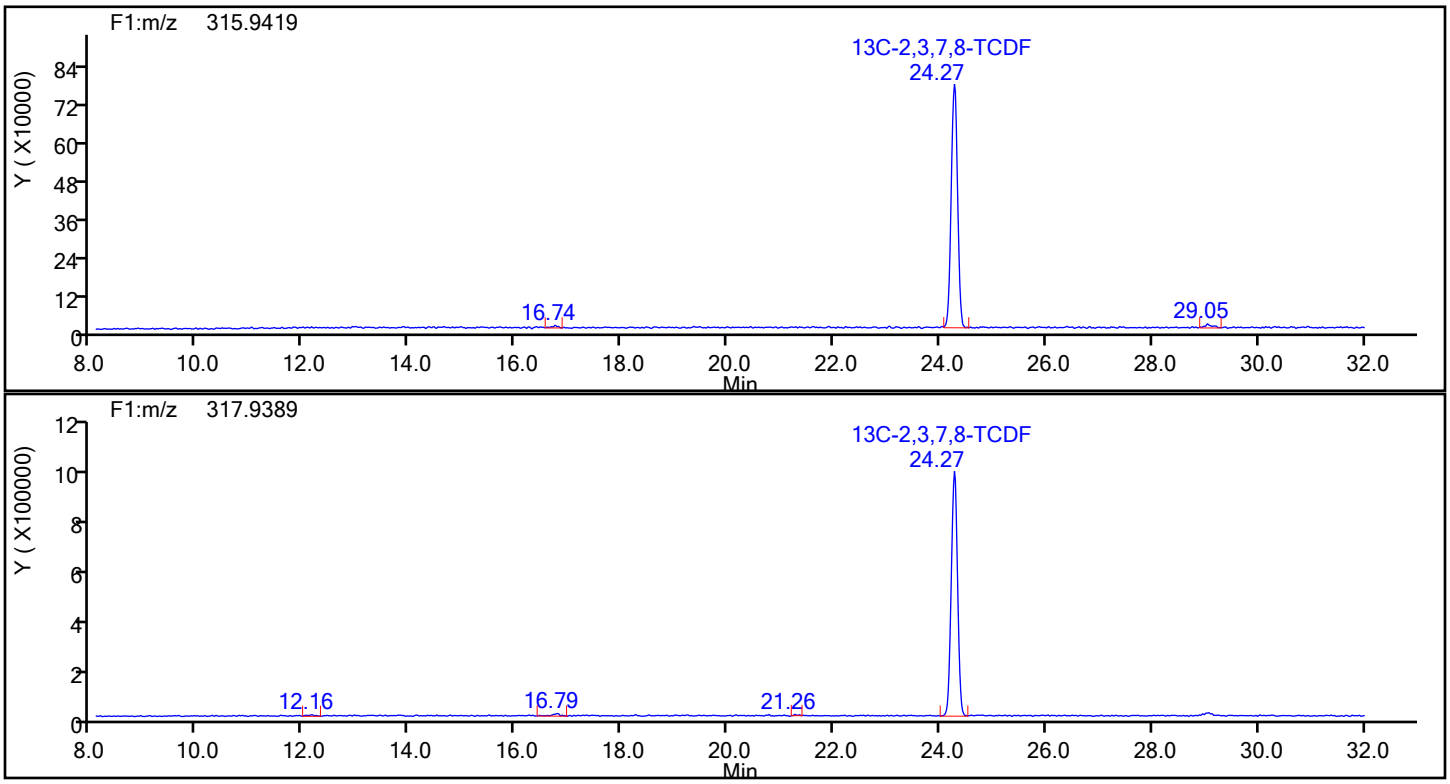
Worklist#: 29777 Sample Line#: 12

Column Type: DB225 Column Dia: 0.32 mm

TCDF



TCDF Standards

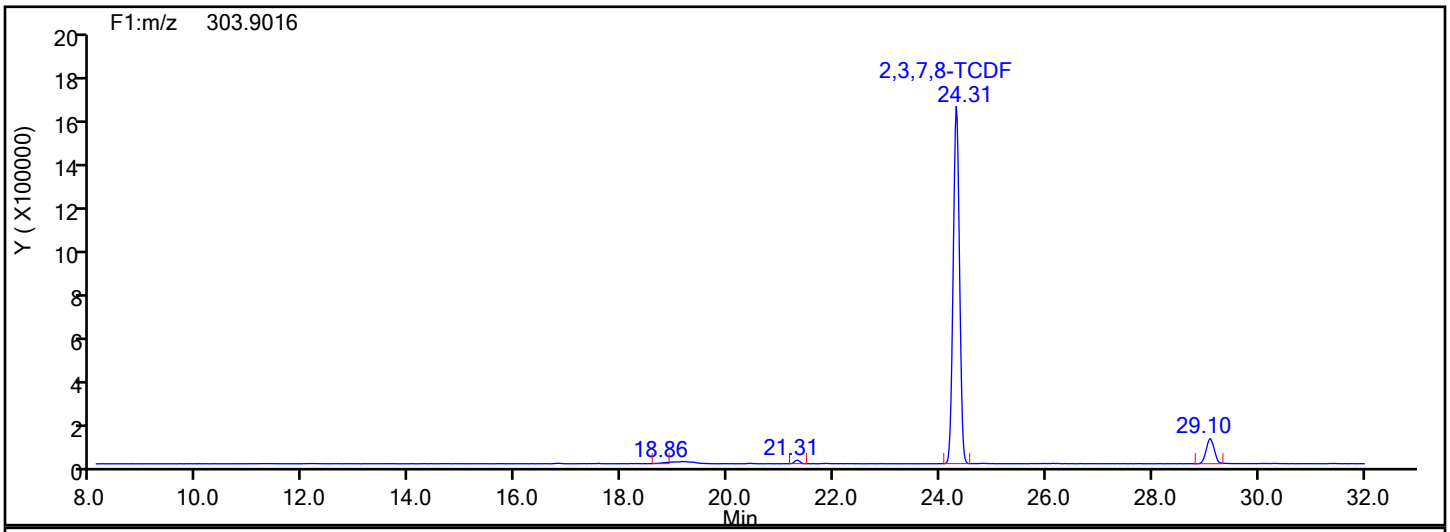


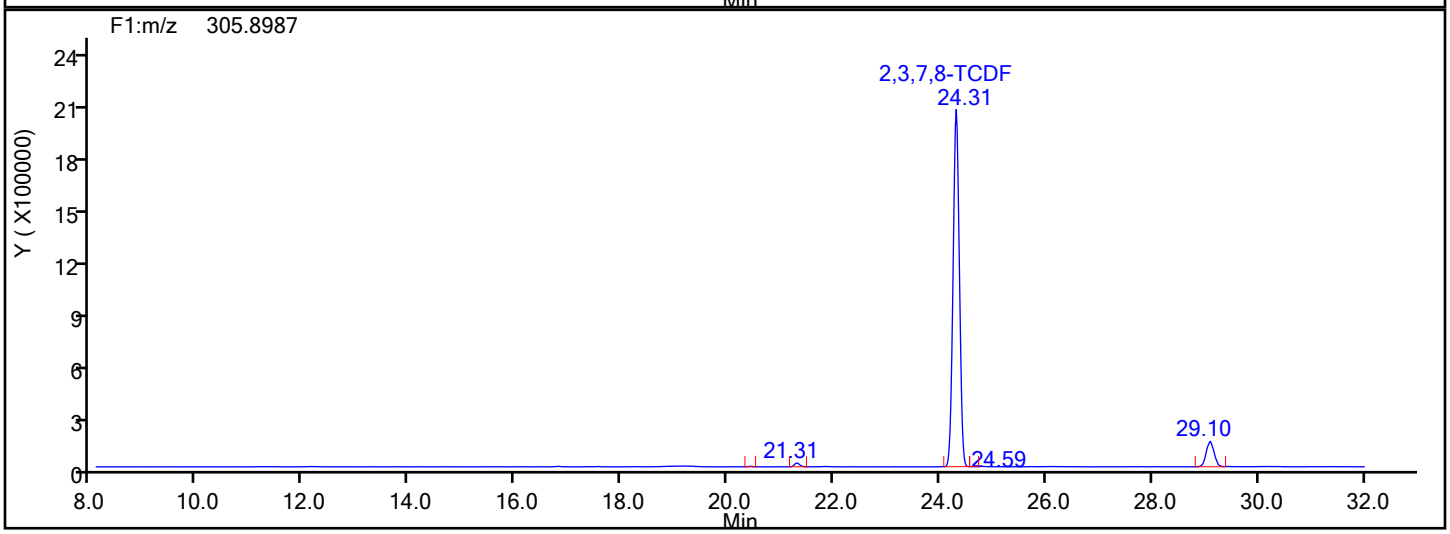
Report Date: 03-May-2019 13:48:21 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

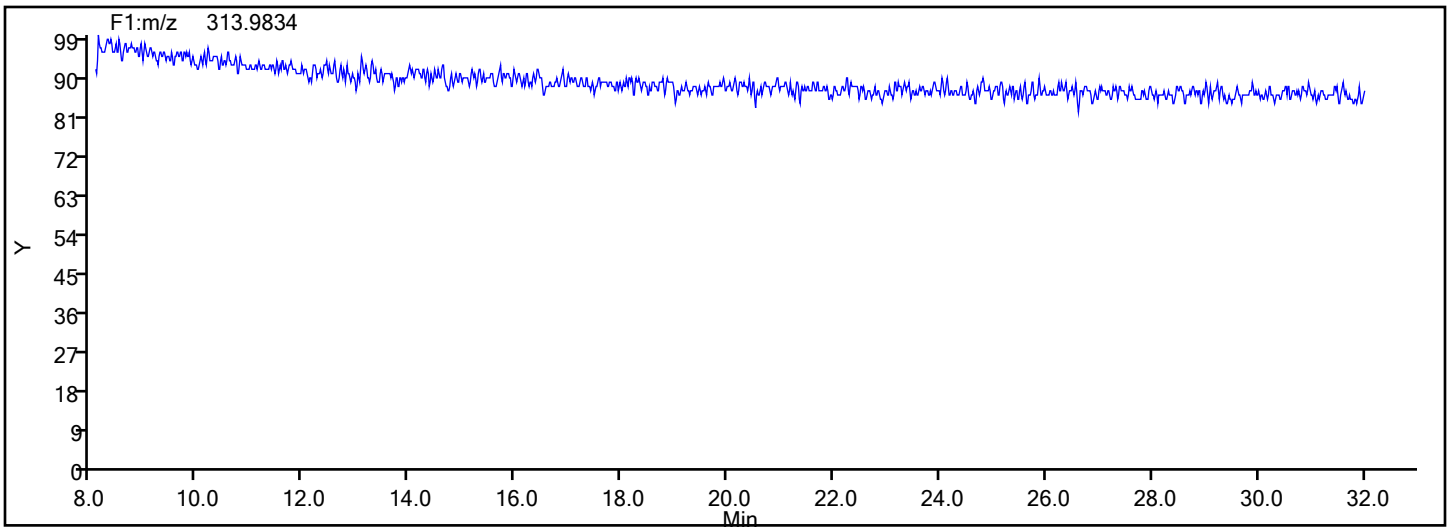
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

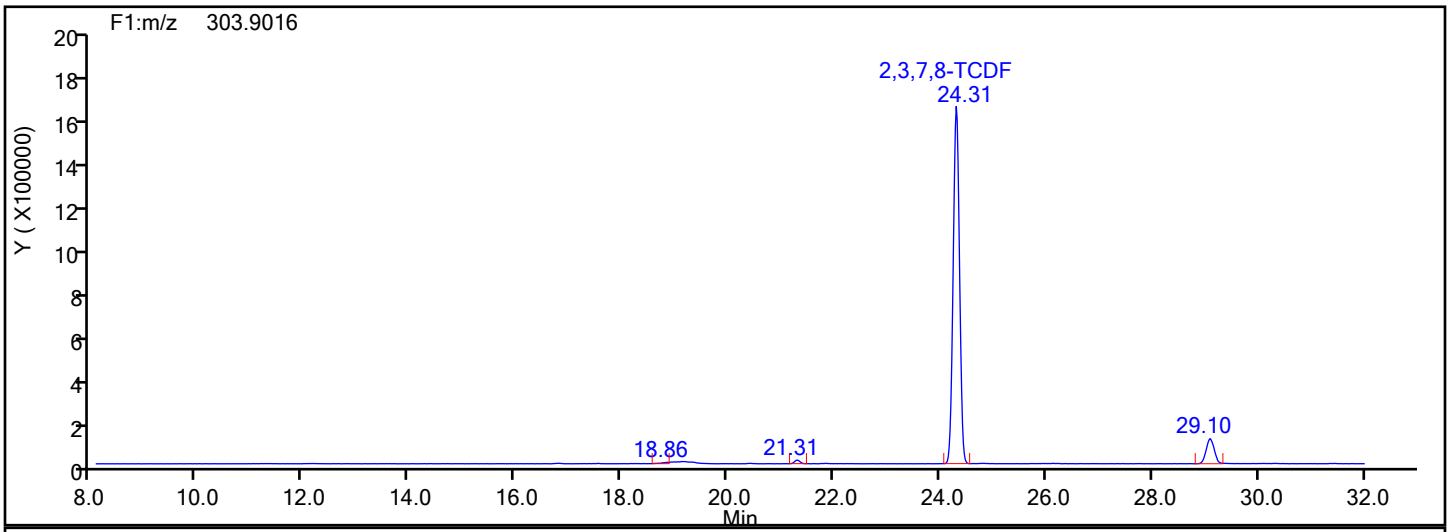


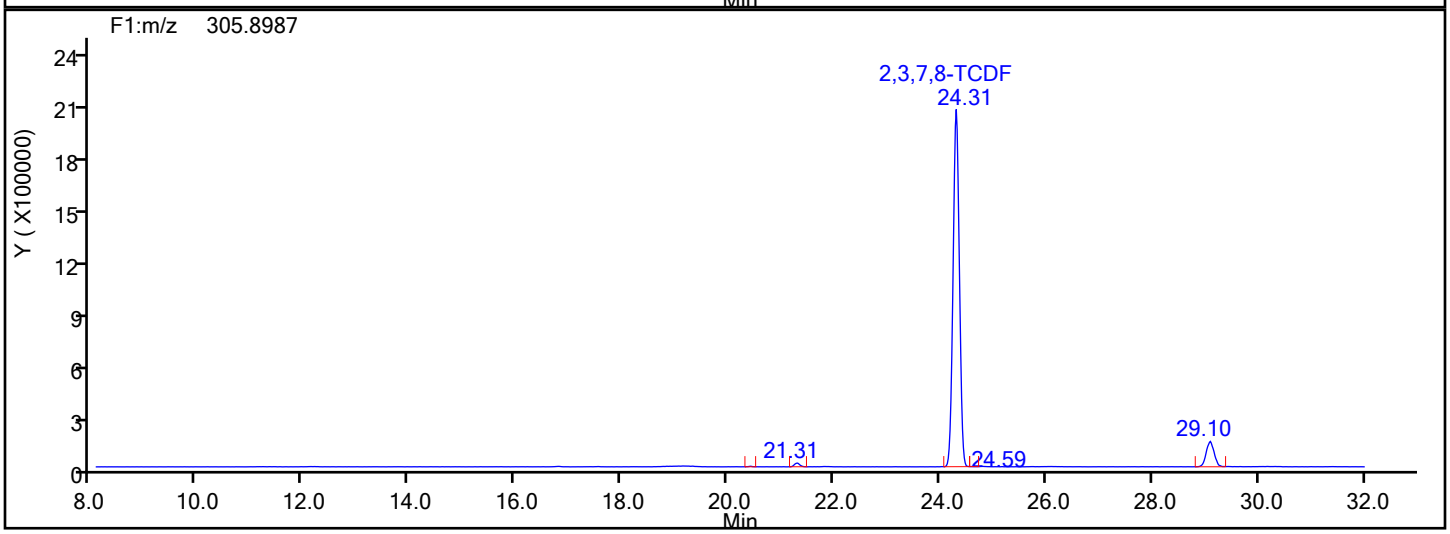
Report Date: 03-May-2019 13:48:21 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

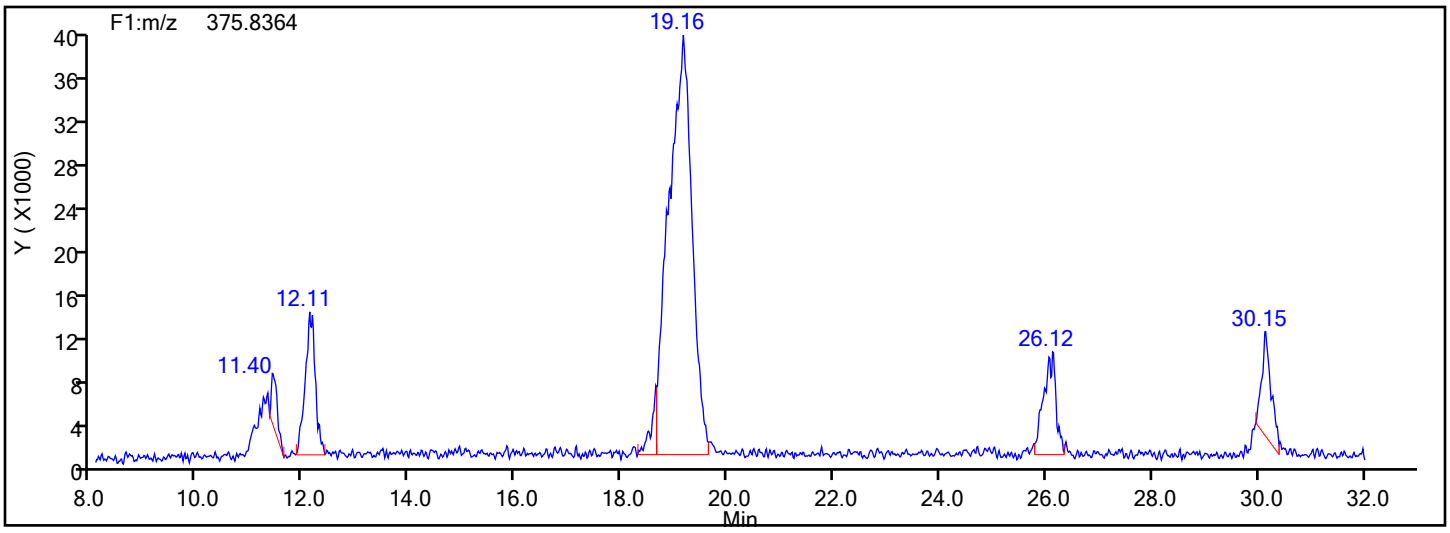
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d		
Injection Date:	03-May-2019 06:14:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	12
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

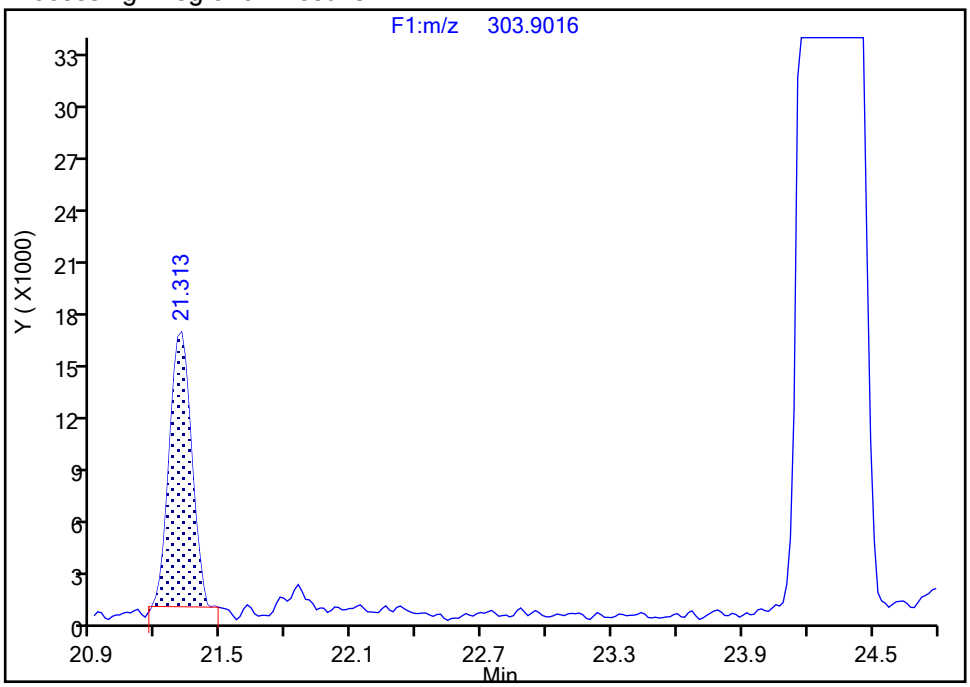
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

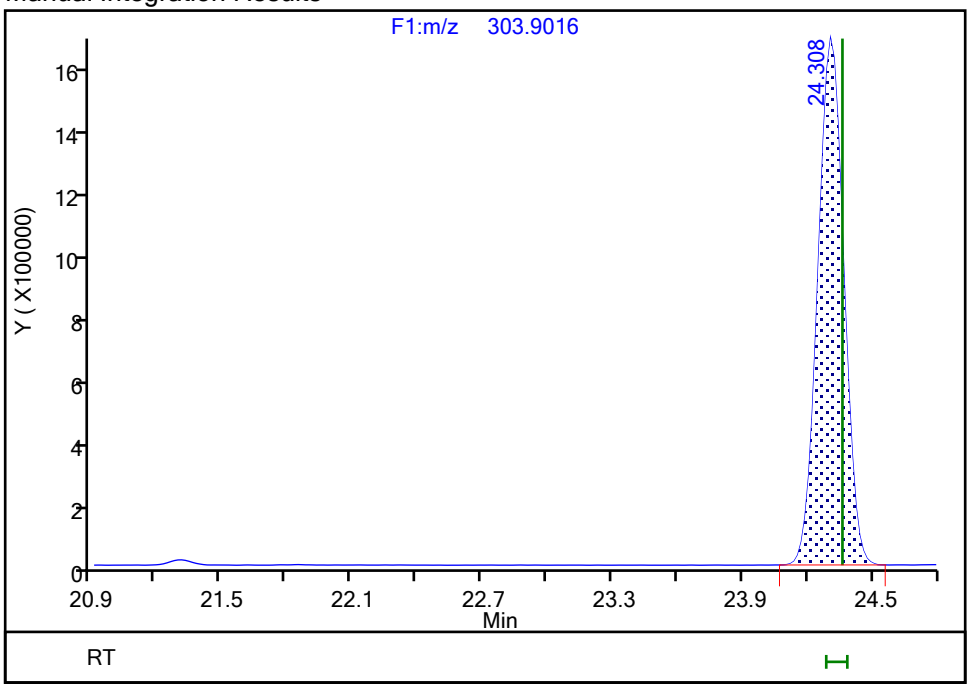
Processing Integration Results

RT: 21.31
Area: 111849
Amount: 1.991937
Amount Units: pg/ul



Manual Integration Results

RT: 24.31
Area: 13469845
Amount: 188.9962
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:33:44

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

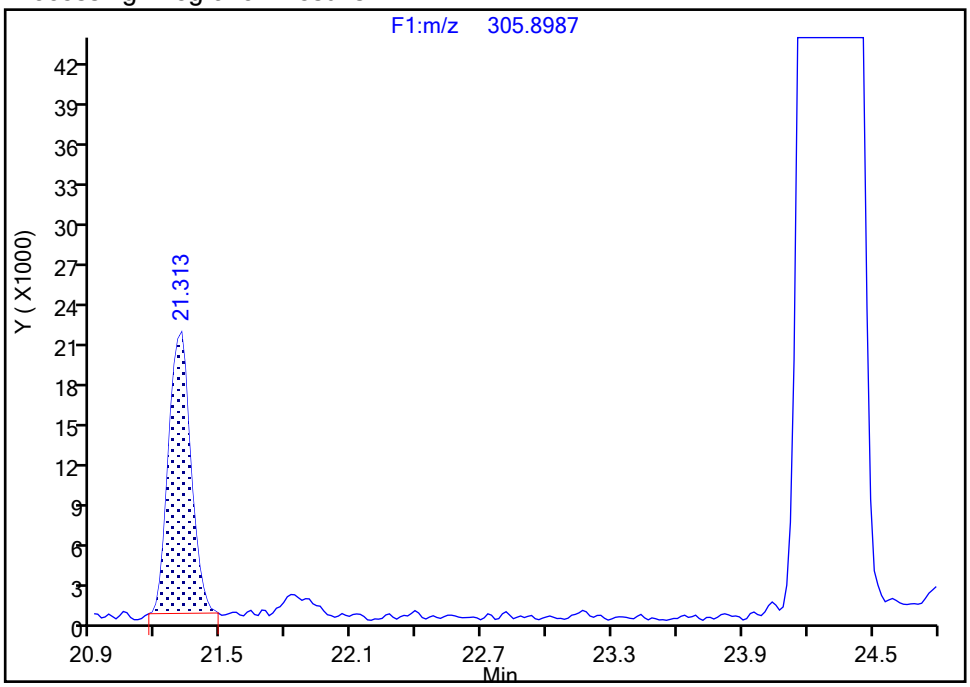
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

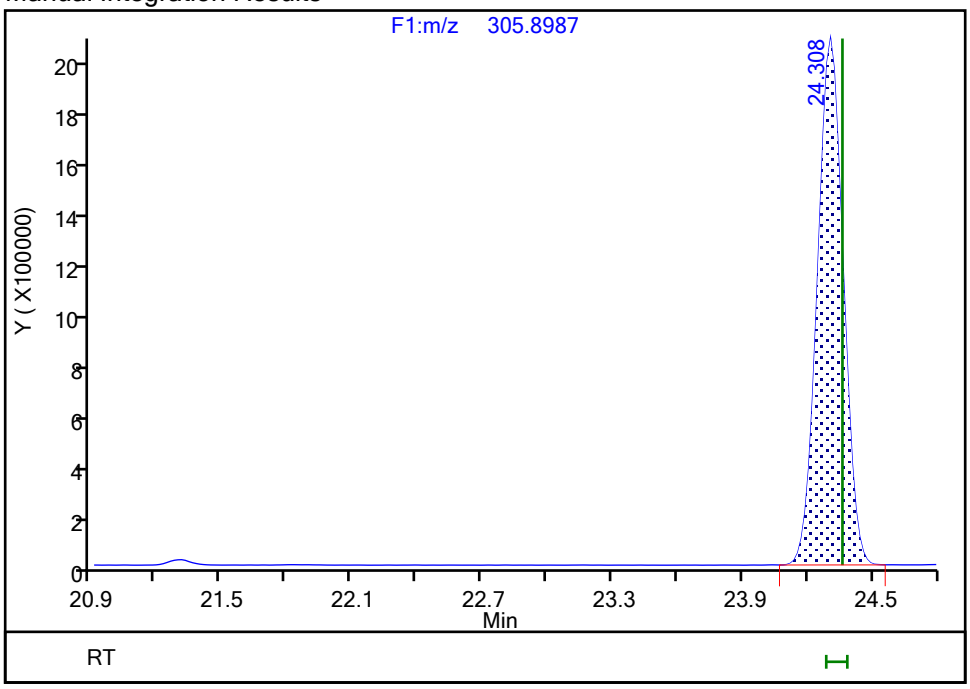
Processing Integration Results

RT: 21.31
Area: 147355
Amount: 1.991937
Amount Units: pg/ul



Manual Integration Results

RT: 24.31
Area: 16739996
Amount: 188.9962
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:34:10

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

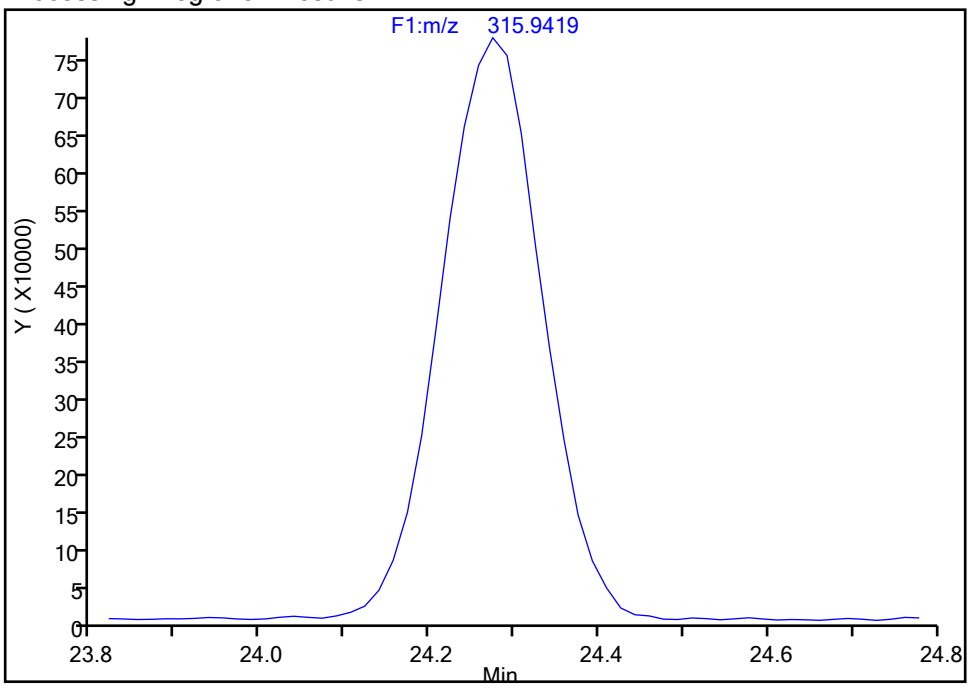
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d				
Injection Date:	03-May-2019 06:14:00	Instrument ID:	D12C		
Lims ID:	IC L5				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

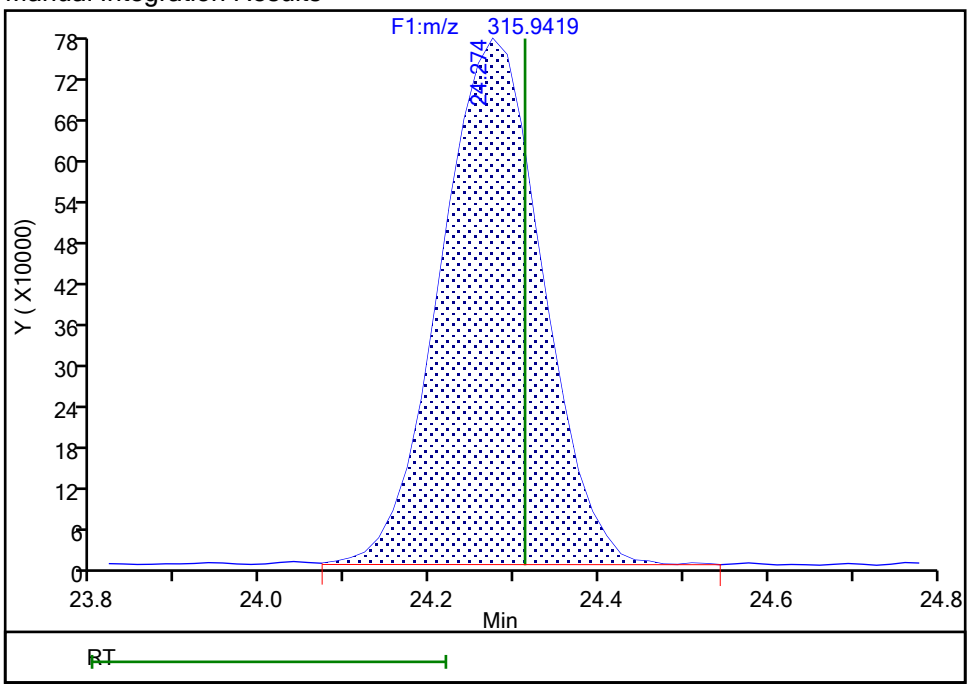
Not Detected
Expected RT: 24.31

Processing Integration Results



Manual Integration Results

RT: 24.27
Area: 6432836
Amount: 99.097972
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 09:16:47
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 7768

SDG No.:

Instrument ID: D2A GC Column: RTX-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/16/2014 14:26 Calibration End Date: 05/16/2014 18:31 Calibration ID: 825

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-7768/2	d3140516i1.d
Level 2	IC 140-7768/3	d3140516i2.d
Level 3	IC 140-7768/4	d3140516i3.d
Level 4	IC 140-7768/5	d3140516i4.d
Level 5	IC 140-7768/6	d3140516i5.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDF	1.1620	1.0787	1.0761	1.0664	1.0575	AveID		1.0881				3.9		20.0			
2,3,7,8-TCDD	1.1914	1.2413	1.1477	1.1335	1.1525	AveID		1.1733				3.7		20.0			
1,2,3,7,8-PeCDF	1.2525	1.1873	1.1447	1.1539	1.2106	AveID		1.1898				3.7		20.0			
2,3,4,7,8-PeCDF	1.1621	1.1000	1.0763	1.0701	1.1388	AveID		1.1095				3.6		20.0			
1,2,3,7,8-PeCDD	1.1072	1.0520	1.0113	1.0030	1.0435	AveID		1.0434				4.0		20.0			
1,2,3,4,7,8-HxCDF	1.4252	1.3521	1.3239	1.3123	1.4010	AveID		1.3629				3.6		20.0			
1,2,3,6,7,8-HxCDF	1.4070	1.2610	1.2346	1.2159	1.2627	AveID		1.2762				5.9		20.0			
2,3,4,6,7,8-HxCDF	1.3654	1.2309	1.2243	1.2236	1.2827	AveID		1.2654				4.8		20.0			
1,2,3,4,7,8-HxCDD	1.2224	1.1235	1.1211	1.1013	1.1360	AveID		1.1409				4.1		20.0			
1,2,3,6,7,8-HxCDD	1.1974	1.1789	1.1380	1.0905	1.1358	AveID		1.1481				3.6		20.0			
1,2,3,7,8,9-HxCDD	1.2071	1.2833	1.1953	1.1788	1.2414	AveID		1.2212				3.4		35.0			
1,2,3,7,8,9-HxCDF	1.2857	1.2741	1.2331	1.2330	1.2608	AveID		1.2573				1.9		20.0			
1,2,3,4,6,7,8-HpCDF	1.6046	1.5139	1.4534	1.4467	1.4732	AveID		1.4984				4.3		20.0			
1,2,3,4,6,7,8-HpCDD	1.1769	1.1205	1.1094	1.0801	1.1151	AveID		1.1204				3.1		20.0			
1,2,3,4,7,8,9-HpCDF	1.4220	1.4030	1.3414	1.3478	1.3894	AveID		1.3807				2.5		20.0			
OCDD	1.2833	1.1839	1.1963	1.1493	1.2234	AveID		1.2073				4.2		20.0			
OCDF	1.1506	1.1271	1.0957	1.0561	1.1513	AveID		1.1162				3.6		35.0			
13C-2,3,7,8-TCDF	1.7281	1.7612	1.7382	1.7730	1.7721	Ave		1.7545				1.2		35.0			
13C-2,3,7,8-TCDD	1.0524	1.0711	1.0580	1.0797	1.0934	Ave		1.0709				1.5		35.0			
13C-1,2,3,7,8-PeCDF	1.3121	1.2910	1.3370	1.4108	1.5012	Ave		1.3704				6.3		35.0			
13C-2,3,4,7,8-PeCDF	1.3287	1.3226	1.3322	1.4302	1.5050	Ave		1.3837				5.9		35.0			
13C-1,2,3,7,8-PeCDD	0.8255	0.8165	0.8307	0.9110	0.9879	Ave		0.8743				8.5		35.0			
13C-1,2,3,4,7,8-HxCDF	1.1989	1.1941	1.2026	1.2023	1.1481	Ave		1.1892				2.0		35.0			
13C-1,2,3,6,7,8-HxCDF	1.4353	1.4571	1.4933	1.4944	1.4322	Ave		1.4625				2.1		35.0			
13C-2,3,4,6,7,8-HxCDF	1.3243	1.3372	1.3420	1.3289	1.2660	Ave		1.3197				2.3		35.0			
13C-1,2,3,4,7,8-HxCDD	0.8799	0.8733	0.8778	0.8876	0.8675	Ave		0.8772				0.9		35.0			
13C-1,2,3,6,7,8-HxCDD	0.9056	0.9046	0.9264	0.9561	0.8927	Ave		0.9171				2.7		35.0			
13C-1,2,3,7,8,9-HxCDF	1.1673	1.2100	1.2020	1.2237	1.1977	Ave		1.2001				1.7		35.0			
13C-1,2,3,4,6,7,8-HpCDF	1.0428	1.0485	1.0503	1.0601	1.0464	Ave		1.0496				0.6		35.0			
13C-1,2,3,4,6,7,8-HpCDD	0.8259	0.8151	0.8034	0.8291	0.8039	Ave		0.8155				1.5		35.0			
13C-1,2,3,4,7,8,9-HpCDF	0.8929	0.8842	0.8895	0.9041	0.9030	Ave		0.8947				1.0		35.0			
13C-OCDD	0.6790	0.6985	0.6669	0.7374	0.7401	Ave		0.7044				4.7		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 7768

SDG No.:

Instrument ID: D2A GC Column: RTX-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/16/2014 14:26 Calibration End Date: 05/16/2014 18:31 Calibration ID: 825

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C-OCDF	1.0271	1.0311	1.0122	1.1195	1.1174	Ave		1.0615				4.9		35.0			
37Cl4-2,3,7,8-TCDD	1.2785	1.2086	1.1875	1.2224	1.2357	Ave		1.2266				2.8					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 7768

SDG No.:

Instrument ID: D2A GC Column: RTX-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/16/2014 14:26 Calibration End Date: 05/16/2014 18:31 Calibration ID: 825

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-7768/2	d3140516i1.d
Level 2	IC 140-7768/3	d3140516i2.d
Level 3	IC 140-7768/4	d3140516i3.d
Level 4	IC 140-7768/5	d3140516i4.d
Level 5	IC 140-7768/6	d3140516i5.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDF		AveID	94226	328832	1699244	6586510	35566472	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDD		AveID	58834	230135	1103093	4263534	23916178	0.500	2.00	10.0	40.0	200
1,2,3,7,8-PeCDF		AveID	385579	1326472	6951995	28353659	172459555	2.50	10.0	50.0	200	1000
2,3,4,7,8-PeCDF		AveID	362268	1259085	6512875	26657615	162647050	2.50	10.0	50.0	200	1000
1,2,3,7,8-PeCDD		AveID	214444	743339	3815716	15915139	97828013	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF		AveID	433645	1500520	7655800	31660907	205245281	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF		AveID	512529	1707727	8864531	36461883	230766405	2.50	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF		AveID	458923	1529879	7899628	32628769	207212834	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD		AveID	272992	911864	4731492	19615008	125745795	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD		AveID	275227	991123	5069185	20922527	129376084	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD		AveID	273517	1060210	5184383	21806109	139413717	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF		AveID	380908	1432850	7126497	30276117	192682603	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF		AveID	424692	1475215	7340131	30775593	196710947	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD		AveID	246709	848864	4285504	17971175	114386892	2.50	10.0	50.0	200	1000
1,2,3,4,7,8,9-HpCDF		AveID	322253	1153014	5736971	24451442	160075574	2.50	10.0	50.0	200	1000
OCDD		AveID	442341	1537141	7672456	34014604	231071676	5.00	20.0	100	400	2000
OCDF		AveID	599861	2160278	10665891	47454024	328275681	5.00	20.0	100	400	2000
13C-2,3,7,8-TCDF	13CTC	Ave	16217882	15241754	15790178	15441140	16816585	100	100	100	100	100
13C-2,3,7,8-TCDD	13CTC	Ave	9876576	9269717	9611208	9403373	10375862	100	100	100	100	100
13C-1,2,3,7,8-PeCDF	13CTC	Ave	12314088	11172583	12146075	12286310	14246063	100	100	100	100	100
13C-2,3,4,7,8-PeCDF	13CTC	Ave	12469187	11446462	12102314	12455454	14282105	100	100	100	100	100
13C-1,2,3,7,8-PeCDD	13CTC	Ave	7747378	7066036	7546076	7933559	9374768	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDF	13CHx	Ave	12171006	11097986	11565241	12063156	14649659	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDF	13CHx	Ave	14571209	13542561	14360417	14993755	18275058	100	100	100	100	100
13C-2,3,4,6,7,8-HxCDF	13CHx	Ave	13444179	12428502	12905207	13333182	16154097	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDD	13CHx	Ave	8933187	8116369	8441043	8905352	11068991	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDD	13CHx	Ave	9193835	8407393	8908892	9593131	11391028	100	100	100	100	100
13C-1,2,3,7,8,9-HxCDF	13CHx	Ave	11850370	11246135	11559055	12277599	15282343	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDF	13CHx	Ave	10586908	9744462	10100696	10636138	13352459	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDD	13CHx	Ave	8384746	7575508	7725803	8319073	10257853	100	100	100	100	100
13C-1,2,3,4,7,8,9-HpCDF	13CHx	Ave	9064964	8217931	8553669	9071146	11521506	100	100	100	100	100
13C-OCDD	13CHx	Ave	13787078	12983405	12827376	14797795	18887158	200	200	200	200	200
13C-OCDF	13CHx	Ave	20853570	19166588	19467909	22466050	28514559	200	200	200	200	200
37Cl4-2,3,7,8-TCDD	13CTC	Ave	59993	209201	1078771	4258282	23452691	0.500	2.00	10.0	40.0	200

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1 Analy Batch No.: 7768

SDG No.:

Instrument ID: D2A GC Column: RTX-5 ID: 0.32(mm) Heated Purge: (Y/N) N

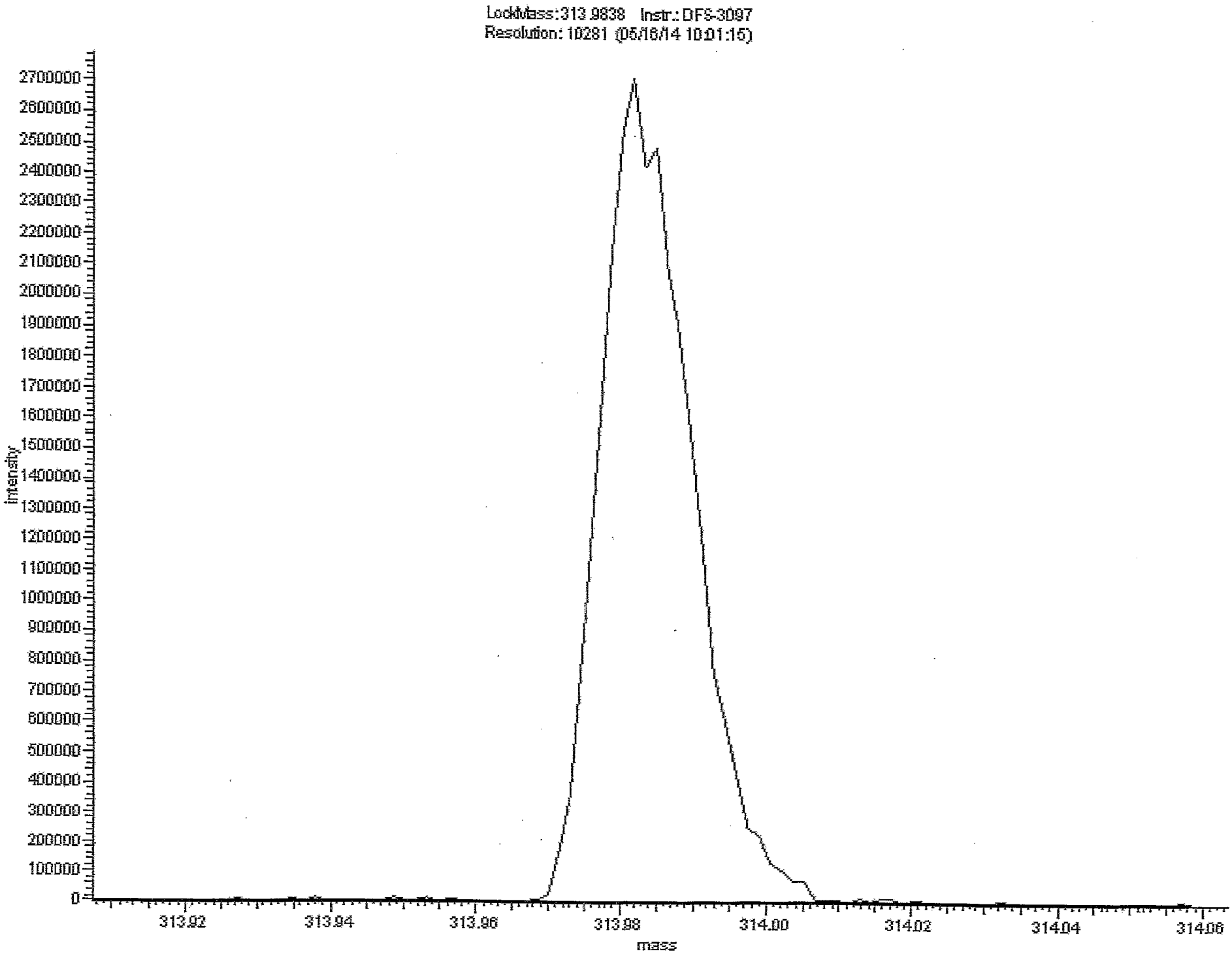
Calibration Start Date: 05/16/2014 14:26 Calibration End Date: 05/16/2014 18:31 Calibration ID: 825

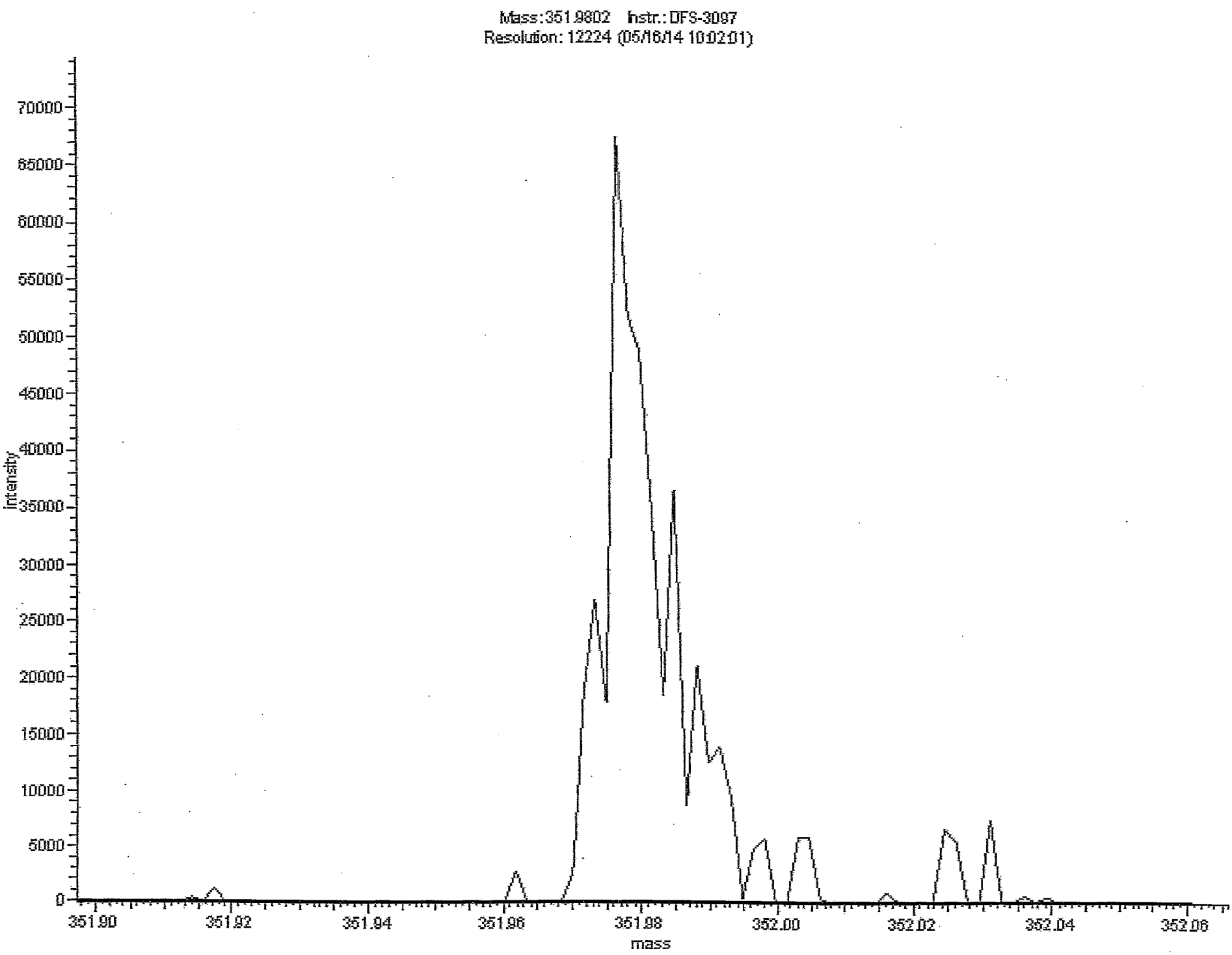
Curve Type Legend:

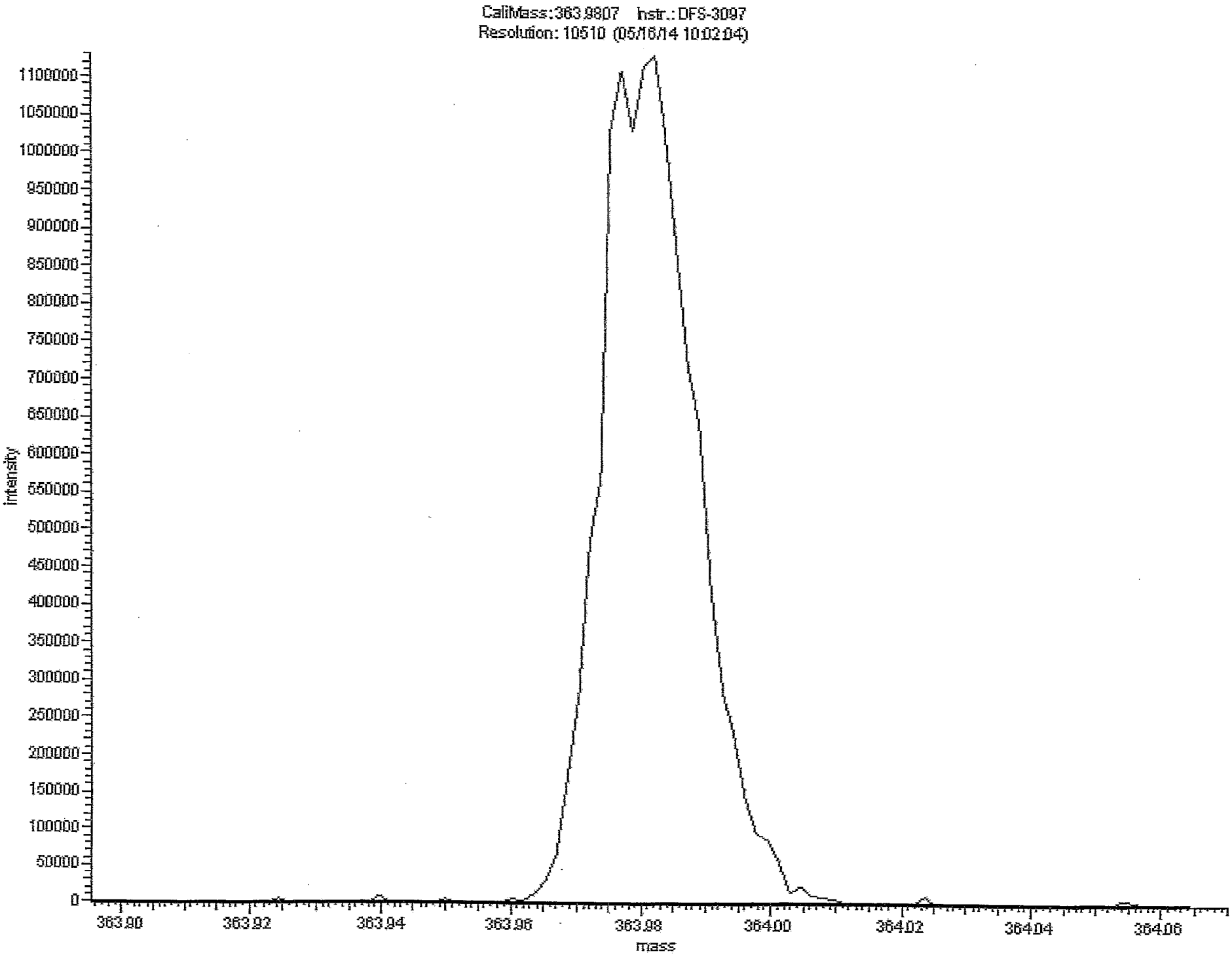
Ave = Average ISTD
AveID = Average isotope dilution

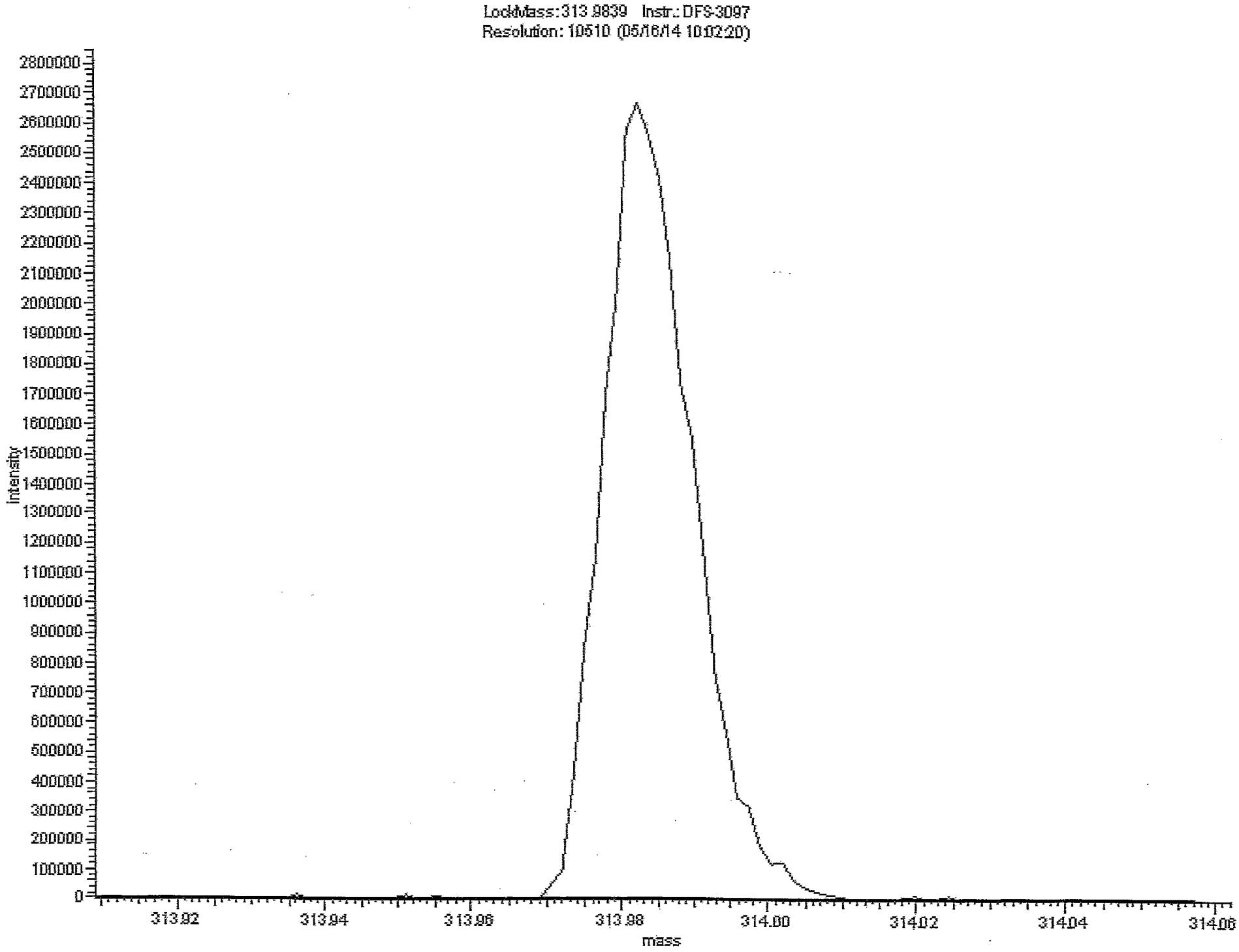
```
Reports
10:08:13:  Peak matching procedure started
10:08:14:
10:08:14:  Reference mass: 313.98336
10:08:15:  Sample mass: 364.0
10:08:15:
10:08:16:  Finding reference mass
10:08:17:  Finding sample mass
10:08:17:
10:08:23:  [1]   363.9794 amu, mean: 363.9794
10:08:26:  [2]   363.9801 amu, mean: 363.9798     SD: 0.48 mmu or: 1.31 ppm
10:08:29:  [3]   363.9812 amu, mean: 363.9802     SD: 0.90 mmu or: 2.48 ppm
10:08:32:  [4]   363.9808 amu, mean: 363.9804     SD: 0.79 mmu or: 2.18 ppm
10:08:36:  [5]   363.9802 amu, mean: 363.9804     SD: 0.69 mmu or: 1.90 ppm
10:08:39:  [6]   363.9808 amu, mean: 363.9804     SD: 0.65 mmu or: 1.78 ppm
10:08:42:  [7]   363.9798 amu, mean: 363.9803     SD: 0.64 mmu or: 1.76 ppm
10:08:45:  [8]   363.9810 amu, mean: 363.9804     SD: 0.64 mmu or: 1.76 ppm
10:08:48:  [9]   363.9810 amu, mean: 363.9805     SD: 0.63 mmu or: 1.73 ppm
10:08:51:  [10]   363.9806 amu, mean: 363.9805     SD: 0.59 mmu or: 1.63 ppm
10:08:52:
10:08:52:  Stop requested. Please wait for procedure to finish.
10:08:52:
```

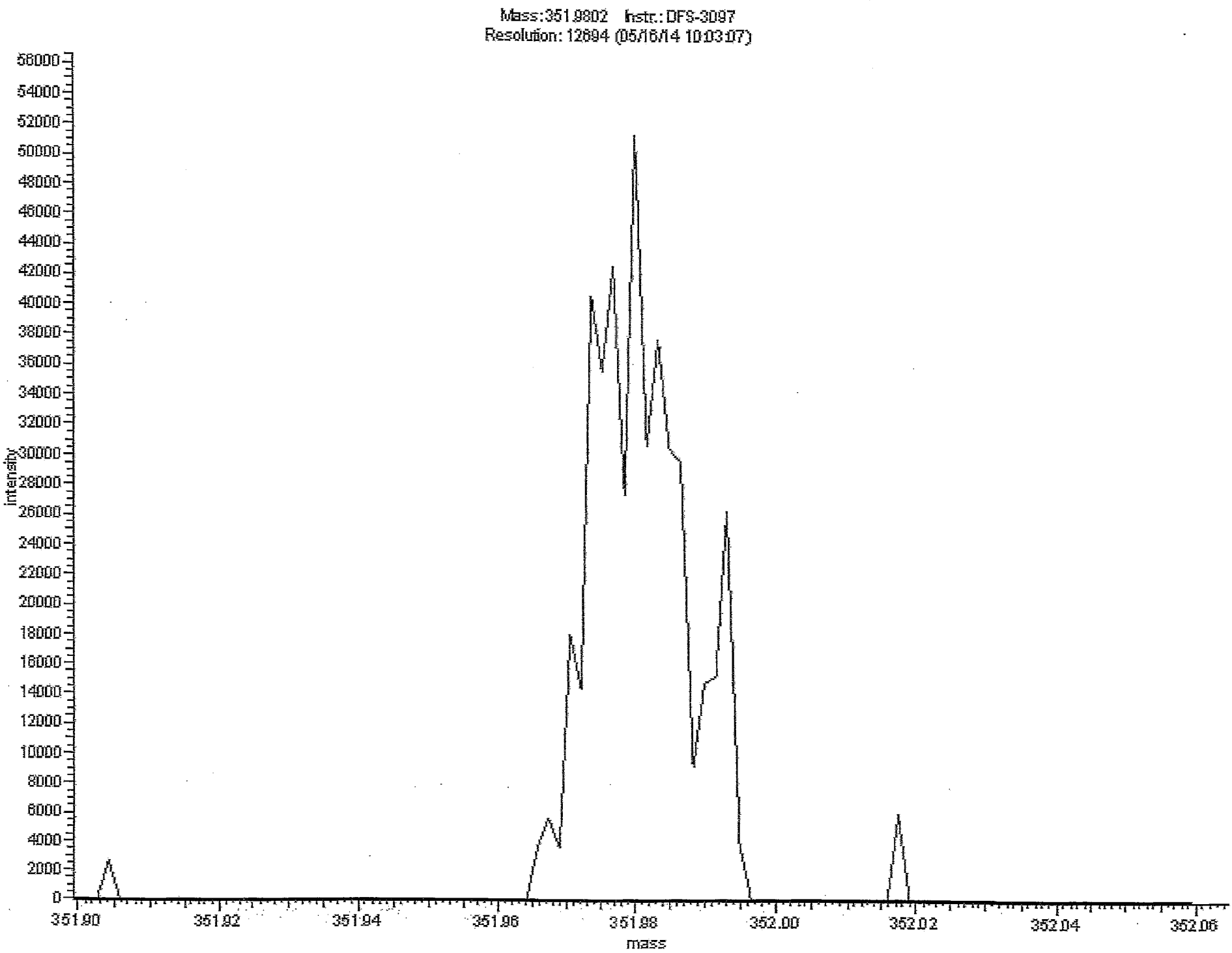
Signature MD 5/16/14

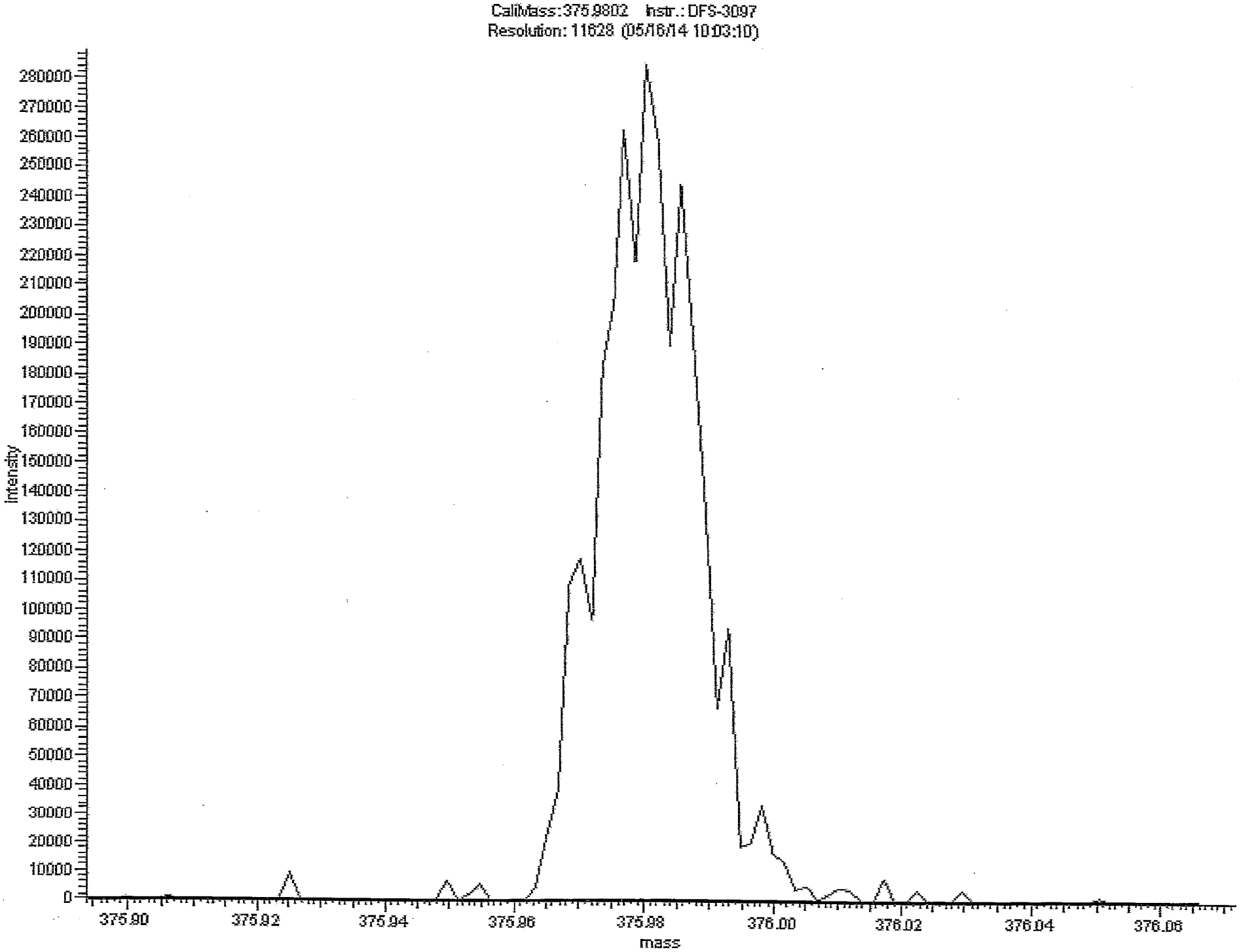

Lockmass:313.9838 Instr.: DFS-3097
Resolution: 10281 (05/16/14 10:01:15)
intensity
2700000
2600000
2500000
2400000
2300000
2200000
2100000
2000000
1900000
1800000
1700000
1600000
1500000
1400000
1300000
1200000
1100000
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
313.92
313.94
313.96
313.98
314.00
314.02
314.04
314.06
mass

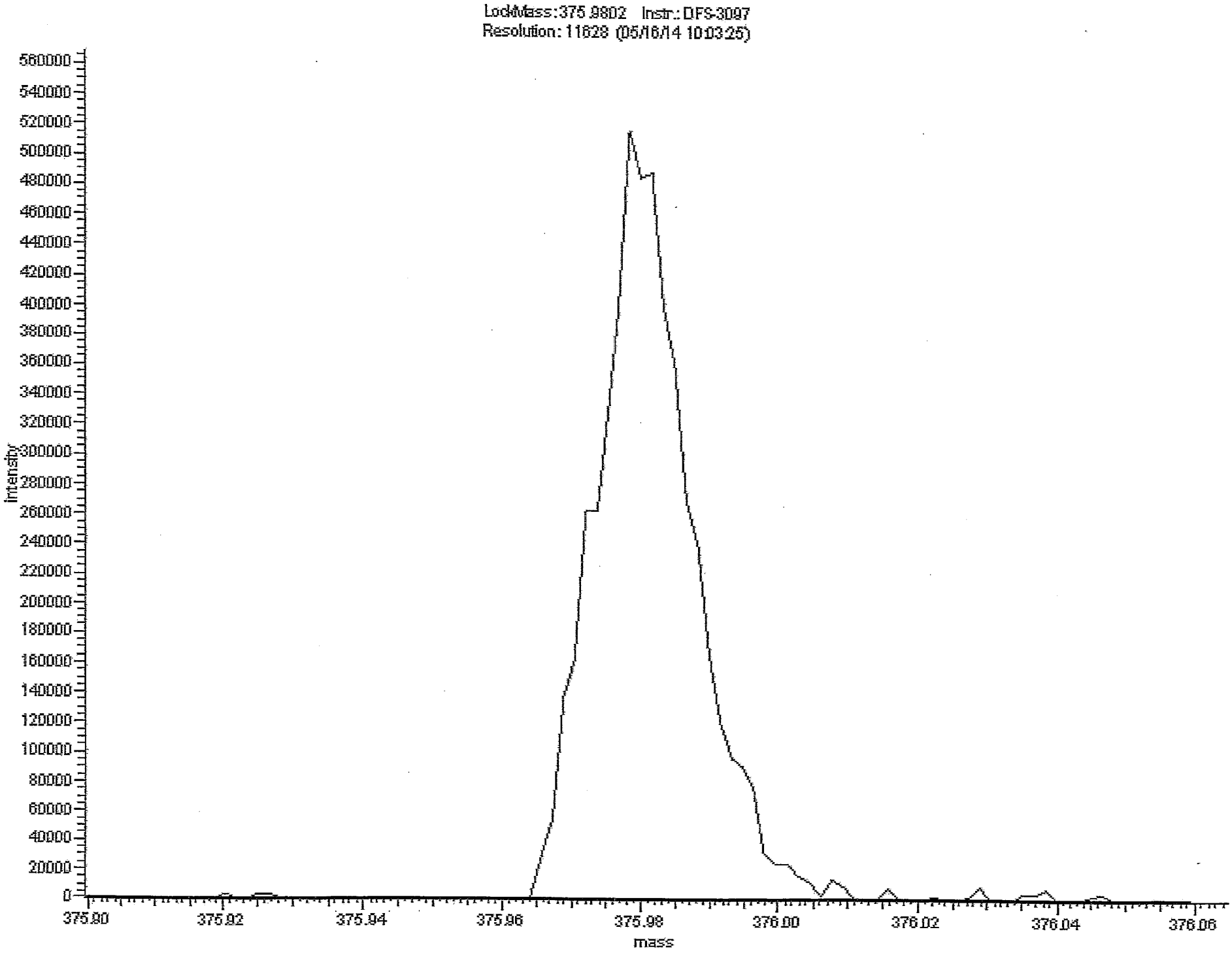

Mass:351.9802 Instr.: DFS-3097
Resolution: 12224 (05/16/14 10:02:01)
70000
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Intensity
351.90
351.92
351.94
351.96
351.98
352.00
352.02
352.04
352.06
mass

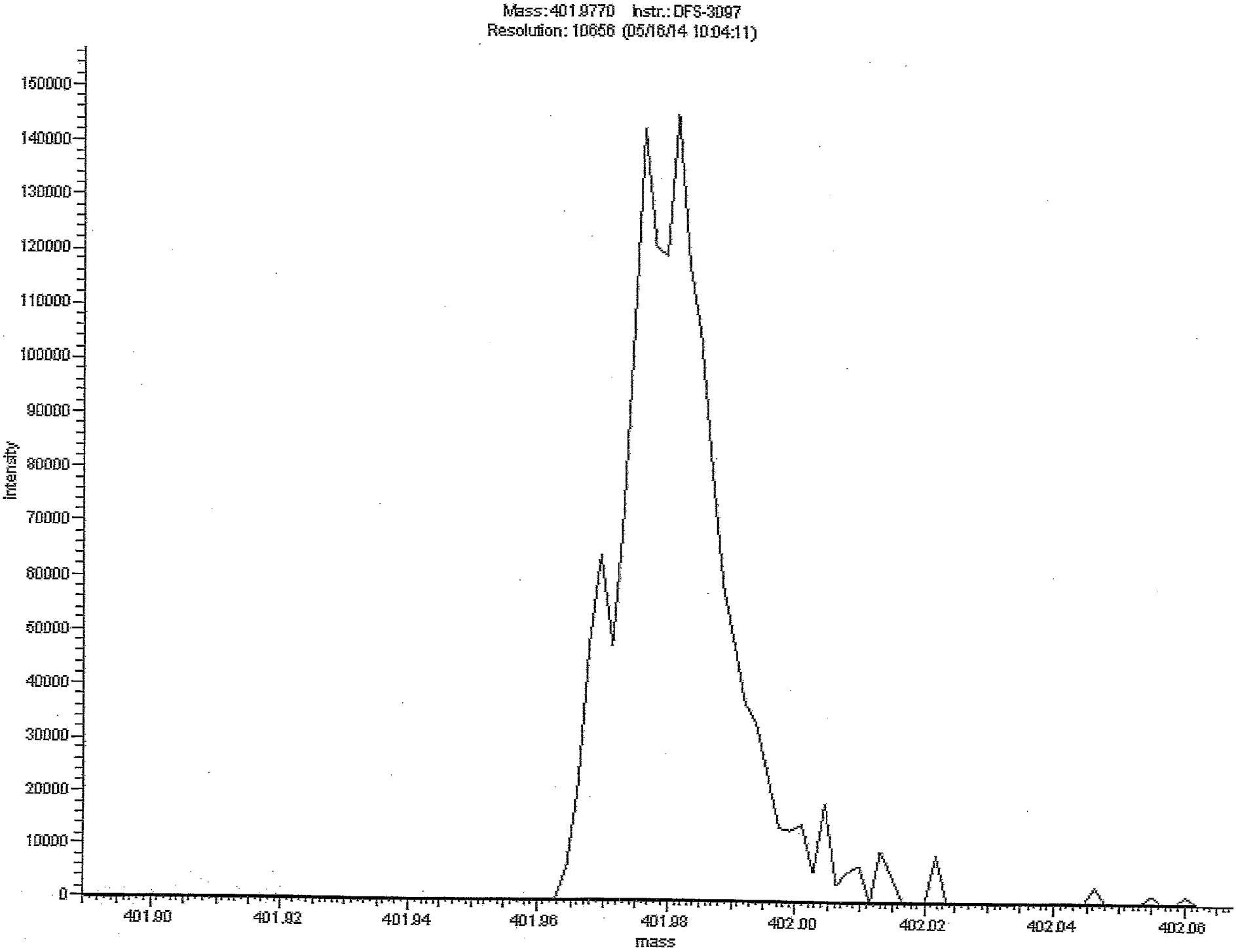

CaliMass:363.9807 Instr.: DFS-3097
Resolution: 10510 (05/16/14 10:02:04)
Intensity
1100000
1050000
1000000
950000
900000
850000
800000
750000
700000
650000
600000
550000
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
363.90
363.92
363.94
363.96
363.98
364.00
364.02
364.04
364.06
mass

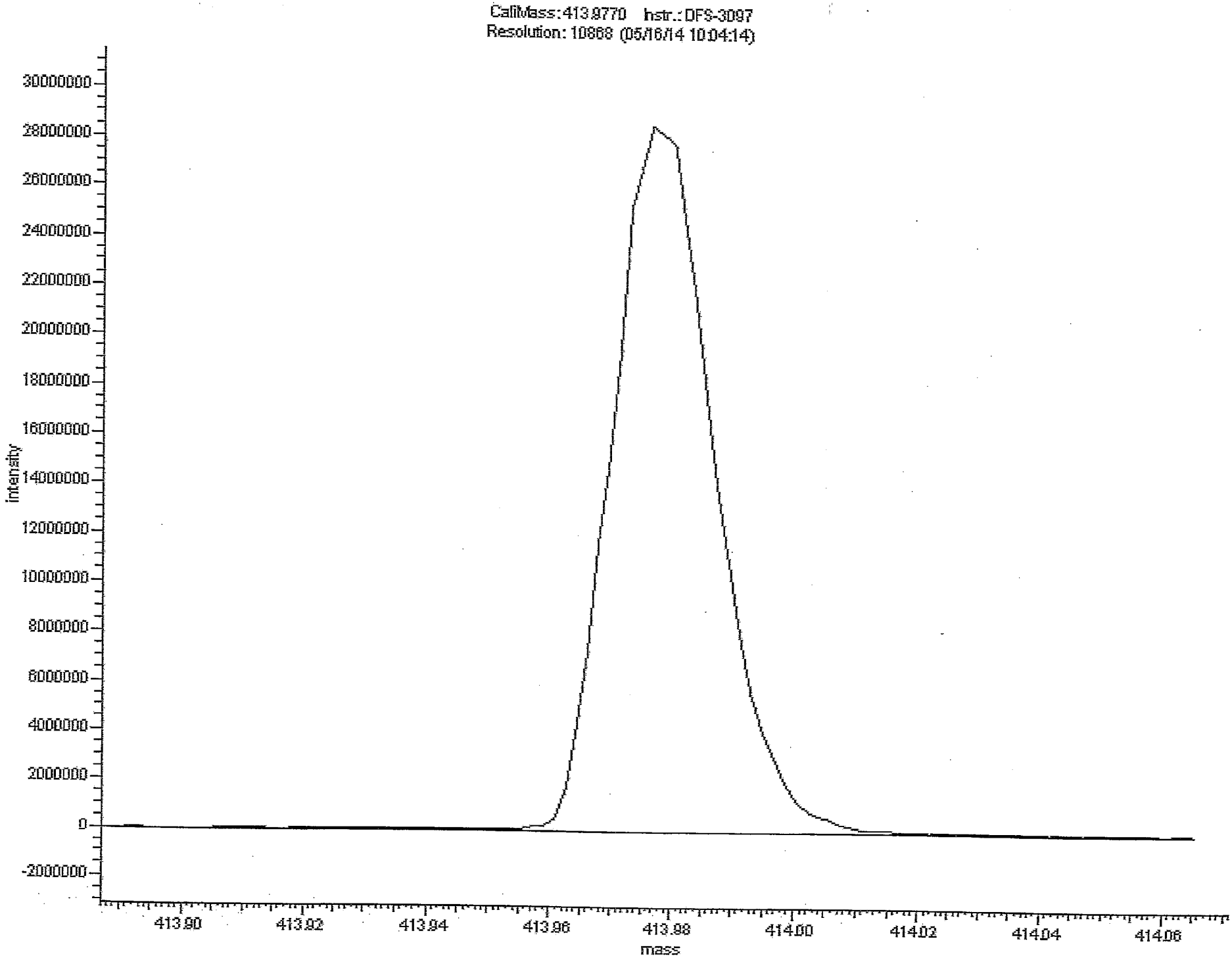

LockMass:313.9839 Instr.: DFS-3097
Resolution: 10510 (05/16/14 10:02:20)
2800000
2700000
2600000
2500000
2400000
2300000
2200000
2100000
2000000
1900000
1800000
1700000
1600000
1500000
1400000
1300000
1200000
1100000
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
Intensity
313.92
313.94
313.96
313.98
314.00
314.02
314.04
314.06
mass

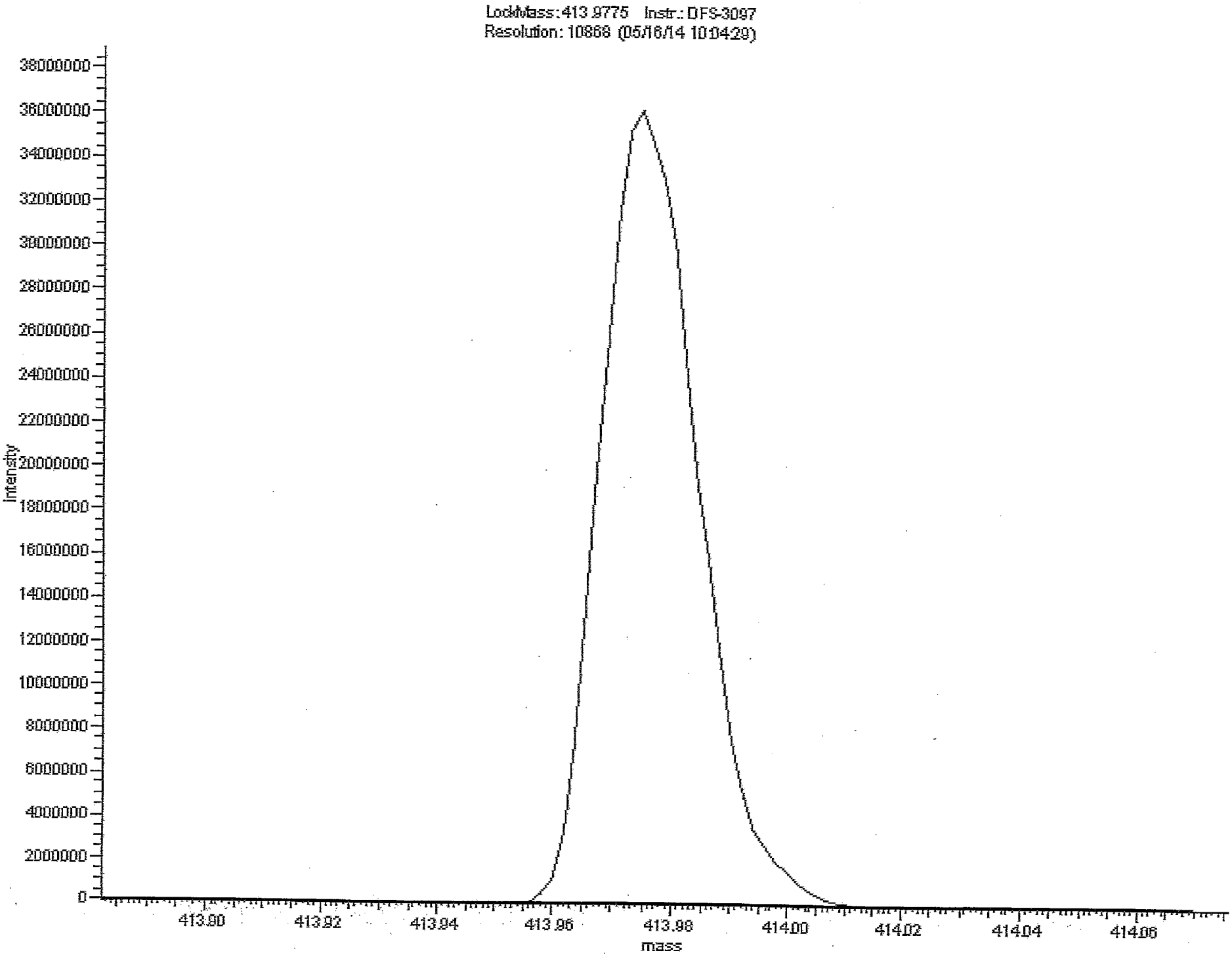

Mass:351.9802 Instr.: DFS-3097
Resolution: 12694 (05/16/14 10:03:07)
Intensity
mass
58000
54000
52000
50000
48000
46000
44000
42000
40000
38000
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
351.90
351.92
351.94
351.96
351.98
352.00
352.02
352.04
352.06

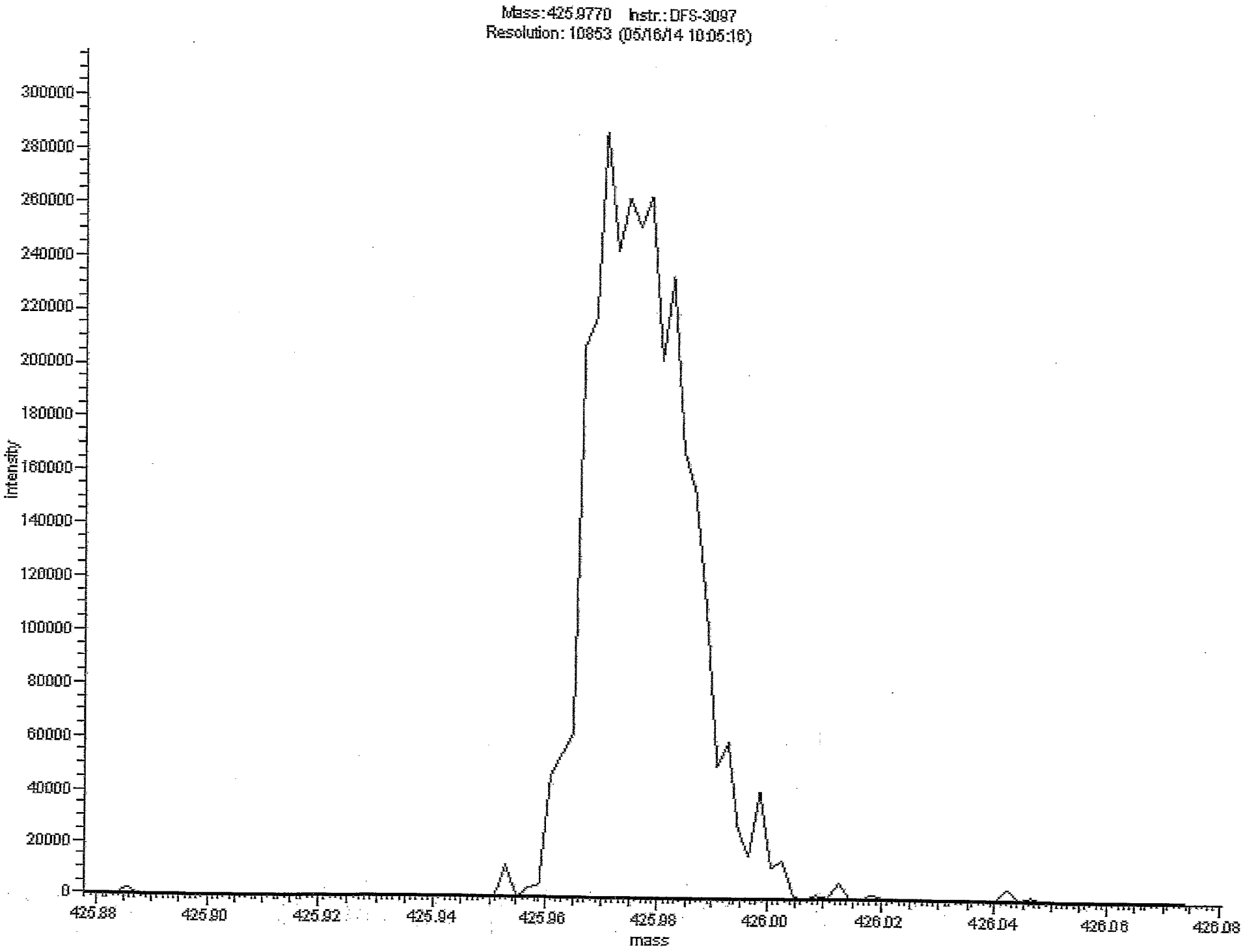

CaliMass:375.9802 Instr.: DFS-3097
Resolution: 11628 (05/16/14 10:03:10)
Intensity
mass
280000
270000
260000
250000
240000
230000
220000
210000
200000
190000
180000
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
375.90
375.92
375.94
375.96
375.98
376.00
376.02
376.04
376.06

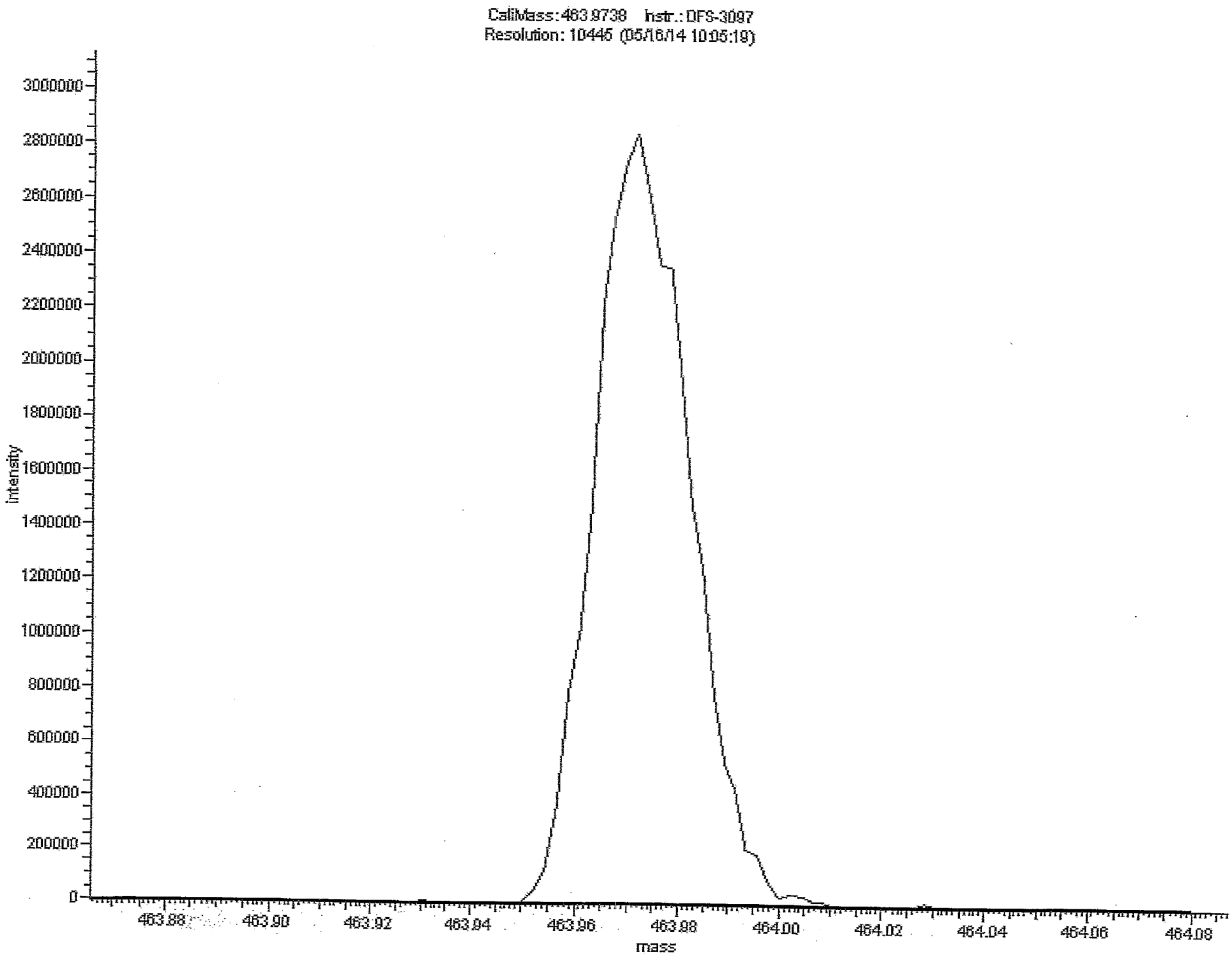

LockMass:375.9802 Instr.: DFS-3097
Resolution: 11628 (05/16/14 10:03:25)
Intensity
560000
540000
520000
500000
480000
460000
440000
420000
400000
380000
360000
340000
320000
300000
280000
260000
240000
220000
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
375.90
375.92
375.94
375.96
375.98
376.00
376.02
376.04
376.06
mass


Mass:401.9770 Instr.: DFS-3097
Resolution: 10656 (05/16/14 10:04:11)
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Intensity
401.90
401.92
401.94
401.96
401.98
402.00
402.02
402.04
402.06
mass


CaliMass:413.9770 Instr.: DFS-3097
Resolution: 10868 (05/16/14 10:04:14)
30000000
28000000
26000000
24000000
22000000
20000000
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
-2000000
Intensity
413.90
413.92
413.94
413.96
413.98
414.00
414.02
414.04
414.06
mass


LockMass:413.9775 Instr.: DFS-3097
Resolution: 10868 (05/16/14 101429)
Intensity
38000000
36000000
34000000
32000000
30000000
28000000
26000000
24000000
22000000
20000000
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
413.90
413.92
413.94
413.96
413.98
414.00
414.02
414.04
414.06
mass


Mass: 425.9770 Instr.: DFS-3097
Resolution: 10853 (05/16/14 10:05:16)
300000
280000
260000
240000
220000
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Intensity
425.88
425.90
425.92
425.94
425.96
425.98
426.00
426.02
426.04
426.06
426.08
mass


CaliMass: 463.9738 Instr.: DFS-3097
Resolution: 10445 (05/16/14 10:05:19)
Intensity
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2800000
2600000
2400000
2200000
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
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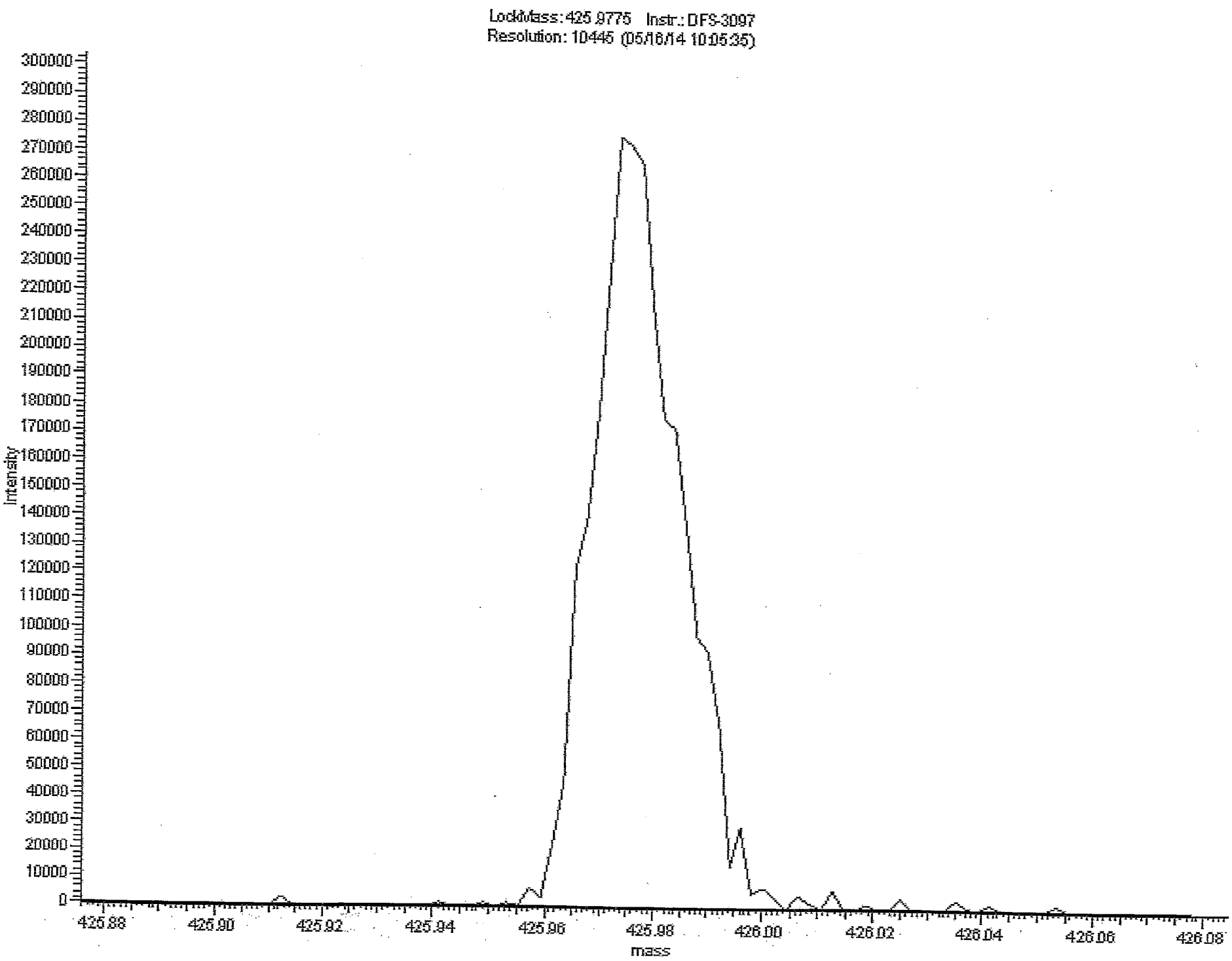
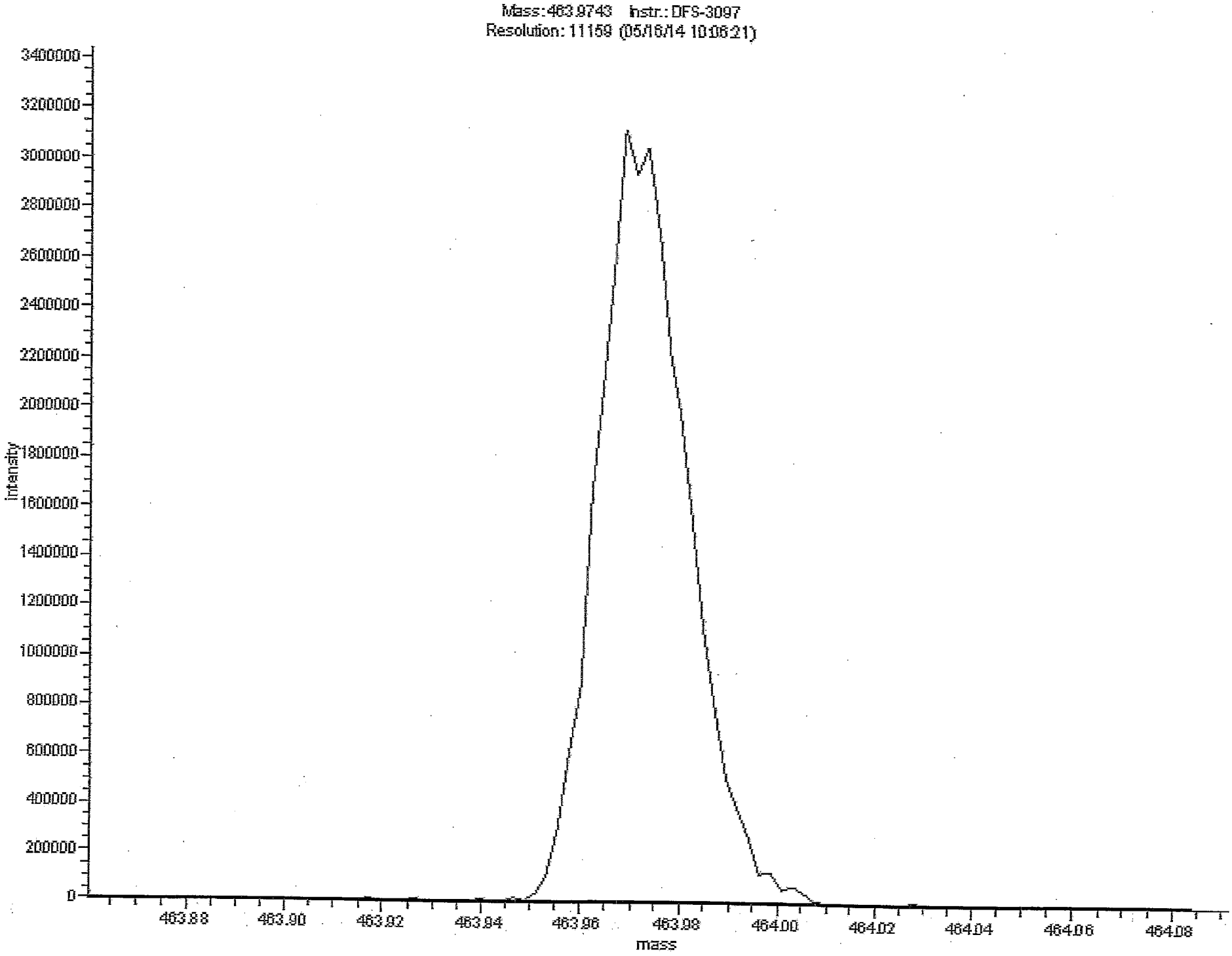
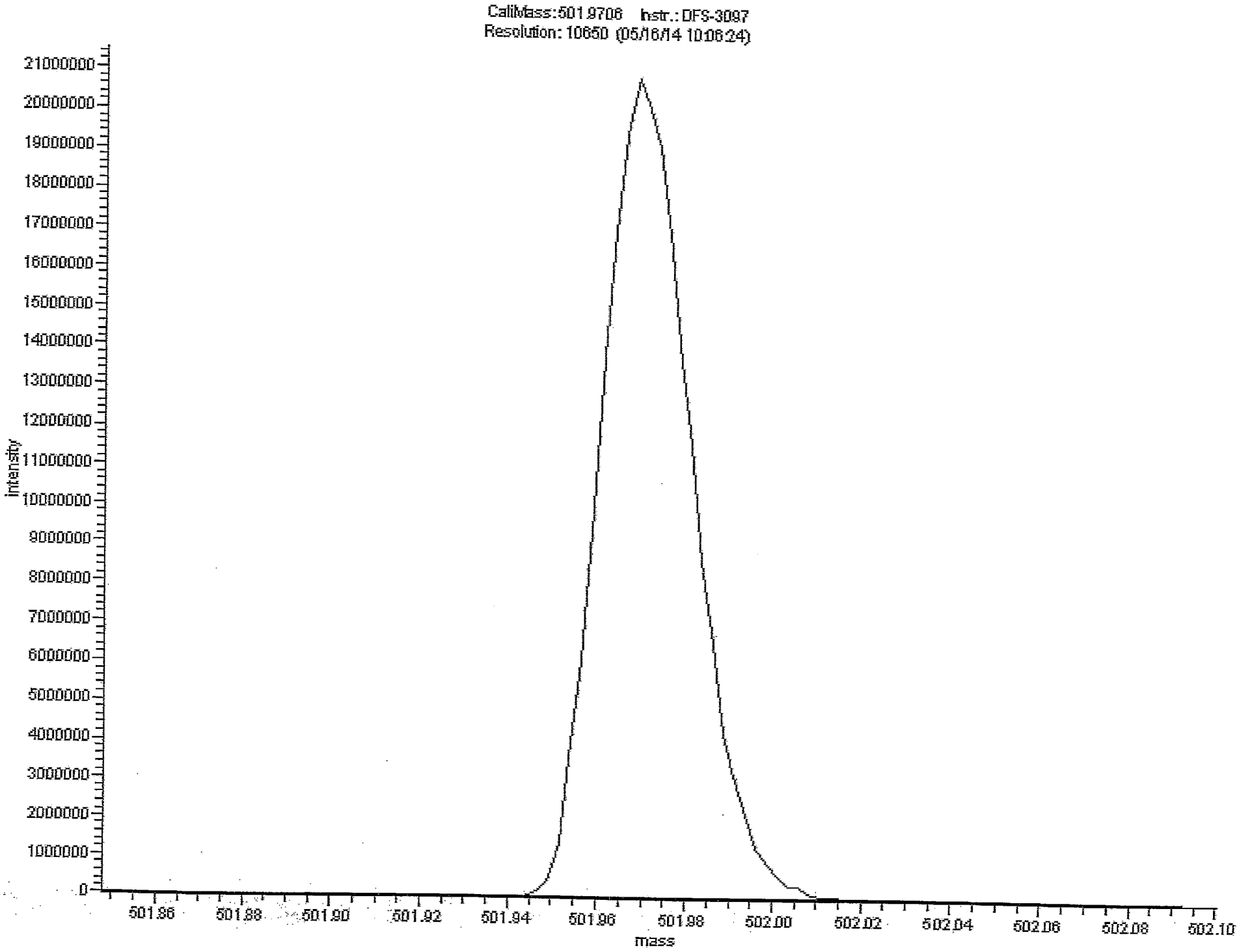
463.90
463.92
463.94
463.96
463.98
464.00
464.02
464.04
464.06
464.08
mass


Lockmass: 425.9775 Instr.: DFS-3097
Resolution: 10445 (05/16/14 10:05:35)
Intensity
mass
300000
290000
280000
270000
260000
250000
240000
230000
220000
210000
200000
190000
180000
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
425.88
425.90
425.92
425.94
425.96
425.98
426.00
426.02
426.04
426.06
426.08


Mass:463.9743 Instr.: DFS-3097
Resolution: 11159 (05/16/14 10:06:21)
Intensity
3400000
3200000
3000000
2800000
2600000
2400000
2200000
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
463.88
463.90
463.92
463.94
463.96
463.98
464.00
464.02
464.04
464.06
464.08
mass


CaliMass:501.9706 Instr.: DFS-3097
Resolution: 10650 (05/16/14 10:06:24)
intensity
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20000000
19000000
18000000
17000000
16000000
15000000
14000000
13000000
12000000
11000000
10000000
9000000
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
501.86
501.88
501.90
501.92
501.94
501.96
501.98
502.00
502.02
502.04
502.06
502.08
502.10
mass

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 16-May-2014 14:26:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs1 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:11 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:11:15

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31.872	58834	0.71	1.1733	0.5077	0.5077	0.008979	0.008979	102	M
A Non-2,3,7,8-sub-TCDD	30.308	1807	0.77	0.0000						RQ
S Total TCDD					0.5077	0.5077	0.008979	0.008979		RQ
2,3,7,8-TCDF	29.761	94226	0.75	1.0881	0.5339	0.5339	0.007514	0.007514	107	M
A Non-2,3,7,8-sub-TCDF	28.995	5764	0.77	0.0000						RQ
S Total TCDF					0.5339	0.5339	0.007514	0.007514		RQ
1,2,3,7,8-PeCDD	41.018	214444	1.73	1.0434	2.653	2.653	0.0167	0.0167	106	M
A Non-2,3,7,8-sub-PeCDD	39.915	9515	1.55	0.0000						RQ
S Total PeCDD					2.653	2.653	0.0167	0.0167		RQ
1,2,3,7,8-PeCDF	39.296	385579	1.56	1.1898	2.632	2.632	0.0410	0.0410	105	
2,3,4,7,8-PeCDF	40.502	362268	1.54	1.1095	2.619	2.619	0.0392	0.0392	105	
A Non-2,3,7,8-sub-PeCDF	38.623						0.0	0.0		
S Total PeCDF					5.250	5.250	0.0401	0.0401		
1,2,3,4,7,8-HxCDD	45.253	272992	1.21	1.1409	2.679	2.679	0.0596	0.0596	107	
1,2,3,6,7,8-HxCDD	45.371	275227	1.26	1.1481	2.607	2.607	0.0639	0.0639	104	
1,2,3,7,8,9-HxCDD	45.759	273517	1.28	1.2212	2.471	2.471	0.0578	0.0578	98.85	M
A Non-2,3,7,8-sub-HxCDD	44.687						0.0	0.0		
S Total HxCDD					7.757	7.757	0.0604	0.0604		
1,2,3,4,7,8-HxCDF	44.190	433645	1.27	1.3629	2.614	2.614	0.0448	0.0448	105	
1,2,3,6,7,8-HxCDF	44.325	512529	1.17	1.2762	2.756	2.756	0.0425	0.0425	110	
2,3,4,6,7,8-HxCDF	45.067	458923	1.25	1.2654	2.698	2.698	0.0454	0.0454	108	
1,2,3,7,8,9-HxCDF	46.029	380908	1.28	1.2573	2.556	2.556	0.0581	0.0581	102	M
A Non-2,3,7,8-sub-HxCDF	44.552						0.0	0.0		
S Total HxCDF					10.6	10.6	0.0477	0.0477		
1,2,3,4,6,7,8-HpCDD	50.184	246709	1.04	1.1204	2.626	2.626	0.0231	0.0231	105	
A Non-2,3,7,8-sub-HpCDD	49.566	11997	1.03	0.0000						
S Total HpCDD					2.626	2.626	0.0231	0.0231		
1,2,3,4,6,7,8-HpCDF	48.464	424692	1.05	1.4984	2.677	2.677	0.0197	0.0197	107	
1,2,3,4,7,8,9-HpCDF	50.808	322253	1.06	1.3807	2.575	2.575	0.0270	0.0270	103	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49.625						0.0	0.0		
S Total HpCDF					5.252	5.252	0.0233	0.0233		
OCDD	54.297	442341	0.82	1.2073	5.315	5.315	0.0289	0.0289	106	M
OCDF	54.435	599861	0.89	1.1162	5.154	5.154	0.0184	0.0184	103	
D 13C-2,3,7,8-TCDD	31.806	9876576	0.82	1.0709	98.3	98.3	0.2664	0.2664	98.27	
D 13C-2,3,7,8-TCDF	29.728	16217882	0.80	1.7545	98.5	98.5	0.1062	0.1062	98.50	
D 13C-1,2,3,7,8-PeCDD	41.001	7747378	1.61	0.8743	94.4	94.4	0.2068	0.2068	94.42	
D 13C-1,2,3,7,8-PeCDF	39.279	12314088	1.61	1.3704	95.7	95.7	0.1532	0.1532	95.75	
D 13C-2,3,4,7,8-PeCDF	40.484	12469187	1.55	1.3837	96.0	96.0	0.1518	0.1518	96.02	
D 13C-1,2,3,4,7,8-HxCDD	45.219	8933187	1.28	0.8772	100.3	100.3	0.2134	0.2134	100	
D 13C-1,2,3,6,7,8-HxCDD	45.354	9193835	1.27	0.9171	98.7	98.7	0.2042	0.2042	98.75	
D 13C-1,2,3,4,7,8-HxCDF	44.173	12171006	0.54	1.1892	100.8	100.8	0.2095	0.2095	101	
D 13C-1,2,3,6,7,8-HxCDF	44.308	14571209	0.53	1.4625	98.1	98.1	0.1704	0.1704	98.14	
D 13C-2,3,4,6,7,8-HxCDF	45.050	13444179	0.53	1.3197	100.3	100.3	0.1888	0.1888	100	
D 13C-1,2,3,7,8,9-HxCDF	46.012	11850370	0.52	1.2001	97.3	97.3	0.2076	0.2076	97.26	
D 13C-1,2,3,4,6,7,8-HpCDD	50.167	8384746	1.04	0.8155	101.3	101.3	0.2339	0.2339	101	
D 13C-1,2,3,4,6,7,8-HpCDF	48.447	10586908	0.46	1.0496	99.4	99.4	0.1656	0.1656	99.35	
D 13C-1,2,3,4,7,8,9-HpCDF	50.791	9064964	0.45	0.8947	99.8	99.8	0.1943	0.1943	99.80	
D 13C-OCDD	54.280	13787078	0.91	0.7044	192.8	192.8	0.1251	0.1251	96.40	
D 13C-OCDF	54.418	20853570	0.91	1.0615	193.5	193.5	0.1275	0.1275	96.76	
$ 37Cl4-2,3,7,8-TCDD	31.872	59993		1.2266	0.5212	0.5212	0.006980	0.006980	104	
* 13C-1,2,3,4-TCDD	31.274	9384699	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45.742	10152105	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated

Reagents:

61L11613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:12 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 16-May-2014 14:26:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs1 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:11 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:11:15

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	31.872	31.871	0	1.002	24519	2882	21	52	137		M
321.8936	31.855	31.871	-1	1.002	34315	3876	22	55	176	0.71(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	29.711	30.308	-36		2771	391	21	52	19		
321.8936	29.728	30.308	-35		556	220	22	55	10	4.98(0.65-0.89)	
319.8965	33.883	30.308	214		504	146	21	52	7		
321.8936	33.783	30.308	208		465	154	22	55	7	1.08(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	29.761	29.793	-2	1.001	40361	4525	30	75	151		
305.8987	29.761	29.793	-2	1.001	53865	5573	29	72	192	0.75(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	23.163	28.995	-349		1692	366	30	75	12		
305.8987	23.197	28.995	-347		1794	405	29	72	14	0.94(0.65-0.89)	
303.9016	34.797	28.995	347		1857	215	30	75	7		
305.8987	34.814	28.995	348		1463	313	29	72	11	1.27(0.65-0.89)	
1,2,3,7,8-PeCDD											M
355.8546	41.018	41.031	-1	1.000	135749	31927	97	242	329		M
357.8516	41.018	41.031	-1	1.000	78695	19726	31	77	636	1.73(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	38.194	39.915	-103		1765	451	97	242	5		
357.8516	38.194	39.915	-103		2696	674	31	77	22	0.65(1.32-1.78)	
355.8546	41.672	39.915	105		4067	957	97	242	10		
357.8516	41.655	39.915	104		2545	554	31	77	18	1.60(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	39.296	39.309	-1	1.000	235054	48686	354	885	138		
341.8567	39.296	39.309	-1	1.000	150525	31066	142	355	219	1.56(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40.502	40.497	0	1.000	219584	51785	354	885	146		
341.8567	40.502	40.497	0	1.000	142684	34471	142	355	243	1.54(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											
339.8597	38.623						354	885			
341.8567	38.623						142	355			
1,2,3,4,7,8-HxCDD											
389.8158	45.253	45.249	0	1.001	149638	37533	423	1057	89		
391.8127	45.236	45.249	-1	1.000	123354	32012	181	452	177	1.21(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45.371	45.367	0	1.000	153521	34384	423	1057	81		
391.8127	45.371	45.367	0	1.000	121706	27207	181	452	150	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	45.759	45.755	0	1.012	153733	36630	423	1057	87		M
391.8127	45.759	45.755	0	1.012	119784	29431	181	452	163	1.28(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											
389.8158	44.687						423	1057			
391.8127	44.687						181	452			
1,2,3,4,7,8-HxCDF											
373.8208	44.190	44.203	-1	1.000	242335	65094	413	1032	158		
375.8178	44.190	44.203	-1	1.000	191310	51020	354	885	144	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44.325	44.338	-1	1.000	276616	66473	413	1032	161		
375.8178	44.325	44.338	-1	1.000	235913	54461	354	885	154	1.17(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45.067	45.064	0	1.000	255321	65716	413	1032	159		
375.8178	45.067	45.064	0	1.000	203602	50722	354	885	143	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											M
373.8208	46.029	46.042	-1	1.000	214140	50304	413	1032	122		M
375.8178	46.029	46.042	-1	1.000	166768	39105	354	885	110	1.28(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											
373.8208	44.552						413	1032			
375.8178	44.552						354	885			
1,2,3,4,6,7,8-HpCDD											
423.7767	50.184	50.180	0	1.000	125747	23404	83	207	282		
425.7737	50.167	50.180	-1	1.000	120962	22652	77	192	294	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48.970	49.566	-36		6090	1428	83	207	17		
425.7737	48.970	49.566	-36		5907	1470	77	192	19	1.03(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	48.464	48.476	-1	1.000	217042	43963	163	407	270		
409.7788	48.464	48.476	-1	1.000	207650	43189	99	247	436	1.05(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8,9-HpCDF											
407.7817	50.808	50.821	-1	1.000	165938	32114	163	407	197		
409.7788	50.808	50.821	-1	1.000	156315	30199	99	247	305	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49.625						163	407			
409.7788	49.625						99	247			
OCDD											M
457.7377	54.297	54.308	-1	1.000	199351	51267	126	315	407		M
459.7348	54.297	54.308	-1	1.000	242990	61264	95	237	645	0.82(0.76-1.02)	M
OCDF											
441.7428	54.435	54.429	0	1.000	283026	67060	102	255	657		
443.7399	54.435	54.429	0	1.000	316835	71889	100	250	719	0.89(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31.806	31.804	0	1.017	4437123	467967	669	1672	700		
333.9338	31.806	31.804	0	1.017	5439453	547707	464	1160	1180	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29.728	29.743	-1	0.951	7185850	815684	396	990	2060		
317.9389	29.728	29.743	-1	0.951	9032032	982215	344	860	2855	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	41.001	40.997	0	1.311	4779816	1137566	490	1225	2322		
369.8919	41.001	40.997	0	1.311	2967562	702235	228	570	3080	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39.279	39.275	0	1.256	7591474	1554308	508	1270	3060		
353.8970	39.279	39.275	0	1.256	4722614	987940	326	815	3030	1.61(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40.484	40.480	0	1.295	7579346	1742048	508	1270	3429		
353.8970	40.484	40.480	0	1.295	4889841	1111024	326	815	3408	1.55(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45.219	45.232	-1	0.989	5015628	1237419	1042	2605	1188		
403.8529	45.219	45.232	-1	0.989	3917559	984923	688	1720	1432	1.28(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45.354	45.350	0	0.992	5145363	1157530	1042	2605	1111		
403.8529	45.354	45.350	0	0.992	4048472	899419	688	1720	1307	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44.173	44.187	-1	0.966	4246020	1077139	873	2182	1234		
385.8610	44.173	44.187	-1	0.966	7924986	2065178	1429	3572	1445	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44.308	44.322	-1	0.969	5039793	1226005	873	2182	1404		
385.8610	44.308	44.322	-1	0.969	9531416	2307784	1429	3572	1615	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45.050	45.047	0	0.985	4651413	1154874	873	2182	1323		
385.8610	45.050	45.047	0	0.985	8792766	2185623	1429	3572	1529	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46.012	46.025	-1	1.006	4046541	920385	873	2182	1054		
385.8610	46.012	46.025	-1	1.006	7803829	1705753	1429	3572	1194	0.52(0.43-0.59)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50.167	50.163	0	1.097	4279476	793115	734	1835	1081		
437.8140	50.150	50.163	-1	1.096	4105270	754273	1029	2572	733	1.04(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48.447	48.443	0	1.059	3349222	701857	545	1362	1288		
419.8220	48.447	48.443	0	1.059	7237686	1522777	1061	2652	1435	0.46(0.51-0.37)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50.791	50.804	-1	1.110	2793241	540408	545	1362	992		
419.8220	50.791	50.804	-1	1.110	6271723	1218464	1061	2652	1148	0.45(0.37-0.51)	
13C-OCDD											
469.7780	54.280	54.291	-1	1.187	6563250	1489277	461	1152	3231		
471.7750	54.280	54.291	-1	1.187	7223828	1670709	353	882	4733	0.91(0.76-1.02)	
13C-OCDF											
453.7830	54.418	54.429	-1	1.190	9942521	2332902	412	1030	5662		
455.7801	54.418	54.429	-1	1.190	10911049	2581911	839	2097	3077	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31.872	31.871	0	1.019	59993	6803	34	85	200		
13C-1,2,3,4-TCDD											
331.9368	31.274	31.289	-1		4187037	433867	669	1672	649		
333.9338	31.290	31.289	0		5197662	558966	464	1160	1205	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45.742	45.738	0		5654695	1276930	1042	2605	1225		
403.8529	45.742	45.738	0		4497410	1033032	688	1720	1502	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Review Flags

M - Manually Integrated

Reagents:

61L11613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:12 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Inject. Date: 16-May-2014 14:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 1
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 2
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
29.711	2771	391	556	220		4.98	R
33.883	504	146	465	154		1.08	Rn
Signal Totals:							
	3275	537	1021	374			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4296	911				3.21	RQ
	1807	661					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (4296 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (1807 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Inject. Date: 16-May-2014 14:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 1
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 2
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23.163	1692	366	1794	405		0.94	R
34.797	1857	215	1463	313		1.27	Rn
Signal Totals:							
	3549	581	3257	718			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6806	1299				1.09	RQ
	5764	1270					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (6806 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (5764 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 12-Jan-2017 08:09:12 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Inject. Date: 16-May-2014 14:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 1
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 2
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDD, RT: 39.915

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
38.194	1765	451	2696	674		0.65	Rn
41.672	4067	957	2545	554		1.60	n
Signal Totals:							
	5832	1408	5241	1228			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	11073	2636				1.11	RQ
	9515	2252					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (11073 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (9515 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Inject. Date: 16-May-2014 14:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 1
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 2
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HxCDF, RT: 44.552

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
Signal Totals:	0	0	0	0			

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Lims ID: IC L1
Client ID:
Inject. Date: 16-May-2014 14:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 1
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 2
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDD, RT: 49.566

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48.970	6090	1428	5907	1470		1.03	
Signal Totals:							
	6090	1428	5907	1470			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	11997	2898				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (11997 * 0.0) / (0 * 0.000)

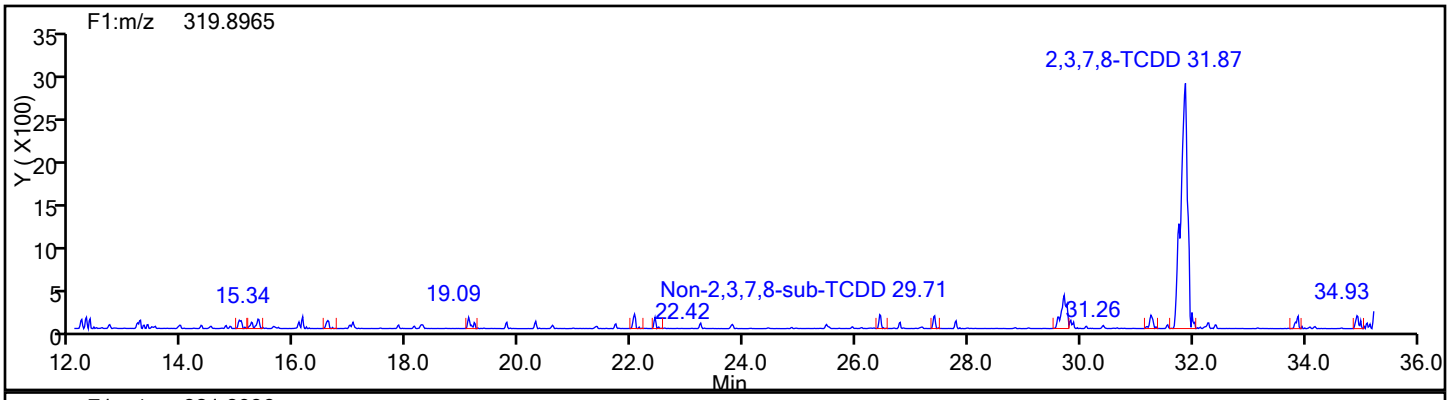
Report Date: 12-Jan-2017 08:09:12 Chrom Revision: 2.2 10-Jan-2017 11:26:10

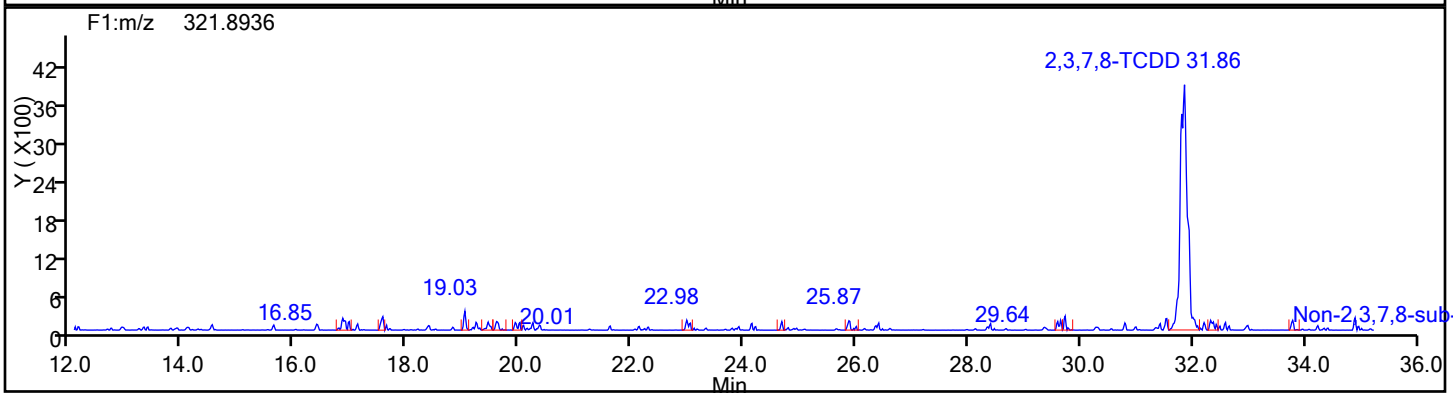
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

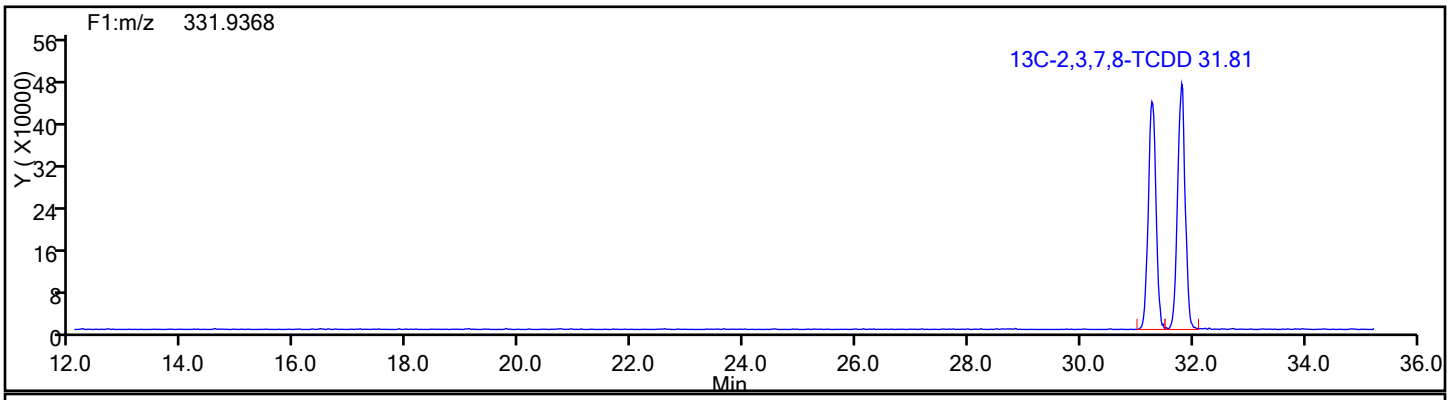
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

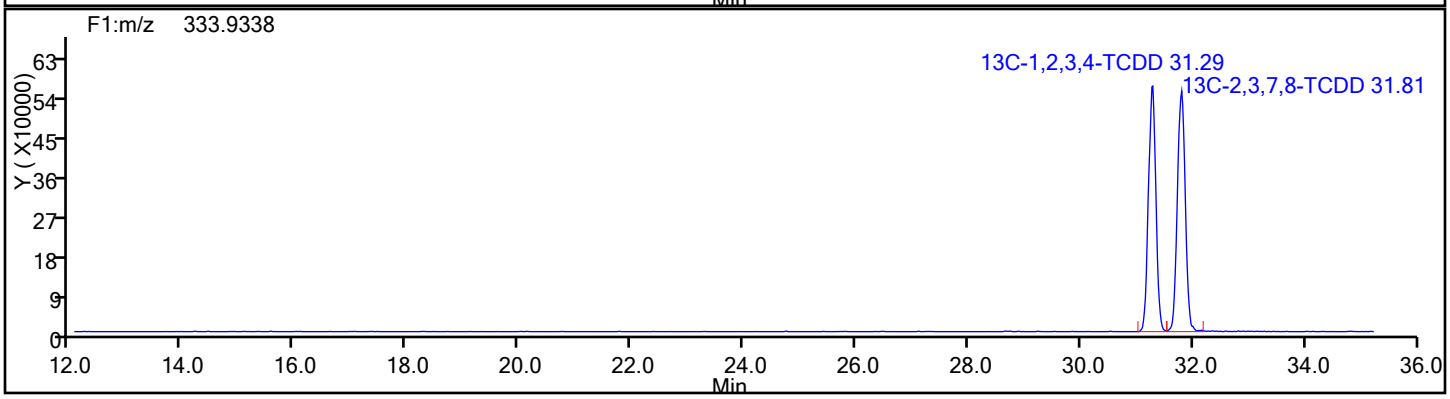
TCDD





TCDD Standards





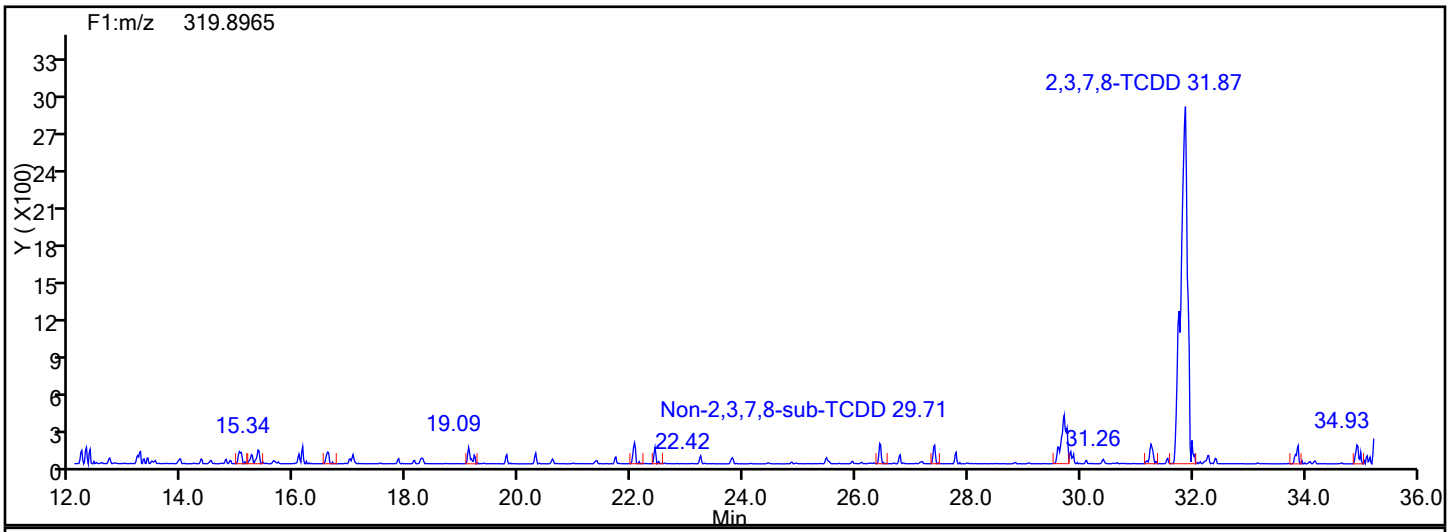
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

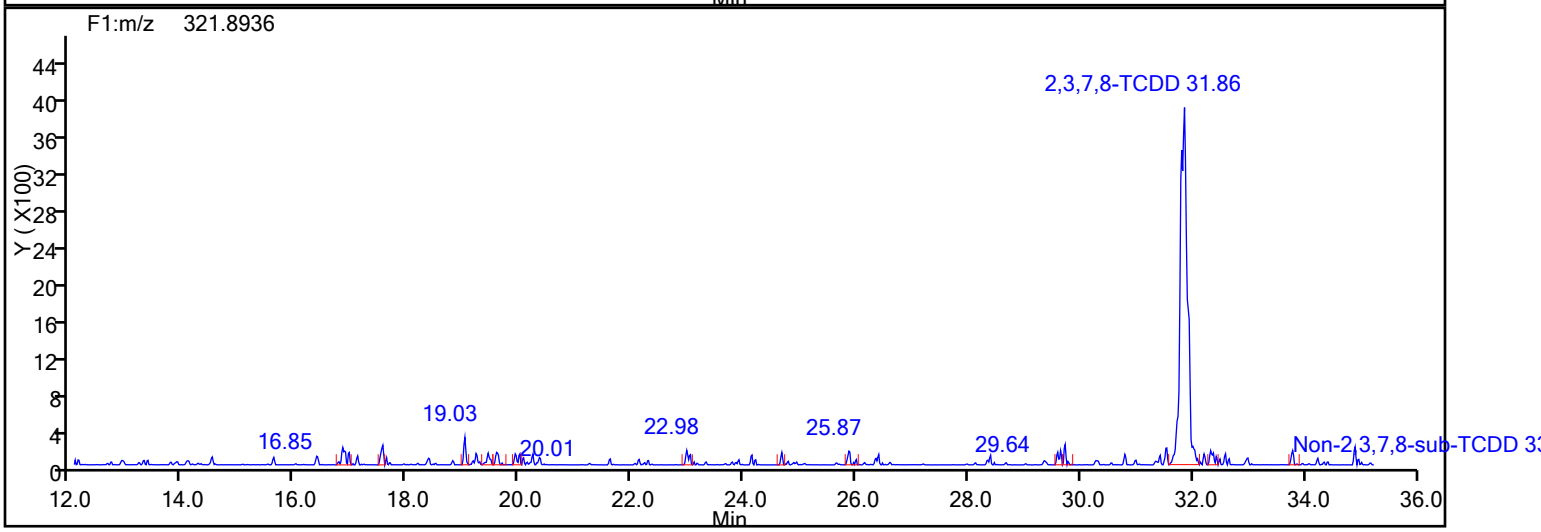
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

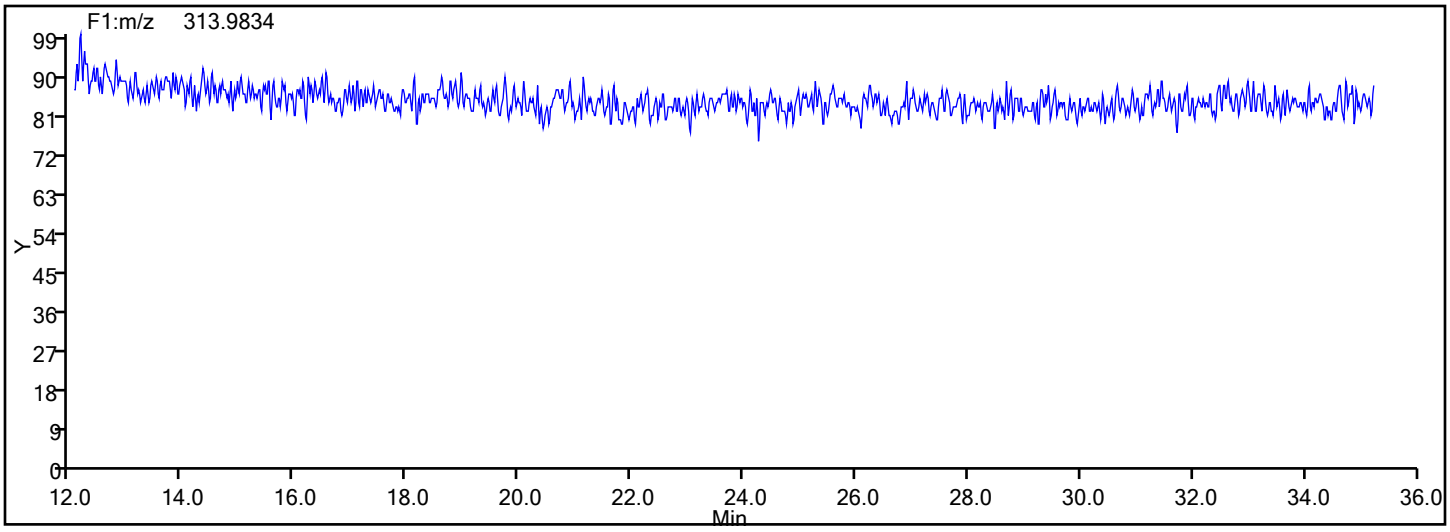
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

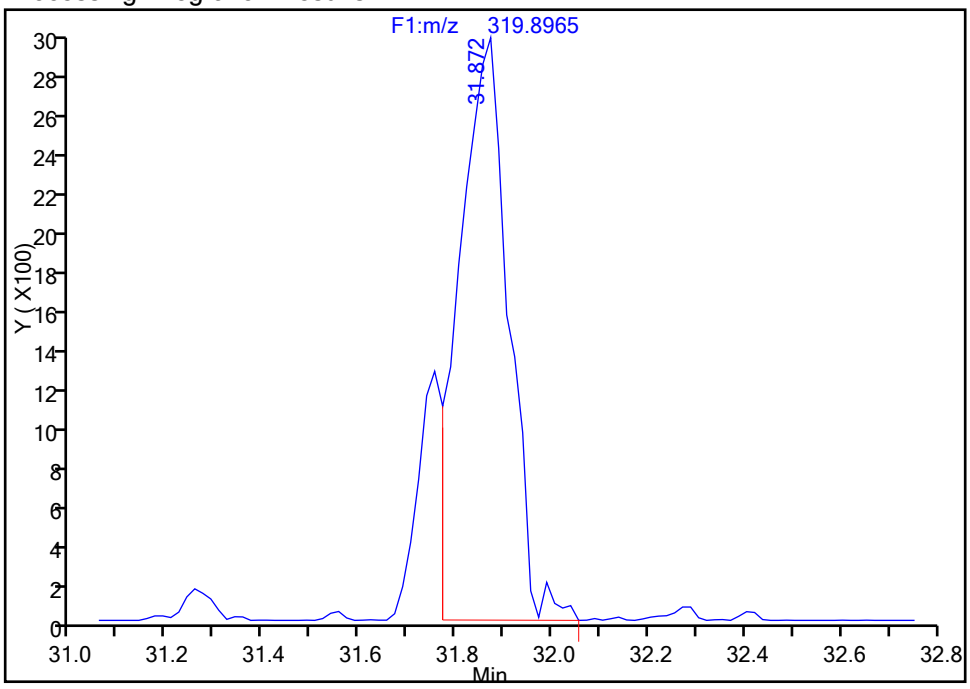
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F1(12.07 :34.29)

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

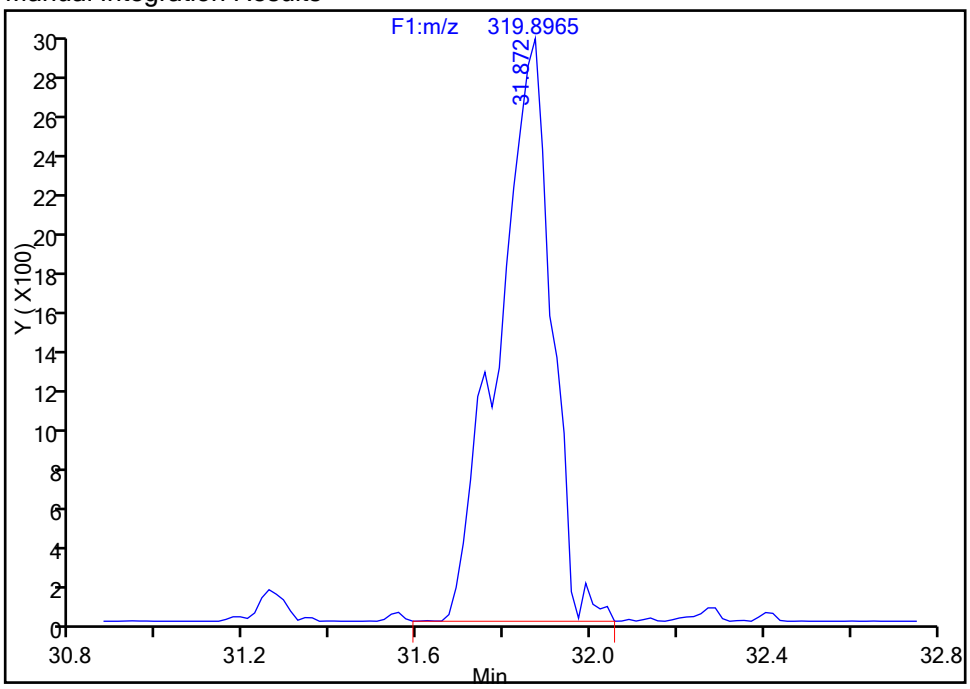
Processing Integration Results

RT: 31.87
Area: 20351
Amount: 0.478631
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 24519
Amount: 0.507713
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Manually Integrated Audit Reason: Baseline

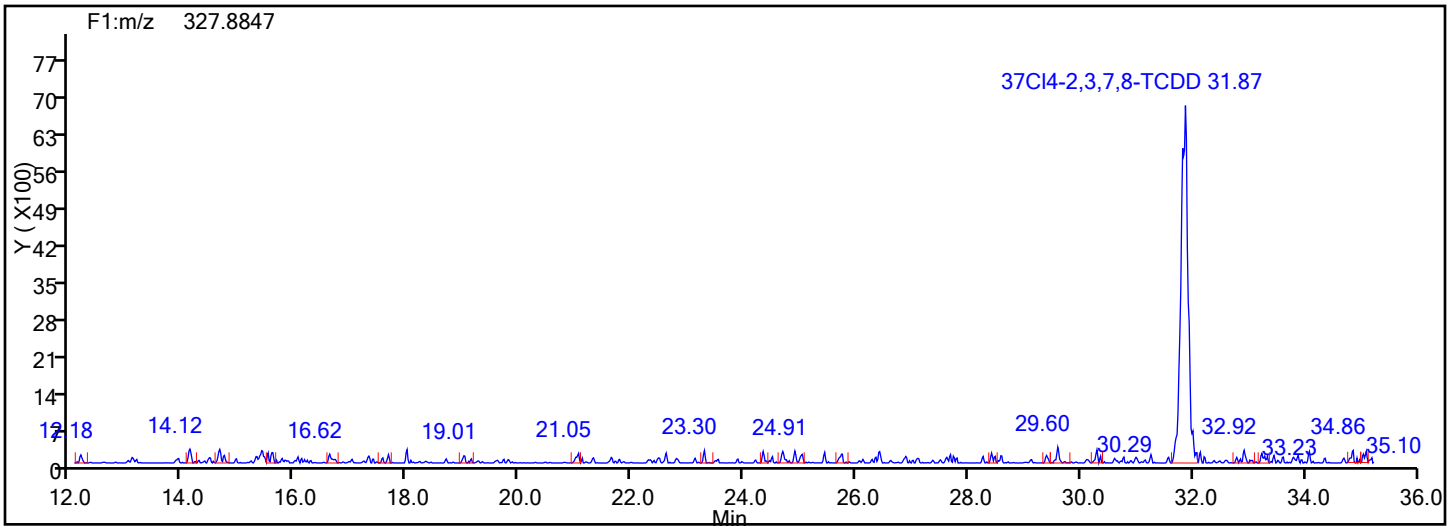
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

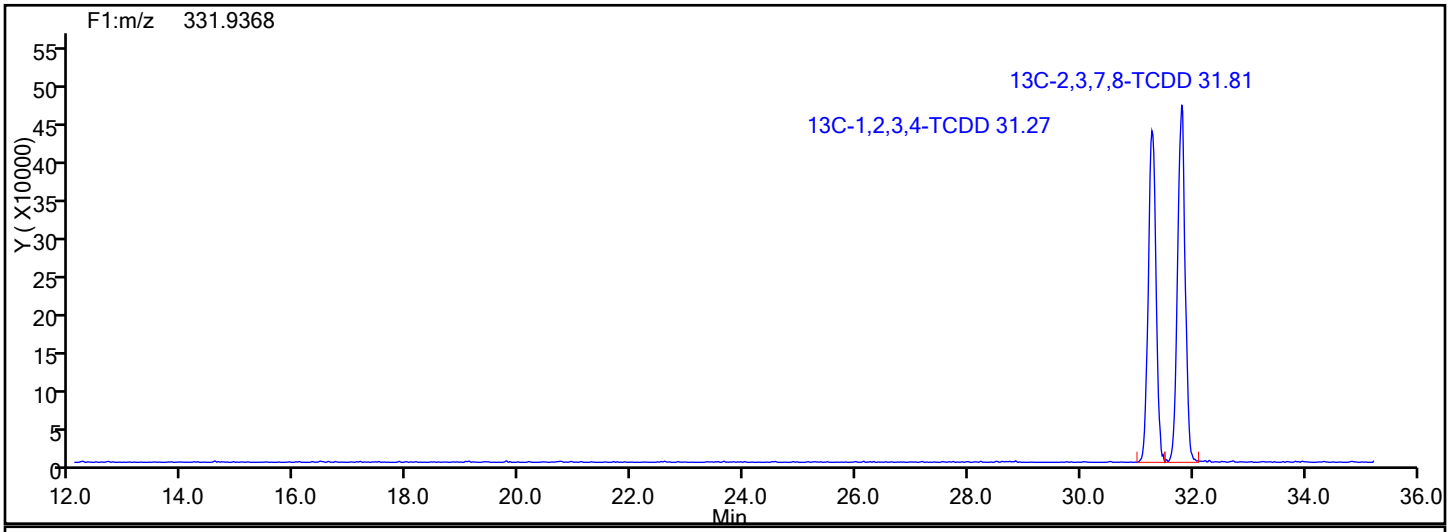
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

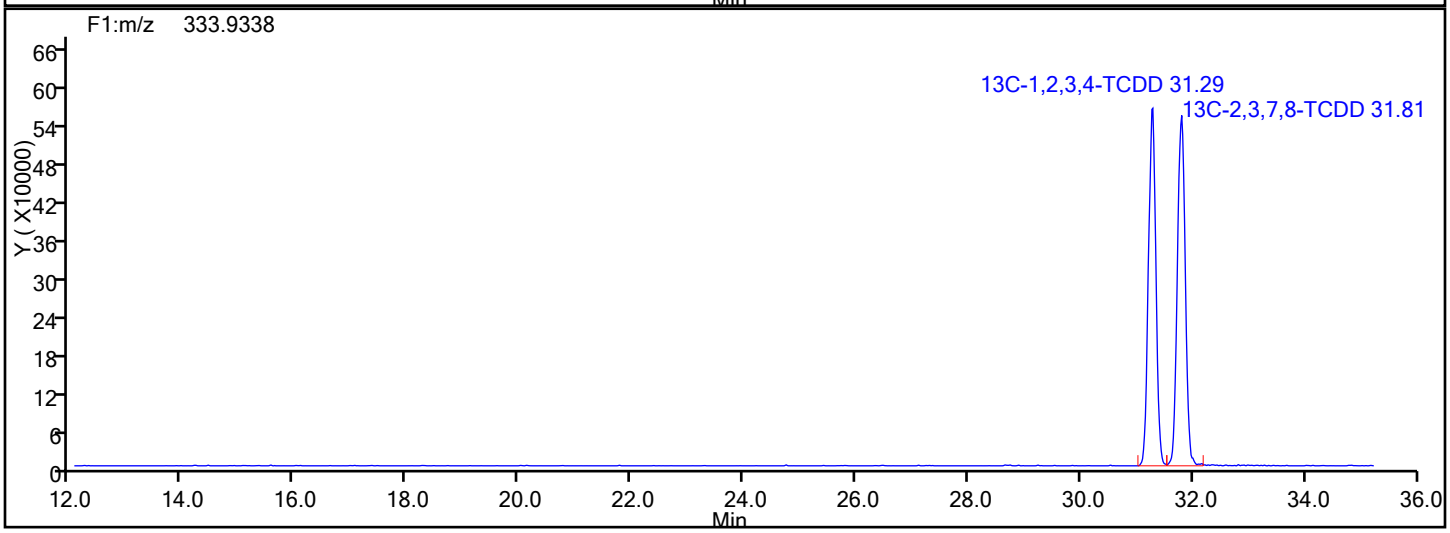
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





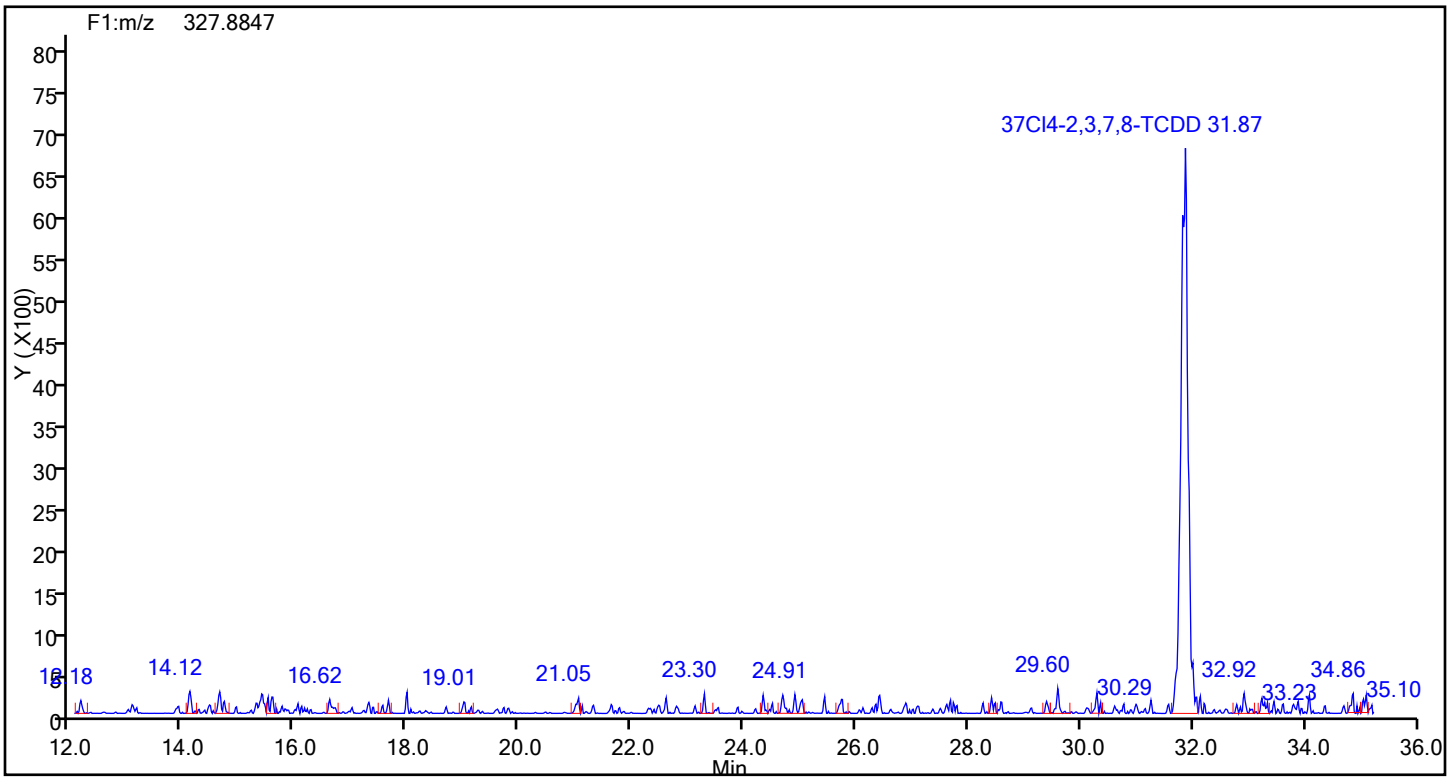
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

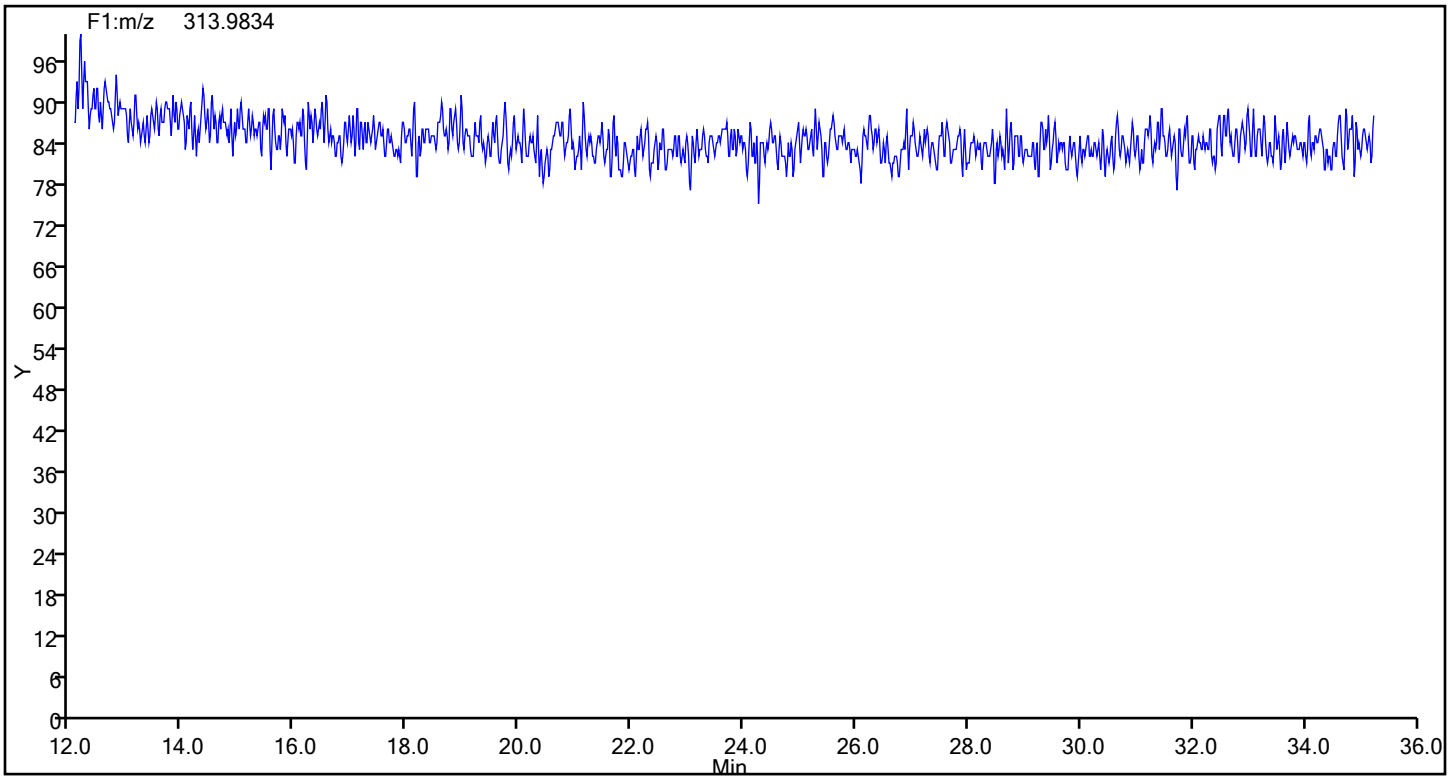
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



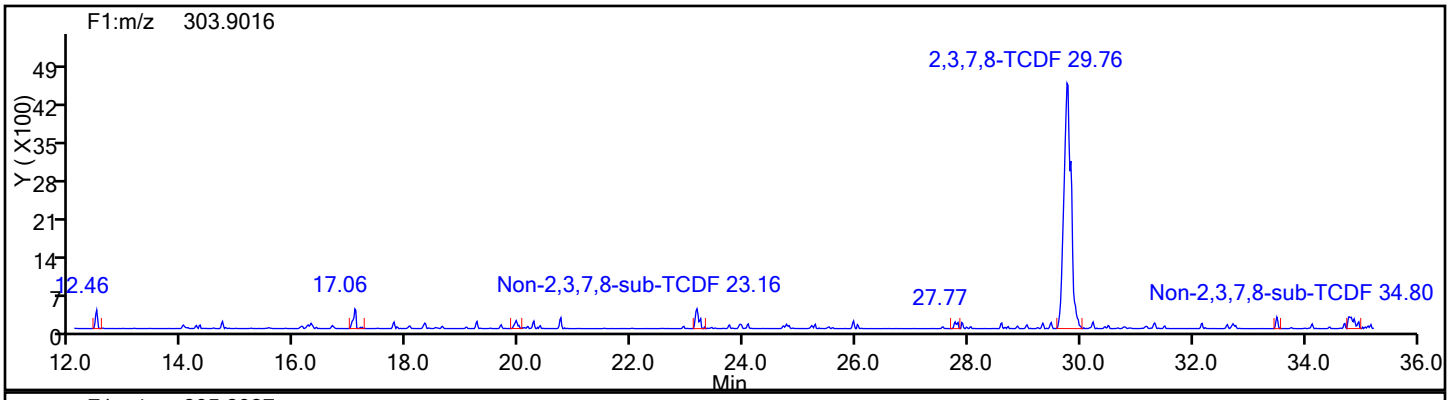
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

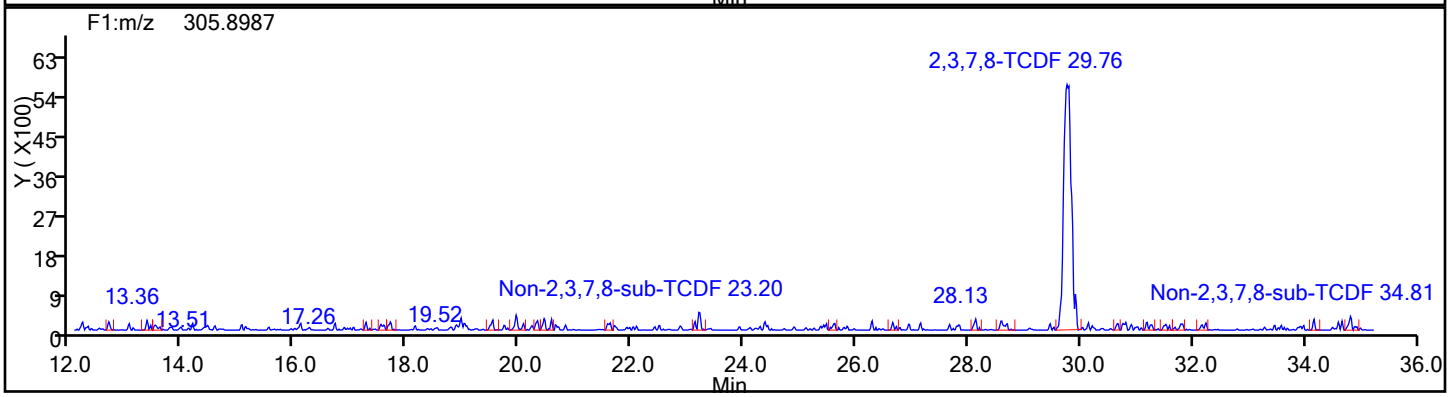
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

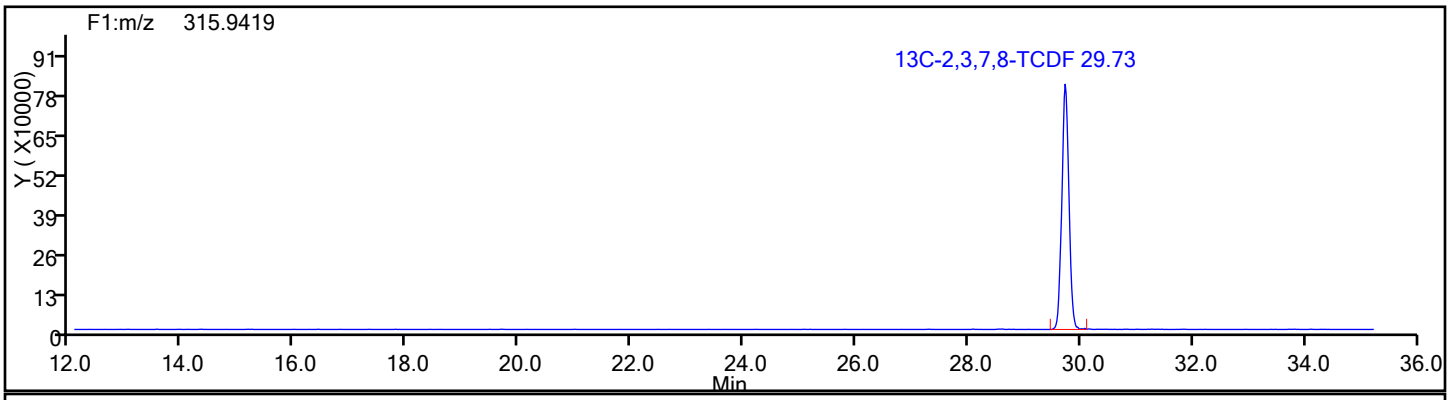
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

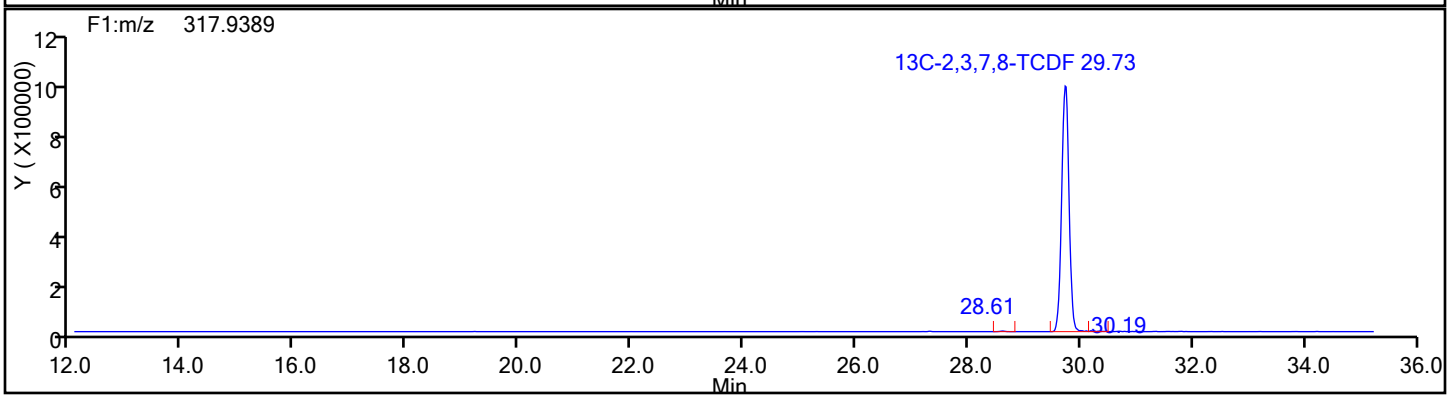
TCDF





TCDF Standards





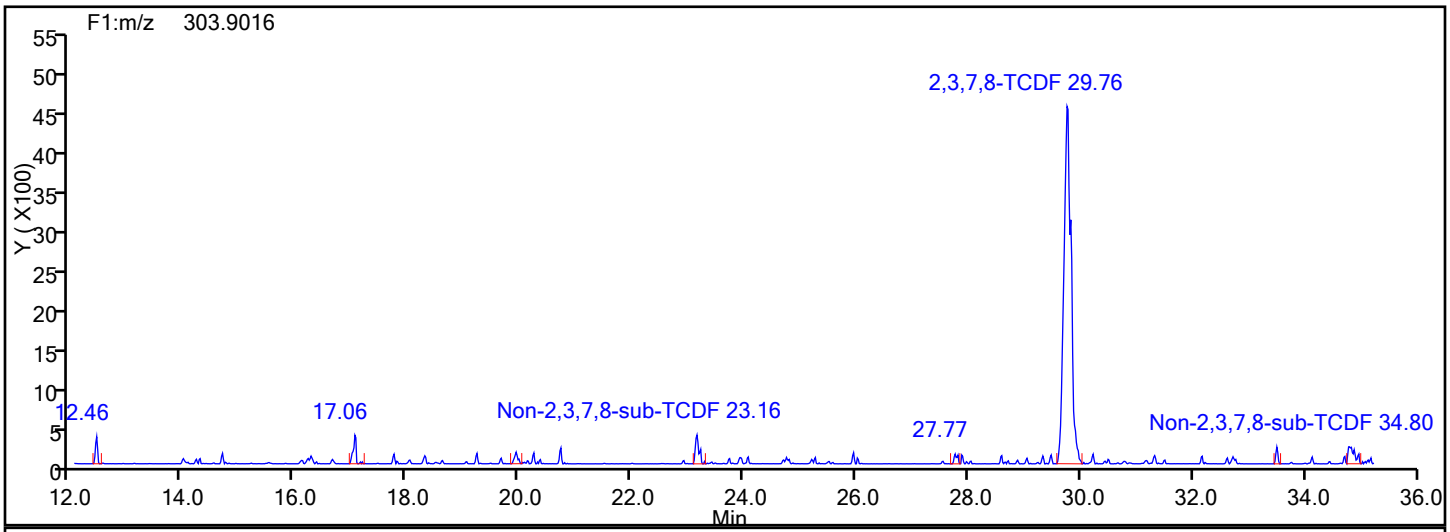
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

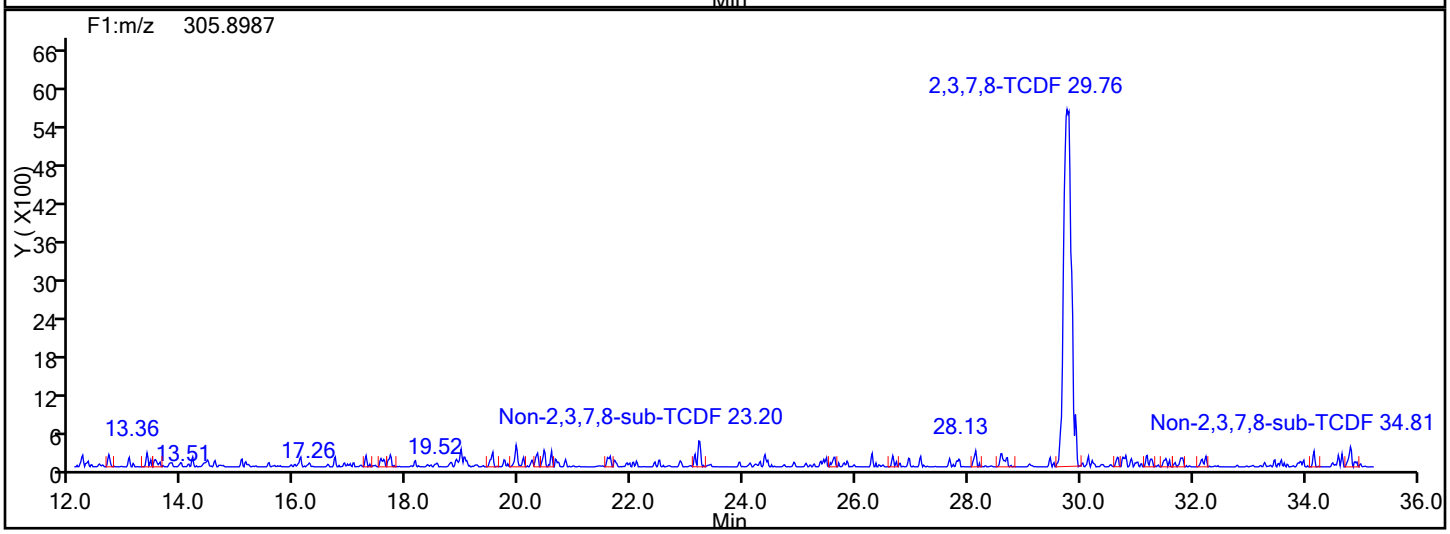
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

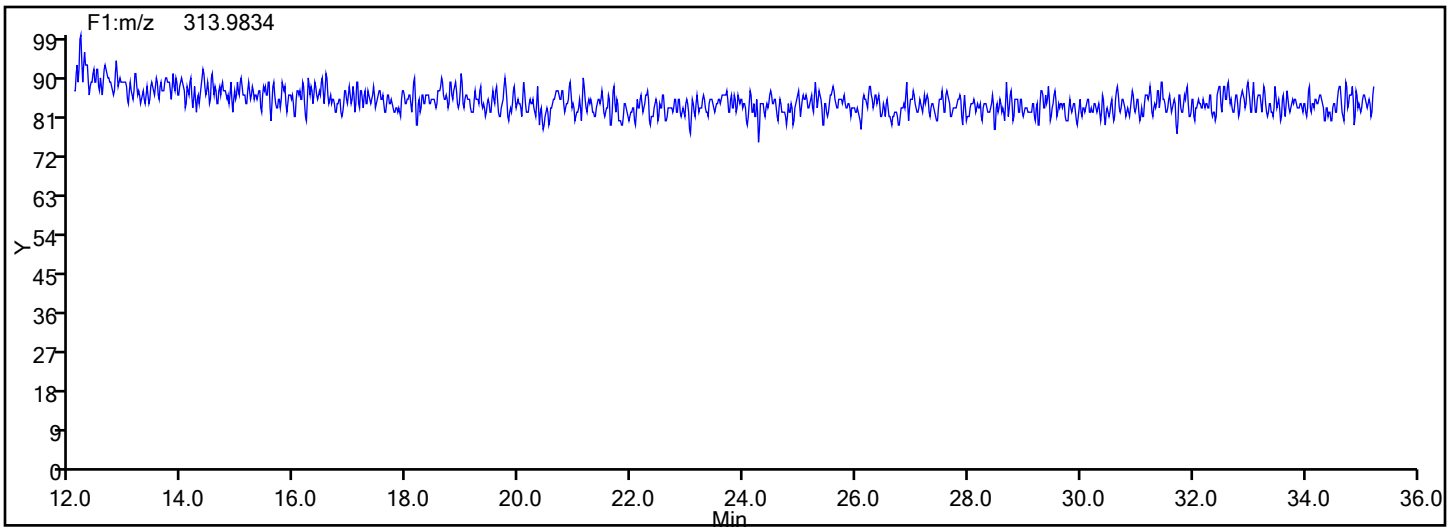
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass



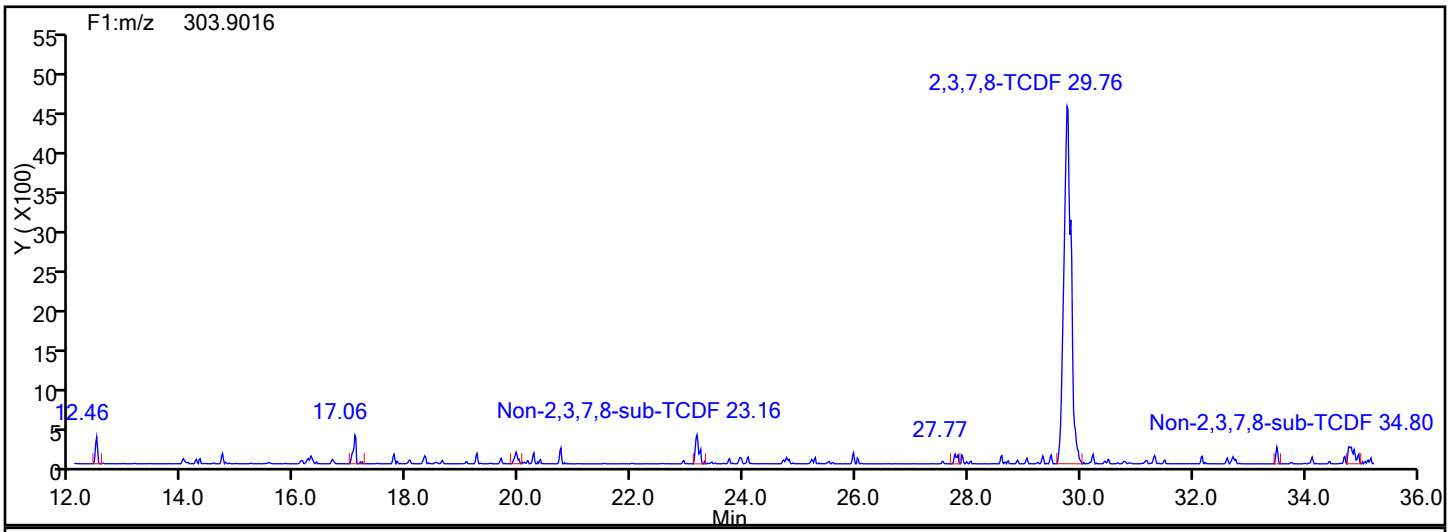
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

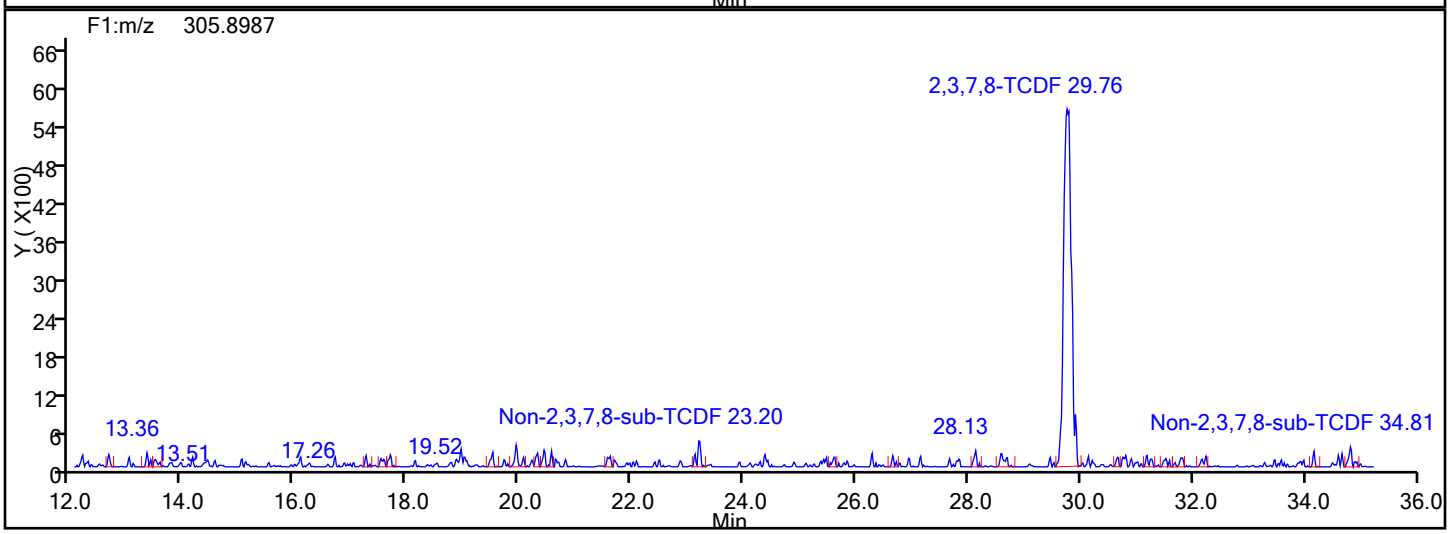
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

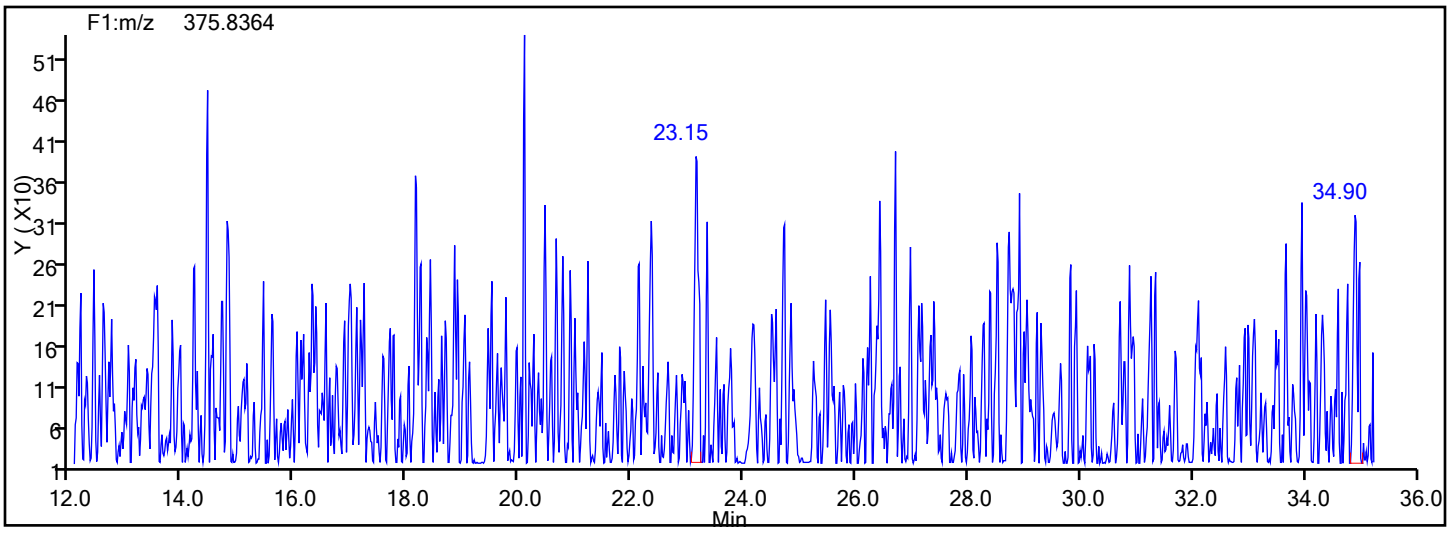
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

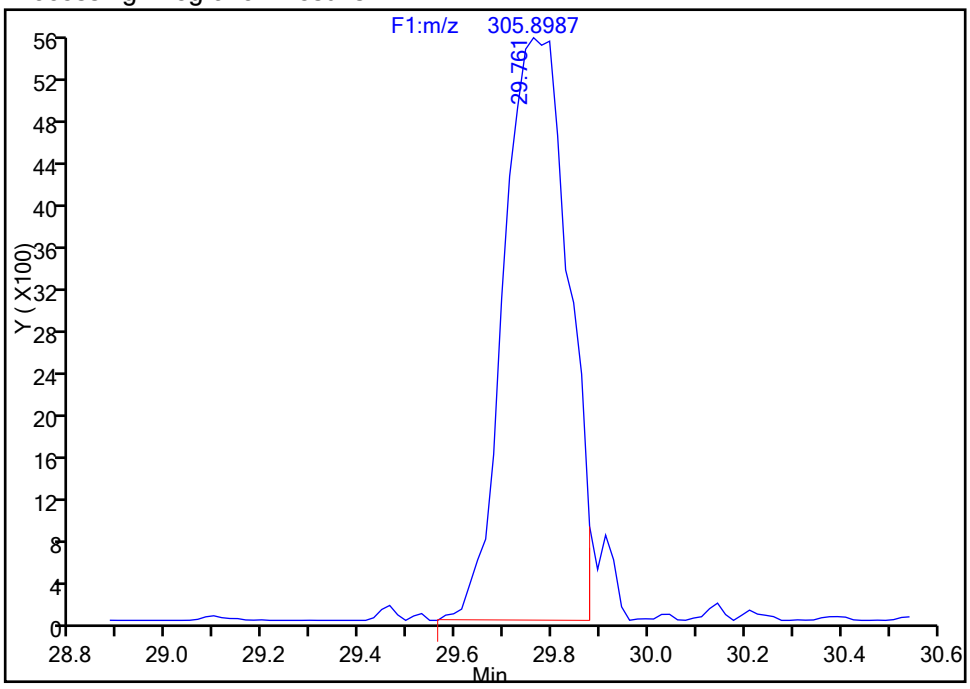
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F1(12.07 :34.29)

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

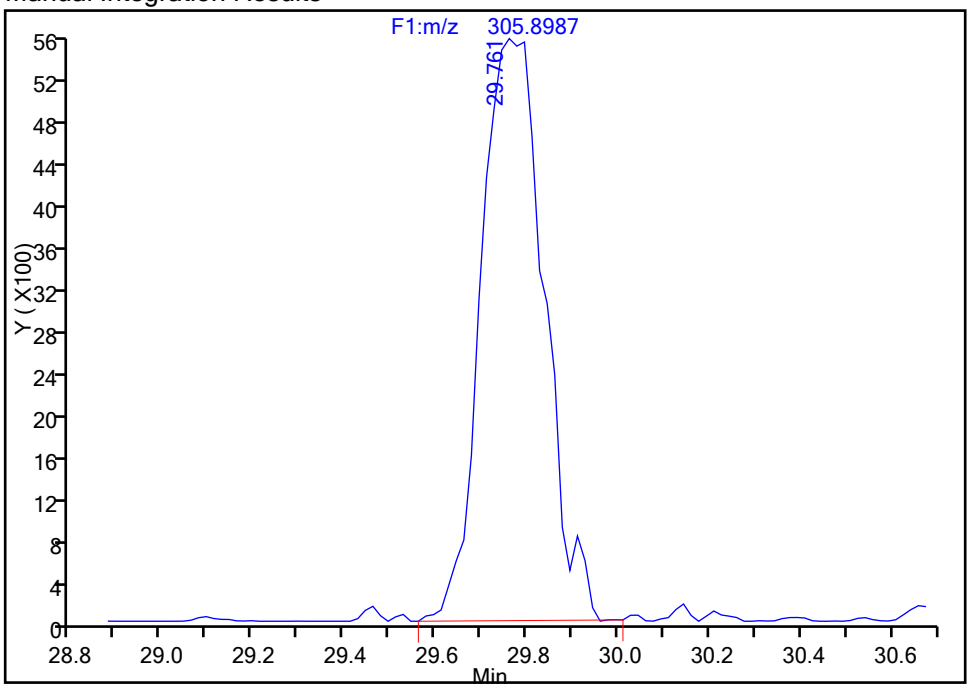
Processing Integration Results

RT: 29.76
Area: 51483
Amount: 0.523263
Amount Units: pg/ul



Manual Integration Results

RT: 29.76
Area: 53865
Amount: 0.533936
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Manually Integrated Audit Reason: Baseline

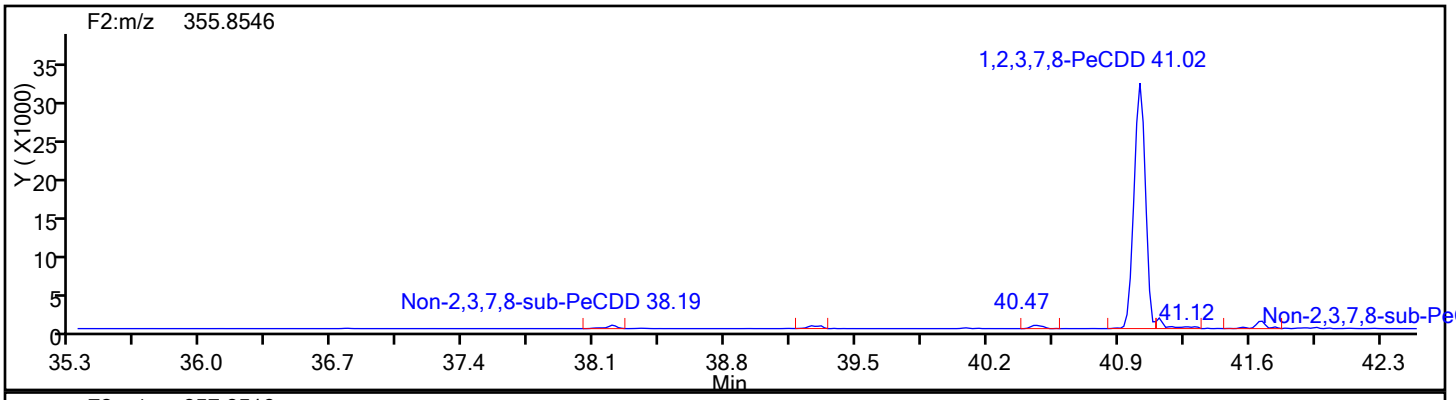
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

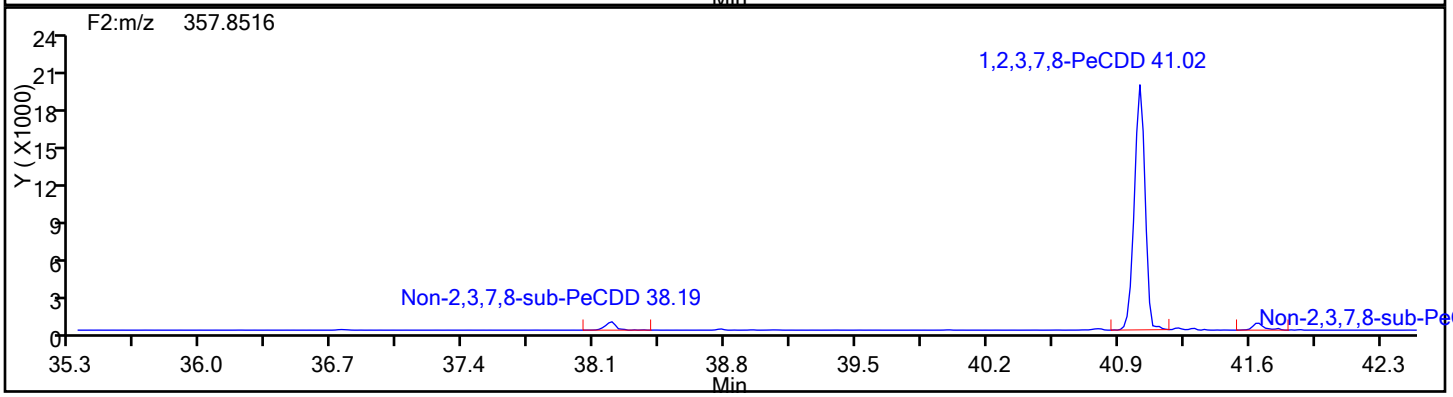
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

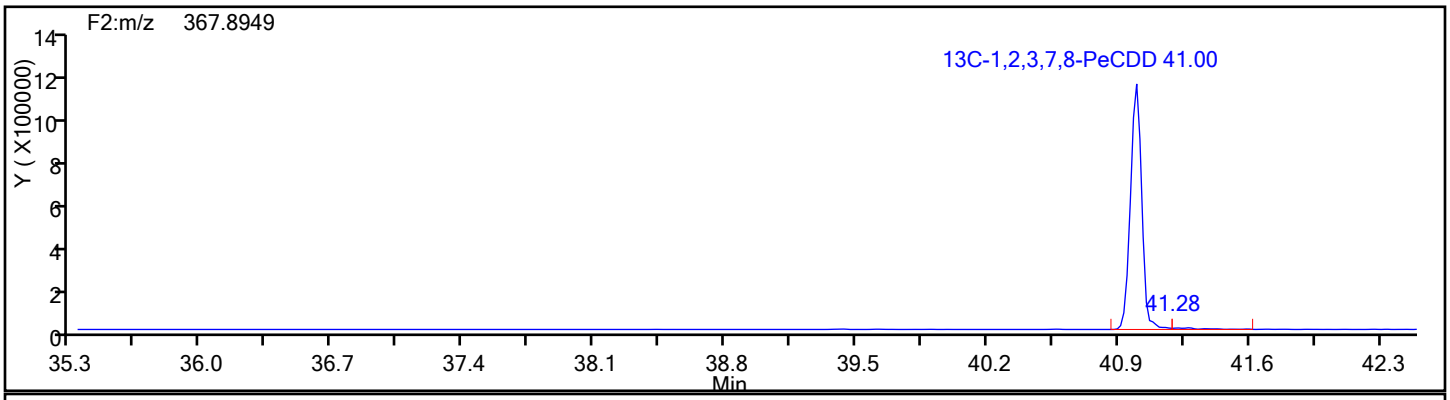
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

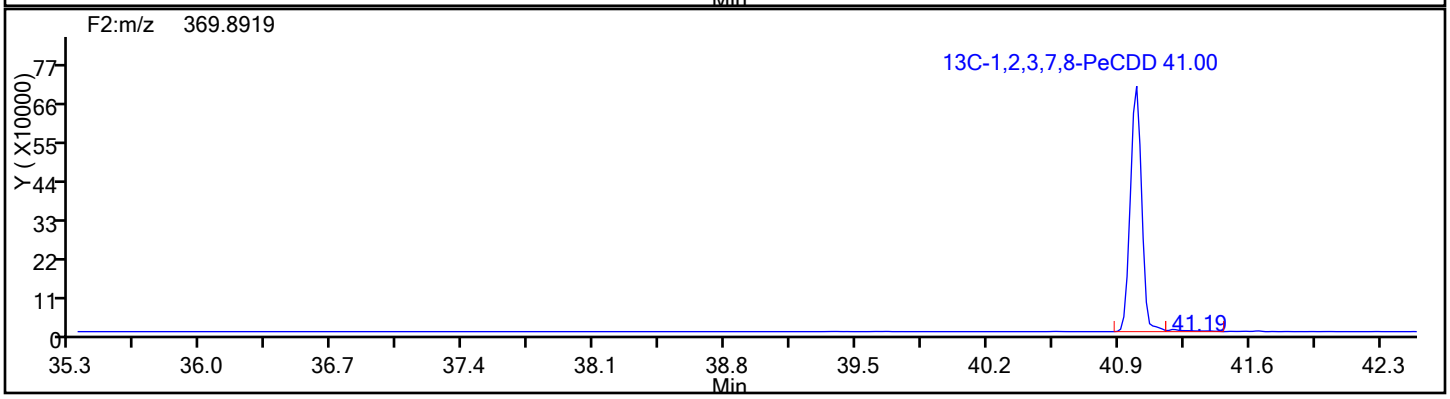
PeCDD





PeCDD Standards





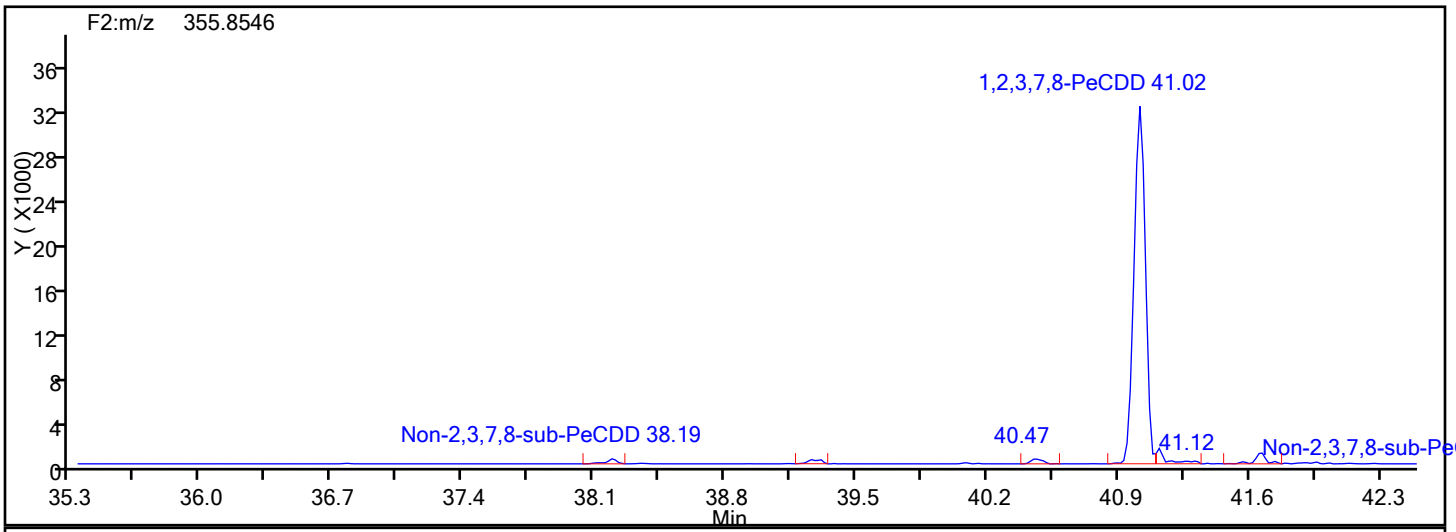
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

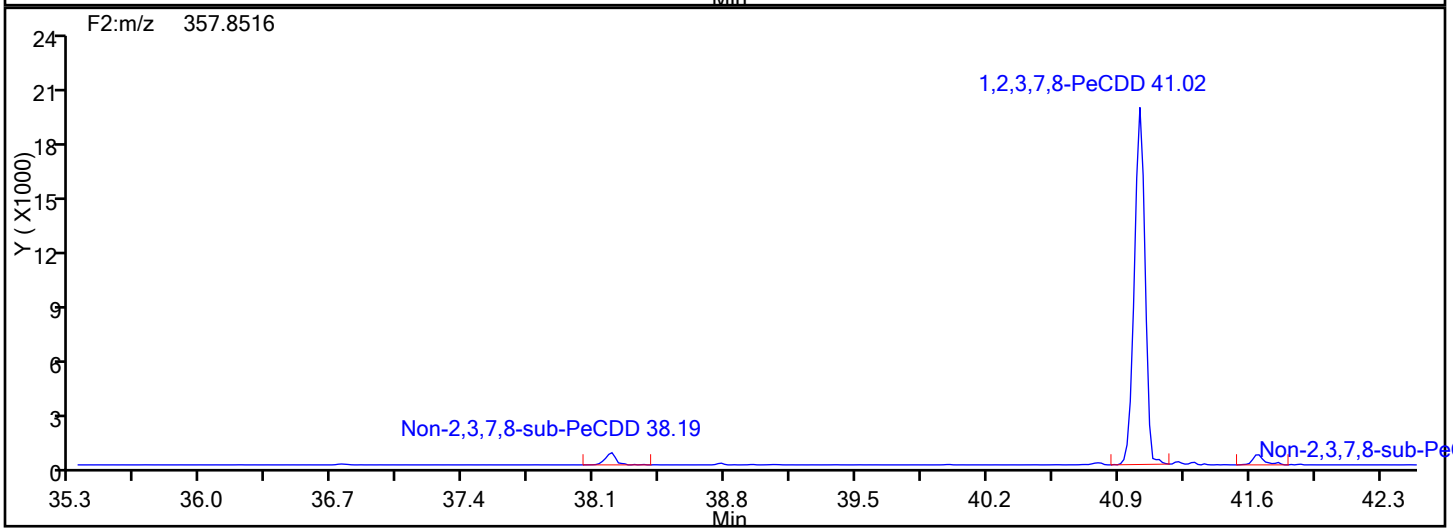
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

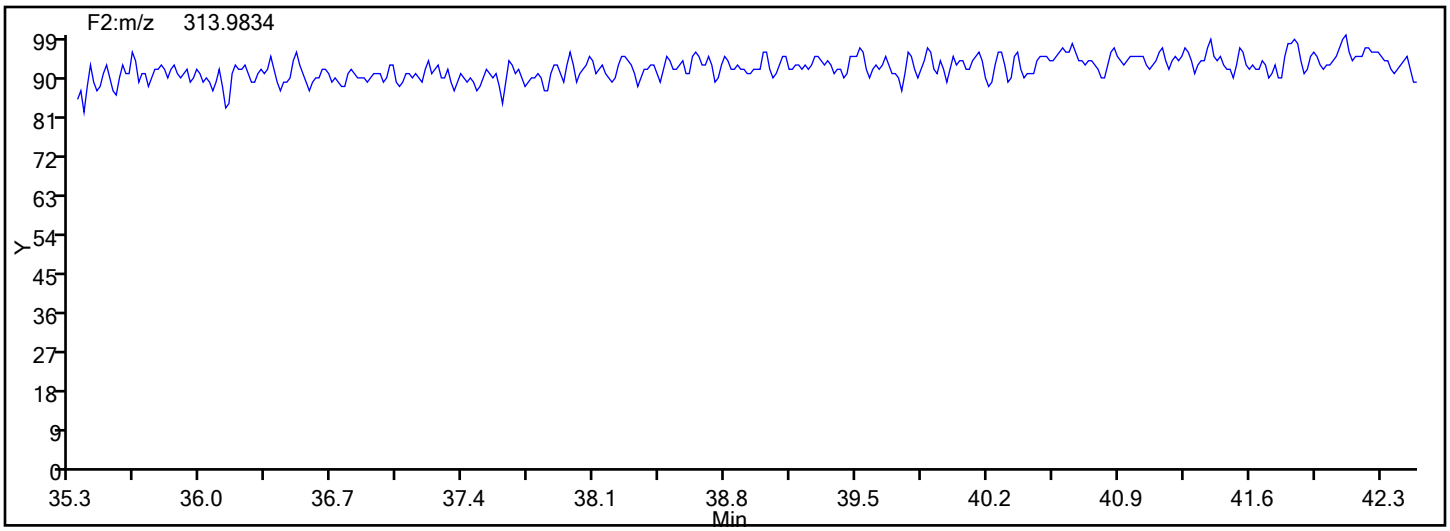
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

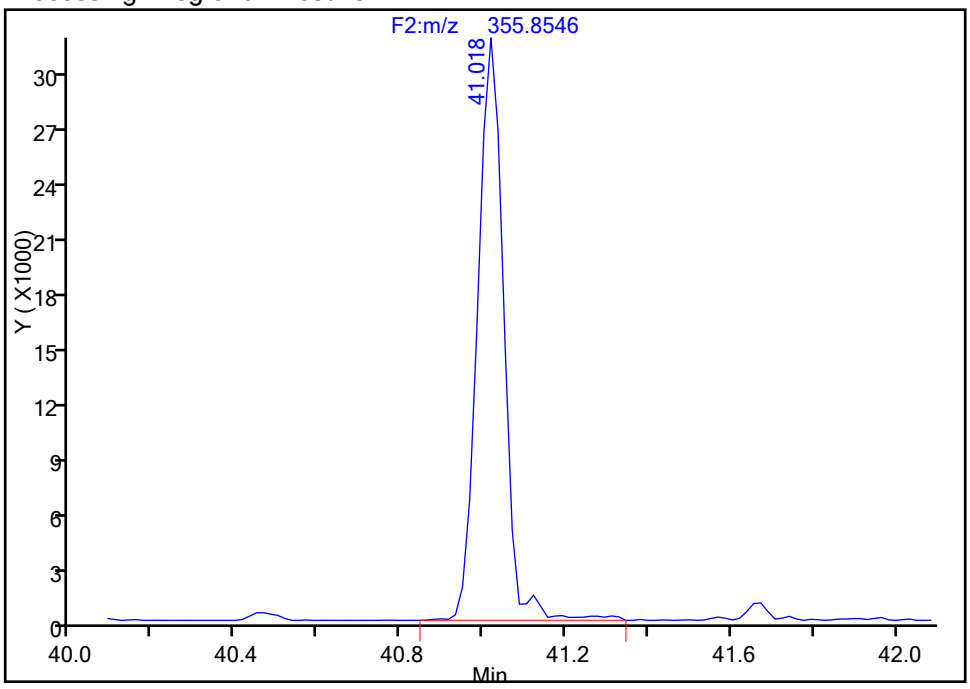
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F2(34.39 :42.21)

1,2,3,7,8-PeCDD, CAS: 40321-76-4

Signal: 1

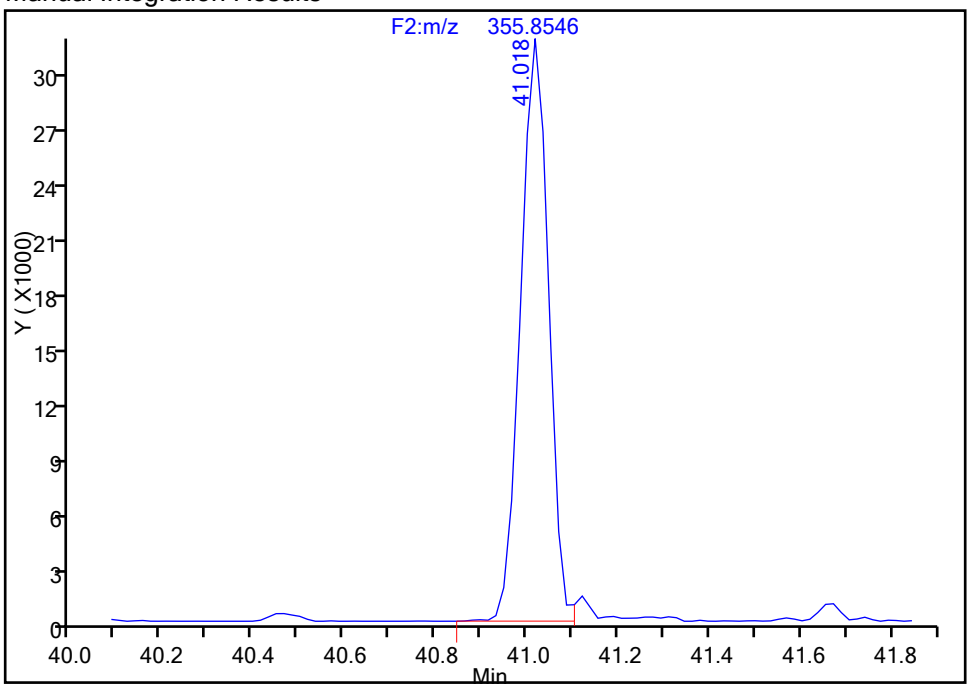
Processing Integration Results

RT: 41.02
Area: 140642
Amount: 2.700260
Amount Units: pg/ul



Manual Integration Results

RT: 41.02
Area: 135749
Amount: 2.652806
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

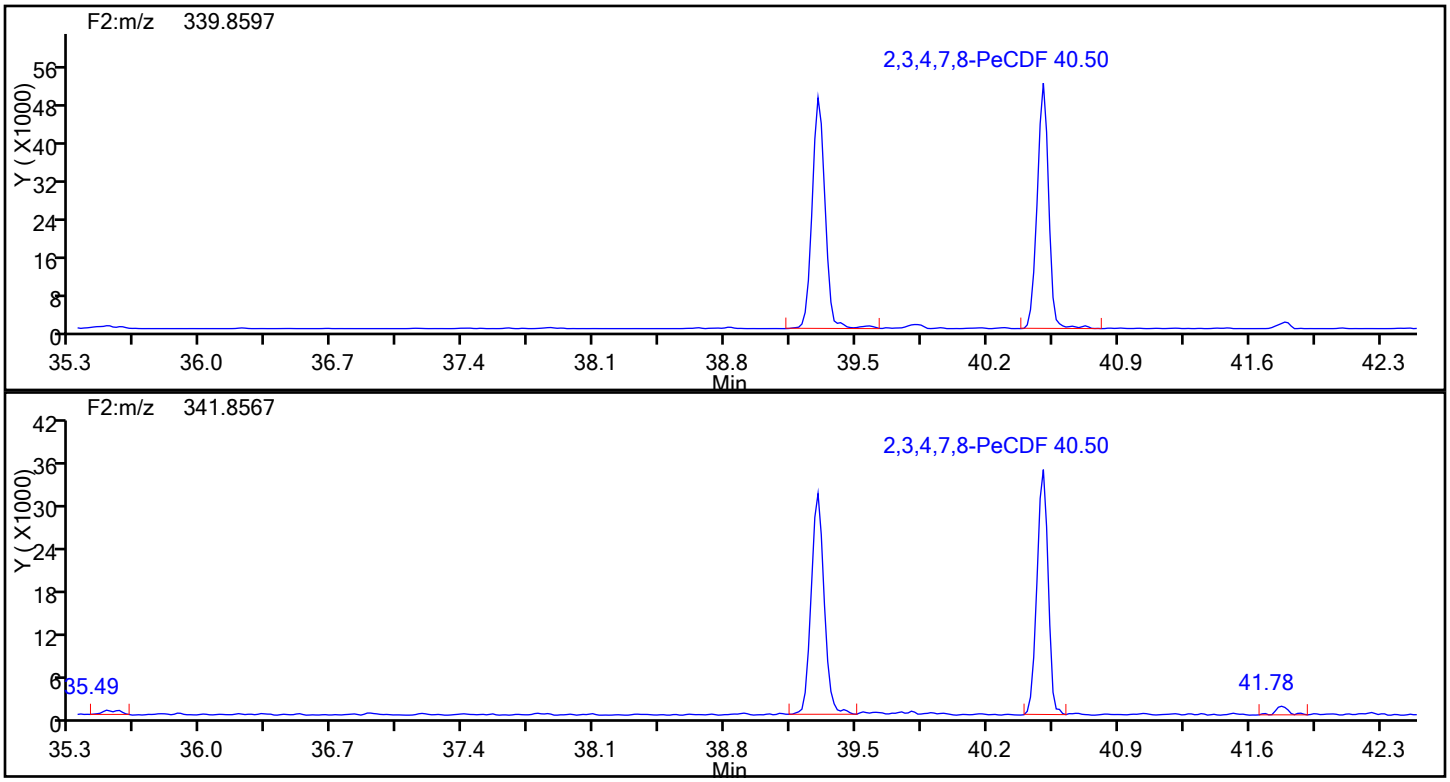
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

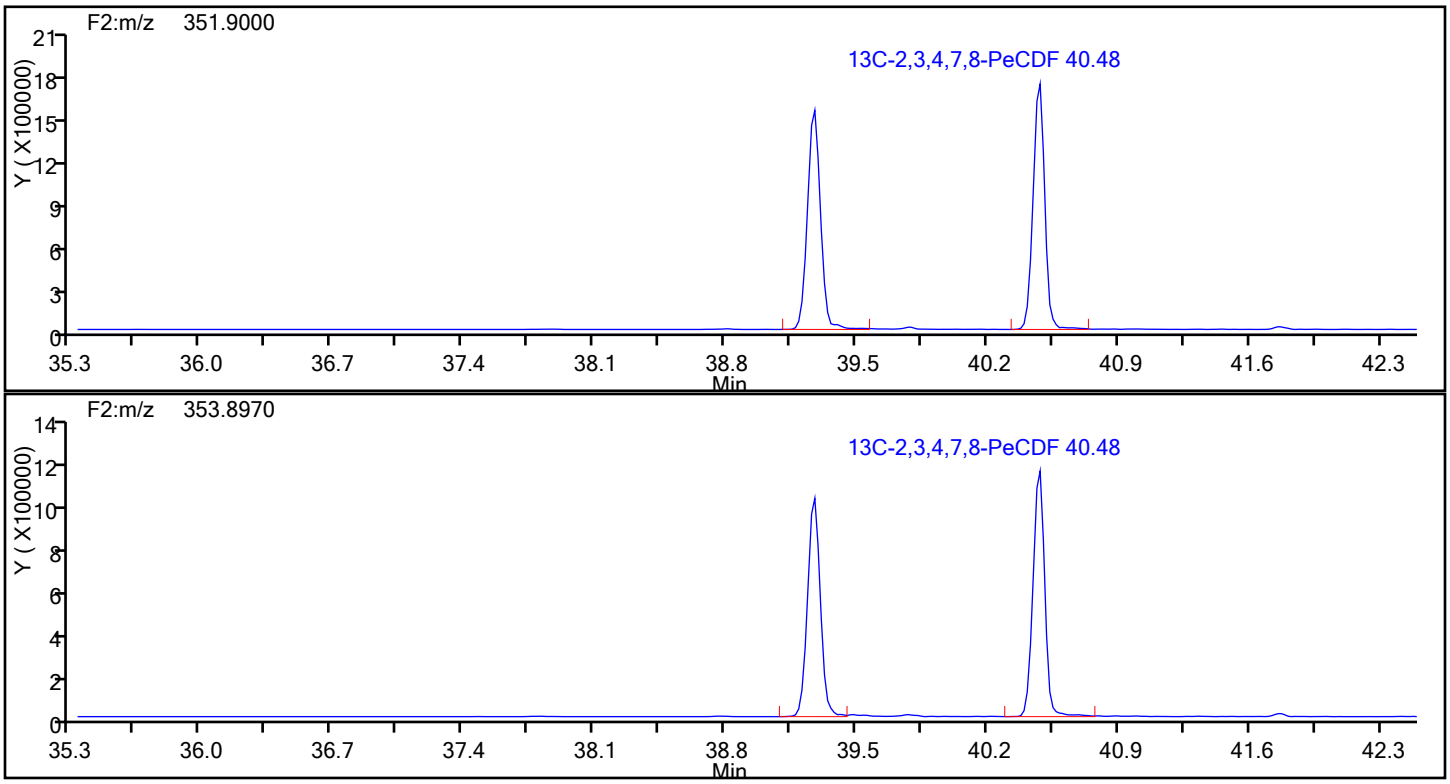
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

PeCDF



PeCDF Standards



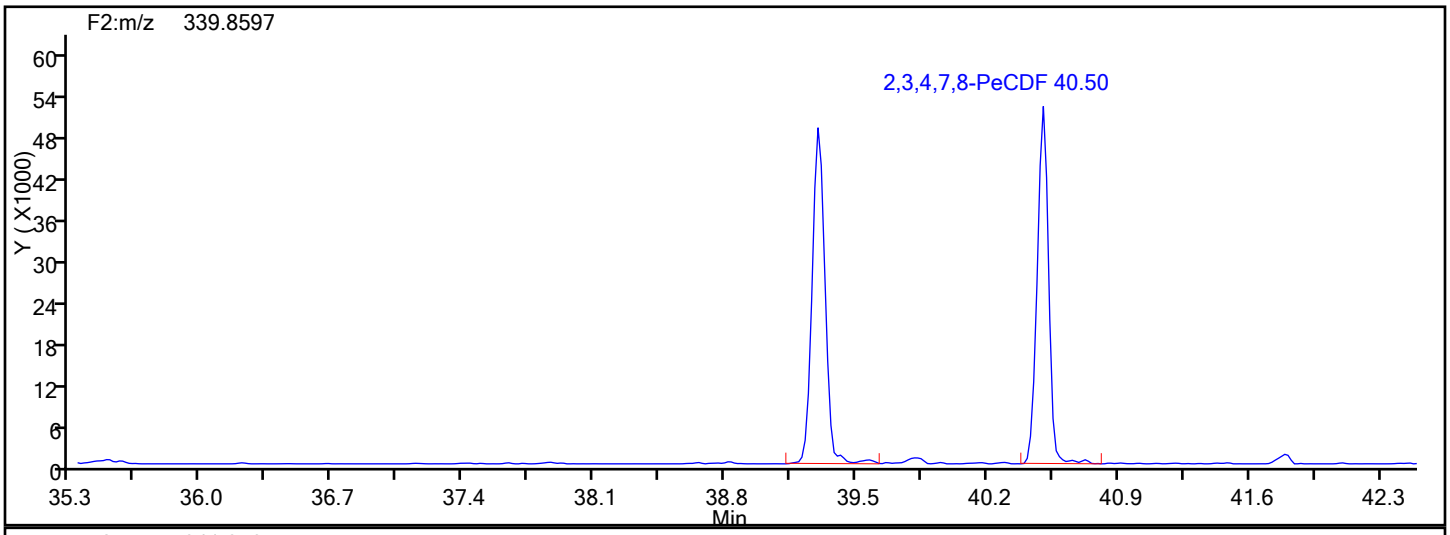
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

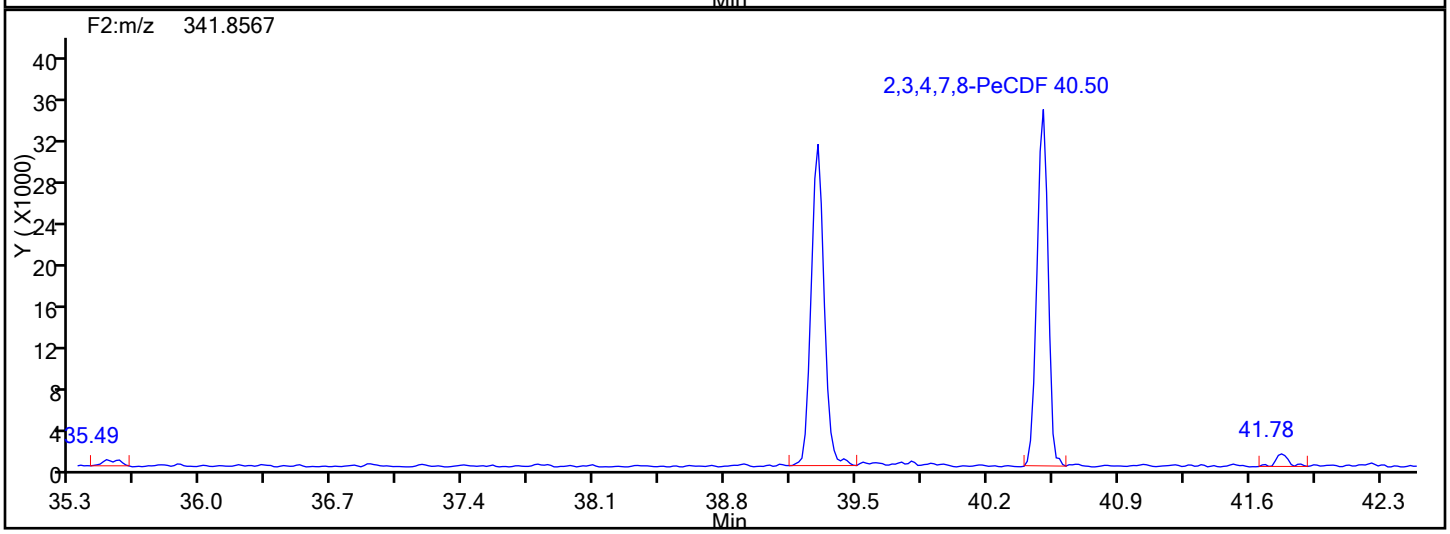
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

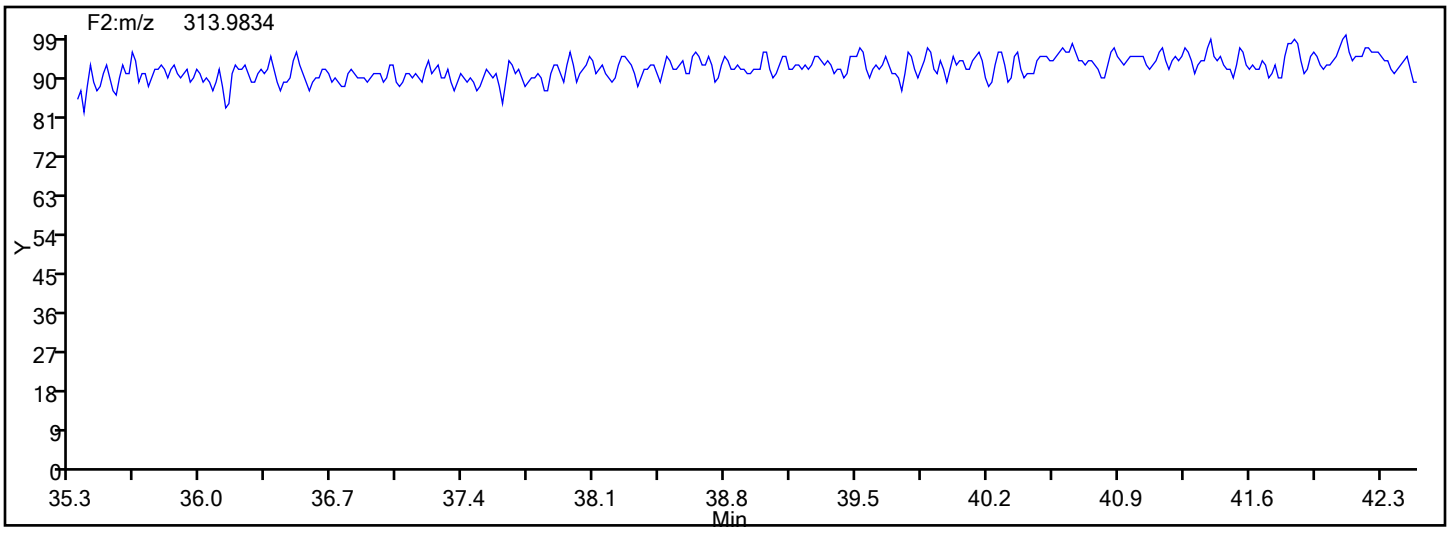
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass



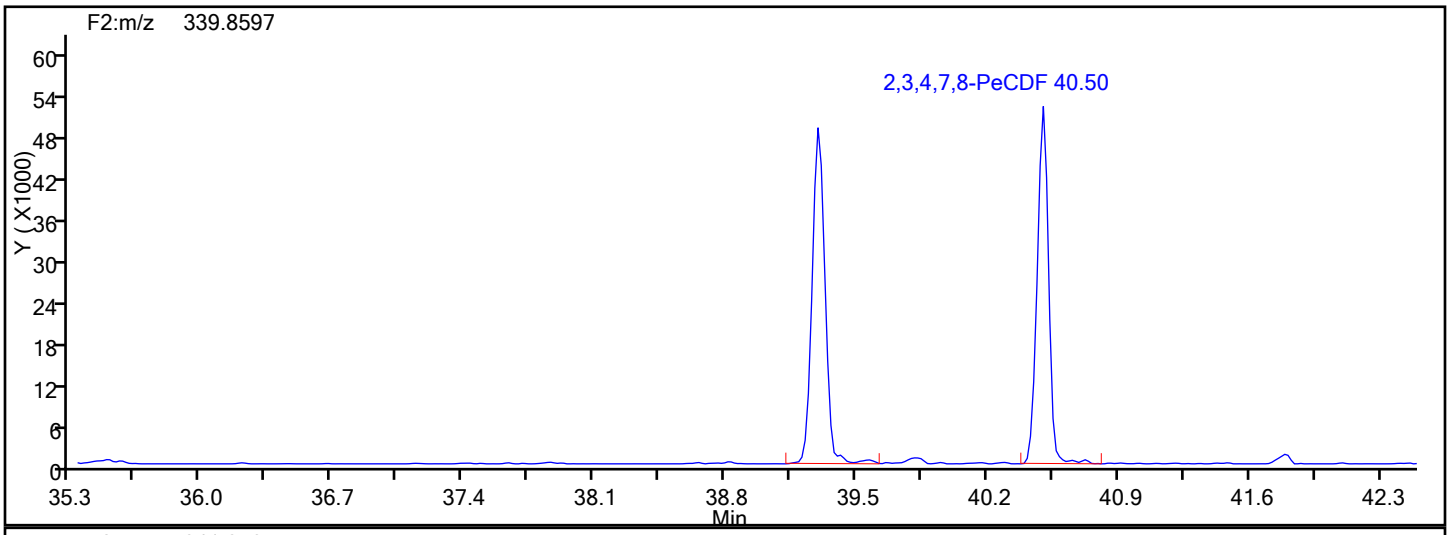
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

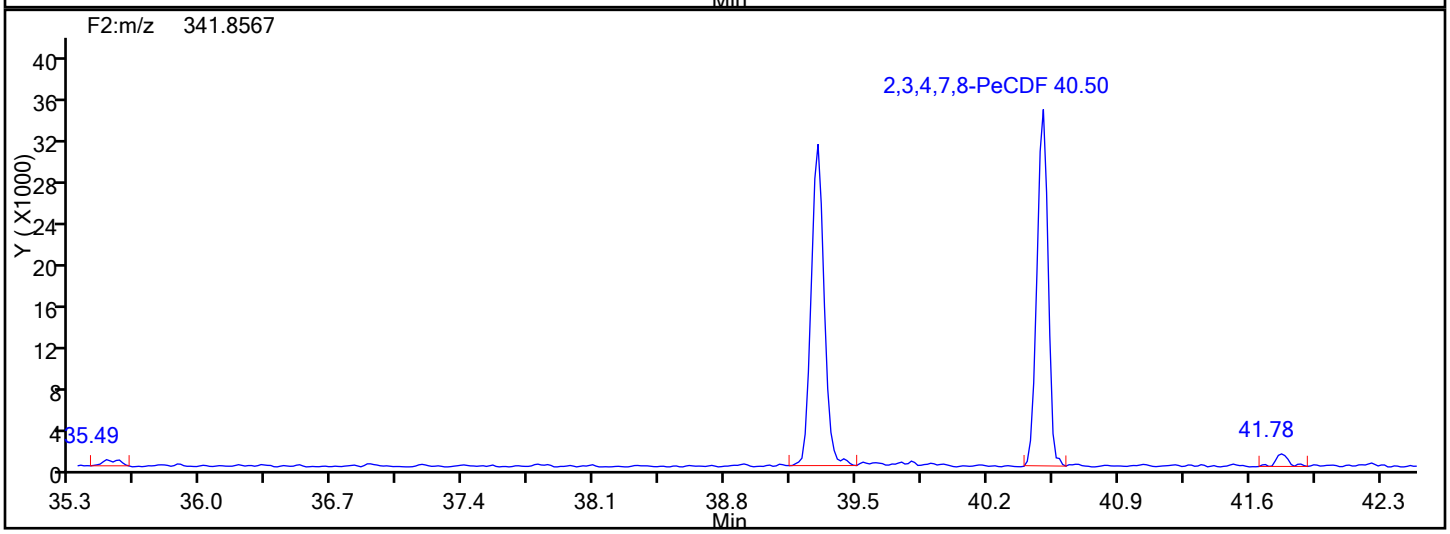
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

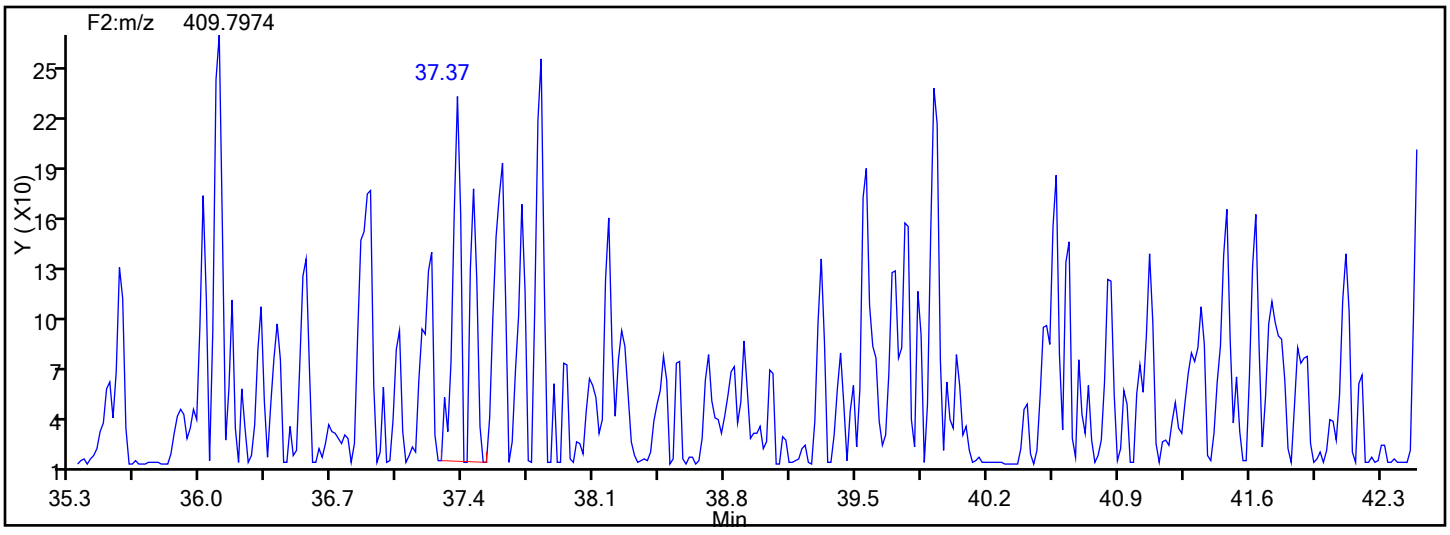
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



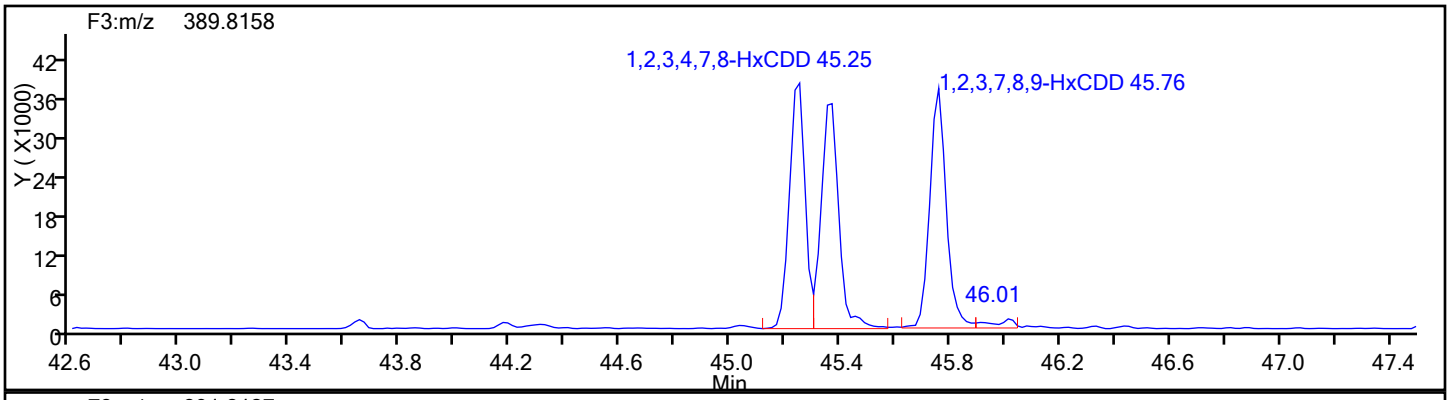
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

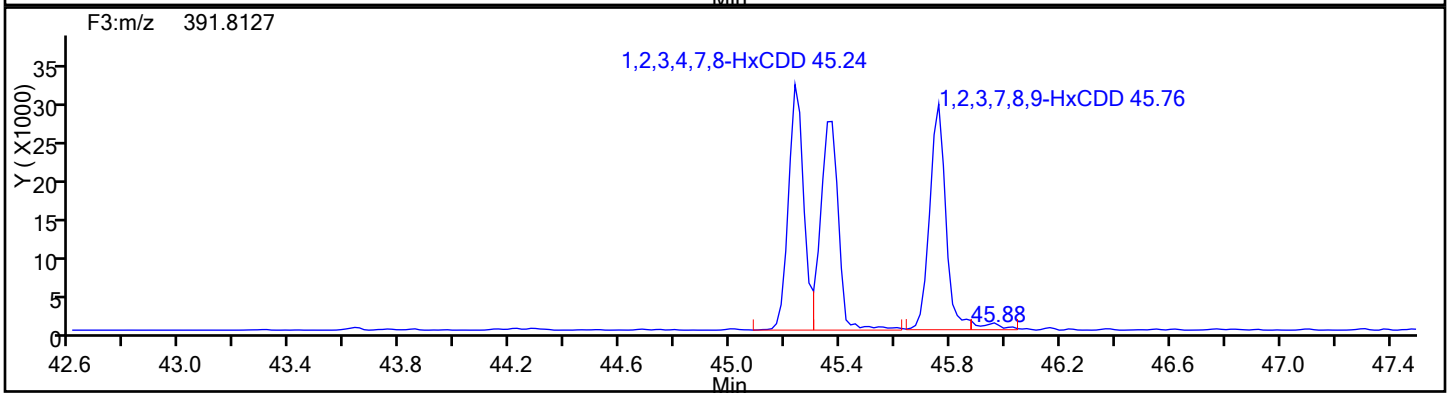
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

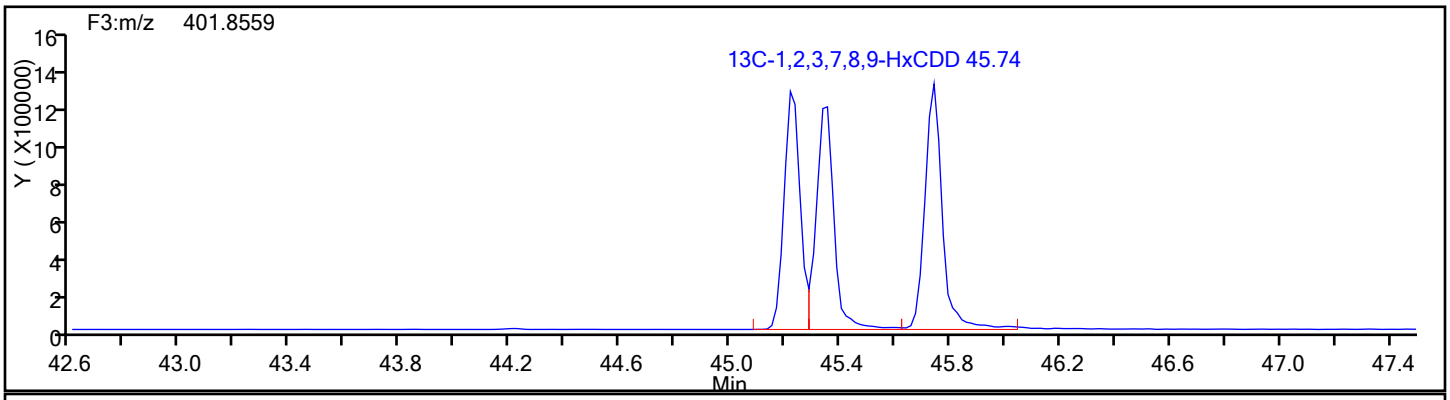
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

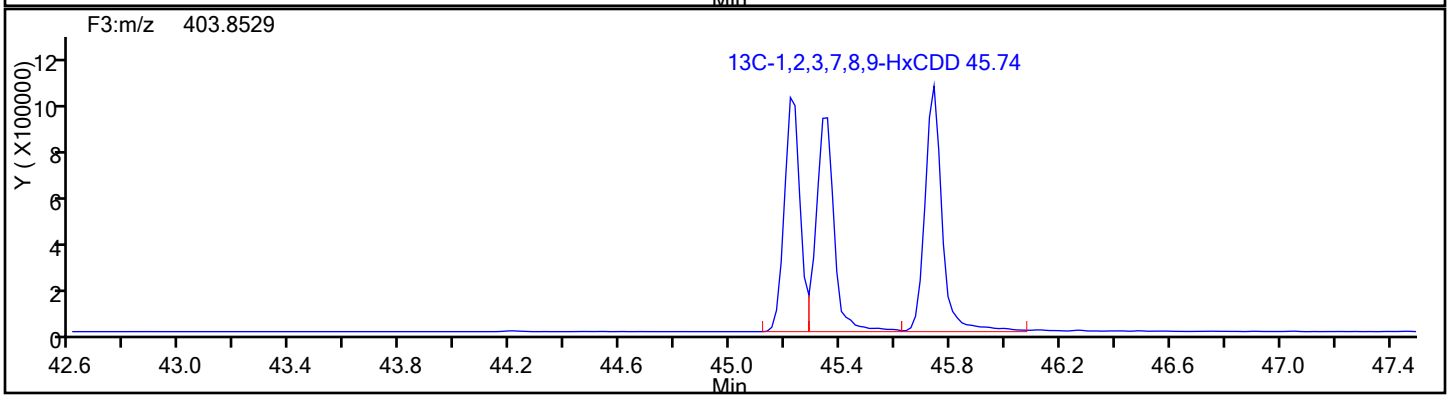
HxCDD





HxCDD Standards





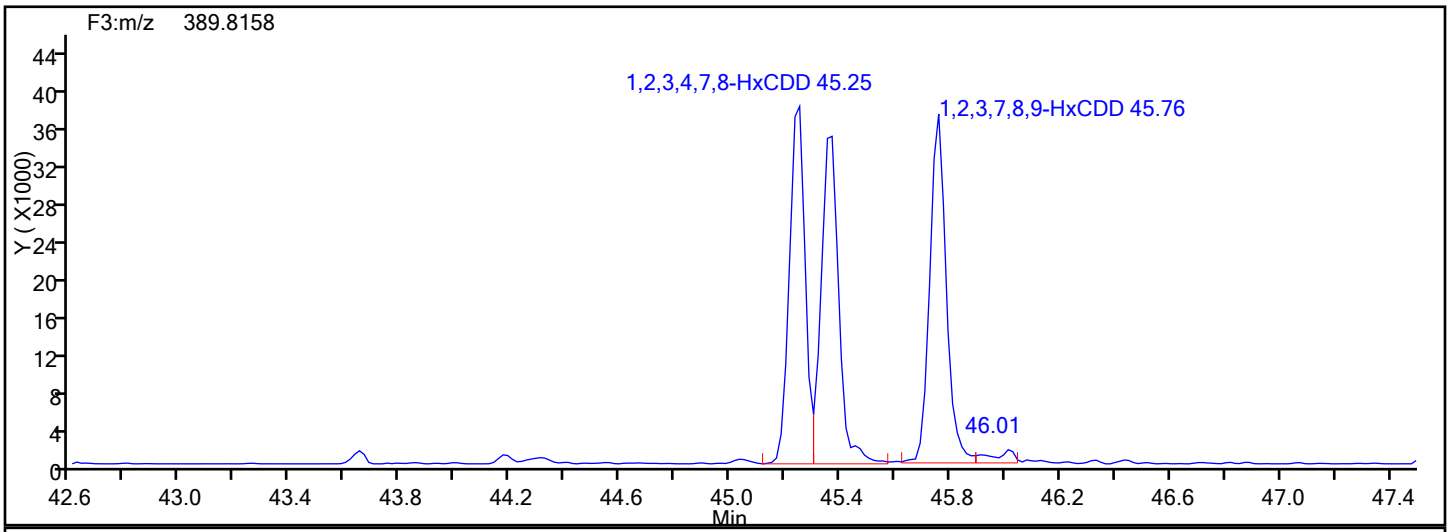
Report Date: 12-Jan-2017 08:09:13 Chrom Revision: 2.2 10-Jan-2017 11:26:10

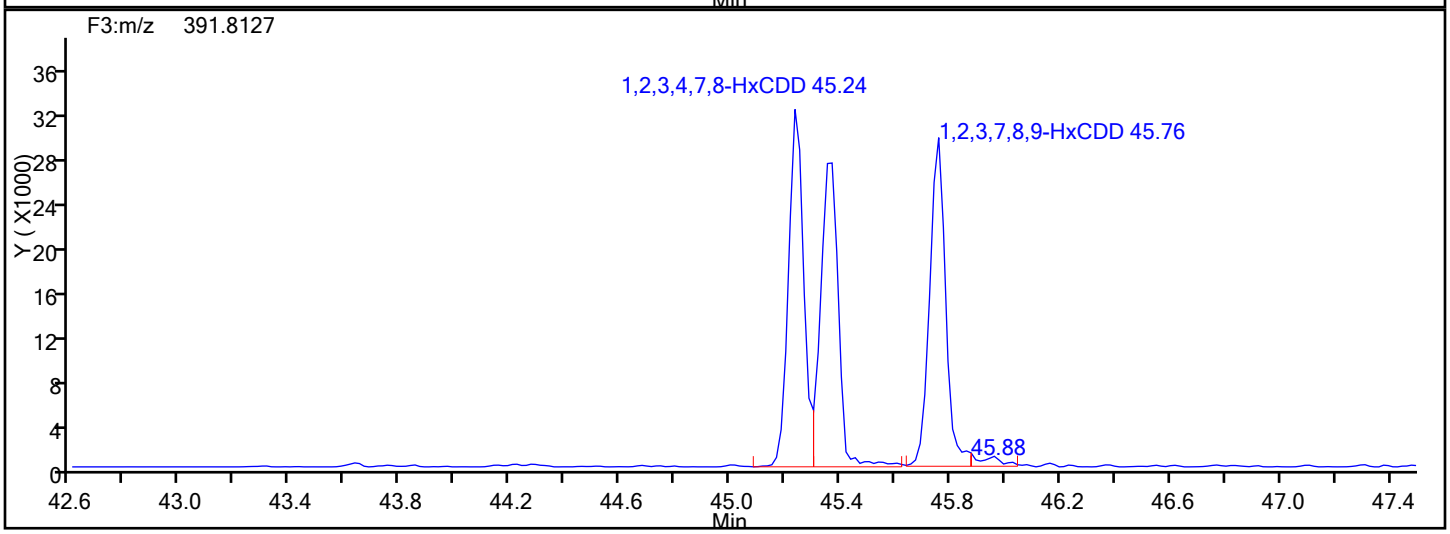
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

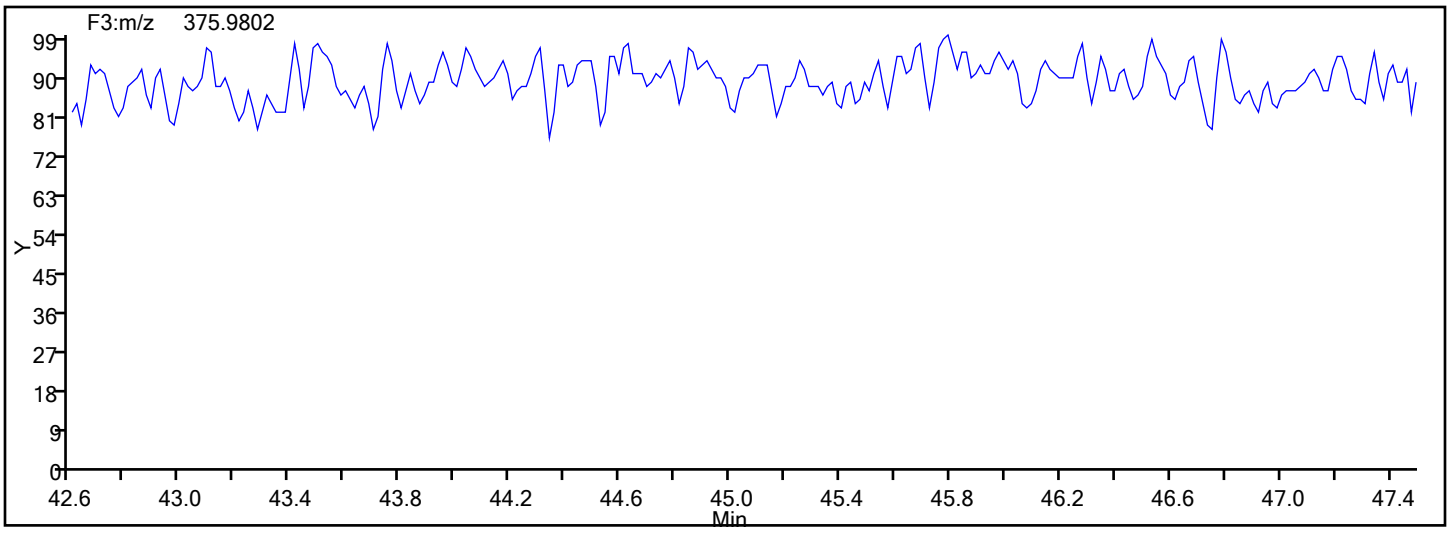
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

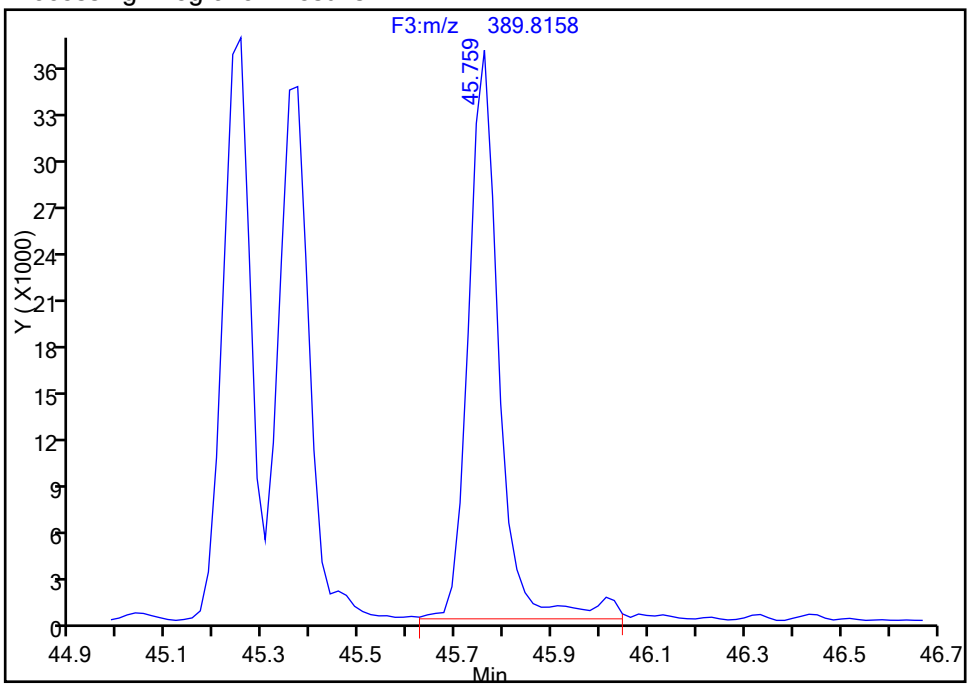
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F3(42.31 :47.08)

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

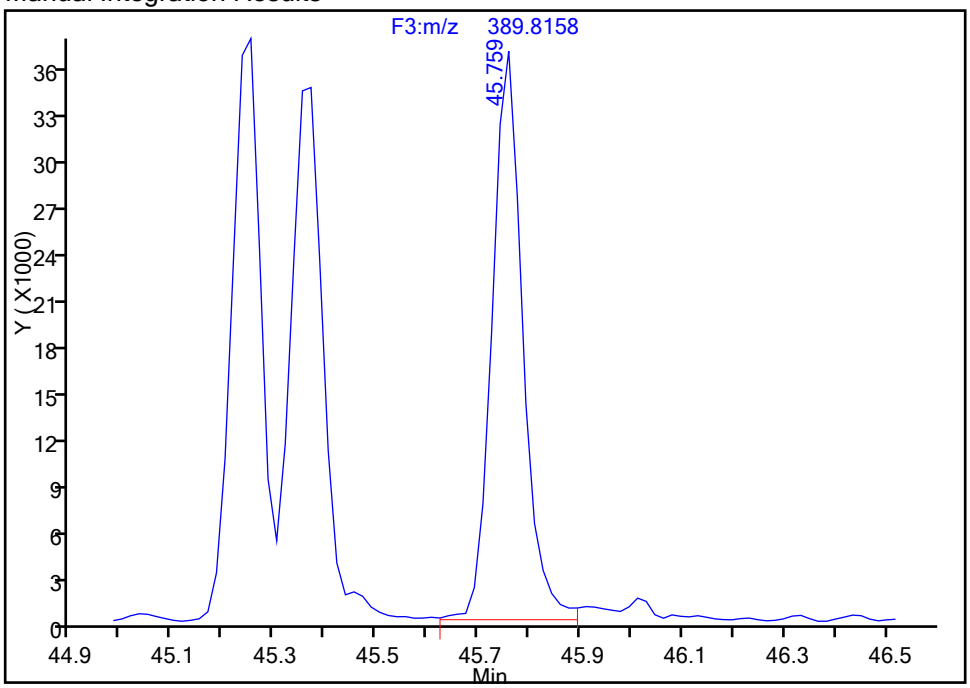
Processing Integration Results

RT: 45.76
Area: 161258
Amount: 2.563620
Amount Units: pg/ul



Manual Integration Results

RT: 45.76
Area: 153733
Amount: 2.471216
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

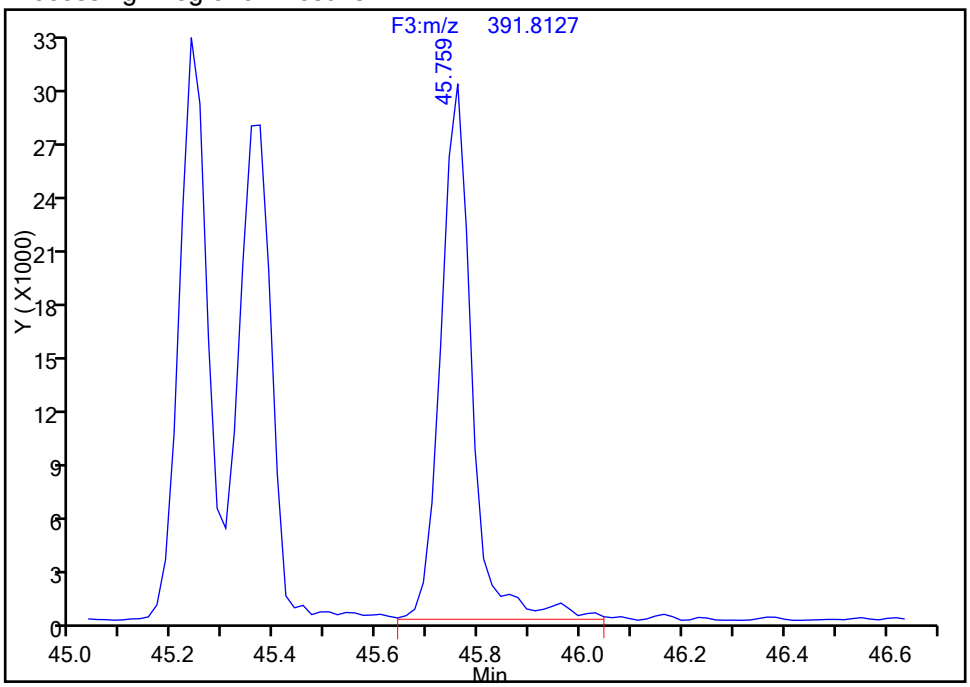
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F3(42.31 :47.08)

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

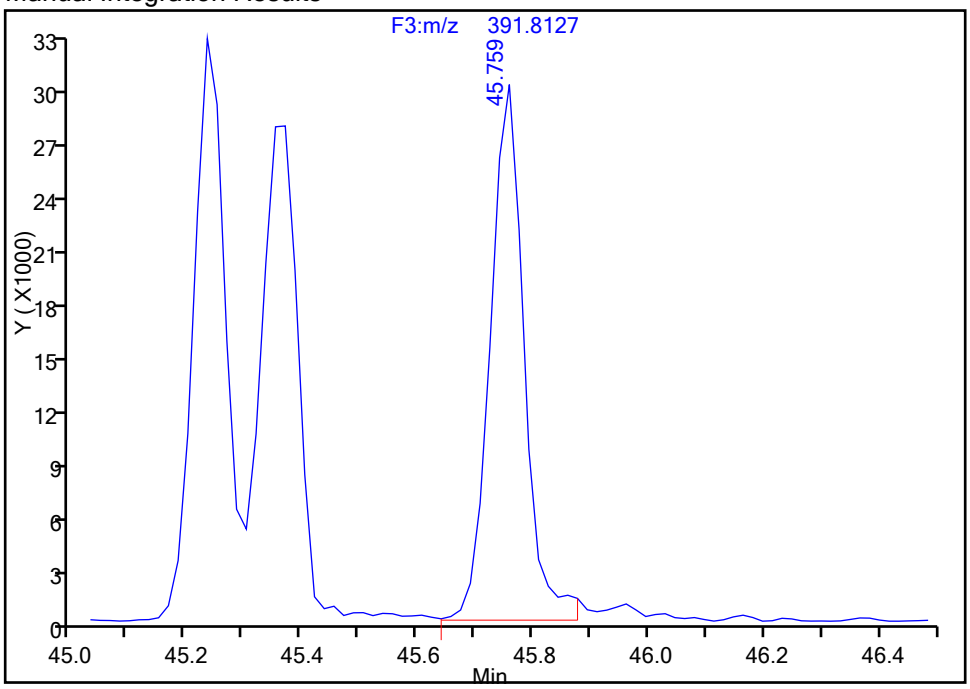
Processing Integration Results

RT: 45.76
Area: 125125
Amount: 2.563620
Amount Units: pg/ul



Manual Integration Results

RT: 45.76
Area: 119784
Amount: 2.471216
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

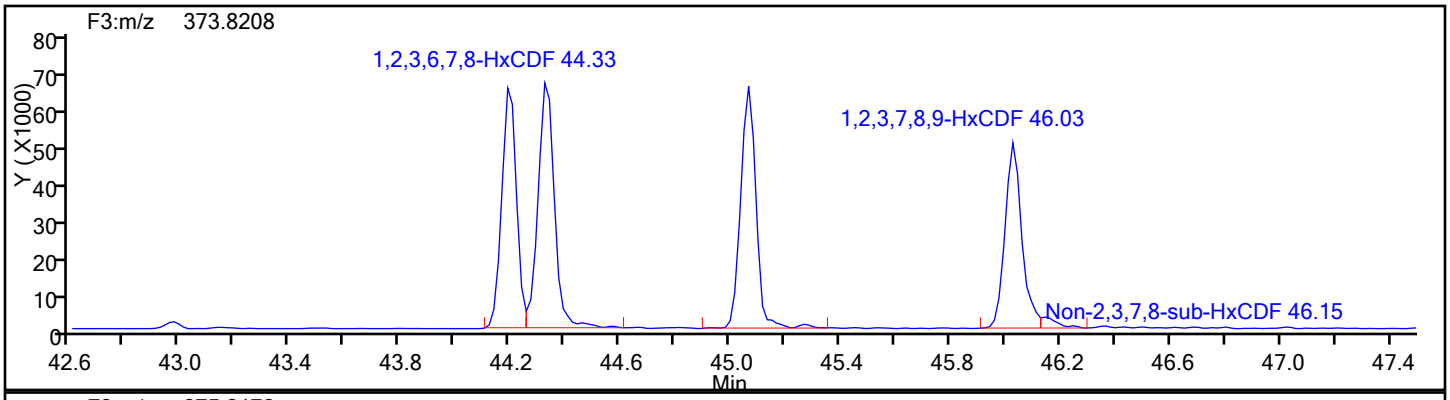
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

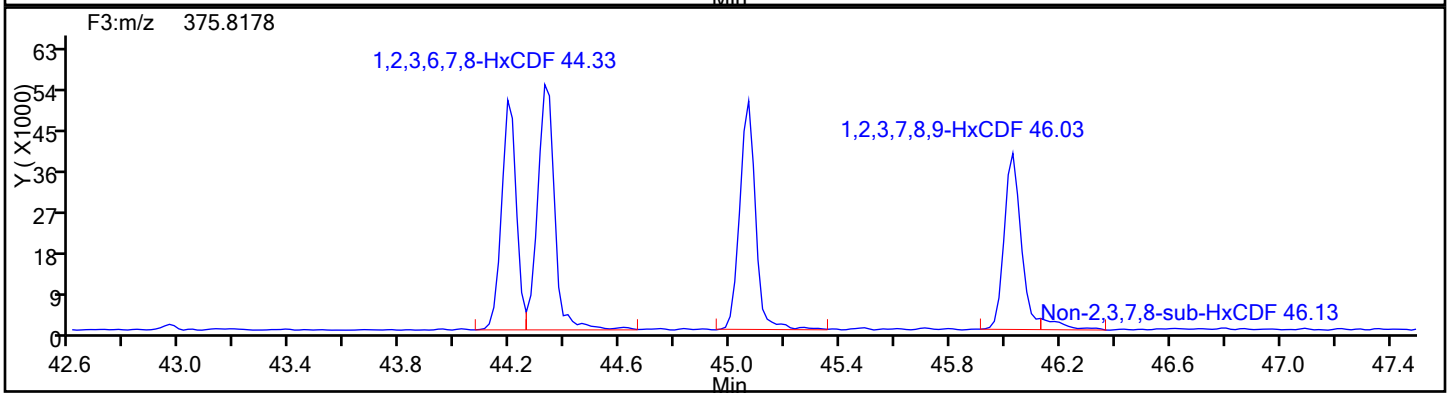
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

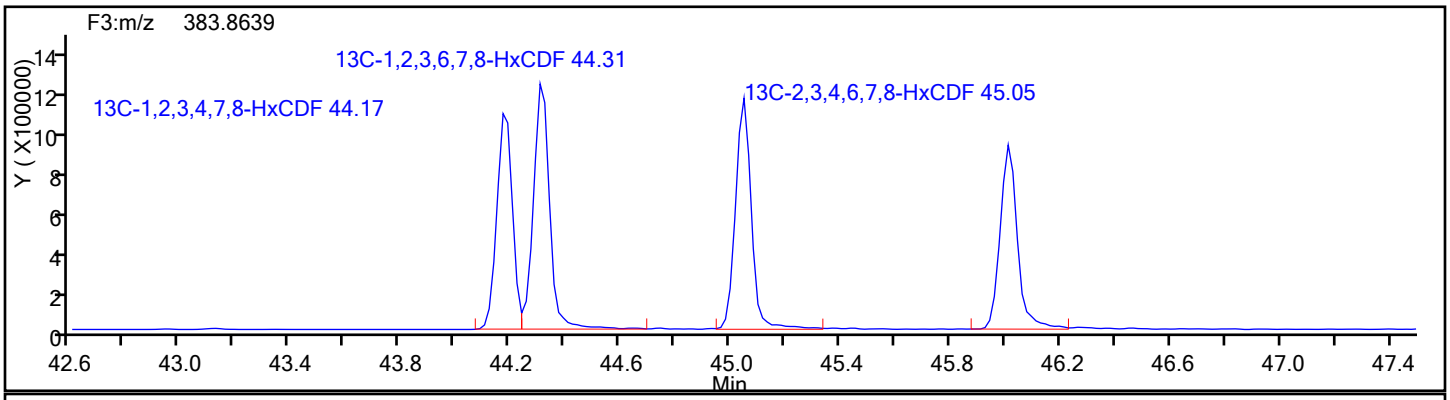
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

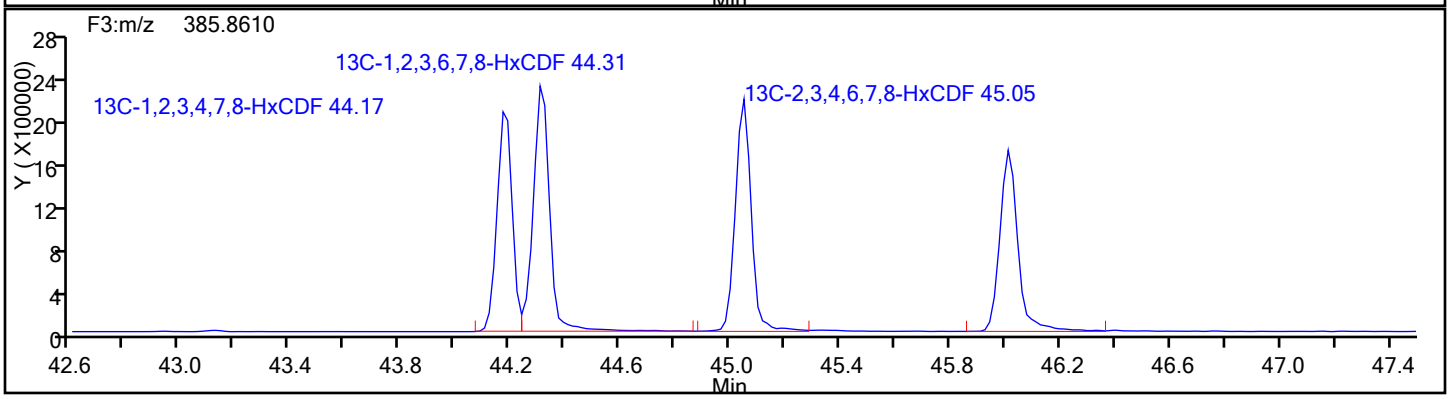
HxCDF





HxCDF Standards





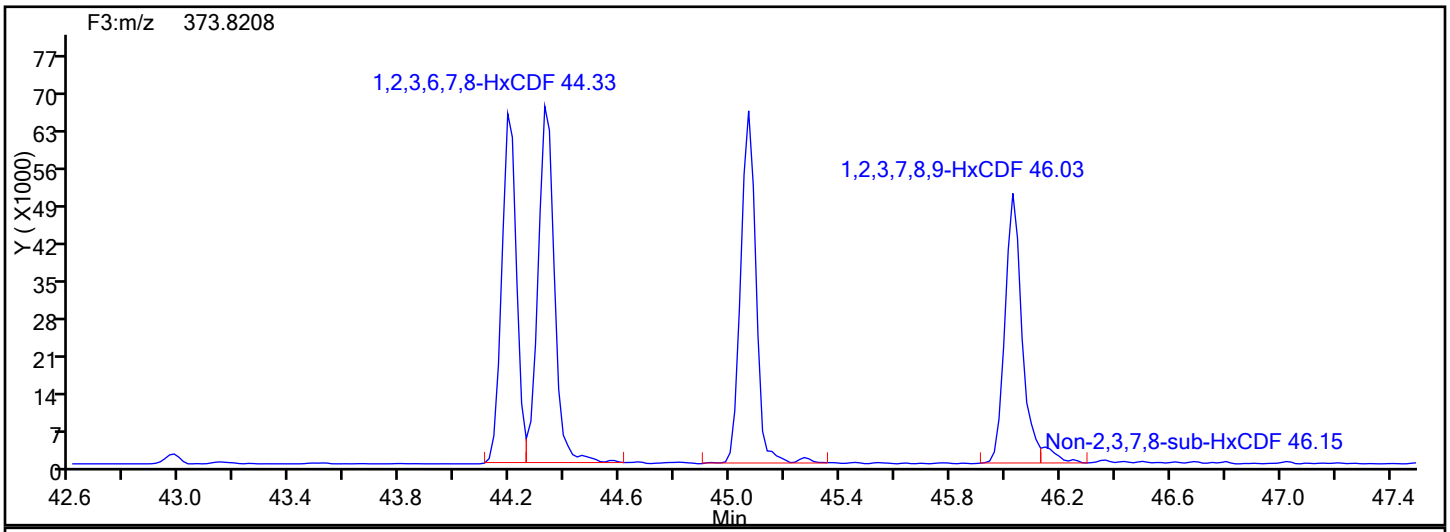
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

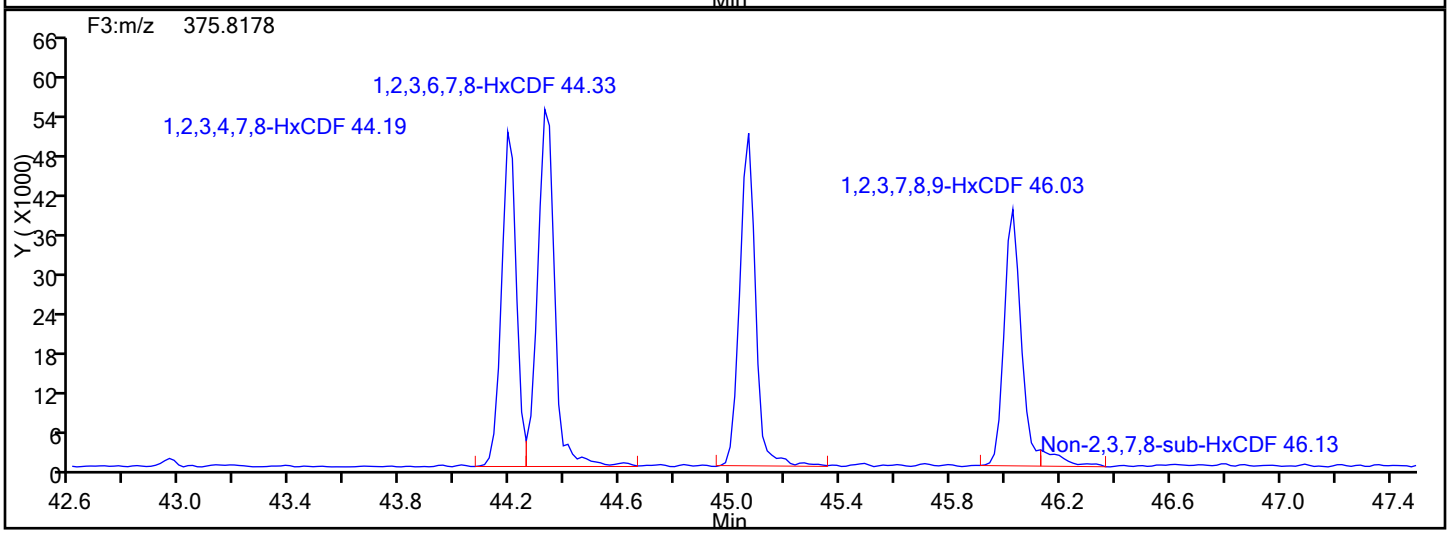
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

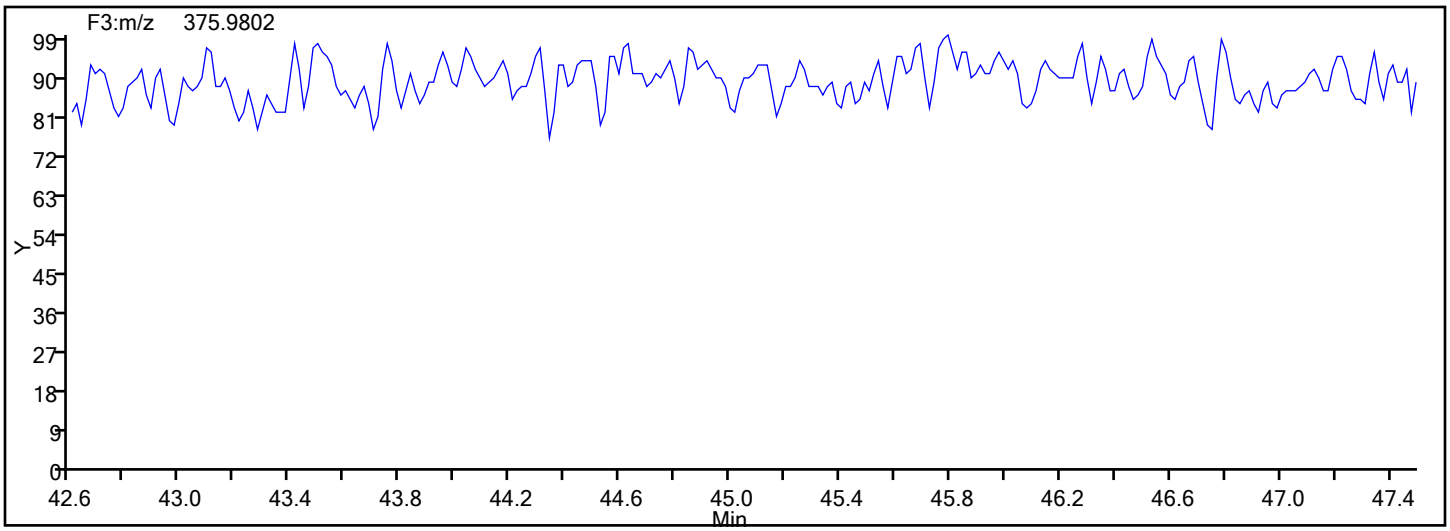
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass



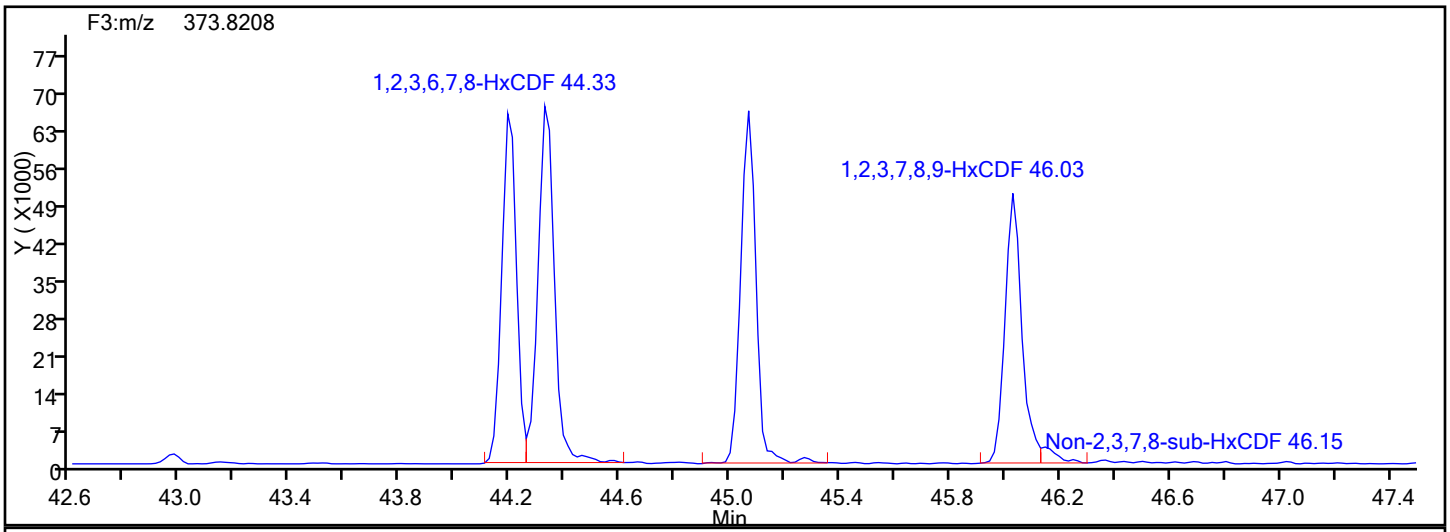
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

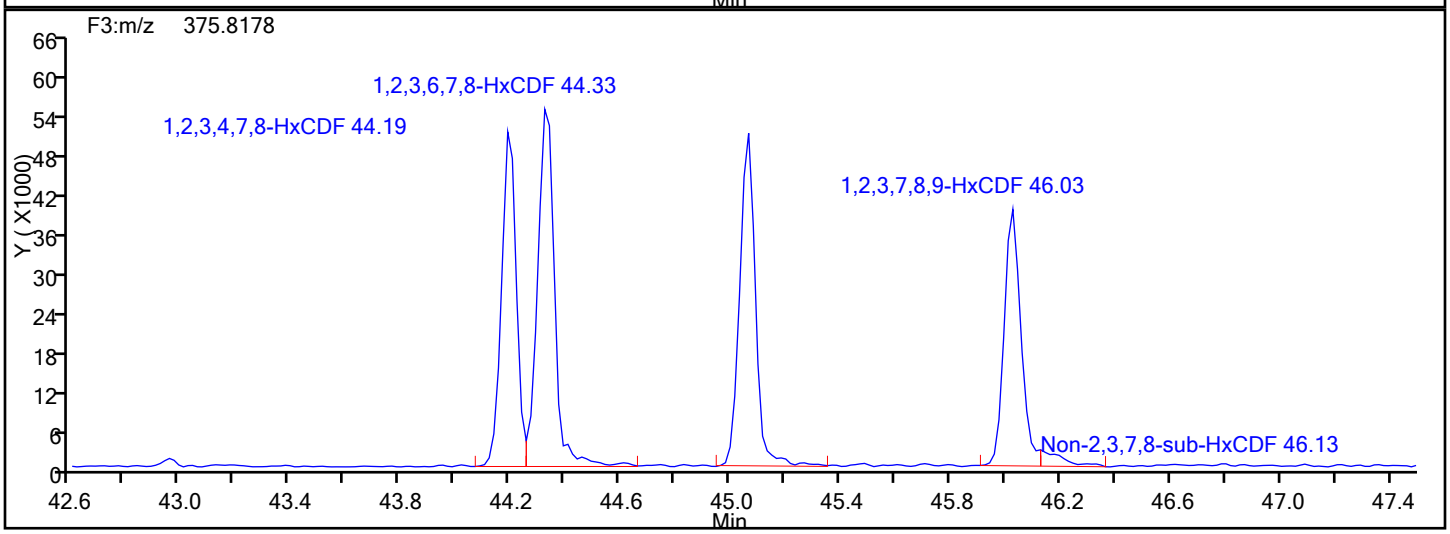
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

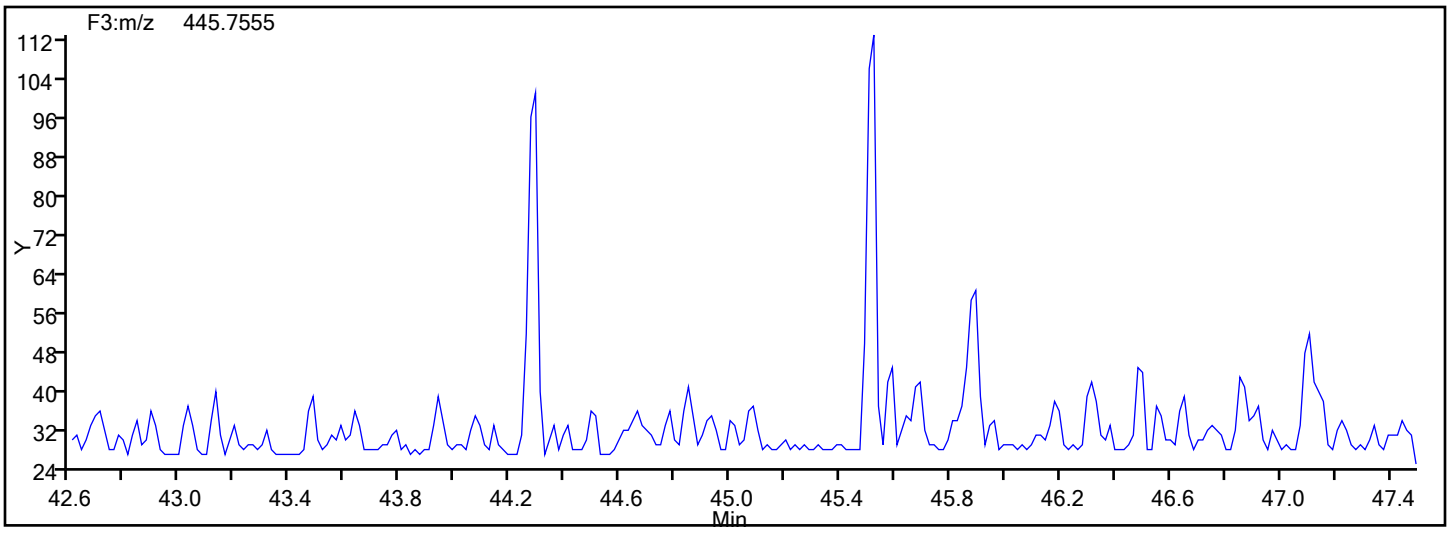
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

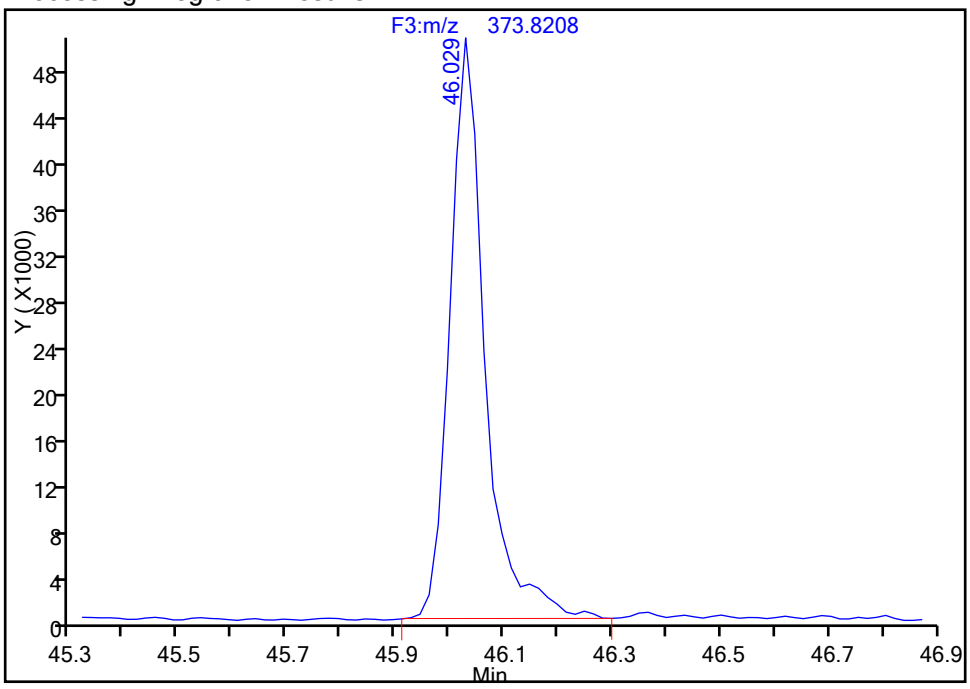
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F3(42.31 :47.08)

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

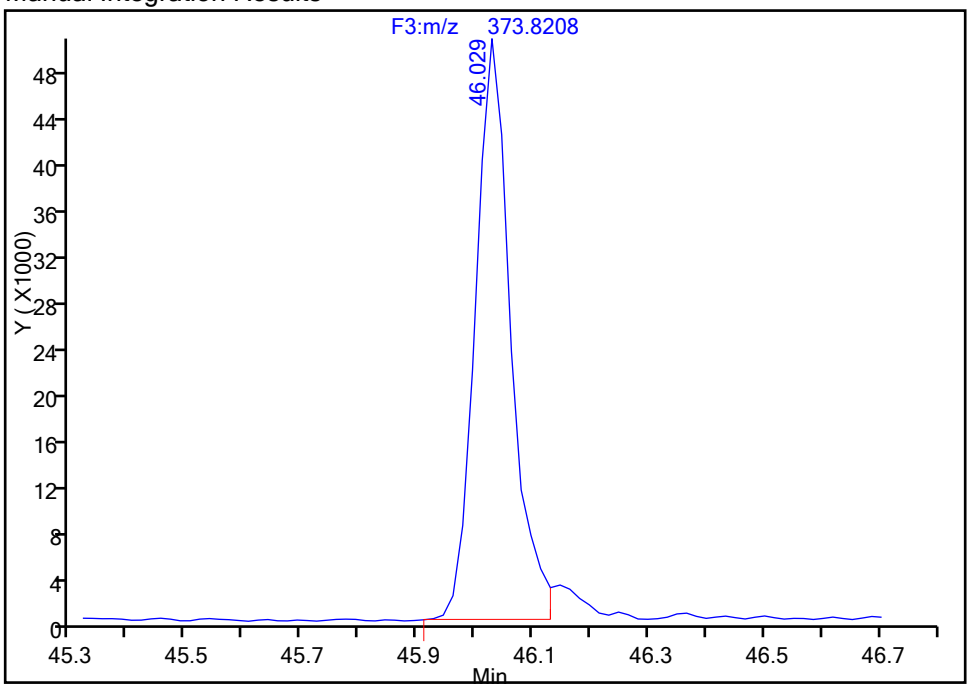
Processing Integration Results

RT: 46.03
Area: 226236
Amount: 2.690381
Amount Units: pg/ul



Manual Integration Results

RT: 46.03
Area: 214140
Amount: 2.556453
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

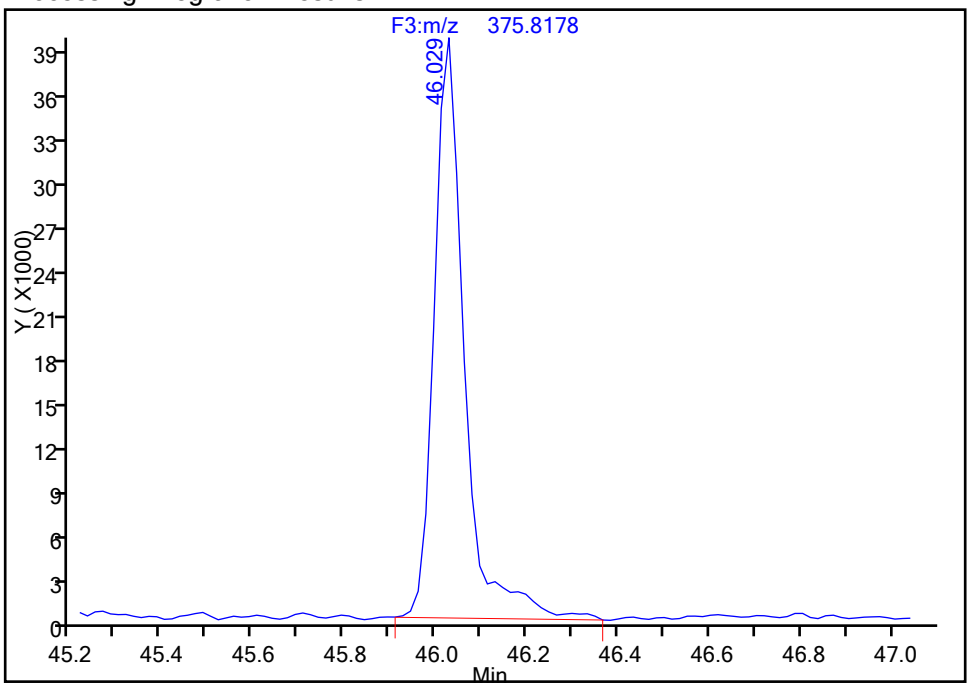
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F3(42.31 :47.08)

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

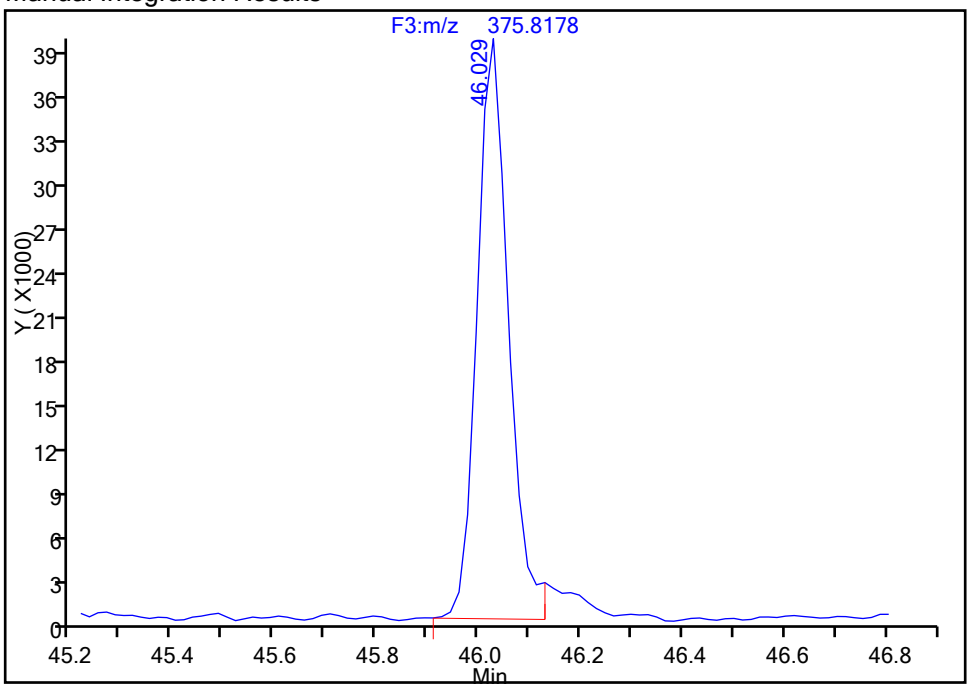
Processing Integration Results

RT: 46.03
Area: 180100
Amount: 2.690381
Amount Units: pg/ul



Manual Integration Results

RT: 46.03
Area: 166768
Amount: 2.556453
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

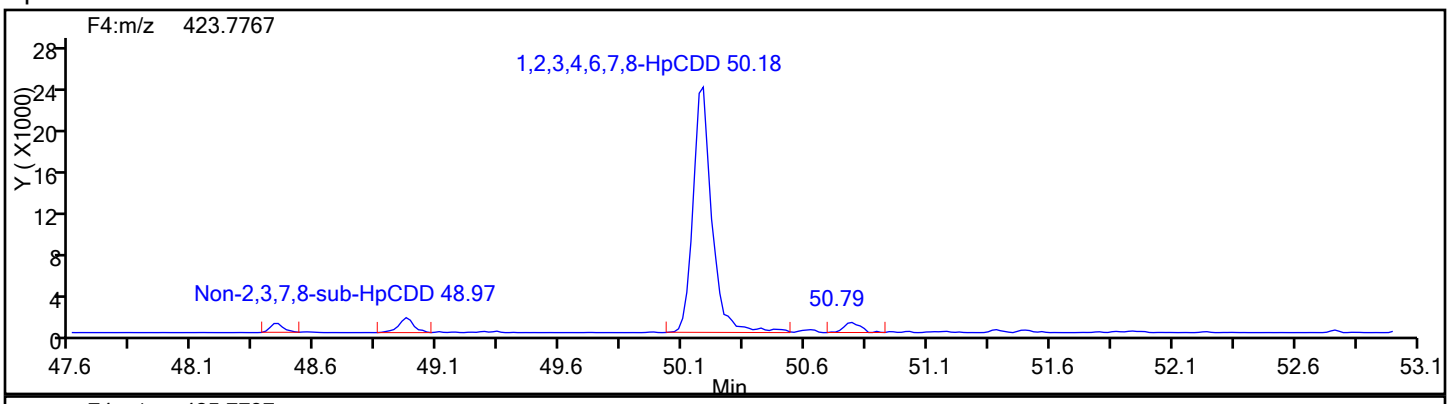
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

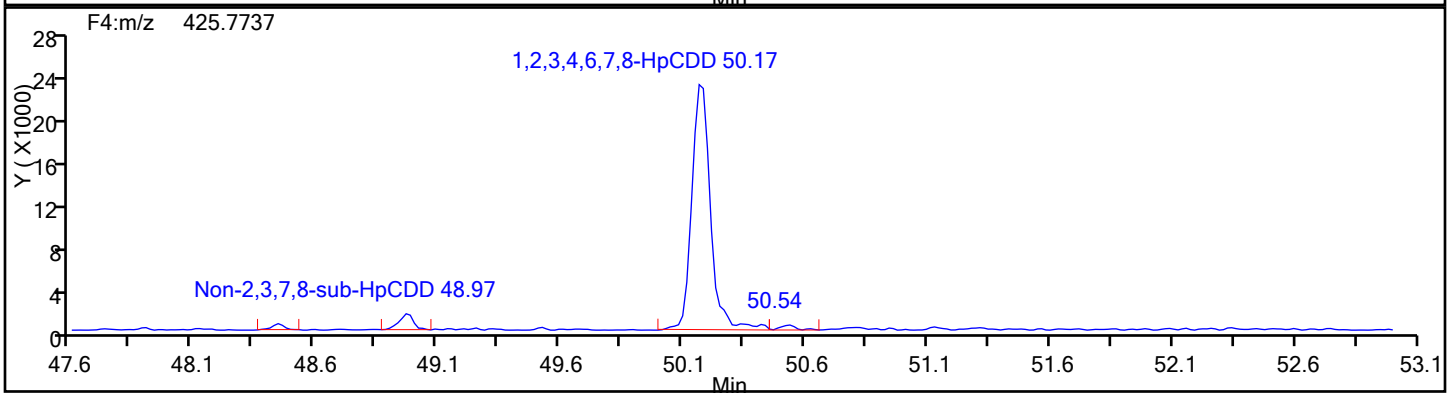
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

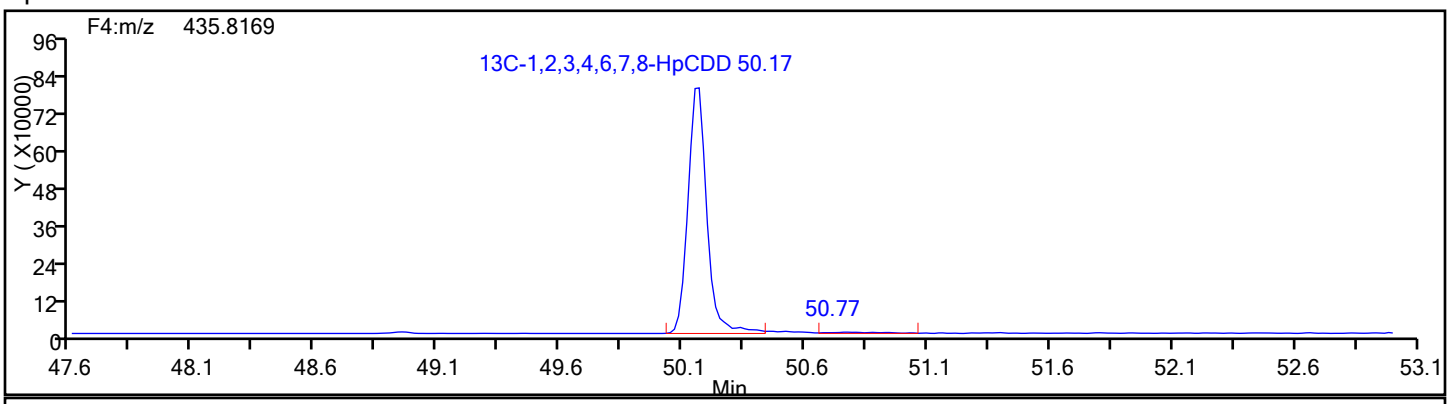
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

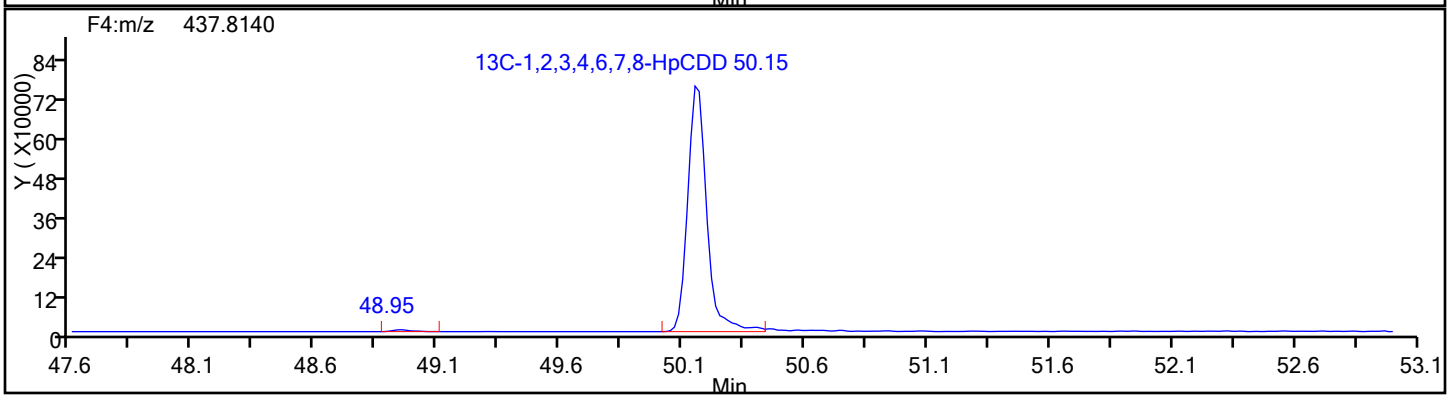
HpCDD





HpCDD Standards



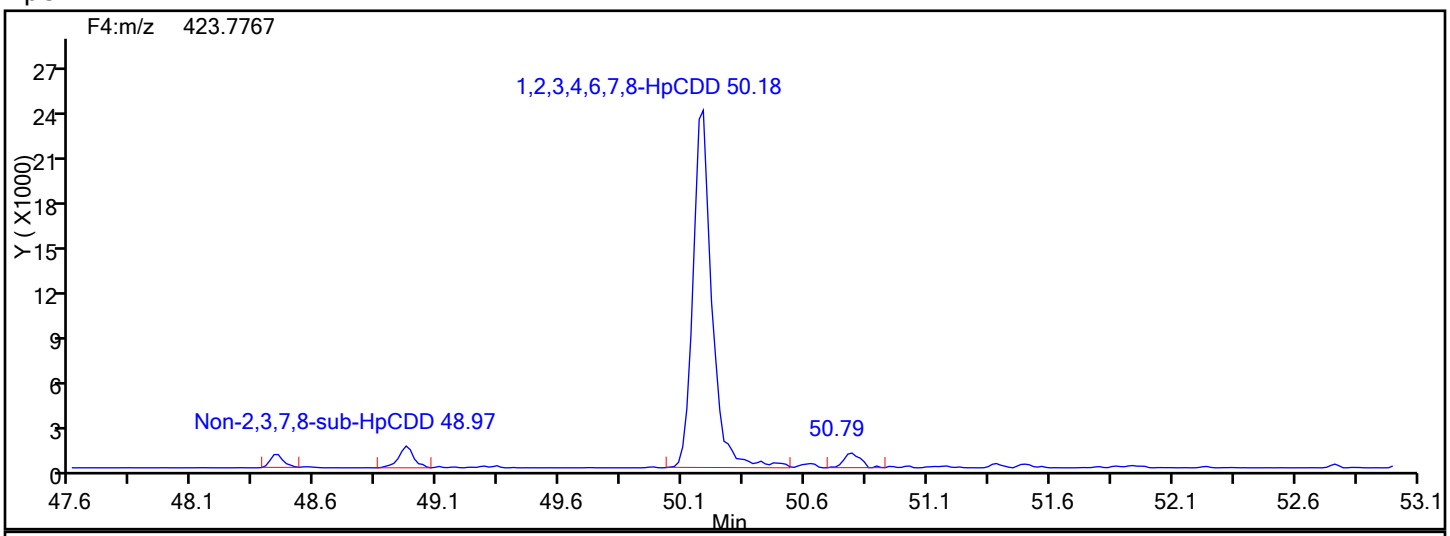


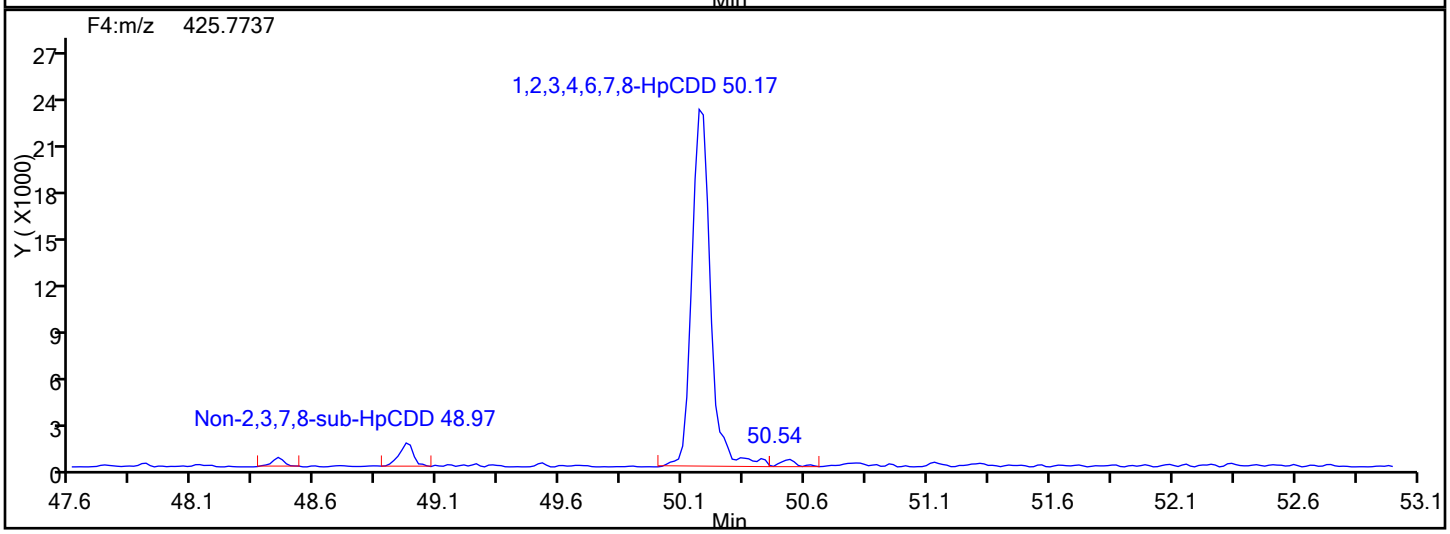
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

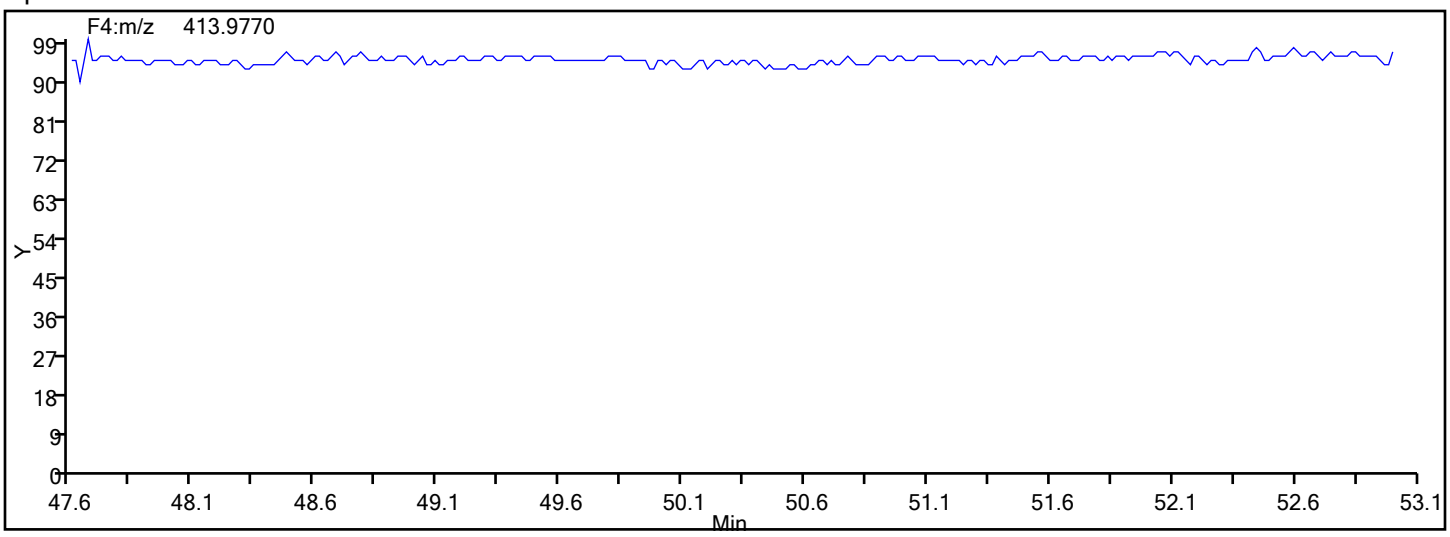
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Injection Vol: 1.0 ul
Instrument ID: D2A Operator ID: DavidsonM
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Client ID:
Worklist#: 7768 Sample Line#: 2
Column Type: Column Dia:

HpCDD





HpCDD Lock Mass



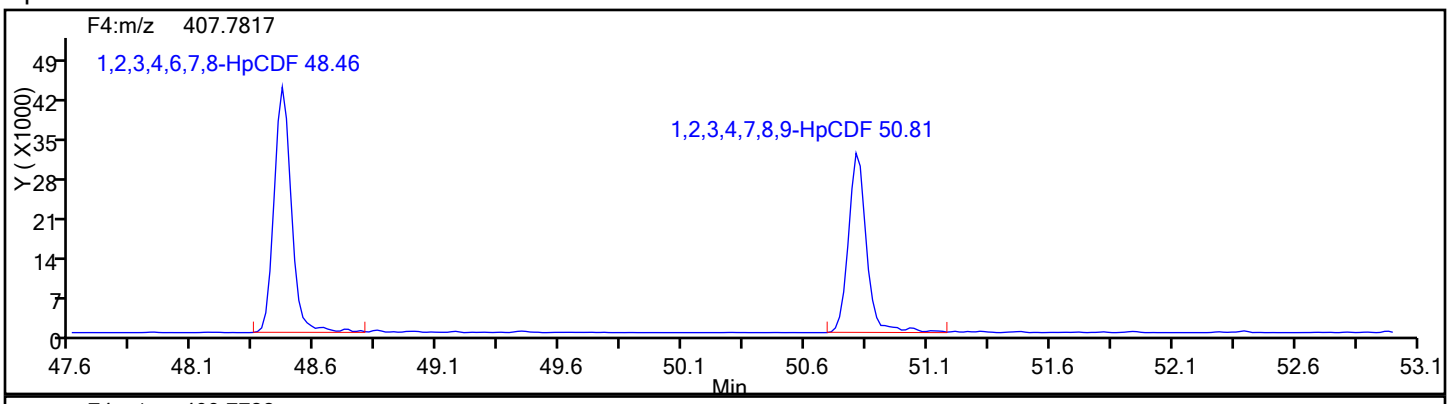
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

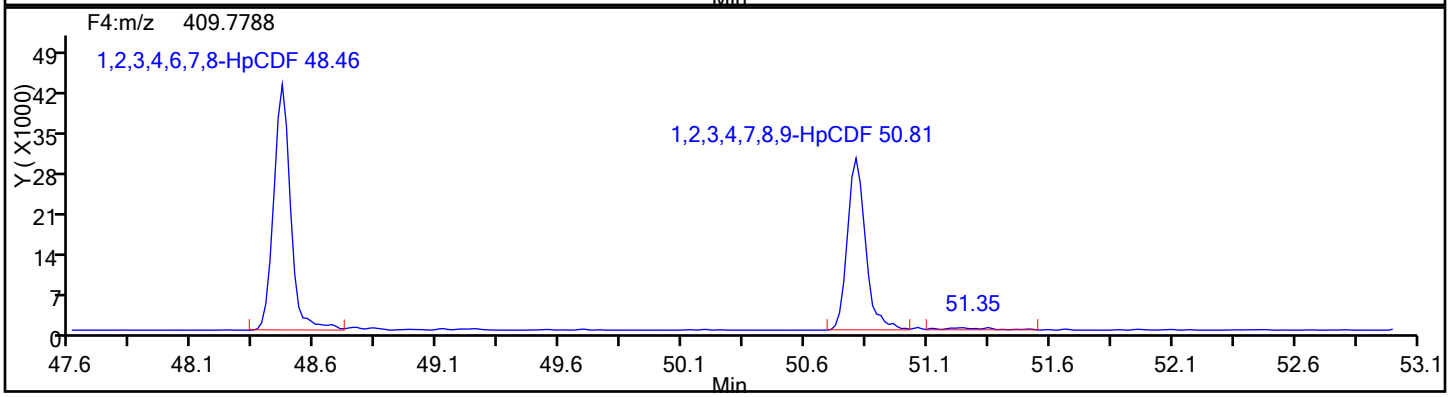
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

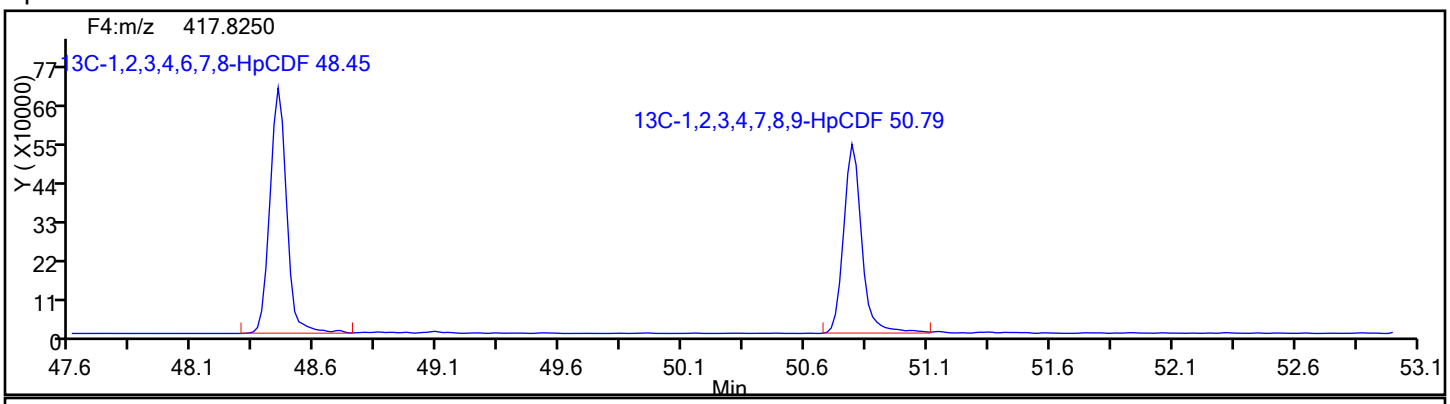
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

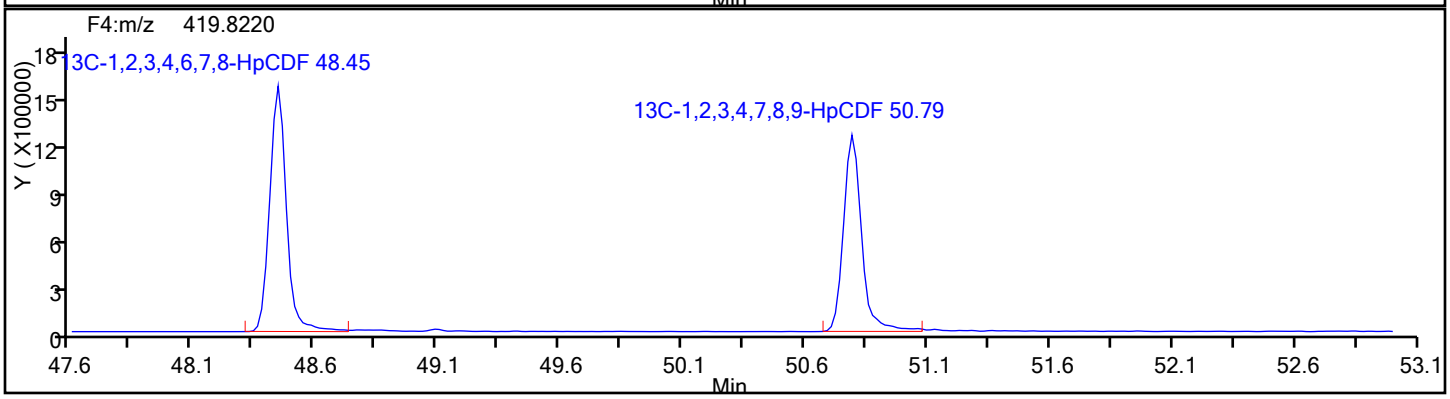
HpCDF





HpCDF Standards





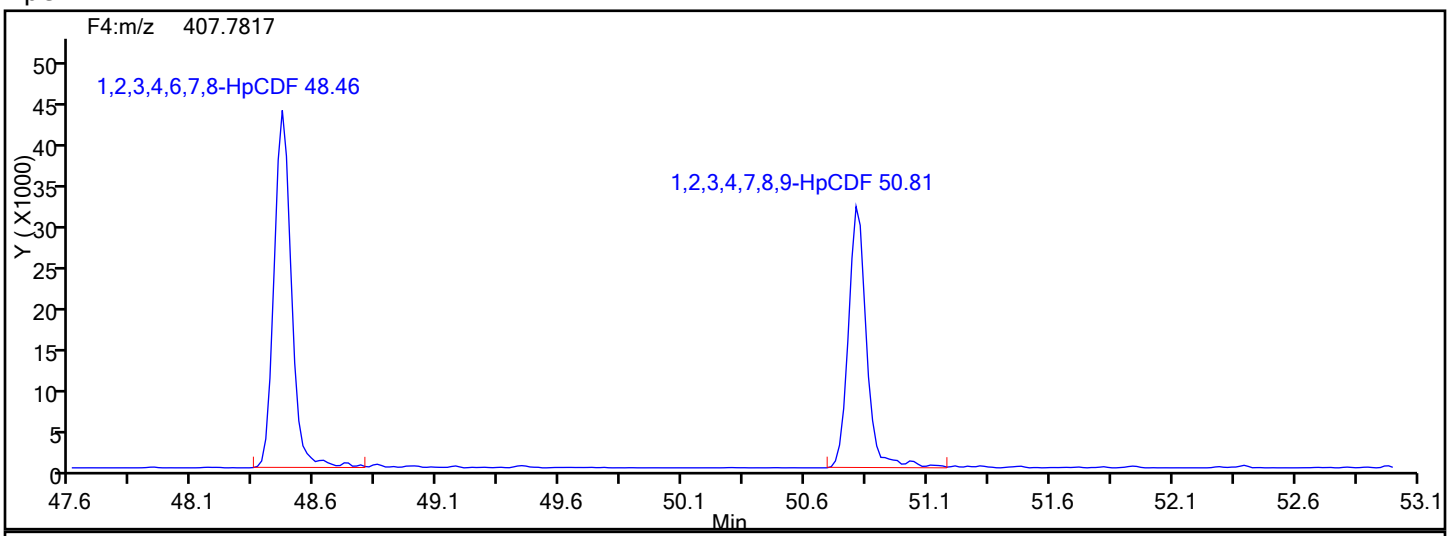
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

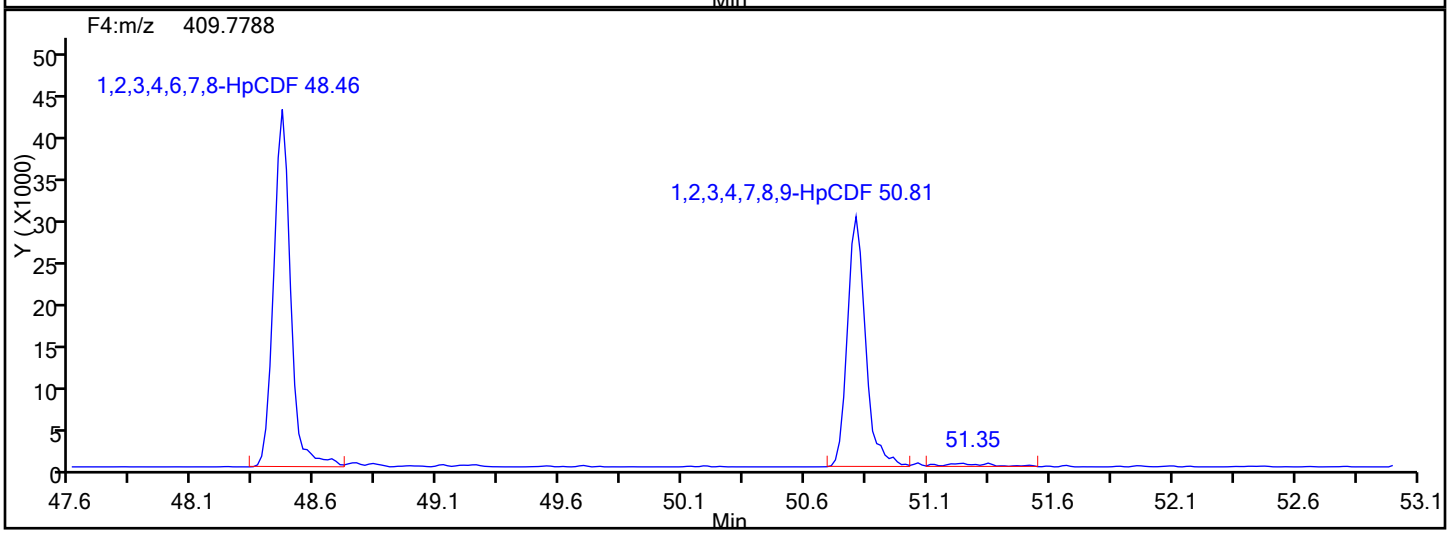
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

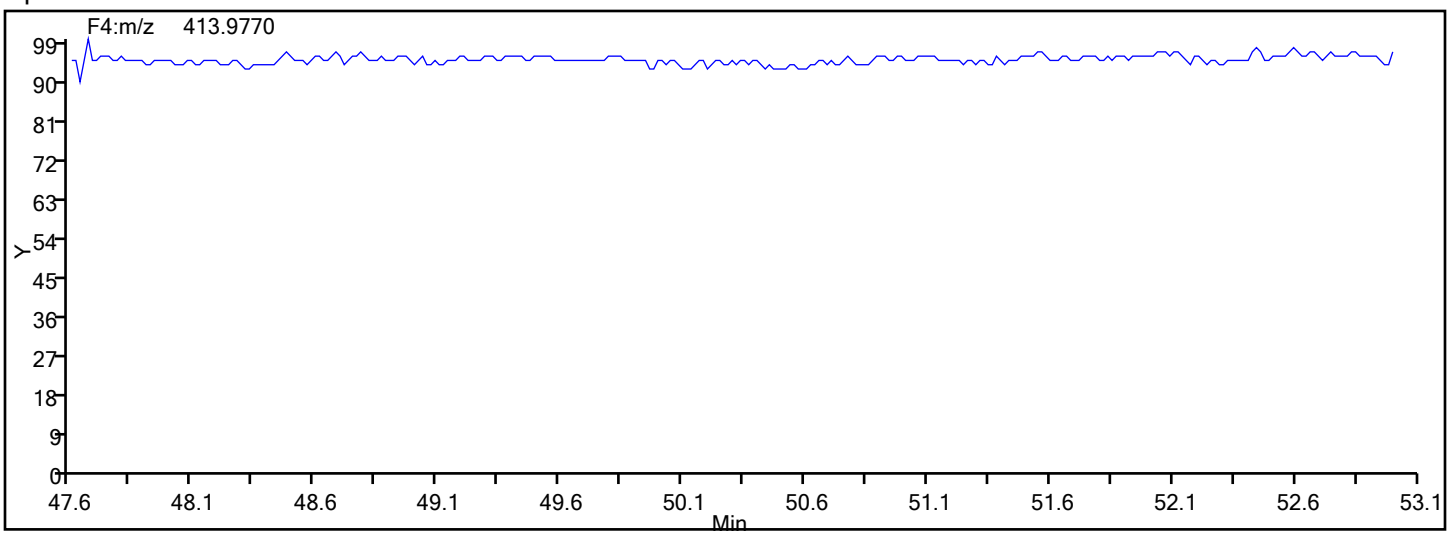
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass



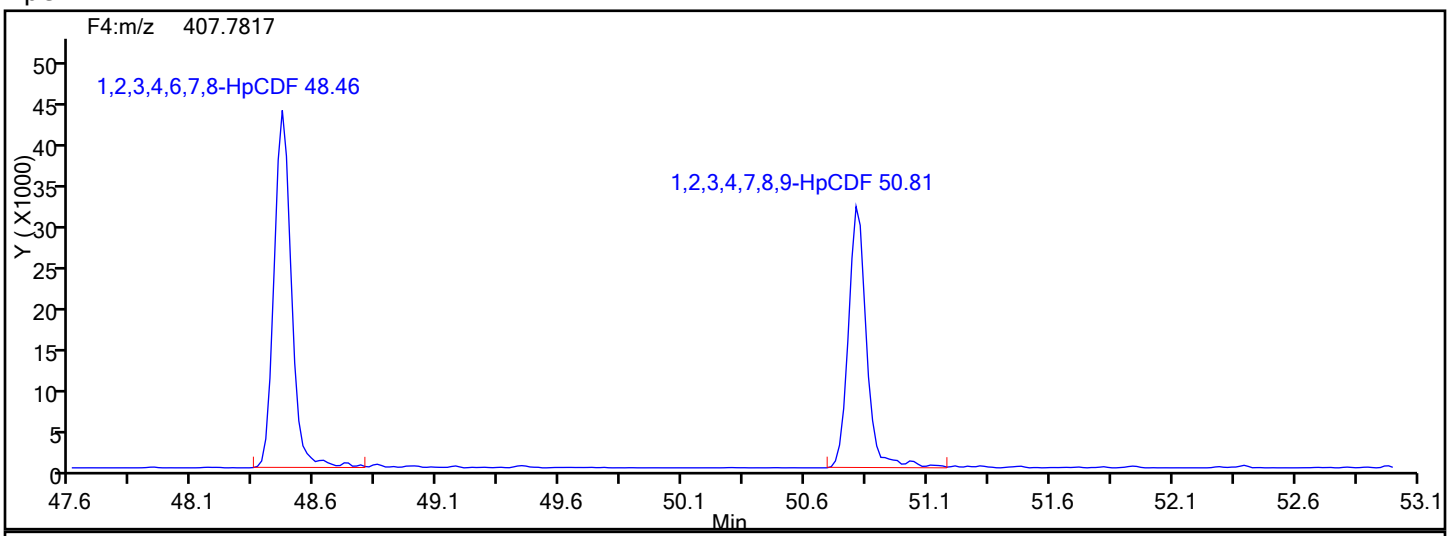
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

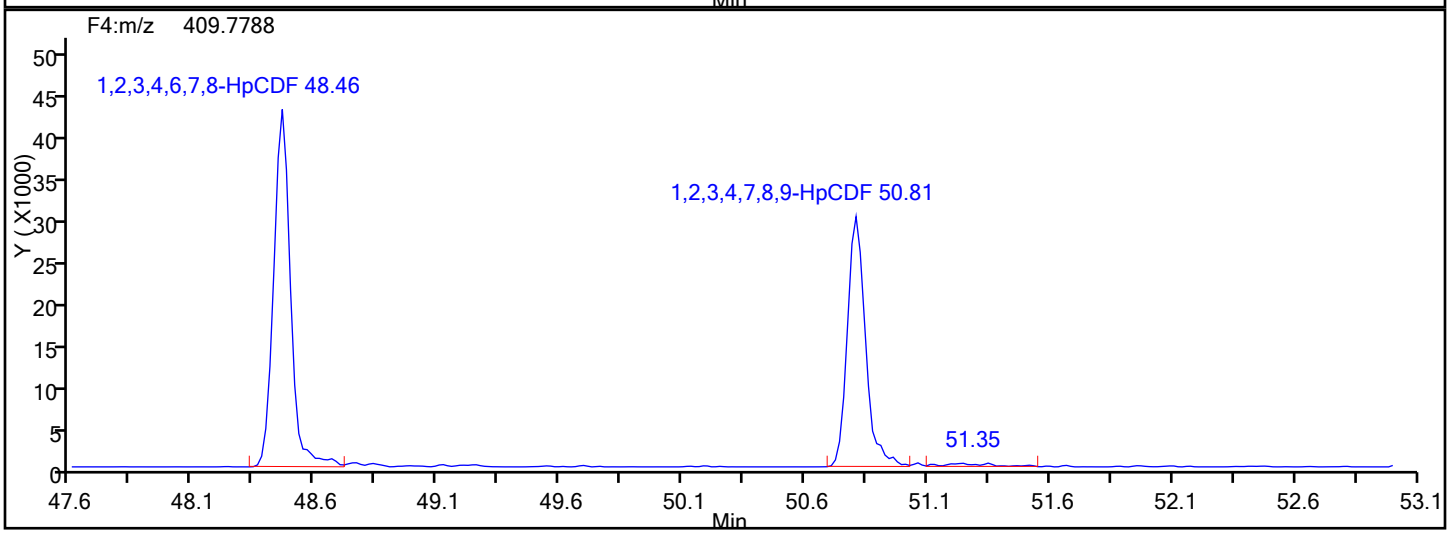
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

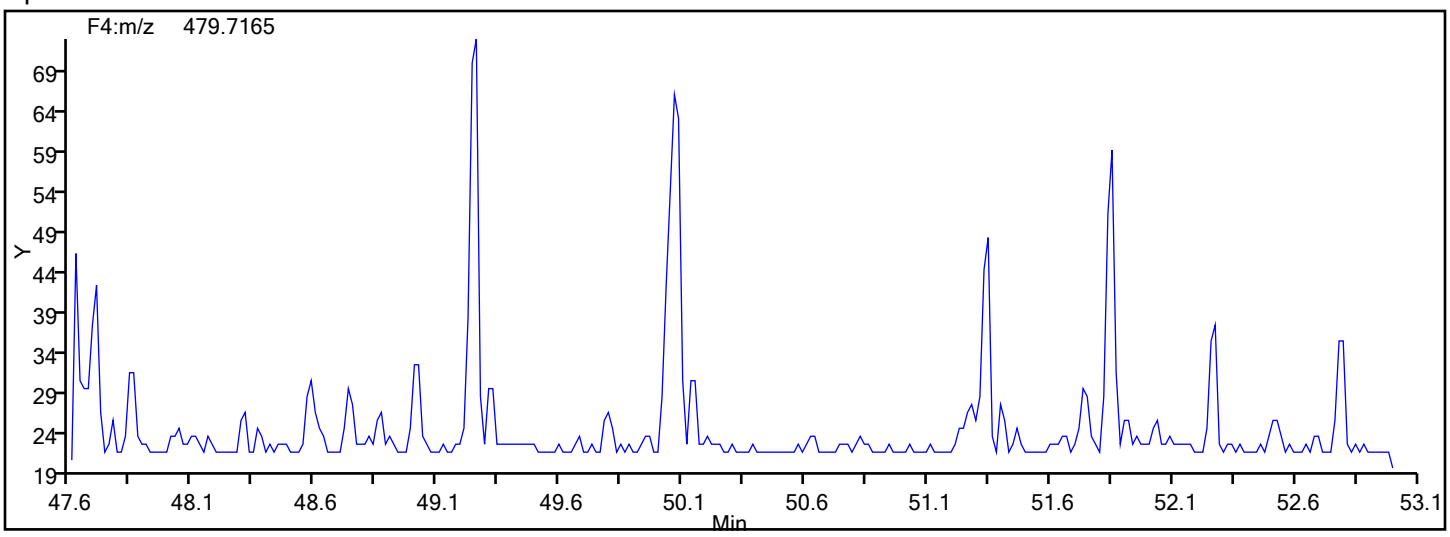
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



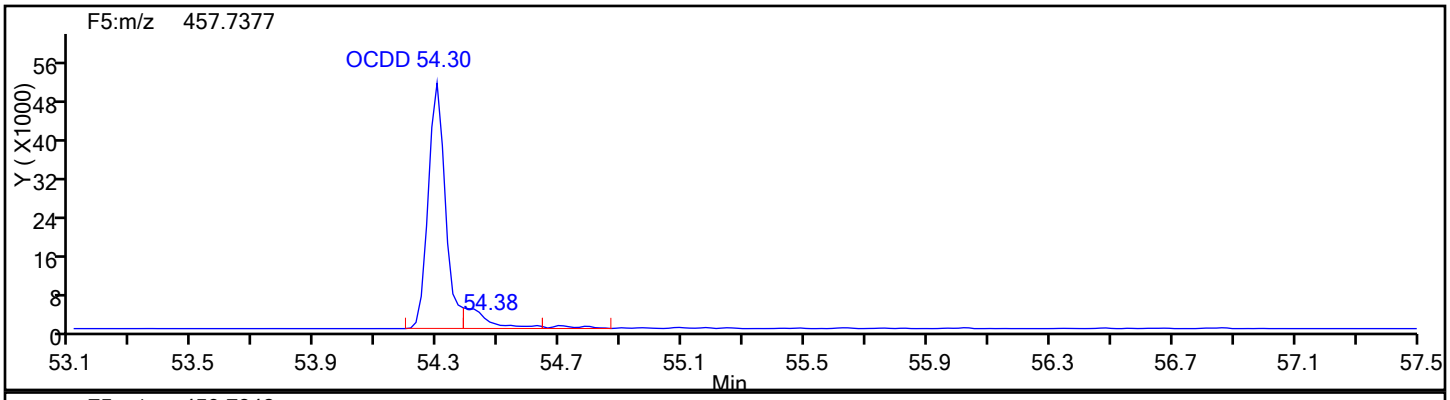
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

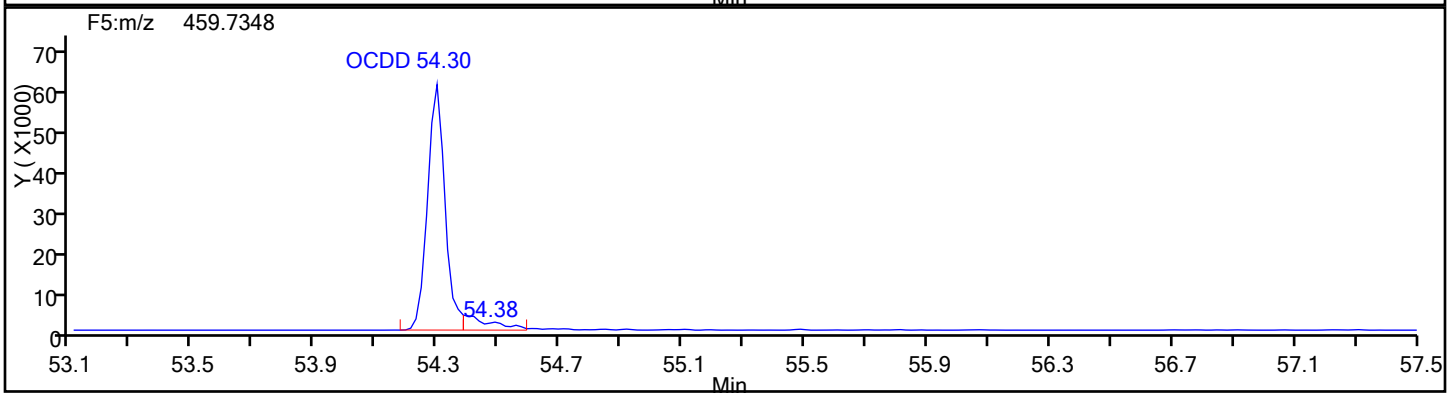
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

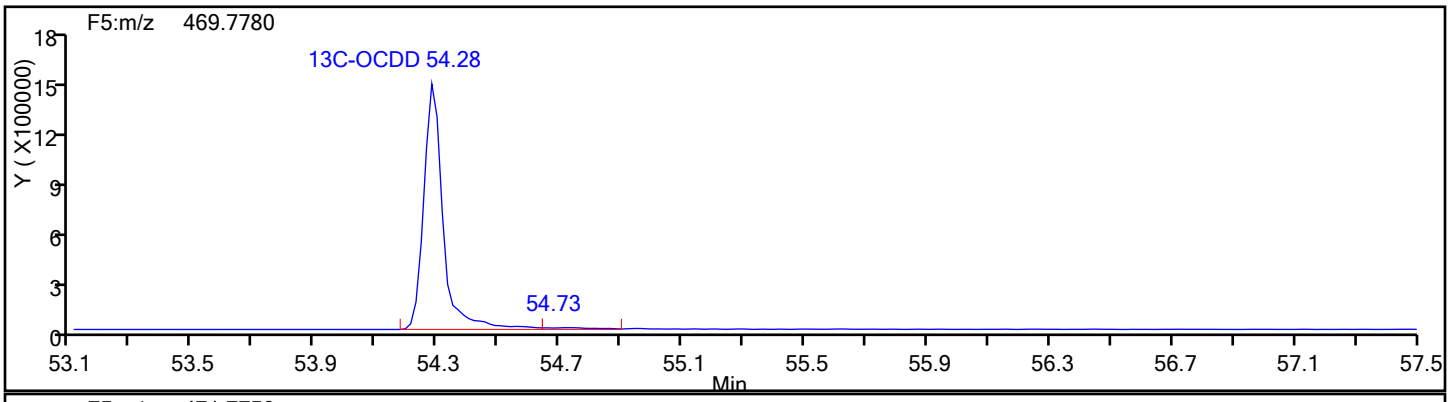
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

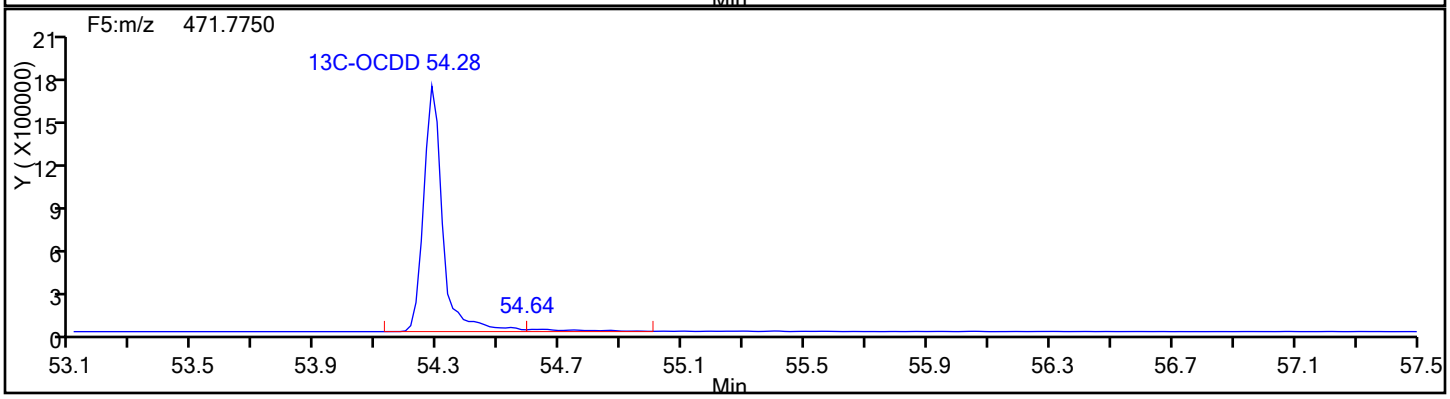
OCDD





OCDD Standards





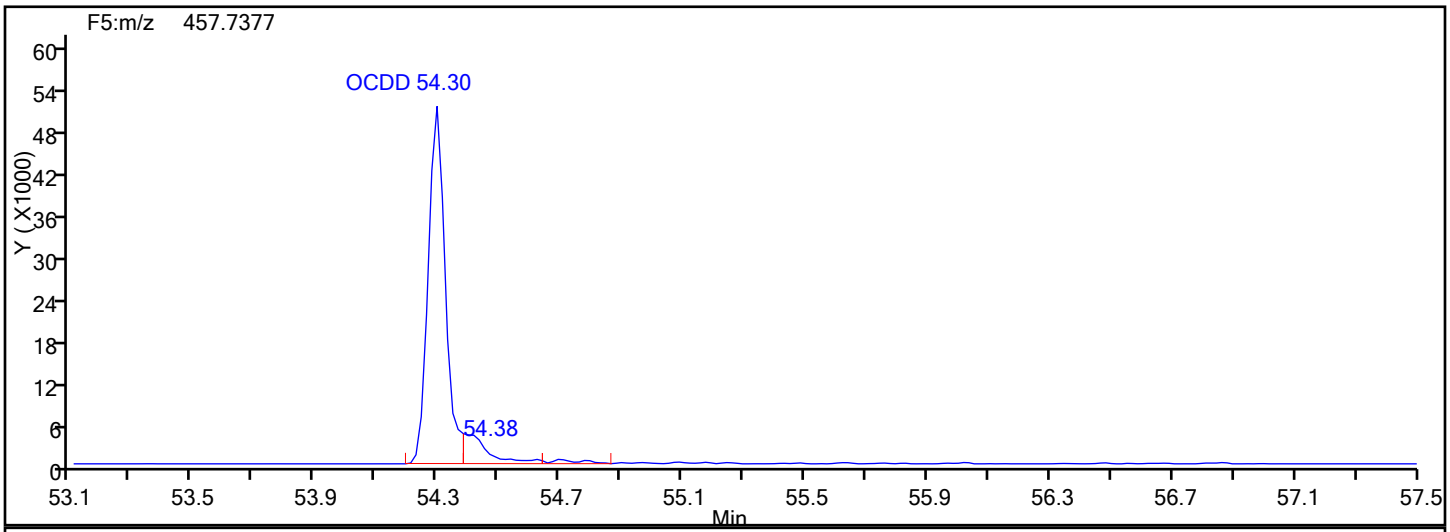
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

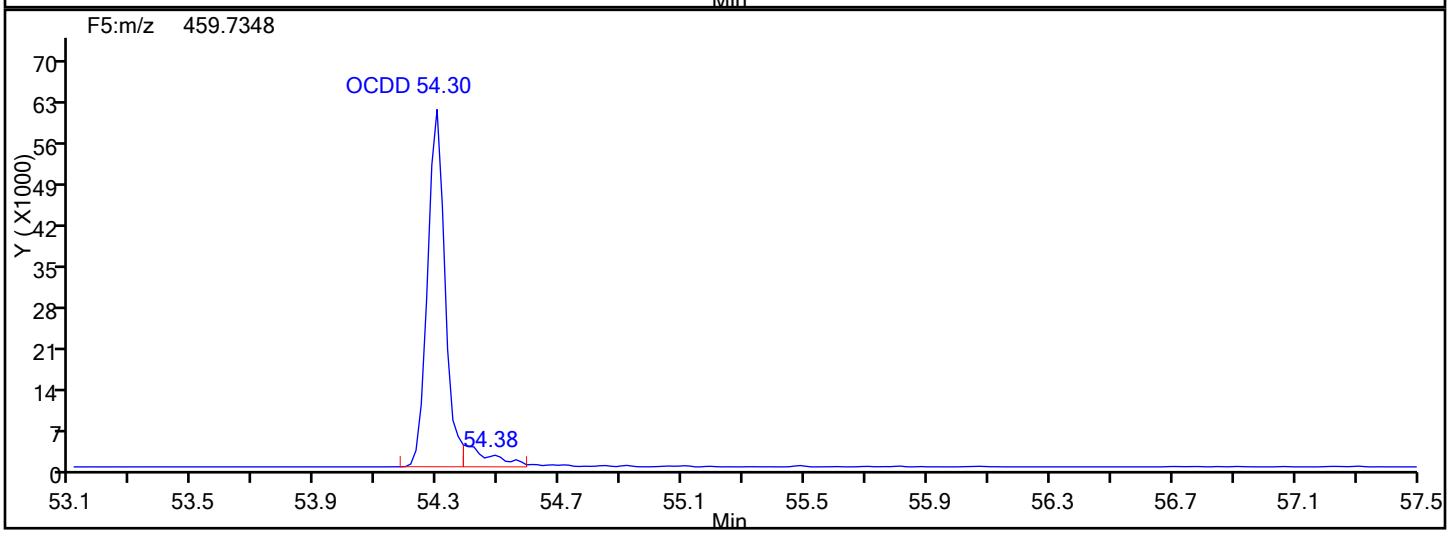
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

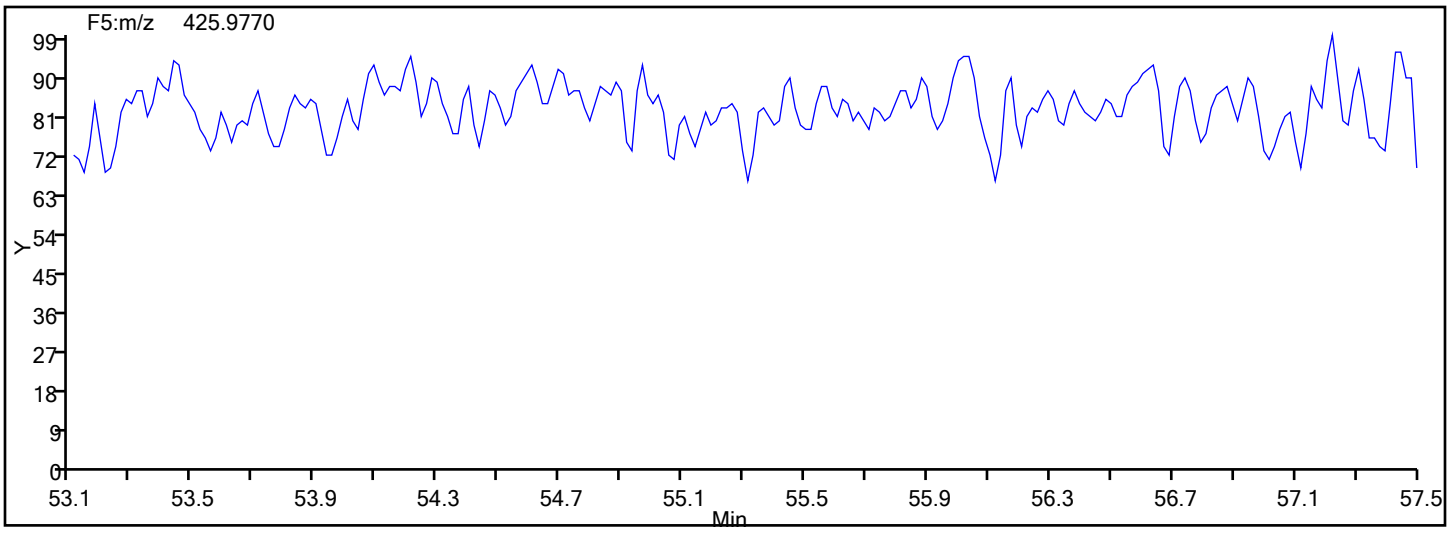
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

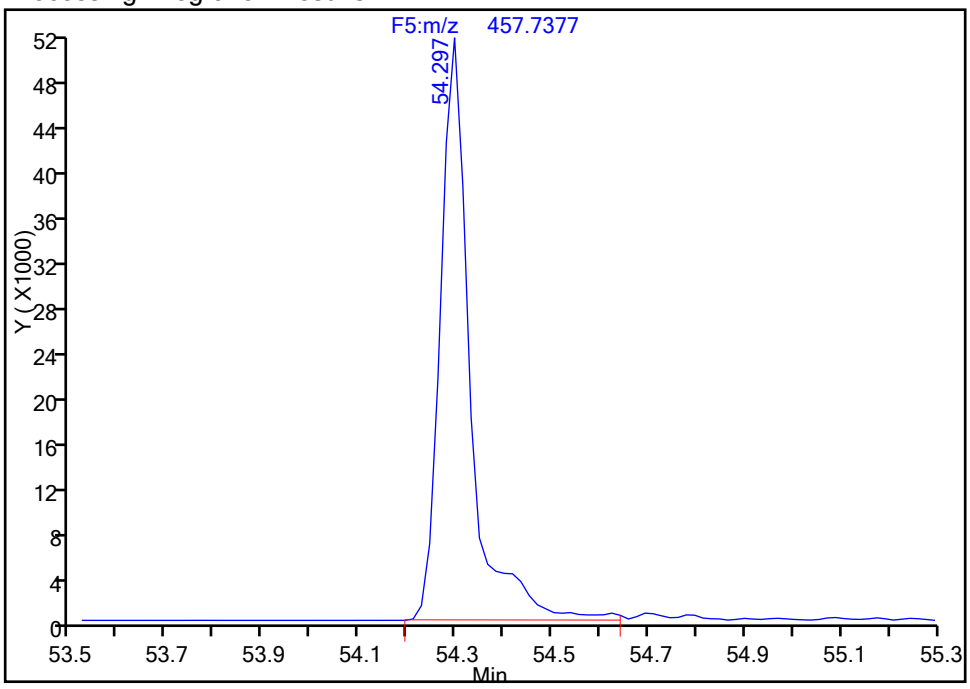
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F5(52.61 :57.22)

OCDD, CAS: 3268-87-9

Signal: 1

Processing Integration Results

RT: 54.30
Area: 222852
Amount: 5.743015
Amount Units: pg/ul



Manual Integration Results

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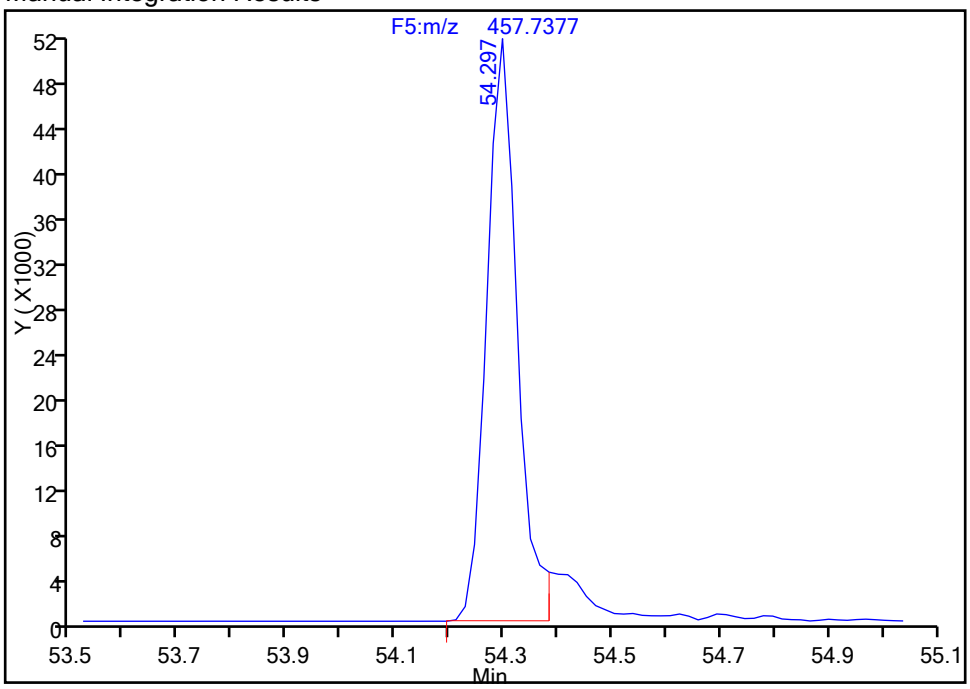
Amount: 5.315146
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d
Injection Date: 16-May-2014 14:26:00 Instrument ID: D2A
Lims ID: IC L1
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F5(52.61 :57.22)

OCDD, CAS: 3268-87-9

Signal: 2

Processing Integration Results

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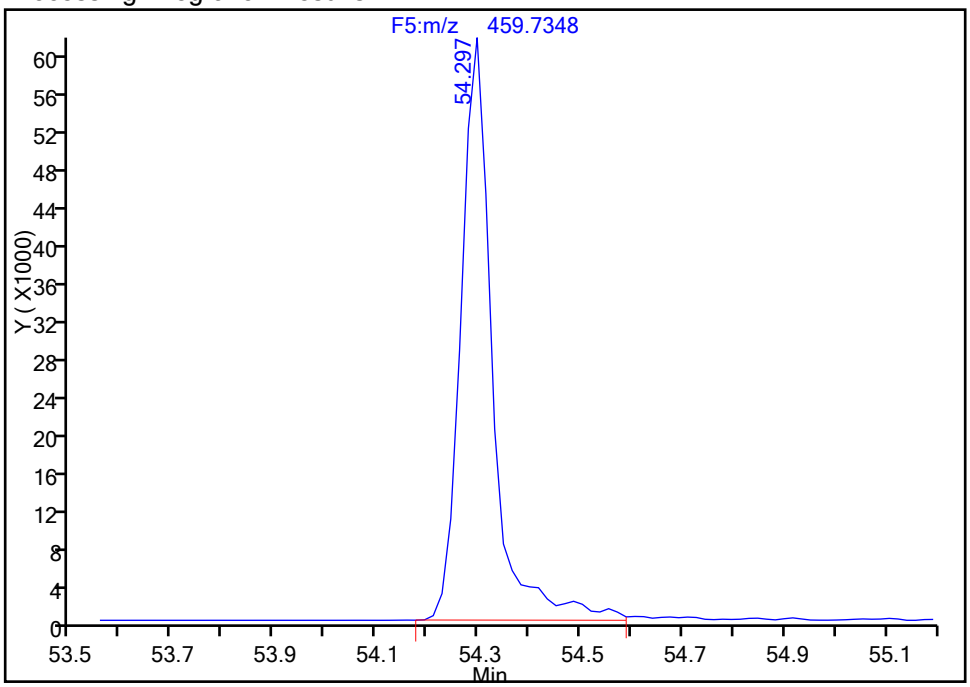
Amount: 5.743015
Amount Units: pg/ul



Manual Integration Results

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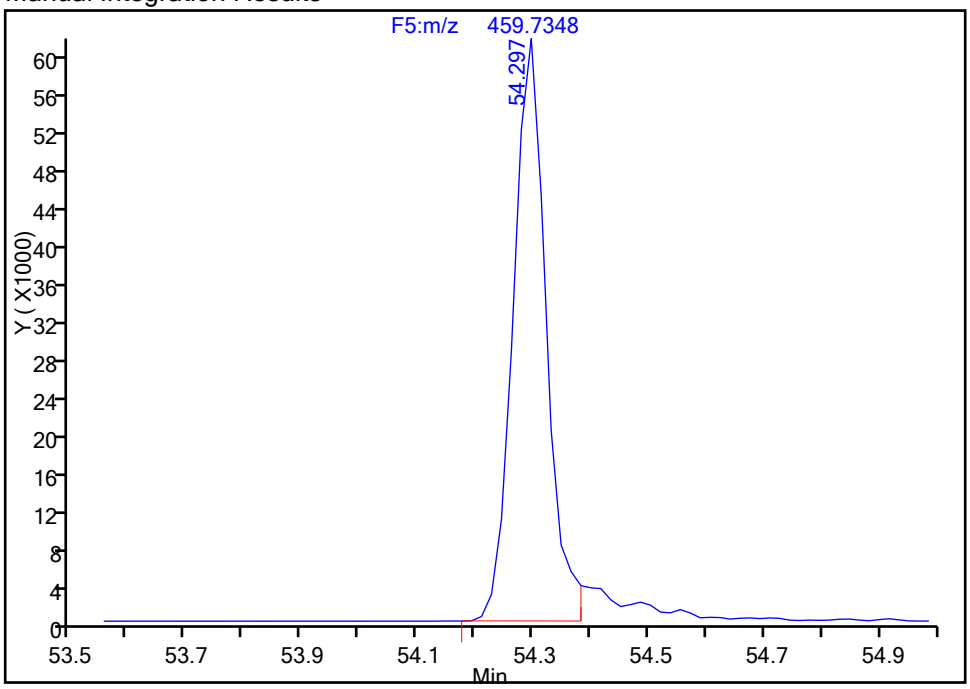
Amount: 5.315146
Amount Units: pg/ul



Reviewer: davidsonm, 11-Jan-2017 16:11:15
Audit Action: Split an Integrated Peak Audit Reason: Shouldering

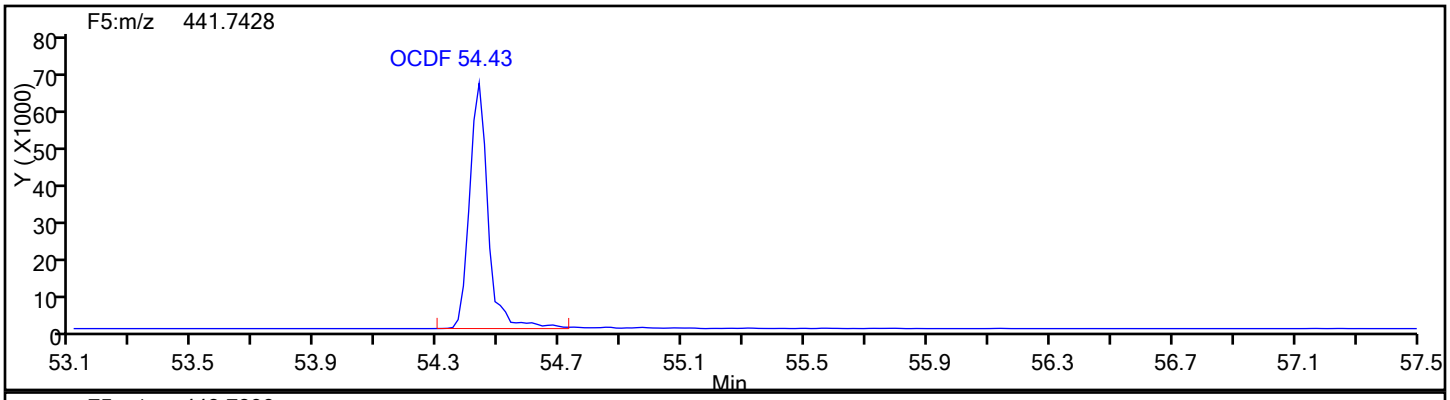
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

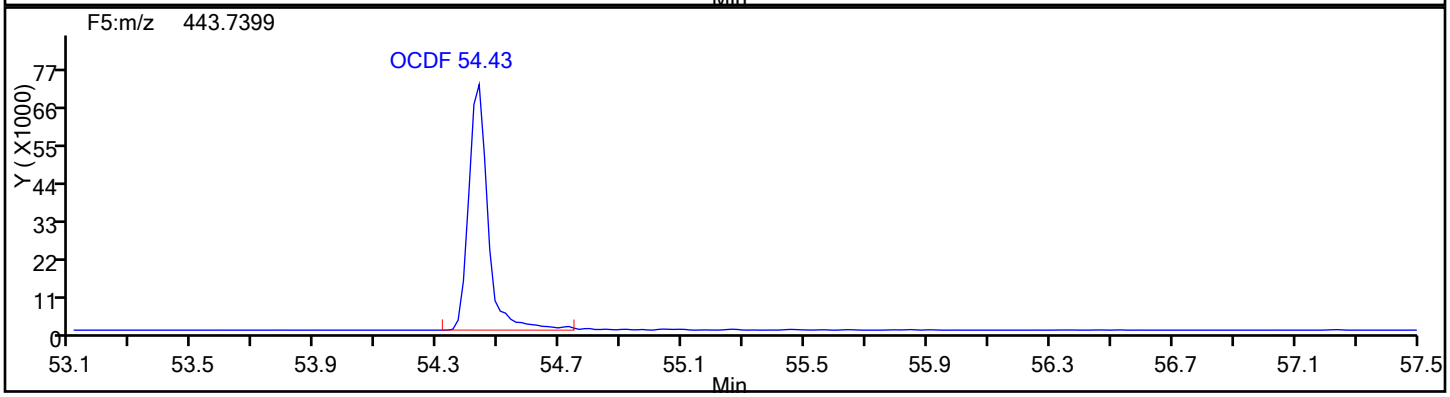
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

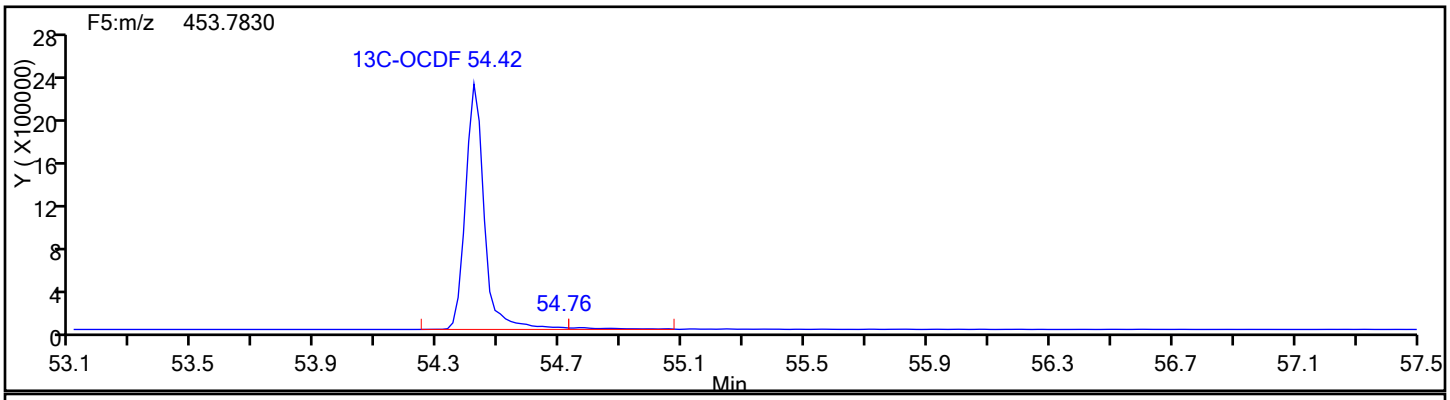
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

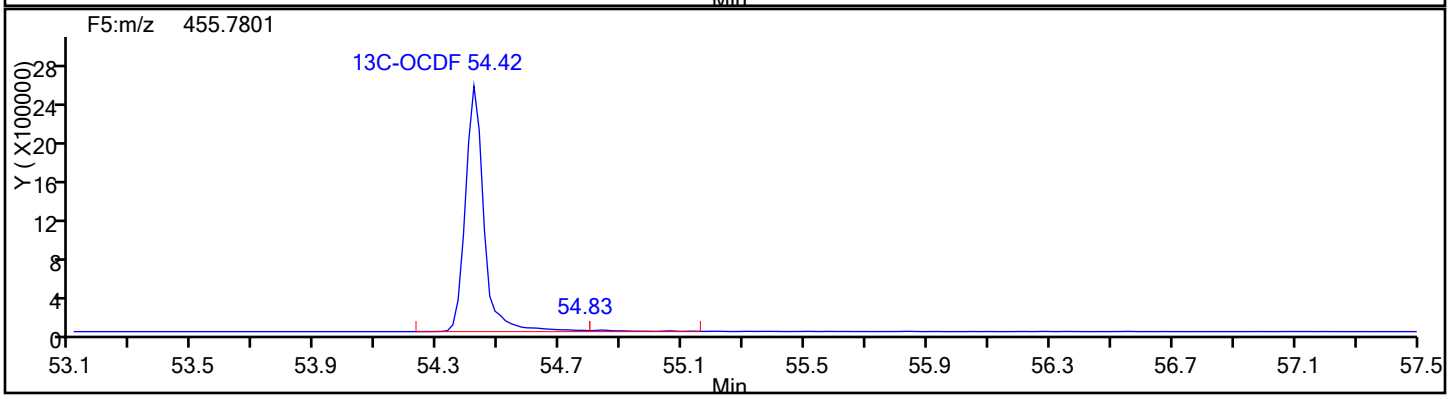
OCDF





OCDF Standards





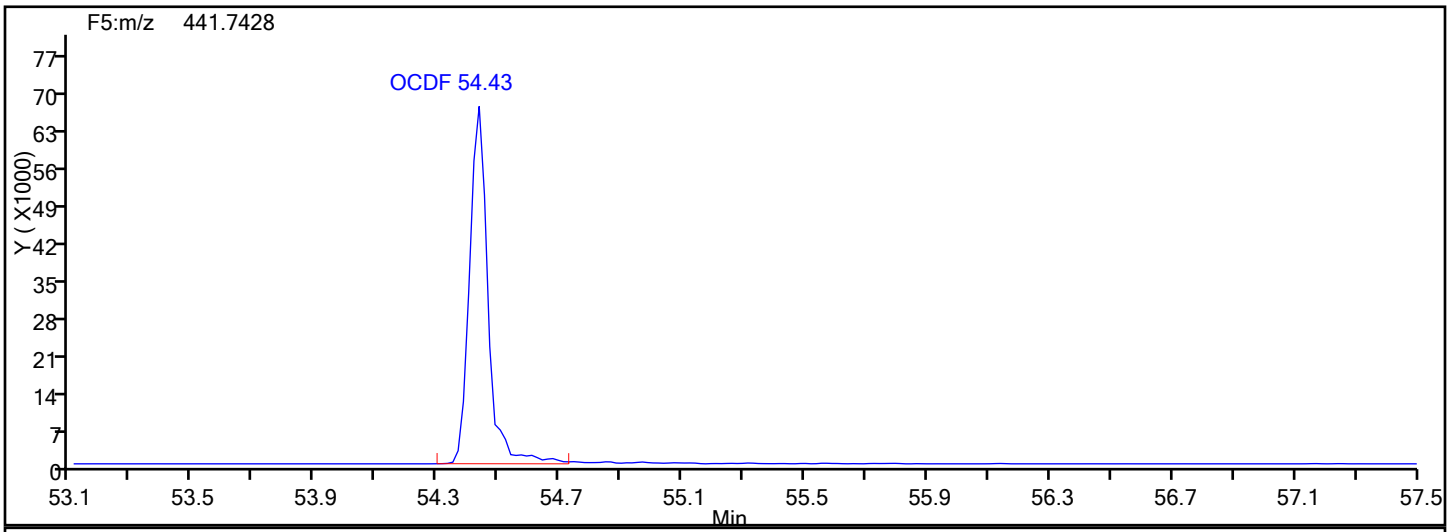
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

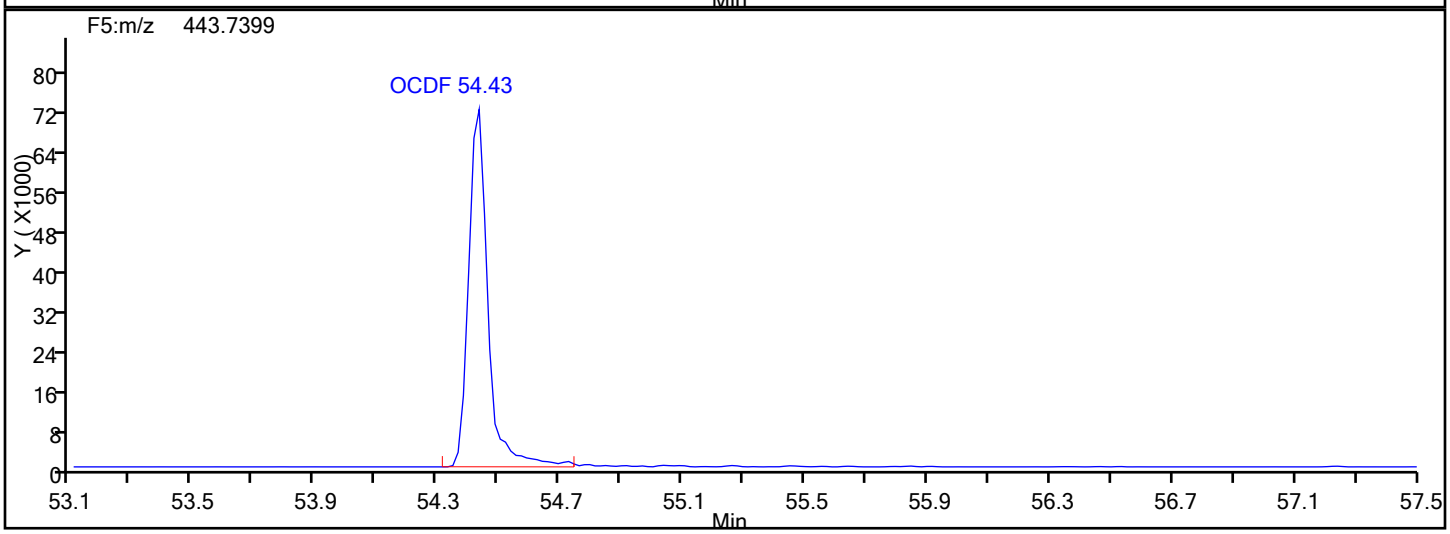
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

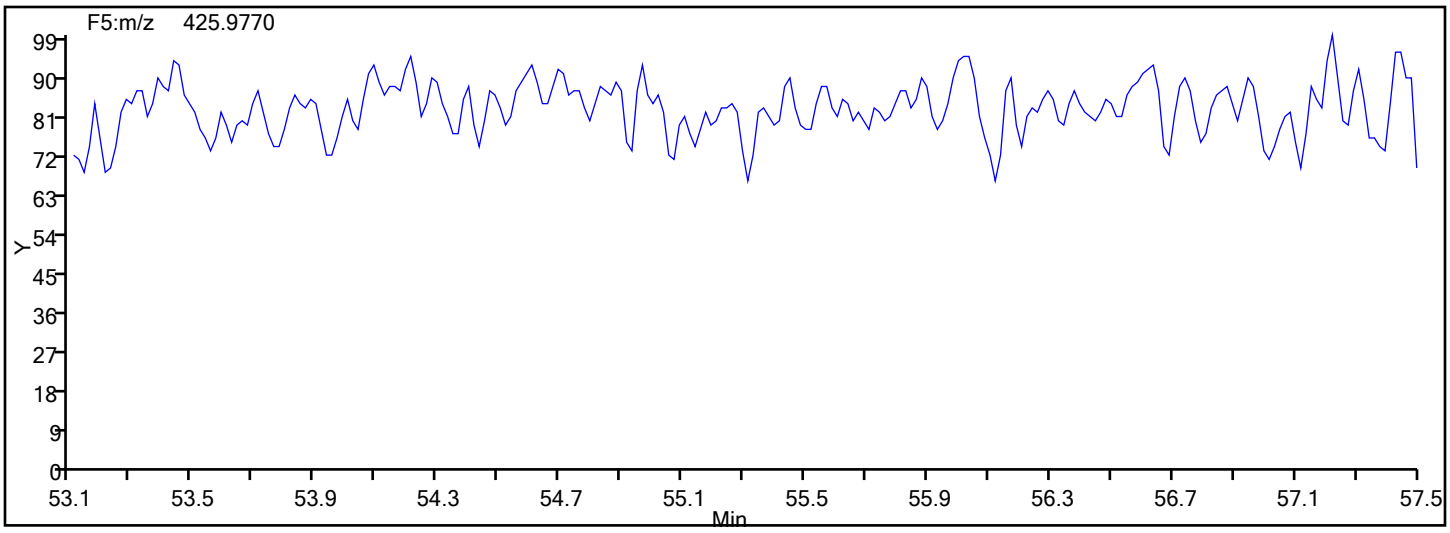
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



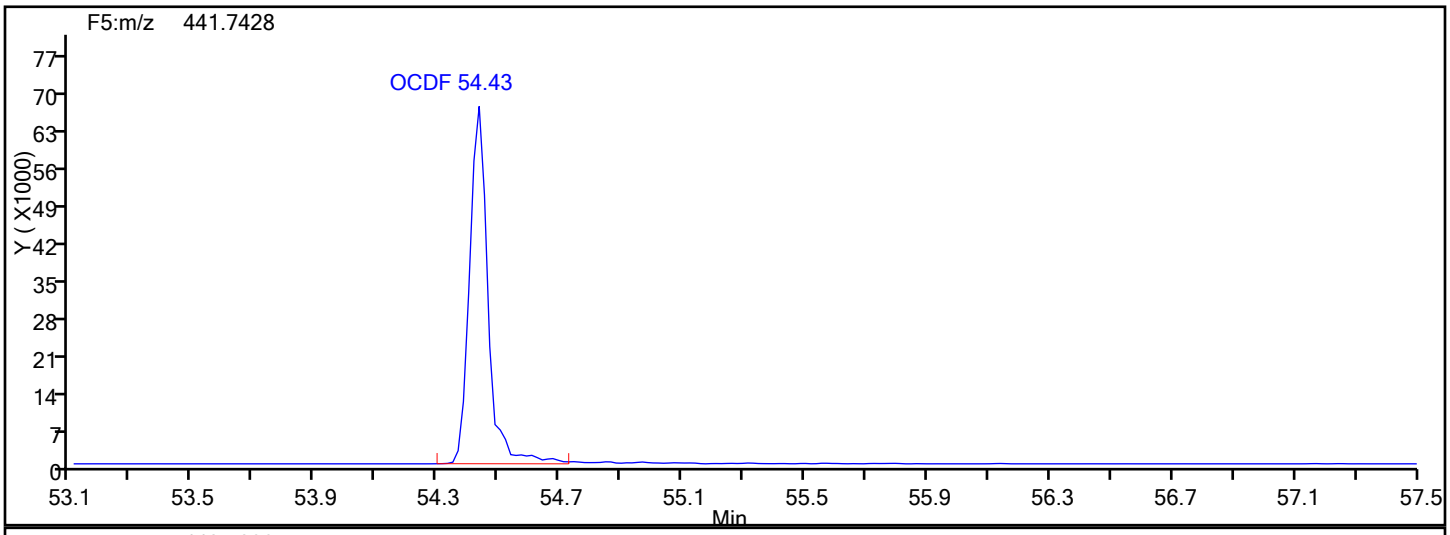
Report Date: 12-Jan-2017 08:09:14 Chrom Revision: 2.2 10-Jan-2017 11:26:10

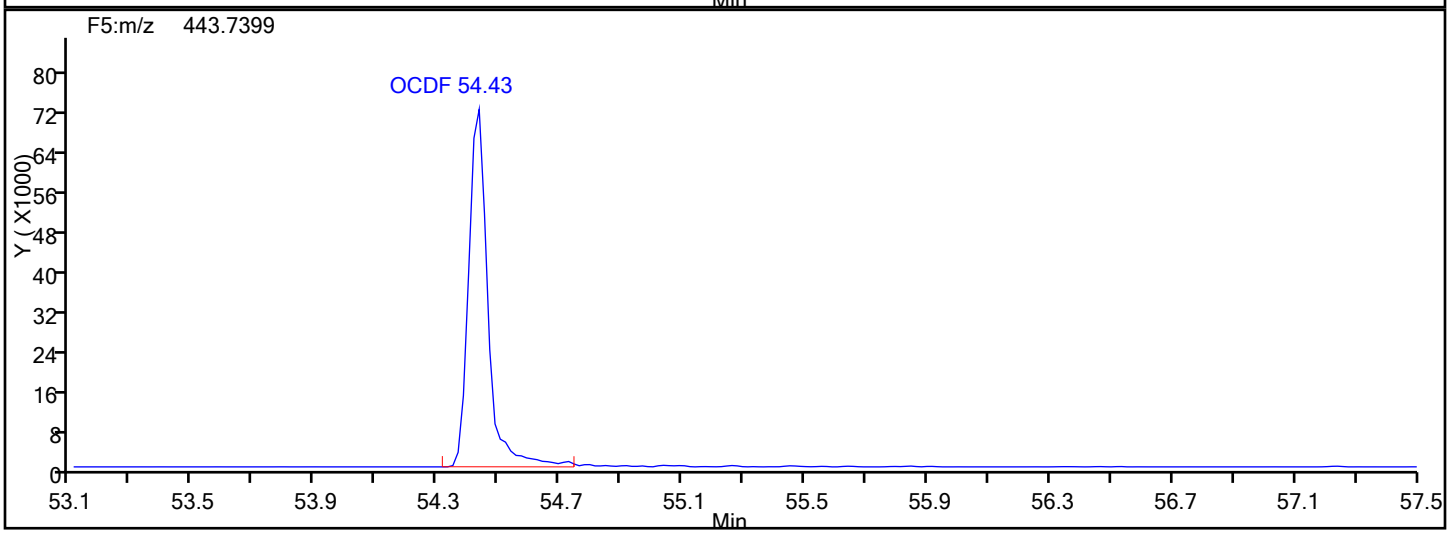
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i1.d

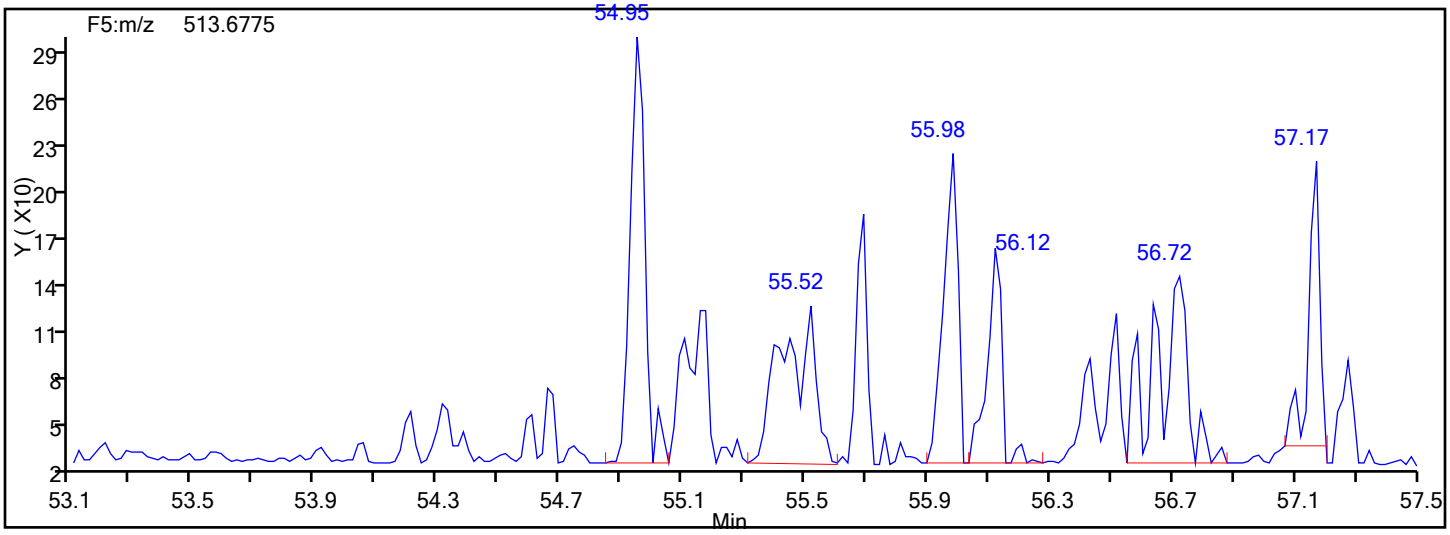
Injection Date:	16-May-2014 14:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	2
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 16-May-2014 15:26:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs2 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:19 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:13:09

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31.872	230135	0.84	1.1733	2.116	2.116	0.0116	0.0116	106	
A Non-2,3,7,8-sub-TCDD	30.308	2309	0.77	0.0000						RQ
S Total TCDD					2.116	2.116	0.0116	0.0116		RQ
2,3,7,8-TCDF	29.778	328832	0.81	1.0881	1.983	1.983	0.0162	0.0162	99.13	
A Non-2,3,7,8-sub-TCDF	28.995						0.0	0.0		
S Total TCDF					1.983	1.983	0.0162	0.0162		
1,2,3,7,8-PeCDD	41.016	743339	1.63	1.0434	10.1	10.1	0.0242	0.0242	101	
A Non-2,3,7,8-sub-PeCDD	39.915						0.0	0.0		
S Total PeCDD					10.1	10.1	0.0242	0.0242		
1,2,3,7,8-PeCDF	39.294	1326472	1.74	1.1898	9.979	9.979	0.0602	0.0602	99.79	
2,3,4,7,8-PeCDF	40.500	1259085	1.60	1.1095	9.914	9.914	0.0581	0.0581	99.14	
A Non-2,3,7,8-sub-PeCDF	38.623						0.0	0.0		
S Total PeCDF					19.9	19.9	0.0592	0.0592		
1,2,3,4,7,8-HxCDD	45.234	911864	1.31	1.1409	9.848	9.848	0.0574	0.0574	98.48	
1,2,3,6,7,8-HxCDD	45.352	991123	1.20	1.1481	10.3	10.3	0.0611	0.0611	103	
1,2,3,7,8,9-HxCDD	45.757	1060210	1.31	1.2212	10.5	10.5	0.0555	0.0555	105	
A Non-2,3,7,8-sub-HxCDD	44.687						0.0	0.0		
S Total HxCDD					30.6	30.6	0.0580	0.0580		
1,2,3,4,7,8-HxCDF	44.189	1500520	1.23	1.3629	9.921	9.921	0.0398	0.0398	99.21	
1,2,3,6,7,8-HxCDF	44.324	1707727	1.29	1.2762	9.881	9.881	0.0369	0.0369	98.81	
2,3,4,6,7,8-HxCDF	45.066	1529879	1.31	1.2654	9.728	9.728	0.0415	0.0415	97.28	
1,2,3,7,8,9-HxCDF	46.027	1432850	1.26	1.2573	10.1	10.1	0.0503	0.0503	101	
A Non-2,3,7,8-sub-HxCDF	44.552						0.0	0.0		
S Total HxCDF					39.7	39.7	0.0421	0.0421		
1,2,3,4,6,7,8-HpCDD	50.166	848864	1.01	1.1204	10.0	10.0	0.0501	0.0501	100	
A Non-2,3,7,8-sub-HpCDD	49.566	6350	1.04	0.0000						RQ
S Total HpCDD					10.0	10.0	0.0501	0.0501		RQ
1,2,3,4,6,7,8-HpCDF	48.463	1475215	1.04	1.4984	10.1	10.1	0.0435	0.0435	101	
1,2,3,4,7,8,9-HpCDF	50.808	1153014	1.04	1.3807	10.2	10.2	0.0586	0.0586	102	

Report Date: 12-Jan-2017 08:09:20 Chrom Revision: 2.2 10-Jan-2017 11:26:10
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49.625						0.0	0.0		
S Total HpCDF					20.3	20.3	0.0510	0.0510		
OCDD	54.294	1537141	0.91	1.2073	19.6	19.6	0.0762	0.0762	98.07	
OCDF	54.432	2160278	0.93	1.1162	20.2	20.2	0.0484	0.0484	101	
D 13C-2,3,7,8-TCDD	31.805	9269717	0.82	1.0709	100.0	100.0	0.2668	0.2668	100	
D 13C-2,3,7,8-TCDF	29.728	15241754	0.81	1.7545	100.4	100.4	0.1062	0.1062	100	
D 13C-1,2,3,7,8-PeCDD	40.999	7066036	1.63	0.8743	93.4	93.4	0.2755	0.2755	93.39	
D 13C-1,2,3,7,8-PeCDF	39.277	11172583	1.58	1.3704	94.2	94.2	0.1693	0.1693	94.20	
D 13C-2,3,4,7,8-PeCDF	40.482	11446462	1.55	1.3837	95.6	95.6	0.1676	0.1676	95.58	
D 13C-1,2,3,4,7,8-HxCDD	45.217	8116369	1.26	0.8772	99.6	99.6	0.2015	0.2015	99.55	
D 13C-1,2,3,6,7,8-HxCDD	45.336	8407393	1.21	0.9171	98.6	98.6	0.1928	0.1928	98.64	
D 13C-1,2,3,4,7,8-HxCDF	44.172	11097986	0.53	1.1892	100.4	100.4	0.1771	0.1771	100	
D 13C-1,2,3,6,7,8-HxCDF	44.307	13542561	0.54	1.4625	99.6	99.6	0.1440	0.1440	99.63	
D 13C-2,3,4,6,7,8-HxCDF	45.049	12428502	0.55	1.3197	101.3	101.3	0.1596	0.1596	101	
D 13C-1,2,3,7,8,9-HxCDF	46.010	11246135	0.55	1.2001	100.8	100.8	0.1755	0.1755	101	
D 13C-1,2,3,4,6,7,8-HpCDD	50.150	7575508	1.08	0.8155	100.0	100.0	0.3177	0.3177	99.95	
D 13C-1,2,3,4,6,7,8-HpCDF	48.446	9744462	0.47	1.0496	99.9	99.9	0.1813	0.1813	99.89	
D 13C-1,2,3,4,7,8,9-HpCDF	50.791	8217931	0.47	0.8947	98.8	98.8	0.2127	0.2127	98.82	
D 13C-OCDD	54.277	12983405	0.91	0.7044	198.3	198.3	0.1912	0.1912	99.16	
D 13C-OCDF	54.415	19166588	0.91	1.0615	194.3	194.3	0.1123	0.1123	97.14	
$ 37Cl4-2,3,7,8-TCDD	31.872	209201		1.2266	1.971	1.971	0.0120	0.0120	98.54	
* 13C-1,2,3,4-TCDD	31.273	8654331	0.82	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45.740	9294113	1.25	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

61L21613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:20 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 16-May-2014 15:26:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs2 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:19 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:13:09

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31.872	31.871	0	1.002	105137	10705	24	60	446		
321.8936	31.872	31.871	0	1.002	124998	12622	29	72	435	0.84(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	25.705	30.308	-276		1151	291	24	60	12		
321.8936	25.705	30.308	-276		550	169	29	72	6	2.09(0.65-0.89)	
319.8965	29.778	30.308	-32		2272	356	24	60	15		
321.8936	29.744	30.308	-34		755	219	29	72	8	3.01(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	29.778	29.793	-1	1.002	147166	16694	44	110	379		
305.8987	29.778	29.793	-1	1.002	181666	20565	77	192	267	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	28.995						44	110			
305.8987	28.995						77	192			
1,2,3,7,8-PeCDD											
355.8546	41.016	41.031	-1	1.000	460269	109322	93	232	1176		
357.8516	41.016	41.031	-1	1.000	283070	69655	78	195	893	1.63(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39.915						93	232			
357.8516	39.915						78	195			
1,2,3,7,8-PeCDF											
339.8597	39.294	39.309	-1	1.000	842515	173754	306	765	568		
341.8567	39.294	39.309	-1	1.000	483957	102696	354	885	290	1.74(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40.500	40.497	0	1.000	774900	176689	306	765	577		
341.8567	40.500	40.497	0	1.000	484185	107161	354	885	303	1.60(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											
339.8597	38.623						306	765			
341.8567	38.623						354	885			
1,2,3,4,7,8-HxCDD											
389.8158	45.234	45.249	-1	1.000	517114	131641	379	947	347		
391.8127	45.234	45.249	-1	1.000	394750	105750	159	397	665	1.31(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45.352	45.367	-1	1.000	540243	124591	379	947	329		
391.8127	45.352	45.367	-1	1.000	450880	101458	159	397	638	1.20(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45.757	45.755	0	1.012	601411	131634	379	947	347		
391.8127	45.757	45.755	0	1.012	458799	102497	159	397	645	1.31(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44.687						379	947			
391.8127	44.687						159	397			
1,2,3,4,7,8-HxCDF											
373.8208	44.189	44.203	-1	1.000	827290	222657	289	722	770		
375.8178	44.189	44.203	-1	1.000	673230	180873	347	867	521	1.23(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44.324	44.338	-1	1.000	960846	235756	289	722	816		
375.8178	44.324	44.338	-1	1.000	746881	183324	347	867	528	1.29(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45.066	45.064	0	1.000	866416	213222	289	722	738		
375.8178	45.066	45.064	0	1.000	663463	158603	347	867	457	1.31(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	46.027	46.042	-1	1.000	797958	175751	289	722	608		
375.8178	46.027	46.042	-1	1.000	634892	142607	347	867	411	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44.552						289	722			
375.8178	44.552						347	867			
1,2,3,4,6,7,8-HpCDD											
423.7767	50.166	50.180	-1	1.000	427584	80925	123	307	658		
425.7737	50.166	50.180	-1	1.000	421280	81582	202	505	404	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											RQ
423.7767	48.985	49.566	-35		4300	861	123	307	7		
425.7737	48.935	49.566	-38		3113	807	202	505	4	1.38(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	48.463	48.476	-1	1.000	750395	153068	256	640	598		
409.7788	48.463	48.476	-1	1.000	724820	145983	260	650	561	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50.808	50.821	-1	1.000	587255	115873	256	640	453		
409.7788	50.808	50.821	-1	1.000	565759	108261	260	650	416	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49.625						256	640			
409.7788	49.625						260	650			

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	54.294	54.308	-1	1.000	730971	169627	183	457	927		
459.7348	54.294	54.308	-1	1.000	806170	185096	363	907	510	0.91(0.76-1.02)	
OCDF											
441.7428	54.432	54.429	0	1.000	1042747	243488	254	635	959		
443.7399	54.432	54.429	0	1.000	1117531	261792	237	592	1105	0.93(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31.805	31.804	0	1.017	4184694	440025	599	1497	735		
333.9338	31.805	31.804	0	1.017	5085023	528497	490	1225	1079	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29.728	29.743	-1	0.951	6812939	771003	420	1050	1836		
317.9389	29.728	29.743	-1	0.951	8428815	941455	290	725	3246	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40.999	40.997	0	1.311	4380561	1046952	545	1362	1921		
369.8919	40.999	40.997	0	1.311	2685475	644525	373	932	1728	1.63(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39.277	39.275	0	1.256	6848053	1415913	538	1345	2632		
353.8970	39.277	39.275	0	1.256	4324530	886761	346	865	2563	1.58(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40.482	40.480	0	1.294	6951956	1552875	538	1345	2886		
353.8970	40.482	40.480	0	1.294	4494506	1006563	346	865	2909	1.55(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45.217	45.232	-1	0.989	4529719	1128595	642	1605	1758		
403.8529	45.217	45.232	-1	0.989	3586650	926324	827	2067	1120	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45.336	45.350	-1	0.991	4600091	1049243	642	1605	1634		
403.8529	45.336	45.350	-1	0.991	3807302	867168	827	2067	1049	1.21(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44.172	44.187	-1	0.966	3853425	1005394	766	1915	1313		
385.8610	44.172	44.187	-1	0.966	7244561	1927282	984	2460	1959	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44.307	44.322	-1	0.969	4736265	1199842	766	1915	1566		
385.8610	44.307	44.322	-1	0.969	8806296	2175827	984	2460	2211	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45.049	45.047	0	0.985	4388561	1067375	766	1915	1393		
385.8610	45.049	45.047	0	0.985	8039941	1958619	984	2460	1990	0.55(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46.010	46.025	-1	1.006	3979151	877838	766	1915	1146		
385.8610	46.010	46.025	-1	1.006	7266984	1638180	984	2460	1665	0.55(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50.150	50.163	-1	1.096	3934053	755146	1326	3315	569		
437.8140	50.150	50.163	-1	1.096	3641455	691211	827	2067	836	1.08(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48.446	48.443	0	1.059	3102669	628947	672	1680	936		
419.8220	48.446	48.443	0	1.059	6641793	1352437	909	2272	1488	0.47(0.51-0.37)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50.791	50.804	-1	1.110	2611435	505141	672	1680	752		
419.8220	50.791	50.804	-1	1.110	5606496	1088299	909	2272	1197	0.47(0.37-0.51)	
13C-OCDD											
469.7780	54.277	54.291	-1	1.187	6185183	1427483	463	1157	3083		
471.7750	54.277	54.291	-1	1.187	6798222	1539237	656	1640	2346	0.91(0.76-1.02)	
13C-OCDF											
453.7830	54.415	54.429	-1	1.190	9156675	2180826	439	1097	4968		
455.7801	54.415	54.429	-1	1.190	10009913	2358456	551	1377	4280	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31.872	31.871	0	1.019	209201	21001	56	140	375		
13C-1,2,3,4-TCDD											
331.9368	31.273	31.289	-1		3894273	420853	599	1497	703		
333.9338	31.273	31.289	-1		4760058	531850	490	1225	1085	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45.740	45.738	0		5160532	1151072	642	1605	1793		
403.8529	45.740	45.738	0		4133581	926028	827	2067	1120	1.25(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Reagents:

61L21613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:20 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d
Lims ID: IC L2
Client ID:
Inject. Date: 16-May-2014 15:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 2
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 3
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
25.705	1151	291	550	169		2.09	Rn
29.778	2272	356	755	219		3.01	Rn
Signal Totals:							
	3423	647	1305	388			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4728	1035				2.62	RQ
	2309	686					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (4728 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (2309 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d
Lims ID: IC L2
Client ID:
Inject. Date: 16-May-2014 15:26:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 2
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 3
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDD, RT: 49.566

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48.985	4300	861	3113	807		1.38	Rn
Signal Totals:							
	4300	861	3113	807			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	7413	1668				1.38	RQ
	6350	1646					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (7413 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (6350 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

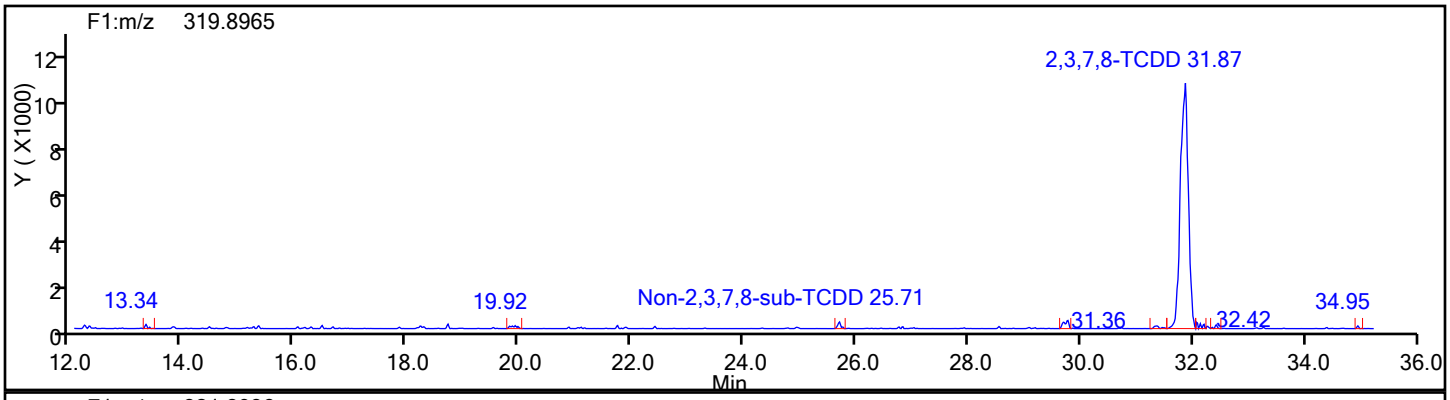
Report Date: 12-Jan-2017 08:09:20 Chrom Revision: 2.2 10-Jan-2017 11:26:10

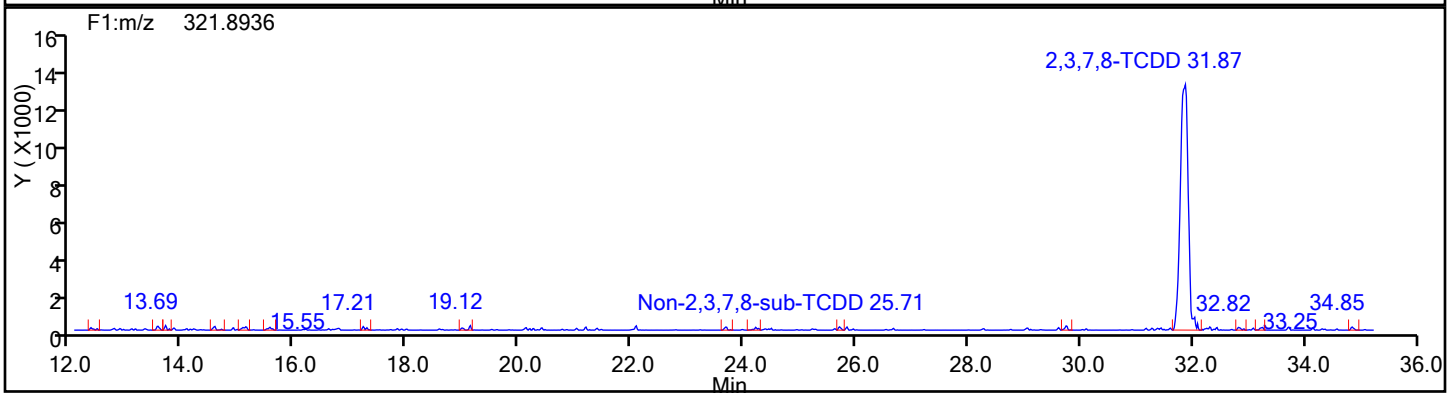
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

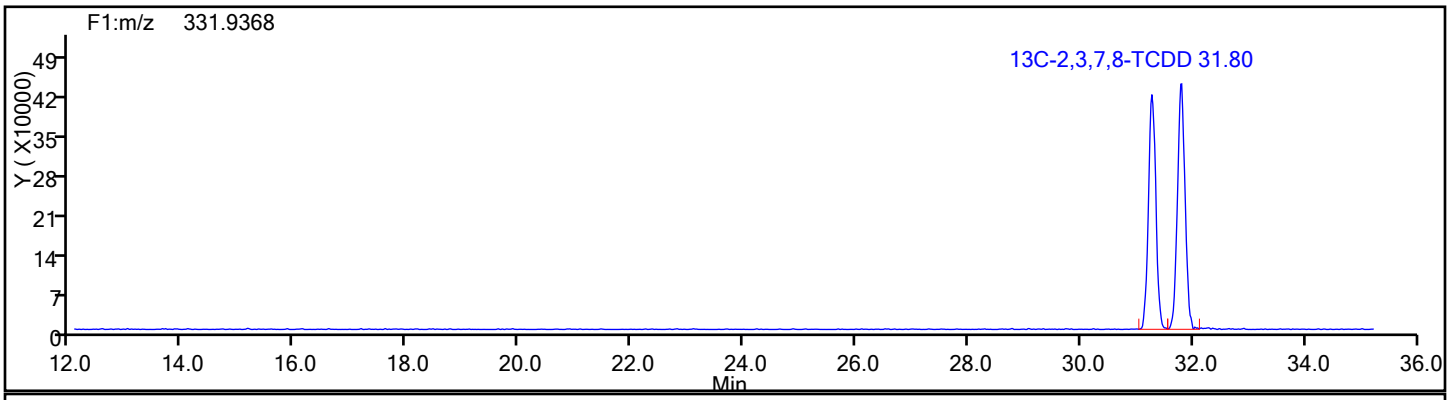
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

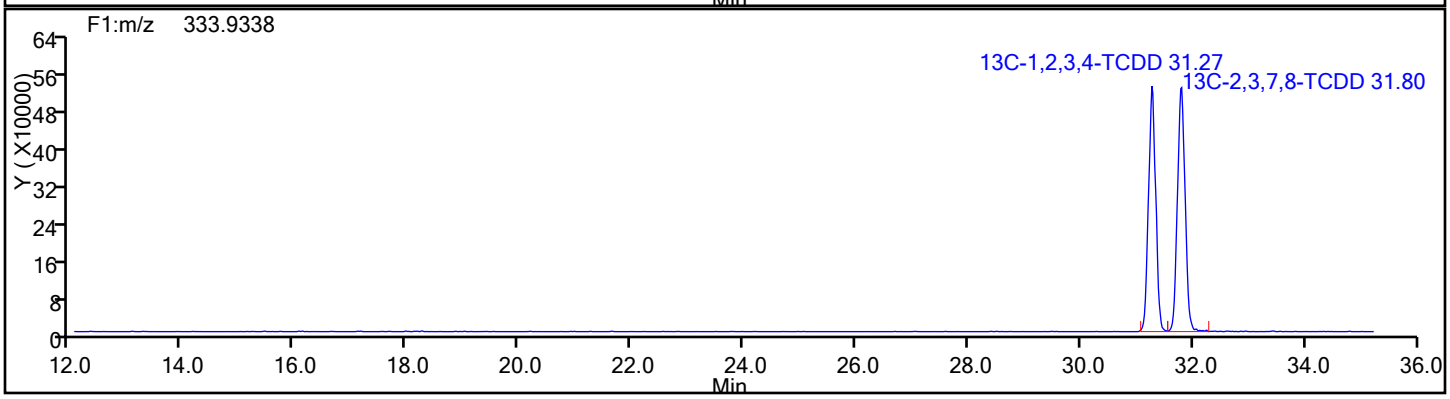
TCDD





TCDD Standards





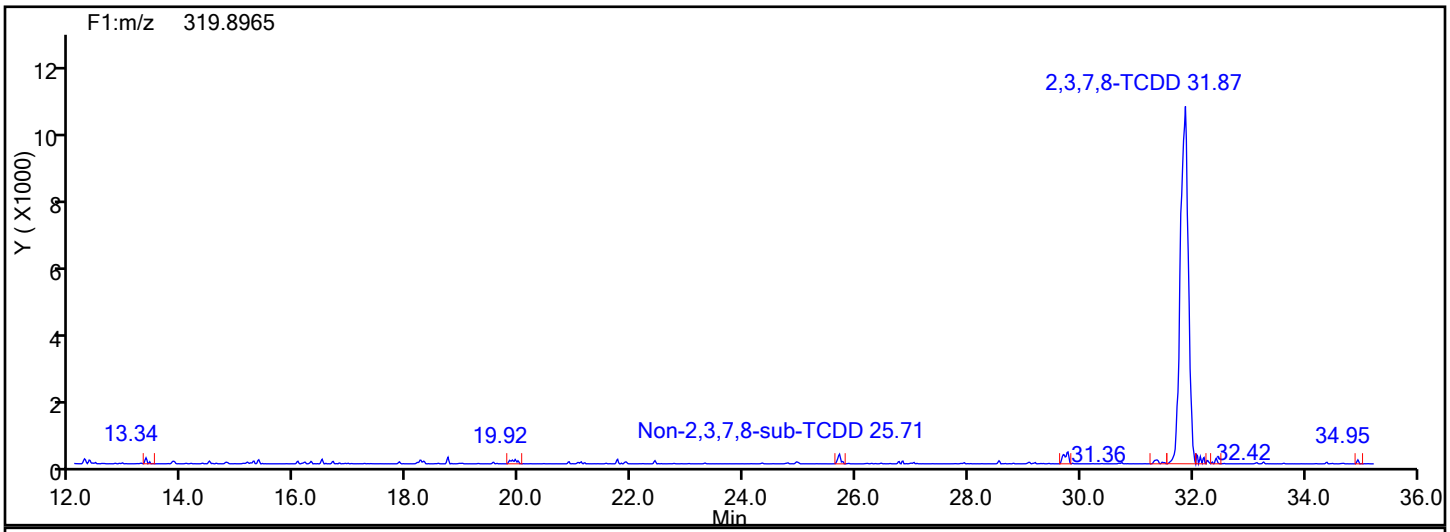
Report Date: 12-Jan-2017 08:09:20 Chrom Revision: 2.2 10-Jan-2017 11:26:10

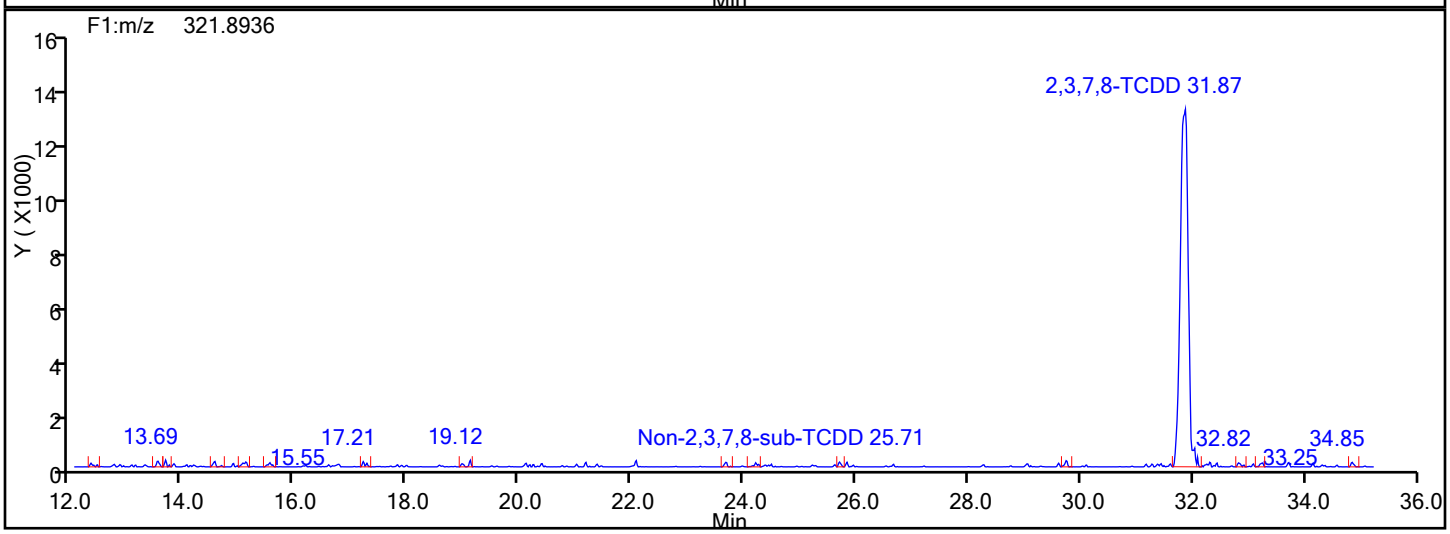
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

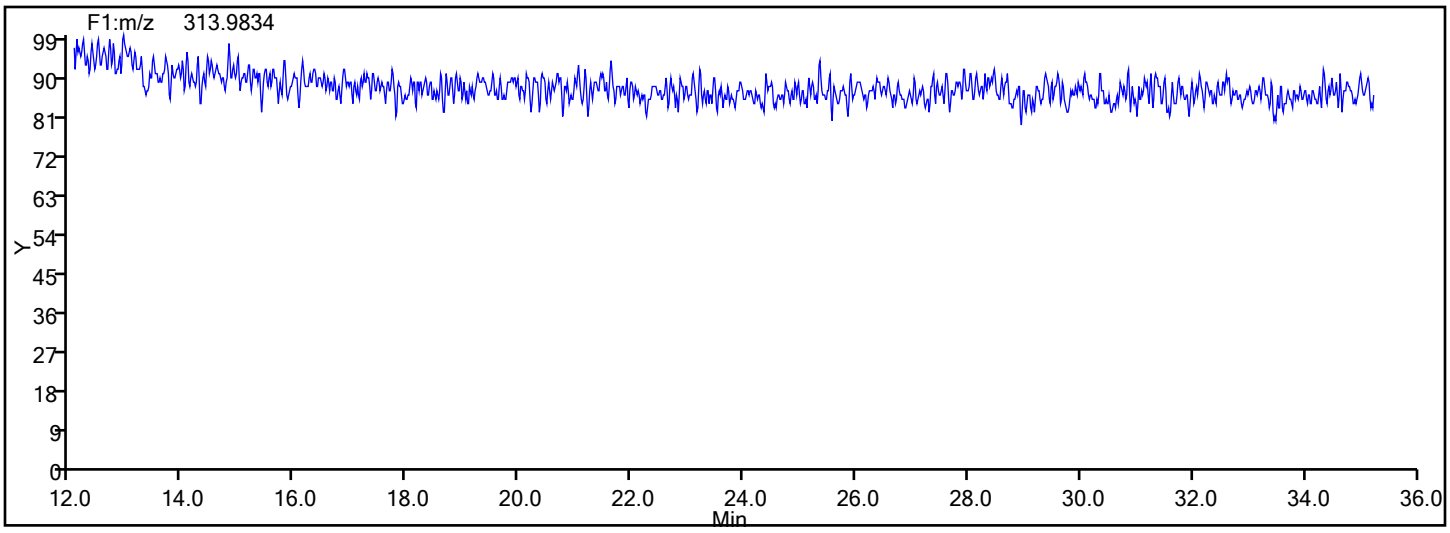
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



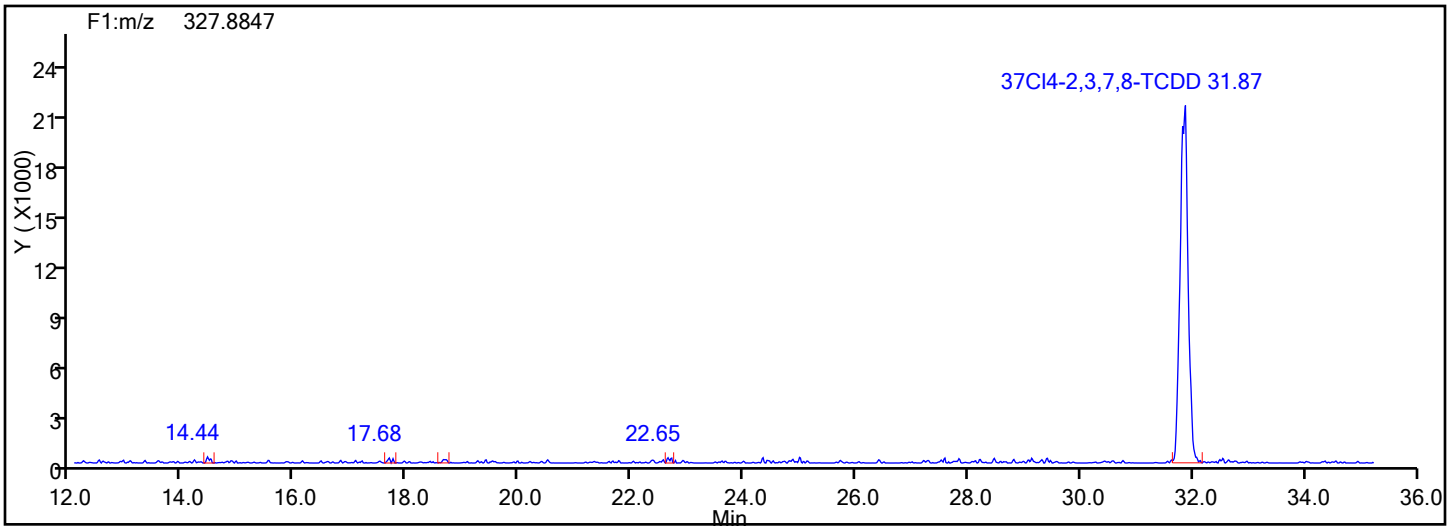
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

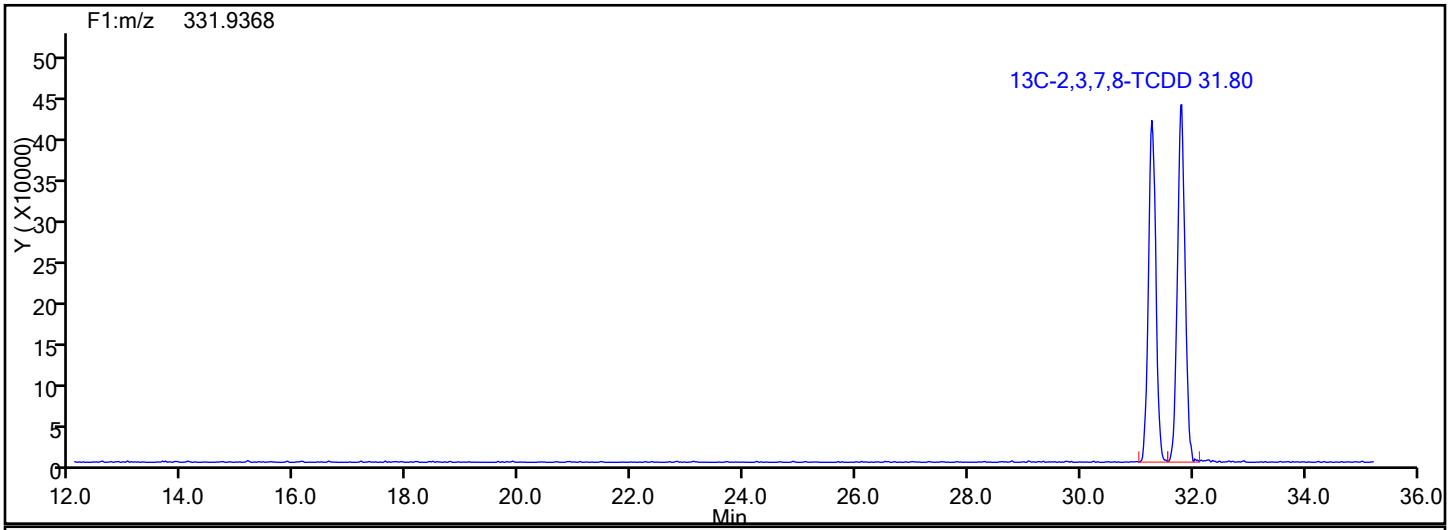
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

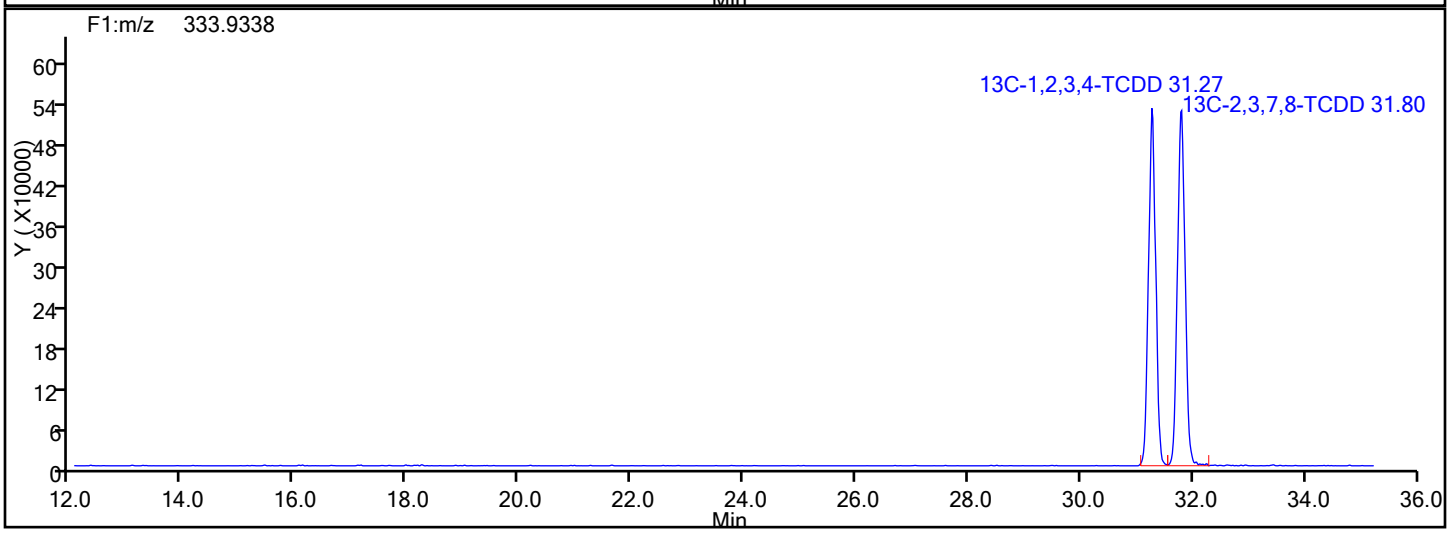
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





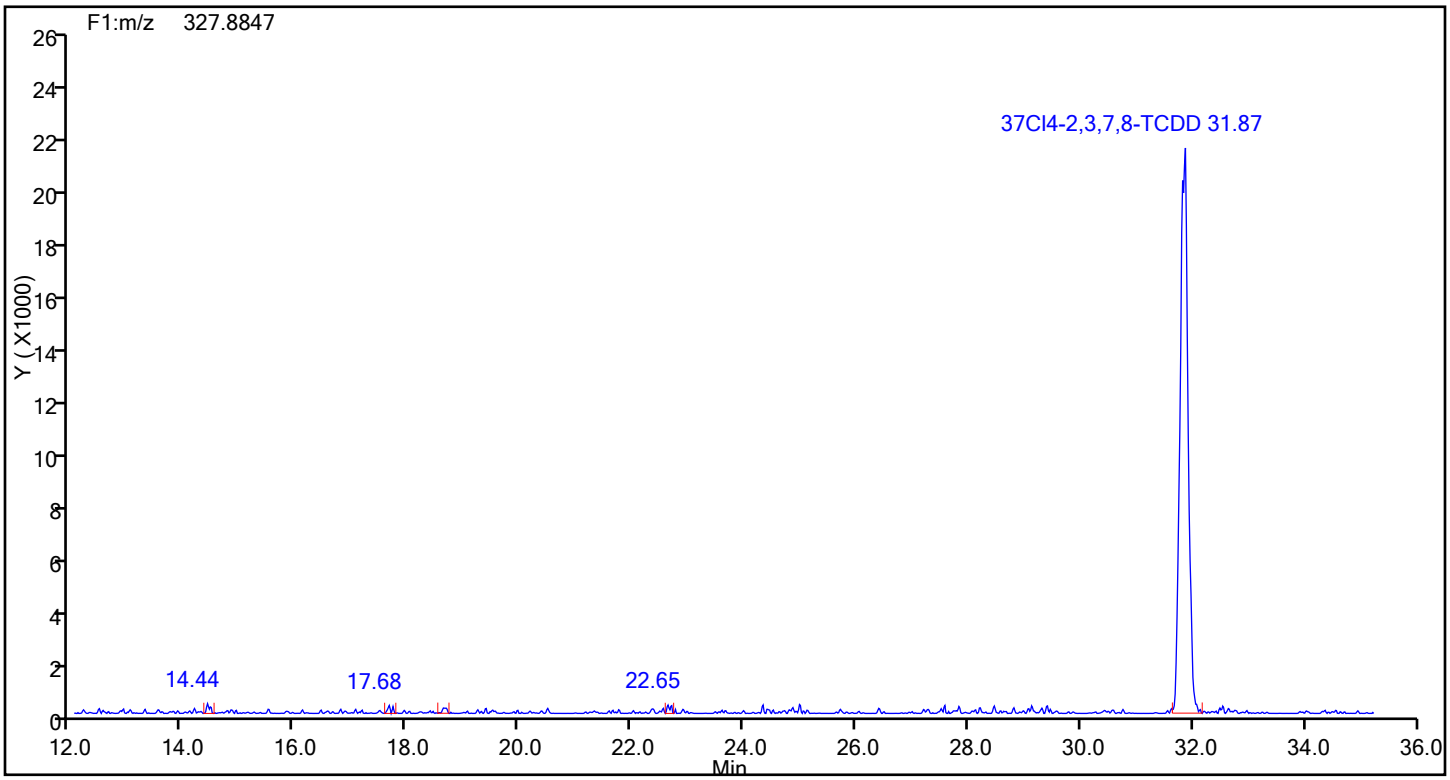
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

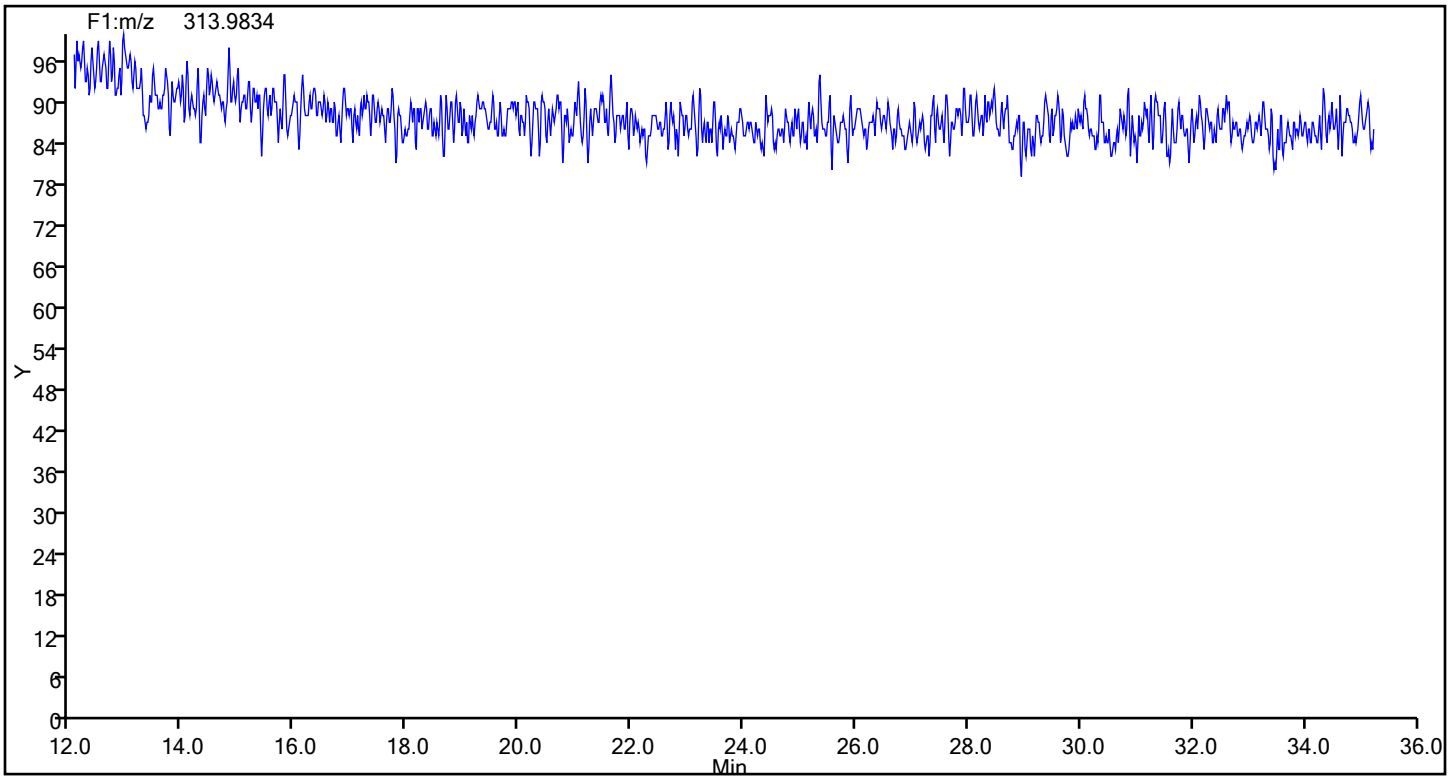
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



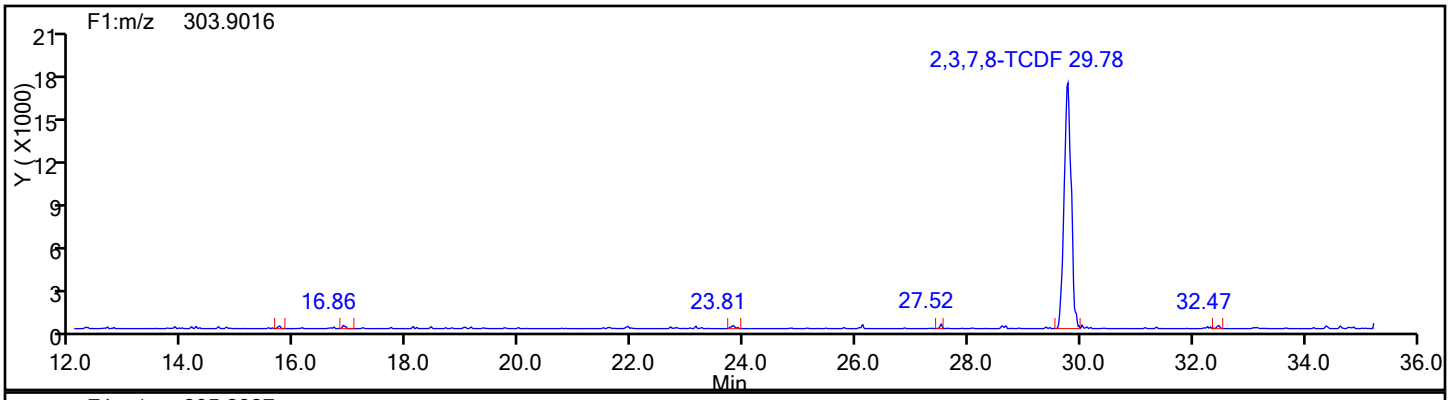
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

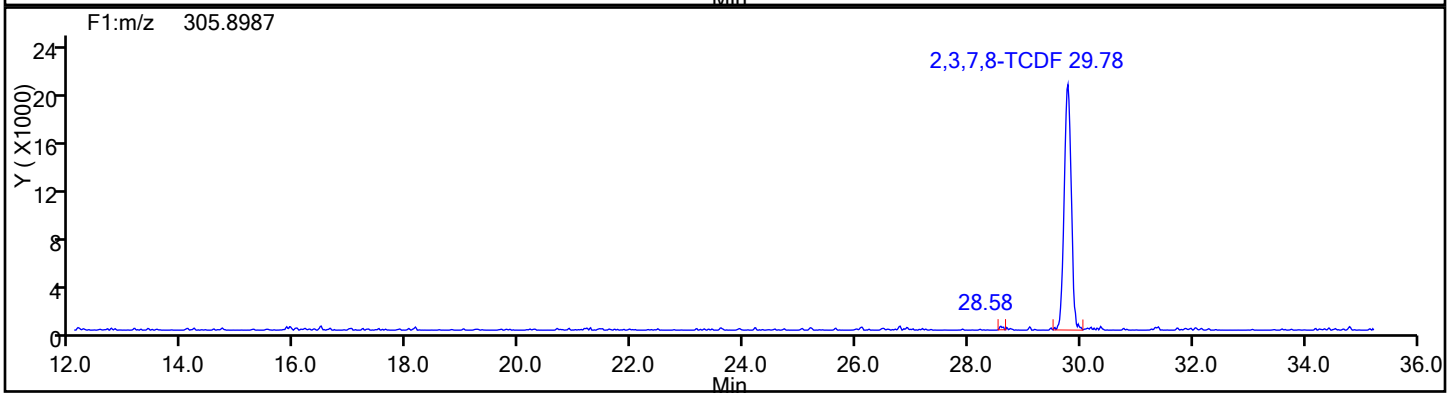
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

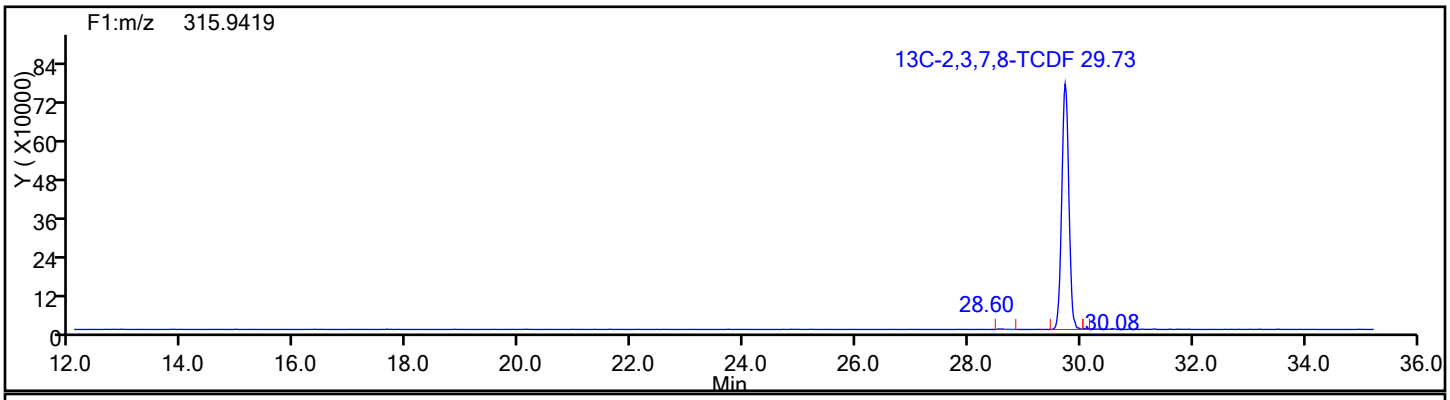
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

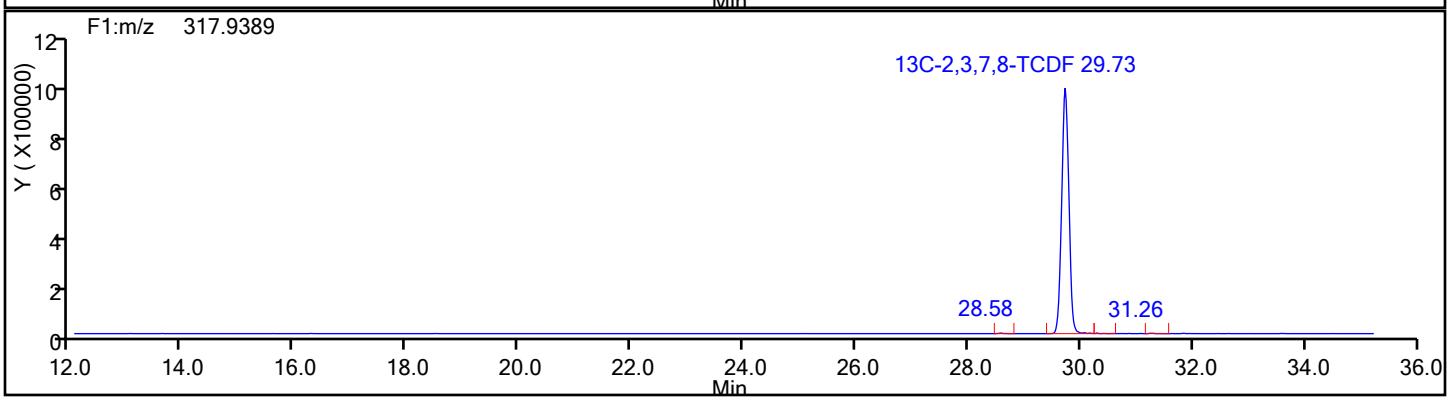
TCDF





TCDF Standards





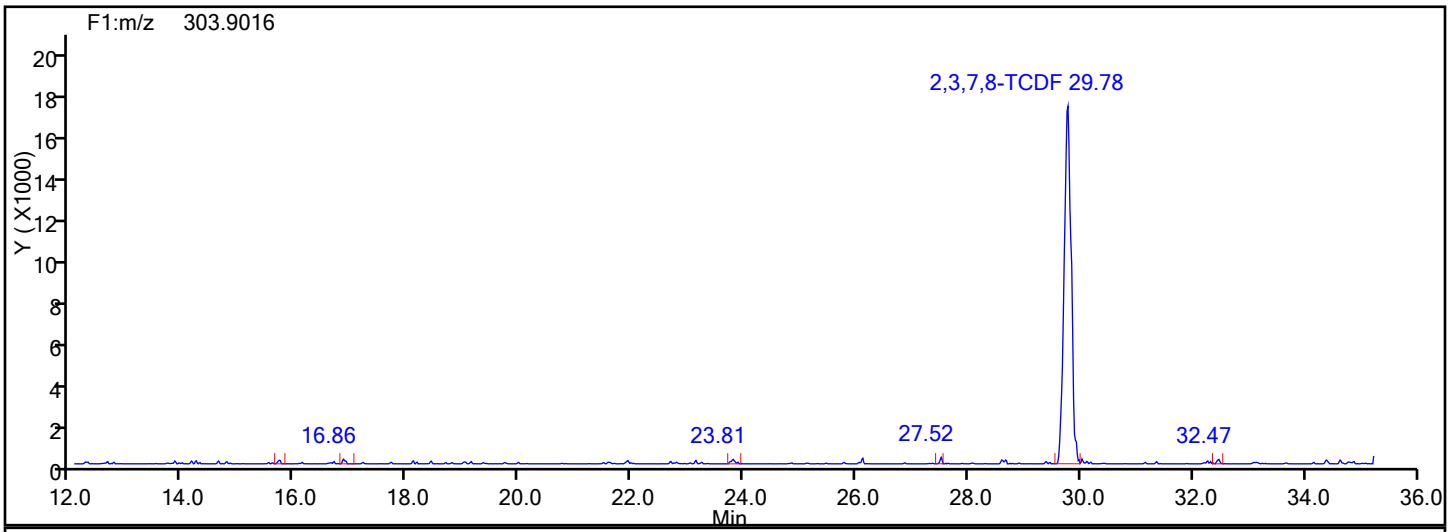
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

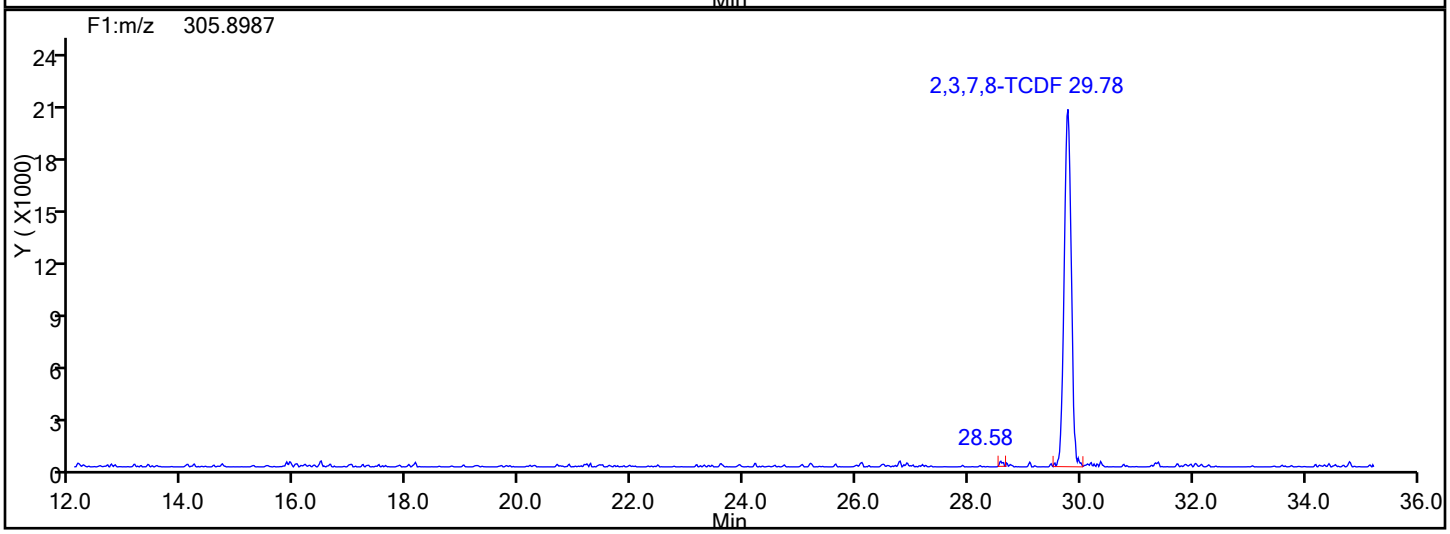
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

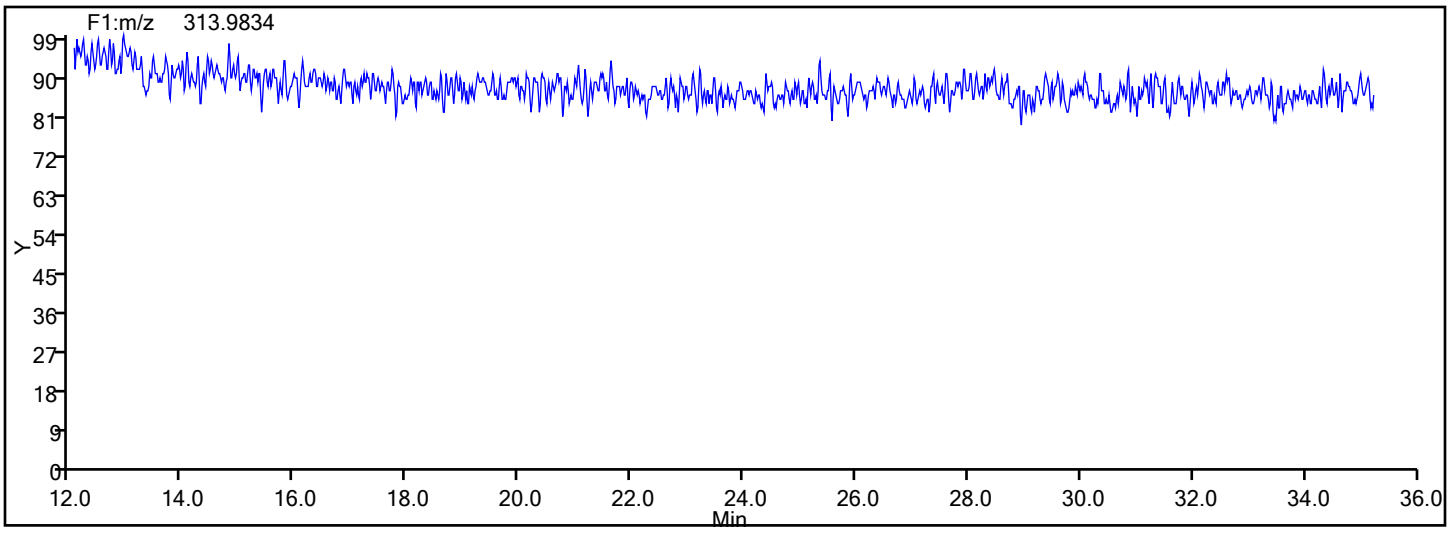
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass



Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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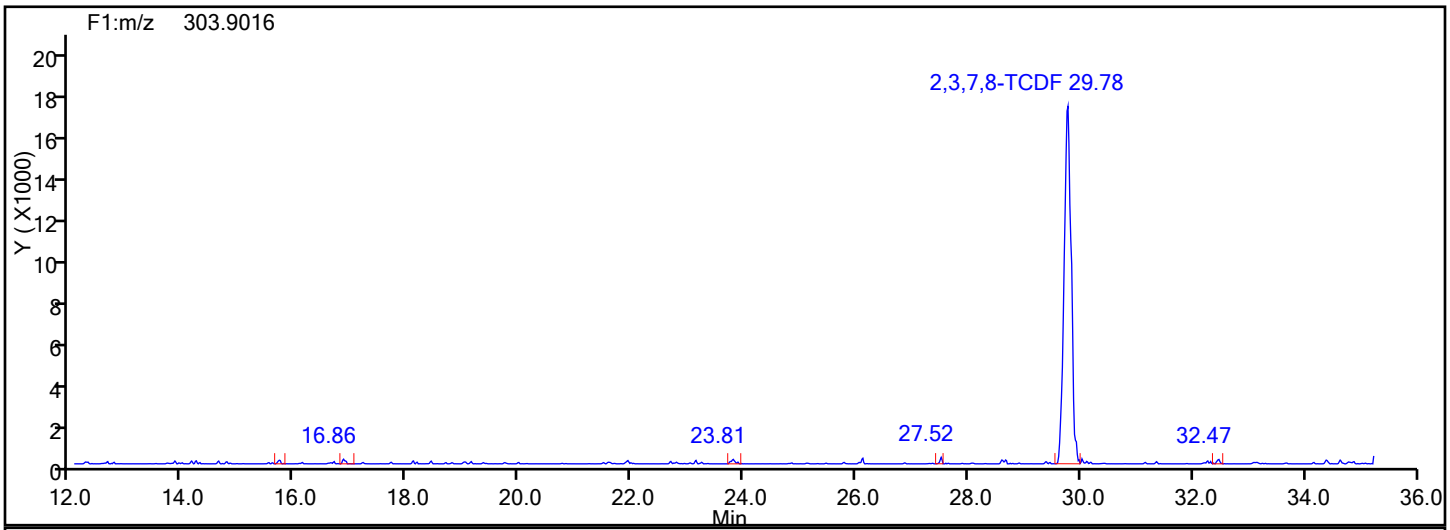
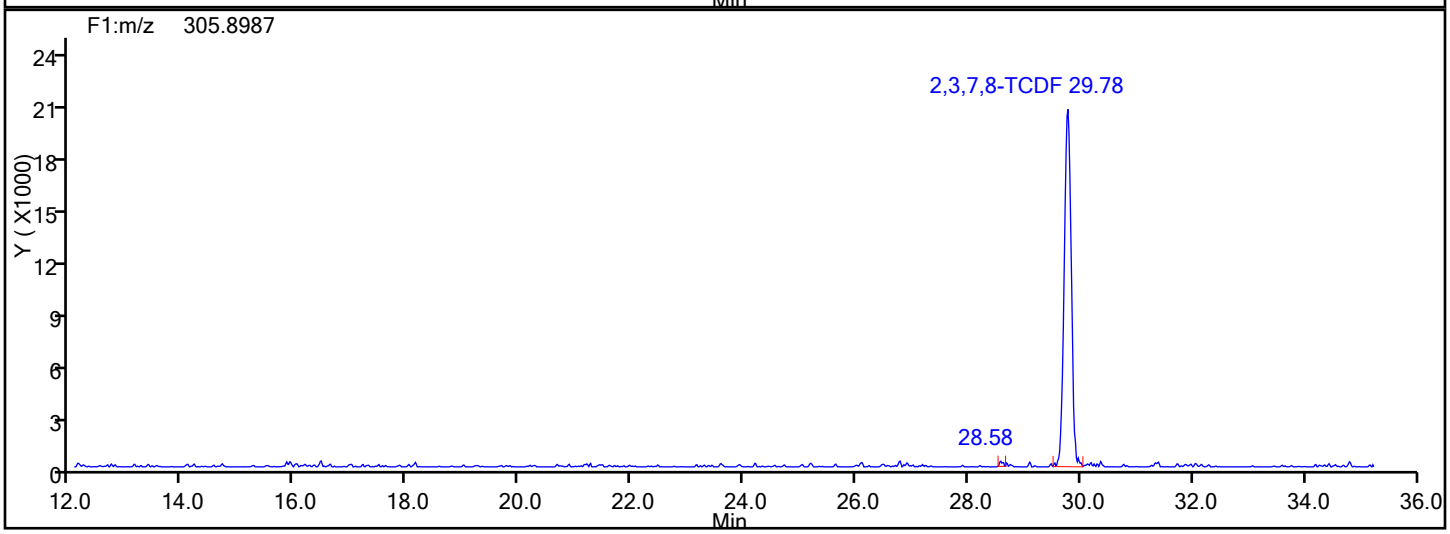
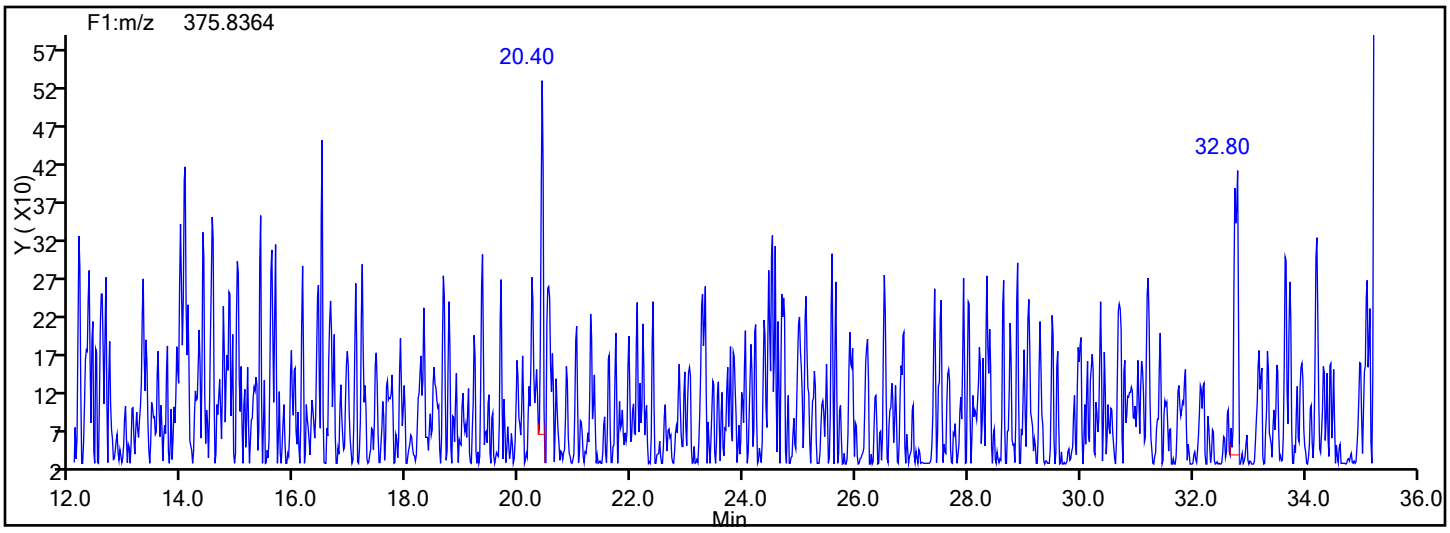
TCDF





TCDF Interference Mass



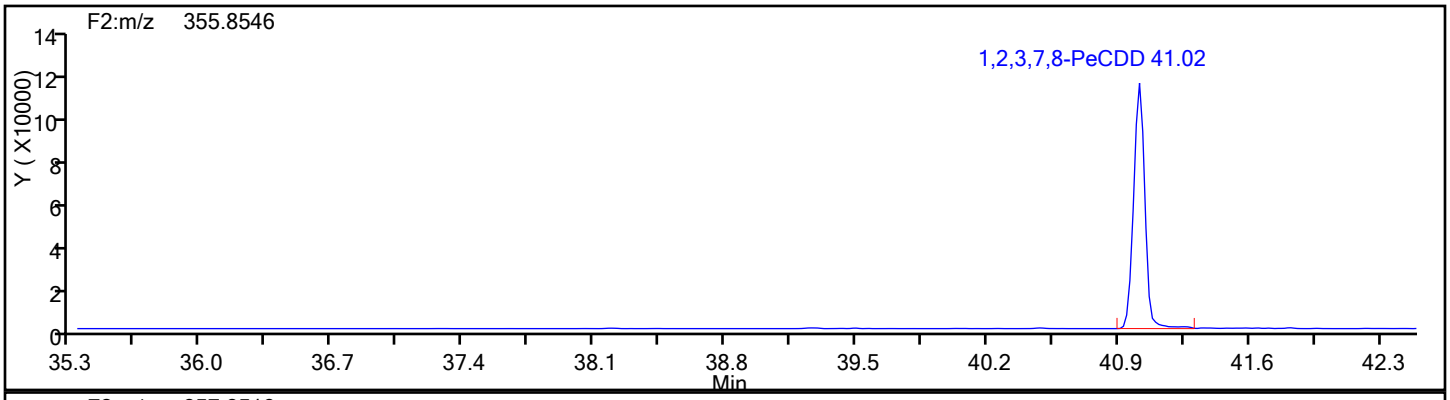
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

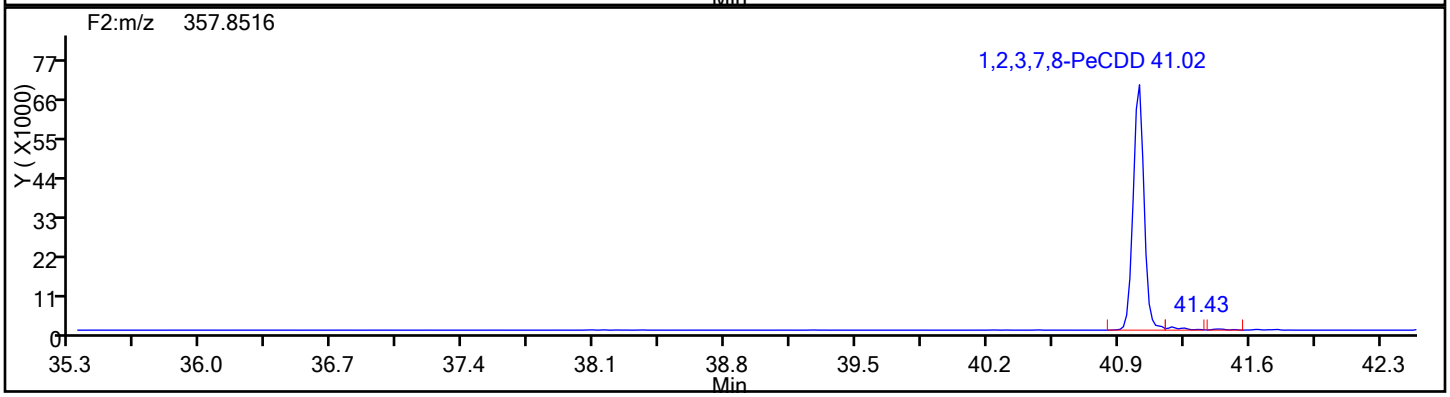
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

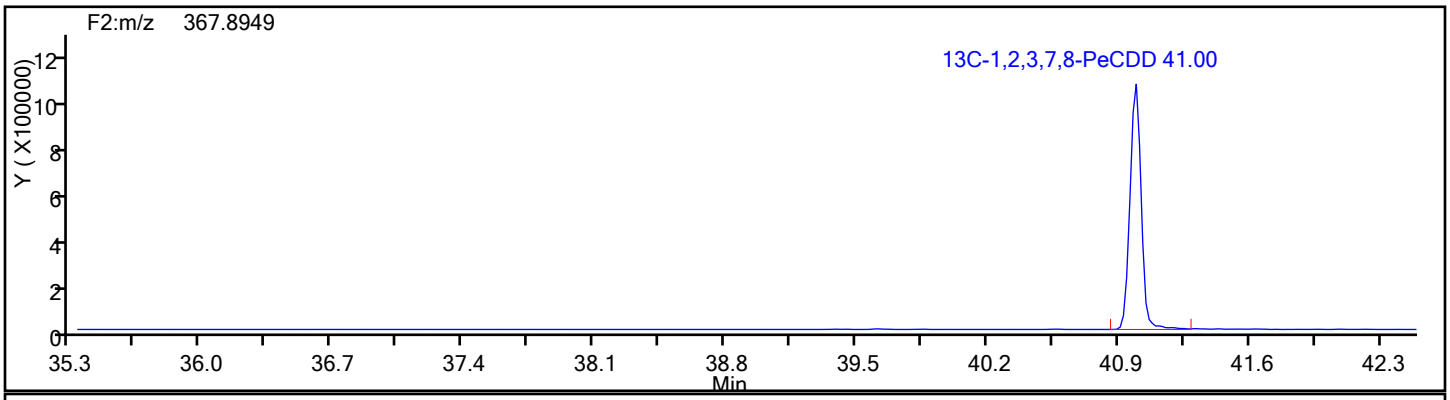
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

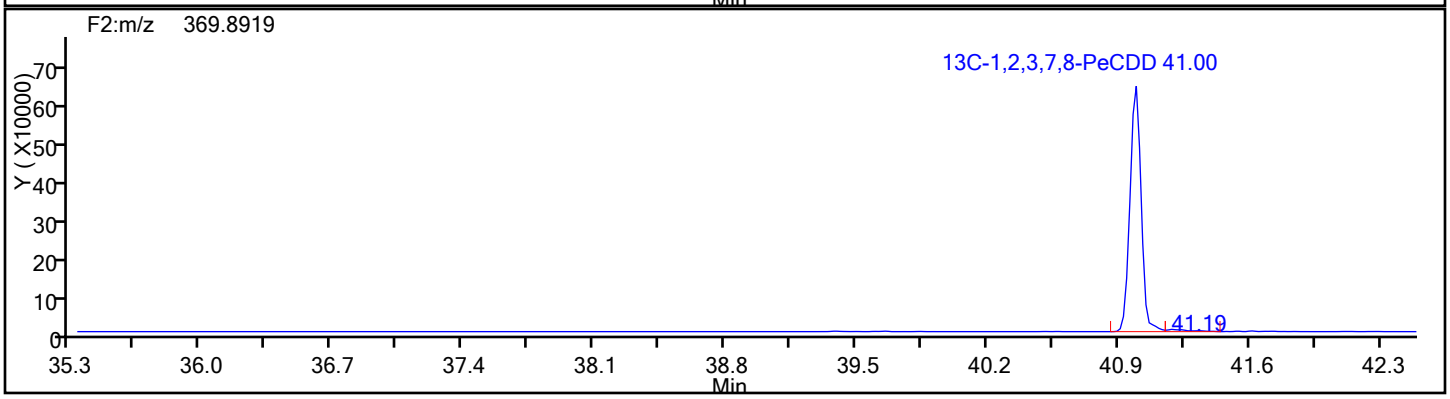
PeCDD





PeCDD Standards





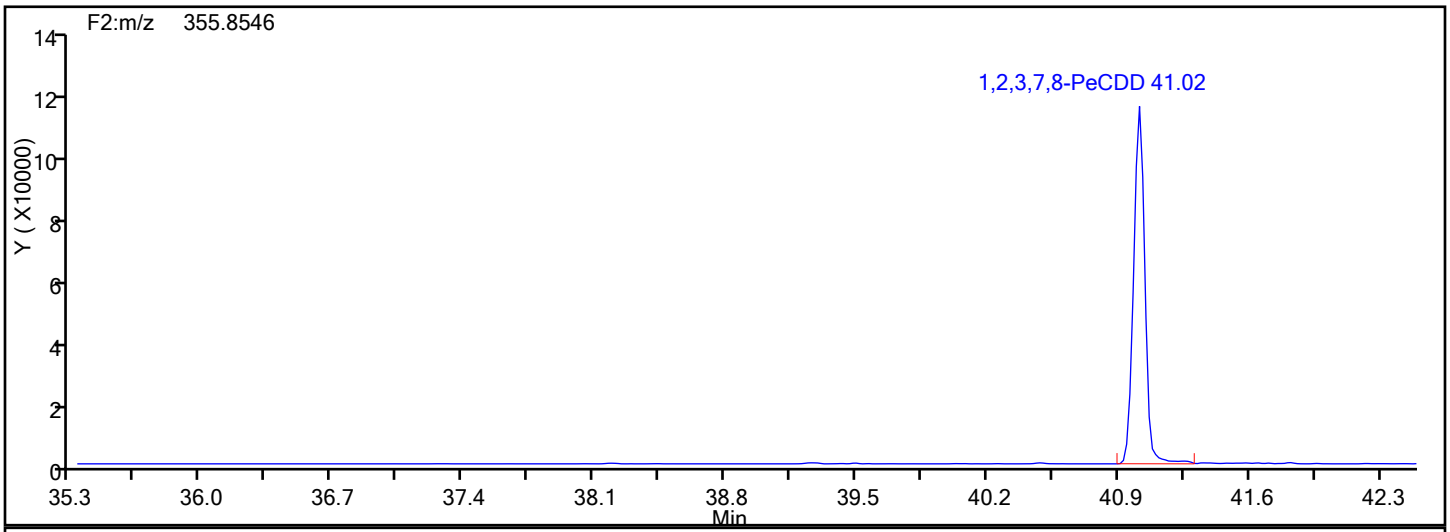
Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

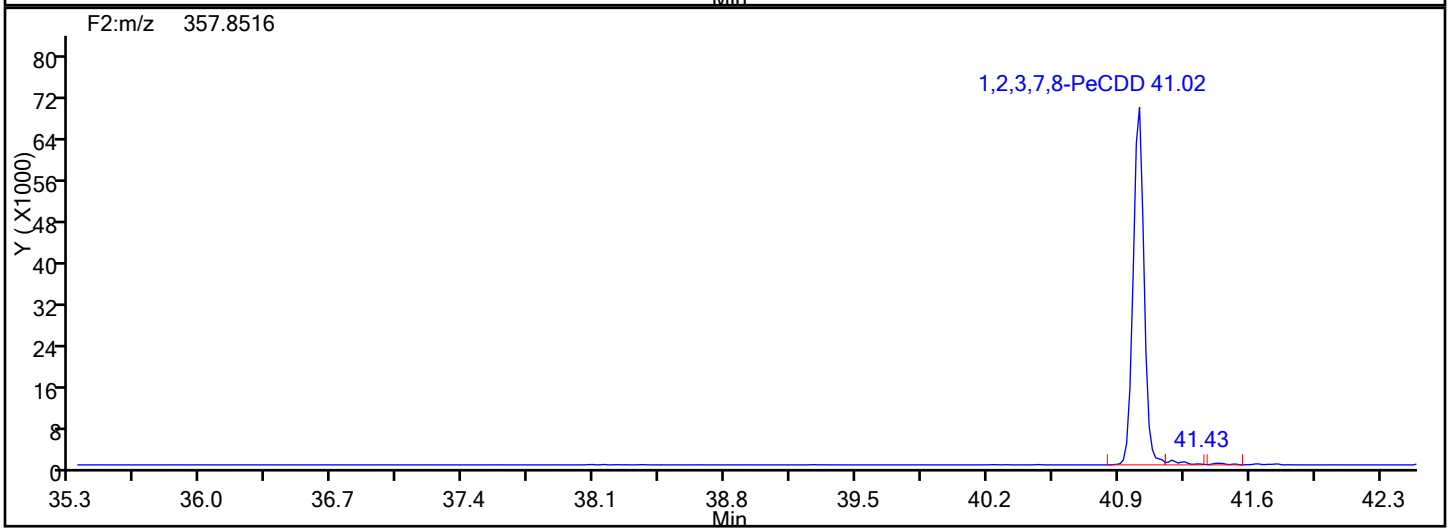
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

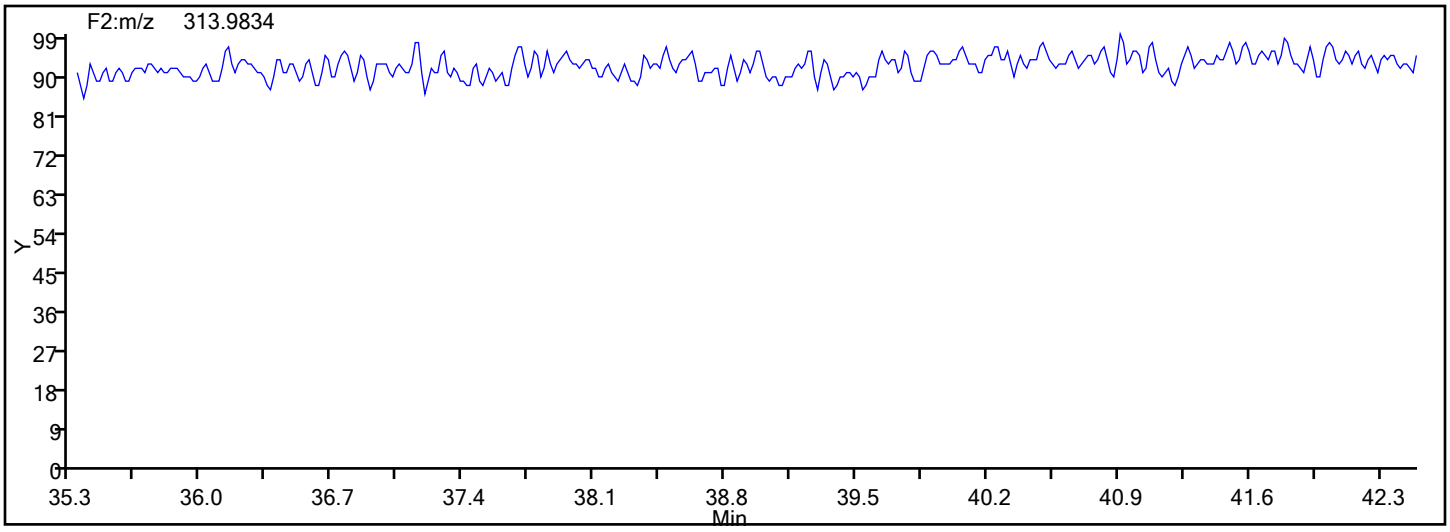
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



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TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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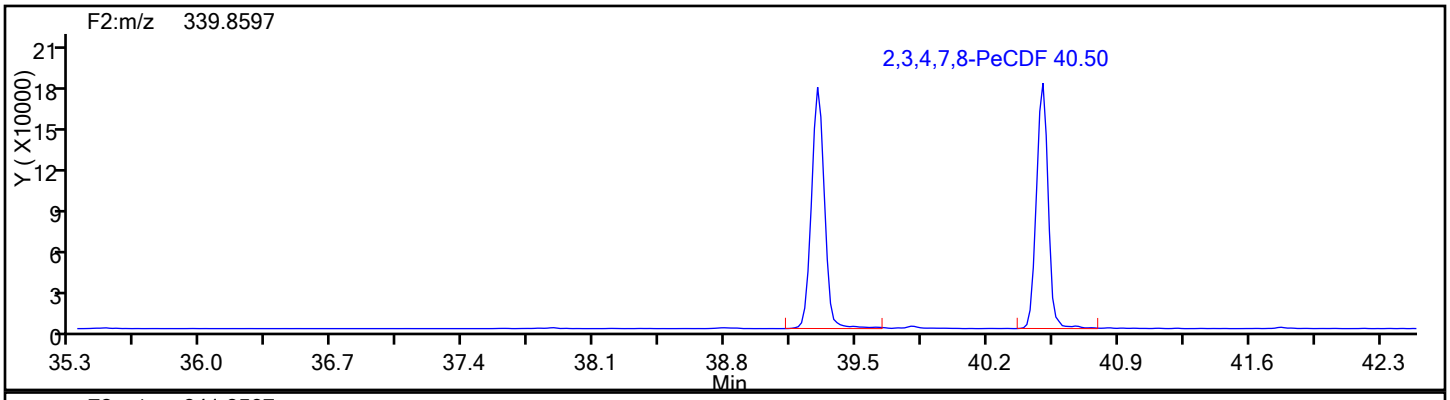
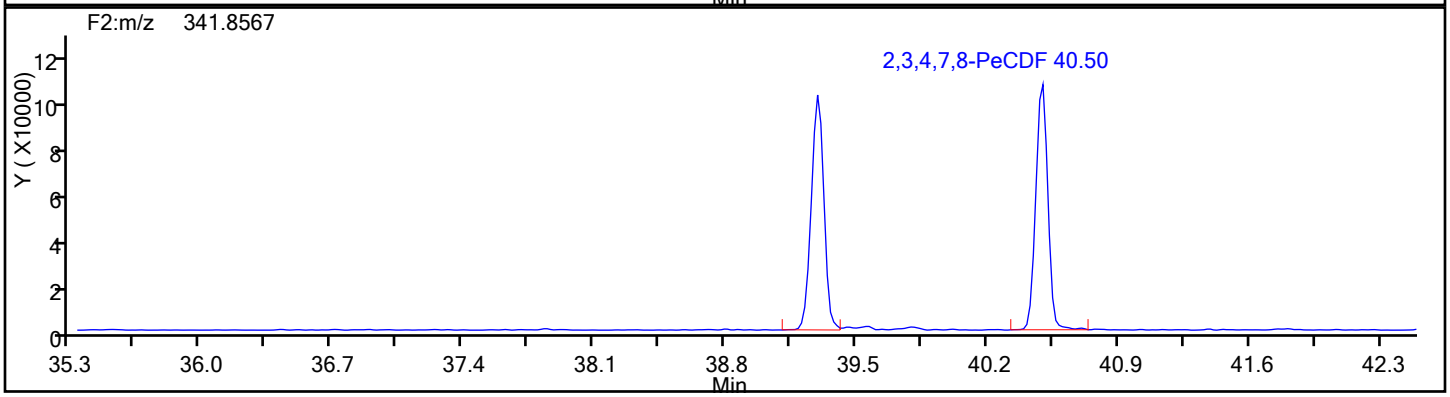
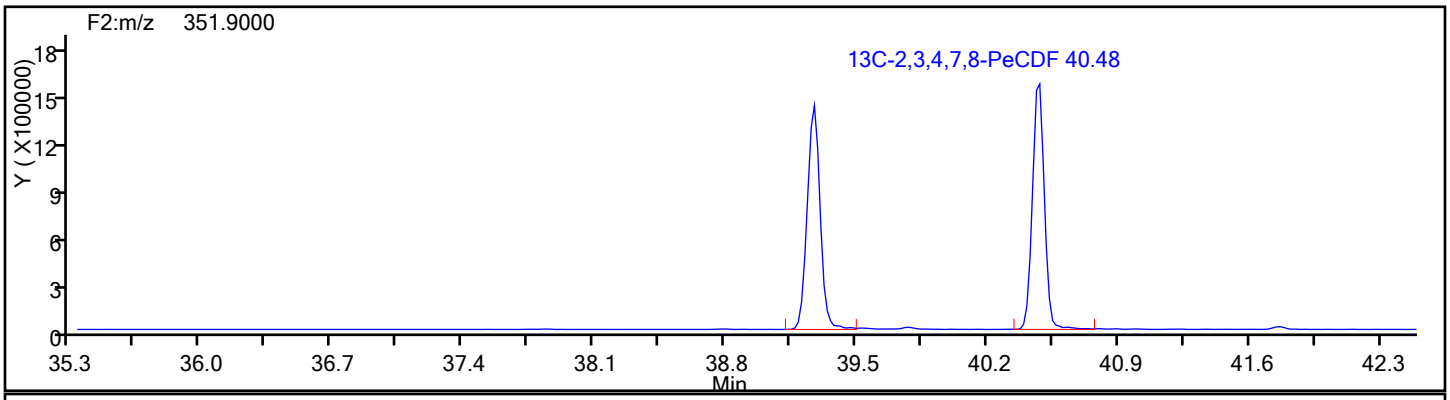
Column Type:		Column Dia:	

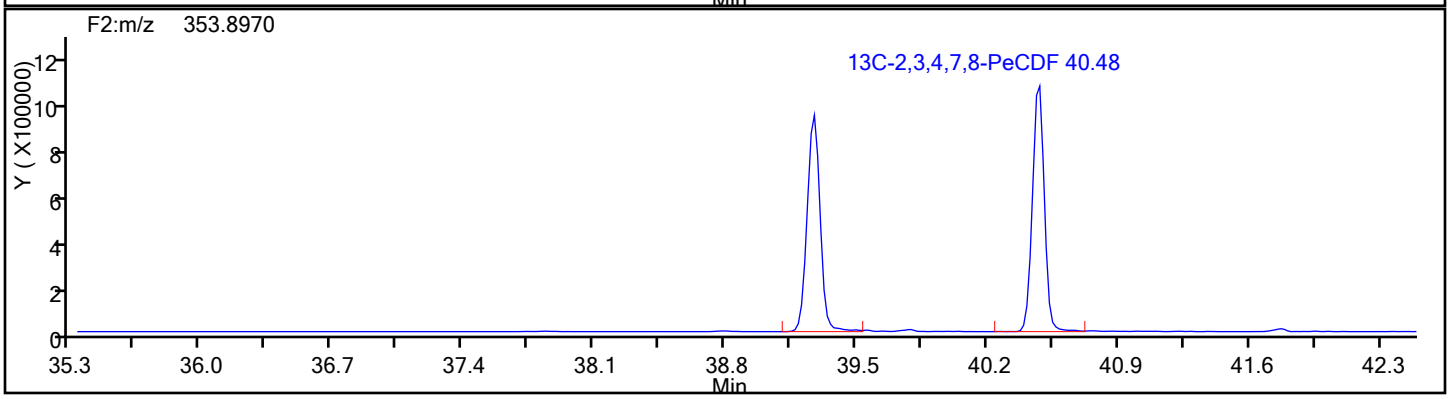
PeCDF





PeCDF Standards





Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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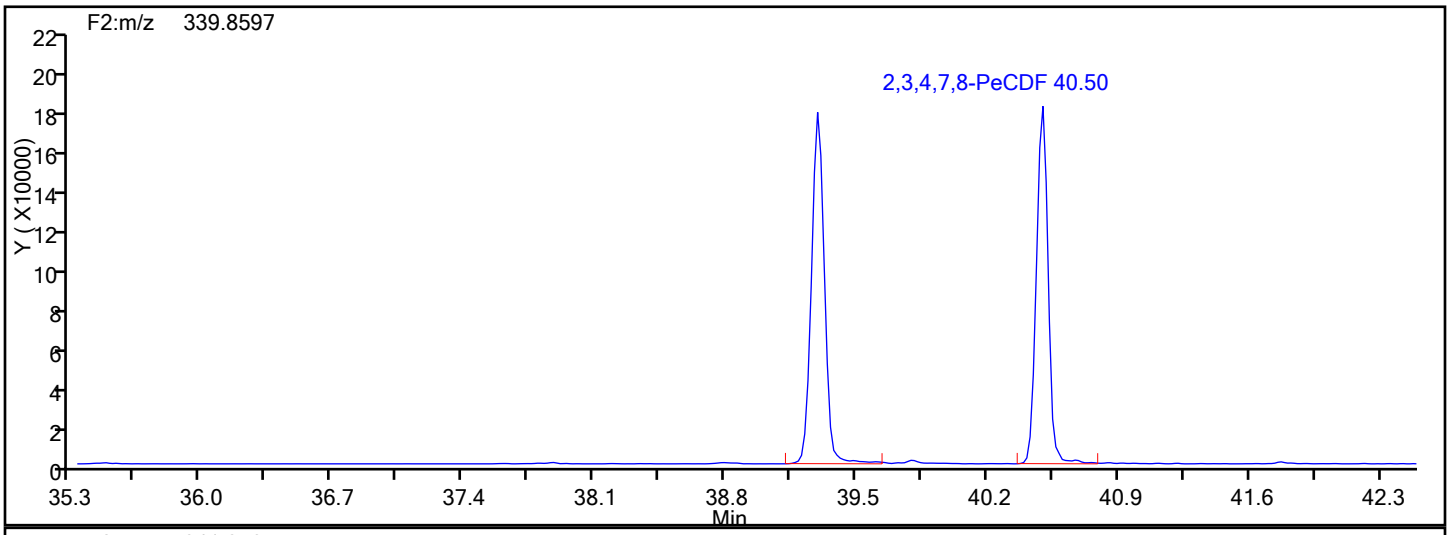
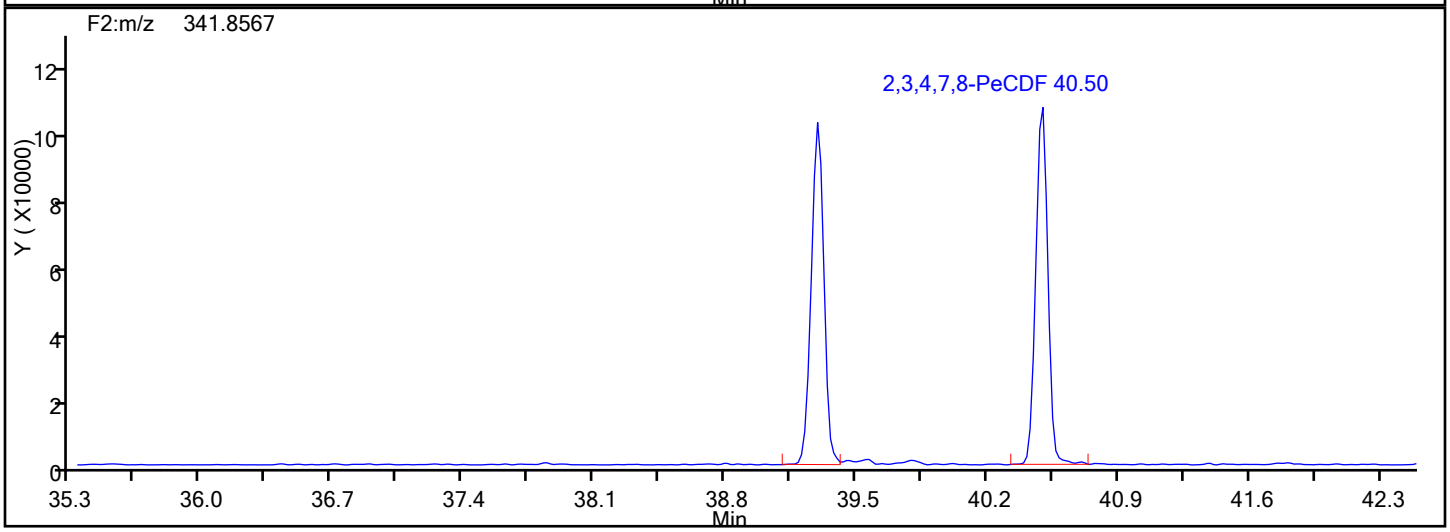
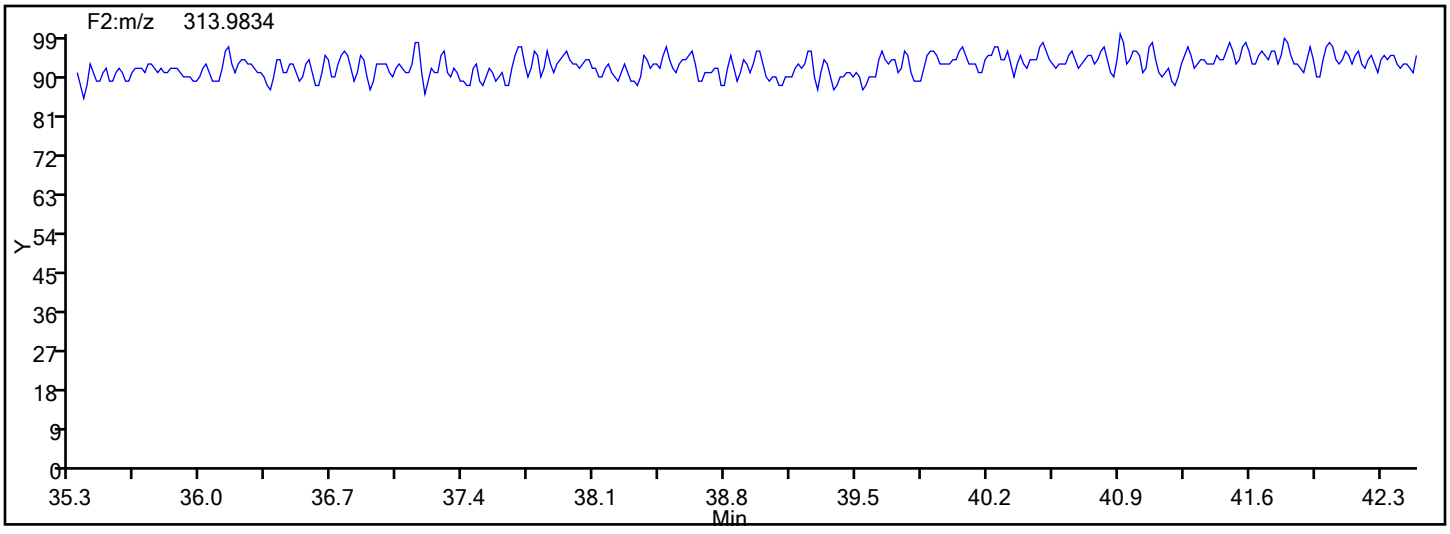
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass



Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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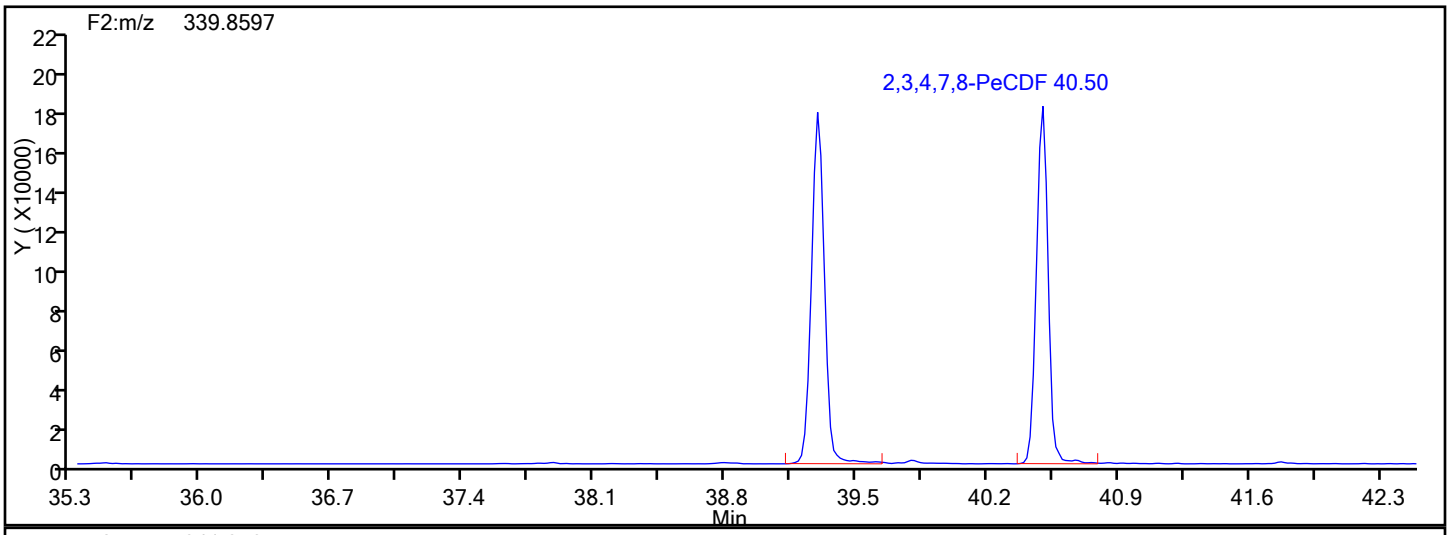
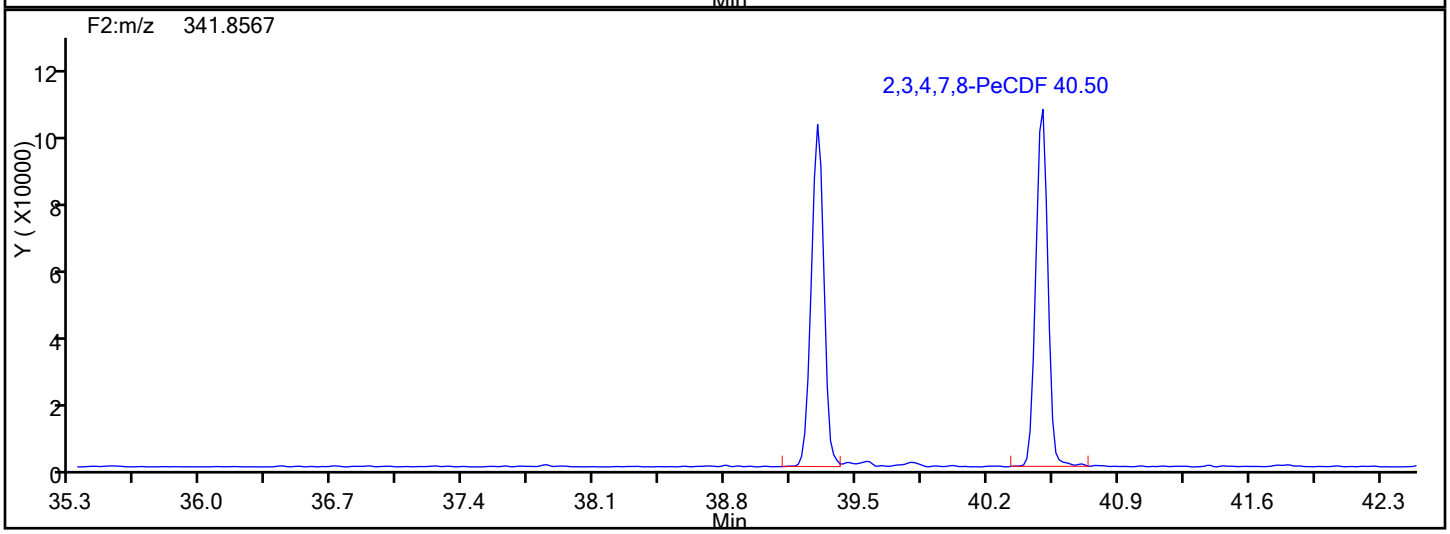
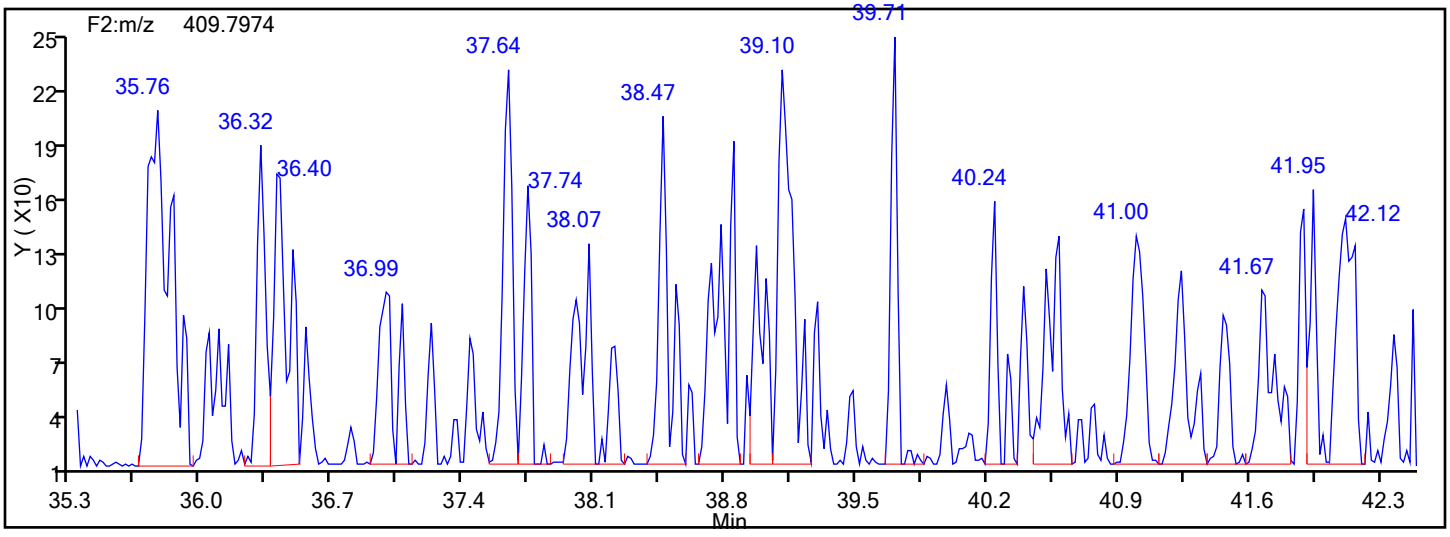
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Report Date: 12-Jan-2017 08:09:21 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

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Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
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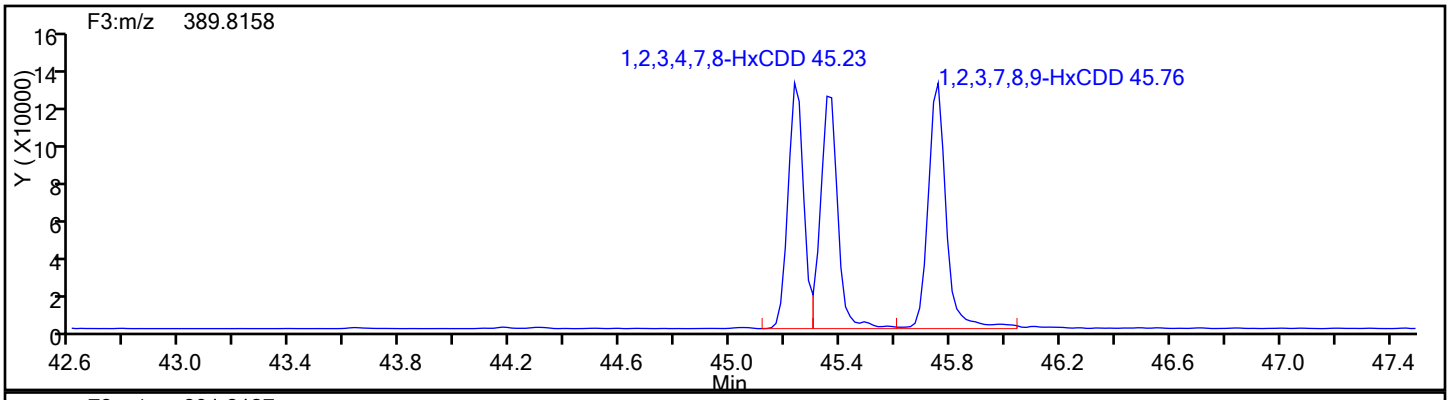
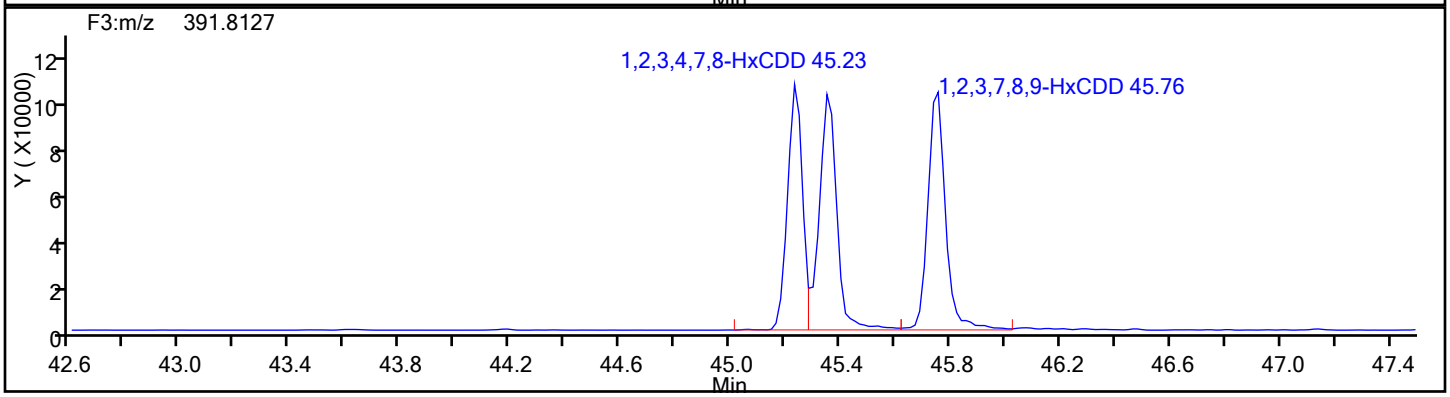
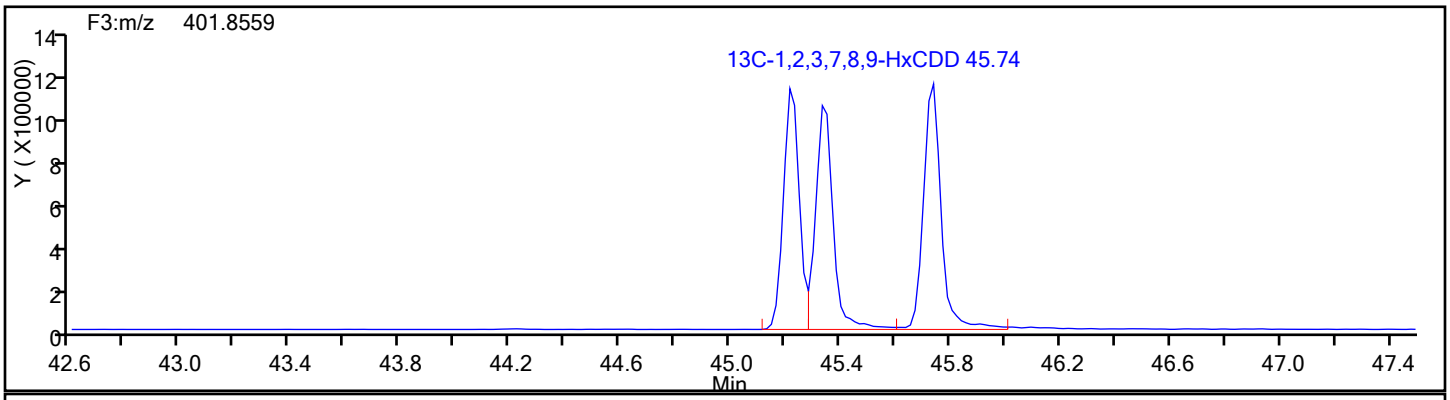
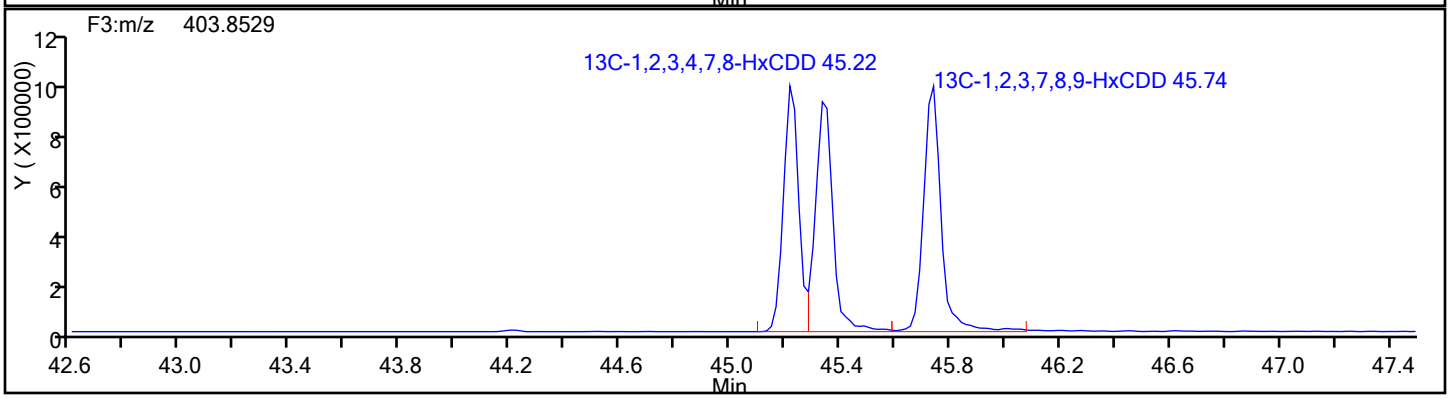
HxCDD





HxCDD Standards





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TestAmerica Knoxville

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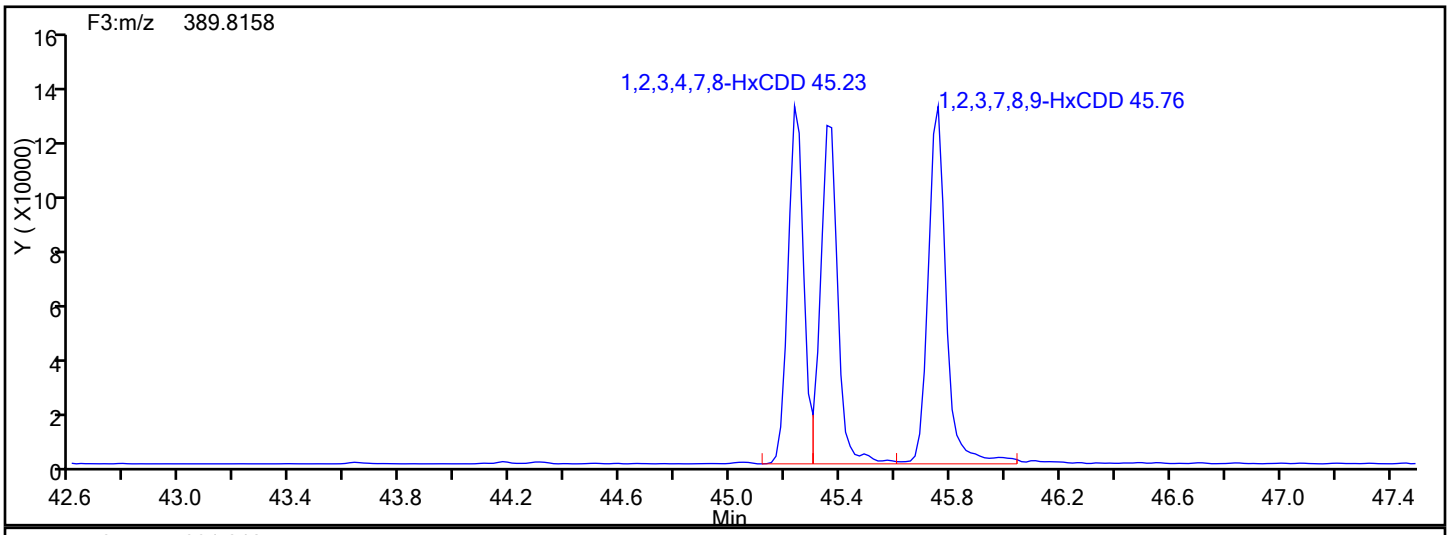
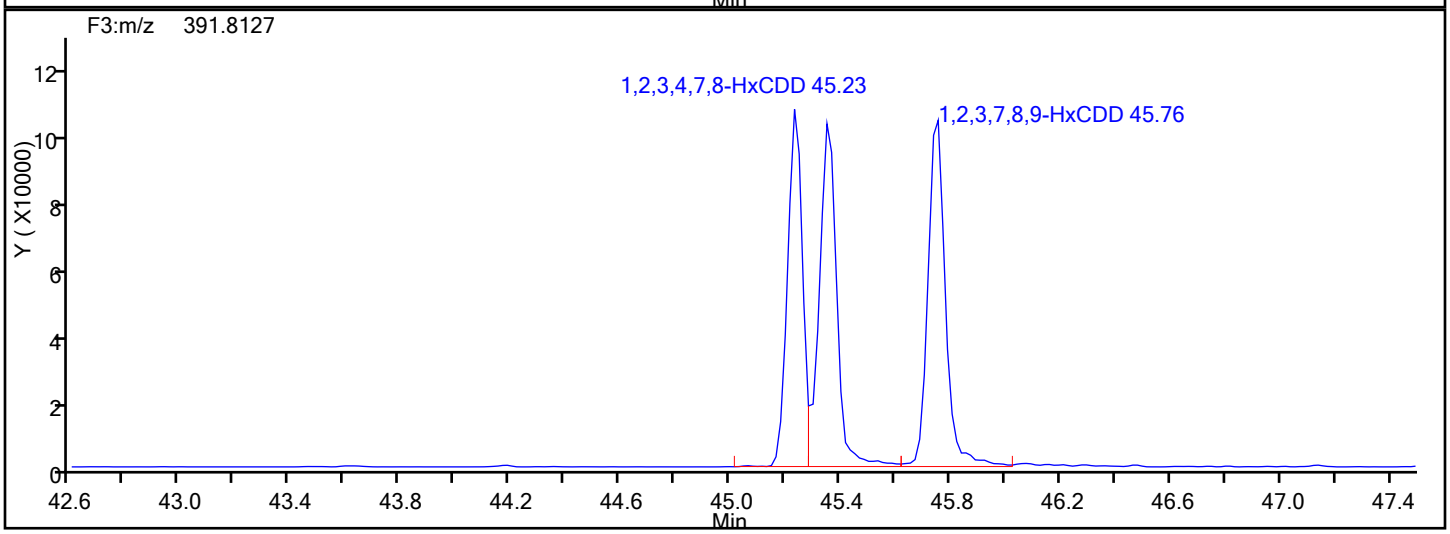
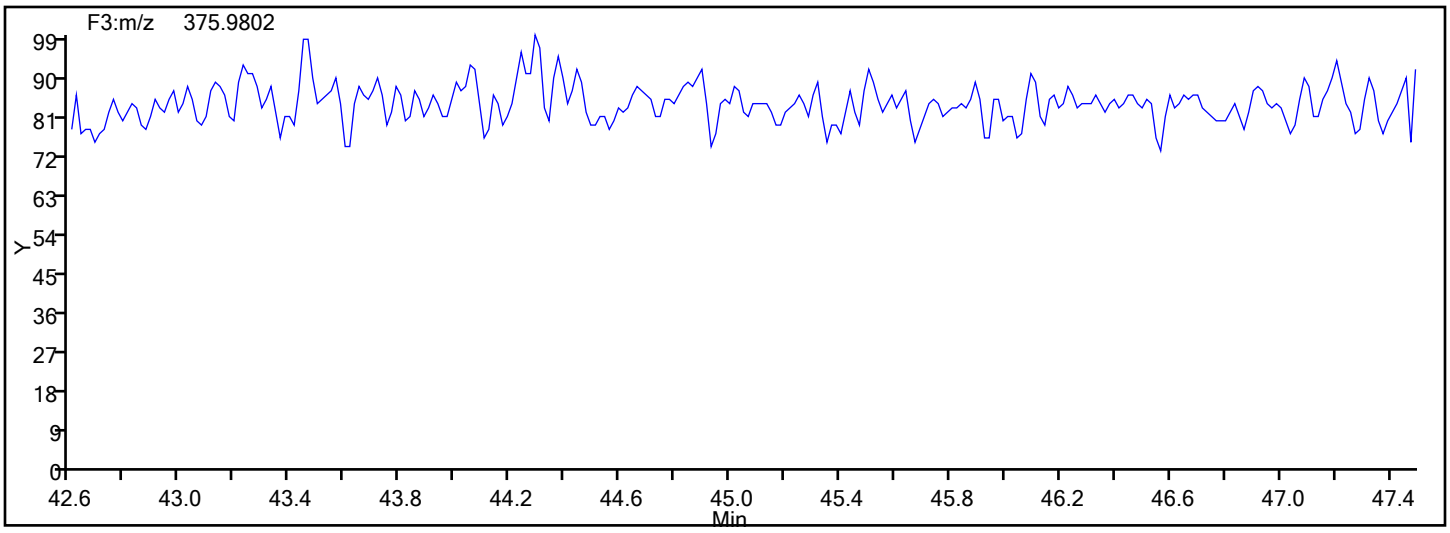




HxCDD Lock Mass



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TestAmerica Knoxville

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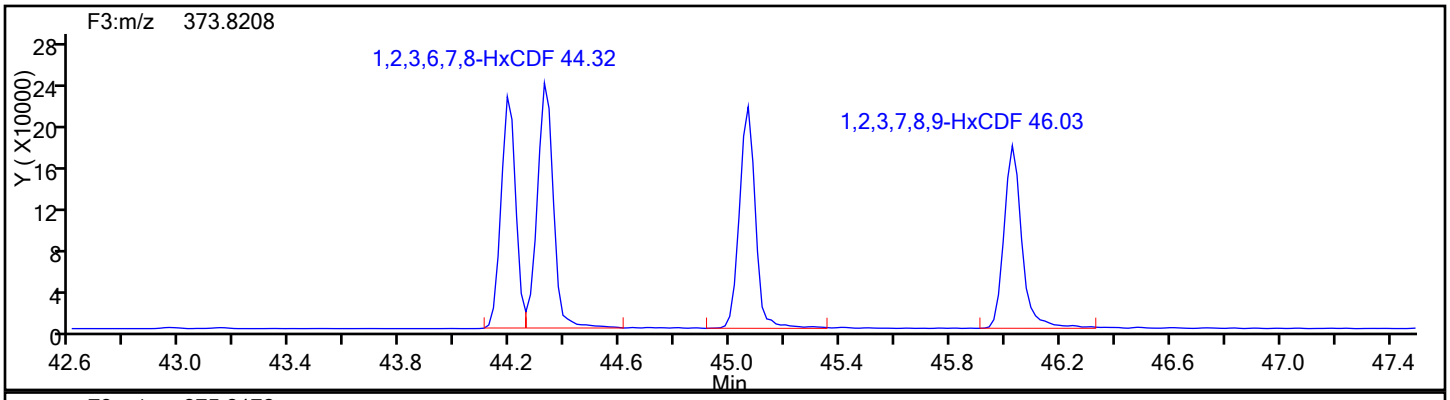
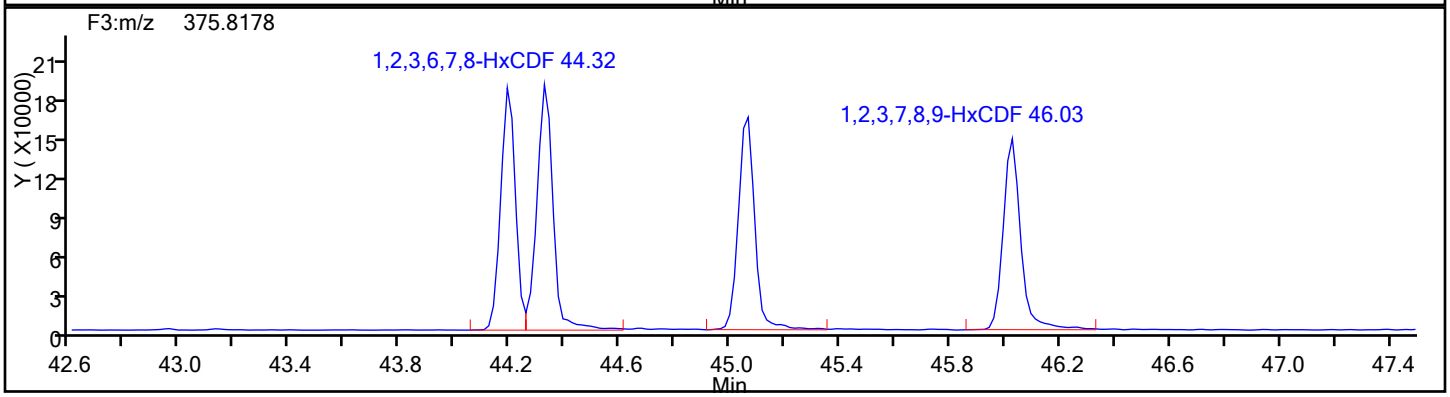
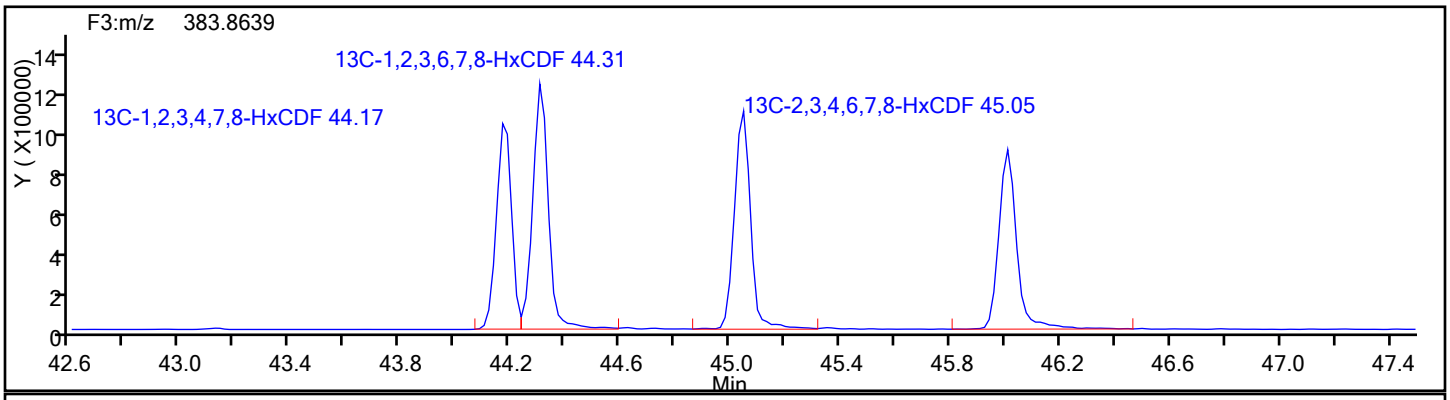
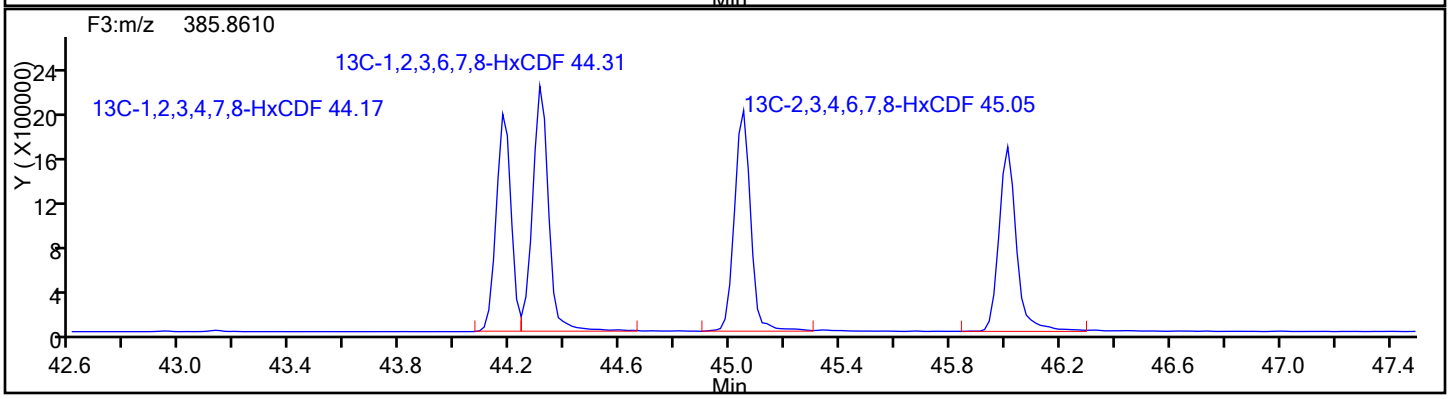




HxCDF Standards





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TestAmerica Knoxville

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Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
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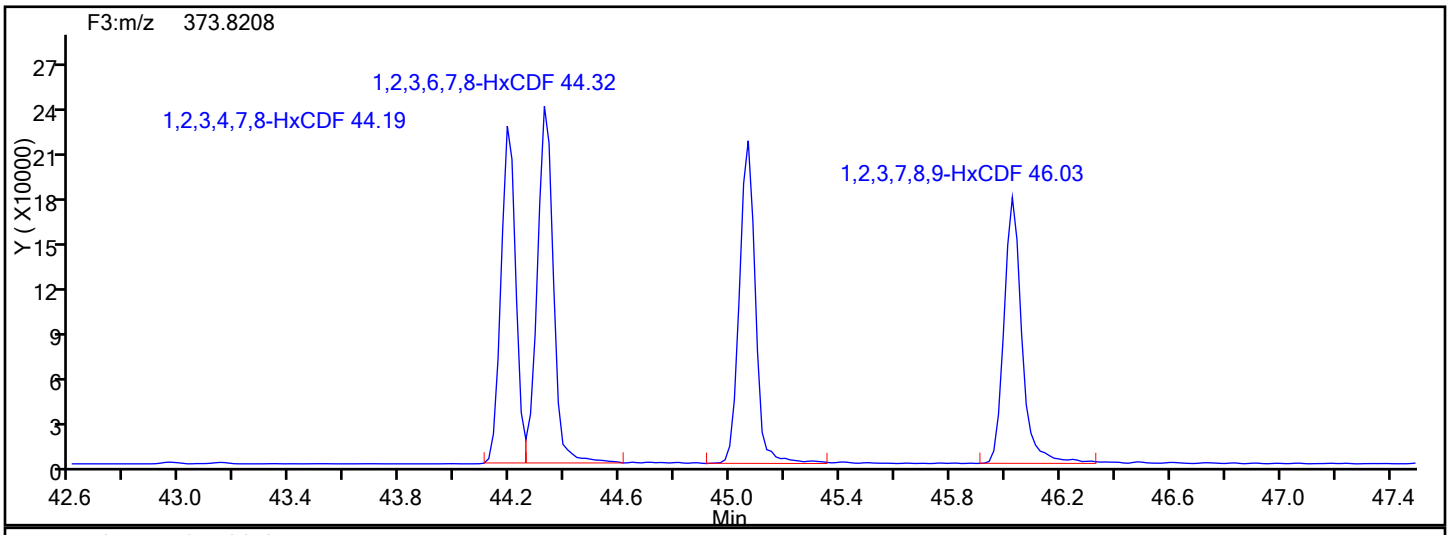
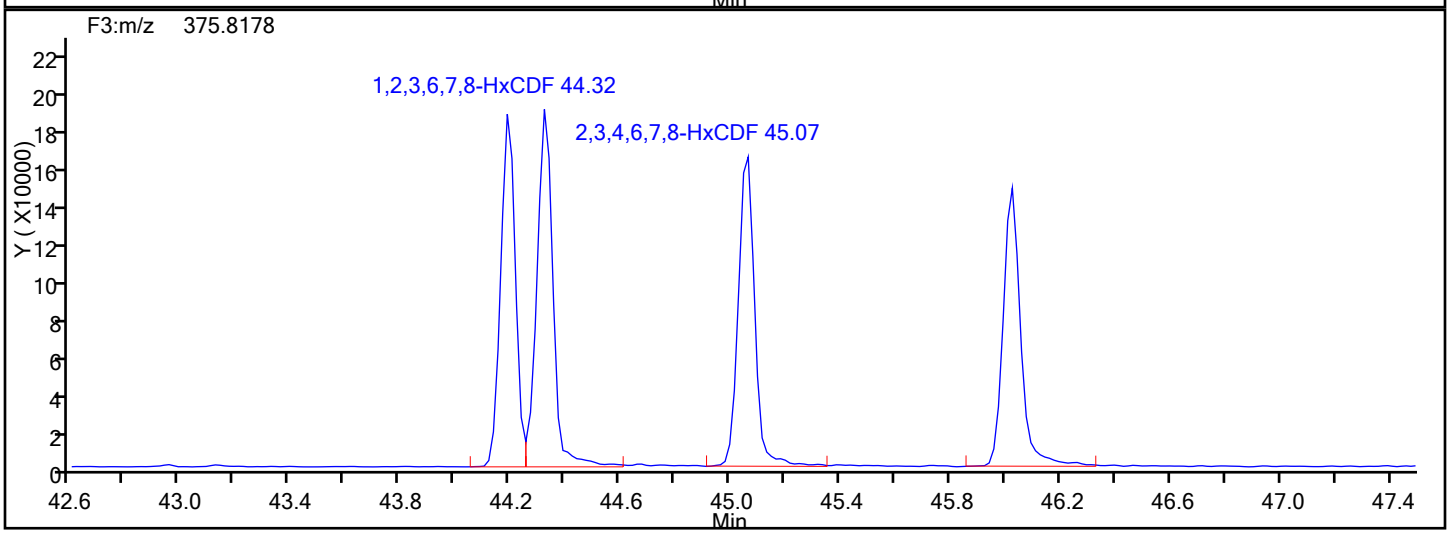
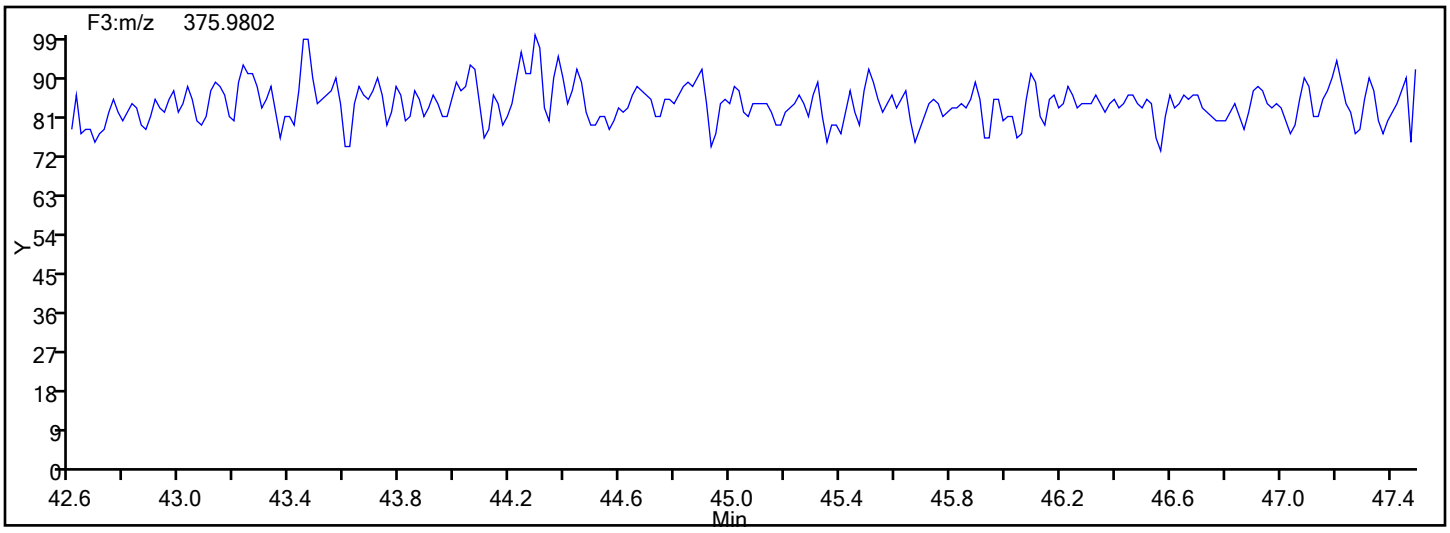




HxCDF Lock Mass



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TestAmerica Knoxville

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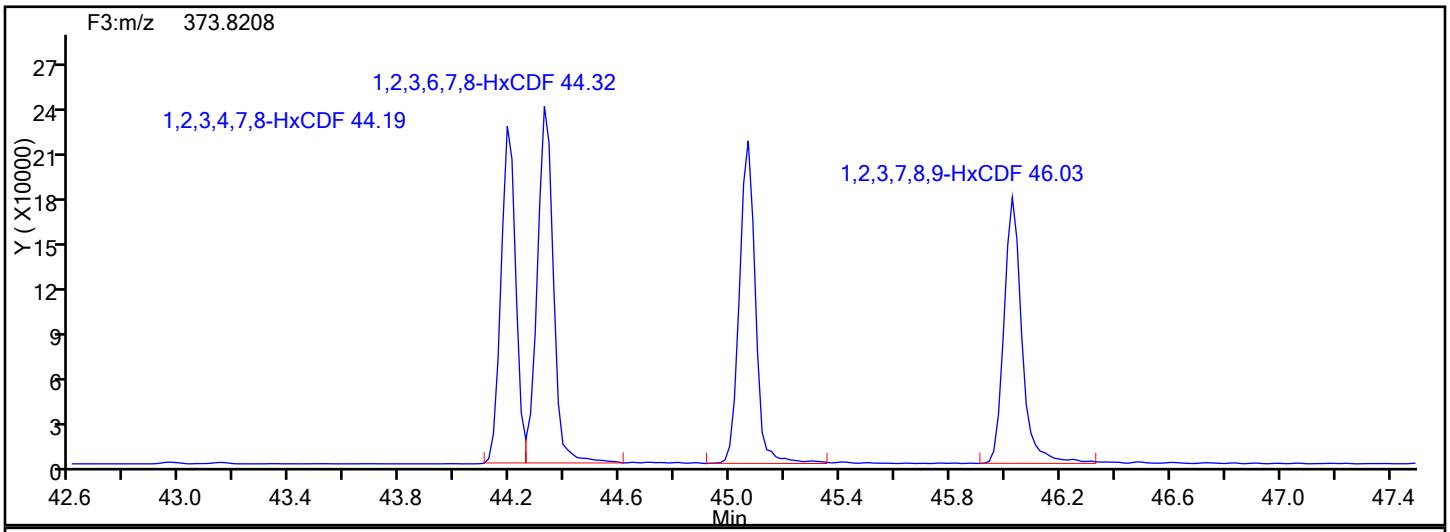
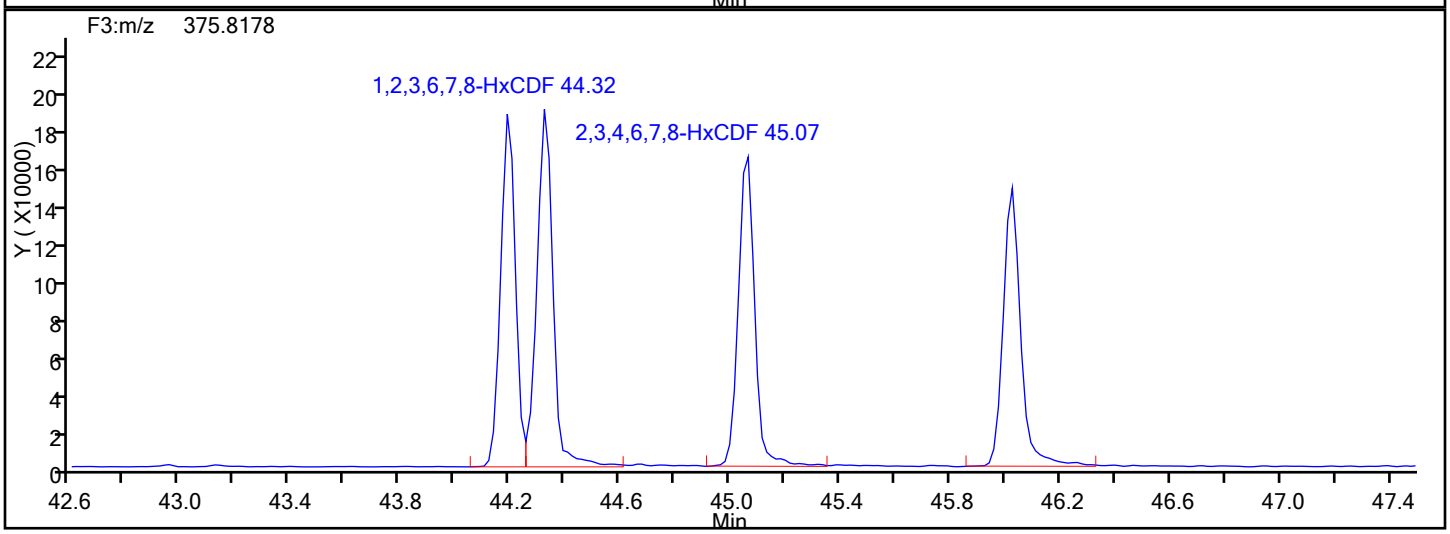
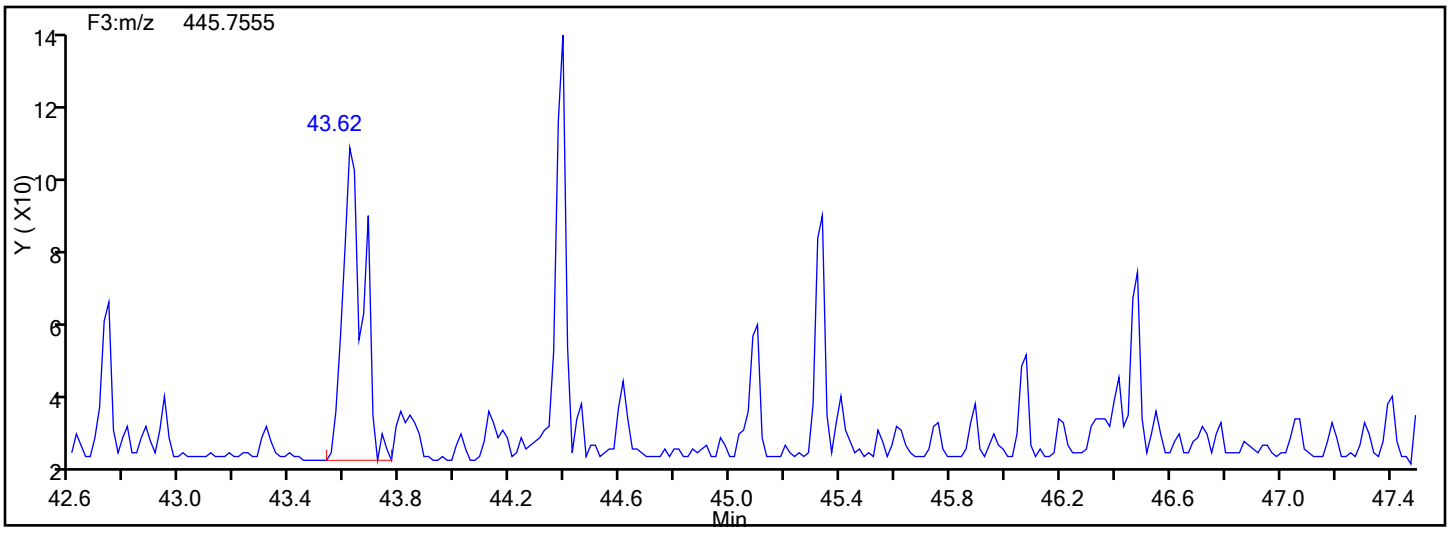




HxCDF Interference Mass



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TestAmerica Knoxville

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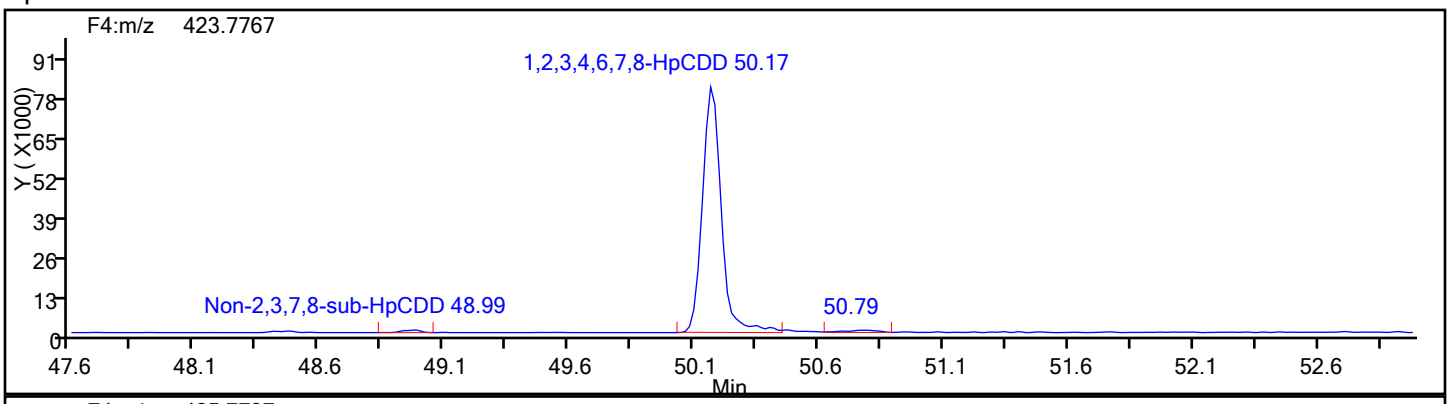
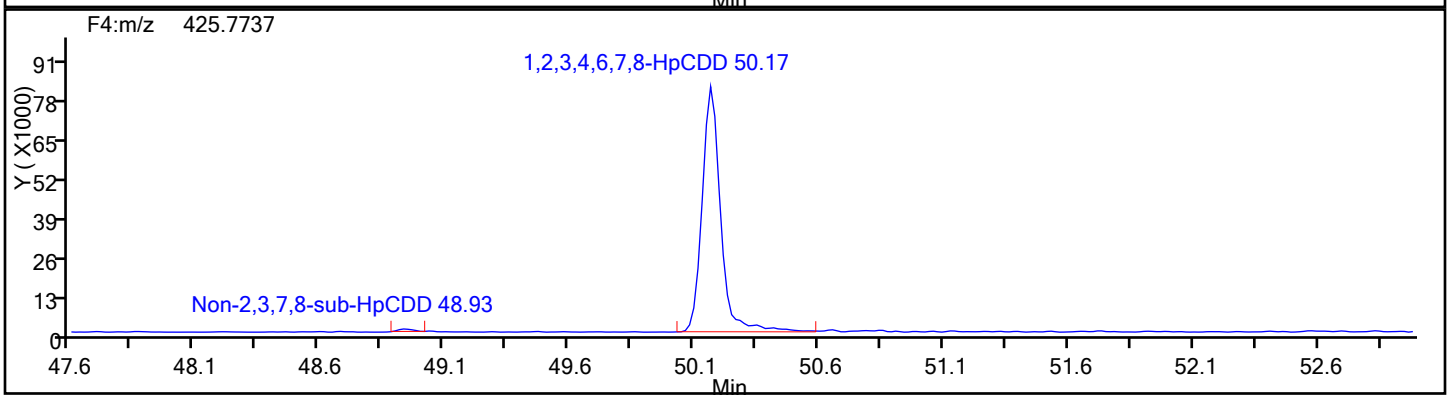
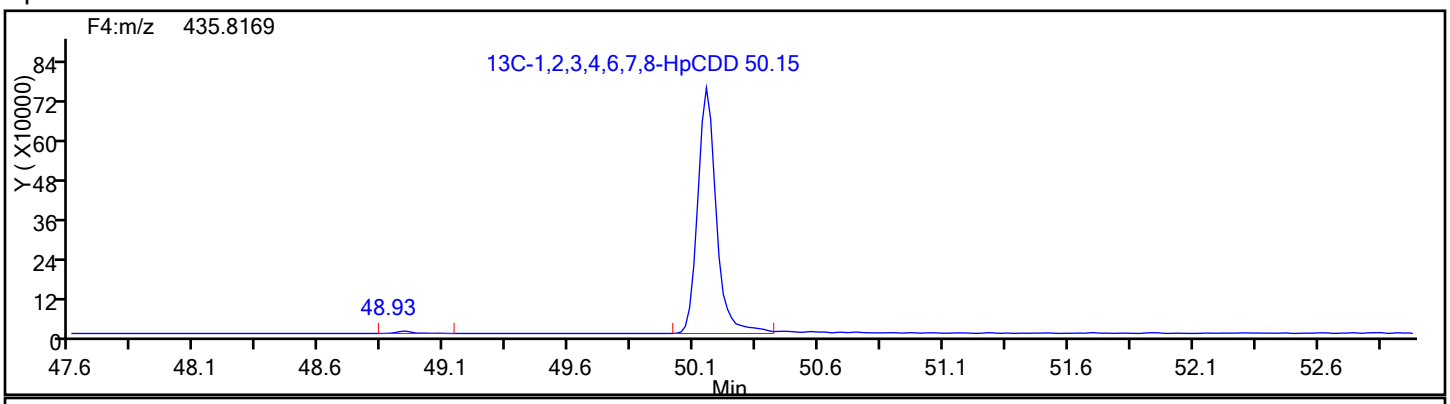
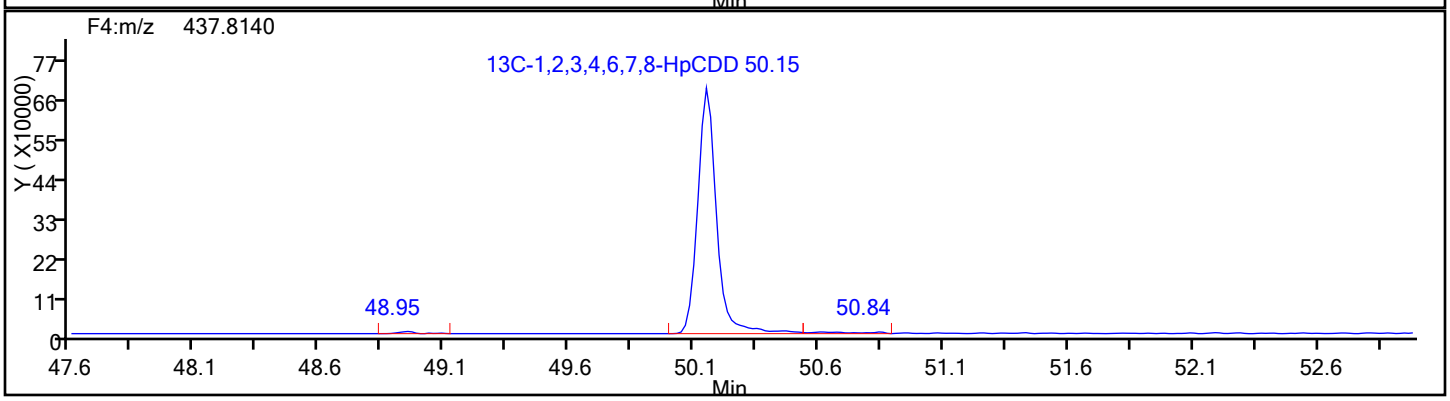
HpCDD





HpCDD Standards





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TestAmerica Knoxville

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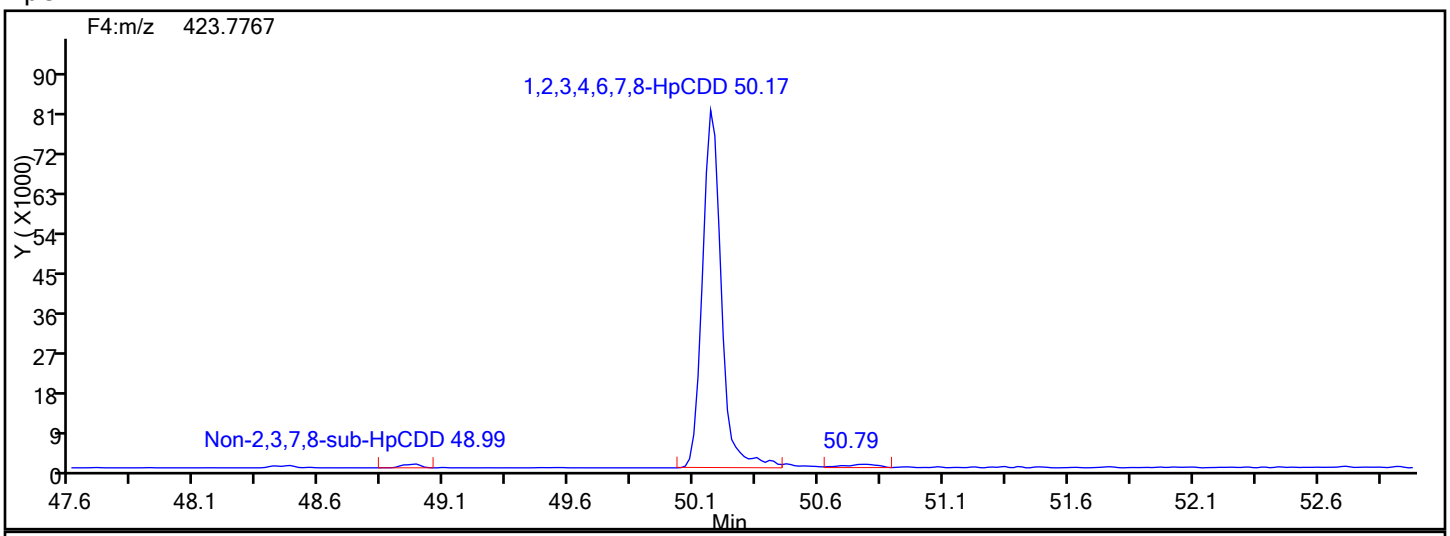
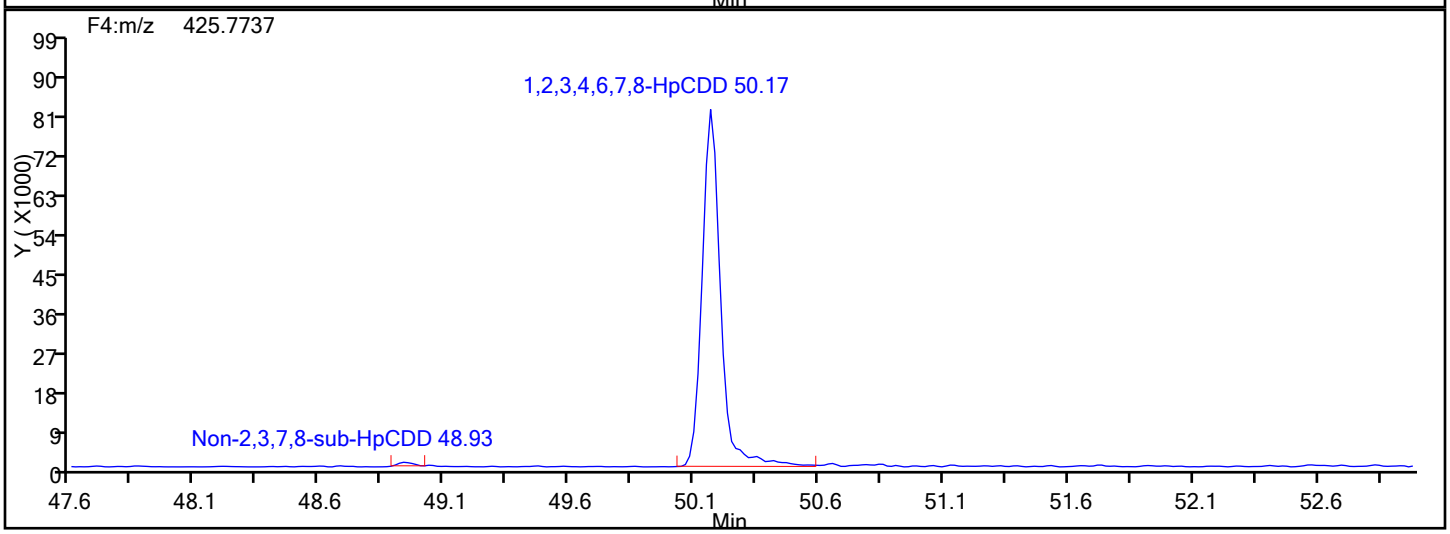
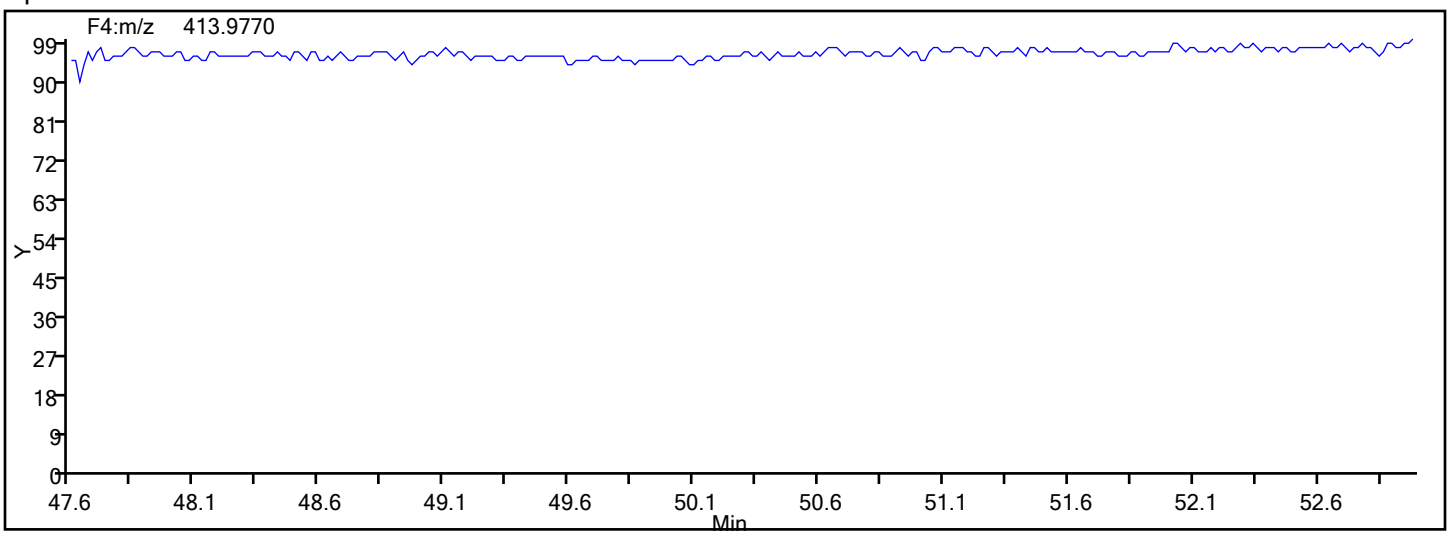




HpCDD Lock Mass



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TestAmerica Knoxville

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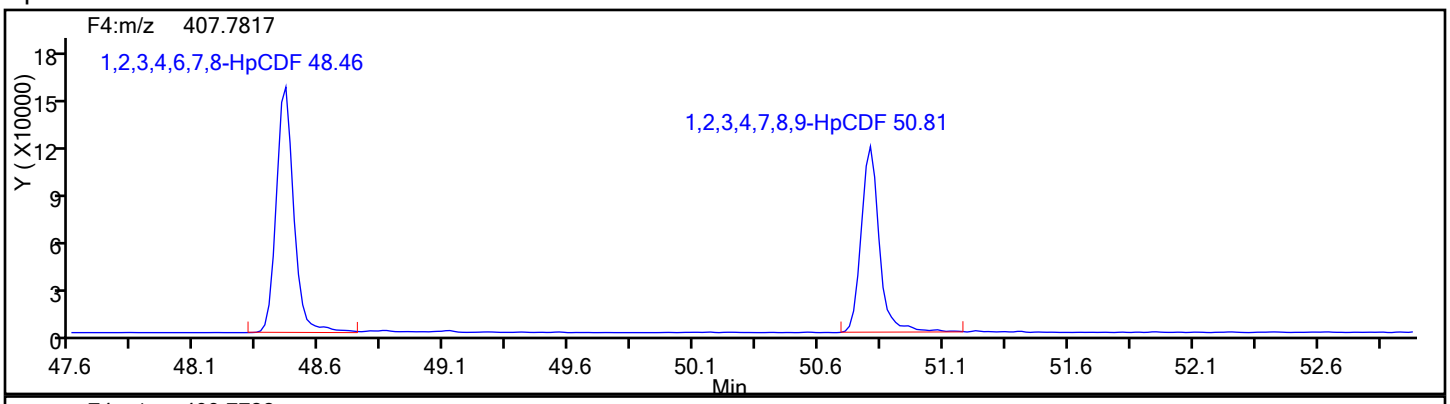
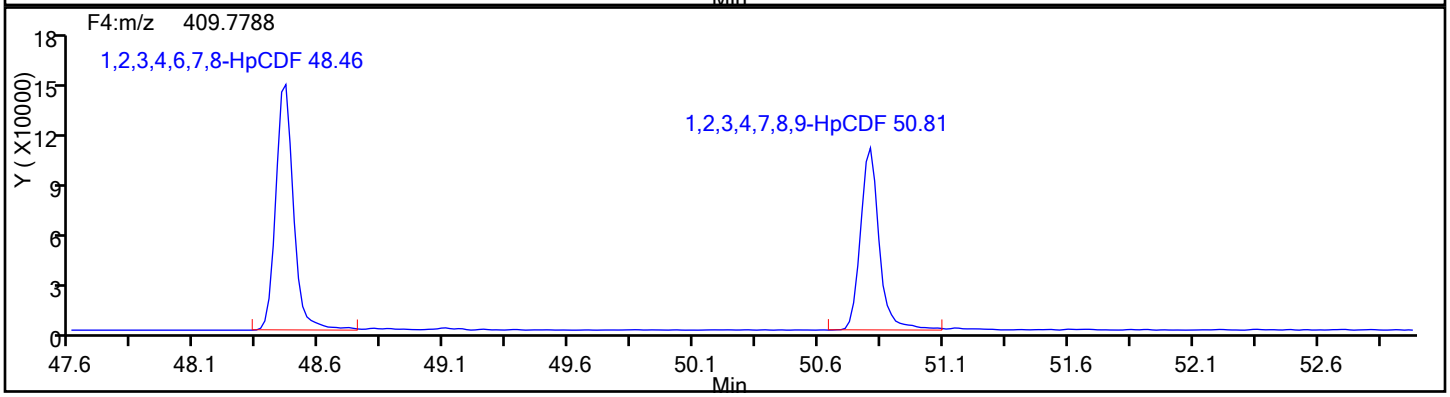
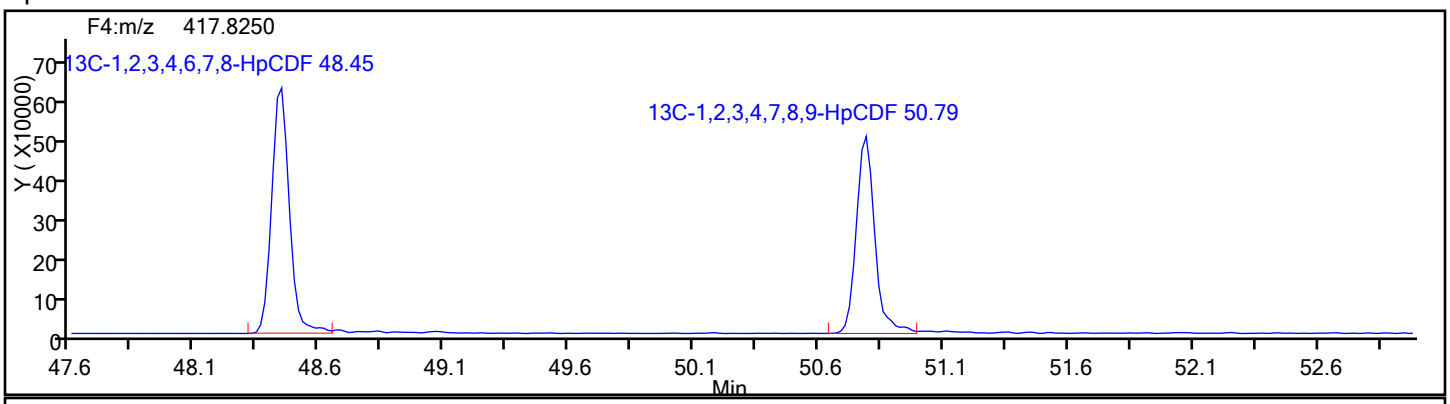
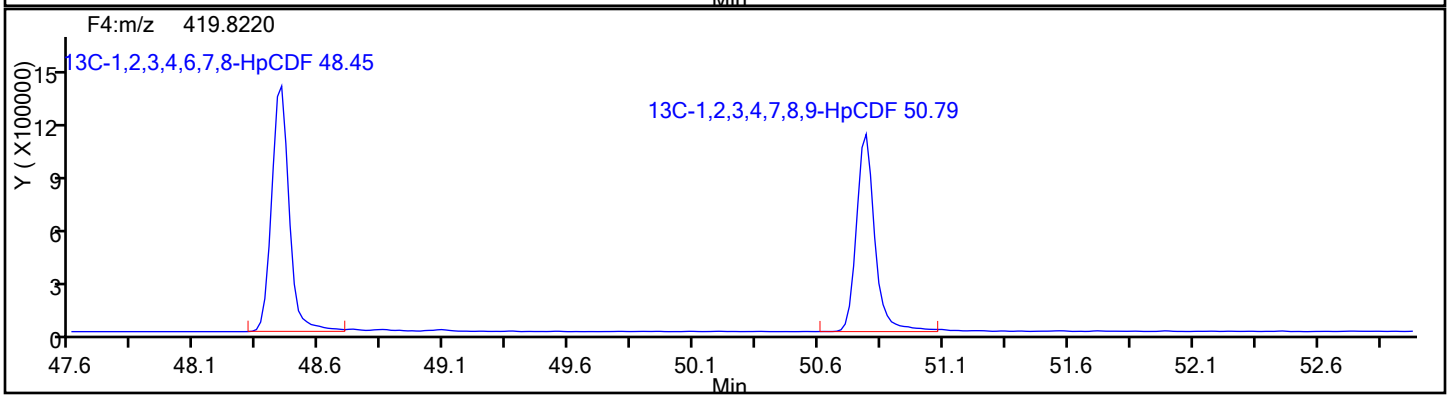




HpCDF Standards





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TestAmerica Knoxville

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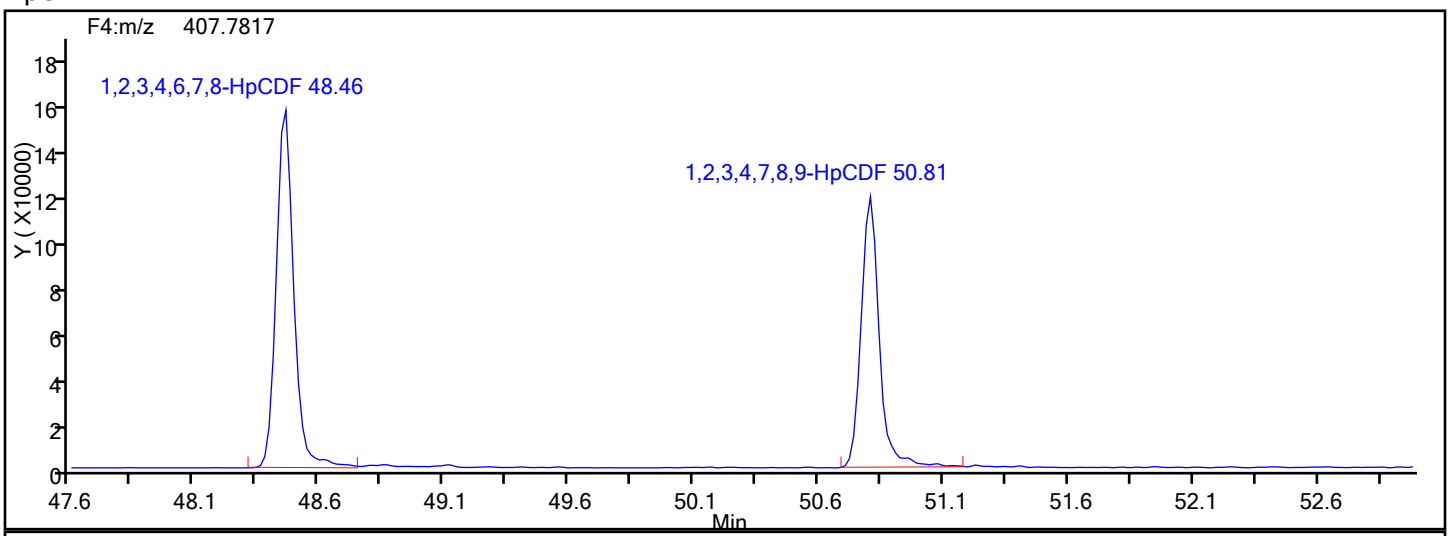
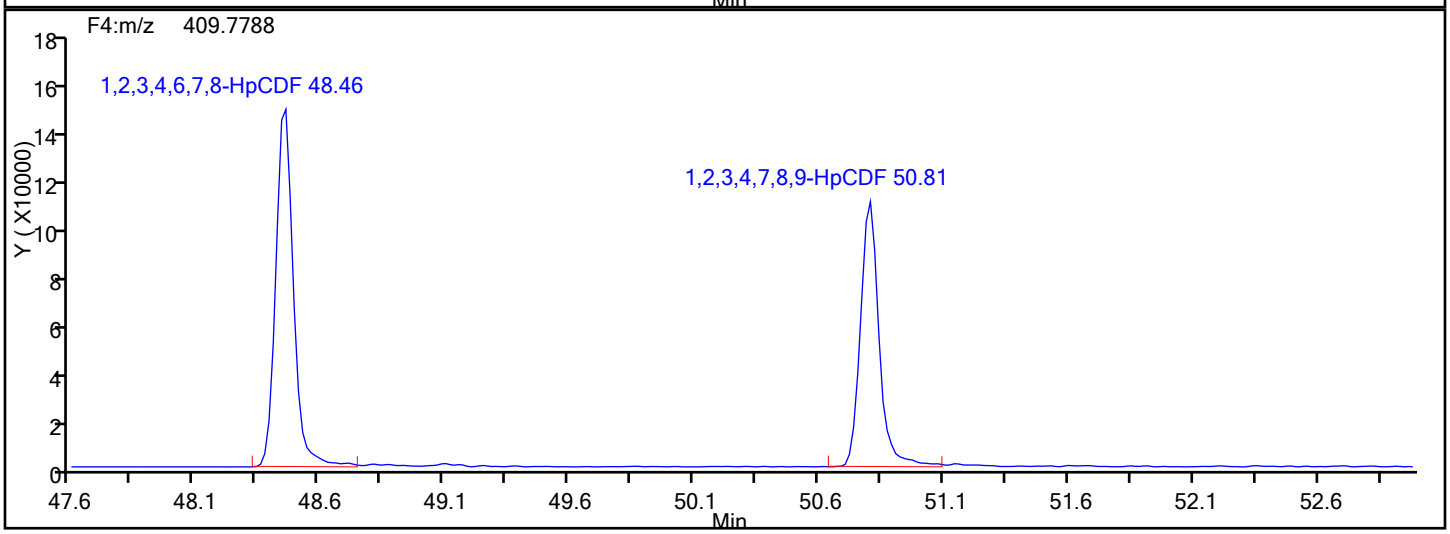
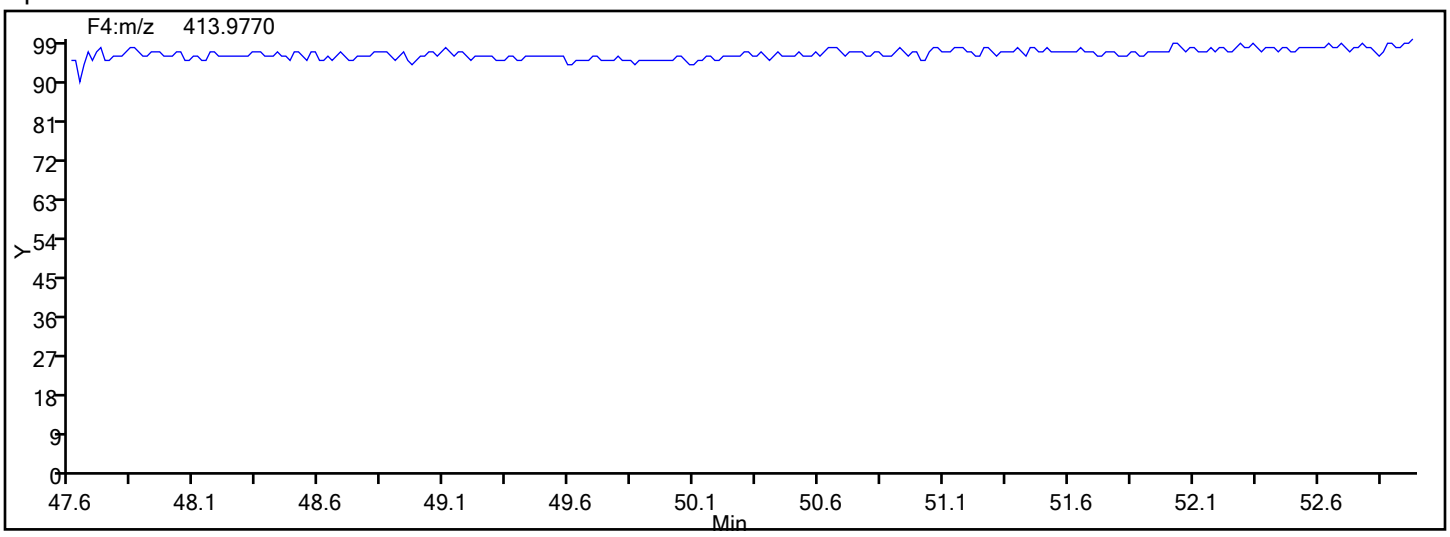




HpCDF Lock Mass



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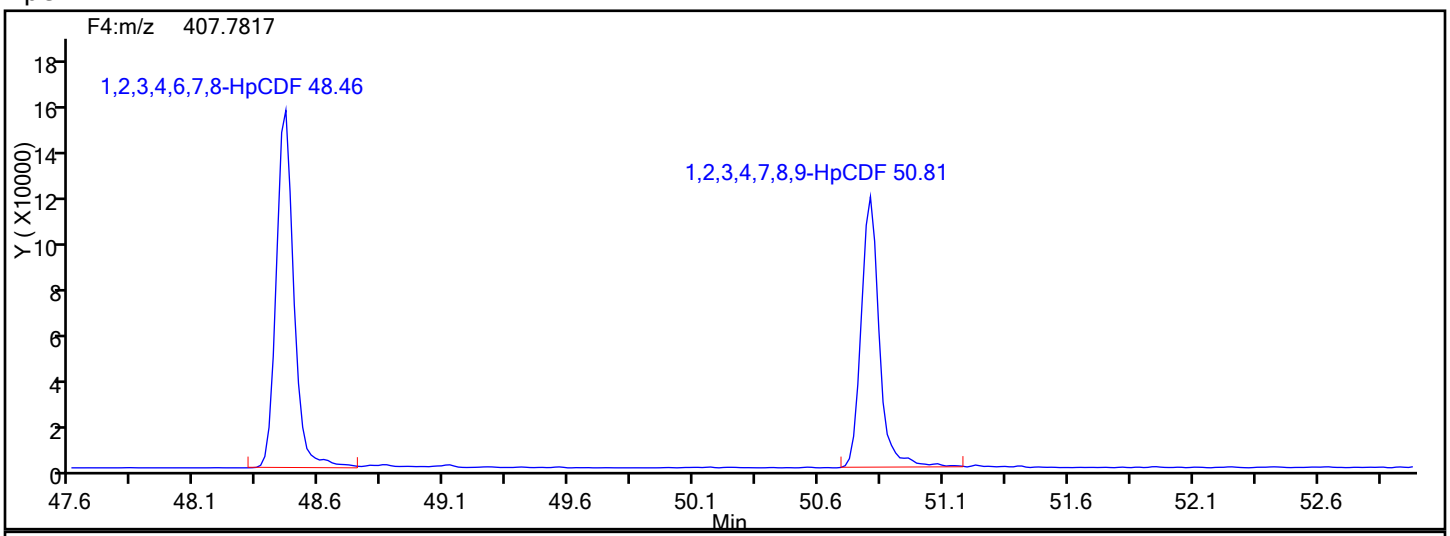

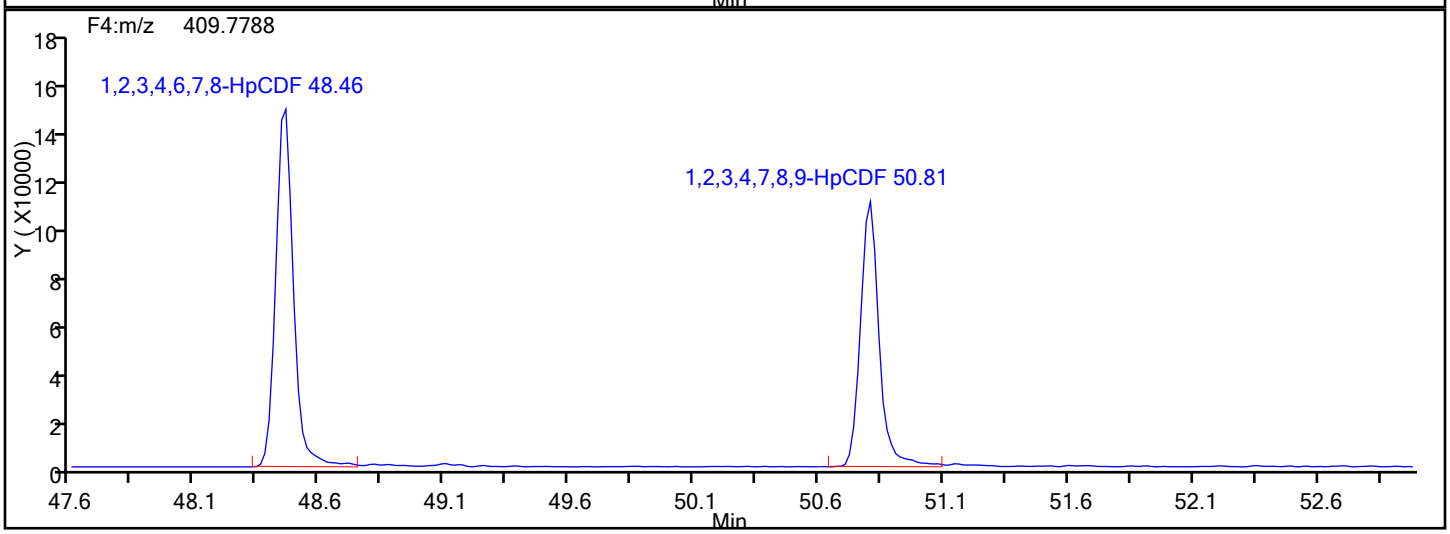

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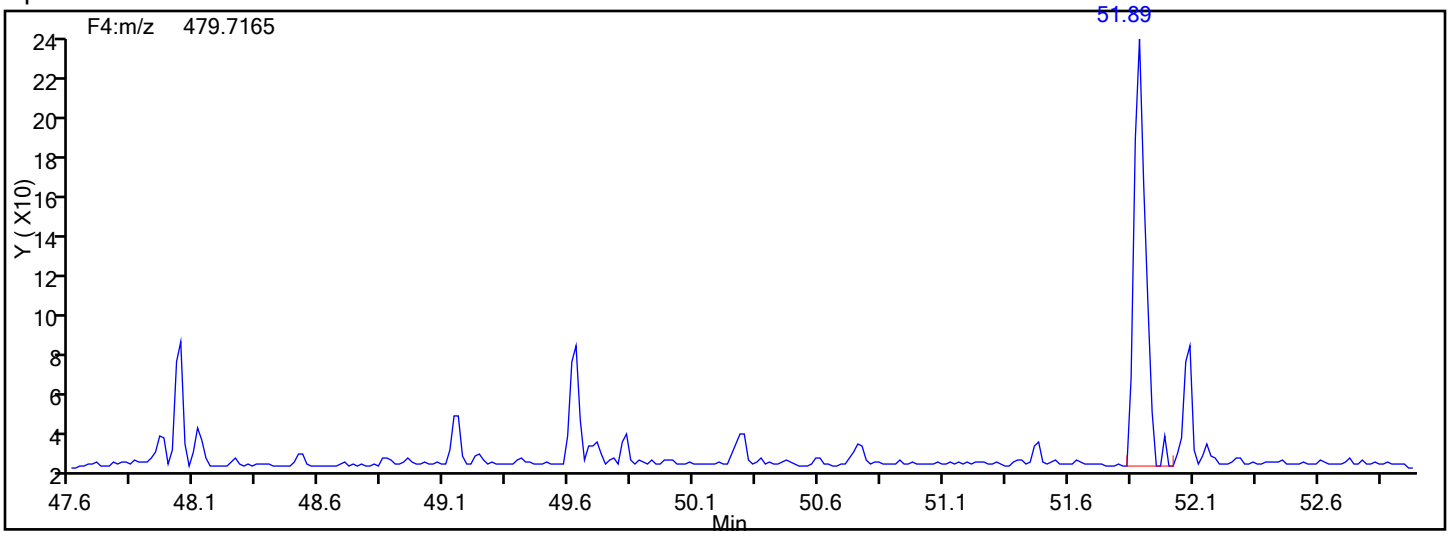

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TestAmerica Knoxville

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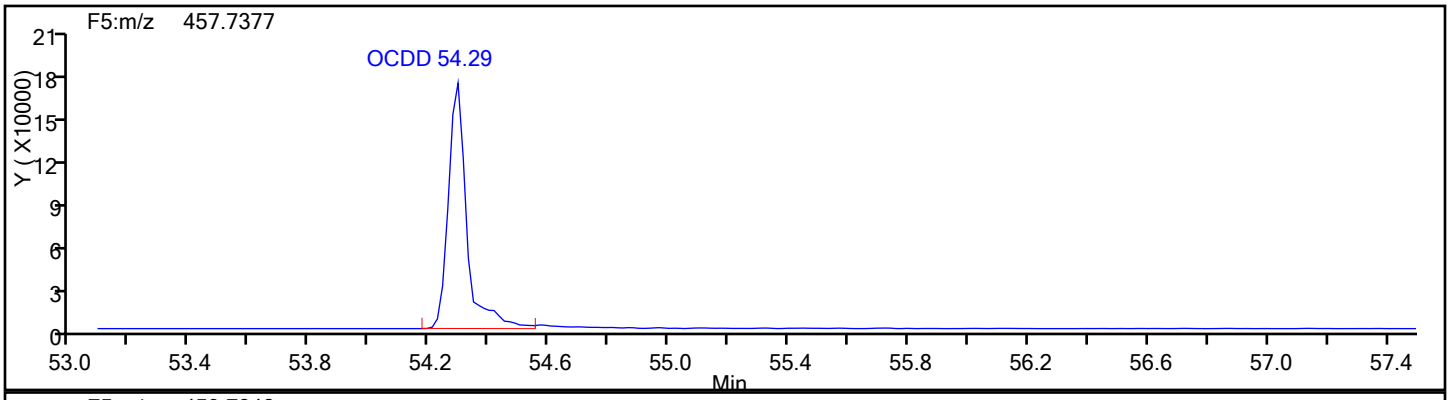
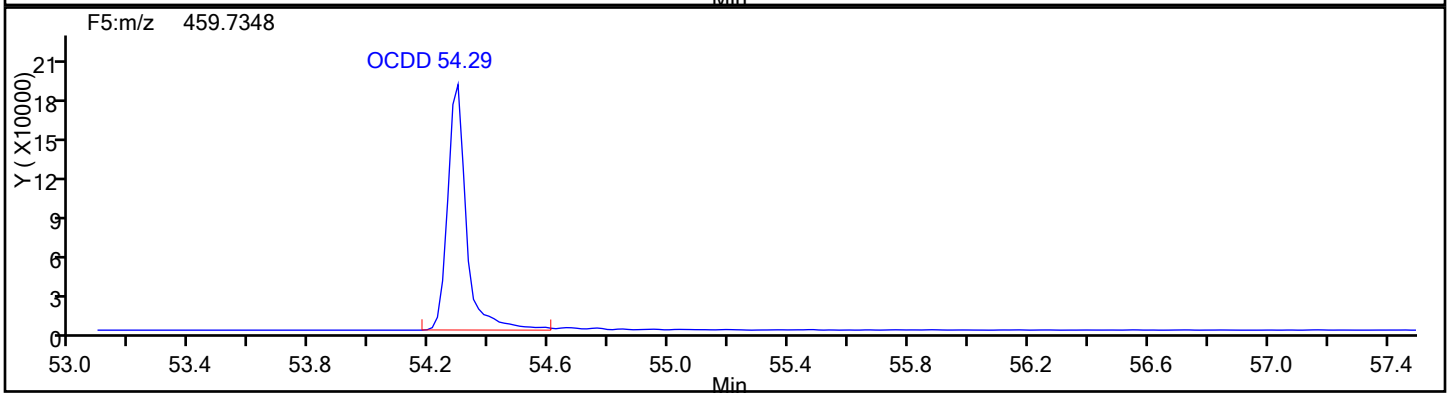
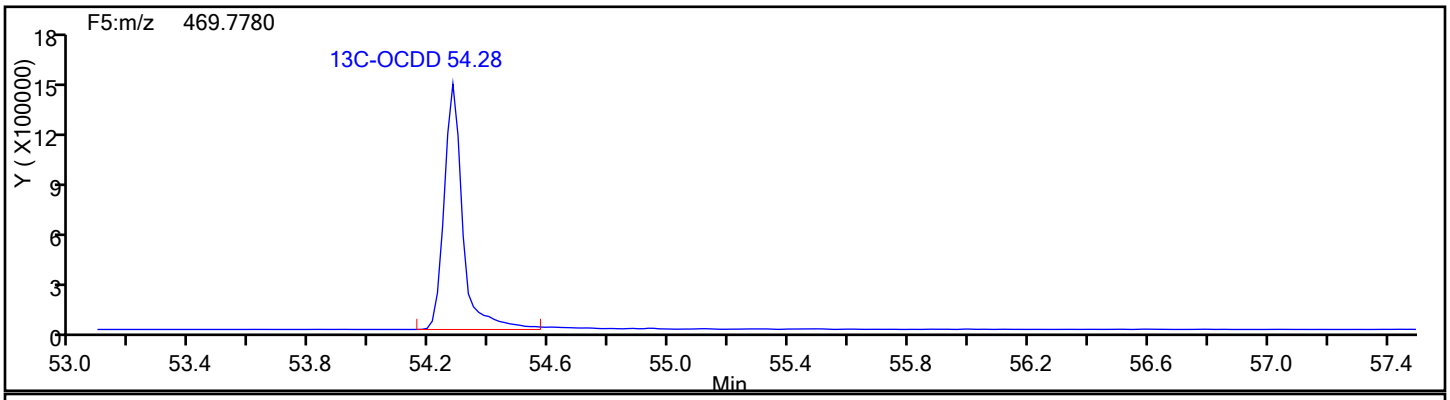
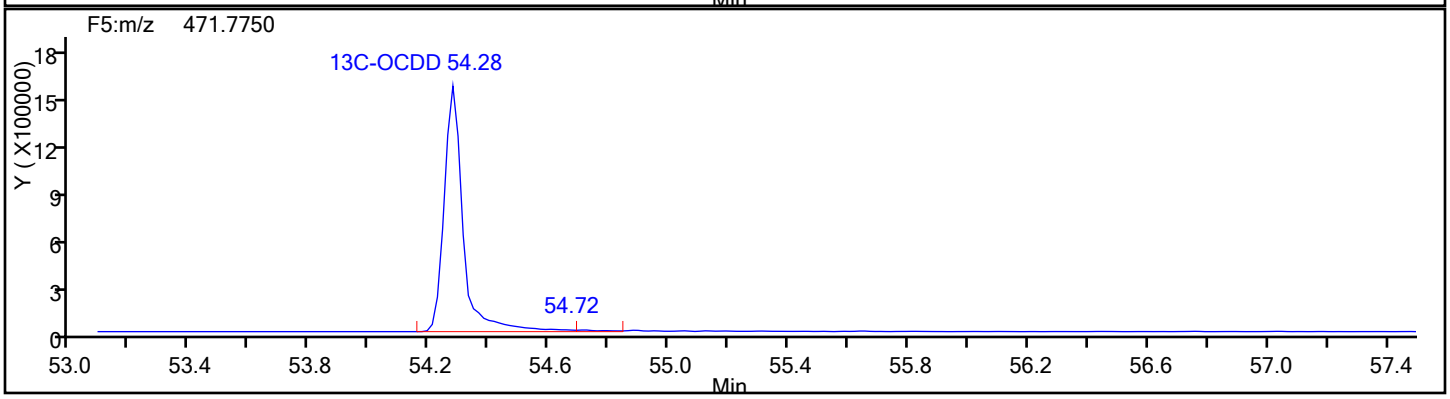
OCDD





OCDD Standards





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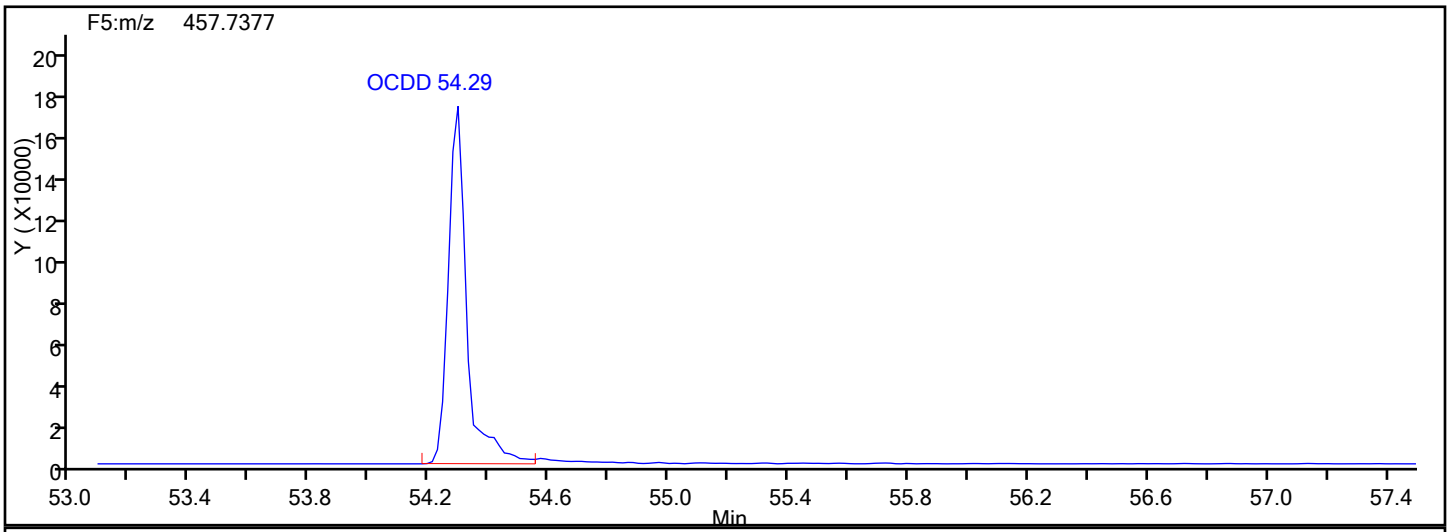
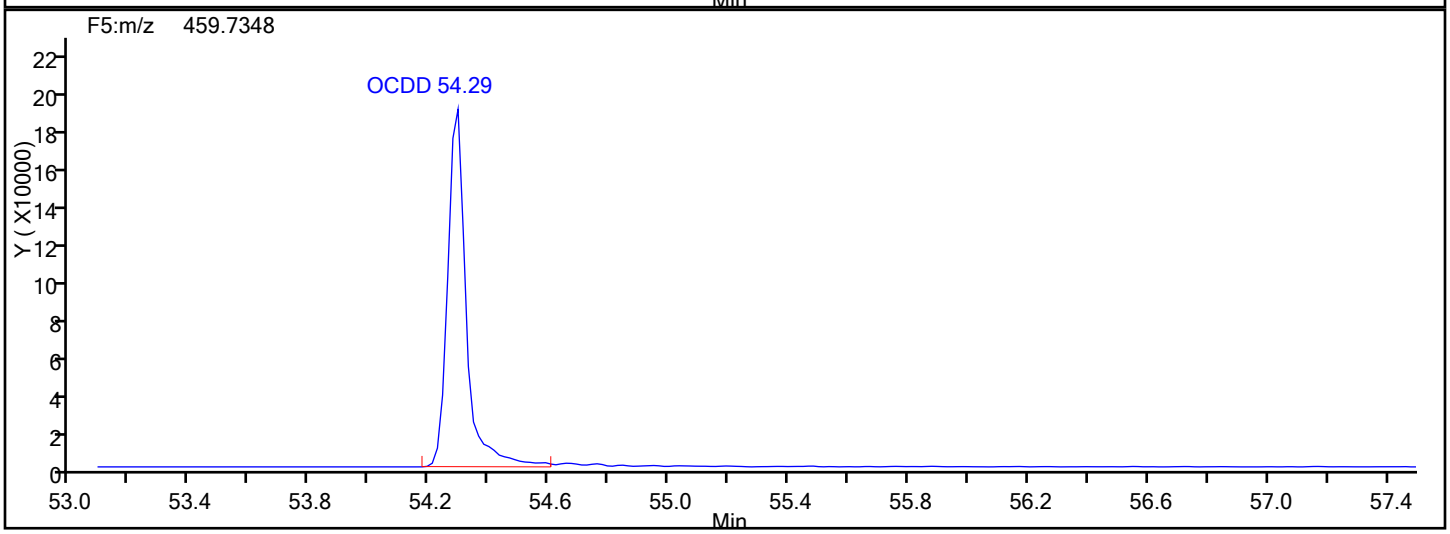
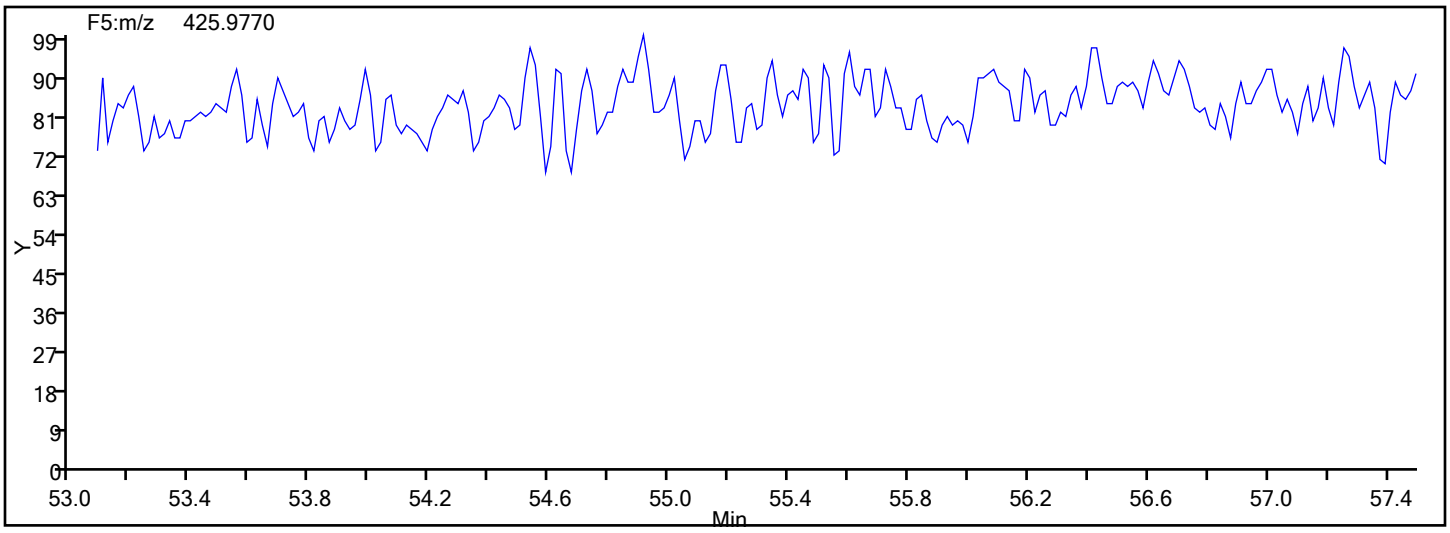




OCDD Lock Mass



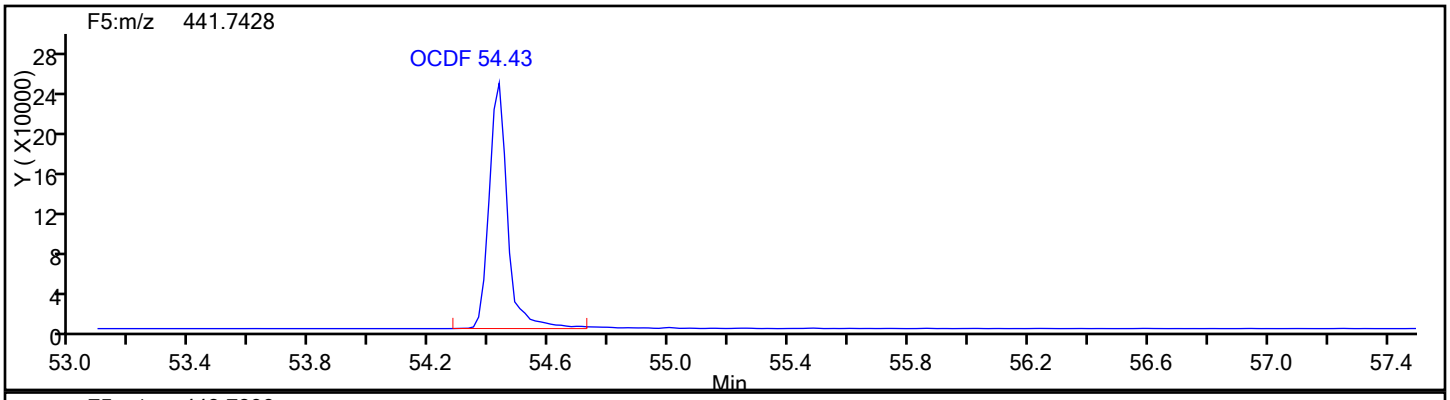
Report Date: 12-Jan-2017 08:09:22 Chrom Revision: 2.2 10-Jan-2017 11:26:10

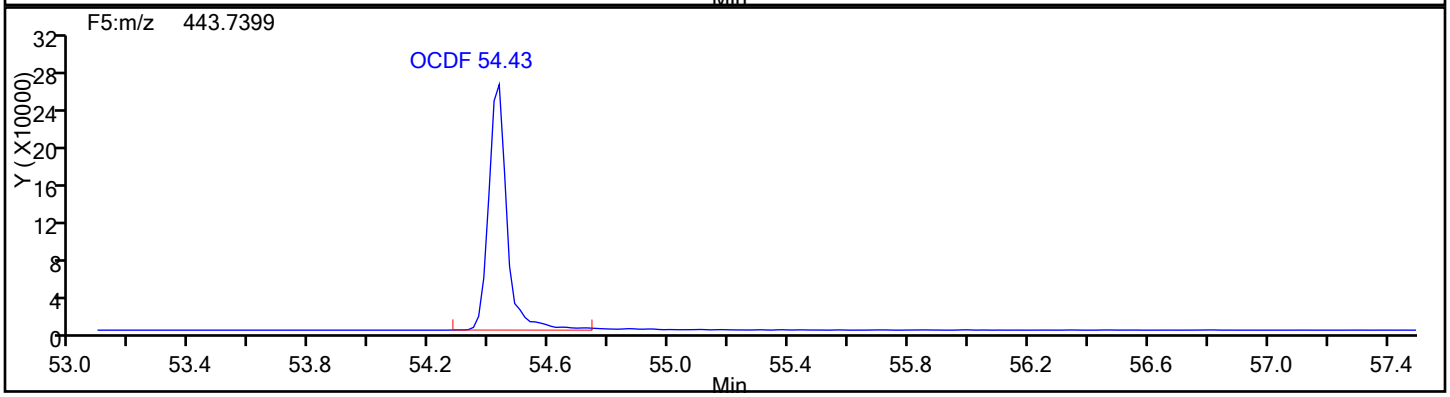
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

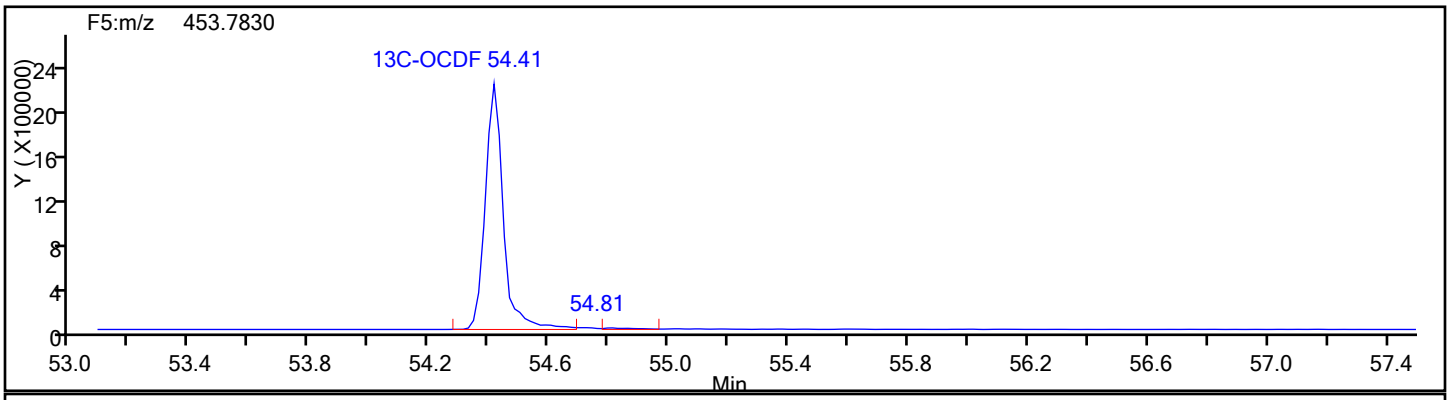
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

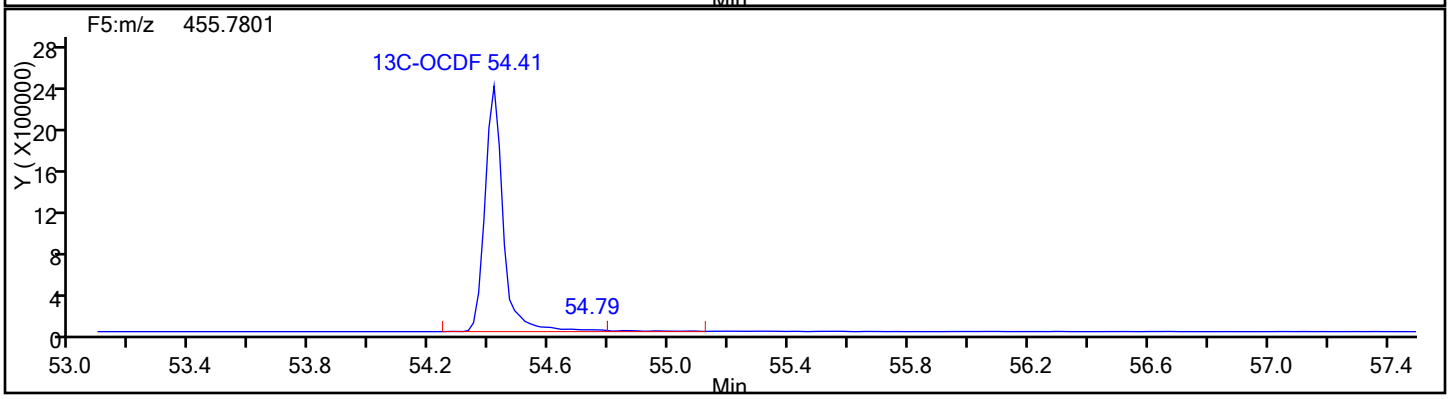
OCDF





OCDF Standards





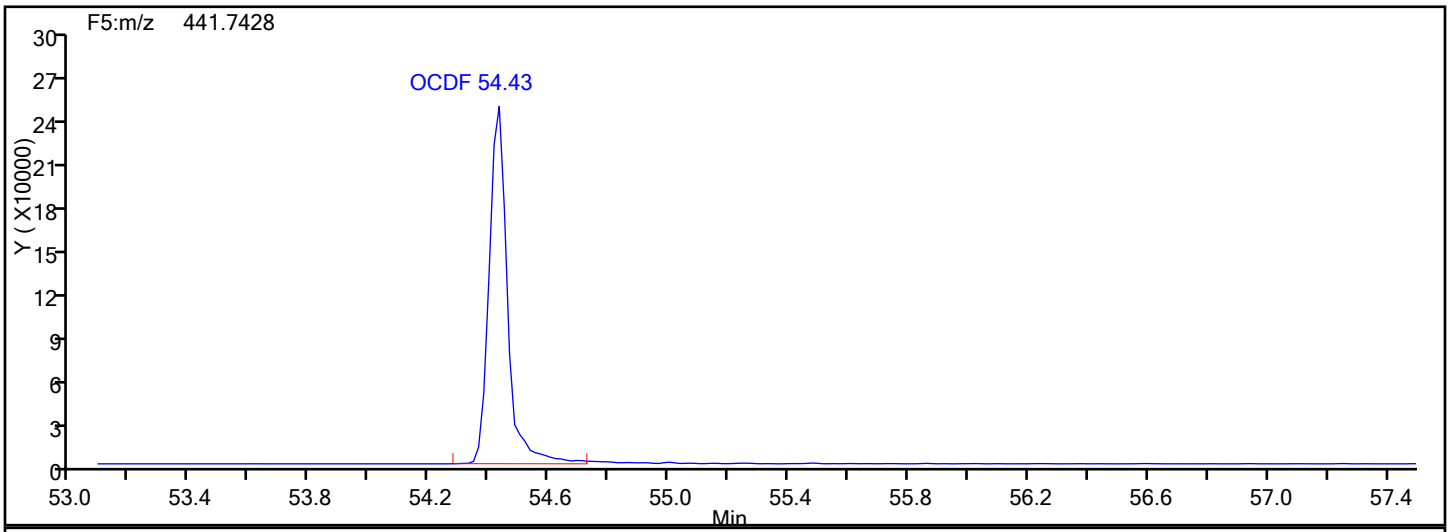
Report Date: 12-Jan-2017 08:09:22 Chrom Revision: 2.2 10-Jan-2017 11:26:10

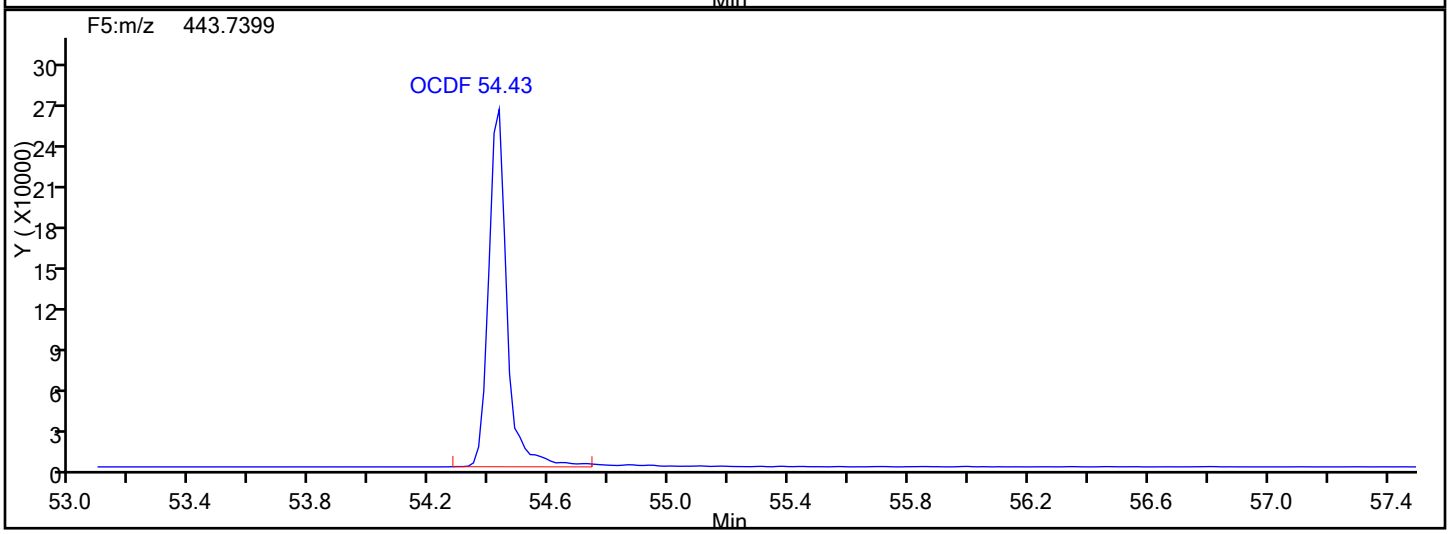
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

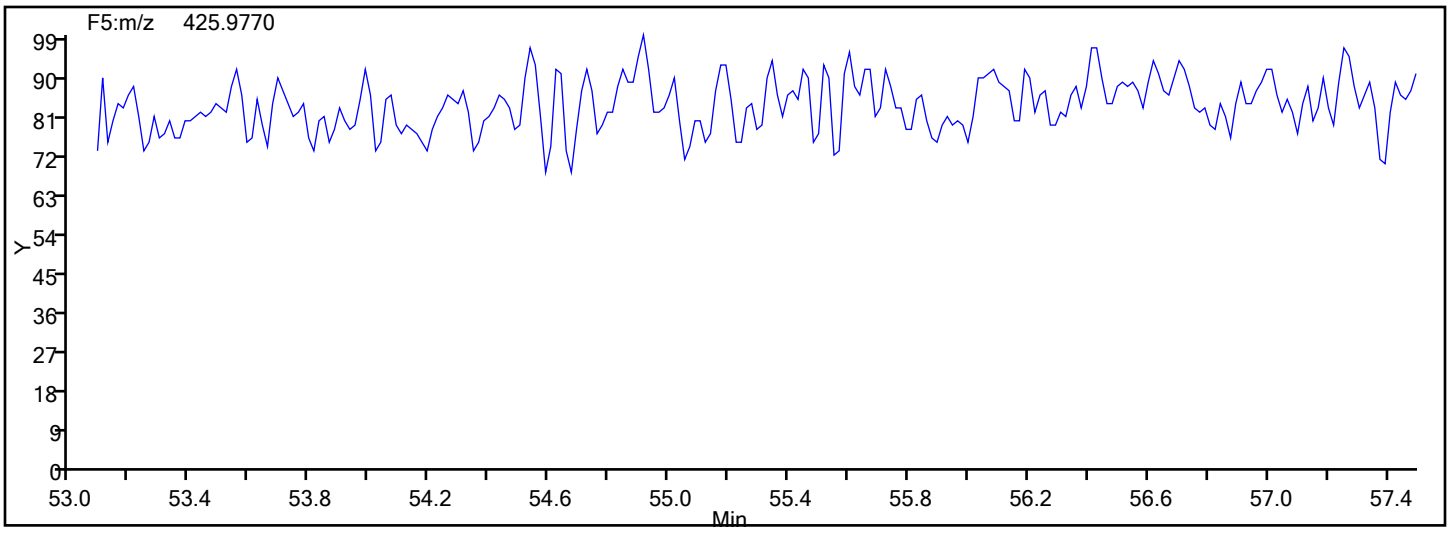
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



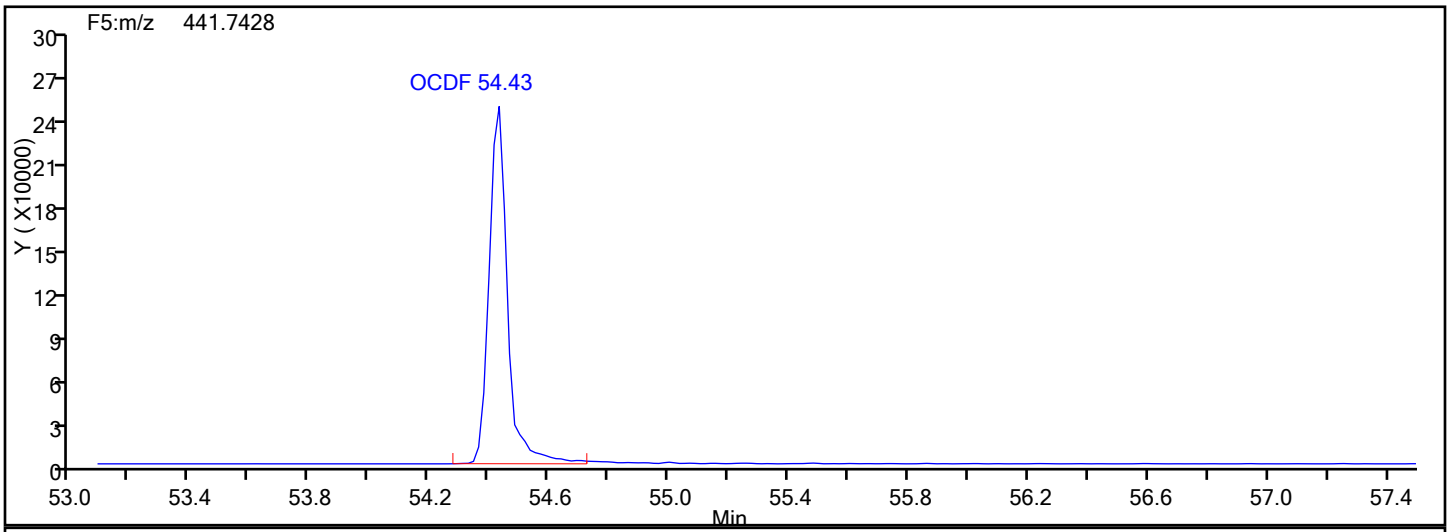
Report Date: 12-Jan-2017 08:09:22 Chrom Revision: 2.2 10-Jan-2017 11:26:10

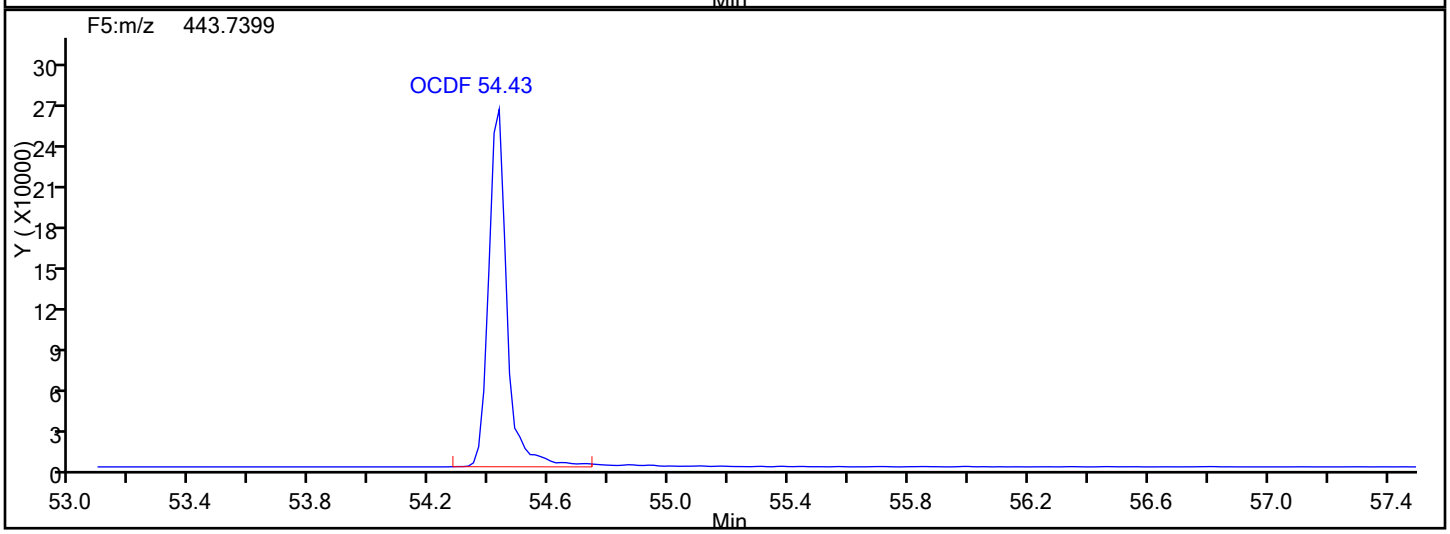
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i2.d

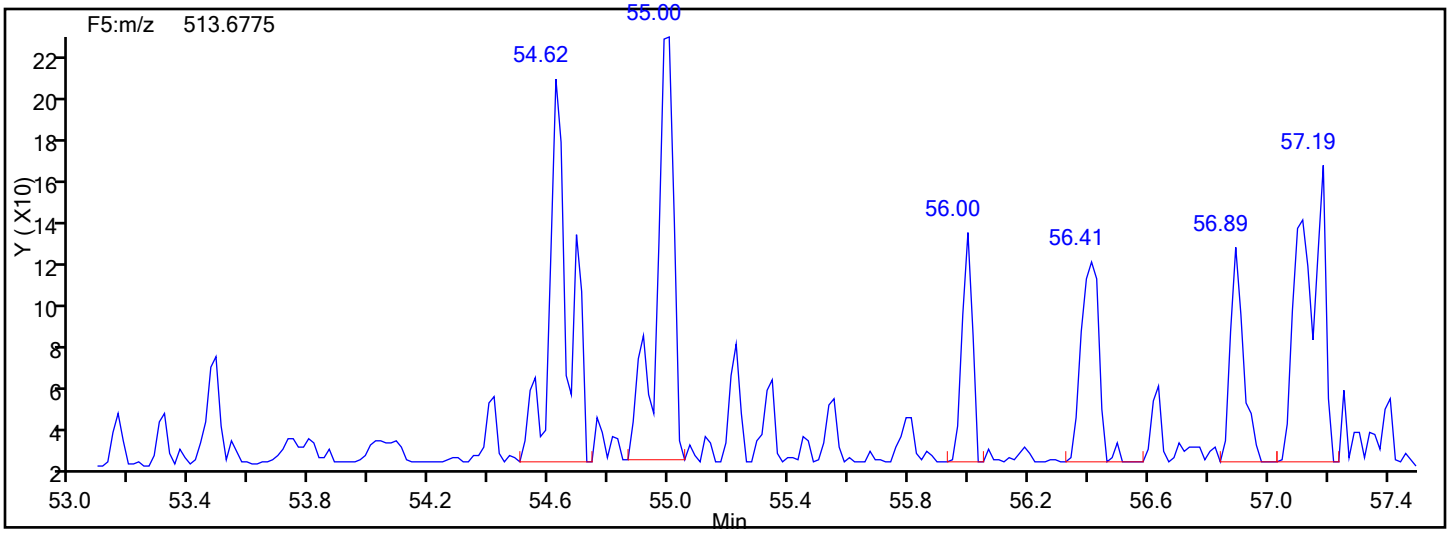
Injection Date:	16-May-2014 15:26:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	3
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 16-May-2014 16:27:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs3 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:10:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:14:19

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31.838	1103093	0.77	1.1733	9.782	9.782	0.0261	0.0261	97.82	
A Non-2,3,7,8-sub-TCDD	30.308	4111	0.77	0.0000						RQ
S Total TCDD					9.782	9.782	0.0261	0.0261		RQ
2,3,7,8-TCDF	29.760	1699244	0.79	1.0881	9.890	9.890	0.0284	0.0284	98.90	
A Non-2,3,7,8-sub-TCDF	28.995	15857	0.77	0.0000						
S Total TCDF					9.890	9.890	0.0284	0.0284		
1,2,3,7,8-PeCDD	41.015	3815716	1.56	1.0434	48.5	48.5	0.0582	0.0582	96.92	
A Non-2,3,7,8-sub-PeCDD	39.915						0.0	0.0		
S Total PeCDD					48.5	48.5	0.0582	0.0582		
1,2,3,7,8-PeCDF	39.293	6951995	1.58	1.1898	48.1	48.1	0.1888	0.1888	96.21	
2,3,4,7,8-PeCDF	40.499	6512875	1.58	1.1095	48.5	48.5	0.1814	0.1814	97.01	
A Non-2,3,7,8-sub-PeCDF	38.623						0.0	0.0		
S Total PeCDF					96.6	96.6	0.1851	0.1851		
1,2,3,4,7,8-HxCDD	45.248	4731492	1.27	1.1409	49.1	49.1	0.1073	0.1073	98.27	
1,2,3,6,7,8-HxCDD	45.366	5069185	1.26	1.1481	49.6	49.6	0.1128	0.1128	99.12	
1,2,3,7,8,9-HxCDD	45.754	5184383	1.28	1.2212	48.9	48.9	0.1031	0.1031	97.88	
A Non-2,3,7,8-sub-HxCDD	44.687						0.0	0.0		
S Total HxCDD					147.6	147.6	0.1078	0.1078		
1,2,3,4,7,8-HxCDF	44.202	7655800	1.25	1.3629	48.6	48.6	0.1512	0.1512	97.14	
1,2,3,6,7,8-HxCDF	44.337	8864531	1.21	1.2762	48.4	48.4	0.1440	0.1440	96.74	
2,3,4,6,7,8-HxCDF	45.063	7899628	1.25	1.2654	48.4	48.4	0.1570	0.1570	96.75	
1,2,3,7,8,9-HxCDF	46.024	7126497	1.26	1.2573	49.0	49.0	0.2044	0.2044	98.07	
A Non-2,3,7,8-sub-HxCDF	44.552						0.0	0.0		
S Total HxCDF					194.3	194.3	0.1642	0.1642		
1,2,3,4,6,7,8-HpCDD	50.178	4285504	1.05	1.1204	49.5	49.5	0.1647	0.1647	99.02	
A Non-2,3,7,8-sub-HpCDD	49.566						0.0	0.0		
S Total HpCDD					49.5	49.5	0.1647	0.1647		
1,2,3,4,6,7,8-HpCDF	48.458	7340131	1.05	1.4984	48.5	48.5	0.1652	0.1652	97.00	
1,2,3,4,7,8,9-HpCDF	50.819	5736971	1.07	1.3807	48.6	48.6	0.2252	0.2252	97.15	

Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49.625						0.0	0.0		
S Total HpCDF					97.1	97.1	0.1952	0.1952		
OCDD	54.290	7672456	0.90	1.2073	99.1	99.1	0.1333	0.1333	99.09	
OCDF	54.428	10665891	0.91	1.1162	98.2	98.2	0.1095	0.1095	98.17	
D 13C-2,3,7,8-TCDD	31.788	9611208	0.81	1.0709	98.8	98.8	0.2864	0.2864	98.79	
D 13C-2,3,7,8-TCDF	29.727	15790178	0.81	1.7545	99.1	99.1	0.1594	0.1594	99.07	
D 13C-1,2,3,7,8-PeCDD	40.998	7546076	1.58	0.8743	95.0	95.0	0.3704	0.3704	95.01	
D 13C-1,2,3,7,8-PeCDF	39.276	12146075	1.57	1.3704	97.6	97.6	0.3207	0.3207	97.56	
D 13C-2,3,4,7,8-PeCDF	40.481	12102314	1.58	1.3837	96.3	96.3	0.3176	0.3176	96.28	
D 13C-1,2,3,4,7,8-HxCDD	45.231	8441043	1.24	0.8772	100.1	100.1	0.2048	0.2048	100	
D 13C-1,2,3,6,7,8-HxCDD	45.350	8908892	1.26	0.9171	101.0	101.0	0.1959	0.1959	101	
D 13C-1,2,3,4,7,8-HxCDF	44.185	11565241	0.52	1.1892	101.1	101.1	0.1596	0.1596	101	
D 13C-1,2,3,6,7,8-HxCDF	44.320	14360417	0.53	1.4625	102.1	102.1	0.1298	0.1298	102	
D 13C-2,3,4,6,7,8-HxCDF	45.046	12905207	0.55	1.3197	101.7	101.7	0.1438	0.1438	102	
D 13C-1,2,3,7,8,9-HxCDF	46.007	11559055	0.54	1.2001	100.2	100.2	0.1581	0.1581	100	
D 13C-1,2,3,4,6,7,8-HpCDD	50.161	7725803	1.10	0.8155	98.5	98.5	0.3117	0.3117	98.52	
D 13C-1,2,3,4,6,7,8-HpCDF	48.441	10100696	0.44	1.0496	100.1	100.1	0.1758	0.1758	100	
D 13C-1,2,3,4,7,8,9-HpCDF	50.786	8553669	0.45	0.8947	99.4	99.4	0.2063	0.2063	99.41	
D 13C-OCDD	54.290	12827376	0.92	0.7044	189.4	189.4	0.1987	0.1987	94.68	
D 13C-OCDF	54.428	19467909	0.91	1.0615	190.7	190.7	0.0917	0.0917	95.36	
$ 37Cl4-2,3,7,8-TCDD	31.838	1078771		1.2266	9.682	9.682	0.0207	0.0207	96.82	
* 13C-1,2,3,4-TCDD	31.273	9084255	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45.737	9616646	1.27	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

61L31613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 16-May-2014 16:27:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs3 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:10:05 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:14:19

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31.838	31.838	0	1.002	480461	49145	43	107	1143		
321.8936	31.855	31.838	1	1.002	622632	66067	74	185	893	0.77(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	29.744	30.308	-34		2139	497	43	107	12		
321.8936	29.727	30.308	-35		2323	402	74	185	5	0.92(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	29.760	29.760	0	1.001	751447	84906	105	262	809		
305.8987	29.777	29.760	1	1.002	947797	110203	112	280	984	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	28.613	28.995	-23		6903	985	105	262	9		
305.8987	28.597	28.995	-24		8954	1096	112	280	10	0.77(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	41.015	41.015	0	1.000	2326577	552471	233	582	2371		
357.8516	41.015	41.015	0	1.000	1489139	361545	206	515	1755	1.56(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39.915						233	582			
357.8516	39.915						206	515			
1,2,3,7,8-PeCDF											
339.8597	39.293	39.293	0	1.000	4258824	875314	1384	3460	632		
341.8567	39.293	39.293	0	1.000	2693171	549312	886	2215	620	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40.499	40.499	0	1.000	3984815	919843	1384	3460	665		
341.8567	40.499	40.499	0	1.000	2528060	588273	886	2215	664	1.58(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											
339.8597	38.623						1384	3460			
341.8567	38.623						886	2215			
1,2,3,4,7,8-HxCDD											
389.8158	45.248	45.248	0	1.000	2647565	694895	543	1357	1280		
391.8127	45.248	45.248	0	1.000	2083927	528569	537	1342	984	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45.366	45.366	0	1.000	2830045	671380	543	1357	1236		
391.8127	45.366	45.366	0	1.000	2239140	528504	537	1342	984	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45.754	45.754	0	1.012	2909461	665096	543	1357	1225		
391.8127	45.754	45.754	0	1.012	2274922	515784	537	1342	960	1.28(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44.687						543	1357			
391.8127	44.687						537	1342			
1,2,3,4,7,8-HxCDF											
373.8208	44.202	44.202	0	1.000	4252364	1152533	1361	3402	847		
375.8178	44.202	44.202	0	1.000	3403436	889291	1188	2970	749	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44.337	44.337	0	1.000	4852548	1177511	1361	3402	865		
375.8178	44.337	44.337	0	1.000	4011983	951434	1188	2970	801	1.21(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45.063	45.063	0	1.000	4384591	1096858	1361	3402	806		
375.8178	45.063	45.063	0	1.000	3515037	885868	1188	2970	746	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	46.024	46.024	0	1.000	3973060	857029	1361	3402	630		
375.8178	46.024	46.024	0	1.000	3153437	697338	1188	2970	587	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44.552						1361	3402			
375.8178	44.552						1188	2970			
1,2,3,4,6,7,8-HpCDD											
423.7767	50.178	50.178	0	1.000	2192332	417062	552	1380	756		
425.7737	50.178	50.178	0	1.000	2093172	396316	526	1315	753	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	49.566						552	1380			
425.7737	49.566						526	1315			
1,2,3,4,6,7,8-HpCDF											
407.7817	48.458	48.458	0	1.000	3763417	750457	1020	2550	736		
409.7788	48.458	48.458	0	1.000	3576714	728511	1018	2545	716	1.05(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50.819	50.819	0	1.001	2966508	567063	1020	2550	556		
409.7788	50.802	50.819	-1	1.000	2770463	540488	1018	2545	531	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49.625						1020	2550			
409.7788	49.625						1018	2545			

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	54.290	54.290	0	1.000	3630135	798190	388	970	2057		
459.7348	54.290	54.290	0	1.000	4042321	922514	517	1292	1784	0.90(0.76-1.02)	
OCDF											
441.7428	54.428	54.428	0	1.000	5087486	1187618	419	1047	2834		
443.7399	54.428	54.428	0	1.000	5578405	1325319	670	1675	1978	0.91(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31.788	31.788	0	1.016	4294516	424380	700	1750	606		
333.9338	31.788	31.788	0	1.016	5316692	529219	507	1267	1044	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29.727	29.727	0	0.951	7044515	770657	604	1510	1276		
317.9389	29.727	29.727	0	0.951	8745663	984510	496	1240	1985	0.81(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40.998	40.998	0	1.311	4626247	1112265	908	2270	1225		
369.8919	40.998	40.998	0	1.311	2919829	692726	366	915	1893	1.58(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39.276	39.276	0	1.256	7420185	1556852	666	1665	2338		
353.8970	39.276	39.276	0	1.256	4725890	969806	1063	2657	912	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40.481	40.481	0	1.294	7402612	1733324	666	1665	2603		
353.8970	40.481	40.481	0	1.294	4699702	1085674	1063	2657	1021	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45.231	45.231	0	0.989	4677745	1212495	788	1970	1539		
403.8529	45.231	45.231	0	0.989	3763298	992262	766	1915	1295	1.24(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45.350	45.350	0	0.992	4971028	1147081	788	1970	1456		
403.8529	45.350	45.350	0	0.992	3937864	936939	766	1915	1223	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44.185	44.185	0	0.966	3971124	1055768	658	1645	1605		
385.8610	44.185	44.185	0	0.966	7594117	2035527	984	2460	2069	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44.320	44.320	0	0.969	4988721	1221360	658	1645	1856		
385.8610	44.320	44.320	0	0.969	9371696	2246658	984	2460	2283	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45.046	45.046	0	0.985	4567426	1141229	658	1645	1734		
385.8610	45.046	45.046	0	0.985	8337781	2065196	984	2460	2099	0.55(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46.007	46.007	0	1.006	4038510	860411	658	1645	1308		
385.8610	46.007	46.007	0	1.006	7520545	1619371	984	2460	1646	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50.161	50.161	0	1.097	4048454	764293	960	2400	796		
437.8140	50.161	50.161	0	1.097	3677349	696523	1239	3097	562	1.10(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48.441	48.441	0	1.059	3071353	632983	814	2035	778		
419.8220	48.441	48.441	0	1.059	7029343	1424811	783	1957	1820	0.44(0.51-0.37)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50.786	50.786	0	1.110	2665351	503859	814	2035	619		
419.8220	50.786	50.786	0	1.110	5888318	1134602	783	1957	1449	0.45(0.37-0.51)	
13C-OCDD											
469.7780	54.290	54.290	0	1.187	6153472	1344000	630	1575	2133		
471.7750	54.290	54.290	0	1.187	6673904	1466401	581	1452	2524	0.92(0.76-1.02)	
13C-OCDF											
453.7830	54.428	54.428	0	1.190	9258160	2101172	434	1085	4841		
455.7801	54.428	54.428	0	1.190	10209749	2351742	408	1020	5764	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31.838	31.838	0	1.018	1078771	110043	100	250	1100		
13C-1,2,3,4-TCDD											
331.9368	31.273	31.273	0		4054750	419797	700	1750	600		
333.9338	31.273	31.273	0		5029505	563740	507	1267	1112	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45.737	45.737	0		5389374	1212839	788	1970	1539		
403.8529	45.737	45.737	0		4227272	949970	766	1915	1240	1.27(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Reagents:

61L31613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d
Lims ID: IC L3
Client ID:
Inject. Date: 16-May-2014 16:27:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 3
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 4
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
29.744	2139	497	2323	402		0.92	Rn
Signal Totals:							
	2139	497	2323	402			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4462	899				0.92	RQ
	4111	711					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (4462 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (4111 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d
Lims ID: IC L3
Client ID:
Inject. Date: 16-May-2014 16:27:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 3
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 4
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
28.613	6903	985	8954	1096		0.77	n
Signal Totals:							
	6903	985	8954	1096			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	15857	2081				0.77	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (15857 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

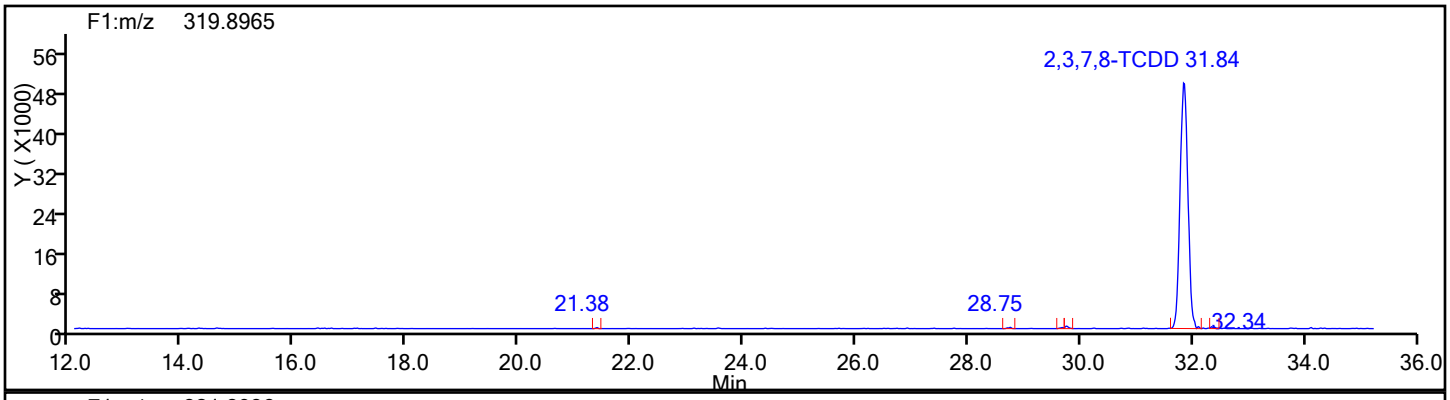
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

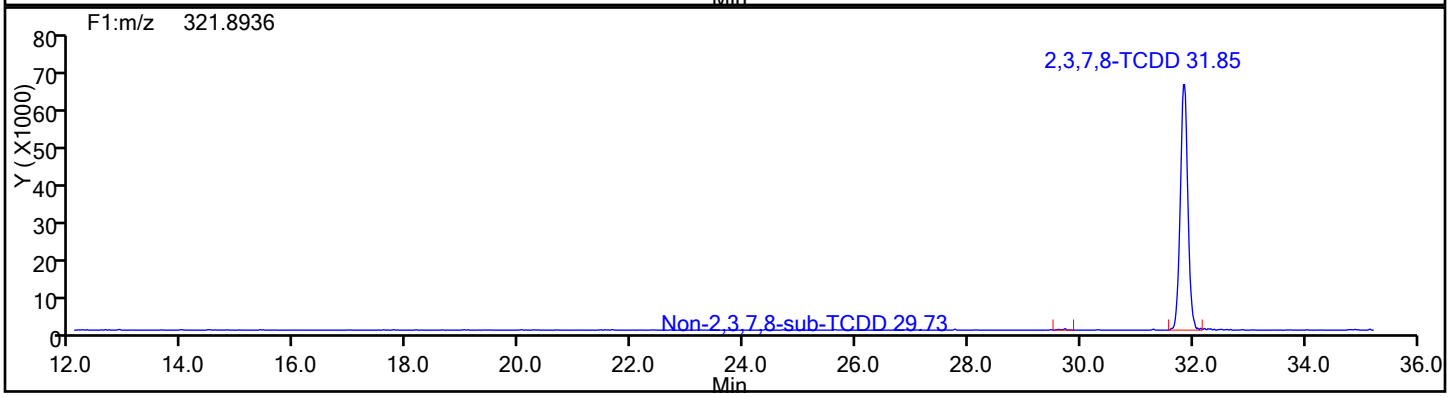
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

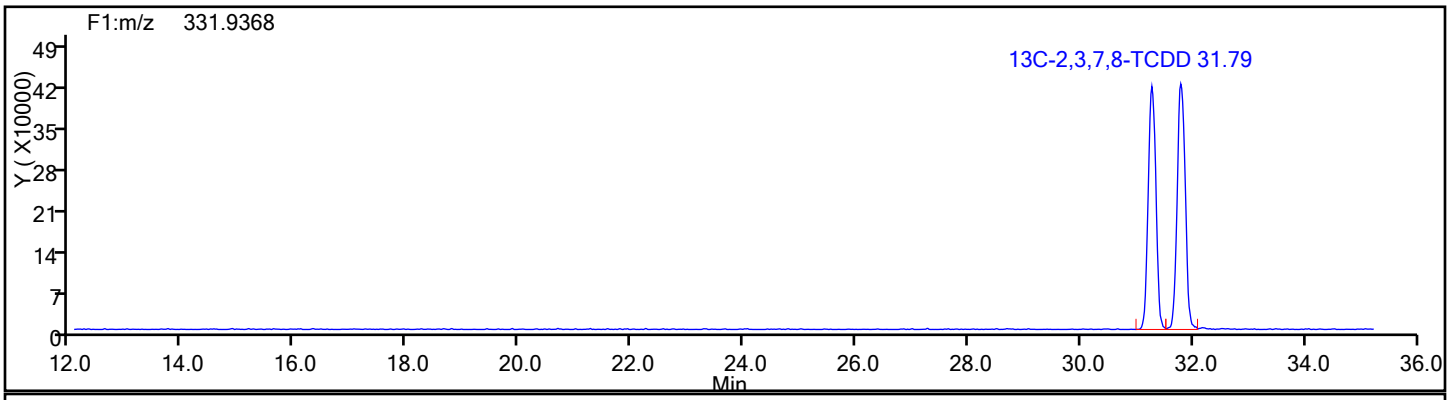
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

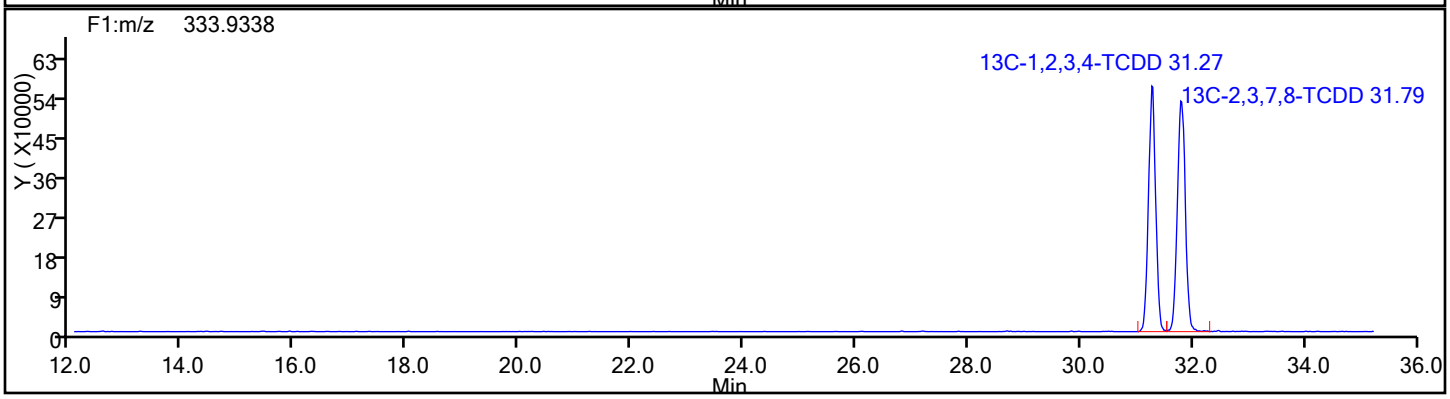
TCDD





TCDD Standards





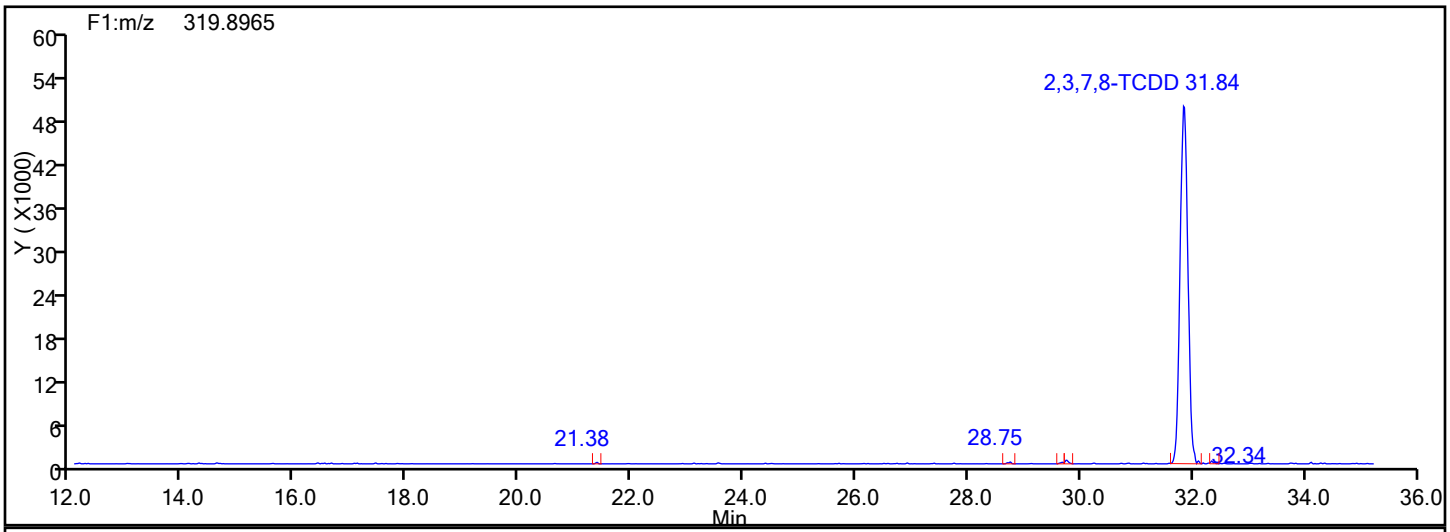
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

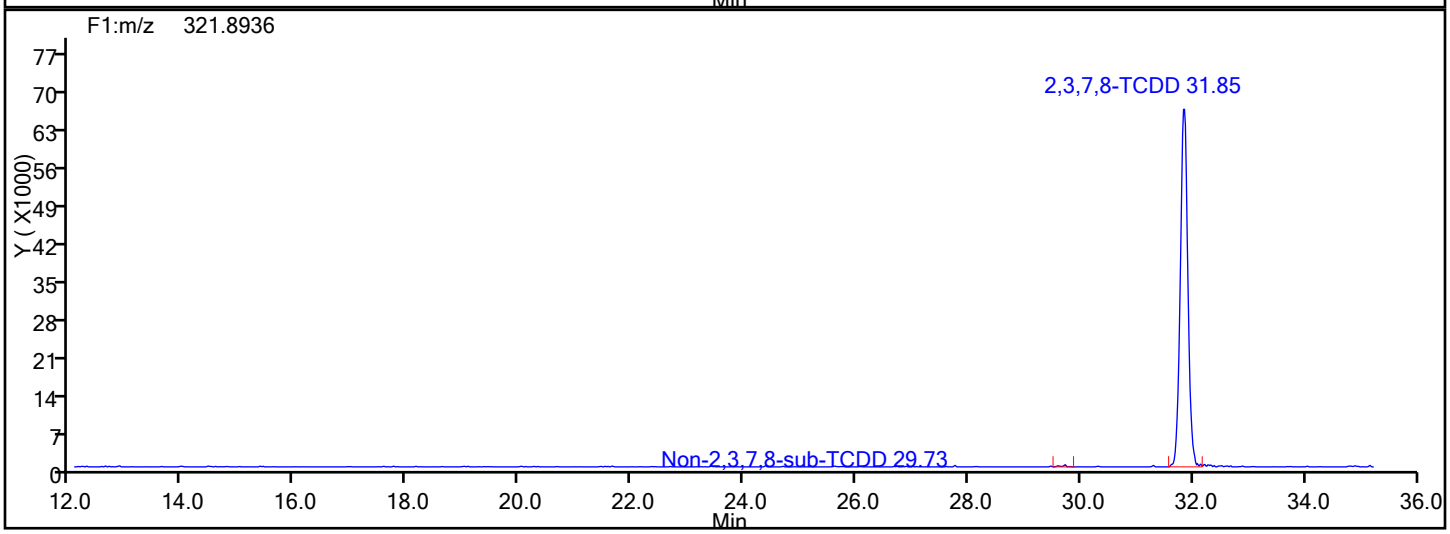
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

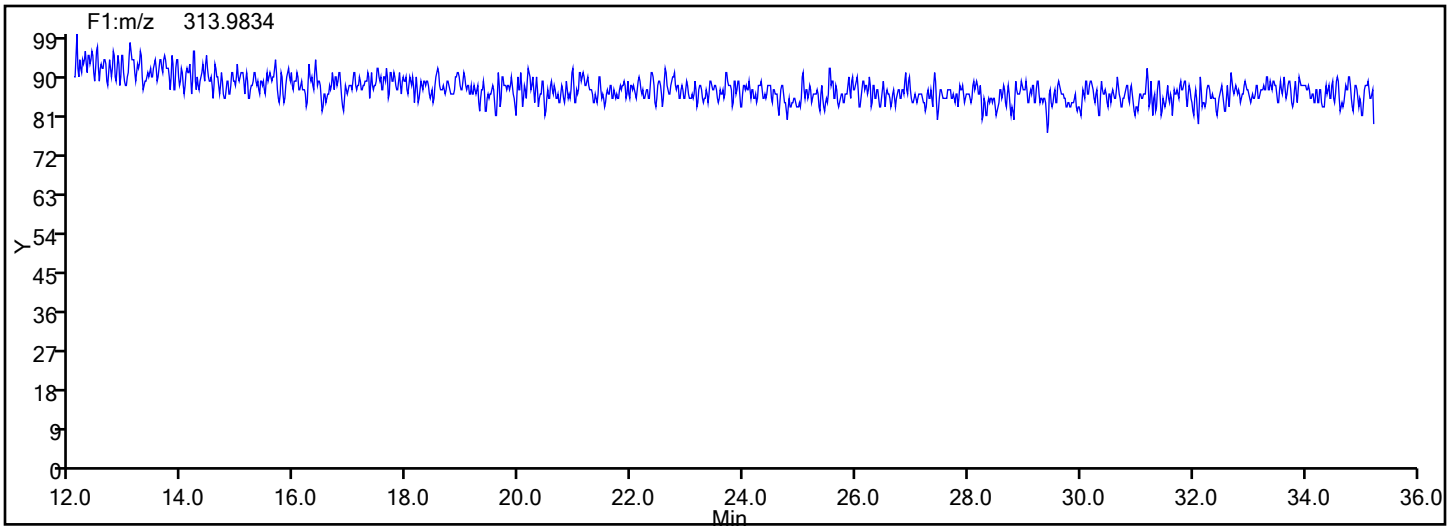
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



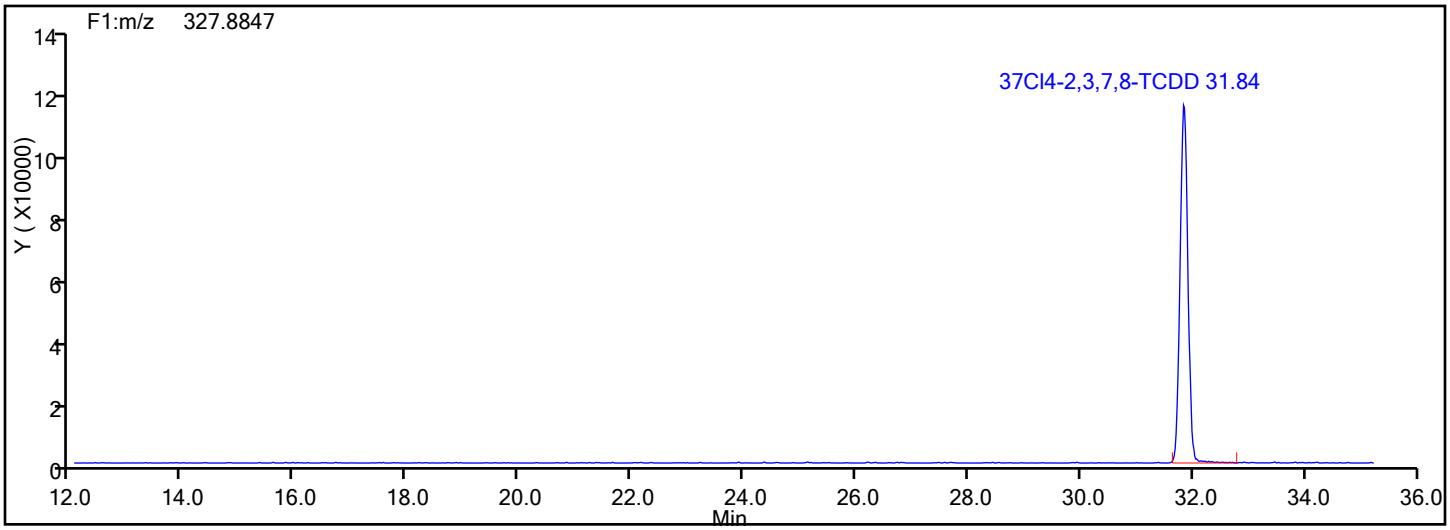
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

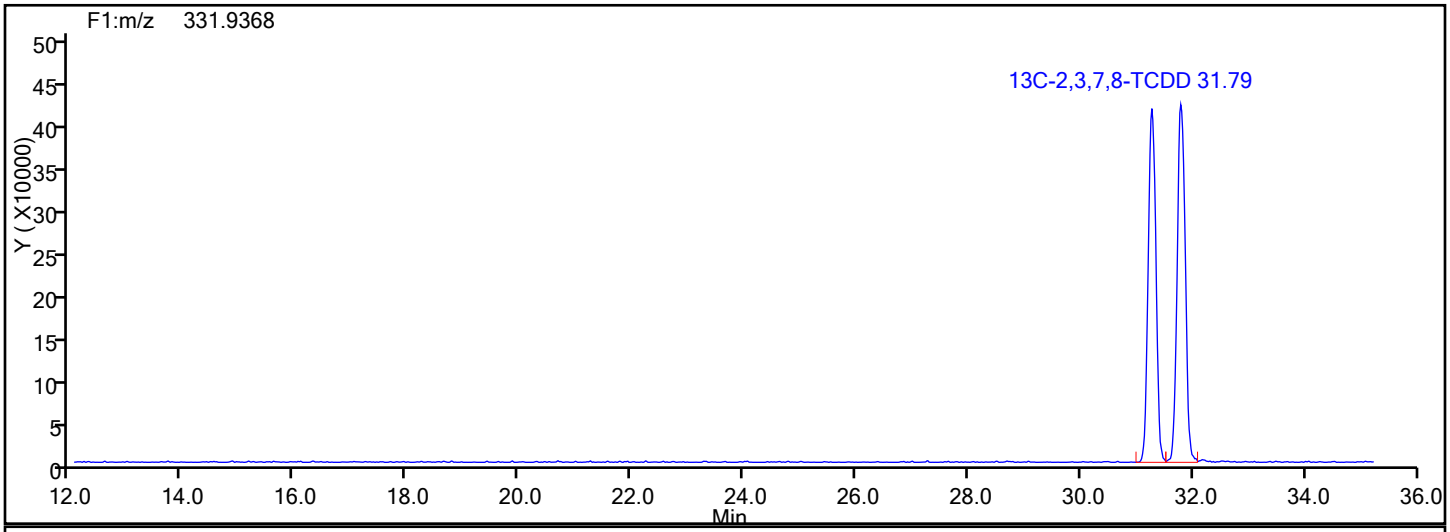
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

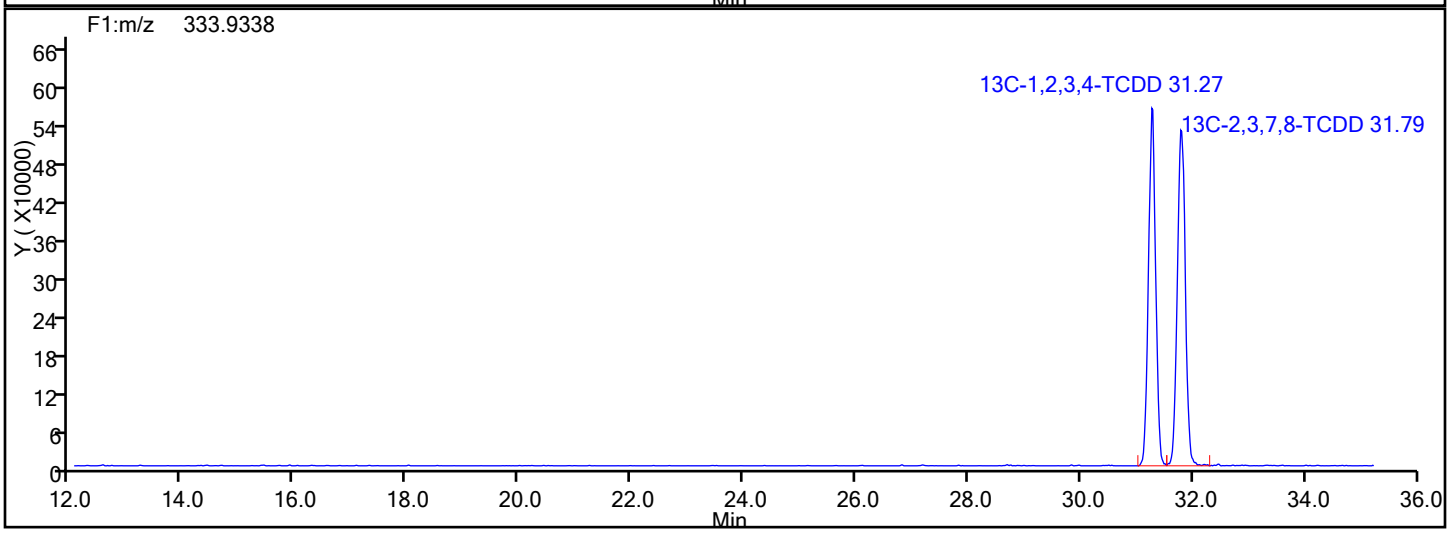
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





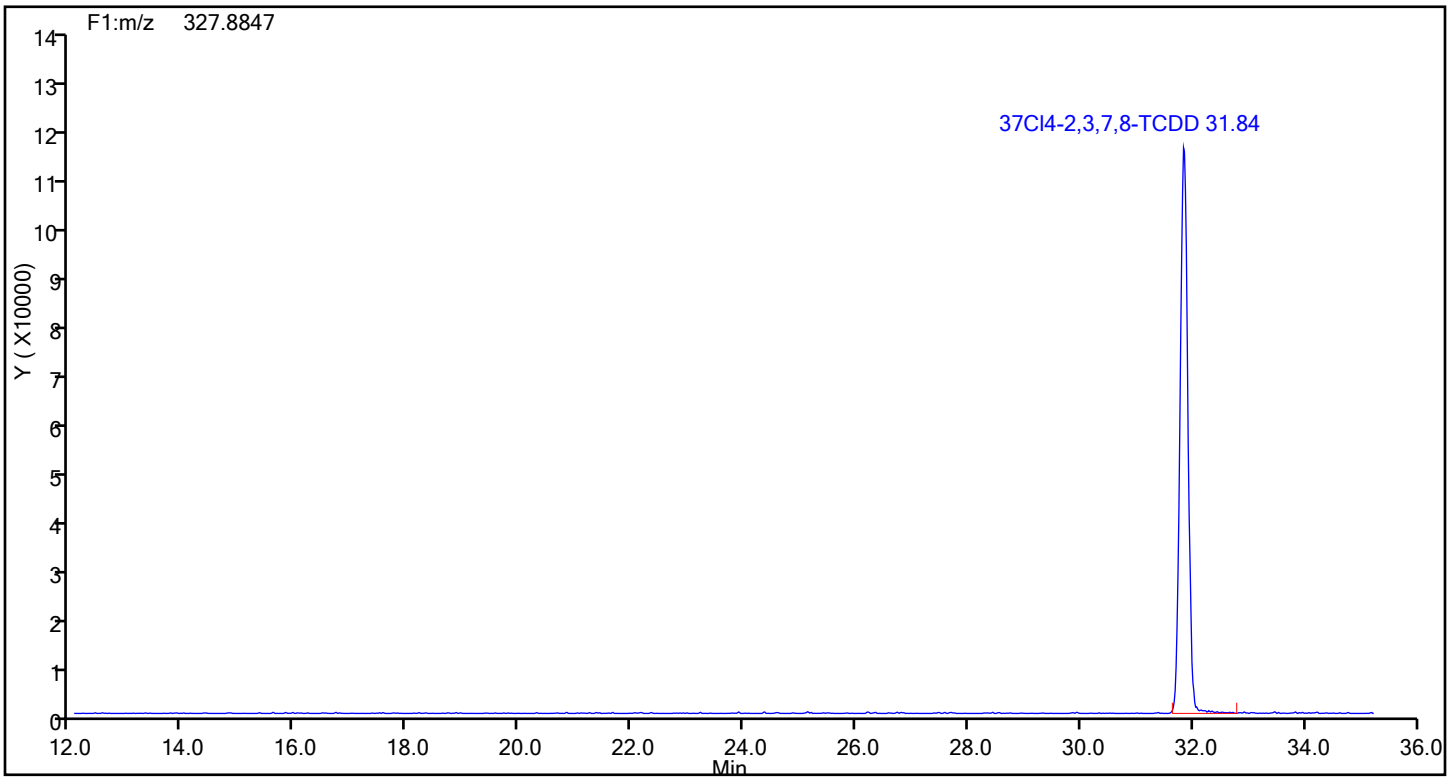
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

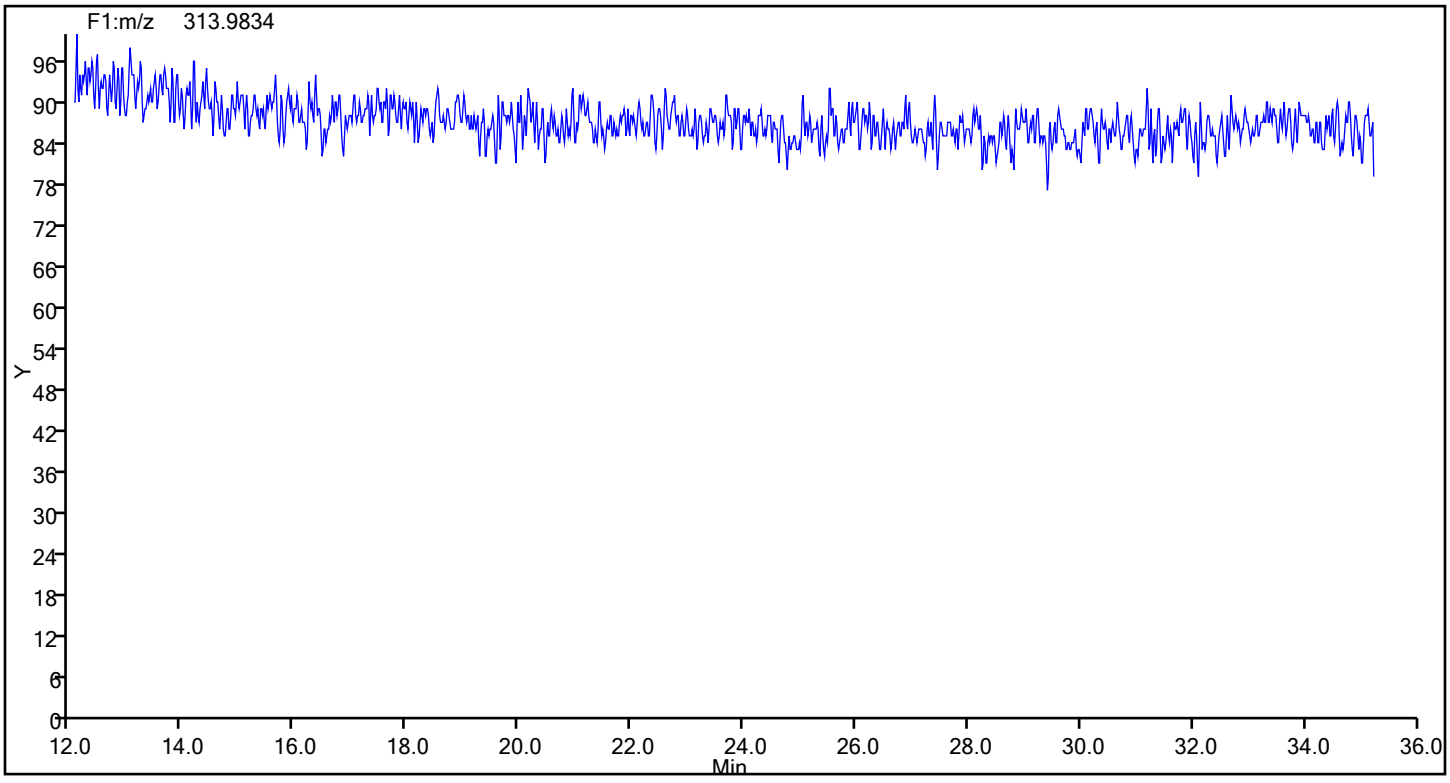
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



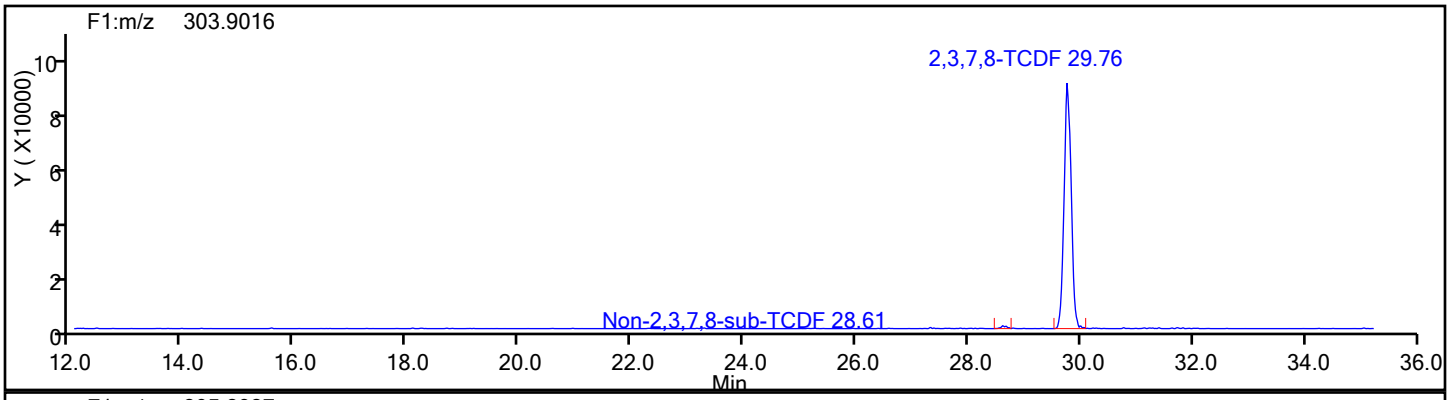
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

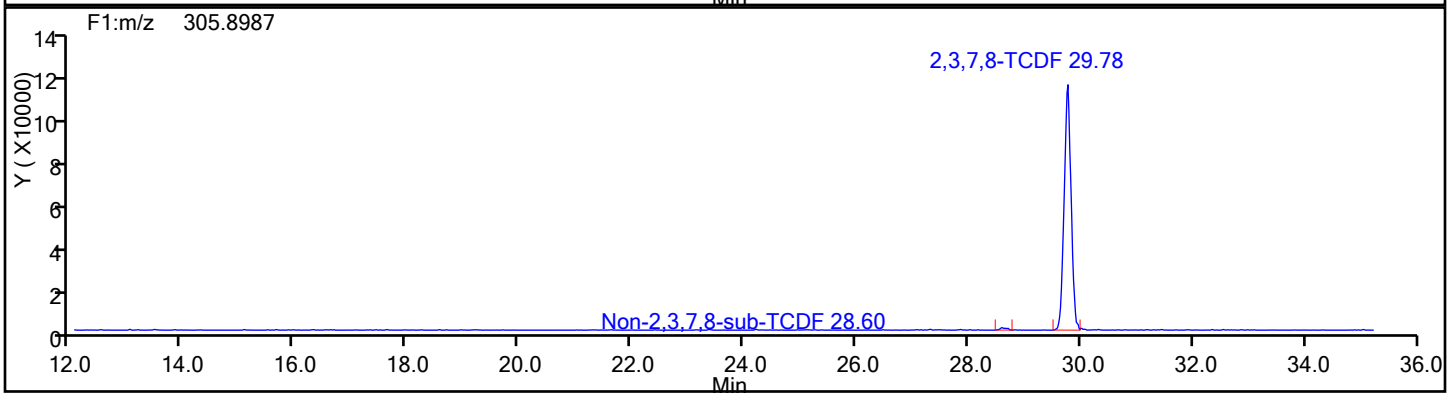
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

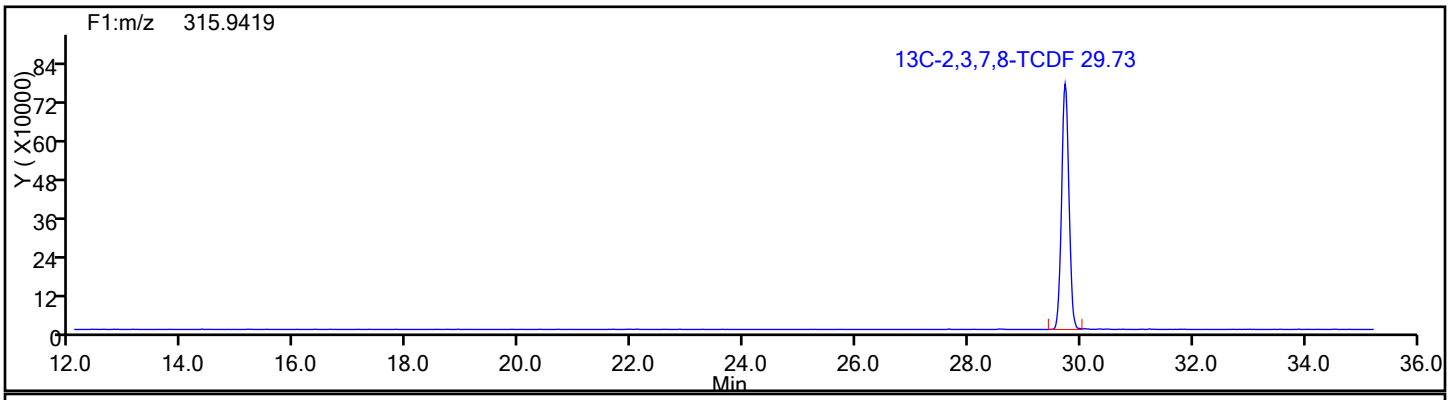
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

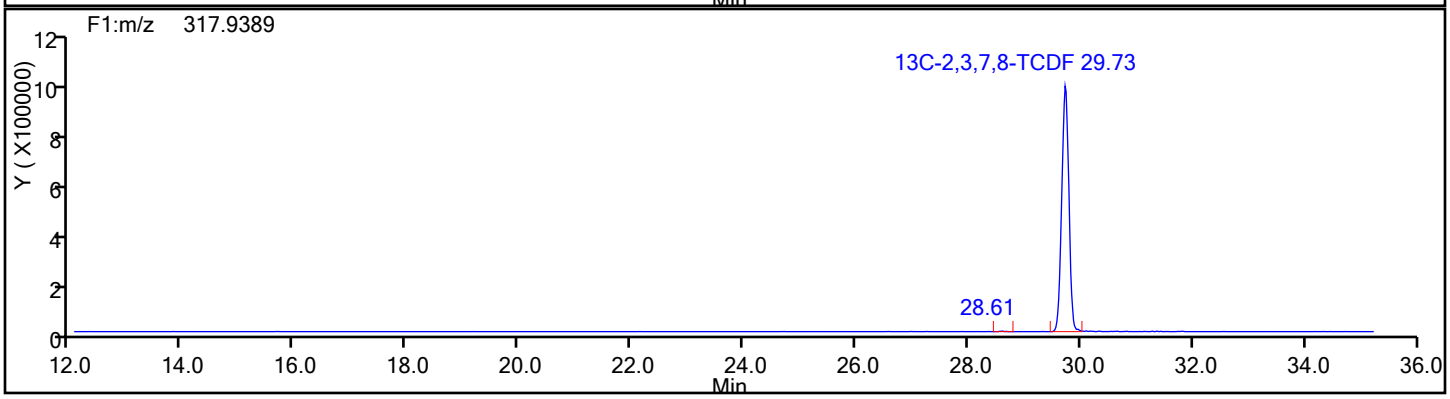
TCDF





TCDF Standards





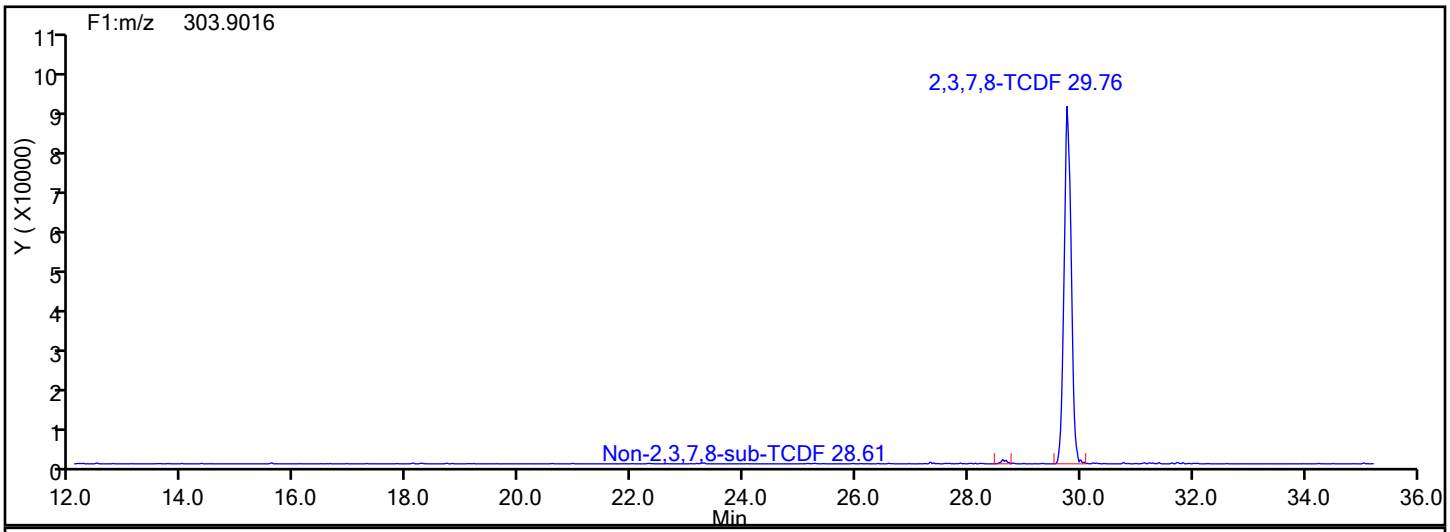
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

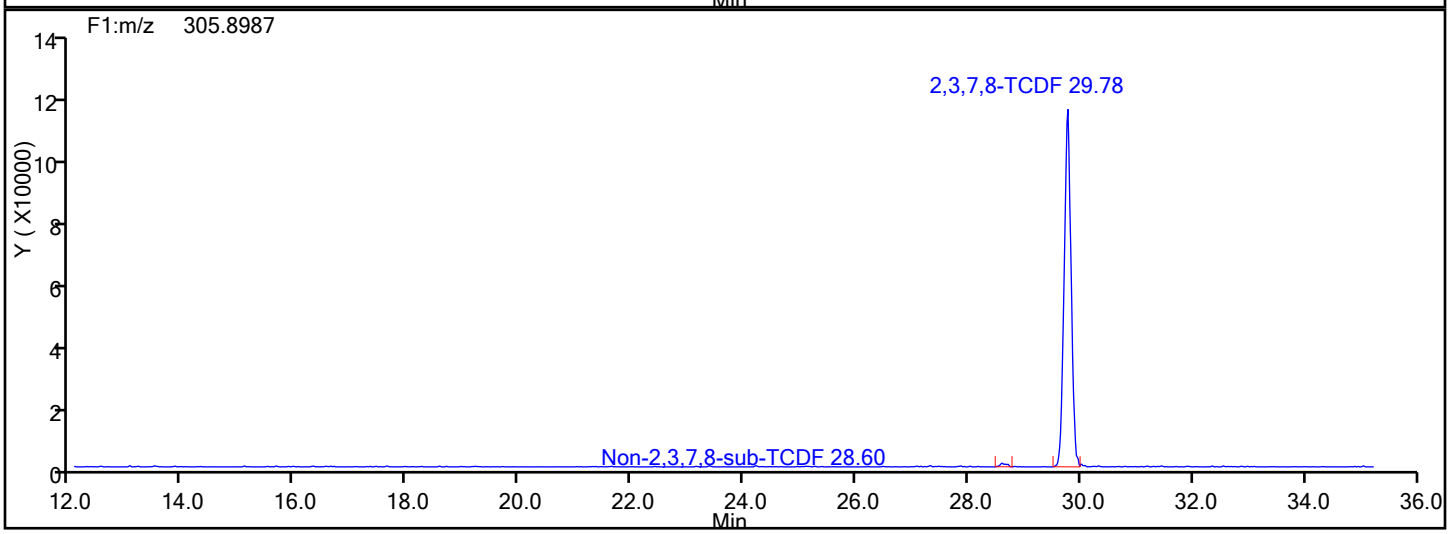
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

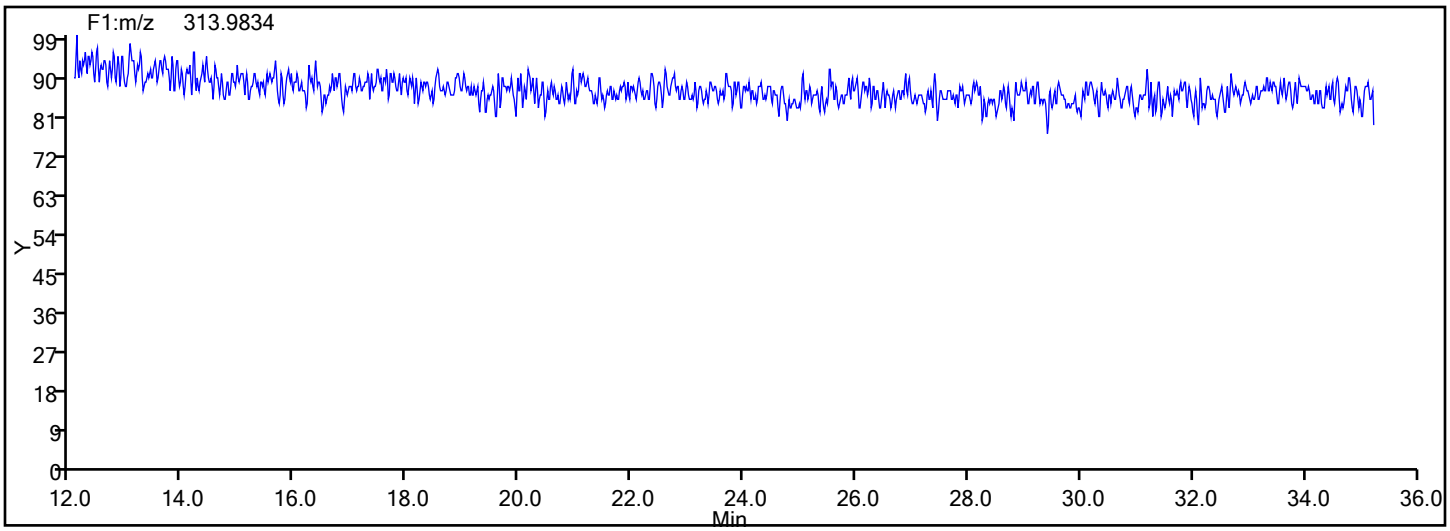
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass



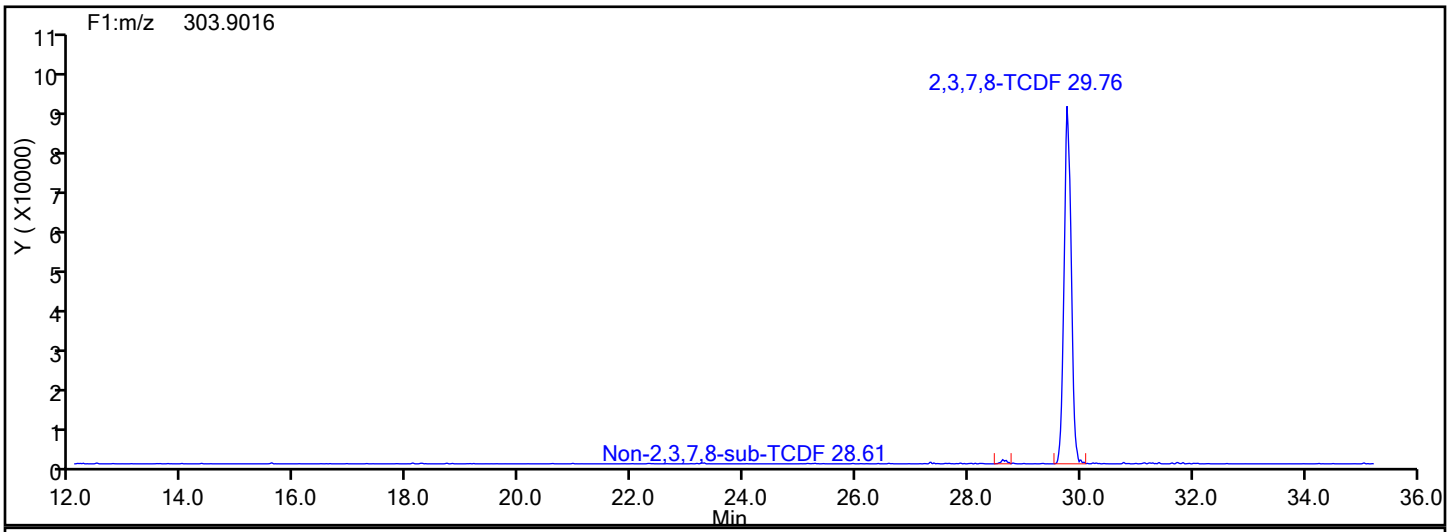
Report Date: 12-Jan-2017 08:10:06 Chrom Revision: 2.2 10-Jan-2017 11:26:10

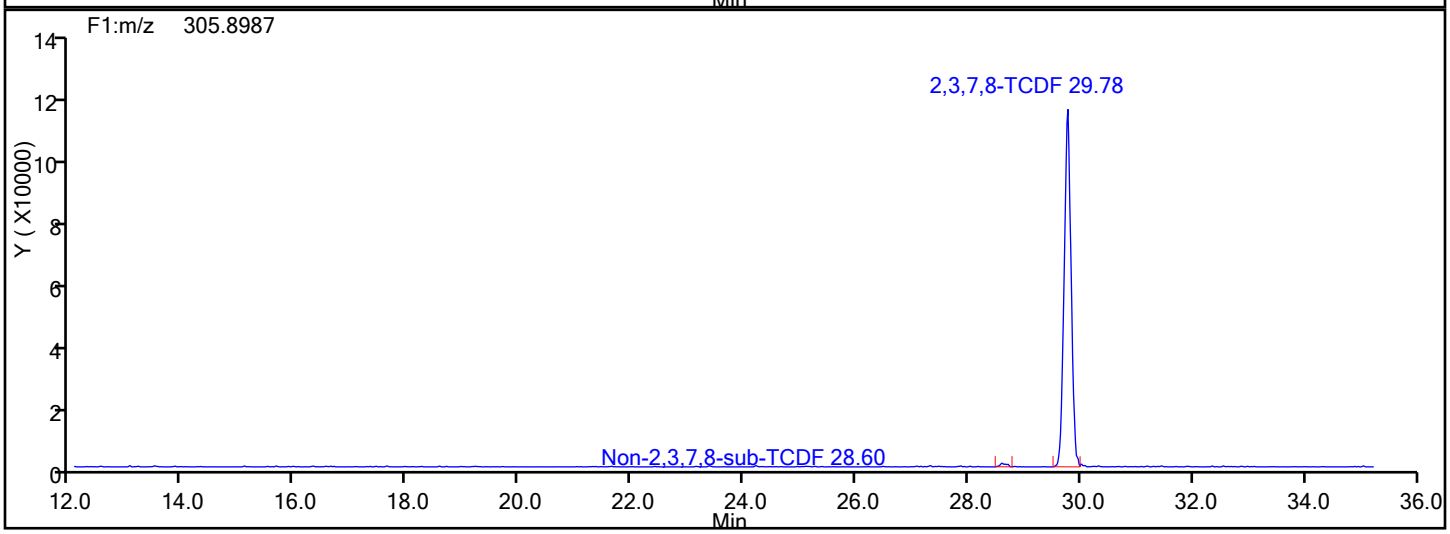
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

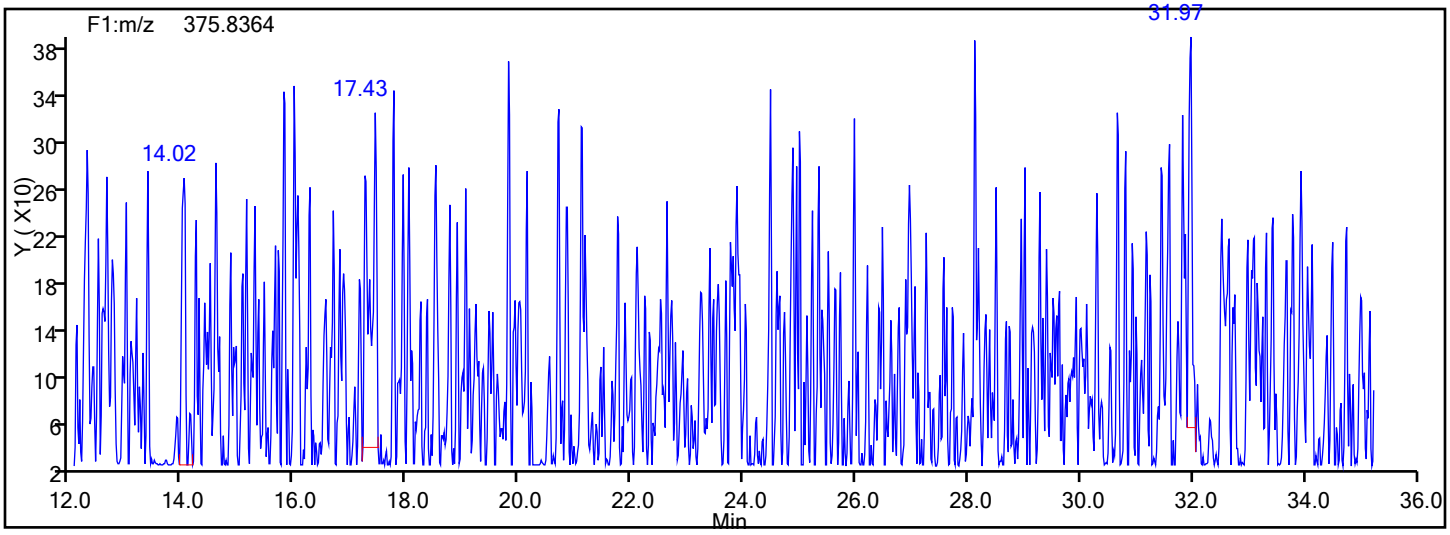
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



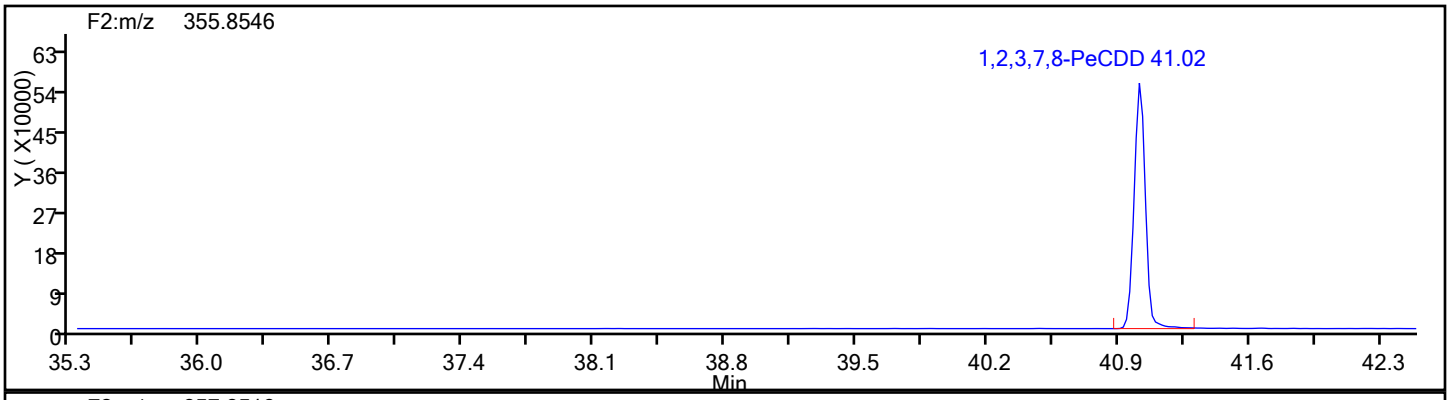
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

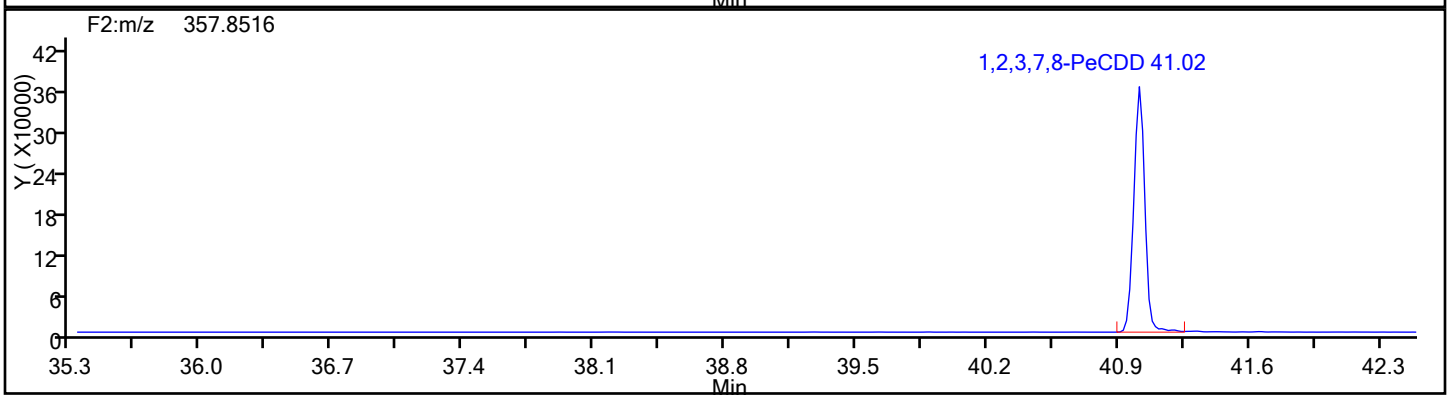
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

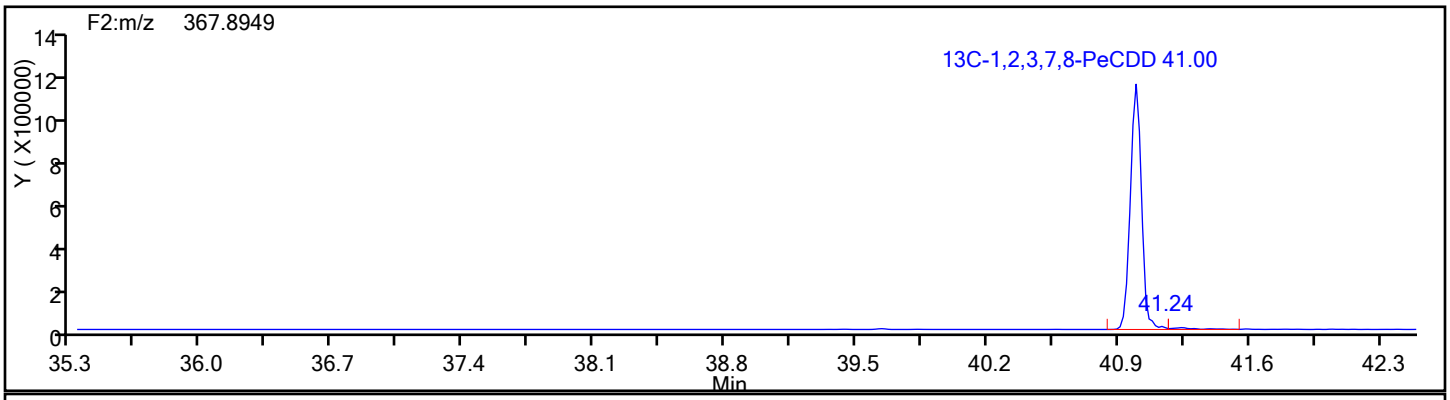
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

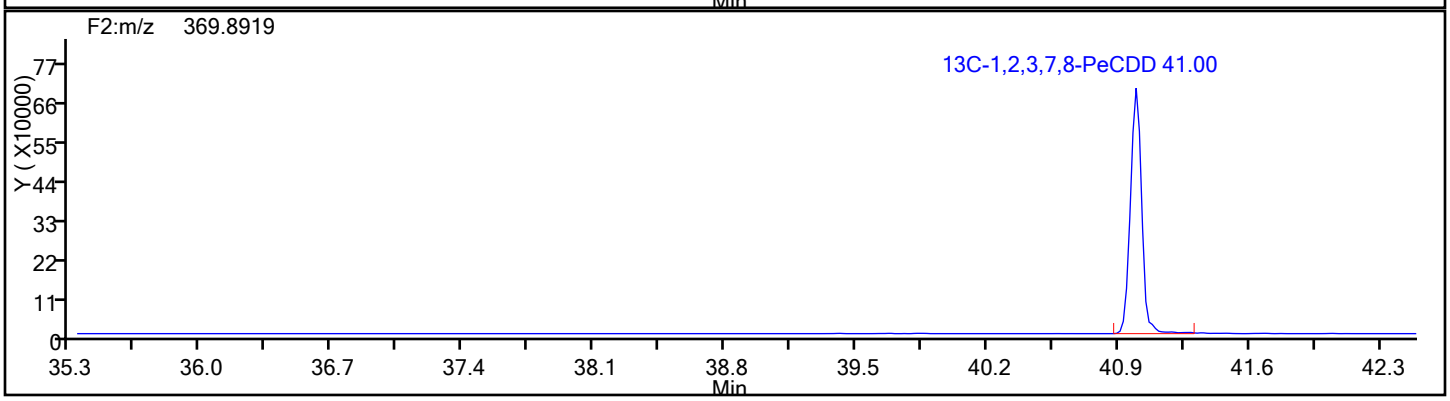
PeCDD





PeCDD Standards





Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

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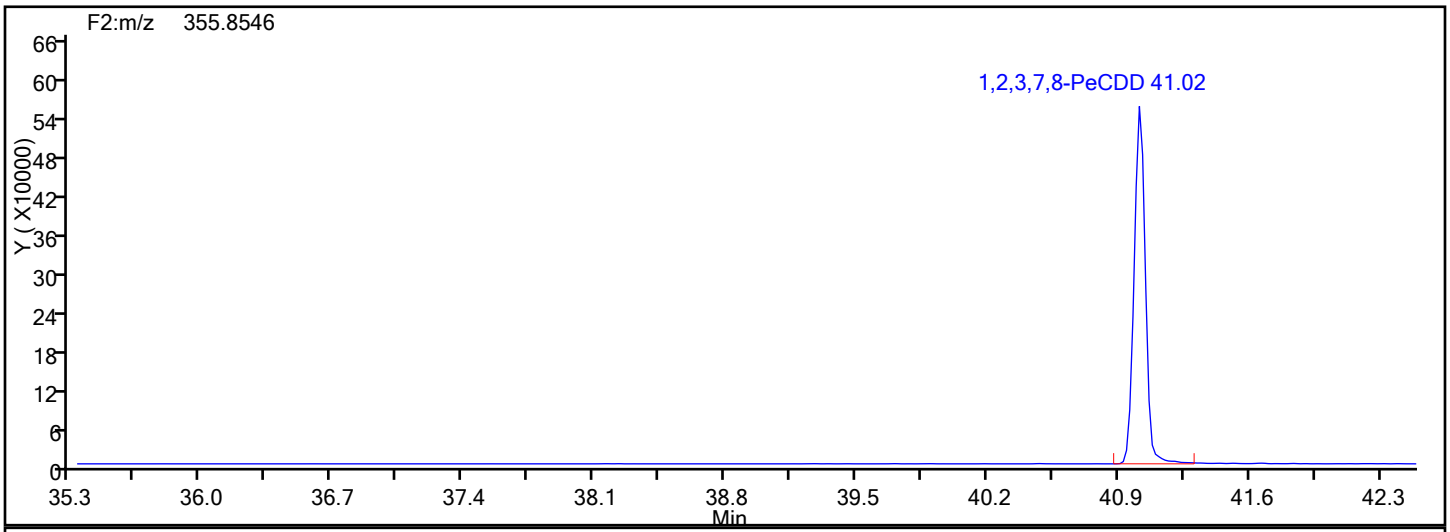

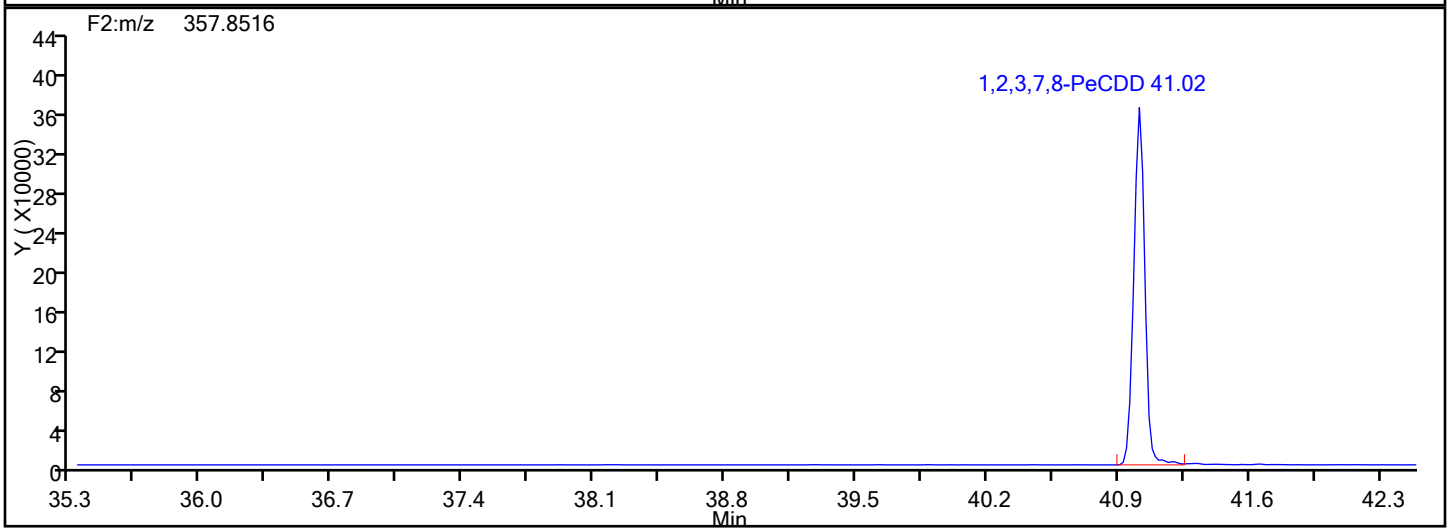

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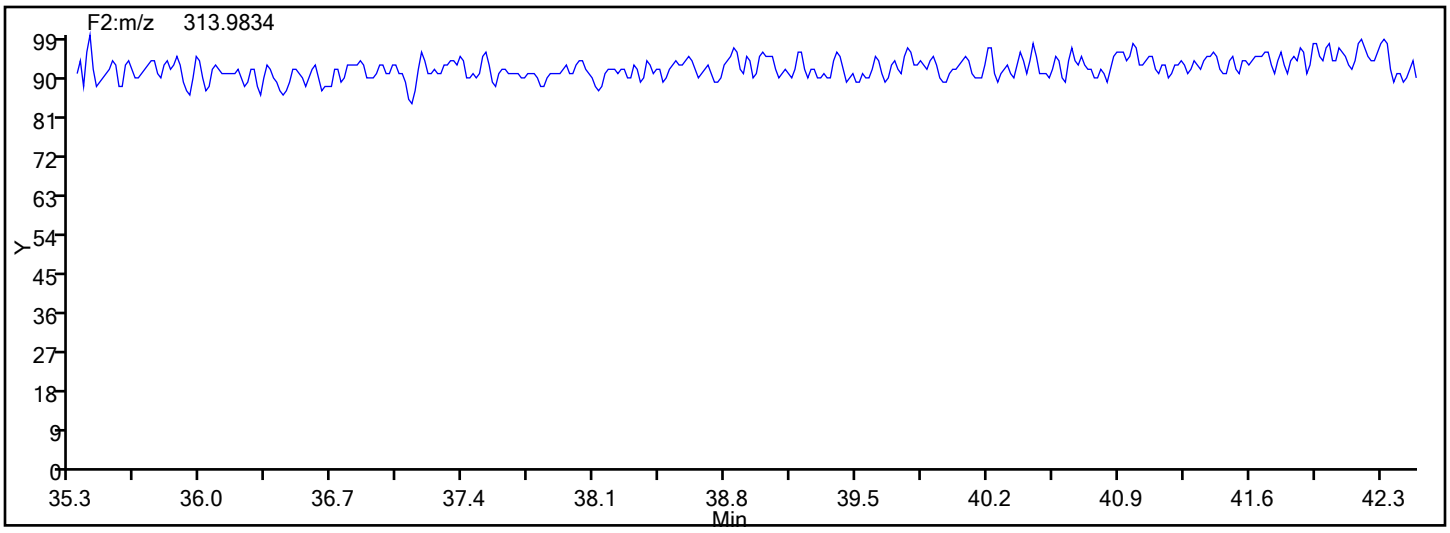

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TestAmerica Knoxville

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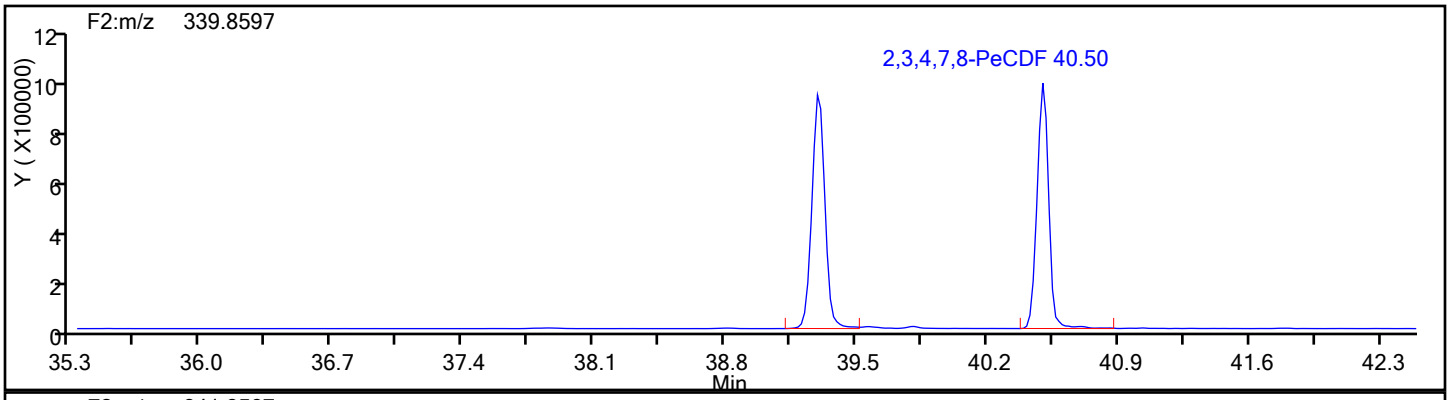

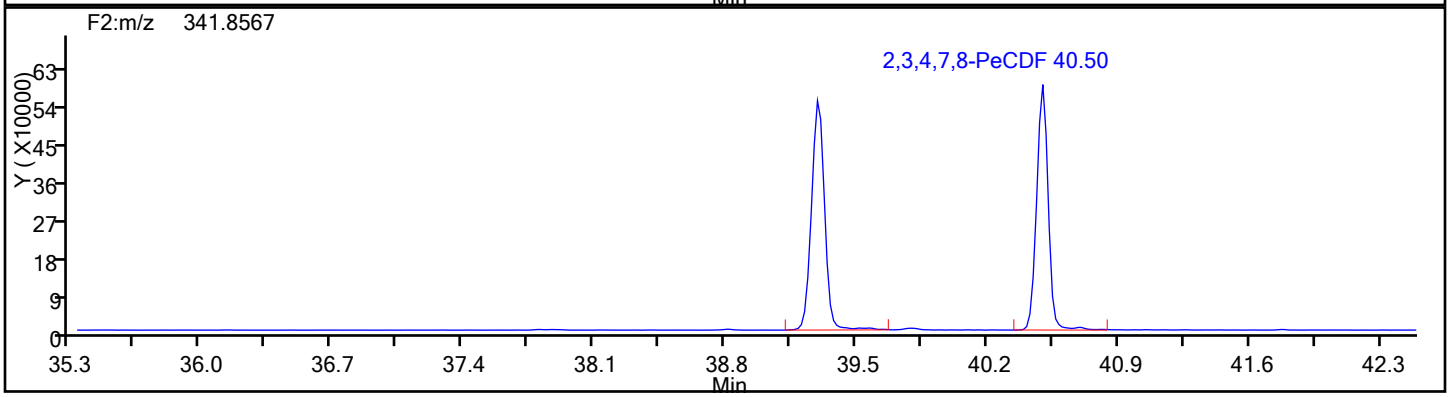

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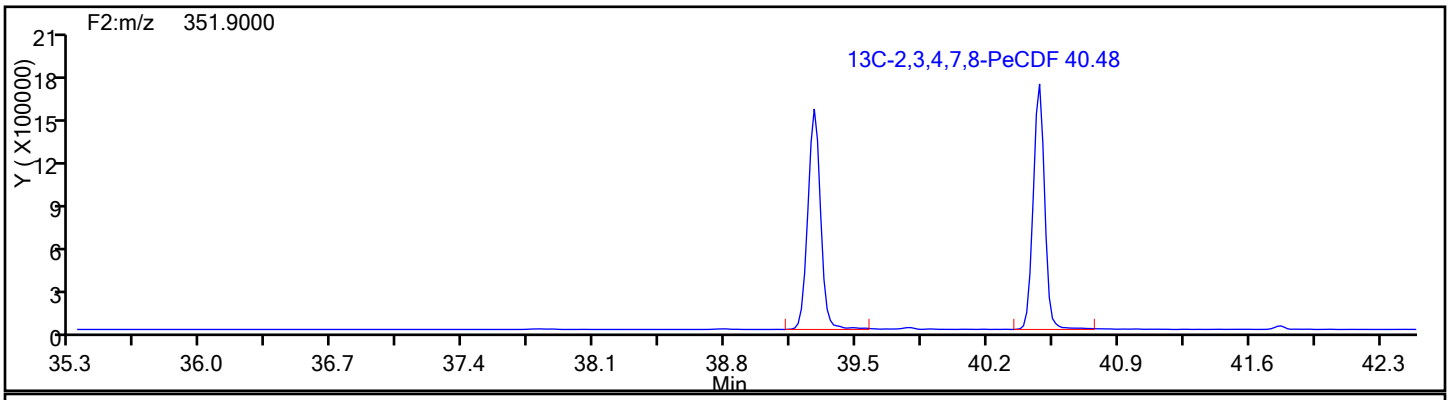

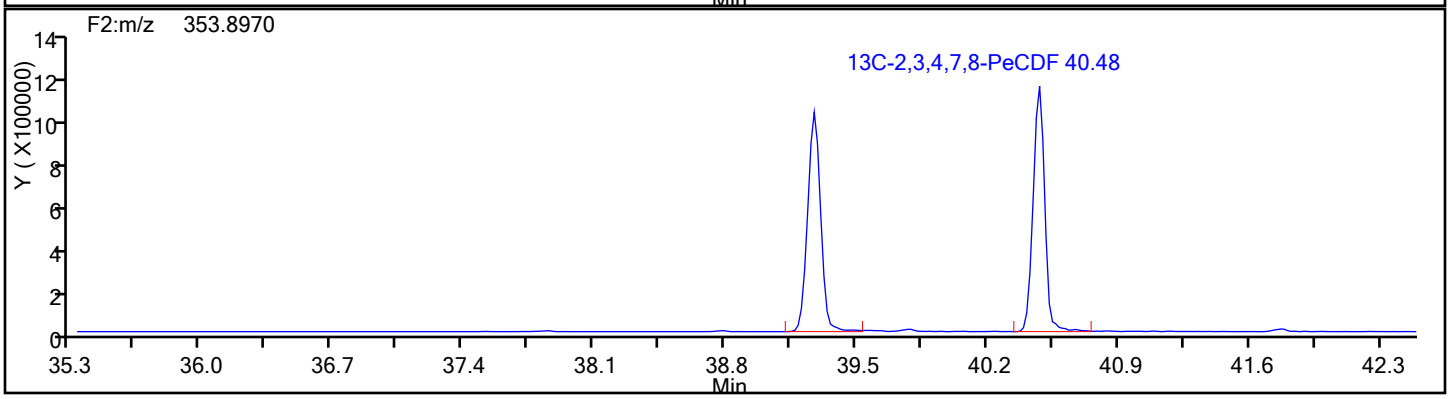

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TestAmerica Knoxville

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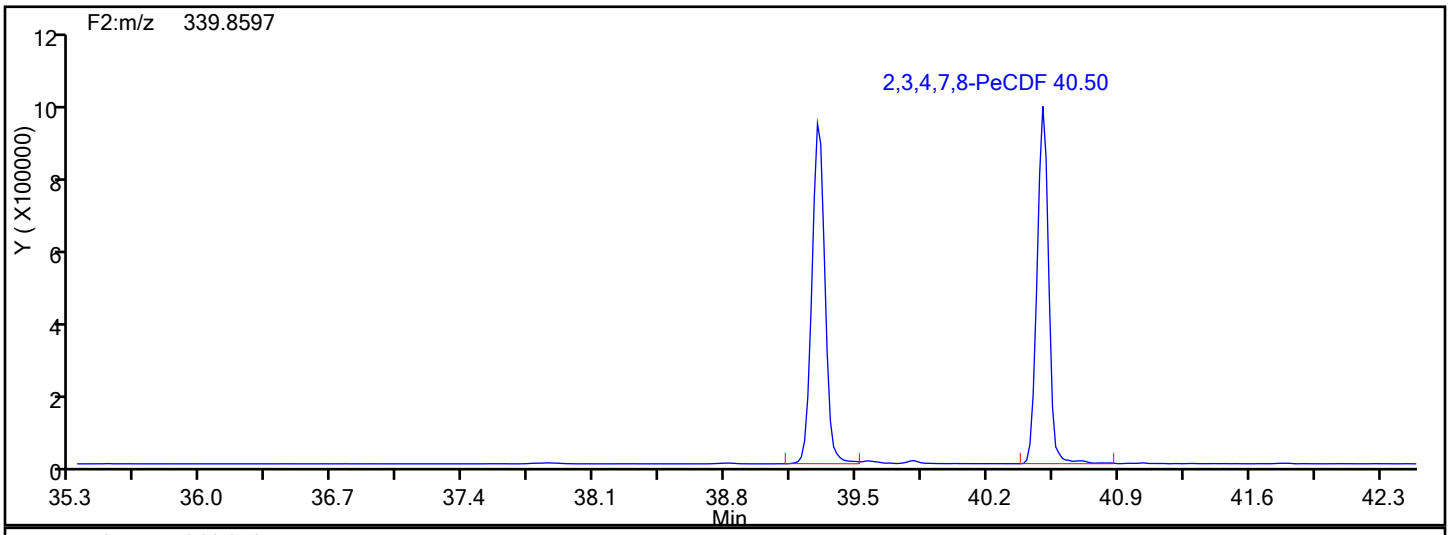

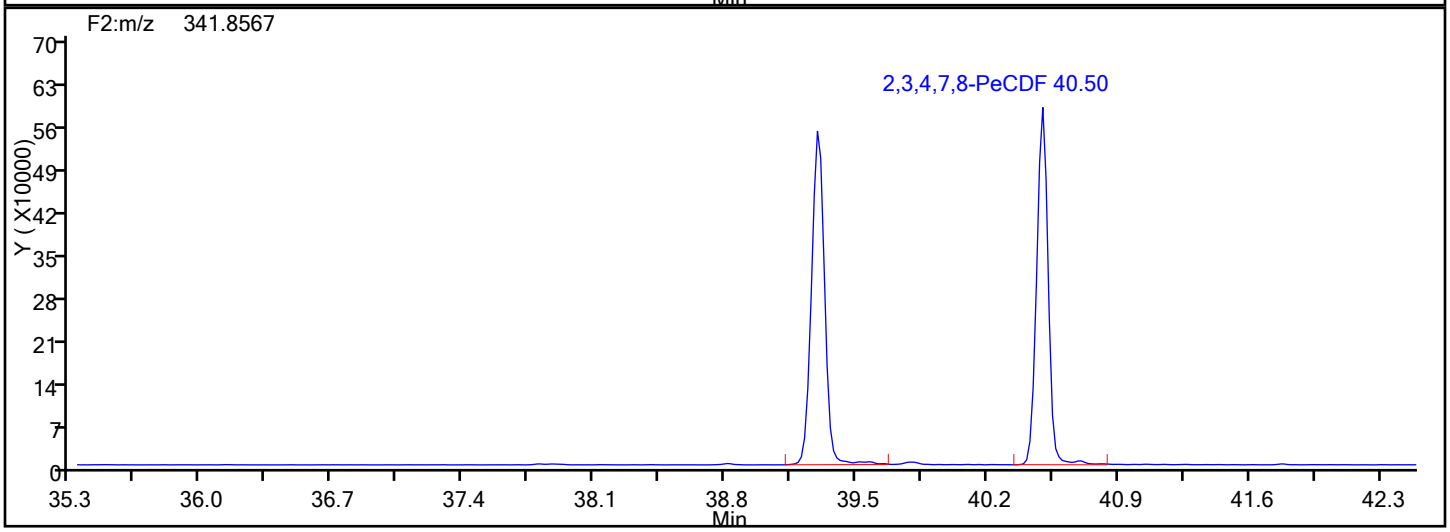

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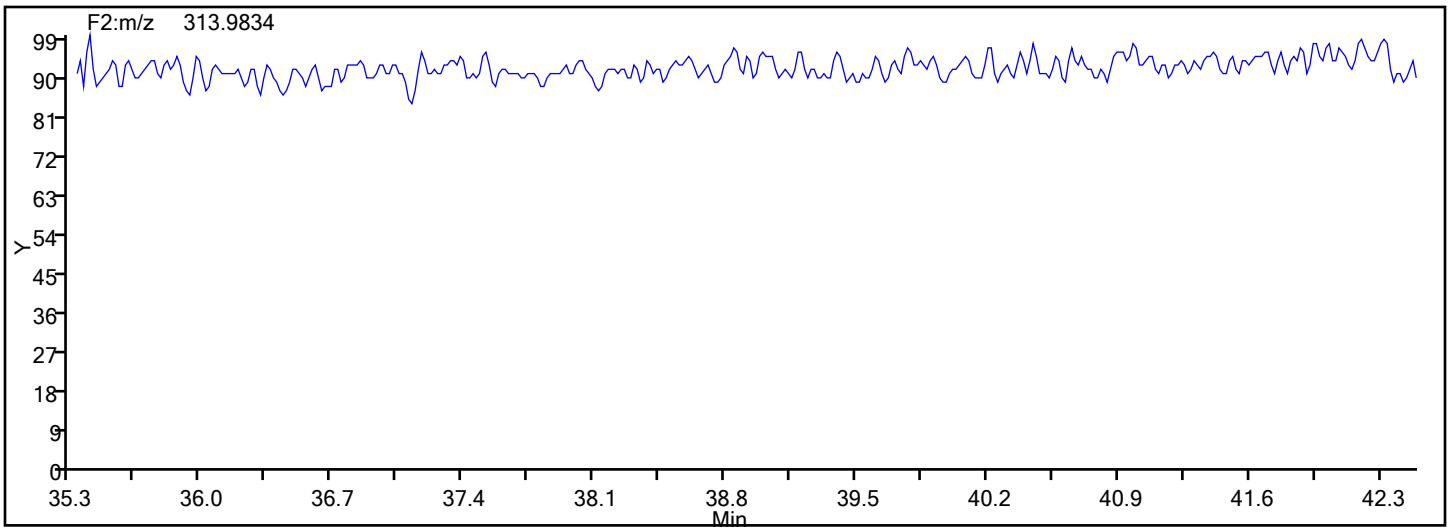

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TestAmerica Knoxville

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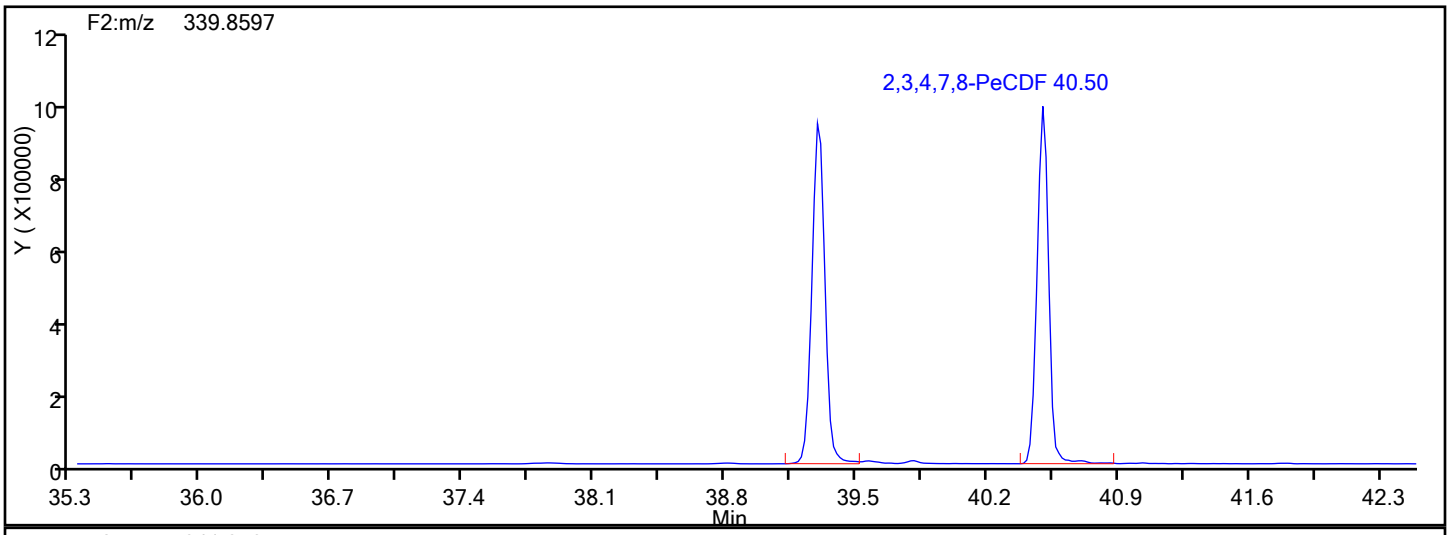

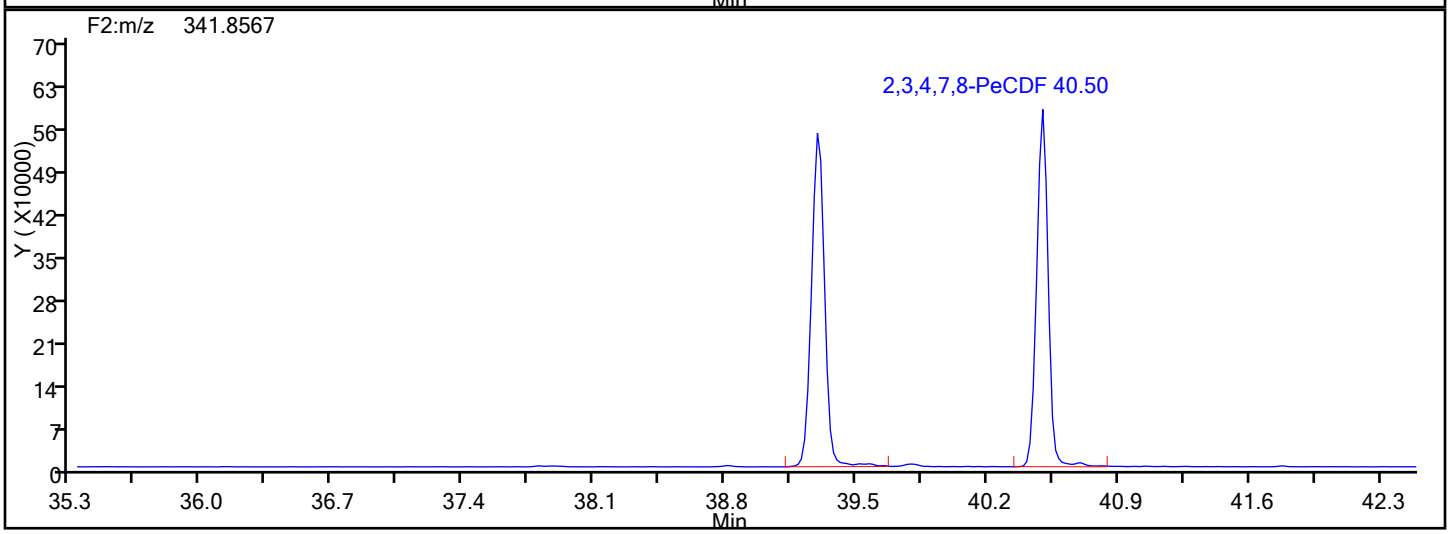

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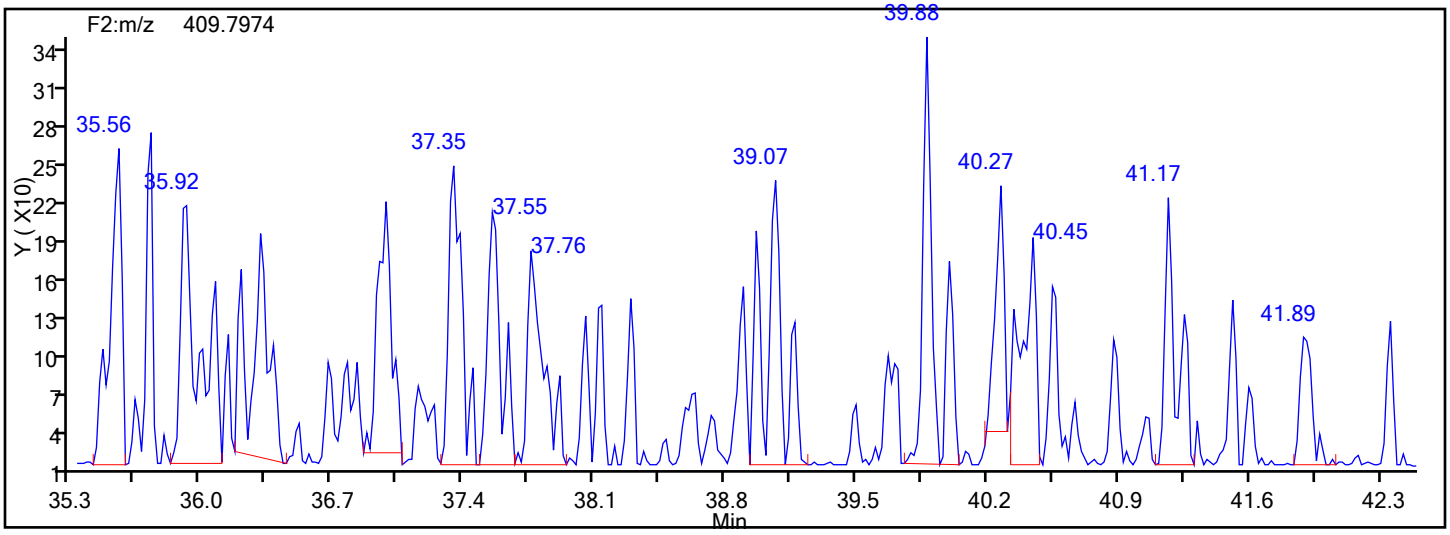

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TestAmerica Knoxville

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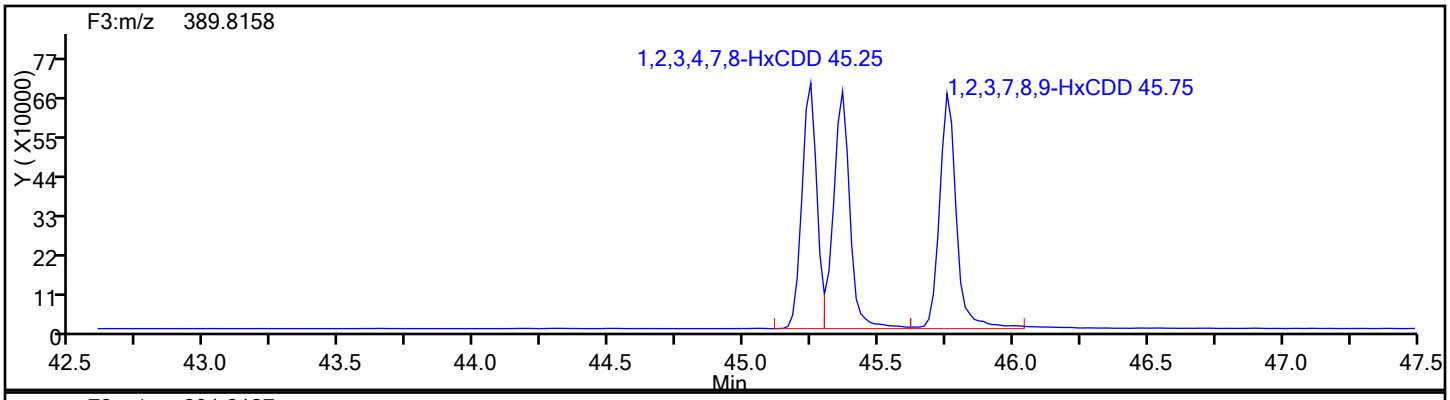
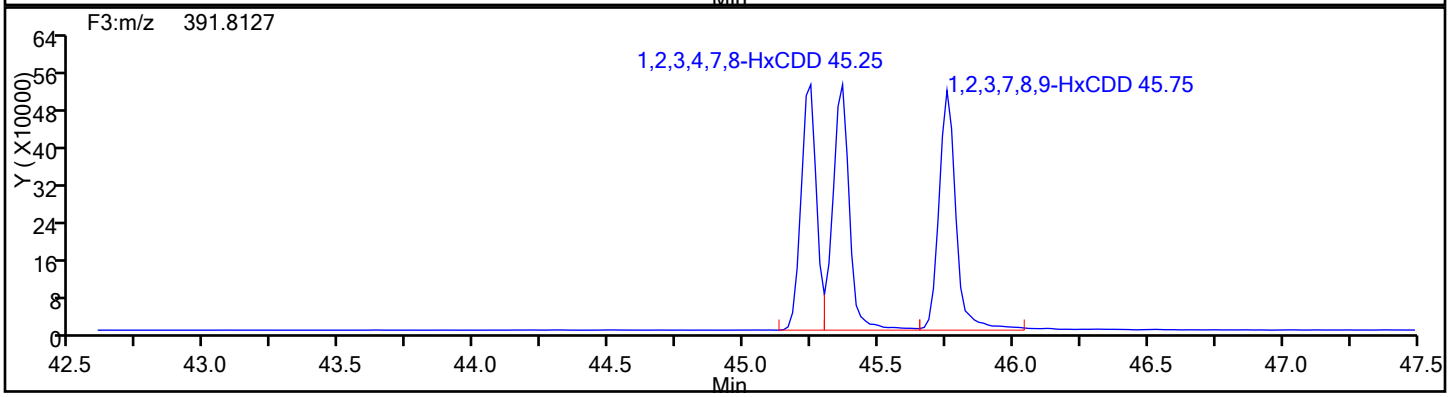
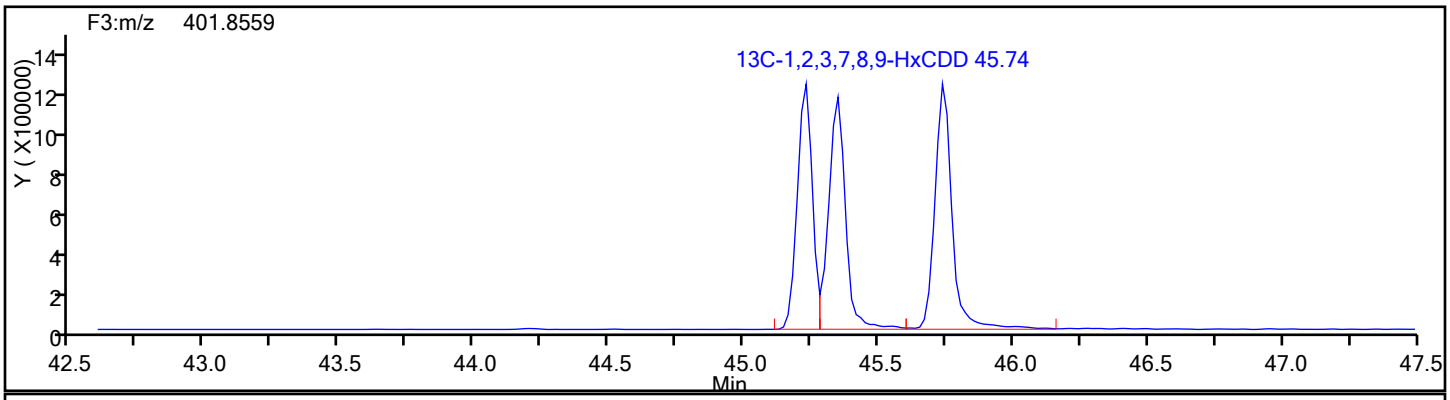
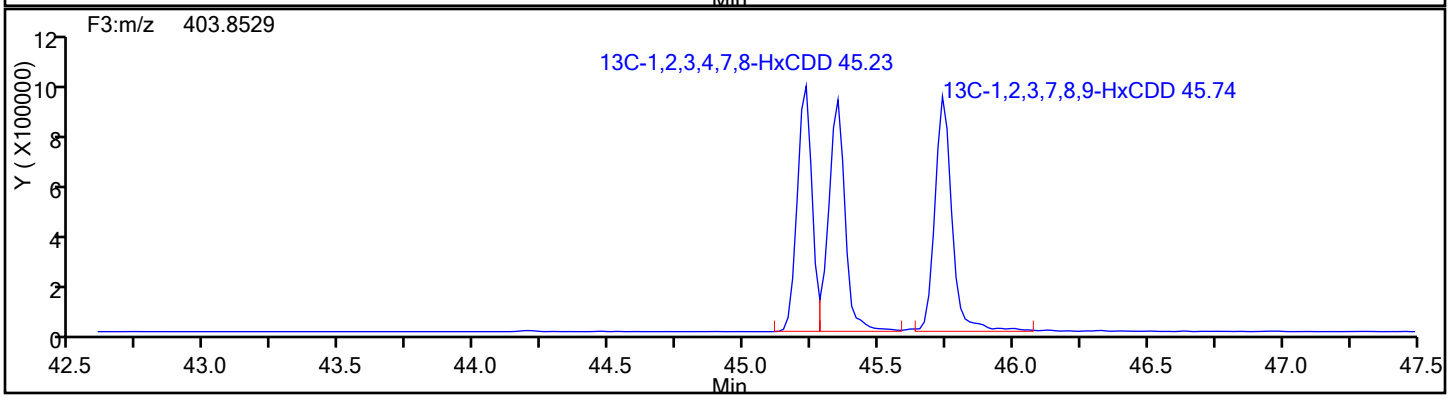




HxCDD Standards





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TestAmerica Knoxville

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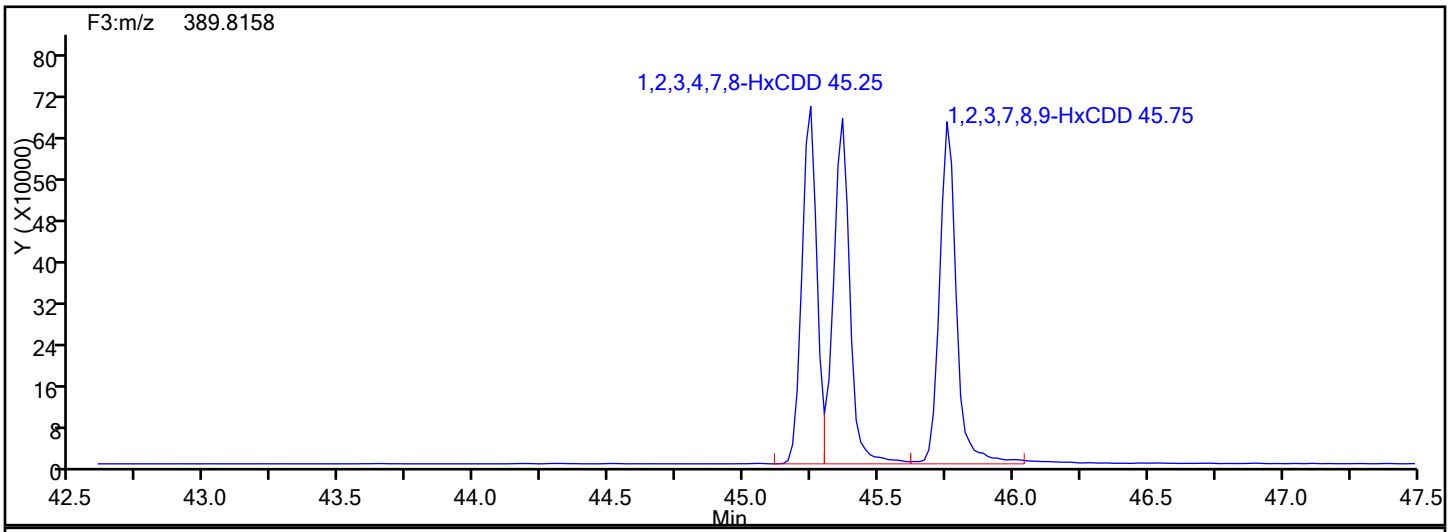

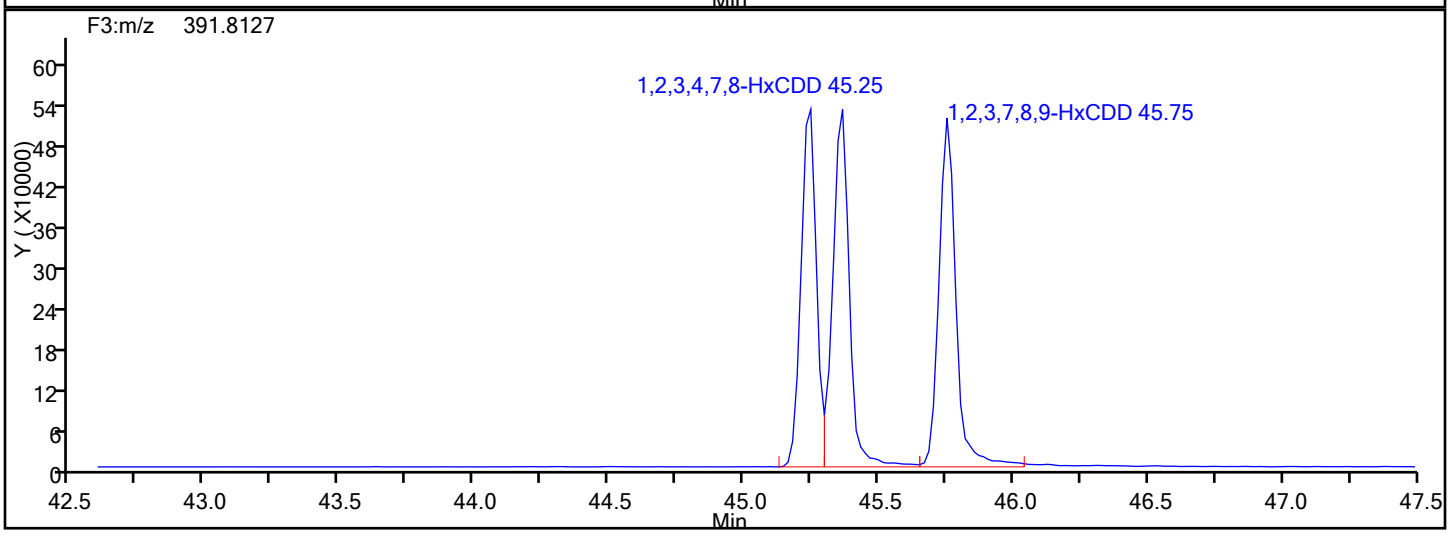

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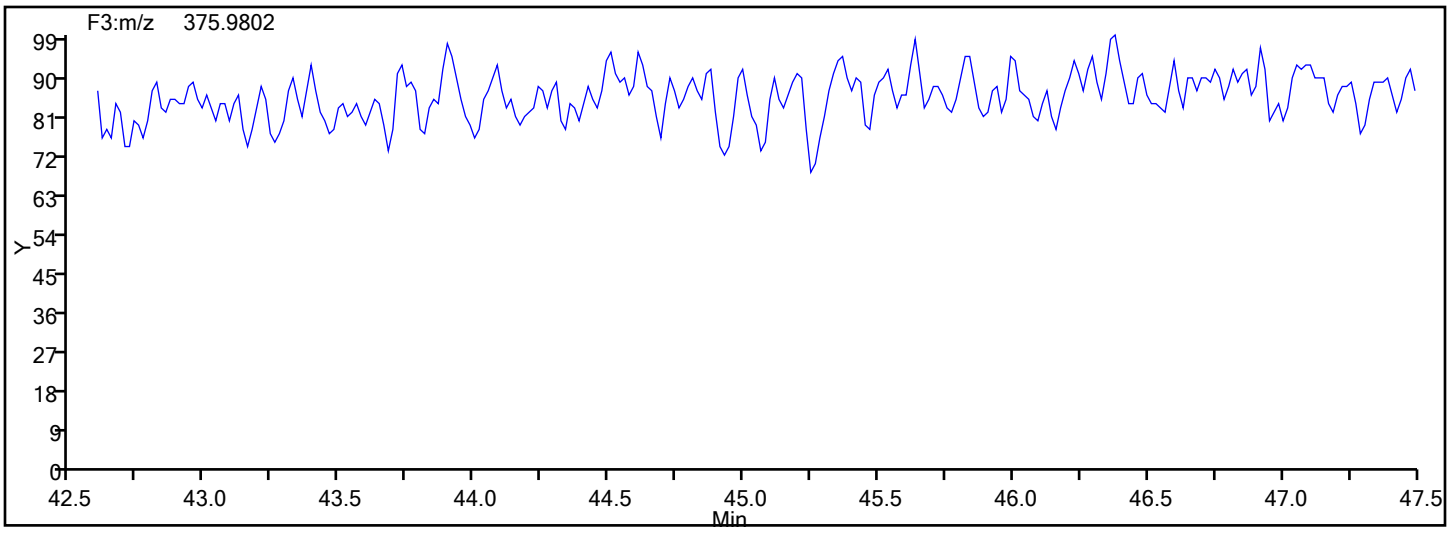

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TestAmerica Knoxville

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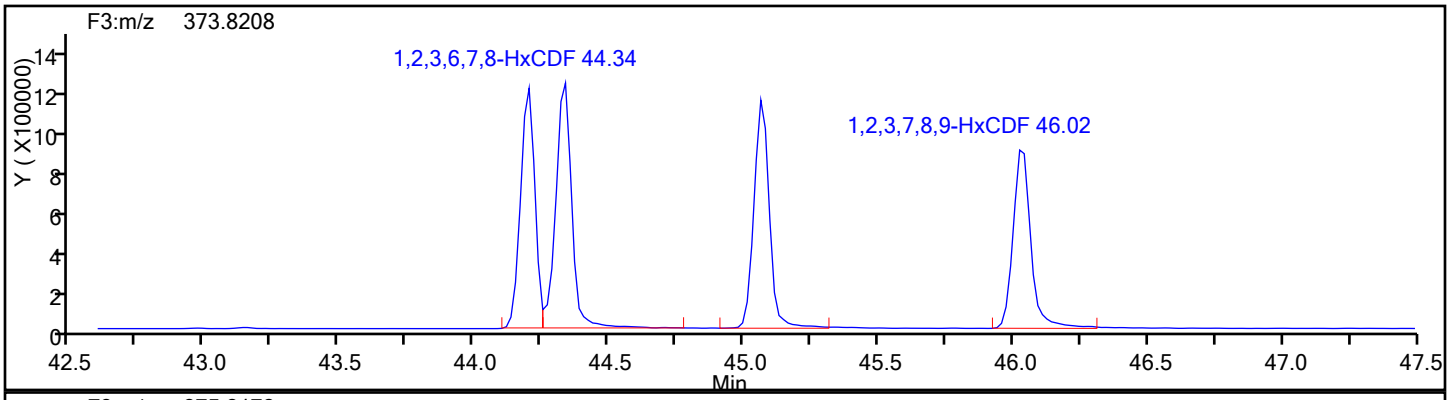

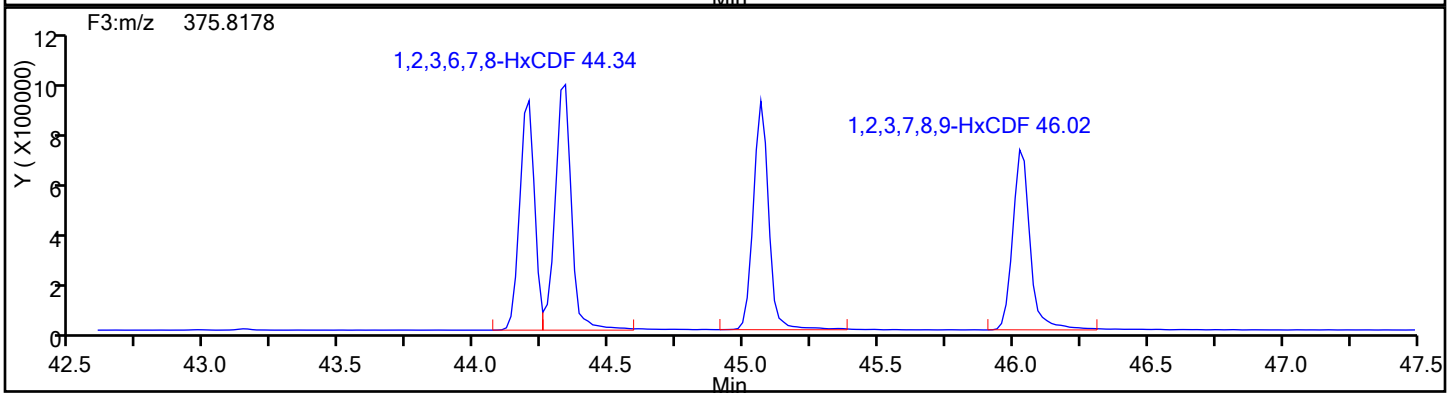

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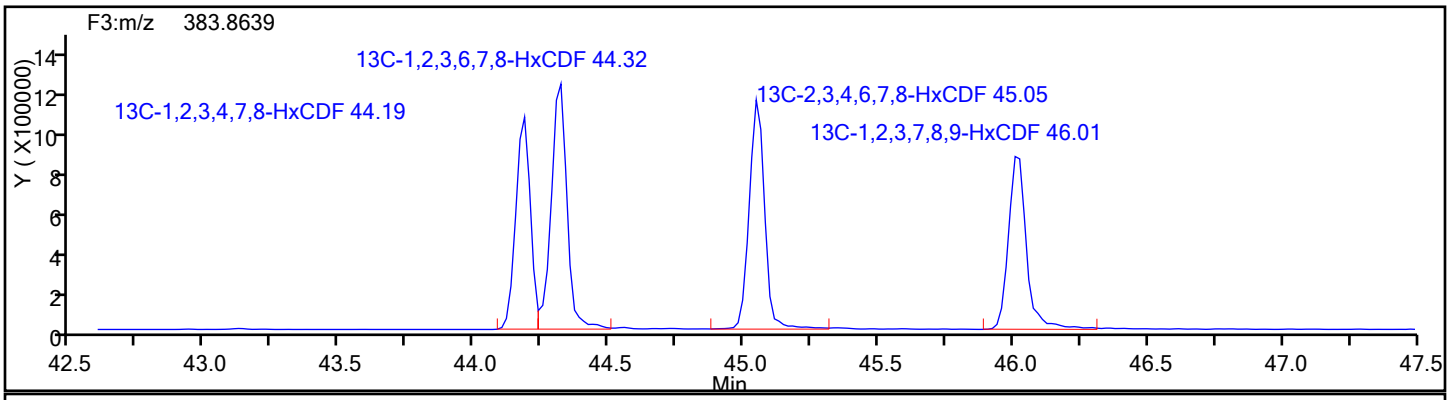

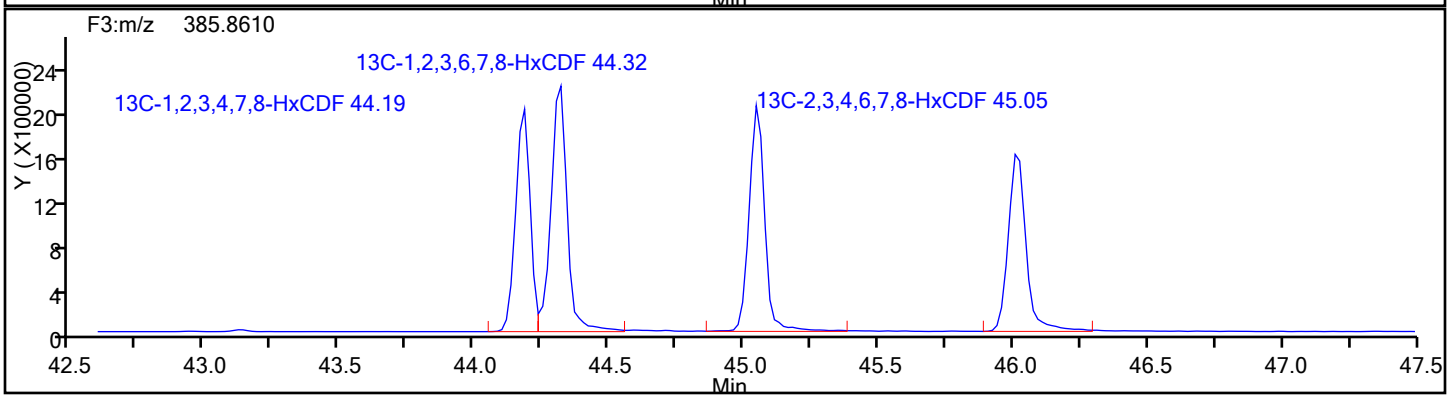

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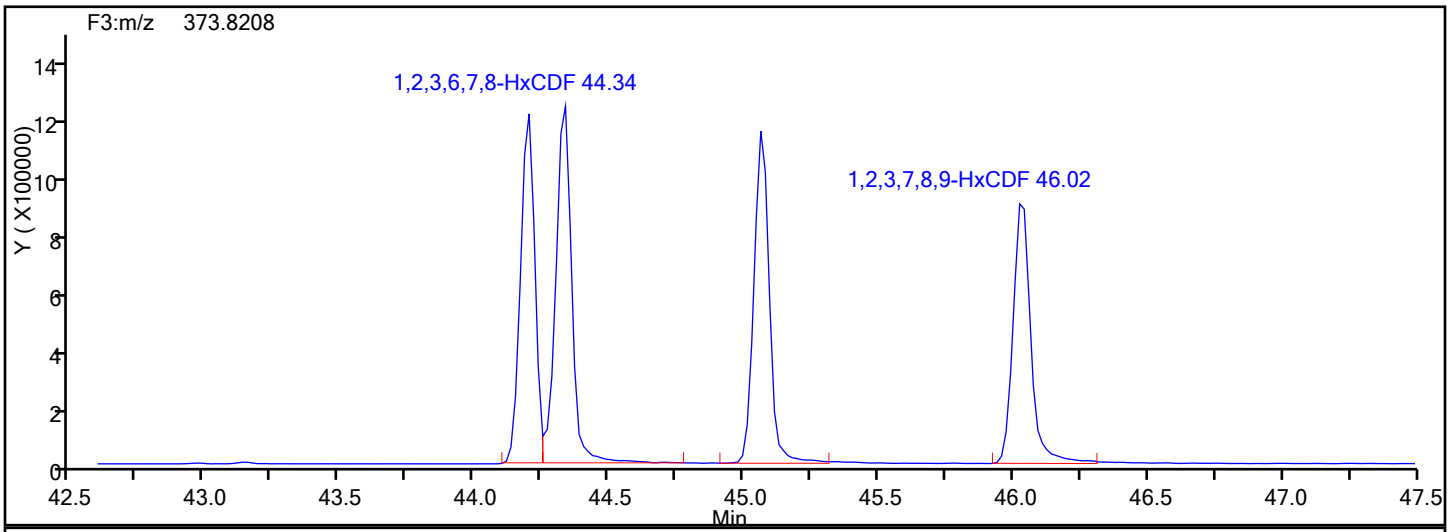

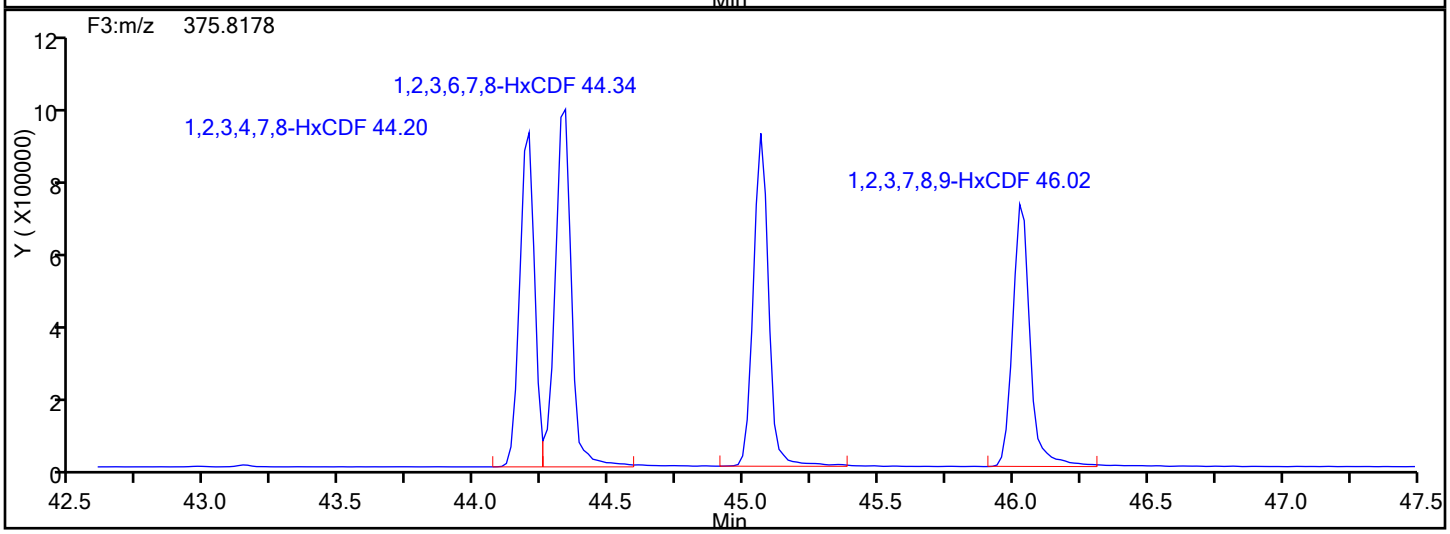

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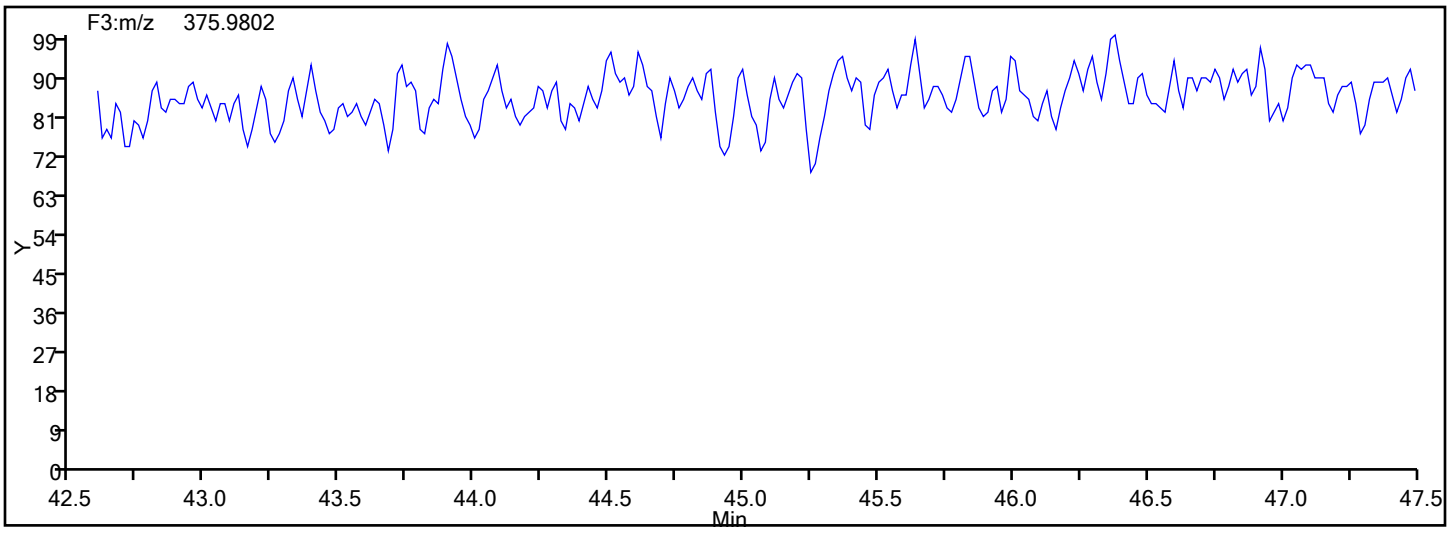

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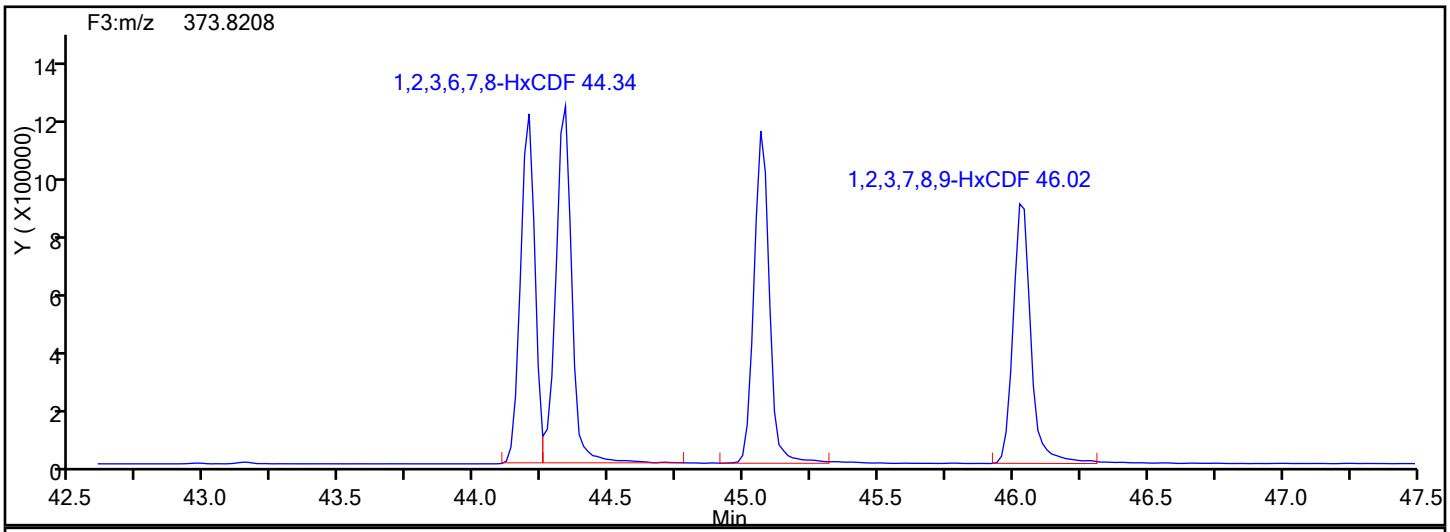

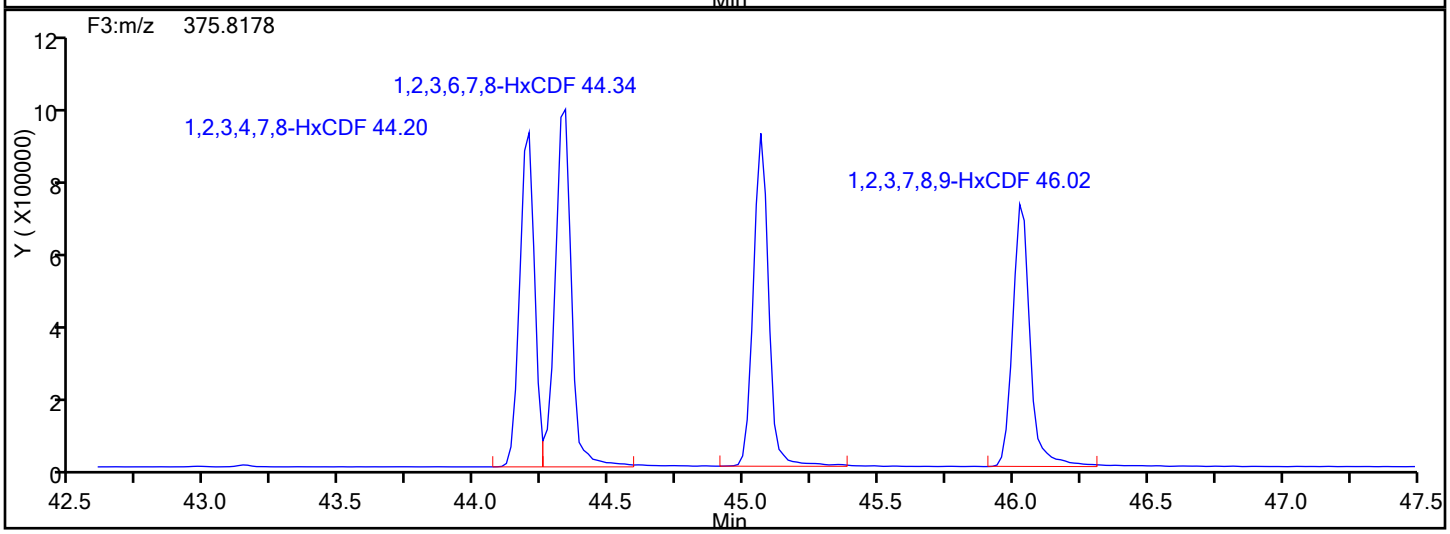

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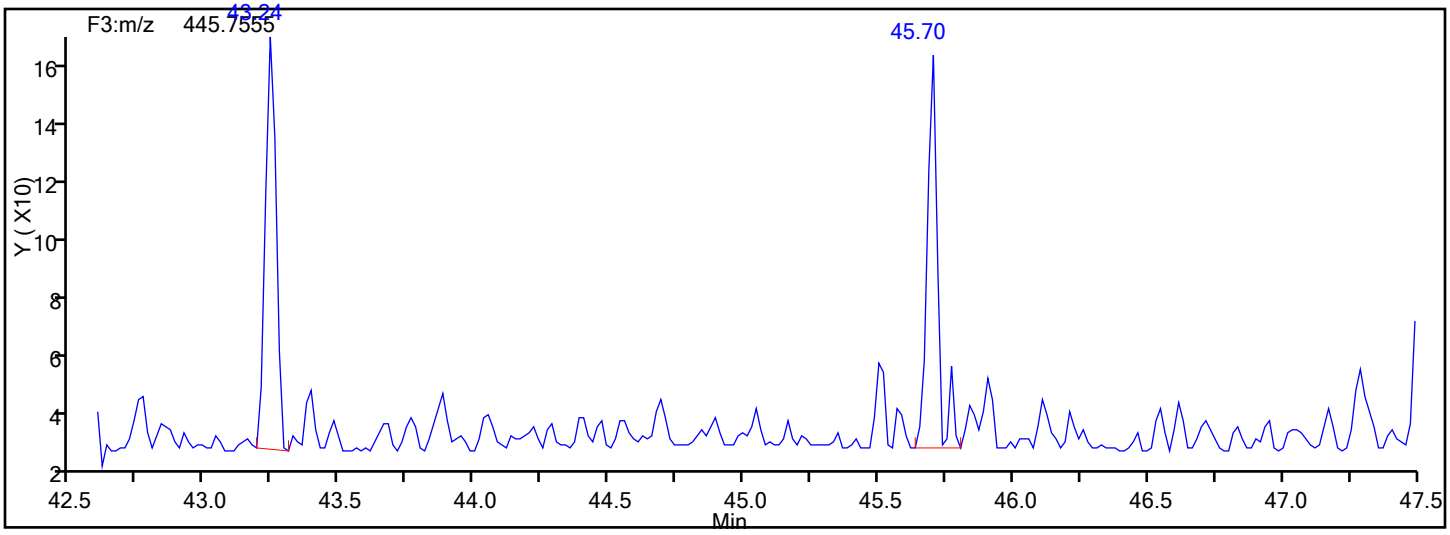

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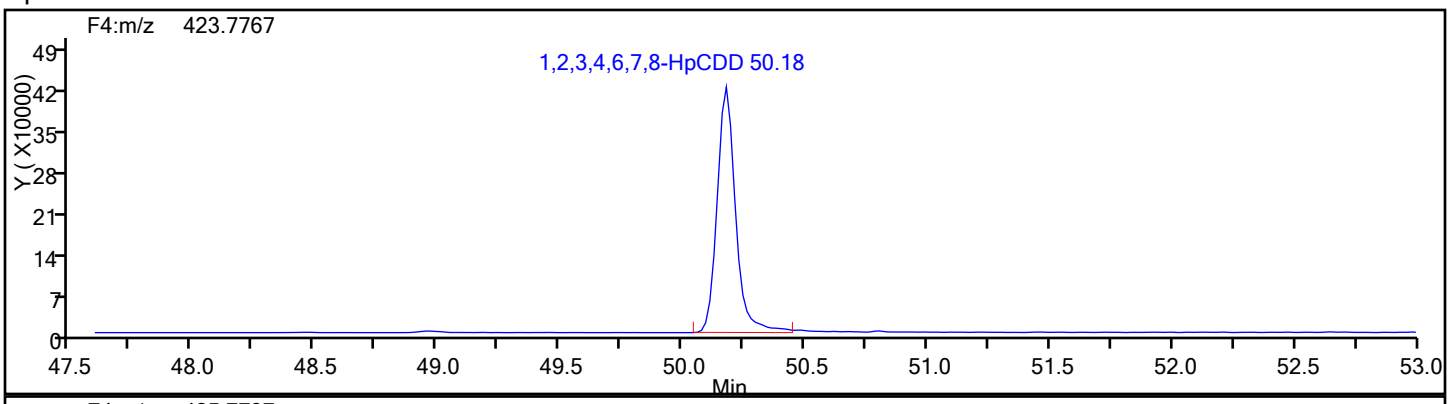

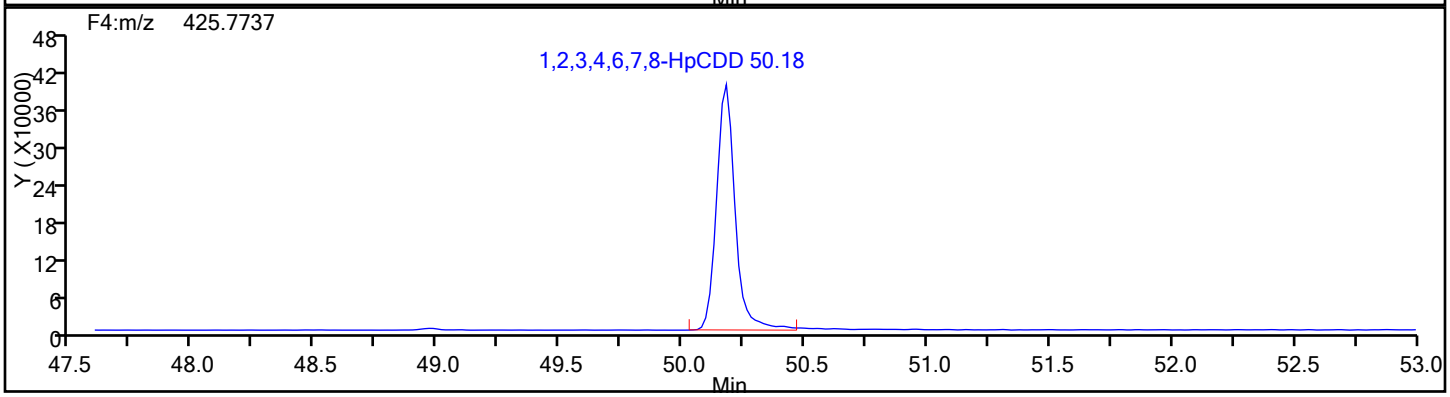

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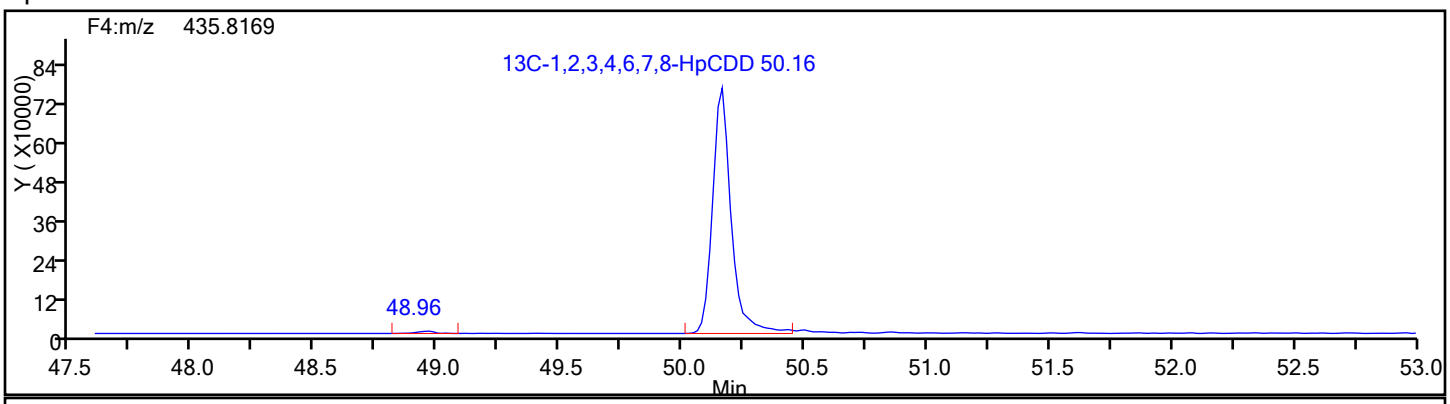

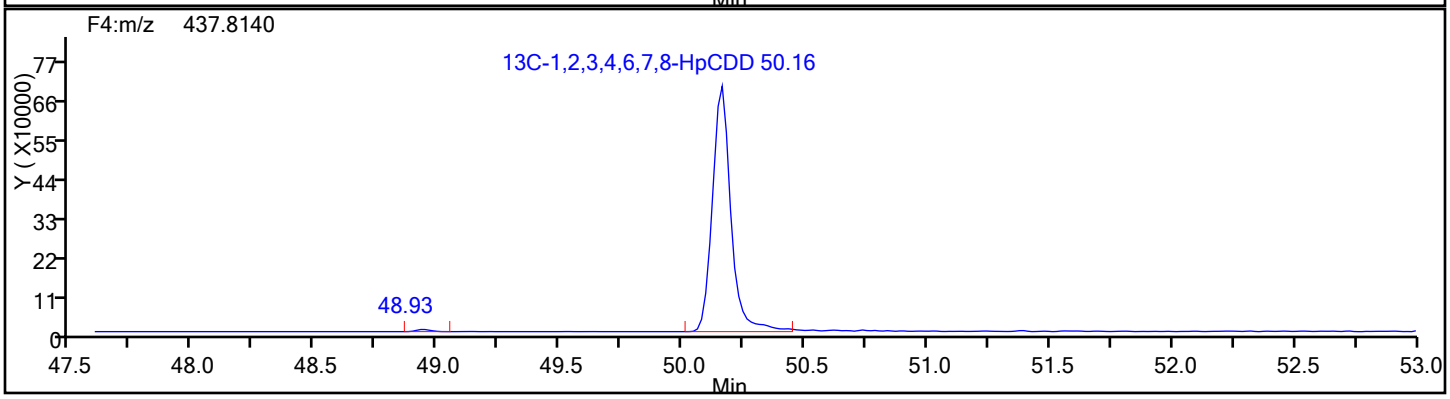

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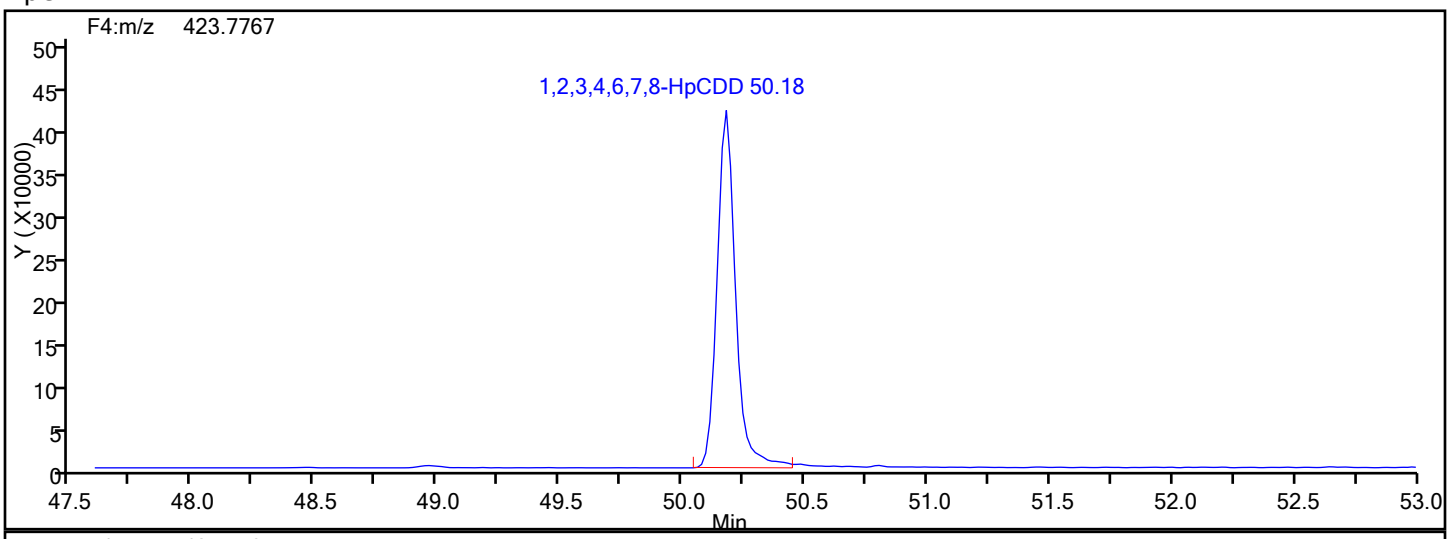

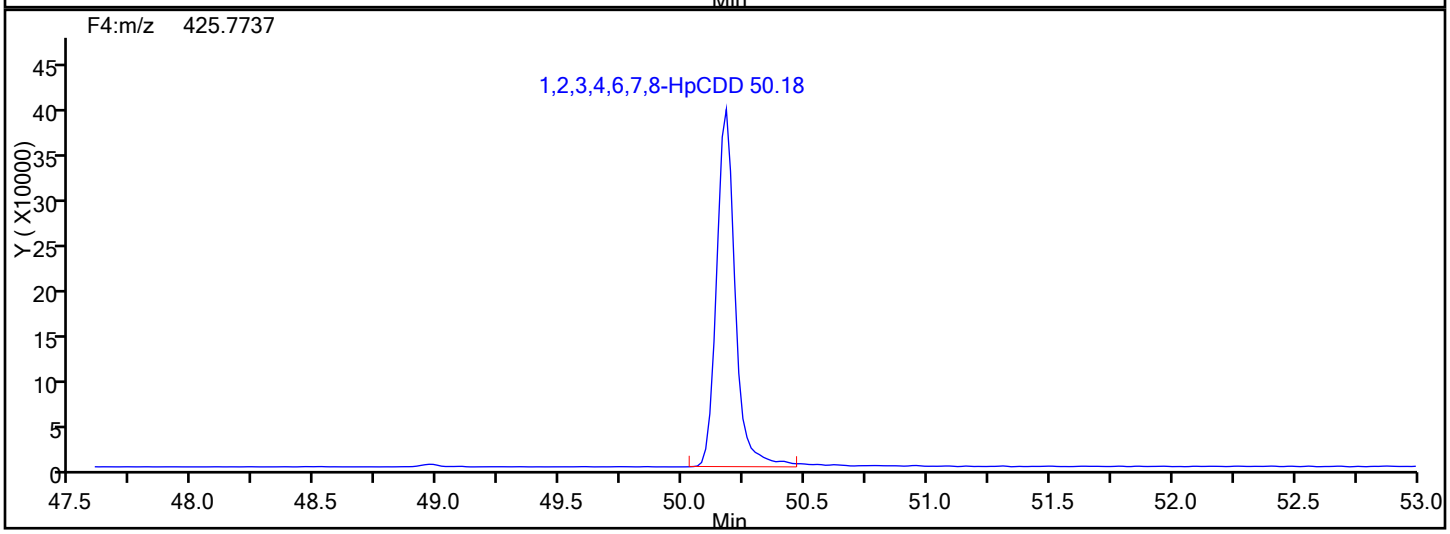

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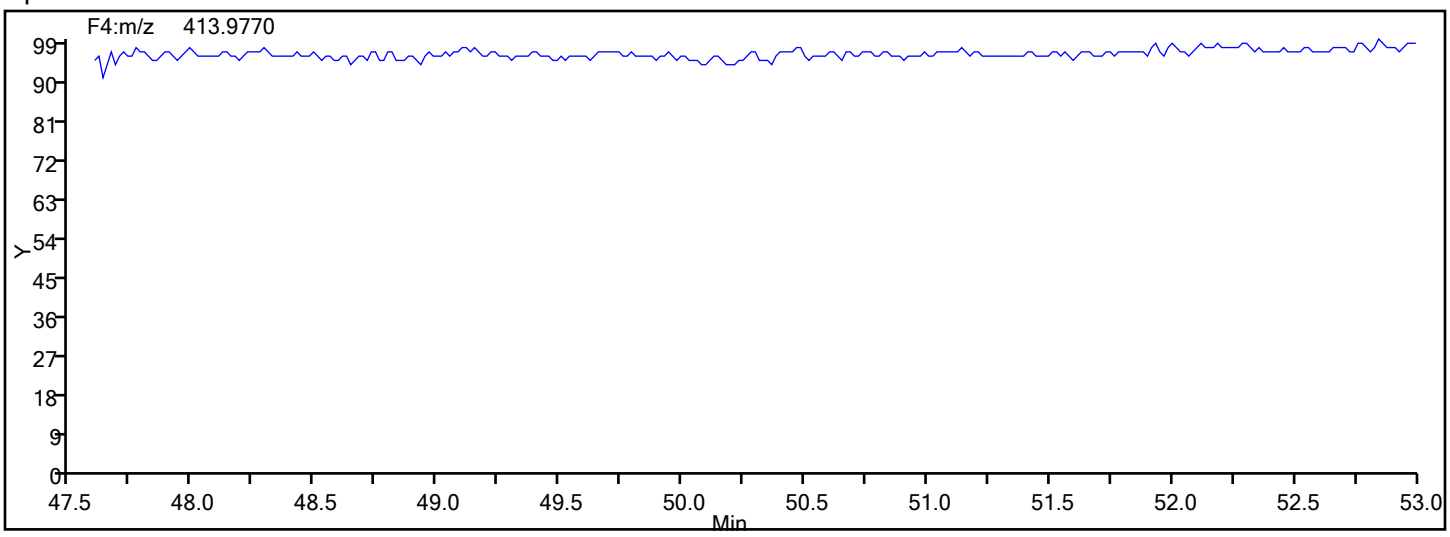

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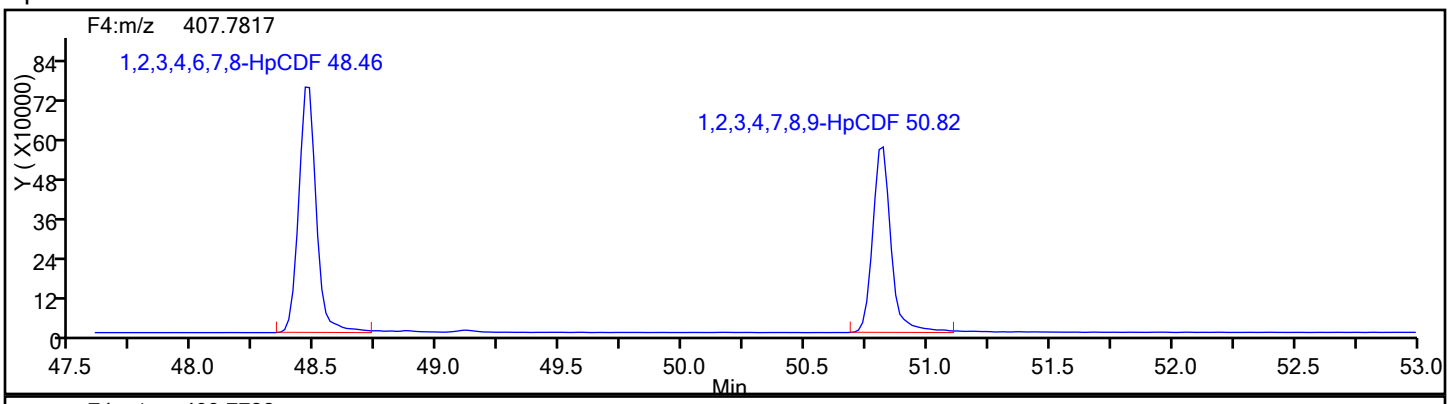
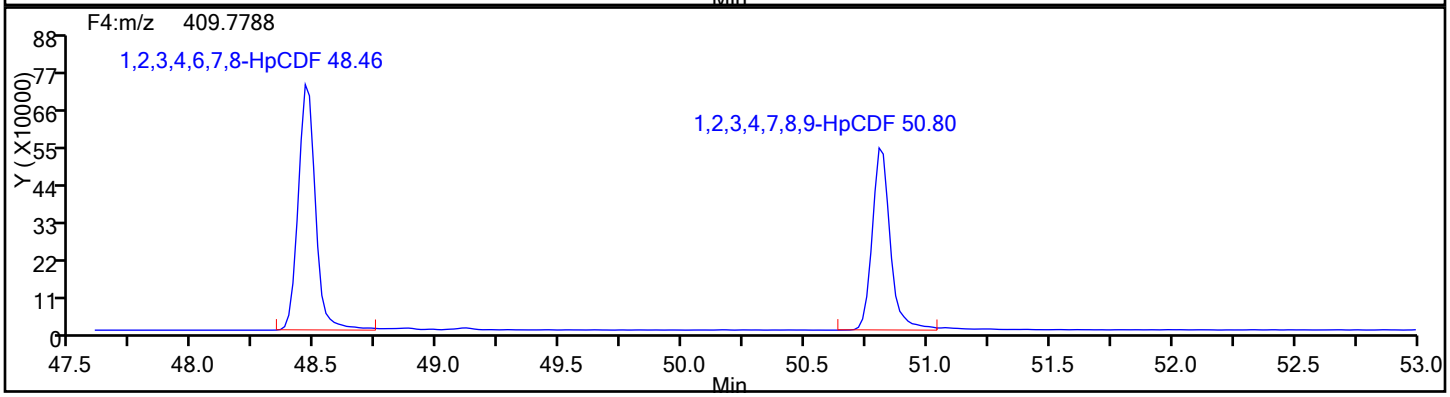
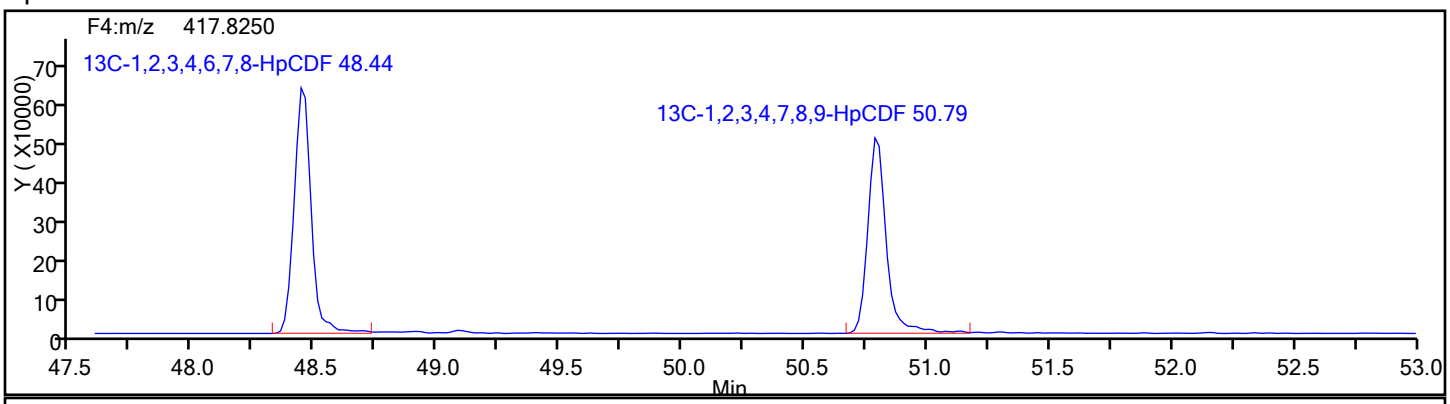
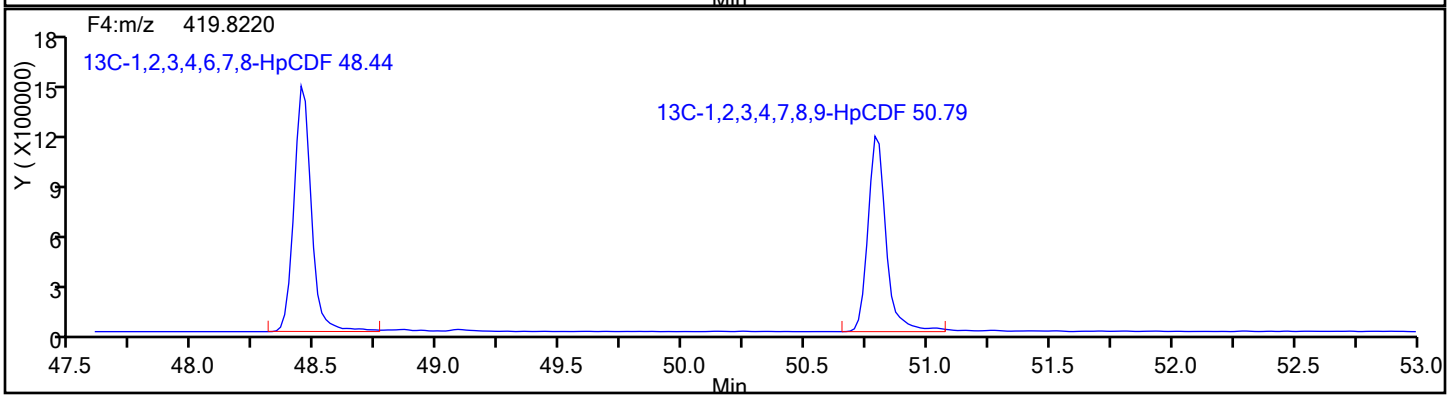




HpCDF Standards





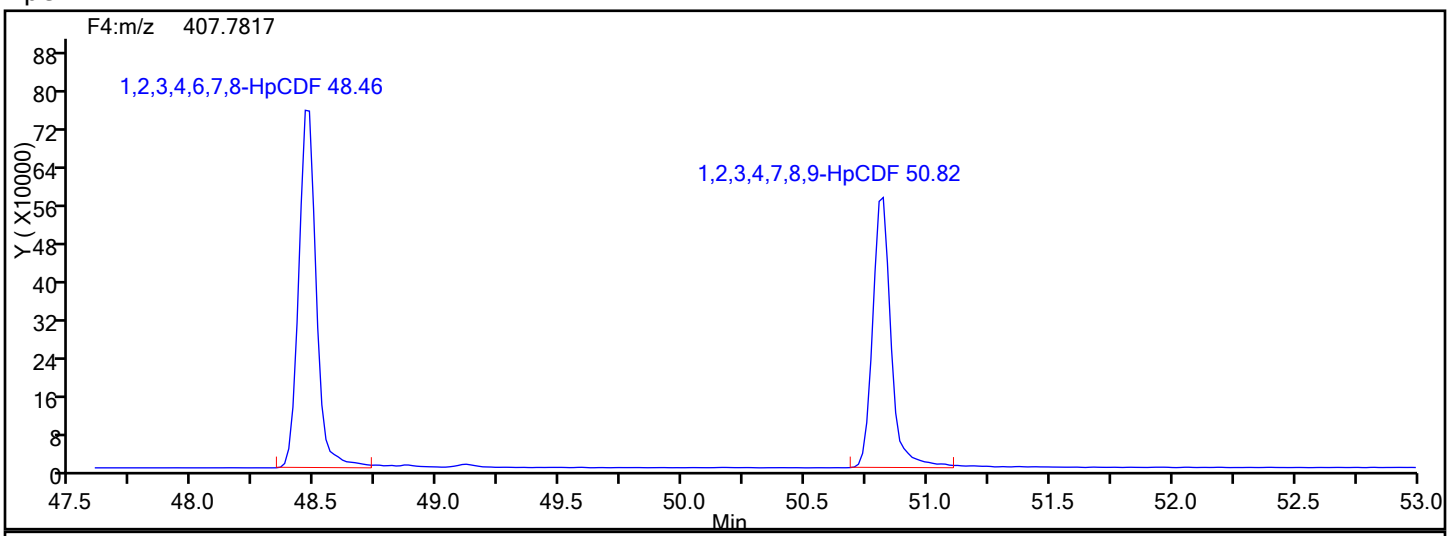
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

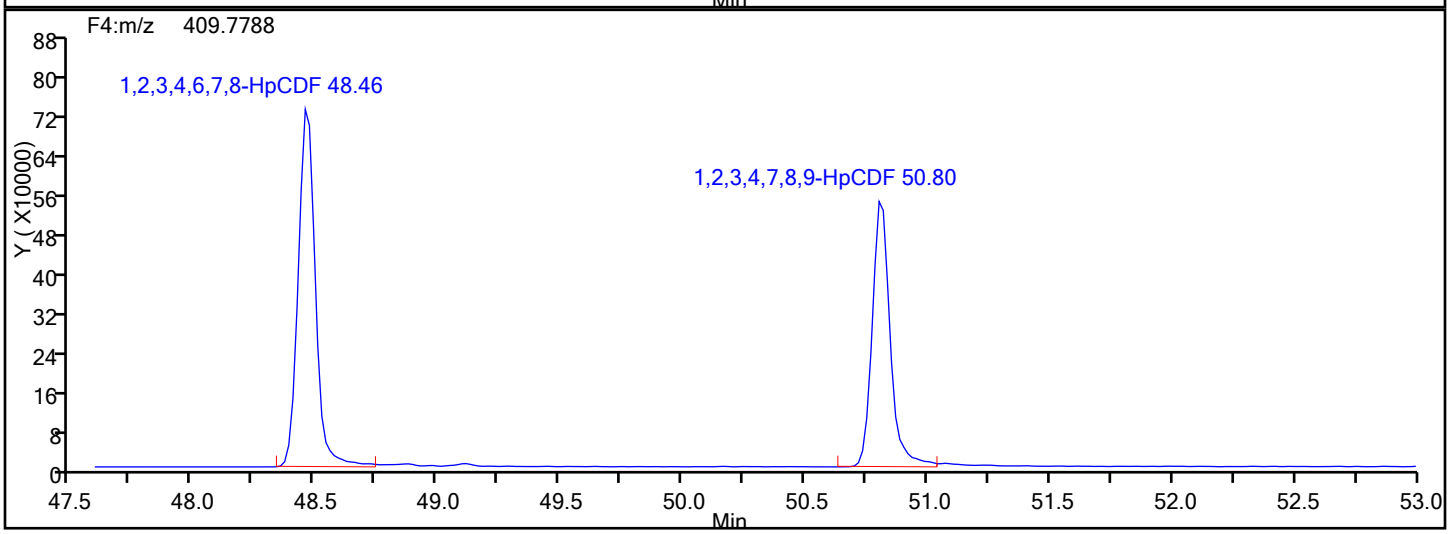
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

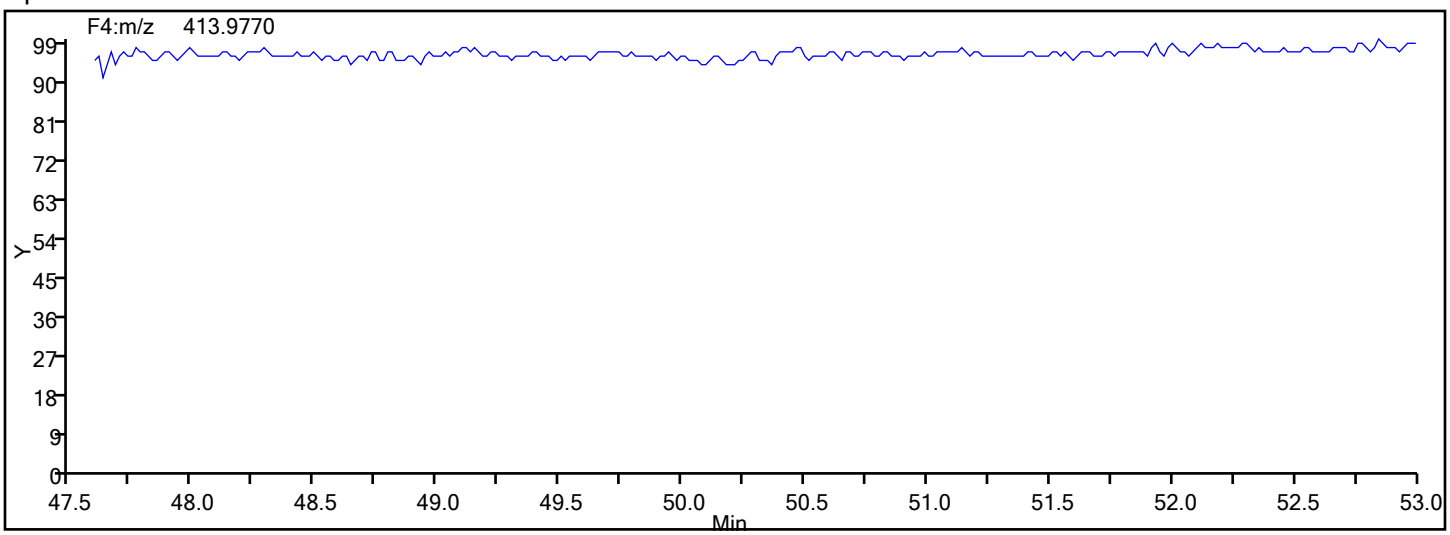
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass



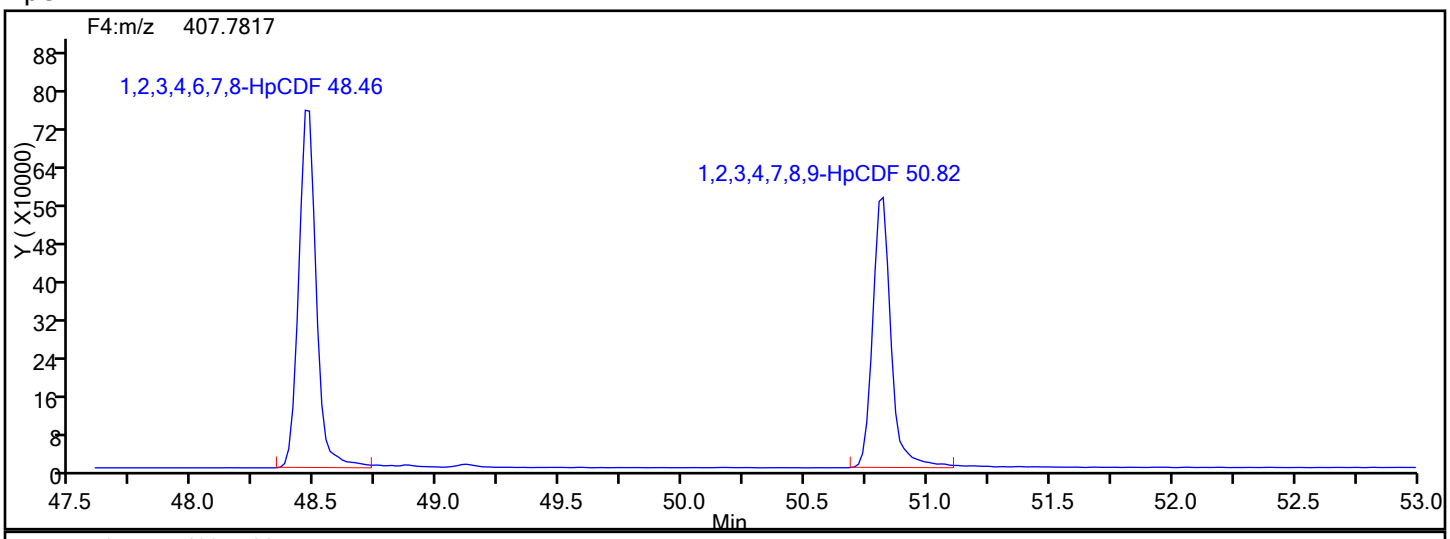
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

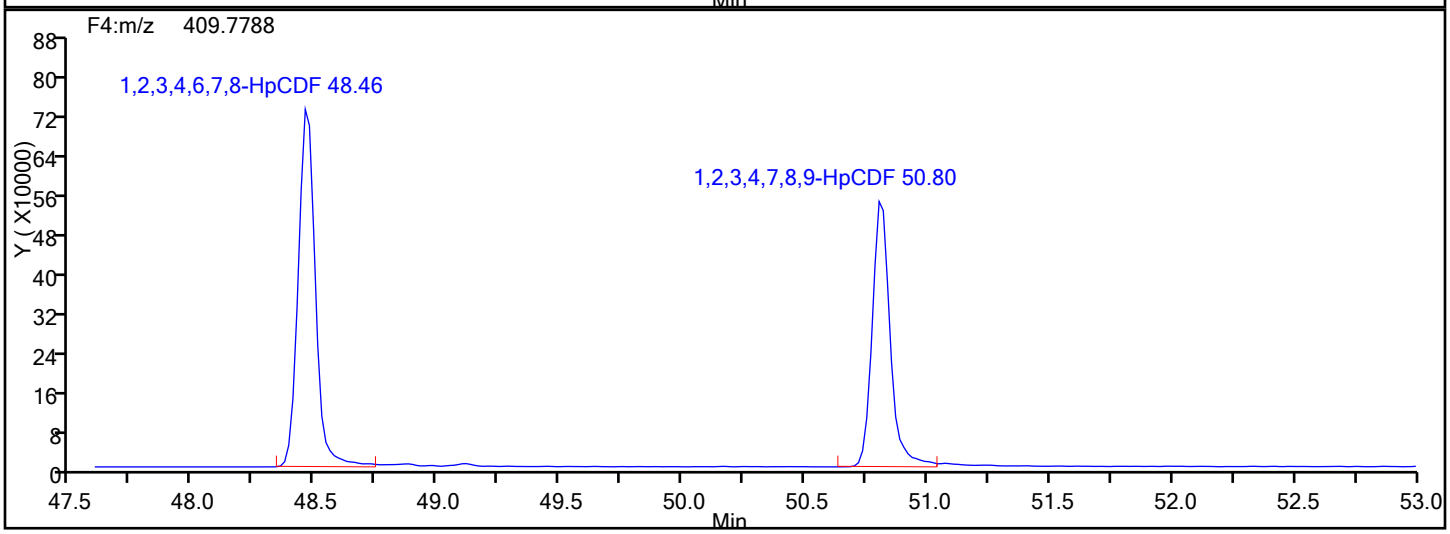
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

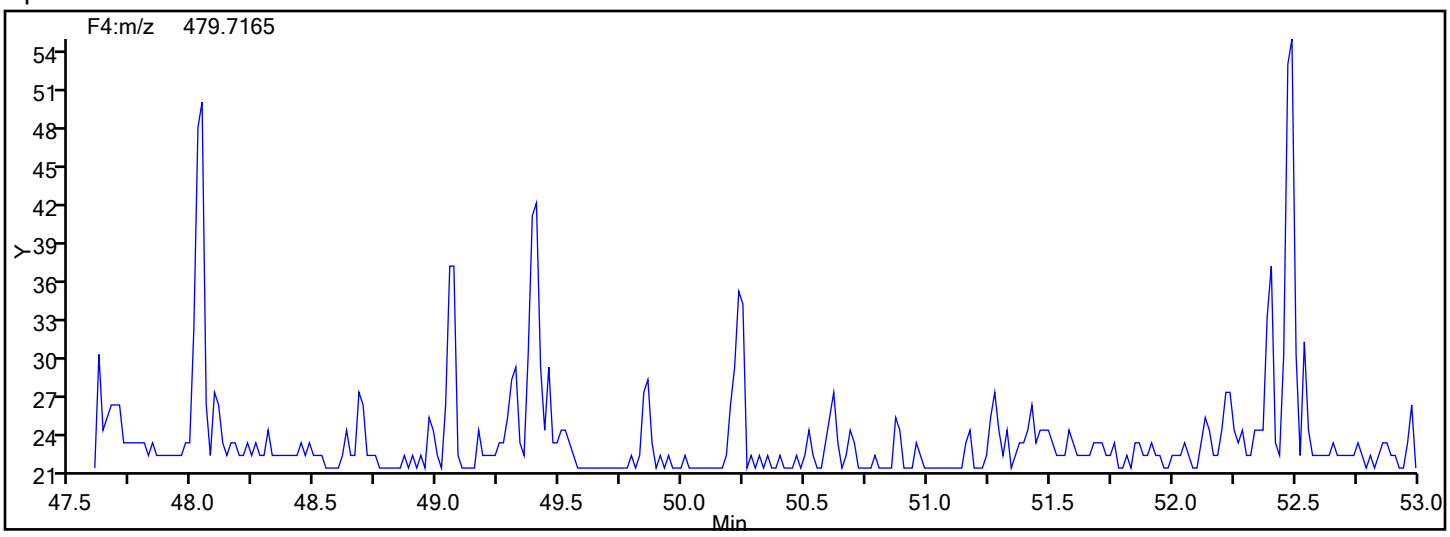
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



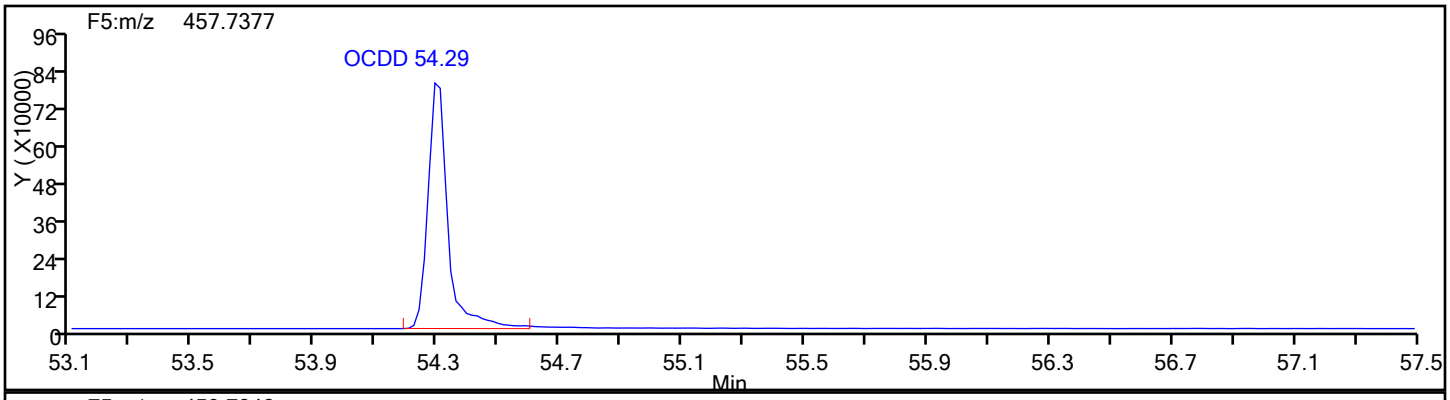
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

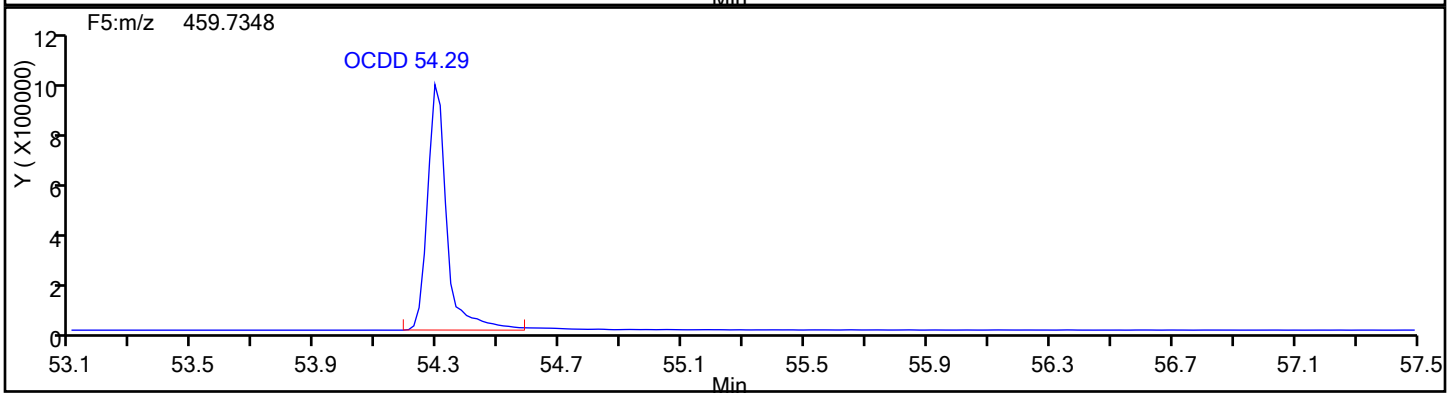
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

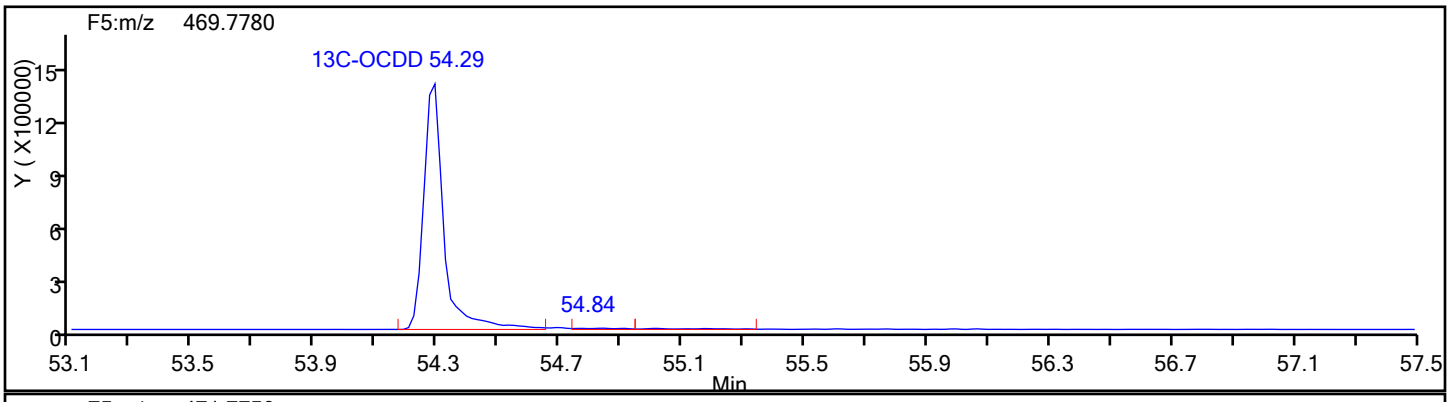
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

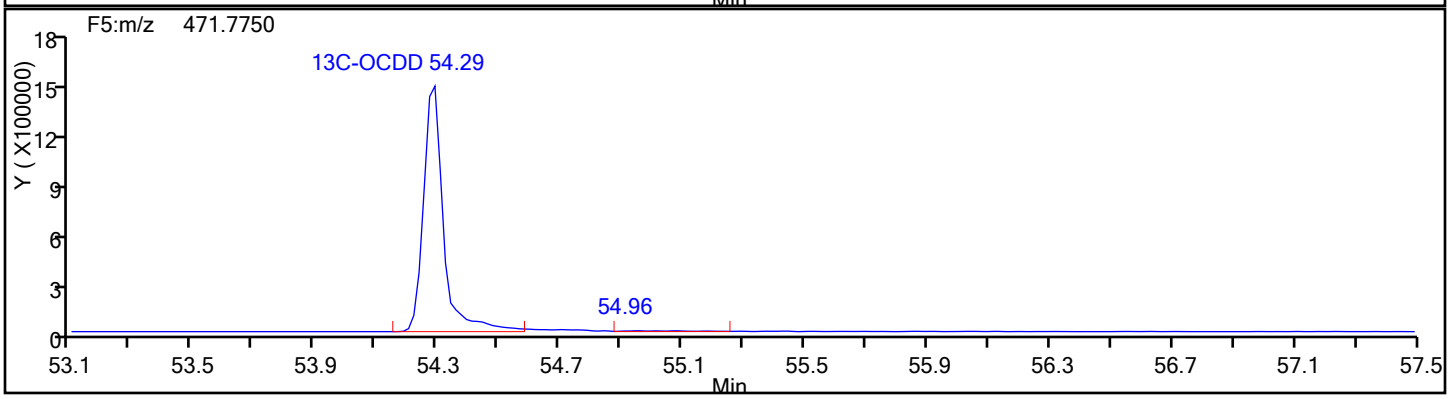
OCDD





OCDD Standards





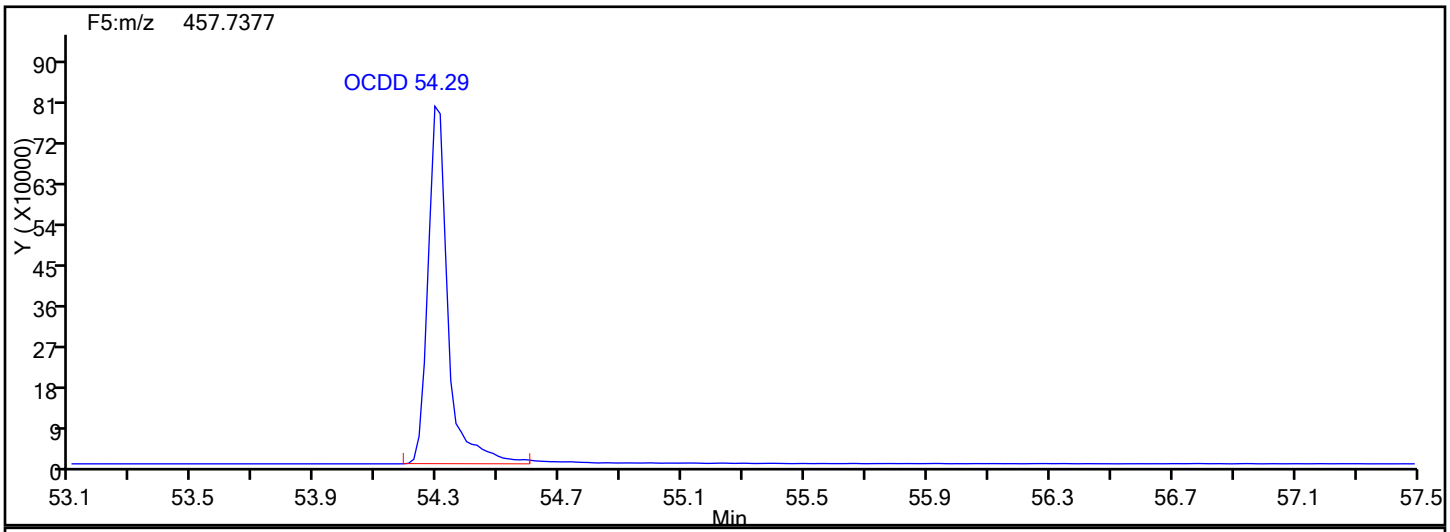
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

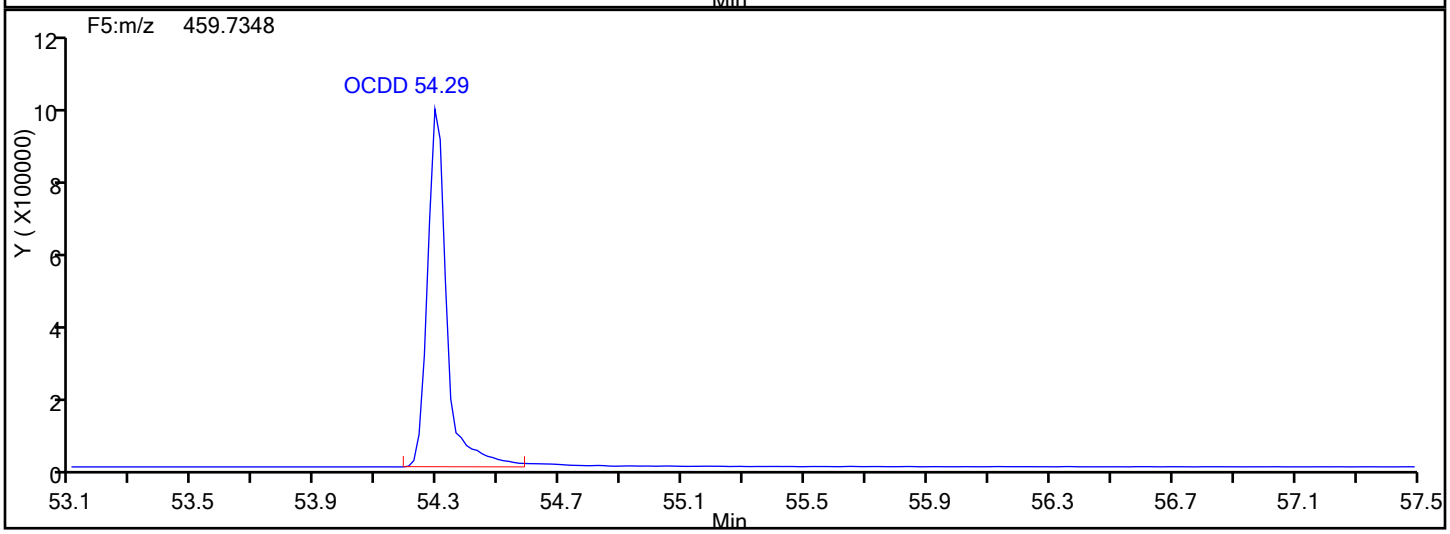
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

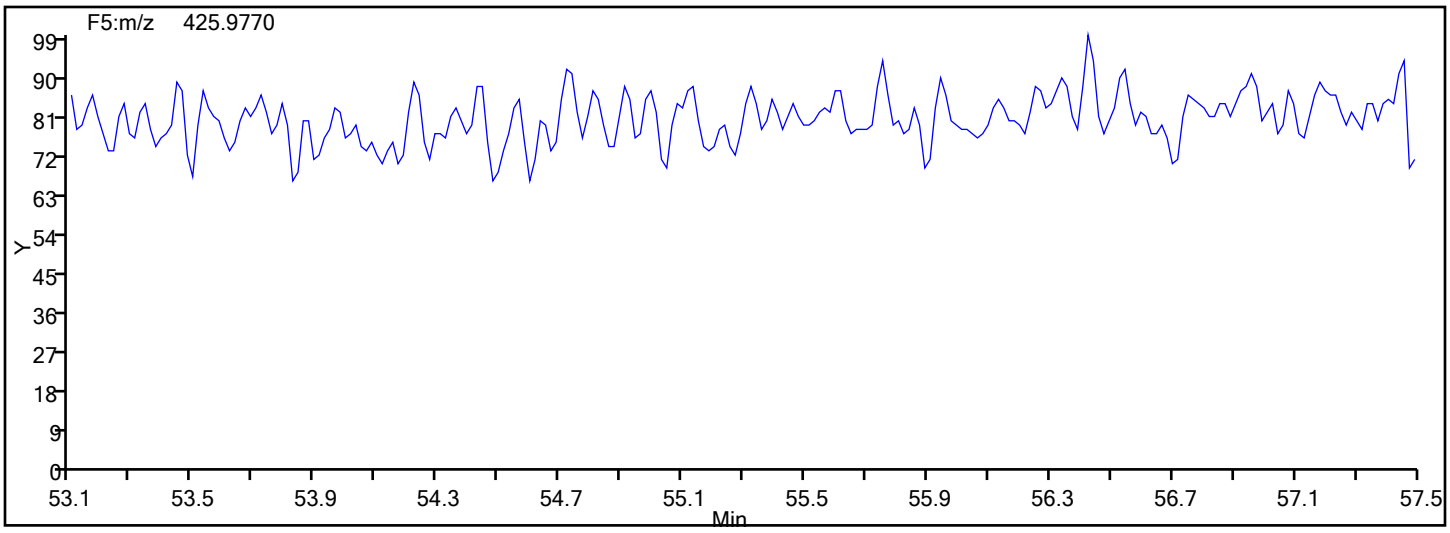
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



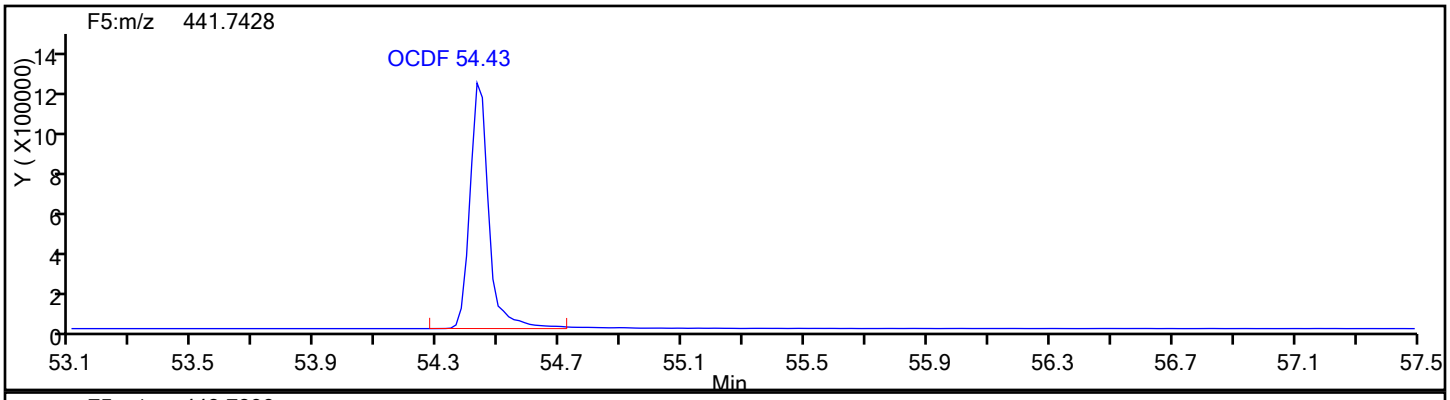
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

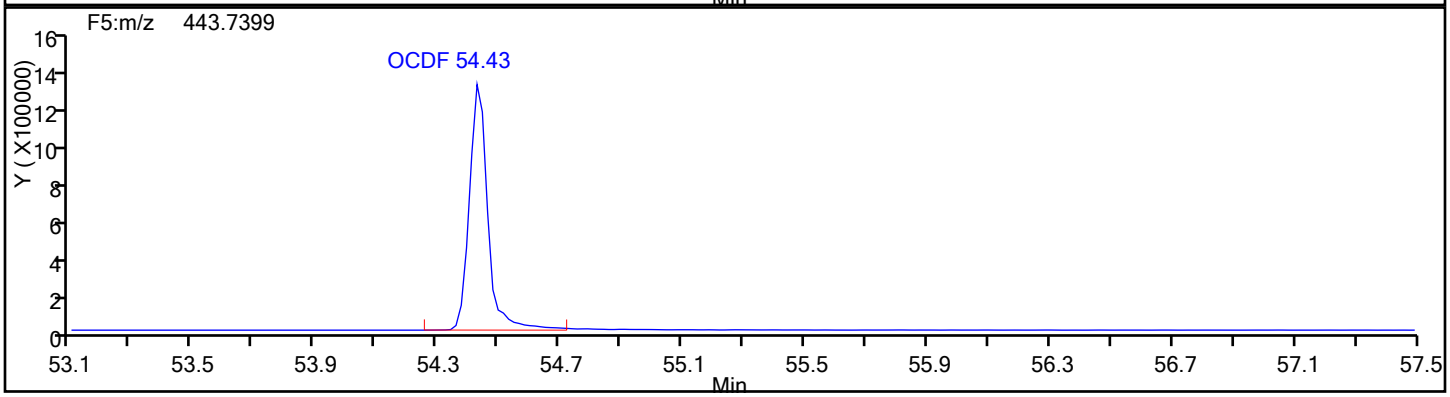
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

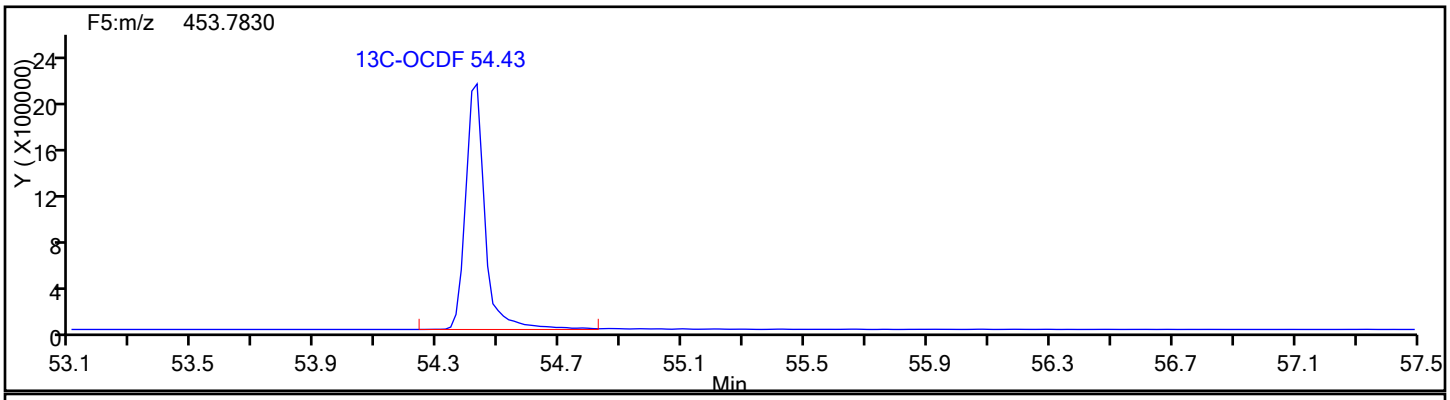
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

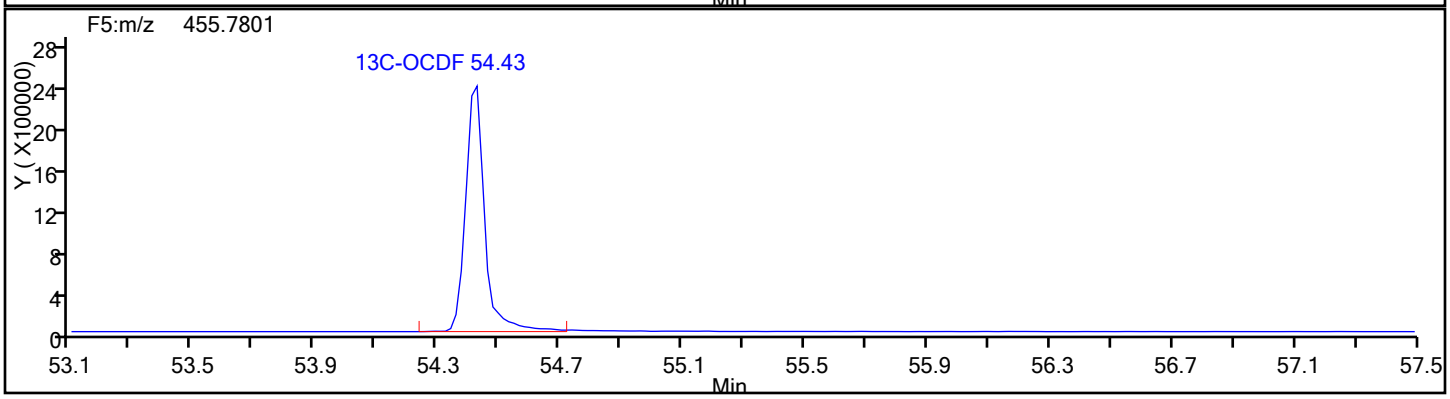
OCDF





OCDF Standards





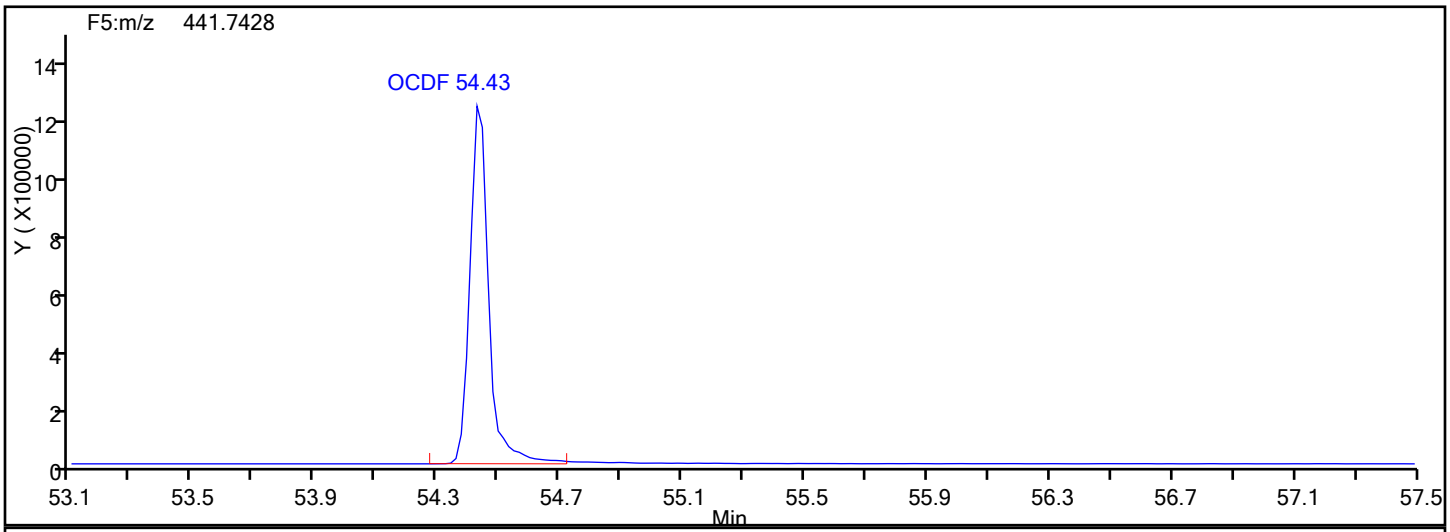
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

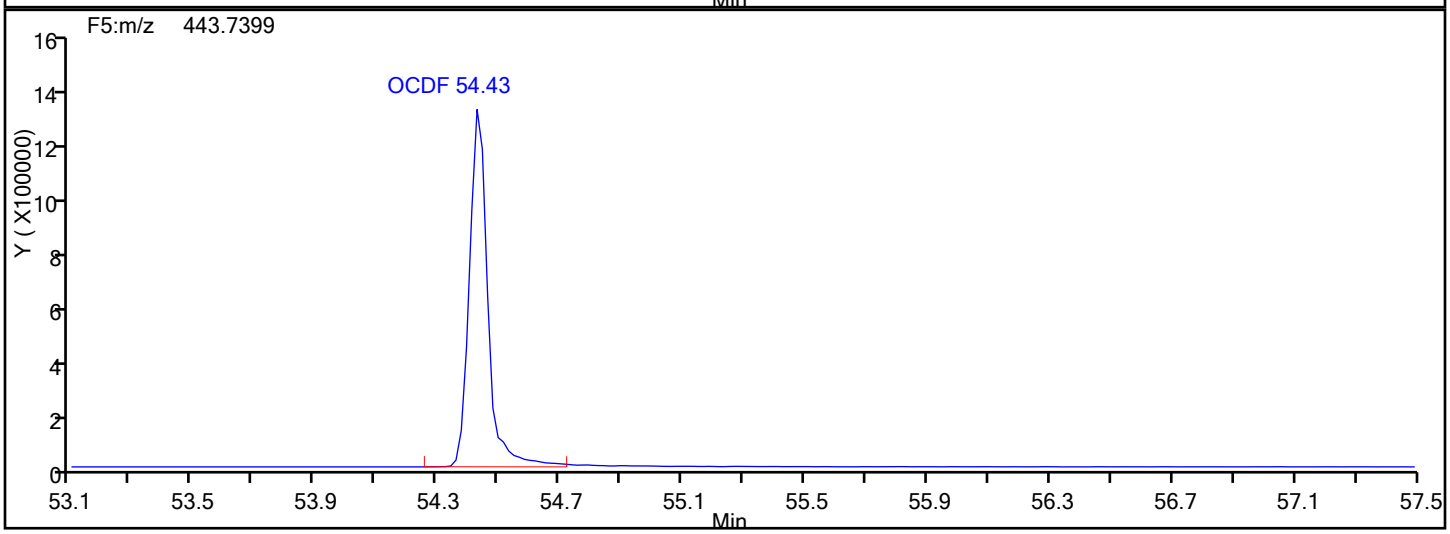
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

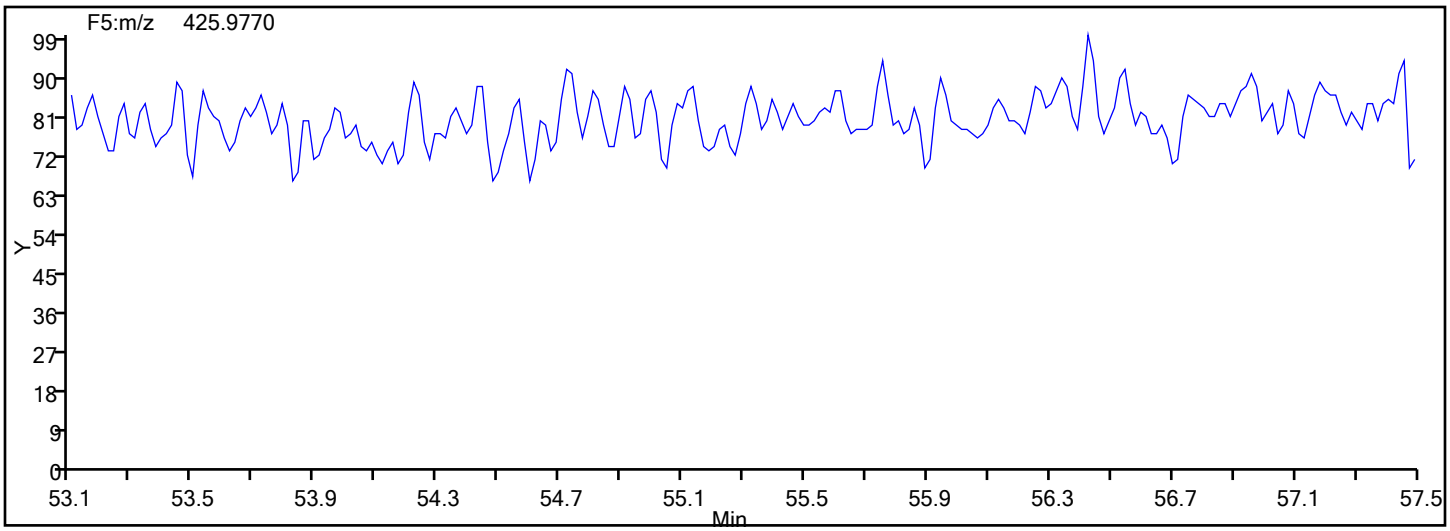
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



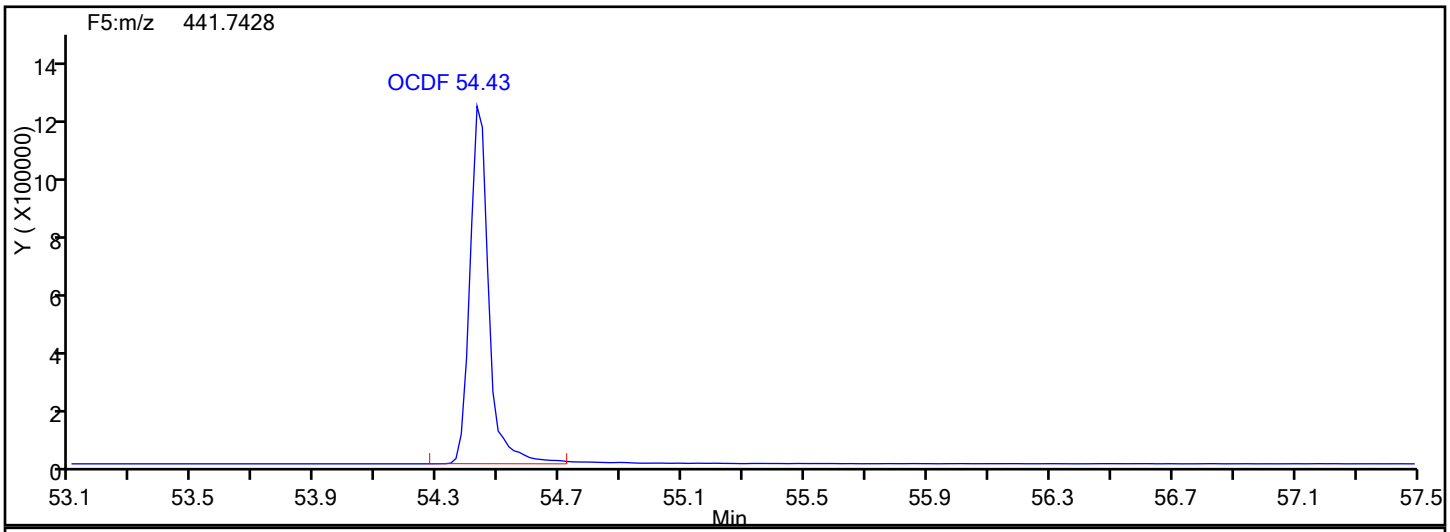
Report Date: 12-Jan-2017 08:10:07 Chrom Revision: 2.2 10-Jan-2017 11:26:10

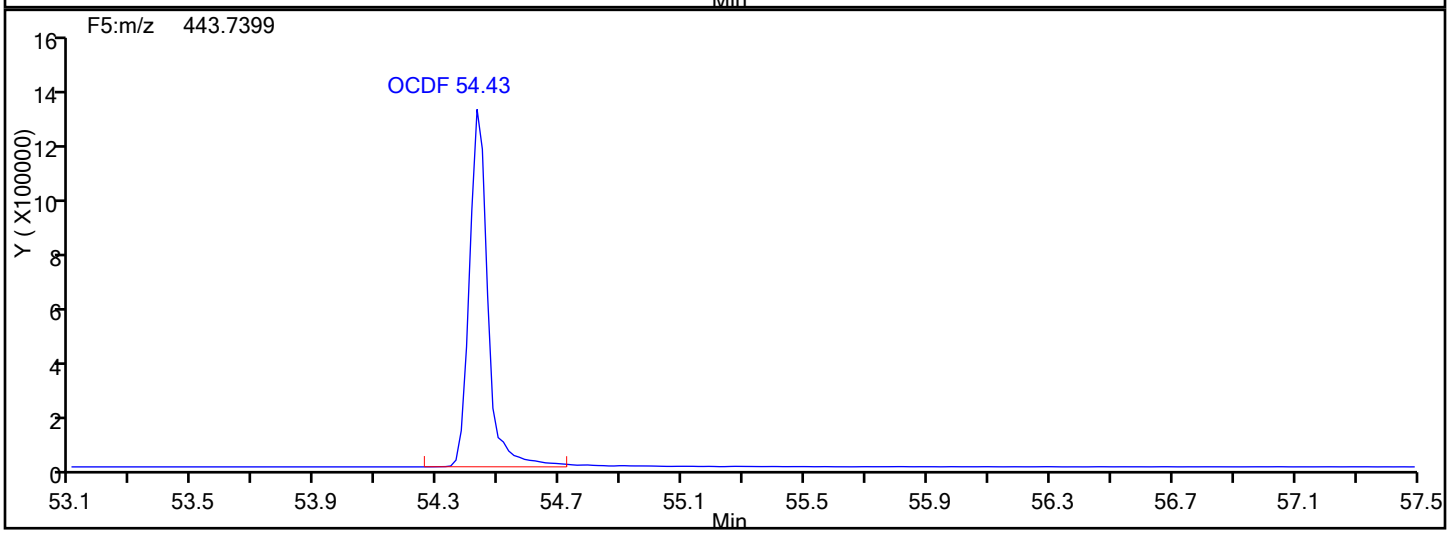
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i3.d

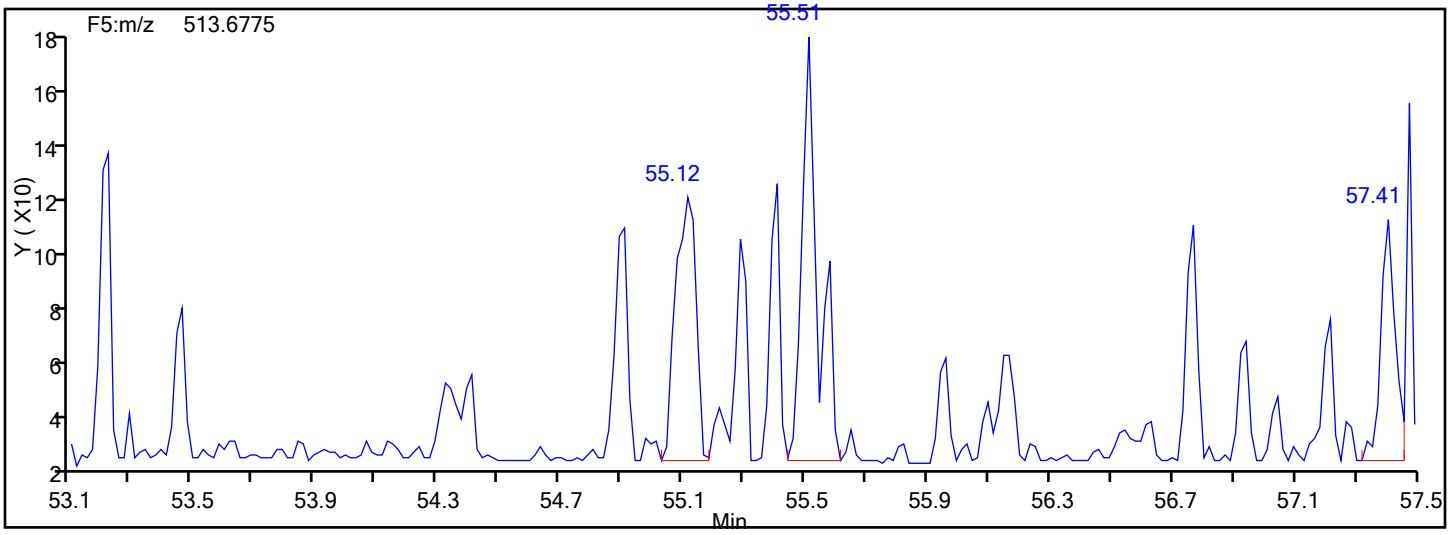
Injection Date:	16-May-2014 16:27:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	4
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 16-May-2014 17:29:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs4 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:34 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:15:14

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31.815	4263534	0.80	1.1733	38.6	38.6	0.0562	0.0562	96.61	
A Non-2,3,7,8-sub-TCDD	30.308						0.0	0.0		
S Total TCDD					38.6	38.6	0.0562	0.0562		
2,3,7,8-TCDF	29.738	6586510	0.79	1.0881	39.2	39.2	0.0448	0.0448	98.00	
A Non-2,3,7,8-sub-TCDF	28.995	62222	0.77	0.0000						RQ
S Total TCDF					39.2	39.2	0.0448	0.0448		RQ
1,2,3,7,8-PeCDD	40.977	15915139	1.57	1.0434	192.3	192.3	0.1041	0.1041	96.13	
A Non-2,3,7,8-sub-PeCDD	39.915						0.0	0.0		
S Total PeCDD					192.3	192.3	0.1041	0.1041		
1,2,3,7,8-PeCDF	39.255	28353659	1.58	1.1898	194.0	194.0	0.6108	0.6108	96.98	
2,3,4,7,8-PeCDF	40.461	26657615	1.59	1.1095	192.9	192.9	0.5785	0.5785	96.45	
A Non-2,3,7,8-sub-PeCDF	38.623						0.0	0.0		
S Total PeCDF					386.9	386.9	0.5947	0.5947		
1,2,3,4,7,8-HxCDD	45.212	19615008	1.24	1.1409	193.1	193.1	0.4370	0.4370	96.53	
1,2,3,6,7,8-HxCDD	45.330	20922527	1.27	1.1481	190.0	190.0	0.4327	0.4327	94.98	
1,2,3,7,8,9-HxCDD	45.718	21806109	1.26	1.2212	193.1	193.1	0.4076	0.4076	96.53	
A Non-2,3,7,8-sub-HxCDD	44.687						0.0	0.0		
S Total HxCDD					576.1	576.1	0.4258	0.4258		
1,2,3,4,7,8-HxCDF	44.166	31660907	1.24	1.3629	192.6	192.6	0.4101	0.4101	96.29	
1,2,3,6,7,8-HxCDF	44.284	36461883	1.25	1.2762	190.5	190.5	0.3742	0.3742	95.27	
2,3,4,6,7,8-HxCDF	45.026	32628769	1.25	1.2654	193.4	193.4	0.4178	0.4178	96.70	
1,2,3,7,8,9-HxCDF	45.988	30276117	1.25	1.2573	196.1	196.1	0.5112	0.5112	98.06	
A Non-2,3,7,8-sub-HxCDF	44.552						0.0	0.0		
S Total HxCDF					772.6	772.6	0.4284	0.4284		
1,2,3,4,6,7,8-HpCDD	50.141	17971175	1.06	1.1204	192.8	192.8	0.5434	0.5434	96.40	
A Non-2,3,7,8-sub-HpCDD	49.566						0.0	0.0		
S Total HpCDD					192.8	192.8	0.5434	0.5434		
1,2,3,4,6,7,8-HpCDF	48.420	30775593	1.05	1.4984	193.1	193.1	0.3986	0.3986	96.55	
1,2,3,4,7,8,9-HpCDF	50.765	24451442	1.05	1.3807	195.2	195.2	0.5424	0.5424	97.61	

Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49.625						0.0	0.0		
S Total HpCDF					388.3	388.3	0.4705	0.4705		
OCDD	54.267	34014604	0.90	1.2073	380.8	380.8	0.3541	0.3541	95.20	
OCDF	54.388	47454024	0.92	1.1162	378.5	378.5	0.3471	0.3471	94.62	
D 13C-2,3,7,8-TCDD	31.766	9403373	0.83	1.0709	100.8	100.8	0.2750	0.2750	101	
D 13C-2,3,7,8-TCDF	29.688	15441140	0.82	1.7545	101.1	101.1	0.0968	0.0968	101	
D 13C-1,2,3,7,8-PeCDD	40.960	7933559	1.61	0.8743	104.2	104.2	0.3387	0.3387	104	
D 13C-1,2,3,7,8-PeCDF	39.238	12286310	1.60	1.3704	102.9	102.9	0.3105	0.3105	103	
D 13C-2,3,4,7,8-PeCDF	40.444	12455454	1.59	1.3837	103.4	103.4	0.3075	0.3075	103	
D 13C-1,2,3,4,7,8-HxCDD	45.195	8905352	1.28	0.8772	101.2	101.2	0.1612	0.1612	101	
D 13C-1,2,3,6,7,8-HxCDD	45.313	9593131	1.26	0.9171	104.3	104.3	0.1542	0.1542	104	
D 13C-1,2,3,4,7,8-HxCDF	44.149	12063156	0.53	1.1892	101.1	101.1	0.1383	0.1383	101	
D 13C-1,2,3,6,7,8-HxCDF	44.267	14993755	0.55	1.4625	102.2	102.2	0.1125	0.1125	102	
D 13C-2,3,4,6,7,8-HxCDF	45.009	13333182	0.53	1.3197	100.7	100.7	0.1246	0.1246	101	
D 13C-1,2,3,7,8,9-HxCDF	45.971	12277599	0.54	1.2001	102.0	102.0	0.1370	0.1370	102	
D 13C-1,2,3,4,6,7,8-HpCDD	50.124	8319073	1.10	0.8155	101.7	101.7	0.2654	0.2654	102	
D 13C-1,2,3,4,6,7,8-HpCDF	48.403	10636138	0.46	1.0496	101.0	101.0	0.1544	0.1544	101	
D 13C-1,2,3,4,7,8,9-HpCDF	50.748	9071146	0.45	0.8947	101.0	101.0	0.1811	0.1811	101	
D 13C-OCDD	54.250	14797795	0.93	0.7044	209.4	209.4	0.1227	0.1227	105	
D 13C-OCDF	54.388	22466050	0.91	1.0615	210.9	210.9	0.1026	0.1026	105	
$ 37Cl4-2,3,7,8-TCDD	31.799	4258282		1.2266	39.9	39.9	0.0284	0.0284	99.66	
* 13C-1,2,3,4-TCDD	31.234	8708927	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45.701	10033553	1.25	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

61L41613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 16-May-2014 17:29:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs4 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:34 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:15:14

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31.815	31.838	-1	1.002	1891248	191979	134	335	1433		
321.8936	31.799	31.838	-2	1.001	2372286	242692	126	315	1926	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	30.308						134	335			
321.8936	30.308						126	315			
2,3,7,8-TCDF											
303.9016	29.738	29.760	-1	1.002	2915517	328500	135	337	2433		
305.8987	29.721	29.760	-2	1.001	3670993	403994	191	477	2115	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	28.591	28.995	-24		24843	3402	135	337	25		
305.8987	28.591	28.995	-24		28149	3247	191	477	17	0.88(0.65-0.89)	
303.9016	30.070	28.995	64		9552	855	135	337	6		
305.8987	30.137	28.995	68		5215	1125	191	477	6	1.83(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40.977	41.015	-2	1.000	9711201	2312647	455	1137	5083		
357.8516	40.977	41.015	-2	1.000	6203938	1486672	371	927	4007	1.57(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39.915						455	1137			
357.8516	39.915						371	927			
1,2,3,7,8-PeCDF											
339.8597	39.255	39.293	-2	1.000	17352103	3551979	4380	10950	811		
341.8567	39.255	39.293	-2	1.000	11001556	2244107	2922	7305	768	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40.461	40.499	-2	1.000	16366381	3807031	4380	10950	869		
341.8567	40.461	40.499	-2	1.000	10291234	2372495	2922	7305	812	1.59(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											
339.8597	38.623						4380	10950			
341.8567	38.623						2922	7305			
1,2,3,4,7,8-HxCDD											
389.8158	45.212	45.248	-2	1.000	10866678	2725560	2588	6470	1053		
391.8127	45.195	45.248	-3	1.000	8748330	2182787	1821	4552	1199	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45.330	45.366	-2	1.000	11699331	2736260	2588	6470	1057		
391.8127	45.313	45.366	-3	1.000	9223196	2118323	1821	4552	1163	1.27(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45.718	45.754	-2	1.012	12176851	2829631	2588	6470	1093		
391.8127	45.718	45.754	-2	1.012	9629258	2234894	1821	4552	1227	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44.687						2588	6470			
391.8127	44.687						1821	4552			
1,2,3,4,7,8-HxCDF											
373.8208	44.166	44.202	-2	1.000	17552228	4595549	3845	9612	1195		
375.8178	44.149	44.202	-3	1.000	14108679	3675530	3097	7742	1187	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44.284	44.337	-3	1.000	20275139	4913451	3845	9612	1278		
375.8178	44.284	44.337	-3	1.000	16186744	4031681	3097	7742	1302	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45.026	45.063	-2	1.000	18106557	4588639	3845	9612	1193		
375.8178	45.026	45.063	-2	1.000	14522212	3646655	3097	7742	1177	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	45.988	46.024	-2	1.000	16793197	3750981	3845	9612	976		
375.8178	45.988	46.024	-2	1.000	13482920	3044426	3097	7742	983	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44.552						3845	9612			
375.8178	44.552						3097	7742			
1,2,3,4,6,7,8-HpCDD											
423.7767	50.141	50.178	-2	1.000	9259060	1781113	2362	5905	754		
425.7737	50.141	50.178	-2	1.000	8712115	1650944	1426	3565	1158	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	49.566						2362	5905			
425.7737	49.566						1426	3565			
1,2,3,4,6,7,8-HpCDF											
407.7817	48.420	48.458	-2	1.000	15764262	3226313	2617	6542	1233		
409.7788	48.420	48.458	-2	1.000	15011331	3120494	2620	6550	1191	1.05(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50.765	50.819	-3	1.000	12497949	2420397	2617	6542	925		
409.7788	50.765	50.819	-3	1.000	11953493	2345175	2620	6550	895	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49.625						2617	6542			
409.7788	49.625						2620	6550			

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	54.267	54.290	-1	1.000	16128444	3708022	1051	2627	3528		
459.7348	54.250	54.290	-2	1.000	17886160	4037709	1866	4665	2164	0.90(0.76-1.02)	
OCDF											
441.7428	54.388	54.428	-2	1.000	22687472	5303694	2550	6375	2080		
443.7399	54.388	54.428	-2	1.000	24766552	5953196	1550	3875	3841	0.92(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31.766	31.788	-1	1.017	4252514	446145	651	1627	685		
333.9338	31.766	31.788	-1	1.017	5150859	538901	440	1100	1225	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29.688	29.727	-2	0.951	6943354	752027	320	800	2350		
317.9389	29.688	29.727	-2	0.951	8497786	921617	309	772	2983	0.82(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40.960	40.998	-2	1.311	4892053	1175097	744	1860	1579		
369.8919	40.960	40.998	-2	1.311	3041506	726434	353	882	2058	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39.238	39.276	-2	1.256	7554923	1540416	855	2137	1802		
353.8970	39.238	39.276	-2	1.256	4731387	971377	721	1802	1347	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40.444	40.481	-2	1.295	7639963	1738288	855	2137	2033		
353.8970	40.444	40.481	-2	1.295	4815491	1105777	721	1802	1534	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45.195	45.231	-2	0.989	4993367	1233498	758	1895	1627		
403.8529	45.195	45.231	-2	0.989	3911985	977058	541	1352	1806	1.28(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45.313	45.350	-2	0.992	5339736	1220476	758	1895	1610		
403.8529	45.313	45.350	-2	0.992	4253395	998127	541	1352	1845	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44.149	44.185	-2	0.966	4183066	1106590	486	1215	2277		
385.8610	44.149	44.185	-2	0.966	7880090	1998317	1025	2562	1950	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44.267	44.320	-3	0.969	5312423	1289548	486	1215	2653		
385.8610	44.267	44.320	-3	0.969	9681332	2344271	1025	2562	2287	0.55(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45.009	45.046	-2	0.985	4594531	1144207	486	1215	2354		
385.8610	45.009	45.046	-2	0.985	8738651	2138197	1025	2562	2086	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45.971	46.007	-2	1.006	4287134	927670	486	1215	1909		
385.8610	45.971	46.007	-2	1.006	7990465	1772222	1025	2562	1729	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50.124	50.161	-2	1.097	4358439	814143	823	2057	989		
437.8140	50.124	50.161	-2	1.097	3960634	741361	1165	2912	636	1.10(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48.403	48.441	-2	1.059	3337014	690637	759	1897	910		
419.8220	48.403	48.441	-2	1.059	7299124	1501267	730	1825	2057	0.46(0.51-0.37)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50.748	50.786	-2	1.110	2821969	553394	759	1897	729		
419.8220	50.748	50.786	-2	1.110	6249177	1194738	730	1825	1637	0.45(0.37-0.51)	
13C-OCDD											
469.7780	54.250	54.290	-2	1.187	7131779	1633617	392	980	4167		
471.7750	54.250	54.290	-2	1.187	7666016	1778388	402	1005	4424	0.93(0.76-1.02)	
13C-OCDF											
453.7830	54.388	54.428	-2	1.190	10677571	2517622	556	1390	4528		
455.7801	54.388	54.428	-2	1.190	11788479	2773637	444	1110	6247	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31.799	31.838	-2	1.018	4258282	440452	129	322	3414		
13C-1,2,3,4-TCDD											
331.9368	31.234	31.273	-2		3910026	413703	651	1627	635		
333.9338	31.234	31.273	-2		4798901	512178	440	1100	1164	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45.701	45.737	-2		5570704	1287541	758	1895	1699		
403.8529	45.701	45.737	-2		4462849	1008970	541	1352	1865	1.25(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Reagents:

61L41613OP_00001 Amount Added: 20.00 Units: uL

Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d
Lims ID: IC L4
Client ID:
Inject. Date: 16-May-2014 17:29:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 4
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 5
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
28.591	24843	3402	28149	3247		0.88	
30.070	9552	855	5215	1125		1.83	Rn
Signal Totals:							
	34395	4257	33364	4372			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	67759	8629				1.03	RQ
	62222	8640					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (67759 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (62222 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

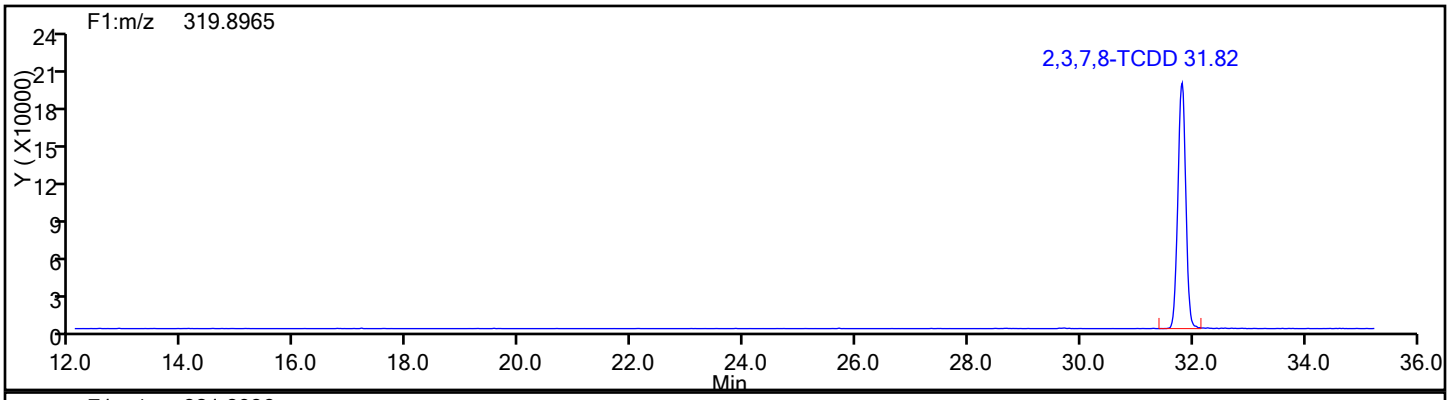
Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

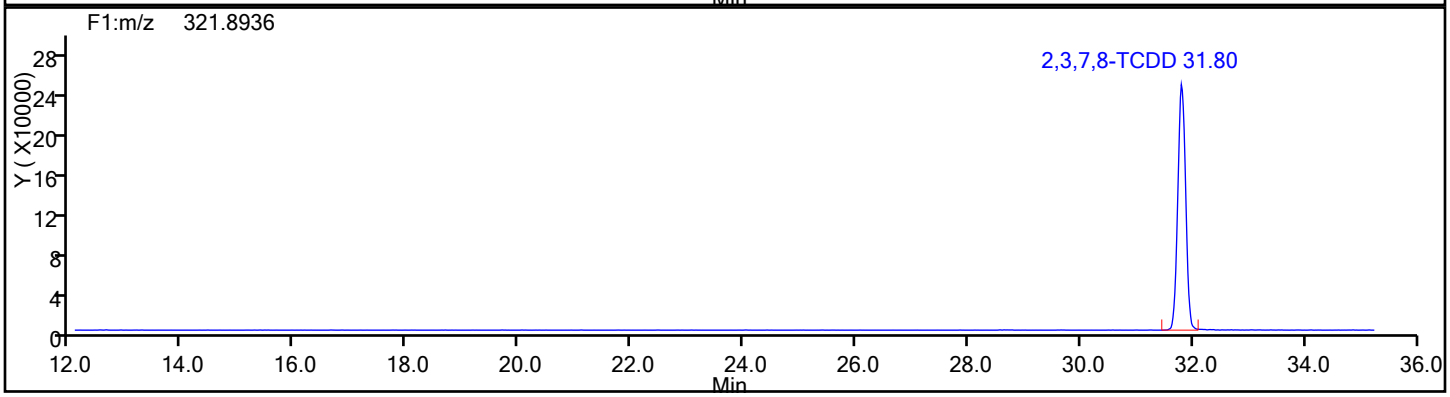
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

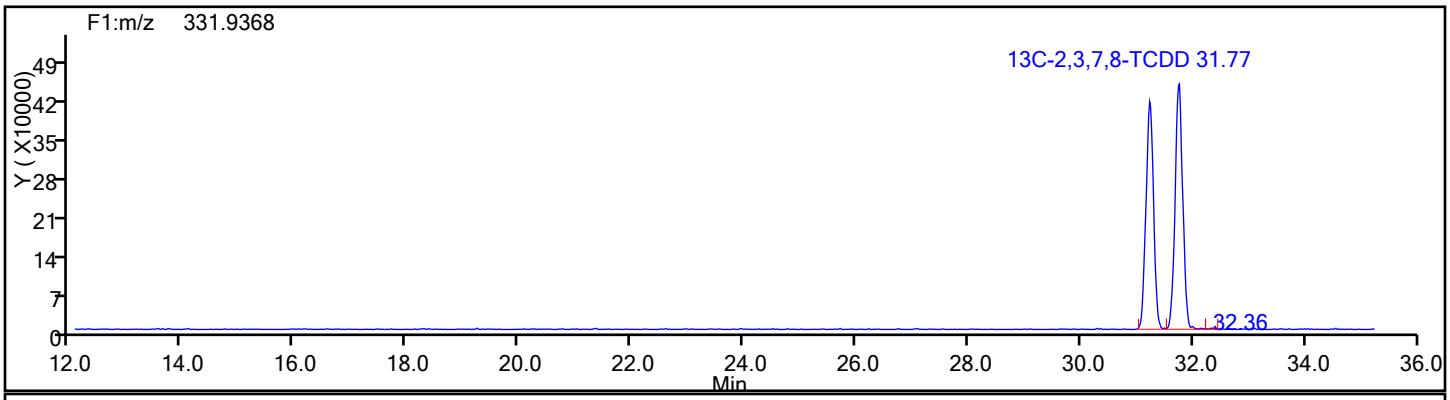
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

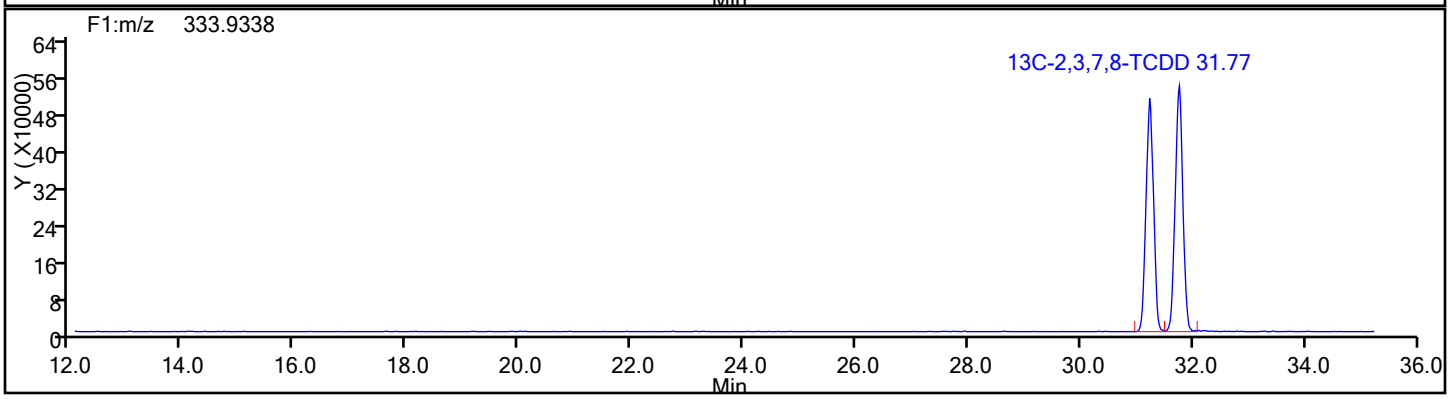
TCDD





TCDD Standards





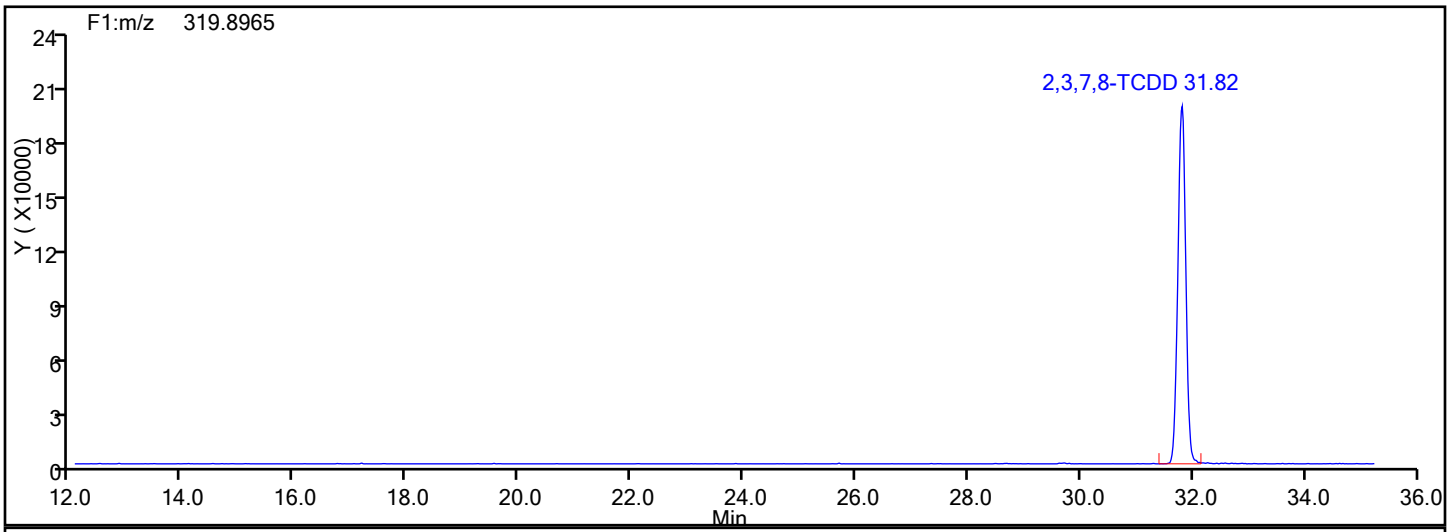
Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

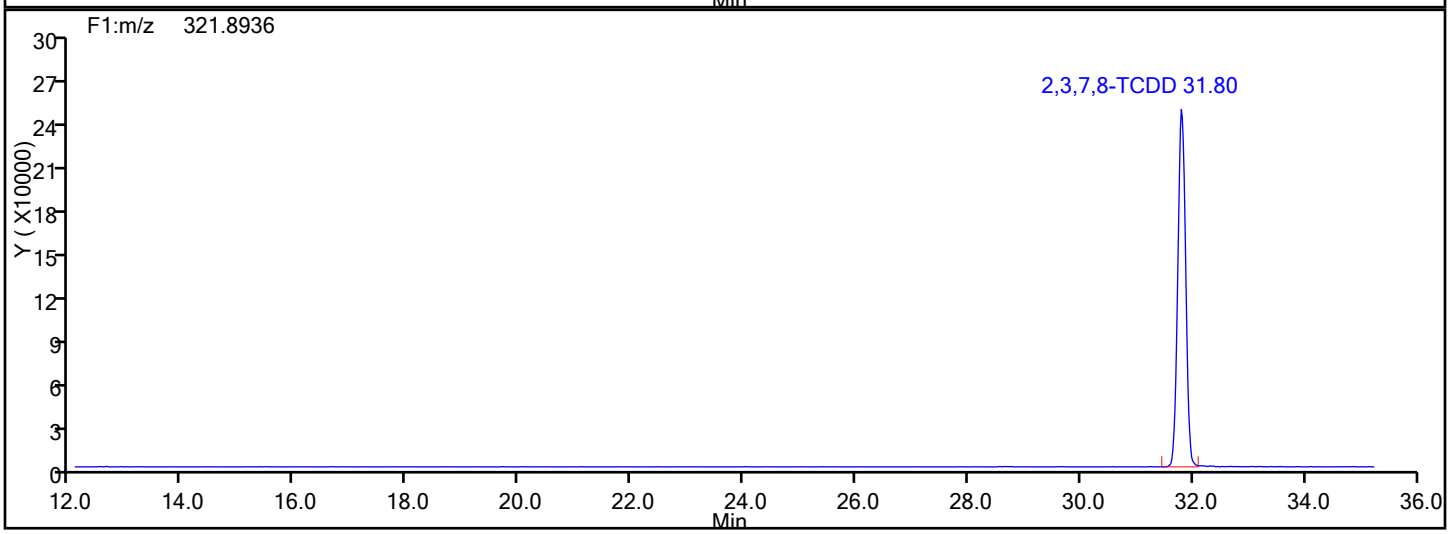
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

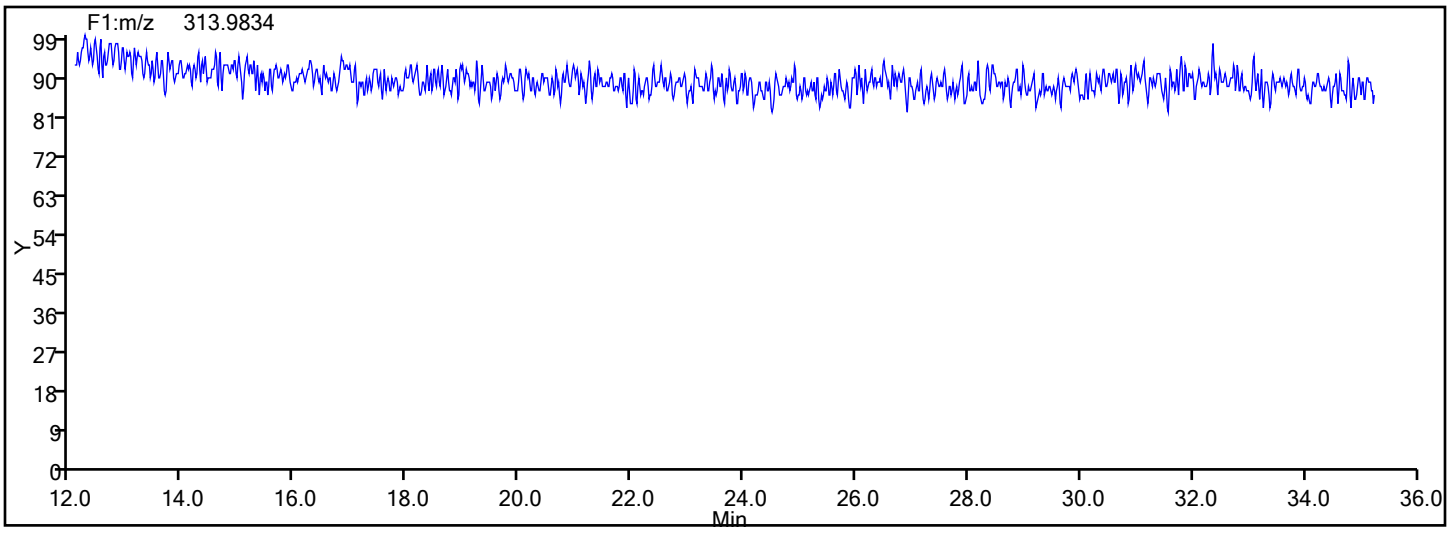
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



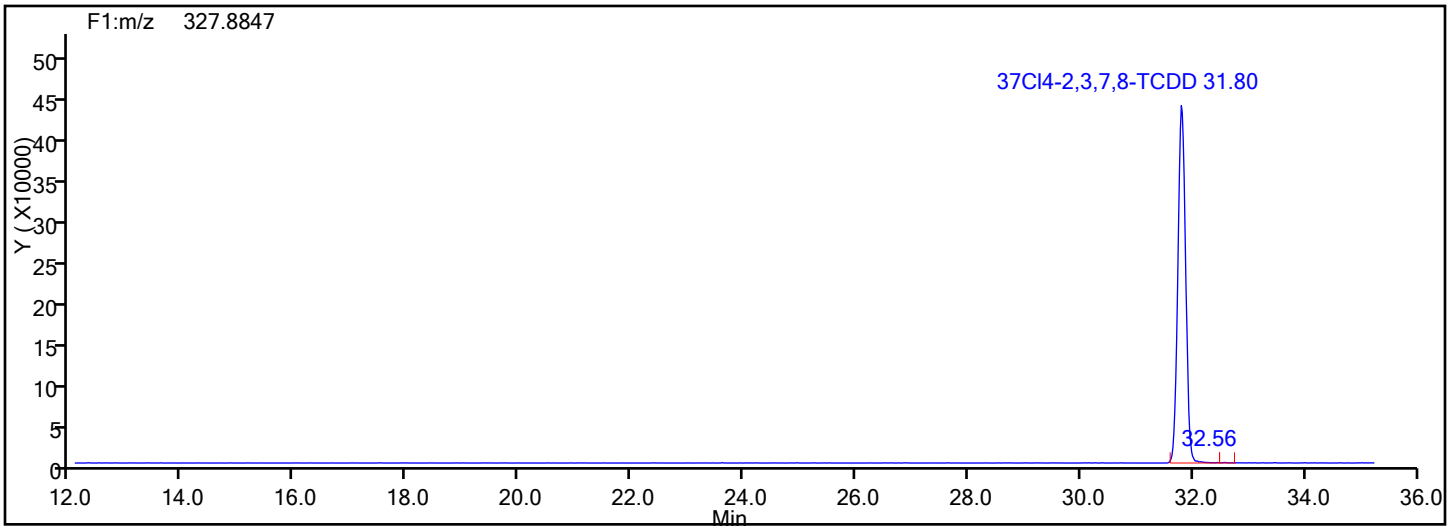
Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

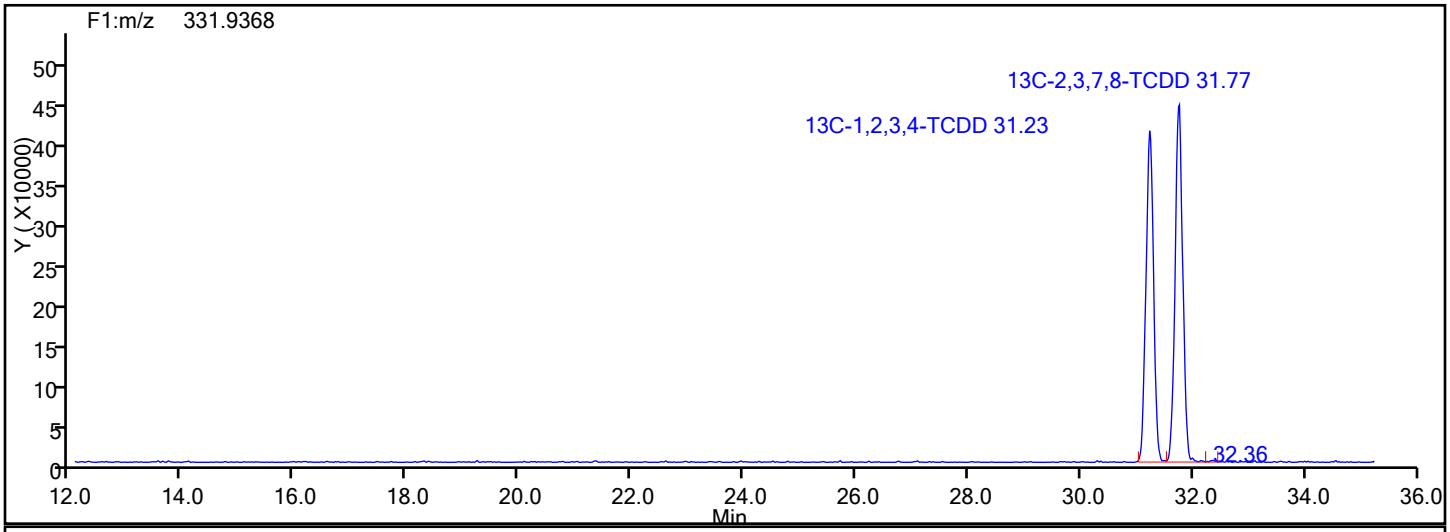
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

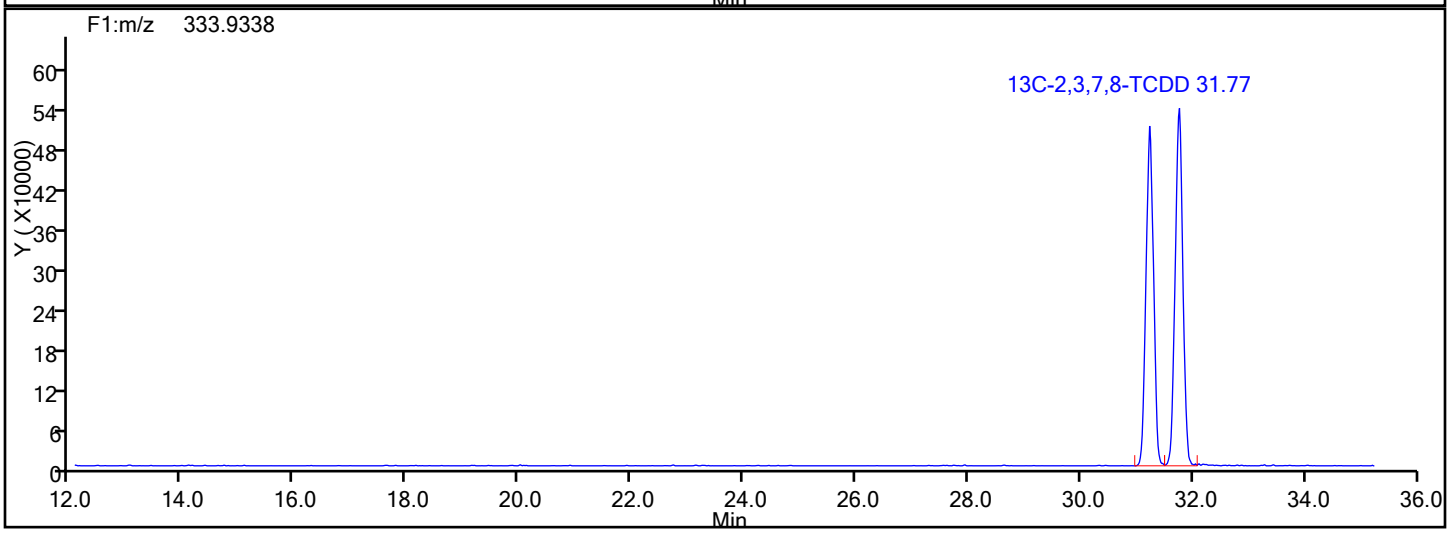
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





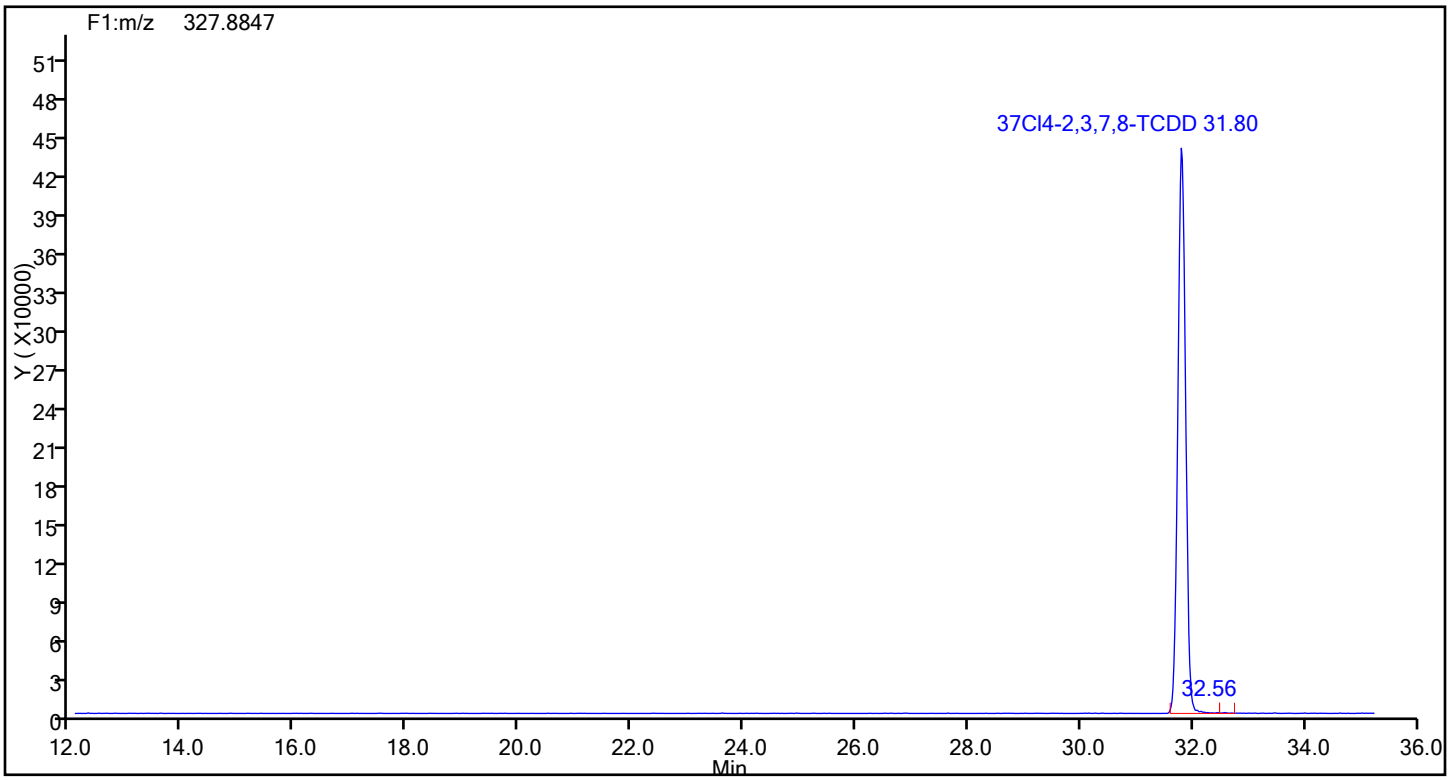
Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

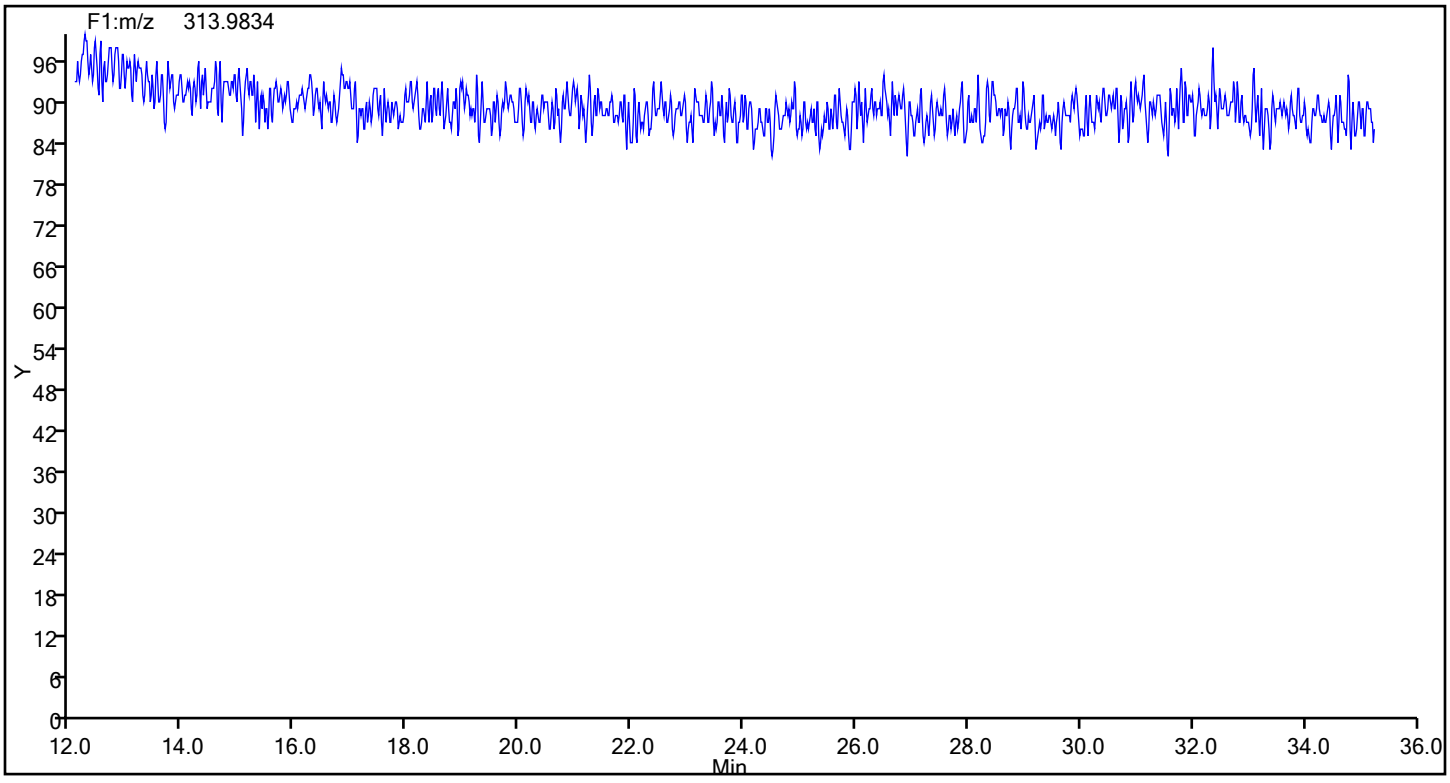
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



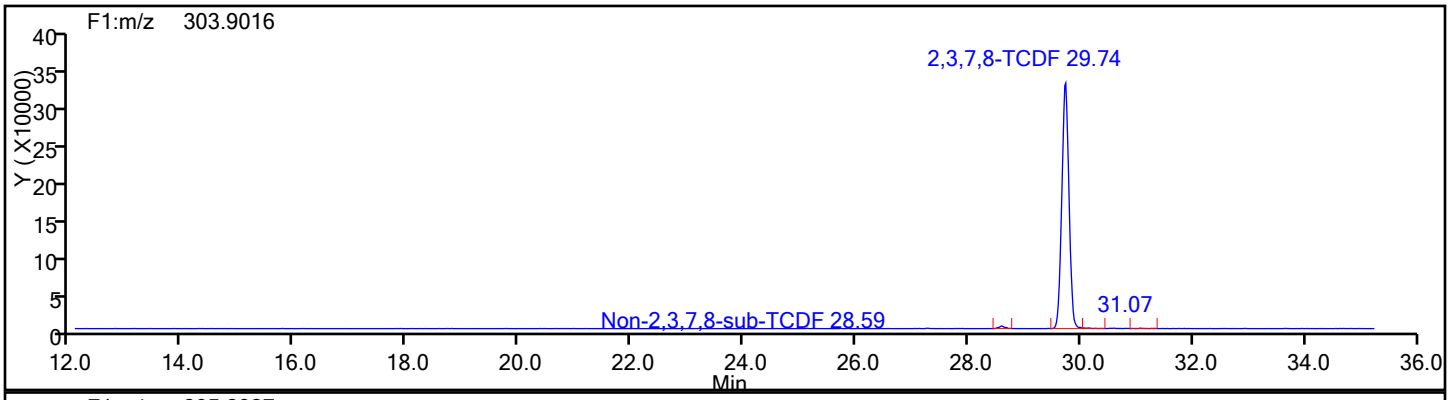
Report Date: 12-Jan-2017 08:09:35 Chrom Revision: 2.2 10-Jan-2017 11:26:10

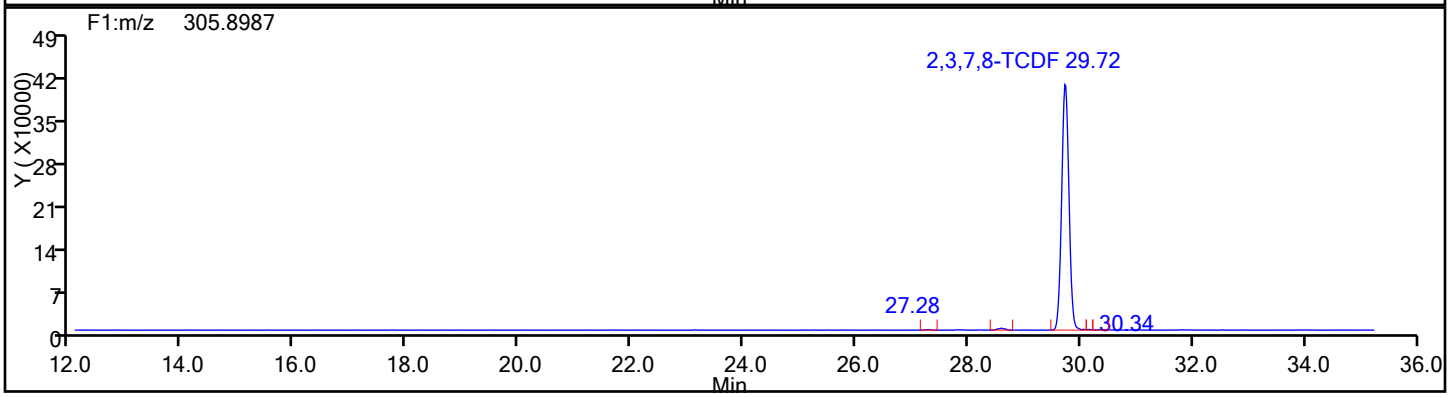
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

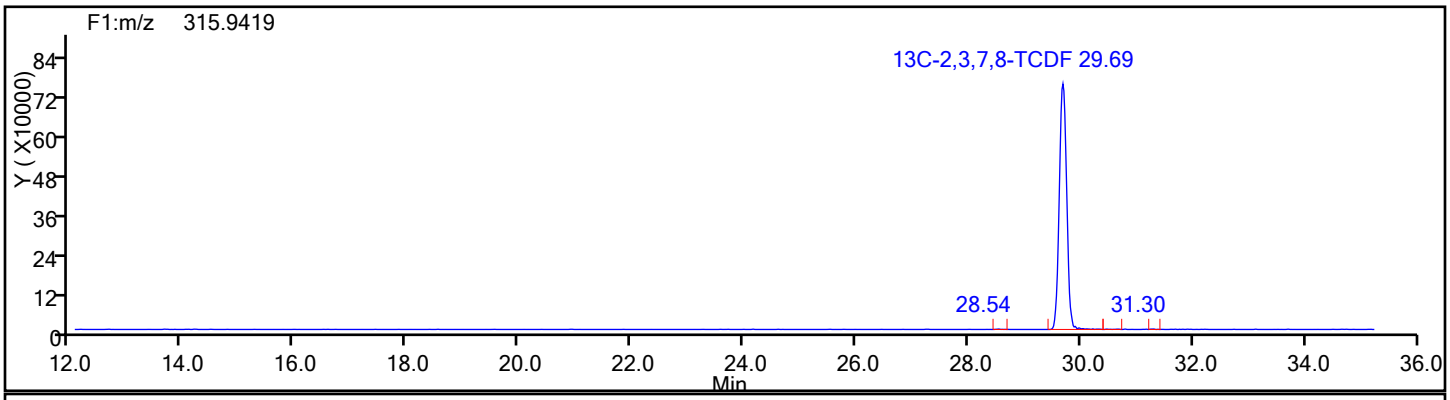
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

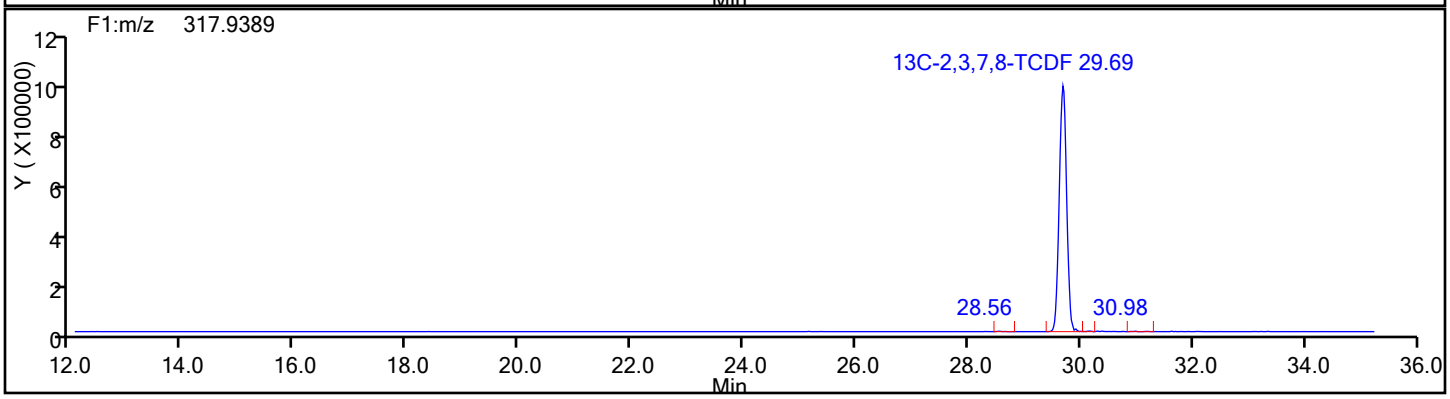
TCDF





TCDF Standards





Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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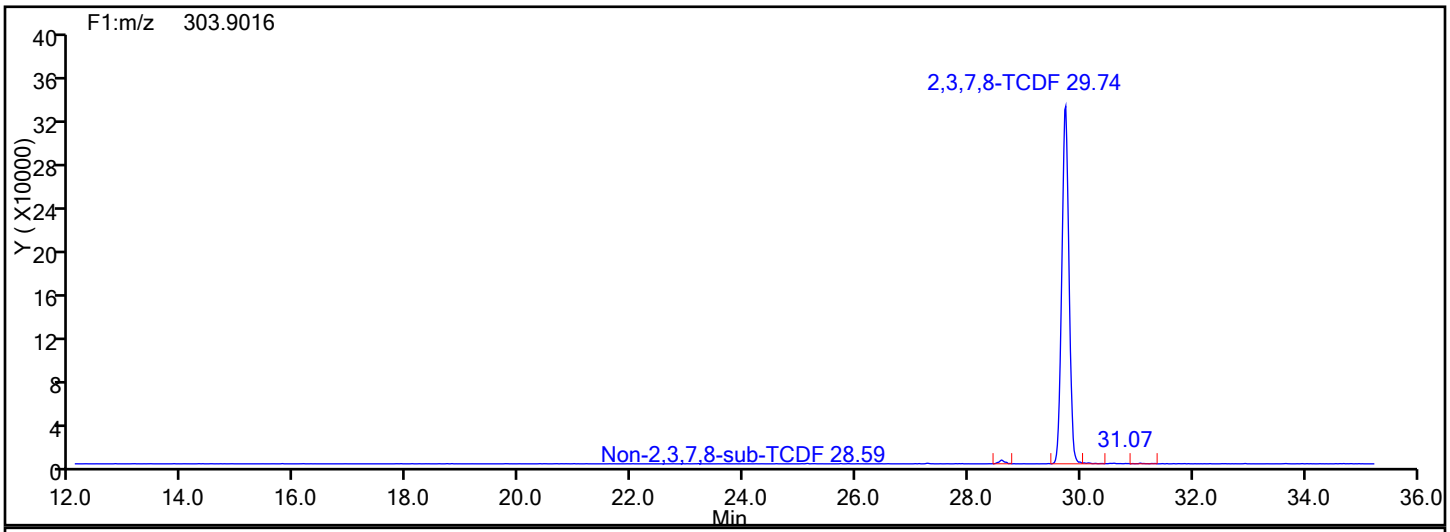
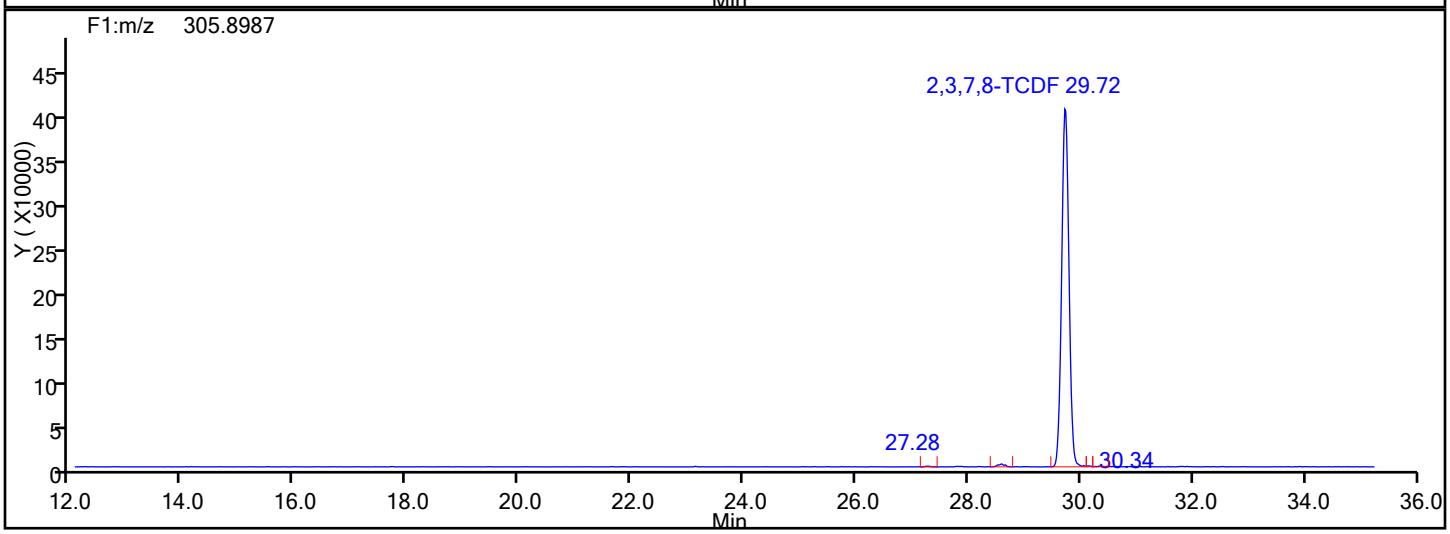
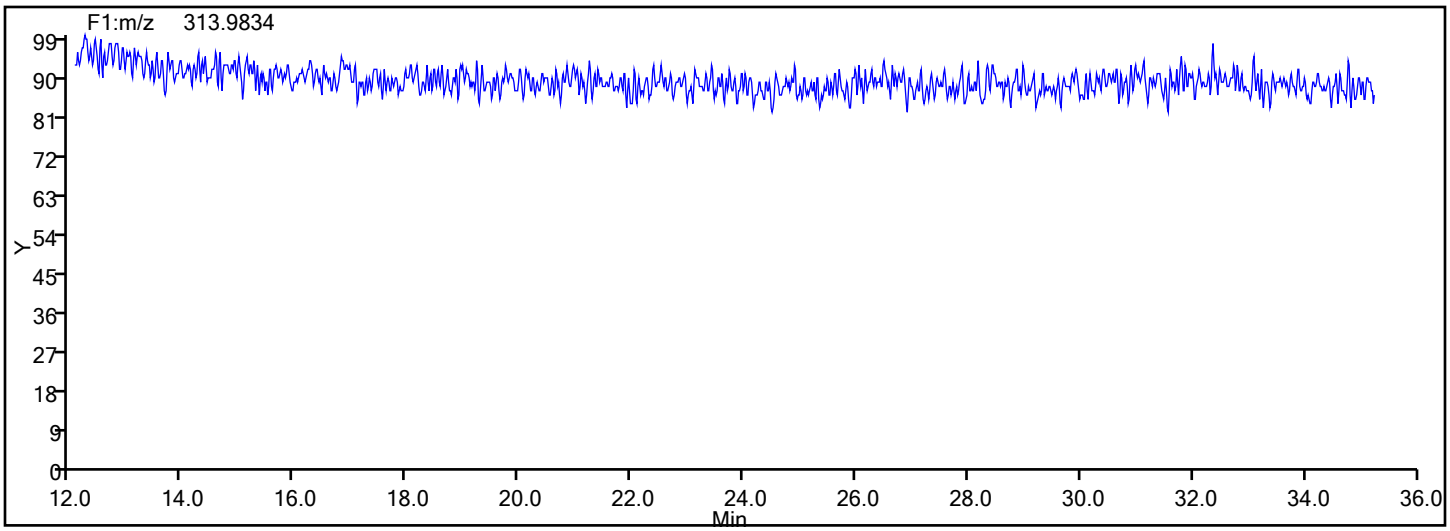




TCDF Lock Mass



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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
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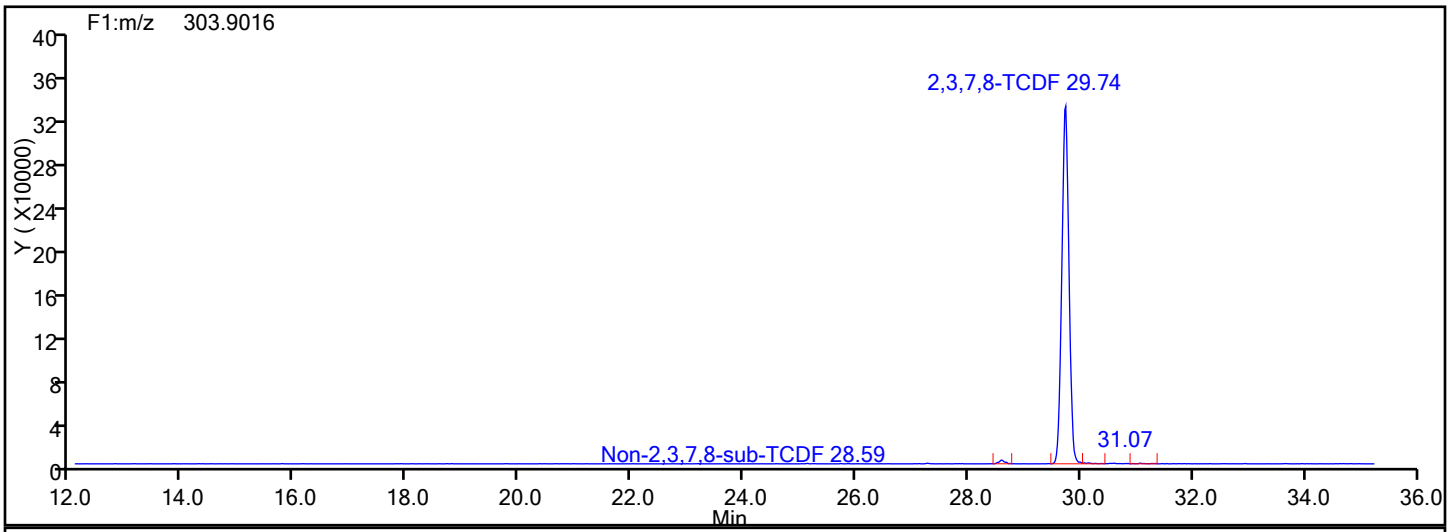

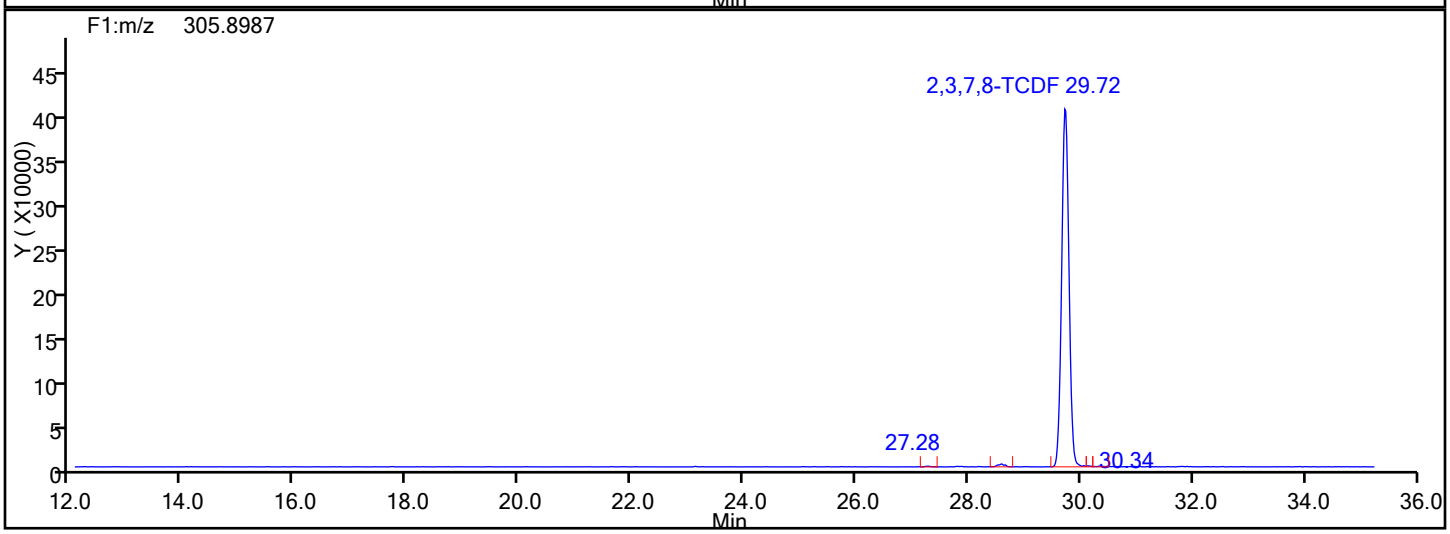

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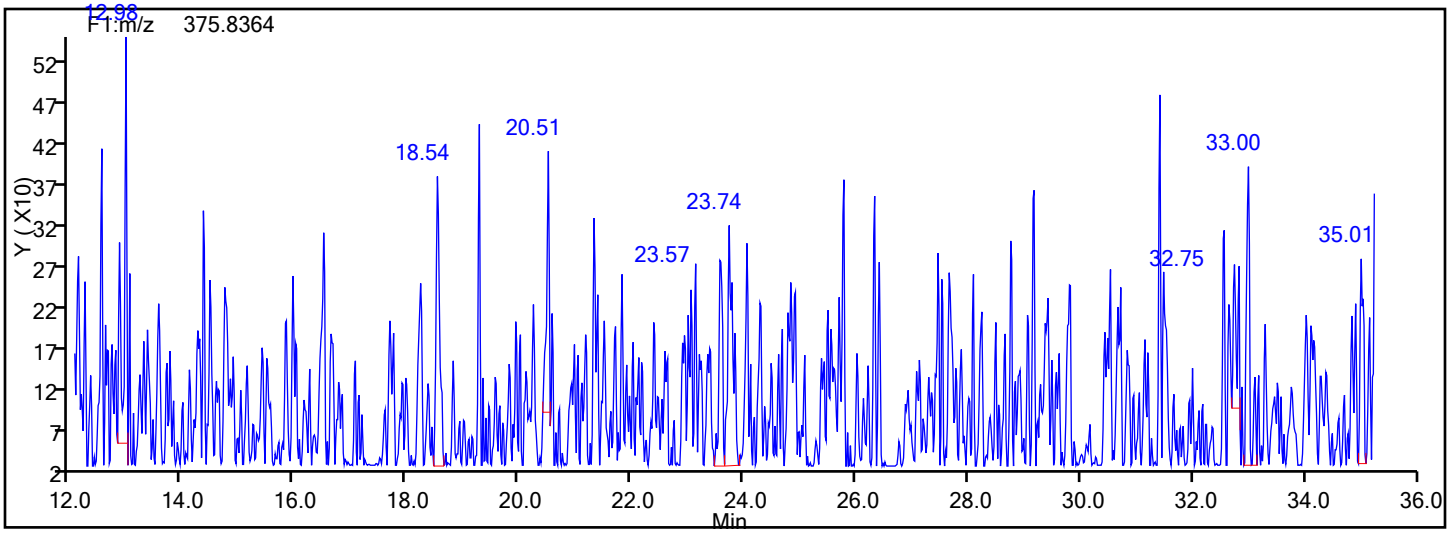

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TestAmerica Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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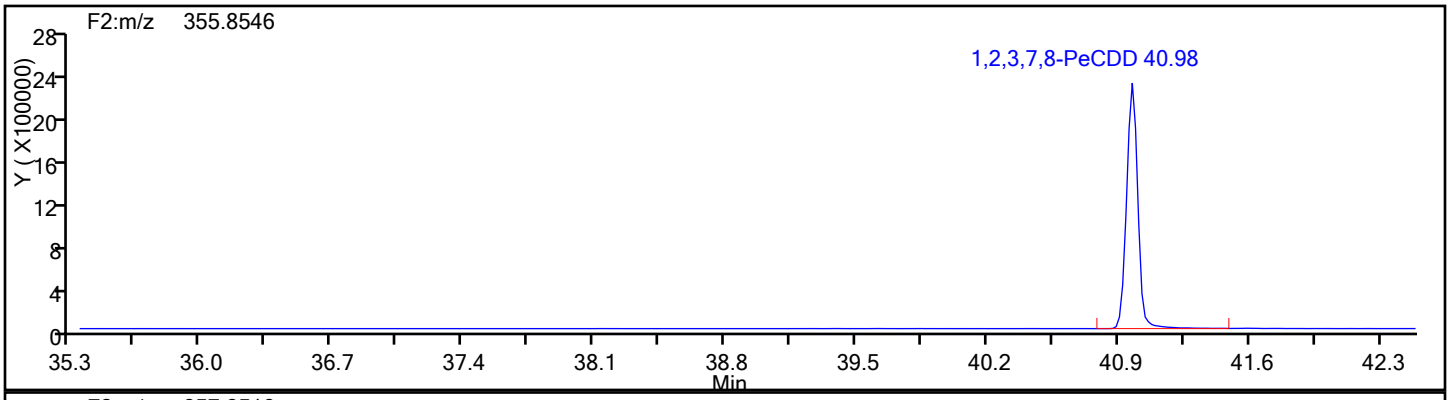

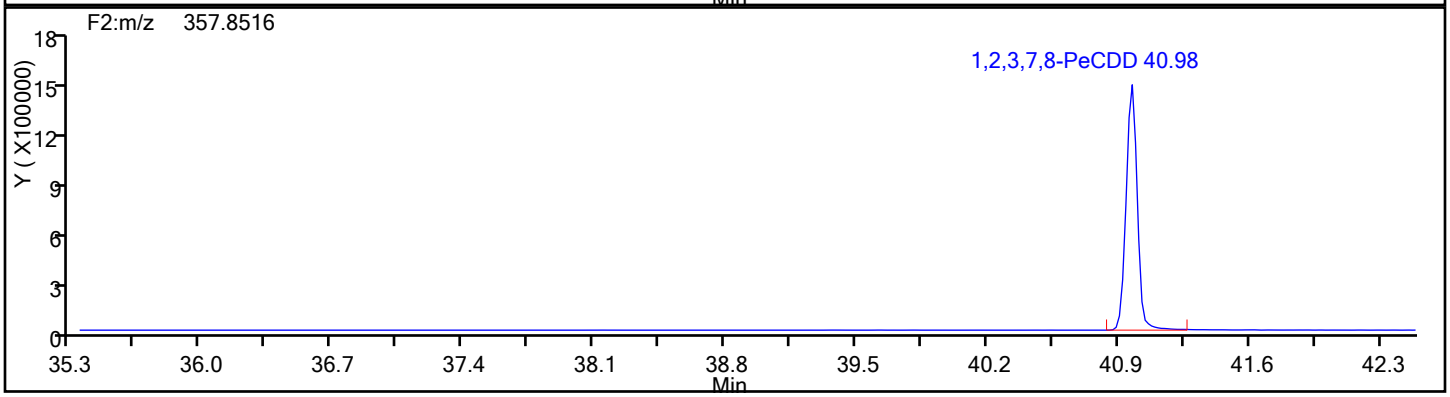

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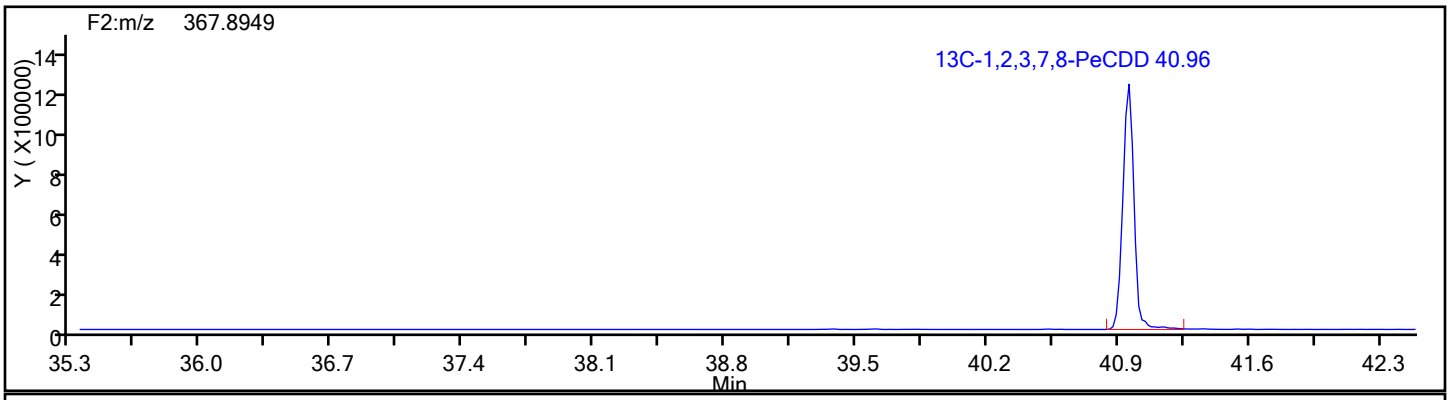

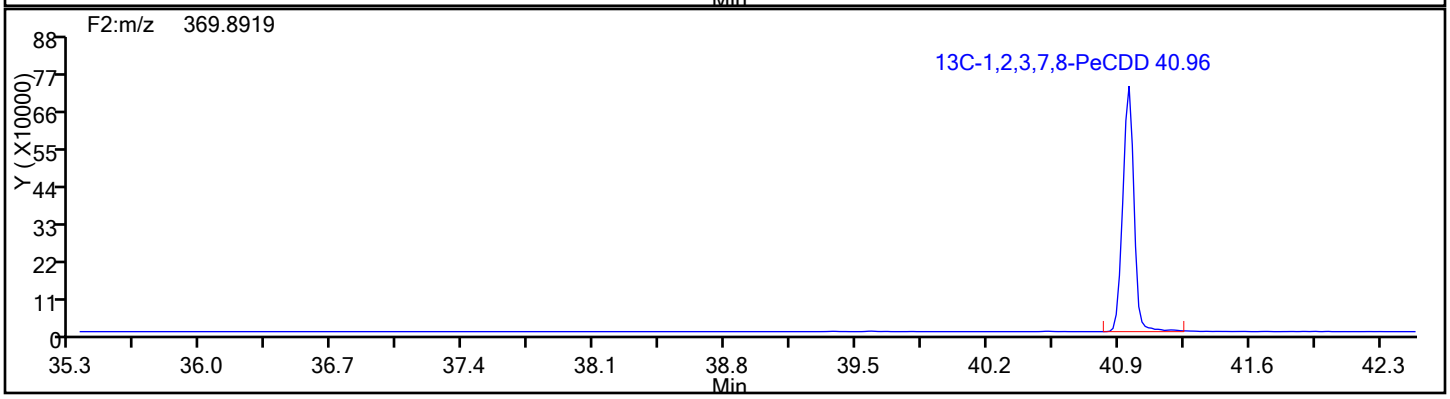

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TestAmerica Knoxville

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Injection Date: 16-May-2014 17:29:00 Injection Vol: 1.0 ul
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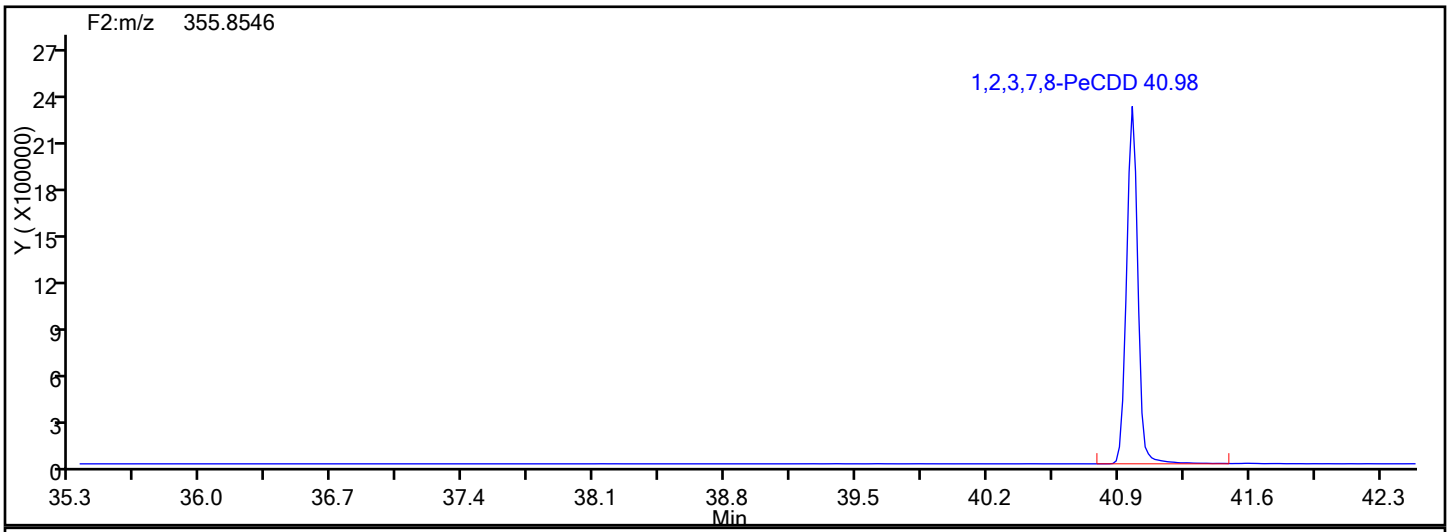
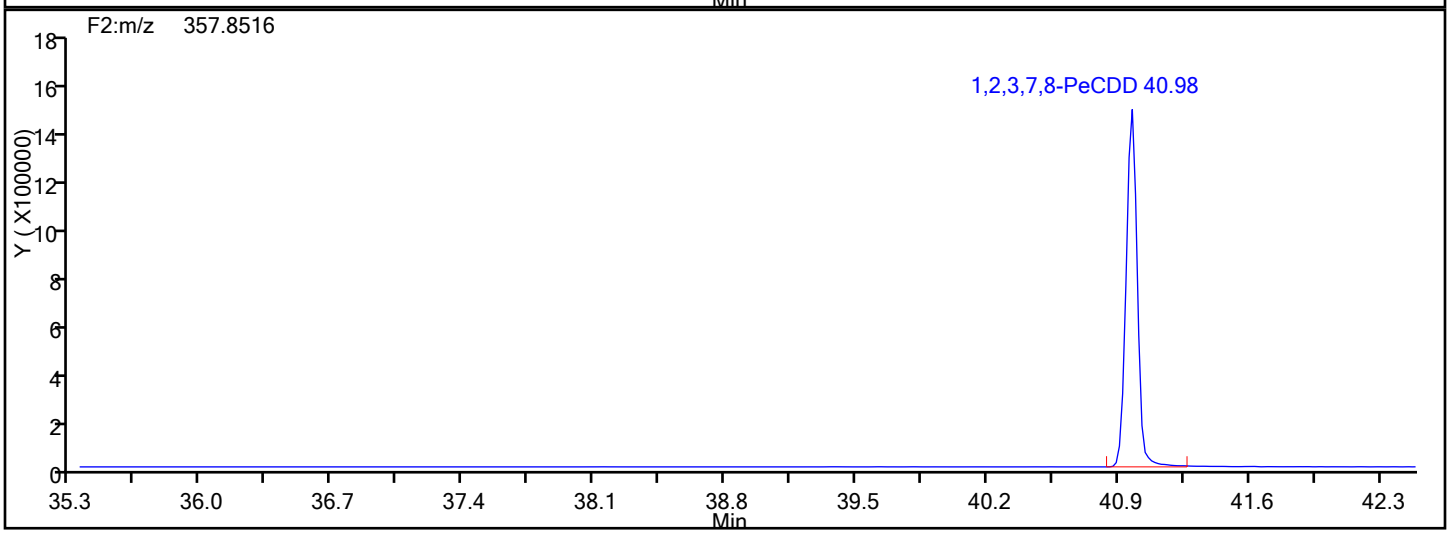
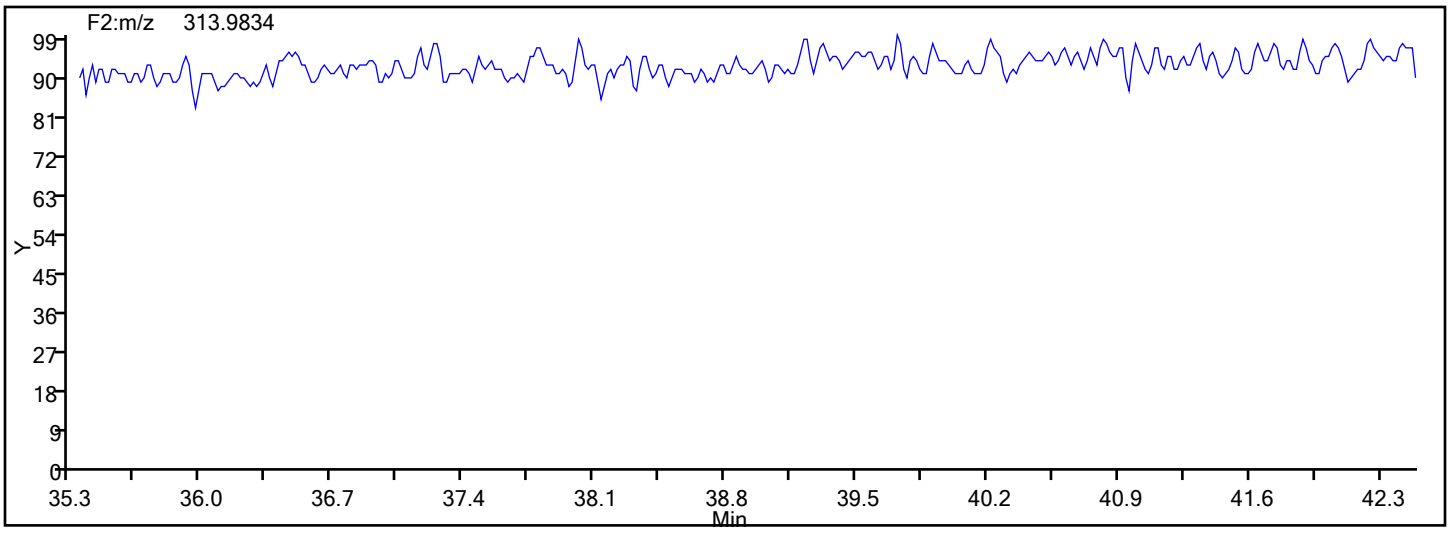




PeCDD Lock Mass



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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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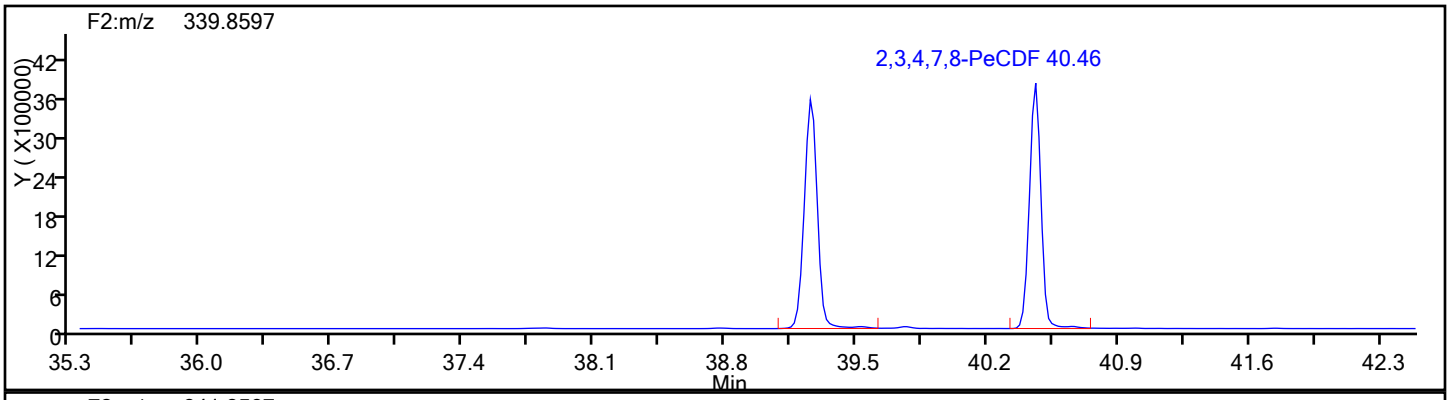
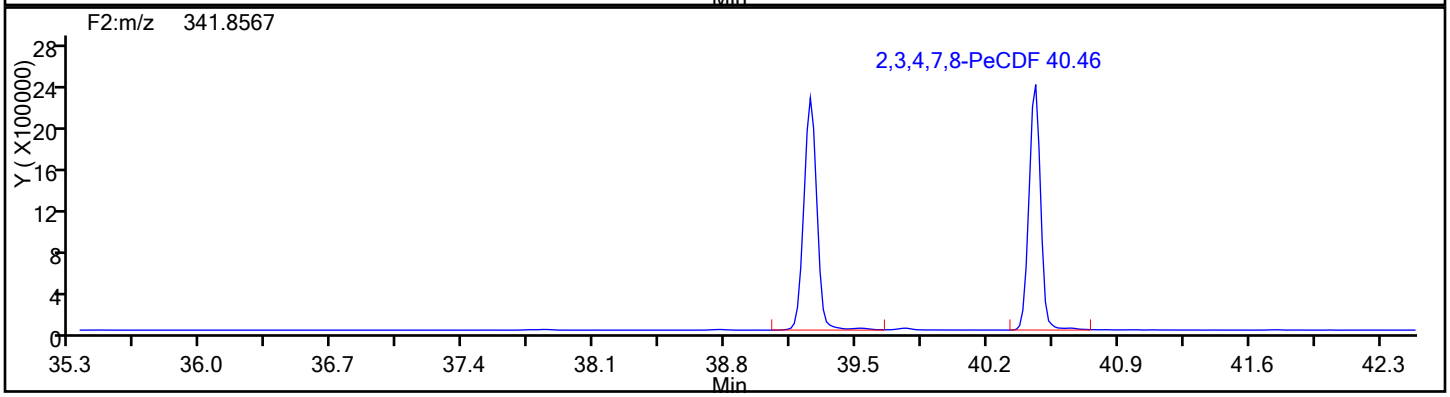
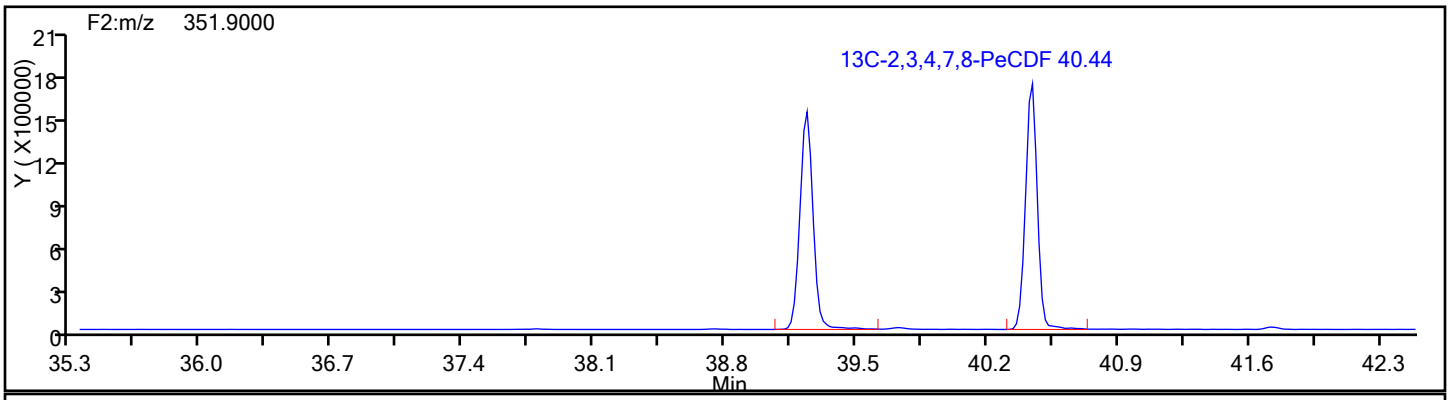
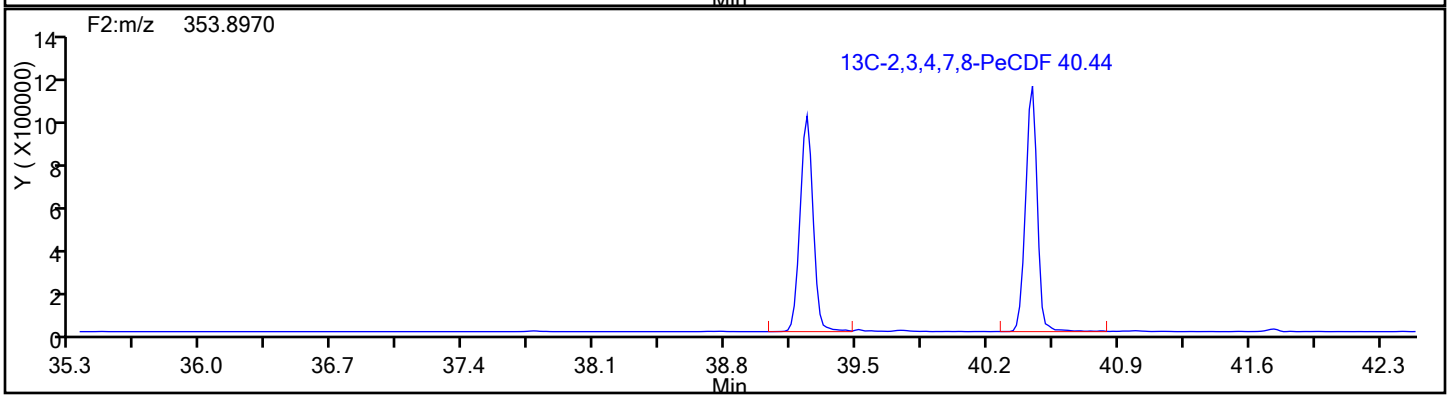




PeCDF Standards





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TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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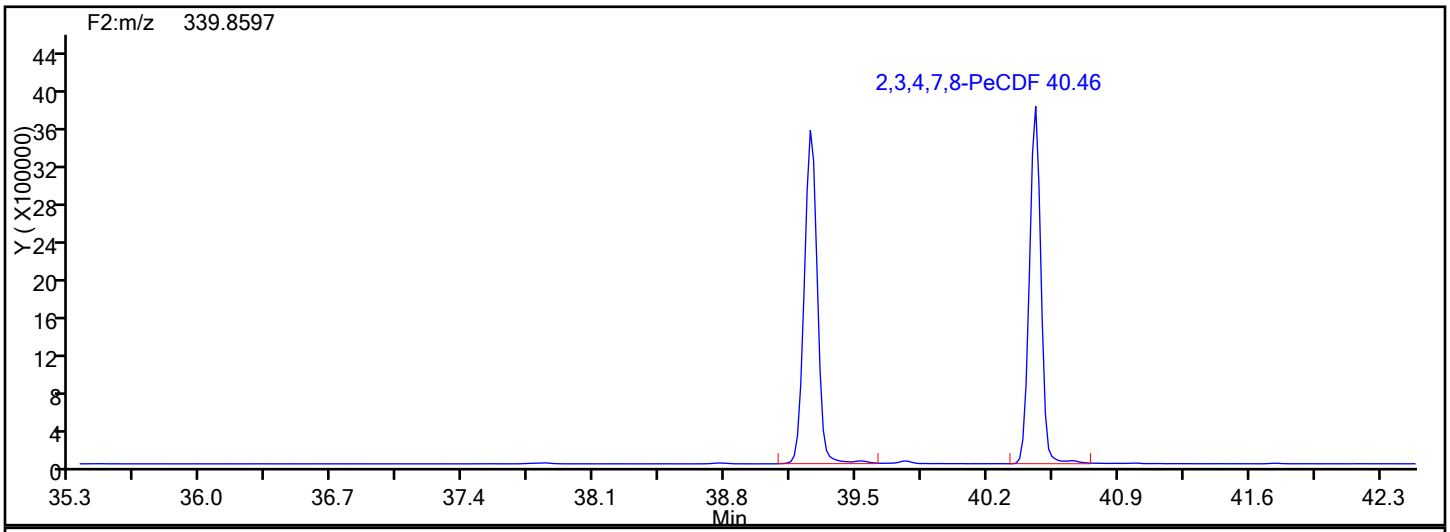
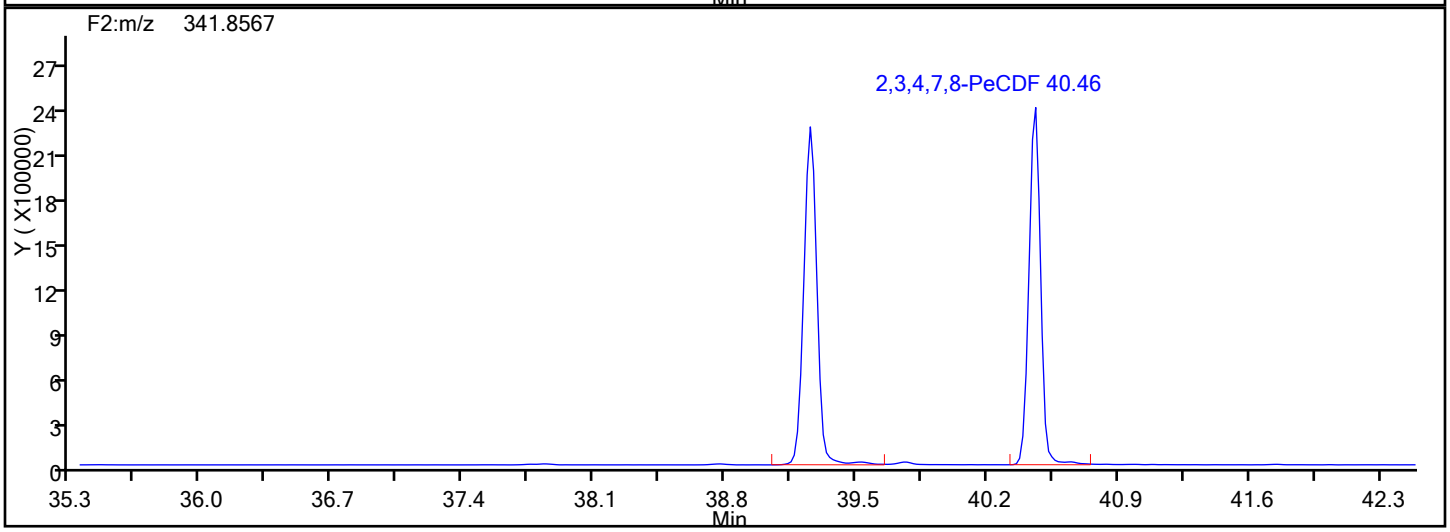
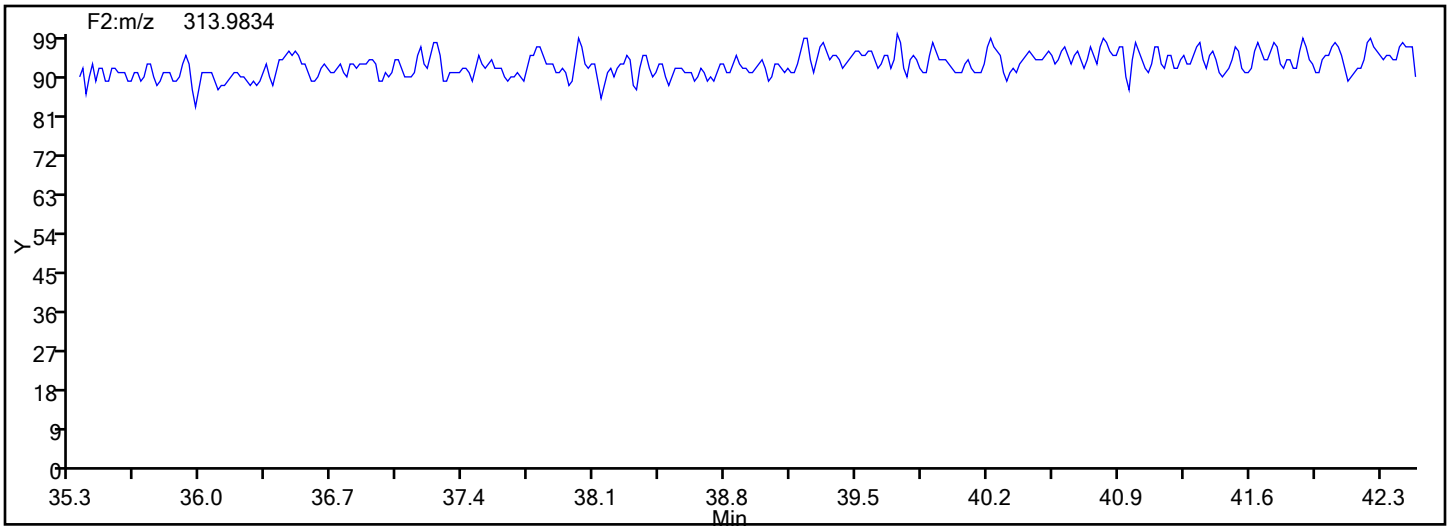




PeCDF Lock Mass



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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
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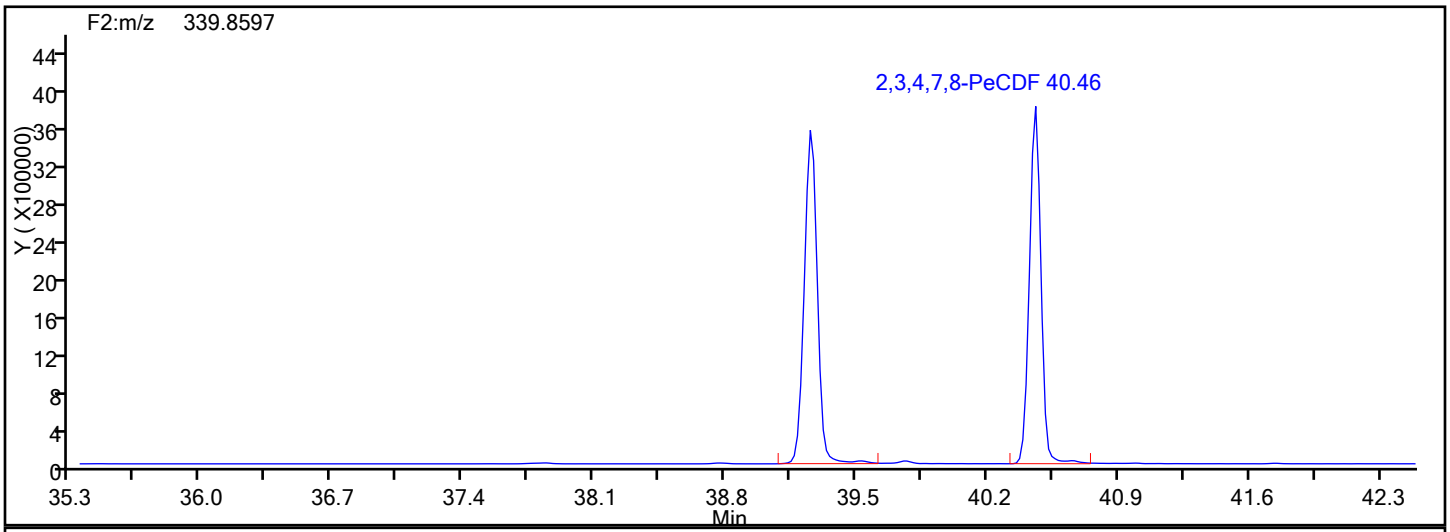

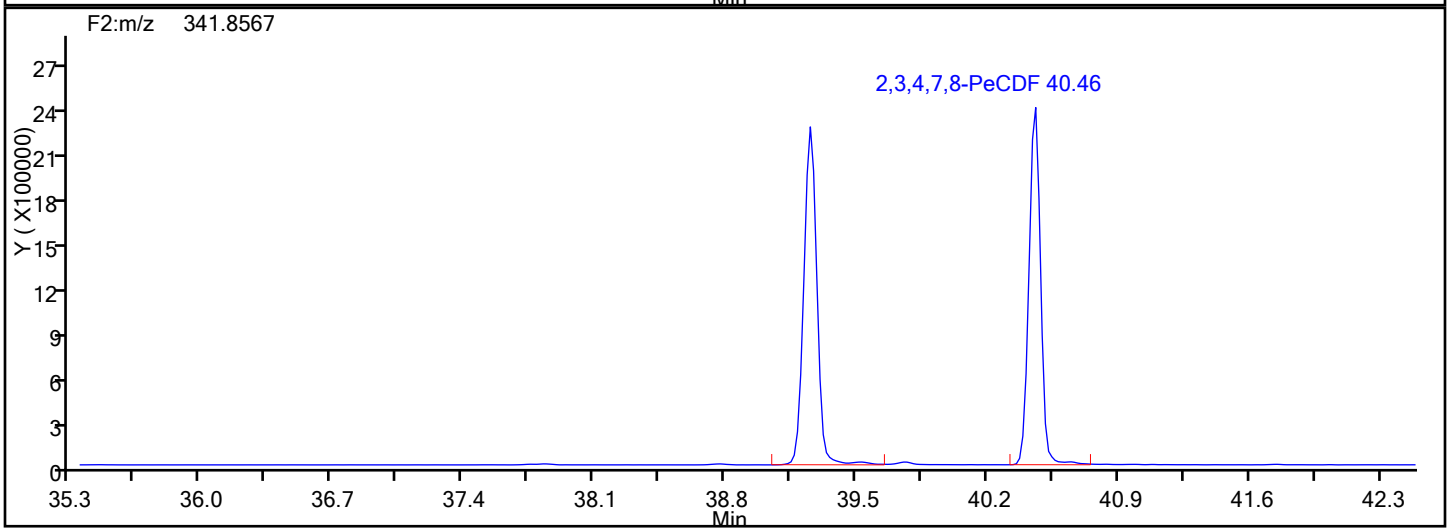

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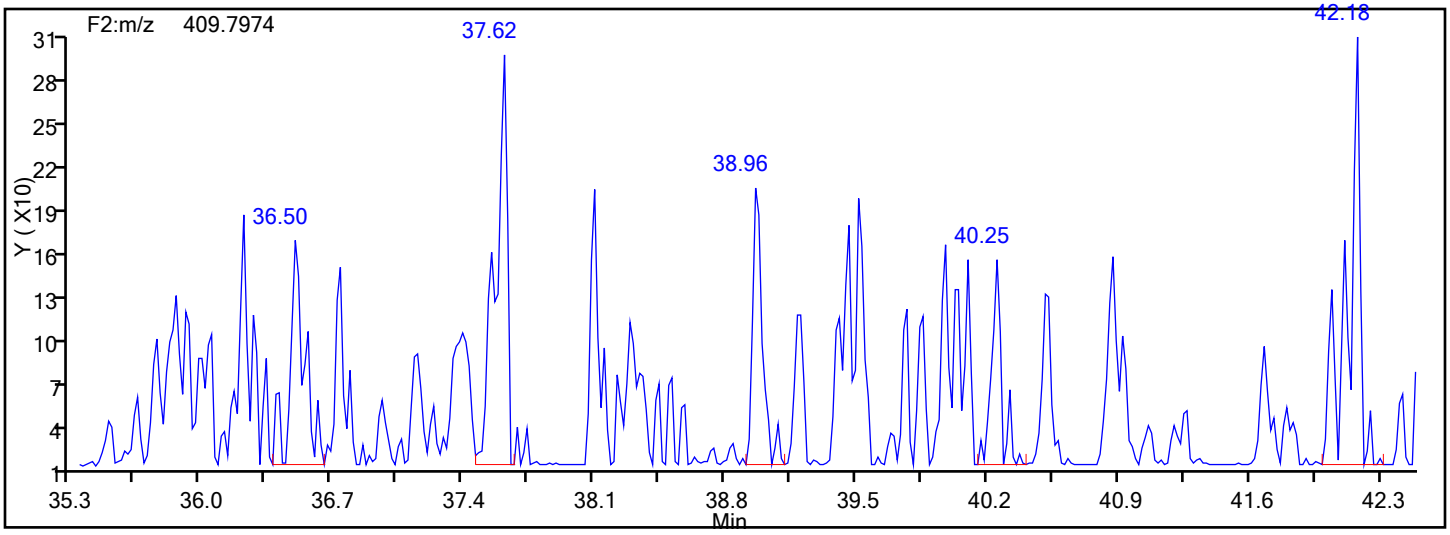

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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
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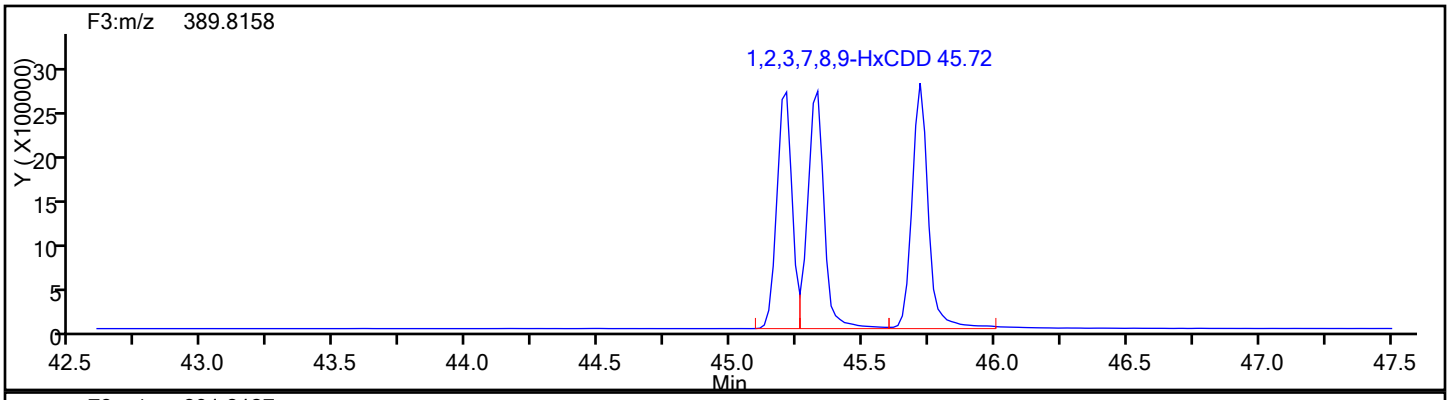
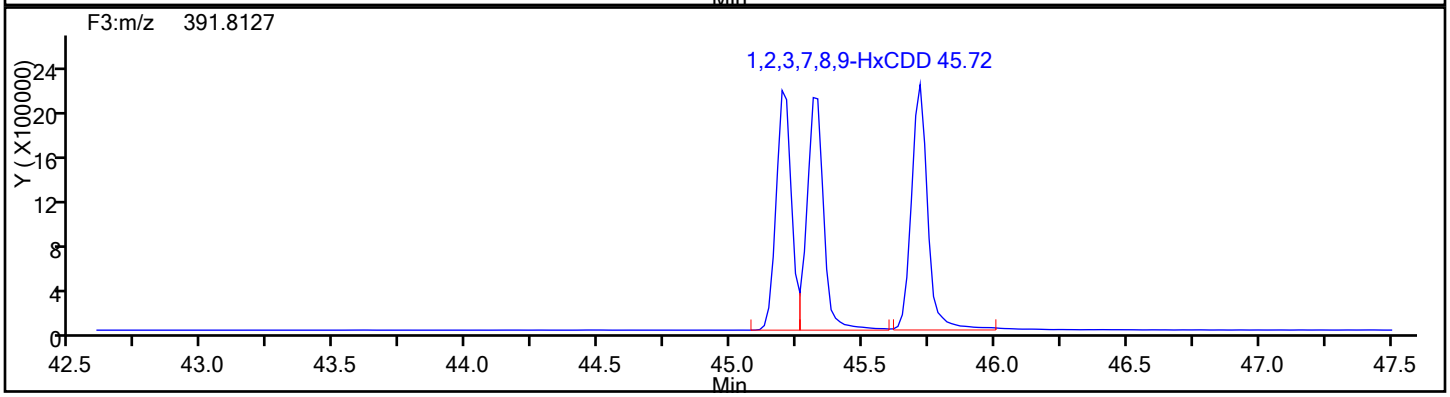
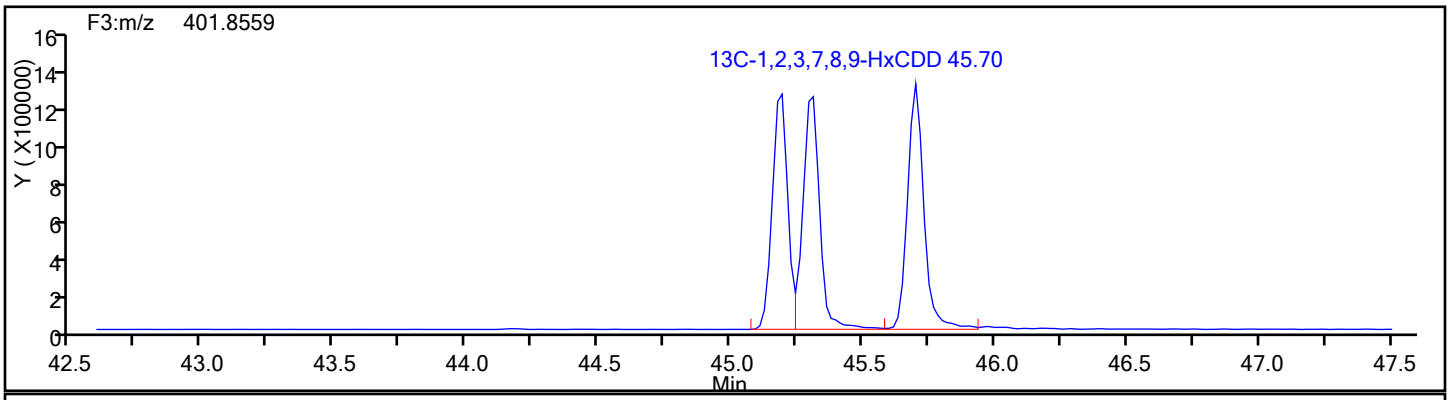
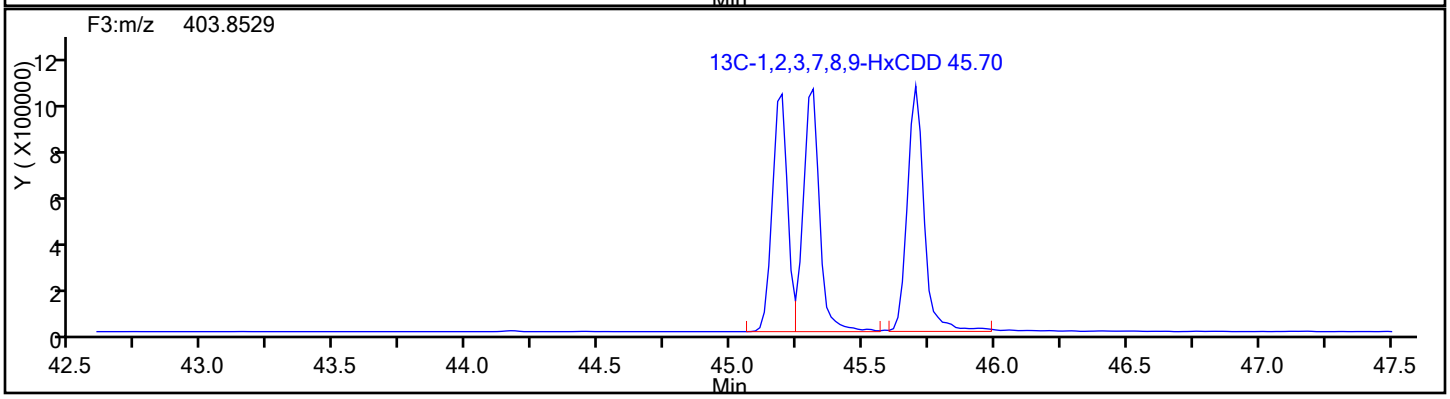




HxCDD Standards





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TestAmerica Knoxville

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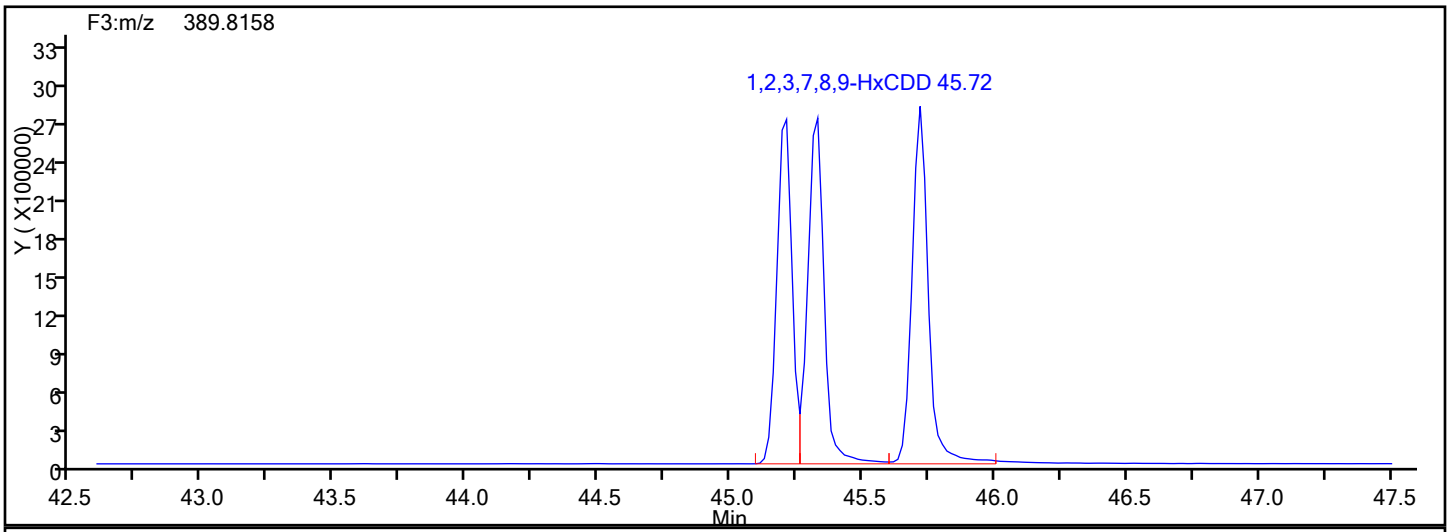

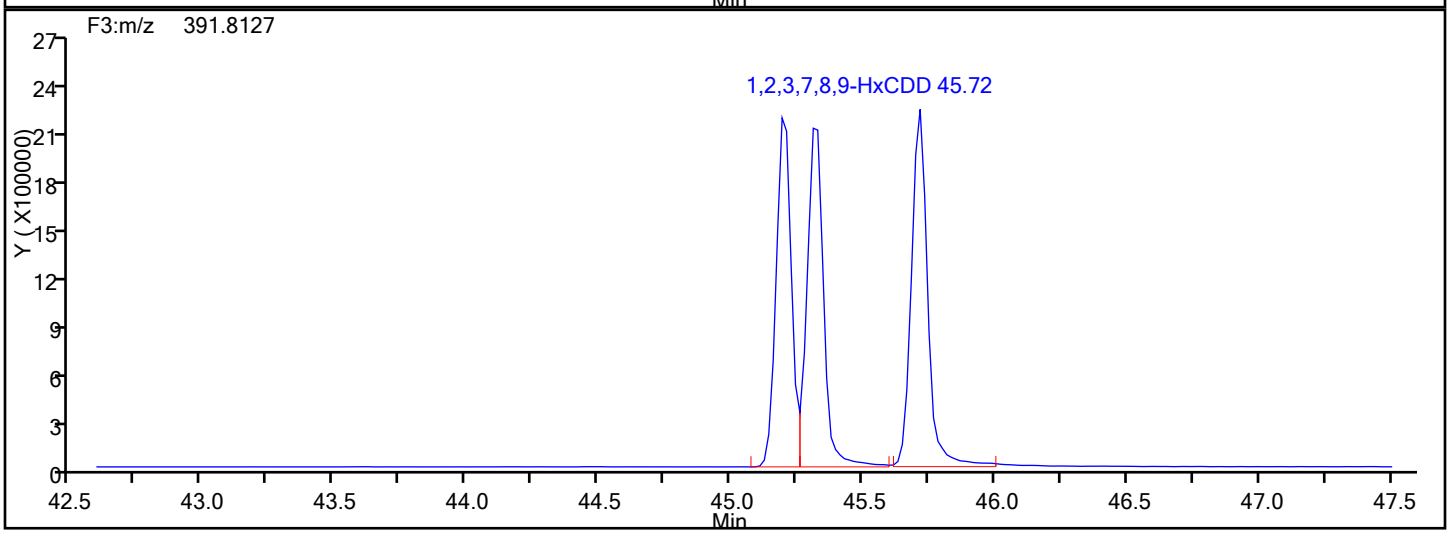

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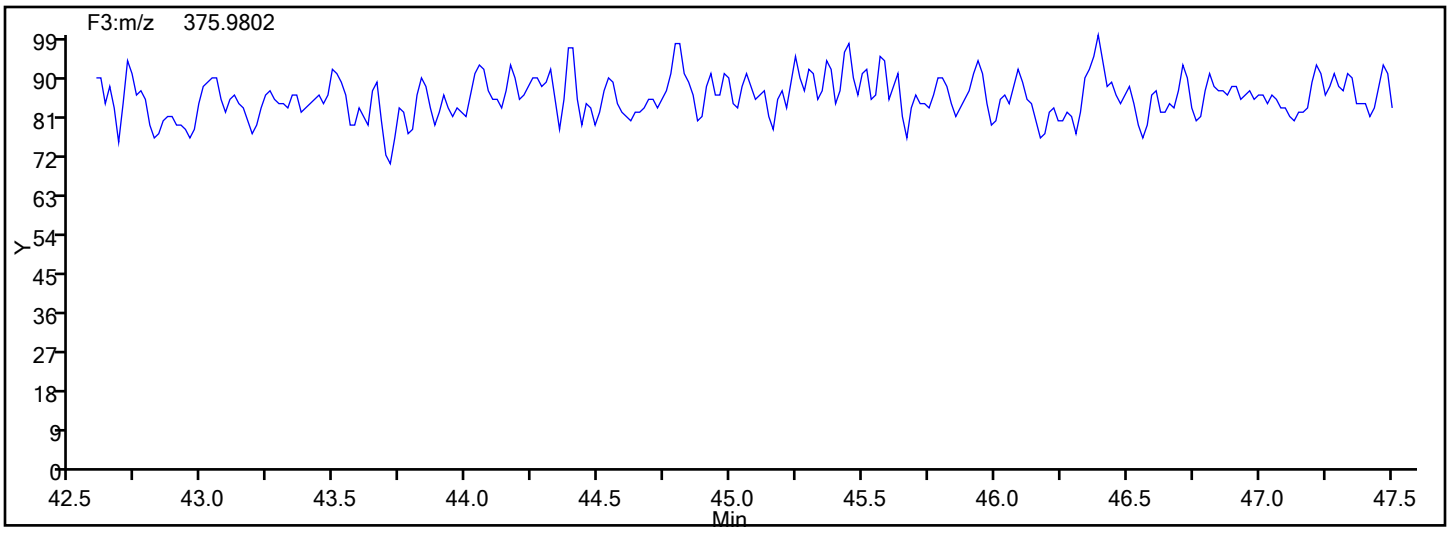

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TestAmerica Knoxville

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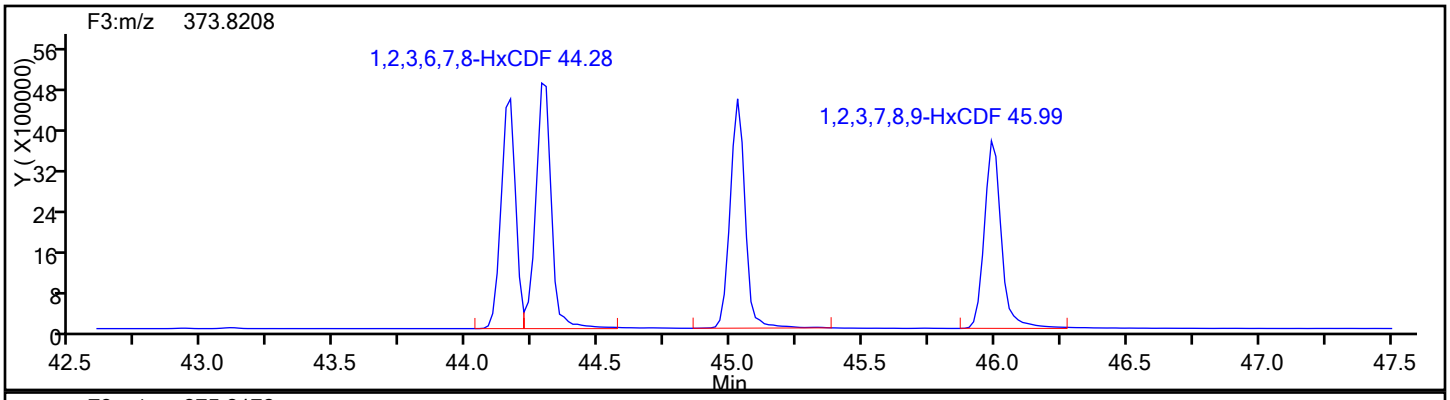

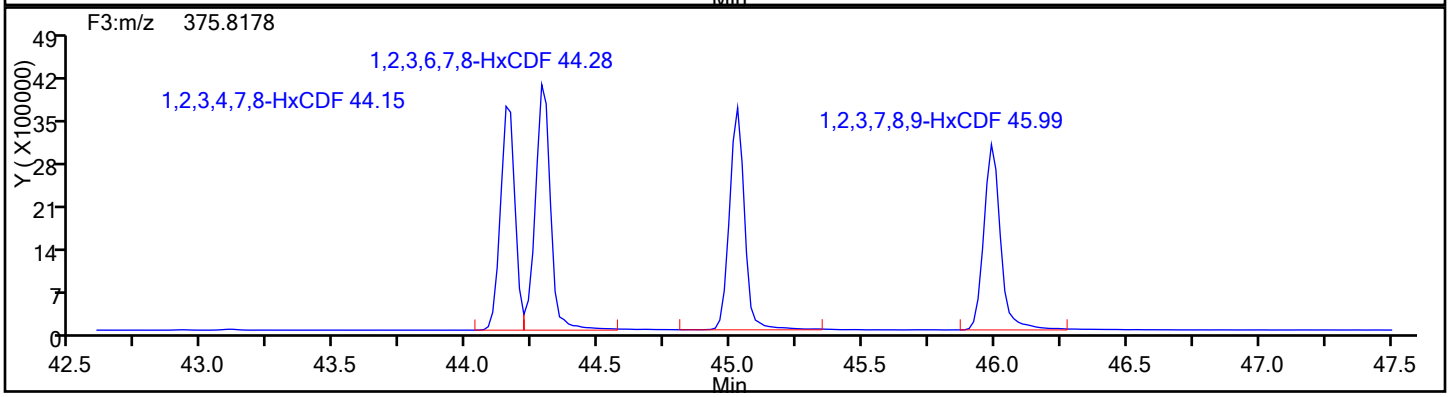

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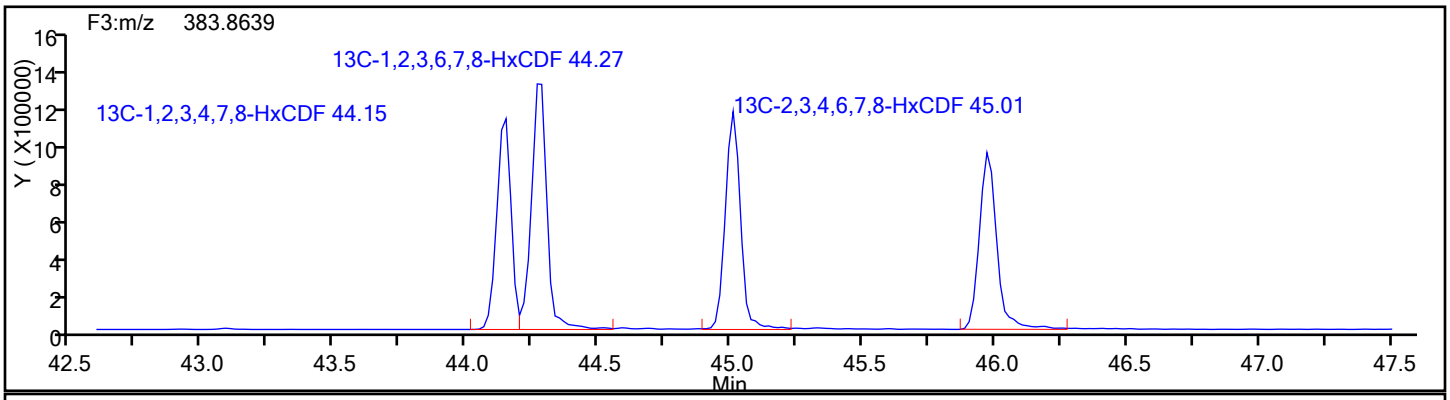

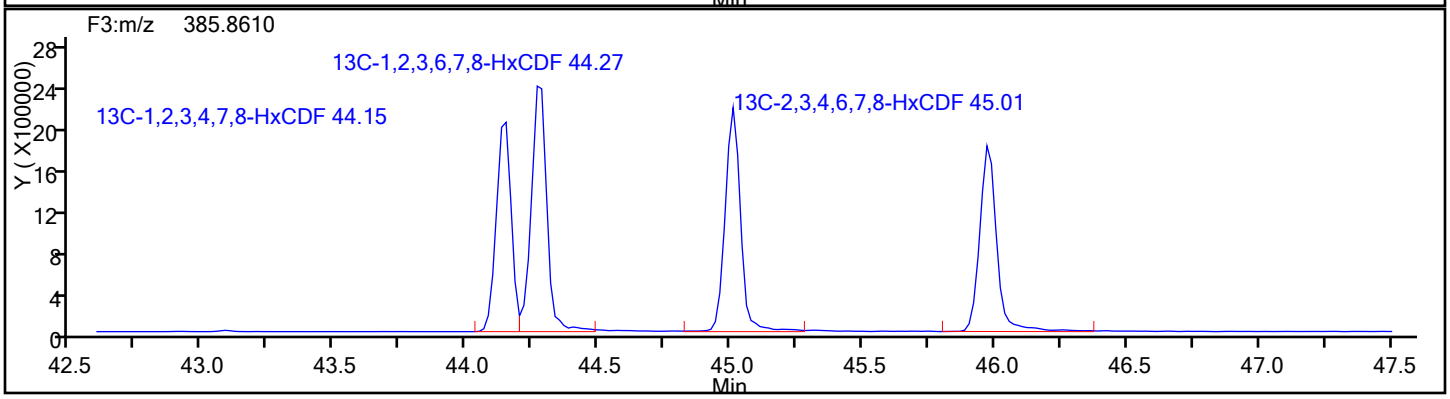

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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
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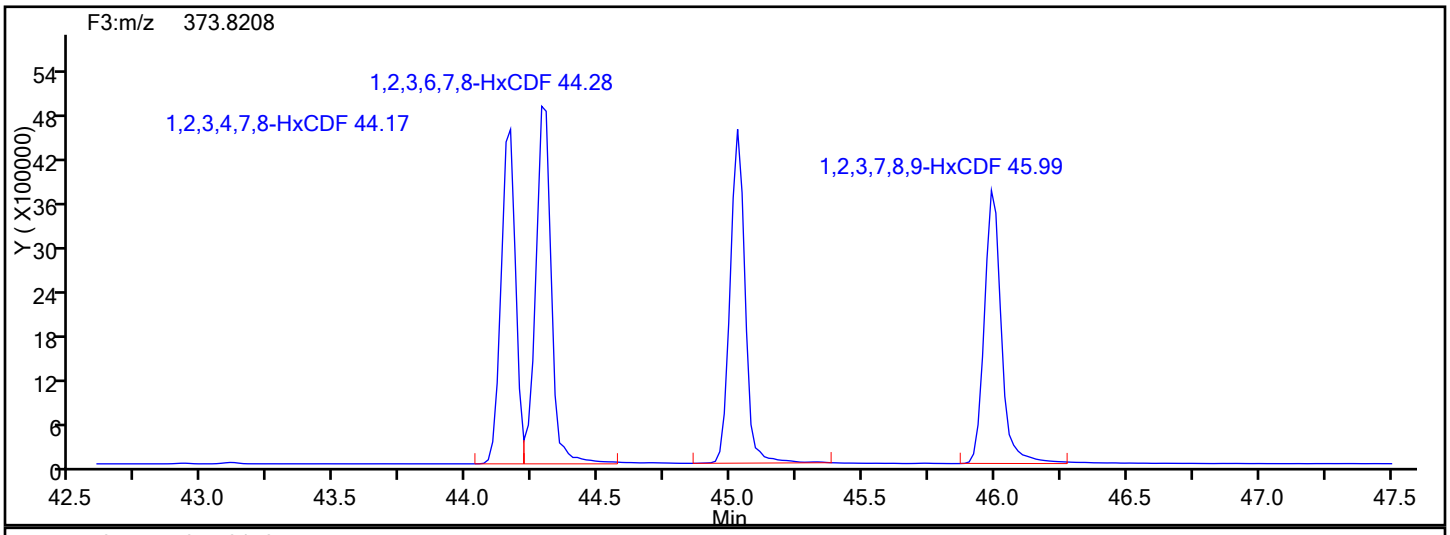

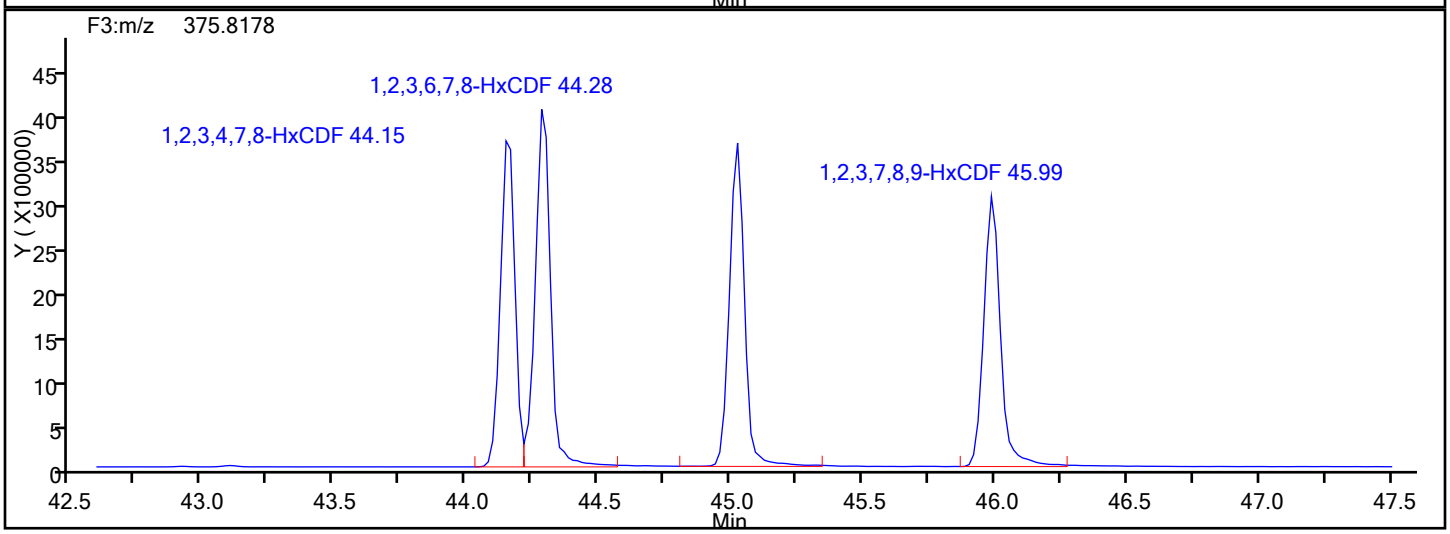

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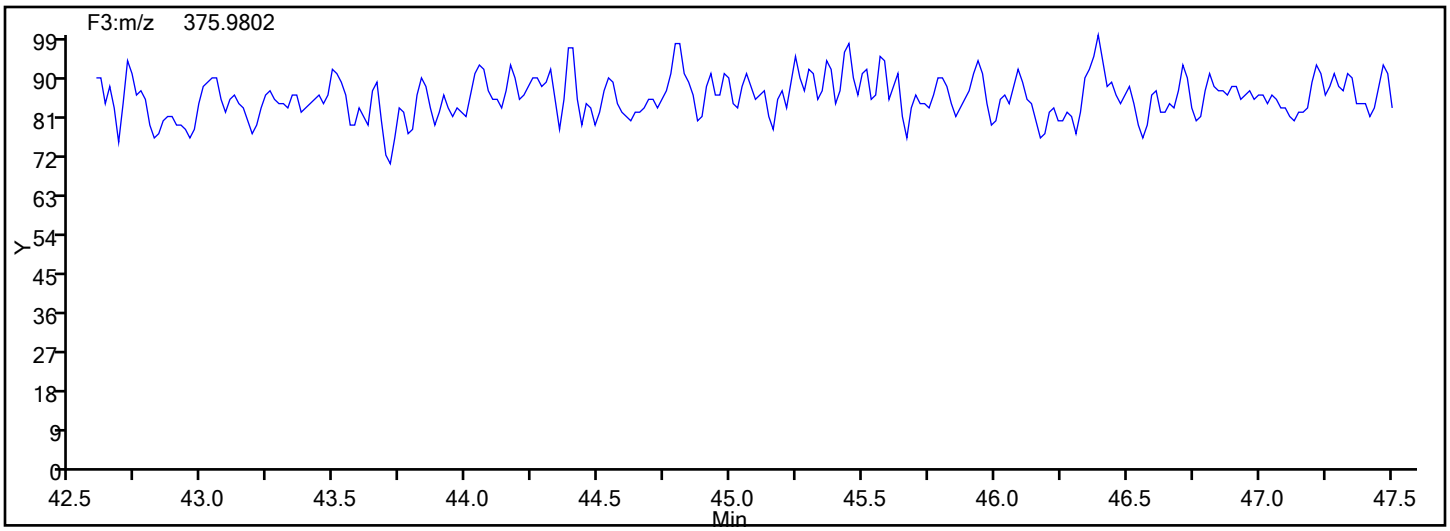

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TestAmerica Knoxville

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Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
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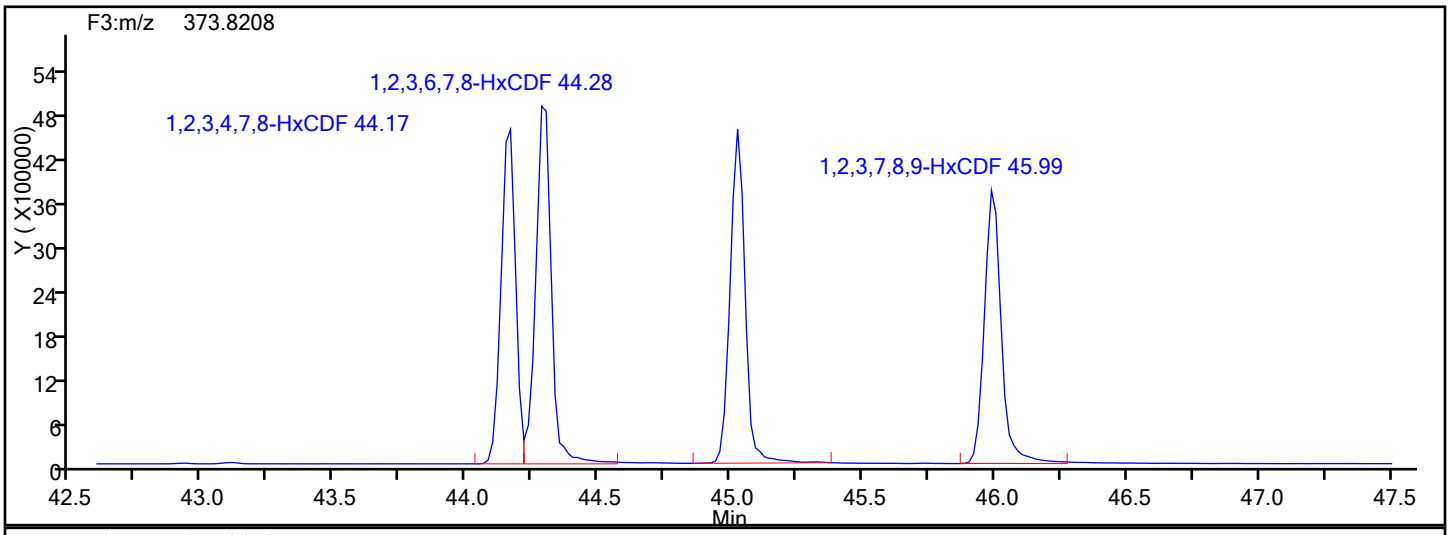
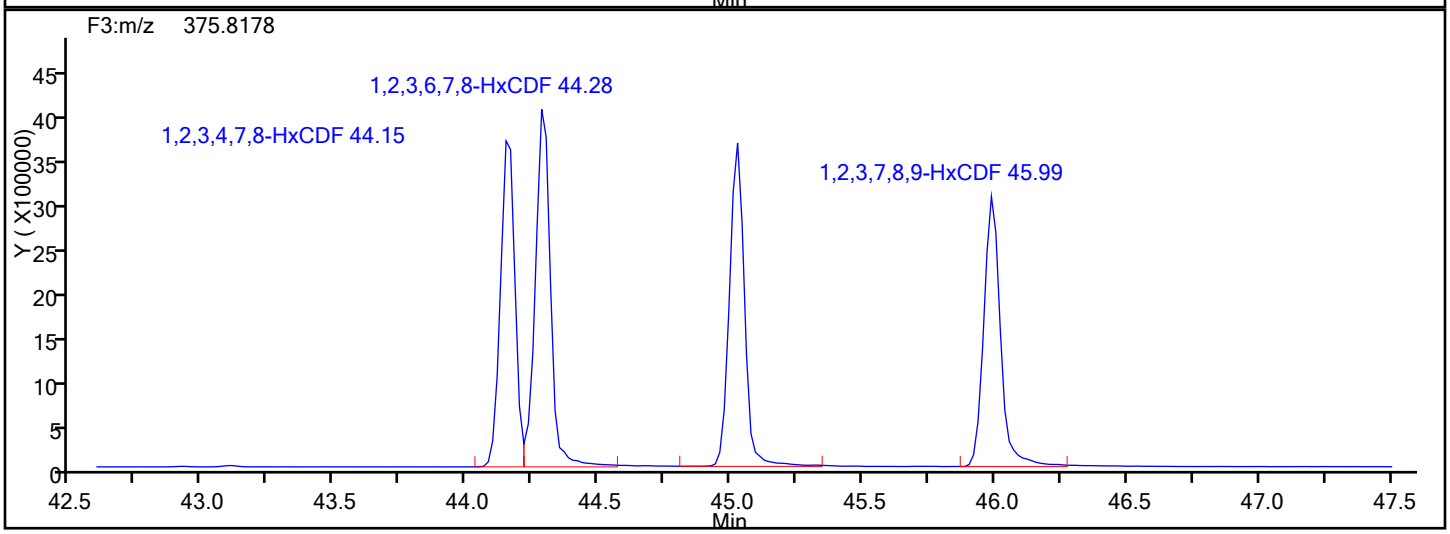
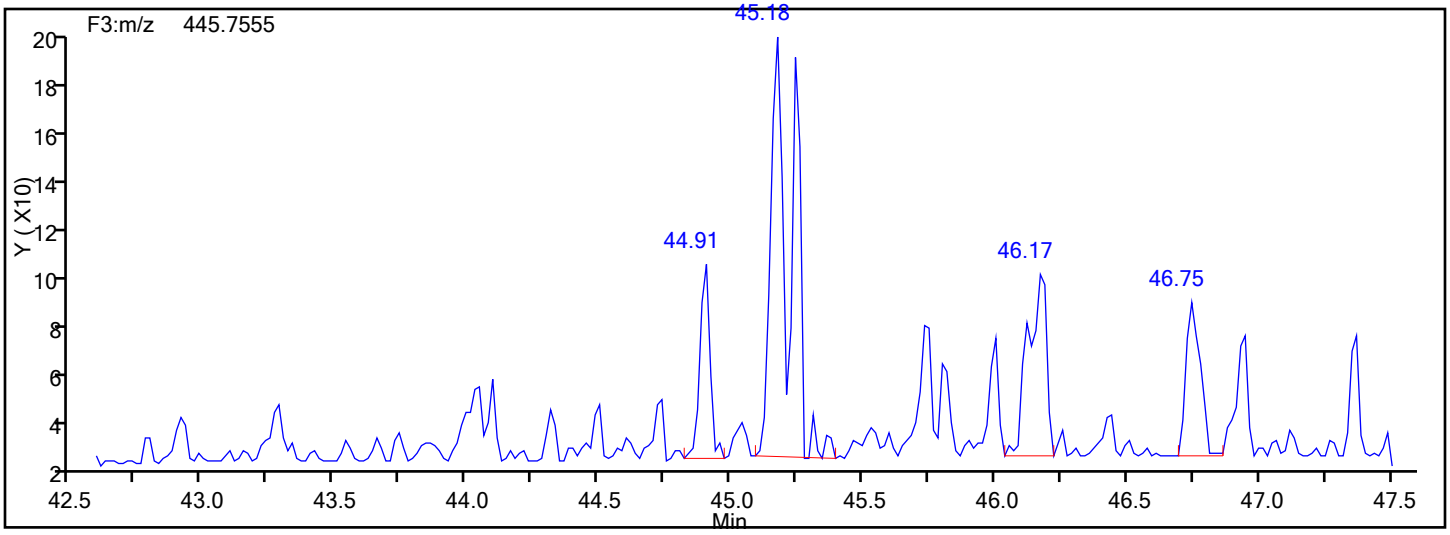
HxCDF





HxCDF Interference Mass



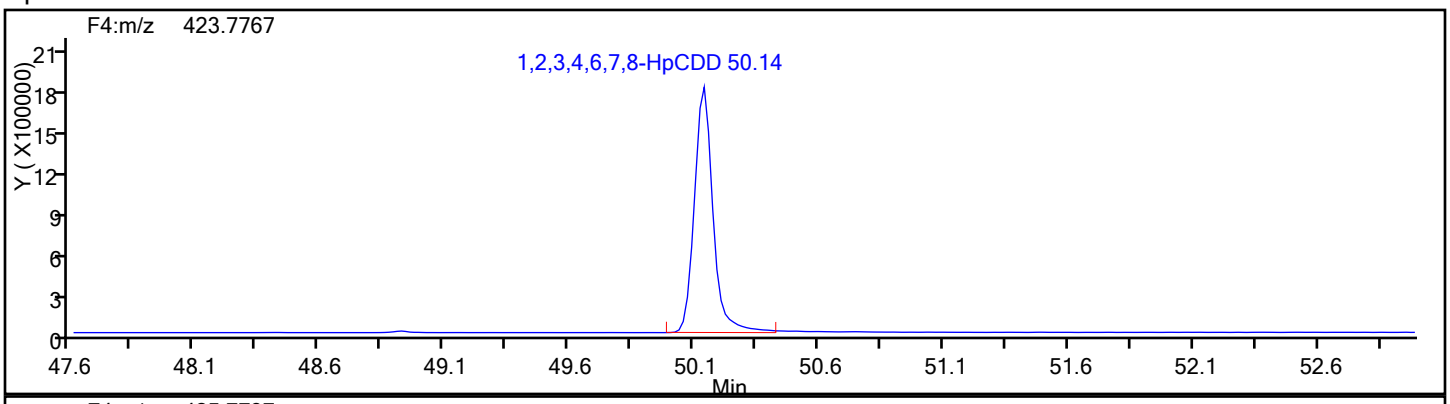
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

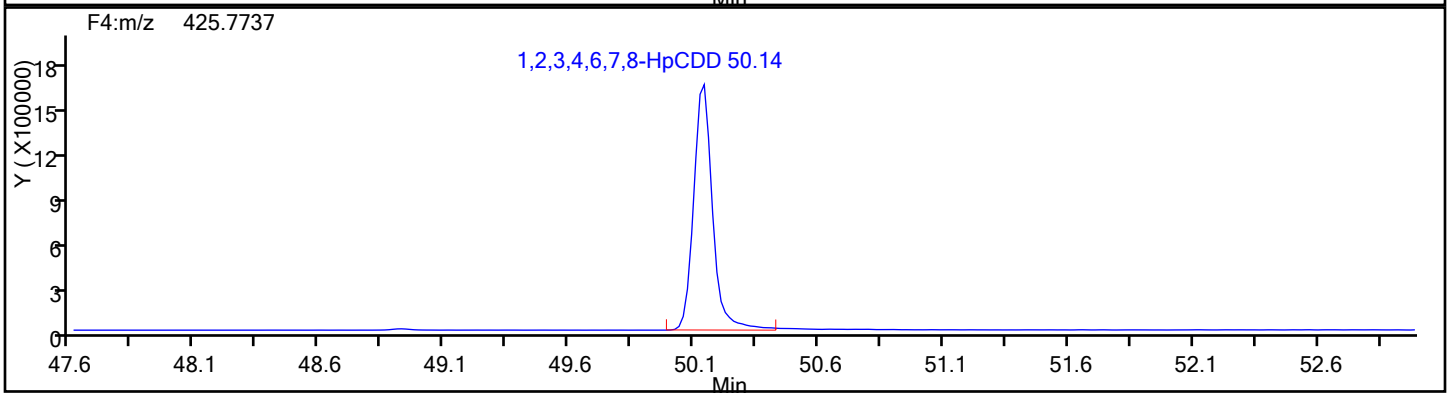
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

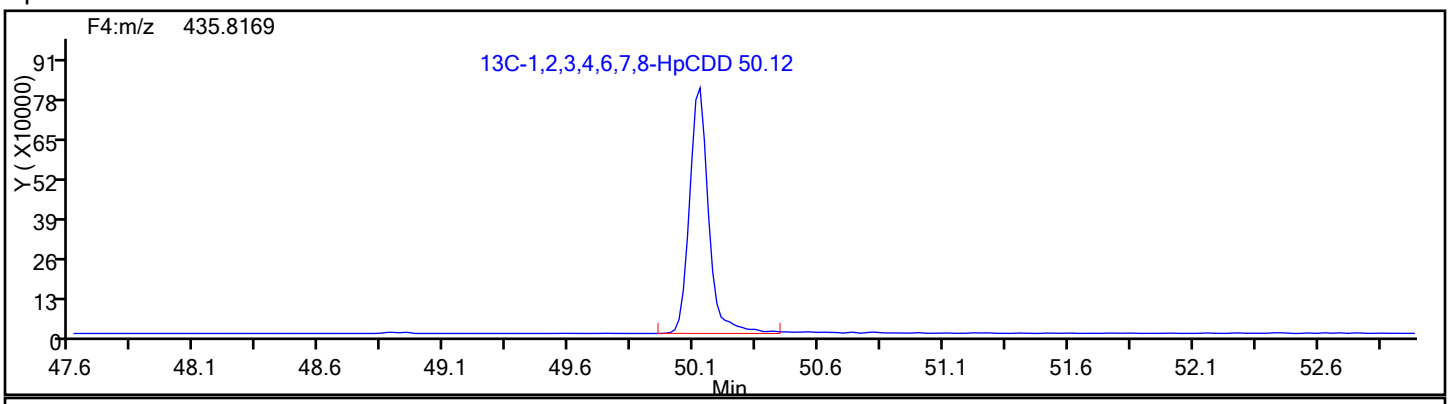
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

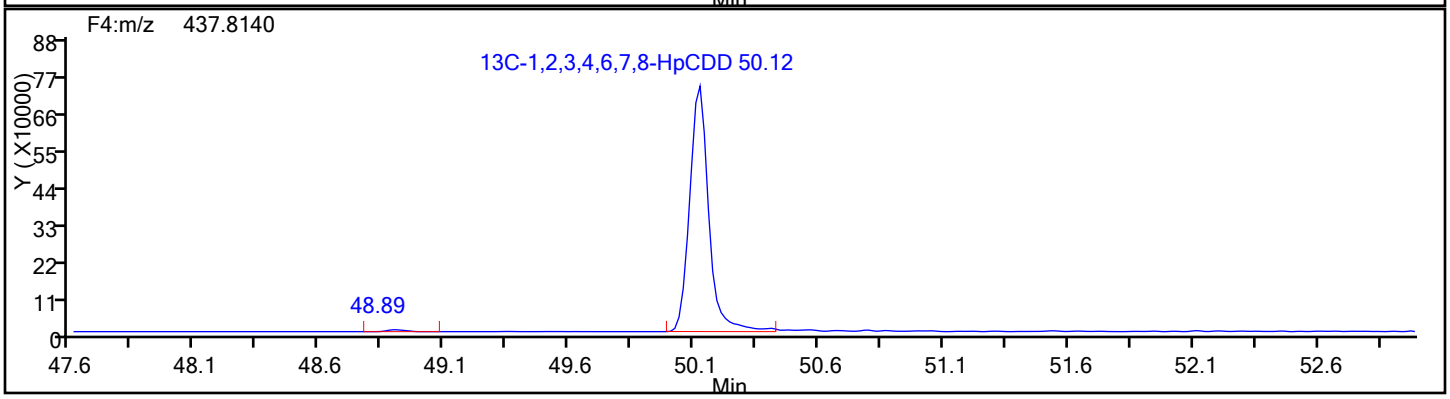
HpCDD





HpCDD Standards



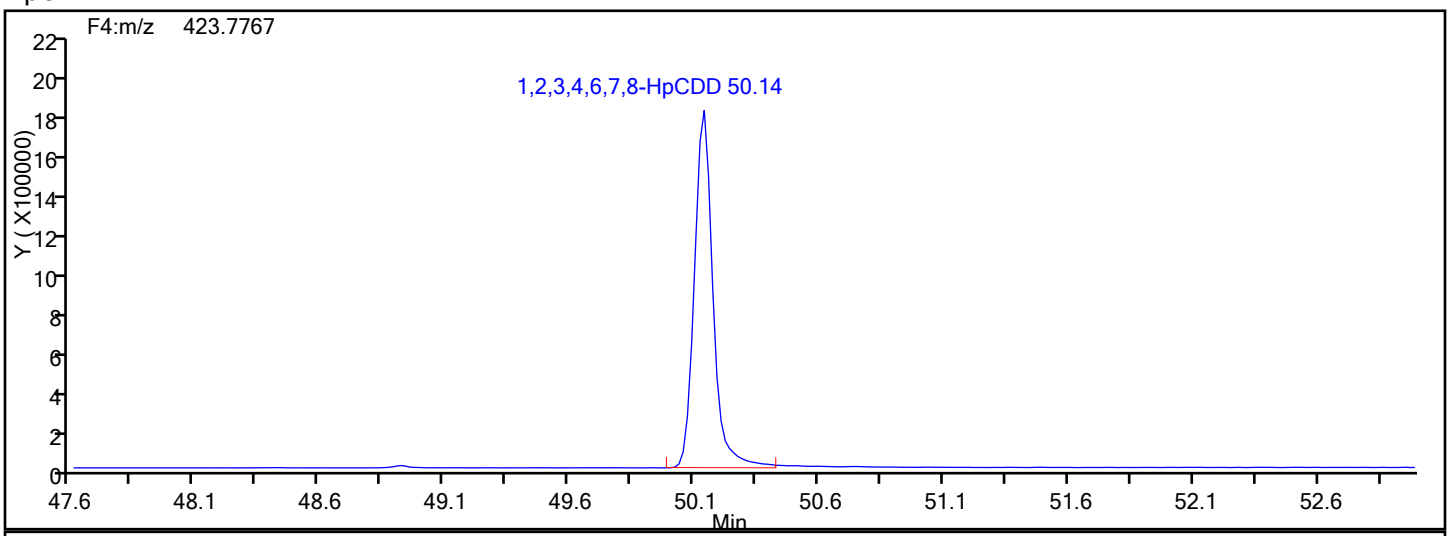


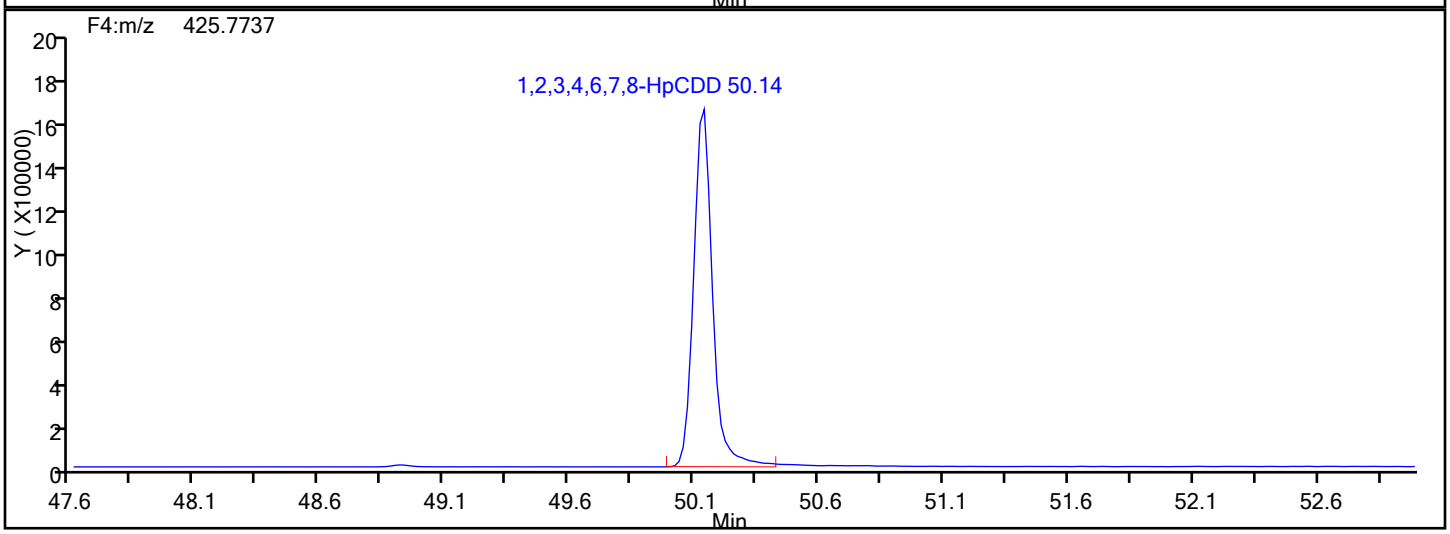
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

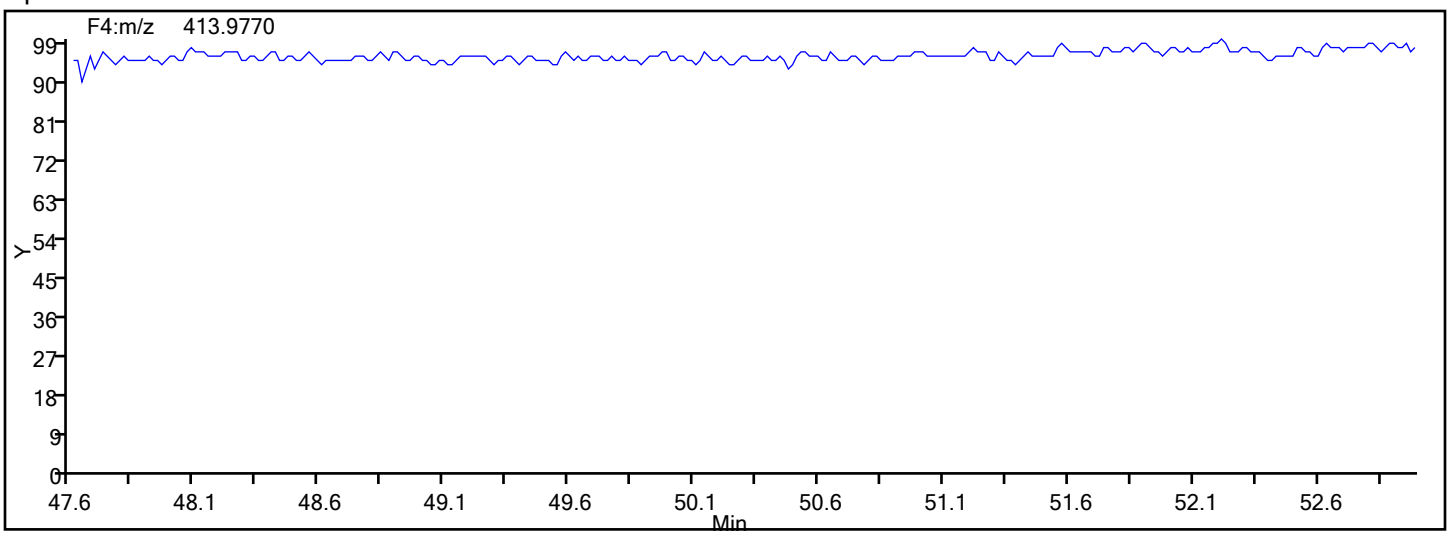
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d
Injection Date: 16-May-2014 17:29:00 Injection Vol: 1.0 ul
Instrument ID: D2A Operator ID: DavidsonM
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Client ID:
Worklist#: 7768 Sample Line#: 5
Column Type: Column Dia:

HpCDD





HpCDD Lock Mass



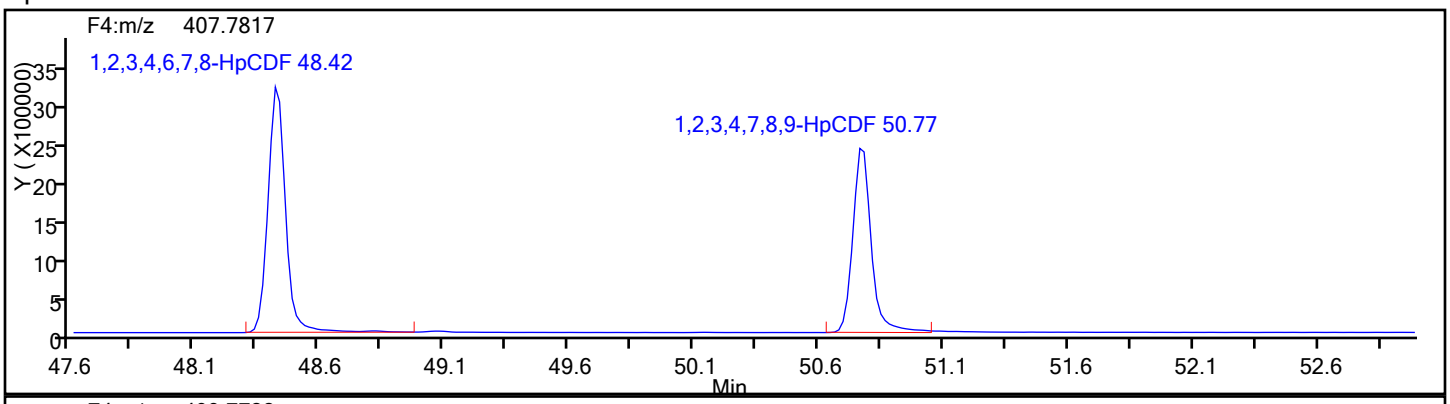
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

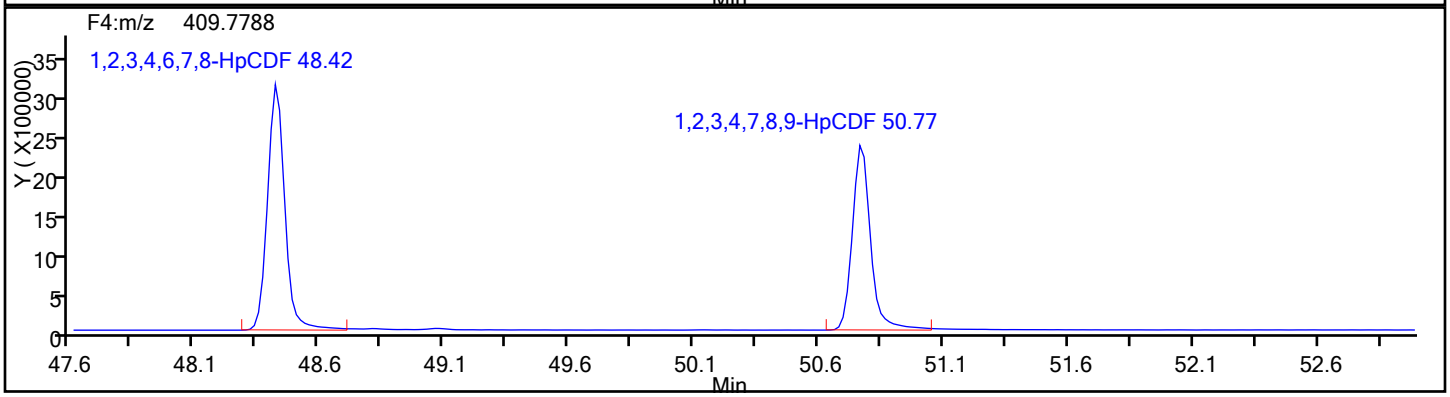
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

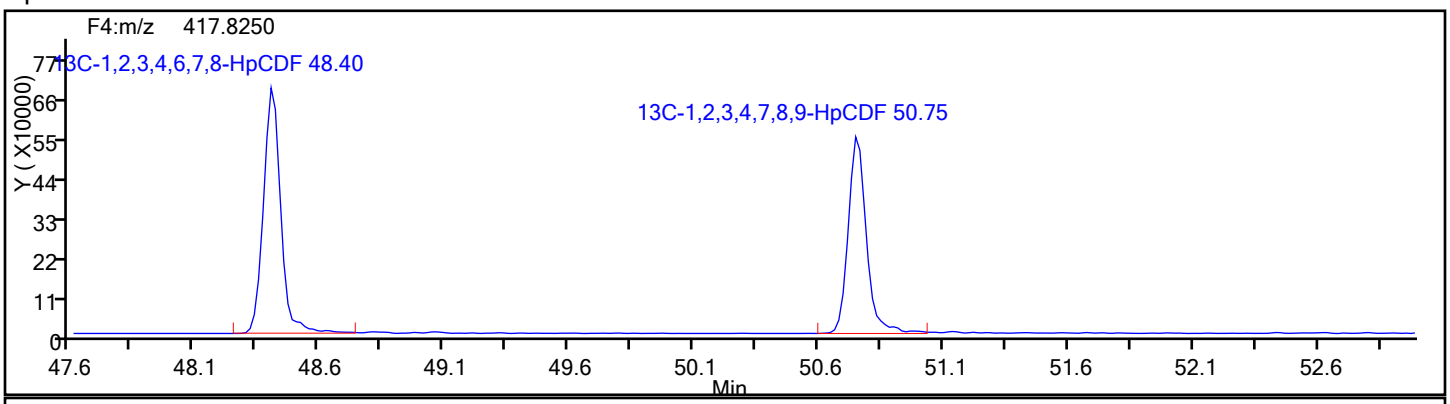
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

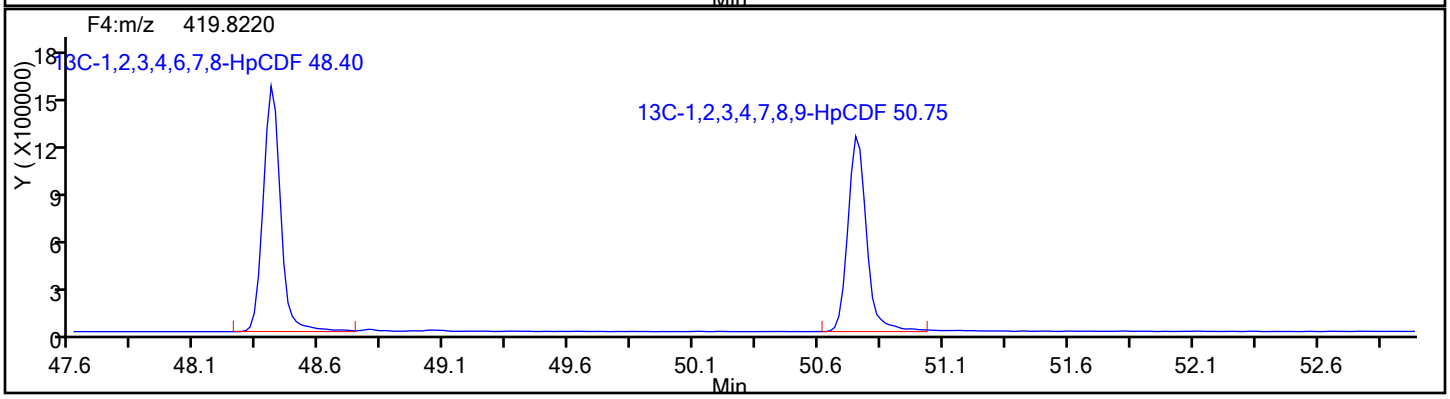
HpCDF





HpCDF Standards





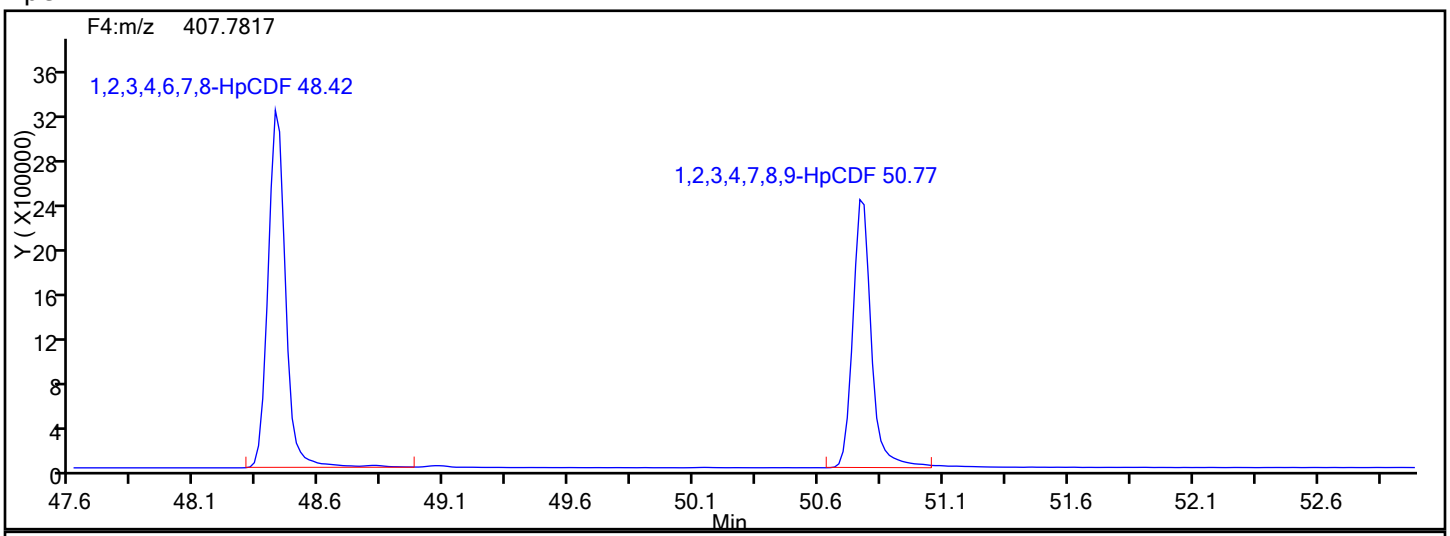
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

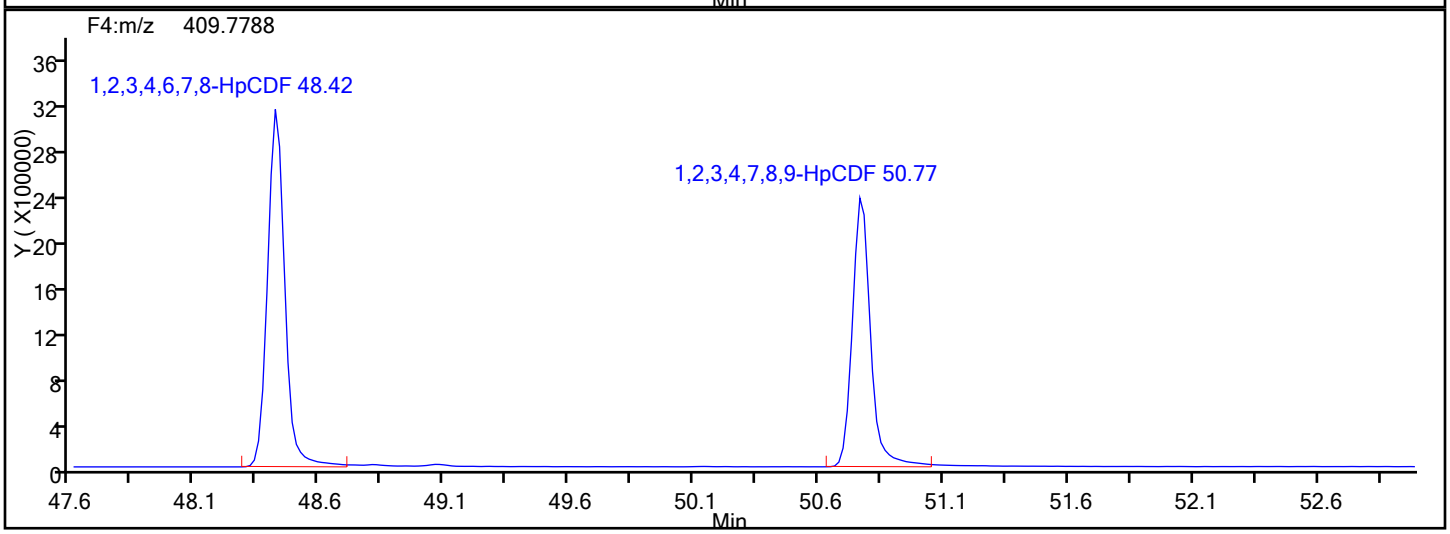
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

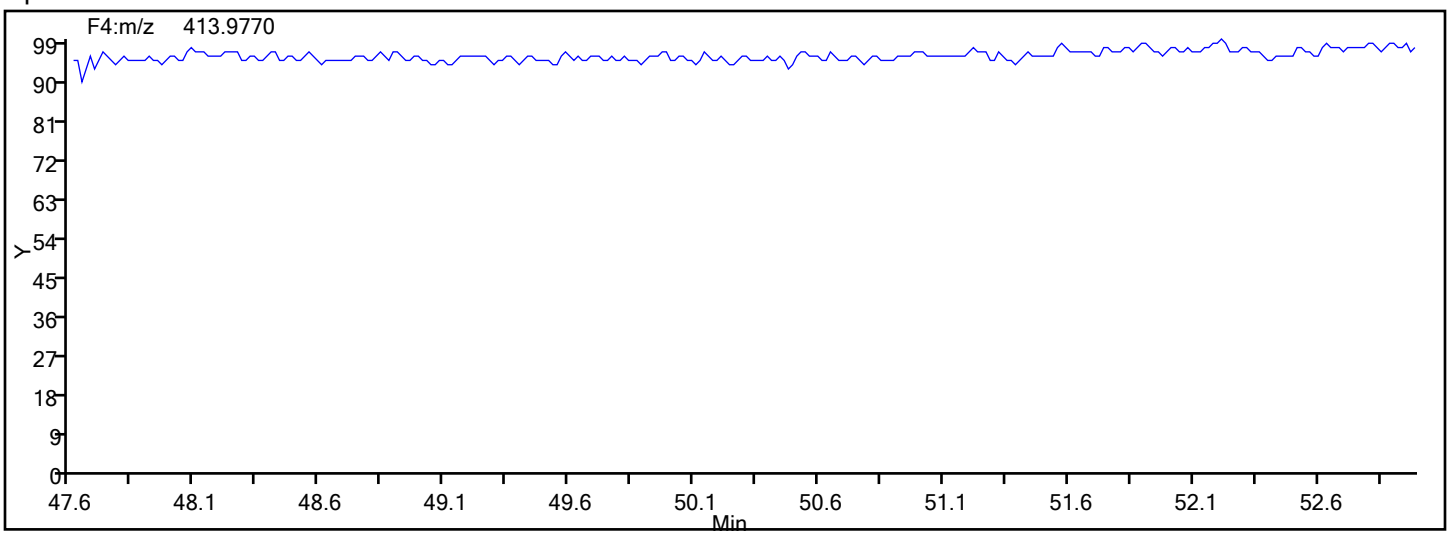
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass



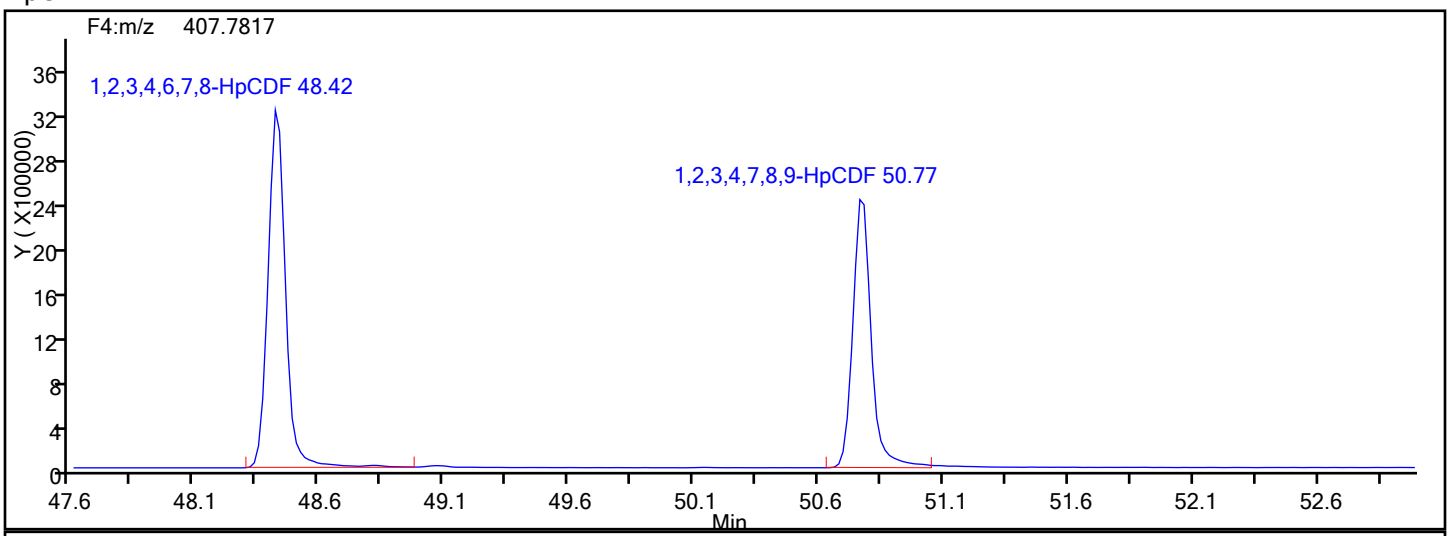
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

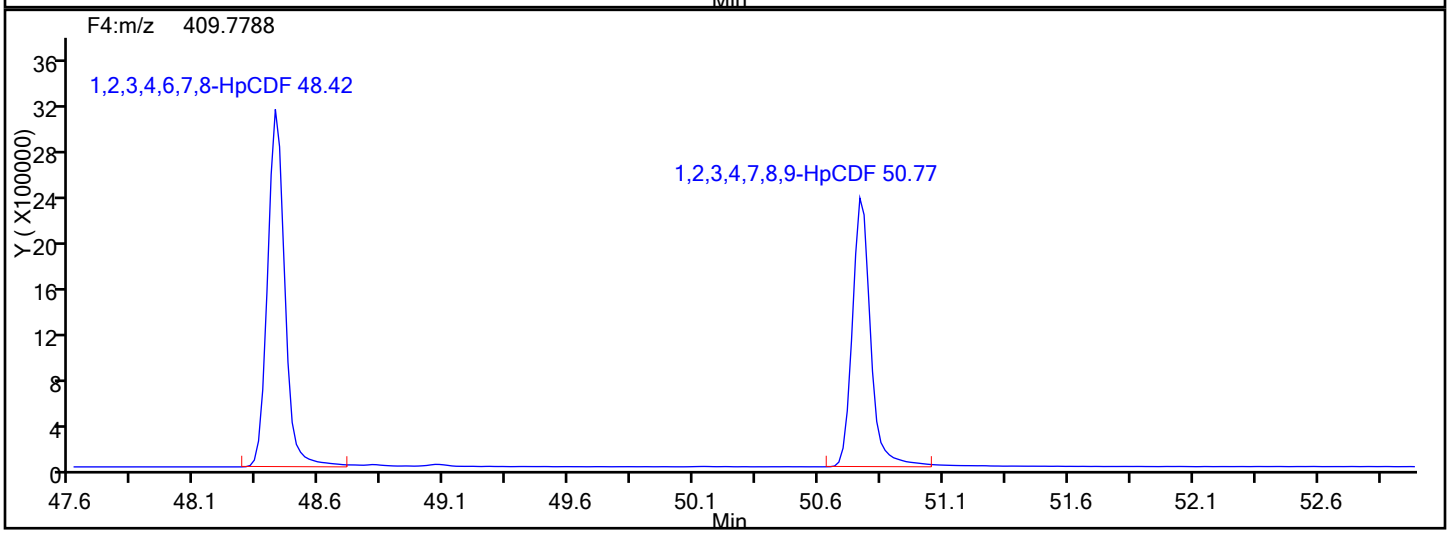
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

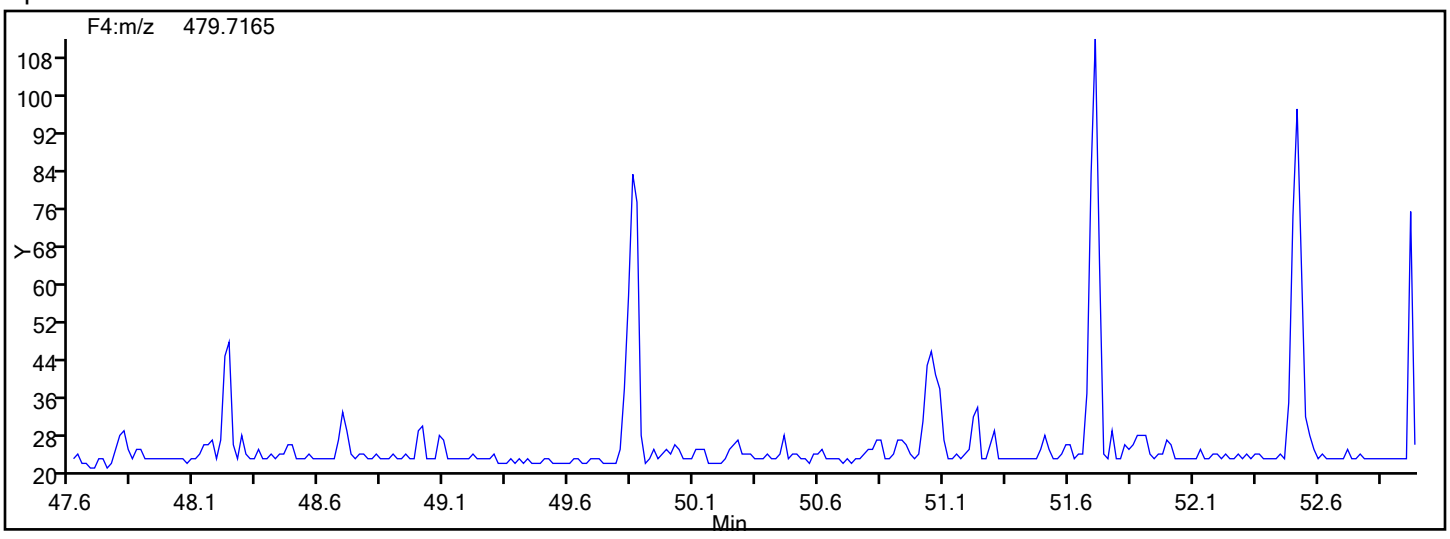
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



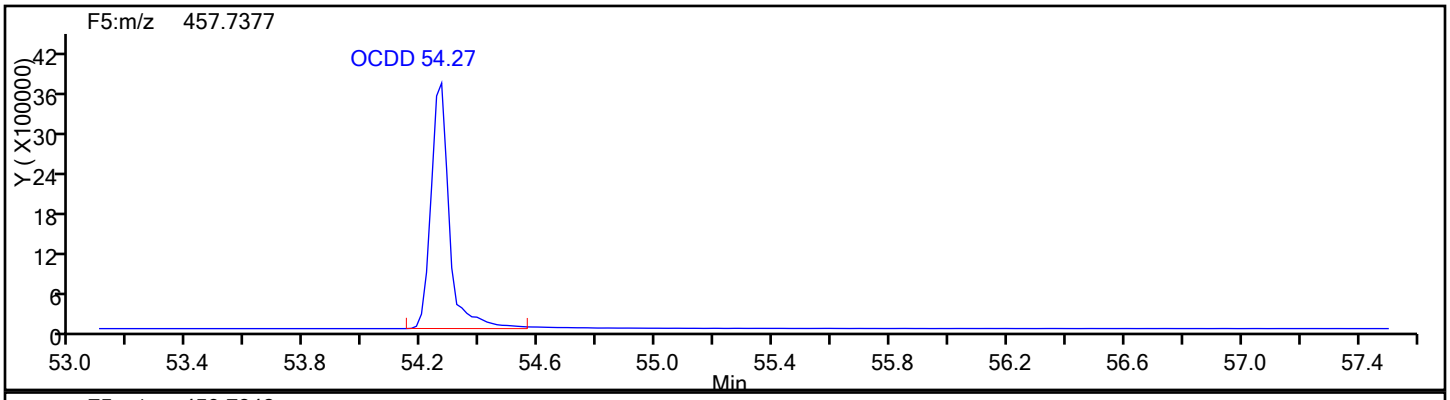
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

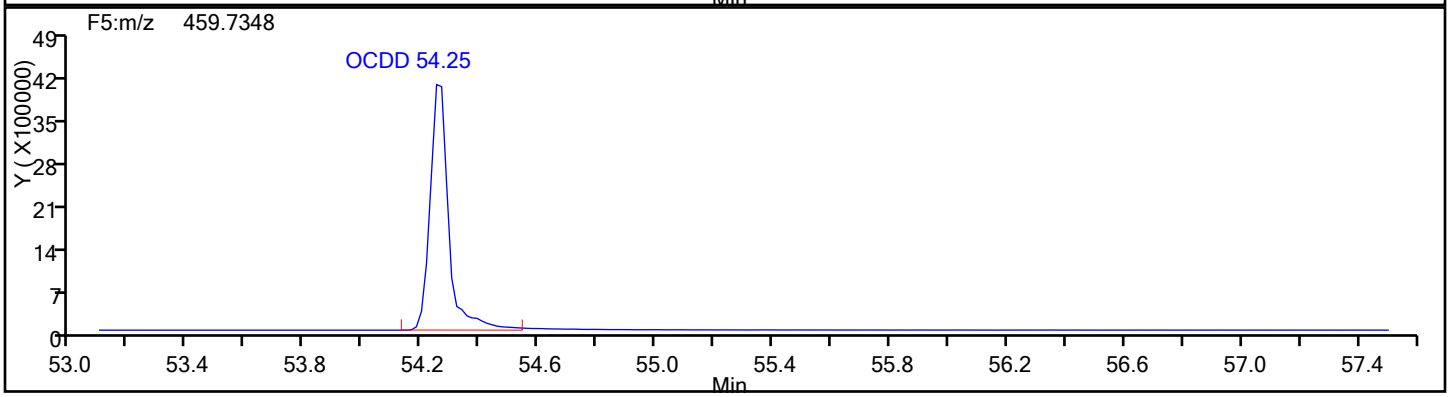
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

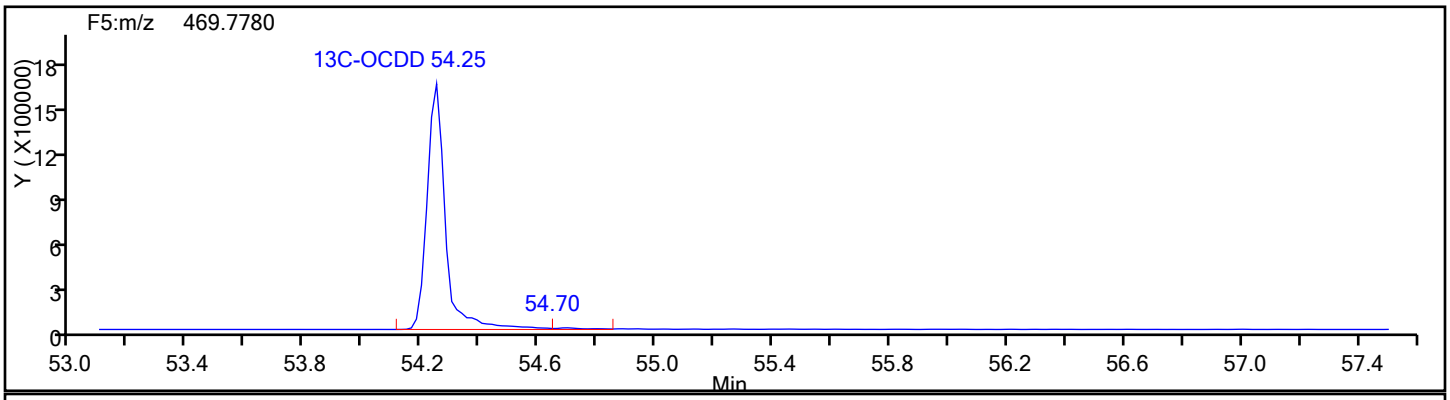
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

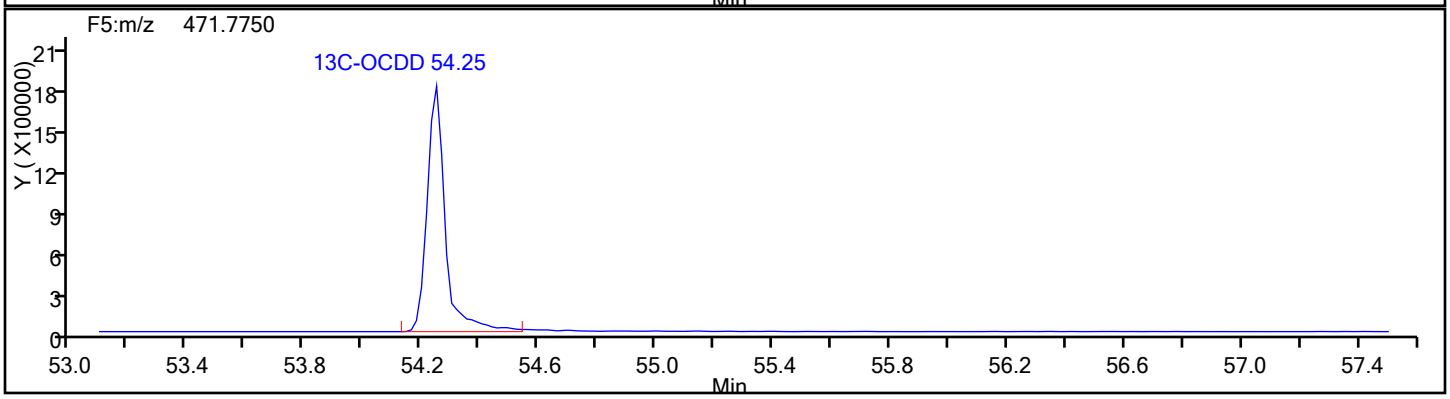
OCDD





OCDD Standards





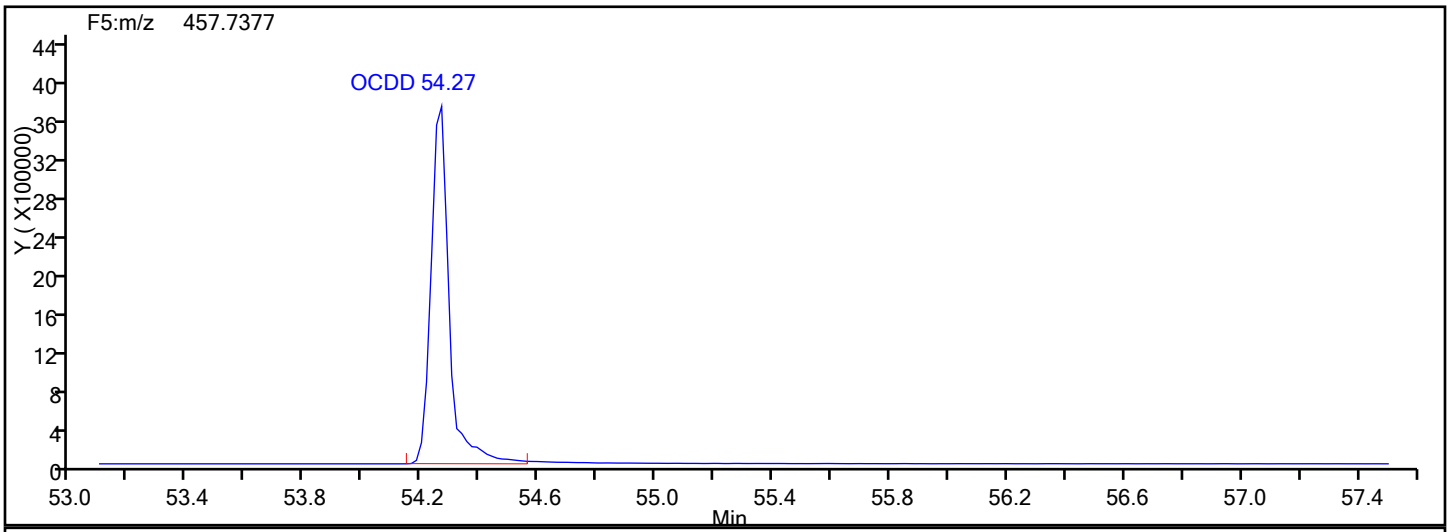
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

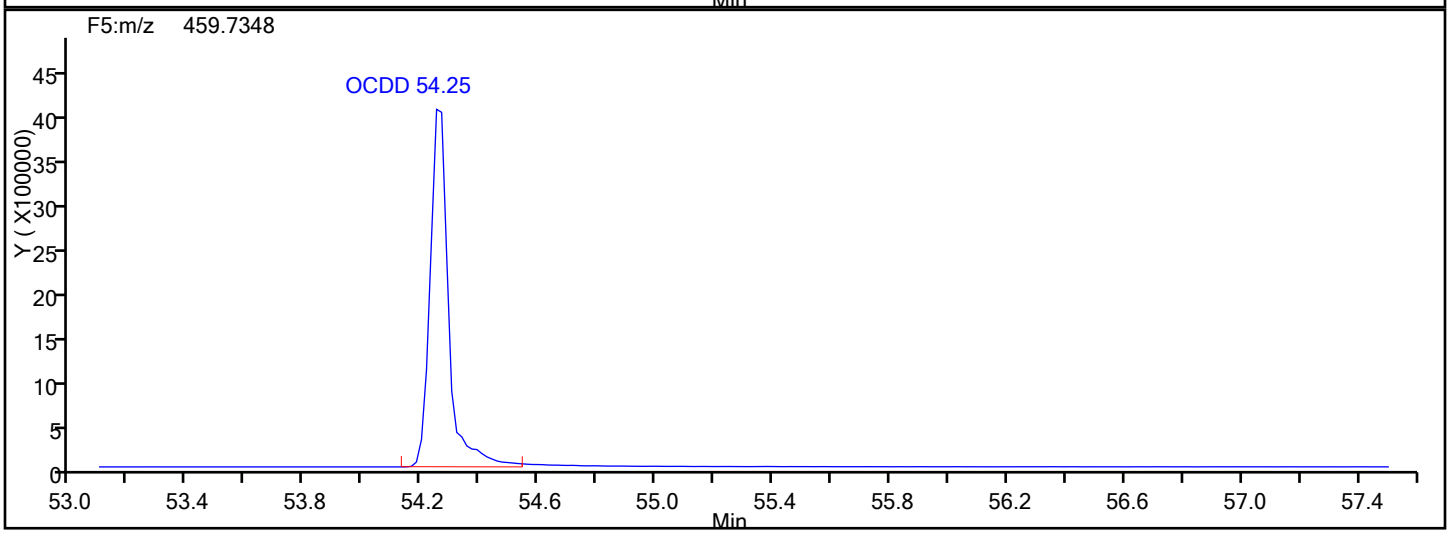
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

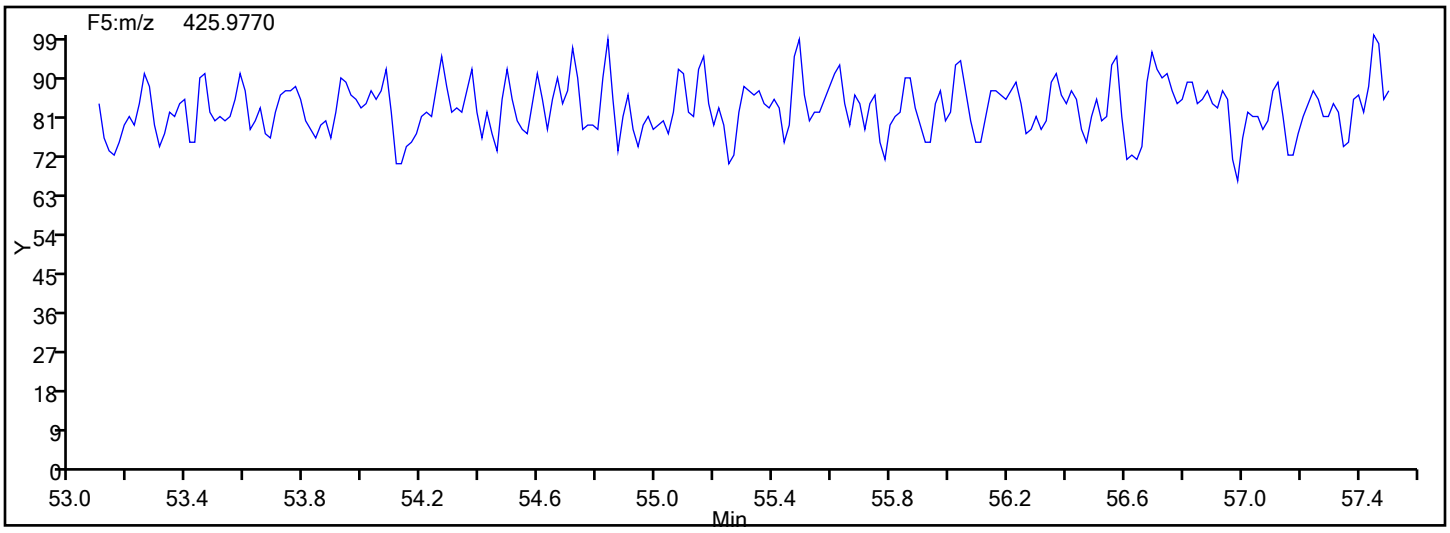
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
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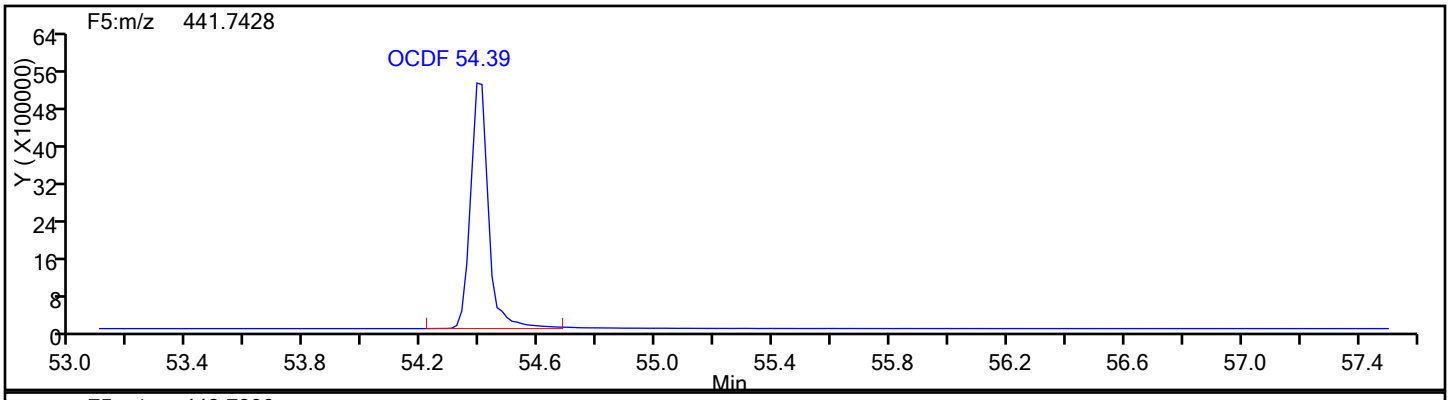
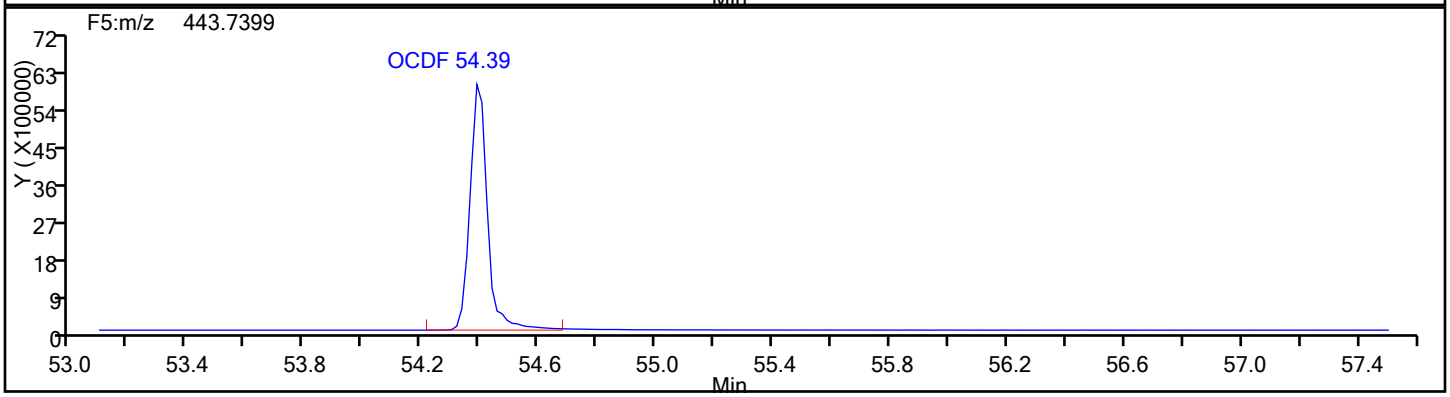
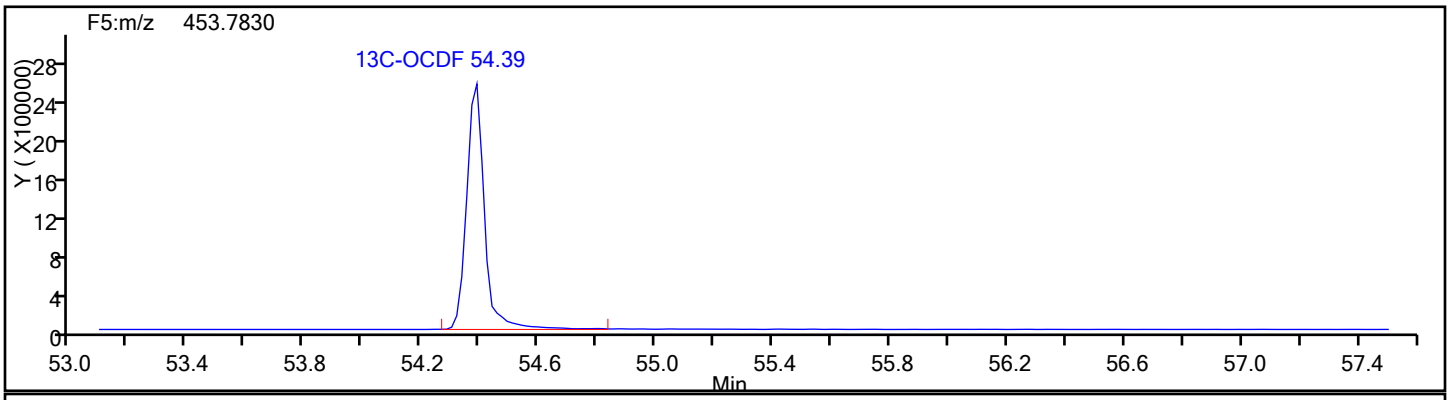
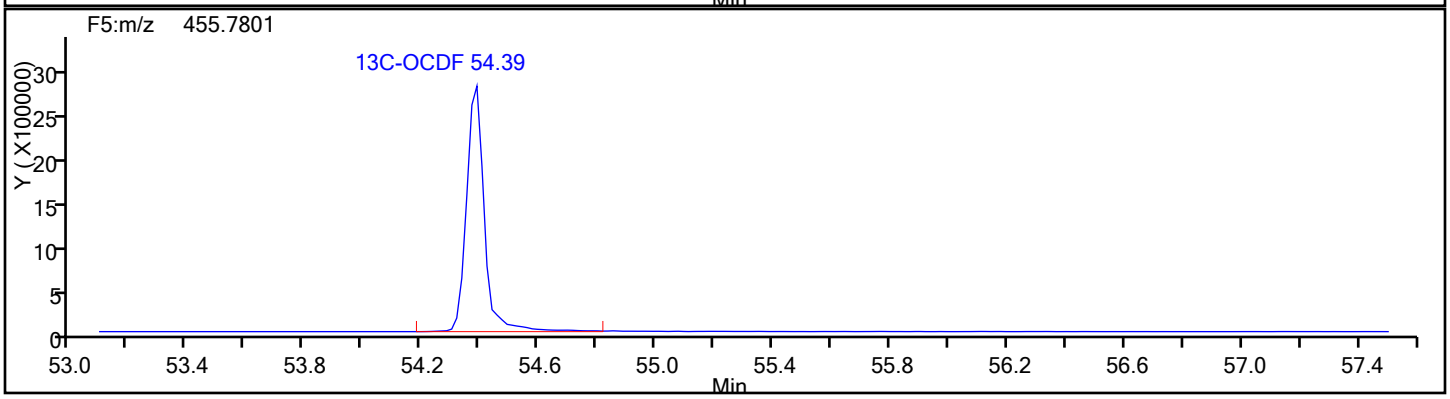
OCDF





OCDF Standards





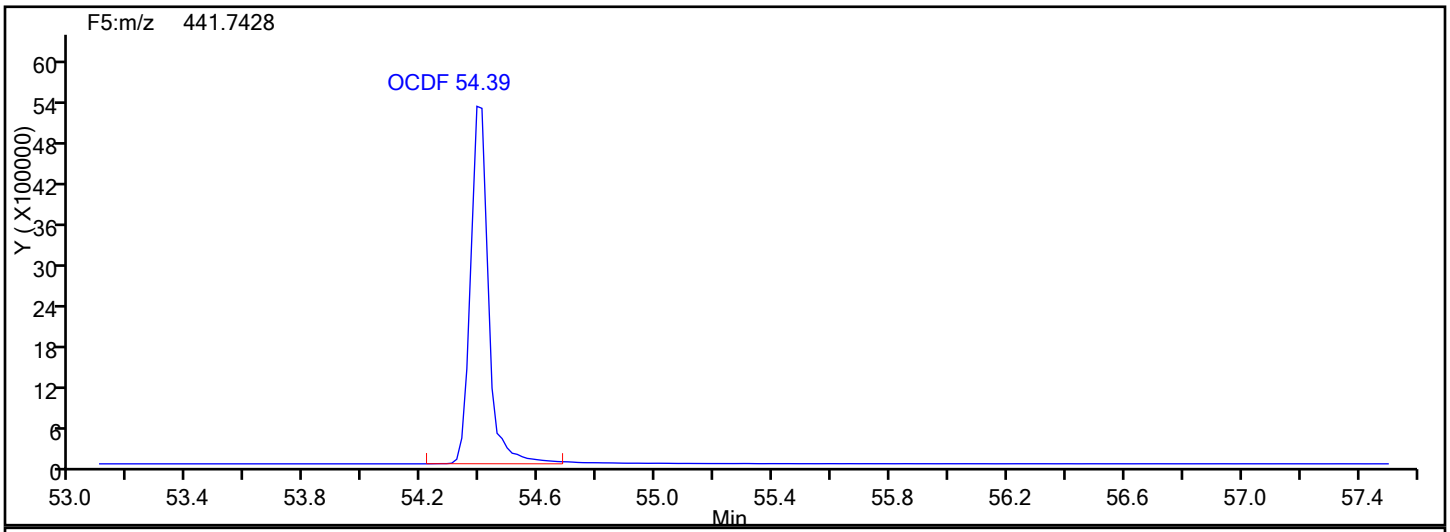
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

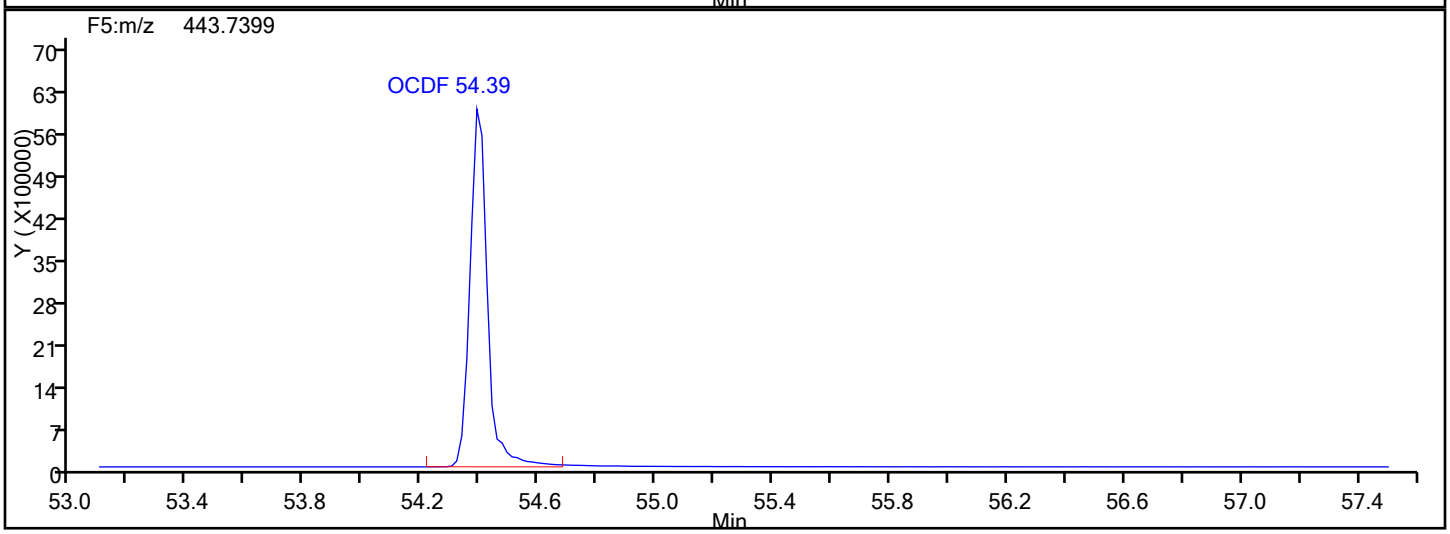
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

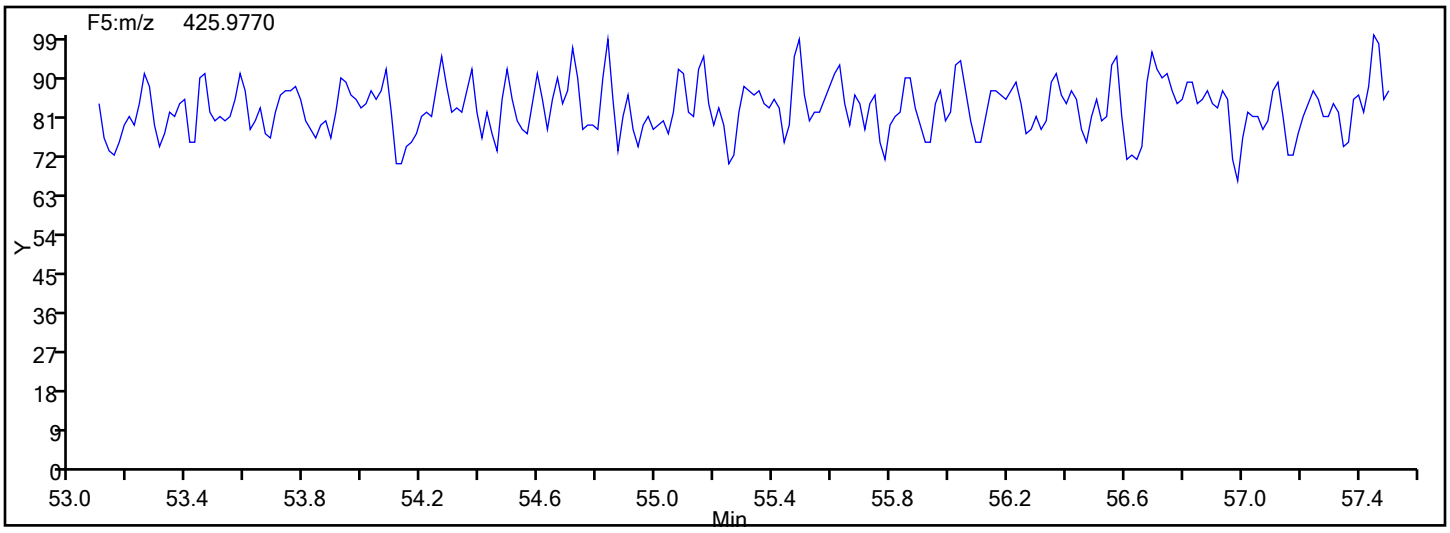
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



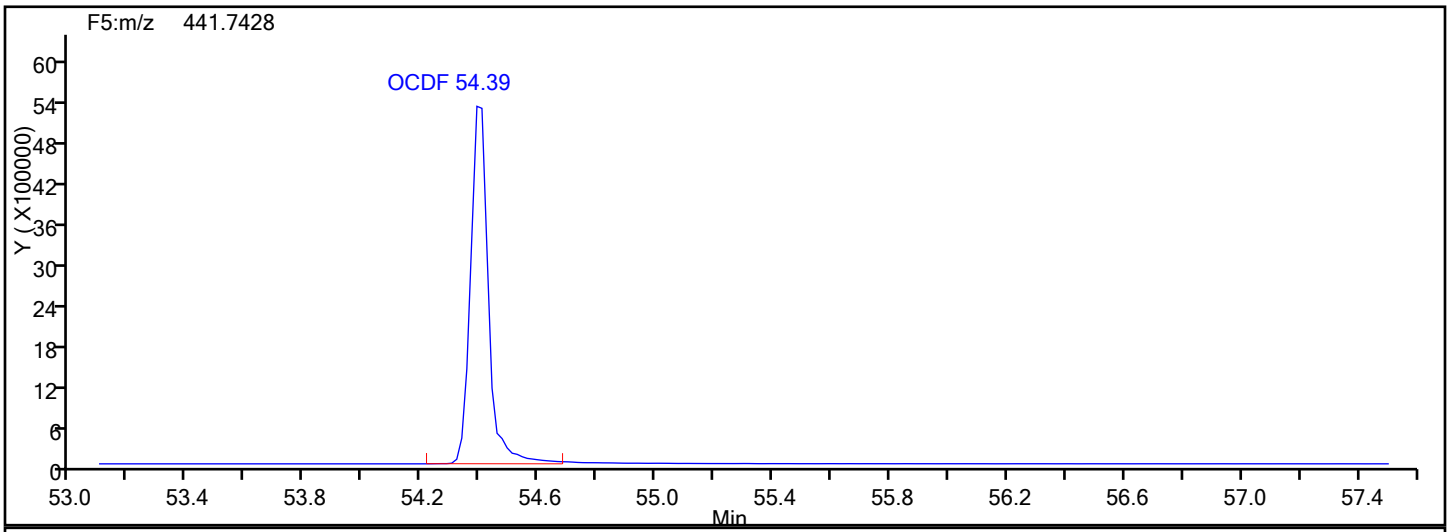
Report Date: 12-Jan-2017 08:09:36 Chrom Revision: 2.2 10-Jan-2017 11:26:10

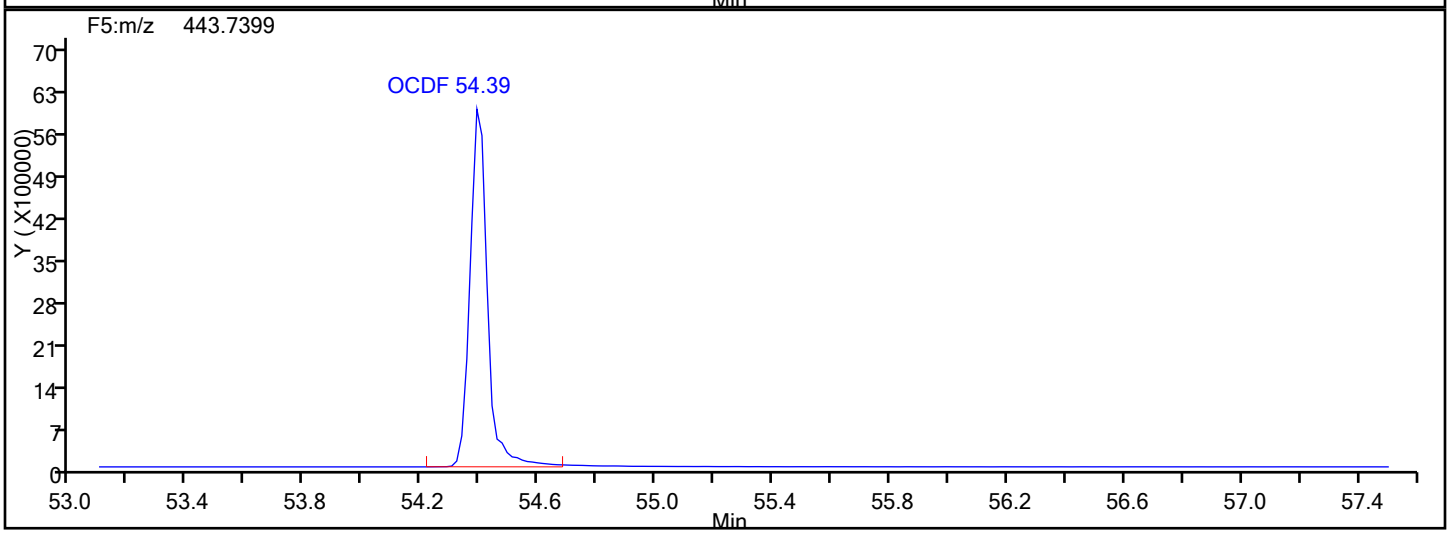
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i4.d

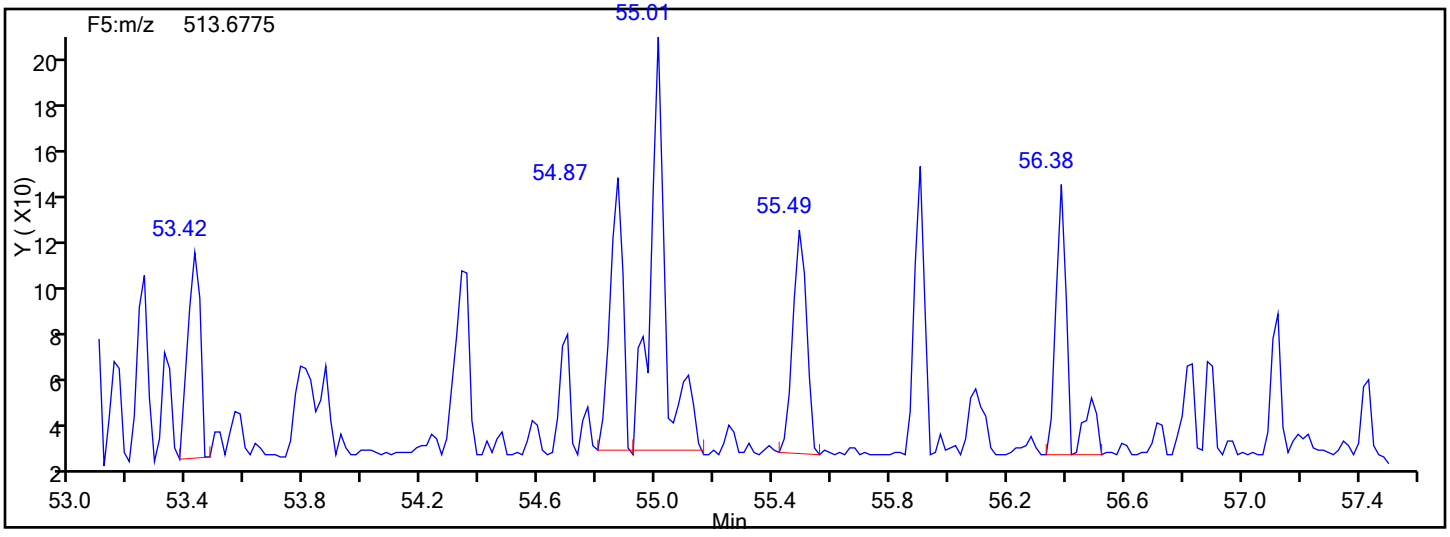
Injection Date:	16-May-2014 17:29:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	5
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 16-May-2014 18:31:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs5 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:42 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:23:41

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31.832	23916178	0.80	1.1733	196.5	196.5	0.1046	0.1046	98.23	
A Non-2,3,7,8-sub-TCDD	30.308	20556	0.87	0.0000						
S Total TCDD					196.5	196.5	0.1046	0.1046		
2,3,7,8-TCDF	29.771	35566472	0.79	1.0881	194.4	194.4	0.1061	0.1061	97.18	
A Non-2,3,7,8-sub-TCDF	28.995	285679	0.84	0.0000						
S Total TCDF					194.4	194.4	0.1061	0.1061		
1,2,3,7,8-PeCDD	41.009	97828013	1.59	1.0434	1000.1	1000.1	0.3428	0.3428	100	
A Non-2,3,7,8-sub-PeCDD	39.915						0.0	0.0		
S Total PeCDD					1000.1	1000.1	0.3428	0.3428		
1,2,3,7,8-PeCDF	39.288	172459555	1.60	1.1898	1017.5	1017.5	3.025	3.025	102	
2,3,4,7,8-PeCDF	40.493	162647050	1.60	1.1095	1026.5	1026.5	2.864	2.864	103	
A Non-2,3,7,8-sub-PeCDF	38.623						0.0	0.0		
S Total PeCDF					2043.9	2043.9	2.945	2.945		
1,2,3,4,7,8-HxCDD	45.245	125745795	1.26	1.1409	995.8	995.8	1.575	1.575	99.58	
1,2,3,6,7,8-HxCDD	45.363	129376084	1.27	1.1481	989.2	989.2	1.608	1.608	98.92	
1,2,3,7,8,9-HxCDD	45.751	139413717	1.26	1.2212	1016.6	1016.6	1.491	1.491	102	
A Non-2,3,7,8-sub-HxCDD	44.687						0.0	0.0		
S Total HxCDD					3001.6	3001.6	1.558	1.558		
1,2,3,4,7,8-HxCDF	44.199	205245281	1.25	1.3629	1028.0	1028.0	2.022	2.022	103	
1,2,3,6,7,8-HxCDF	44.334	230766405	1.25	1.2762	989.4	989.4	1.847	1.847	98.94	
2,3,4,6,7,8-HxCDF	45.059	207212834	1.25	1.2654	1013.7	1013.7	2.076	2.076	101	
1,2,3,7,8,9-HxCDF	46.038	192682603	1.26	1.2573	1002.8	1002.8	2.485	2.485	100	
A Non-2,3,7,8-sub-HxCDF	44.552						0.0	0.0		
S Total HxCDF					4033.9	4033.9	2.107	2.107		
1,2,3,4,6,7,8-HpCDD	50.192	114386892	1.05	1.1204	995.3	995.3	1.902	1.902	99.53	
A Non-2,3,7,8-sub-HpCDD	49.566						0.0	0.0		
S Total HpCDD					995.3	995.3	1.902	1.902		
1,2,3,4,6,7,8-HpCDF	48.471	196710947	1.03	1.4984	983.2	983.2	2.194	2.194	98.32	
1,2,3,4,7,8,9-HpCDF	50.816	160075574	1.04	1.3807	1006.3	1006.3	2.965	2.965	101	

Report Date: 12-Jan-2017 08:09:43 Chrom Revision: 2.2 10-Jan-2017 11:26:10
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49.625						0.0	0.0		
S Total HpCDF					1989.5	1989.5	2.579	2.579		
OCDD	54.304	231071676	0.89	1.2073	2026.8	2026.8	0.8181	0.8181	101	
OCDF	54.442	328275681	0.90	1.1162	2062.9	2062.9	0.7552	0.7552	103	
D 13C-2,3,7,8-TCDD	31.799	10375862	0.80	1.0709	102.1	102.1	0.2605	0.2605	102	
D 13C-2,3,7,8-TCDF	29.721	16816585	0.79	1.7545	101.0	101.0	0.1119	0.1119	101	
D 13C-1,2,3,7,8-PeCDD	40.992	9374768	1.62	0.8743	113.0	113.0	0.4333	0.4333	113	
D 13C-1,2,3,7,8-PeCDF	39.271	14246063	1.59	1.3704	109.5	109.5	0.1736	0.1736	110	
D 13C-2,3,4,7,8-PeCDF	40.476	14282105	1.62	1.3837	108.8	108.8	0.1720	0.1720	109	
D 13C-1,2,3,4,7,8-HxCDD	45.228	11068991	1.26	0.8772	98.9	98.9	0.1314	0.1314	98.89	
D 13C-1,2,3,6,7,8-HxCDD	45.346	11391028	1.28	0.9171	97.3	97.3	0.1256	0.1256	97.34	
D 13C-1,2,3,4,7,8-HxCDF	44.182	14649659	0.54	1.1892	96.5	96.5	0.1158	0.1158	96.54	
D 13C-1,2,3,6,7,8-HxCDF	44.317	18275058	0.54	1.4625	97.9	97.9	0.0942	0.0942	97.93	
D 13C-2,3,4,6,7,8-HxCDF	45.042	16154097	0.53	1.3197	95.9	95.9	0.1043	0.1043	95.93	
D 13C-1,2,3,7,8,9-HxCDF	46.021	15282343	0.54	1.2001	99.8	99.8	0.1147	0.1147	99.80	
D 13C-1,2,3,4,6,7,8-HpCDD	50.175	10257853	1.05	0.8155	98.6	98.6	0.1427	0.1427	98.58	
D 13C-1,2,3,4,6,7,8-HpCDF	48.454	13352459	0.46	1.0496	99.7	99.7	0.1096	0.1096	99.70	
D 13C-1,2,3,4,7,8,9-HpCDF	50.799	11521506	0.46	0.8947	100.9	100.9	0.1286	0.1286	101	
D 13C-OCDD	54.287	18887158	0.92	0.7044	210.1	210.1	0.0872	0.0872	105	
D 13C-OCDF	54.425	28514559	0.90	1.0615	210.5	210.5	0.0642	0.0642	105	
$ 37Cl4-2,3,7,8-TCDD	31.832	23452691		1.2266	201.5	201.5	0.0283	0.0283	101	
* 13C-1,2,3,4-TCDD	31.267	9489667	0.81	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45.734	12759843	1.30	1E+05	100.0	100.0				

Reagents:

61L51613OP_00001 Amount Added: 20.00 Units: uL

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 16-May-2014 18:31:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:74cs5 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Jan-2017 08:09:42 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK029

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:23:41

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31.832	31.838	0	1.001	10665390	1108150	219	547	5060		
321.8936	31.849	31.838	1	1.002	13250788	1366893	303	757	4511	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	28.708	30.308	-96		9544	1291	219	547	6		
321.8936	28.741	30.308	-94		11012	1474	303	757	5	0.87(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	29.771	29.760	1	1.002	15694011	1738934	454	1135	3830		
305.8987	29.771	29.760	1	1.002	19872461	2216741	412	1030	5380	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	28.625	28.995	-22		130826	15367	454	1135	34		
305.8987	28.641	28.995	-21		154853	16581	412	1030	40	0.84(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	41.009	41.015	0	1.000	60075873	14997294	1824	4560	8222		
357.8516	41.009	41.015	0	1.000	37752140	9486986	1446	3615	6561	1.59(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39.915						1824	4560			
357.8516	39.915						1446	3615			
1,2,3,7,8-PeCDF											
339.8597	39.288	39.293	0	1.000	106202805	22324573	27008	67520	827		
341.8567	39.288	39.293	0	1.000	66256750	14051069	15663	39157	897	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40.493	40.499	0	1.000	100191913	24210618	27008	67520	896		
341.8567	40.493	40.499	0	1.000	62455137	15041234	15663	39157	960	1.60(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											
339.8597	38.623						27008	67520			
341.8567	38.623						15663	39157			
1,2,3,4,7,8-HxCDD											
389.8158	45.245	45.248	0	1.000	70196193	19067753	12408	31020	1537		
391.8127	45.245	45.248	0	1.000	55549602	14654681	8468	21170	1731	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45.363	45.366	0	1.000	72331523	18520681	12408	31020	1493		
391.8127	45.363	45.366	0	1.000	57044561	14423769	8468	21170	1703	1.27(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45.751	45.754	0	1.012	77766034	18943593	12408	31020	1527		
391.8127	45.751	45.754	0	1.012	61647683	15150297	8468	21170	1789	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44.687						12408	31020			
391.8127	44.687						8468	21170			
1,2,3,4,7,8-HxCDF											
373.8208	44.199	44.202	0	1.000	114161862	31685533	23050	57625	1375		
375.8178	44.199	44.202	0	1.000	91083419	24447023	20666	51665	1183	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44.334	44.337	0	1.000	128418736	33333661	23050	57625	1446		
375.8178	44.317	44.337	-1	1.000	102347669	26127663	20666	51665	1264	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45.059	45.063	0	1.000	115056569	30171058	23050	57625	1309		
375.8178	45.059	45.063	0	1.000	92156265	24362204	20666	51665	1179	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	46.038	46.024	1	1.000	107301541	25727683	23050	57625	1116		
375.8178	46.021	46.024	0	1.000	85381062	19976892	20666	51665	967	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44.552						23050	57625			
375.8178	44.552						20666	51665			
1,2,3,4,6,7,8-HpCDD											
423.7767	50.192	50.178	1	1.000	58686063	11601434	8826	22065	1314		
425.7737	50.175	50.178	0	1.000	55700829	11195120	8090	20225	1384	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	49.566						8826	22065			
425.7737	49.566						8090	20225			
1,2,3,4,6,7,8-HpCDF											
407.7817	48.471	48.458	1	1.000	100031303	22111953	20119	50297	1099		
409.7788	48.471	48.458	1	1.000	96679644	21209513	17872	44680	1187	1.03(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50.816	50.819	0	1.000	81724701	17482751	20119	50297	869		
409.7788	50.816	50.819	0	1.000	78350873	16747345	17872	44680	937	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49.625						20119	50297			
409.7788	49.625						17872	44680			

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	54.304	54.290	1	1.000	108733609	27926856	5675	14187	4921		
459.7348	54.304	54.290	1	1.000	122338067	31462370	3359	8397	9367	0.89(0.76-1.02)	
OCDF											
441.7428	54.442	54.428	1	1.000	155863517	41040943	7156	17890	5735		
443.7399	54.442	54.428	1	1.000	172412164	44868657	4979	12447	9012	0.90(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31.799	31.788	1	1.017	4607334	473651	592	1480	800		
333.9338	31.782	31.788	0	1.016	5768528	589511	550	1375	1072	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29.721	29.727	0	0.951	7427403	841116	547	1367	1538		
317.9389	29.721	29.727	0	0.951	9389182	1034816	257	642	4027	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40.992	40.998	0	1.311	5796310	1417798	1141	2852	1243		
369.8919	40.992	40.998	0	1.311	3578458	867632	410	1025	2116	1.62(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39.271	39.276	0	1.256	8743681	1824863	607	1517	3006		
353.8970	39.271	39.276	0	1.256	5502382	1138709	367	917	3103	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40.476	40.481	0	1.295	8822327	2063105	607	1517	3399		
353.8970	40.476	40.481	0	1.295	5459778	1294562	367	917	3527	1.62(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45.228	45.231	0	0.989	6164898	1616312	842	2105	1920		
403.8529	45.228	45.231	0	0.989	4904093	1287517	532	1330	2420	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45.346	45.350	0	0.992	6401259	1595923	842	2105	1895		
403.8529	45.346	45.350	0	0.992	4989769	1231785	532	1330	2315	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44.182	44.185	0	0.966	5120432	1381755	832	2080	1661		
385.8610	44.182	44.185	0	0.966	9529227	2585041	810	2025	3191	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44.317	44.320	0	0.969	6409287	1630605	832	2080	1960		
385.8610	44.317	44.320	0	0.969	11865771	3006925	810	2025	3712	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45.042	45.046	0	0.985	5600324	1449599	832	2080	1742		
385.8610	45.042	45.046	0	0.985	10553773	2710750	810	2025	3347	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46.021	46.007	1	1.006	5386117	1234214	832	2080	1483		
385.8610	46.021	46.007	1	1.006	9896226	2263801	810	2025	2795	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50.175	50.161	1	1.097	5249997	1019447	2	5	509724		
437.8140	50.158	50.161	0	1.097	5007856	965323	1386	3465	696	1.05(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48.454	48.441	1	1.059	4191950	918491	651	1627	1411		
419.8220	48.454	48.441	1	1.059	9160509	1970766	721	1802	2733	0.46(0.51-0.37)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50.799	50.786	1	1.111	3608112	723202	651	1627	1111		
419.8220	50.799	50.786	1	1.111	7913394	1597054	721	1802	2215	0.46(0.37-0.51)	
13C-OCDD											
469.7780	54.287	54.290	0	1.187	9055141	2191452	401	1002	5465		
471.7750	54.287	54.290	0	1.187	9832017	2381855	332	830	7174	0.92(0.76-1.02)	
13C-OCDF											
453.7830	54.425	54.428	0	1.190	13541954	3402498	327	817	10405		
455.7801	54.425	54.428	0	1.190	14972605	3795875	485	1212	7827	0.90(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31.832	31.838	0	1.018	23452691	2454284	142	355	17284		
13C-1,2,3,4-TCDD											
331.9368	31.267	31.273	0		4245924	455340	592	1480	769		
333.9338	31.267	31.273	0		5243743	567990	550	1375	1033	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45.734	45.737	0		7200331	1668779	842	2105	1982		
403.8529	45.734	45.737	0		5559512	1312385	532	1330	2467	1.30(1.05-1.43)	

QC Flag Legend

Processing Flags

n - Failed Sig-To-Noise Test

Reagents:

61L51613OP_00001 Amount Added: 20.00 Units: uL

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d
Lims ID: IC L5
Client ID:
Inject. Date: 16-May-2014 18:31:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 5
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 6
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
28.708	9544	1291	11012	1474		0.87	n
Signal Totals:							
	9544	1291	11012	1474			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	20556	2765				0.87	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (20556 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d
Lims ID: IC L5
Client ID:
Inject. Date: 16-May-2014 18:31:00 Dil. Factor: 1.0000
Sample Type: IC, ICal Standard Calib Level: 5
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 6
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
28.625	130826	15367	154853	16581		0.84	
Signal Totals:							
	130826	15367	154853	16581			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	285679	31948				0.84	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (285679 * 0.0) / (0 * 0.000)

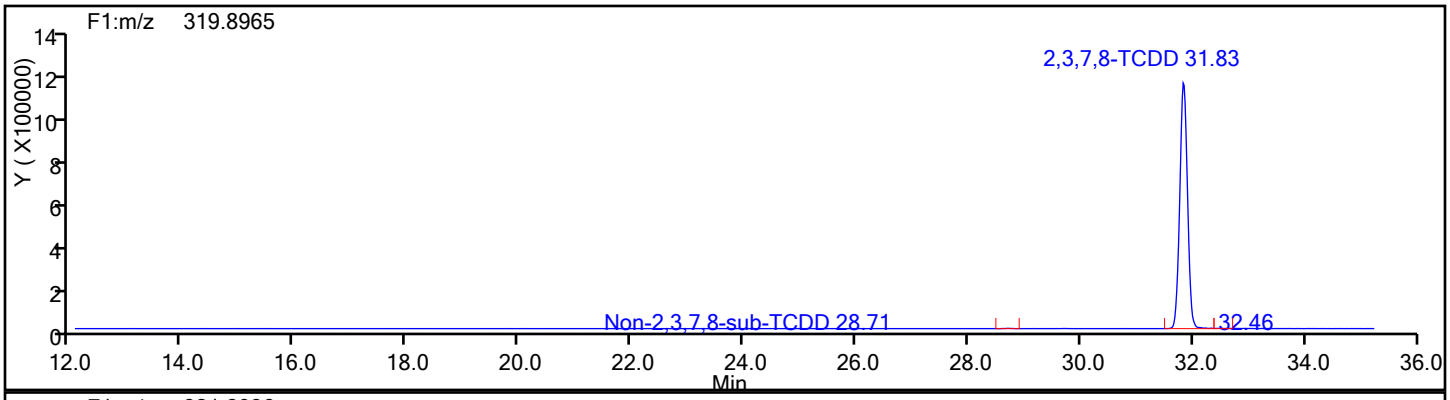
Report Date: 12-Jan-2017 08:09:43 Chrom Revision: 2.2 10-Jan-2017 11:26:10

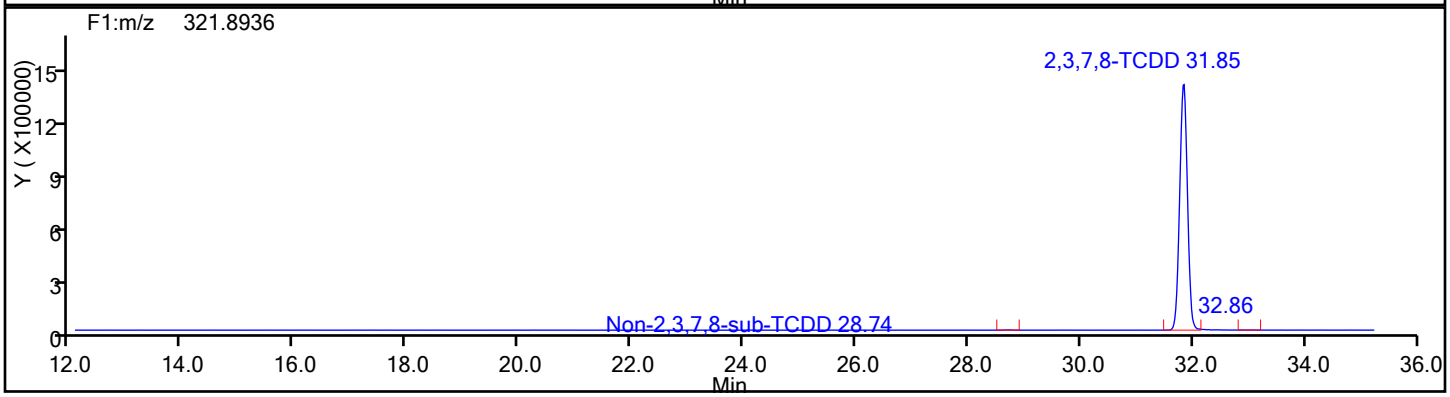
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

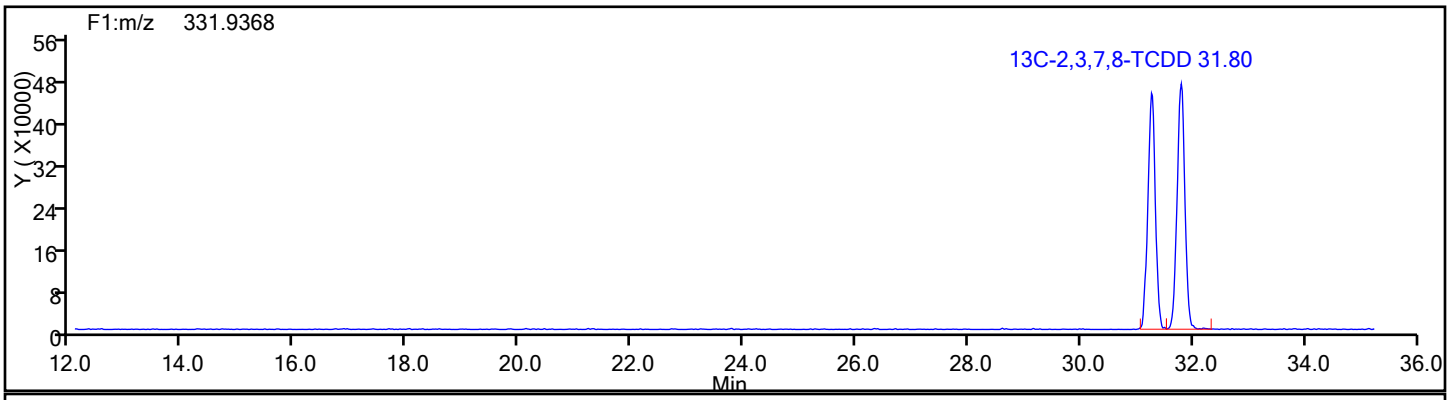
Injection Date:	16-May-2014 18:31:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	6
Column Type:		Column Dia:	

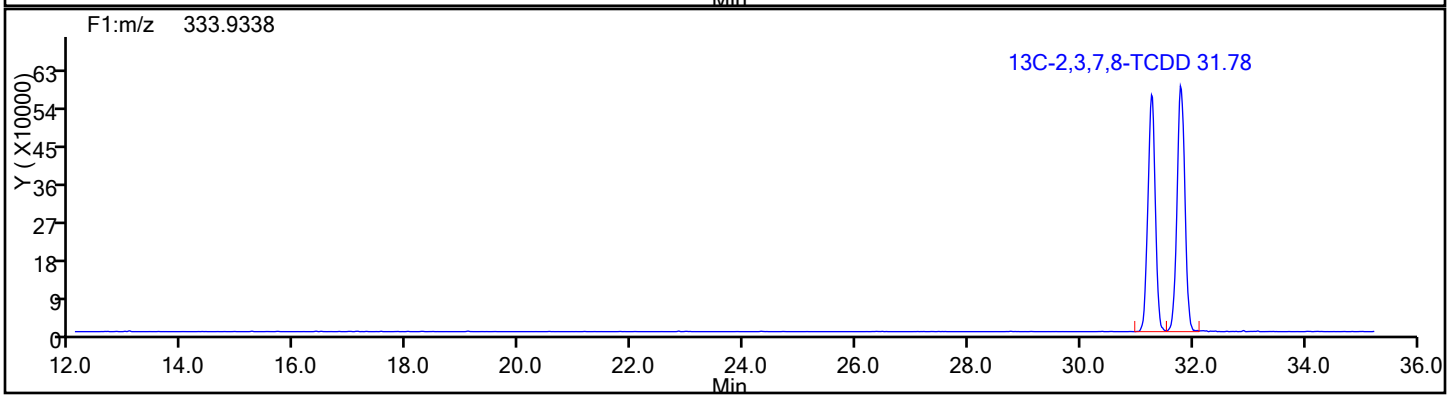
TCDD





TCDD Standards





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TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Injection Date:	16-May-2014 18:31:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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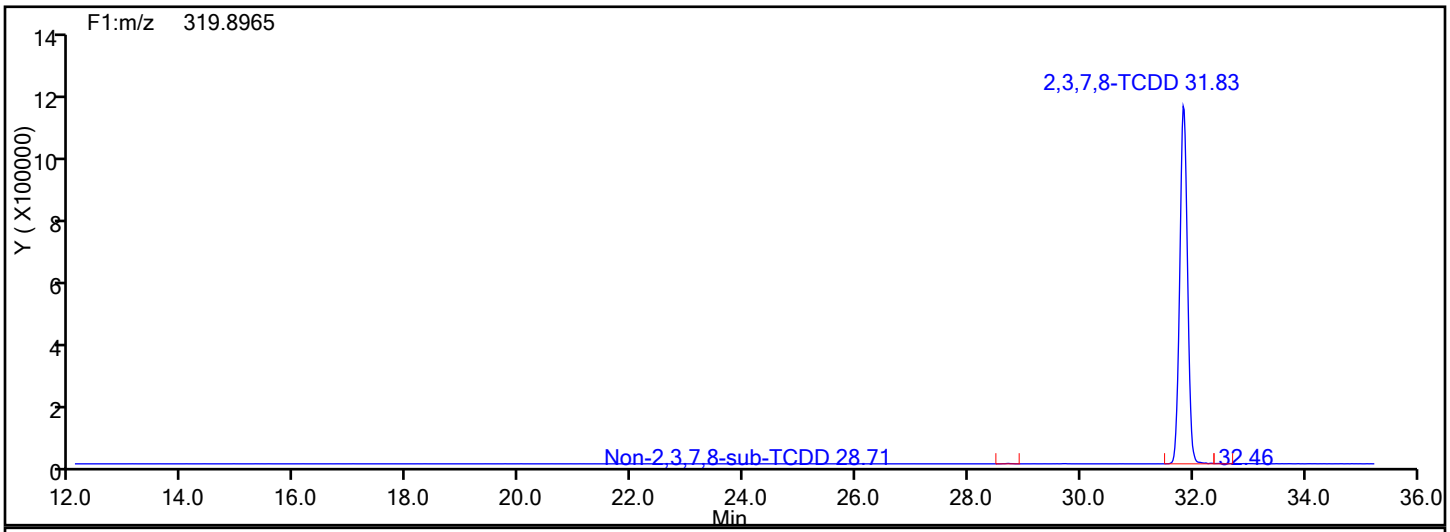
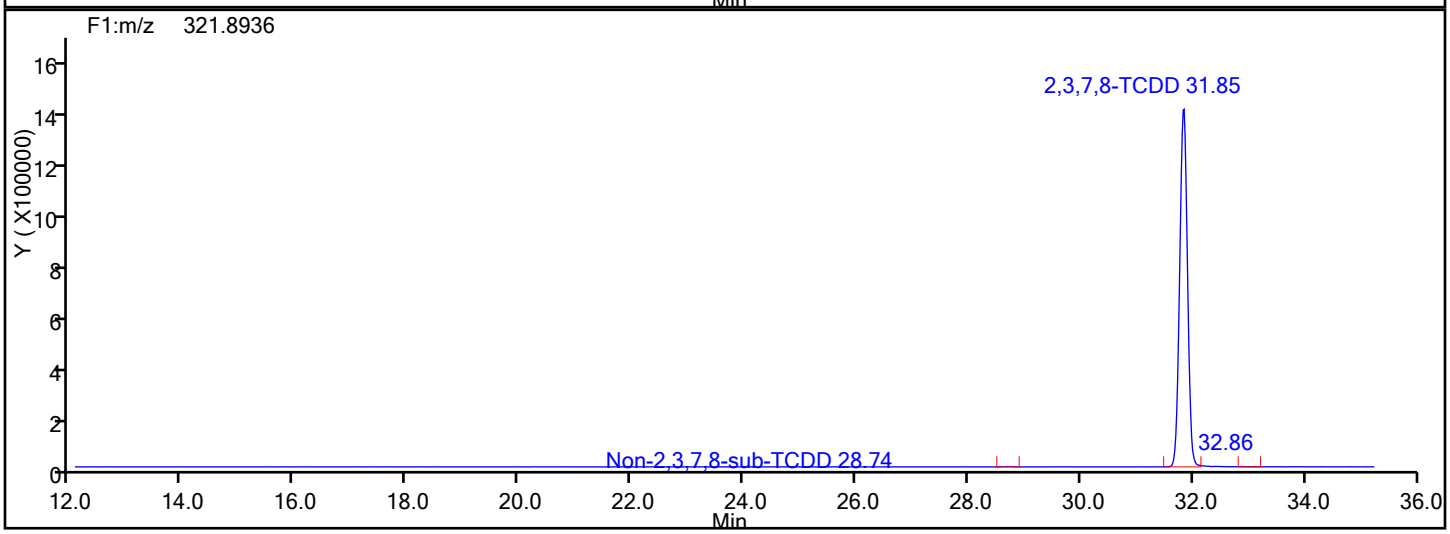
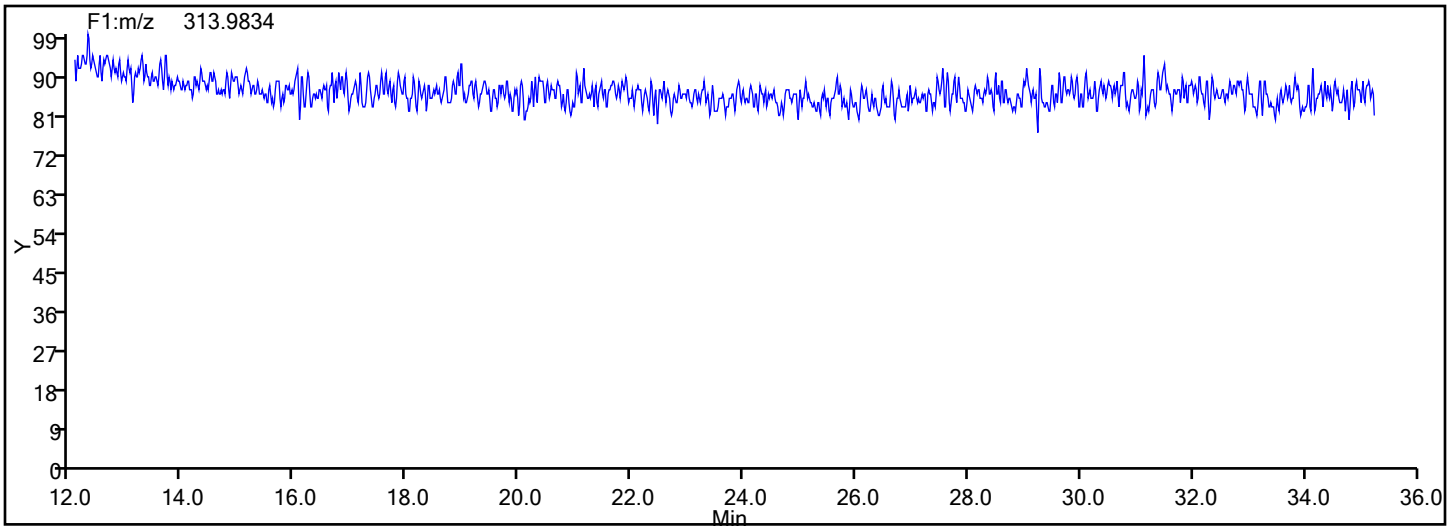
TCDD





TCDD Lock Mass



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TestAmerica Knoxville

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Injection Date:	16-May-2014 18:31:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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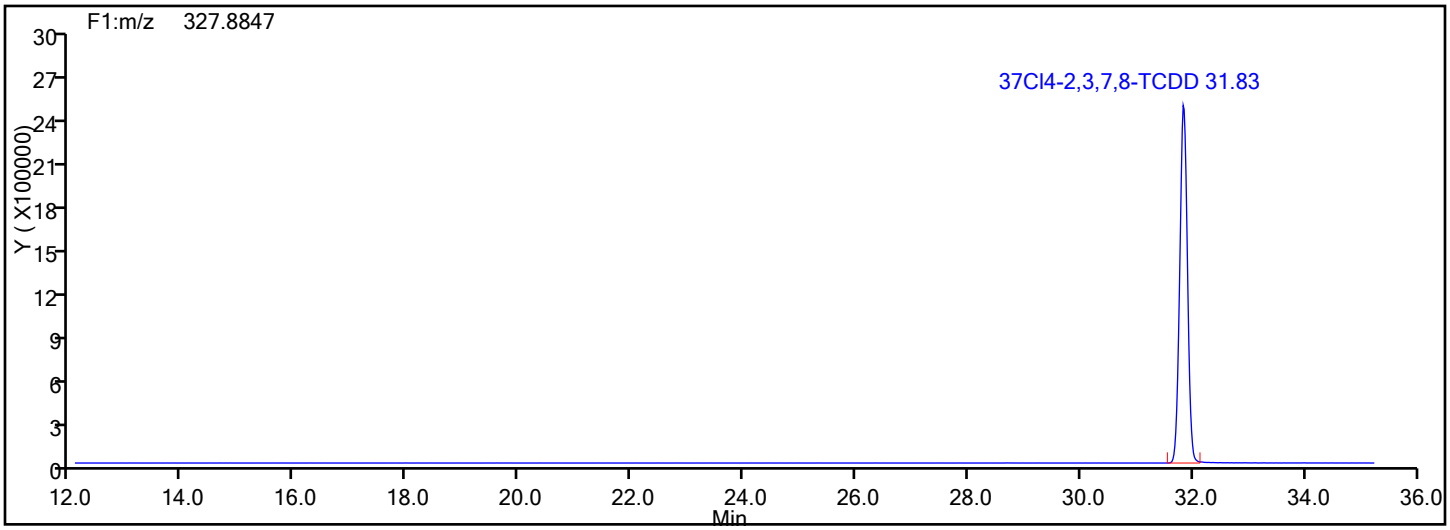
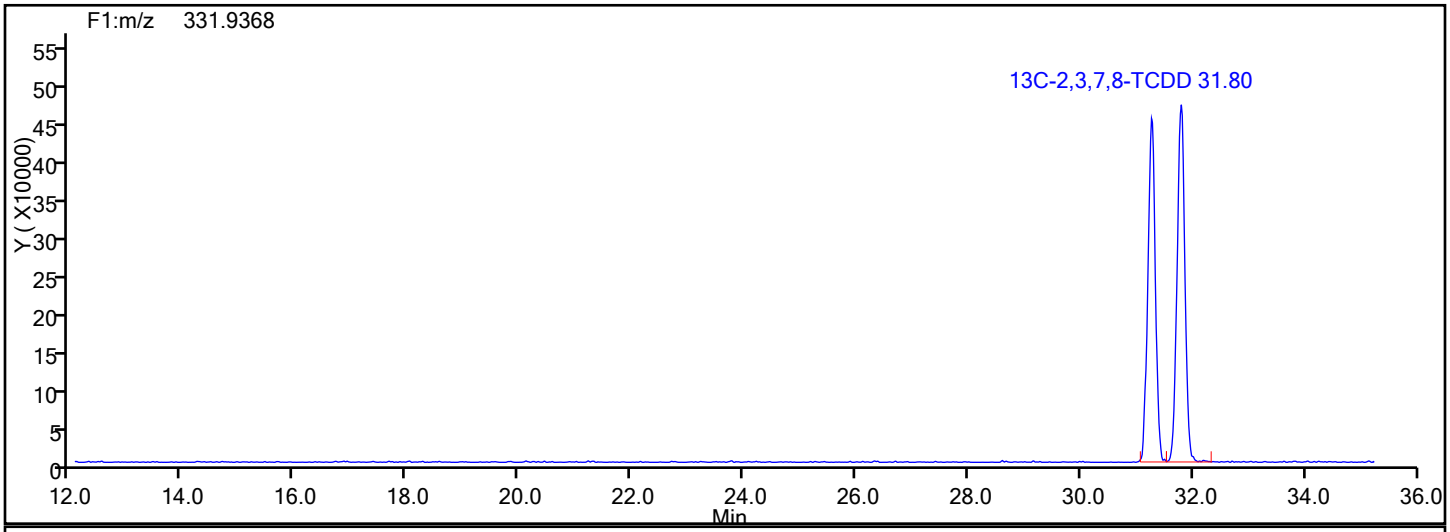
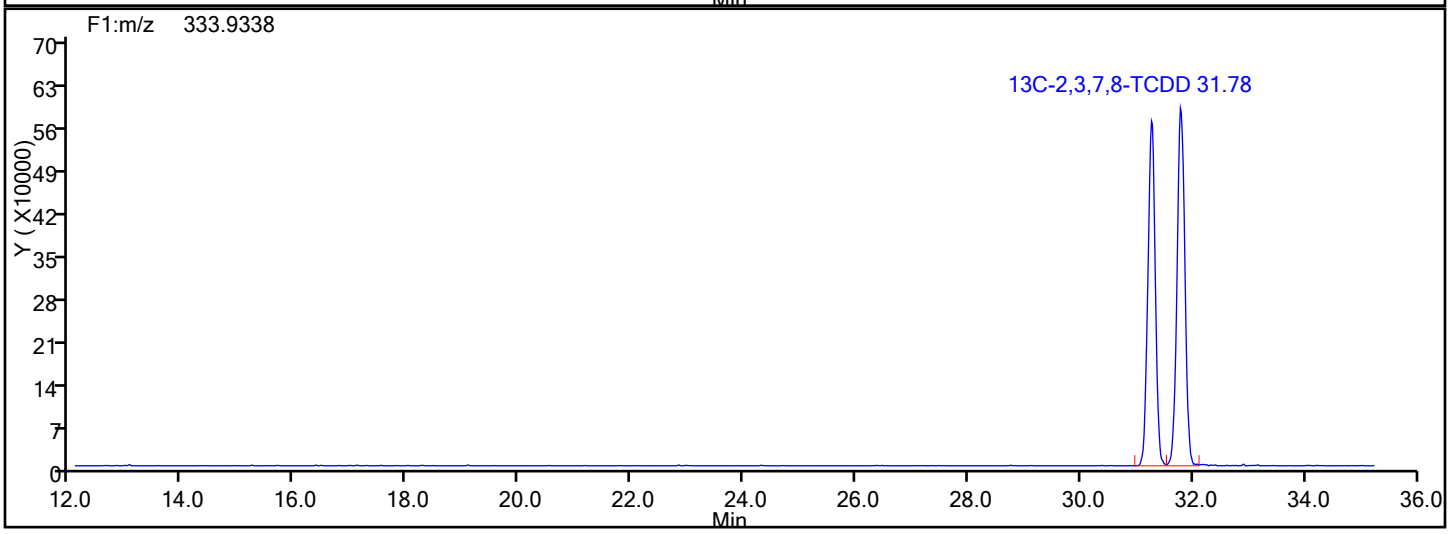
37Cl4-TCDD



37Cl4-TCDD Standards





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TestAmerica Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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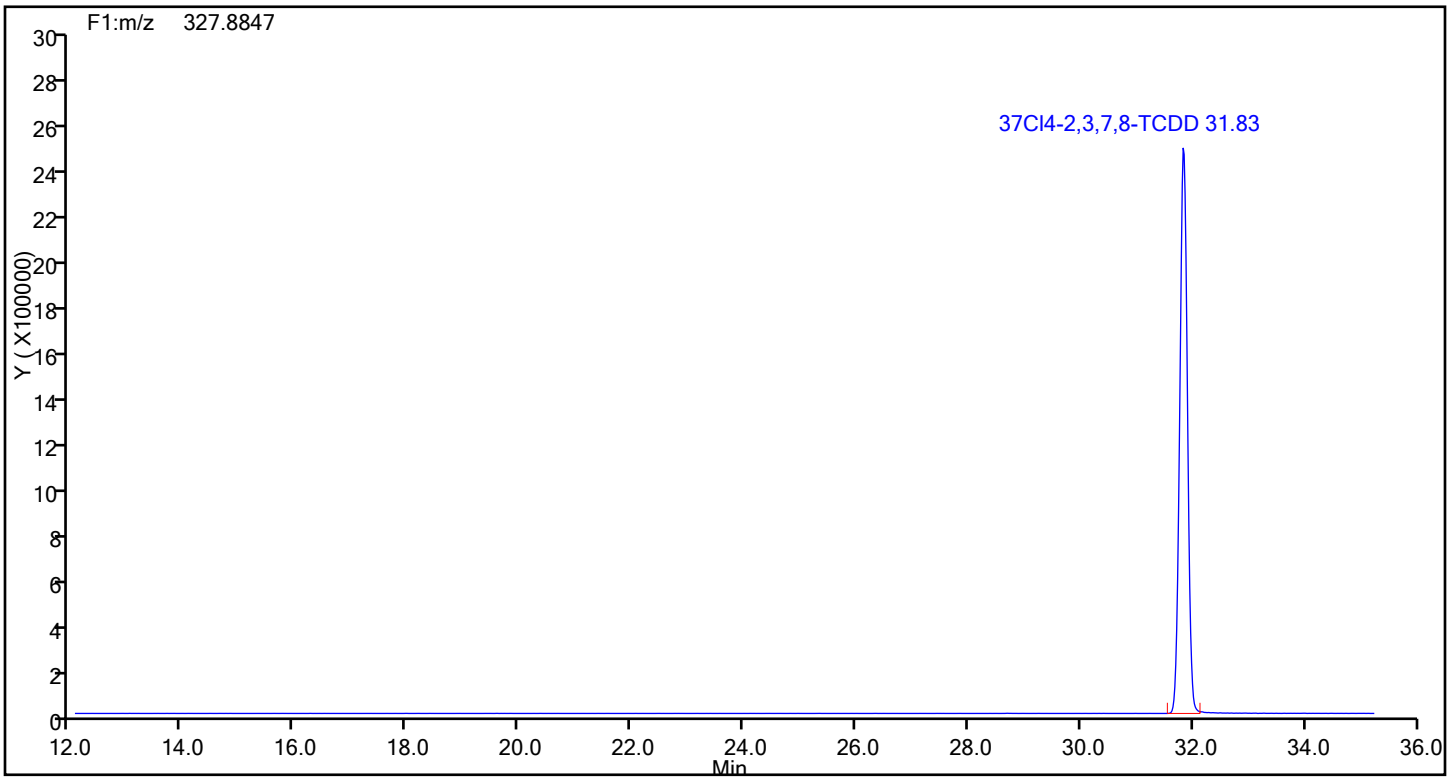
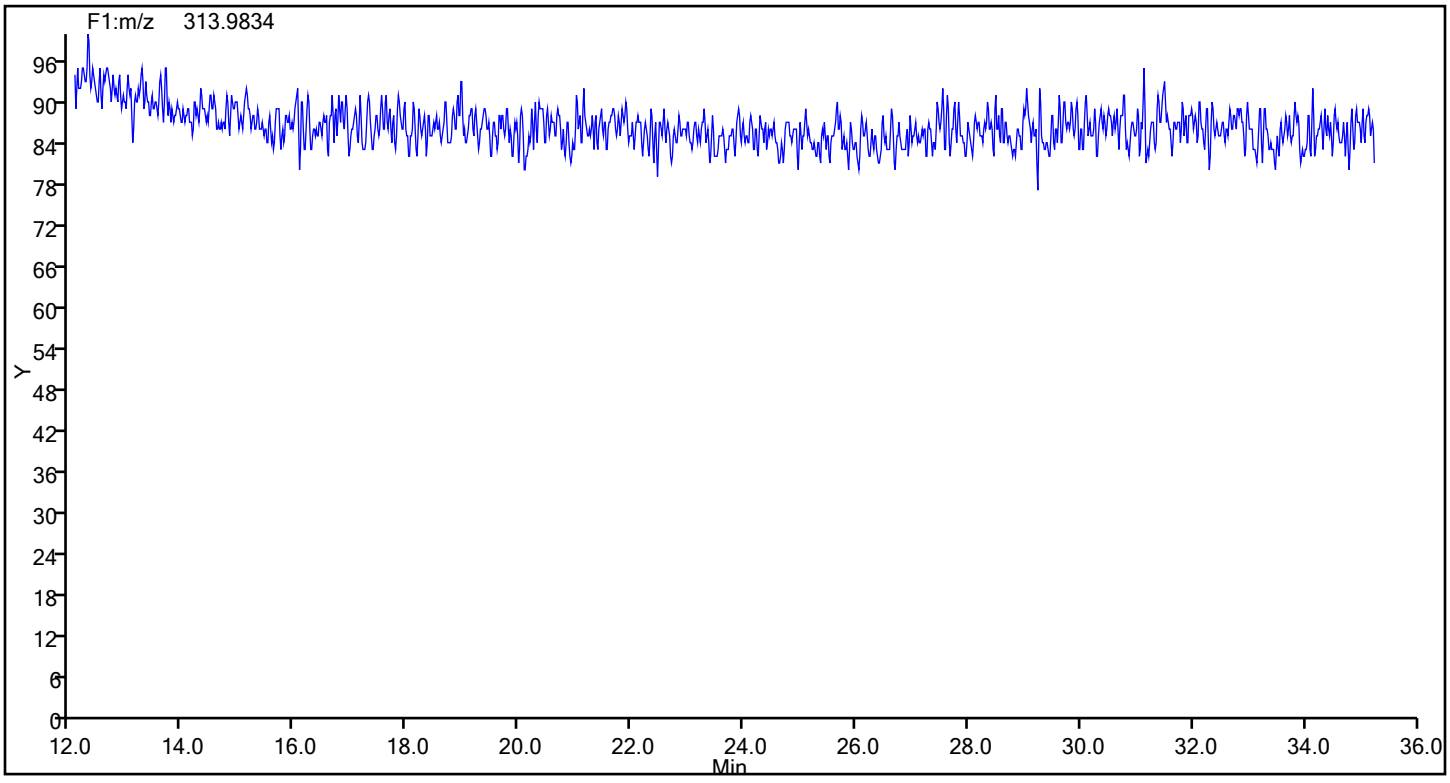
37Cl4-TCDD



37Cl4-TCDD Lock Mass



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TestAmerica Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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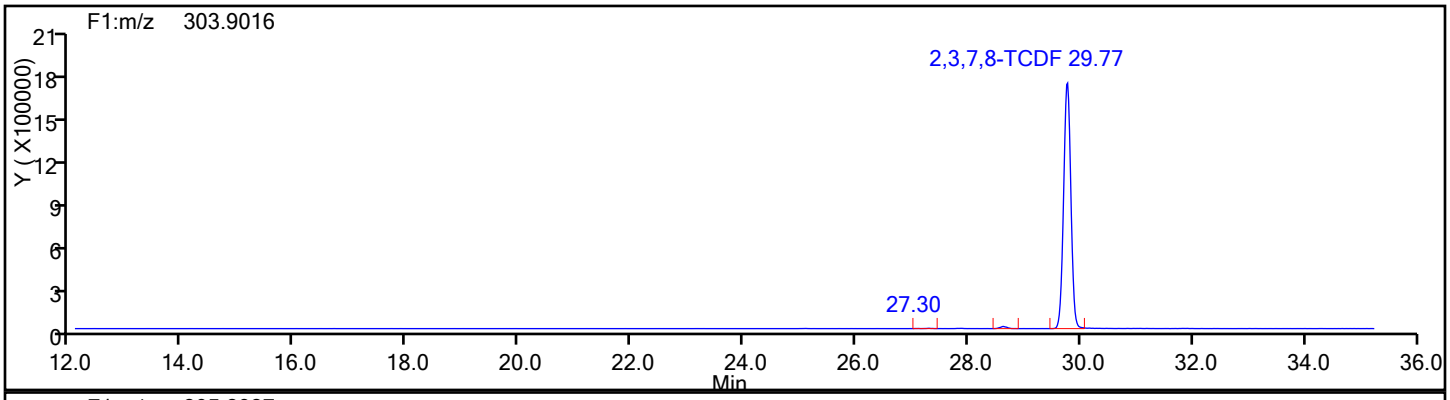
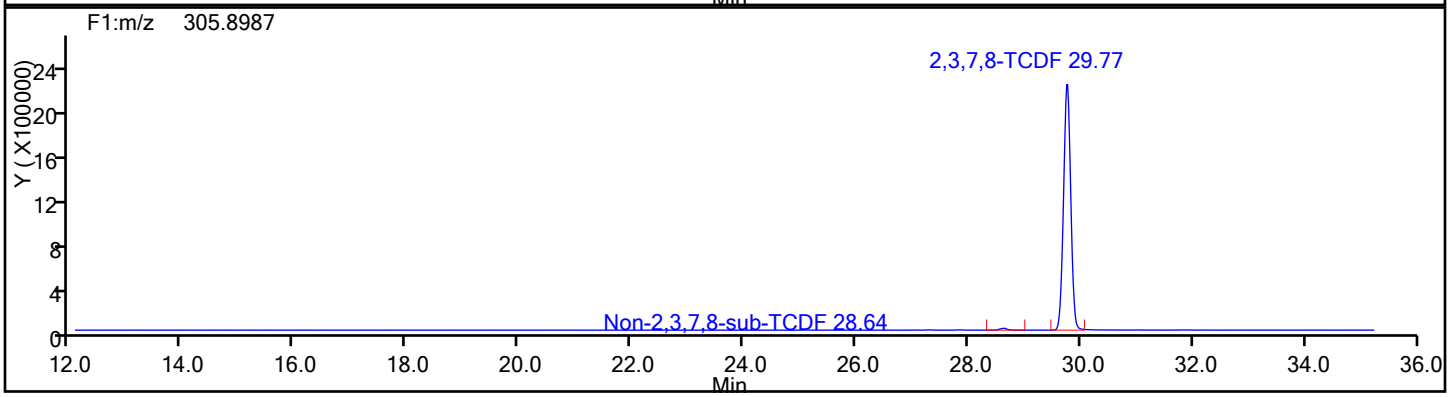
TCDF





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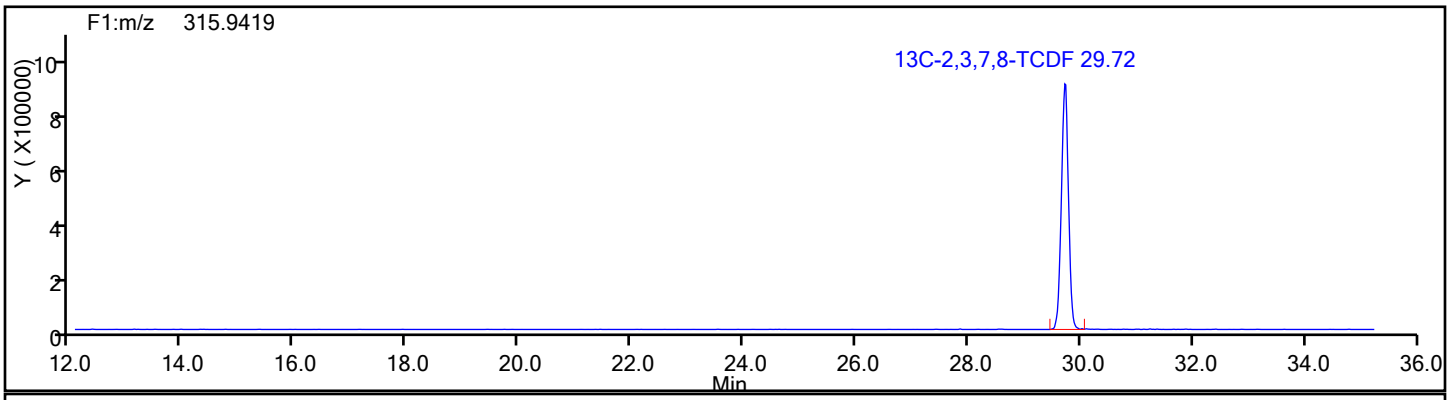

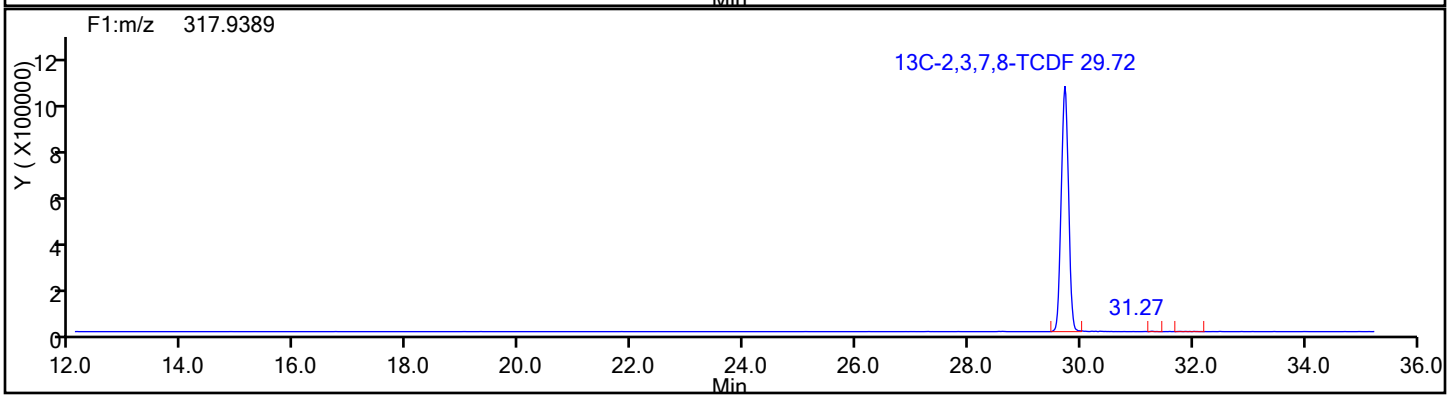

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TestAmerica Knoxville

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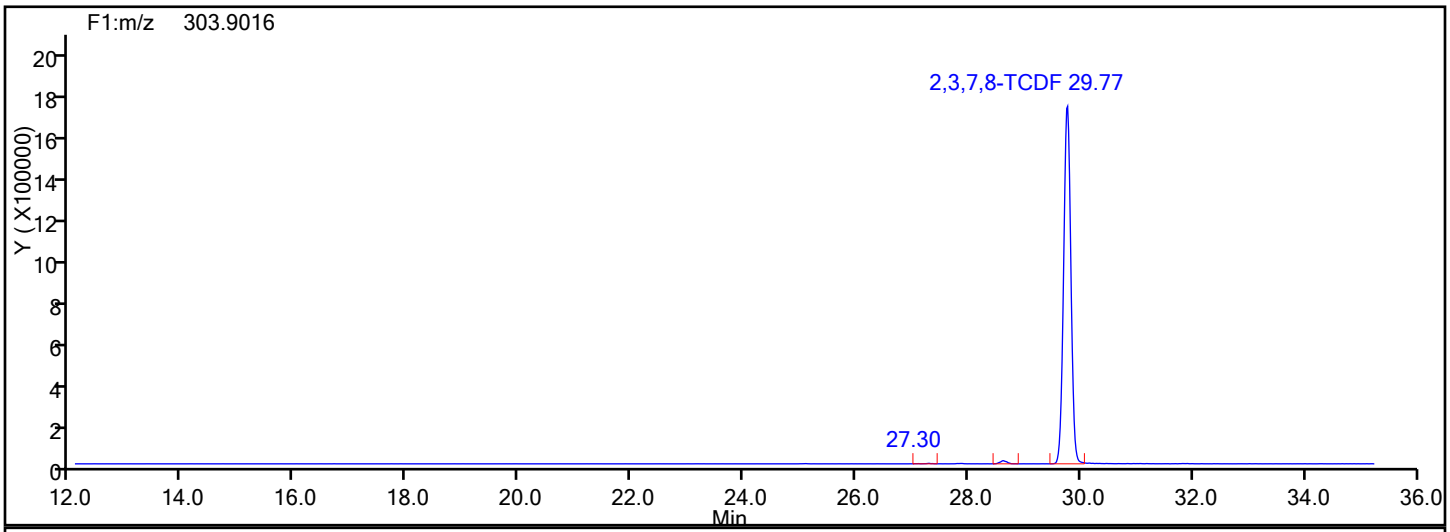
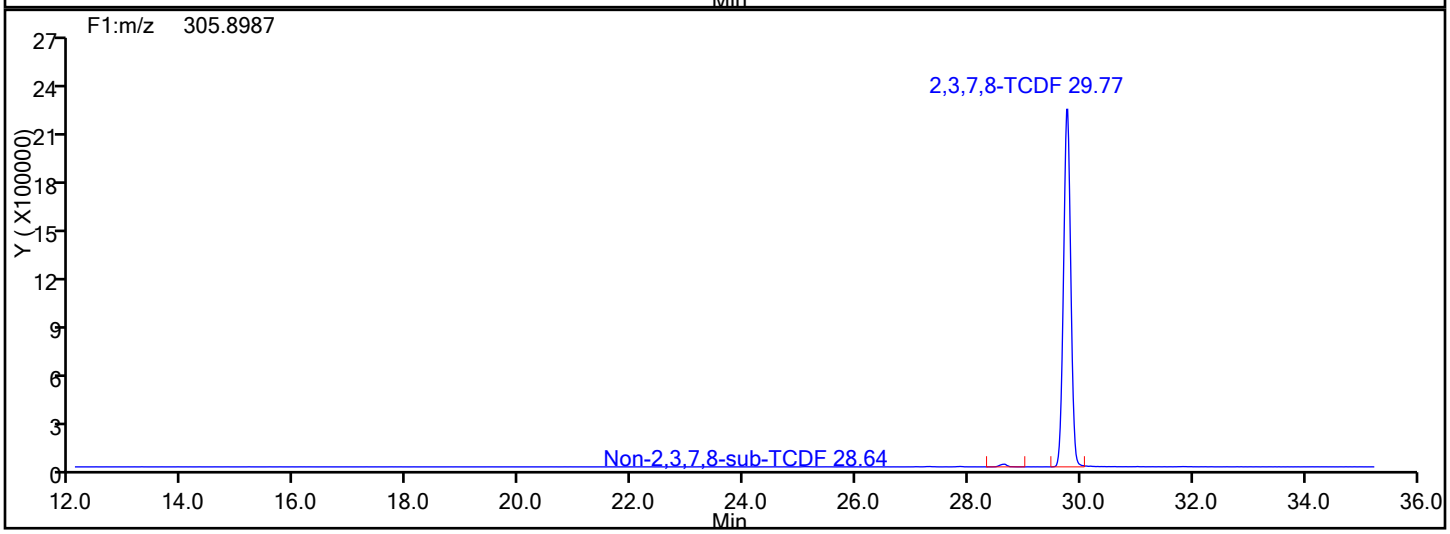
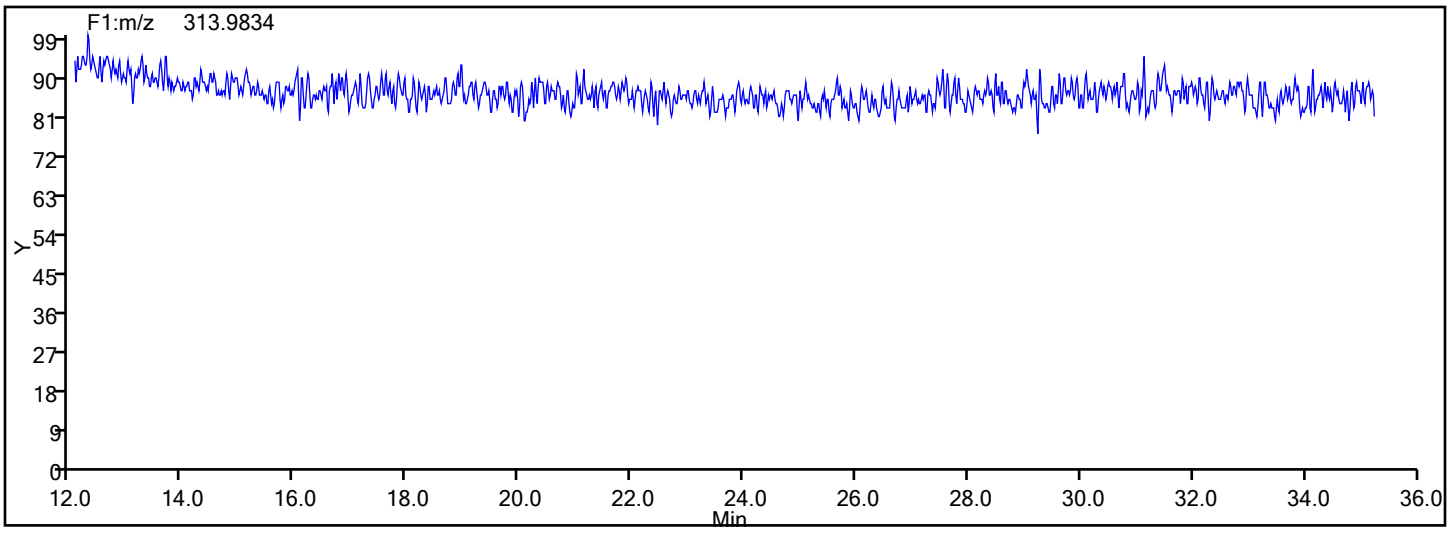




TCDF Lock Mass



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TestAmerica Knoxville

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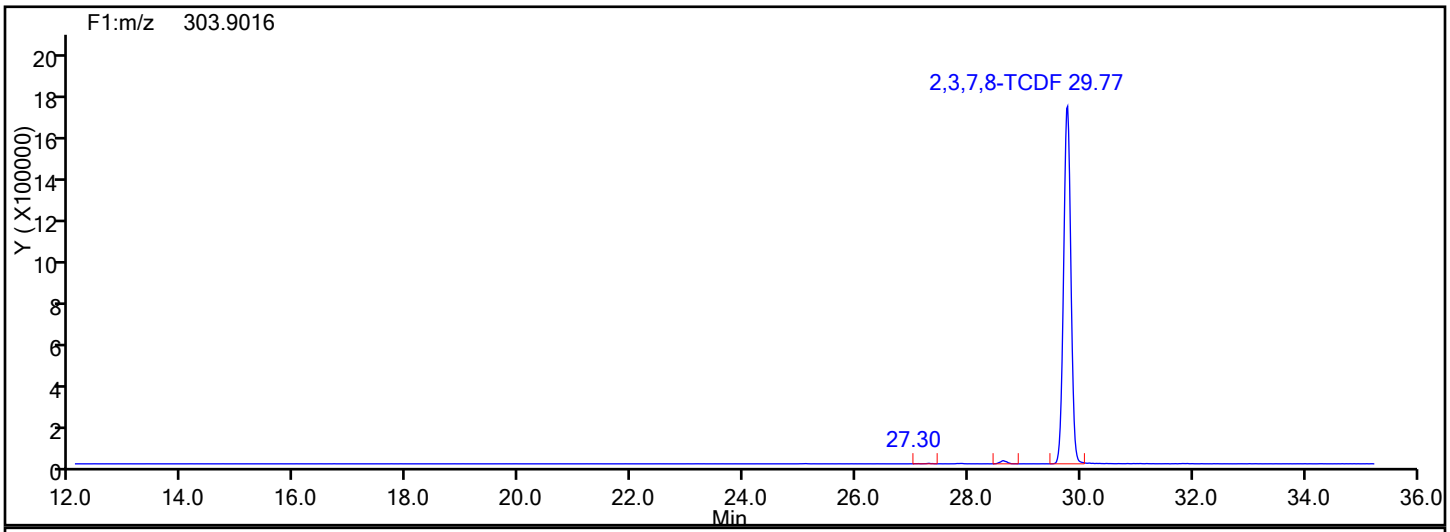
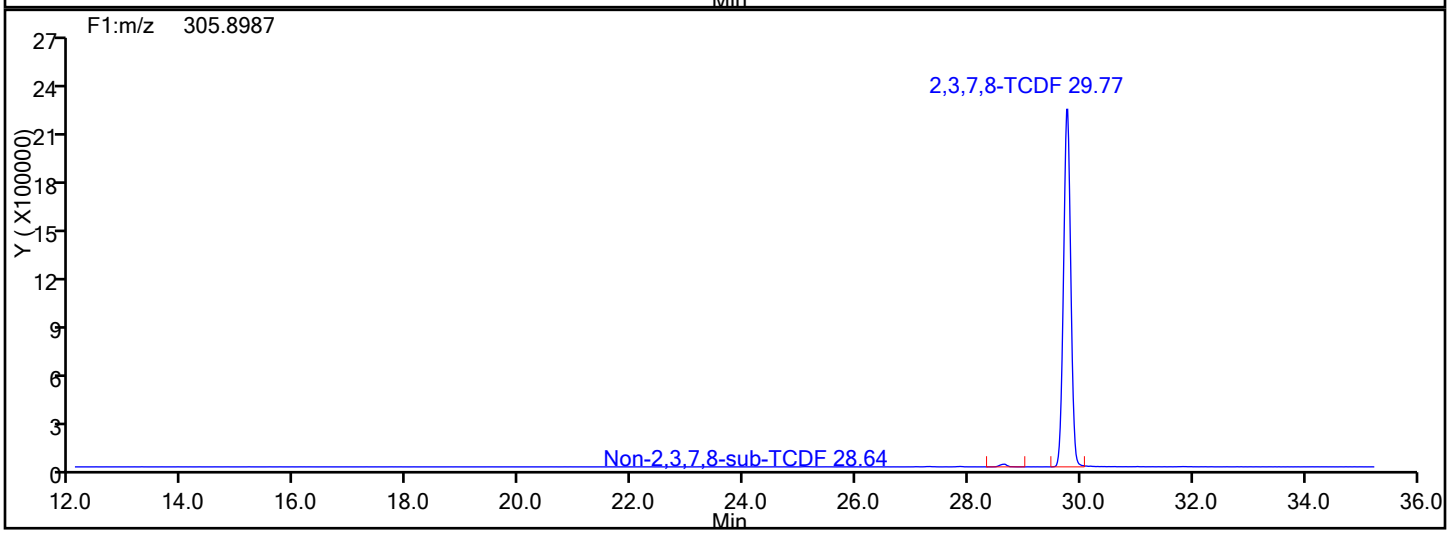
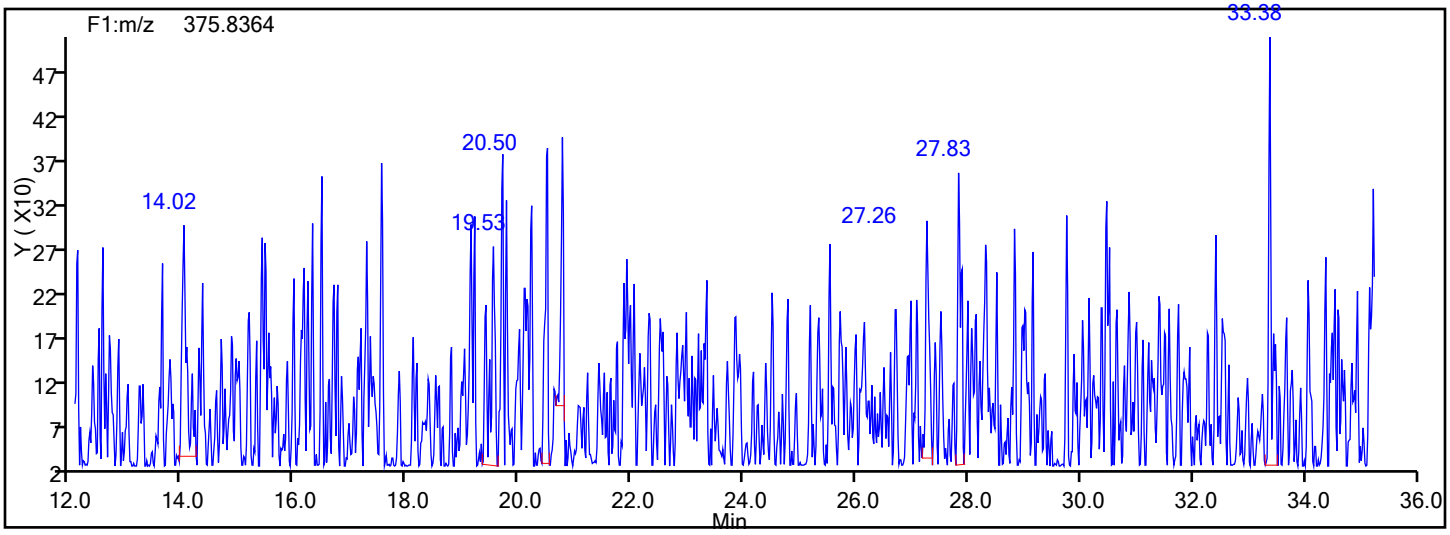




TCDF Interference Mass



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TestAmerica Knoxville

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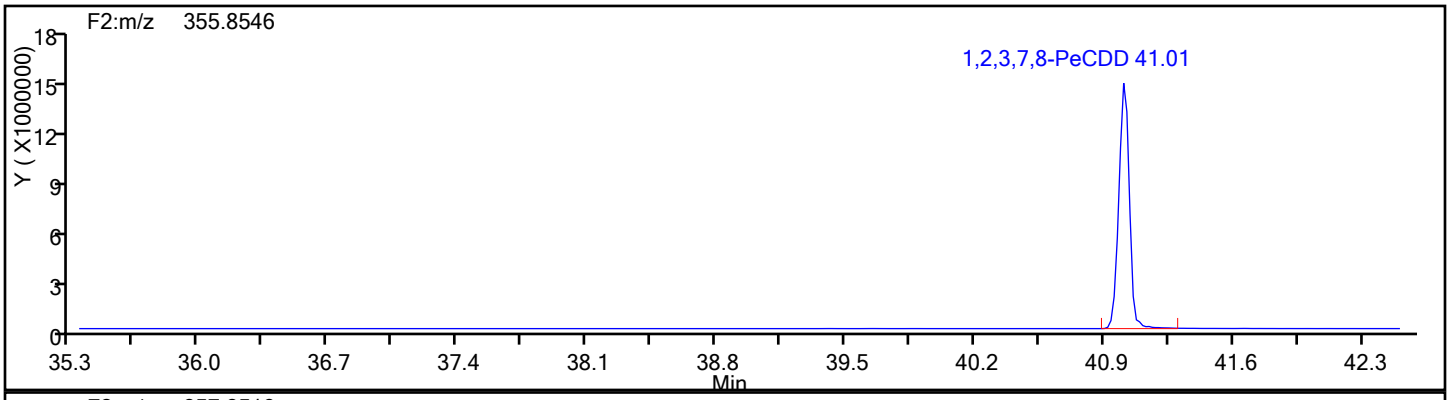
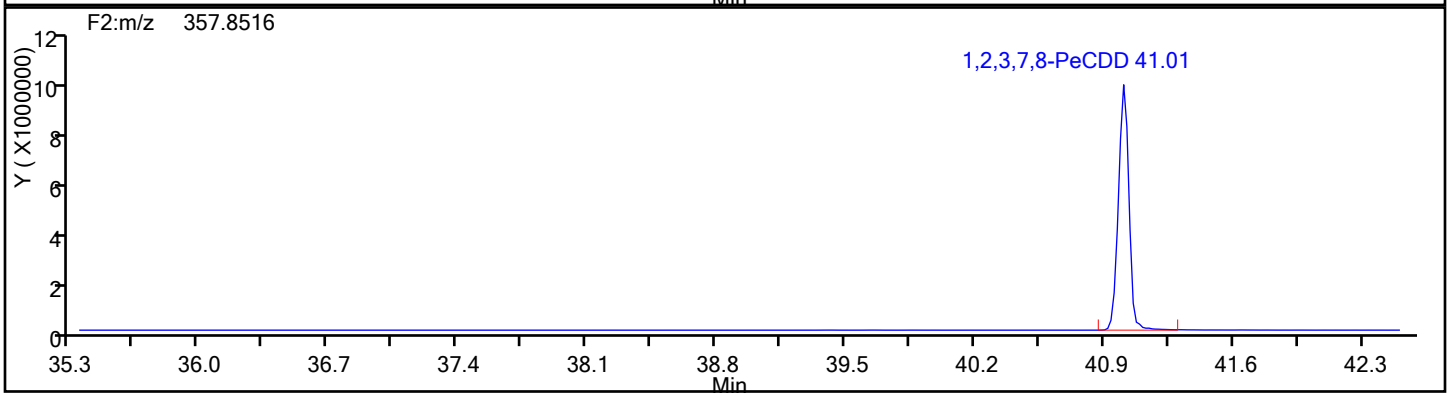
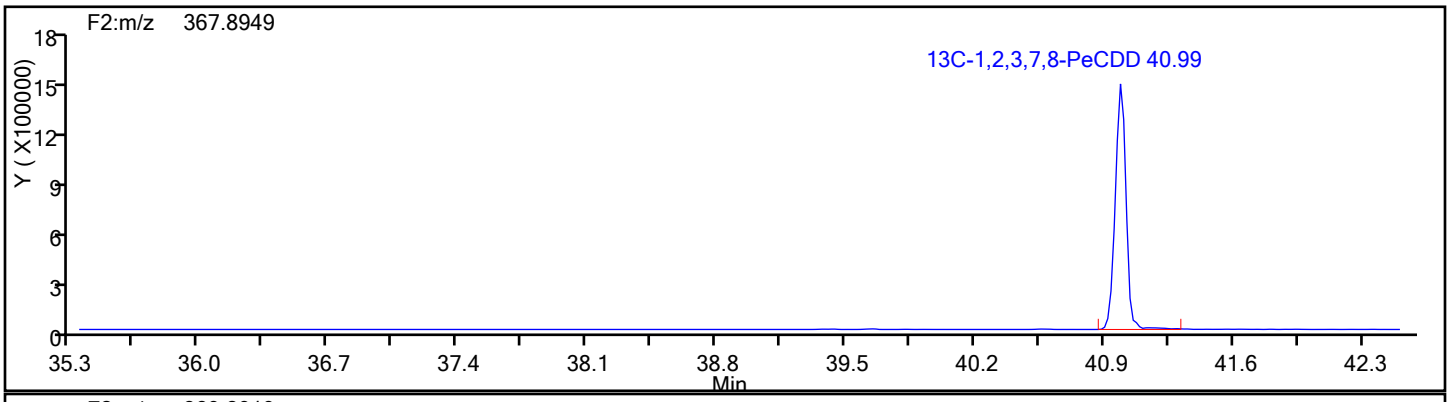
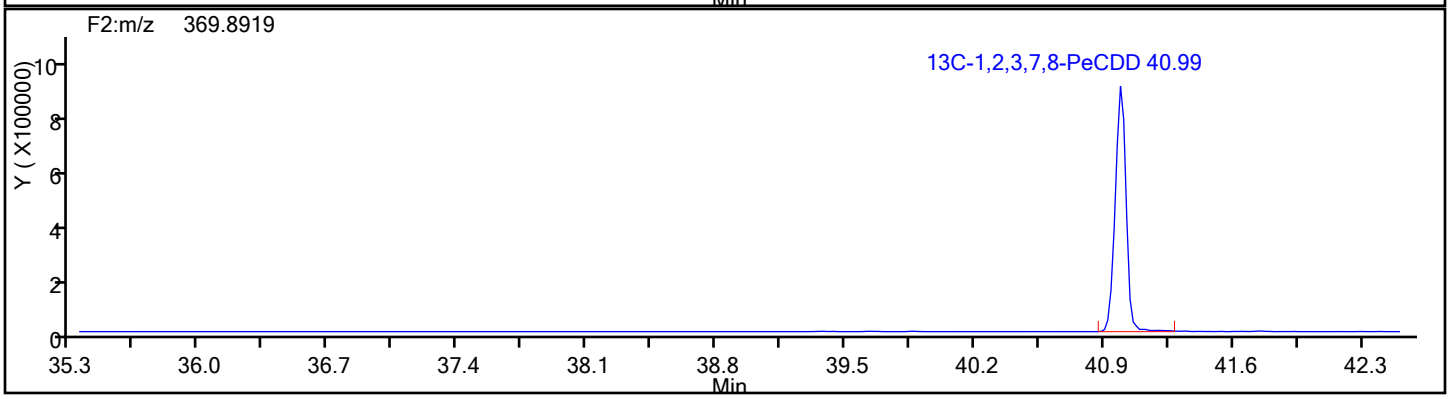
PeCDD





PeCDD Standards





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TestAmerica Knoxville

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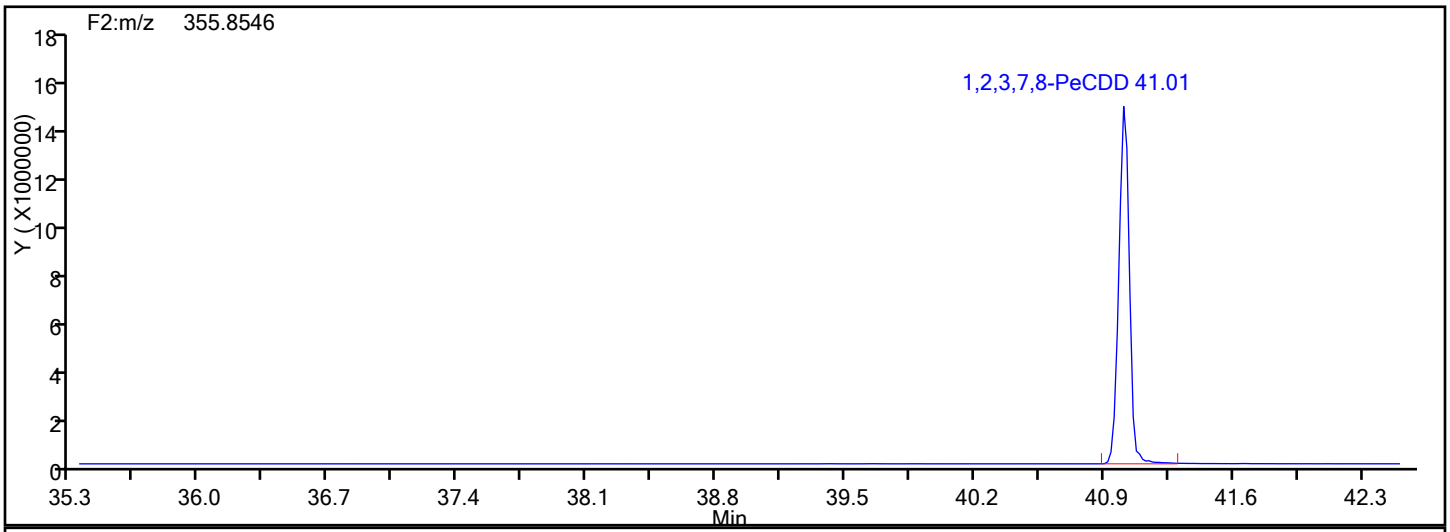
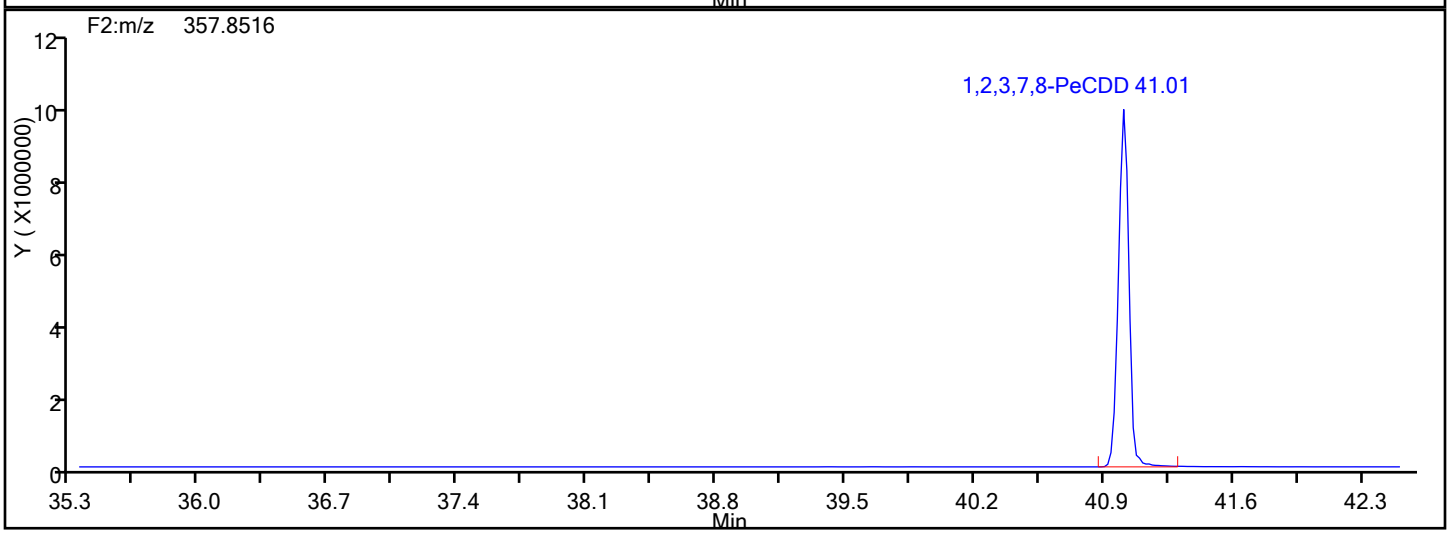
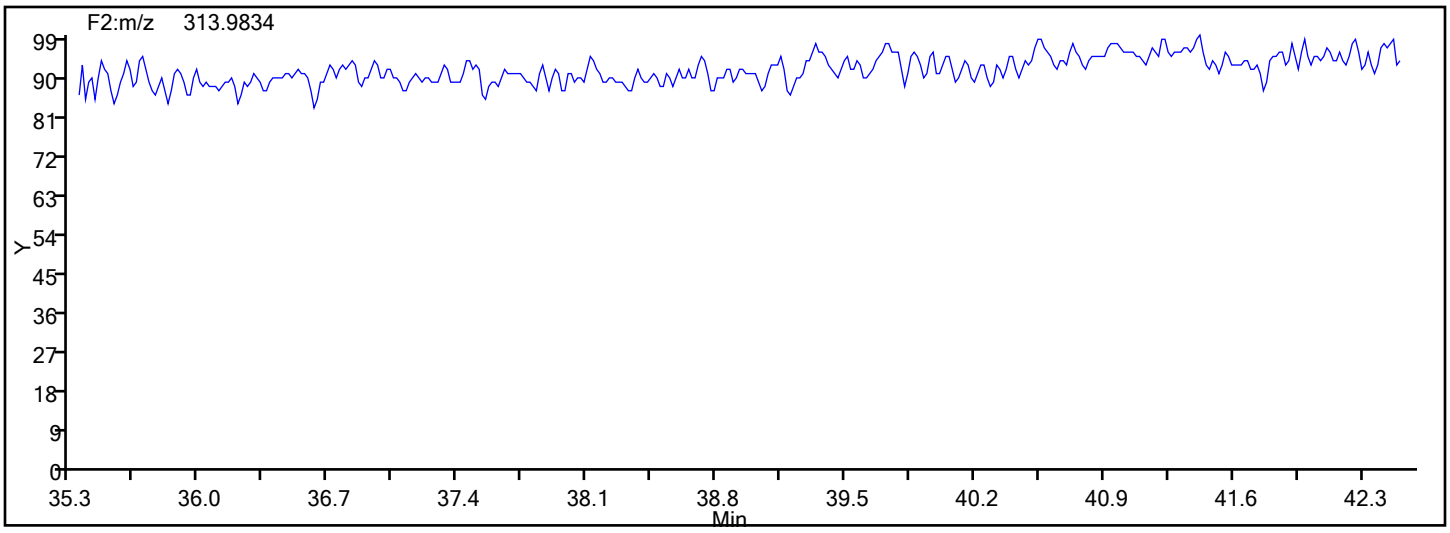




PeCDD Lock Mass



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TestAmerica Knoxville

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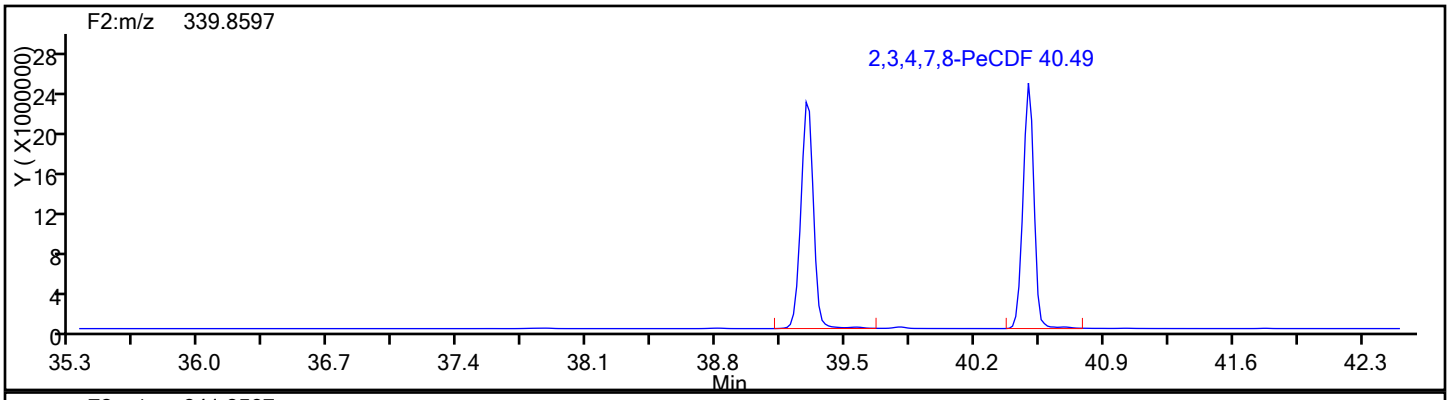
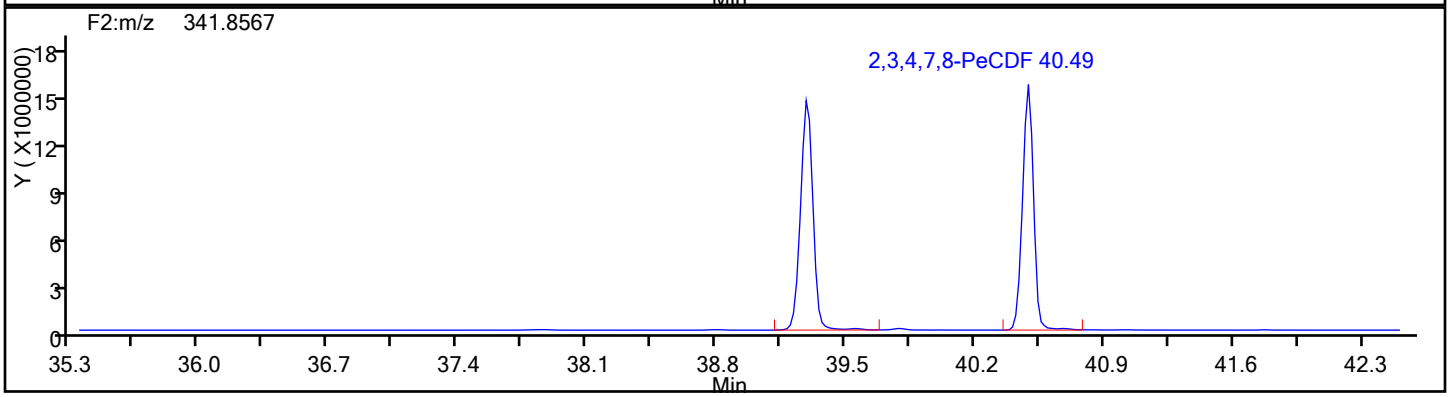
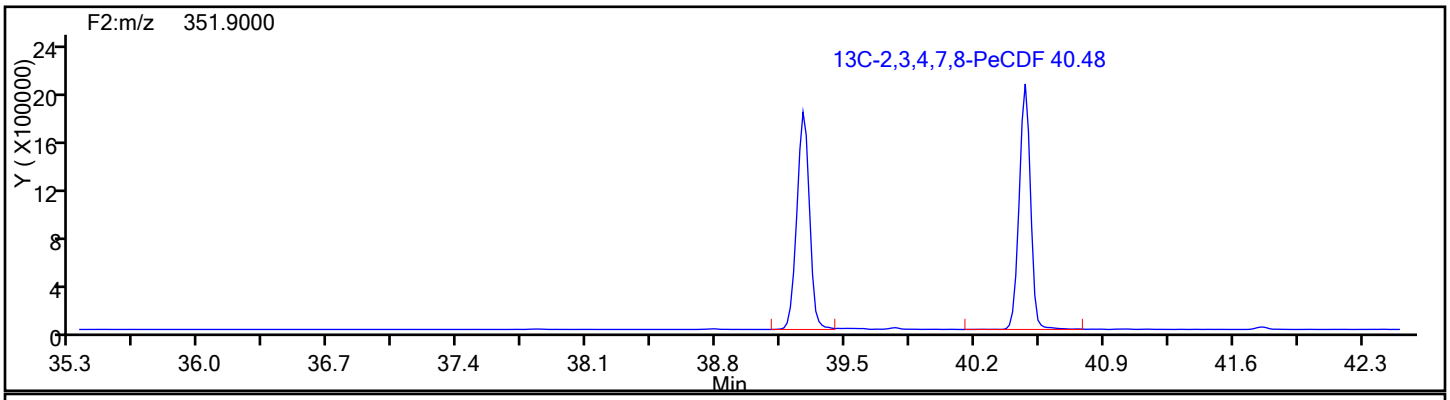
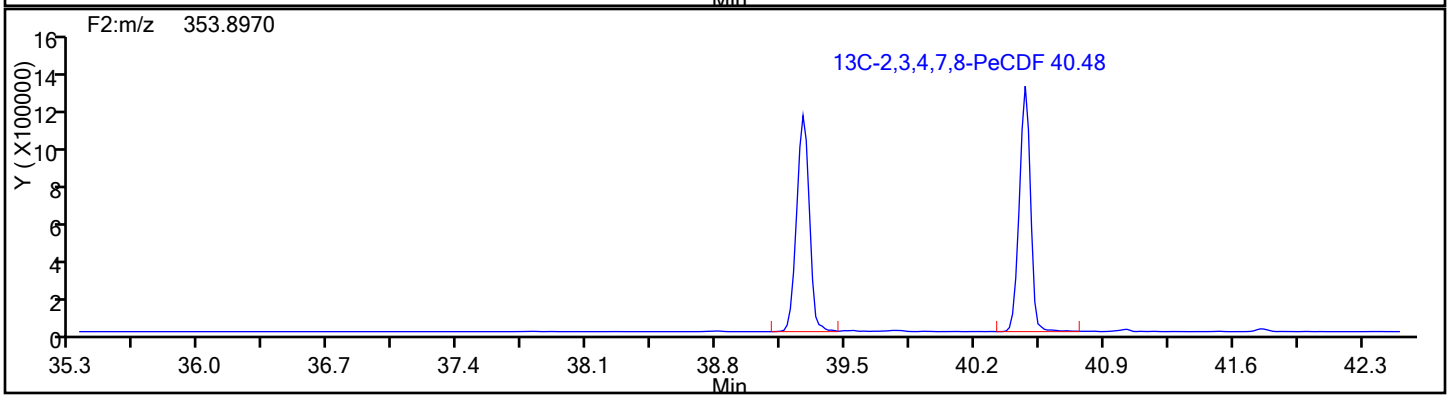




PeCDF Standards





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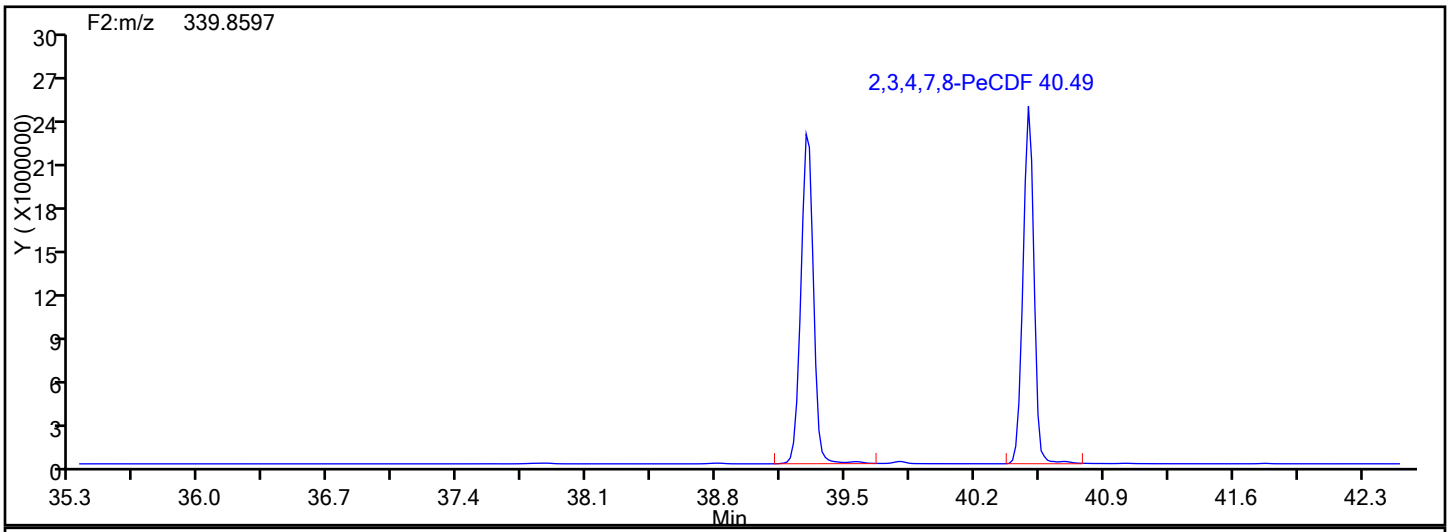
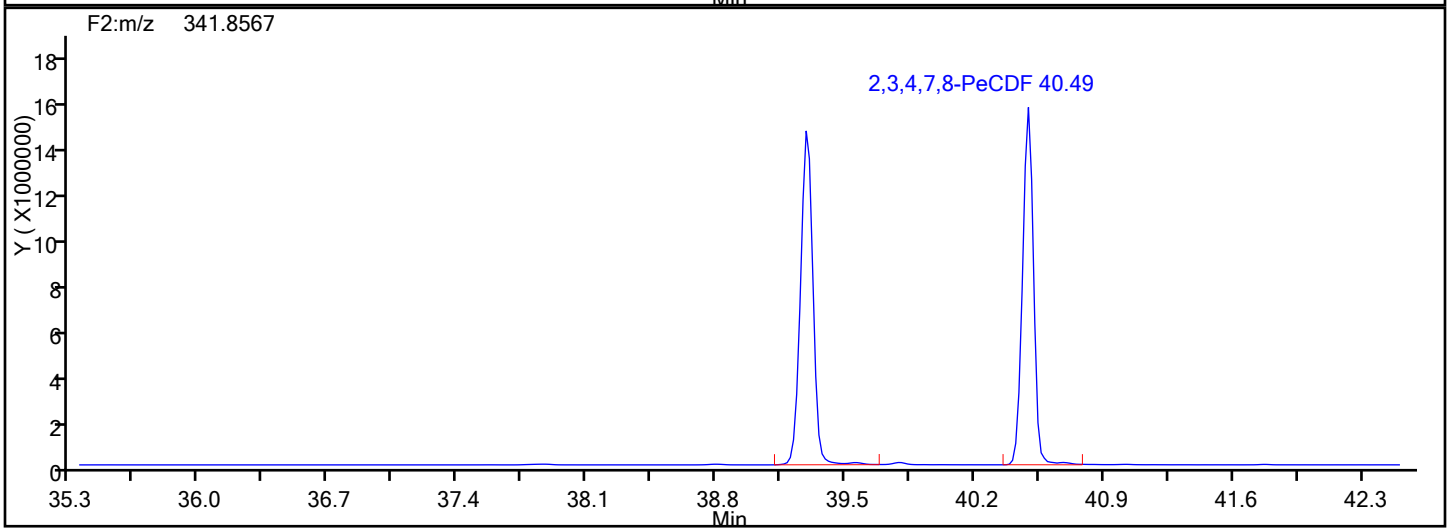
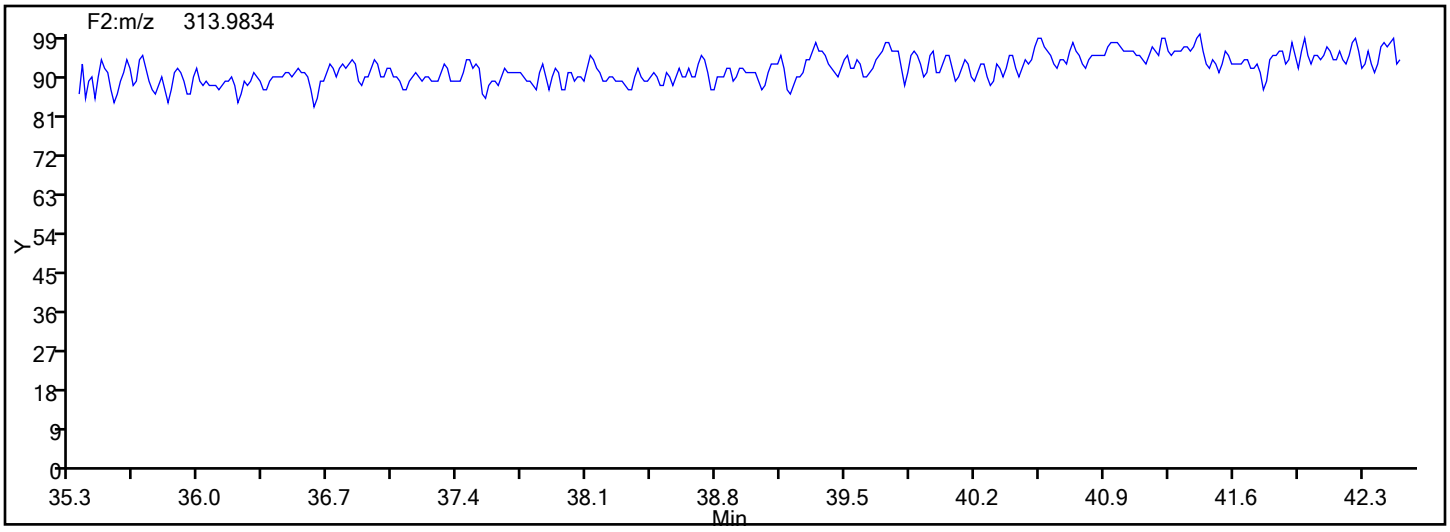




PeCDF Lock Mass



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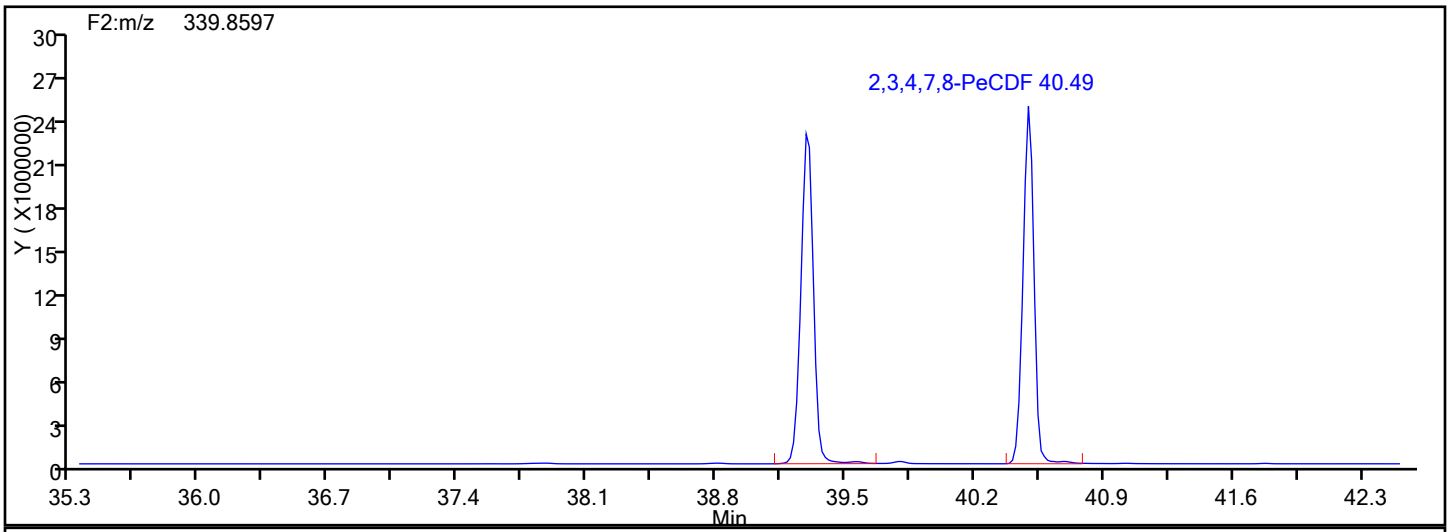
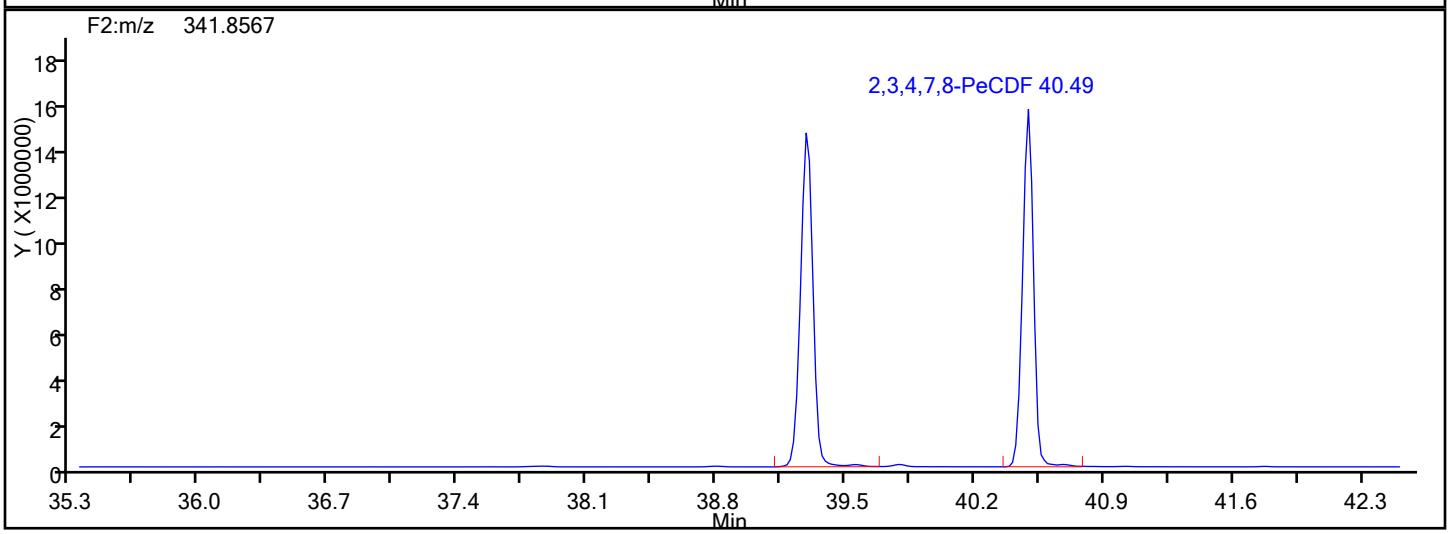
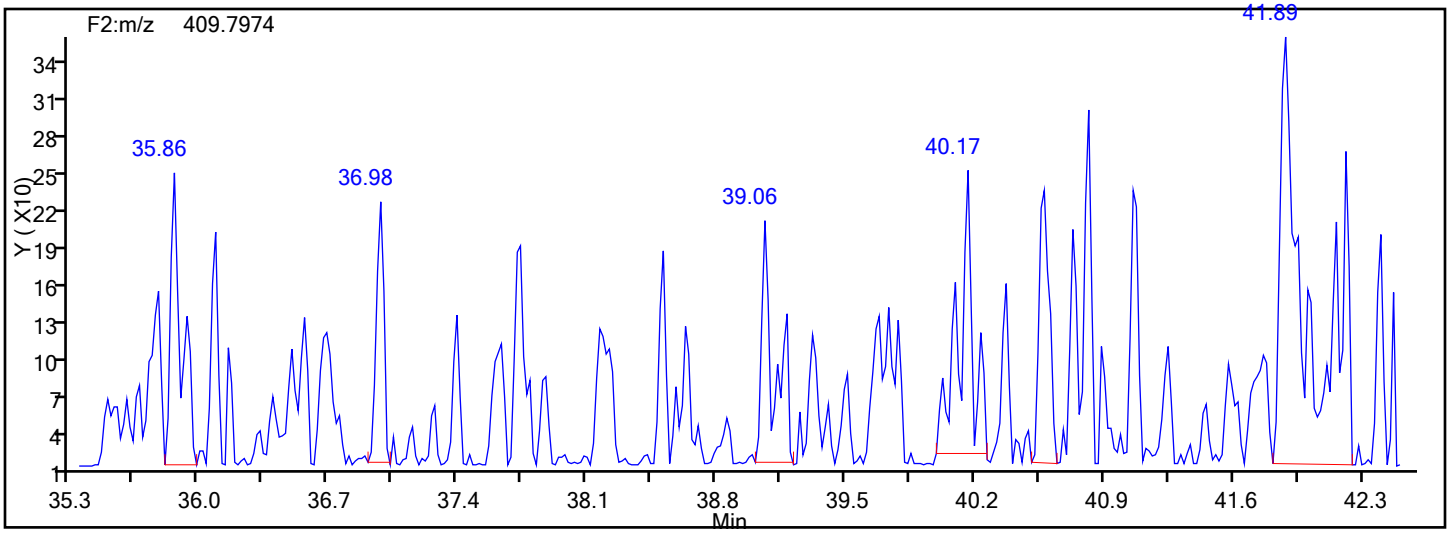




PeCDF Interference Mass



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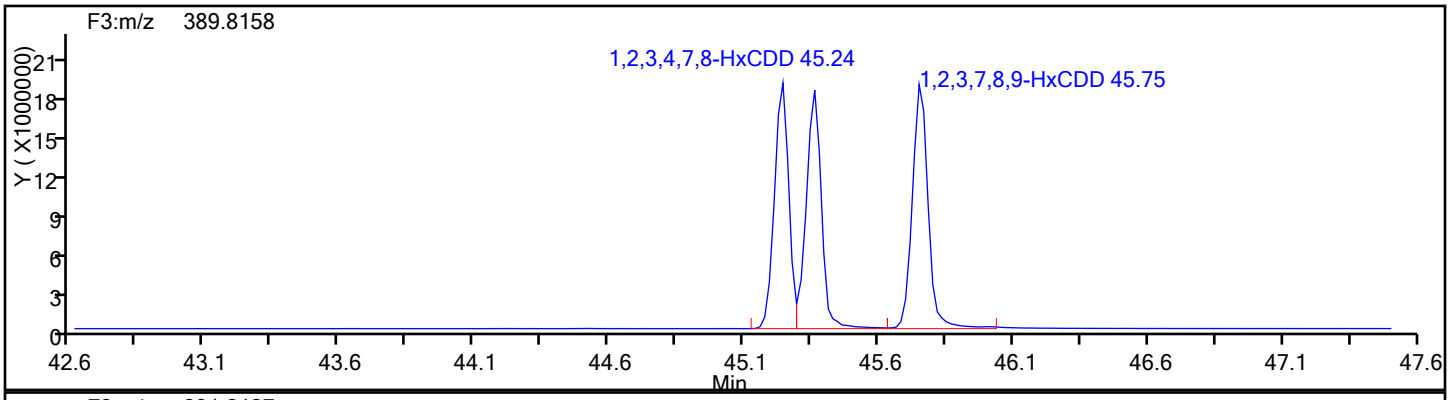
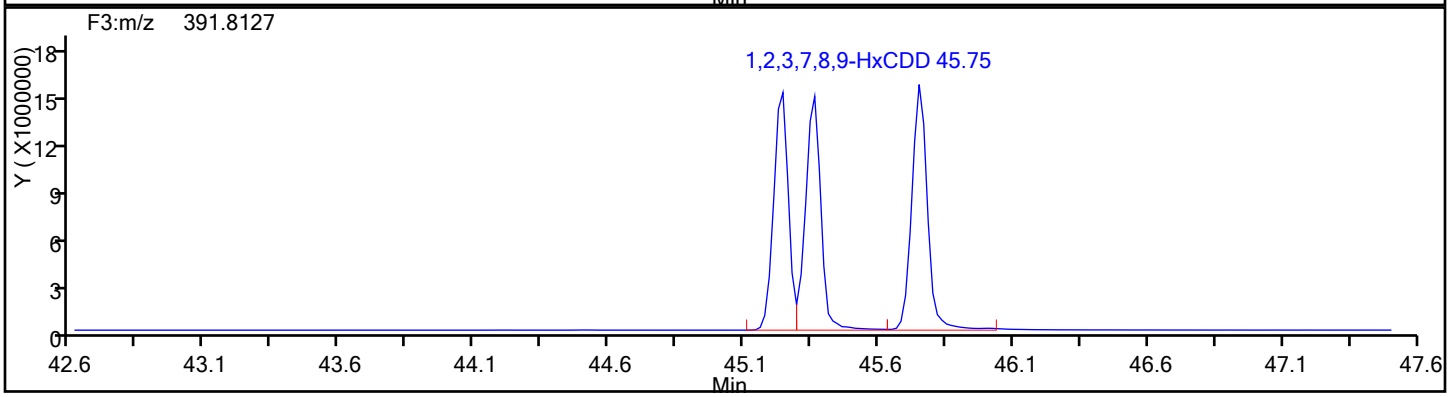
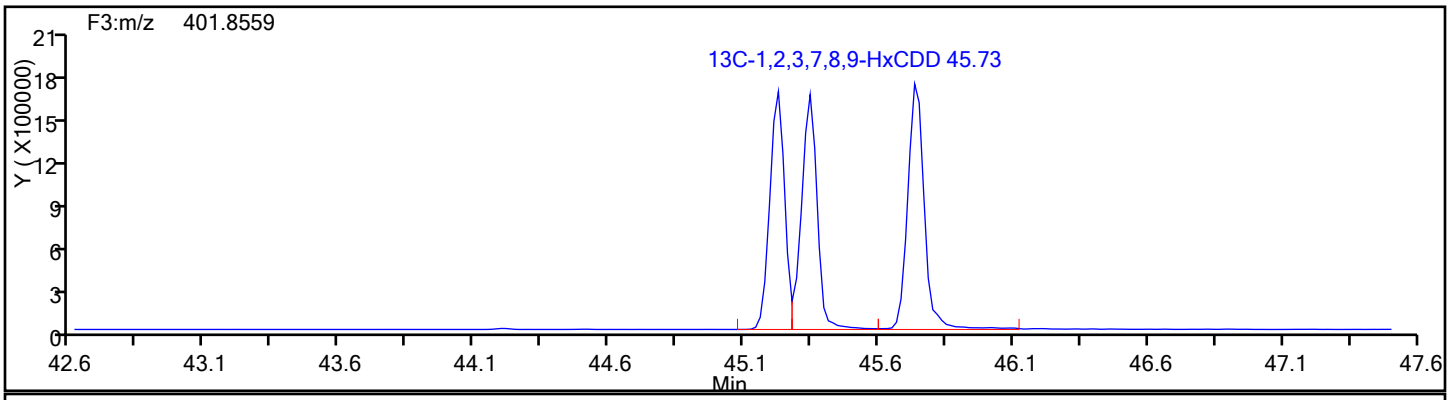
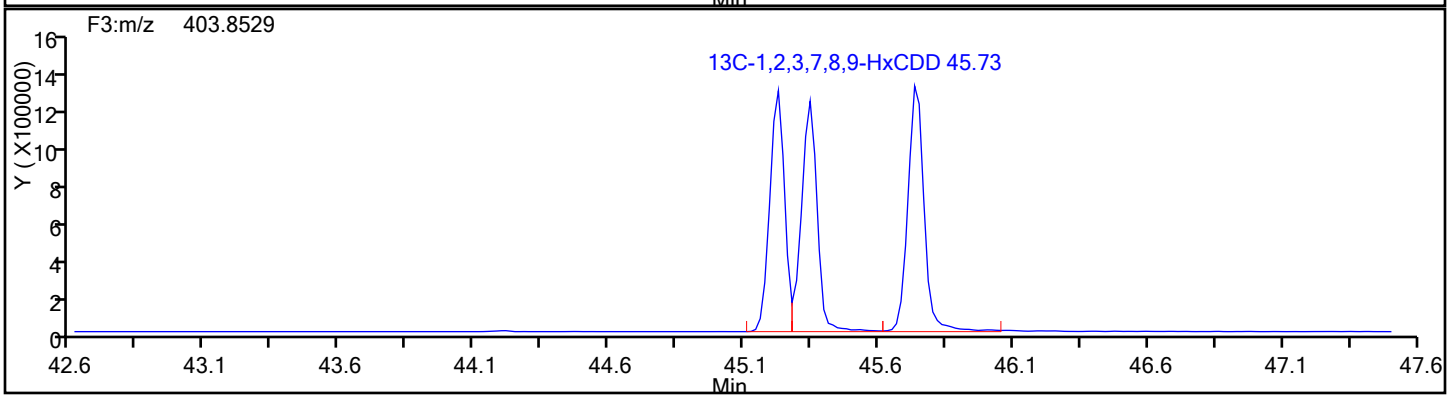
HxCDD





HxCDD Standards





Report Date: 12-Jan-2017 08:09:44 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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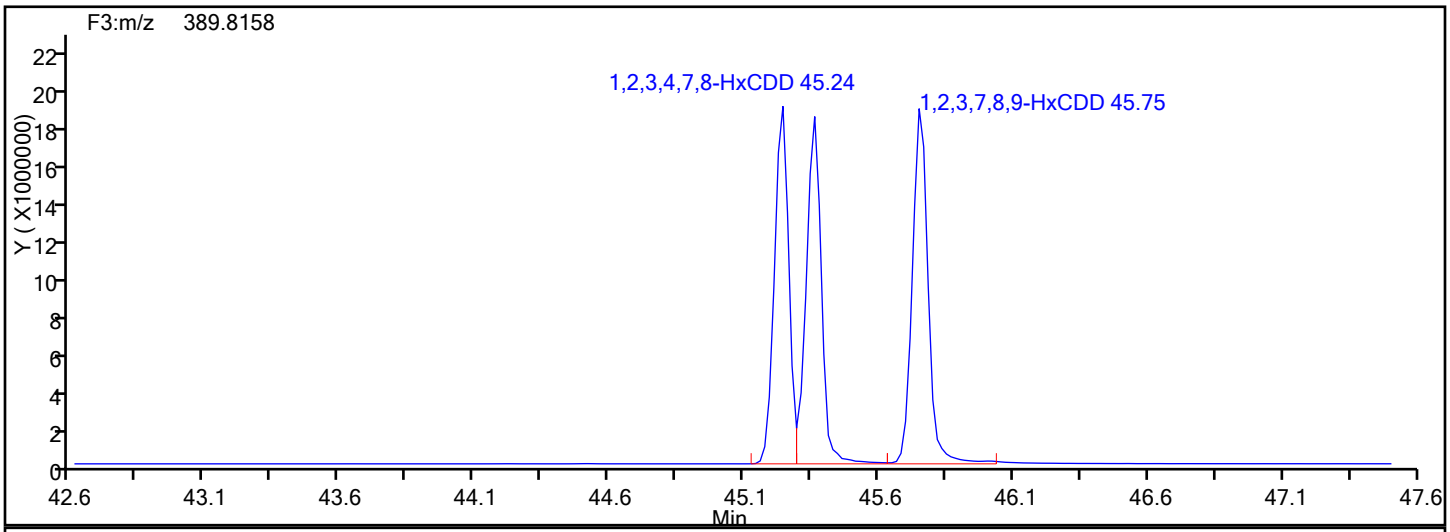

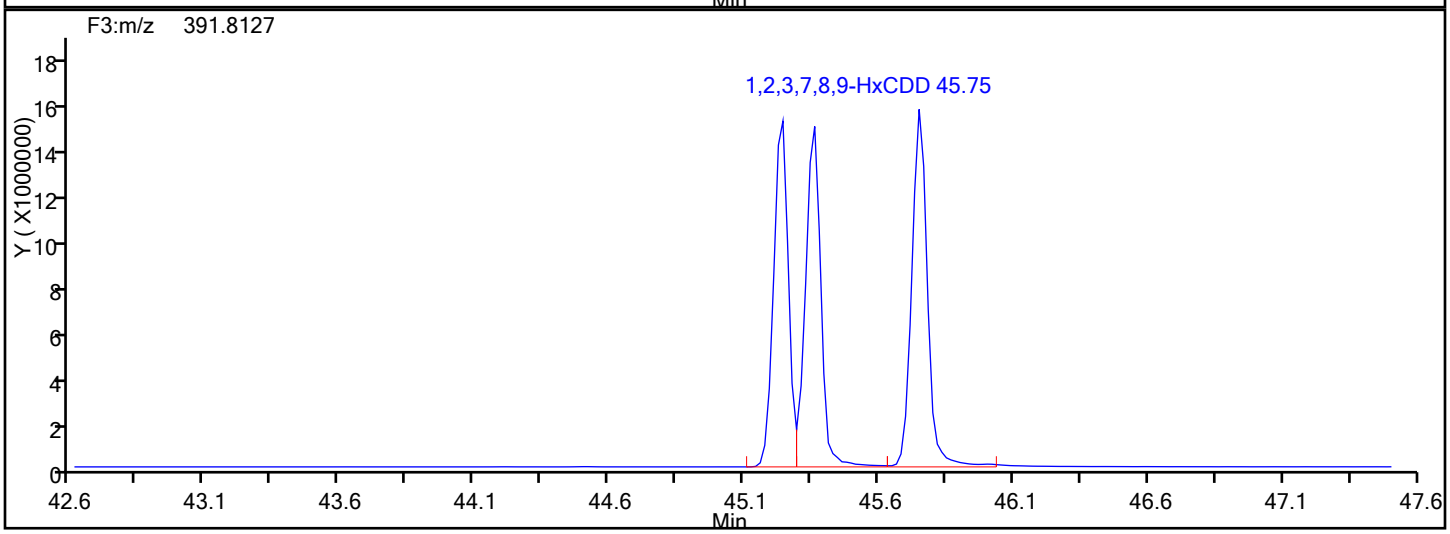

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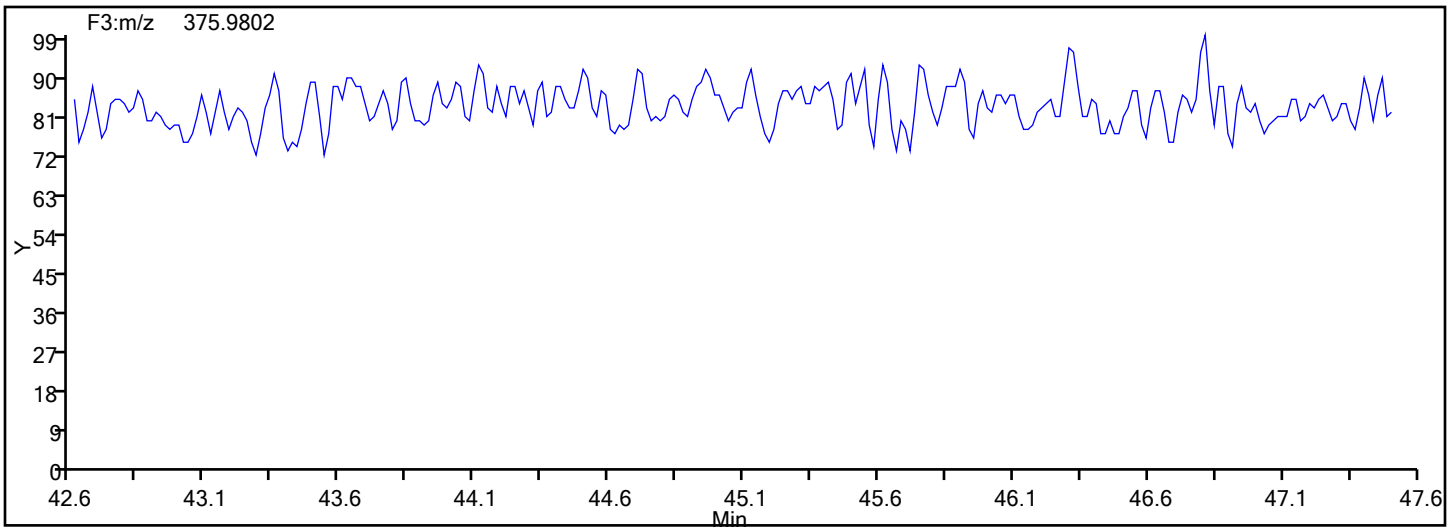

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TestAmerica Knoxville

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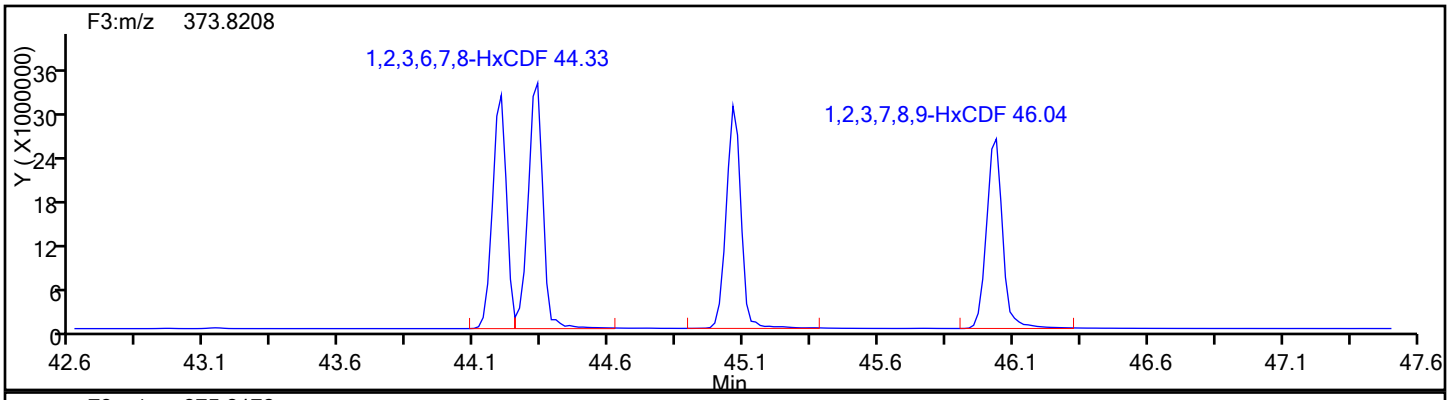

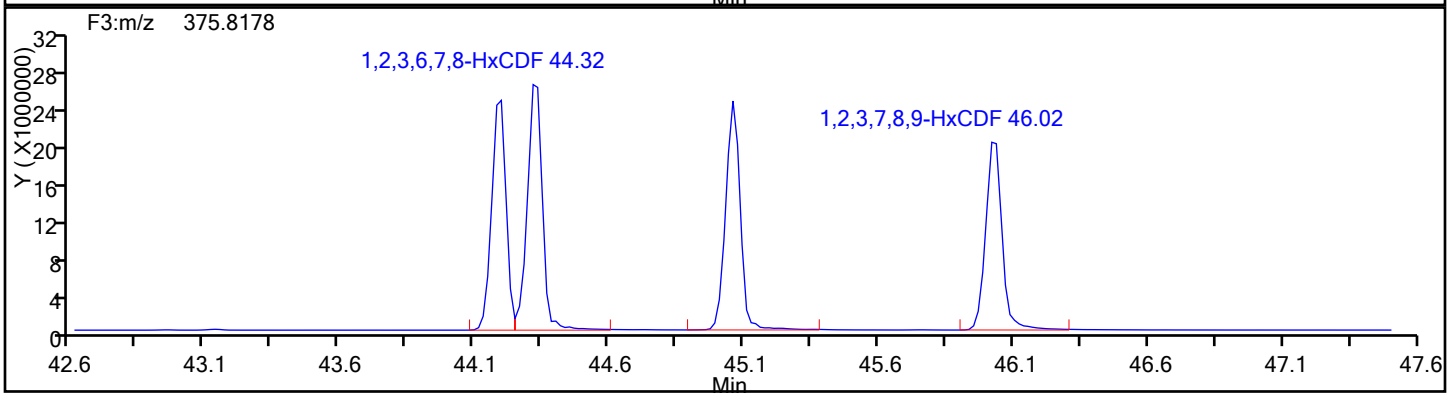

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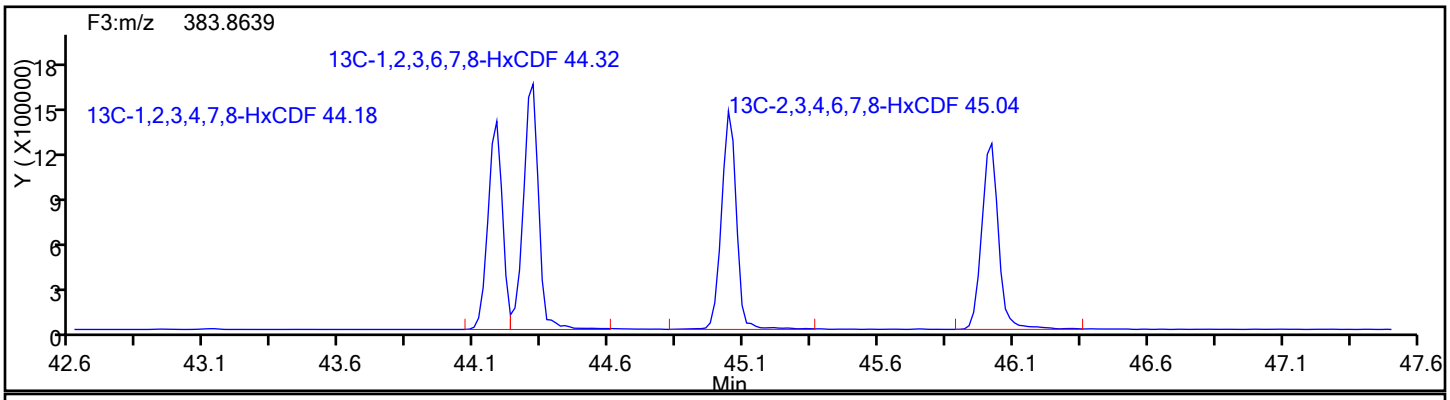

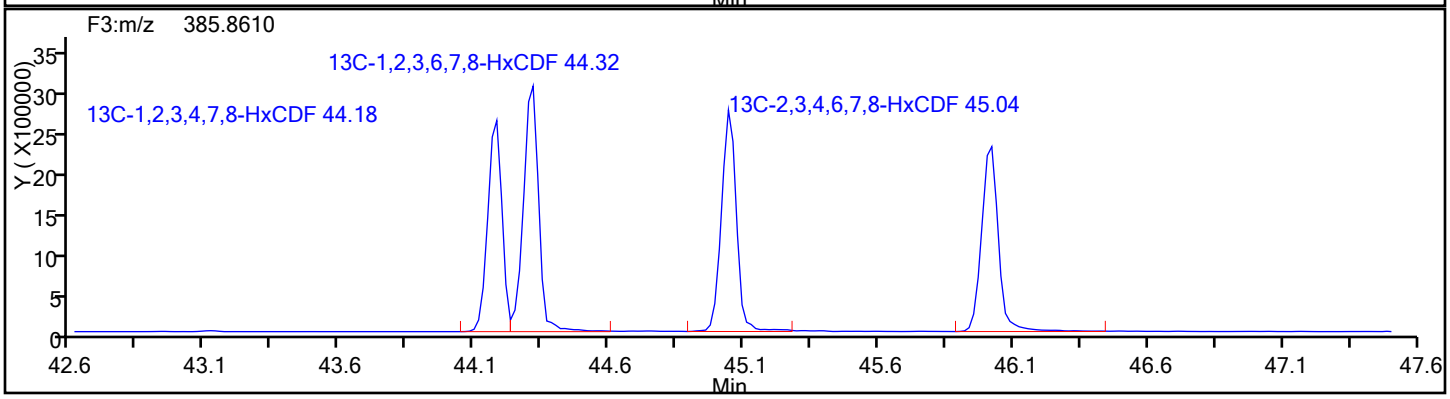

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TestAmerica Knoxville

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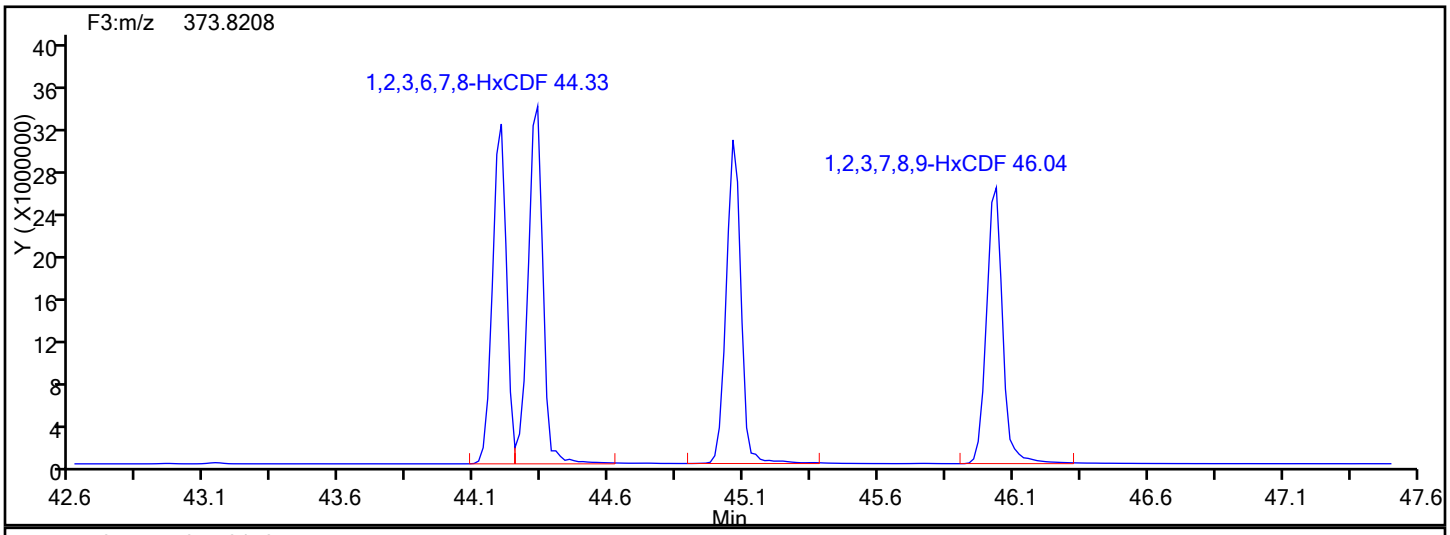
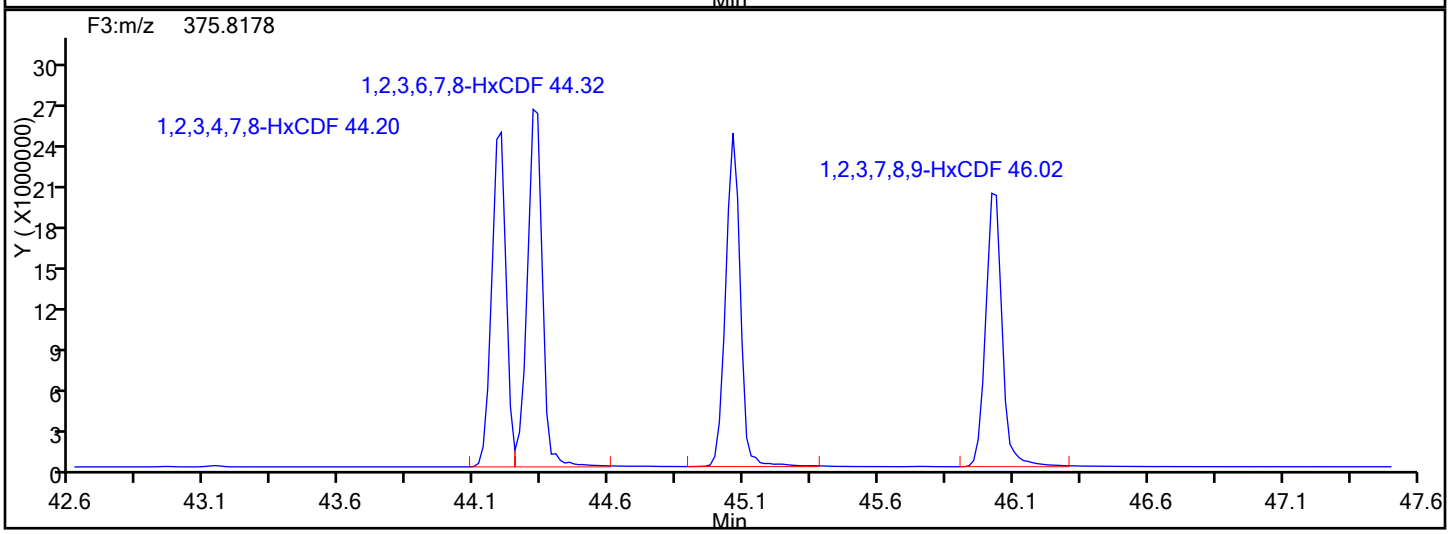
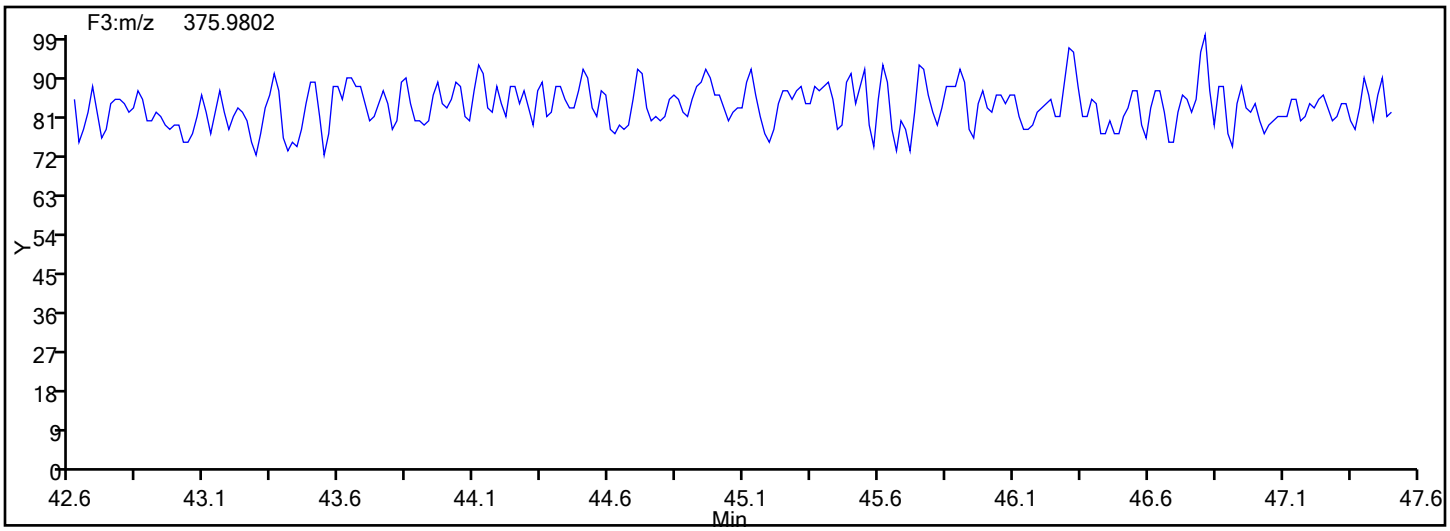




HxCDF Lock Mass



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TestAmerica Knoxville

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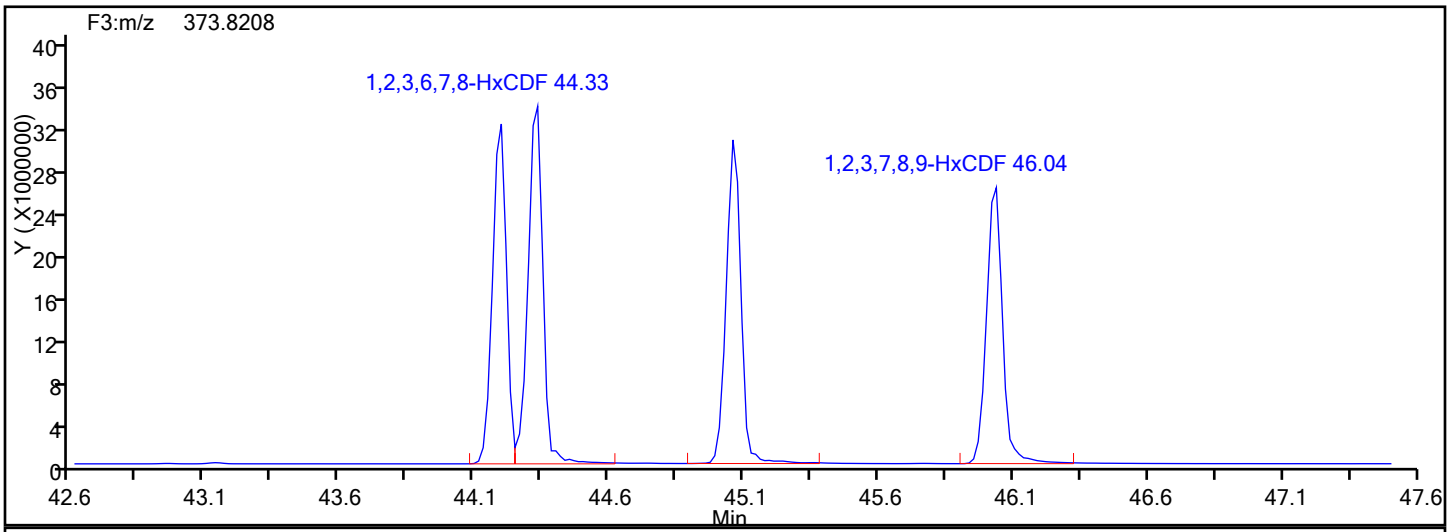

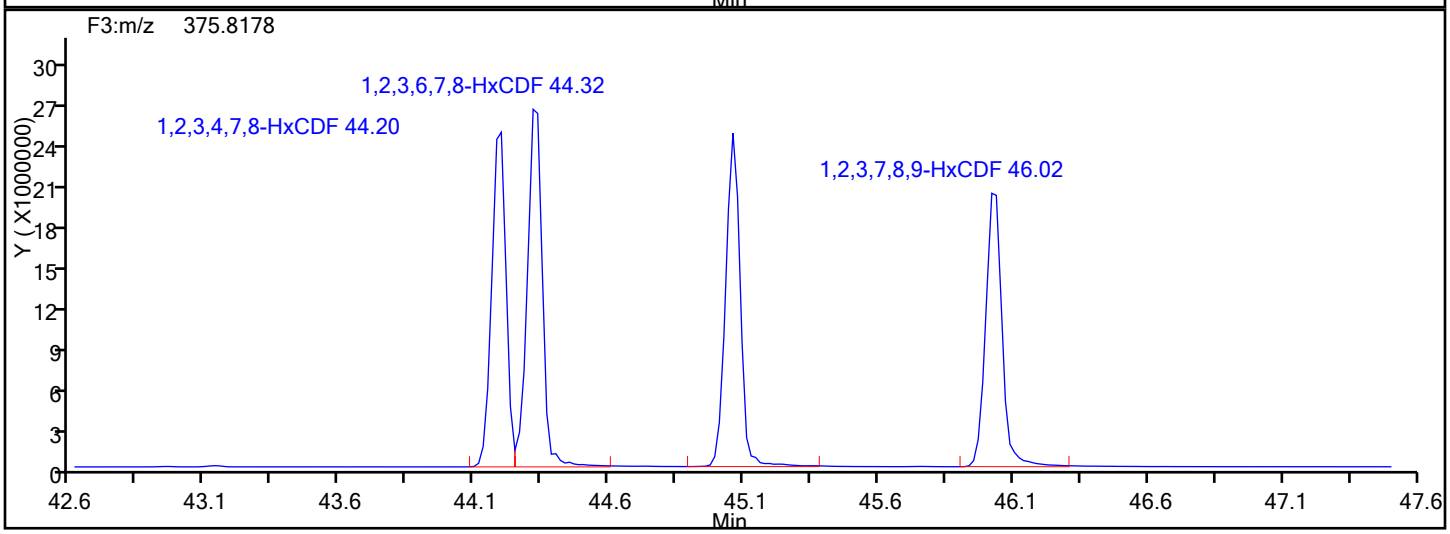

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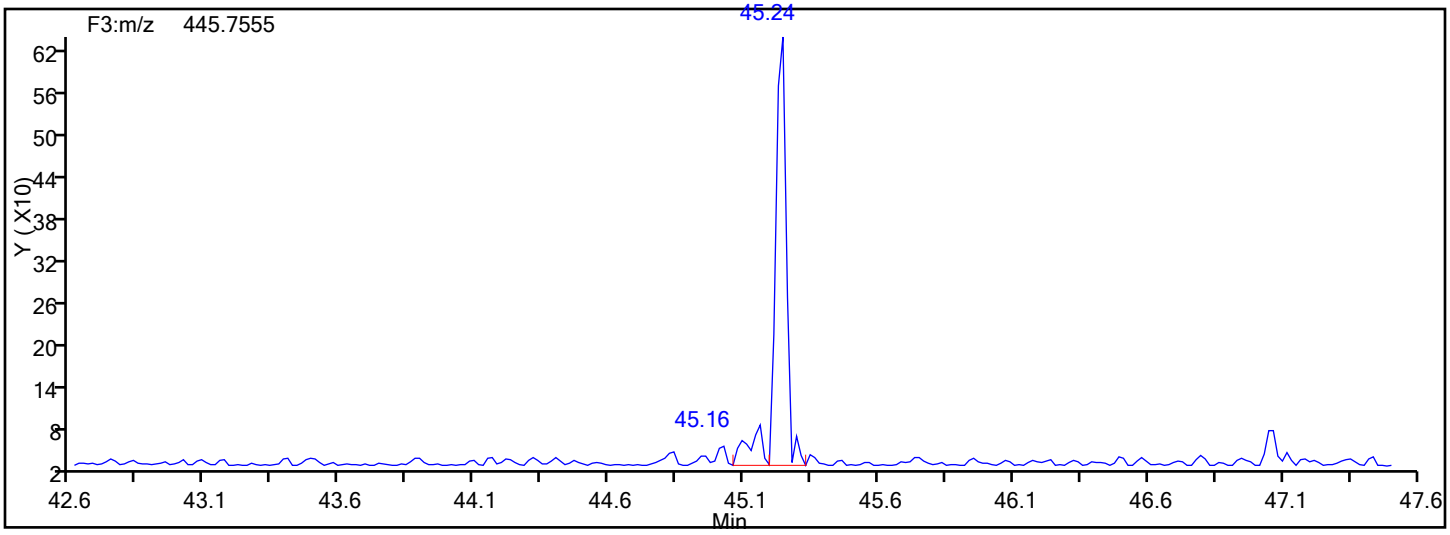

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TestAmerica Knoxville

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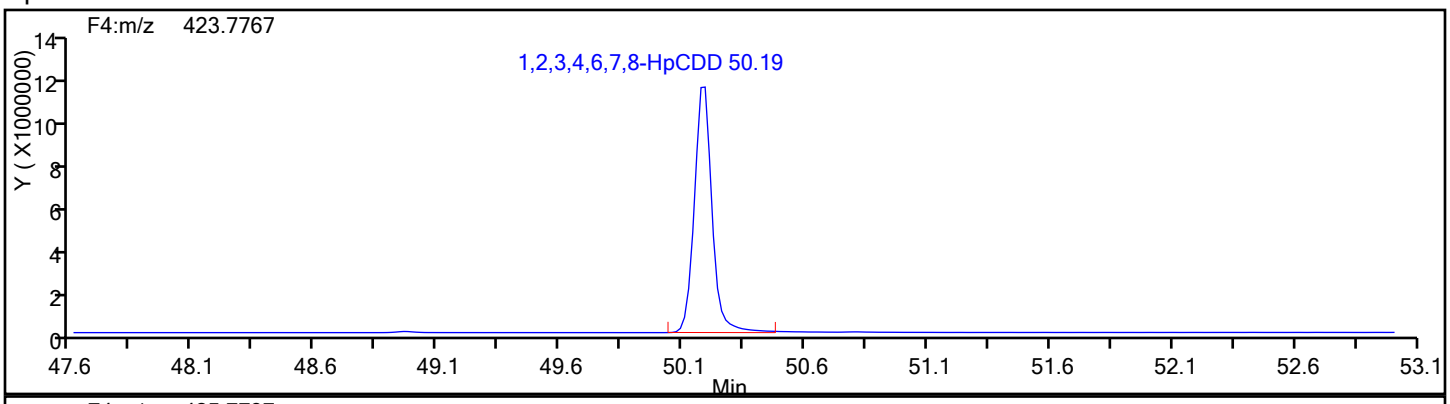
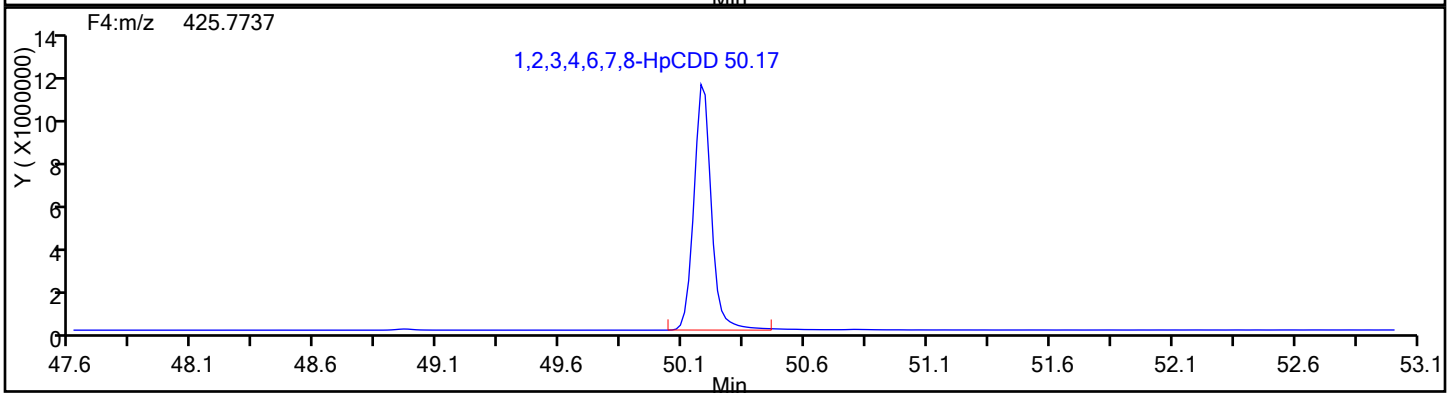
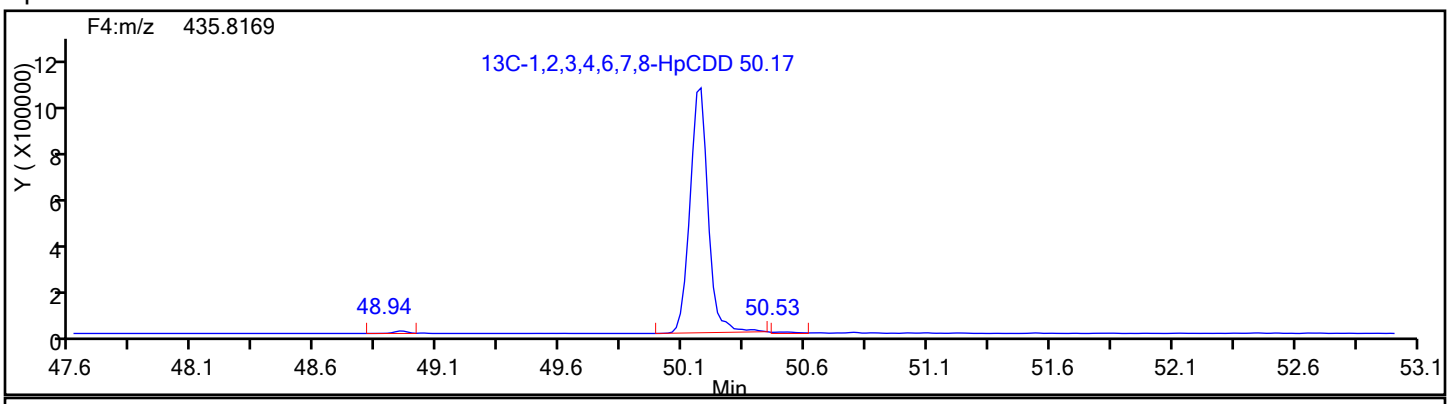
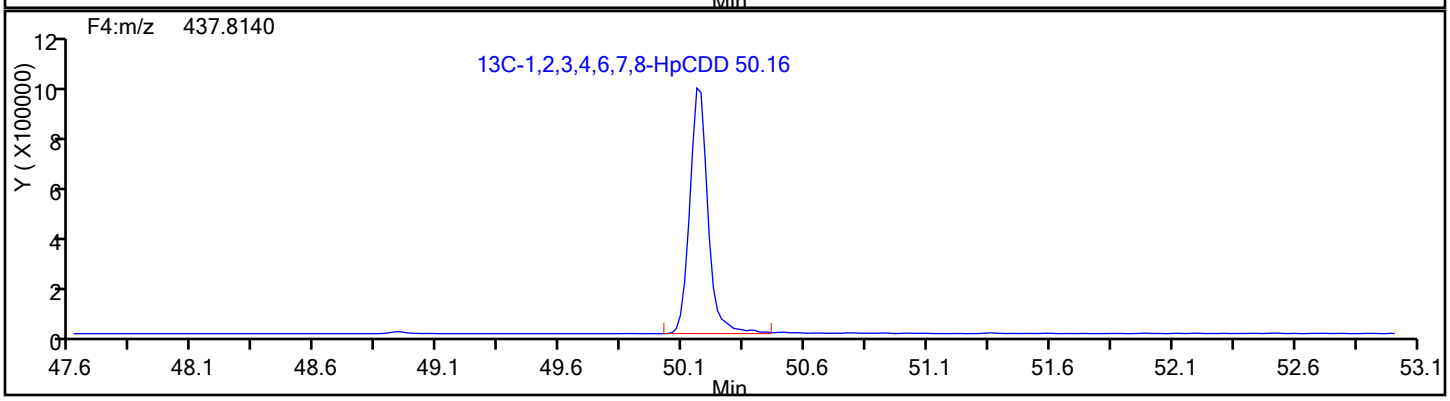
HpCDD





HpCDD Standards





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TestAmerica Knoxville

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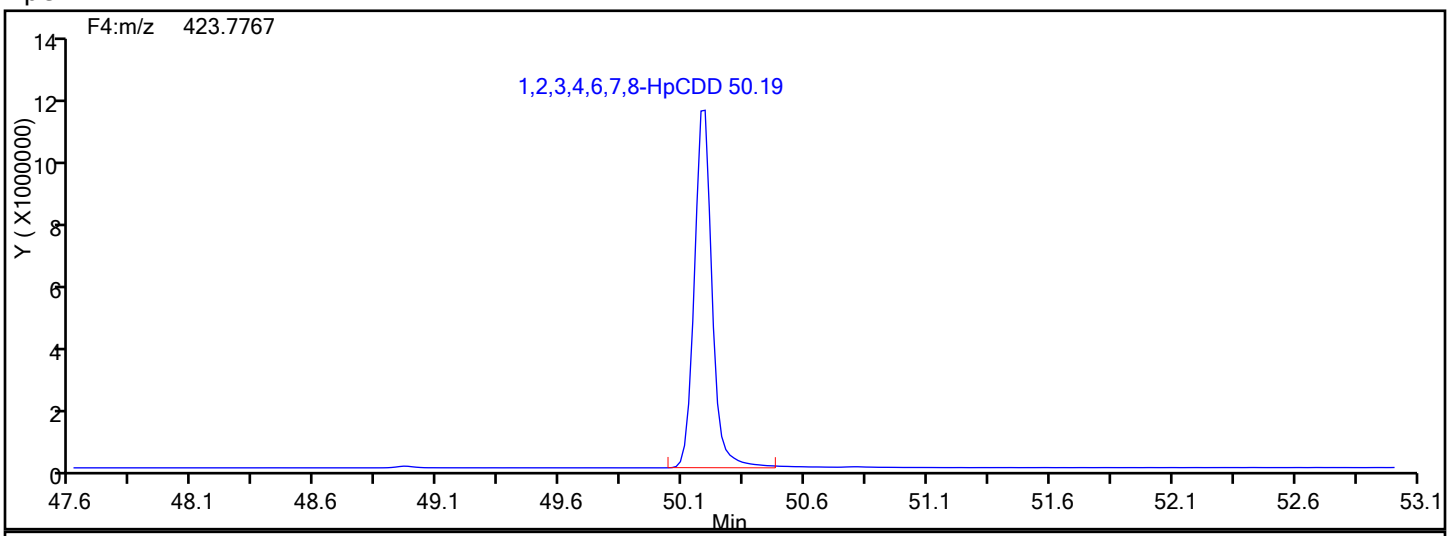
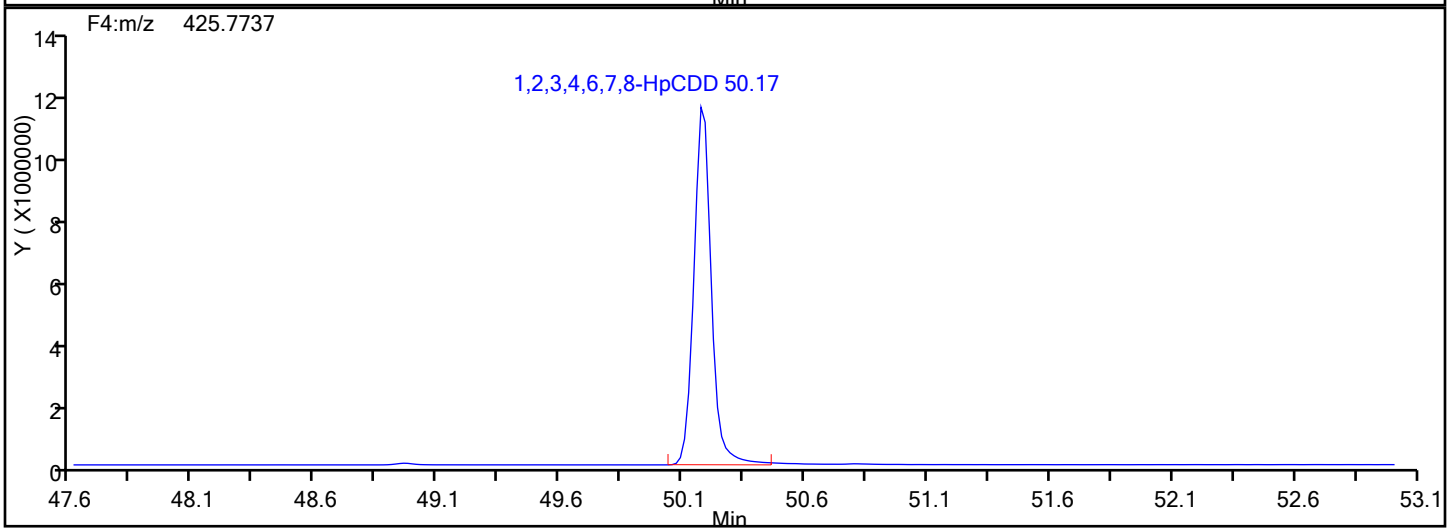
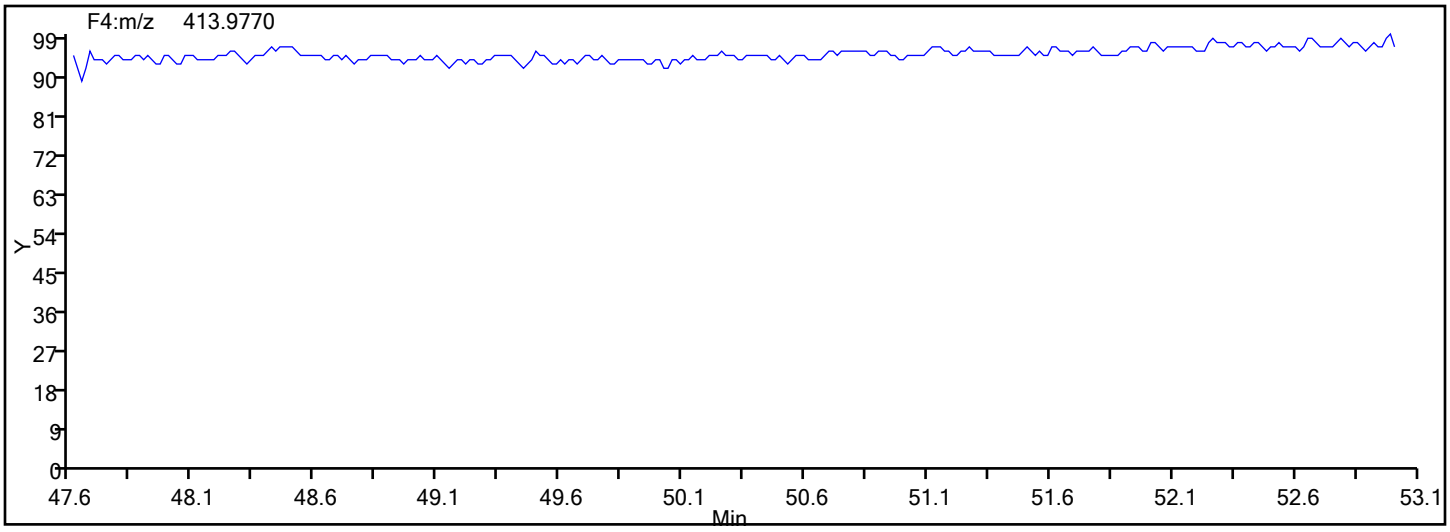




HpCDD Lock Mass



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TestAmerica Knoxville

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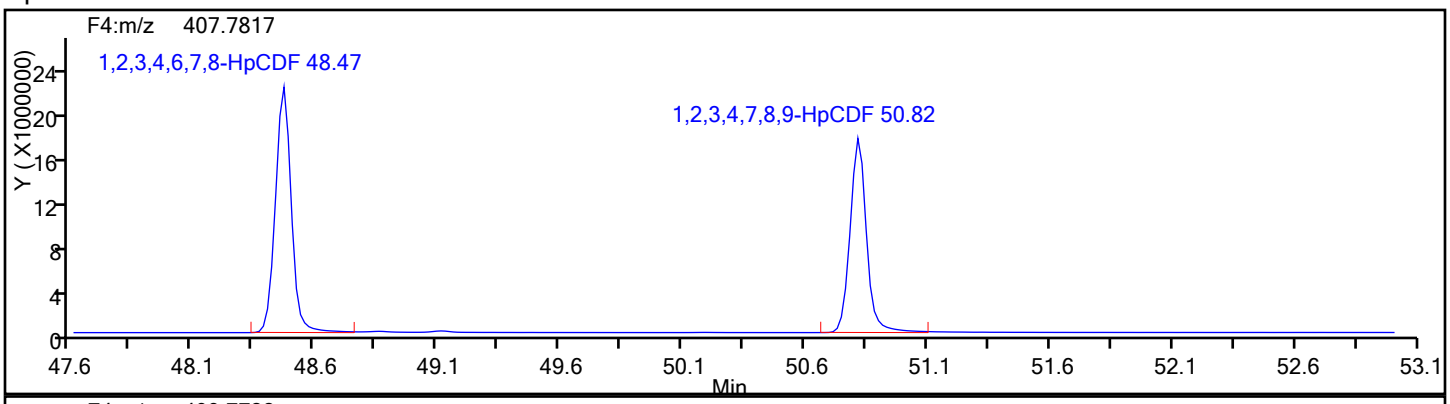

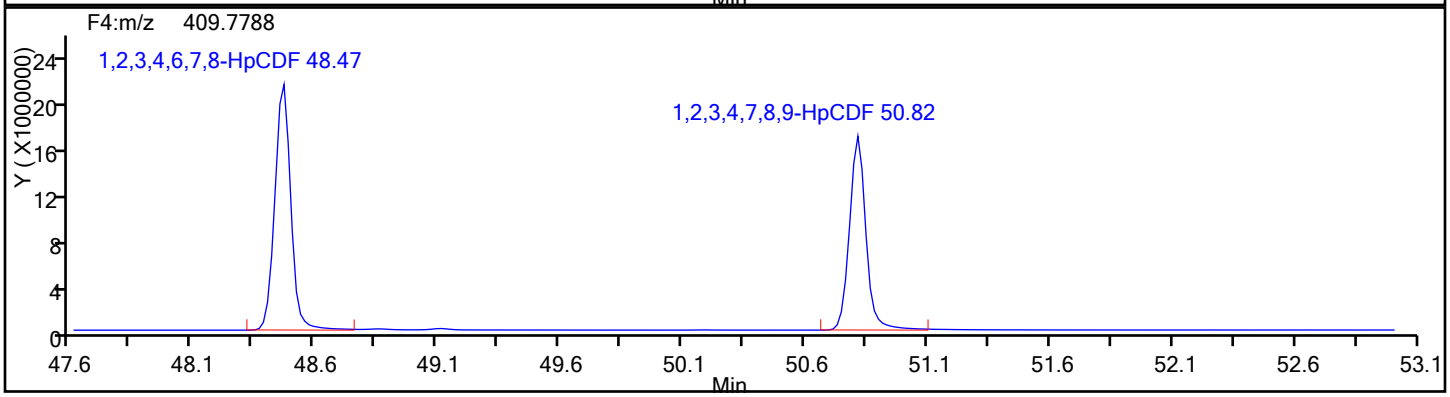

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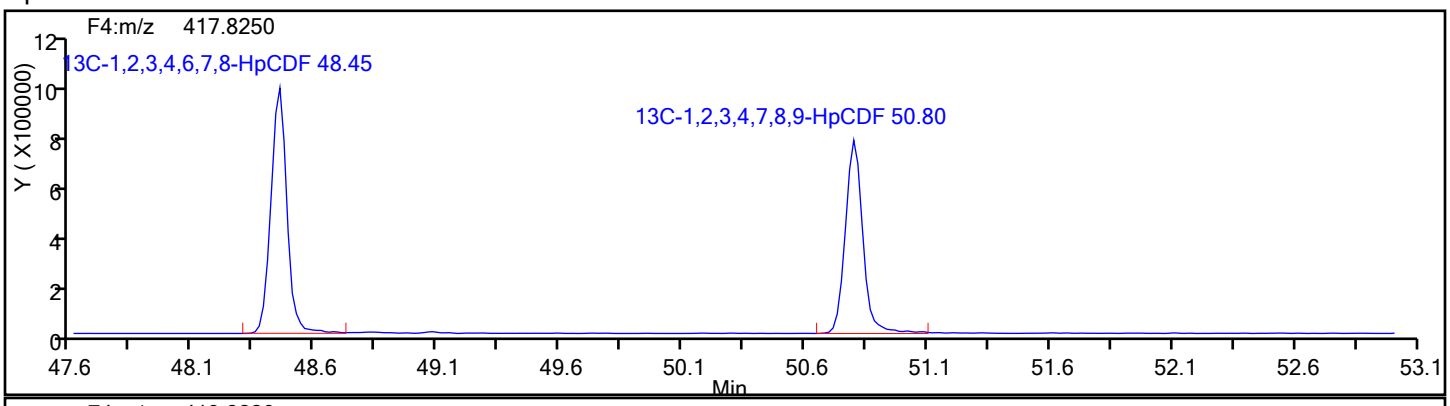

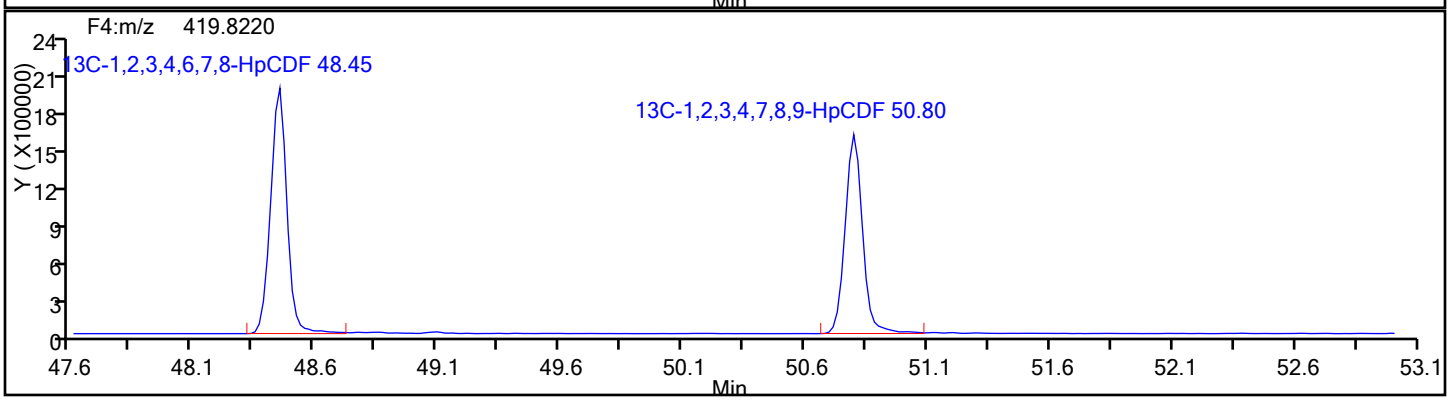

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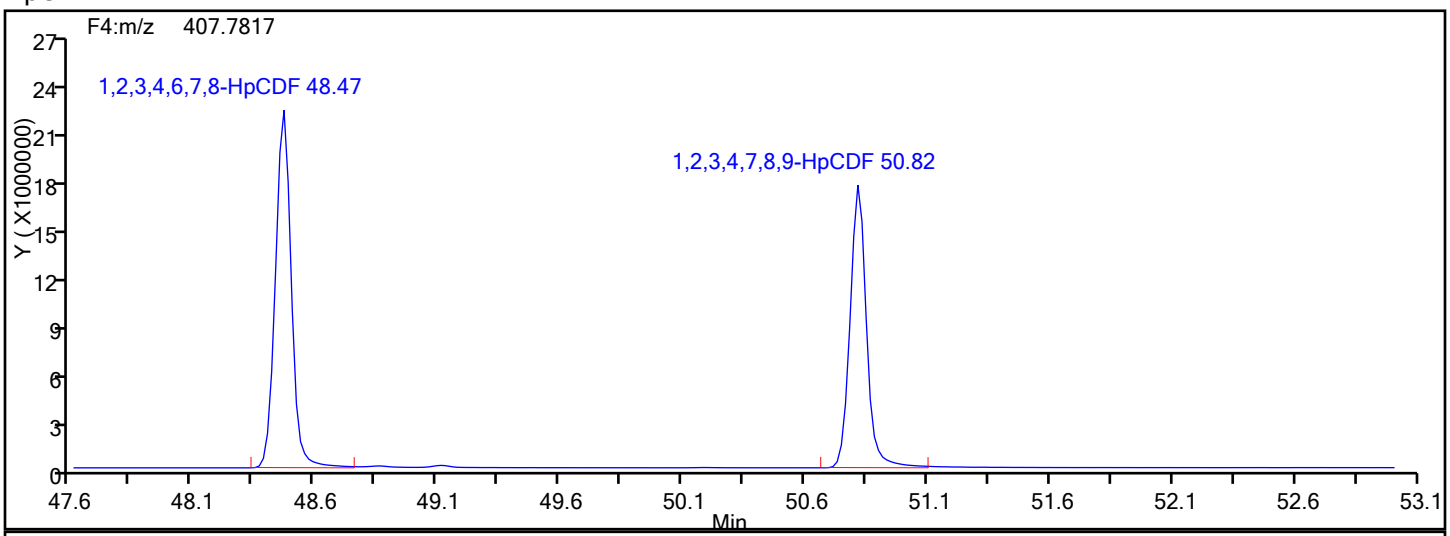
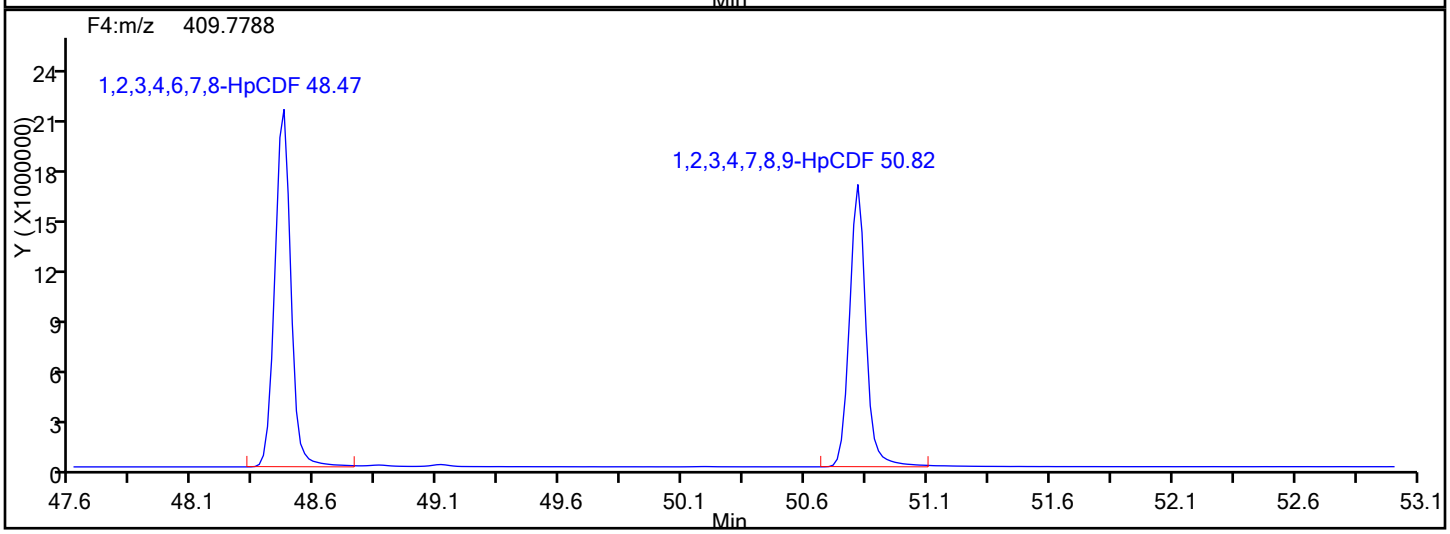
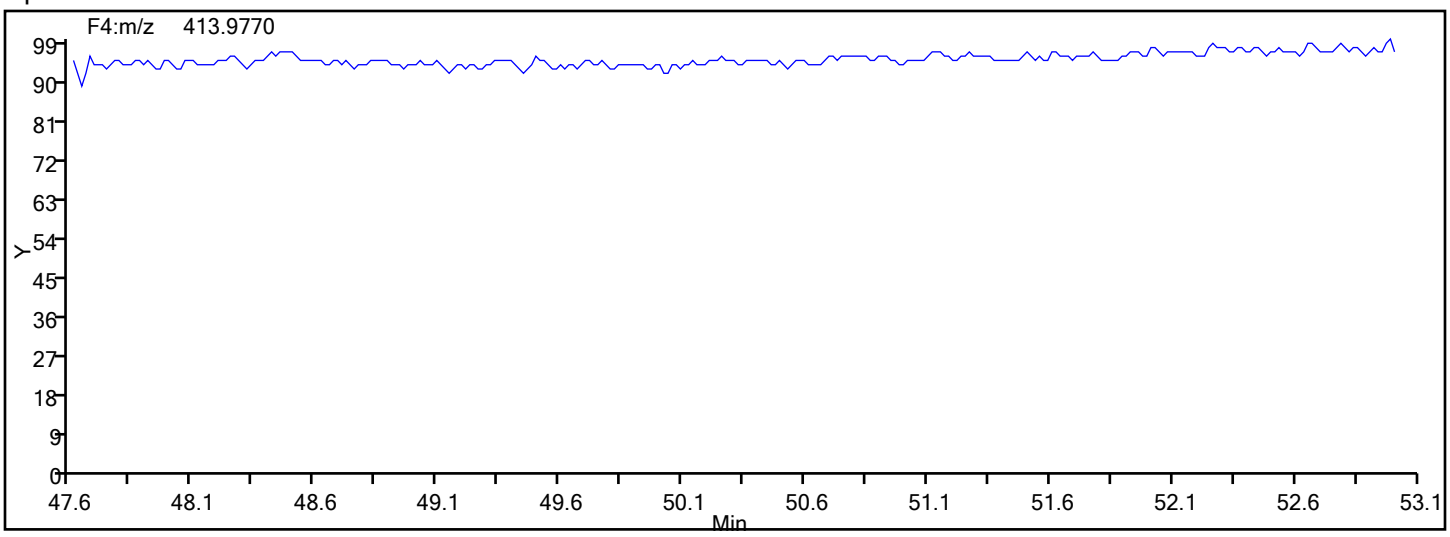




HpCDF Lock Mass



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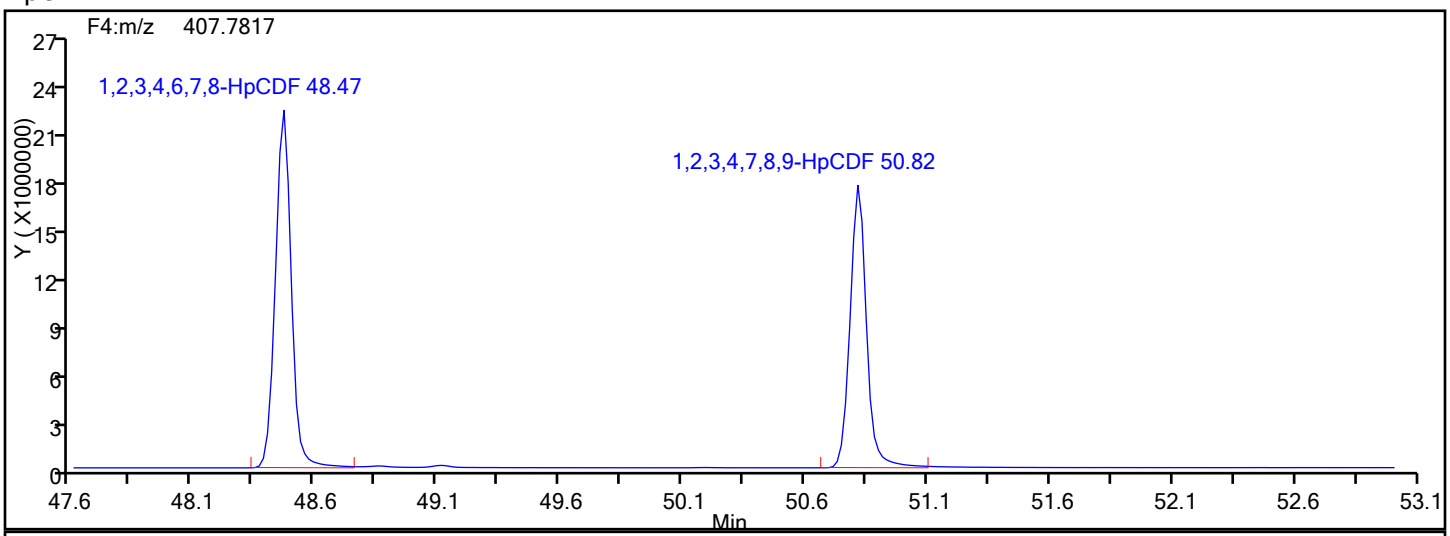

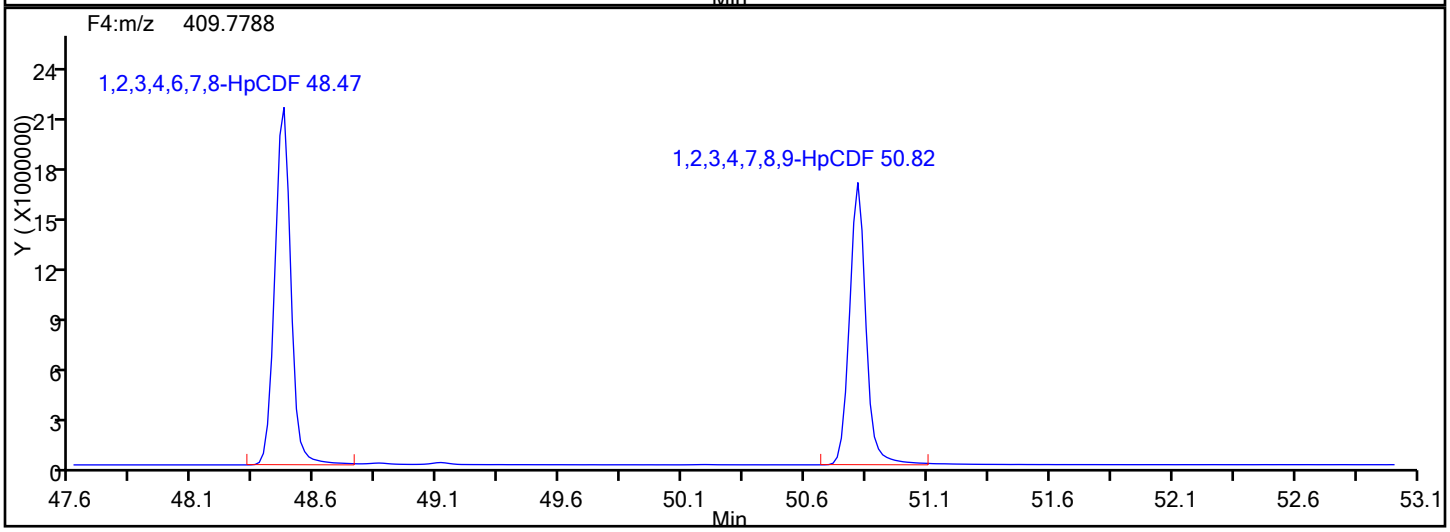

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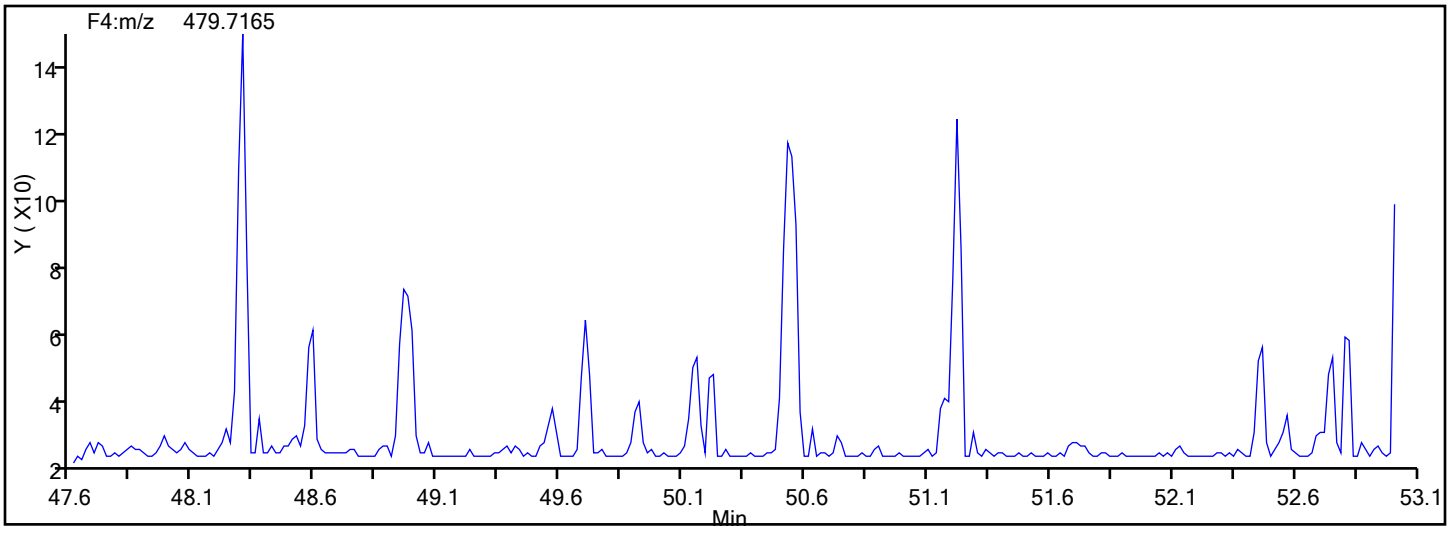

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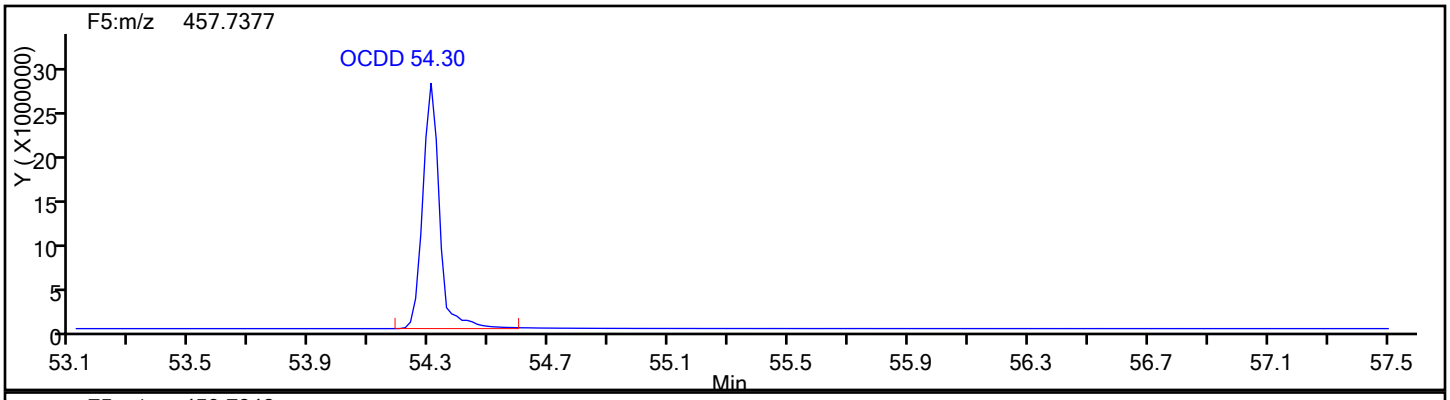
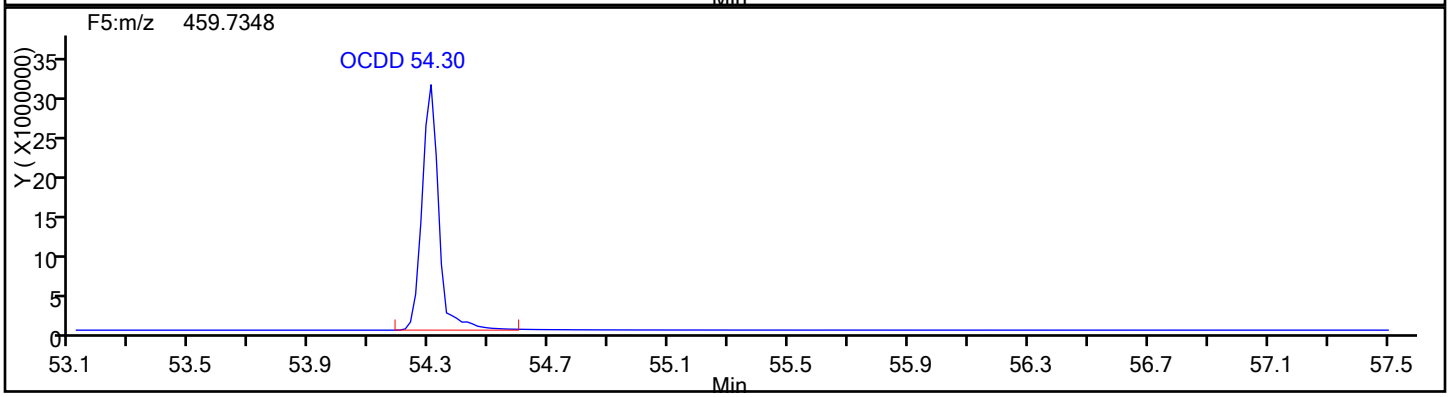
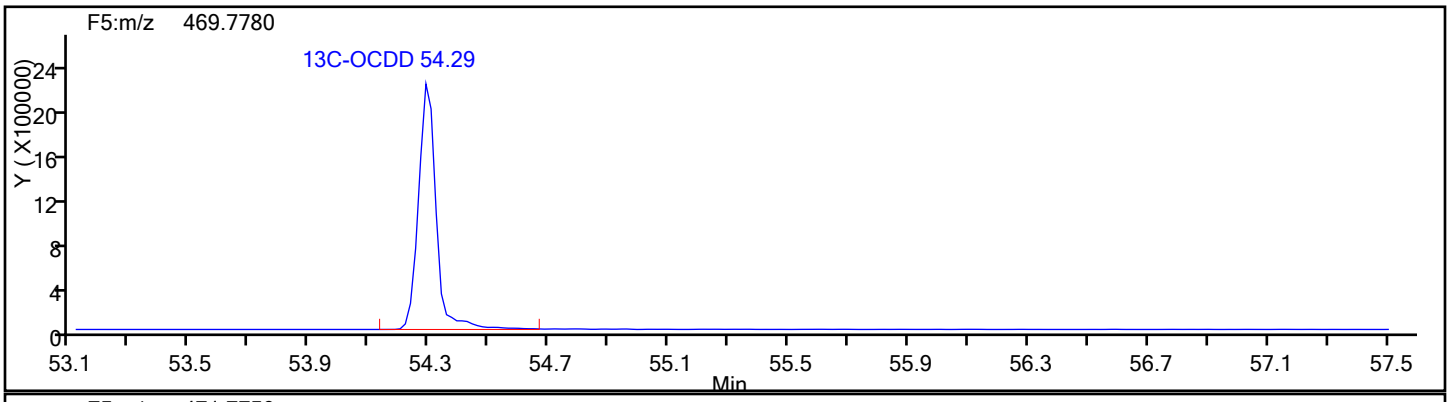
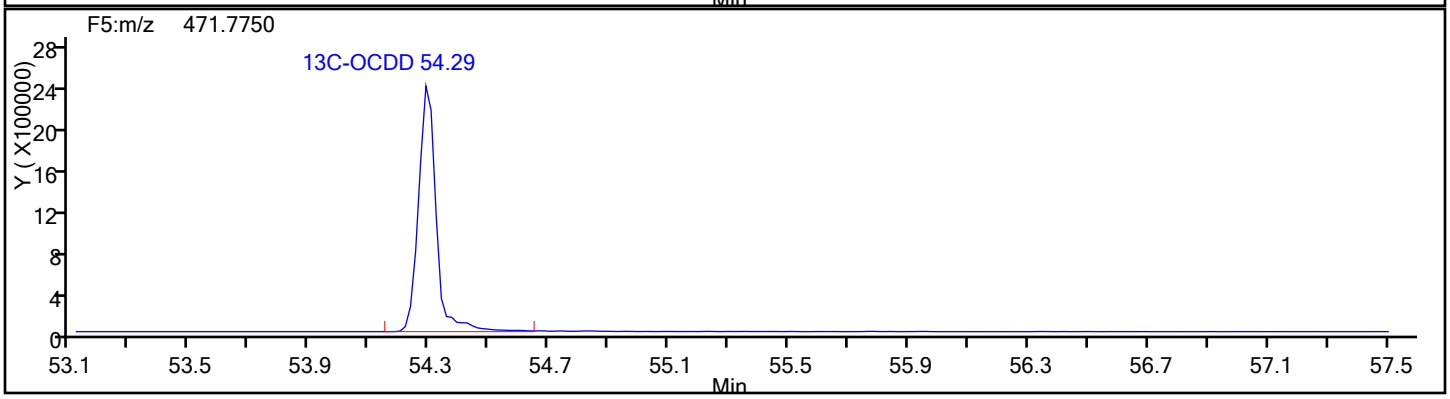




OCDD Standards





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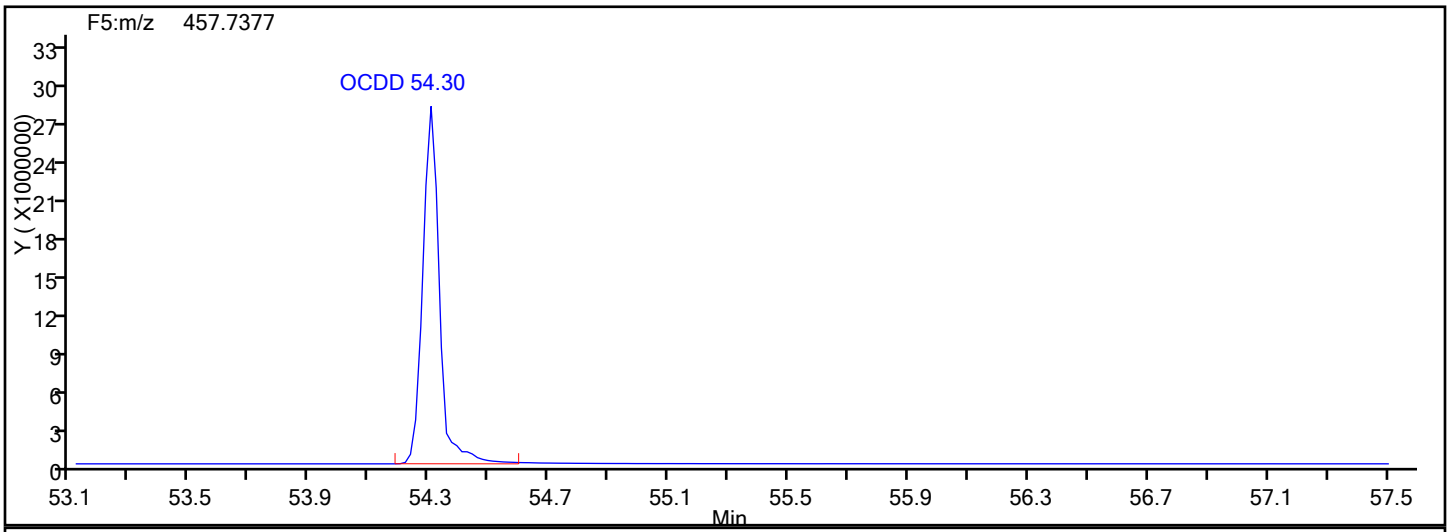

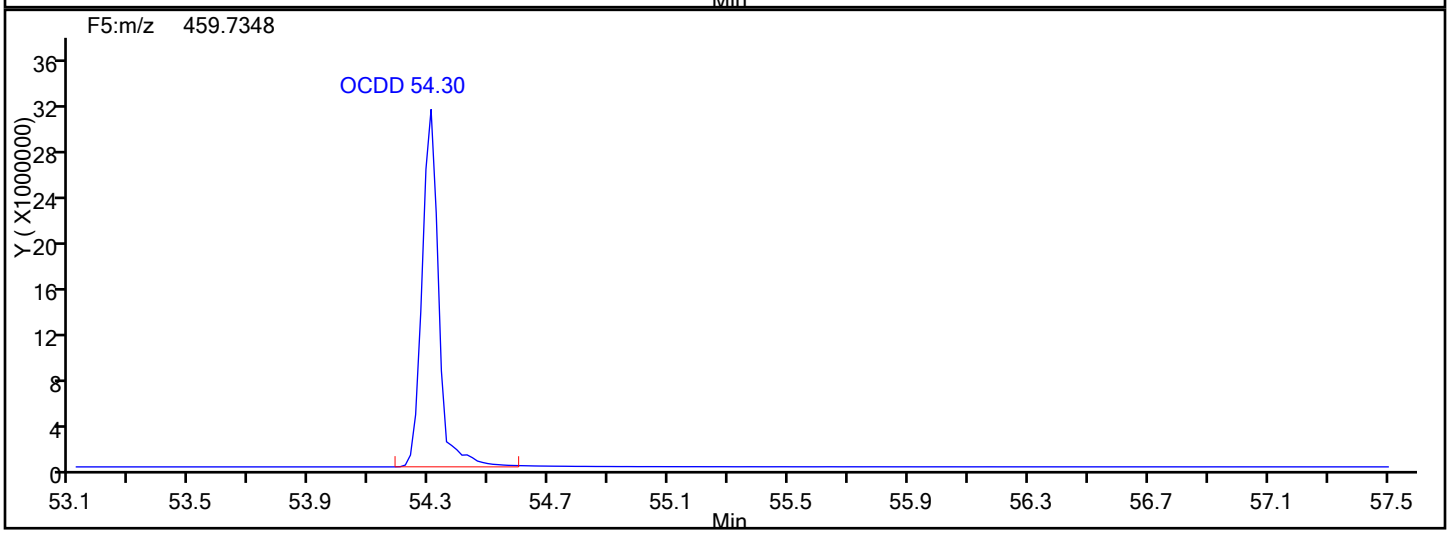

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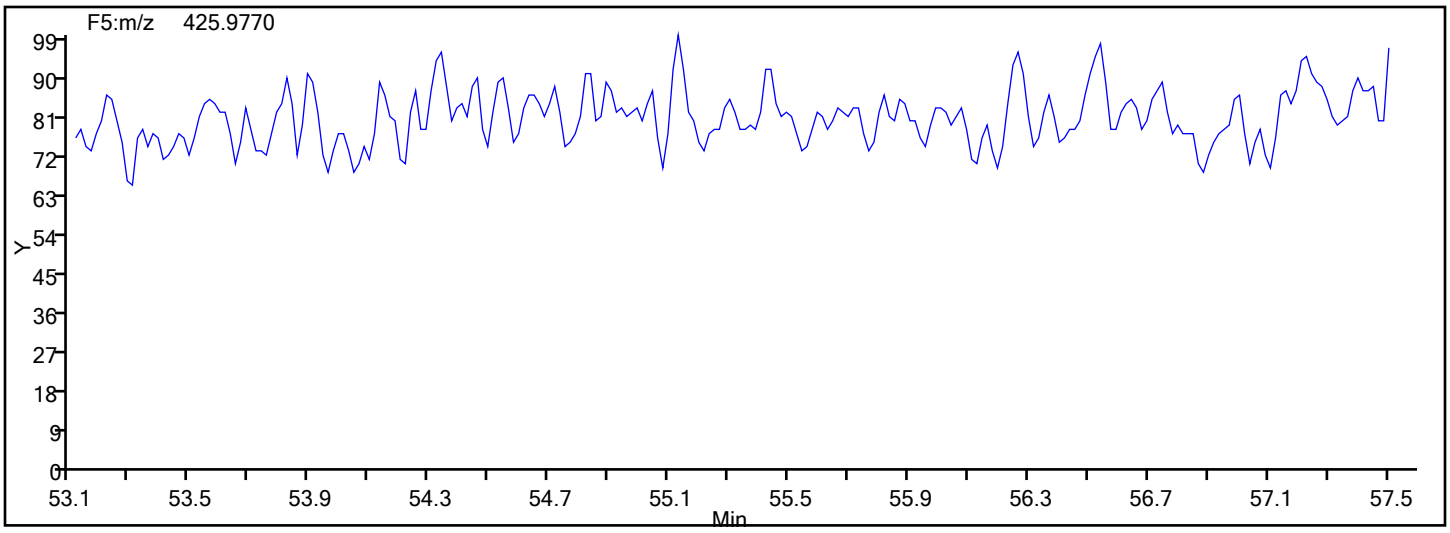

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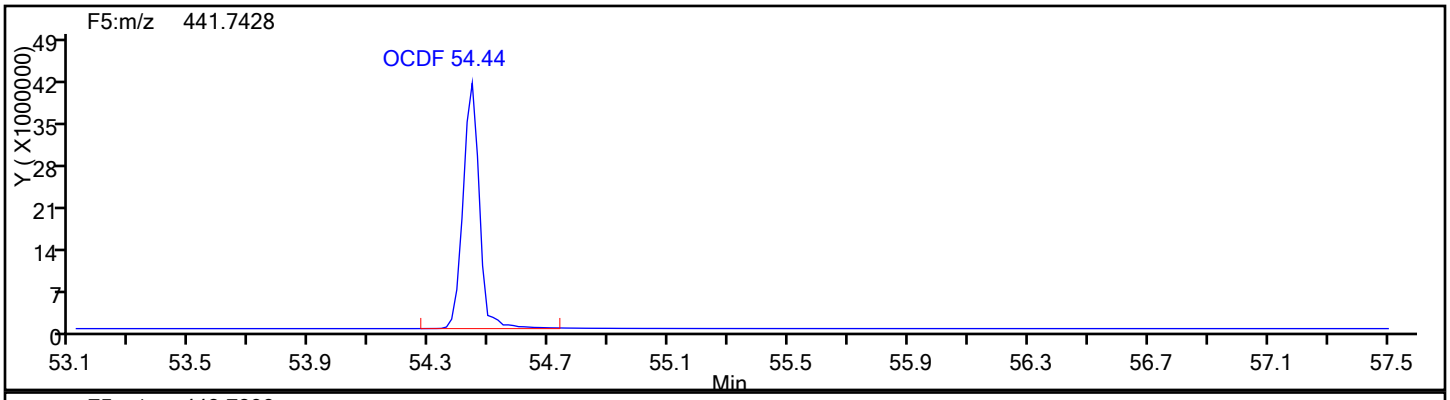
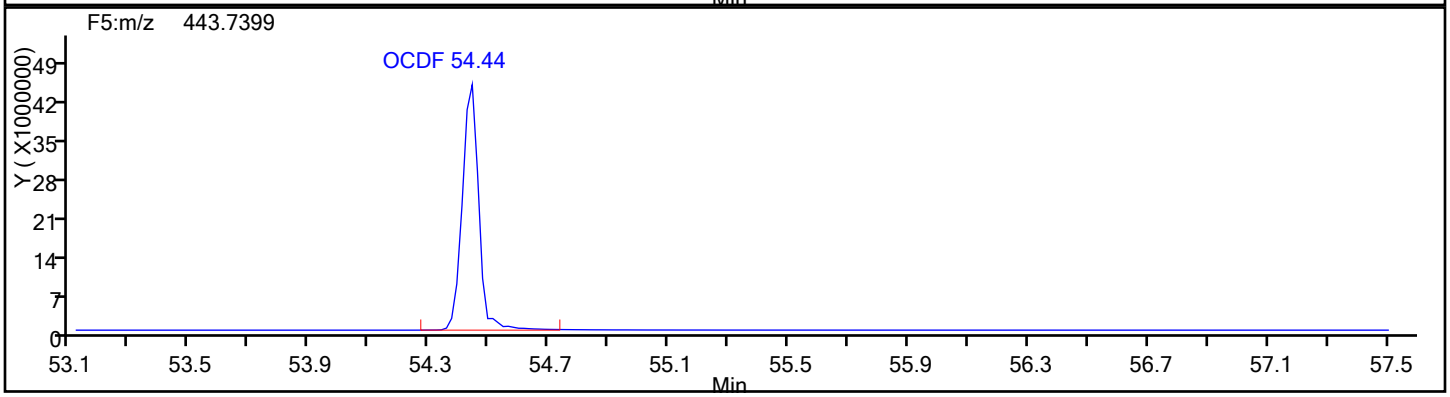
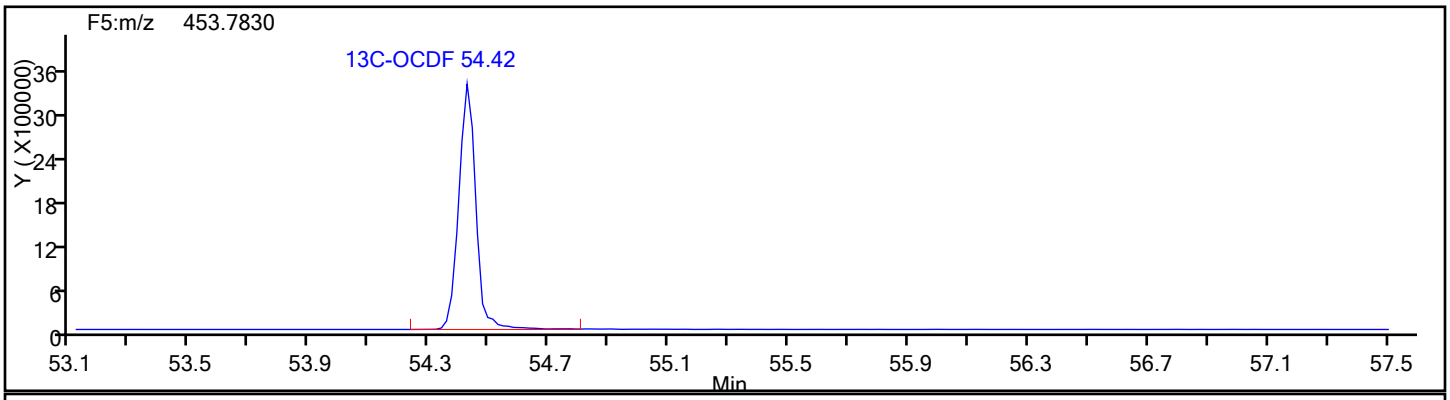
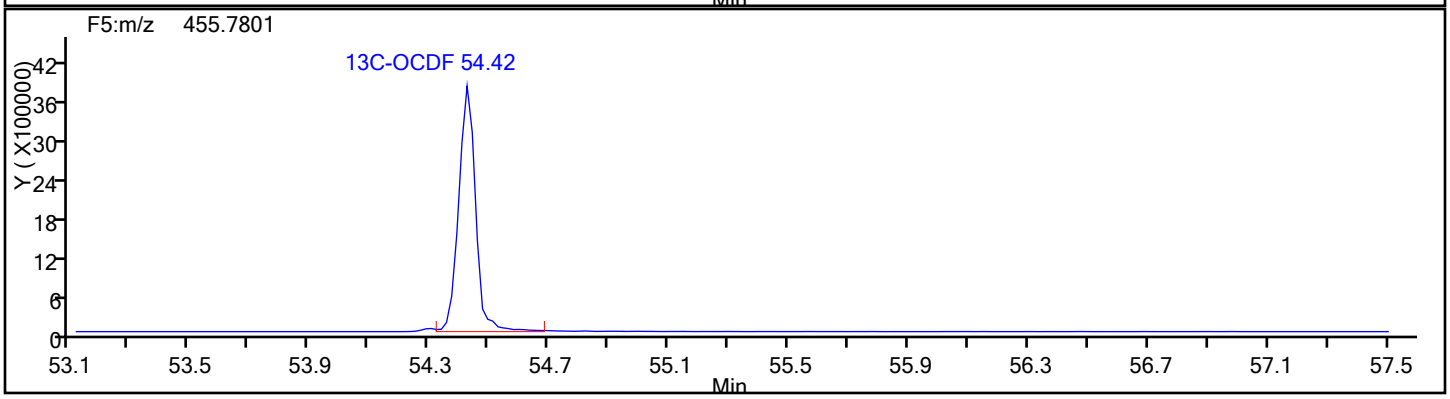




OCDF Standards





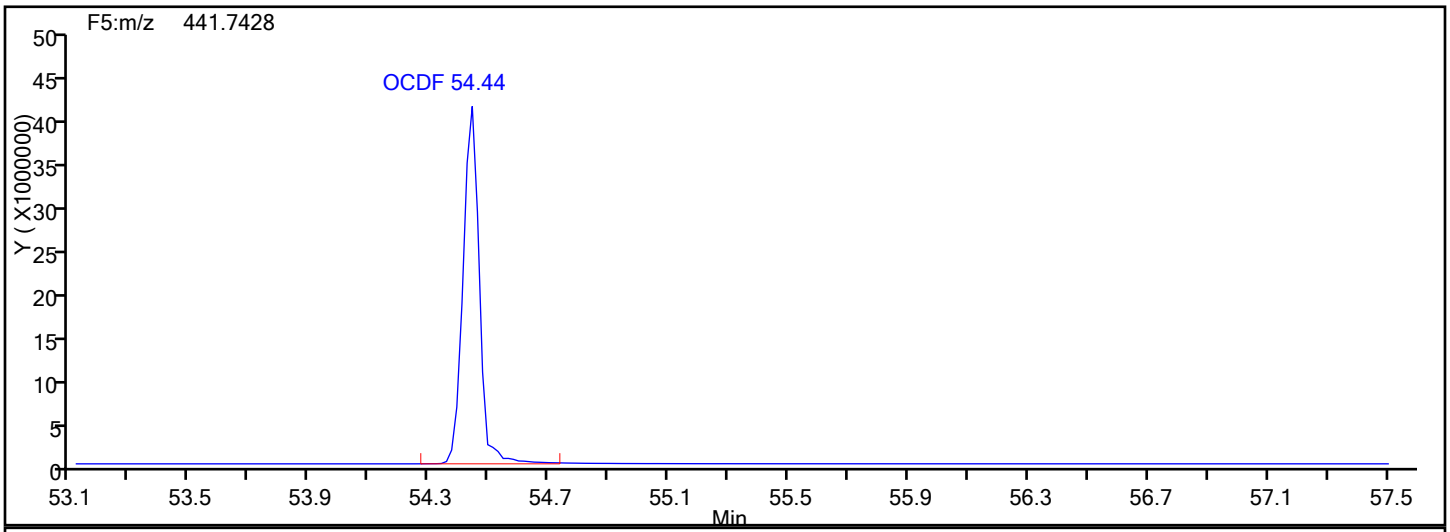
Report Date: 12-Jan-2017 08:09:44 Chrom Revision: 2.2 10-Jan-2017 11:26:10

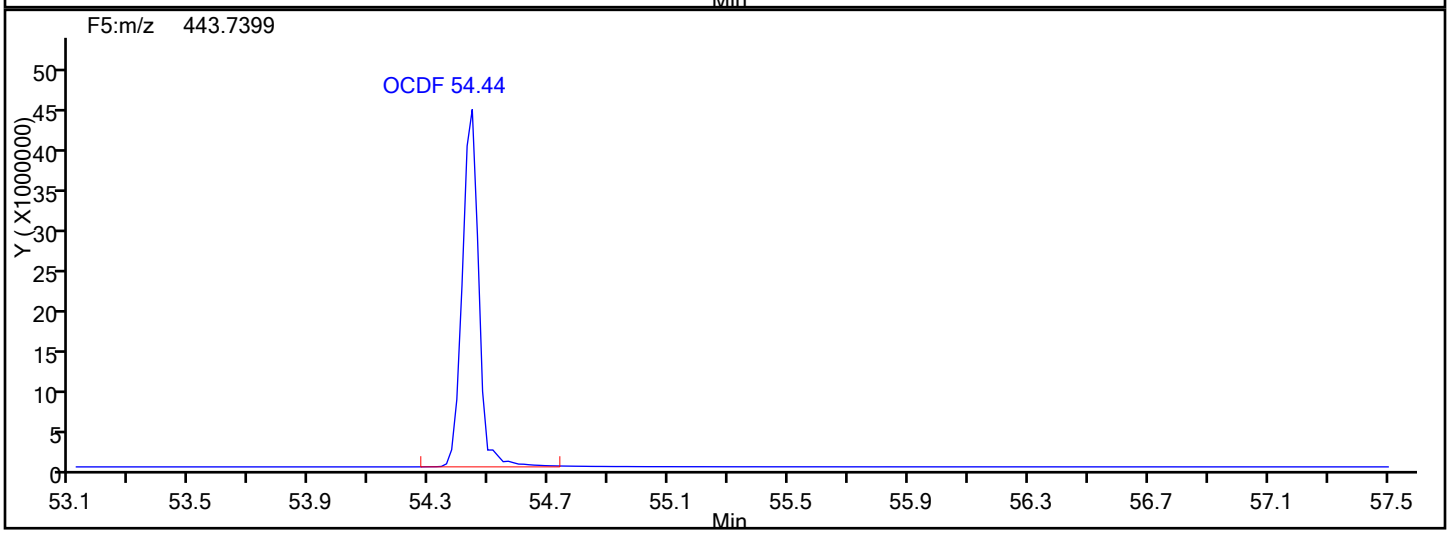
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

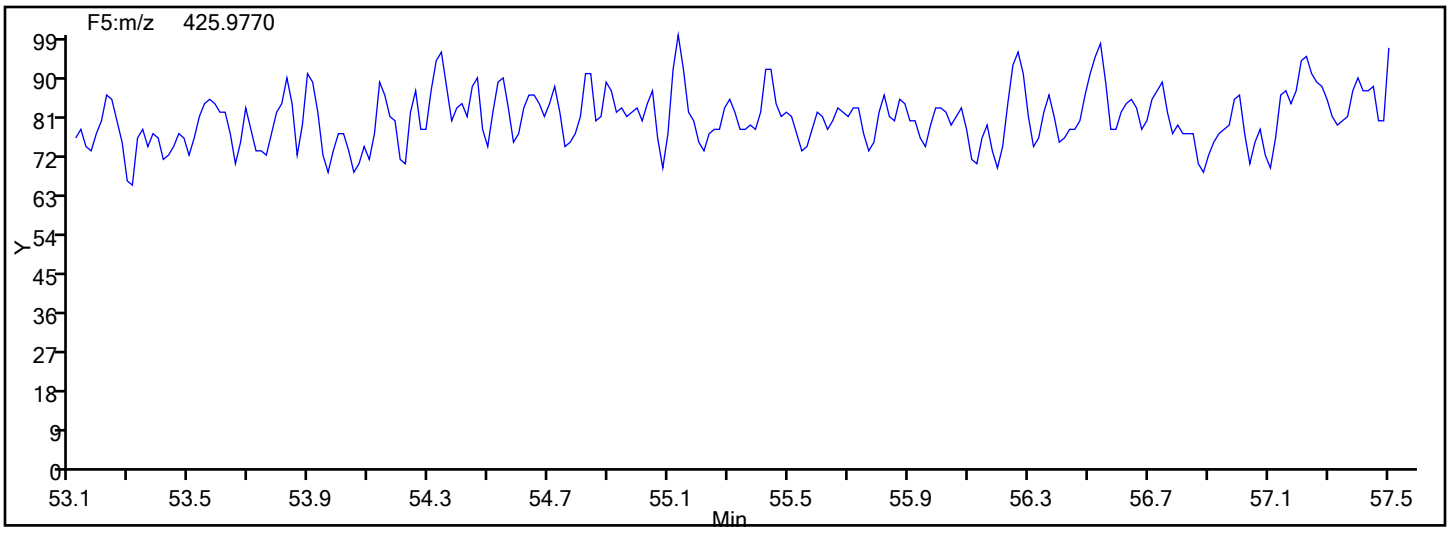
Injection Date:	16-May-2014 18:31:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	6
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



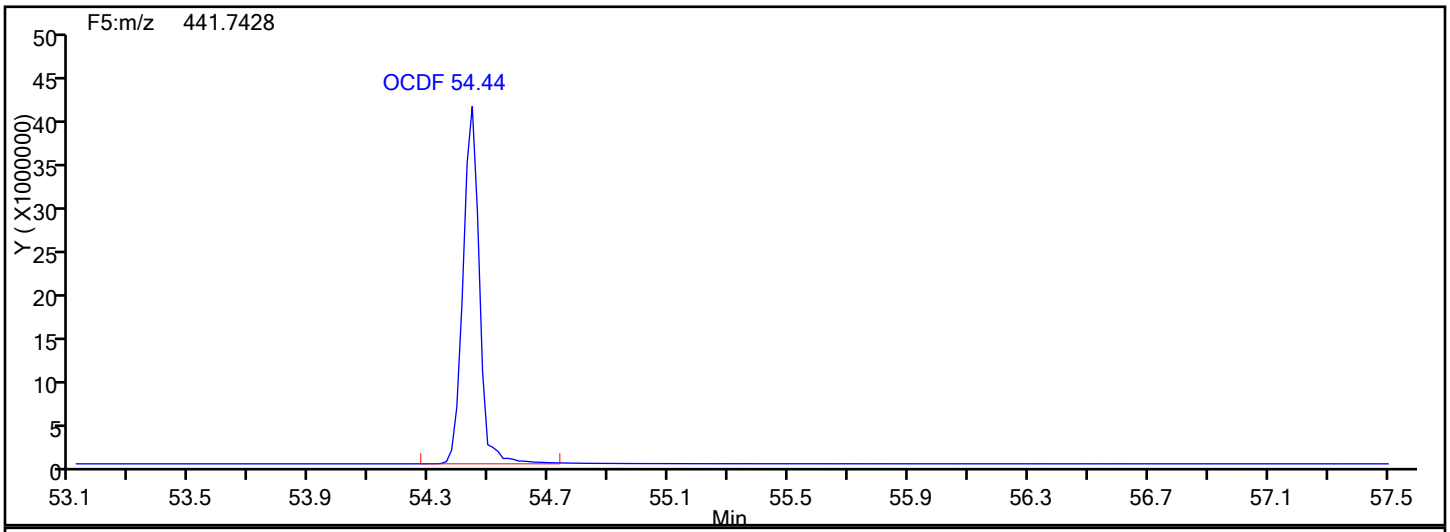
Report Date: 12-Jan-2017 08:09:44 Chrom Revision: 2.2 10-Jan-2017 11:26:10

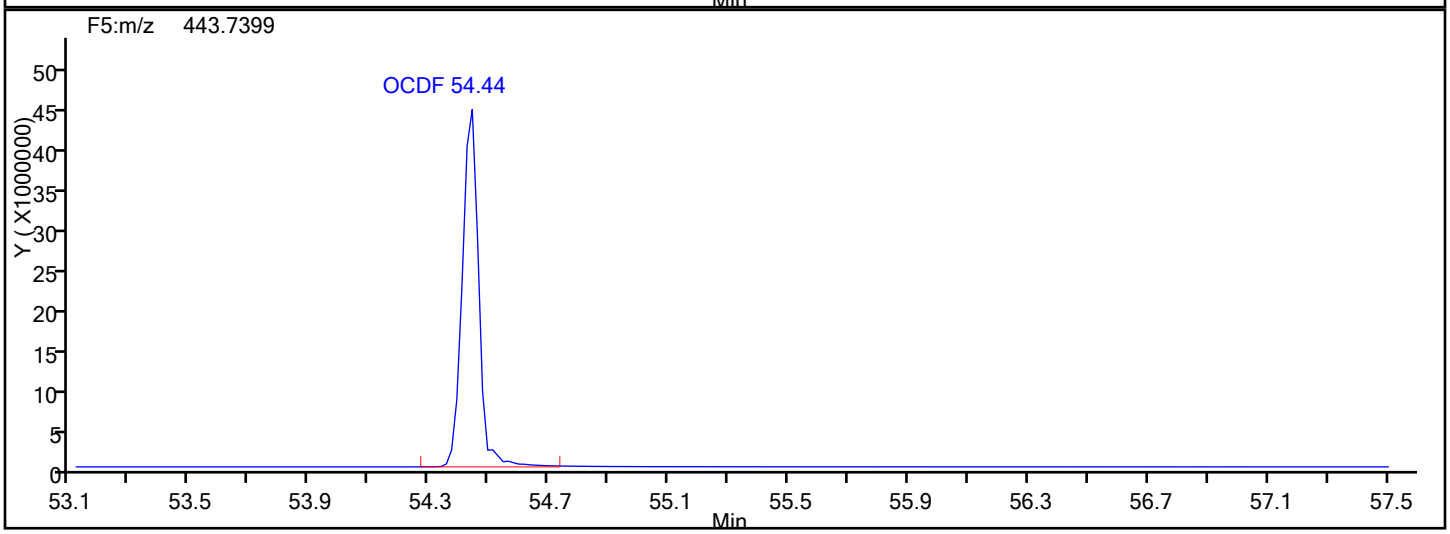
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

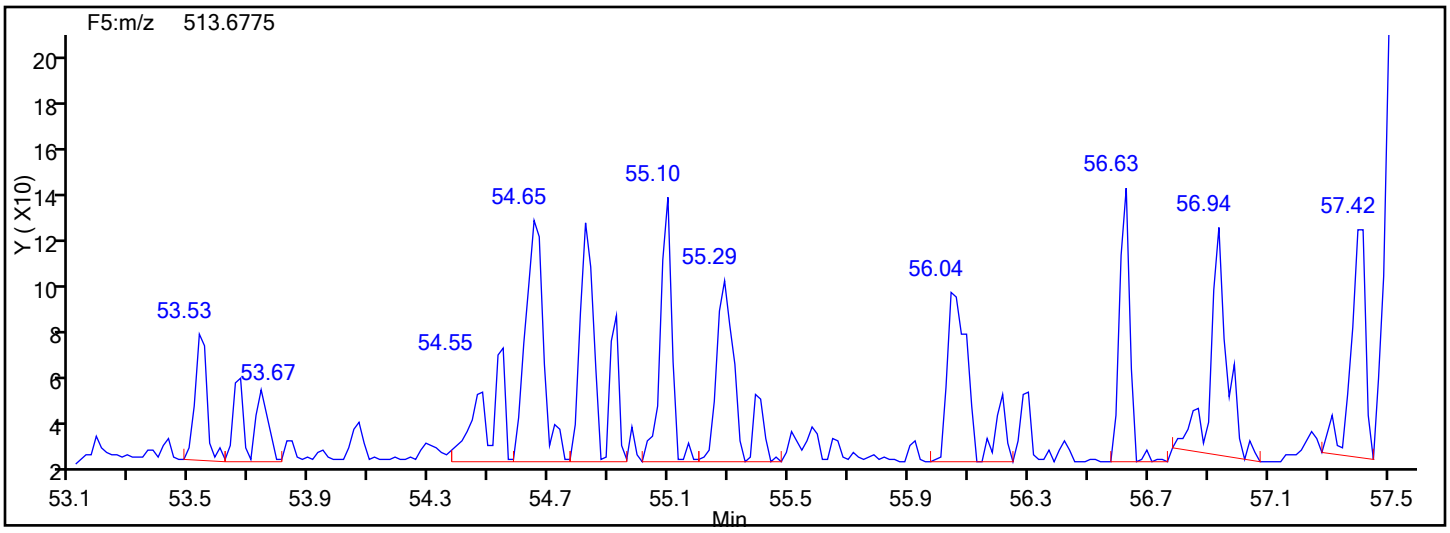
Injection Date:	16-May-2014 18:31:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	6
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): WDM 140-7768/1 Instrument ID (1): D2A

GC Column (1): RTX-5 ID: 0.32(mm) Date Analyzed (1): 05/16/2014 10:23

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	31.85	17

Resolution Report

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d
Injection Date: 16-May-2014 10:23:00 Instrument ID: D2A
Lims ID: WDM
Client ID:
Operator ID: DavidsonM ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

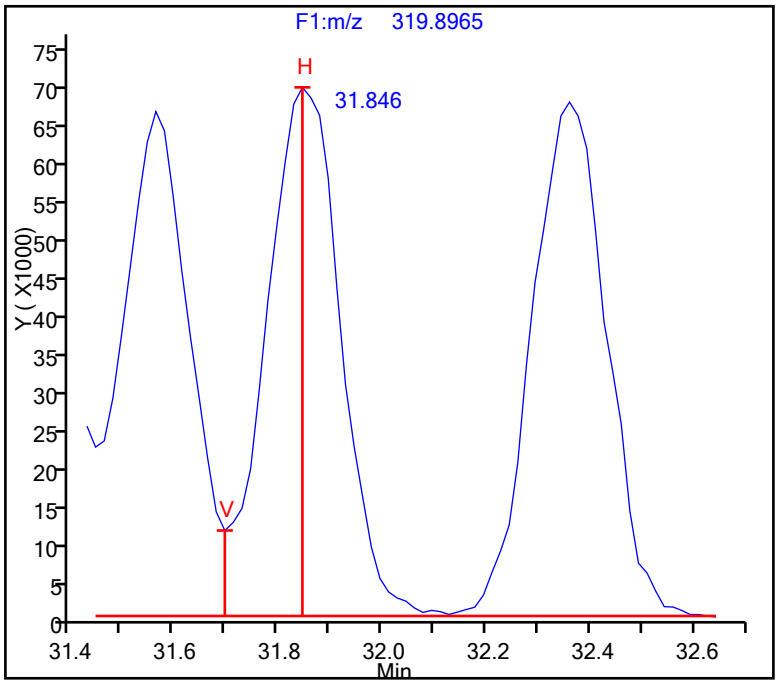
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 11408
H (Peak Height) = 69250

%R = 17 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): CPS 140-29777/1 Instrument ID (1): D12C

GC Column (1): DB 225 ID: 0.25(mm) Date Analyzed (1): 05/03/2019 01:30

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	24.37	6

Report Date: 03-May-2019 13:46:04 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d
Injection Date: 03-May-2019 01:30:00 Instrument ID: D12C
Lims ID: CPS
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column: DB225 (0.32 mm)
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL

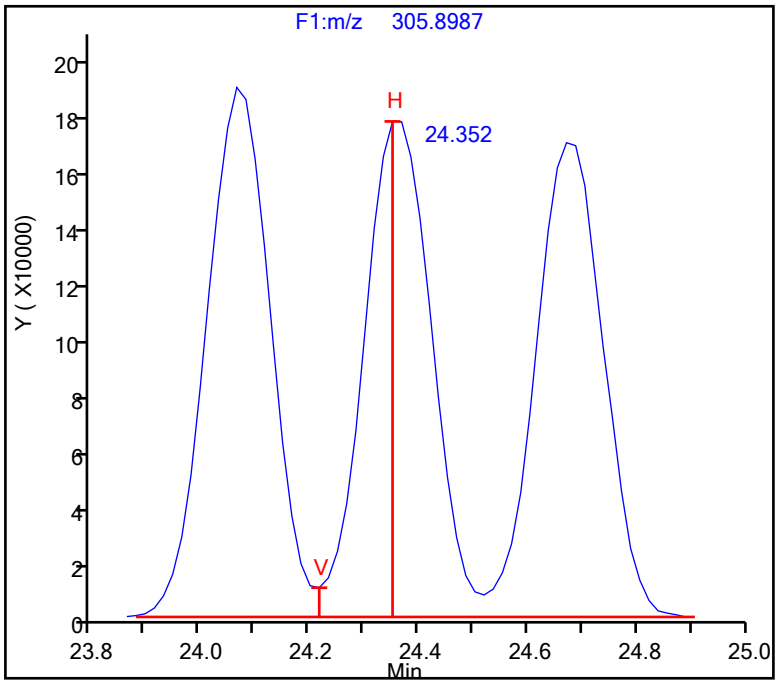
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 10162
H (Peak Height) = 172526

%R = 6 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): WDMCCV 140-36126/1 Instrument ID (1): D2A

GC Column (1): RTX-5 ID: 0.32(mm) Date Analyzed (1): 12/17/2019 01:01

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	30.85	17

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Injection Date: 17-Dec-2019 01:01:00 Instrument ID: D2A
Lims ID: WDMCCV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column:
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

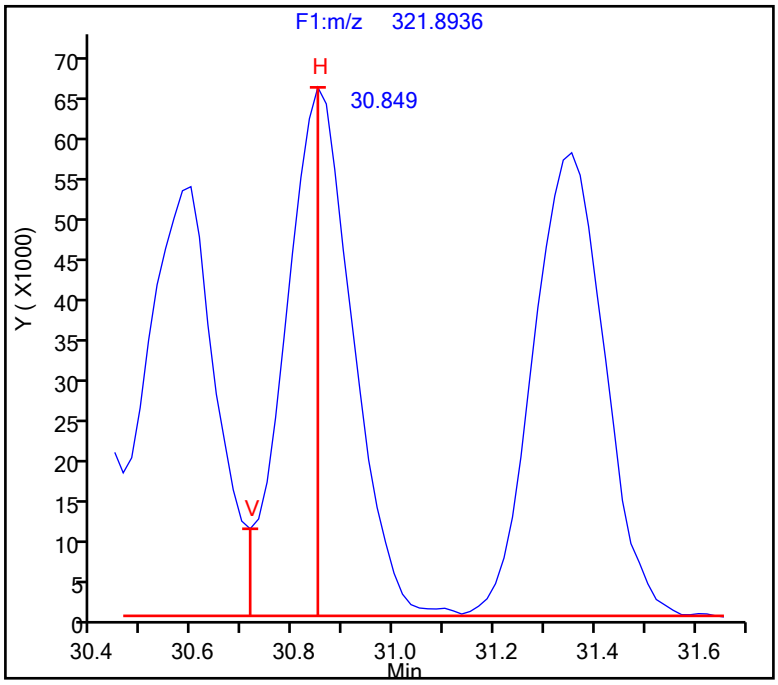
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 11031
H (Peak Height) = 65612

%R = 17 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): WDMCCV 140-36146/1 Instrument ID (1): D2A

GC Column (1): RTX-5 ID: 0.32(mm) Date Analyzed (1): 12/17/2019 12:34

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	30.82	18

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Injection Date: 17-Dec-2019 12:34:00 Instrument ID: D2A
Lims ID: WDMCCV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column:
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

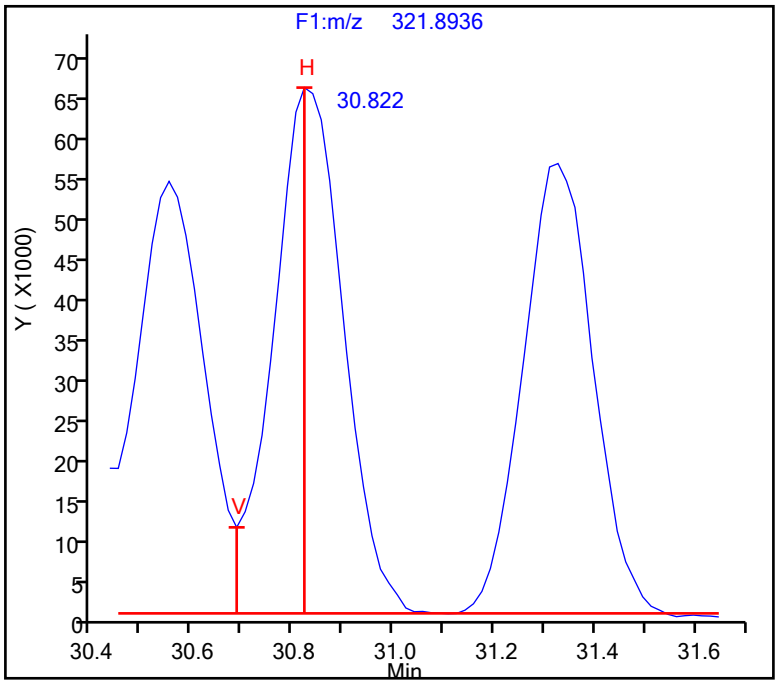
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 11504
H (Peak Height) = 65811

%R = 18 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): WDMCCV 140-36166/1 Instrument ID (1): D2A

GC Column (1): RTX-5 ID: 0.32(mm) Date Analyzed (1): 12/18/2019 00:01

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	30.81	19

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Injection Date: 18-Dec-2019 00:01:00 Instrument ID: D2A
Lims ID: WDMCCV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column:
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

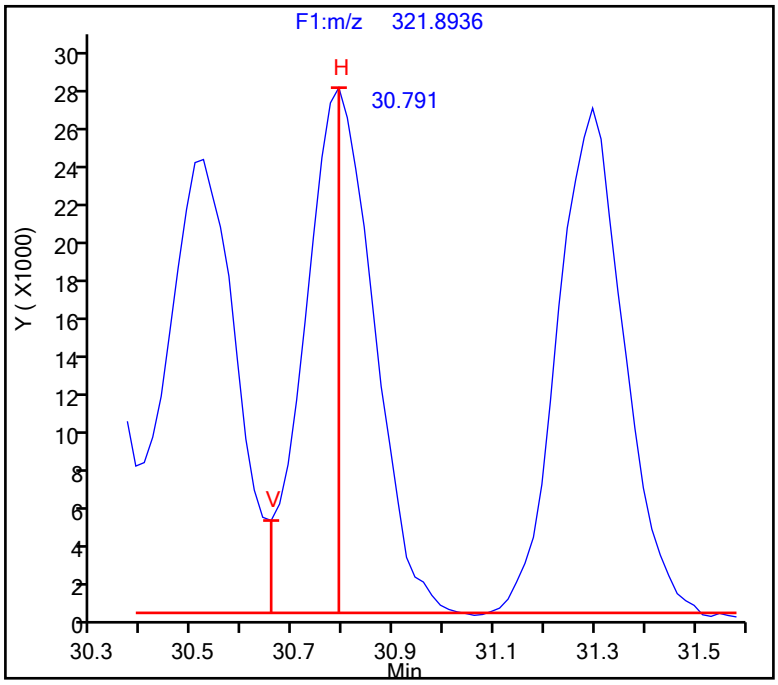
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 5246
H (Peak Height) = 27847

%R = 19 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): CPS 140-36167/1 Instrument ID (1): D12C

GC Column (1): DB225 ID: 0.32(mm) Date Analyzed (1): 12/18/2019 00:58

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	22.21	8

Report Date: 18-Dec-2019 02:02:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d
Injection Date: 18-Dec-2019 00:58:00 Instrument ID: D12C
Lims ID: CPS
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column: DB225 (0.32 mm)
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL

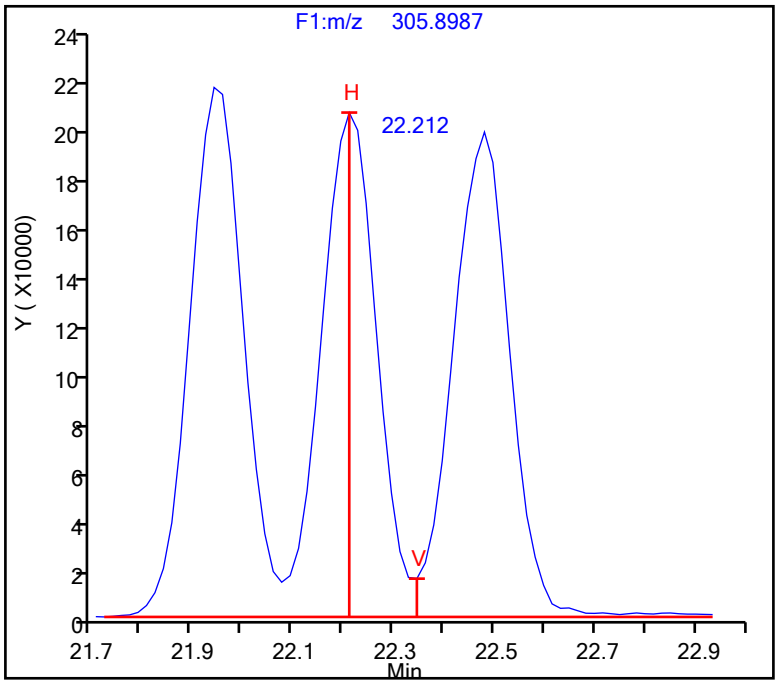
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 15697
H (Peak Height) = 206793

%R = 8 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID (1): CPS 140-36178/1 Instrument ID (1): D12C

GC Column (1): DB225 ID: 0.32(mm) Date Analyzed (1): 12/18/2019 11:19

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	22.22	7

Report Date: 18-Dec-2019 12:50:05 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Resolution Report

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d

Injection Date: 18-Dec-2019 11:19:00 Instrument ID: D12C

Lims ID: CPS

Client ID:

Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1

Injection Vol: 1.0 ul Column: DB225 (0.32 mm)

Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL

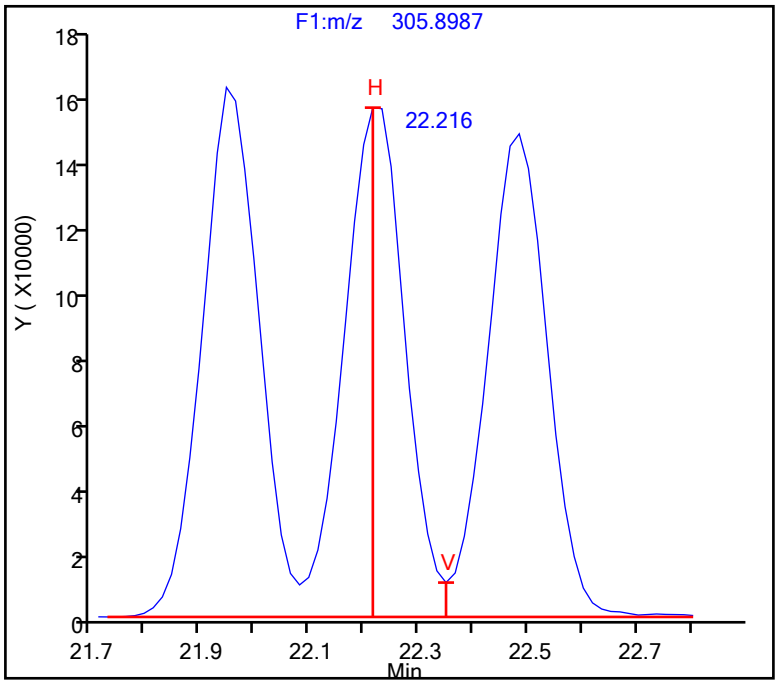
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 10183
H (Peak Height) = 151804

%R = 7 <= 25
Passed



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: ICV 140-29777/17 Calibration Date: 05/03/2019 12:43

Instrument ID: D12C Calib Start Date: 05/03/2019 02:43

GC Column: DB 225 ID: 0.25(mm) Calib End Date: 05/03/2019 06:14

Lab File ID: icv_190503124322.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
2,3,7,8-TCDD	AveID	1.221	1.277		10.5	10.0	4.5	35.0
2,3,7,8-TCDF	AveID	1.110	1.100		9.91	10.0	-0.9	35.0
13C-2,3,7,8-TCDD	Ave	1.003	0.9346		93.2	100	-6.8	
13C-2,3,7,8-TCDF	Ave	1.619	1.730		107	100	6.8	
37Cl4-2,3,7,8-TCDD	Ave	1.183	1.195		10.1	10.0	1.0	

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-May-2019 12:43:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-017
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist:

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:49:17 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\ical5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 13:21:23

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	21:23	1548429	0.78	1.2213	10.5	10.5	0.1031	0.1031	105	a
2,3,7,8-TCDF	24:20	2469360	0.80	1.1100	9.907	9.907	0.0390	0.0390	99.07	a
D 13C-2,3,7,8-TCDD	21:22	12129060	0.79	1.0031	93.2	93.2	0.1356	0.1356	93.17	a
D 13C-2,3,7,8-TCDF	24:17	22453548	0.80	1.6193	106.8	106.8	0.1881	0.1881	107	a
$ 37Cl4-2,3,7,8-TCDD	21:23	1550661		1.1834	10.1	10.1	0.0453	0.0453	101	
* 13C-1,2,3,4-TCDD	21:56	12978248	0.81	1.6E+05	100.0	100.0				

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

61CV1613OS_00005 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-May-2019 12:43:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0011646-017
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist:

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:49:17 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: reynoldk Date: 03-May-2019 13:21:23

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	21:23	21:26	-2	1.001	679944	98718	416	1040	237		a
321.8936	21:23	21:26	-2	1.001	868485	124848	470	1175	266	0.78(0.65-0.89)	
2,3,7,8-TCDF											a
303.9016	24:20	24:22	-2	1.002	1100702	134204	255	637	526		a
305.8987	24:19	24:22	-3	1.001	1368658	167738	210	525	799	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											a
331.9368	21:22	21:24	-1	0.975	5360505	774582	481	1202	1610		a
333.9338	21:22	21:24	-1	0.975	6768555	984513	515	1287	1912	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:17	24:19	-2	1.107	9991897	1192526	1365	3412	874		a
317.9389	24:17	24:19	-2	1.107	12461651	1492860	866	2165	1724	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21:23	21:26	-2	0.975	1550661	226462	393	982	576		
13C-1,2,3,4-TCDD											
331.9368	21:56	21:58	-2		5809635	827496	481	1202	1720		
333.9338	21:54	21:58	-3		7168613	1003049	515	1287	1948	0.81(0.65-0.89)	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

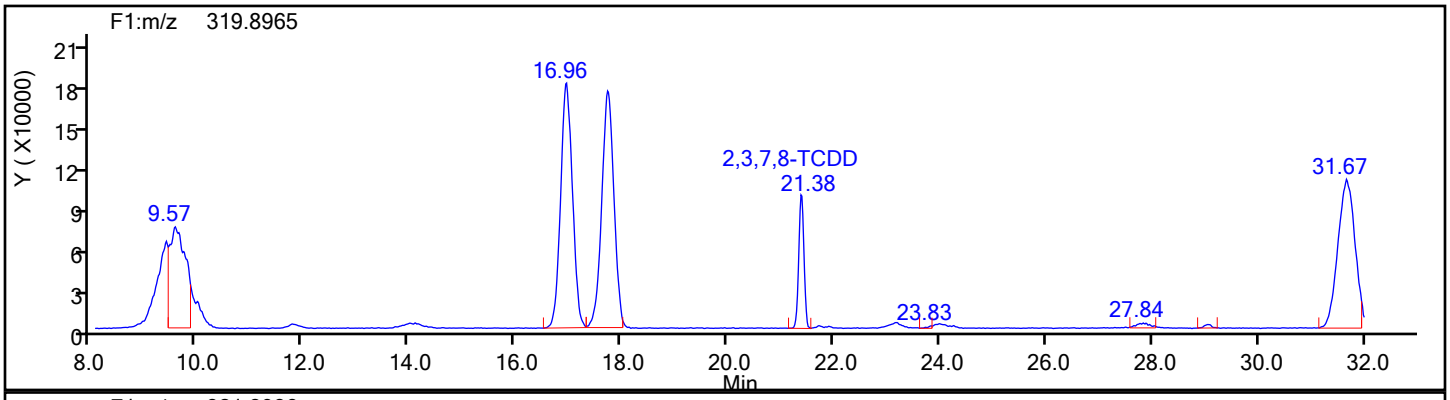
61CV1613OS_00005 Amount Added: 20.00 Units: uL

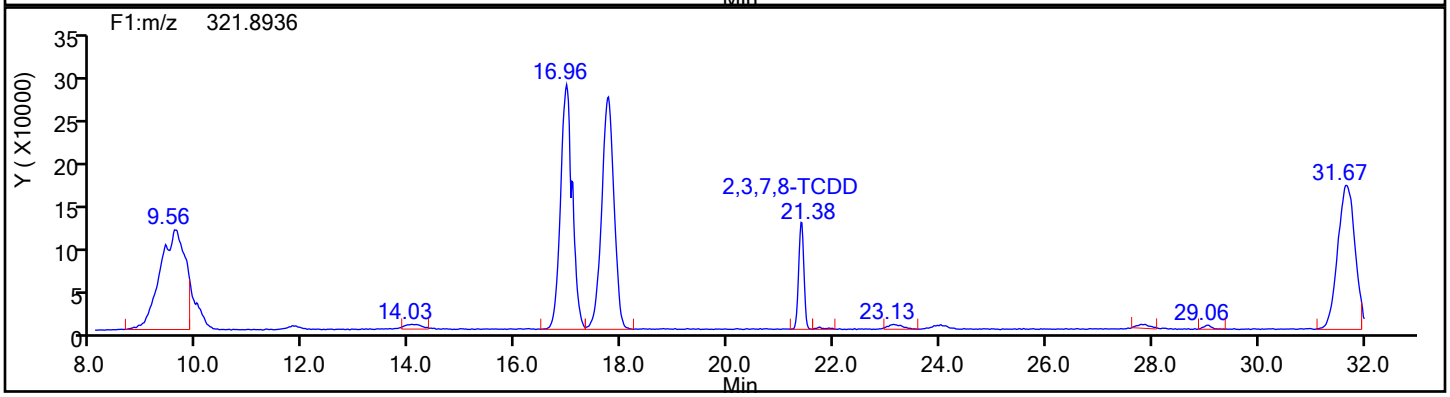
Report Date: 03-May-2019 13:49:17 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

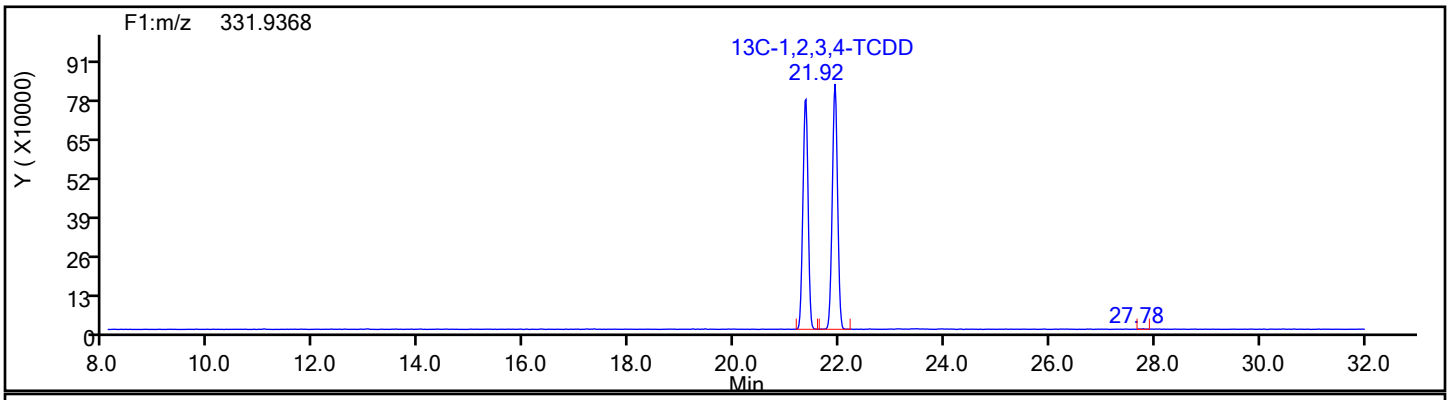
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

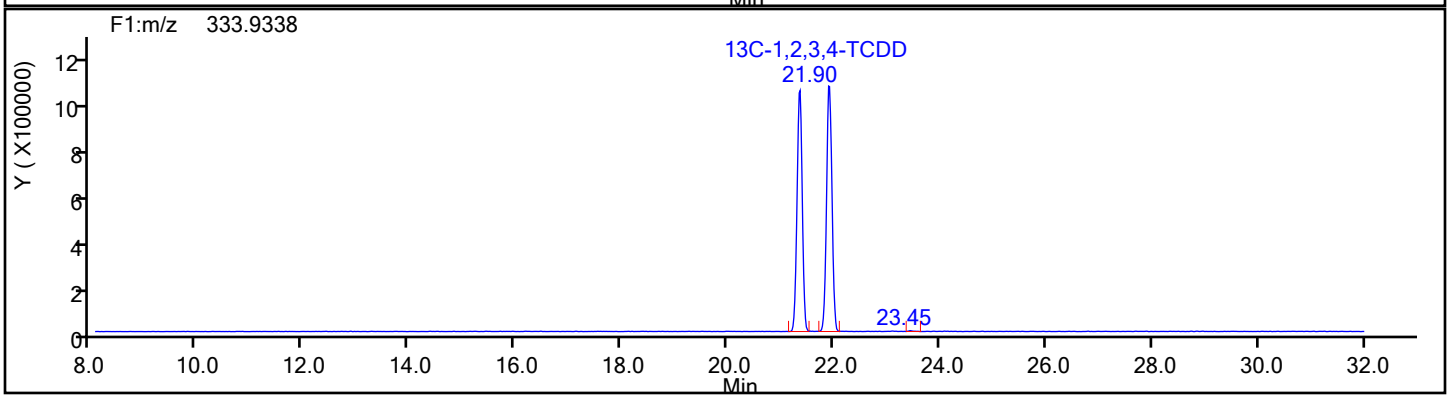
TCDD





TCDD Standards



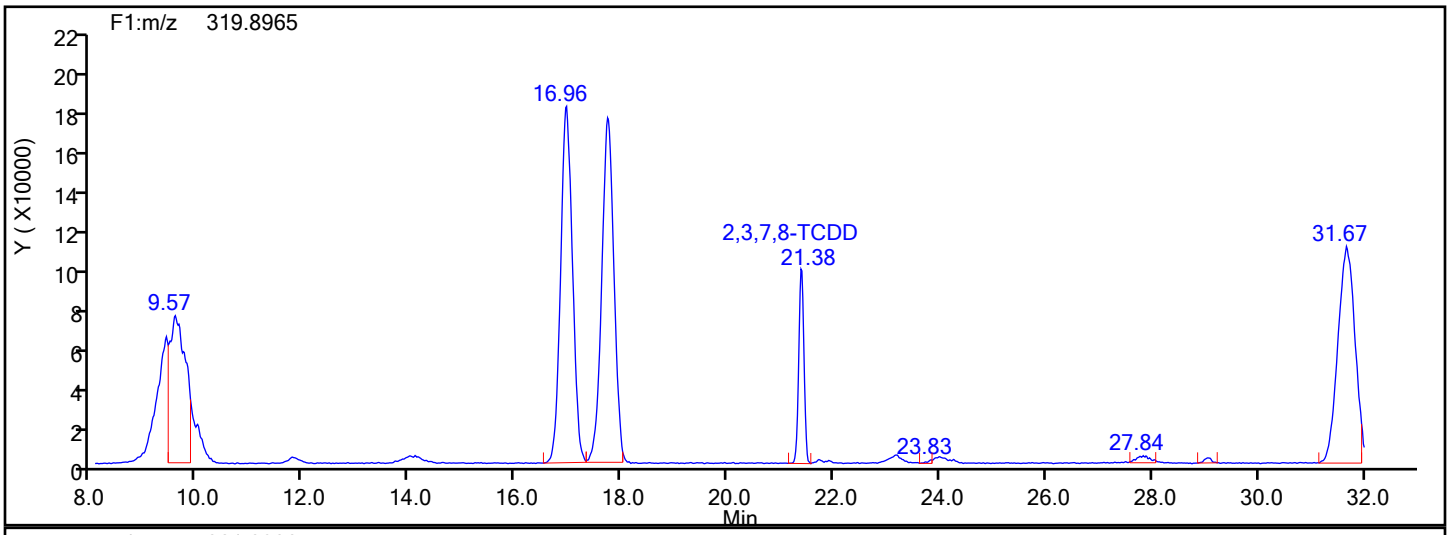


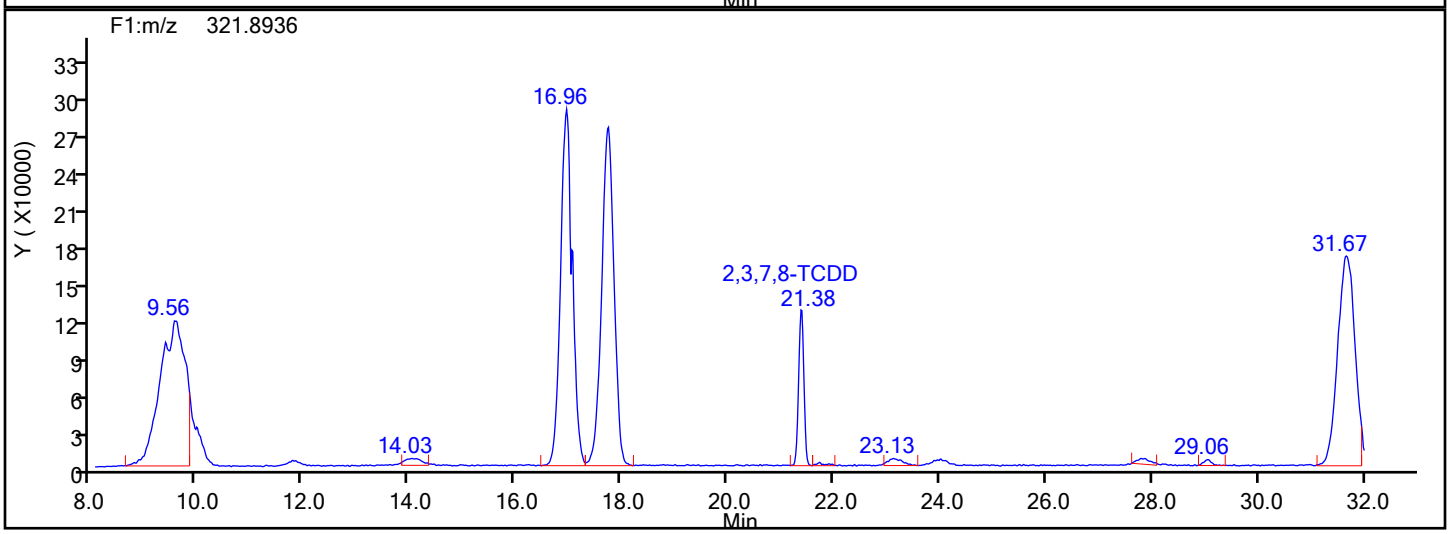
Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

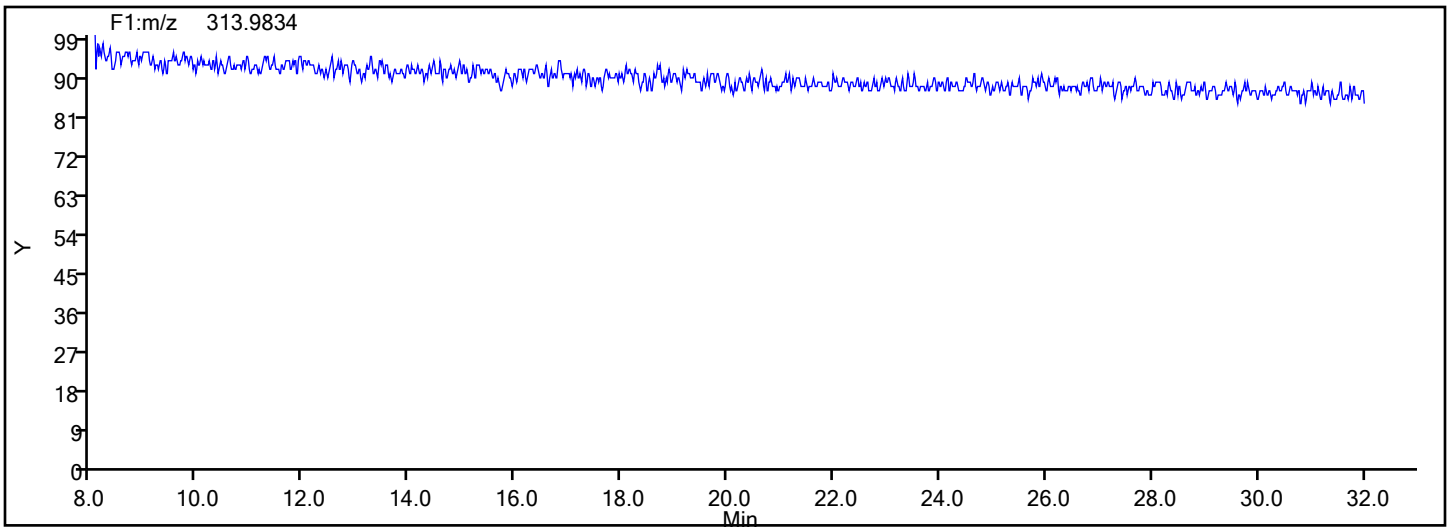
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

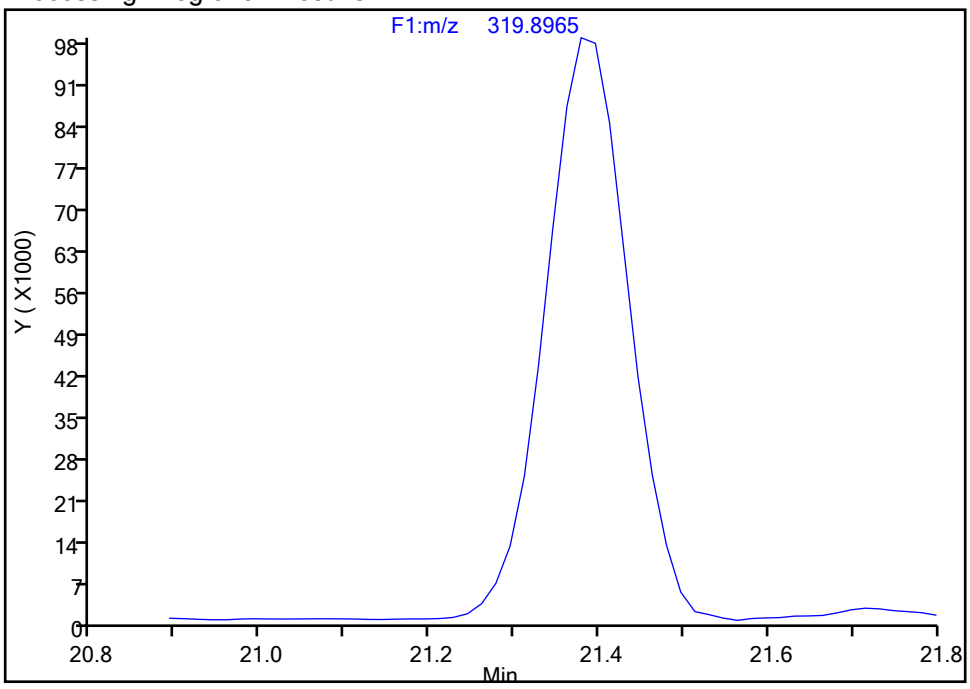
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d				
Injection Date:	03-May-2019 12:43:00	Instrument ID:	D12C		
Lims ID:	ICV				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	17
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

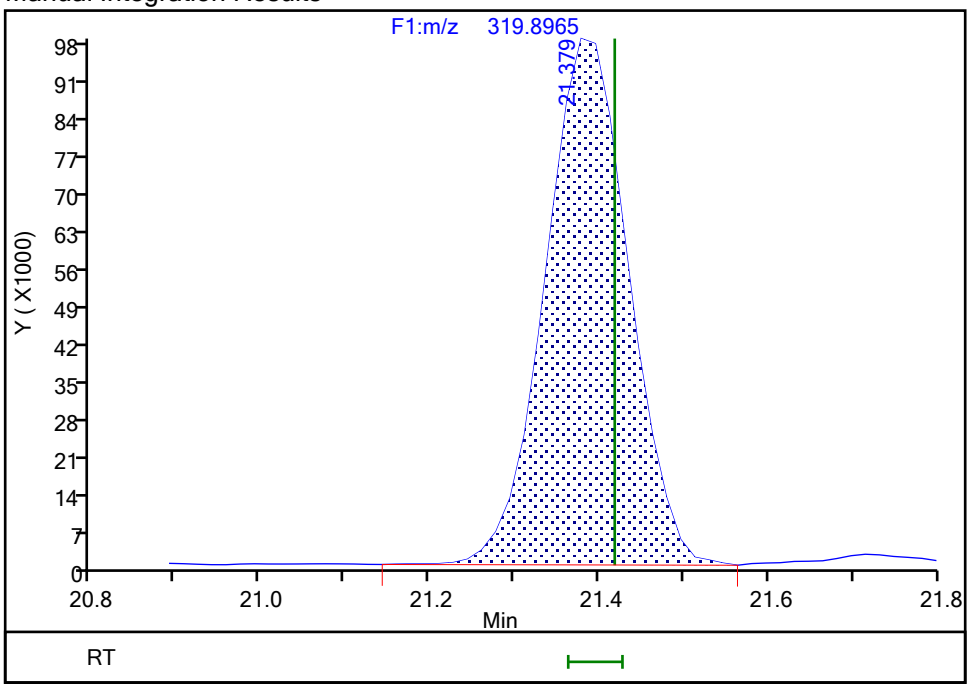
Not Detected
Expected RT: 21.42

Processing Integration Results



Manual Integration Results

RT: 21.38
Area: 679944
Amount: 10.452796
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 13:20:49
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

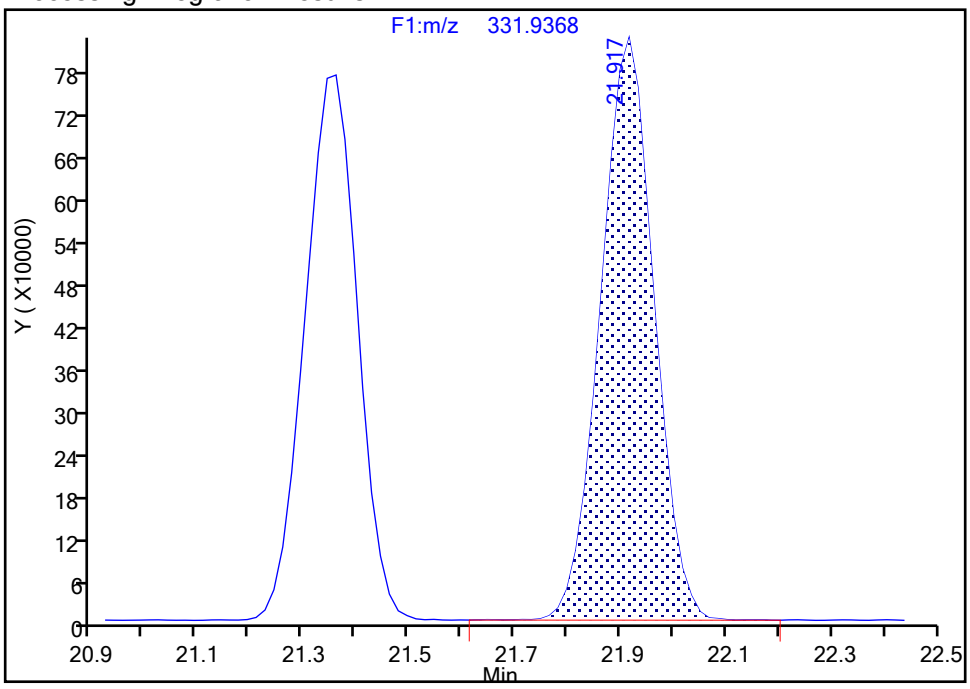
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d
Injection Date: 03-May-2019 12:43:00 Instrument ID: D12C
Lims ID: ICV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

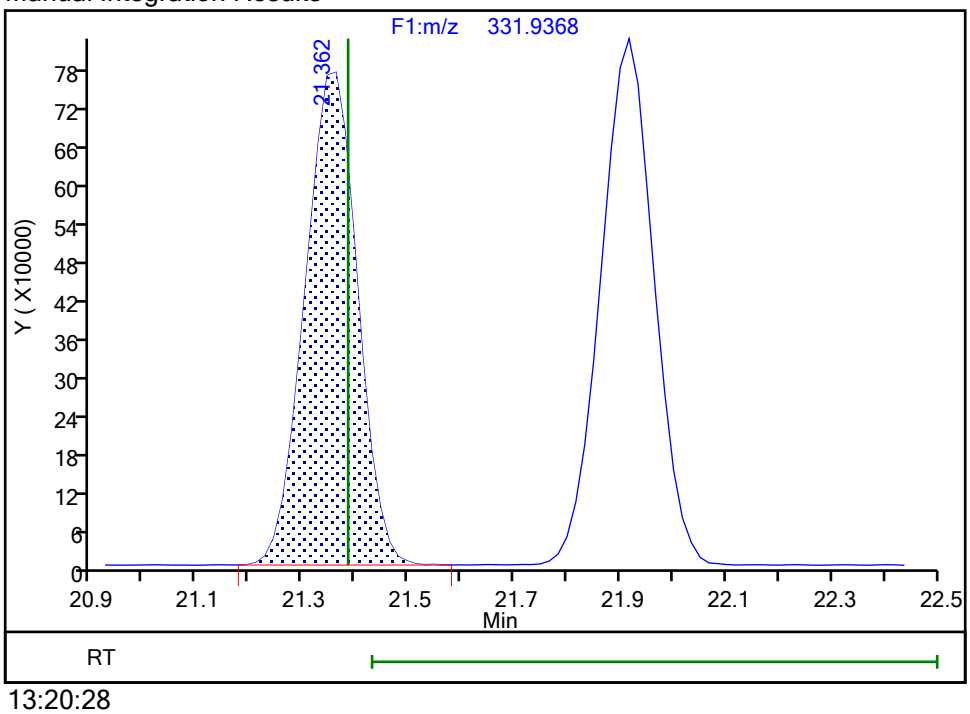
Processing Integration Results

RT: 21.92
Area: 5813280
Amount: 99.718166
Amount Units: pg/ul



Manual Integration Results

RT: 21.36
Area: 5360505
Amount: 93.167277
Amount Units: pg/ul



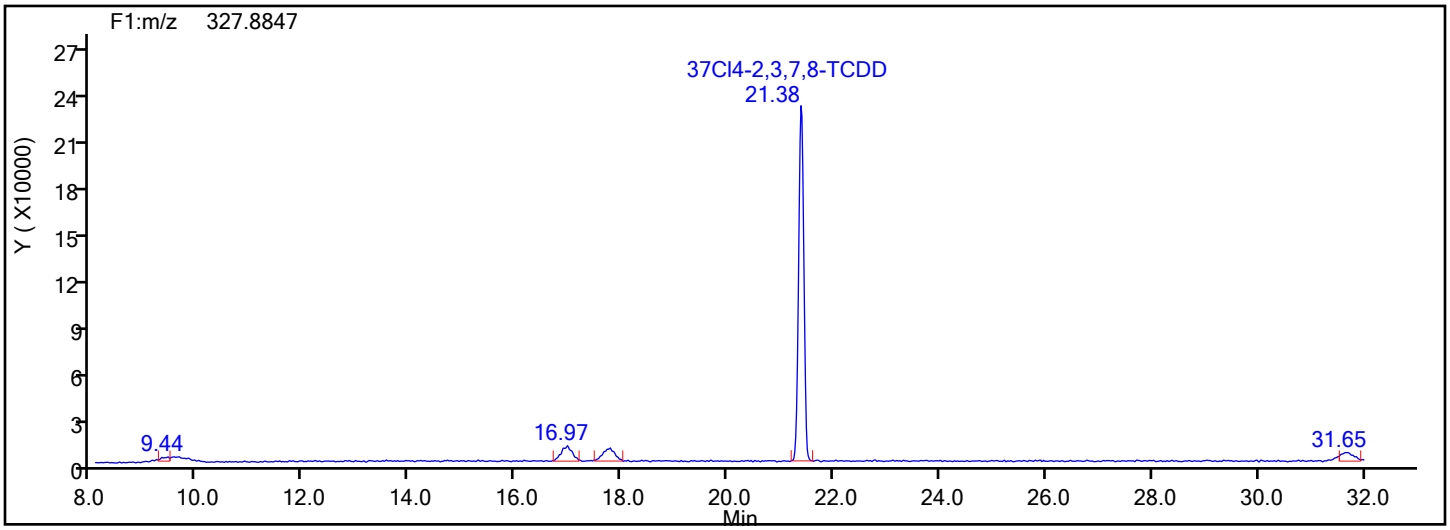
Reviewer: reynoldk, 03-May-2019 13:20:28
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

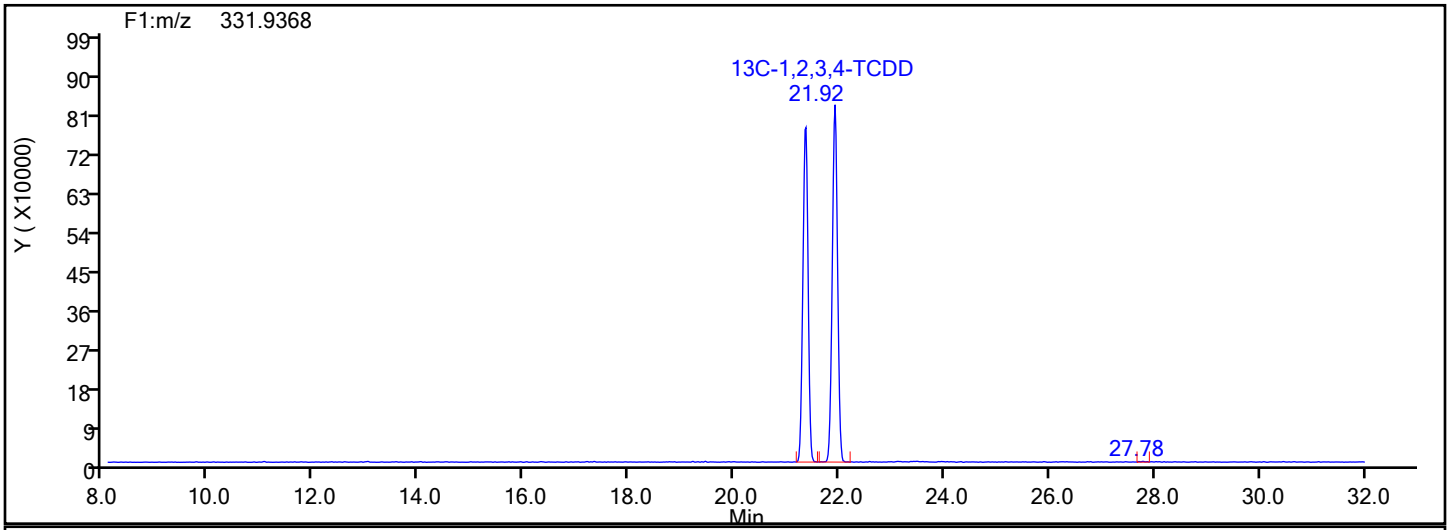
Eurofins TestAmerica, Knoxville

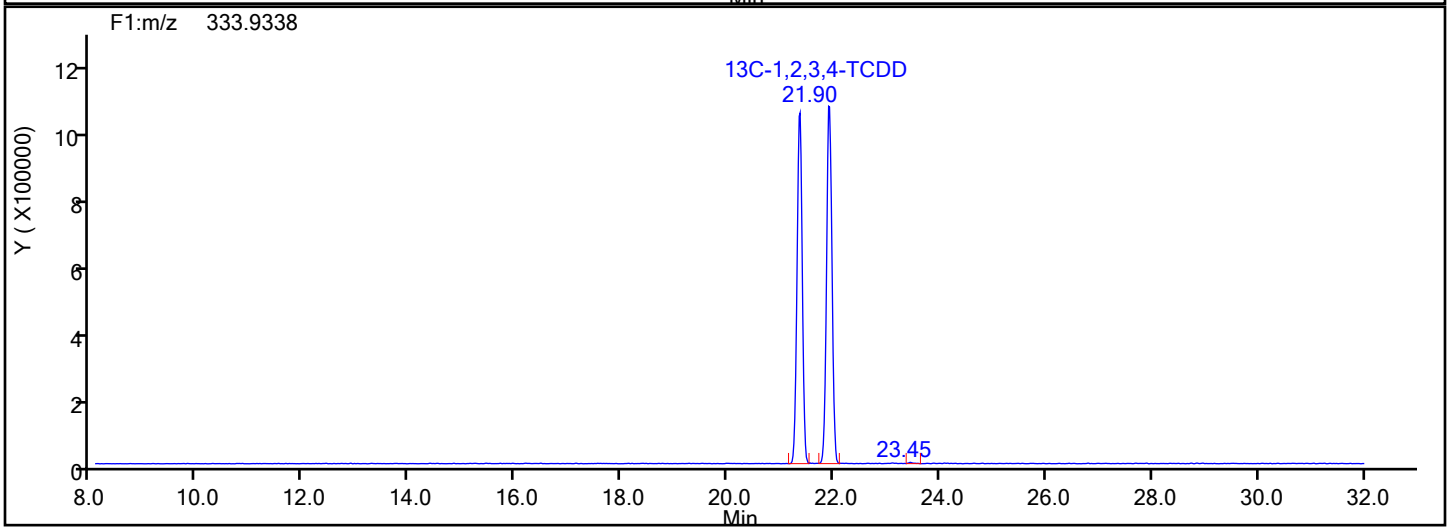
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



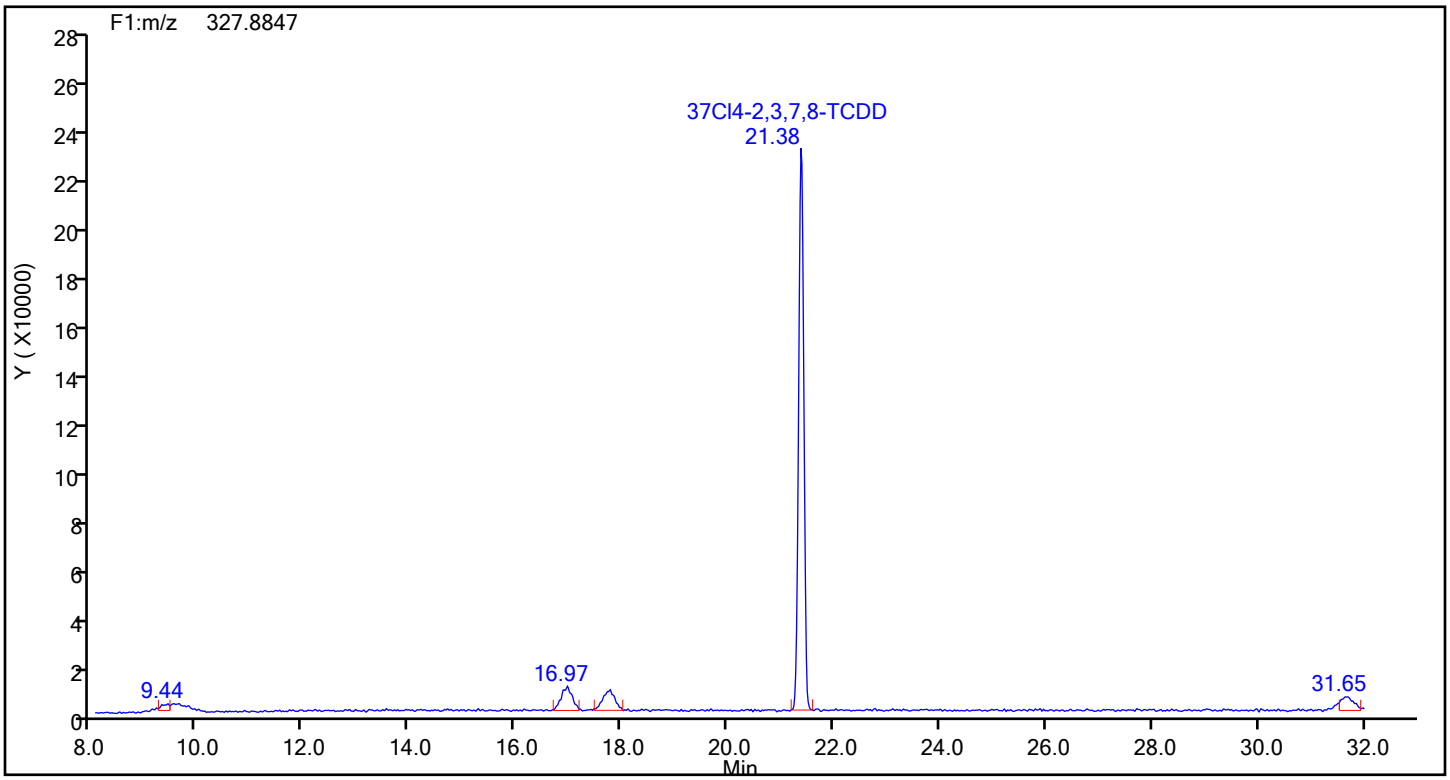


Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

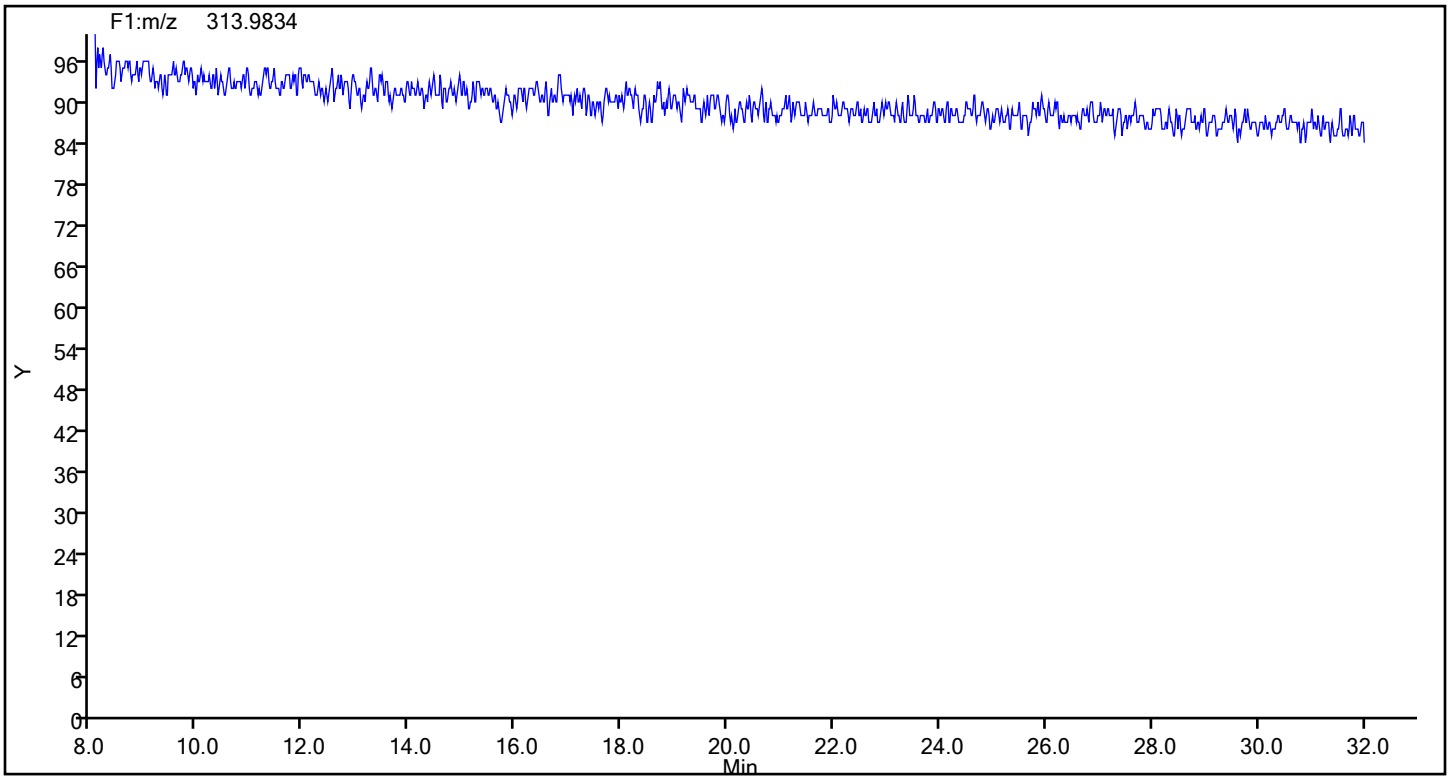
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

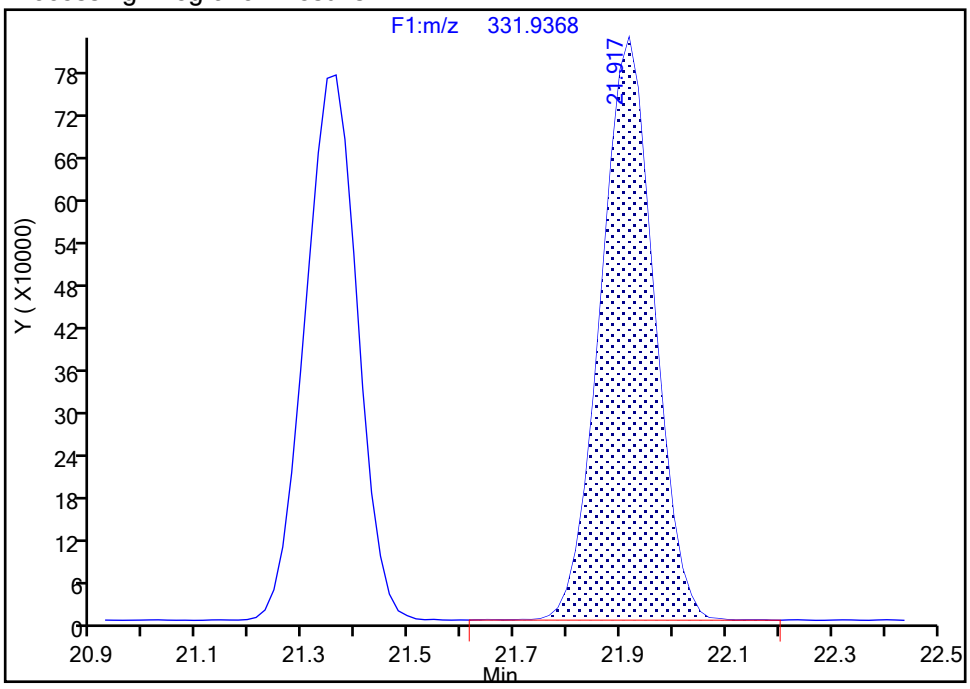
Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d
Injection Date: 03-May-2019 12:43:00 Instrument ID: D12C
Lims ID: ICV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: TCDD_TCDF_D12C Limit Group: HR - 1613B - ICAL
Column: DB225 (0.32 mm) Detector F1(8.07 :27.50)

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

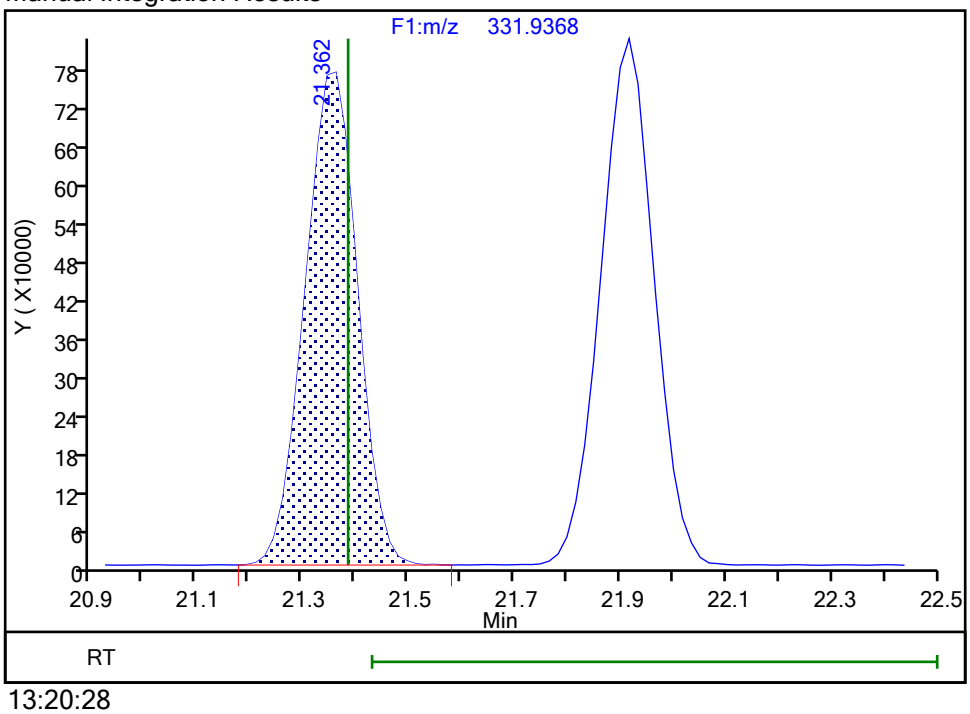
Processing Integration Results

RT: 21.92
Area: 5813280
Amount: 99.718166
Amount Units: pg/ul



Manual Integration Results

RT: 21.36
Area: 5360505
Amount: 93.167277
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 13:20:28
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

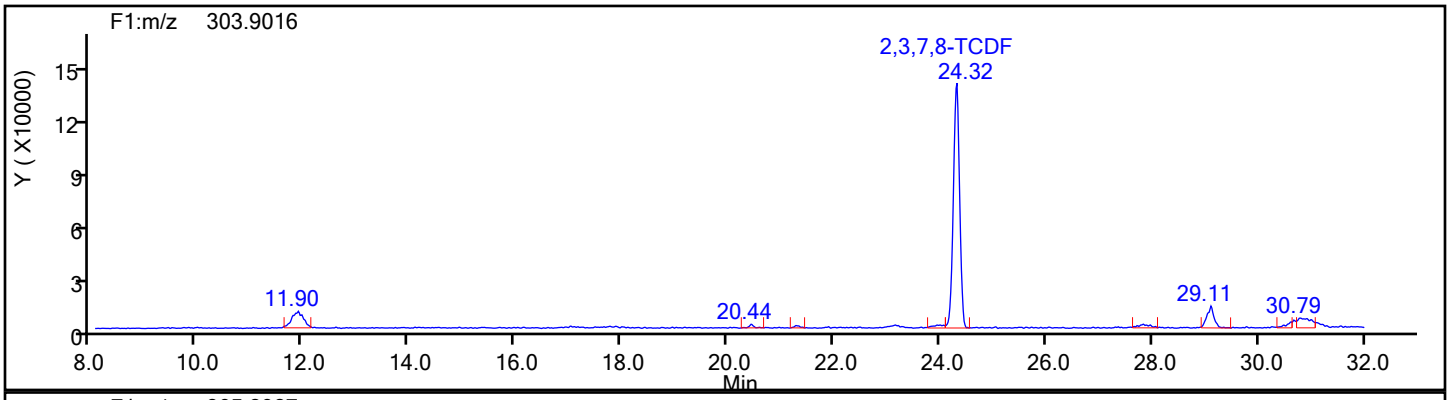
Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

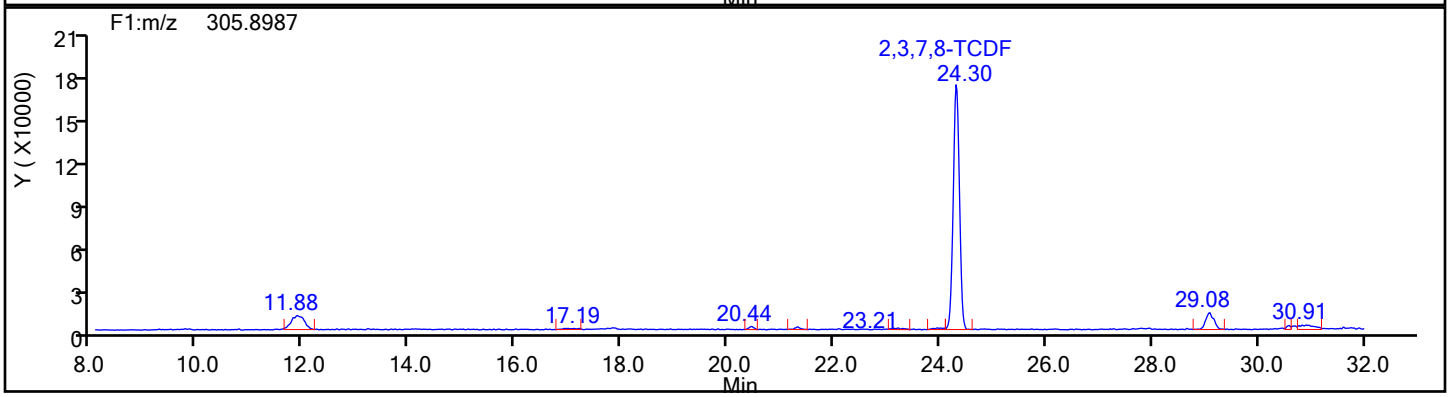
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d

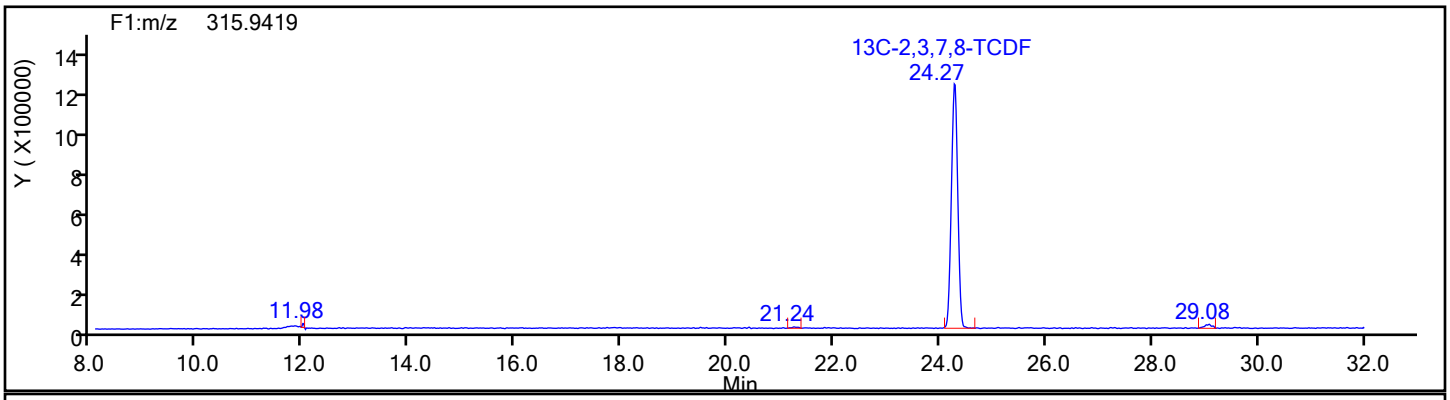
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

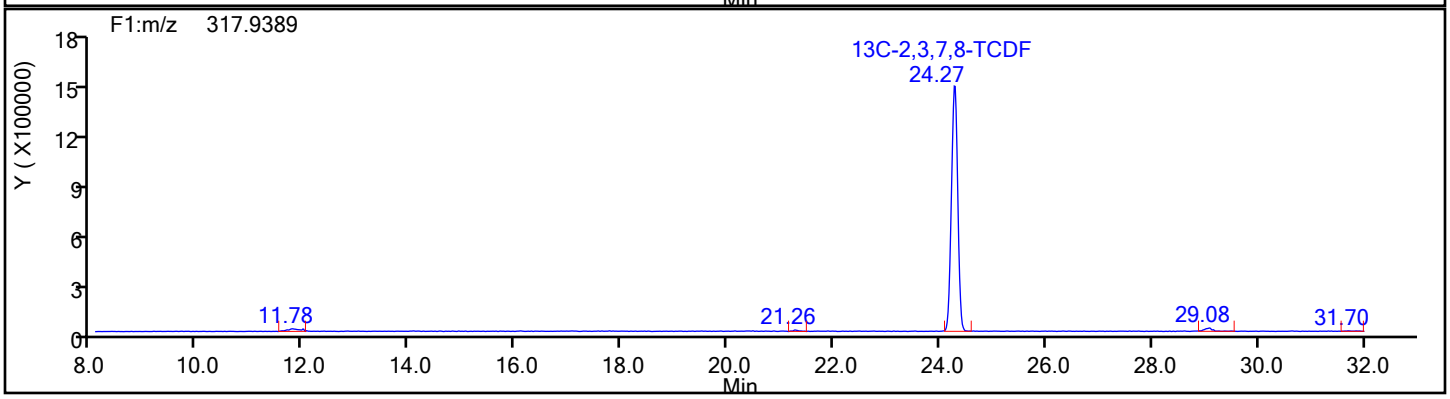
TCDF





TCDF Standards



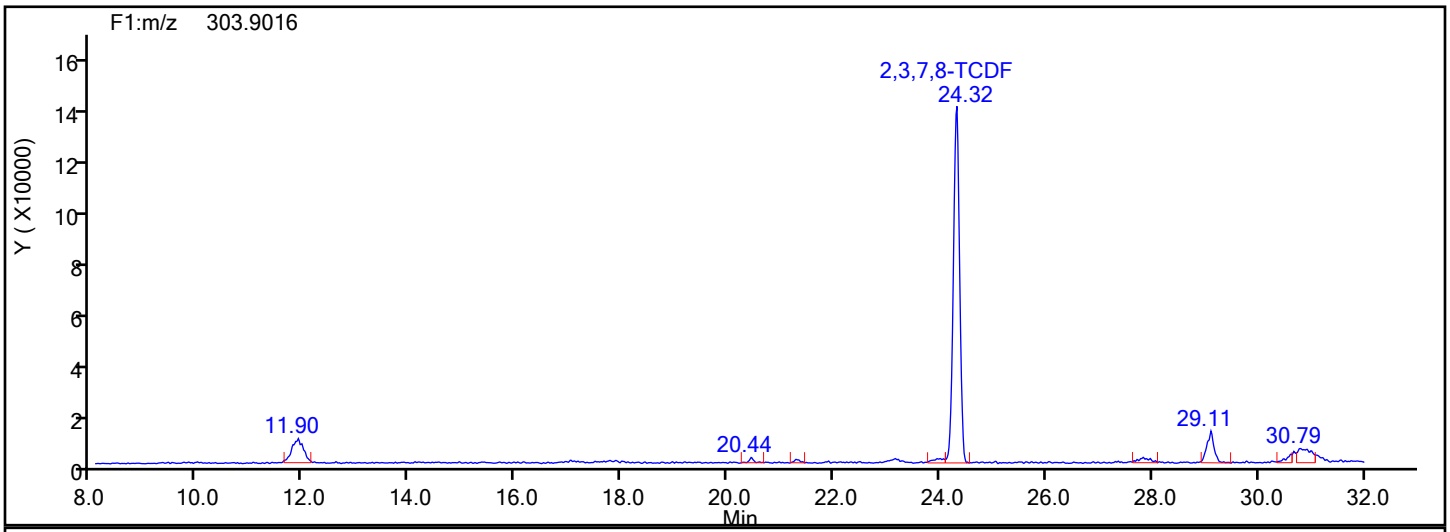


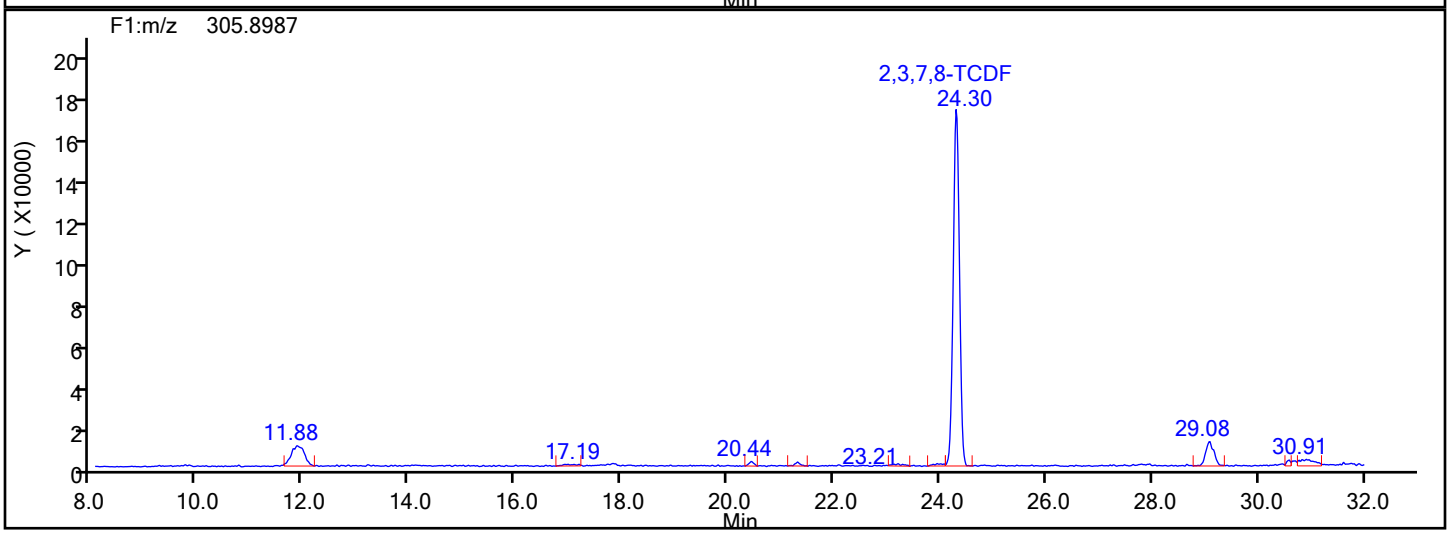
Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

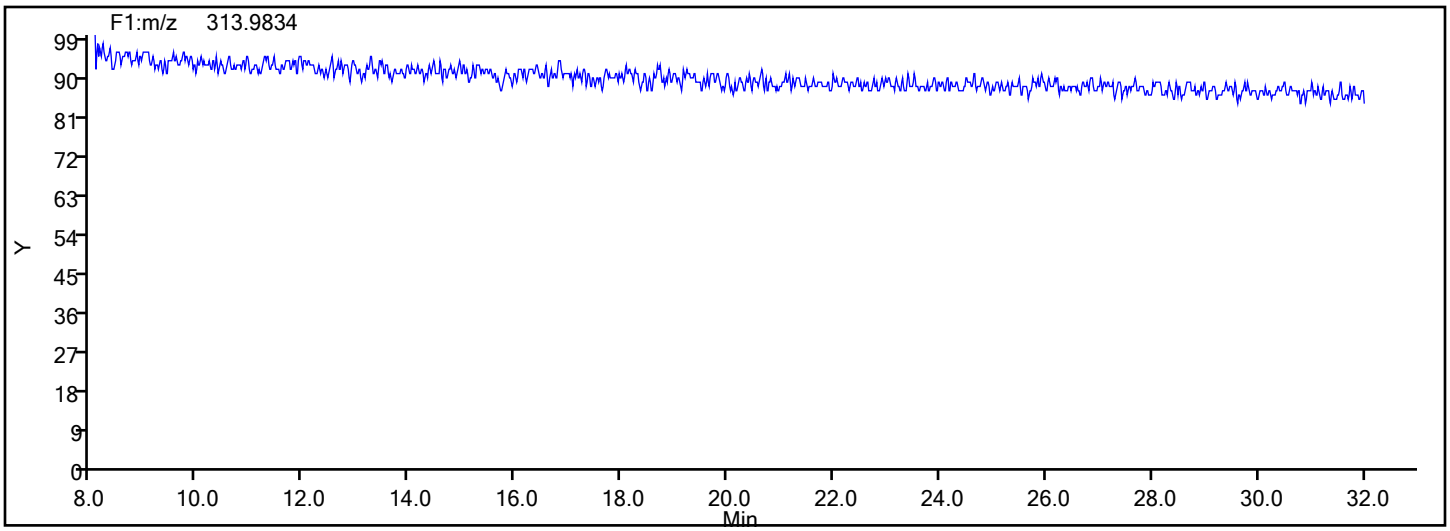
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

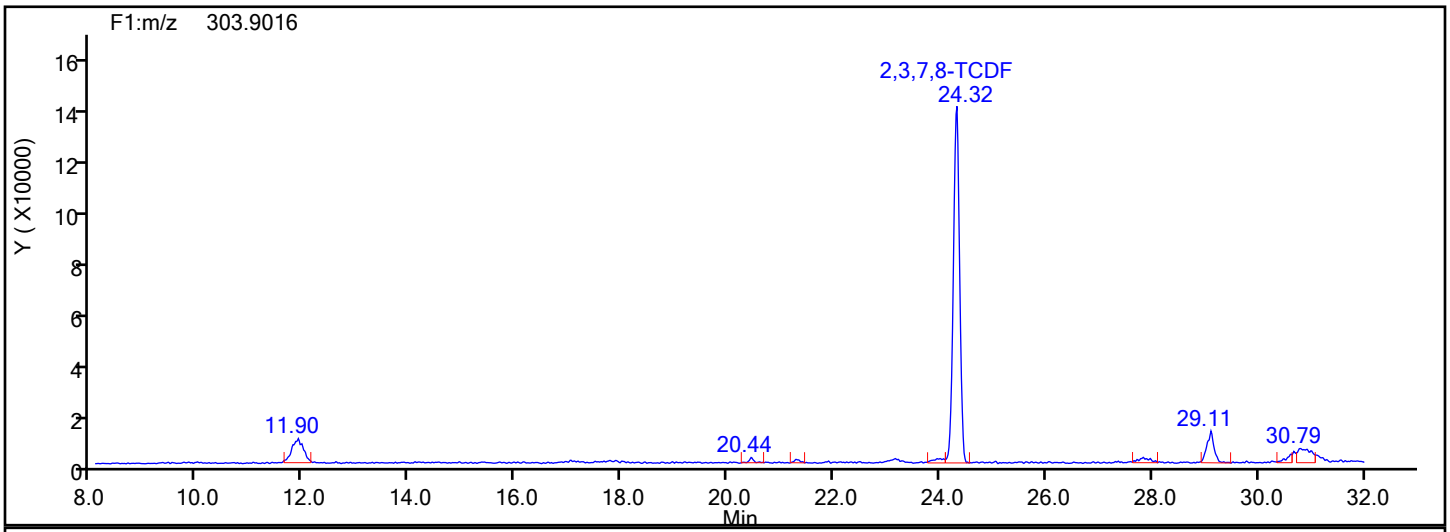


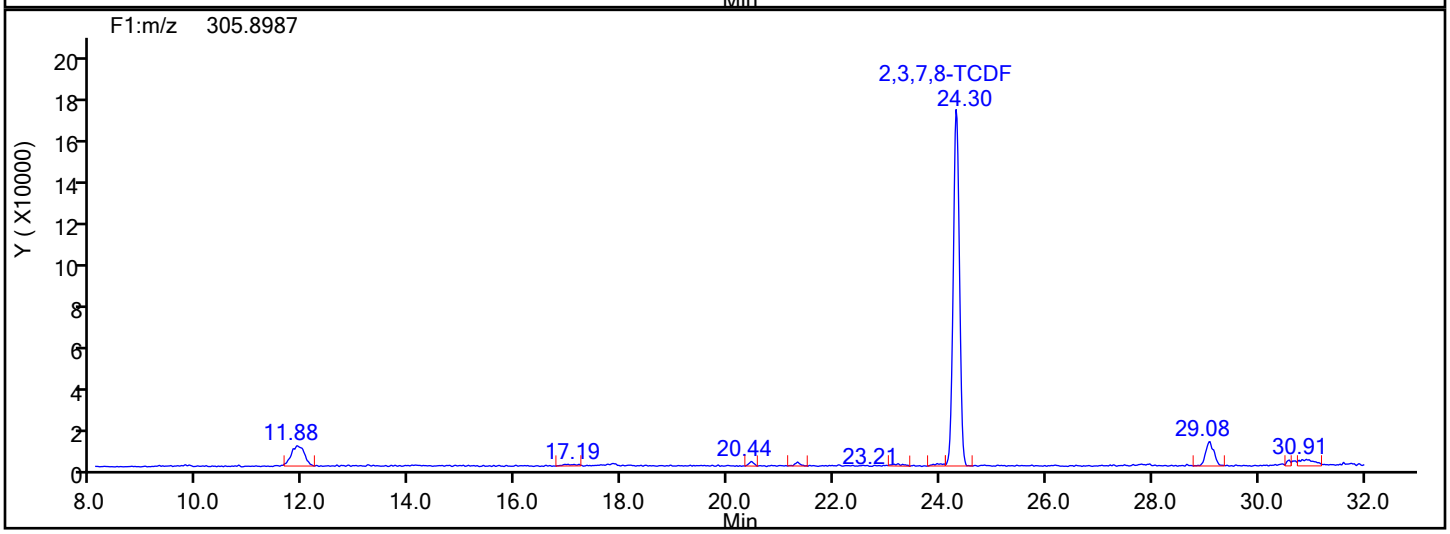
Report Date: 03-May-2019 13:49:18 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

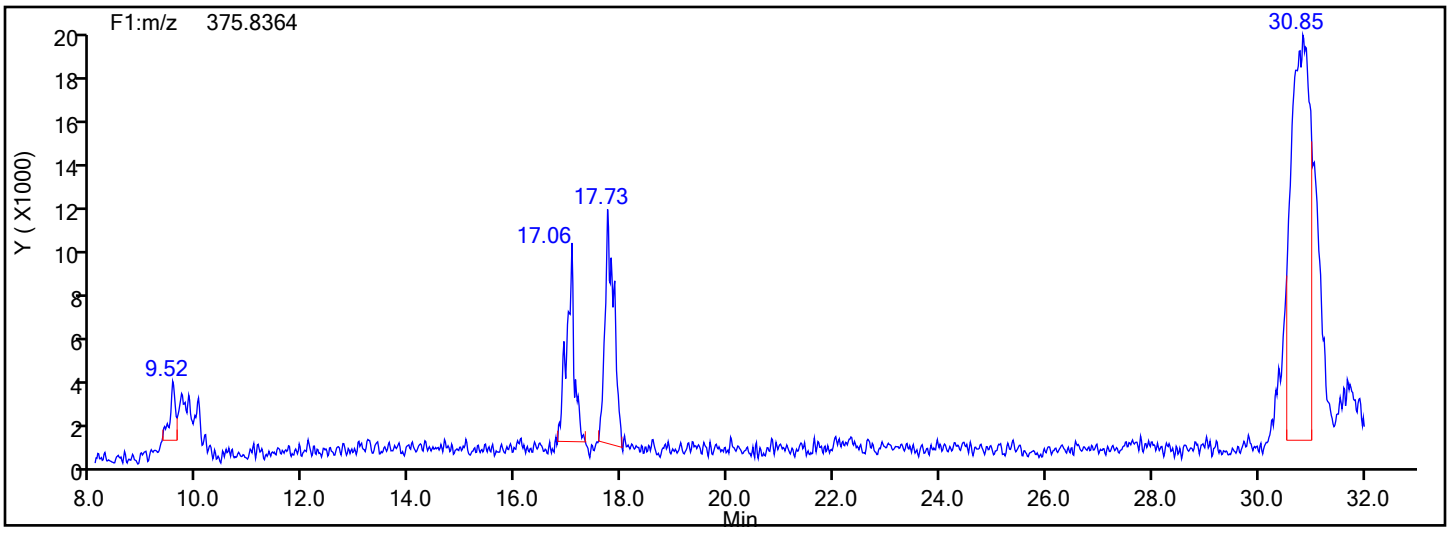
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d		
Injection Date:	03-May-2019 12:43:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

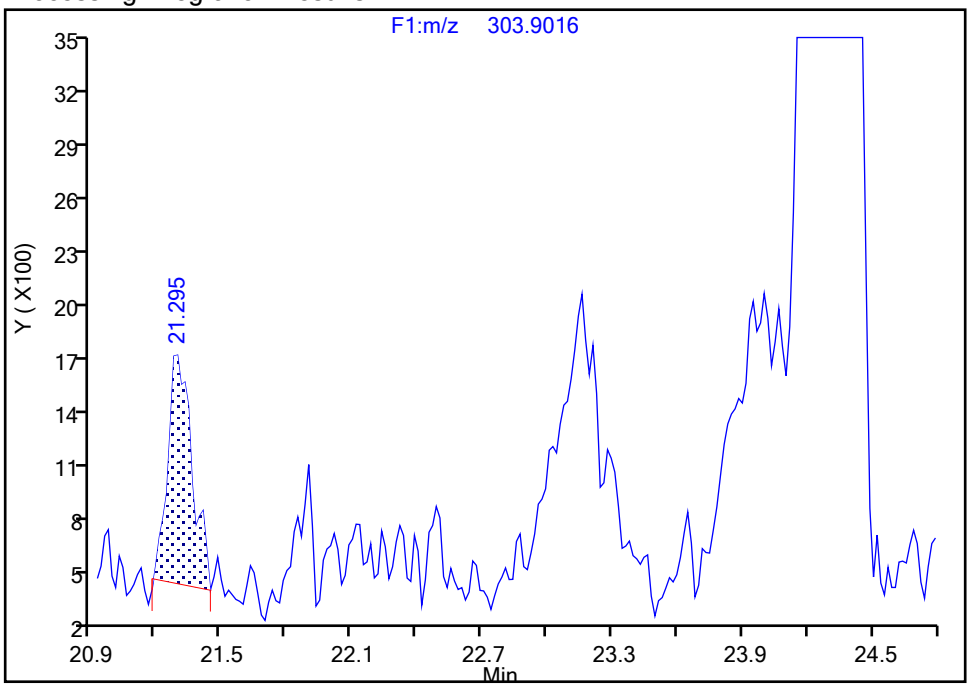
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d				
Injection Date:	03-May-2019 12:43:00	Instrument ID:	D12C		
Lims ID:	ICV				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	17
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

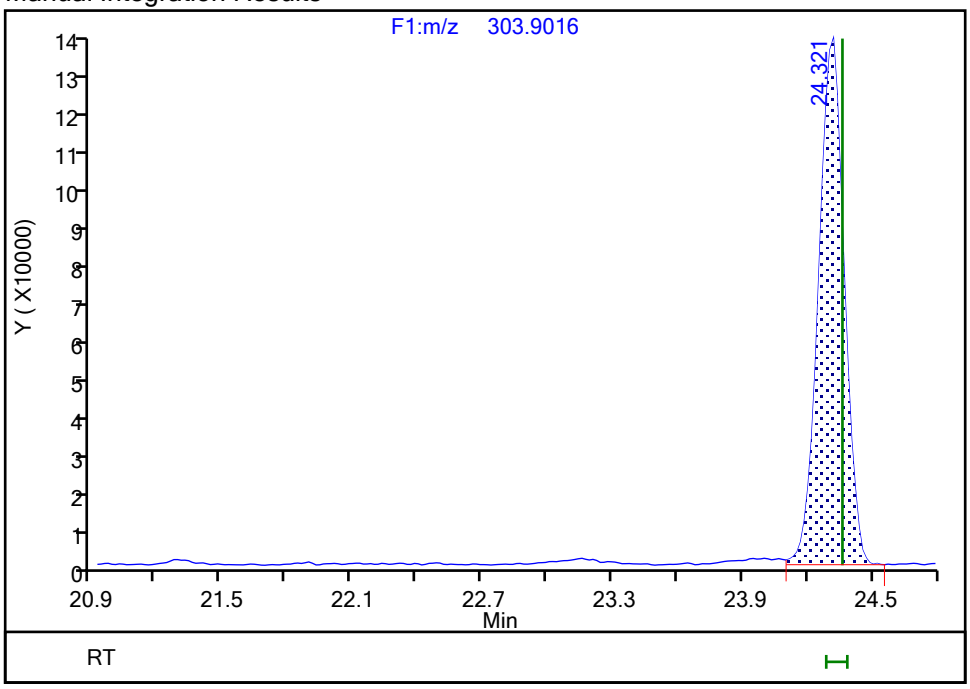
Processing Integration Results

RT: 21.29
Area: 9594
Amount: 0.089656
Amount Units: pg/ul



Manual Integration Results

RT: 24.32
Area: 1100702
Amount: 9.907498
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 13:20:43

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

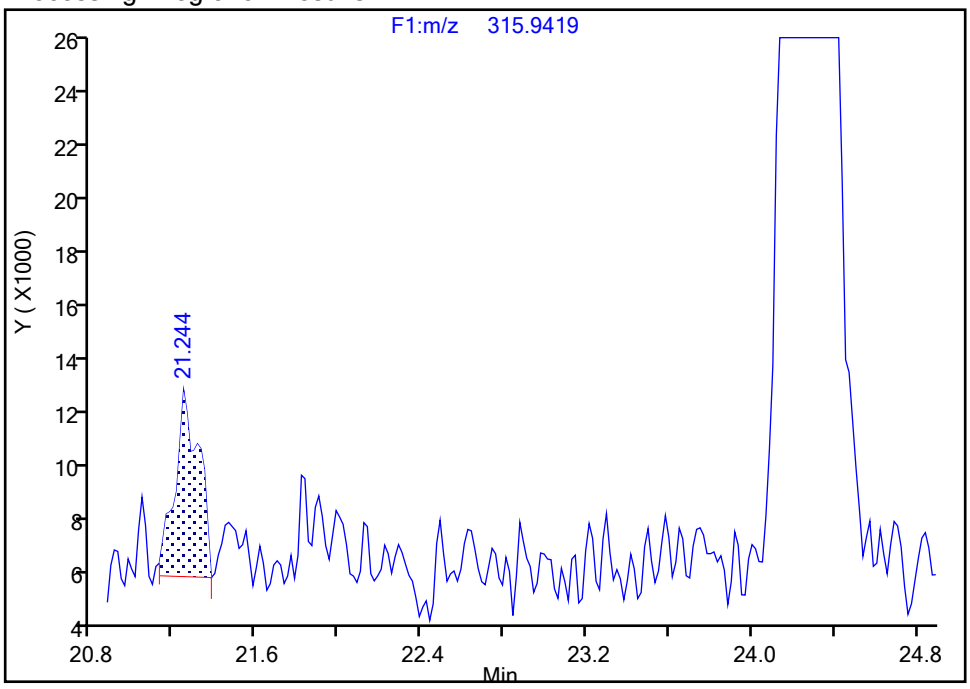
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icv_190503124322.d				
Injection Date:	03-May-2019 12:43:00	Instrument ID:	D12C		
Lims ID:	ICV				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	17
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

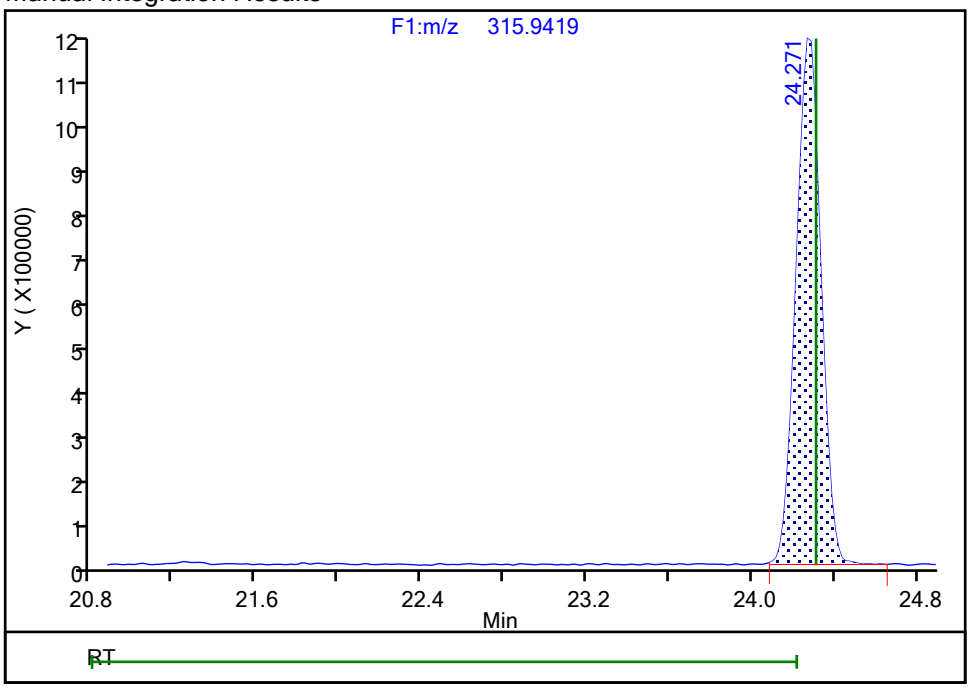
Processing Integration Results

RT: 21.24
Area: 54980
Amount: 0.559408
Amount Units: pg/ul



Manual Integration Results

RT: 24.27
Area: 9991897
Amount: 106.8441
Amount Units: pg/ul



Reviewer: reynoldk, 03-May-2019 13:20:36
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: CCV 140-36167/3 Calibration Date: 12/18/2019 01:51

Instrument ID: D12C Calib Start Date: 05/03/2019 02:43

GC Column: DB225 ID: 0.32(mm) Calib End Date: 05/03/2019 06:14

Lab File ID: d2191218s1.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.221	1.077		8.82	10.0	88	78-129
2,3,7,8-TCDF	AveID	1.110	1.080		9.73	10.0	97	84-120
13C-2,3,7,8-TCDD	Ave	1.003	0.9821		97.9	100	98	82-121
13C-2,3,7,8-TCDF	Ave	1.619	1.491		92.1	100	92	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.183	1.076		9.10	10.0	91	79-127

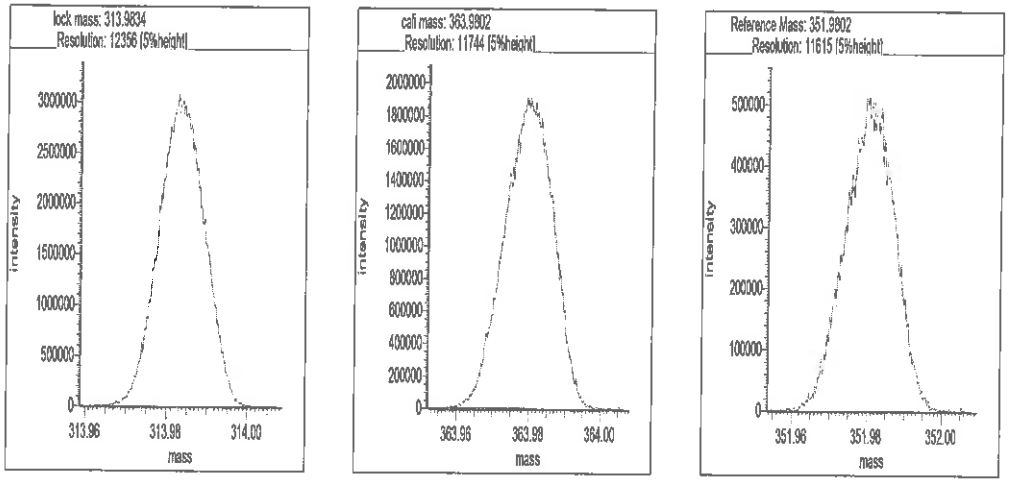
Resolution Check Report (DFS SN: 3097)

eurofins

Date:	18 Dec 2019 00:42
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

Segment 1

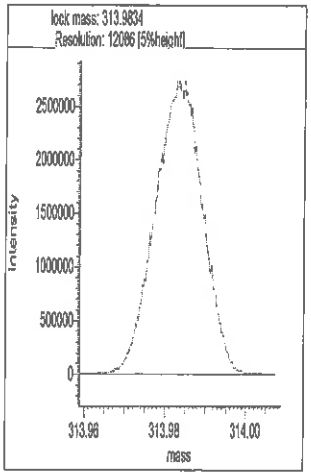
Lock mass 313.9834 [m/z] Resolution: 12356 [5%height]
Cali. mass 363.9802 [m/z] Resolution: 11744 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 11615 [5%height]

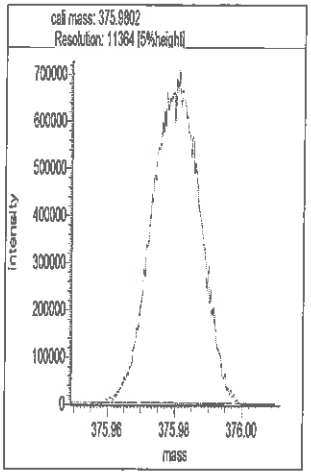


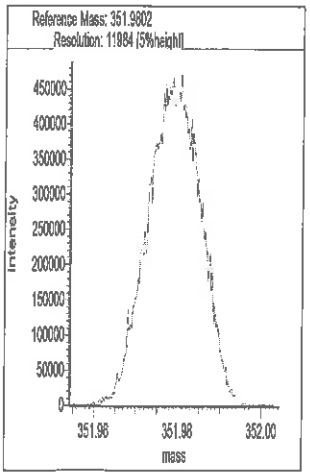
Segment 2

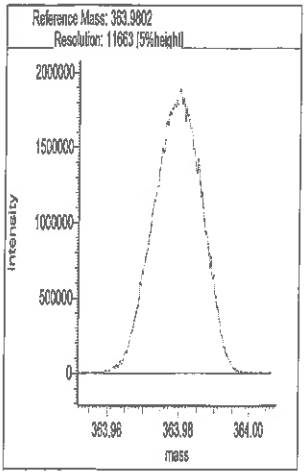
Lock mass 313.9834 [m/z] Resolution: 12086 [5%height]
Cali. mass 375.9802 [m/z] Resolution: 11364 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 11984 [5%height]
Ref. mass 363.9802 [m/z] Resolution: 11663 [5%height]
Ref. mass 401.9770 [m/z] Resolution: 11971 [5%height]

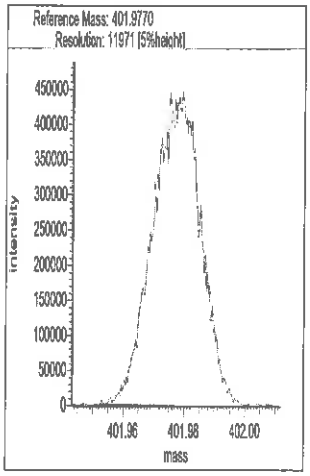
191218 S1a











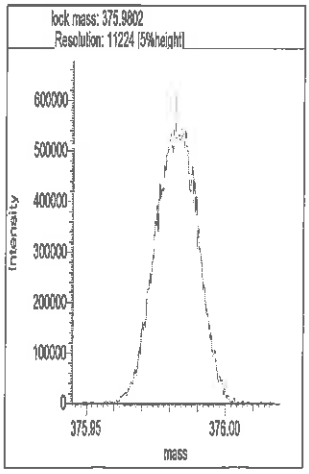
Segment 3

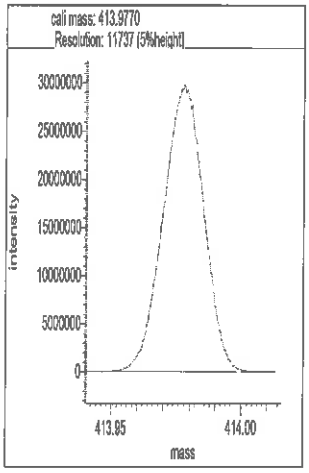
Lock mass 375.9802 [m/z] Resolution: 11224 [5%height]

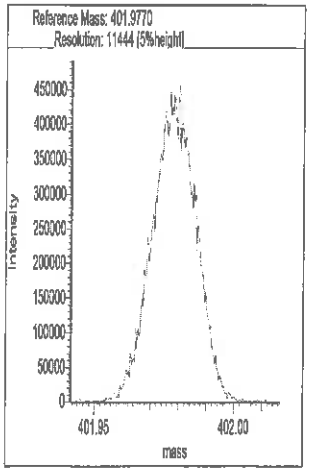
Cali. mass 413.9770 [m/z] Resolution: 11737 [5%height]

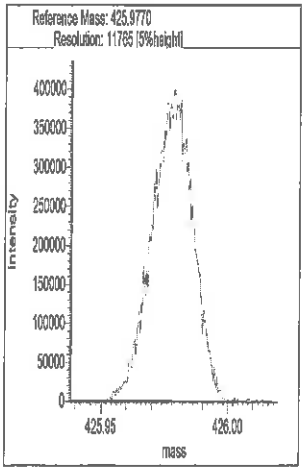
Ref. mass 401.9770 [m/z] Resolution: 11444 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11765 [5%height]







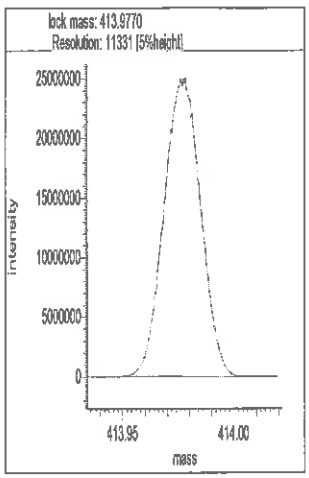


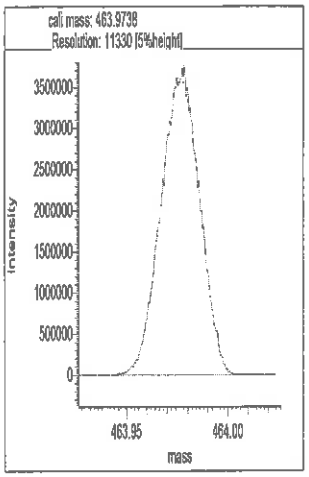
Segment 4

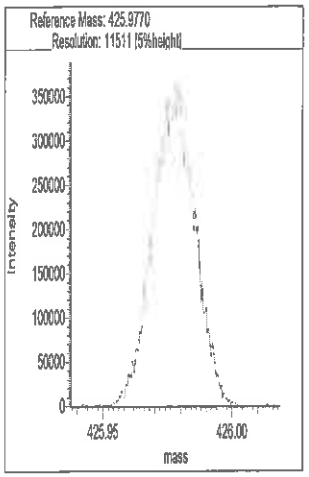
Lock mass 413.9770 [m/z] Resolution: 11331 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11330 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11511 [5%height]





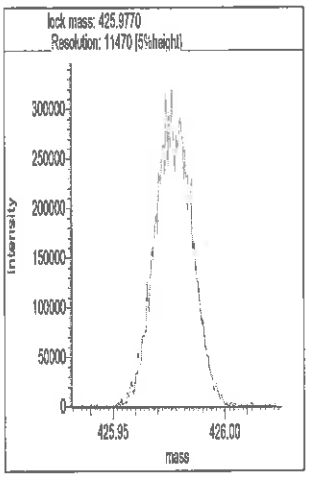


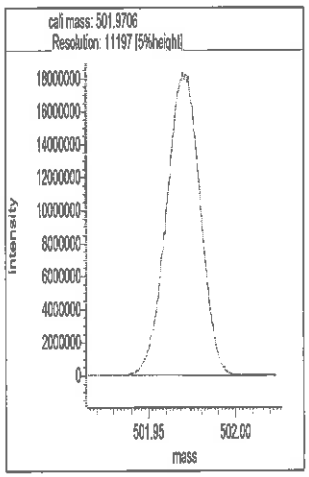
Segment 5

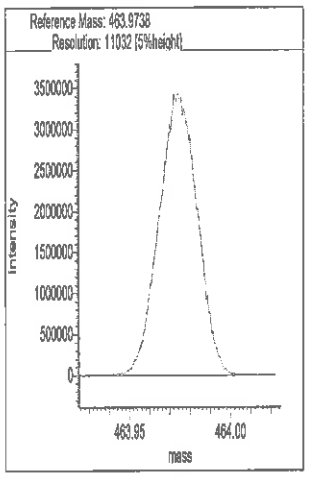
Lock mass 425.9770 [m/z] Resolution: 11470 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11197 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11032 [5%height]







Reports

```
00:55:42:  Peak matching procedure started
00:55:42:
00:55:43:  Reference mass: 313.98336
00:55:43:  Sample mass: 364.0
00:55:44:
00:55:44:  Finding reference mass
00:55:45:  Finding sample mass
00:55:46:
00:55:51:  [1]    363.9808 amu, mean: 363.9808
00:55:55:  [2]    363.9800 amu, mean: 363.9804     SD: 0.57 mmu or: 1.56 ppm
00:55:58:  [3]    363.9797 amu, mean: 363.9801     SD: 0.58 mmu or: 1.59 ppm
00:56:01:  [4]    363.9800 amu, mean: 363.9801     SD: 0.48 mmu or: 1.32 ppm
00:56:04:  [5]    363.9806 amu, mean: 363.9802     SD: 0.47 mmu or: 1.28 ppm
00:56:07:  [6]    363.9803 amu, mean: 363.9802     SD: 0.42 mmu or: 1.15 ppm
00:56:11:  [7]    363.9799 amu, mean: 363.9802     SD: 0.40 mmu or: 1.09 ppm
00:56:14:  [8]    363.9792 amu, mean: 363.9801     SD: 0.49 mmu or: 1.35 ppm
00:56:17:  [9]    363.9799 amu, mean: 363.9800     SD: 0.46 mmu or: 1.28 ppm
00:56:20:  [10]    363.9798 amu, mean: 363.9800     SD: 0.44 mmu or: 1.22 ppm
00:56:21:
00:56:21:  Stop requested. Please wait for procedure to finish.
00:56:21:
00:56:23:
00:56:23:  Peakmatching stopped
```

Signature LH 12-18-19

Resolution Check Report (DFS SN: 3097)

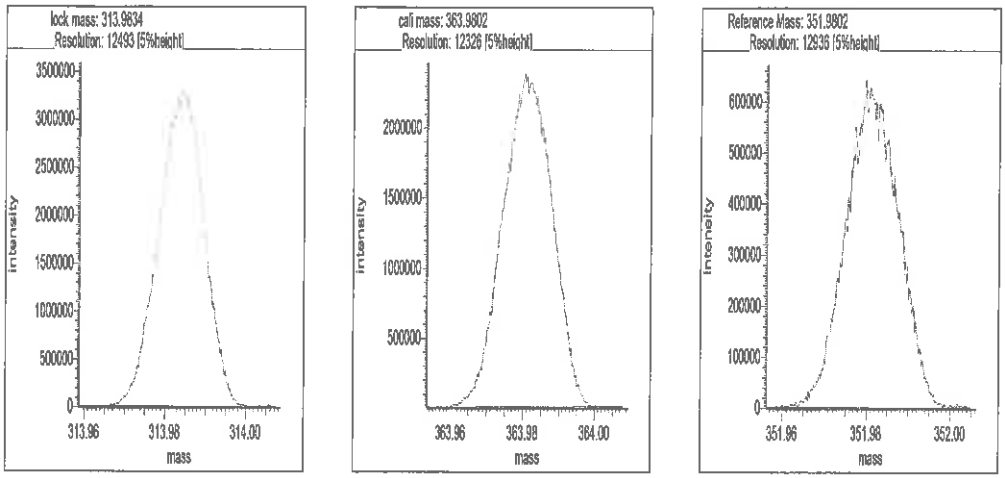
eurofins

Date:	18 Dec 2019 11:03
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

Segment 1

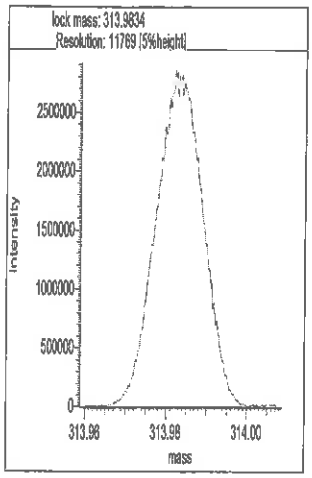
Lock mass 313.9834 [m/z] Resolution: 12493 [5%height]
Cali. mass 363.9802 [m/z] Resolution: 12326 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12936 [5%height]

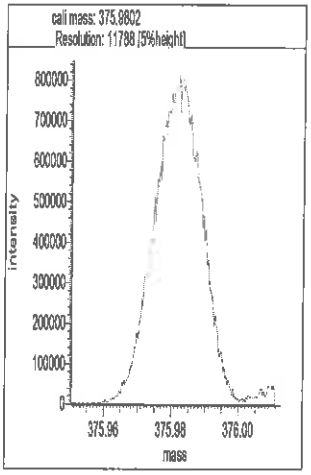
_191218s2a

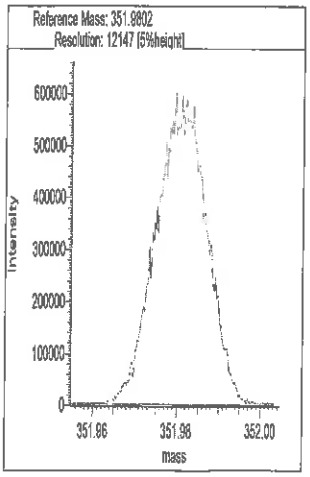


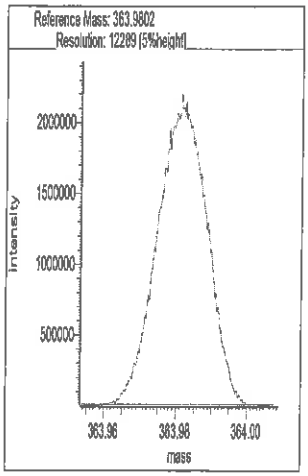
Segment 2

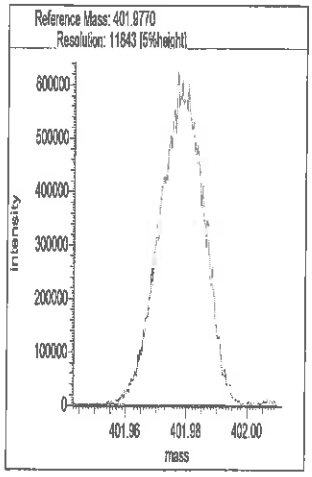
Lock mass 313.9834 [m/z] Resolution: 11769 [5%height]
Cali. mass 375.9802 [m/z] Resolution: 11788 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12147 [5%height]
Ref. mass 363.9802 [m/z] Resolution: 12289 [5%height]
Ref. mass 401.9770 [m/z] Resolution: 11843 [5%height]











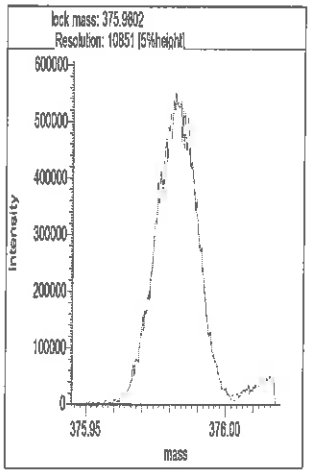
Segment 3

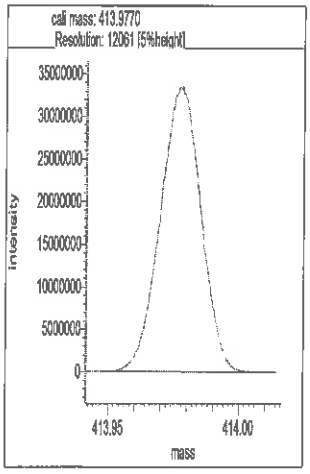
Lock mass 375.9802 [m/z] Resolution: 10851 [5%height]

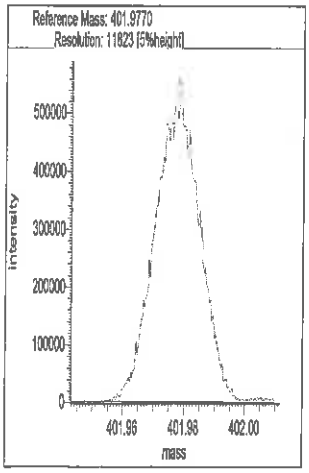
Cali. mass 413.9770 [m/z] Resolution: 12061 [5%height]

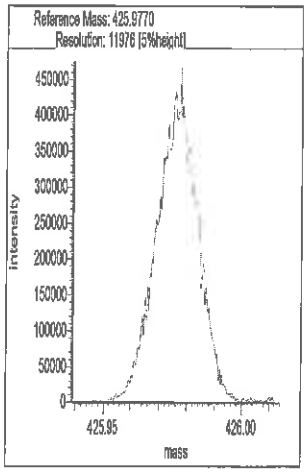
Ref. mass 401.9770 [m/z] Resolution: 11823 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11976 [5%height]







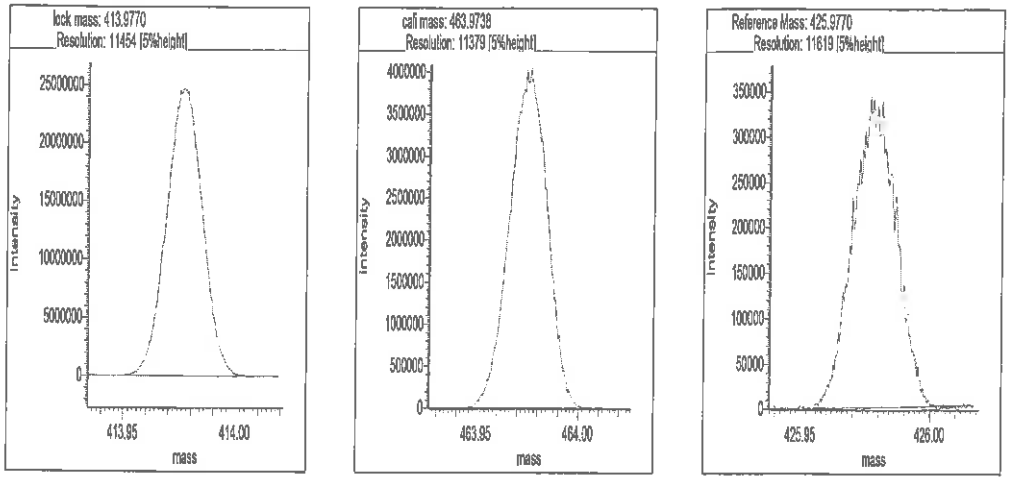


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11454 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11379 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11619 [5%height]

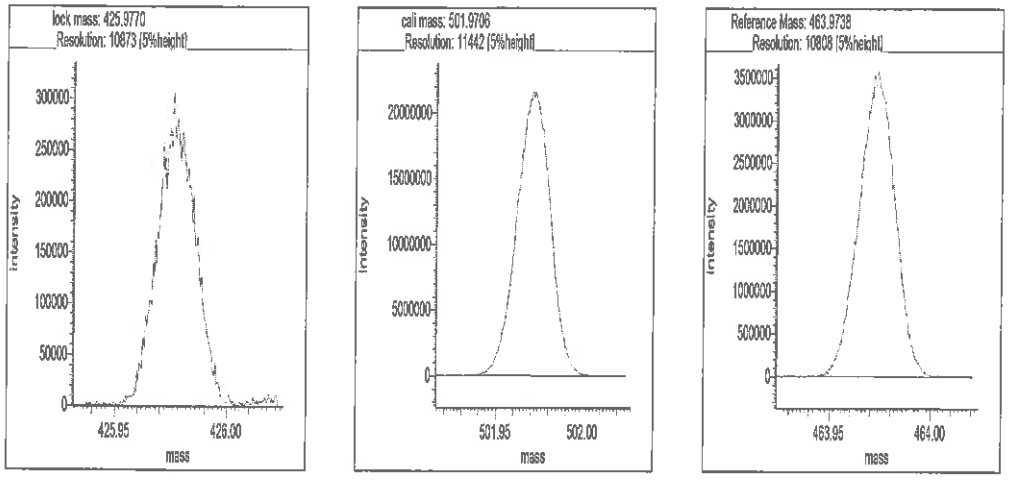


Segment 5

Lock mass 425.9770 [m/z] Resolution: 10873 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11442 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 10808 [5%height]



```
Reports
11:18:02:  Peak matching procedure started
11:18:02:
11:18:03:  Reference mass: 313.98336
11:18:03:  Sample mass: 364.0
11:18:04:
11:18:04:  Finding reference mass
11:18:05:  Finding sample mass
11:18:06:
11:18:11:  [1]    363.9802 amu, mean: 363.9802
11:18:15:  [2]    363.9802 amu, mean: 363.9802     SD: 0.01 mmu or: 0.03 ppm
11:18:18:  [3]    363.9797 amu, mean: 363.9800     SD: 0.31 mmu or: 0.86 ppm
11:18:21:  [4]    363.9795 amu, mean: 363.9799     SD: 0.39 mmu or: 1.06 ppm
11:18:24:  [5]    363.9802 amu, mean: 363.9800     SD: 0.36 mmu or: 0.99 ppm
11:18:27:  [6]    363.9806 amu, mean: 363.9801     SD: 0.42 mmu or: 1.16 ppm
11:18:30:  [7]    363.9804 amu, mean: 363.9801     SD: 0.40 mmu or: 1.11 ppm
11:18:33:  [8]    363.9798 amu, mean: 363.9801     SD: 0.39 mmu or: 1.08 ppm
11:18:37:  [9]    363.9794 amu, mean: 363.9800     SD: 0.43 mmu or: 1.18 ppm
11:18:40:  [10]    363.9798 amu, mean: 363.9800     SD: 0.41 mmu or: 1.12 ppm
11:18:40:
11:18:40:  Stop requested. Please wait for procedure to finish.
11:18:40:
```

Signature 12/18/19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 01:51:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014071-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 02:34:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 02:34:42

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	1081133	0.79	1.2213	8.816	8.816	0.0461	0.0461	88.16	
2,3,7,8-TCDF	22:15	1646160	0.80	1.1100	9.731	9.731	0.0770	0.0770	97.31	
D 13C-2,3,7,8-TCDD	19:42	10041510	0.78	1.0031	97.9	97.9	0.2883	0.2883	97.91	
D 13C-2,3,7,8-TCDF	22:13	15240501	0.79	1.6193	92.1	92.1	0.1396	0.1396	92.05	
$ 37Cl4-2,3,7,8-TCDD	19:43	1100512		1.1834	9.095	9.095	0.0268	0.0268	90.95	
* 13C-1,2,3,4-TCDD	20:09	10224483	0.80	1.6E+05	100.0	100.0			100	

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 01:51:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014071-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 02:34:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 02:34:42

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:43	0	1.001	477943	76136	149	372	511		
321.8936	19:44	19:43	1	1.002	603190	95199	200	500	476	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:15	22:15	0	1.002	731146	96792	383	957	253		
305.8987	22:14	22:15	-1	1.001	915014	121474	312	780	389	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:42	19:42	0	0.977	4386061	686465	932	2330	737		
333.9338	19:42	19:42	0	0.977	5655449	863765	933	2332	926	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:13	22:13	0	1.103	6744093	898864	753	1882	1194		
317.9389	22:13	22:13	0	1.103	8496408	1133766	705	1762	1608	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:43	0	0.978	1100512	174744	205	512	852		
13C-1,2,3,4-TCDD											
331.9368	20:09	20:09	0		4545361	714392	932	2330	767		
333.9338	20:09	20:09	0		5679122	897579	933	2332	962	0.80(0.65-0.89)	

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
CCV Relative RT Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 01:51:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014071-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 02:34:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 02:34:42

Start Cal Date: 03-May-2019 02:43:00
End Cal Date: 03-May-2019 06:14:00

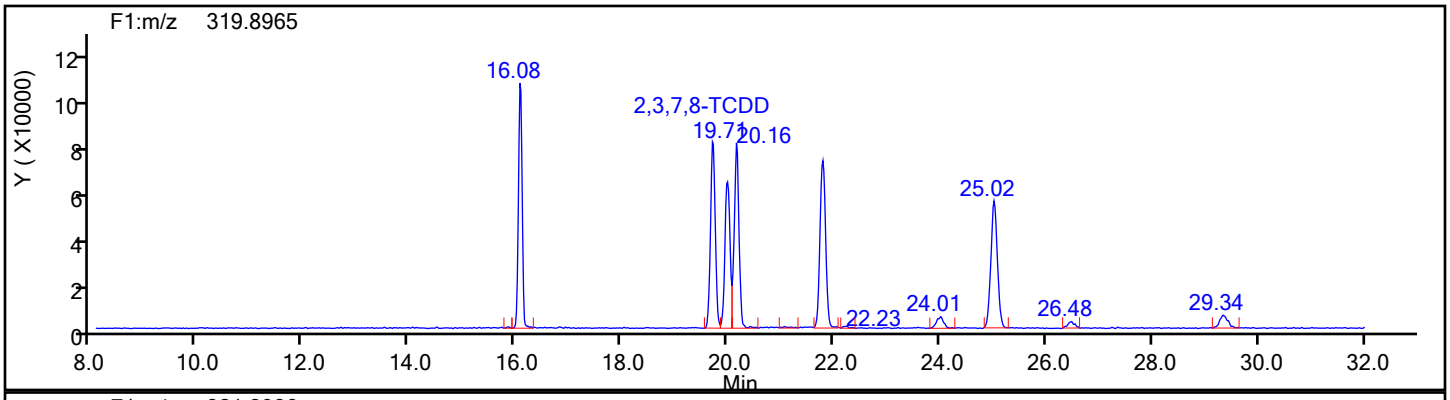
Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,4-TCDD		21:56	20:09	-106		1.000	1.000	0.000 - 0.000
13C-2,3,7,8-TCDD		21:21	19:42	-99		0.974	0.977	0.976 - 1.043
2,3,7,8-TCDD	T	21:23	19:43	-100		1.002	1.001	0.999 - 1.003
37Cl4-2,3,7,8-TCDD		21:23	19:43	-100		0.975	*0.978	0.989 - 1.052
13C-2,3,7,8-TCDF		24:17	22:13	-123		1.107	1.103	0.923 - 1.103
2,3,7,8-TCDF		24:19	22:15	-123		1.001	1.002	0.999 - 1.003

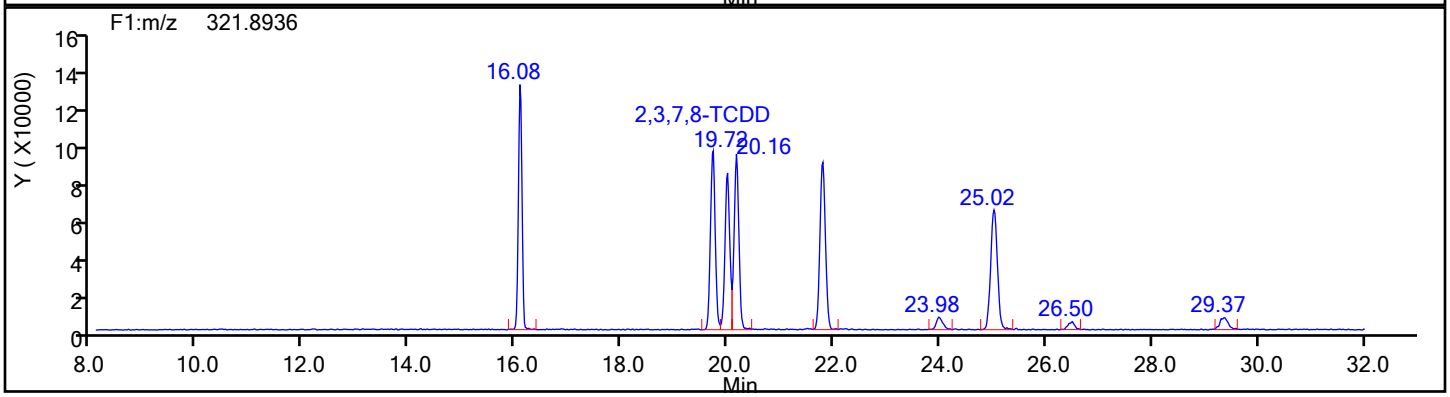
Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

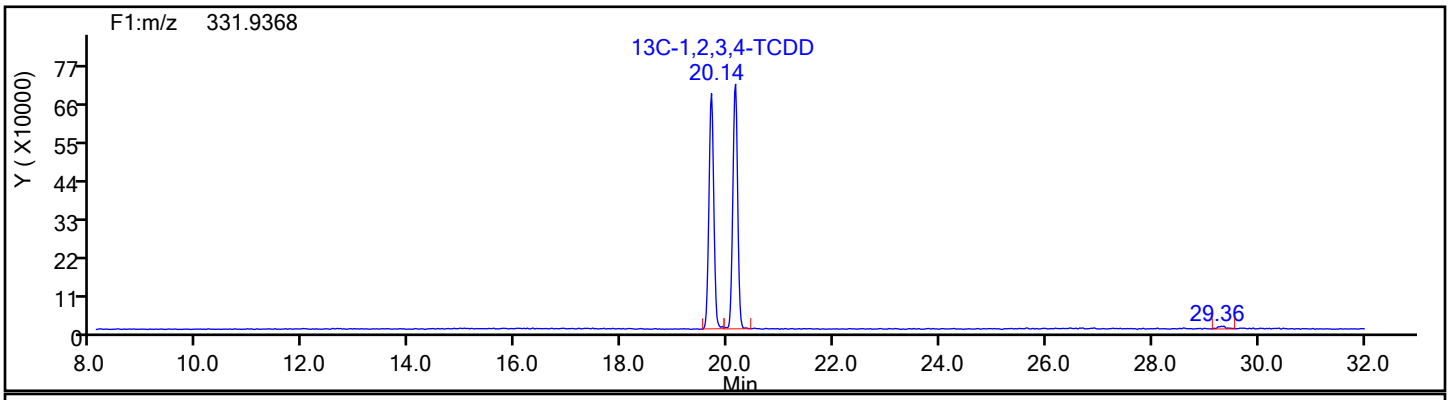
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

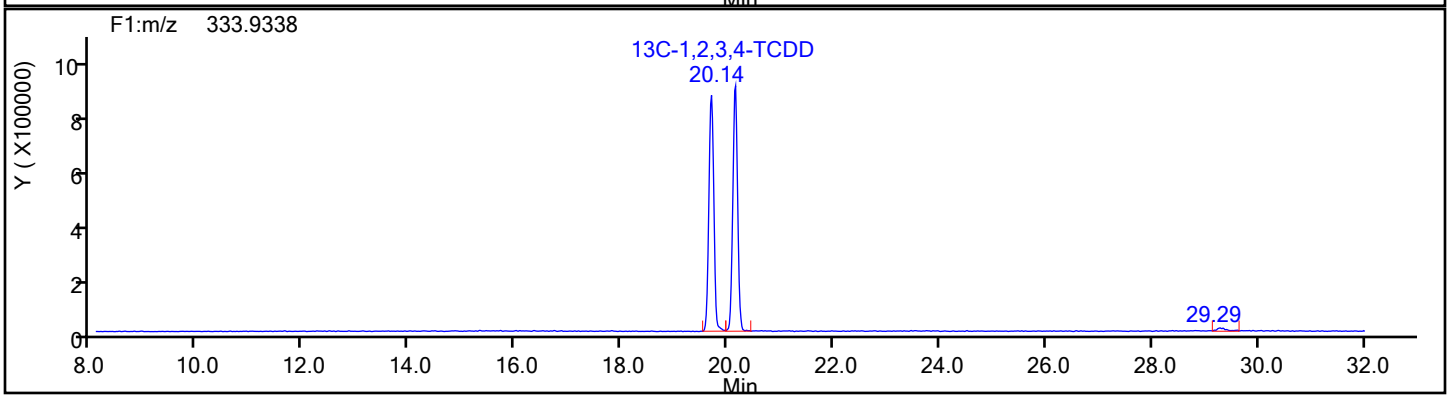
TCDD





TCDD Standards



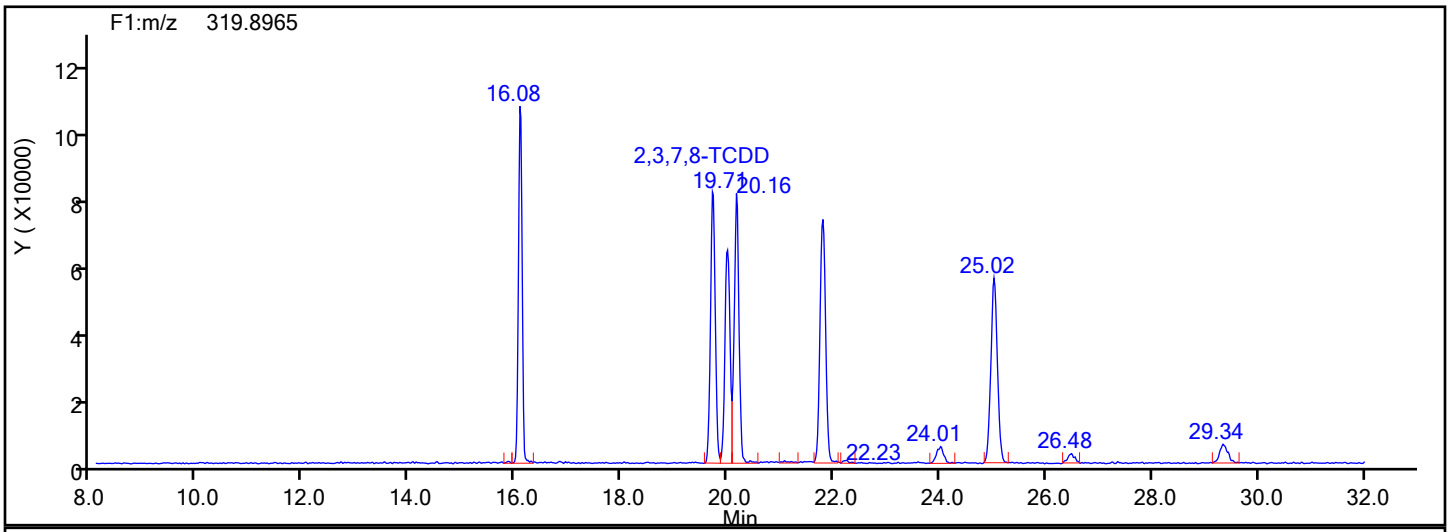


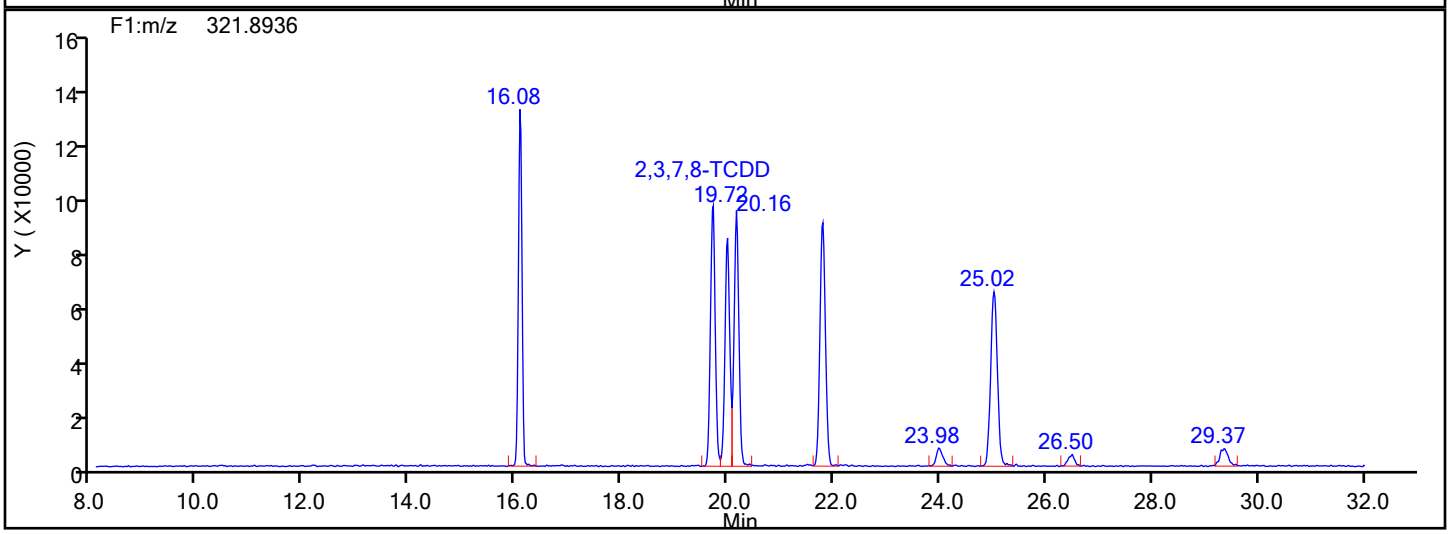
Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

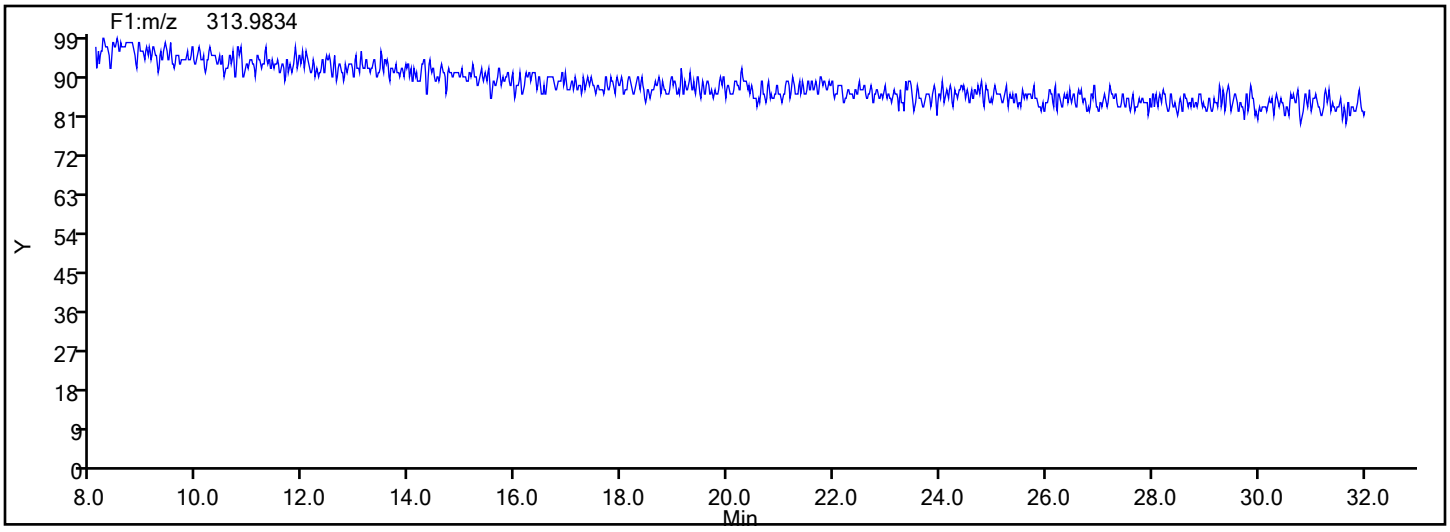
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass

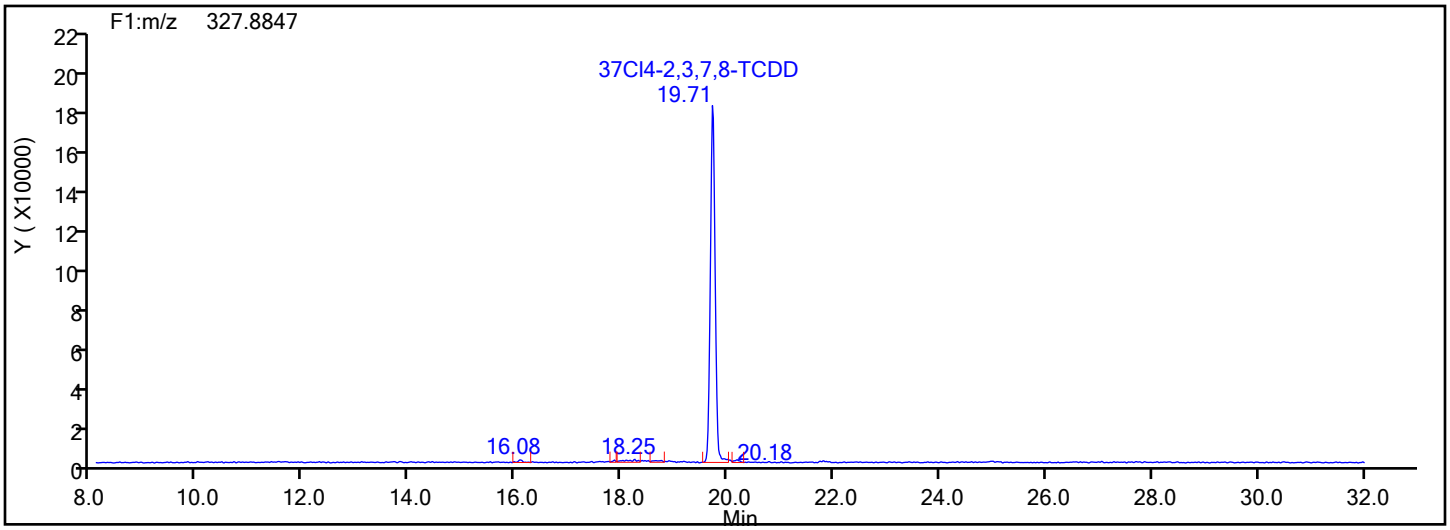


Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

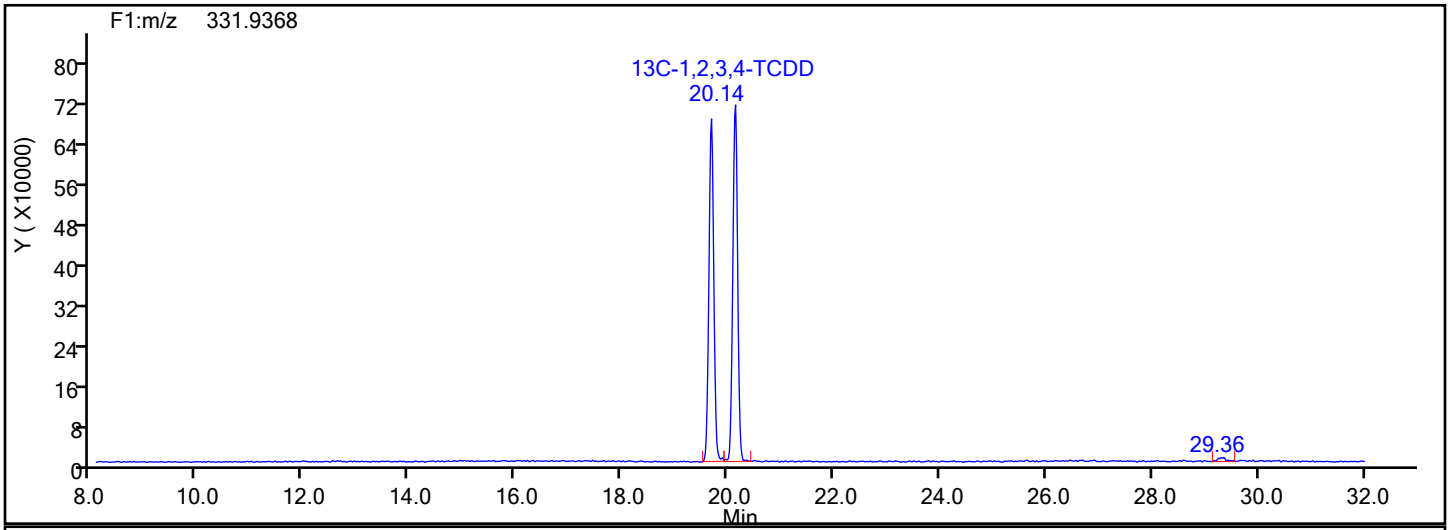
Eurofins TestAmerica, Knoxville

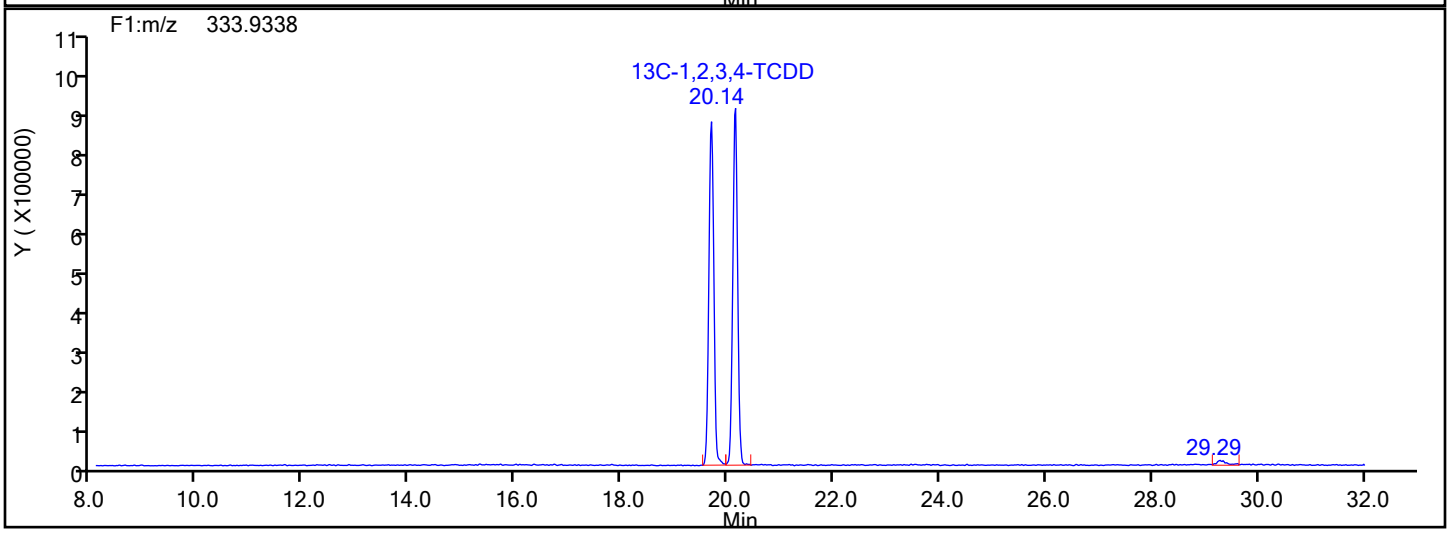
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



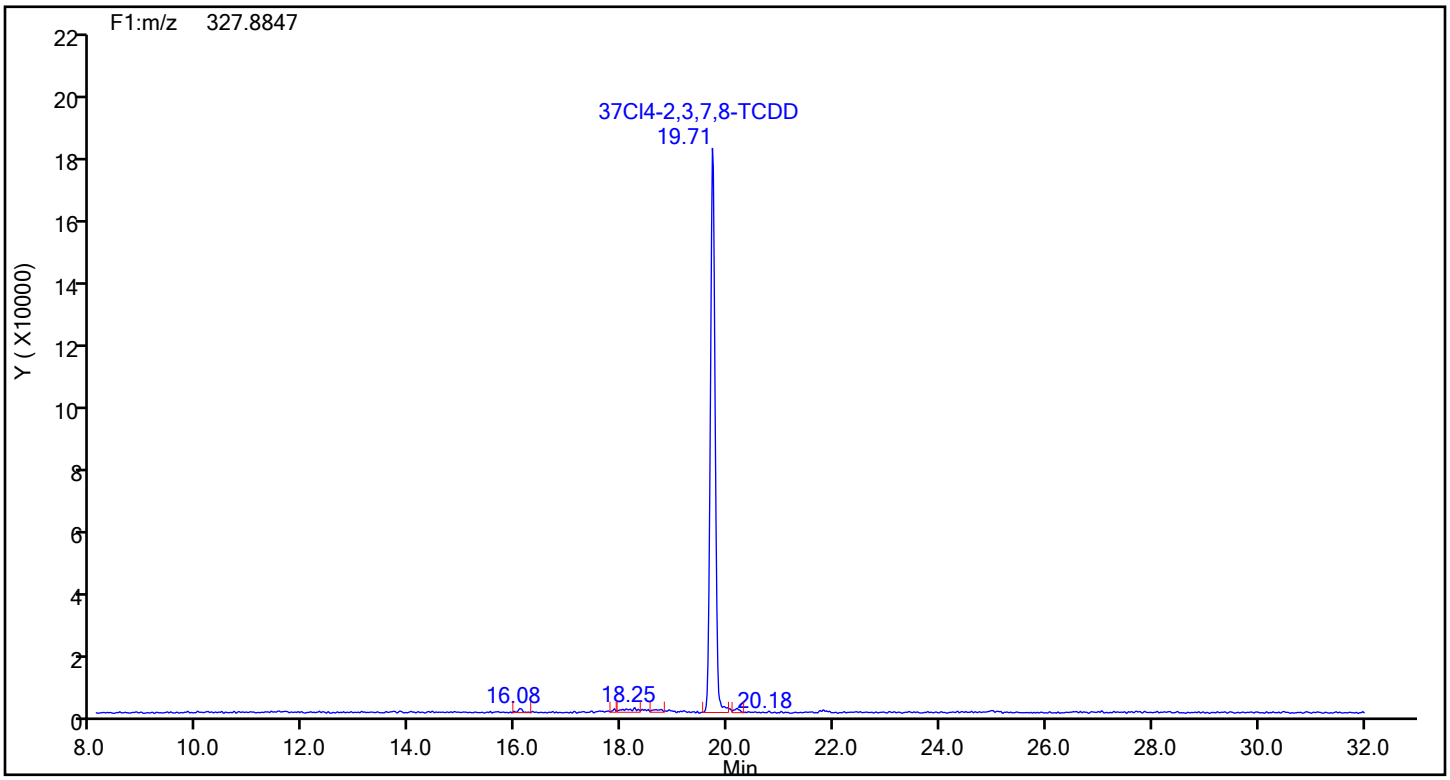


Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

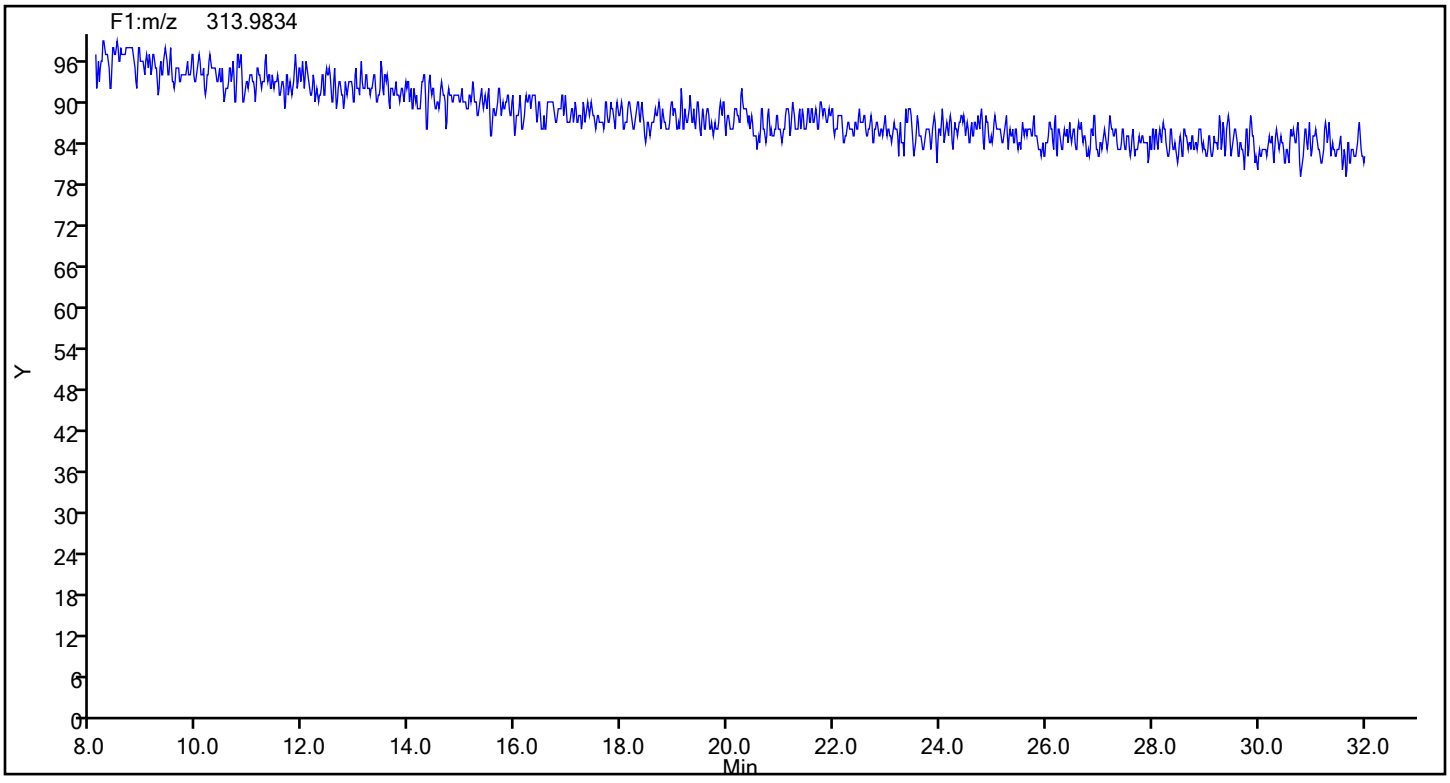
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass

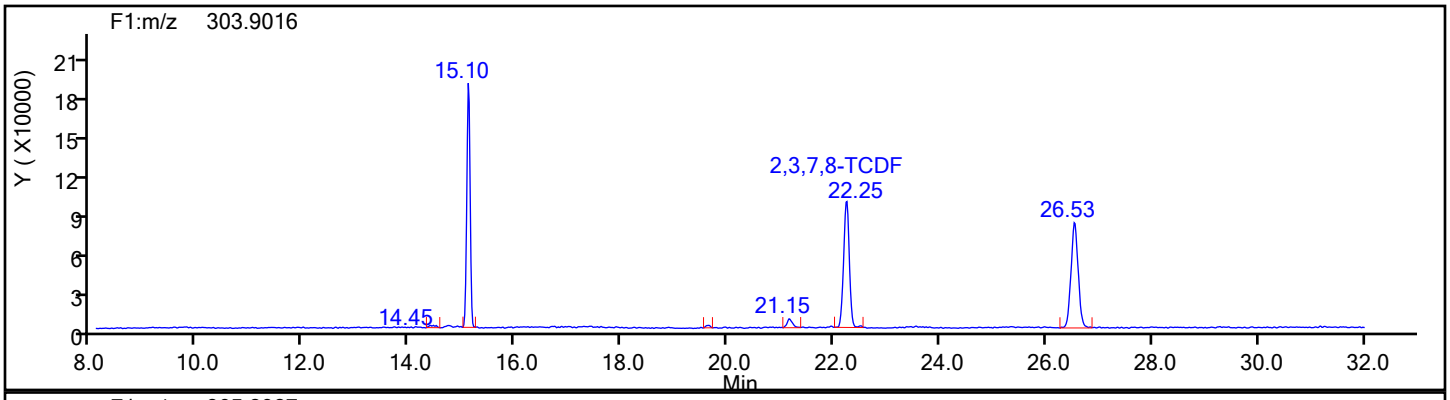


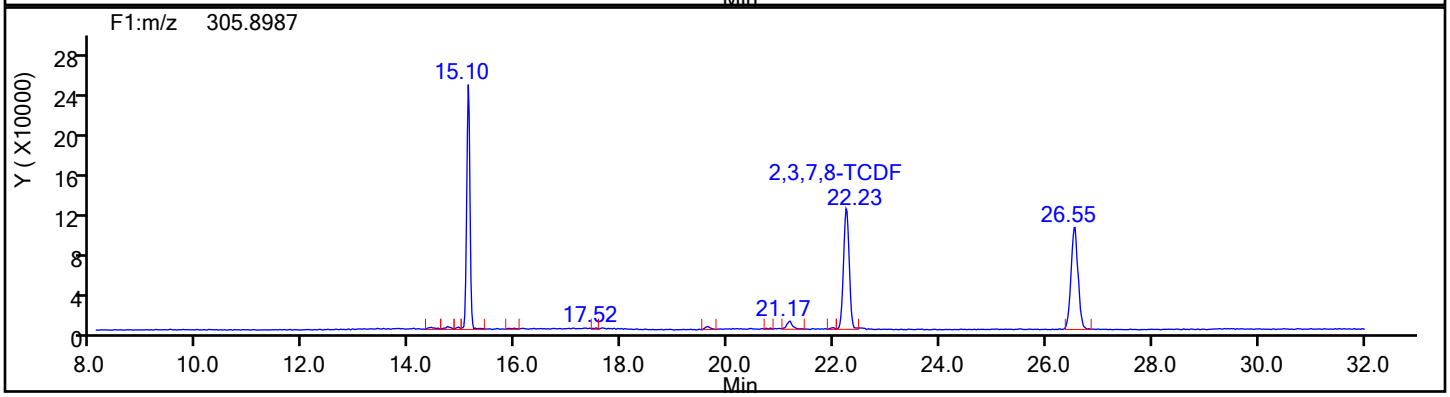
Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

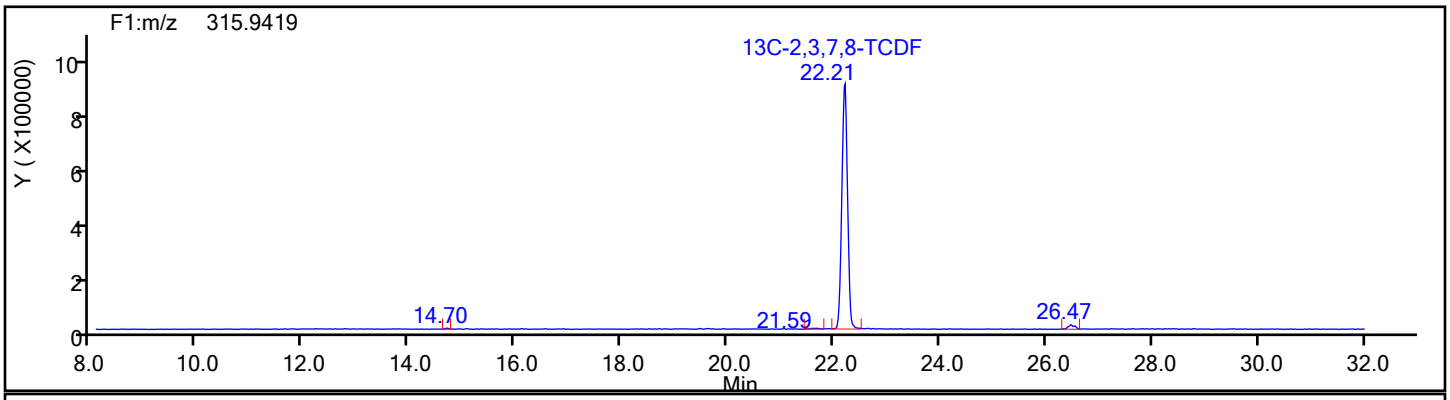
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

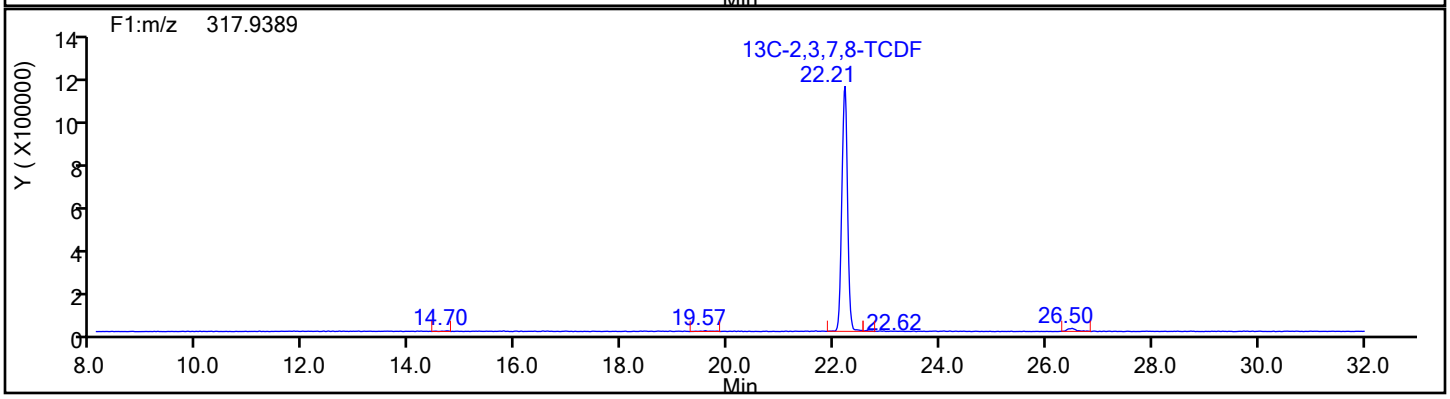
TCDF





TCDF Standards



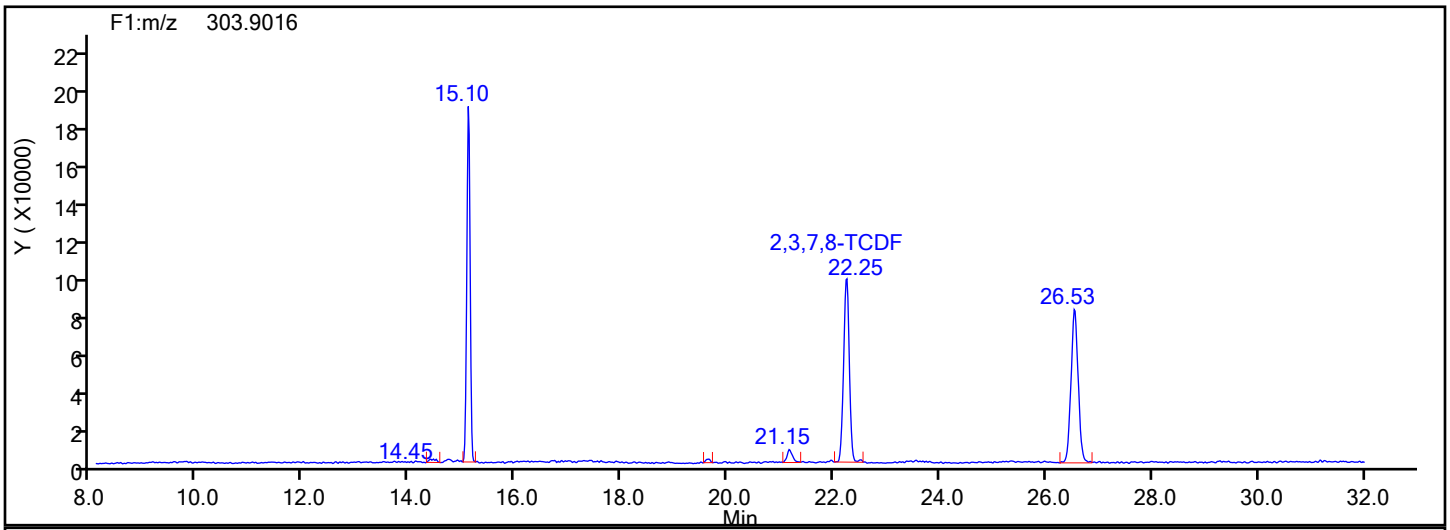


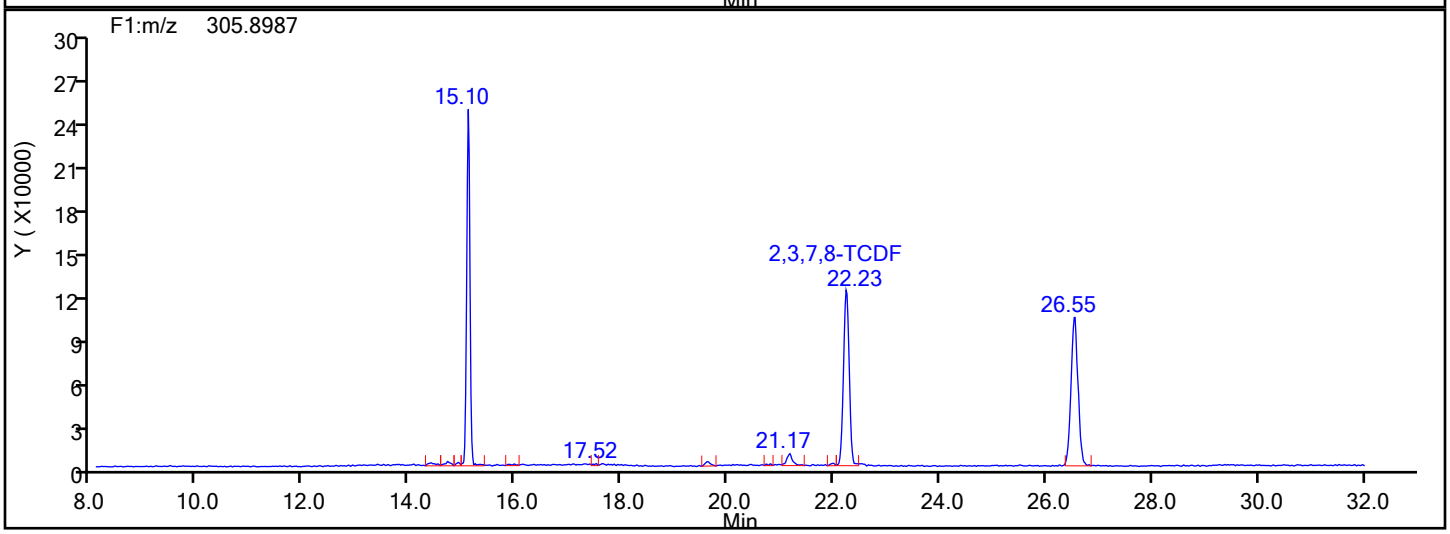
Report Date: 18-Dec-2019 02:34:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

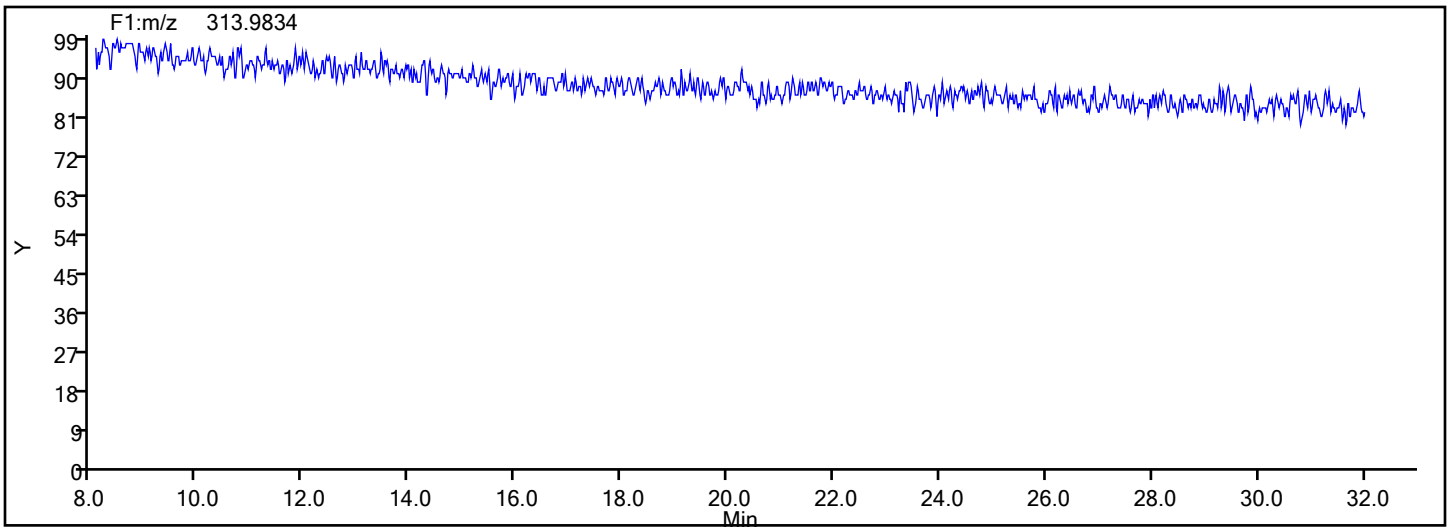
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

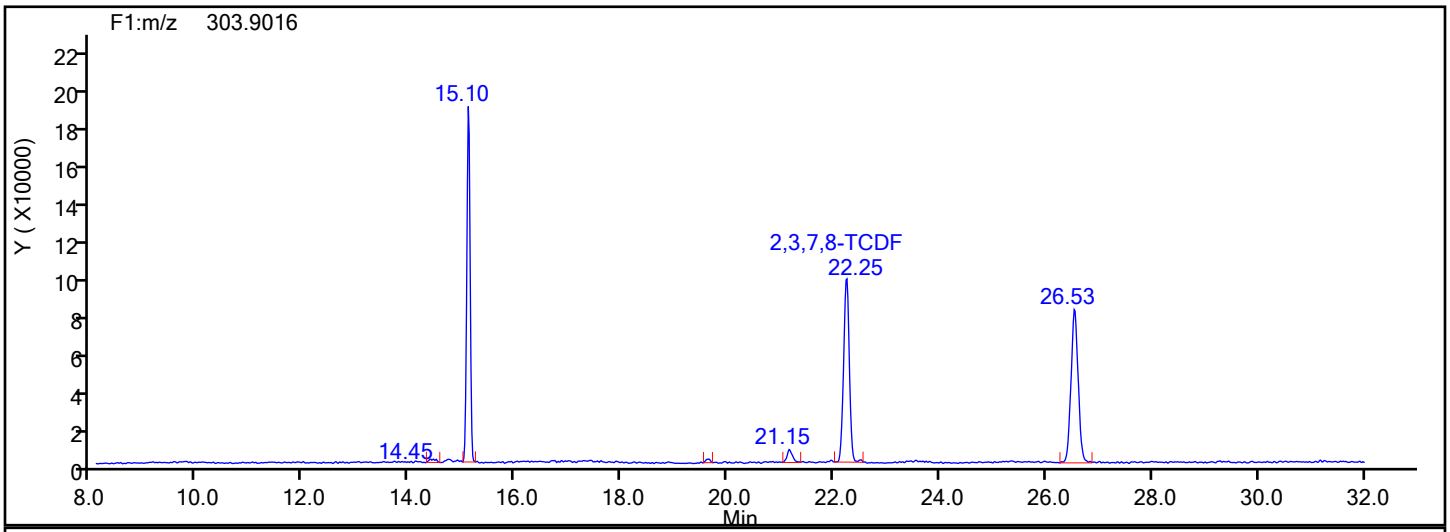


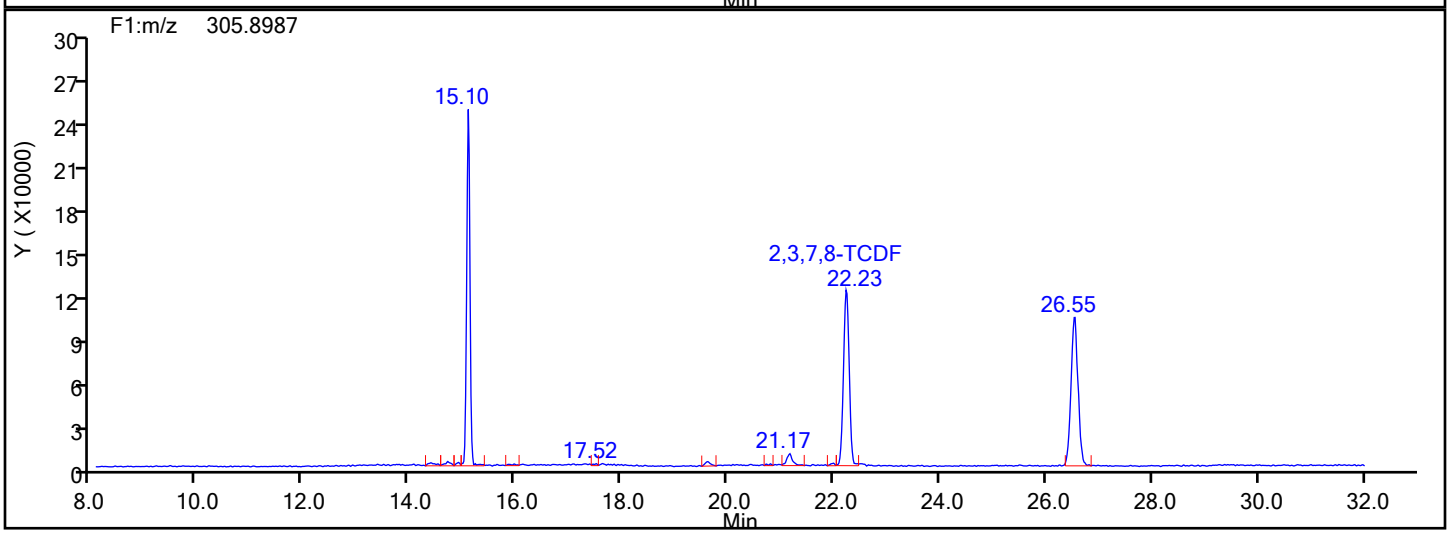
Report Date: 18-Dec-2019 02:34:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

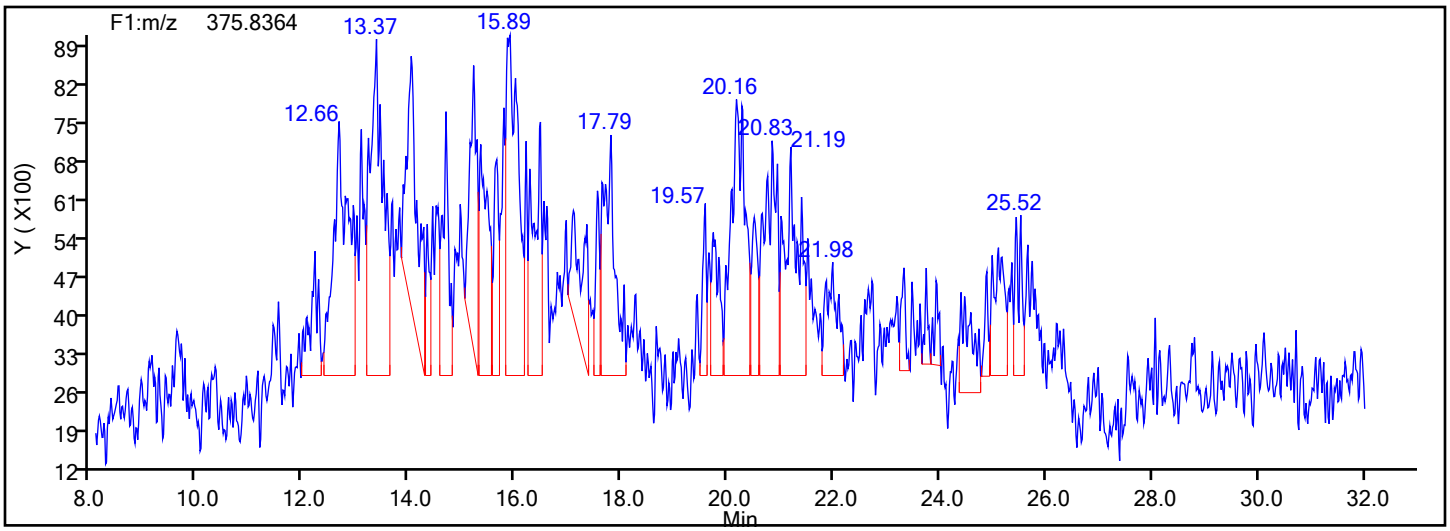
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218s1.d		
Injection Date:	18-Dec-2019 01:51:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: CCV 140-36178/3 Calibration Date: 12/18/2019 12:11

Instrument ID: D12C Calib Start Date: 05/03/2019 02:43

GC Column: DB225 ID: 0.32(mm) Calib End Date: 05/03/2019 06:14

Lab File ID: d2191218s2.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.221	1.068		8.74	10.0	87	78-129
2,3,7,8-TCDF	AveID	1.110	1.087		9.79	10.0	98	84-120
13C-2,3,7,8-TCDD	Ave	1.003	1.024		102	100	102	82-121
13C-2,3,7,8-TCDF	Ave	1.619	1.475		91.1	100	91	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.183	1.127		9.53	10.0	95	79-127

Resolution Check Report (DFS SN: 3097)

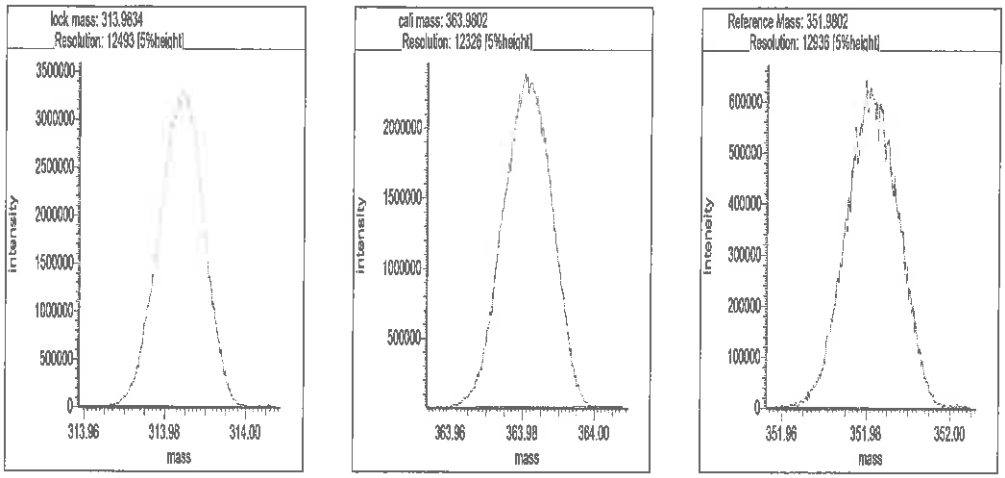
eurofins

Date:	18 Dec 2019 11:03
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

Segment 1

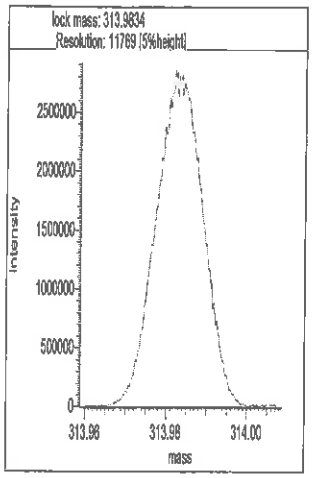
Lock mass 313.9834 [m/z] Resolution: 12493 [5%height]
Cali. mass 363.9802 [m/z] Resolution: 12326 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12936 [5%height]

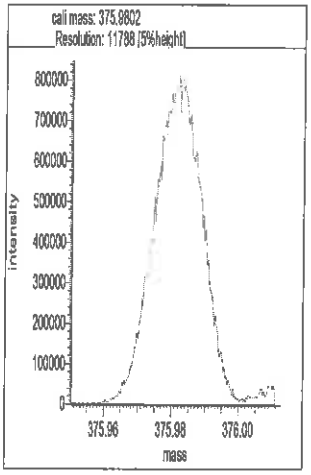
_191218s2a

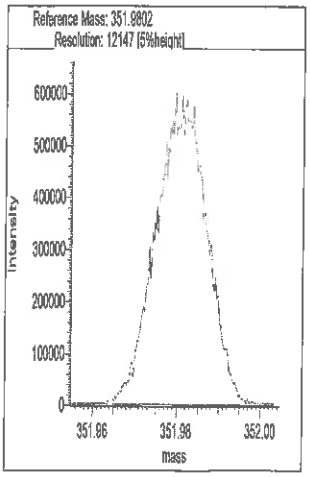


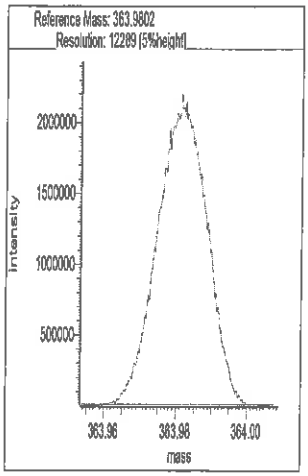
Segment 2

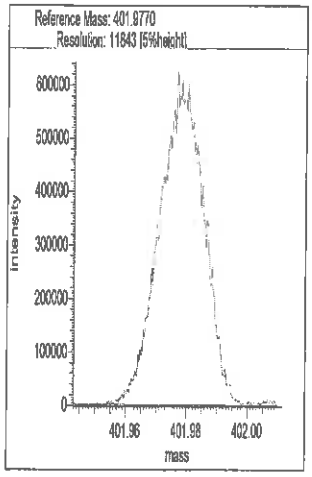
Lock mass 313.9834 [m/z] Resolution: 11769 [5%height]
Cali. mass 375.9802 [m/z] Resolution: 11788 [5%height]
Ref. mass 351.9802 [m/z] Resolution: 12147 [5%height]
Ref. mass 363.9802 [m/z] Resolution: 12289 [5%height]
Ref. mass 401.9770 [m/z] Resolution: 11843 [5%height]











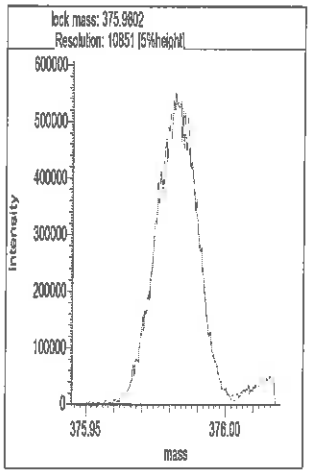
Segment 3

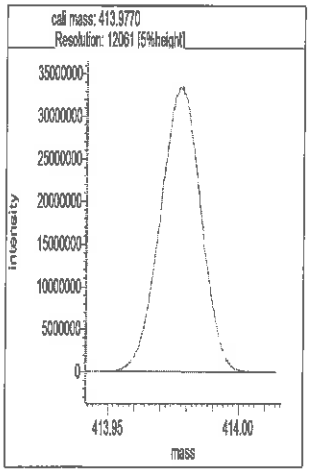
Lock mass 375.9802 [m/z] Resolution: 10851 [5%height]

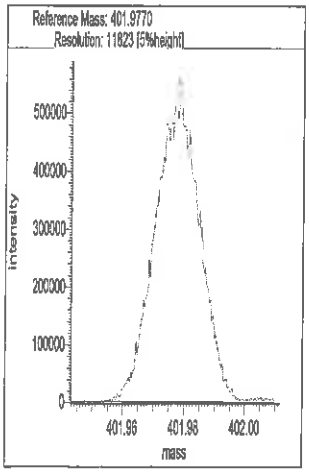
Cali. mass 413.9770 [m/z] Resolution: 12061 [5%height]

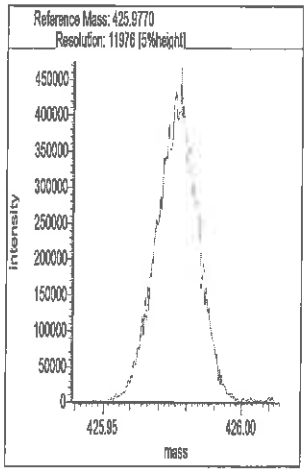
Ref. mass 401.9770 [m/z] Resolution: 11823 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11976 [5%height]







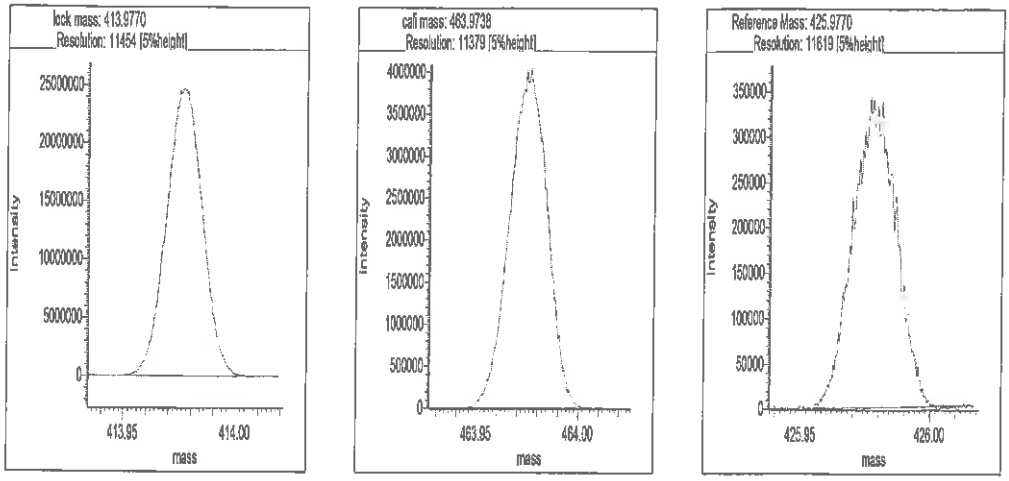


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11454 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11379 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11619 [5%height]

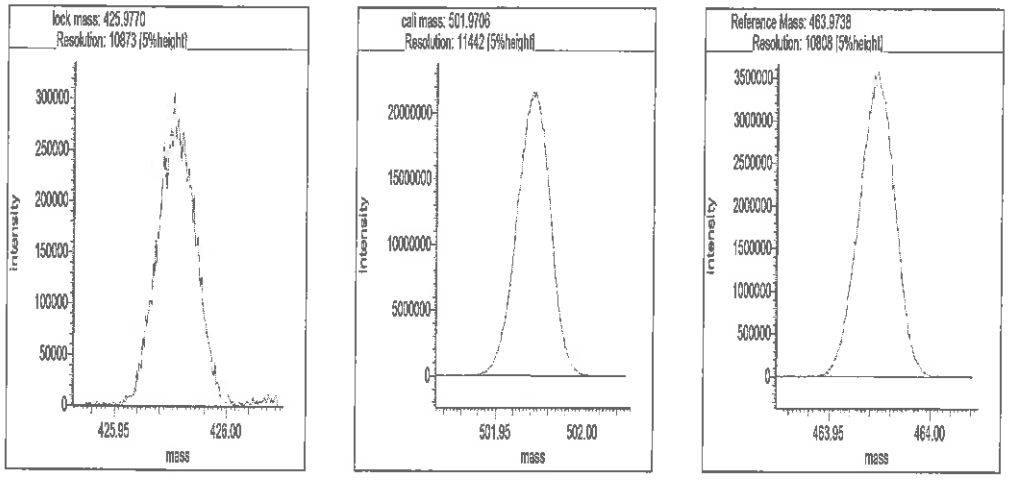


Segment 5

Lock mass 425.9770 [m/z] Resolution: 10873 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11442 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 10808 [5%height]



```
Reports
11:18:02:  Peak matching procedure started
11:18:02:
11:18:03:  Reference mass: 313.98336
11:18:03:  Sample mass: 364.0
11:18:04:
11:18:04:  Finding reference mass
11:18:05:  Finding sample mass
11:18:06:
11:18:11:  [1]    363.9802 amu, mean: 363.9802
11:18:15:  [2]    363.9802 amu, mean: 363.9802     SD: 0.01 mmu or: 0.03 ppm
11:18:18:  [3]    363.9797 amu, mean: 363.9800     SD: 0.31 mmu or: 0.86 ppm
11:18:21:  [4]    363.9795 amu, mean: 363.9799     SD: 0.39 mmu or: 1.06 ppm
11:18:24:  [5]    363.9802 amu, mean: 363.9800     SD: 0.36 mmu or: 0.99 ppm
11:18:27:  [6]    363.9806 amu, mean: 363.9801     SD: 0.42 mmu or: 1.16 ppm
11:18:30:  [7]    363.9804 amu, mean: 363.9801     SD: 0.40 mmu or: 1.11 ppm
11:18:33:  [8]    363.9798 amu, mean: 363.9801     SD: 0.39 mmu or: 1.08 ppm
11:18:37:  [9]    363.9794 amu, mean: 363.9800     SD: 0.43 mmu or: 1.18 ppm
11:18:40:  [10]    363.9798 amu, mean: 363.9800     SD: 0.41 mmu or: 1.12 ppm
11:18:40:
11:18:40:  Stop requested. Please wait for procedure to finish.
11:18:40:
```

Signature 12/18/19

Resolution Check Report (DFS SN: 3097)

eurofins

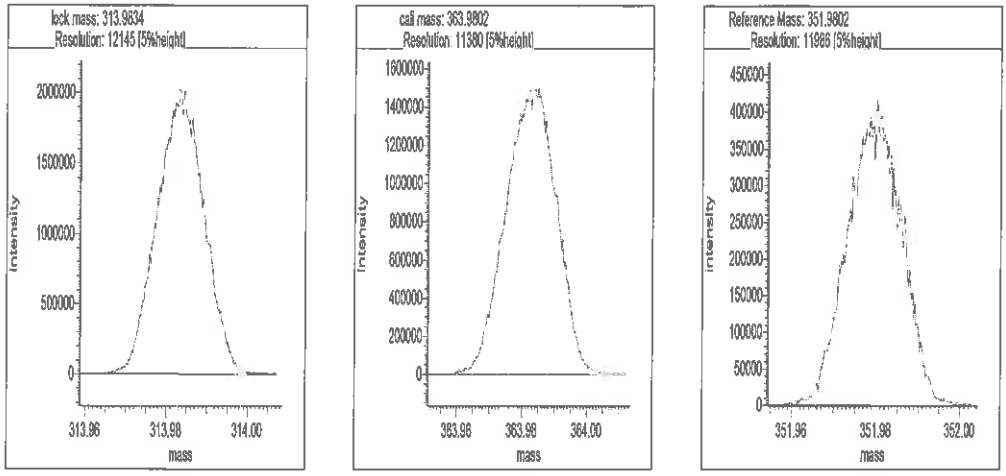
Date:	18 Dec 2019 20:48
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

Segment 1

Lock mass 313.9834 [m/z] Resolution: 12145 [5%height]

Cali. mass 363.9802 [m/z] Resolution: 11380 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11986 [5%height]



Segment 2

Lock mass 313.9834 [m/z] Resolution: 11991 [5%height]

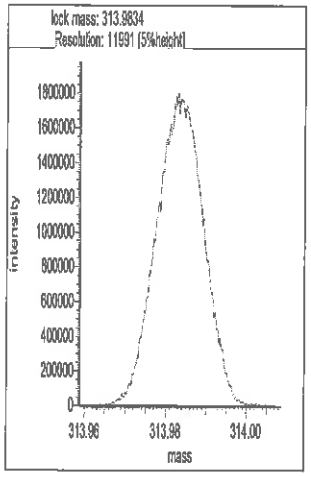
Cali. mass 375.9802 [m/z] Resolution: 11243 [5%height]

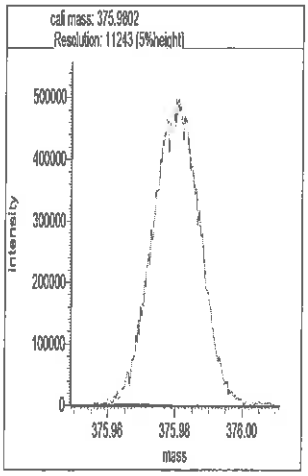
Ref. mass 351.9802 [m/z] Resolution: 11579 [5%height]

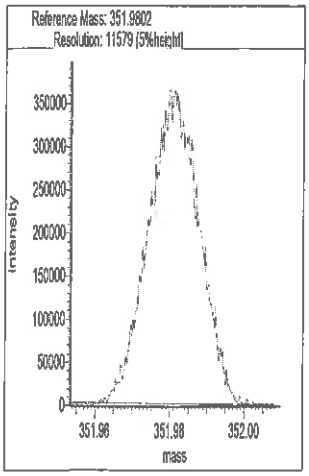
Ref. mass 363.9802 [m/z] Resolution: 11656 [5%height]

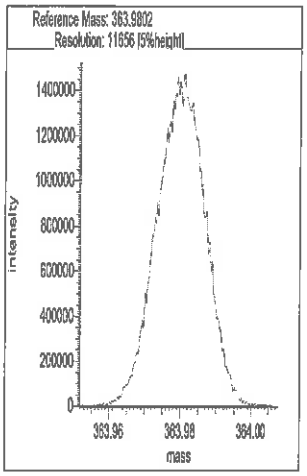
Ref. mass 401.9770 [m/z] Resolution: 11082 [5%height]

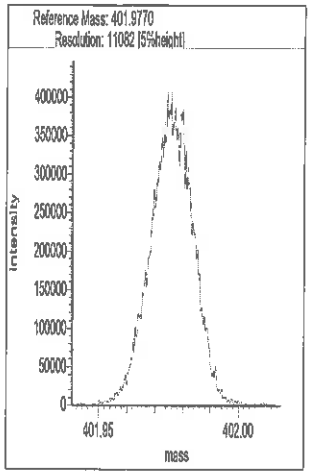
_191218s2b











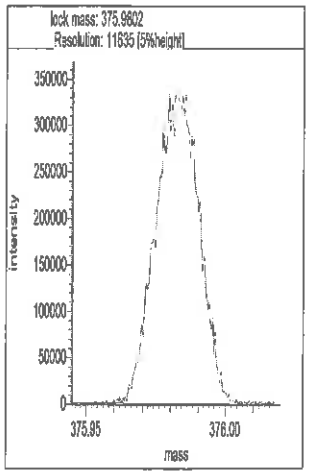
Segment 3

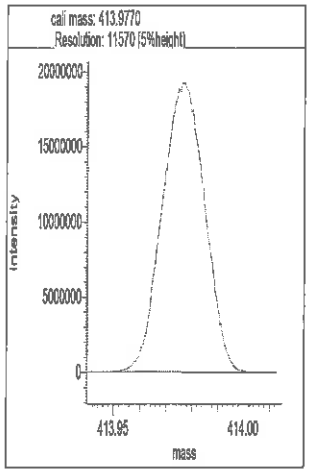
Lock mass 375.9802 [m/z] Resolution: 11635 [5%height]

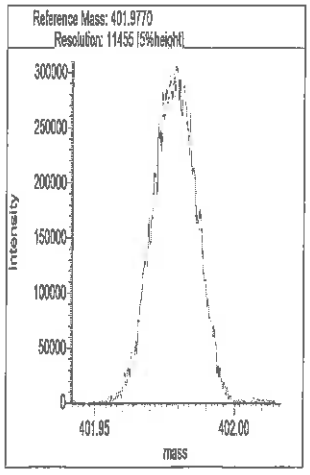
Cali. mass 413.9770 [m/z] Resolution: 11570 [5%height]

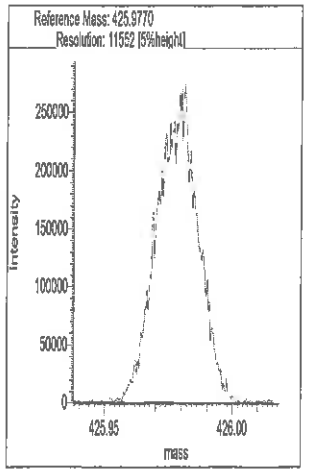
Ref. mass 401.9770 [m/z] Resolution: 11455 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11552 [5%height]







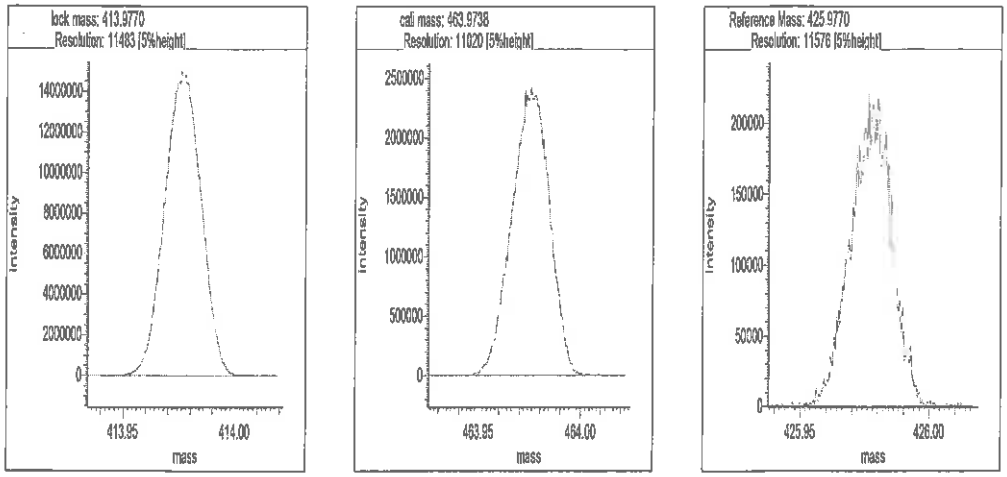


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11483 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11020 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11576 [5%height]

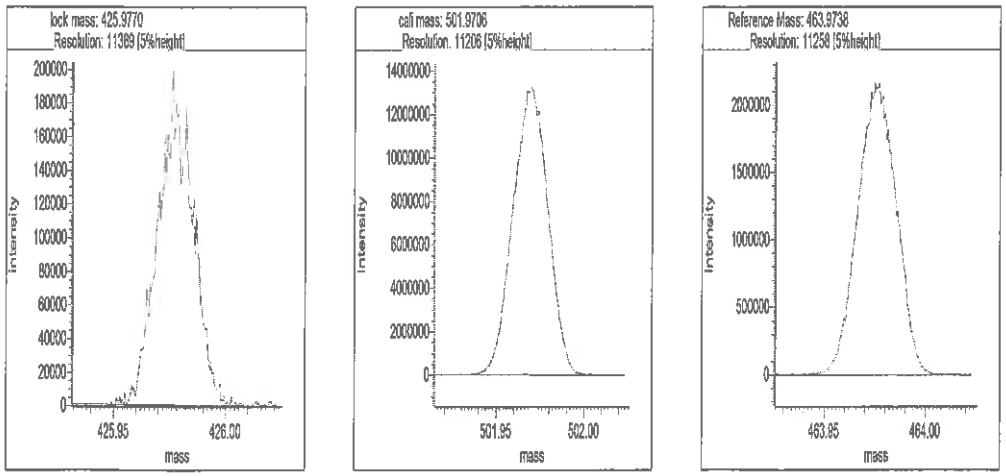


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11369 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11206 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11258 [5%height]



```
Reports
21:00:29:  Peak matching procedure started
21:00:30:
21:00:30:  Reference mass: 313.98336
21:00:31:  Sample mass: 364.0
21:00:31:
21:00:32:  Finding reference mass
21:00:33:  Finding sample mass
21:00:33:
21:00:39:  [1]    363.9804 amu, mean: 363.9804
21:00:42:  [2]    363.9799 amu, mean: 363.9801     SD: 0.33 mmu or: 0.90 ppm
21:00:45:  [3]    363.9797 amu, mean: 363.9800     SD: 0.36 mmu or: 0.99 ppm
21:00:48:  [4]    363.9793 amu, mean: 363.9798     SD: 0.44 mmu or: 1.20 ppm
21:00:51:  [5]    363.9796 amu, mean: 363.9798     SD: 0.39 mmu or: 1.07 ppm
21:00:55:  [6]    363.9801 amu, mean: 363.9798     SD: 0.37 mmu or: 1.03 ppm
21:00:58:  [7]    363.9800 amu, mean: 363.9799     SD: 0.35 mmu or: 0.95 ppm
21:01:01:  [8]    363.9800 amu, mean: 363.9799     SD: 0.32 mmu or: 0.89 ppm
21:01:04:  [9]    363.9795 amu, mean: 363.9798     SD: 0.33 mmu or: 0.90 ppm
21:01:07:  [10]    363.9797 amu, mean: 363.9798     SD: 0.31 mmu or: 0.86 ppm
21:01:09:
21:01:09:  Stop requested. Please wait for procedure to finish.
21:01:09:
21:01:10:  [11]    363.9806 amu, mean: 363.9799     SD: 0.37 mmu or: 1.02 ppm
21:01:12:
21:01:13:  Peakmatching stopped
```

Signature LVA 12-18-19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 12:11:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014075-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:49:50 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 12:49:50

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	977221	0.79	1.2213	8.741	8.741	0.0395	0.0395	87.41	
2,3,7,8-TCDF	22:13	1433352	0.80	1.1100	9.792	9.792	0.0598	0.0598	97.92	
D 13C-2,3,7,8-TCDD	19:41	9154230	0.79	1.0031	102.0	102.0	0.1695	0.1695	102	
D 13C-2,3,7,8-TCDF	22:11	13187602	0.80	1.6193	91.1	91.1	0.1548	0.1548	91.07	
$ 37Cl4-2,3,7,8-TCDD	19:43	1008147		1.1834	9.526	9.526	0.0191	0.0191	95.26	
* 13C-1,2,3,4-TCDD	20:08	8942800	0.81	1.6E+05	100.0	100.0			100	

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 12:11:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014075-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:49:50 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 12:49:50

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	19:43	19:43	0	1.002	430959	70323	123	307	572		
321.8936	19:43	19:43	0	1.002	546262	87175	151	377	577	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:13	22:13	0	1.002	636441	85232	165	412	517		
305.8987	22:13	22:13	0	1.002	796911	106496	299	747	356	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19:41	19:41	0	0.977	4036381	629606	510	1275	1235		
333.9338	19:41	19:41	0	0.977	5117849	791880	414	1035	1913	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:11	0	1.102	5849851	769071	772	1930	996		
317.9389	22:11	22:11	0	1.102	7337751	977762	590	1475	1657	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:43	0	0.979	1008147	160080	123	307	1301		
13C-1,2,3,4-TCDD											
331.9368	20:08	20:08	0		3994222	614627	510	1275	1205		
333.9338	20:07	20:08	-1		4948578	743697	414	1035	1796	0.81(0.65-0.89)	

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
CCV Relative RT Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2019 12:11:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-003
Misc. Info.: 140-0014075-003
Operator ID: Xcalibur_System Instrument ID: D12C
Sublist: chrom-TCDD_TCDF_D12C*sub2

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:49:50 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\ical5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 12:49:50

Start Cal Date: 03-May-2019 02:43:00
End Cal Date: 03-May-2019 06:14:00

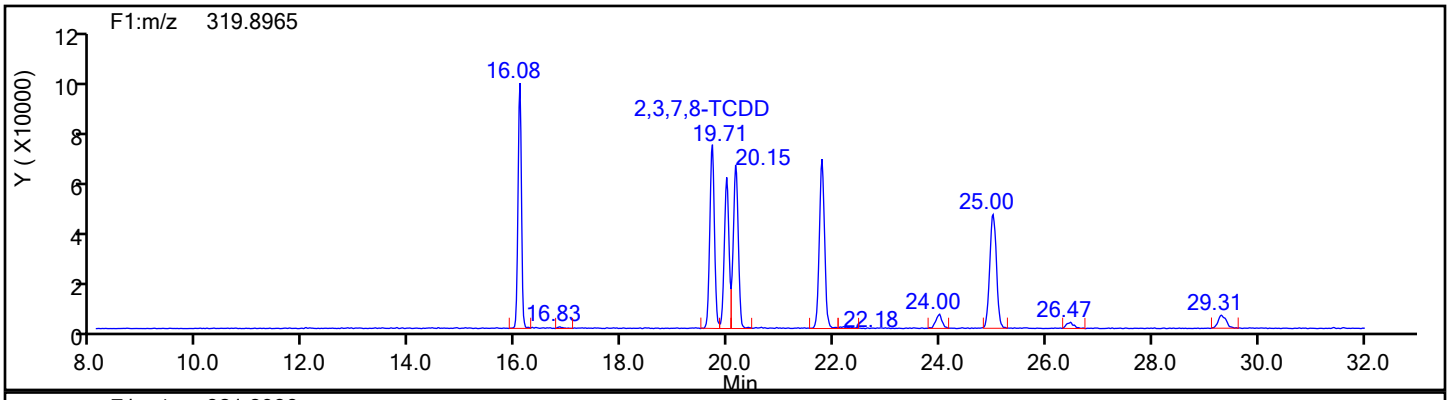
Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,4-TCDD		21:56	20:08	-107		1.000	1.000	0.000 - 0.000
13C-2,3,7,8-TCDD		21:21	19:41	-100		0.974	0.977	0.976 - 1.043
2,3,7,8-TCDD	T	21:23	19:43	-100		1.002	1.002	0.999 - 1.003
37Cl4-2,3,7,8-TCDD		21:23	19:43	-100		0.975	*0.979	0.989 - 1.052
13C-2,3,7,8-TCDF		24:17	22:11	-125		1.107	1.102	0.923 - 1.103
2,3,7,8-TCDF		24:19	22:13	-125		1.001	1.002	0.999 - 1.003

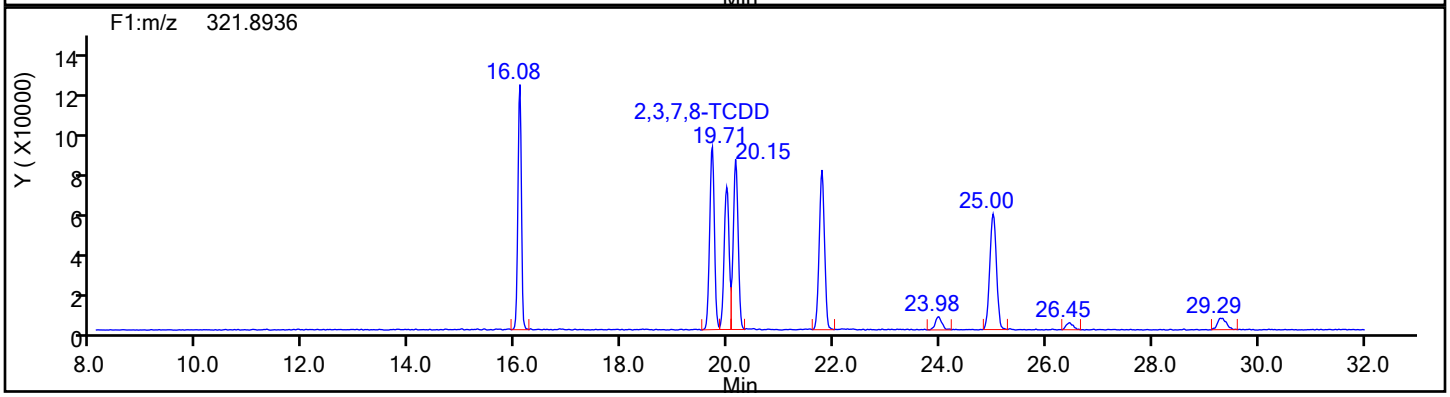
Report Date: 18-Dec-2019 12:49:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

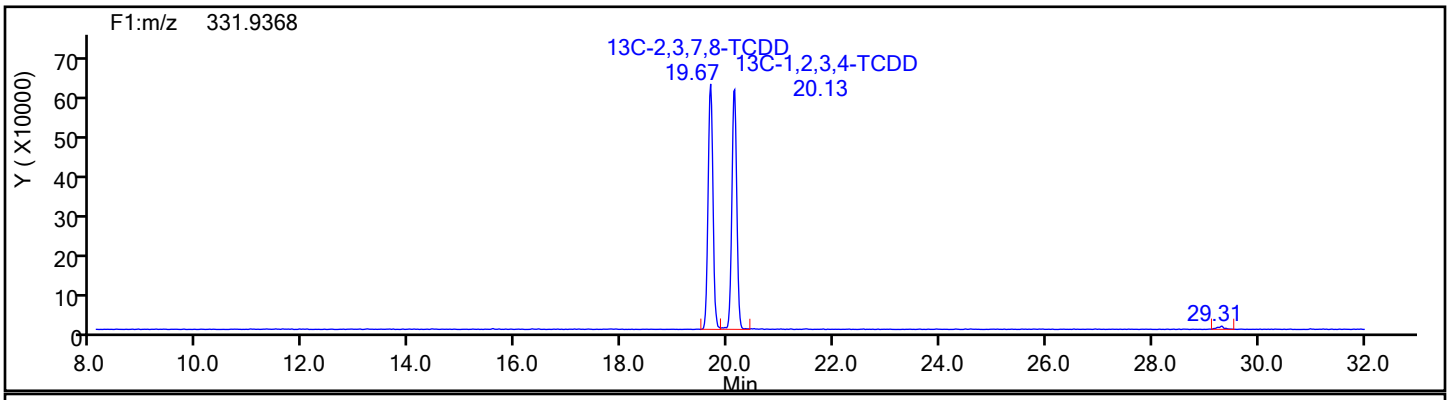
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

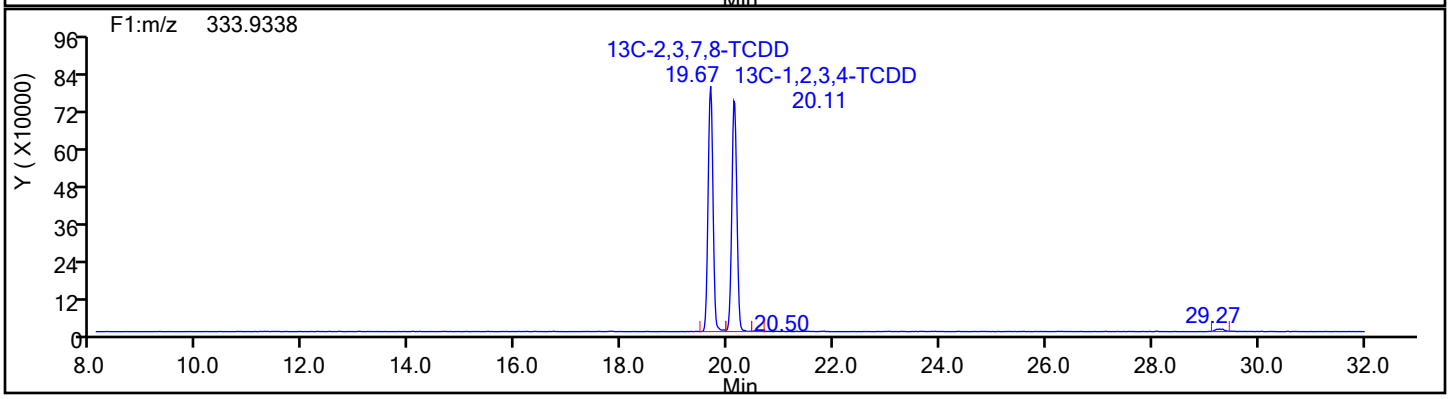
TCDD





TCDD Standards



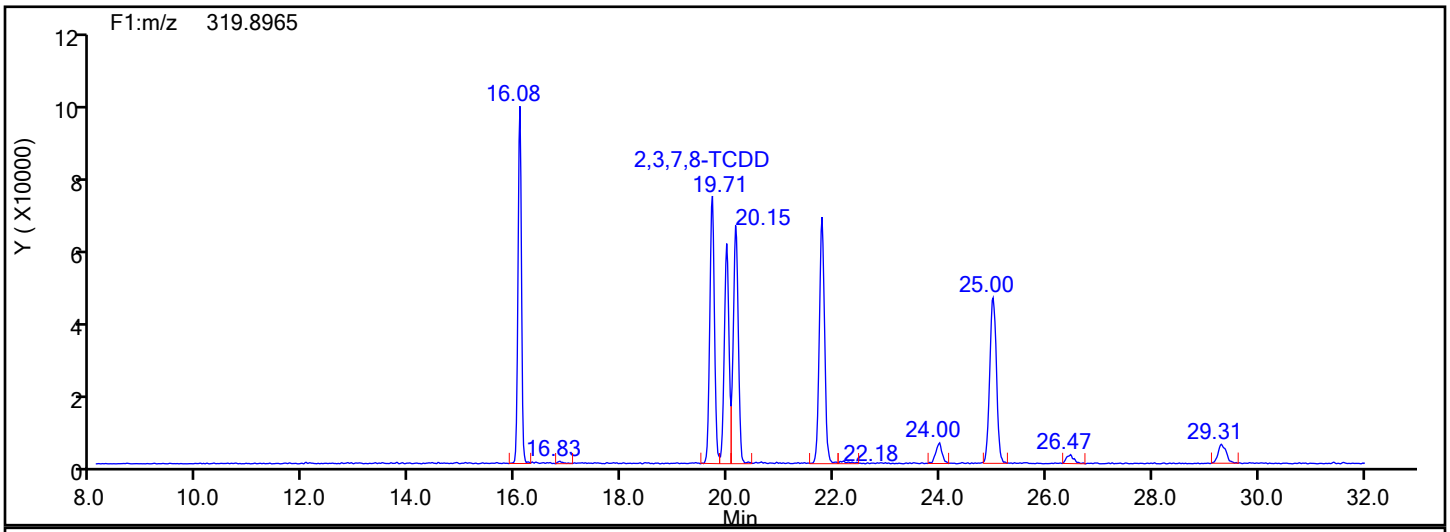


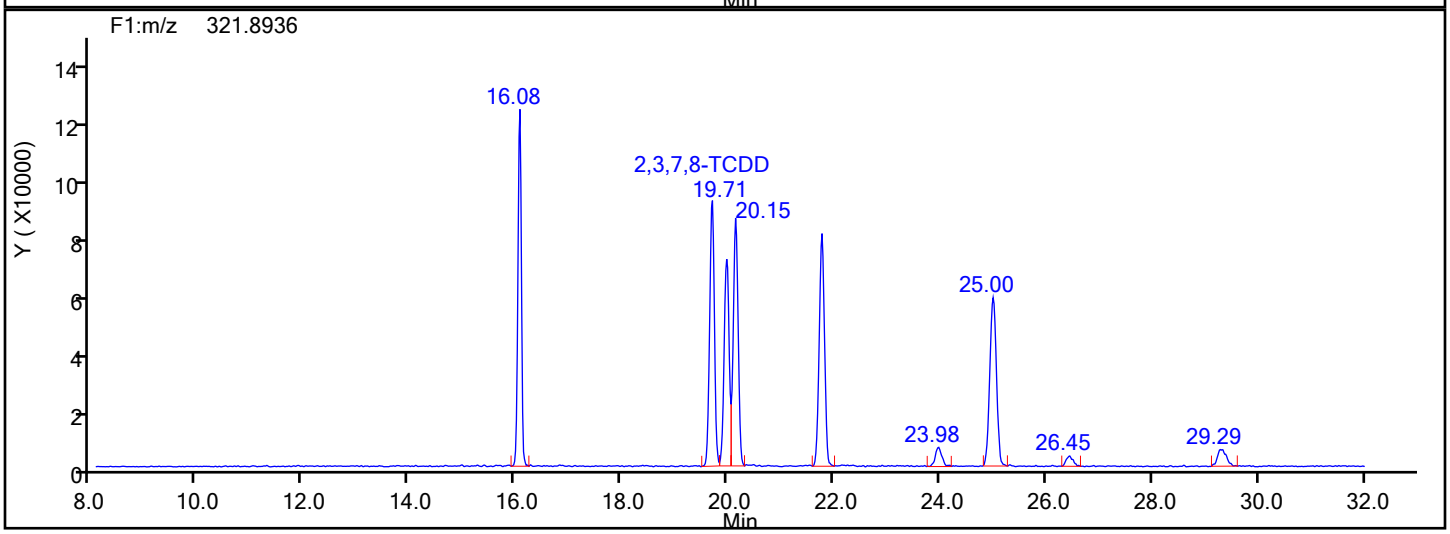
Report Date: 18-Dec-2019 12:49:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

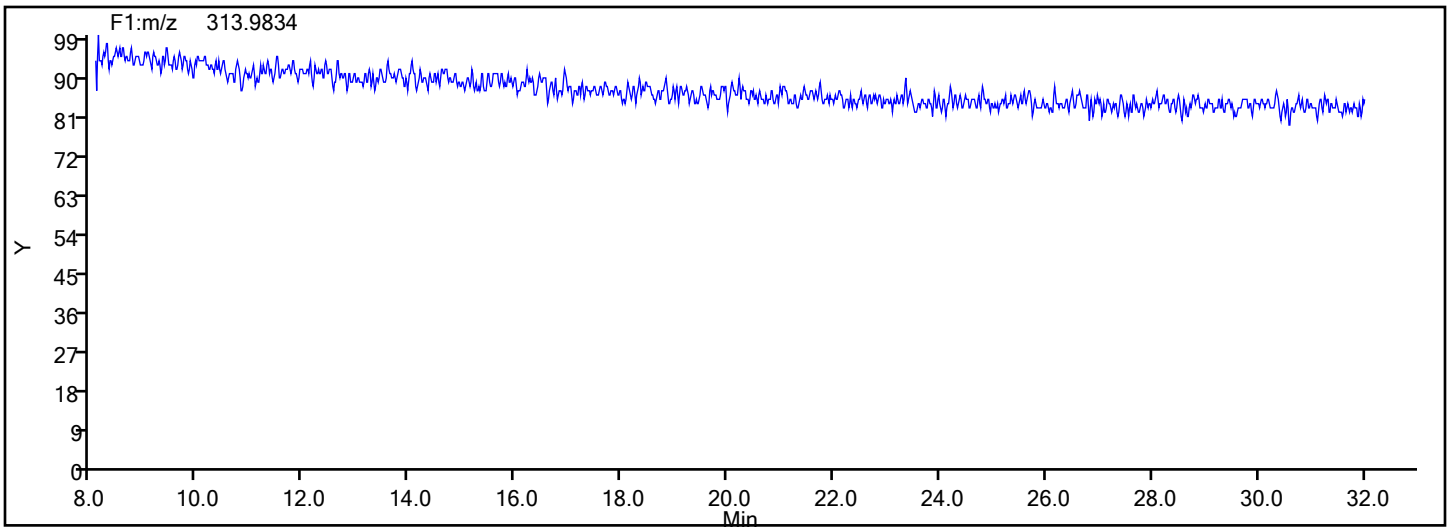
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDD





TCDD Lock Mass

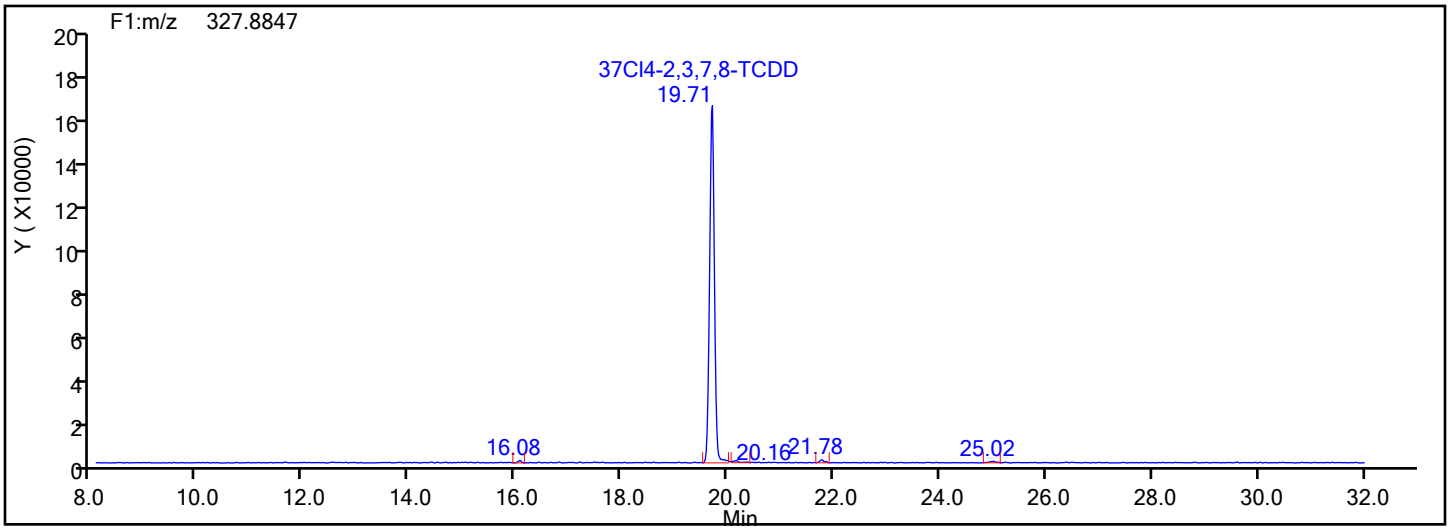


Report Date: 18-Dec-2019 12:49:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

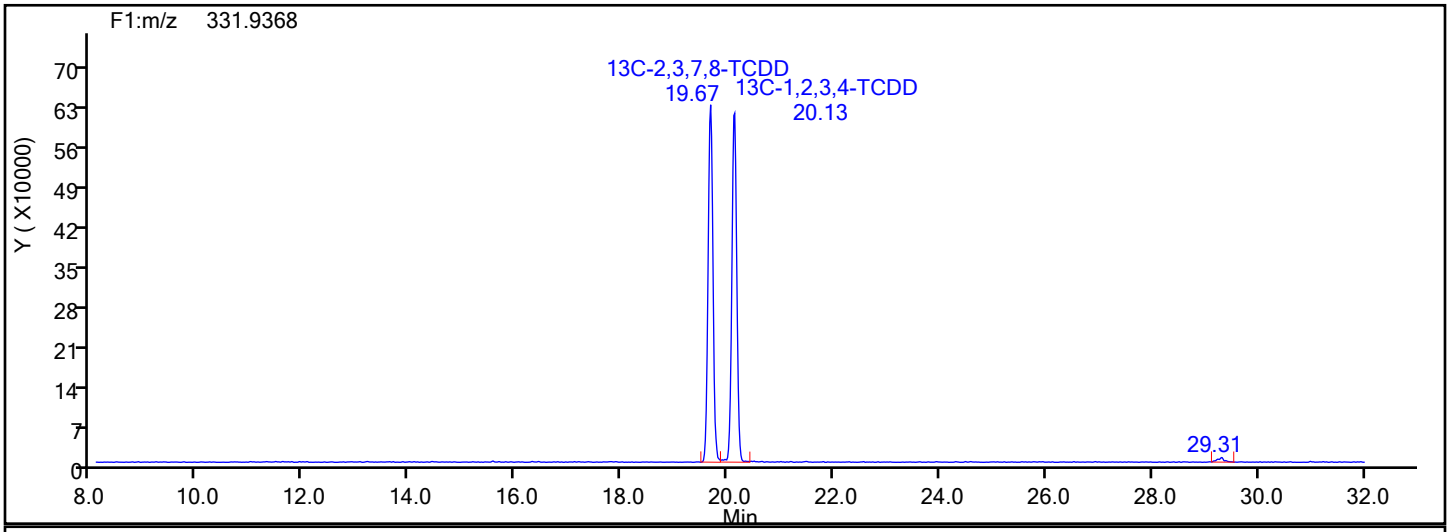
Eurofins TestAmerica, Knoxville

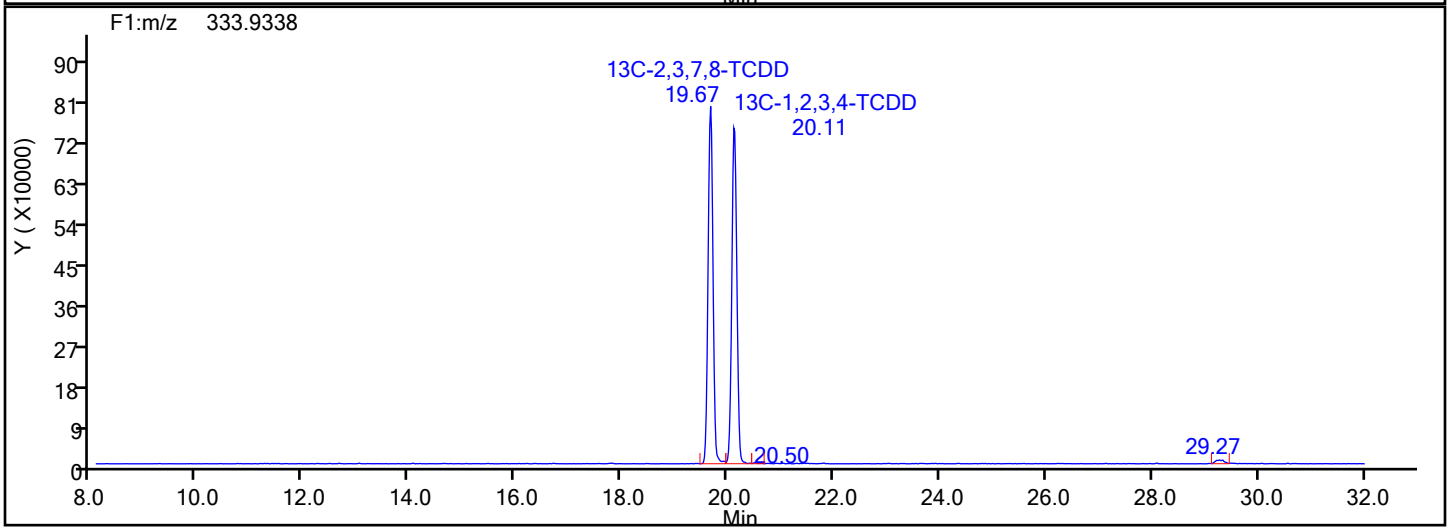
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



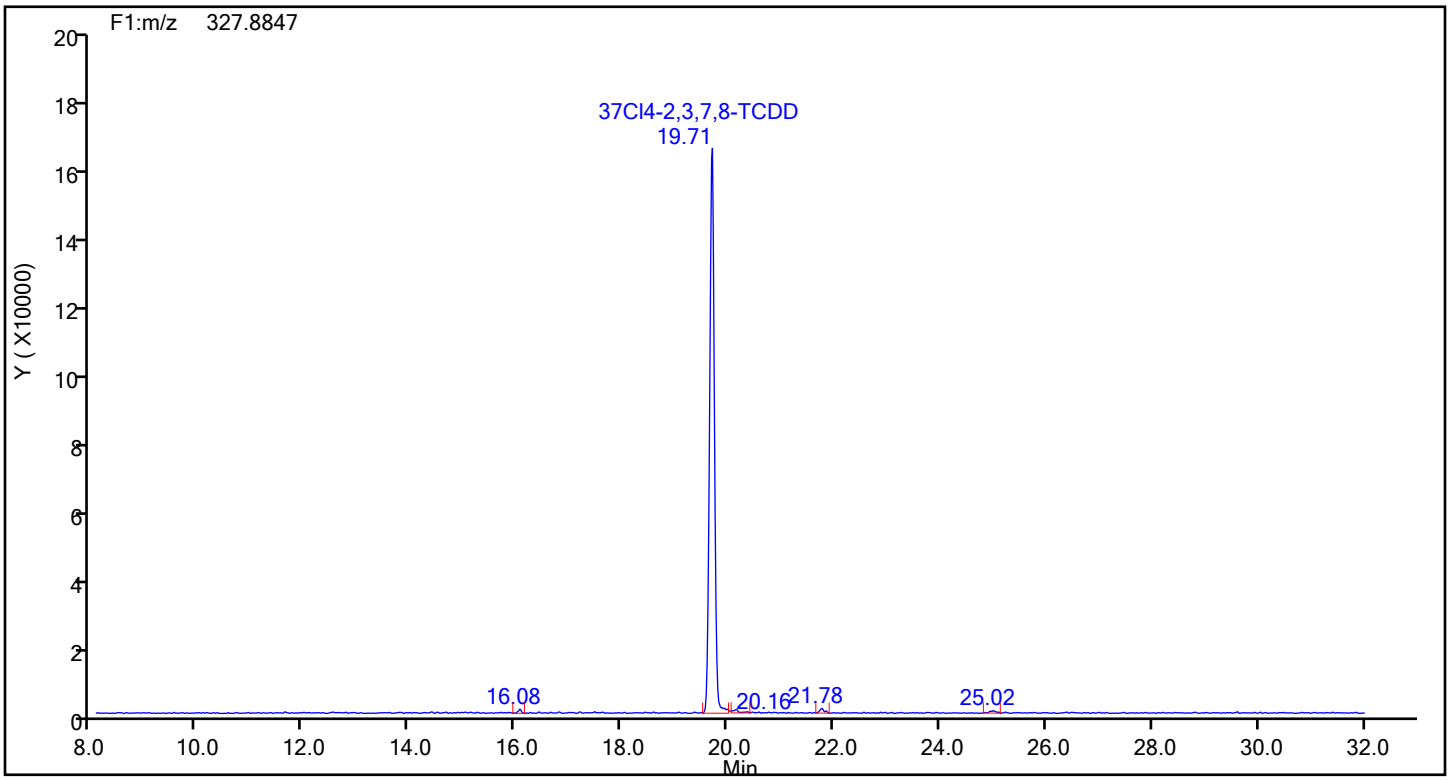


Report Date: 18-Dec-2019 12:49:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

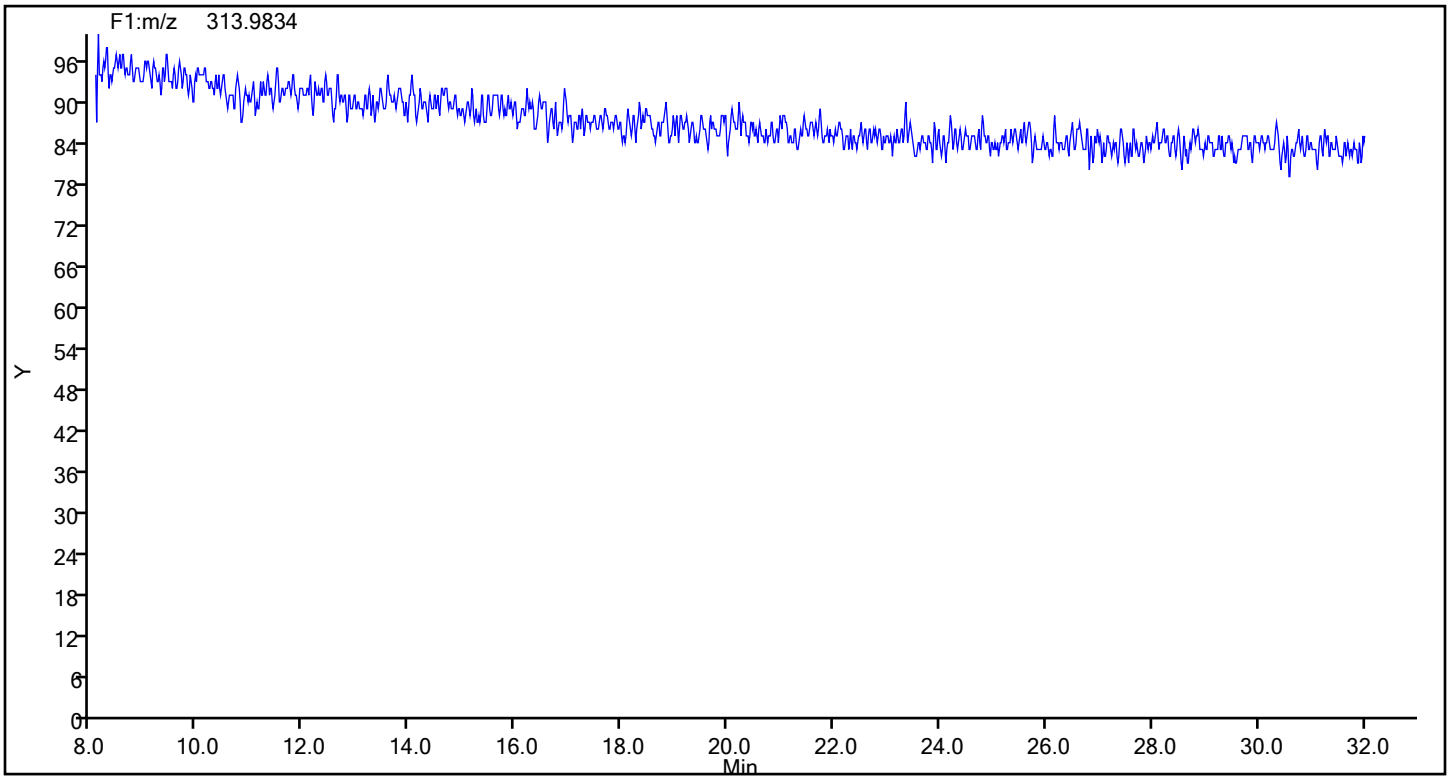
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Lock Mass

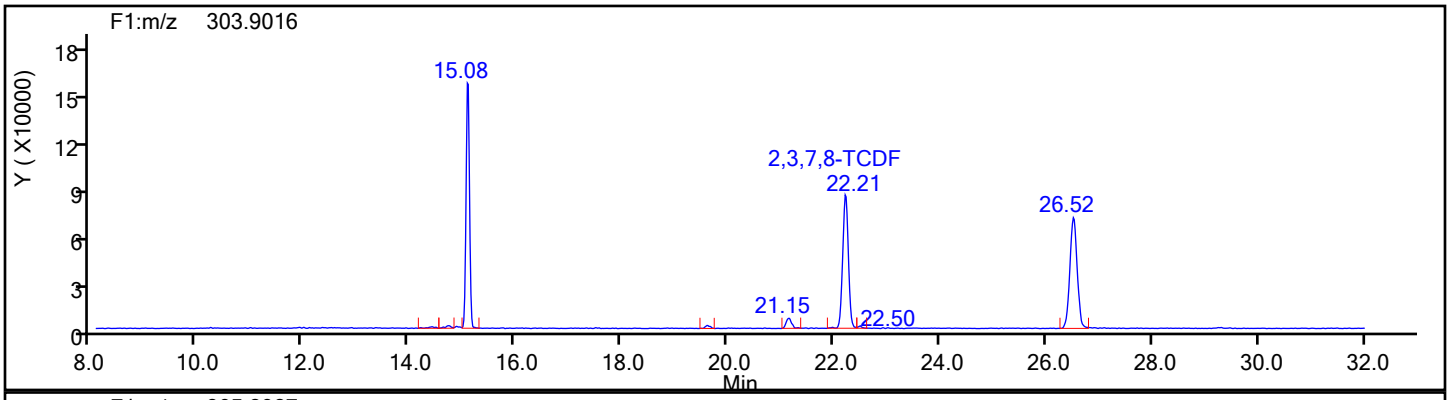


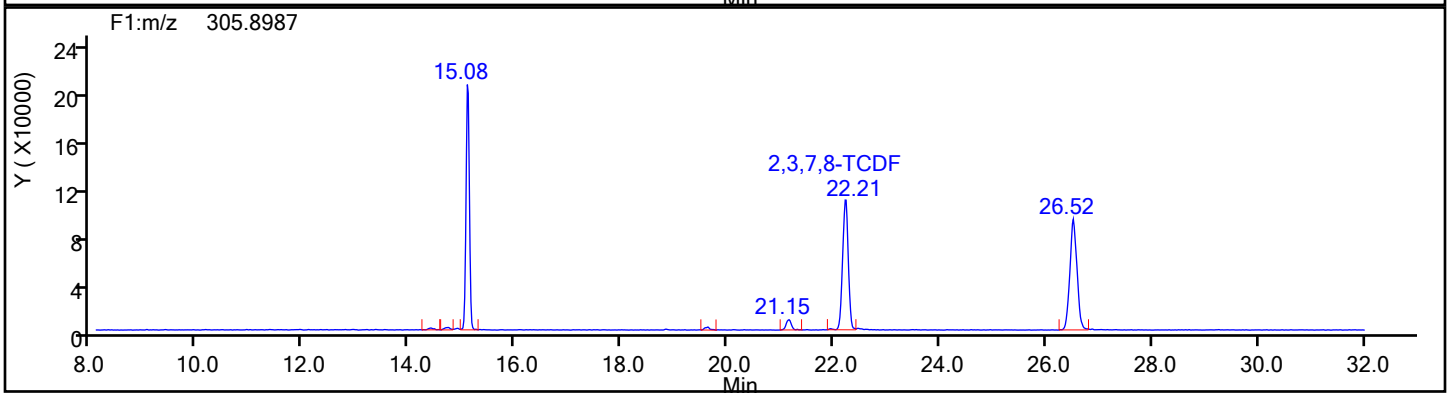
Report Date: 18-Dec-2019 12:49:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

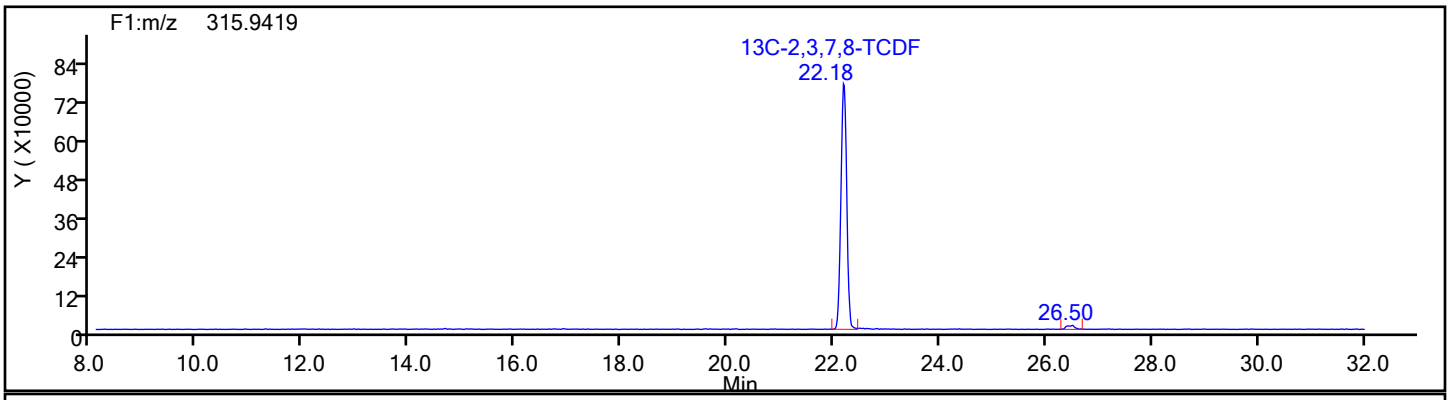
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

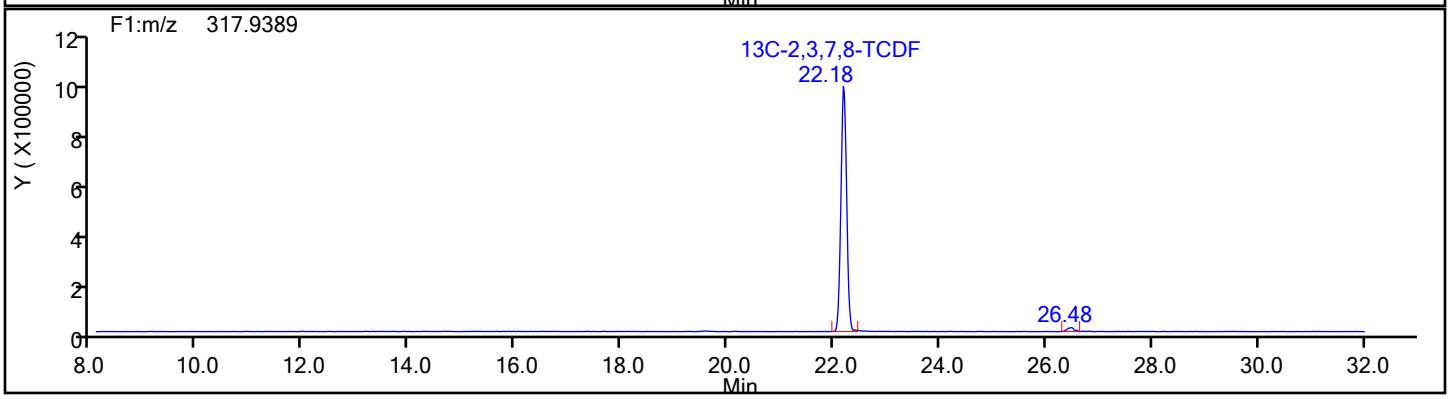
TCDF





TCDF Standards



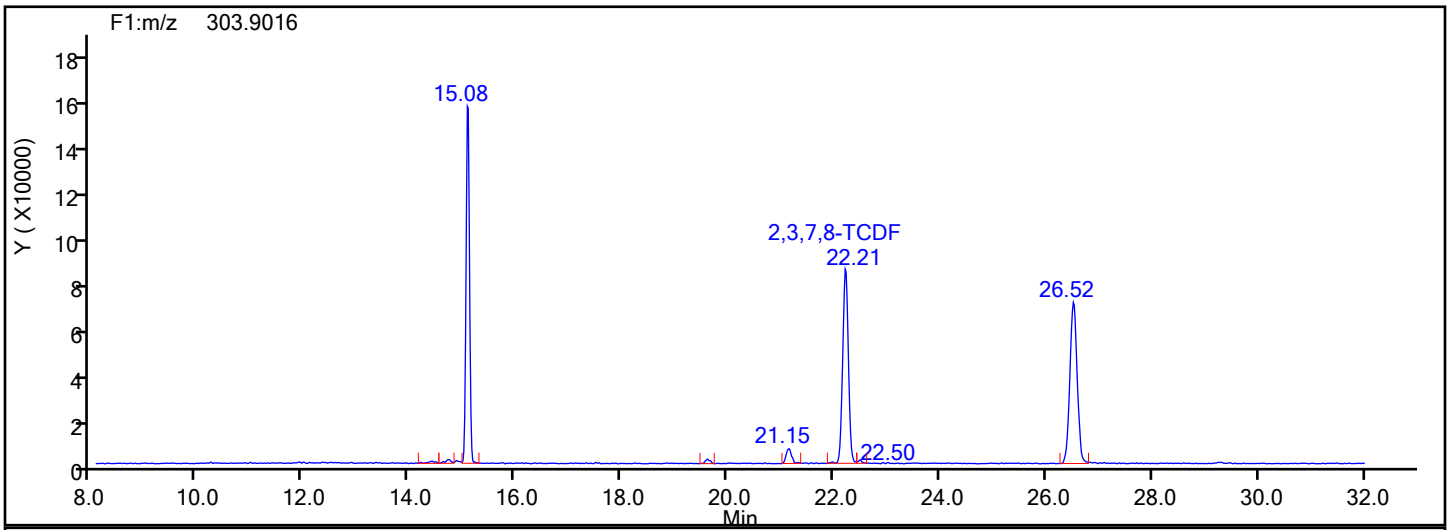


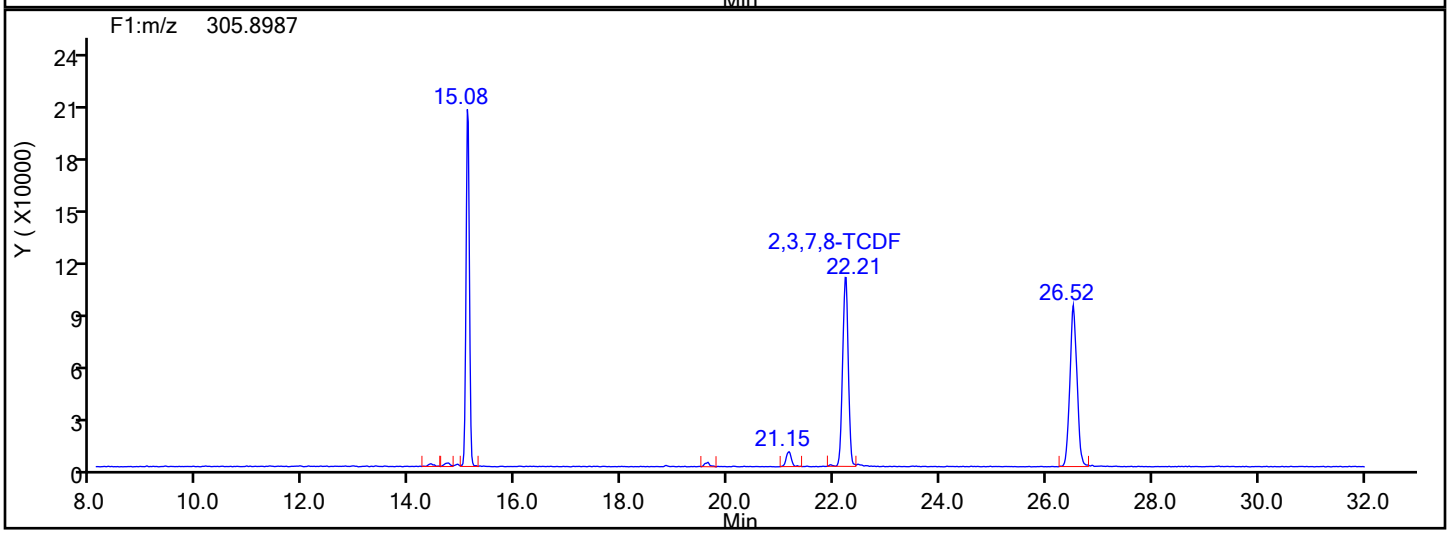
Report Date: 18-Dec-2019 12:49:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

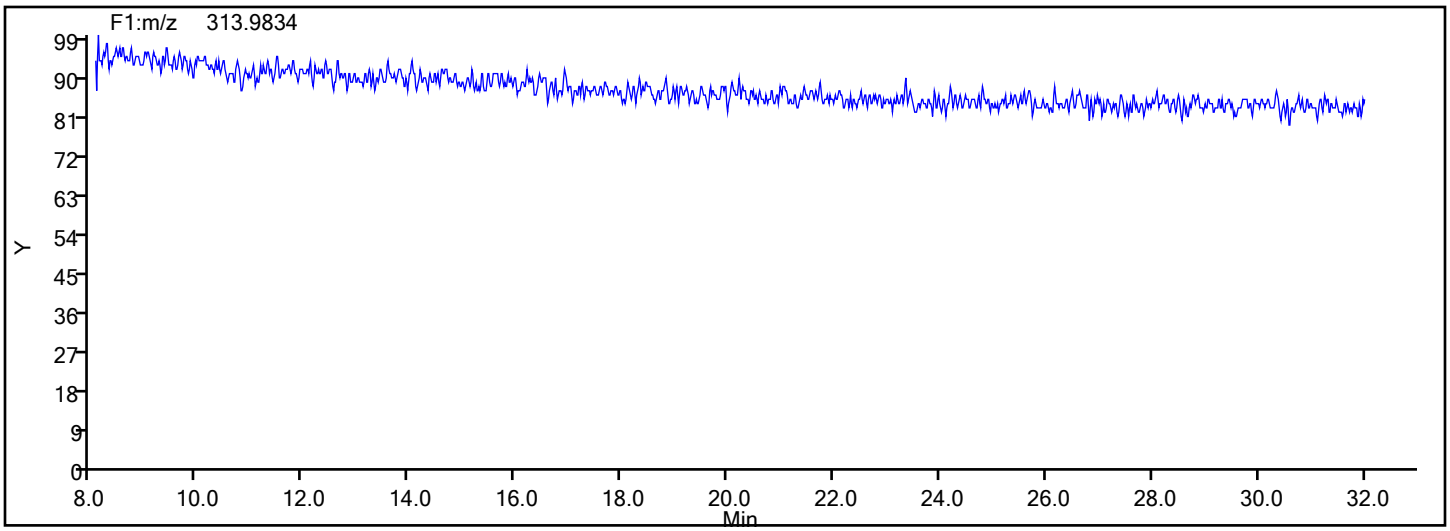
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

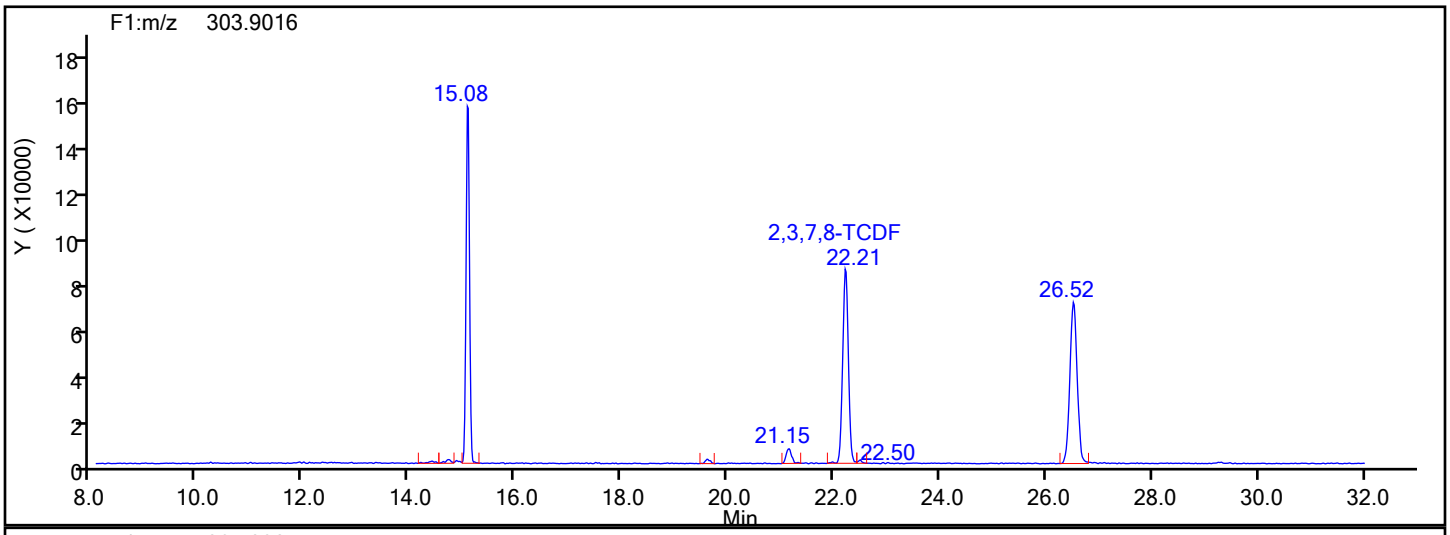


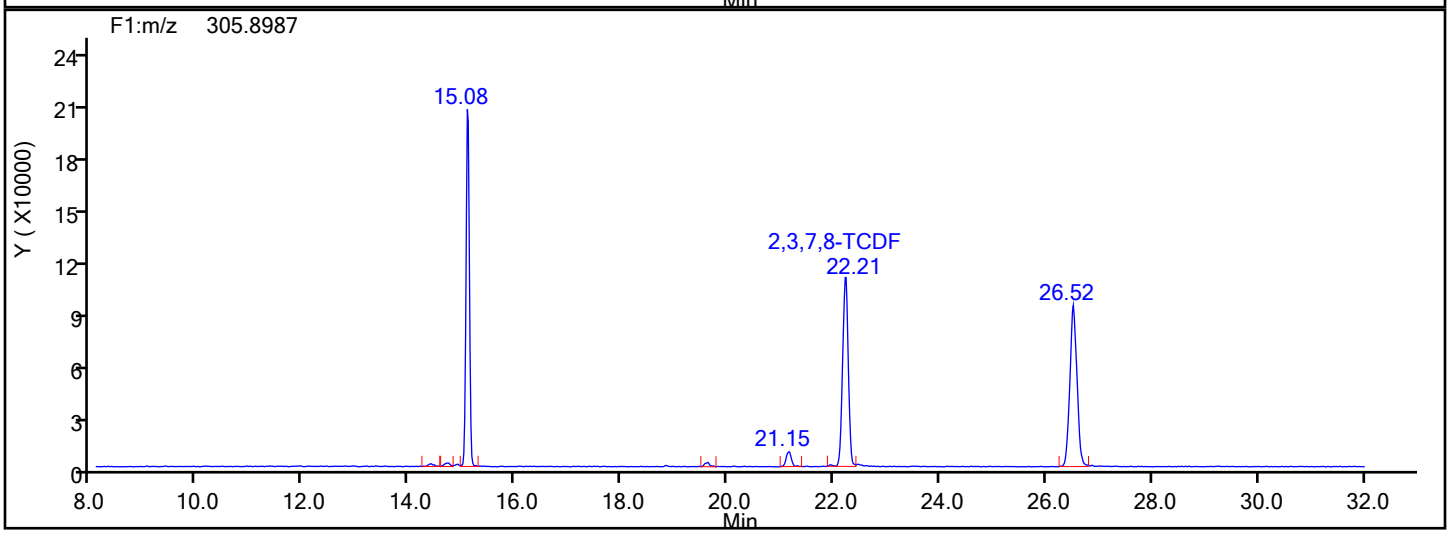
Report Date: 18-Dec-2019 12:49:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

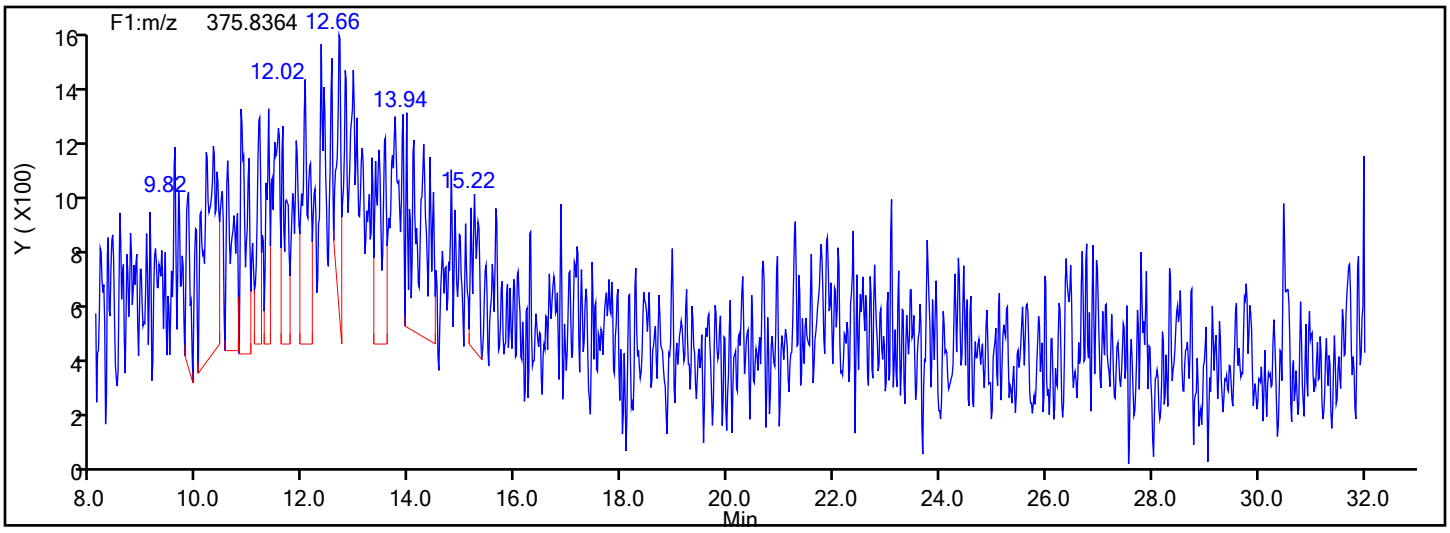
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218s2.d		
Injection Date:	18-Dec-2019 12:11:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	3
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: ICV 140-7768/7 Calibration Date: 05/16/2014 20:36

Instrument ID: D2A Calib Start Date: 05/16/2014 14:26

GC Column: RTX-5 ID: 0.32(mm) Calib End Date: 05/16/2014 18:31

Lab File ID: d3140516ss.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
2,3,7,8-TCDF	AveID	1.088	1.069		9.82	10.0	-1.8	35.0
2,3,7,8-TCDD	AveID	1.173	1.088		9.27	10.0	-7.3	35.0
1,2,3,7,8-PeCDF	AveID	1.190	1.051		44.2	50.0	-11.6	35.0
2,3,4,7,8-PeCDF	AveID	1.109	1.106		49.8	50.0	-0.3	35.0
1,2,3,7,8-PeCDD	AveID	1.043	1.080		51.7	50.0	3.5	35.0
1,2,3,4,7,8-HxCDF	AveID	1.363	1.210		44.4	50.0	-11.2	35.0
1,2,3,6,7,8-HxCDF	AveID	1.276	1.178		46.1	50.0	-7.7	35.0
2,3,4,6,7,8-HxCDF	AveID	1.265	1.171		46.3	50.0	-7.5	35.0
1,2,3,4,7,8-HxCDD	AveID	1.141	1.081		47.4	50.0	-5.3	35.0
1,2,3,6,7,8-HxCDD	AveID	1.148	1.023		44.5	50.0	-10.9	35.0
1,2,3,7,8,9-HxCDD	AveID	1.221	1.075		44.0	50.0	-12.0	35.0
1,2,3,7,8,9-HxCDF	AveID	1.257	1.146		45.6	50.0	-8.9	35.0
1,2,3,4,6,7,8-HpCDF	AveID	1.498	1.371		45.7	50.0	-8.5	35.0
1,2,3,4,6,7,8-HpCDD	AveID	1.120	1.091		48.7	50.0	-2.6	35.0
1,2,3,4,7,8,9-HpCDF	AveID	1.381	1.356		49.1	50.0	-1.8	35.0
OCDD	AveID	1.207	1.096		90.7	100	-9.3	35.0
OCDF	AveID	1.116	1.302		117	100	16.7	35.0
13C-2,3,7,8-TCDF	Ave	1.755	1.954		111	100	11.4	
13C-2,3,7,8-TCDD	Ave	1.071	1.163		109	100	8.6	
13C-1,2,3,7,8-PeCDF	Ave	1.370	1.489		109	100	8.6	
13C-2,3,4,7,8-PeCDF	Ave	1.384	1.444		104	100	4.3	
13C-1,2,3,7,8-PeCDD	Ave	0.8743	0.8389		96.0	100	-4.0	
13C-1,2,3,4,7,8-HxCDF	Ave	1.189	1.260		106	100	6.0	
13C-1,2,3,6,7,8-HxCDF	Ave	1.462	1.518		104	100	3.8	
13C-2,3,4,6,7,8-HxCDF	Ave	1.320	1.402		106	100	6.2	
13C-1,2,3,4,7,8-HxCDD	Ave	0.8772	0.9166		104	100	4.5	
13C-1,2,3,6,7,8-HxCDD	Ave	0.9171	1.021		111	100	11.4	
13C-1,2,3,7,8,9-HxCDF	Ave	1.200	1.243		104	100	3.6	
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.050	1.135		108	100	8.1	
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8155	0.8003		98.1	100	-1.9	
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.8947	0.8904		99.5	100	-0.5	
13C-OCDD	Ave	0.7044	0.7274		207	200	3.3	
13C-OCDF	Ave	1.061	0.8403		158	200	-20.8	
37Cl4-2,3,7,8-TCDD	Ave	1.227	1.270		10.4	10.0	3.6	

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 16-May-2014 20:36:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:76 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist:

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 01-Feb-2017 12:30:10 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK012

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:32:47

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31:53	1417873	0.79	1.1733	9.273	9.273	0.0556	0.0556	92.73	
A Non-2,3,7,8-sub-TCDD	30:20	27238	0.77	0.0000						RQ
S Total TCDD					9.273	9.273	0.0556	0.0556		RQ
2,3,7,8-TCDF	29:49	2340173	0.79	1.0881	9.823	9.823	0.0298	0.0298	98.23	
A Non-2,3,7,8-sub-TCDF	28:61	61132	0.77	0.0000						RQ
S Total TCDF					9.823	9.823	0.0298	0.0298		RQ
1,2,3,7,8-PeCDD	41:03	5075088	1.55	1.0434	51.7	51.7	0.0781	0.0781	103	
A Non-2,3,7,8-sub-PeCDD	39:56						0.0	0.0		
S Total PeCDD					51.7	51.7	0.0781	0.0781		
1,2,3,7,8-PeCDF	39:20	8772190	1.60	1.1898	44.2	44.2	0.3292	0.3292	88.37	
2,3,4,7,8-PeCDF	40:31	8947470	1.58	1.1095	49.8	49.8	0.3182	0.3182	99.70	
A Non-2,3,7,8-sub-PeCDF	38:38	194618	1.55	0.0000						RQ
S Total PeCDF					94.0	94.0	0.3237	0.3237		RQ
1,2,3,4,7,8-HxCDD	45:16	6434621	1.25	1.1409	47.4	47.4	0.1781	0.1781	94.72	
1,2,3,6,7,8-HxCDD	45:23	6785615	1.25	1.1481	44.5	44.5	0.1729	0.1729	89.06	
1,2,3,7,8,9-HxCDD	45:46	6765473	1.25	1.2212	44.0	44.0	0.1645	0.1645	88.00	
A Non-2,3,7,8-sub-HxCDD	44:42	6077453	1.07	0.0000						
S Total HxCDD					135.9	135.9	0.1718	0.1718		
1,2,3,4,7,8-HxCDF	44:13	9905457	1.24	1.3629	44.4	44.4	0.1276	0.1276	88.77	
1,2,3,6,7,8-HxCDF	44:21	11612537	1.25	1.2762	46.1	46.1	0.1262	0.1262	92.27	
2,3,4,6,7,8-HxCDF	45:05	10663021	1.25	1.2654	46.3	46.3	0.1363	0.1363	92.51	
1,2,3,7,8,9-HxCDF	46:04	9252844	1.24	1.2573	45.6	45.6	0.1802	0.1802	91.12	
A Non-2,3,7,8-sub-HxCDF	44:34						0.0	0.0		
S Total HxCDF					182.3	182.3	0.1426	0.1426		
1,2,3,4,6,7,8-HpCDD	50:12	5673345	1.05	1.1204	48.7	48.7	0.2370	0.2370	97.39	
A Non-2,3,7,8-sub-HpCDD	49:35	43311	1.01	0.0000						
S Total HpCDD					48.7	48.7	0.2370	0.2370		
1,2,3,4,6,7,8-HpCDF	48:30	10105566	1.06	1.4984	45.7	45.7	0.1492	0.1492	91.47	
1,2,3,4,7,8,9-HpCDF	50:50	7845196	1.05	1.3807	49.1	49.1	0.2145	0.2145	98.23	

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49:39						0.0	0.0		
S Total HpCDF					94.9	94.9	0.1818	0.1818		
OCDD	54:20	10353088	0.91	1.2073	90.7	90.7	0.1168	0.1168	90.74	
OCDF	54:27	14219371	0.91	1.1162	116.7	116.7	0.1569	0.1569	117	
D 13C-2,3,7,8-TCDD	31:49	13031572	0.81	1.0709	108.6	108.6	0.2879	0.2879	109	
D 13C-2,3,7,8-TCDF	29:46	21894242	0.80	1.7545	111.4	111.4	0.3328	0.3328	111	
D 13C-1,2,3,7,8-PeCDD	40:61	9401272	1.59	0.8743	96.0	96.0	0.3372	0.3372	95.95	
D 13C-1,2,3,7,8-PeCDF	39:17	16685645	1.58	1.3704	108.6	108.6	0.5610	0.5610	109	
D 13C-2,3,4,7,8-PeCDF	40:30	16178636	1.60	1.3837	104.3	104.3	0.5556	0.5556	104	
D 13C-1,2,3,4,7,8-HxCDD	45:15	11909770	1.26	0.8772	104.5	104.5	0.1864	0.1864	104	
D 13C-1,2,3,6,7,8-HxCDD	45:22	13272005	1.28	0.9171	111.4	111.4	0.1783	0.1783	111	
D 13C-1,2,3,4,7,8-HxCDF	44:12	16374250	0.52	1.1892	106.0	106.0	0.1201	0.1201	106	
D 13C-1,2,3,6,7,8-HxCDF	44:20	19722109	0.52	1.4625	103.8	103.8	0.0977	0.0977	104	
D 13C-2,3,4,6,7,8-HxCDF	45:04	18217439	0.53	1.3197	106.2	106.2	0.1082	0.1082	106	
D 13C-1,2,3,7,8,9-HxCDF	46:03	16152585	0.52	1.2001	103.6	103.6	0.1190	0.1190	104	
D 13C-1,2,3,4,6,7,8-HpCDD	50:11	10398852	1.09	0.8155	98.1	98.1	0.0233	0.0233	98.14	
D 13C-1,2,3,4,6,7,8-HpCDF	48:28	14746195	0.45	1.0496	108.1	108.1	0.1265	0.1265	108	
D 13C-1,2,3,4,7,8,9-HpCDF	50:49	11568712	0.47	0.8947	99.5	99.5	0.1484	0.1484	99.51	
D 13C-OCDD	54:18	18901029	0.92	0.7044	206.5	206.5	0.1411	0.1411	103	
D 13C-OCDF	54:27	21836911	0.89	1.0615	158.3	158.3	0.0854	0.0854	79.17	
$ 37Cl4-2,3,7,8-TCDD	31:53	1423356		1.2266	10.4	10.4	0.0168	0.0168	104	
* 13C-1,2,3,4-TCDD	31:18	11206563	0.82	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:45	12993023	1.26	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

61CV1613OS_00005 Amount Added: 20.00 Units: uL

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 16-May-2014 20:36:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:76 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A
Sublist:

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 01-Feb-2017 12:30:10 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK012

First Level Reviewer: davidsonm Date: 11-Jan-2017 16:32:47

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31:53	31:53	0	1.002	625068	60444	179	447	338		
321.8936	31:53	31:53	0	1.002	792805	81677	166	415	492	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	31:36	30:20	77		14371	1924	179	447	11		
321.8936	31:38	30:20	79		15389	2519	166	415	15	0.93(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	29:49	29:49	0	1.002	1031334	108919	158	395	689		
305.8987	29:49	29:49	0	1.002	1308839	141742	155	387	914	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	27:53	28:61	-68		9888	1534	158	395	10		
305.8987	27:55	28:61	-66		12672	2036	155	387	13	0.78(0.65-0.89)	
303.9016	34:42	28:61	340		16780	2164	158	395	14		
305.8987	34:43	28:61	341		115682	4841	155	387	31	0.15(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	41:03	41:03	0	1.001	3087321	702702	295	737	2382		
357.8516	41:02	41:03	-1	1.000	1987767	465184	422	1055	1102	1.55(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39:56						295	737			
357.8516	39:56						422	1055			
1,2,3,7,8-PeCDF											
339.8597	39:20	39:20	0	1.001	5404007	1115966	2501	6252	446		
341.8567	39:20	39:20	0	1.001	3368183	689033	2774	6935	248	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40:31	40:31	0	1.000	5473120	1239165	2501	6252	495		
341.8567	40:31	40:31	0	1.000	3474350	799162	2774	6935	288	1.58(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	39:50	38:38	71		138716	26751	2501	6252	11		
341.8567	39:50	38:38	71		76321	15381	2774	6935	6	1.82(1.32-1.78)	
1,2,3,4,7,8-HxCDD											
389.8158	45:16	45:16	0	1.000	3579248	927964	1313	3282	707		
391.8127	45:16	45:16	0	1.000	2855373	725887	1200	3000	605	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45:23	45:23	0	1.000	3774978	909011	1313	3282	692		
391.8127	45:23	45:23	0	1.000	3010637	734850	1200	3000	612	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:46	45:46	0	1.012	3754712	862716	1313	3282	657		
391.8127	45:46	45:46	0	1.012	3010761	693378	1200	3000	578	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44:38	44:42	-5		3139465	355478	1313	3282	271		
391.8127	44:38	44:42	-5		2937988	346912	1200	3000	289	1.07(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	44:13	44:13	0	1.000	5487400	1497391	1821	4552	822		
375.8178	44:13	44:13	0	1.000	4418057	1193324	1292	3230	924	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44:21	44:21	0	1.000	6453112	1603982	1821	4552	881		
375.8178	44:21	44:21	0	1.000	5159425	1253054	1292	3230	970	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45:05	45:05	0	1.000	5919412	1461157	1821	4552	802		
375.8178	45:05	45:05	0	1.000	4743609	1190672	1292	3230	922	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	46:04	46:04	0	1.000	5114596	1110954	1821	4552	610		
375.8178	46:03	46:04	-1	1.000	4138248	899907	1292	3230	697	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44:34						1821	4552			
375.8178	44:34						1292	3230			
1,2,3,4,6,7,8-HpCDD											
423.7767	50:12	50:12	0	1.000	2908005	549724	901	2252	610		
425.7737	50:12	50:12	0	1.000	2765340	524474	1173	2932	447	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:59	49:35	-36		21729	5130	901	2252	6		
425.7737	48:60	49:35	-35		21582	5123	1173	2932	4	1.01(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	48:30	48:30	0	1.001	5205525	1048507	1360	3400	771		
409.7788	48:29	48:30	-1	1.000	4900041	996621	1290	3225	773	1.06(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:50	50:50	0	1.000	4012075	797853	1360	3400	587		
409.7788	50:50	50:50	0	1.000	3833121	754937	1290	3225	585	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	49:39						1360	3400			
409.7788	49:39						1290	3225			

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	54:20	54:20	0	1.000	4936199	1099344	554	1385	1984		
459.7348	54:18	54:20	-1	1.000	5416889	1240830	651	1627	1906	0.91(0.76-1.02)	
OCDF											
441.7428	54:27	54:27	0	1.000	6768152	1570191	718	1795	2187		
443.7399	54:27	54:27	0	1.000	7451219	1761771	1059	2647	1664	0.91(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31:49	31:50	0	1.016	5815191	584676	597	1492	979		
333.9338	31:50	31:50	0	1.017	7216381	737228	843	2107	875	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29:46	29:45	0	0.951	9740010	1056104	1458	3645	724		
317.9389	29:46	29:45	0	0.951	12154232	1352506	1269	3172	1066	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:61	40:60	0	1.310	5770571	1350495	883	2207	1529		
369.8919	40:61	40:60	0	1.310	3630701	849050	494	1235	1719	1.59(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39:17	39:17	0	1.255	10209440	2060178	1791	4477	1150		
353.8970	39:17	39:17	0	1.255	6476205	1306438	1800	4500	726	1.58(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:30	40:29	0	1.294	9958166	2298930	1791	4477	1284		
353.8970	40:30	40:29	0	1.294	6220470	1436425	1800	4500	798	1.60(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45:15	45:14	1	0.989	6640939	1716989	1276	3190	1346		
403.8529	45:15	45:14	1	0.989	5268831	1375213	660	1650	2084	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45:22	45:21	1	0.992	7448022	1763686	1276	3190	1382		
403.8529	45:22	45:21	1	0.992	5823983	1400199	660	1650	2122	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44:12	44:11	1	0.966	5572913	1526862	563	1407	2712		
385.8610	44:12	44:11	1	0.966	10801337	2947711	1128	2820	2613	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44:20	44:19	1	0.969	6720563	1680247	563	1407	2984		
385.8610	44:20	44:19	1	0.969	13001546	3153048	1128	2820	2795	0.52(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45:04	45:03	0	0.985	6334059	1563970	563	1407	2778		
385.8610	45:04	45:03	0	0.985	11883380	2946859	1128	2820	2612	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46:03	46:01	1	1.006	5526618	1177745	563	1407	2092		
385.8610	46:01	46:01	0	1.006	10625967	2256210	1128	2820	2000	0.52(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50:11	50:09	1	1.097	5427250	1008813	153	382	6594		
437.8140	50:11	50:09	1	1.097	4971602	943619	72	180	13106	1.09(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48:28	48:27	0	1.059	4588031	915667	791	1977	1158		
419.8220	48:28	48:27	0	1.059	10158164	2048687	781	1952	2623	0.45(0.51-0.37)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:49	50:48	1	1.111	3700112	716176	791	1977	905		
419.8220	50:49	50:48	1	1.111	7868600	1520419	781	1952	1947	0.47(0.37-0.51)	
13C-OCDD											
469.7780	54:18	54:17	1	1.187	9058974	2055731	645	1612	3187		
471.7750	54:18	54:17	1	1.187	9842055	2215791	532	1330	4165	0.92(0.76-1.02)	
13C-OCDF											
453.7830	54:27	54:26	1	1.190	10295647	2421522	579	1447	4182		
455.7801	54:27	54:26	1	1.190	11541264	2651395	494	1235	5367	0.89(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31:53	31:53	0	1.019	1423356	147302	96	240	1534		
13C-1,2,3,4-TCDD											
331.9368	31:18	31:18	0		5037847	530028	597	1492	888		
333.9338	31:18	31:18	0		6168716	637618	843	2107	756	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:45	45:45	0		7238094	1648269	1276	3190	1292		
403.8529	45:45	45:45	0		5754929	1311453	660	1650	1987	1.26(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Reagents:

61CV1613OS_00005 Amount Added: 20.00 Units: uL

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Inject. Date: 16-May-2014 20:36:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 7
Sublist:

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
31:36	14371	1924	15389	2519		0.93	R
Signal Totals:							
	14371	1924	15389	2519			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	29760	4443				0.93	RQ
	27238	4458					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (29760 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (27238 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Inject. Date: 16-May-2014 20:36:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 7
Sublist:

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
27:53	9888	1534	12672	2036		0.78	n
34:42	16780	2164	115682	4841		0.15	R
Signal Totals:							
	26668	3698	128354	6877			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	155022	10575				0.21	RQ
	61132	8544					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (155022 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (61132 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Inject. Date: 16-May-2014 20:36:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 7
Sublist:

Non-2,3,7,8-sub-PeCDF, RT: 38.623

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
39:50	138716	26751	76321	15381		1.82	Rn
Signal Totals:							
	138716	26751	76321	15381			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	215037	42132				1.82	RQ
	194618	39221					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (215037 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (194618 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Inject. Date: 16-May-2014 20:36:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 7
Sublist:

Non-2,3,7,8-sub-HxCDD, RT: 44.687

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
44:38	3139465	355478	2937988	346912		1.07	
Signal Totals:							
	3139465	355478	2937988	346912			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6077453	702390				1.07	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (6077453 * 0.0) / (0 * 0.000)

Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Lims ID: ICV
Client ID:
Inject. Date: 16-May-2014 20:36:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 7
Sublist:

Non-2,3,7,8-sub-HpCDD, RT: 49.566

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:59	21729	5130	21582	5123		1.01	n
Signal Totals:							
	21729	5130	21582	5123			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	43311	10253				1.01	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (43311 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

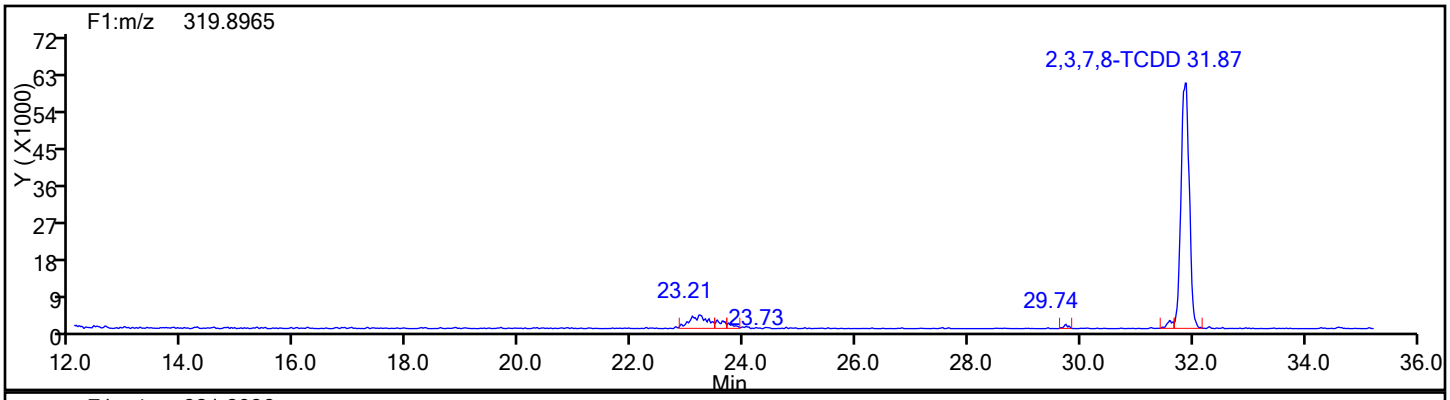
Report Date: 01-Feb-2017 12:30:13 Chrom Revision: 2.2 30-Jan-2017 14:50:44

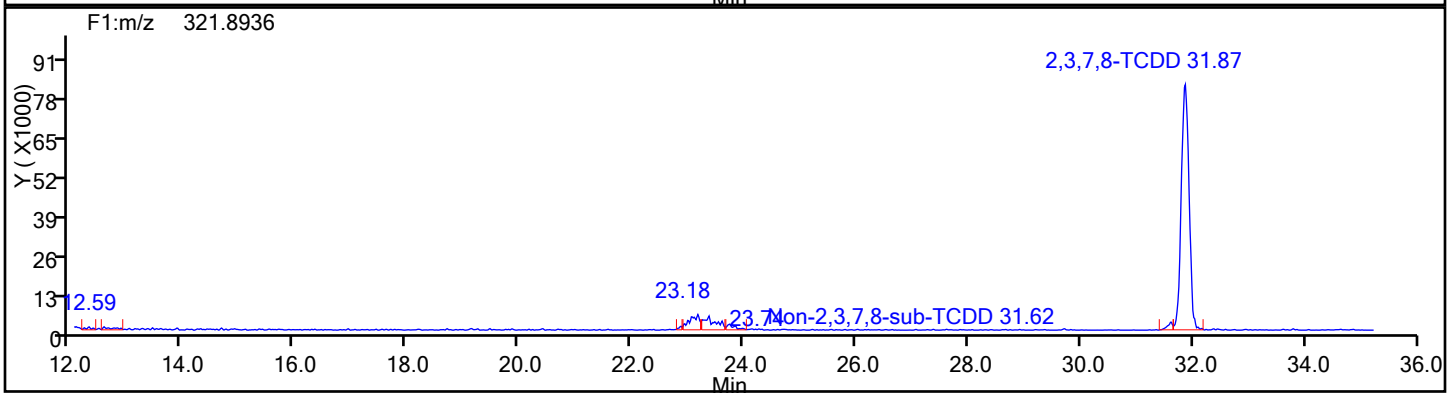
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

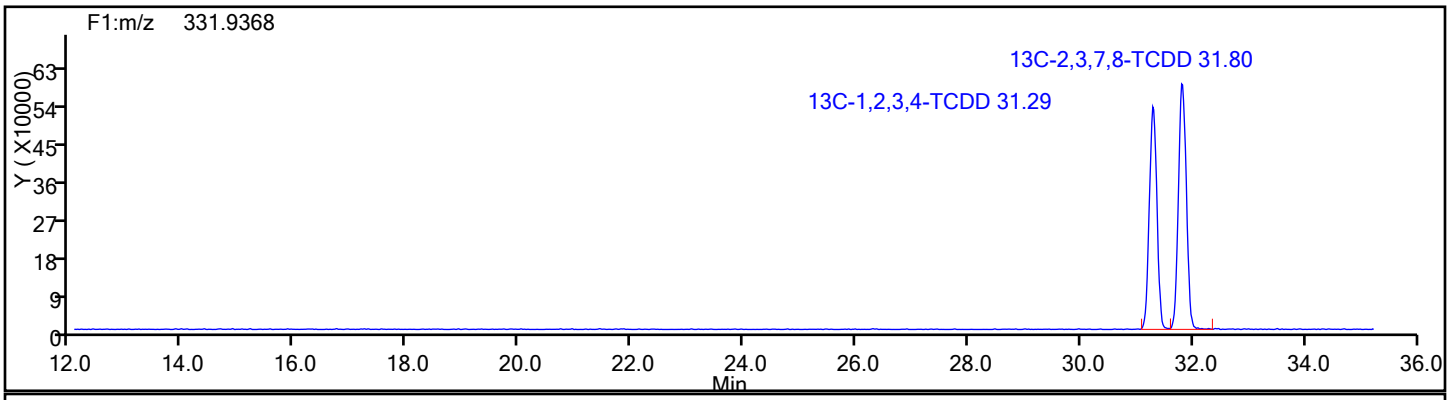
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

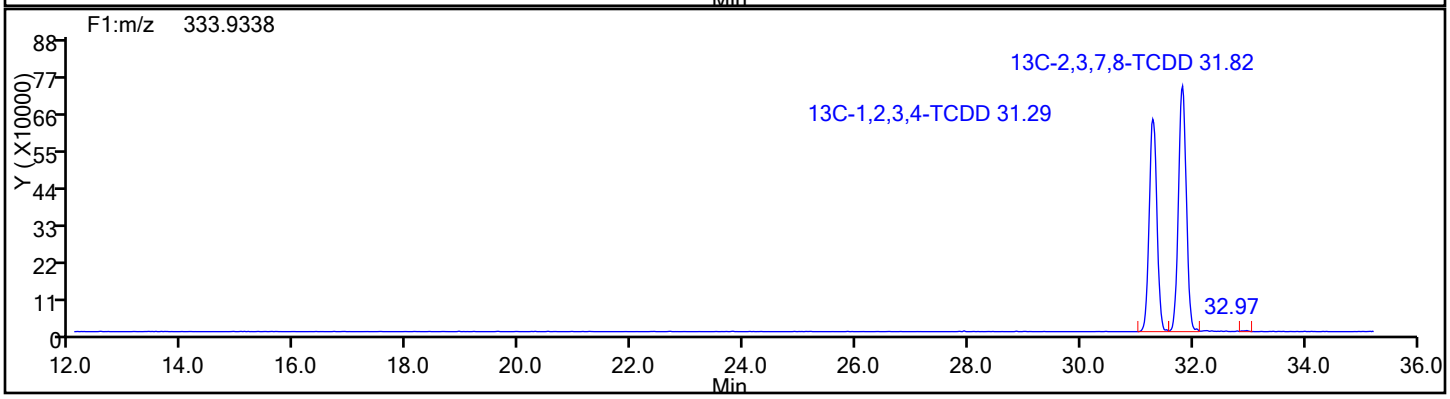
TCDD





TCDD Standards



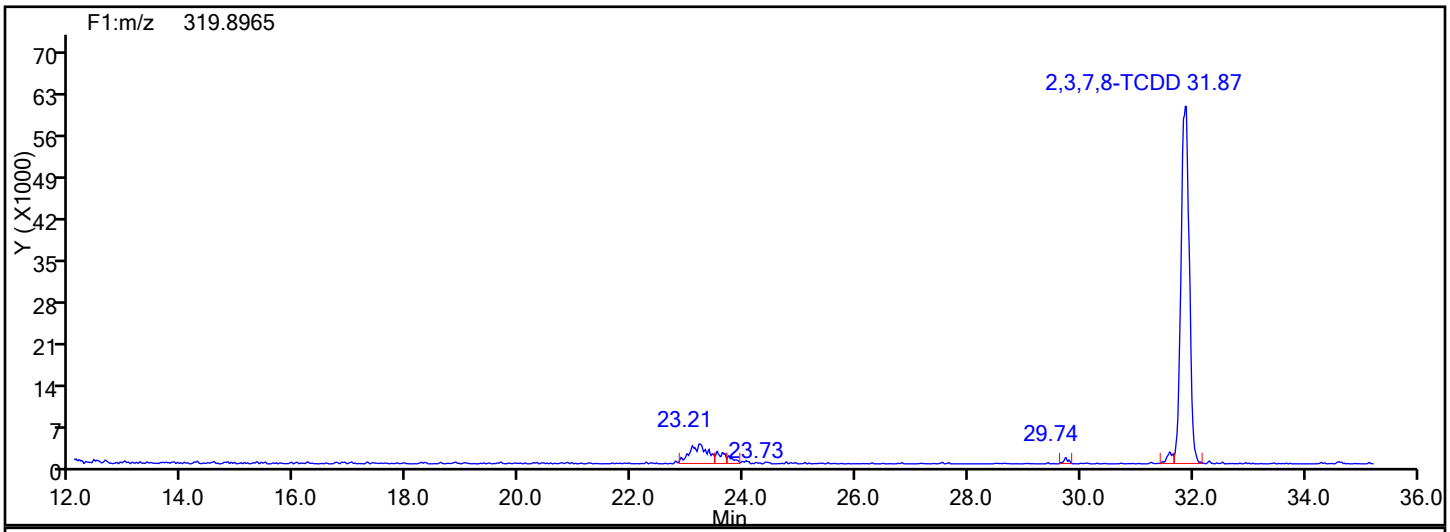


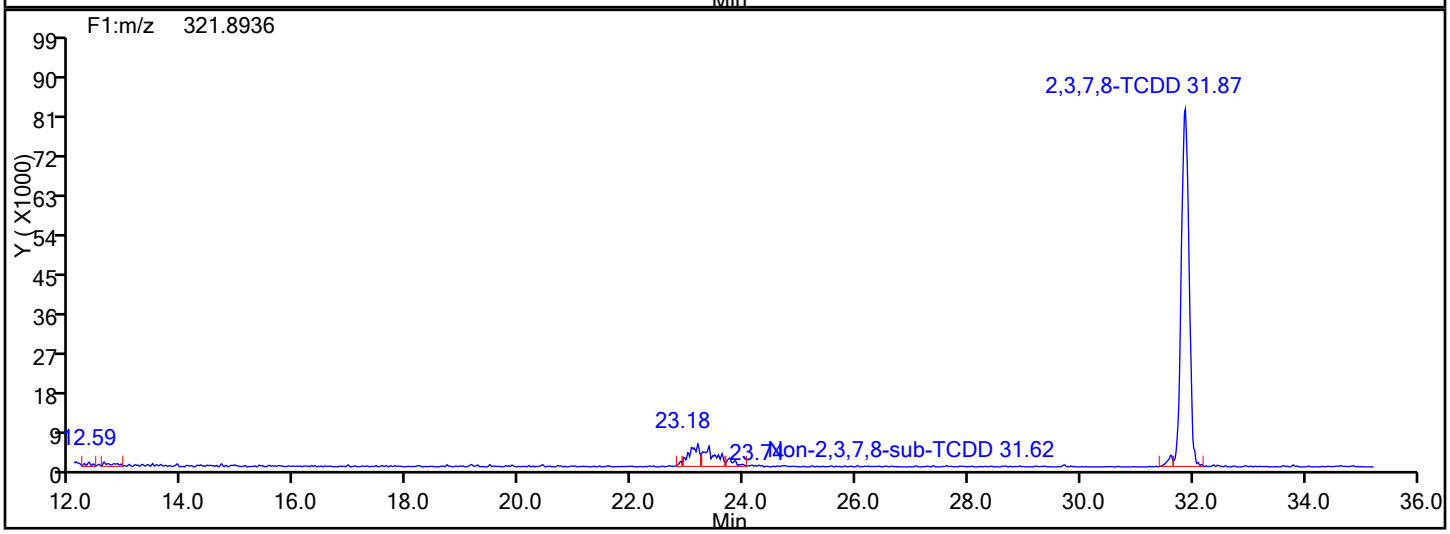
Report Date: 01-Feb-2017 12:30:14 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

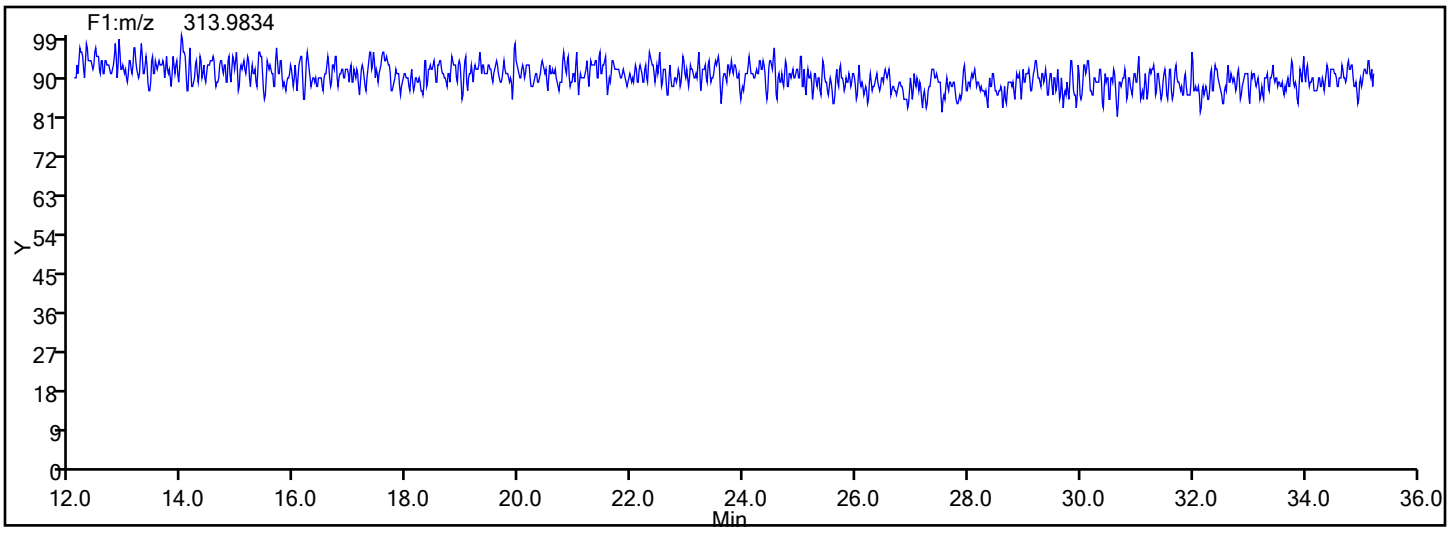
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Injection Date: 16-May-2014 20:36:00 Injection Vol: 1.0 ul
Instrument ID: D2A Operator ID: DavidsonM
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Client ID:
Worklist#: 7768 Sample Line#: 7
Column Type: Column Dia:

TCDD





TCDD Lock Mass



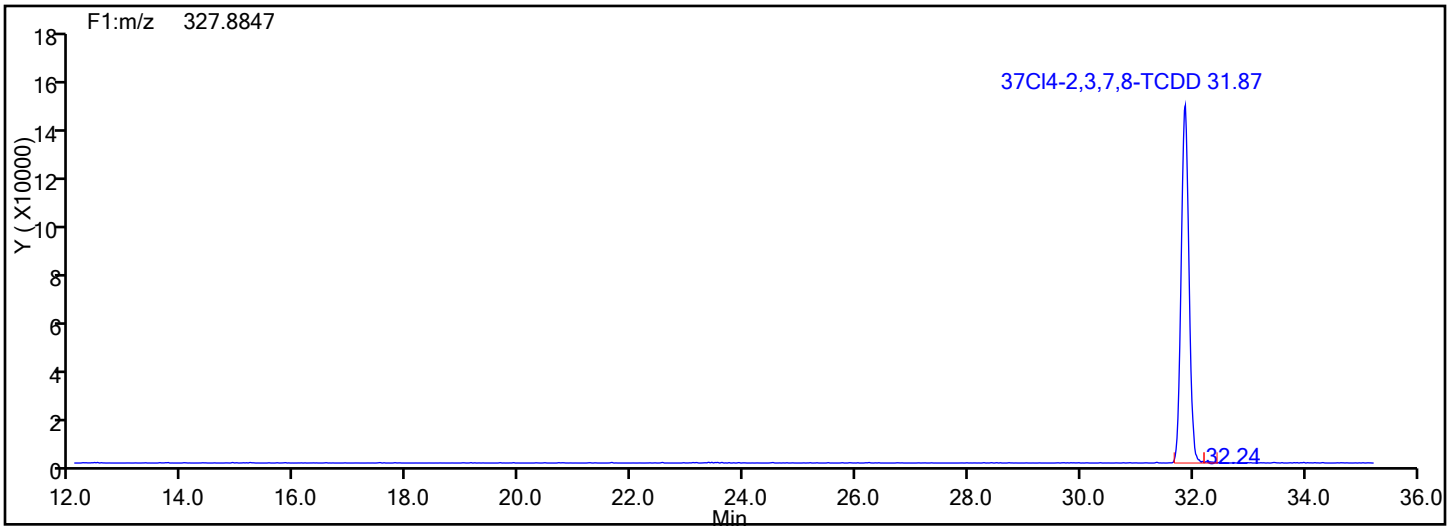
Report Date: 01-Feb-2017 12:30:14 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

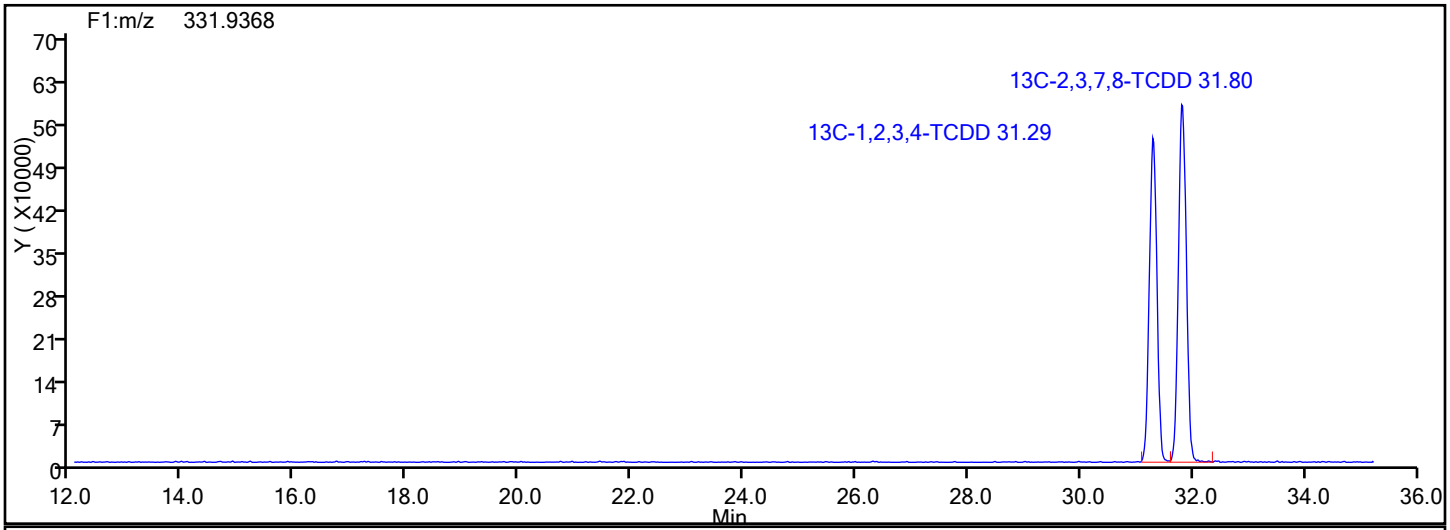
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

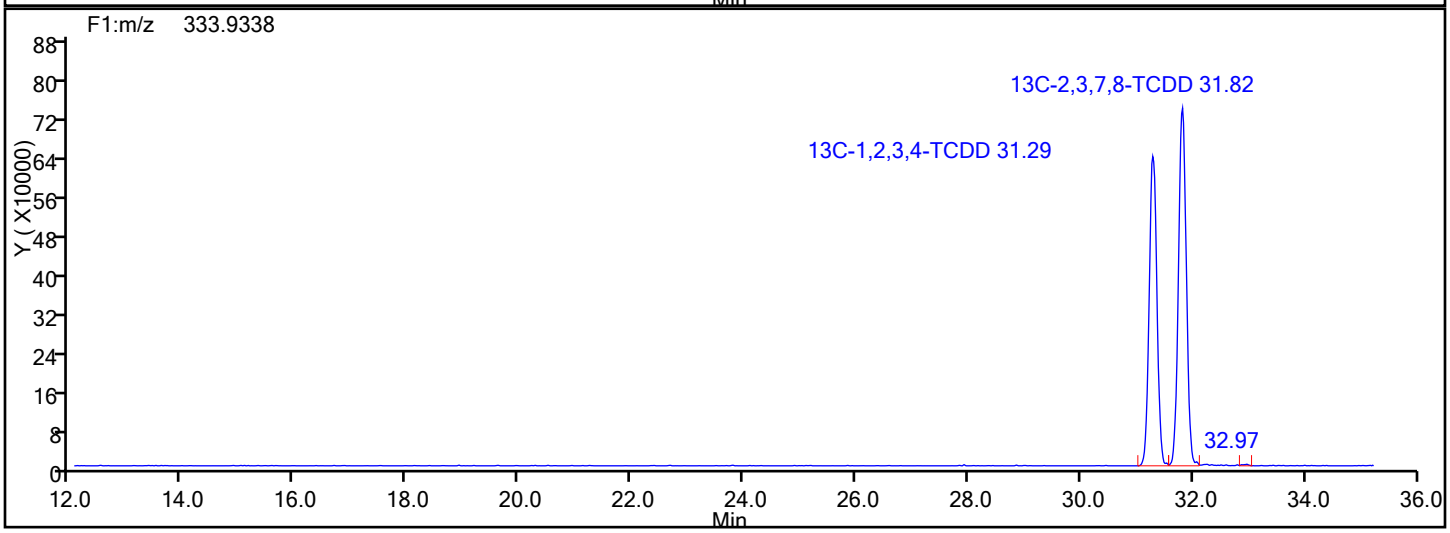
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





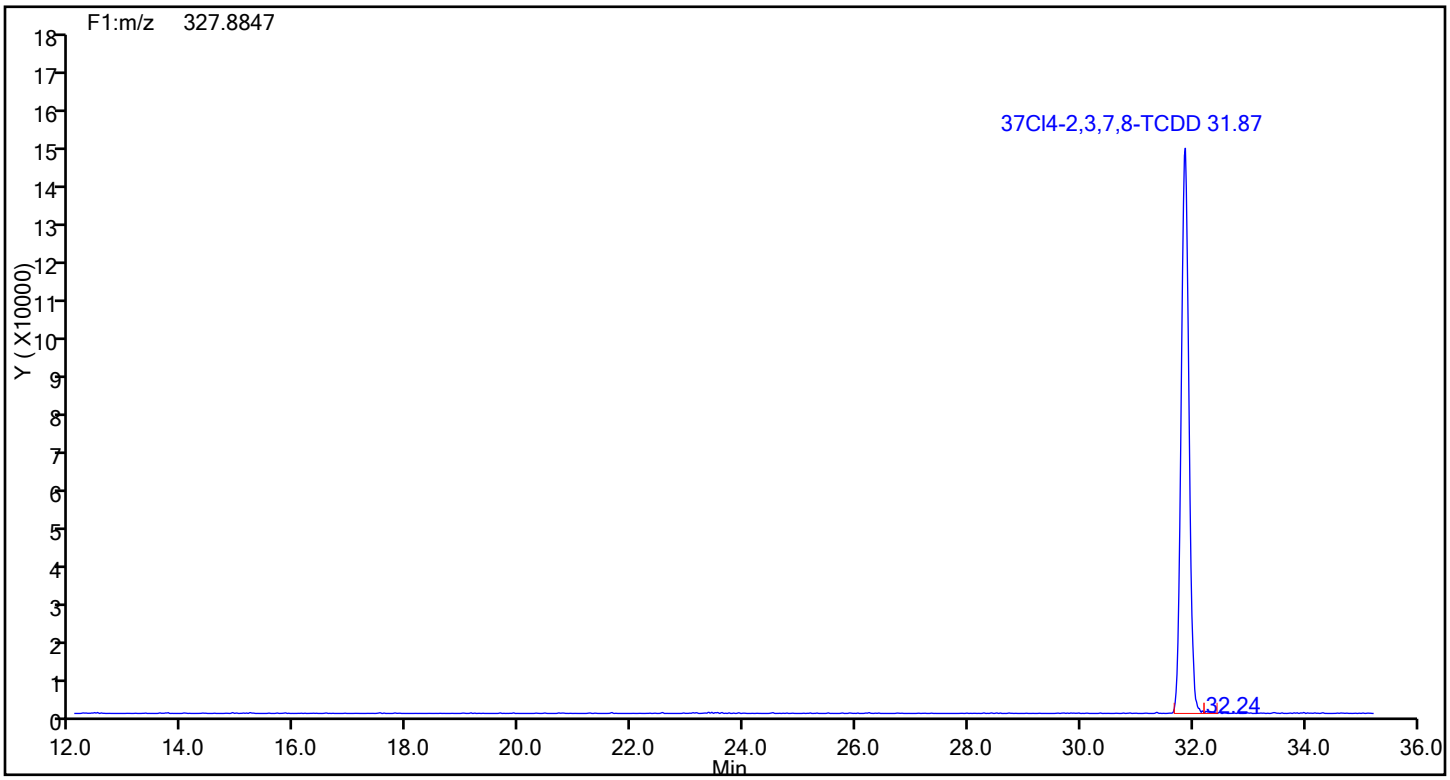
Report Date: 01-Feb-2017 12:30:14 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

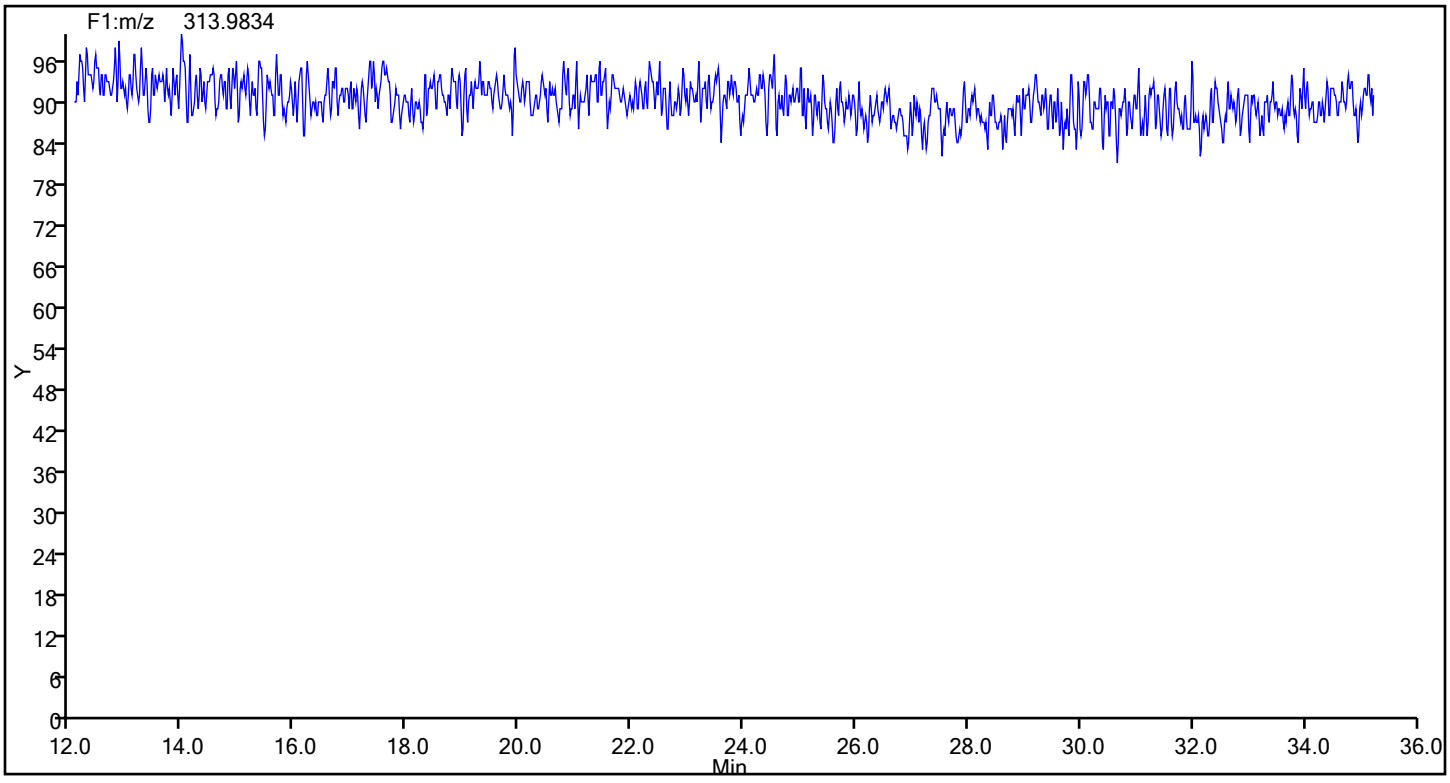
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



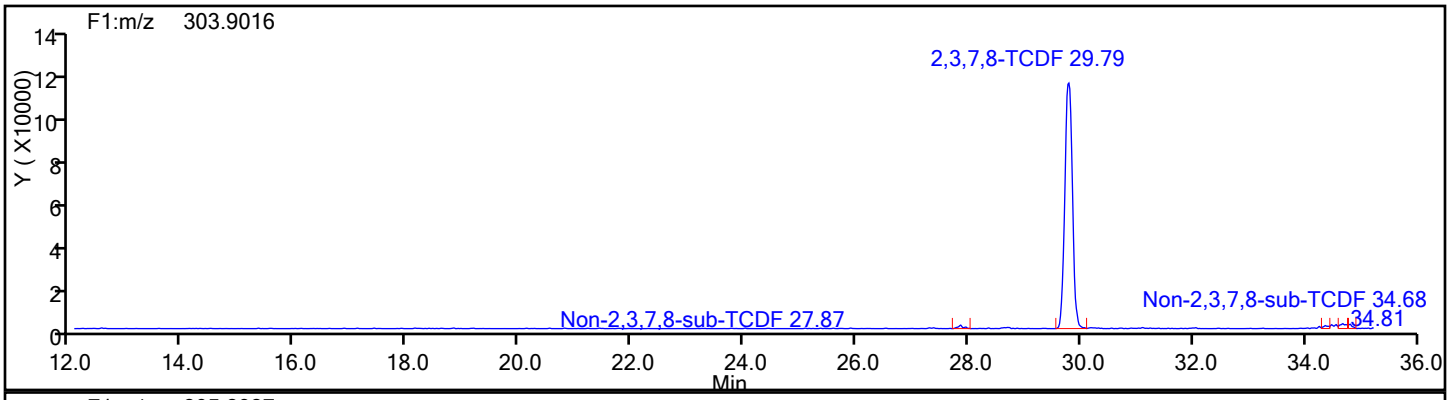
Report Date: 01-Feb-2017 12:30:14 Chrom Revision: 2.2 30-Jan-2017 14:50:44

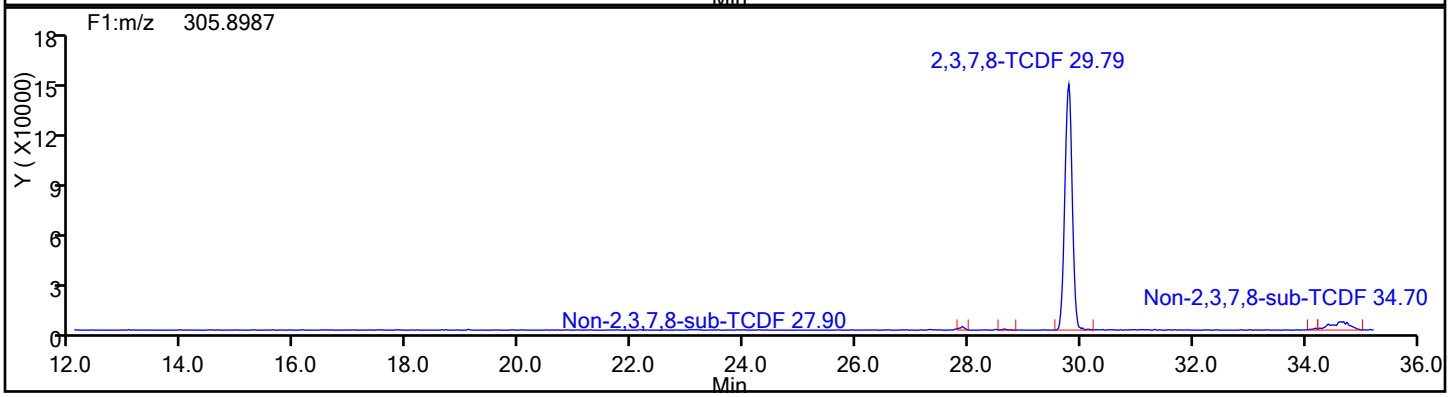
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

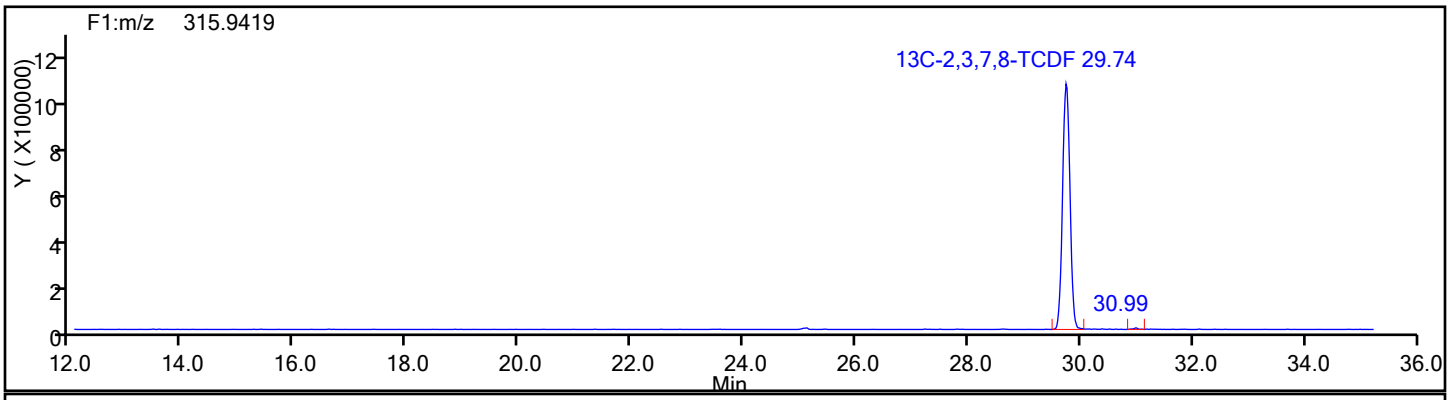
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

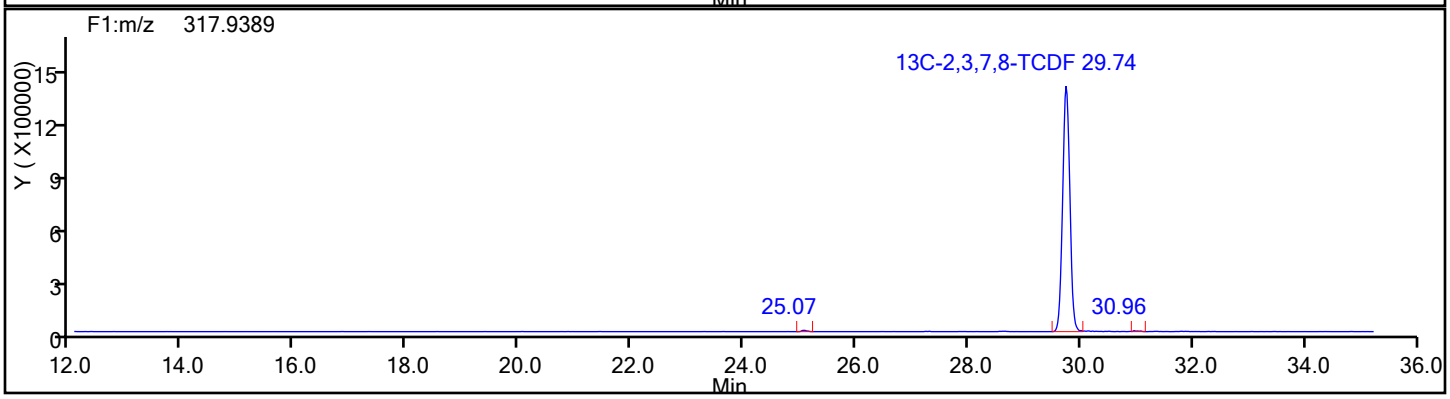
TCDF





TCDF Standards





Report Date: 01-Feb-2017 12:30:14 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

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Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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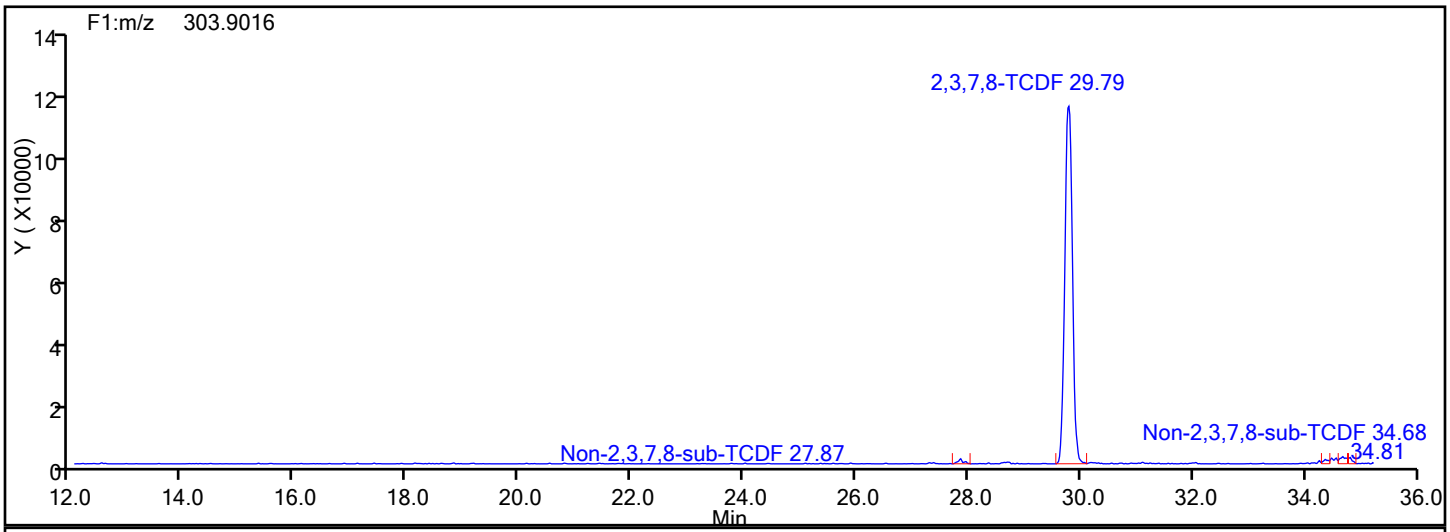
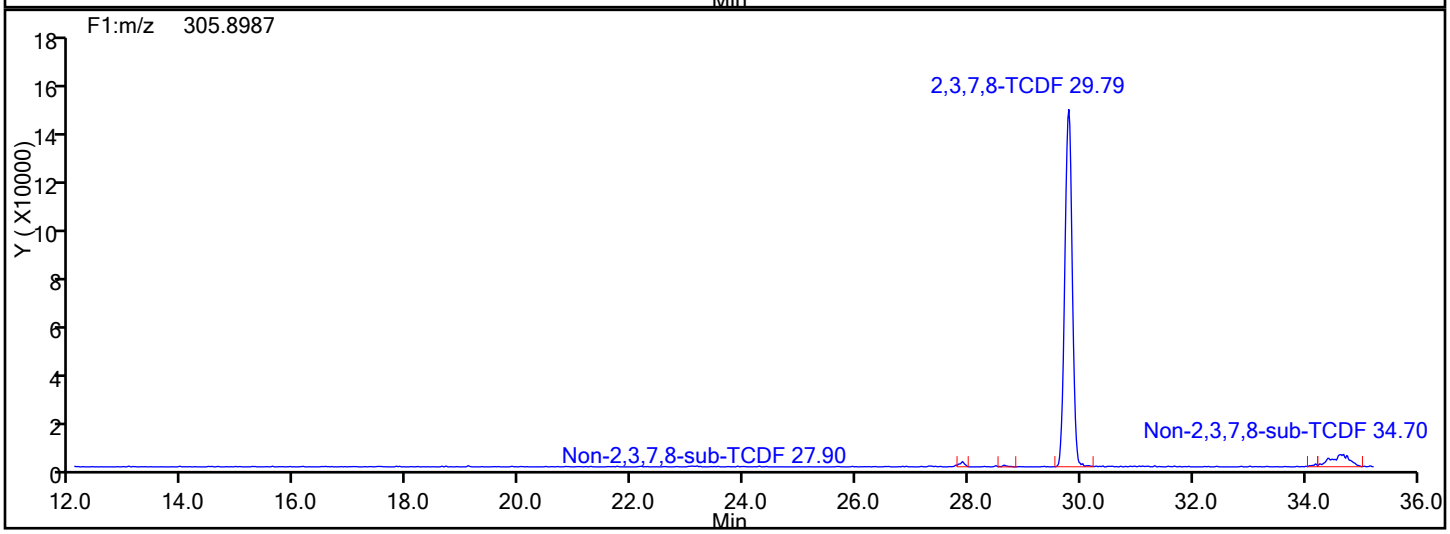
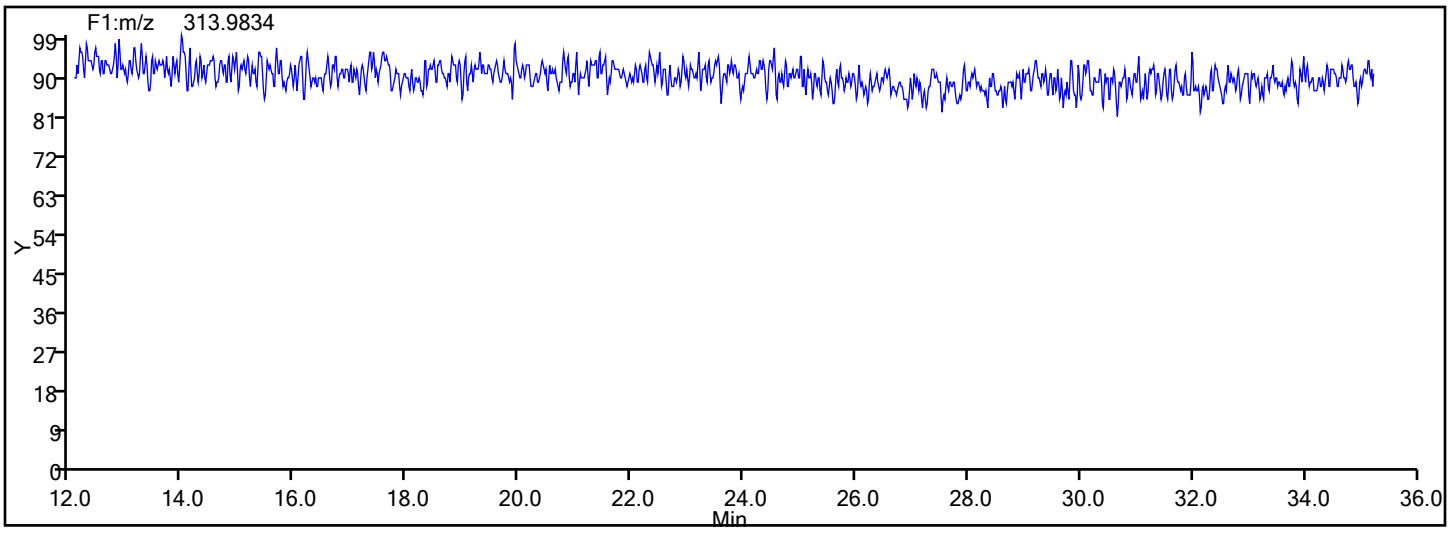




TCDF Lock Mass



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TestAmerica Knoxville

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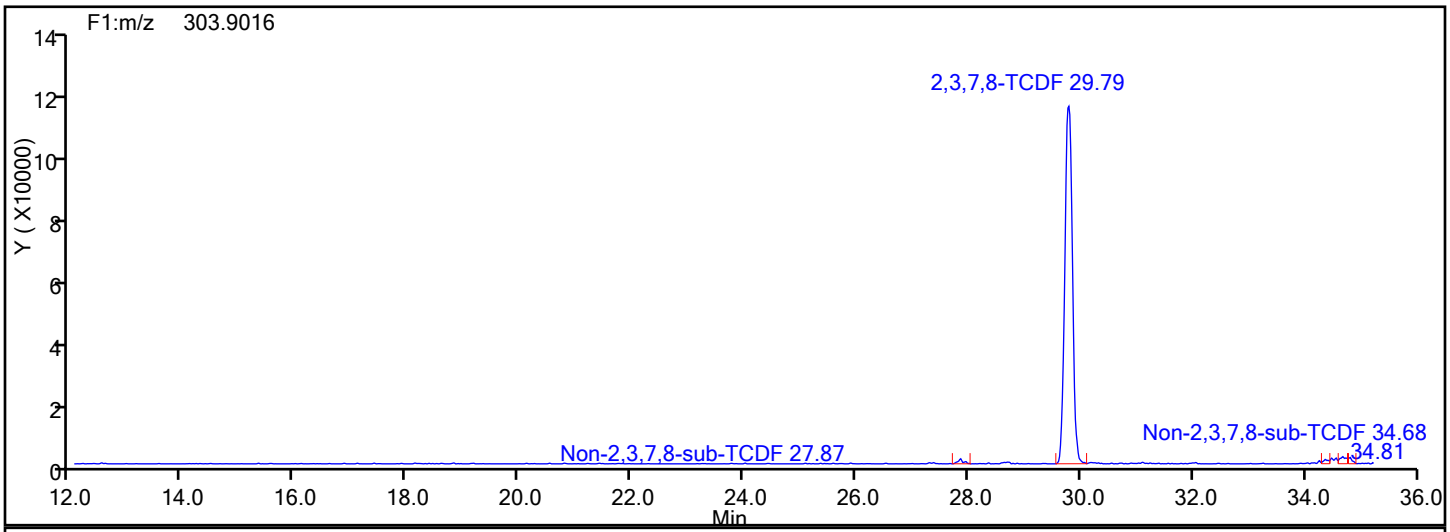
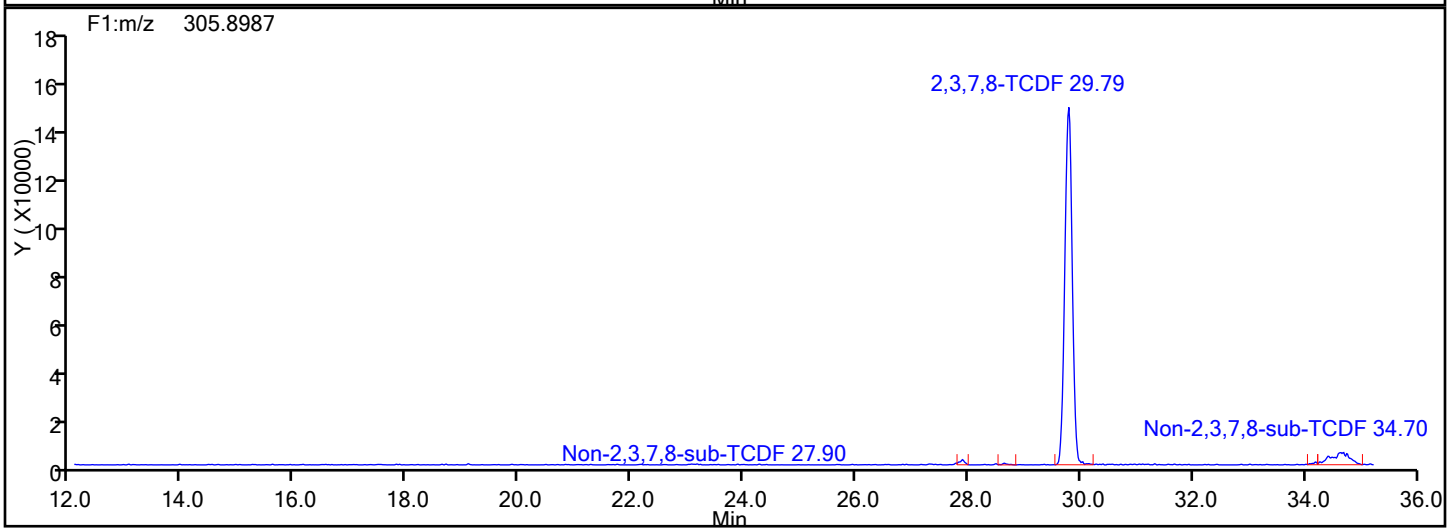
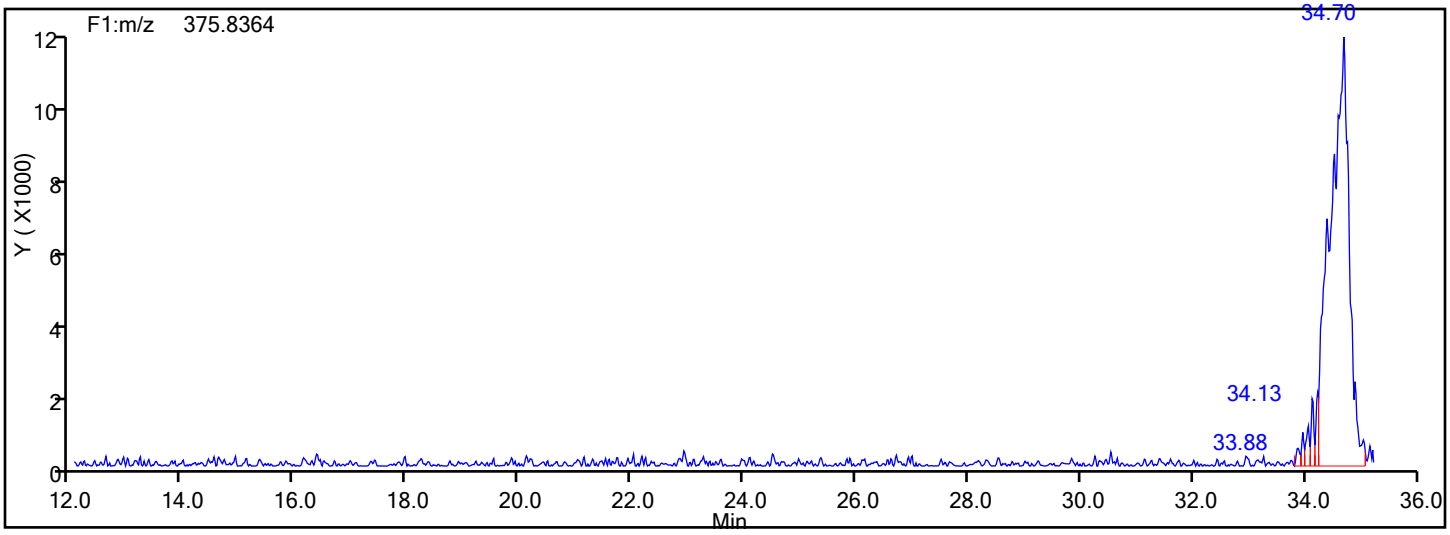




TCDF Interference Mass



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TestAmerica Knoxville

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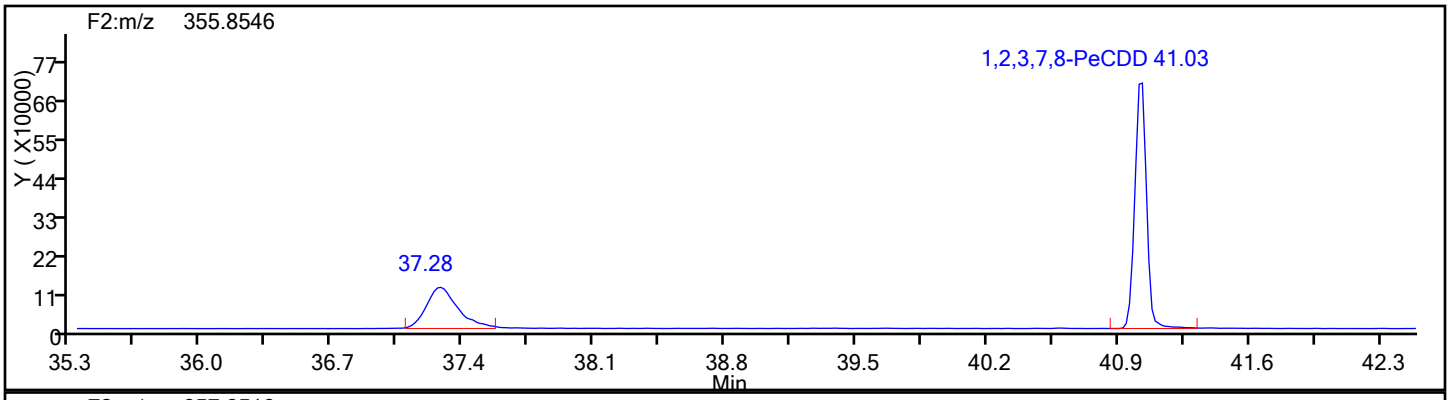

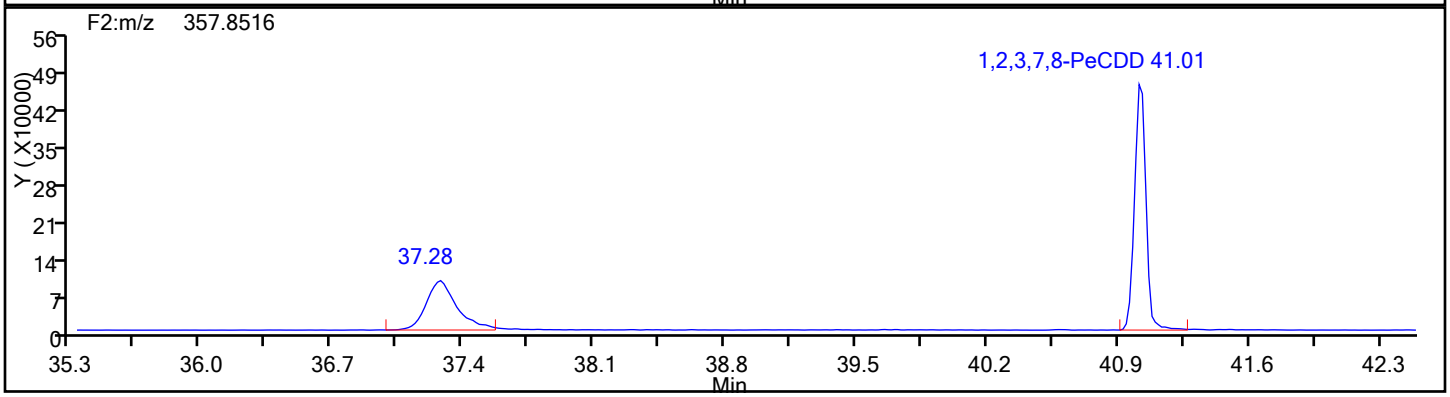

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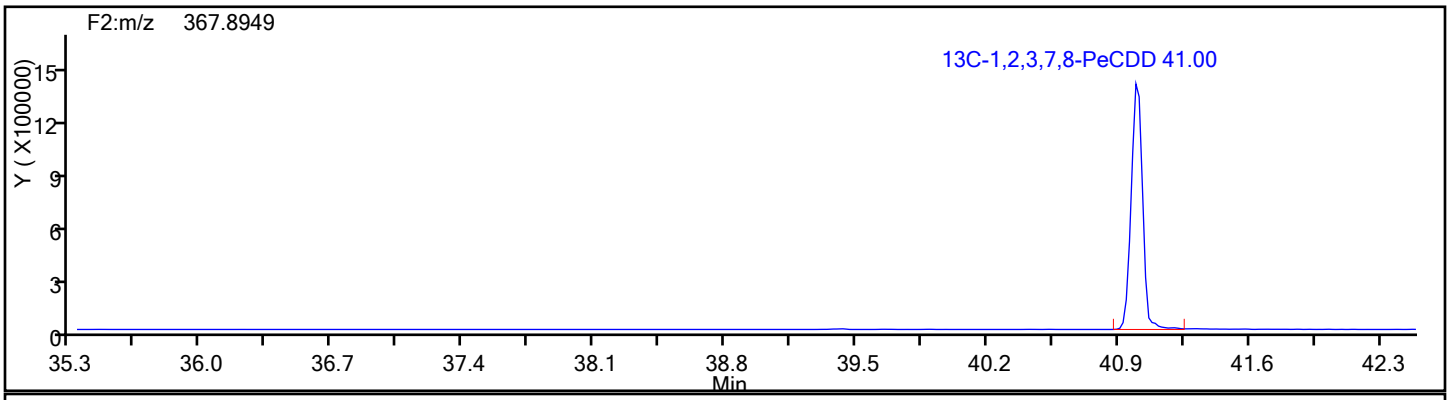

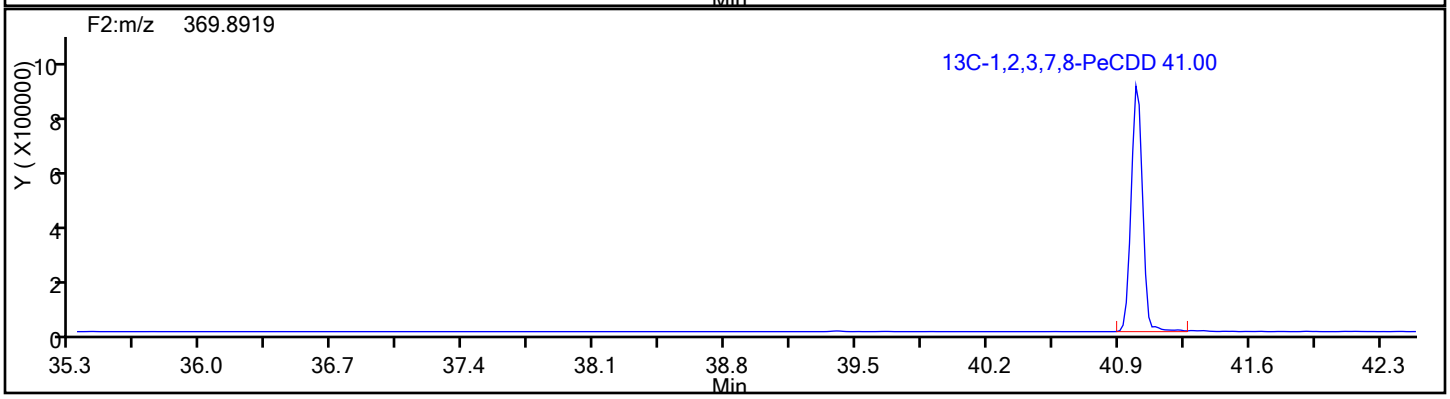

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TestAmerica Knoxville

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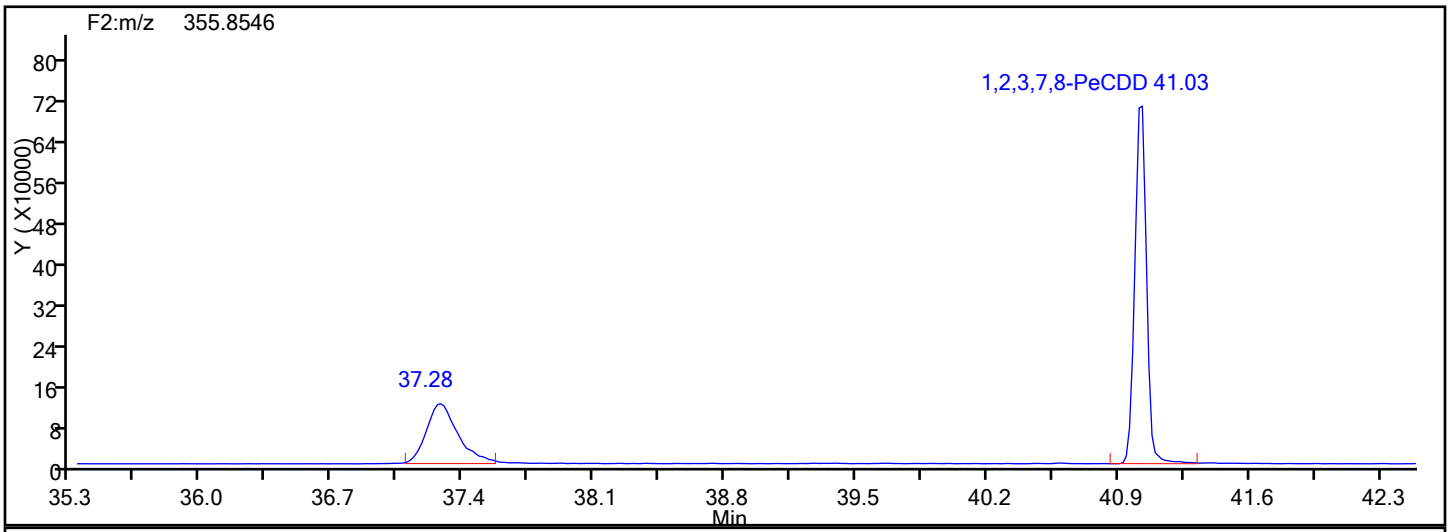
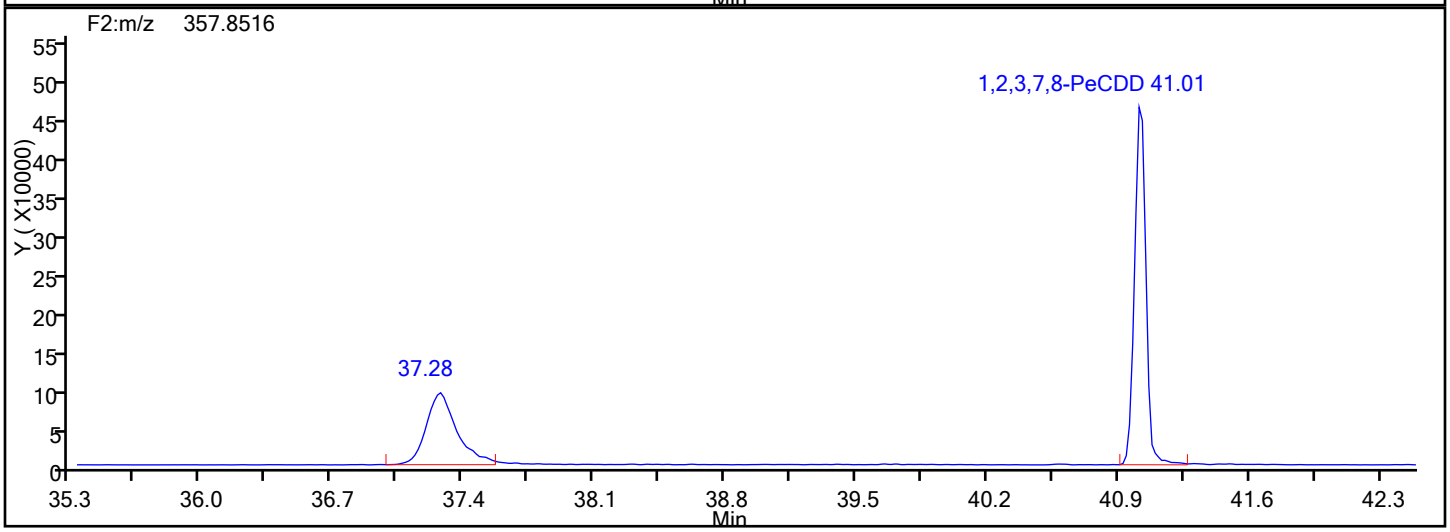
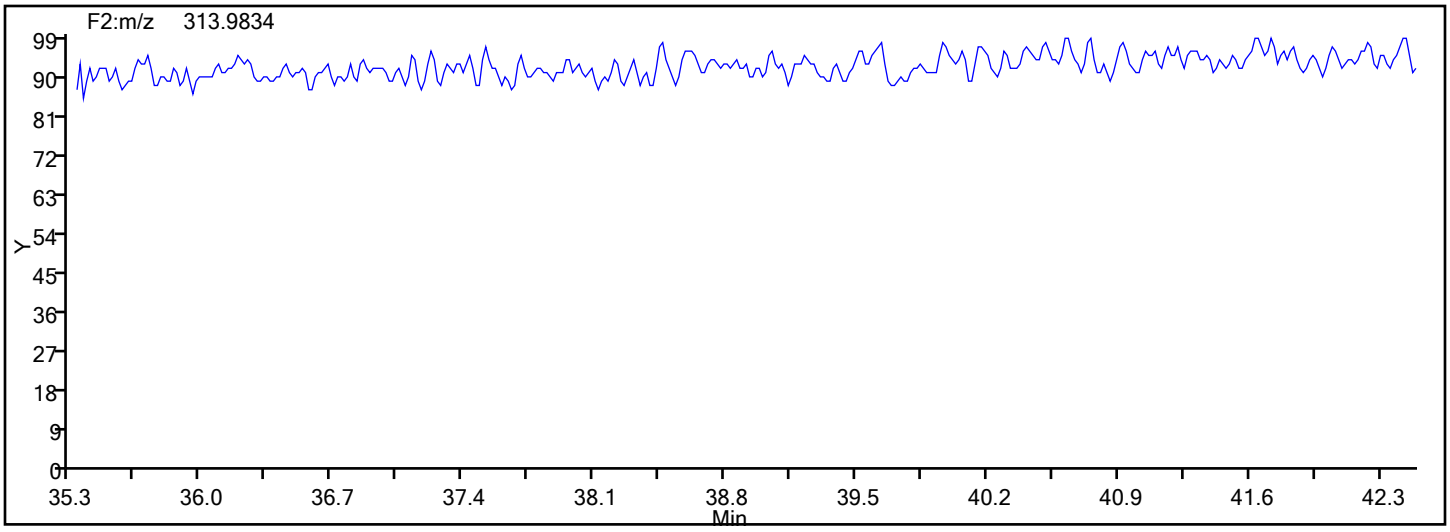




PeCDD Lock Mass



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TestAmerica Knoxville

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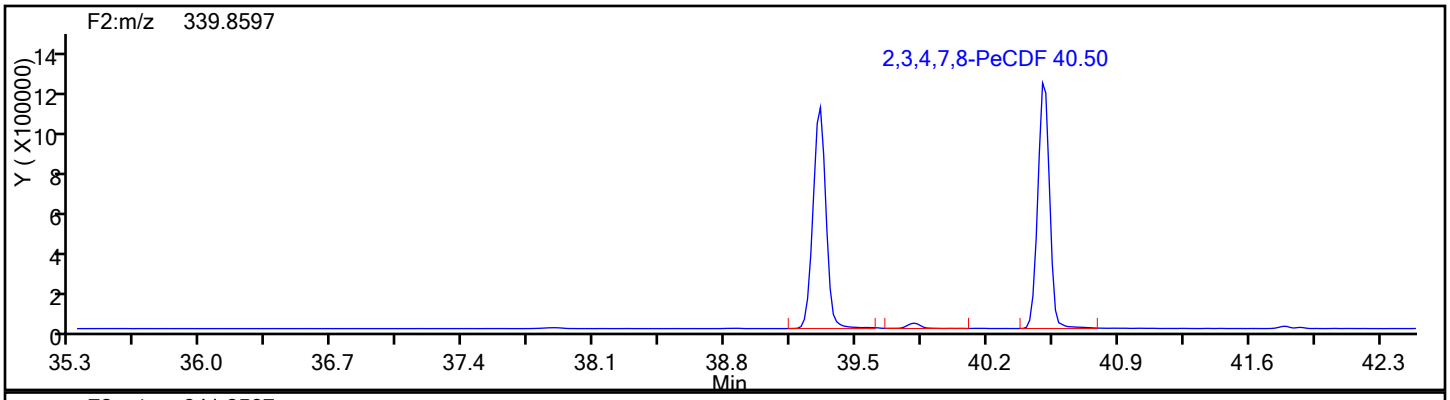
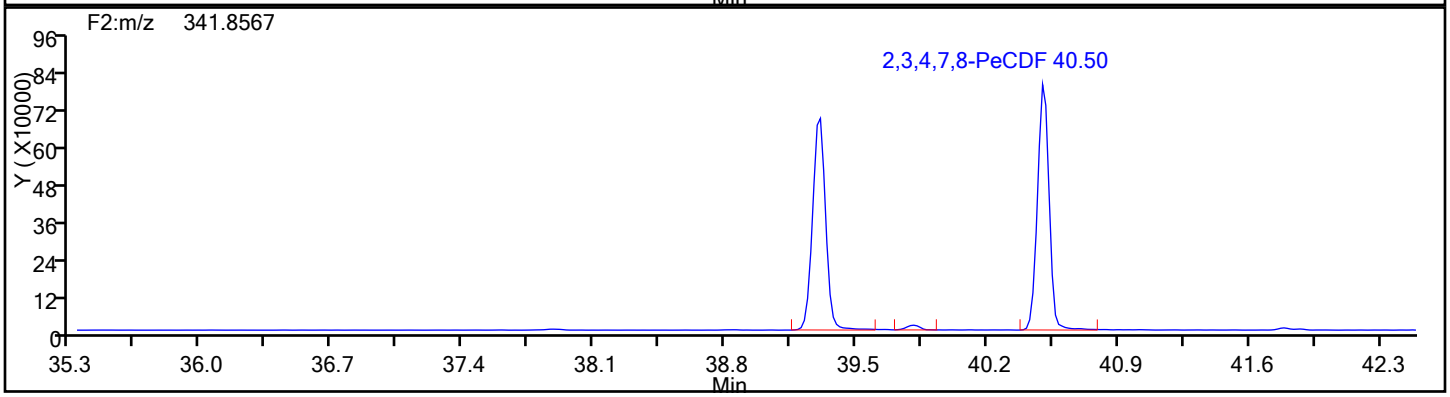
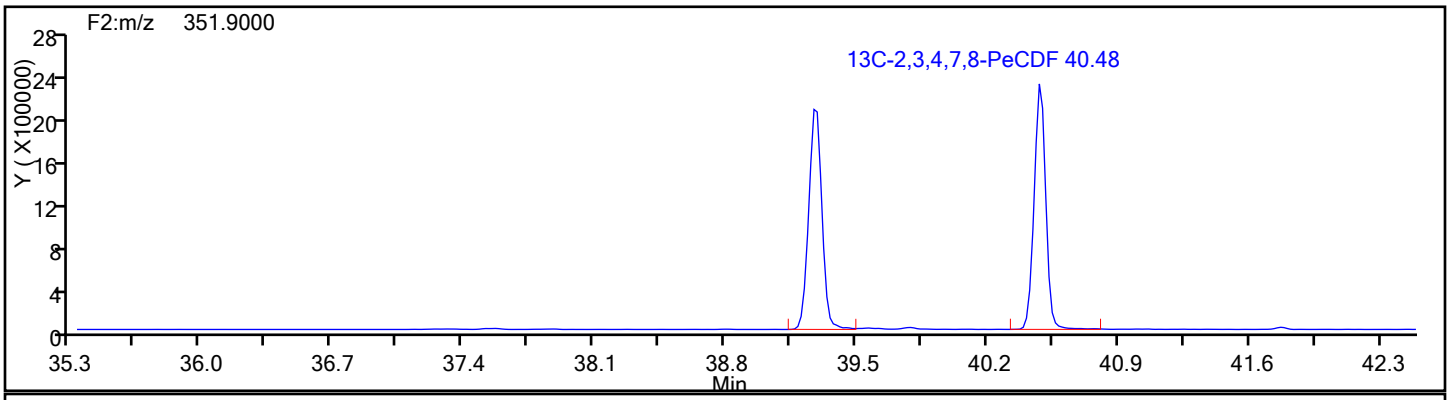
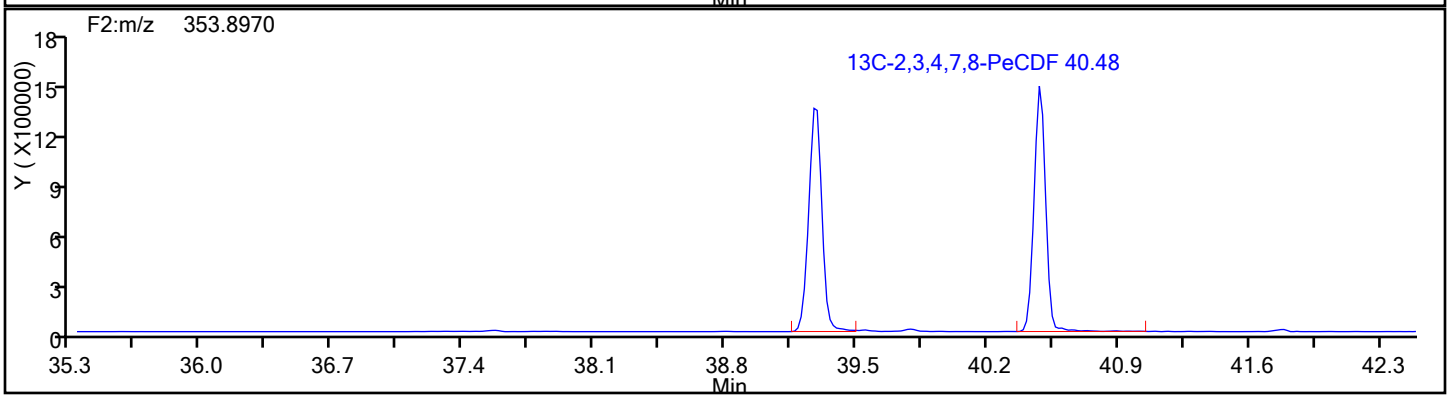




PeCDF Standards





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TestAmerica Knoxville

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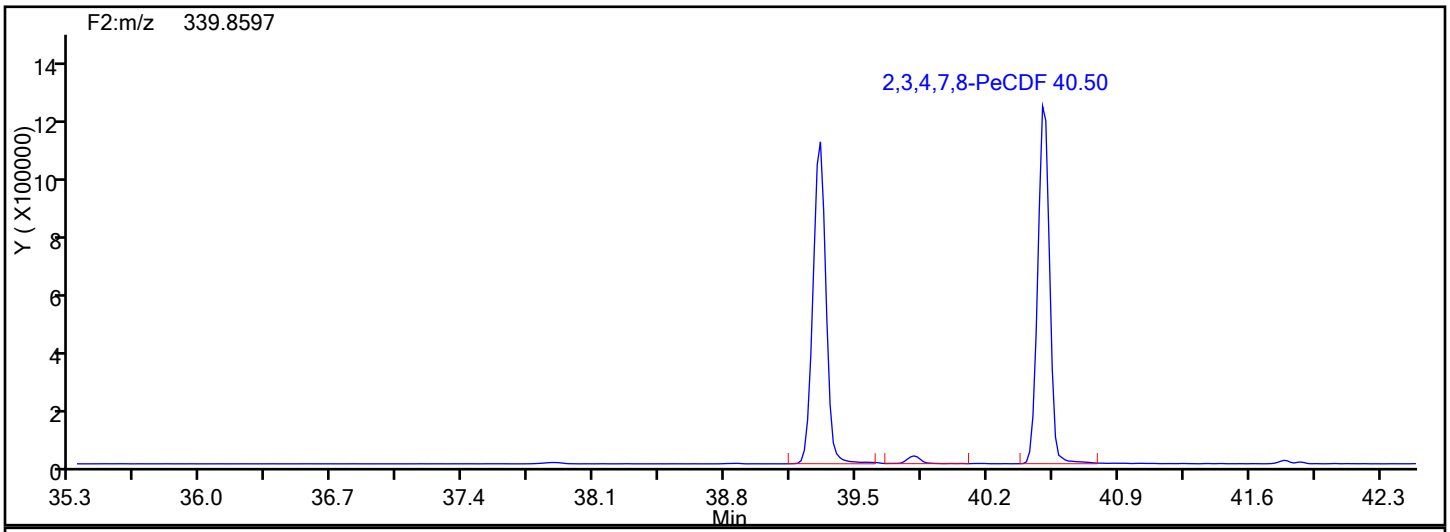
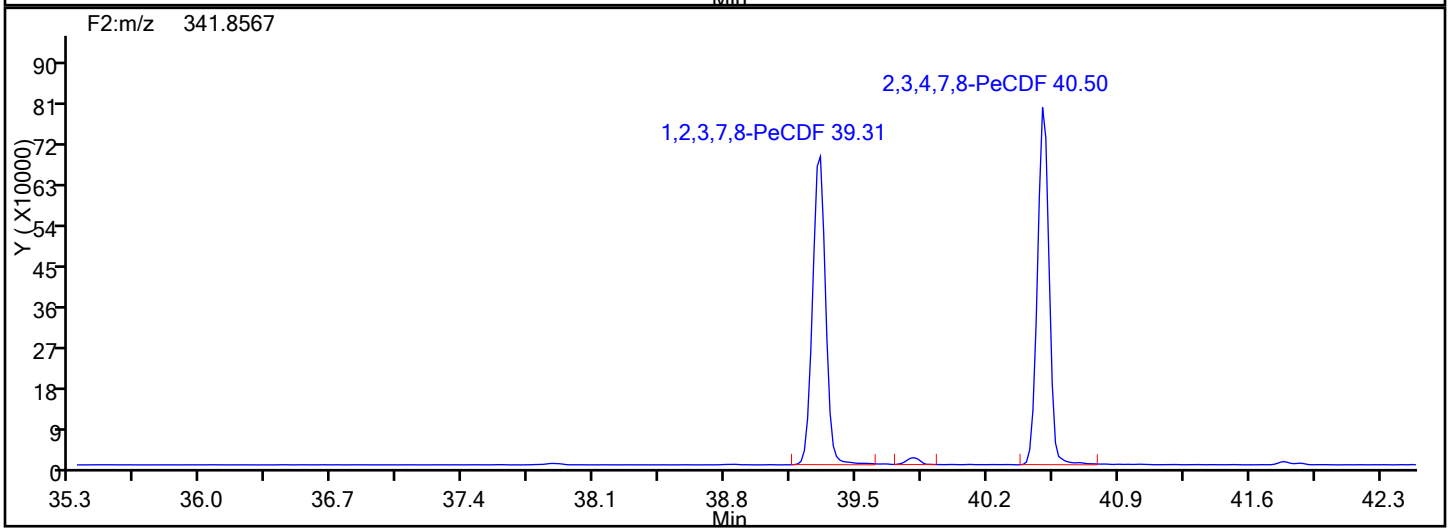
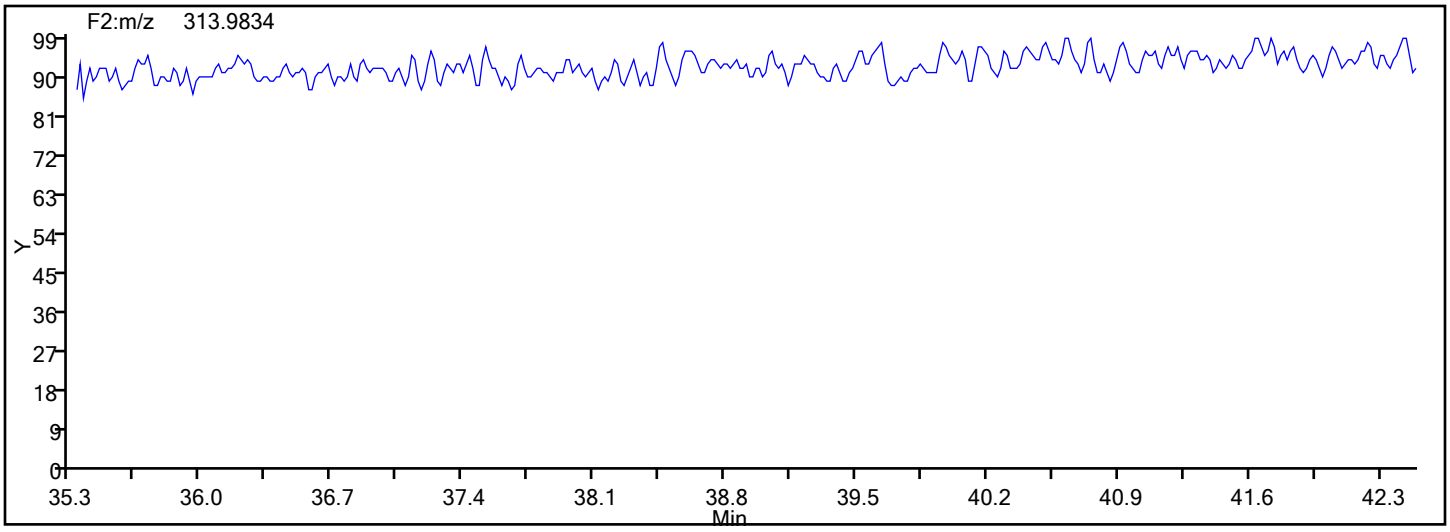




PeCDF Lock Mass



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TestAmerica Knoxville

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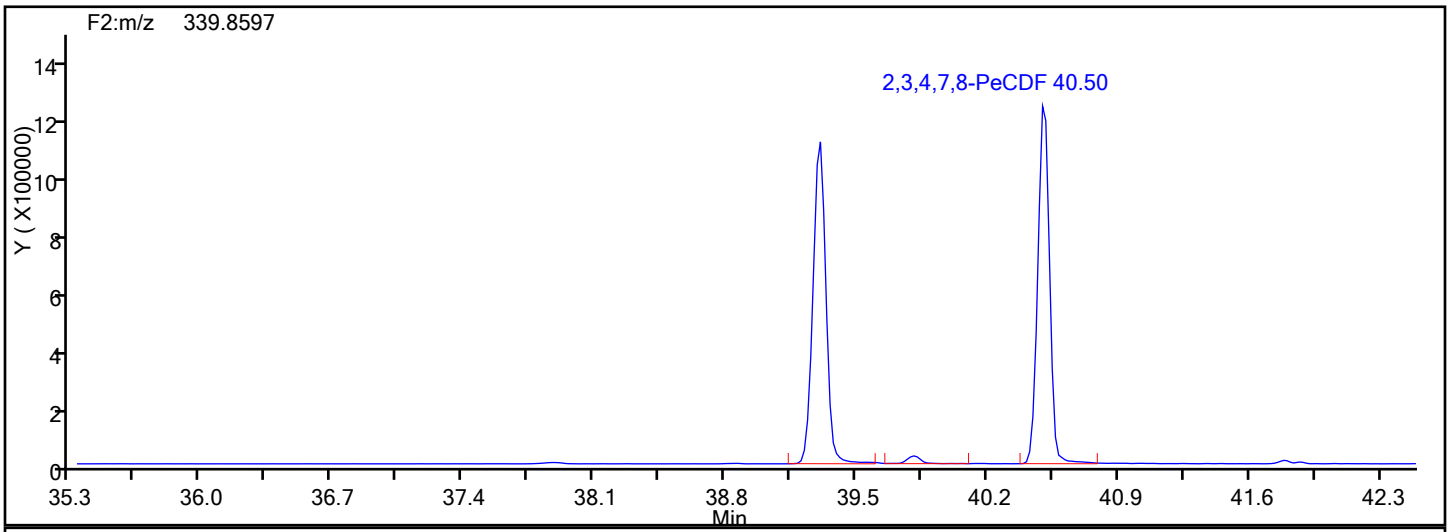

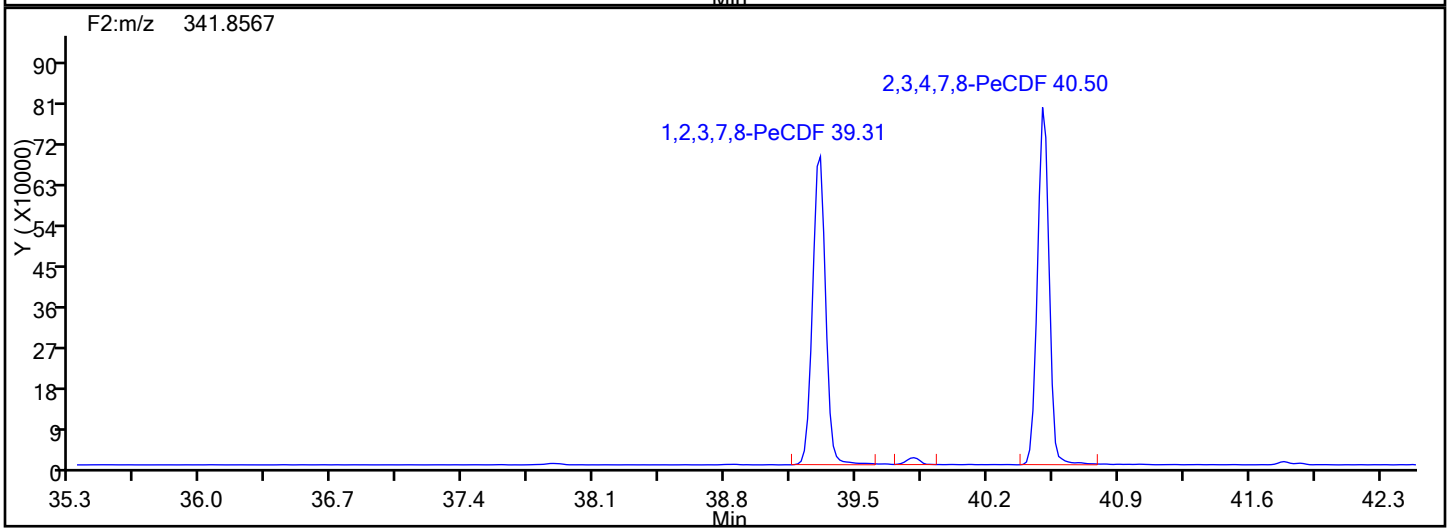

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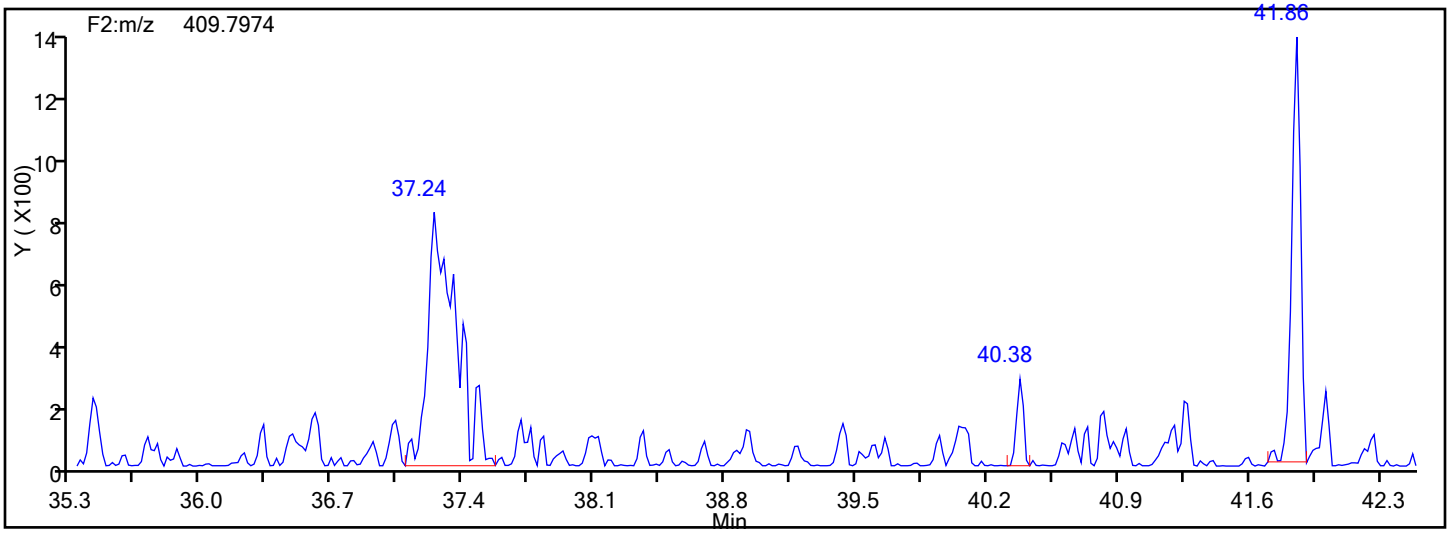

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TestAmerica Knoxville

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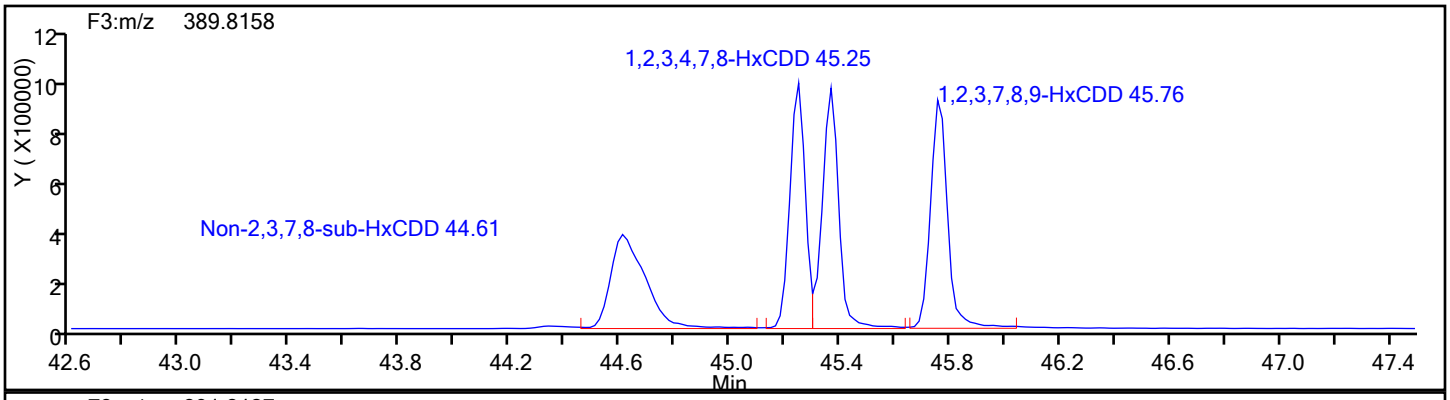

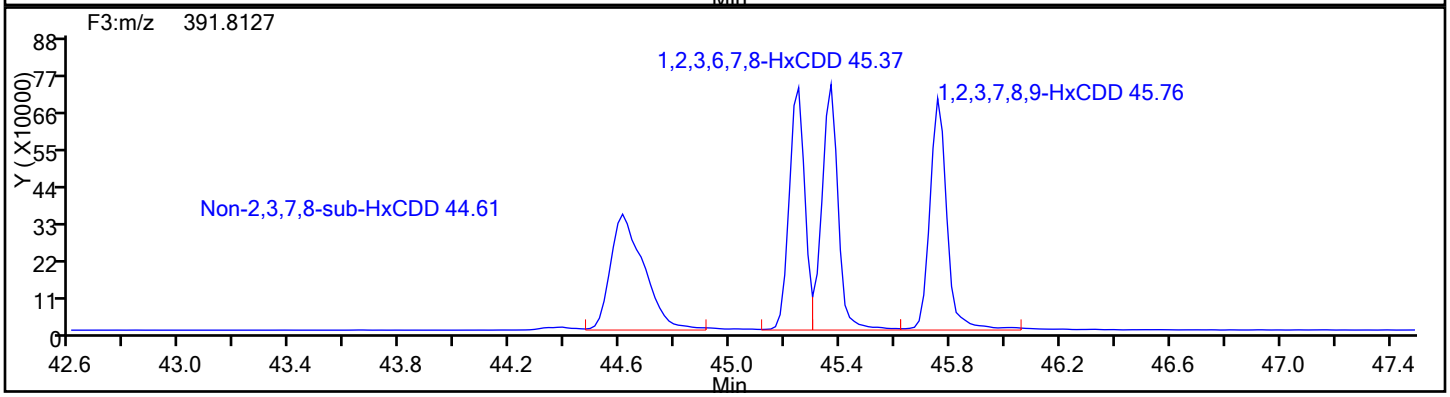

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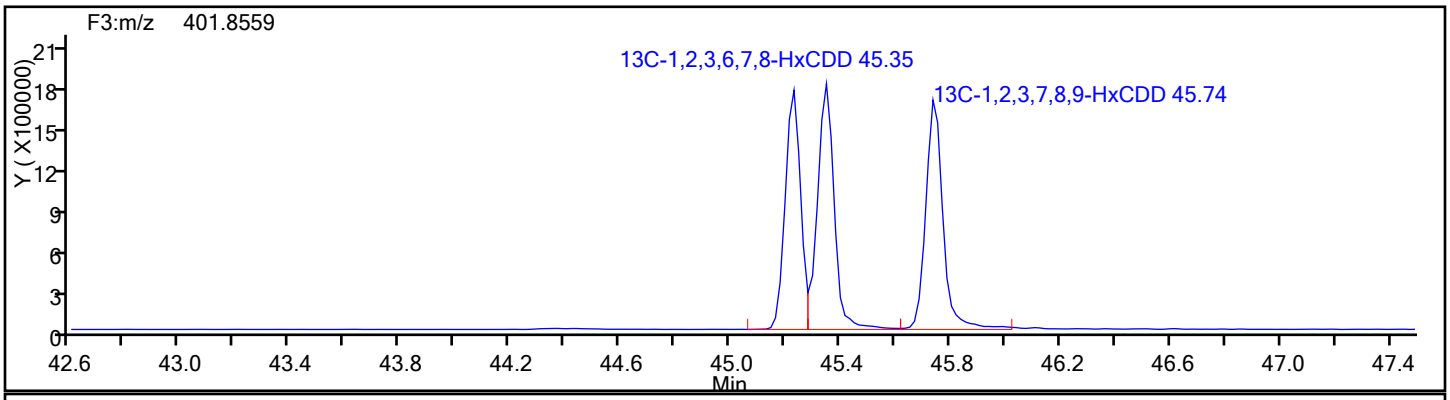

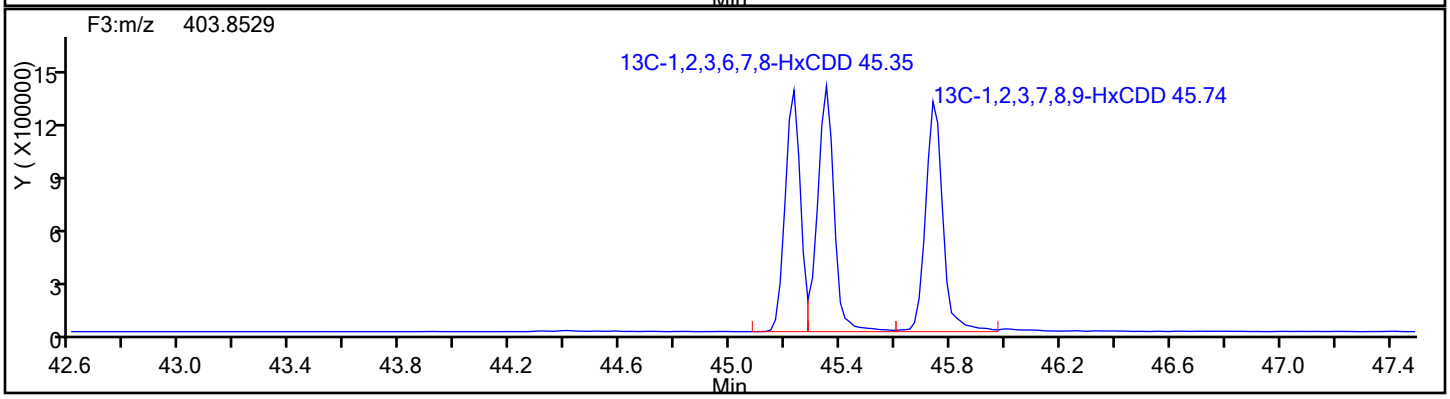

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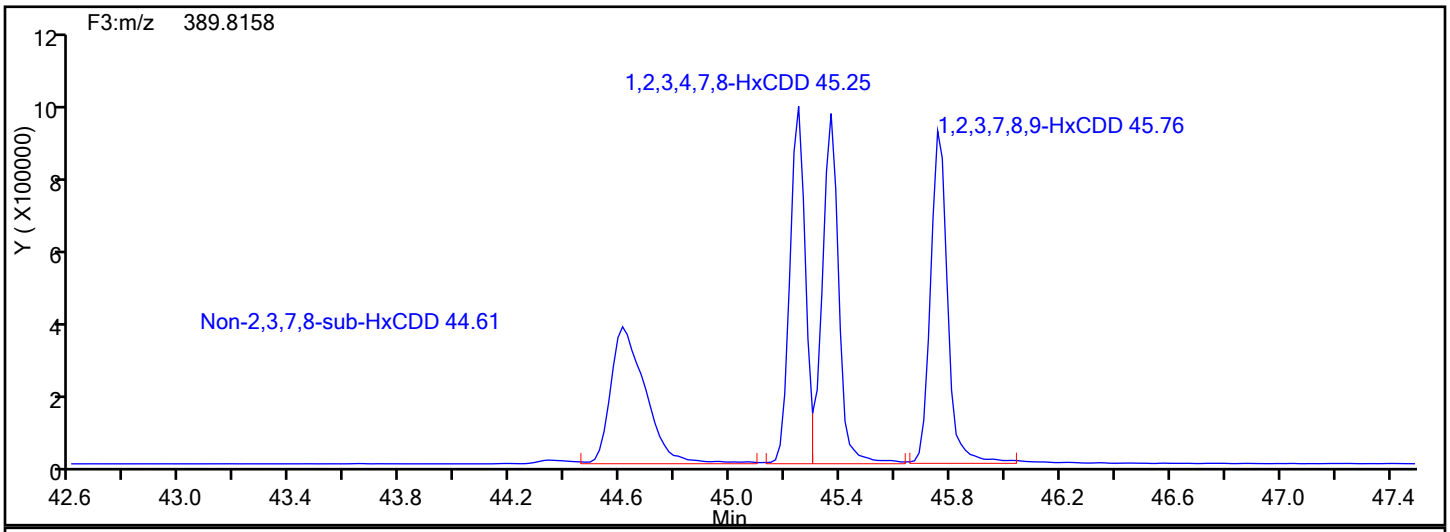

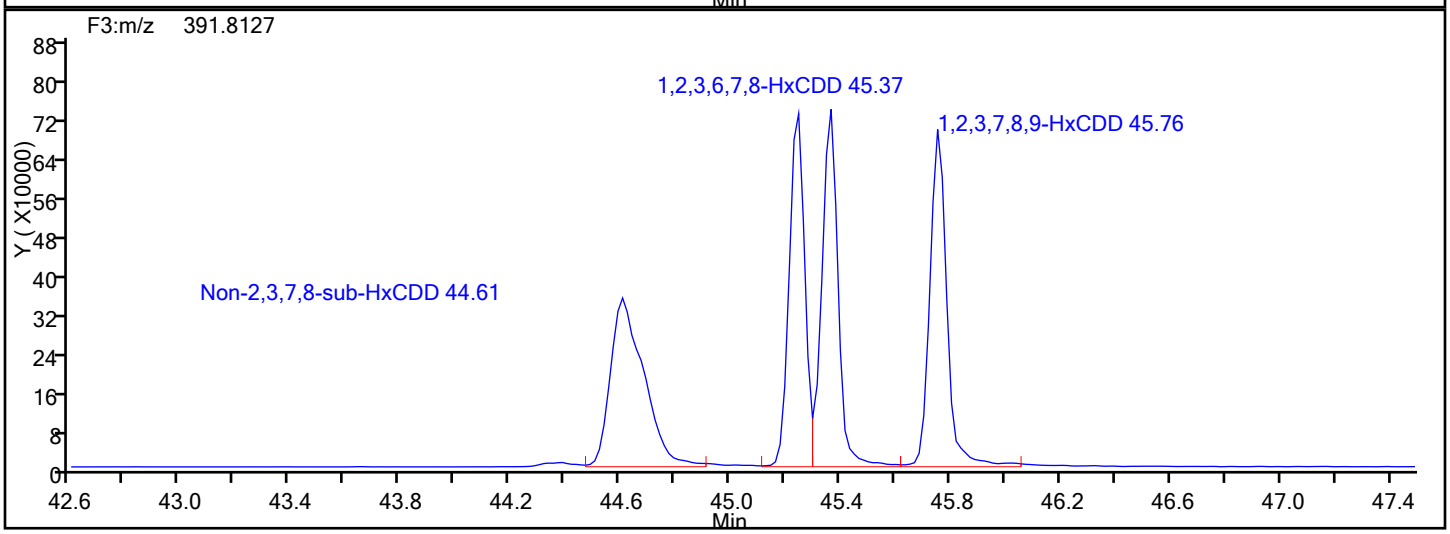

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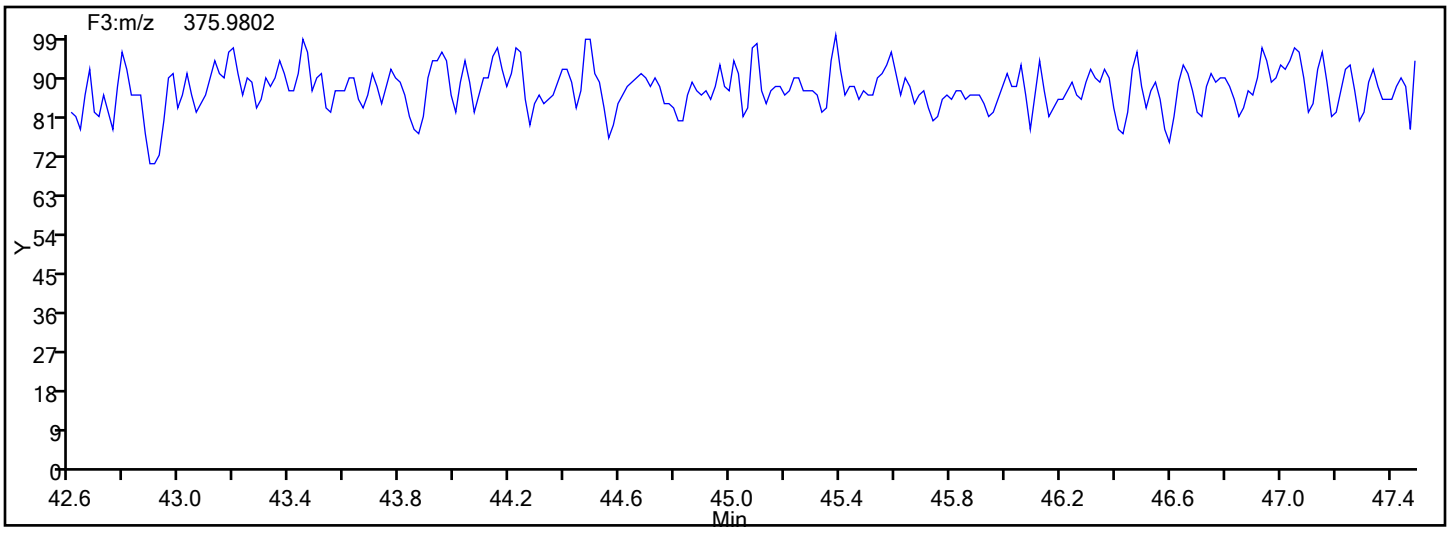

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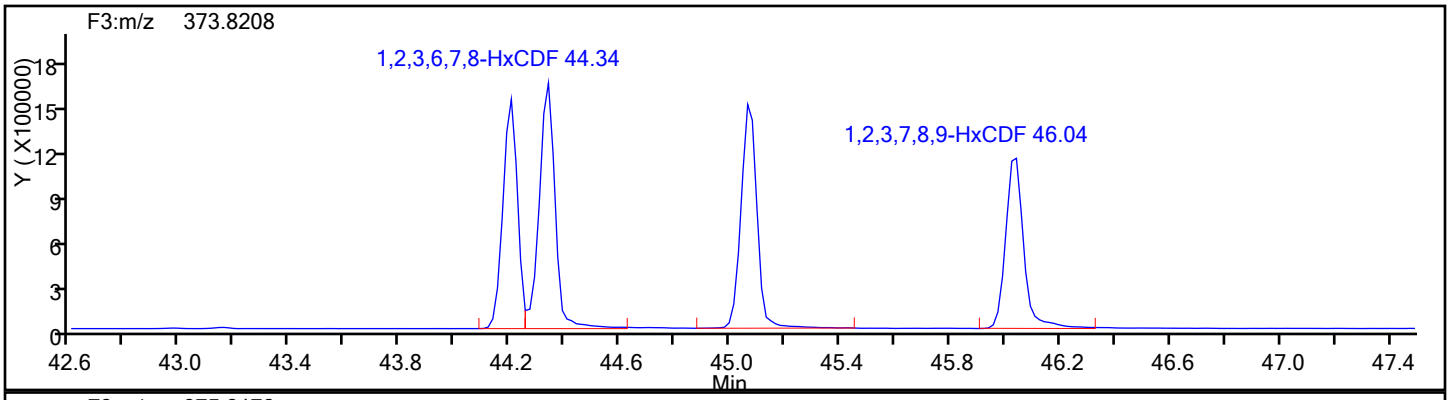

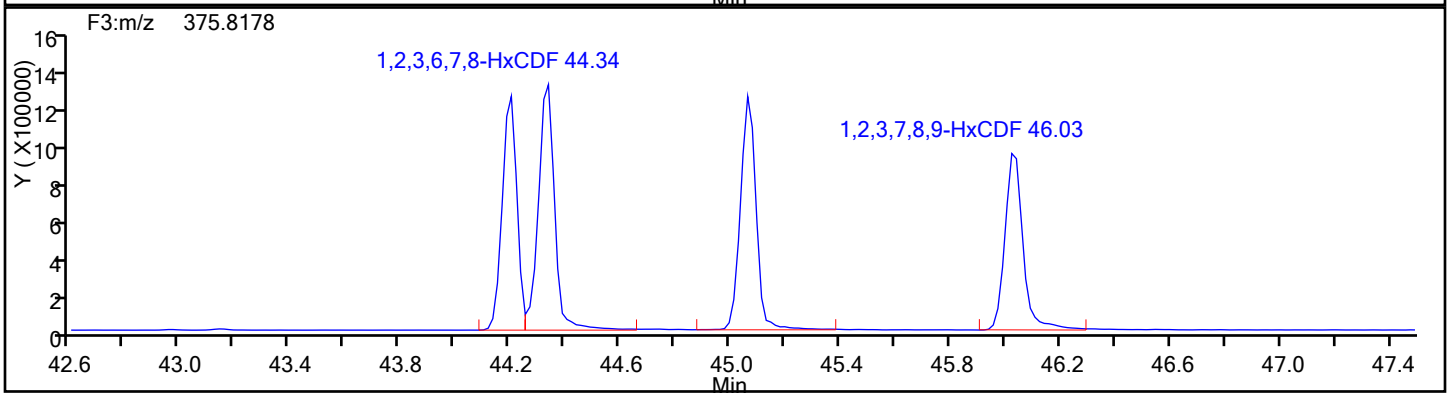

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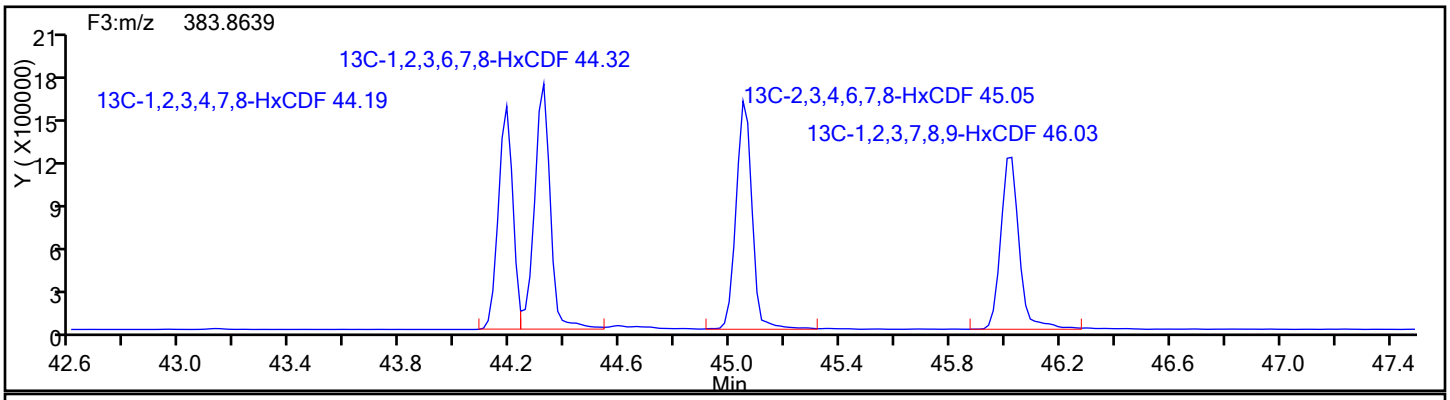

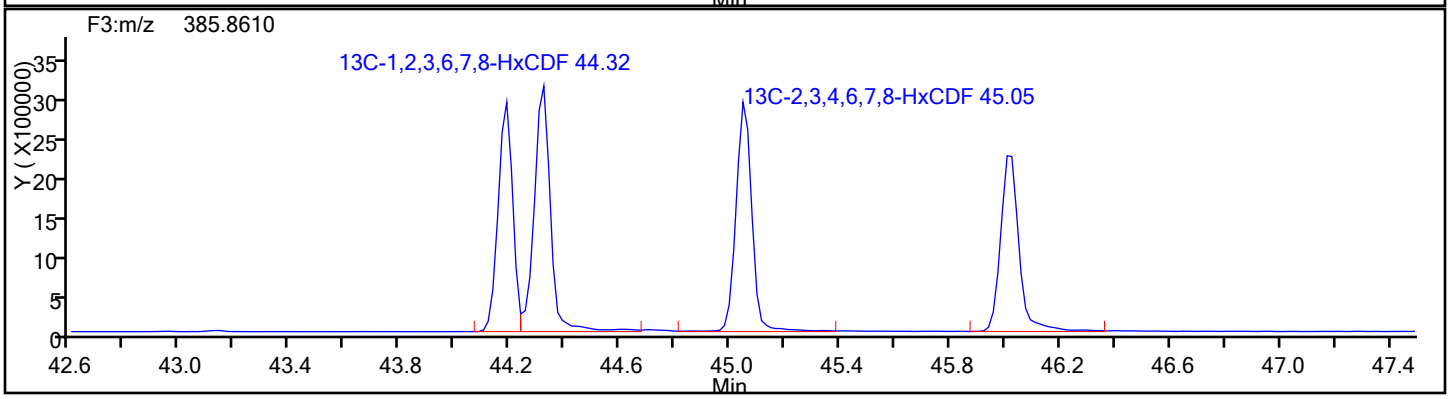

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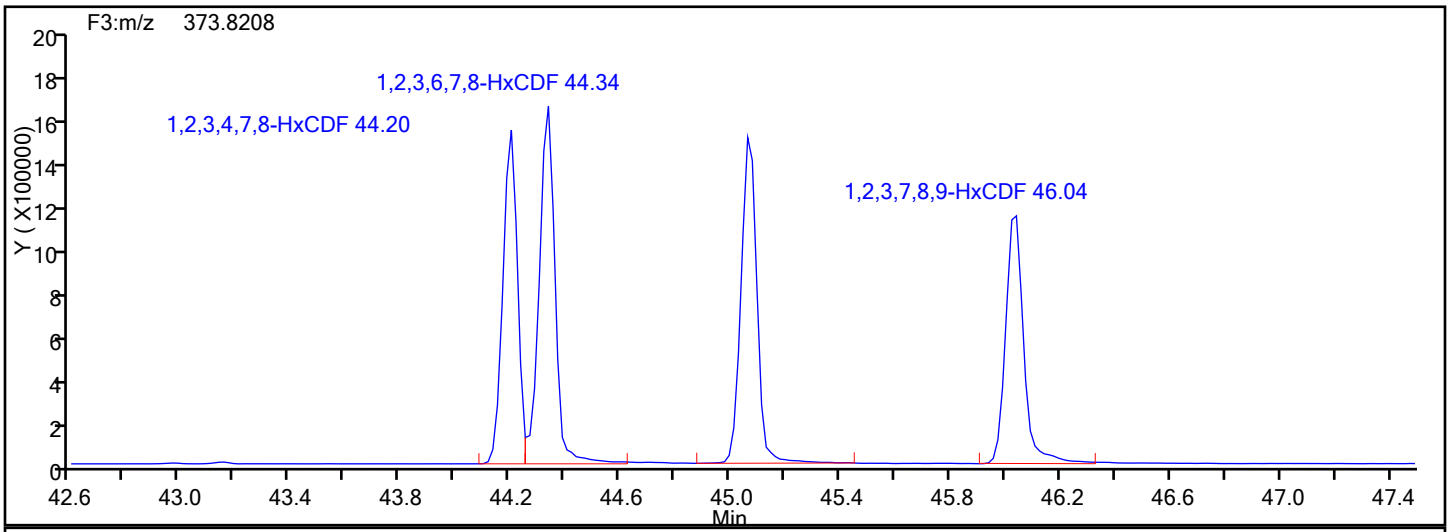

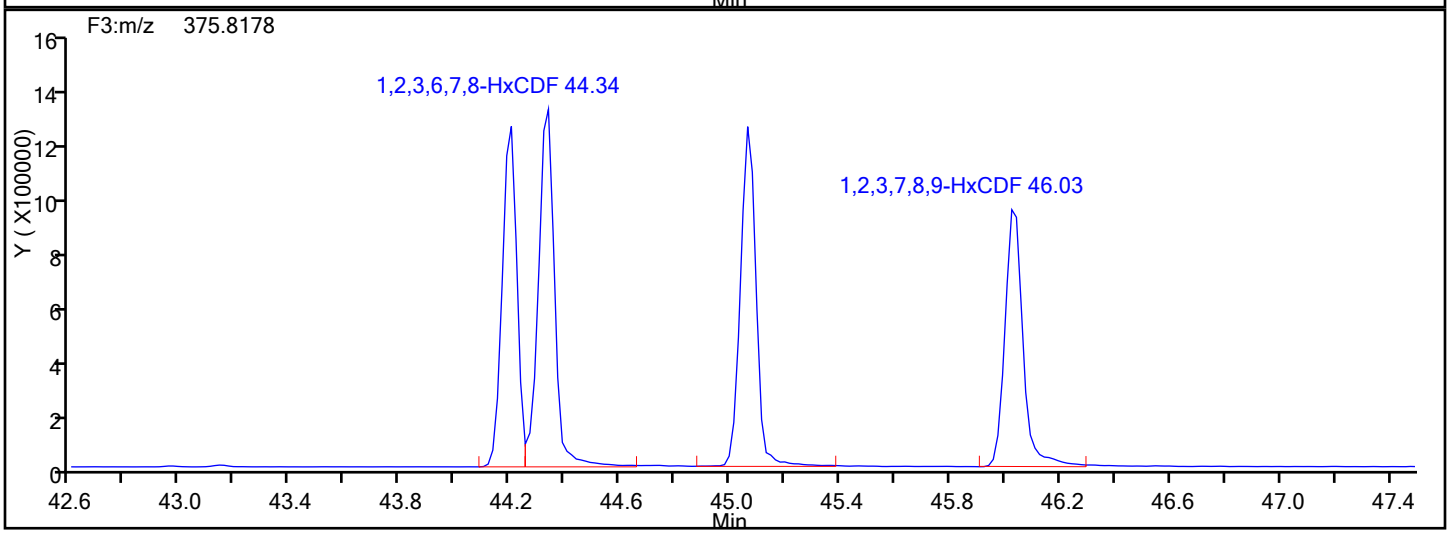

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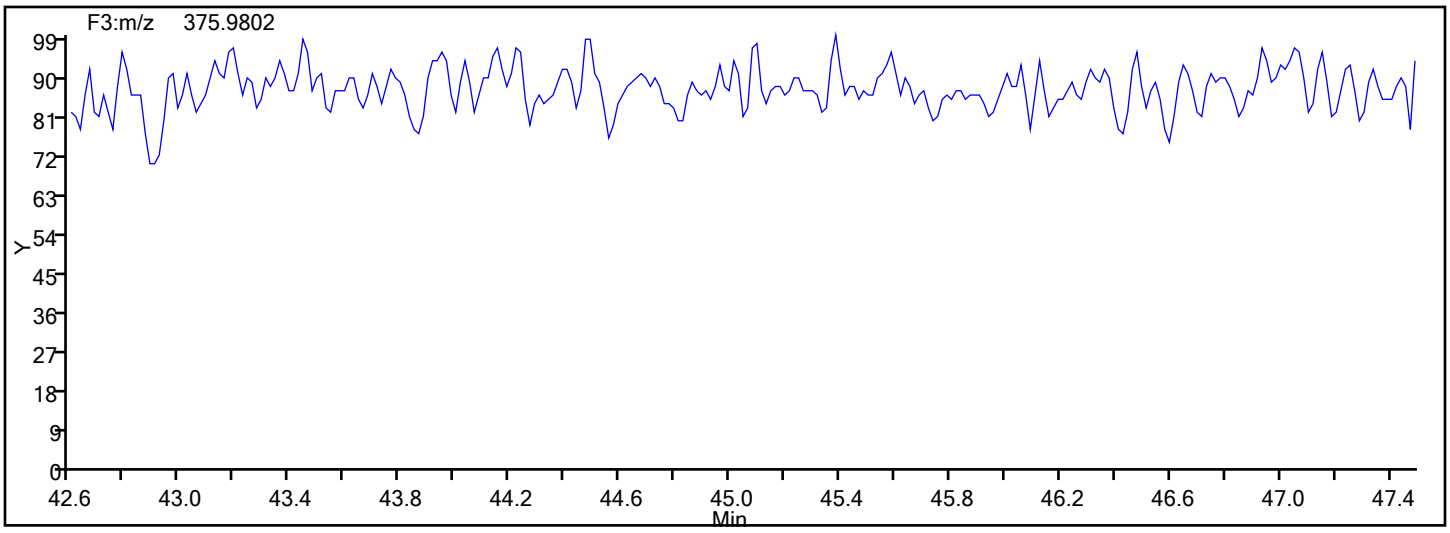

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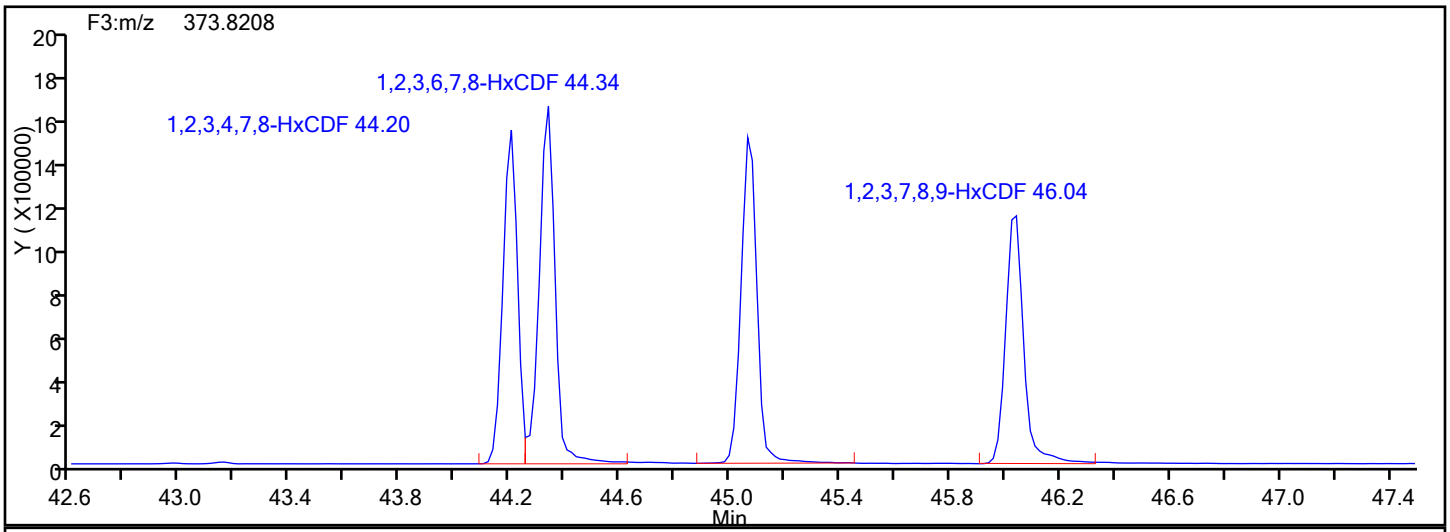
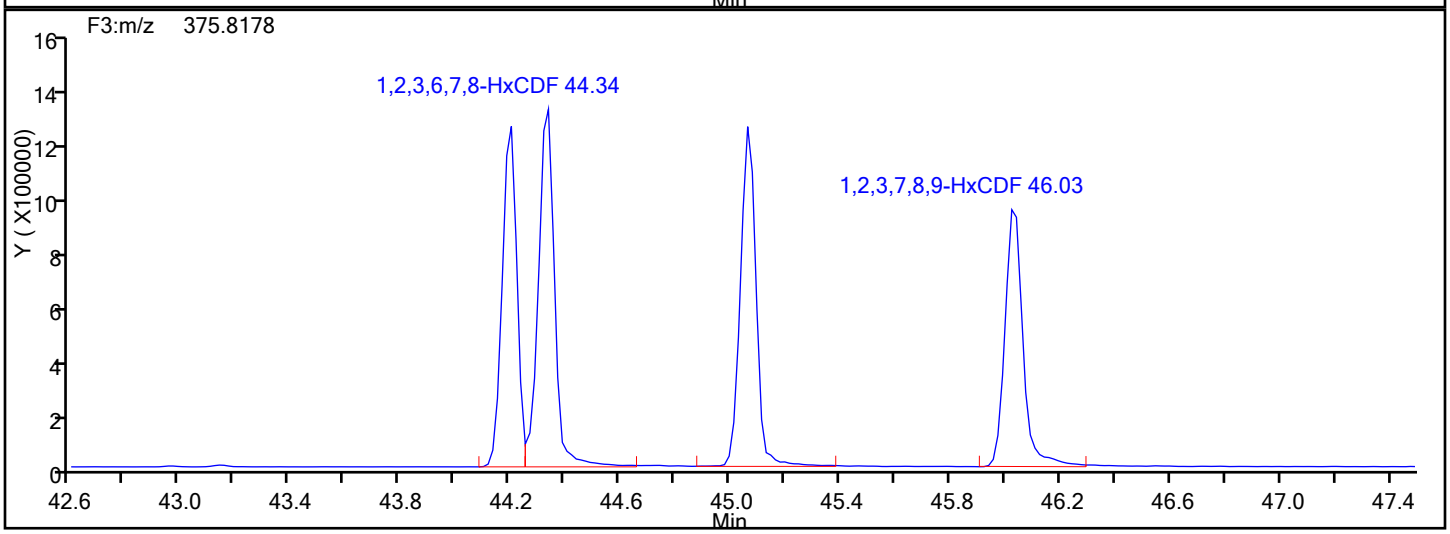
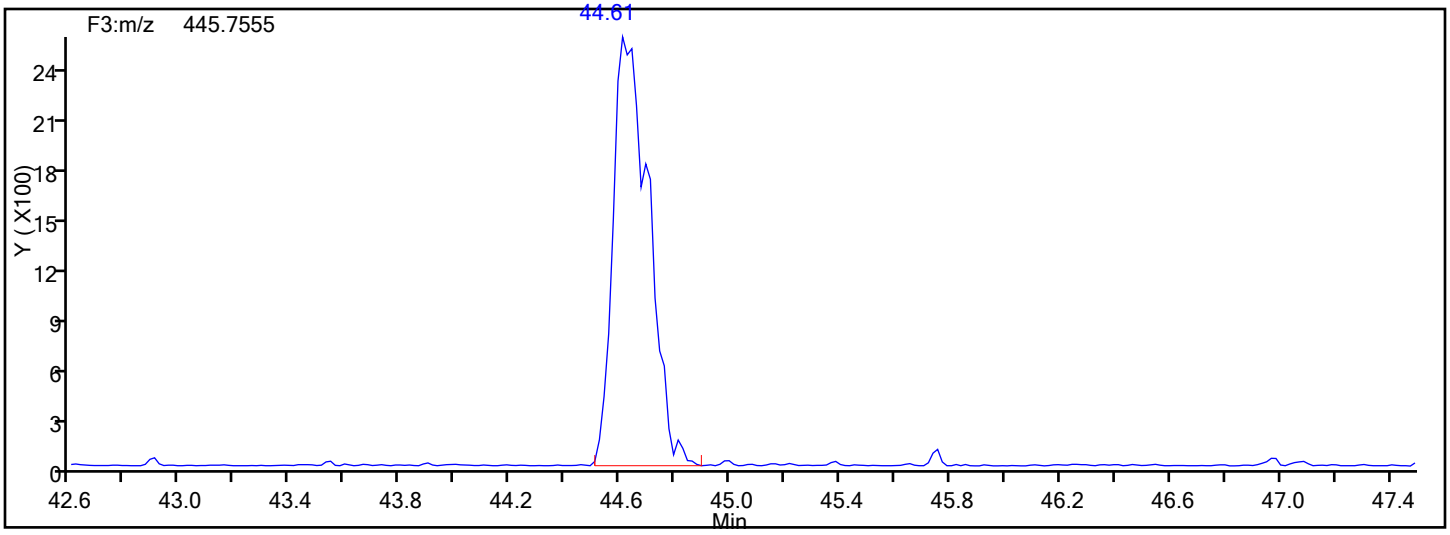




HxCDF Interference Mass



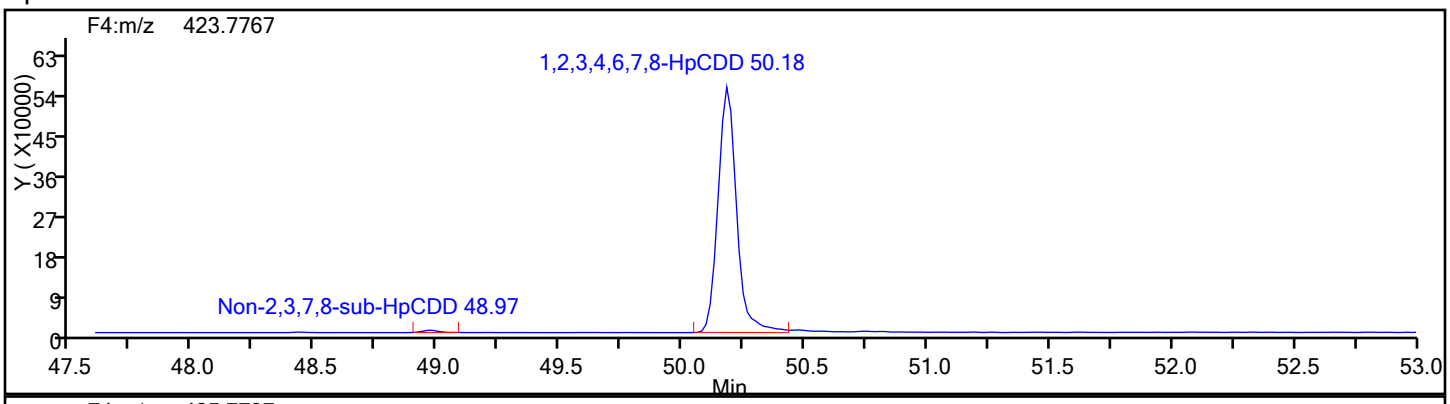
Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

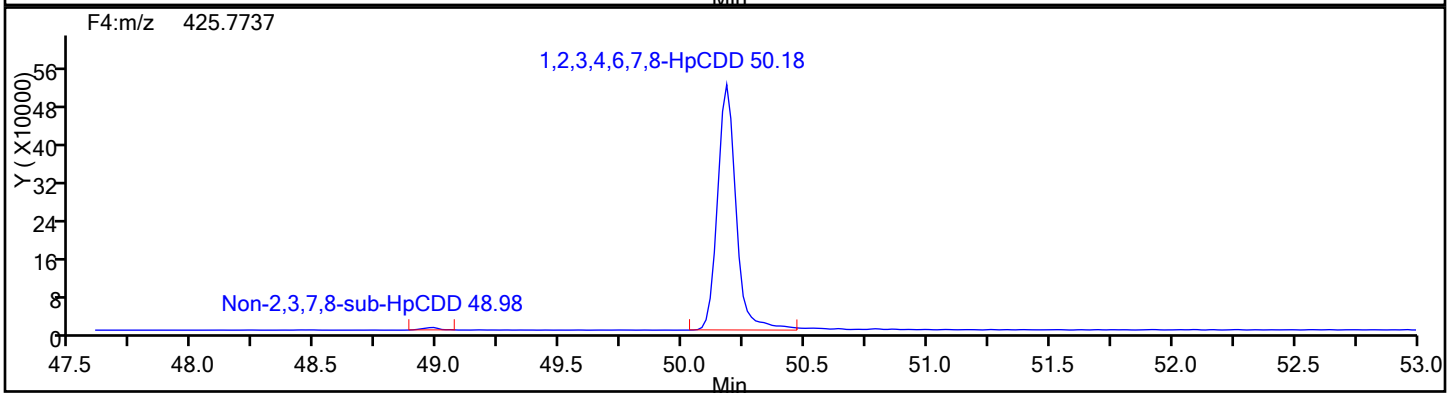
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

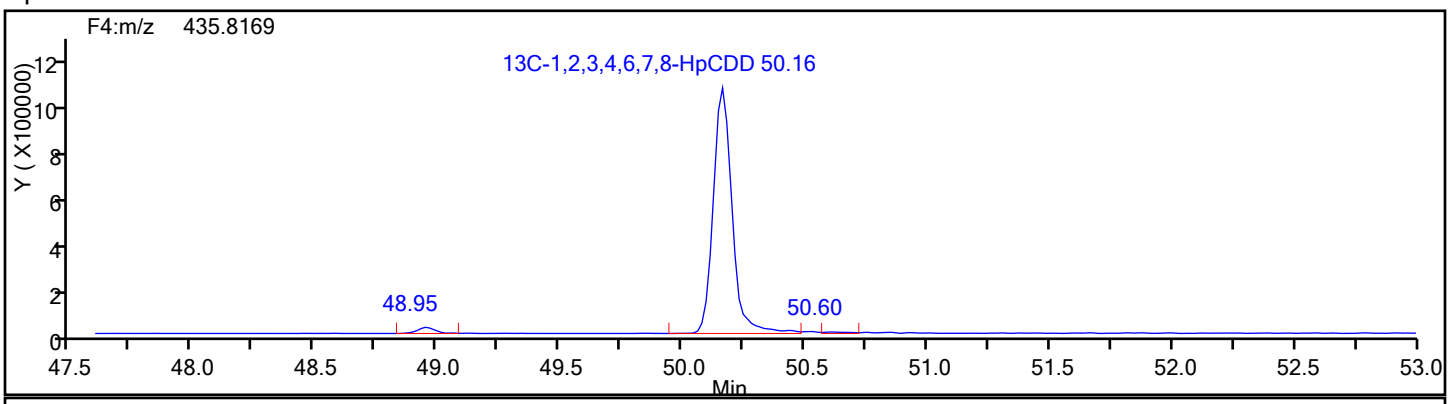
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

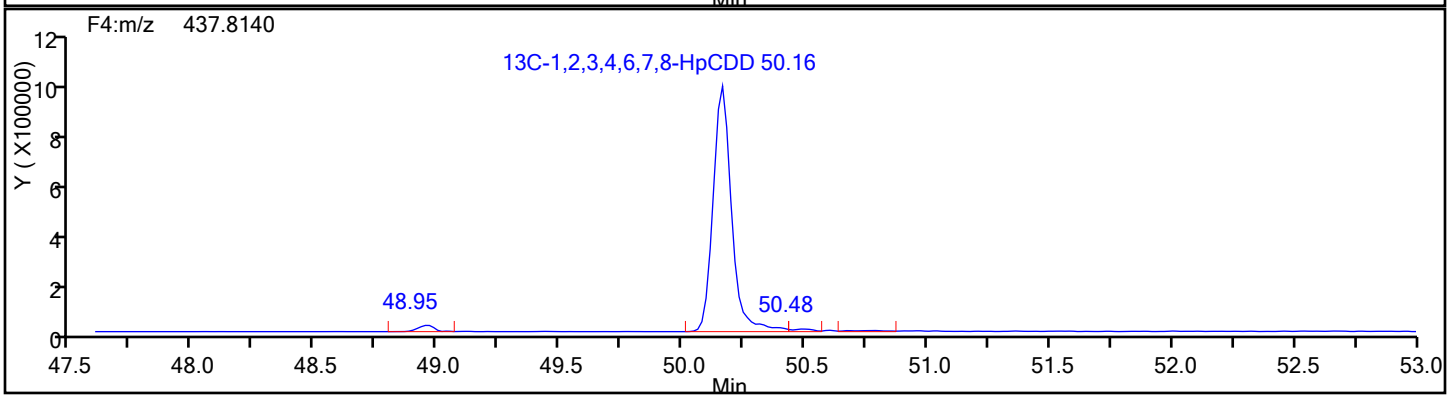
HpCDD





HpCDD Standards





Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

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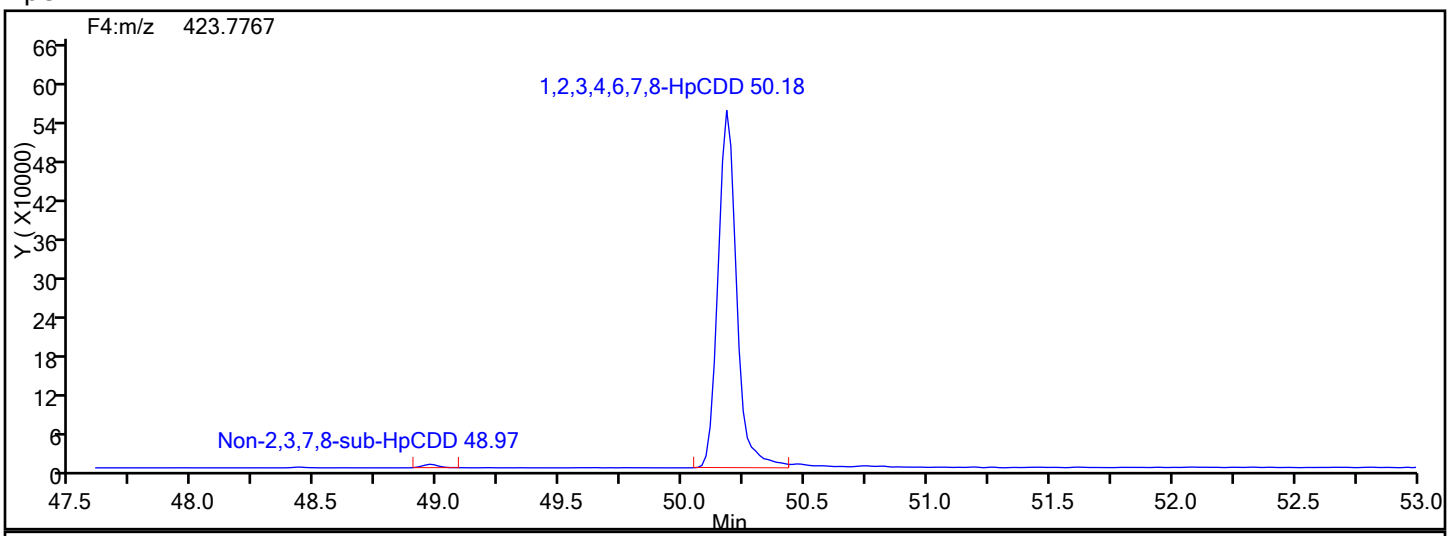
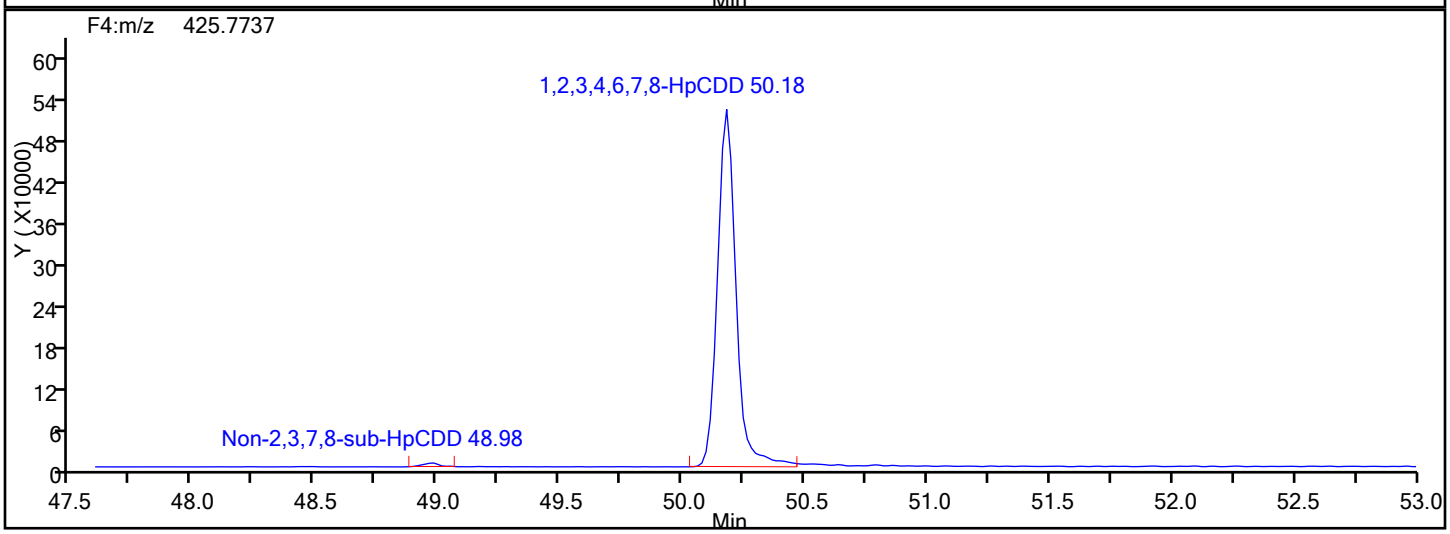
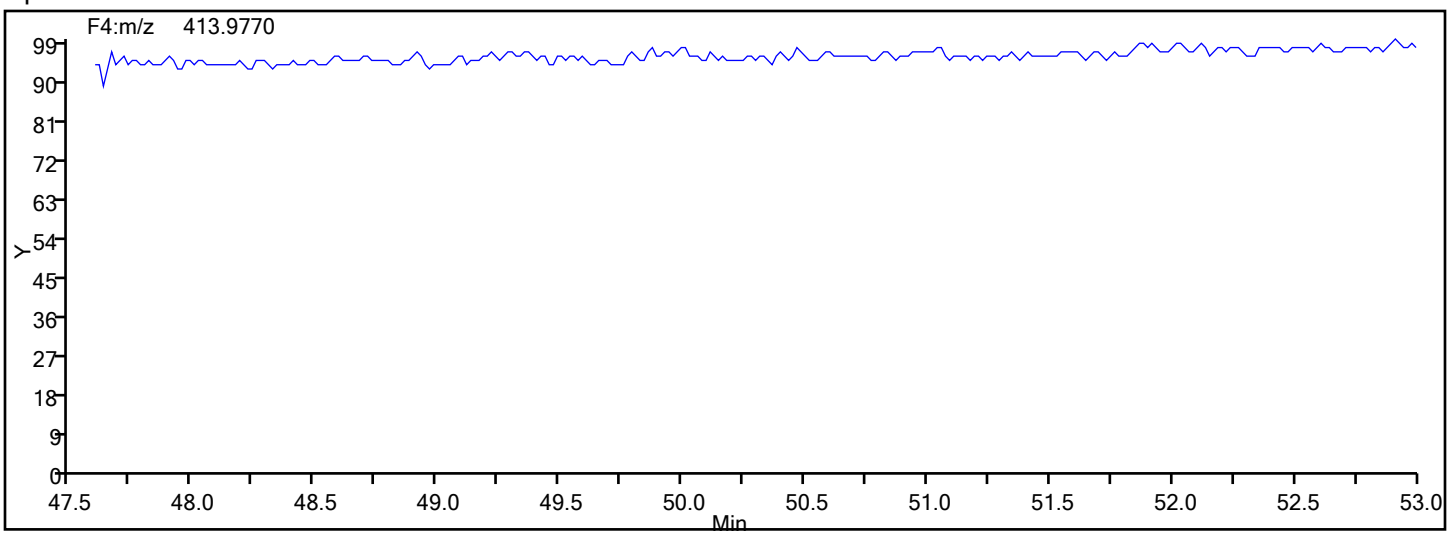
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



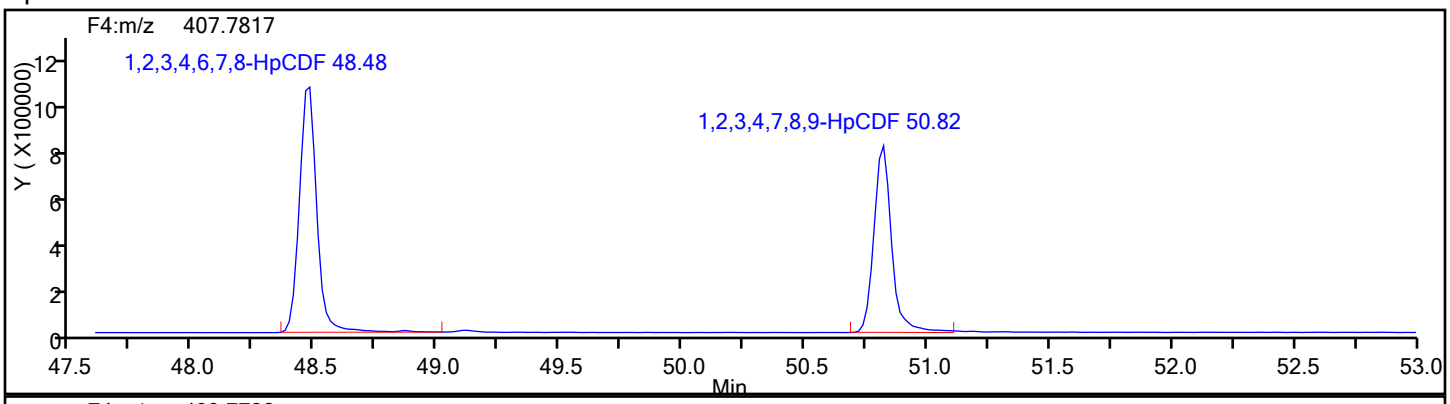
Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

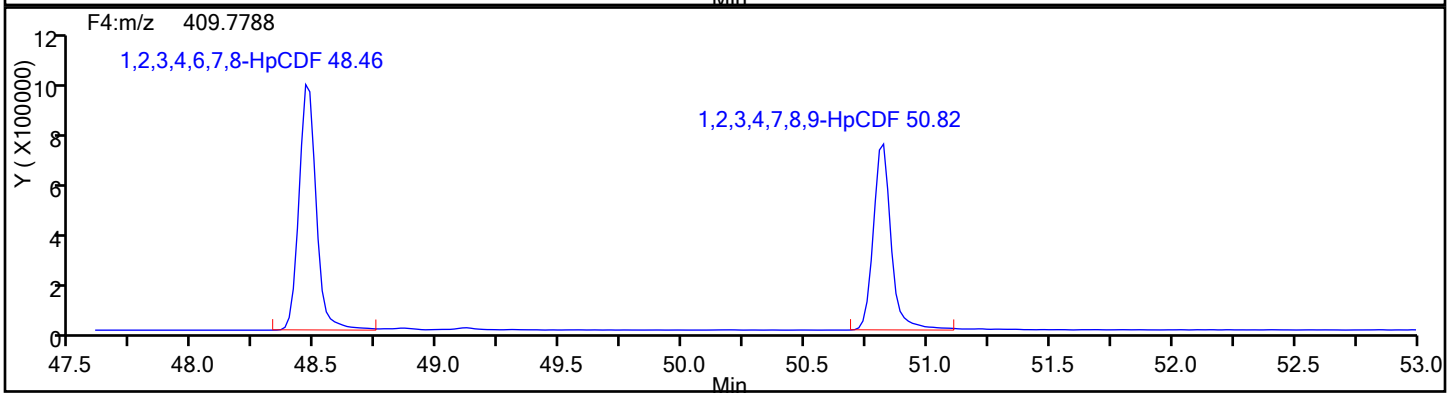
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

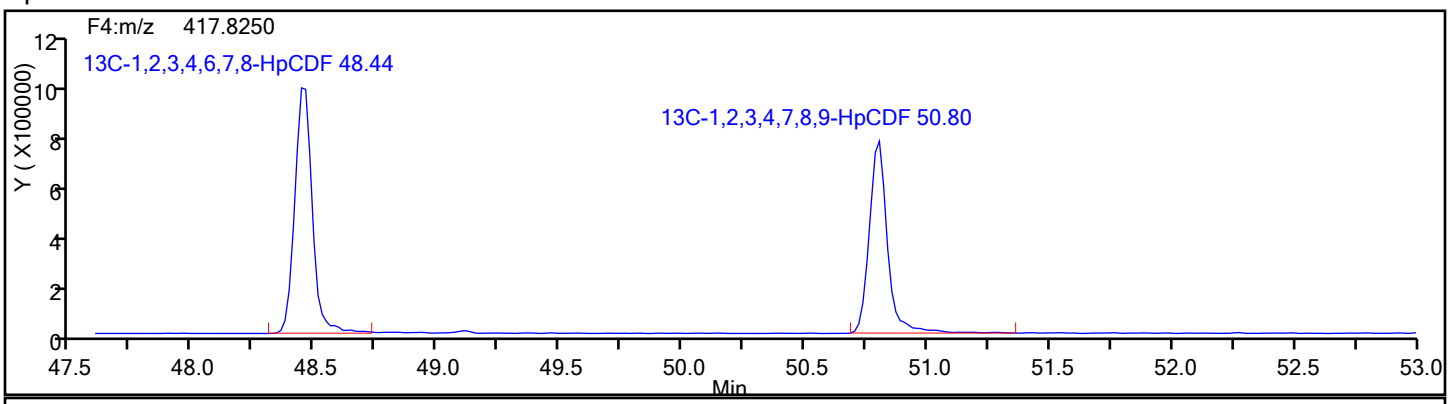
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

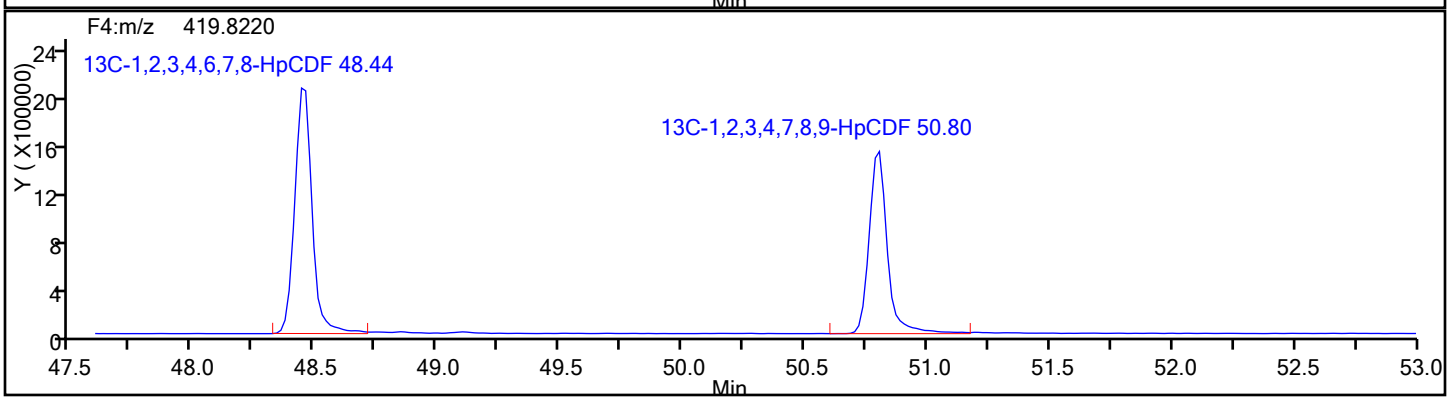
HpCDF





HpCDF Standards



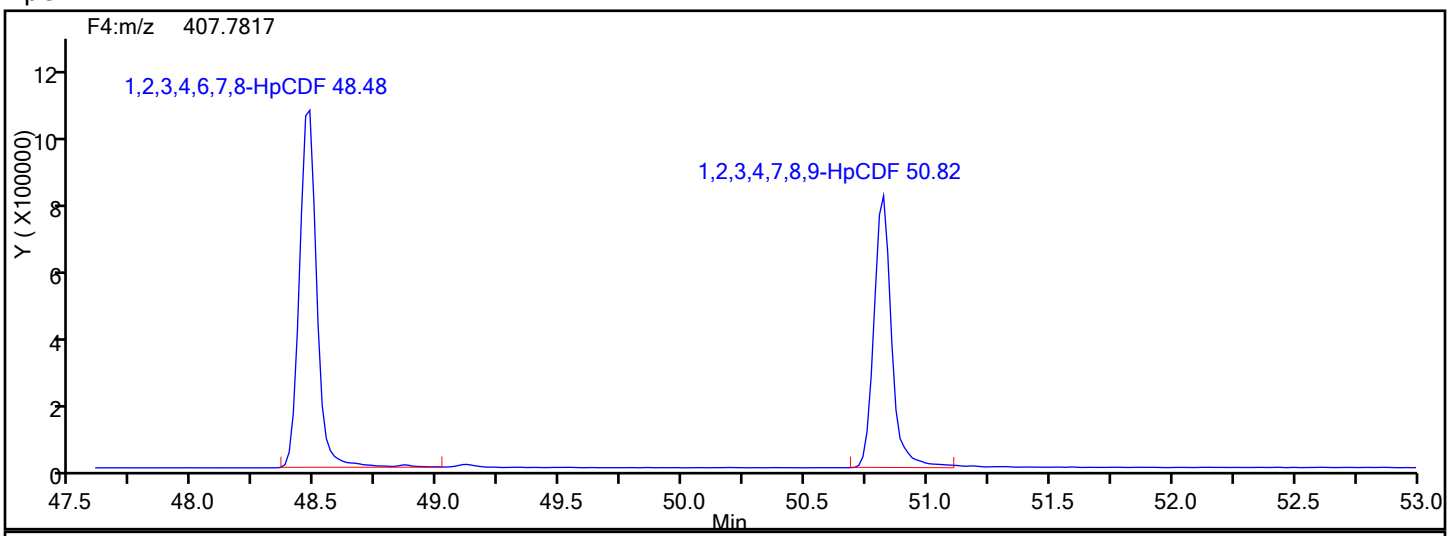


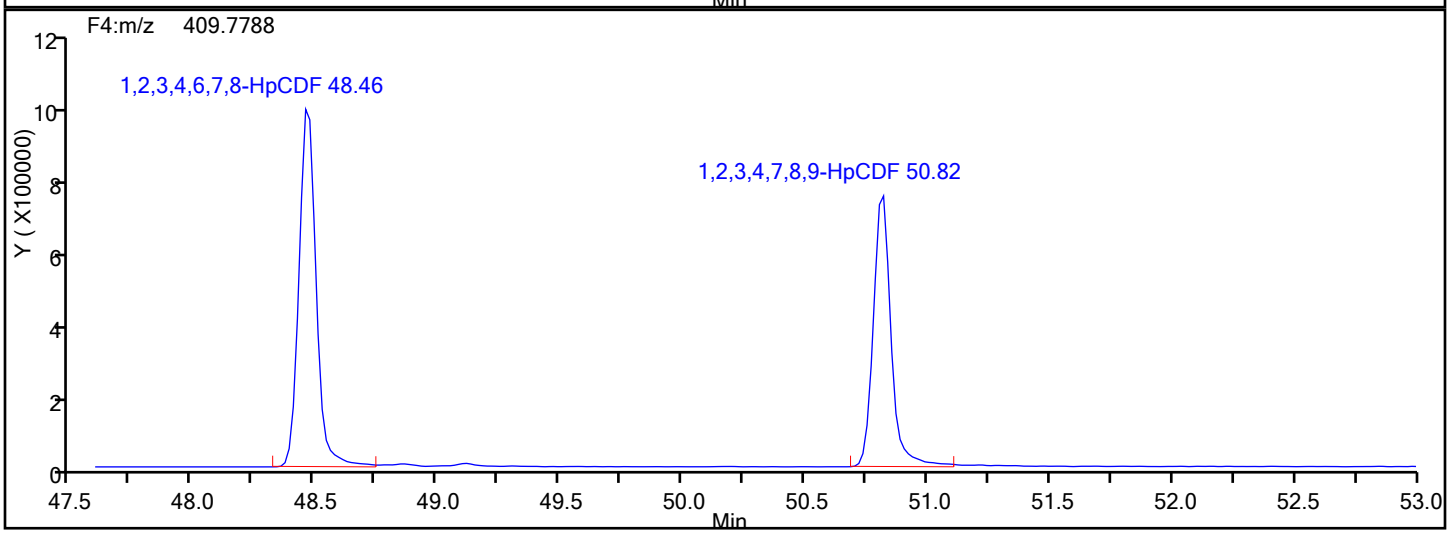
Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

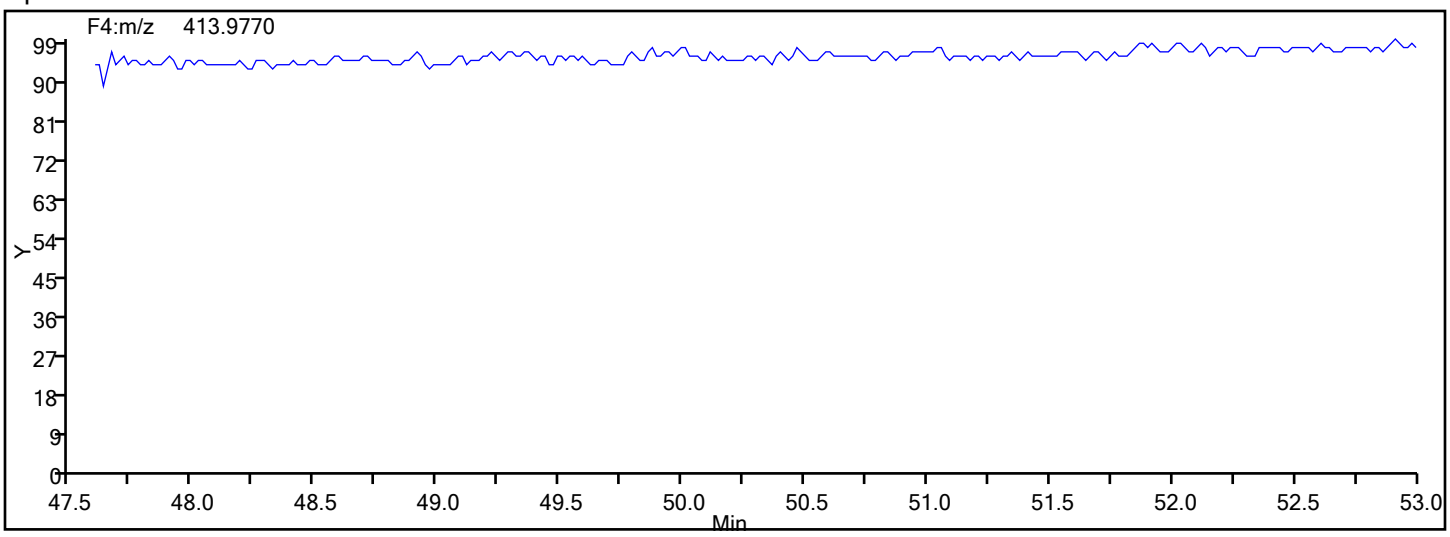
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d
Injection Date: 16-May-2014 20:36:00 Injection Vol: 1.0 ul
Instrument ID: D2A Operator ID: DavidsonM
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Client ID:
Worklist#: 7768 Sample Line#: 7
Column Type: Column Dia:

HpCDF





HpCDF Lock Mass



Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

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Injection Date: 16-May-2014 20:36:00 Injection Vol: 1.0 ul
Instrument ID: D2A Operator ID: DavidsonM
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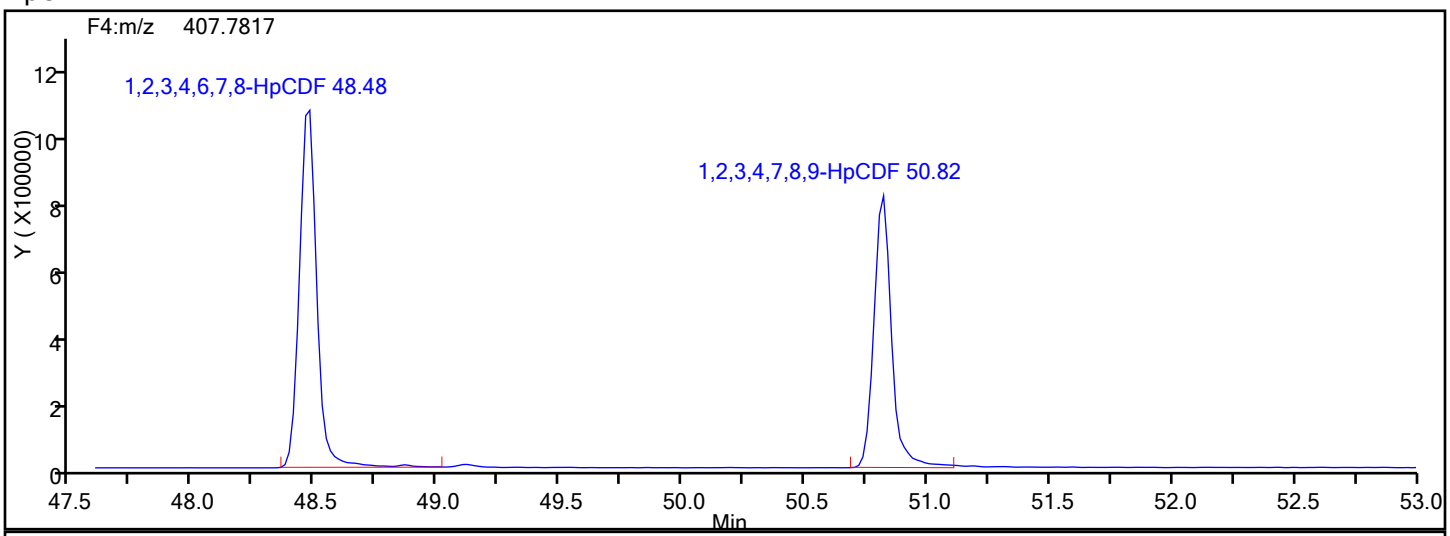
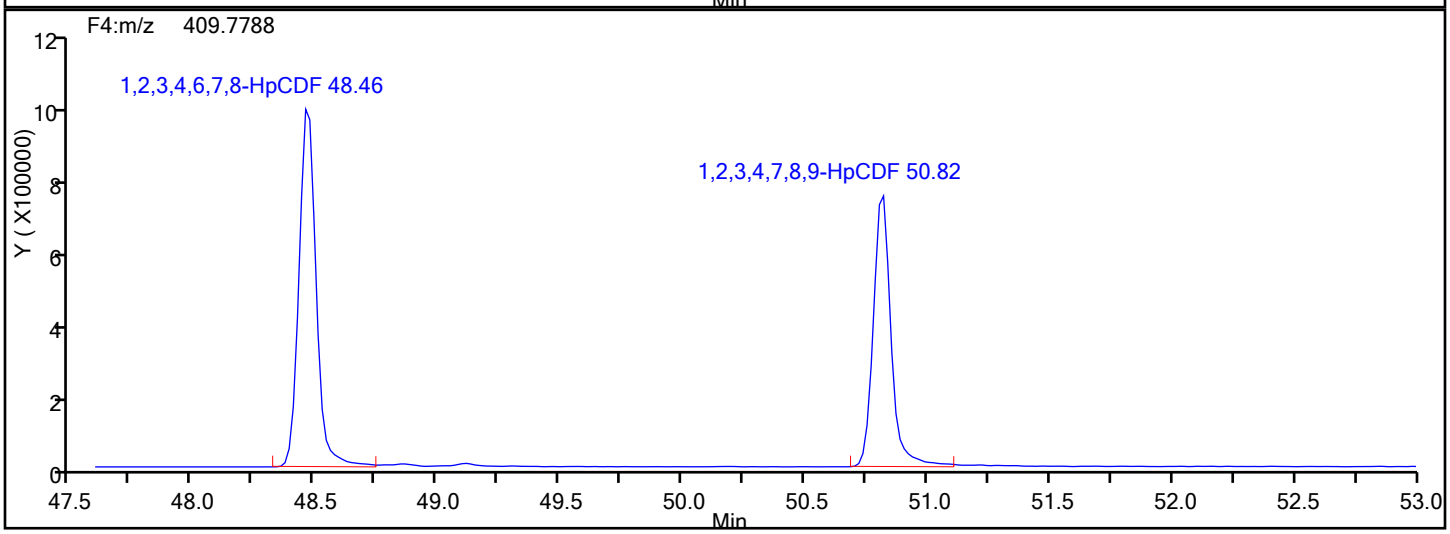
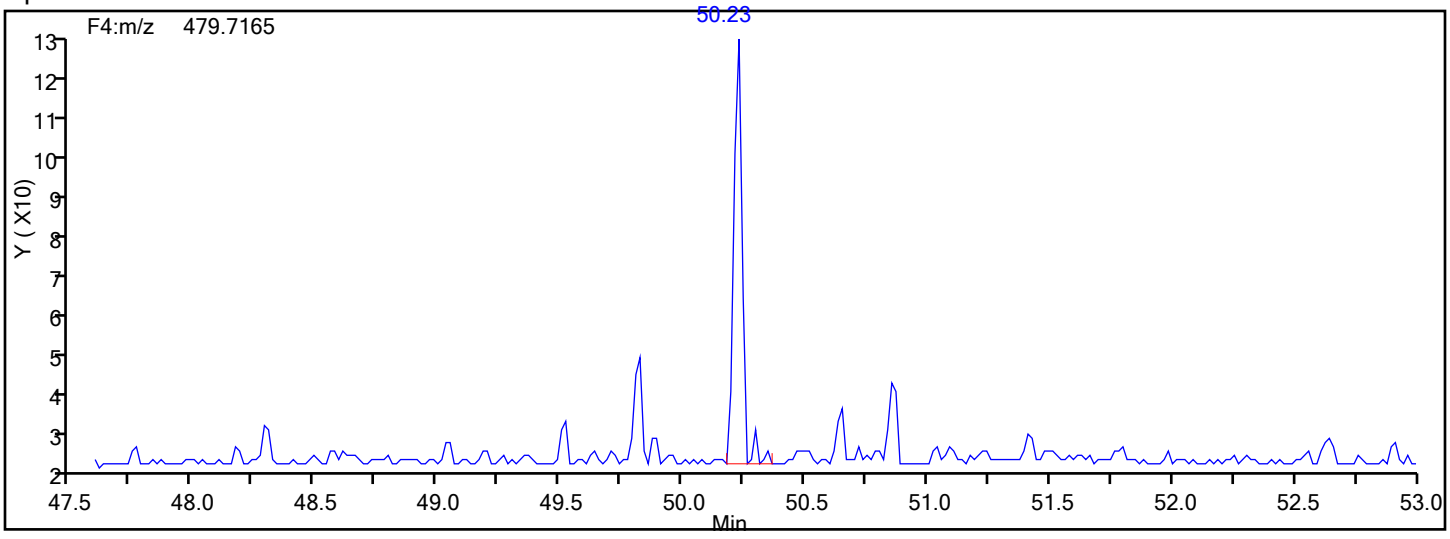
Client ID:
Worklist#: 7768 Sample Line#: 7
Column Type: Column Dia:

HpCDF





HpCDF Interference Mass



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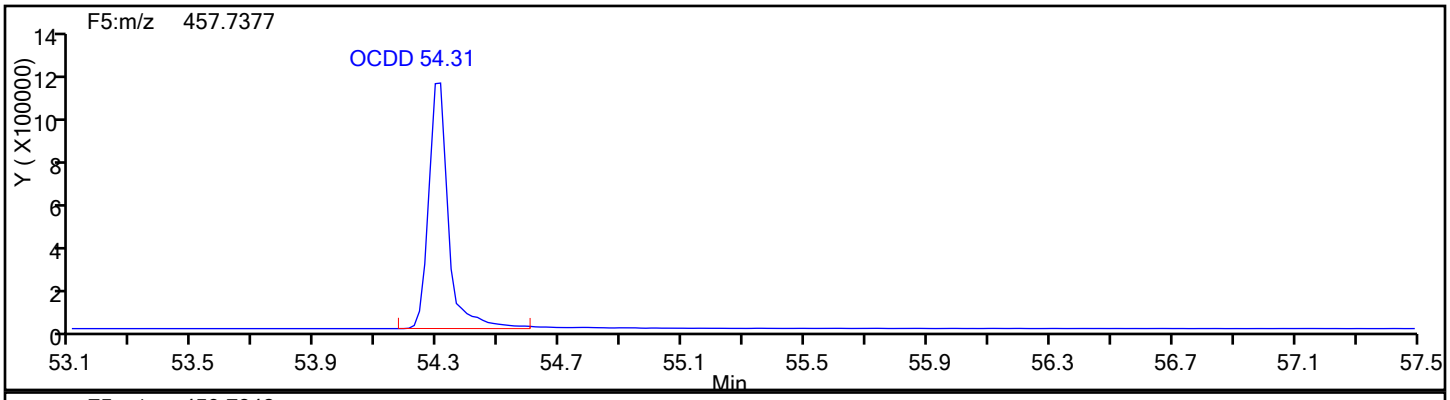
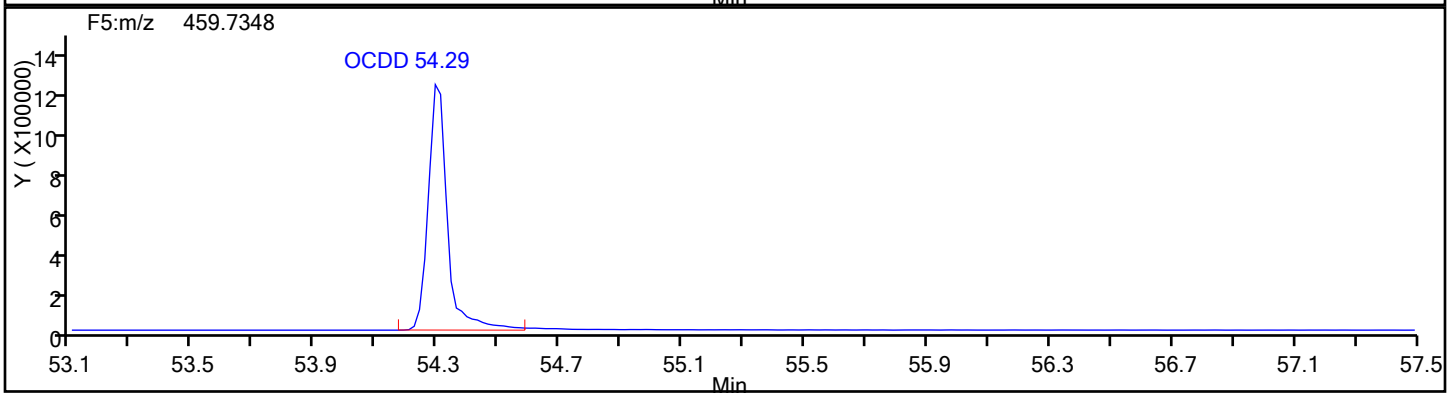
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

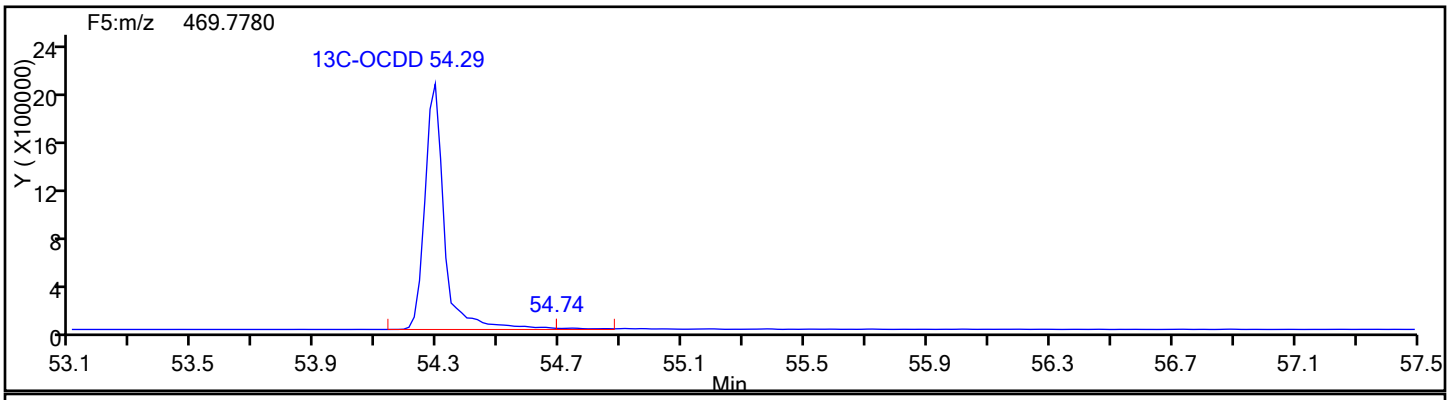
Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

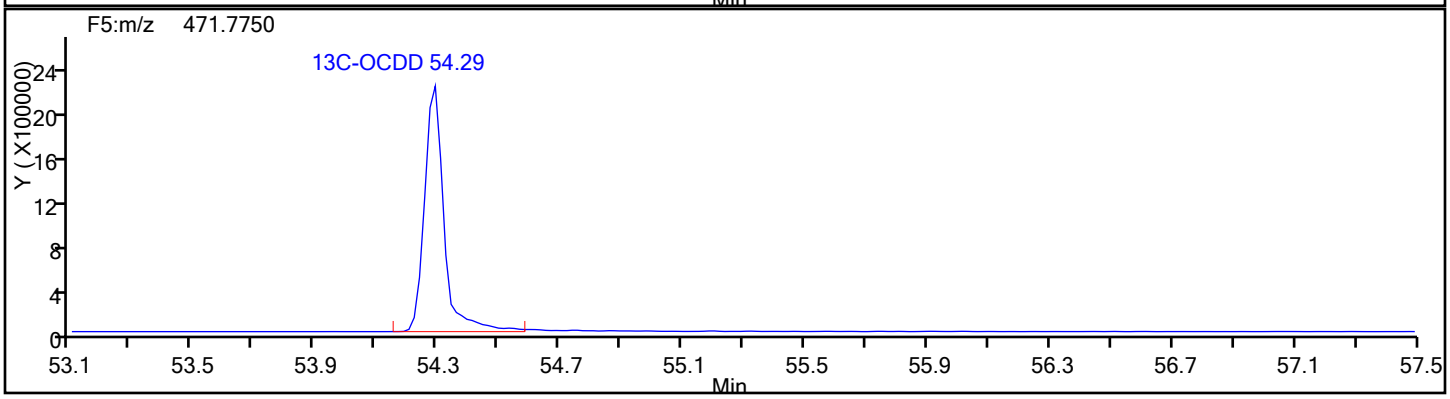
OCDD





OCDD Standards





Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	7
Column Type:		Column Dia:	

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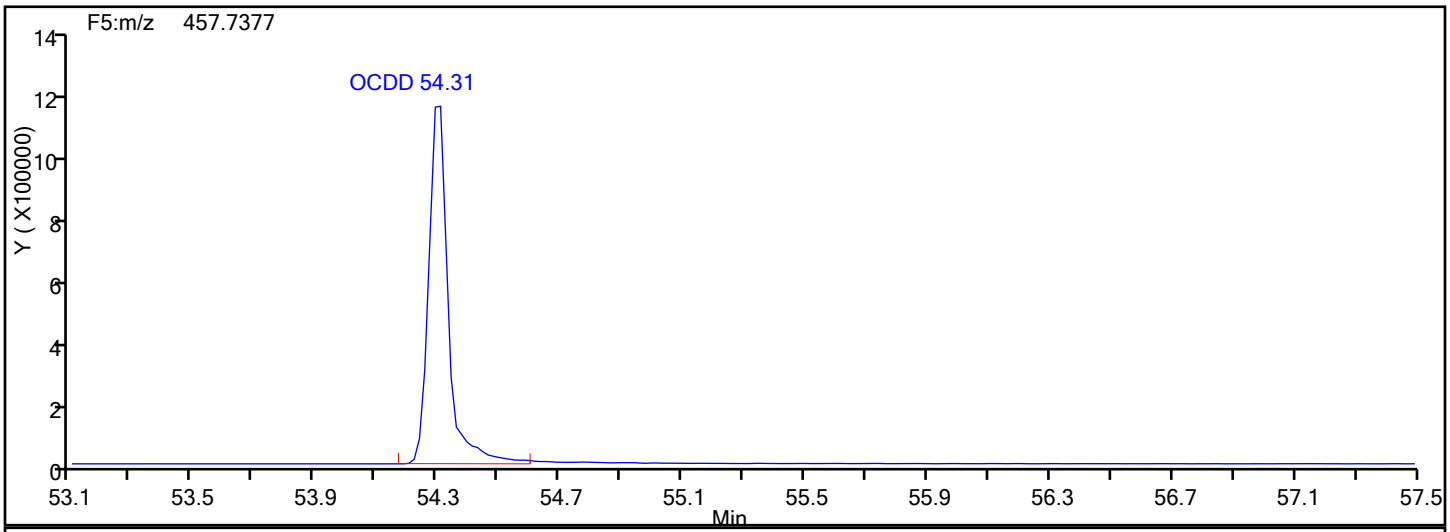
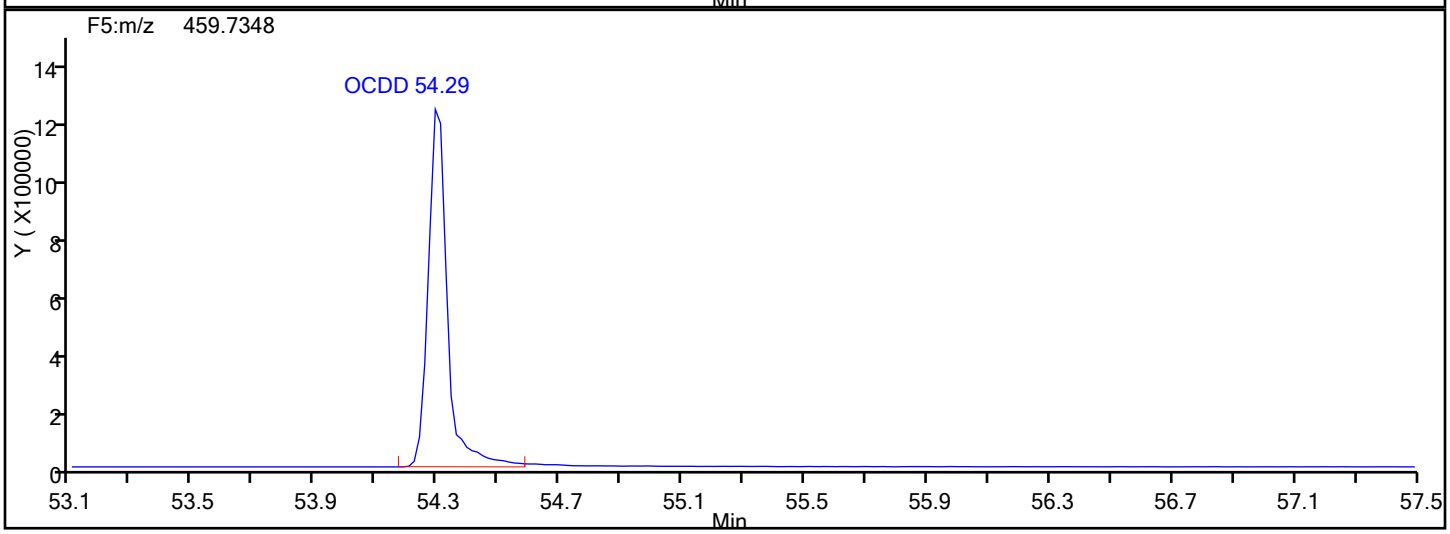
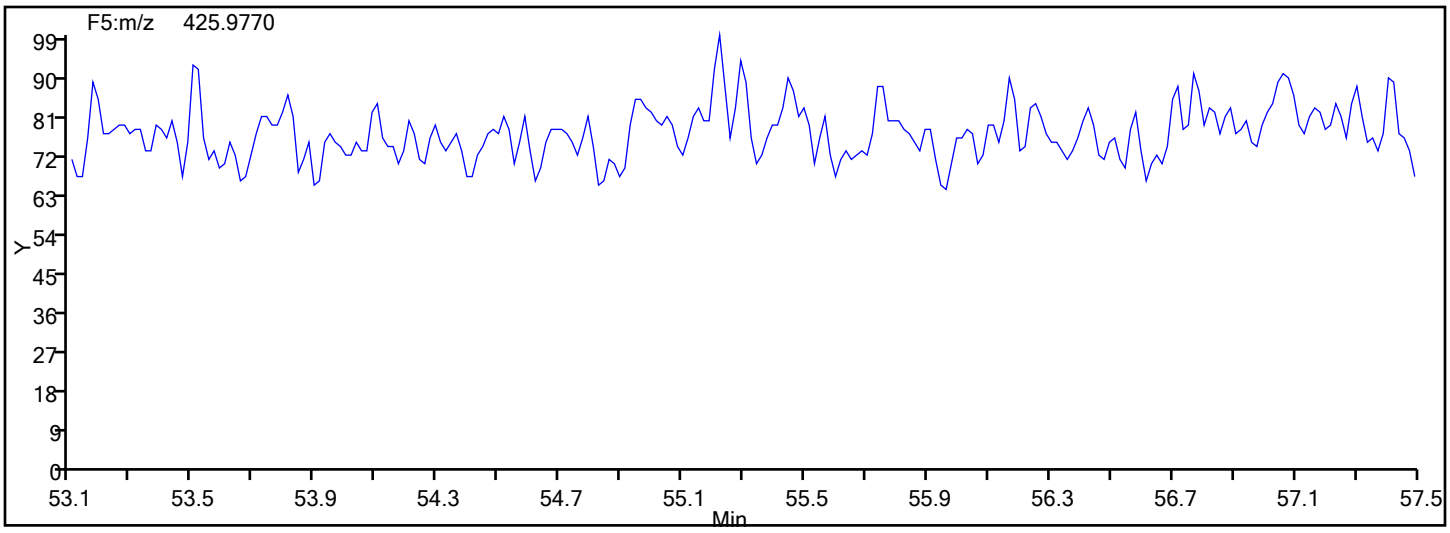




OCDD Lock Mass



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TestAmerica Knoxville

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Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
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Client ID:			
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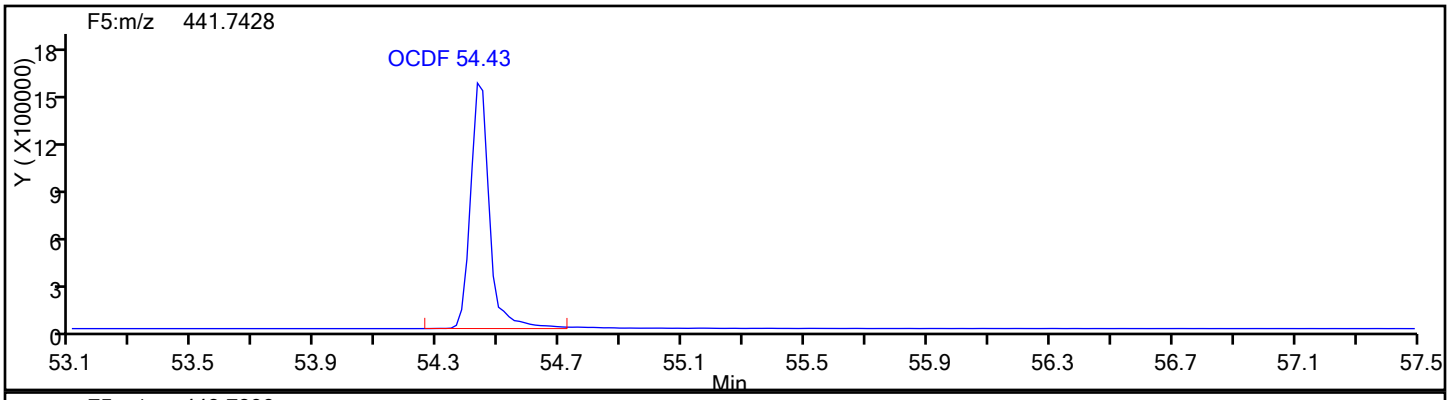
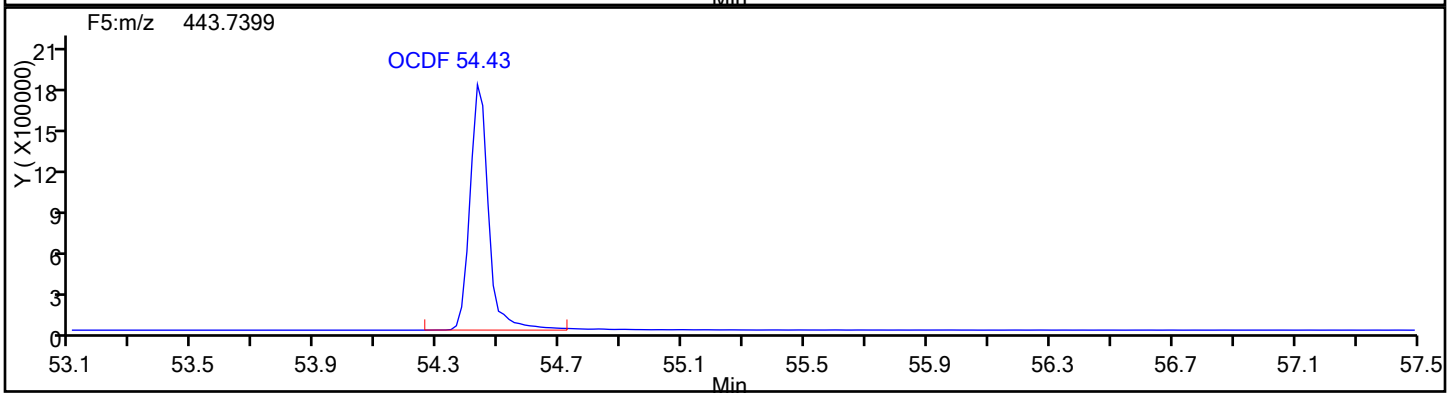
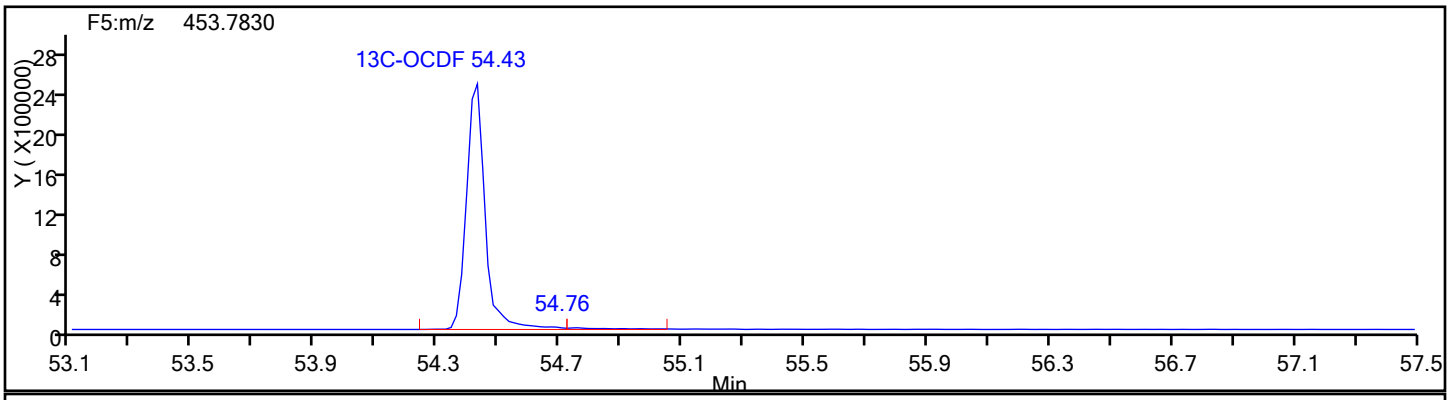
Column Type:		Column Dia:	

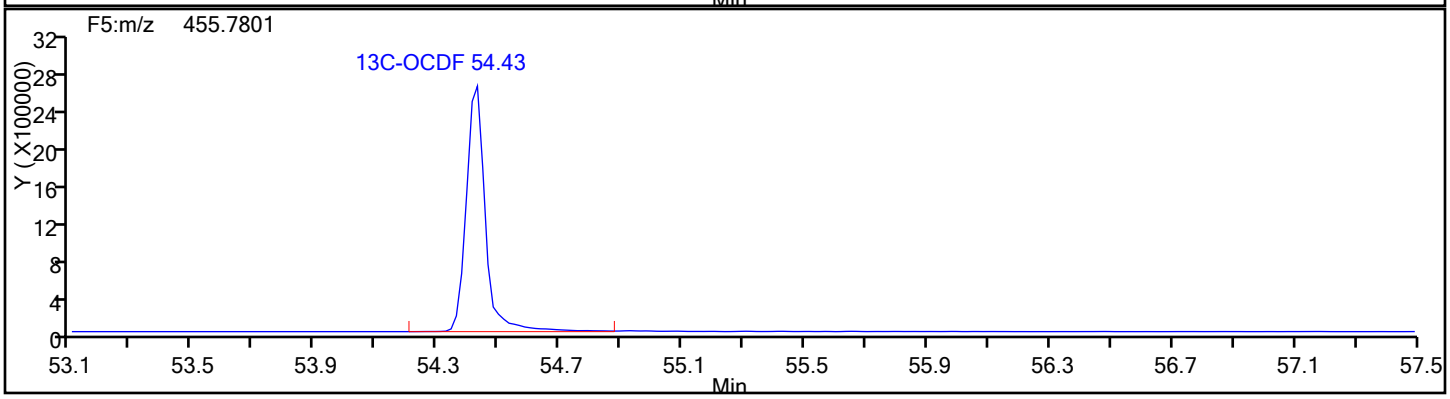
OCDF





OCDF Standards





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TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516ss.d

Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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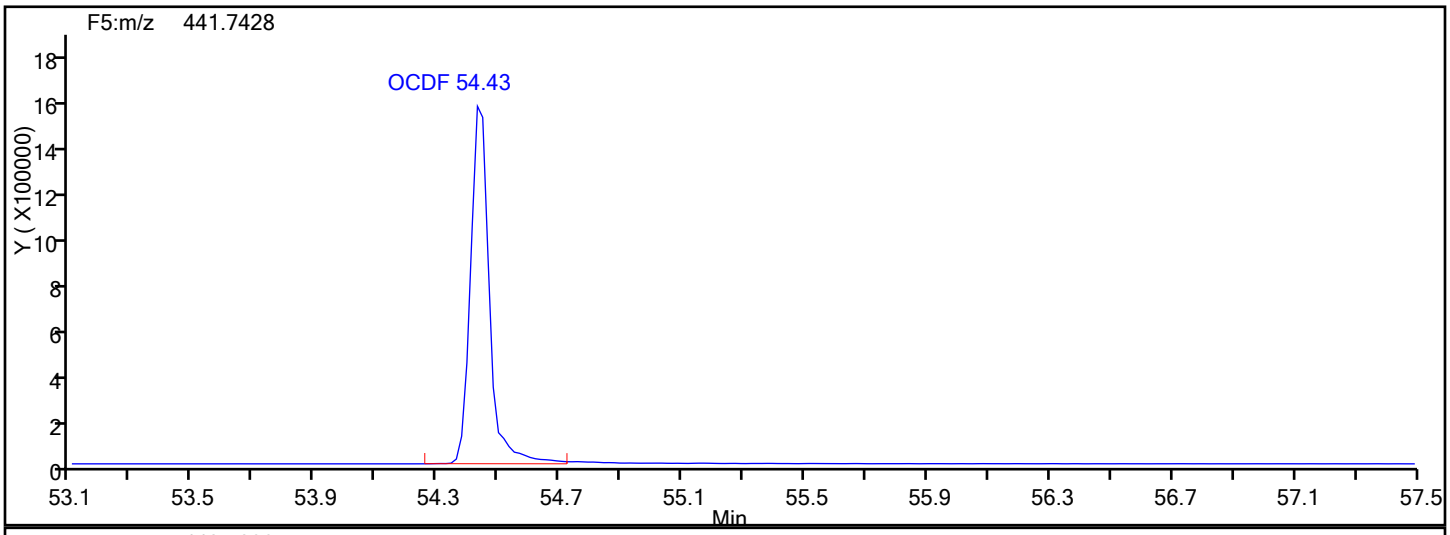
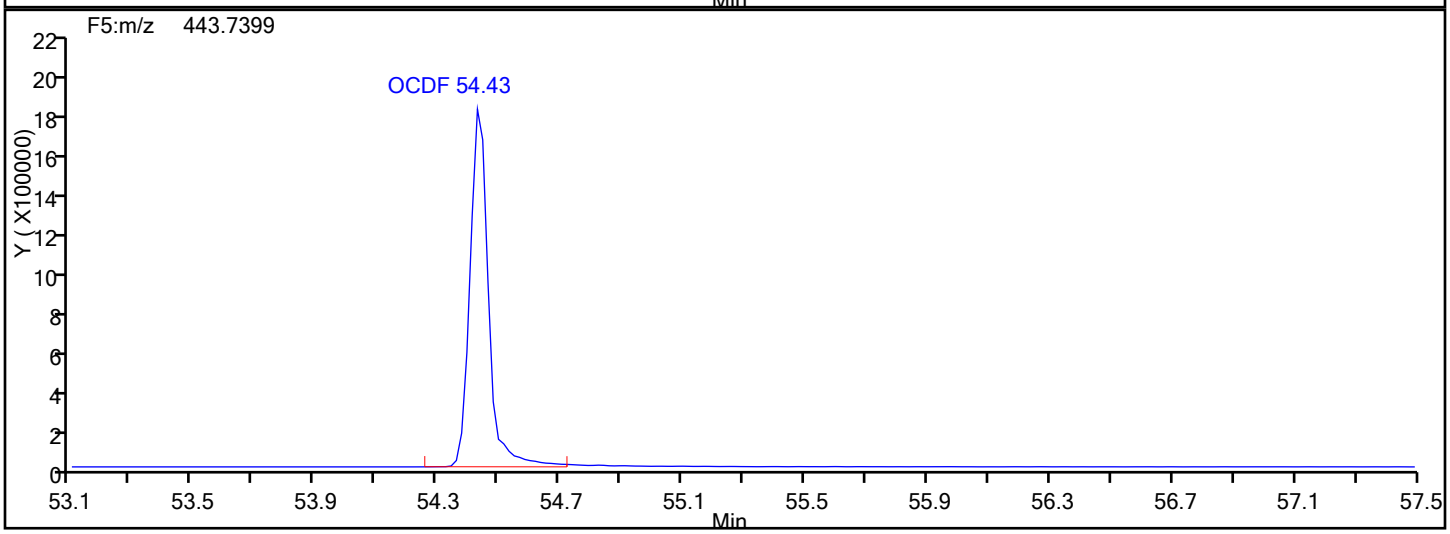
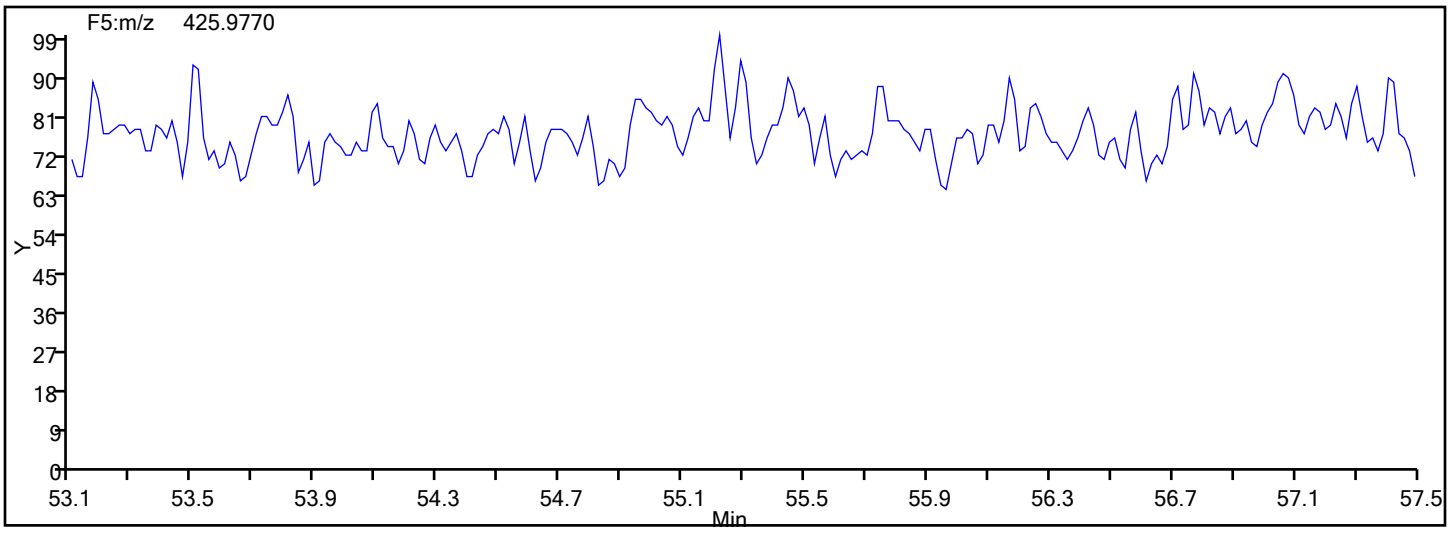
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



Report Date: 01-Feb-2017 12:30:15 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

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Injection Date:	16-May-2014 20:36:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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Column Type:		Column Dia:	

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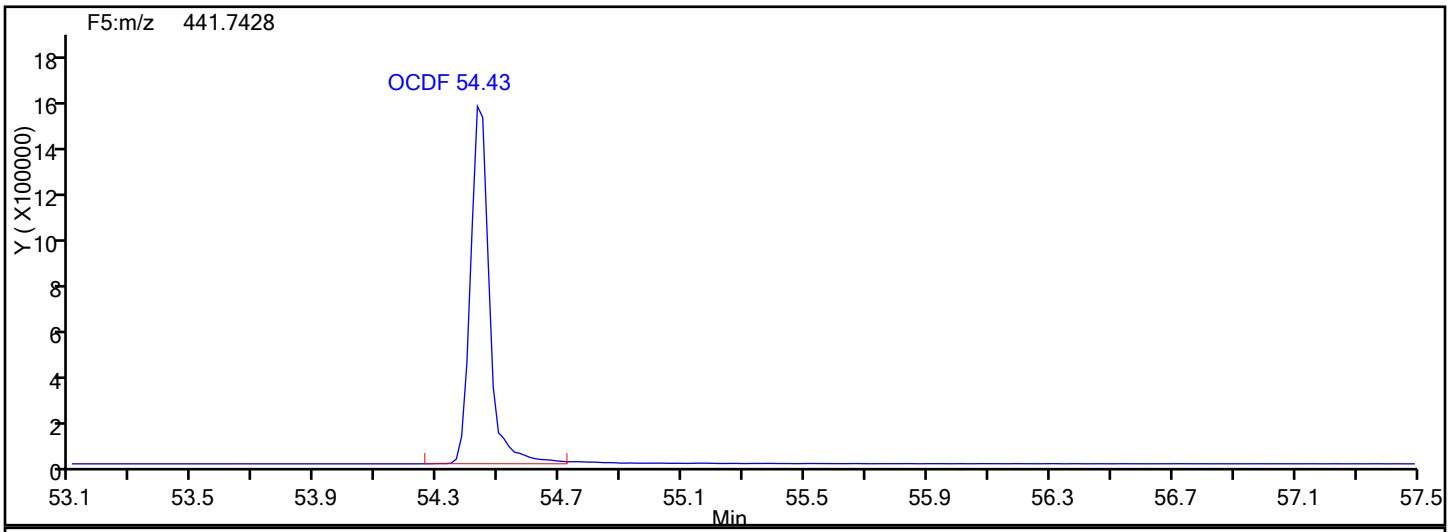
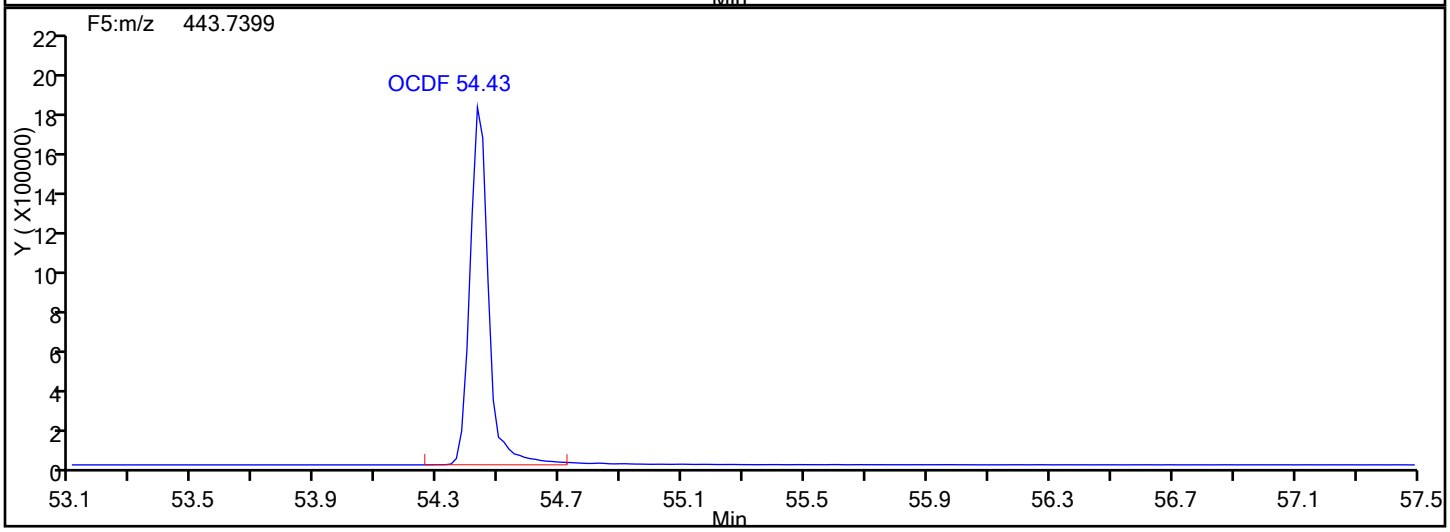
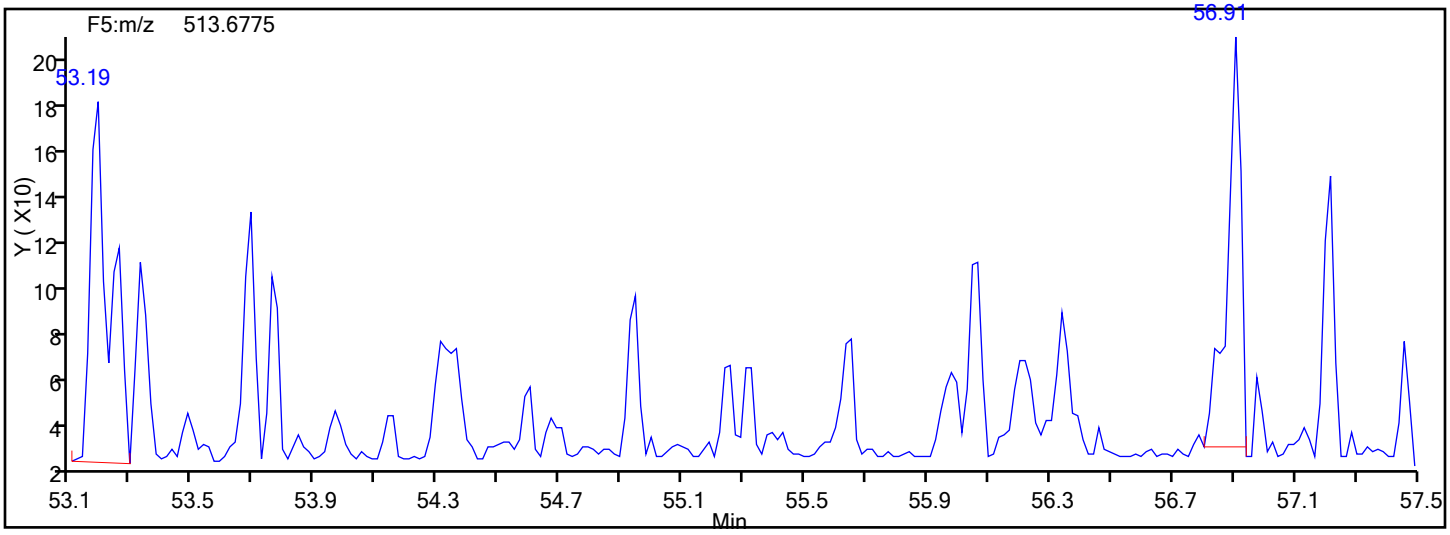




OCDF Interference Mass



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: WDMCCV 140-36126/1 Calibration Date: 12/17/2019 01:01

Instrument ID: D2A Calib Start Date: 05/16/2014 14:26

GC Column: RTX-5 ID: 0.32(mm) Calib End Date: 05/16/2014 18:31

Lab File ID: d3191217s1.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.088	1.106		10.2	10.0	102	84-120
2,3,7,8-TCDD	AveID	1.173	1.167		9.95	10.0	99	78-129
1,2,3,7,8-PeCDF	AveID	1.190	1.181		49.6	50.0	99	82-120
2,3,4,7,8-PeCDF	AveID	1.109	1.101		49.6	50.0	99	82-122
1,2,3,7,8-PeCDD	AveID	1.043	1.056		50.6	50.0	101	78-130
1,2,3,4,7,8-HxCDF	AveID	1.363	1.371		50.3	50.0	101	90-112
1,2,3,6,7,8-HxCDF	AveID	1.276	1.256		49.2	50.0	98	88-114
2,3,4,6,7,8-HxCDF	AveID	1.265	1.261		49.8	50.0	100	88-114
1,2,3,4,7,8-HxCDD	AveID	1.141	1.134		49.7	50.0	99	78-128
1,2,3,6,7,8-HxCDD	AveID	1.148	1.179		51.3	50.0	103	78-128
1,2,3,7,8,9-HxCDD	AveID	1.221	1.259		51.5	50.0	103	82-122
1,2,3,7,8,9-HxCDF	AveID	1.257	1.178		46.8	50.0	94	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.498	1.523		50.8	50.0	102	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.120	1.140		50.9	50.0	102	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.381	1.480		53.6	50.0	107	86-116
OCDD	AveID	1.207	1.255		104	100	104	79-126
OCDF	AveID	1.116	1.031		92.3	100	92	63-159
13C-2,3,7,8-TCDF	Ave	1.755	1.664		94.8	100	95	71-140
13C-2,3,7,8-TCDD	Ave	1.071	1.045		97.6	100	98	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.370	1.326		96.8	100	97	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.384	1.378		99.6	100	100	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.8743	0.8666		99.1	100	99	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.189	1.204		101	100	101	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.462	1.460		99.8	100	100	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.320	1.350		102	100	102	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8772	0.8644		98.5	100	99	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9171	0.9333		102	100	102	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.200	1.189		99.0	100	99	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.050	1.008		96.1	100	96	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8155	0.7965		97.7	100	98	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.8947	0.8321		93.0	100	93	77-129
13C-OCDD	Ave	0.7044	0.6281		178	200	89	48-208
13C-OCDF	Ave	1.061	1.025		193	200	97	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.227	1.164		9.49	10.0	95	79-127

Resolution Check Report (DFS SN: 3190)

eurofins | Environment Testing TestAmerica

Date:	17 Dec 2019 00:49
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

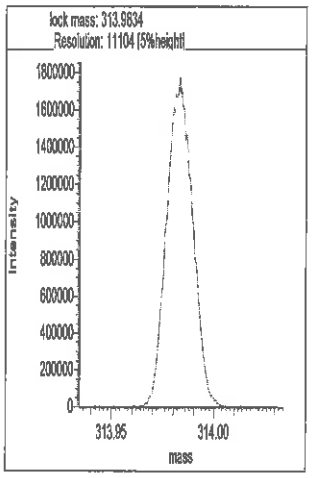
Segment 1

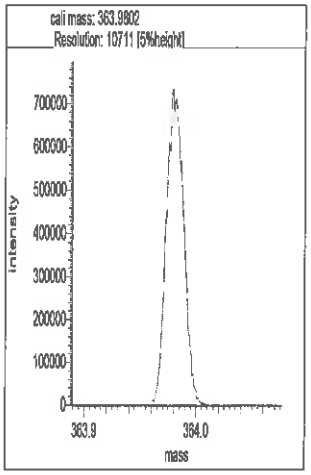
Lock mass 313.9834 [m/z] Resolution: 11104 [5%height]

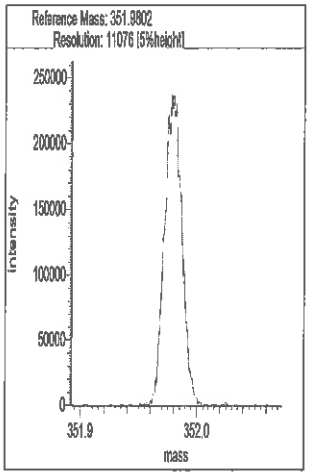
Cali. mass 363.9802 [m/z] Resolution: 10711 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11076 [5%height]

191217s1a







Segment 2

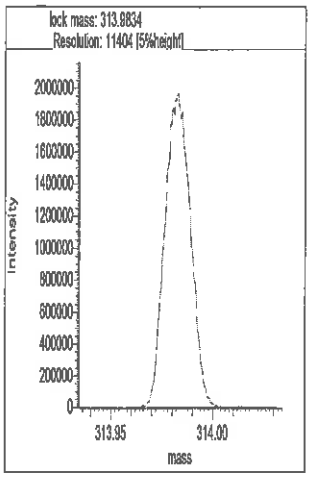
Lock mass 313.9834 [m/z] Resolution: 11404 [5%height]

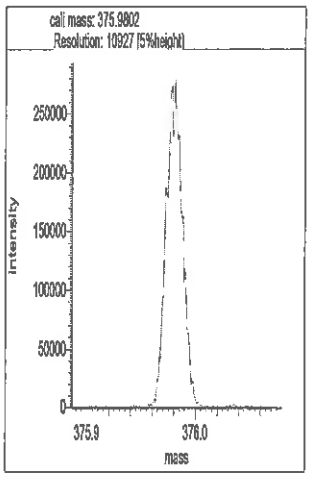
Cali. mass 375.9802 [m/z] Resolution: 10927 [5%height]

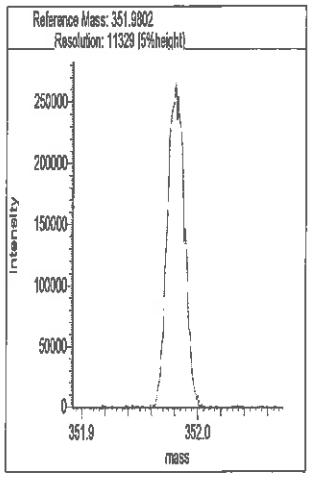
Ref. mass 351.9802 [m/z] Resolution: 11329 [5%height]

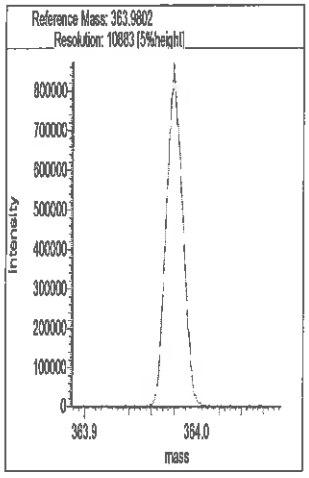
Ref. mass 363.9802 [m/z] Resolution: 10883 [5%height]

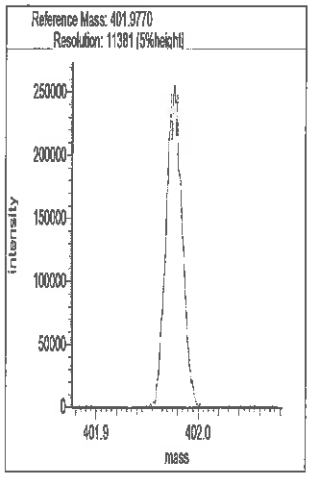
Ref. mass 401.9770 [m/z] Resolution: 11381 [5%height]











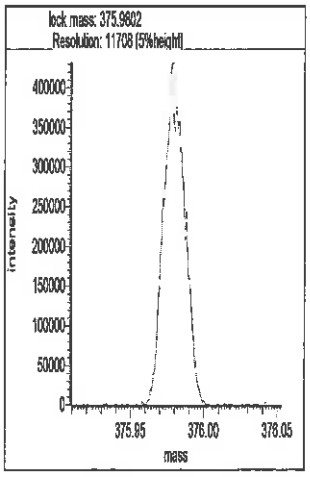
Segment 3

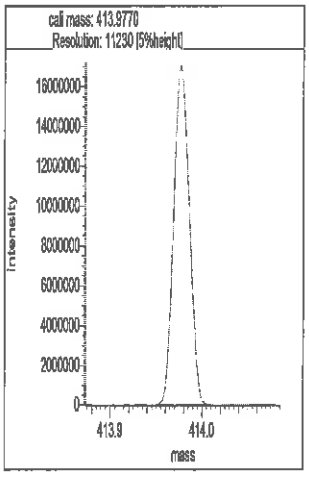
Lock mass 375.9802 [m/z] Resolution: 11708 [5%height]

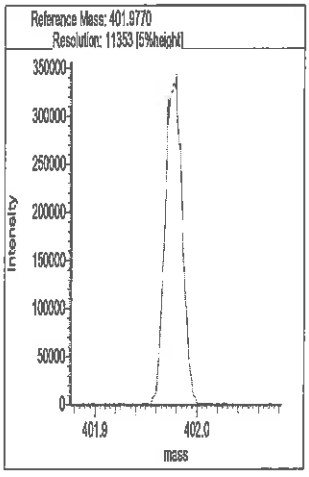
Cali. mass 413.9770 [m/z] Resolution: 11230 [5%height]

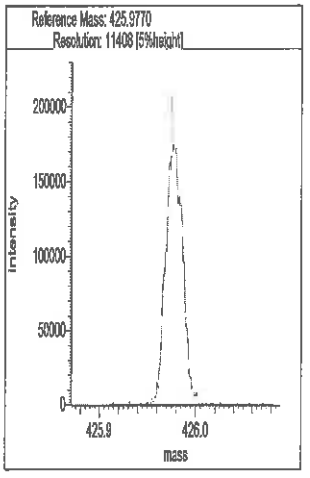
Ref. mass 401.9770 [m/z] Resolution: 11353 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11408 [5%height]







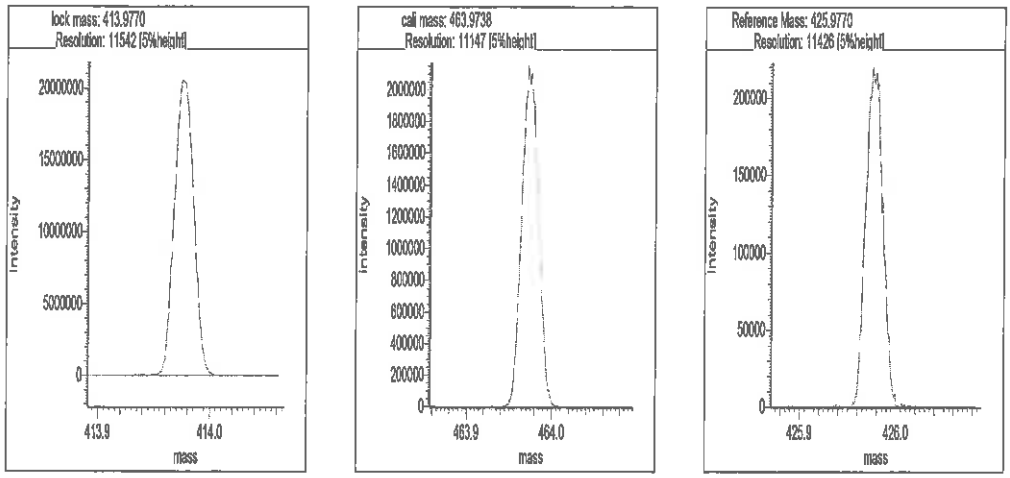


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11542 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11147 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11426 [5%height]

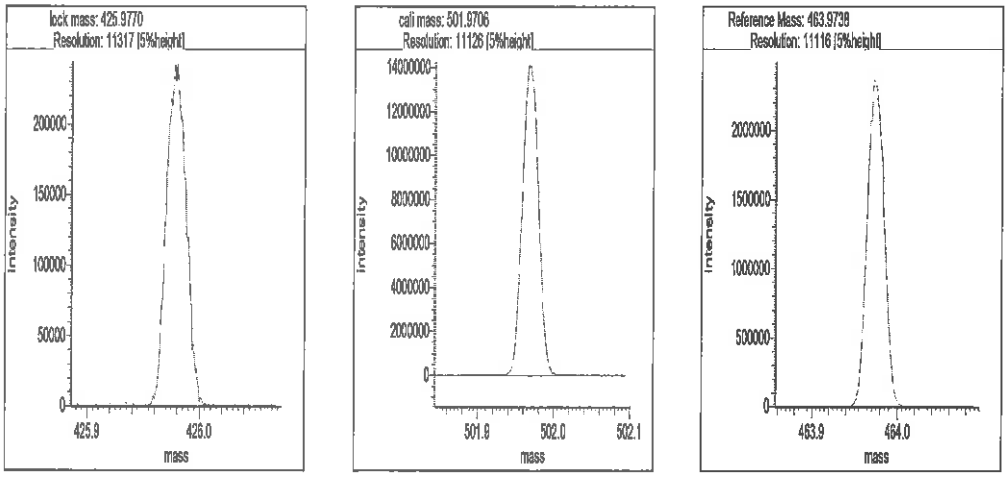


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11317 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11126 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11116 [5%height]



```
Reports
00:59:49:  Peak matching procedure started
00:59:50:
00:59:50:  Reference mass: 313.98336
00:59:51:  Sample mass: 364.0
00:59:51:
00:59:52:  Finding reference mass
00:59:53:  Finding sample mass
00:59:53:
00:59:59:  [1]    363.9797 amu, mean: 363.9797
01:00:02:  [2]    363.9801 amu, mean: 363.9799     SD: 0.26 mmu or: 0.70 ppm
01:00:05:  [3]    363.9803 amu, mean: 363.9801     SD: 0.28 mmu or: 0.77 ppm
01:00:08:  [4]    363.9799 amu, mean: 363.9800     SD: 0.25 mmu or: 0.68 ppm
01:00:11:  [5]    363.9798 amu, mean: 363.9800     SD: 0.23 mmu or: 0.62 ppm
01:00:14:  [6]    363.9803 amu, mean: 363.9800     SD: 0.24 mmu or: 0.66 ppm
01:00:17:  [7]    363.9803 amu, mean: 363.9801     SD: 0.24 mmu or: 0.67 ppm
01:00:20:  [8]    363.9801 amu, mean: 363.9801     SD: 0.22 mmu or: 0.62 ppm
01:00:23:  [9]    363.9794 amu, mean: 363.9800     SD: 0.31 mmu or: 0.85 ppm
01:00:27:  [10]    363.9803 amu, mean: 363.9800     SD: 0.31 mmu or: 0.85 ppm
01:00:27:
01:00:27:  Stop requested. Please wait for procedure to finish.
01:00:27:
```

Signature PMP 12-17-19

Resolution Check Report (DFS SN: 3190)

eurofins | Environment Testing TestAmerica

Date:	17 Dec 2019 12:20
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

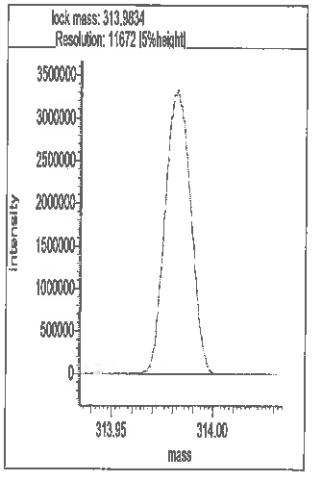
Segment 1

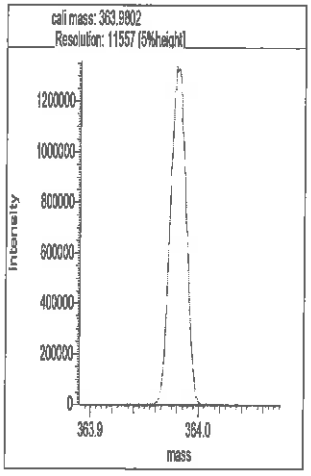
-191217s2a

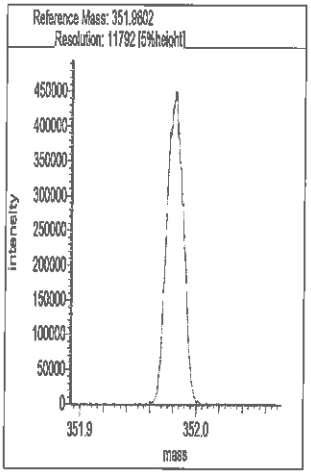
Lock mass 313.9834 [m/z] Resolution: 11672 [5%height]

Cali. mass 363.9802 [m/z] Resolution: 11557 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11792 [5%height]







Segment 2

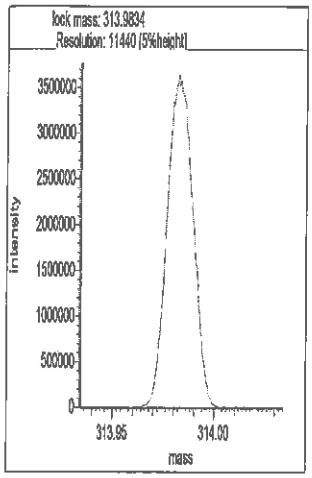
Lock mass 313.9834 [m/z] Resolution: 11440 [5%height]

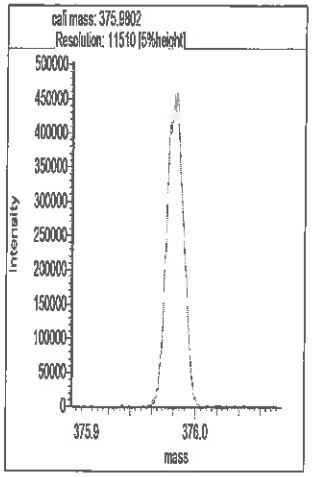
Cali. mass 375.9802 [m/z] Resolution: 11510 [5%height]

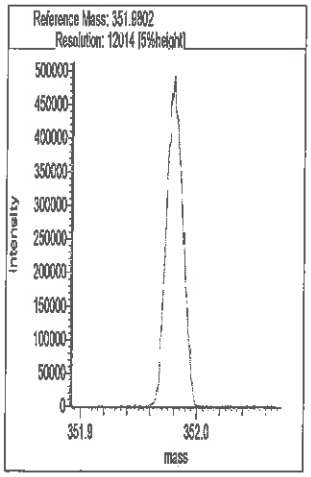
Ref. mass 351.9802 [m/z] Resolution: 12014 [5%height]

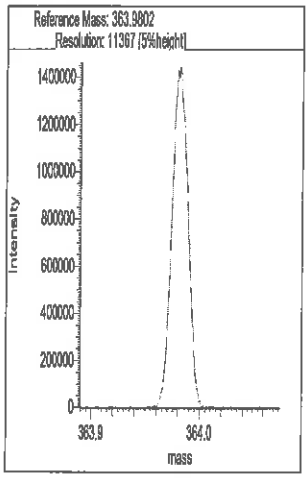
Ref. mass 363.9802 [m/z] Resolution: 11367 [5%height]

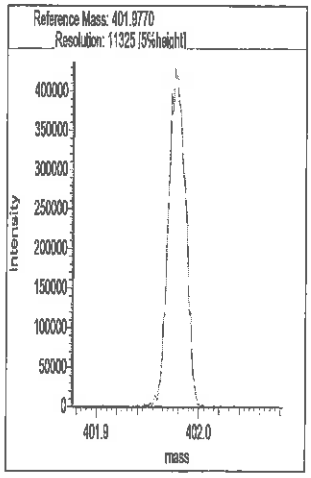
Ref. mass 401.9770 [m/z] Resolution: 11325 [5%height]











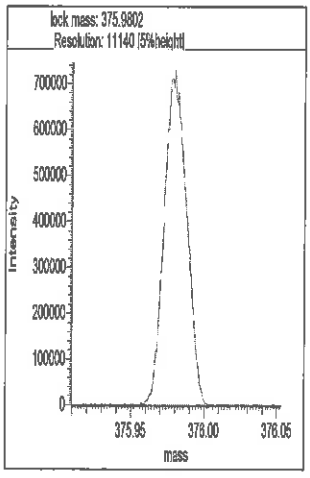
Segment 3

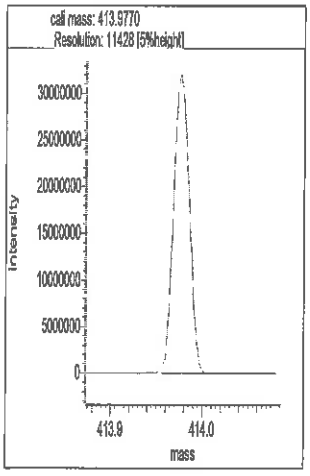
Lock mass 375.9802 [m/z] Resolution: 11140 [5%height]

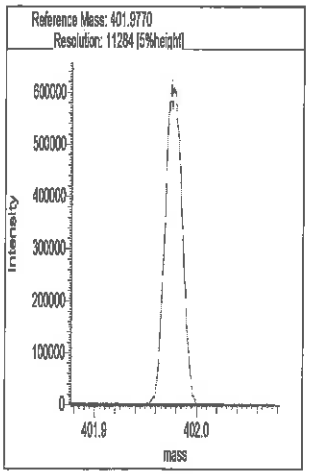
Cali. mass 413.9770 [m/z] Resolution: 11428 [5%height]

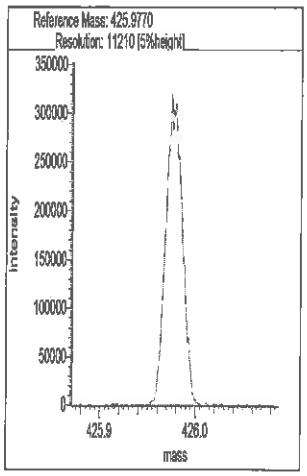
Ref. mass 401.9770 [m/z] Resolution: 11284 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11210 [5%height]







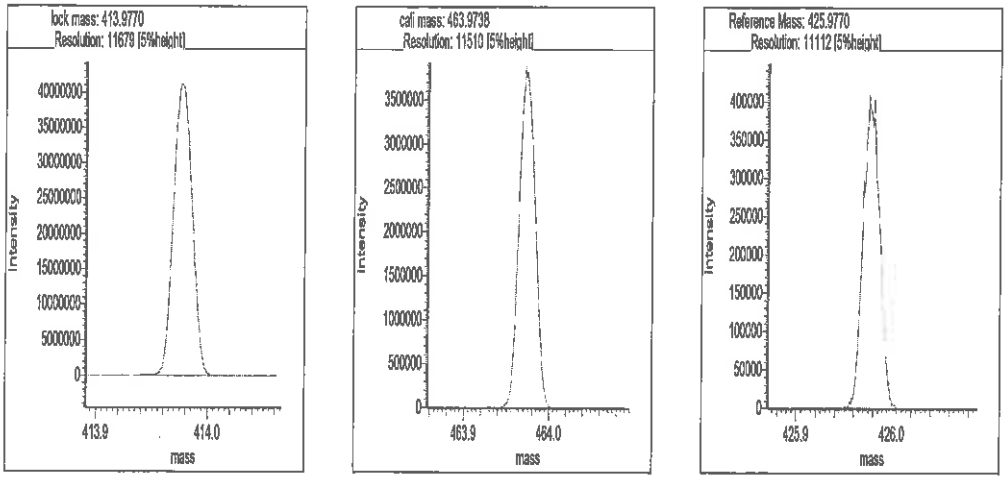


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11679 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11510 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11112 [5%height]

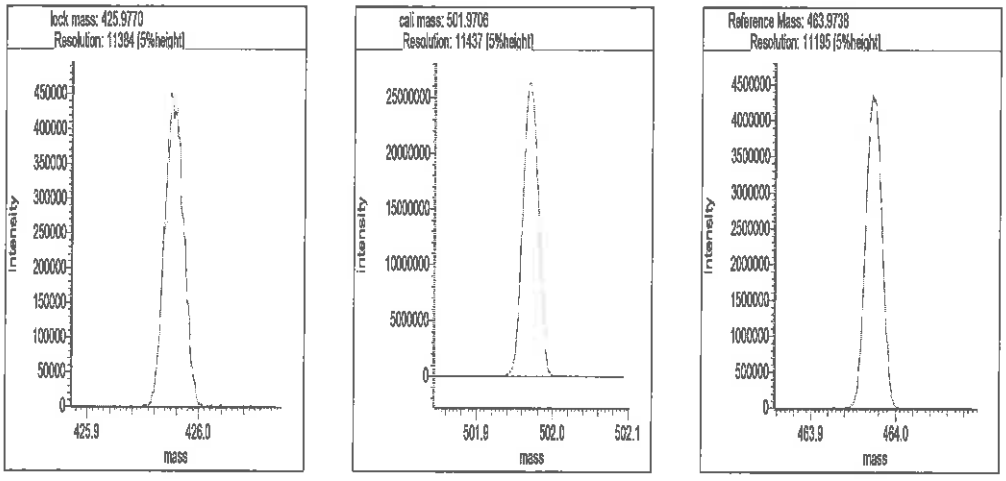


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11384 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11437 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11195 [5%height]



```
Reports
12:32:33:  Peak matching procedure started
12:32:34:
12:32:34:  Reference mass: 313.98336
12:32:35:  Sample mass: 364.0
12:32:35:
12:32:36:  Finding reference mass
12:32:37:  Finding sample mass
12:32:37:
12:32:43:  [1]    363.9802 amu, mean: 363.9802
12:32:46:  [2]    363.9802 amu, mean: 363.9802      SD: 0.05 mmu or: 0.15 ppm
12:32:49:  [3]    363.9800 amu, mean: 363.9801      SD: 0.12 mmu or: 0.33 ppm
12:32:52:  [4]    363.9804 amu, mean: 363.9802      SD: 0.19 mmu or: 0.52 ppm
12:32:56:  [5]    363.9810 amu, mean: 363.9804      SD: 0.39 mmu or: 1.07 ppm
12:32:59:  [6]    363.9803 amu, mean: 363.9803      SD: 0.35 mmu or: 0.96 ppm
12:33:02:  [7]    363.9799 amu, mean: 363.9803      SD: 0.36 mmu or: 0.99 ppm
12:33:05:  [8]    363.9803 amu, mean: 363.9803      SD: 0.33 mmu or: 0.91 ppm
12:33:08:  [9]    363.9807 amu, mean: 363.9803      SD: 0.35 mmu or: 0.95 ppm
12:33:11:  [10]    363.9808 amu, mean: 363.9804      SD: 0.36 mmu or: 0.98 ppm
12:33:14:  [11]    363.9805 amu, mean: 363.9804      SD: 0.34 mmu or: 0.94 ppm
12:33:17:
12:33:17:  Stop requested. Please wait for procedure to finish.
12:33:17:
12:33:18:  [12]    363.9811 amu, mean: 363.9805      SD: 0.38 mmu or: 1.05 ppm
12:33:20:
12:33:20:  Peakmatching stopped
```

Signature MM/ID 12/17/19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 01:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 02:15:34 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0327

First Level Reviewer: parslyt Date: 17-Dec-2019 02:15:34

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:51	1089163	0.77	1.1733	9.948	9.948	0.0132	0.0132	99.48	
A Non-2,3,7,8-sub-TCDD	29:30	2883693	0.80	1.1733	26.3	26.3	0.0132	9.363	0.00	a
S Total TCDD					36.3	36.3	0.0132	0.0132		
2,3,7,8-TCDF	28:52	1643634	0.80	1.0881	10.2	10.2	0.009421	0.009421	102	
A Non-2,3,7,8-sub-TCDF	28:13						0.009421	0.2342		RQU
S Total TCDF					10.2	10.2	0.009421	0.009421		
1,2,3,7,8-PeCDD	40:35	4085485	1.59	1.0434	50.6	50.6	0.008450	0.008450	101	
A Non-2,3,7,8-sub-PeCDD	39:27						0.008450	0.7154		U
S Total PeCDD					50.6	50.6	0.008450	0.008450		
1,2,3,7,8-PeCDF	38:48	6990984	1.60	1.1898	49.6	49.6	0.0516	0.0516	99.23	
2,3,4,7,8-PeCDF	40:03	6771445	1.59	1.1095	49.6	49.6	0.0471	0.0471	99.22	
A Non-2,3,7,8-sub-PeCDF	38:02						0.0491	0.6333		U
S Total PeCDF					99.2	99.2	0.0493	0.0493		
1,2,3,4,7,8-HxCDD	44:51	4813962	1.26	1.1409	49.7	49.7	0.005702	0.005702	99.38	
1,2,3,6,7,8-HxCDD	44:58	5403677	1.26	1.1481	51.3	51.3	0.005704	0.005704	103	
1,2,3,7,8,9-HxCDD	45:21	5557209	1.23	1.2212	51.5	51.5	0.005345	0.005345	103	
A Non-2,3,7,8-sub-HxCDD	44:19						0.005578	0.005578		
S Total HxCDD					152.6	152.6	0.005583	0.005583		
1,2,3,4,7,8-HxCDF	43:49	8108371	1.26	1.3629	50.3	50.3	0.0885	0.0885	101	
1,2,3,6,7,8-HxCDF	43:57	9006818	1.24	1.2762	49.2	49.2	0.0838	0.0838	98.43	
2,3,4,6,7,8-HxCDF	44:40	8364415	1.25	1.2654	49.8	49.8	0.0887	0.0887	99.69	
1,2,3,7,8,9-HxCDF	45:36	6877309	1.25	1.2573	46.8	46.8	0.1178	0.1178	93.69	
A Non-2,3,7,8-sub-HxCDF	44:10						0.0931	0.0931		
S Total HxCDF					196.2	196.2	0.0947	0.0947		
1,2,3,4,6,7,8-HpCDD	49:38	4459229	1.05	1.1204	50.9	50.9	0.0327	0.0327	102	
A Non-2,3,7,8-sub-HpCDD	49:03						0.0327	0.0327		
S Total HpCDD					50.9	50.9	0.0327	0.0327		
1,2,3,4,6,7,8-HpCDF	47:58	7545802	1.05	1.4984	50.8	50.8	0.004630	0.004630	102	
1,2,3,4,7,8,9-HpCDF	50:17	6049742	1.06	1.3807	53.6	53.6	0.007071	0.007071	107	

Report Date: 17-Dec-2019 02:15:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49:20						0.005635	1.260		RQU
S Total HpCDF					104.4	104.4	0.005851	0.005851		
OCDD	53:54	7742333	0.91	1.2073	103.9	103.9	0.005804	0.005804	104	
OCDF	54:02	10377282	0.91	1.1162	92.3	92.3	0.005145	0.005145	92.33	
D 13C-2,3,7,8-TCDD	30:48	9331945	0.81	1.0709	97.6	97.6	0.1141	0.1141	97.60	
D 13C-2,3,7,8-TCDF	28:49	14854663	0.82	1.7545	94.8	94.8	0.0942	0.0942	94.83	
D 13C-1,2,3,7,8-PeCDD	40:34	7737165	1.61	0.8743	99.1	99.1	0.4001	0.4001	99.12	
D 13C-1,2,3,7,8-PeCDF	38:47	11842583	1.60	1.3704	96.8	96.8	1.149	1.149	96.79	
D 13C-2,3,4,7,8-PeCDF	40:02	12303200	1.61	1.3837	99.6	99.6	1.138	1.138	99.59	
D 13C-1,2,3,4,7,8-HxCDD	44:50	8491845	1.36	0.8772	98.5	98.5	0.3475	0.3475	98.54	
D 13C-1,2,3,6,7,8-HxCDD	44:57	9169586	1.20	0.9171	101.8	101.8	0.3324	0.3324	102	
D 13C-1,2,3,4,7,8-HxCDF	43:48	11826672	0.54	1.1892	101.2	101.2	0.3241	0.3241	101	
D 13C-1,2,3,6,7,8-HxCDF	43:56	14339170	0.54	1.4625	99.8	99.8	0.2636	0.2636	99.80	
D 13C-2,3,4,6,7,8-HxCDF	44:39	13262031	0.54	1.3197	102.3	102.3	0.2921	0.2921	102	
D 13C-1,2,3,7,8,9-HxCDF	45:35	11676474	0.54	1.2001	99.0	99.0	0.3212	0.3212	99.03	
D 13C-1,2,3,4,6,7,8-HpCDD	49:37	7824714	1.08	0.8155	97.7	97.7	0.0903	0.0903	97.67	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	9906028	0.46	1.0496	96.1	96.1	0.7106	0.7106	96.06	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	8175035	0.46	0.8947	93.0	93.0	0.8336	0.8336	93.00	
D 13C-OCDD	53:53	12340725	0.90	0.7044	178.3	178.3	0.2627	0.2627	89.16	
D 13C-OCDF	54:01	20140168	0.92	1.0615	193.1	193.1	0.1548	0.1548	96.57	
$ 37Cl4-2,3,7,8-TCDD	30:51	1039367		1.2266	9.491	9.491	0.008576	0.008576	94.91	
* 13C-1,2,3,4-TCDD	30:19	8928255	0.81	9.1E+04	100.0	100.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:20	9824443	1.26	1E+05	100.0	100.0			100	
1,3,6,8-TCDF	22:31	1838413	0.79						0.00	
1,3,6,8-TCDD	24:57	1024036	0.79						0.00	
1,2,8,9-TCDF	33:55	1491176	0.80						0.00	
1,2,8,9-TCDD	34:02	933184	0.79						0.00	
1,3,4,6,8-PeCDF	34:40	6531325	1.58						0.00	
1,2,4,7,9-PeCDD	37:38	3802390	1.59						0.00	
1,2,3,8,9-PeCDD	41:16	4250435	1.60						0.00	
1,2,3,8,9-PeCDF	41:23	6260846	1.59						0.00	
1,2,3,4,6,8-HxCDF	42:36	7675621	1.27						0.00	
1,2,4,6,7,9-HxCDD	43:17	5516764	1.24						0.00	
1,2,3,4,8,9-HxCDF	45:44	7344410	1.30						0.00	
1,2,3,4,6,7,9-HpCDD	48:28	4607861	1.06						0.00	

QC Flag Legend

Review Flags
U - Marked Undetected
a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Report Date: 17-Dec-2019 02:15:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 01:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 02:15:34 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0327

First Level Reviewer: parslyt Date: 17-Dec-2019 02:15:34

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:51	30:51	0	1.002	474263	51336	30	75	1711		
321.8936	30:51	30:51	0	1.002	614900	65602	31	77	2116	0.77(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											a
319.8965	30:21	29:30	51	0.985	418487	45754	30	75	1525		a
321.8936	30:21	29:30	51	0.985	528127	57966	31	77	1870	0.79(0.65-0.89)	
319.8965	30:36	29:30	67	0.993	408852	43902	30	75	1463		a
321.8936	30:36	29:30	67	0.993	503073	53332	31	77	1720	0.81(0.65-0.89)	
319.8965	31:22	29:30	112	1.018	449962	46249	30	75	1542		a
321.8936	31:22	29:30	112	1.018	575192	57528	31	77	1856	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:52	28:52	0	1.002	728000	83394	28	70	2978		
305.8987	28:52	28:52	0	1.002	915634	105690	43	107	2458	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	26:31	28:13	-102	0.920	1899	191	28	70	7		
305.8987	26:29	28:13	-104	0.919	2514	517	43	107	12	0.76(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:35	40:35	0	1.000	2509835	553955	37	92	14972		
357.8516	40:35	40:35	0	1.000	1575650	349049	23	57	15176	1.59(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	39:27	39:27	0	0.972	33119	5912	37	92			
357.8516	39:27	39:27	0	0.972	24639	4732	23	57		1.34(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:48	38:48	0	1.000	4298262	840247	358	895	2347		
341.8567	38:48	38:48	0	1.000	2692722	523345	200	500	2617	1.60(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	40:03	40:03	0	1.000	4161498	918494	358	895	2566		
341.8567	40:03	40:03	0	1.000	2609947	574567	200	500	2873	1.59(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											U
339.8597	37:14	38:02	-48	0.960	52326	6716	358	895	19		
341.8567	37:14	38:02	-48	0.960	35566	5138	200	500	26	1.47(1.32-1.78)	
1,2,3,4,7,8-HxCDD											
389.8158	44:51	44:51	0	1.000	2682553	707327	34	85	20804		
391.8127	44:51	44:51	0	1.000	2131409	559823	22	55	25447	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:58	44:58	0	1.000	3011404	676366	34	85	19893		
391.8127	44:58	44:58	0	1.000	2392273	539248	22	55	24511	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:21	45:21	0	1.012	3063236	653936	34	85	19233		
391.8127	45:21	45:21	0	1.012	2493973	510622	22	55	23210	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44:19						34	85			
391.8127	44:19						22	55			
1,2,3,4,7,8-HxCDF											
373.8208	43:49	43:49	0	1.000	4515316	1195768	669	1672	1787		
375.8178	43:49	43:49	0	1.000	3593055	955625	819	2047	1167	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:57	43:57	0	1.000	4983491	1234219	669	1672	1845		
375.8178	43:57	43:57	0	1.000	4023327	995197	819	2047	1215	1.24(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:40	44:40	0	1.000	4651738	1175688	669	1672	1757		
375.8178	44:40	44:40	0	1.000	3712677	922369	819	2047	1126	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	45:36	45:36	0	1.000	3821821	911590	669	1672	1363		
375.8178	45:36	45:36	0	1.000	3055488	734495	819	2047	897	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44:10						669	1672			
375.8178	44:10						819	2047			
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:38	0	1.000	2287137	396672	138	345	2874		
425.7737	49:38	49:38	0	1.000	2172092	384134	60	150	6402	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	49:03						138	345			
425.7737	49:03						60	150			
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:58	0	1.000	3873679	796411	45	112	17698		
409.7788	47:58	47:58	0	1.000	3672123	751090	12	30	62591	1.05(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:17	50:17	0	1.000	3106751	540948	45	112	12021		
409.7788	50:17	50:17	0	1.000	2942991	517907	12	30	43159	1.06(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:22	49:20	-58	1.008	70010	8877	45	112	197		
	Empc Correction				59819	8914	45	112	198		
409.7788	48:22	49:20	-58	1.008	57519	8572	12	30	714	1.22(0.88-1.20)	
OCDD											
457.7377	53:54	53:54	0	1.000	3683239	773716	21	52	36844		
459.7348	53:54	53:54	0	1.000	4059094	848093	16	40	53006	0.91(0.76-1.02)	
OCDF											
441.7428	54:02	54:02	0	1.000	4936174	1076830	39	97	27611		
443.7399	54:02	54:02	0	1.000	5441108	1154881	13	32	88837	0.91(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:48	0	1.016	4164882	445071	327	817	1361		
333.9338	30:49	30:48	1	1.017	5167063	539988	161	402	3354	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:49	28:49	0	0.951	6686410	774508	284	710	2727		
317.9389	28:50	28:49	1	0.951	8168253	952101	376	940	2532	0.82(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:34	0	1.338	4768638	1047818	985	2462	1064		
369.8919	40:34	40:34	0	1.338	2968527	653455	412	1030	1586	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:47	38:47	0	1.279	7280031	1403720	3275	8187	429		
353.8970	38:47	38:47	0	1.279	4562552	868270	3012	7530	288	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	40:02	0	1.321	7583967	1652838	3275	8187	505		
353.8970	40:02	40:02	0	1.321	4719233	1017173	3012	7530	338	1.61(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:50	44:50	0	0.989	4890417	1206897	1467	3667	823		
403.8529	44:50	44:50	0	0.989	3601428	945366	1067	2667	886	1.36(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:57	44:57	0	0.991	4993144	1178927	1467	3667	804		
403.8529	44:57	44:57	0	0.991	4176442	958875	1067	2667	899	1.20(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:48	43:48	0	0.966	4123600	1072947	1173	2932	915		
385.8610	43:48	43:48	0	0.966	7703072	2012607	2031	5077	991	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:56	0	0.969	5042681	1220340	1173	2932	1040		
385.8610	43:56	43:56	0	0.969	9296489	2258262	2031	5077	1112	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	4664161	1168424	1173	2932	996		
385.8610	44:39	44:39	0	0.985	8597870	2144784	2031	5077	1056	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	4095853	881586	1173	2932	752		
385.8610	45:35	45:35	0	1.006	7580621	1630029	2031	5077	803	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:37	49:37	0	1.094	4058764	706659	231	577	3059		
437.8140	49:37	49:37	0	1.094	3765950	643262	381	952	1688	1.08(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	0	1.058	3135890	647341	1469	3672	441		
419.8220	47:57	47:57	0	1.058	6770138	1399496	4731	11827	296	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	0	1.109	2565775	453166	1469	3672	308		
419.8220	50:16	50:16	0	1.109	5609260	1001281	4731	11827	212	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:53	53:53	0	1.189	5840342	1250480	963	2407	1299		
471.7750	53:53	53:53	0	1.189	6500383	1375367	575	1437	2392	0.90(0.76-1.02)	
13C-OCDF											
453.7830	54:01	54:01	0	1.192	9665998	2171636	655	1637	3315		
455.7801	54:01	54:01	0	1.192	10474170	2355769	711	1777	3313	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:51	30:51	0	1.018	1039367	110408	42	105	2629		
13C-1,2,3,4-TCDD											
331.9368	30:19	30:19	0		4008189	457401	327	817	1399		
333.9338	30:18	30:19	-1		4920066	540828	161	402	3359	0.81(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:20	0		5479928	1165366	1467	3667	794		
403.8529	45:20	45:20	0		4344515	912810	1067	2667	855	1.26(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	22:31	22:31	0	0.781	809226	127777	28	70	4563		
305.8987	22:31	22:31	0	0.781	1029187	157691	43	107	3667	0.79(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	24:57	24:57	0	0.810	450467	60157	30	75	2005		
321.8936	24:56	24:57	-1	0.809	573569	78876	31	77	2544	0.79(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	33:55	33:55	0	1.177	660462	71207	28	70	2543		
305.8987	33:55	33:55	0	1.177	830714	86535	43	107	2012	0.80(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	34:02	34:02	0	1.105	410776	44649	30	75	1488		
321.8936	34:02	34:02	0	1.105	522408	57715	31	77	1862	0.79(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	34:40	34:40	0	0.894	3995807	487753	358	895	1362		
341.8567	34:40	34:40	0	0.894	2535518	312997	200	500	1565	1.58(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	37:38	37:38	0	0.928	2332972	374644	37	92	10126		
357.8516	37:38	37:38	0	0.928	1469418	234429	23	57	10193	1.59(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:16	41:16	0	1.017	2614780	572730	37	92	15479		
357.8516	41:16	41:16	0	1.017	1635655	348246	23	57	15141	1.60(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	41:23	41:23	0	1.067	3845090	855194	358	895	2389		
341.8567	41:22	41:23	-1	1.067	2415756	524745	200	500	2624	1.59(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,8-HxCDF											
373.8208	42:36	42:36	0	0.973	4293548	1056506	669	1672	1579		
375.8178	42:35	42:36	-1	0.972	3382073	858376	819	2047	1048	1.27(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	43:17	43:17	0	0.966	3056684	785900	34	85	23115		
391.8127	43:17	43:17	0	0.966	2460080	617961	22	55	28089	1.24(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	45:44	45:44	0	1.044	4153258	889801	669	1672	1330		
375.8178	45:44	45:44	0	1.044	3191152	686467	819	2047	838	1.30(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	48:28	48:28	0	0.977	2368378	459192	138	345	3327		
425.7737	48:28	48:28	0	0.977	2239483	430037	60	150	7167	1.06(0.88-1.20)	

QC Flag Legend

Review Flags

U - Marked Undetected

a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
CCV Relative RT Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 01:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 02:15:34 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0327

First Level Reviewer: parslyt Date: 17-Dec-2019 02:15:34

Start Cal Date: 16-May-2014 14:26:00
End Cal Date: 16-May-2014 18:31:00

Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,4-TCDD		31:17	30:19	-57		1.000	1.000	0.000 - 0.000
13C-2,3,7,8-TCDD		31:48	30:48	-60		1.017	1.016	0.976 - 1.043
2,3,7,8-TCDD		31:50	30:51	-58		1.001	1.002	0.999 - 1.002
37Cl4-2,3,7,8-TCDD		31:50	30:51	-58		1.018	1.018	0.989 - 1.052
13C-2,3,7,8-TCDF		29:44	28:49	-54		0.951	0.951	0.923 - 1.103
2,3,7,8-TCDF		29:47	28:52	-54		1.002	1.002	0.999 - 1.003
13C-1,2,3,7,8-PeCDD		41:00	40:34	-25		1.311	1.338	1.000 - 1.567
1,2,3,7,8-PeCDD		41:01	40:35	-25		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8-PeCDF		39:17	38:47	-30		1.256	1.279	1.000 - 1.425
1,2,3,7,8-PeCDF		39:18	38:48	-30		1.000	1.000	0.999 - 1.002
13C-2,3,4,7,8-PeCDF		40:29	40:02	-26		1.295	1.321	1.011 - 1.526
2,3,4,7,8-PeCDF		40:30	40:03	-26		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8,9-HxCDD		45:45	45:20	-24		1.000	1.000	0.000 - 0.000
13C-1,2,3,4,7,8-HxCDD		45:14	44:50	-24		0.989	0.989	0.977 - 1.000
1,2,3,4,7,8-HxCDD		45:15	44:51	-24		1.000	1.000	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDD		45:21	44:57	-24		0.992	0.991	0.981 - 1.003
1,2,3,6,7,8-HxCDD		45:22	44:58	-24		1.000	1.000	0.998 - 1.004
1,2,3,7,8,9-HxCDD		45:46	45:21	-24		1.012	1.012	1.000 - 1.019
13C-1,2,3,4,7,8-HxCDF		44:11	43:48	-23		0.966	0.966	0.936 - 0.996
1,2,3,4,7,8-HxCDF		44:12	43:49	-23		1.000	1.000	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDF		44:20	43:56	-23		0.969	0.969	0.949 - 0.975
1,2,3,6,7,8-HxCDF		44:21	43:57	-23		1.000	1.000	0.997 - 1.005
13C-2,3,4,6,7,8-HxCDF		45:03	44:39	-23		0.985	0.985	0.977 - 1.047
2,3,4,6,7,8-HxCDF		45:04	44:40	-23		1.000	1.000	0.999 - 1.001

Compound	T/L	ICAL RT	CCV RT	Δ RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,7,8,9-HxCDF		46:02	45:35	-26		1.006	1.006	0.959 - 1.021
1,2,3,7,8,9-HxCDF		46:03	45:36	-26		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDD		50:11	49:37	-34		1.097	1.094	1.086 - 1.110
1,2,3,4,6,7,8-HpCDD		50:12	49:38	-34		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDF		48:28	47:57	-30		1.059	1.058	1.043 - 1.085
1,2,3,4,6,7,8-HpCDF		48:29	47:58	-30		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,7,8,9-HpCDF		50:48	50:16	-32		1.111	1.109	1.057 - 1.151
1,2,3,4,7,8,9-HpCDF		50:49	50:17	-32		1.000	1.000	0.999 - 1.001
13C-OCDD		54:18	53:53	-25		1.187	1.189	1.032 - 1.311
OCDD		54:19	53:54	-25		1.000	1.000	0.999 - 1.001
13C-OCDF		54:26	54:01	-25		1.190	1.192	1.092 - 1.292
OCDF		54:27	54:02	-25		1.000	1.000	0.999 - 1.008

Report Date: 17-Dec-2019 02:15:34 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 01:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	100.000	9331945	985059

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		100.000	9331945	985059

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
30:21	418487	45754	528127	57966	8.65	0.79	a
30:36	408852	43902	503073	53332	8.33	0.81	a
31:22	449962	46249	575192	57528	9.36	0.78	a
Signal Totals:							
	1277301	135905	1606392	168826			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2883693	304731				0.80	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 26.337 = (2883693 * 100.000) / (9331945 * 1.173)

QC Flag Legend

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 01:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	100.000	14854663	1726609

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		100.000	14854663	1726609

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
26:31	1899	191	2514	517	0.0273	0.76	n
27:00	4820	524	5277	600	0.0625	0.91	RQ
27:00	4063	461	5277	600	0.0578		Empc Correction
27:49	16648	2046	21216	2687	0.2342	0.78	
30:23	2148	304	2062	318	0.0260	1.04	RnQ
30:23	1587	244	2062	318	0.0226		Empc Correction
31:48	1548	227	2497	176	0.0250	0.62	RnQ
31:48	1548	227	2010	294	0.0220		Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 01:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	100.000	7737165	1701273

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		100.000	7737165	1701273

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
40:50	33119	5912	24639	4732	0.7154	1.34	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 01:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	100.000	11842583	2271990
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	100.000	12303200	2670011

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		100.000	12072891	2471000

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:14	52326	6716	35566	5138	0.6333	1.47	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 01:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	9906028	2046837
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	8175035	1454447

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		100.000	9040531	1750642

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:22	70010	8877	57519	8572	0.9799	1.22	RQ
48:22	59819	8914	57519	8572	0.9016		Empc Correction
48:36	88683	14075	75244	12537	1.26	1.18	

Compound is Marked ND

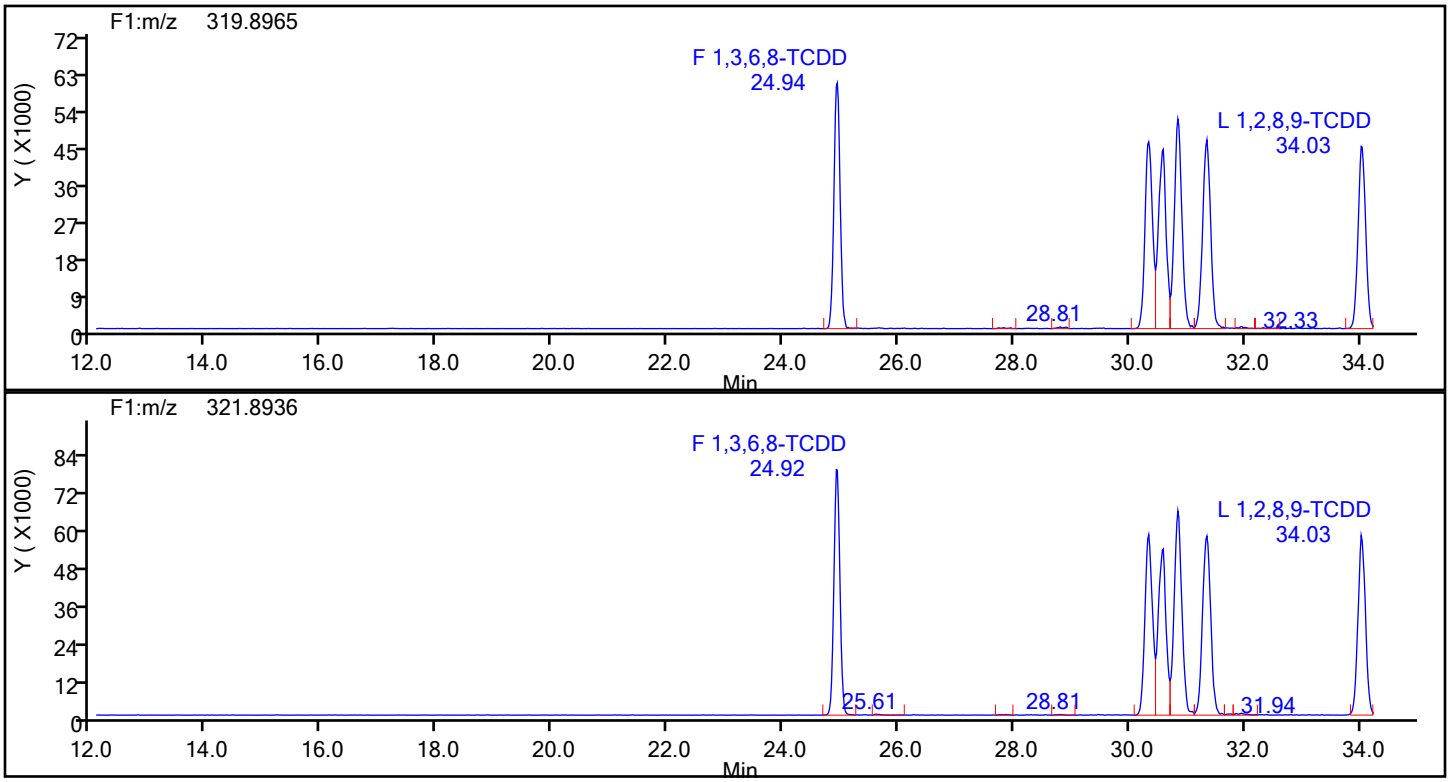
Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

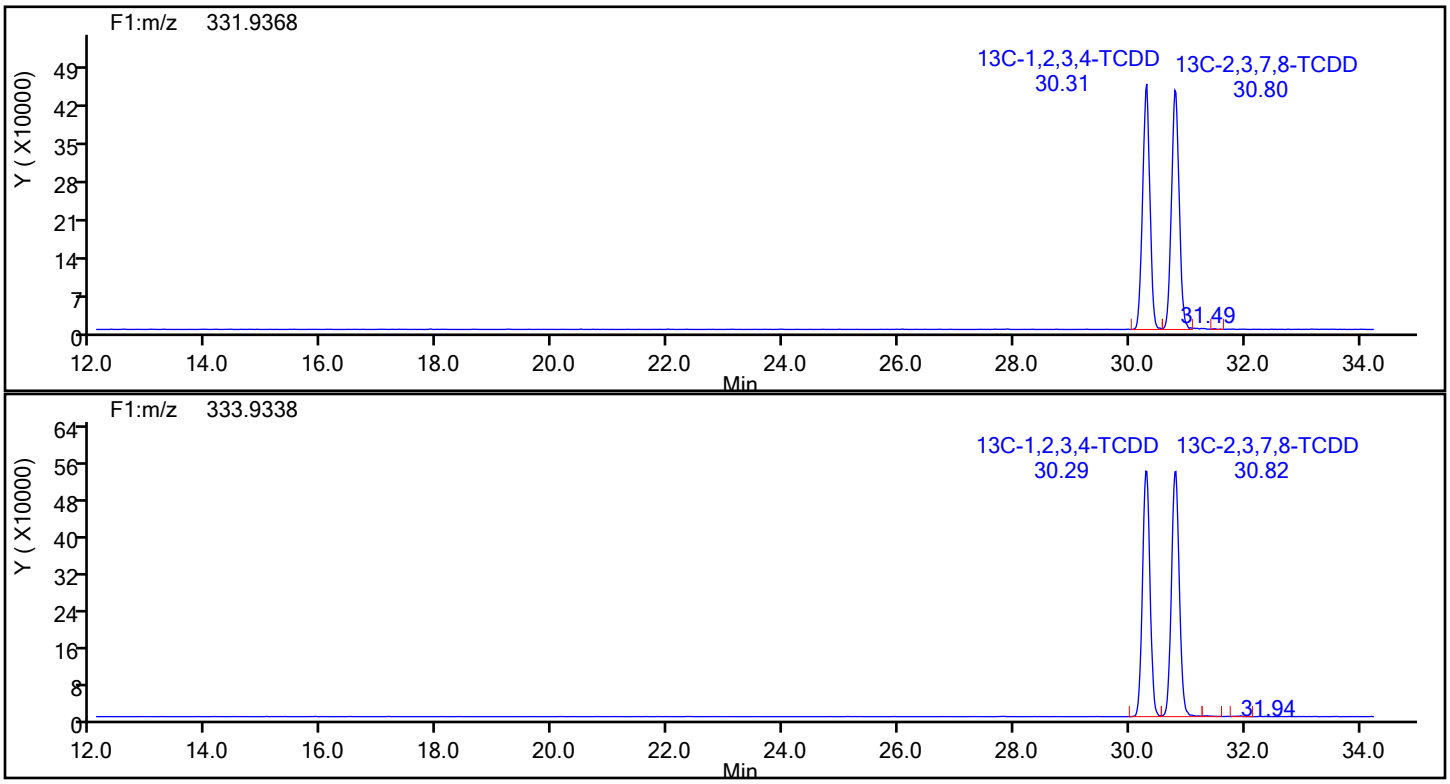
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d

Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

TCDD



TCDD Standards

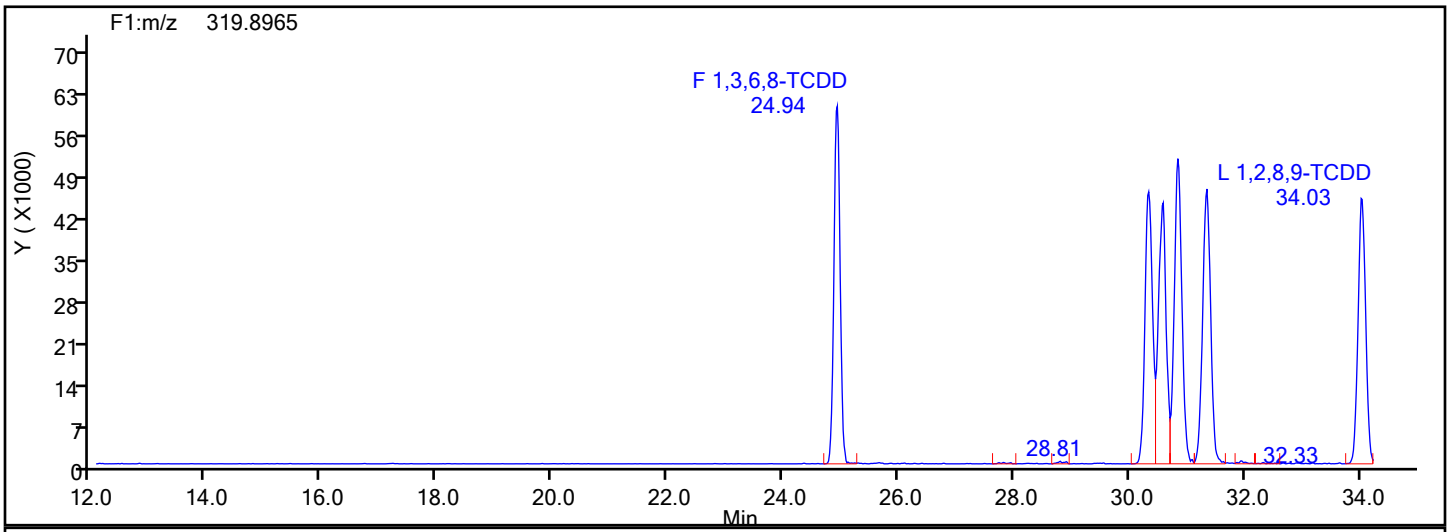


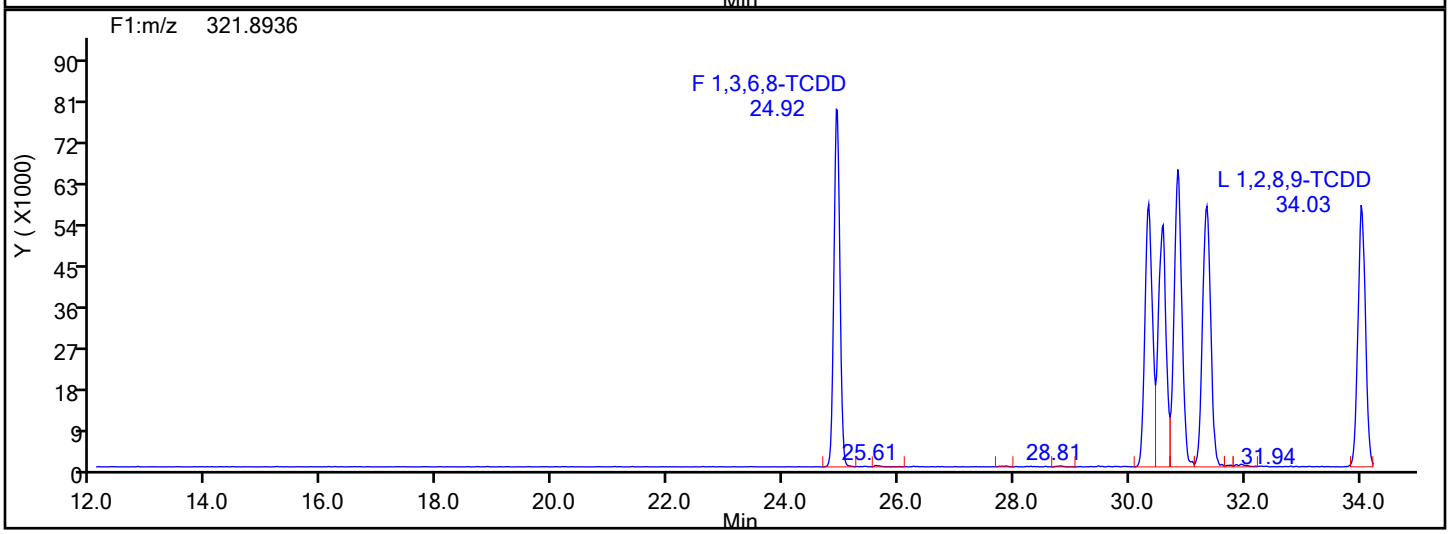
Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

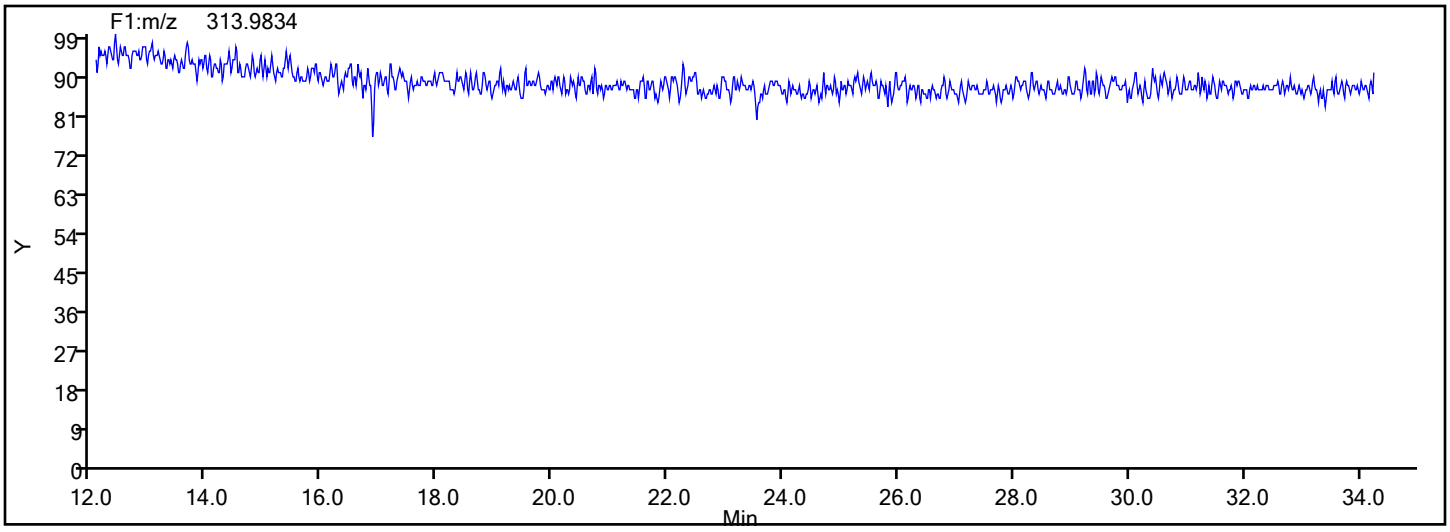
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d		
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



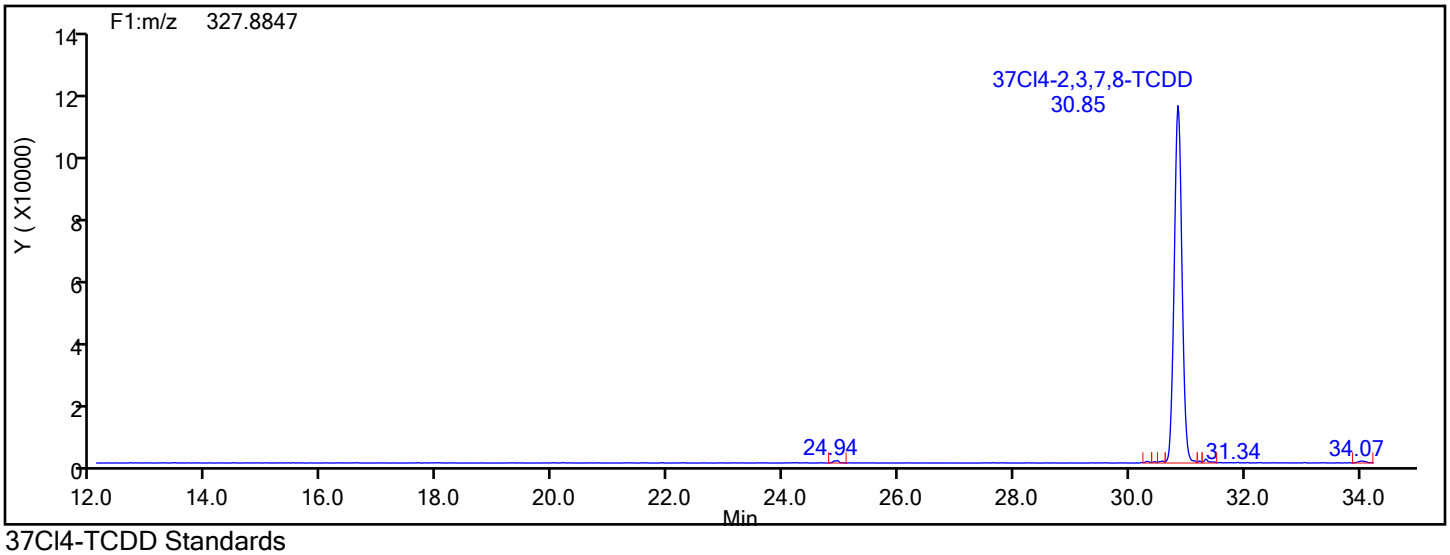
Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

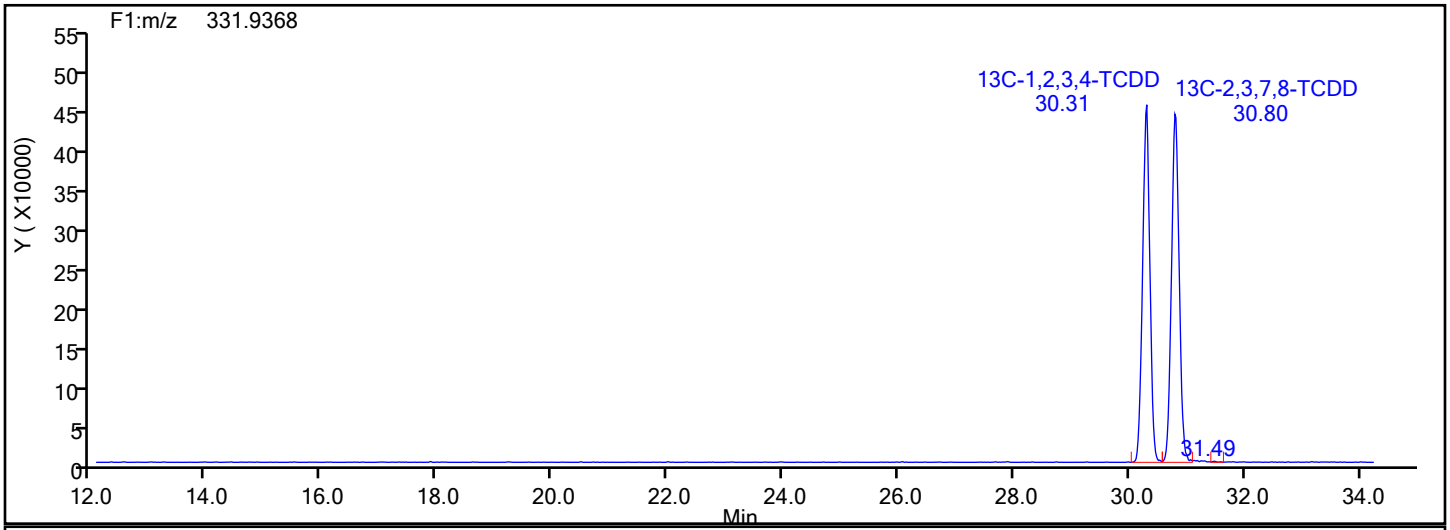
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d

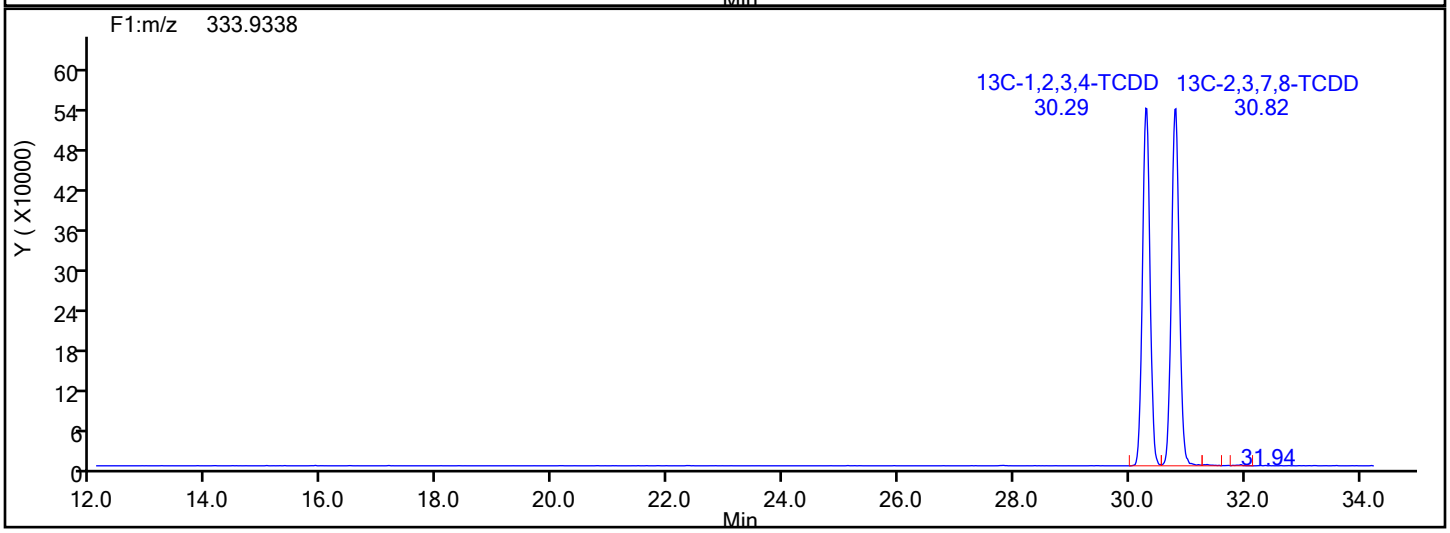
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards



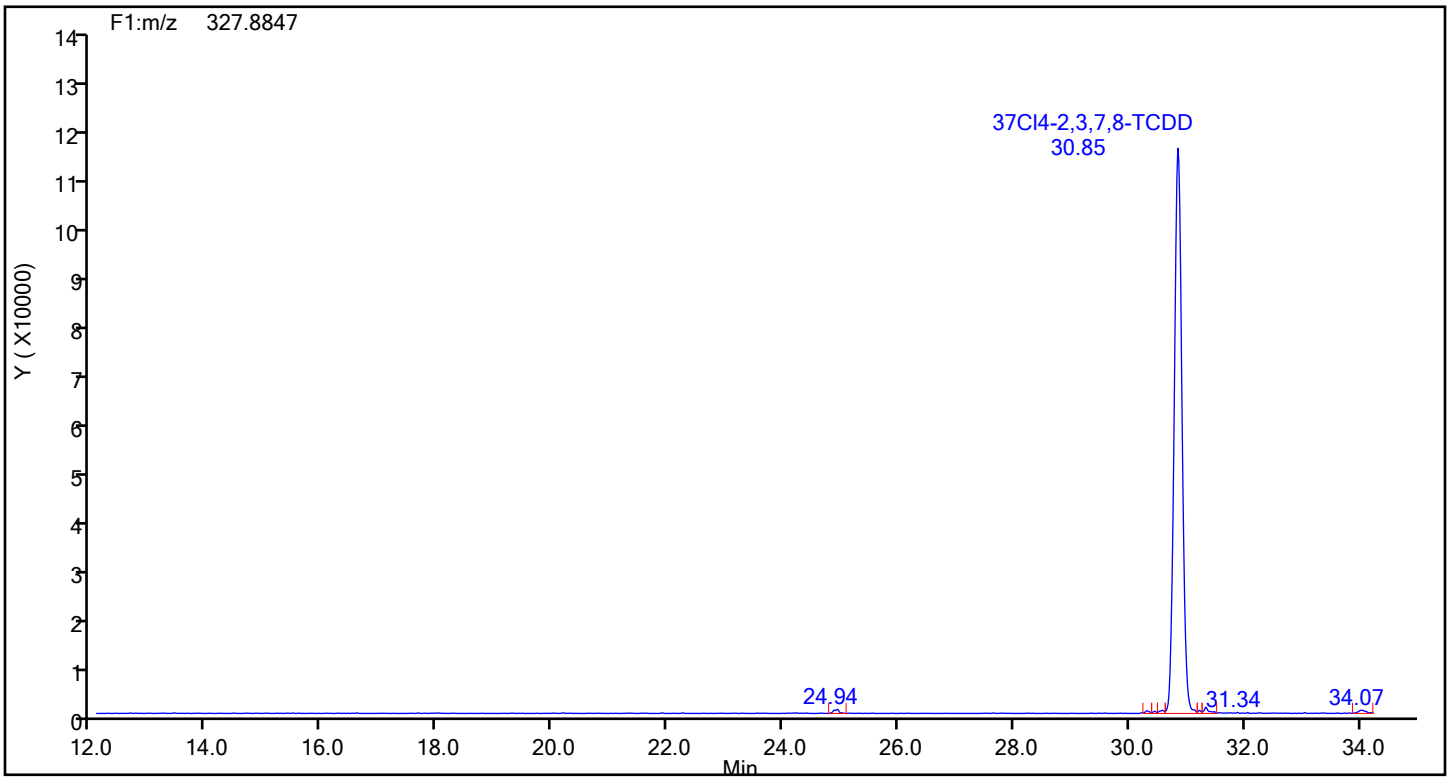


Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

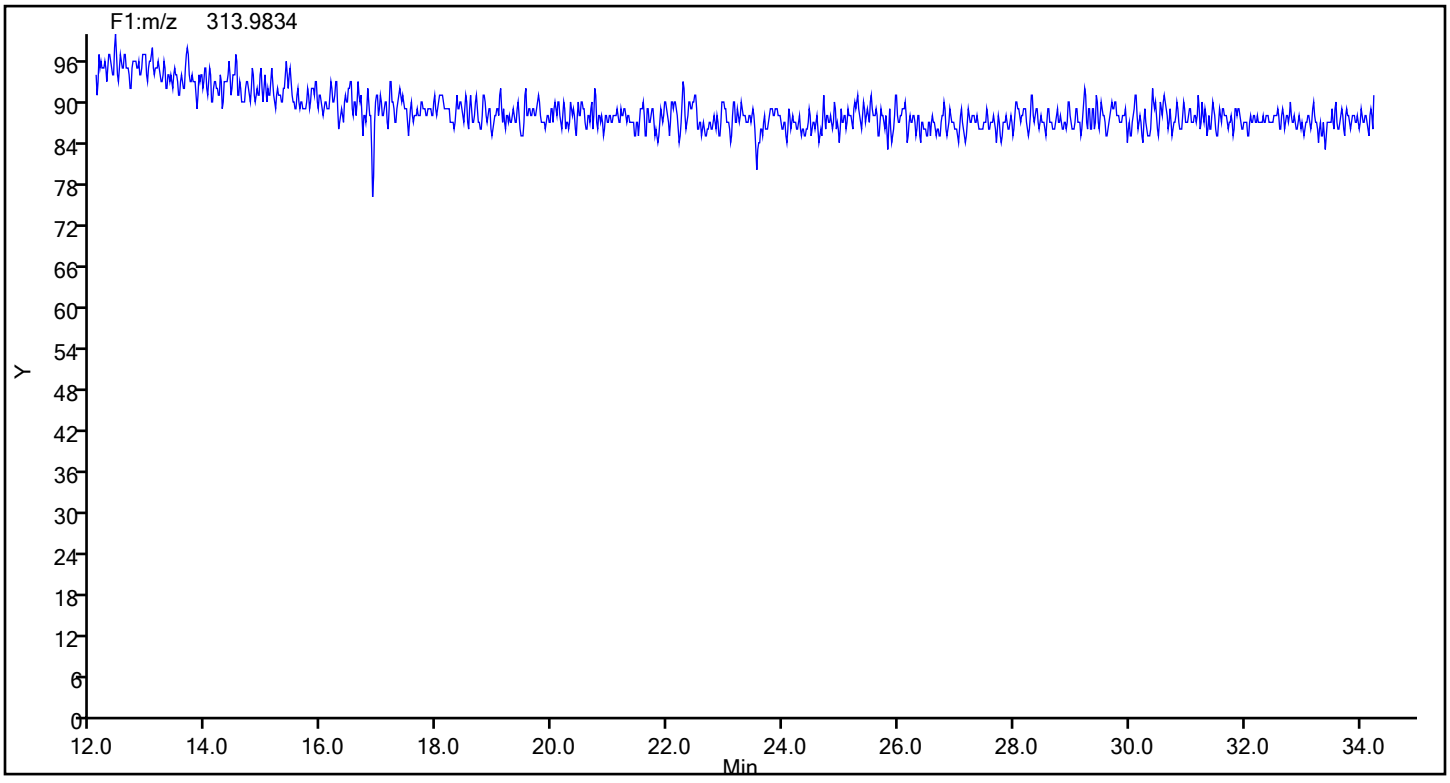
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d		
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

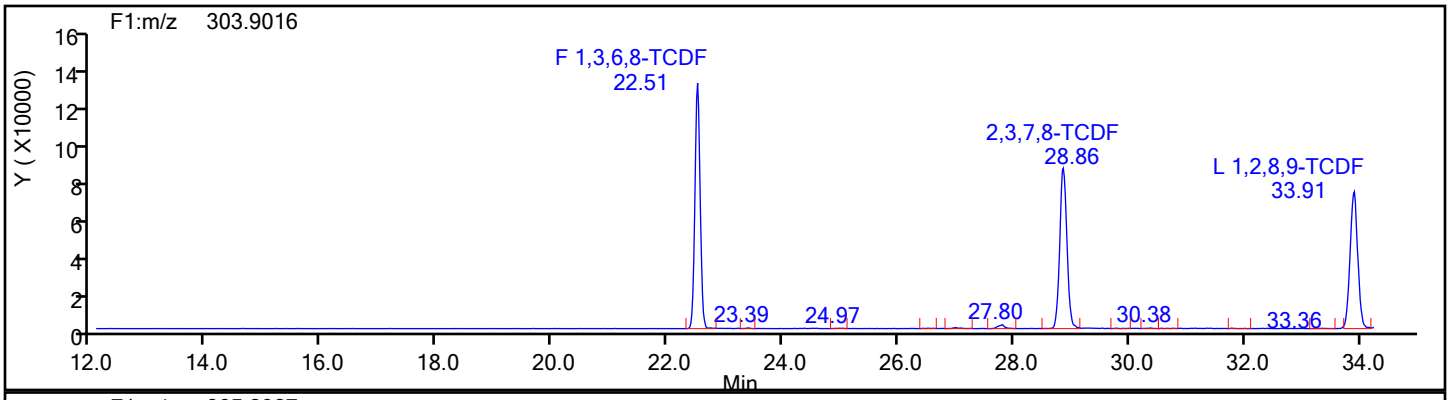


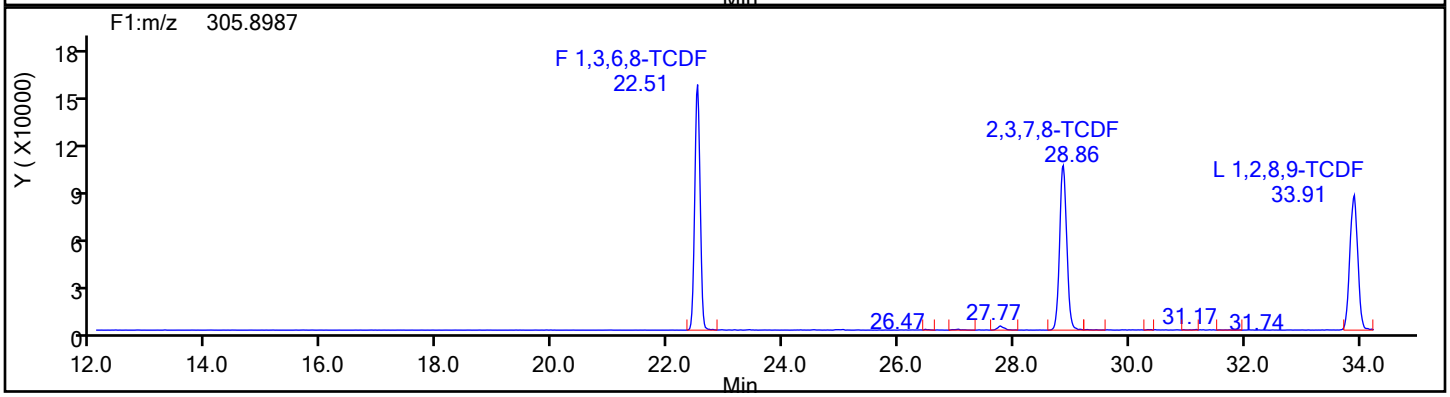
Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

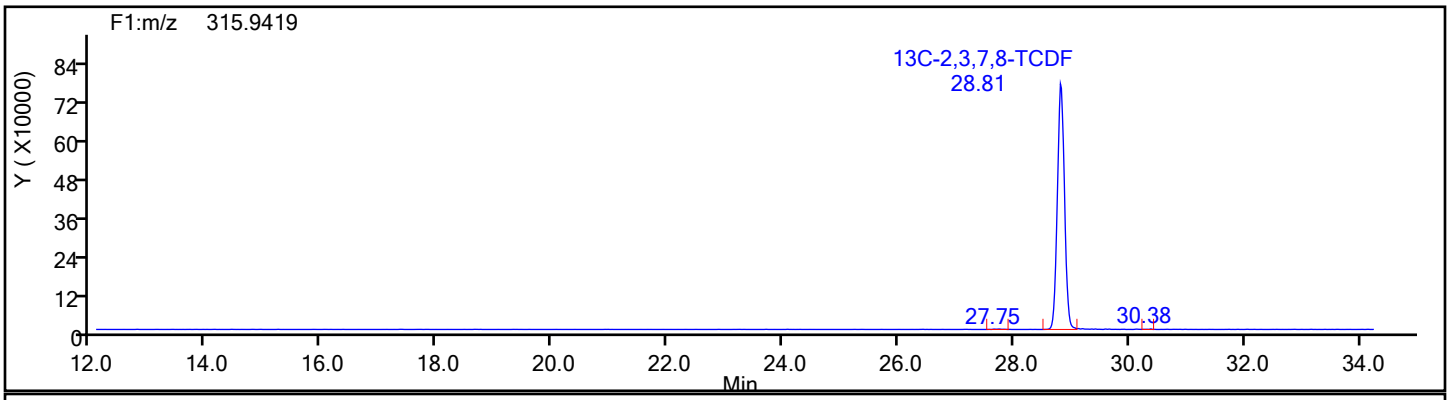
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d		
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

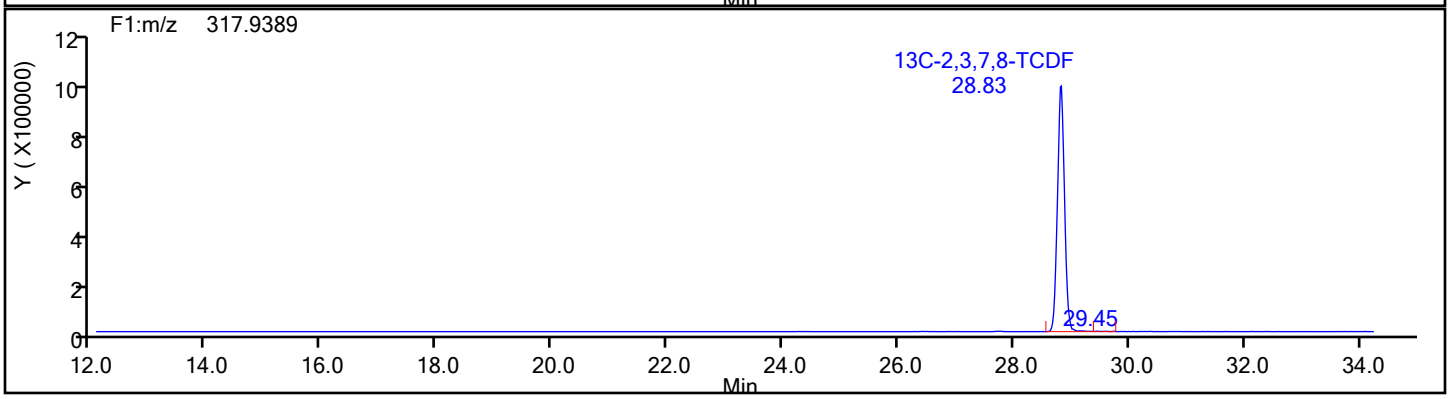
TCDF





TCDF Standards





Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\d3191217s1.d		
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

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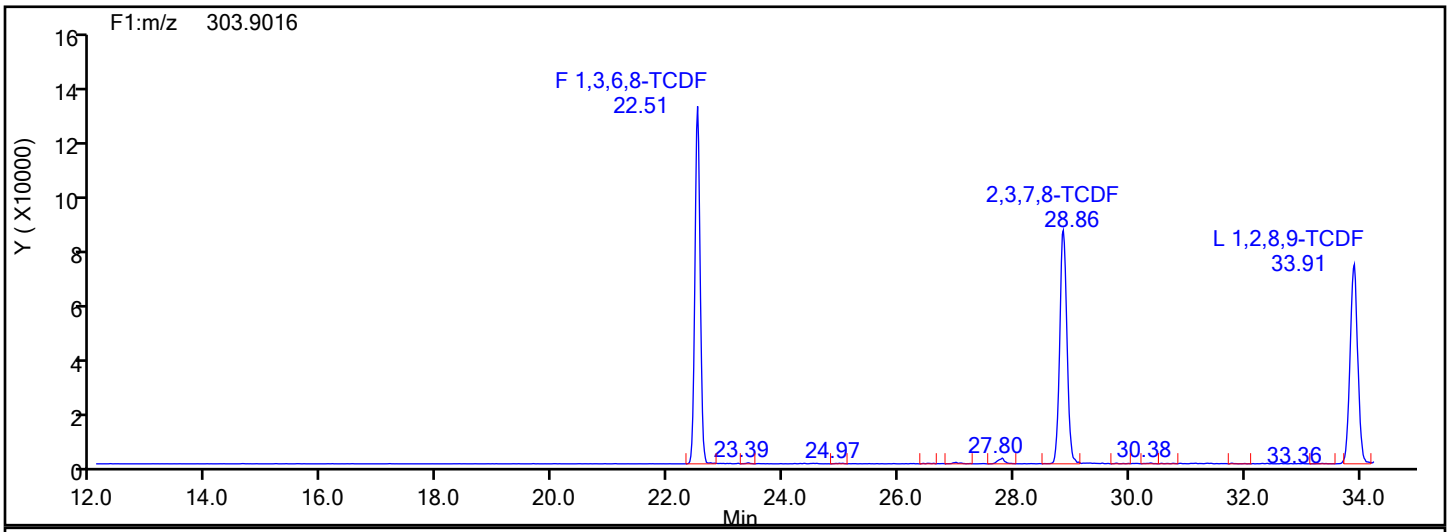

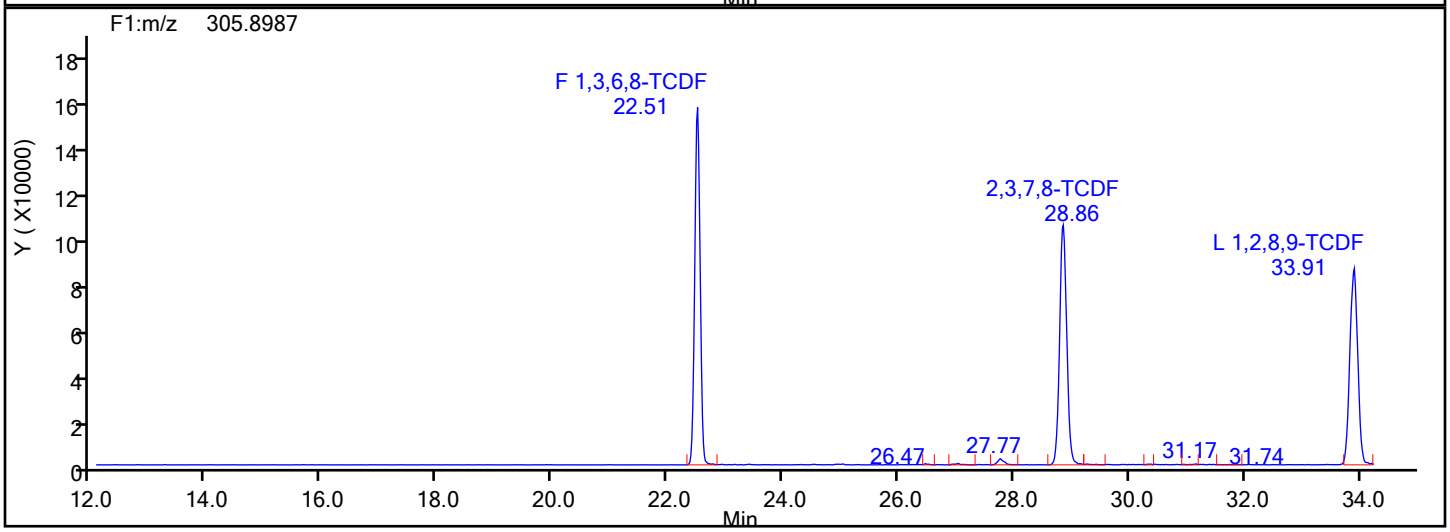

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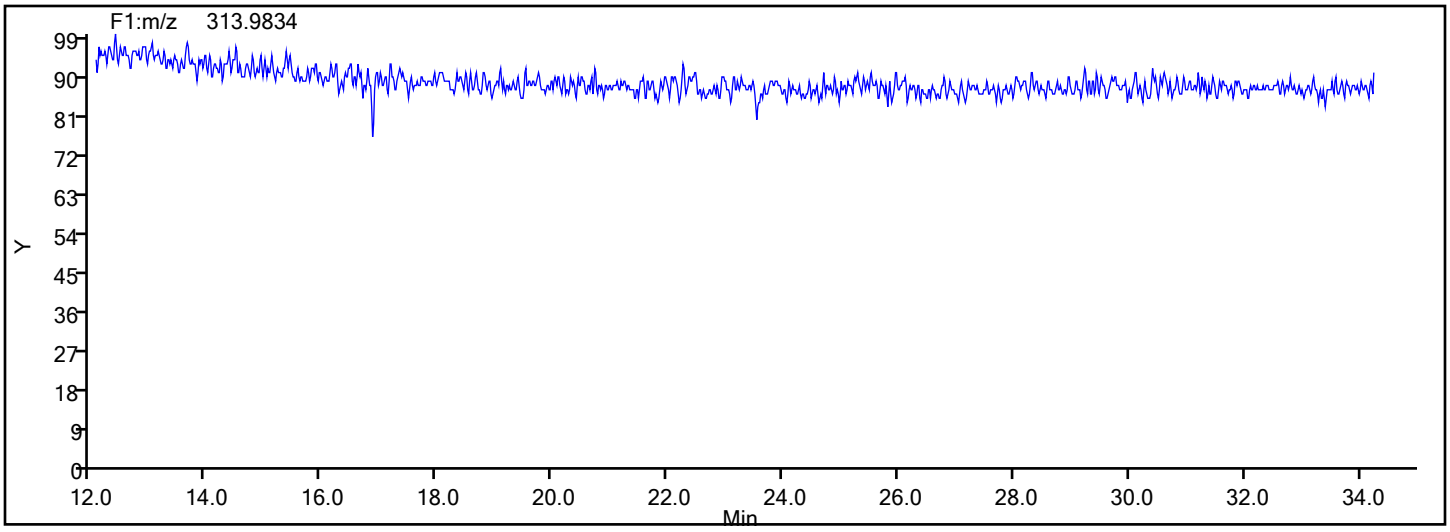

Report Date: 17-Dec-2019 02:15:35 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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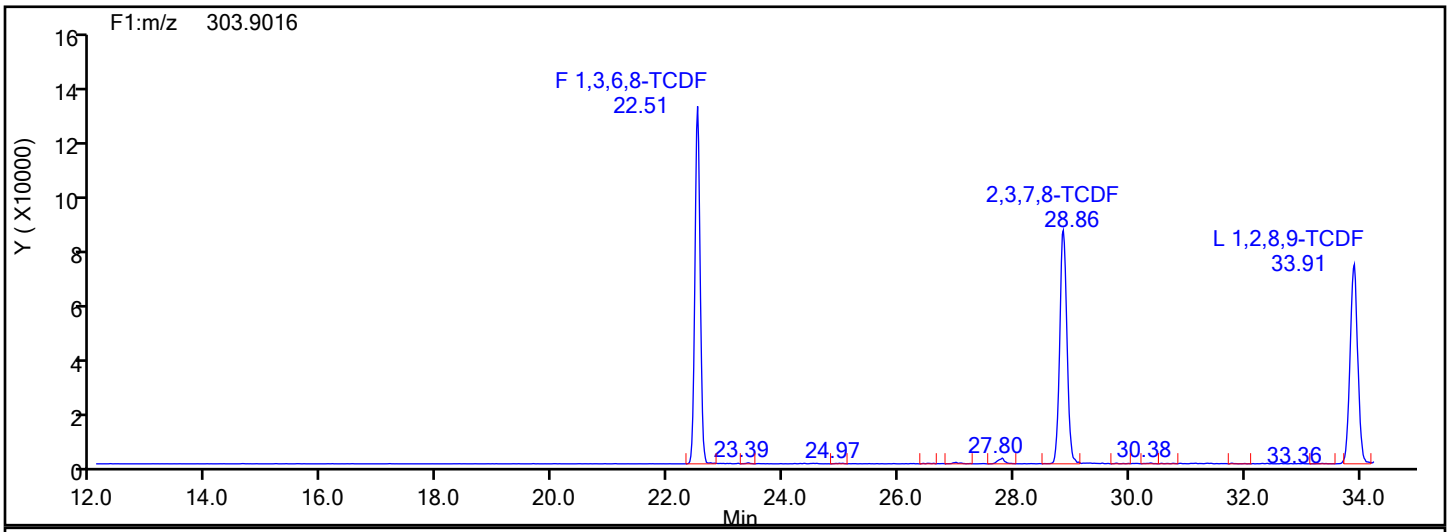

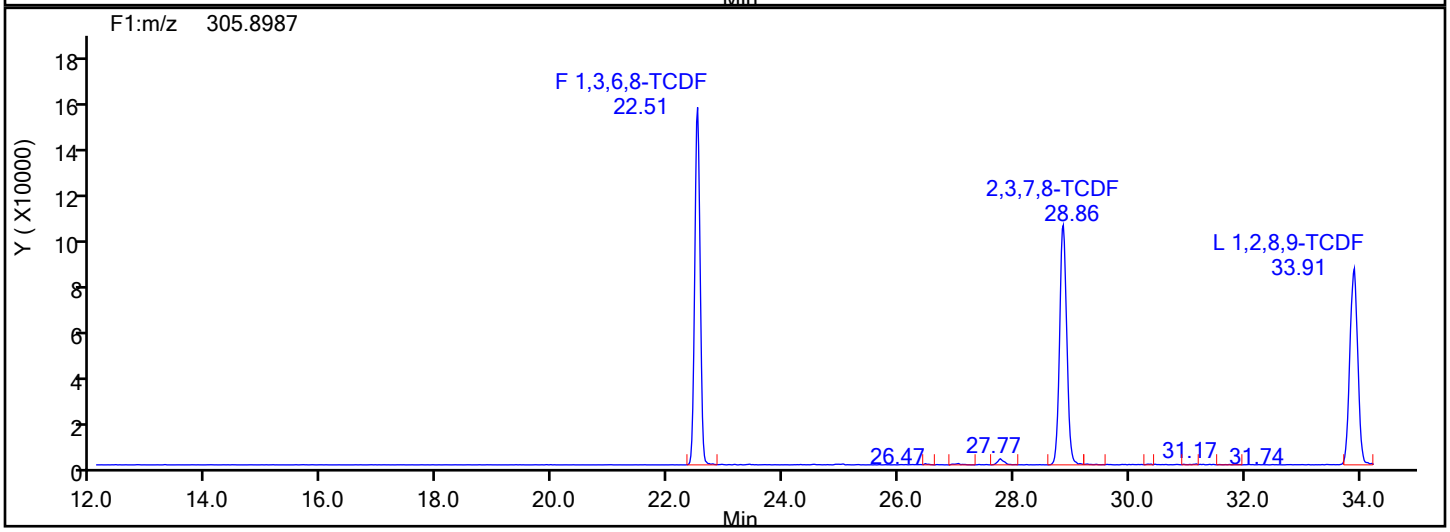

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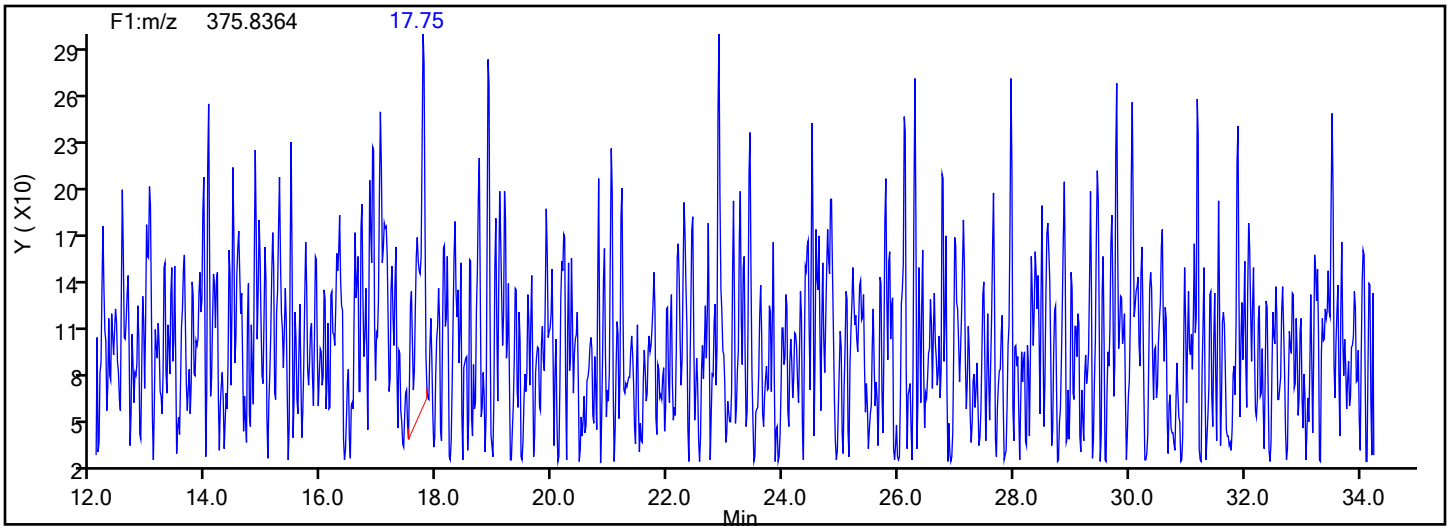

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Eurofins TestAmerica, Knoxville

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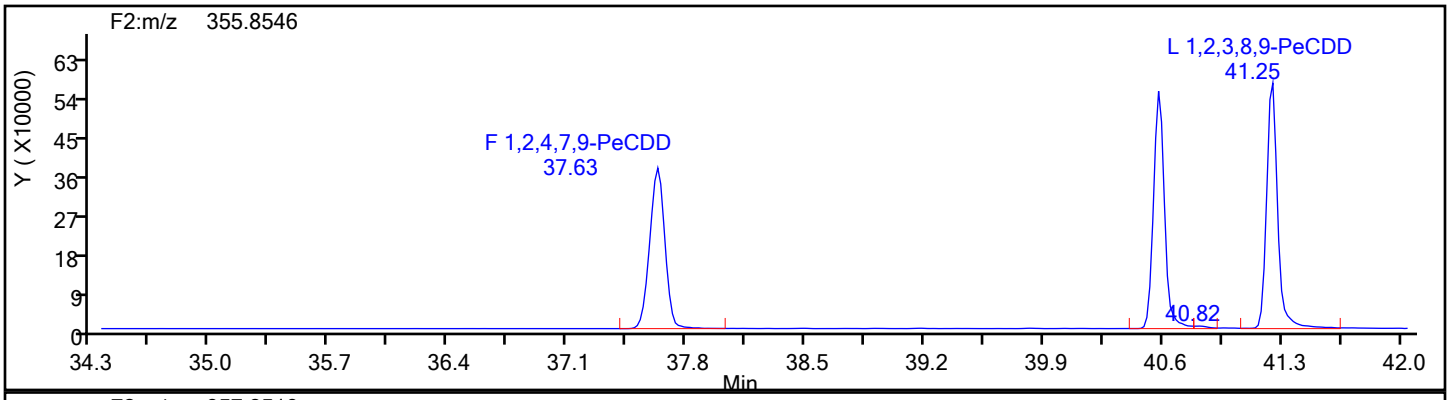
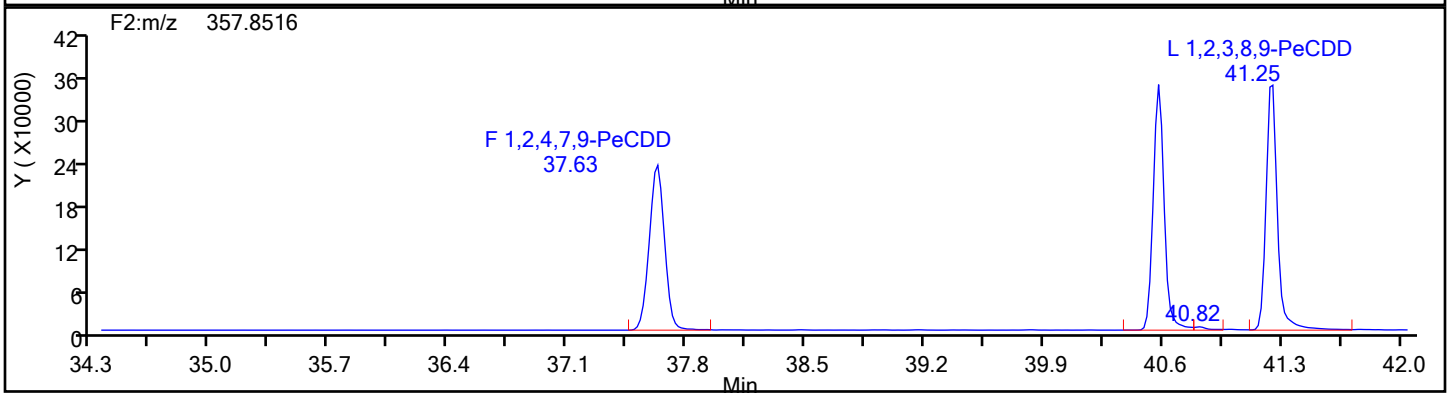
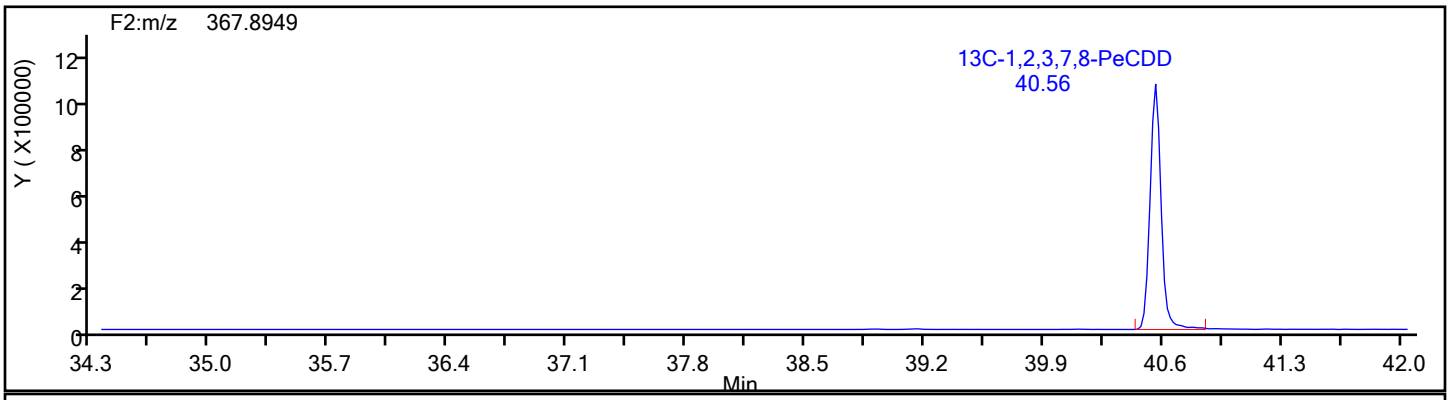
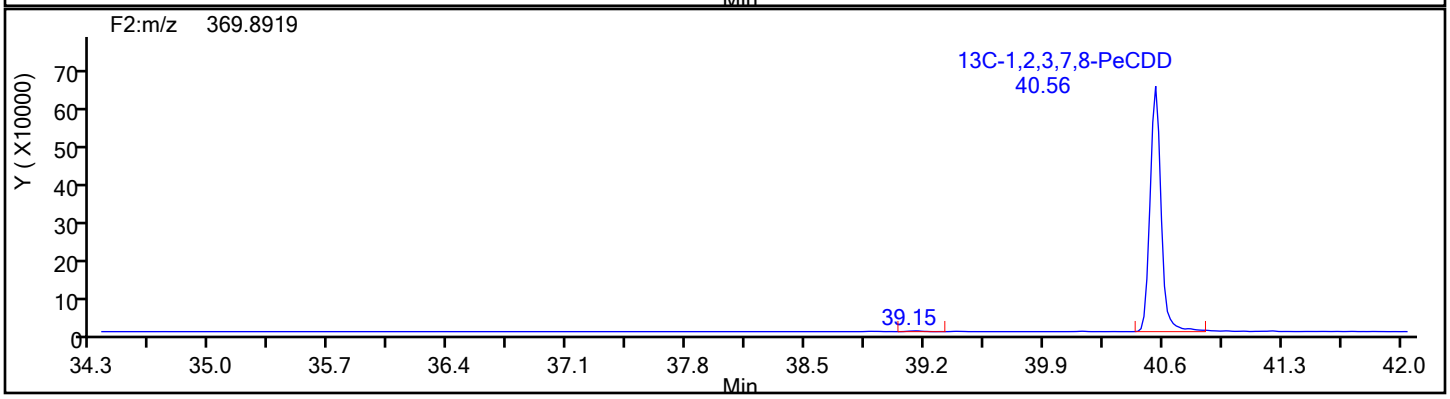




PeCDD Standards





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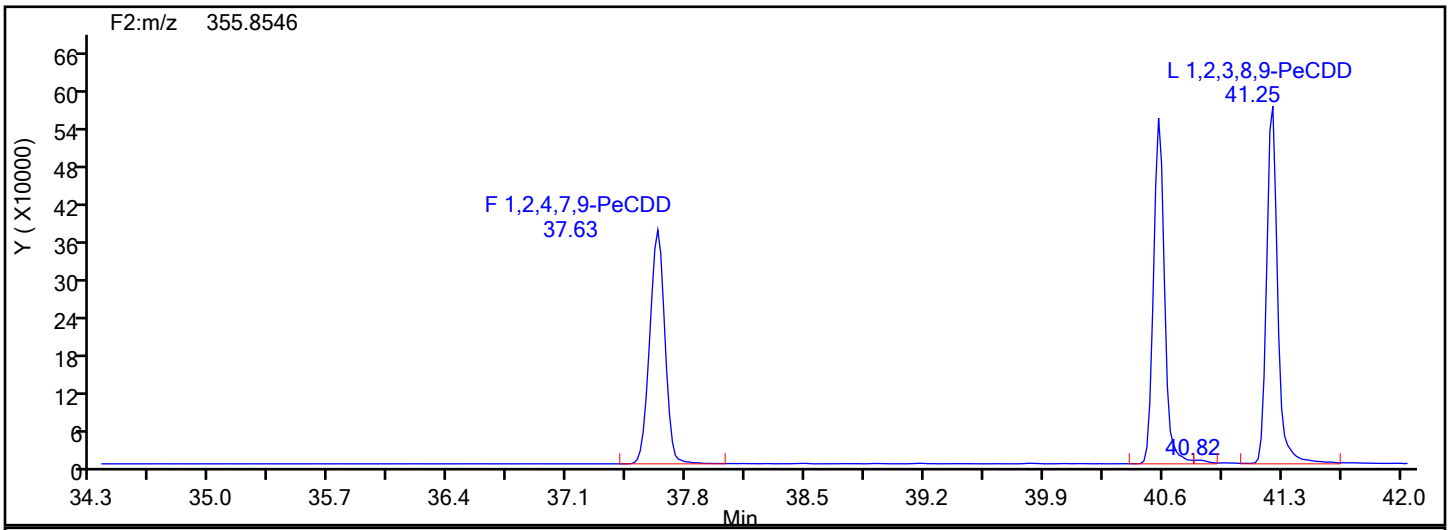
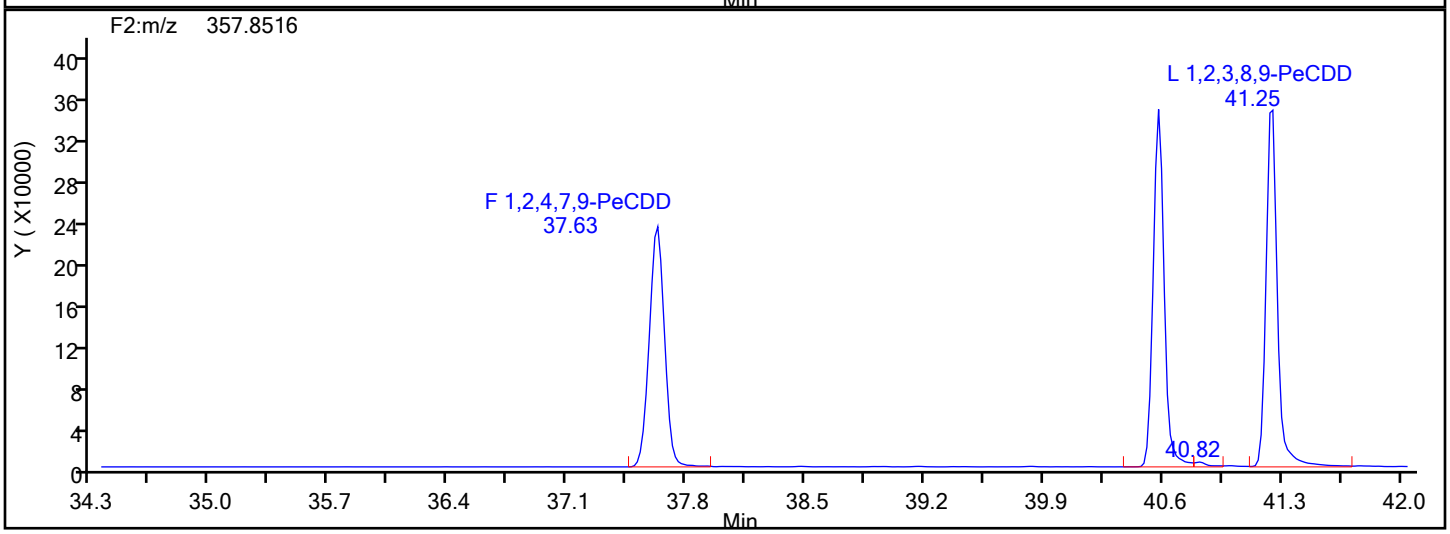
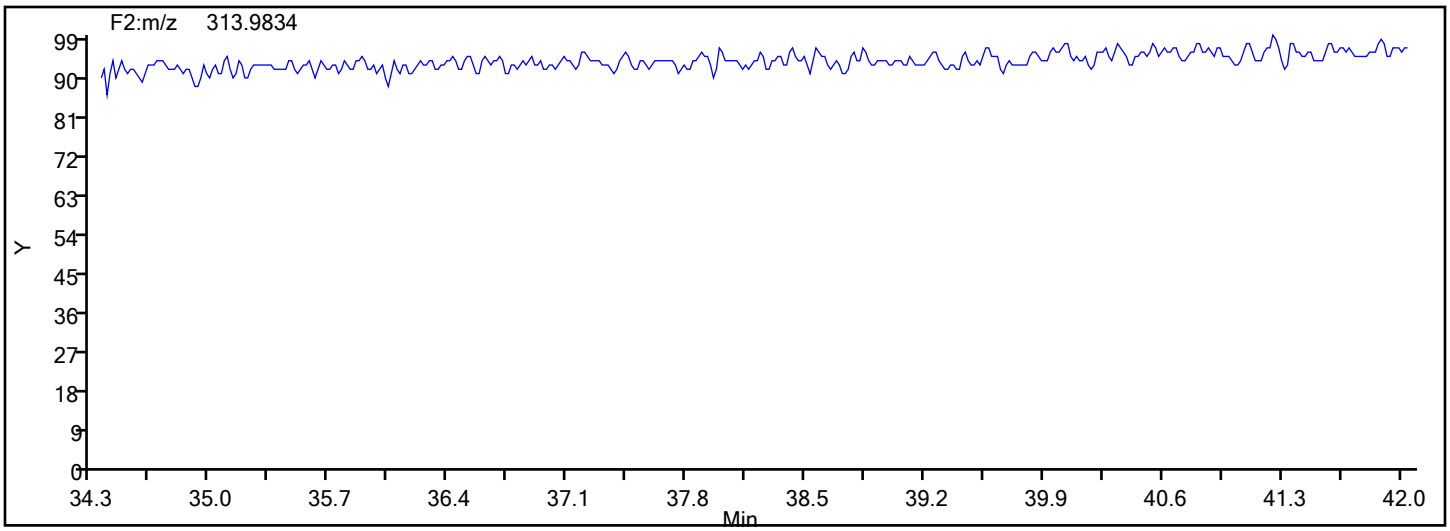




PeCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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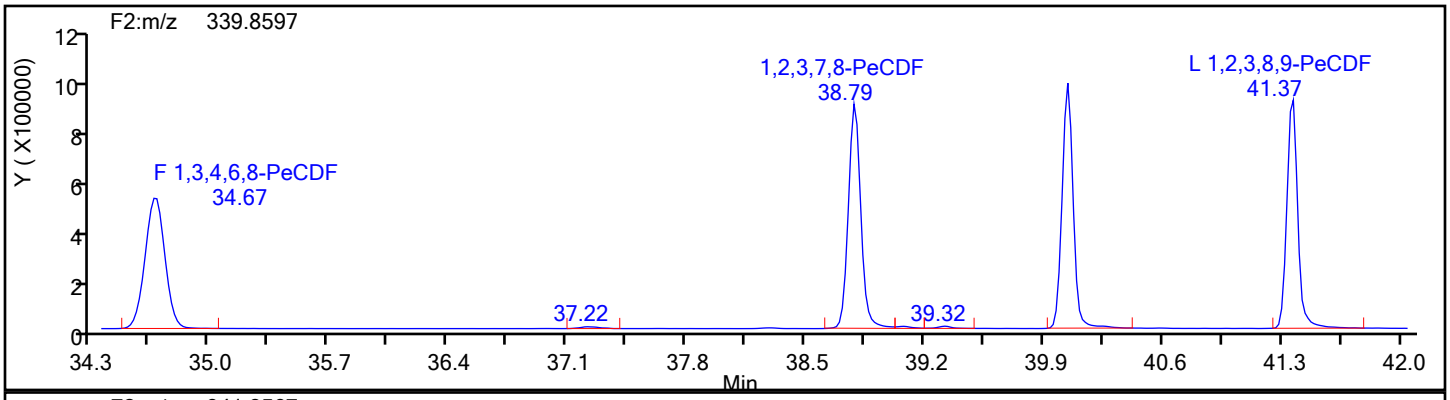

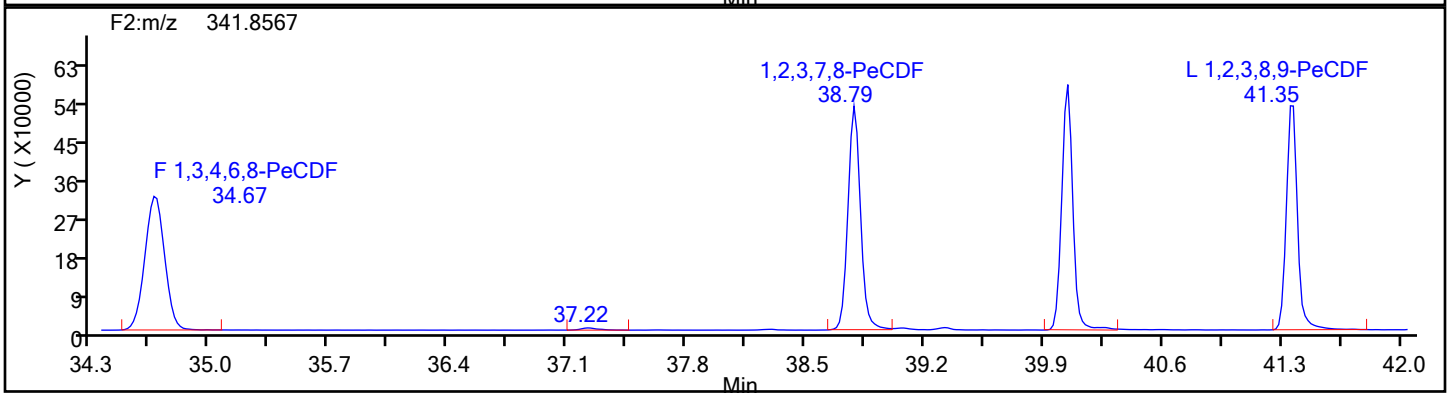

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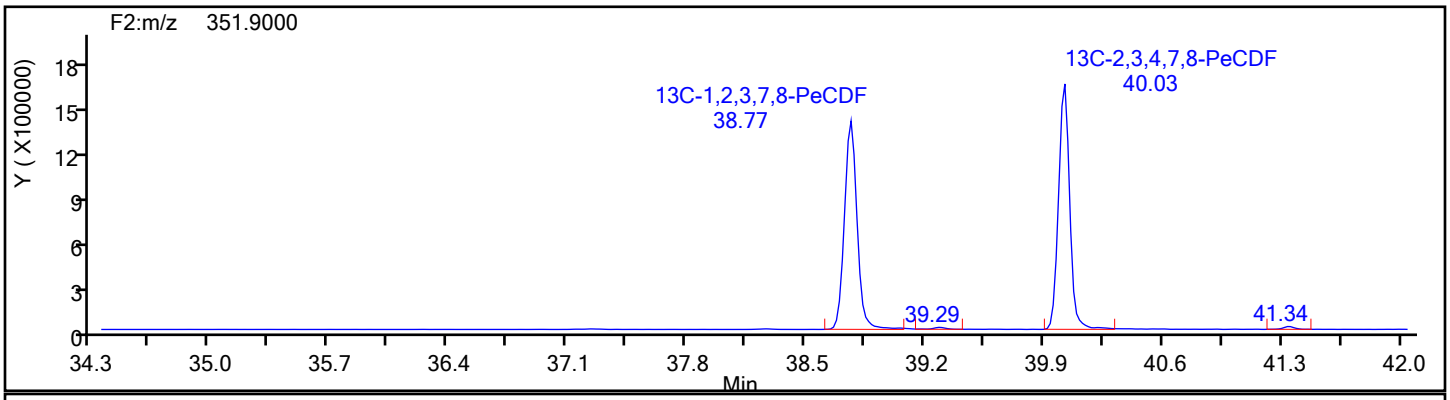

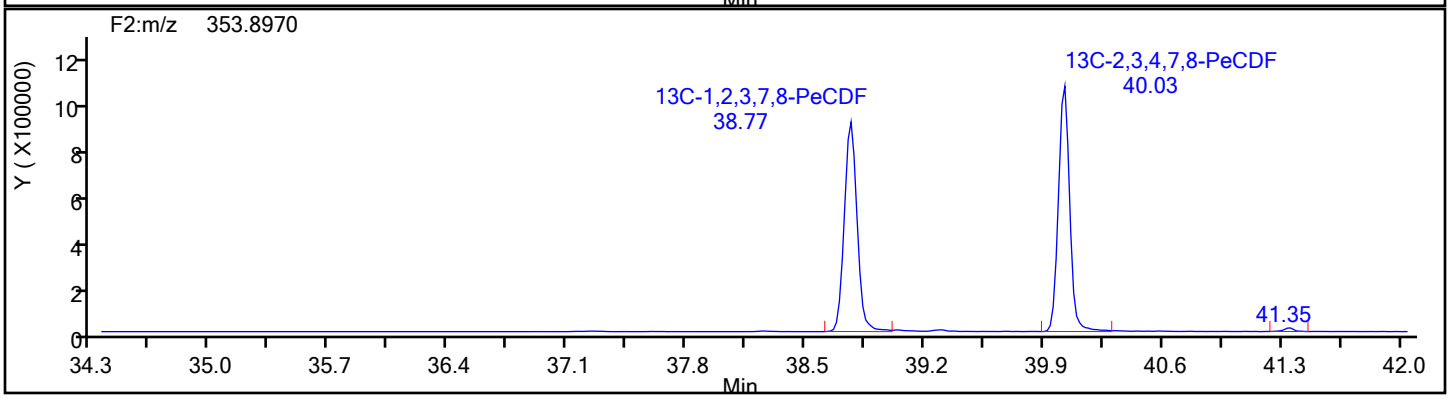

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Eurofins TestAmerica, Knoxville

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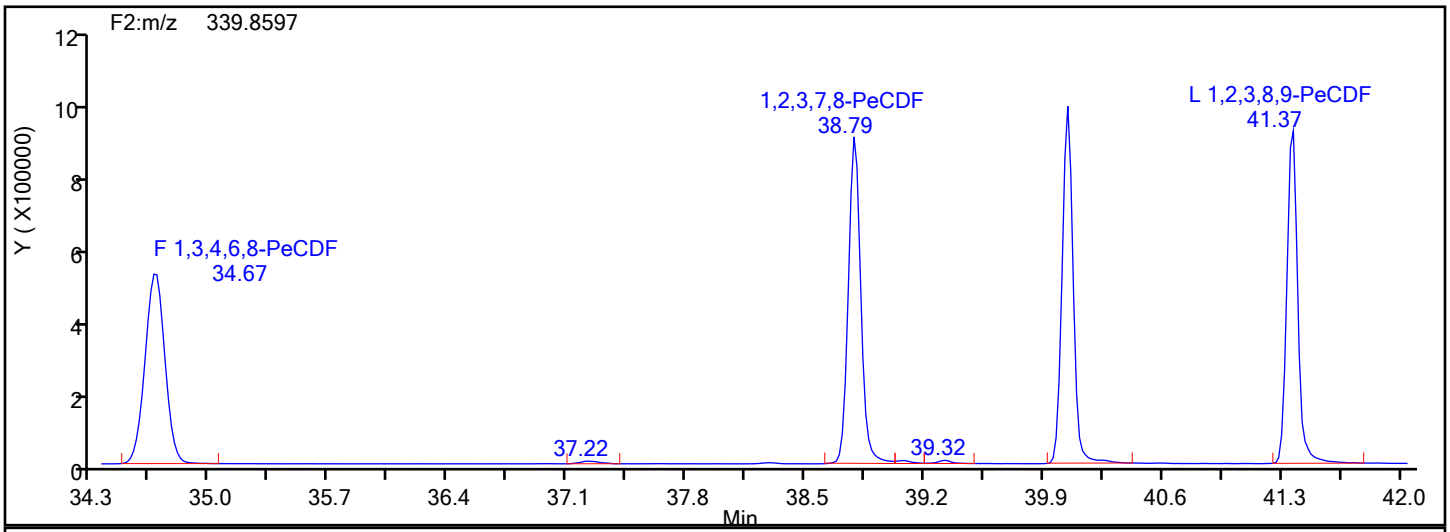

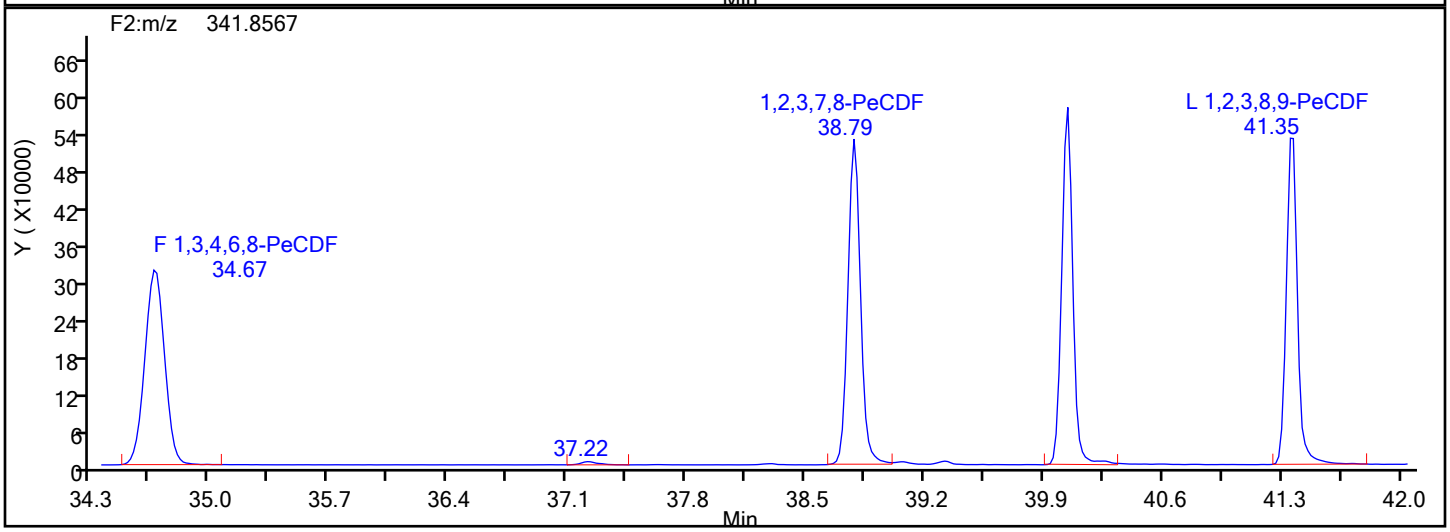

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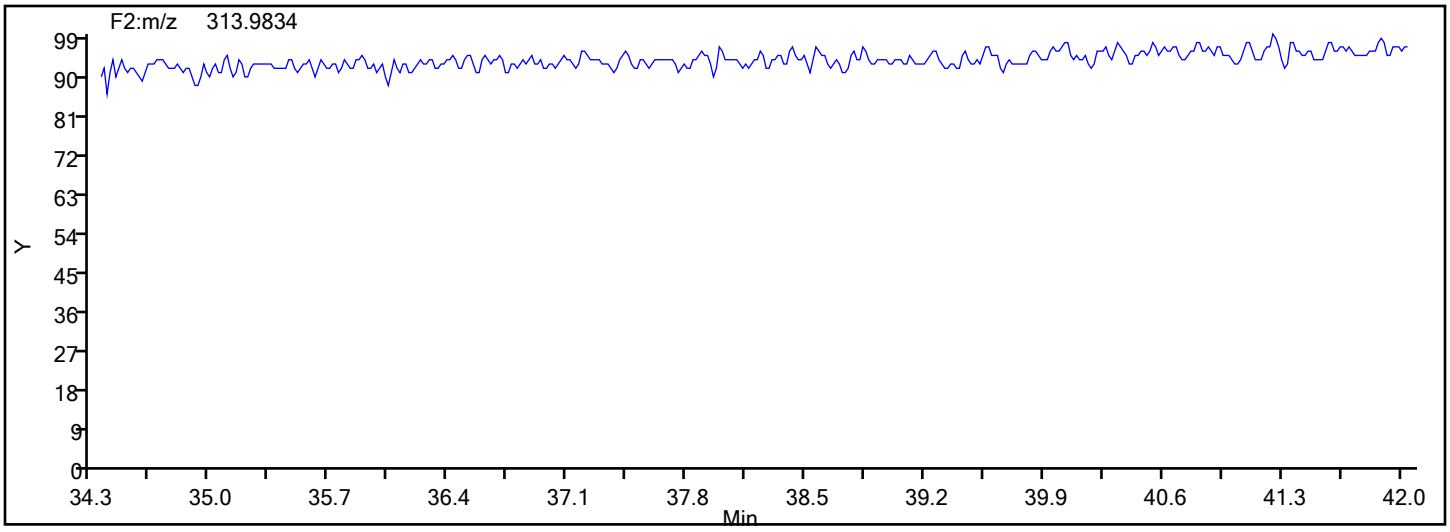

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Eurofins TestAmerica, Knoxville

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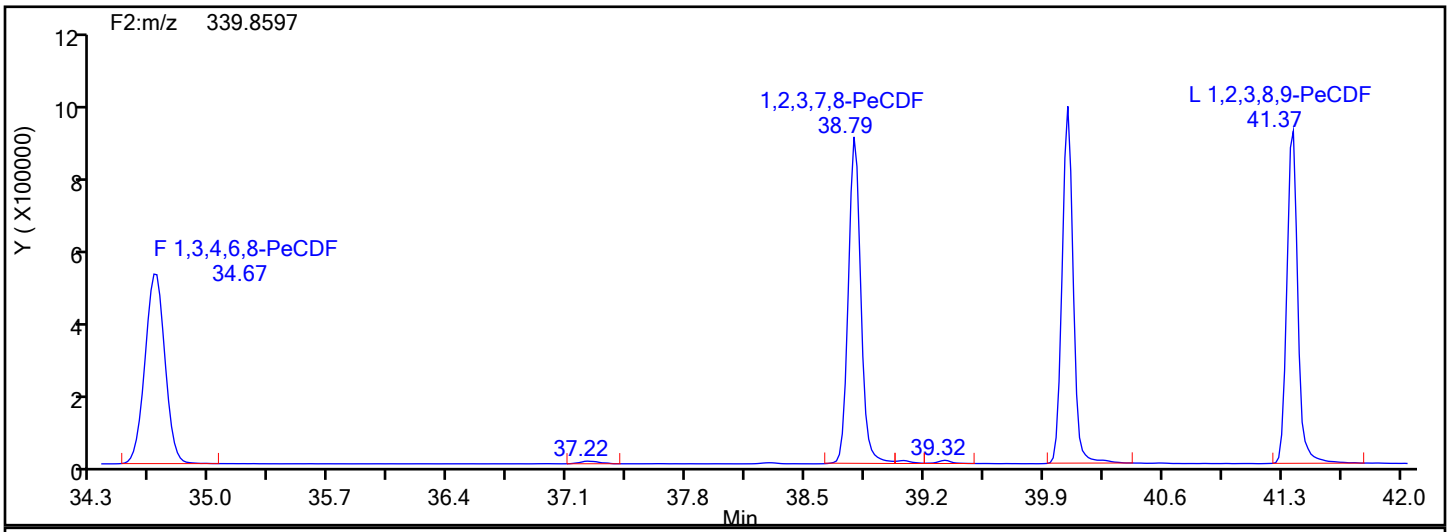

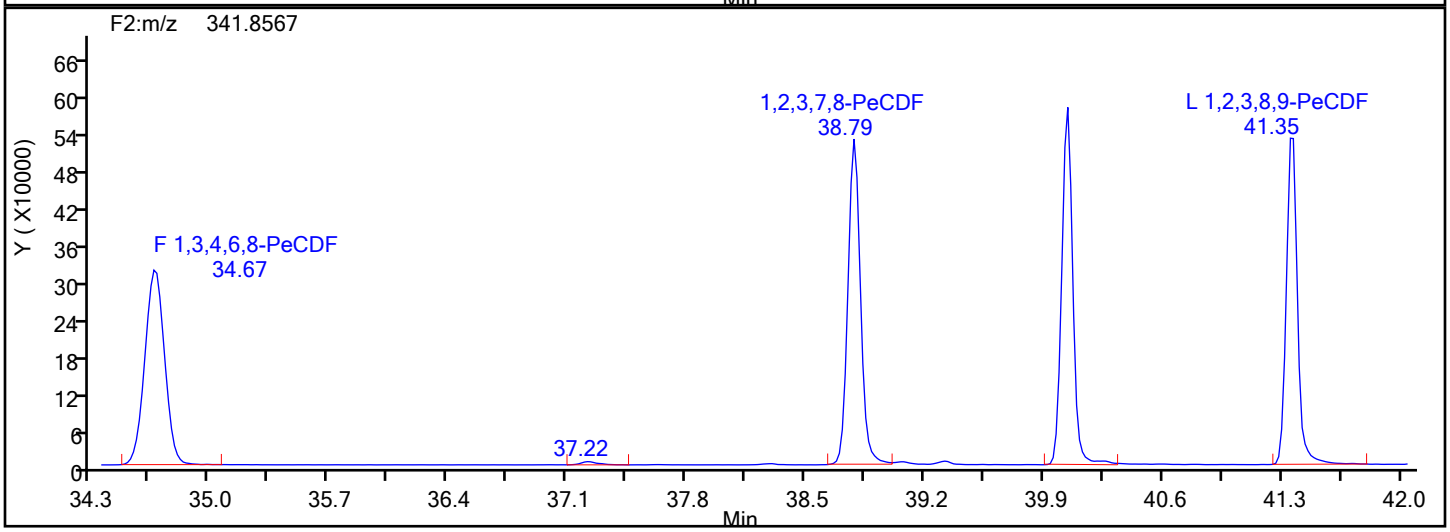

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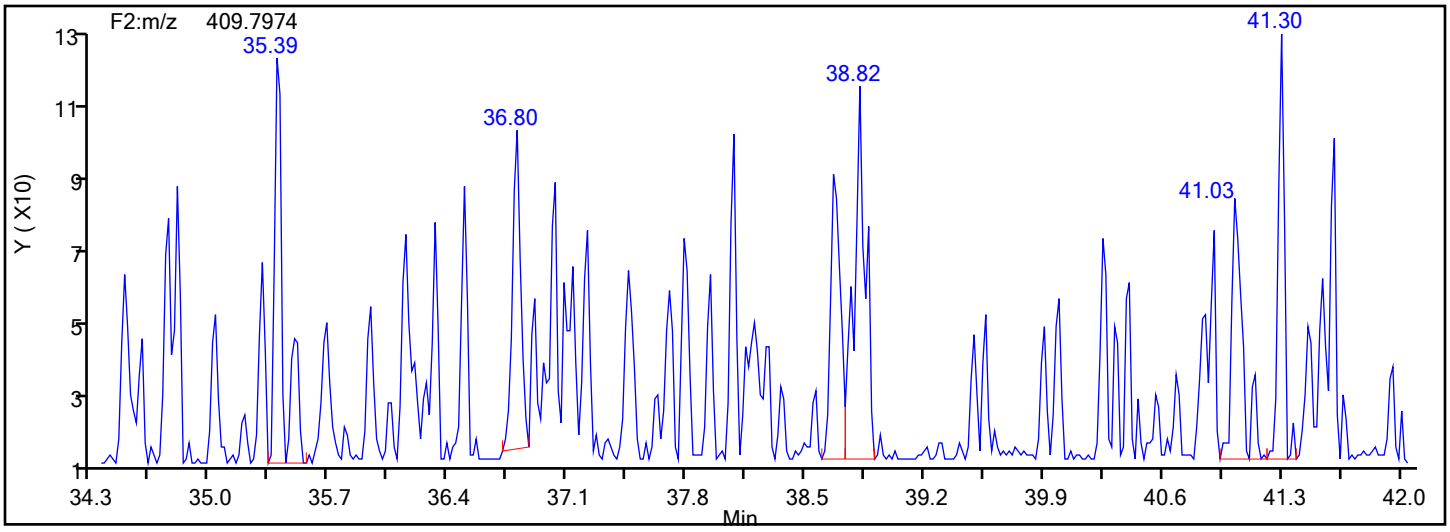

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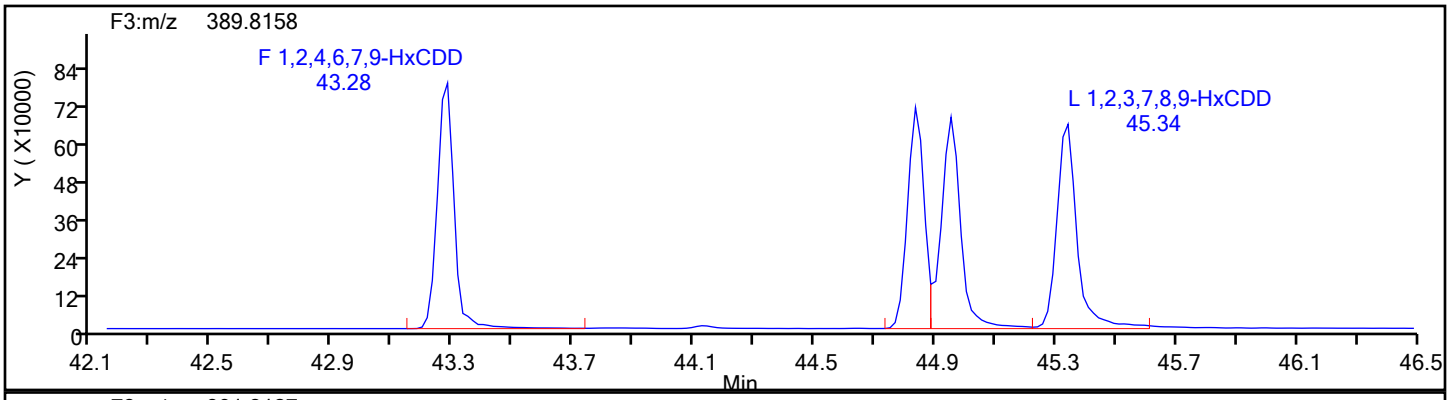
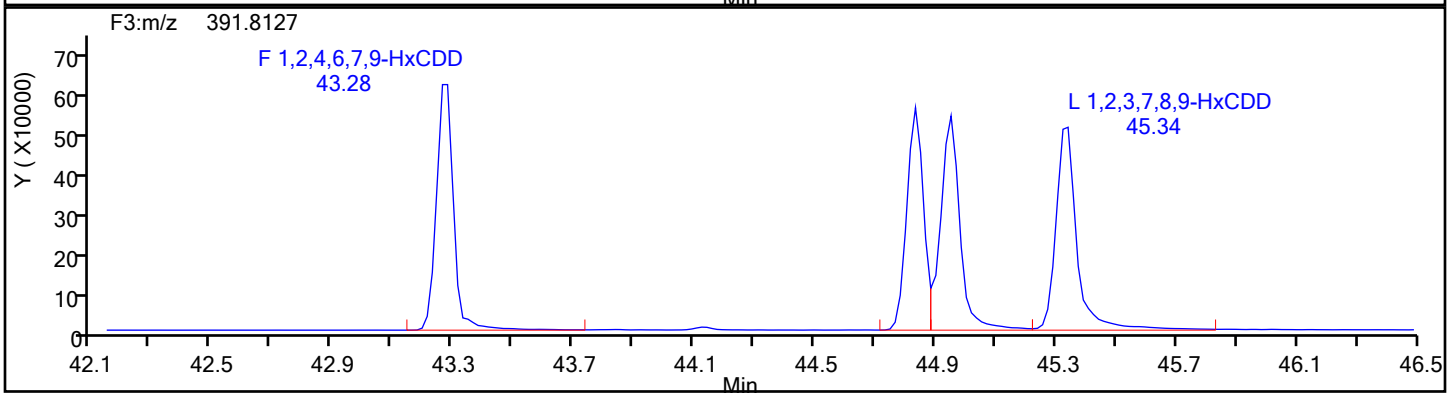
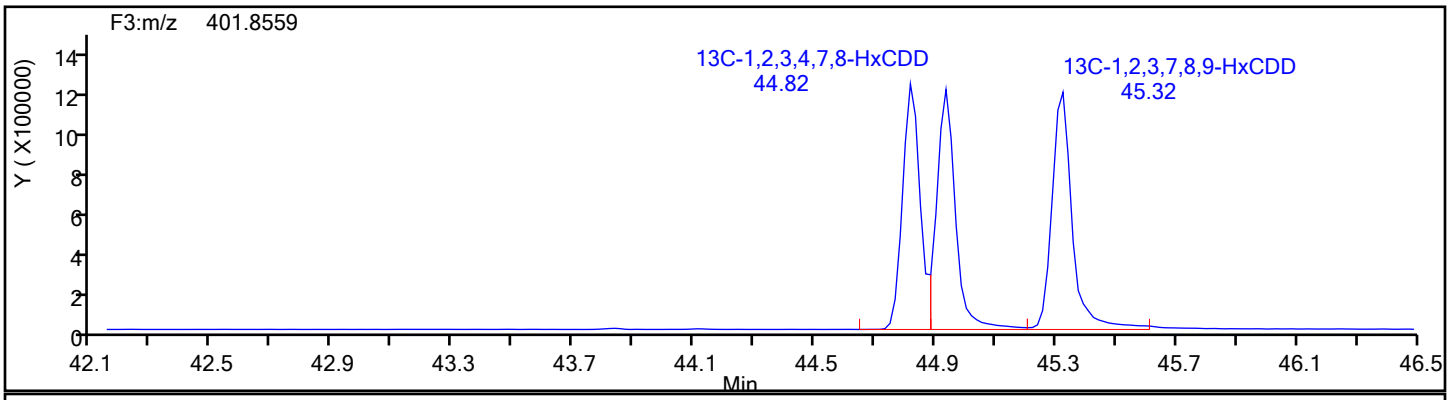
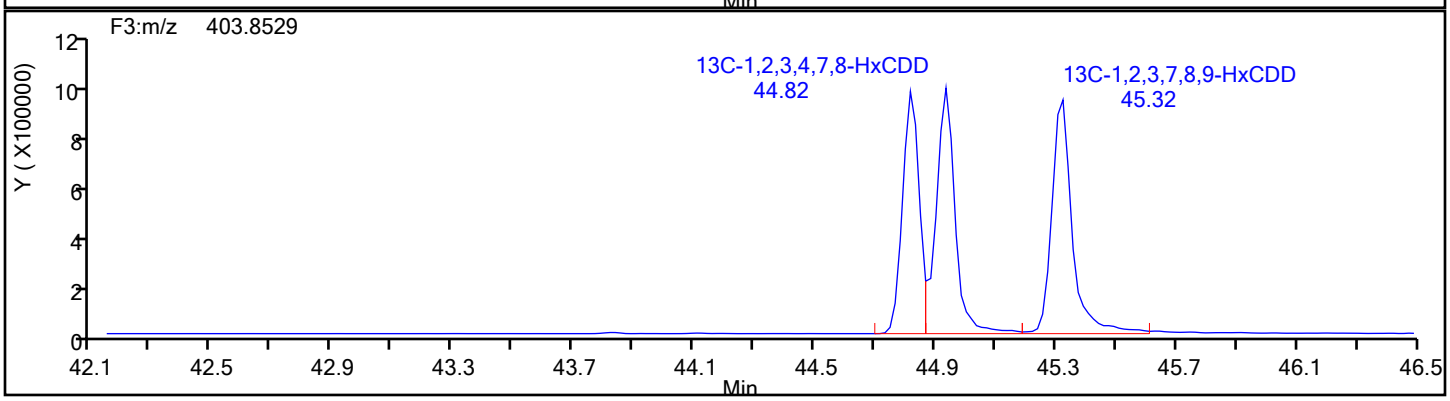




HxCDD Standards





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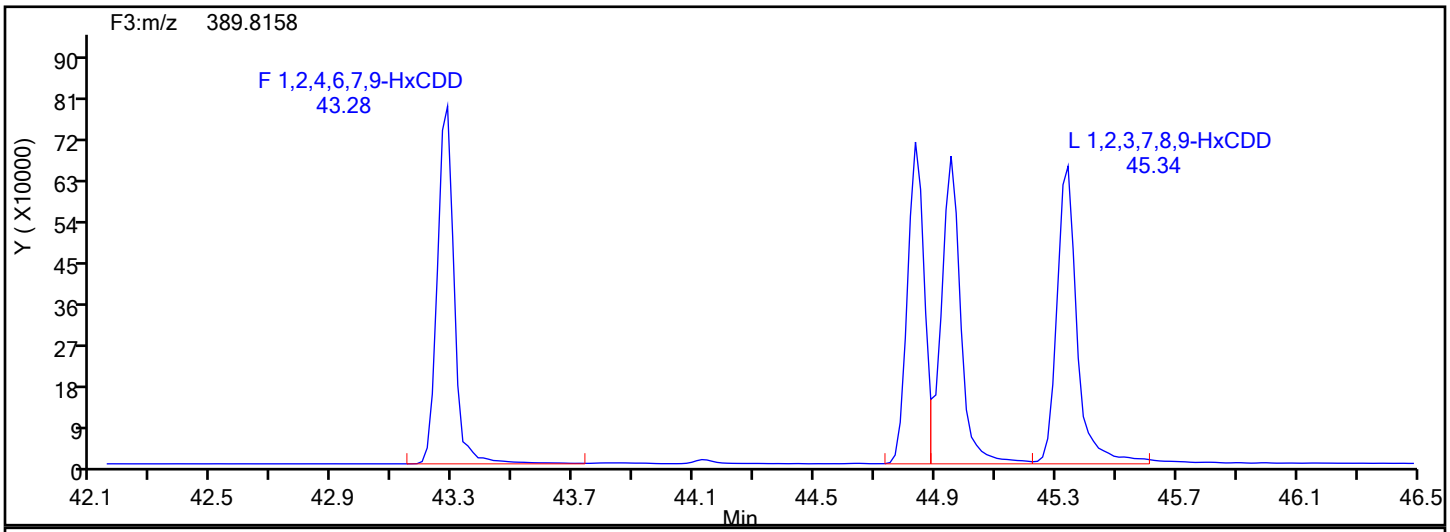

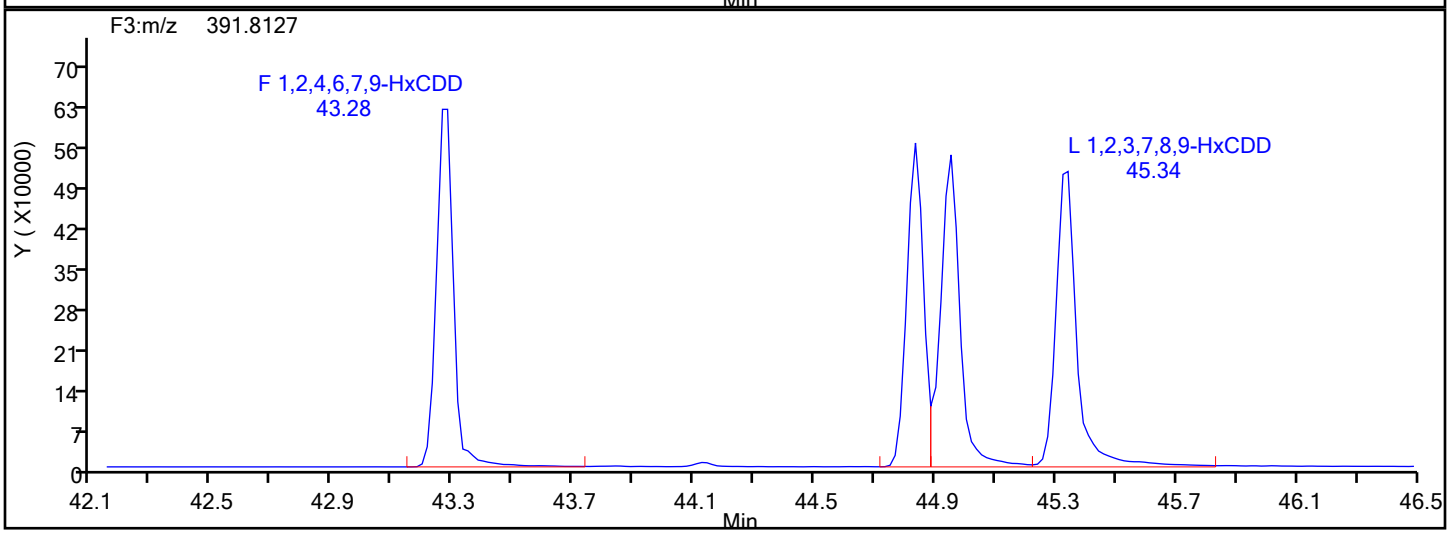

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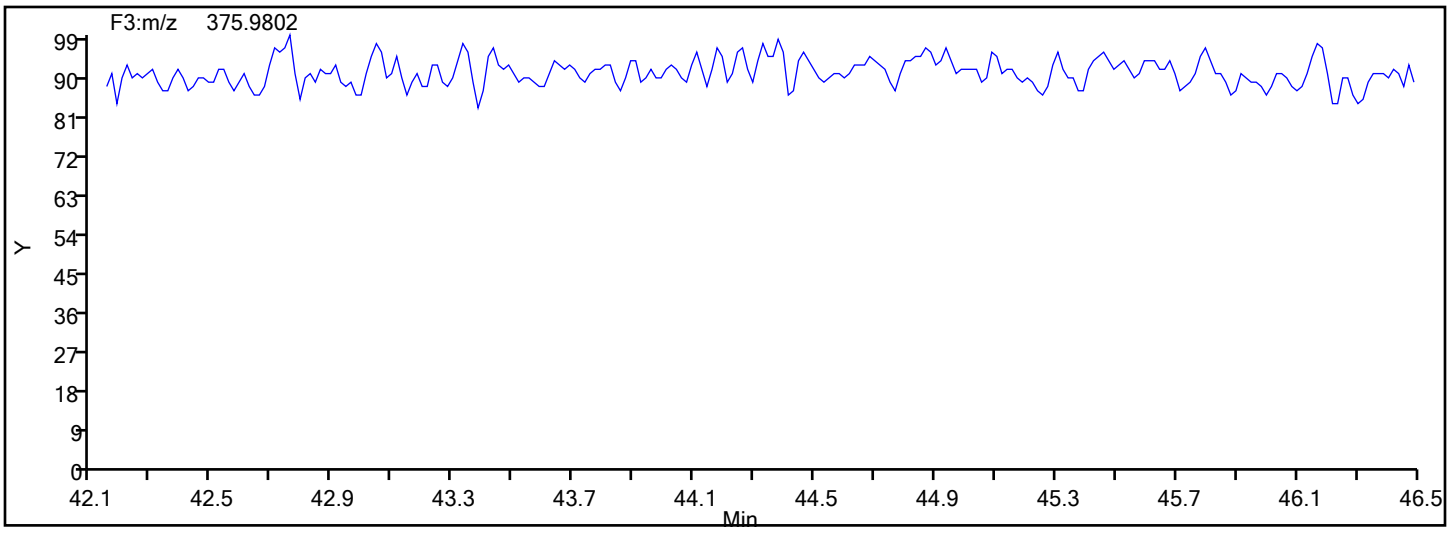

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Eurofins TestAmerica, Knoxville

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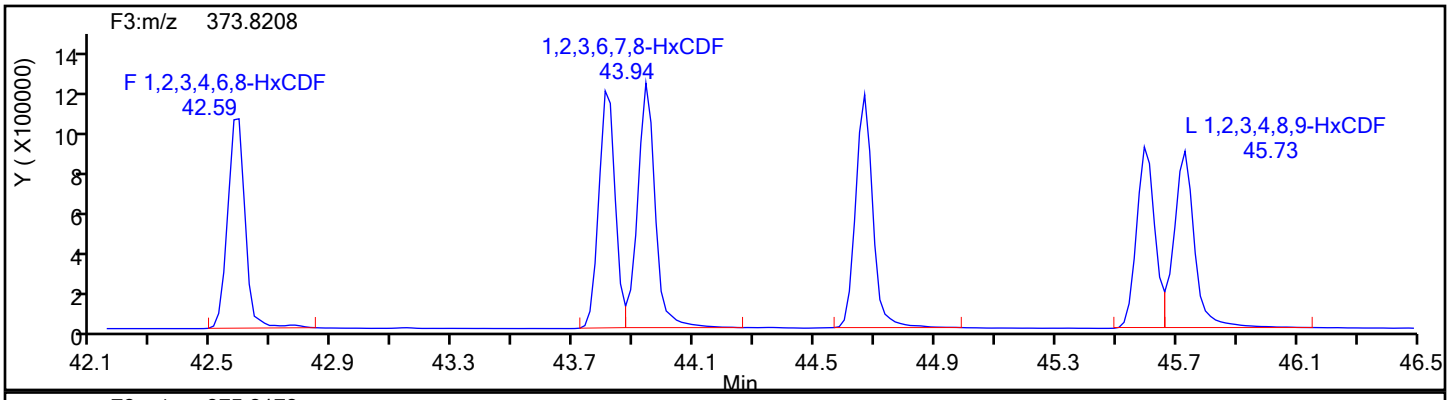
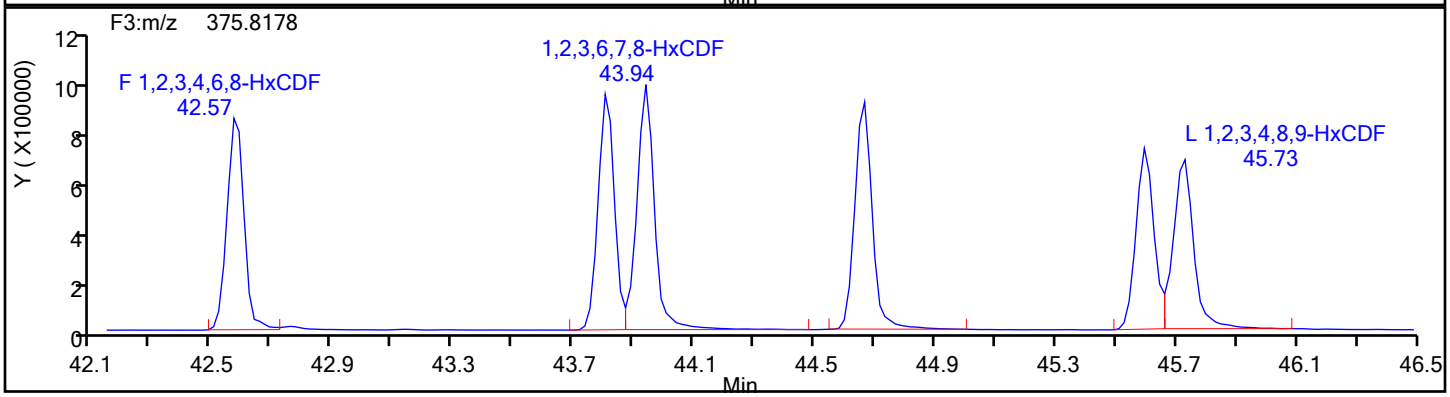
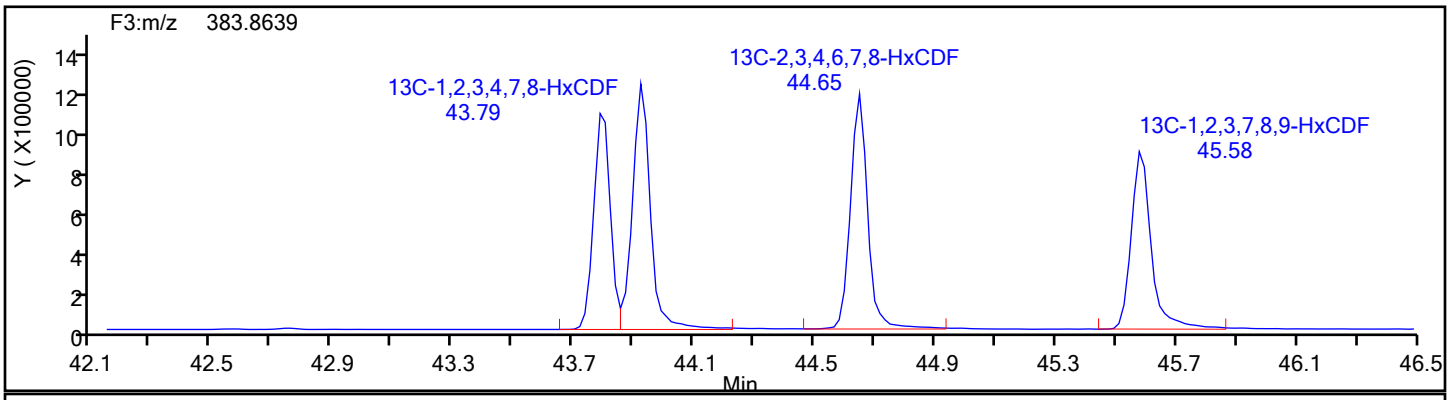
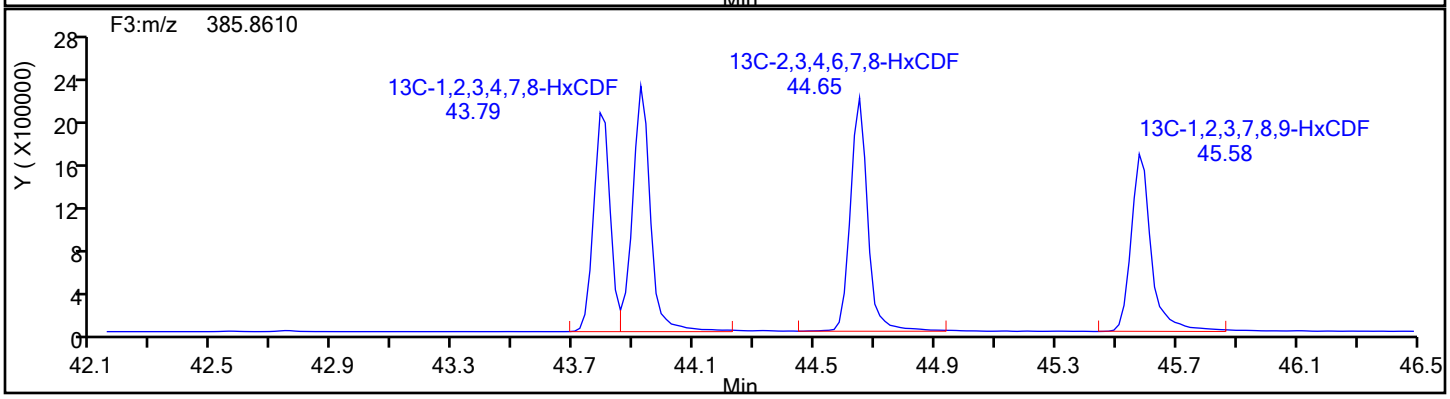




HxCDF Standards





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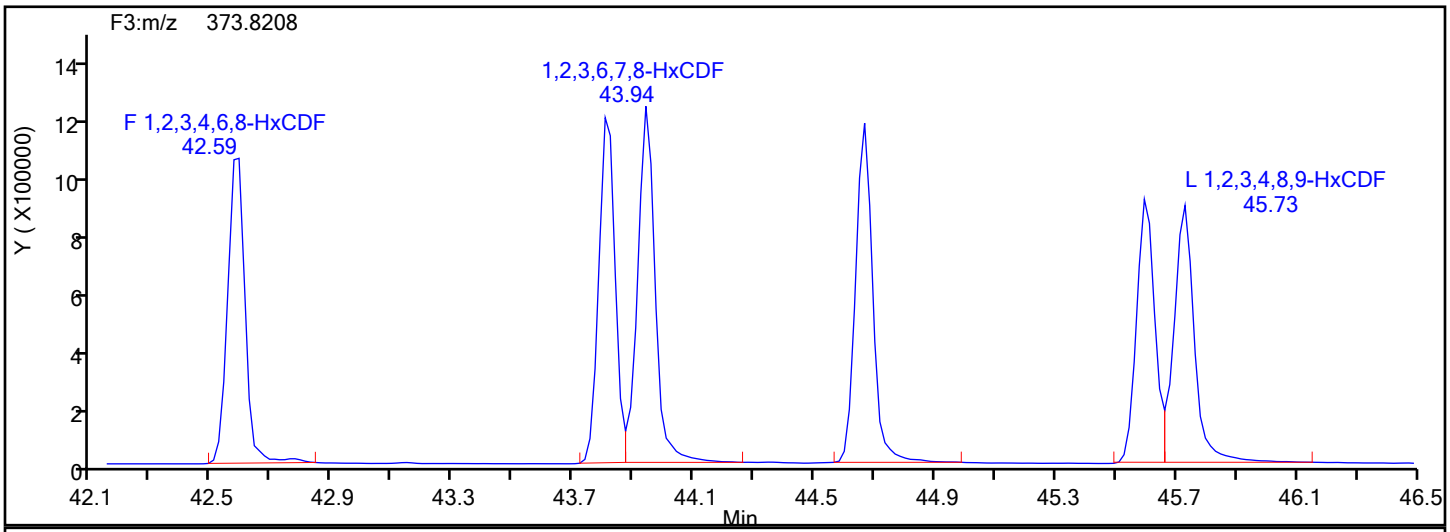

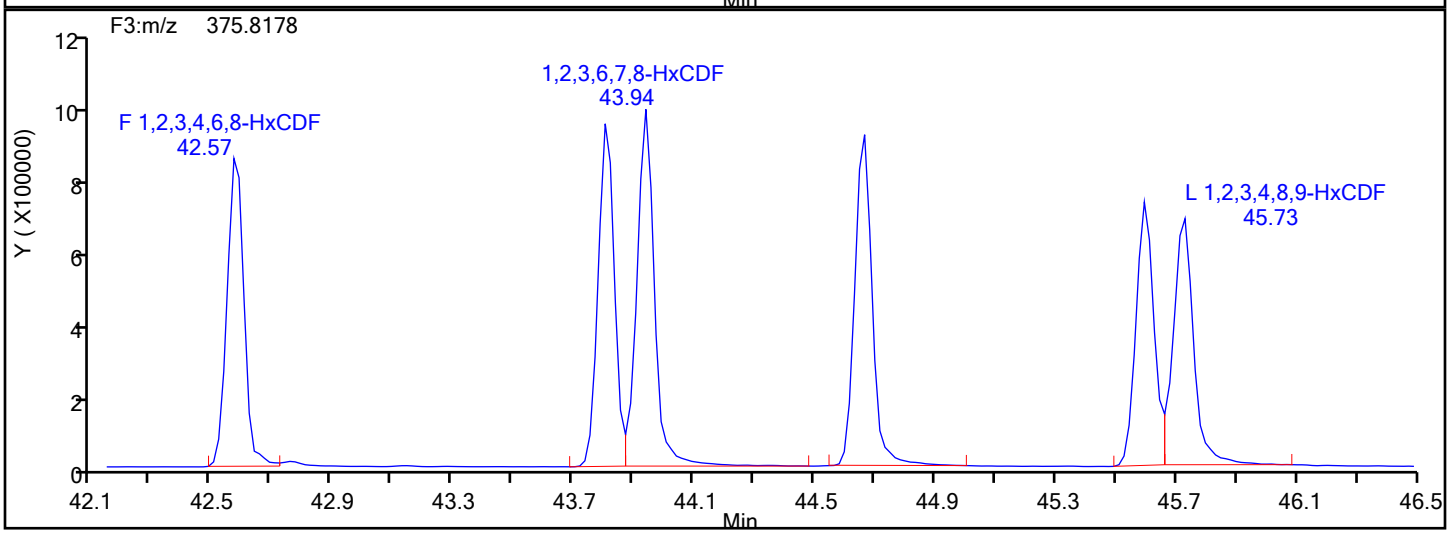

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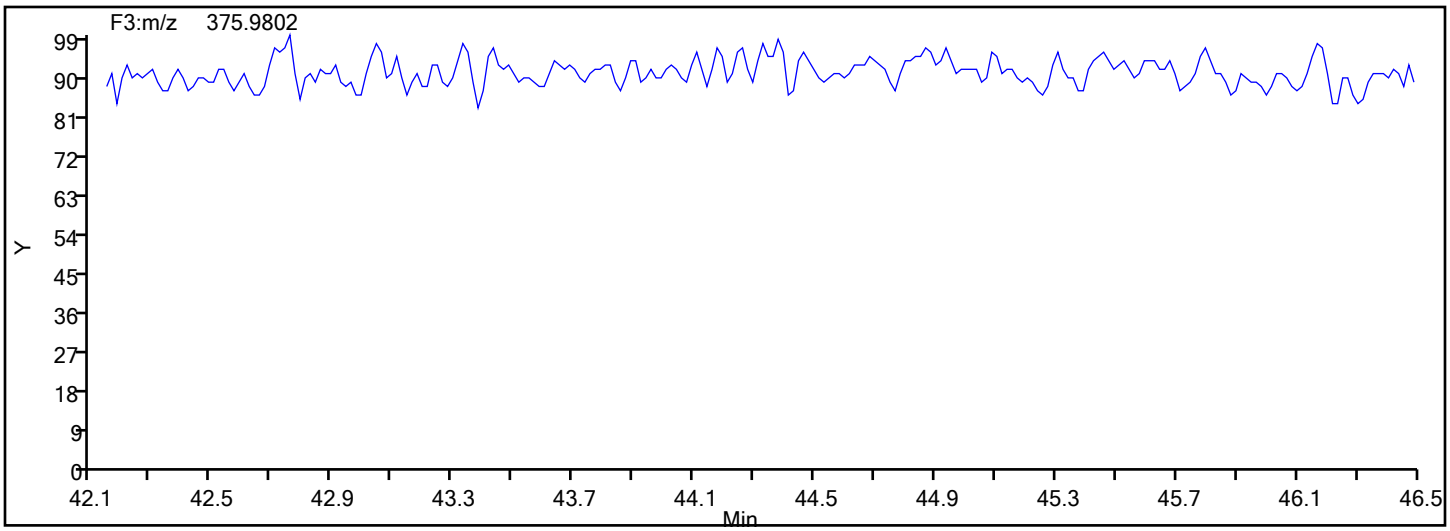

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Eurofins TestAmerica, Knoxville

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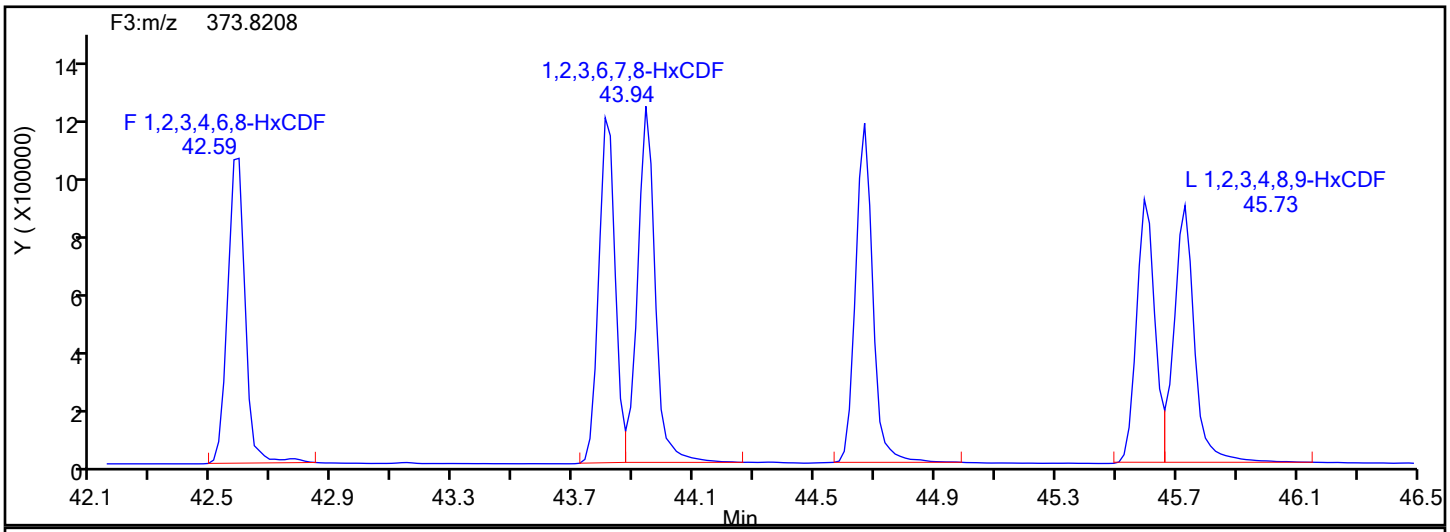

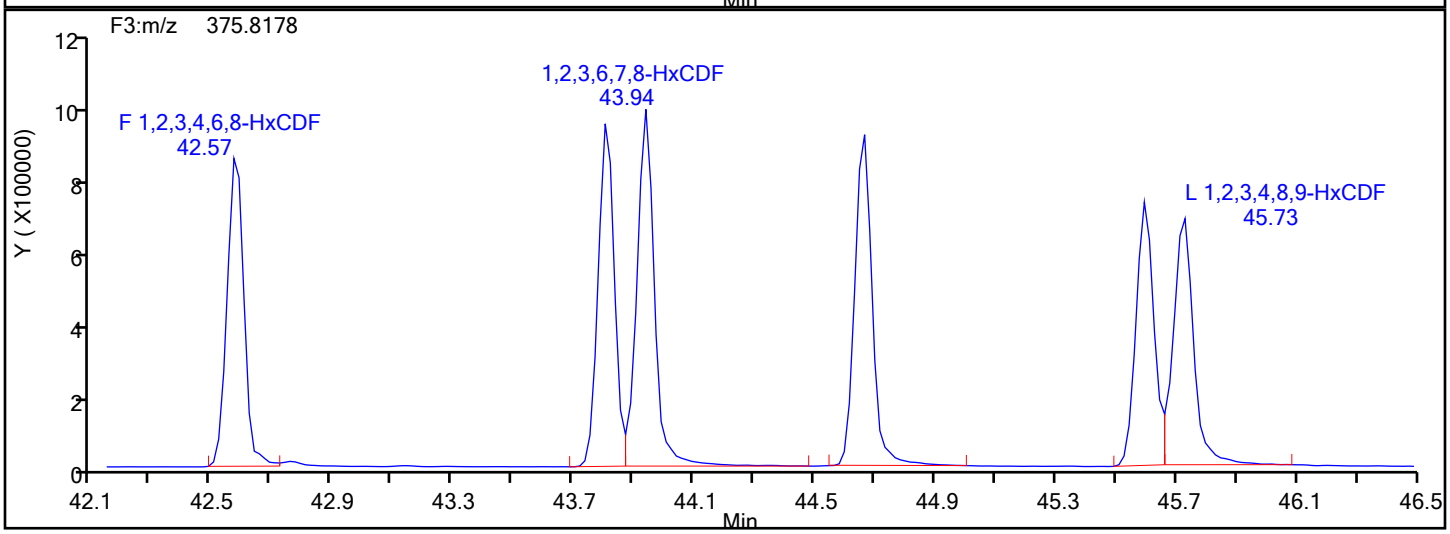

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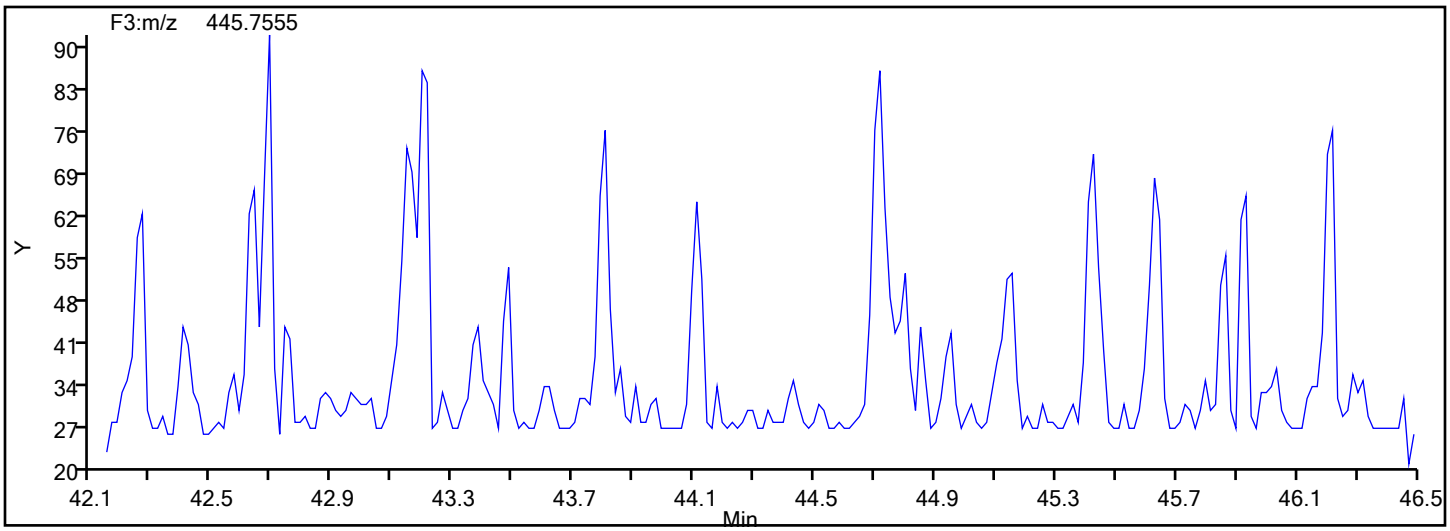

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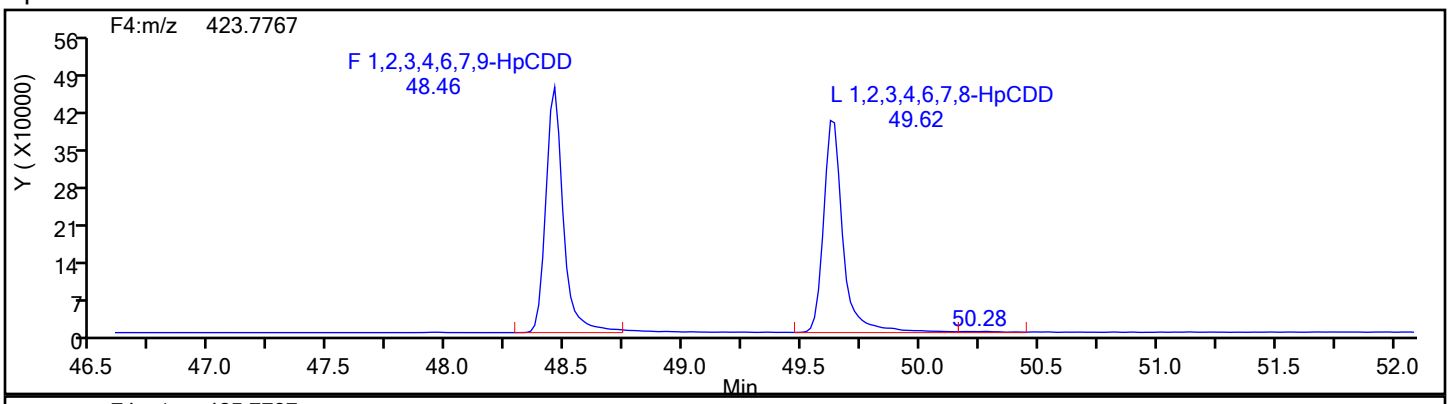
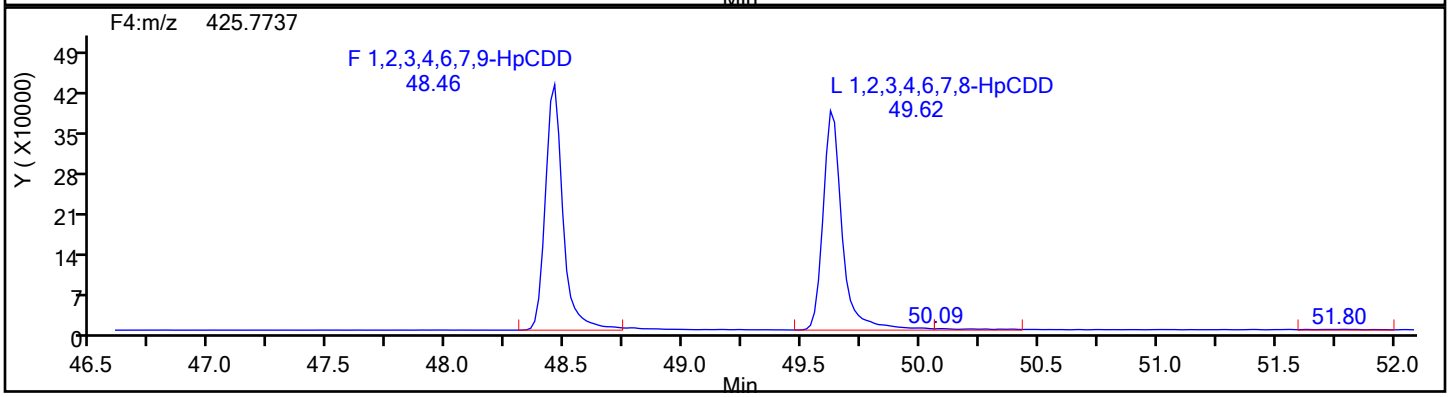
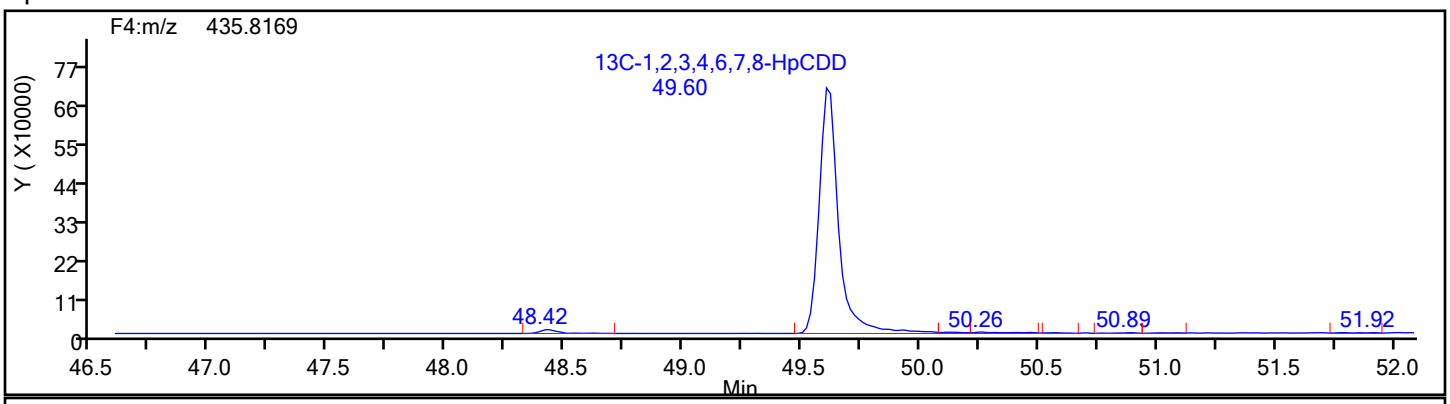
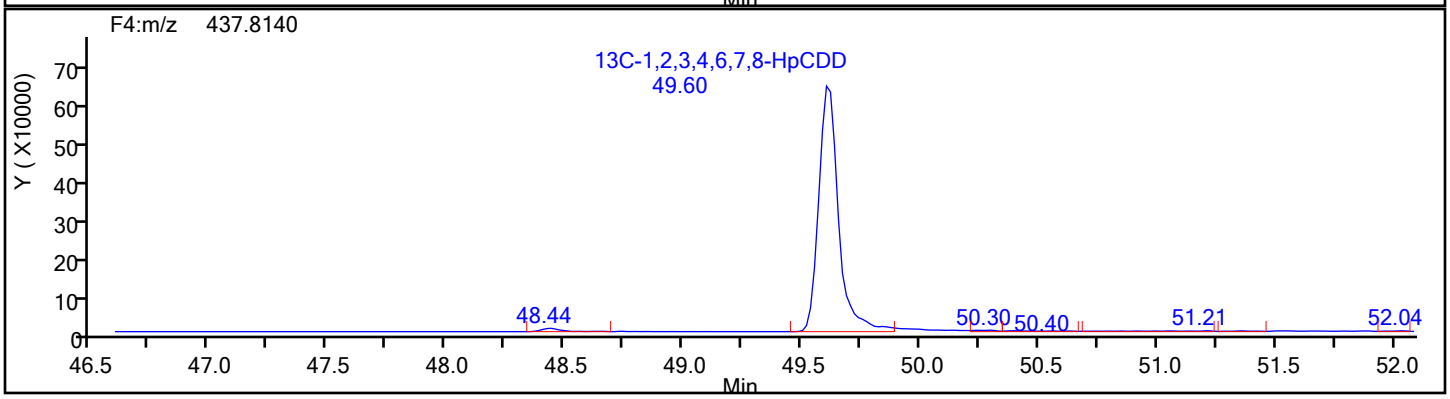




HpCDD Standards





Report Date: 17-Dec-2019 02:15:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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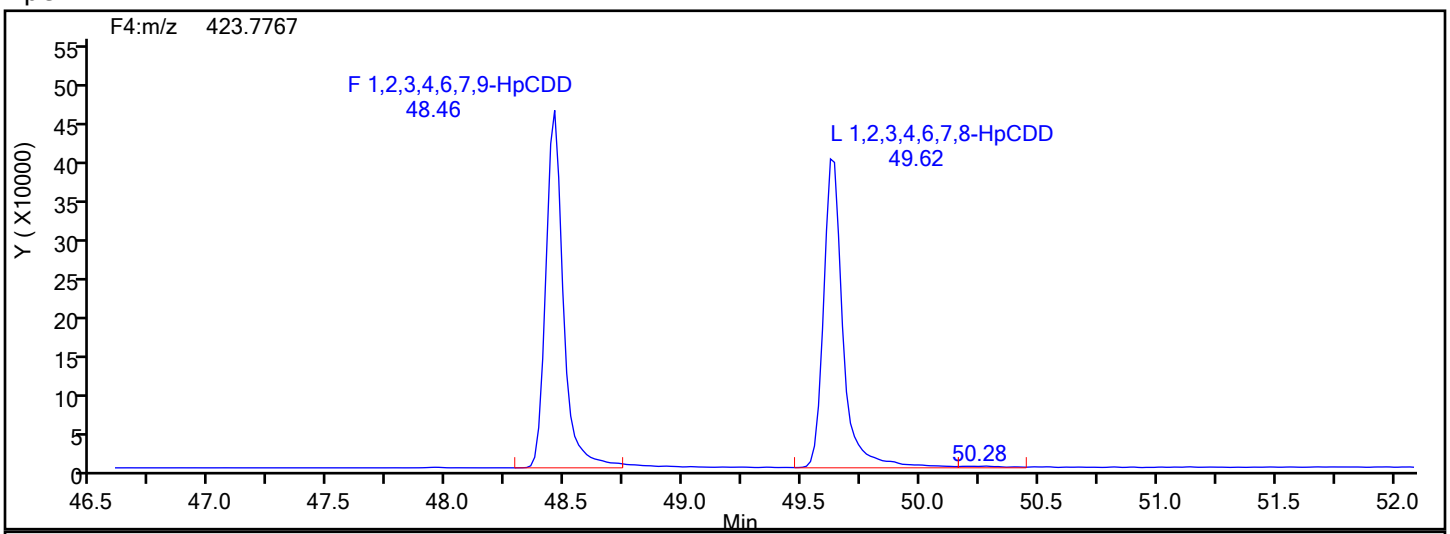
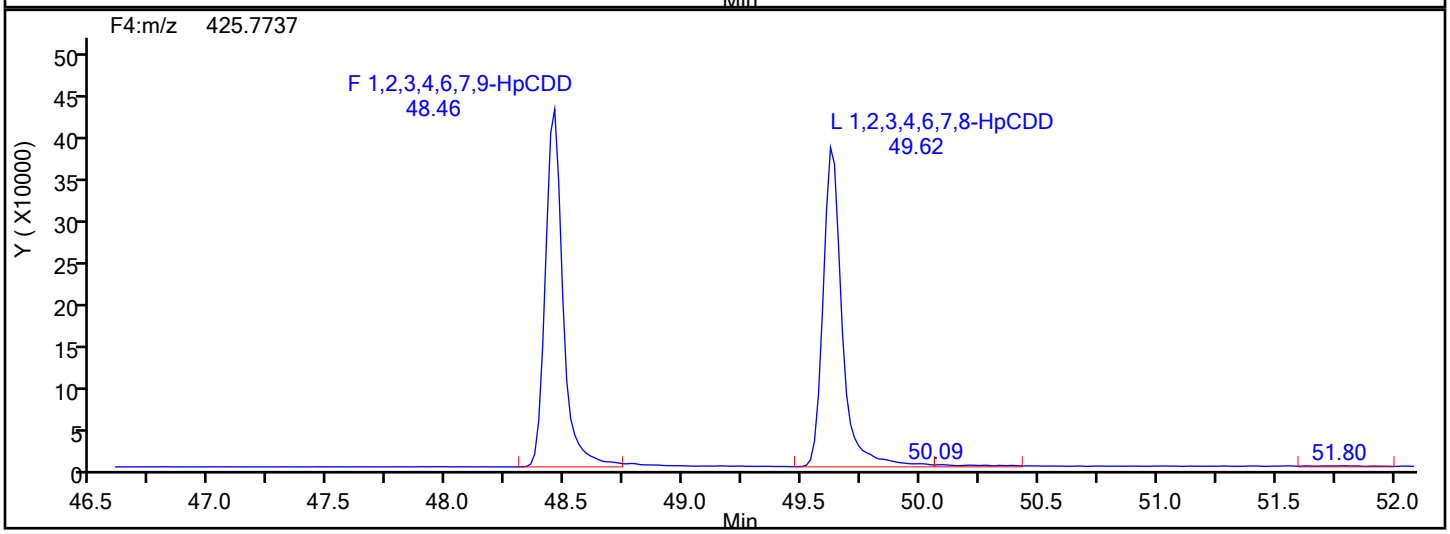
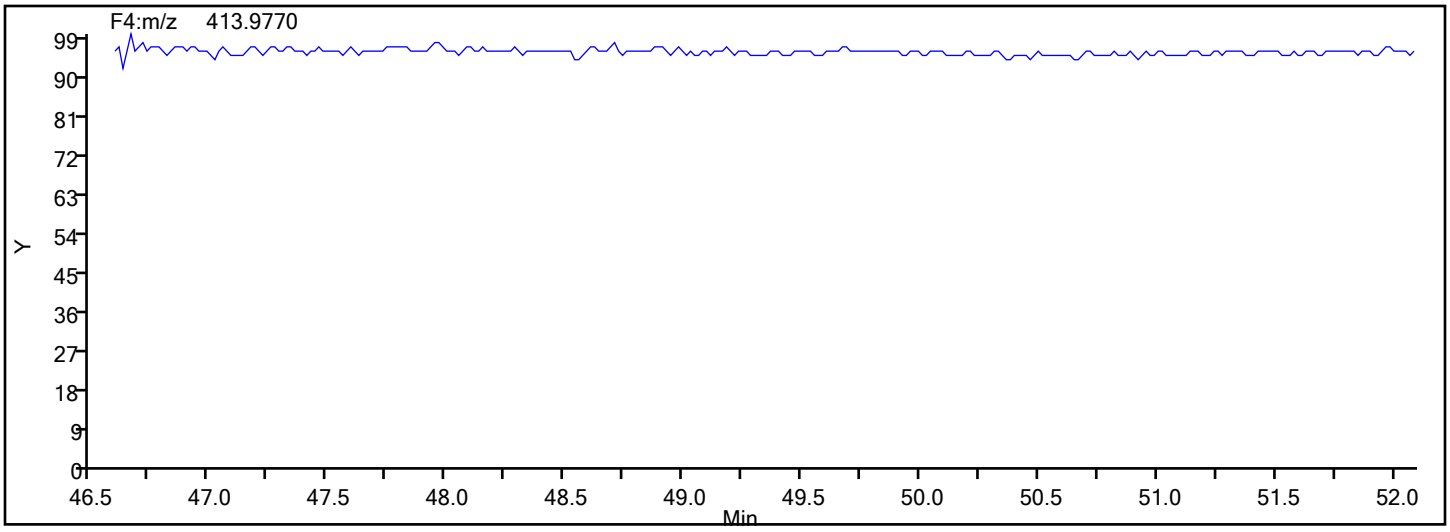
Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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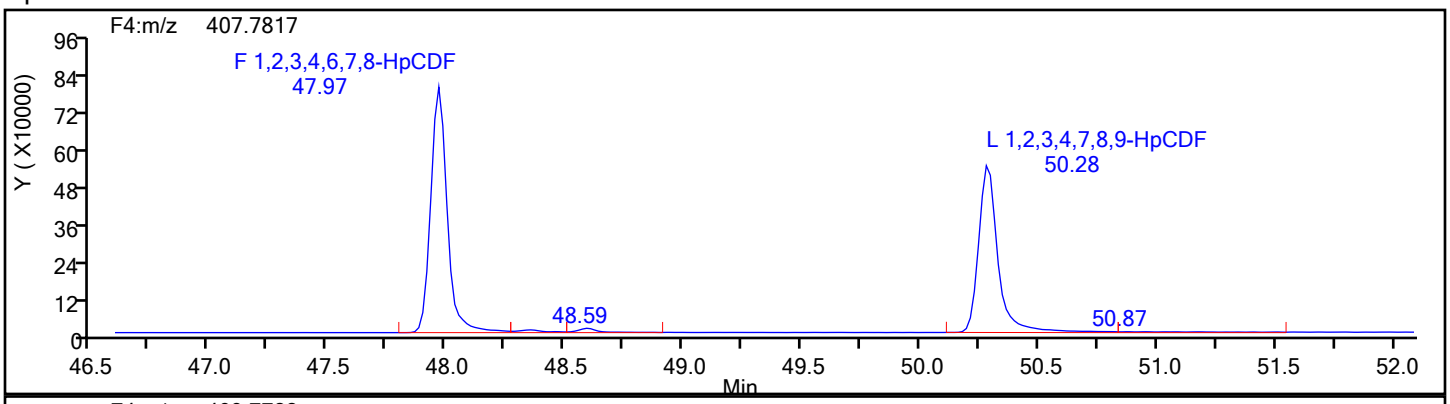
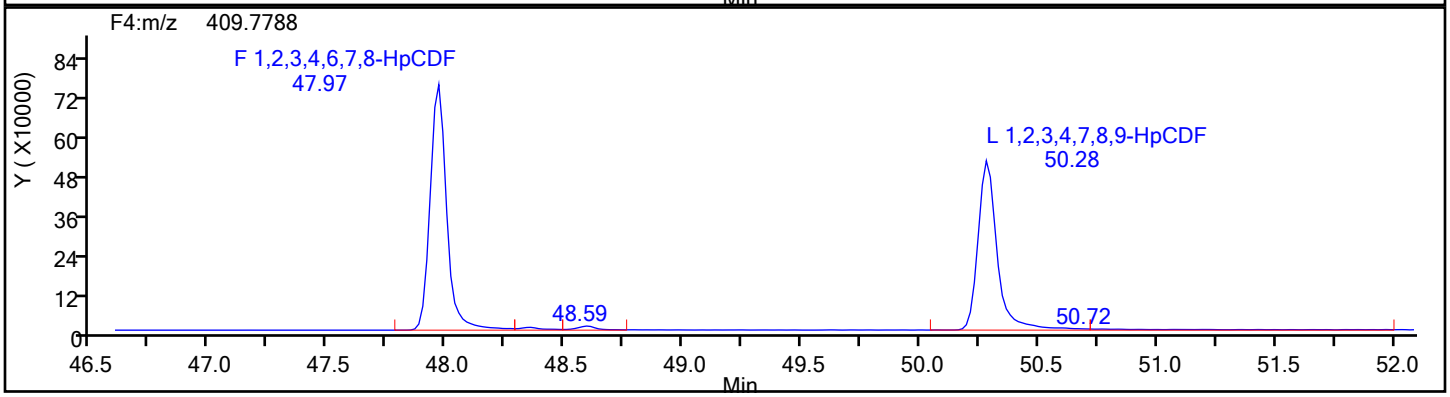
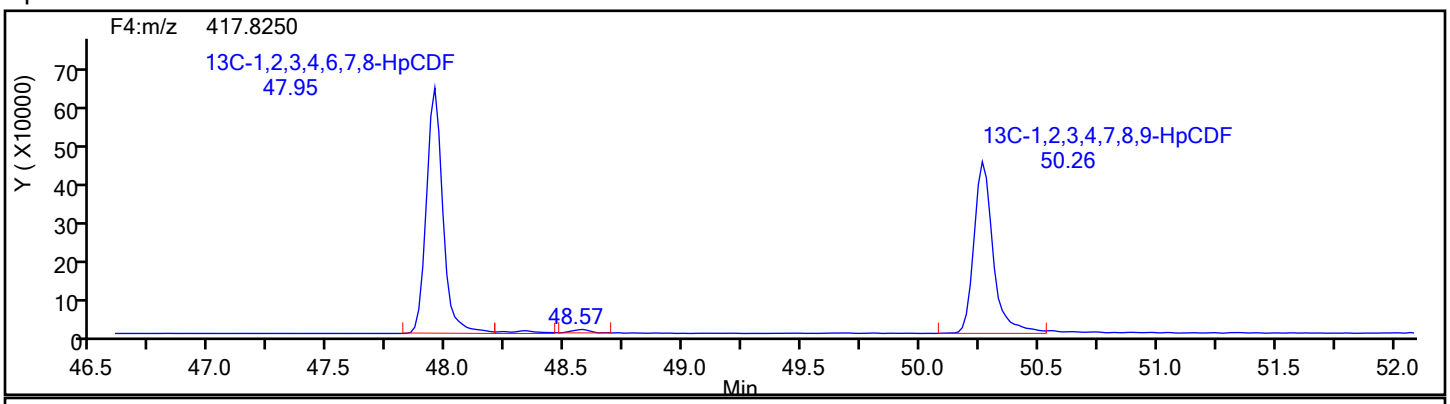
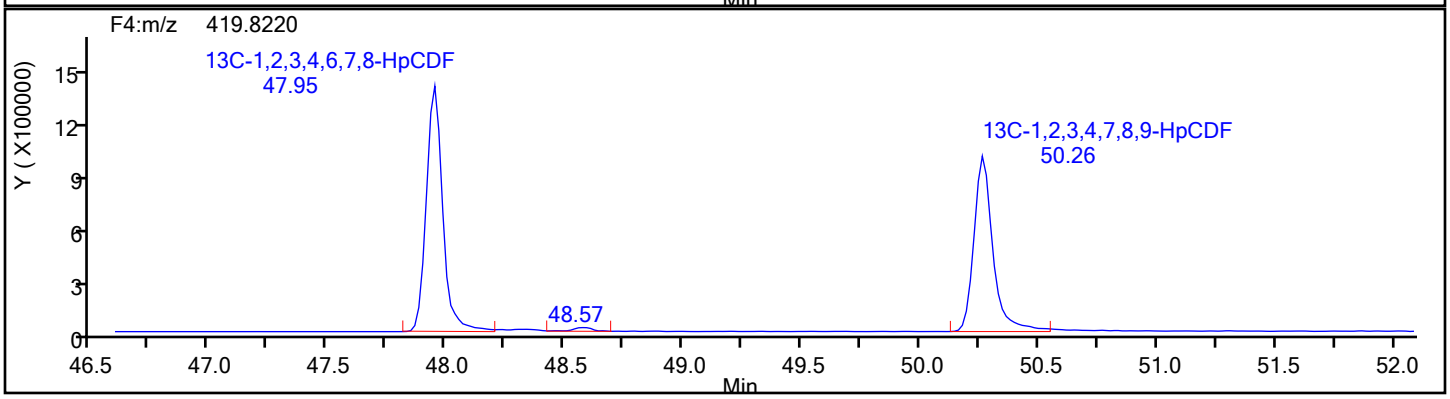
HpCDF





HpCDF Standards





Eurofins TestAmerica, Knoxville

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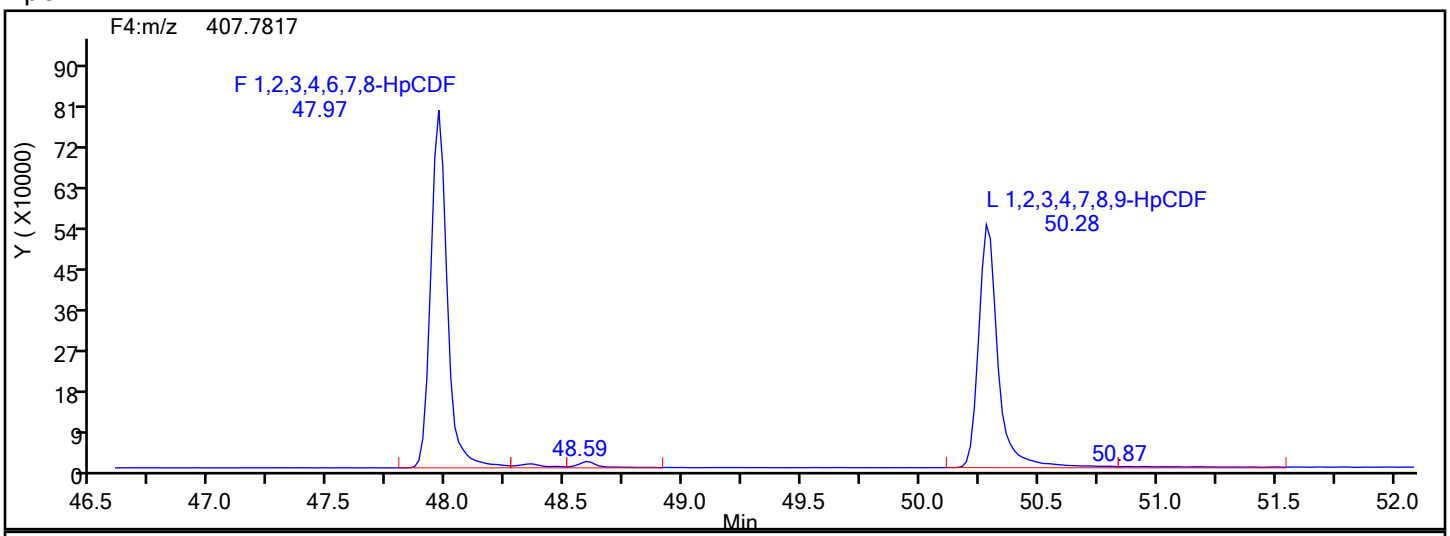
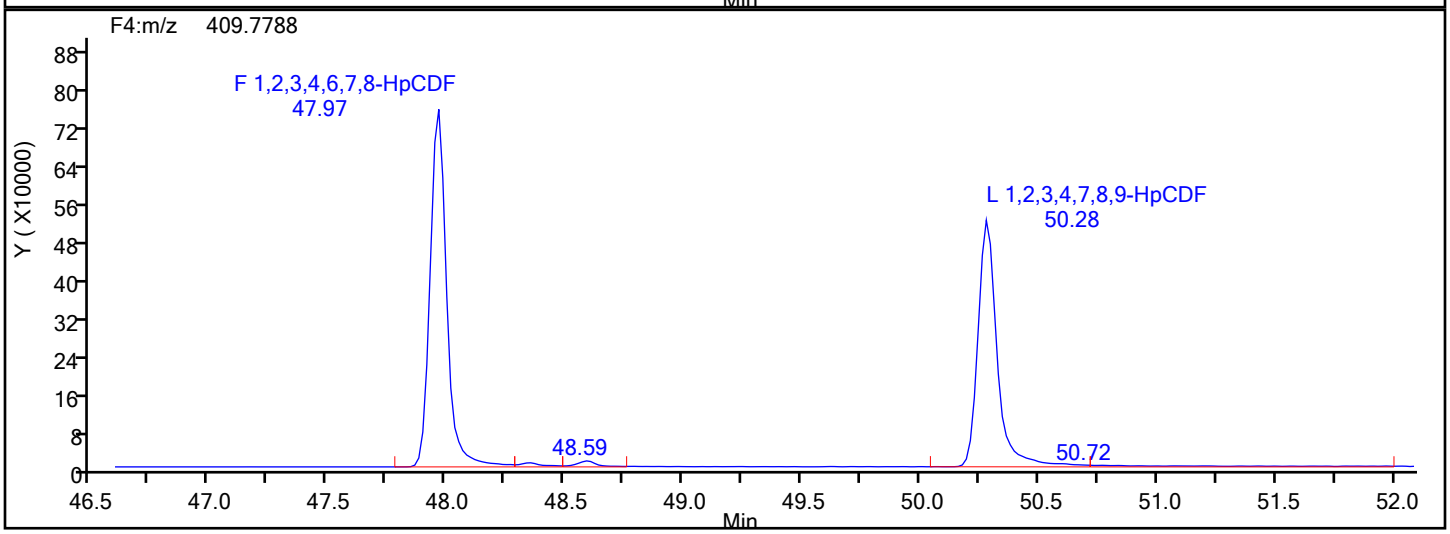
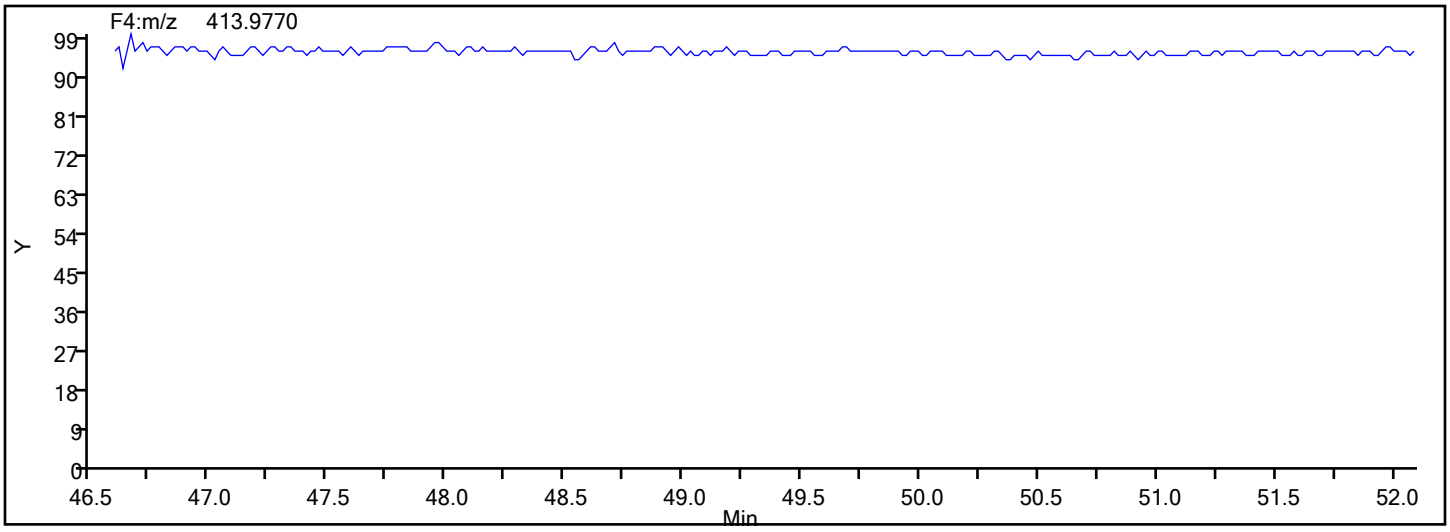
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	1
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass



Report Date: 17-Dec-2019 02:15:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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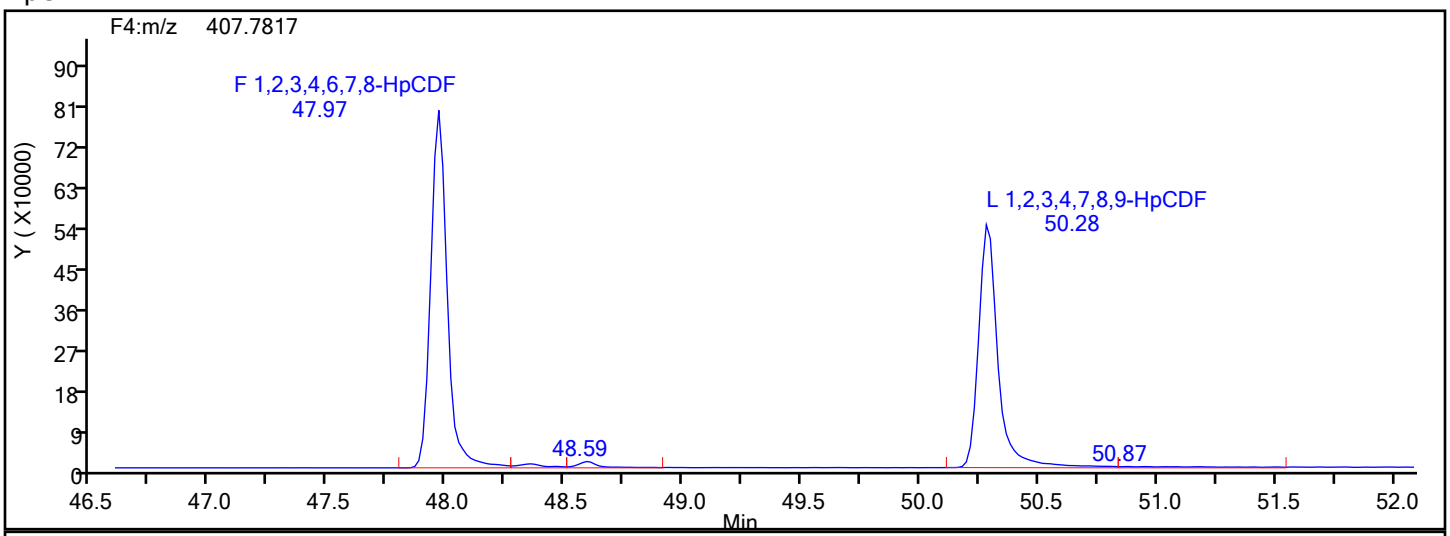
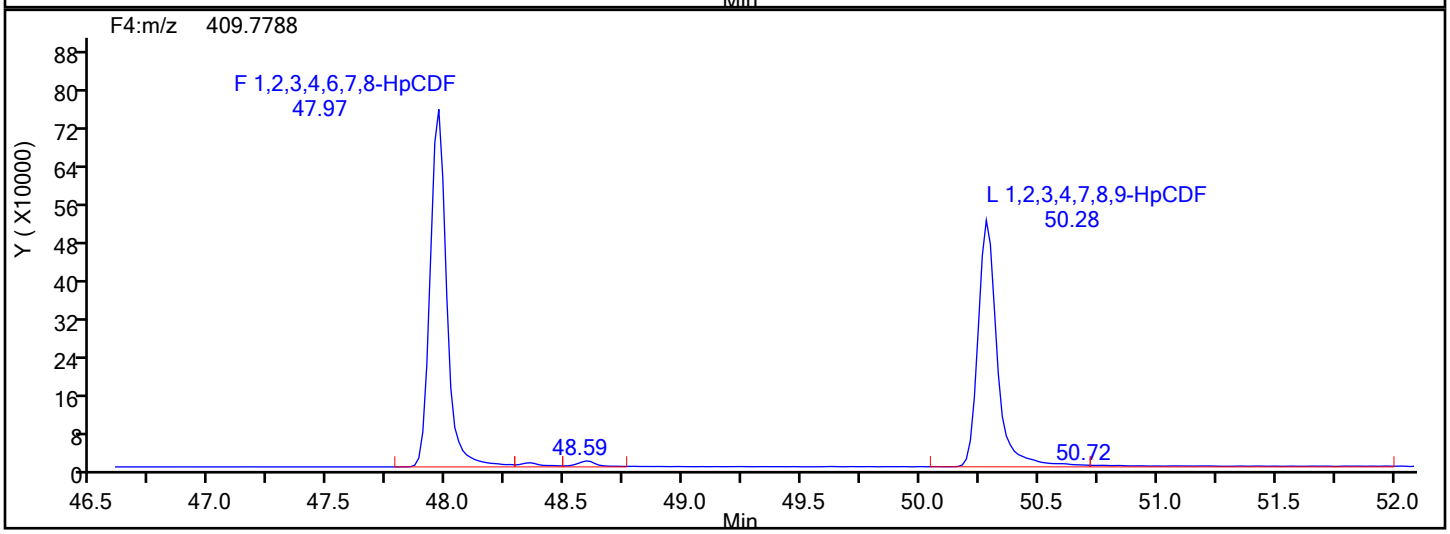
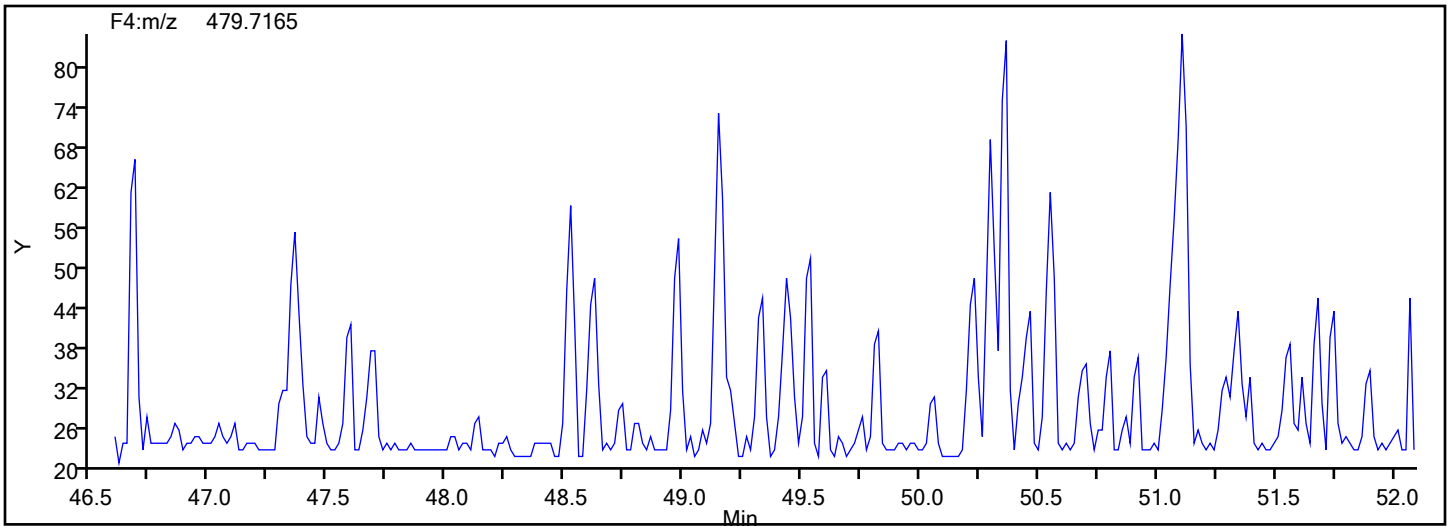




HpCDF Interference Mass



Report Date: 17-Dec-2019 02:15:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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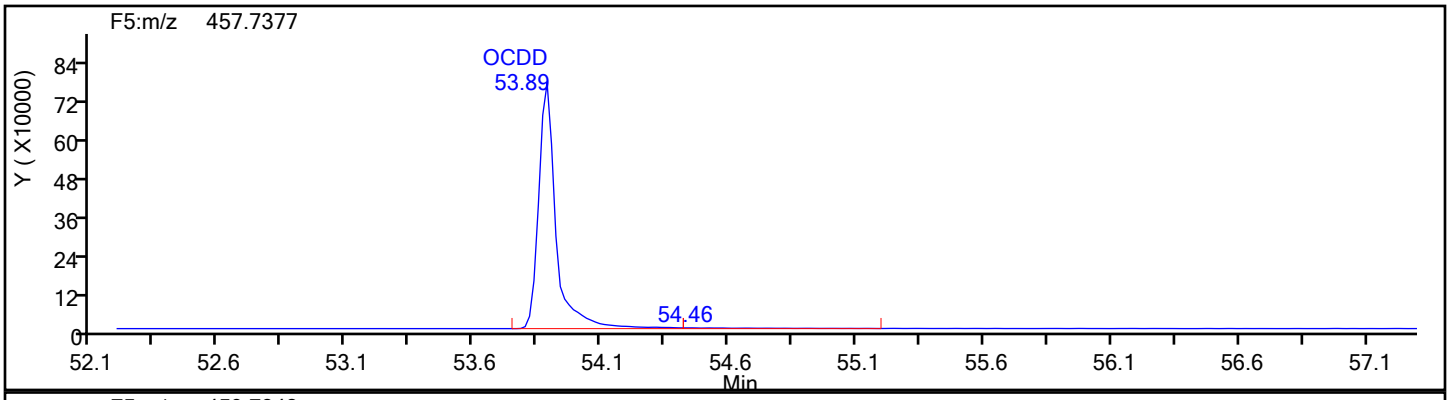
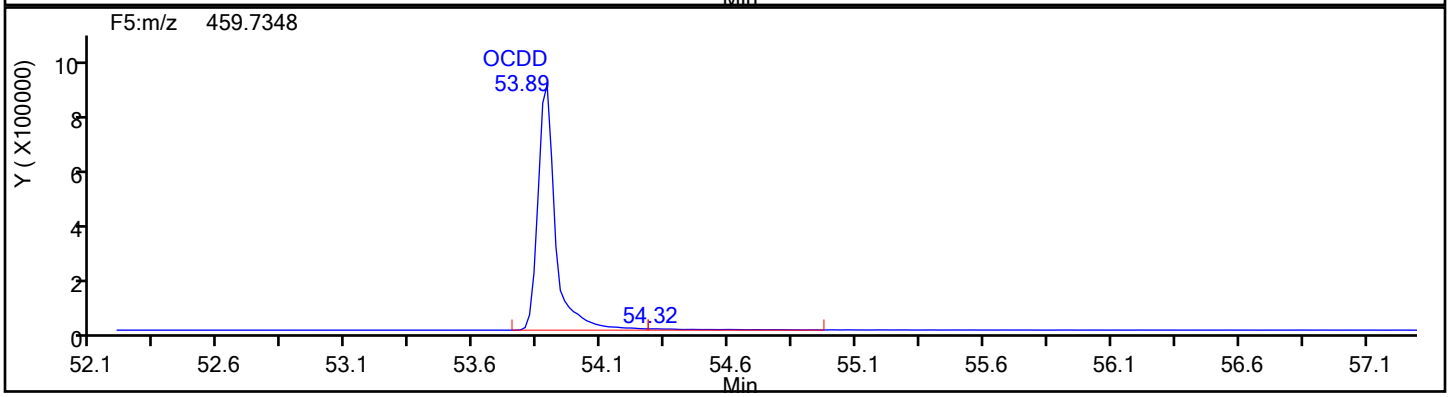
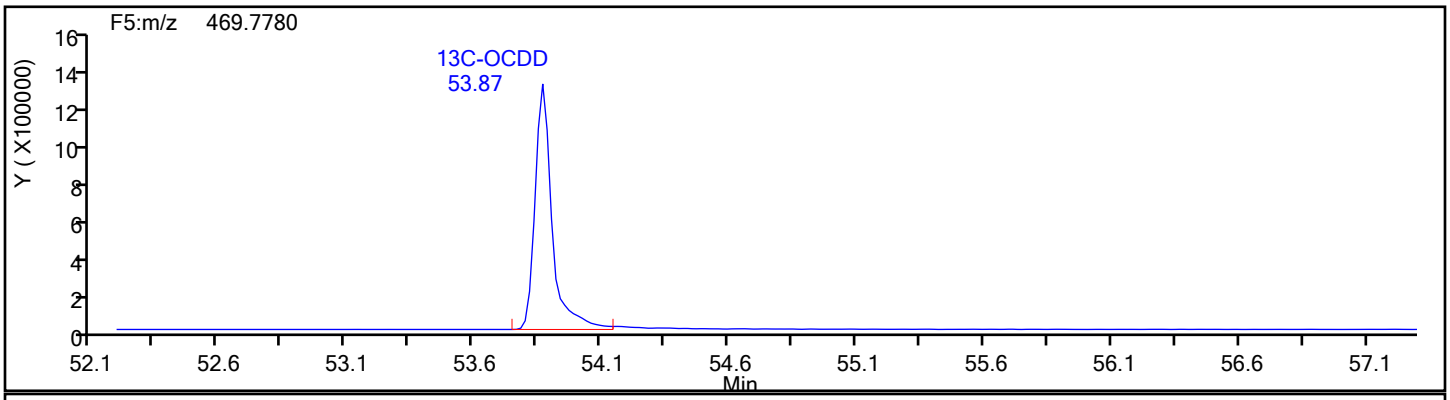
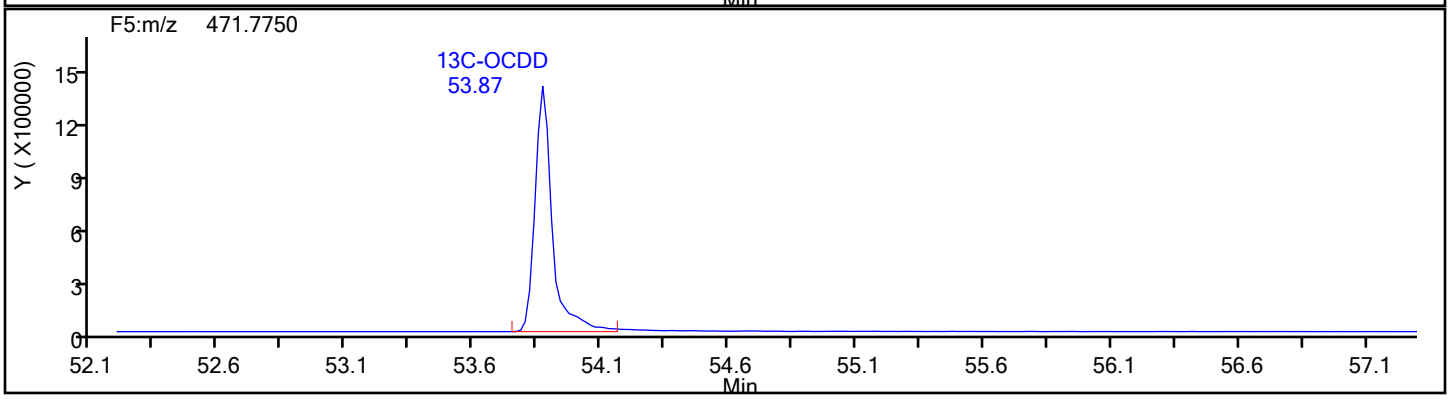




OCDD Standards





Report Date: 17-Dec-2019 02:15:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Client ID:			
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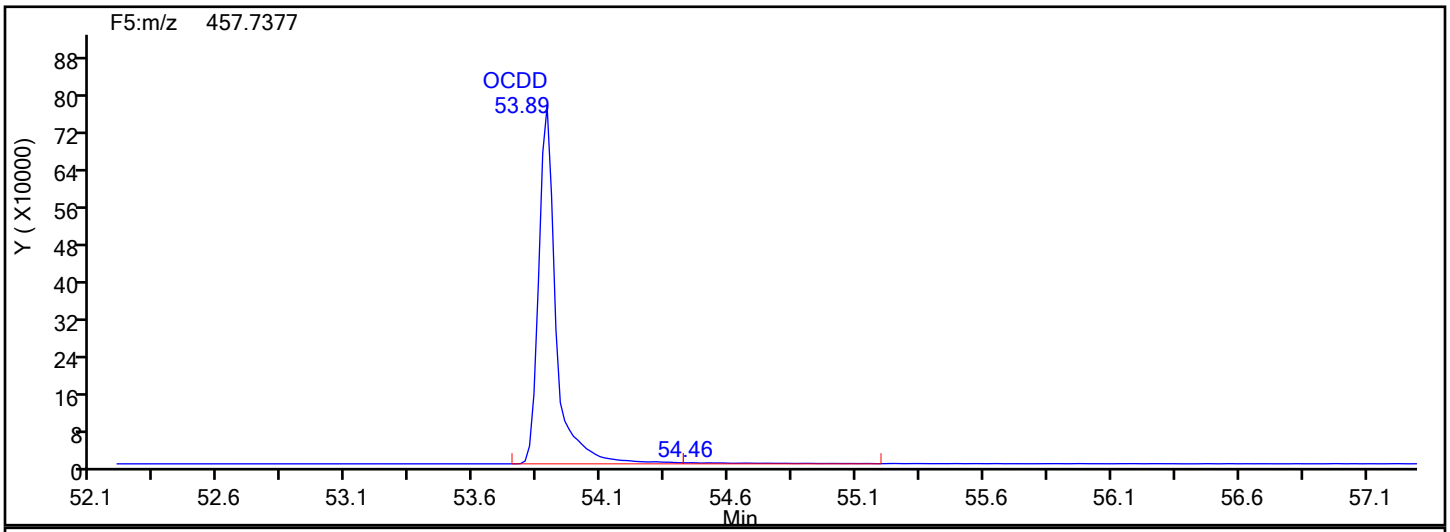
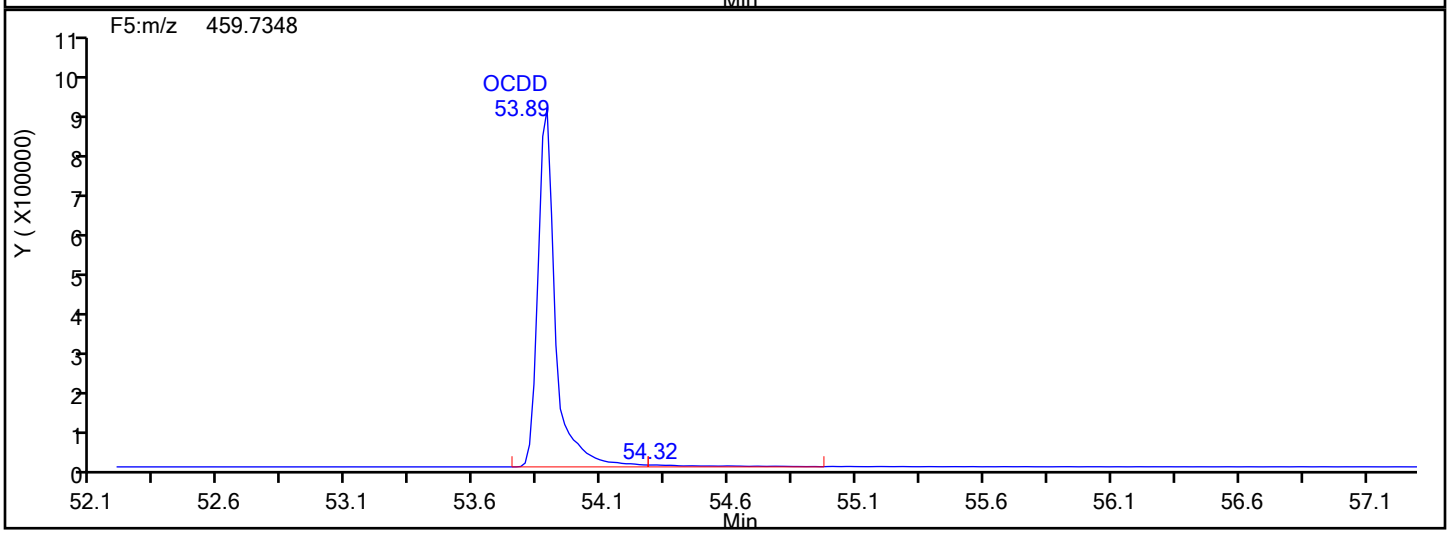
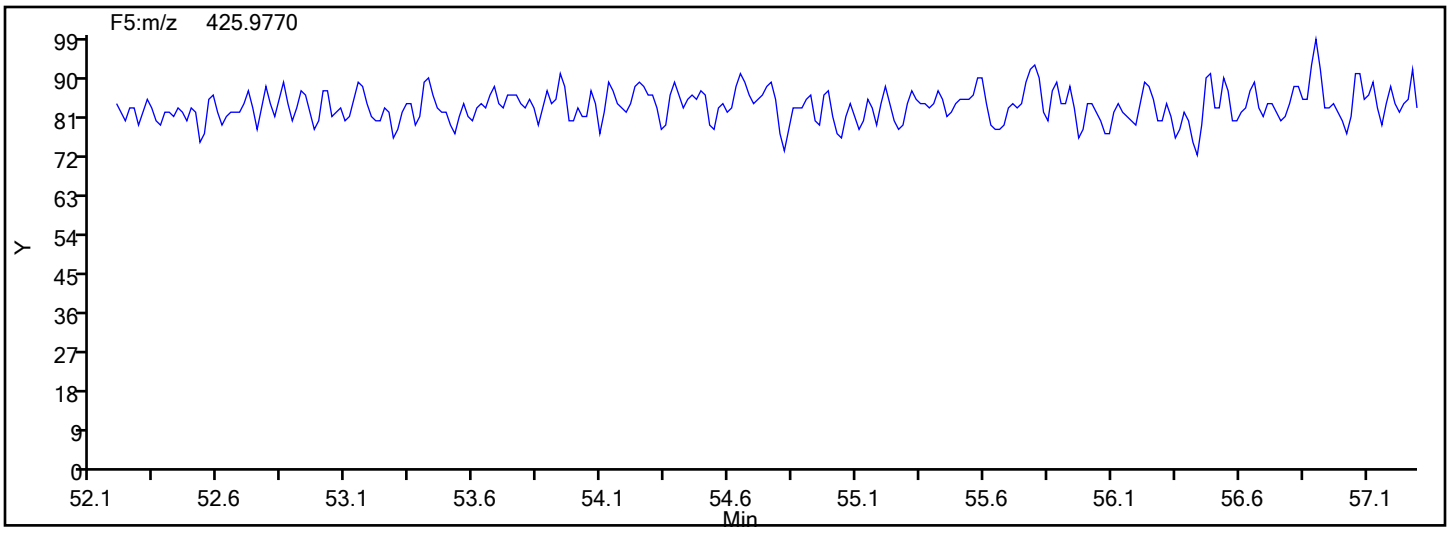




OCDD Lock Mass



Report Date: 17-Dec-2019 02:15:36 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date:	17-Dec-2019 01:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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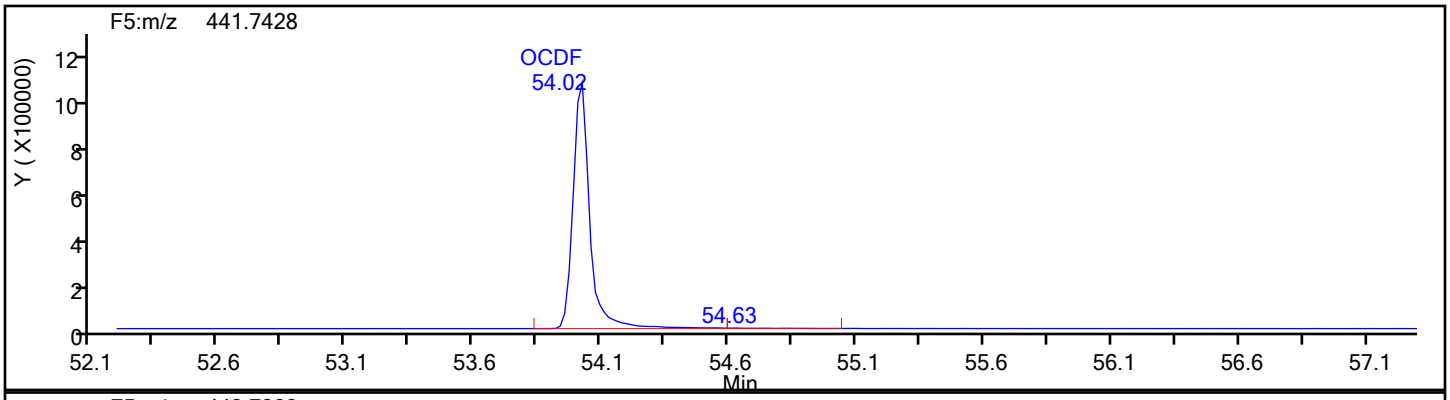
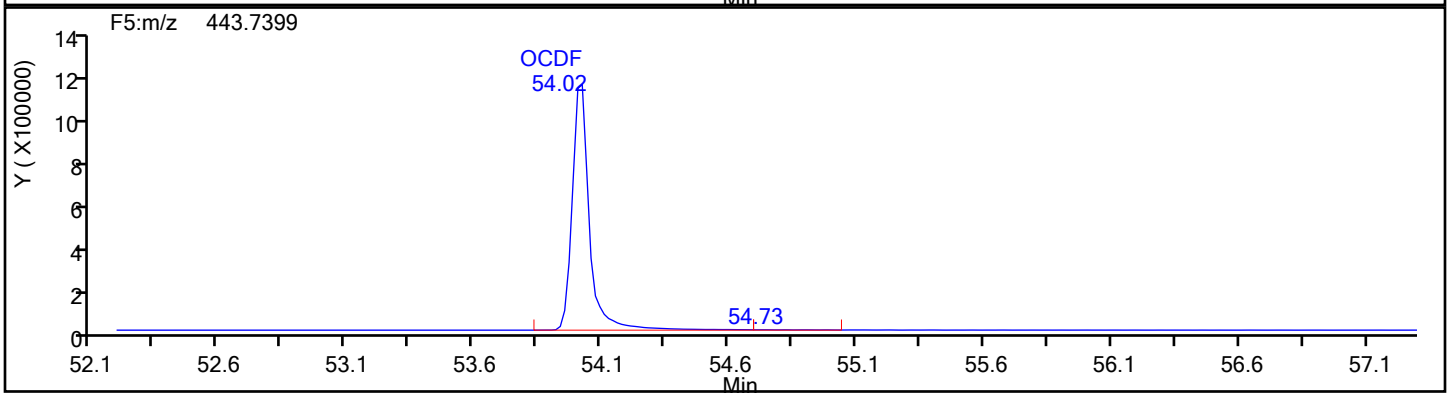
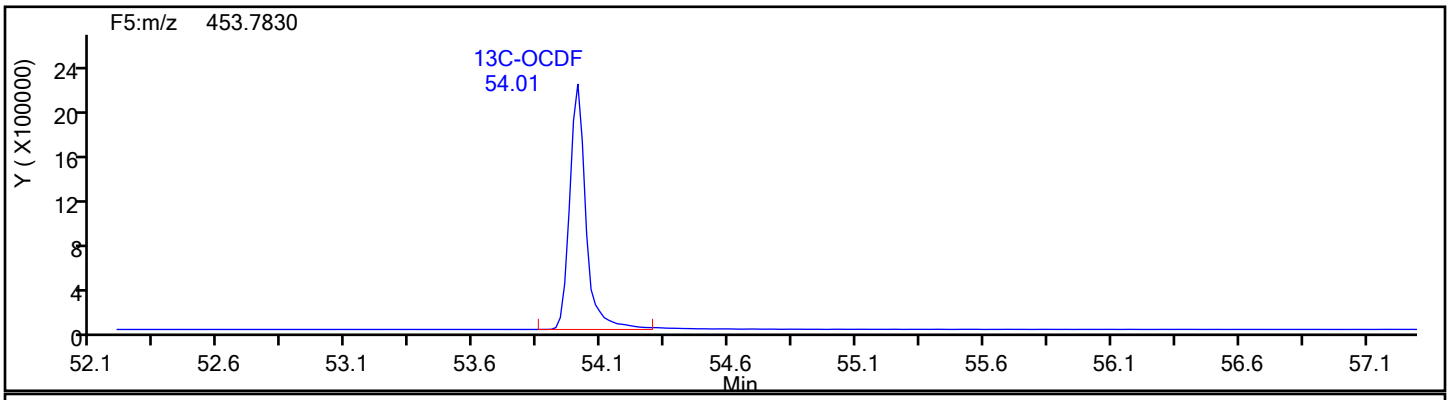
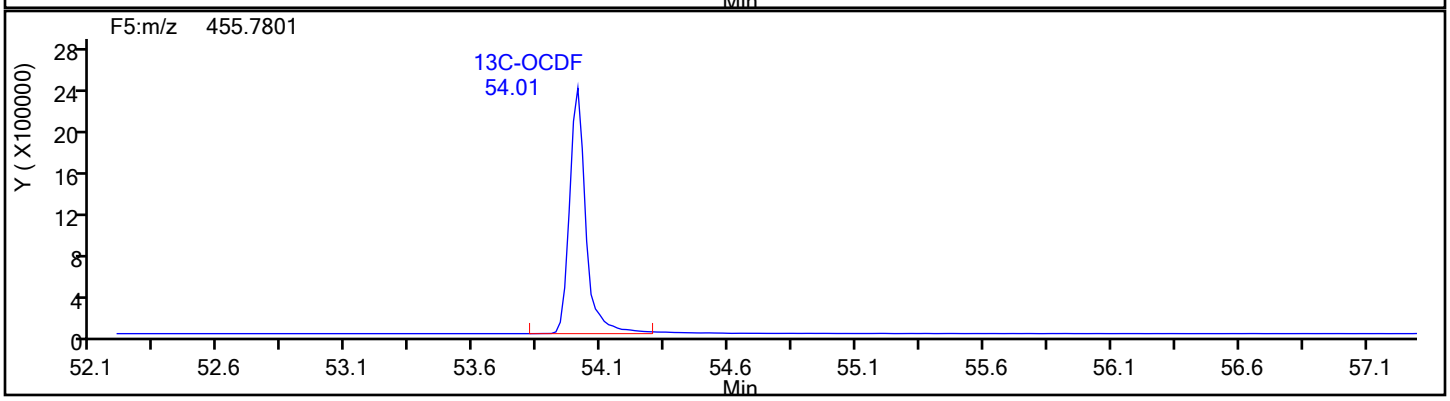




OCDF Standards





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Eurofins TestAmerica, Knoxville

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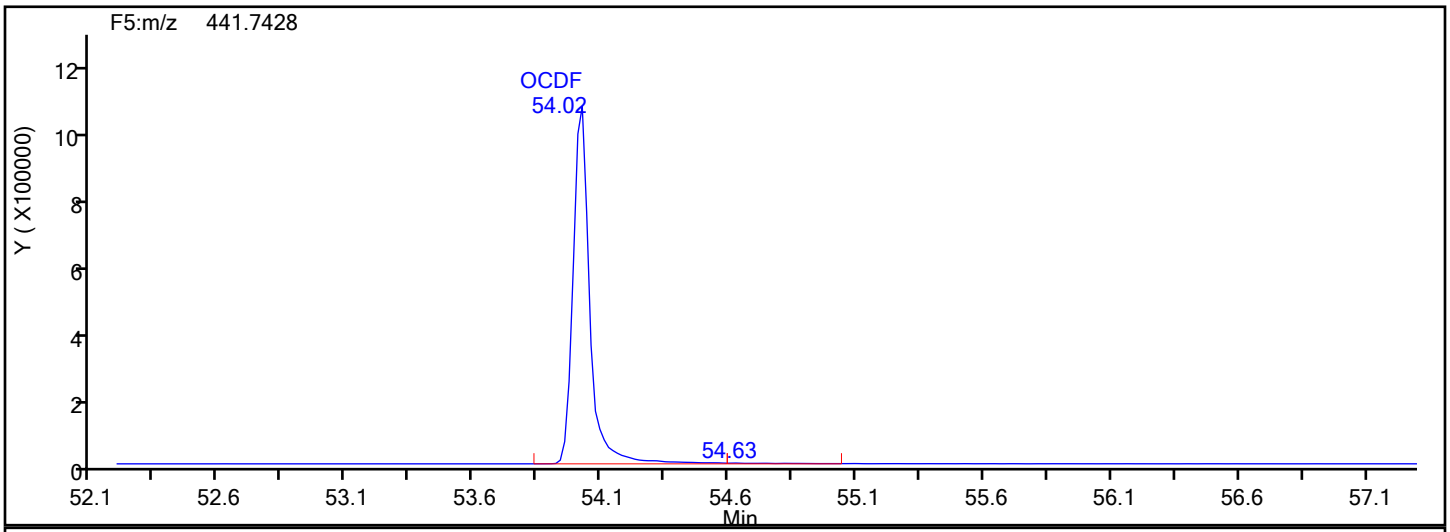
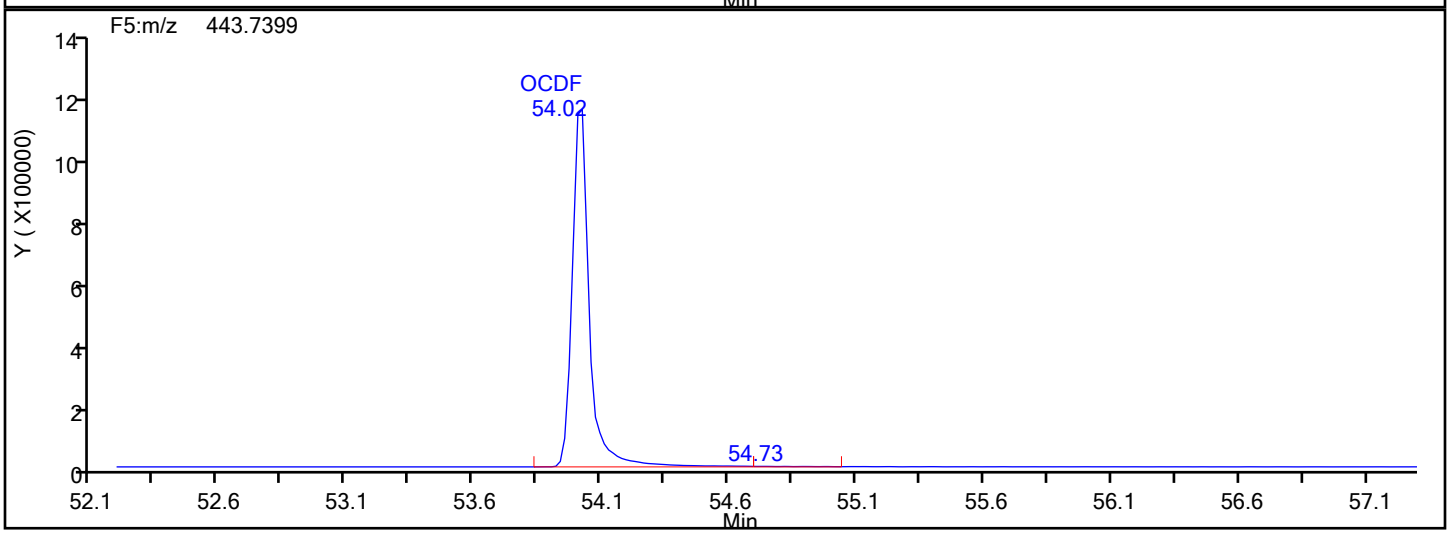
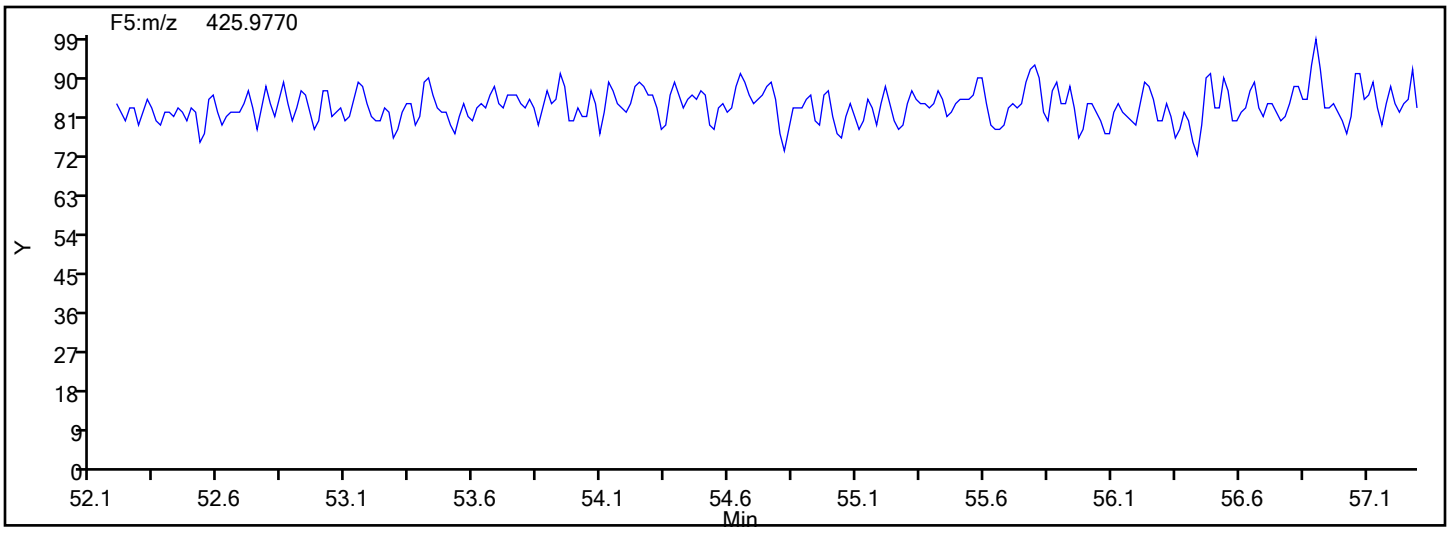




OCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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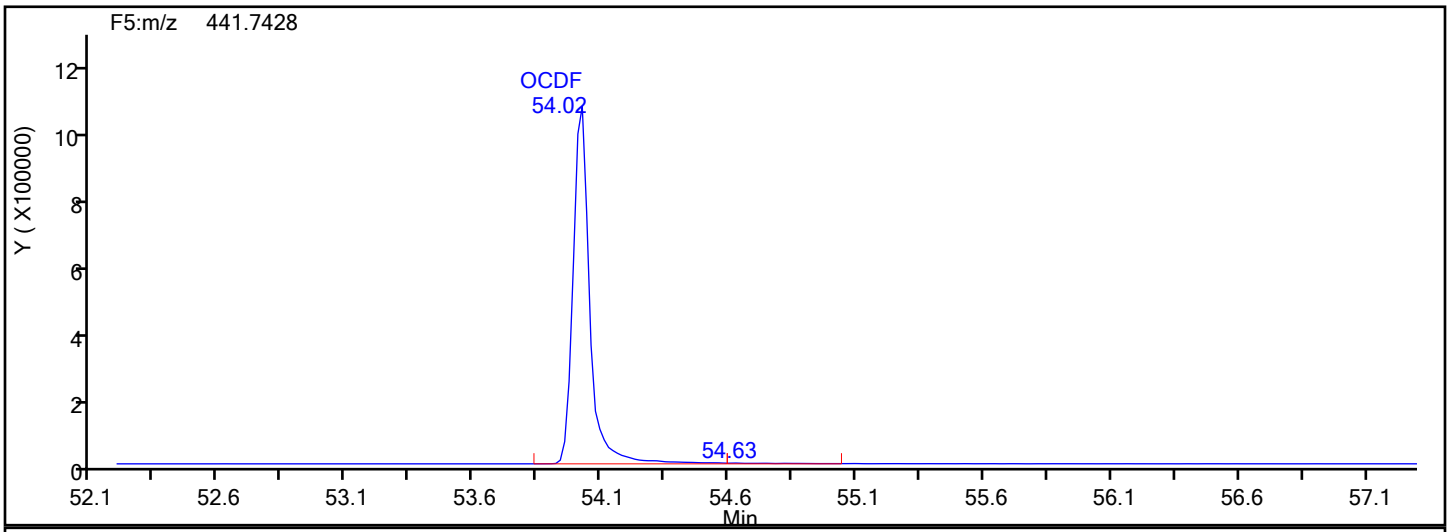
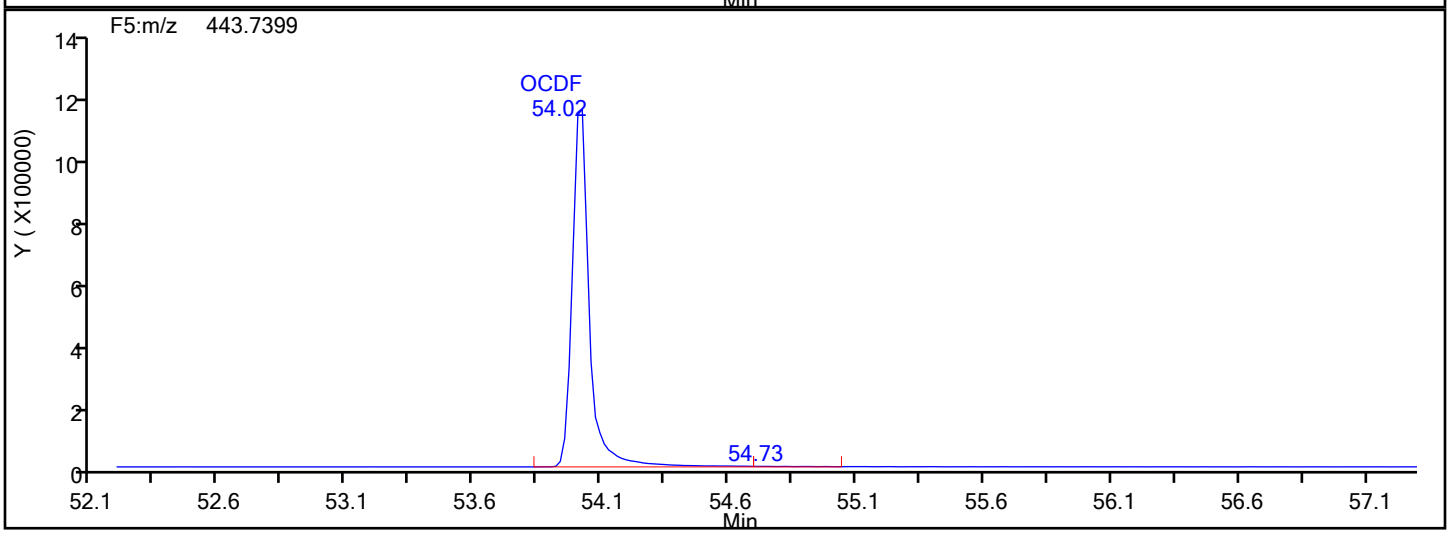
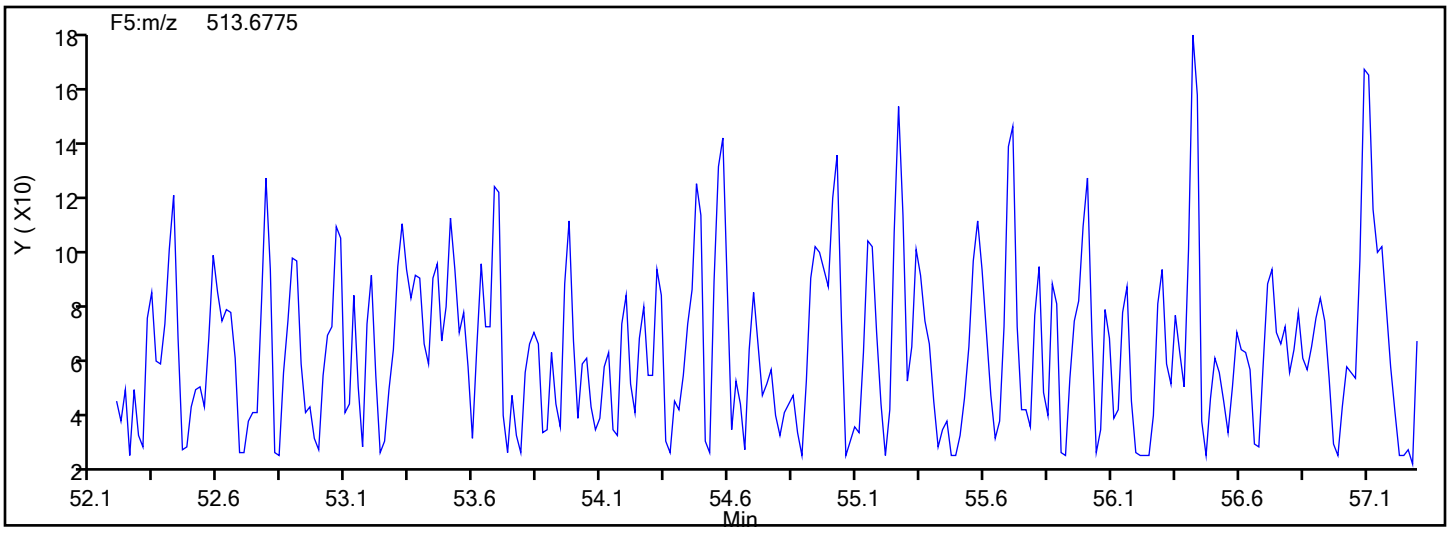
OCDF





OCDF Interference Mass



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: WDMCCV 140-36146/1 Calibration Date: 12/17/2019 12:34

Instrument ID: D2A Calib Start Date: 05/16/2014 14:26

GC Column: RTX-5 ID: 0.32(mm) Calib End Date: 05/16/2014 18:31

Lab File ID: d3191217s2.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.088	1.126		10.3	10.0	103	84-120
2,3,7,8-TCDD	AveID	1.173	1.185		10.1	10.0	101	78-129
1,2,3,7,8-PeCDF	AveID	1.190	1.195		50.2	50.0	100	82-120
2,3,4,7,8-PeCDF	AveID	1.109	1.111		50.1	50.0	100	82-122
1,2,3,7,8-PeCDD	AveID	1.043	1.049		50.3	50.0	101	78-130
1,2,3,4,7,8-HxCDF	AveID	1.363	1.395		51.2	50.0	102	90-112
1,2,3,6,7,8-HxCDF	AveID	1.276	1.247		48.8	50.0	98	88-114
2,3,4,6,7,8-HxCDF	AveID	1.265	1.268		50.1	50.0	100	88-114
1,2,3,4,7,8-HxCDD	AveID	1.141	1.098		48.1	50.0	96	78-128
1,2,3,6,7,8-HxCDD	AveID	1.148	1.199		52.2	50.0	104	78-128
1,2,3,7,8,9-HxCDD	AveID	1.221	1.253		51.3	50.0	103	82-122
1,2,3,7,8,9-HxCDF	AveID	1.257	1.146		45.6	50.0	91	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.498	1.511		50.4	50.0	101	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.120	1.136		50.7	50.0	101	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.381	1.495		54.1	50.0	108	86-116
OCDD	AveID	1.207	1.299		108	100	108	79-126
OCDF	AveID	1.116	1.015		90.9	100	91	63-159
13C-2,3,7,8-TCDF	Ave	1.755	1.774		101	100	101	71-140
13C-2,3,7,8-TCDD	Ave	1.071	1.086		101	100	101	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.370	1.338		97.6	100	98	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.384	1.334		96.4	100	96	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.8743	0.8557		97.9	100	98	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.189	1.157		97.3	100	97	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.462	1.517		104	100	104	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.320	1.321		100	100	100	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8772	0.8578		97.8	100	98	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9171	0.9426		103	100	103	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.200	1.176		98.0	100	98	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.050	1.009		96.1	100	96	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8155	0.7746		95.0	100	95	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.8947	0.8439		94.3	100	94	77-129
13C-OCDD	Ave	0.7044	0.6260		178	200	89	48-208
13C-OCDF	Ave	1.061	1.070		202	200	101	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.227	1.223		9.97	10.0	100	79-127

Resolution Check Report (DFS SN: 3190)

eurofins | Environment Testing TestAmerica

Date:	17 Dec 2019 12:20
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

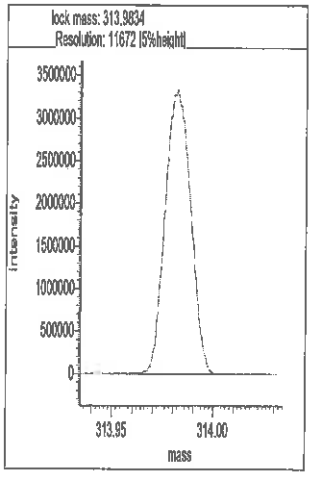
Segment 1

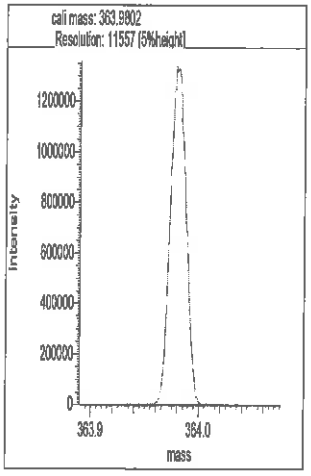
-191217s2a

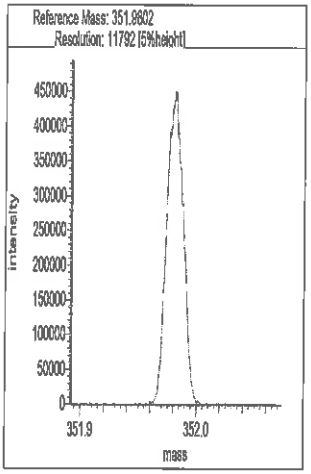
Lock mass 313.9834 [m/z] Resolution: 11672 [5%height]

Cali. mass 363.9802 [m/z] Resolution: 11557 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11792 [5%height]







Segment 2

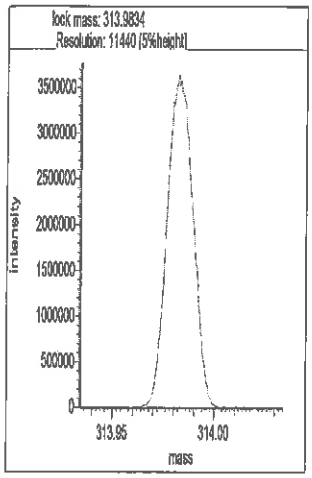
Lock mass 313.9834 [m/z] Resolution: 11440 [5%height]

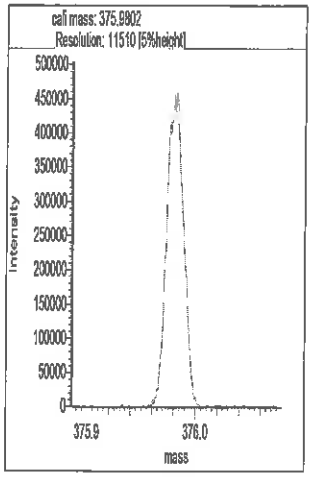
Cali. mass 375.9802 [m/z] Resolution: 11510 [5%height]

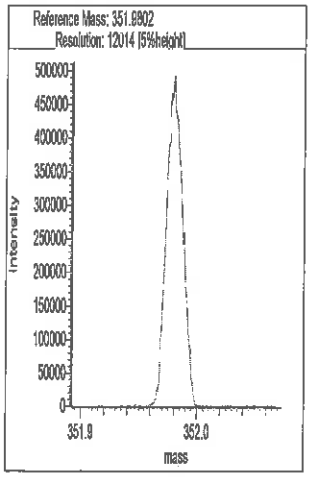
Ref. mass 351.9802 [m/z] Resolution: 12014 [5%height]

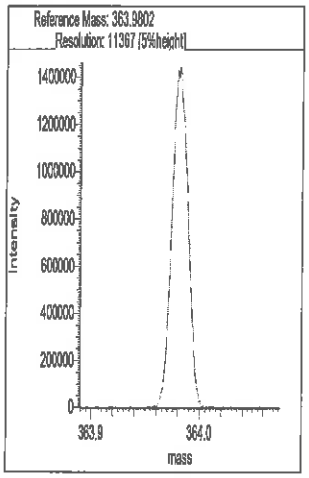
Ref. mass 363.9802 [m/z] Resolution: 11367 [5%height]

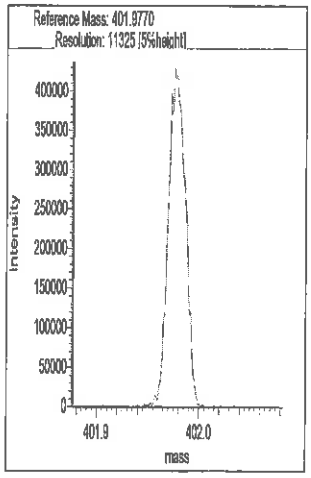
Ref. mass 401.9770 [m/z] Resolution: 11325 [5%height]











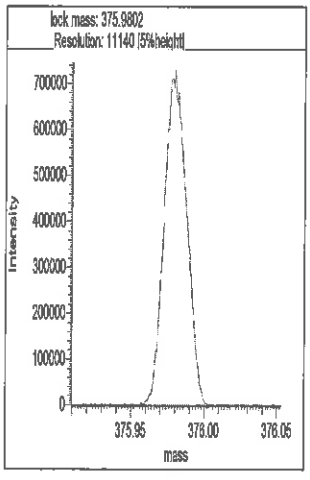
Segment 3

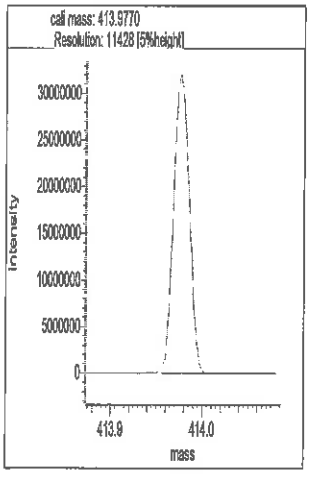
Lock mass 375.9802 [m/z] Resolution: 11140 [5%height]

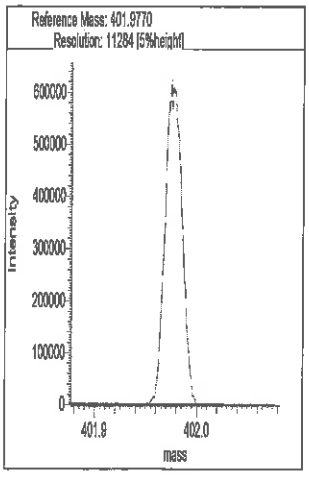
Cali. mass 413.9770 [m/z] Resolution: 11428 [5%height]

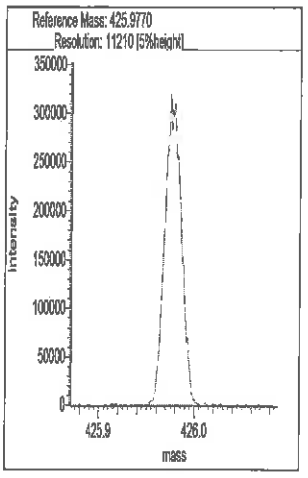
Ref. mass 401.9770 [m/z] Resolution: 11284 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11210 [5%height]







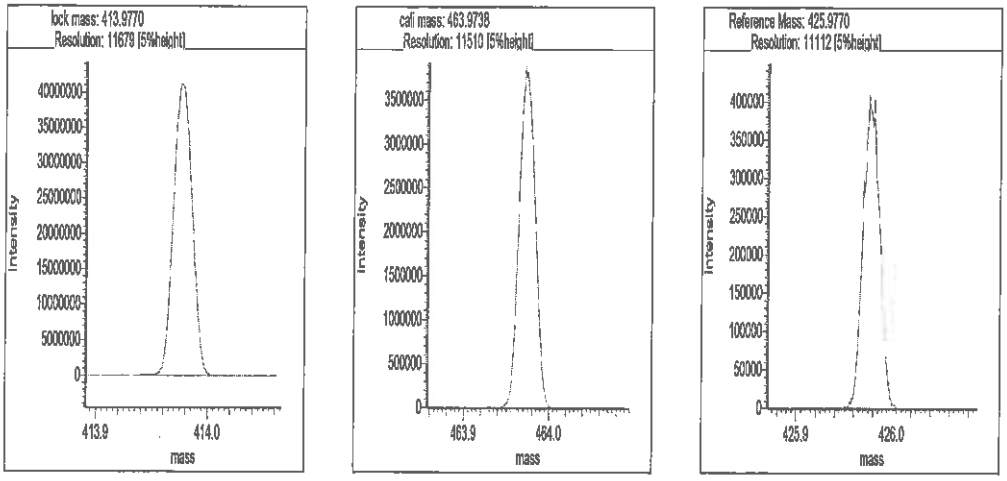


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11679 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11510 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11112 [5%height]

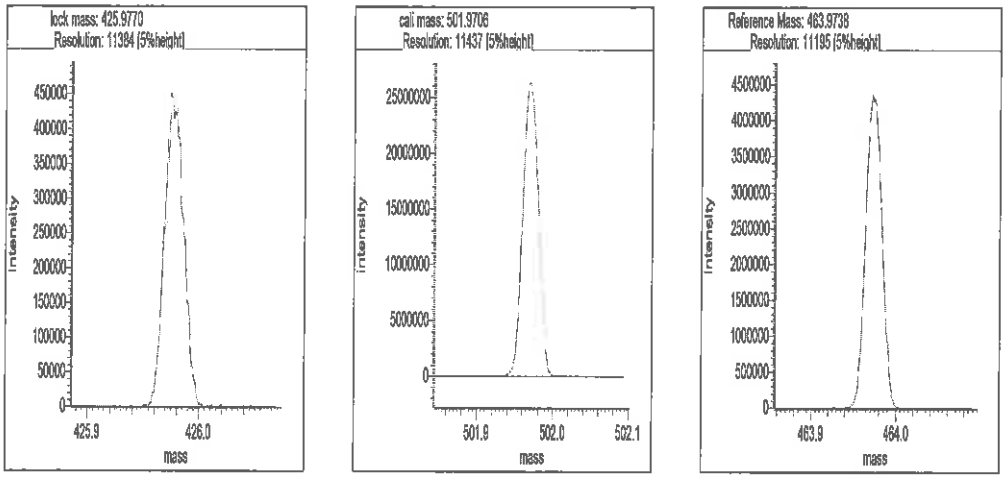


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11384 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11437 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11195 [5%height]



```
Reports
12:32:33:  Peak matching procedure started
12:32:34:
12:32:34:  Reference mass: 313.98336
12:32:35:  Sample mass: 364.0
12:32:35:
12:32:36:  Finding reference mass
12:32:37:  Finding sample mass
12:32:37:
12:32:43:  [1]    363.9802 amu, mean: 363.9802
12:32:46:  [2]    363.9802 amu, mean: 363.9802      SD: 0.05 mmu or: 0.15 ppm
12:32:49:  [3]    363.9800 amu, mean: 363.9801      SD: 0.12 mmu or: 0.33 ppm
12:32:52:  [4]    363.9804 amu, mean: 363.9802      SD: 0.19 mmu or: 0.52 ppm
12:32:56:  [5]    363.9810 amu, mean: 363.9804      SD: 0.39 mmu or: 1.07 ppm
12:32:59:  [6]    363.9803 amu, mean: 363.9803      SD: 0.35 mmu or: 0.96 ppm
12:33:02:  [7]    363.9799 amu, mean: 363.9803      SD: 0.36 mmu or: 0.99 ppm
12:33:05:  [8]    363.9803 amu, mean: 363.9803      SD: 0.33 mmu or: 0.91 ppm
12:33:08:  [9]    363.9807 amu, mean: 363.9803      SD: 0.35 mmu or: 0.95 ppm
12:33:11:  [10]    363.9808 amu, mean: 363.9804      SD: 0.36 mmu or: 0.98 ppm
12:33:14:  [11]    363.9805 amu, mean: 363.9804      SD: 0.34 mmu or: 0.94 ppm
12:33:17:
12:33:17:  Stop requested. Please wait for procedure to finish.
12:33:17:
12:33:18:  [12]    363.9811 amu, mean: 363.9805      SD: 0.38 mmu or: 1.05 ppm
12:33:20:
12:33:20:  Peakmatching stopped
```

Signature MM/ID 12/17/19

Resolution Check Report (DFS SN: 3190)

eurofins Environment Testing TestAmerica

Date:	17 Dec 2019 22:42
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

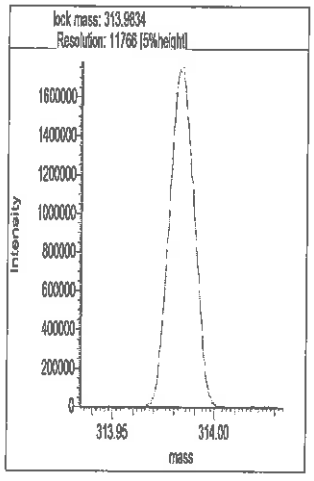
Segment 1

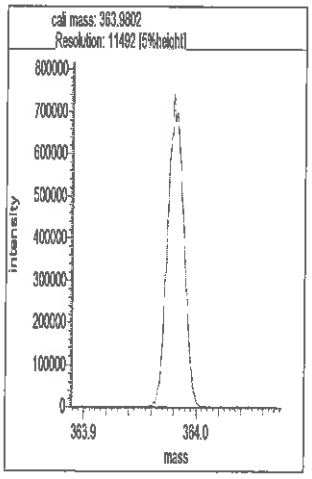
Lock mass 313.9834 [m/z] Resolution: 11766 [5%height]

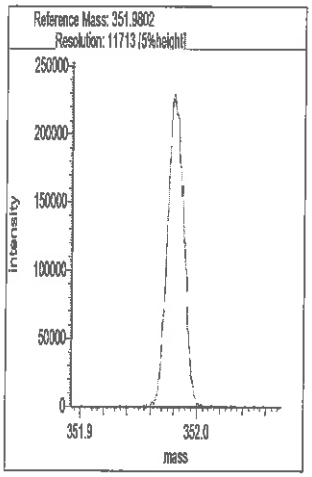
Cali. mass 363.9802 [m/z] Resolution: 11492 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11713 [5%height]

-191217s2b







Segment 2

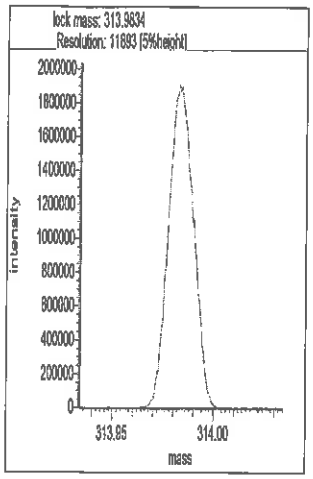
Lock mass 313.9834 [m/z] Resolution: 11893 [5%height]

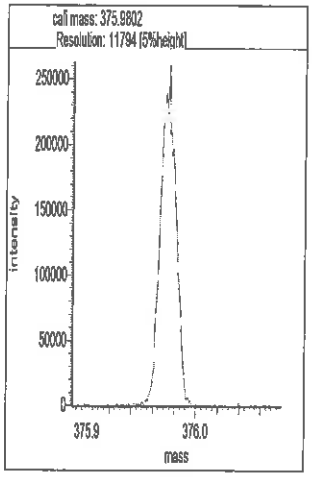
Cali. mass 375.9802 [m/z] Resolution: 11794 [5%height]

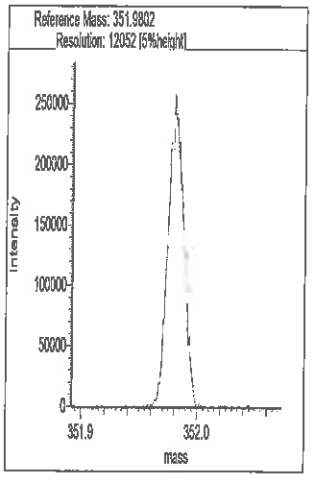
Ref. mass 351.9802 [m/z] Resolution: 12052 [5%height]

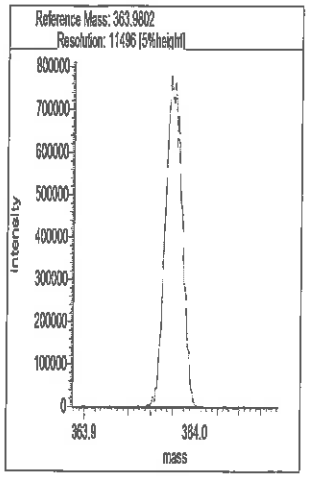
Ref. mass 363.9802 [m/z] Resolution: 11496 [5%height]

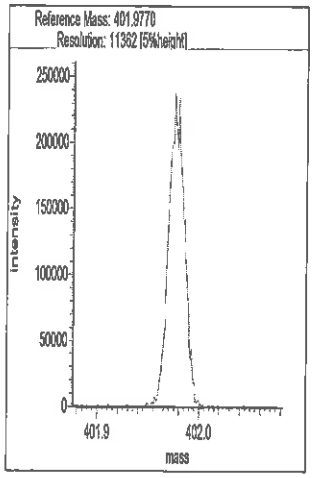
Ref. mass 401.9770 [m/z] Resolution: 11362 [5%height]











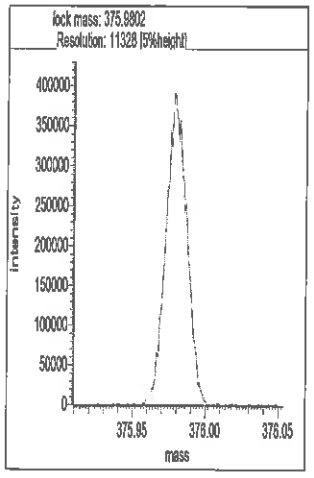
Segment 3

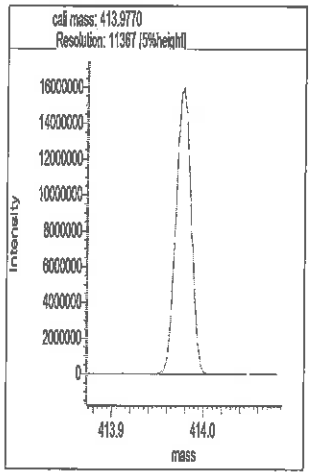
Lock mass 375.9802 [m/z] Resolution: 11328 [5%height]

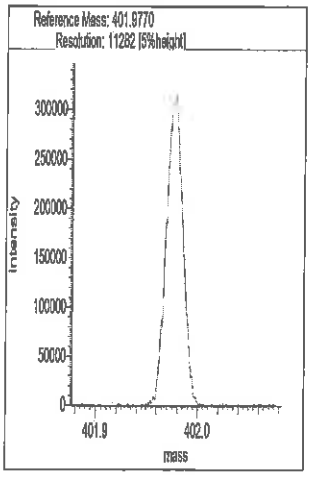
Cali. mass 413.9770 [m/z] Resolution: 11367 [5%height]

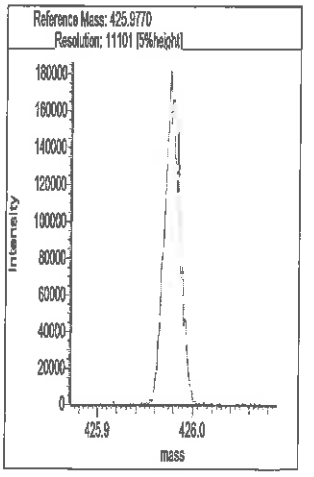
Ref. mass 401.9770 [m/z] Resolution: 11282 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11101 [5%height]







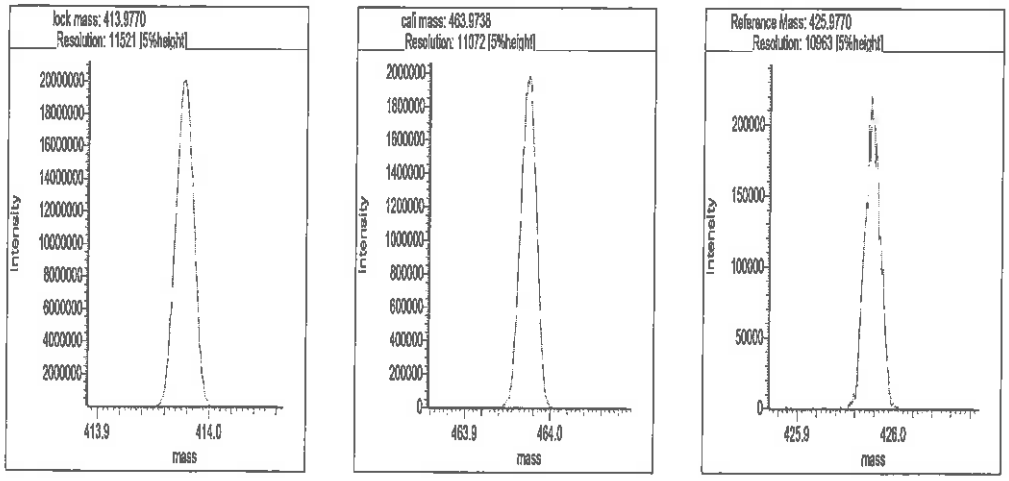


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11521 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11072 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 10963 [5%height]

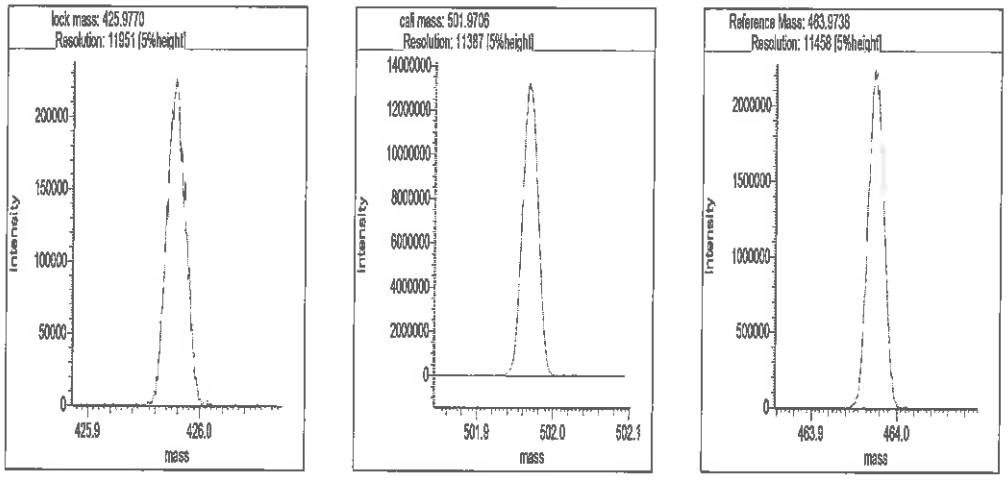


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11951 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 11387 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 11458 [5%height]



```
Reports
22:54:09:  Peak matching procedure started
22:54:09:
22:54:10:  Reference mass: 313.98336
22:54:10:  Sample mass: 364.0
22:54:11:
22:54:11:  Finding reference mass
22:54:12:  Finding sample mass
22:54:13:
22:54:18:  [1]    363.9855 amu, mean: 363.9855
22:54:21:  [2]    363.9854 amu, mean: 363.9854      SD: 0.08 mmu or: 0.23 ppm
22:54:25:  [3]    363.9845 amu, mean: 363.9851      SD: 0.55 mmu or: 1.52 ppm
22:54:28:  [4]    363.9850 amu, mean: 363.9851      SD: 0.46 mmu or: 1.26 ppm
22:54:31:  [5]    363.9855 amu, mean: 363.9852      SD: 0.44 mmu or: 1.20 ppm
22:54:34:  [6]    363.9855 amu, mean: 363.9852      SD: 0.41 mmu or: 1.14 ppm
22:54:37:  [7]    363.9854 amu, mean: 363.9853      SD: 0.39 mmu or: 1.06 ppm
22:54:40:  [8]    363.9853 amu, mean: 363.9853      SD: 0.36 mmu or: 0.98 ppm
22:54:43:  [9]    363.9853 amu, mean: 363.9853      SD: 0.33 mmu or: 0.92 ppm
22:54:47:  [10]    363.9852 amu, mean: 363.9853      SD: 0.32 mmu or: 0.87 ppm
22:54:47:
22:54:47:  Stop requested. Please wait for procedure to finish.
22:54:47:
22:54:50:
22:54:51:  Peakmatching stopped
```

Signature PMP 12-17-19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 12:34:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 13:41:51 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 13:41:51

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:50	1165849	0.79	1.1733	10.1	10.1	0.0171	0.0171	101	
A Non-2,3,7,8-sub-TCDD	29:29	2928278	0.80	1.1733	25.4	25.4	0.0171	8.871	0.00	
S Total TCDD					35.5	35.5	0.0171	0.0171		
2,3,7,8-TCDF	28:51	1810058	0.80	1.0881	10.3	10.3	0.009513	0.009513	103	
A Non-2,3,7,8-sub-TCDF	28:12						0.009513	0.1811		RQU
S Total TCDF					10.3	10.3	0.009513	0.009513		
1,2,3,7,8-PeCDD	40:35	4067376	1.56	1.0434	50.3	50.3	0.002575	0.002575	101	
A Non-2,3,7,8-sub-PeCDD	39:26						0.002575	0.4374		RQU
S Total PeCDD					50.3	50.3	0.002575	0.002575		
1,2,3,7,8-PeCDF	38:47	7246383	1.57	1.1898	50.2	50.2	0.0619	0.0619	100	
2,3,4,7,8-PeCDF	40:03	6716780	1.55	1.1095	50.1	50.1	0.0576	0.0576	100	
A Non-2,3,7,8-sub-PeCDF	38:01						0.0595	0.5798		U
S Total PeCDF					100.3	100.3	0.0597	0.0597		
1,2,3,4,7,8-HxCDD	44:50	4683349	1.25	1.1409	48.1	48.1	0.003339	0.003339	96.24	
1,2,3,6,7,8-HxCDD	44:57	5619773	1.26	1.1481	52.2	52.2	0.003280	0.003280	104	
1,2,3,7,8,9-HxCDD	45:21	5607661	1.29	1.2212	51.3	51.3	0.003102	0.003102	103	
A Non-2,3,7,8-sub-HxCDD	44:19						0.003237	0.003237		U
S Total HxCDD					151.6	151.6	0.003240	0.003240		
1,2,3,4,7,8-HxCDF	43:49	8023014	1.27	1.3629	51.2	51.2	0.1215	0.1215	102	
1,2,3,6,7,8-HxCDF	43:56	9406122	1.27	1.2762	48.8	48.8	0.1084	0.1084	97.68	
2,3,4,6,7,8-HxCDF	44:40	8327360	1.30	1.2654	50.1	50.1	0.1186	0.1186	100	
1,2,3,7,8,9-HxCDF	45:36	6704921	1.25	1.2573	45.6	45.6	0.1613	0.1613	91.17	M
A Non-2,3,7,8-sub-HxCDF	44:10						0.1247	0.1247		U
S Total HxCDF					195.7	195.7	0.1274	0.1274		
1,2,3,4,6,7,8-HpCDD	49:38	4373484	1.07	1.1204	50.7	50.7	0.0357	0.0357	101	
A Non-2,3,7,8-sub-HpCDD	49:03						0.0357	1.093		U
S Total HpCDD					50.7	50.7	0.0357	0.0357		
1,2,3,4,6,7,8-HpCDF	47:58	7581757	1.09	1.4984	50.4	50.4	0.001922	0.001922	101	
1,2,3,4,7,8,9-HpCDF	50:17	6272712	1.08	1.3807	54.1	54.1	0.002902	0.002902	108	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49:56						0.002328	1.006		RQU
S Total HpCDF					104.6	104.6	0.002412	0.002412		
OCDD	53:53	8086967	0.90	1.2073	107.6	107.6	0.003908	0.003908	108	
OCDF	54:01	10800127	0.95	1.1162	90.9	90.9	0.005700	0.005700	90.94	
D 13C-2,3,7,8-TCDD	30:48	9839712	0.79	1.0709	101.4	101.4	0.0902	0.0902	101	
D 13C-2,3,7,8-TCDF	28:49	16078989	0.80	1.7545	101.1	101.1	0.1152	0.1152	101	
D 13C-1,2,3,7,8-PeCDD	40:34	7754977	1.60	0.8743	97.9	97.9	0.4046	0.4046	97.87	
D 13C-1,2,3,7,8-PeCDF	38:46	12125417	1.59	1.3704	97.6	97.6	0.9733	0.9733	97.62	
D 13C-2,3,4,7,8-PeCDF	40:02	12089402	1.61	1.3837	96.4	96.4	0.9639	0.9639	96.40	
D 13C-1,2,3,4,7,8-HxCDD	44:49	8530863	1.27	0.8772	97.8	97.8	0.2405	0.2405	97.79	
D 13C-1,2,3,6,7,8-HxCDD	44:56	9373504	1.26	0.9171	102.8	102.8	0.2300	0.2300	103	
D 13C-1,2,3,4,7,8-HxCDF	43:47	11501577	0.53	1.1892	97.3	97.3	0.3541	0.3541	97.25	
D 13C-1,2,3,6,7,8-HxCDF	43:55	15091122	0.53	1.4625	103.8	103.8	0.2879	0.2879	104	
D 13C-2,3,4,6,7,8-HxCDF	44:39	13139301	0.54	1.3197	100.1	100.1	0.3191	0.3191	100	
D 13C-1,2,3,7,8,9-HxCDF	45:35	11698179	0.53	1.2001	98.0	98.0	0.3509	0.3509	98.02	
D 13C-1,2,3,4,6,7,8-HpCDD	49:37	7702902	1.09	0.8155	95.0	95.0	0.0361	0.0361	94.98	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	10033501	0.46	1.0496	96.1	96.1	0.3588	0.3588	96.12	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	8391901	0.46	0.8947	94.3	94.3	0.4210	0.4210	94.31	
D 13C-OCDD	53:52	12450800	0.92	0.7044	177.7	177.7	0.3857	0.3857	88.87	
D 13C-OCDF	54:00	21280307	0.90	1.0615	201.6	201.6	0.2161	0.2161	101	
$ 37Cl4-2,3,7,8-TCDD	30:50	1108022		1.2266	9.967	9.967	0.0160	0.0160	99.67	
* 13C-1,2,3,4-TCDD	30:17	9063253	0.82	9.1E+04	100.0	100.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:20	9944819	1.26	1E+05	100.0	100.0			100	
1,3,6,8-TCDF	22:31	1980735	0.78						0.00	
1,3,6,8-TCDD	24:55	1079057	0.80						0.00	
1,2,8,9-TCDF	33:54	1533138	0.79						0.00	
1,2,8,9-TCDD	34:02	936717	0.82						0.00	
1,3,4,6,8-PeCDF	34:40	6735322	1.60						0.00	
1,2,4,7,9-PeCDD	37:38	3758988	1.58						0.00	
1,2,3,8,9-PeCDD	41:15	4098593	1.57						0.00	
1,2,3,8,9-PeCDF	41:22	6169146	1.57						0.00	
1,2,3,4,6,8-HxCDF	42:35	7858544	1.27						0.00	
1,2,4,6,7,9-HxCDD	43:17	5378918	1.26						0.00	
1,2,3,4,8,9-HxCDF	45:44	7607885	1.26						0.00	Ma
1,2,3,4,6,7,9-HpCDD	48:27	4454058	1.05						0.00	

QC Flag Legend

Review Flags

M - Manually Integrated
U - Marked Undetected
a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Report Date: 17-Dec-2019 13:41:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 12:34:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 13:41:51 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 13:41:51

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:50	30:50	0	1.001	515128	53405	26	65	2054		
321.8936	30:50	30:50	0	1.001	650721	65808	57	142	1155	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	30:21	29:29	52	0.985	449151	48962	26	65	1883		
321.8936	30:21	29:29	52	0.985	563551	58784	57	142	1031	0.80(0.65-0.89)	
319.8965	30:34	29:29	65	0.992	395117	42843	26	65	1648		
321.8936	30:34	29:29	65	0.992	496338	54228	57	142	951	0.80(0.65-0.89)	
319.8965	31:20	29:29	111	1.017	458342	46605	26	65	1793		
321.8936	31:20	29:29	111	1.017	565779	56433	57	142	990	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:51	28:51	0	1.001	804447	90479	28	70	3231		
305.8987	28:51	28:51	0	1.001	1005611	116341	47	117	2475	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	24:23	28:12	-229	0.846	1970	190	28	70	7		
305.8987	24:29	28:12	-223	0.850	2426	313	47	117	7	0.81(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:35	40:35	0	1.000	2481250	539603	11	27	49055		
357.8516	40:35	40:35	0	1.000	1586126	344145	7	17	49164	1.56(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	39:26	39:26	0	0.972	48319	7136	11	27			
	Empc Correction				21513	2957	11	27	0		
357.8516	39:26	39:26	0	0.972	13880	1908	7	17		3.48(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:47	38:47	0	1.000	4428323	844750	396	990	2133		
341.8567	38:47	38:47	0	1.000	2818060	533732	270	675	1977	1.57(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	40:03	40:03	0	1.000	4078272	902512	396	990	2279		
341.8567	40:03	40:03	0	1.000	2638508	574864	270	675	2129	1.55(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											U
339.8597	37:13	38:01	-48	0.960	48217	5928	396	990	15		
341.8567	37:14	38:01	-47	0.960	32490	4153	270	675	15	1.48(1.32-1.78)	
1,2,3,4,7,8-HxCDD											
389.8158	44:50	44:50	0	1.000	2604767	695879	16	40	43492		
391.8127	44:50	44:50	0	1.000	2078582	553345	16	40	34584	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:57	44:57	0	1.000	3134791	677776	16	40	42361		
391.8127	44:57	44:57	0	1.000	2484982	546208	16	40	34138	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:21	45:21	0	1.012	3156441	648697	16	40	40544		
391.8127	45:21	45:21	0	1.012	2451220	503832	16	40	31490	1.29(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											U
389.8158	44:19						16	40			
391.8127	44:19						16	40			
1,2,3,4,7,8-HxCDF											
373.8208	43:49	43:49	0	1.001	4483108	1132703	1080	2700	1049		
375.8178	43:48	43:49	-1	1.000	3539906	907603	829	2072	1095	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:56	43:56	0	1.000	5264989	1231543	1080	2700	1140		
375.8178	43:56	43:56	0	1.000	4141133	995663	829	2072	1201	1.27(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:40	44:40	0	1.000	4701066	1135424	1080	2700	1051		
375.8178	44:40	44:40	0	1.000	3626294	883447	829	2072	1066	1.30(1.05-1.43)	
1,2,3,7,8,9-HxCDF											M
373.8208	45:36	45:36	0	1.000	3720804	863068	1080	2700	799		
375.8178	45:36	45:36	0	1.000	2984117	696386	829	2072	840	1.25(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											U
373.8208	44:10						1080	2700			
375.8178	44:10						829	2072			
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:38	0	1.000	2257819	387832	140	350	2770		
425.7737	49:38	49:38	0	1.000	2115665	362507	70	175	5179	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											U
423.7767	49:03	49:03	0	0.988	45435	3497	140	350			
425.7737	49:03	49:03	0	0.988	48862	2613	70	175		0.93(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:58	0	1.000	3953673	797382	18	45	44299		
409.7788	47:58	47:58	0	1.000	3628084	752781	5	12	150556	1.09(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:17	50:17	0	1.000	3255269	535333	18	45	29741		
409.7788	50:17	50:17	0	1.000	3017443	513286	5	12	102657	1.08(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:21	49:56	-95	1.008	64152	10294	18	45	572		
409.7788	48:21	49:56	-95	1.008	69325	7486	5	12	1497	0.93(0.88-1.20)	
OCDD											
457.7377	53:53	53:53	0	1.000	3822625	793225	4	10	198306		
459.7348	53:53	53:53	0	1.000	4264342	890542	20	50	44527	0.90(0.76-1.02)	
OCDF											
441.7428	54:01	54:01	0	1.000	5255391	1176533	55	137	21392		
443.7399	54:01	54:01	0	1.000	5544736	1269610	4	10	317403	0.95(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:48	0	1.017	4354799	456359	230	575	1984		
333.9338	30:48	30:48	0	1.017	5484913	577313	148	370	3901	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:49	28:49	0	0.951	7140441	791020	267	667	2963		
317.9389	28:49	28:49	0	0.951	8938548	1015462	524	1310	1938	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:34	0	1.339	4771627	1034958	843	2107	1228		
369.8919	40:34	40:34	0	1.339	2983350	640047	541	1352	1183	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:46	38:46	0	1.280	7437732	1396617	3043	7607	459		
353.8970	38:46	38:46	0	1.280	4687685	865427	2175	5437	398	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:02	40:02	0	1.321	7460098	1611206	3043	7607	529		
353.8970	40:02	40:02	0	1.321	4629304	996444	2175	5437	458	1.61(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	0	0.989	4770374	1177346	1015	2537	1160		
403.8529	44:49	44:49	0	0.989	3760489	922691	726	1815	1271	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	0	0.991	5230794	1177823	1015	2537	1160		
403.8529	44:56	44:56	0	0.991	4142710	946537	726	1815	1304	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:47	0	0.966	4004757	998120	1096	2740	911		
385.8610	43:47	43:47	0	0.966	7496820	1883934	2379	5947	792	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:55	0	0.969	5210628	1192368	1096	2740	1088		
385.8610	43:55	43:55	0	0.969	9880494	2258222	2379	5947	949	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	4580595	1110569	1096	2740	1013		
385.8610	44:39	44:39	0	0.985	8558706	2068842	2379	5947	870	0.54(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	4039281	824456	1096	2740	752		
385.8610	45:35	45:35	0	1.006	7658898	1528796	2379	5947	643	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:37	49:37	0	1.095	4018546	683385	136	340	5025		
437.8140	49:36	49:37	-1	1.094	3684356	629922	107	267	5887	1.09(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	0	1.058	3145068	621001	1694	4235	367		
419.8220	47:57	47:57	0	1.058	6888433	1358438	1414	3535	961	0.46(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	0	1.109	2647936	443371	1694	4235	262		
419.8220	50:16	50:16	0	1.109	5743965	979334	1414	3535	693	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	0	1.188	5958985	1215049	1098	2745	1107		
471.7750	53:52	53:52	0	1.188	6491815	1328499	1144	2860	1161	0.92(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:00	0	1.191	10052763	2198369	866	2165	2539		
455.7801	54:00	54:00	0	1.191	11227544	2422873	1027	2567	2359	0.90(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:50	30:50	0	1.018	1108022	118414	77	192	1538		
13C-1,2,3,4-TCDD											
331.9368	30:17	30:17	0		4071878	447772	230	575	1947		
333.9338	30:17	30:17	0		4991375	530251	148	370	3583	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:20	0		5538762	1142926	1015	2537	1126		
403.8529	45:20	45:20	0		4406057	919959	726	1815	1267	1.26(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	22:31	22:31	0	0.781	869183	131358	28	70	4691		
305.8987	22:31	22:31	0	0.781	1111552	167903	47	117	3572	0.78(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	24:55	24:55	0	0.809	478328	65560	26	65	2522		
321.8936	24:55	24:55	0	0.809	600729	80311	57	142	1409	0.80(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	33:54	33:54	0	1.177	676693	70503	28	70	2518		
305.8987	33:54	33:54	0	1.177	856445	88565	47	117	1884	0.79(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	34:02	34:02	0	1.105	420879	45290	26	65	1742		
321.8936	34:02	34:02	0	1.105	515838	54660	57	142	959	0.82(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	34:40	34:40	0	0.894	4146045	500630	396	990	1264		
341.8567	34:40	34:40	0	0.894	2589277	310958	270	675	1152	1.60(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	37:38	37:38	0	0.928	2299559	362858	11	27	32987		
357.8516	37:38	37:38	0	0.928	1459429	229748	7	17	32821	1.58(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:15	41:15	0	1.017	2503805	535901	11	27	48718		
357.8516	41:15	41:15	0	1.017	1594788	334274	7	17	47753	1.57(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	41:22	41:22	0	1.067	3769556	818076	396	990	2066		
341.8567	41:22	41:22	0	1.067	2399590	512197	270	675	1897	1.57(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,8-HxCDF											
373.8208	42:35	42:35	0	0.973	4401846	1074068	1080	2700	995		
375.8178	42:34	42:35	-1	0.972	3456698	830938	829	2072	1002	1.27(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	43:17	43:17	0	0.966	2996714	758146	16	40	47384		
391.8127	43:17	43:17	0	0.966	2382204	595152	16	40	37197	1.26(1.05-1.43)	
1,2,3,4,8,9-HxCDF											Ma
373.8208	45:44	45:44	0	1.044	4237152	879315	1080	2700	814		M
375.8178	45:44	45:44	0	1.044	3370733	699712	829	2072	844	1.26(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	48:27	48:27	0	0.977	2282284	436062	140	350	3115		
425.7737	48:27	48:27	0	0.977	2171774	417080	70	175	5958	1.05(0.88-1.20)	

QC Flag Legend

Review Flags

M - Manually Integrated
U - Marked Undetected
a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
CCV Relative RT Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 17-Dec-2019 12:34:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014066-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 13:41:51 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: davidsonm Date: 17-Dec-2019 13:41:51

Start Cal Date: 16-May-2014 14:26:00
End Cal Date: 16-May-2014 18:31:00

Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,4-TCDD		31:17	30:17	-59		1.000	1.000	0.000 - 0.000
13C-2,3,7,8-TCDD		31:48	30:48	-60		1.017	1.017	0.976 - 1.043
2,3,7,8-TCDD		31:50	30:50	-60		1.001	1.001	0.999 - 1.002
37Cl4-2,3,7,8-TCDD		31:50	30:50	-60		1.018	1.018	0.989 - 1.052
13C-2,3,7,8-TCDF		29:44	28:49	-55		0.951	0.951	0.923 - 1.103
2,3,7,8-TCDF		29:47	28:51	-56		1.002	1.001	0.999 - 1.003
13C-1,2,3,7,8-PeCDD		41:00	40:34	-26		1.311	1.339	1.000 - 1.567
1,2,3,7,8-PeCDD		41:01	40:35	-26		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8-PeCDF		39:17	38:46	-30		1.256	1.280	1.000 - 1.425
1,2,3,7,8-PeCDF		39:18	38:47	-30		1.000	1.000	0.999 - 1.002
13C-2,3,4,7,8-PeCDF		40:29	40:02	-27		1.295	1.321	1.011 - 1.526
2,3,4,7,8-PeCDF		40:30	40:03	-27		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8,9-HxCDD		45:45	45:20	-25		1.000	1.000	0.000 - 0.000
13C-1,2,3,4,7,8-HxCDD		45:14	44:49	-25		0.989	0.989	0.977 - 1.000
1,2,3,4,7,8-HxCDD		45:15	44:50	-25		1.000	1.000	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDD		45:21	44:56	-25		0.992	0.991	0.981 - 1.003
1,2,3,6,7,8-HxCDD		45:22	44:57	-25		1.000	1.000	0.998 - 1.004
1,2,3,7,8,9-HxCDD		45:46	45:21	-25		1.012	1.012	1.000 - 1.019
13C-1,2,3,4,7,8-HxCDF		44:11	43:47	-24		0.966	0.966	0.936 - 0.996
1,2,3,4,7,8-HxCDF		44:12	43:49	-23		1.000	1.001	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDF		44:20	43:55	-24		0.969	0.969	0.949 - 0.975
1,2,3,6,7,8-HxCDF		44:21	43:56	-24		1.000	1.000	0.997 - 1.005
13C-2,3,4,6,7,8-HxCDF		45:03	44:39	-24		0.985	0.985	0.977 - 1.047
2,3,4,6,7,8-HxCDF		45:04	44:40	-24		1.000	1.000	0.999 - 1.001

Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,7,8,9-HxCDF		46:02	45:35	-27		1.006	1.006	0.959 - 1.021
1,2,3,7,8,9-HxCDF		46:03	45:36	-27		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDD		50:11	49:37	-33		1.097	1.095	1.086 - 1.110
1,2,3,4,6,7,8-HpCDD		50:12	49:38	-33		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDF		48:28	47:57	-30		1.059	1.058	1.043 - 1.085
1,2,3,4,6,7,8-HpCDF		48:29	47:58	-30		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,7,8,9-HpCDF		50:48	50:16	-32		1.111	1.109	1.057 - 1.151
1,2,3,4,7,8,9-HpCDF		50:49	50:17	-32		1.000	1.000	0.999 - 1.001
13C-OCDD		54:18	53:52	-25		1.187	1.188	1.032 - 1.311
OCDD		54:19	53:53	-25		1.000	1.000	0.999 - 1.001
13C-OCDF		54:26	54:00	-25		1.190	1.191	1.092 - 1.292
OCDF		54:27	54:01	-25		1.000	1.000	0.999 - 1.008

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 29.467

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	100.000	9839712	1033672

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		100.000	9839712	1033672

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
30:21	449151	48962	563551	58784	8.77	0.80	
30:34	395117	42843	496338	54228	7.72	0.80	
31:20	458342	46605	565779	56433	8.87	0.81	
Signal Totals:							
	1302610	138410	1625668	169445			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2928278	307855				0.80	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 25.364 = (2928278 * 100.000) / (9839712 * 1.173)

Report Date: 17-Dec-2019 13:41:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.196

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	100.000	16078989	1806482

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		100.000	16078989	1806482

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
24:23	1970	190	2426	313	0.0251	0.81	n
25:00	3006	246	2720	295	0.0327	1.11	RnQ
25:00	2094	227	2720	295	0.0275		Empc Correction
27:02	4892	394	5588	625	0.0599	0.88	
27:46	17103	1872	17902	1808	0.2001	0.96	RQ
27:46	13784	1392	17902	1808	0.1811		Empc Correction
29:27	2878	253	2797	278	0.0324	1.03	RnQ
29:27	2153	214	2797	278	0.0283		Empc Correction
30:20	1906	213	2013	300	0.0224	0.95	RnQ
30:20	1550	230	2013	300	0.0204		Empc Correction
30:27	1916	222	2536	271	0.0254	0.76	n
31:06	3849	296	3190	302	0.0402	1.21	RnQ
31:06	2456	232	3190	302	0.0323		Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDD, RT: 39.432

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	100.000	7754977	1675005

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		100.000	7754977	1675005

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
40:48	48319	7136	13880	1908	0.7687	3.48	RQ
40:48	21513	2957	13880	1908	0.4374		Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDF, RT: 38.009

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	100.000	12125417	2262044
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	100.000	12089402	2607650

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		100.000	12107409	2434847

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:13	48217	5928	32490	4153	0.5798	1.48	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HxCDD, RT: 44.304

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	100.000	8530863	2100037
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	100.000	9373504	2124360
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		100.000	8952183	2112198

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HxCDF, RT: 44.151

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	100.000	11501577	2882054
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	100.000	15091122	3450590
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	100.000	13139301	3179411
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	100.000	11698179	2353252

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		100.000	12857544	2966326

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	7702902	1313307

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	7702902	1313307

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
50:17	45435	3497	48862	2613	1.09	0.93	

Compound is Marked ND

Report Date: 17-Dec-2019 13:41:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 17-Dec-2019 12:34:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36146 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDF, RT: 49.925

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	10033501	1979439
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	8391901	1422705

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		100.000	9212701	1701072

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	64152	10294	69325	7486	1.01	0.93	
48:36	60744	9732	64618	8746	0.9453	0.94	
51:03	103941	2576	56987	2082	1.21	1.82	RQ
51:03	59266	2165	56987	2082	0.8766		Empc Correction

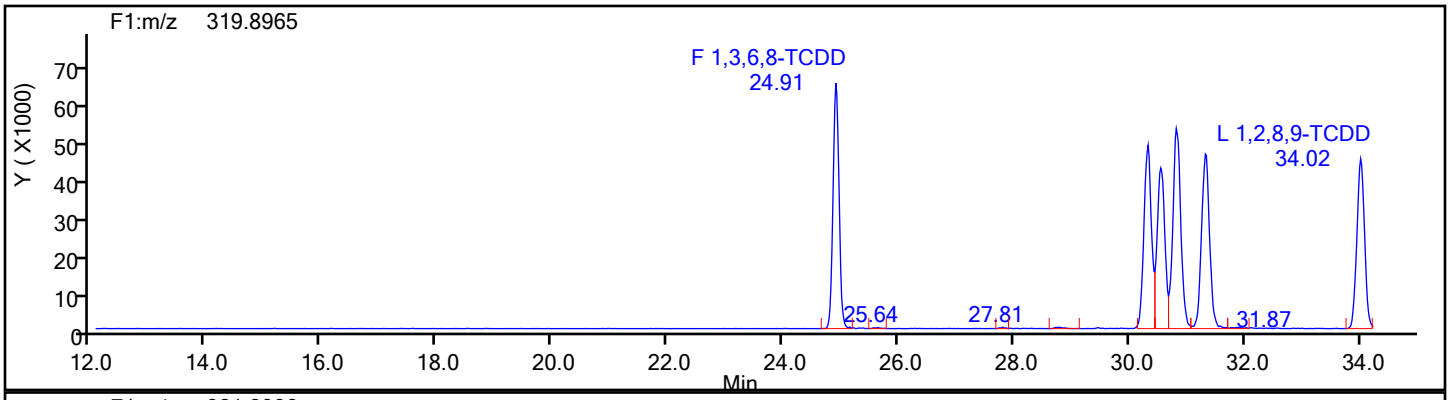
Compound is Marked ND

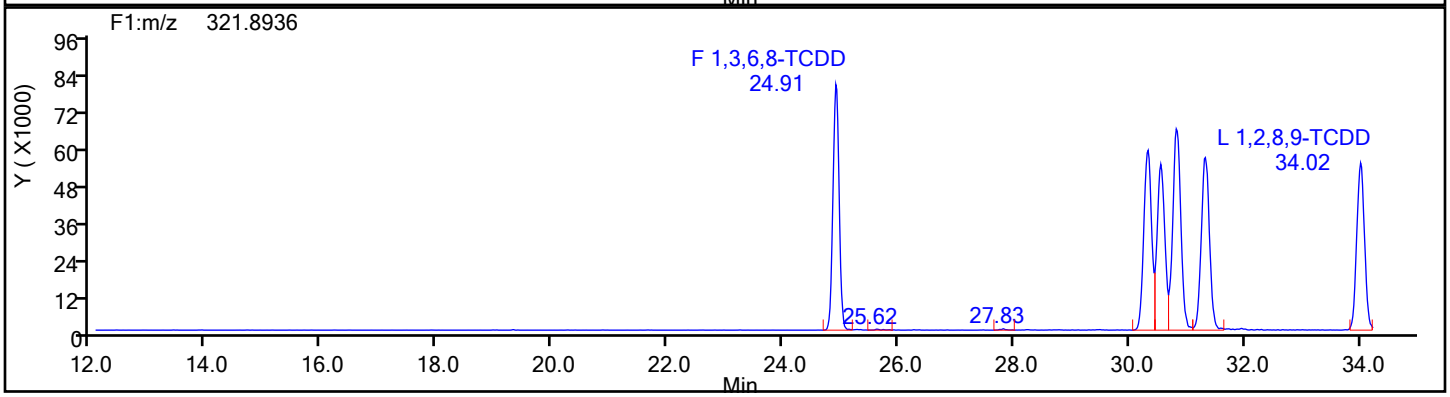
Report Date: 17-Dec-2019 13:41:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

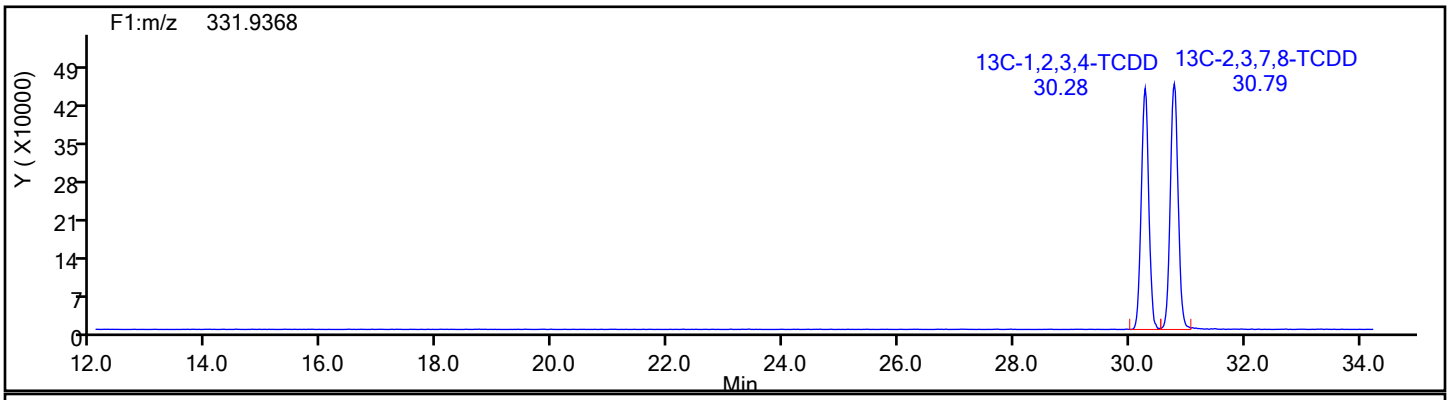
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d		
Injection Date:	17-Dec-2019 12:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

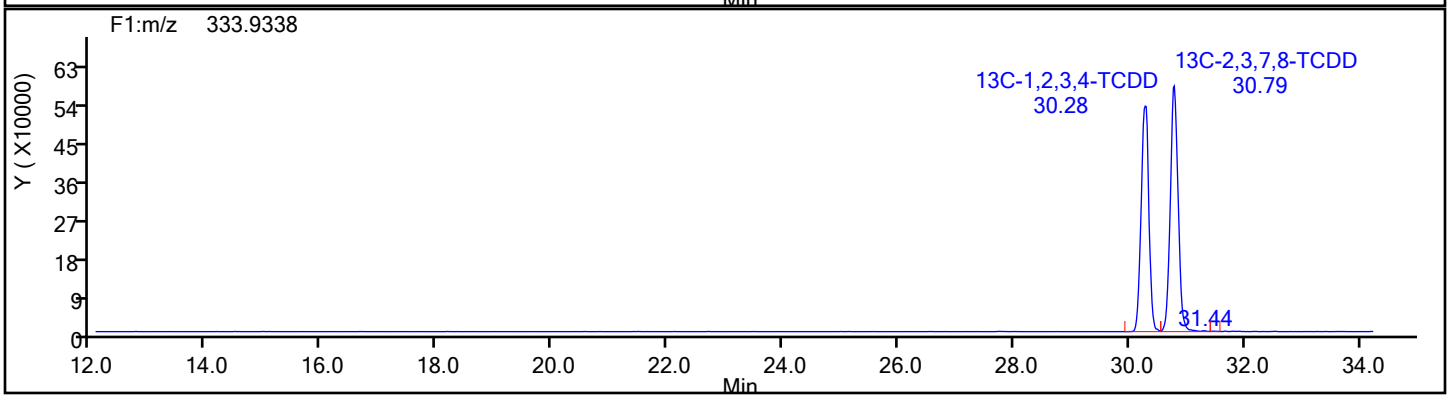
TCDD





TCDD Standards



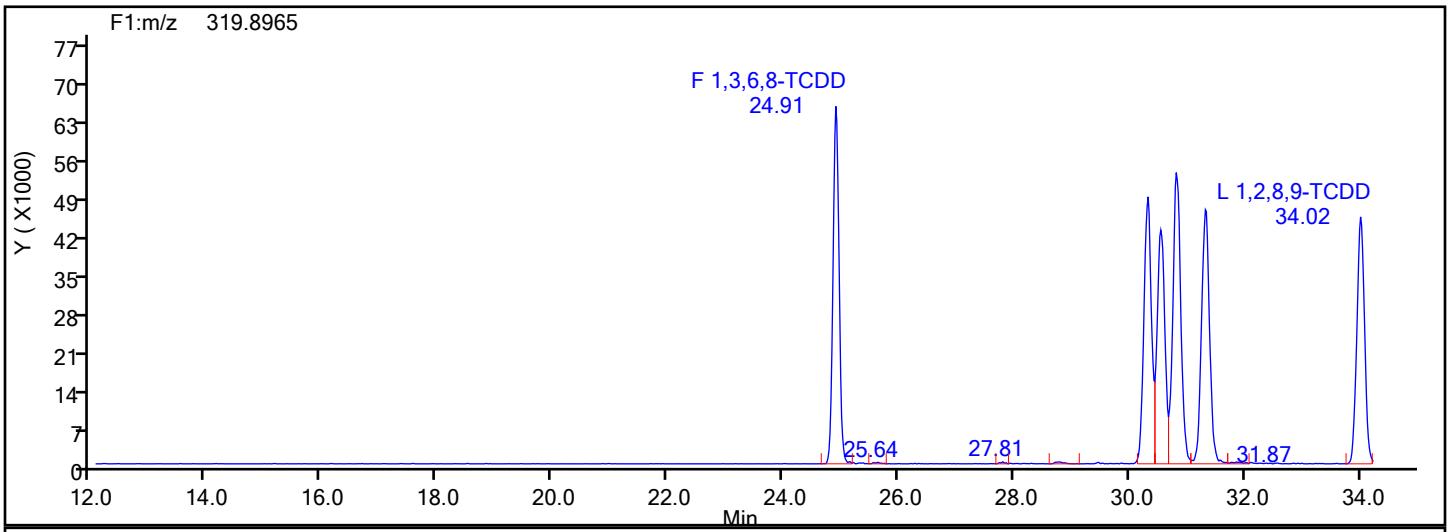


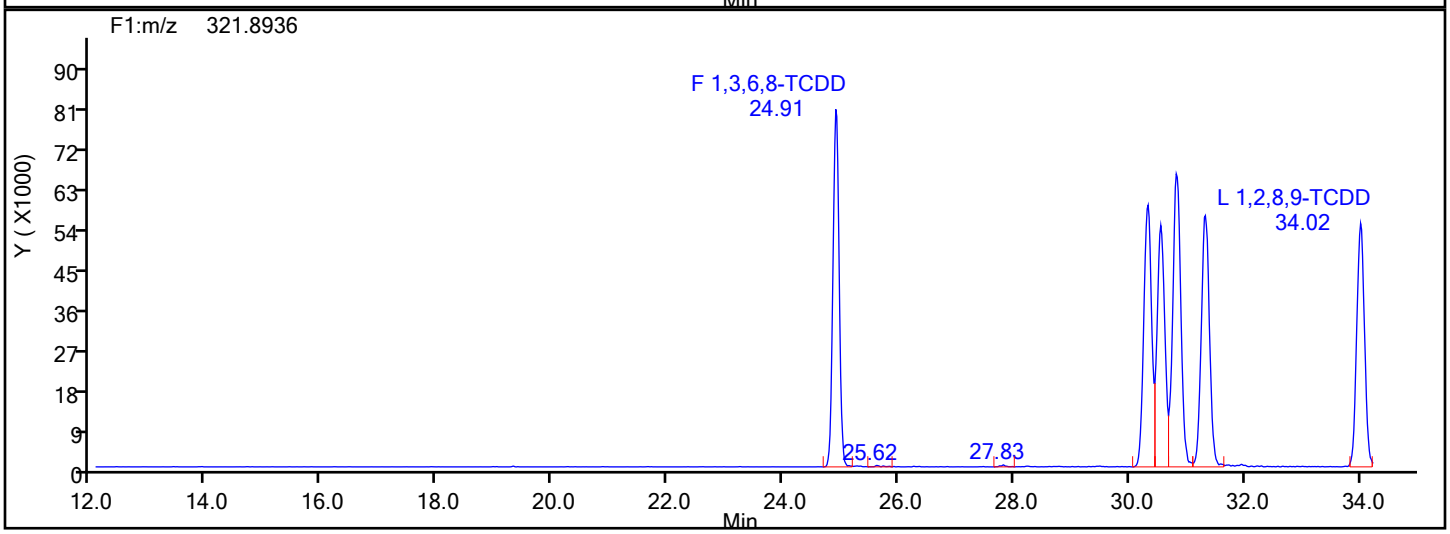
Report Date: 17-Dec-2019 13:41:51 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

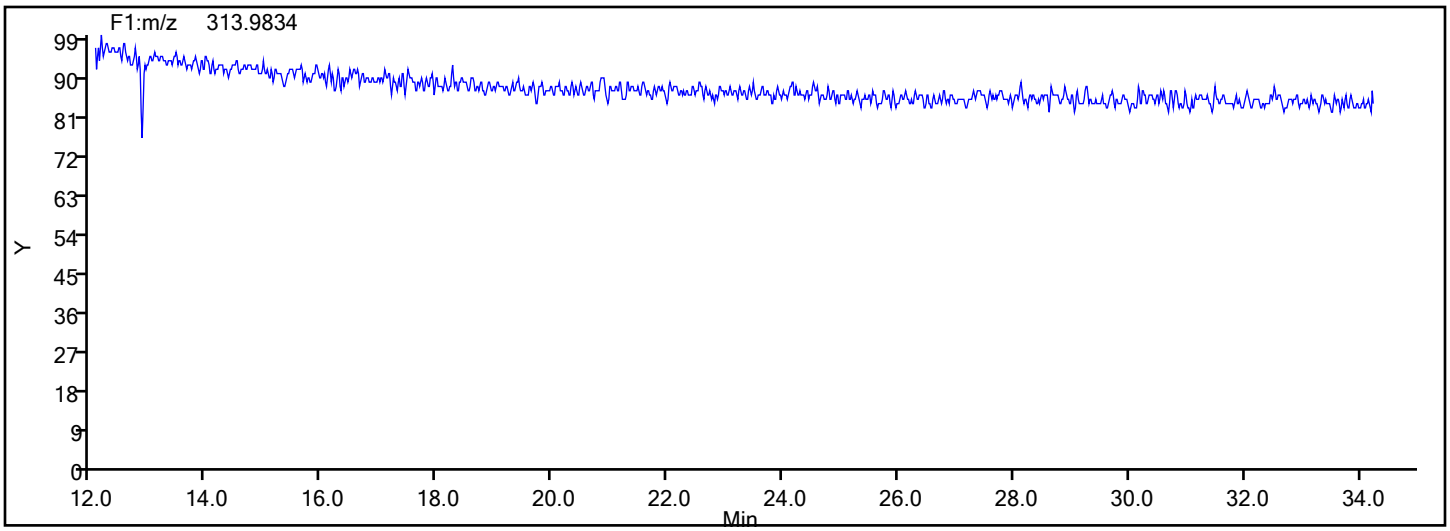
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d		
Injection Date:	17-Dec-2019 12:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



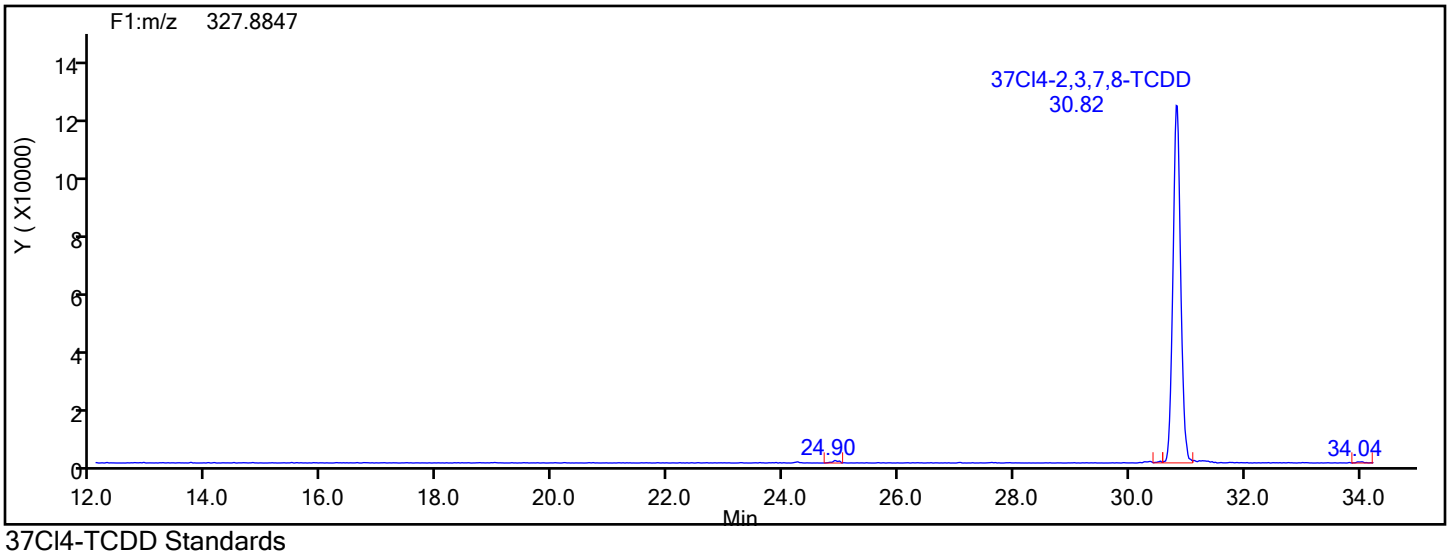
Report Date: 17-Dec-2019 13:41:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

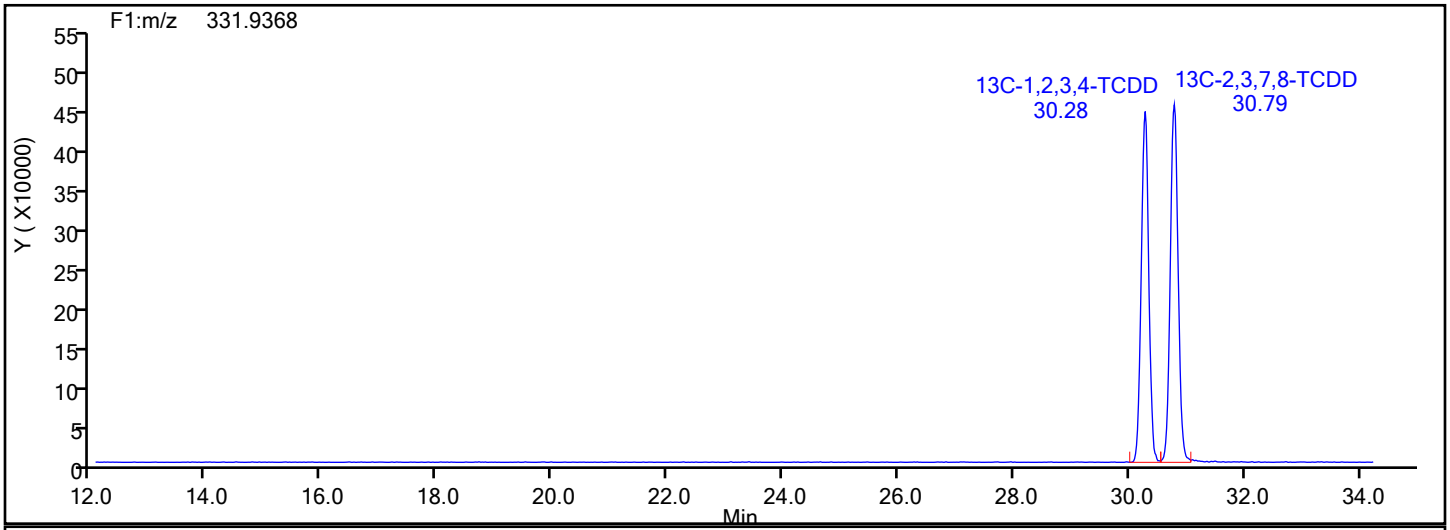
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d

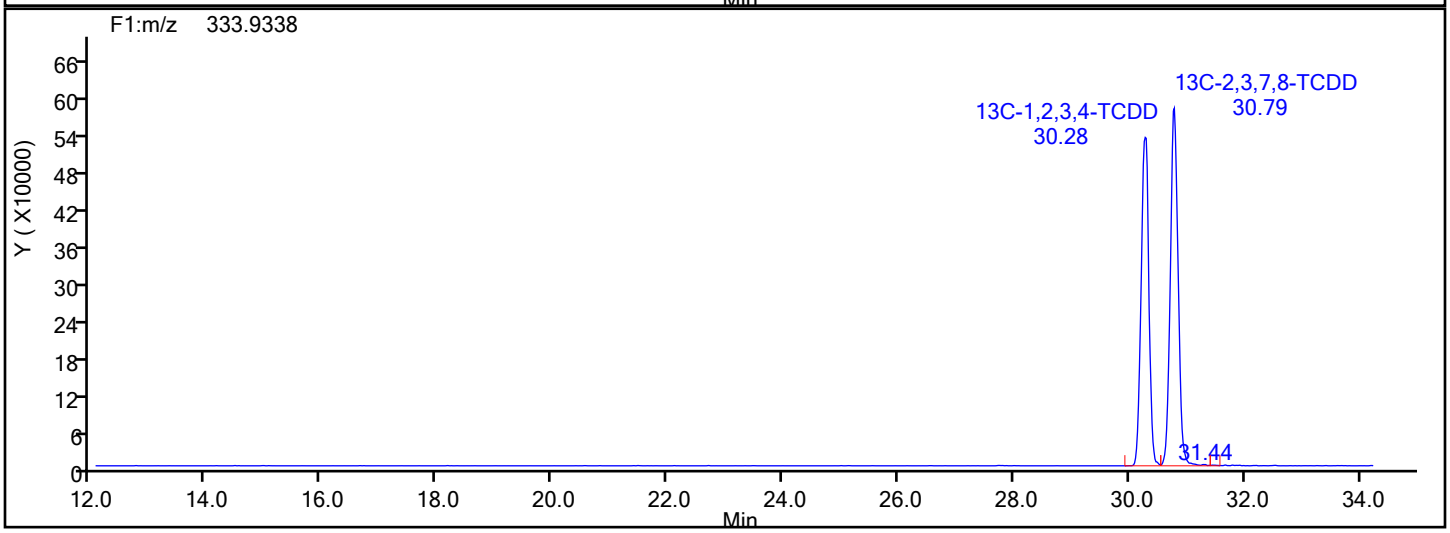
Injection Date:	17-Dec-2019 12:34:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 13:41:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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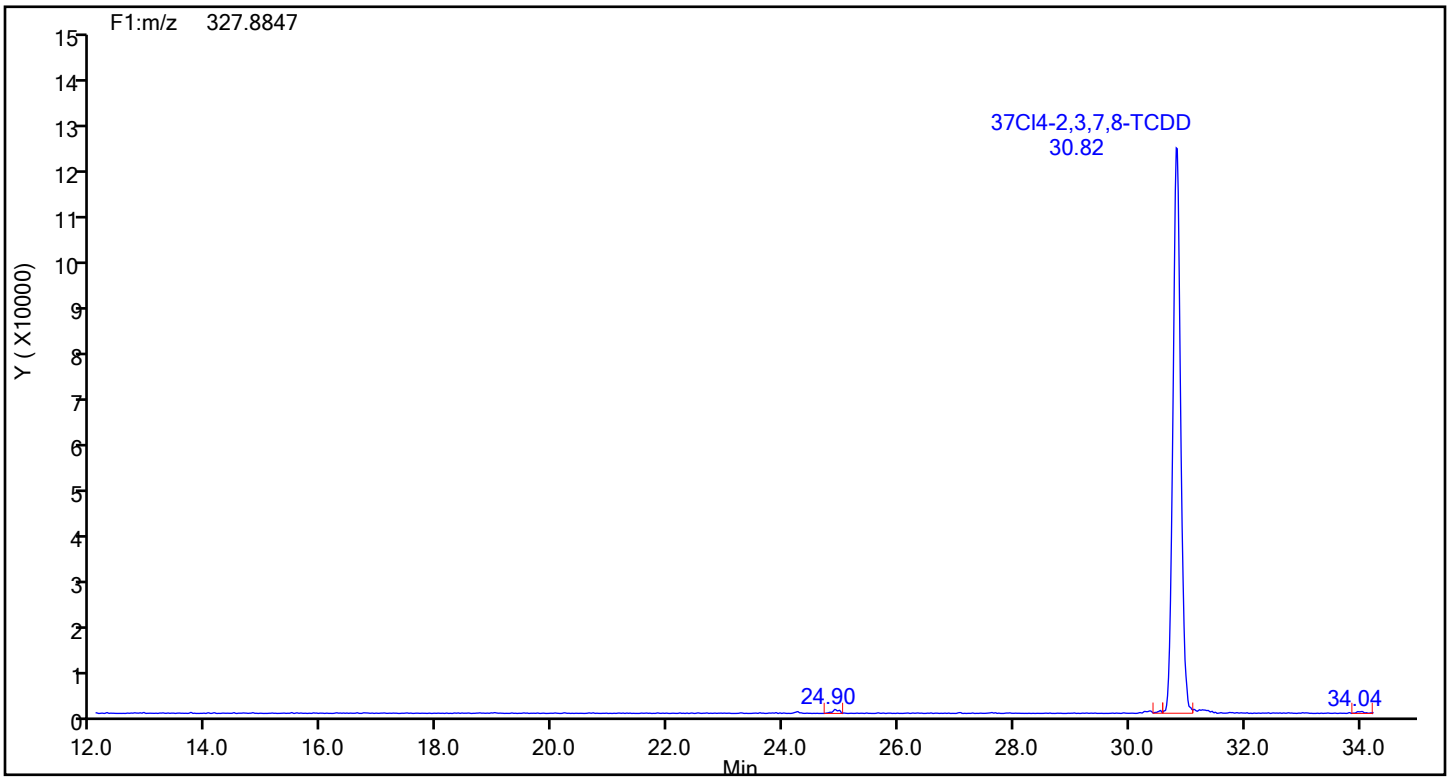

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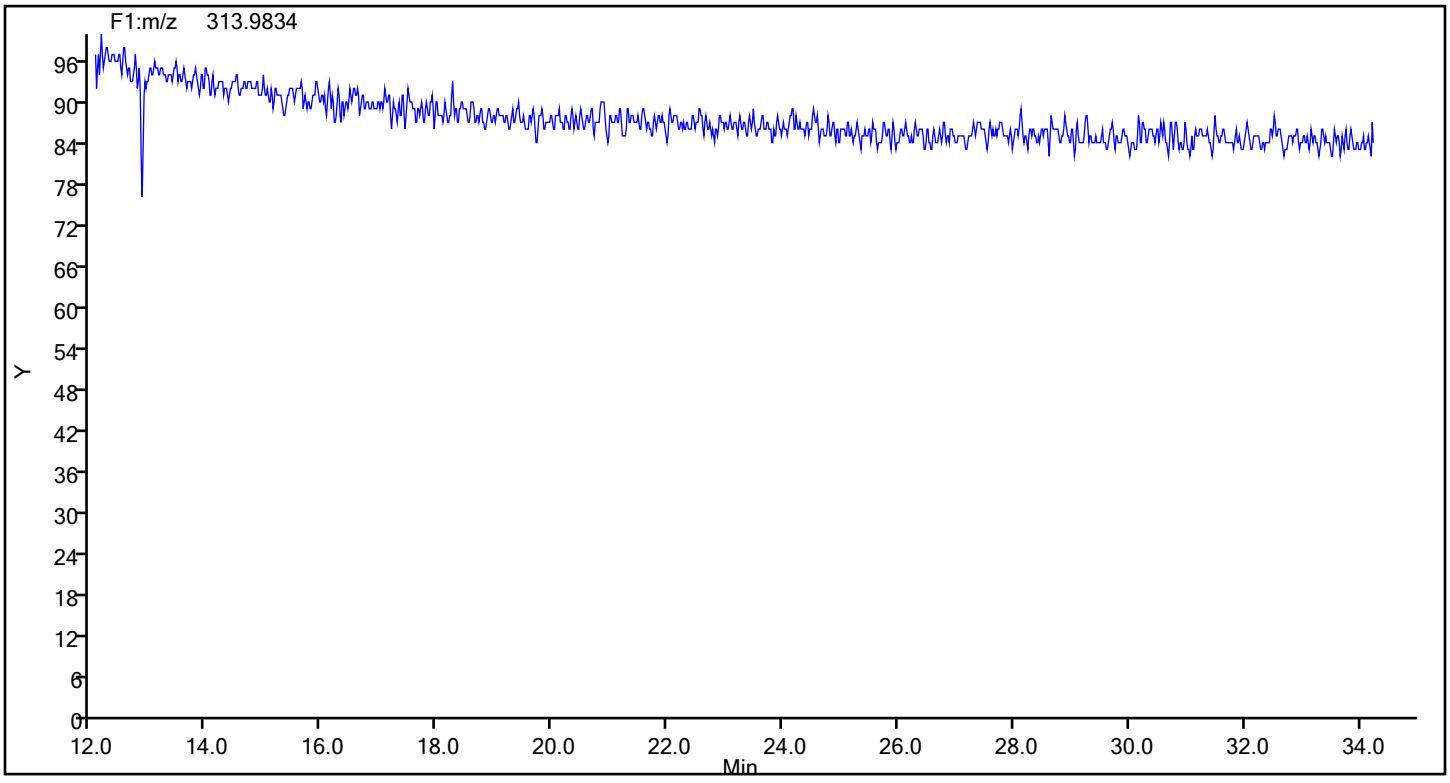

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Eurofins TestAmerica, Knoxville

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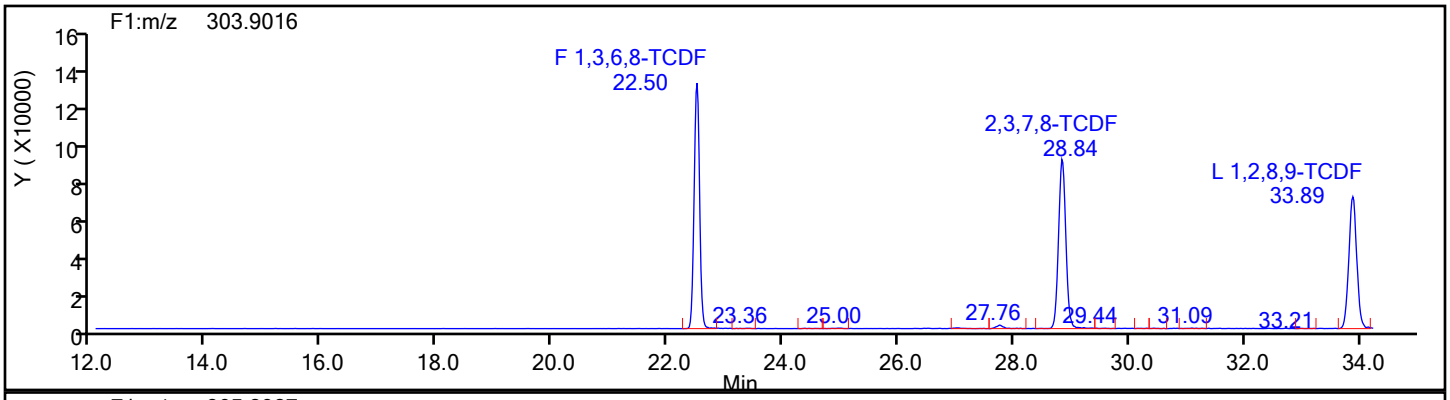
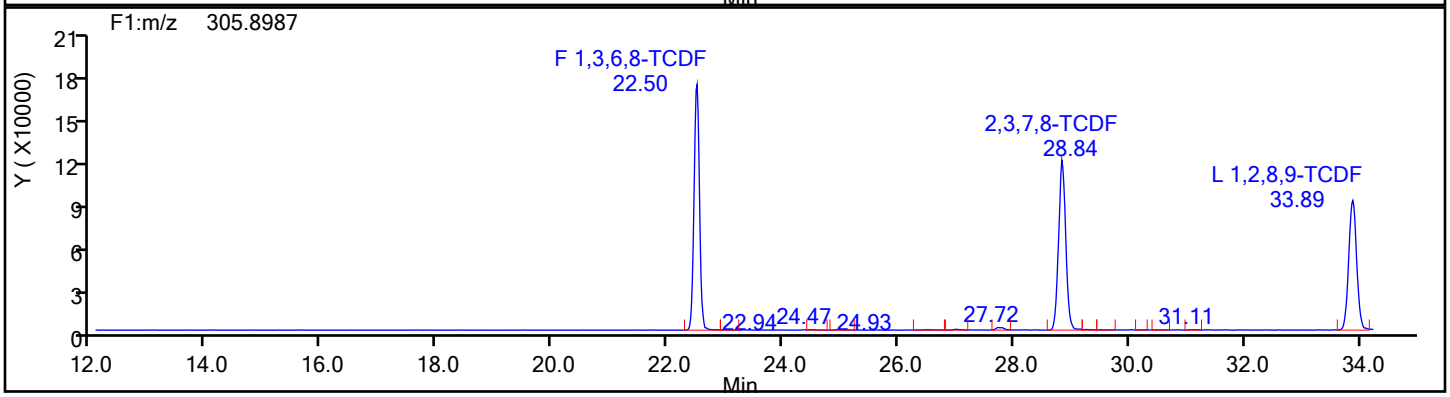
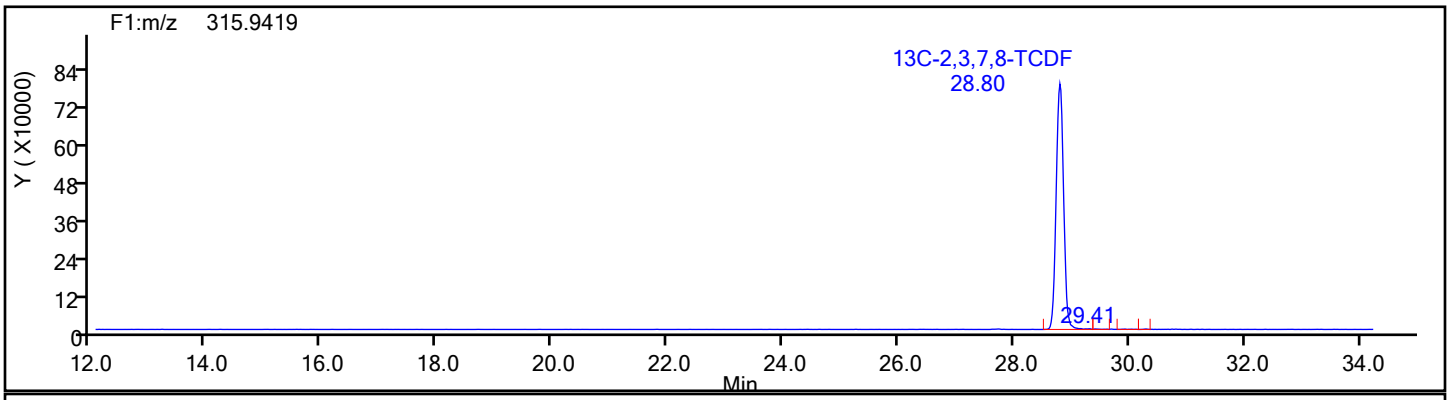
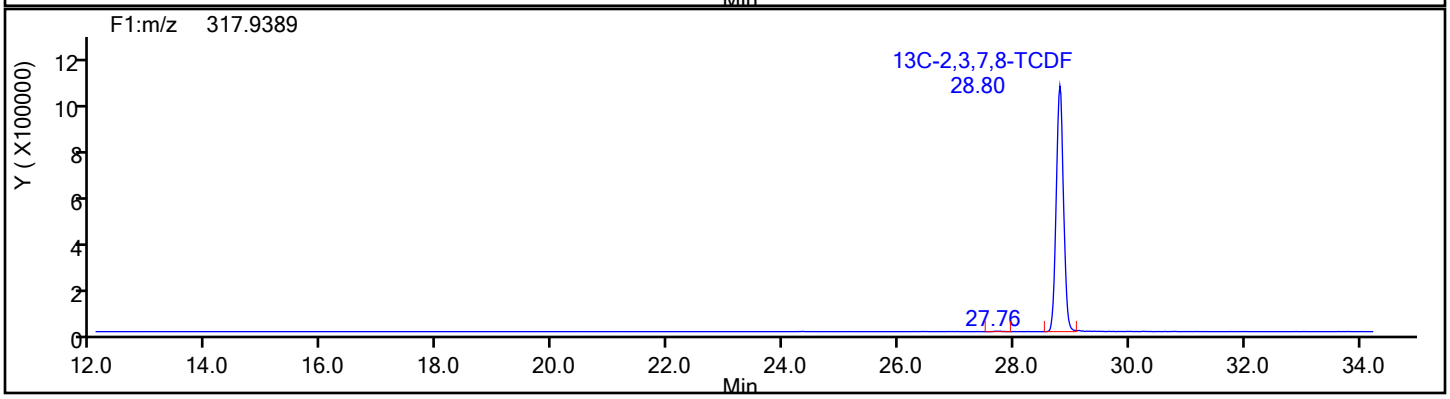




TCDF Standards





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Eurofins TestAmerica, Knoxville

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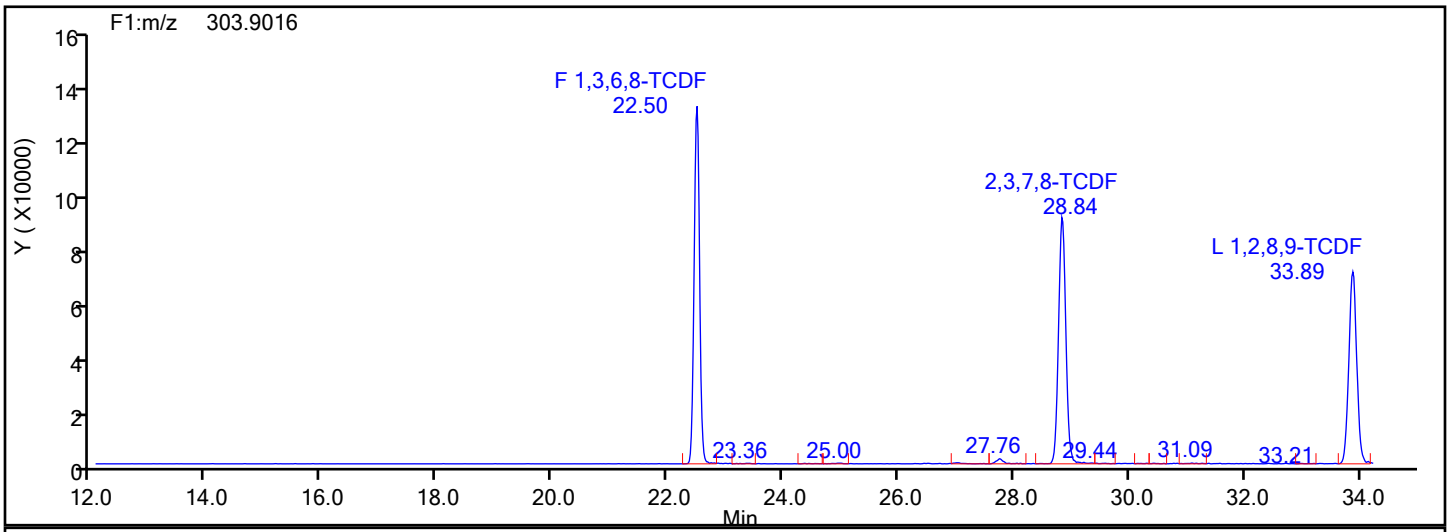
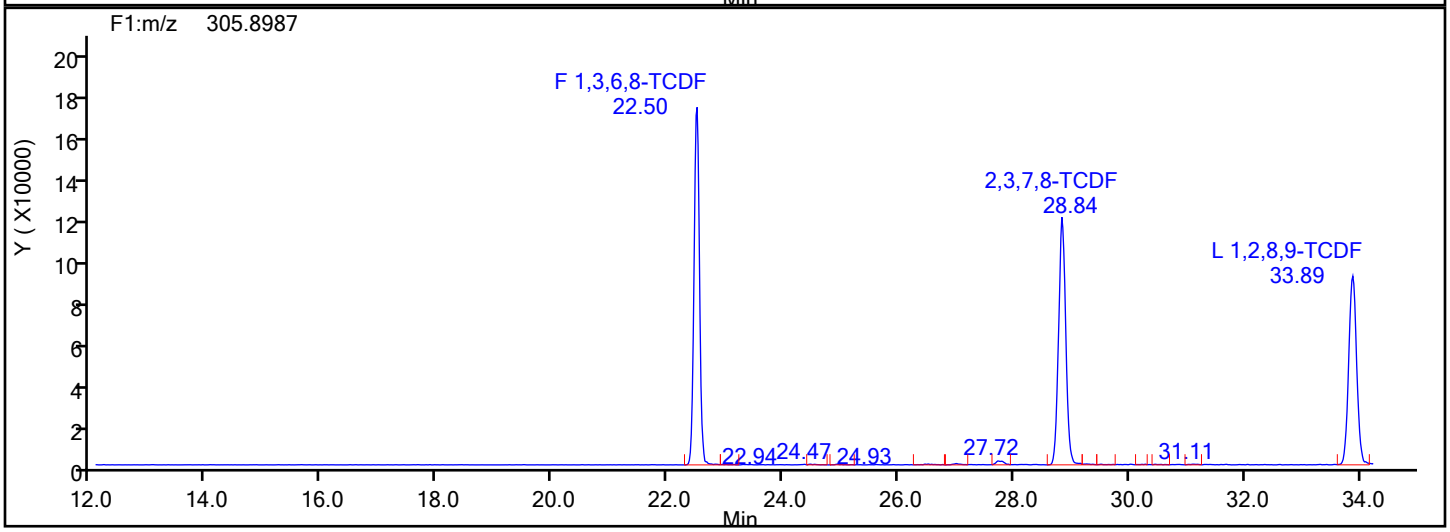
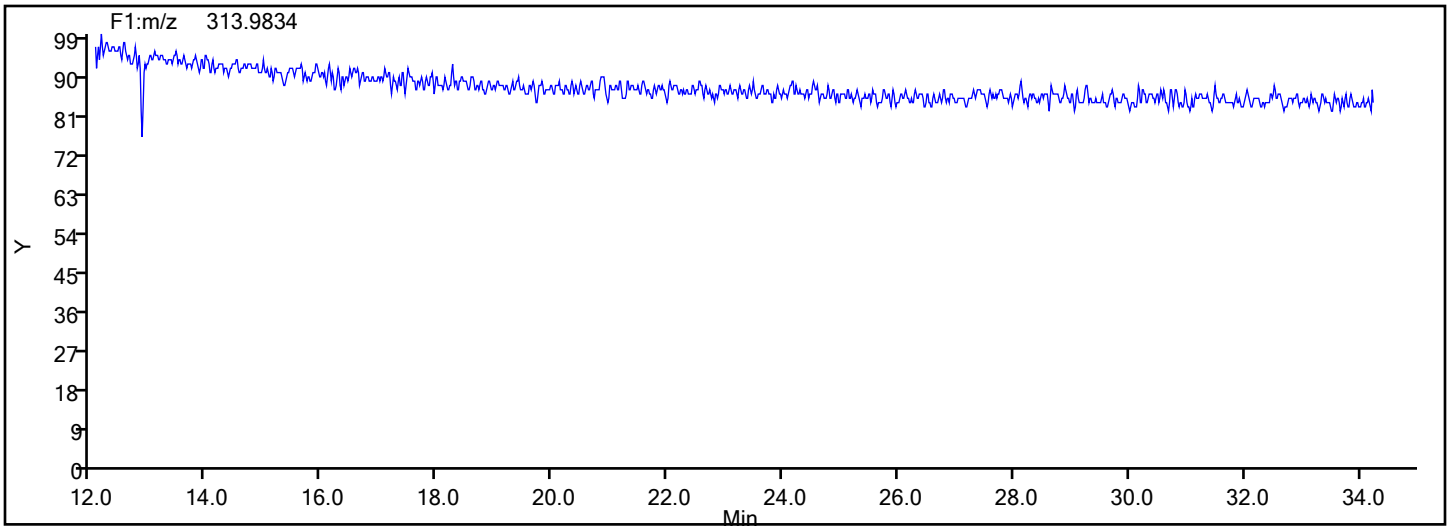




TCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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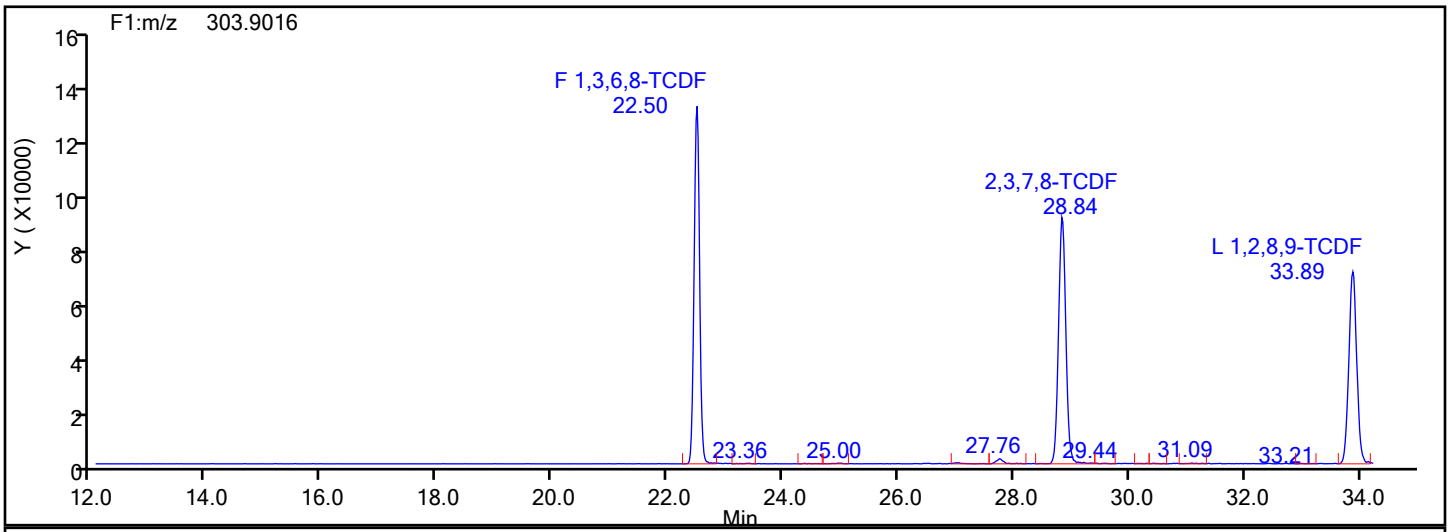

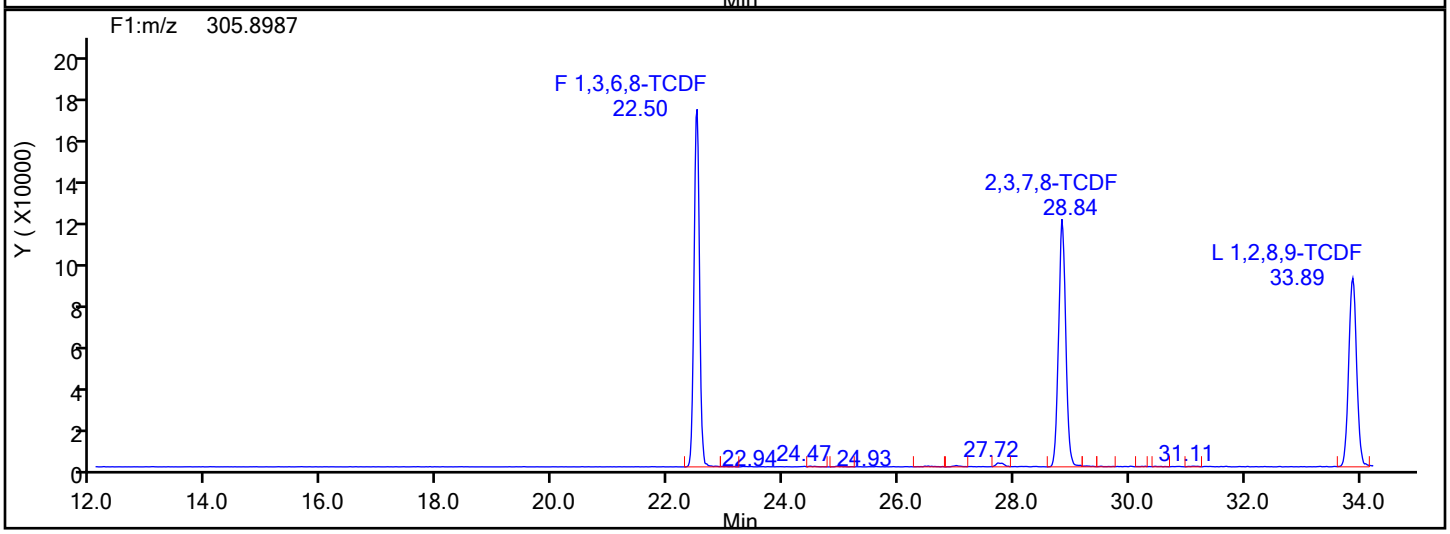

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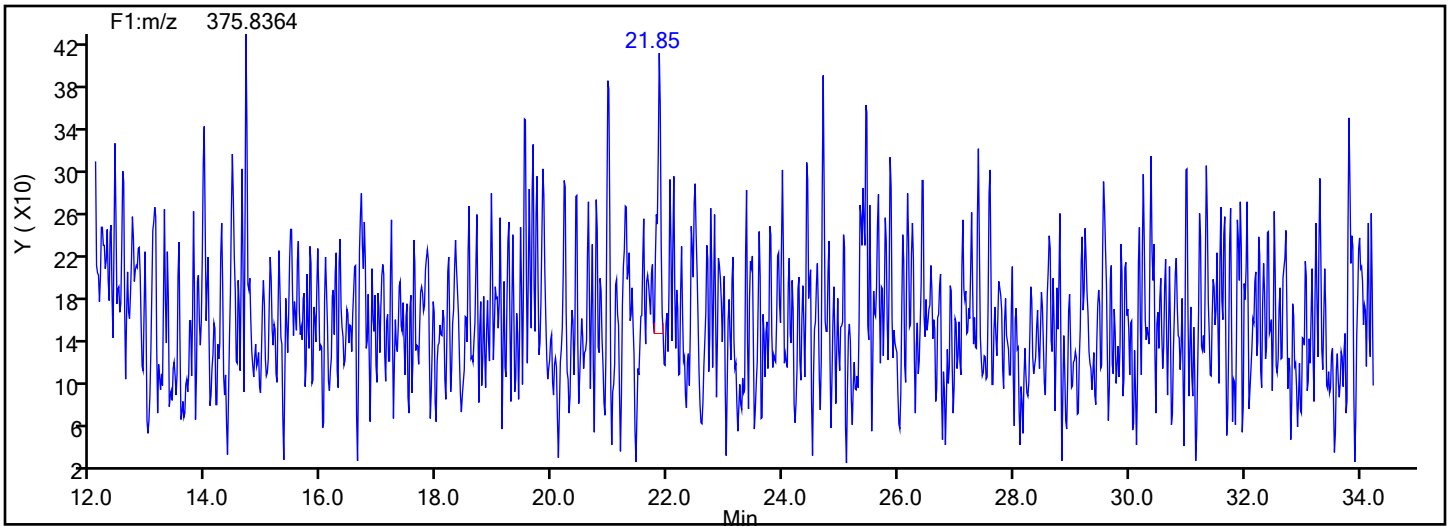

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Eurofins TestAmerica, Knoxville

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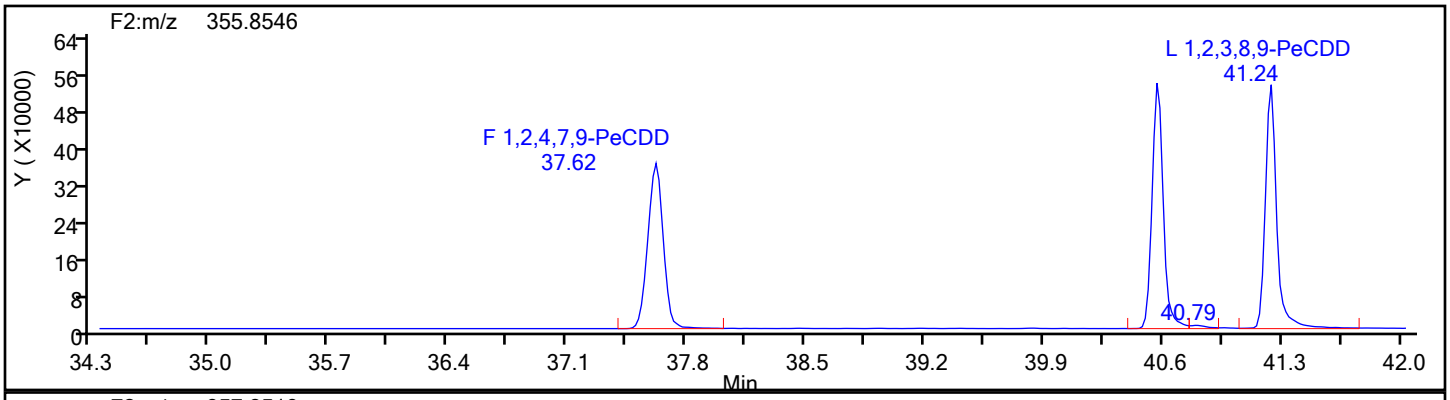
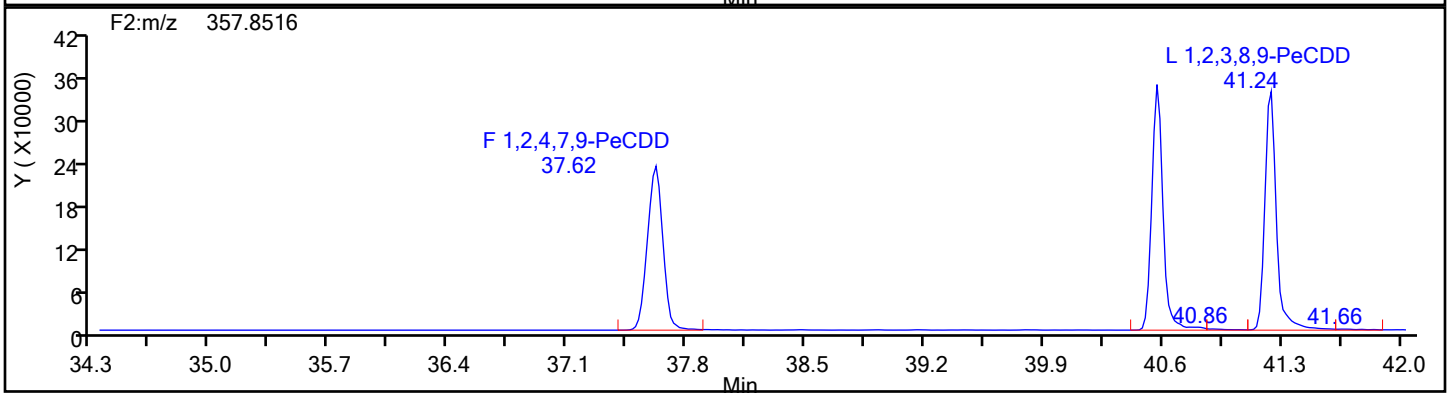
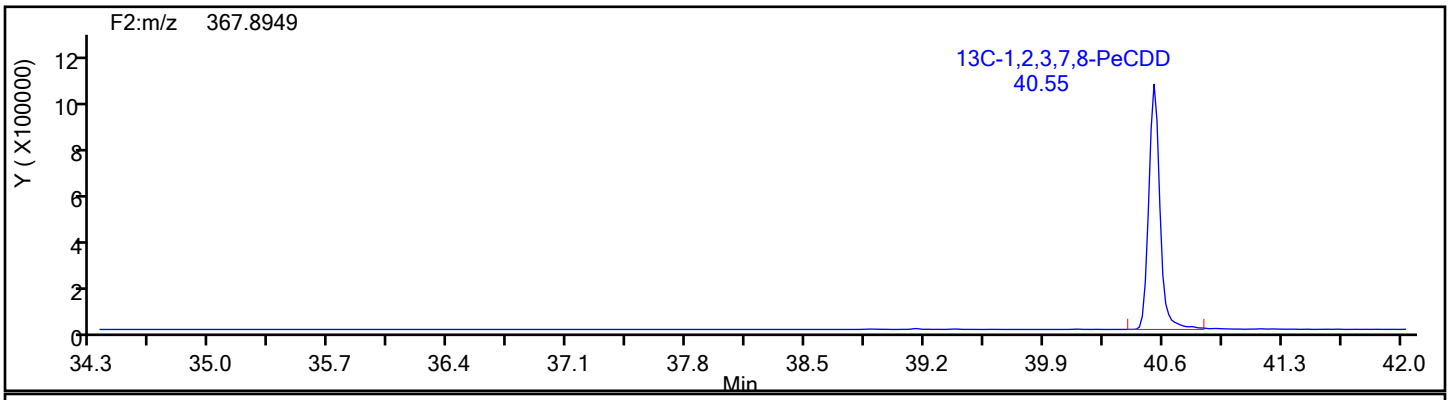
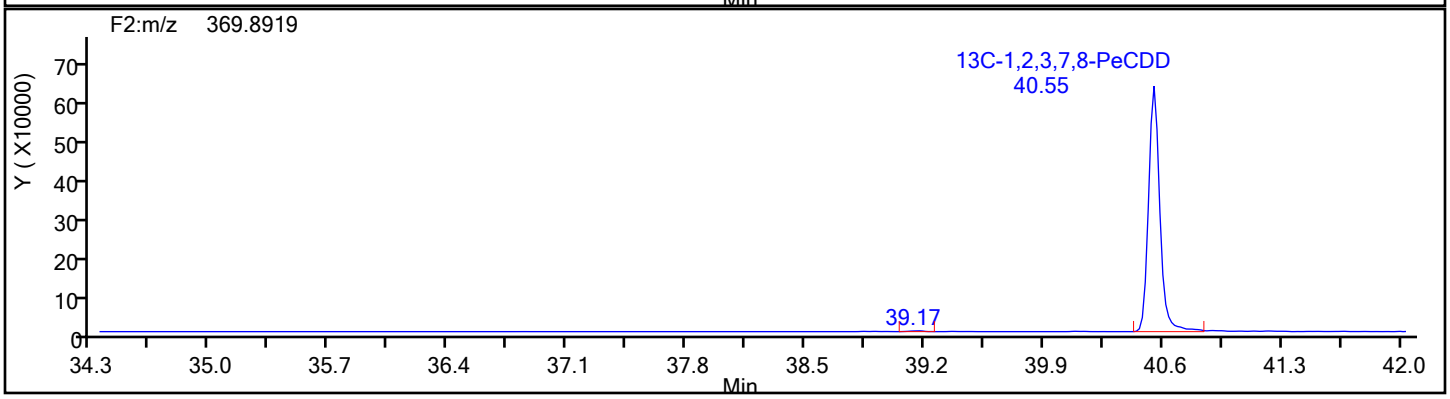




PeCDD Standards





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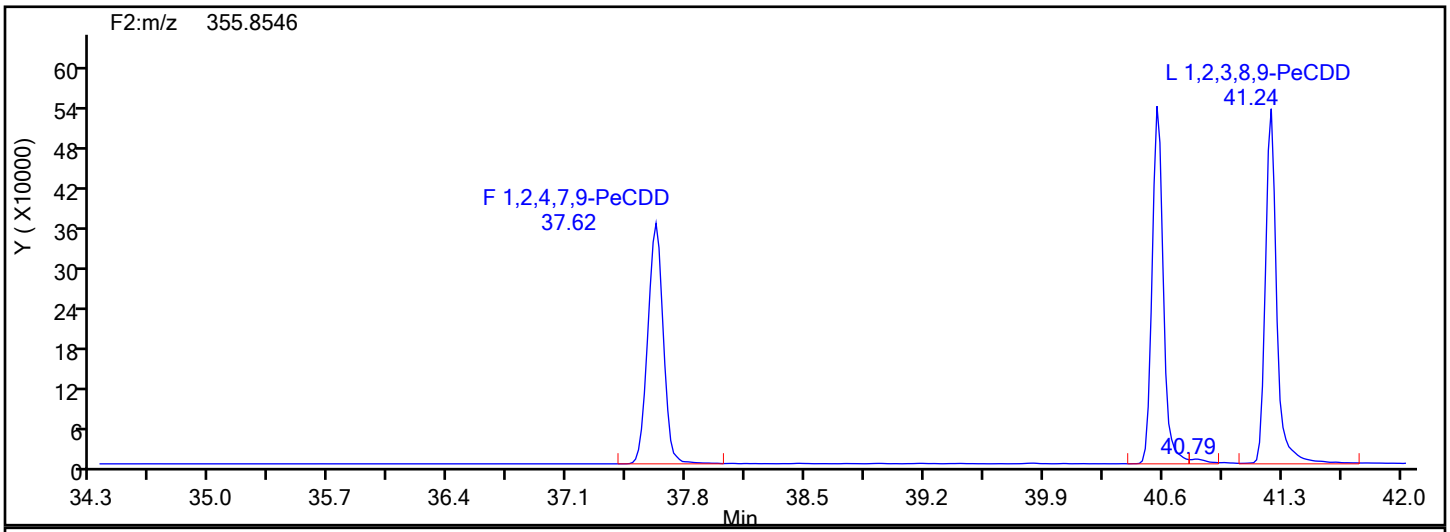
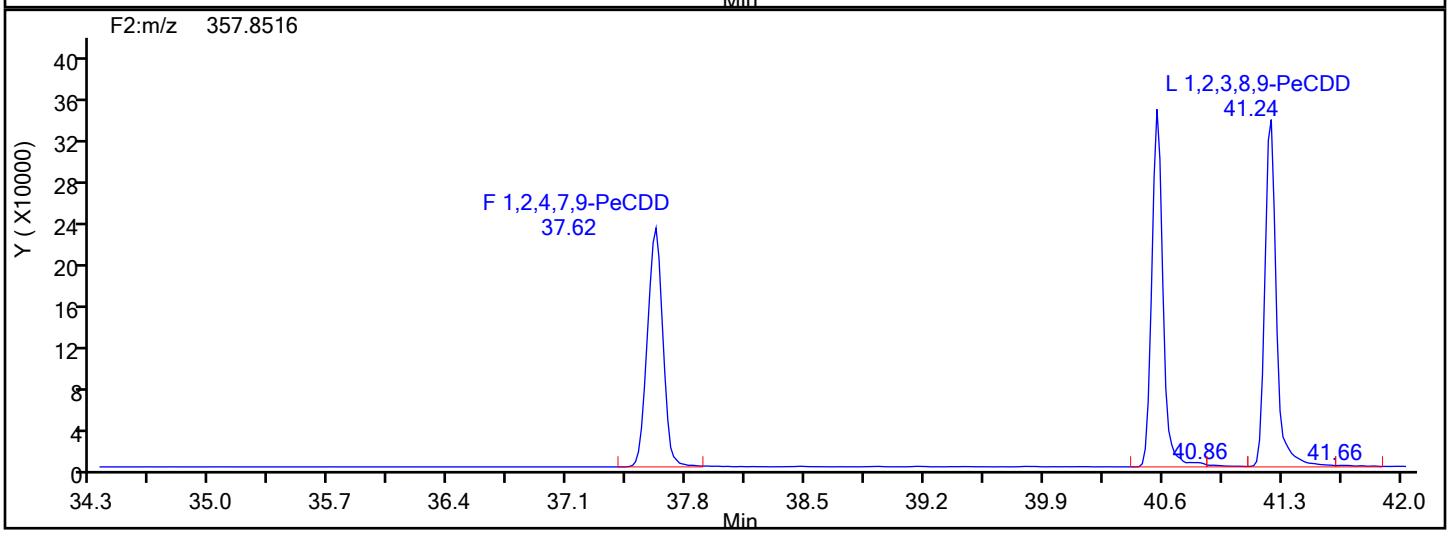
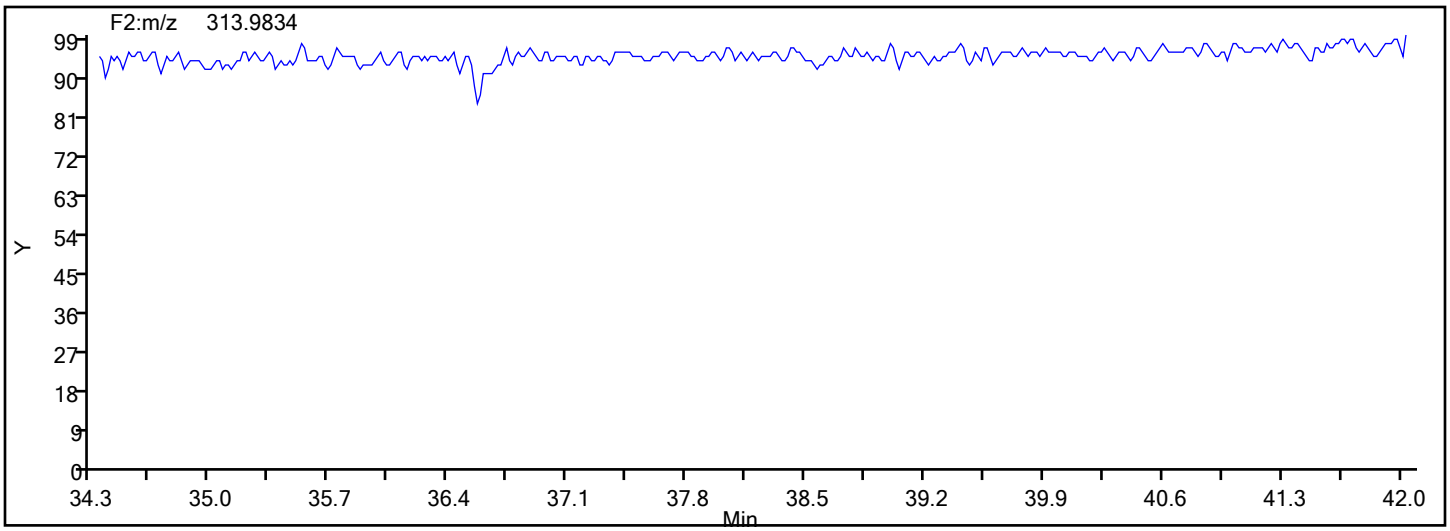




PeCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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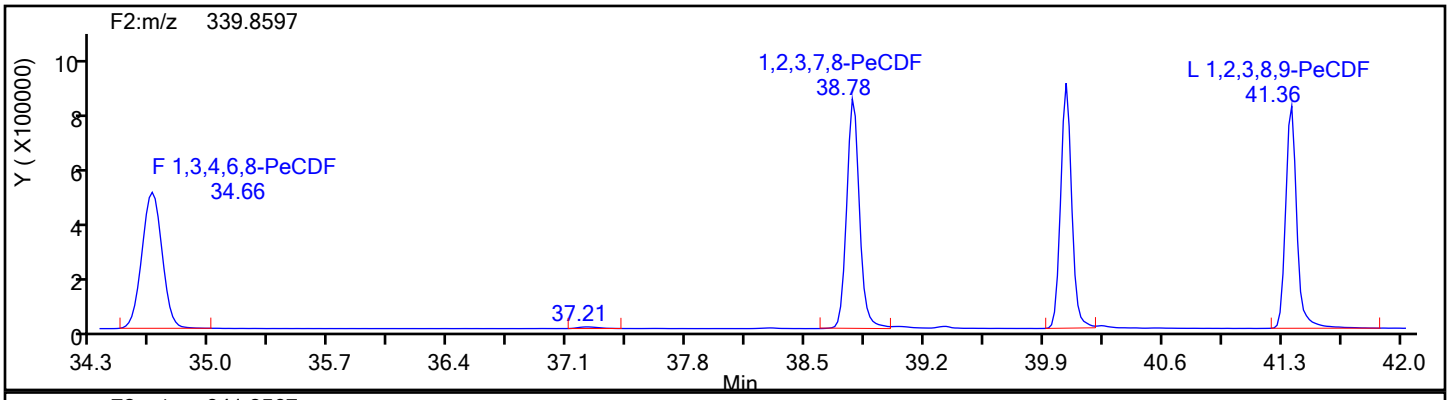

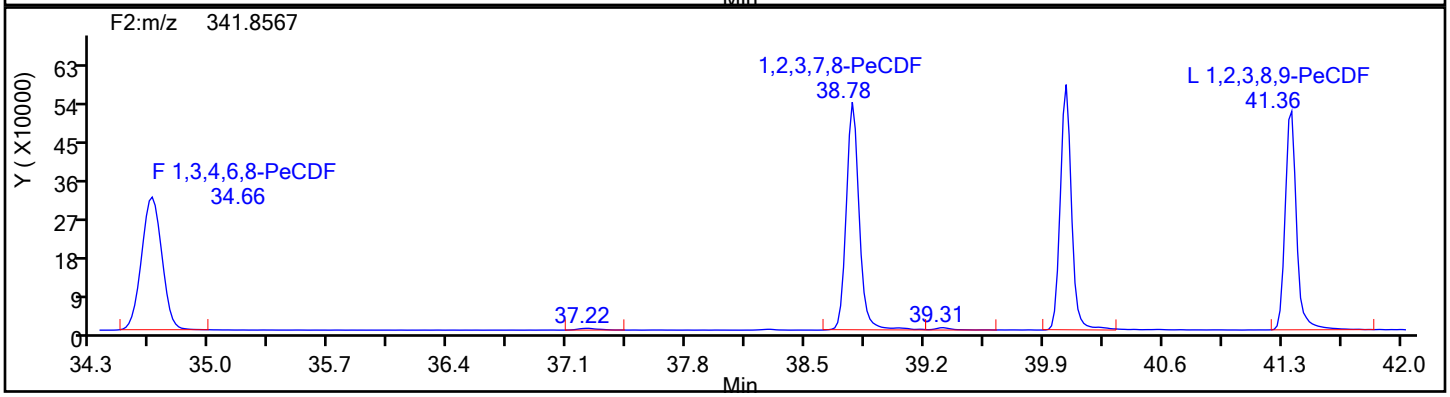

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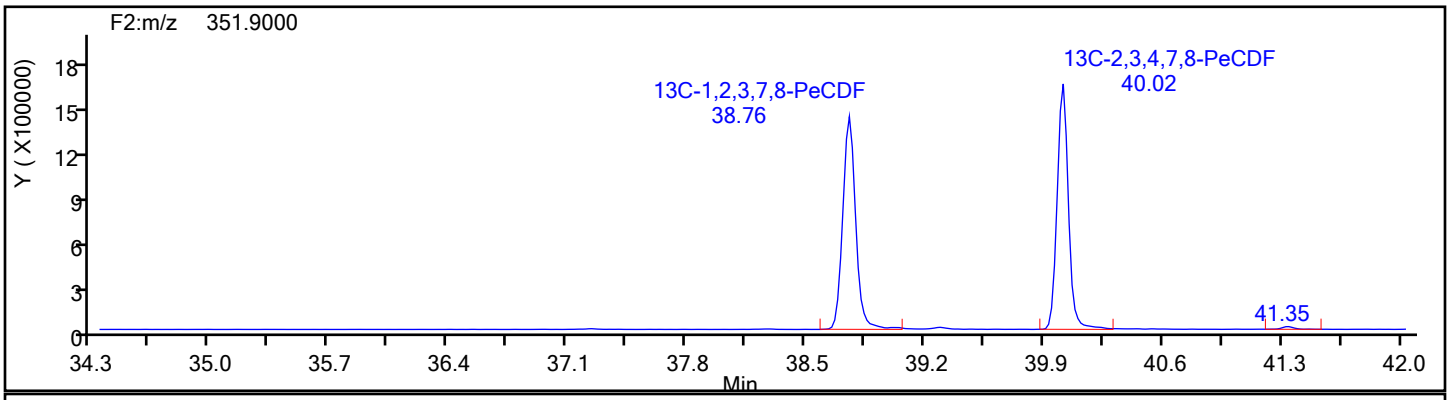

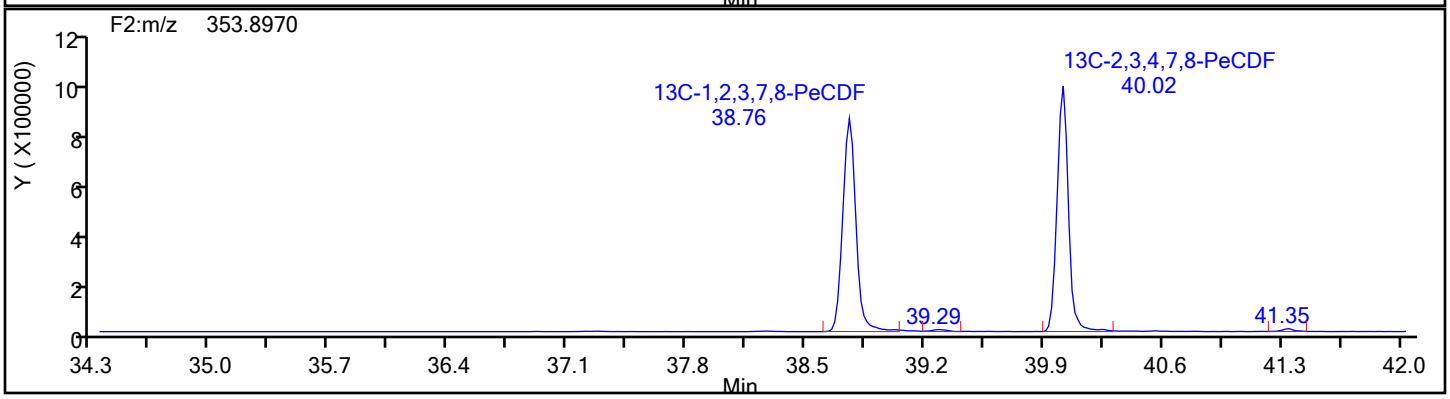

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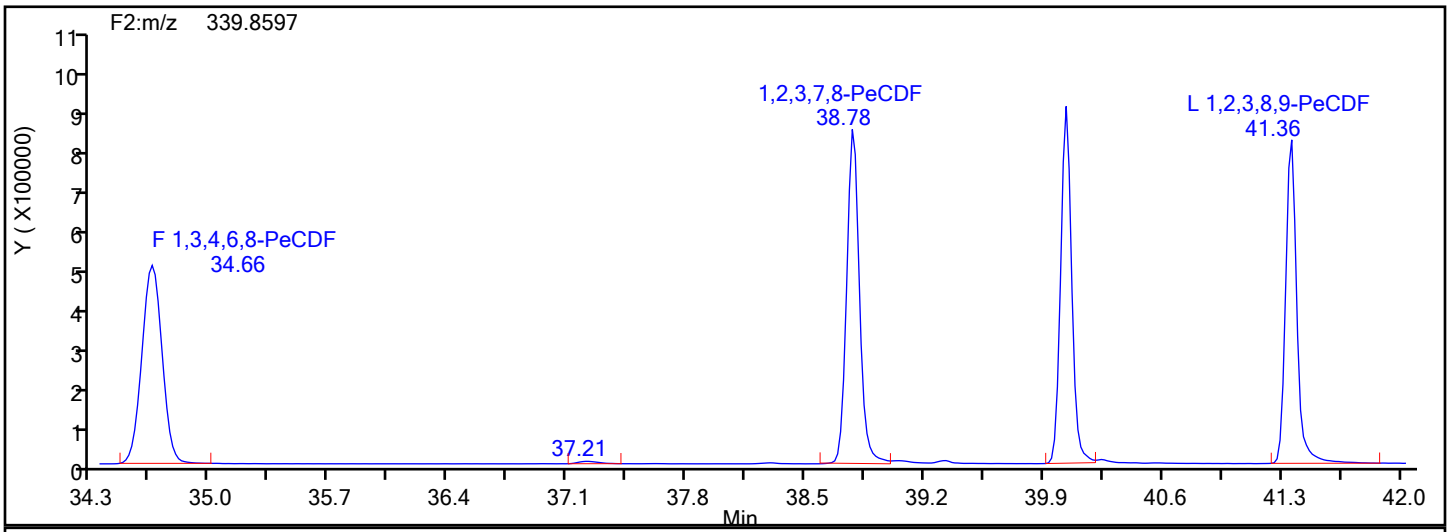
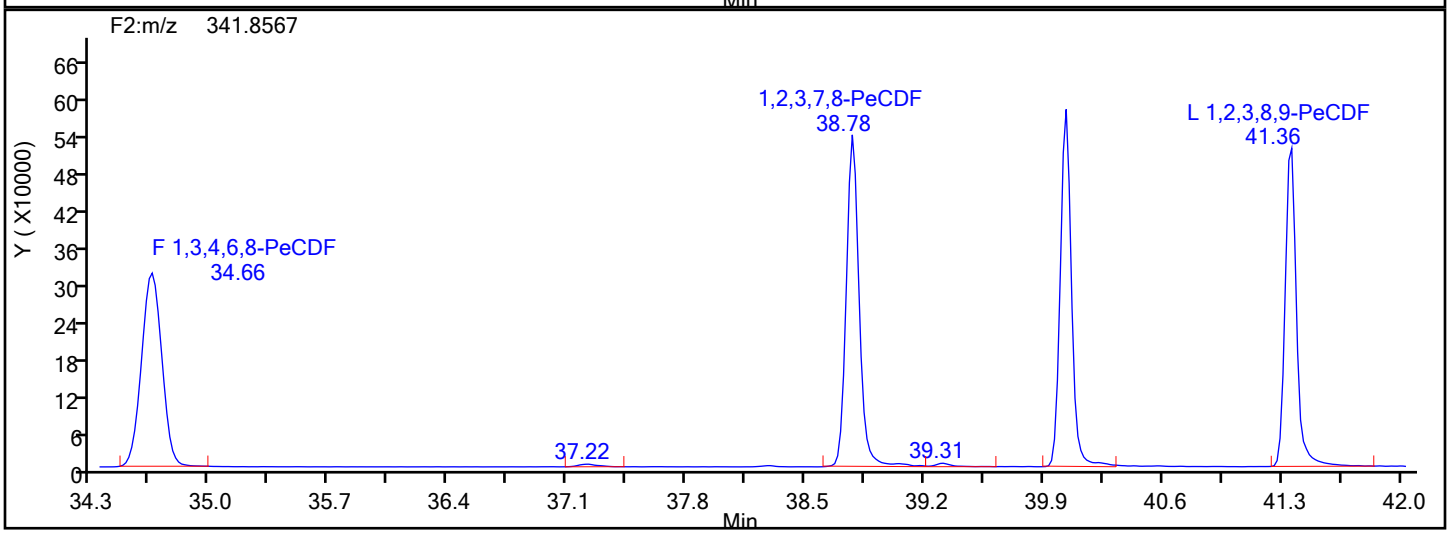
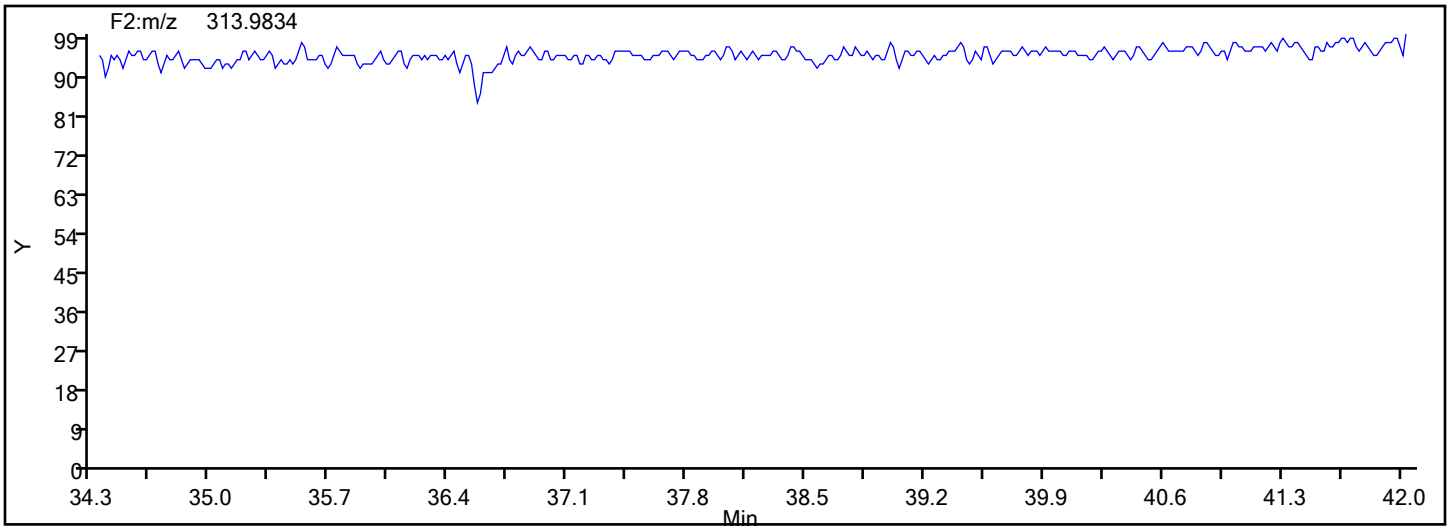




PeCDF Lock Mass



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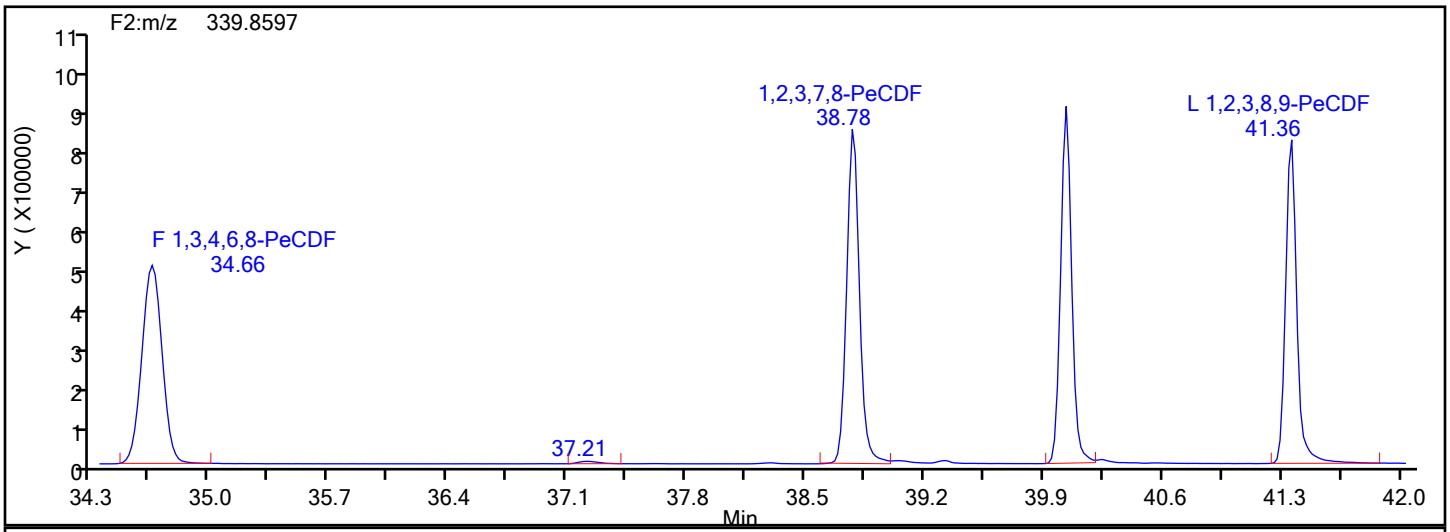

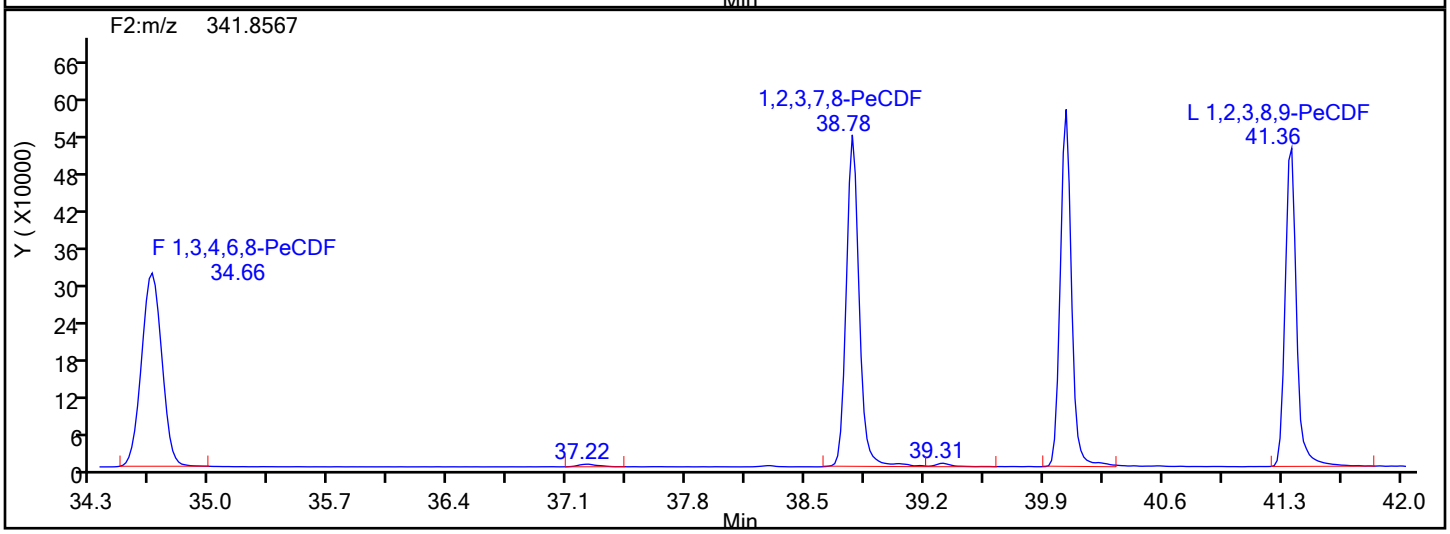

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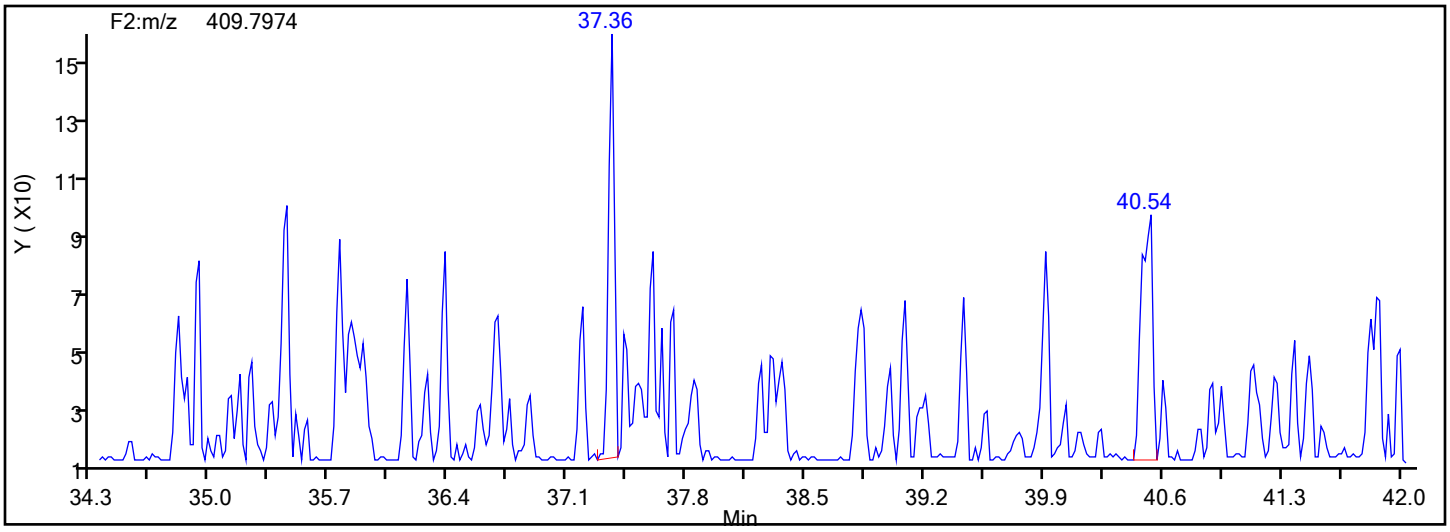

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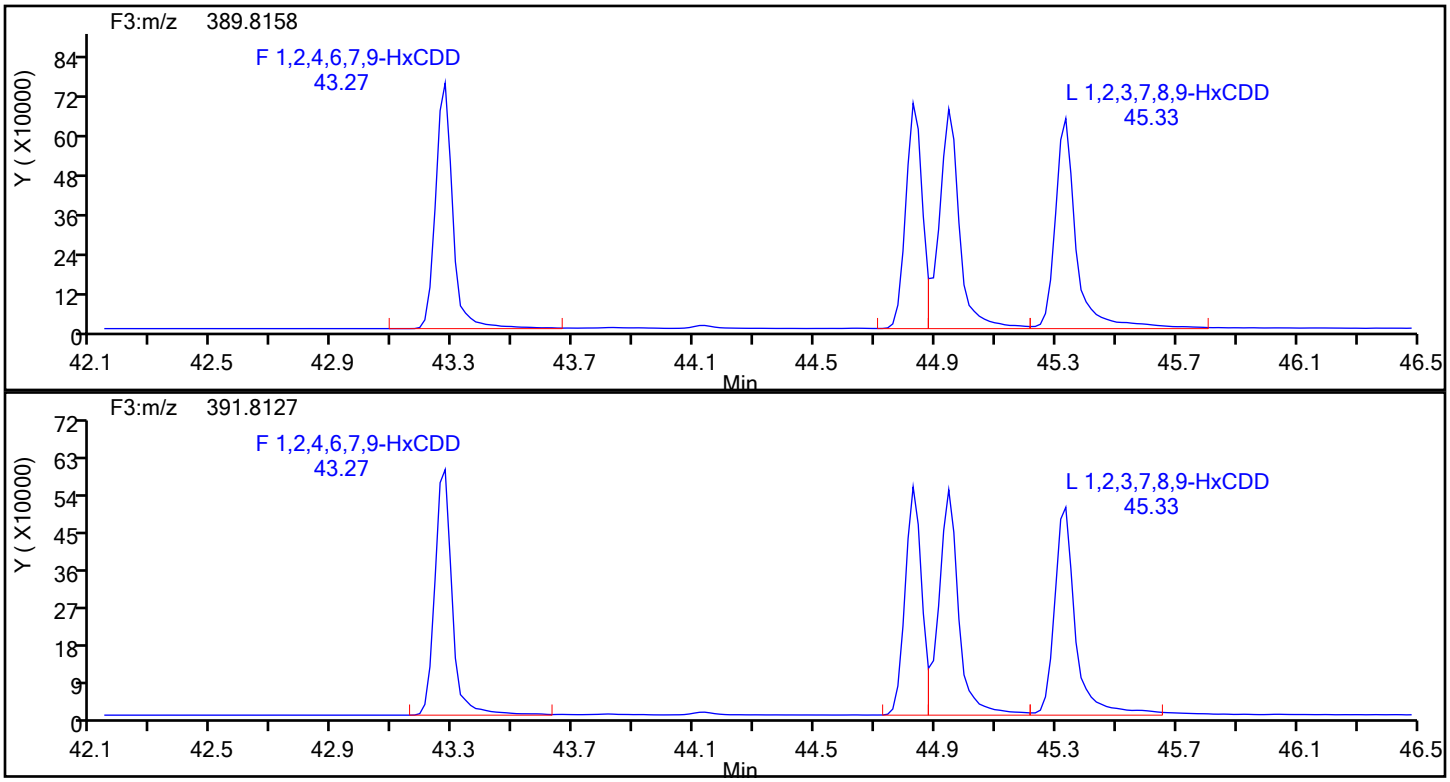

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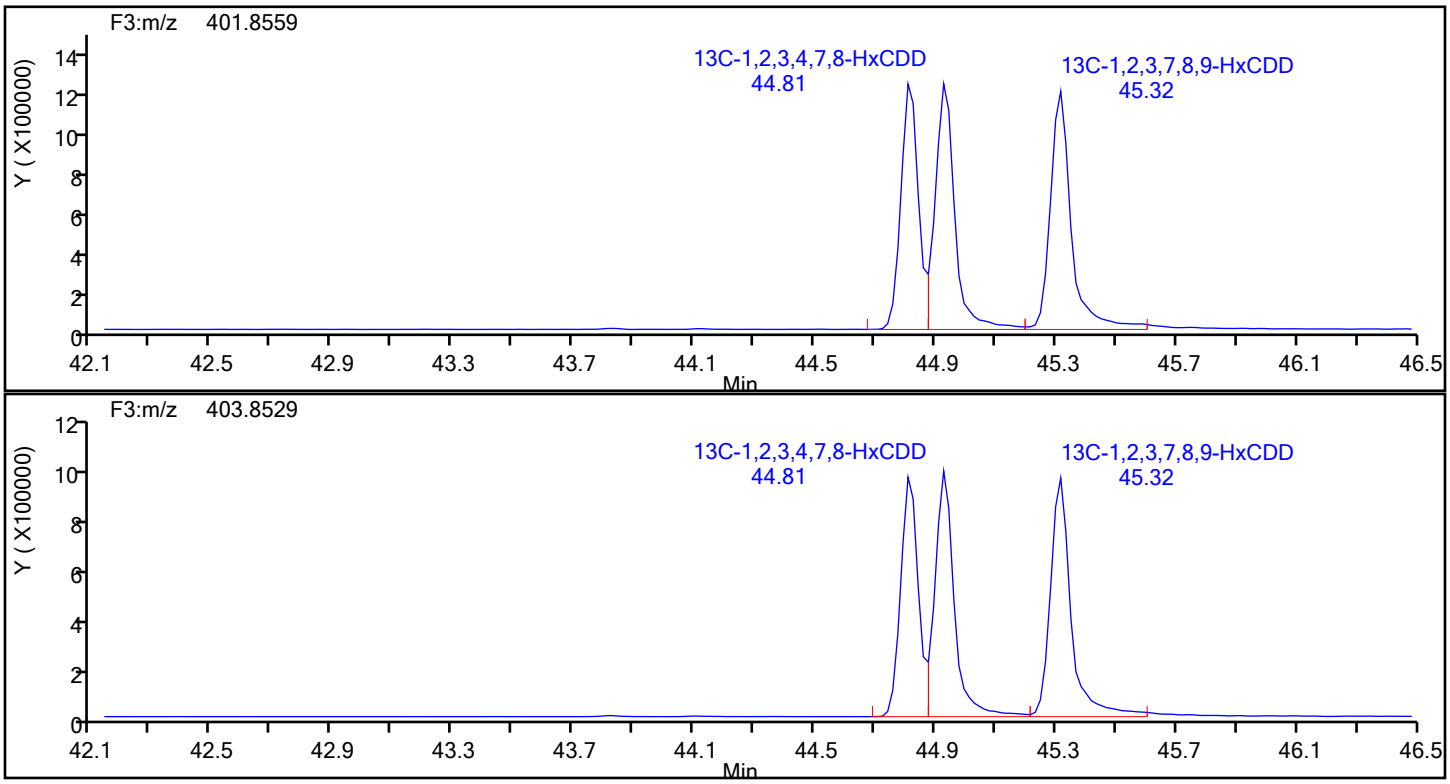

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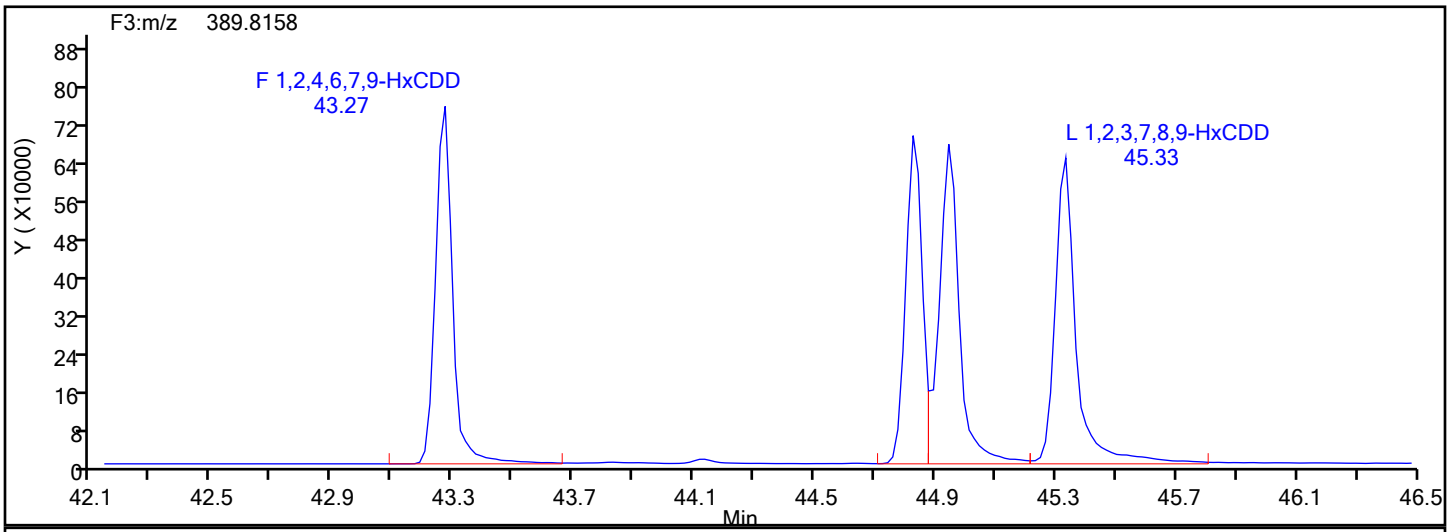
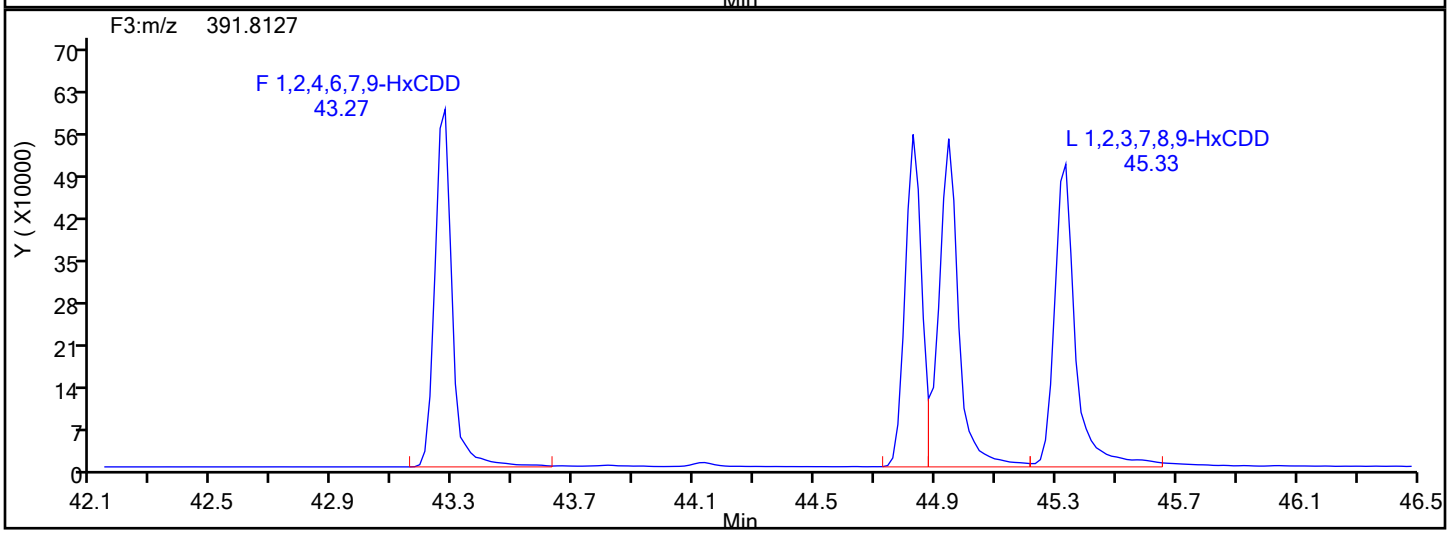
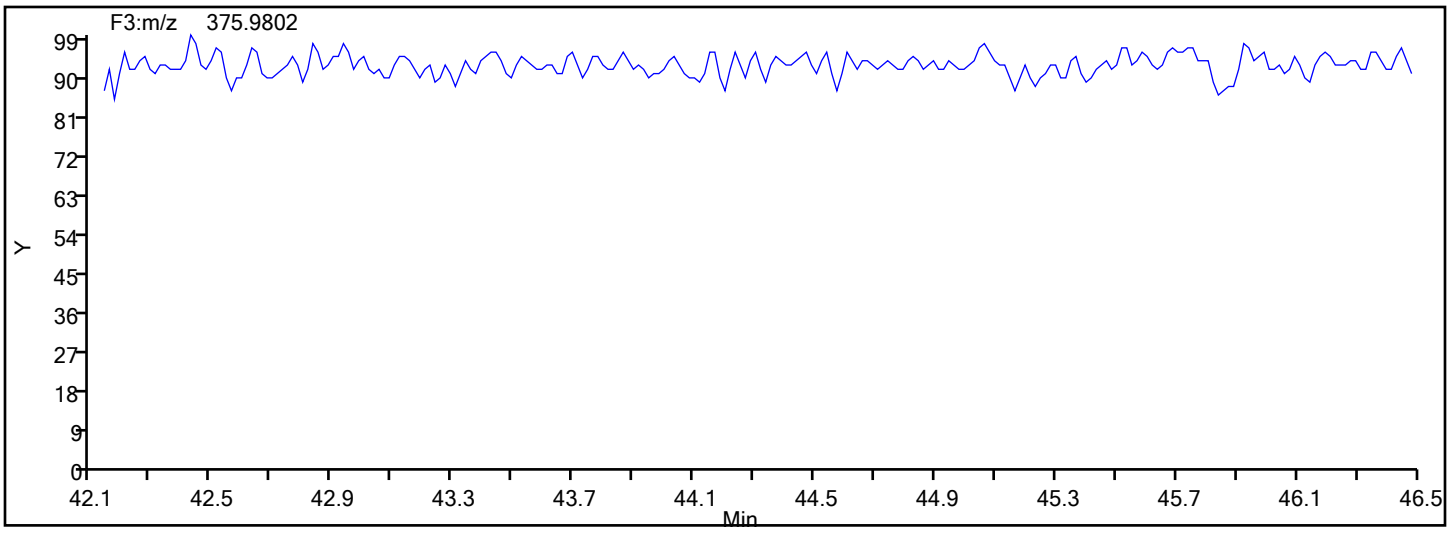




HxCDD Lock Mass



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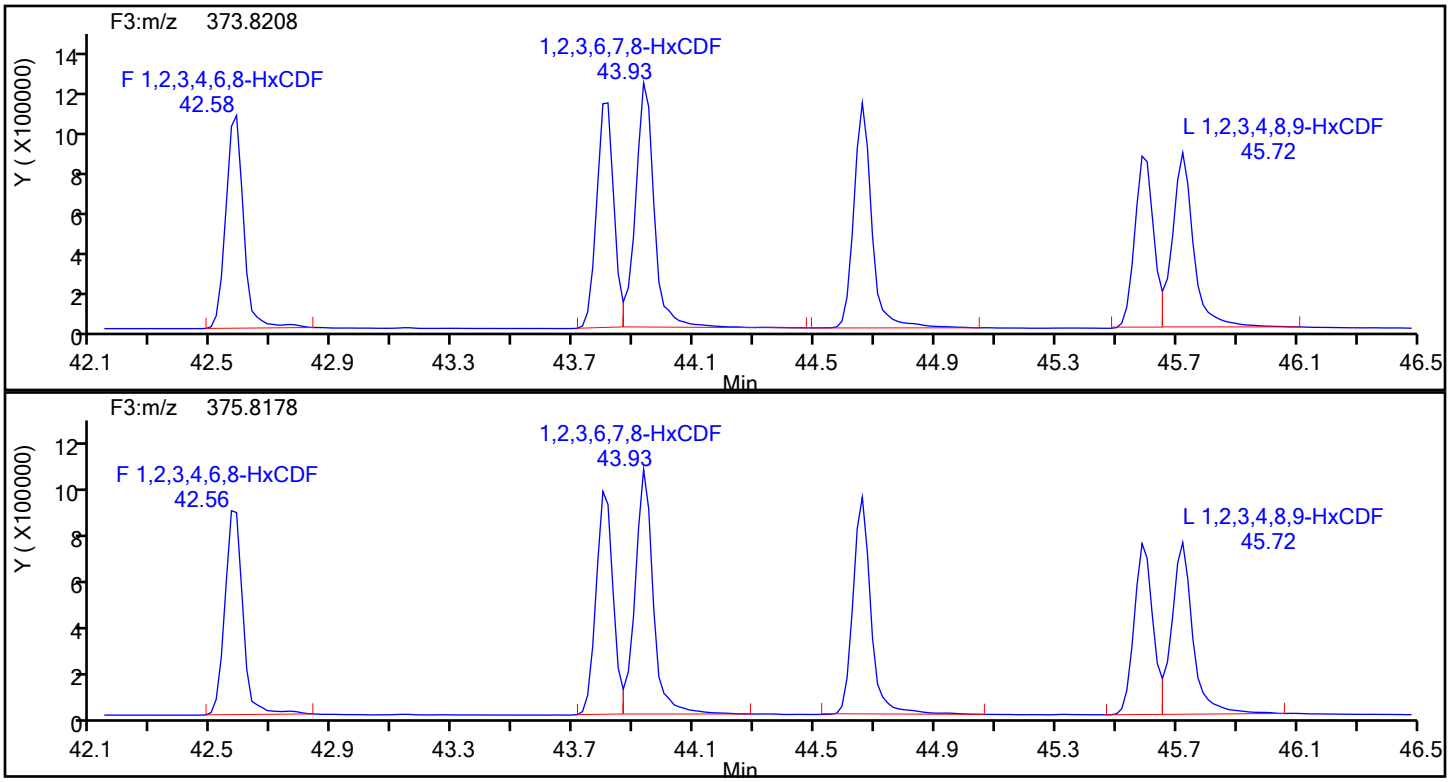

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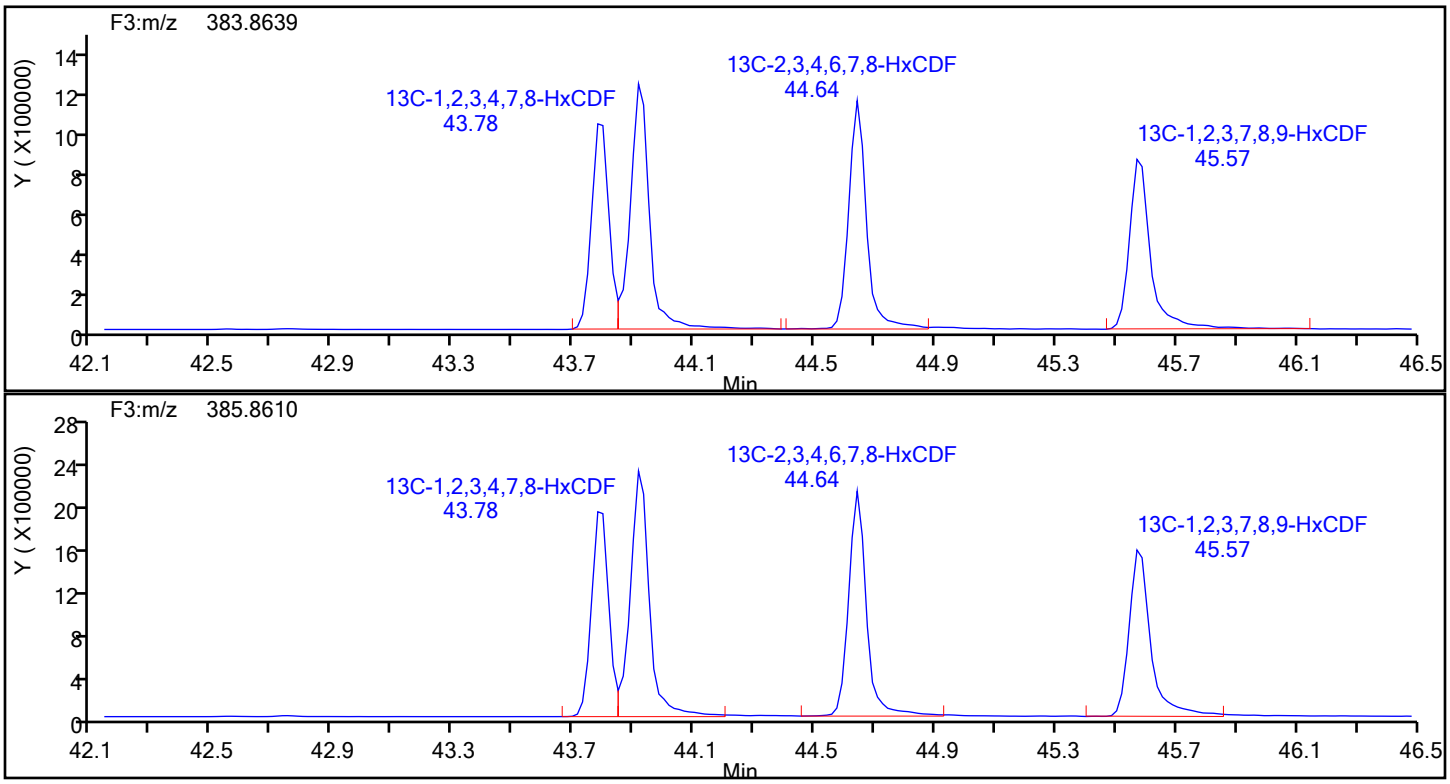

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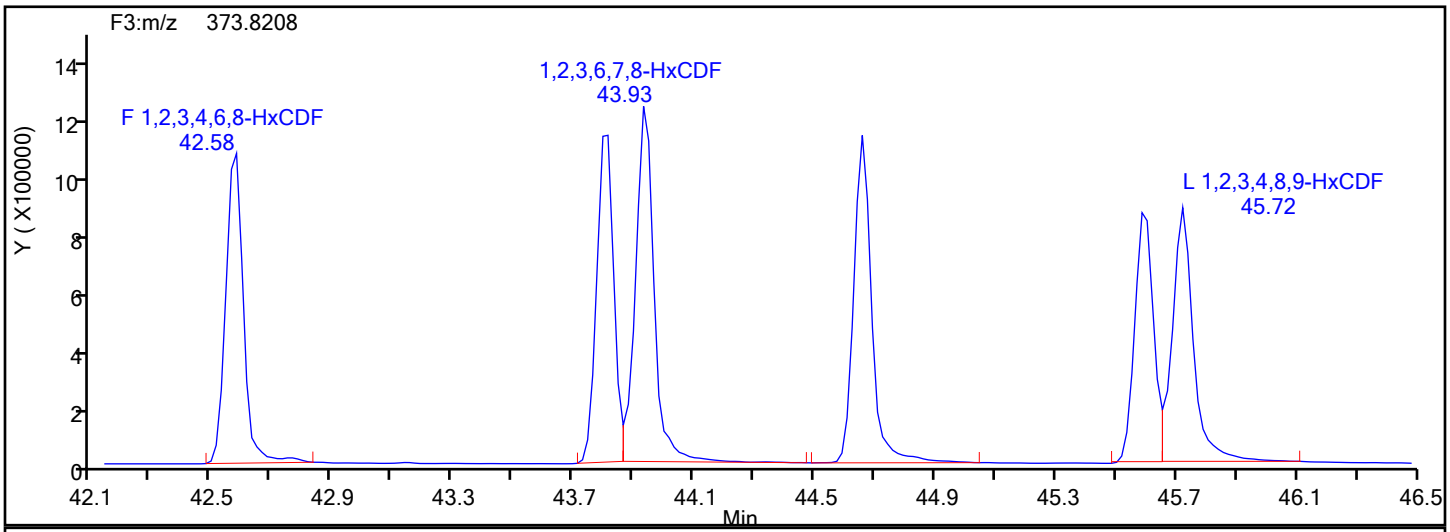
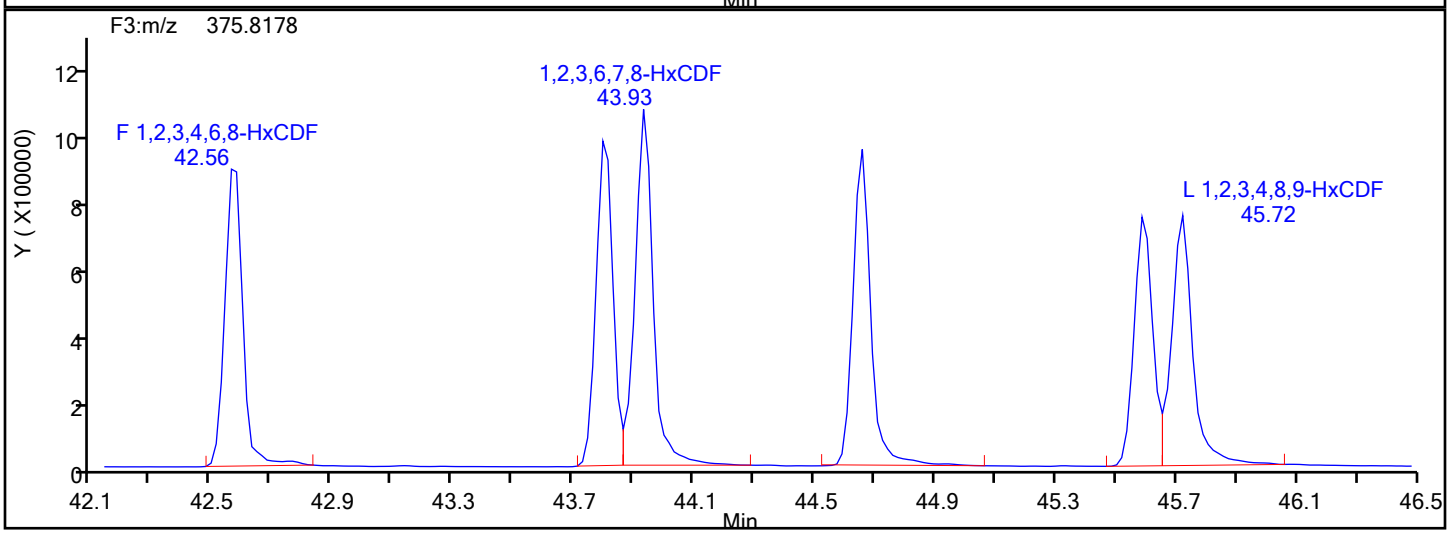
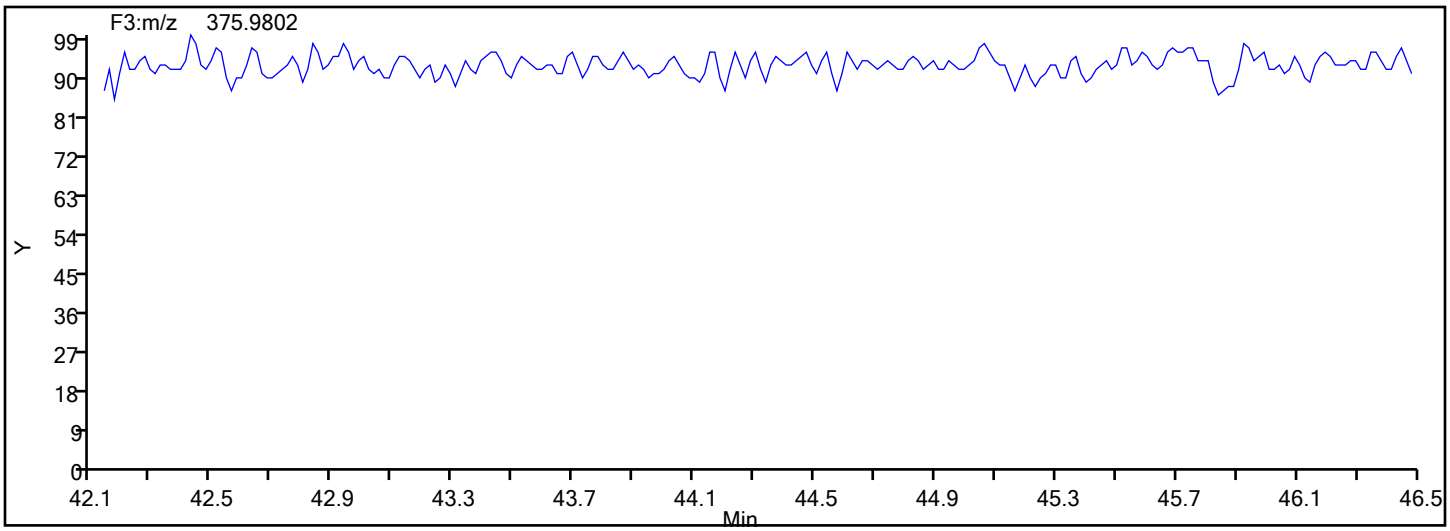




HxCDF Lock Mass



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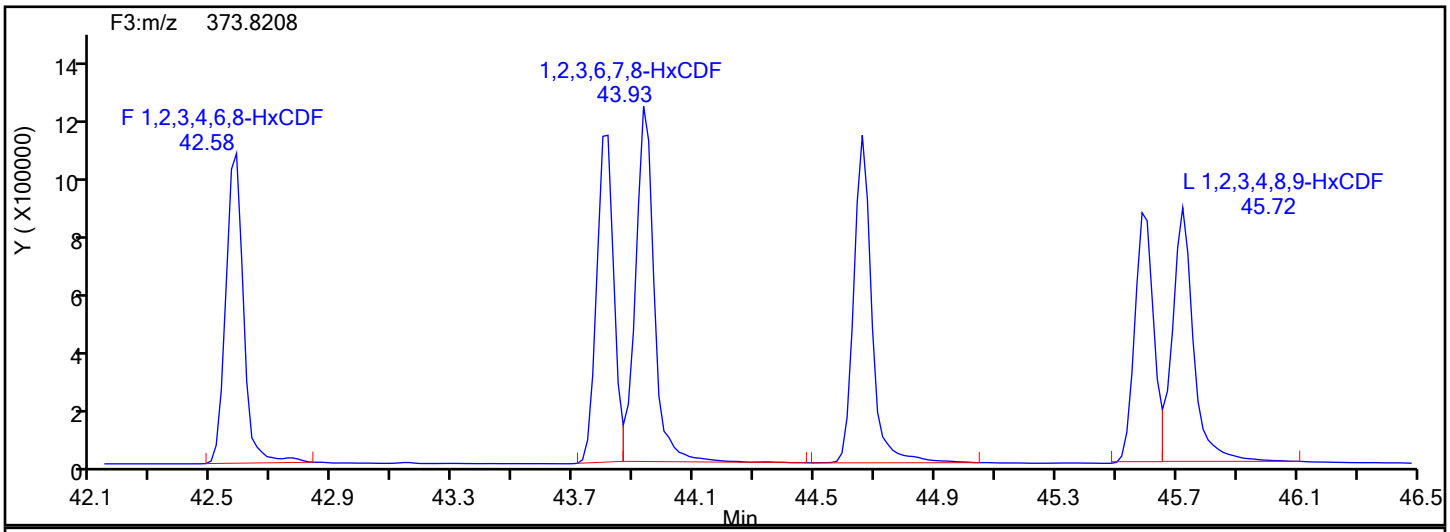
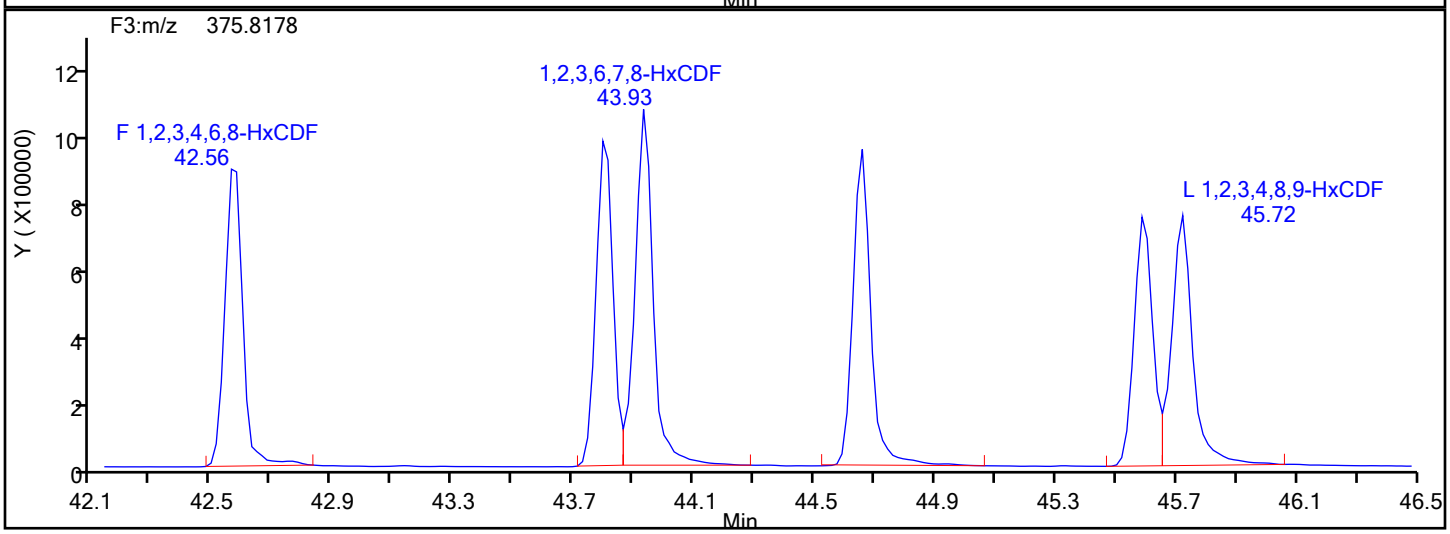
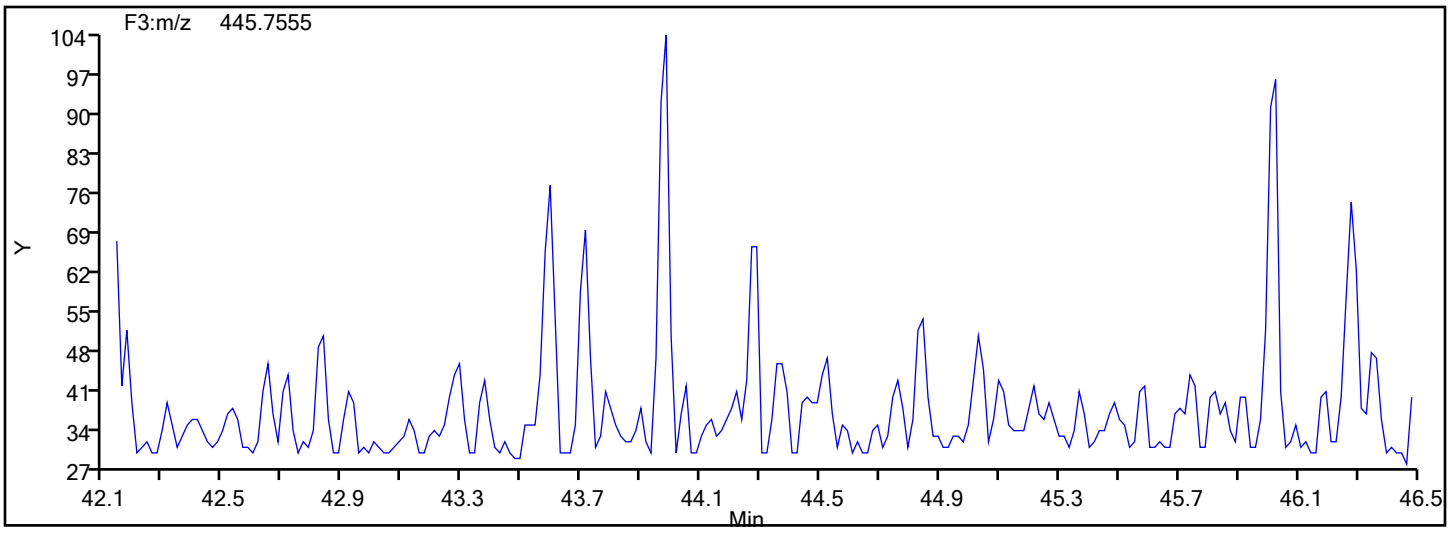
HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

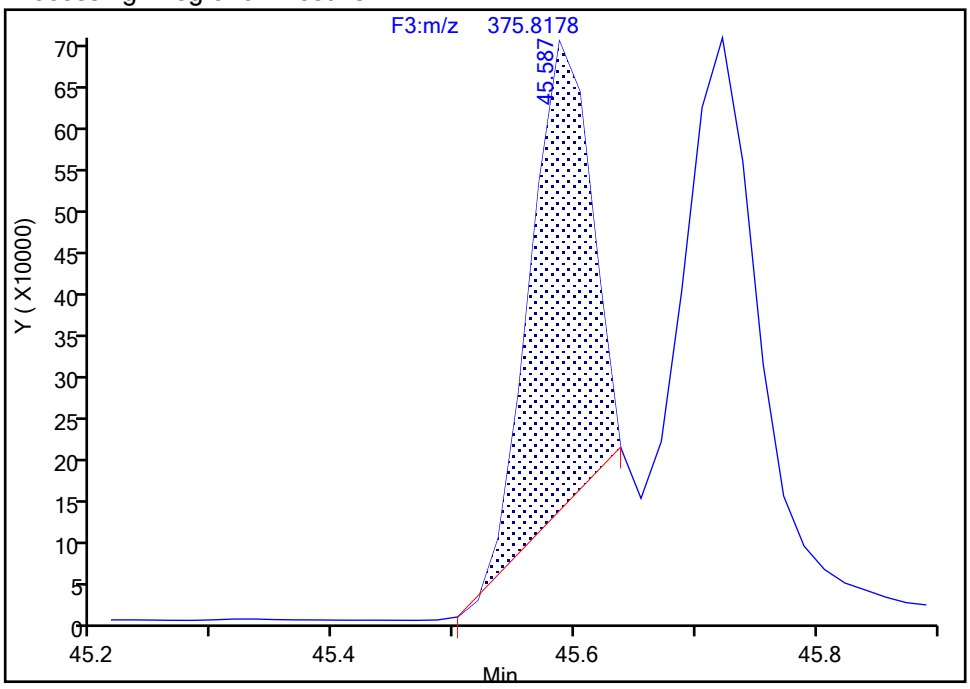
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d				
Injection Date:	17-Dec-2019 12:34:00	Instrument ID:	D2A		
Lims ID:	WDMCCV				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

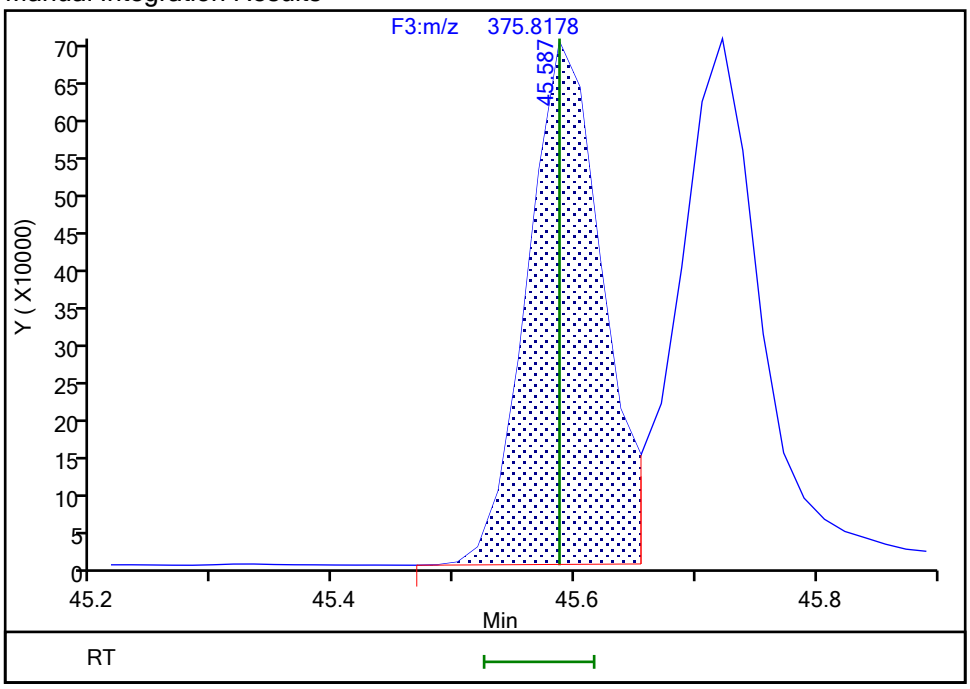
Processing Integration Results

RT: 45.59
Area: 1948390
Amount: 38.543631
Amount Units: pg/ul



Manual Integration Results

RT: 45.59
Area: 2984117
Amount: 45.585317
Amount Units: pg/ul



Reviewer: davidsonm, 17-Dec-2019 13:37:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 13:41:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d		
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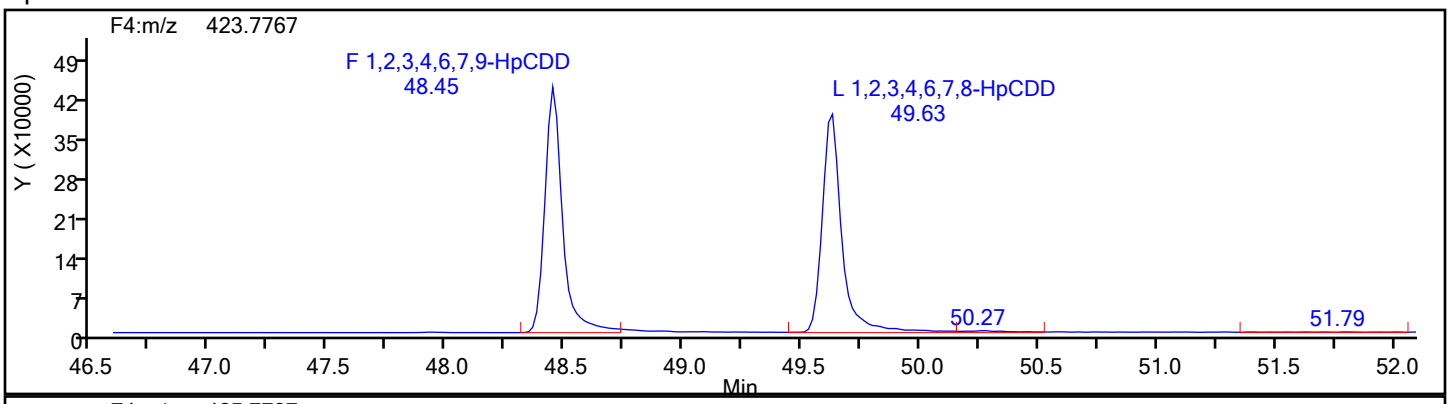
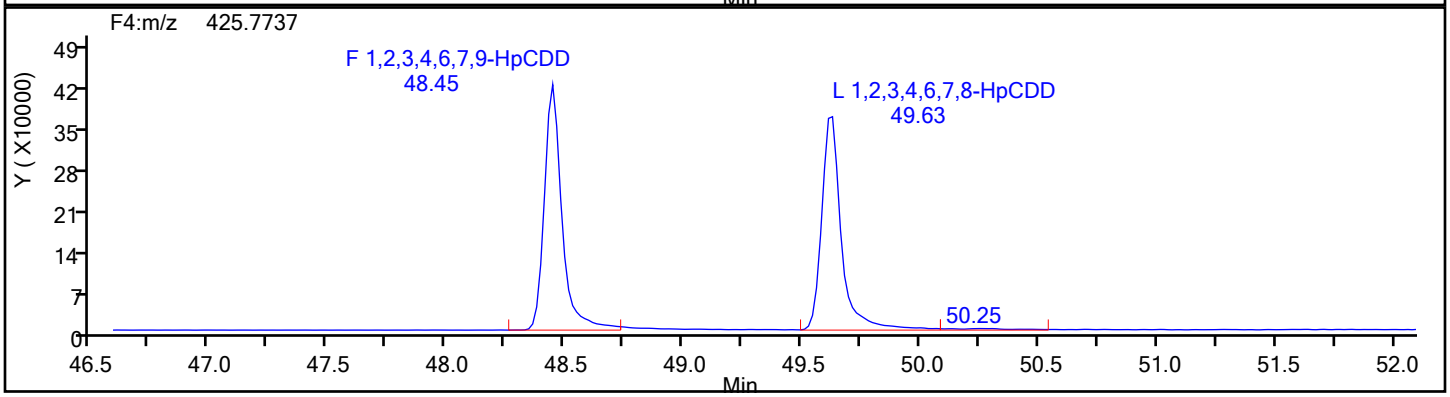
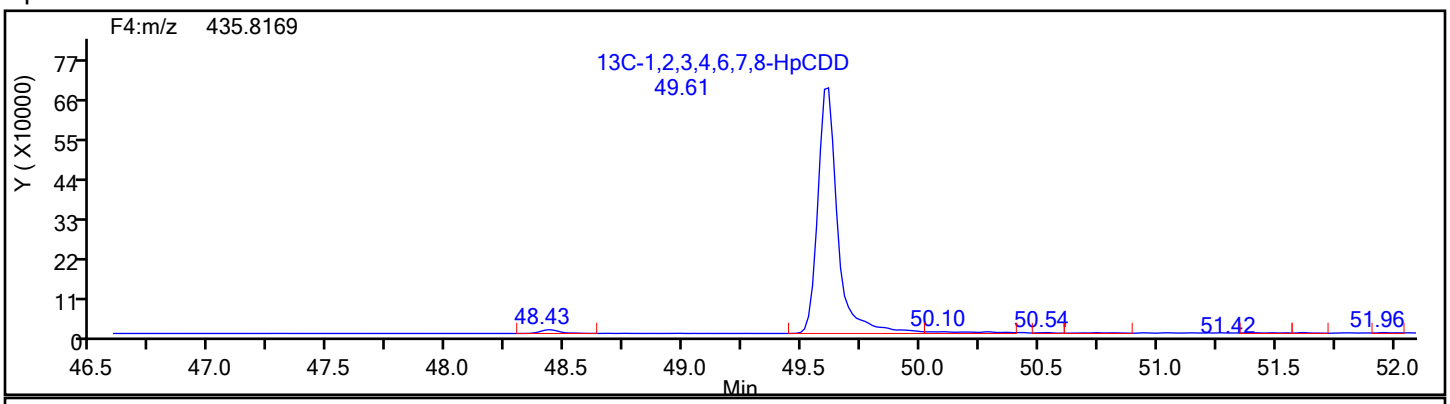
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

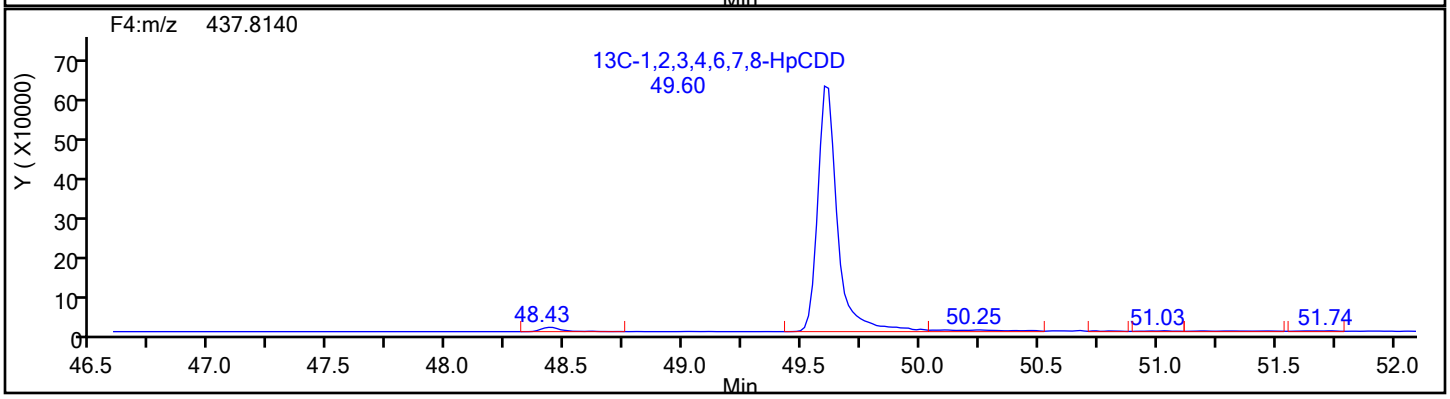
HpCDD





HpCDD Standards





Eurofins TestAmerica, Knoxville

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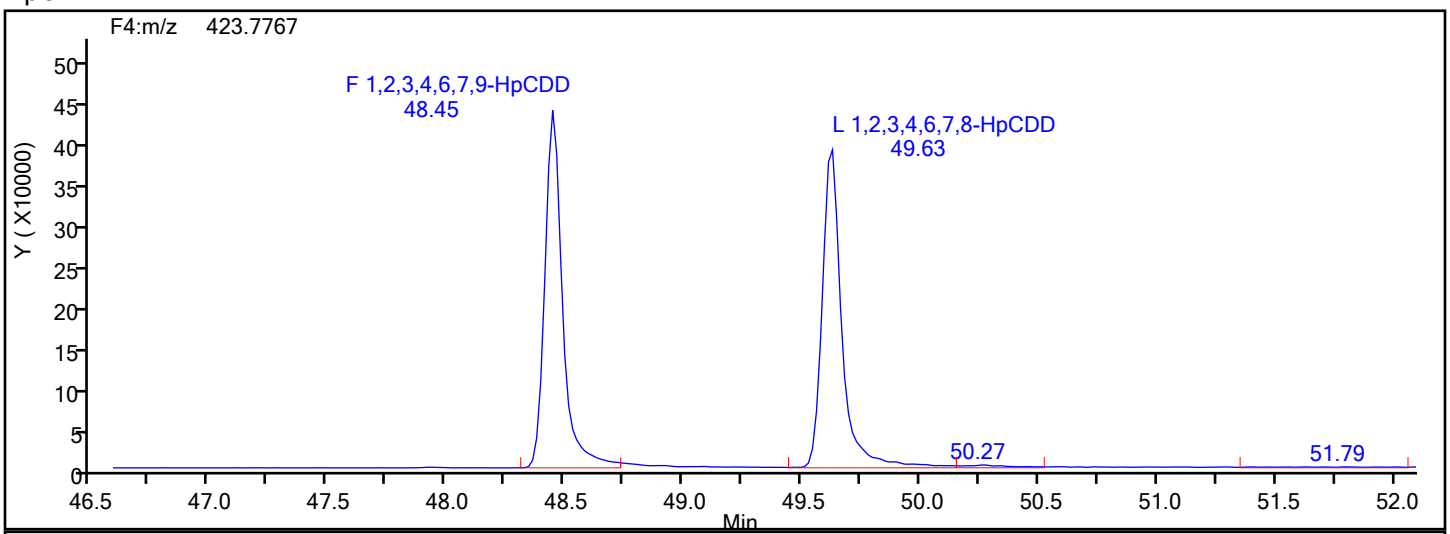
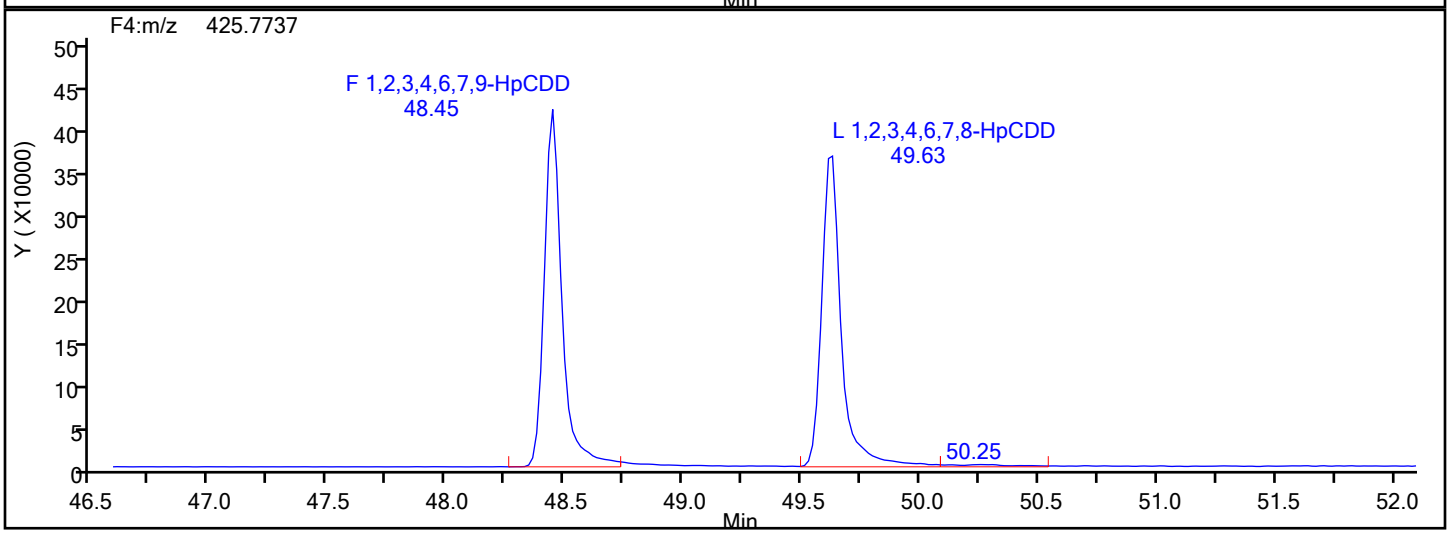
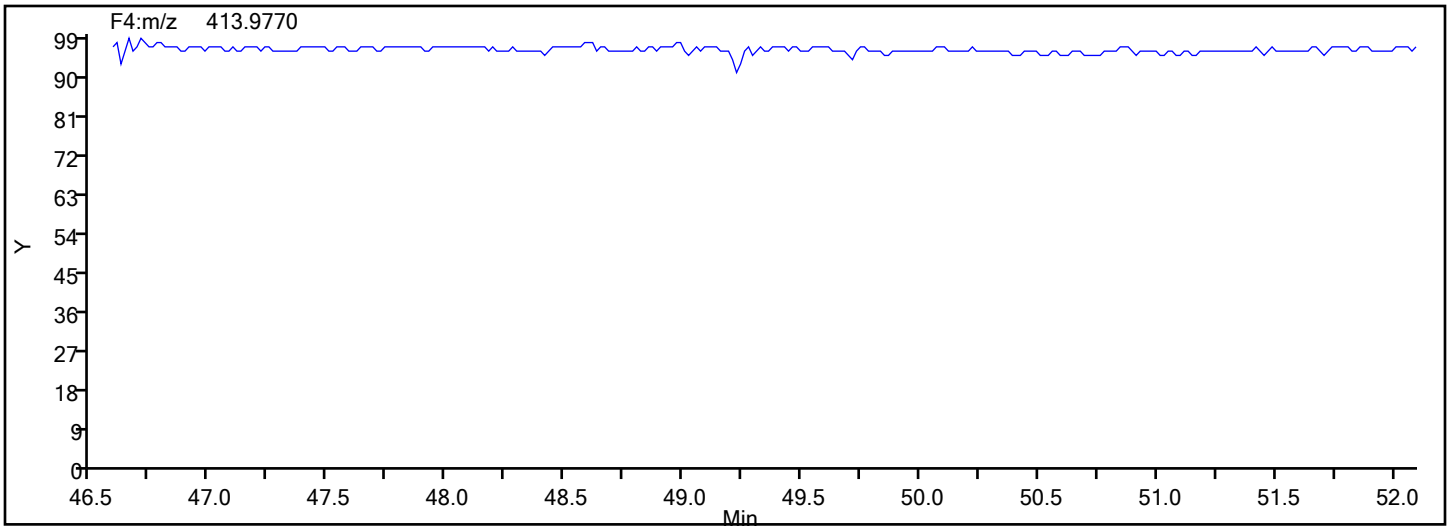
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Report Date: 17-Dec-2019 13:41:52 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14066.b\d3191217s2.d		
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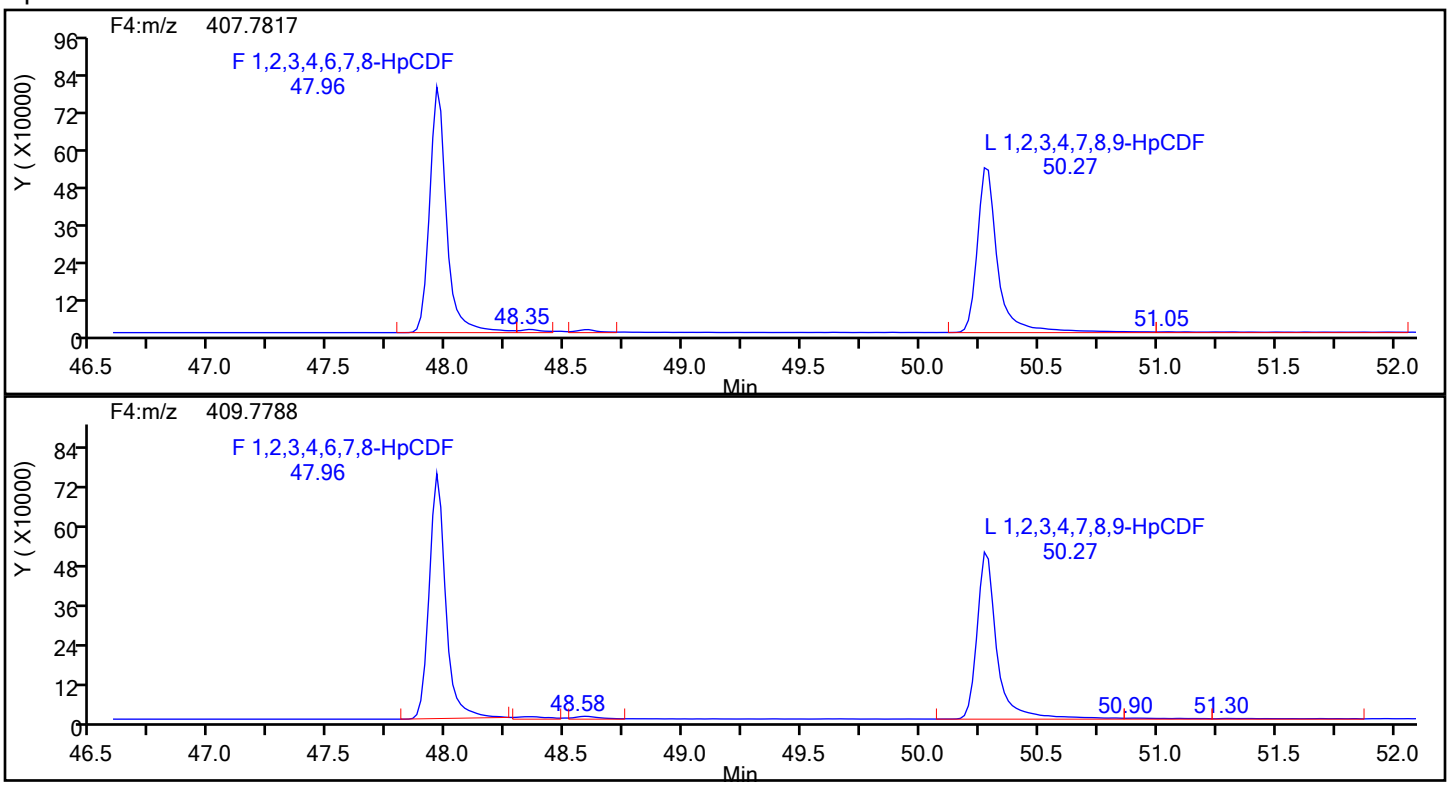
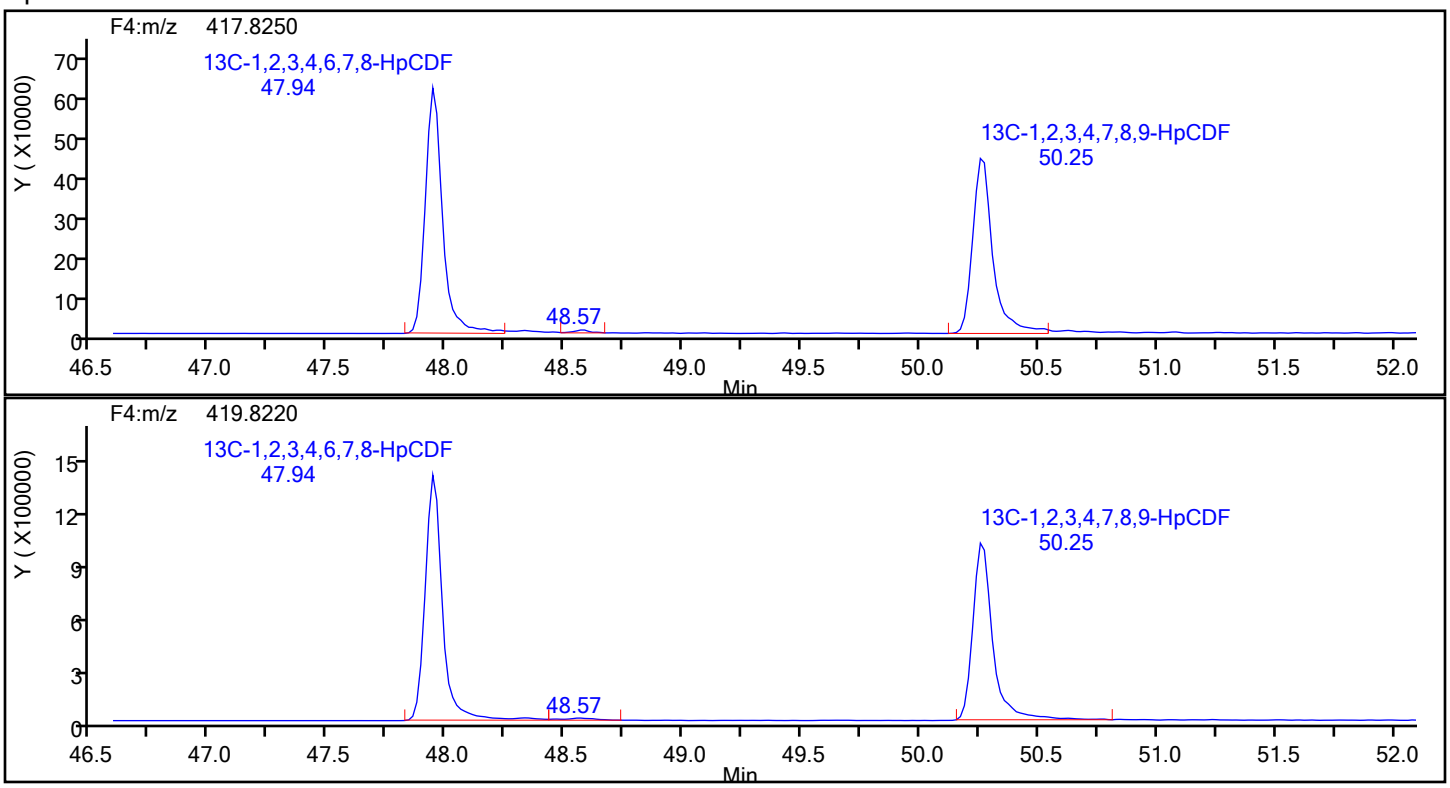
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

HpCDF



HpCDF Standards



Eurofins TestAmerica, Knoxville

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Client ID:			
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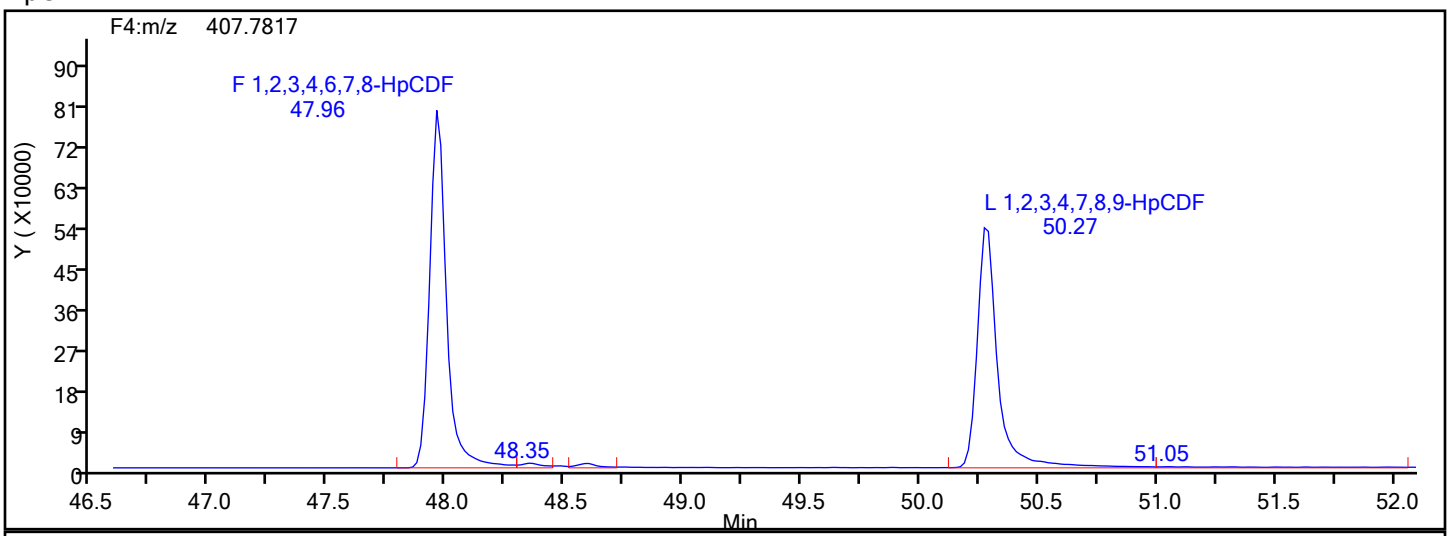
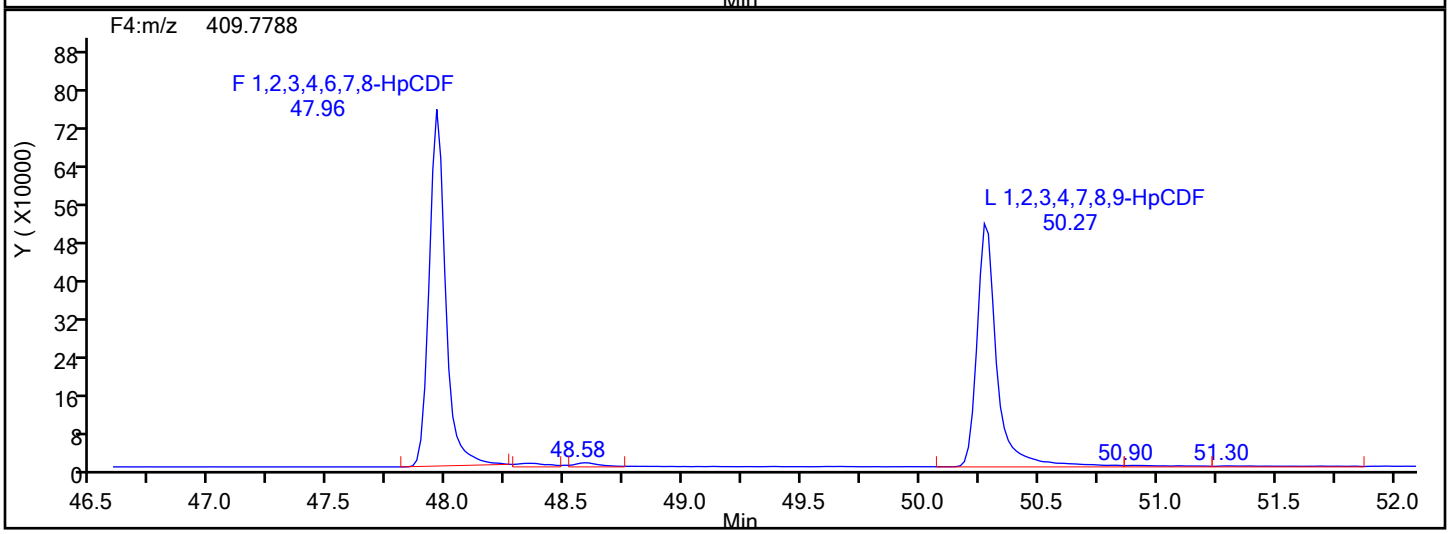
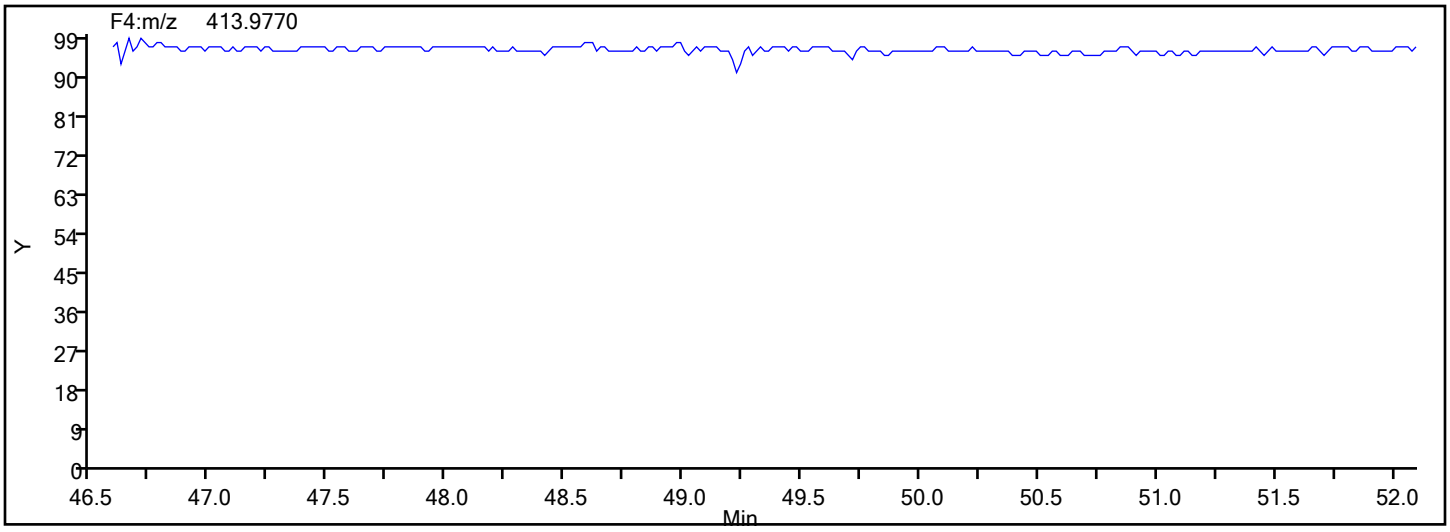




HpCDF Lock Mass



Eurofins TestAmerica, Knoxville

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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
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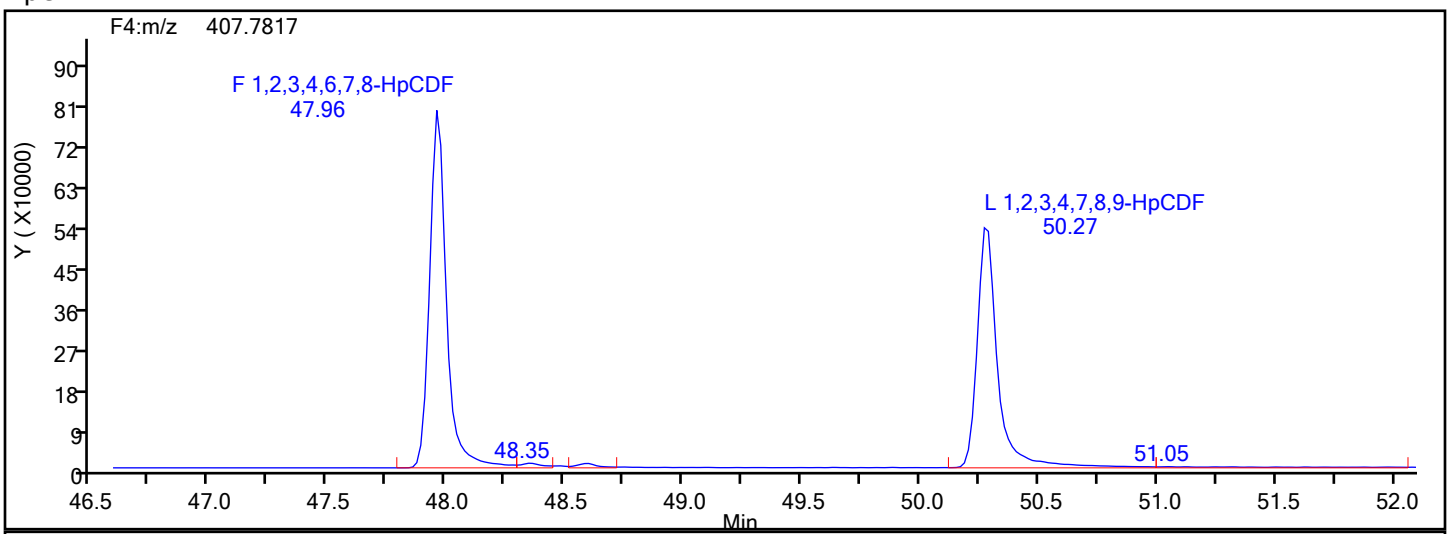
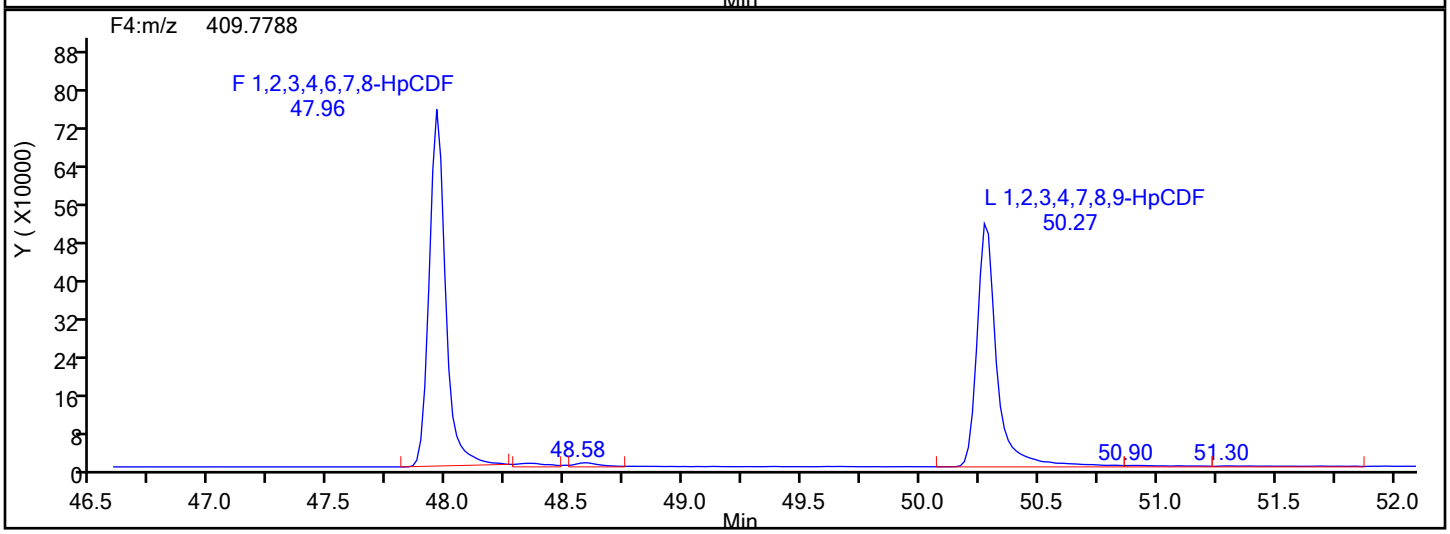
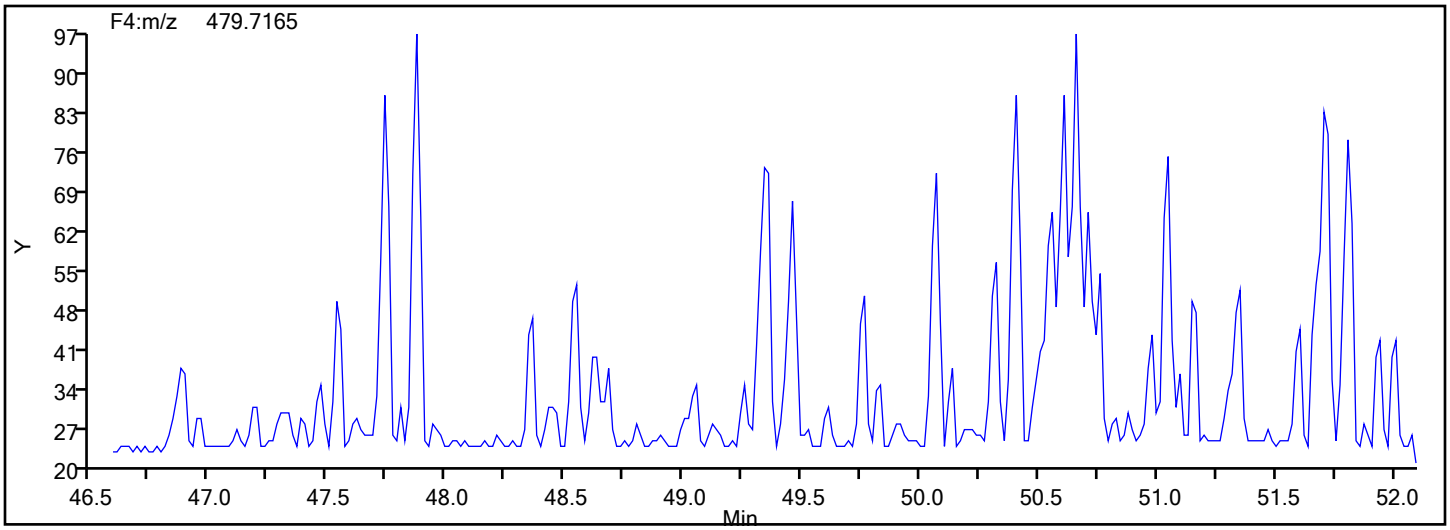
HpCDF





HpCDF Interference Mass



Report Date: 17-Dec-2019 13:41:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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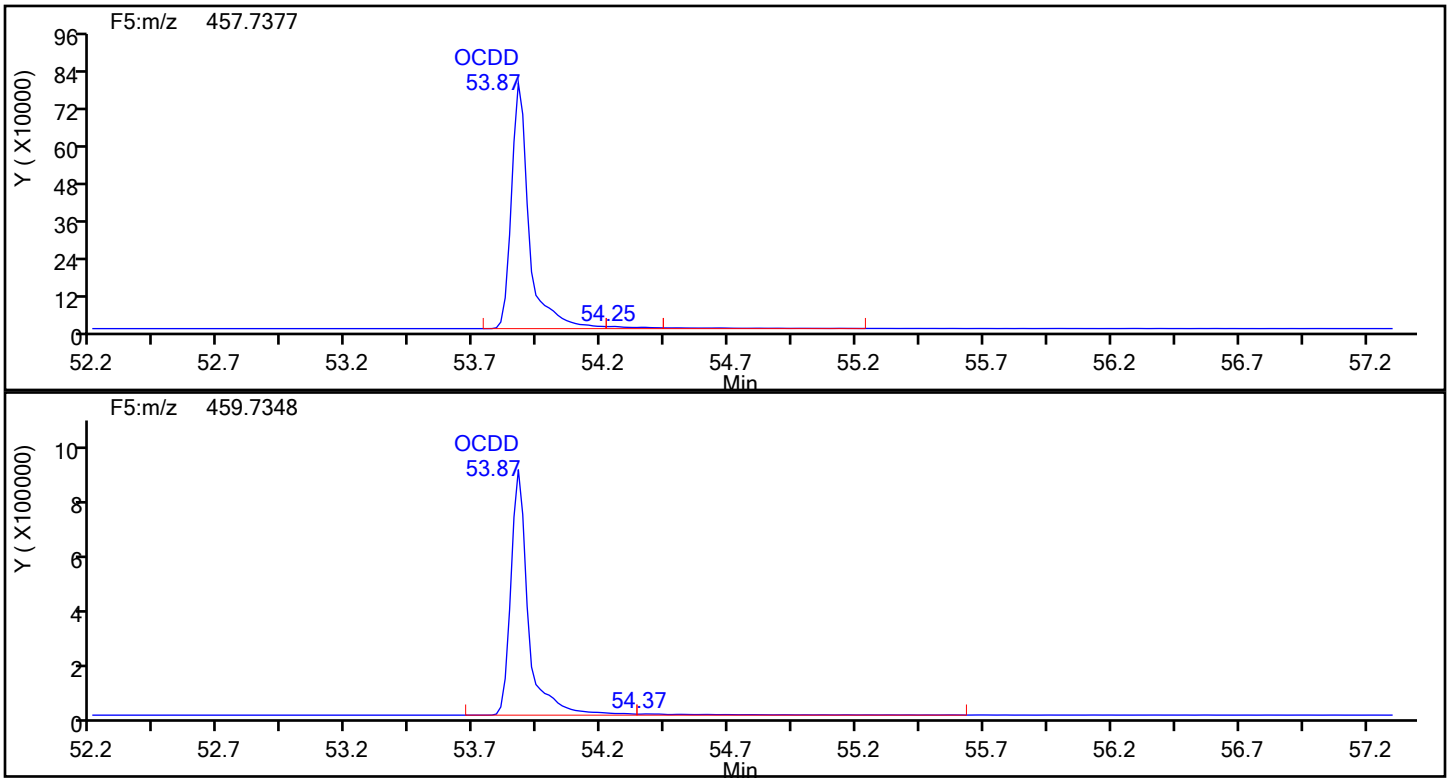
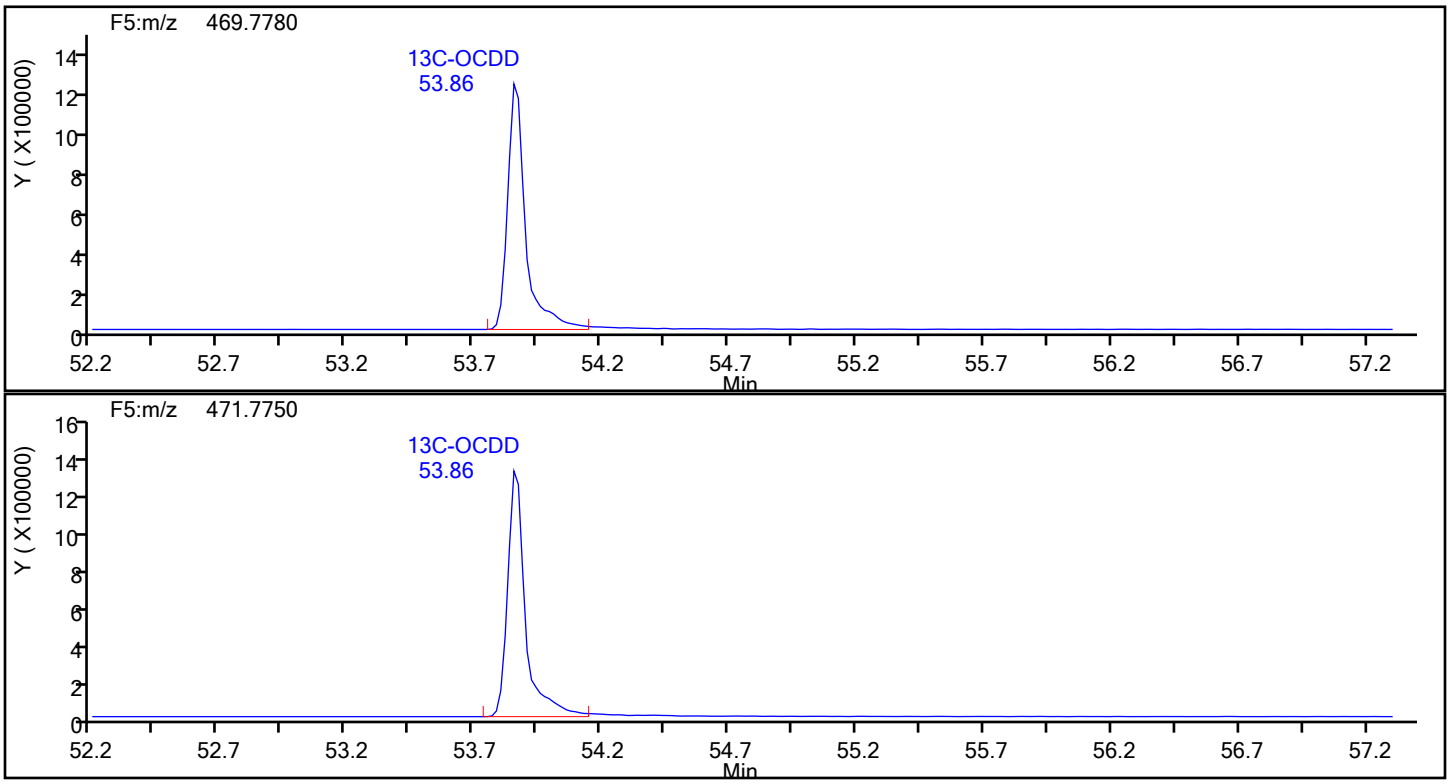
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36146	Sample Line#:	1
Column Type:		Column Dia:	

OCDD



OCDD Standards



Report Date: 17-Dec-2019 13:41:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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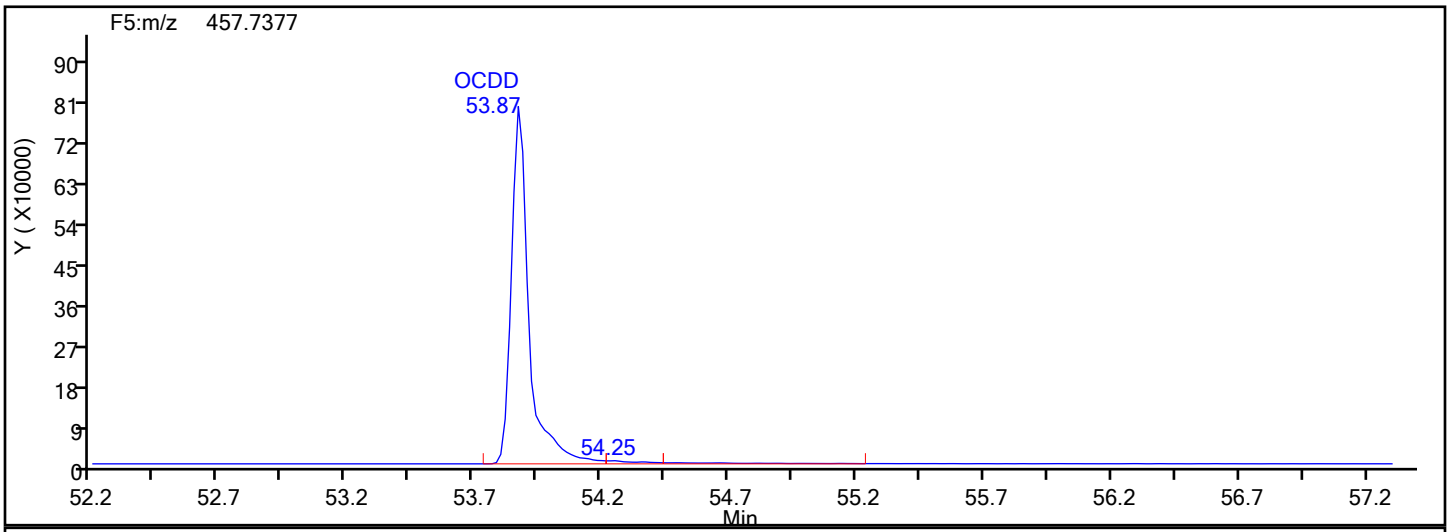
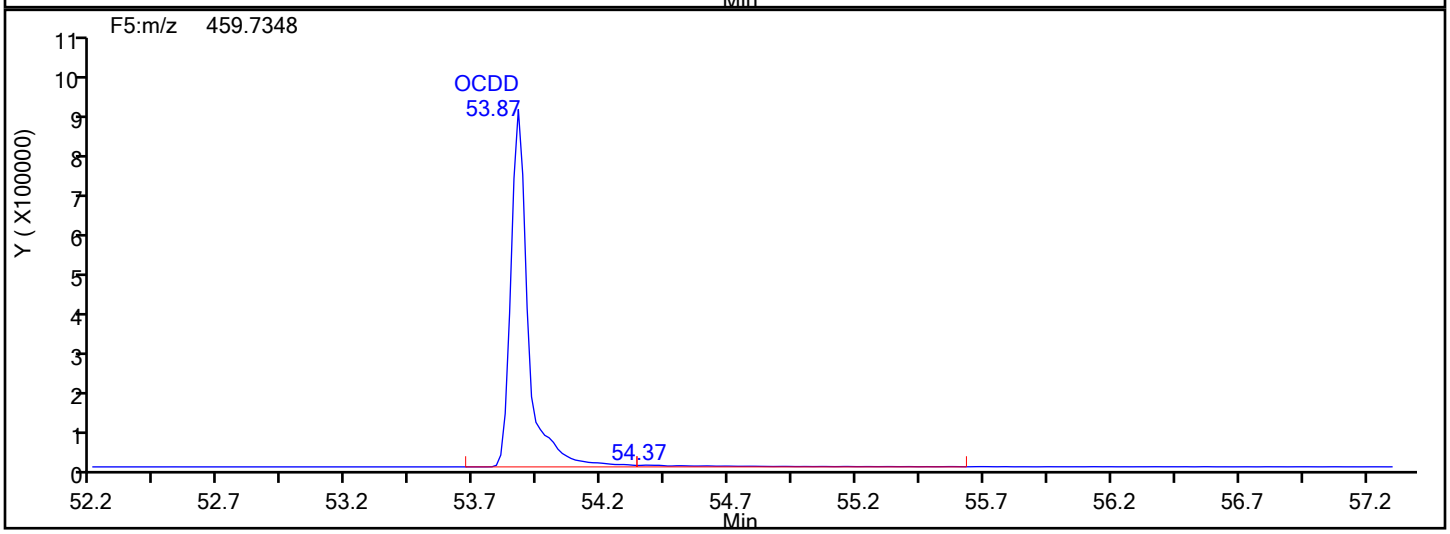
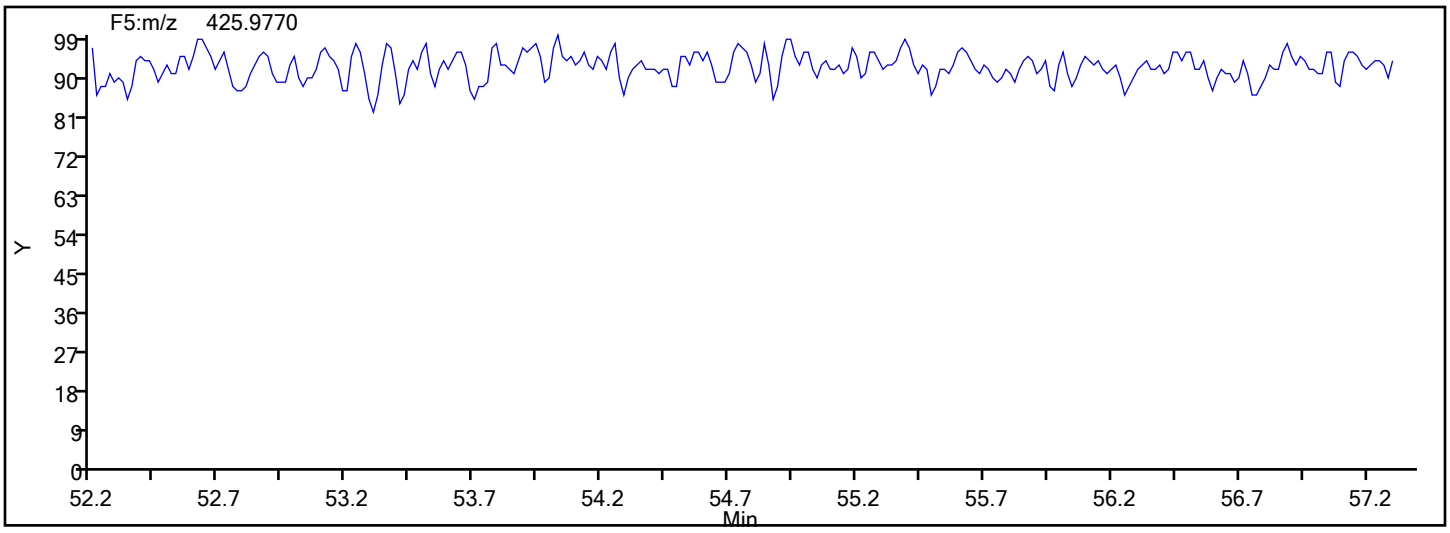




OCDD Lock Mass



Report Date: 17-Dec-2019 13:41:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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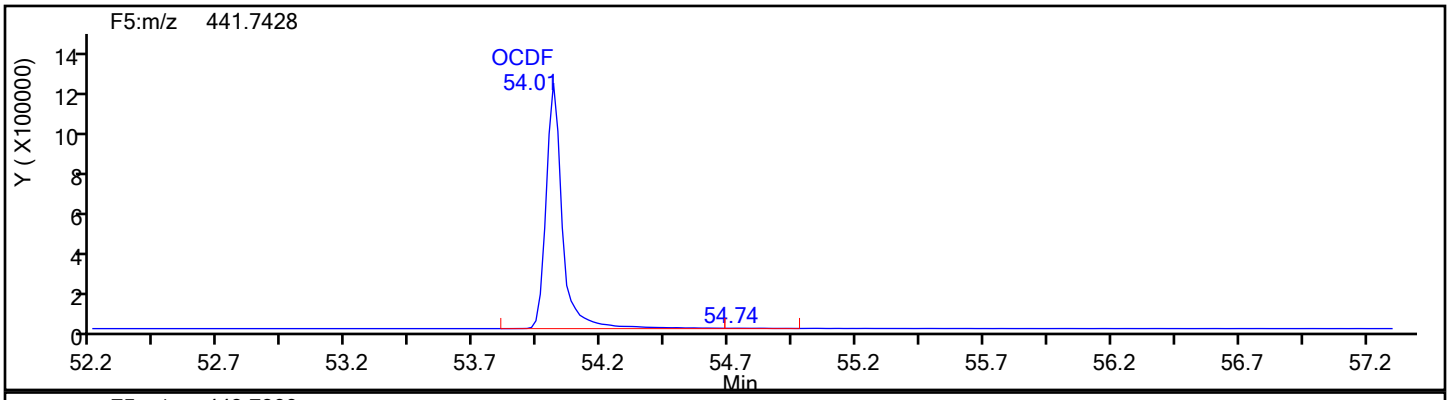
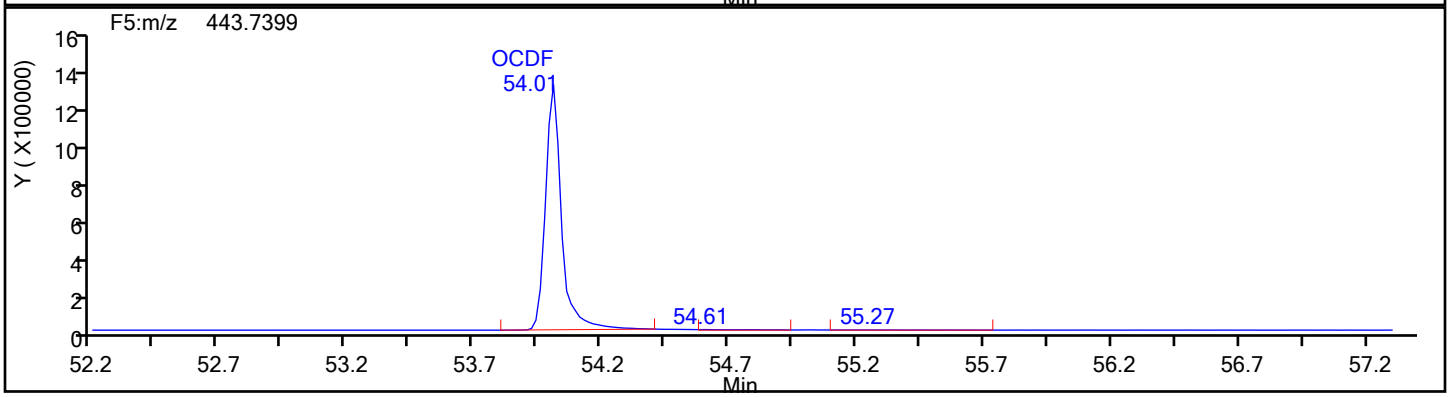
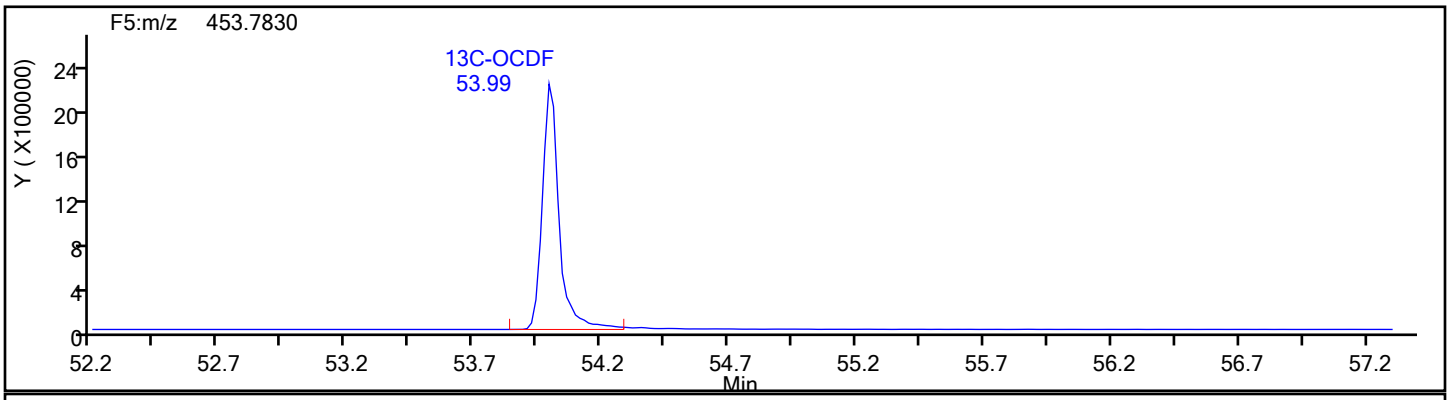
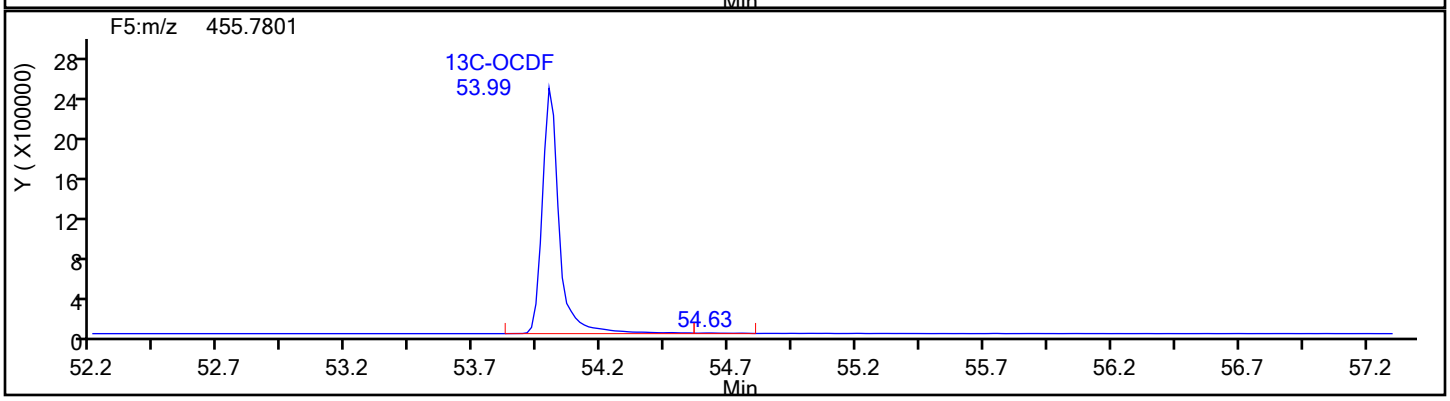




OCDF Standards





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Eurofins TestAmerica, Knoxville

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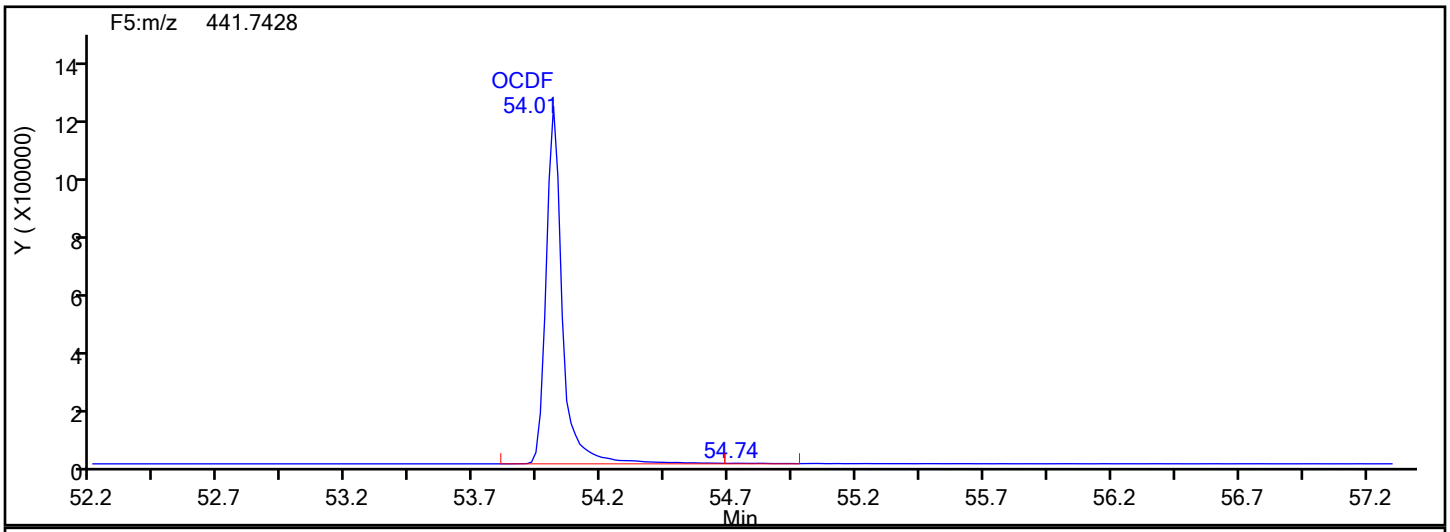
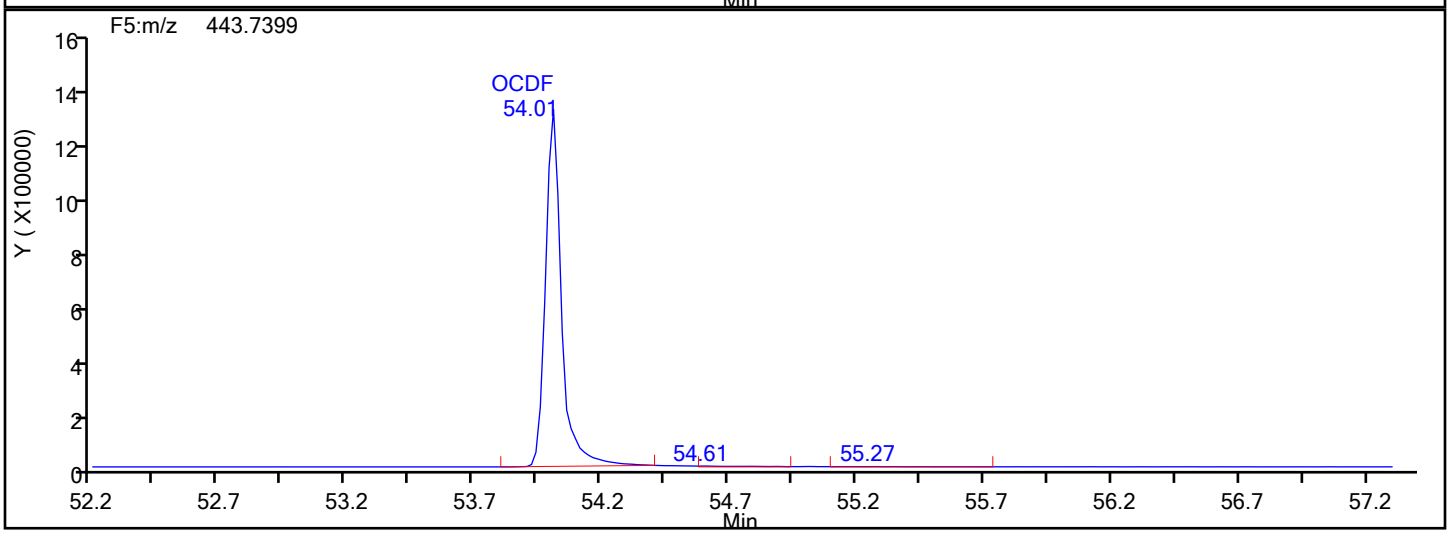
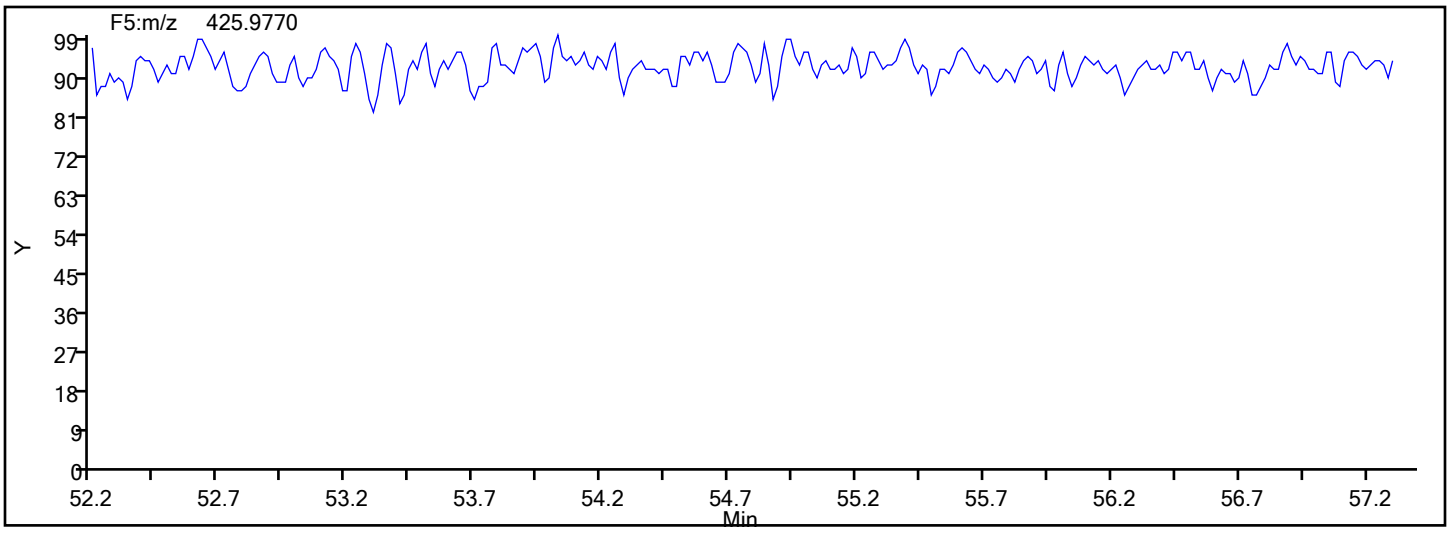
OCDF





OCDF Lock Mass



Report Date: 17-Dec-2019 13:41:53 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Instrument ID:	D2A	Operator ID:	Xcalibur_System
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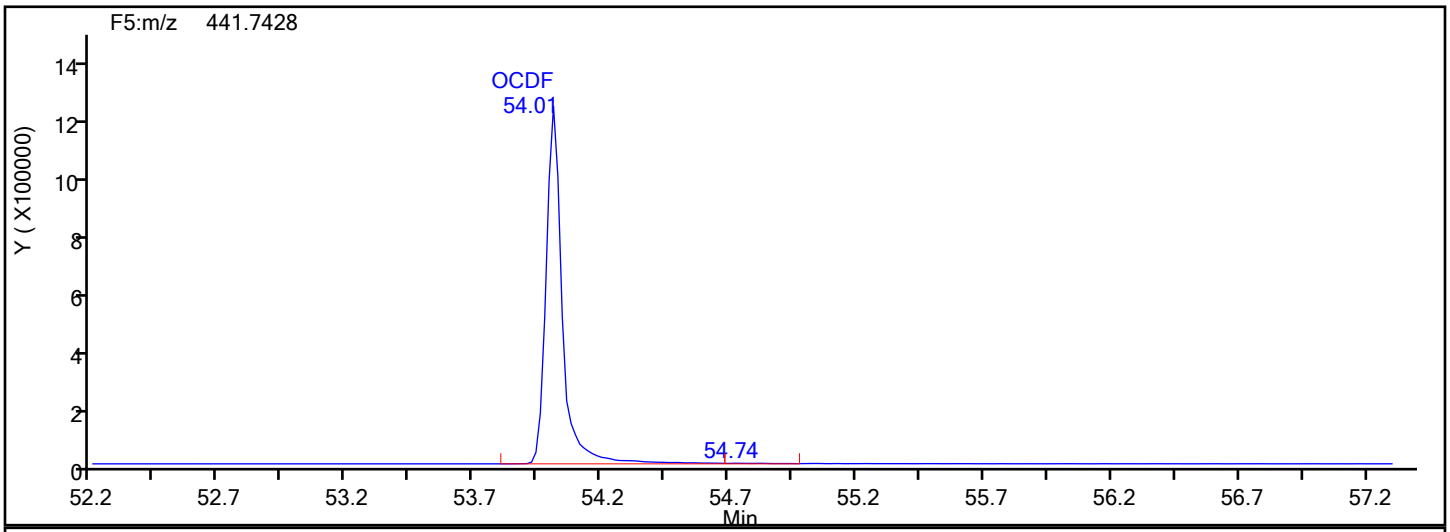
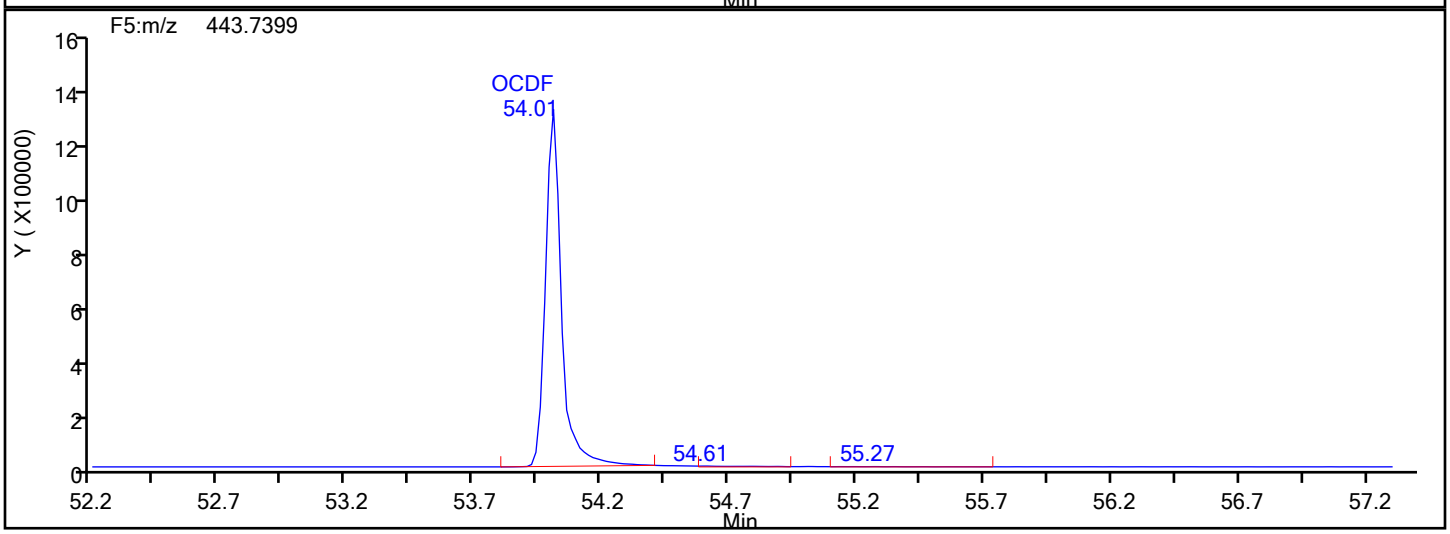
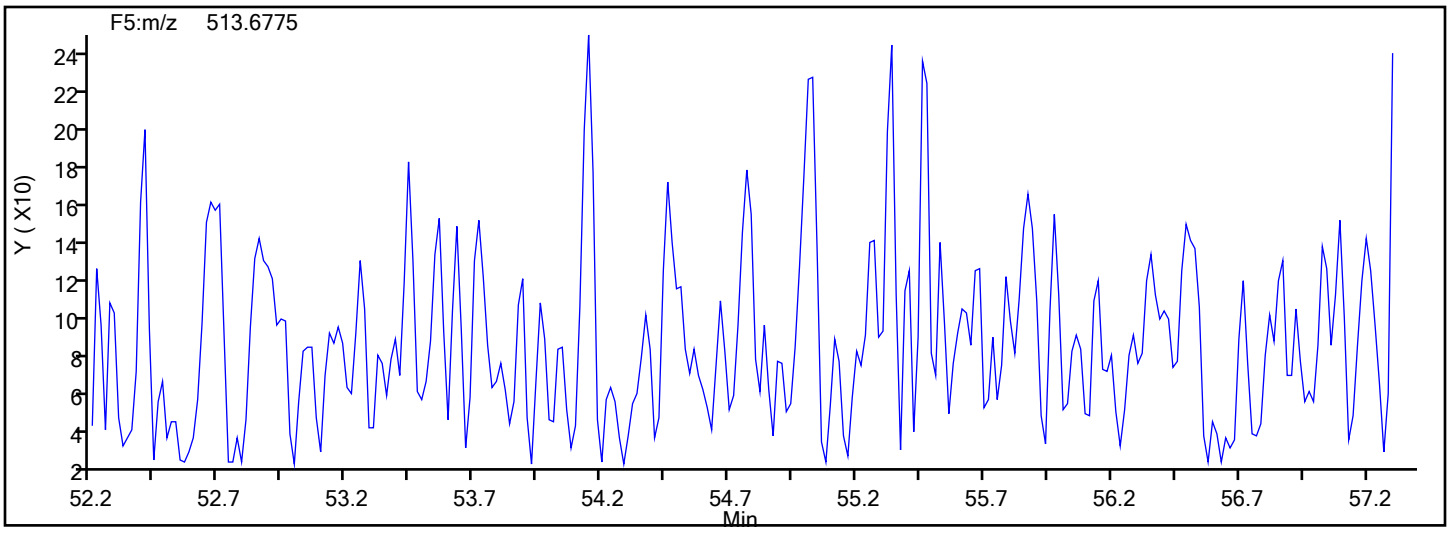
OCDF





OCDF Interference Mass



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Lab Sample ID: WDMCCV 140-36166/1 Calibration Date: 12/18/2019 00:01

Instrument ID: D2A Calib Start Date: 05/16/2014 14:26

GC Column: RTX-5 ID: 0.32(mm) Calib End Date: 05/16/2014 18:31

Lab File ID: d3191217s3.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.088	1.117		10.3	10.0	103	84-120
2,3,7,8-TCDD	AveID	1.173	1.179		10.0	10.0	100	78-129
1,2,3,7,8-PeCDF	AveID	1.190	1.191		50.1	50.0	100	82-120
2,3,4,7,8-PeCDF	AveID	1.109	1.088		49.0	50.0	98	82-122
1,2,3,7,8-PeCDD	AveID	1.043	1.029		49.3	50.0	99	78-130
1,2,3,4,7,8-HxCDF	AveID	1.363	1.383		50.7	50.0	101	90-112
1,2,3,6,7,8-HxCDF	AveID	1.276	1.254		49.1	50.0	98	88-114
2,3,4,6,7,8-HxCDF	AveID	1.265	1.241		49.1	50.0	98	88-114
1,2,3,4,7,8-HxCDD	AveID	1.141	1.147		50.3	50.0	101	78-128
1,2,3,6,7,8-HxCDD	AveID	1.148	1.118		48.7	50.0	97	78-128
1,2,3,7,8,9-HxCDD	AveID	1.221	1.231		50.4	50.0	101	82-122
1,2,3,7,8,9-HxCDF	AveID	1.257	1.177		46.8	50.0	94	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.498	1.512		50.5	50.0	101	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.120	1.116		49.8	50.0	100	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.381	1.441		52.2	50.0	104	86-116
OCDD	AveID	1.207	1.241		103	100	103	79-126
OCDF	AveID	1.116	1.009		90.4	100	90	63-159
13C-2,3,7,8-TCDF	Ave	1.755	1.657		94.4	100	94	71-140
13C-2,3,7,8-TCDD	Ave	1.071	1.041		97.2	100	97	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.370	1.312		95.7	100	96	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.384	1.246		90.1	100	90	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.8743	0.7911		90.5	100	90	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.189	1.247		105	100	105	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.462	1.554		106	100	106	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.320	1.329		101	100	101	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8772	0.8809		100	100	100	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9171	0.9648		105	100	105	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.200	1.223		102	100	102	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.050	0.9950		94.8	100	95	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8155	0.8025		98.4	100	98	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.8947	0.8420		94.1	100	94	77-129
13C-OCDD	Ave	0.7044	0.6152		175	200	87	48-208
13C-OCDF	Ave	1.061	1.049		198	200	99	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.227	1.151		9.38	10.0	94	79-127

Resolution Check Report (DFS SN: 3190)

eurofins | Environment Testing TestAmerica

Date:	17 Dec 2019 23:49
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

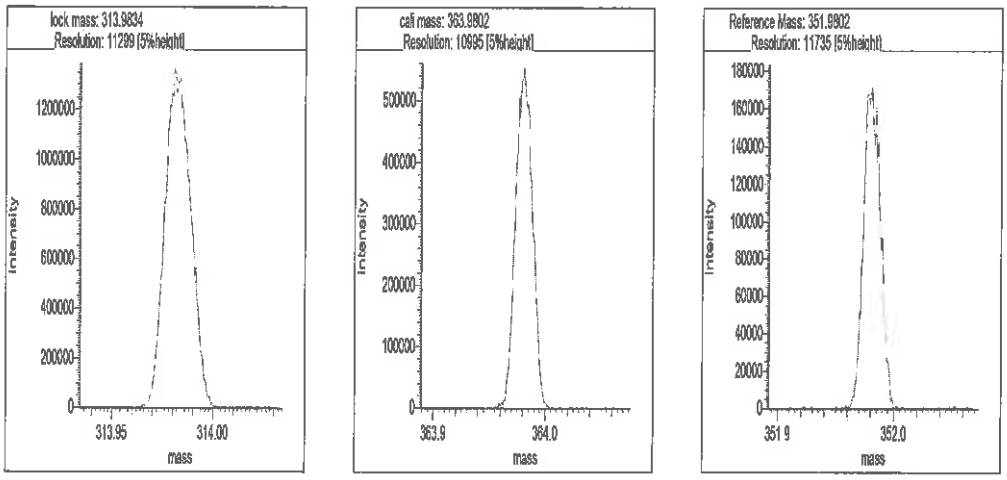
Segment 1

Lock mass 313.9834 [m/z] Resolution: 11299 [5%height]

Cali. mass 363.9802 [m/z] Resolution: 10995 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11735 [5%height]

-191217s3a



Segment 2

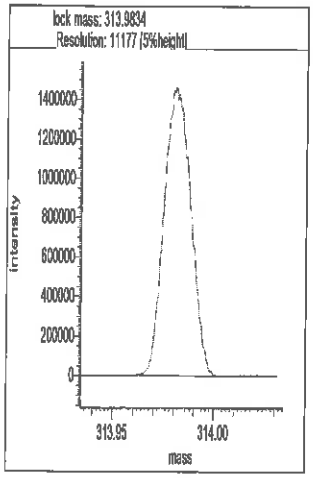
Lock mass 313.9834 [m/z] Resolution: 11177 [5%height]

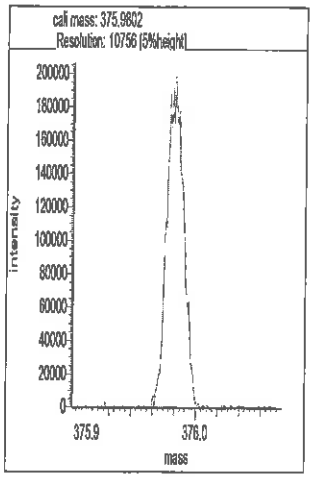
Cali. mass 375.9802 [m/z] Resolution: 10756 [5%height]

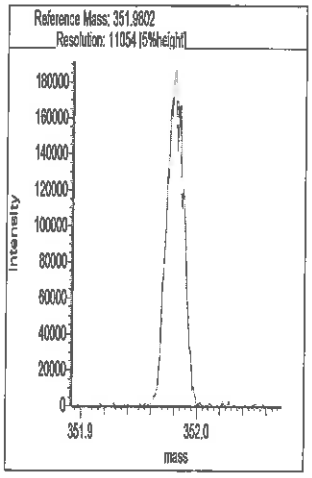
Ref. mass 351.9802 [m/z] Resolution: 11054 [5%height]

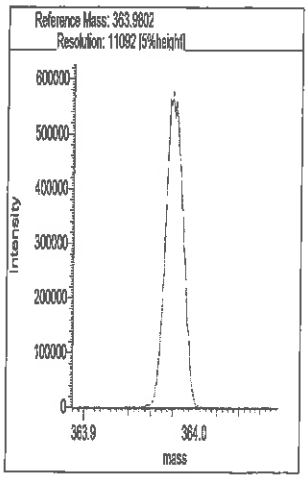
Ref. mass 363.9802 [m/z] Resolution: 11092 [5%height]

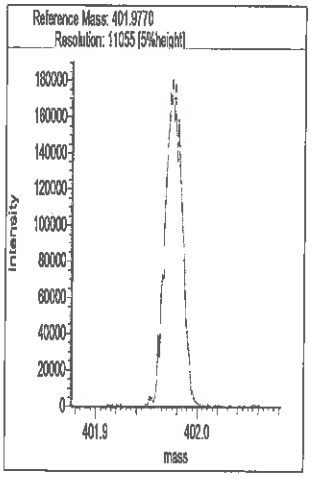
Ref. mass 401.9770 [m/z] Resolution: 11055 [5%height]











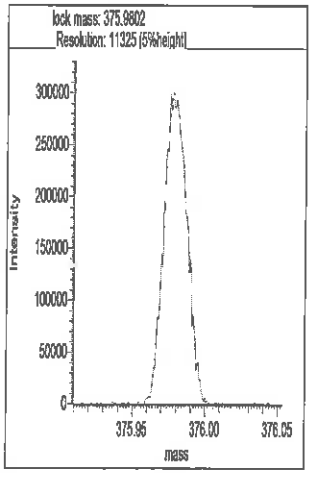
Segment 3

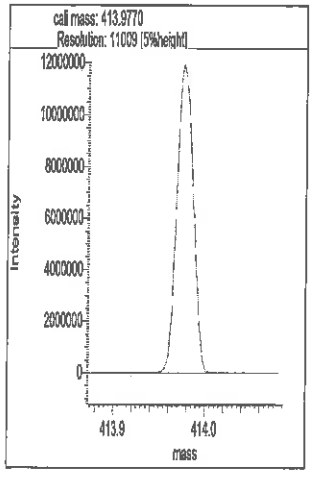
Lock mass 375.9802 [m/z] Resolution: 11325 [5%height]

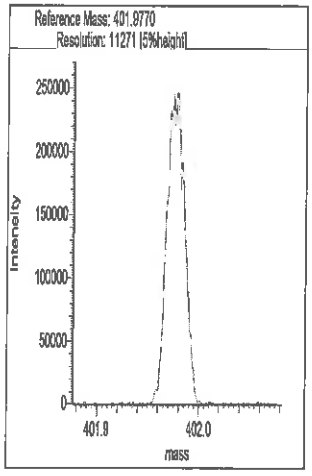
Cali. mass 413.9770 [m/z] Resolution: 11009 [5%height]

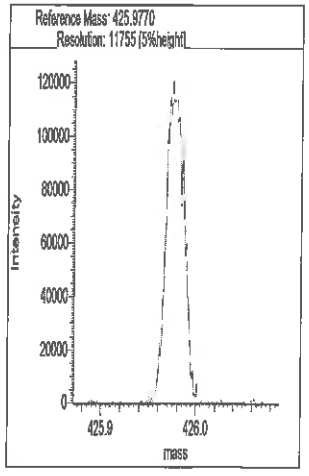
Ref. mass 401.9770 [m/z] Resolution: 11271 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11755 [5%height]







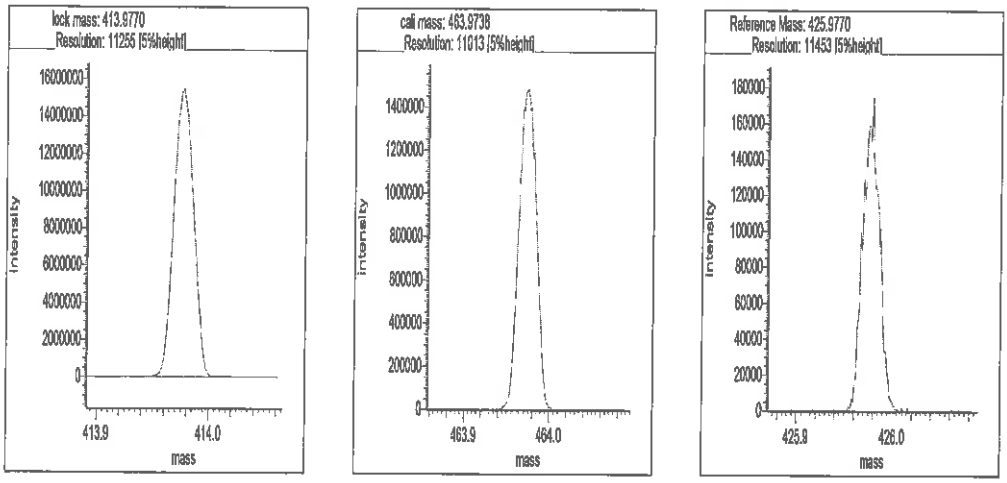


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11255 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11013 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11453 [5%height]

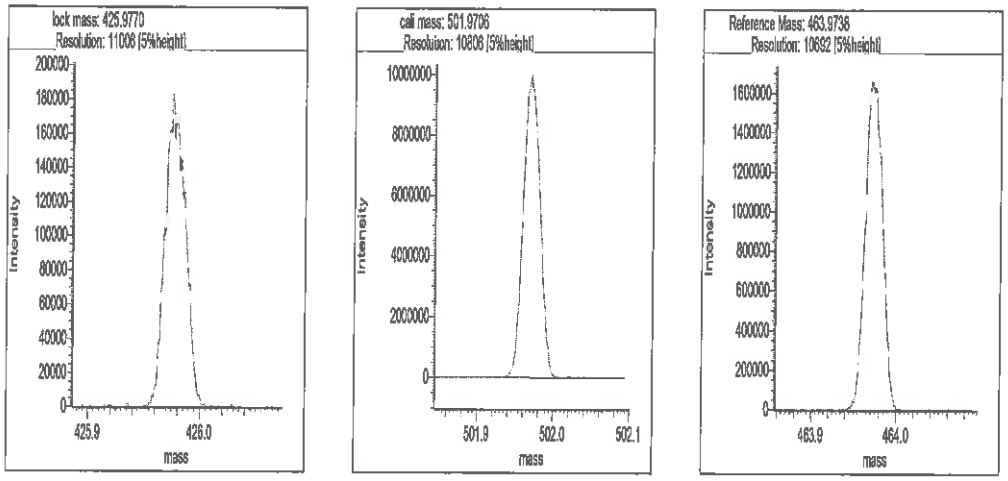


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11006 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 10806 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 10692 [5%height]



```
Reports
23:59:53:  Peak matching procedure started
23:59:53:
23:59:54:  Reference mass: 313.98336
23:59:54:  Sample mass: 364.0
23:59:55:
23:59:55:  Finding reference mass
23:59:56:  Finding sample mass
23:59:57:
00:00:03:  [1]    363.9798 amu, mean: 363.9798
00:00:05:  [2]    363.9801 amu, mean: 363.9800      SD: 0.19 mmu or: 0.51 ppm
00:00:09:  [3]    363.9797 amu, mean: 363.9799      SD: 0.19 mmu or: 0.51 ppm
00:00:12:  [4]    363.9797 amu, mean: 363.9799      SD: 0.17 mmu or: 0.47 ppm
00:00:15:  [5]    363.9799 amu, mean: 363.9799      SD: 0.15 mmu or: 0.42 ppm
00:00:18:  [6]    363.9796 amu, mean: 363.9798      SD: 0.17 mmu or: 0.47 ppm
00:00:21:  [7]    363.9797 amu, mean: 363.9798      SD: 0.16 mmu or: 0.44 ppm
00:00:25:  [8]    363.9795 amu, mean: 363.9798      SD: 0.18 mmu or: 0.50 ppm
00:00:28:  [9]    363.9801 amu, mean: 363.9798      SD: 0.20 mmu or: 0.56 ppm
00:00:31:  [10]    363.9800 amu, mean: 363.9798      SD: 0.20 mmu or: 0.56 ppm
00:00:31:
00:00:31:  Stop requested. Please wait for procedure to finish.
00:00:31:
```

Signature PMP 12-18-19

Resolution Check Report (DFS SN: 3190)

eurofins

Date:	18 Dec 2019 11:08
MID Experiment:	5w_db5_fc43_singleGC_OCDF_ResCheck
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	9000
Reference:	FC43Knx.lua
Status:	RESOLUTION PASSED

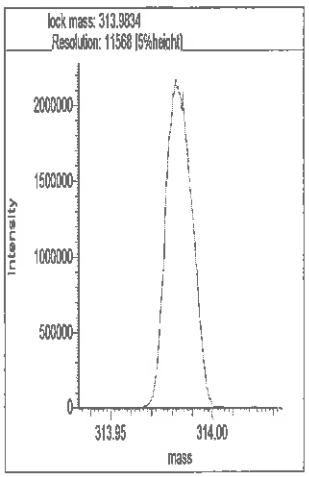
Segment 1

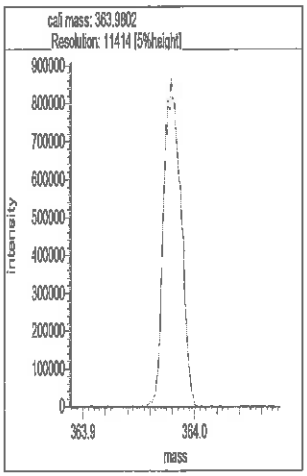
-191217s3b

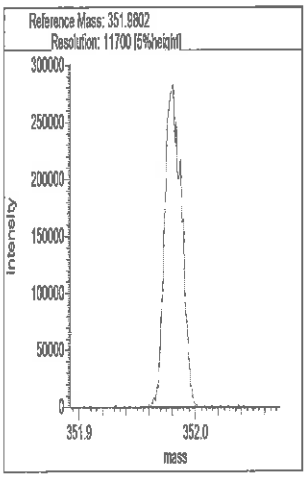
Lock mass 313.9834 [m/z] Resolution: 11568 [5%height]

Cali. mass 363.9802 [m/z] Resolution: 11414 [5%height]

Ref. mass 351.9802 [m/z] Resolution: 11700 [5%height]







Segment 2

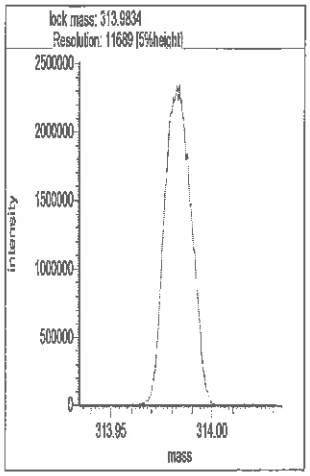
Lock mass 313.9834 [m/z] Resolution: 11689 [5%height]

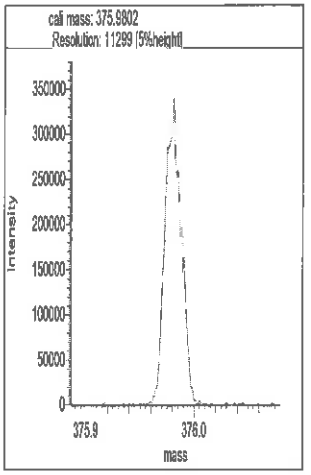
Cali. mass 375.9802 [m/z] Resolution: 11299 [5%height]

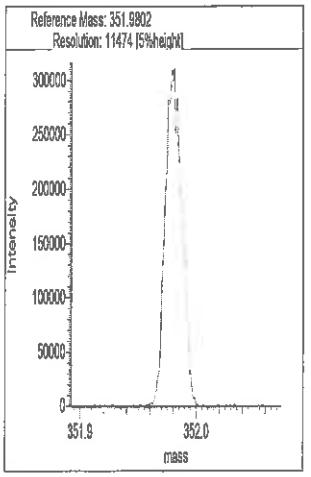
Ref. mass 351.9802 [m/z] Resolution: 11474 [5%height]

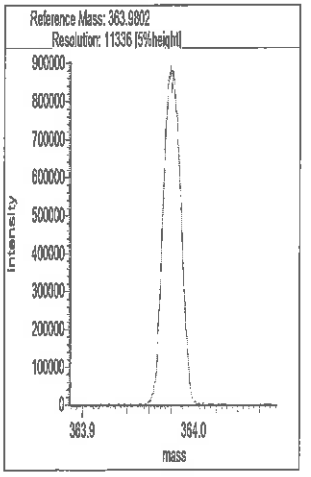
Ref. mass 363.9802 [m/z] Resolution: 11336 [5%height]

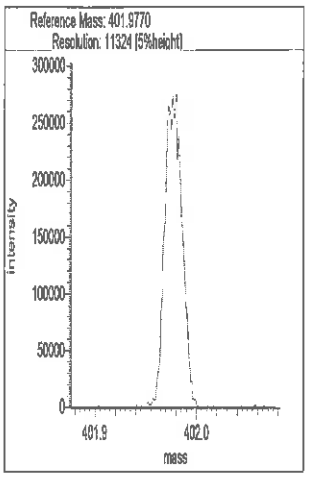
Ref. mass 401.9770 [m/z] Resolution: 11324 [5%height]











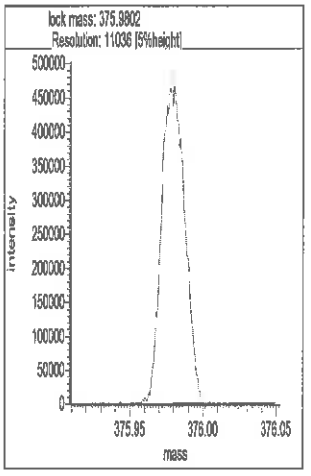
Segment 3

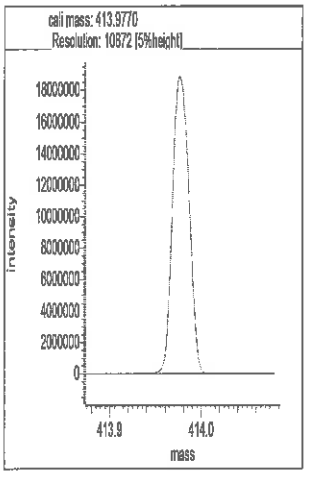
Lock mass 375.9802 [m/z] Resolution: 11036 [5%height]

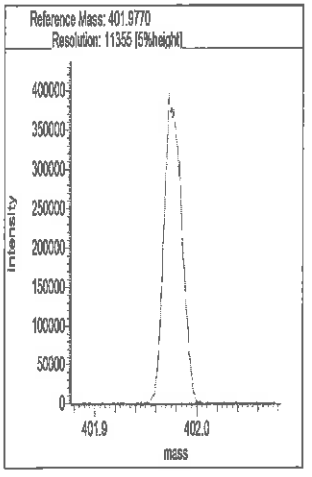
Cali. mass 413.9770 [m/z] Resolution: 10872 [5%height]

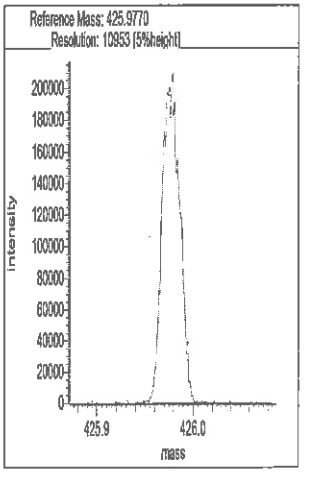
Ref. mass 401.9770 [m/z] Resolution: 11355 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 10953 [5%height]







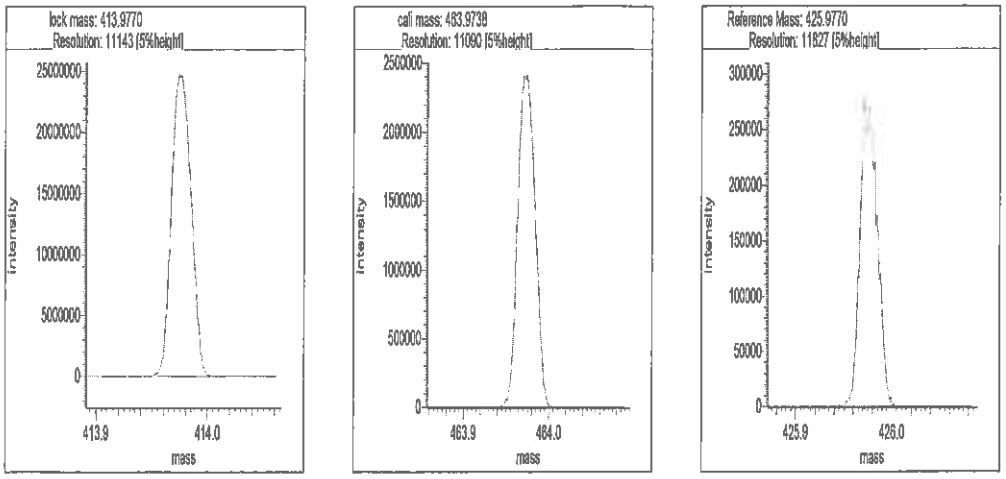


Segment 4

Lock mass 413.9770 [m/z] Resolution: 11143 [5%height]

Cali. mass 463.9738 [m/z] Resolution: 11090 [5%height]

Ref. mass 425.9770 [m/z] Resolution: 11827 [5%height]

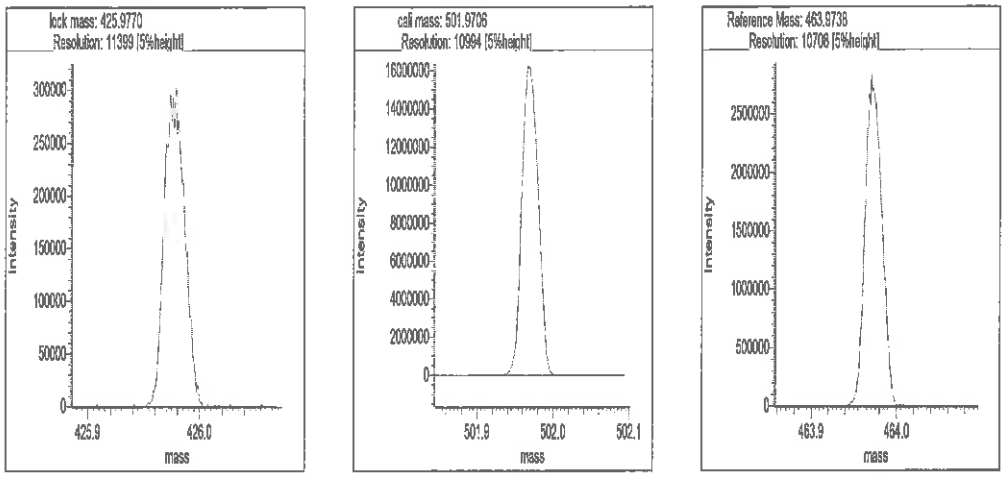


Segment 5

Lock mass 425.9770 [m/z] Resolution: 11399 [5%height]

Cali. mass 501.9706 [m/z] Resolution: 10994 [5%height]

Ref. mass 463.9738 [m/z] Resolution: 10708 [5%height]



```
Reports
11:21:19:  Peak matching procedure started
11:21:20:
11:21:20:  Reference mass: 313.98336
11:21:21:  Sample mass: 364.0
11:21:22:
11:21:22:  Finding reference mass
11:21:23:  Finding sample mass
11:21:24:
11:21:29:  [1]    363.9805 amu, mean: 363.9805
11:21:32:  [2]    363.9804 amu, mean: 363.9804      SD: 0.02 mmu or: 0.07 ppm
11:21:35:  [3]    363.9801 amu, mean: 363.9803      SD: 0.17 mmu or: 0.47 ppm
11:21:38:  [4]    363.9804 amu, mean: 363.9804      SD: 0.14 mmu or: 0.40 ppm
11:21:42:  [5]    363.9809 amu, mean: 363.9805      SD: 0.25 mmu or: 0.70 ppm
11:21:45:  [6]    363.9811 amu, mean: 363.9806      SD: 0.34 mmu or: 0.94 ppm
11:21:48:  [7]    363.9805 amu, mean: 363.9806      SD: 0.31 mmu or: 0.86 ppm
11:21:51:  [8]    363.9811 amu, mean: 363.9806      SD: 0.34 mmu or: 0.94 ppm
11:21:54:  [9]    363.9804 amu, mean: 363.9806      SD: 0.33 mmu or: 0.90 ppm
11:21:57:  [10]    363.9807 amu, mean: 363.9806      SD: 0.31 mmu or: 0.85 ppm
11:21:58:
11:21:58:  Stop requested. Please wait for procedure to finish.
11:21:58:
11:22:01:
```

Signature MM/ID 12/18/19

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 18-Dec-2019 00:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:05:09 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 01:05:09

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:49	488371	0.80	1.1733	10.0	10.0	0.0393	0.0393	100	a
A Non-2,3,7,8-sub-TCDD	29:27	1296852	0.80	1.1733	26.7	26.7	0.0393	9.443	0.00	a
S Total TCDD					36.7	36.7	0.0393	0.0393		
2,3,7,8-TCDF	28:49	736420	0.78	1.0881	10.3	10.3	0.0196	0.0196	103	
A Non-2,3,7,8-sub-TCDF	28:10						0.0196	0.1934		RQU
S Total TCDF					10.3	10.3	0.0196	0.0196		
1,2,3,7,8-PeCDD	40:33	1619149	1.60	1.0434	49.3	49.3	0.0137	0.0137	98.58	
A Non-2,3,7,8-sub-PeCDD	39:24						0.0137	0.9674		U
S Total PeCDD					49.3	49.3	0.0137	0.0137		
1,2,3,7,8-PeCDF	38:45	3109308	1.56	1.1898	50.1	50.1	0.0702	0.0702	100	
2,3,4,7,8-PeCDF	40:01	2698344	1.57	1.1095	49.0	49.0	0.0689	0.0689	98.06	
A Non-2,3,7,8-sub-PeCDF	37:59						0.0694	0.0694		
S Total PeCDF					99.1	99.1	0.0695	0.0695		
1,2,3,4,7,8-HxCDD	44:49	2030635	1.25	1.1409	50.3	50.3	0.007205	0.007205	101	
1,2,3,6,7,8-HxCDD	44:56	2167617	1.29	1.1481	48.7	48.7	0.007398	0.007398	97.35	
1,2,3,7,8,9-HxCDD	45:18	2283857	1.25	1.2212	50.4	50.4	0.006841	0.006841	101	
A Non-2,3,7,8-sub-HxCDD	44:17						0.007140	1.500		U
S Total HxCDD					149.3	149.3	0.007148	0.007148		
1,2,3,4,7,8-HxCDF	43:47	3466277	1.27	1.3629	50.7	50.7	0.0864	0.0864	101	
1,2,3,6,7,8-HxCDF	43:55	3915092	1.25	1.2762	49.1	49.1	0.0845	0.0845	98.22	
2,3,4,6,7,8-HxCDF	44:38	3316012	1.24	1.2654	49.1	49.1	0.1010	0.1010	98.11	
1,2,3,7,8,9-HxCDF	45:35	2894813	1.30	1.2573	46.8	46.8	0.1191	0.1191	93.63	
A Non-2,3,7,8-sub-HxCDF	44:08						0.0961	0.0961		
S Total HxCDF					195.7	195.7	0.0977	0.0977		
1,2,3,4,6,7,8-HpCDD	49:36	1800790	1.04	1.1204	49.8	49.8	0.0541	0.0541	99.64	
A Non-2,3,7,8-sub-HpCDD	49:01						0.0541	0.5140		RQU
S Total HpCDD					49.8	49.8	0.0541	0.0541		
1,2,3,4,6,7,8-HpCDF	47:57	3023835	1.03	1.4984	50.5	50.5	0.005576	0.005576	101	
1,2,3,4,7,8,9-HpCDF	50:16	2439009	1.05	1.3807	52.2	52.2	0.007857	0.007857	104	

Report Date: 18-Dec-2019 01:05:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HpCDF	49:31						0.006557	1.522		RQU
S Total HpCDF					102.6	102.6	0.006716	0.006716		
OCDD	53:51	3068643	0.90	1.2073	102.8	102.8	0.0121	0.0121	103	
OCDF	53:59	4255104	0.93	1.1162	90.4	90.4	0.0182	0.0182	90.42	
D 13C-2,3,7,8-TCDD	30:45	4143284	0.80	1.0709	97.2	97.2	0.2525	0.2525	97.22	
D 13C-2,3,7,8-TCDF	28:46	6592771	0.82	1.7545	94.4	94.4	0.1428	0.1428	94.42	
D 13C-1,2,3,7,8-PeCDD	40:32	3148238	1.61	0.8743	90.5	90.5	0.5429	0.5429	90.48	
D 13C-1,2,3,7,8-PeCDF	38:44	5219881	1.59	1.3704	95.7	95.7	1.154	1.154	95.71	
D 13C-2,3,4,7,8-PeCDF	40:00	4960376	1.57	1.3837	90.1	90.1	1.143	1.143	90.08	
D 13C-1,2,3,4,7,8-HxCDD	44:48	3541222	1.26	0.8772	100.4	100.4	0.5240	0.5240	100	
D 13C-1,2,3,6,7,8-HxCDD	44:55	3878769	1.30	0.9171	105.2	105.2	0.5012	0.5012	105	
D 13C-1,2,3,4,7,8-HxCDF	43:46	5011937	0.52	1.1892	104.8	104.8	0.3943	0.3943	105	
D 13C-1,2,3,6,7,8-HxCDF	43:54	6246598	0.55	1.4625	106.2	106.2	0.3206	0.3206	106	
D 13C-2,3,4,6,7,8-HxCDF	44:37	5341977	0.53	1.3197	100.7	100.7	0.3553	0.3553	101	
D 13C-1,2,3,7,8,9-HxCDF	45:34	4917738	0.53	1.2001	101.9	101.9	0.3907	0.3907	102	
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	3226208	1.09	0.8155	98.4	98.4	0.7669	0.7669	98.41	
D 13C-1,2,3,4,6,7,8-HpCDF	47:55	3999833	0.45	1.0496	94.8	94.8	0.4868	0.4868	94.79	
D 13C-1,2,3,4,7,8,9-HpCDF	50:15	3385095	0.46	0.8947	94.1	94.1	0.5711	0.5711	94.11	
D 13C-OCDD	53:51	4946295	0.90	0.7044	174.7	174.7	0.6162	0.6162	87.34	
D 13C-OCDF	53:59	8431846	0.92	1.0615	197.6	197.6	0.2720	0.2720	98.80	
$ 37Cl4-2,3,7,8-TCDD	30:47	457966		1.2266	9.382	9.382	0.0265	0.0265	93.82	
* 13C-1,2,3,4-TCDD	30:15	3979567	0.85	9.1E+04	100.0	100.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:17	4020106	1.24	1E+05	100.0	100.0			100	
1,3,6,8-TCDF	22:28	820036	0.82						0.00	
1,3,6,8-TCDD	24:53	449942	0.76						0.00	
1,2,8,9-TCDF	33:52	675098	0.77						0.00	
1,2,8,9-TCDD	34:00	420518	0.81						0.00	
1,3,4,6,8-PeCDF	34:37	2754421	1.58						0.00	
1,2,4,7,9-PeCDD	37:36	1576991	1.59						0.00	
1,2,3,8,9-PeCDD	41:13	1715702	1.60						0.00	
1,2,3,8,9-PeCDF	41:20	2529100	1.63						0.00	
1,2,3,4,6,8-HxCDF	42:33	3192853	1.25						0.00	
1,2,4,6,7,9-HxCDD	43:15	2292517	1.26						0.00	
1,2,3,4,8,9-HxCDF	45:43	3024834	1.17						0.00	
1,2,3,4,6,7,9-HpCDD	48:25	1983419	1.05						0.00	

QC Flag Legend

Review Flags
U - Marked Undetected
a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Report Date: 18-Dec-2019 01:05:09 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 18-Dec-2019 00:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:05:09 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 01:05:09

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	30:49	30:49	0	1.002	216372	22350	40	100	559		a
321.8936	30:48	30:49	-1	1.002	271999	27847	40	100	696	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											a
319.8965	30:18	29:27	51	0.985	189603	21031	40	100	526		a
321.8936	30:18	29:27	51	0.985	227970	26938	40	100	673	0.83(0.65-0.89)	
319.8965	30:33	29:27	66	0.993	182165	19564	40	100	489		a
321.8936	30:32	29:27	65	0.993	238056	24095	40	100	602	0.77(0.65-0.89)	
319.8965	31:18	29:27	111	1.018	204389	20186	40	100	505		a
321.8936	31:18	29:27	111	1.018	254669	26778	40	100	669	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:49	28:49	0	1.002	322985	35733	32	80	1117		
305.8987	28:49	28:49	0	1.002	413435	45160	32	80	1411	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	23:18	28:10	-291	0.810	838	166	32	80	5		
305.8987	23:22	28:10	-287	0.813	1440	169	32	80	5	0.58(0.65-0.89)	
	Empc Correction				1088	215	32	80	7		
1,2,3,7,8-PeCDD											
355.8546	40:33	40:33	0	1.000	995568	214193	20	50	10710		
357.8516	40:33	40:33	0	1.000	623581	140614	21	52	6696	1.60(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	39:24	39:24	0	0.972	18698	2376	20	50			
357.8516	39:24	39:24	0	0.972	13081	2205	21	52		1.43(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:45	38:45	0	1.000	1892648	360789	201	502	1795		
341.8567	38:45	38:45	0	1.000	1216660	233105	134	335	1740	1.56(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	40:01	40:01	0	1.000	1646799	364003	201	502	1811		
341.8567	40:01	40:01	0	1.000	1051545	229754	134	335	1715	1.57(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											
339.8597	37:59						201	502			
341.8567	37:59						134	335			
1,2,3,4,7,8-HxCDD											
389.8158	44:49	44:49	0	1.000	1127299	287807	19	47	15148		
391.8127	44:49	44:49	0	1.000	903336	225229	11	27	20475	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:56	44:56	0	1.000	1219973	273516	19	47	14396		
391.8127	44:55	44:56	-1	1.000	947644	216766	11	27	19706	1.29(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:18	45:18	0	1.011	1267258	282733	19	47	14881		
391.8127	45:18	45:18	0	1.011	1016599	226892	11	27	20627	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											U
389.8158	44:17	44:17	0	0.986	38212	1818	19	47			
391.8127	44:17	44:17	0	0.986	26900	1561	11	27		1.42(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:47	43:47	0	1.000	1940118	525594	369	922	1424		
375.8178	43:47	43:47	0	1.000	1526159	420155	278	695	1511	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:55	43:55	0	1.000	2171325	539266	369	922	1461		
375.8178	43:55	43:55	0	1.000	1743767	410649	278	695	1477	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:38	44:38	0	1.000	1837707	443797	369	922	1203		
375.8178	44:38	44:38	0	1.000	1478305	363204	278	695	1306	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	45:35	45:35	0	1.000	1637718	386518	369	922	1047		
375.8178	45:35	45:35	0	1.000	1257095	300630	278	695	1081	1.30(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44:08						369	922			
375.8178	44:08						278	695			
1,2,3,4,6,7,8-HpCDD											
423.7767	49:36	49:36	0	1.000	919797	173322	62	155	2796		
425.7737	49:36	49:36	0	1.000	880993	161779	82	205	1973	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											U
423.7767	49:01	49:01	0	0.988	11622	986	62	155			
	Empc Correction				9472	785	62	155	0		
425.7737	49:01	49:01	0	0.988	9108	755	82	205		1.28(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:57	47:57	0	1.001	1532382	314677	6	15	52446		
409.7788	47:56	47:57	-1	1.000	1491453	299291	21	52	14252	1.03(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:16	50:16	0	1.000	1248750	225774	6	15	37629		
409.7788	50:16	50:16	0	1.000	1190259	213760	21	52	10179	1.05(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:19	49:31	-72	1.008	29975	3372	6	15	562		
	Empc Correction				21987	3503	6	15	584		
409.7788	48:19	49:31	-72	1.008	21142	3369	21	52	160	1.42(0.88-1.20)	
OCDD											
457.7377	53:51	53:51	0	1.000	1451375	311066	9	22	34563		
459.7348	53:51	53:51	0	1.000	1617268	351891	22	55	15995	0.90(0.76-1.02)	
OCDF											
441.7428	53:59	53:59	0	1.000	2052154	463793	35	87	13251		
443.7399	53:59	53:59	0	1.000	2202950	508394	41	102	12400	0.93(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:45	30:45	0	1.017	1837644	196535	239	597	822		
333.9338	30:45	30:45	0	1.017	2305640	236851	234	585	1012	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:46	28:46	0	0.951	2967903	335668	233	582	1441		
317.9389	28:46	28:46	0	0.951	3624868	413182	205	512	2016	0.82(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:32	40:32	0	1.340	1940547	434403	546	1365	796		
369.8919	40:32	40:32	0	1.340	1207691	277084	284	710	976	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:44	38:44	0	1.281	3205205	612486	1224	3060	500		
353.8970	38:44	38:44	0	1.281	2014676	390311	1541	3852	253	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:00	40:00	0	1.322	3033713	669479	1224	3060	547		
353.8970	40:00	40:00	0	1.322	1926663	425542	1541	3852	276	1.57(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:48	0	0.989	1971804	509878	1001	2502	509		
403.8529	44:48	44:48	0	0.989	1569418	402603	637	1592	632	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:55	0	0.992	2193648	493516	1001	2502	493		
403.8529	44:54	44:55	-1	0.991	1685121	389499	637	1592	611	1.30(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:46	43:46	0	0.966	1721318	486284	650	1625	748		
385.8610	43:46	43:46	0	0.966	3290619	887706	1021	2552	869	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:54	43:54	0	0.969	2222488	524755	650	1625	807		
385.8610	43:54	43:54	0	0.969	4024110	974731	1021	2552	955	0.55(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:37	44:37	0	0.985	1860850	436237	650	1625	671		
385.8610	44:37	44:37	0	0.985	3481127	829040	1021	2552	812	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:34	45:34	0	1.006	1697562	371719	650	1625	572		
385.8610	45:34	45:34	0	1.006	3220176	707764	1021	2552	693	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:35	0	1.095	1681554	313284	1216	3040	258		
437.8140	49:35	49:35	0	1.095	1544654	280706	1013	2532	277	1.09(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:55	47:55	0	1.058	1238533	247289	801	2002	309		
419.8220	47:55	47:55	0	1.058	2761300	554630	1020	2550	544	0.45(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:15	50:15	0	1.109	1071465	199342	801	2002	249		
419.8220	50:15	50:15	0	1.109	2313630	418282	1020	2550	410	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:51	53:51	0	1.189	2340980	498307	584	1460	853		
471.7750	53:51	53:51	0	1.189	2605315	560226	963	2407	582	0.90(0.76-1.02)	
13C-OCDF											
453.7830	53:59	53:59	0	1.192	4029819	895910	558	1395	1606		
455.7801	53:59	53:59	0	1.192	4402027	969771	471	1177	2059	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:47	30:47	0	1.018	457966	47577	57	142	835		
13C-1,2,3,4-TCDD											
331.9368	30:15	30:15	0		1823269	198098	239	597	829		
333.9338	30:15	30:15	0		2156298	239033	234	585	1022	0.85(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:17	45:17	0		2223604	495569	1001	2502	495		
403.8529	45:17	45:17	0		1796502	395333	637	1592	621	1.24(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	22:28	22:28	0	0.781	368259	53996	32	80	1687		
305.8987	22:29	22:28	1	0.782	451777	67168	32	80	2099	0.82(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	24:53	24:53	0	0.809	194481	26282	40	100	657		
321.8936	24:53	24:53	0	0.809	255461	35449	40	100	886	0.76(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	33:52	33:52	0	1.177	294275	29942	32	80	936		
305.8987	33:51	33:52	-1	1.177	380823	39477	32	80	1234	0.77(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	34:00	34:00	0	1.106	187753	20767	40	100	519		
321.8936	33:59	34:00	-1	1.105	232765	25408	40	100	635	0.81(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	34:37	34:37	0	0.894	1687278	202267	201	502	1006		
341.8567	34:37	34:37	0	0.894	1067143	130358	134	335	973	1.58(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	37:36	37:36	0	0.928	967507	151000	20	50	7550		
357.8516	37:36	37:36	0	0.928	609484	93522	21	52	4453	1.59(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:13	41:13	0	1.017	1055401	242538	20	50	12127		
357.8516	41:13	41:13	0	1.017	660301	153757	21	52	7322	1.60(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	41:20	41:20	0	1.067	1568155	358325	201	502	1783		
341.8567	41:20	41:20	0	1.067	960945	222529	134	335	1661	1.63(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,8-HxCDF											
373.8208	42:33	42:33	0	0.972	1776448	469254	369	922	1272		
375.8178	42:33	42:33	0	0.972	1416405	375763	278	695	1352	1.25(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	43:15	43:15	0	0.965	1278388	340091	19	47	17900		
391.8127	43:15	43:15	0	0.965	1014129	275362	11	27	25033	1.26(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	45:43	45:43	0	1.044	1629092	357961	369	922	970		
375.8178	45:42	45:43	-1	1.044	1395742	286468	278	695	1030	1.17(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	48:25	48:25	0	0.976	1014846	193902	62	155	3127		
425.7737	48:25	48:25	0	0.976	968573	190120	82	205	2319	1.05(0.88-1.20)	

QC Flag Legend

Review Flags

U - Marked Undetected

a - User Assigned ID

Reagents:

61WDML3OP_F/L_00070 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
CCV Relative RT Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Sample Type: WDMCCV
Inject. Date: 18-Dec-2019 00:01:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014069-001
Operator ID: Xcalibur_System Instrument ID: D2A
Sublist: chrom-D2A_Dioxin*sub1

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:05:09 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0311

First Level Reviewer: parslyt Date: 18-Dec-2019 01:05:09

Start Cal Date: 16-May-2014 14:26:00
End Cal Date: 16-May-2014 18:31:00

Compound	T/L	ICAL RT	CCV RT	RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,4-TCDD		31:17	30:15	-61		1.000	1.000	0.000 - 0.000
13C-2,3,7,8-TCDD		31:48	30:45	-63		1.017	1.017	0.976 - 1.043
37Cl4-2,3,7,8-TCDD		31:50	30:47	-63		1.018	1.018	0.989 - 1.052
2,3,7,8-TCDD		31:50	30:49	-61		1.001	1.002	0.999 - 1.002
13C-2,3,7,8-TCDF		29:44	28:46	-58		0.951	0.951	0.923 - 1.103
2,3,7,8-TCDF		29:47	28:49	-58		1.002	1.002	0.999 - 1.003
13C-1,2,3,7,8-PeCDD		41:00	40:32	-28		1.311	1.340	1.000 - 1.567
1,2,3,7,8-PeCDD		41:01	40:33	-28		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8-PeCDF		39:17	38:44	-32		1.256	1.281	1.000 - 1.425
1,2,3,7,8-PeCDF		39:18	38:45	-32		1.000	1.000	0.999 - 1.002
13C-2,3,4,7,8-PeCDF		40:29	40:00	-29		1.295	1.322	1.011 - 1.526
2,3,4,7,8-PeCDF		40:30	40:01	-29		1.000	1.000	0.999 - 1.002
13C-1,2,3,7,8,9-HxCDD		45:45	45:17	-27		1.000	1.000	0.000 - 0.000
13C-1,2,3,4,7,8-HxCDD		45:14	44:48	-26		0.989	0.989	0.977 - 1.000
1,2,3,4,7,8-HxCDD		45:15	44:49	-26		1.000	1.000	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDD		45:21	44:55	-26		0.992	0.992	0.981 - 1.003
1,2,3,6,7,8-HxCDD		45:22	44:56	-26		1.000	1.000	0.998 - 1.004
1,2,3,7,8,9-HxCDD		45:46	45:18	-27		1.012	1.011	1.000 - 1.019
13C-1,2,3,4,7,8-HxCDF		44:11	43:46	-25		0.966	0.966	0.936 - 0.996
1,2,3,4,7,8-HxCDF		44:12	43:47	-25		1.000	1.000	0.999 - 1.001
13C-1,2,3,6,7,8-HxCDF		44:20	43:54	-25		0.969	0.969	0.949 - 0.975
1,2,3,6,7,8-HxCDF		44:21	43:55	-25		1.000	1.000	0.997 - 1.005
13C-2,3,4,6,7,8-HxCDF		45:03	44:37	-26		0.985	0.985	0.977 - 1.047
2,3,4,6,7,8-HxCDF		45:04	44:38	-26		1.000	1.000	0.999 - 1.001

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d

Compound	T/L	ICAL RT	CCV RT	Δ RT (secs)	RT Lmt	ICAL RRT	CCV RRT	RRT Limits
13C-1,2,3,7,8,9-HxCDF		46:02	45:34	-28		1.006	1.006	0.959 - 1.021
1,2,3,7,8,9-HxCDF		46:03	45:35	-28		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDD		50:11	49:35	-35		1.097	1.095	1.086 - 1.110
1,2,3,4,6,7,8-HpCDD		50:12	49:36	-35		1.000	1.000	0.999 - 1.001
13C-1,2,3,4,6,7,8-HpCDF		48:28	47:55	-32		1.059	1.058	1.043 - 1.085
1,2,3,4,6,7,8-HpCDF		48:29	47:57	-31		1.000	1.001	0.999 - 1.001
13C-1,2,3,4,7,8,9-HpCDF		50:48	50:15	-33		1.111	1.109	1.057 - 1.151
1,2,3,4,7,8,9-HpCDF		50:49	50:16	-33		1.000	1.000	0.999 - 1.001
13C-OCDD		54:18	53:51	-26		1.187	1.189	1.032 - 1.311
OCDD		54:19	53:51	-27		1.000	1.000	0.999 - 1.001
13C-OCDF		54:26	53:59	-26		1.190	1.192	1.091 - 1.291
OCDF		54:27	53:59	-27		1.000	1.000	0.999 - 1.008

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	100.000	4143284	433386

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		100.000	4143284	433386

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
30:18	189603	21031	227970	26938	8.59	0.83	a
30:33	182165	19564	238056	24095	8.64	0.77	a
31:18	204389	20186	254669	26778	9.44	0.80	a
Signal Totals:							
	576157	60781	720695	77811			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1296852	138592				0.80	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 26.677 = (1296852 * 100.000) / (4143284 * 1.173)

QC Flag Legend

Review Flags
a - User Assigned ID

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	100.000	6592771	748850

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		100.000	6592771	748850

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:18	838	166	1440	169	0.0318	0.58	RnQ
23:18	838	166	1088	215	0.0268		Empc Correction
24:57	910	168	1408	256	0.0323	0.65	n
26:30	974	109	1340	362	0.0323	0.73	n
26:59	1870	333	2753	279	0.0644	0.68	n
27:42	6035	799	9366	1135	0.2147	0.64	RQ
27:42	6035	799	7837	1037	0.1934		Empc Correction
29:13	2529	245	1017	205	0.0494	2.49	RnQ
29:13	783	157	1017	205	0.0251		Empc Correction
30:01	1121	180	1053	148	0.0303	1.06	RnQ
30:01	810	113	1053	148	0.0260		Empc Correction

Compound is Marked ND

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	100.000	3148238	711487

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		100.000	3148238	711487

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
40:48	18698	2376	13081	2205	0.9674	1.43	

Compound is Marked ND

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	100.000	3541222	912481
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	100.000	3878769	883015
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		100.000	3709995	897748

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
45:39	38212	1818	26900	1561	1.50	1.42	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3226208	593990

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	3226208	593990

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
50:08	11622	986	9108	755	0.5735	1.28	RnQ
50:08	9472	785	9108	755	0.5140		Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Lims ID: WDMCCV
Client ID:
Inject. Date: 18-Dec-2019 00:01:00 Dil. Factor: 1.0000
Sample Type: WDMCCV, Combo WDM and CCV
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 1
Sublist: chrom-D2A_Dioxin*sub1

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3999833	801919
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3385095	617624

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		100.000	3692464	709771

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:19	29975	3372	21142	3369	0.9617	1.42	RQ
48:19	21987	3503	21142	3369	0.8114		Empc Correction
48:34	25964	3858	22735	3051	0.9162	1.14	
50:41	37784	2022	43094	1649	1.52	0.88	

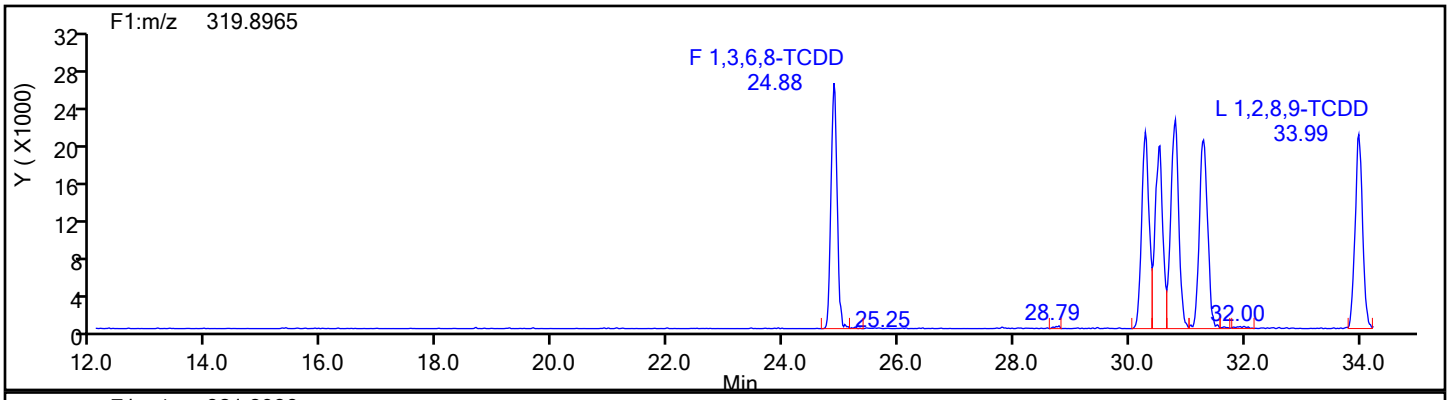
Compound is Marked ND

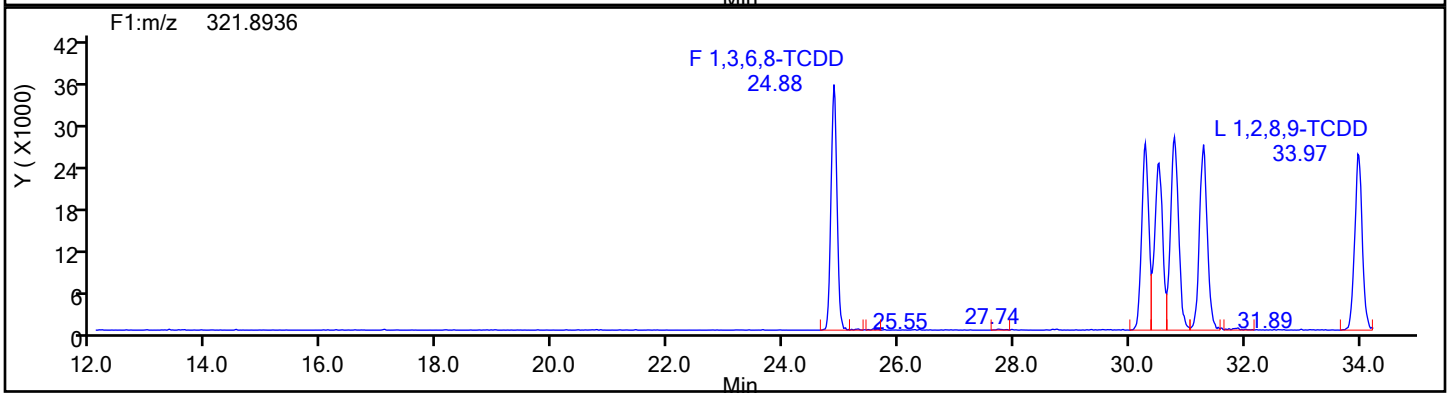
Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

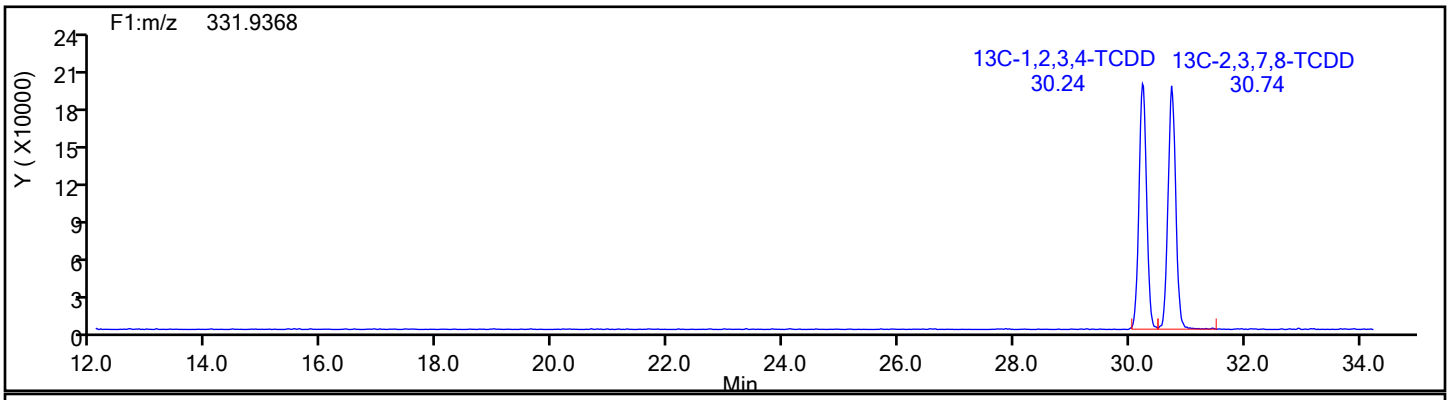
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d		
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

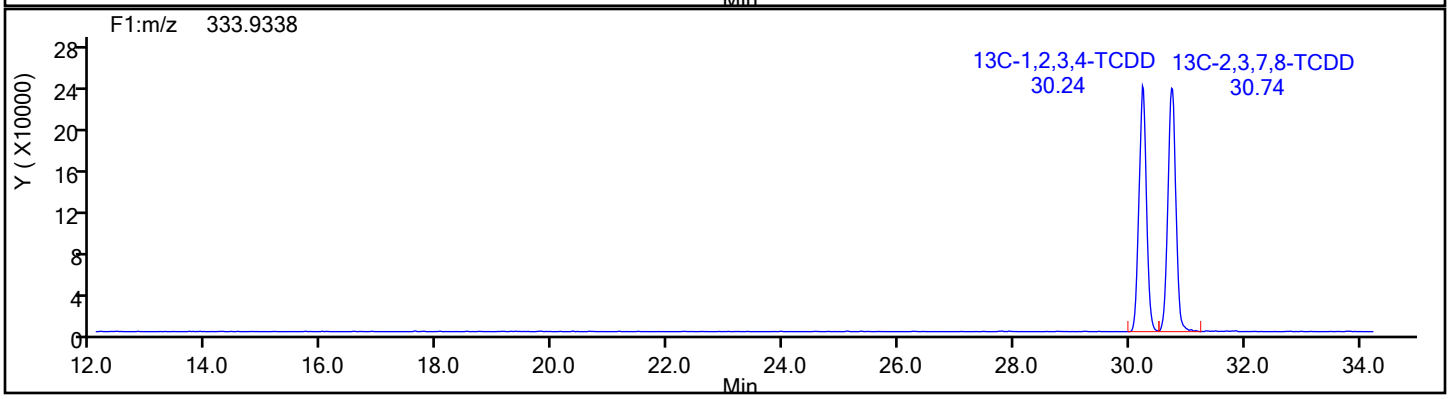
TCDD





TCDD Standards

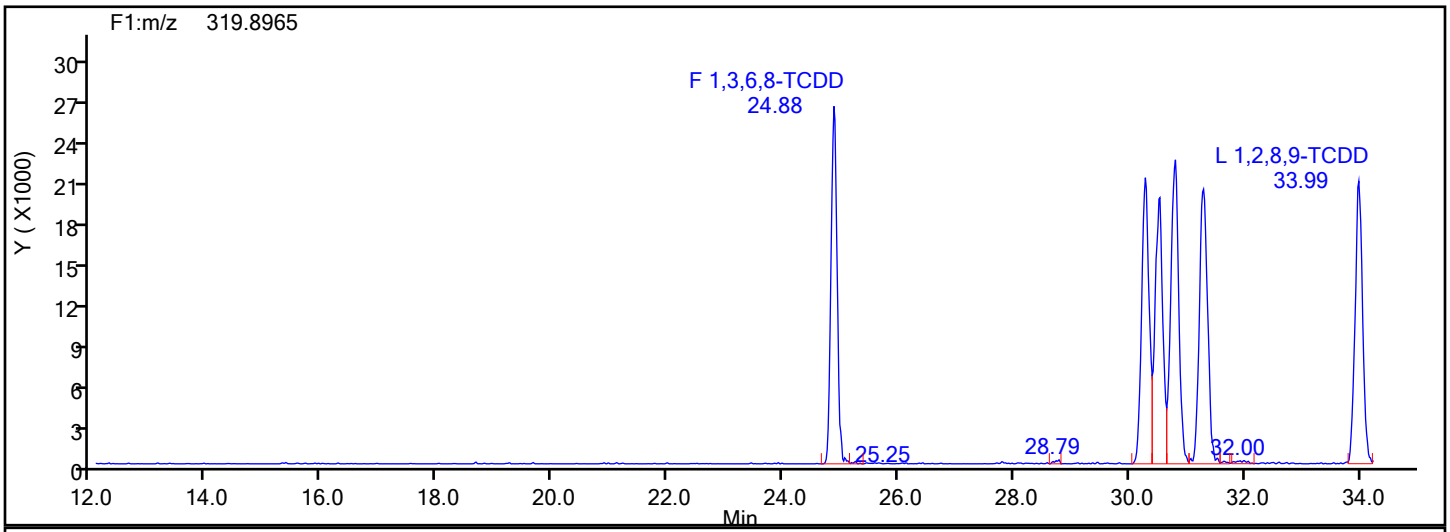


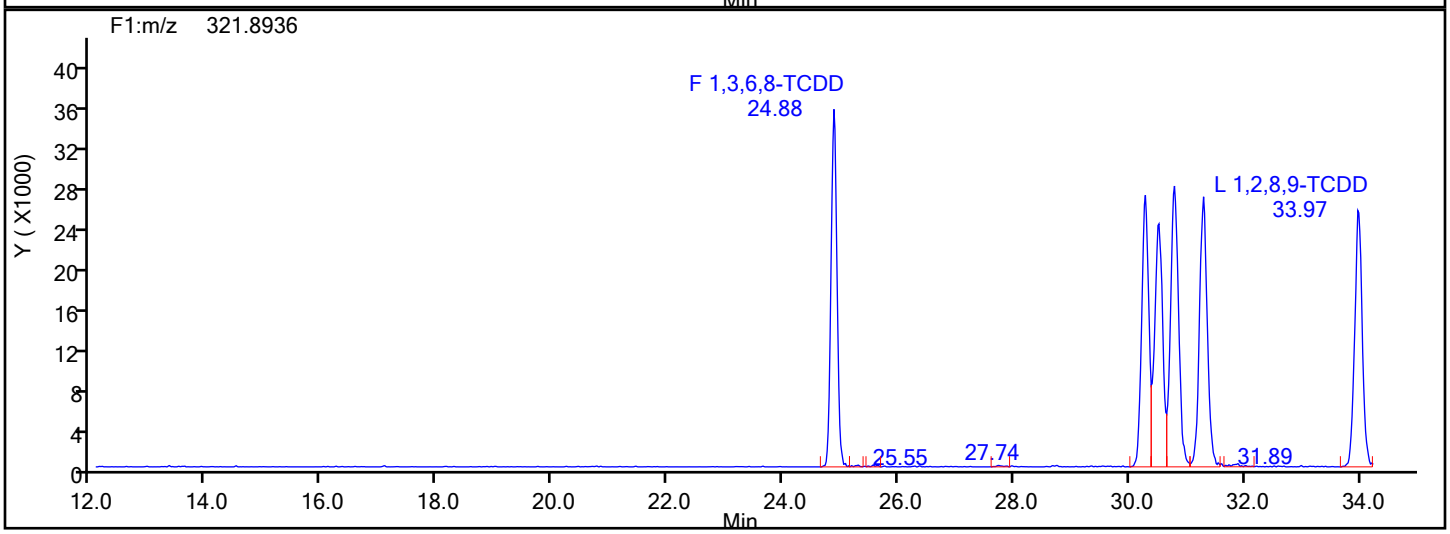


Eurofins TestAmerica, Knoxville

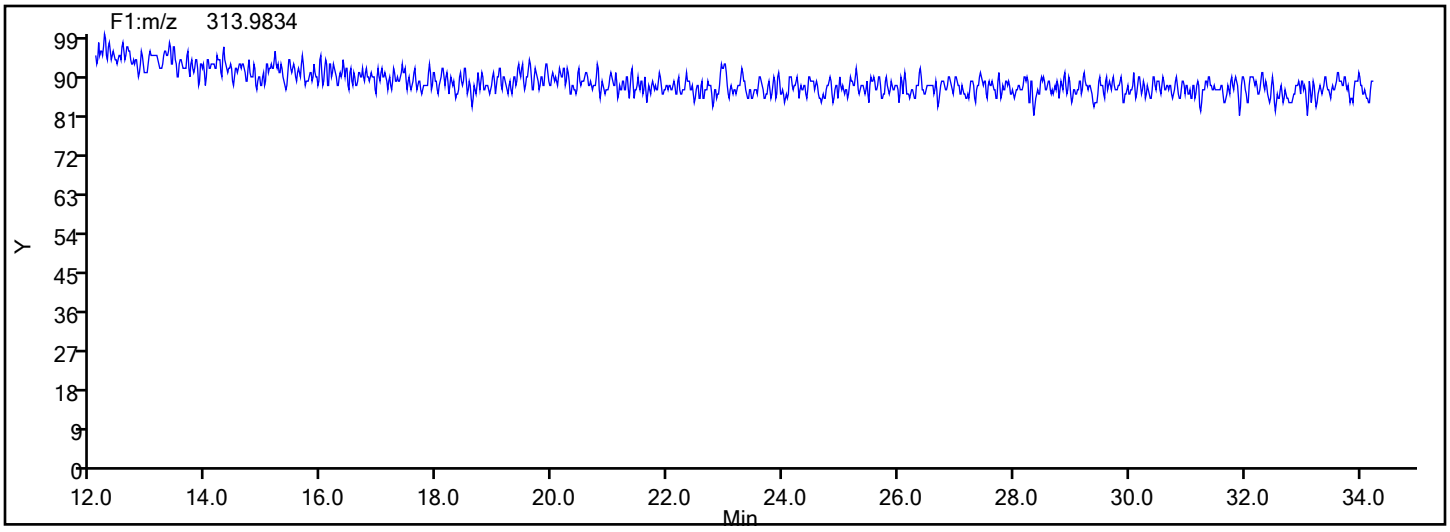
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d		
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

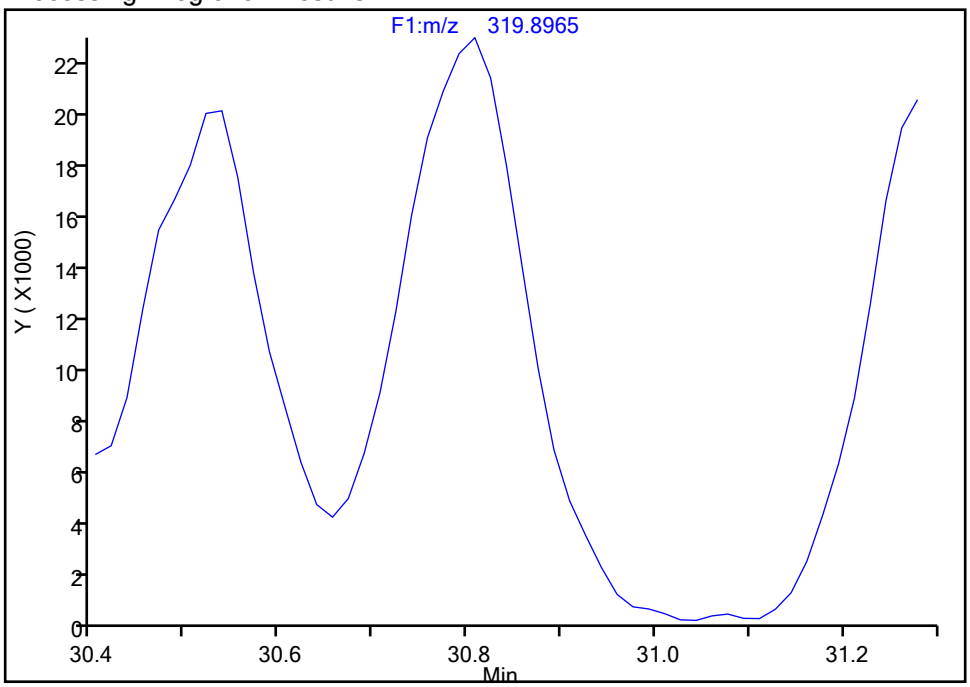
Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d
Injection Date: 18-Dec-2019 00:01:00 Instrument ID: D2A
Lims ID: WDMCCV
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F1(12.07 :34.29)

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

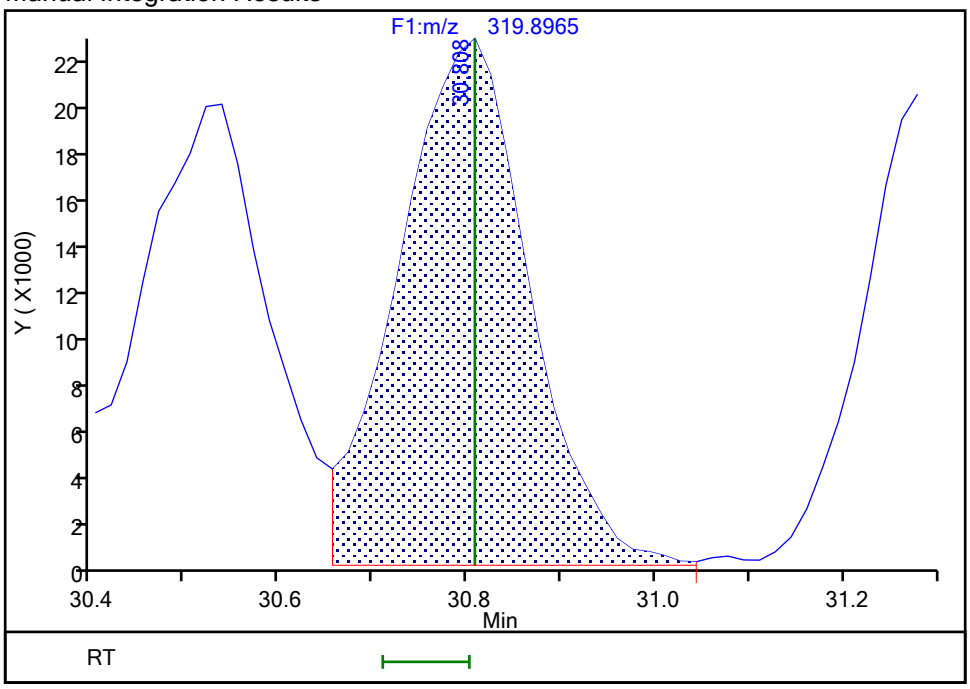
Not Detected
Expected RT: 30.81

Processing Integration Results



Manual Integration Results

RT: 30.81
Area: 216372
Amount: 10.046188
Amount Units: pg/ul



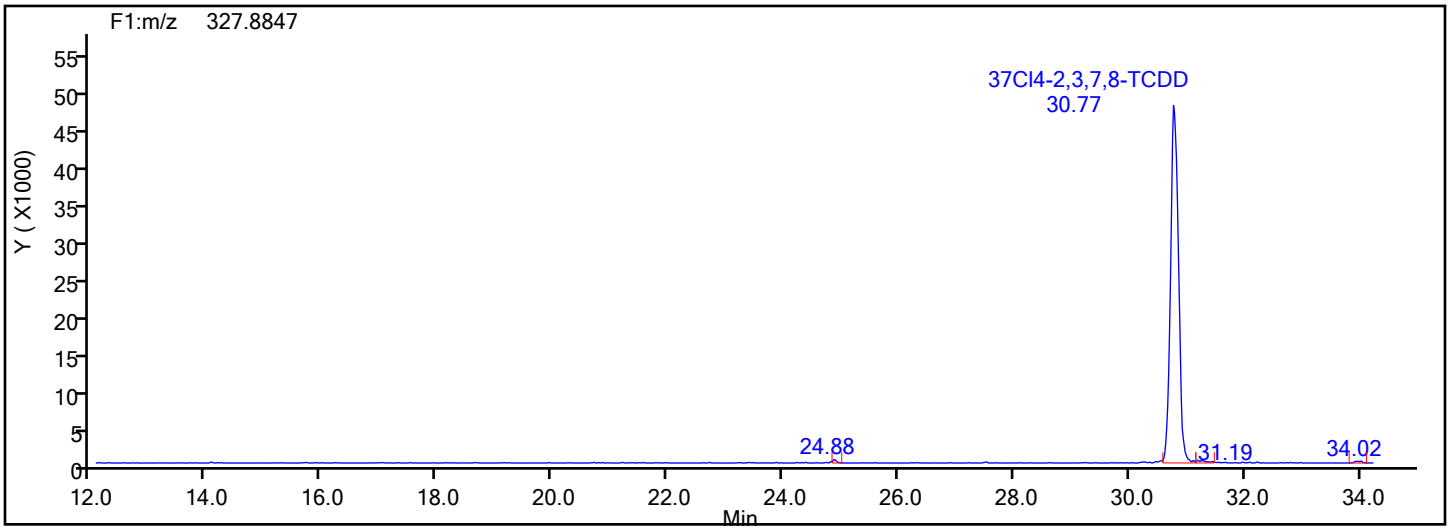
Reviewer: parslyt, 18-Dec-2019 01:02:27
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

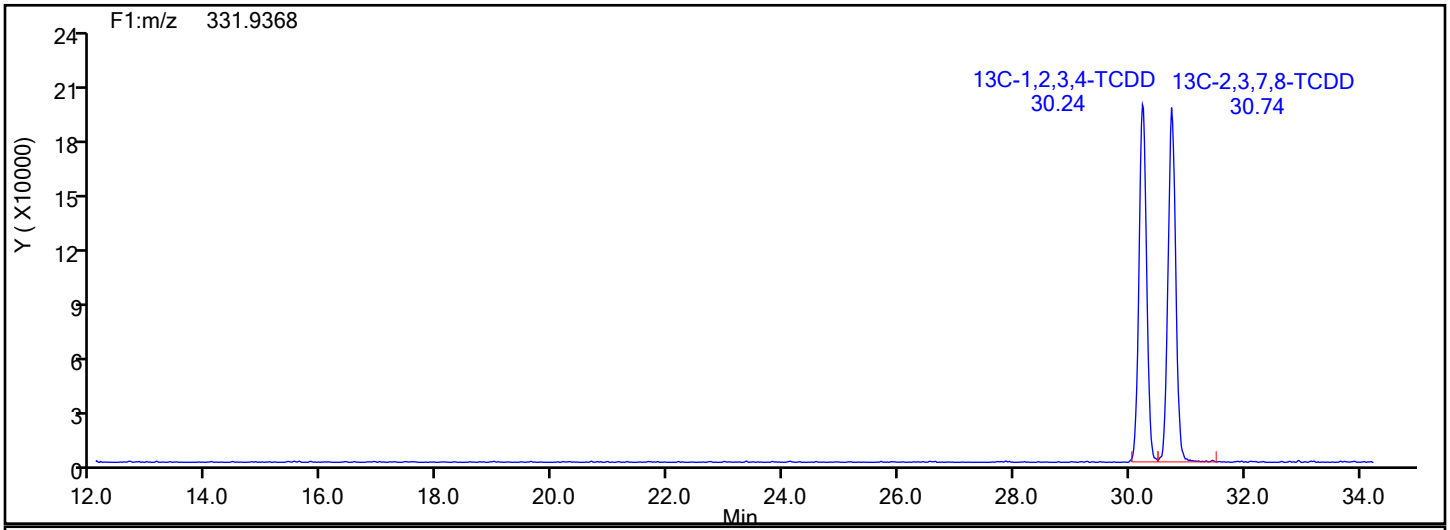
Eurofins TestAmerica, Knoxville

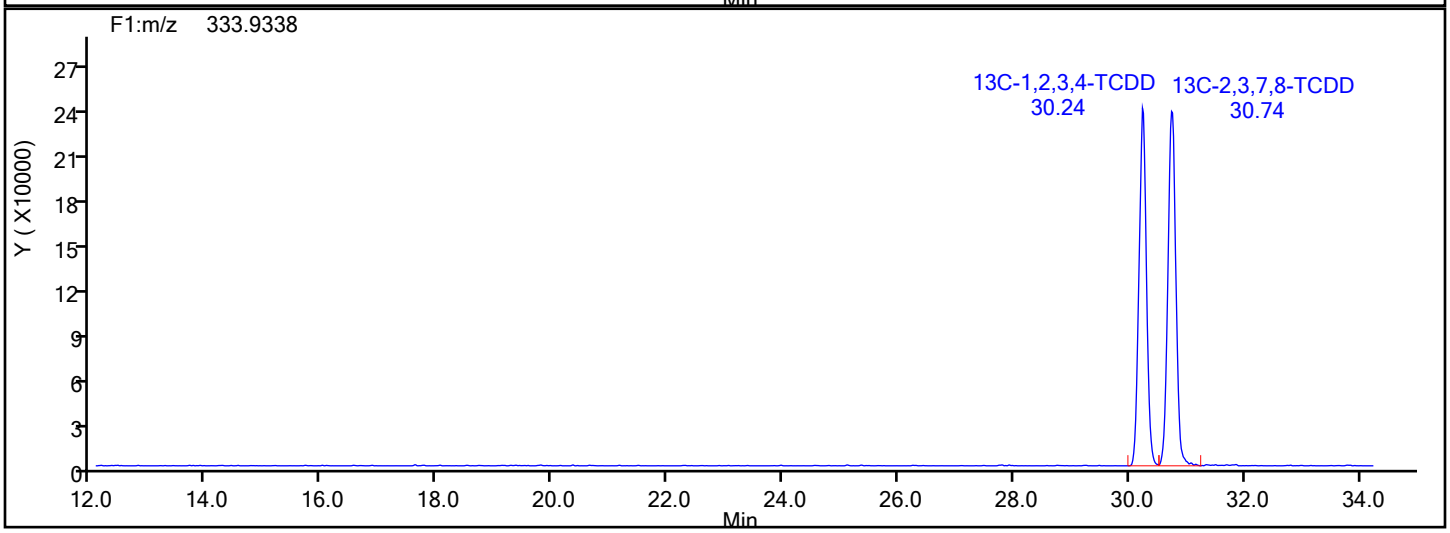
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d		
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 18-Dec-2019 01:05:10 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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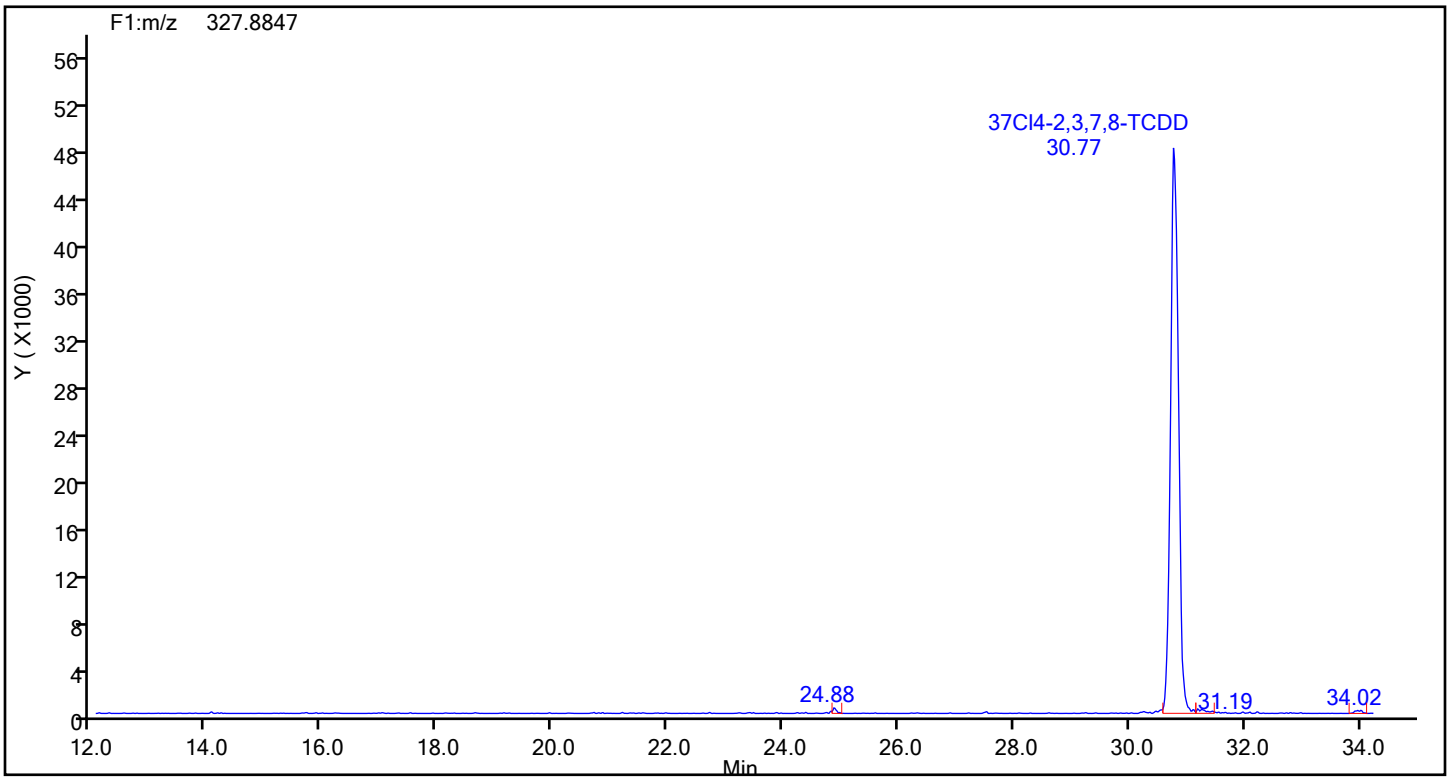
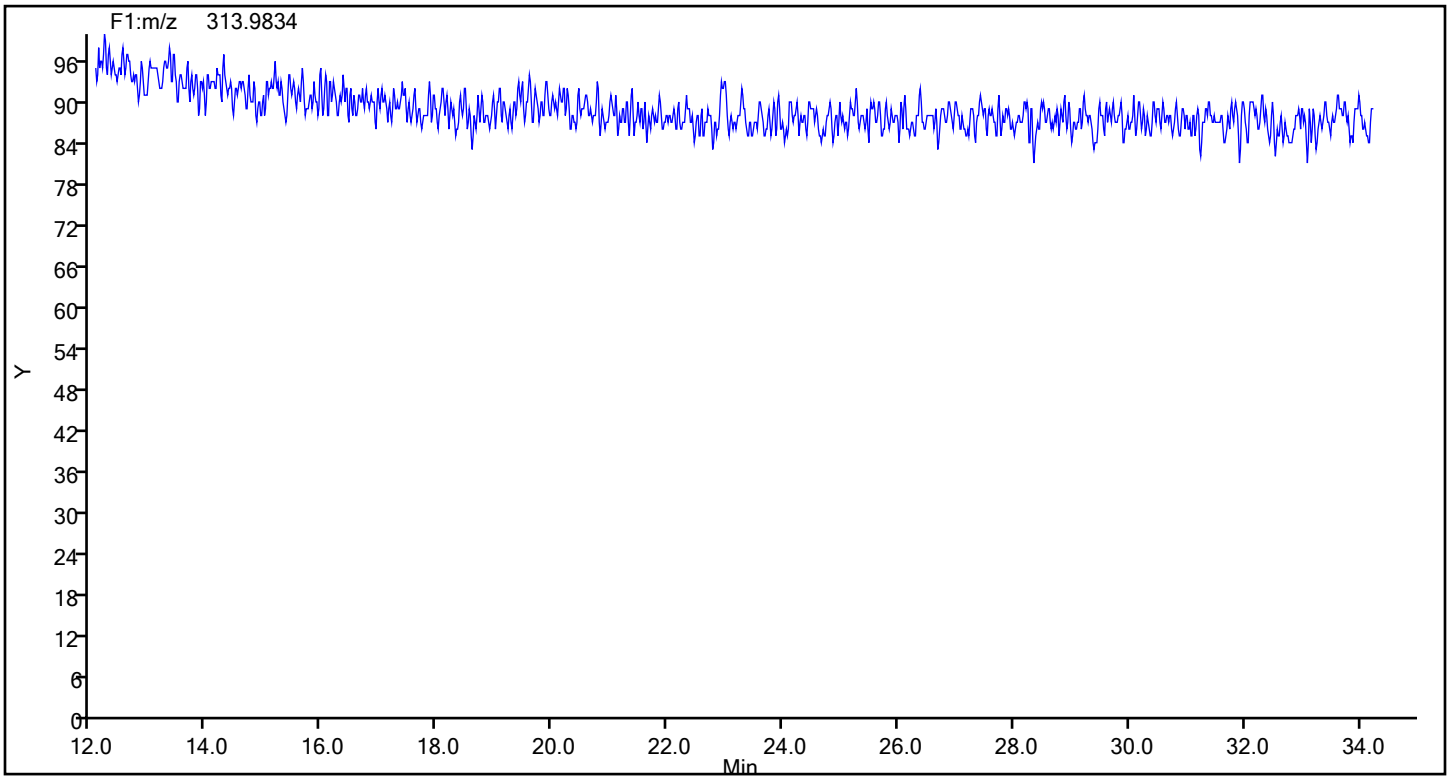
37Cl4-TCDD



37Cl4-TCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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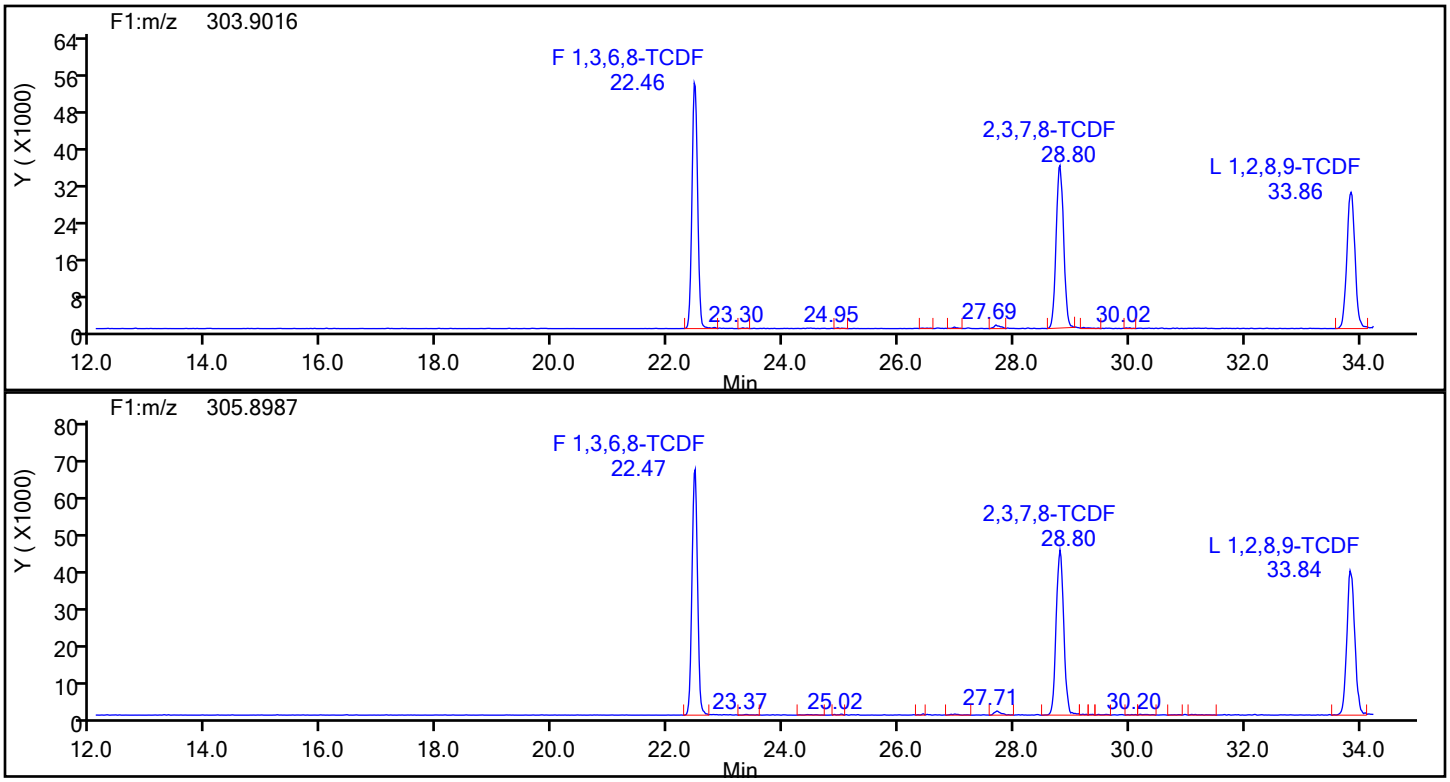
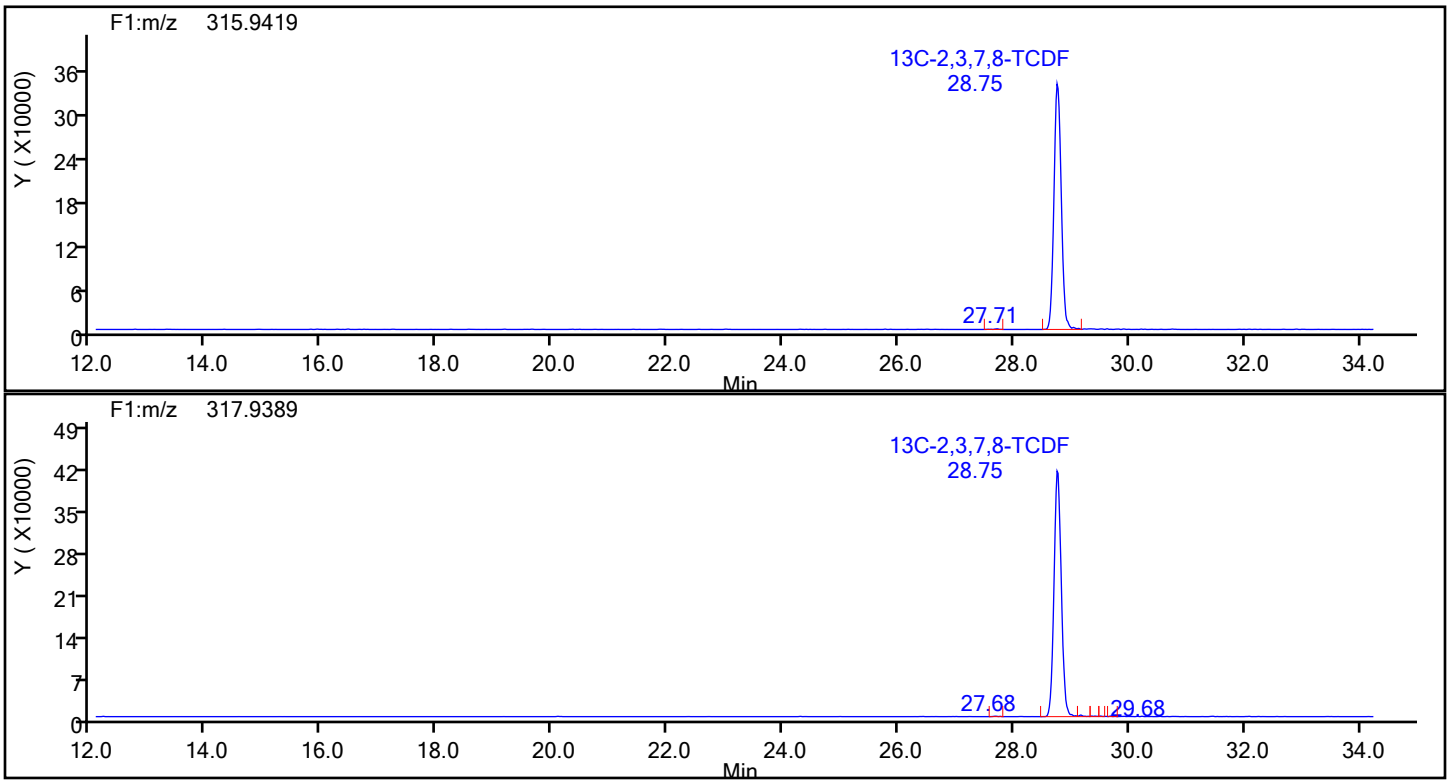


TCDF Standards



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Eurofins TestAmerica, Knoxville

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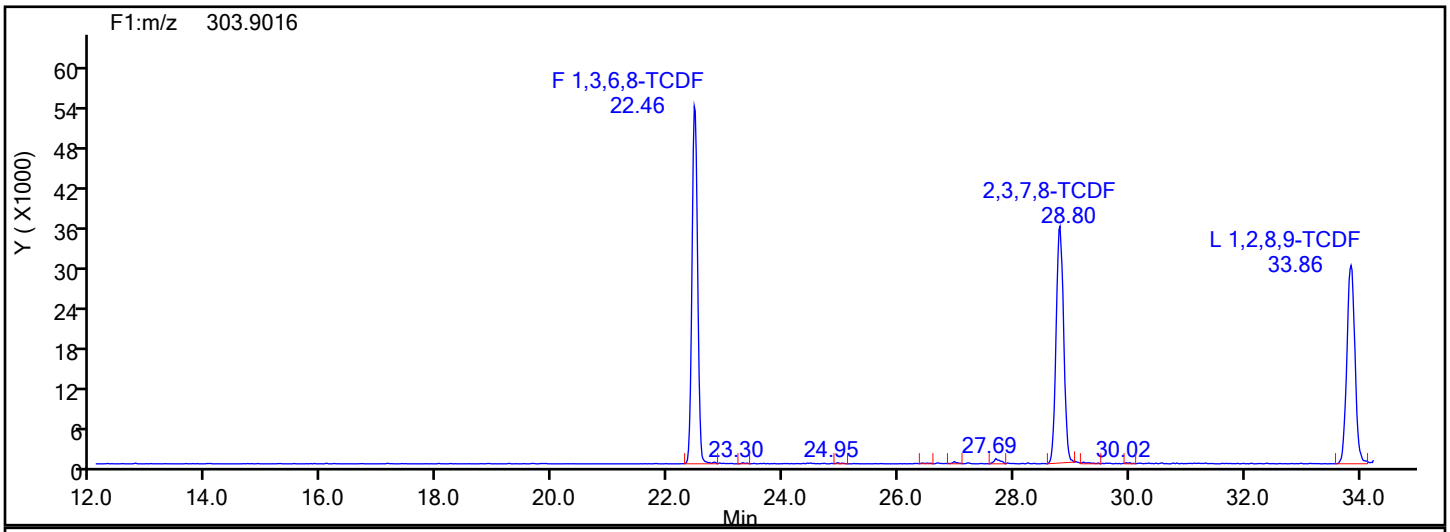
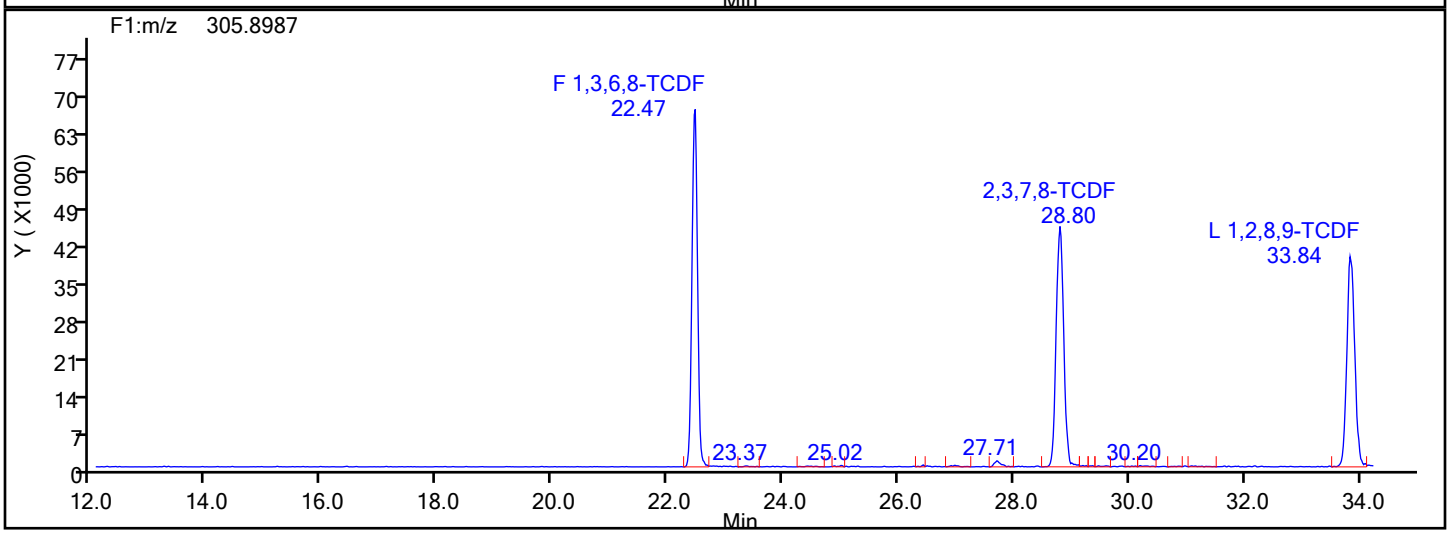
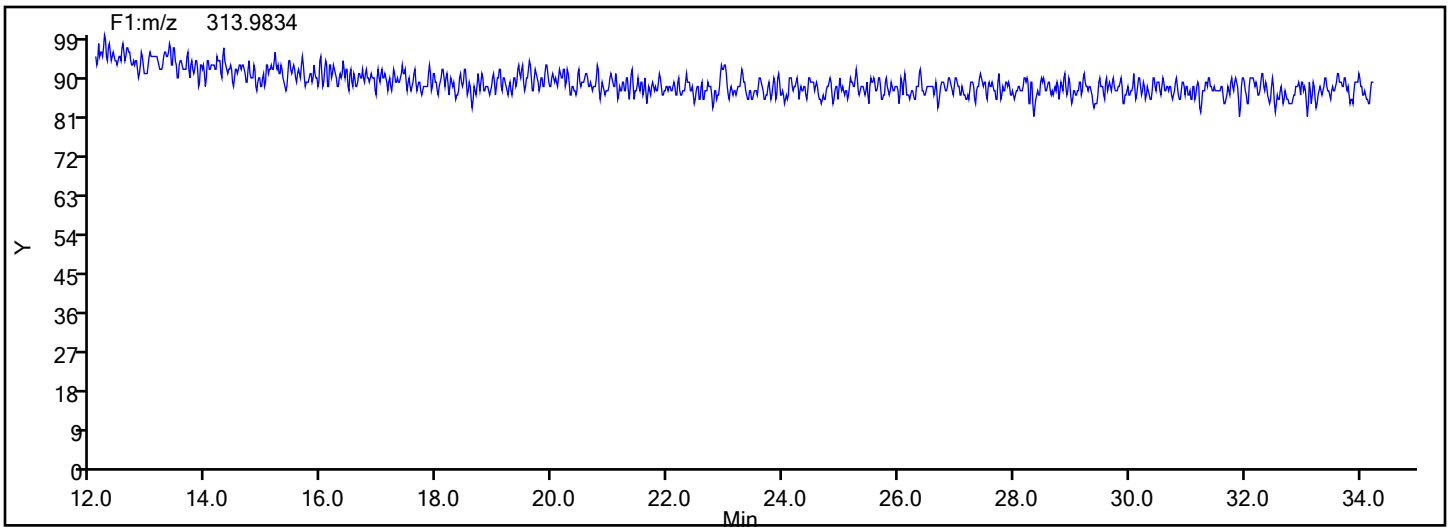




TCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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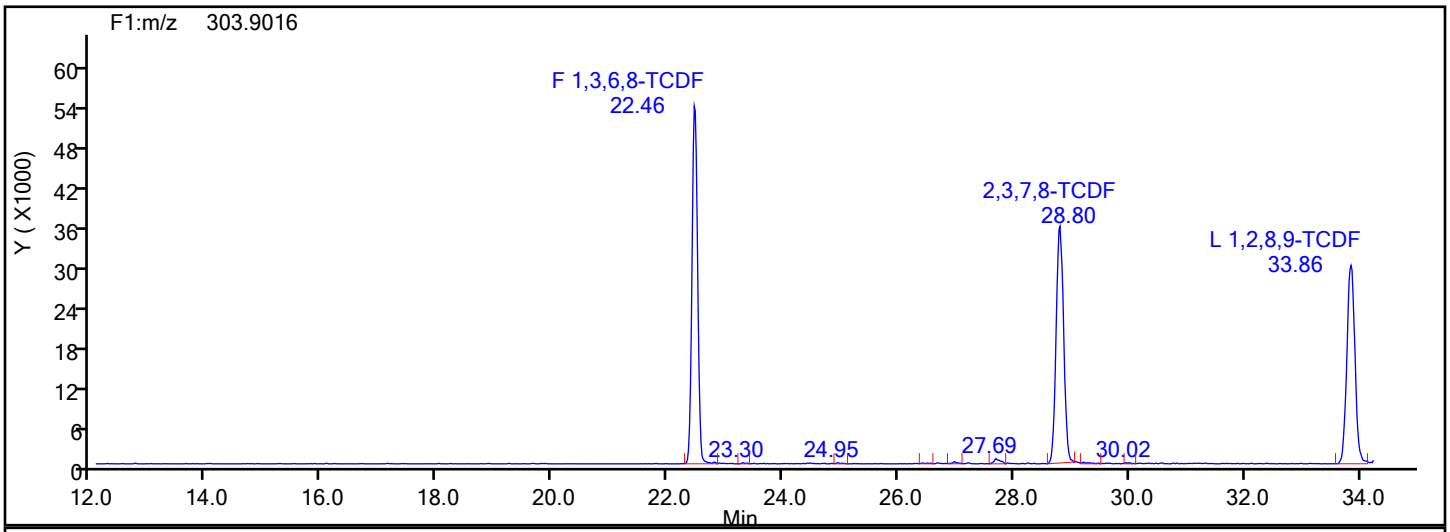
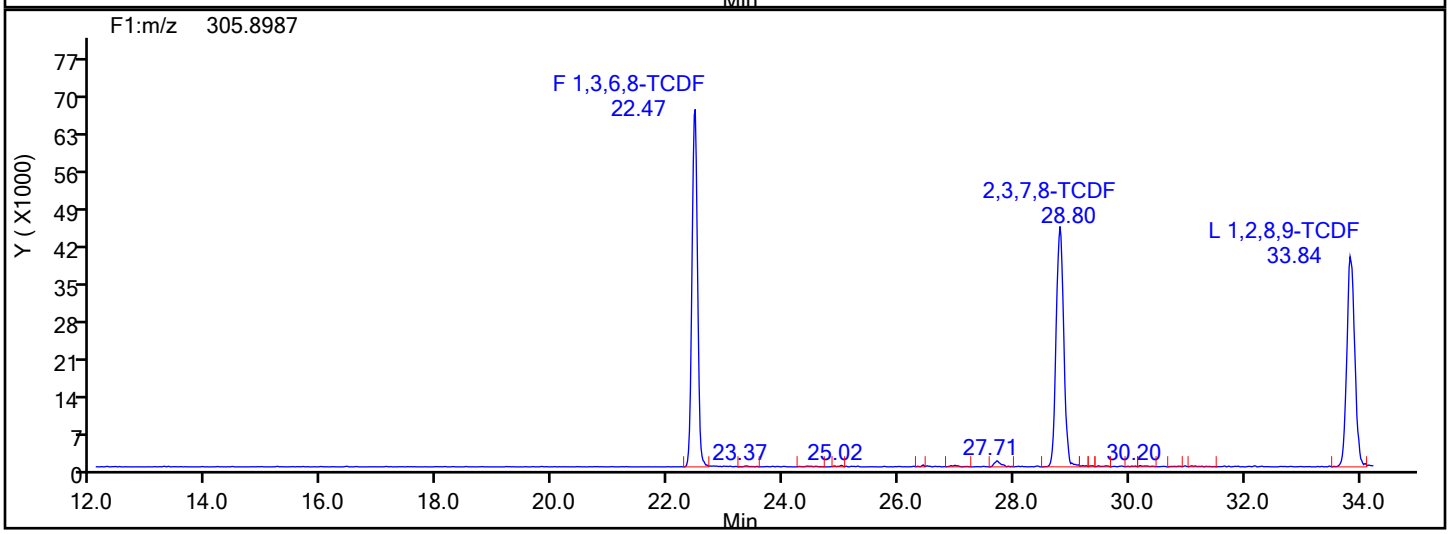
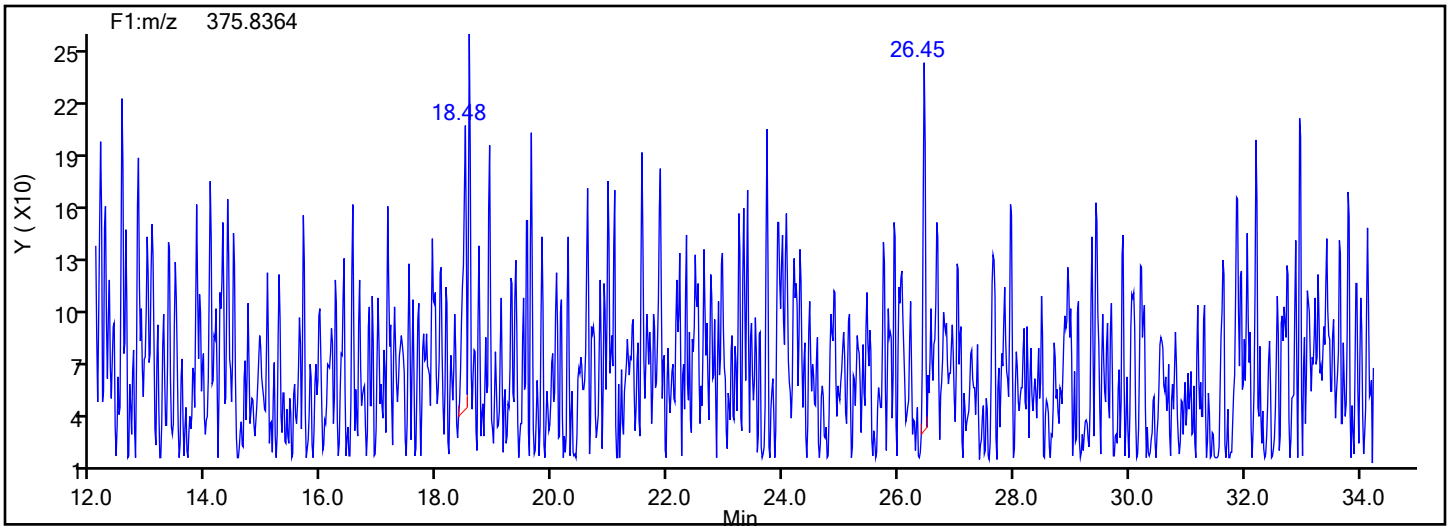




TCDF Interference Mass



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Eurofins TestAmerica, Knoxville

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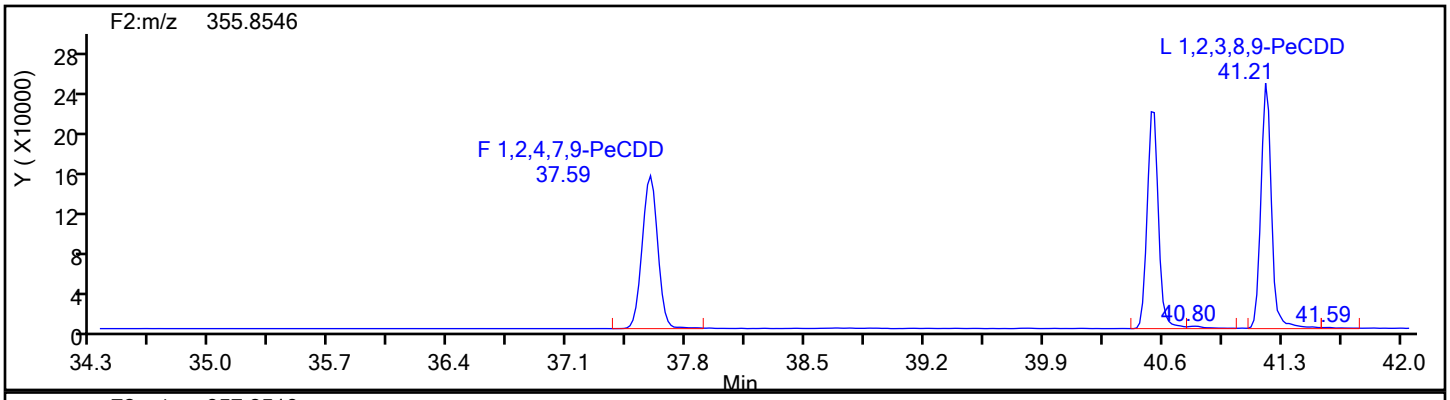
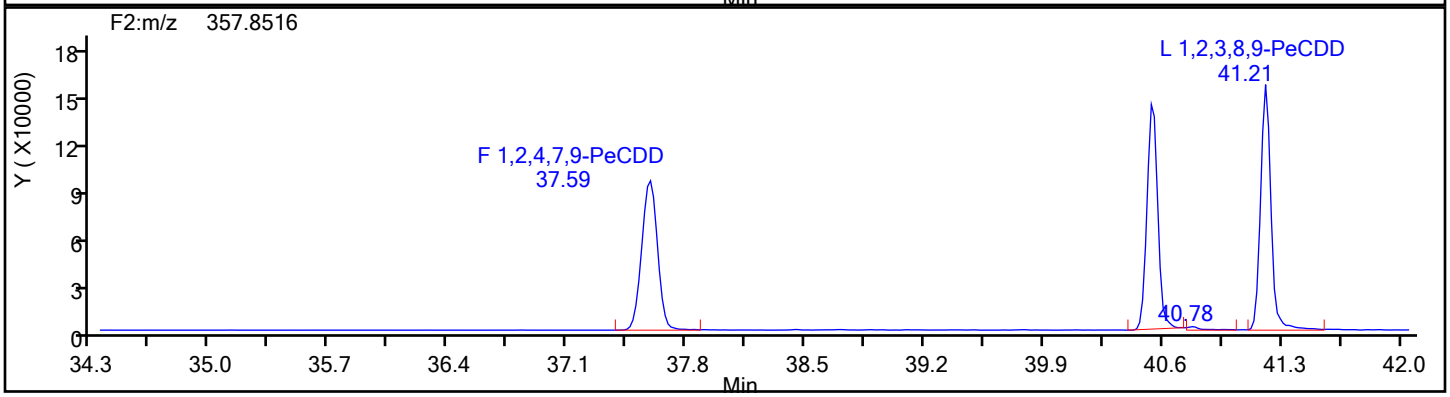
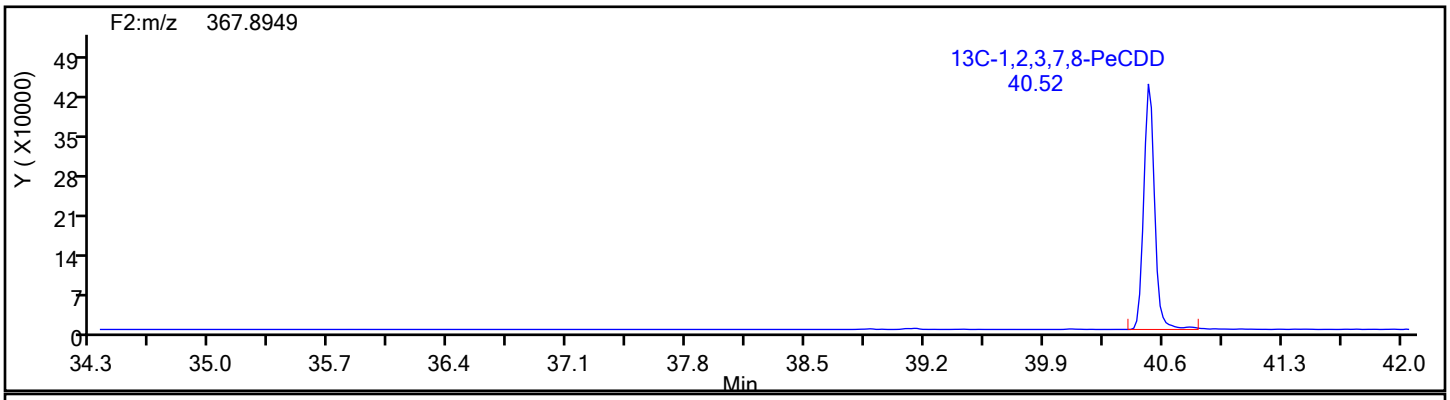
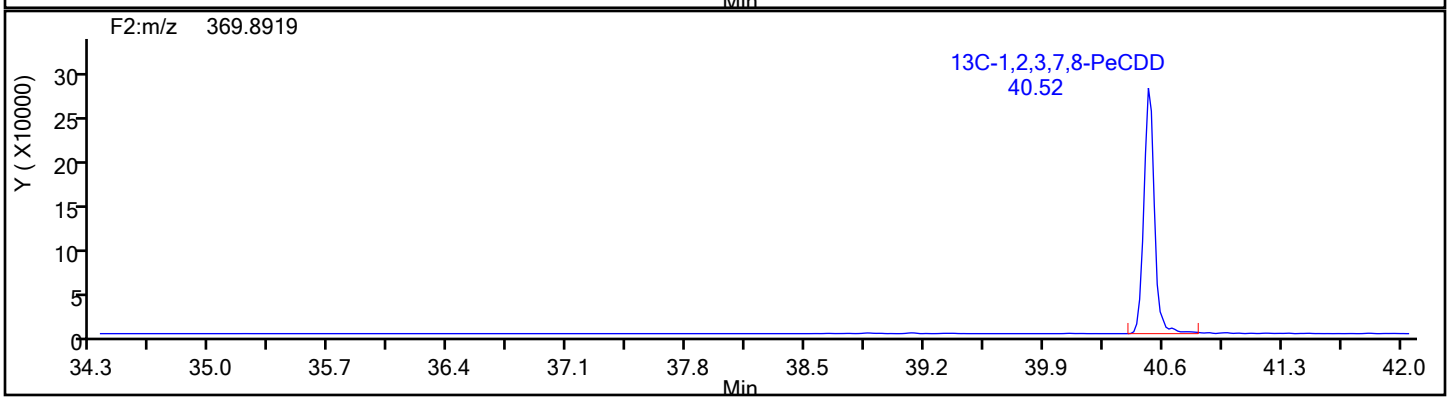




PeCDD Standards





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Eurofins TestAmerica, Knoxville

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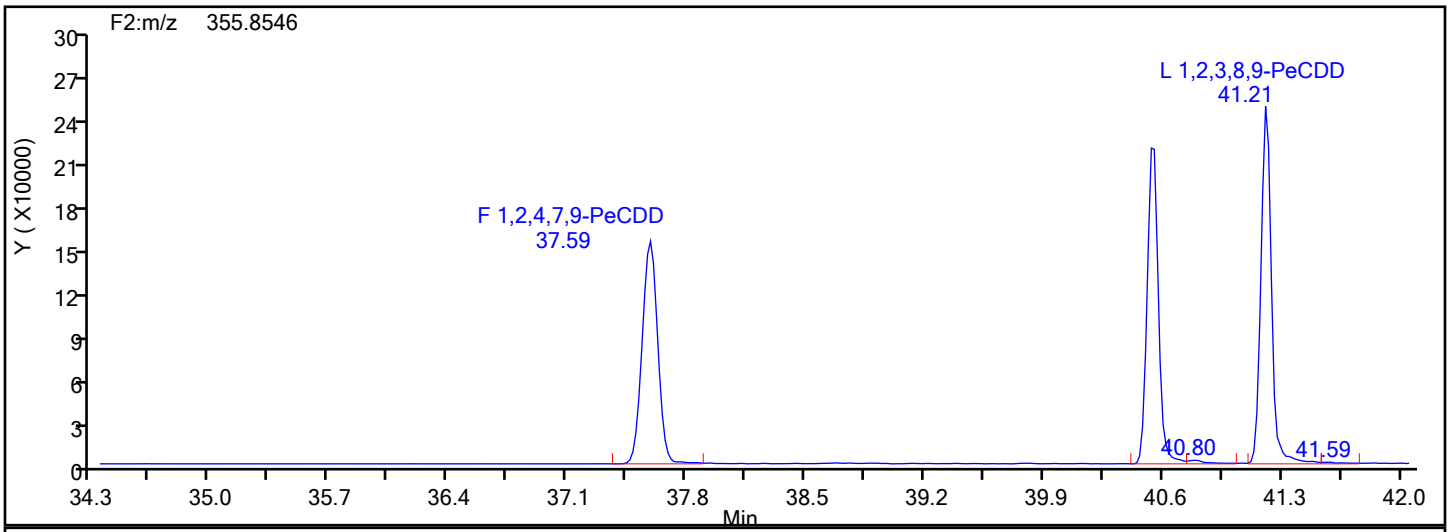
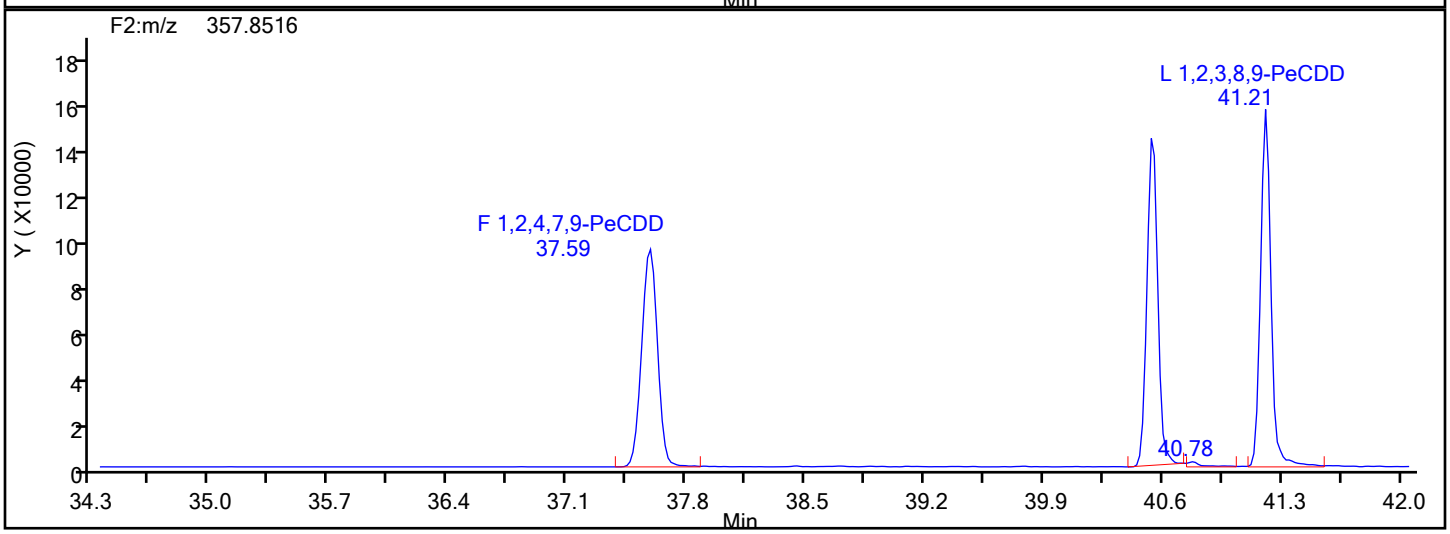
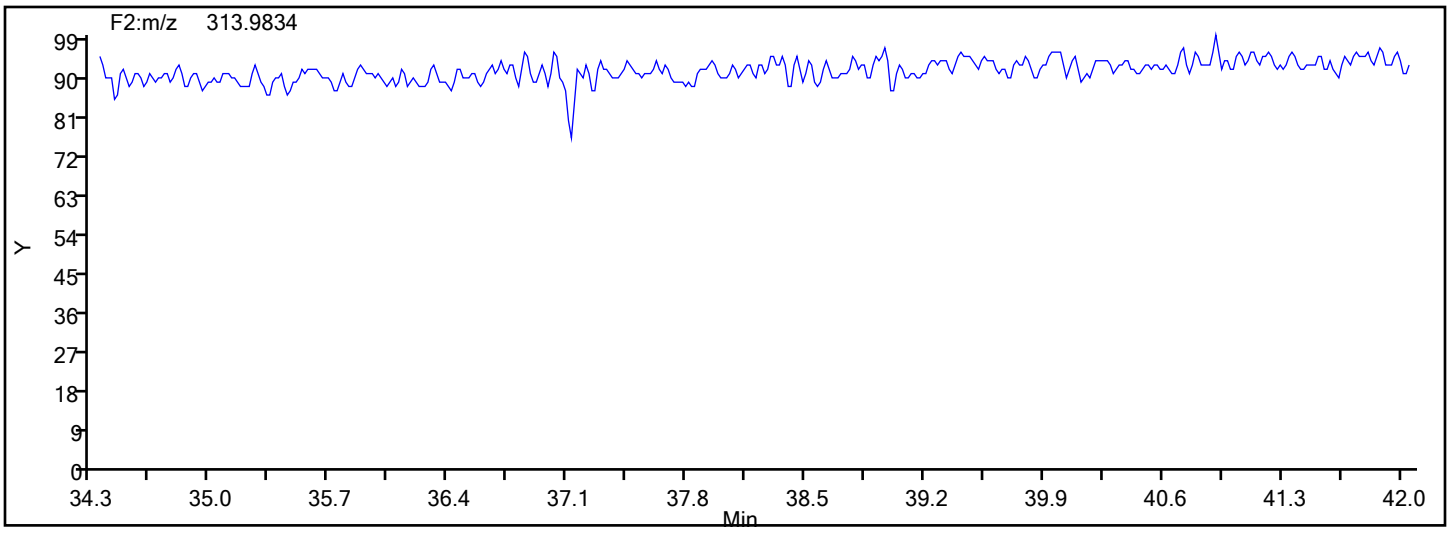




PeCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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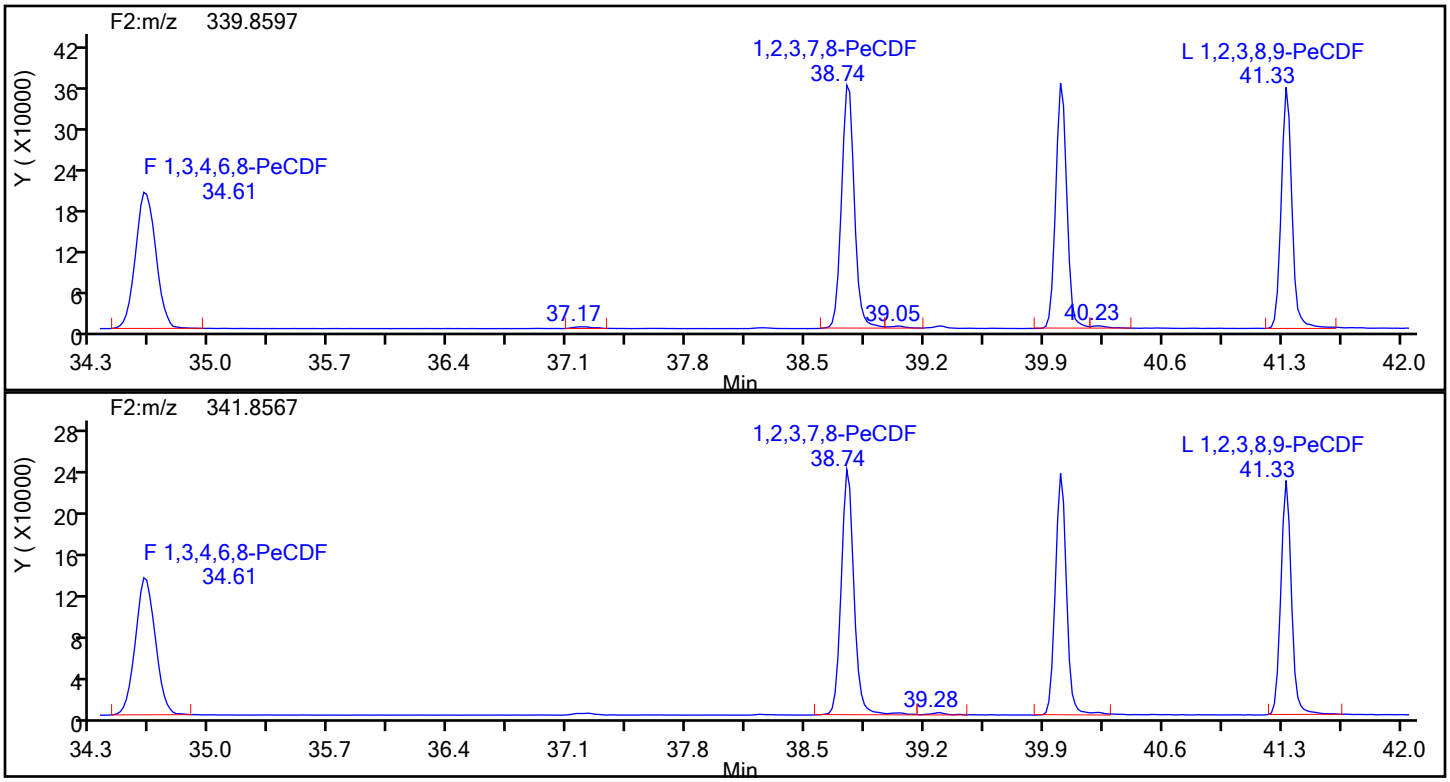

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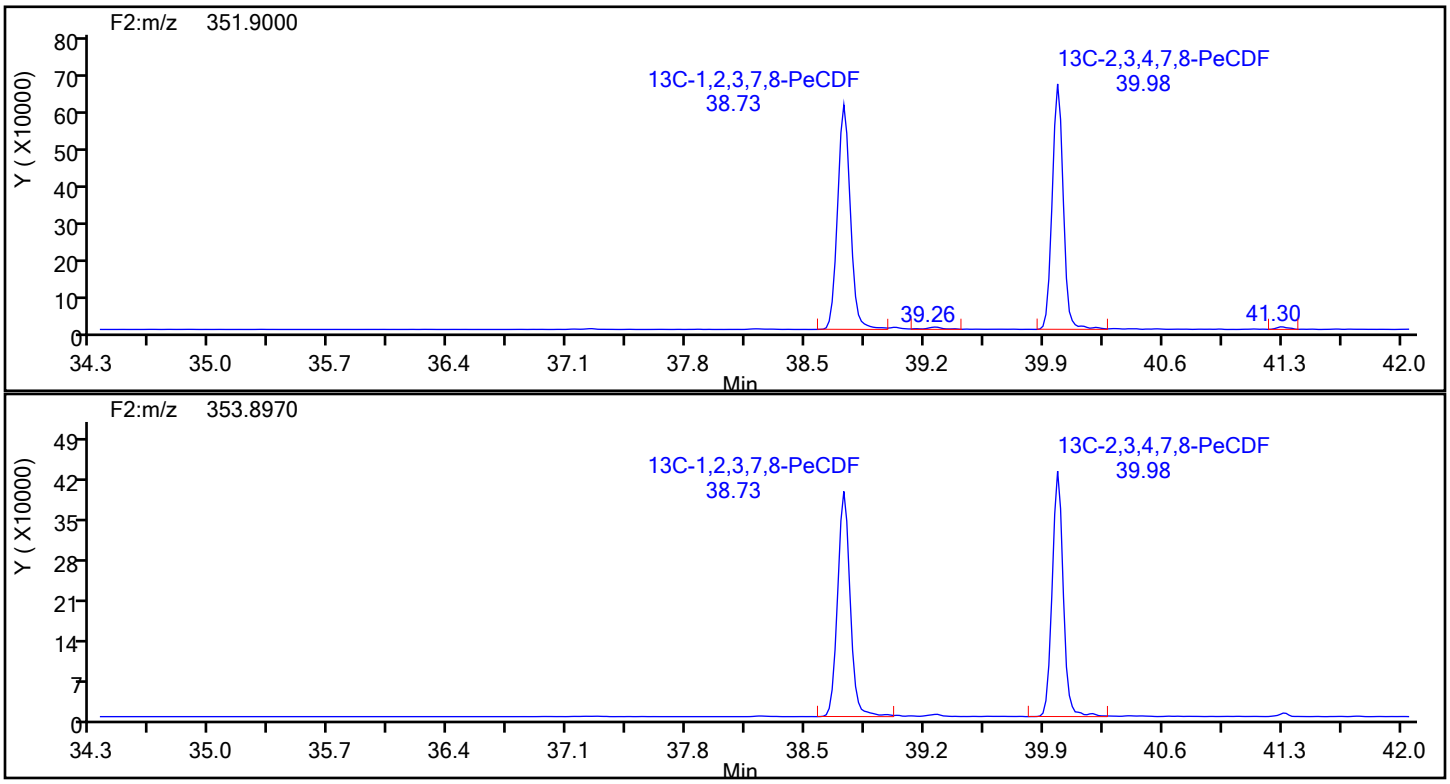

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Eurofins TestAmerica, Knoxville

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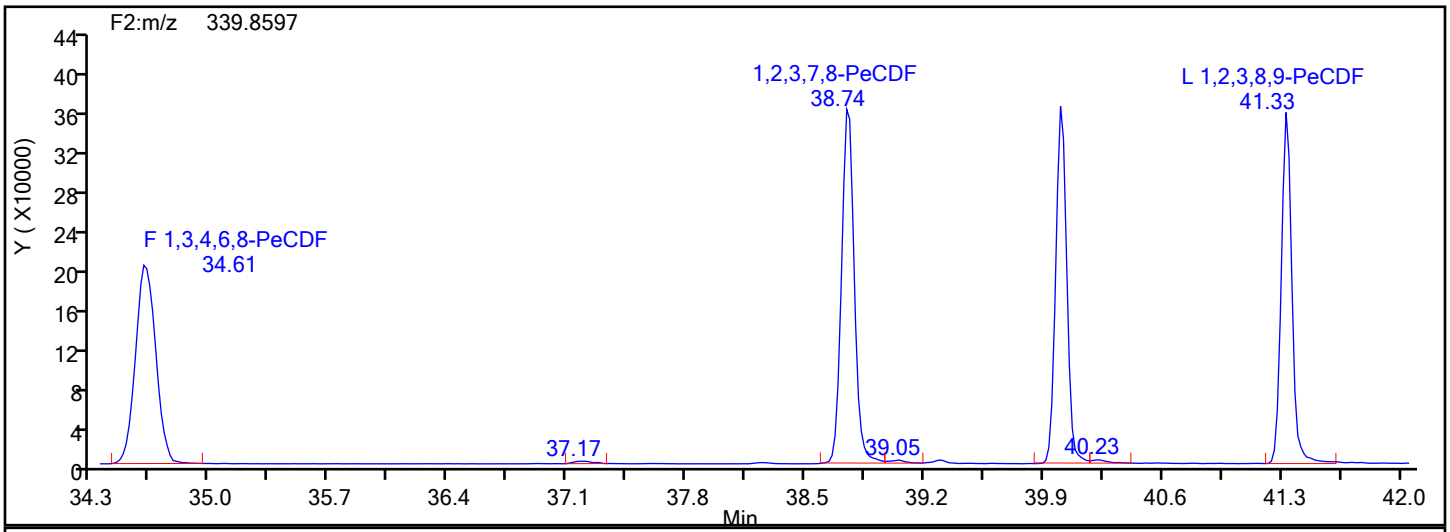
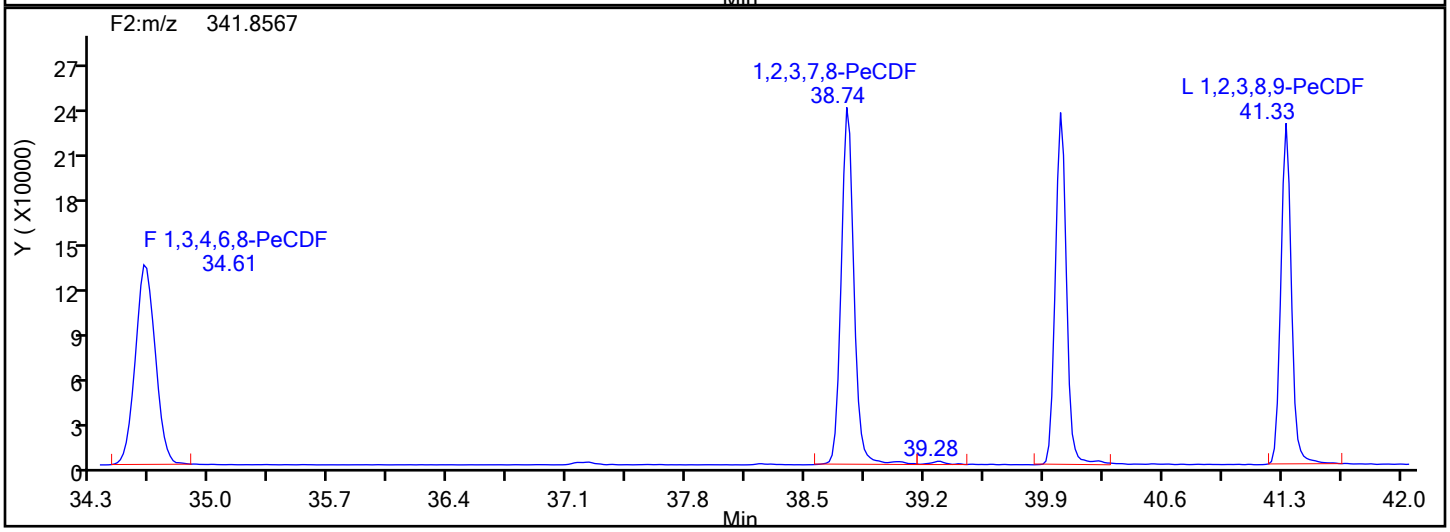
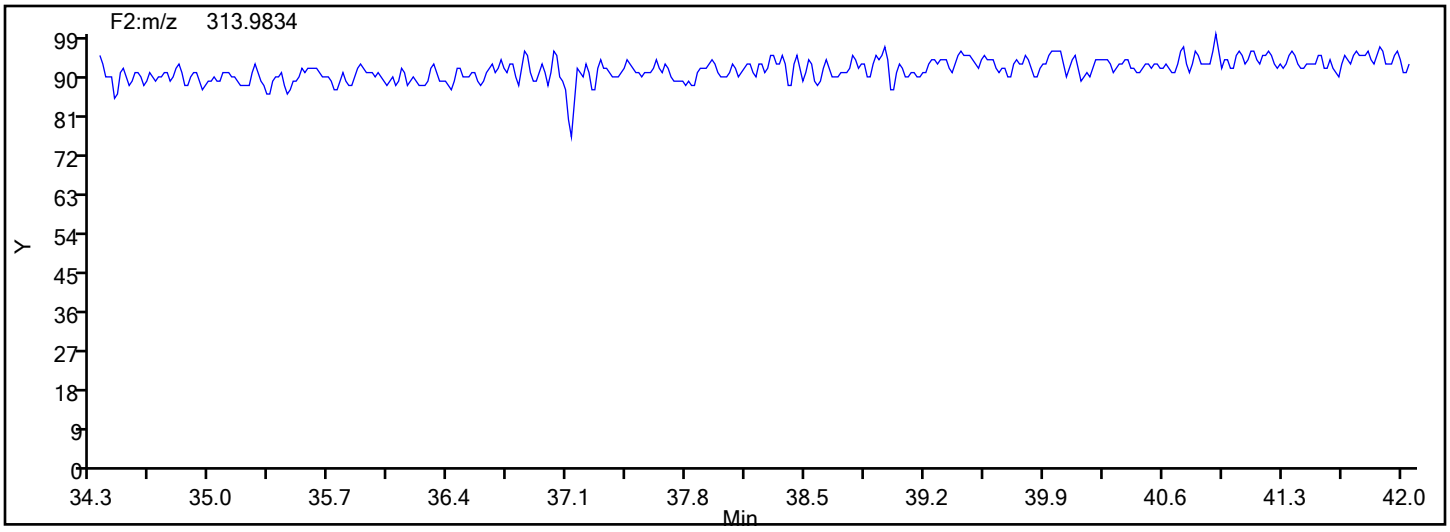




PeCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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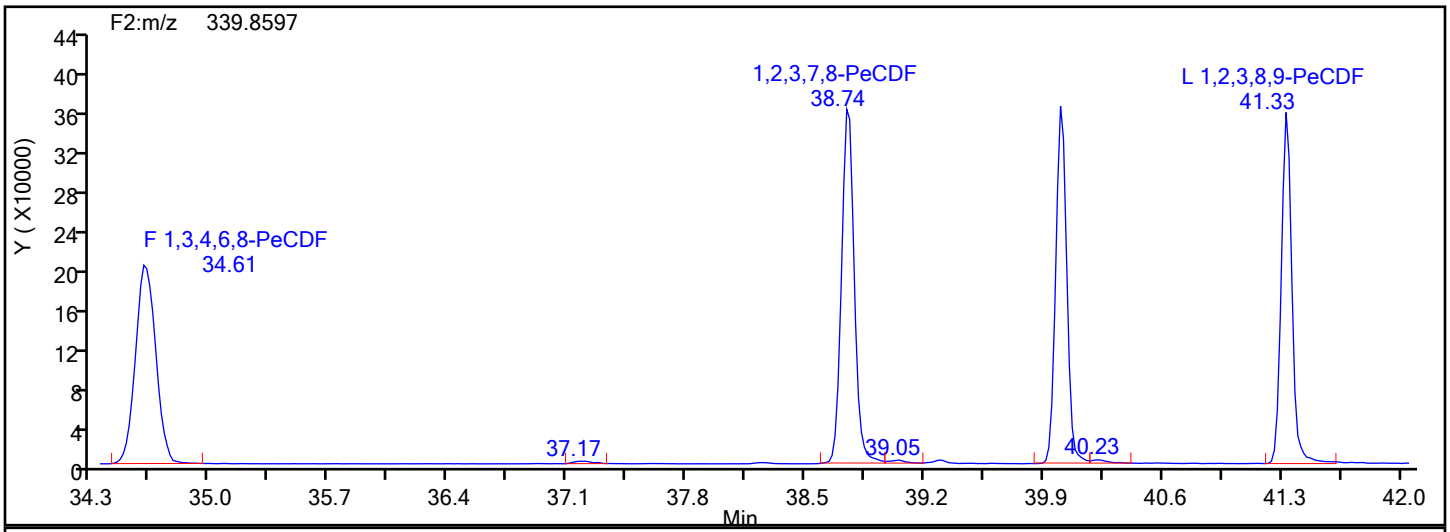
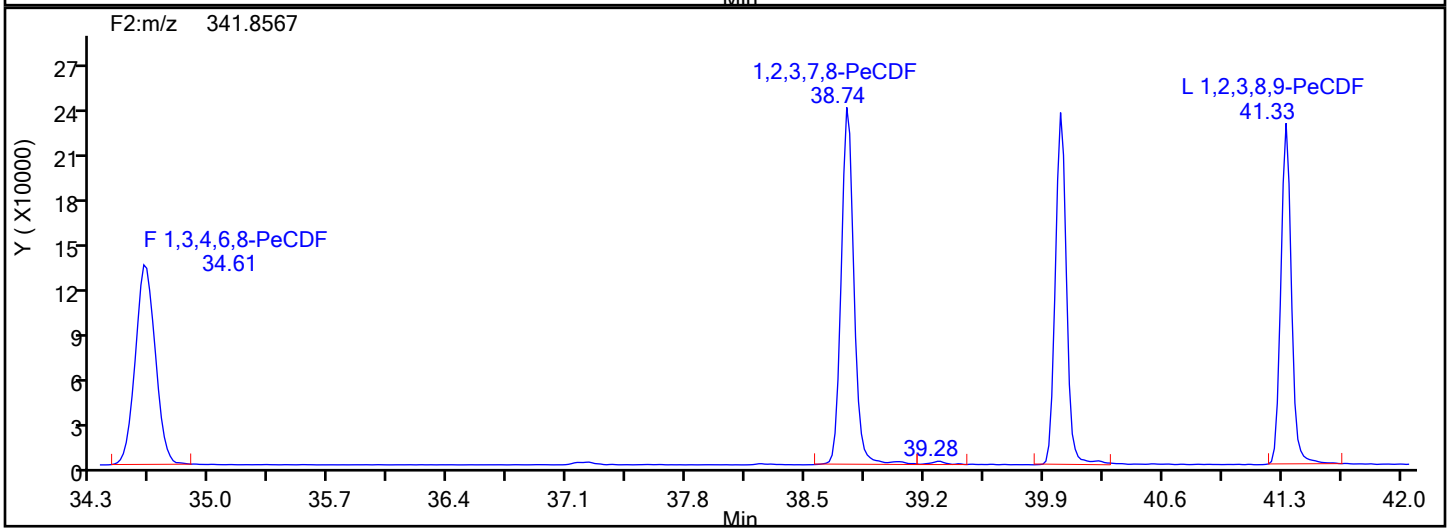
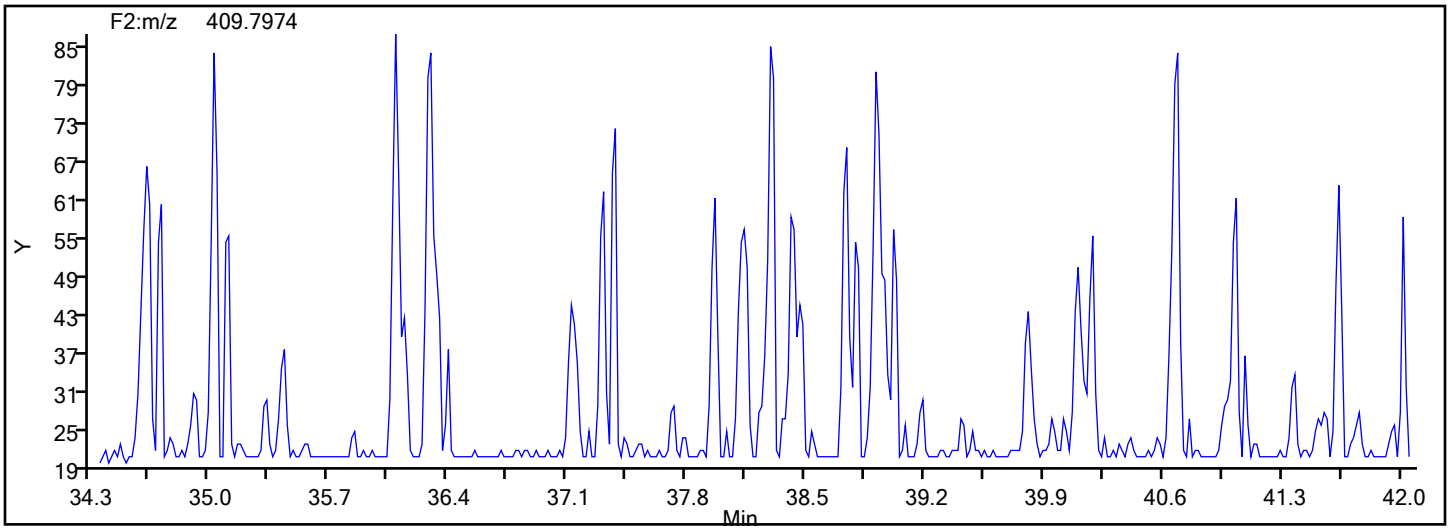




PeCDF Interference Mass



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Eurofins TestAmerica, Knoxville

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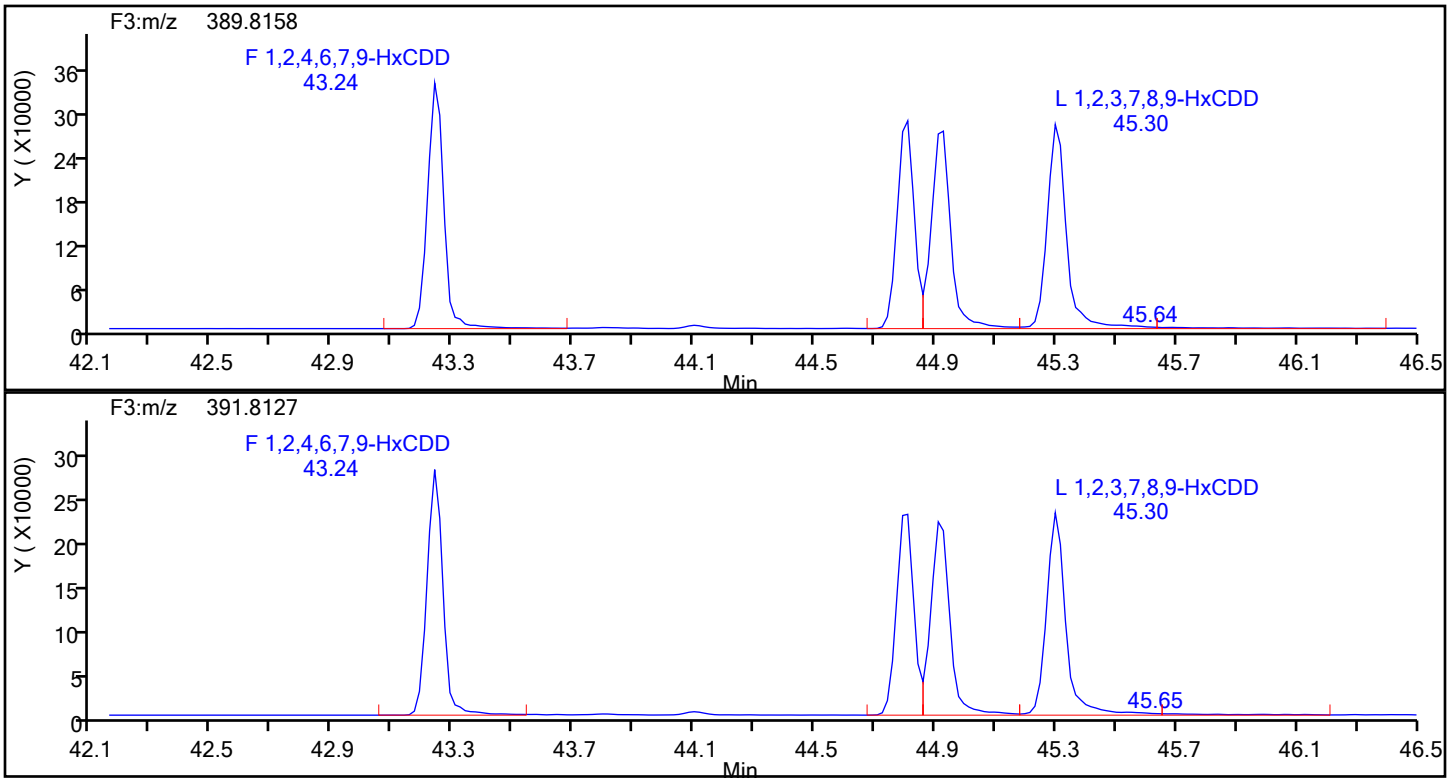
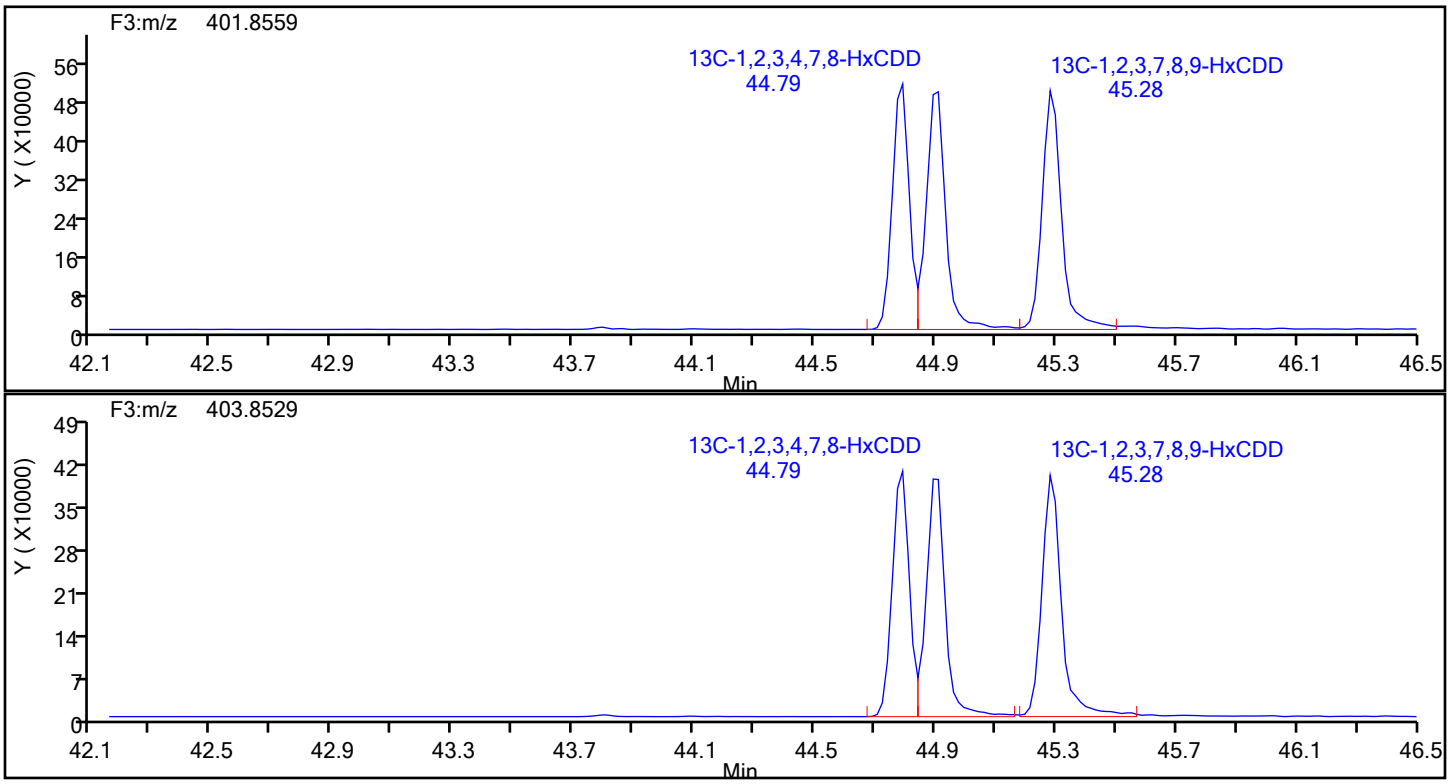


HxCDD Standards



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Eurofins TestAmerica, Knoxville

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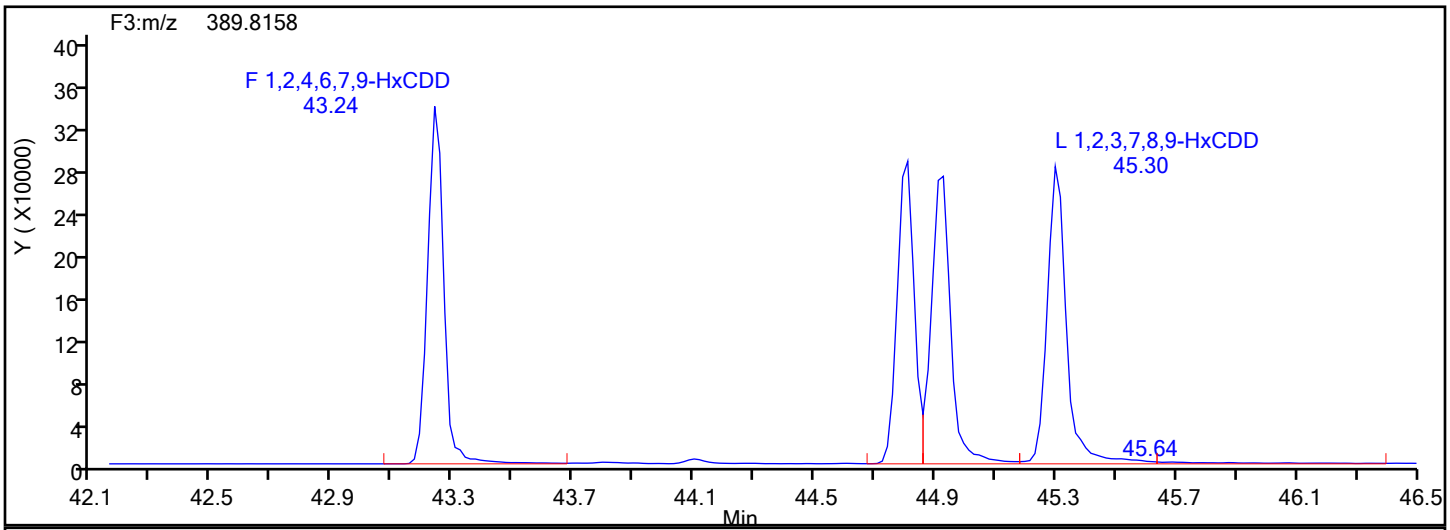
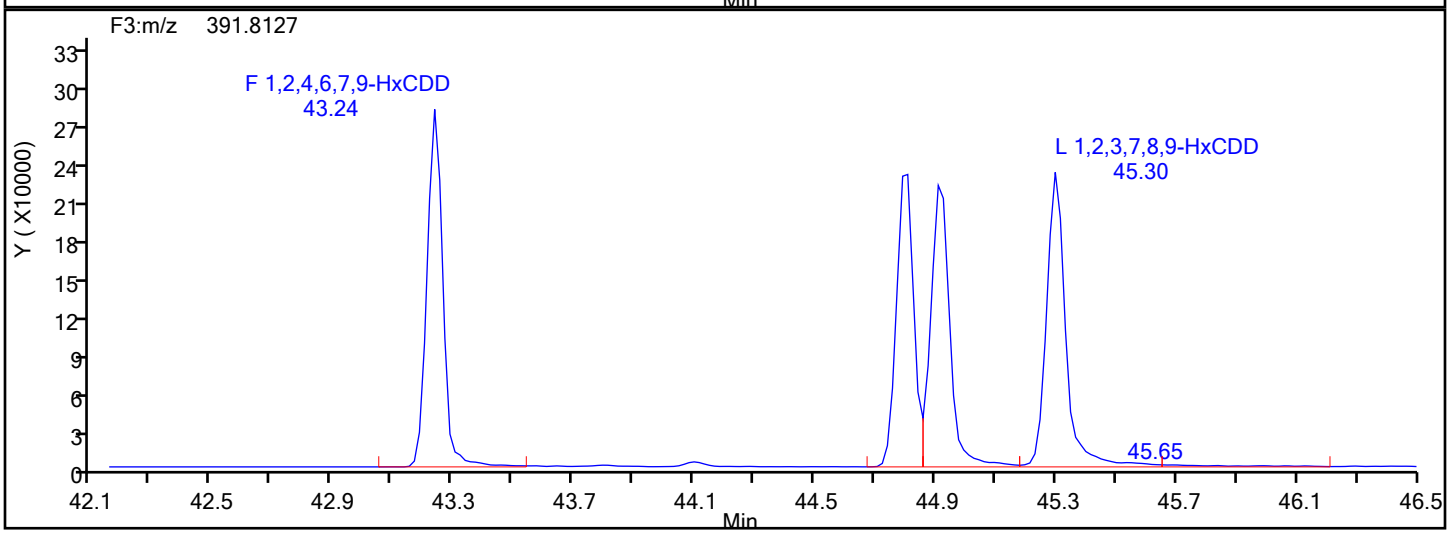
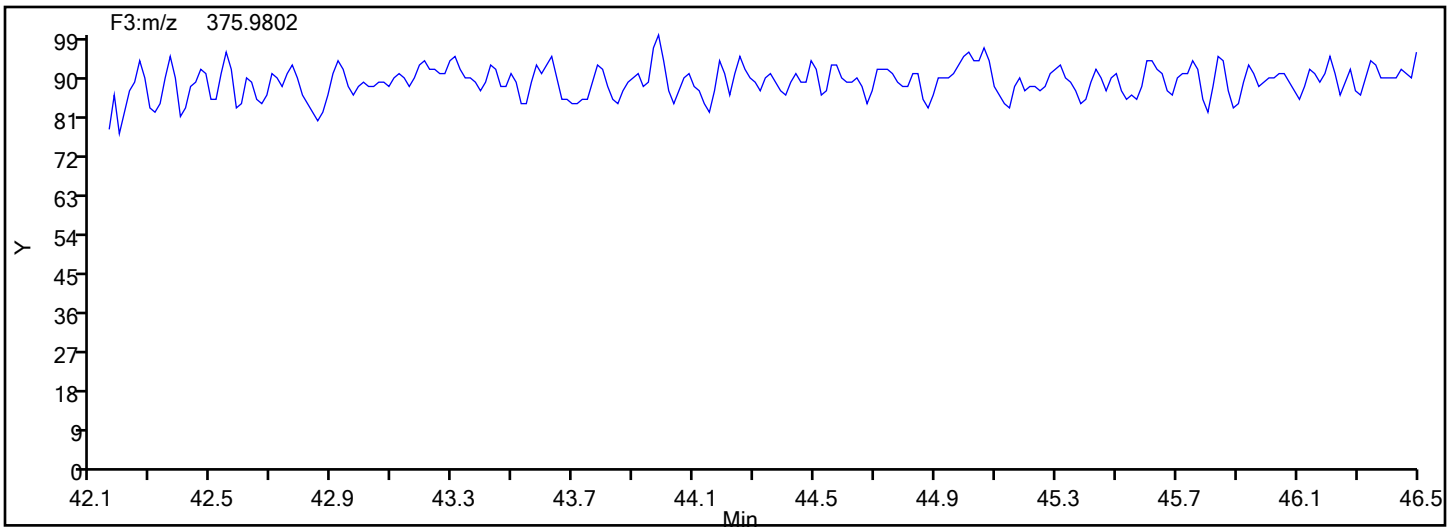




HxCDD Lock Mass



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Eurofins TestAmerica, Knoxville

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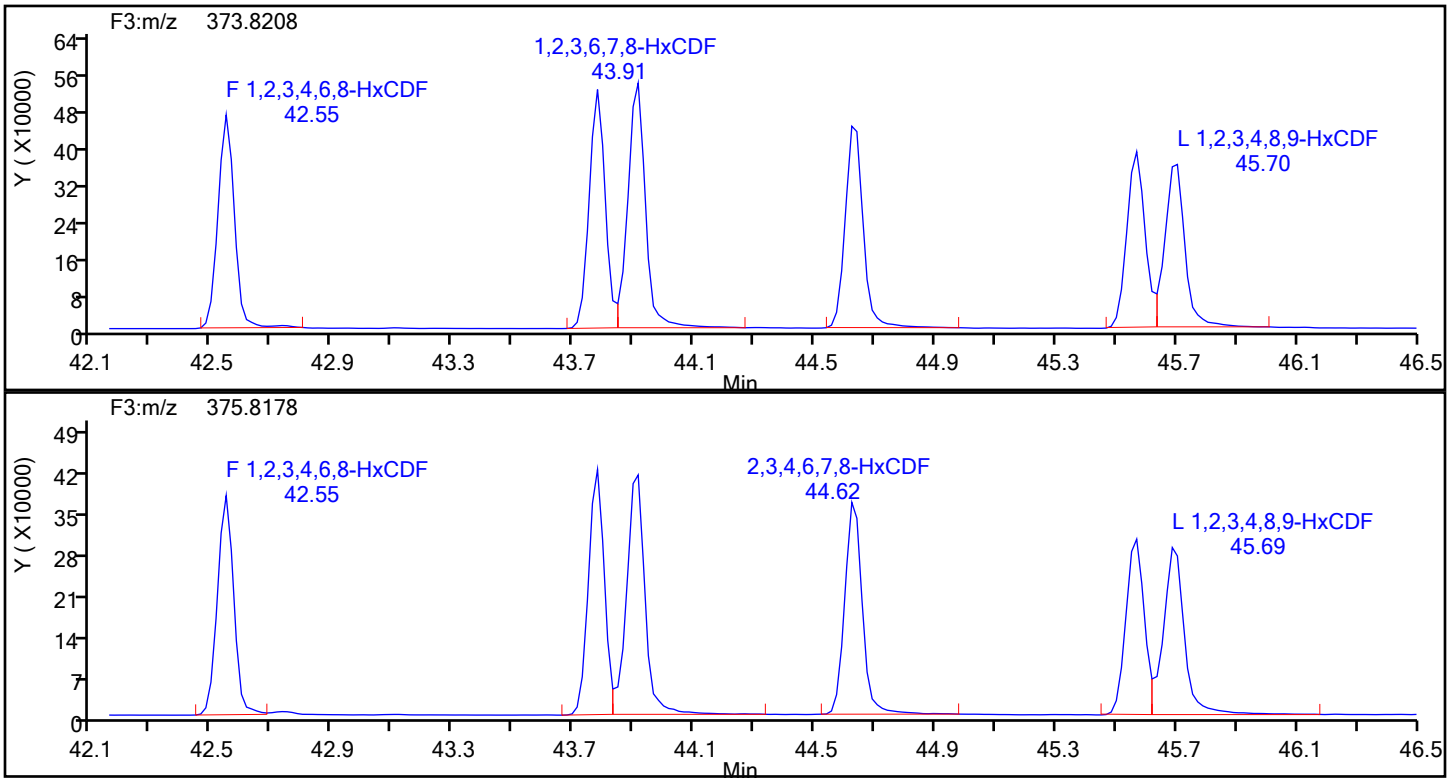

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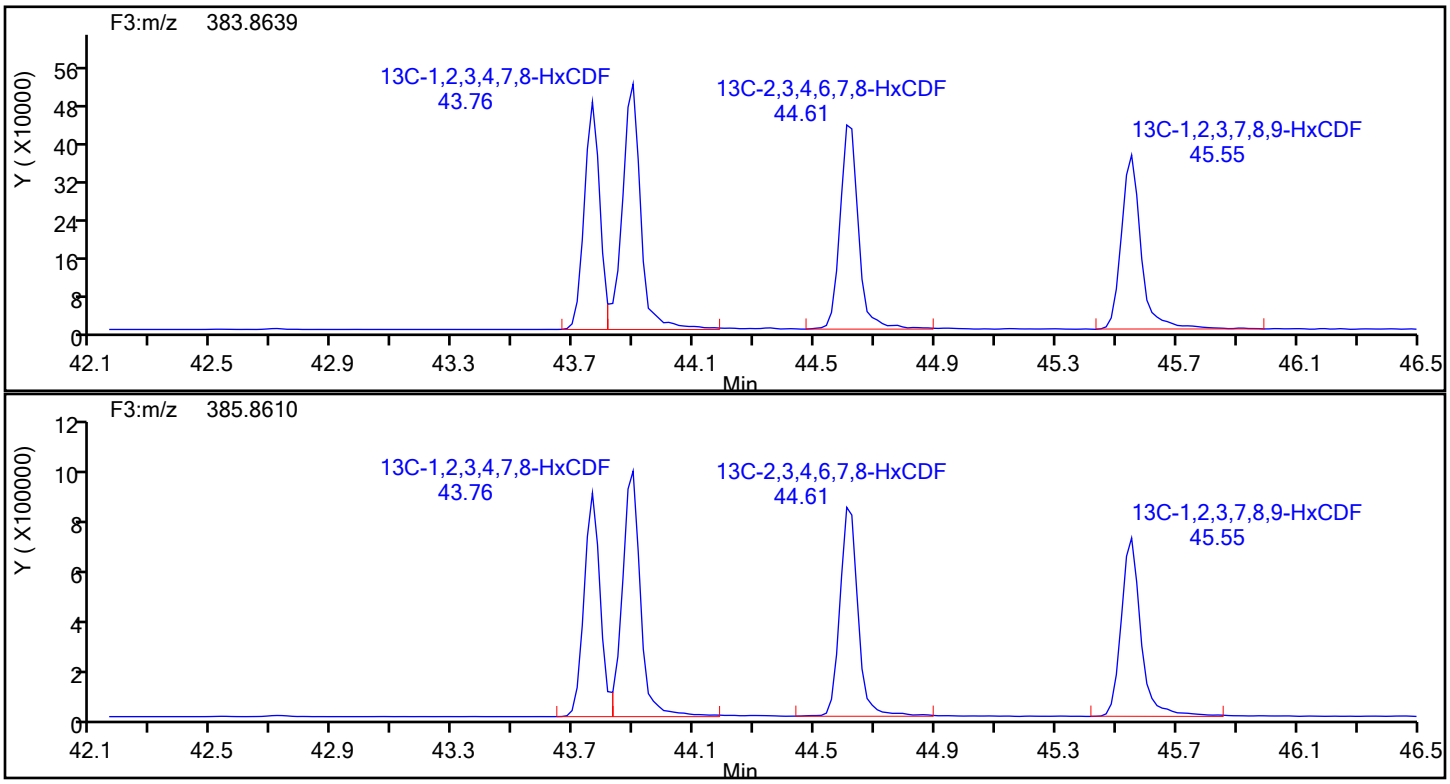

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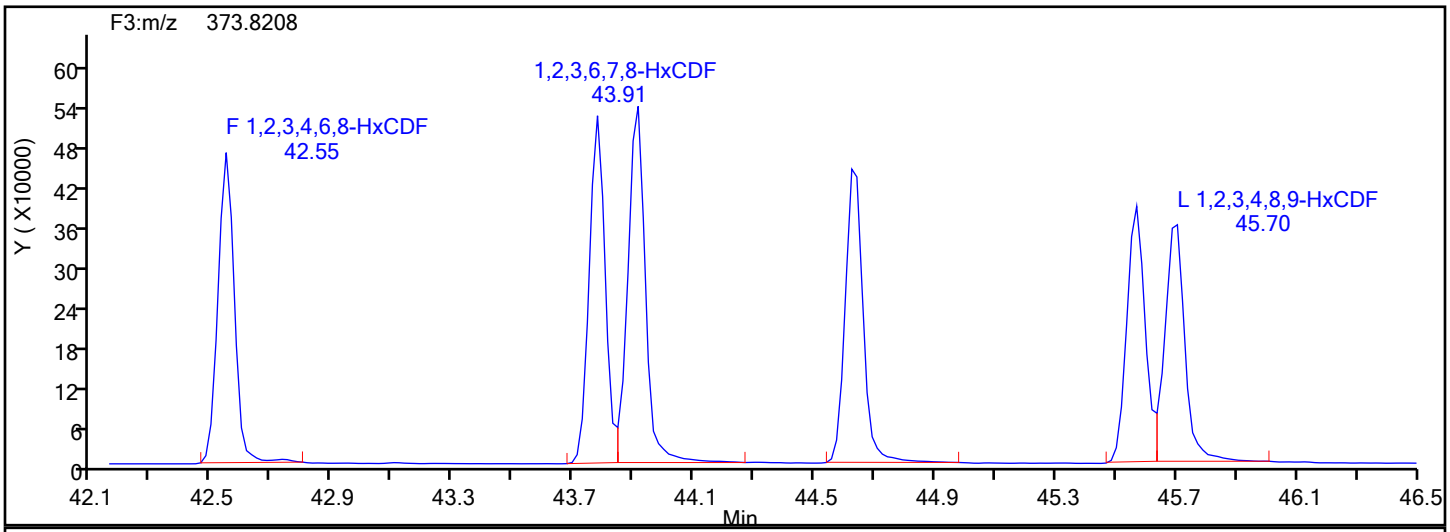
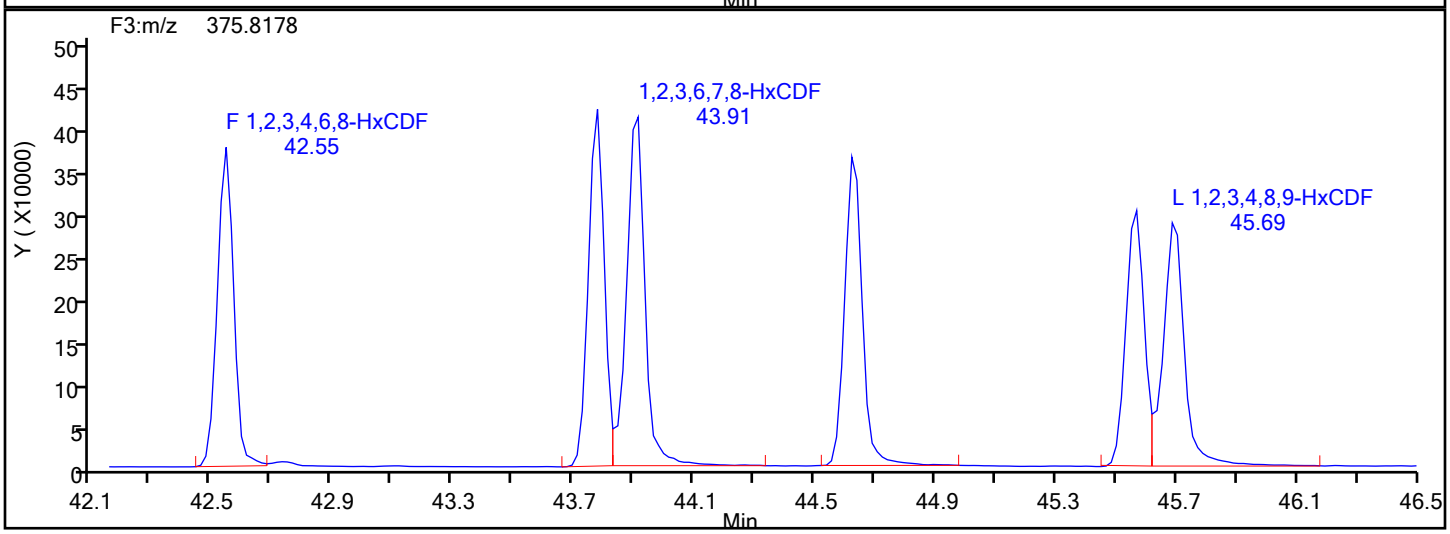
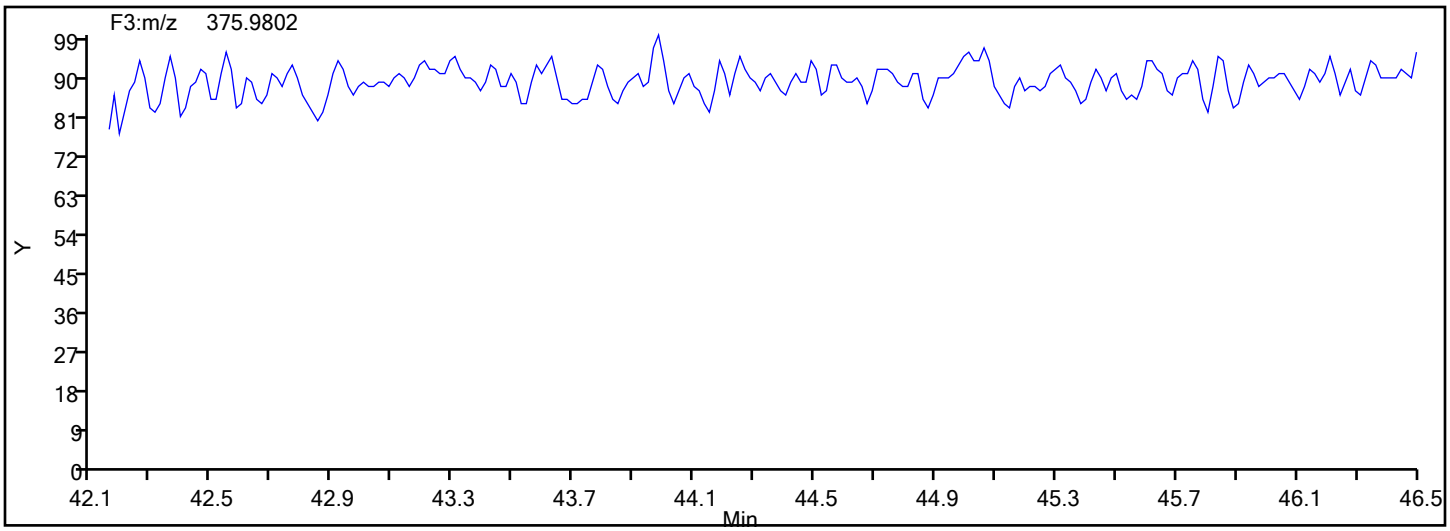




HxCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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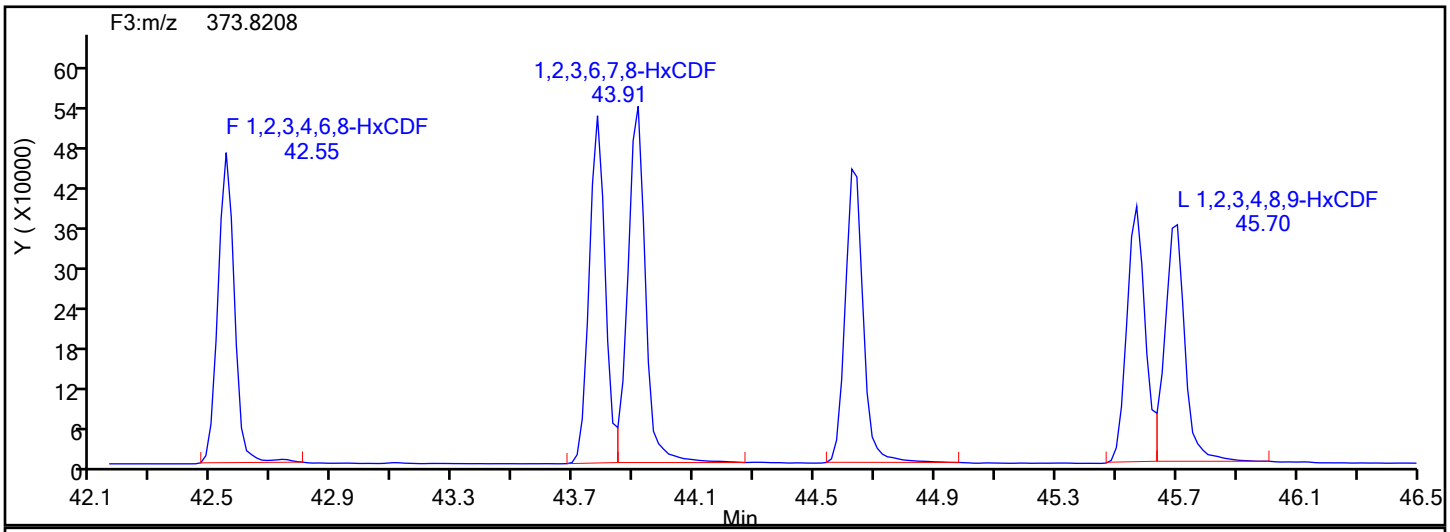
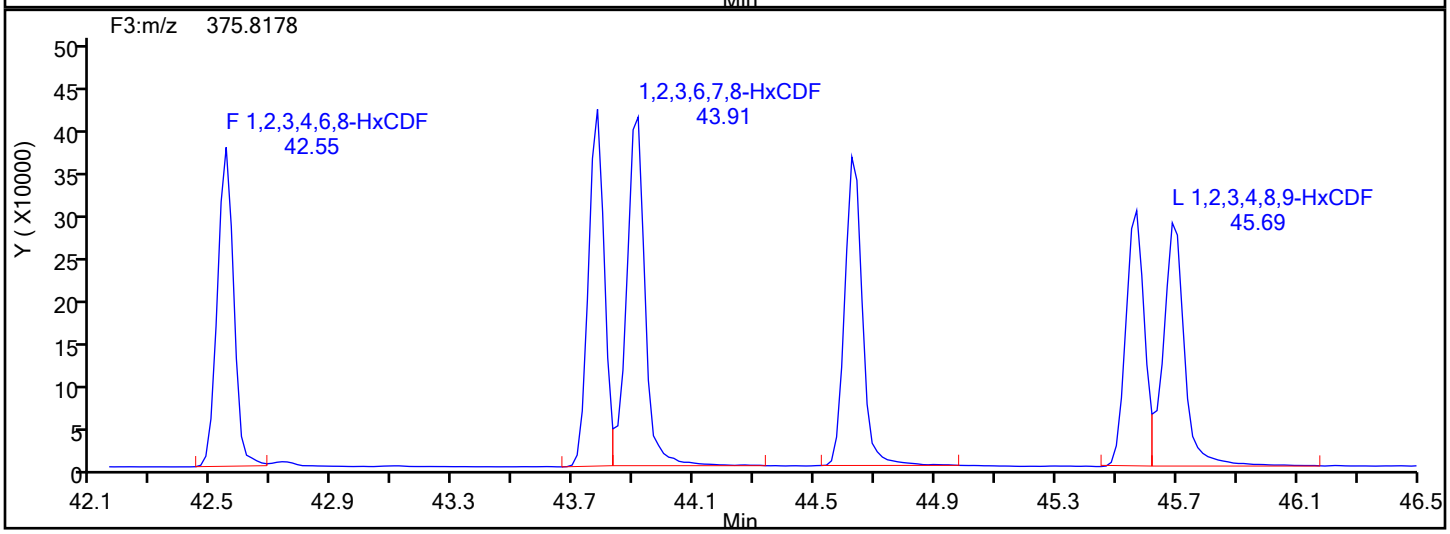
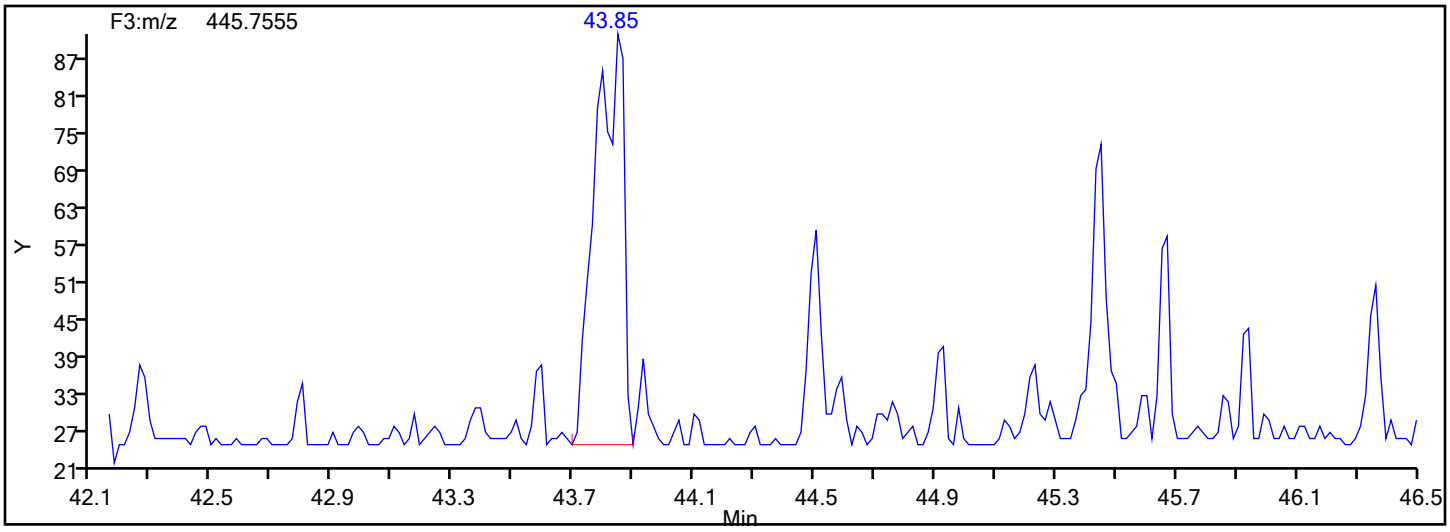




HxCDF Interference Mass



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d		
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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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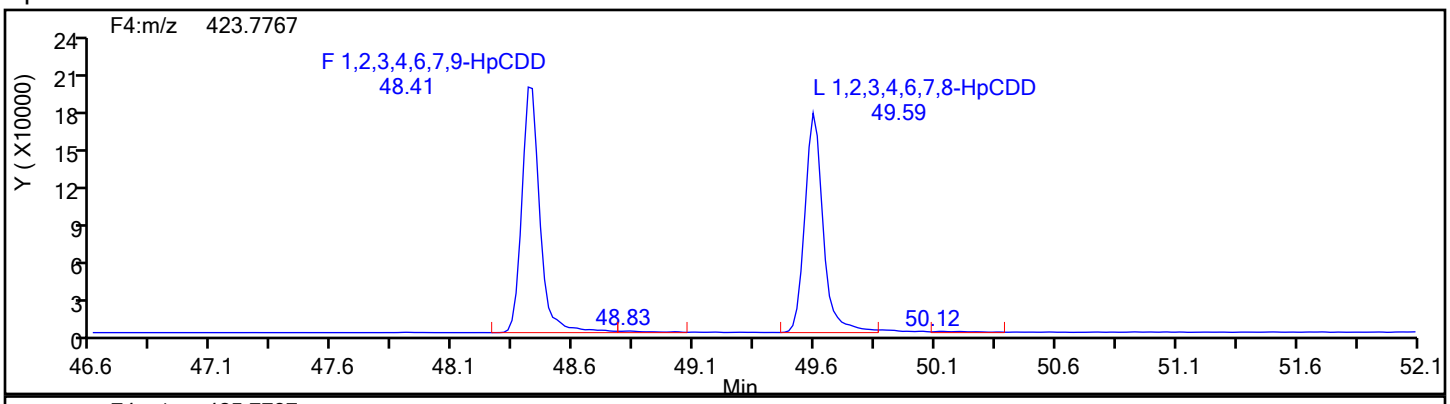
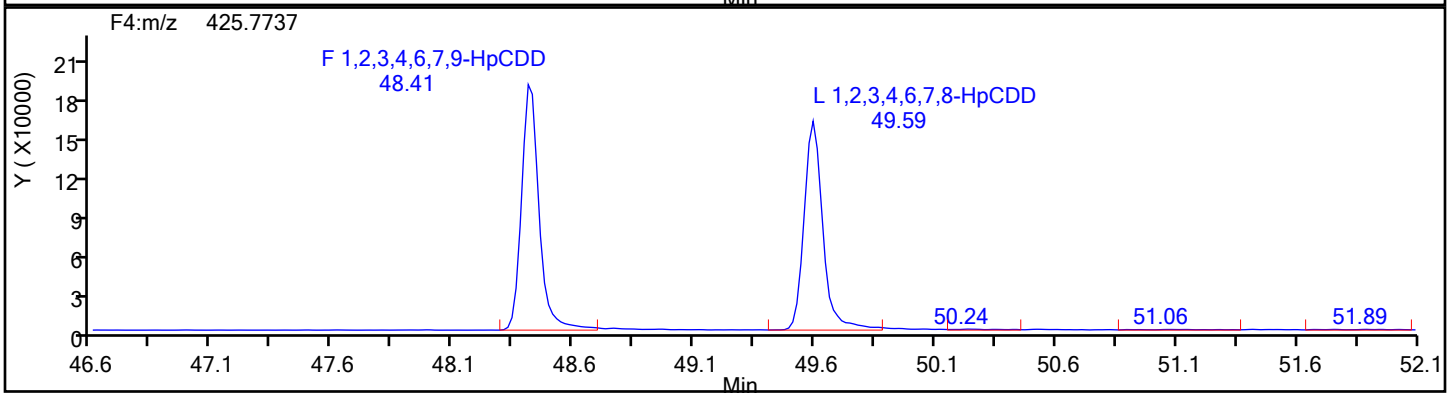
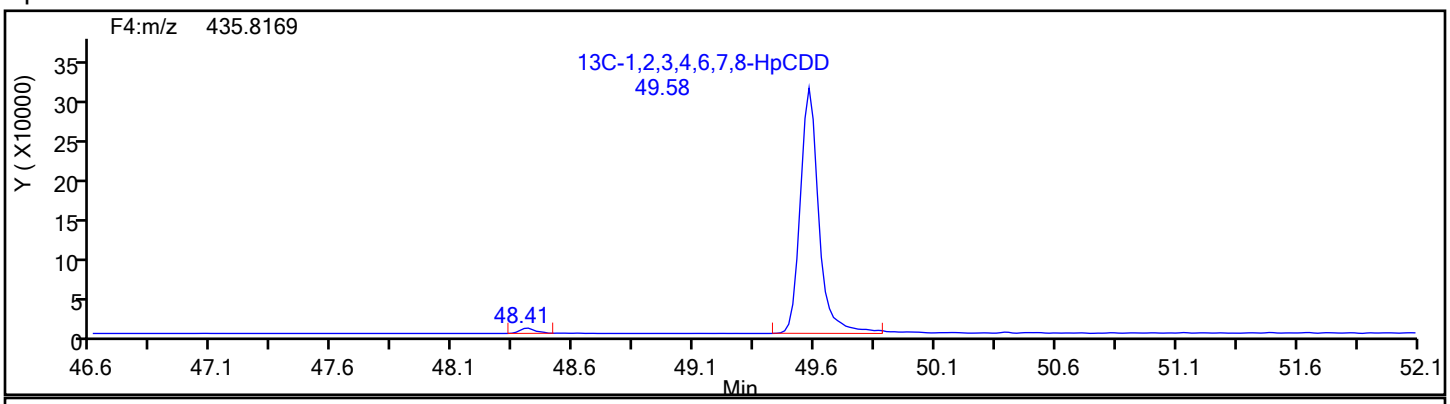
Column Type:		Column Dia:	

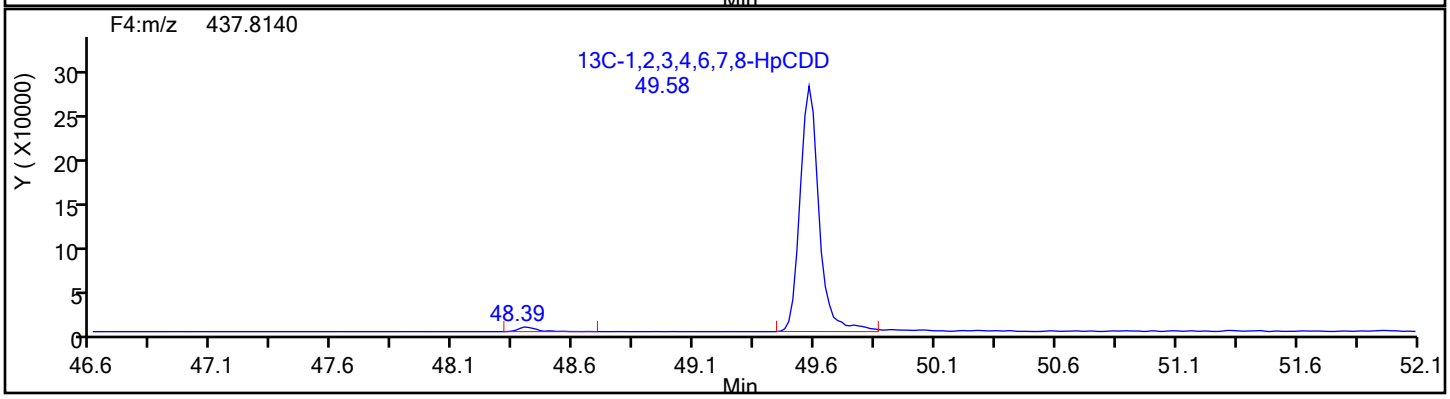
HpCDD





HpCDD Standards





Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d		
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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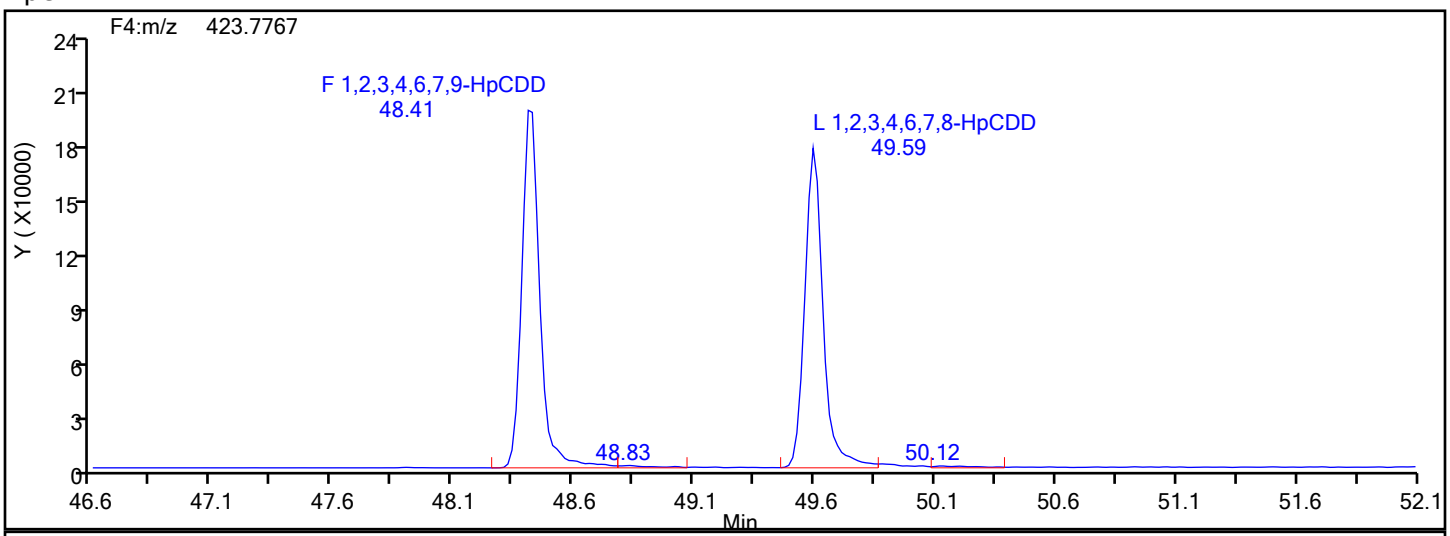
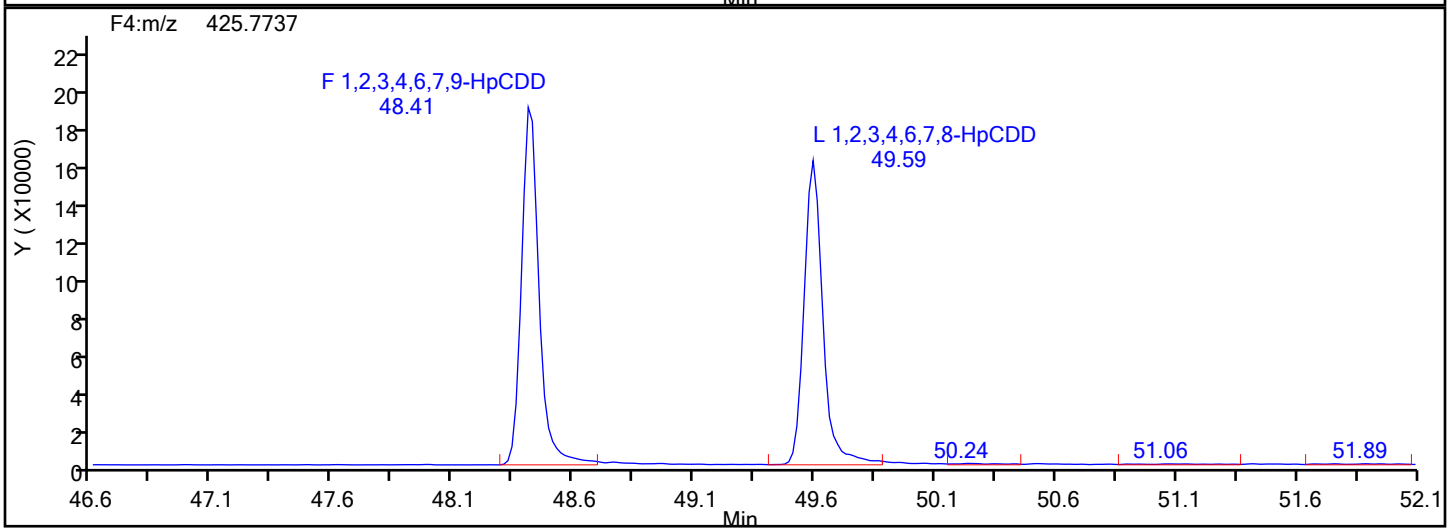
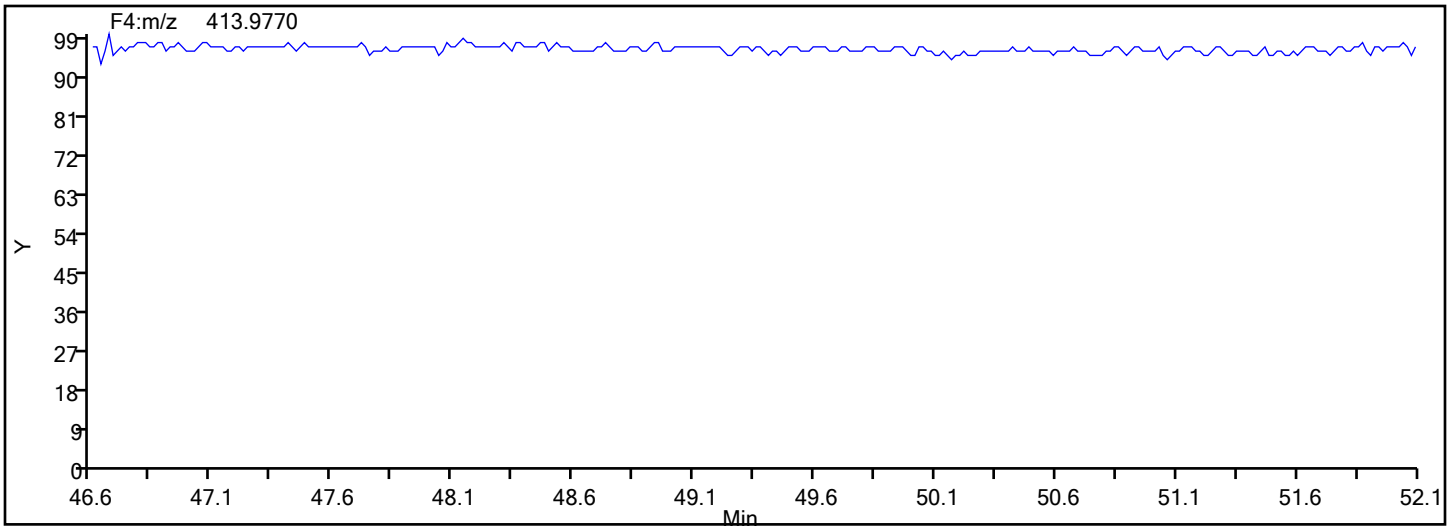
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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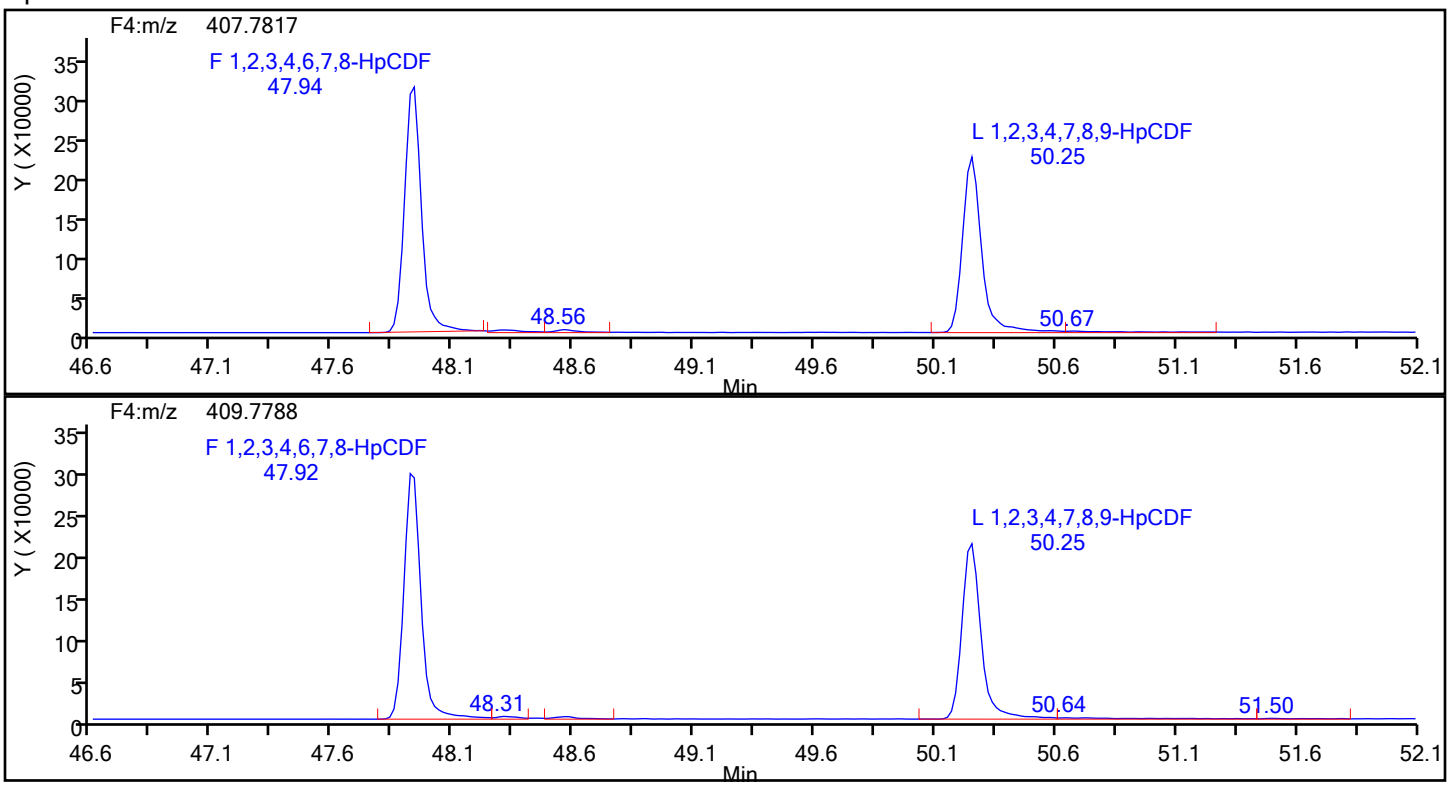
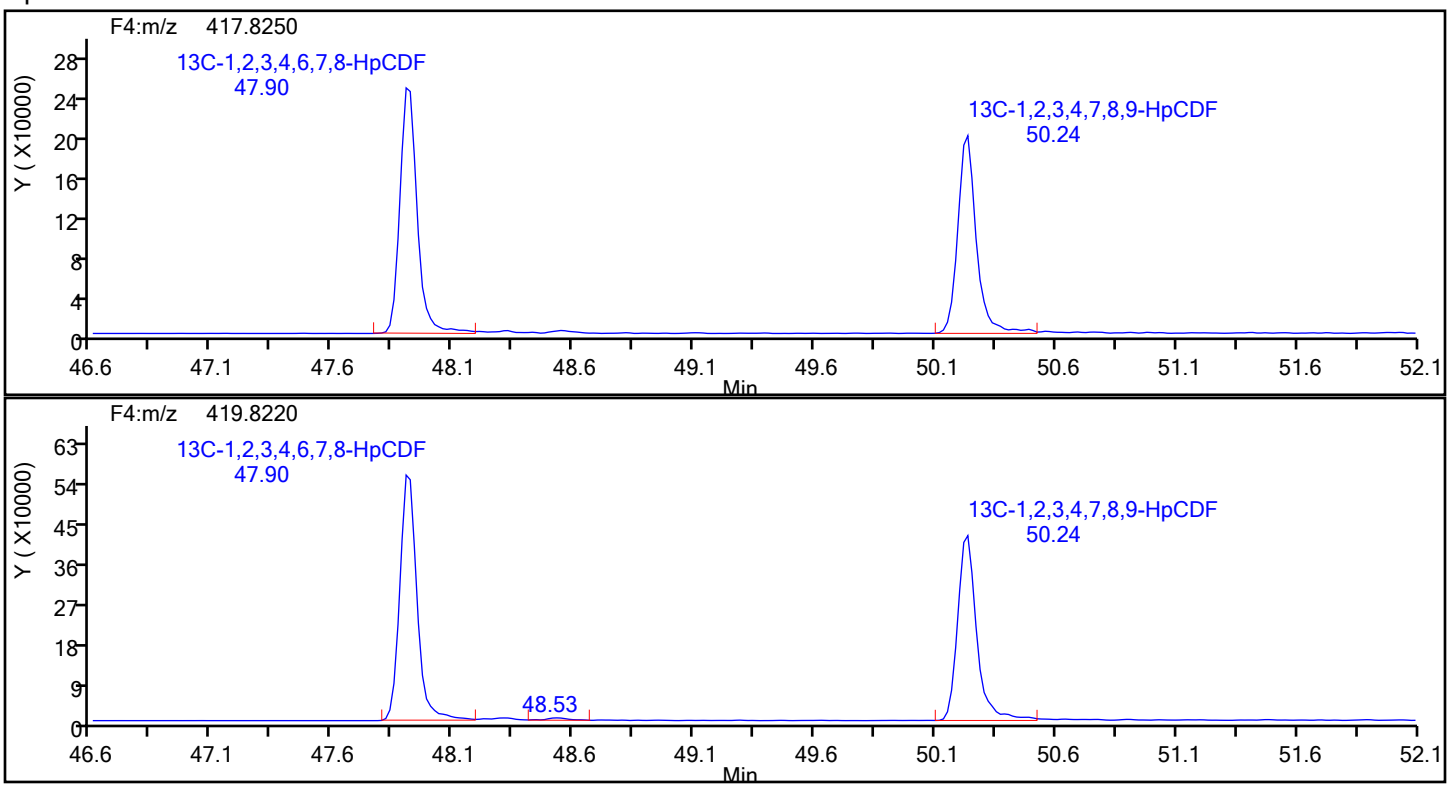
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

HpCDF



HpCDF Standards



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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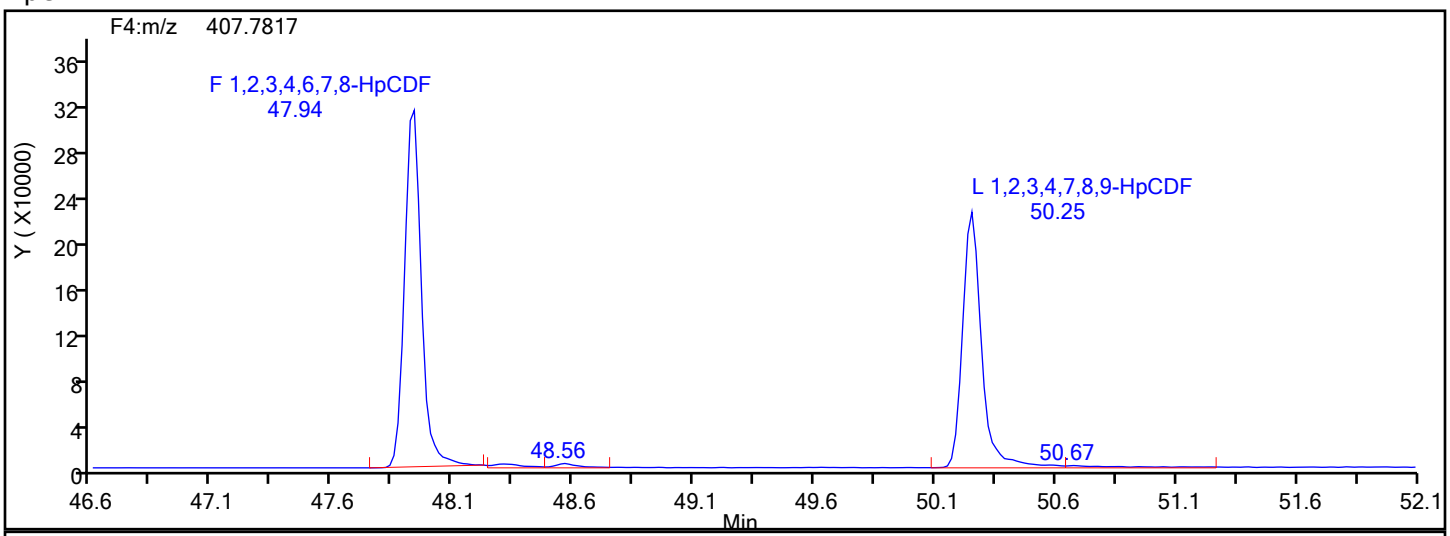
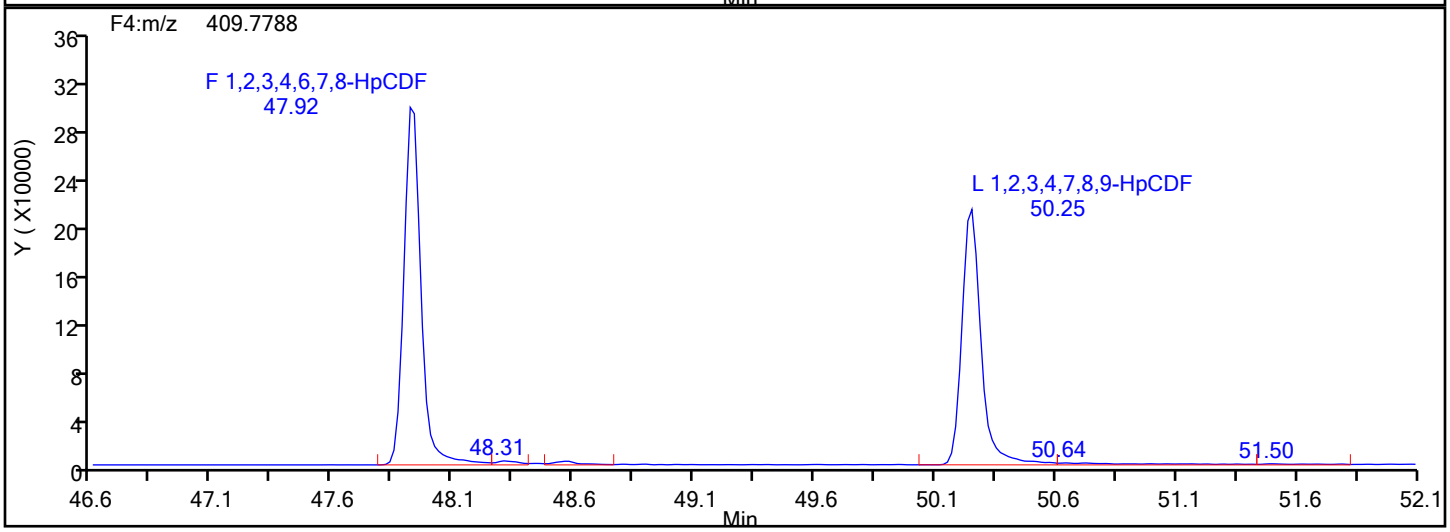
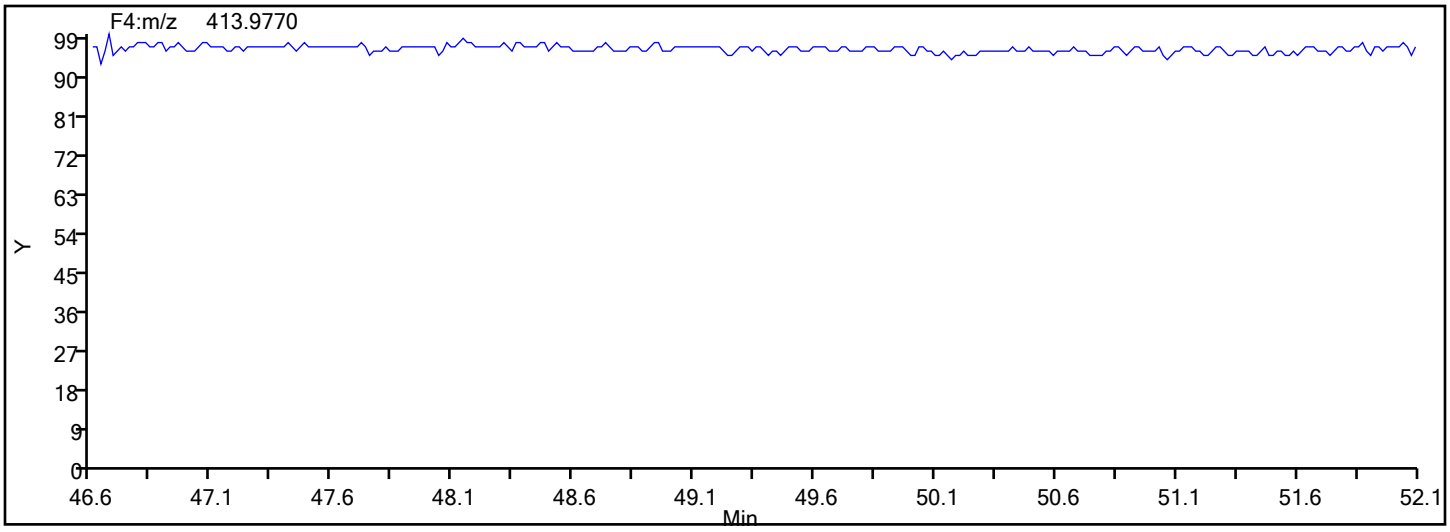
HpCDF





HpCDF Lock Mass



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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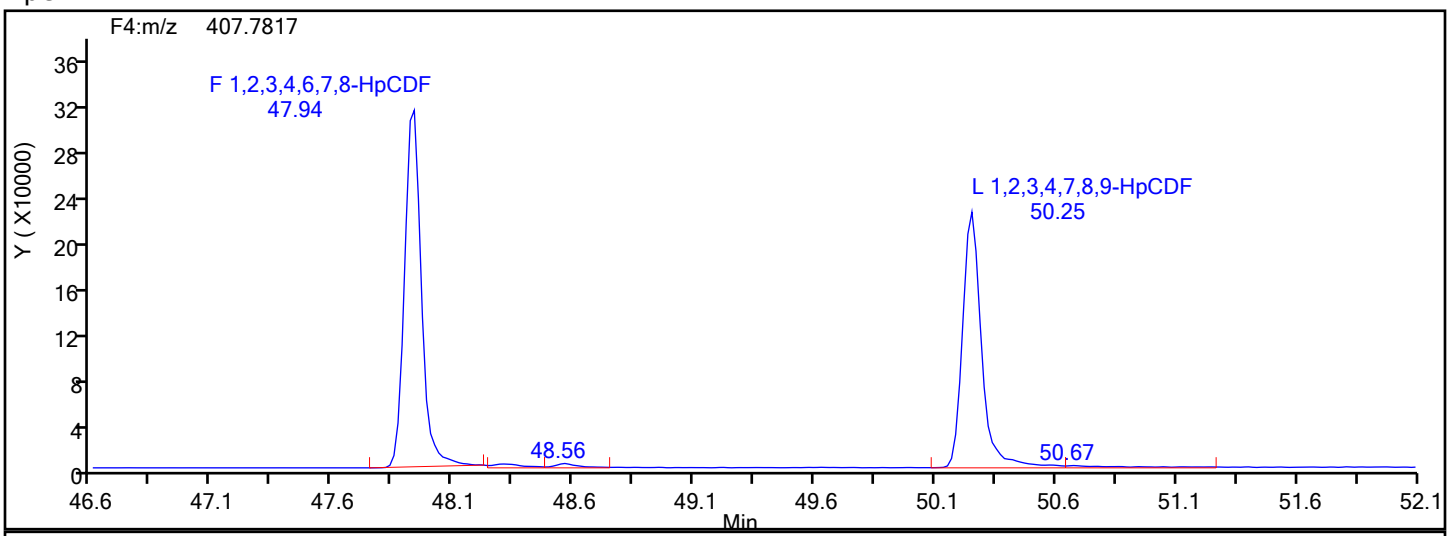
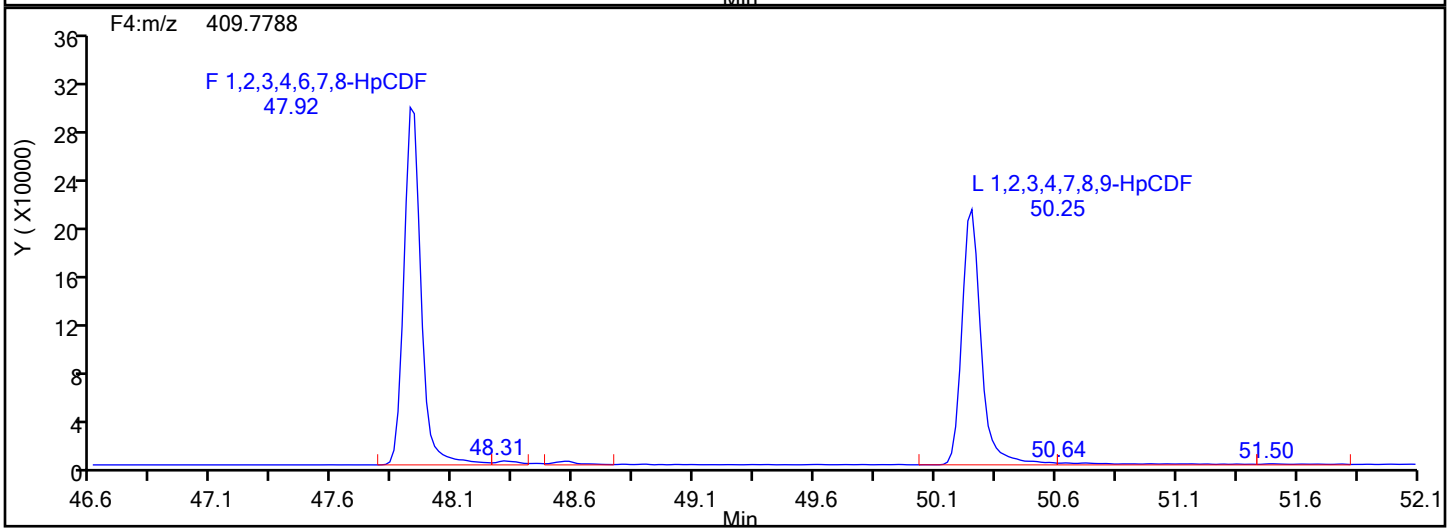
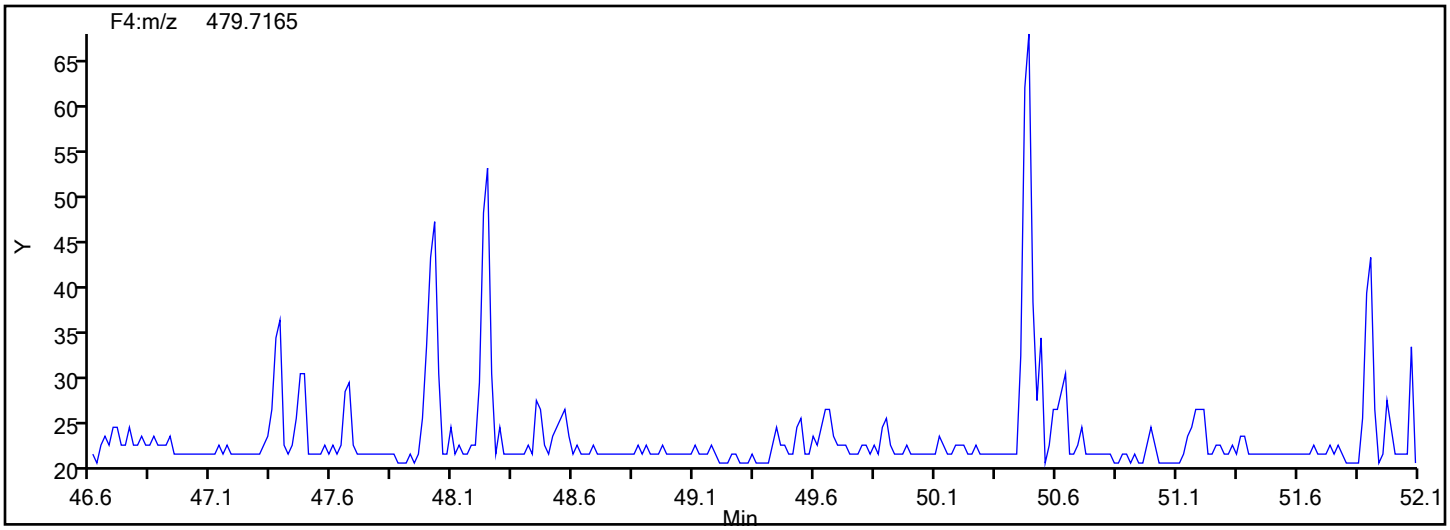
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date: 18-Dec-2019 00:01:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

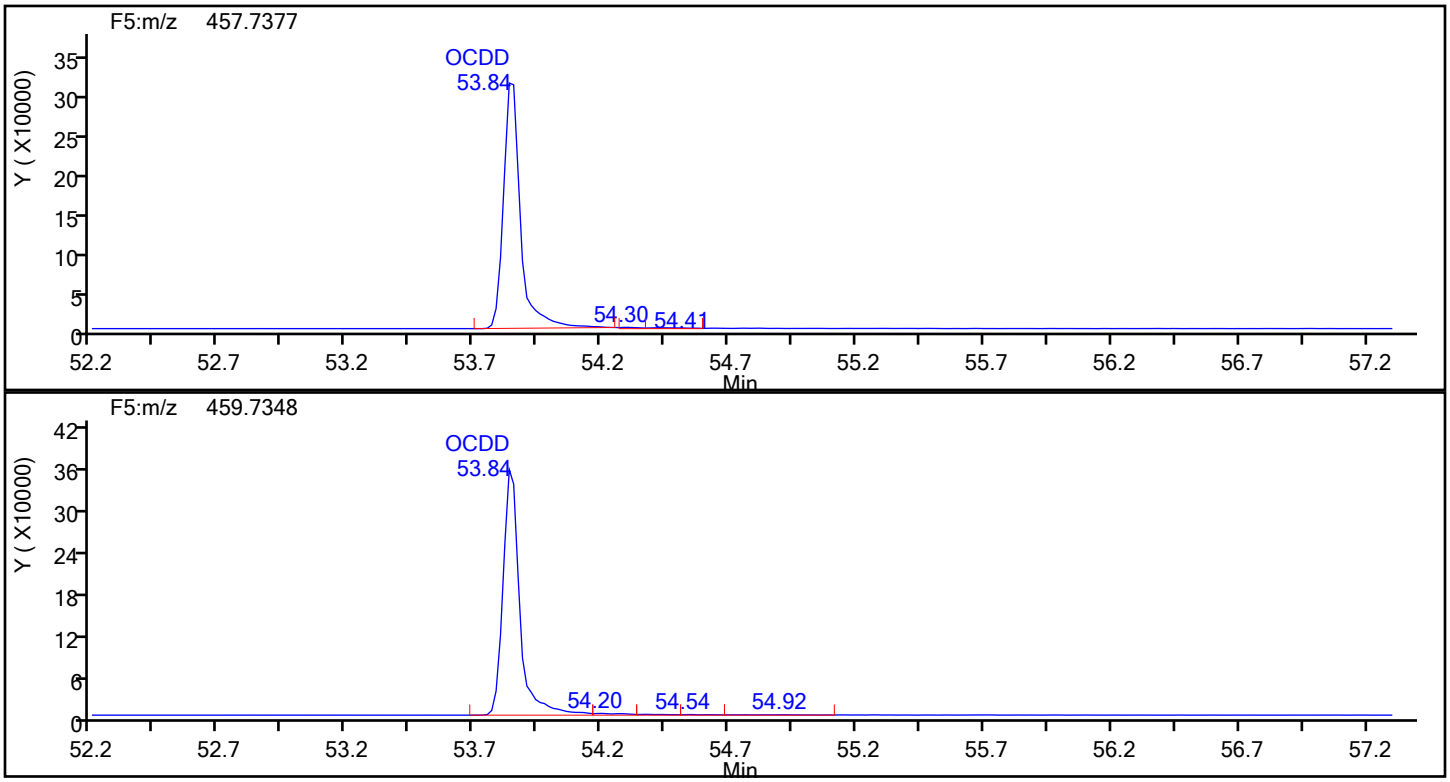
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID:

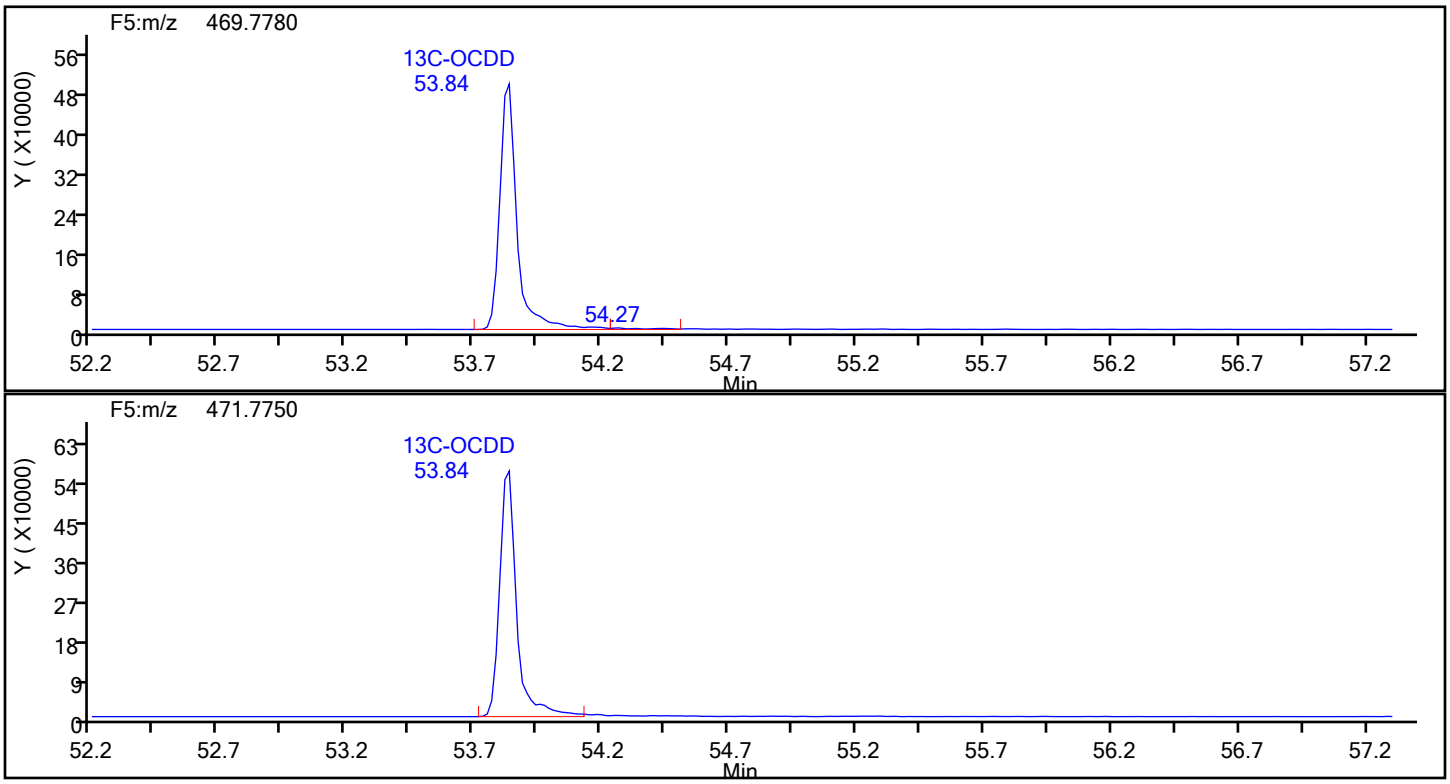
Worklist#: 36166 Sample Line#: 1

Column Type: Column Dia:

OCDD



OCDD Standards



Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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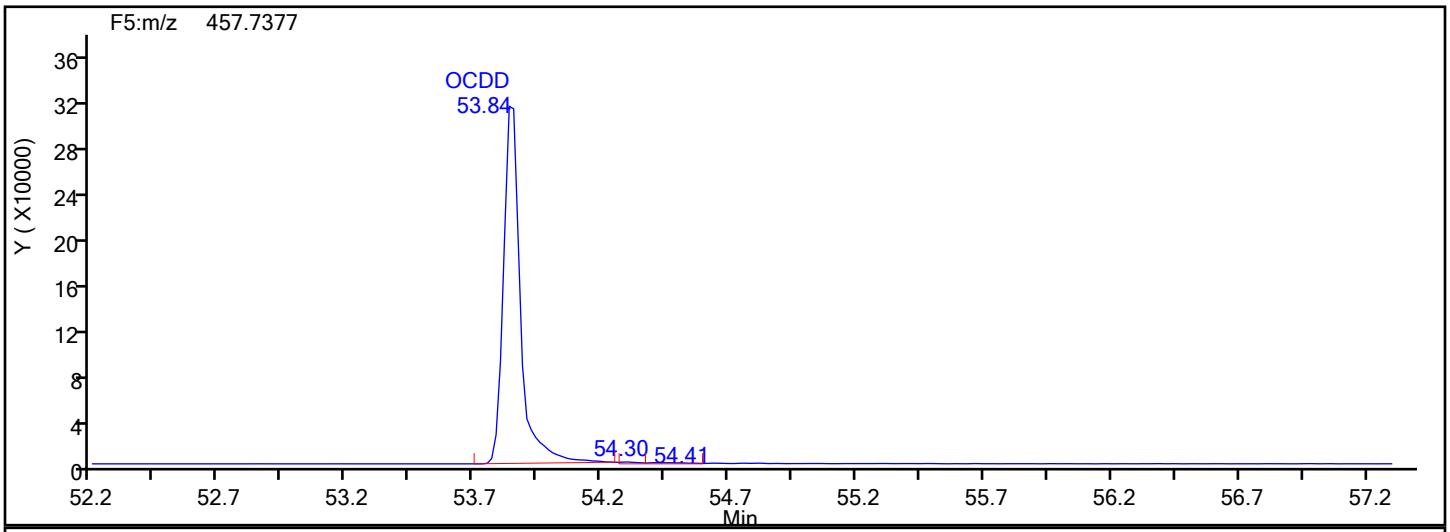
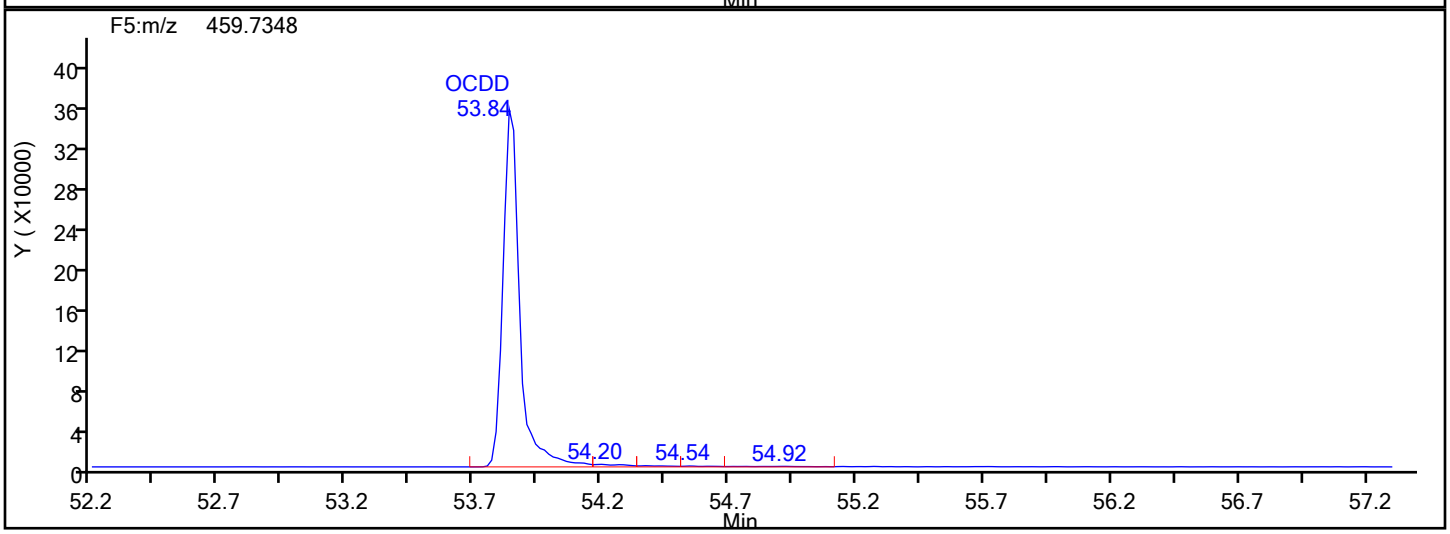
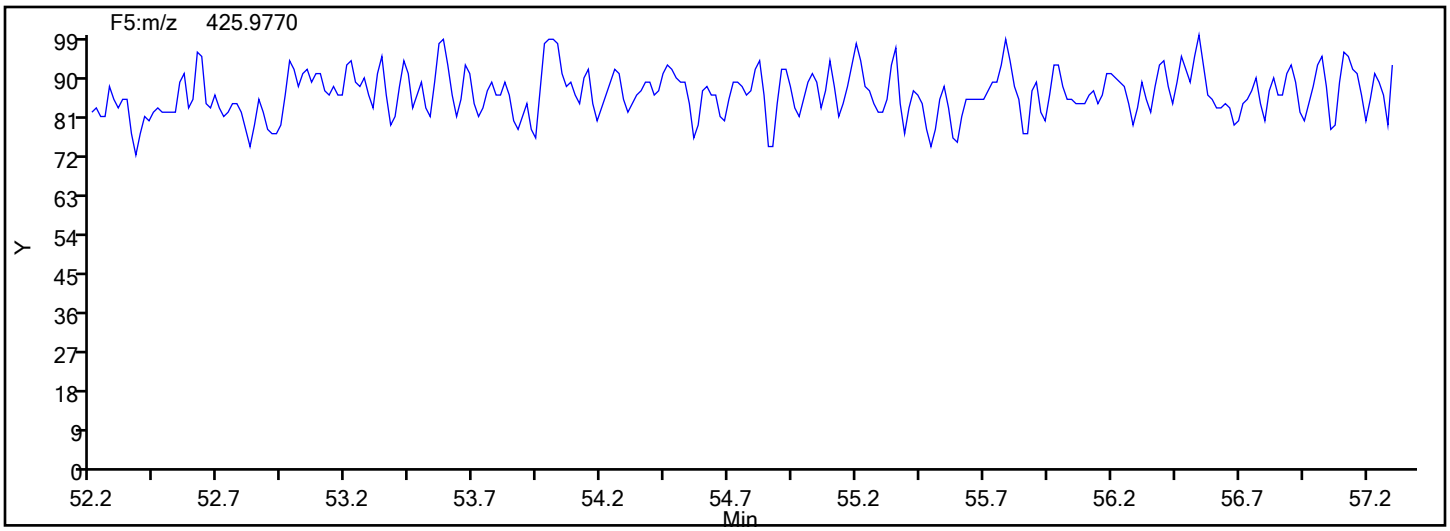
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



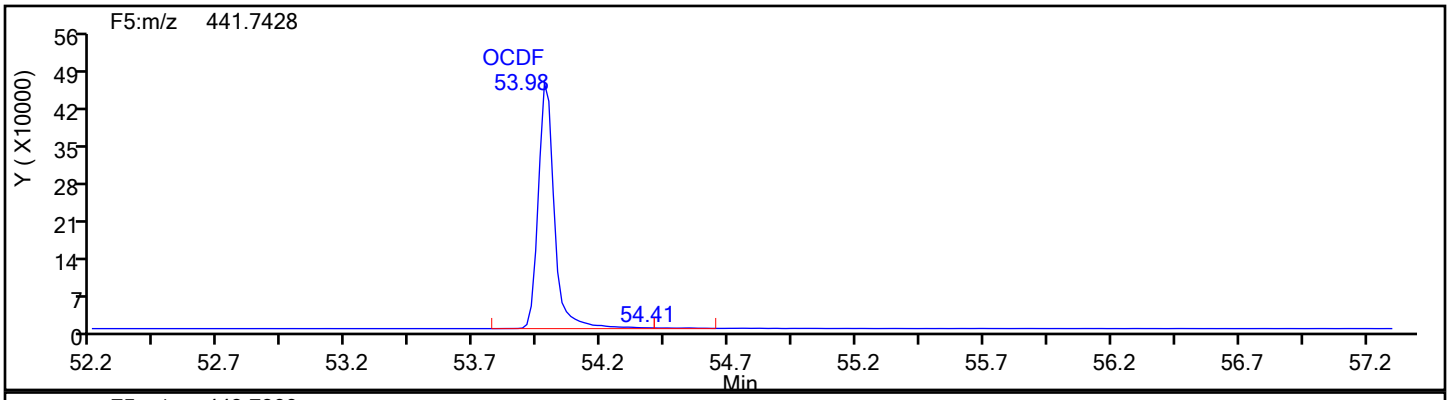
Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

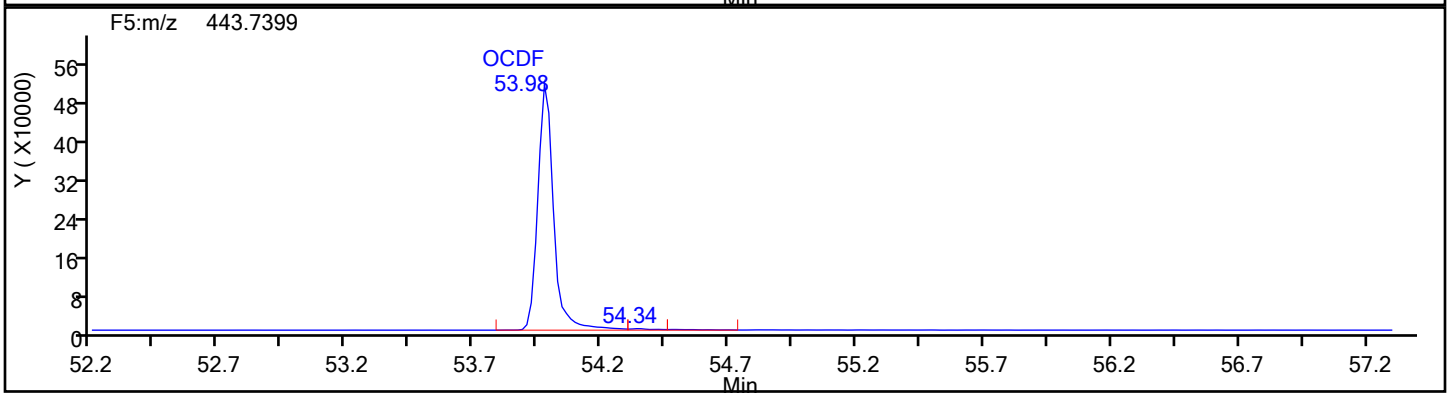
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\d3191217s3.d

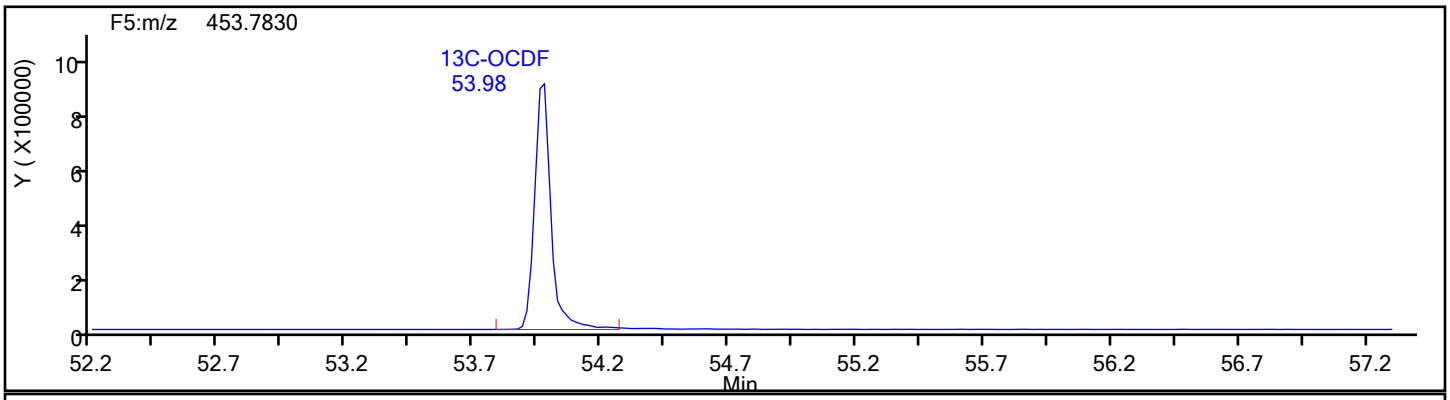
Injection Date:	18-Dec-2019 00:01:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36166	Sample Line#:	1
Column Type:		Column Dia:	

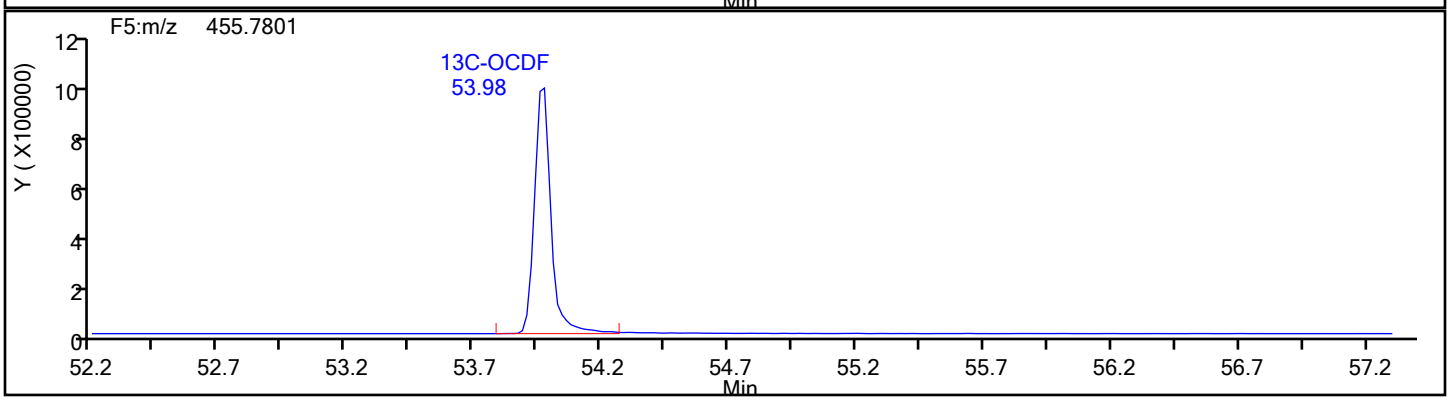
OCDF





OCDF Standards





Report Date: 18-Dec-2019 01:05:11 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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Column Type:		Column Dia:	

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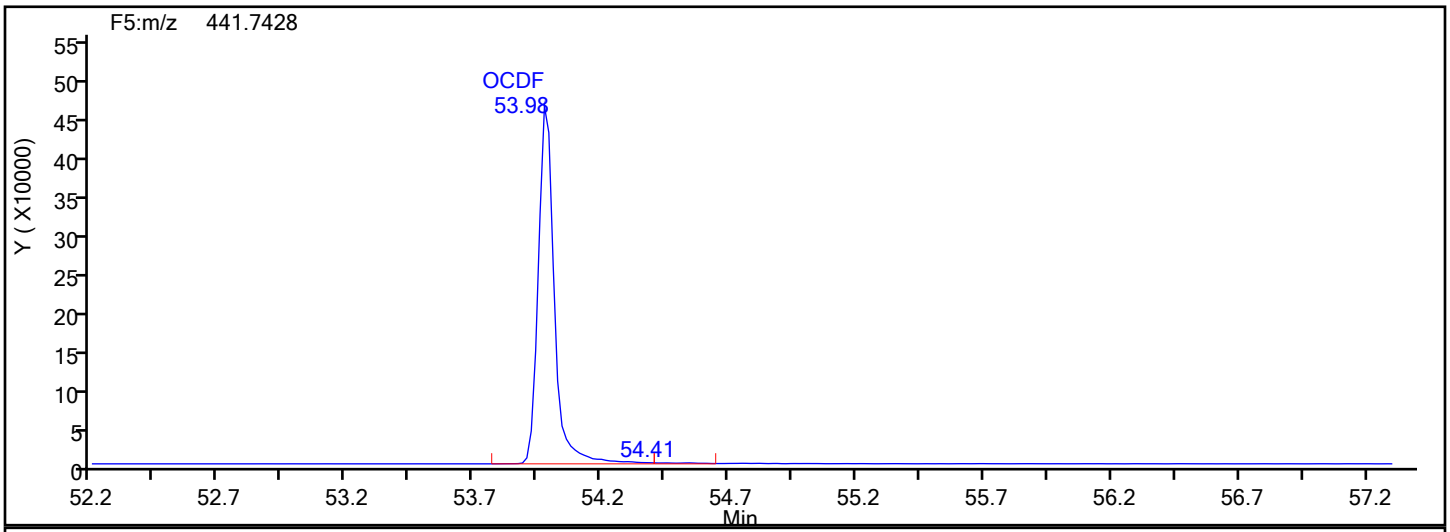
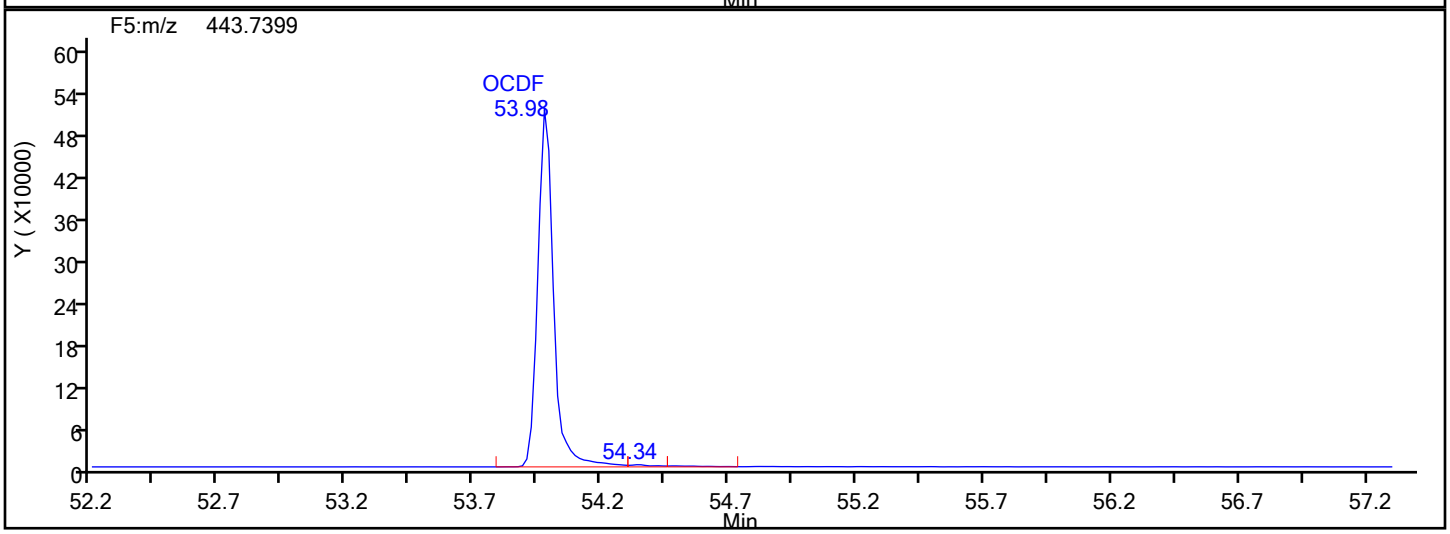
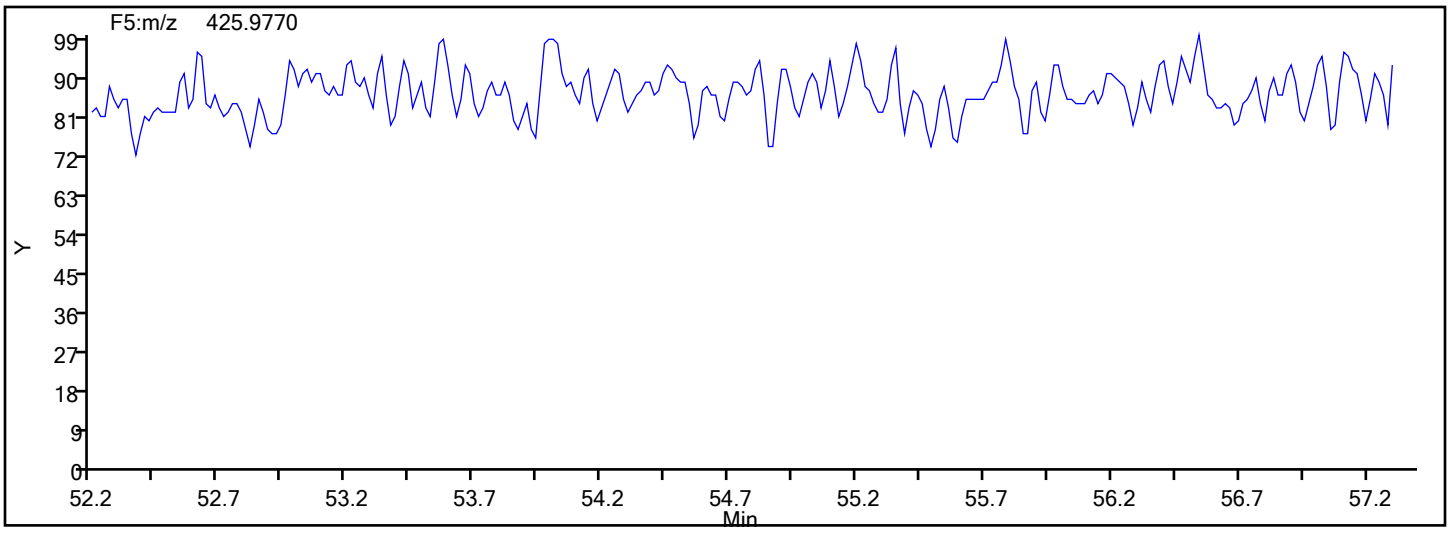




OCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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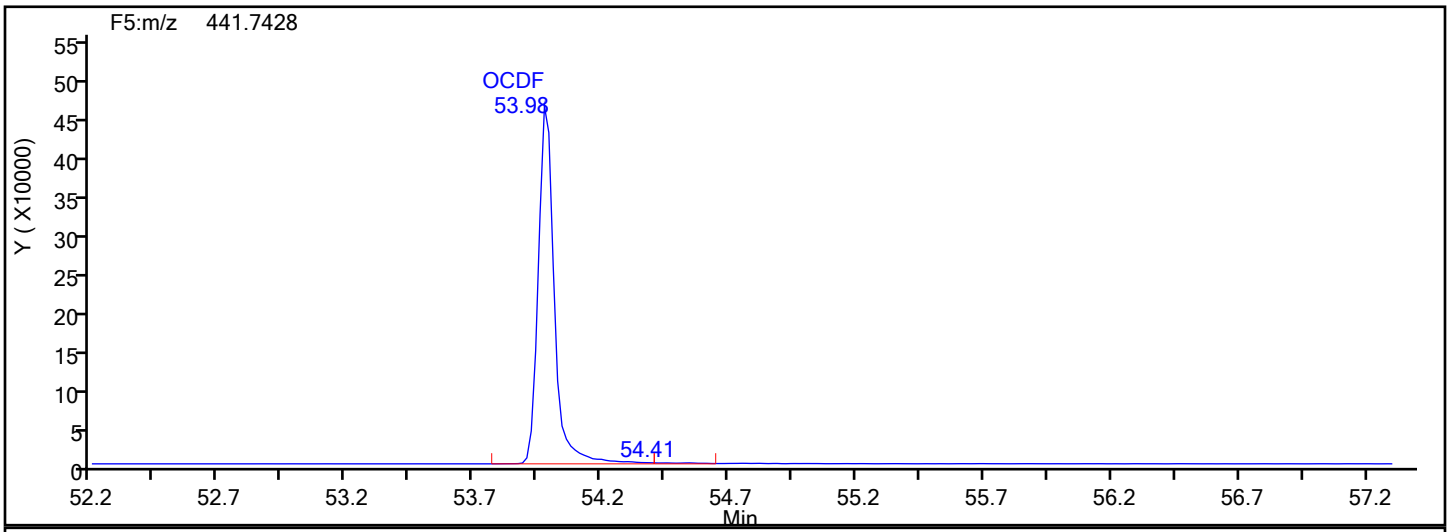
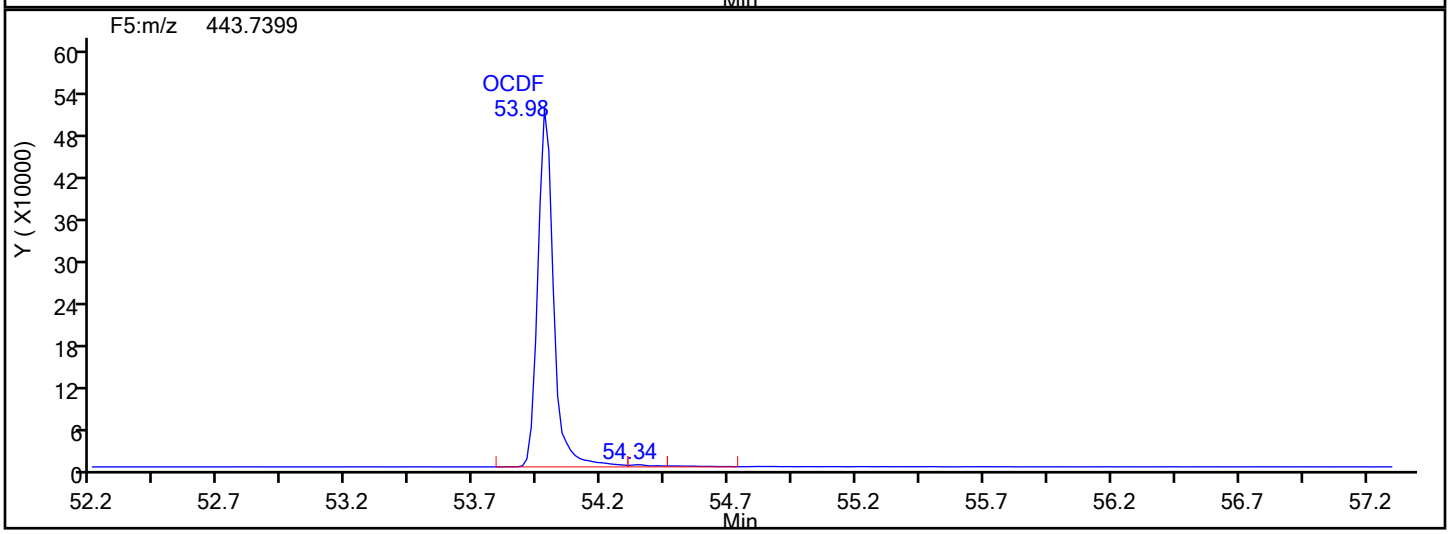
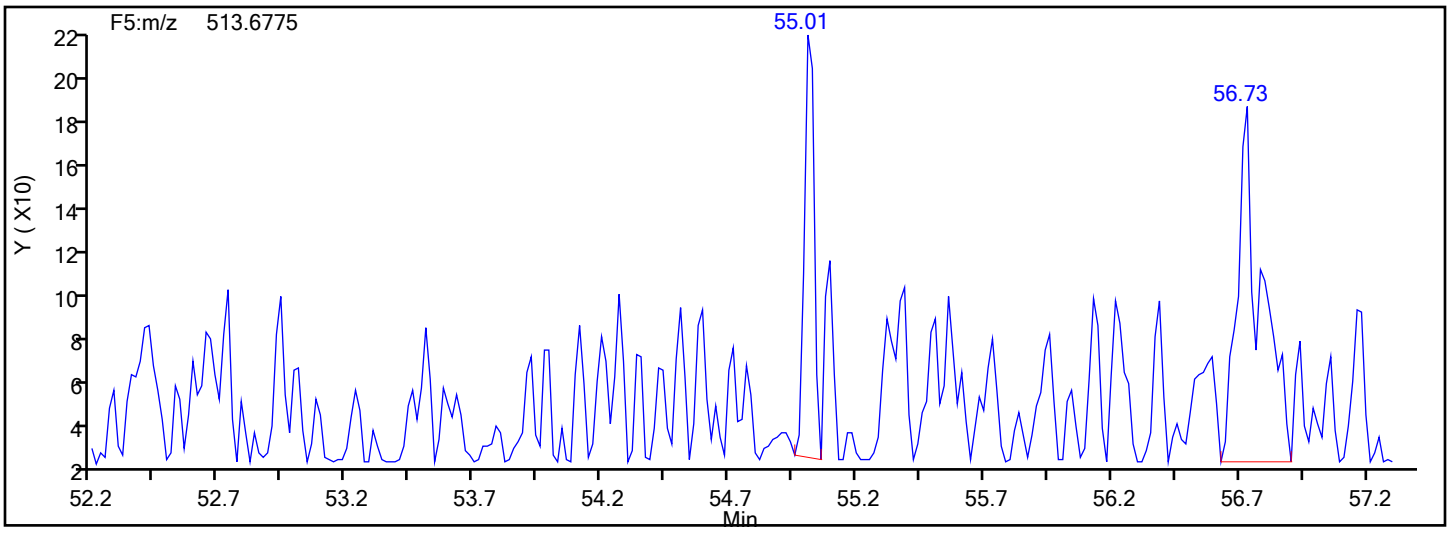
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 03-May-2019 01:30:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0011646-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:46:03 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: mcwhirterl Date: 03-May-2019 02:46:01

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDF	24:23	2678383	0.80	1.1100	9.432	9.432	0.0466	0.0466		a
D 13C-2,3,7,8-TCDF	24:21	2558191	0.82	1.6193					0.00	a

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 03-May-2019 01:30:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0011646-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 03-May-2019 13:46:03 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0308

First Level Reviewer: mcwhirterl Date: 03-May-2019 02:46:01

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDF											a
303.9016	24:23	24:23	0	1.001	1189519	145946	232	580	629		a
305.8987	24:22	24:23	-1	1.001	1488864	172526	389	972	444	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	24:21	24:17	3	1.000	1149322	131541	943	2357	139		a
317.9389	24:20	24:17	2	1.000	1408869	168725	835	2087	202	0.82(0.65-0.89)	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

Report Date: 03-May-2019 13:46:05 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d		
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Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
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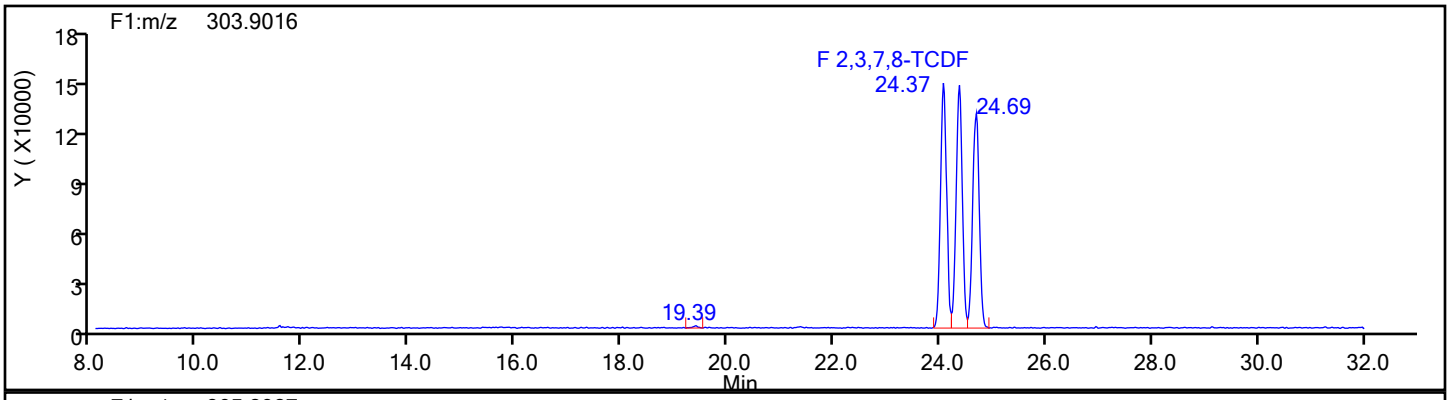
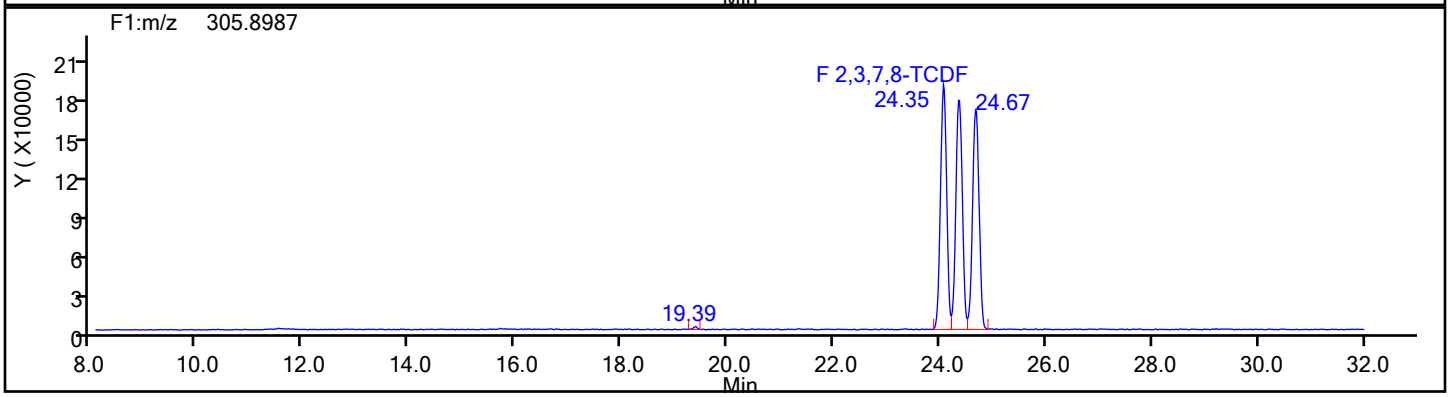
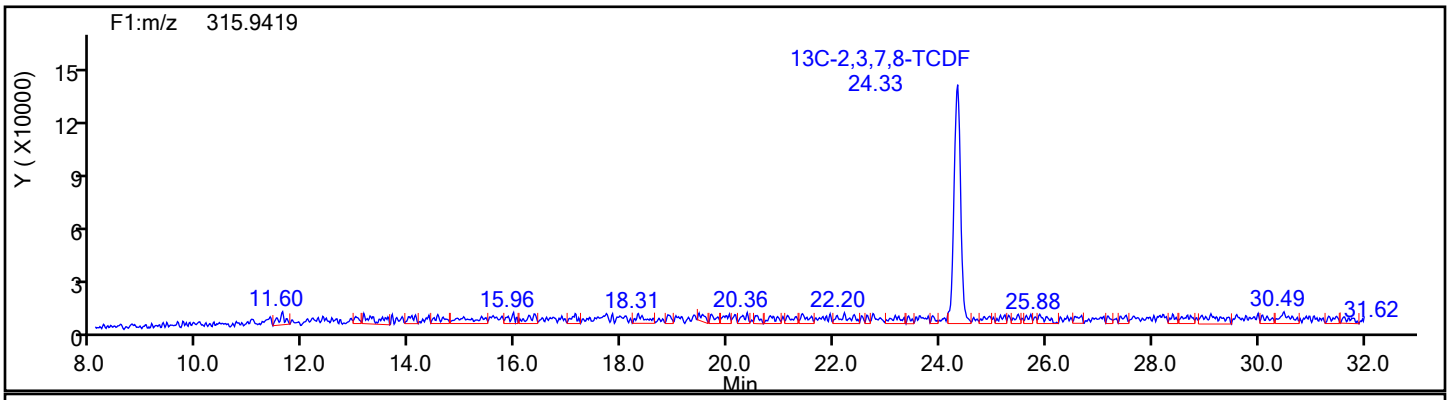
Column Type:	DB225	Column Dia:	0.32 mm

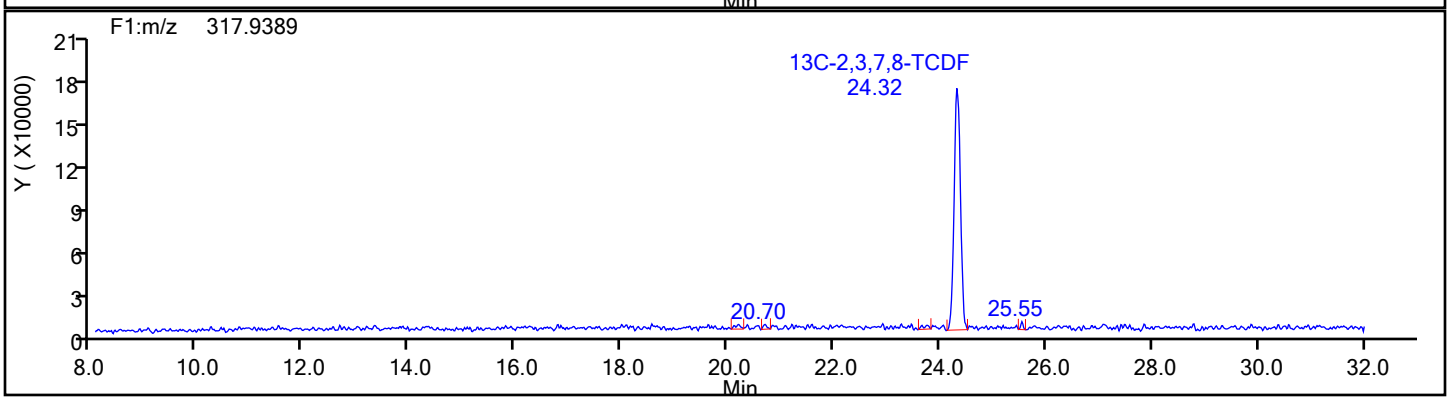
TCDF





TCDF Standards



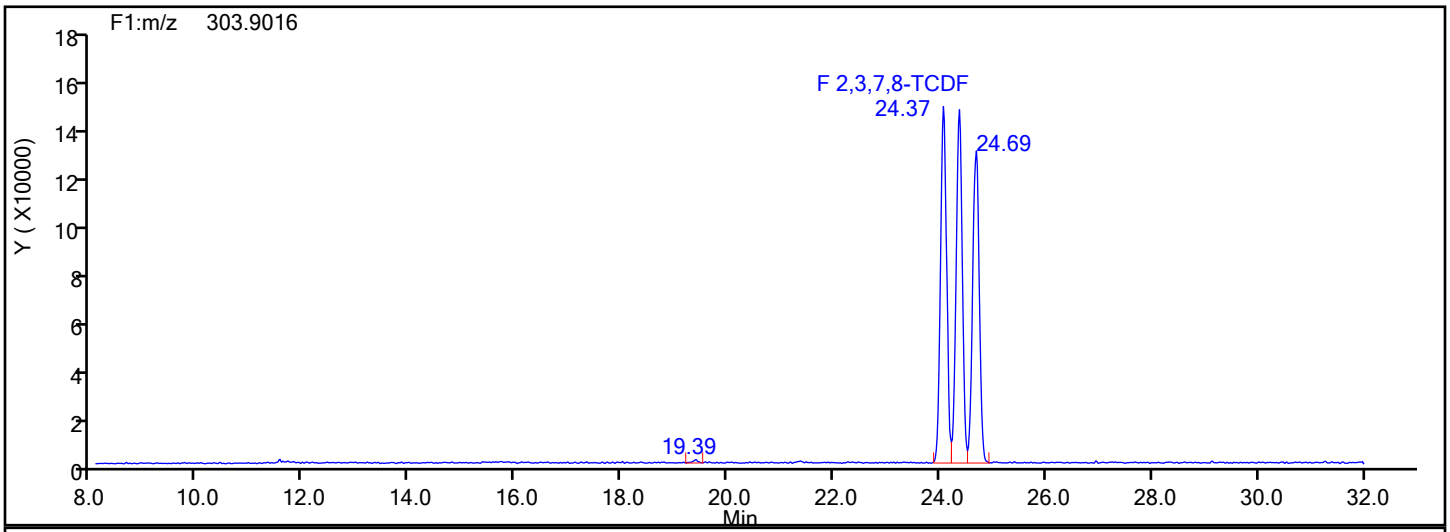


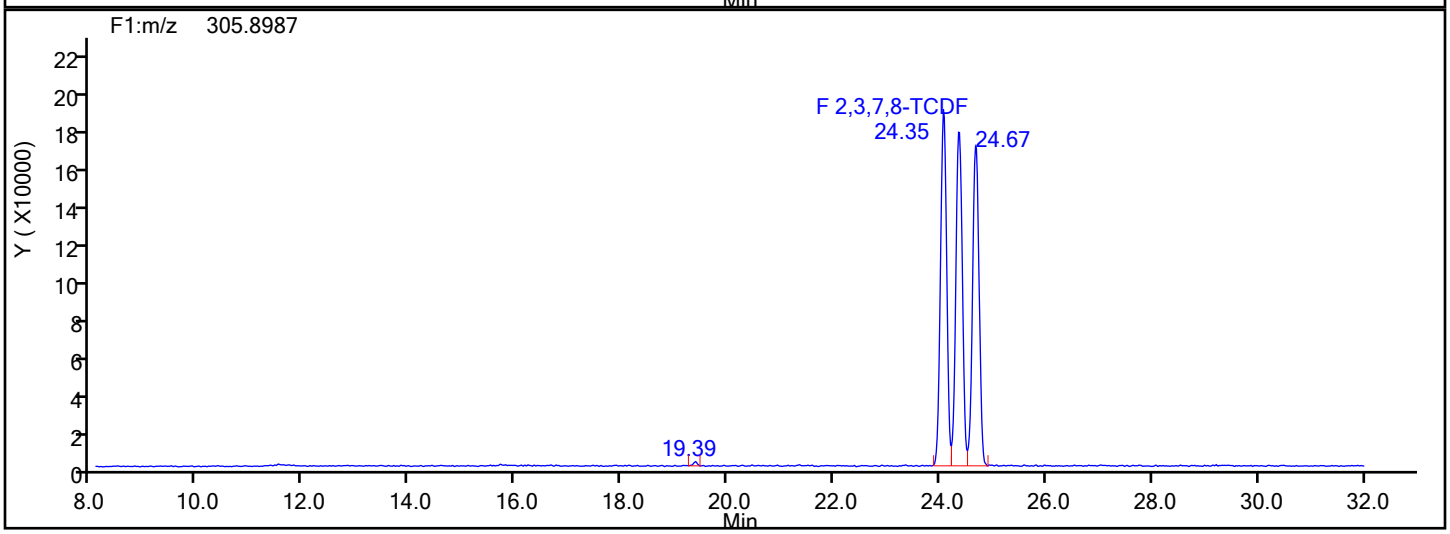
Report Date: 03-May-2019 13:46:05 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

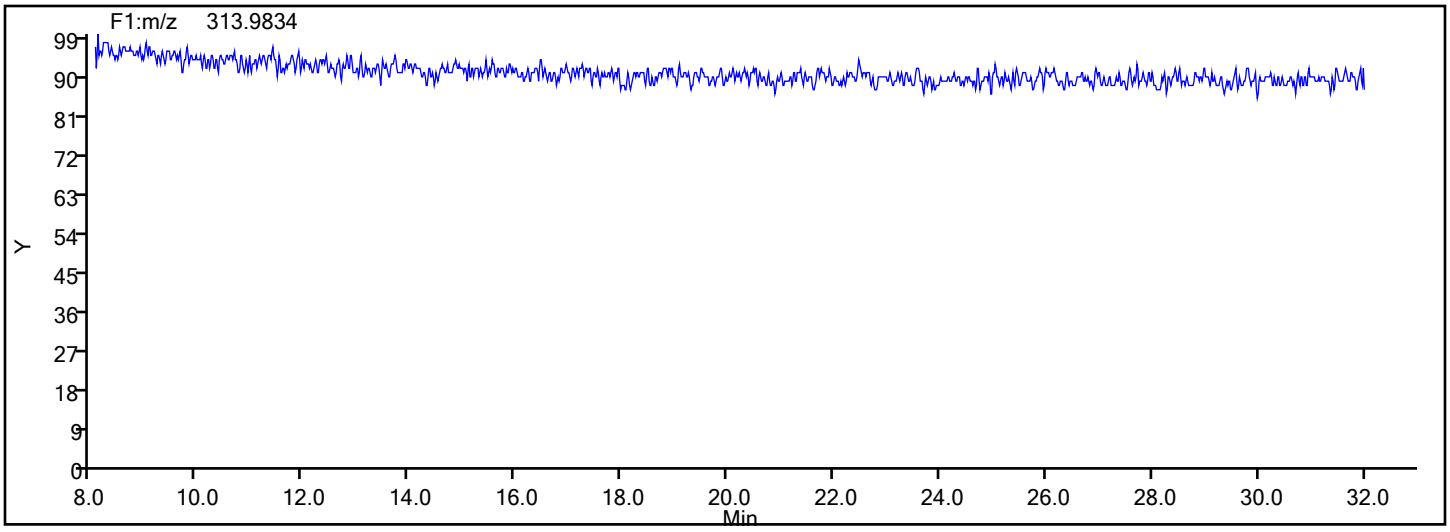
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d		
Injection Date:	03-May-2019 01:30:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

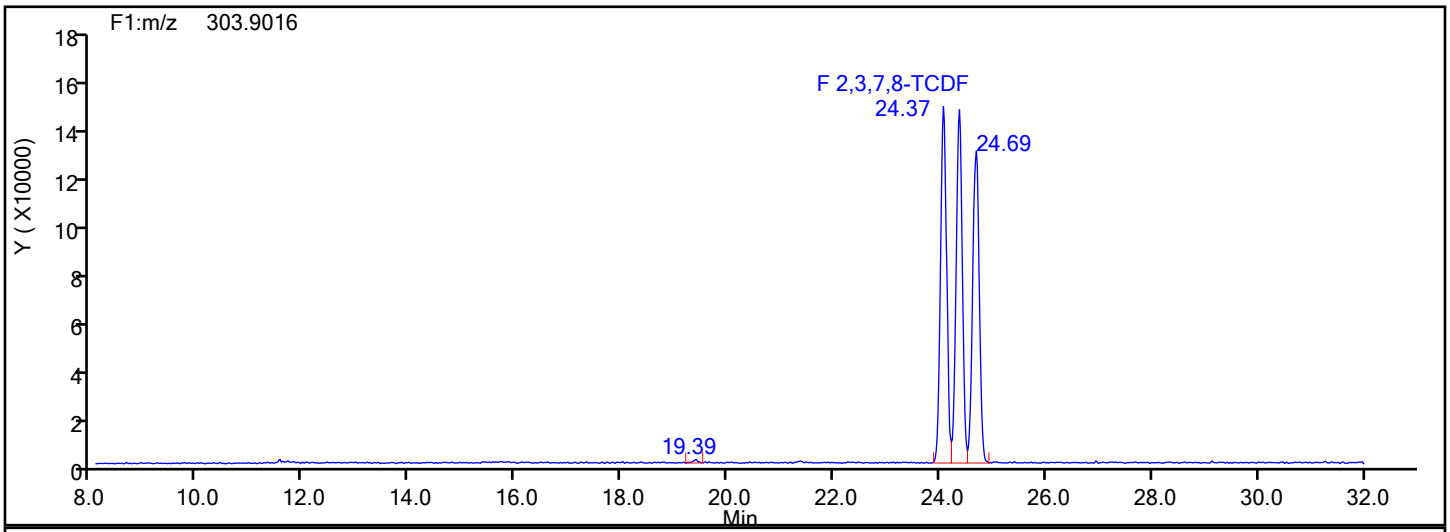


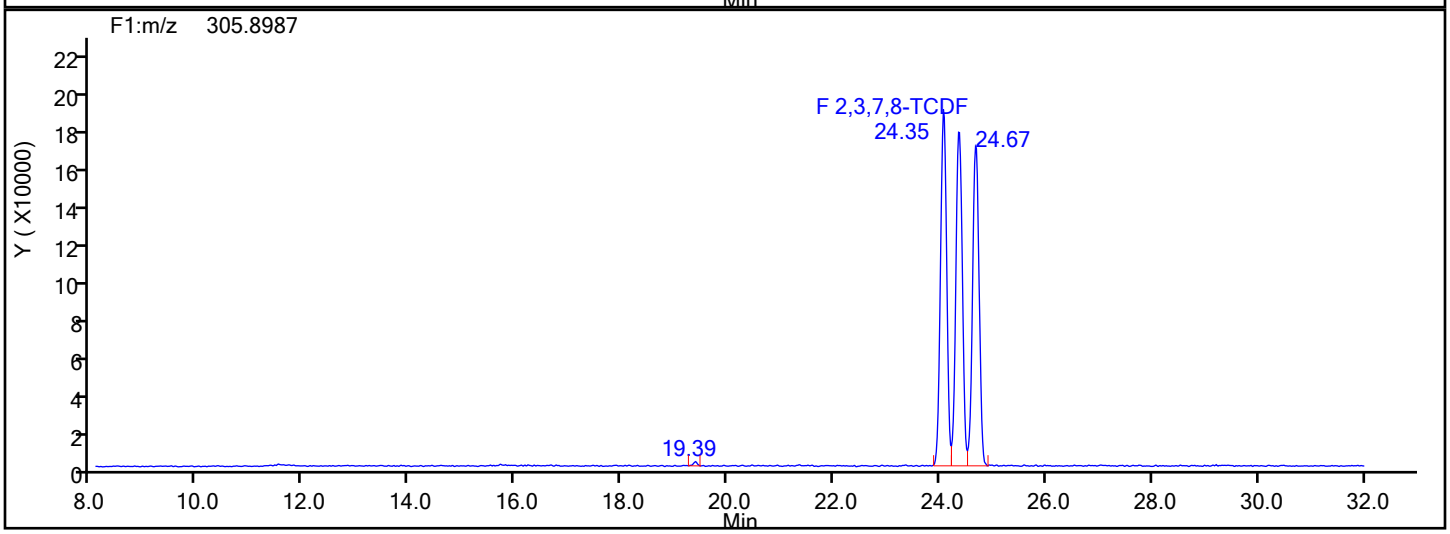
Report Date: 03-May-2019 13:46:05 Chrom Revision: 2.3 18-Apr-2019 13:31:50

Eurofins TestAmerica, Knoxville

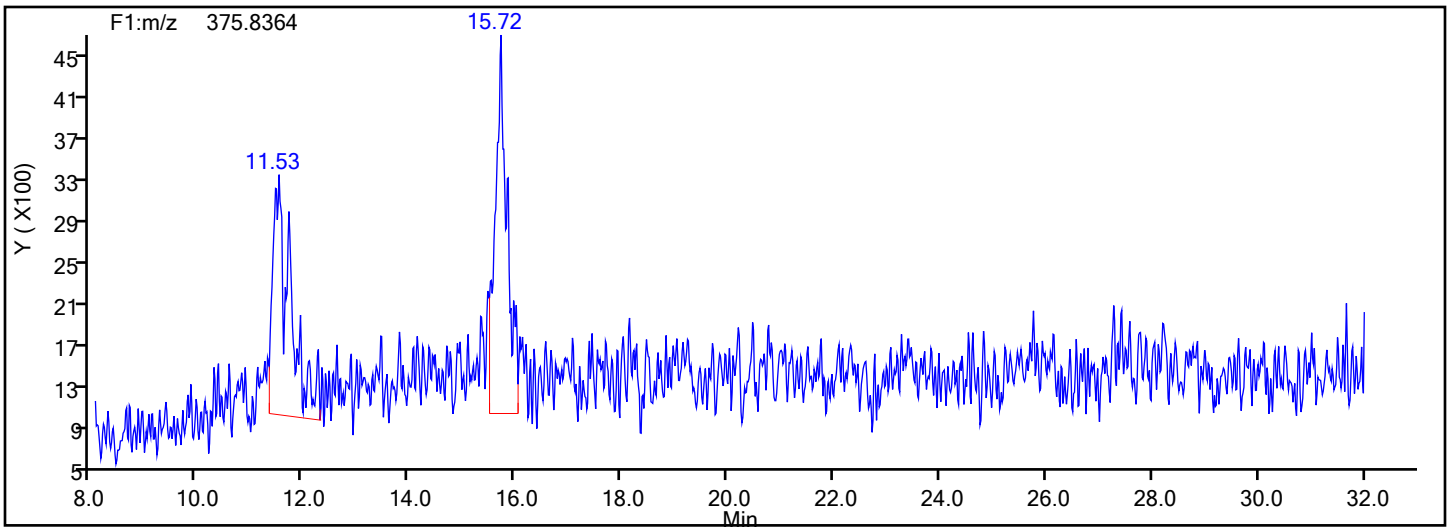
Data File:	\\chromna\Knoxville\ChromData\D12C\20190502-11646.b\d2190503w1.d		
Injection Date:	03-May-2019 01:30:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	29777	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 18-Dec-2019 00:58:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0014071-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 02:02:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 02:02:42

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDF	22:13	2846840	0.80	1.1100	9.670	9.670	0.0705	0.0705		a
D 13C-2,3,7,8-TCDF	22:11	2652174	0.82	1.6193					0.00	a

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 18-Dec-2019 00:58:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0014071-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 02:02:42 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX0324

First Level Reviewer: mcwhirterl Date: 18-Dec-2019 02:02:42

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDF											a
303.9016	22:13	22:13	0	1.002	1265128	166068	405	1012	410		a
305.8987	22:13	22:13	0	1.002	1581712	206793	659	1647	314	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											a
315.9419	22:11	22:11	0	1.000	1194577	152688	386	965	396		a
317.9389	22:11	22:11	0	1.000	1457597	187085	446	1115	419	0.82(0.65-0.89)	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

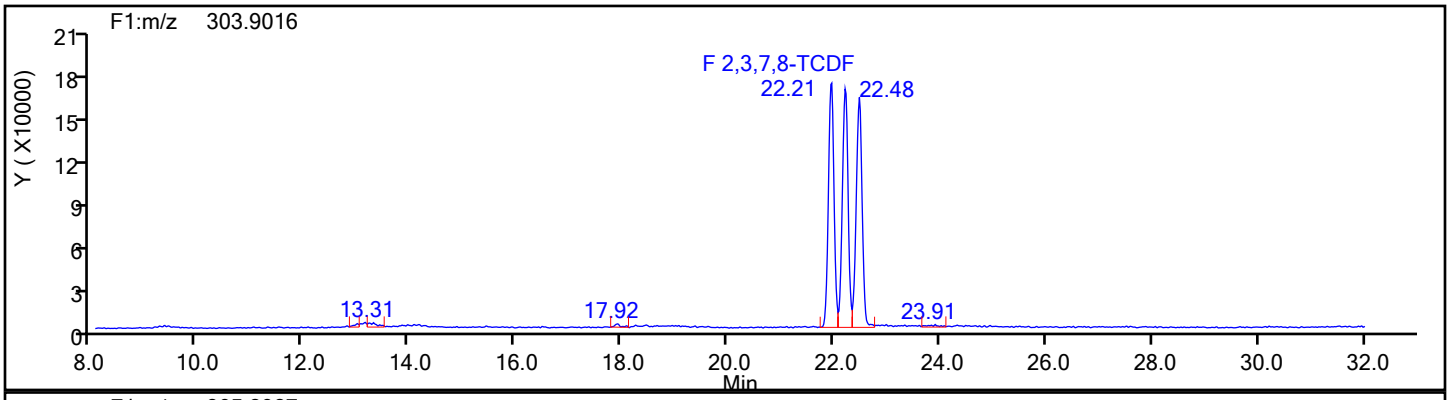
61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

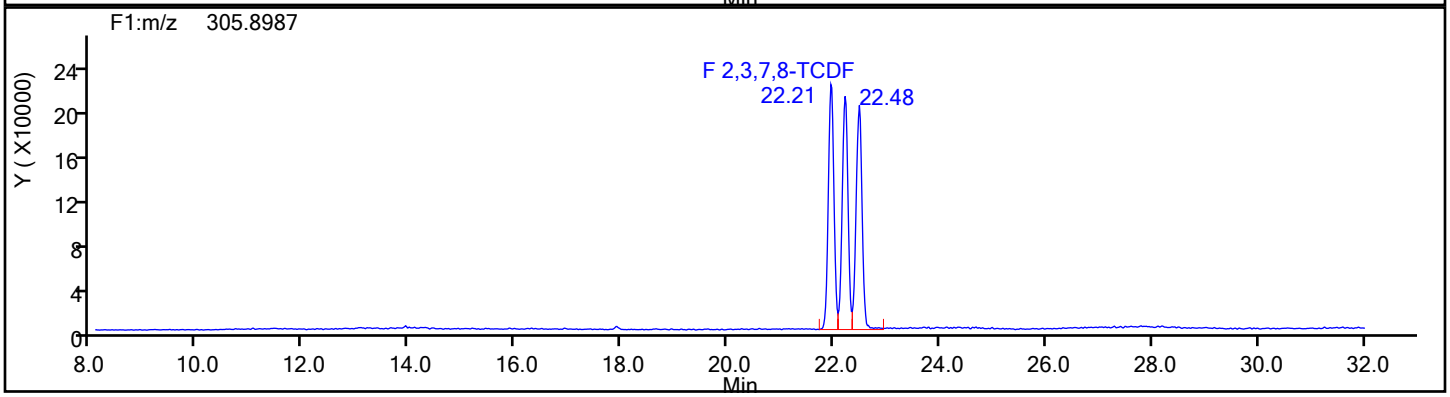
Report Date: 18-Dec-2019 02:02:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

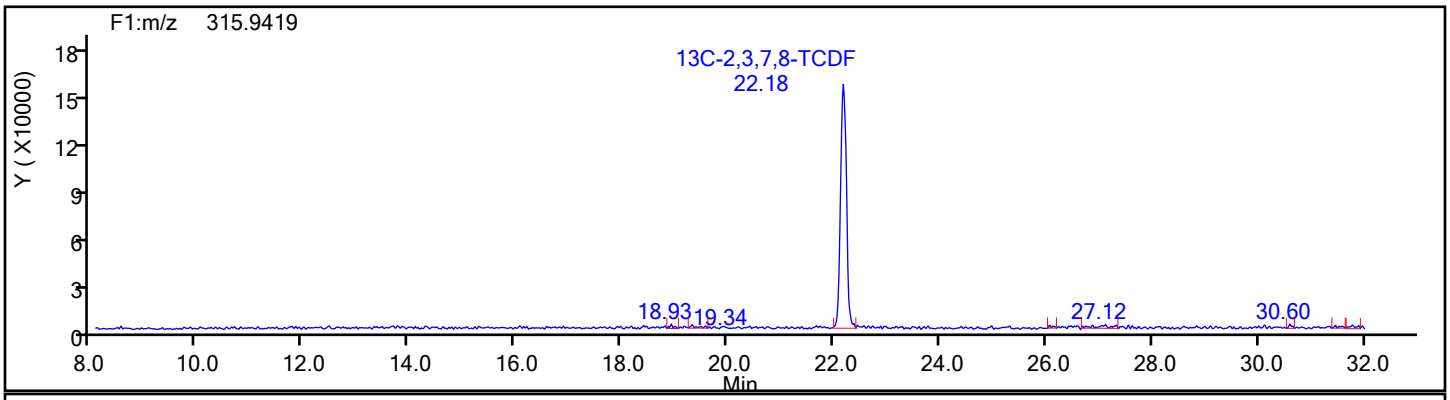
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d		
Injection Date:	18-Dec-2019 00:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

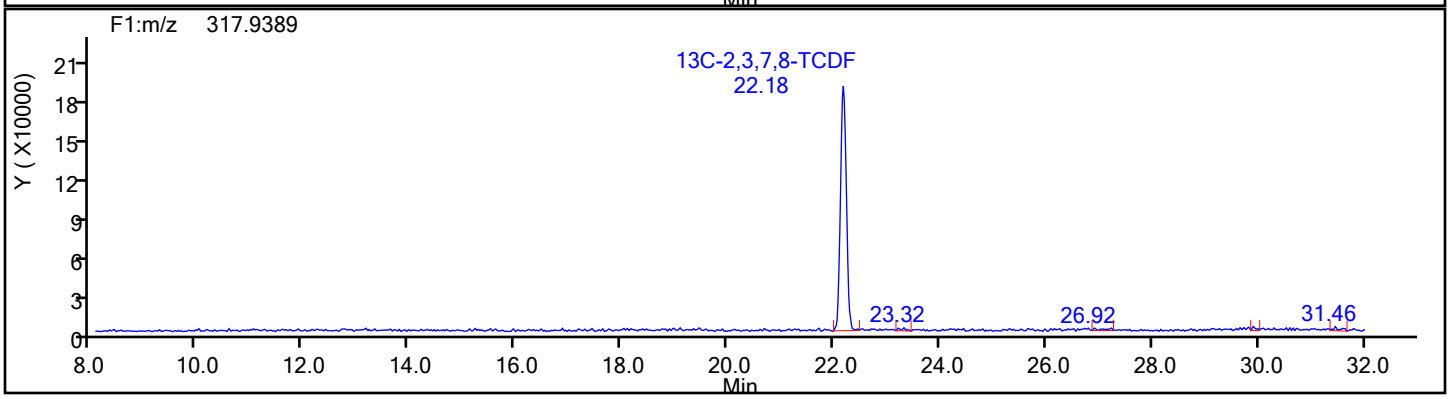
TCDF





TCDF Standards



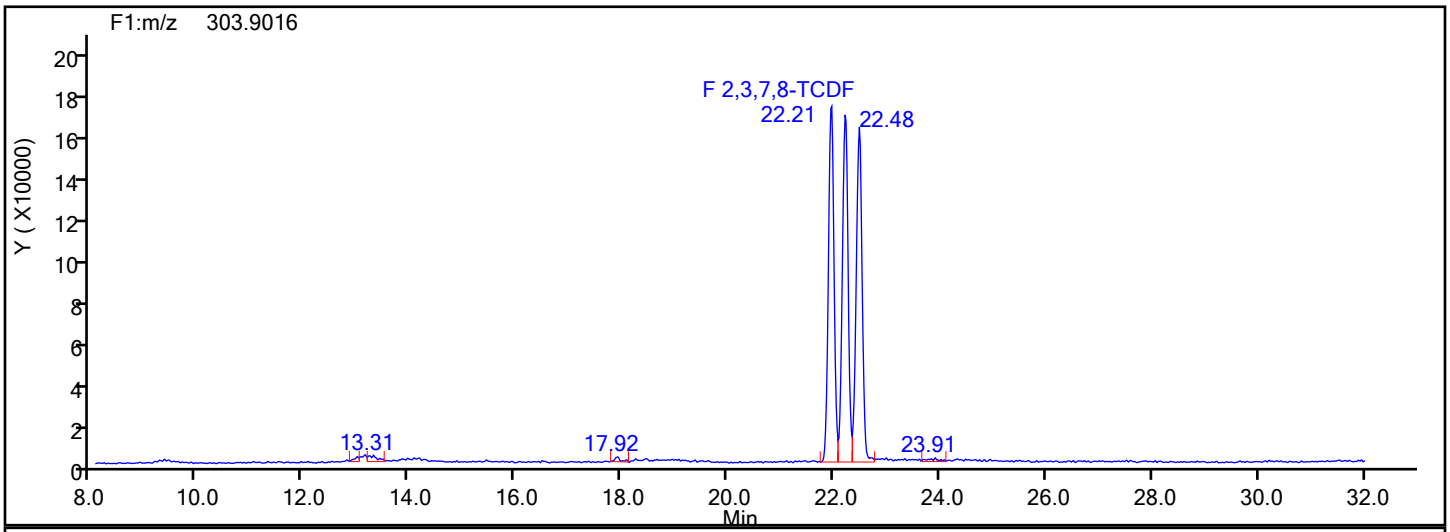


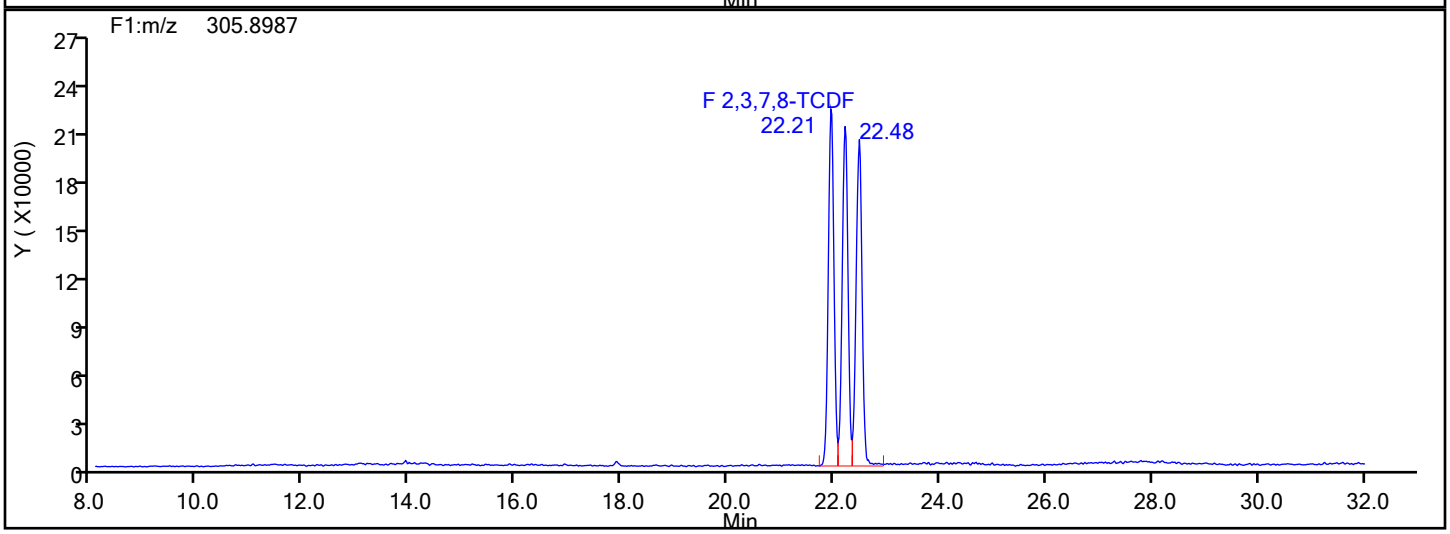
Report Date: 18-Dec-2019 02:02:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

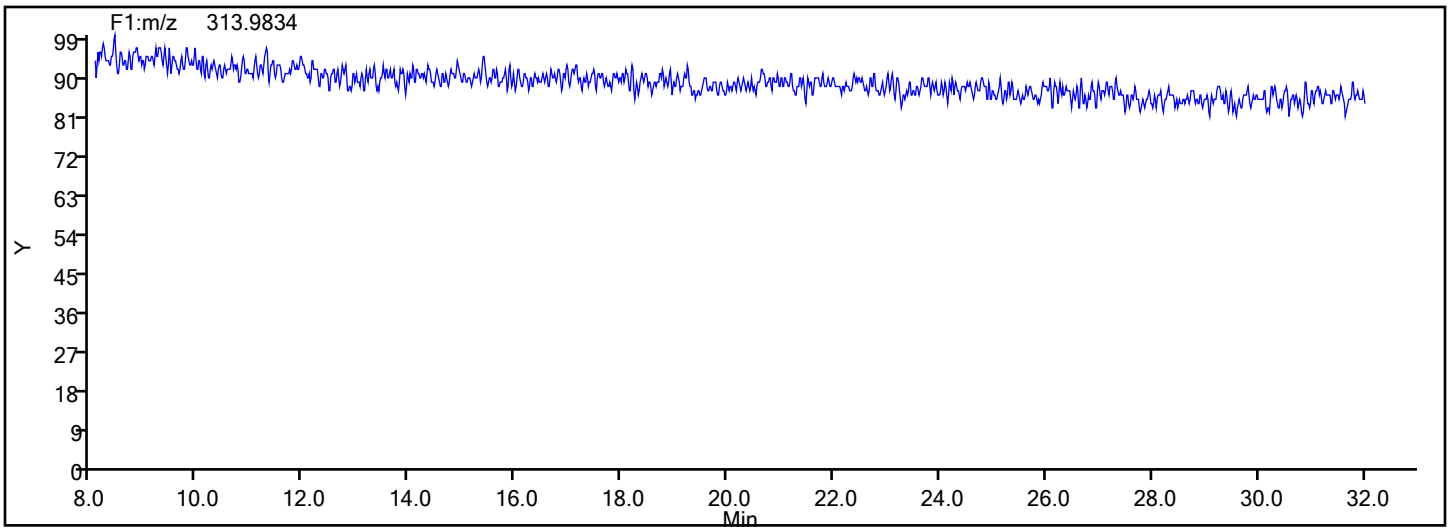
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d		
Injection Date:	18-Dec-2019 00:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

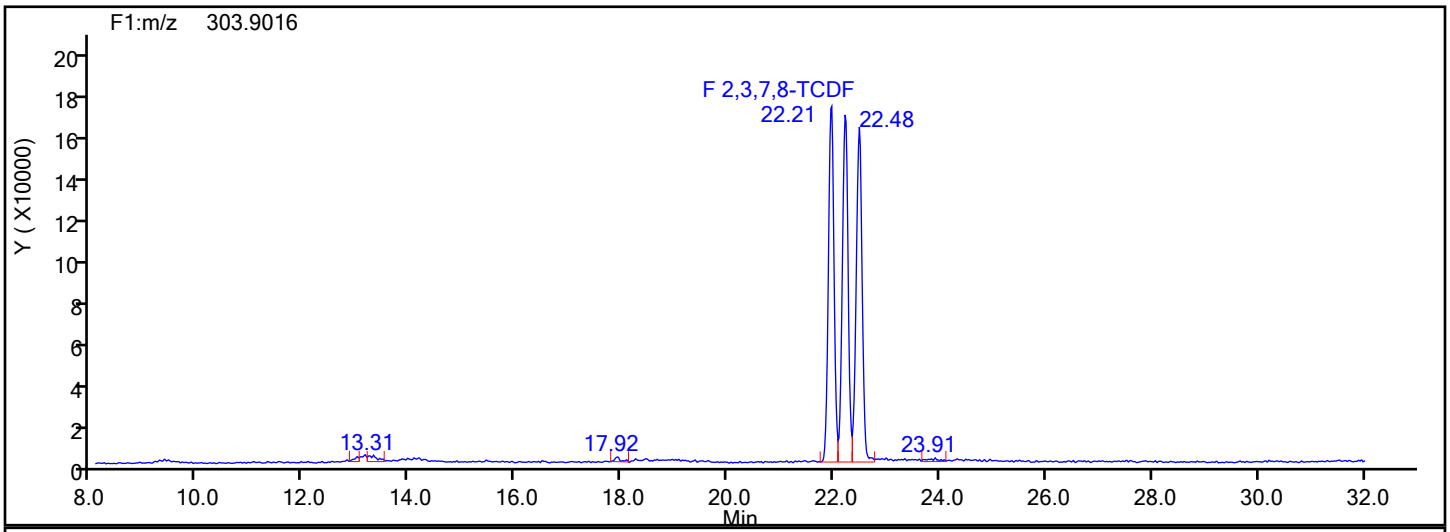


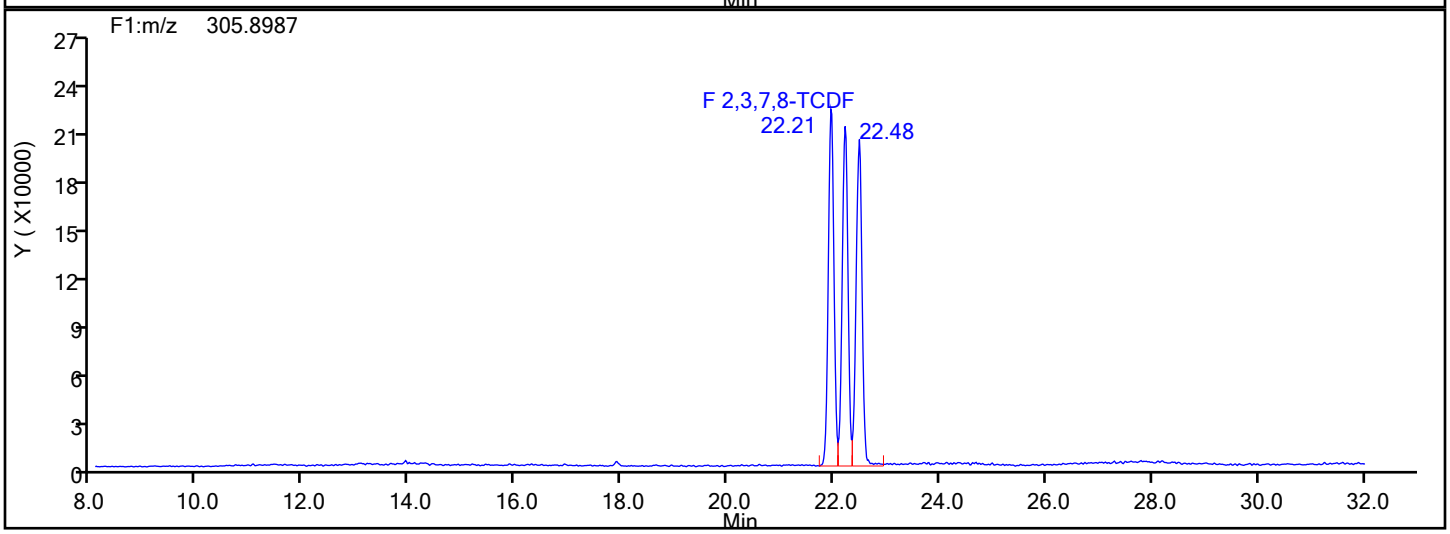
Report Date: 18-Dec-2019 02:02:44 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

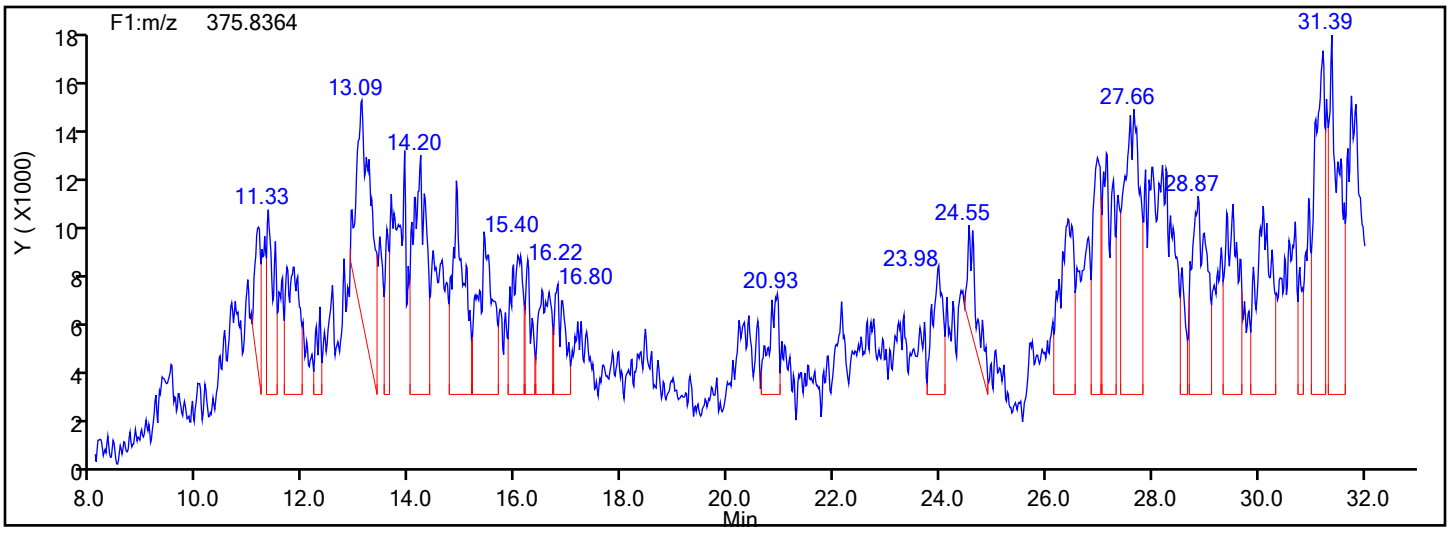
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\d2191218w1.d		
Injection Date:	18-Dec-2019 00:58:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36167	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 18-Dec-2019 11:19:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0014075-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:50:05 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 12:13:36

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDF	22:13	2117487	0.80	1.1100	9.446	9.446	0.0341	0.0341		
D 13C-2,3,7,8-TCDF	22:11	2019496	0.77	1.6193					0.00	

Reagents:

61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 18-Dec-2019 11:19:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0007662-001
Misc. Info.: 140-0014075-001
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191218-14075.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:50:05 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 12:13:36

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDF											
303.9016	22:13	22:13	0	1.002	938101	127581	206	515	619		
305.8987	22:13	22:13	0	1.002	1179386	151836	202	505	752	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	22:11	22:11	0	1.000	878716	117809	464	1160	254		
317.9389	22:11	22:11	0	1.000	1140780	151280	306	765	494	0.77(0.65-0.89)	

Reagents:

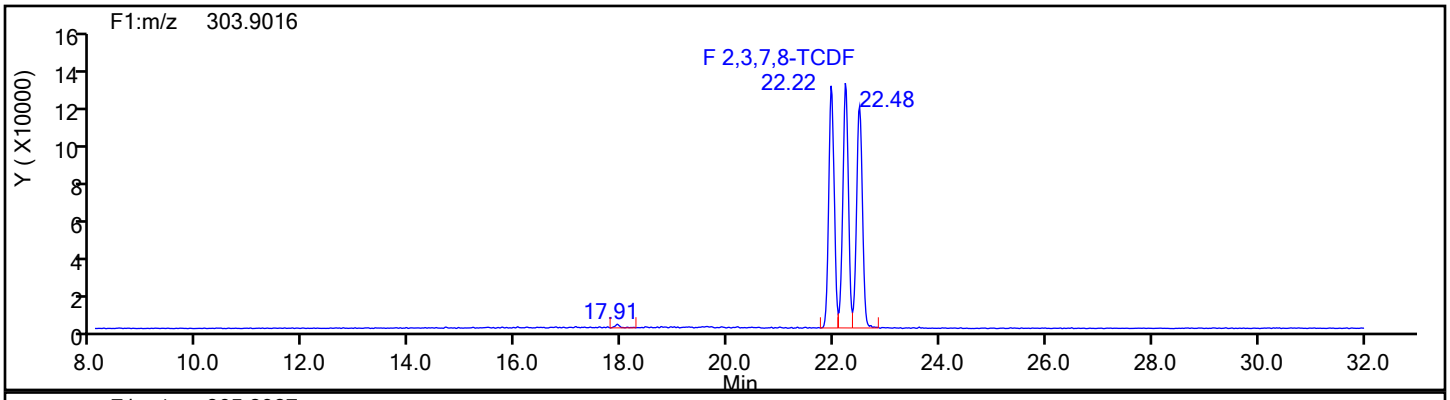
61IDWDWRKTCDF_00002 Amount Added: 20.00 Units: uL

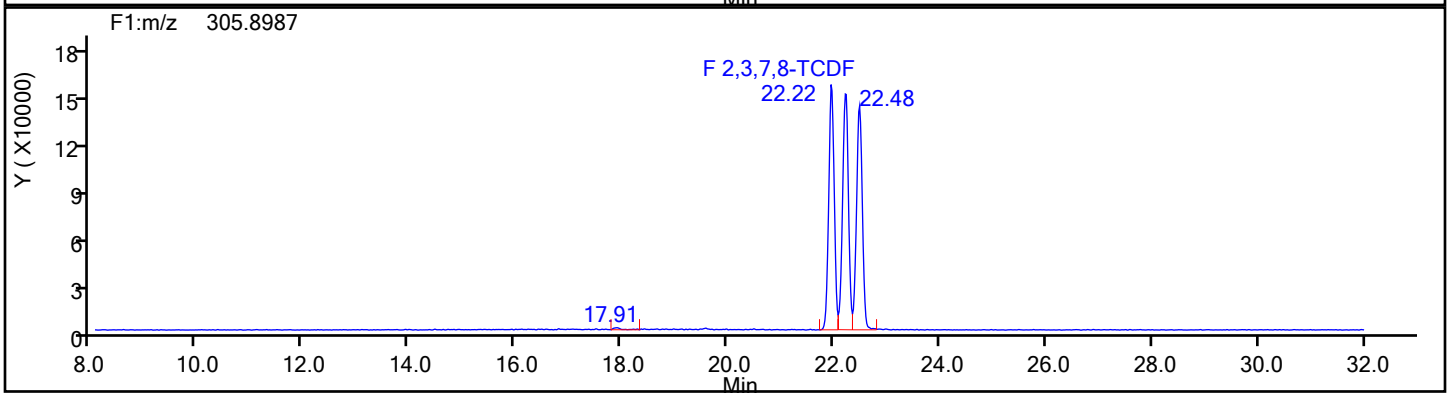
Report Date: 18-Dec-2019 12:50:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

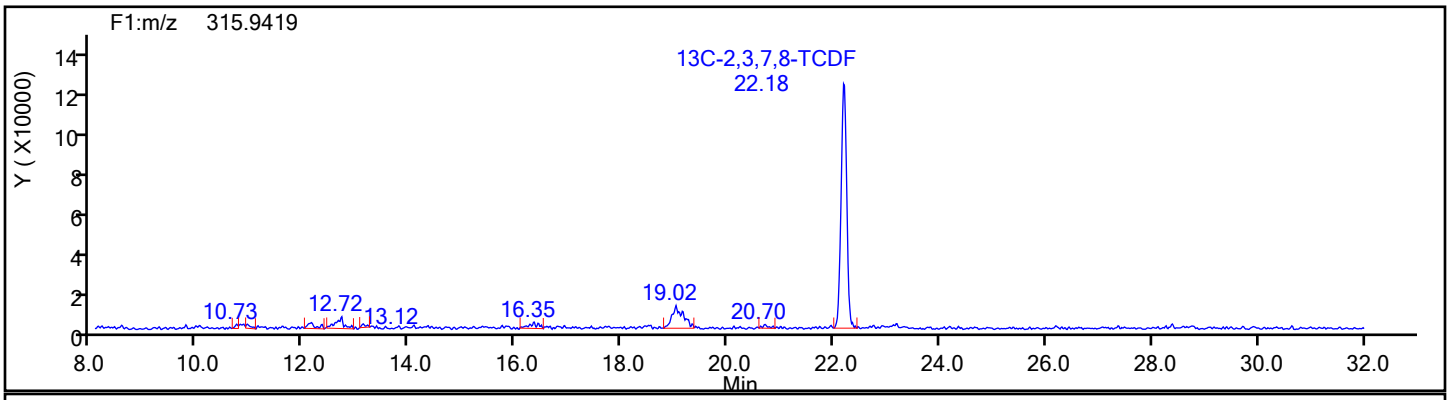
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d		
Injection Date:	18-Dec-2019 11:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

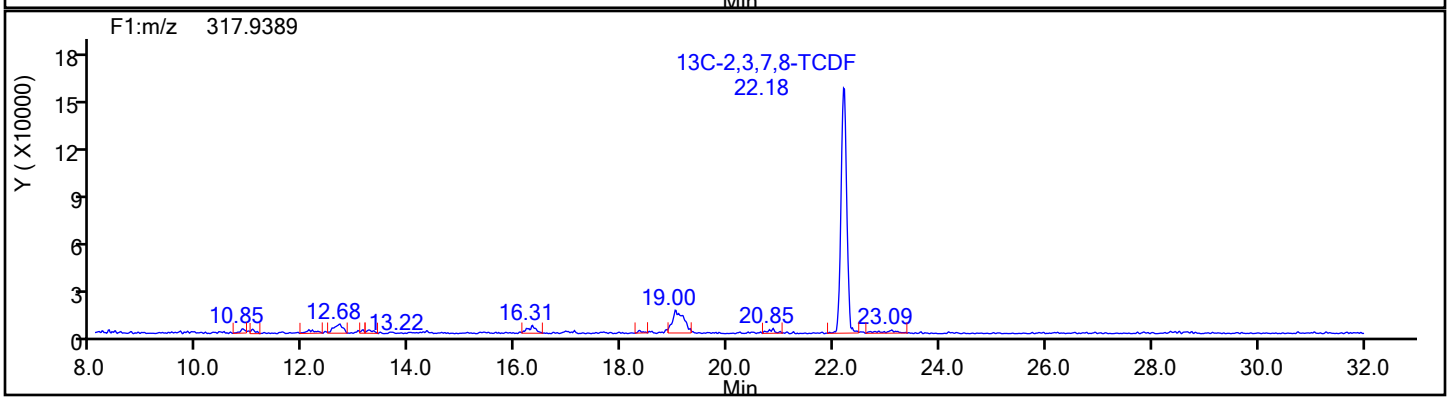
TCDF





TCDF Standards



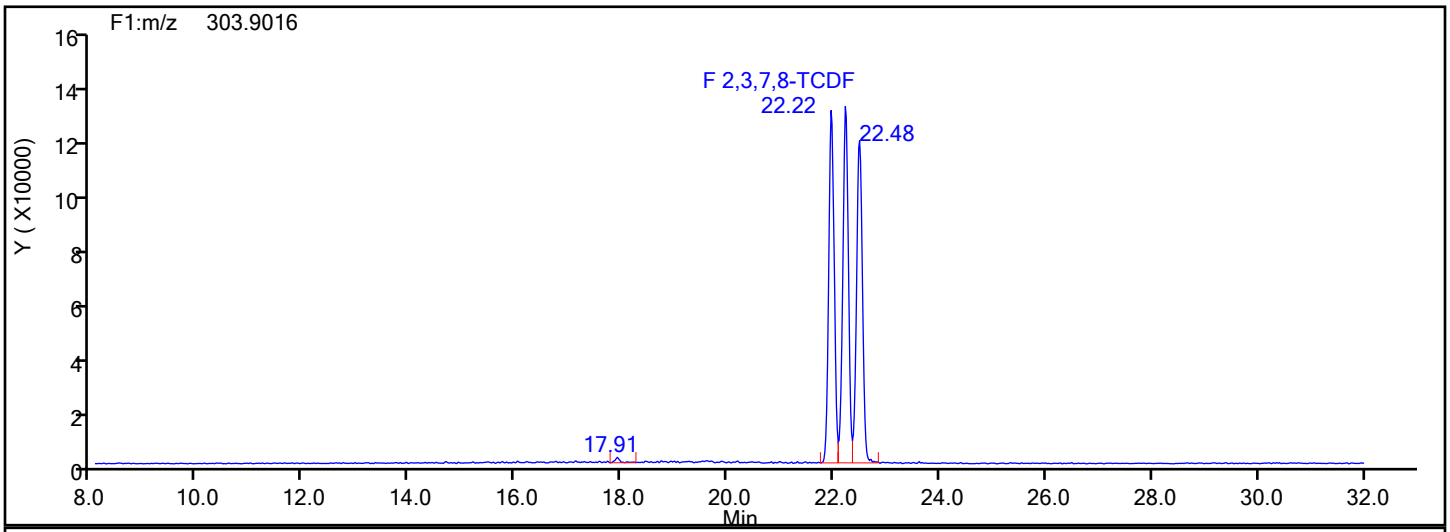


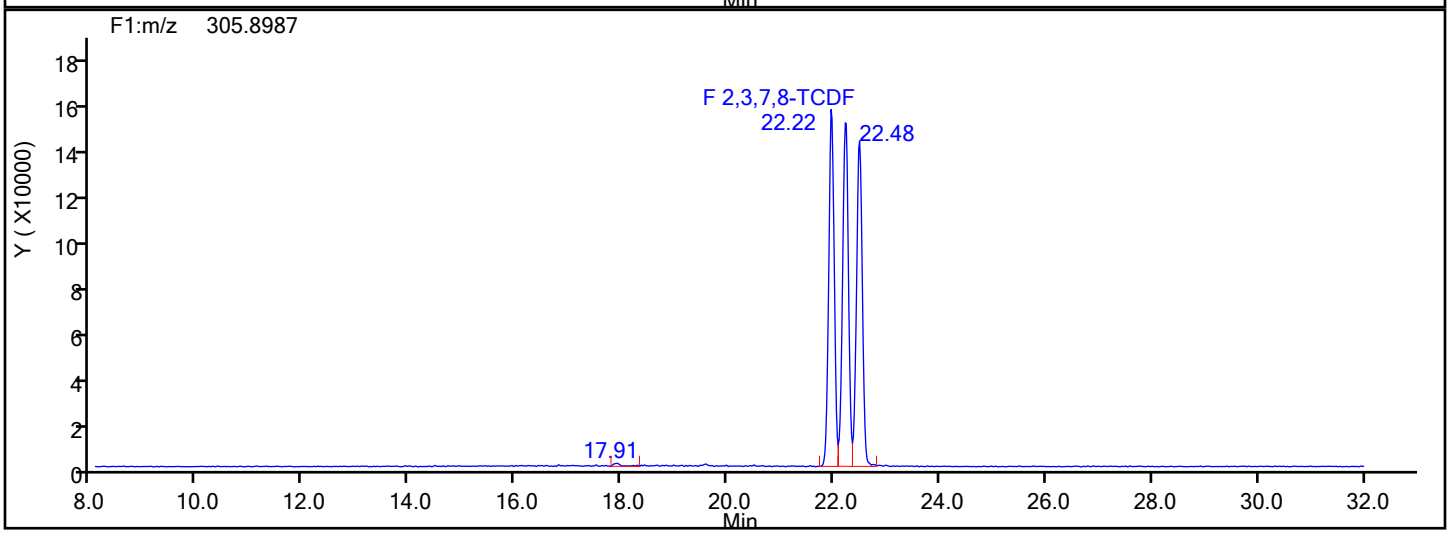
Report Date: 18-Dec-2019 12:50:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

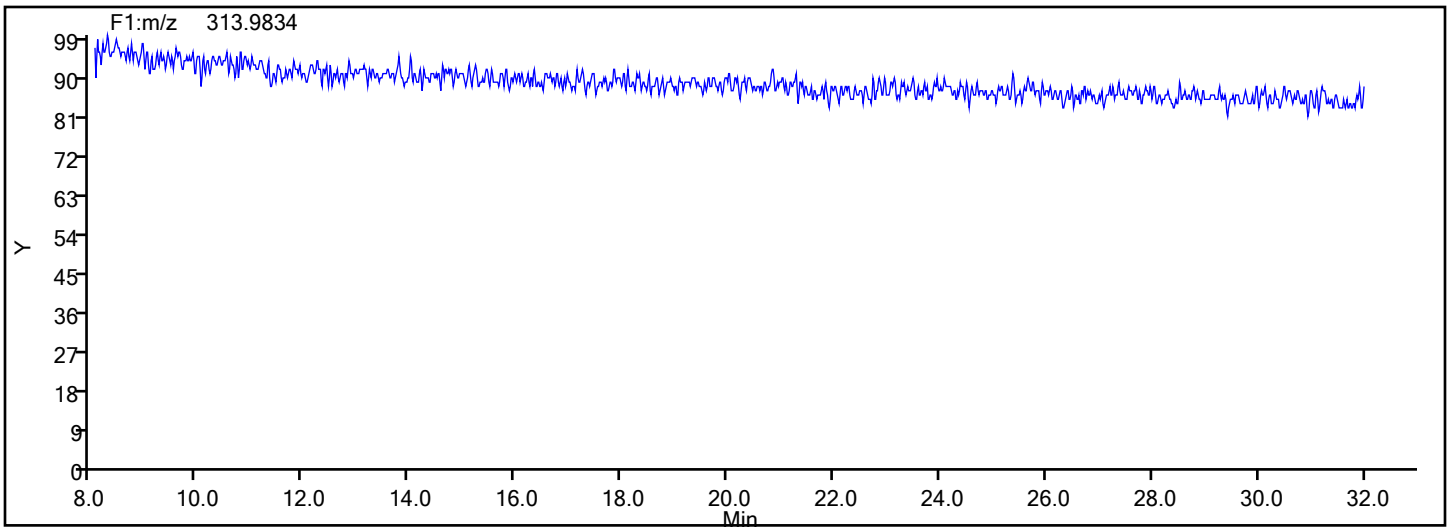
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d		
Injection Date:	18-Dec-2019 11:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

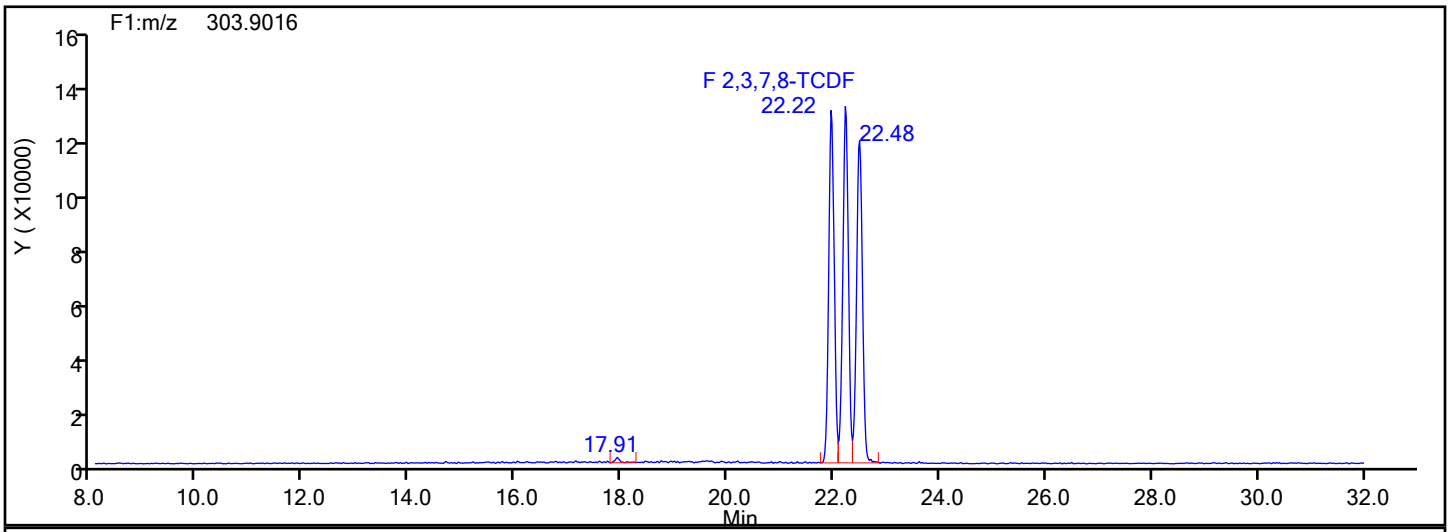


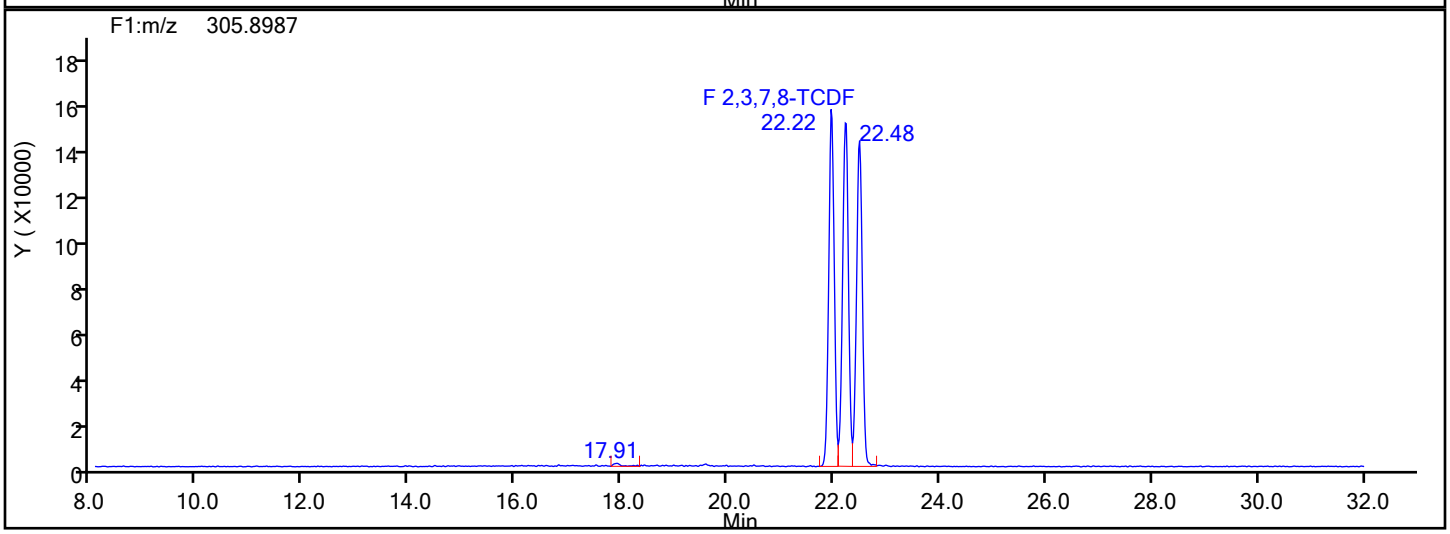
Report Date: 18-Dec-2019 12:50:06 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

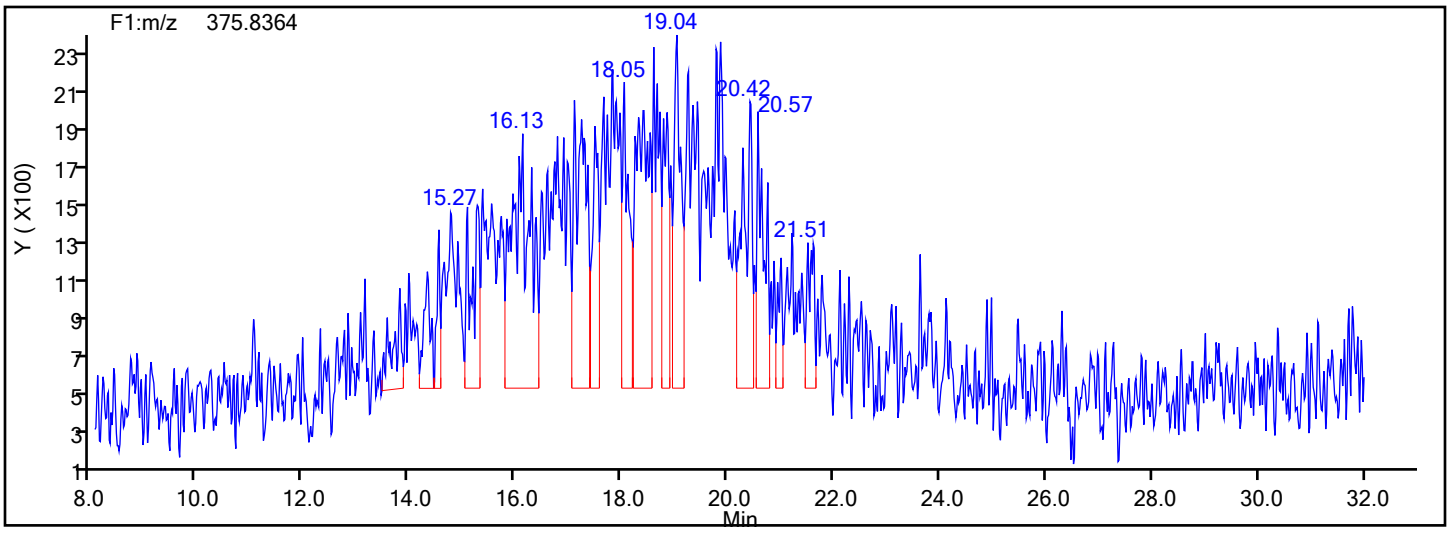
Data File:	\\chromna\Knoxville\ChromData\D12C\20191218-14075.b\d2191218w2.d		
Injection Date:	18-Dec-2019 11:19:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36178	Sample Line#:	1
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 16-May-2014 10:23:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:83 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 01-Feb-2017 12:19:14 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK012

First Level Reviewer: gilmorem Date: 01-Feb-2017 12:19:14

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	31:52	1589129	0.78	1.1733	9.827	9.827	0.0525	0.0525		
A Non-2,3,7,8-sub-TCDD	30:20	4299654	0.80	0.0000						
S Total TCDD					9.827	9.827	0.0525	0.0525		
2,3,7,8-TCDF	29:47	2357482	0.78	1.0881	9.693	9.693	0.0581	0.0581		
A Non-2,3,7,8-sub-TCDF	28:61	41764	0.80	0.0000						
S Total TCDF					9.693	9.693	0.0581	0.0581		
1,2,3,7,8-PeCDD	41:01	5982819	1.58	1.0434	50.2	50.2	0.1352	0.1352		
A Non-2,3,7,8-sub-PeCDD	39:56						0.0	0.0		
S Total PeCDD					50.2	50.2	0.1352	0.1352		
1,2,3,7,8-PeCDF	39:18	10286787	1.60	1.1898	49.3	49.3	0.2156	0.2156		
2,3,4,7,8-PeCDF	40:30	9924708	1.58	1.1095	49.7	49.7	0.2037	0.2037		
A Non-2,3,7,8-sub-PeCDF	38:38						0.0	0.0		
S Total PeCDF					99.0	99.0	0.2097	0.2097		
1,2,3,4,7,8-HxCDD	45:15	7476089	1.26	1.1409	50.4	50.4	0.2657	0.2657		
1,2,3,6,7,8-HxCDD	45:22	7598331	1.25	1.1481	49.5	49.5	0.2727	0.2727		
1,2,3,7,8,9-HxCDD	45:46	8317943	1.24	1.2212	51.7	51.7	0.2523	0.2523		
A Non-2,3,7,8-sub-HxCDD	44:42						0.0	0.0		
S Total HxCDD					151.6	151.6	0.2636	0.2636		
1,2,3,4,7,8-HxCDF	44:12	12537626	1.24	1.3629	49.0	49.0	0.2654	0.2654		
1,2,3,6,7,8-HxCDF	44:20	13426640	1.24	1.2762	48.9	48.9	0.2599	0.2599		
2,3,4,6,7,8-HxCDF	45:04	12110442	1.25	1.2654	48.2	48.2	0.2974	0.2974		
1,2,3,7,8,9-HxCDF	46:02	10527214	1.25	1.2573	47.6	47.6	0.3663	0.3663		
A Non-2,3,7,8-sub-HxCDF	44:34						0.0	0.0		
S Total HxCDF					193.7	193.7	0.2972	0.2972		
1,2,3,4,6,7,8-HpCDD	50:11	6801187	1.06	1.1204	48.9	48.9	0.1169	0.1169		
A Non-2,3,7,8-sub-HpCDD	49:35						0.0	0.0		
S Total HpCDD					48.9	48.9	0.1169	0.1169		
1,2,3,4,6,7,8-HpCDF	48:28	11064927	1.04	1.4984	48.4	48.4	0.2343	0.2343		
1,2,3,4,7,8,9-HpCDF	50:49	9279563	1.05	1.3807	49.9	49.9	0.3032	0.3032		
A Non-2,3,7,8-sub-HpCDF	49:39						0.0	0.0		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					98.3	98.3	0.2688	0.2688		
OCDD	54:18	12317564	0.91	1.2073	102.2	102.2	0.1313	0.1313		
OCDF	54:27	16322450	0.91	1.1162	98.1	98.1	0.1132	0.1132		
D 13C-2,3,7,8-TCDD	31:50	13782525	0.80	1.0709	101.6	101.6	0.2722	0.2722	102	
D 13C-2,3,7,8-TCDF	29:45	22350977	0.78	1.7545	100.6	100.6	0.1848	0.1848	101	
D 13C-1,2,3,7,8-PeCDD	40:60	11420019	1.63	0.8743	103.2	103.2	0.3838	0.3838	103	
D 13C-1,2,3,7,8-PeCDF	39:17	17536794	1.60	1.3704	101.1	101.1	0.1989	0.1989	101	
D 13C-2,3,4,7,8-PeCDF	40:29	18008915	1.61	1.3837	102.8	102.8	0.1970	0.1970	103	
D 13C-1,2,3,4,7,8-HxCDD	45:14	12997422	1.27	0.8772	99.2	99.2	0.2024	0.2024	99.22	
D 13C-1,2,3,6,7,8-HxCDD	45:21	13368313	1.27	0.9171	97.6	97.6	0.1936	0.1936	97.61	
D 13C-1,2,3,4,7,8-HxCDF	44:11	18777500	0.52	1.1892	105.7	105.7	0.1461	0.1461	106	
D 13C-1,2,3,6,7,8-HxCDF	44:19	21493519	0.53	1.4625	98.4	98.4	0.1188	0.1188	98.42	
D 13C-2,3,4,6,7,8-HxCDF	45:03	19873130	0.53	1.3197	100.8	100.8	0.1317	0.1317	101	
D 13C-1,2,3,7,8,9-HxCDF	46:01	17573709	0.54	1.2001	98.1	98.1	0.1448	0.1448	98.06	
D 13C-1,2,3,4,6,7,8-HpCDD	50:09	12409981	1.07	0.8155	101.9	101.9	0.3650	0.3650	102	
D 13C-1,2,3,4,6,7,8-HpCDF	48:27	15245672	0.46	1.0496	97.3	97.3	0.1531	0.1531	97.26	
D 13C-1,2,3,4,7,8,9-HpCDF	50:48	13475063	0.45	0.8947	100.9	100.9	0.1796	0.1796	101	
D 13C-OCDD	54:17	19967001	0.92	0.7044	189.8	189.8	0.0935	0.0935	94.91	
D 13C-OCDF	54:26	29828160	0.89	1.0615	188.2	188.2	0.1211	0.1211	94.09	
$ 37Cl4-2,3,7,8-TCDD	31:53	1540857		1.2266	9.922	9.922	0.0141	0.0141	99.22	
* 13C-1,2,3,4-TCDD	31:18	12661775	0.79	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:45	14933512	1.23	1E+05	100.0	100.0				
1,3,6,8-TCDF	23:12	2705807	0.78							
1,3,6,8-TCDD	25:43	1493428	0.79							
1,2,8,9-TCDF	34:49	2207414	0.79							
1,2,8,9-TCDD	34:56	1027901	1.53							R
1,3,4,6,8-PeCDF	35:30	9418858	1.58							
1,2,4,7,9-PeCDD	38:12	5769231	1.58							
1,2,3,8,9-PeCDD	41:40	6403188	1.58							
1,2,3,8,9-PeCDF	41:47	9220677	1.58							
1,2,3,4,6,8-HxCDF	42:58	11593665	1.24							
1,2,4,6,7,9-HxCDD	43:38	8590777	1.29							
1,2,3,4,8,9-HxCDF	46:10	10545581	1.26							
1,2,3,4,6,7,9-HpCDD	48:59	7139183	1.04							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

61WDML3OP_00001 Amount Added: 20.00 Units: uL

Report Date: 01-Feb-2017 12:19:16 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 16-May-2014 10:23:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WO=4104:83 Meth=F8o Dil=1
Misc. Info.: Inst=d2a/1182082 Batch=20140516i Ccal=D3140515S2
Operator ID: DavidsonM Instrument ID: D2A

Method: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 01-Feb-2017 12:19:14 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: XAWRK012

First Level Reviewer: gilmorem Date: 01-Feb-2017 12:19:14

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	31:52	31:52	0	1.001	696529	69222	209	522	331		
321.8936	31:53	31:52	1	1.002	892600	89318	140	350	638	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	31:21	30:20	61		634630	64877	209	522	310		
321.8936	31:21	30:20	61		795249	85115	140	350	608	0.80(0.65-0.89)	
319.8965	31:35	30:20	75		596138	66085	209	522	316		
321.8936	31:35	30:20	75		756200	78976	140	350	564	0.79(0.65-0.89)	
319.8965	32:23	30:20	123		679460	67333	209	522	322		
321.8936	32:22	30:20	122		837977	80267	140	350	573	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	29:47	29:47	0	1.001	1030383	110691	179	447	618		
305.8987	29:47	29:47	0	1.001	1327099	145355	450	1125	323	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	28:39	28:61	-21		18518	2522	179	447	14		
305.8987	28:40	28:61	-20		23246	3134	450	1125	7	0.80(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	41:01	41:01	0	1.000	3663513	865905	1136	2840	762		
357.8516	41:01	41:01	0	1.000	2319306	553569	374	935	1480	1.58(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	39:56						1136	2840			
357.8516	39:56						374	935			
1,2,3,7,8-PeCDF											
339.8597	39:18	39:18	0	1.000	6334583	1305396	2242	5605	582		
341.8567	39:18	39:18	0	1.000	3952204	823049	1407	3517	585	1.60(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	40:30	40:30	0	1.000	6077933	1398614	2242	5605	624		
341.8567	40:30	40:30	0	1.000	3846775	876157	1407	3517	623	1.58(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											
339.8597	38:38						2242	5605			
341.8567	38:38						1407	3517			
1,2,3,4,7,8-HxCDD											
389.8158	45:15	45:15	0	1.000	4166912	1065660	2295	5737	464		
391.8127	45:15	45:15	0	1.000	3309177	841026	1727	4317	487	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	45:22	45:22	0	1.000	4226872	1011650	2295	5737	441		
391.8127	45:22	45:22	0	1.000	3371459	826469	1727	4317	479	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:46	45:46	0	1.012	4607847	1053576	2295	5737	459		
391.8127	45:46	45:46	0	1.012	3710096	840399	1727	4317	487	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	44:42						2295	5737			
391.8127	44:42						1727	4317			
1,2,3,4,7,8-HxCDF											
373.8208	44:12	44:12	0	1.000	6951531	1877297	4021	10052	467		
375.8178	44:12	44:12	0	1.000	5586095	1516685	3318	8295	457	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	44:20	44:20	0	1.000	7444736	1903851	4021	10052	473		
375.8178	44:20	44:20	0	1.000	5981904	1556381	3318	8295	469	1.24(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	45:04	45:04	0	1.000	6729390	1682827	4021	10052	419		
375.8178	45:04	45:04	0	1.000	5381052	1311981	3318	8295	395	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	46:02	46:02	0	1.000	5854129	1415565	4021	10052	352		
375.8178	46:02	46:02	0	1.000	4673085	1123767	3318	8295	339	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	44:34						4021	10052			
375.8178	44:34						3318	8295			
1,2,3,4,6,7,8-HpCDD											
423.7767	50:11	50:11	0	1.001	3502420	651977	546	1365	1194		
425.7737	50:10	50:11	-1	1.000	3298767	623072	664	1660	938	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	49:35						546	1365			
425.7737	49:35						664	1660			
1,2,3,4,6,7,8-HpCDF											
407.7817	48:28	48:28	0	1.000	5628277	1194618	2211	5527	540		
409.7788	48:28	48:28	0	1.000	5436650	1152269	2265	5662	509	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:49	50:49	0	1.000	4761486	943596	2211	5527	427		
409.7788	50:49	50:49	0	1.000	4518077	912841	2265	5662	403	1.05(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											
407.7817	49:39						2211	5527			
409.7788	49:39						2265	5662			
OCDD											
457.7377	54:18	54:18	0	1.000	5864993	1424854	961	2402	1483		
459.7348	54:18	54:18	0	1.000	6452571	1540991	550	1375	2802	0.91(0.76-1.02)	
OCDF											
441.7428	54:27	54:27	0	1.000	7783500	1914344	949	2372	2017		
443.7399	54:27	54:27	0	1.000	8538950	2069182	921	2302	2247	0.91(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	31:50	31:50	0	1.017	6142060	623396	1089	2722	572		
333.9338	31:49	31:50	-1	1.016	7640465	793194	501	1252	1583	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	29:45	29:45	0	0.951	9828273	1091149	1288	3220	847		
317.9389	29:45	29:45	0	0.951	12522704	1394107	480	1200	2904	0.78(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:60	40:60	0	1.310	7072990	1653783	1563	3907	1058		
369.8919	40:60	40:60	0	1.310	4347029	1022227	267	667	3829	1.63(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	39:17	39:17	0	1.255	10799529	2182297	1003	2507	2176		
353.8970	39:17	39:17	0	1.255	6737265	1373259	484	1210	2837	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:29	40:29	0	1.294	11096035	2464519	1003	2507	2457		
353.8970	40:29	40:29	0	1.294	6912880	1570847	484	1210	3246	1.61(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	45:14	45:14	0	0.989	7273389	1861481	749	1872	2485		
403.8529	45:14	45:14	0	0.989	5724033	1455179	1658	4145	878	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	45:21	45:21	0	0.991	7479523	1801159	749	1872	2405		
403.8529	45:21	45:21	0	0.991	5888790	1410042	1658	4145	850	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	44:11	44:11	0	0.966	6451490	1760136	773	1932	2277		
385.8610	44:11	44:11	0	0.966	12326010	3312655	1583	3957	2093	0.52(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	44:19	44:19	0	0.969	7484164	1929971	773	1932	2497		
385.8610	44:19	44:19	0	0.969	14009355	3601488	1583	3957	2275	0.53(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	45:03	45:03	0	0.985	6852361	1683655	773	1932	2178		
385.8610	45:03	45:03	0	0.985	13020769	3192337	1583	3957	2017	0.53(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	46:01	46:01	0	1.006	6155940	1404414	773	1932	1817		
385.8610	46:01	46:01	0	1.006	11417769	2578908	1583	3957	1629	0.54(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	50:09	50:09	0	1.096	6418552	1192690	2111	5277	565		
437.8140	50:09	50:09	0	1.096	5991429	1116969	1925	4812	580	1.07(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	48:27	48:27	0	1.059	4814800	1019155	755	1887	1350		
419.8220	48:27	48:27	0	1.059	10430872	2168312	1424	3560	1523	0.46(0.51-0.37)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:48	50:48	0	1.110	4198433	838216	755	1887	1110		
419.8220	50:48	50:48	0	1.110	9276630	1834729	1424	3560	1288	0.45(0.37-0.51)	
13C-OCDD											
469.7780	54:17	54:17	0	1.187	9561386	2241485	518	1295	4327		
471.7750	54:17	54:17	0	1.187	10405615	2525718	375	937	6735	0.92(0.76-1.02)	
13C-OCDF											
453.7830	54:26	54:26	0	1.190	14032219	3509504	579	1447	6061		
455.7801	54:26	54:26	0	1.190	15795941	3888947	1164	2910	3341	0.89(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	31:53	31:53	0	1.019	1540857	163270	94	235	1737		
13C-1,2,3,4-TCDD											
331.9368	31:18	31:18	0		5600787	604972	1089	2722	556		
333.9338	31:18	31:18	0		7060988	758389	501	1252	1514	0.79(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:45	45:45	0		8233327	1900497	749	1872	2537		
403.8529	45:45	45:45	0		6700185	1489143	1658	4145	898	1.23(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	23:12	23:12	0		1188062	179703	179	447	1004		
305.8987	23:12	23:12	0		1517745	224499	450	1125	499	0.78(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	25:43	25:43	0		659431	89773	209	522	430		
321.8936	25:43	25:43	0		833997	110819	140	350	792	0.79(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	34:49	34:49	0		976870	119878	179	447	670		
305.8987	34:49	34:49	0		1230544	148928	450	1125	331	0.79(0.65-0.89)	
1,2,8,9-TCDD											R
319.8965	34:56	34:56	0		621667	77237	209	522			
321.8936	34:56	34:56	0		406234	99648	140	350		1.53(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	35:30	35:30	0		5766695	802508	2242	5605	358		
341.8567	35:30	35:30	0		3652163	508637	1407	3517	362	1.58(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	38:12	38:12	0		3532025	602440	1136	2840	530		
357.8516	38:12	38:12	0		2237206	374750	374	935	1002	1.58(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:40	41:40	0		3922341	906446	1136	2840	798		
357.8516	41:40	41:40	0		2480847	587482	374	935	1571	1.58(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	41:47	41:47	0		5640415	1328106	2242	5605	592		
341.8567	41:47	41:47	0		3580262	862011	1407	3517	613	1.58(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,8-HxCDF											
373.8208	42:58	42:58	0		6408064	1762377	4021	10052	438		
375.8178	42:58	42:58	0		5185601	1395659	3318	8295	421	1.24(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	43:38	43:38	0		4834597	1263198	2295	5737	550		
391.8127	43:38	43:38	0		3756180	1000999	1727	4317	580	1.29(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	46:10	46:10	0		5877002	1308455	4021	10052	325		
375.8178	46:10	46:10	0		4668579	1034589	3318	8295	312	1.26(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	48:59	48:59	0		3636651	724215	546	1365	1326		
425.7737	48:59	48:59	0		3502532	696931	664	1660	1050	1.04(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

61WDML3OP_00001 Amount Added: 20.00 Units: uL

Report Date: 01-Feb-2017 12:19:16 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d
Lims ID: WDM
Client ID:
Inject. Date: 16-May-2014 10:23:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDD, RT: 30.308

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
31:21	634630	64877	795249	85115		0.80	
31:35	596138	66085	756200	78976		0.79	
32:23	679460	67333	837977	80267		0.81	
Signal Totals:	1910228	198295	2389426	244358			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4299654	442653				0.80	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (4299654 * 0.0) / (0 * 0.000)

TestAmerica Knoxville
AreaSum WorkSheet Report

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d
Lims ID: WDM
Client ID:
Inject. Date: 16-May-2014 10:23:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: D2A Operator: DavidsonM
Lims Batch ID: 7768 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDF, RT: 28.995

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height

Invalid SimRptGroup

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
28:39	18518	2522	23246	3134		0.80	
Signal Totals:							
	18518	2522	23246	3134			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	41764	5656				0.80	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (41764 * 0.0) / (0 * 0.000)

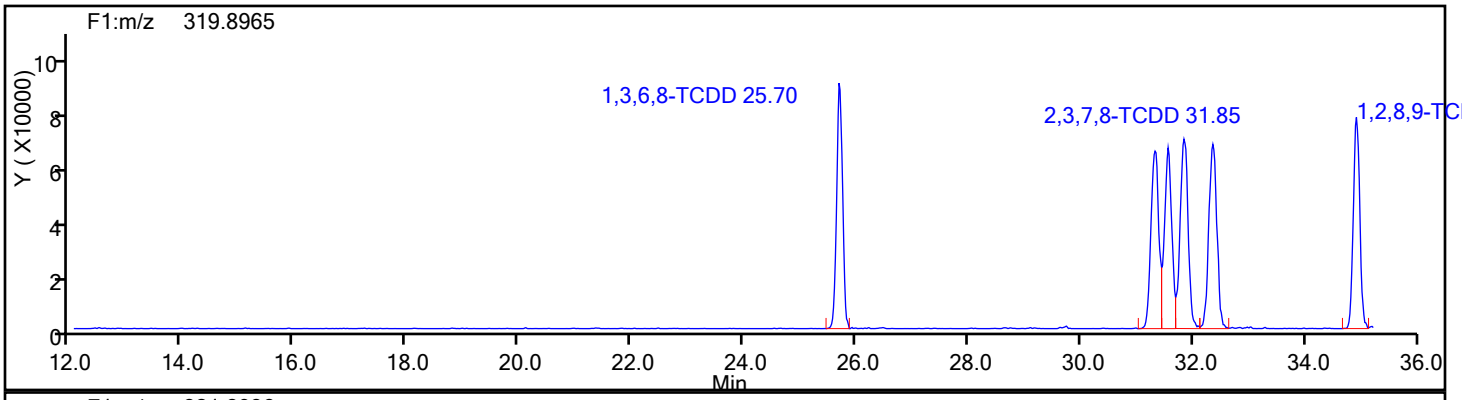
Report Date: 01-Feb-2017 12:19:16 Chrom Revision: 2.2 30-Jan-2017 14:50:44

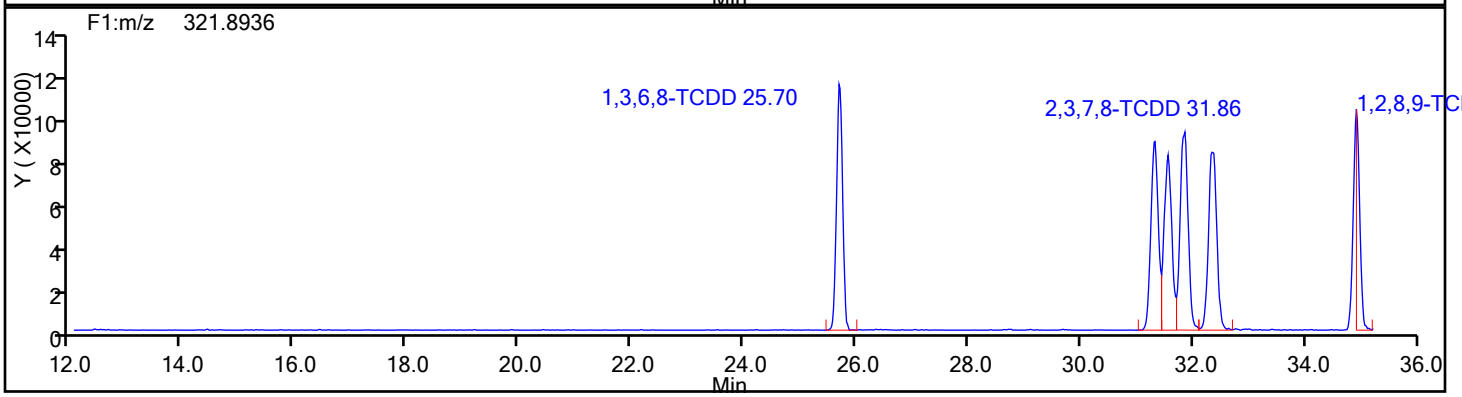
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

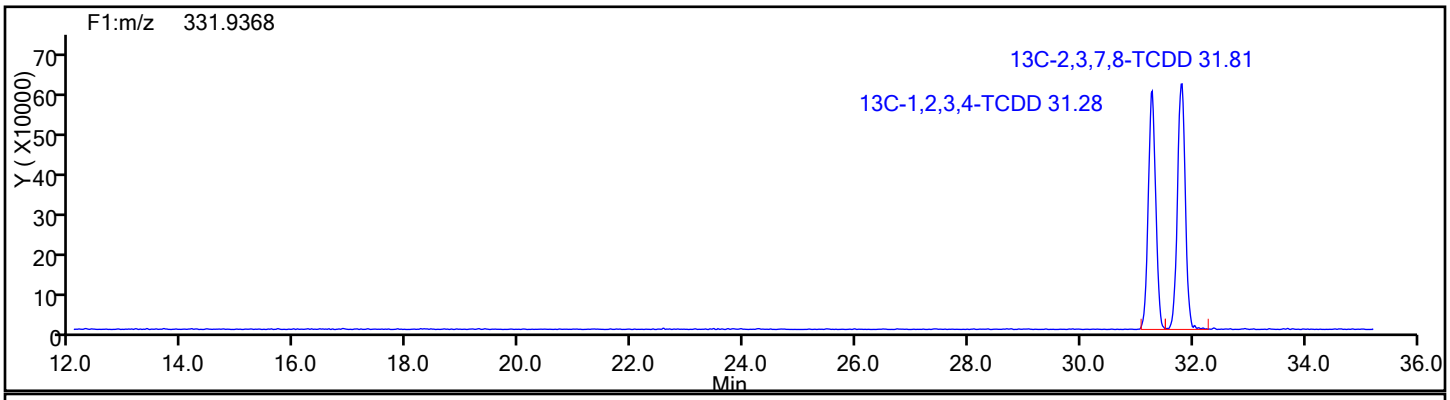
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

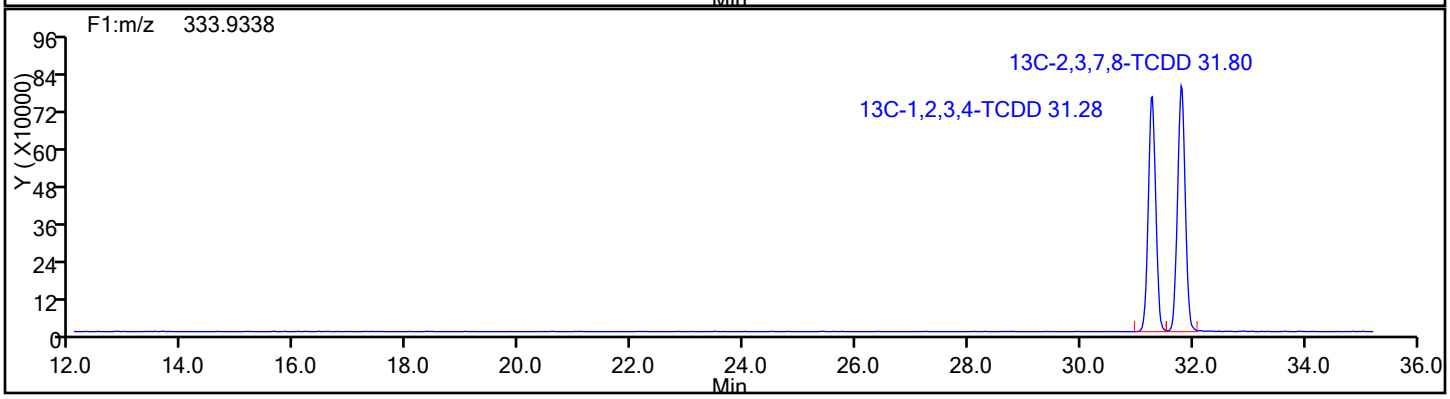
TCDD





TCDD Standards





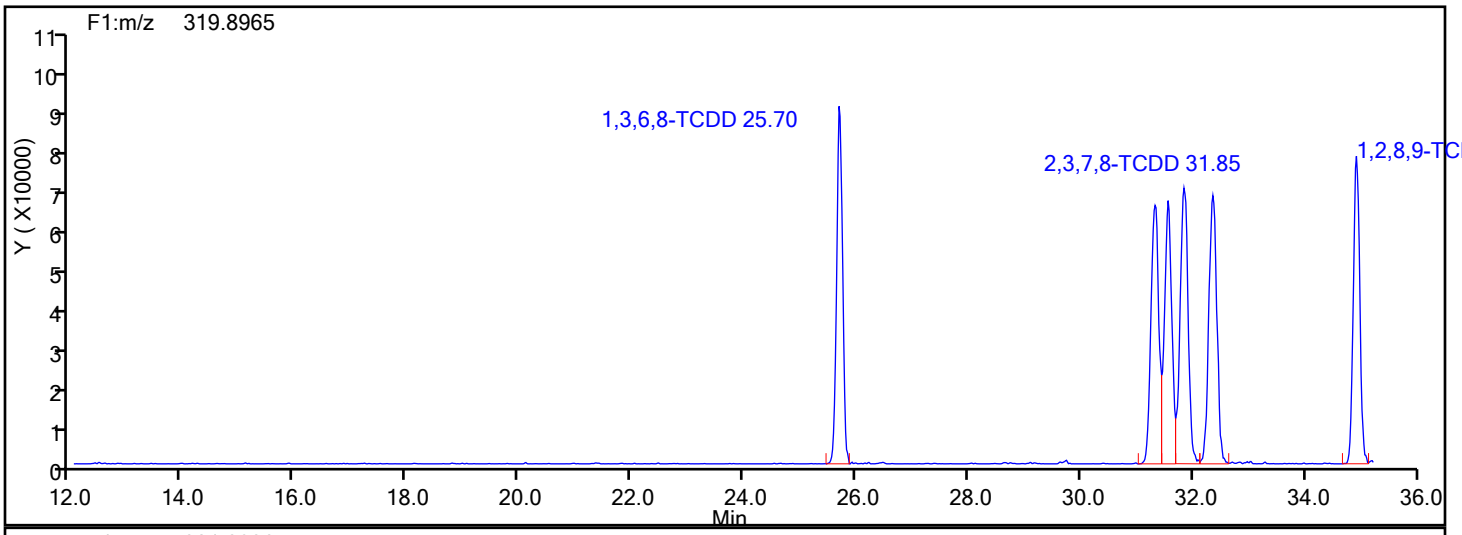
Report Date: 01-Feb-2017 12:19:16 Chrom Revision: 2.2 30-Jan-2017 14:50:44

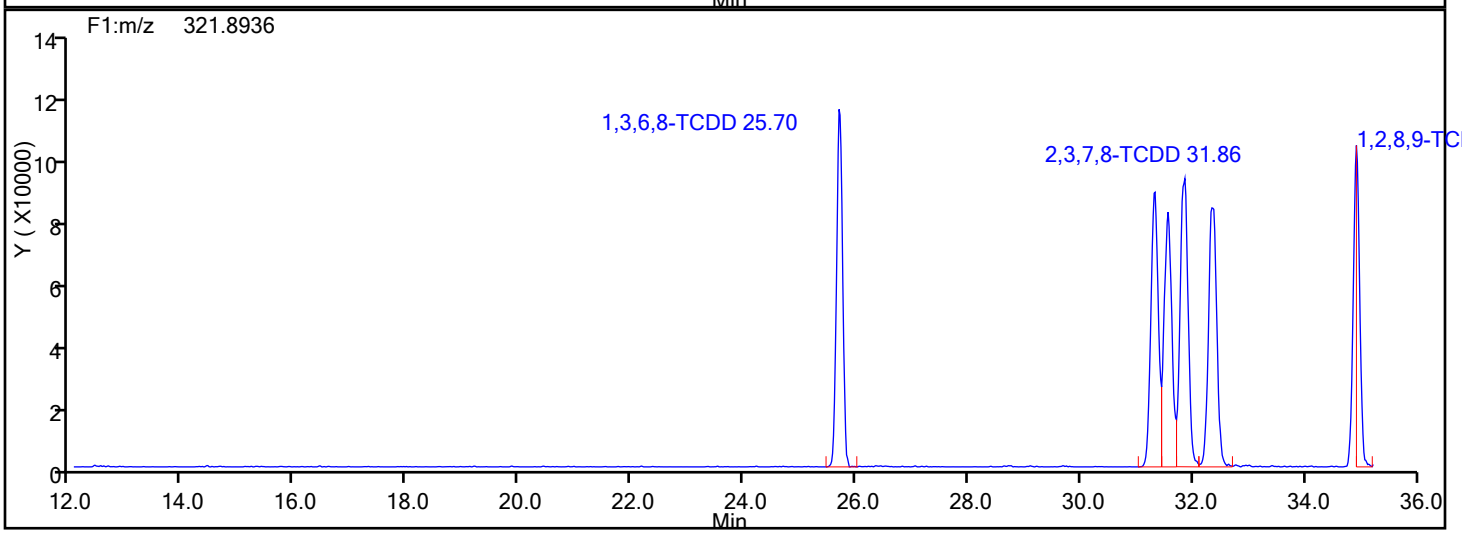
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

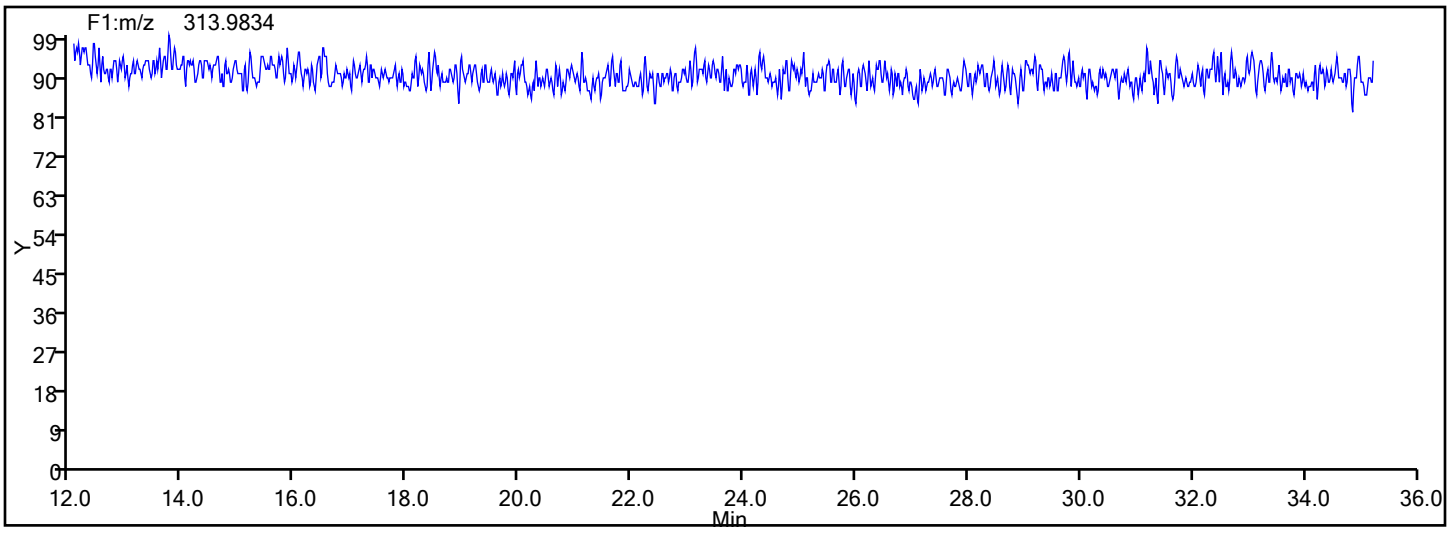
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



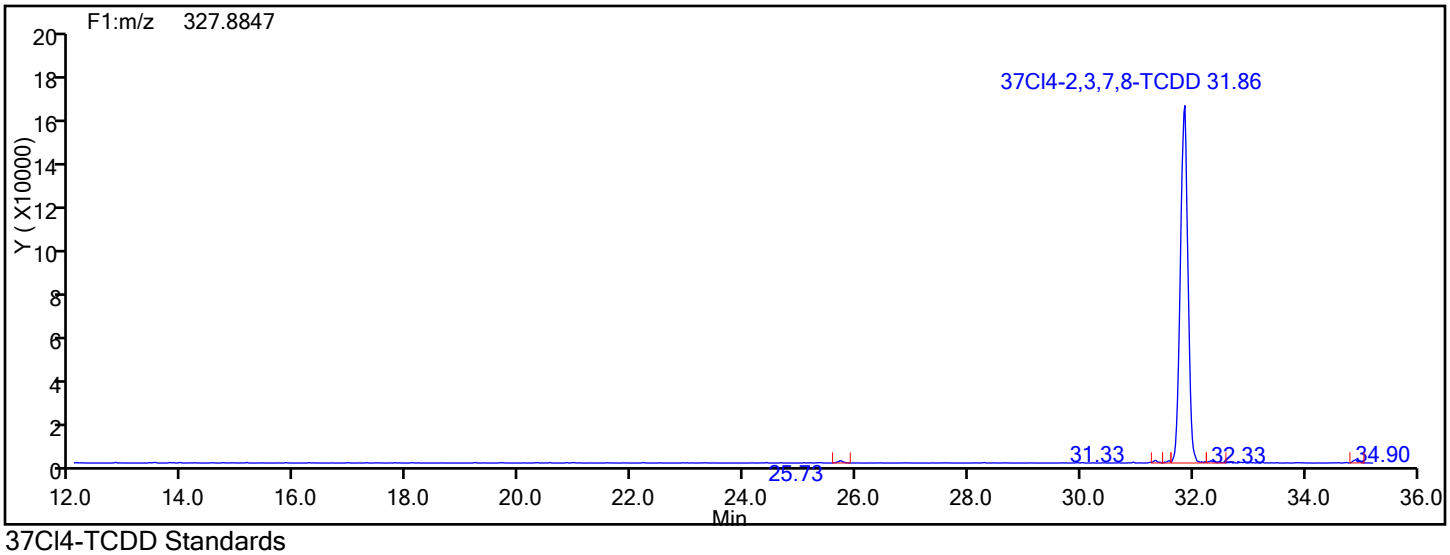
Report Date: 01-Feb-2017 12:19:16 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

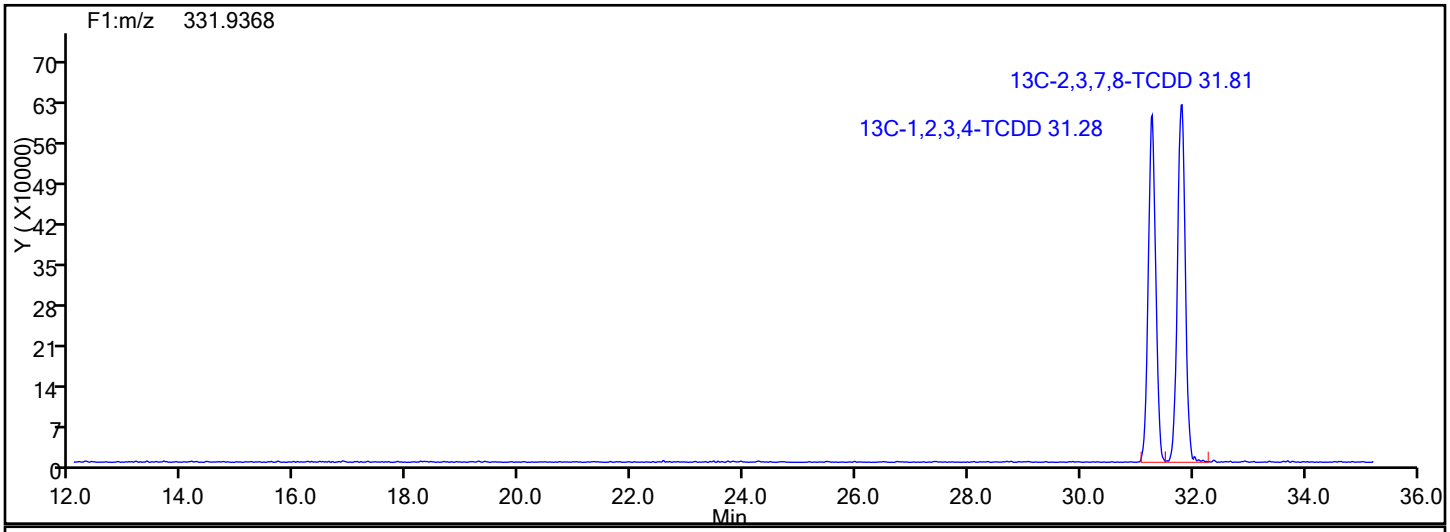
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

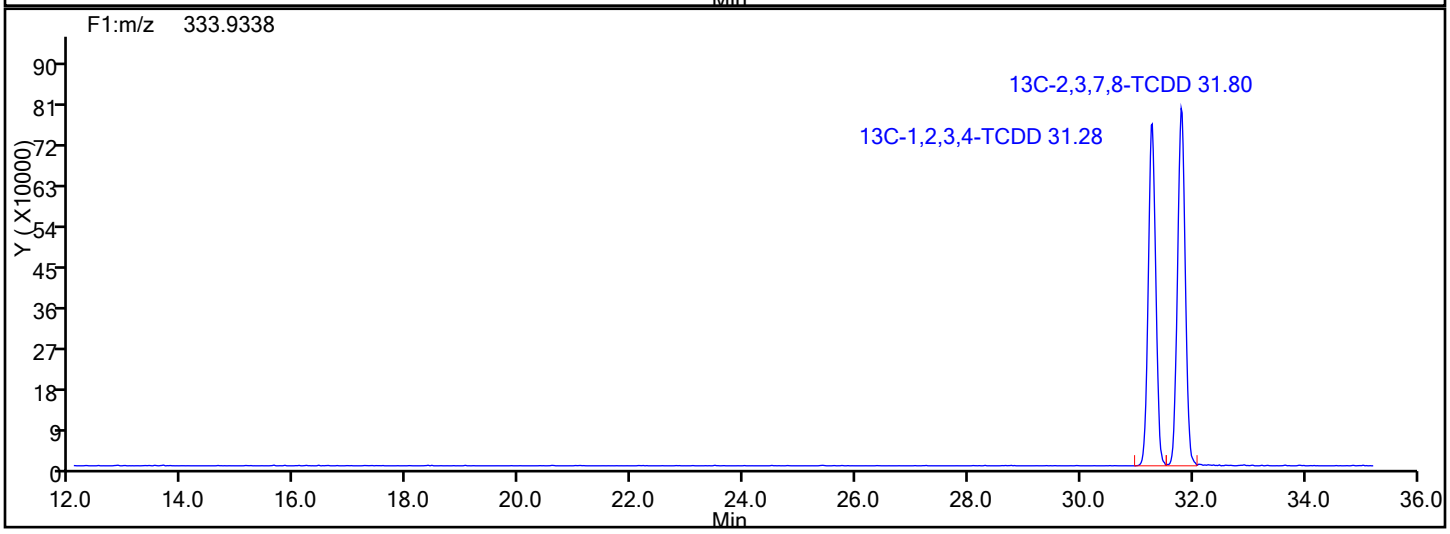
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





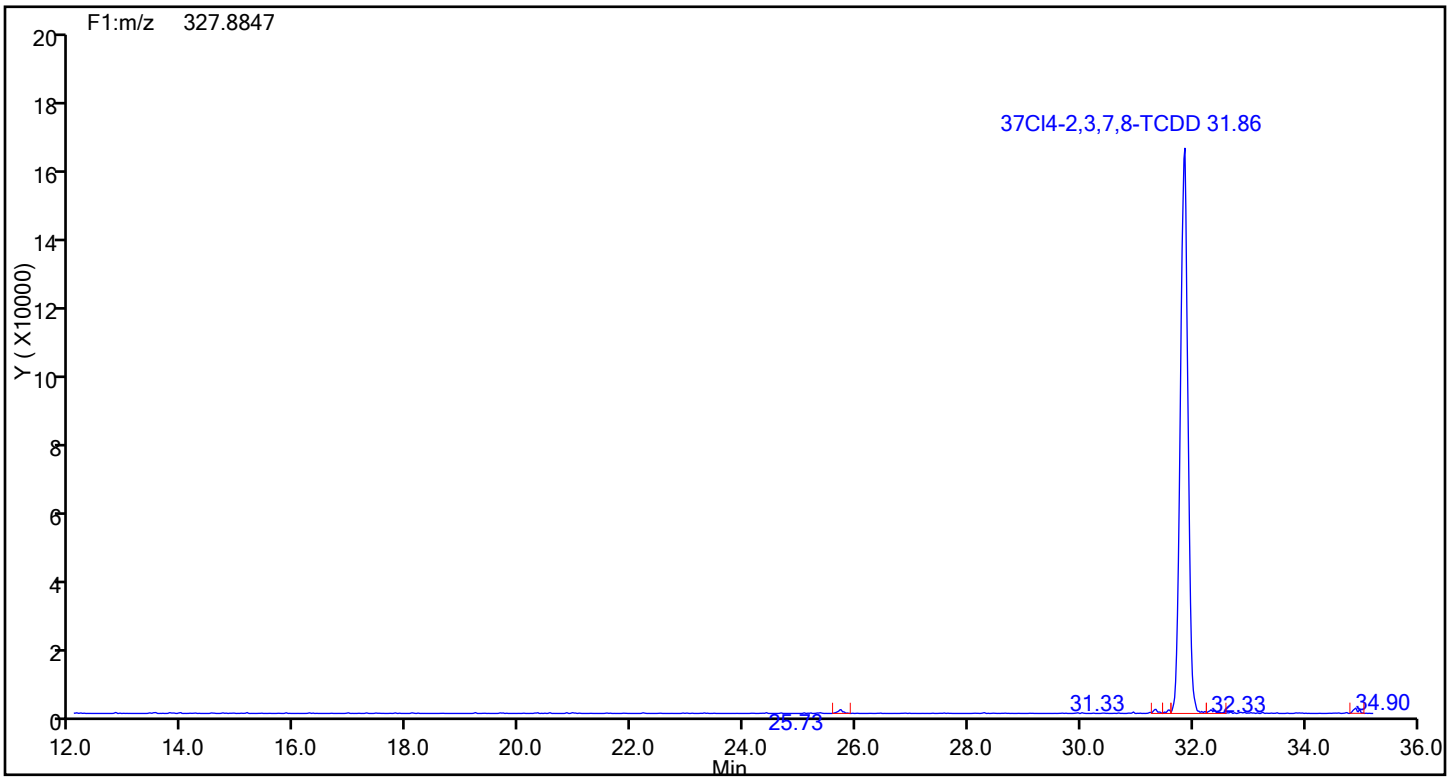
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

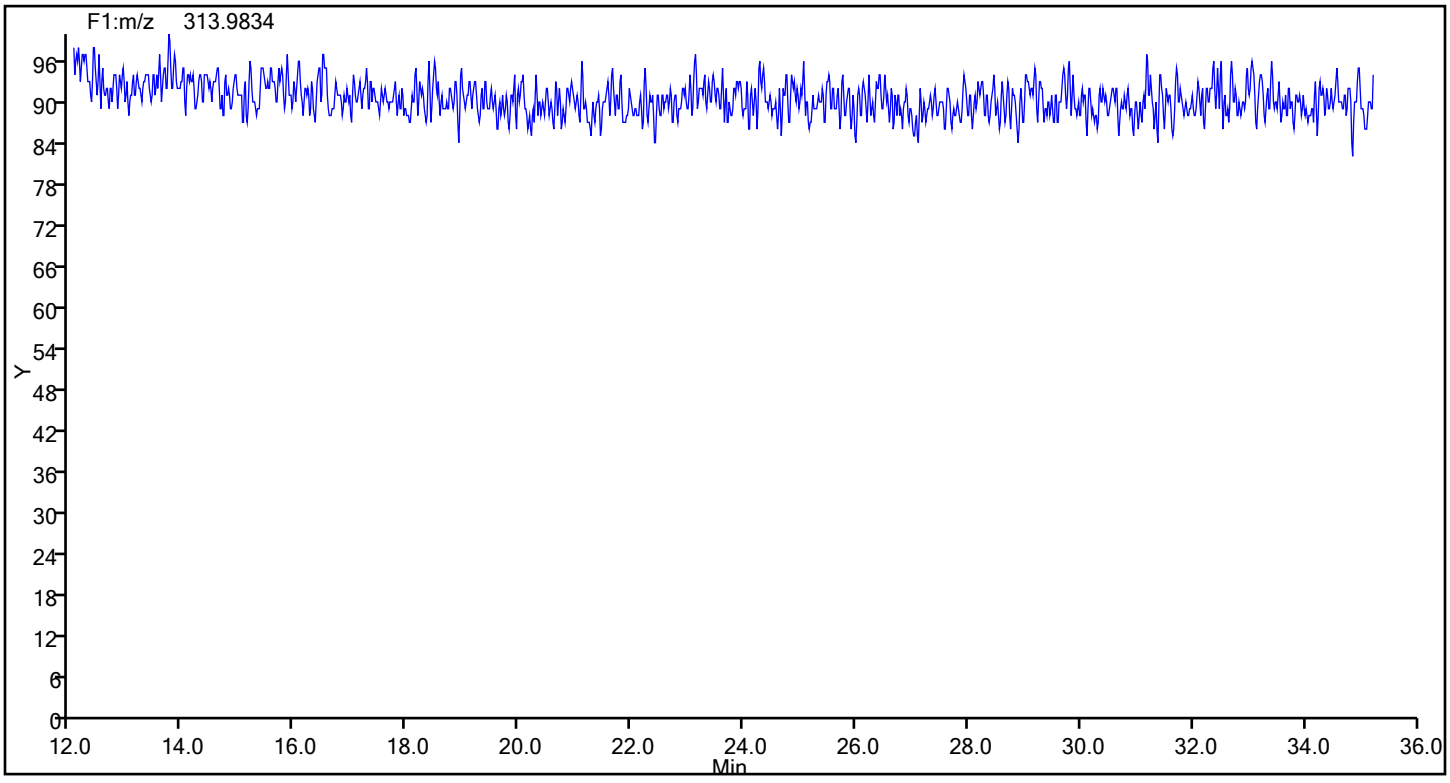
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



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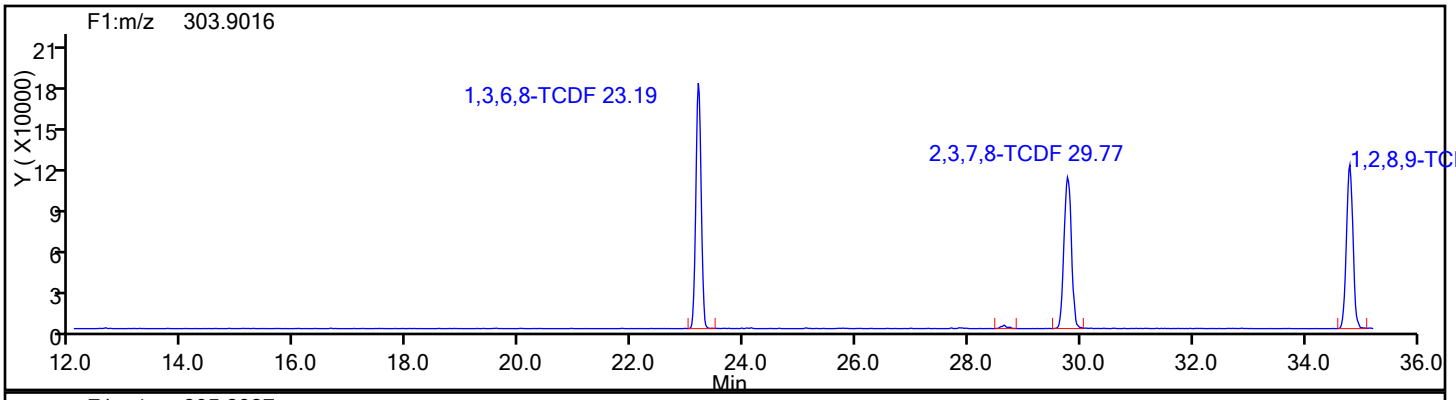
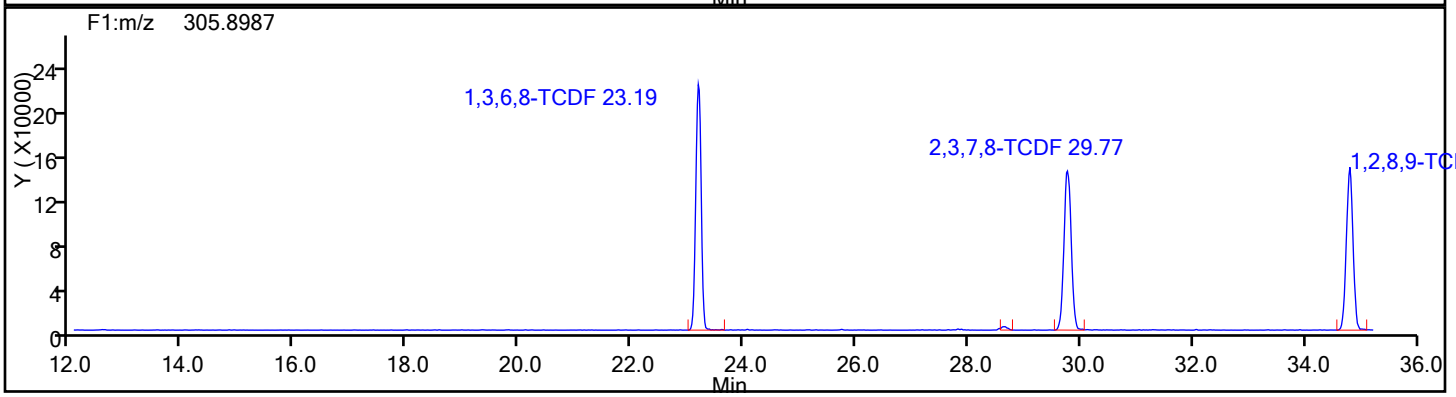
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

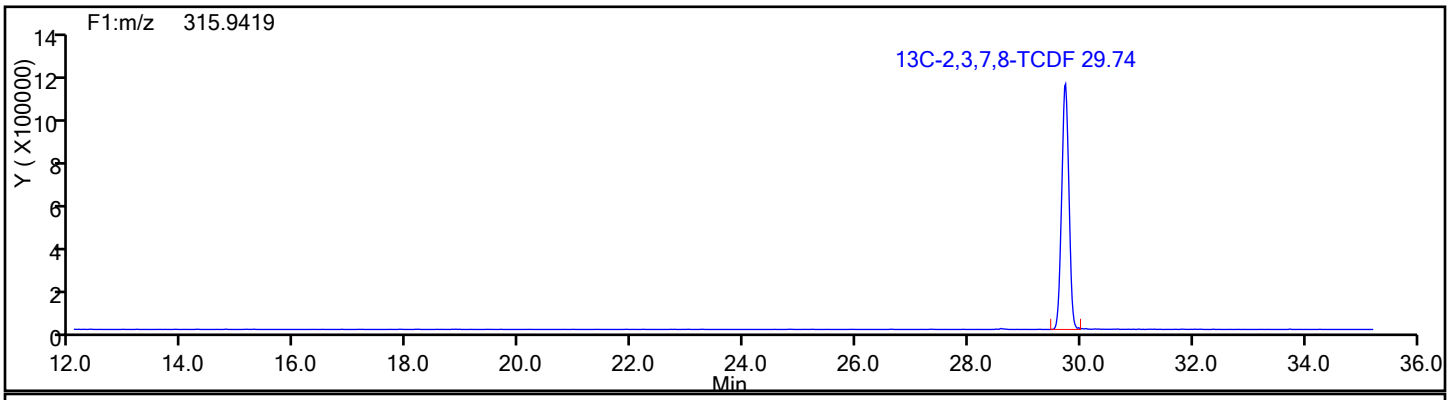
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

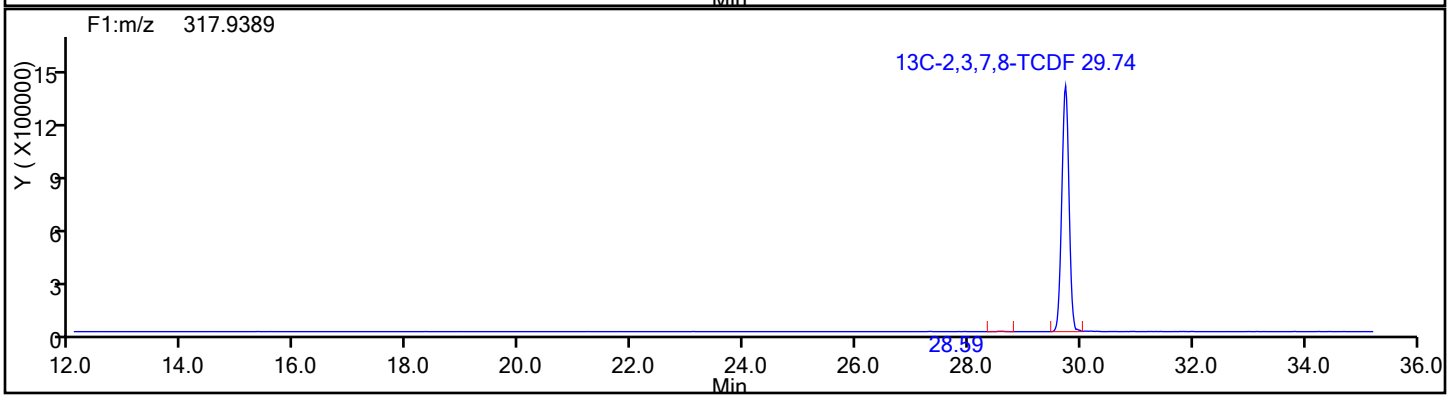
TCDF





TCDF Standards





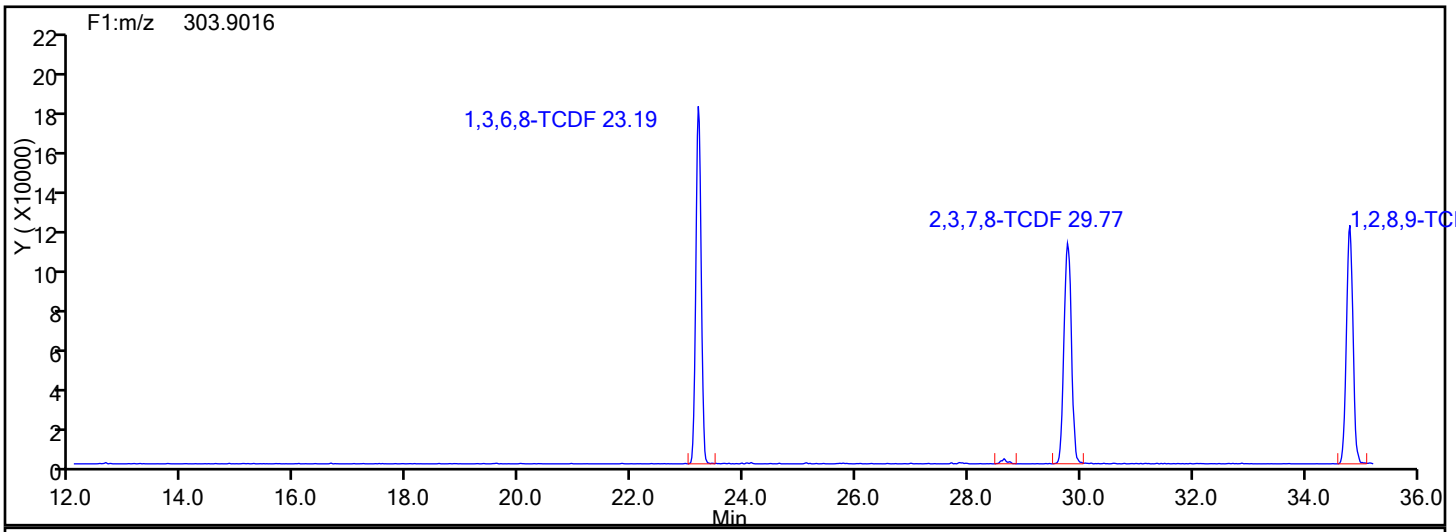
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

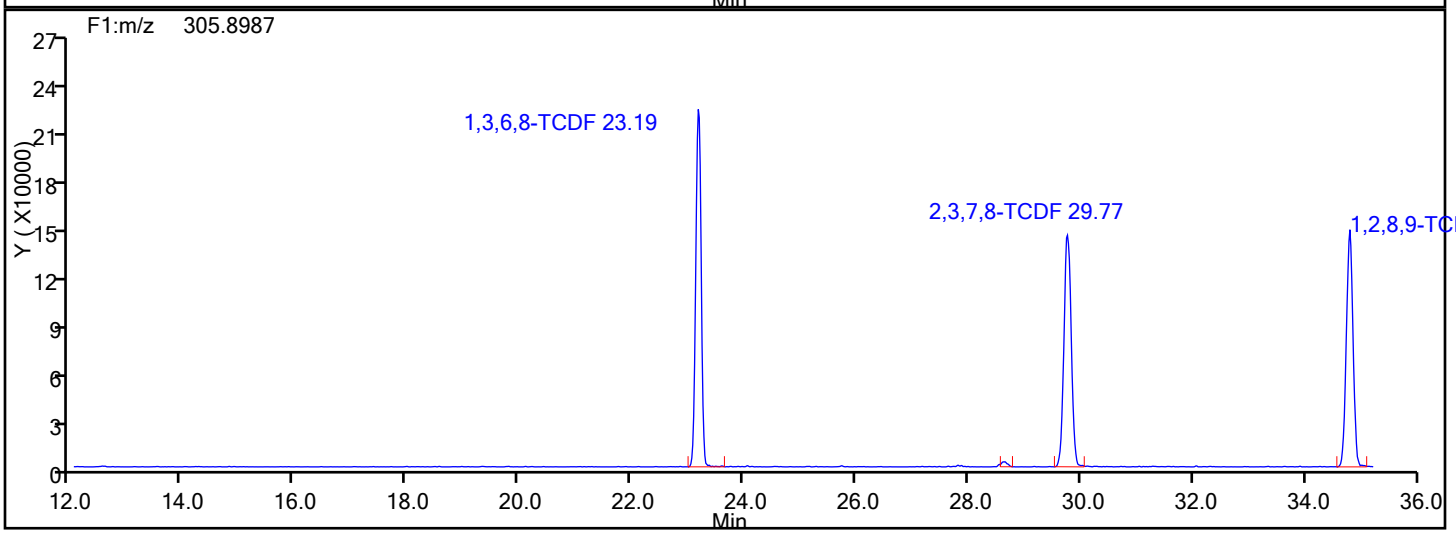
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

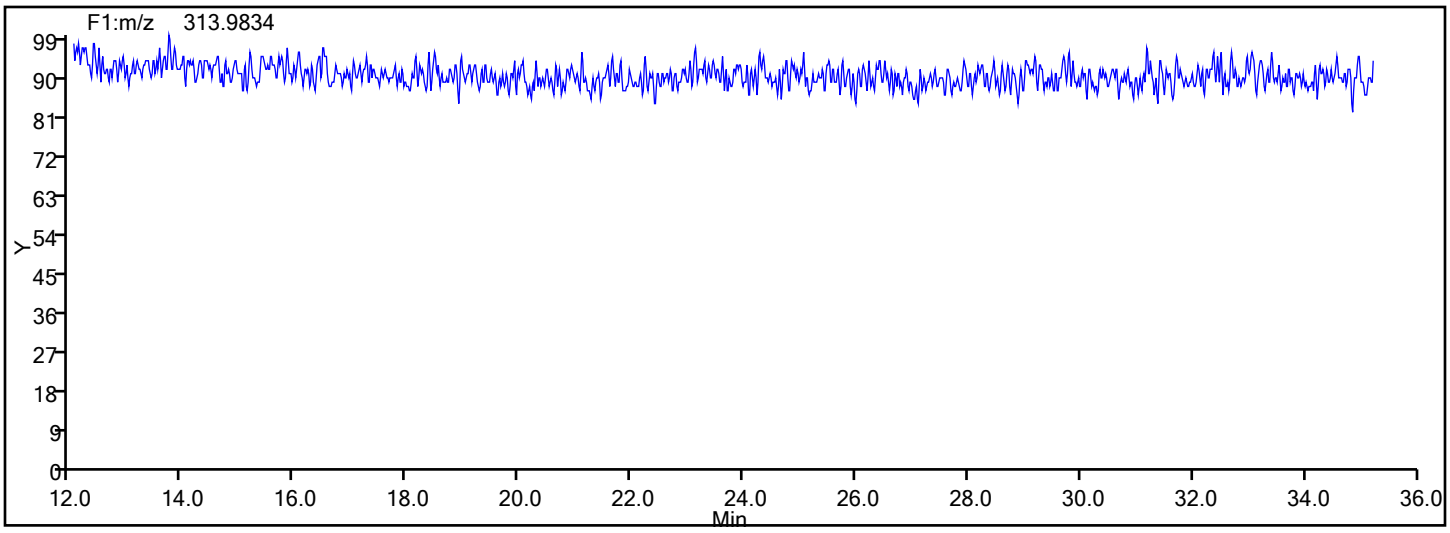
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass



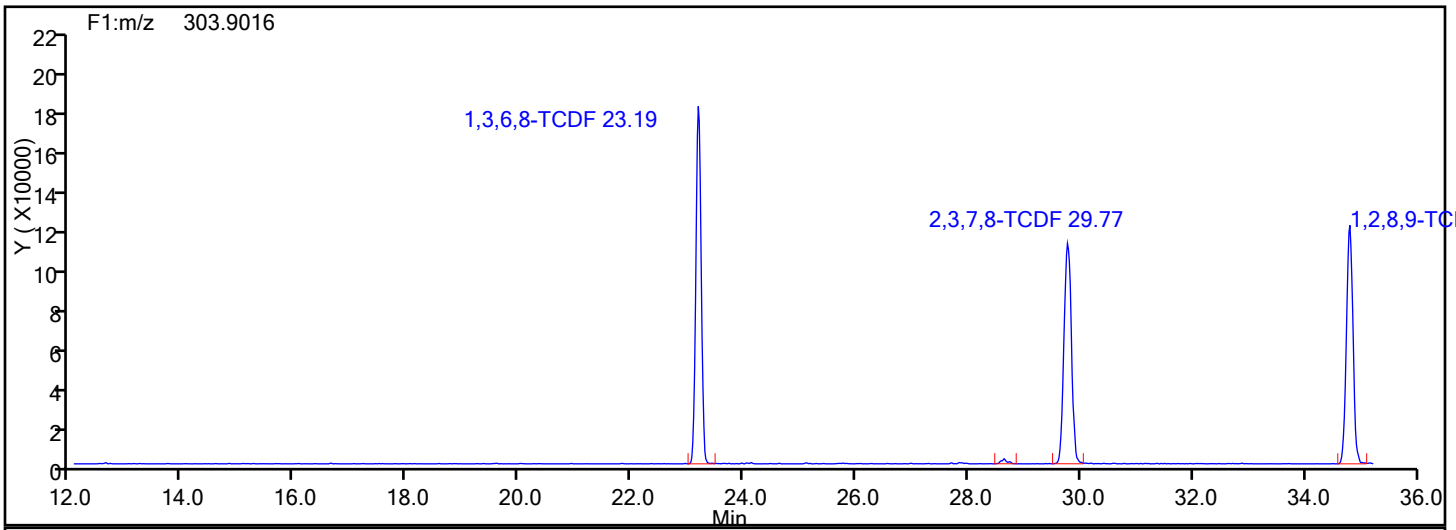
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

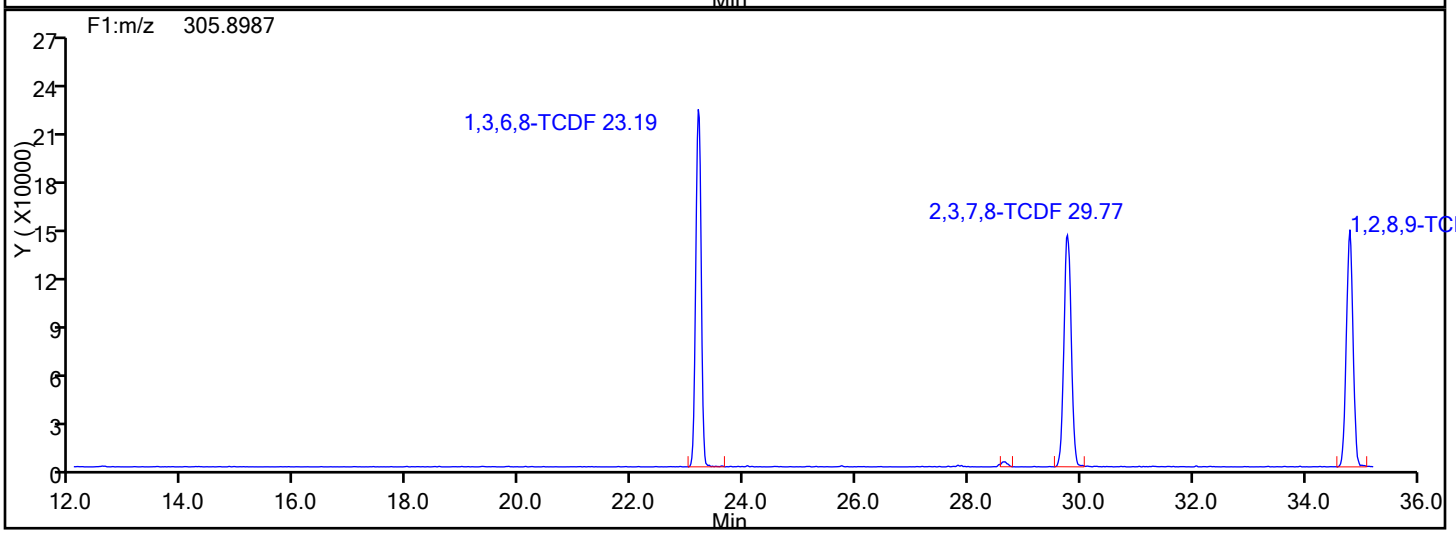
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

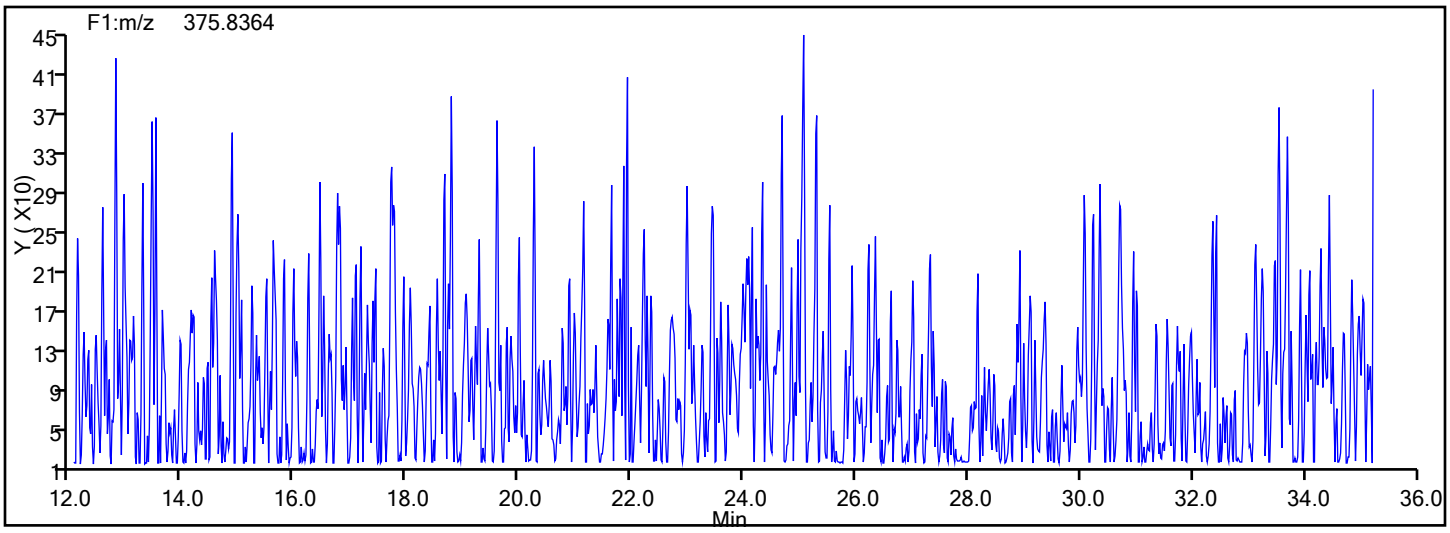
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



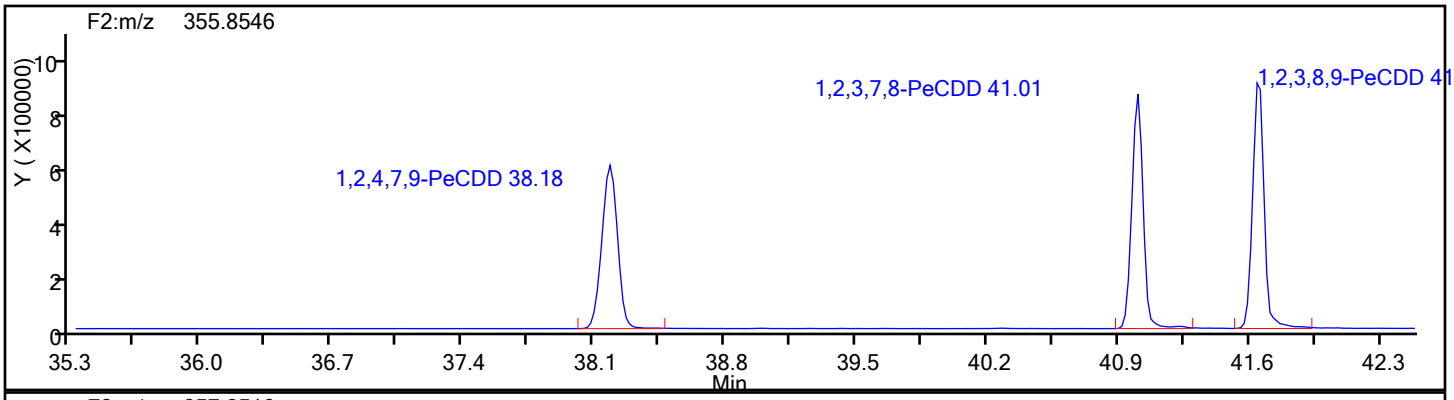
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

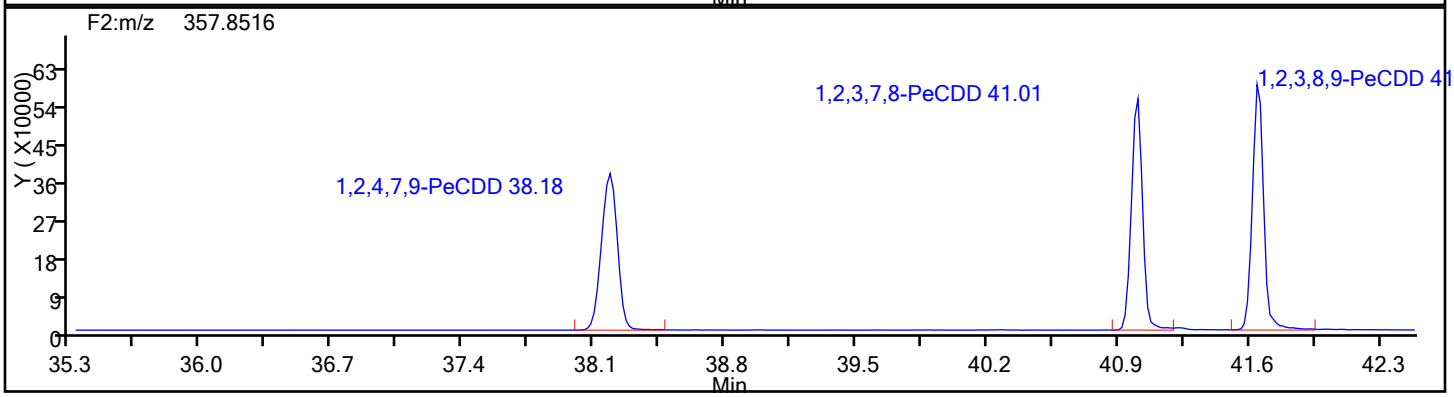
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

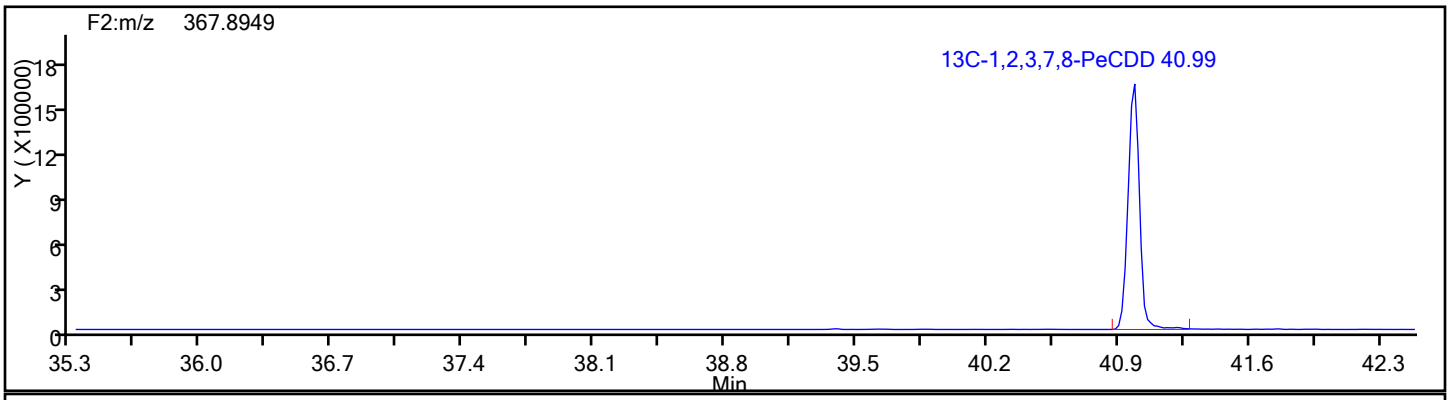
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

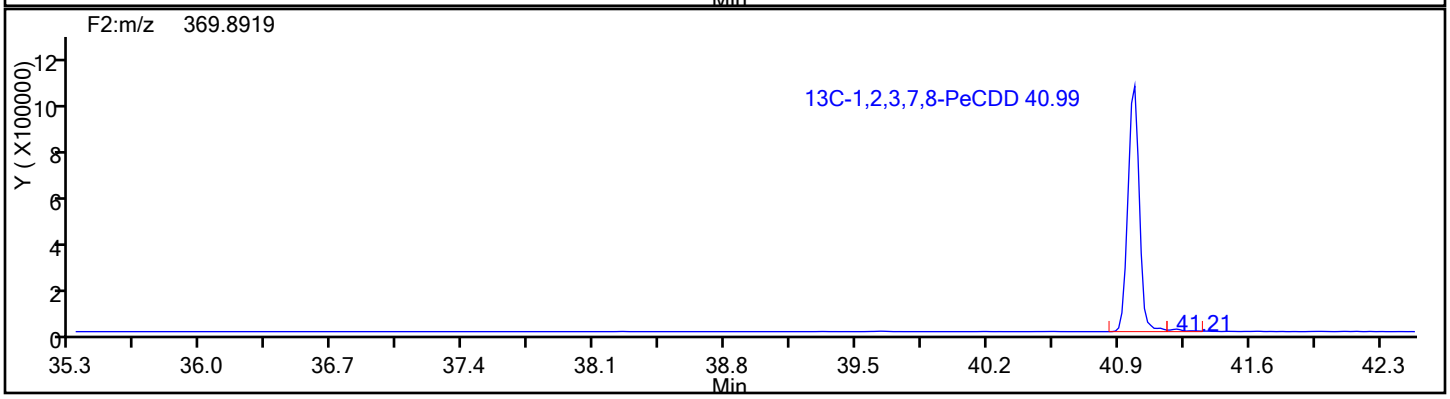
PeCDD





PeCDD Standards





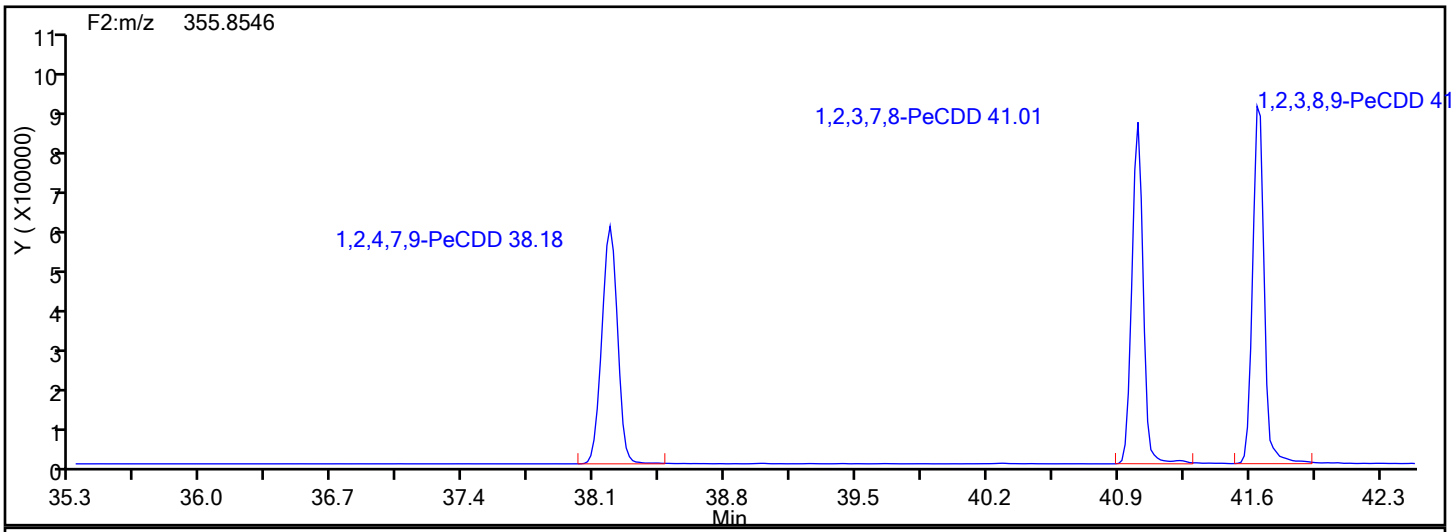
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

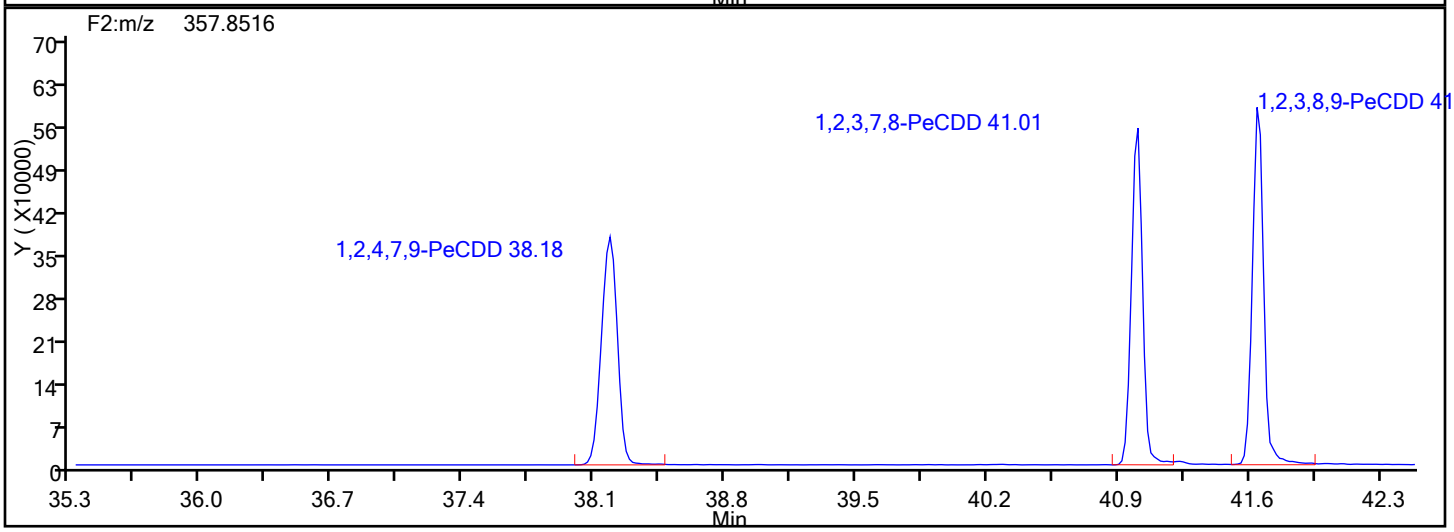
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

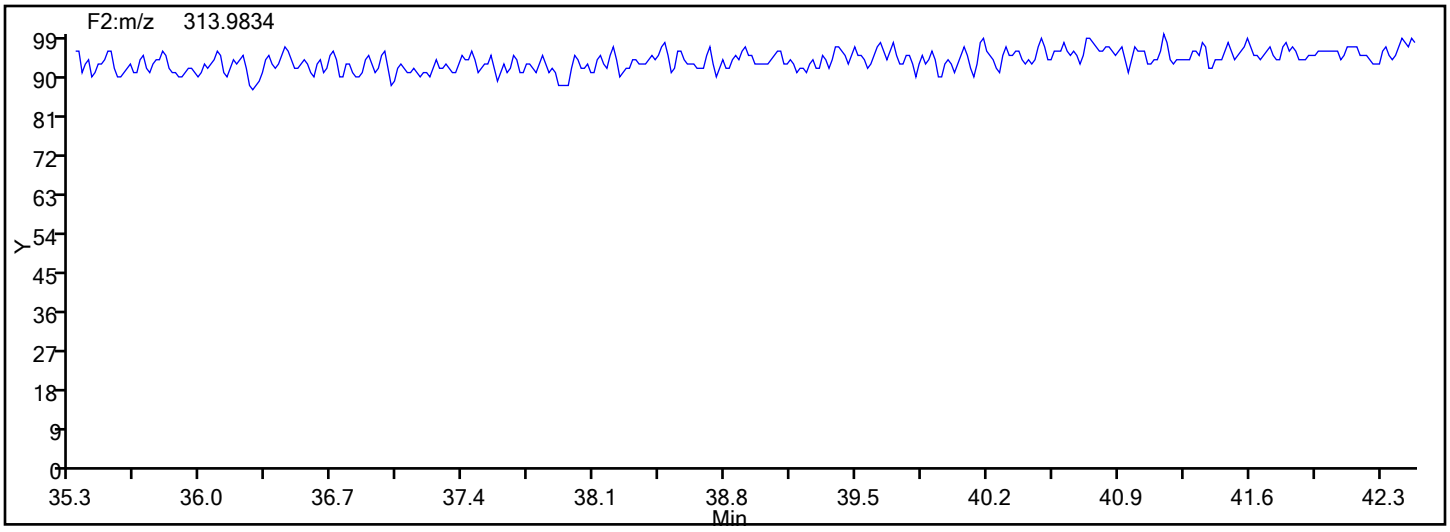
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



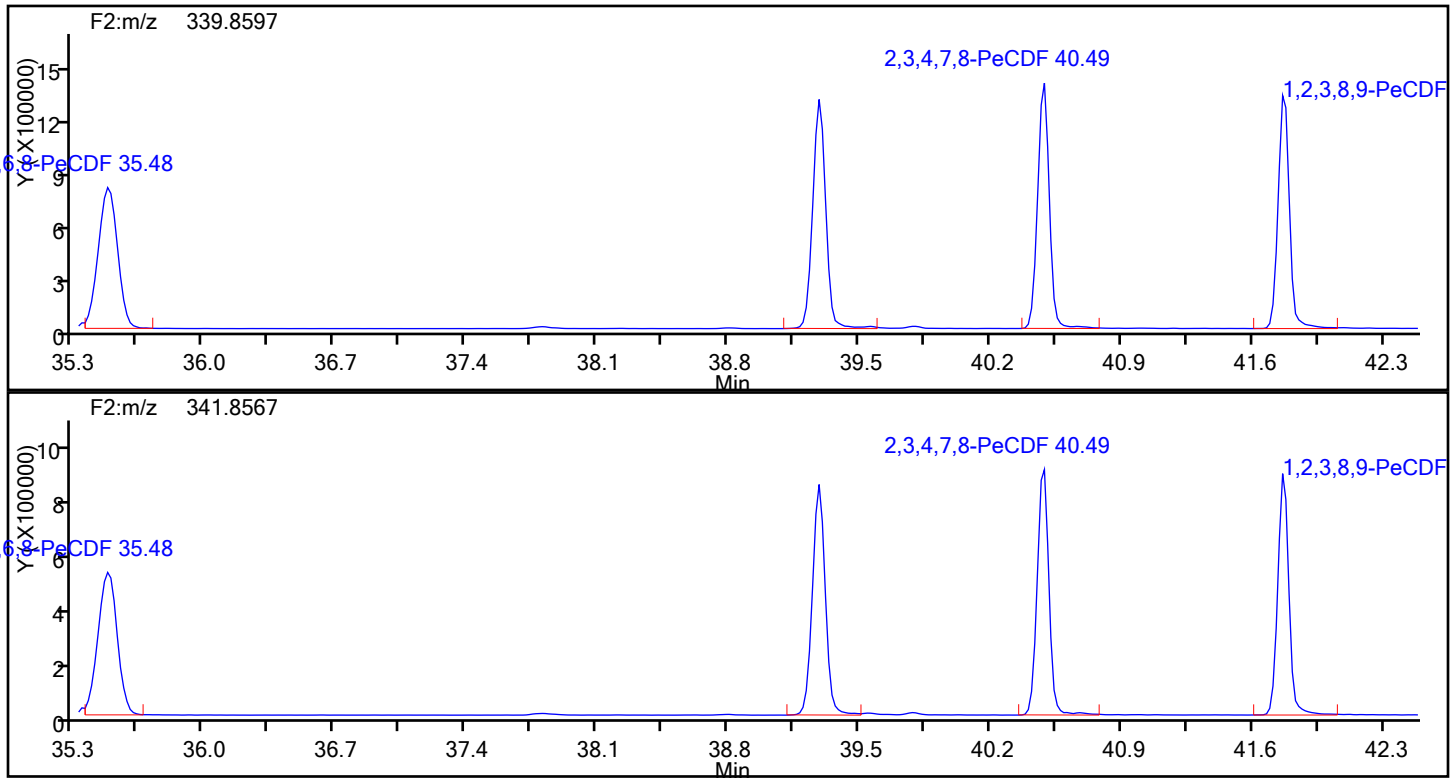
Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

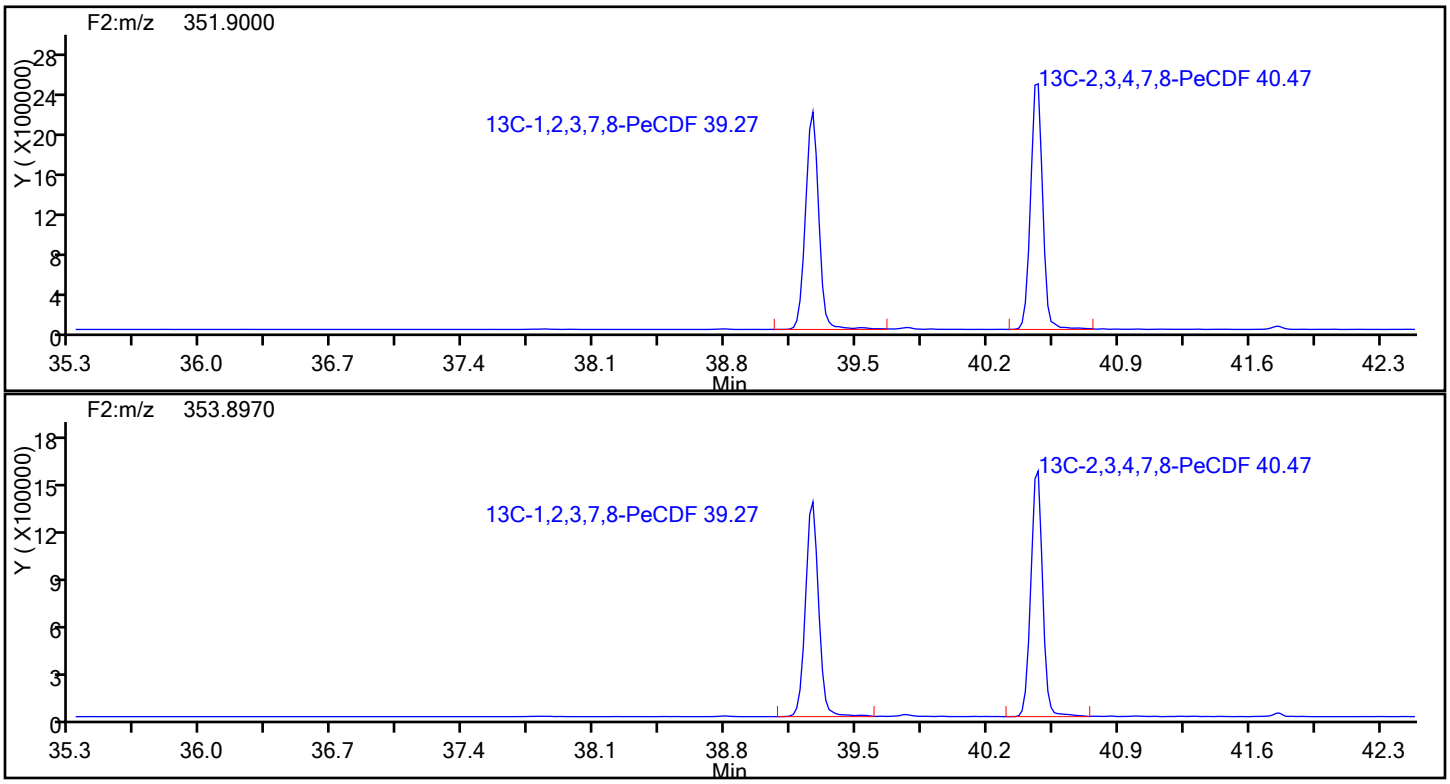
Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

PeCDF



PeCDF Standards



Report Date: 01-Feb-2017 12:19:17 Chrom Revision: 2.2 30-Jan-2017 14:50:44

TestAmerica Knoxville

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Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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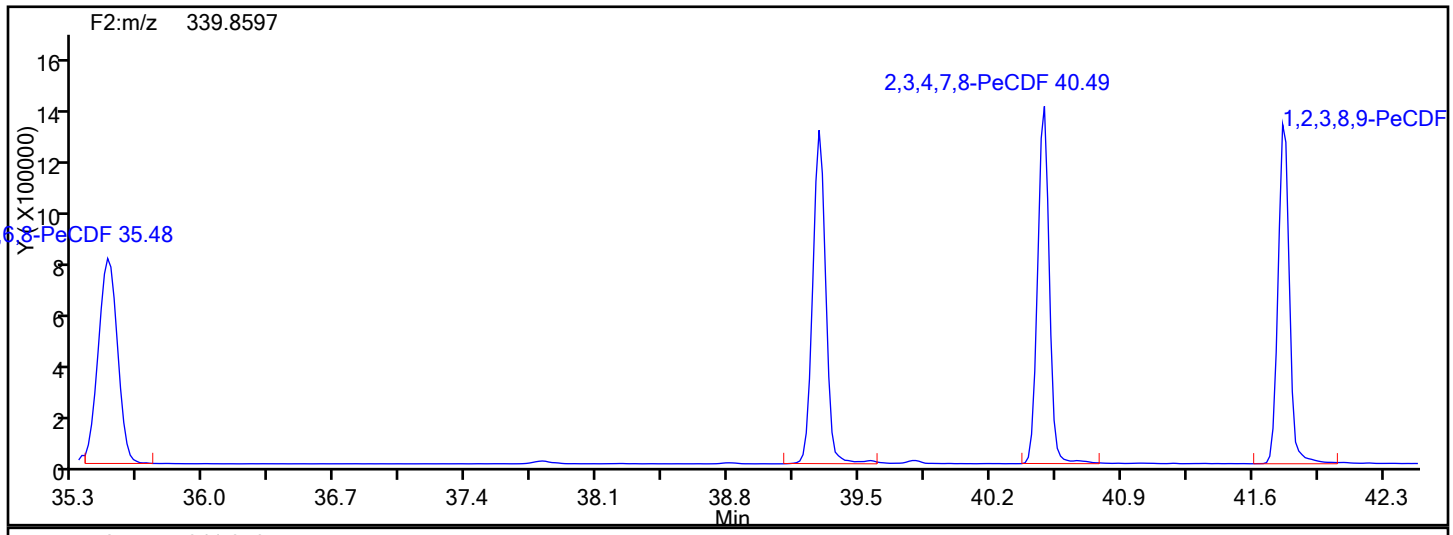

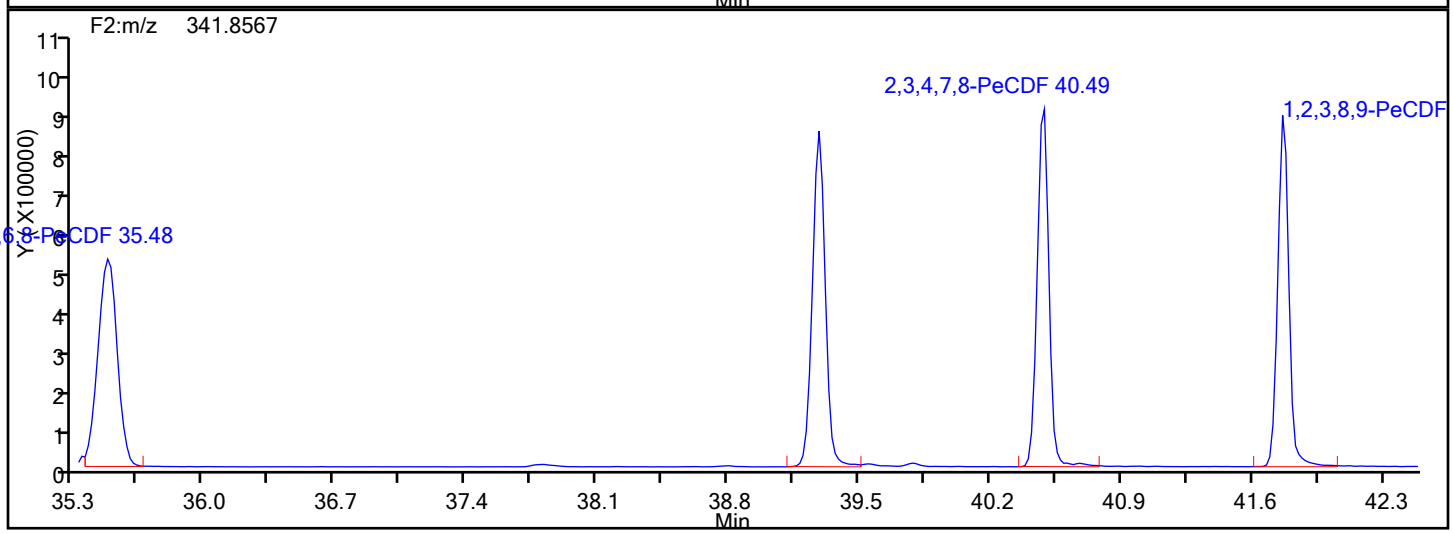

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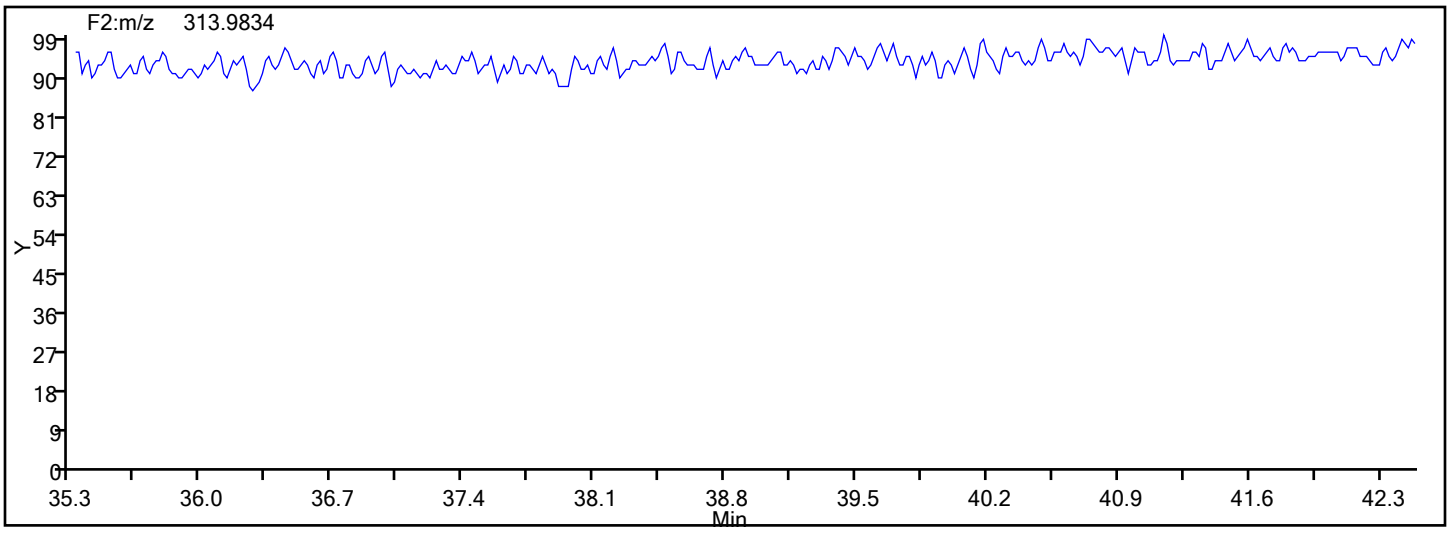

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TestAmerica Knoxville

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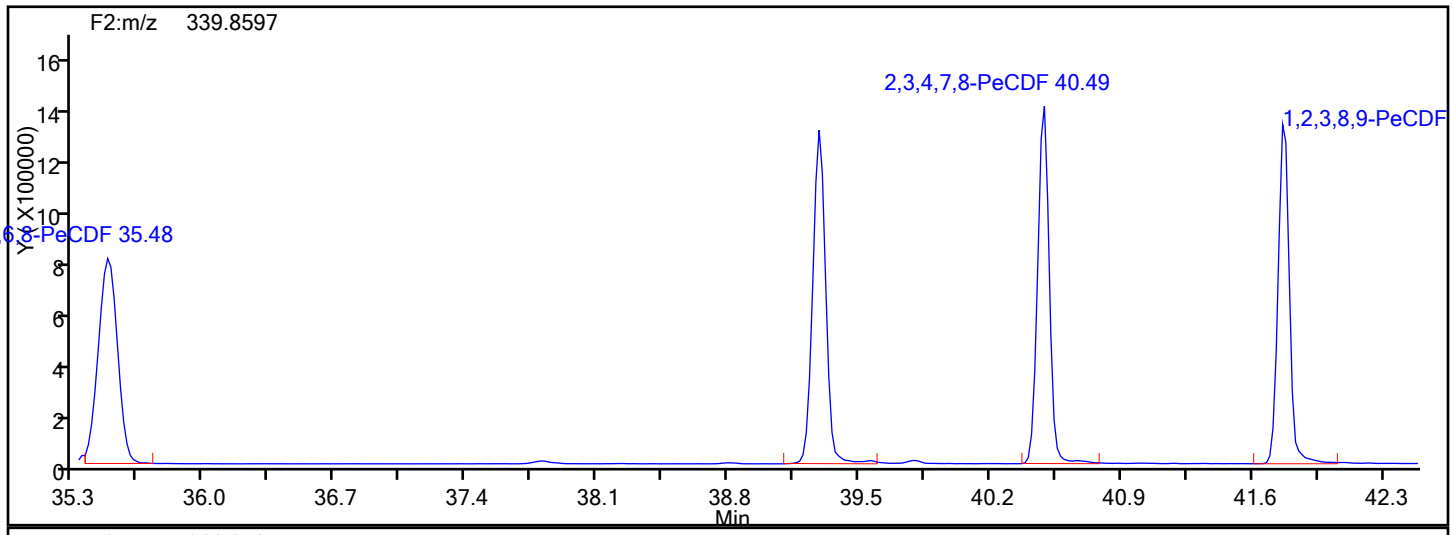

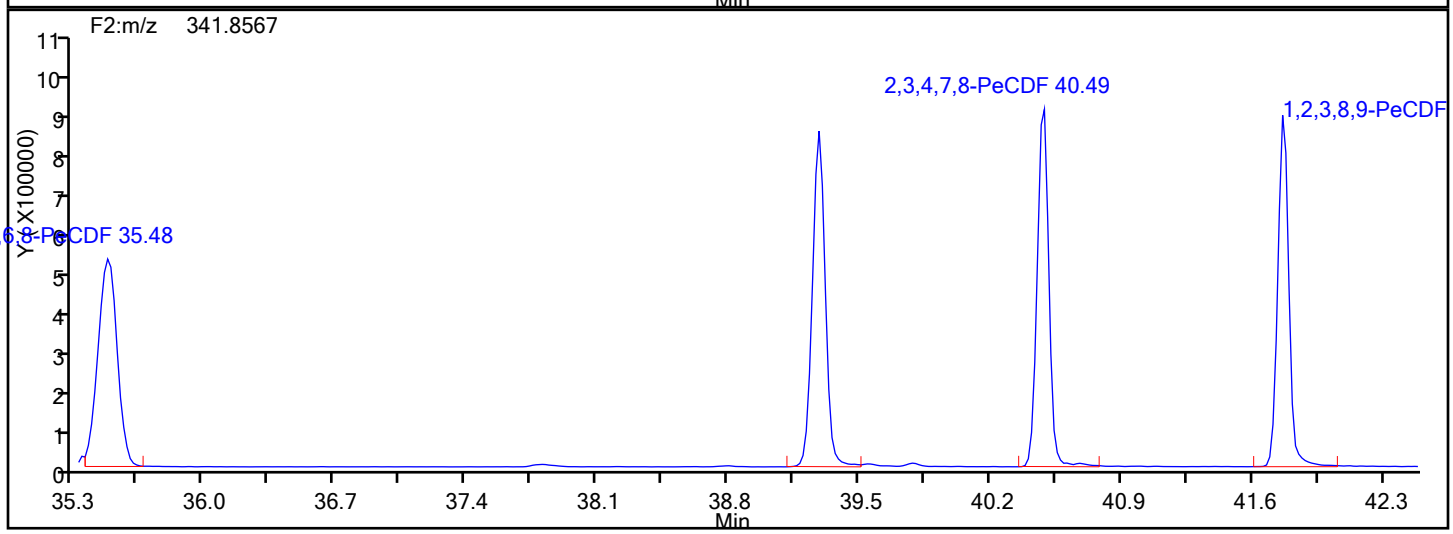

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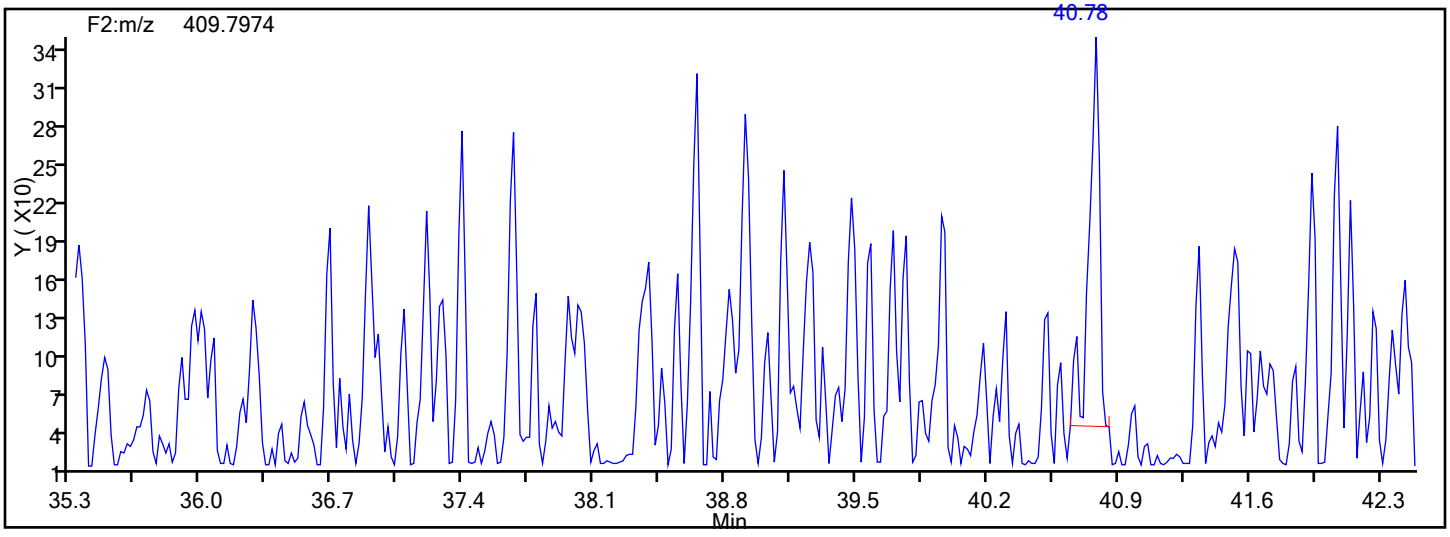

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TestAmerica Knoxville

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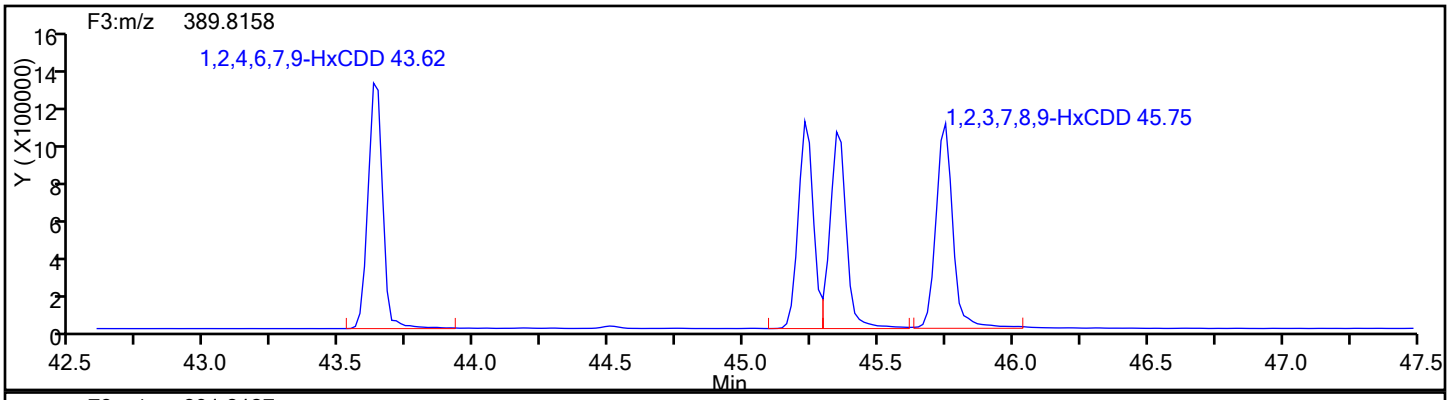

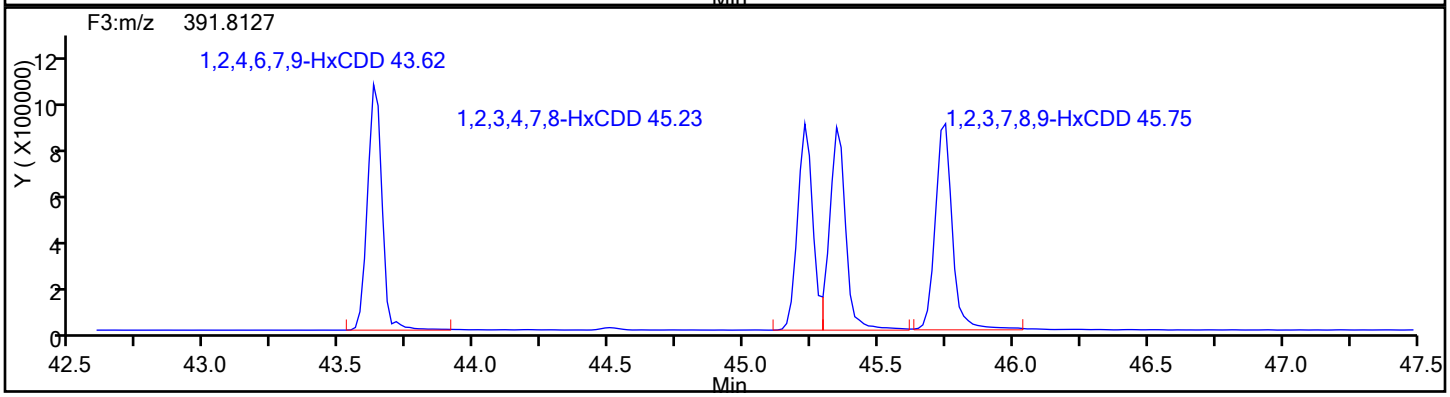

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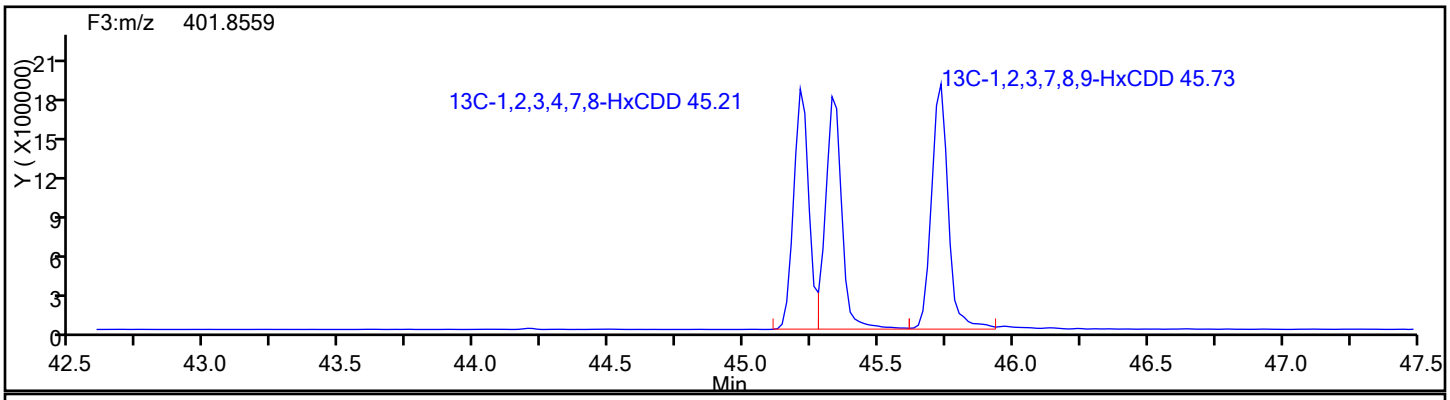

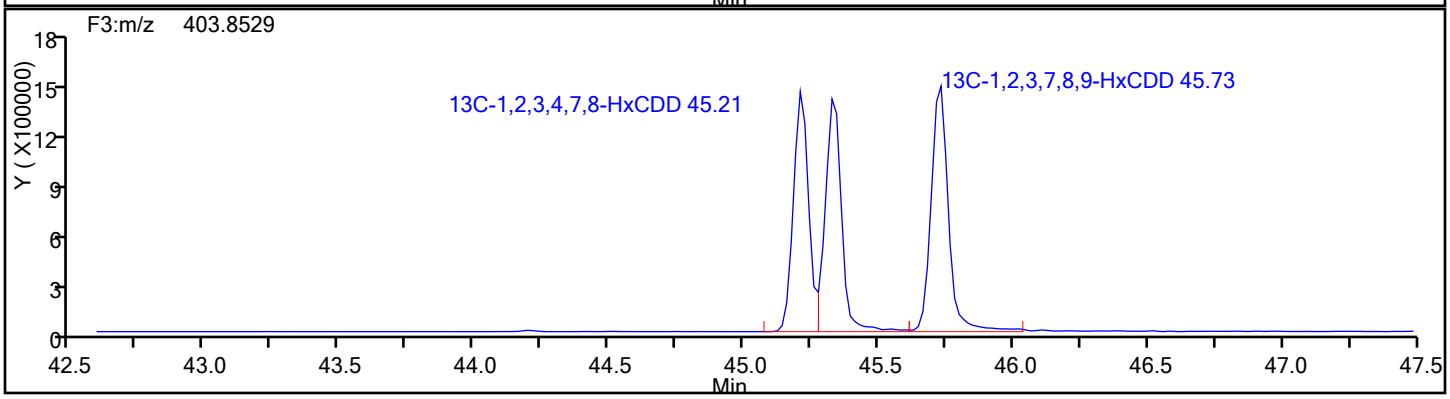

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TestAmerica Knoxville

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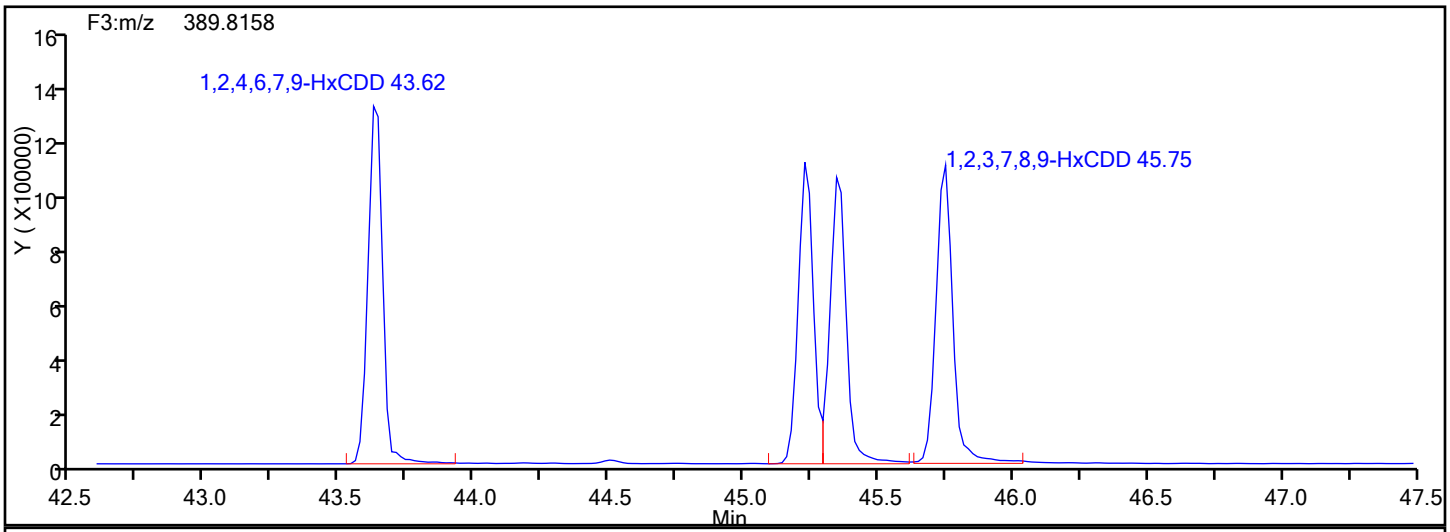
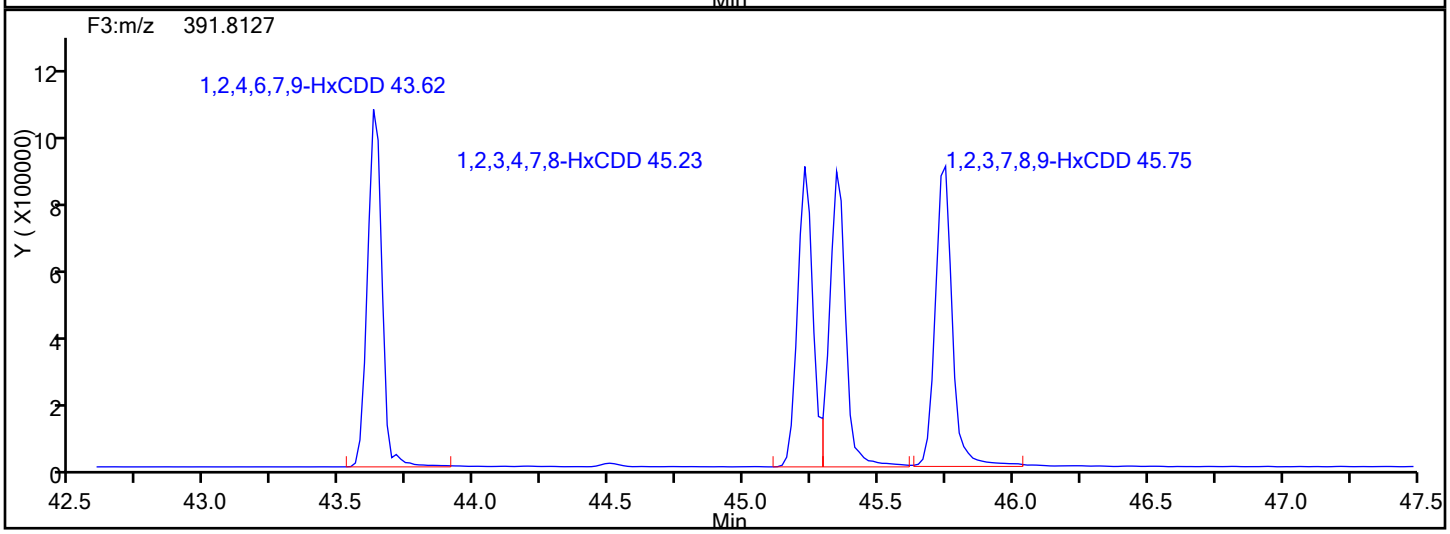
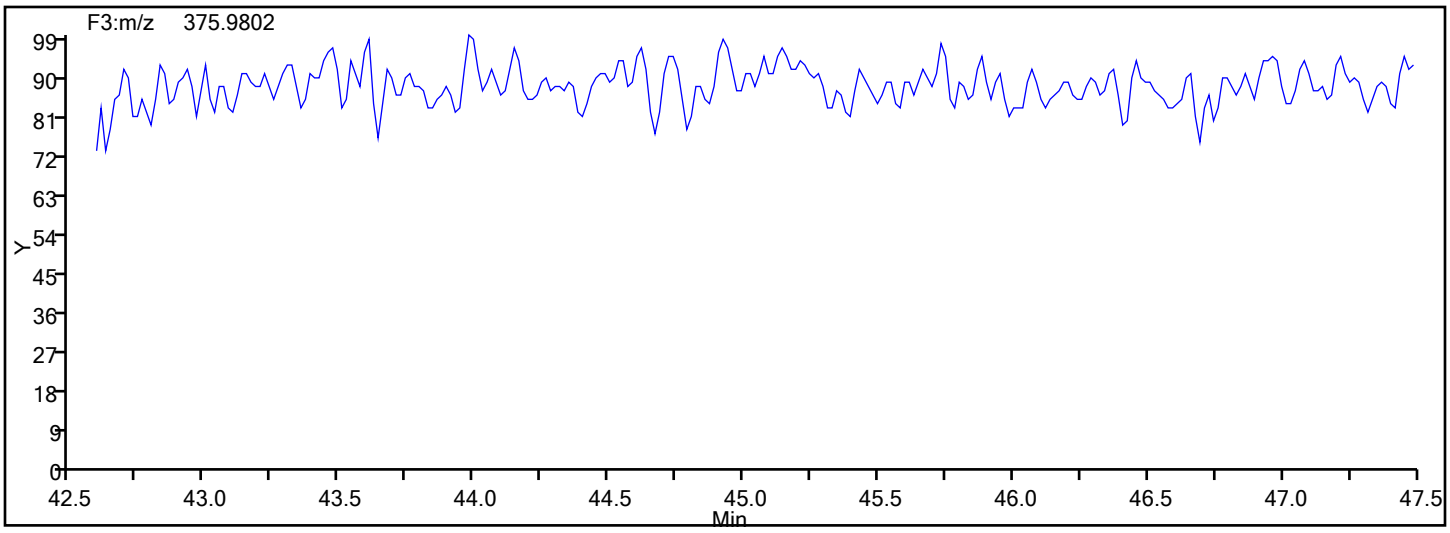




HxCDD Lock Mass



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TestAmerica Knoxville

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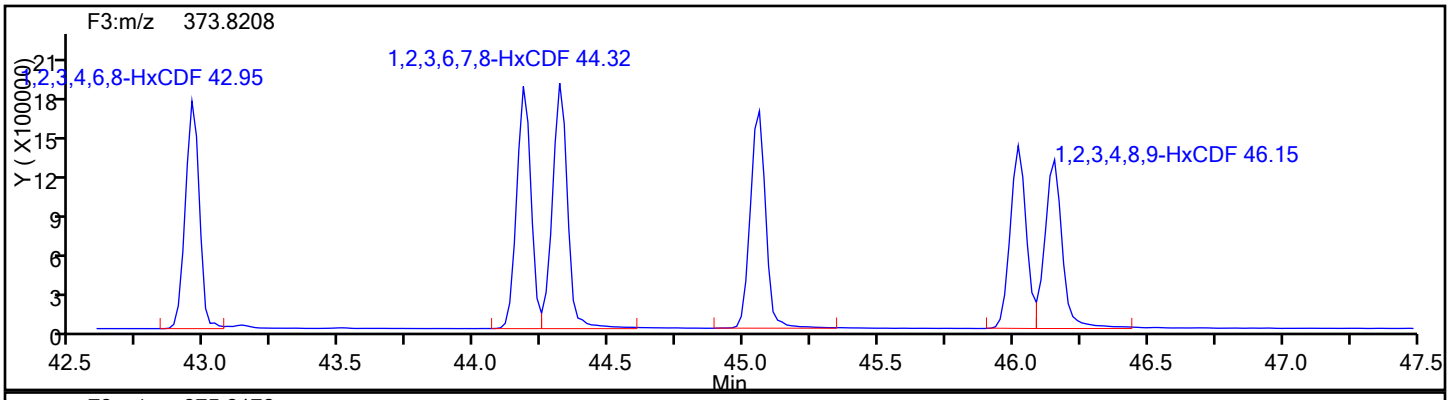

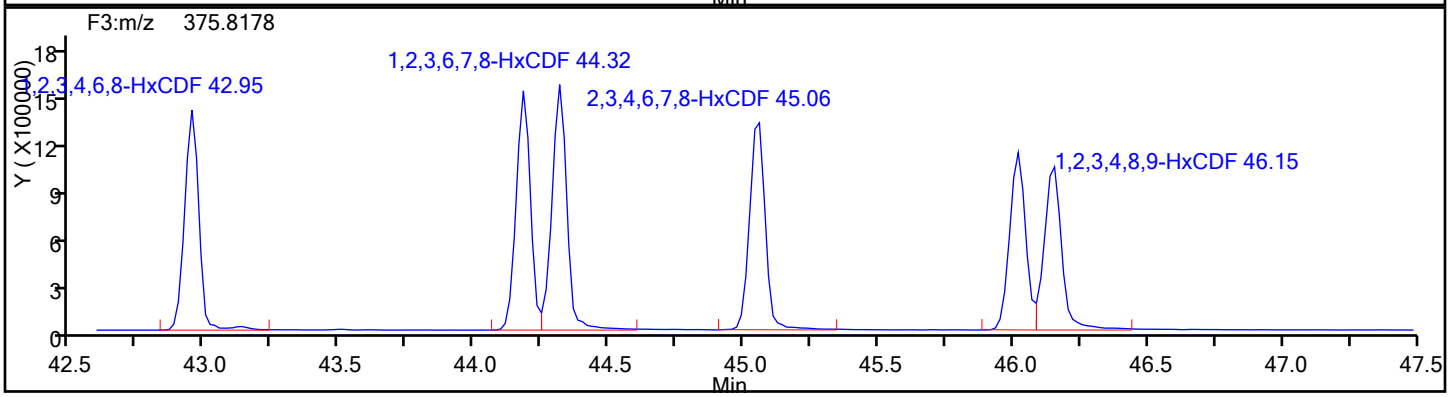

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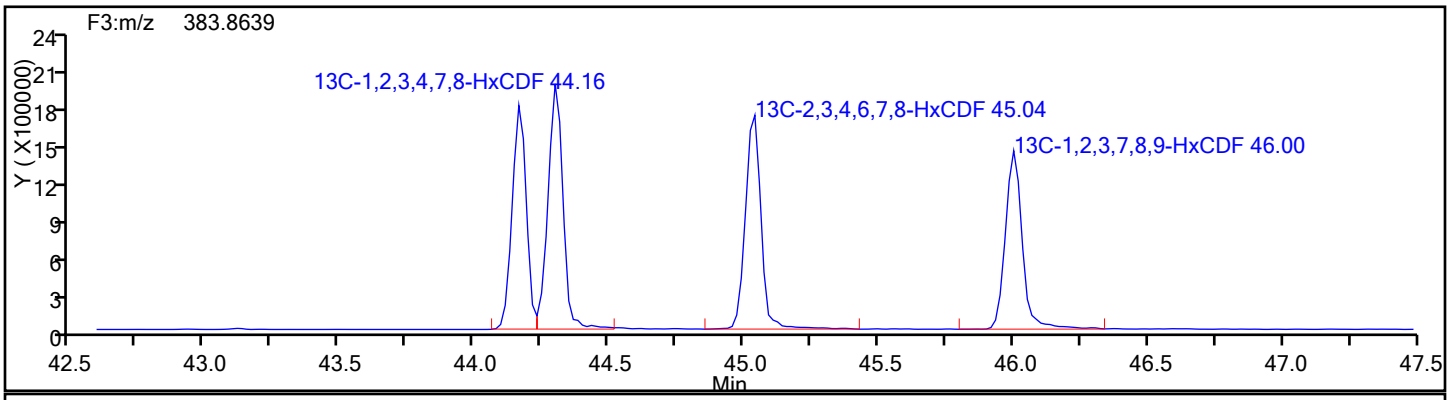

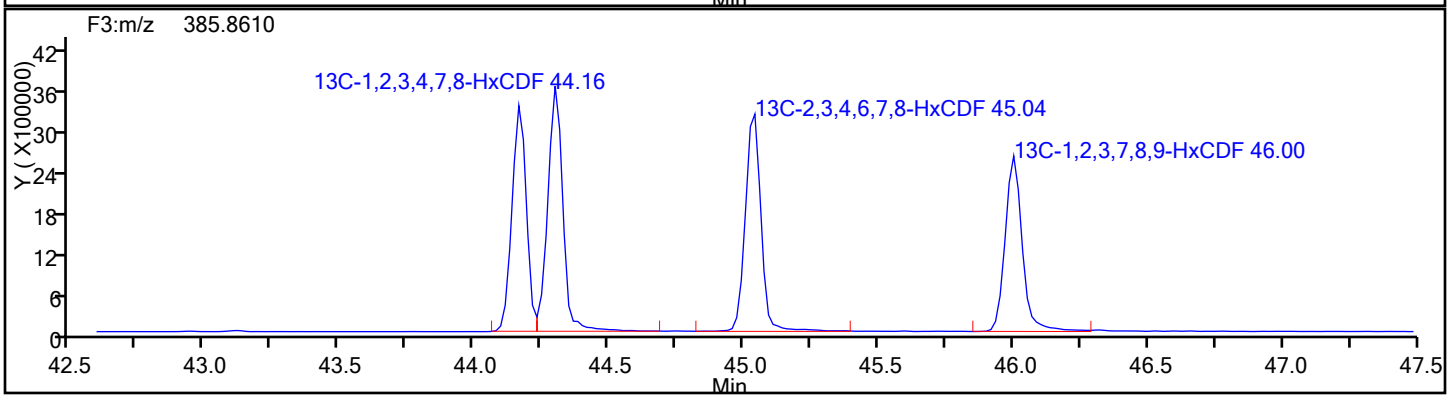

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TestAmerica Knoxville

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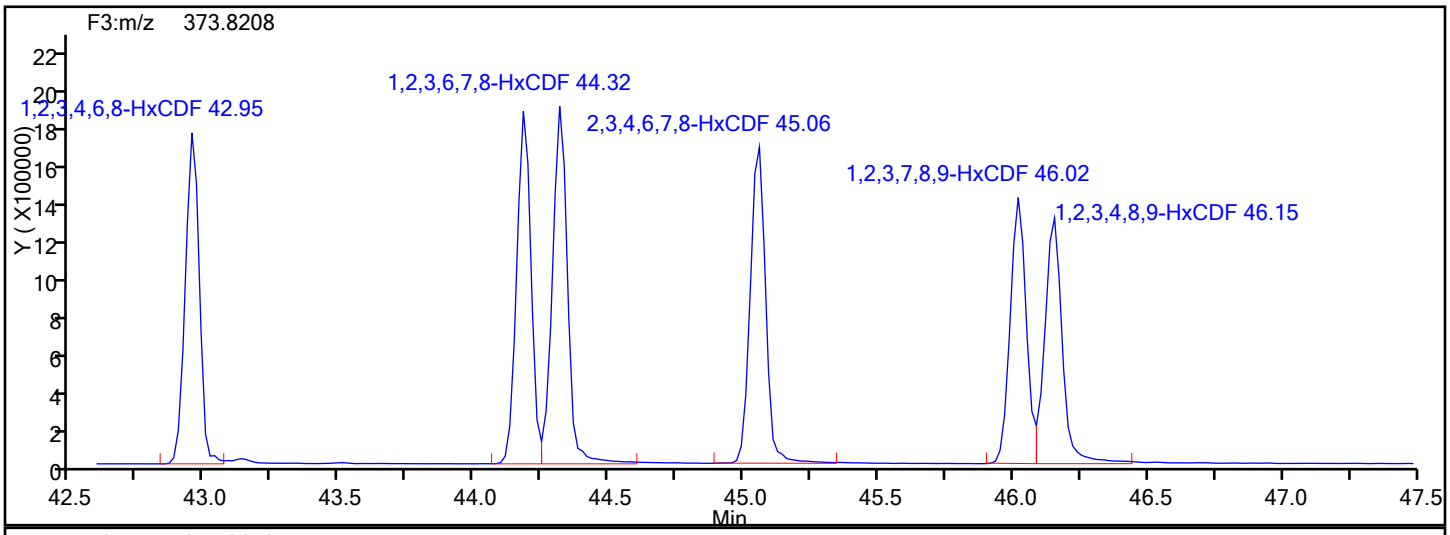
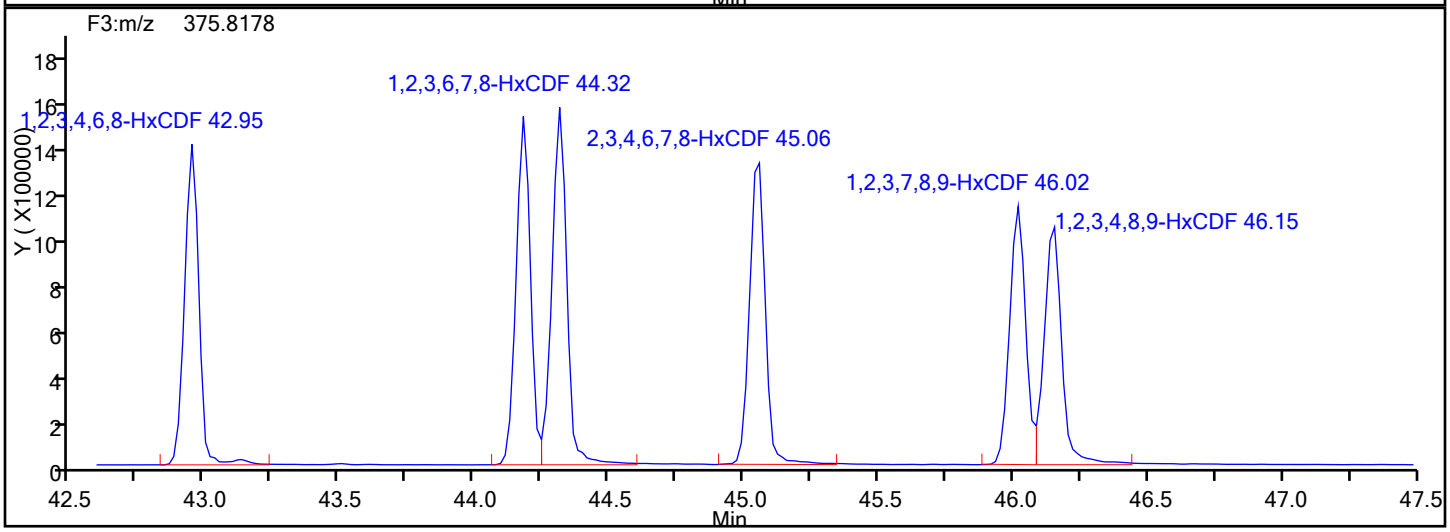
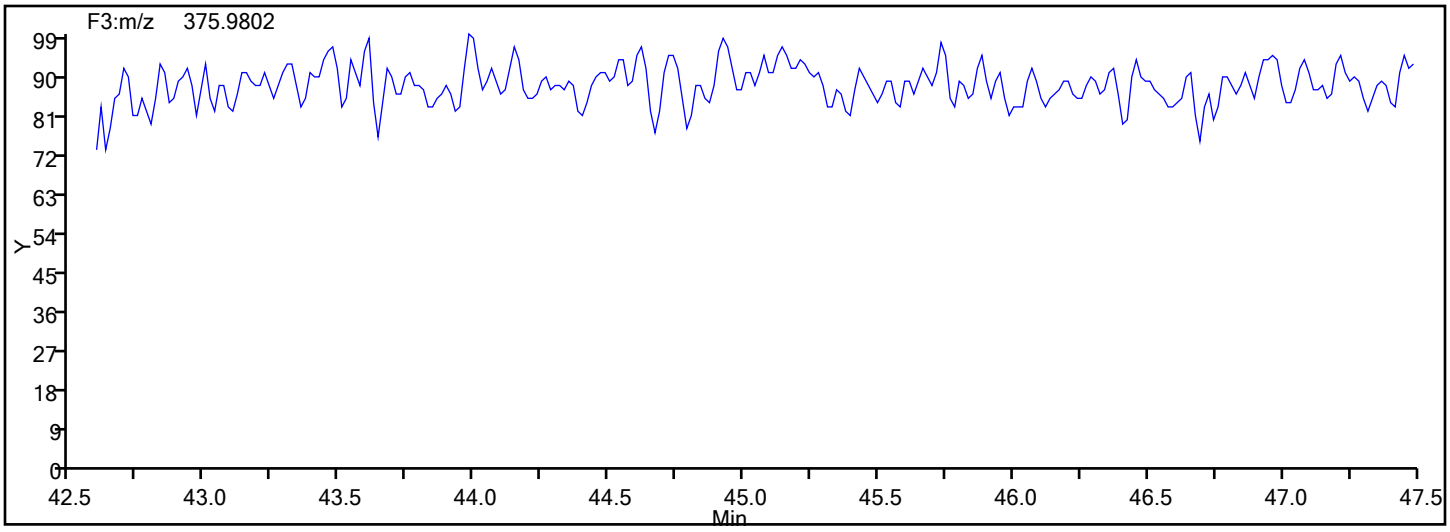




HxCDF Lock Mass



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TestAmerica Knoxville

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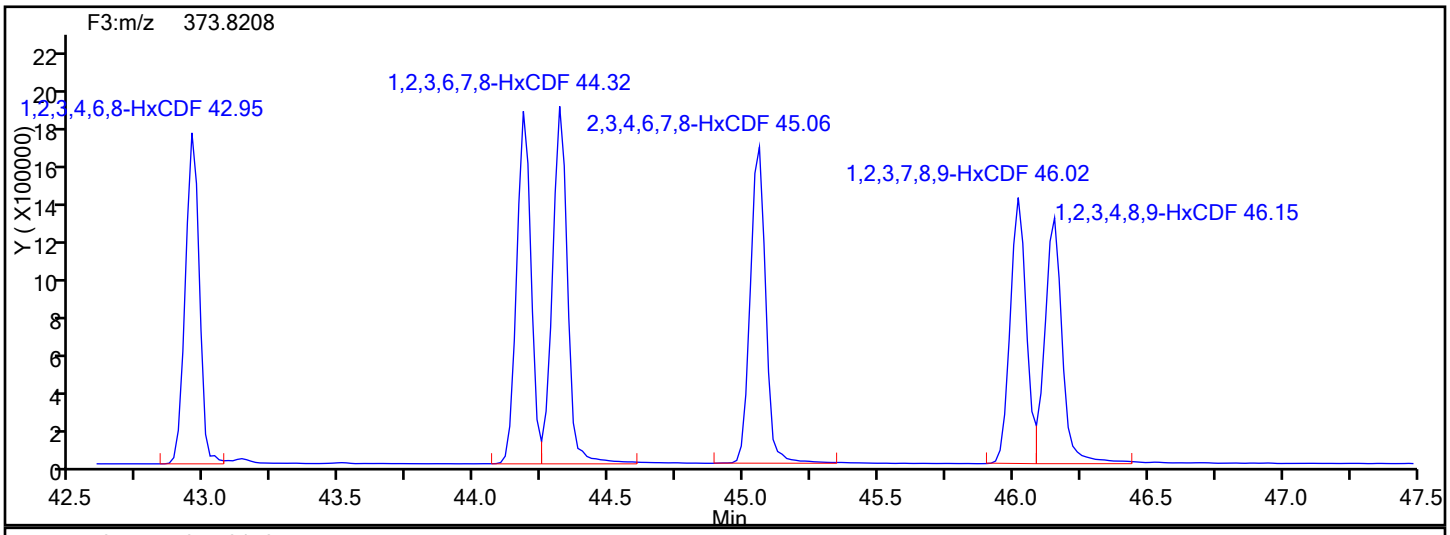

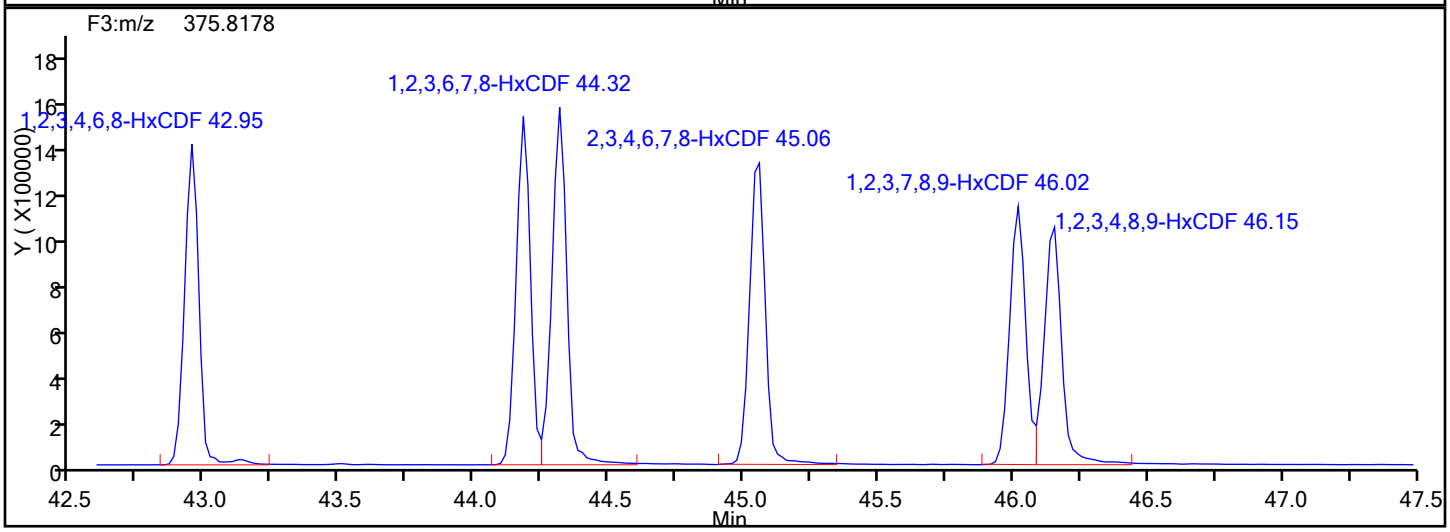

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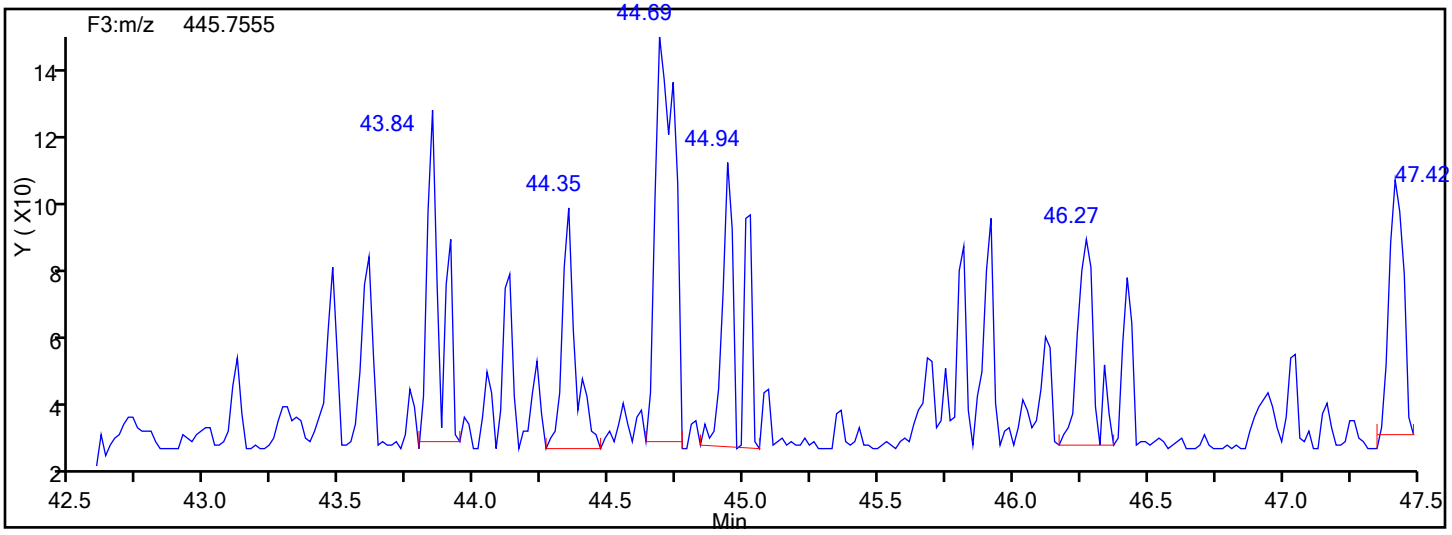

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TestAmerica Knoxville

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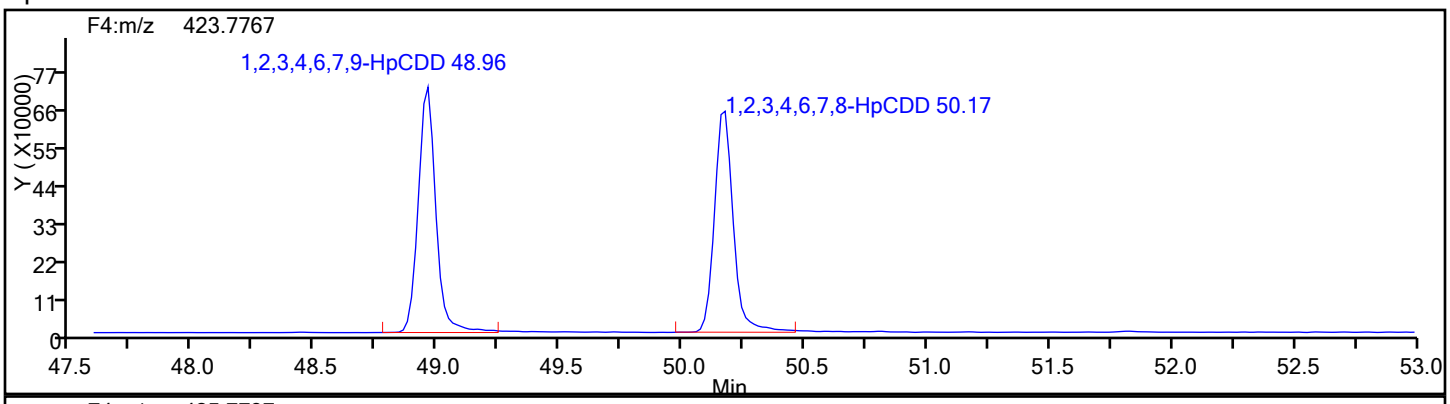
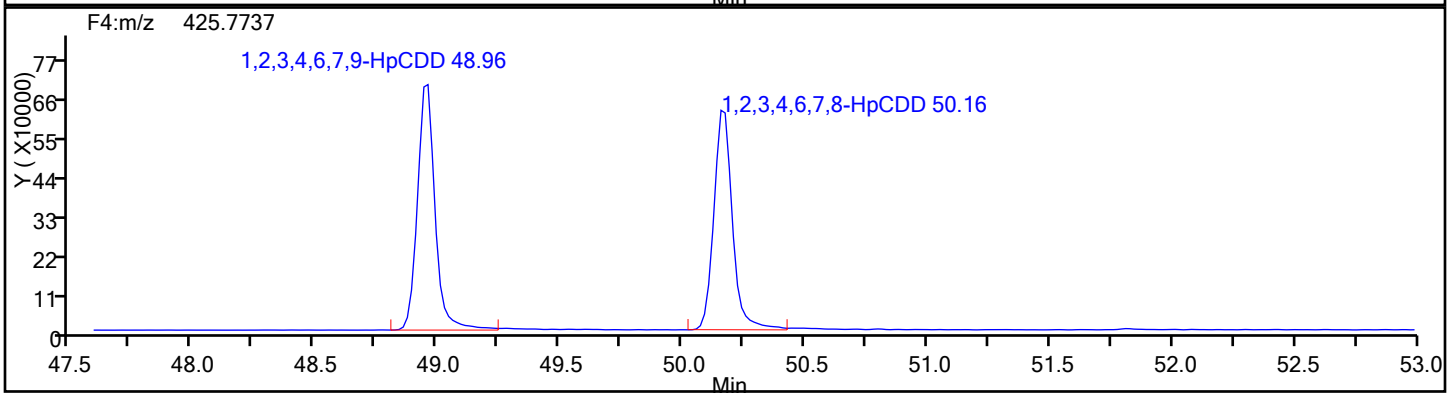
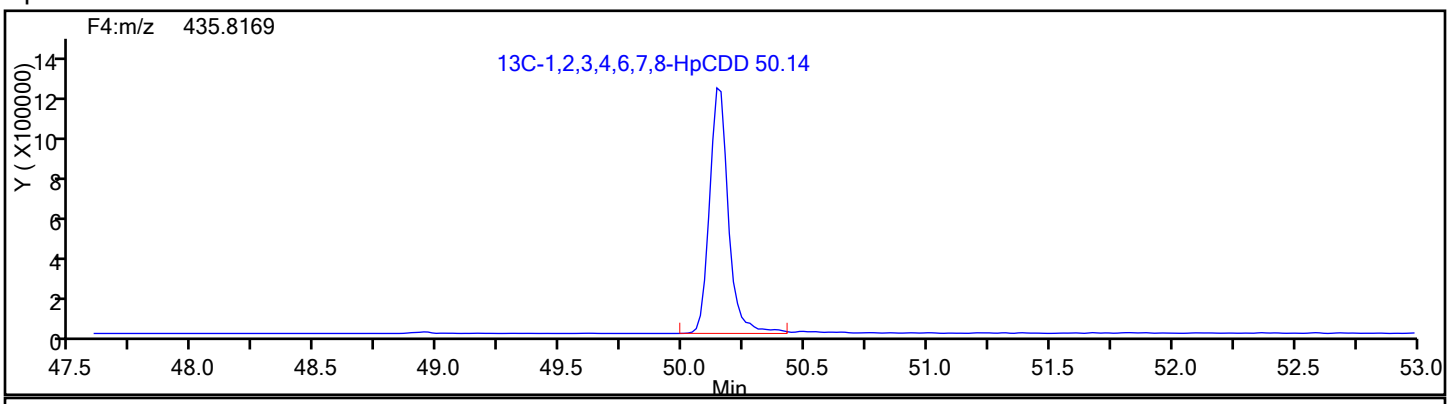
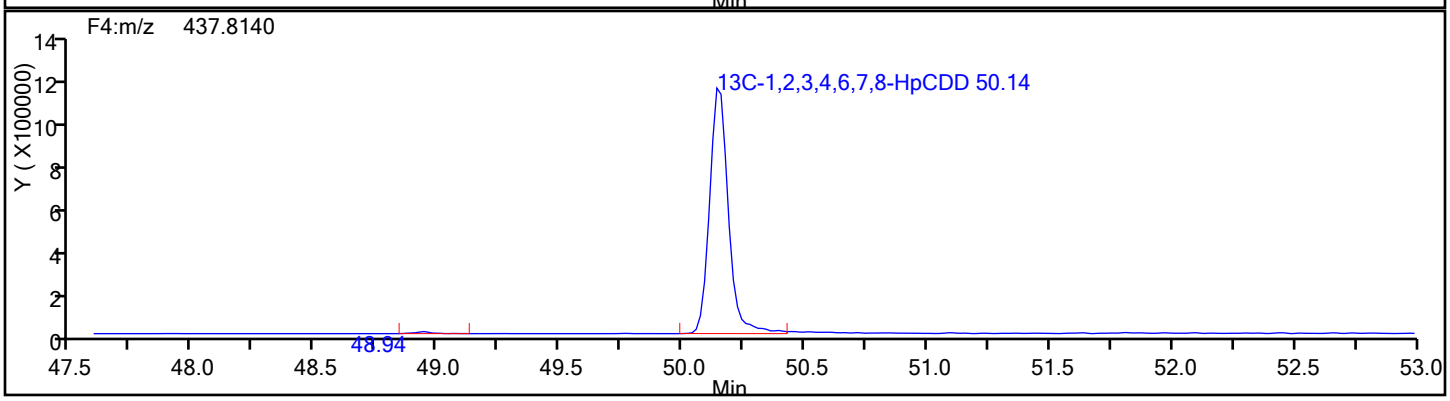




HpCDD Standards





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TestAmerica Knoxville

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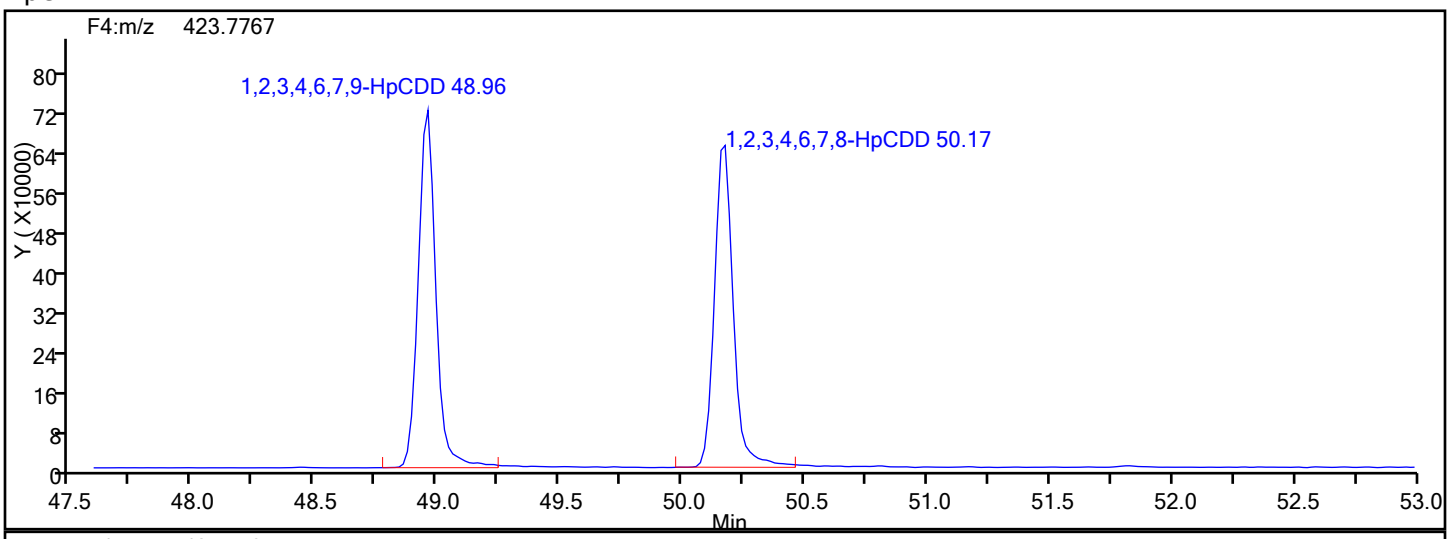

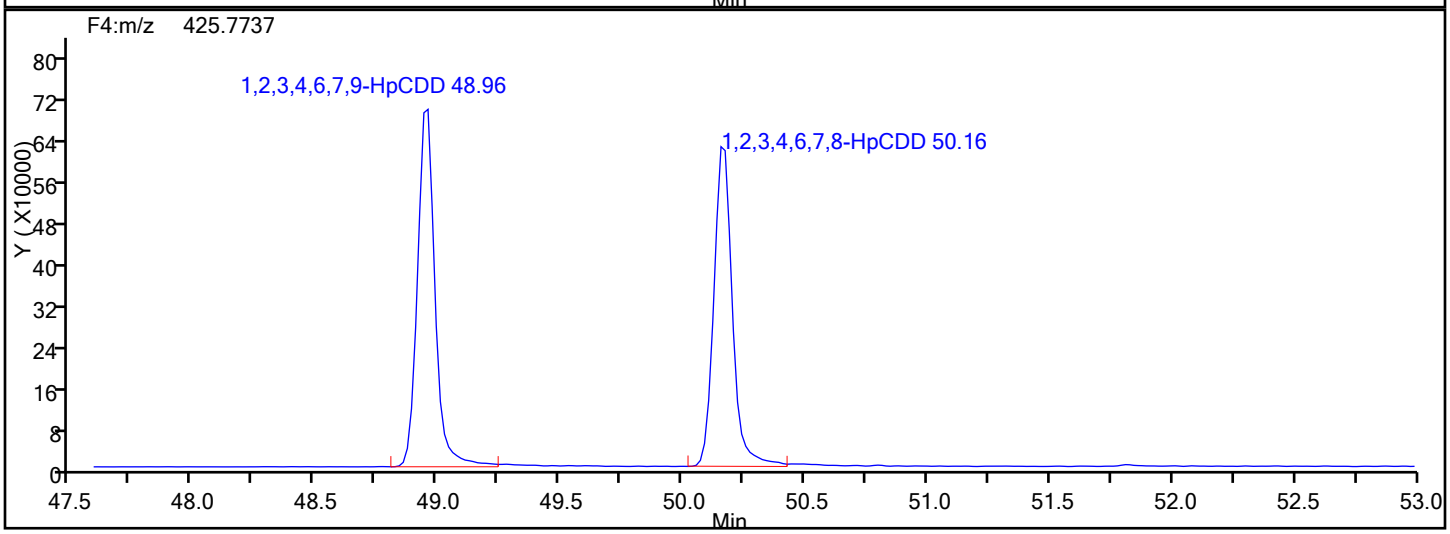

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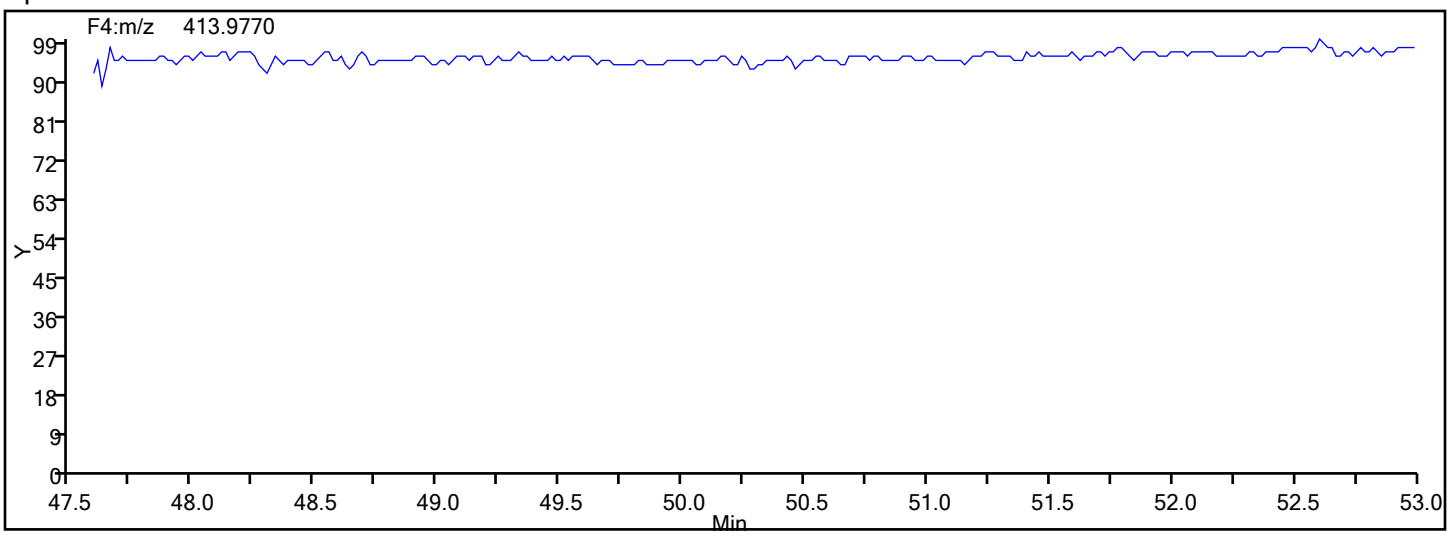

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TestAmerica Knoxville

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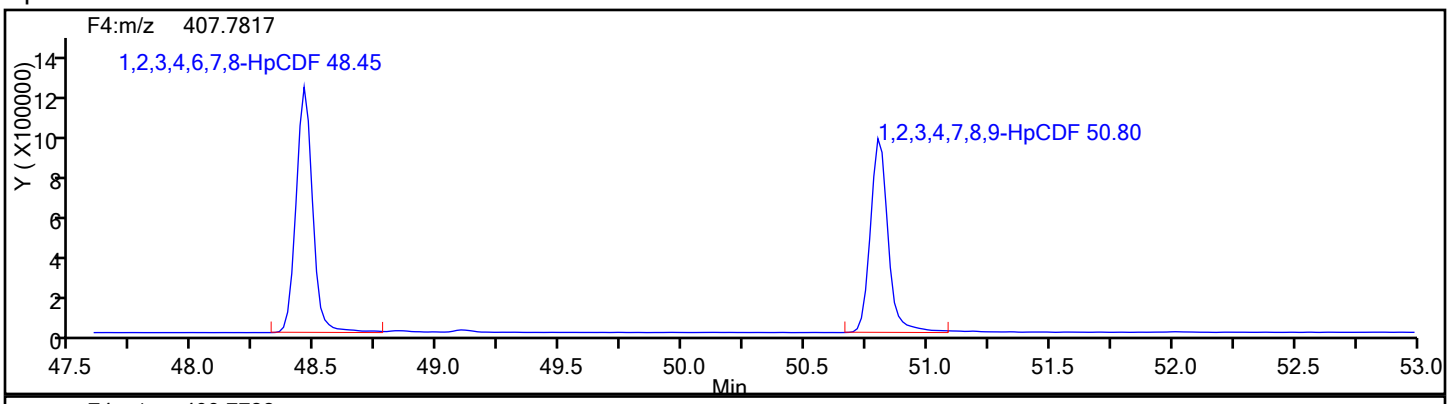

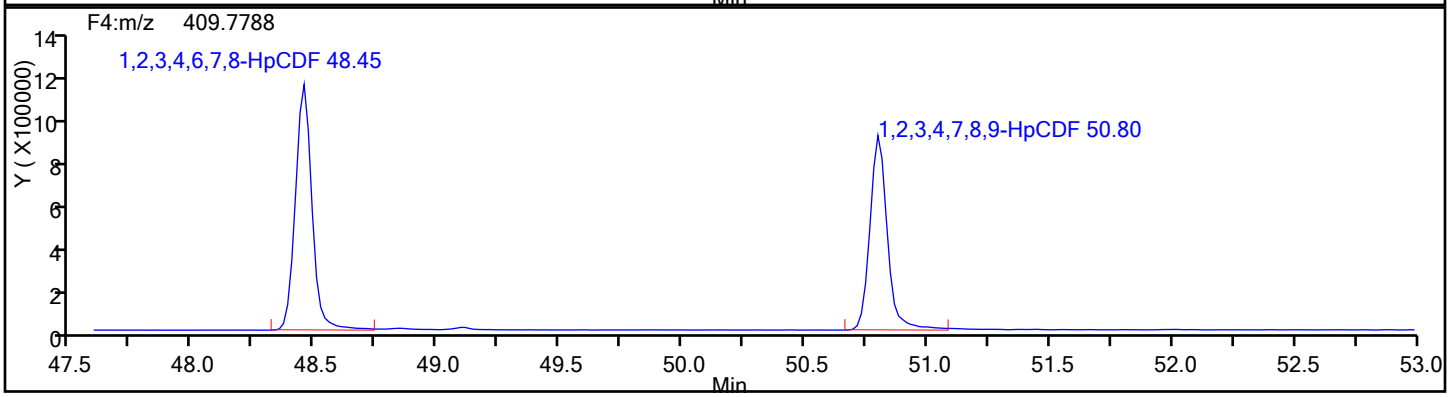

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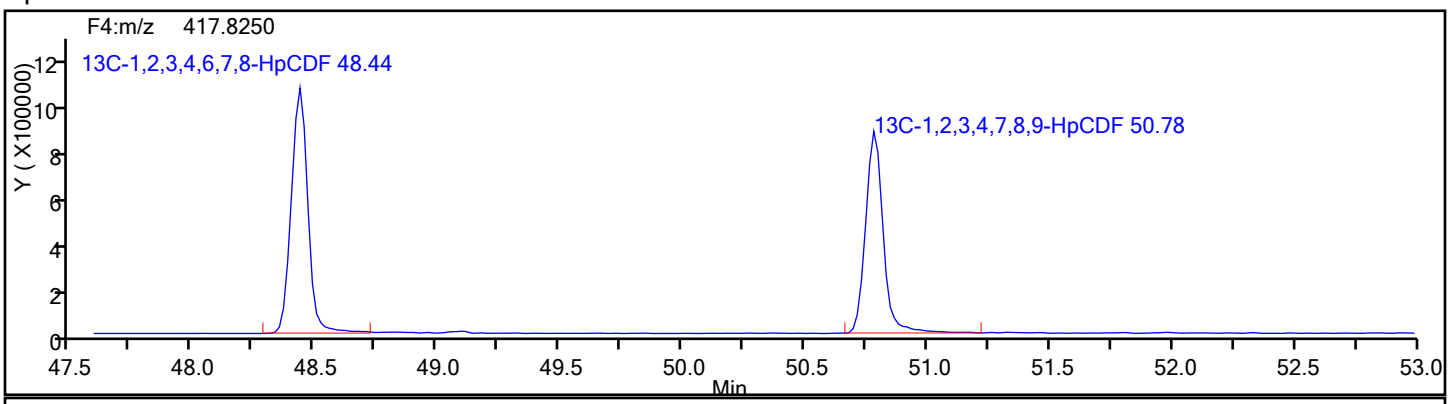

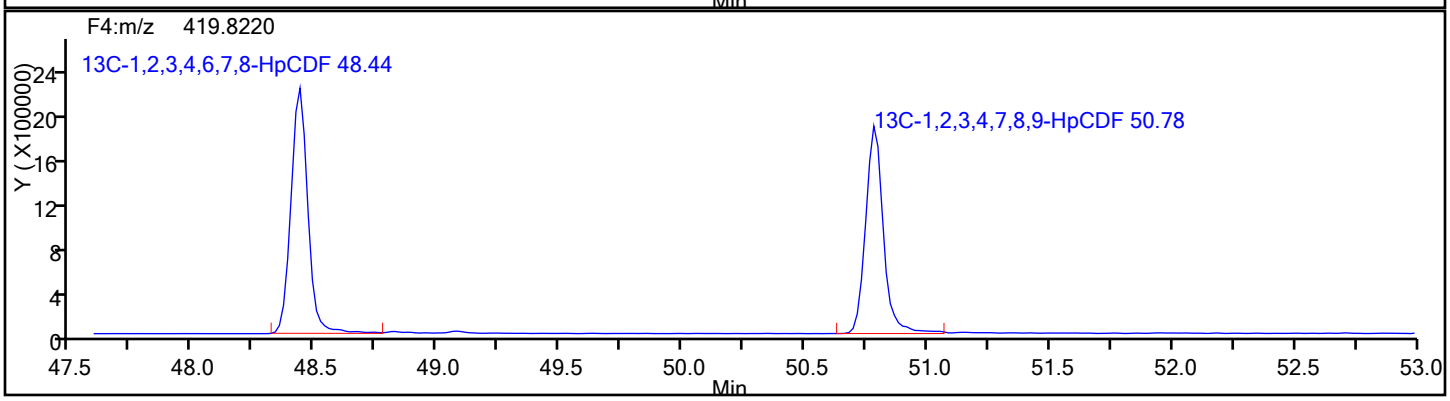

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TestAmerica Knoxville

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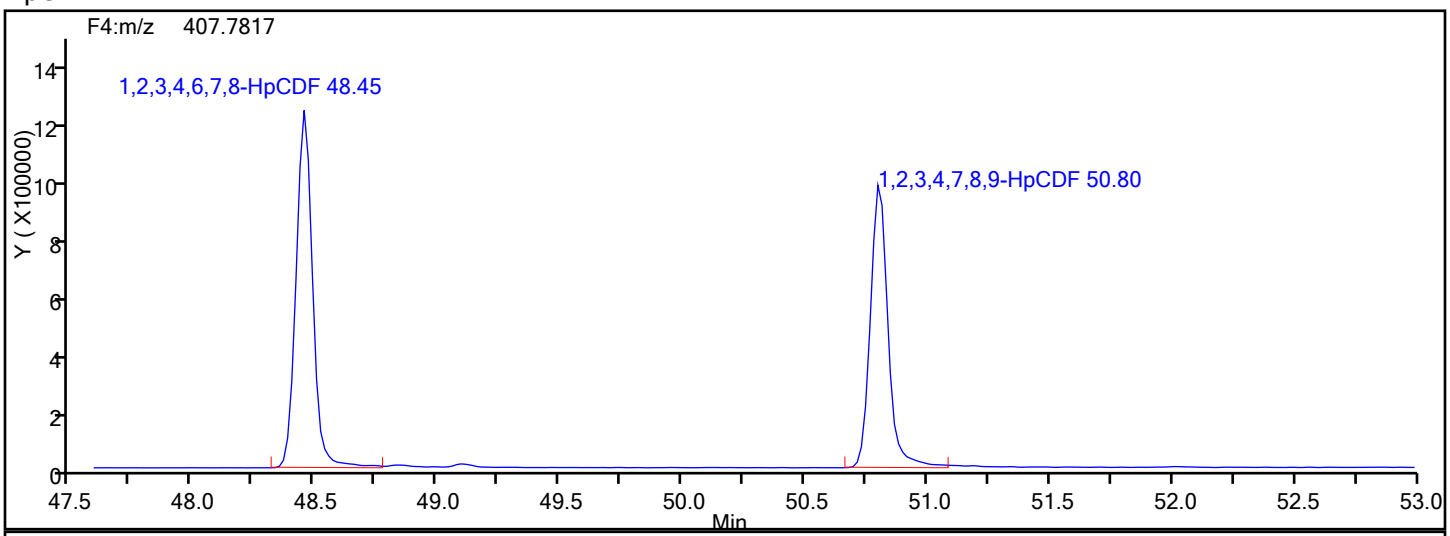

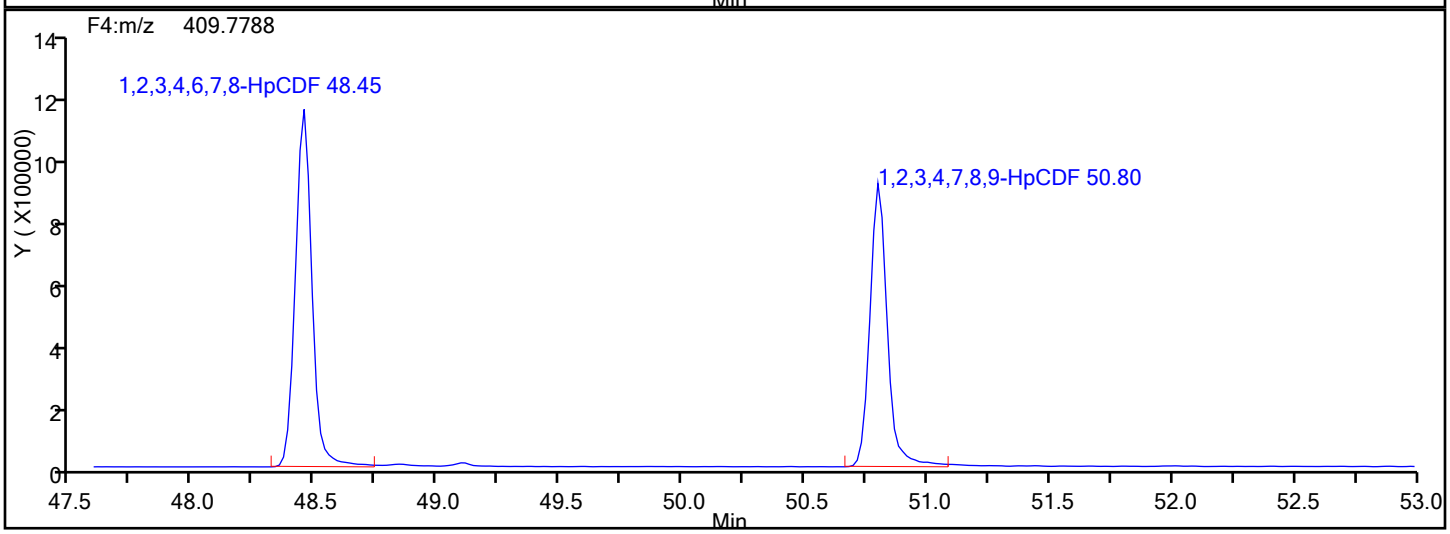

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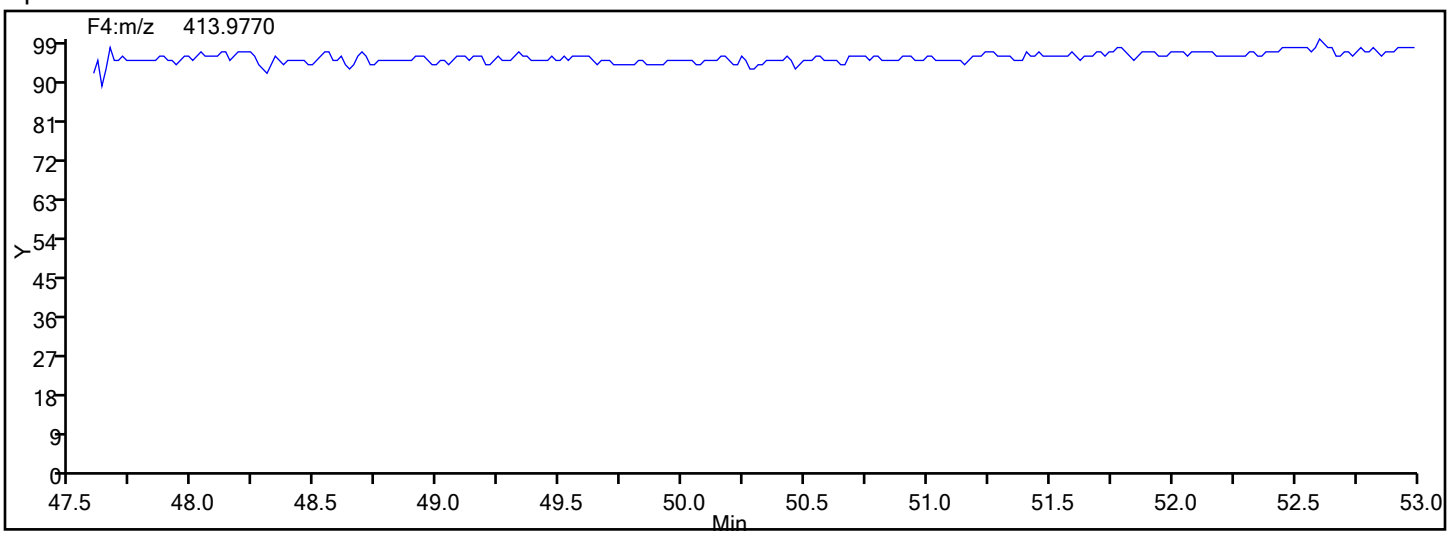

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TestAmerica Knoxville

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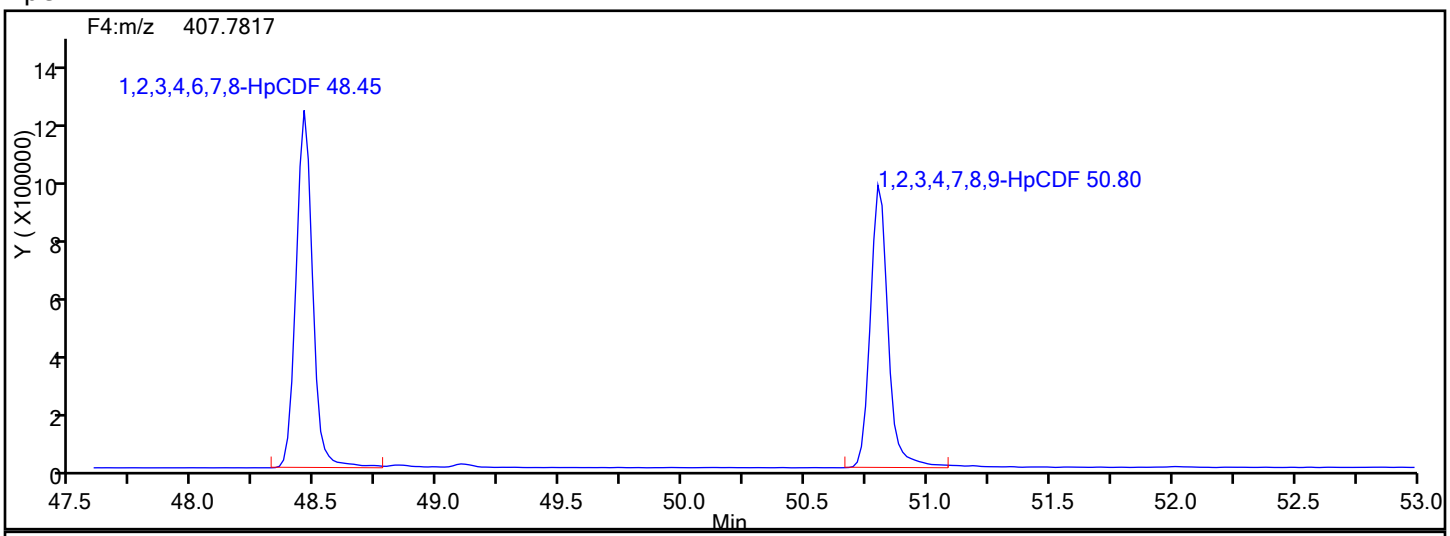

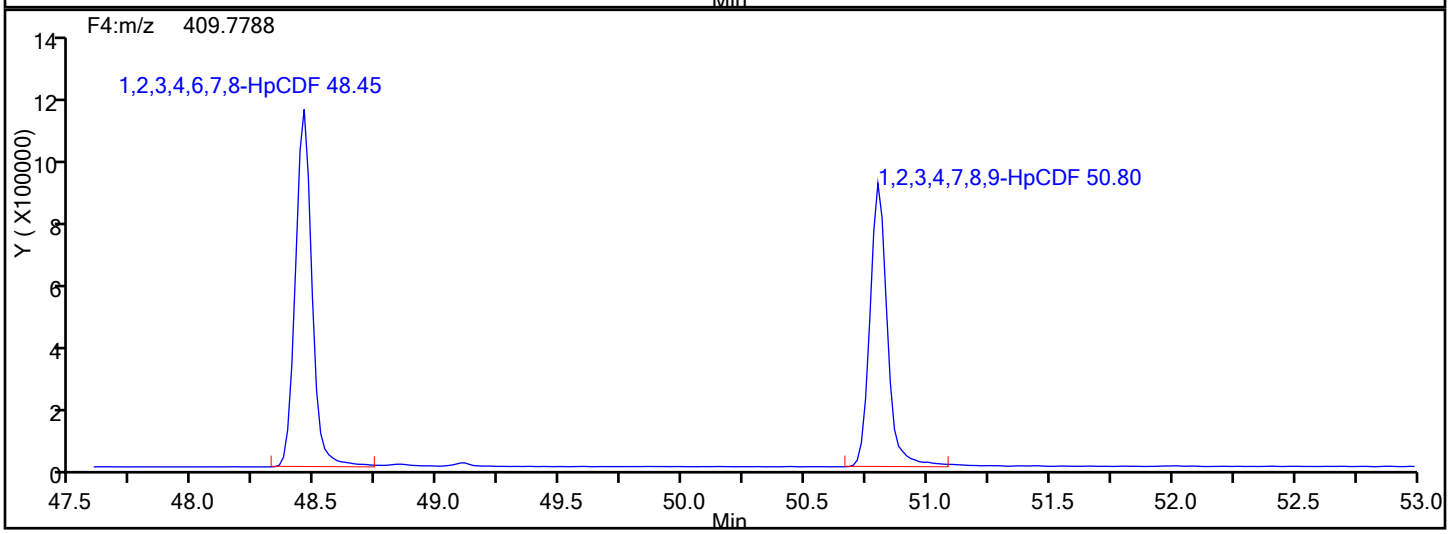

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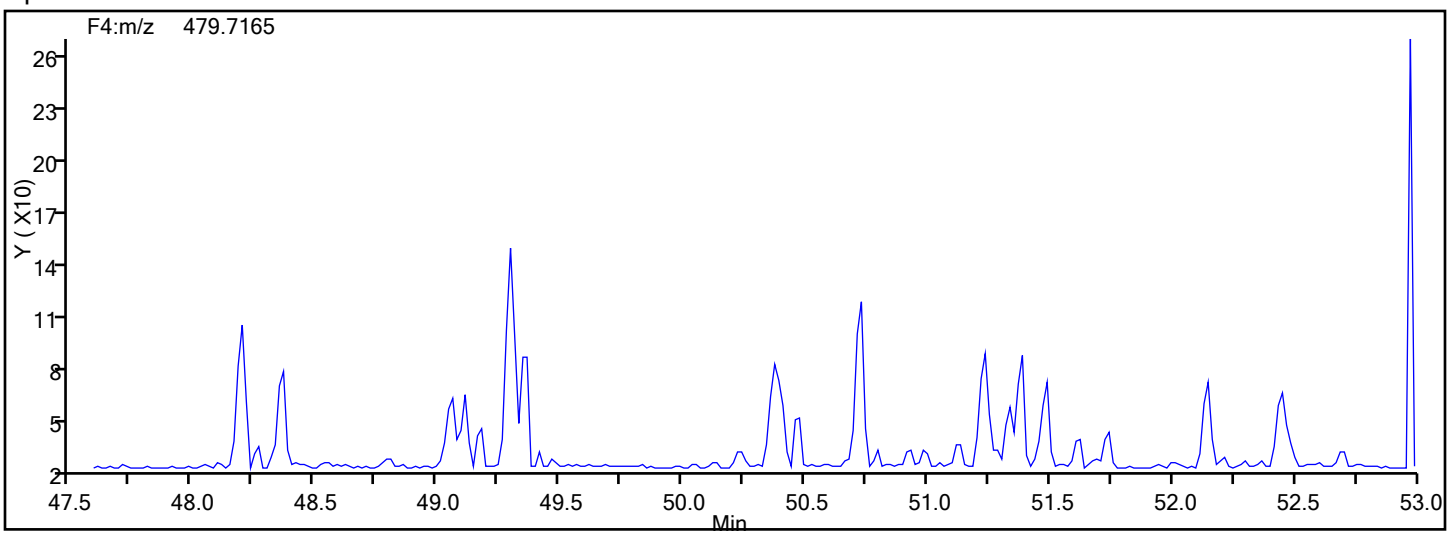

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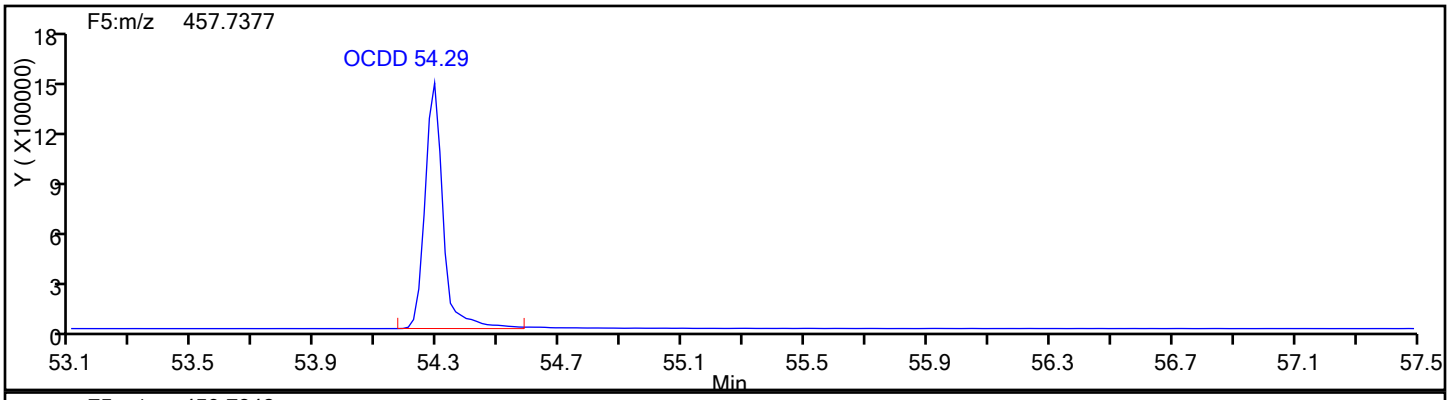
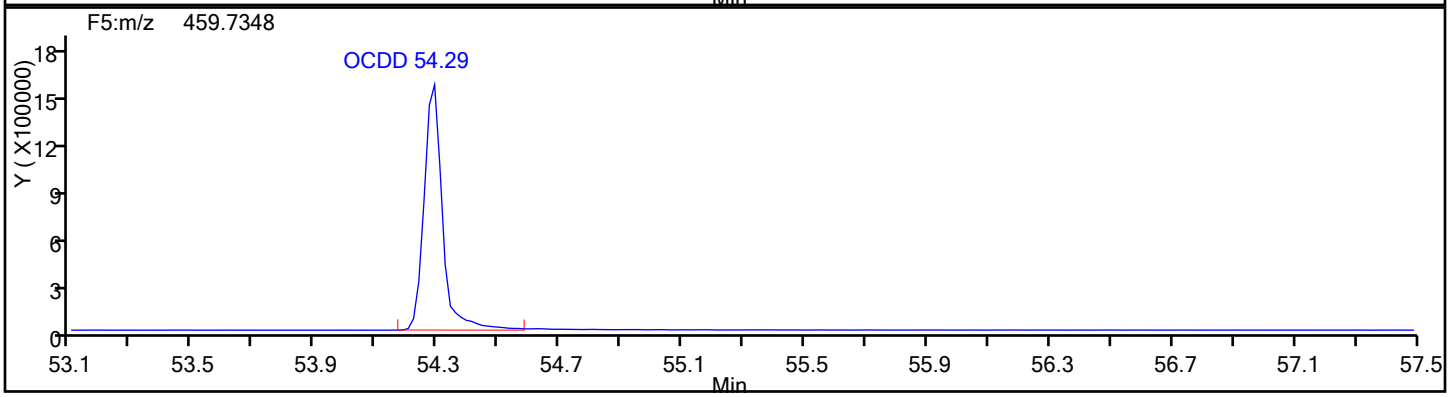
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

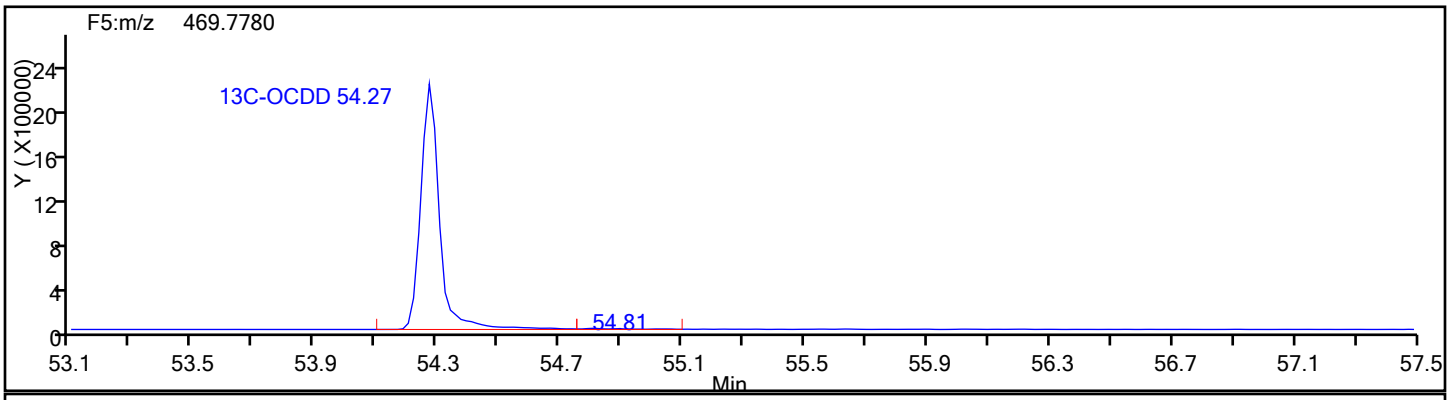
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

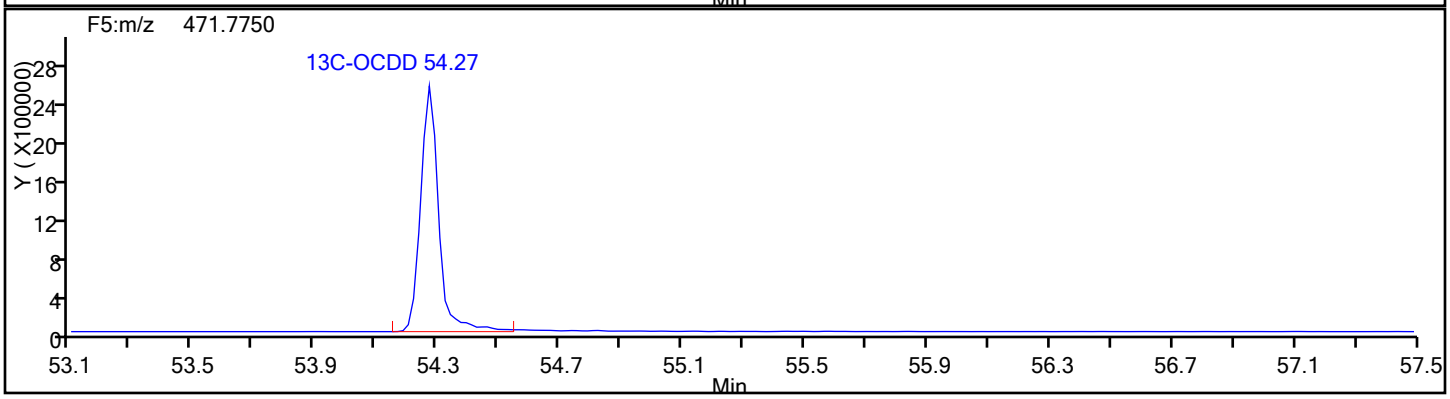
OCDD





OCDD Standards





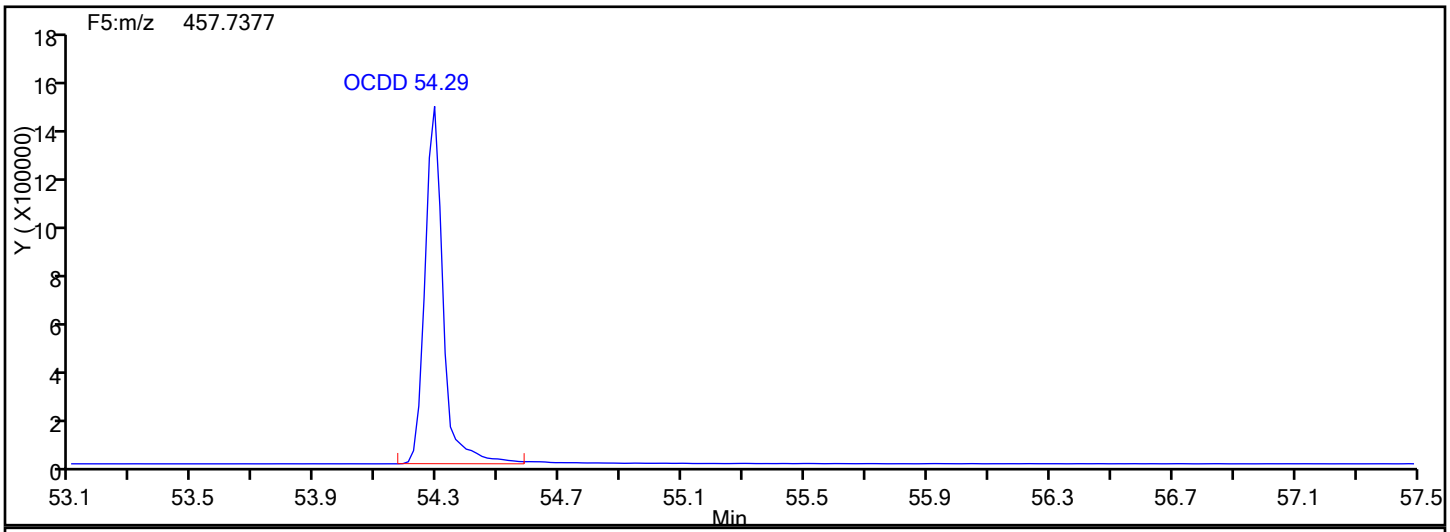
Report Date: 01-Feb-2017 12:19:18 Chrom Revision: 2.2 30-Jan-2017 14:50:44

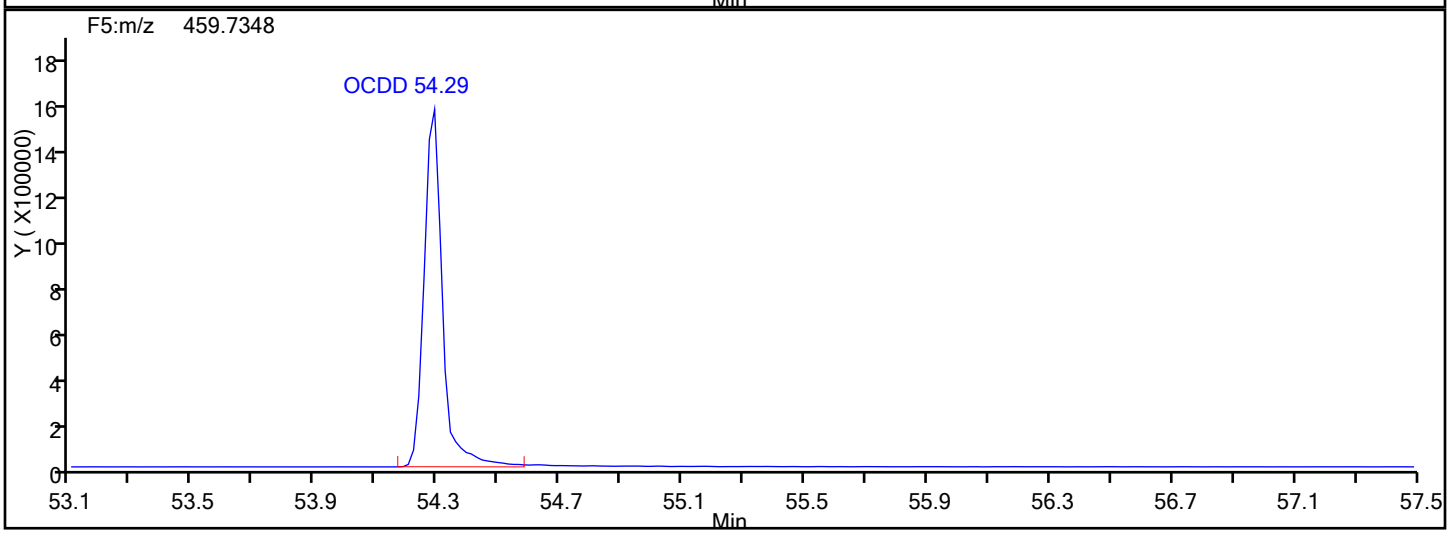
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

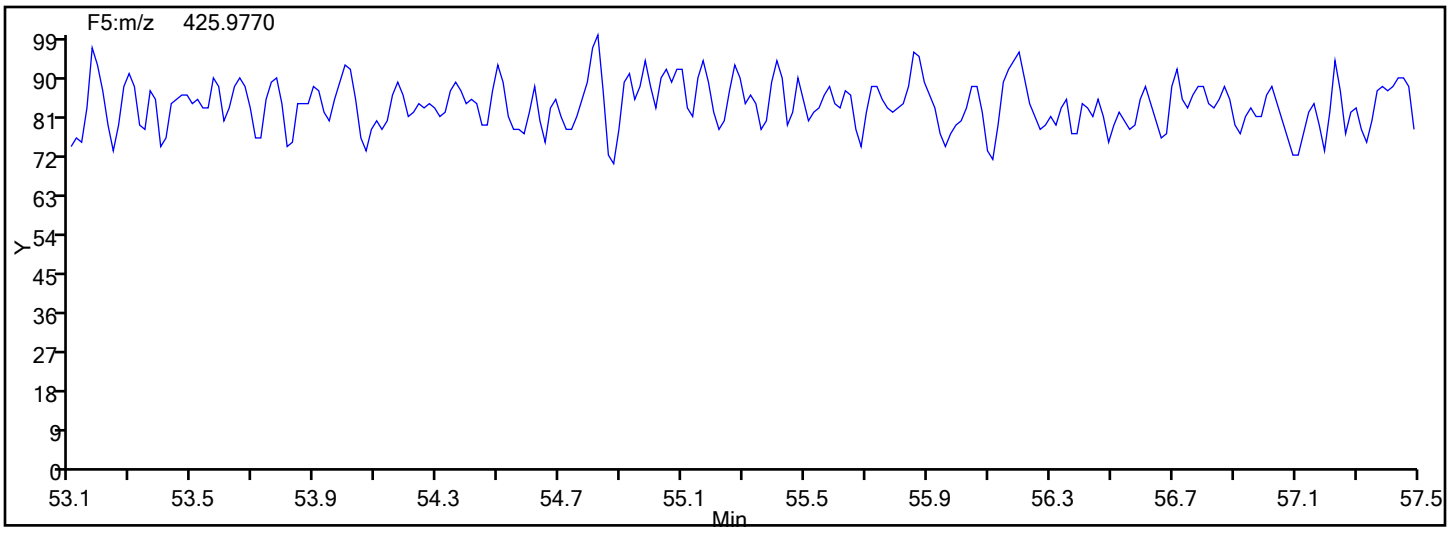
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



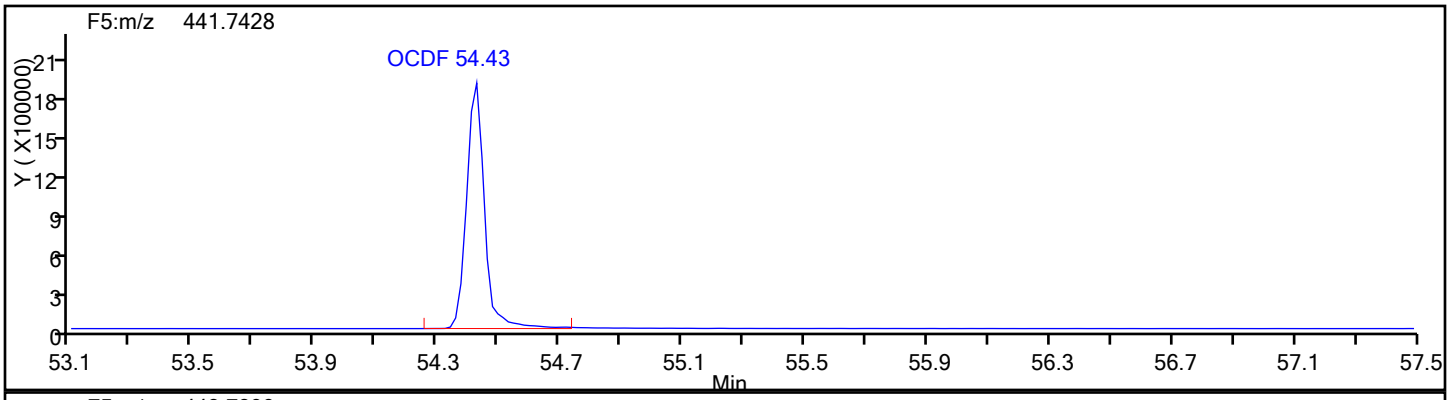
Report Date: 01-Feb-2017 12:19:18 Chrom Revision: 2.2 30-Jan-2017 14:50:44

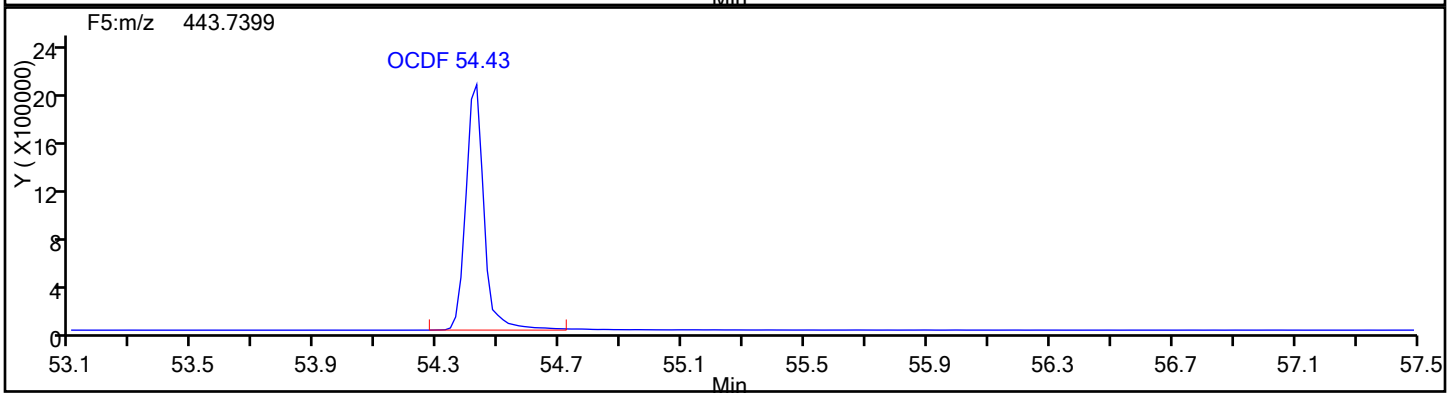
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

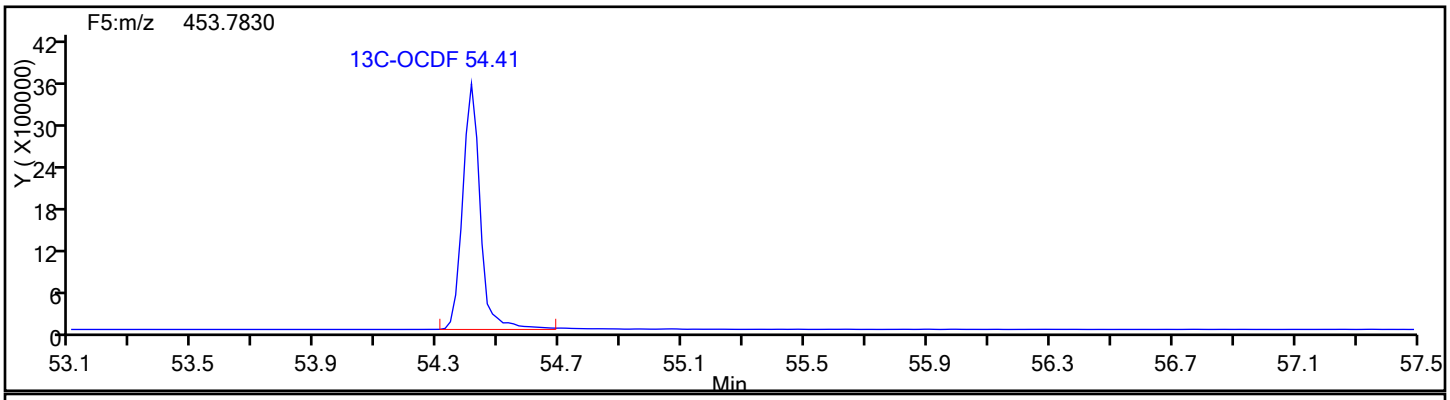
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

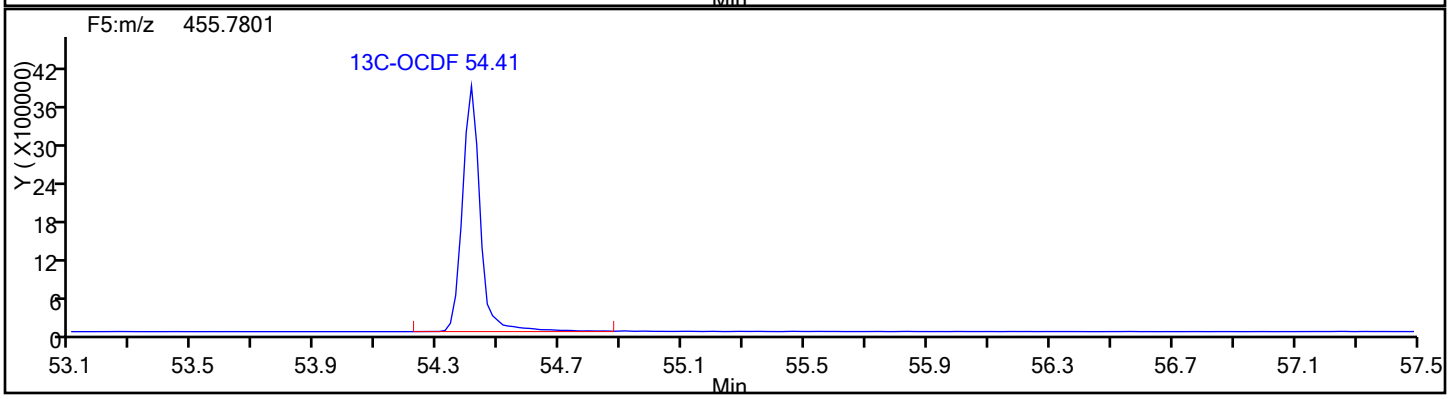
OCDF





OCDF Standards





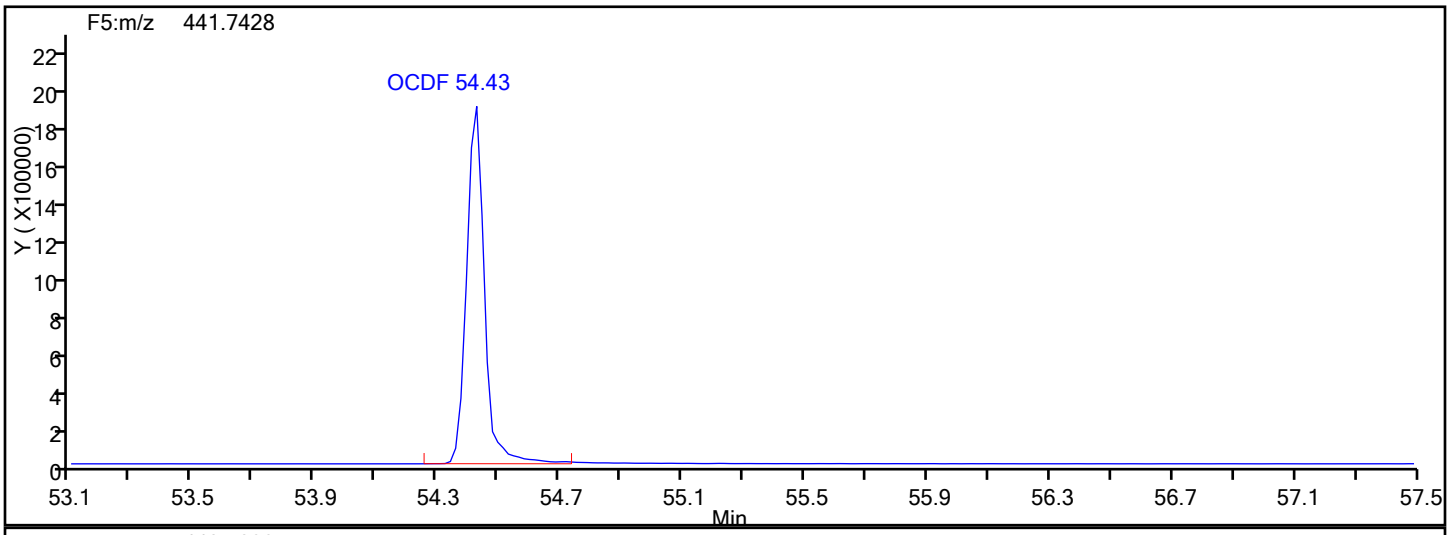
Report Date: 01-Feb-2017 12:19:18 Chrom Revision: 2.2 30-Jan-2017 14:50:44

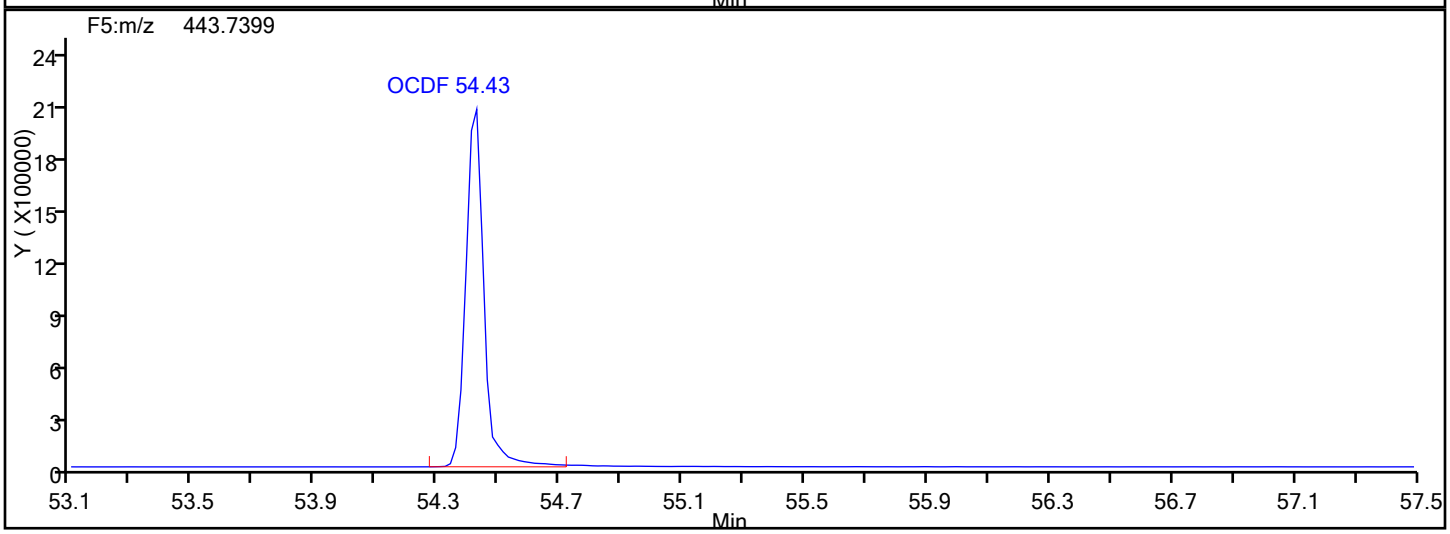
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

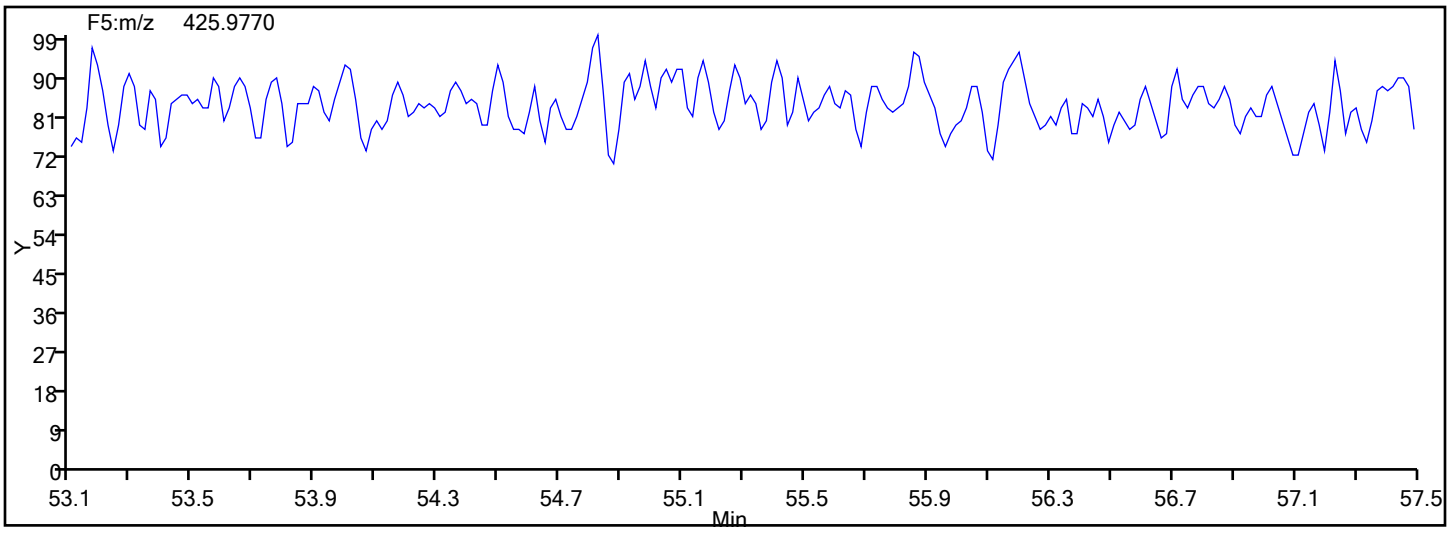
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



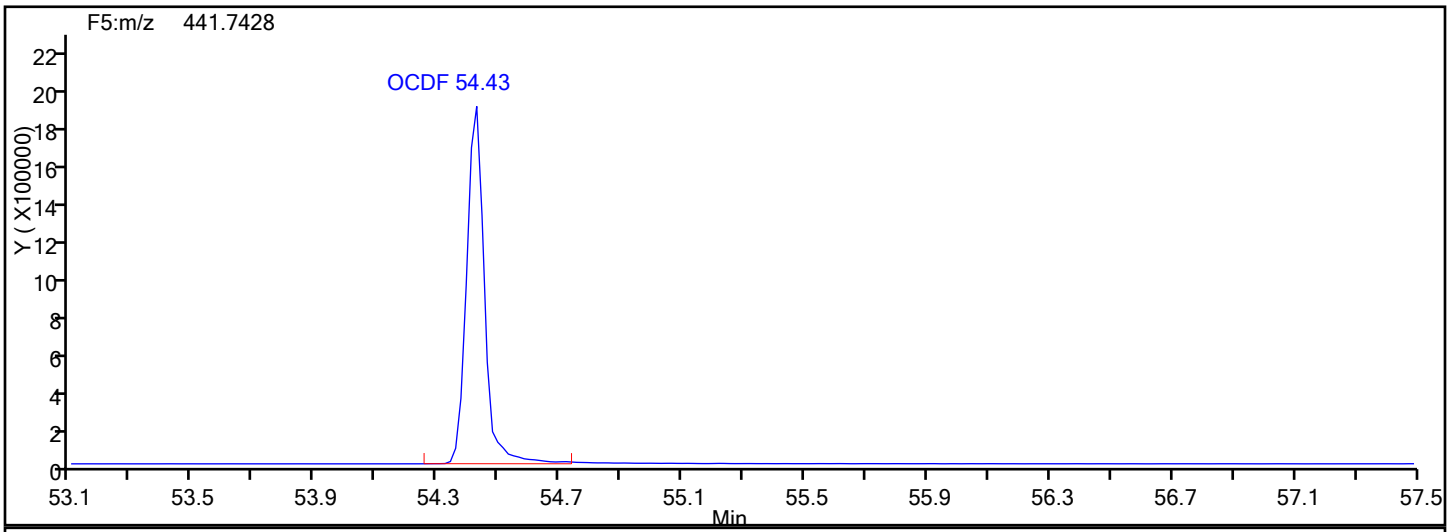
Report Date: 01-Feb-2017 12:19:18 Chrom Revision: 2.2 30-Jan-2017 14:50:44

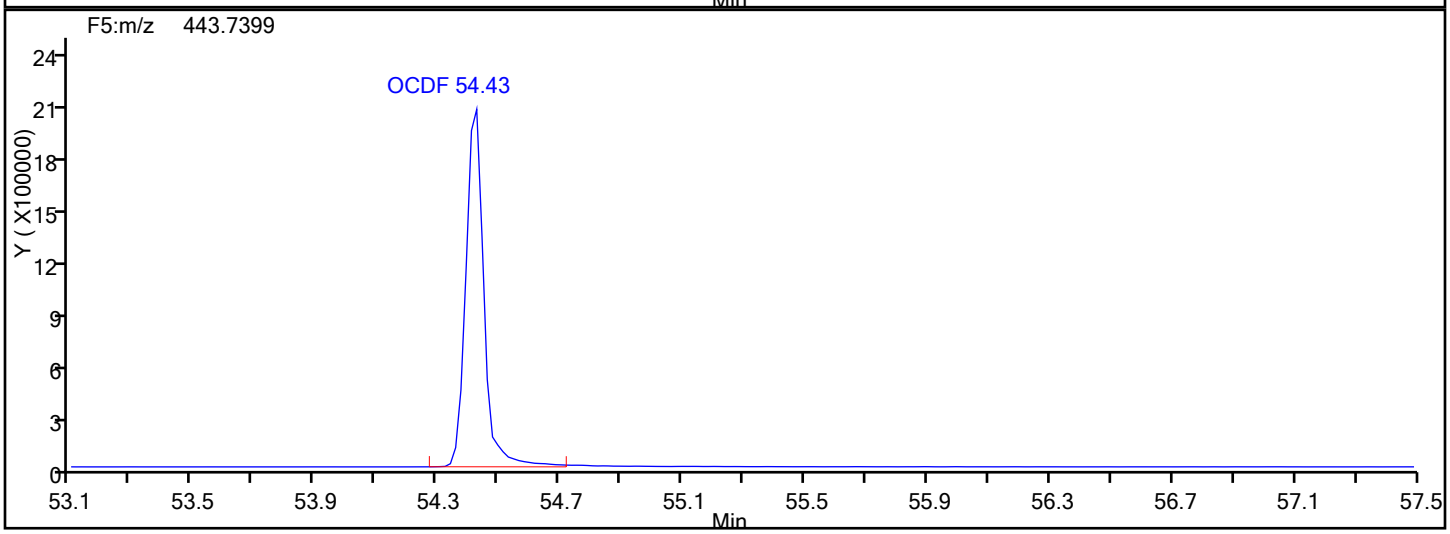
TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516w1.d

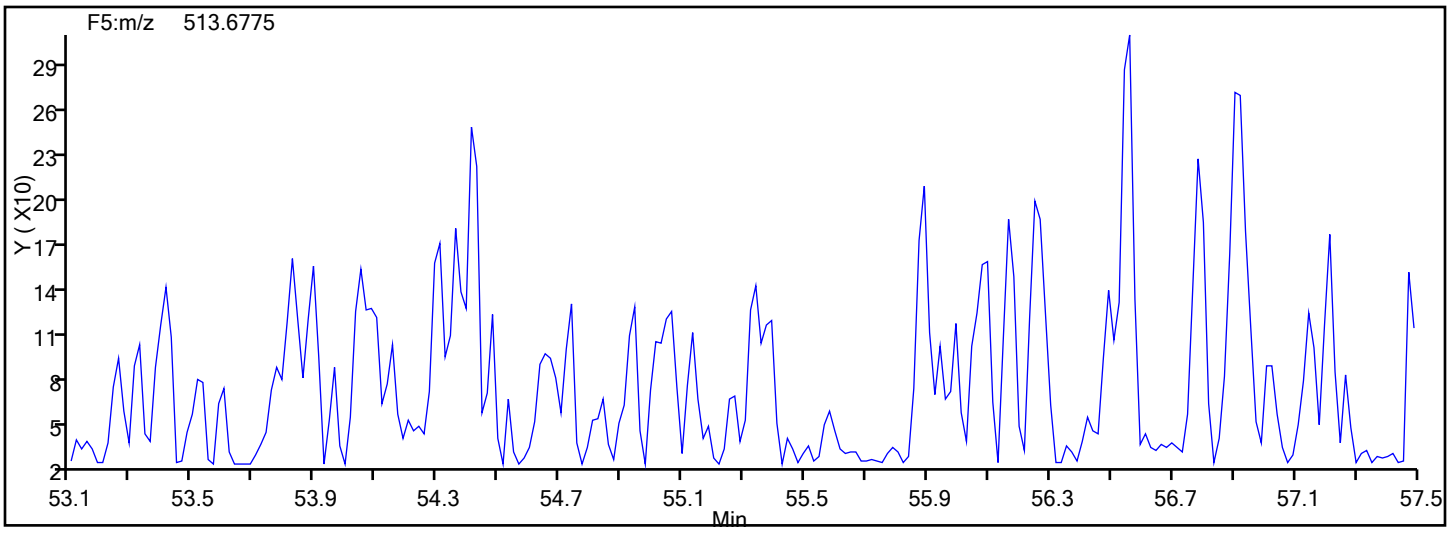
Injection Date:	16-May-2014 10:23:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	DavidsonM
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	7768	Sample Line#:	1
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 140-35991/20-A

Matrix: Sediment Lab File ID: mb140-3599120-a.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10(g) Date Analyzed: 12/17/2019 04:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		1.0	0.063
41903-57-5	Total TCDD	0.118	J	1.0	0.063
40321-76-4	1,2,3,7,8-PeCDD	ND		5.0	0.060
36088-22-9	Total PeCDD	ND		5.0	0.060
39227-28-6	1,2,3,4,7,8-HxCDD	ND		5.0	0.041
57653-85-7	1,2,3,6,7,8-HxCDD	ND		5.0	0.040
19408-74-3	1,2,3,7,8,9-HxCDD	ND		5.0	0.038
34465-46-8	Total HxCDD	0.683	J q	5.0	0.039
35822-46-9	1,2,3,4,6,7,8-HpCDD	0.189	J q	5.0	0.071
37871-00-4	Total HpCDD	0.435	J q	5.0	0.071
3268-87-9	OCDD	2.36	J q	10	0.019
51207-31-9	2,3,7,8-TCDF	ND		1.0	0.032
30402-14-3	Total TCDF	0.116	J q	1.0	0.032
57117-41-6	1,2,3,7,8-PeCDF	ND		5.0	0.053
57117-31-4	2,3,4,7,8-PeCDF	ND		5.0	0.048
30402-15-4	Total PeCDF	ND		5.0	0.053
70648-26-9	1,2,3,4,7,8-HxCDF	ND		5.0	0.050
57117-44-9	1,2,3,6,7,8-HxCDF	ND		5.0	0.046
60851-34-5	2,3,4,6,7,8-HxCDF	ND		5.0	0.050
72918-21-9	1,2,3,7,8,9-HxCDF	ND		5.0	0.067
55684-94-1	Total HxCDF	ND		5.0	0.067
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.175	J q	5.0	0.017
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.193	J	5.0	0.028
38998-75-3	Total HpCDF	0.368	J q	5.0	0.022
39001-02-0	OCDF	1.32	J	10	0.024

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 140-35991/20-A

Matrix: Sediment Lab File ID: mb140-3599120-a.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10(g) Date Analyzed: 12/17/2019 04:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	65		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	65		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	67		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	77		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	70		23-140
114423-97-1	13C-OCDD	59		17-157
89059-46-1	13C-2,3,7,8-TCDF	66		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	67		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	72		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	73		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	74		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	71		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	72		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	64		26-138
109719-78-0	13C-OCDF	63		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	76		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Sample Type: MB
Inject. Date: 17-Dec-2019 04:00:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 07:07:00 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: parslyt Date: 17-Dec-2019 05:18:31

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:51						0.0317	0.0317		
A Non-2,3,7,8-sub-TCDD	29:30	2245	0.87	1.1733	0.0591	0.0591	0.0317	0.0591		
S Total TCDD					0.0591	0.0591	0.0317	0.0317		
2,3,7,8-TCDF	28:52						0.0160	0.0160		
A Non-2,3,7,8-sub-TCDF	28:13	3386	0.77	1.0881	0.1430	0.0582	0.0160	0.0582		RQa
S Total TCDF					0.1430	0.0582	0.0160	0.0160		RQ
1,2,3,7,8-PeCDD	40:35						0.0300	0.0300		
A Non-2,3,7,8-sub-PeCDD	39:27						0.0300	0.0300		
S Total PeCDD							0.0300	0.0300		
1,2,3,7,8-PeCDF	38:48						0.0264	0.0264		
2,3,4,7,8-PeCDF	40:03						0.0241	0.0241		
A Non-2,3,7,8-sub-PeCDF	38:02						0.0251	0.0251		
S Total PeCDF							0.0264	0.0264		
1,2,3,4,7,8-HxCDD	44:51						0.0204	0.0204		
1,2,3,6,7,8-HxCDD	44:58						0.0199	0.0199		
1,2,3,7,8,9-HxCDD	45:21						0.0189	0.0189		
A Non-2,3,7,8-sub-HxCDD	44:19	11709	1.24	1.1700	0.3879	0.3413	0.0197	0.3413		RQM
S Total HxCDD					0.3879	0.3413	0.0197	0.0197		RQ
1,2,3,4,7,8-HxCDF	43:49						0.0252	0.0252		
1,2,3,6,7,8-HxCDF	43:57						0.0231	0.0231		
2,3,4,6,7,8-HxCDF	44:40						0.0249	0.0249		
1,2,3,7,8,9-HxCDF	45:36						0.0337	0.0337		
A Non-2,3,7,8-sub-HxCDF	44:10						0.0262	0.0262		
S Total HxCDF							0.0337	0.0337		
1,2,3,4,6,7,8-HpCDD	49:38	2719	1.04	1.1204	0.1035	0.0945	0.0357	0.0357		RQM
A Non-2,3,7,8-sub-HpCDD	49:03	3535	1.15	1.1204	0.1229	0.1229	0.0357	0.1229		
S Total HpCDD					0.2264	0.2174	0.0357	0.0357		RQ
1,2,3,4,6,7,8-HpCDF	47:57	4471	1.04	1.4984	0.0970	0.0877	0.008478	0.008478		RQM
1,2,3,4,7,8,9-HpCDF	50:17	3456	1.08	1.3807	0.0964	0.0964	0.0140	0.0140		M
A Non-2,3,7,8-sub-HpCDF	49:20						0.0107	0.0107		

Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HpCDF					0.1934	0.1841	0.0112	0.0112		RQ
OCDD	53:53	26786	0.89	1.2073	1.293	1.178	0.009718	0.009718		RQM
OCDF	54:01	22107	0.89	1.1162	0.6589	0.6589	0.0120	0.0120		M
D 13C-2,3,7,8-TCDD	30:47	1618624	0.78	1.0709	32.7	32.7	0.3308	0.3308	65.45	
D 13C-2,3,7,8-TCDF	28:47	2672751	0.79	1.7545	33.0	33.0	0.1159	0.1159	65.96	
D 13C-1,2,3,7,8-PeCDD	40:34	1310928	1.65	0.8743	32.5	32.5	0.2880	0.2880	64.92	
D 13C-1,2,3,7,8-PeCDF	38:46	2104837	1.59	1.3704	33.3	33.3	0.3190	0.3190	66.51	
D 13C-2,3,4,7,8-PeCDF	40:01	2116179	1.62	1.3837	33.1	33.1	0.3160	0.3160	66.22	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1335487	1.30	0.8772	33.7	33.7	0.1317	0.1317	67.37	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1596368	1.35	0.9171	38.5	38.5	0.1260	0.1260	77.03	
D 13C-1,2,3,4,7,8-HxCDF	43:47	1944414	0.54	1.1892	36.2	36.2	0.2791	0.2791	72.36	
D 13C-1,2,3,6,7,8-HxCDF	43:55	2421015	0.55	1.4625	36.6	36.6	0.2270	0.2270	73.26	
D 13C-2,3,4,6,7,8-HxCDF	44:39	2197505	0.51	1.3197	36.8	36.8	0.2515	0.2515	73.69	
D 13C-1,2,3,7,8,9-HxCDF	45:35	1927677	0.53	1.2001	35.5	35.5	0.2766	0.2766	71.08	
D 13C-1,2,3,4,6,7,8-HpCDD	49:37	1283511	1.08	0.8155	34.8	34.8	0.2353	0.2353	69.65	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	1701112	0.48	1.0496	35.9	35.9	0.2664	0.2664	71.72	
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	1298750	0.46	0.8947	32.1	32.1	0.3125	0.3125	64.24	
D 13C-OCDD	53:52	1883962	0.97	0.7044	59.2	59.2	0.2010	0.2010	59.18	
D 13C-OCDF	54:00	3005989	0.91	1.0615	62.7	62.7	0.2517	0.2517	62.66	
$ 37Cl4-2,3,7,8-TCDD	30:50	427891		1.2266	7.553	7.553	0.0182	0.0182	75.53	
* 13C-1,2,3,4-TCDD	30:16	4618832	0.82	9.1E+04	100.0	100.0				
* 13C-1,2,3,7,8,9-HxCDD	45:19	4519377	1.25	1E+05	100.0	100.0				

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Sample Type: MB
Inject. Date: 17-Dec-2019 04:00:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-007
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 07:07:00 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1004

First Level Reviewer: parslyt Date: 17-Dec-2019 05:18:31

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:50						25	62			
321.8936	30:50						27	67			
A Non-2,3,7,8-sub-TCDD											
319.8965	24:58	29:30	-271	0.811	1044	230	25	62	9		
321.8936	24:54	29:30	-275	0.809	1201	180	27	67	7	0.87(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:50						13	32			
305.8987	28:50						29	72			
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	28:57	28:13	43	1.005	6406	826	13	32	64		a
	Empc Correction				1473	246	13	32	19		
305.8987	28:58	28:13	44	1.006	1913	320	29	72	11	3.35(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:35						41	102			
357.8516	40:35						31	77			
A Non-2,3,7,8-sub-PeCDD											
355.8546	39:27						41	102			
357.8516	39:27						31	77			
1,2,3,7,8-PeCDF											
339.8597	38:47						27	67			
341.8567	38:47						71	177			
2,3,4,7,8-PeCDF											
339.8597	40:02						27	67			
341.8567	40:02						71	177			

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											
339.8597	38:02						27	67			
341.8567	38:02						71	177			
1,2,3,4,7,8-HxCDD											
389.8158	44:50						45	112			
391.8127	44:50						22	55			
1,2,3,6,7,8-HxCDD											
389.8158	44:57						45	112			
391.8127	44:57						22	55			
1,2,3,7,8,9-HxCDD											
389.8158	45:20						45	112			
391.8127	45:20						22	55			
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	43:50	44:19	-29	0.976	6482	1185	45	112	26		M
391.8127	43:50	44:19	-29	0.976	6823	923	22	55	42	0.95(1.05-1.43)	M
	Empc Correction				5227	955	22	55	43		
389.8158	43:58	44:19	-21	0.000			45	112			
391.8127	43:58	44:19	-21	0.000			22	55		0.00(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:49						50	125			
375.8178	43:49						88	220			
1,2,3,6,7,8-HxCDF											
373.8208	43:57						50	125			
375.8178	43:57						88	220			
2,3,4,6,7,8-HxCDF											
373.8208	44:40						50	125			
375.8178	44:40						88	220			
1,2,3,7,8,9-HxCDF											
373.8208	45:36						50	125			
375.8178	45:36						88	220			
A Non-2,3,7,8-sub-HxCDF											
373.8208	44:10						50	125			
375.8178	44:10						88	220			
1,2,3,4,6,7,8-HpCDD											RQM
423.7767	49:38	49:37	0	1.000	1644	386	22	55	18		M
	Empc Correction				1386	345	22	55	16		
425.7737	49:38	49:37	0	1.000	1333	332	50	125	7	1.23(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDD											
423.7767	48:27	49:03	-36	0.977	1892	282	22	55	13		
425.7737	48:26	49:03	-37	0.976	1643	280	50	125	6	1.15(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											RQM
407.7817	47:57	47:58	-2	1.000	2754	545	26	65	21		M
	Empc Correction				2279	612	26	65	24		
409.7788	47:58	47:58	-1	1.000	2192	589	9	22	65	1.26(0.88-1.20)	M
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:17	50:17	-1	1.000	1796	376	26	65	14		M
409.7788	50:16	50:17	-2	1.000	1660	294	9	22	33	1.08(0.88-1.20)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											
407.7817	49:20						26	65			
409.7788	49:20						9	22			
OCDD											RQM
457.7377	53:53	53:53	-1	1.000	15236	3824	1	2	3824		
	Empc Correction				12613	3592	1	2	3592		
459.7348	53:53	53:53	-1	1.000	14173	4036	17	42	237	1.08(0.76-1.02)	M
OCDF											M
441.7428	54:01	54:01	-1	1.000	10382	2534	15	37	169		M
443.7399	54:01	54:01	-1	1.000	11725	2945	21	52	140	0.89(0.76-1.02)	M
13C-2,3,7,8-TCDD											
331.9368	30:47	30:45	-2	1.017	707857	76775	372	930	206		
333.9338	30:47	30:45	-2	1.017	910767	97927	358	895	274	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:47	28:46	-2	0.951	1183596	138127	266	665	519		
317.9389	28:47	28:46	-2	0.951	1489155	163571	153	382	1069	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:30	-1	1.340	816266	178658	150	375	1191		
369.8919	40:34	40:30	-1	1.340	494662	108622	369	922	294	1.65(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:46	38:42	-1	1.281	1291608	238865	556	1390	430		
353.8970	38:46	38:42	-1	1.281	813229	151019	345	862	438	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	39:58	-1	1.322	1308974	287050	556	1390	516		
353.8970	40:01	39:58	-1	1.322	807205	170706	345	862	495	1.62(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	-1	0.989	753884	200287	242	605	828		
403.8529	44:49	44:49	-1	0.989	581603	158036	217	542	728	1.30(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	-1	0.991	917826	206595	242	605	854		
403.8529	44:56	44:56	-1	0.991	678542	159020	217	542	733	1.35(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:47	-1	0.966	679807	172535	467	1167	369		
385.8610	43:47	43:47	-1	0.966	1264607	330285	851	2127	388	0.54(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:55	43:56	-1	0.969	859172	206368	467	1167	442		
385.8610	43:55	43:56	-1	0.969	1561843	378177	851	2127	444	0.55(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	-1	0.985	740322	178805	467	1167	383		
385.8610	44:39	44:39	-1	0.985	1457183	368695	851	2127	433	0.51(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	-1	1.006	670530	139205	467	1167	298		
385.8610	45:35	45:35	-1	1.006	1257147	268242	851	2127	315	0.53(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:37	49:36	0	1.095	666308	116671	274	685	426		
437.8140	49:36	49:36	-1	1.094	617203	108406	488	1220	222	1.08(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	-1	1.058	548676	112914	543	1357	208		
419.8220	47:57	47:57	-1	1.058	1152436	229524	567	1417	405	0.48(0.37-0.51)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:16	50:16	-1	1.109	410244	69817	543	1357	129		
419.8220	50:16	50:16	-1	1.109	888506	155174	567	1417	274	0.46(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	-1	1.188	925827	188464	320	800	589		
471.7750	53:52	53:52	-1	1.188	958135	195082	242	605	806	0.97(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:01	-1	1.192	1429186	319153	548	1370	582		
455.7801	54:00	54:01	-1	1.192	1576803	350918	513	1282	684	0.91(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:50	30:48	-2	1.018	427891	43244	46	115	940		
13C-1,2,3,4-TCDD											
331.9368	30:16	30:19	-3		2079827	233544	372	930	628		
333.9338	30:16	30:19	-3		2539005	281534	358	895	786	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:20	-1		2510453	553187	242	605	2286		
403.8529	45:19	45:20	-1		2008924	439401	217	542	2025	1.25(1.05-1.43)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Inject. Date: 17-Dec-2019 04:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1618624	174702

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1618624	174702

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:58	1044	230	1201	180	0.0591	0.87	
Signal Totals:							
	1044	230	1201	180			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2245	410				0.87	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0591 = (2245 * 50.000) / (1618624 * 1.173)

Eurofins TestAmerica, Knoxville
AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Inject. Date: 17-Dec-2019 04:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2672751	301698

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2672751	301698

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
28:57	6406	826	1913	320	0.1430	3.35	RQa
28:57	1473	246	1913	320	0.0582		Empc Correction
Signal Totals:							
	1473	246	1913	320			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	8319	1146				3.35	RQa
	3386	566					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1430 = (8319 * 50.000) / (2672751 * 1.088)
Empc Amount: 0.0582 = (3386 * 50.000) / (2672751 * 1.088)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Inject. Date: 17-Dec-2019 04:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1335487	358323
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1596368	365615
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1465927	361969

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:50	6482	1185	6823	923	0.3879	0.95	RQM
43:50	6482	1185	5227	955	0.3413		Empc Correction
43:58	0	0	0	0		0.00	
Signal Totals:							
	6482	1185	5227	955			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	13305	2108				0.95	RQM
	11709	2140					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3879 = (13305 * 50.000) / (1465927 * 1.170)
Empc Amount: 0.3413 = (11709 * 50.000) / (1465927 * 1.170)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Lims ID: MB 140-35991/20-A
Client ID:
Inject. Date: 17-Dec-2019 04:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1283511	225077

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1283511	225077

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	1892	282	1643	280	0.1229	1.15	
Signal Totals:							
	1892	282	1643	280			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3535	562				1.15	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

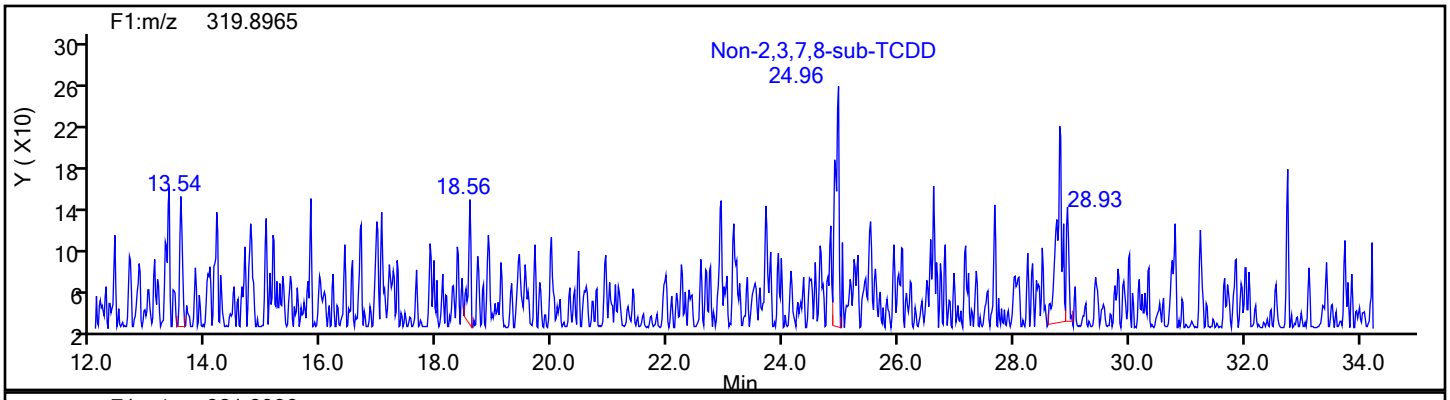
Amount: 0.1229 = (3535 * 50.000) / (1283511 * 1.120)

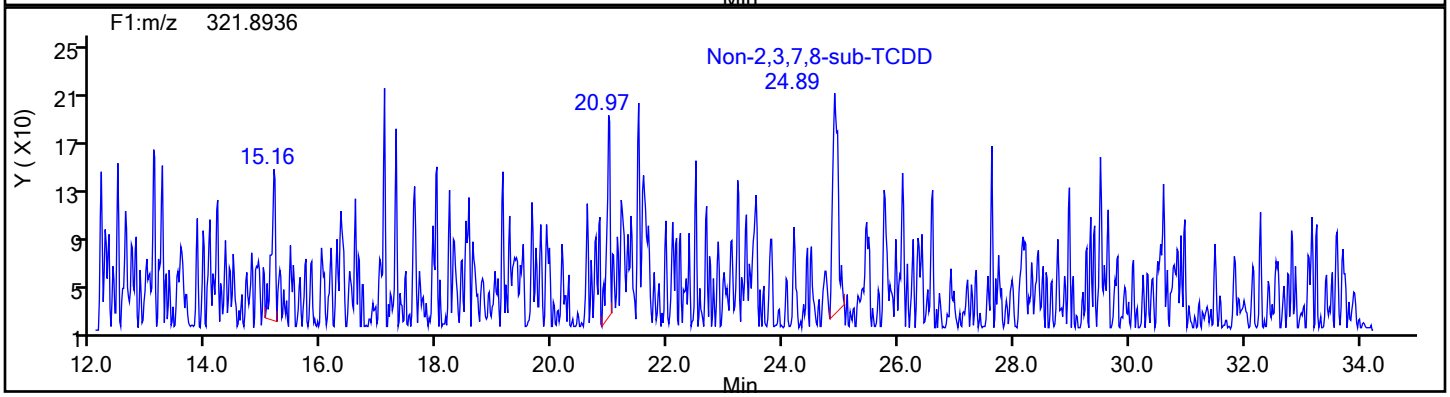
Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

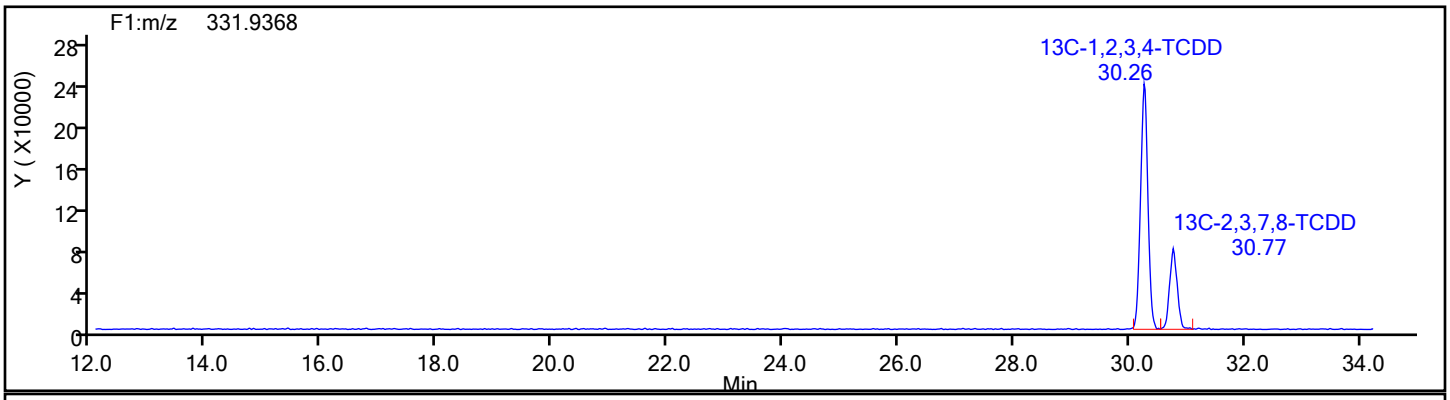
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

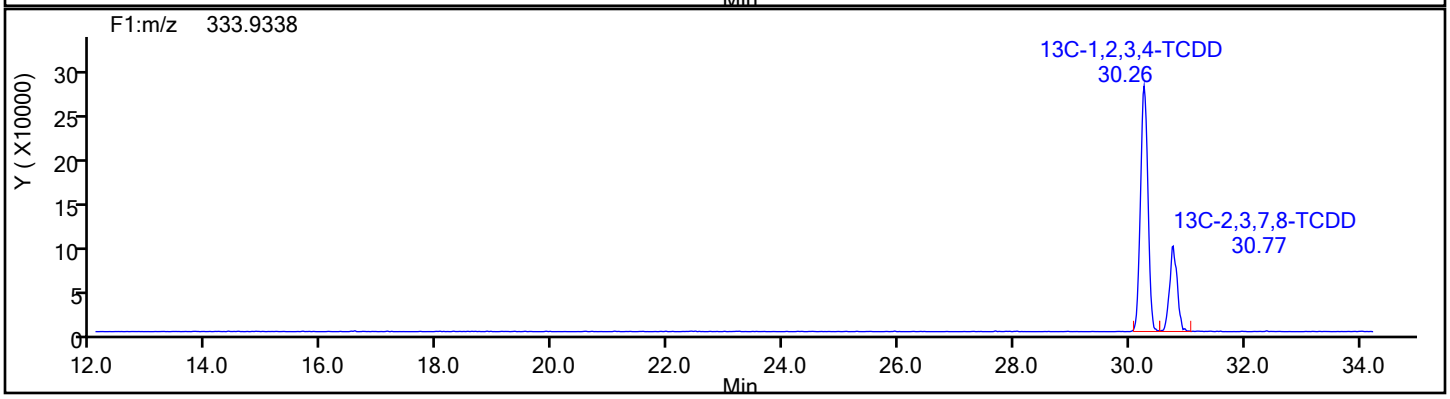
TCDD





TCDD Standards



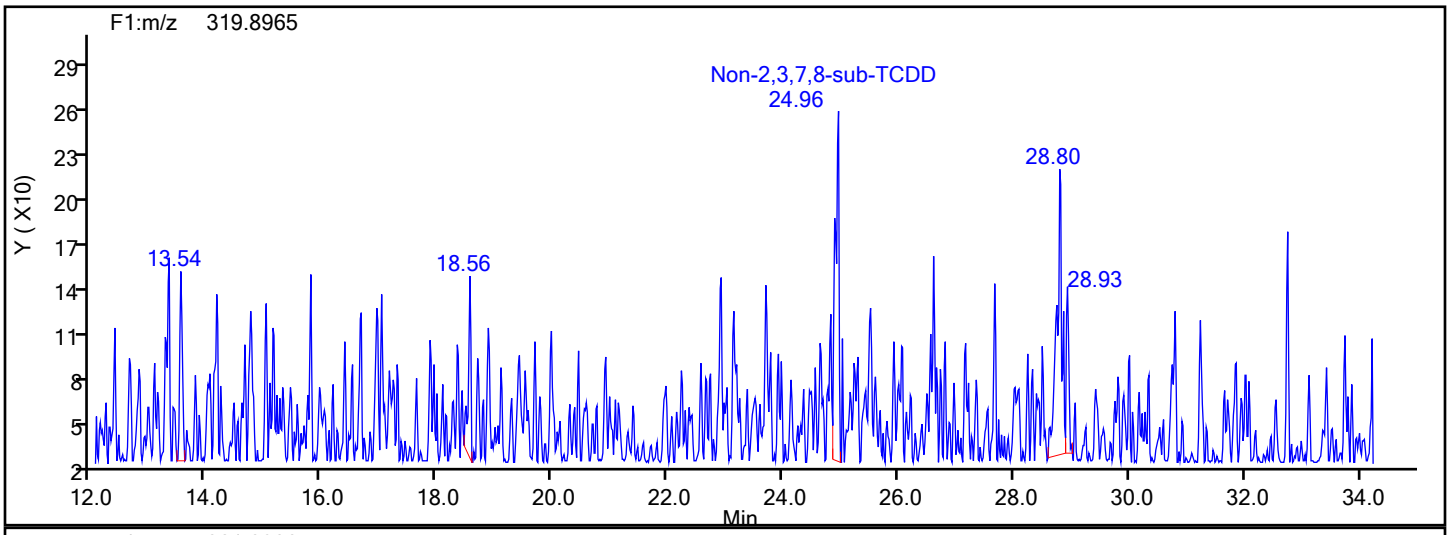


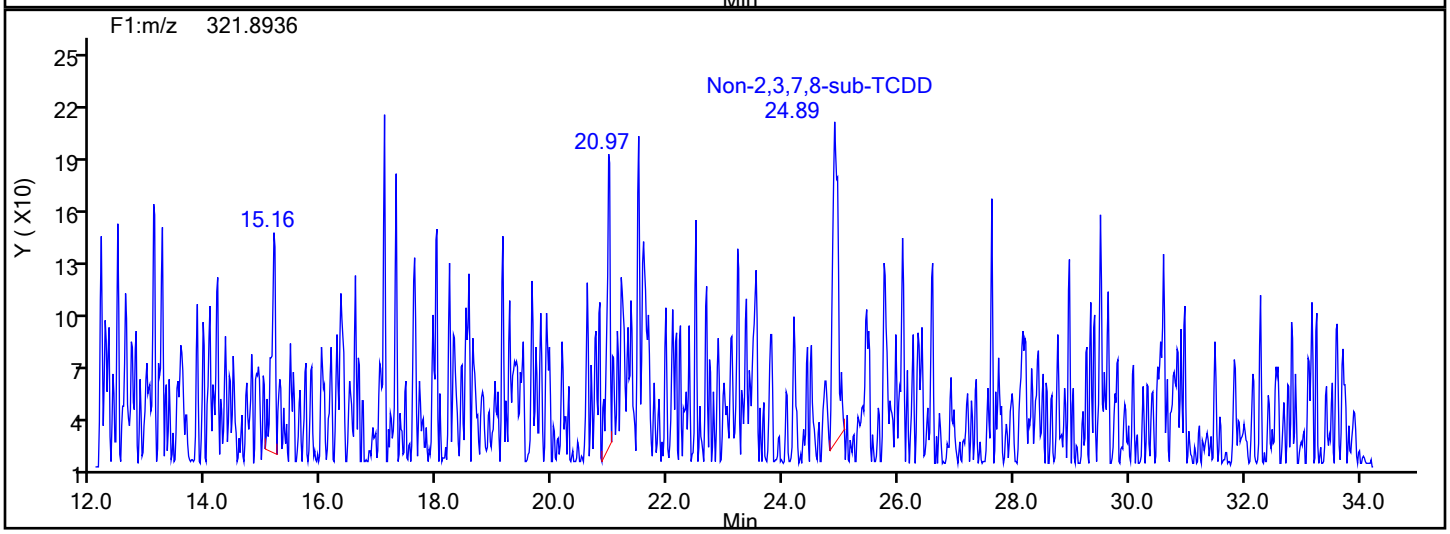
Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

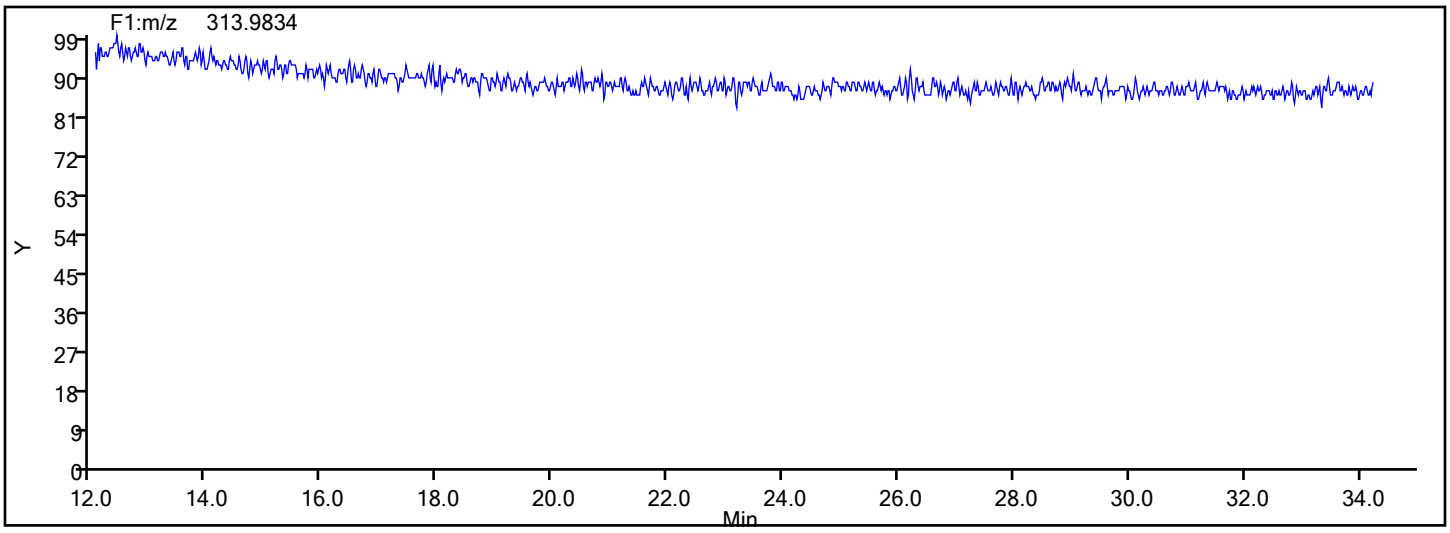
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



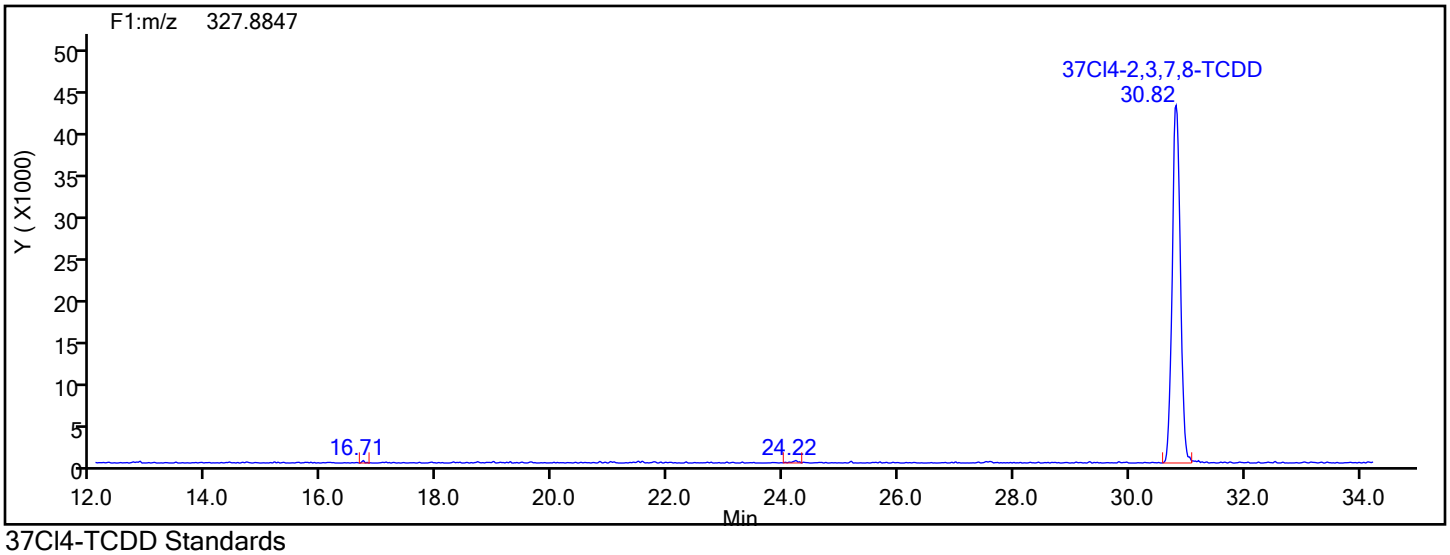
Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

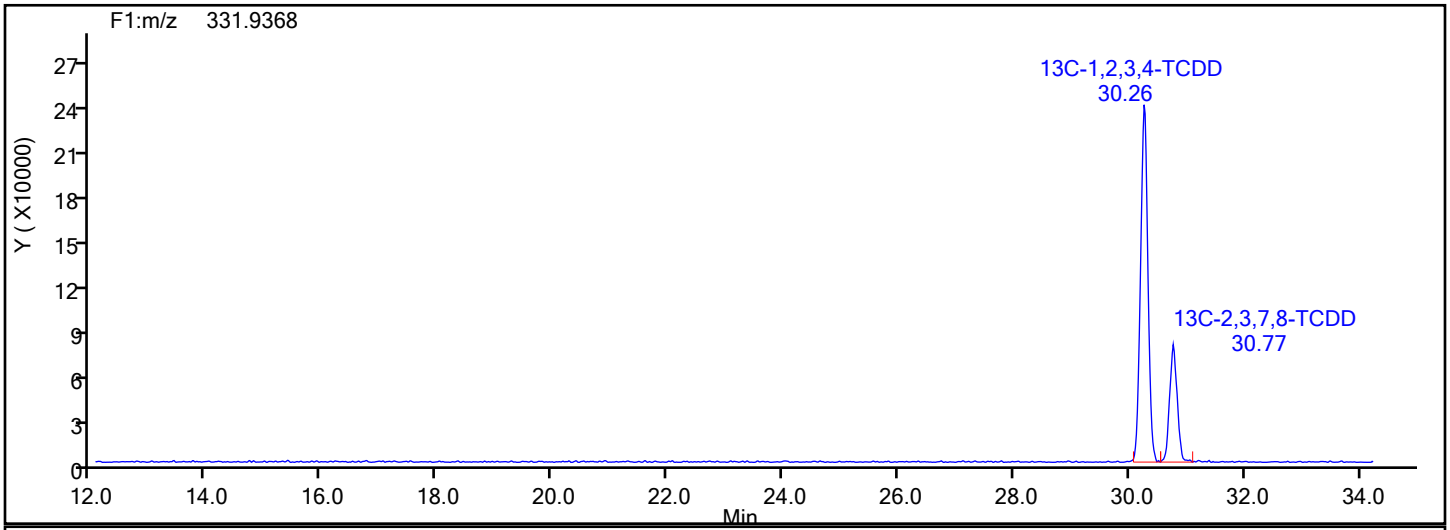
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d

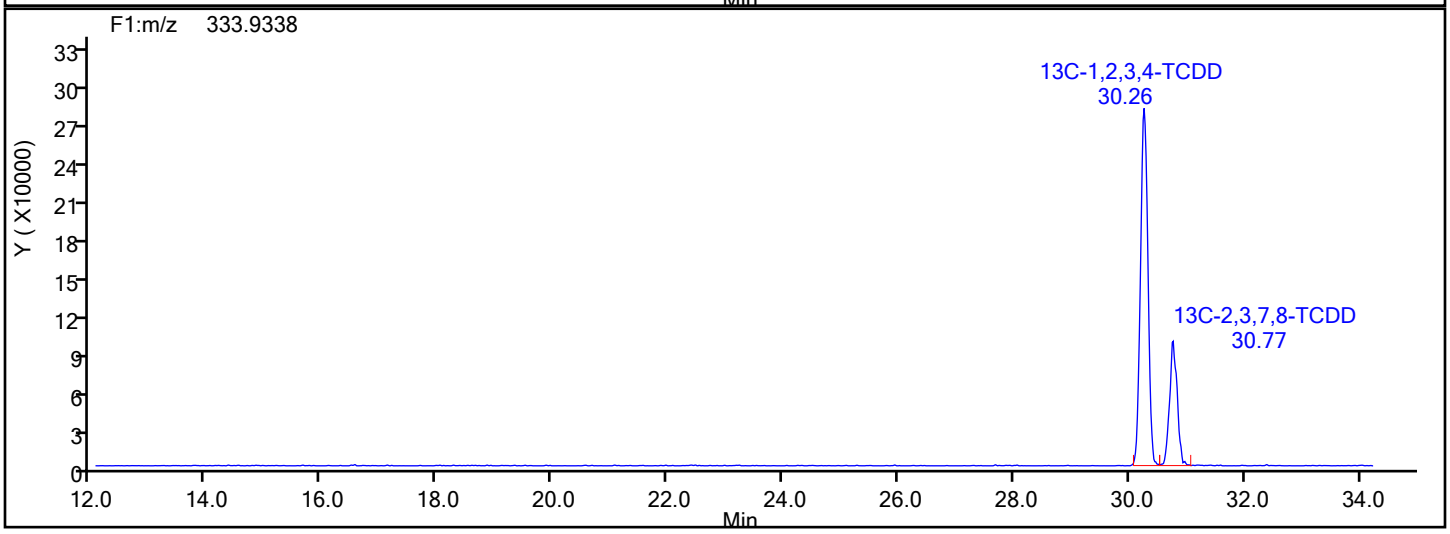
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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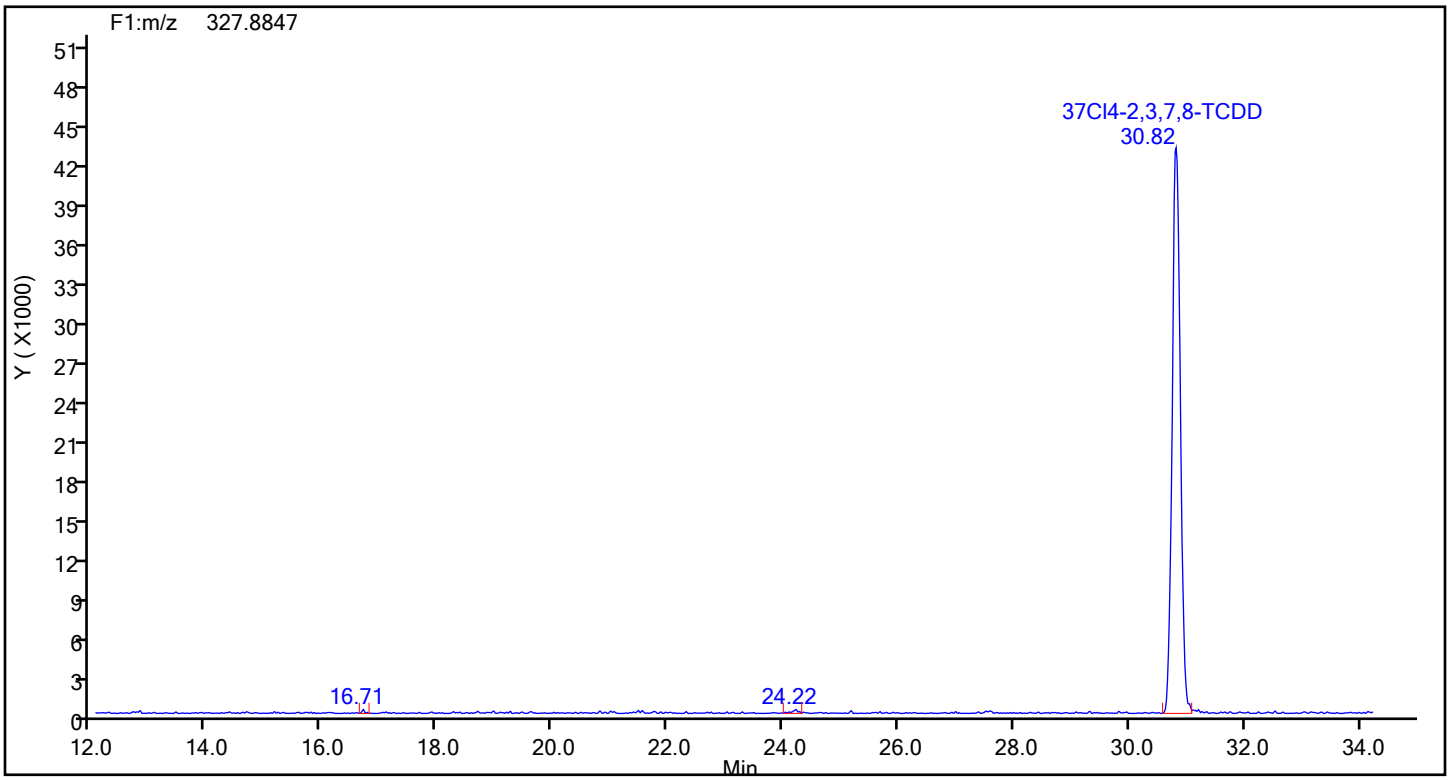
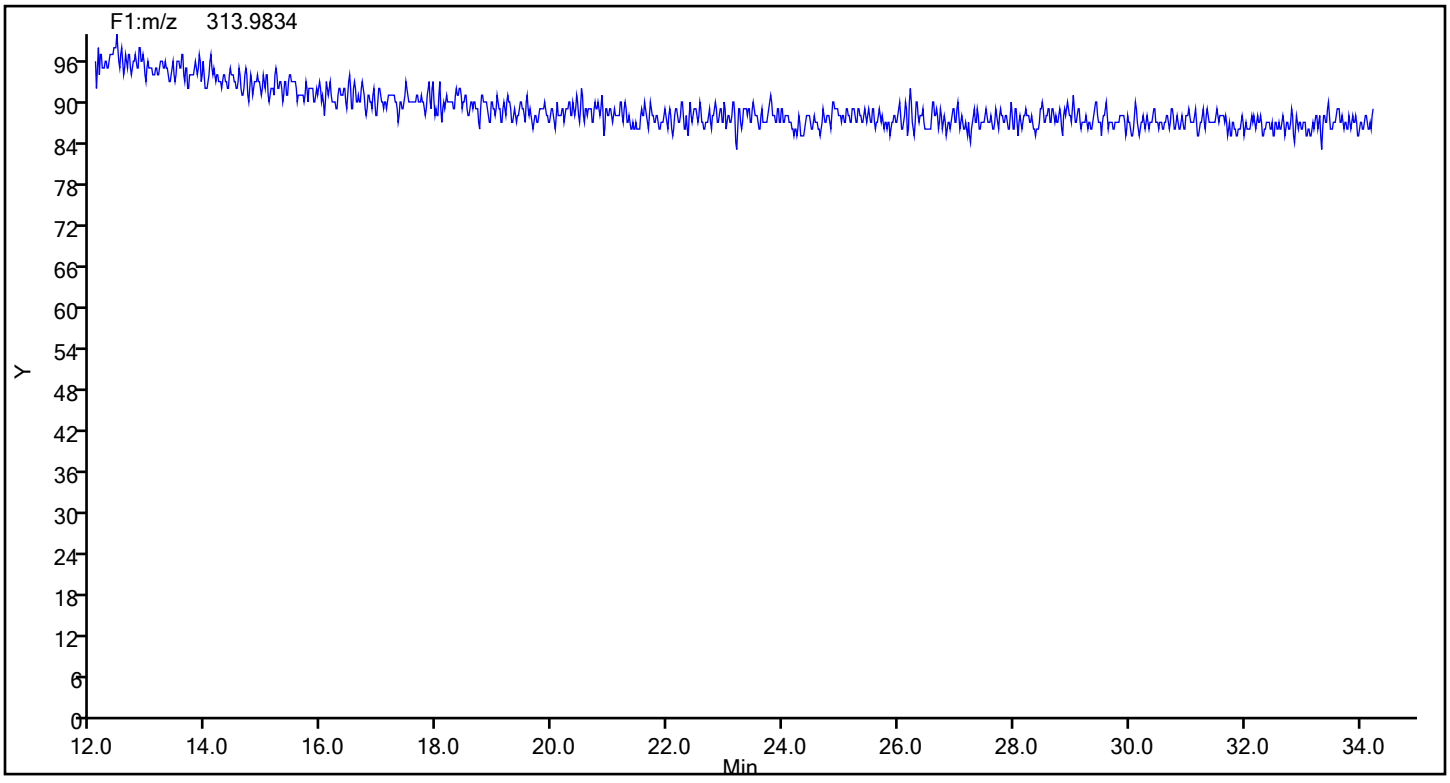
37Cl4-TCDD



37Cl4-TCDD Lock Mass



Report Date: 17-Dec-2019 09:50:02 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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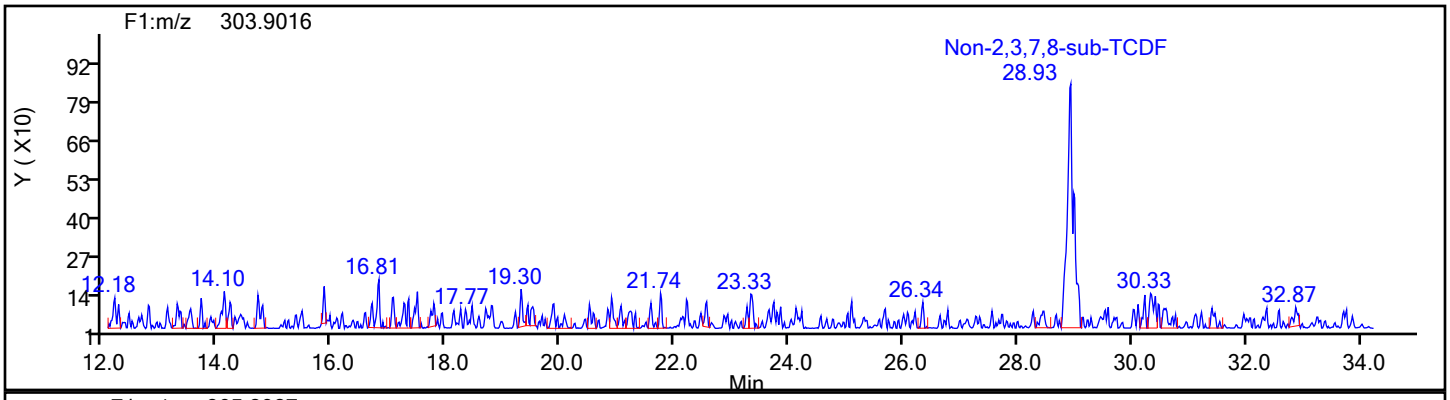
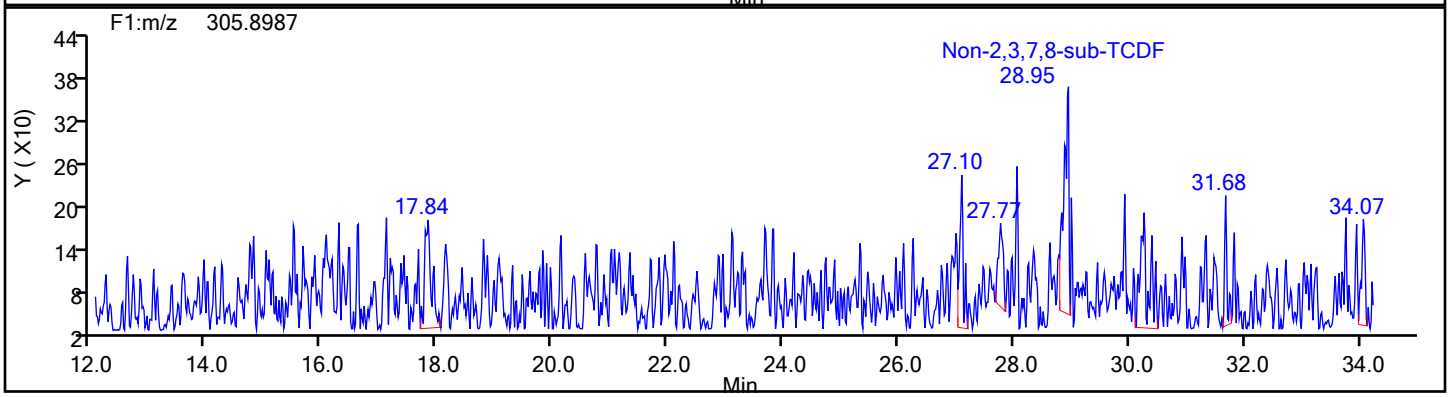
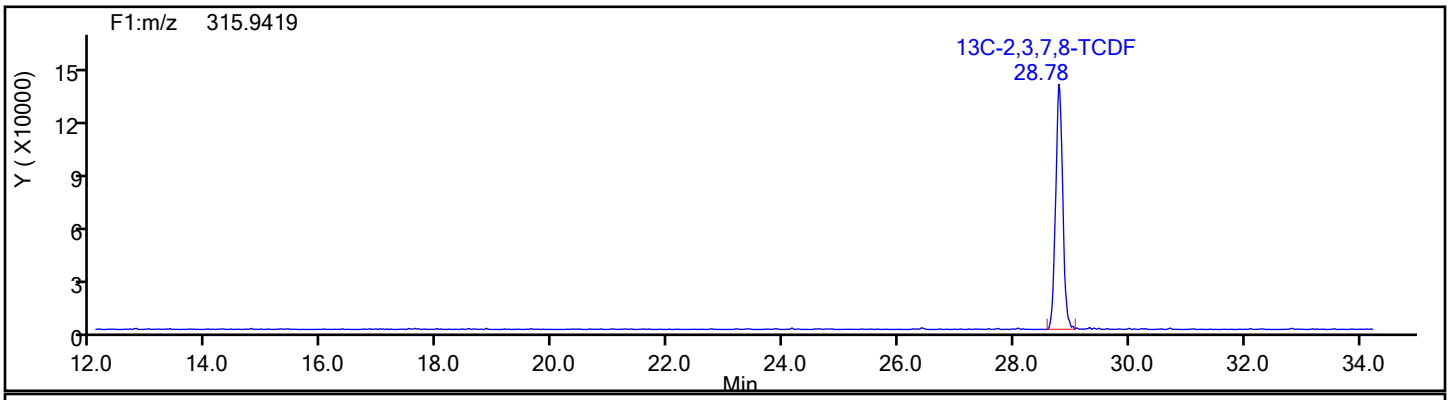
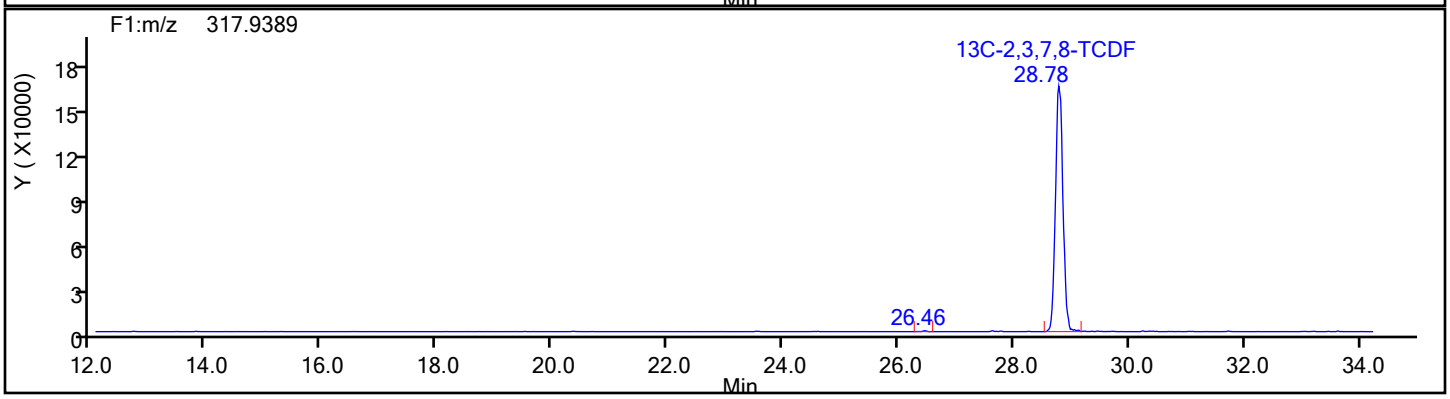
TCDF





TCDF Standards





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Eurofins TestAmerica, Knoxville

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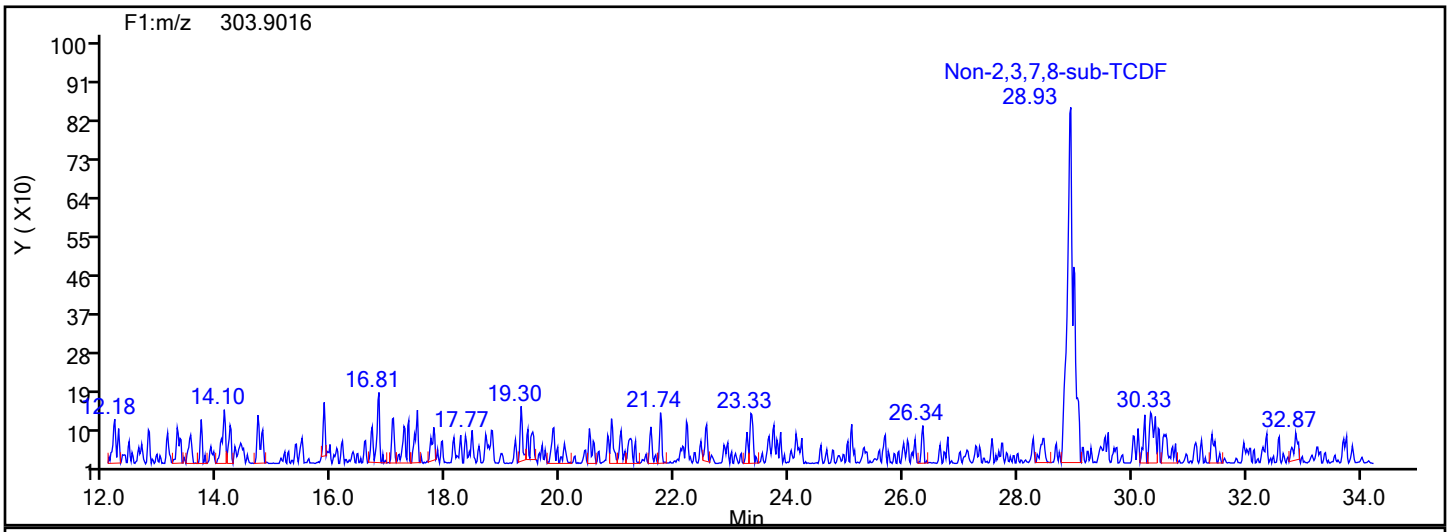
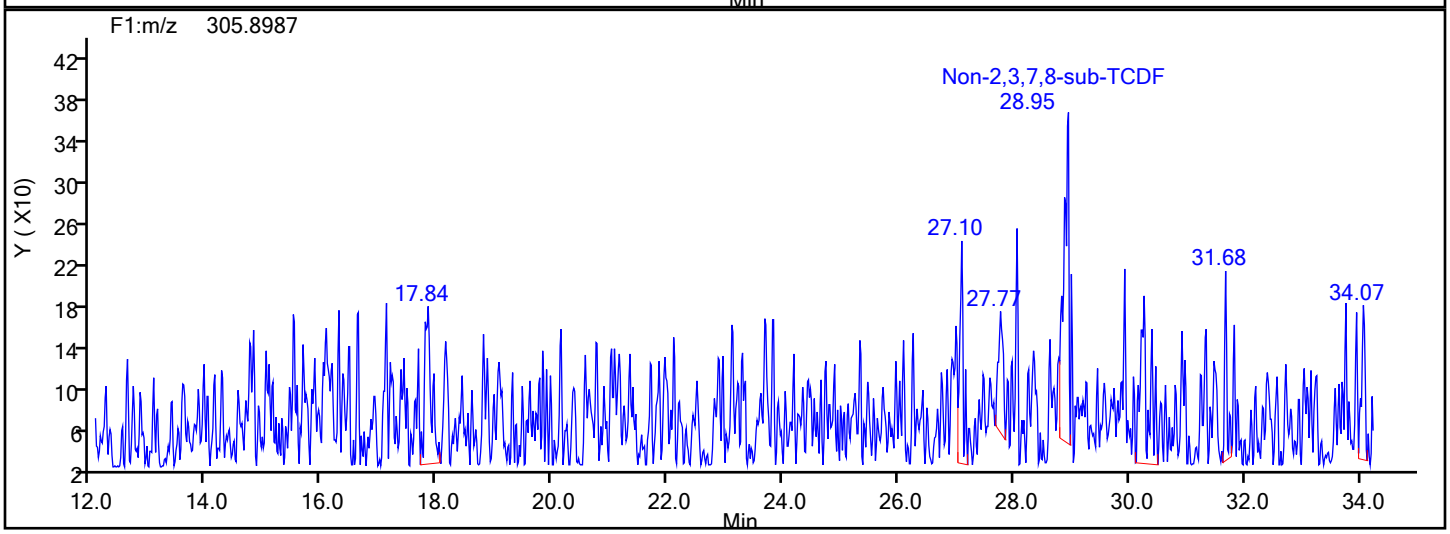
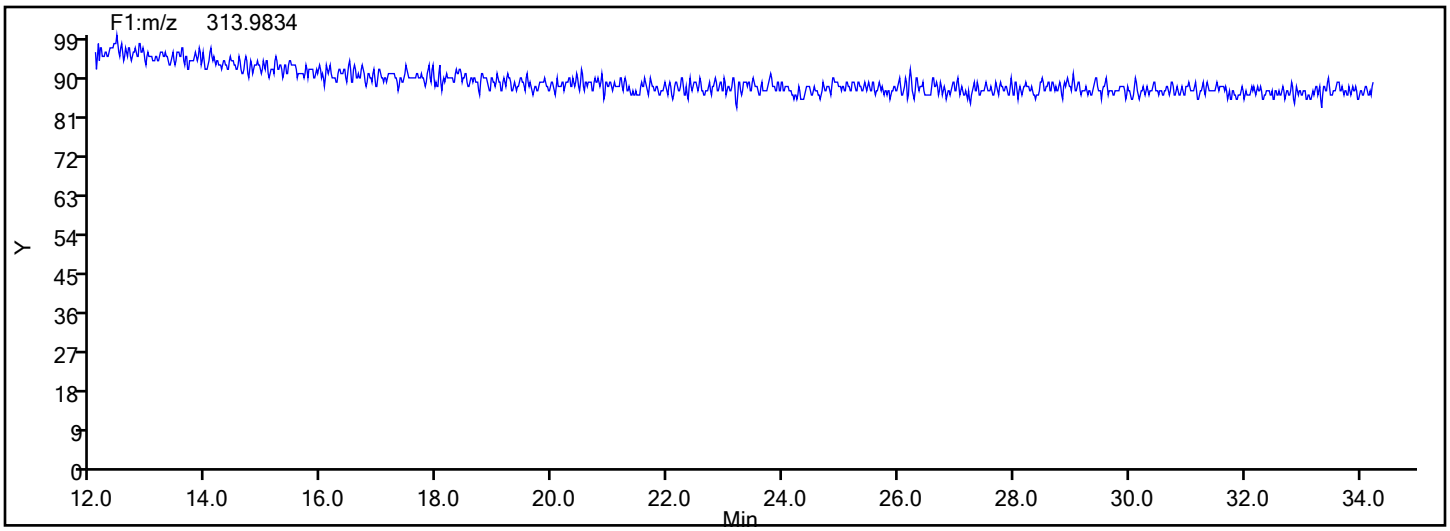




TCDF Lock Mass



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Eurofins TestAmerica, Knoxville

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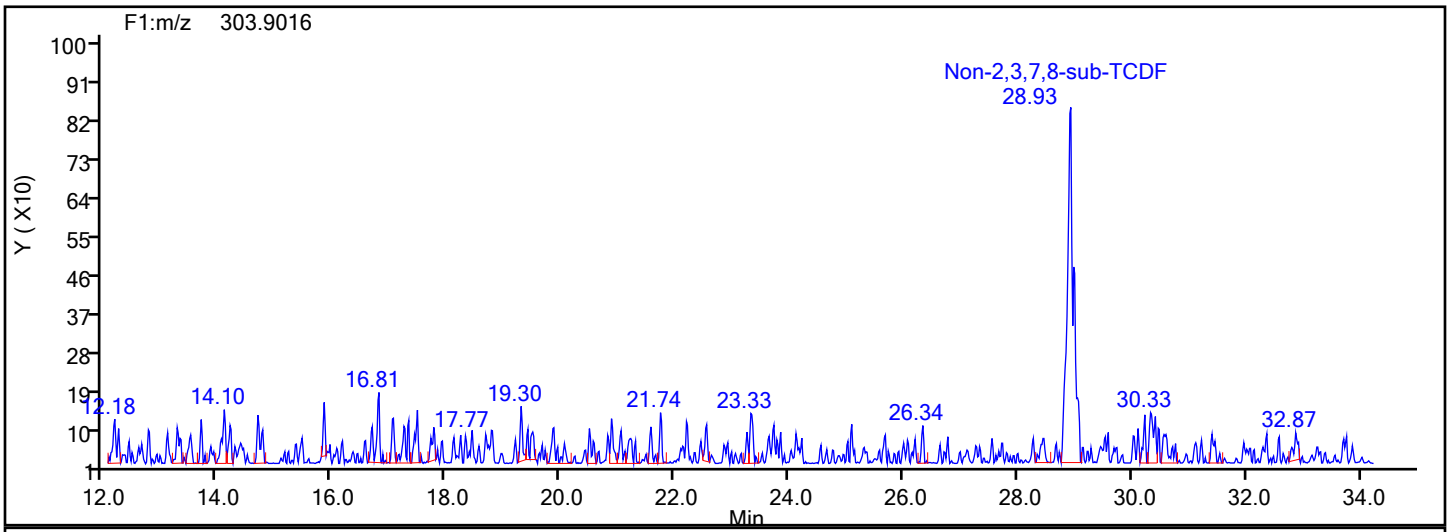
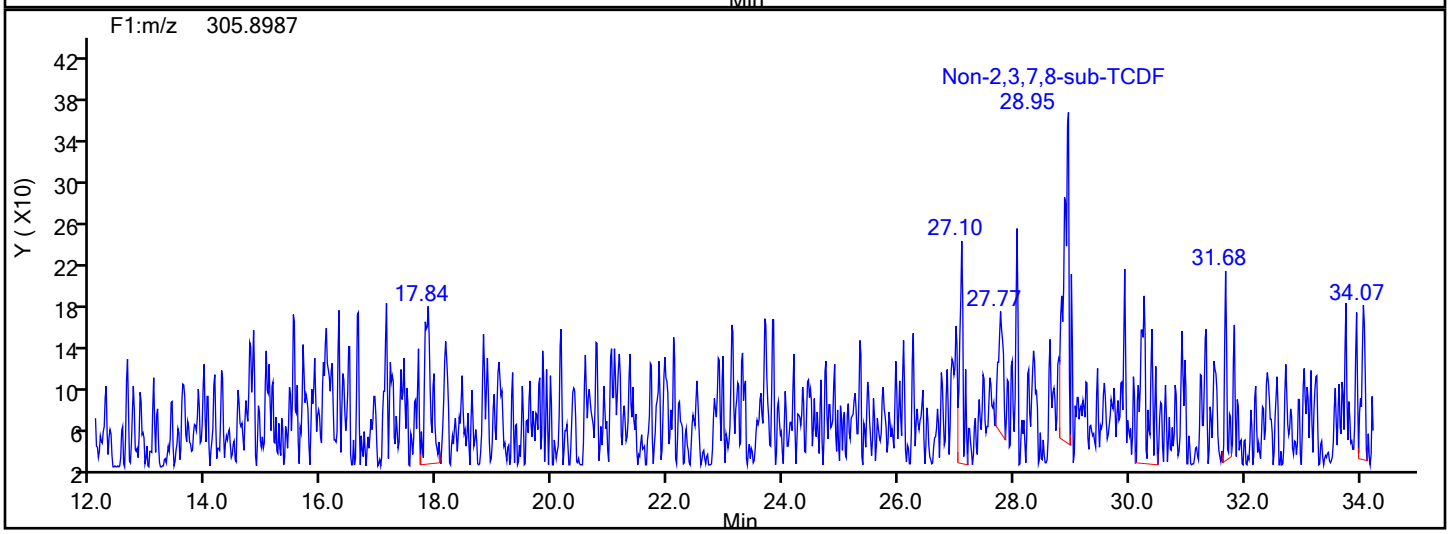
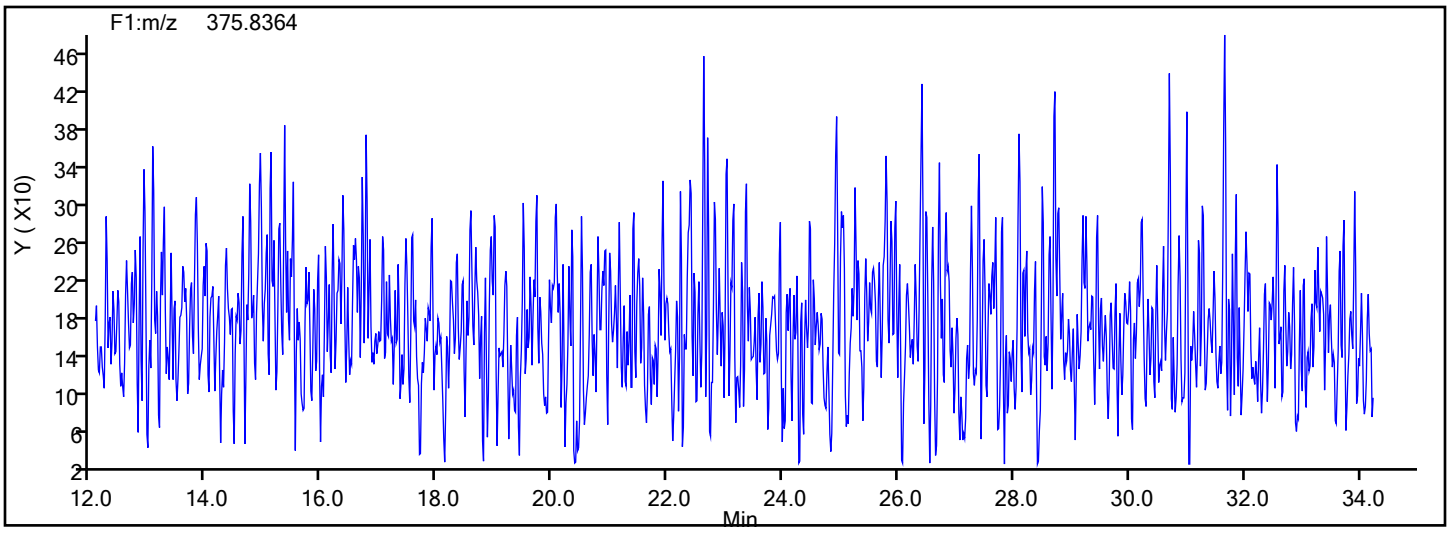
TCDF





TCDF Interference Mass



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Eurofins TestAmerica, Knoxville

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Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
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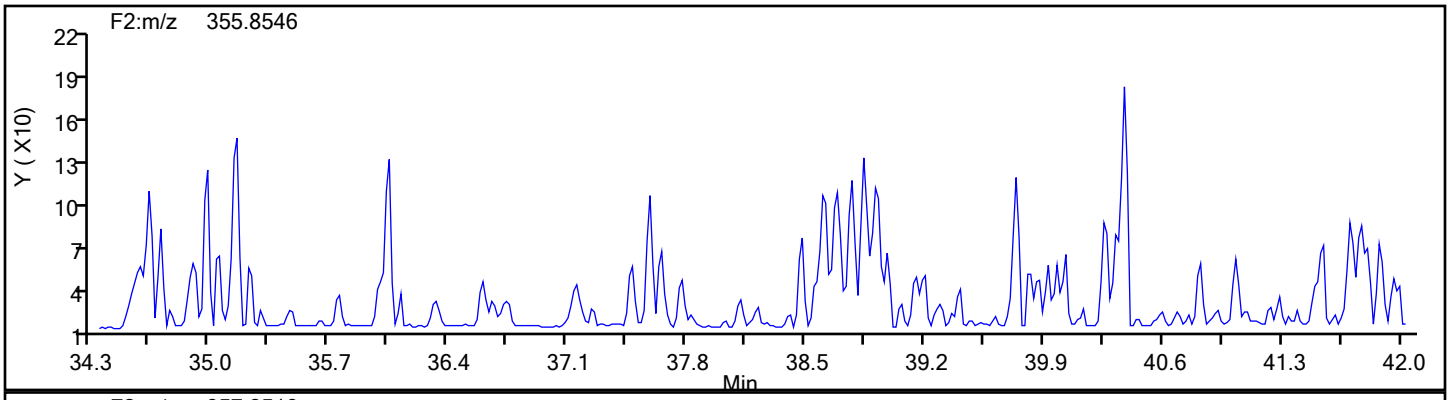
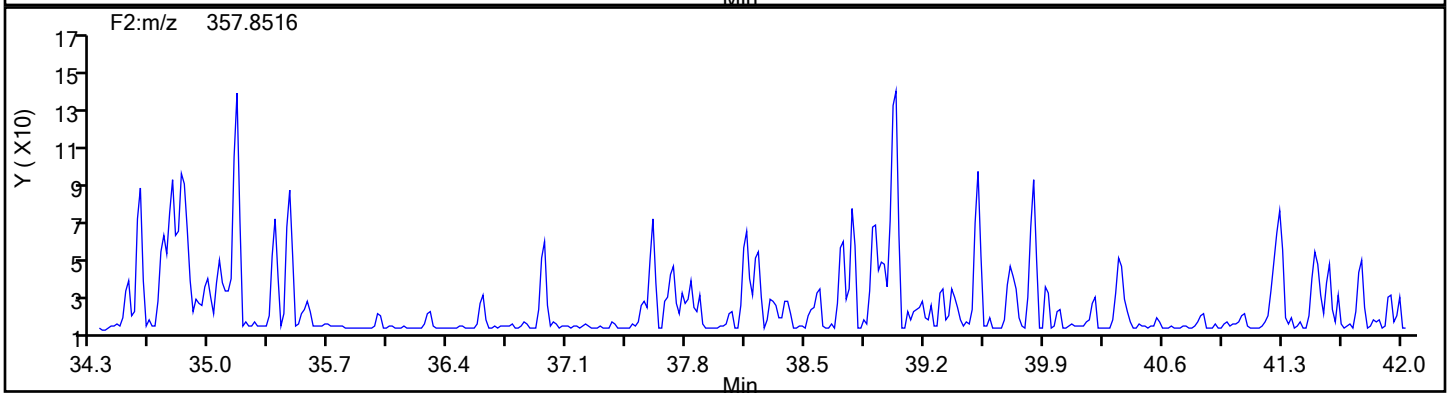
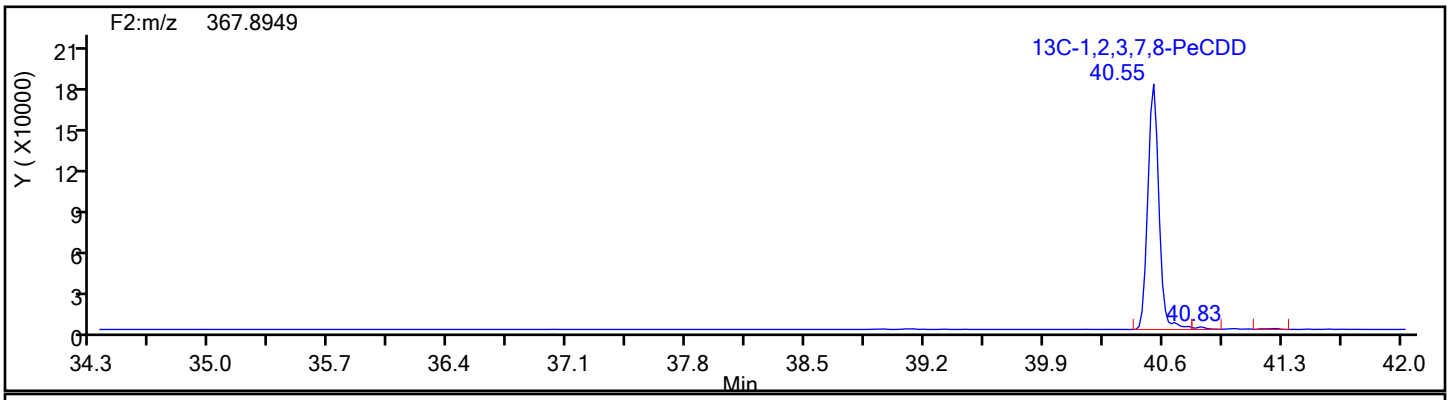
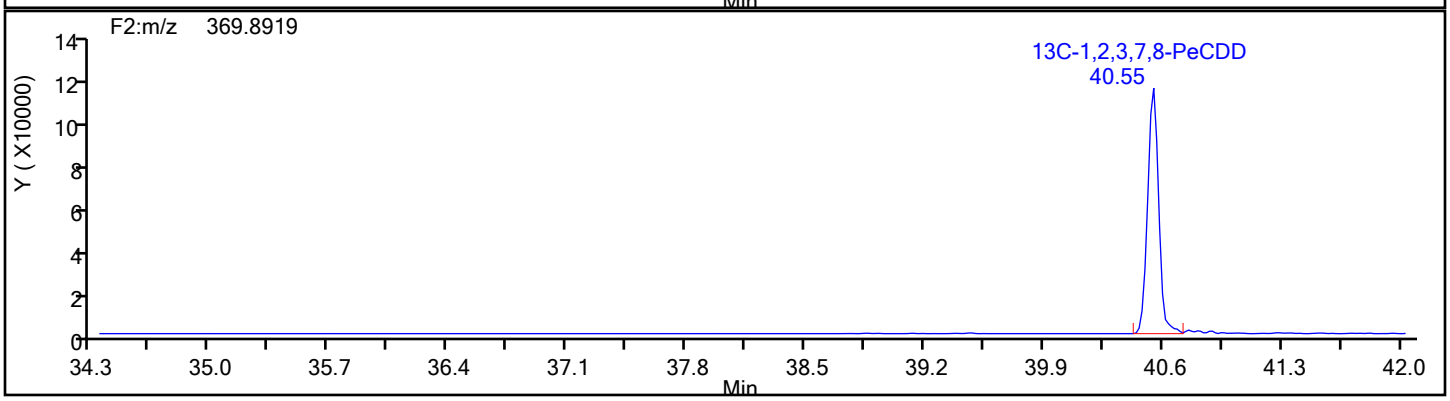
PeCDD





PeCDD Standards





Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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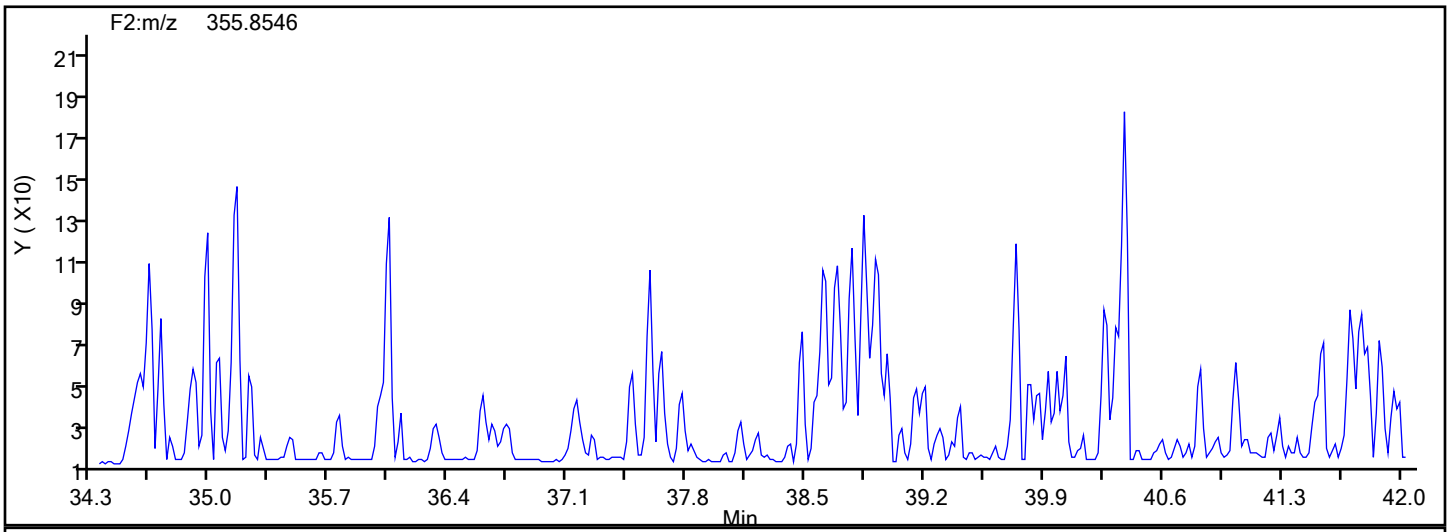
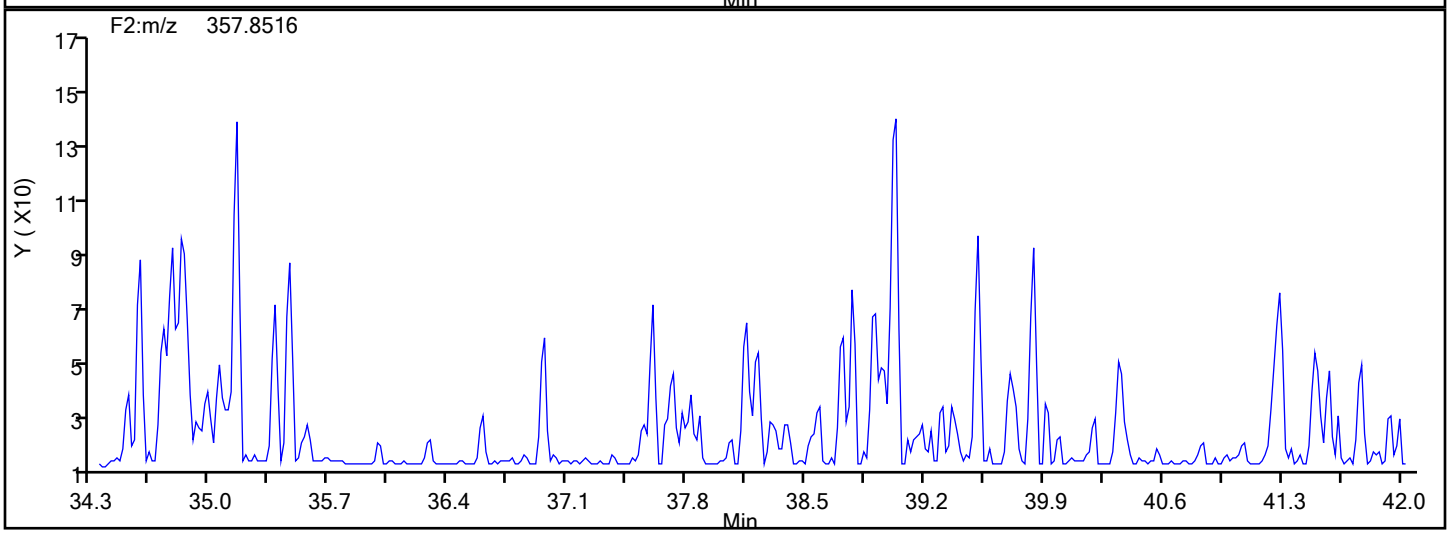
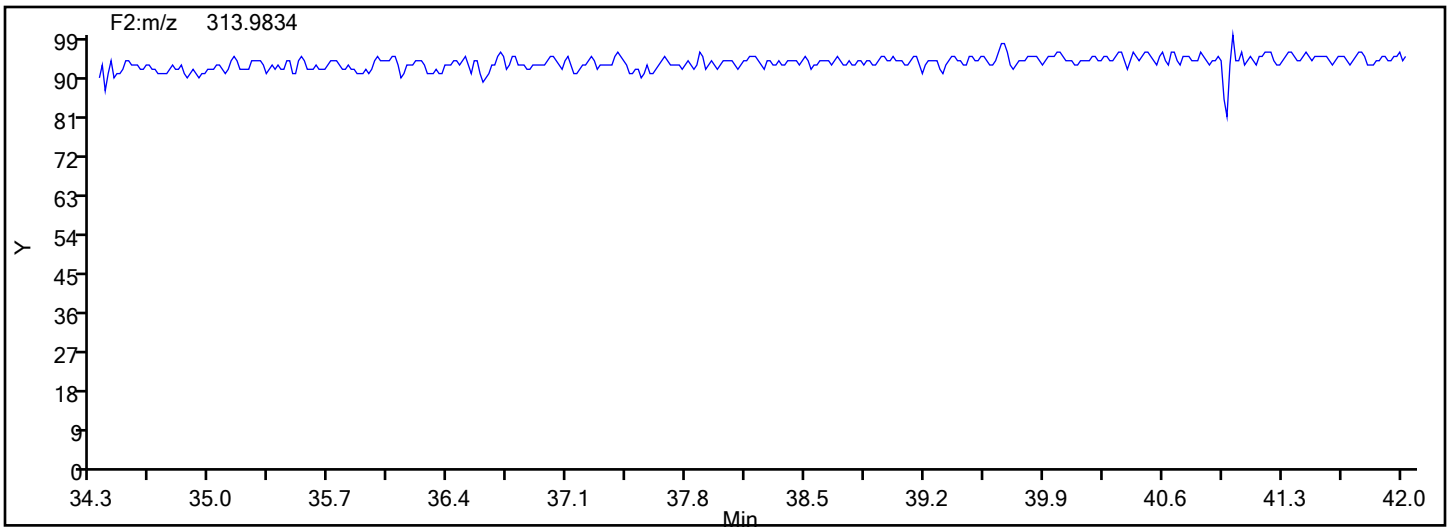




PeCDD Lock Mass



Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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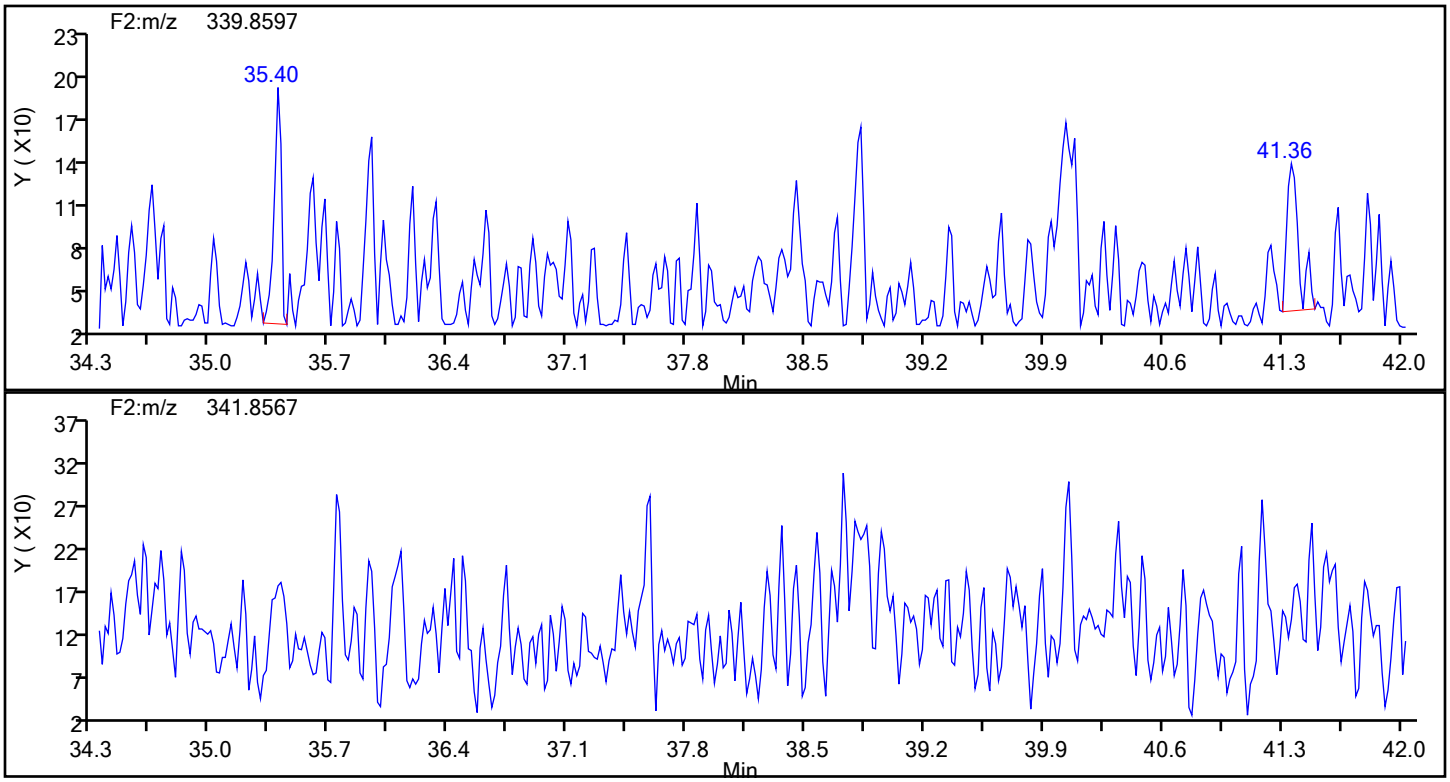
PeCDF



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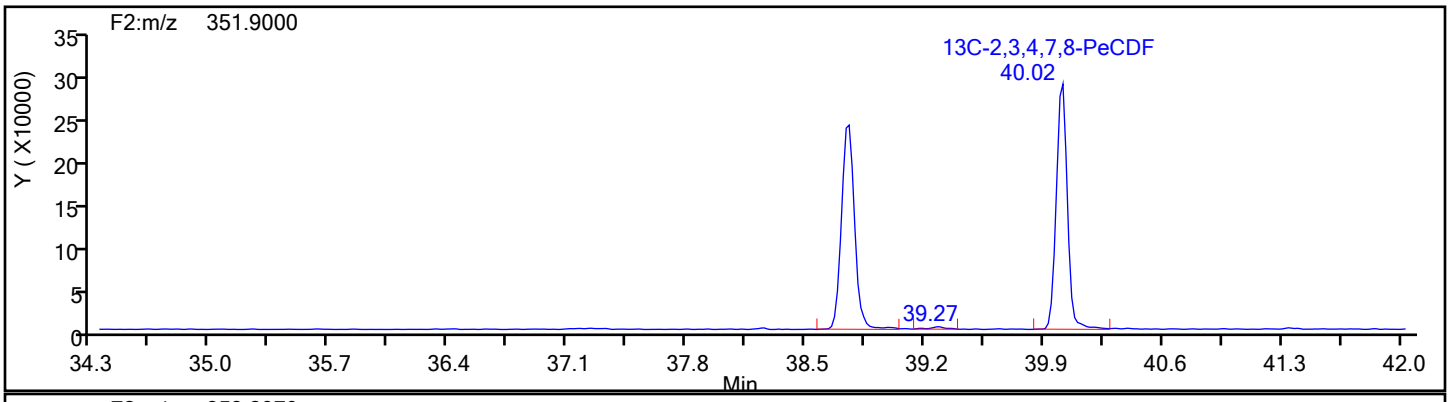

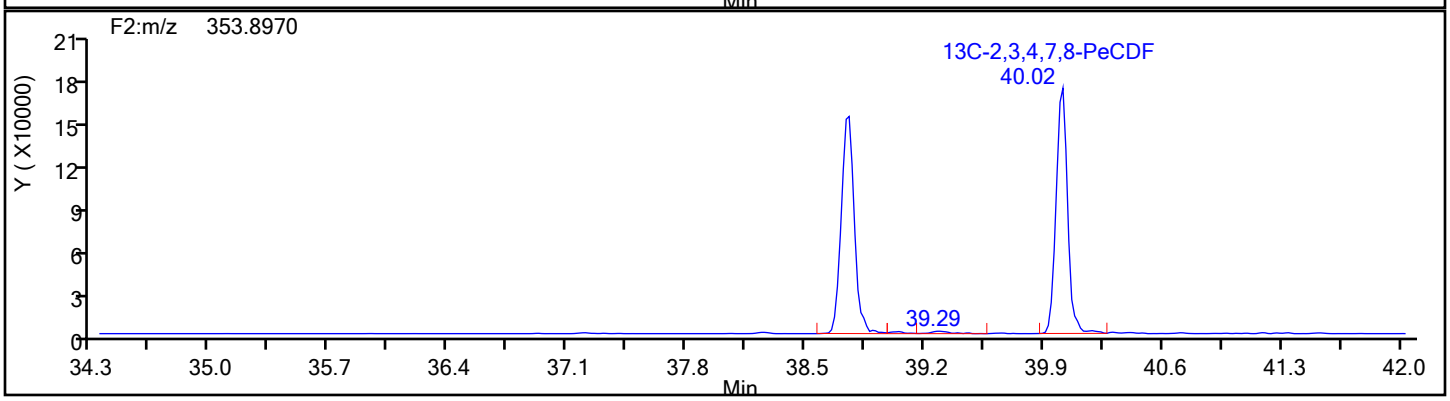

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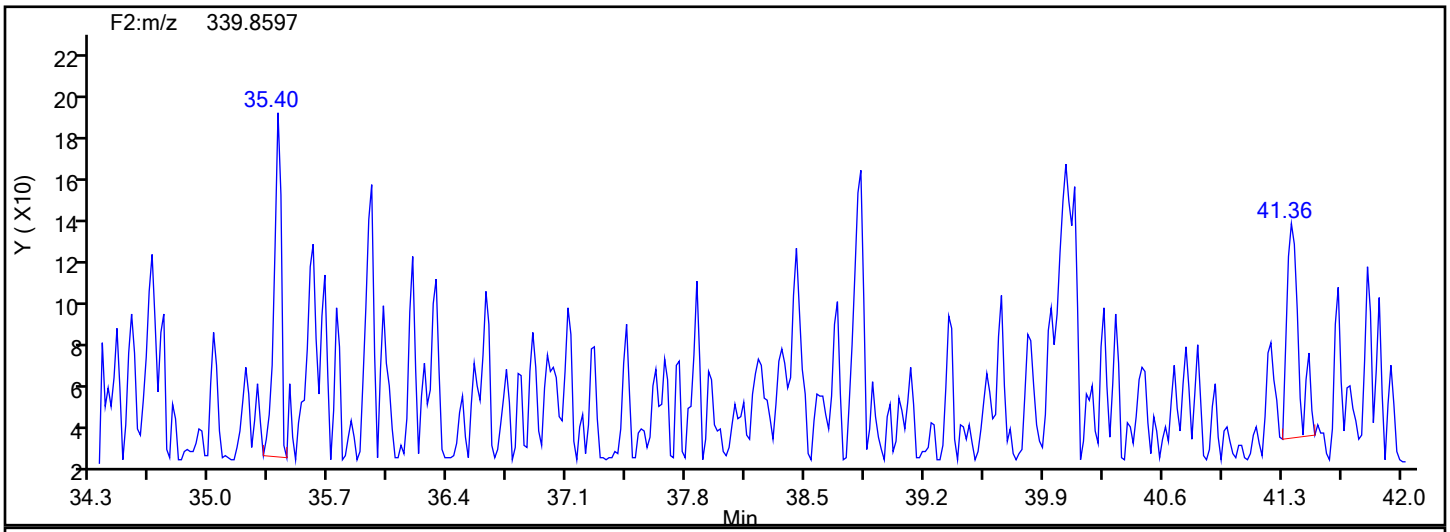
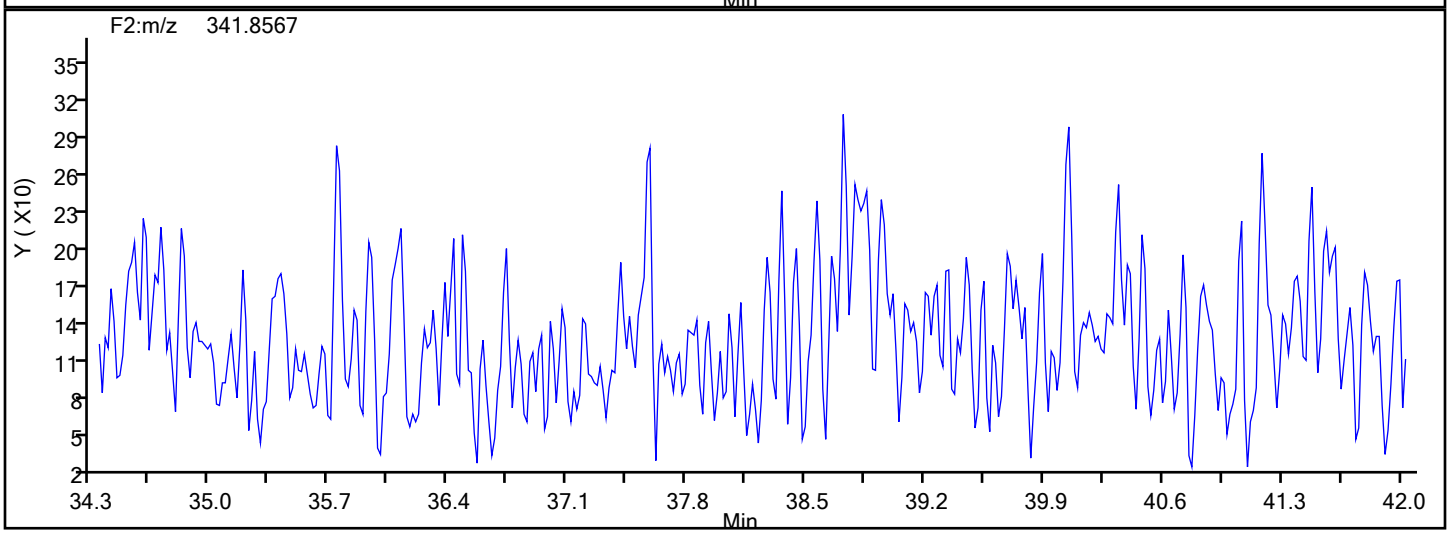
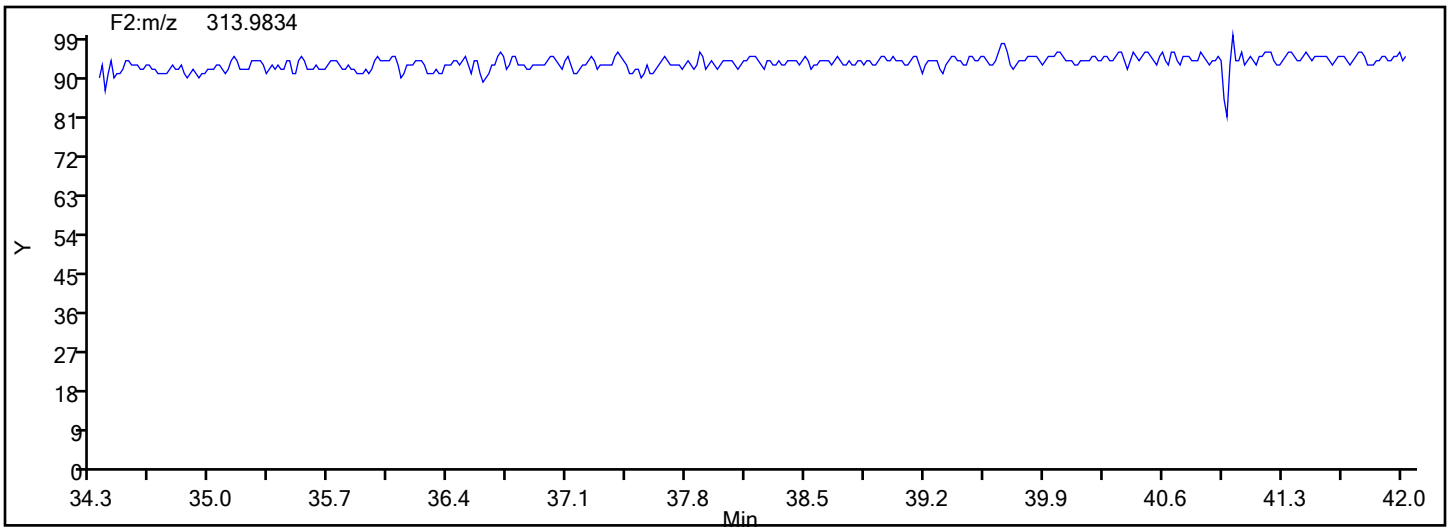




PeCDF Lock Mass



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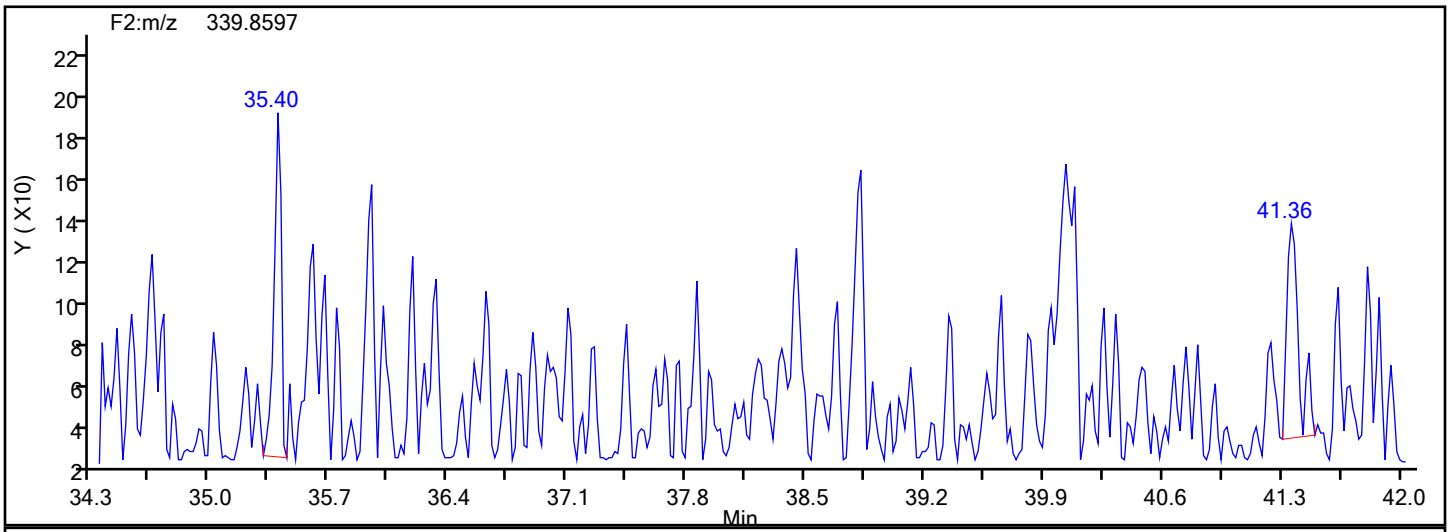
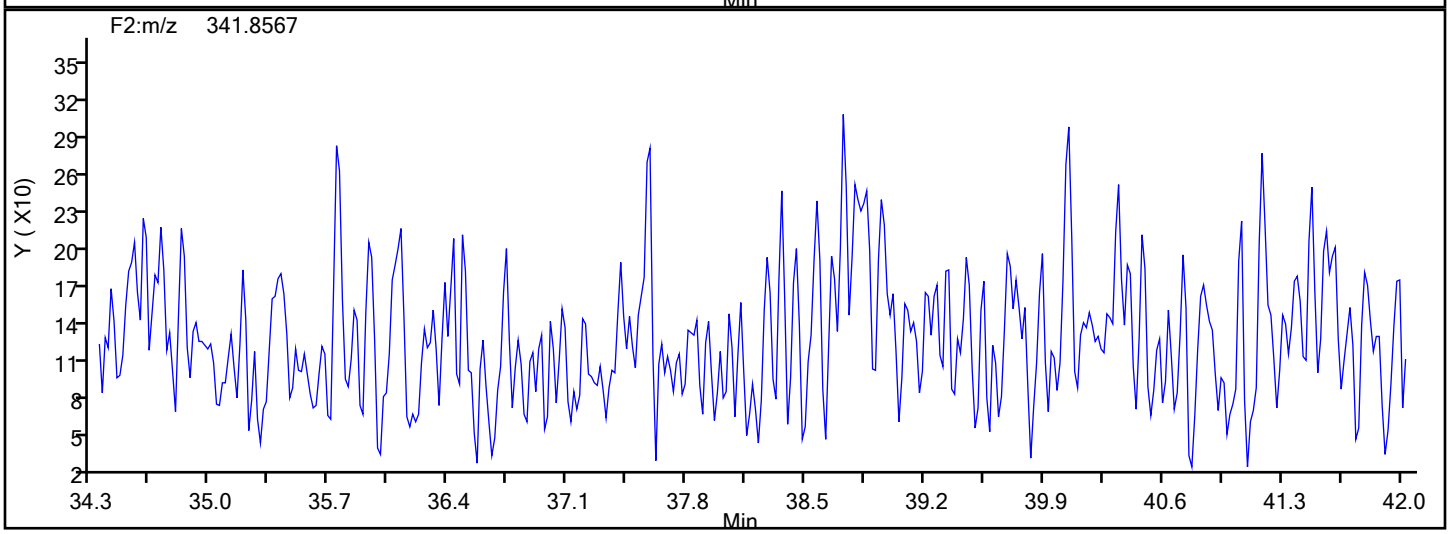
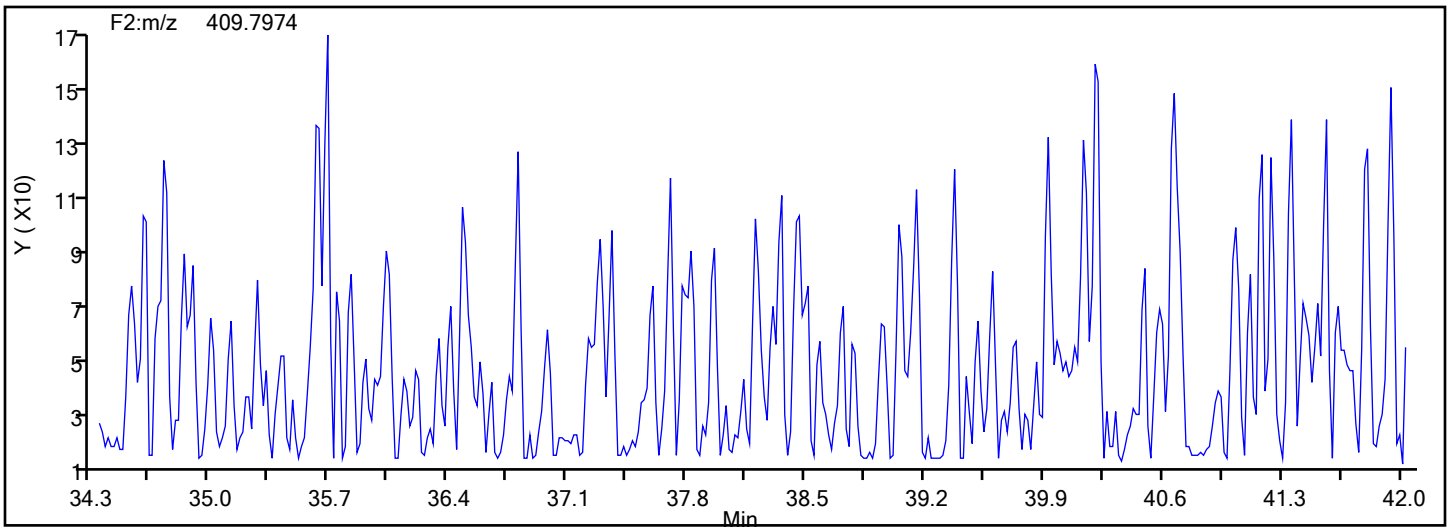
PeCDF





PeCDF Interference Mass



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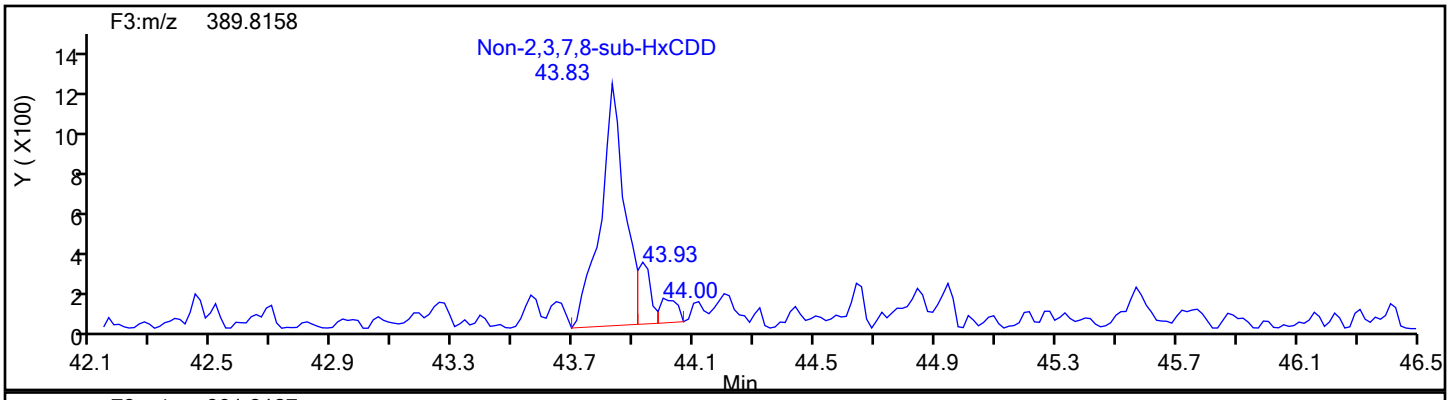
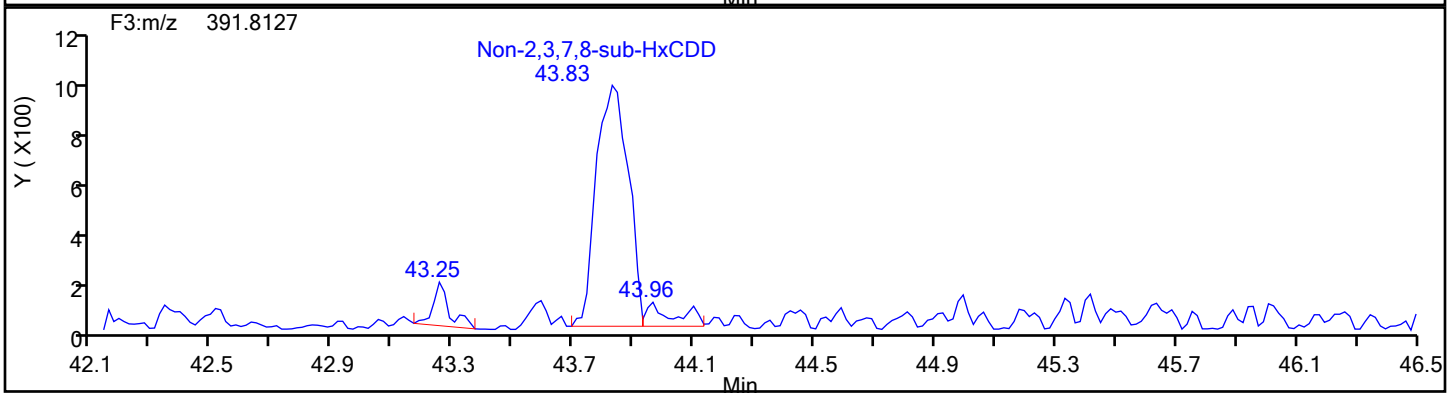
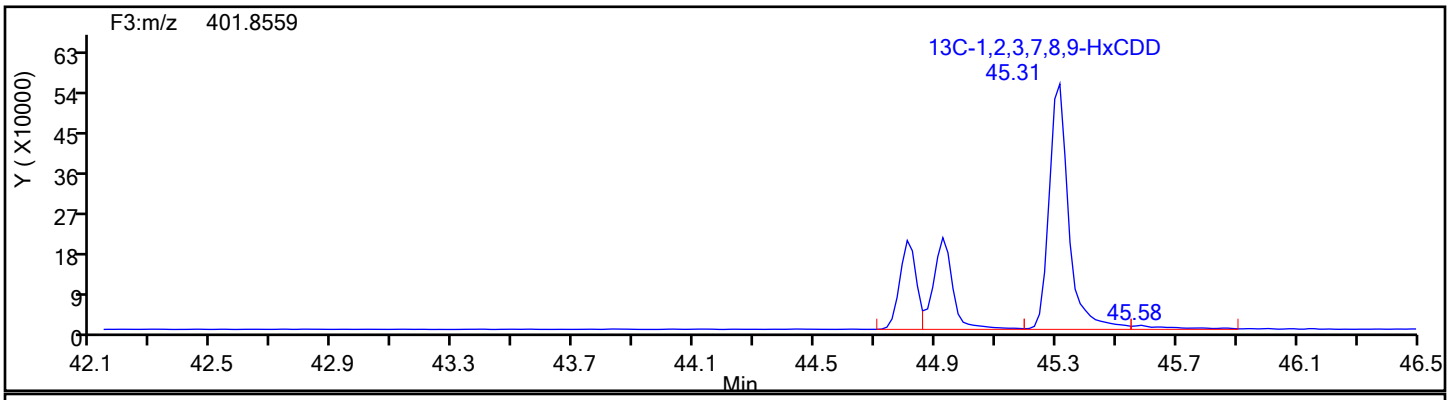
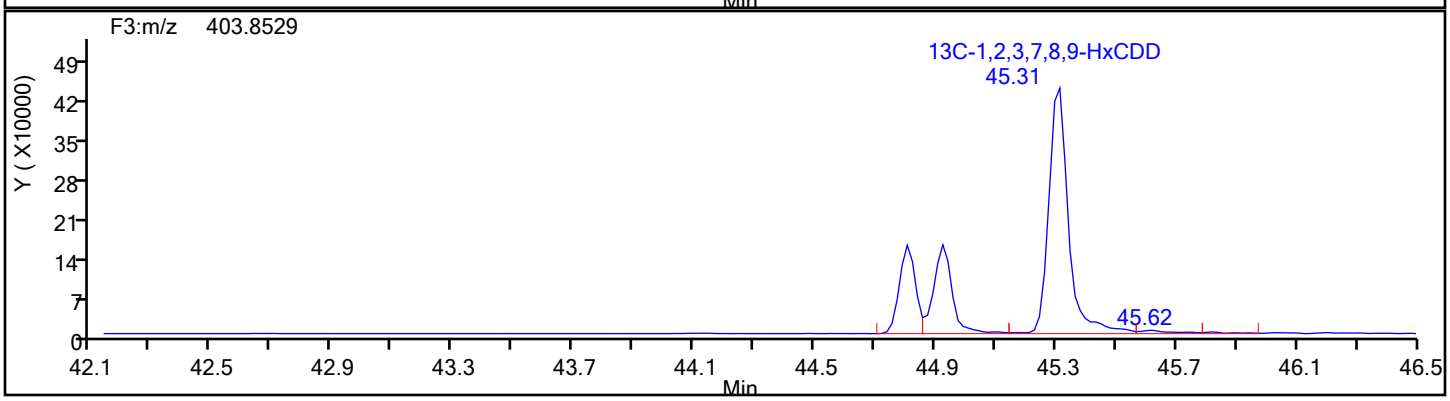
HxCDD





HxCDD Standards





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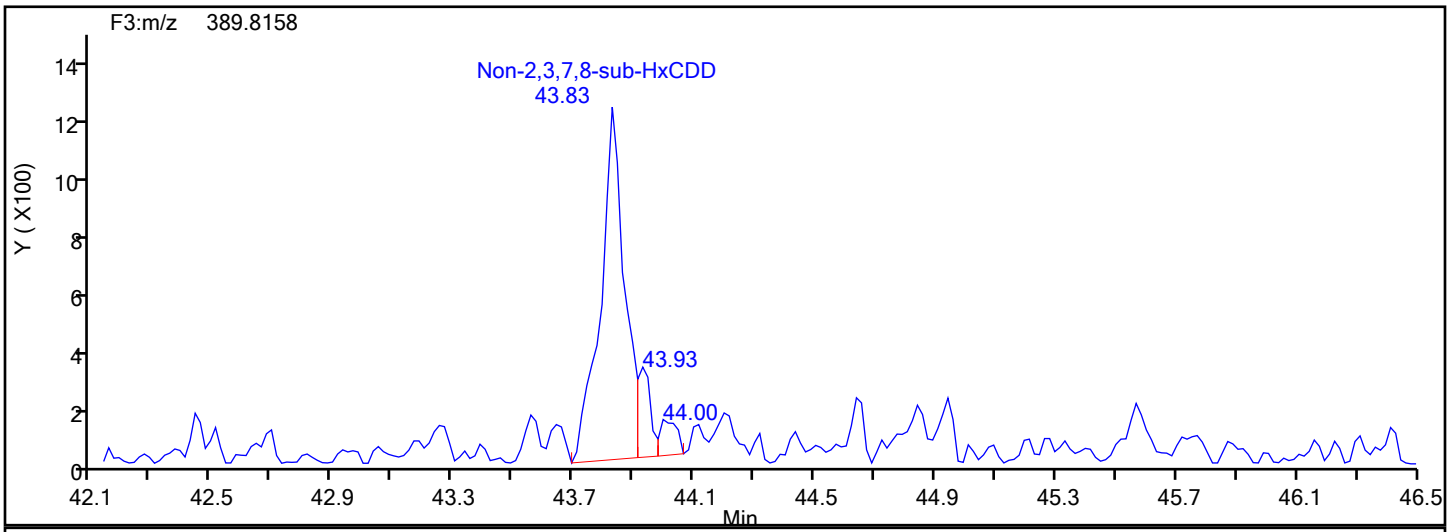
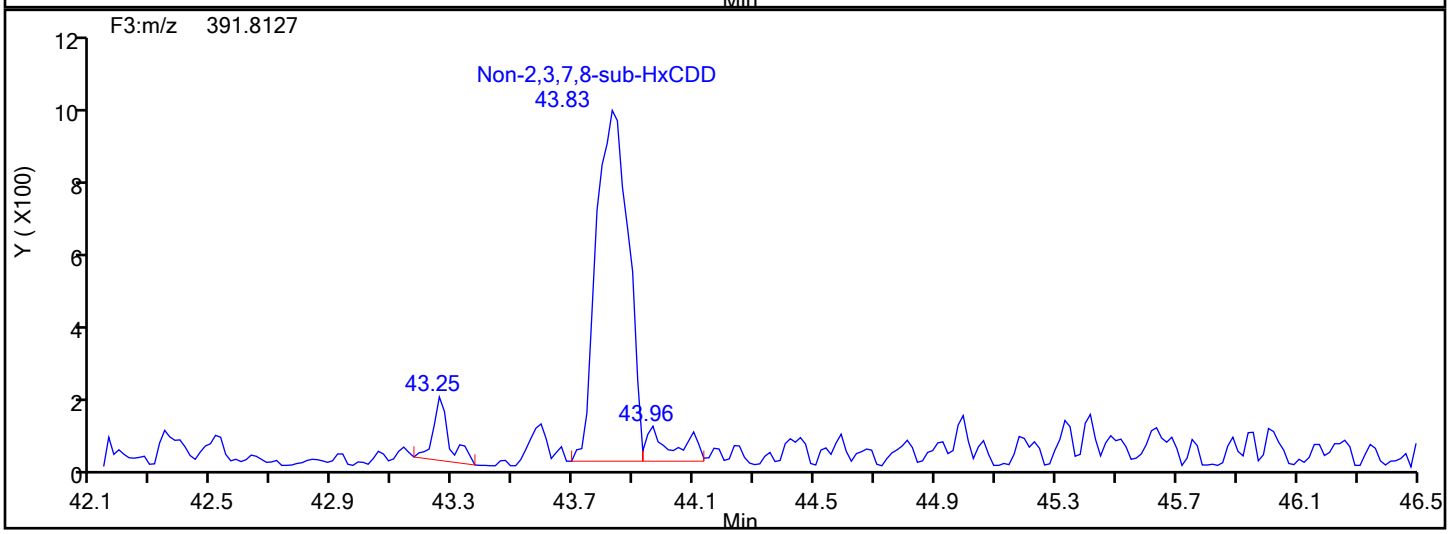
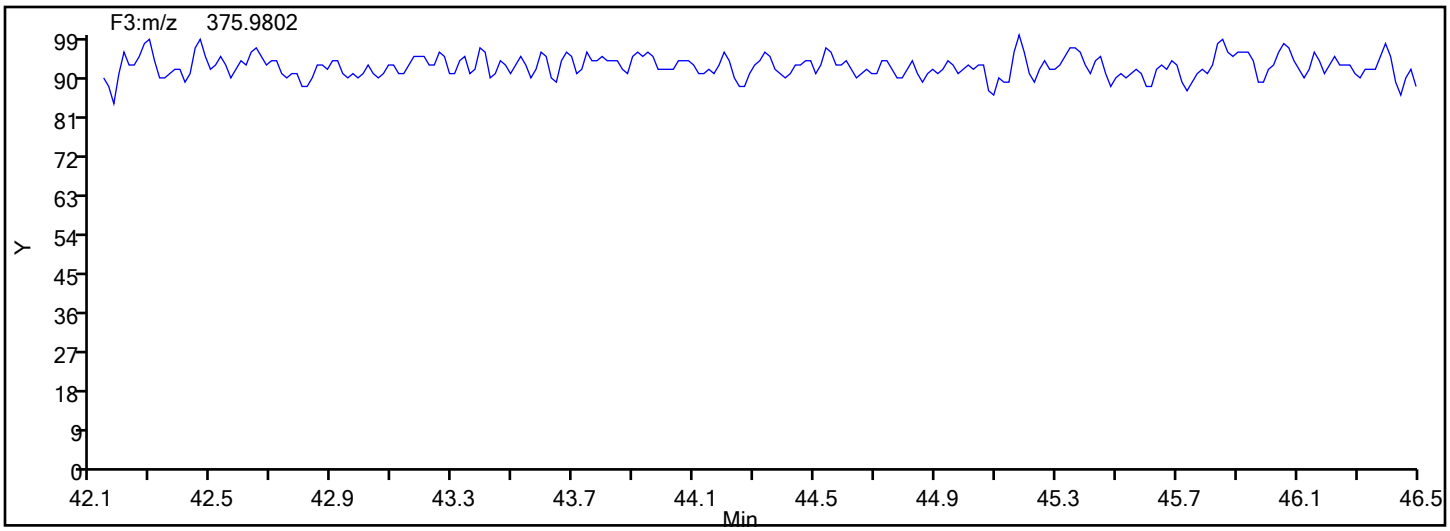
HxCDD





HxCDD Lock Mass



Eurofins TestAmerica, Knoxville

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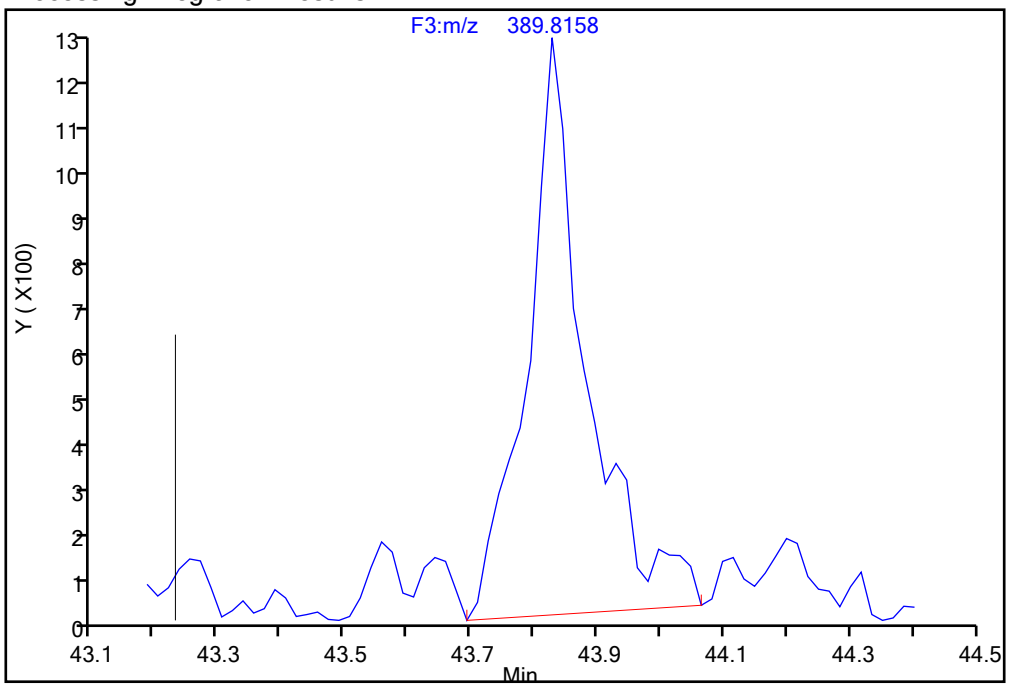
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (43.23- 45.39)

Signal: 1

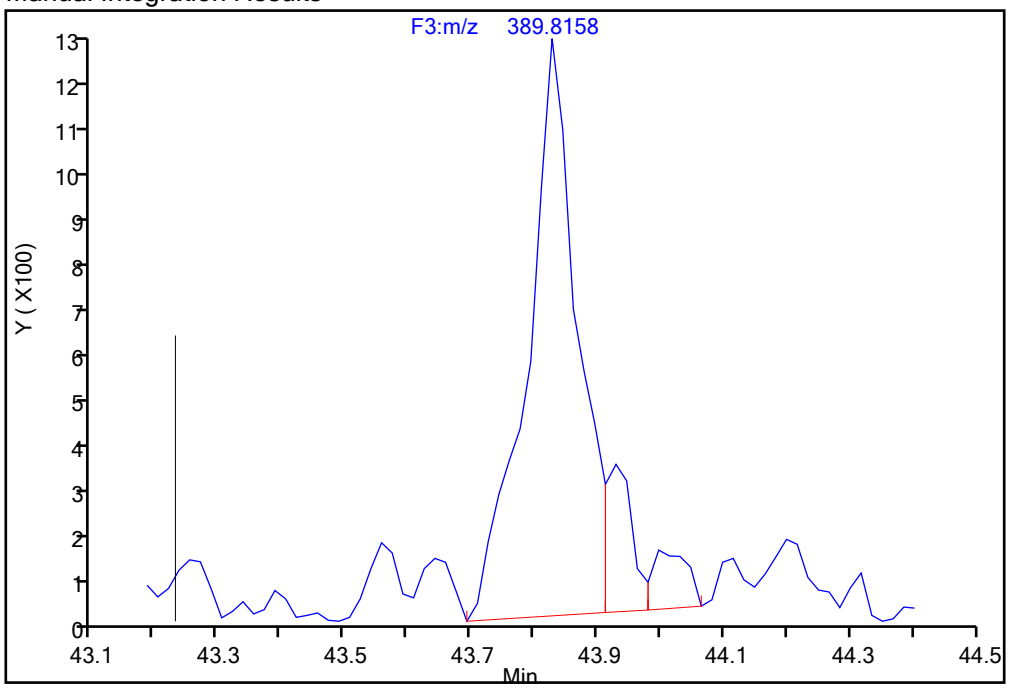
Processing Integration Results

RT = 43.828 Area = 7752



Manual Integration Results

RT = 43.828 Area = 6482 M



Reviewer: parslyt, 17-Dec-2019 05:14:59

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
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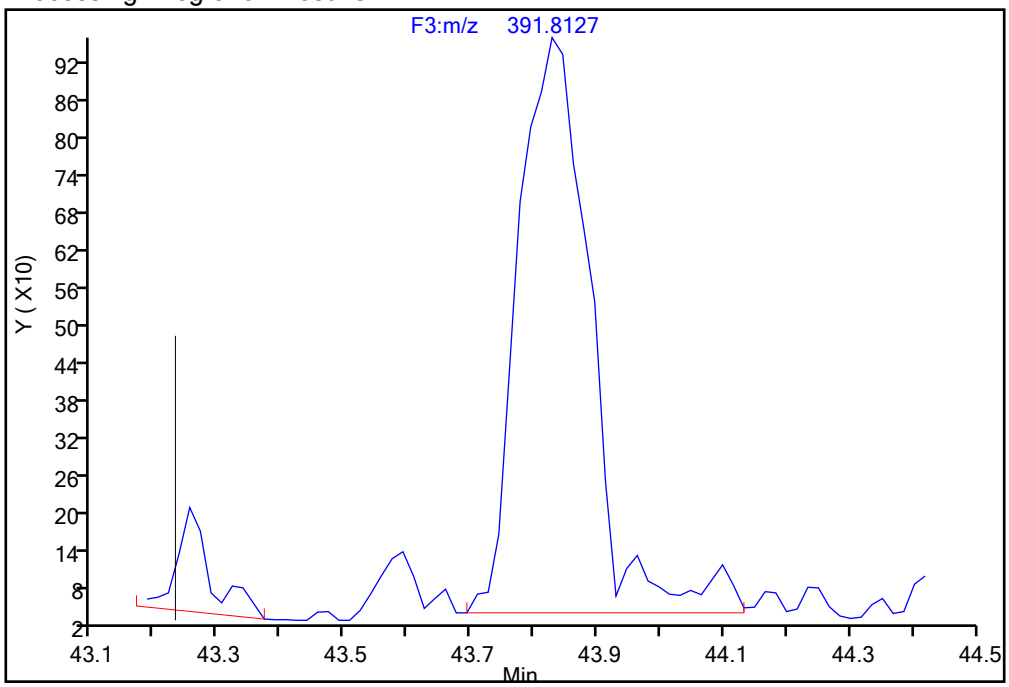
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (43.23- 45.39)

Signal: 2

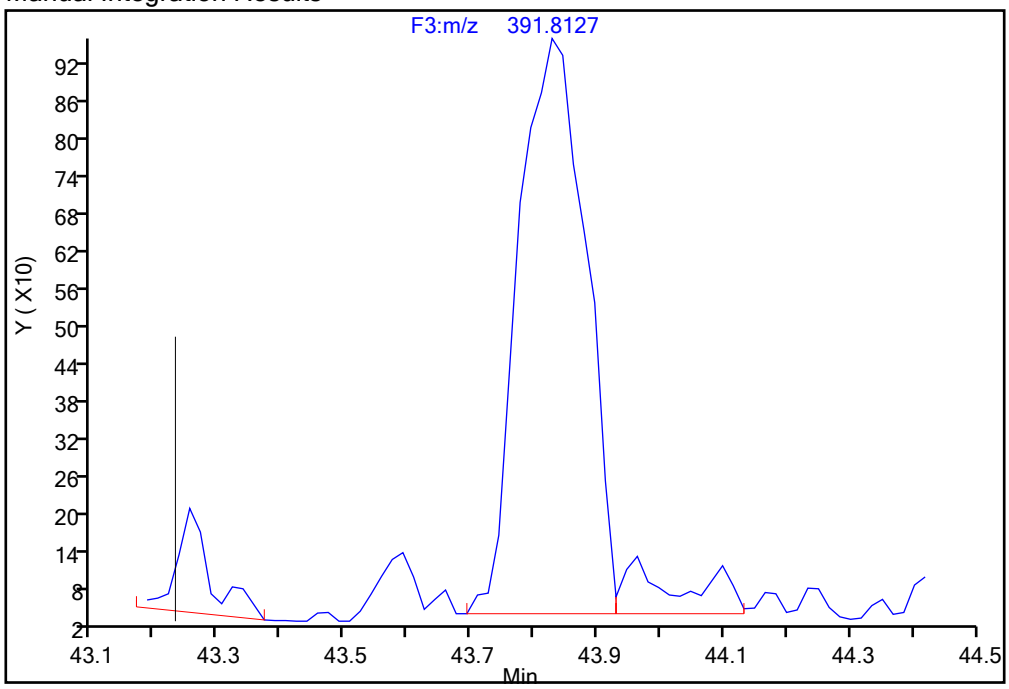
Processing Integration Results

RT = 43.828 Area = 7402



Manual Integration Results

RT = 43.828 Area = 6823 M



Reviewer: parslyt, 17-Dec-2019 05:14:53

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

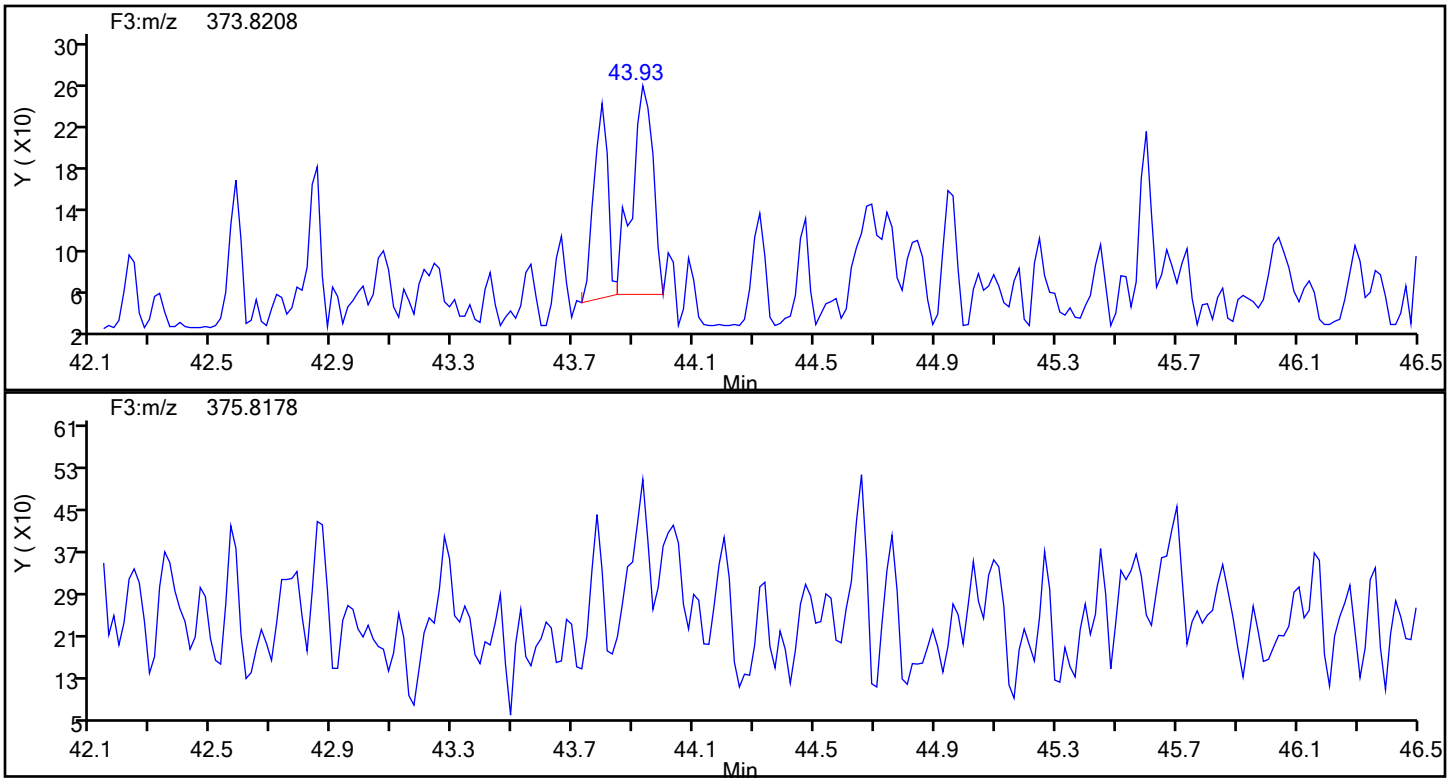
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

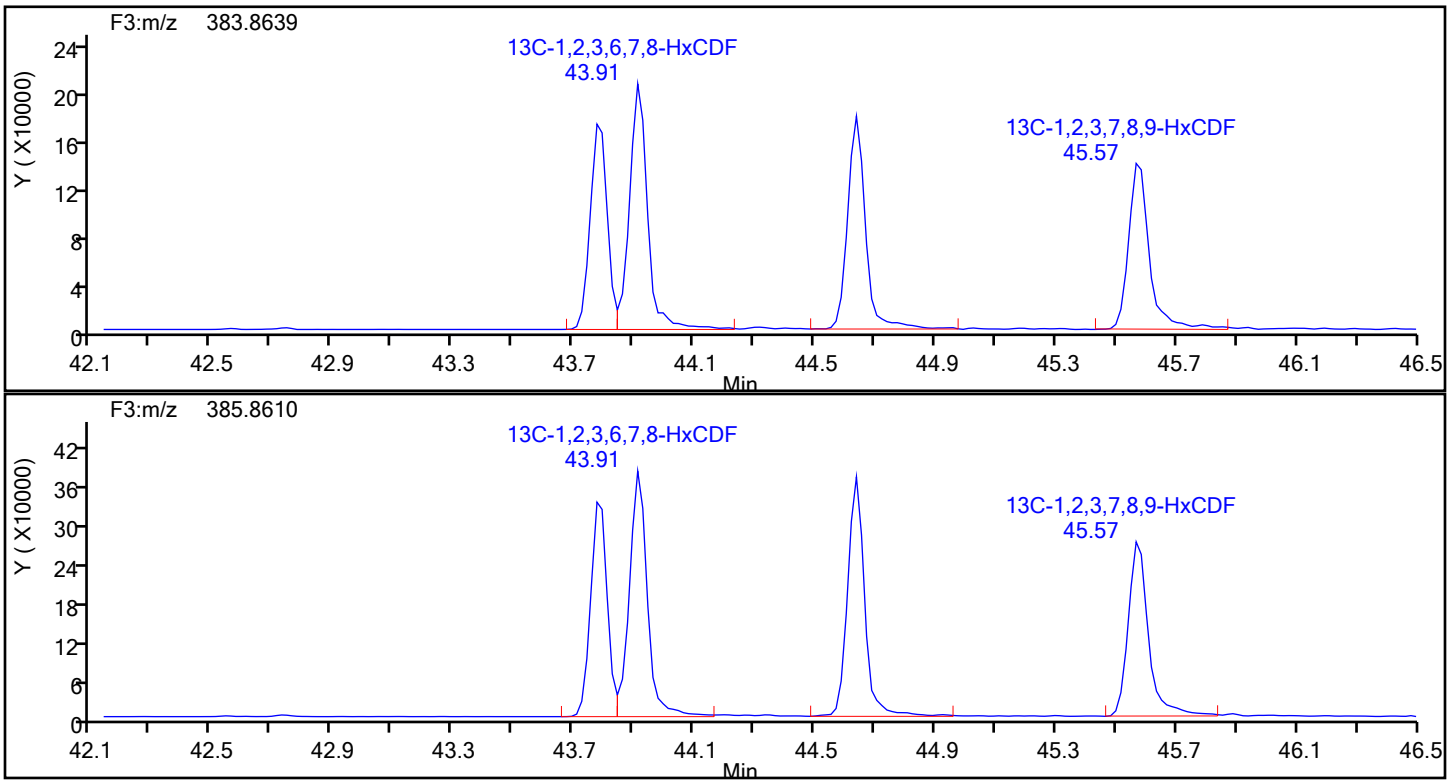
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d

Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF



HxCDF Standards

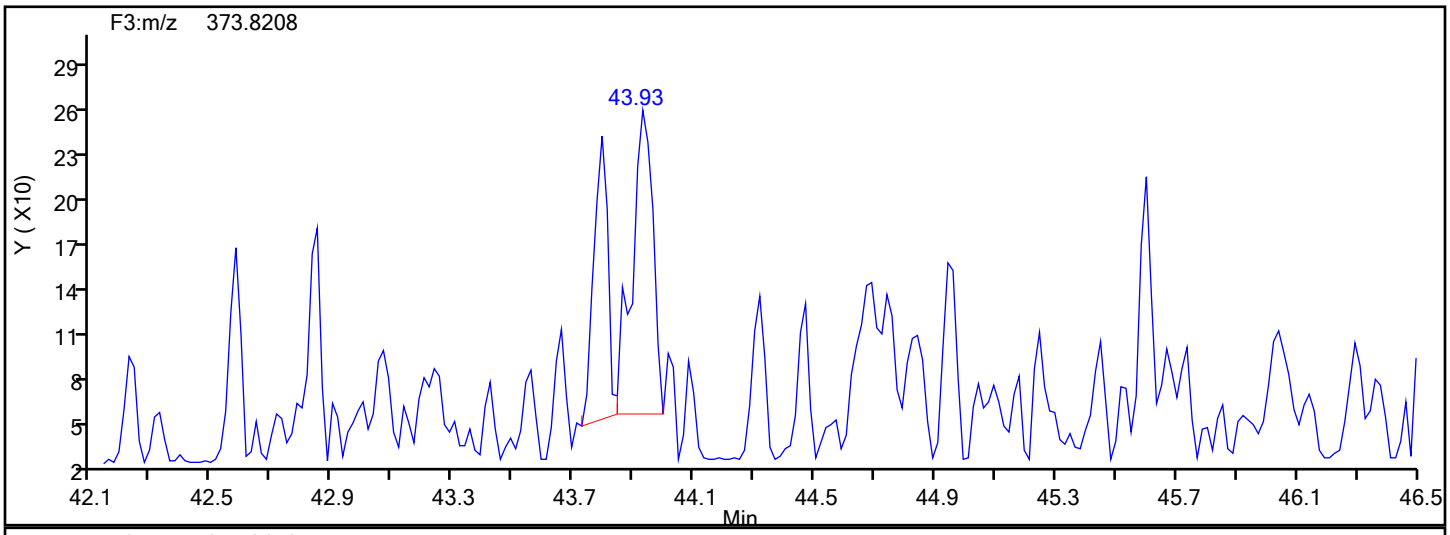


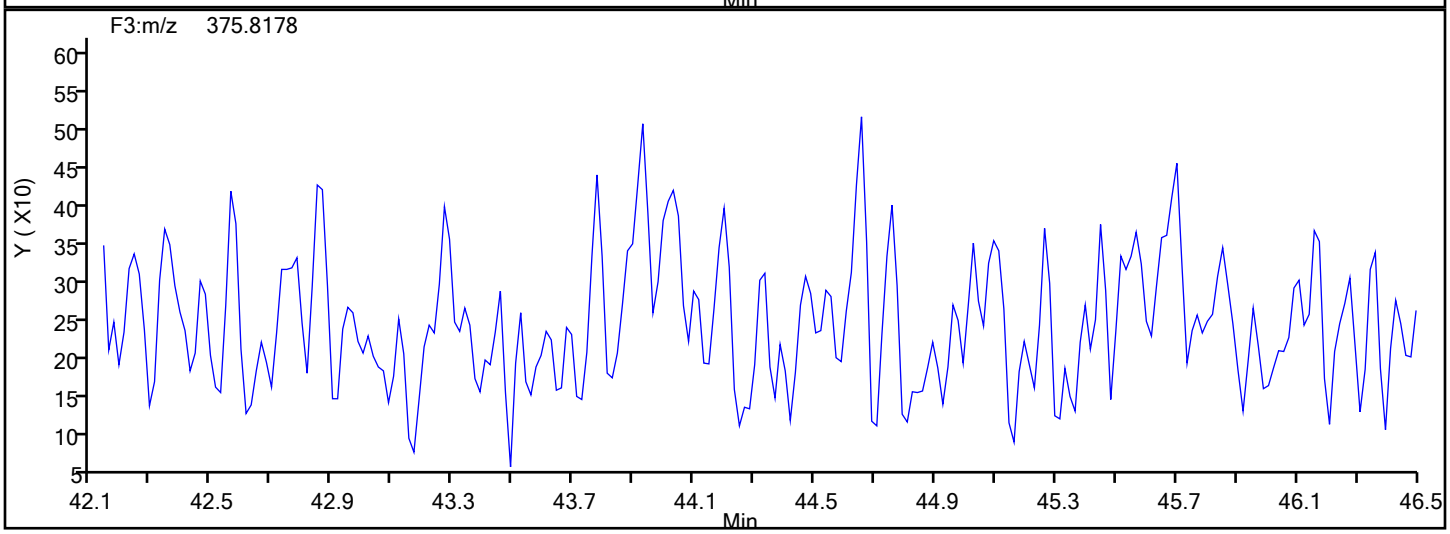
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

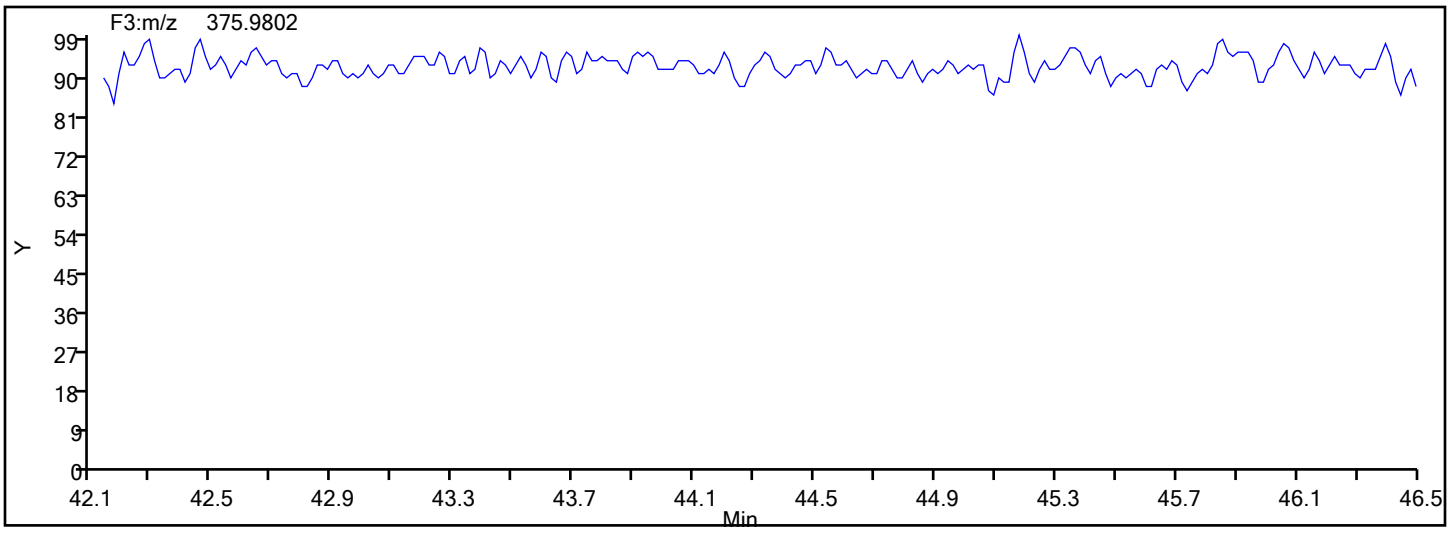
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

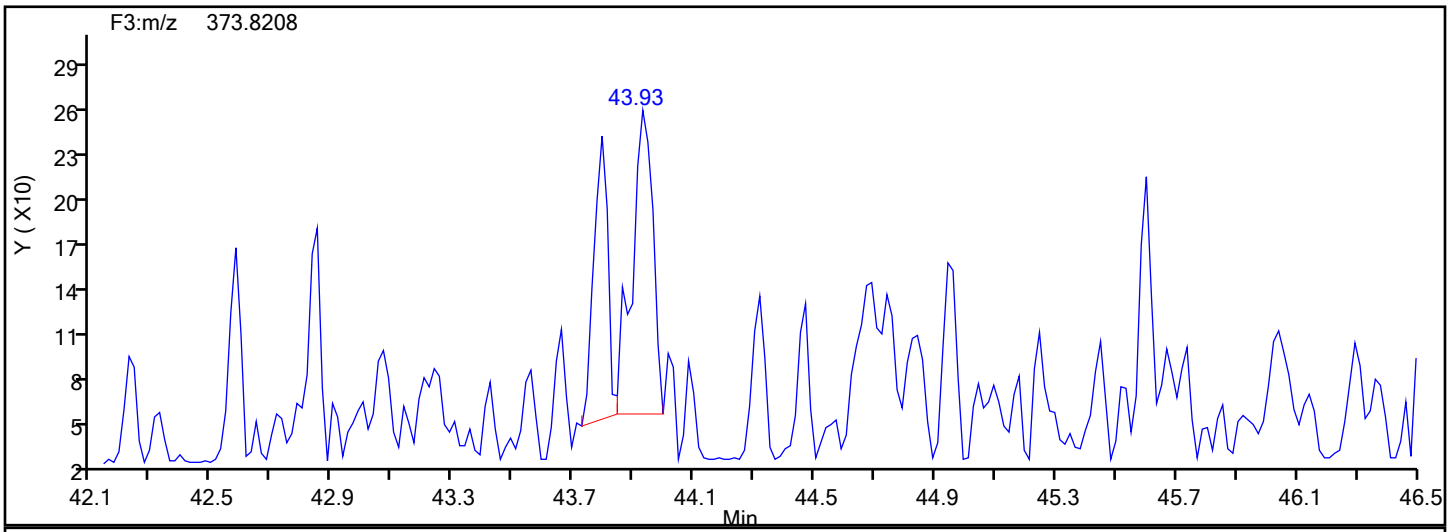


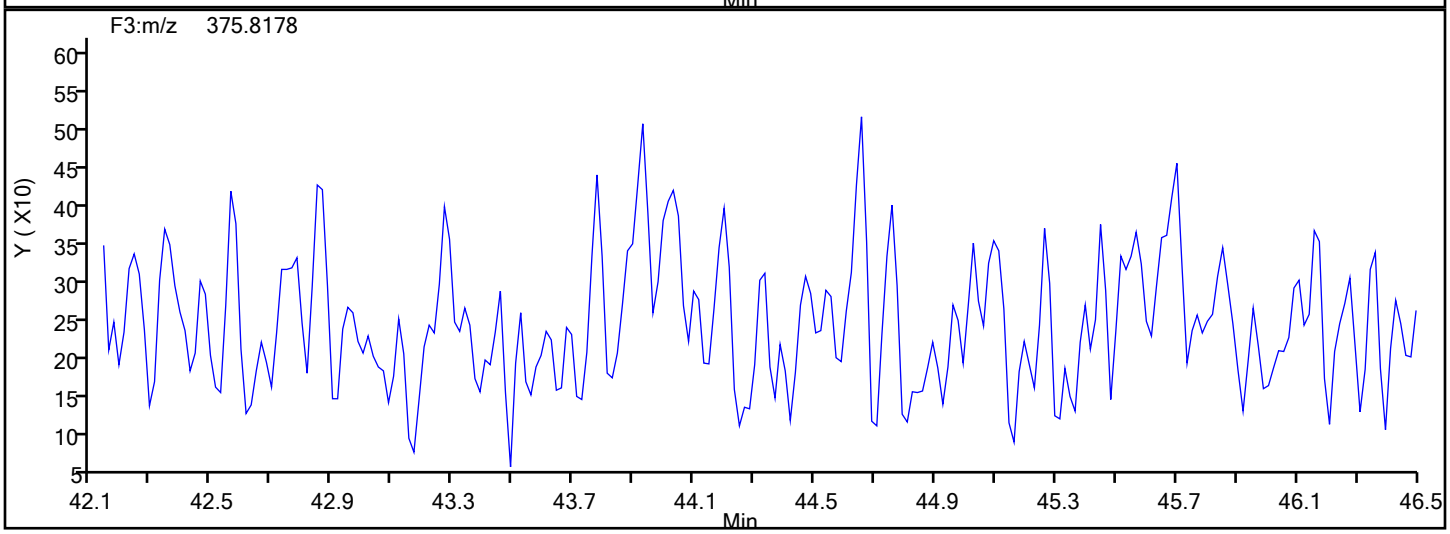
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

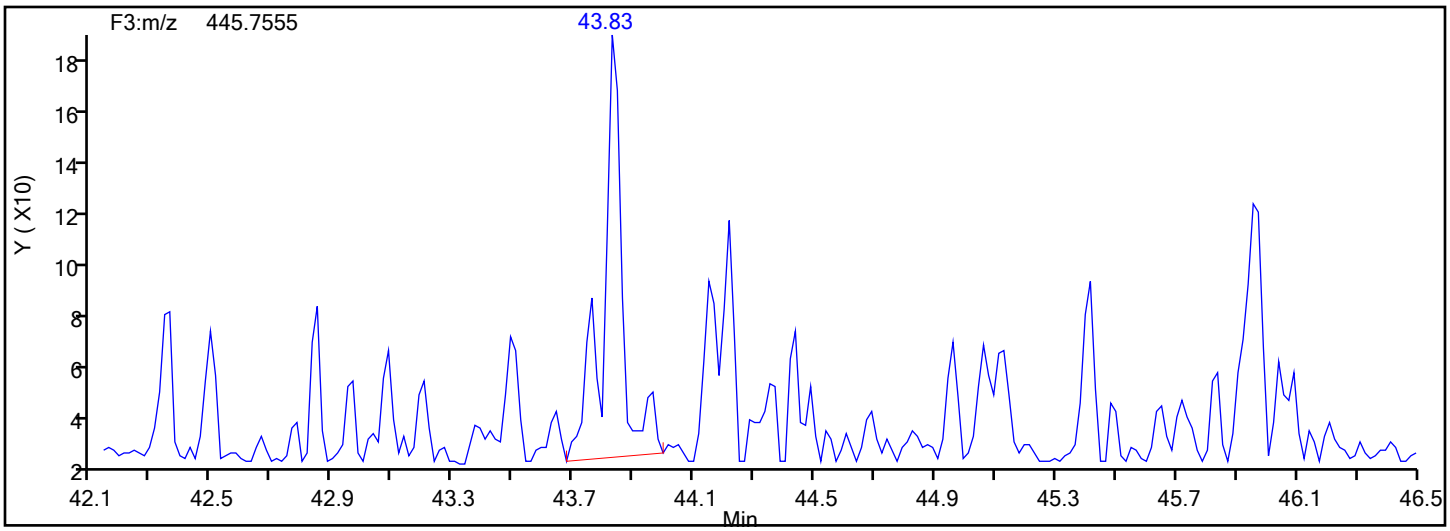
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass

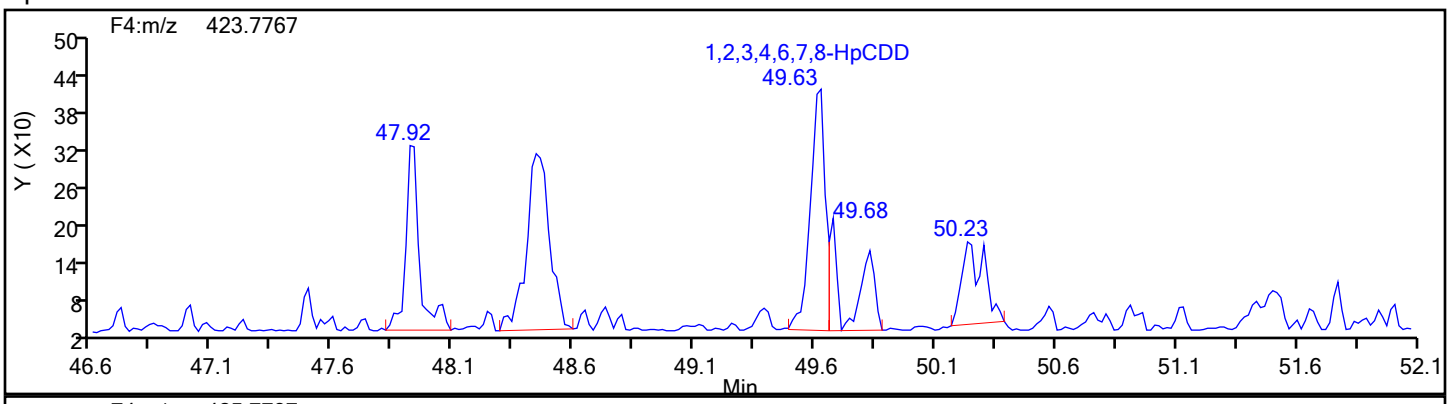


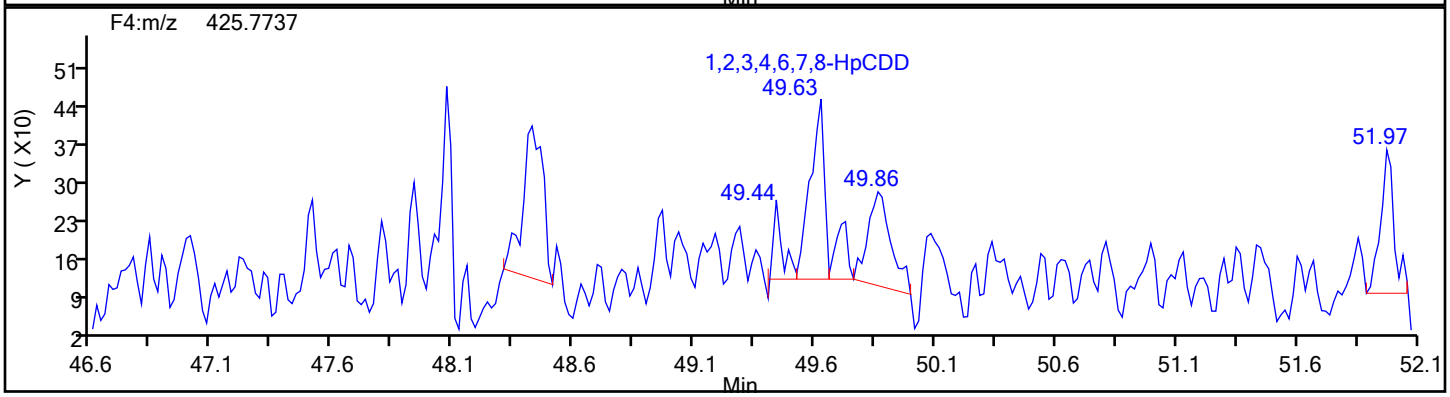
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

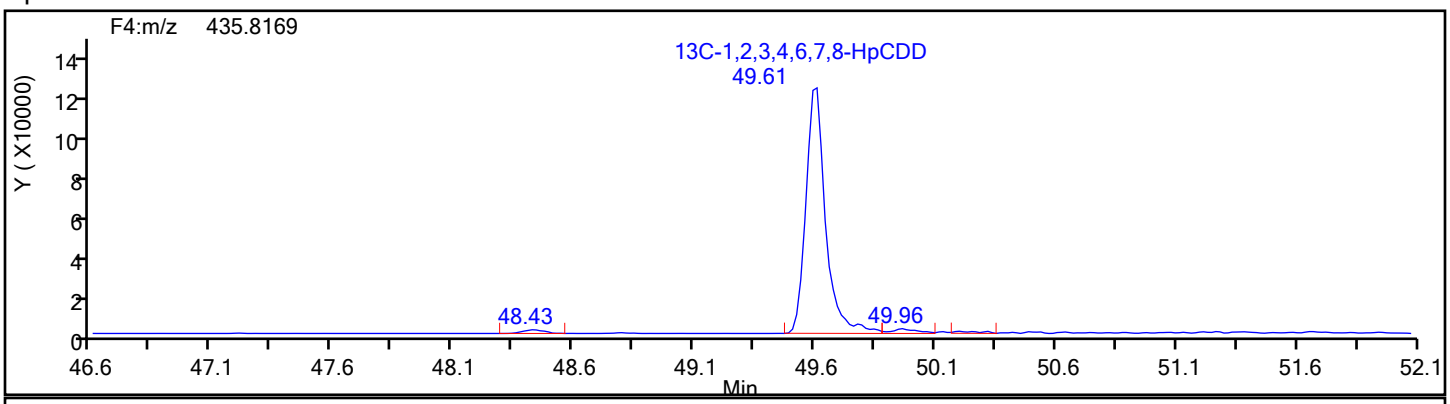
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

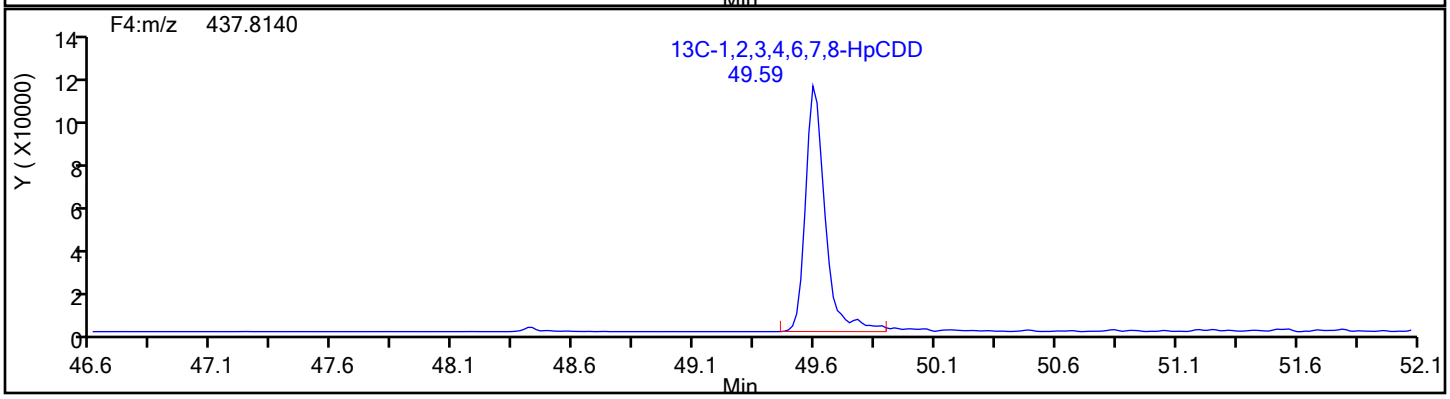
HpCDD





HpCDD Standards



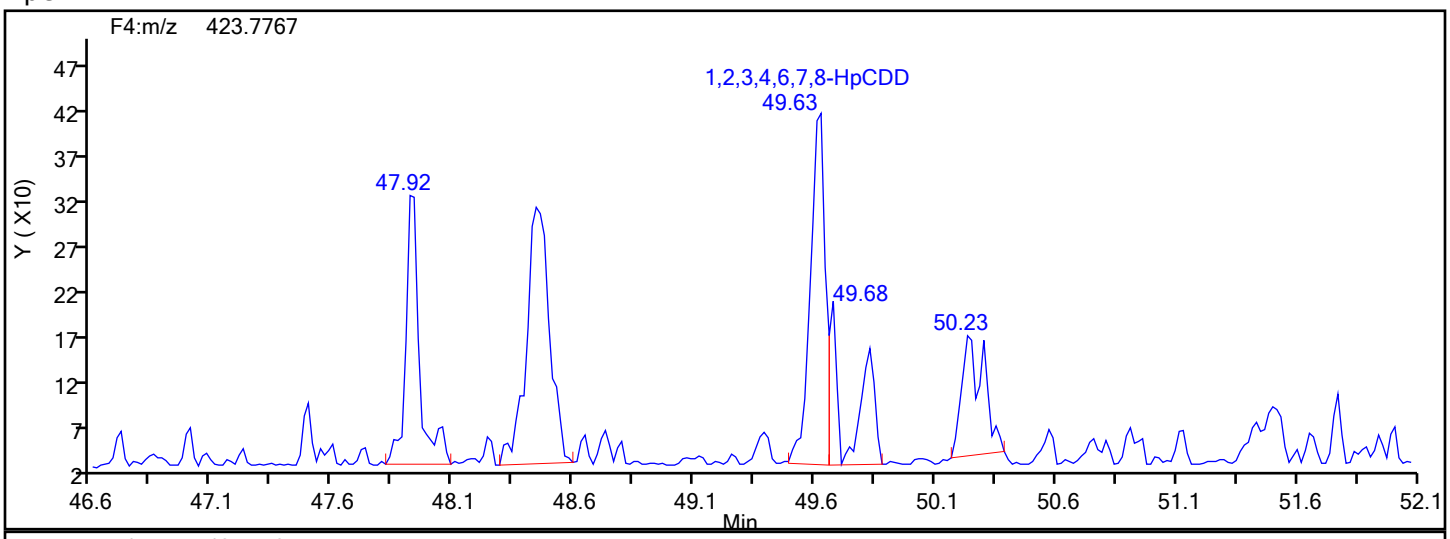


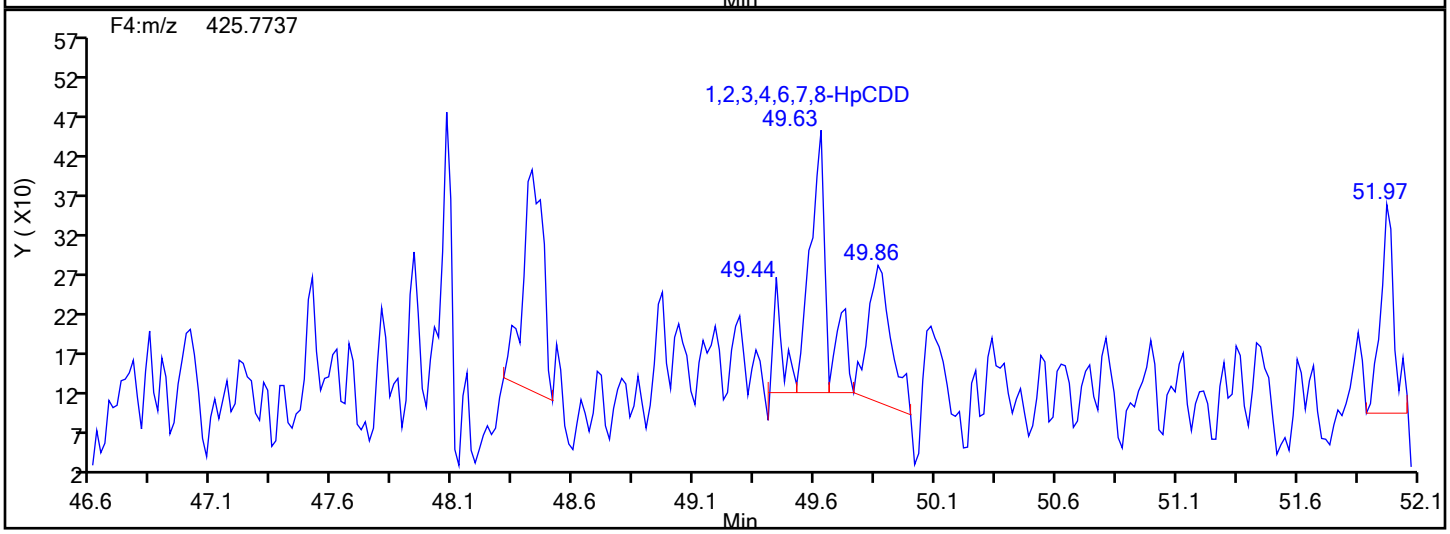
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

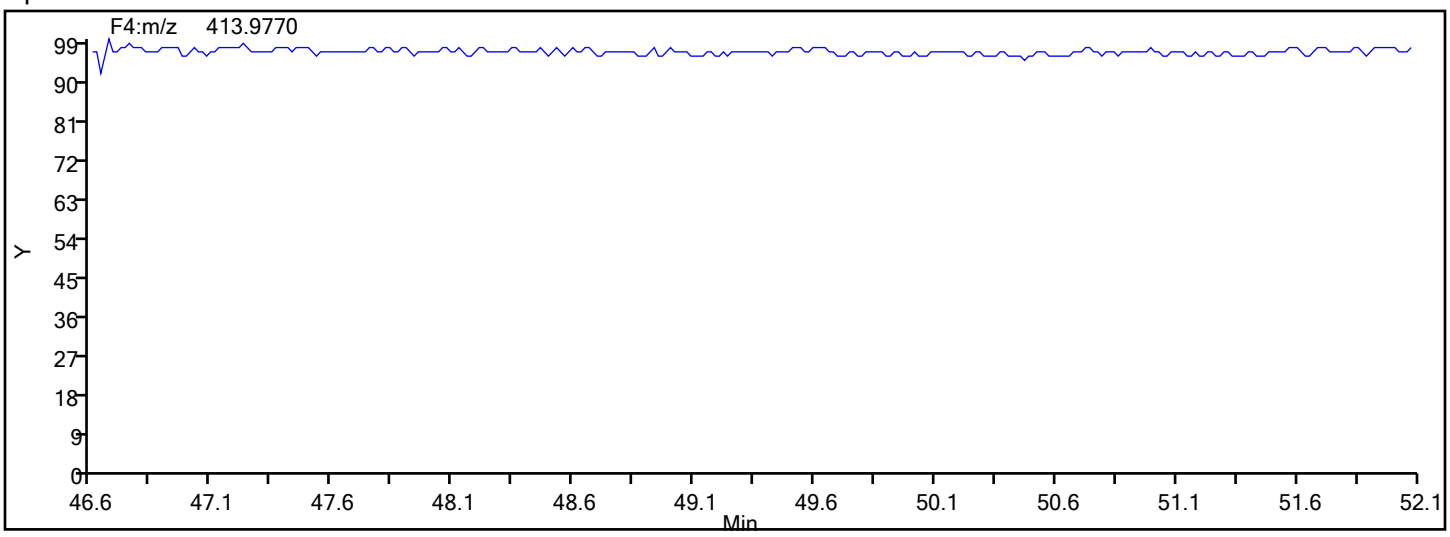
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

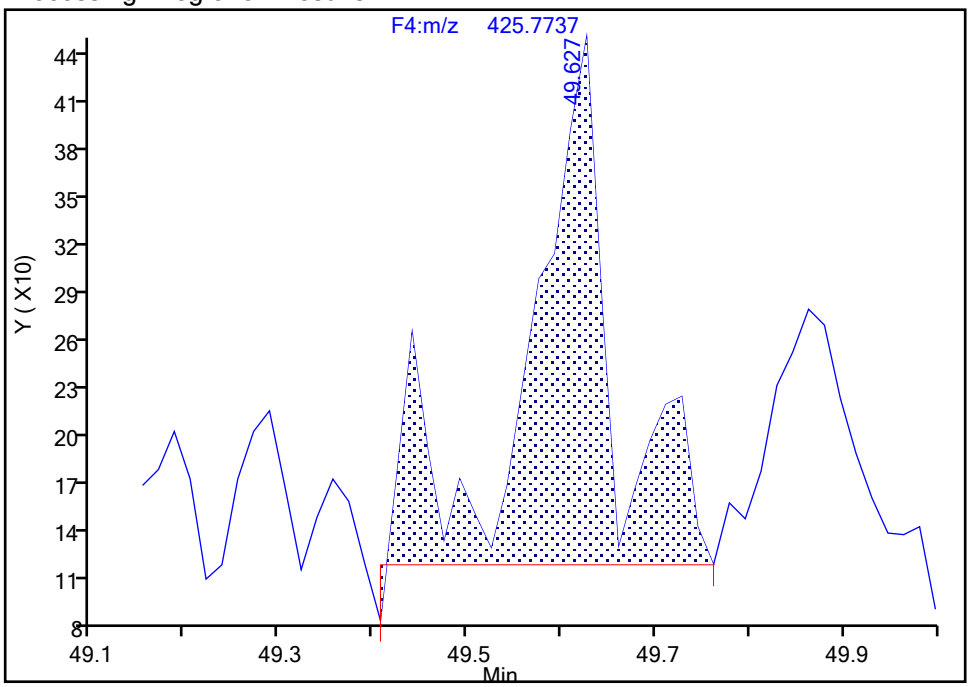
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Injection Date: 17-Dec-2019 04:00:00 Instrument ID: D2A
Lims ID: MB 140-35991/20-A
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F4(47.18 :52.50)

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 2

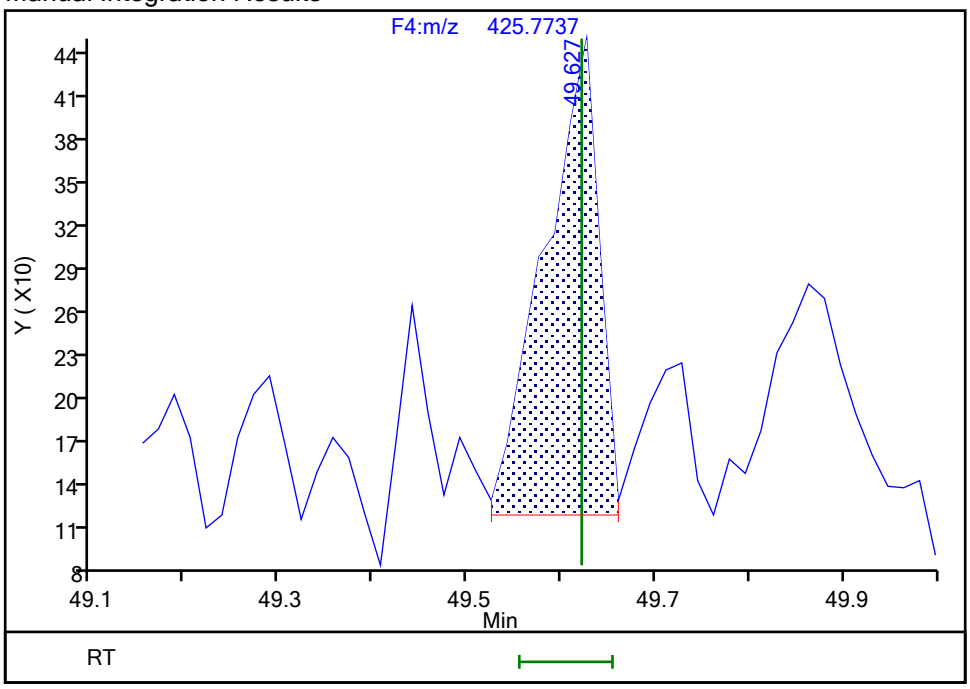
Processing Integration Results

RT: 49.63
Area: 2059
Amount: 0.138623
Amount Units: pg/ul



Manual Integration Results

RT: 49.63
Area: 1333
Amount: 0.103506
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:16:13
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

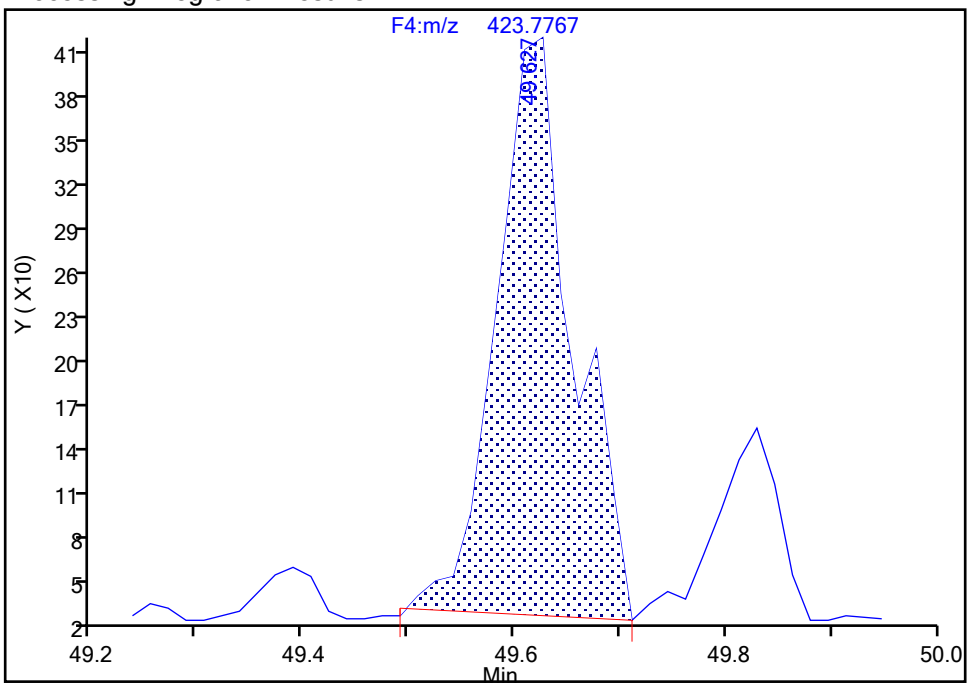
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 1

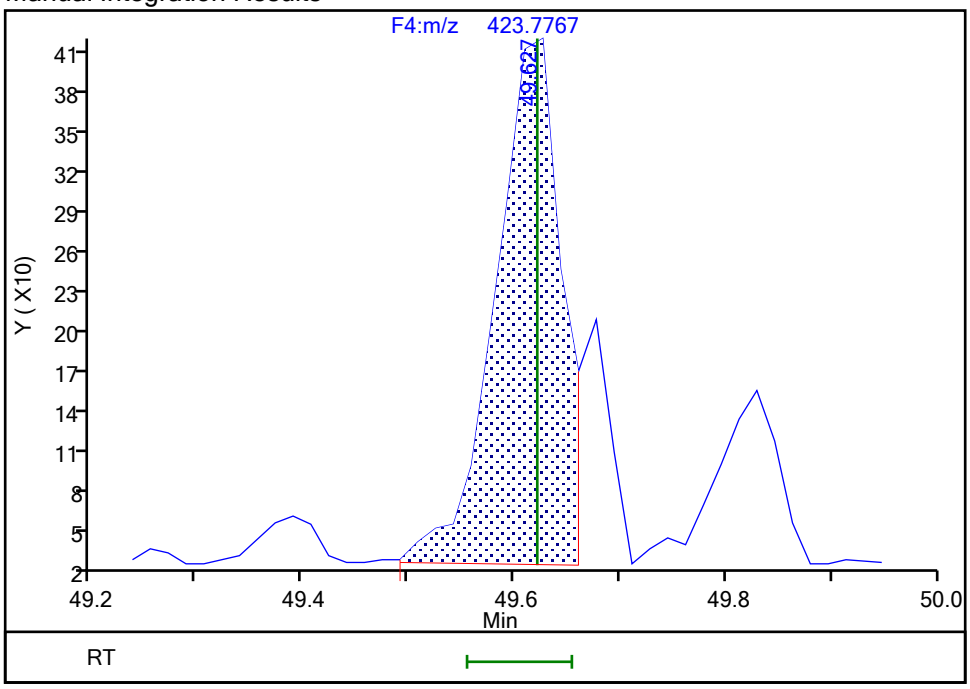
Processing Integration Results

RT: 49.63
Area: 1928
Amount: 0.138623
Amount Units: pg/ul



Manual Integration Results

RT: 49.63
Area: 1644
Amount: 0.103506
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:16:32
Audit Action: Manually Integrated Audit Reason: Baseline

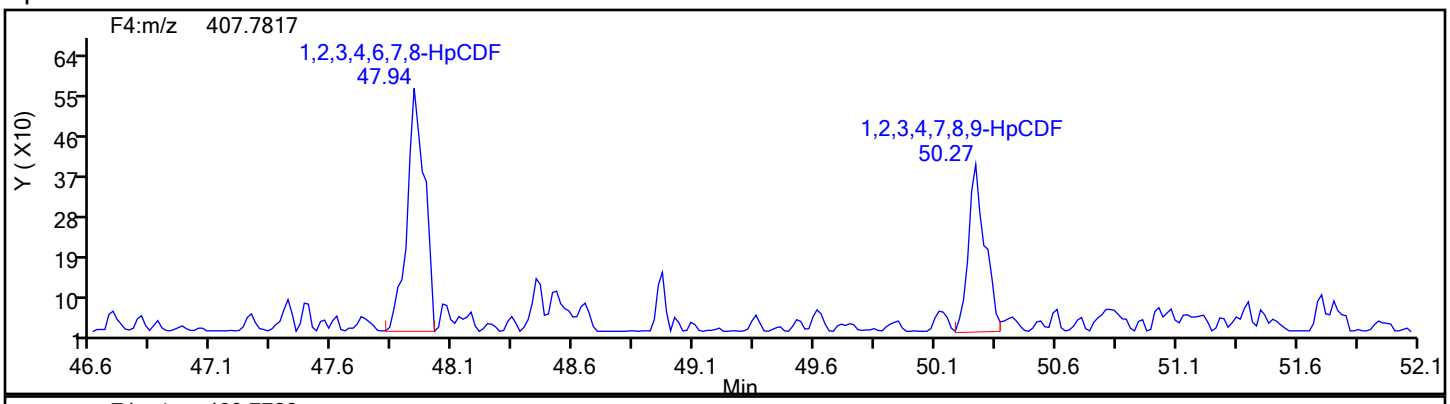
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

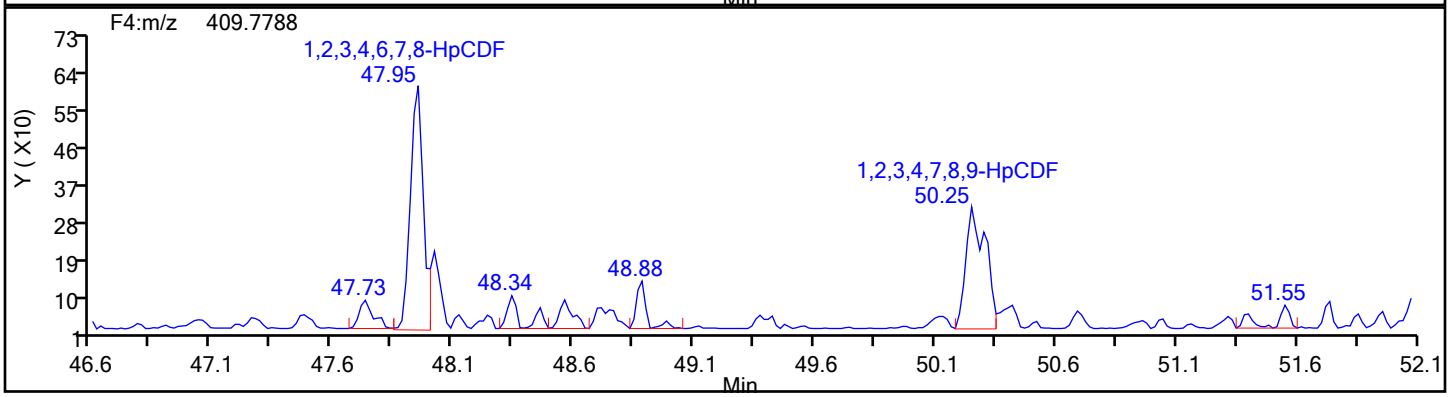
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d

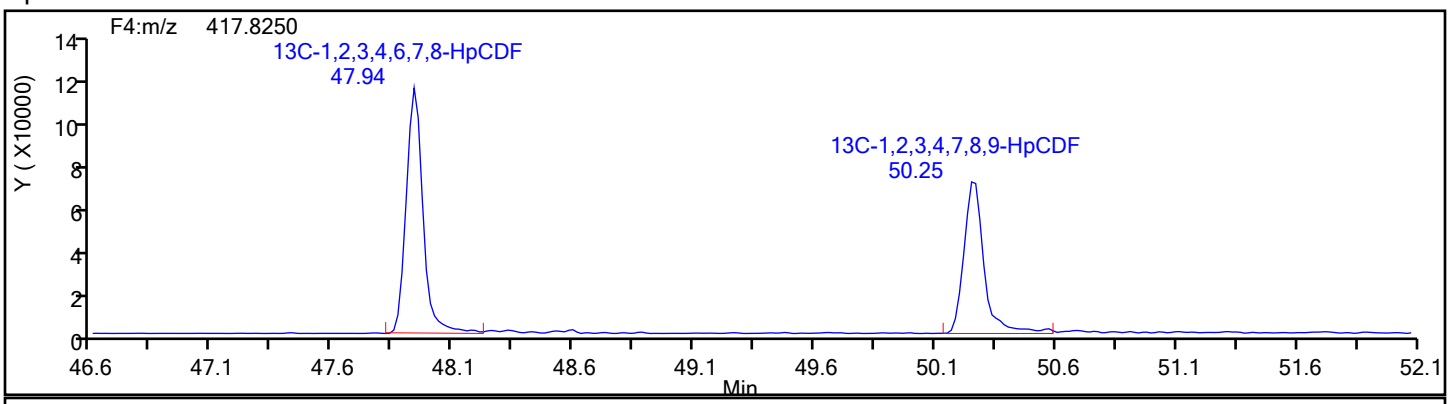
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

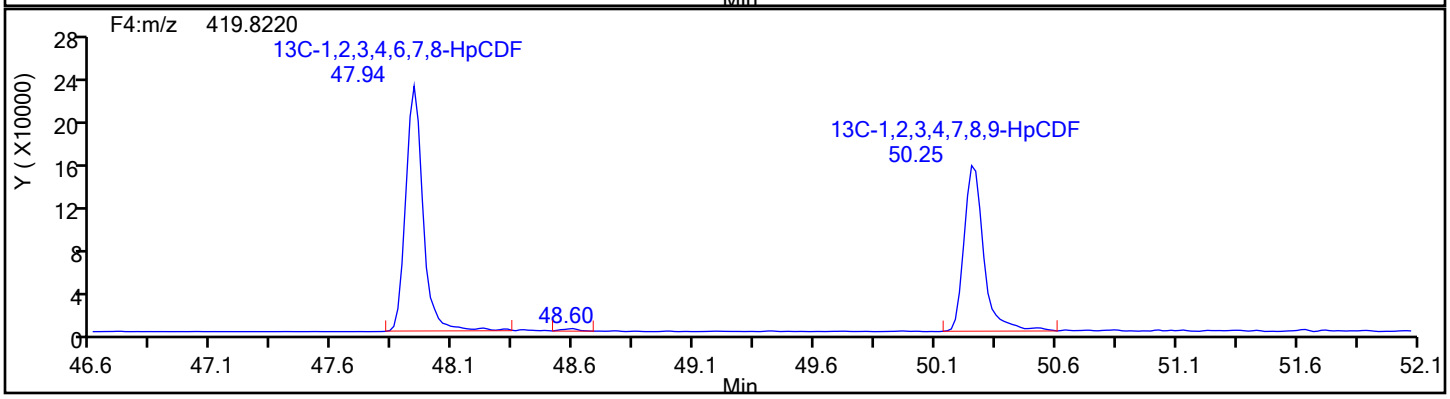
HpCDF





HpCDF Standards



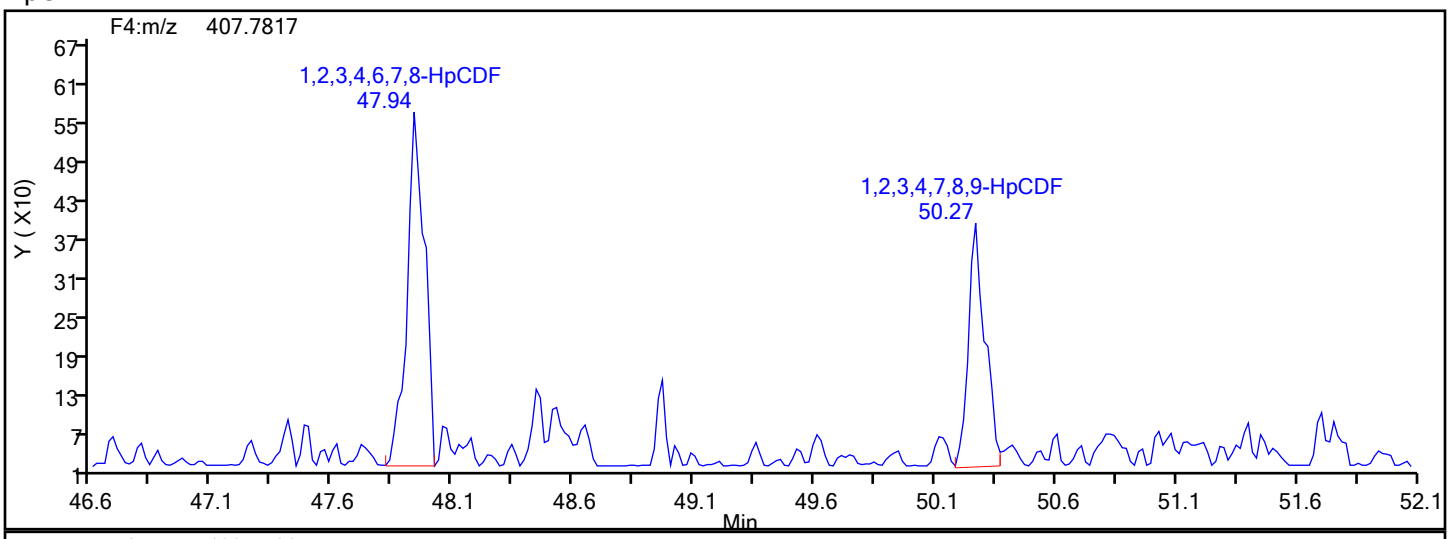


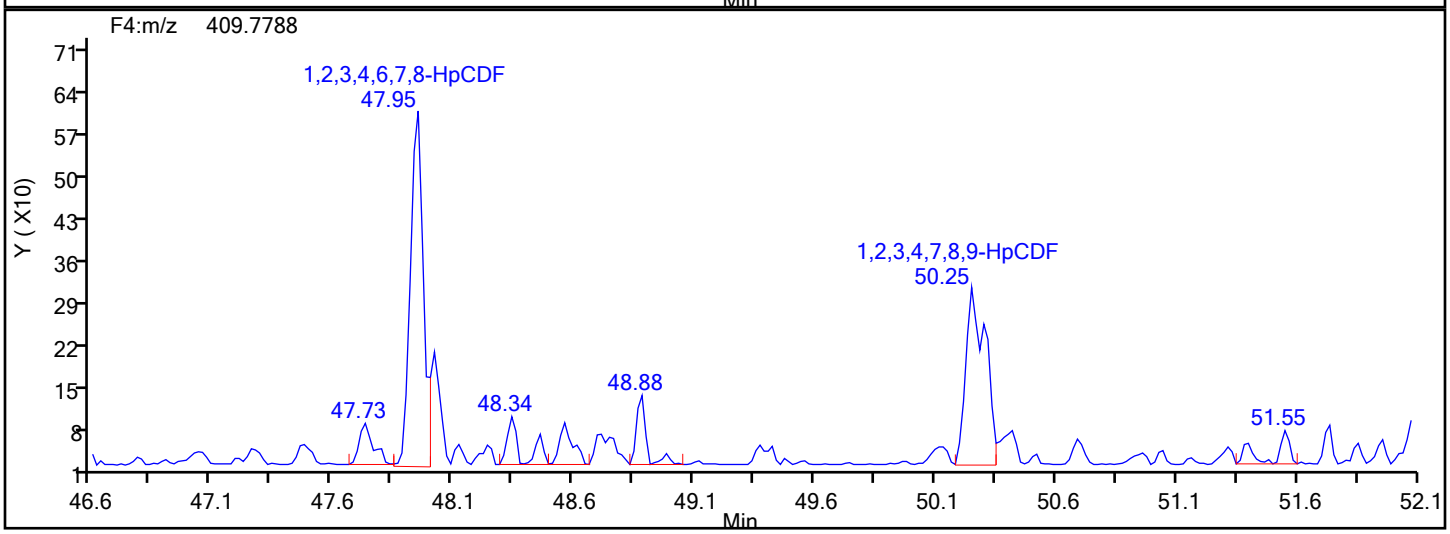
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

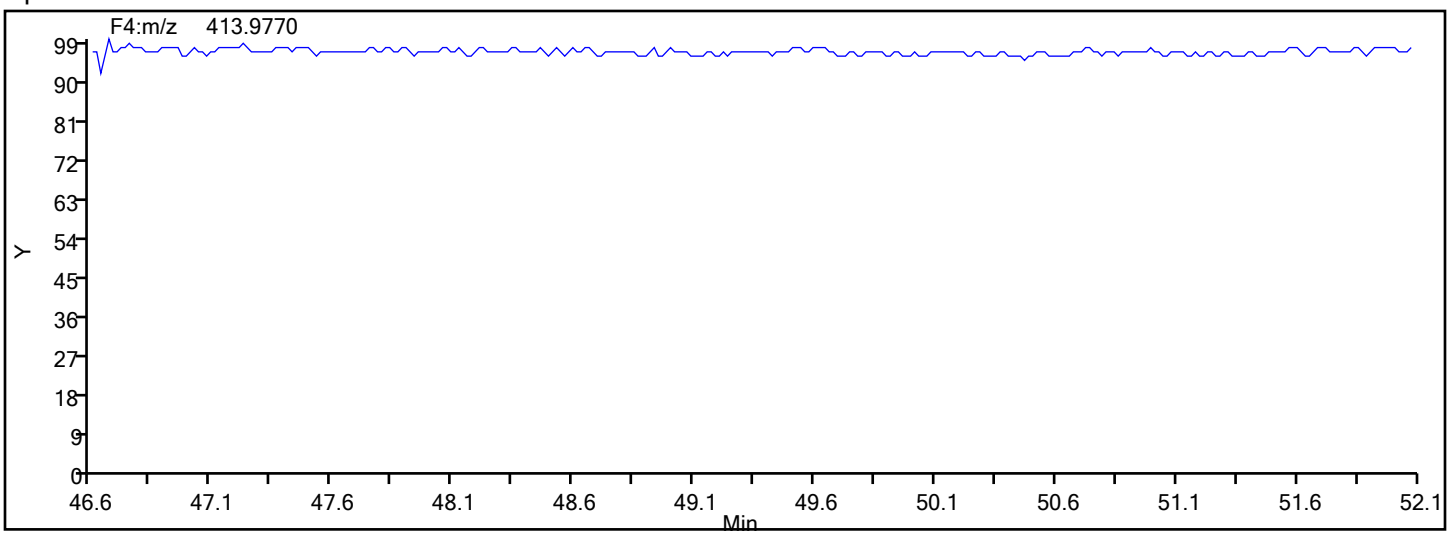
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

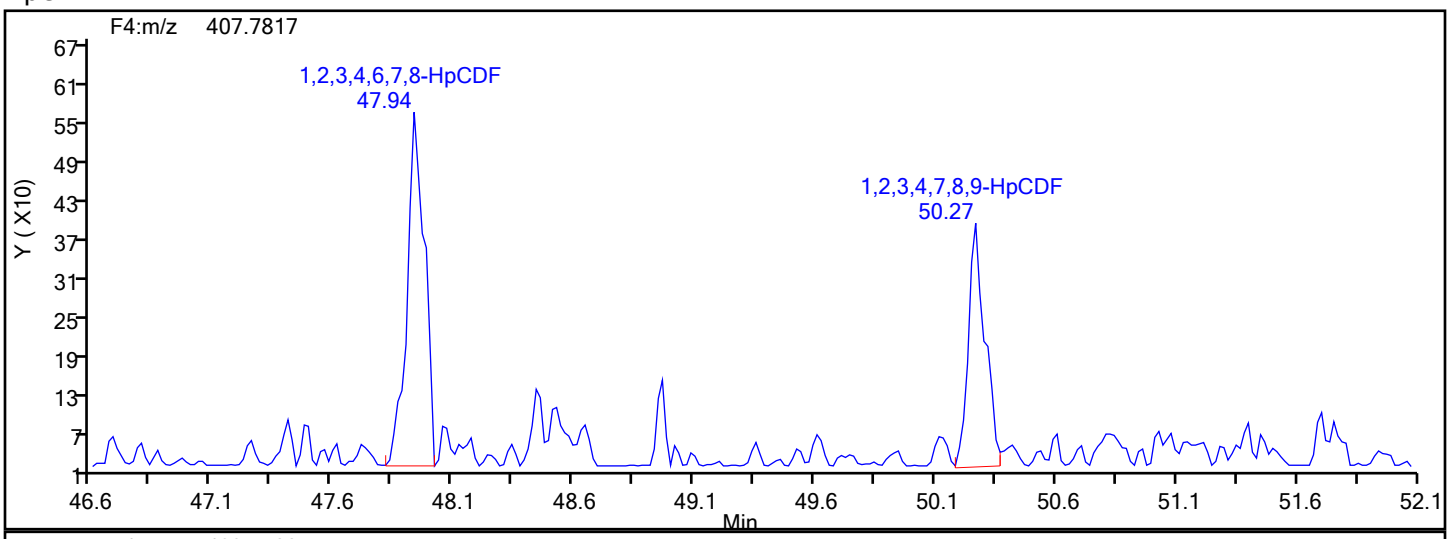


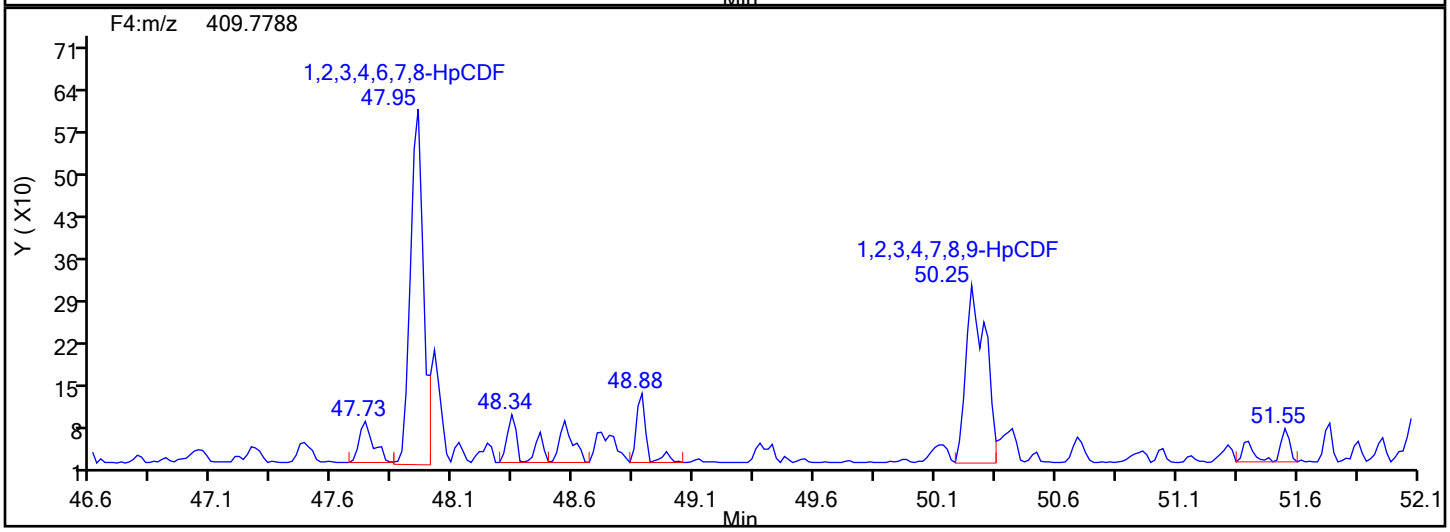
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

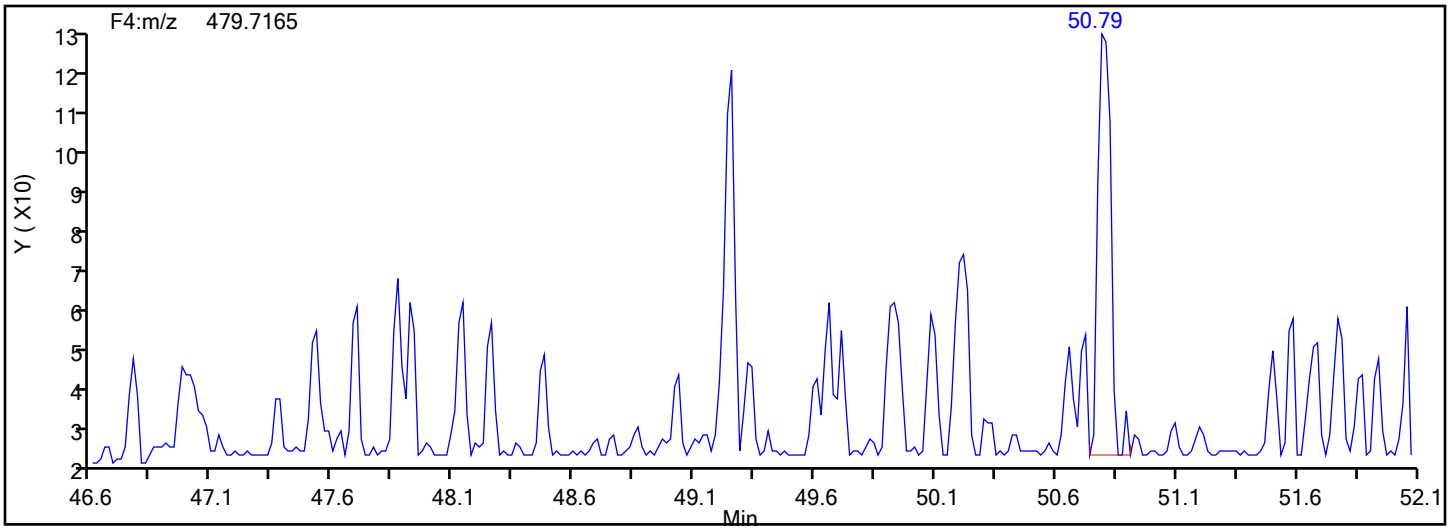
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

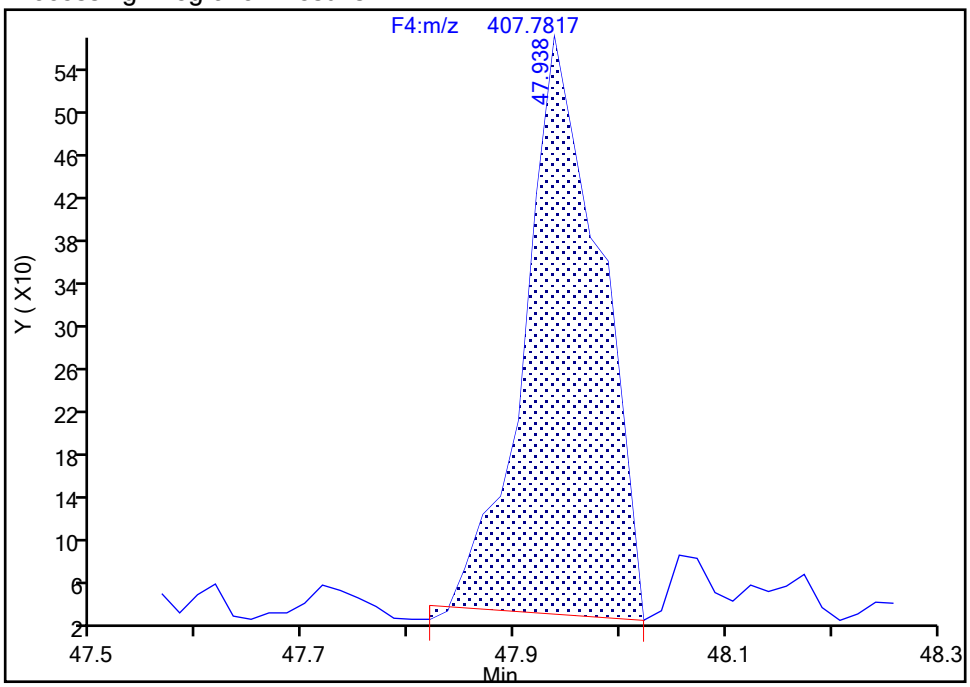
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

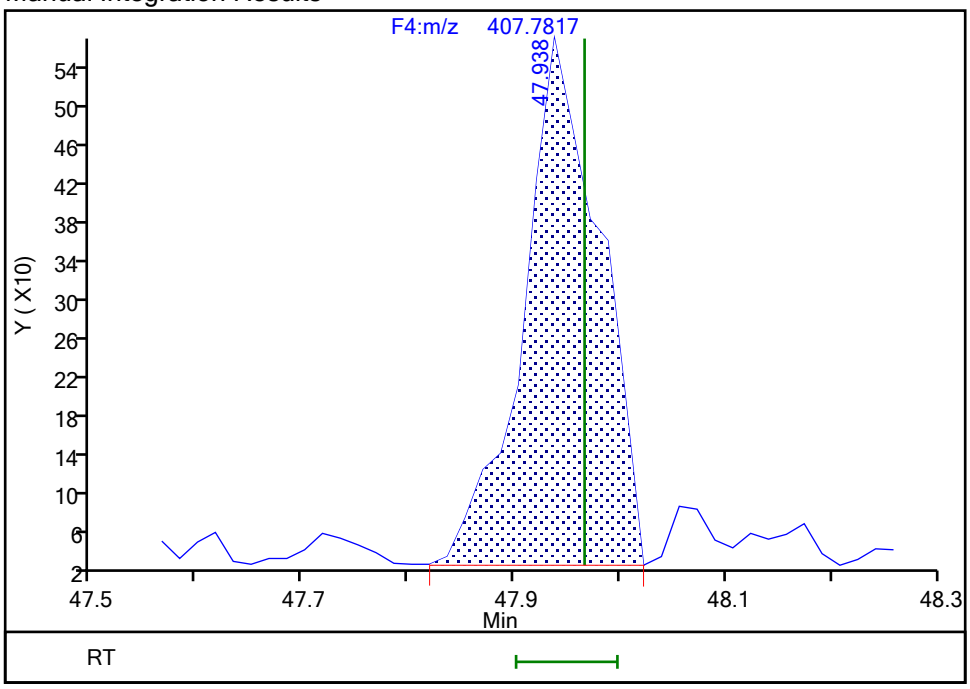
Processing Integration Results

RT: 47.94
Area: 2669
Amount: 0.103162
Amount Units: pg/ul



Manual Integration Results

RT: 47.94
Area: 2754
Amount: 0.097022
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:16:47

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

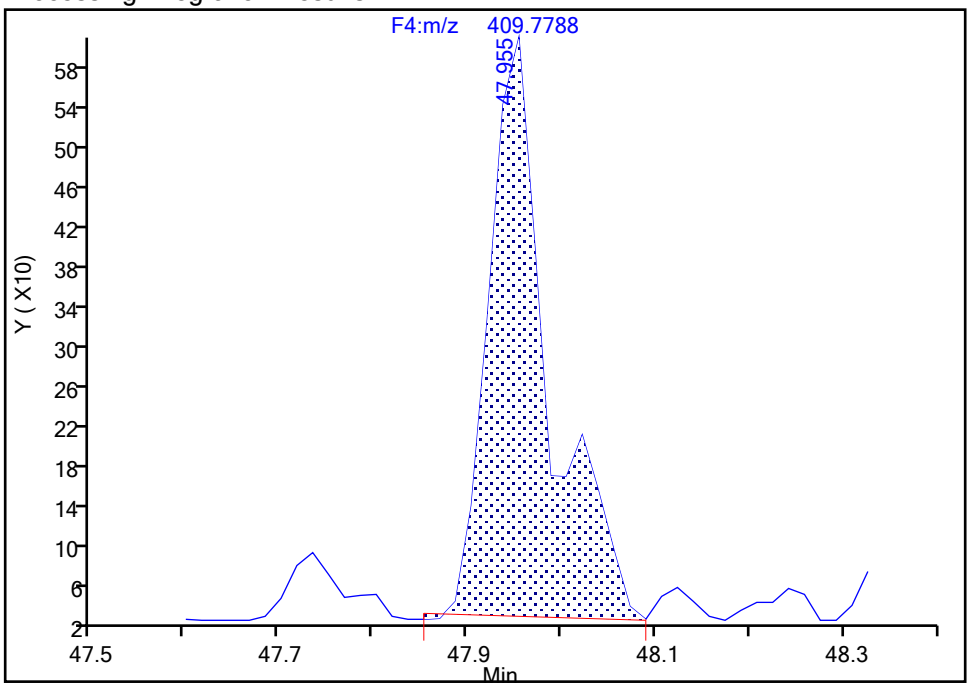
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

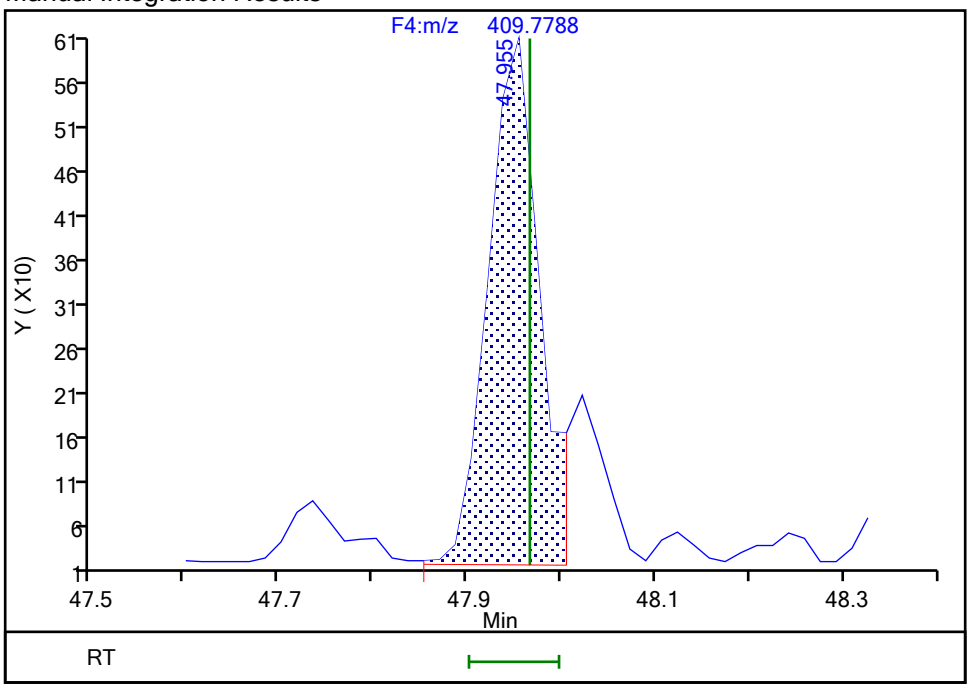
Processing Integration Results

RT: 47.95
Area: 2590
Amount: 0.103162
Amount Units: pg/ul



Manual Integration Results

RT: 47.95
Area: 2192
Amount: 0.097022
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:17:02

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

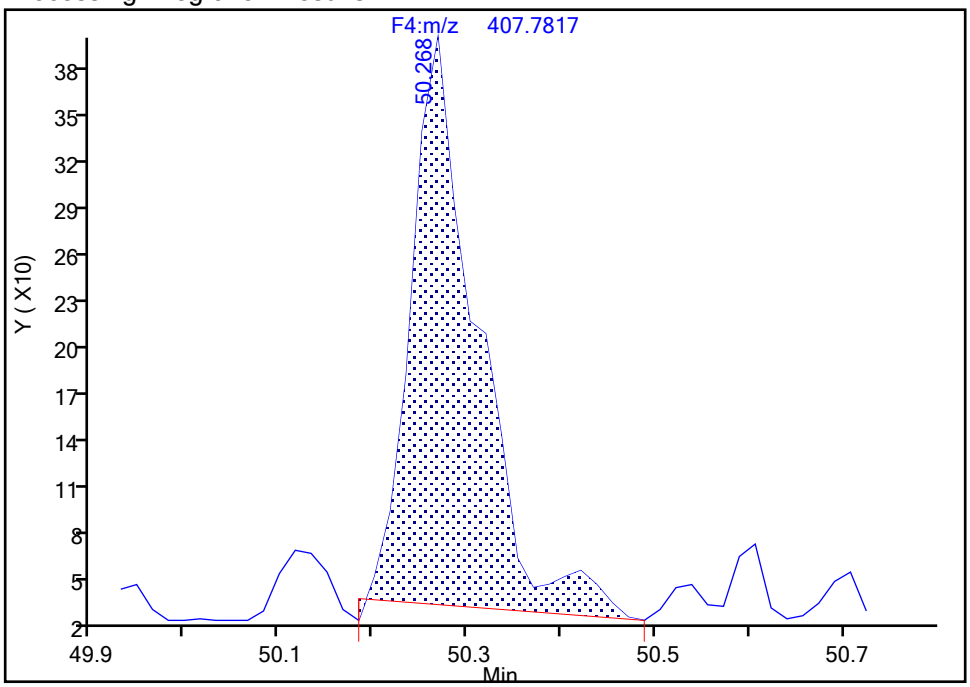
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

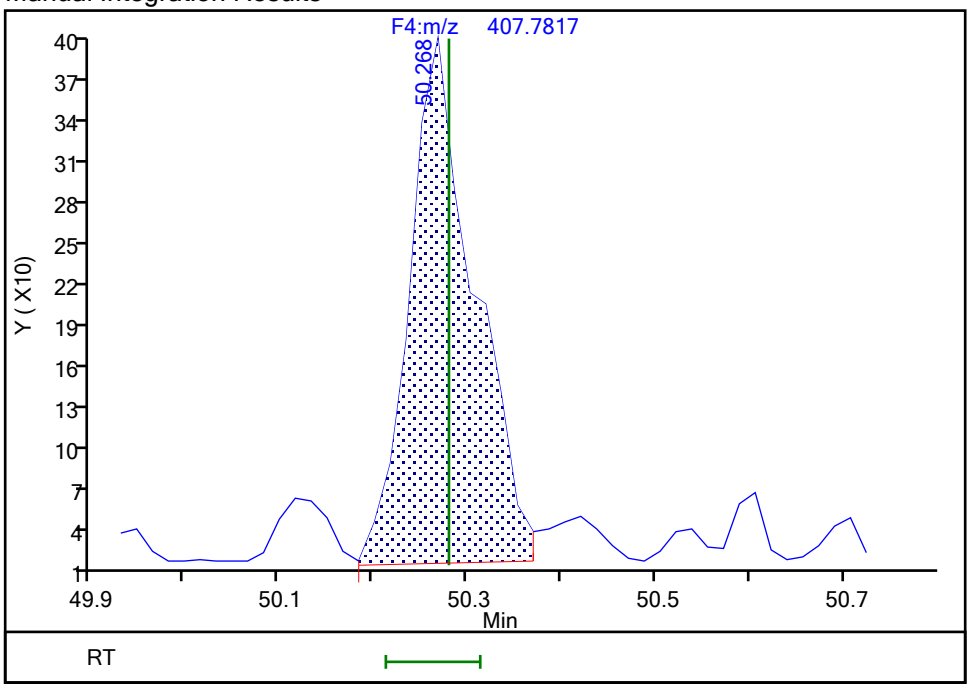
Processing Integration Results

RT: 50.27
Area: 1783
Amount: 0.100965
Amount Units: pg/ul



Manual Integration Results

RT: 50.27
Area: 1796
Amount: 0.096364
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:17:21

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

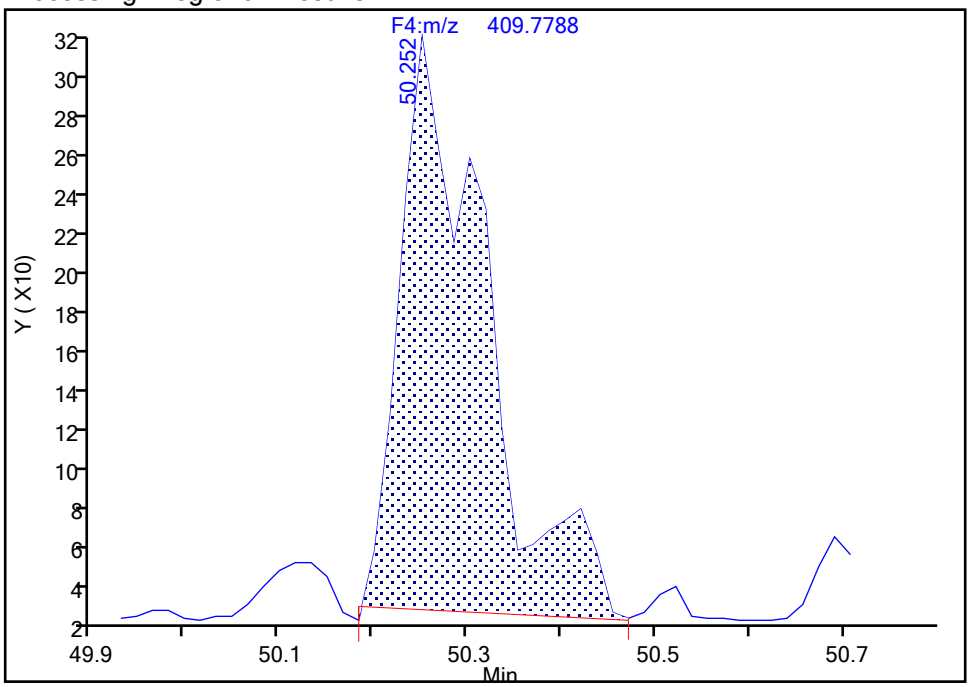
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

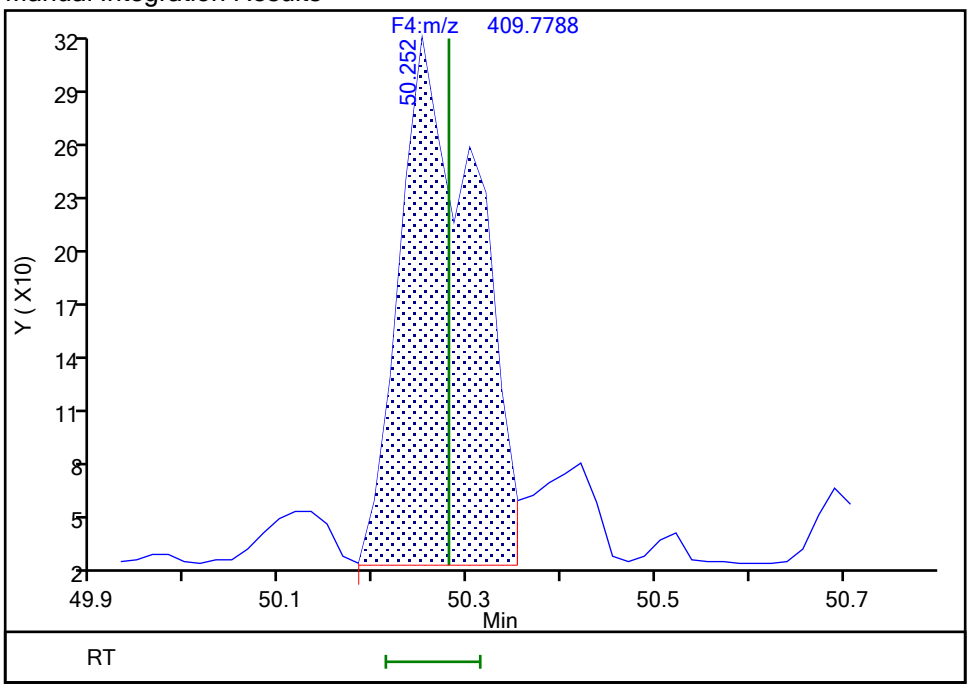
Processing Integration Results

RT: 50.25
Area: 1838
Amount: 0.100965
Amount Units: pg/ul



Manual Integration Results

RT: 50.25
Area: 1660
Amount: 0.096364
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:17:29

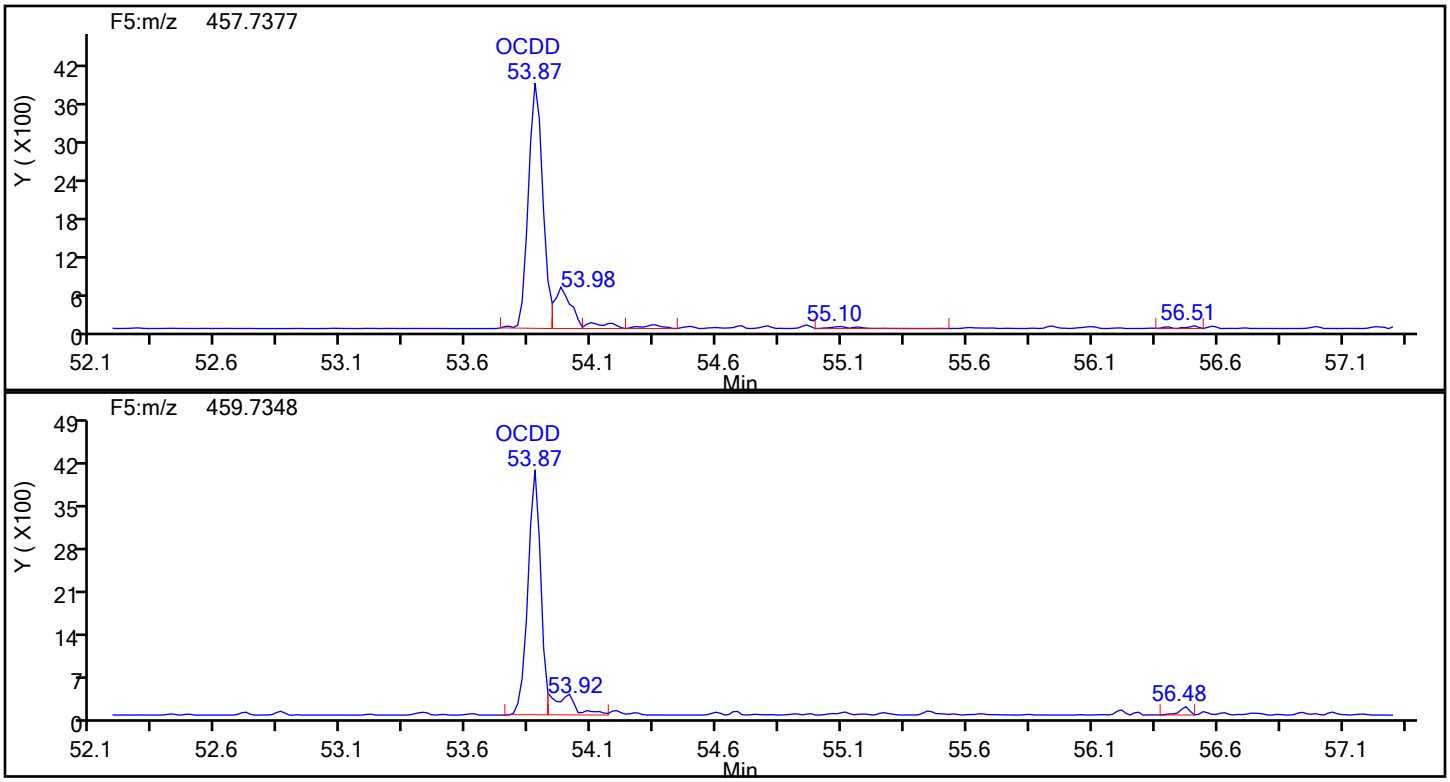
Audit Action: Manually Integrated Audit Reason: Baseline

Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

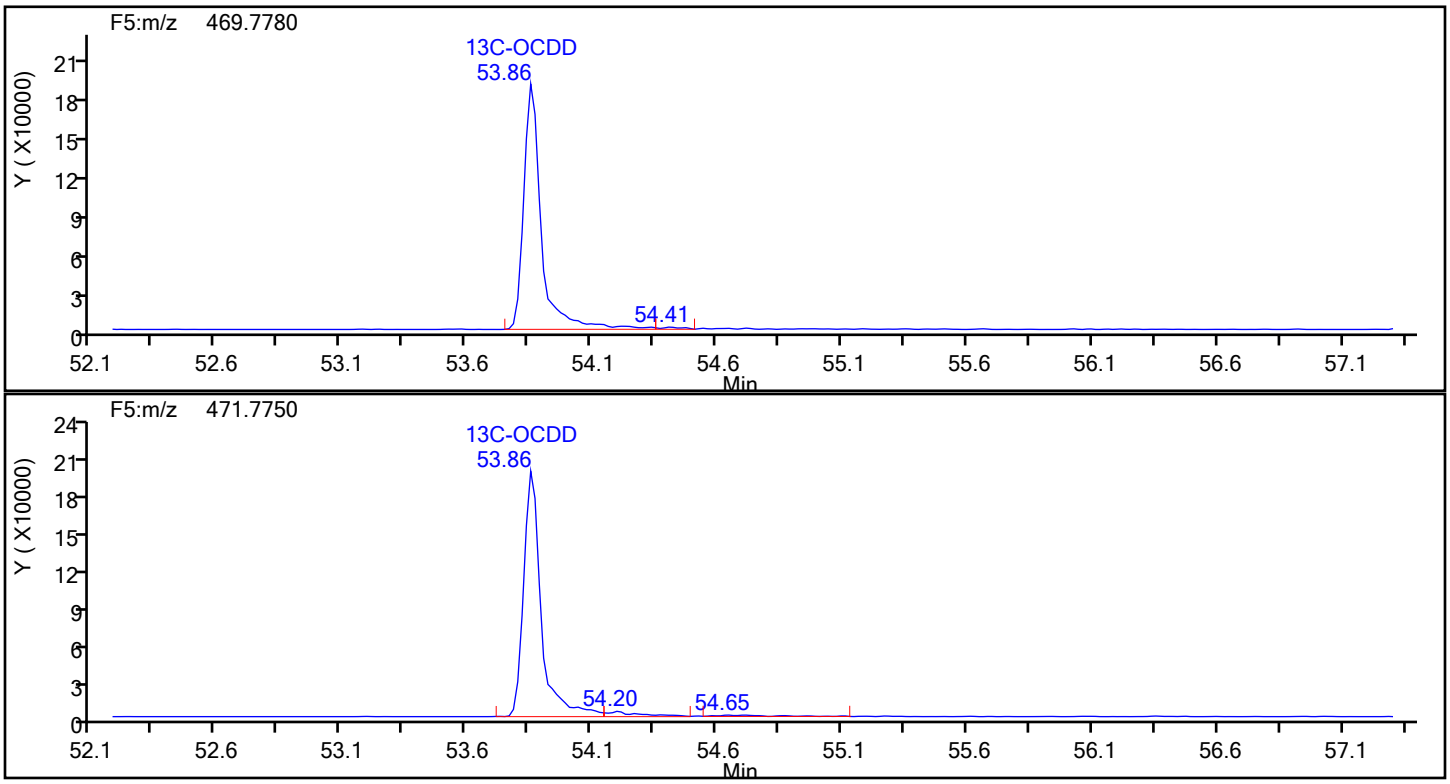
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

OCDD



OCDD Standards

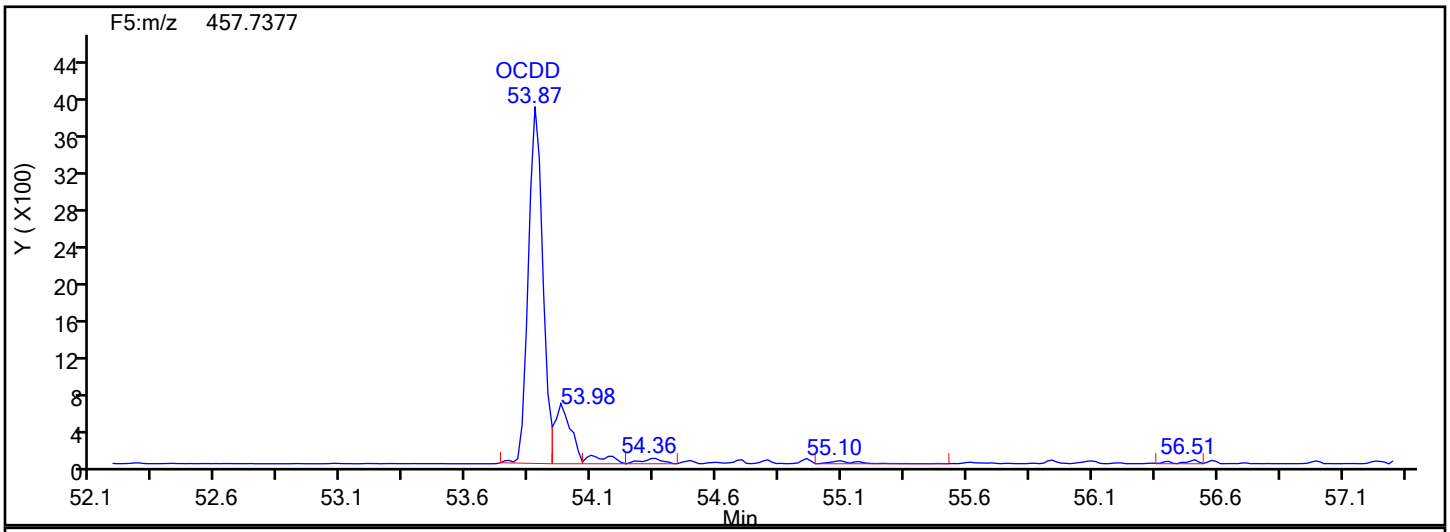


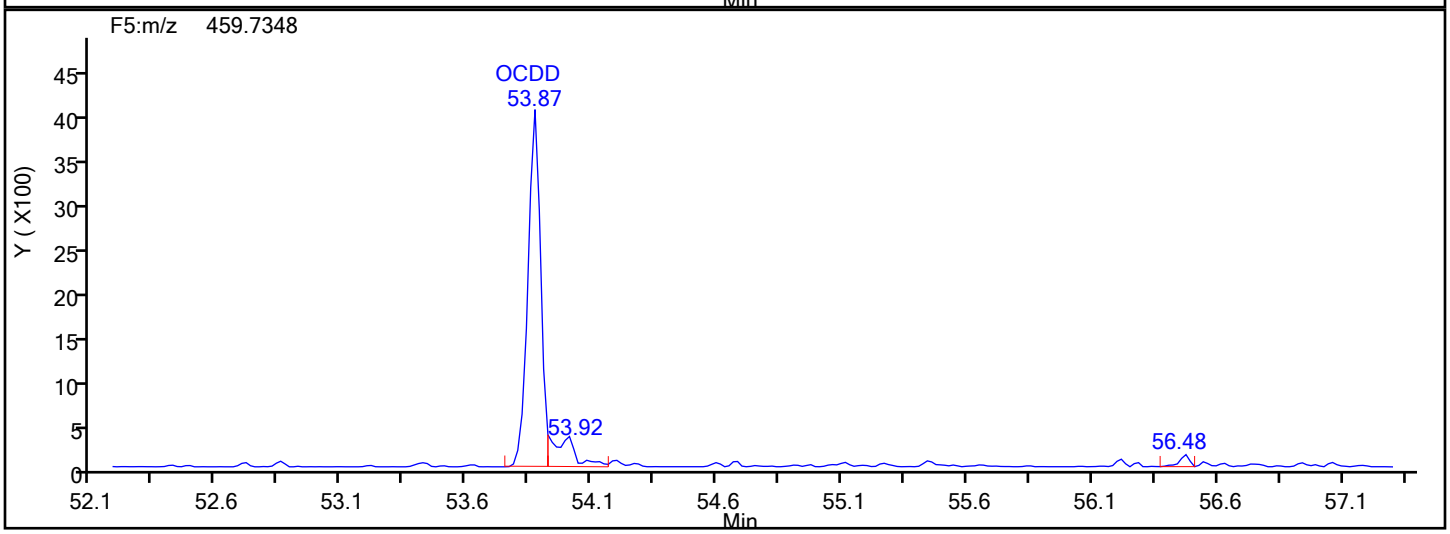
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

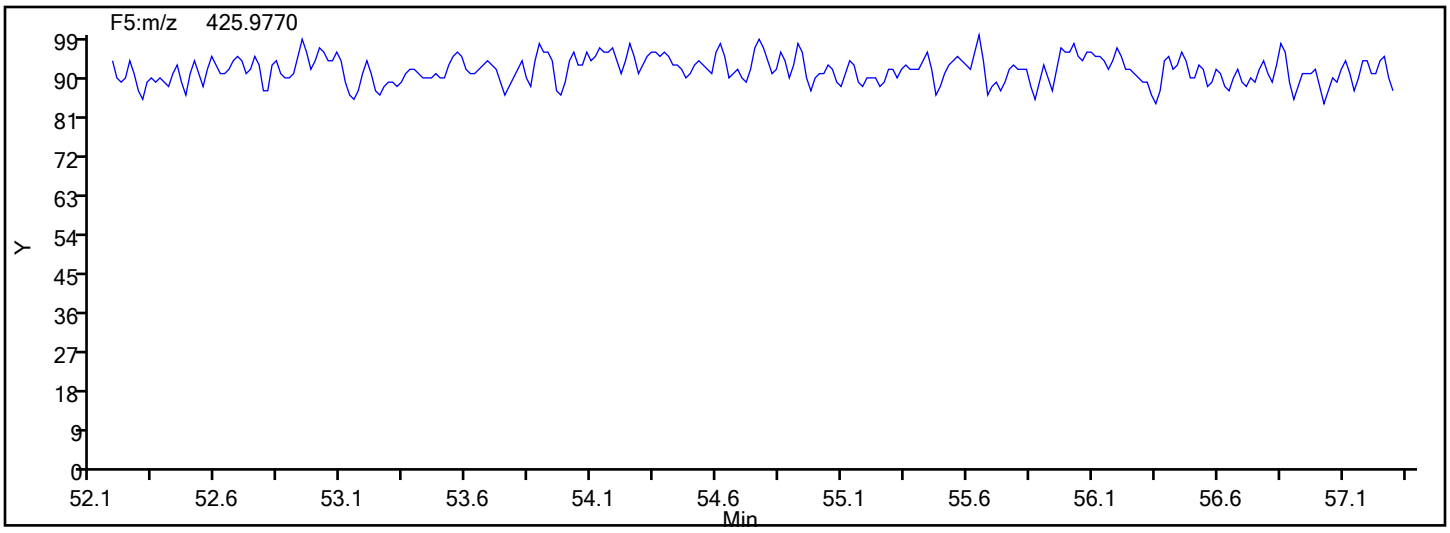
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

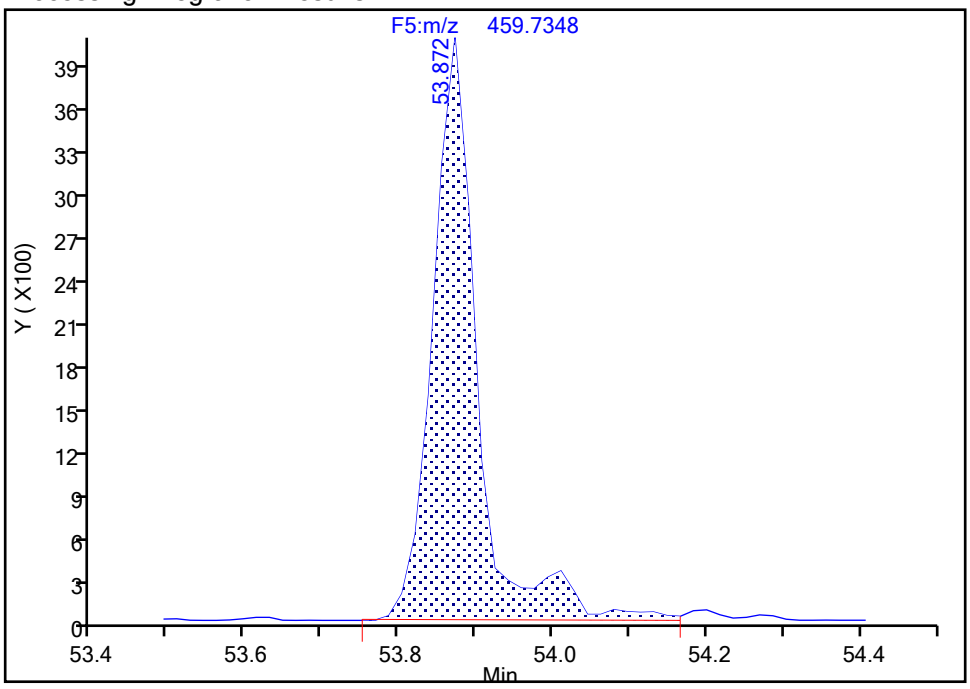
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDD, CAS: 3268-87-9

Signal: 2

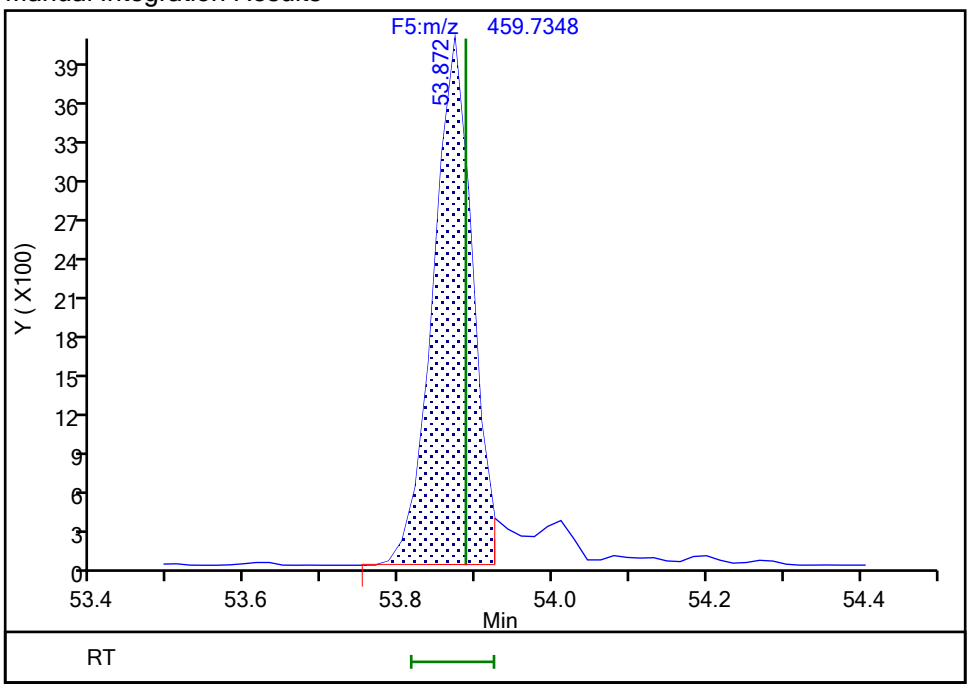
Processing Integration Results

RT: 53.87
Area: 16339
Amount: 1.388262
Amount Units: pg/ul



Manual Integration Results

RT: 53.87
Area: 14173
Amount: 1.293029
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:17:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

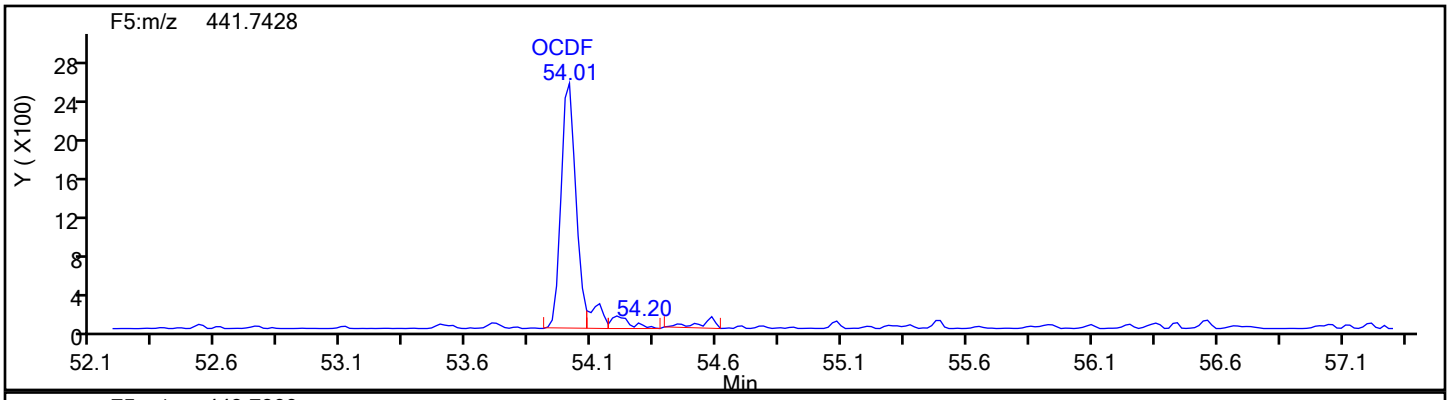
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

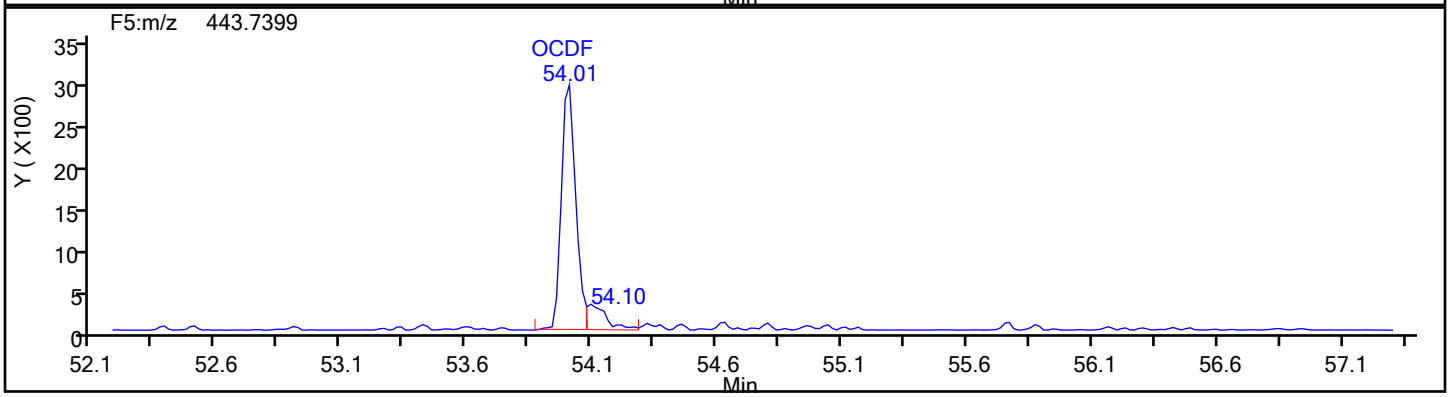
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d

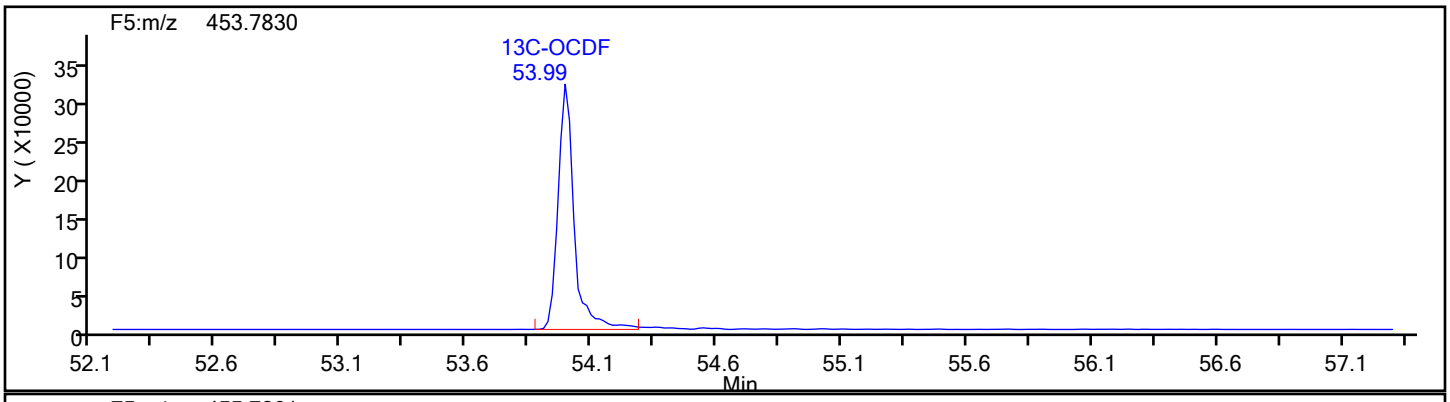
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

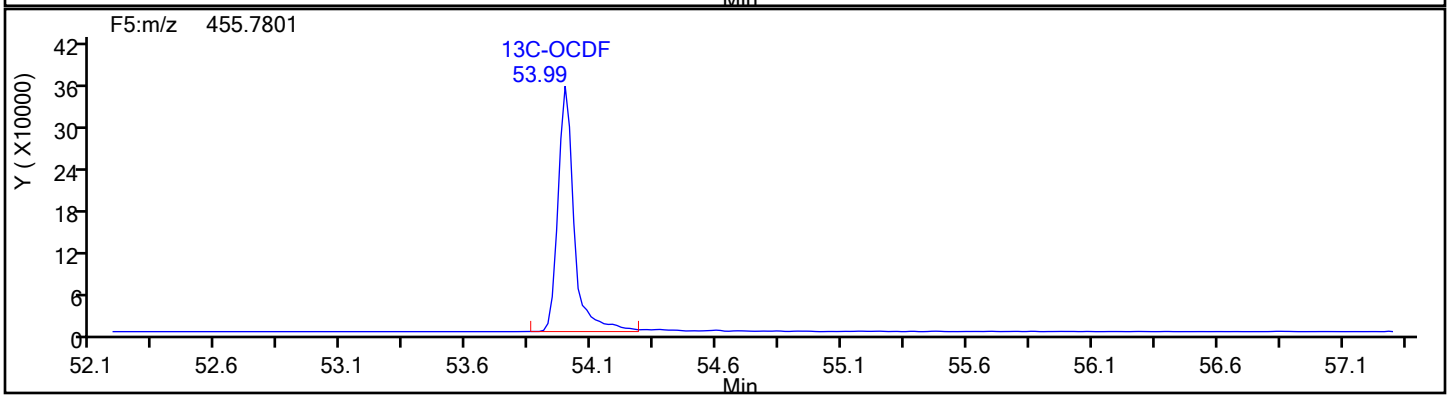
OCDF





OCDF Standards



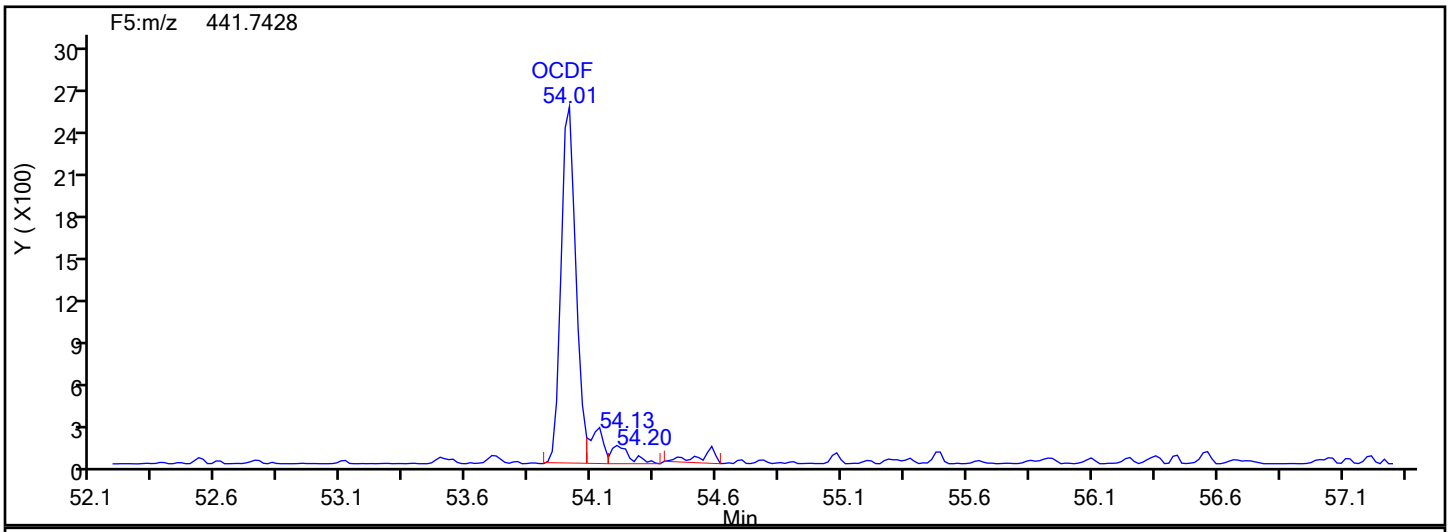


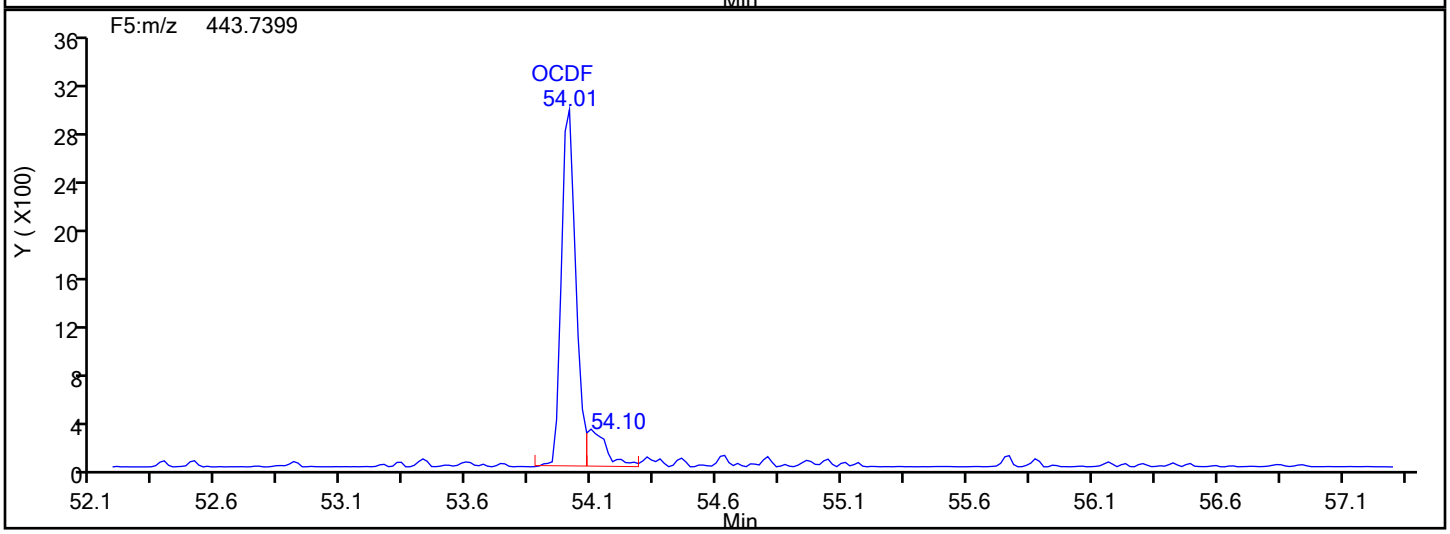
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

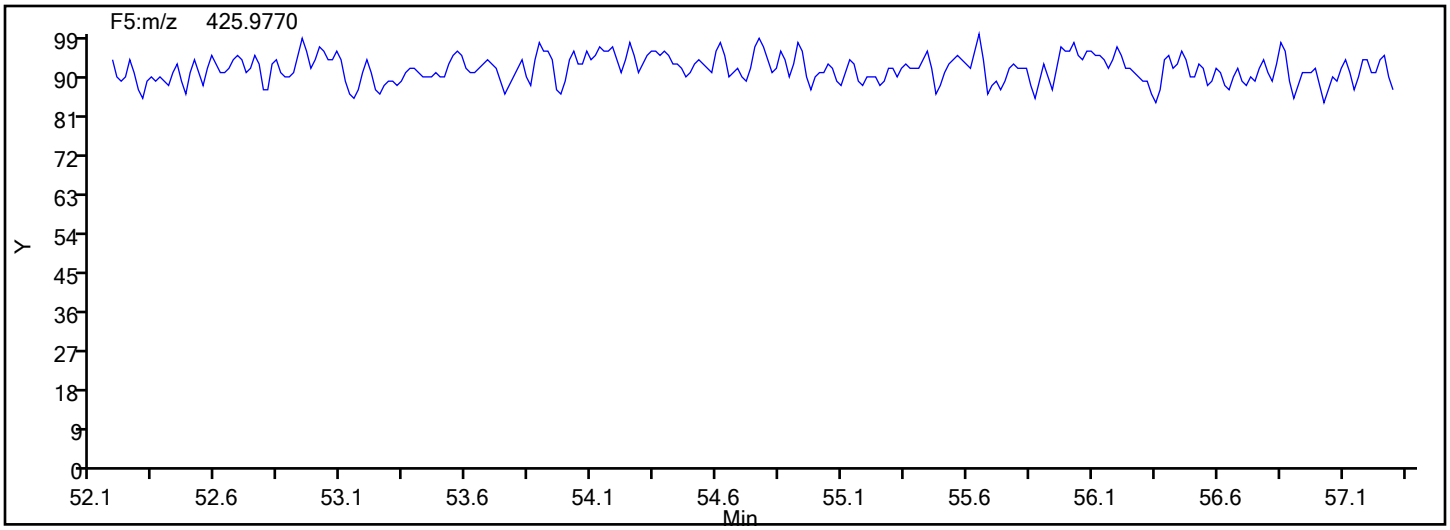
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

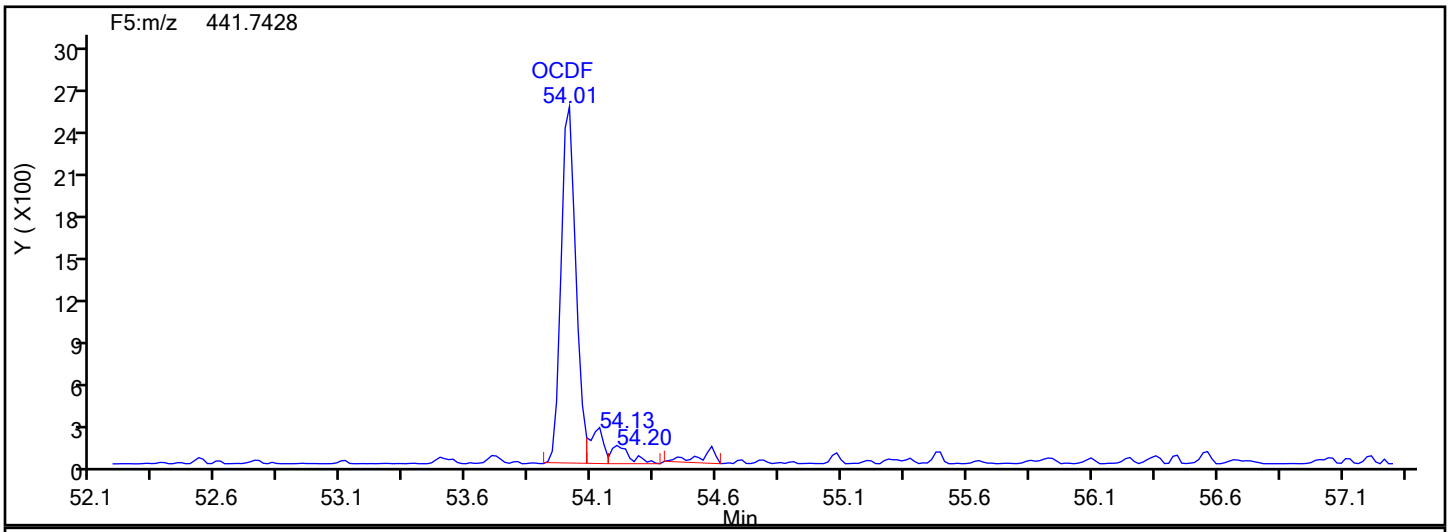


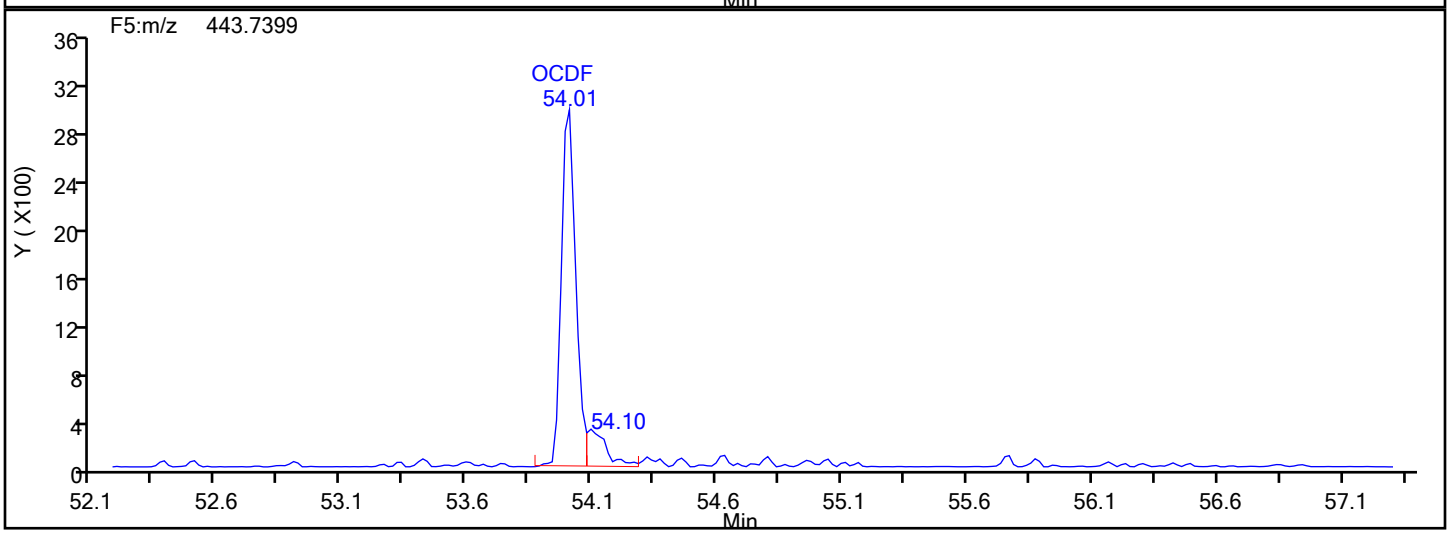
Report Date: 17-Dec-2019 09:50:03 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

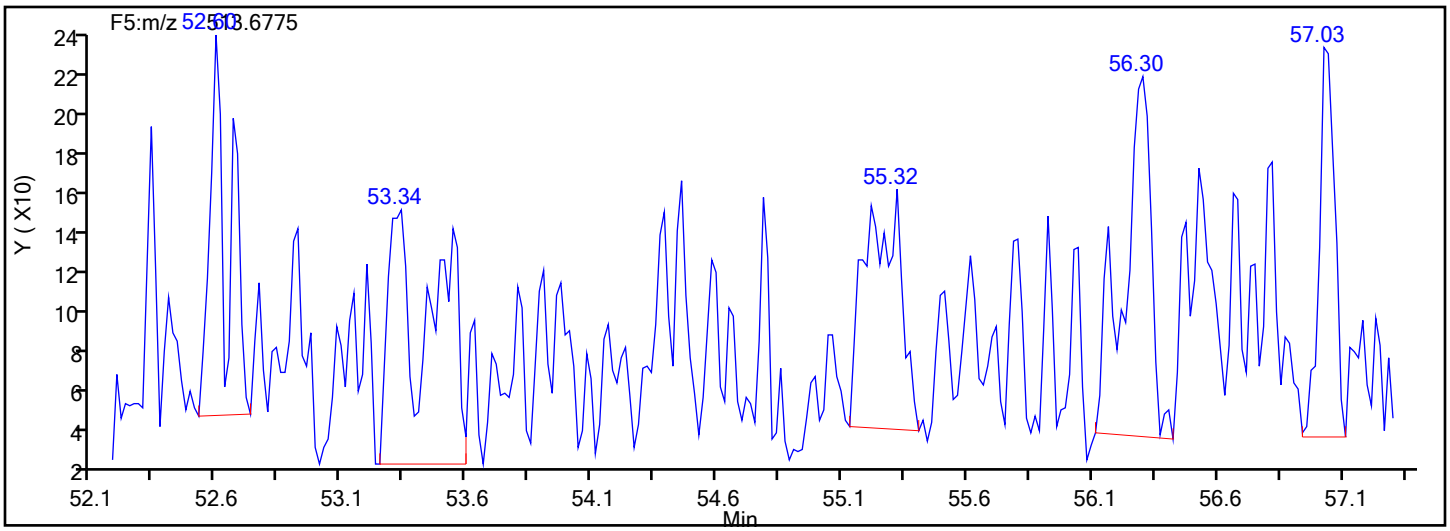
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d		
Injection Date:	17-Dec-2019 04:00:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	7
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

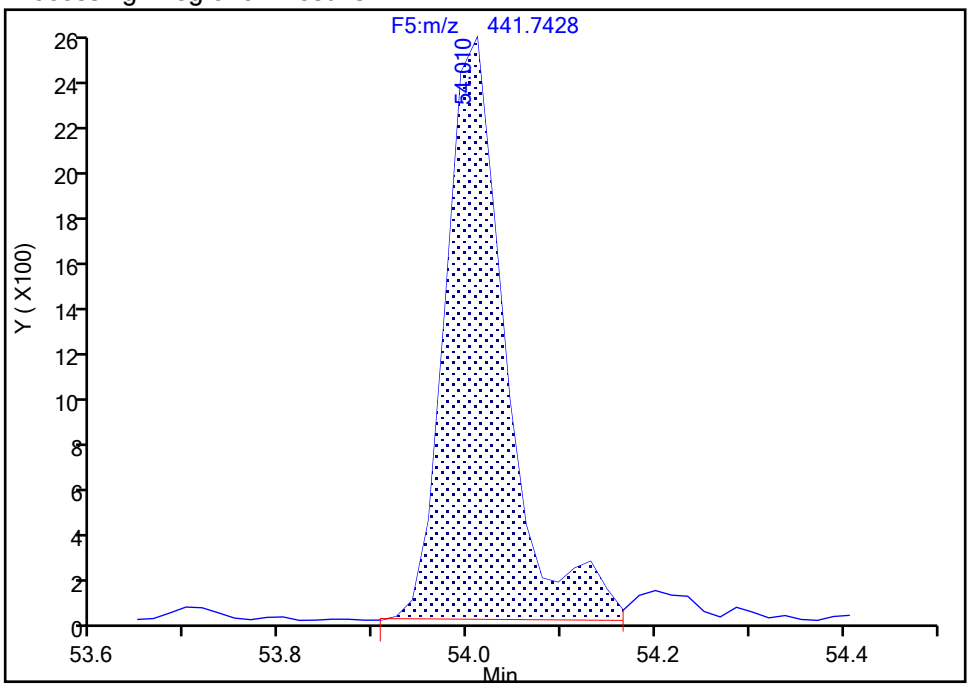
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d
Injection Date: 17-Dec-2019 04:00:00 Instrument ID: D2A
Lims ID: MB 140-35991/20-A
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL
Column: Detector F5(52.61 :57.22)

OCDF, CAS: 39001-02-0

Signal: 1

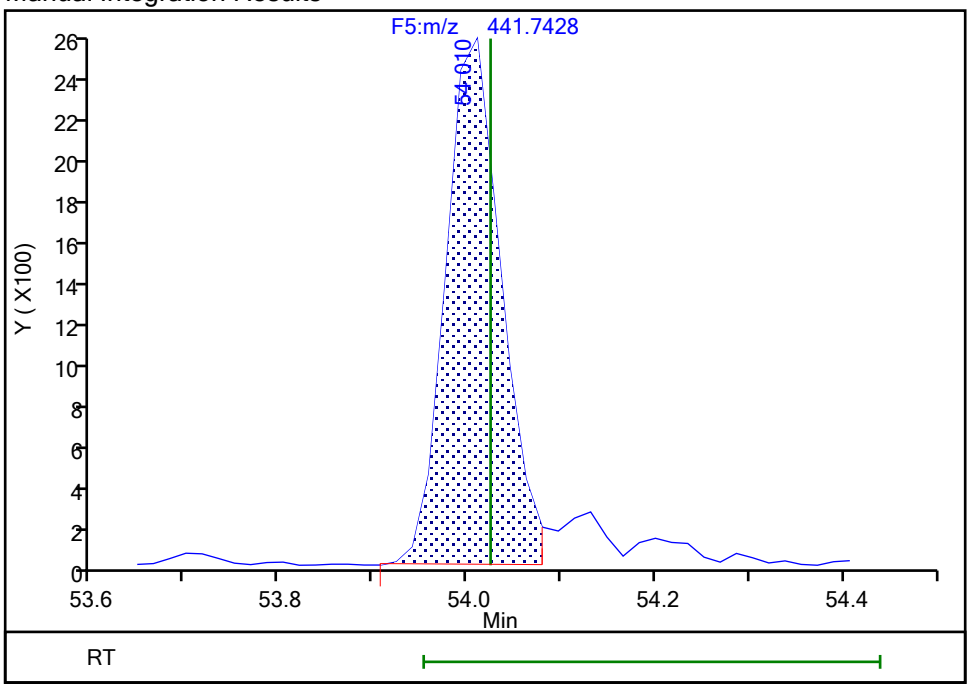
Processing Integration Results

RT: 54.01
Area: 11307
Amount: 0.734474
Amount Units: pg/ul



Manual Integration Results

RT: 54.01
Area: 10382
Amount: 0.658889
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:18:04
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

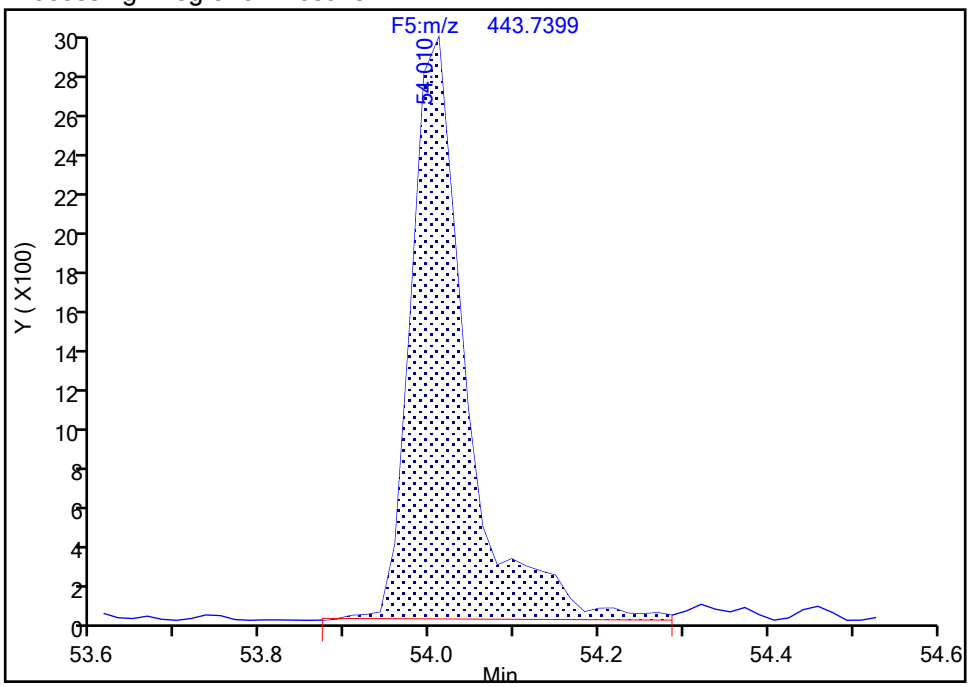
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\mb140-3599120-a.d				
Injection Date:	17-Dec-2019 04:00:00	Instrument ID:	D2A		
Lims ID:	MB 140-35991/20-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

OCDF, CAS: 39001-02-0

Signal: 2

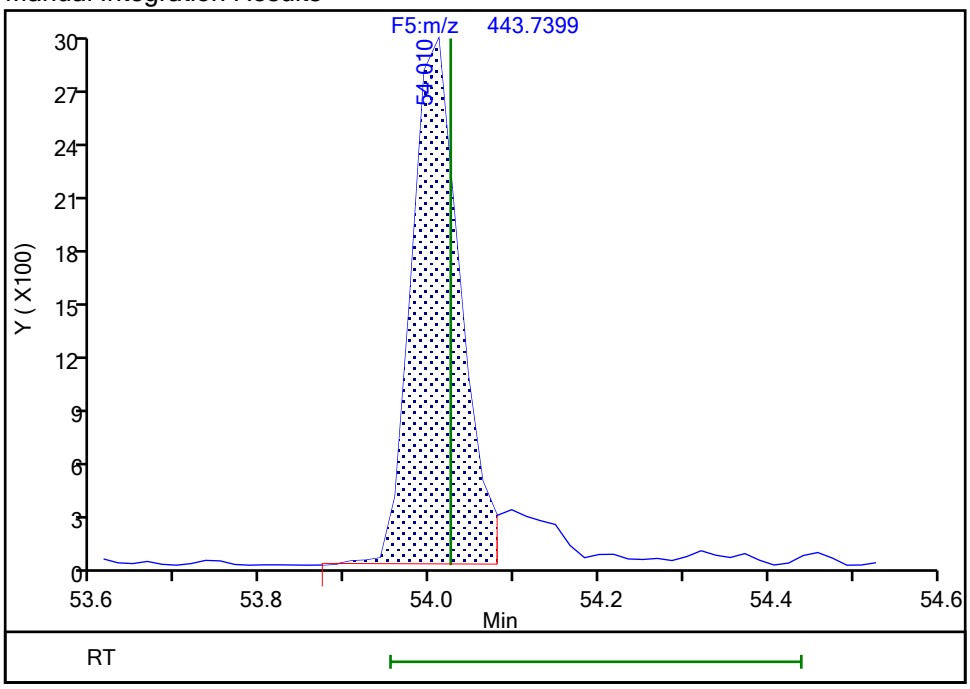
Processing Integration Results

RT: 54.01
Area: 13336
Amount: 0.734474
Amount Units: pg/ul



Manual Integration Results

RT: 54.01
Area: 11725
Amount: 0.658889
Amount Units: pg/ul



Reviewer: parslyt, 17-Dec-2019 05:18:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 140-35991/21-A

Matrix: Sediment Lab File ID: lcs140-3599121-a.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10(g) Date Analyzed: 12/17/2019 02:04

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	20.7		1.0	0.14
41903-57-5	Total TCDD	20.7		1.0	0.14
40321-76-4	1,2,3,7,8-PeCDD	104		5.0	0.039
36088-22-9	Total PeCDD	104		5.0	0.039
39227-28-6	1,2,3,4,7,8-HxCDD	101		5.0	0.036
57653-85-7	1,2,3,6,7,8-HxCDD	104		5.0	0.037
19408-74-3	1,2,3,7,8,9-HxCDD	105		5.0	0.034
34465-46-8	Total HxCDD	310		5.0	0.036
35822-46-9	1,2,3,4,6,7,8-HpCDD	94.4		5.0	0.084
37871-00-4	Total HpCDD	94.4		5.0	0.084
3268-87-9	OCDD	187		10	0.017
51207-31-9	2,3,7,8-TCDF	21.5		1.0	0.056
30402-14-3	Total TCDF	21.5		1.0	0.056
57117-41-6	1,2,3,7,8-PeCDF	95.9		5.0	0.089
57117-31-4	2,3,4,7,8-PeCDF	102		5.0	0.083
30402-15-4	Total PeCDF	198		5.0	0.086
70648-26-9	1,2,3,4,7,8-HxCDF	103		5.0	0.36
57117-44-9	1,2,3,6,7,8-HxCDF	98.4		5.0	0.33
60851-34-5	2,3,4,6,7,8-HxCDF	97.8		5.0	0.35
72918-21-9	1,2,3,7,8,9-HxCDF	101		5.0	0.45
55684-94-1	Total HxCDF	401		5.0	0.37
67562-39-4	1,2,3,4,6,7,8-HpCDF	94.2		5.0	0.027
55673-89-7	1,2,3,4,7,8,9-HpCDF	104		5.0	0.043
38998-75-3	Total HpCDF	198		5.0	0.035
39001-02-0	OCDF	165		10	0.024

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 140-35991/21-A

Matrix: Sediment Lab File ID: lcs140-3599121-a.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10(g) Date Analyzed: 12/17/2019 02:04

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 36126 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	65		20-175
109719-79-1	13C-1,2,3,7,8-PeCDD	70		21-227
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		21-193
109719-81-5	13C-1,2,3,6,7,8-HxCDD	78		25-163
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	79		26-166
114423-97-1	13C-OCDD	70		13-199
89059-46-1	13C-2,3,7,8-TCDF	65		22-152
109719-77-9	13C-1,2,3,7,8-PeCDF	69		21-192
116843-02-8	13C-2,3,4,7,8-PeCDF	69		13-328
114423-98-2	13C-1,2,3,4,7,8-HxCDF	70		19-202
116843-03-9	13C-1,2,3,6,7,8-HxCDF	73		21-159
116843-05-1	13C-2,3,4,6,7,8-HxCDF	76		22-176
116843-04-0	13C-1,2,3,7,8,9-HxCDF	76		17-205
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	78		21-158
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	73		20-186
109719-78-0	13C-OCDF	76		13-199

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	72		31-191

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Sample Type: LCS
Inject. Date: 17-Dec-2019 02:04:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-002
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 03:18:48 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0327

First Level Reviewer: parslyt Date: 17-Dec-2019 03:18:48

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:49	309057	0.80	1.1733	10.4	10.4	0.0680	0.0680	104	
A Non-2,3,7,8-sub-TCDD	29:30						0.0680	0.1771		RQU
S Total TCDD					10.4	10.4	0.0680	0.0680		
2,3,7,8-TCDF	28:51	487328	0.81	1.0881	10.8	10.8	0.0279	0.0279	108	
A Non-2,3,7,8-sub-TCDF	28:13						0.0279	0.2272		RQU
S Total TCDF					10.8	10.8	0.0279	0.0279		
1,2,3,7,8-PeCDD	40:35	1205619	1.60	1.0434	51.9	51.9	0.0196	0.0196	104	
A Non-2,3,7,8-sub-PeCDD	39:27						0.0196	1.753		RQU
S Total PeCDD					51.9	51.9	0.0196	0.0196		
1,2,3,7,8-PeCDF	38:47	1983994	1.59	1.1898	47.9	47.9	0.0447	0.0447	95.86	
2,3,4,7,8-PeCDF	40:03	1994927	1.57	1.1095	51.1	51.1	0.0415	0.0415	102	
A Non-2,3,7,8-sub-PeCDF	38:02						0.0429	1.505		RQU
S Total PeCDF					99.0	99.0	0.0431	0.0431		
1,2,3,4,7,8-HxCDD	44:50	1410723	1.25	1.1409	50.6	50.6	0.0182	0.0182	101	
1,2,3,6,7,8-HxCDD	44:57	1703666	1.28	1.1481	52.0	52.0	0.0186	0.0186	104	
1,2,3,7,8,9-HxCDD	45:21	1696542	1.29	1.2212	52.4	52.4	0.0172	0.0172	105	
A Non-2,3,7,8-sub-HxCDD	44:19						0.0180	1.830		U
S Total HxCDD					155.0	155.0	0.0180	0.0180		
1,2,3,4,7,8-HxCDF	43:48	2349005	1.27	1.3629	51.7	51.7	0.1796	0.1796	103	
1,2,3,6,7,8-HxCDF	43:57	2677786	1.25	1.2762	49.2	49.2	0.1640	0.1640	98.43	
2,3,4,6,7,8-HxCDF	44:40	2456664	1.26	1.2654	48.9	48.9	0.1763	0.1763	97.82	
1,2,3,7,8,9-HxCDF	45:36	2318376	1.27	1.2573	50.6	50.6	0.2242	0.2242	101	
A Non-2,3,7,8-sub-HxCDF	44:10						0.1835	1.358		RQU
S Total HxCDF					200.5	200.5	0.1860	0.1860		
1,2,3,4,6,7,8-HpCDD	49:38	1363273	1.06	1.1204	47.2	47.2	0.0422	0.0422	94.41	
A Non-2,3,7,8-sub-HpCDD	49:03						0.0422	4.130		U
S Total HpCDD					47.2	47.2	0.0422	0.0422		
1,2,3,4,6,7,8-HpCDF	47:58	2305052	1.07	1.4984	47.1	47.1	0.0137	0.0137	94.23	
1,2,3,4,7,8,9-HpCDF	50:18	1855199	1.08	1.3807	51.9	51.9	0.0216	0.0216	104	
A Non-2,3,7,8-sub-HpCDF	49:20						0.0169	0.9746		RQU
S Total HpCDF					99.0	99.0	0.0176	0.0176		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
OCDD	53:53	2220631	0.92	1.2073	93.3	93.3	0.008453	0.008453	93.27	
OCDF	54:01	2966438	0.92	1.1162	82.6	82.6	0.0118	0.0118	82.63	
D 13C-2,3,7,8-TCDD	30:48	1272229	0.79	1.0709	32.5	32.5	0.3064	0.3064	64.92	
D 13C-2,3,7,8-TCDF	28:49	2081136	0.79	1.7545	32.4	32.4	0.1290	0.1290	64.83	
D 13C-1,2,3,7,8-PeCDD	40:34	1112985	1.63	0.8743	34.8	34.8	0.2037	0.2037	69.57	
D 13C-1,2,3,7,8-PeCDF	38:45	1739536	1.60	1.3704	34.7	34.7	0.2953	0.2953	69.37	
D 13C-2,3,4,7,8-PeCDF	40:01	1758865	1.48	1.3837	34.7	34.7	0.2924	0.2924	69.47	
D 13C-1,2,3,4,7,8-HxCDD	44:49	1221518	1.31	0.8772	35.0	35.0	0.1209	0.1209	70.00	
D 13C-1,2,3,6,7,8-HxCDD	44:56	1427823	1.35	0.9171	39.1	39.1	0.1157	0.1157	78.26	
D 13C-1,2,3,4,7,8-HxCDF	43:47	1665819	0.53	1.1892	35.2	35.2	0.3066	0.3066	70.42	
D 13C-1,2,3,6,7,8-HxCDF	43:56	2131554	0.54	1.4625	36.6	36.6	0.2493	0.2493	73.27	
D 13C-2,3,4,6,7,8-HxCDF	44:39	1984622	0.55	1.3197	37.8	37.8	0.2763	0.2763	75.60	
D 13C-1,2,3,7,8,9-HxCDF	45:35	1820423	0.52	1.2001	38.1	38.1	0.3038	0.3038	76.25	
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	1288763	1.06	0.8155	39.7	39.7	0.2510	0.2510	79.44	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	1632595	0.47	1.0496	39.1	39.1	0.2820	0.2820	78.19	
D 13C-1,2,3,4,7,8,9-HpCDF	50:17	1294230	0.45	0.8947	36.4	36.4	0.3308	0.3308	72.71	
D 13C-OCDD	53:52	1972068	0.91	0.7044	70.4	70.4	0.3295	0.3295	70.37	
D 13C-OCDF	54:00	3216244	0.92	1.0615	76.2	76.2	0.2553	0.2553	76.16	
$ 37Cl4-2,3,7,8-TCDD	30:49	322689		1.2266	7.189	7.189	0.0161	0.0161	71.89	
* 13C-1,2,3,4-TCDD	30:17	3659506	0.82	9.1E+04	100.0	100.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:20	3978594	1.32	1E+05	100.0	100.0			100	

QC Flag Legend

Review Flags

U - Marked Undetected

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Sample Type: LCS
Inject. Date: 17-Dec-2019 02:04:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: 140-0014051-002
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 03:18:48 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX0327

First Level Reviewer: parslyt Date: 17-Dec-2019 03:18:48

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:49	30:51	-3	1.001	137610	15911	51	127	312		
321.8936	30:50	30:51	-2	1.001	171447	18953	34	85	557	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											U
319.8965	24:56	29:30	-273	0.810	2083	330	51	127	6		
	Empc Correction				1747	274	51	127	5		
321.8936	24:56	29:30	-273	0.810	2270	356	34	85	10	0.92(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:51	28:52	-2	1.001	218386	23224	28	70	829		
305.8987	28:51	28:52	-2	1.001	268942	28247	28	70	1009	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	22:30	28:13	-343	0.781	2122	361	28	70	13		
305.8987	22:32	28:13	-341	0.782	2420	423	28	70	15	0.88(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:35	40:35	0	1.000	742130	159245	19	47	8381		
357.8516	40:35	40:35	0	1.000	463489	101299	20	50	5065	1.60(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	37:37	39:27	-110	0.927	9651	1415	19	47	74		
357.8516	37:37	39:27	-110	0.927	7625	1209	20	50	60	1.27(1.32-1.78)	
	Empc Correction				6226	912	20	50	46		
1,2,3,7,8-PeCDF											
339.8597	38:47	38:46	0	1.001	1218239	226249	75	187	3017		
341.8567	38:47	38:46	0	1.001	765755	142128	61	152	2330	1.59(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40:03	40:02	0	1.001	1218684	249500	75	187	3327		
341.8567	40:02	40:02	-1	1.000	776243	160870	61	152	2637	1.57(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											U
339.8597	34:40	38:02	-201	0.895	16858	1917	75	187	26		
	Empc Correction				14131	2200	75	187	29		
341.8567	34:41	38:02	-200	0.895	9117	1420	61	152	23	1.85(1.32-1.78)	
1,2,3,4,7,8-HxCDD											
389.8158	44:50	44:50	0	1.000	785082	206646	29	72	7126		
391.8127	44:50	44:50	0	1.000	625641	161934	23	57	7041	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:57	44:57	0	1.000	956915	208119	29	72	7177		
391.8127	44:57	44:57	0	1.000	746751	157568	23	57	6851	1.28(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:21	45:21	0	1.012	954584	189167	29	72	6523		
391.8127	45:20	45:21	-1	1.011	741958	153909	23	57	6692	1.29(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											U
389.8158	43:17	44:19	-62	0.963	31351	7604	29	72	262		
391.8127	43:16	44:19	-63	0.963	25381	6392	23	57	278	1.24(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:48	43:48	0	1.000	1312771	345155	425	1062	812		
375.8178	43:48	43:48	0	1.000	1036234	275214	414	1035	665	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:57	43:57	0	1.000	1487021	357483	425	1062	841		
375.8178	43:57	43:57	0	1.000	1190765	280298	414	1035	677	1.25(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:40	44:40	0	1.000	1371025	330029	425	1062	777		
375.8178	44:40	44:40	0	1.000	1085639	254402	414	1035	614	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDF											
373.8208	45:36	45:36	0	1.000	1298762	258717	425	1062	609		
375.8178	45:36	45:36	0	1.000	1019614	204387	414	1035	494	1.27(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											U
373.8208	42:35	44:10	-94	0.970	42925	10884	425	1062	26		
	Empc Correction				36876	9746	425	1062	23		
375.8178	42:34	44:10	-95	0.969	29739	7860	414	1035	19	1.44(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:38	49:37	0	1.001	702645	119382	50	125	2388		
425.7737	49:38	49:37	0	1.001	660628	108989	34	85	3206	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											U
423.7767	48:27	49:03	-35	0.977	60718	11507	50	125	230		
425.7737	48:27	49:03	-35	0.977	58561	11724	34	85	345	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDF											
407.7817	47:58	47:58	-1	1.000	1191794	232538	25	62	9302		
409.7788	47:58	47:58	-1	1.000	1113258	219460	29	72	7568	1.07(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	50:18	50:18	0	1.000	961269	161199	25	62	6448		
409.7788	50:18	50:18	0	1.000	893930	148640	29	72	5126	1.08(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:21	49:20	-58	1.008	20510	2630	25	62	105		
409.7788	48:21	49:20	-58	1.008	19859	2590	29	72	89	1.03(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	53:53	53:53	-1	1.000	1065386	217557	10	25	21756		
459.7348	53:53	53:53	-1	1.000	1155245	241076	6	15	40179	0.92(0.76-1.02)	
OCDF											
441.7428	54:01	54:01	-1	1.000	1425030	309735	11	27	28158		
443.7399	54:01	54:01	-1	1.000	1541408	336358	25	62	13454	0.92(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:46	-1	1.017	562322	57079	381	952	150		
333.9338	30:47	30:46	-2	1.017	709907	75748	151	377	502	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	28:49	28:47	-1	0.952	920040	105975	192	480	552		
317.9389	28:49	28:47	-1	0.952	1161096	124903	175	437	714	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:34	40:31	0	1.340	689060	145084	119	297	1219		
369.8919	40:34	40:31	0	1.340	423925	91945	170	425	541	1.63(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:43	-1	1.280	1070665	199448	327	817	610		
353.8970	38:45	38:43	-1	1.280	668871	120231	329	822	365	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	39:59	-1	1.322	1050761	220724	327	817	675		
353.8970	40:01	39:59	-1	1.322	708104	148501	329	822	451	1.48(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:49	44:49	0	0.989	693542	178339	252	630	708		
403.8529	44:49	44:49	0	0.989	527976	135289	88	220	1537	1.31(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:56	44:56	0	0.991	820392	170464	252	630	676		
403.8529	44:56	44:56	0	0.991	607431	133130	88	220	1513	1.35(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	43:47	43:47	0	0.966	578290	148723	522	1305	285		
385.8610	43:47	43:47	0	0.966	1087529	279740	647	1617	432	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	43:56	43:56	0	0.969	746528	175598	522	1305	336		
385.8610	43:56	43:56	0	0.969	1385026	325434	647	1617	503	0.54(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	44:39	44:39	0	0.985	706463	167064	522	1305	320		
385.8610	44:39	44:39	0	0.985	1278159	302900	647	1617	468	0.55(0.43-0.59)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	45:35	45:35	0	1.006	624991	126653	522	1305	243		
385.8610	45:35	45:35	0	1.006	1195432	245224	647	1617	379	0.52(0.43-0.59)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:36	-1	1.094	663224	114860	434	1085	265		
437.8140	49:37	49:36	0	1.095	625539	107293	222	555	483	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	47:57	47:57	-1	1.058	519370	107114	393	982	273		
419.8220	47:57	47:57	-1	1.058	1113225	221594	556	1390	399	0.47(0.37-0.51)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	50:17	50:16	0	1.109	404312	70832	393	982	180		
419.8220	50:17	50:16	0	1.109	889918	155584	556	1390	280	0.45(0.37-0.51)	
13C-OCDD											
469.7780	53:52	53:52	-1	1.188	937968	187487	341	852	550		
471.7750	53:52	53:52	-1	1.188	1034100	204503	403	1007	507	0.91(0.76-1.02)	
13C-OCDF											
453.7830	54:00	54:01	-1	1.191	1539290	327507	264	660	1241		
455.7801	54:00	54:01	-1	1.191	1676954	358653	605	1512	593	0.92(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:49	30:49	-3	1.018	322689	32968	32	80	1030		
13C-1,2,3,4-TCDD											
331.9368	30:17	30:19	-3		1646771	180816	381	952	475		
333.9338	30:16	30:19	-4		2012735	224490	151	377	1487	0.82(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:20	45:20	0		2261683	458274	252	630	1819		
403.8529	45:20	45:20	0		1716911	343100	88	220	3899	1.32(1.05-1.43)	

QC Flag Legend

Review Flags

U - Marked Undetected

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-TCDD, RT: 29.485

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	1272229	132827

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		50.000	1272229	132827

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
24:56	2083	330	2270	356	0.1458	0.92	RQ
24:56	1747	274	2270	356	0.1346		Empc Correction
30:19	1671	404	2011	270	0.1233	0.83	
31:19	2885	331	931	277	0.1278	3.10	RQ
31:19	716	213	931	277	0.0552		Empc Correction
34:02	2834	343	2988	368	0.1950	0.95	RQ
34:02	2300	283	2988	368	0.1771		Empc Correction

Compound is Marked ND

Report Date: 17-Dec-2019 03:18:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-TCDF, RT: 28.214

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	2081136	230878

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		50.000	2081136	230878

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22:30	2122	361	2420	423	0.1003	0.88	
26:28	1778	190	1537	189	0.0732	1.16	RQ
26:28	1183	145	1537	189	0.0601		Empc Correction
27:48	1283	210	1579	189	0.0632	0.81	
33:56	4487	392	5804	902	0.2272	0.77	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-PeCDD, RT: 39.441

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	1112985	237029

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		50.000	1112985	237029

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
37:37	9651	1415	7625	1209	0.7438	1.27	RQ
37:37	9651	1415	6226	912	0.6836		Empc Correction
40:59	4921	675	3376	350	0.3572	1.46	
41:15	25888	4690	14822	3359	1.75	1.75	

Compound is Marked ND

Report Date: 17-Dec-2019 03:18:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-PeCDF, RT: 38.019

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	1739536	319679
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	1758865	369225

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		50.000	1749200	344452

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
34:40	16858	1917	9117	1420	0.6458	1.85	RQ
34:40	14131	2200	9117	1420	0.5780		Empc Correction
39:18	11338	1887	9814	1477	0.5259	1.16	RQ
39:18	11338	1887	7314	1217	0.4638		Empc Correction
41:22	38774	7872	21756	4093	1.51	1.78	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-HxCDD, RT: 44.311

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	1221518	313628
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	1427823	303594
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		50.000	1324670	308611

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
43:17	31351	7604	25381	6392	1.83	1.24	

Compound is Marked ND

Report Date: 17-Dec-2019 03:18:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-HxCDF, RT: 44.159

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	1665819	428463
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	2131554	501032
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	1984622	469964
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	1820423	371877

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		50.000	1900604	442834

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:35	42925	10884	29739	7860	1.48	1.44	RQ
42:35	36876	9746	29739	7860	1.36		Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-HpCDD, RT: 49.039

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	1288763	222153

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		50.000	1288763	222153

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
48:27	60718	11507	58561	11724	4.13	1.04	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d
Lims ID: LCS 140-35991/21-A
Client ID:
Inject. Date: 17-Dec-2019 02:04:00 Dil. Factor: 1.0000
Sample Type: LCS, Lab Control Sample
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36126 Lims Sample ID: 2

Non-2,3,7,8-sub-HpCDF, RT: 49.317

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	1632595	328708
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	1294230	226416

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		50.000	1463412	277562

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:21	20510	2630	19859	2590	0.9581	1.03	
48:36	21479	2843	19582	2355	0.9746	1.10	
50:42	36125	1698	11526	1732	1.13	3.13	RQ
50:42	11987	1801	11526	1732	0.5581		Empc Correction

Compound is Marked ND

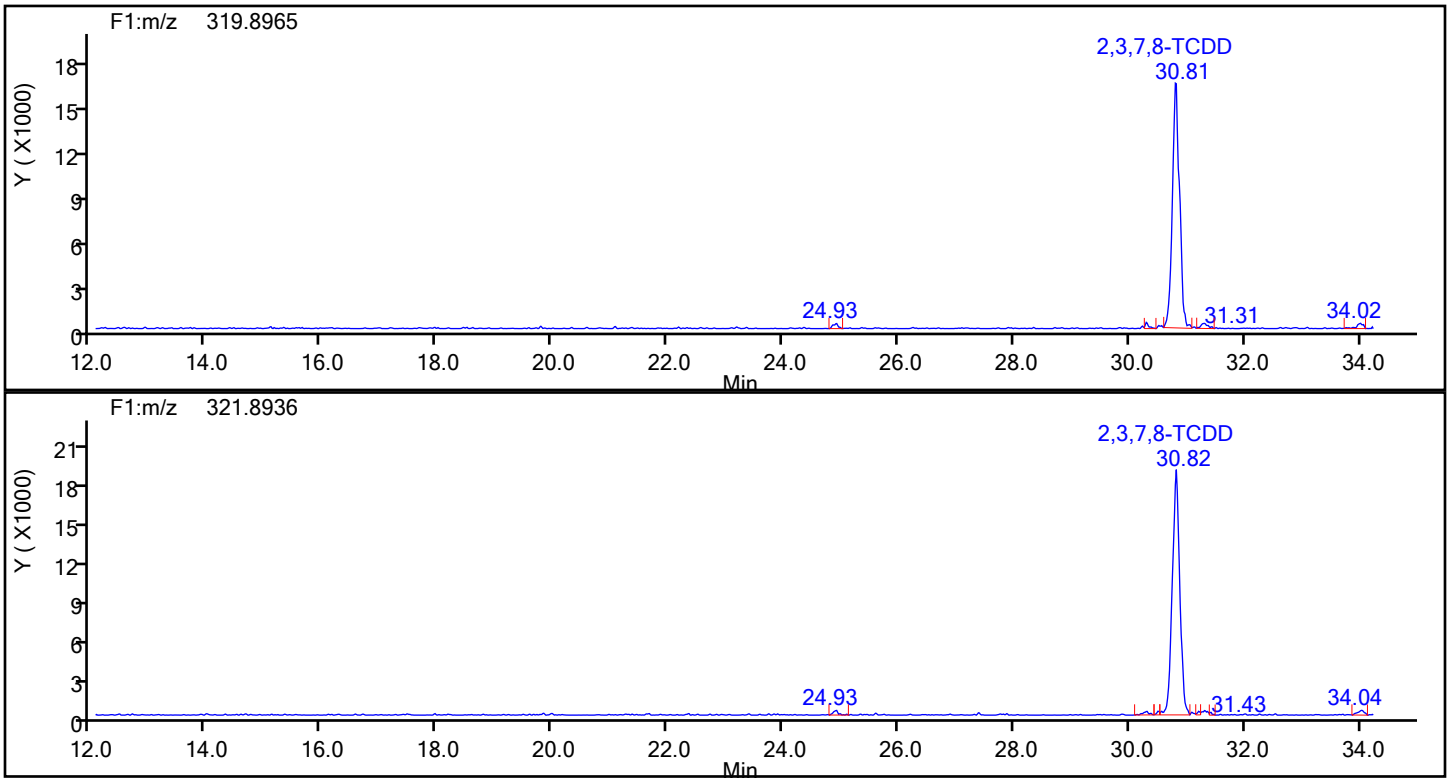
Report Date: 17-Dec-2019 03:18:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

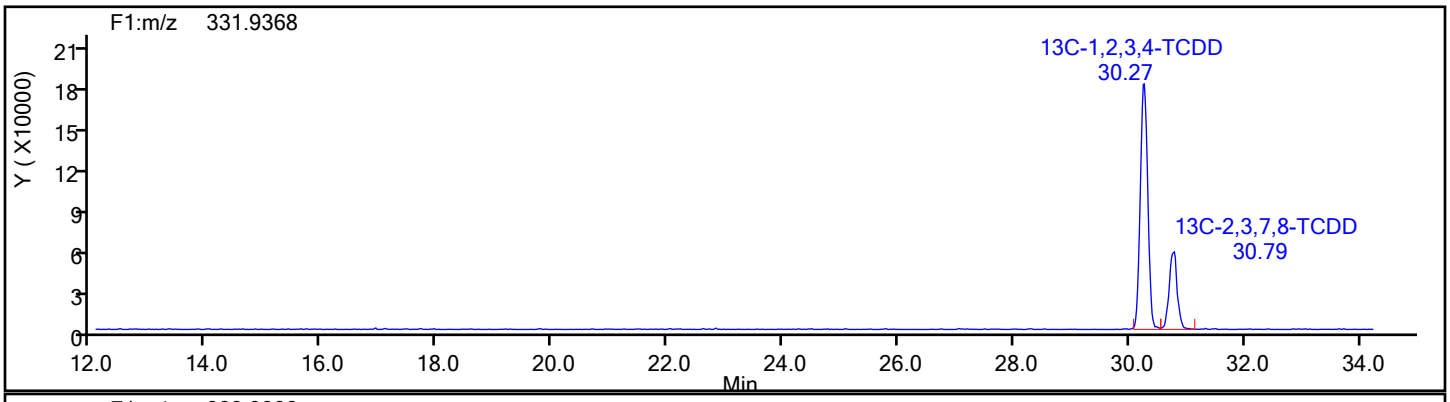
Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d

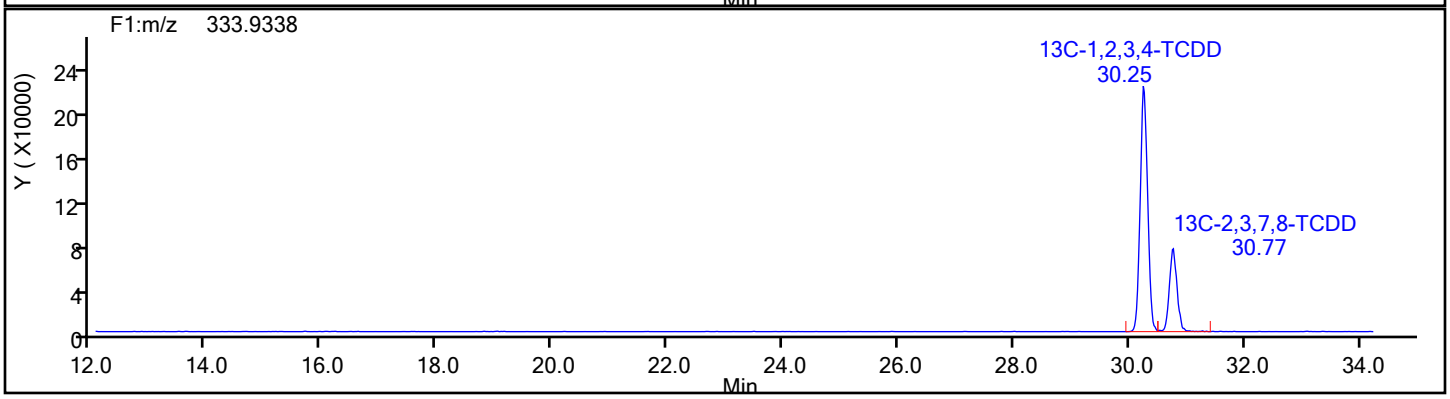
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

TCDD



TCDD Standards





Report Date: 17-Dec-2019 03:18:48 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
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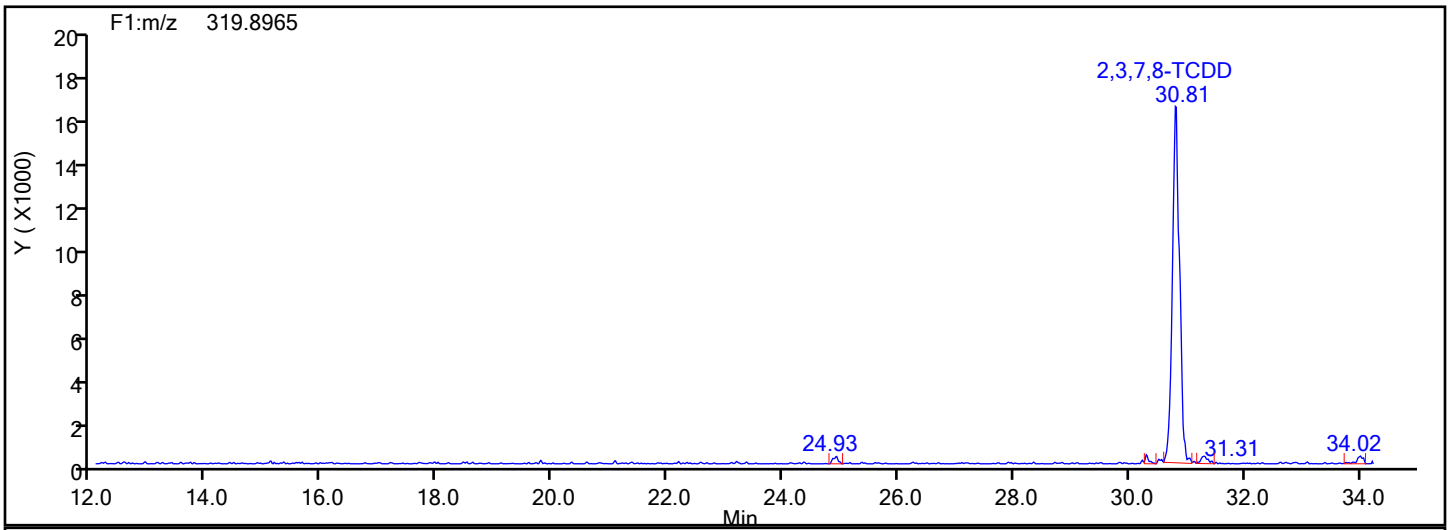
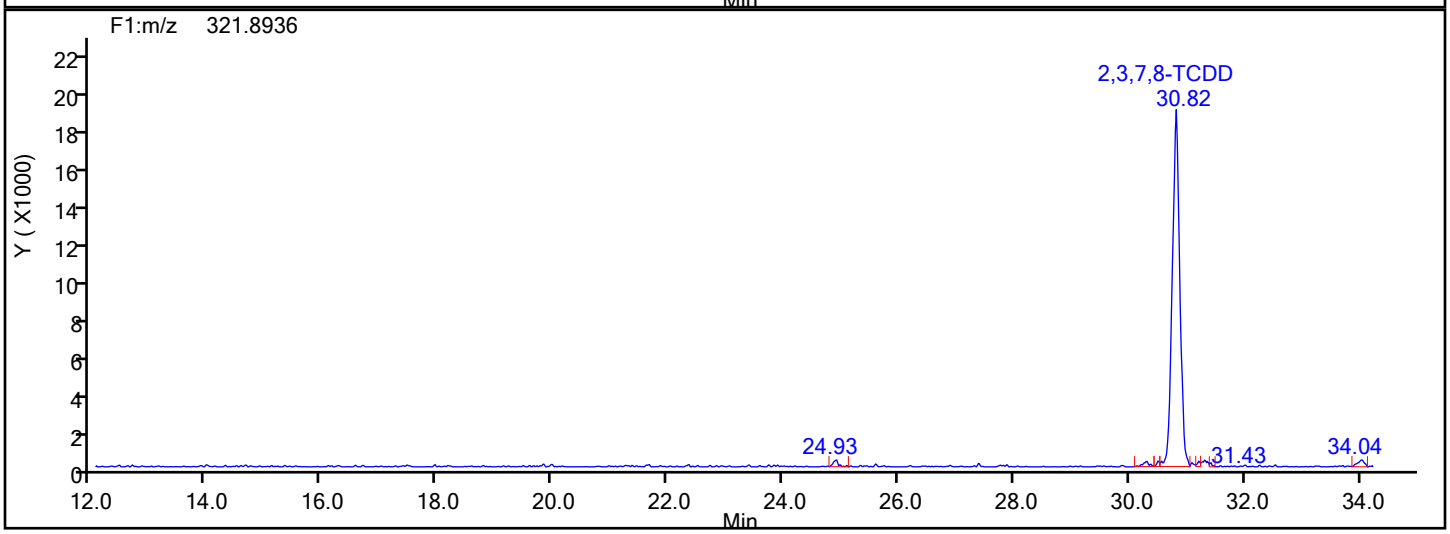
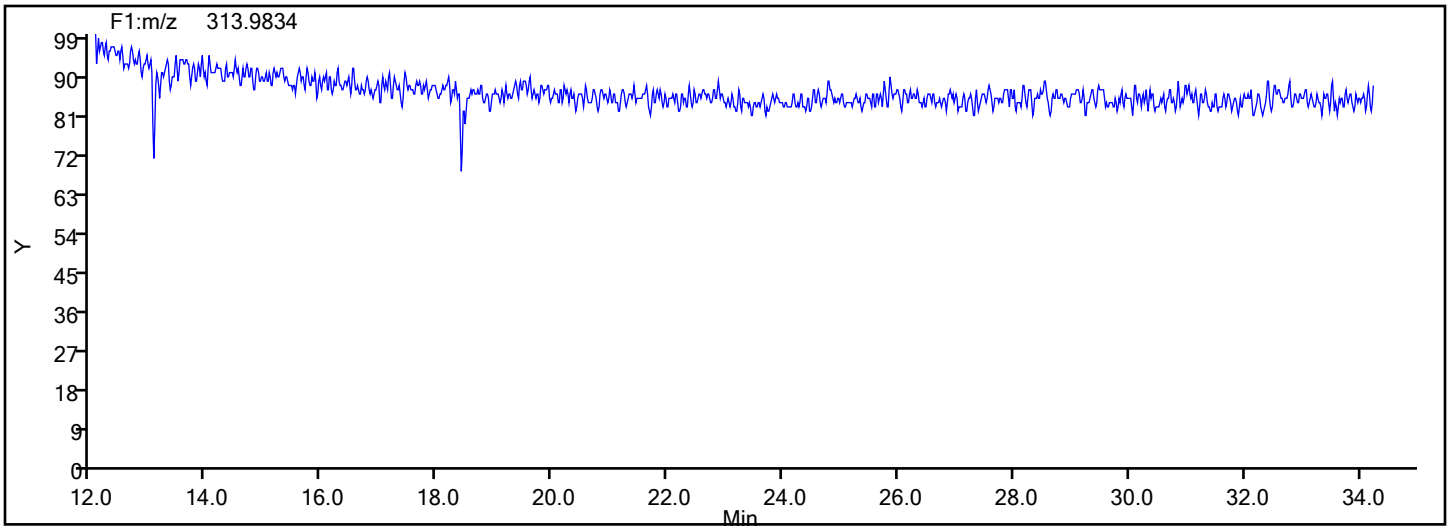
TCDD





TCDD Lock Mass



Report Date: 17-Dec-2019 03:18:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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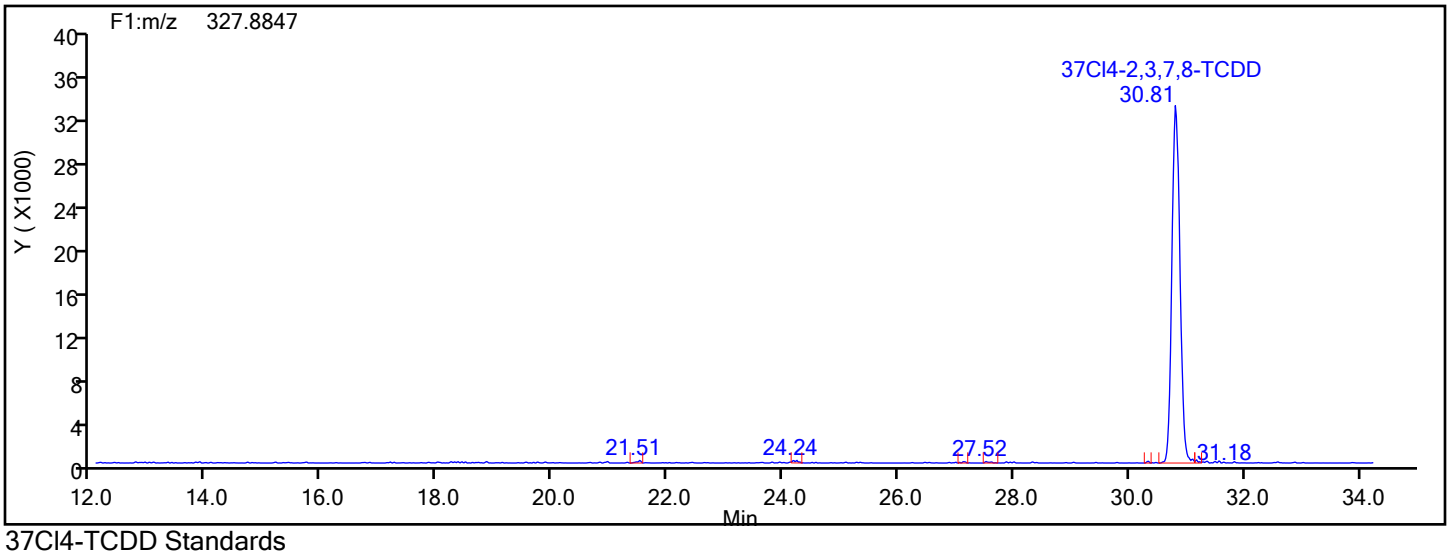
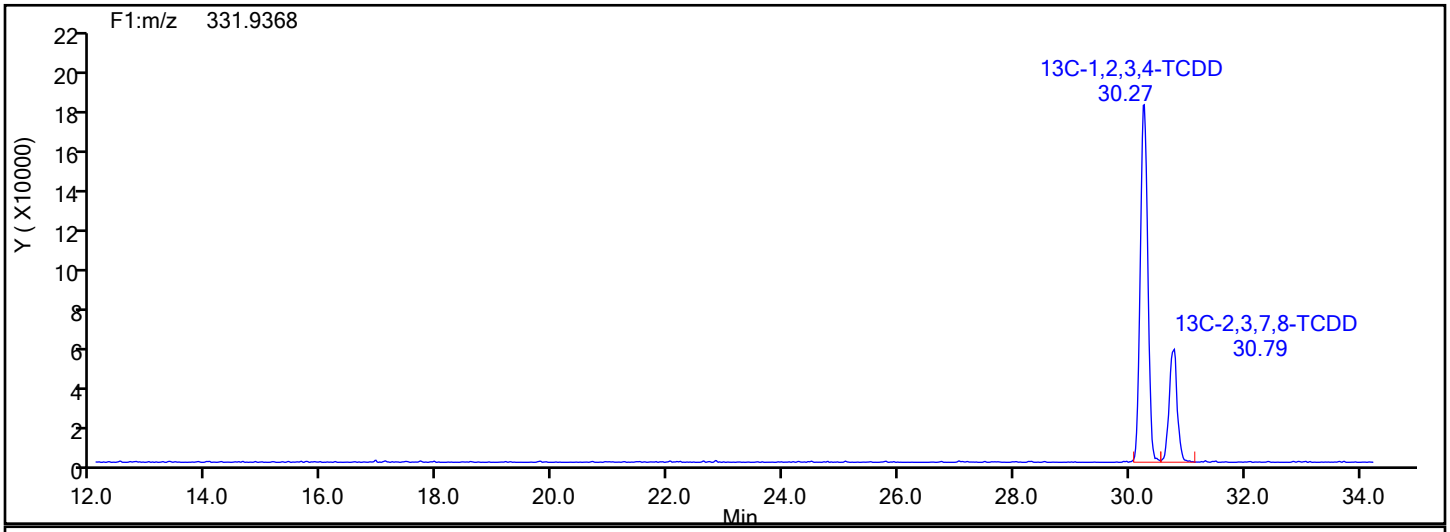
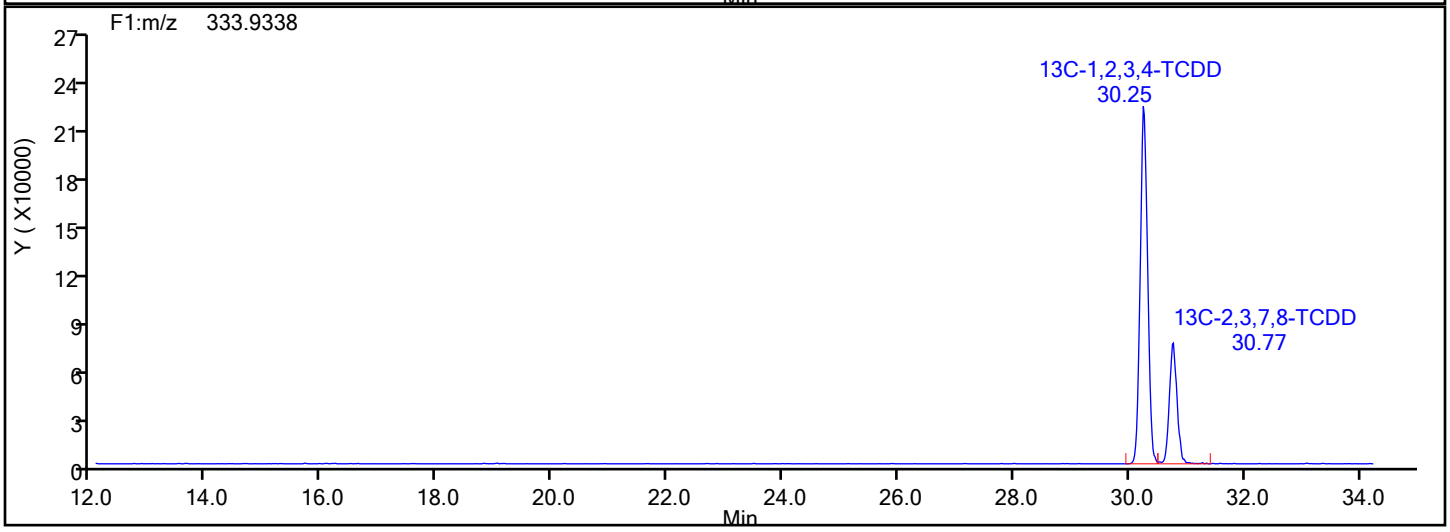
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Knoxville

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Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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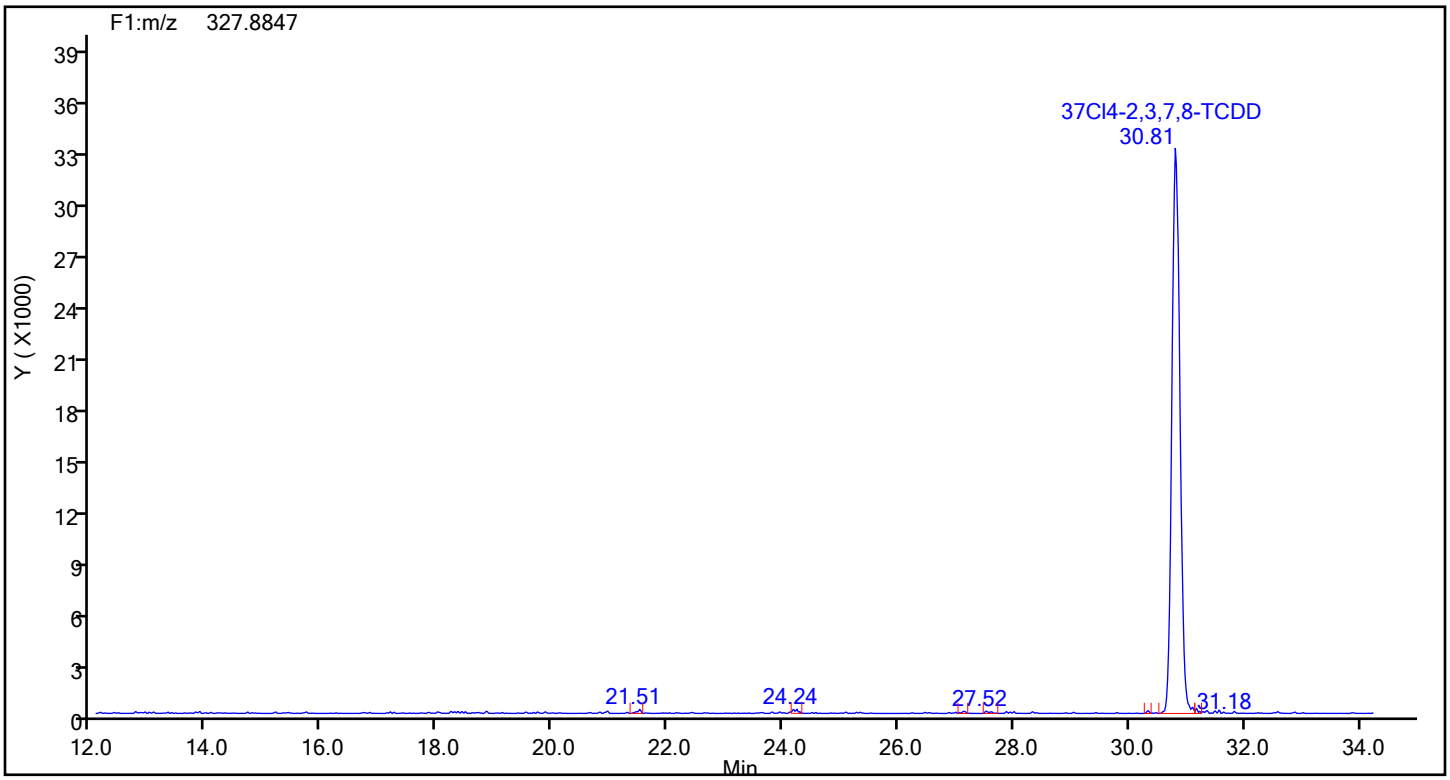
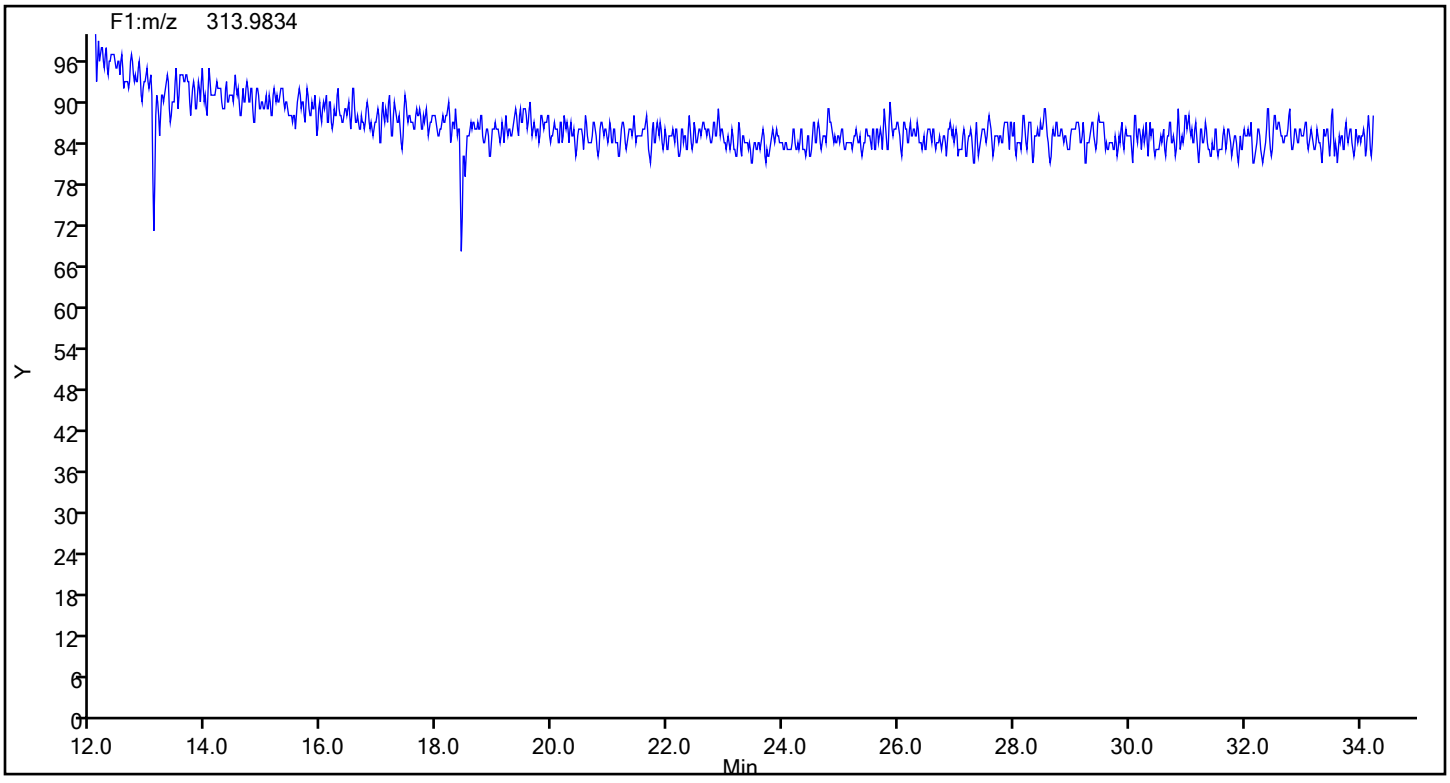
37Cl4-TCDD



37Cl4-TCDD Lock Mass



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Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d

Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
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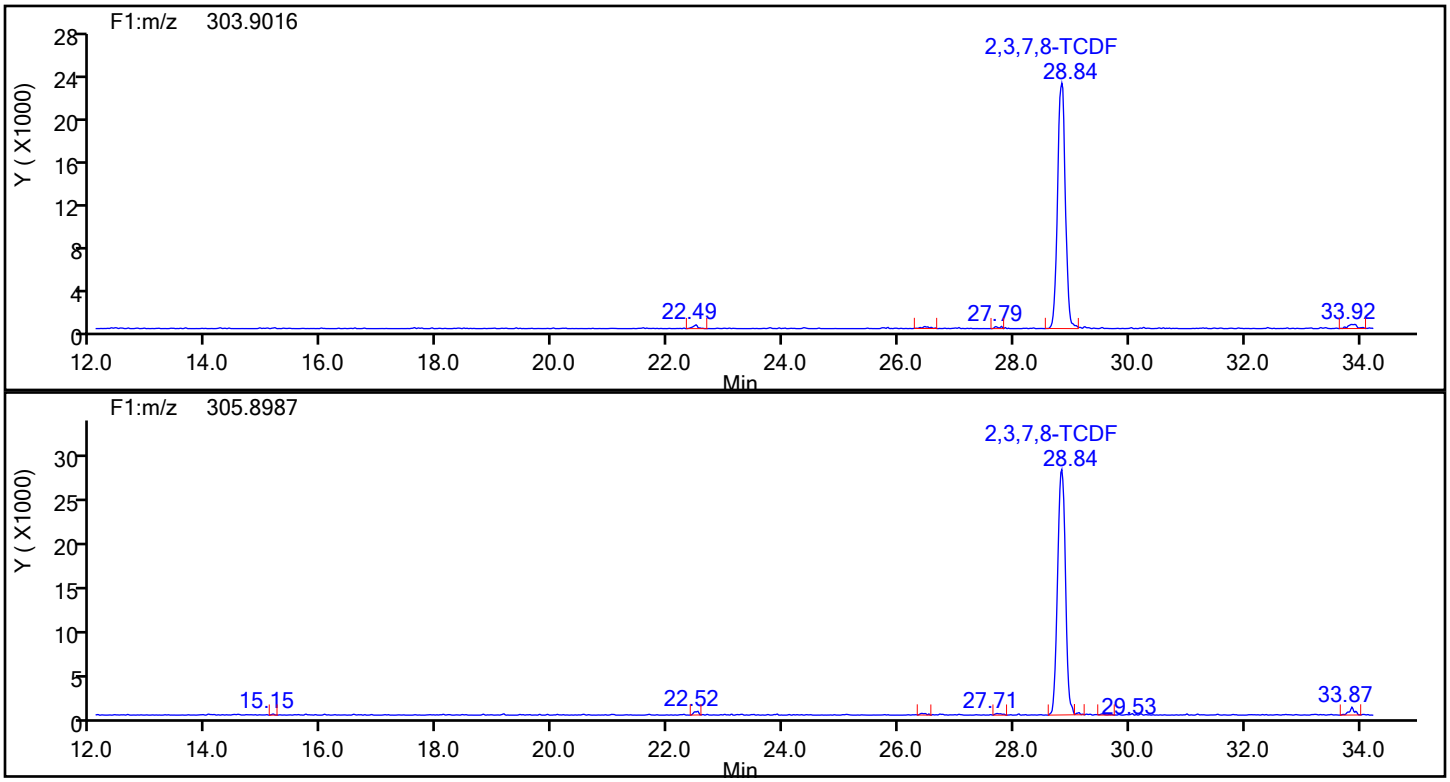
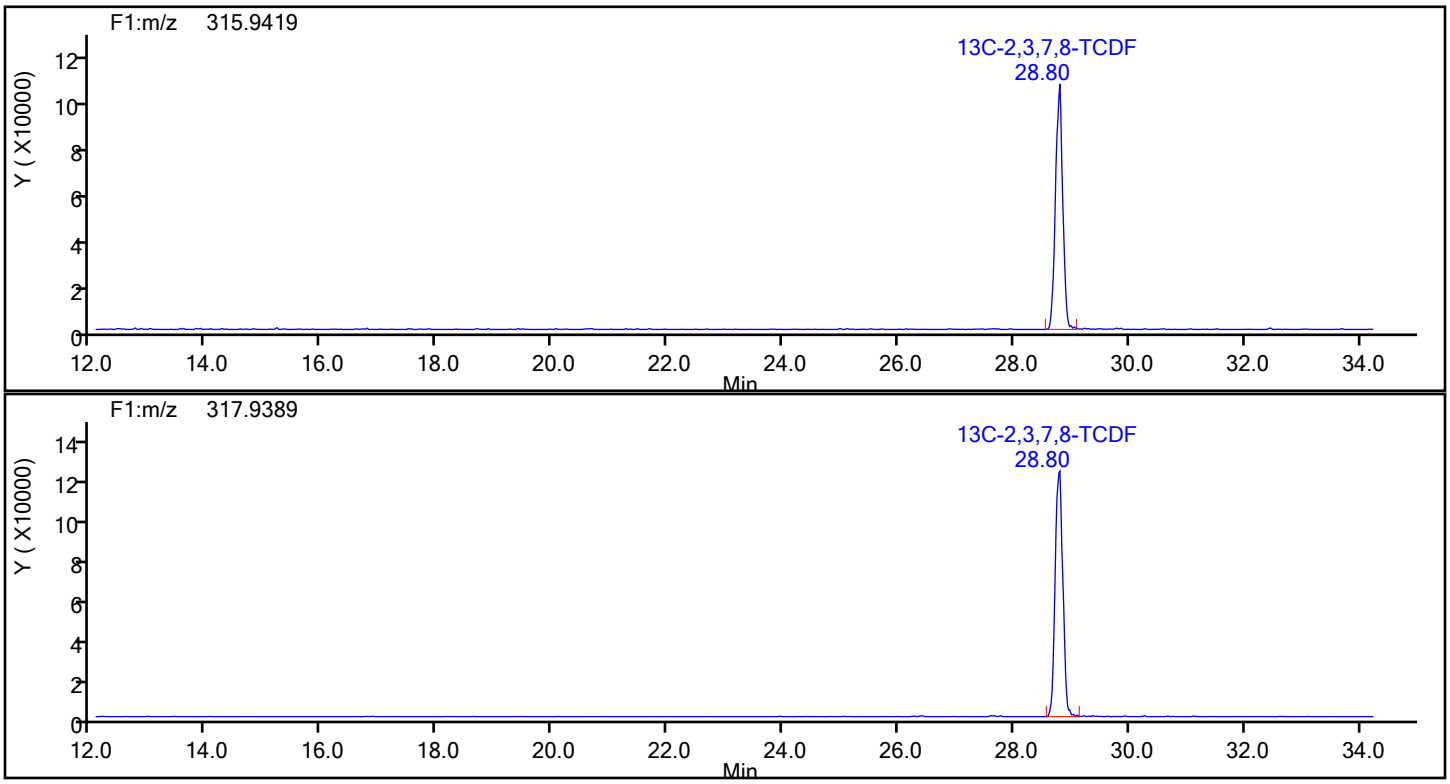
TCDF



TCDF Standards



Report Date: 17-Dec-2019 03:18:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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Client ID:			
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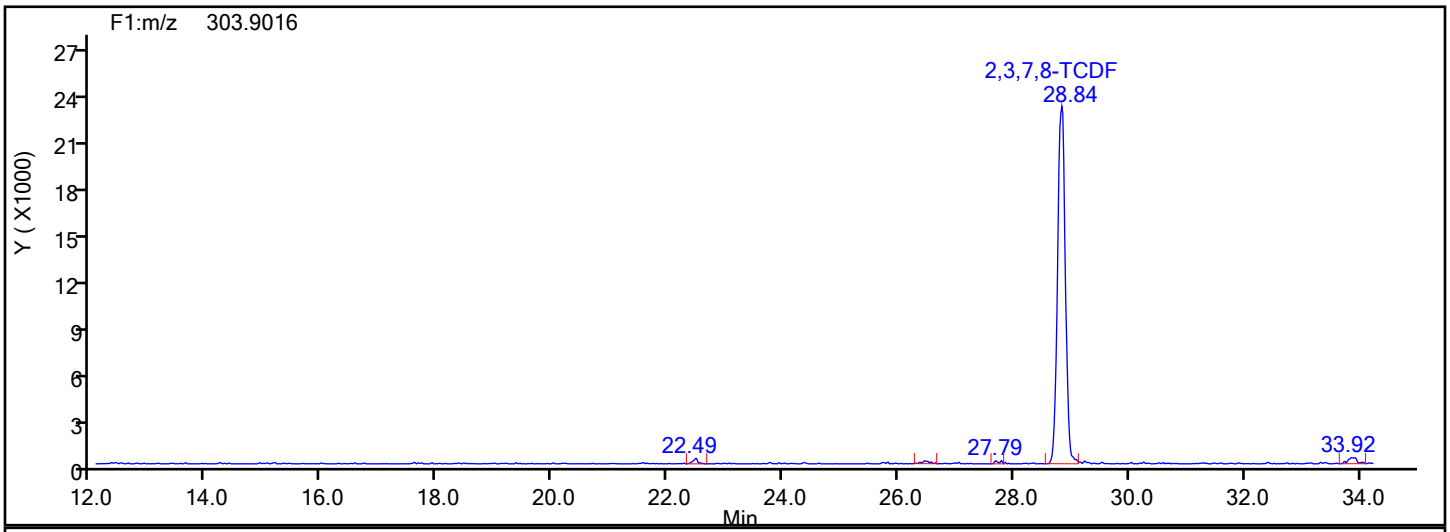
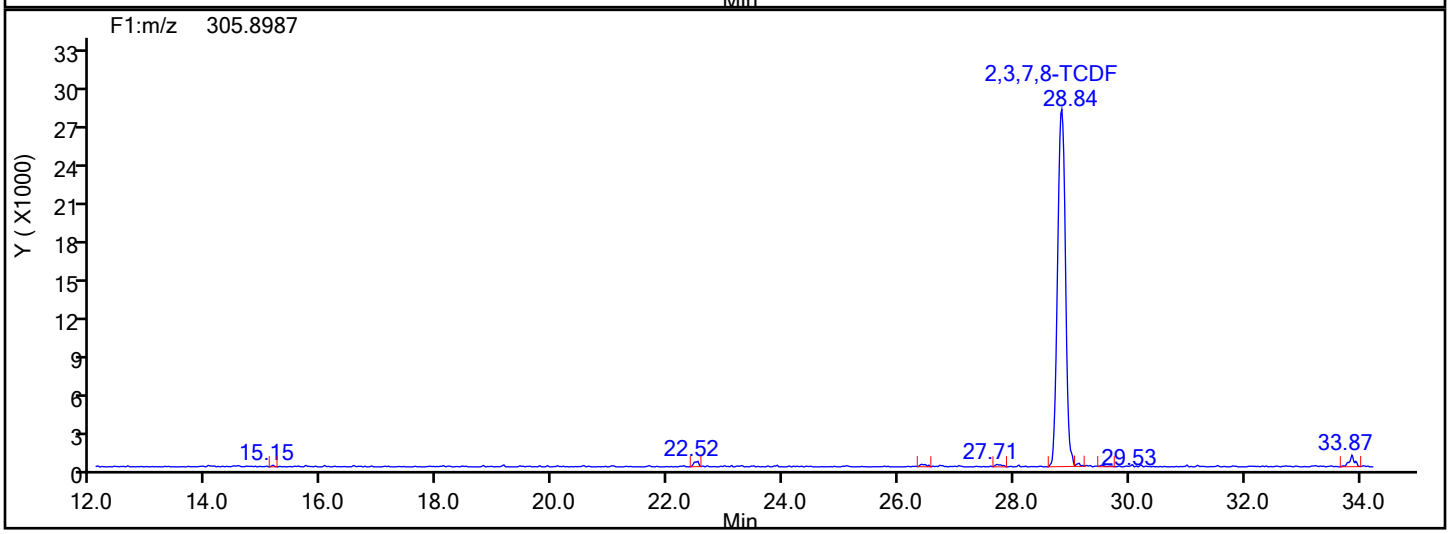
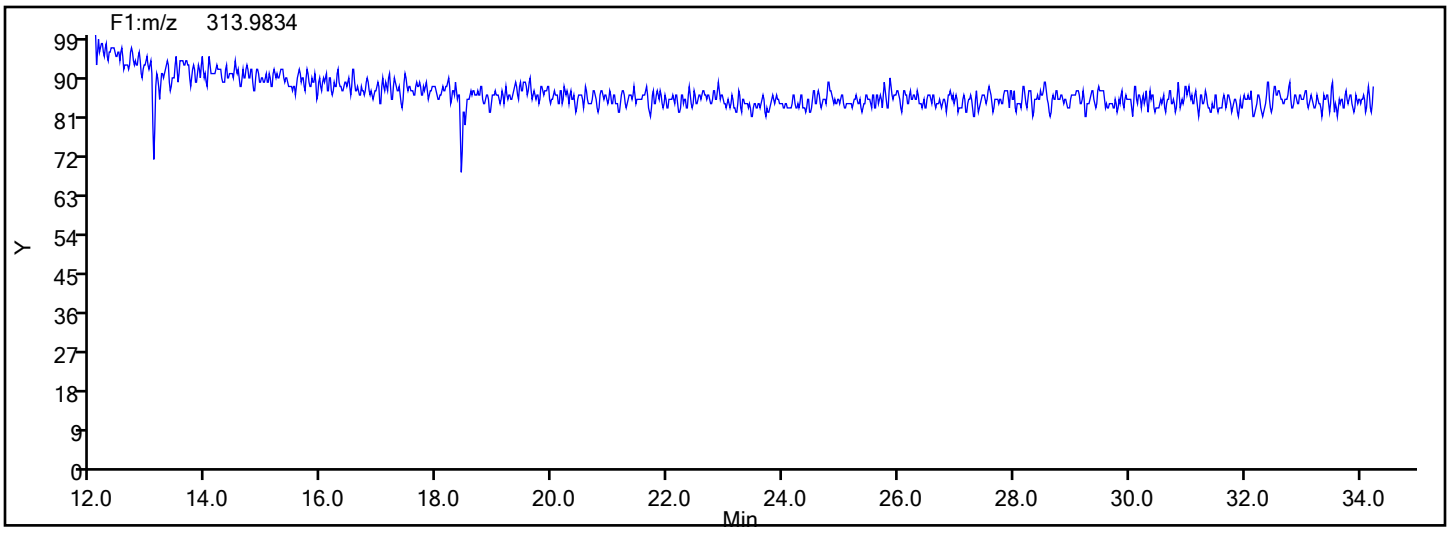
TCDF





TCDF Lock Mass



Report Date: 17-Dec-2019 03:18:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
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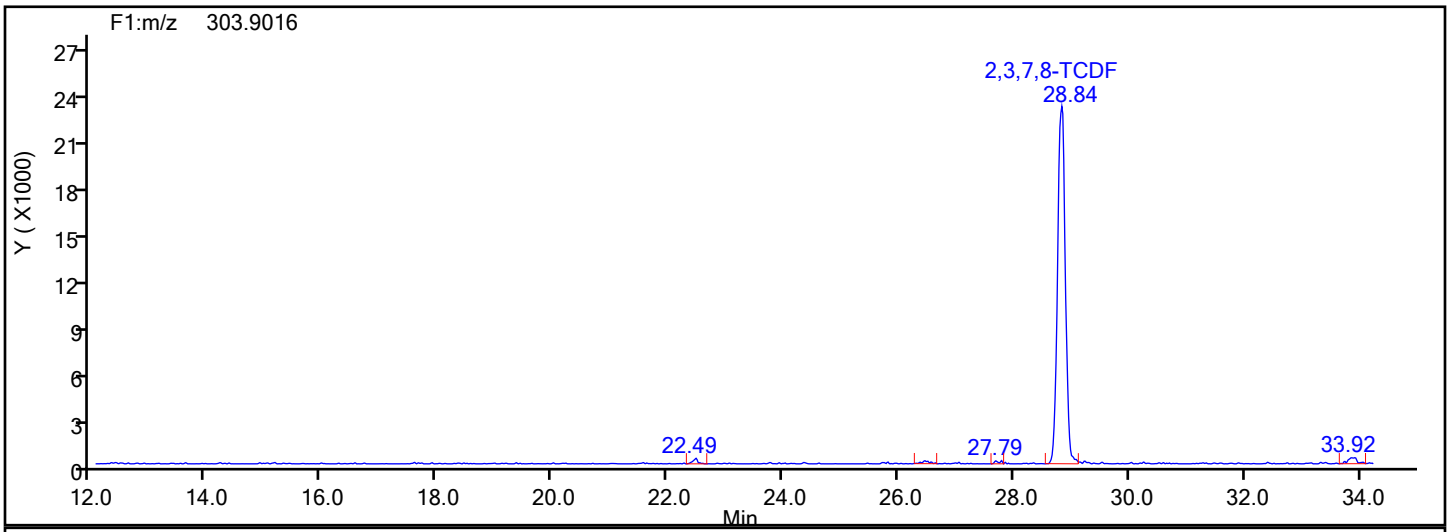
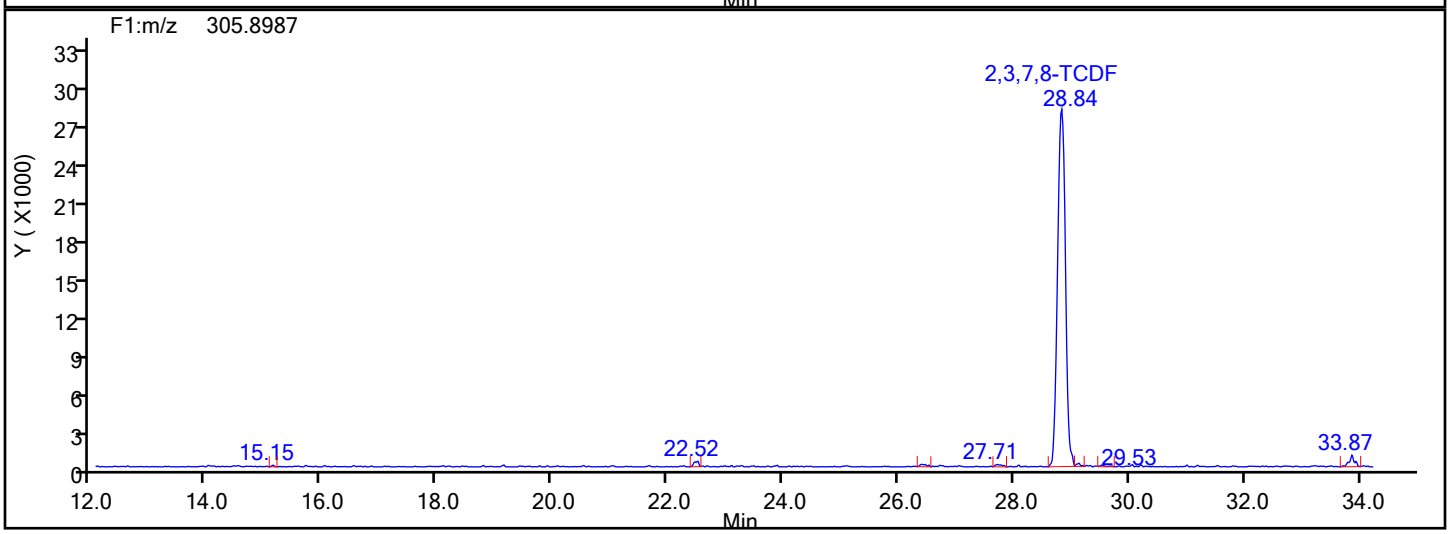
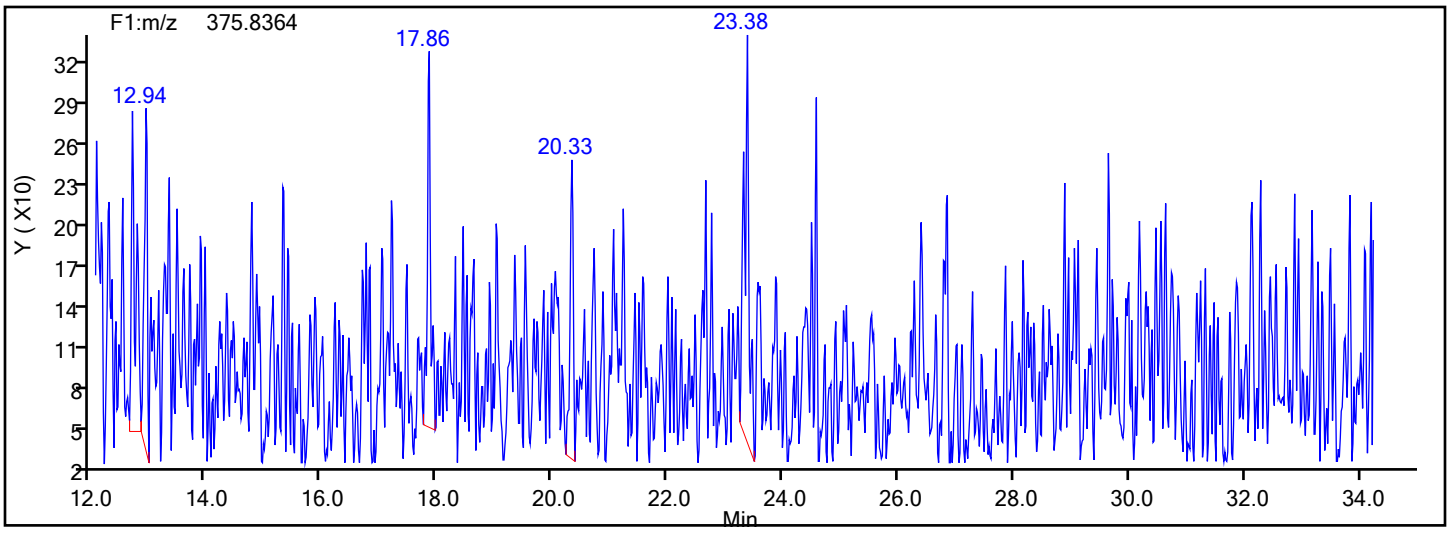
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



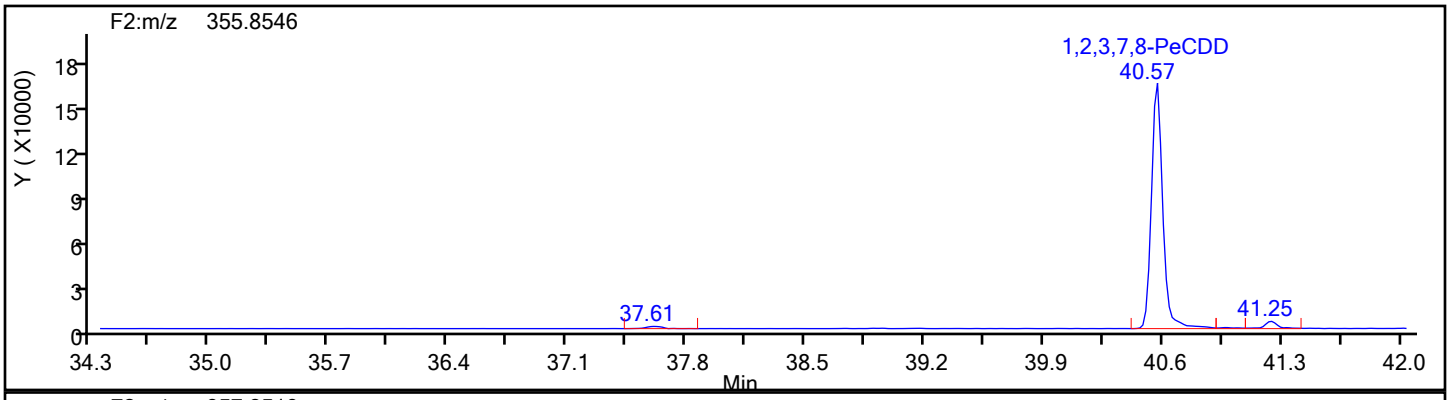
Report Date: 17-Dec-2019 03:18:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

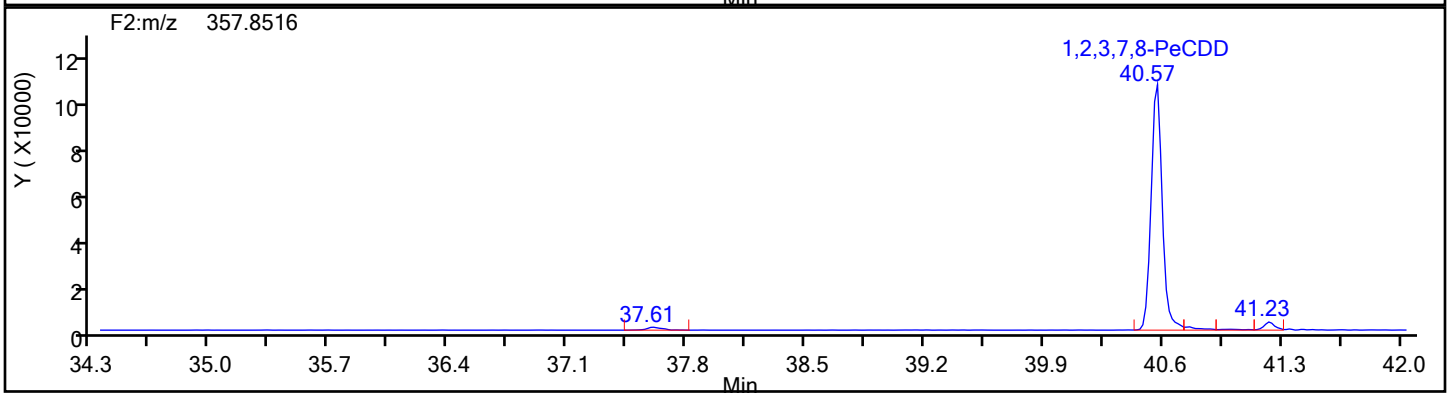
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d

Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

PeCDD





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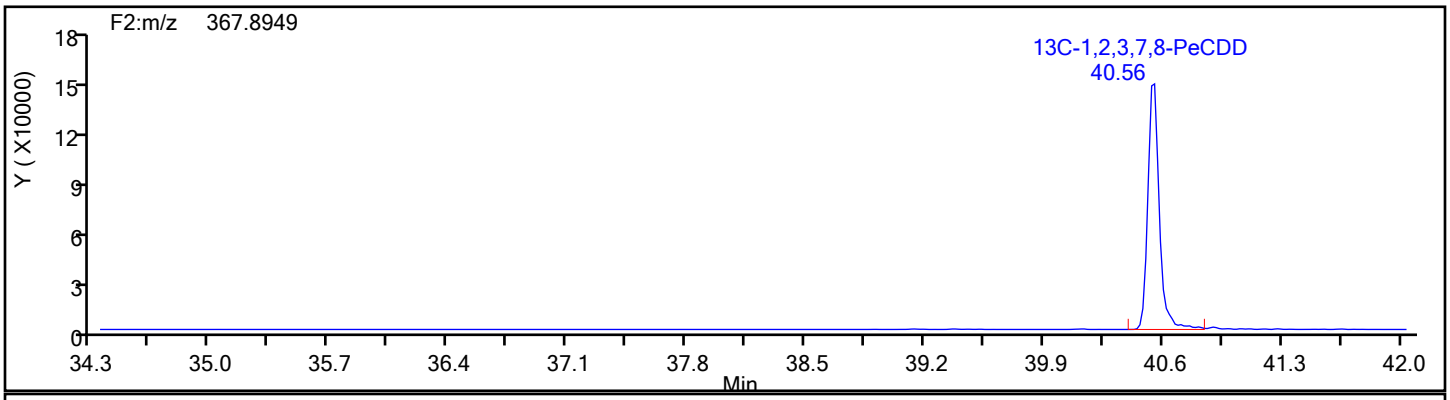

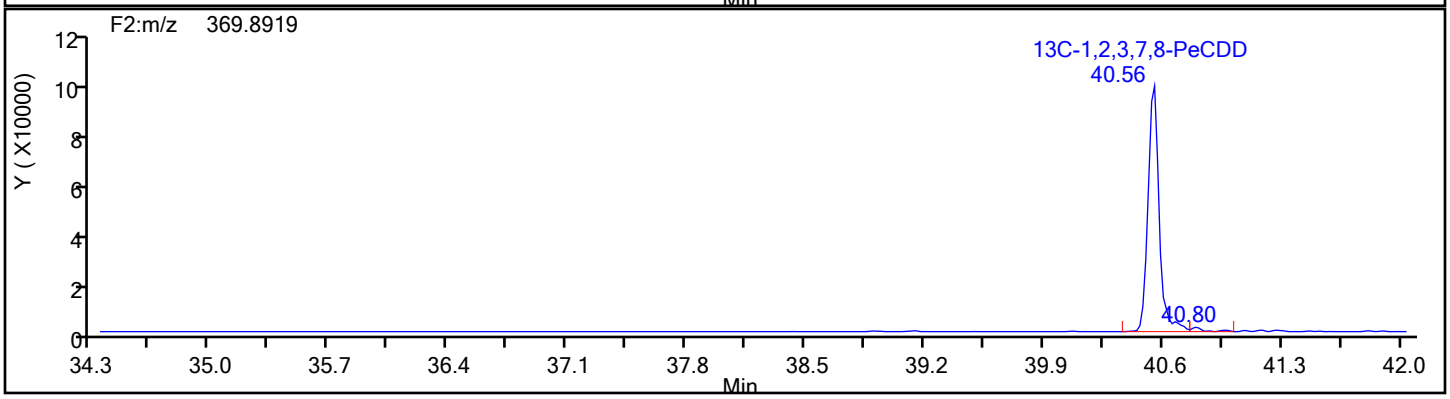

Report Date: 17-Dec-2019 03:18:49 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

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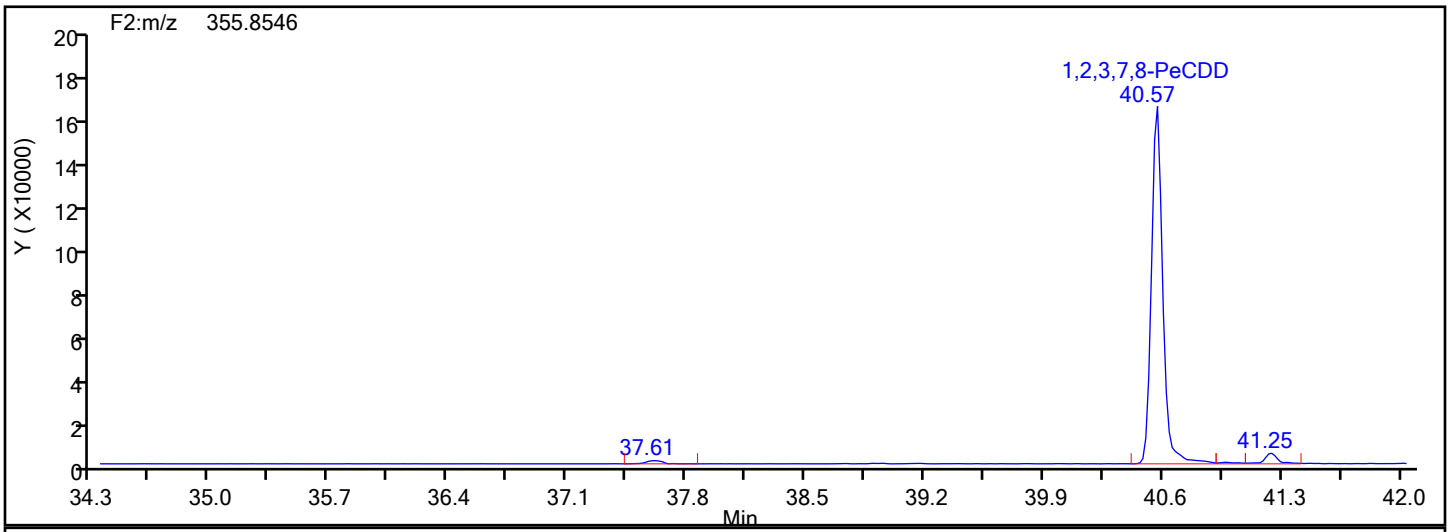

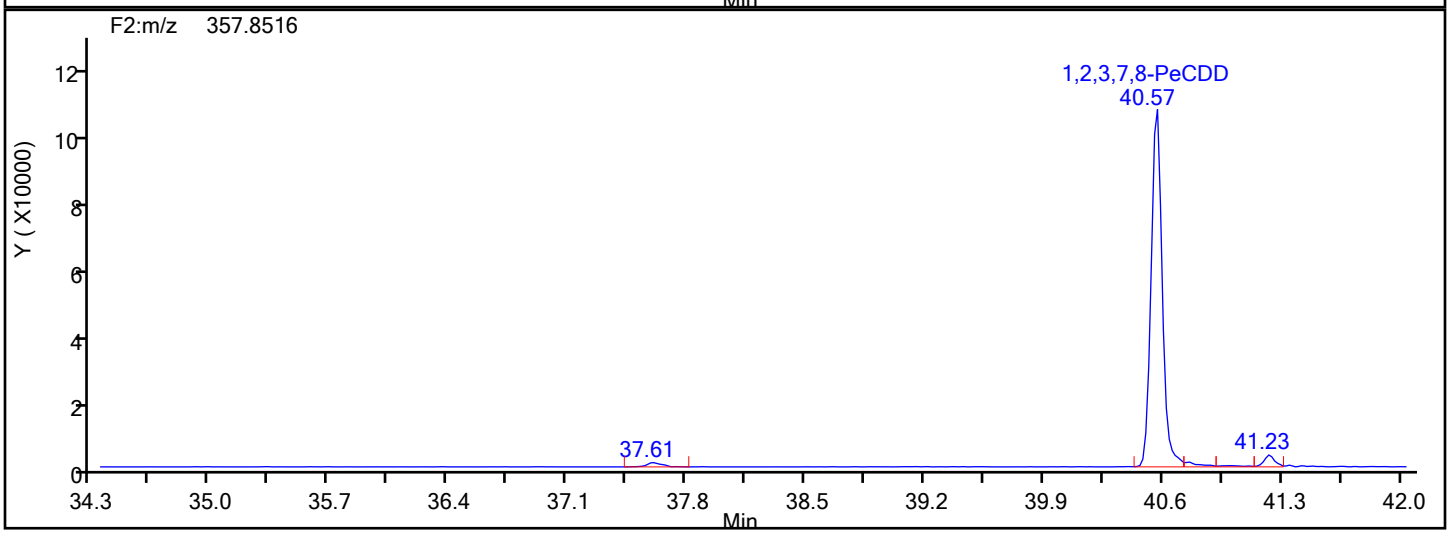

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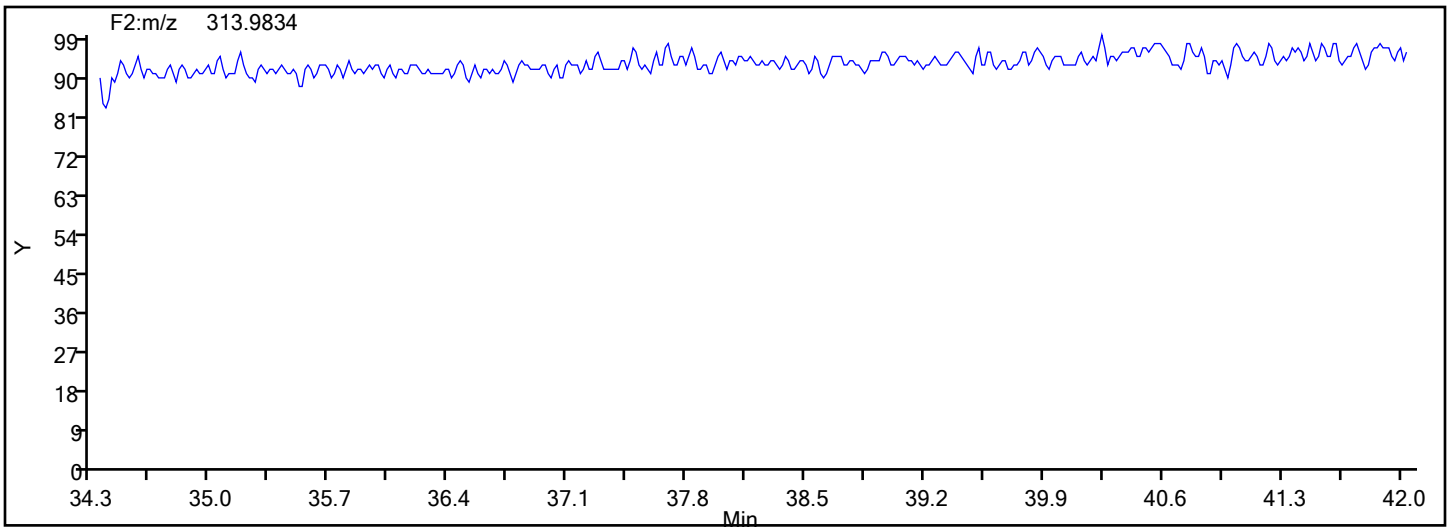

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Eurofins TestAmerica, Knoxville

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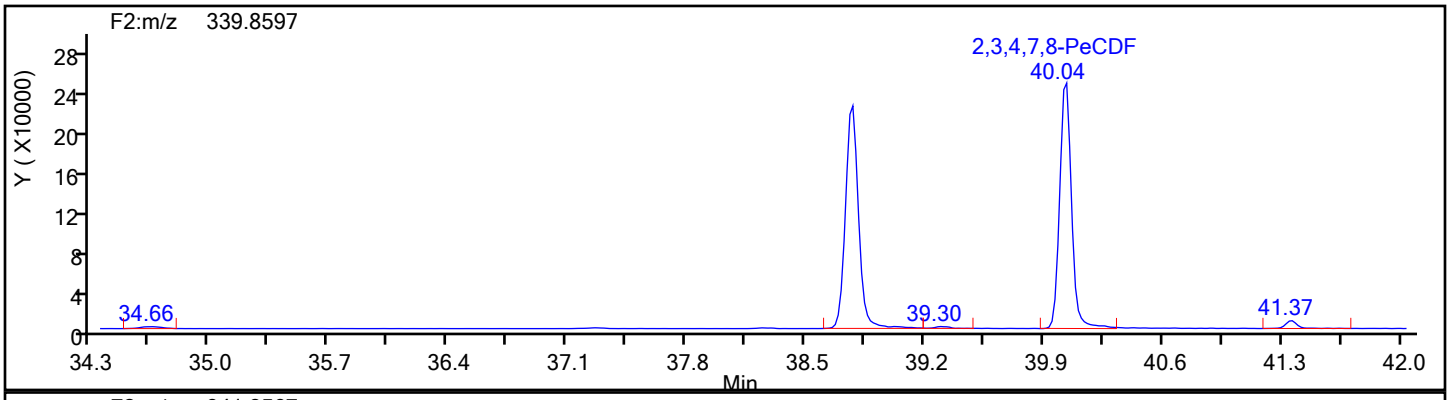

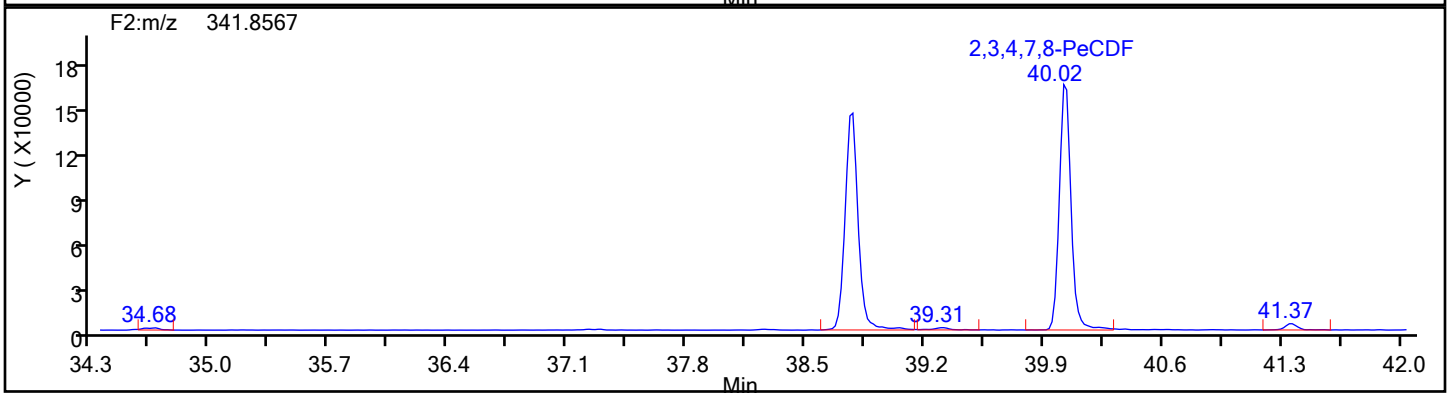

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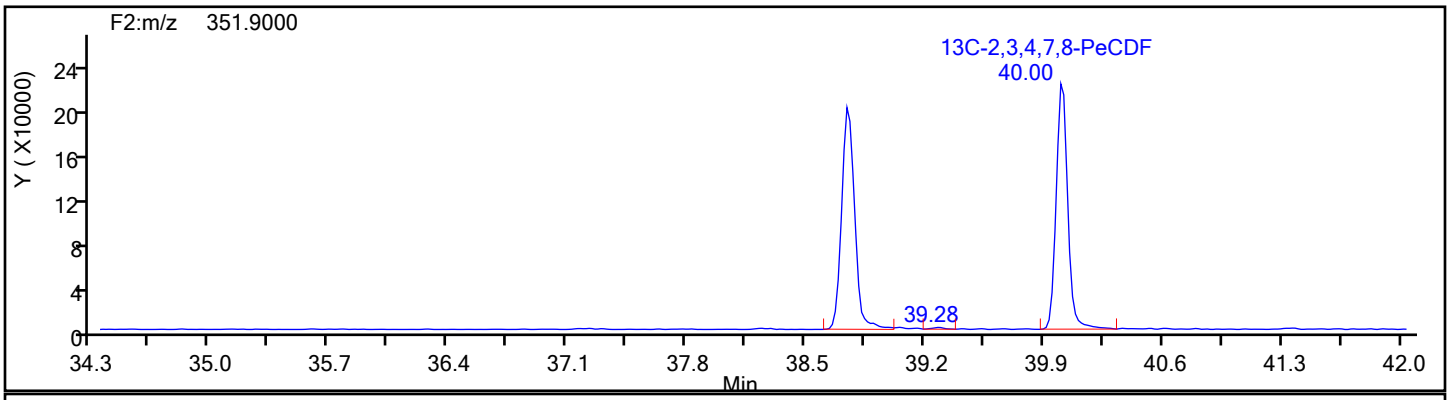

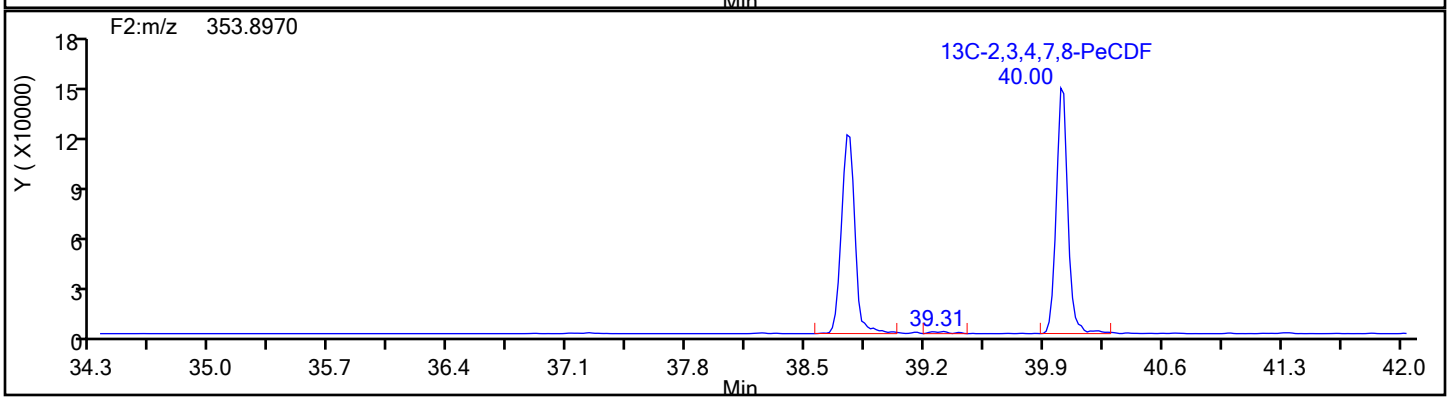

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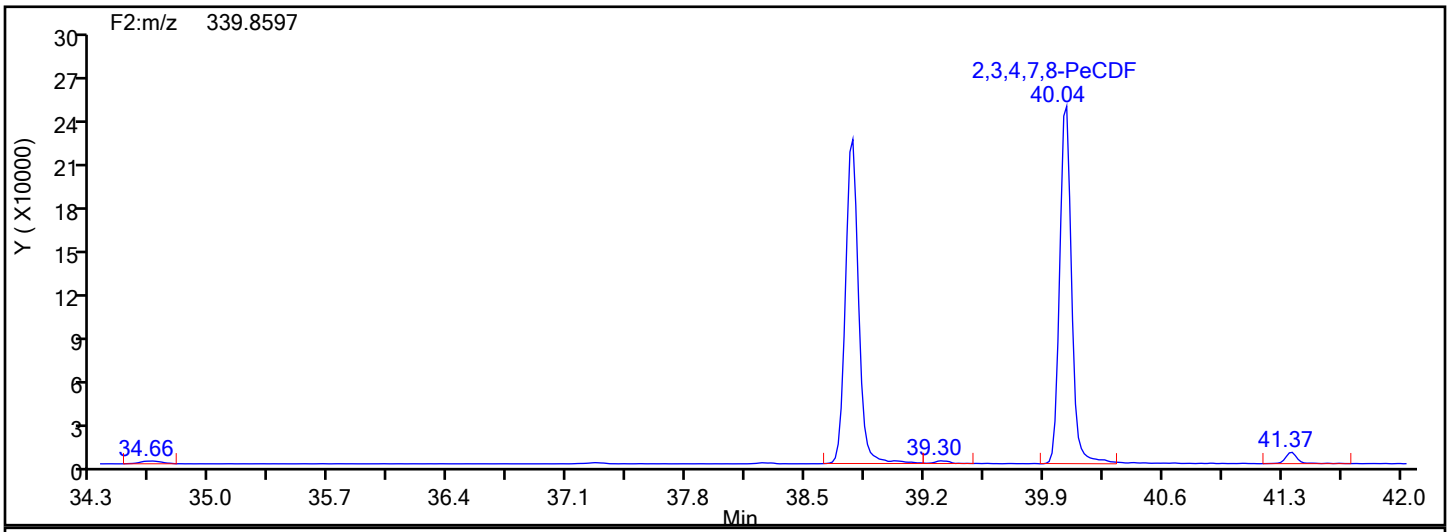
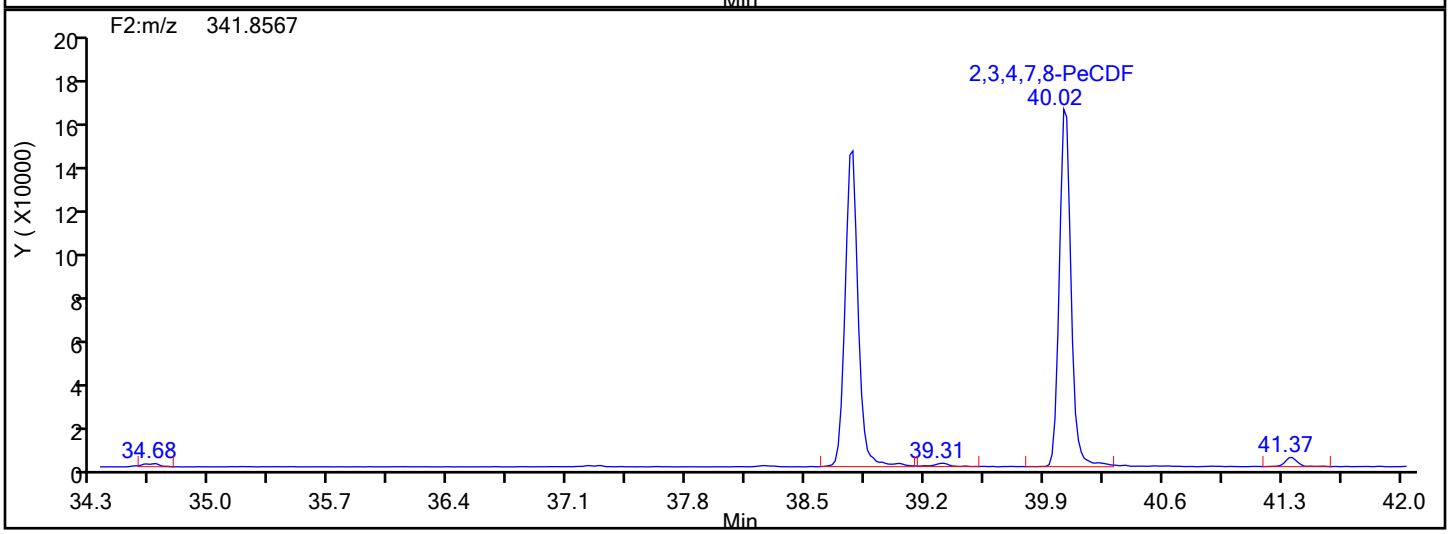
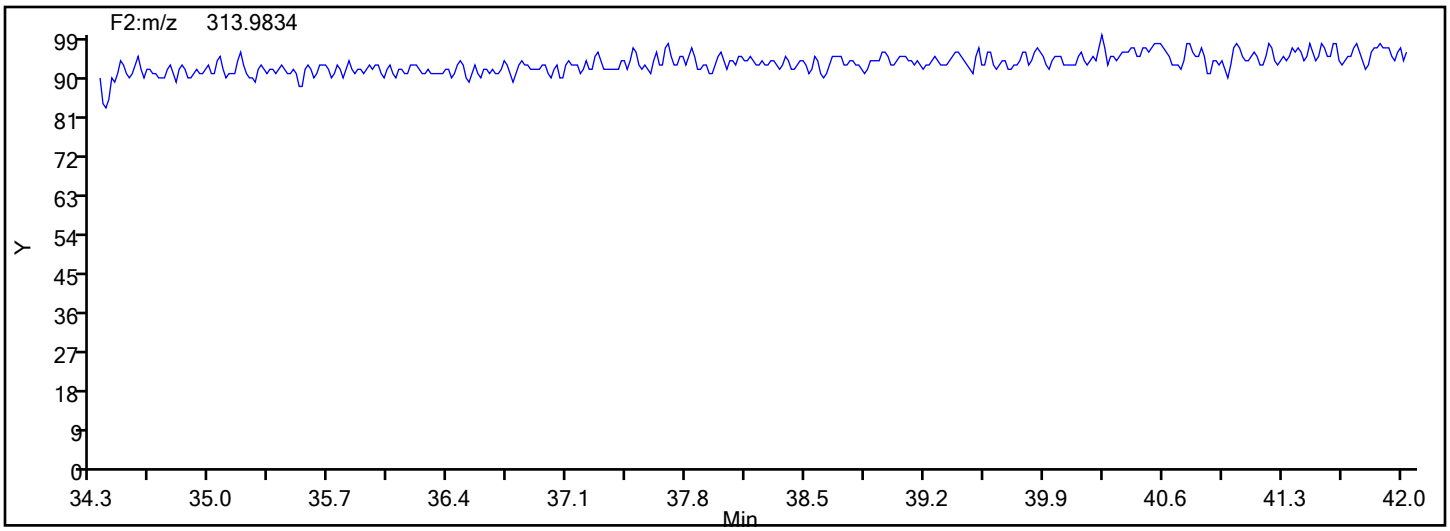




PeCDF Lock Mass



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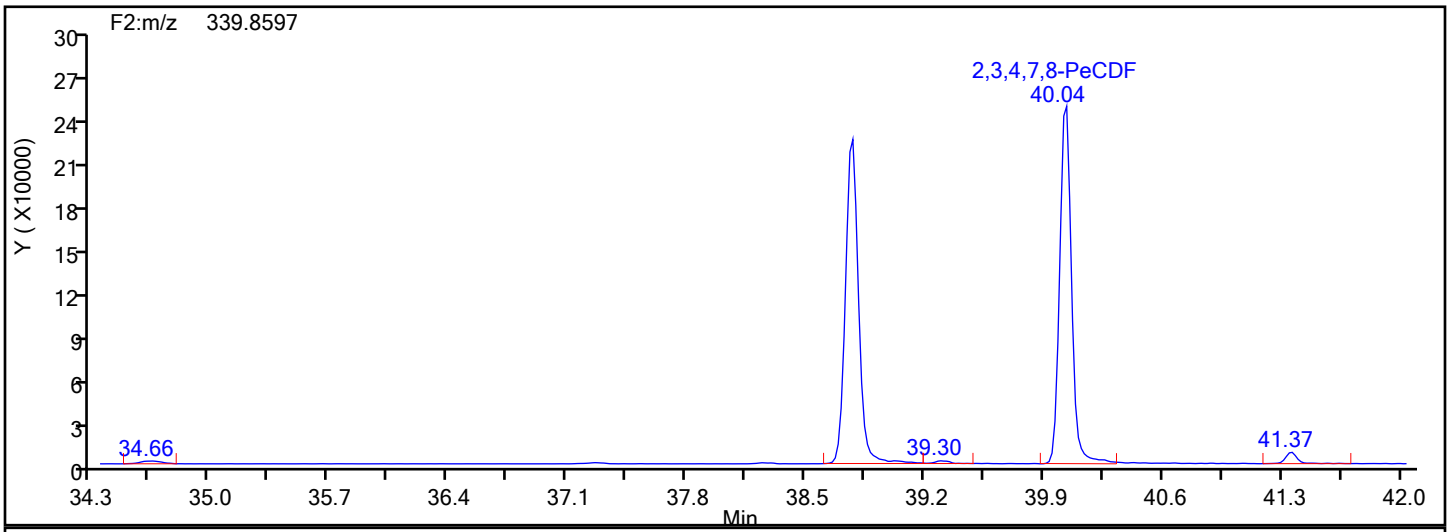

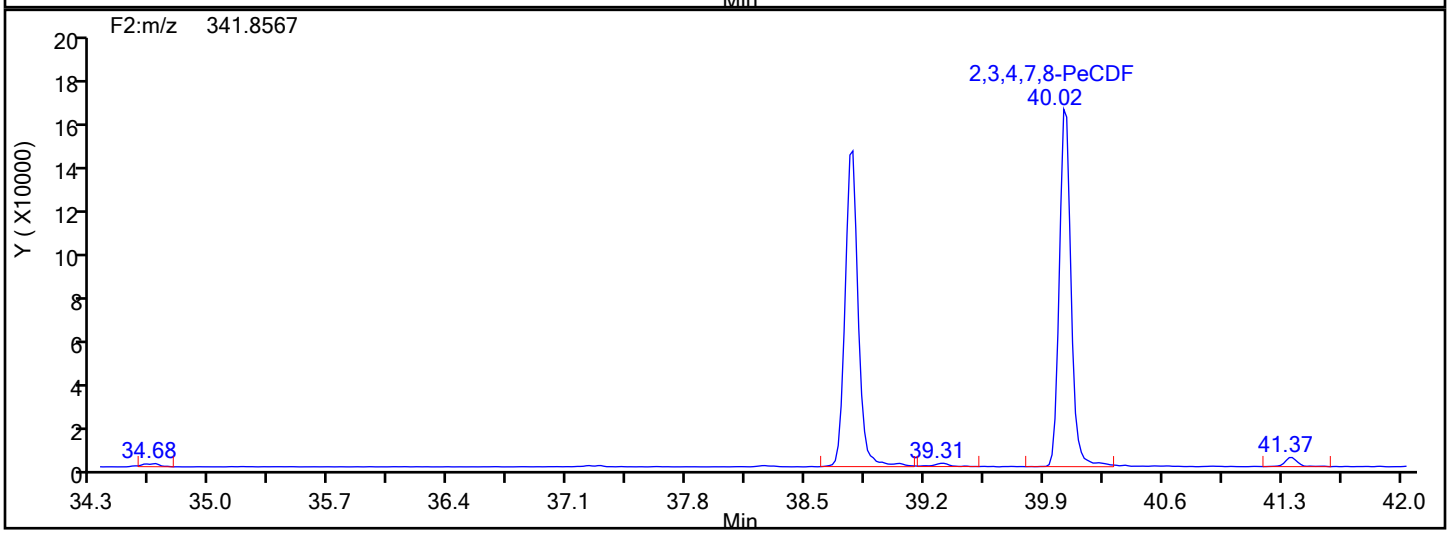

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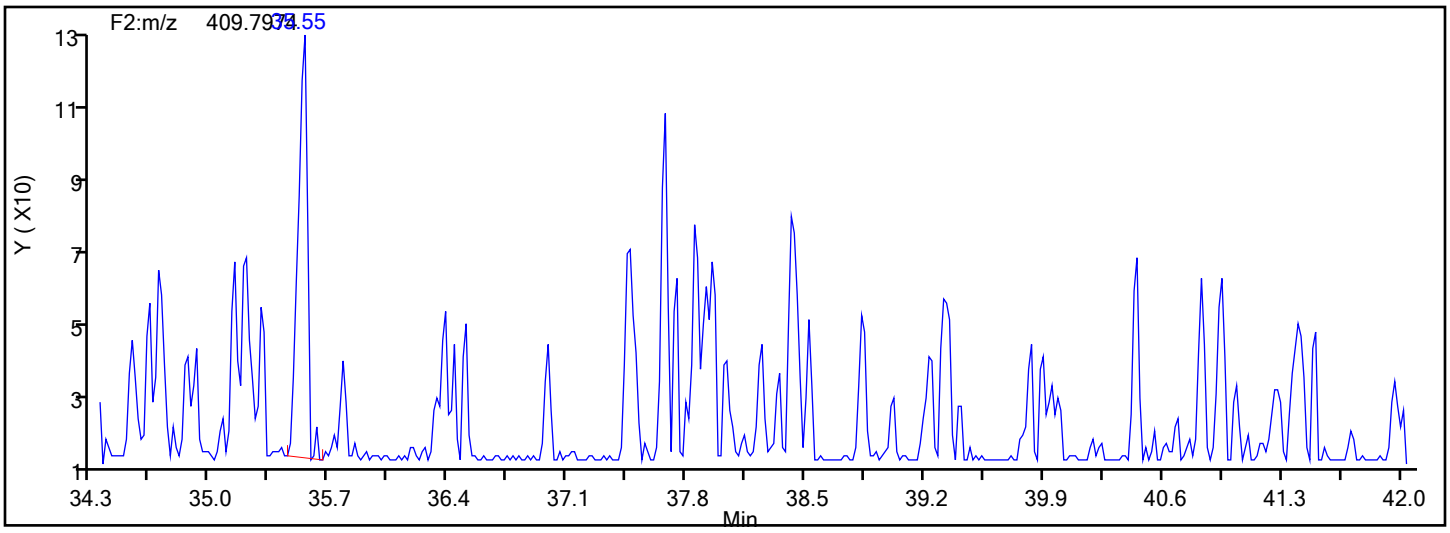

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Eurofins TestAmerica, Knoxville

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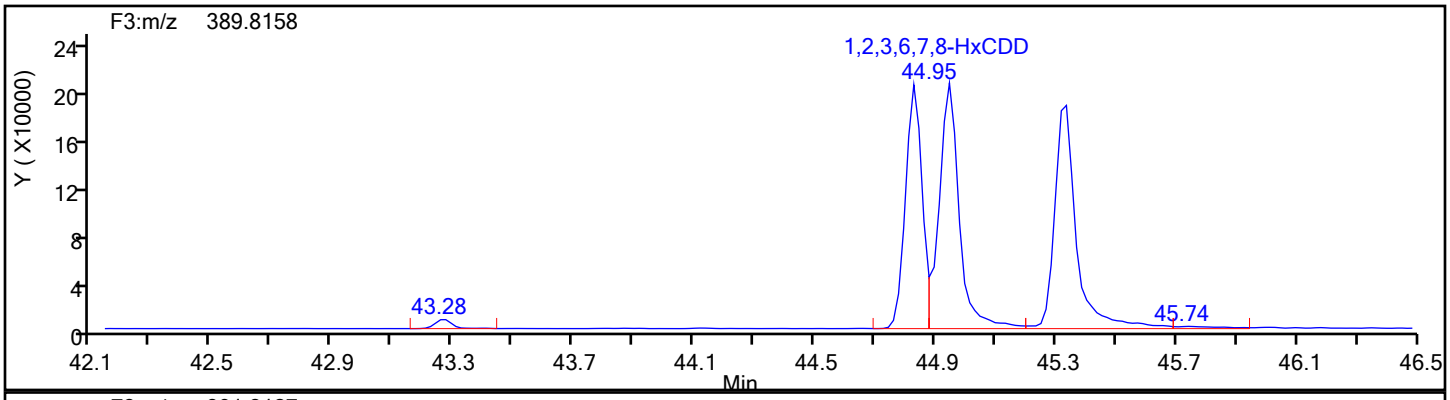
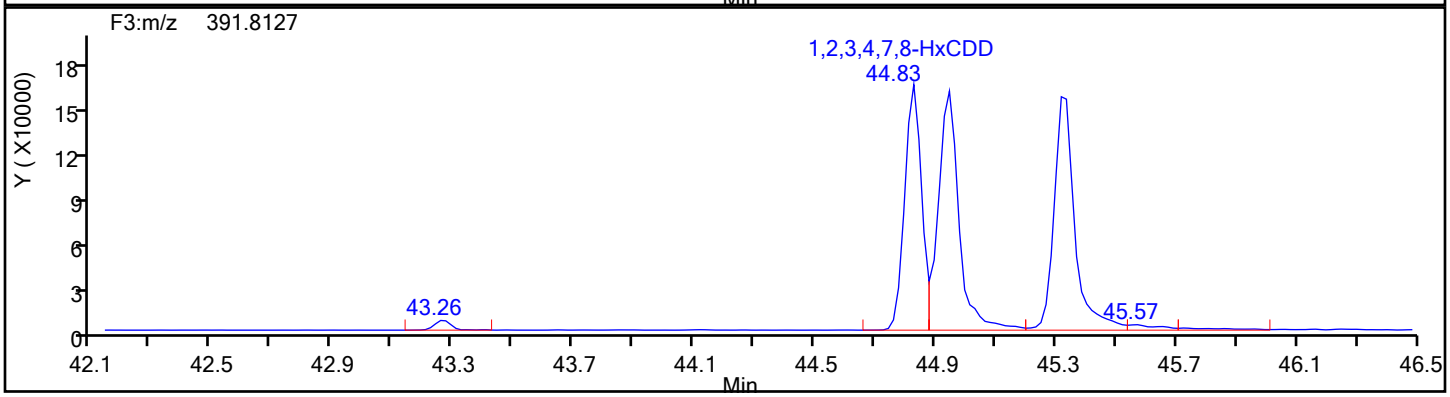
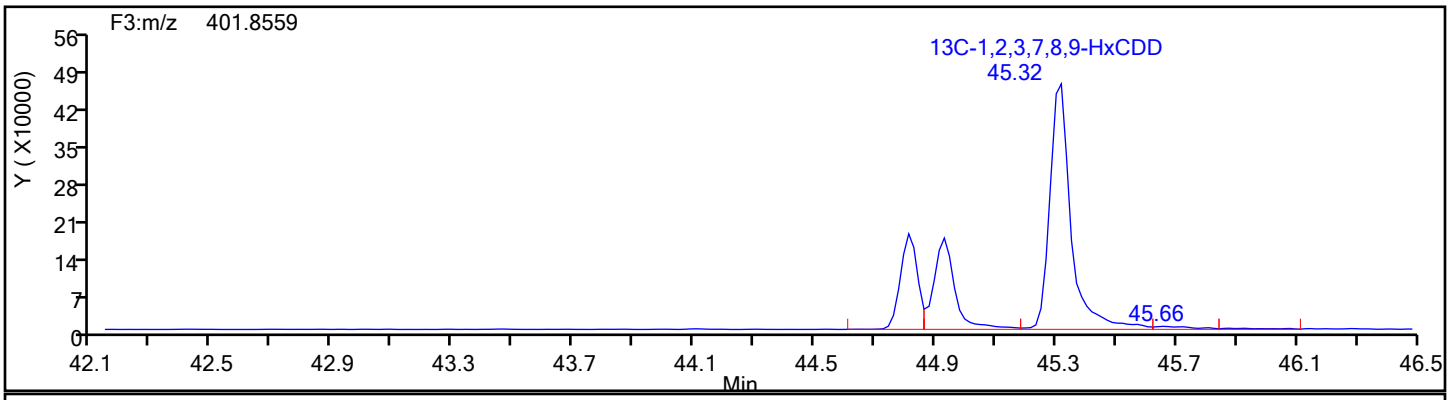
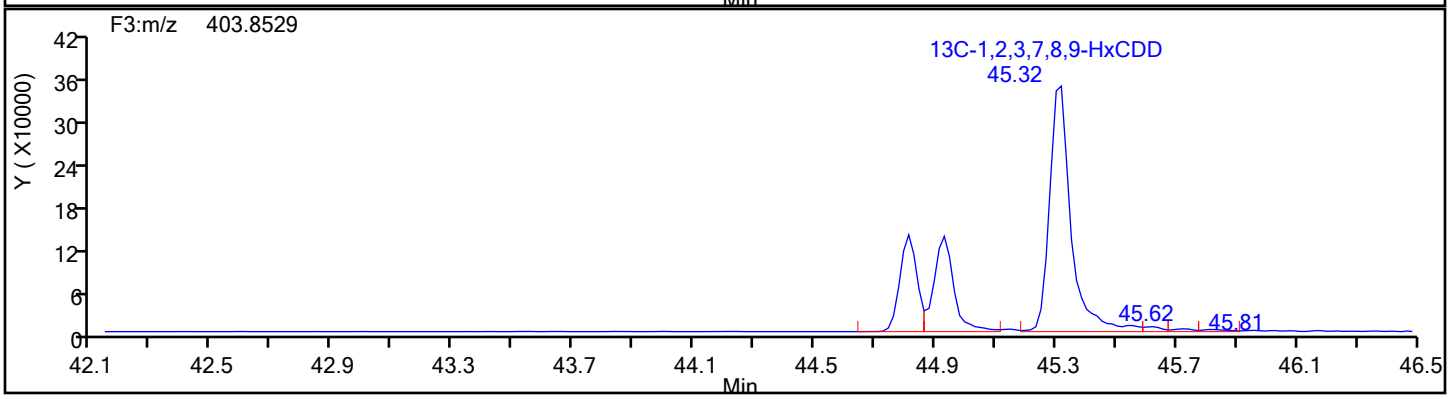




HxCDD Standards





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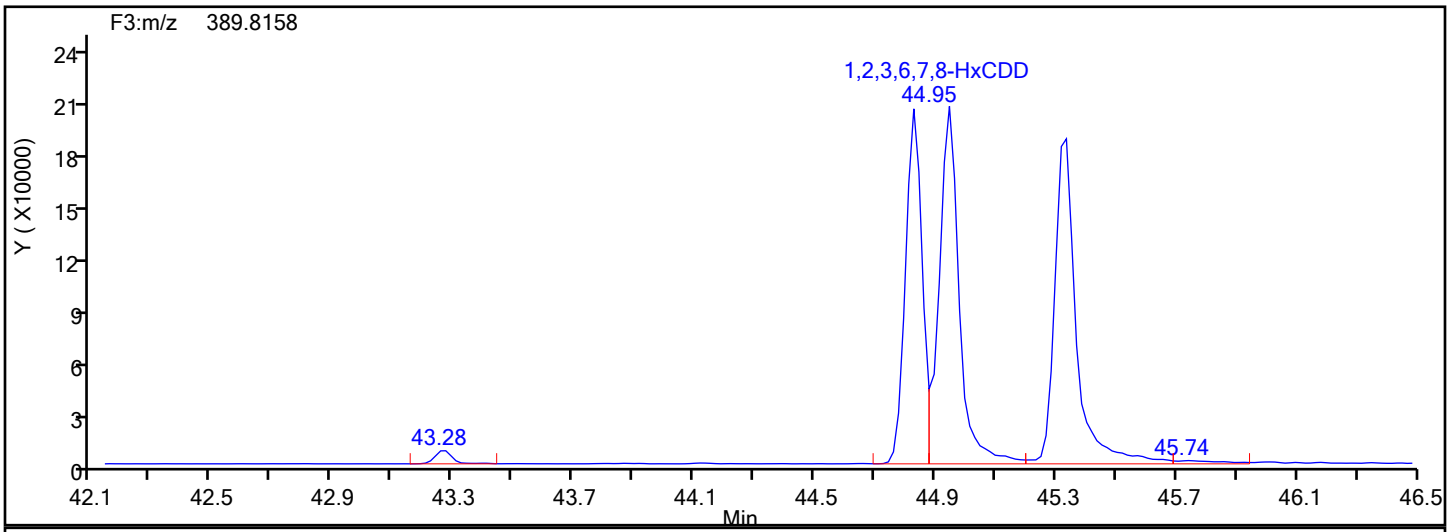

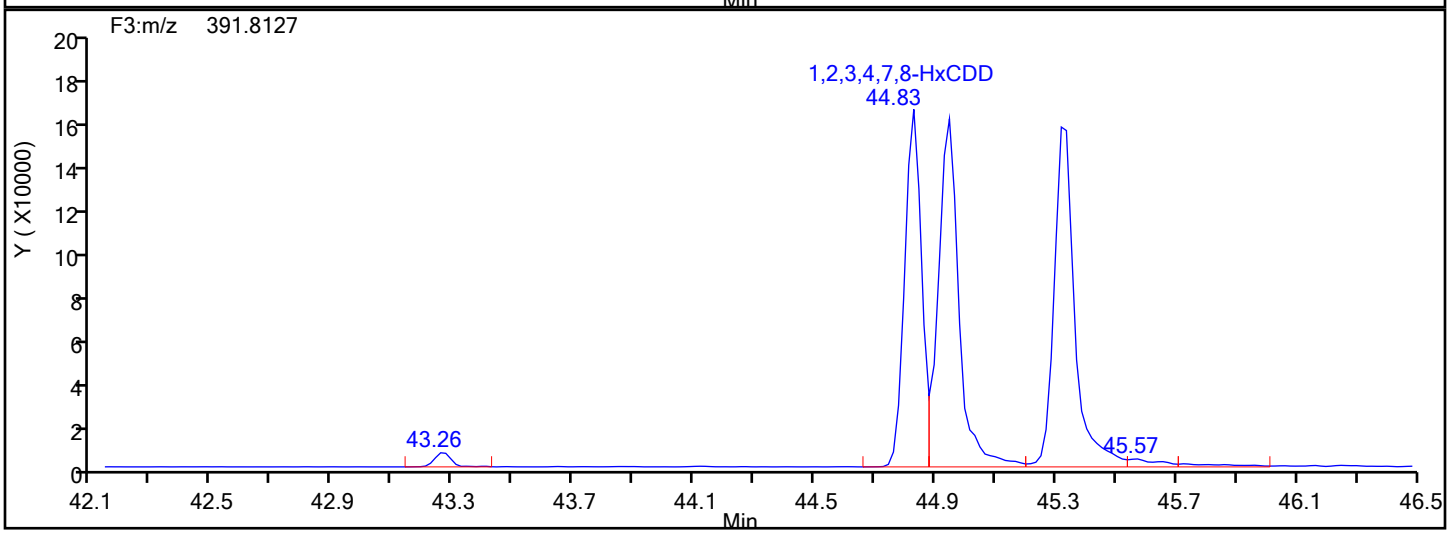

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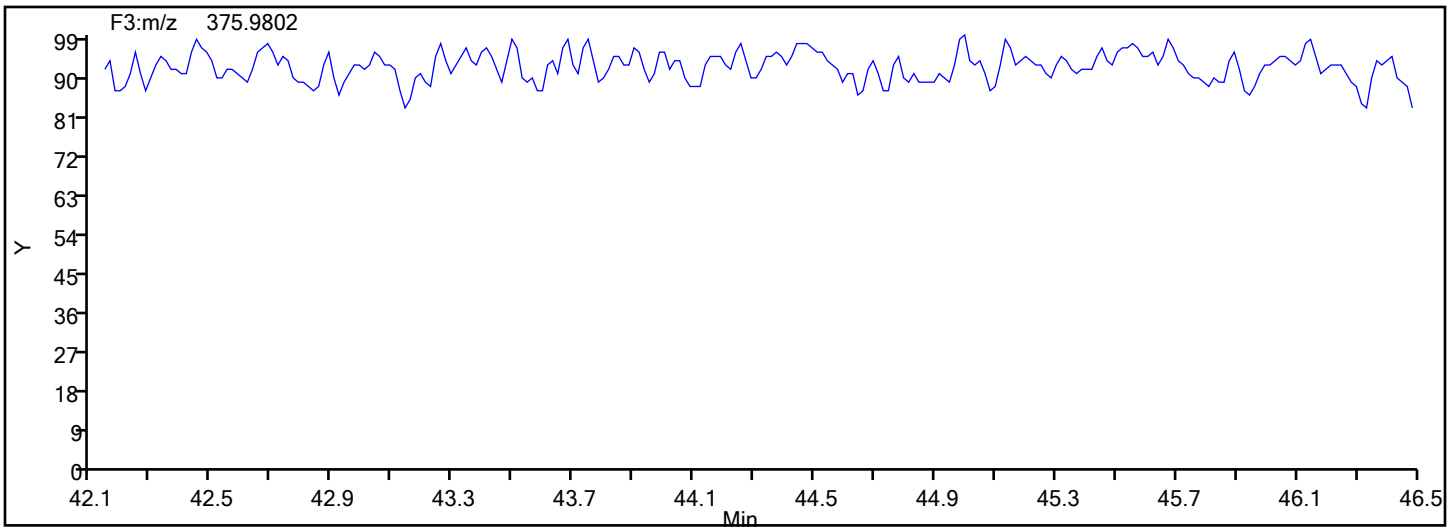

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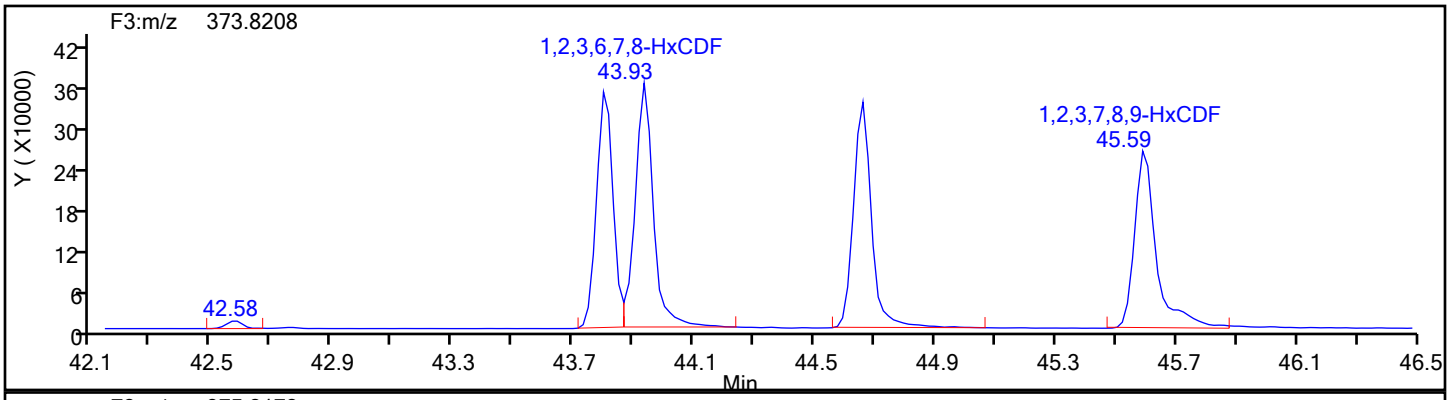
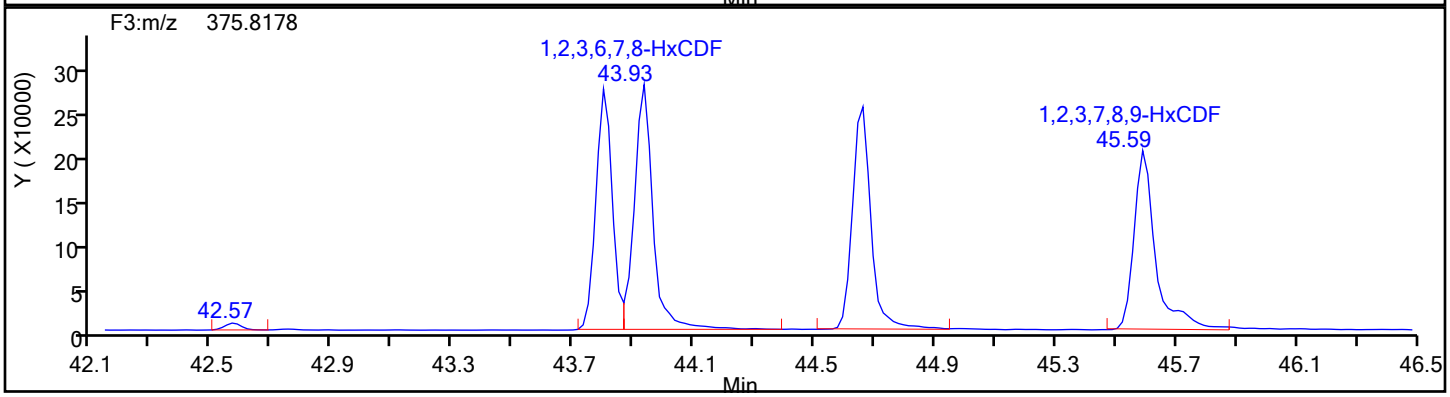
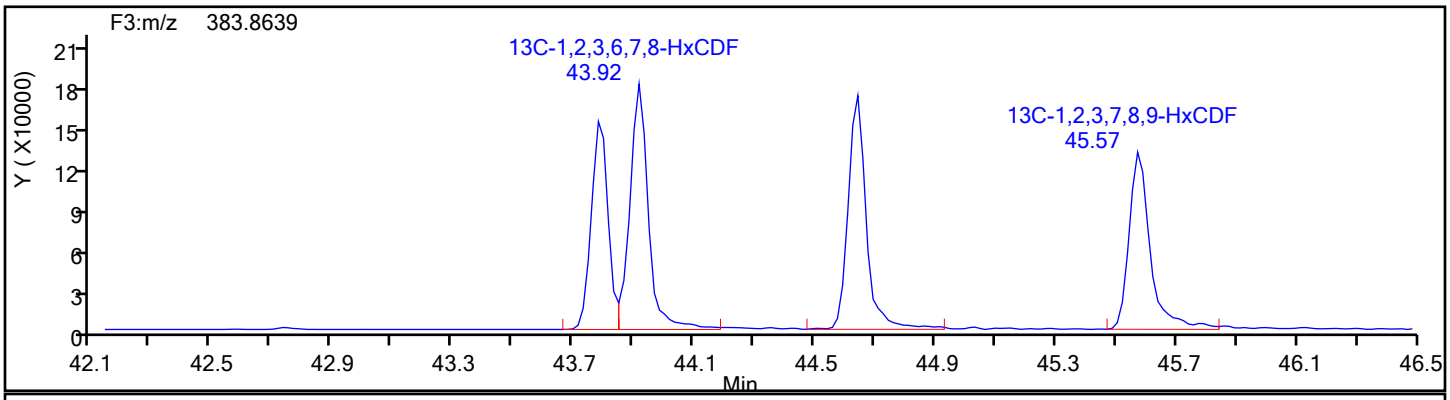
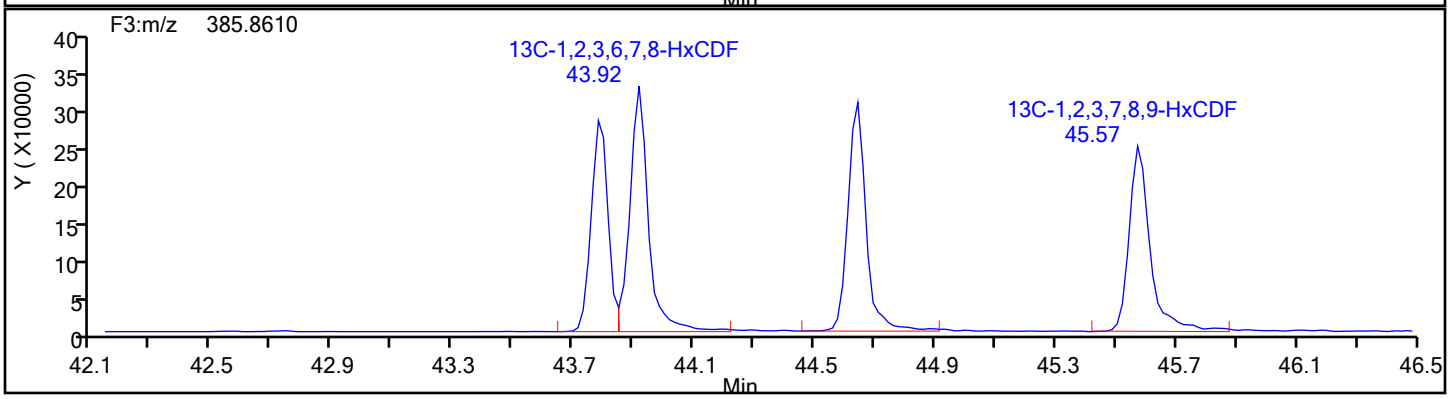




HxCDF Standards





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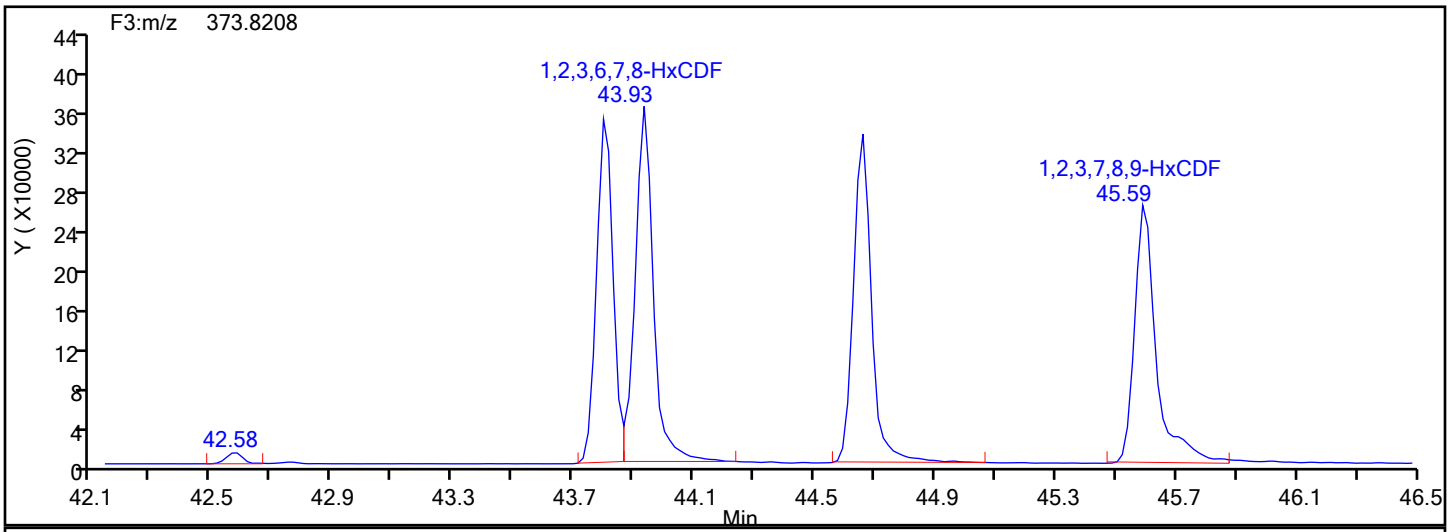

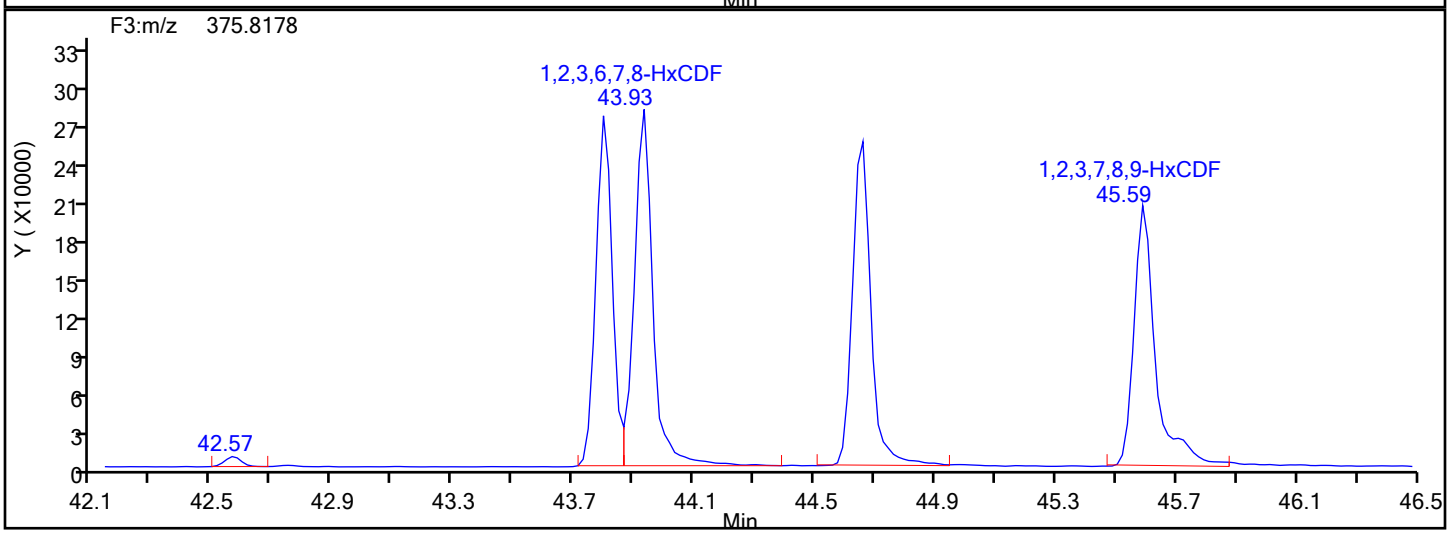

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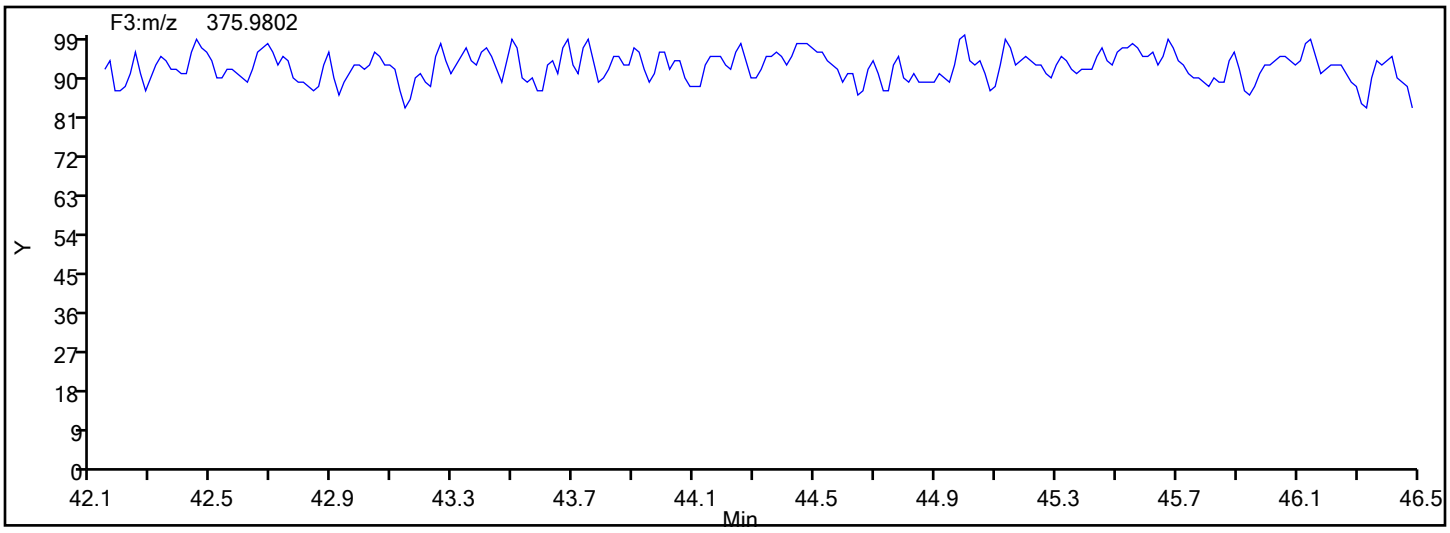

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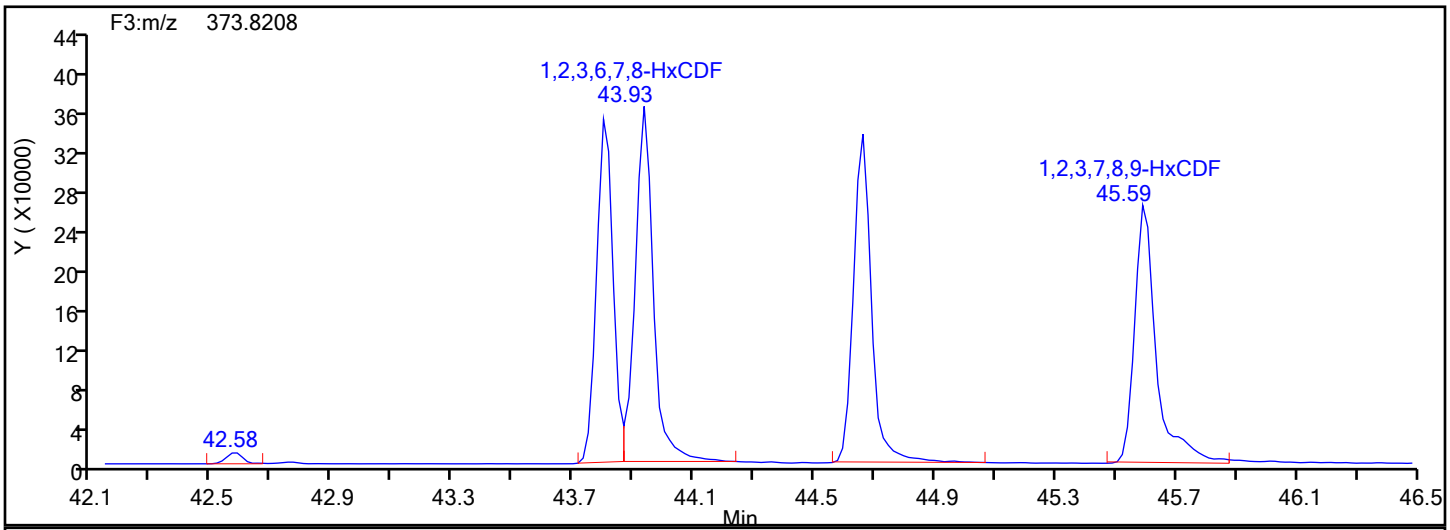

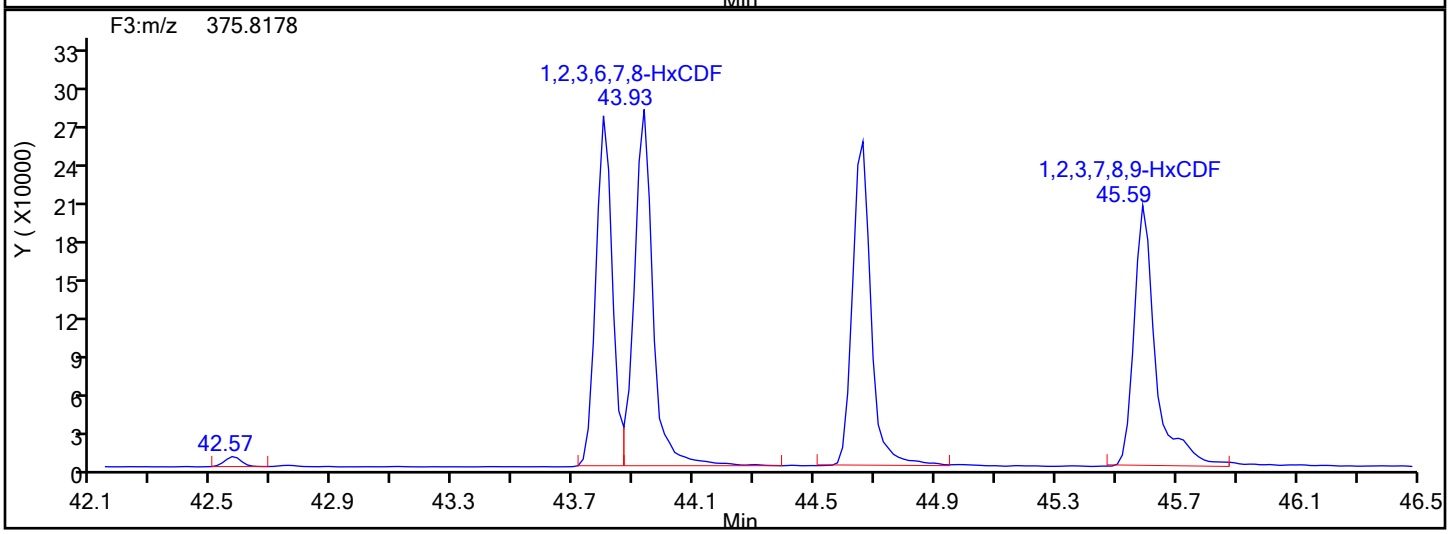

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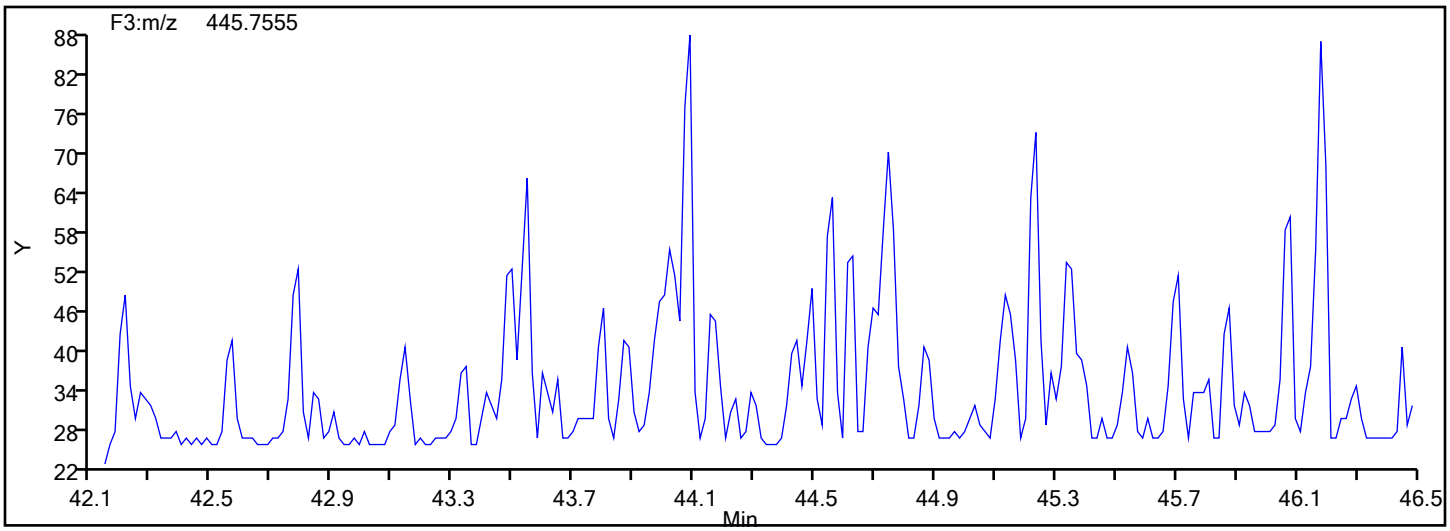

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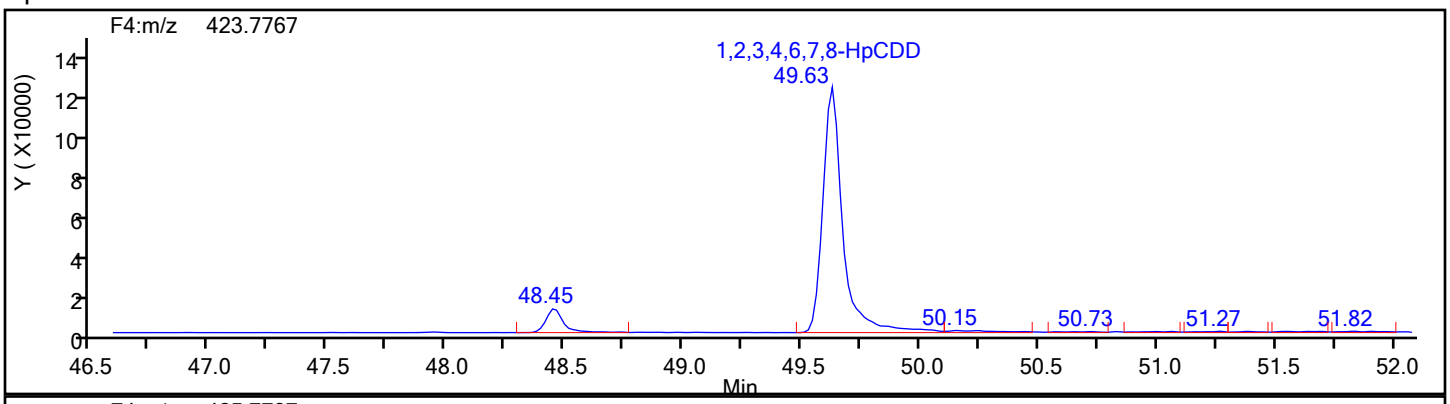

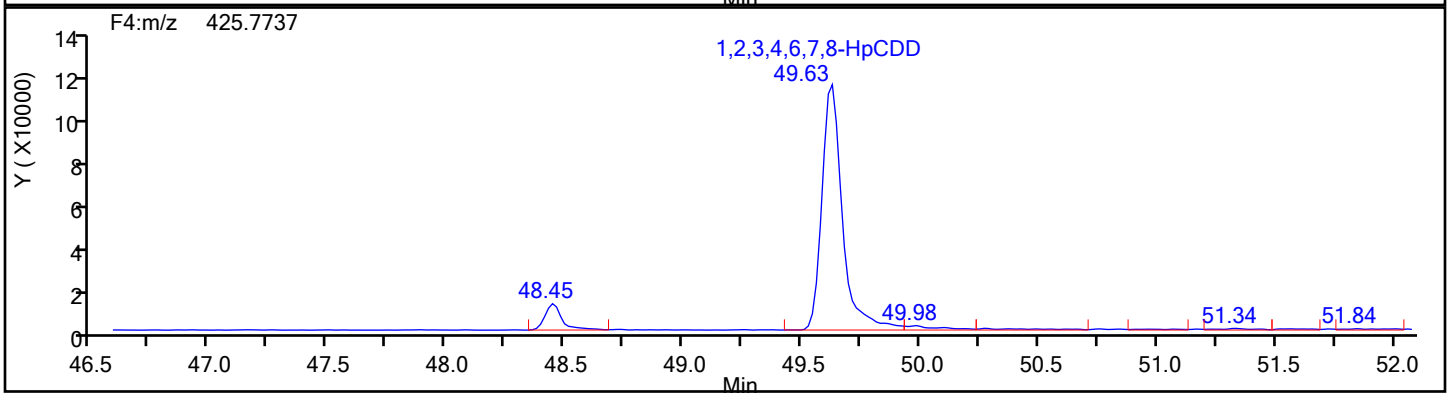

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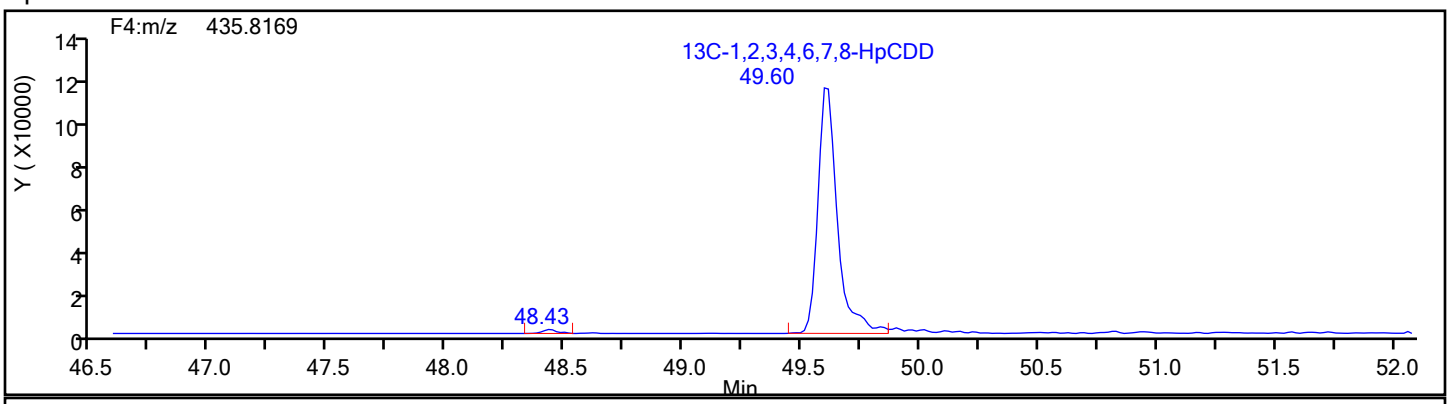

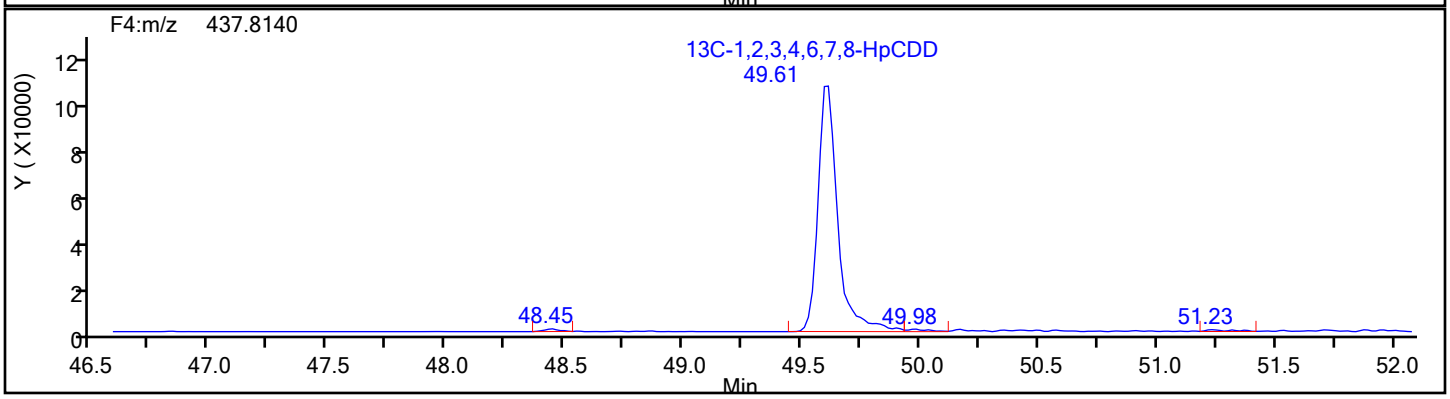

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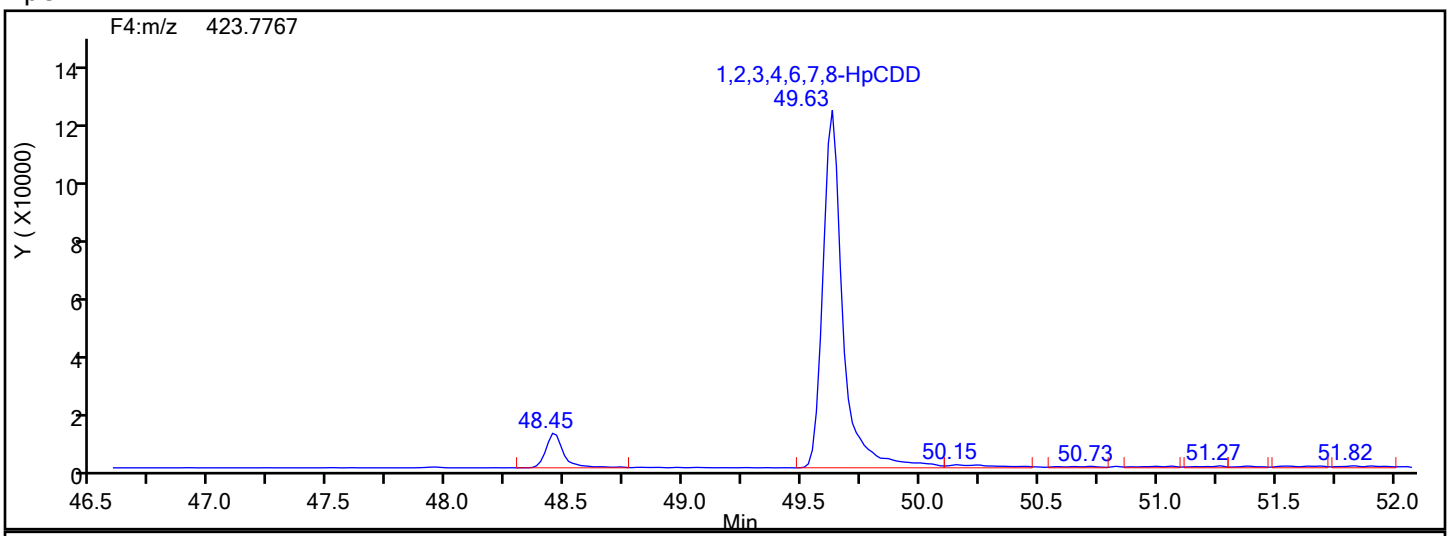

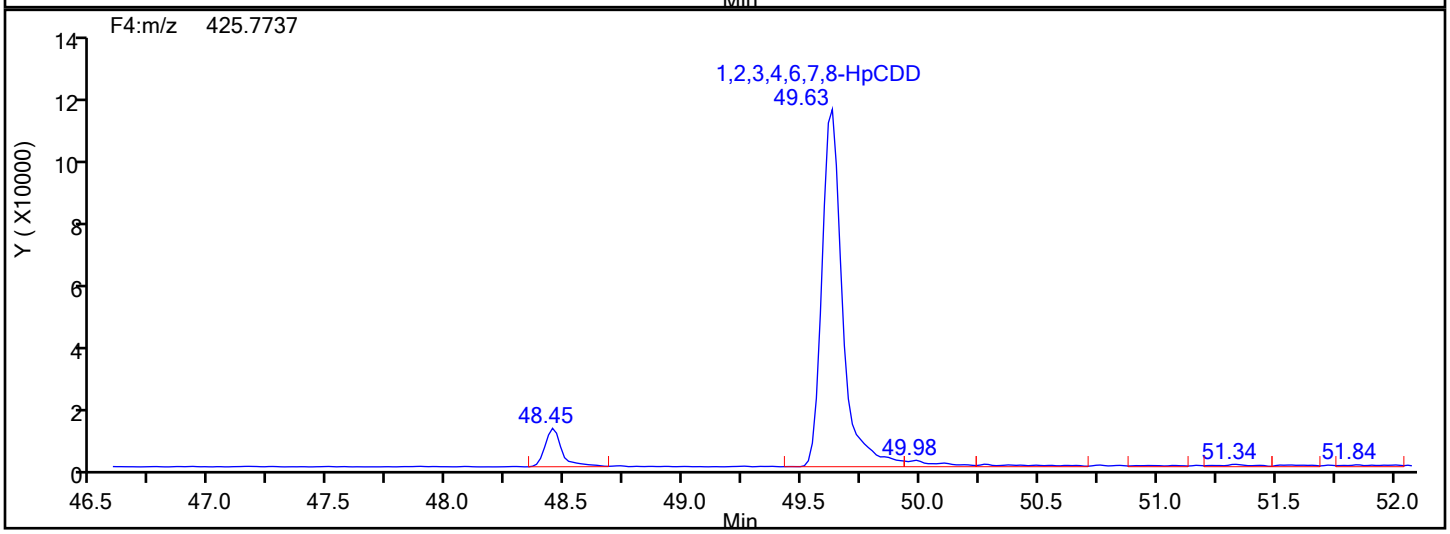

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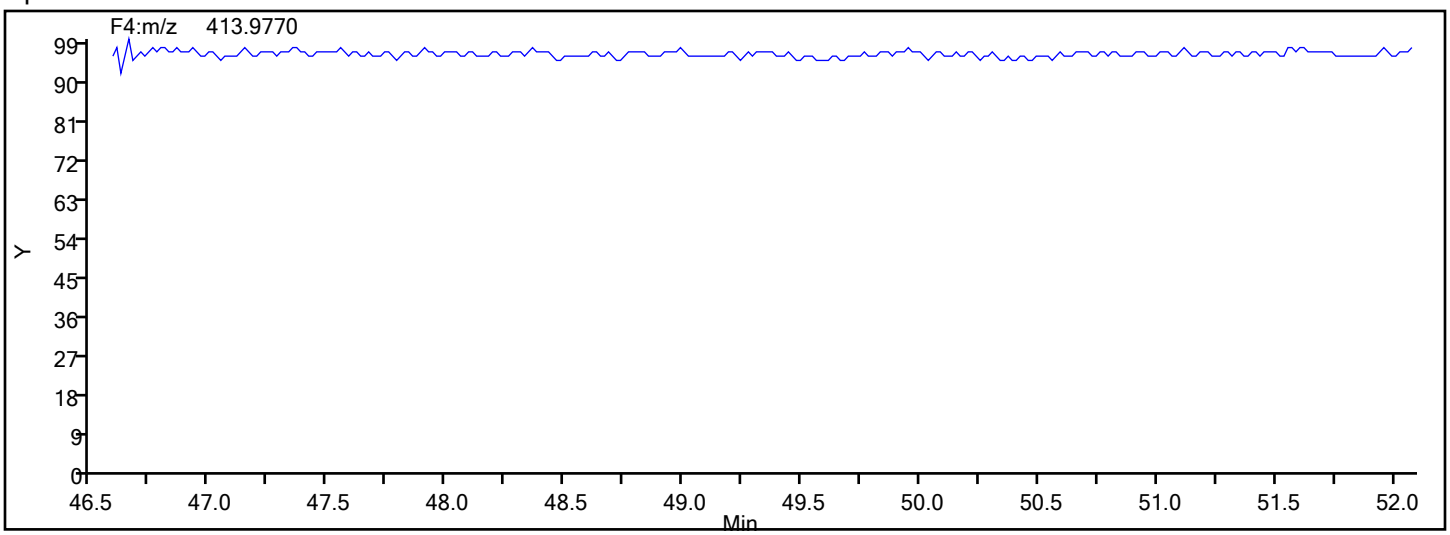

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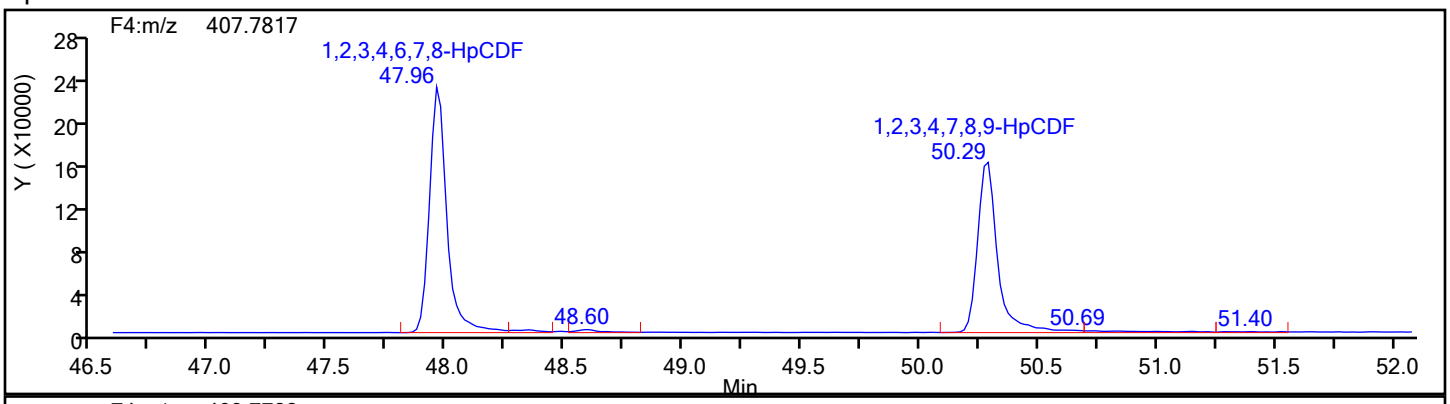
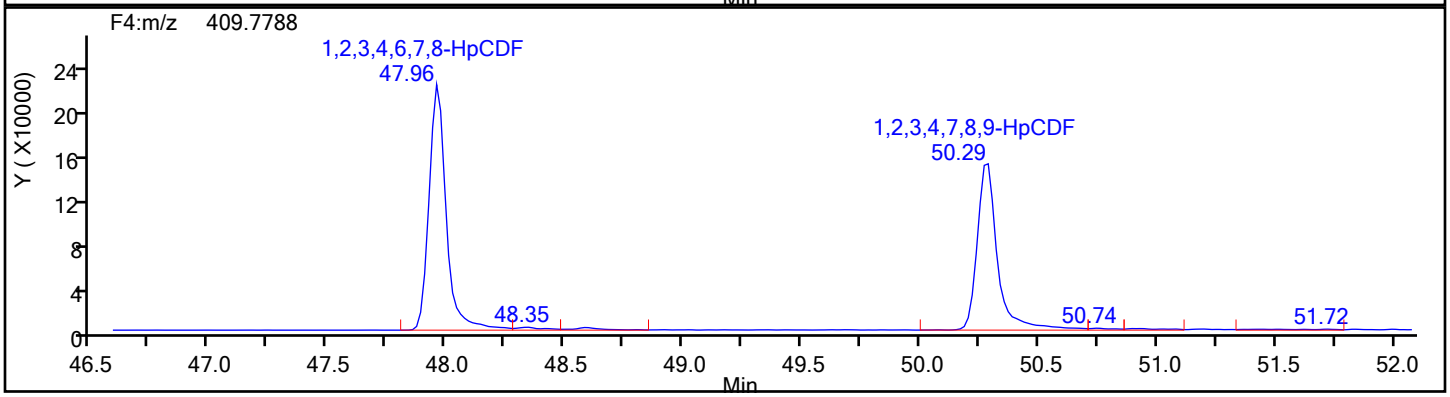
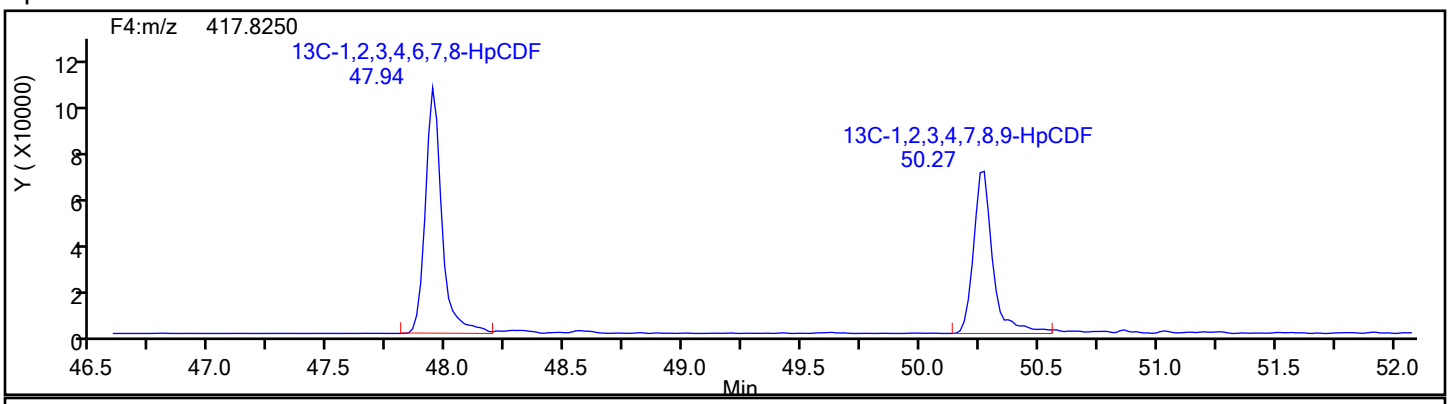
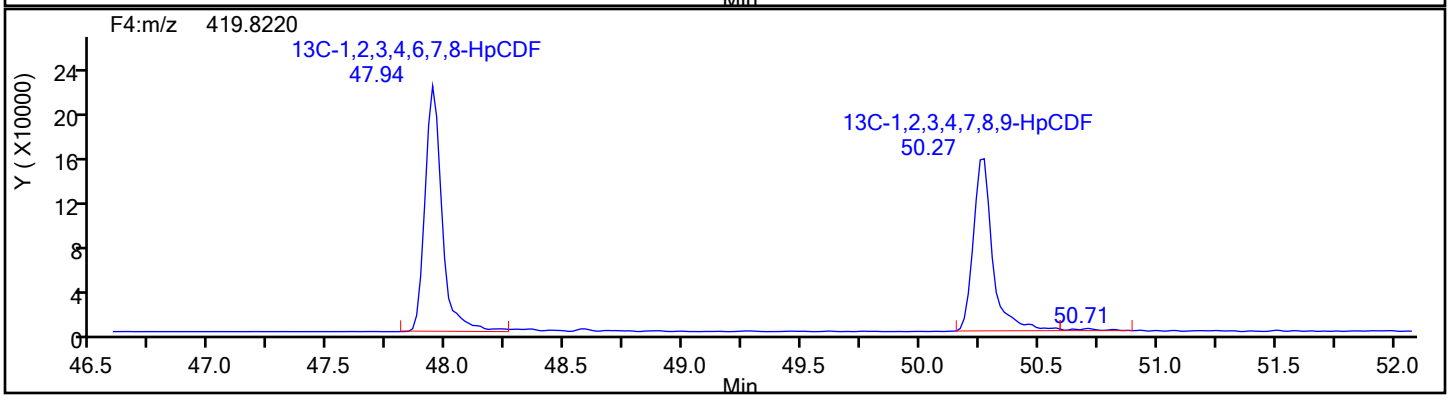
HpCDF





HpCDF Standards



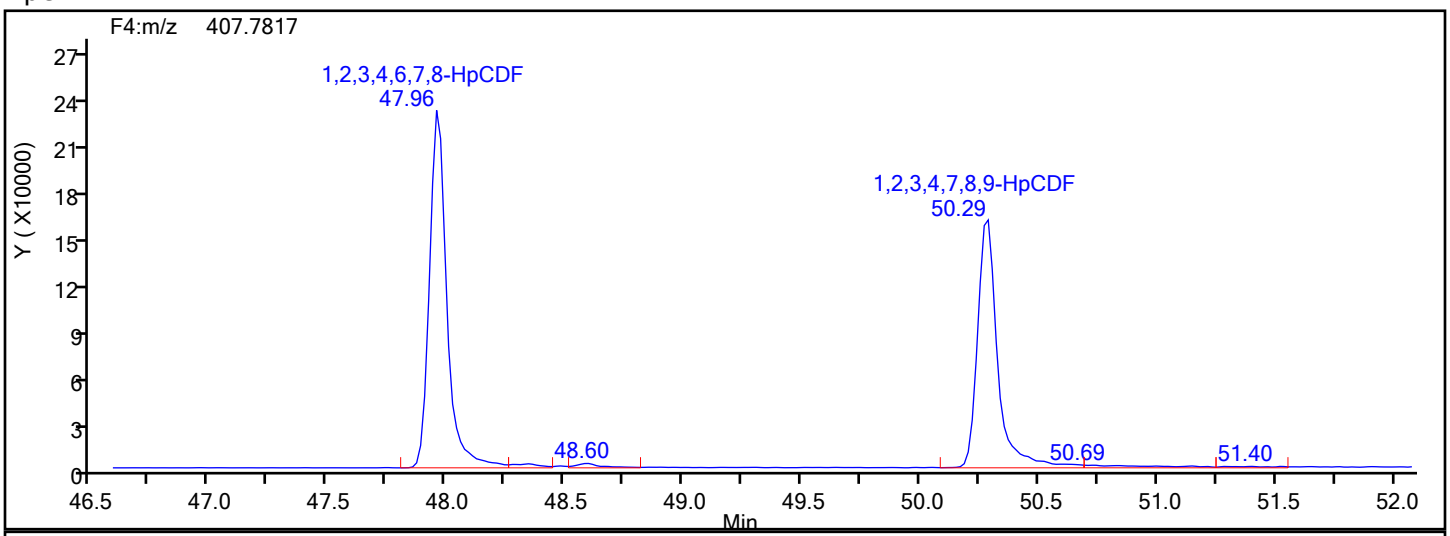


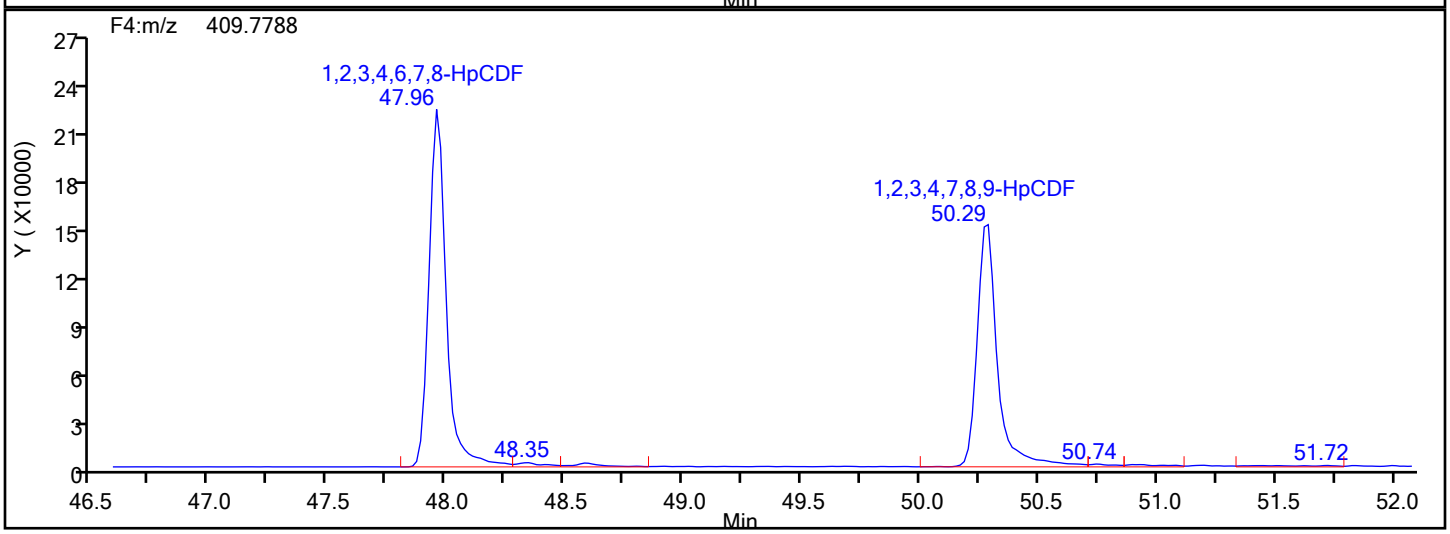
Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

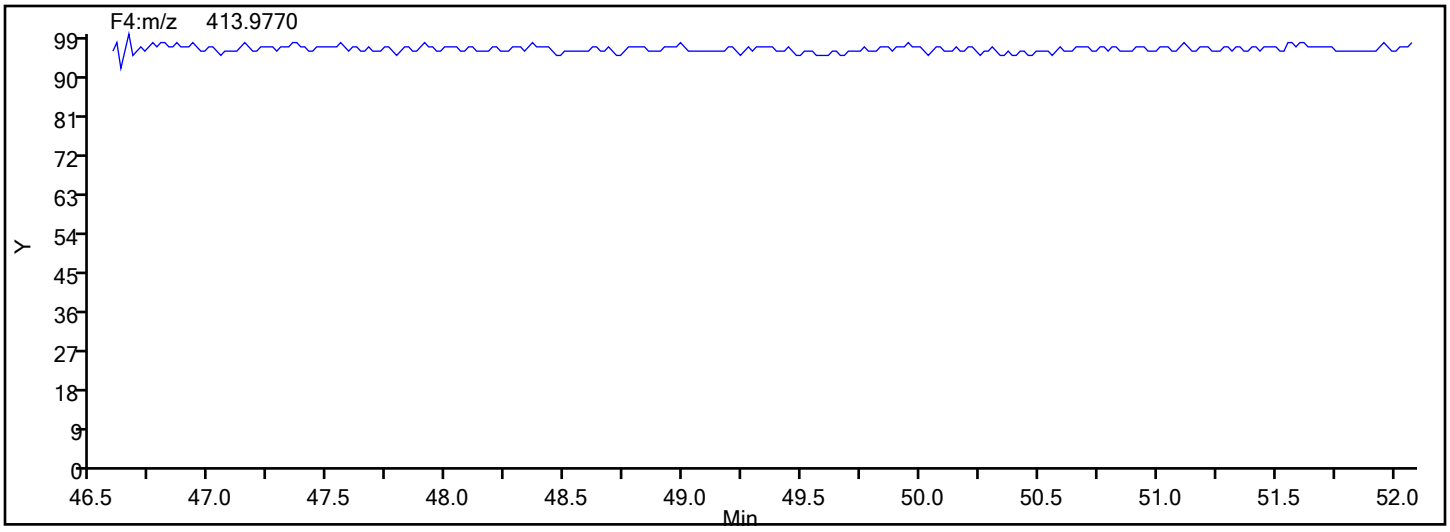
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

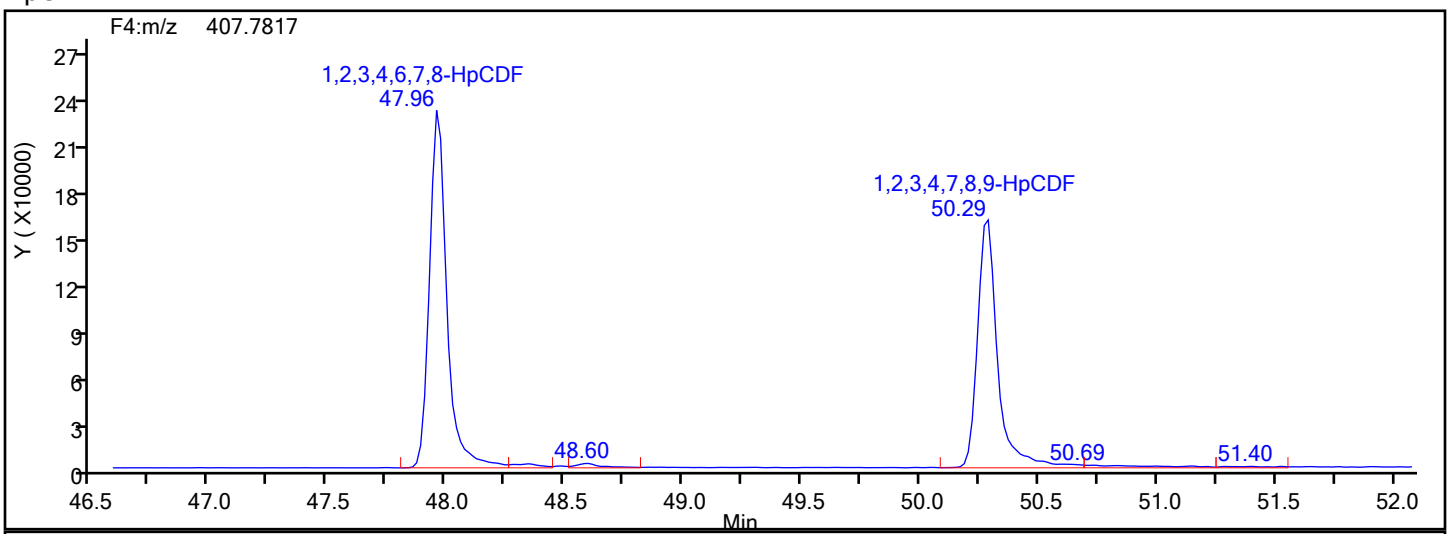


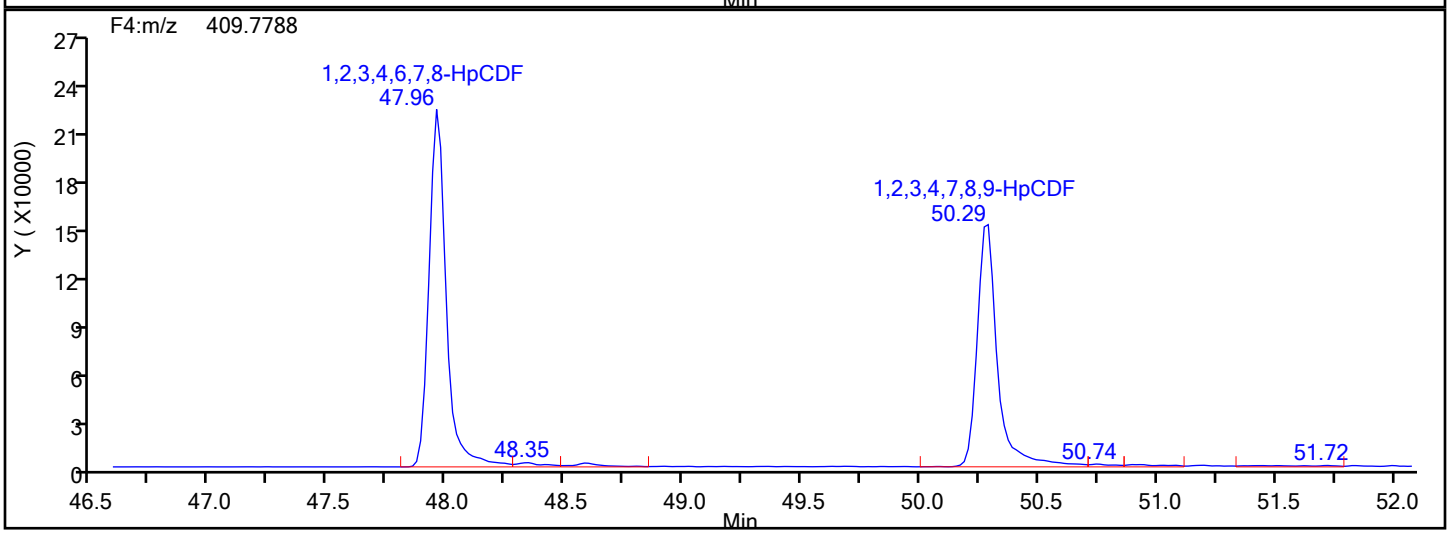
Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

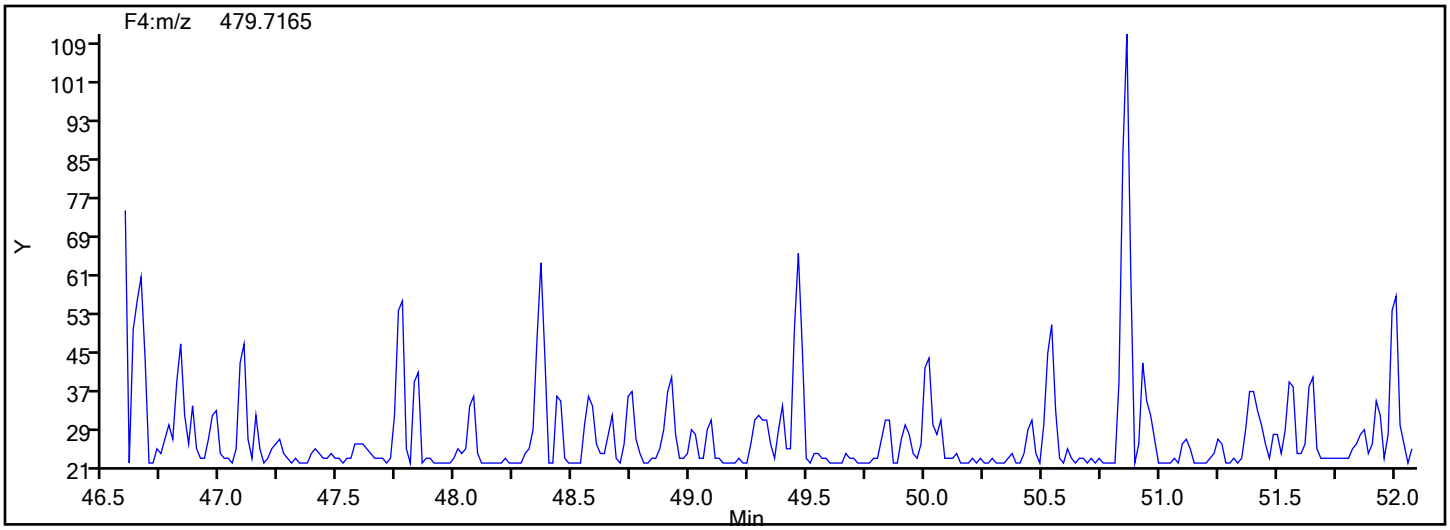
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d

Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
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Column Type:		Column Dia:	

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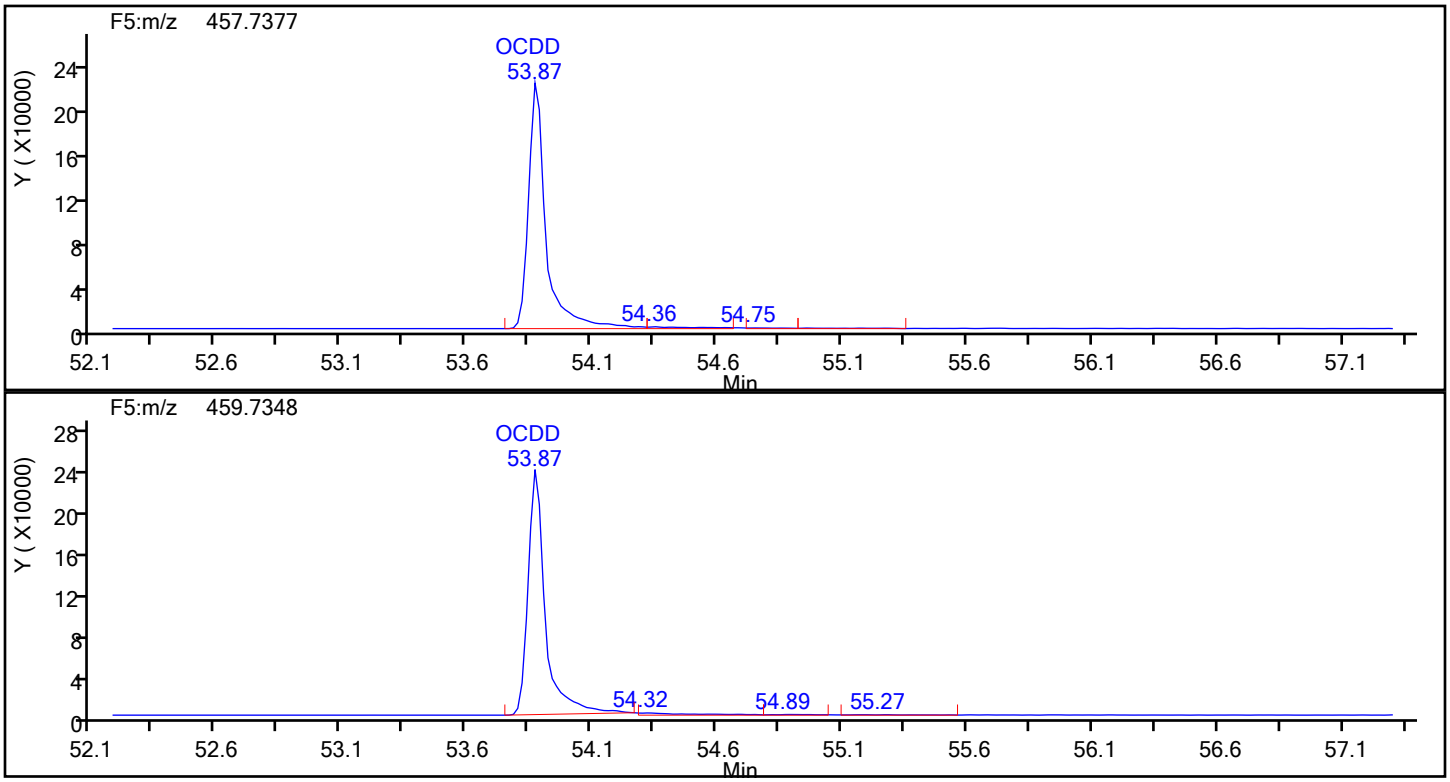
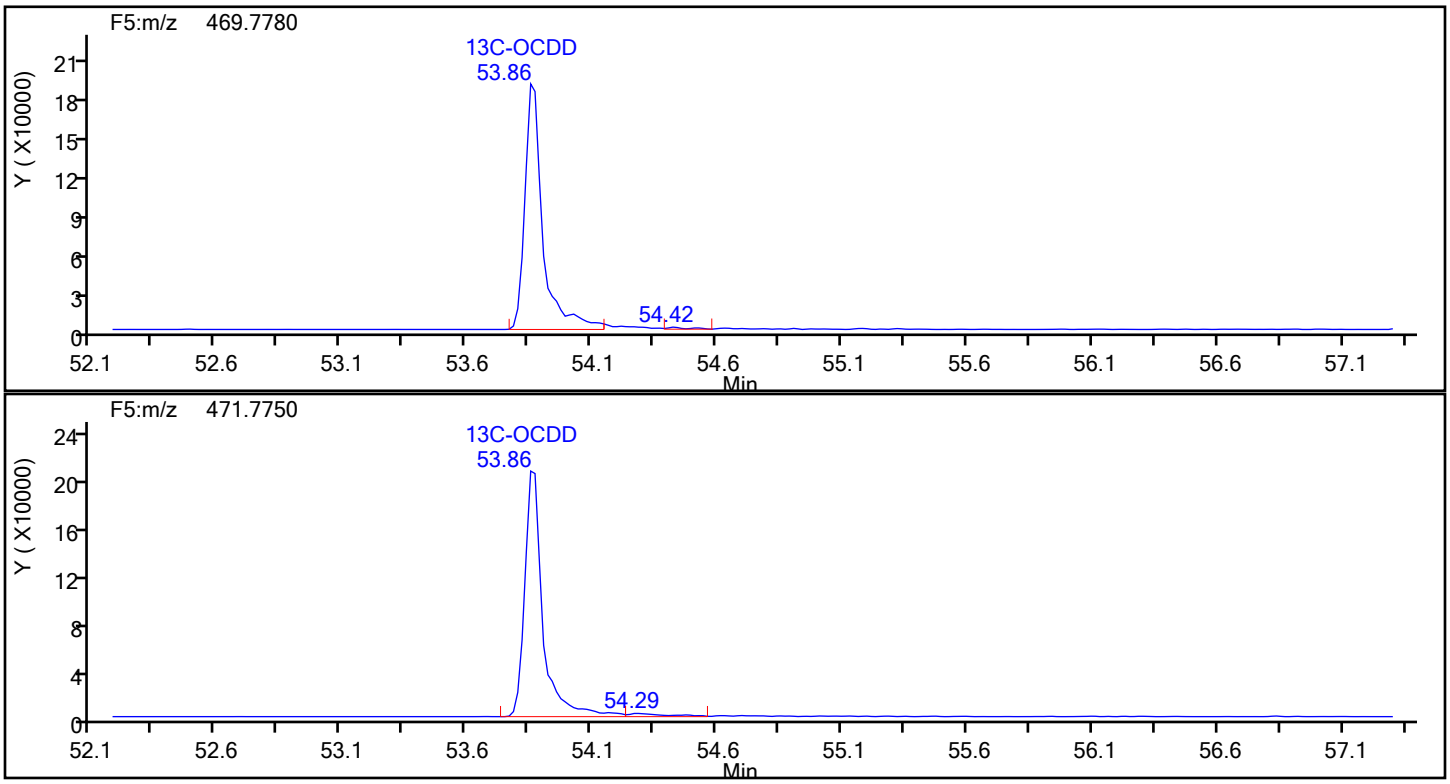


OCDD Standards

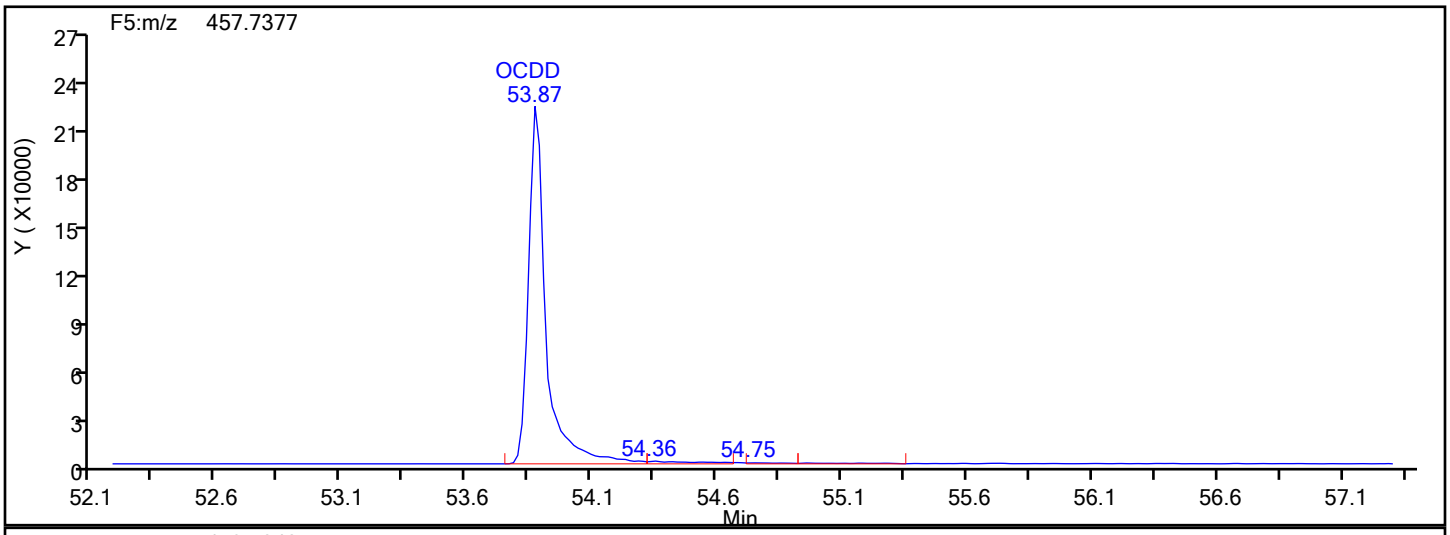


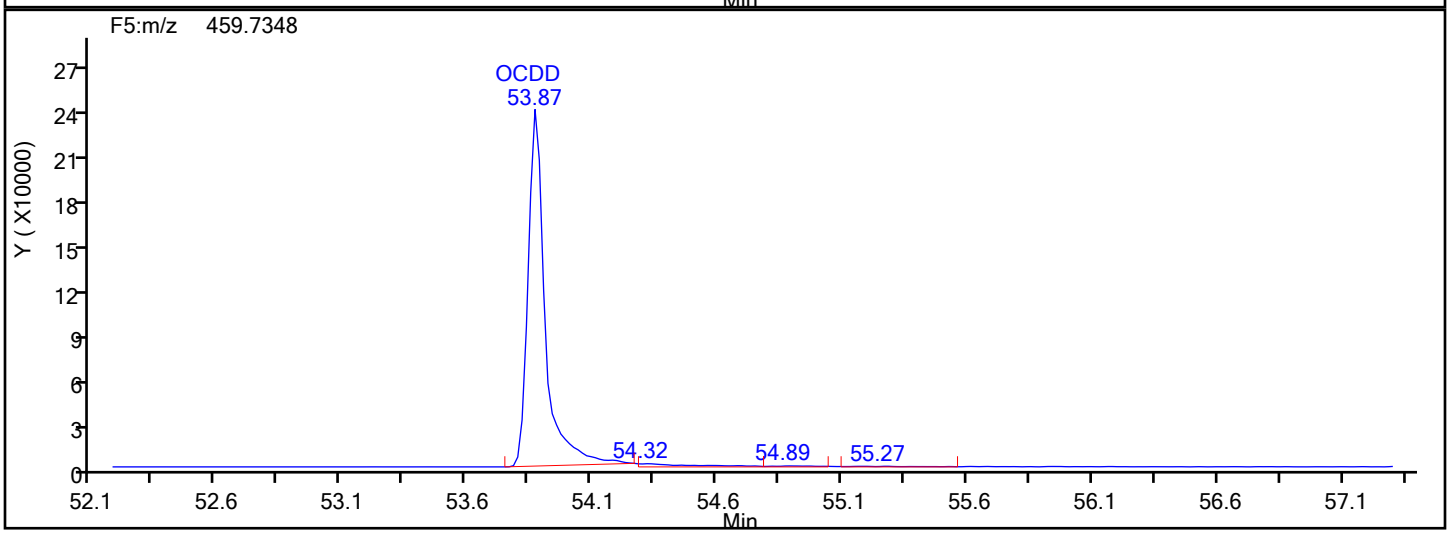
Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

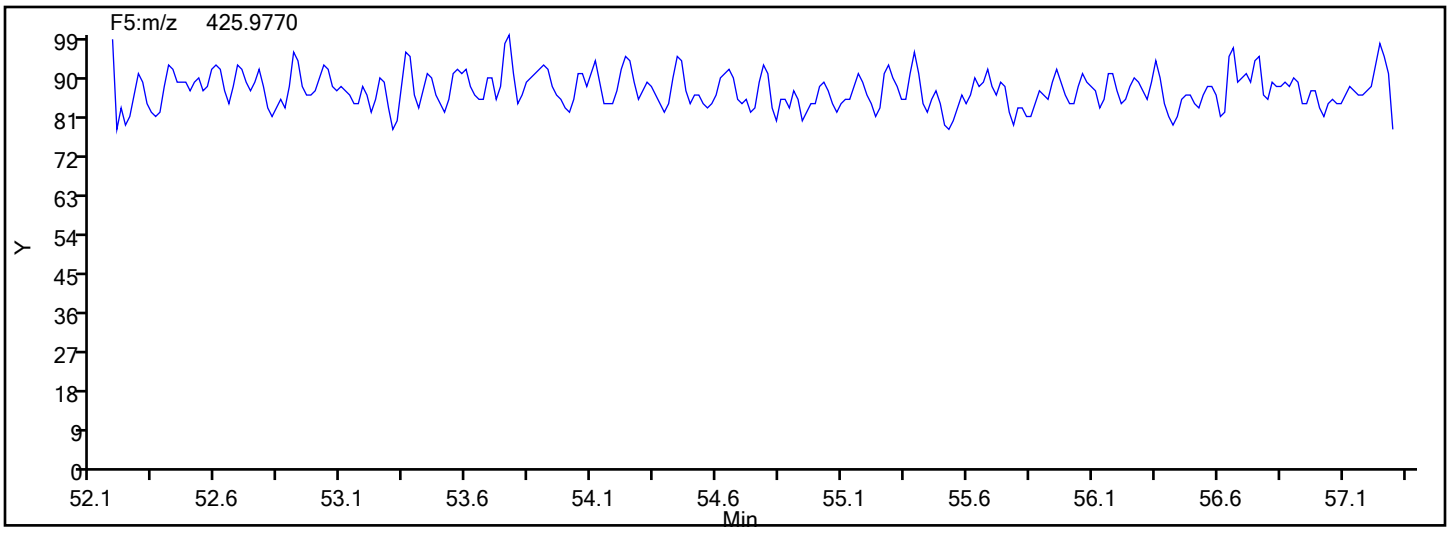
Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



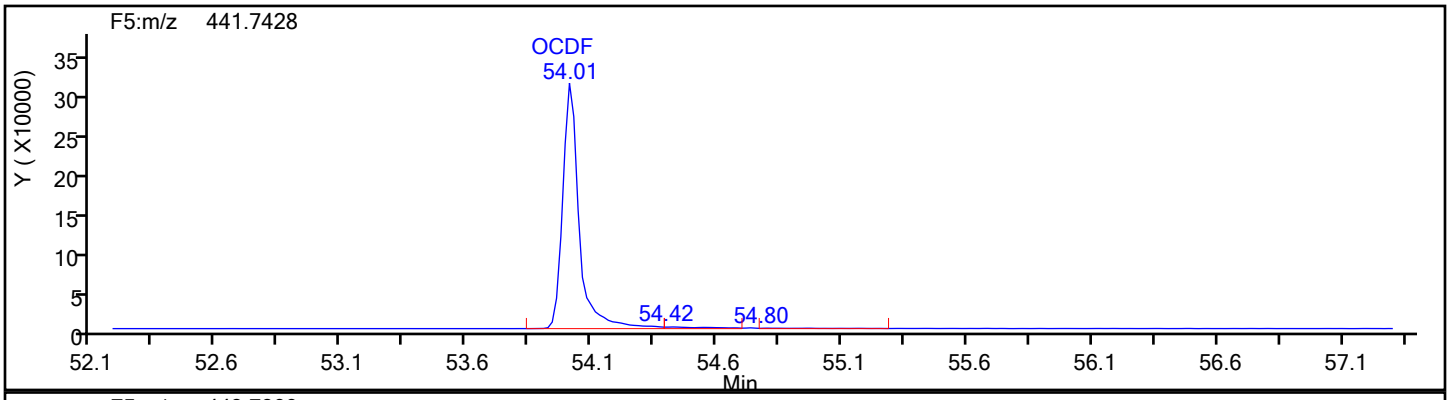
Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

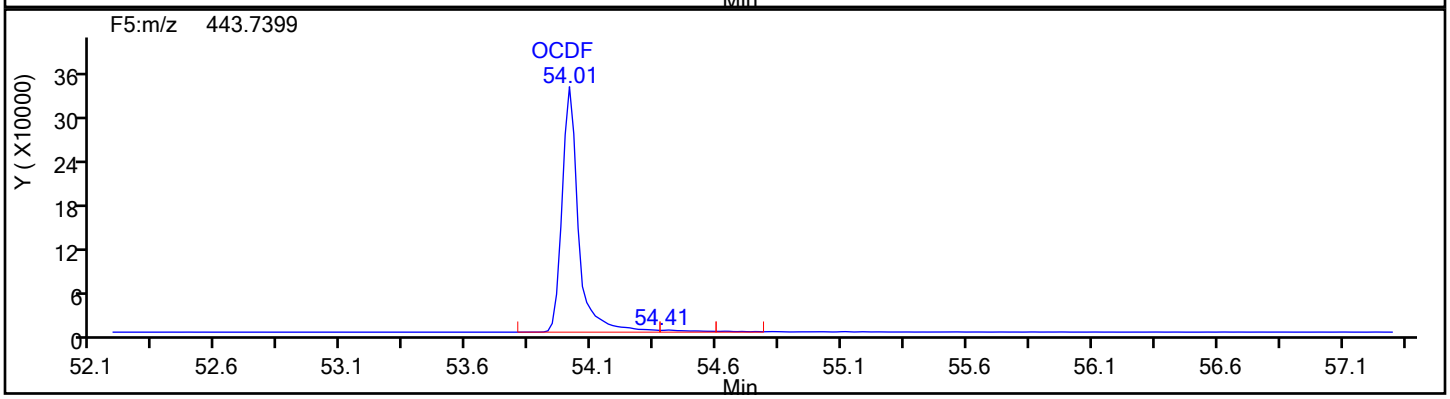
Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d

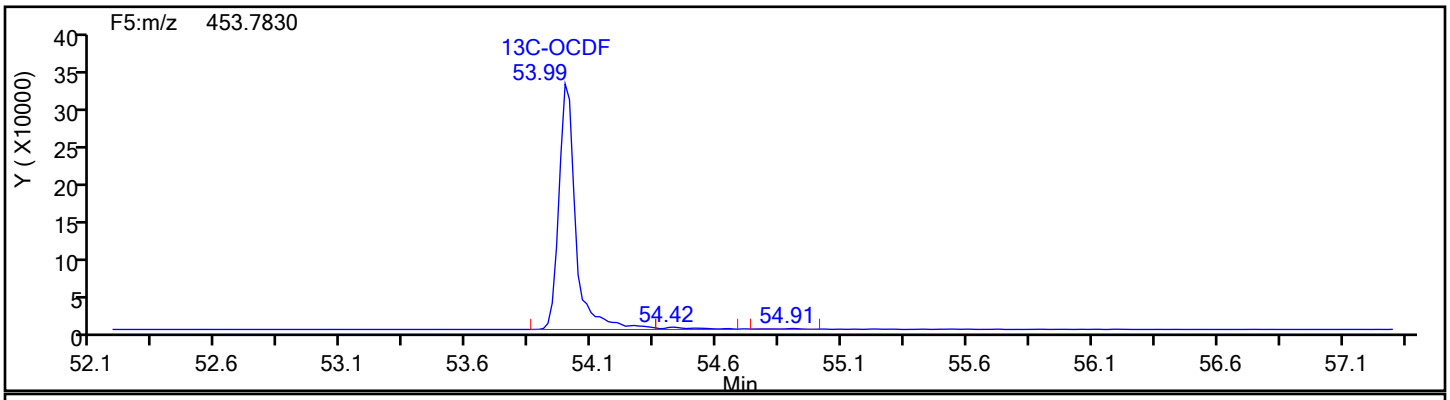
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	36126	Sample Line#:	2
Column Type:		Column Dia:	

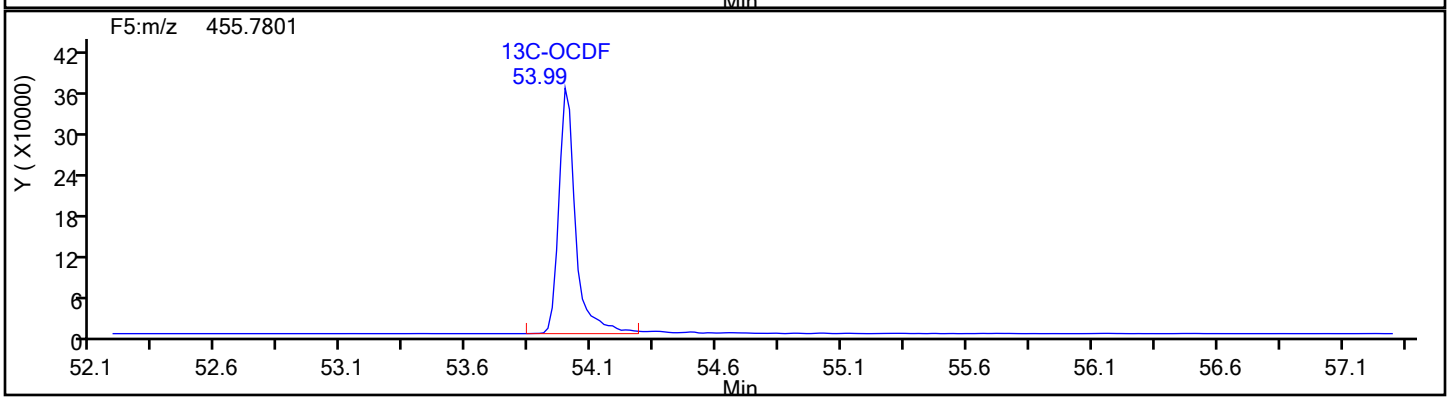
OCDF





OCDF Standards





Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
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Client ID:			
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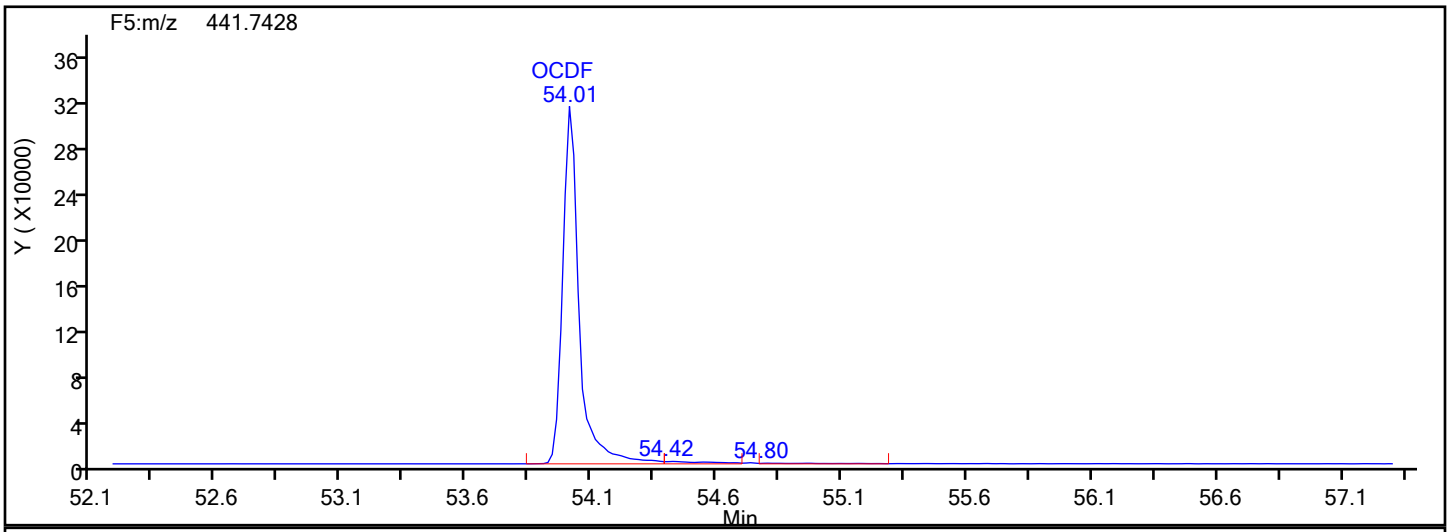
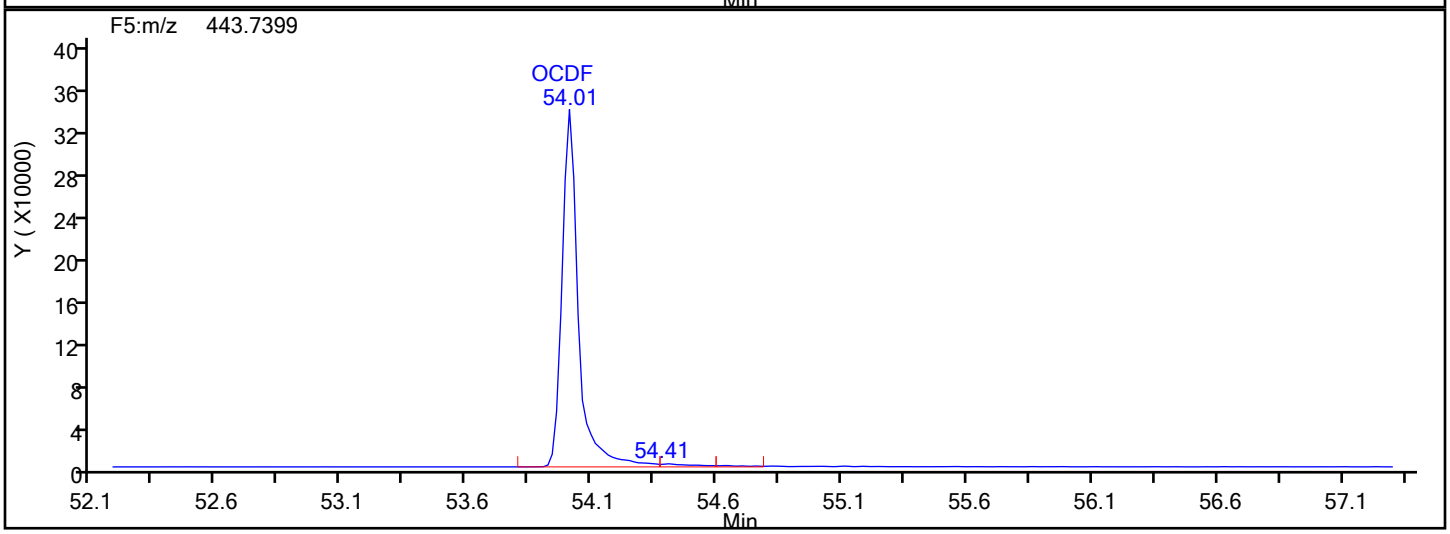
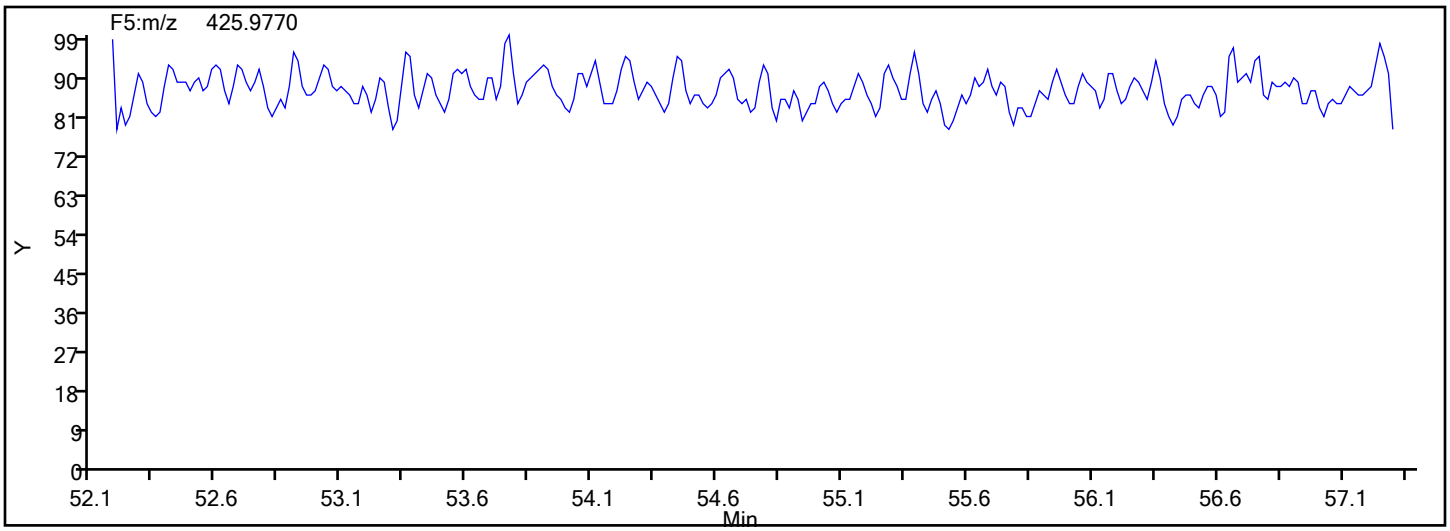
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass



Report Date: 17-Dec-2019 03:18:50 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191216-14051.b\lcs140-3599121-a.d		
Injection Date:	17-Dec-2019 02:04:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
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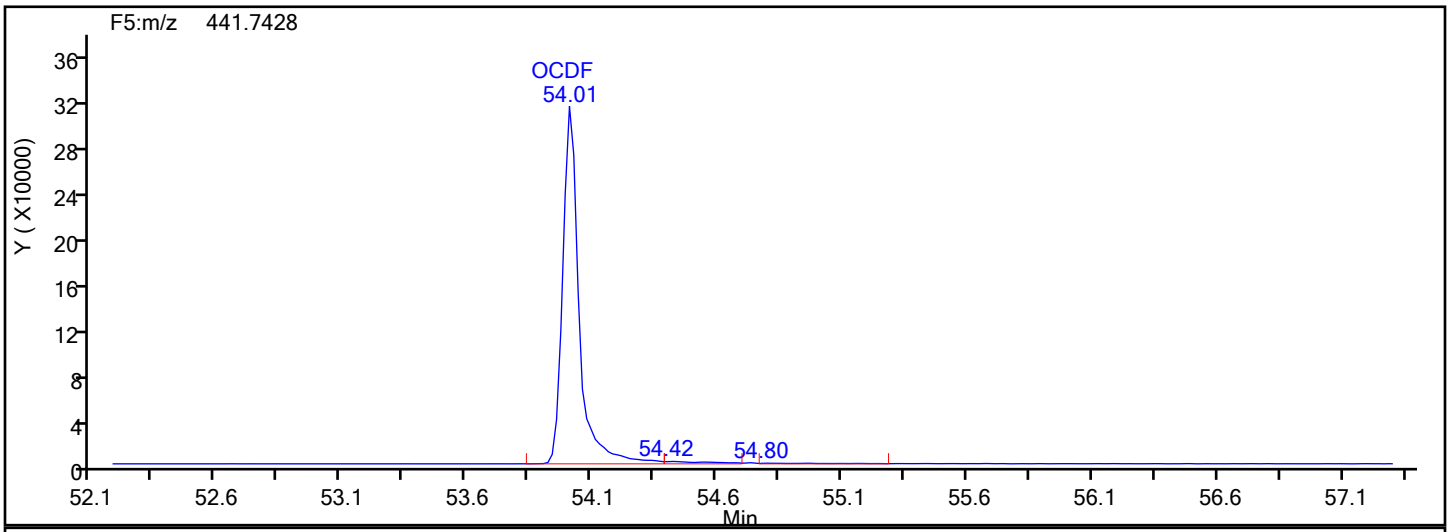
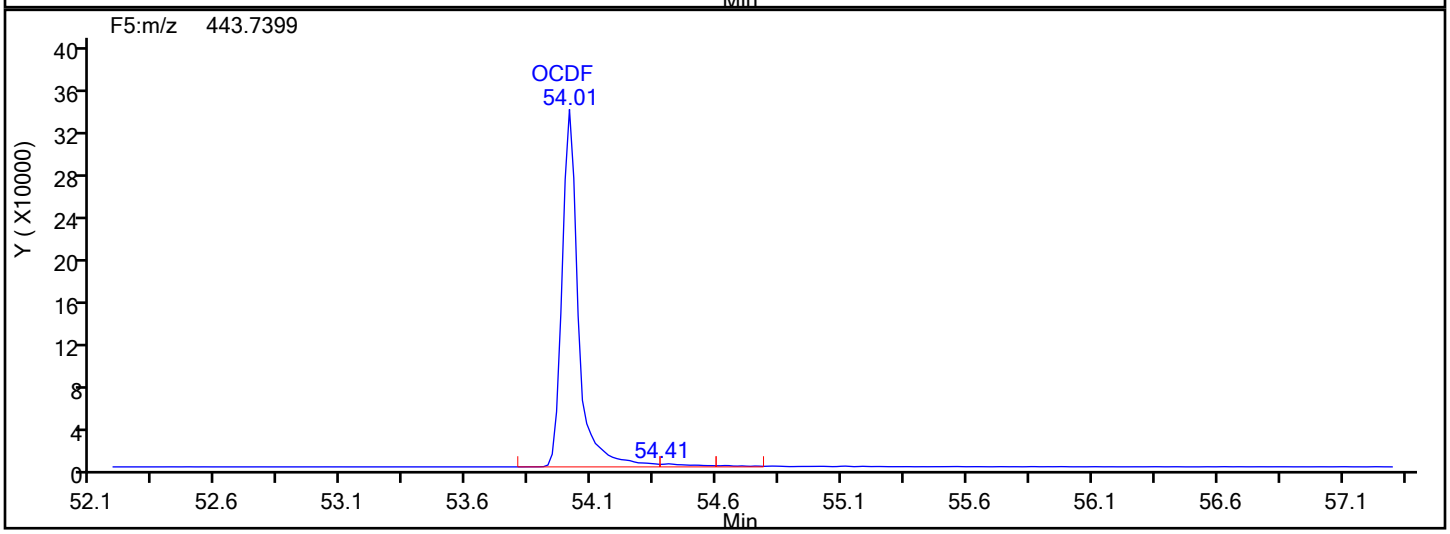
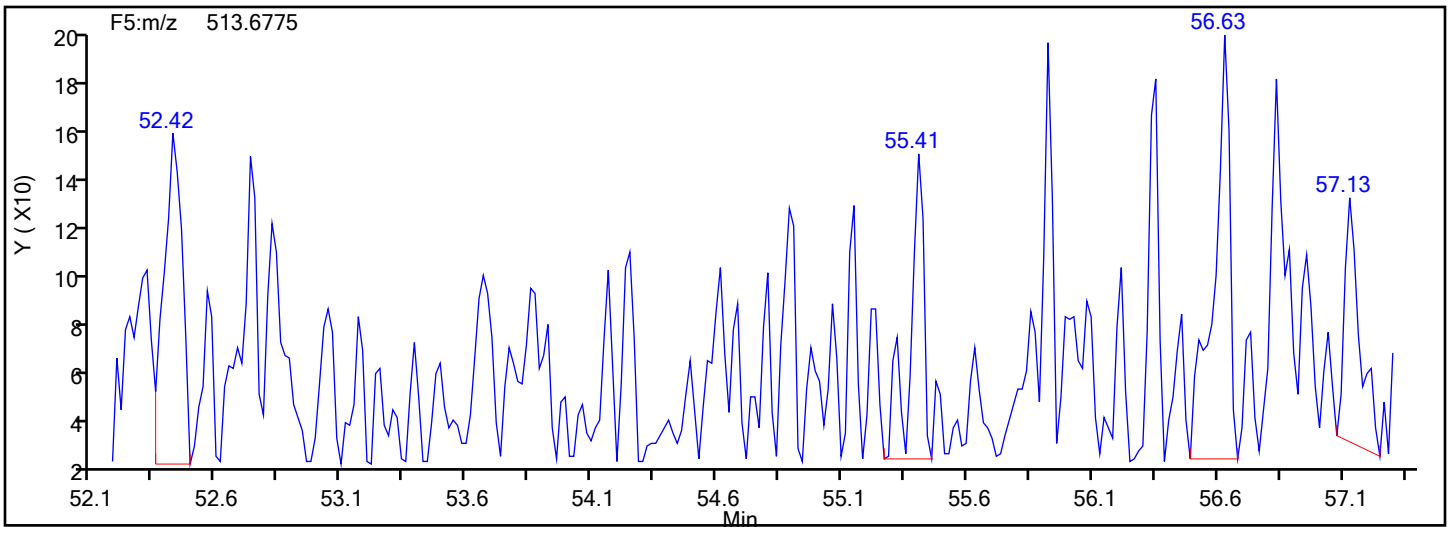
OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MS Lab Sample ID: 140-17578-12 MS

Matrix: Sediment Lab File ID: 140-17578-a-12-bmsa.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.54(g) Date Analyzed: 12/18/2019 09:05

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1180	4	17	1.5
41903-57-5	Total TCDD	1180		17	1.5
40321-76-4	1,2,3,7,8-PeCDD	182		86	2.1
36088-22-9	Total PeCDD	182		86	2.1
39227-28-6	1,2,3,4,7,8-HxCDD	177		86	3.1
57653-85-7	1,2,3,6,7,8-HxCDD	158		86	3.0
19408-74-3	1,2,3,7,8,9-HxCDD	171		86	2.9
34465-46-8	Total HxCDD	506		86	3.0
35822-46-9	1,2,3,4,6,7,8-HpCDD	253		86	1.1
37871-00-4	Total HpCDD	253		86	1.1
3268-87-9	OCDD	2010	F1	170	0.72
30402-14-3	Total TCDF	4080		17	1.4
57117-41-6	1,2,3,7,8-PeCDF	278	F1	86	0.72
57117-31-4	2,3,4,7,8-PeCDF	237	F1	86	0.58
30402-15-4	Total PeCDF	515		86	0.65
70648-26-9	1,2,3,4,7,8-HxCDF	320	F1	86	2.1
57117-44-9	1,2,3,6,7,8-HxCDF	215	F1	86	2.0
60851-34-5	2,3,4,6,7,8-HxCDF	202		86	2.5
72918-21-9	1,2,3,7,8,9-HxCDF	179		86	2.9
55684-94-1	Total HxCDF	915		86	2.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	199	F1	86	0.28
55673-89-7	1,2,3,4,7,8,9-HpCDF	198		86	0.41
38998-75-3	Total HpCDF	397		86	0.35
39001-02-0	OCDF	286		170	0.22

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MS Lab Sample ID: 140-17578-12 MS

Matrix: Sediment Lab File ID: 140-17578-a-12-bmsa.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.54(g) Date Analyzed: 12/18/2019 09:05

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	64		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	62		23-140
114423-97-1	13C-OCDD	57		17-157
89059-46-1	13C-2,3,7,8-TCDF	60		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	59		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	65		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	69		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	67		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	58		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	63		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	67		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	55		26-138
109719-78-0	13C-OCDF	63		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	82		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MS
Inject. Date: 18-Dec-2019 09:05:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-013
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:06:21 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:20:27

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:51	797254	0.80	1.1733	34.4	34.4	0.0423	0.0423	3441	
A Non-2,3,7,8-sub-TCDD	29:27						0.0423	2.776		RQU
S Total TCDD					34.4	34.4	0.0423	0.0423		
2,3,7,8-TCDF	28:51	3935123	0.80	1.0881	118.7	118.7	0.0409	0.0409	11870	
A Non-2,3,7,8-sub-TCDF	28:10						0.0409	50.0		RQU
S Total TCDF					118.7	118.7	0.0409	0.0409		
1,2,3,7,8-PeCDD	40:34	88761	1.71	1.0434	5.277	5.277	0.0597	0.0597	106	
A Non-2,3,7,8-sub-PeCDD	39:24						0.0597	0.0597		U
S Total PeCDD					5.277	5.277	0.0597	0.0597		
1,2,3,7,8-PeCDF	38:46	225558	1.59	1.1898	8.089	8.089	0.0208	0.0208	162	
2,3,4,7,8-PeCDF	40:02	198584	1.54	1.1095	6.891	6.891	0.0168	0.0168	138	
A Non-2,3,7,8-sub-PeCDF	37:59						0.0185	1.280		RQU
S Total PeCDF					15.0	15.0	0.0188	0.0188		
1,2,3,4,7,8-HxCDD	44:50	104102	1.34	1.1409	5.141	5.141	0.0912	0.0912	103	
1,2,3,6,7,8-HxCDD	44:56	98094	1.23	1.1481	4.591	4.591	0.0882	0.0882	91.83	
1,2,3,7,8,9-HxCDD	45:20	110571	1.23	1.2212	4.981	4.981	0.0840	0.0840	99.61	
A Non-2,3,7,8-sub-HxCDD	44:17						0.0877	0.6112		U
S Total HxCDD					14.7	14.7	0.0878	0.0878		
1,2,3,4,7,8-HxCDF	43:48	302786	1.26	1.3629	9.291	9.291	0.0610	0.0610	186	a
1,2,3,6,7,8-HxCDF	43:56	227932	1.34	1.2762	6.246	6.246	0.0583	0.0583	125	
2,3,4,6,7,8-HxCDF	44:39	164642	1.29	1.2654	5.860	5.860	0.0718	0.0718	117	
1,2,3,7,8,9-HxCDF	45:36	143187	1.21	1.2573	5.198	5.198	0.0845	0.0845	104	Ma
A Non-2,3,7,8-sub-HxCDF	44:08						0.0676	9.714		MU
S Total HxCDF					26.6	26.6	0.0689	0.0689		
1,2,3,4,6,7,8-HpCDD	49:37	122243	1.04	1.1204	7.367	7.367	0.0318	0.0318	147	M
A Non-2,3,7,8-sub-HpCDD	49:01						0.0318	0.0318		U
S Total HpCDD					7.367	7.367	0.0318	0.0318		
1,2,3,4,6,7,8-HpCDF	47:57	178325	1.04	1.4984	5.790	5.790	0.008148	0.008148	116	
1,2,3,4,7,8,9-HpCDF	50:17	113086	1.02	1.3807	5.741	5.741	0.0120	0.0120	115	M
A Non-2,3,7,8-sub-HpCDF	49:31						0.009774	0.6552		RQU
S Total HpCDF					11.5	11.5	0.0101	0.0101		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
OCDD	53:52	816678	0.90	1.2073	58.3	58.3	0.0209	0.0209	583	
OCDF	54:00	180775	0.92	1.1162	8.300	8.300	0.006451	0.006451	83.00	
D 13C-2,3,7,8-TCDD	30:49	98727	0.87	1.0709	3.178	3.178	0.2190	0.2190	63.56	M
D 13C-2,3,7,8-TCDF	28:48	152328	0.70	1.7545	2.993	2.993	0.2575	0.2575	59.86	
D 13C-1,2,3,7,8-PeCDD	40:33	80610	1.69	0.8743	3.178	3.178	1.040	1.040	63.57	
D 13C-1,2,3,7,8-PeCDF	38:46	117184	1.76	1.3704	2.948	2.948	2.807	2.807	58.95	M
D 13C-2,3,4,7,8-PeCDF	40:01	129867	1.73	1.3837	3.235	3.235	2.780	2.780	64.71	M
D 13C-1,2,3,4,7,8-HxCDD	44:49	88753	1.35	0.8772	3.477	3.477	0.0155	0.0155	69.53	Ma
D 13C-1,2,3,6,7,8-HxCDD	44:55	93042	1.05	0.9171	3.486	3.486	0.0149	0.0149	69.72	M
D 13C-1,2,3,4,7,8-HxCDF	43:47	119554	0.53	1.1892	3.455	3.455	1.867	1.867	69.09	Ma
D 13C-1,2,3,6,7,8-HxCDF	43:55	142958	0.52	1.4625	3.359	3.359	1.518	1.518	67.18	M
D 13C-2,3,4,6,7,8-HxCDF	44:38	111022	0.50	1.3197	2.891	2.891	1.683	1.683	57.82	M
D 13C-1,2,3,7,8,9-HxCDF	45:34	109539	0.54	1.2001	3.136	3.136	1.850	1.850	62.73	M
D 13C-1,2,3,4,6,7,8-HpCDD	49:36	74051	1.05	0.8155	3.120	3.120	0.0113	0.0113	62.41	
D 13C-1,2,3,4,6,7,8-HpCDF	47:57	102774	0.38	1.0496	3.365	3.365	1.132	1.132	67.29	M
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	71332	0.50	0.8947	2.740	2.740	1.328	1.328	54.79	M
D 13C-OCDD	53:51	115977	0.77	0.7044	5.658	5.658	3.025	3.025	56.58	M
D 13C-OCDF	53:59	195134	1.00	1.0615	6.317	6.317	3.141	3.141	63.17	
$ 37Cl4-2,3,7,8-TCDD	30:52	29236		1.2266	0.8217	0.8217	0.0864	0.0864	82.17	
* 13C-1,2,3,4-TCDD	30:18	290086	0.86	9.1E+04	10.0	10.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:19	291012	1.32	1E+05	10.0	10.0			100	
1,3,6,8-TCDF	22:28						0.0	0.0		
1,3,6,8-TCDD	24:53						0.0	0.0		
1,2,8,9-TCDF	33:53	277040	0.82						0.00	
1,2,8,9-TCDD	34:00						0.0	0.0		
1,3,4,6,8-PeCDF	34:44	2239	1.24						0.00	R
1,2,4,7,9-PeCDD	37:37	66689	0.02						0.00	R
1,2,3,8,9-PeCDD	41:13						0.0	0.0		
1,2,3,8,9-PeCDF	41:22	5126	1.29						0.00	R
1,2,3,4,6,8-HxCDF	42:45	11505	0.96						0.00	R
1,2,4,6,7,9-HxCDD	43:16	30016	1.56						0.00	R
1,2,3,4,8,9-HxCDF	45:43						0.0	0.0		
1,2,3,4,6,7,9-HpCDD	48:26	104144	1.01						0.00	

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MS
Inject. Date: 18-Dec-2019 09:05:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-013
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 12:06:21 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:20:27

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:51	30:52	2	1.001	353209	37496	20	50	1875		
321.8936	30:50	30:52	1	1.001	444045	46738	24	60	1947	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											U
319.8965	27:48	29:27	-98	0.902	2751	354	20	50	18		
321.8936	27:48	29:27	-98	0.902	3548	640	24	60	27	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:51	28:50	2	1.002	1744156	182961	38	95	4815		
305.8987	28:51	28:50	2	1.002	2190967	232968	29	72	8033	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	23:22	28:10	-287	0.812	2161	291	38	95	8		
305.8987	23:23	28:10	-286	0.812	3063	594	29	72	20	0.71(0.65-0.89)	
1,2,3,7,8-PeCDD											
355.8546	40:34	40:33	1	1.000	55980	13040	12	30	1087		
357.8516	40:34	40:33	1	1.000	32781	7260	78	195	93	1.71(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	39:24						12	30			
357.8516	39:24						78	195			
1,2,3,7,8-PeCDF											
339.8597	38:46	38:46	1	1.000	138352	26165	19	47	1377		
341.8567	38:46	38:46	1	1.000	87206	16427	24	60	684	1.59(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40:02	40:02	1	1.000	120288	26565	19	47	1398		
341.8567	40:02	40:02	1	1.000	78296	17637	24	60	735	1.54(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											U
339.8597	37:16	37:59	-42	0.961	23241	3902	19	47	205		
341.8567	37:17	37:59	-41	0.962	13122	2407	24	60	100	1.77(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDD											
389.8158	44:50	44:49	1	1.000	59687	14575	130	325	112		
391.8127	44:49	44:49	0	1.000	44415	11009	45	112	245	1.34(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:56	44:56	0	1.000	54017	13341	130	325	103		
391.8127	44:56	44:56	0	1.000	44077	10558	45	112	235	1.23(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:20	45:19	1	1.011	60997	13767	130	325	106		
391.8127	45:20	45:19	1	1.011	49574	11658	45	112	259	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											U
389.8158	44:08	44:17	-9	0.982	4826	1041	130	325	8		
391.8127	44:08	44:17	-9	0.982	4524	961	45	112	21	1.07(1.05-1.43)	
1,2,3,4,7,8-HxCDF											a
373.8208	43:48	43:48	1	1.000	168876	43993	114	285	386		a
375.8178	43:47	43:48	0	1.000	133910	34206	92	230	372	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:56	43:56	0	1.000	130322	30969	114	285	272		
375.8178	43:56	43:56	0	1.000	97610	22897	92	230	249	1.34(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:39	44:39	1	1.000	92694	22657	114	285	199		
375.8178	44:39	44:39	1	1.000	71948	17763	92	230	193	1.29(1.05-1.43)	
1,2,3,7,8,9-HxCDF											Ma
373.8208	45:36	45:35	1	1.001	78468	16992	114	285	149		M
375.8178	45:36	45:35	1	1.001	64719	14215	92	230	155	1.21(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											MU
373.8208	43:48	44:08	-20	0.998	168876	43993	114	285	386		
375.8178	43:47	44:08	-21	0.997	133910	34206	92	230	372	1.26(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											M
423.7767	49:37	49:36	1	1.000	62433	11178	24	60	466		M
425.7737	49:37	49:36	1	1.000	59810	10961	22	55	498	1.04(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDD											U
423.7767	49:01						24	60			
425.7737	49:01						22	55			
1,2,3,4,6,7,8-HpCDF											
407.7817	47:57	47:58	0	1.000	90904	18786	11	27	1708		
409.7788	47:57	47:58	0	1.000	87421	18342	7	17	2620	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											M
407.7817	50:17	50:17	1	1.000	57155	11080	11	27	1007		M
409.7788	50:17	50:17	1	1.000	55931	11252	7	17	1607	1.02(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:20	49:31	-71	1.008	1064	199	11	27	18		
409.7788	48:18	49:31	-73	1.007	2304	289	7	17	41	0.46(0.88-1.20)	
	Empc Correction				1023	191	7	17	0		
OCDD											
457.7377	53:52	53:51	1	1.000	387154	85223	20	50	4261		
459.7348	53:52	53:51	1	1.000	429524	94588	8	20	11824	0.90(0.76-1.02)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDF											
441.7428	54:00	53:58	1	1.000	86493	20322	10	25	2032		
443.7399	54:00	53:58	1	1.000	94282	21160	3	7	7053	0.92(0.76-1.02)	
13C-2,3,7,8-TCDD											M
331.9368	30:49	30:48	4	1.017	46039	5459	158	395	35		M
333.9338	30:47	30:48	2	1.016	52688	5610	161	402	35	0.87(0.65-0.89)	M
13C-2,3,7,8-TCDF											
315.9419	28:48	28:47	2	0.951	62613	8601	243	607	35		
317.9389	28:50	28:47	4	0.952	89715	10145	371	927	27	0.70(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											
367.8949	40:33	40:33	1	1.339	50589	11539	114	285	101		
369.8919	40:33	40:33	1	1.339	30021	6517	1122	2805	6	1.69(1.32-1.78)	
13C-1,2,3,7,8-PeCDF											M
351.9000	38:46	38:48	2	1.280	74775	13901	3232	8080	4		
353.8970	38:45	38:48	1	1.279	42409	7730	1997	4992	4	1.76(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											M
351.9000	40:01	40:04	1	1.321	82233	19081	3232	8080	6		
353.8970	40:01	40:04	1	1.321	47634	9588	1997	4992	5	1.73(1.32-1.78)	M
13C-1,2,3,4,7,8-HxCDD											Ma
401.8559	44:49	44:49	1	0.989	51044	10983	37	92	297		M
403.8529	44:48	44:49	0	0.989	37709	10019				1.35(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											M
401.8559	44:55	44:56	0	0.991	47622	10504	37	92	284		M
403.8529	44:55	44:56	0	0.991	45420	11076				1.05(1.05-1.43)	M
13C-1,2,3,4,7,8-HxCDF											Ma
383.8639	43:47	43:46	1	0.966	41667	11154	1993	4982	6		M
385.8610	43:47	43:46	1	0.966	77887	19811	4003	10007	5	0.53(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											M
383.8639	43:55	43:55	0	0.969	49076	12088	1993	4982	6		
385.8610	43:55	43:55	0	0.969	93882	22508	4003	10007	6	0.52(0.43-0.59)	M
13C-2,3,4,6,7,8-HxCDF											M
383.8639	44:38	44:38	1	0.985	37243	9656	1993	4982	5		M
385.8610	44:38	44:38	1	0.985	73779	18702	4003	10007	5	0.50(0.43-0.59)	M
13C-1,2,3,7,8,9-HxCDF											M
383.8639	45:34	45:34	0	1.006	38493	8924	1993	4982	4		M
385.8610	45:34	45:34	0	1.006	71046	15304	4003	10007	4	0.54(0.43-0.59)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:36	49:37	1	1.095	37973	8544	12	30	712		
437.8140	49:35	49:37	0	1.094	36078	7595	13	32	584	1.05(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											M
417.8250	47:57	47:56	2	1.058	28071	4817	976	2440	5		M
419.8220	47:56	47:56	1	1.058	74703	13613	2232	5580	6	0.38(0.37-0.51)	M
13C-1,2,3,4,7,8,9-HpCDF											M
417.8250	50:16	50:16	1	1.109	23765	4652	976	2440	5		M
419.8220	50:15	50:16	0	1.109	47567	8900	2232	5580	4	0.50(0.37-0.51)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-OCDD											M
469.7780	53:51	53:51	0	1.189	50362	11091	2273	5682	5		M
471.7750	53:51	53:51	0	1.189	65615	16659	3481	8702	5	0.77(0.76-1.02)	M
13C-OCDF											
453.7830	53:59	54:01	0	1.192	97695	22841	4455	11137	5		
455.7801	53:59	54:01	0	1.192	97439	21603	4547	11367	5	1.00(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:52	30:50	5	1.019	29236	3292	144	360	23		
13C-1,2,3,4-TCDD											
331.9368	30:18	30:15	3		134542	14662	158	395	93		
333.9338	30:18	30:15	3		155544	19319	161	402	120	0.86(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:17	1		165684	39676	37	92	1072		
403.8529	45:19	45:17	1		125328	27826				1.32(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	22:29						38	95			
305.8987	22:29						29	72			
1,3,6,8-TCDD											
319.8965	24:56						20	50			
321.8936	24:56						24	60			
1,2,8,9-TCDF											
303.9016	33:53	33:53	1	1.177	124979	12799	38	95	337		
305.8987	33:52	33:53	0	1.176	152061	15423	29	72	532	0.82(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	34:03						20	50			
321.8936	34:03						24	60			
1,3,4,6,8-PeCDF											R
339.8597	34:44	34:38	7	0.896	1241	200	19	47	11		
341.8567	34:40	34:38	3	0.894	998	154	24	60	6	1.24(1.32-1.78)	
1,2,4,7,9-PeCDD											R
355.8546	37:37	37:36	1	0.928	1496	269	12	30	22		
357.8516	37:46	37:36	11	0.932	65193	13418	78	195	172	0.02(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:13						12	30			
357.8516	41:13						78	195			
1,2,3,8,9-PeCDF											R
339.8597	41:22	41:22	1	1.067	2892	556	19	47	29		
341.8567	41:23	41:22	2	1.067	2234	420	24	60	18	1.29(1.32-1.78)	
1,2,3,4,6,8-HxCDF											R
373.8208	42:45	42:34	11	0.976	5650	1489	114	285	13		
375.8178	42:46	42:34	12	0.976	5855	1434	92	230	16	0.96(1.05-1.43)	
1,2,4,6,7,9-HxCDD											R
389.8158	43:16	43:15	1	0.965	18311	5243	130	325	40		
391.8127	43:16	43:15	1	0.965	11705	3293	45	112	73	1.56(1.05-1.43)	

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,8,9-HxCDF											
373.8208	45:43						114	285			
375.8178	45:43						92	230			
1,2,3,4,6,7,9-HpCDD											
423.7767	48:26	48:25	1	0.977	52256	10368	24	60	432		
425.7737	48:26	48:25	1	0.977	51888	10608	22	55	482	1.01(0.88-1.20)	

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	98727	11069

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		5.000	98727	11069

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
27:48	2751	354	3548	640	0.2719	0.78	
28:45	606	111	1441	230	0.0884	0.42	RQ
28:45	606	111	787	144			Empc Correction
30:37	4197	734	5537	871	0.4202	0.76	
31:57	28400	3054	35918	3571	2.78	0.79	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	152328	18746

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		5.000	152328	18746

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:22	2161	291	3063	594	0.1576	0.71	
24:22	14589	1943	17994	1917	0.9829	0.81	
24:38	1649	304	2869	405	0.1363	0.57	RQ
24:38	1649	304	2141	394			Empc Correction
25:05	78474	9947	96781	12037	5.29	0.81	
25:49	93959	8878	112592	10367	6.23	0.83	
26:15	15289	2047	19837	2965	1.06	0.77	
26:27	47178	5983	58451	7199	3.19	0.81	
26:59	69334	8738	91525	10662	4.85	0.76	
27:14	8729	1266	9444	1369	0.5482	0.92	RQ
27:14	7271	1054	9444	1369			Empc Correction
27:45	727292	84893	930226	111782	50.0	0.78	
28:22	37219	4360	49960	5809	2.63	0.74	
29:18	3072	501	2773	513	0.1763	1.11	RQ
29:18	2135	395	2773	513			Empc Correction
30:02	111292	12205	142092	15133	7.64	0.78	
30:42	23709	2365	31307	2839	1.66	0.76	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	80610	18056

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		5.000	80610	18056

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	117184	21631
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	129867	28669

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		5.000	123525	25150

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:16	23241	3902	13122	2407	1.28	1.77	
38:18	2833	417	1989	299	0.1698	1.42	
39:05	2173	348	1356	228	0.1243	1.60	
39:17	16770	3629	10274	1958	0.9522	1.63	
40:16	11175	1934	6084	1043	0.6077	1.84	RQ
40:16	9430	1616	6084	1043			Empc Correction

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	88753	21002
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	93042	21580
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		5.000	90897	21291

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
44:08	4826	1041	4524	961	0.6112	1.07	

Compound is Marked ND

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	119554	30965
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	142958	34596
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	111022	28358
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	109539	24228

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		5.000	120768	29536

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
43:48	168876	43993	133910	34206	9.71	1.26	
45:36	78468	16992	0	0	2.52	0.00	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	74051	16139

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		5.000	74051	16139

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 09:05:00 Dil. Factor: 10.0000
Sample Type: MS, Matrix Spike
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	102774	18430
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	71332	13552

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		5.000	87053	15991

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:20	1064	199	2304	289	0.1344	0.46	RQ
48:20	1064	199	1023	191			Empc Correction
48:36	8396	1589	8026	1488	0.6552	1.05	

Compound is Marked ND

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

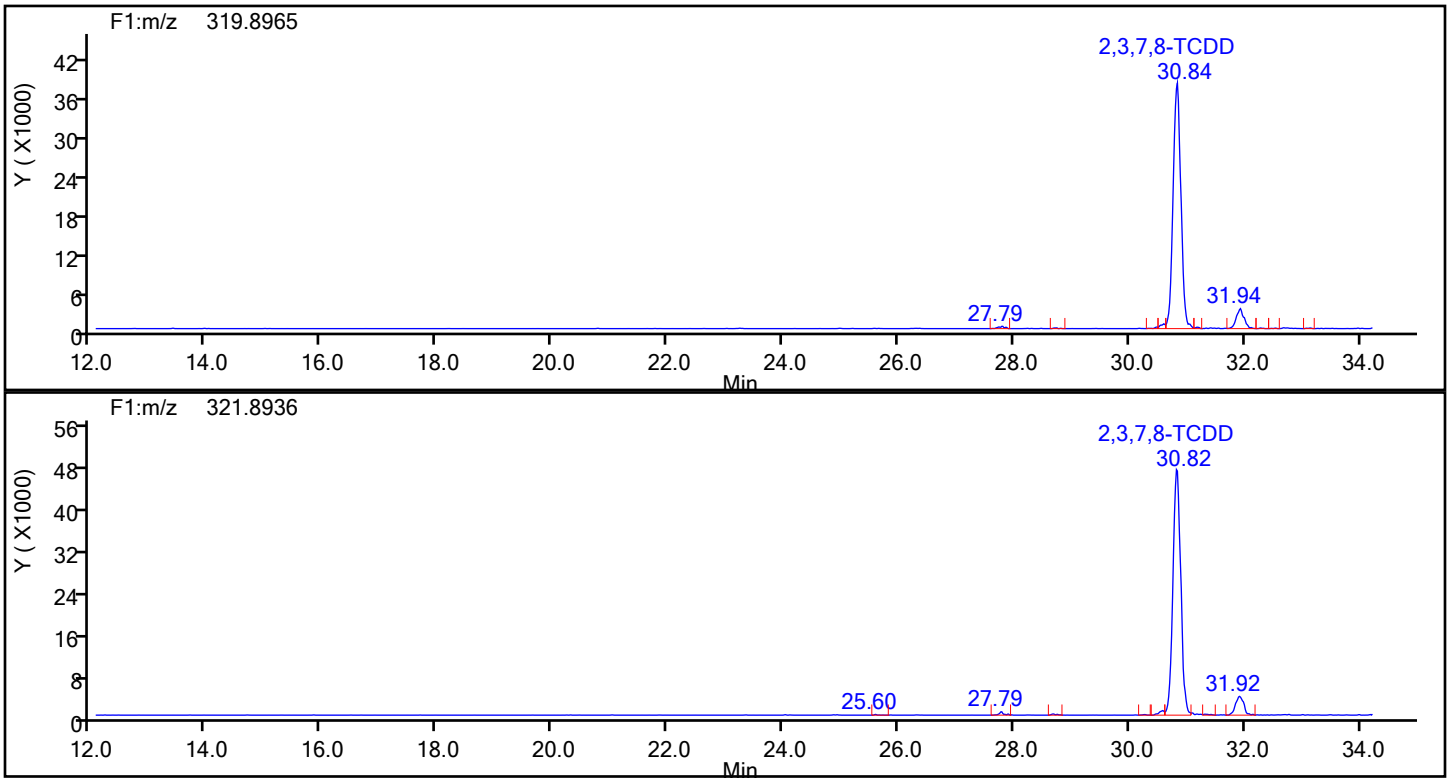
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

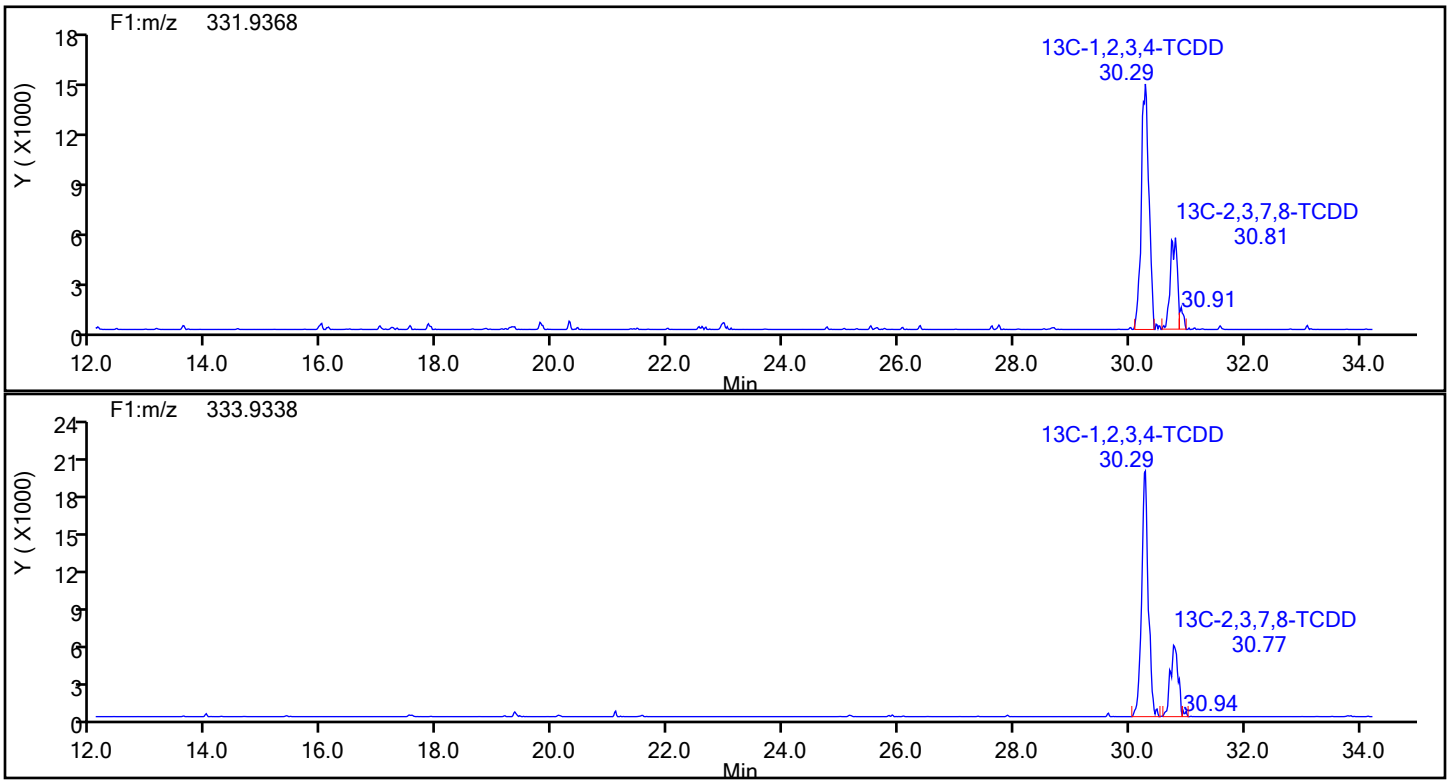
Worklist#: 36166 Sample Line#: 13

Column Type: Column Dia:

TCDD



TCDD Standards

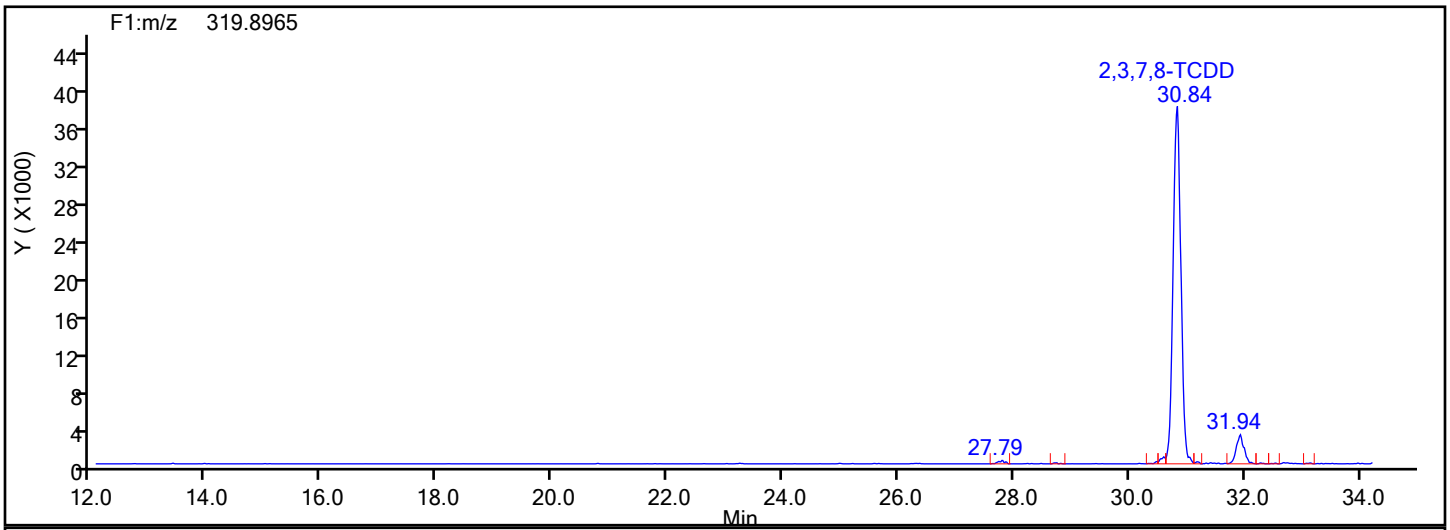


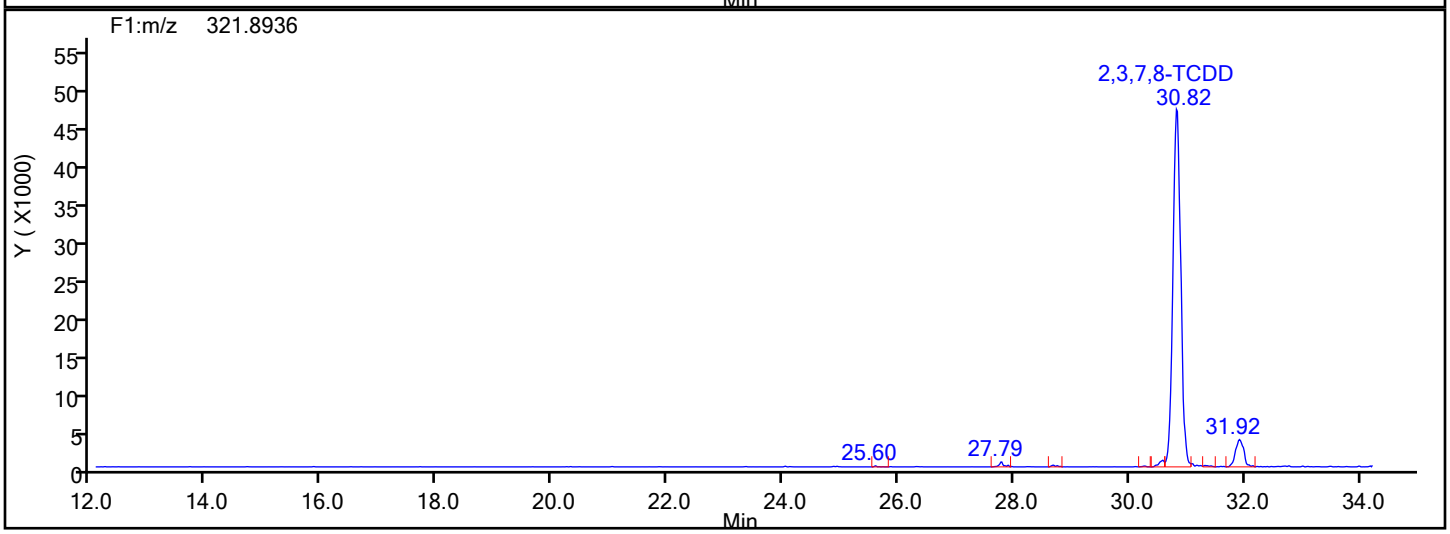
Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

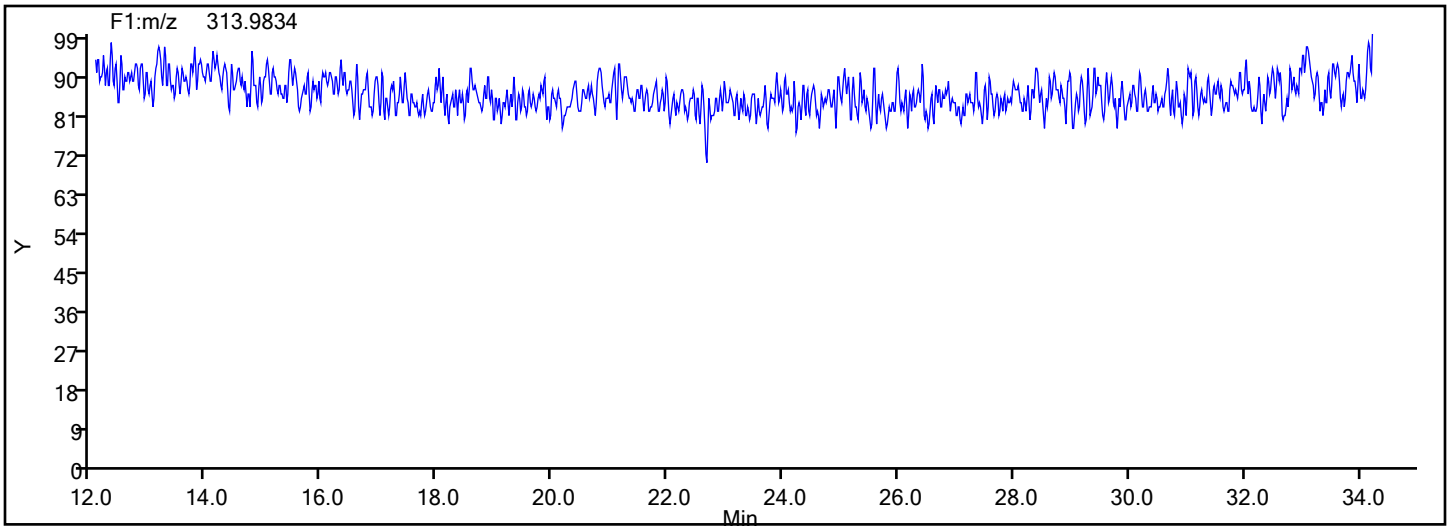
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

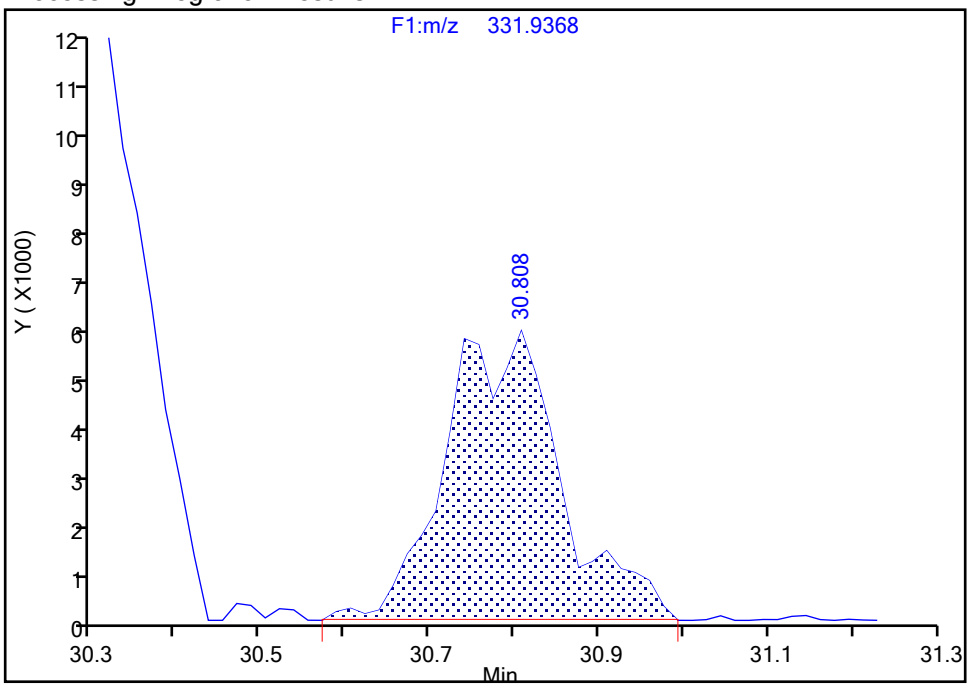
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

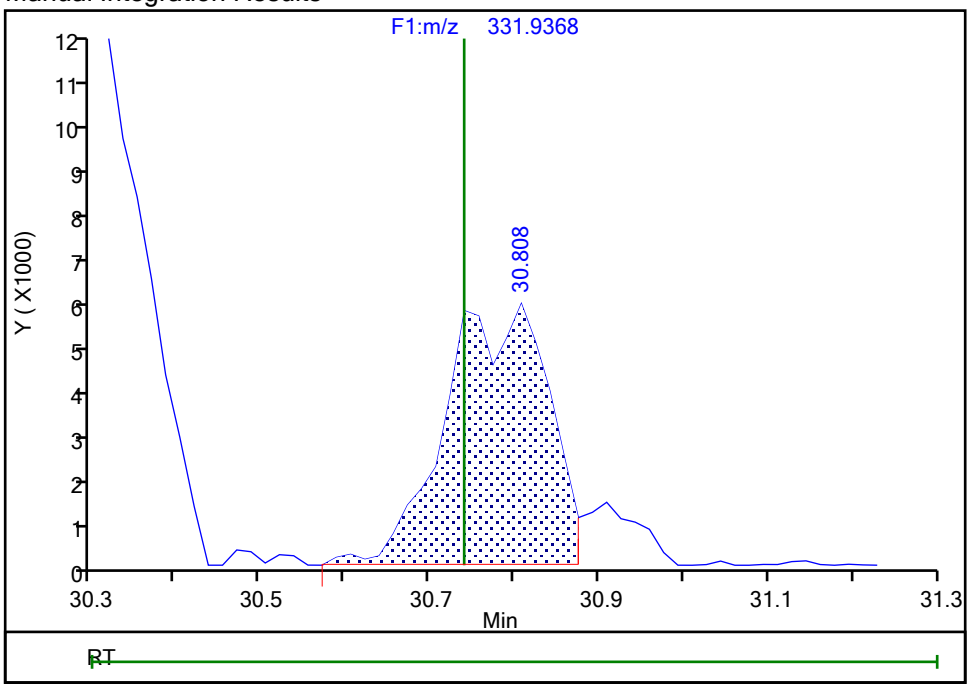
Processing Integration Results

RT: 30.81
Area: 51790
Amount: 3.414548
Amount Units: pg/ul



Manual Integration Results

RT: 30.81
Area: 46039
Amount: 3.177956
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:11:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

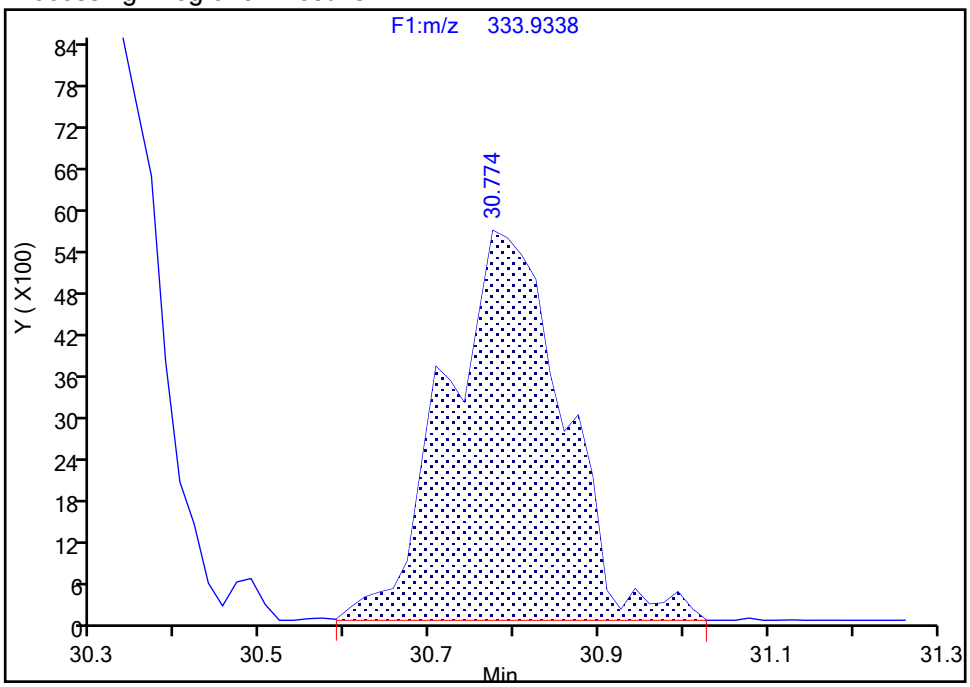
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 2

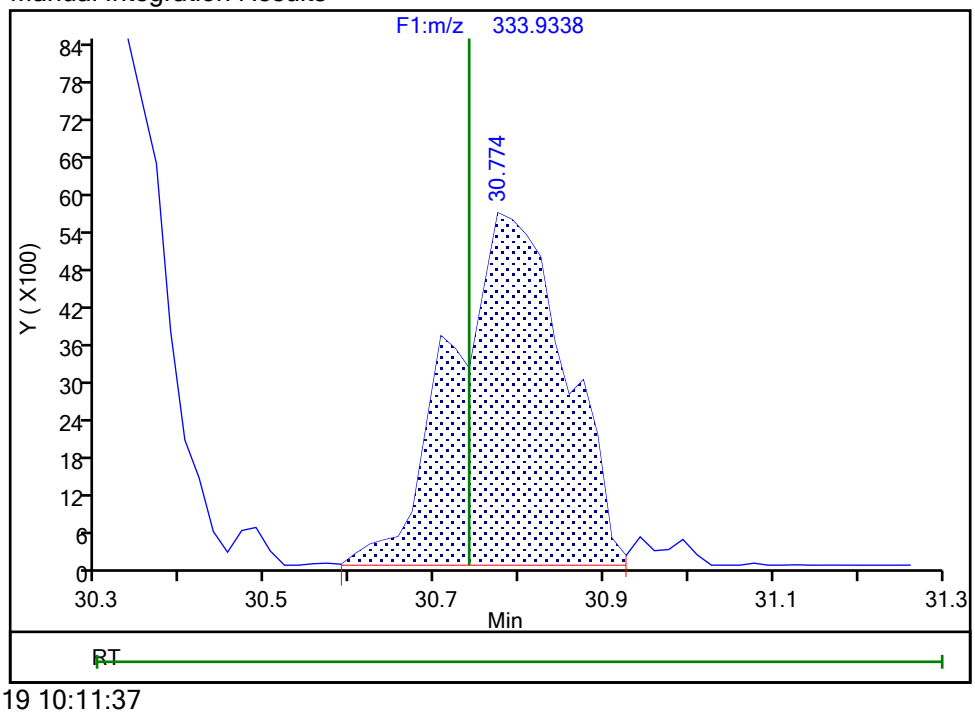
Processing Integration Results

RT: 30.77
Area: 54287
Amount: 3.414548
Amount Units: pg/ul



Manual Integration Results

RT: 30.77
Area: 52688
Amount: 3.177956
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:11:37

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

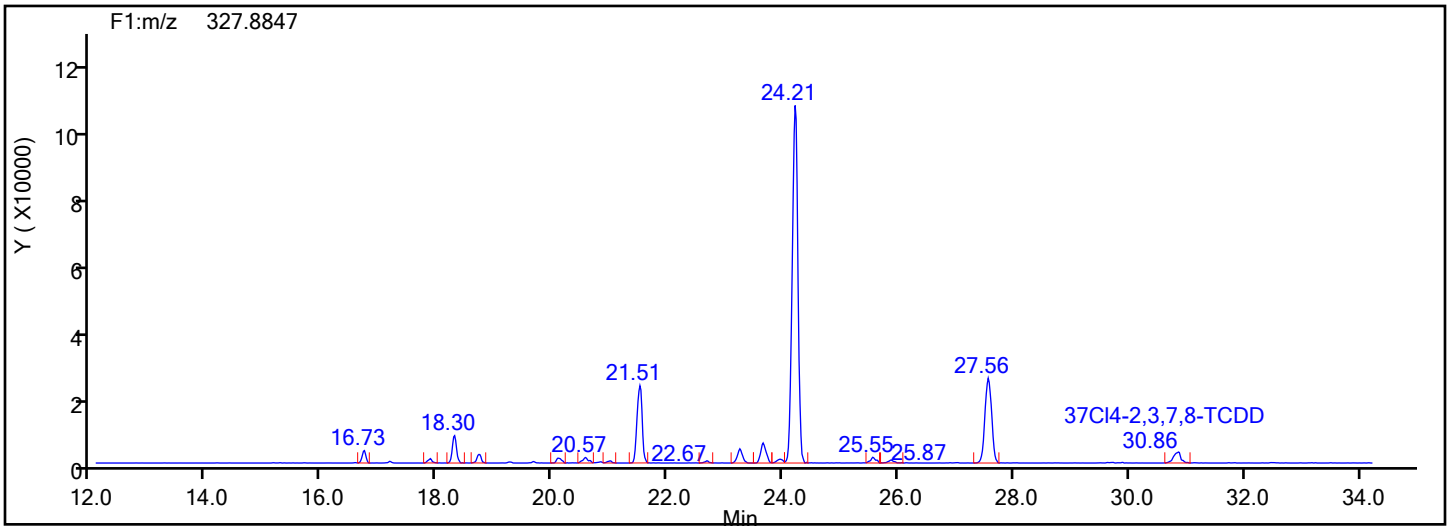
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

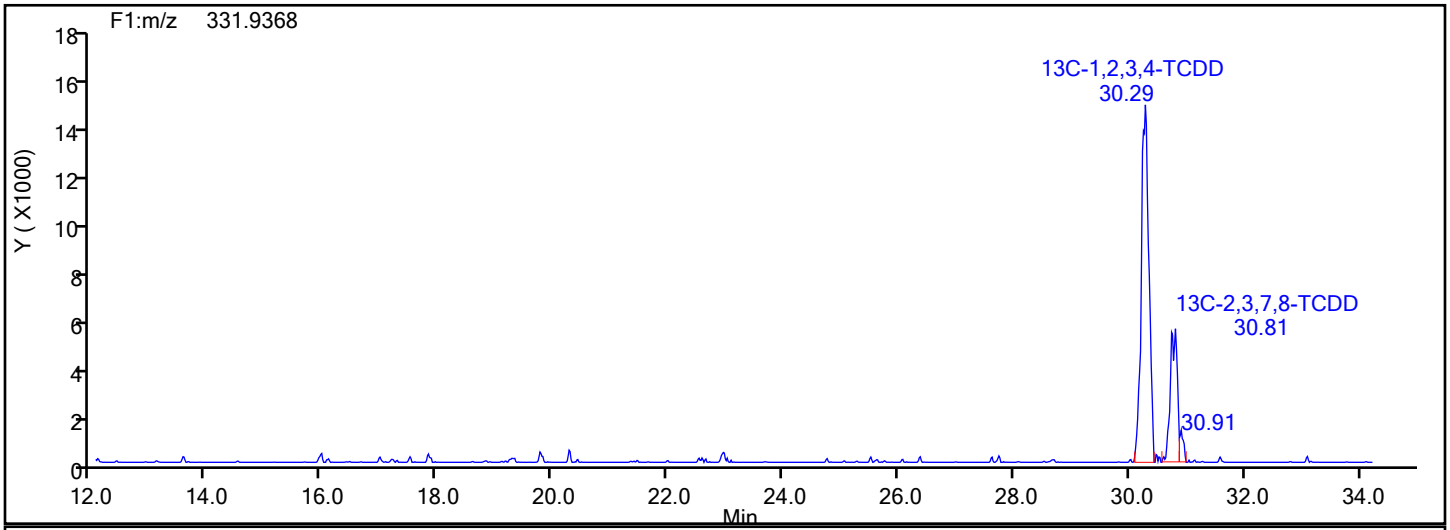
Worklist#: 36166 Sample Line#: 13

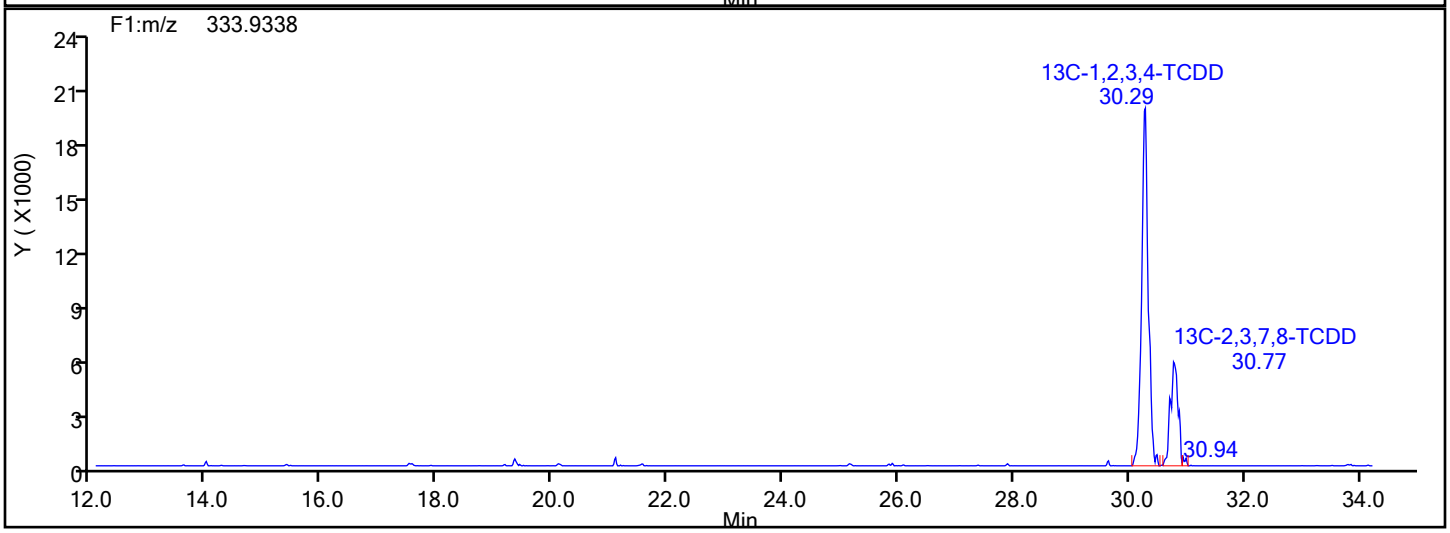
Column Type: Column Dia:

37Cl4-TCDD



37Cl4-TCDD Standards



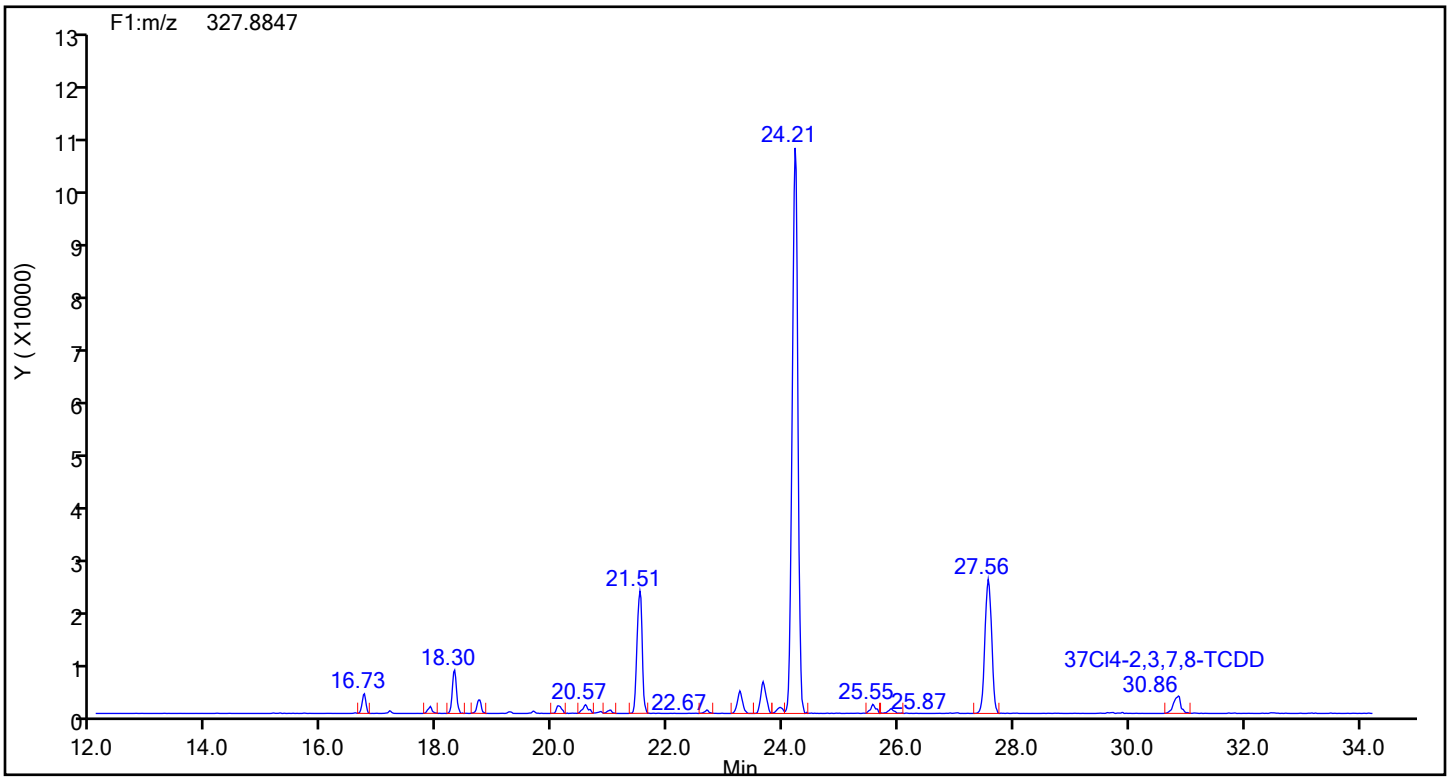


Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

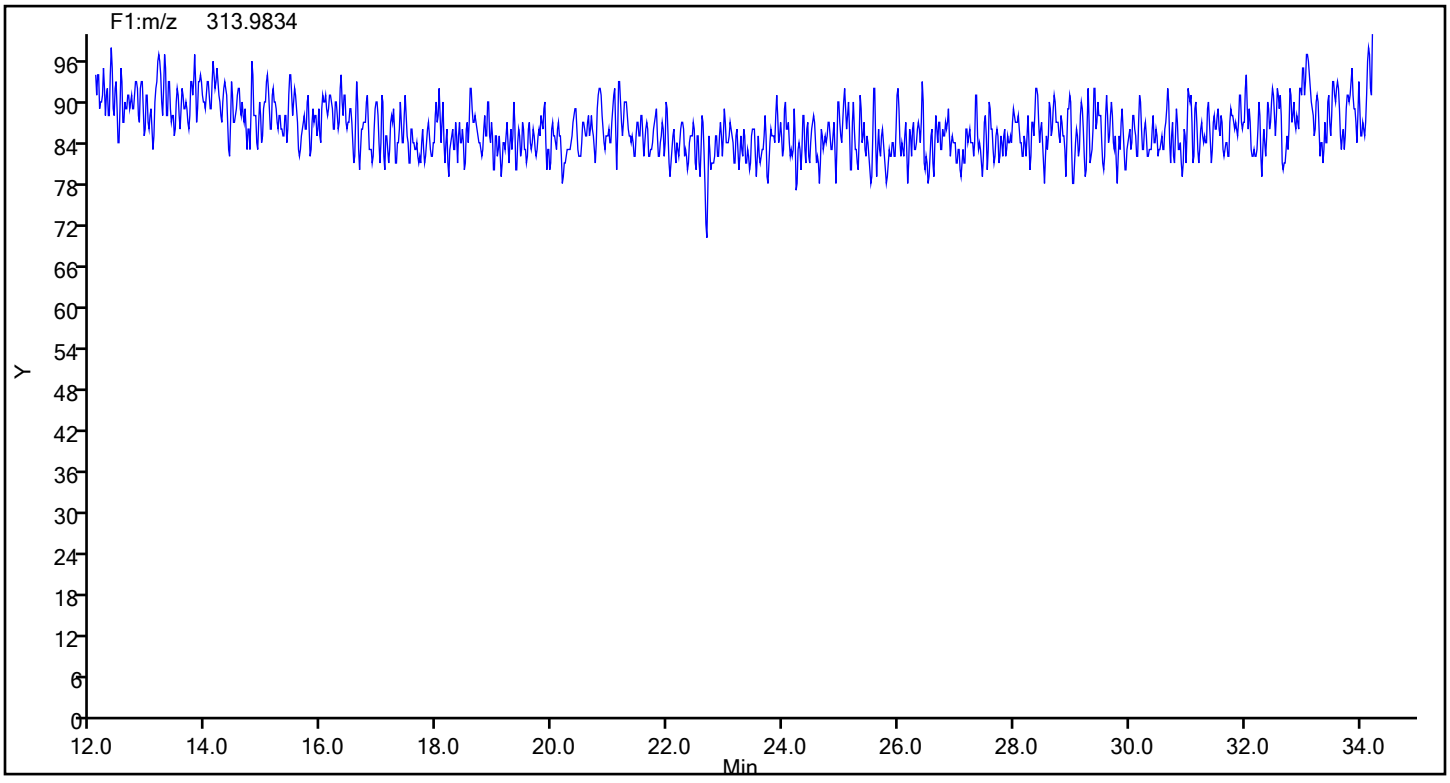
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

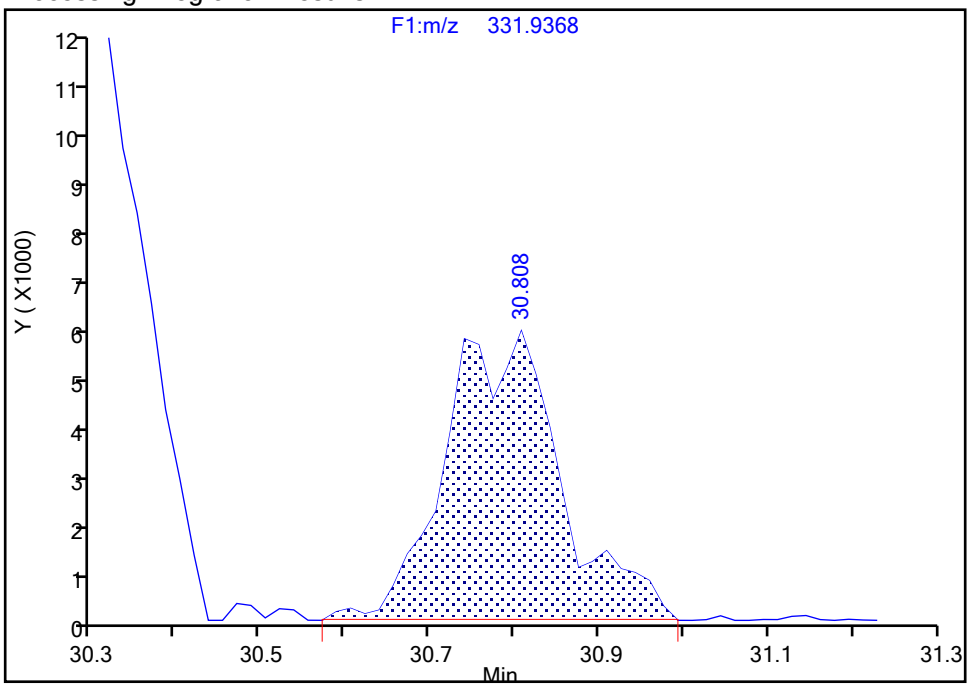
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 1

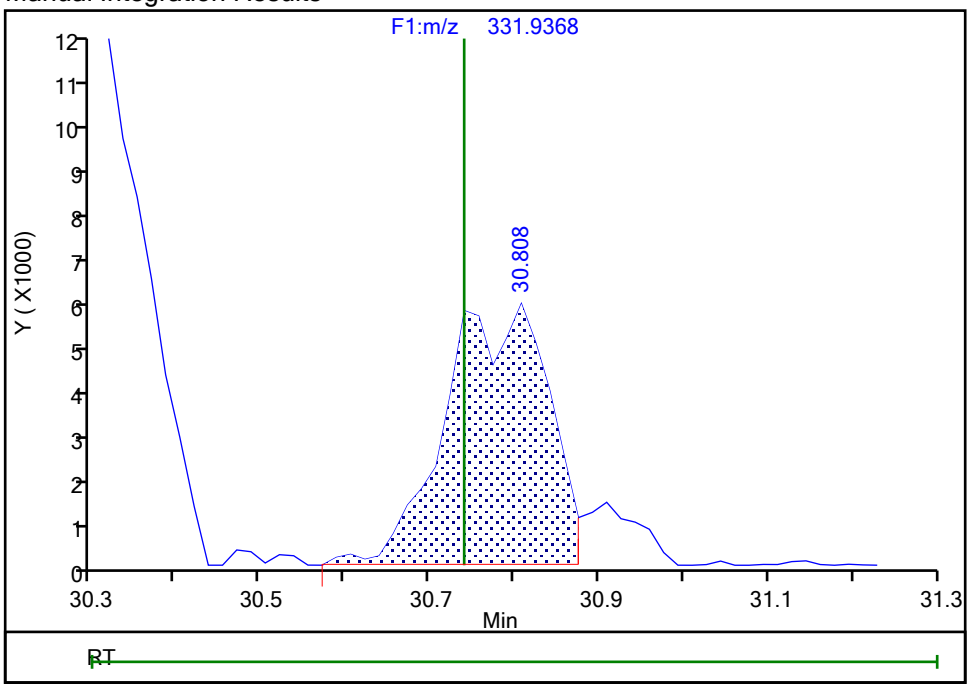
Processing Integration Results

RT: 30.81
Area: 51790
Amount: 3.414548
Amount Units: pg/ul



Manual Integration Results

RT: 30.81
Area: 46039
Amount: 3.177956
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:11:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

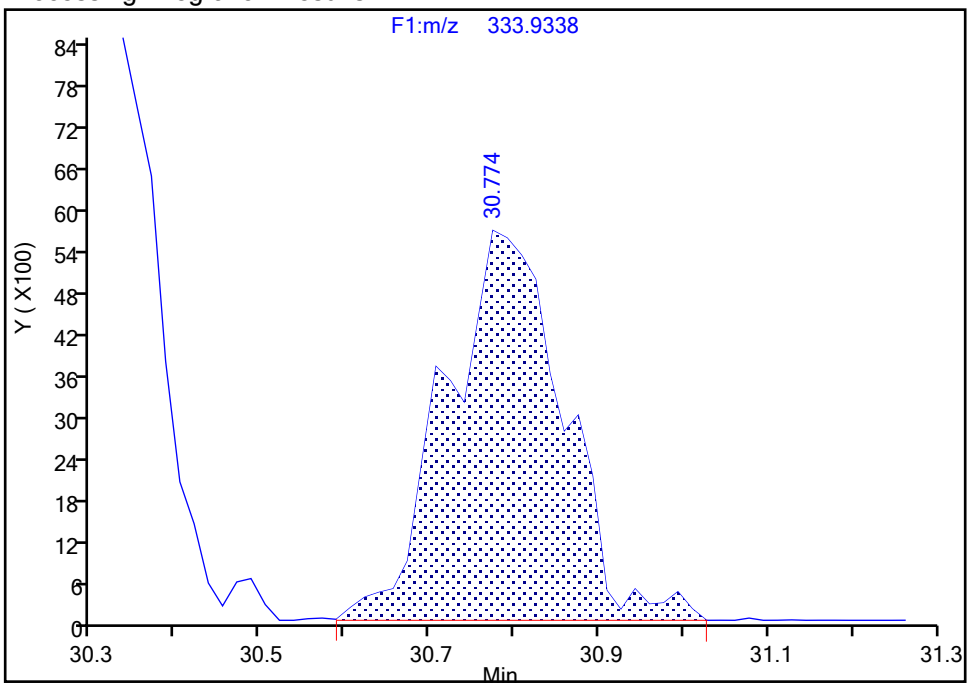
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

13C-2,3,7,8-TCDD, CAS: 76523-40-5

Signal: 2

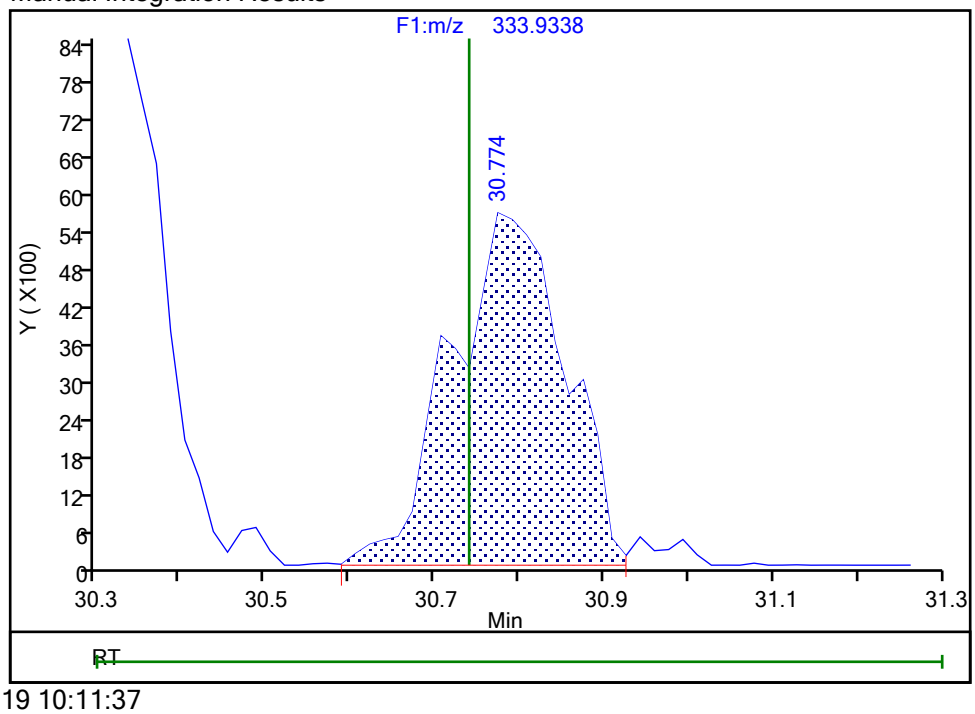
Processing Integration Results

RT: 30.77
Area: 54287
Amount: 3.414548
Amount Units: pg/ul



Manual Integration Results

RT: 30.77
Area: 52688
Amount: 3.177956
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:11:37

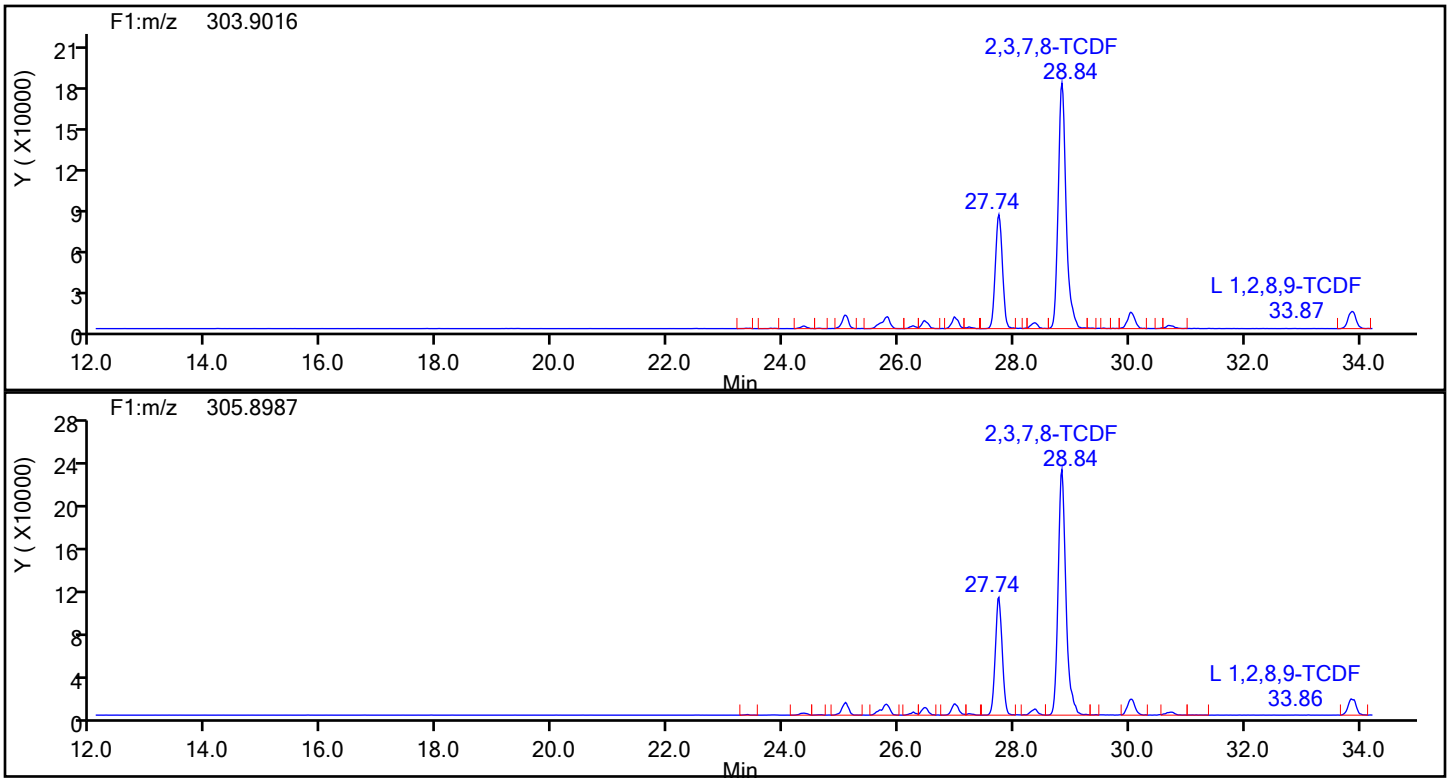
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

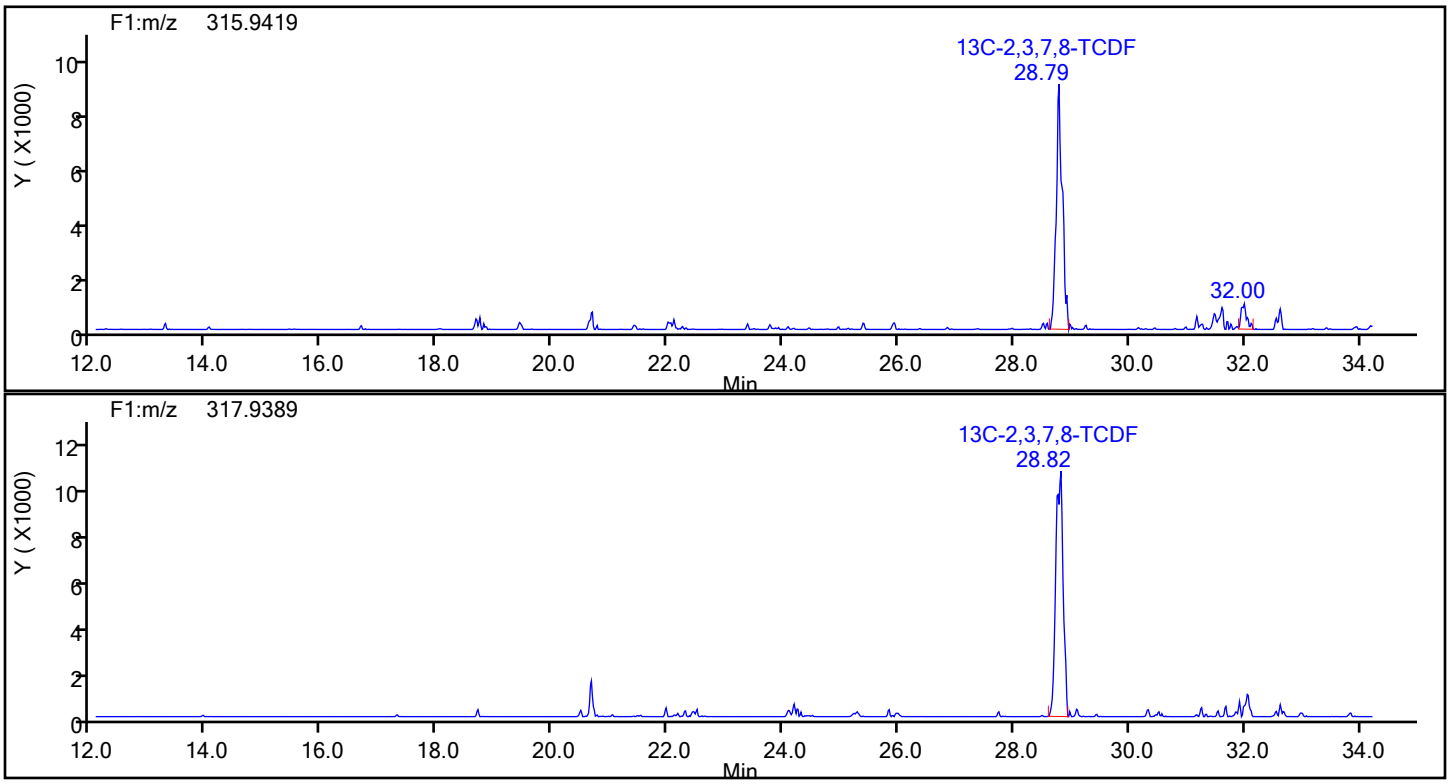
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

TCDF



TCDF Standards

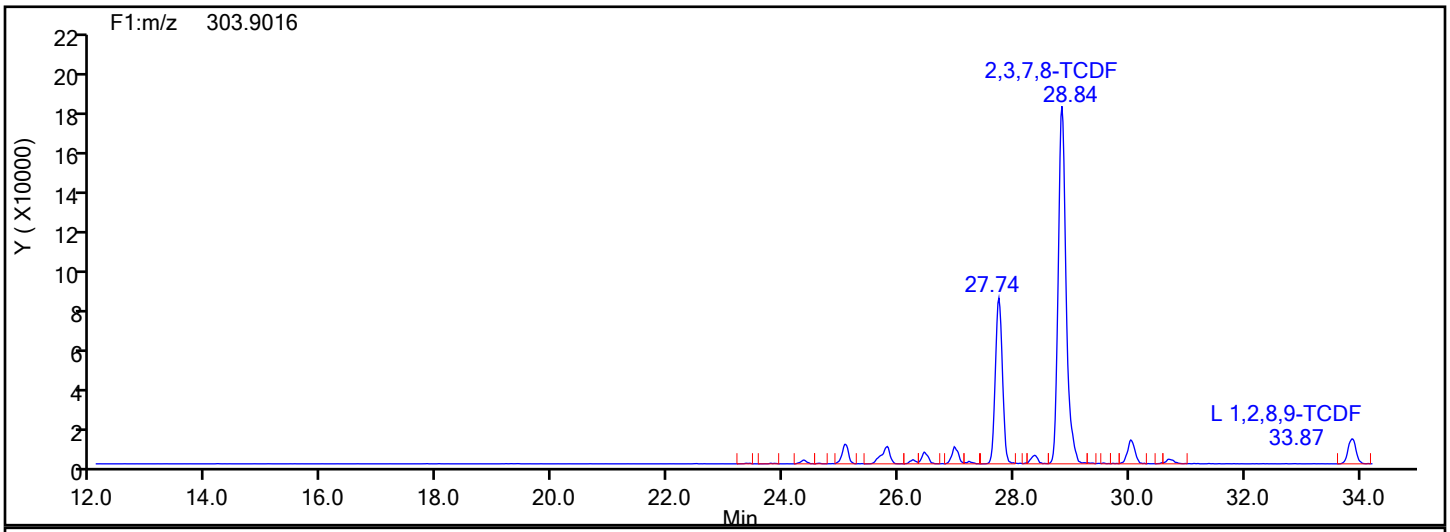


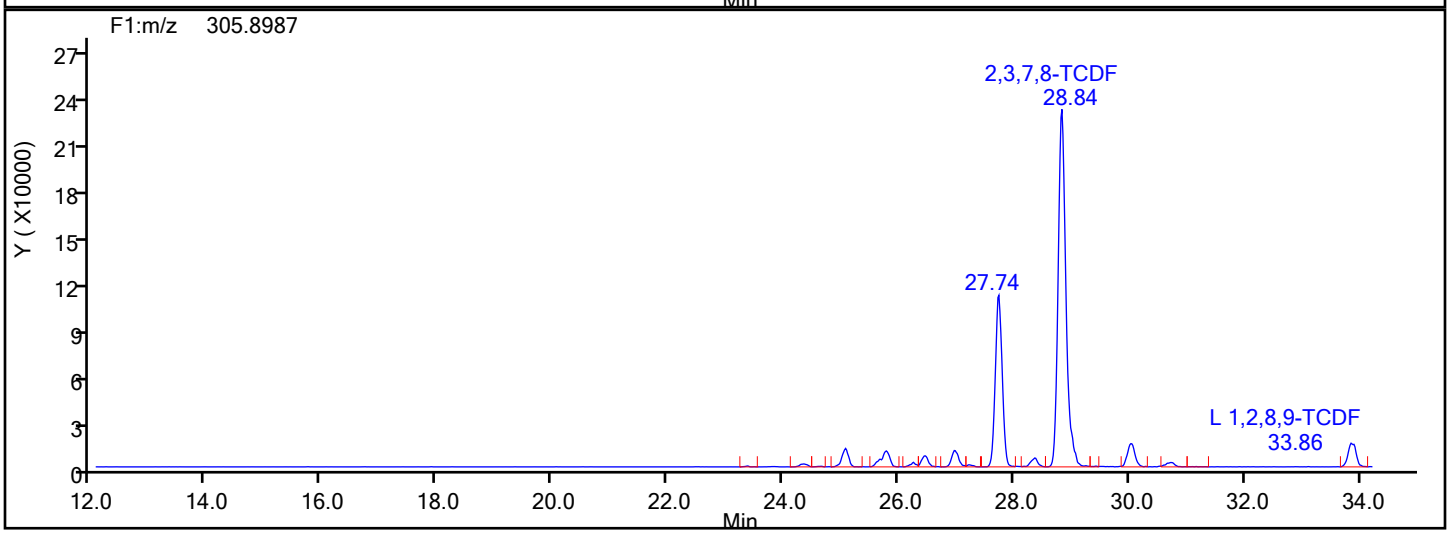
Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

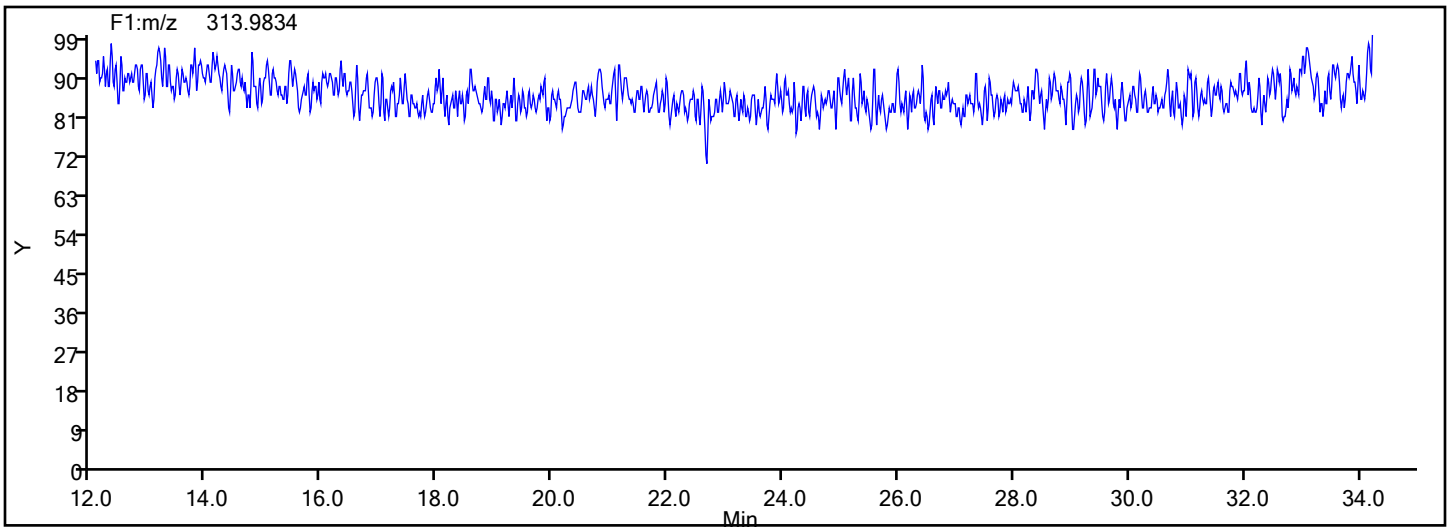
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

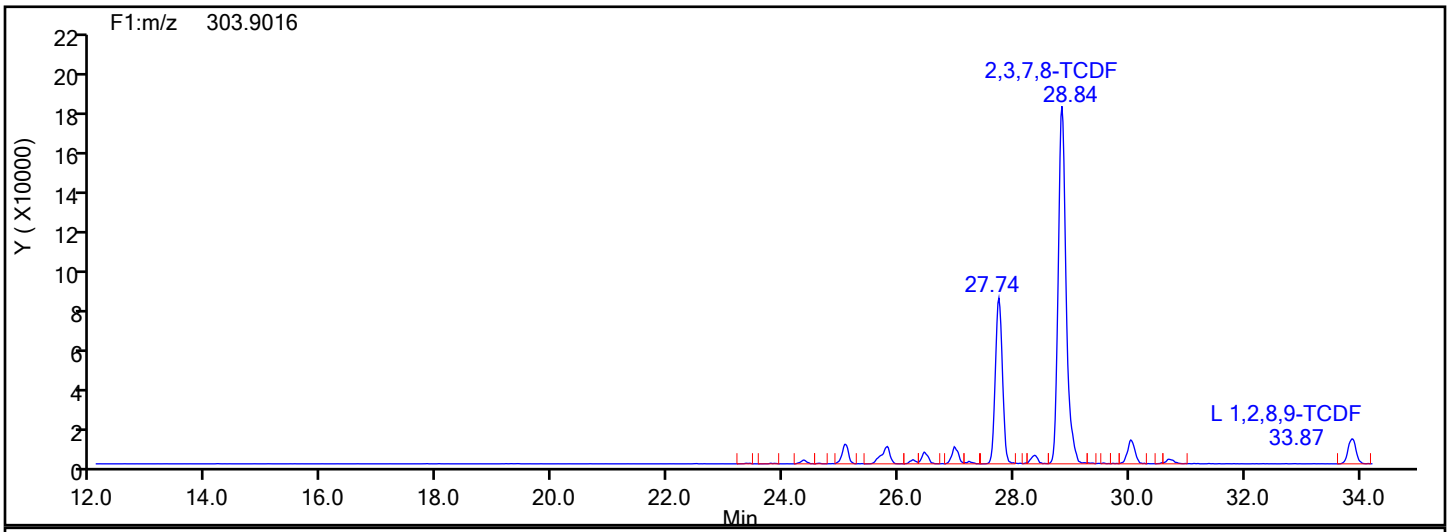


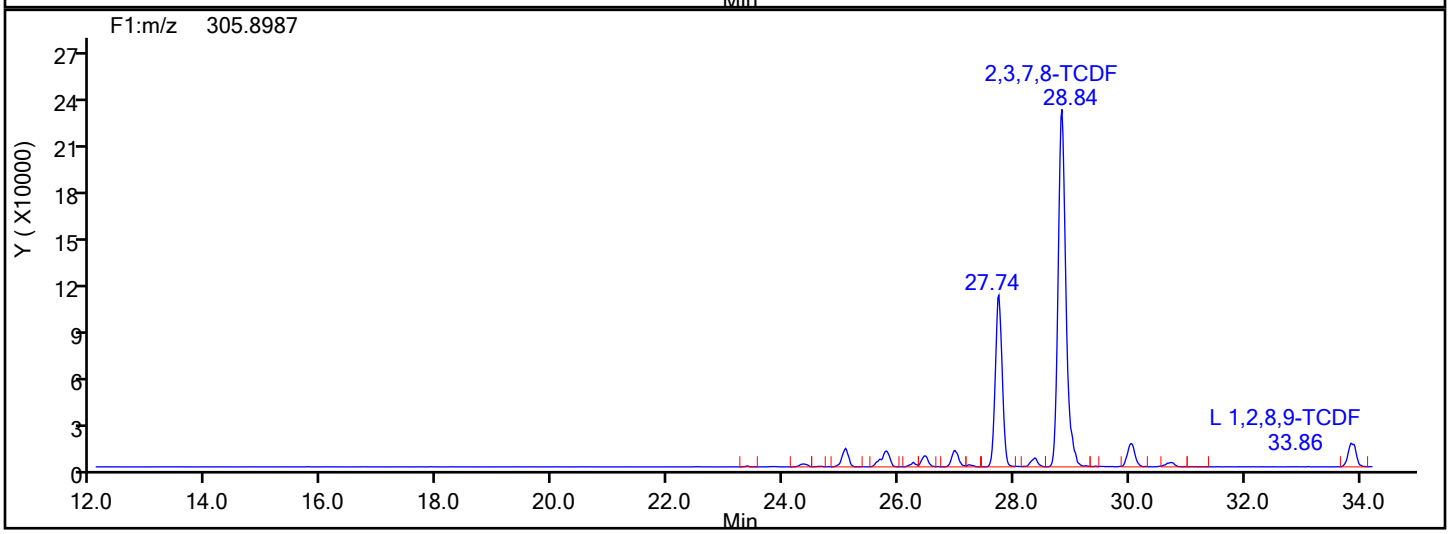
Report Date: 18-Dec-2019 12:06:24 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

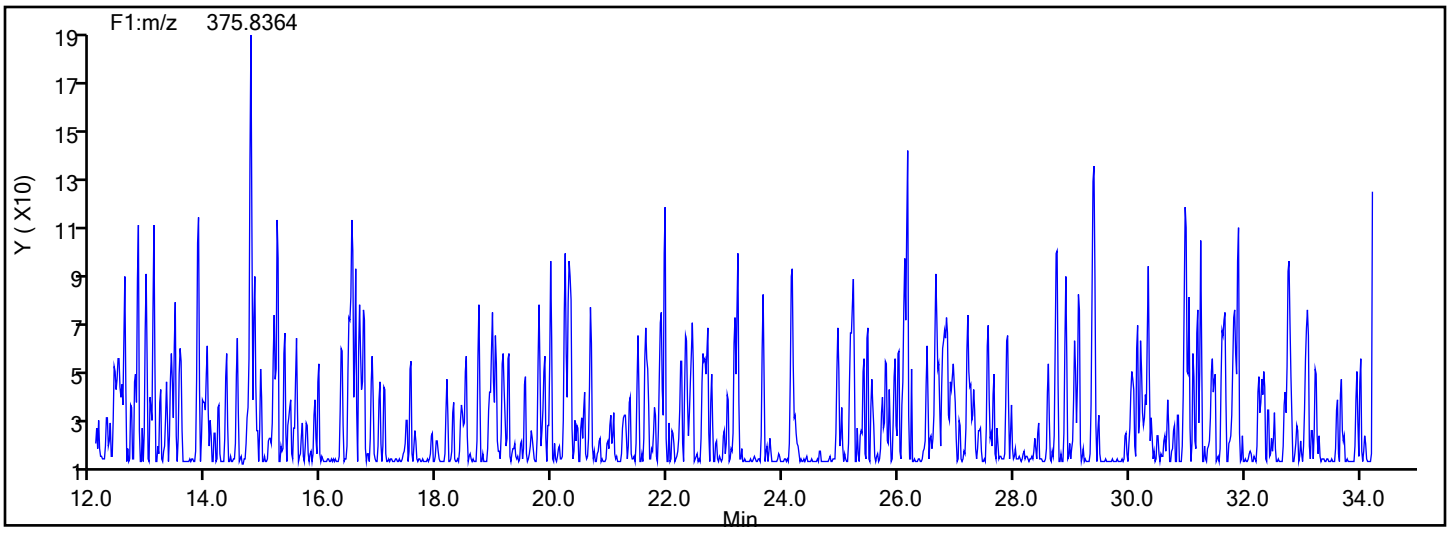
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

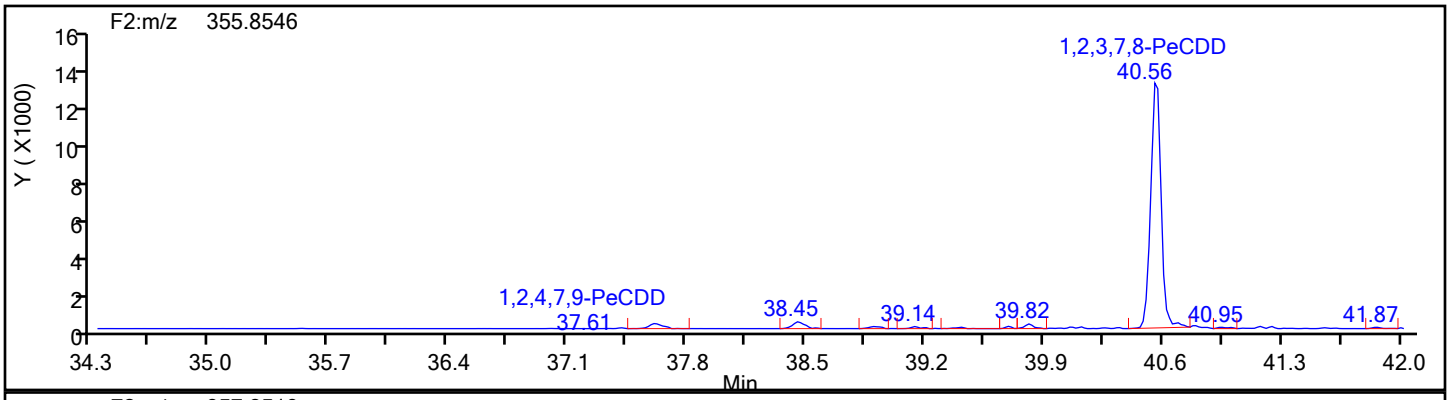
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

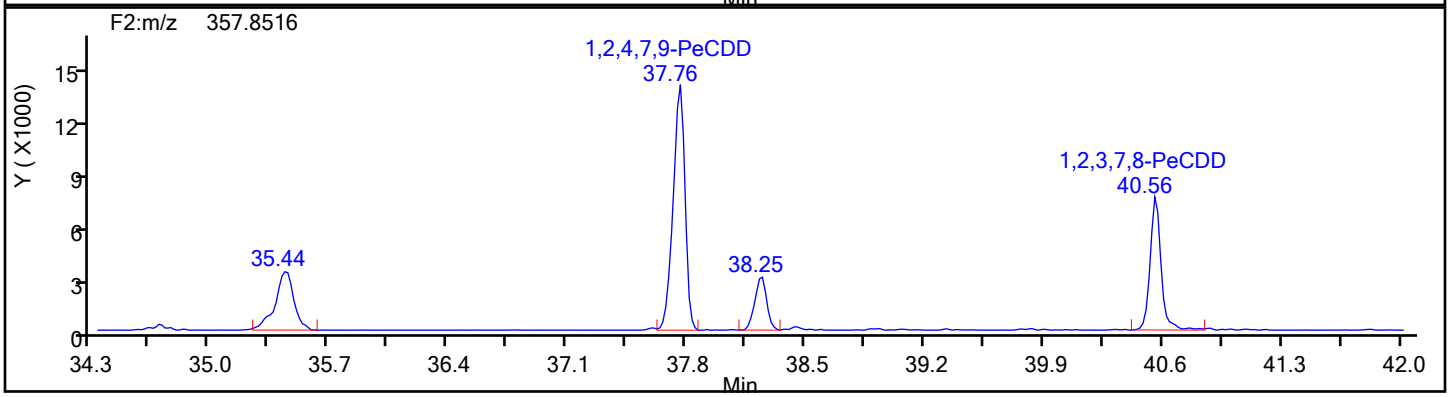
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 13

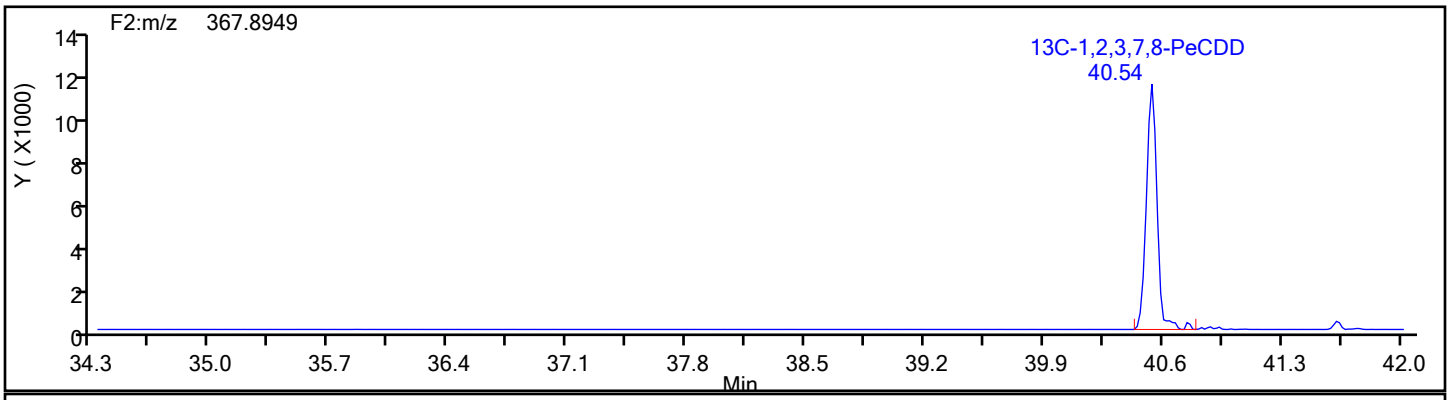
Column Type: Column Dia:

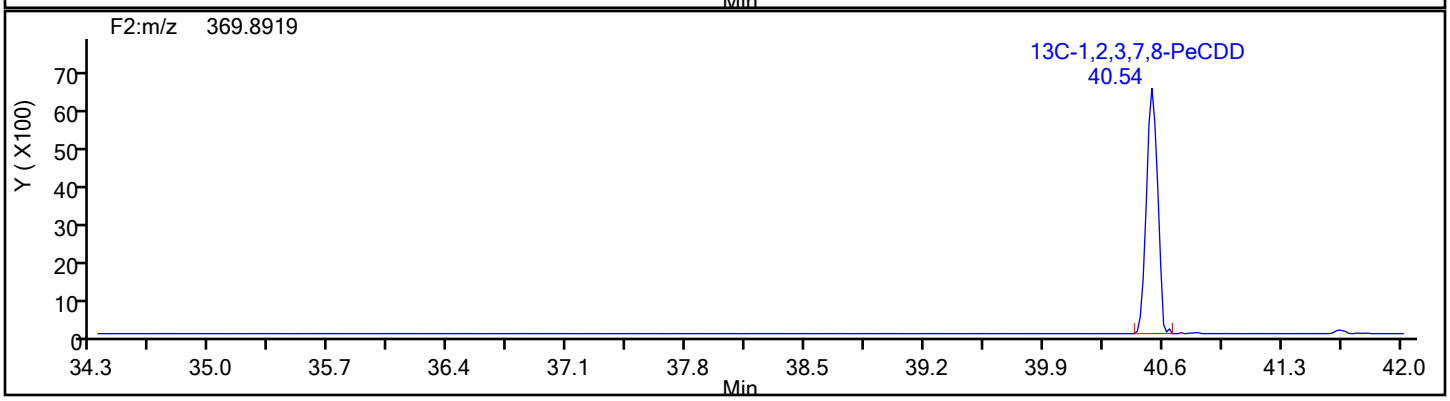
PeCDD





PeCDD Standards



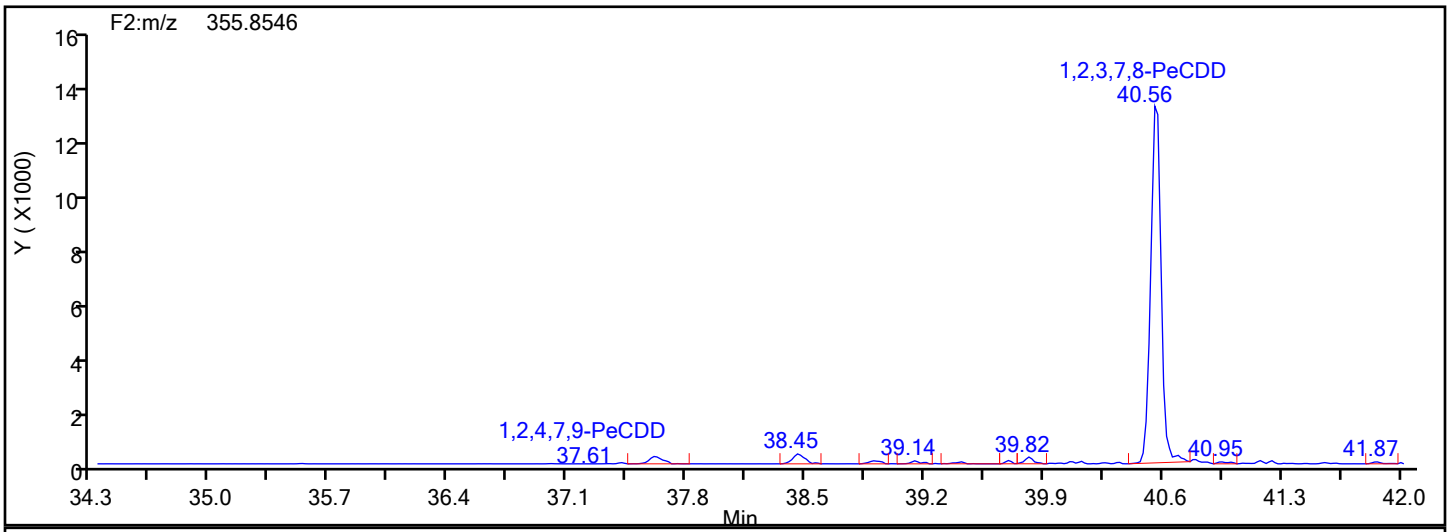


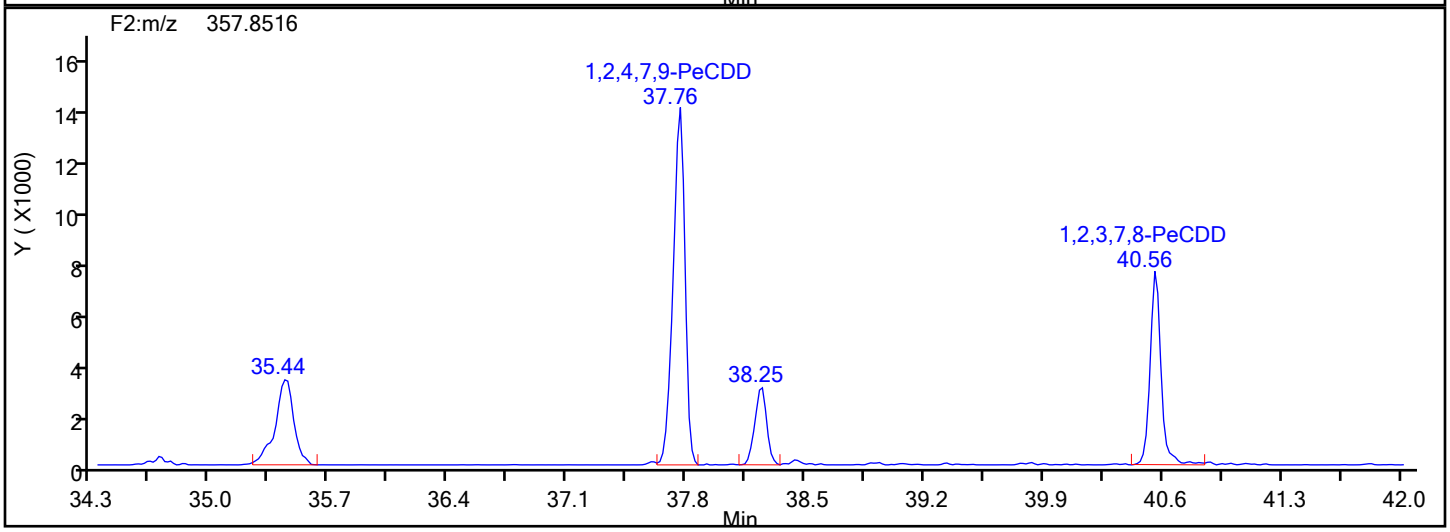
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

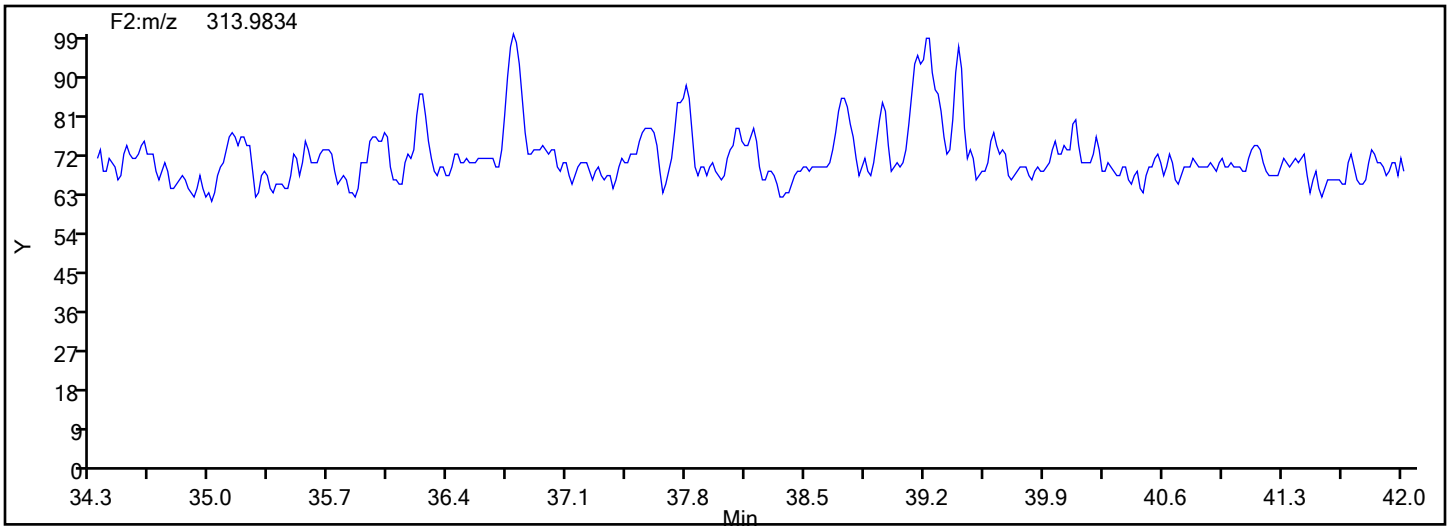
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

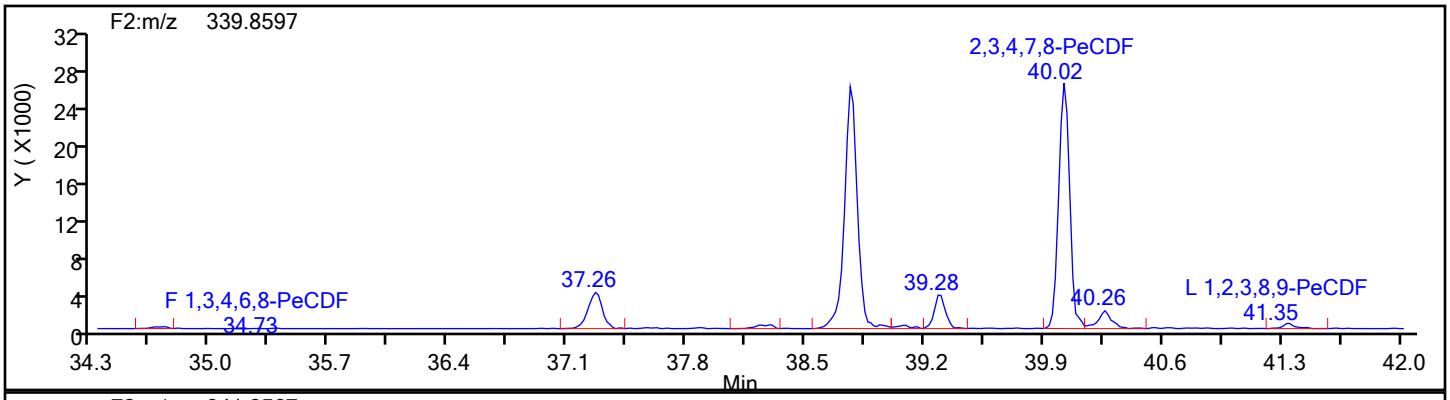
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

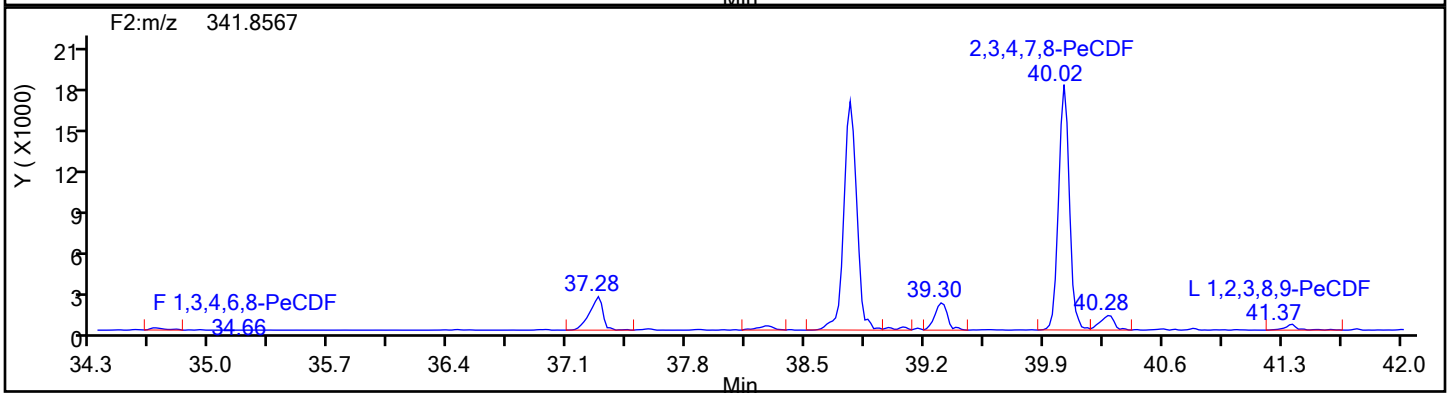
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 13

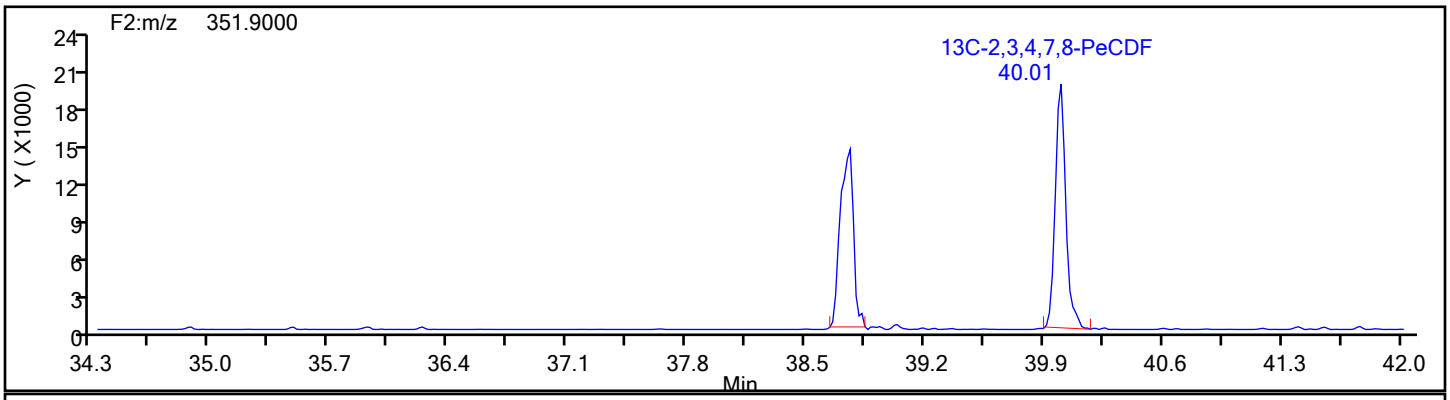
Column Type: Column Dia:

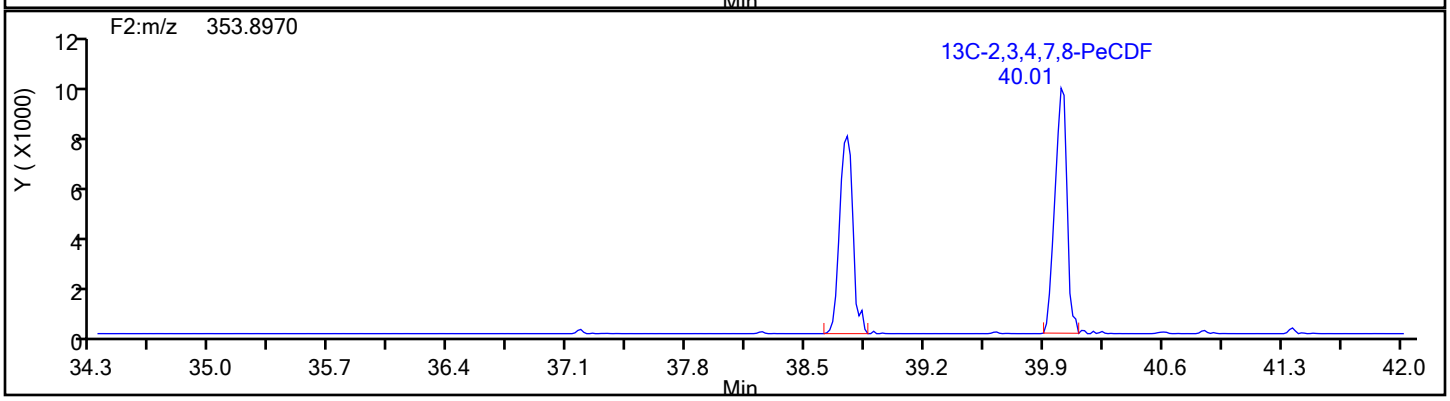
PeCDF





PeCDF Standards



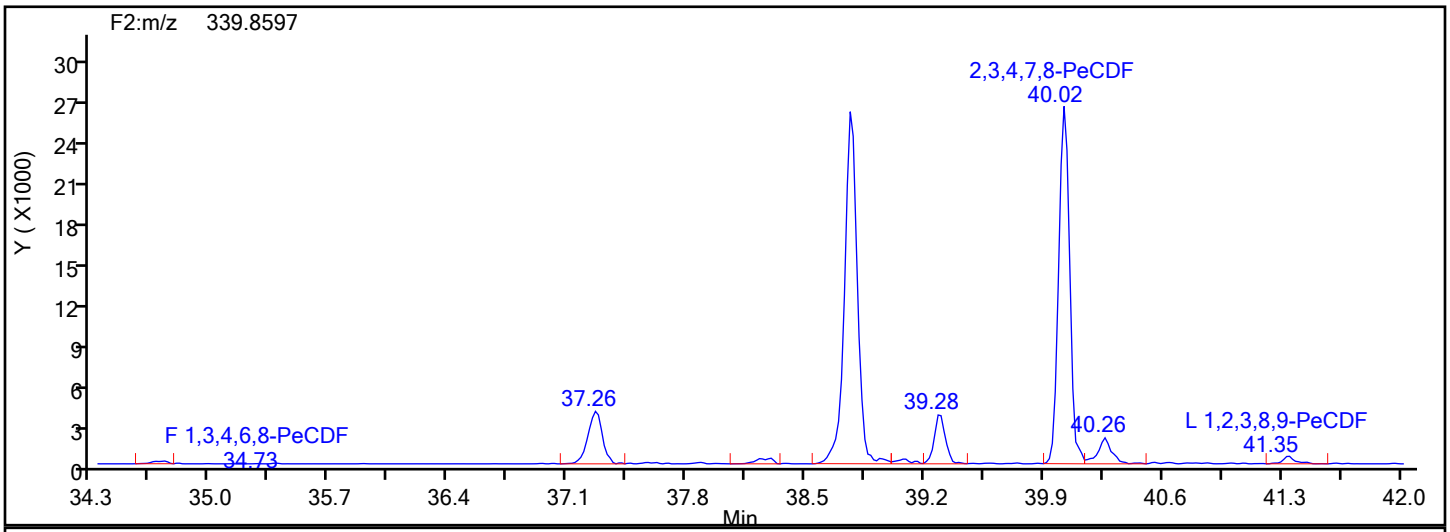


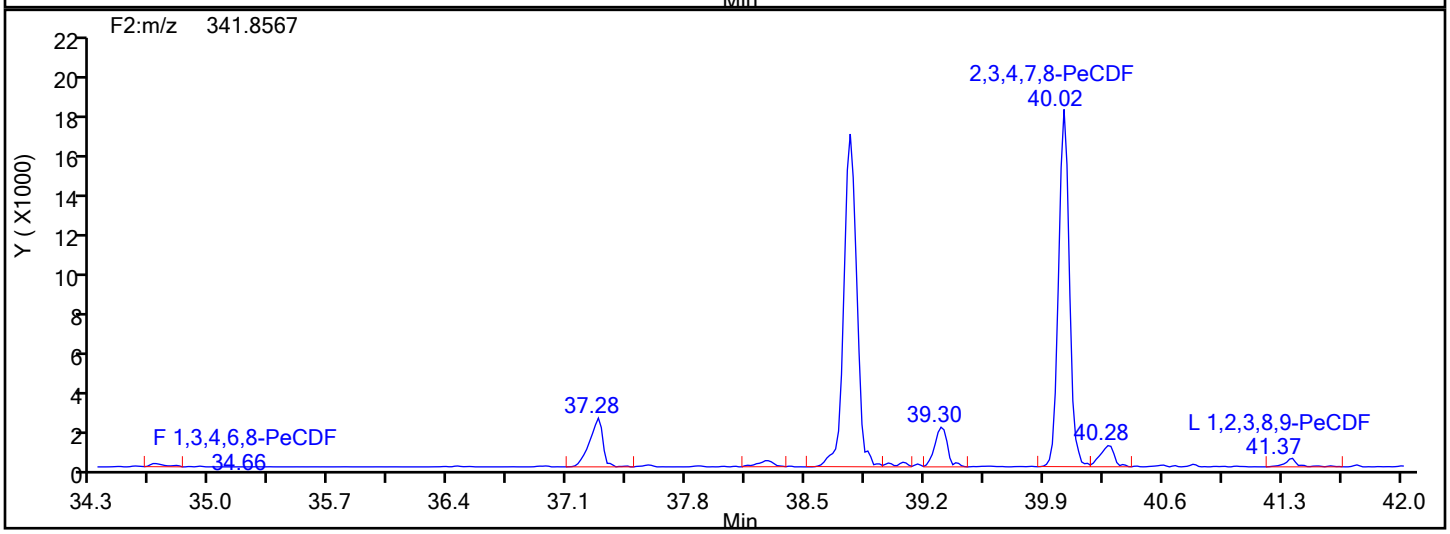
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

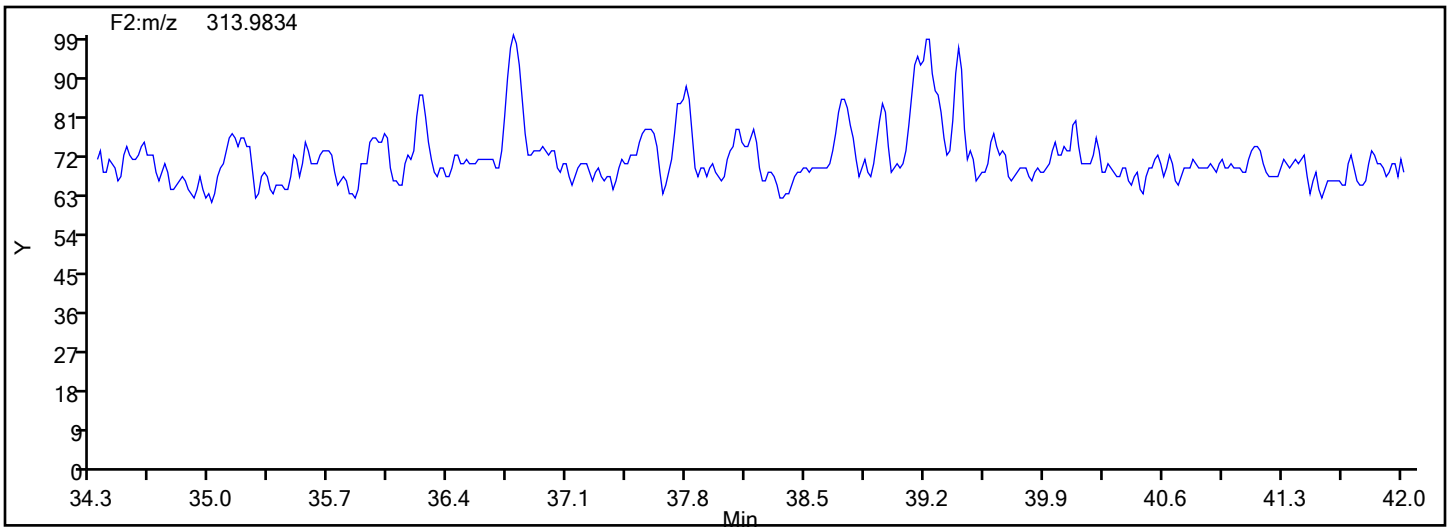
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

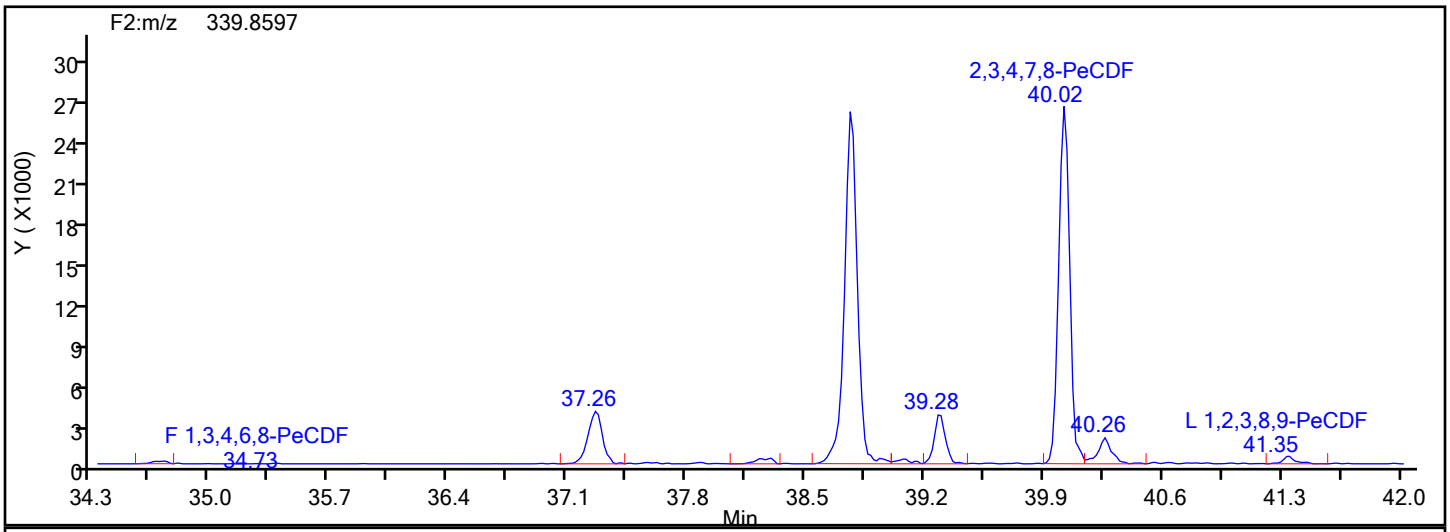


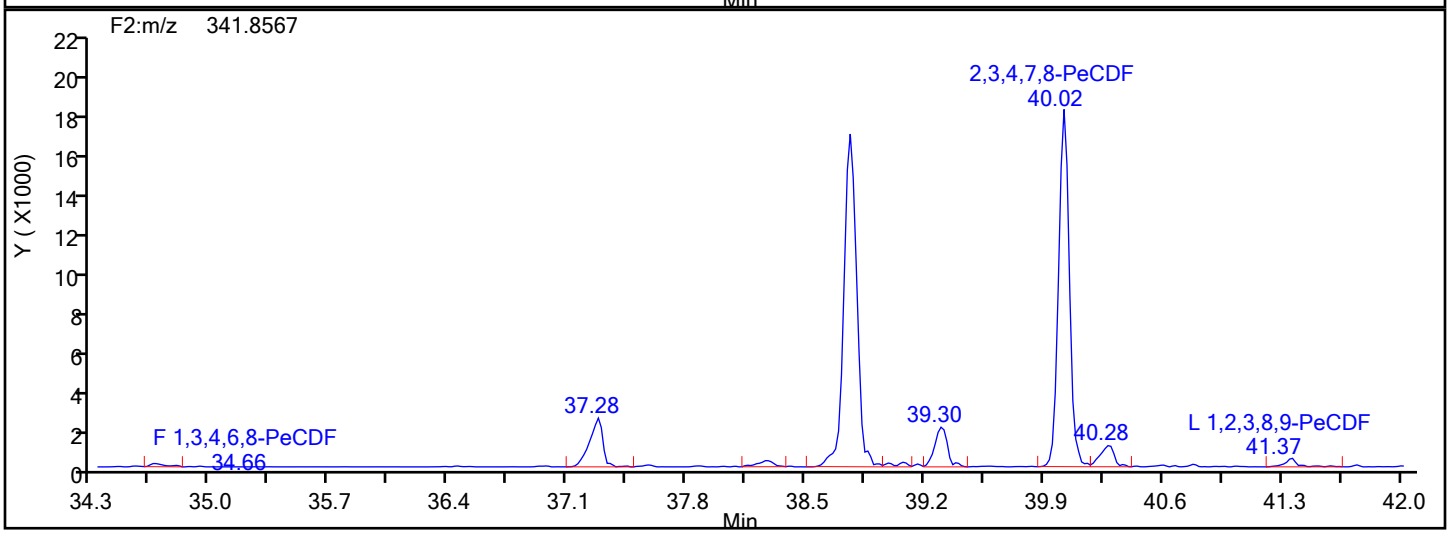
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

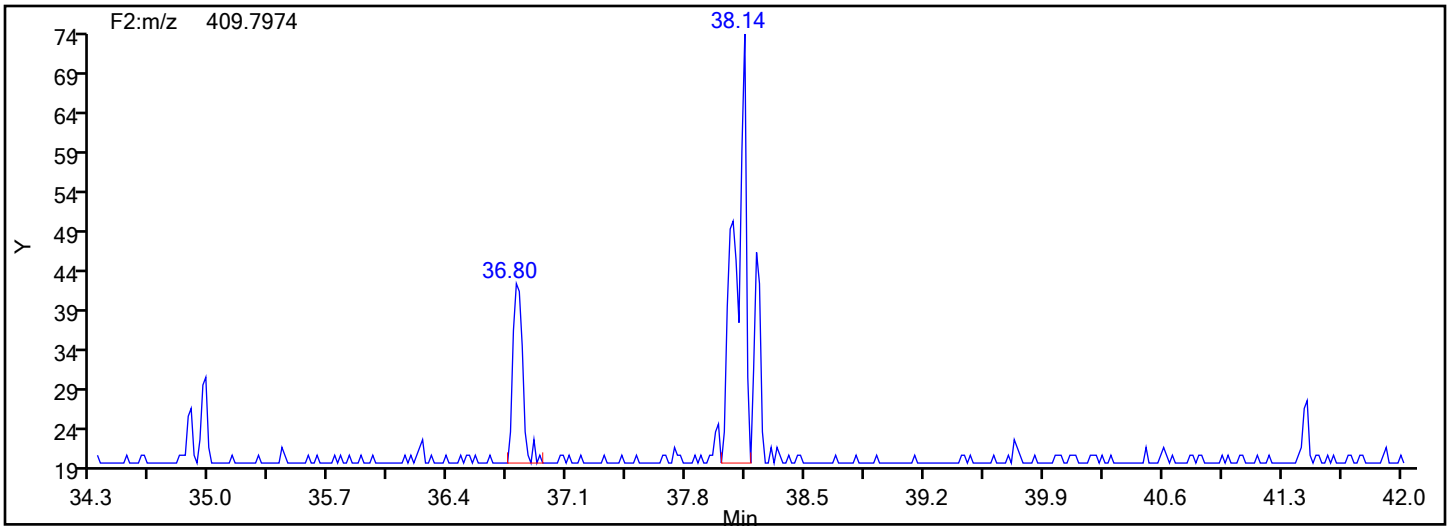
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Eurofins TestAmerica, Knoxville

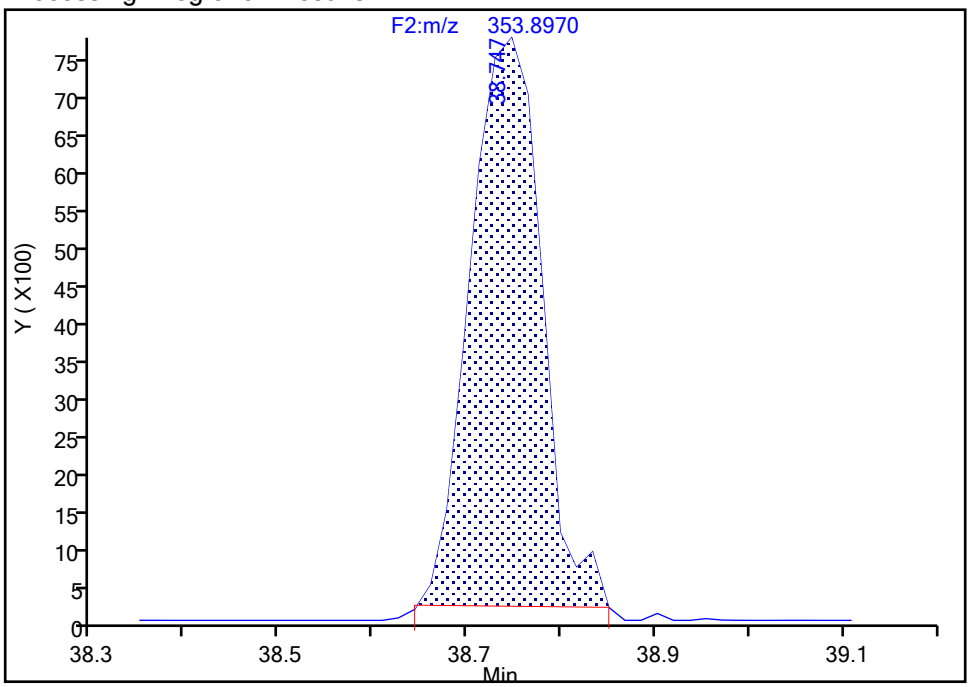
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

13C-1,2,3,7,8-PeCDF, CAS: 109719-77-9

Signal: 2

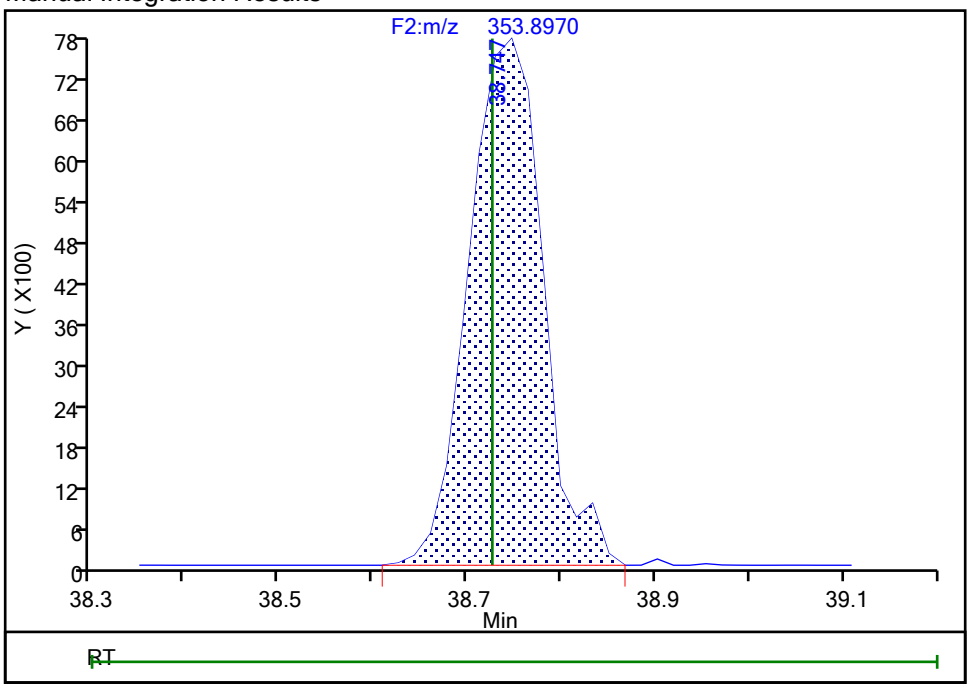
Processing Integration Results

RT: 38.75
Area: 39884
Amount: 2.884188
Amount Units: pg/ul



Manual Integration Results

RT: 38.75
Area: 42409
Amount: 2.947703
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:12:22
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

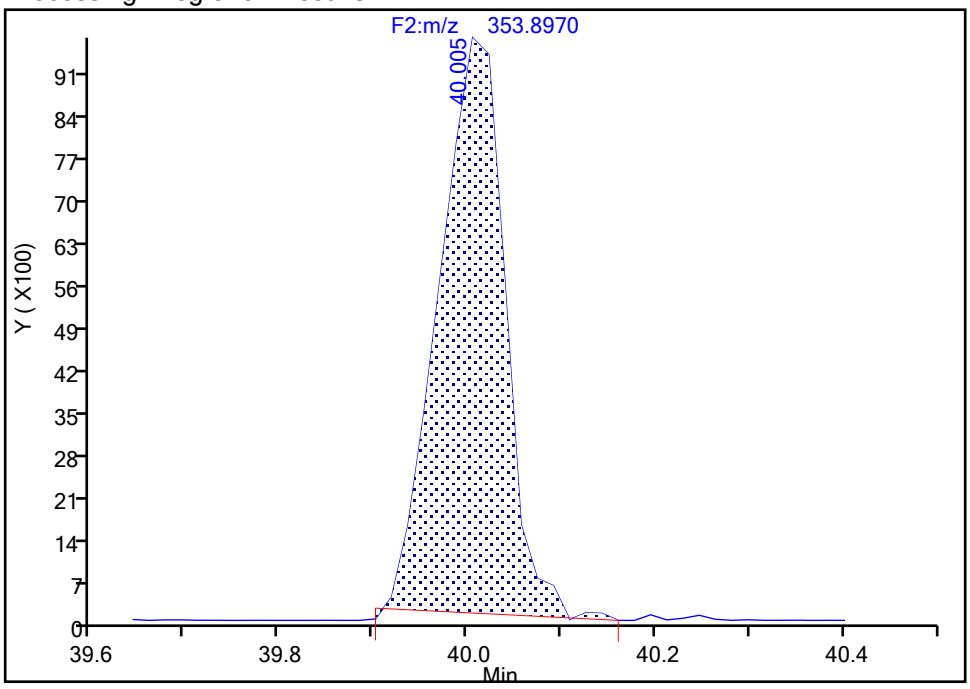
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

13C-2,3,4,7,8-PeCDF, CAS: 116843-02-8

Signal: 2

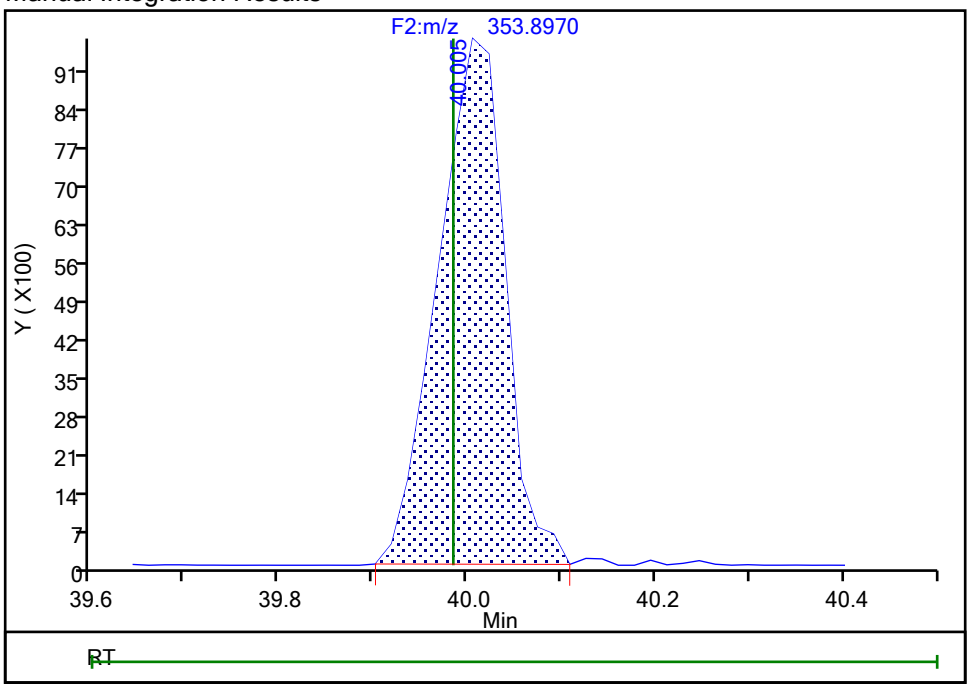
Processing Integration Results

RT: 40.01
Area: 46560
Amount: 3.208547
Amount Units: pg/ul



Manual Integration Results

RT: 40.01
Area: 47634
Amount: 3.235303
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:12:40

Audit Action: Manually Integrated Audit Reason: Baseline

Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

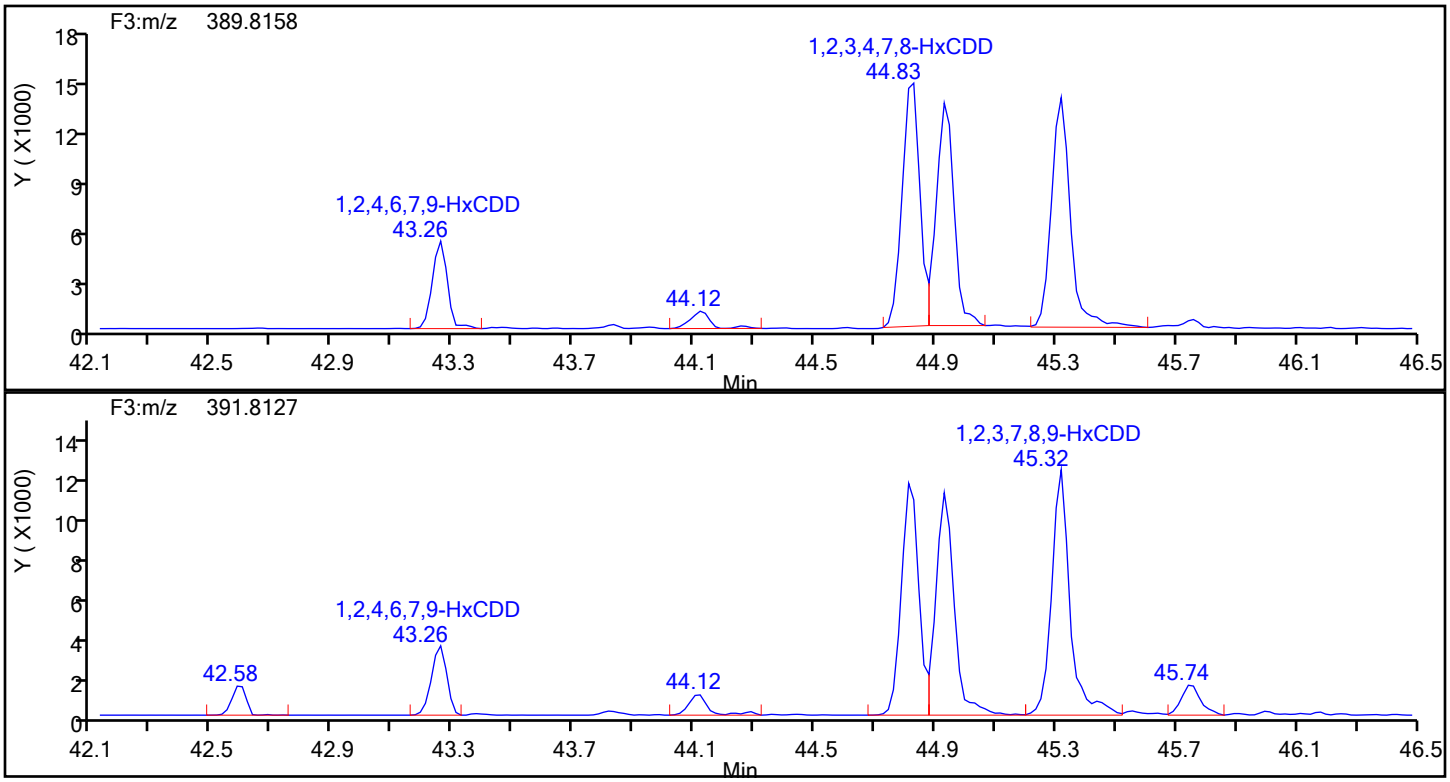
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

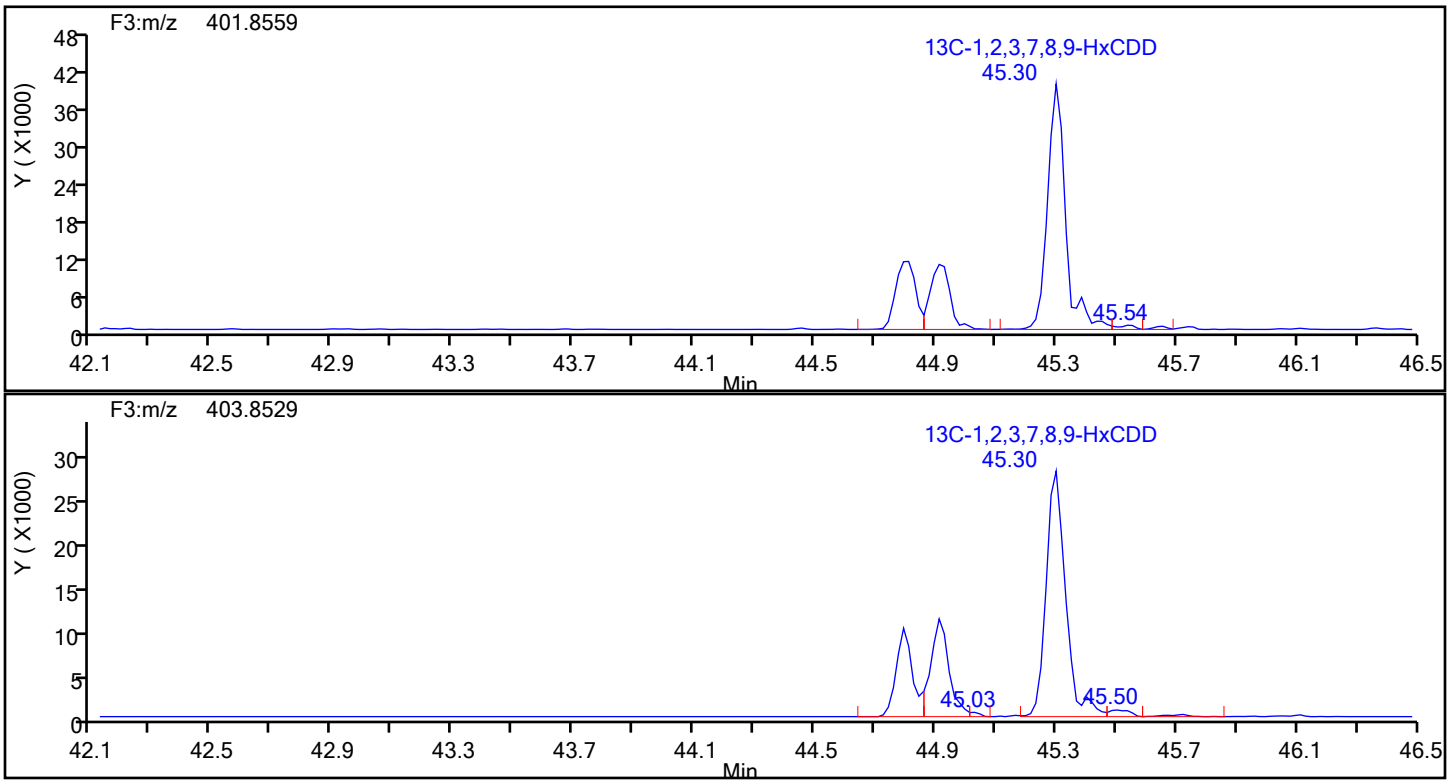
Worklist#: 36166 Sample Line#: 13

Column Type: Column Dia:

HxCDD



HxCDD Standards

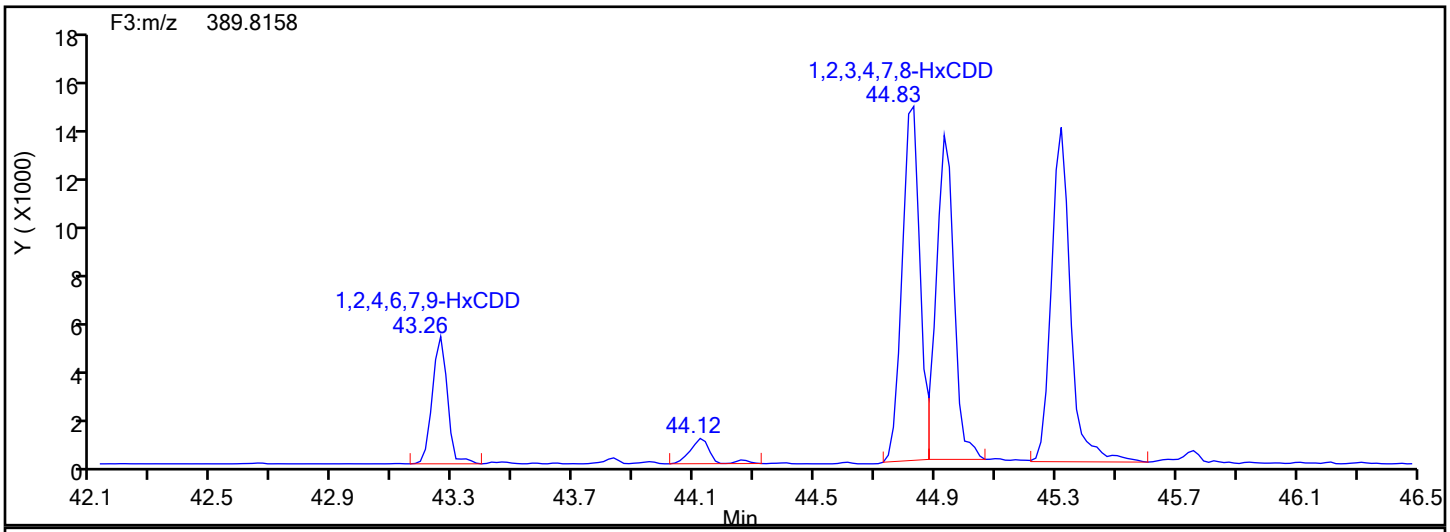


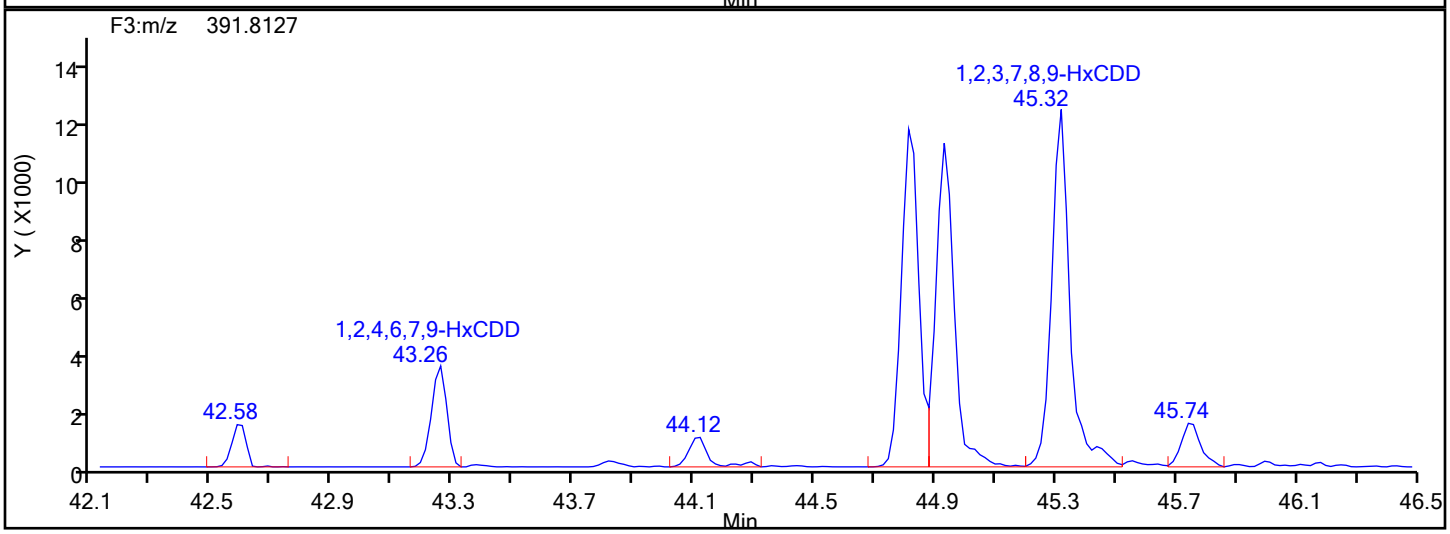
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

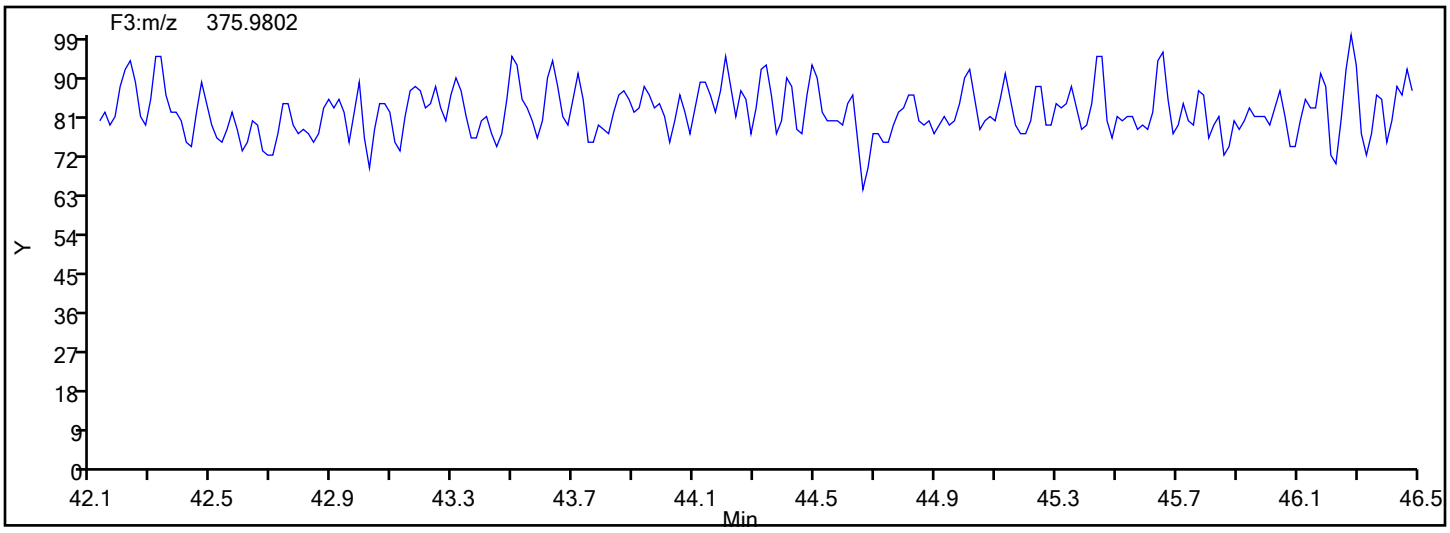
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

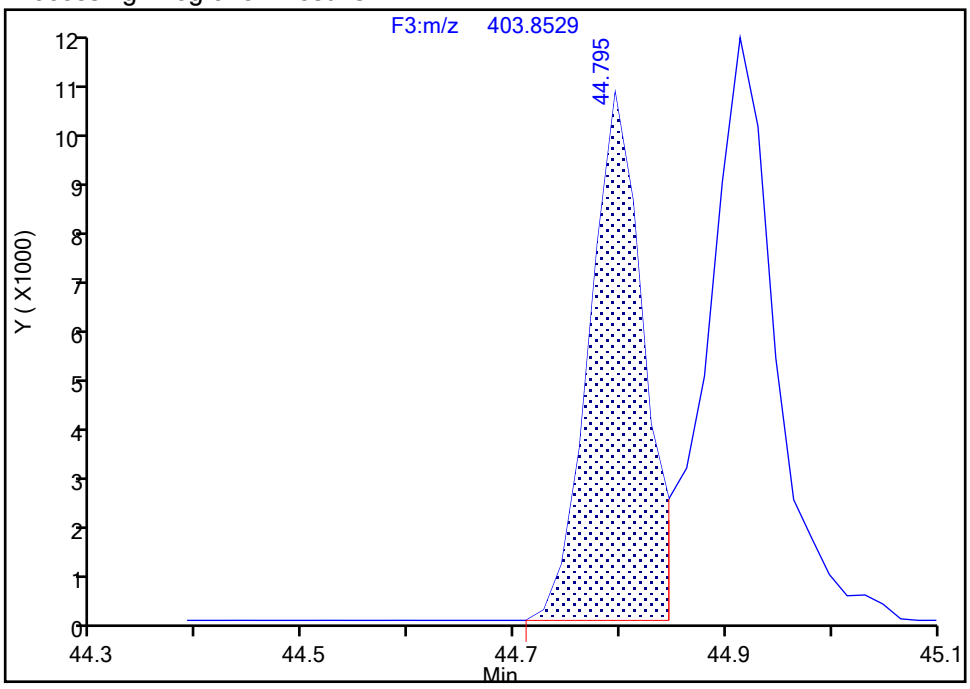
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 2

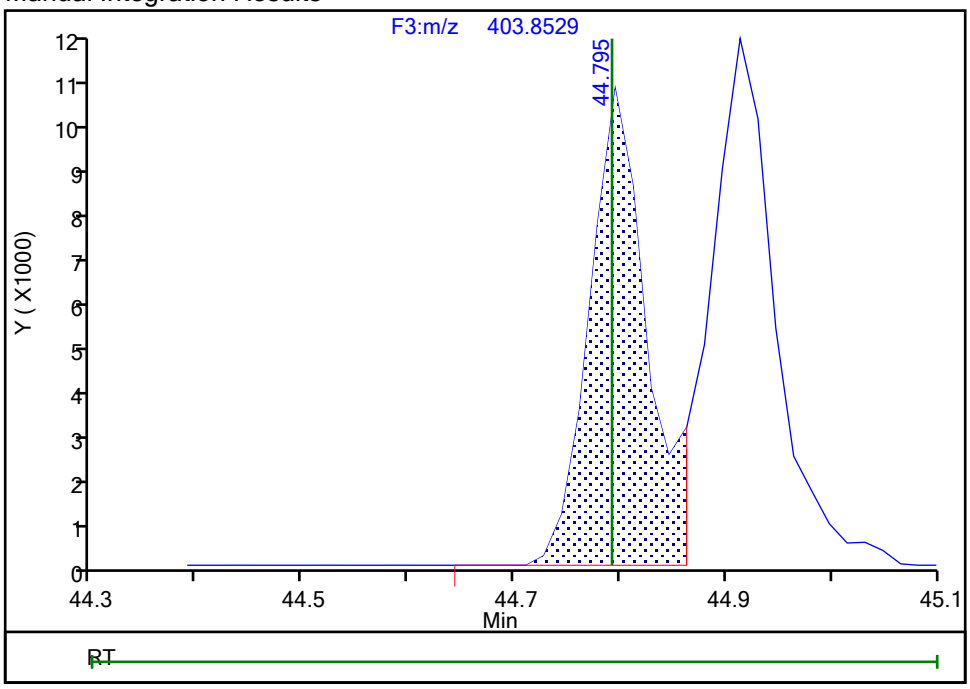
Processing Integration Results

RT: 44.80
Area: 35072
Amount: 3.375321
Amount Units: pg/ul



Manual Integration Results

RT: 44.80
Area: 37709
Amount: 3.476741
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 12:06:13
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

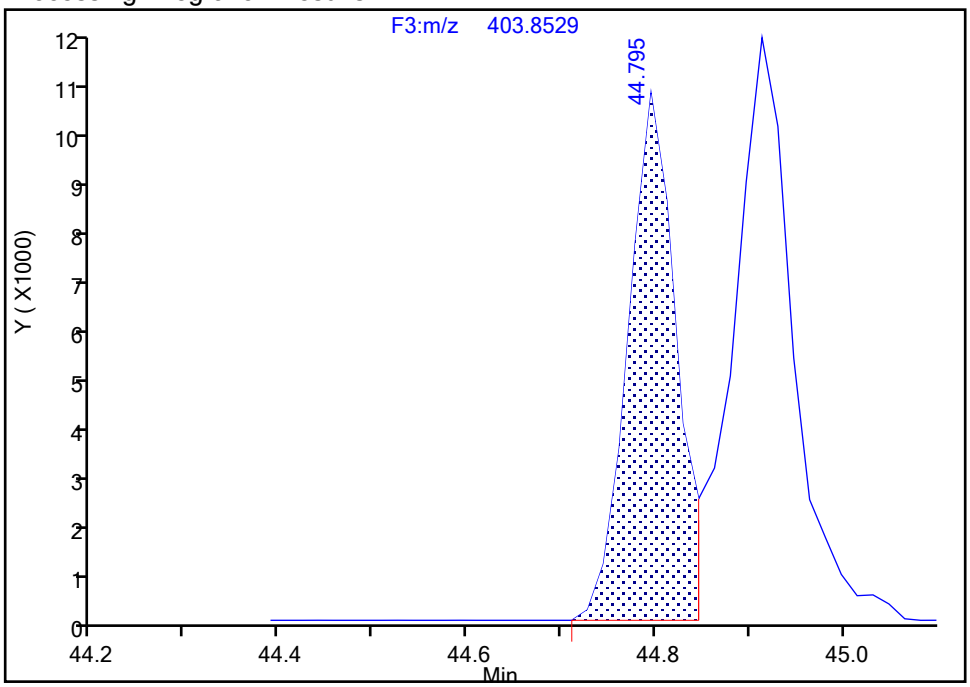
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 3

Processing Integration Results

RT: 44.81
Area: 86164
Amount: 3.375321
Amount Units: pg/ul



Manual Integration Results

RT: 44.81
Area: 88753
Amount: 3.476741
Amount Units: pg/ul

Reviewer: davidsonm, 18-Dec-2019 12:06:13
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

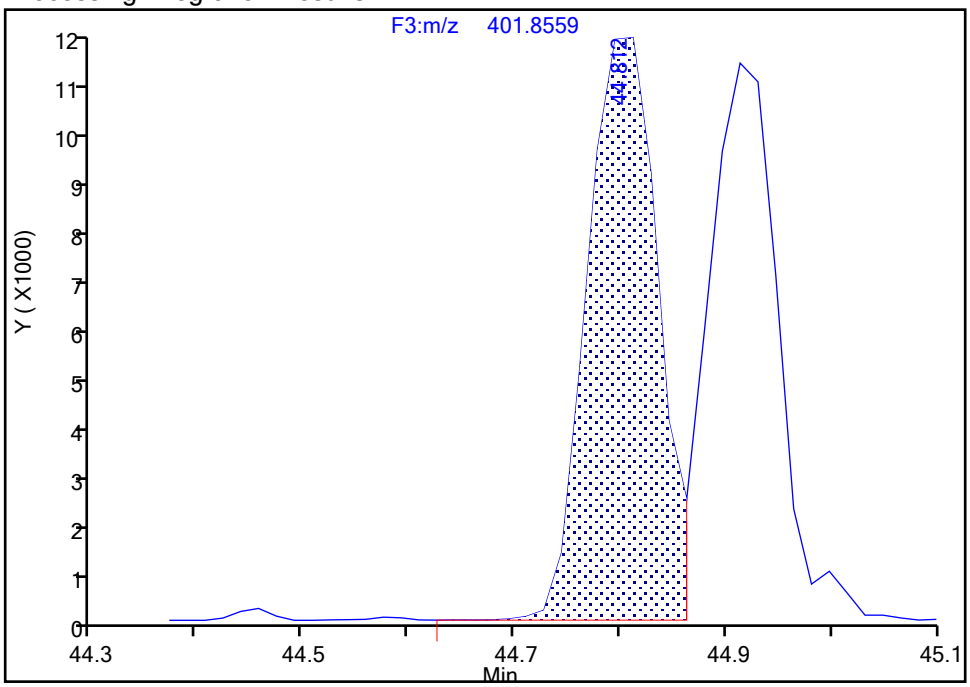
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

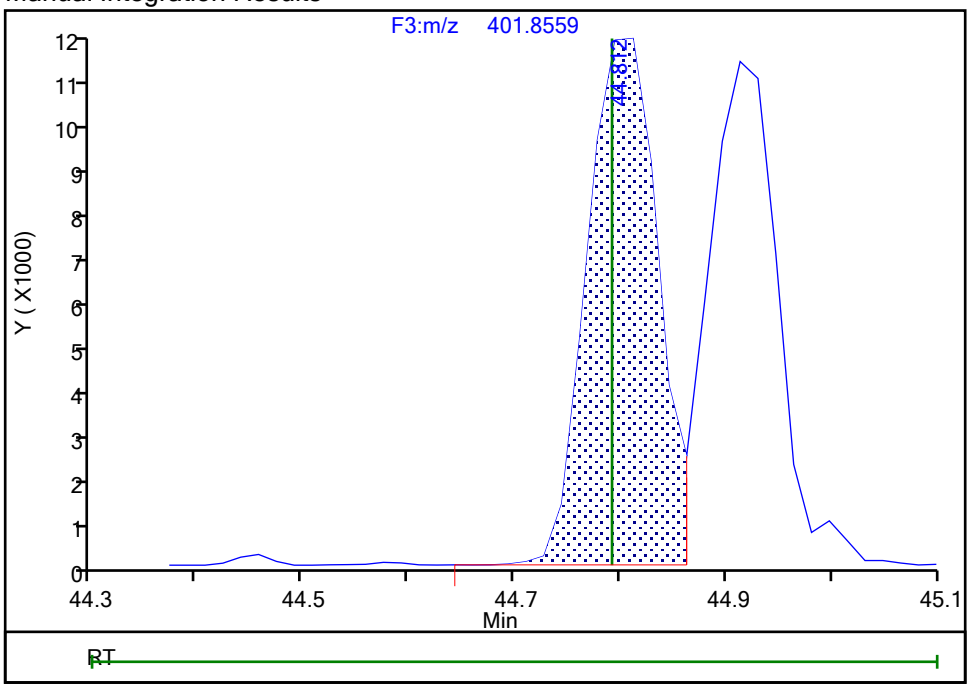
Processing Integration Results

RT: 44.81
Area: 51092
Amount: 3.375321
Amount Units: pg/ul



Manual Integration Results

RT: 44.81
Area: 51044
Amount: 3.476741
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 12:06:16
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason:

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 3

Processing Integration Results

RT:	44.91
Area:	96783
Amount:	3.626416
Amount Units:	pg/ul

Manual Integration Results

RT:	44.91
Area:	93042
Amount:	3.486242
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 10:13:43

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

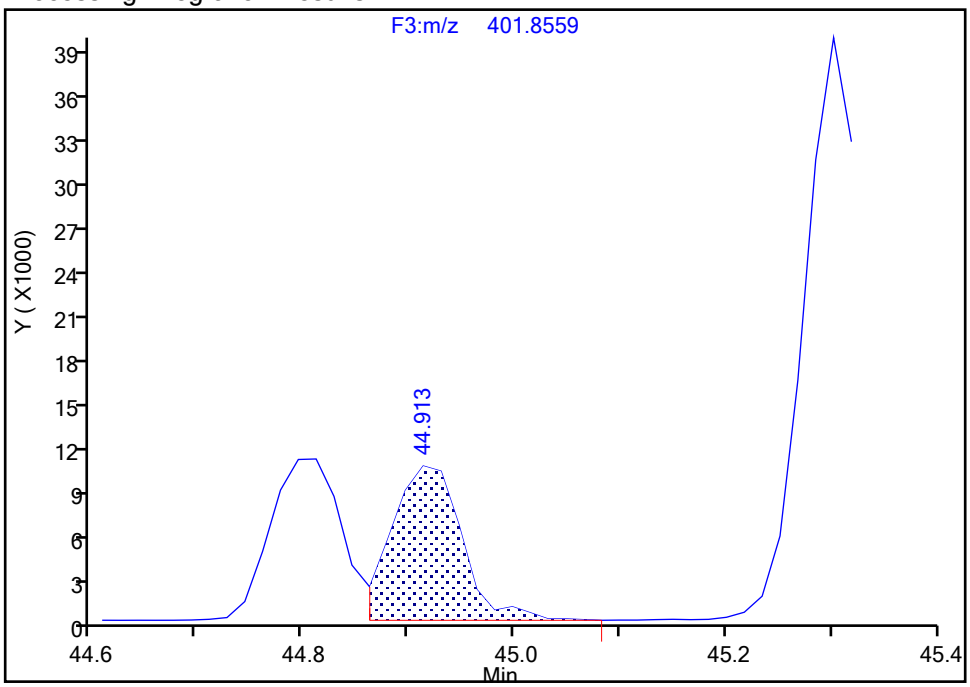
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 1

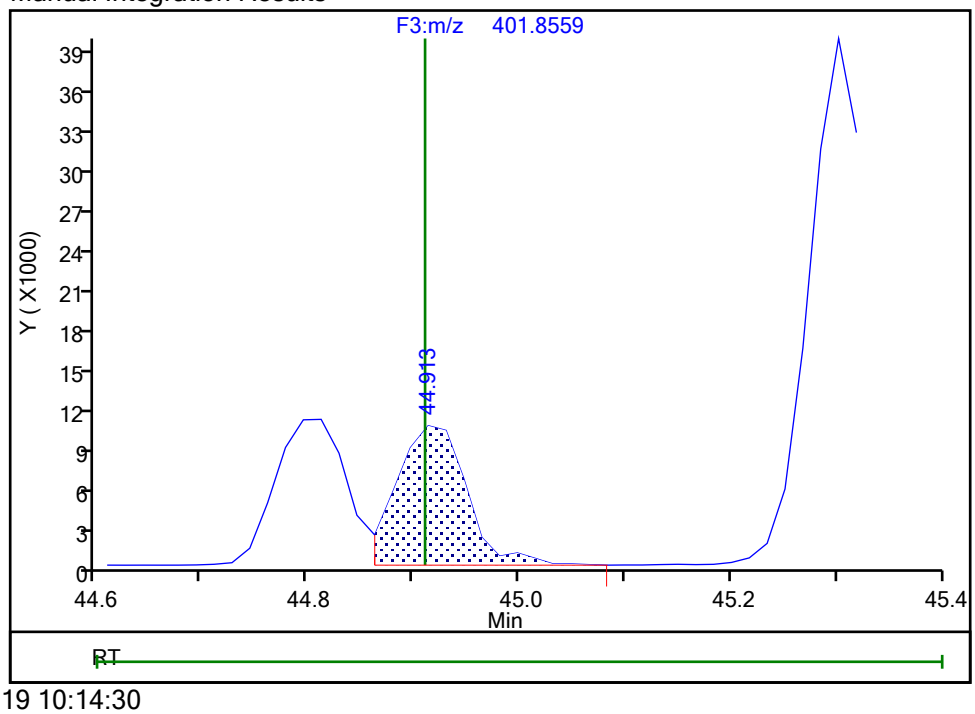
Processing Integration Results

RT: 44.91
Area: 47654
Amount: 3.626416
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 47622
Amount: 3.486242
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:14:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

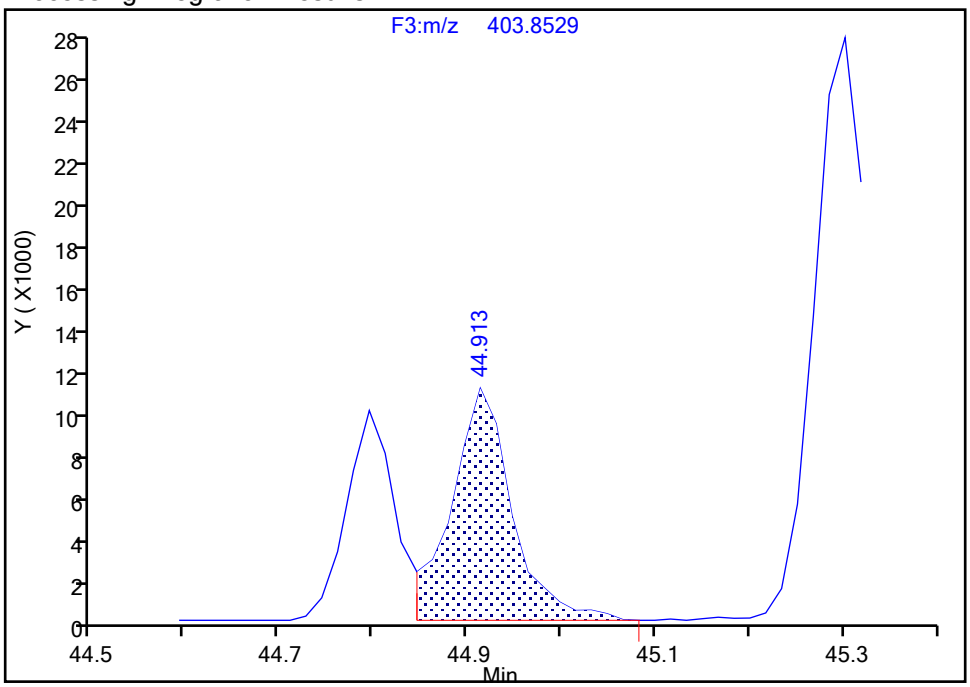
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDD, CAS: 109719-81-5

Signal: 2

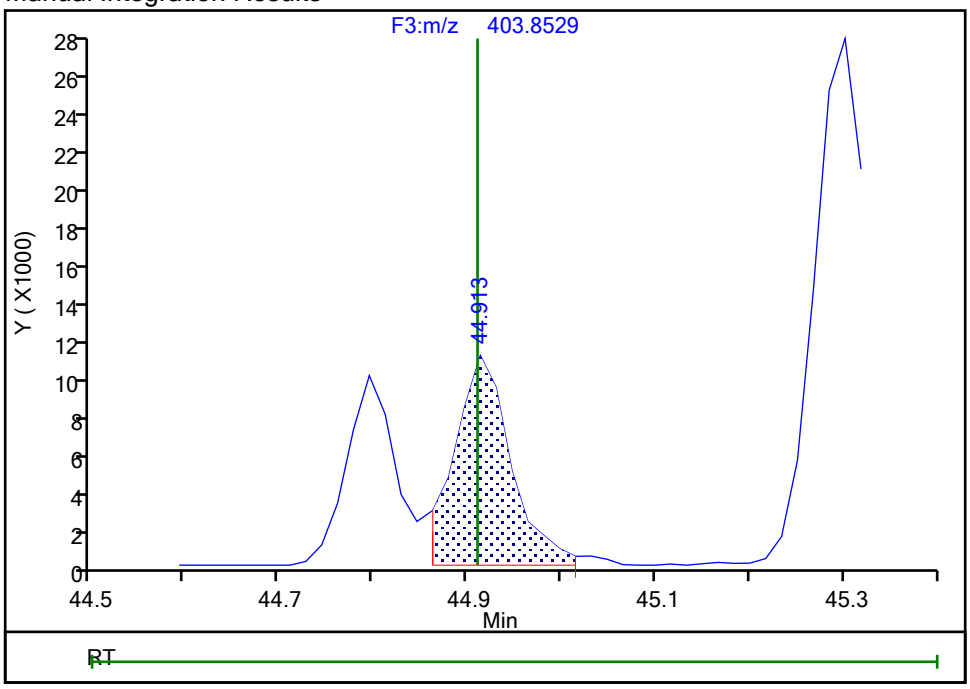
Processing Integration Results

RT: 44.91
Area: 49129
Amount: 3.626416
Amount Units: pg/ul



Manual Integration Results

RT: 44.91
Area: 45420
Amount: 3.486242
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:14:54

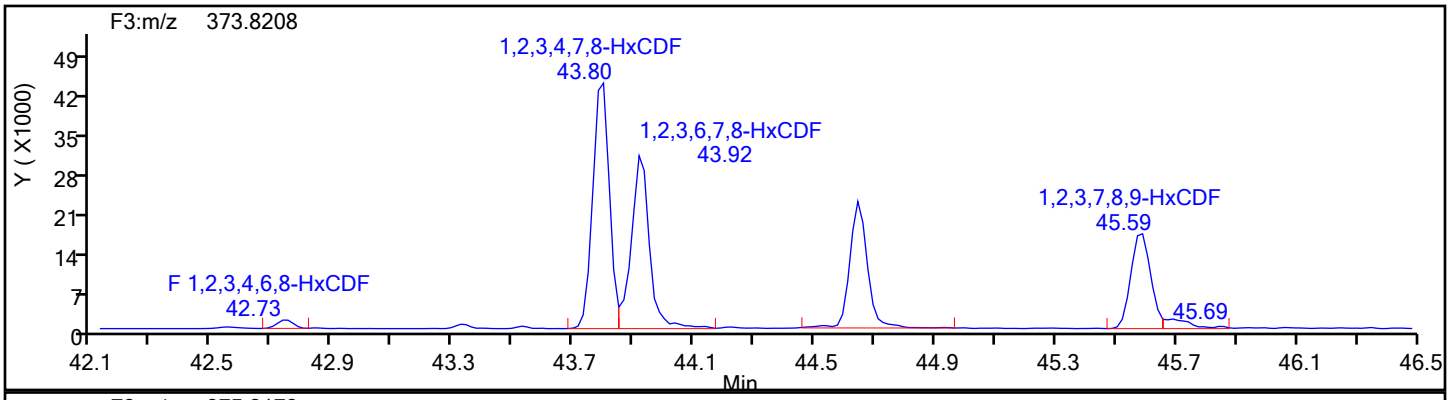
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

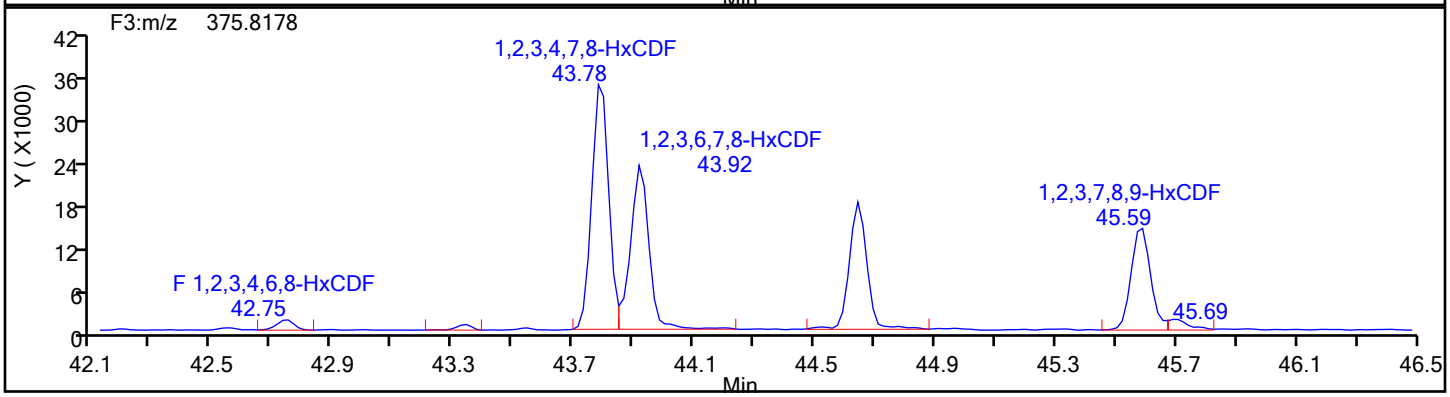
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

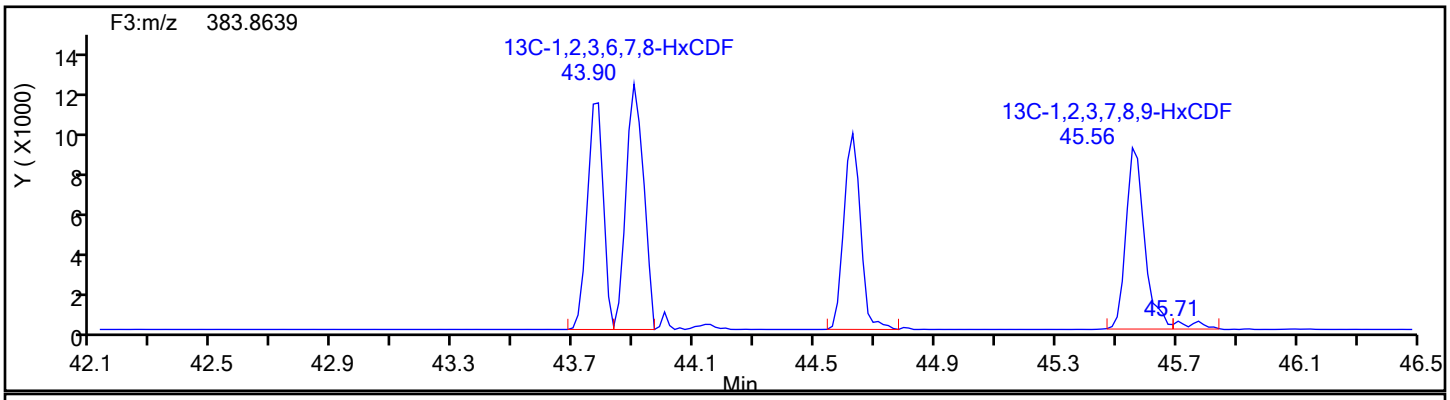
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

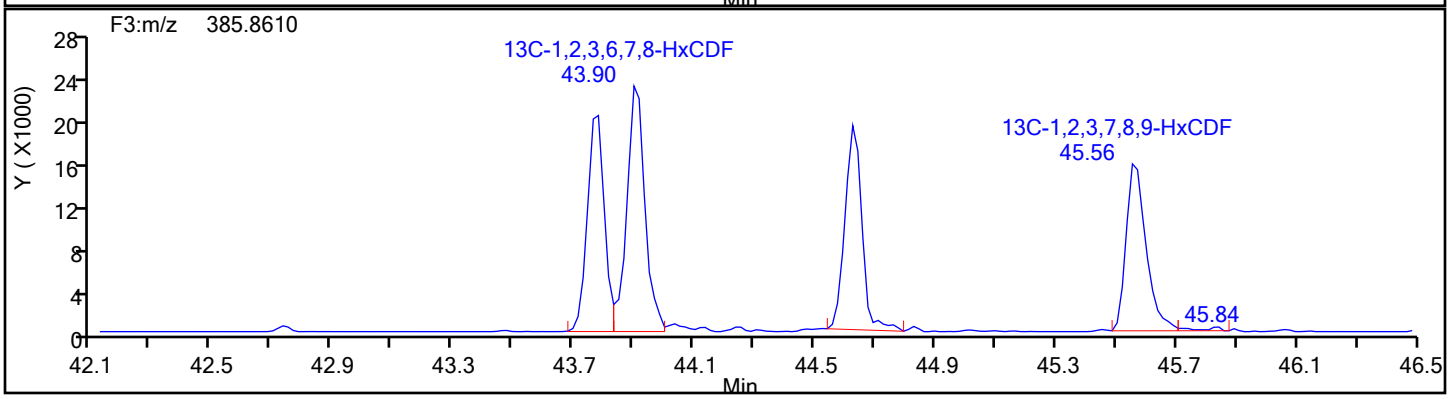
HxCDF





HxCDF Standards



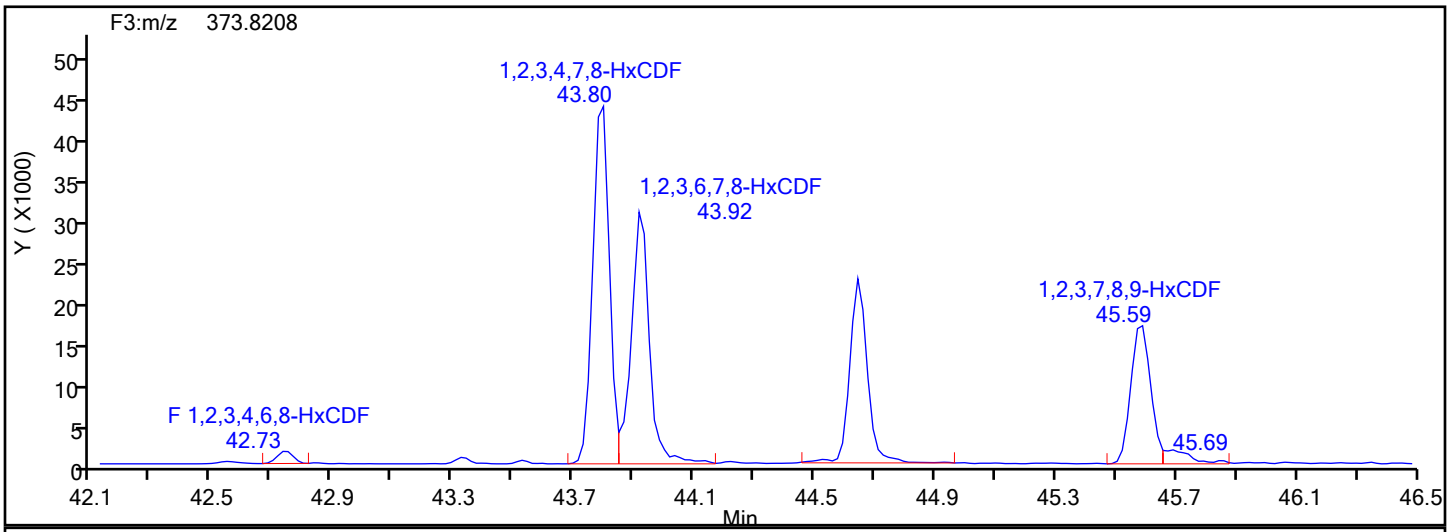


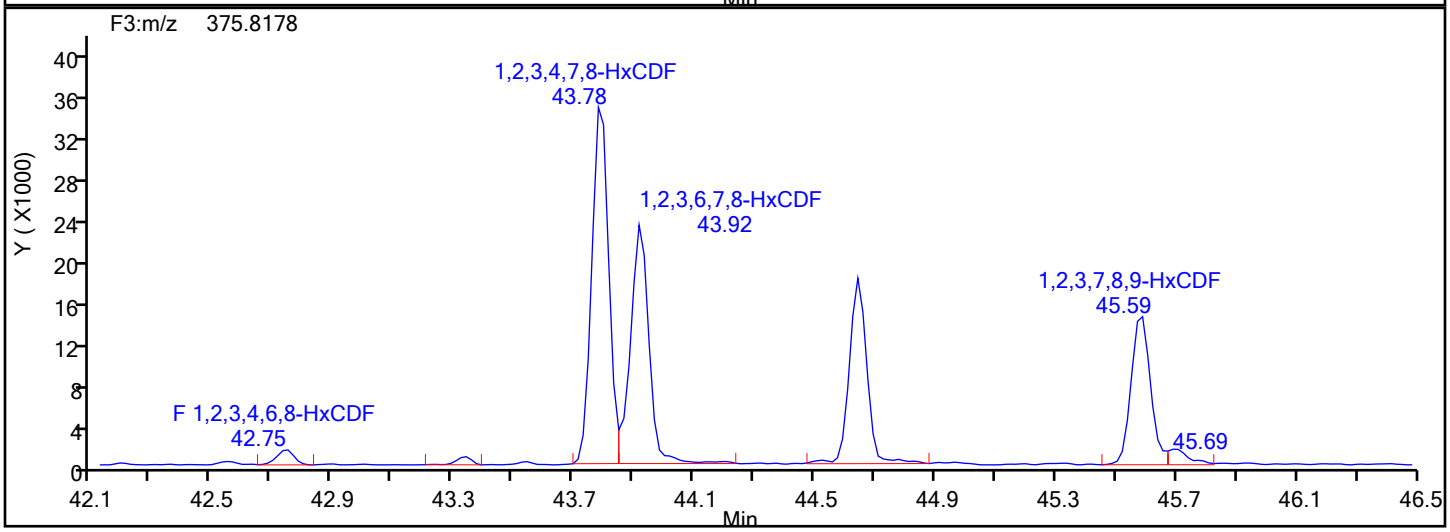
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

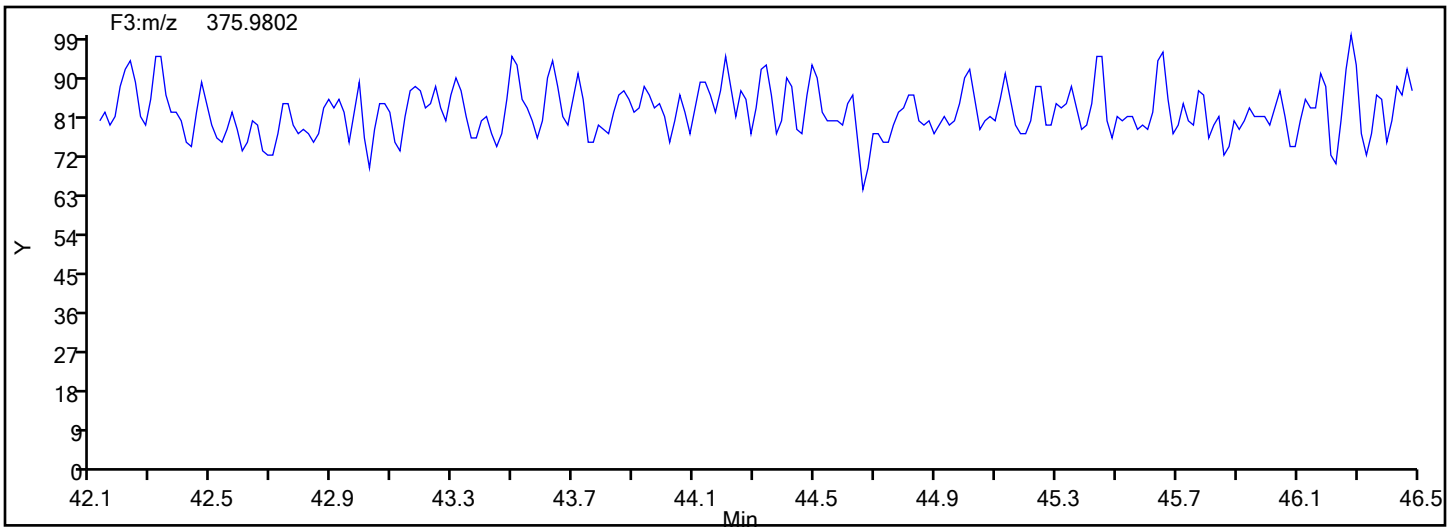
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

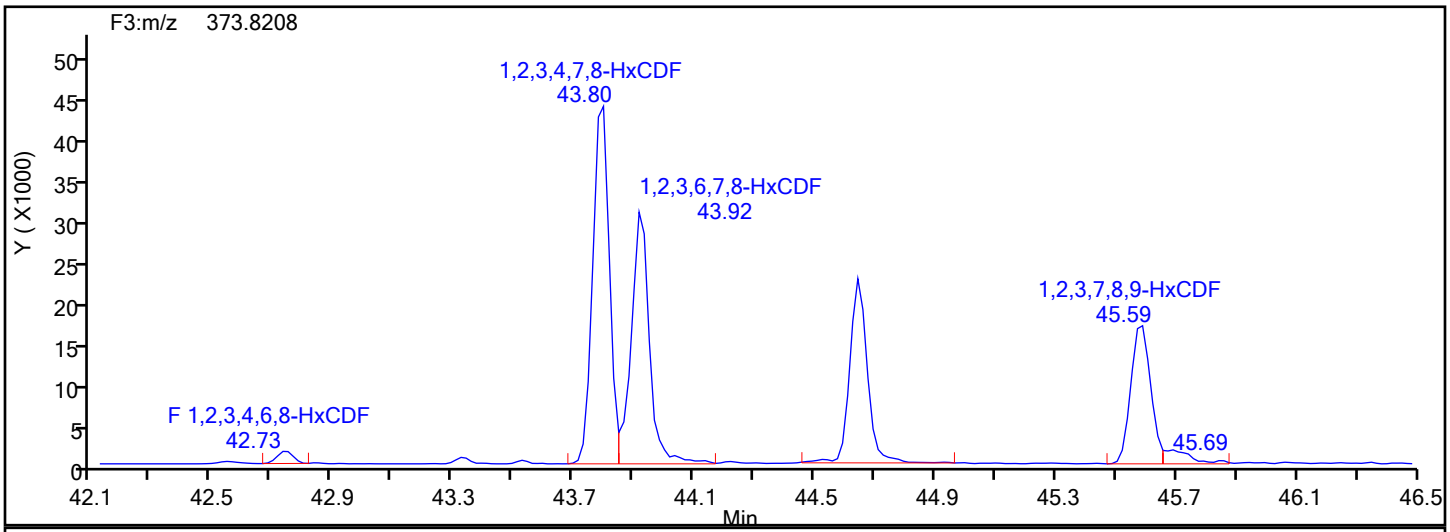


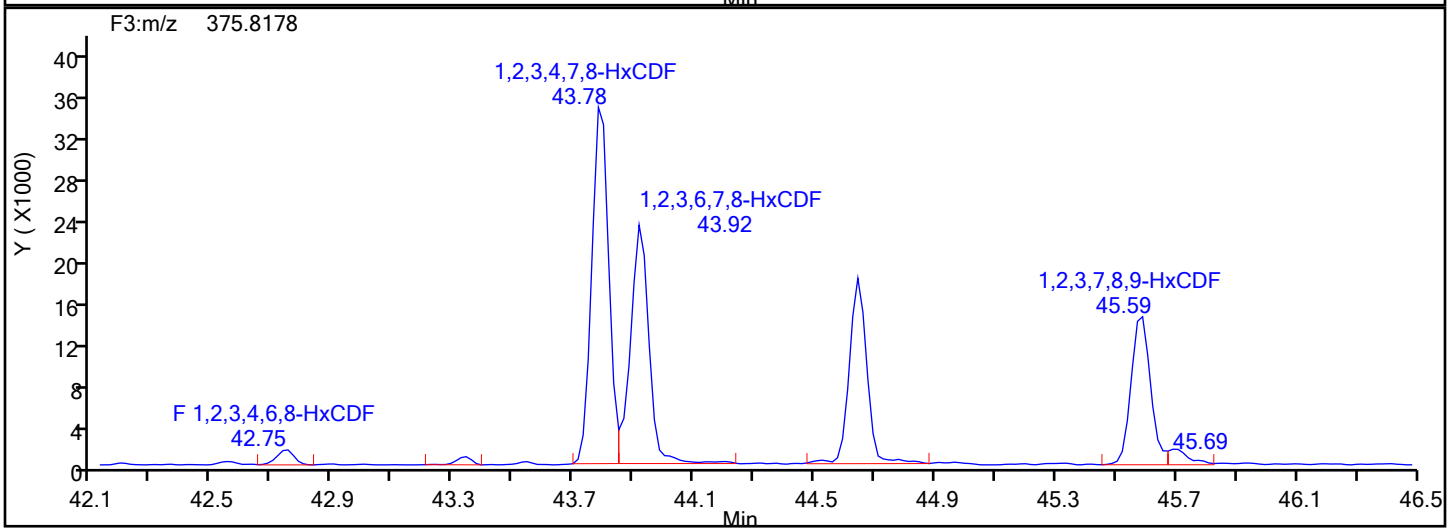
Report Date: 18-Dec-2019 12:06:25 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

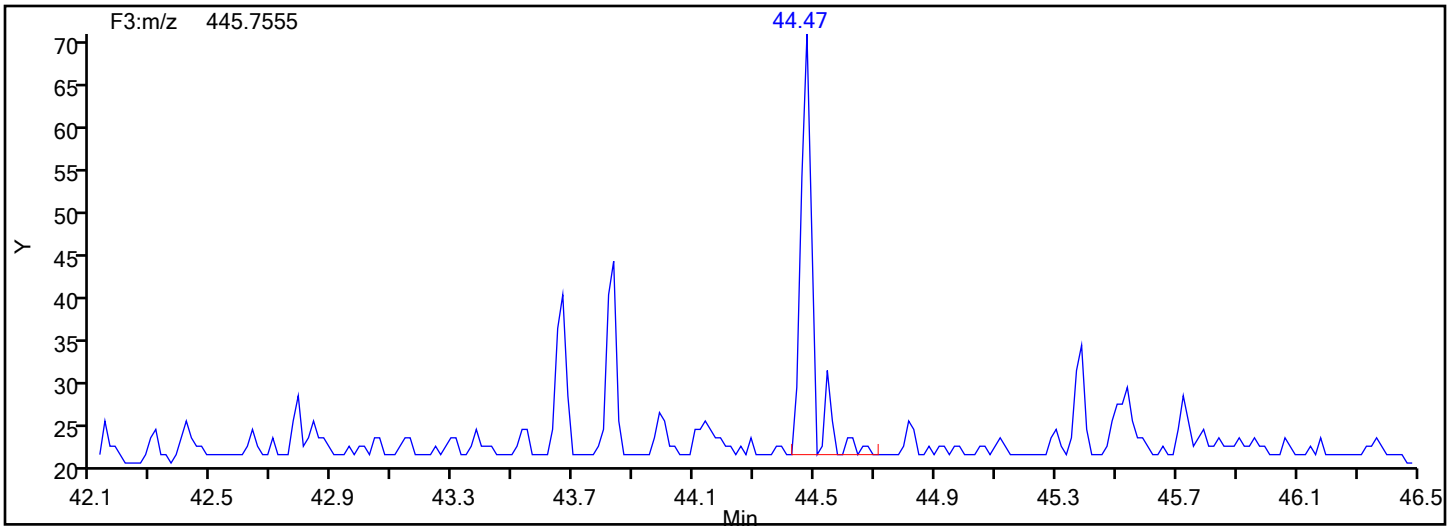
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

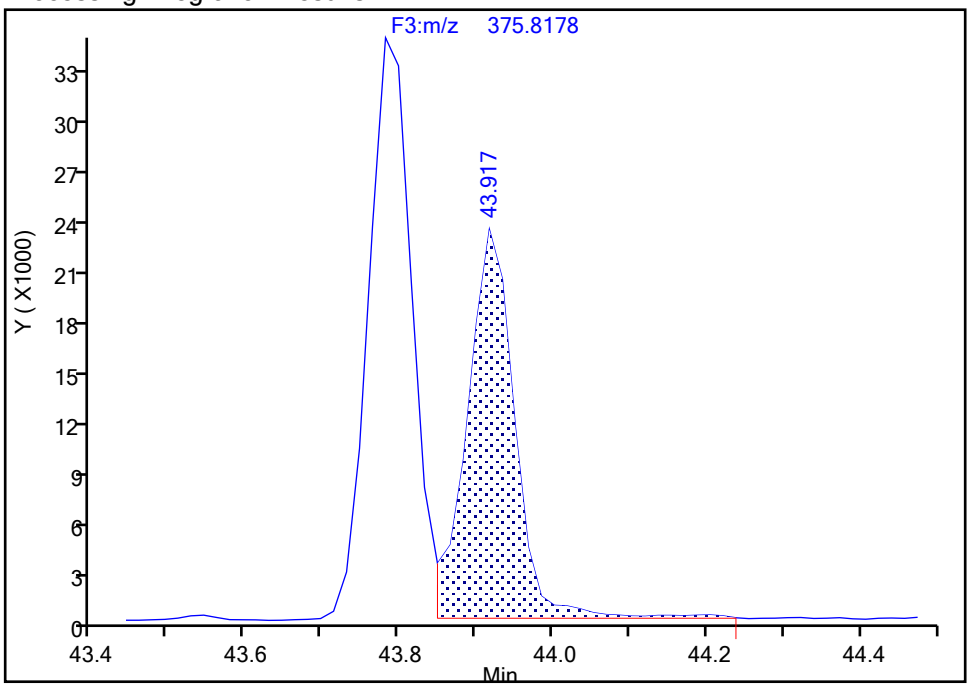
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

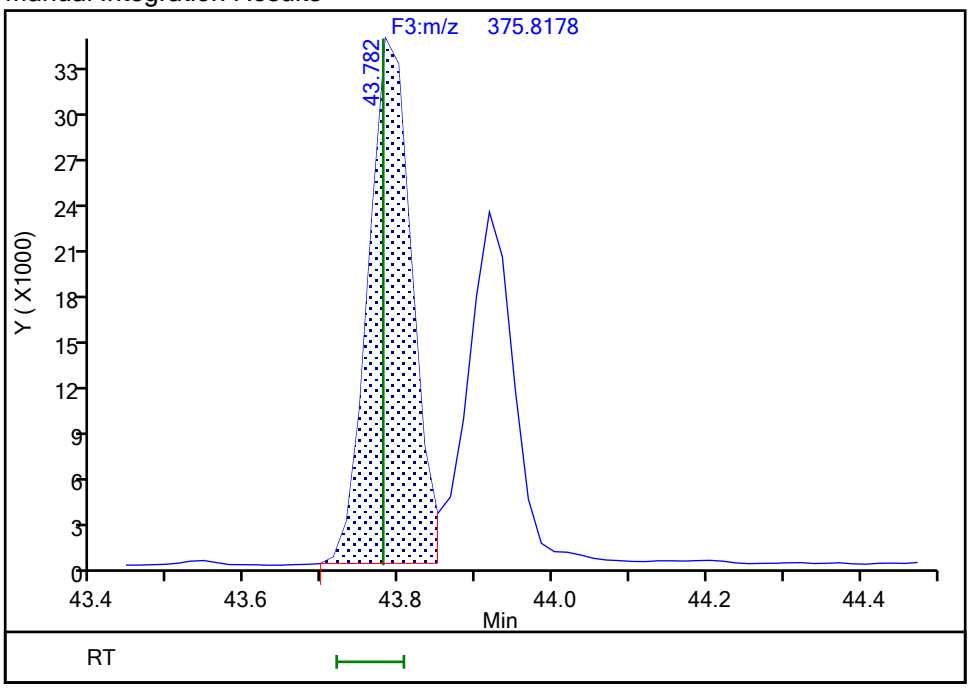
Processing Integration Results

RT: 43.92
Area: 97610
Amount: 6.994354
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 133910
Amount: 9.291334
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:20
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

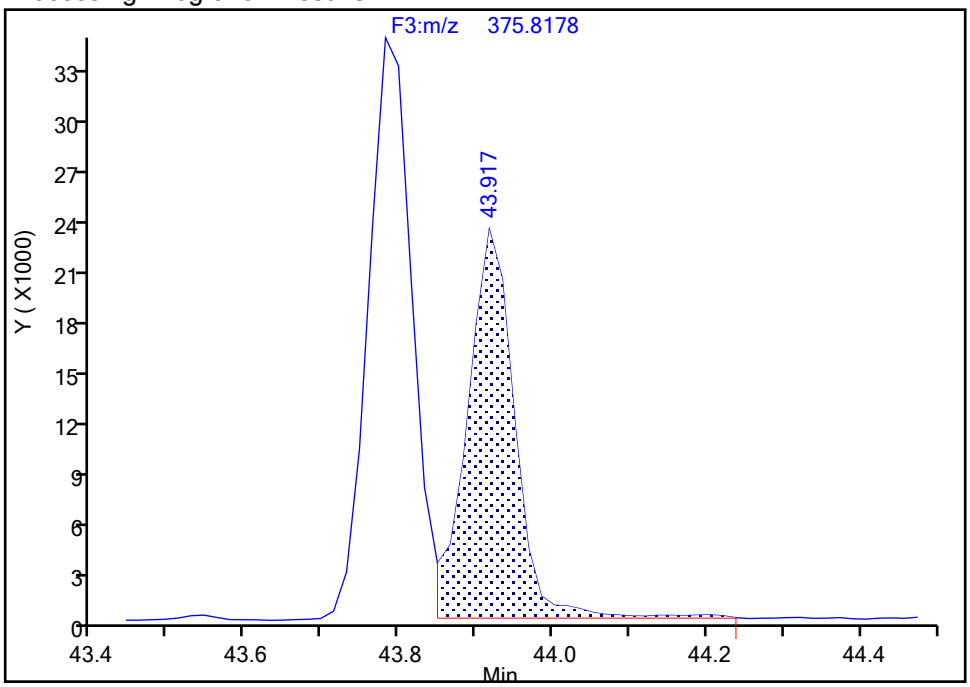
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 3

Processing Integration Results

RT: 43.92
Area: 227932
Amount: 6.994354
Amount Units: pg/ul



Manual Integration Results

RT: 43.80
Area: 302786
Amount: 9.291334
Amount Units: pg/ul

Reviewer: davidsonm, 18-Dec-2019 10:15:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

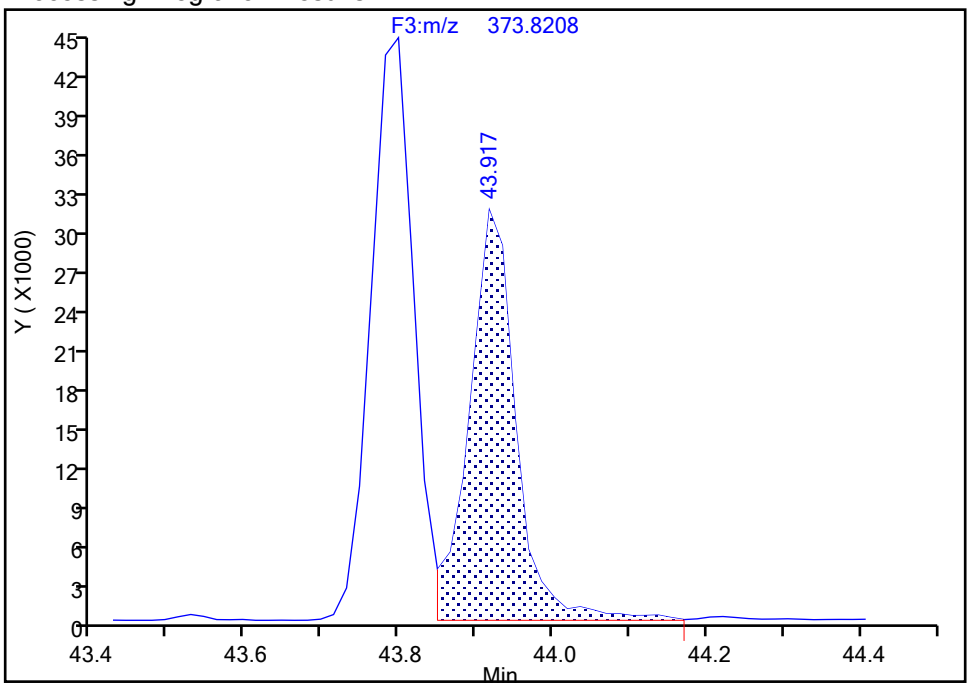
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

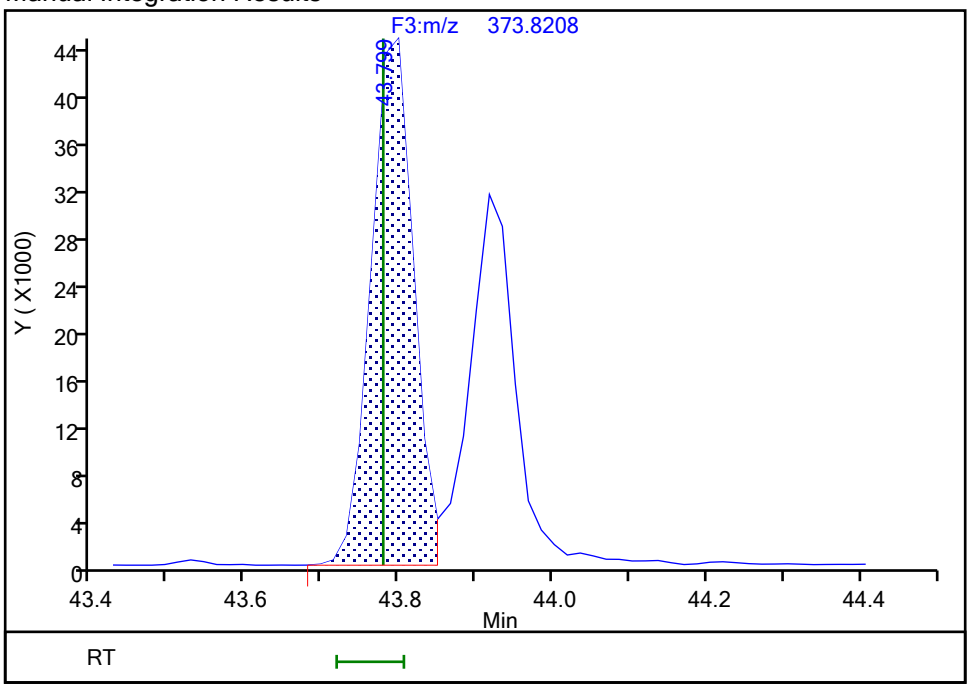
Processing Integration Results

RT: 43.92
Area: 130322
Amount: 6.994354
Amount Units: pg/ul



Manual Integration Results

RT: 43.80
Area: 168876
Amount: 9.291334
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:22

Audit Action: Assigned Compound ID Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 3

Processing Integration Results

RT:	44.64
Area:	165553
Amount:	6.010185
Amount Units:	pg/ul

Manual Integration Results

RT:	45.59
Area:	143187
Amount:	5.198217
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 10:16:46

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

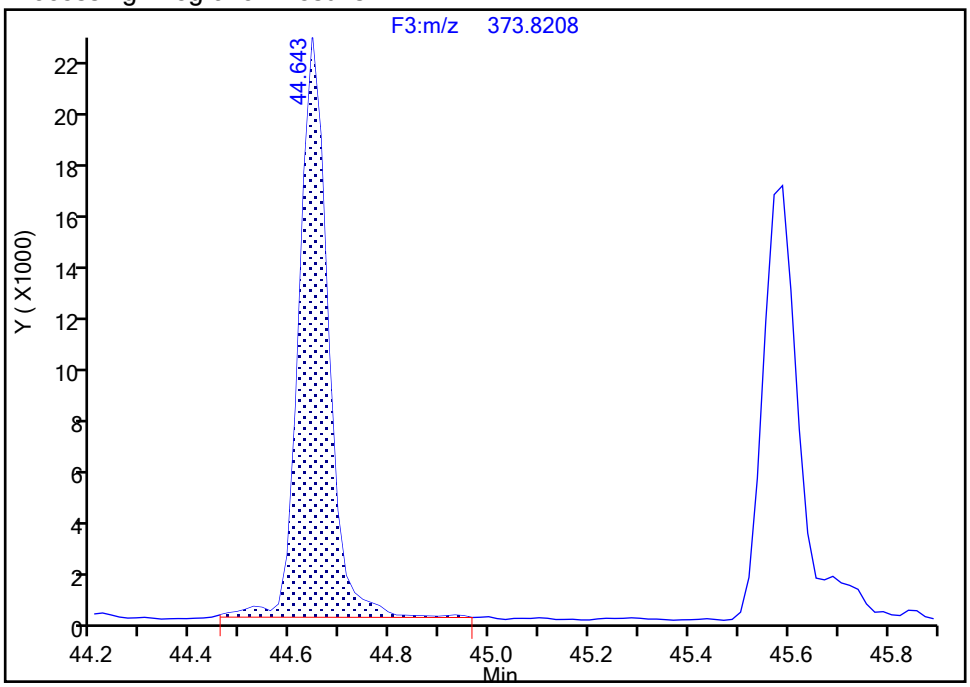
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

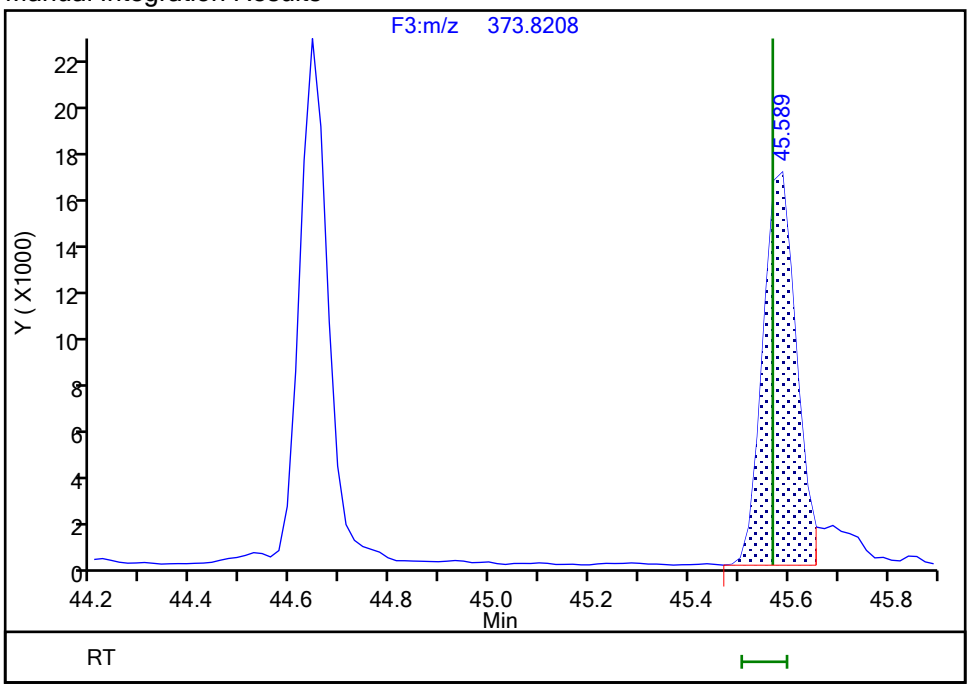
Processing Integration Results

RT: 44.64
Area: 92694
Amount: 6.010185
Amount Units: pg/ul



Manual Integration Results

RT: 45.59
Area: 78468
Amount: 5.198217
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:16:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

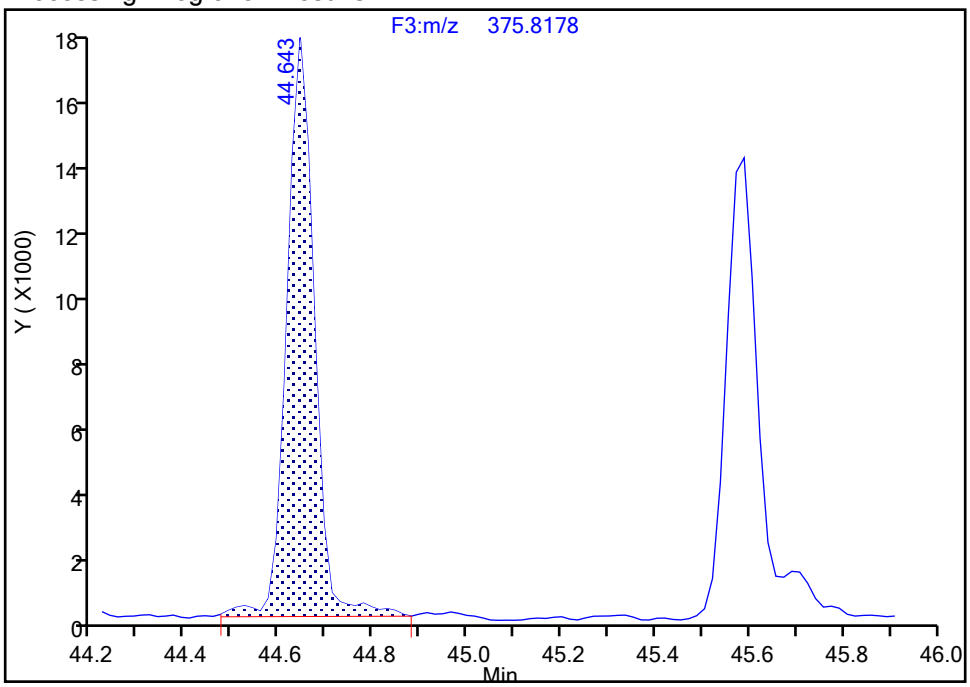
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

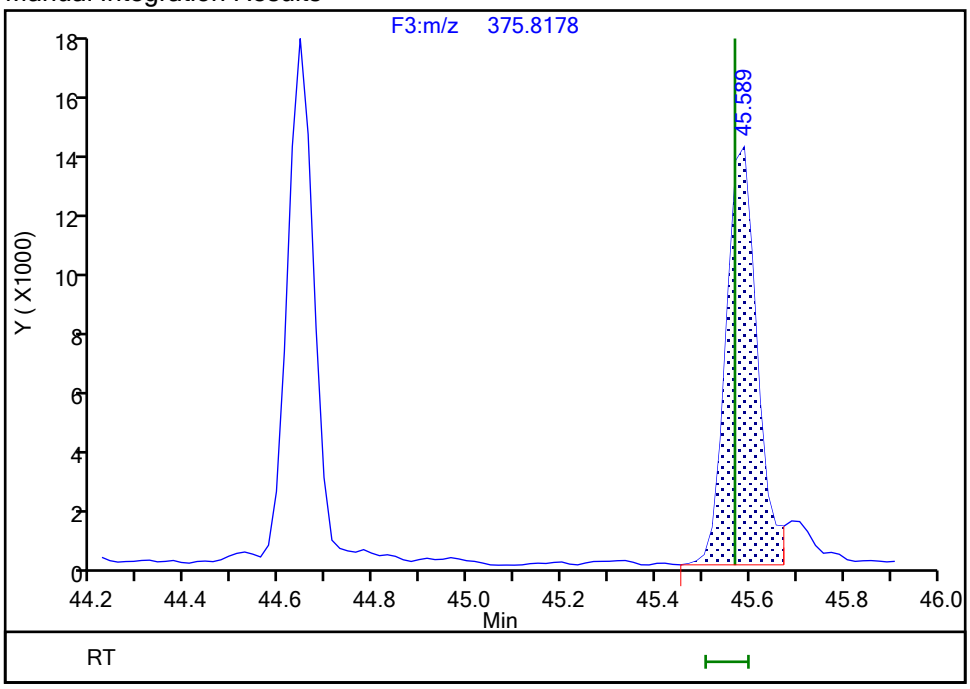
Processing Integration Results

RT: 44.64
Area: 72859
Amount: 6.010185
Amount Units: pg/ul



Manual Integration Results

RT: 45.59
Area: 64719
Amount: 5.198217
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:16:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

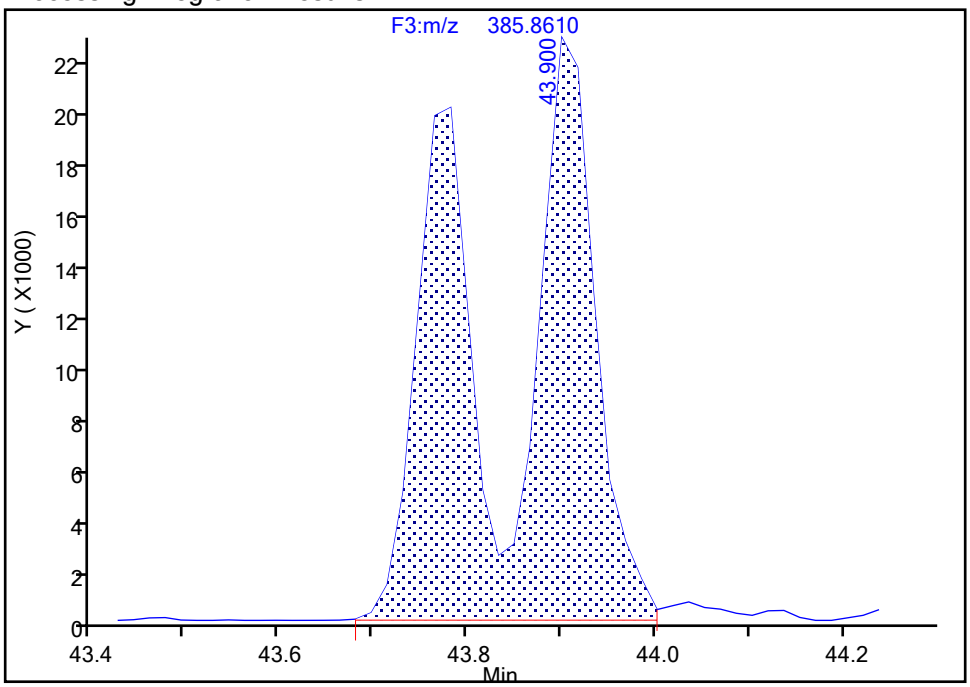
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 2

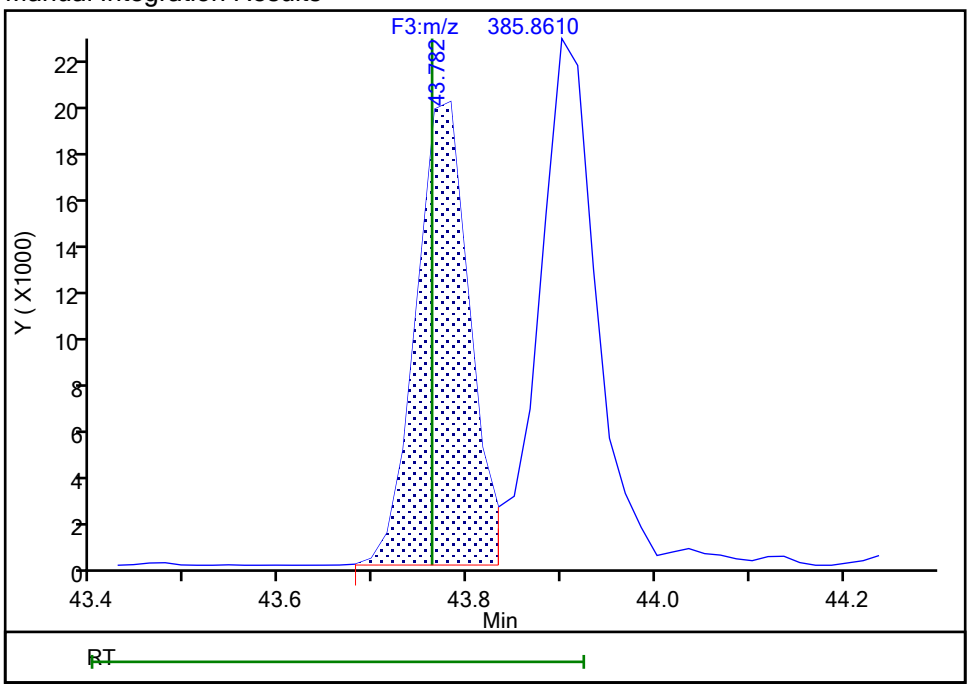
Processing Integration Results

RT: 43.90
Area: 171770
Amount: 6.381548
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 77887
Amount: 3.454623
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:12

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Knoxville

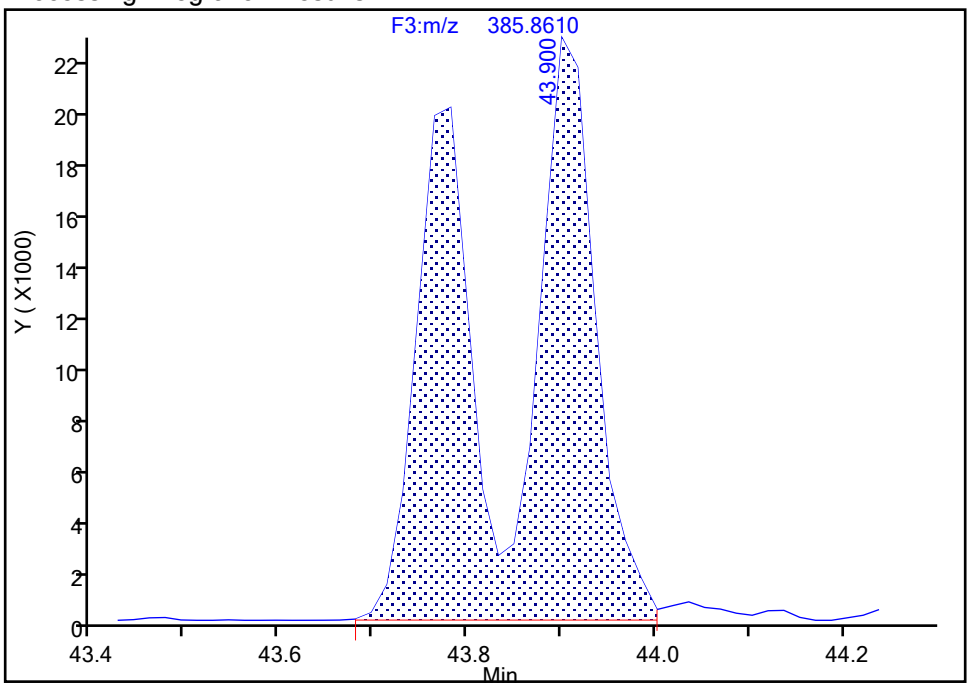
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 3

Processing Integration Results

RT: 43.90
Area: 220846
Amount: 6.381548
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 119554
Amount: 3.454623
Amount Units: pg/ul
Reviewer: davidsonm, 18-Dec-2019 10:15:12
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

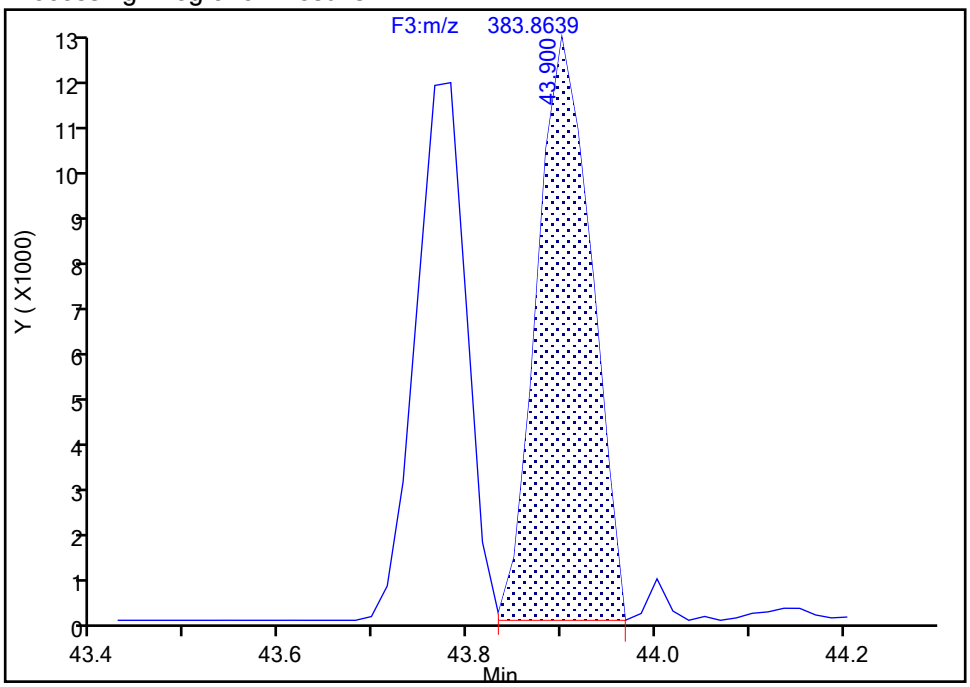
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 1

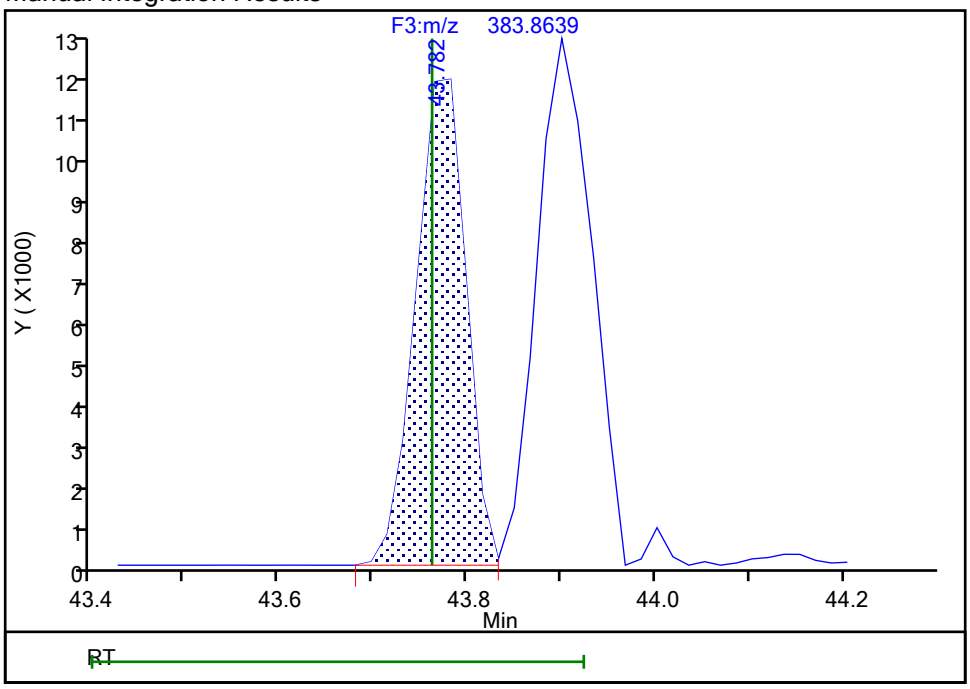
Processing Integration Results

RT: 43.90
Area: 49076
Amount: 6.381548
Amount Units: pg/ul



Manual Integration Results

RT: 43.78
Area: 41667
Amount: 3.454623
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:14

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

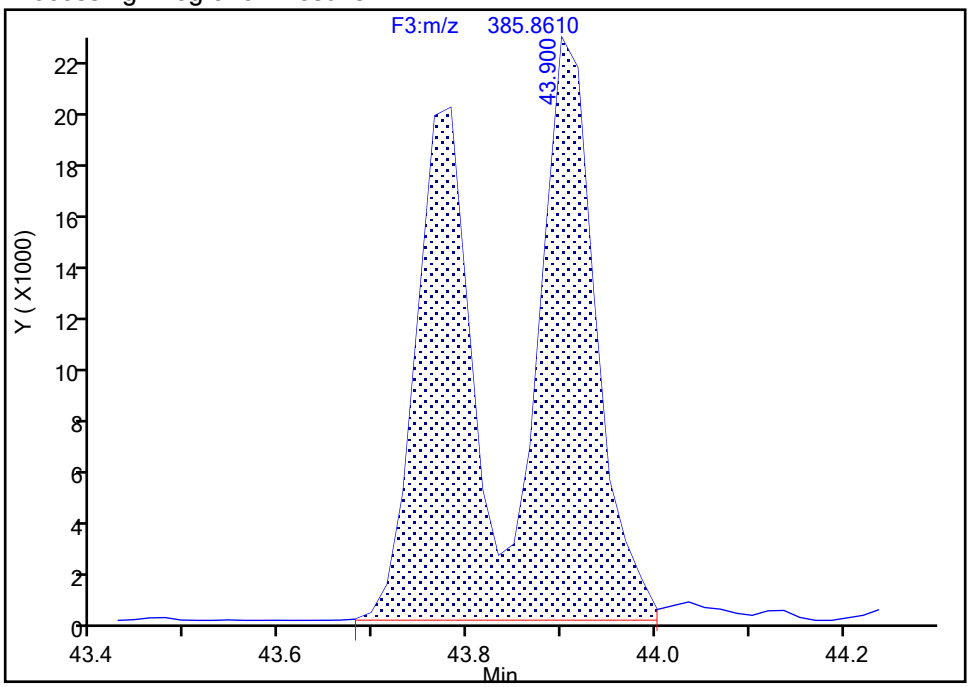
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDF, CAS: 116843-03-9

Signal: 2

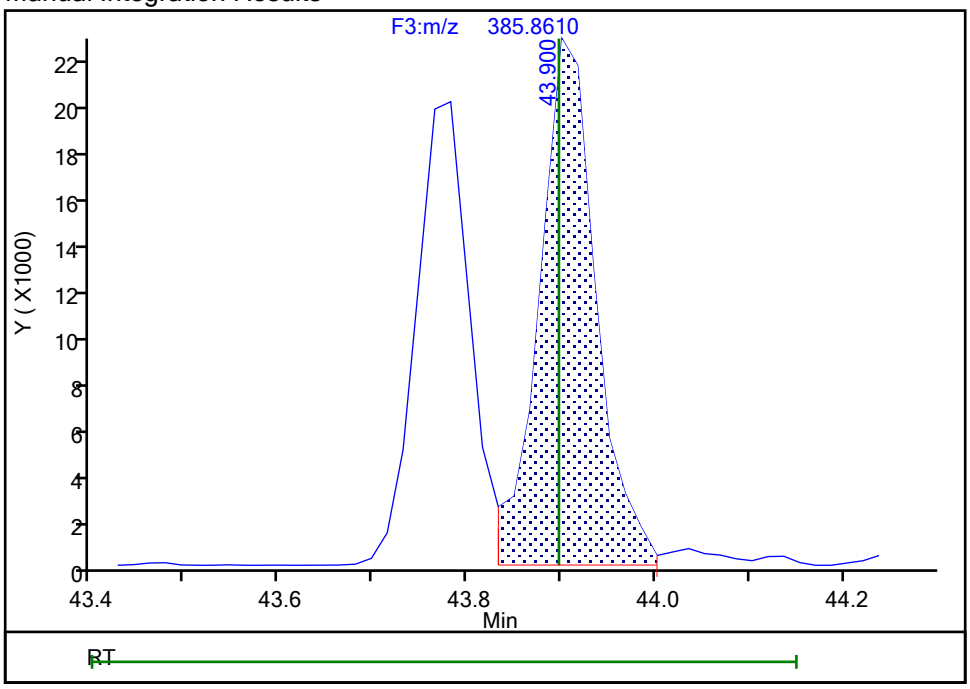
Processing Integration Results

RT: 43.90
Area: 171770
Amount: 5.189144
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 93882
Amount: 3.359036
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:11

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

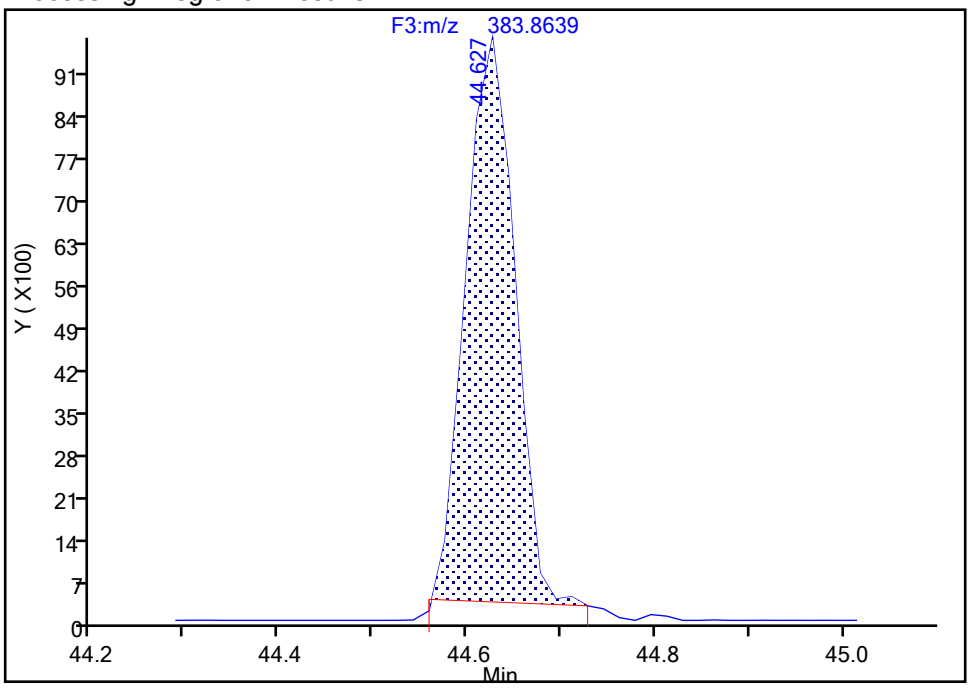
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-2,3,4,6,7,8-HxCDF, CAS: 116843-05-1

Signal: 1

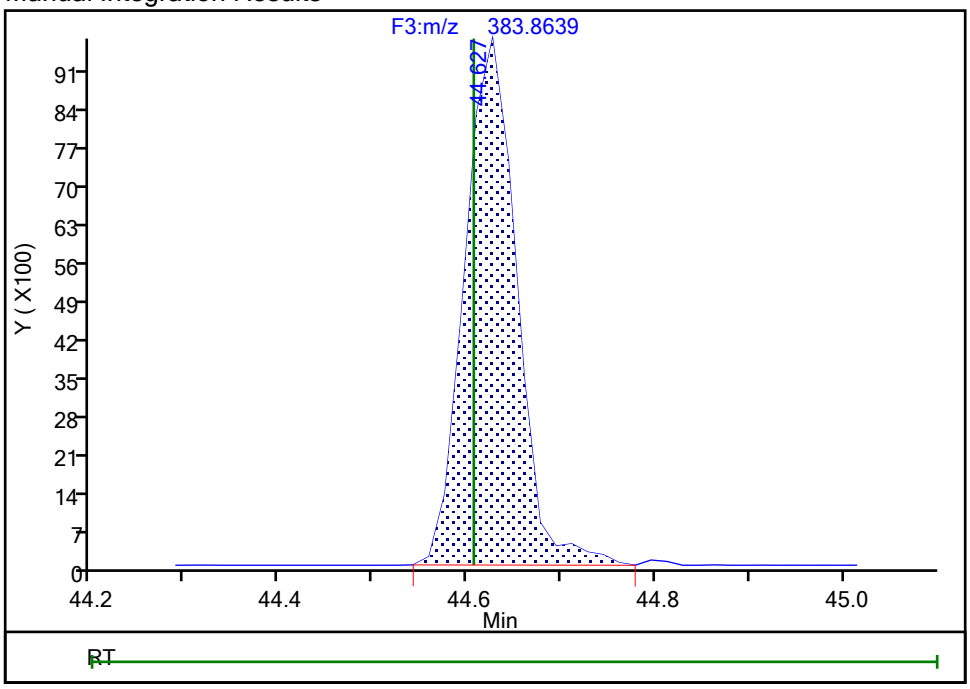
Processing Integration Results

RT: 44.63
Area: 34819
Amount: 2.644802
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 37243
Amount: 2.890896
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:45

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

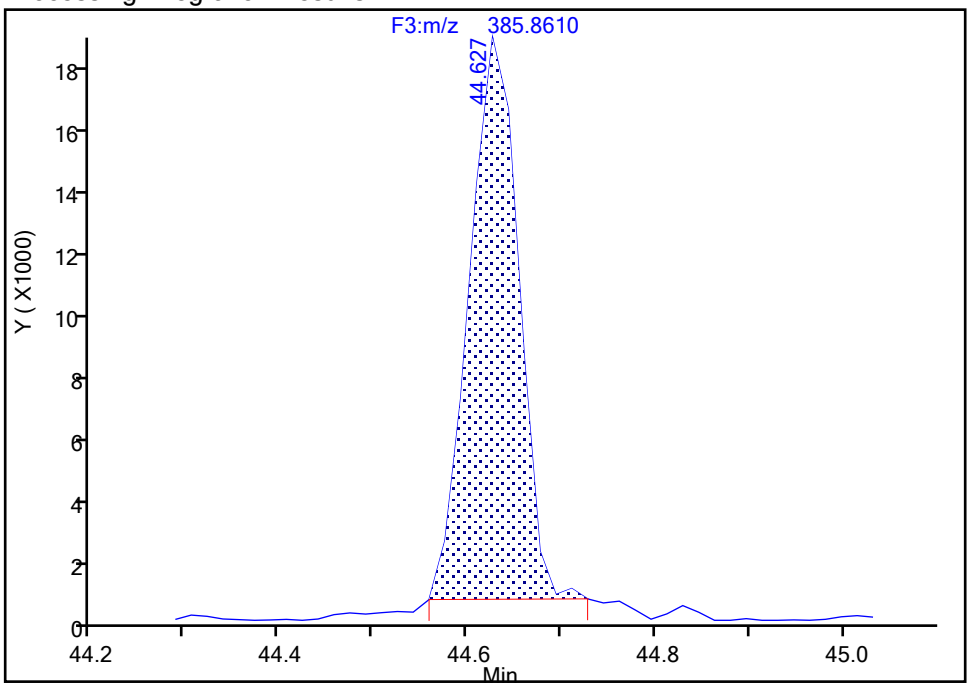
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-2,3,4,6,7,8-HxCDF, CAS: 116843-05-1

Signal: 2

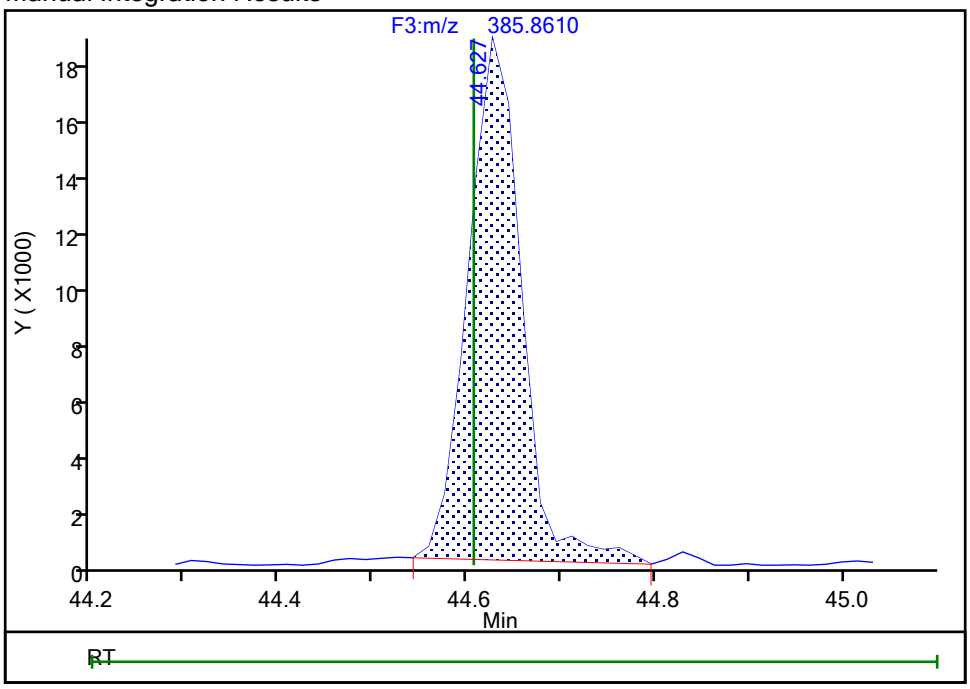
Processing Integration Results

RT: 44.63
Area: 66752
Amount: 2.644802
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 73779
Amount: 2.890896
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:15:52

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 3

Processing Integration Results

RT:	44.63
Area:	100603
Amount:	2.880531
Amount Units:	pg/ul

Manual Integration Results

RT:	45.56
Area:	109539
Amount:	3.136393
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 10:16:05

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

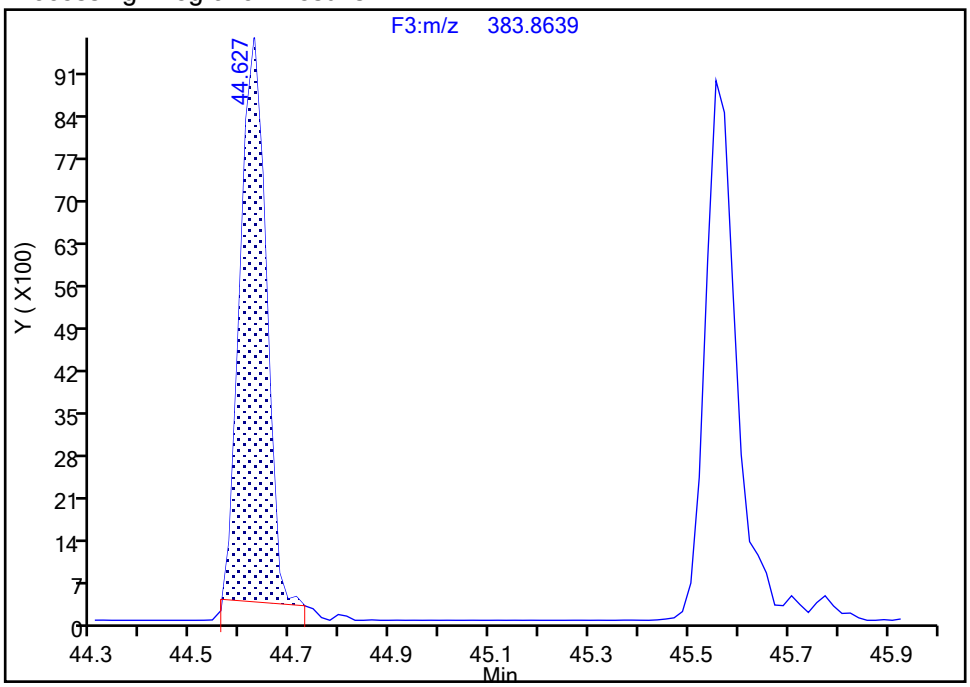
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 1

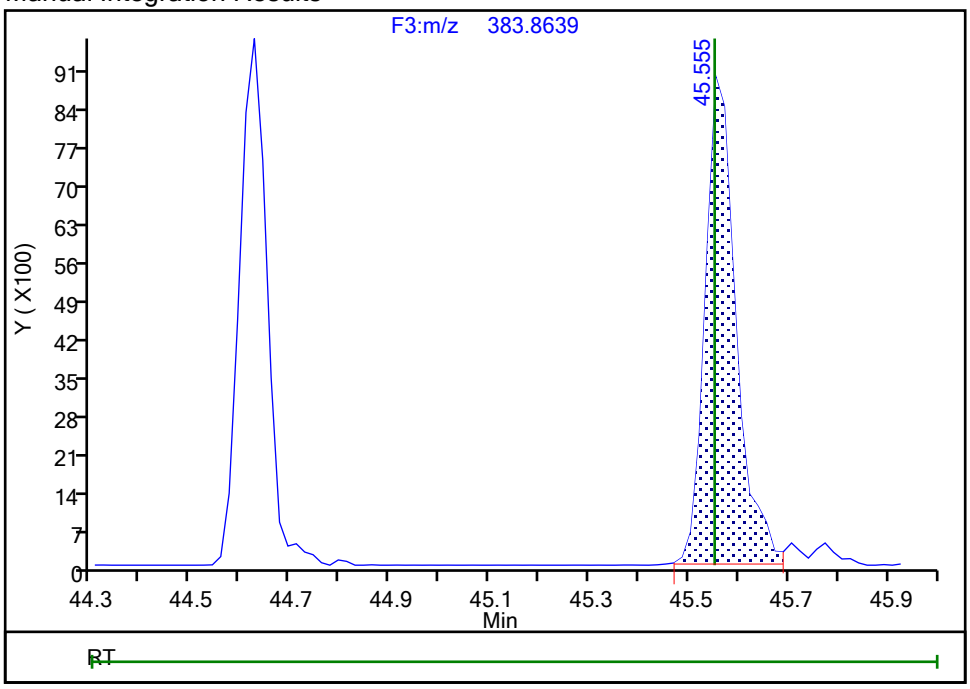
Processing Integration Results

RT: 44.63
Area: 33851
Amount: 2.880531
Amount Units: pg/ul



Manual Integration Results

RT: 45.56
Area: 38493
Amount: 3.136393
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:16:40

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

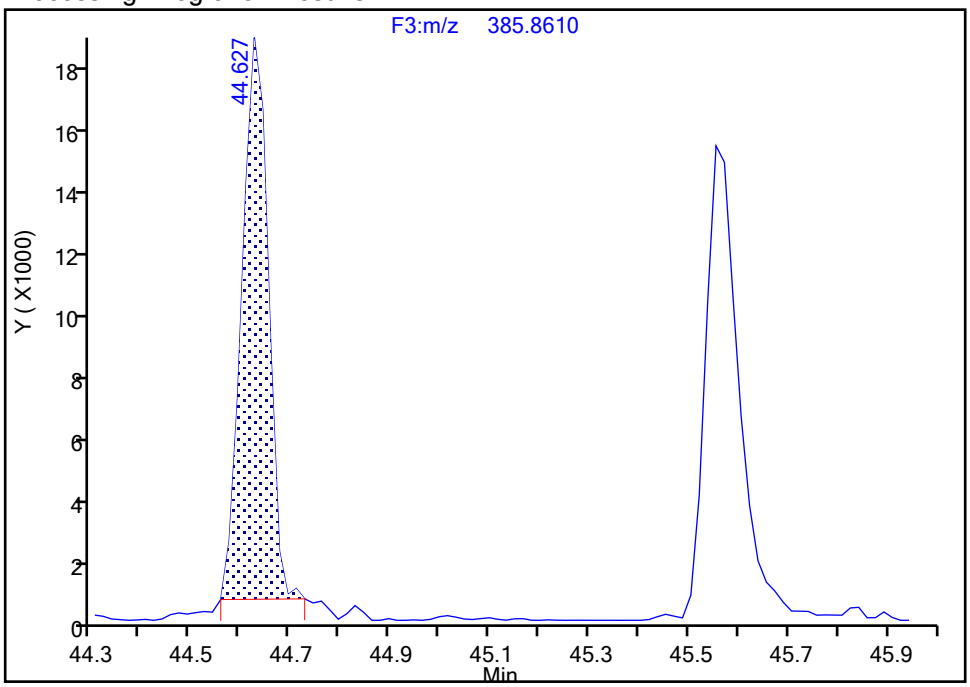
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 2

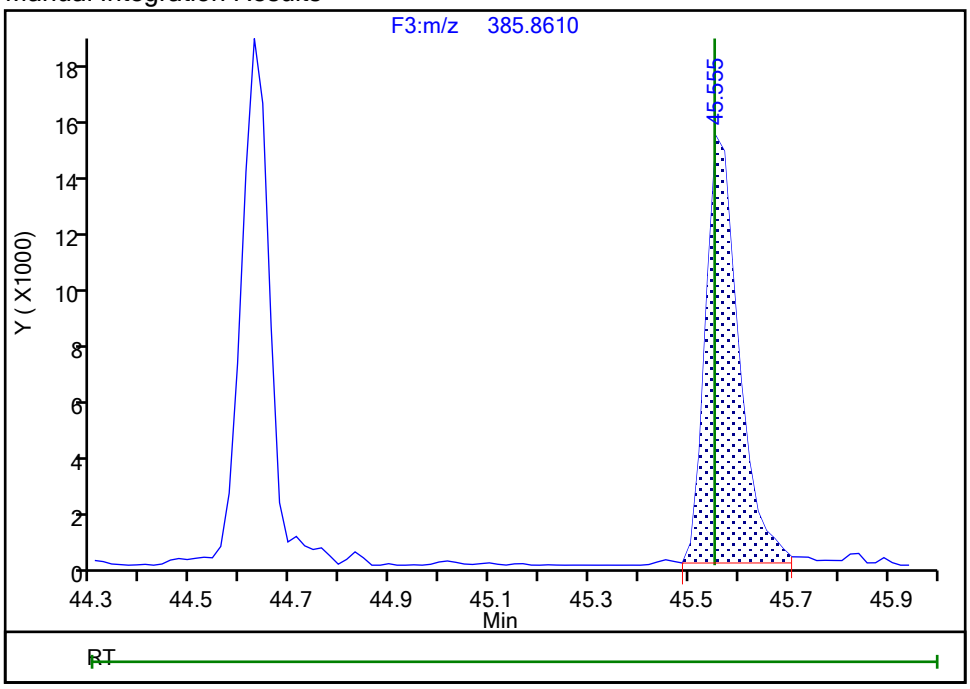
Processing Integration Results

RT: 44.63
Area: 66752
Amount: 2.880531
Amount Units: pg/ul



Manual Integration Results

RT: 45.56
Area: 71046
Amount: 3.136393
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:16:43

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

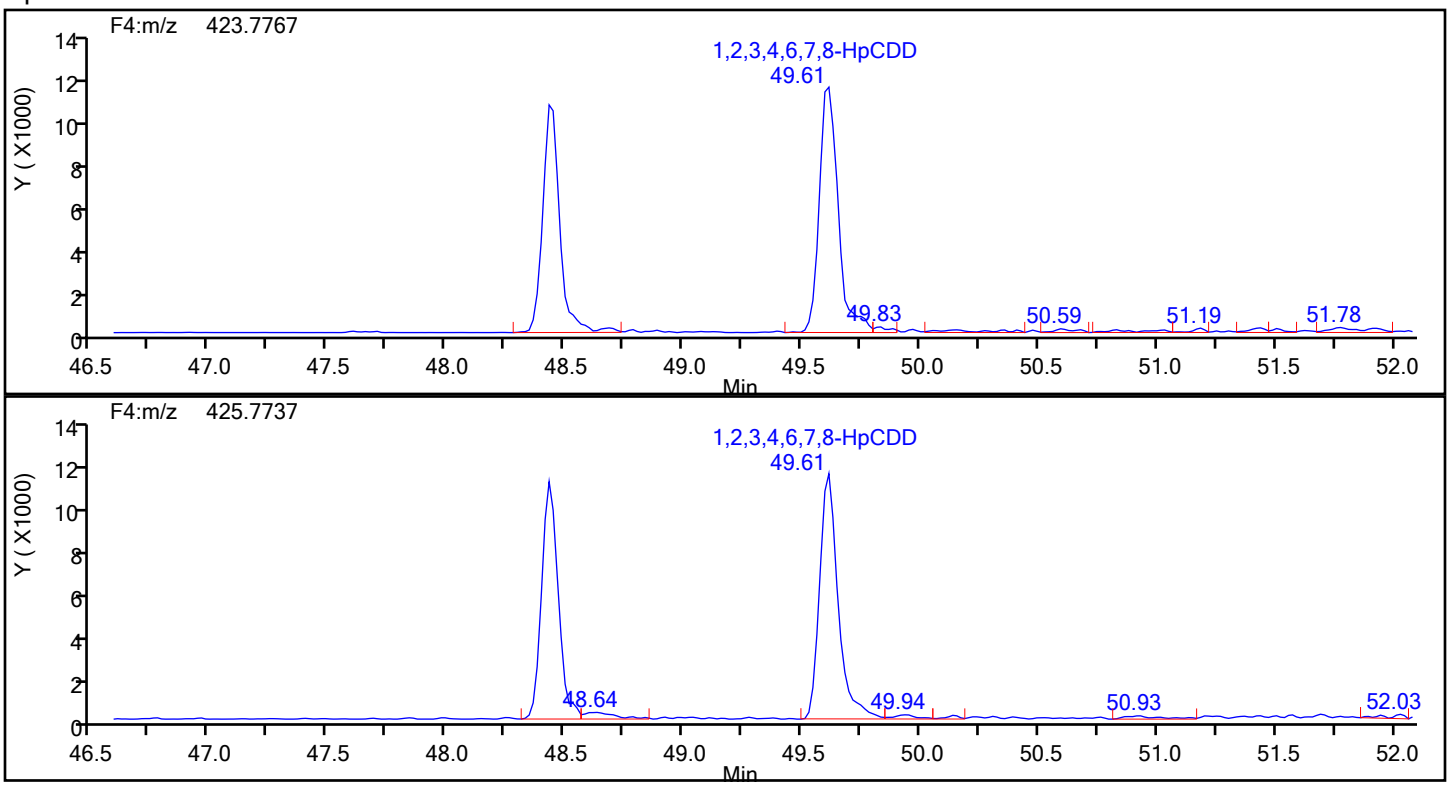
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

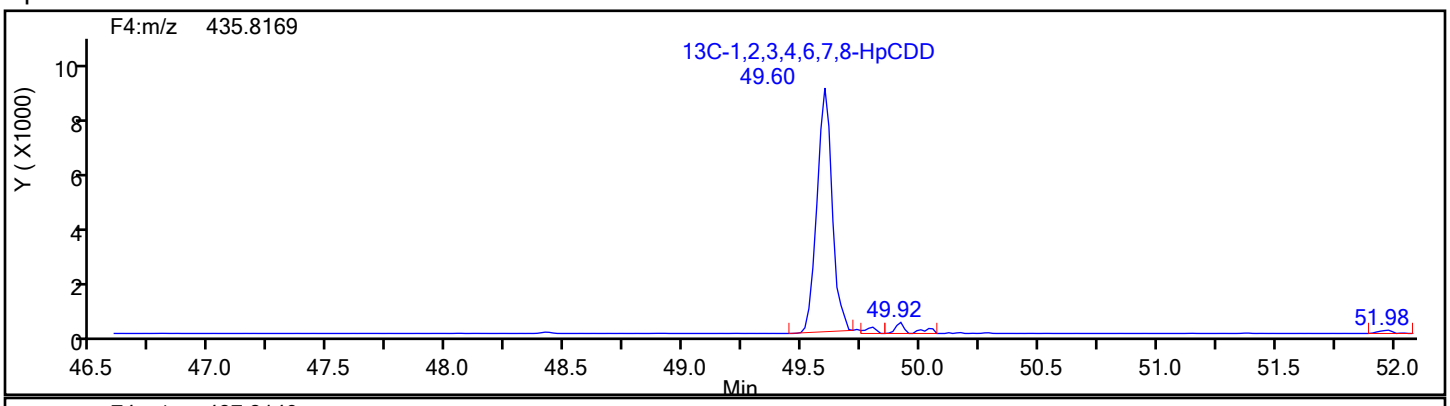
Worklist#: 36166 Sample Line#: 13

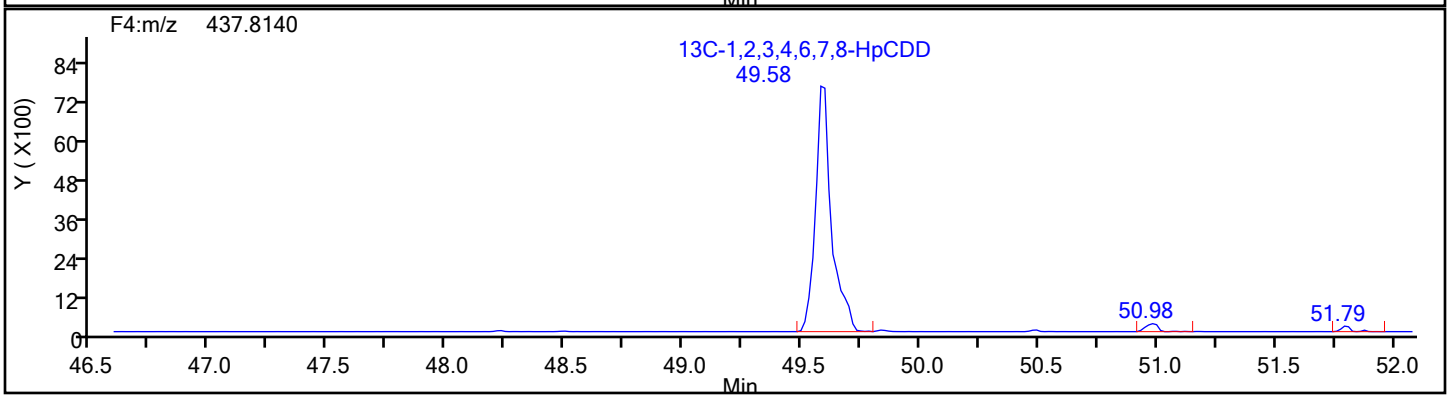
Column Type: Column Dia:

HpCDD



HpCDD Standards



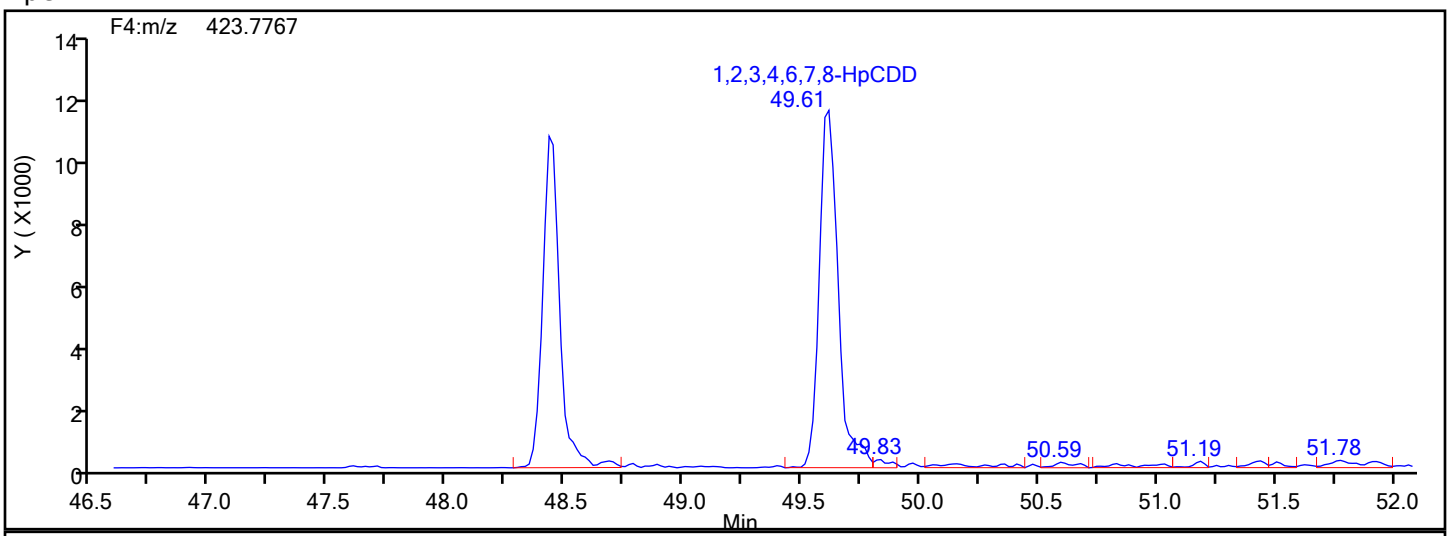


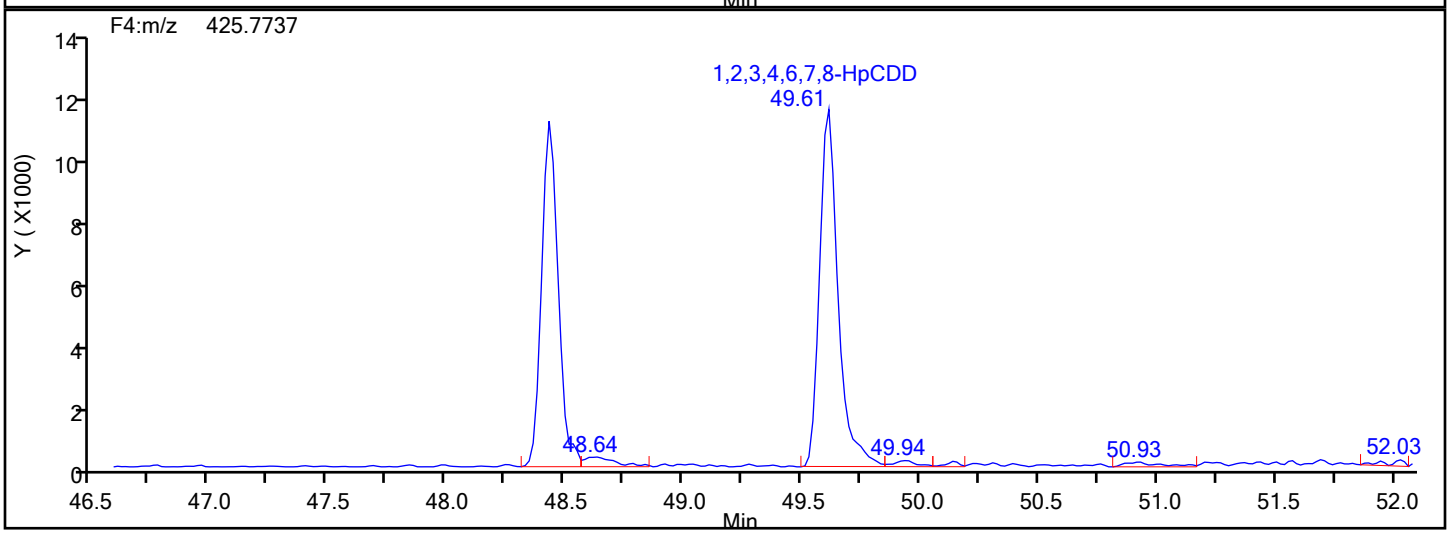
Report Date: 18-Dec-2019 12:06:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

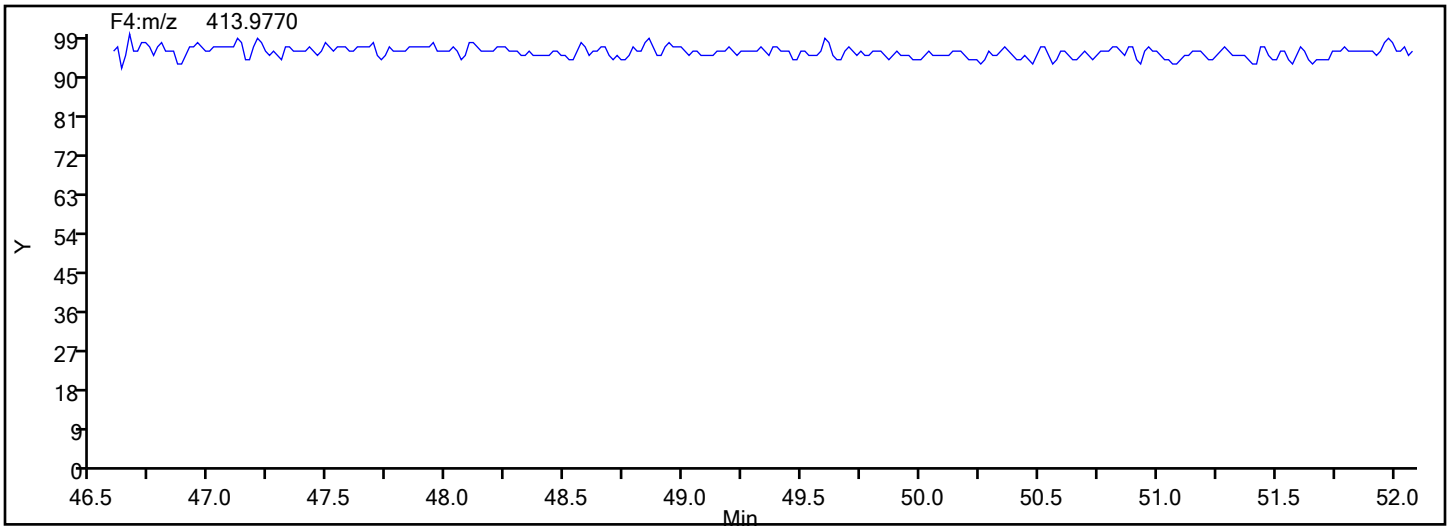
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

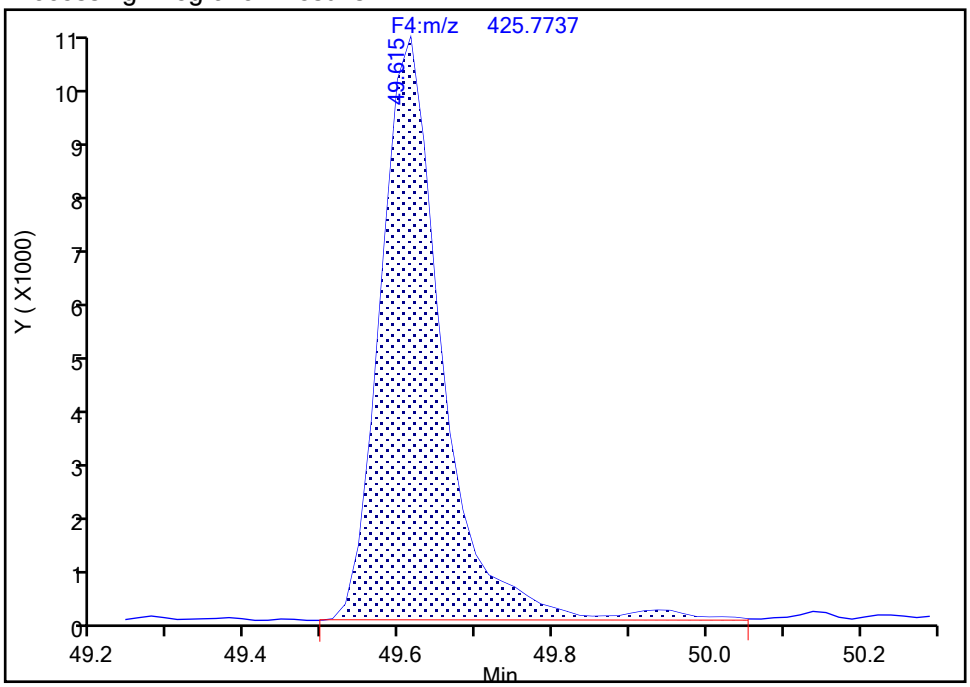
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 2

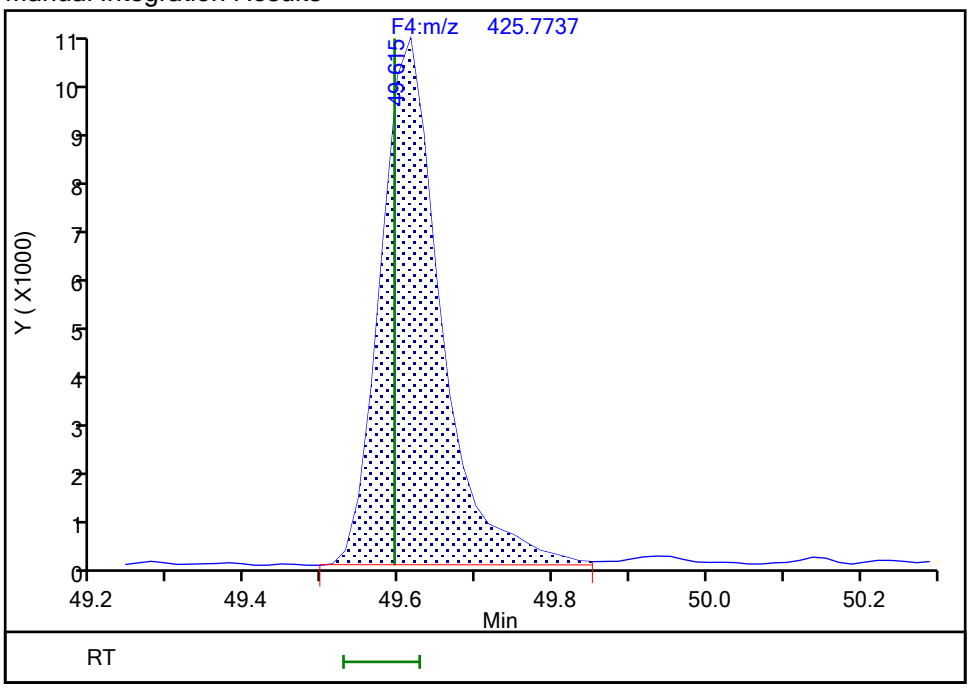
Processing Integration Results

RT: 49.61
Area: 61025
Amount: 7.508097
Amount Units: pg/ul



Manual Integration Results

RT: 49.61
Area: 59810
Amount: 7.366838
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:17:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

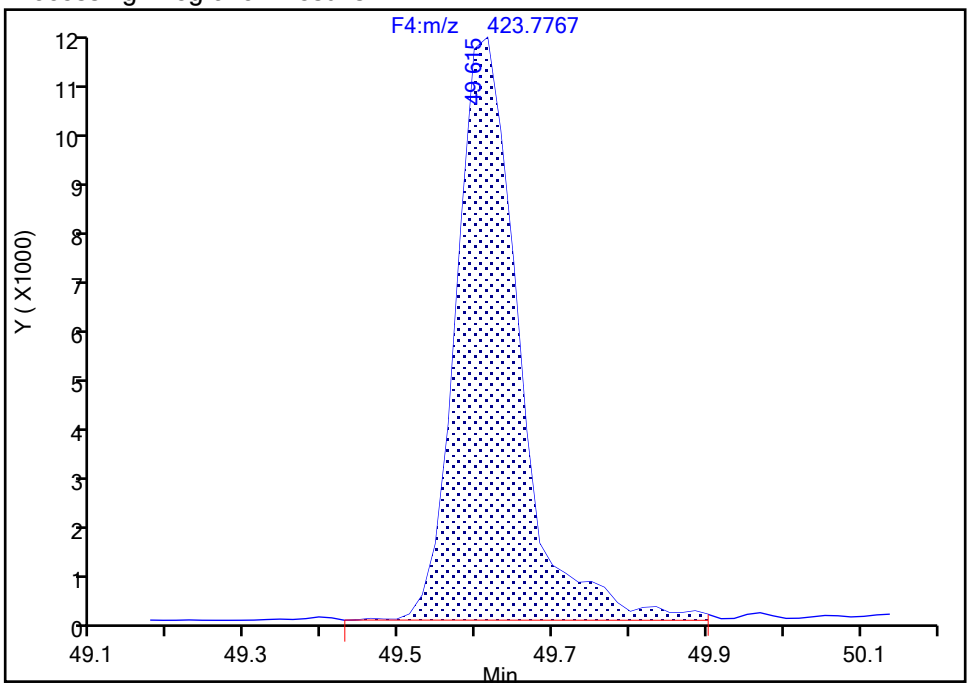
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 1

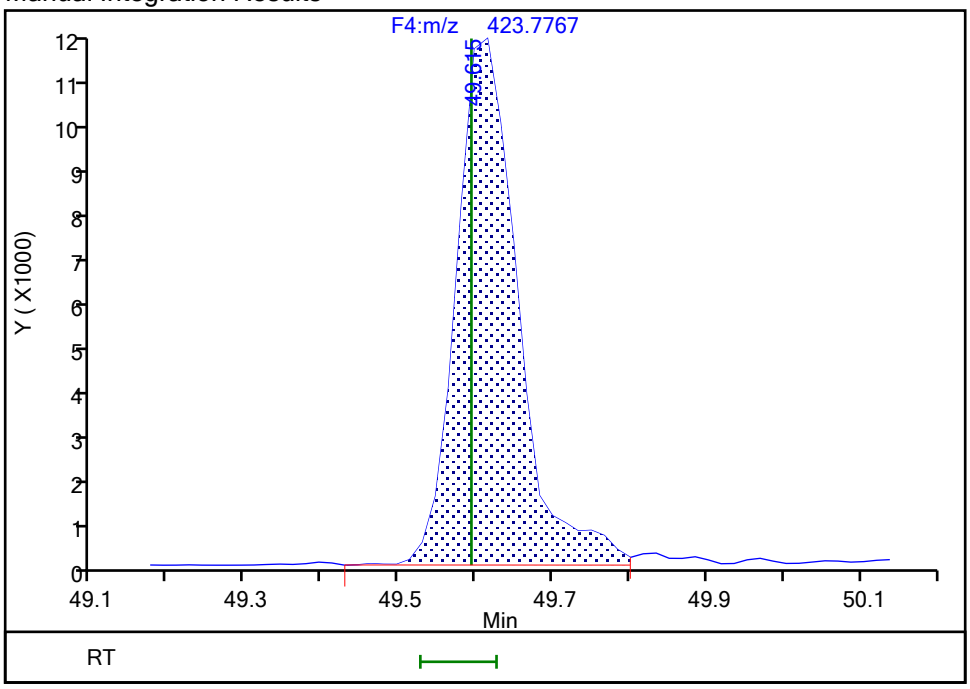
Processing Integration Results

RT: 49.61
Area: 63562
Amount: 7.508097
Amount Units: pg/ul



Manual Integration Results

RT: 49.61
Area: 62433
Amount: 7.366838
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:17:09

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

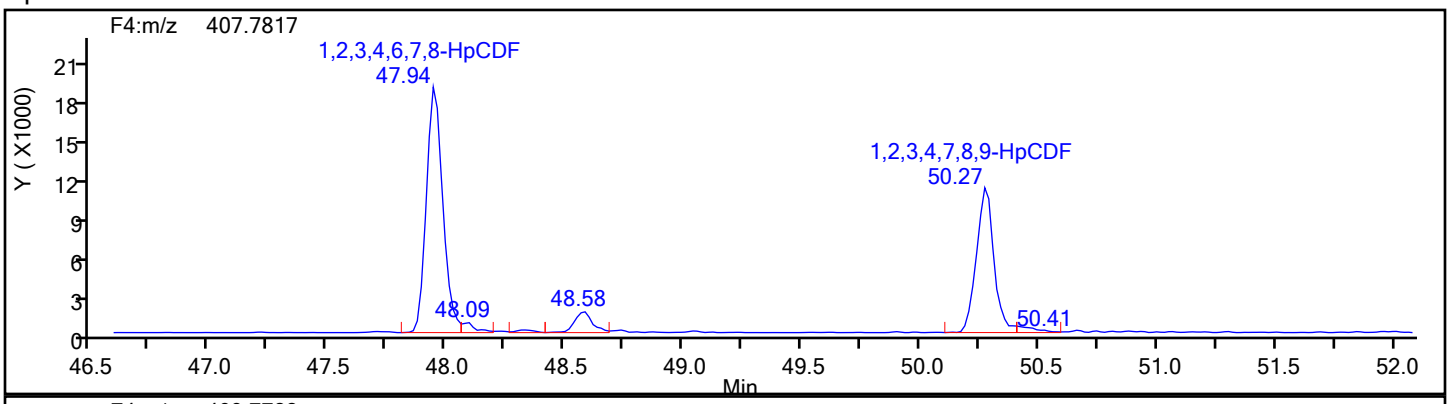
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

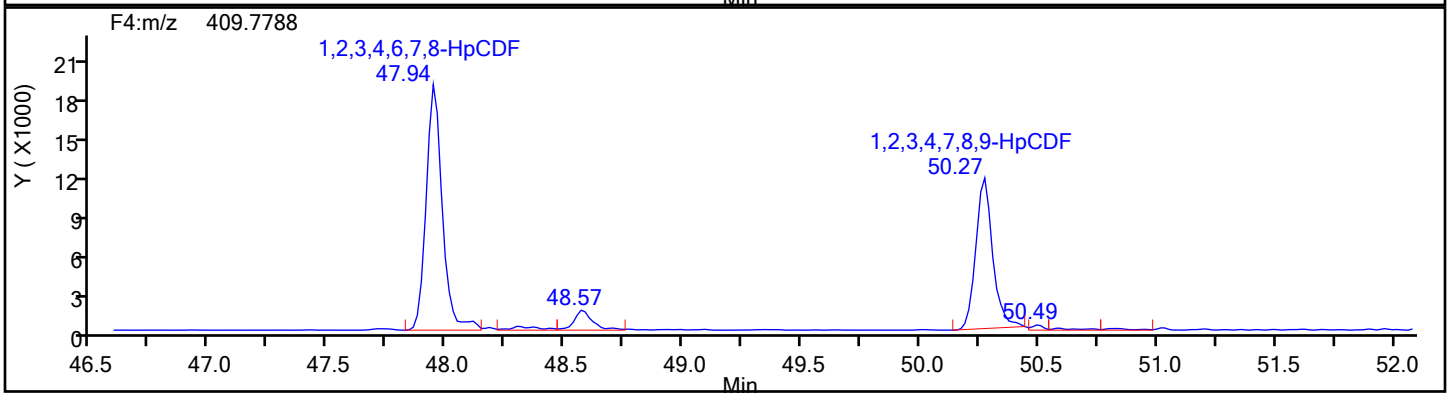
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 13

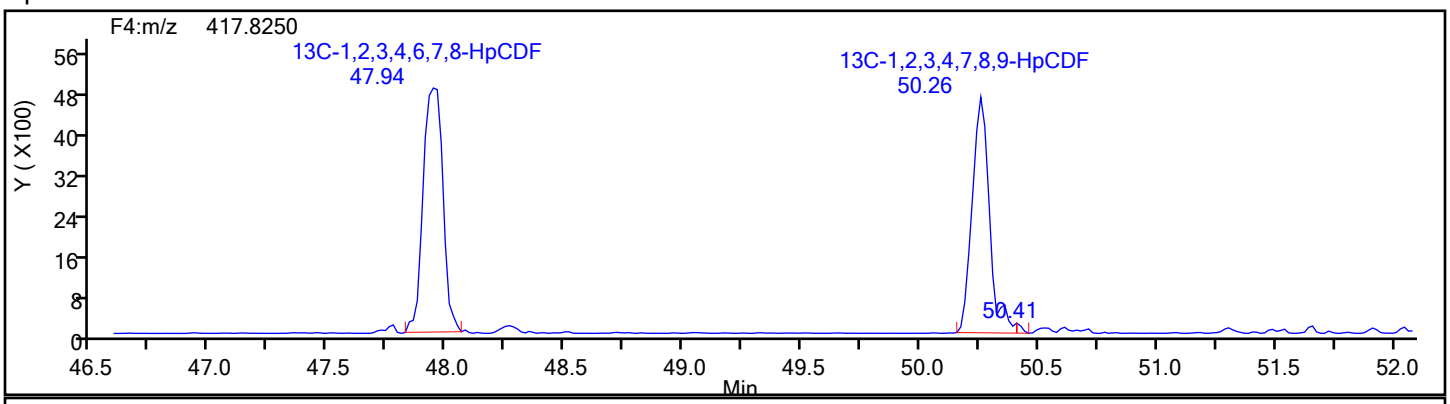
Column Type: Column Dia:

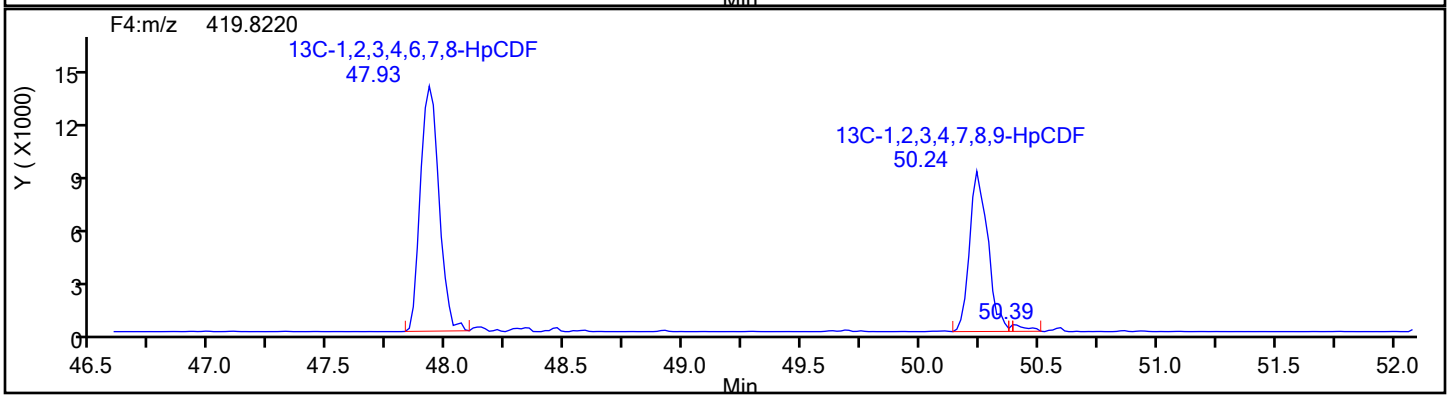
HpCDF





HpCDF Standards



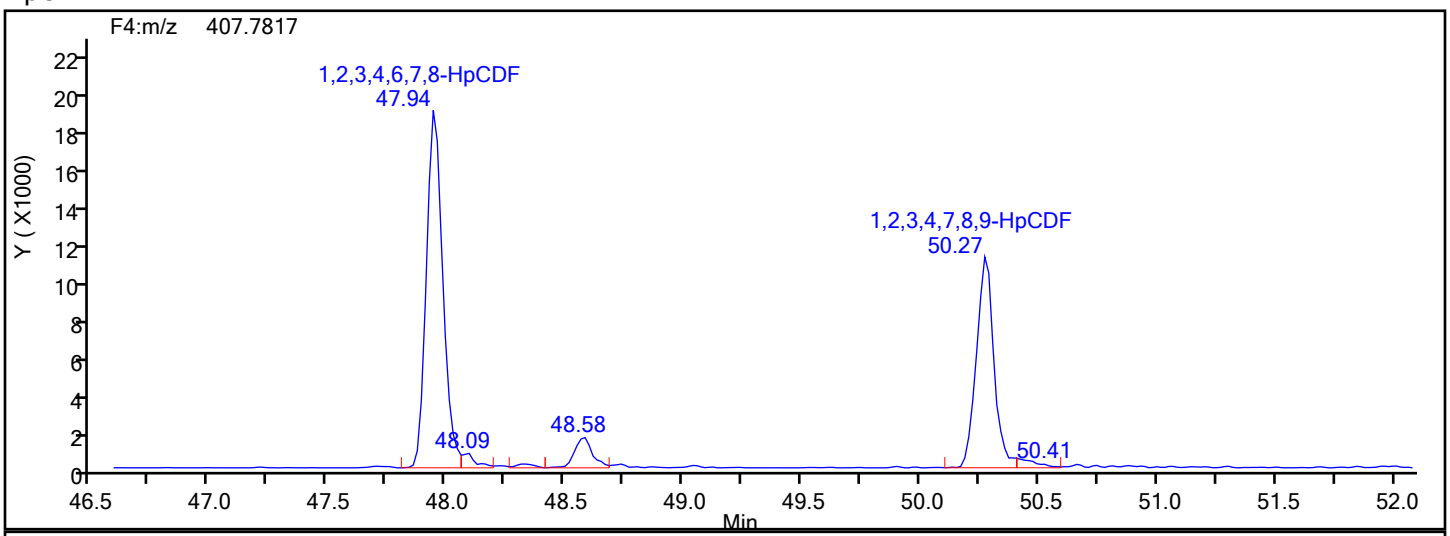


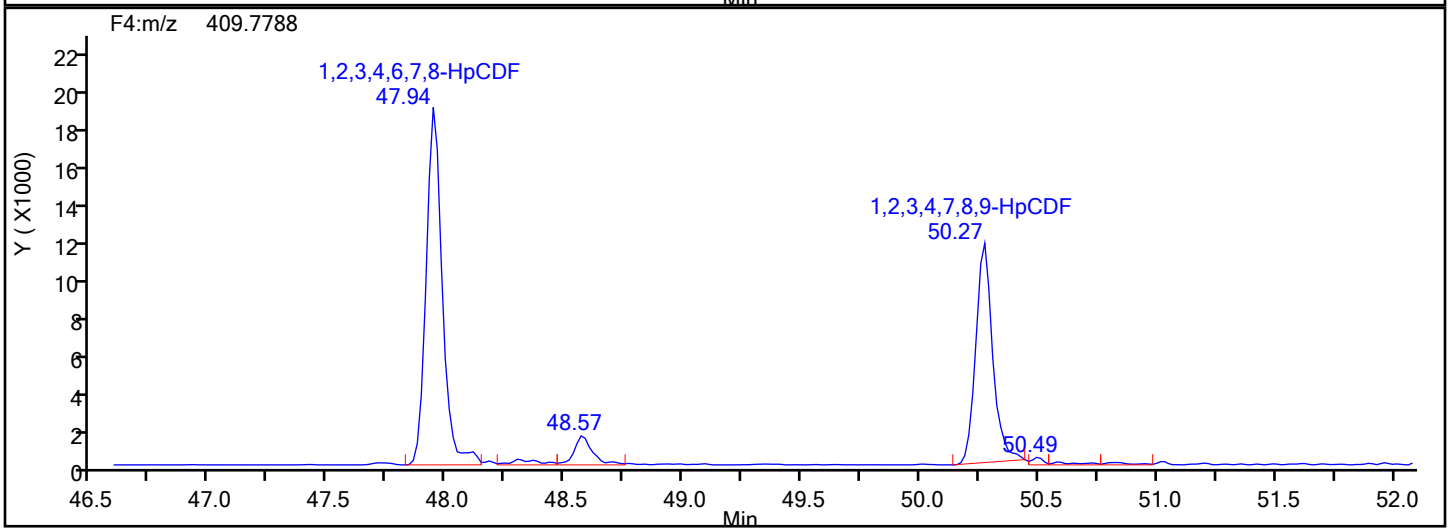
Report Date: 18-Dec-2019 12:06:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

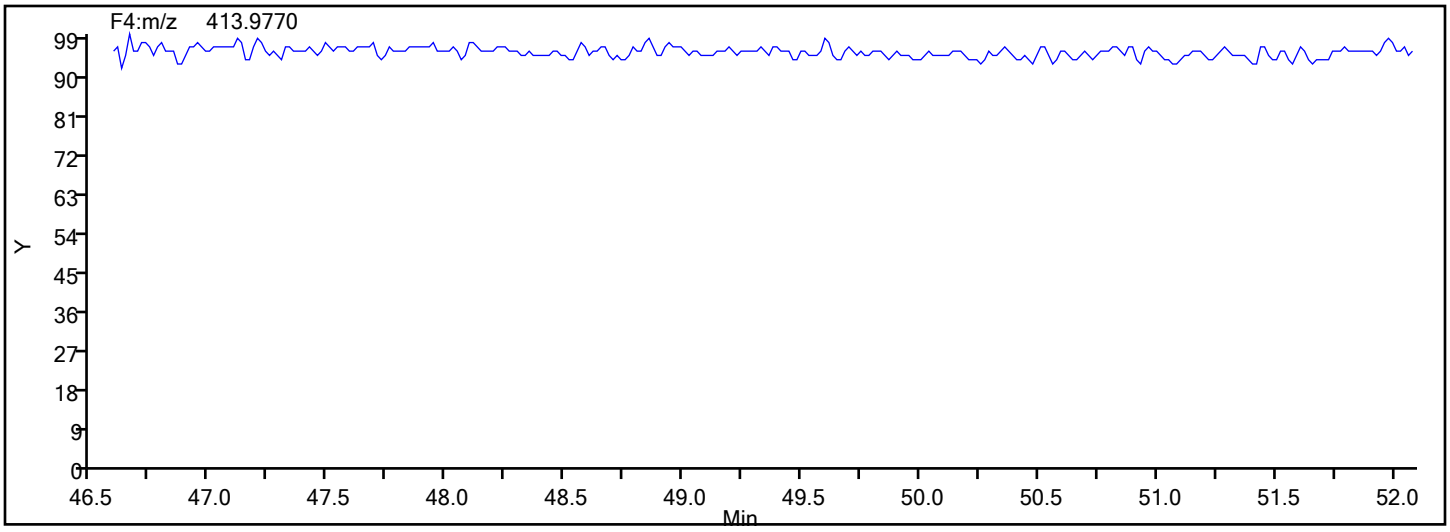
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

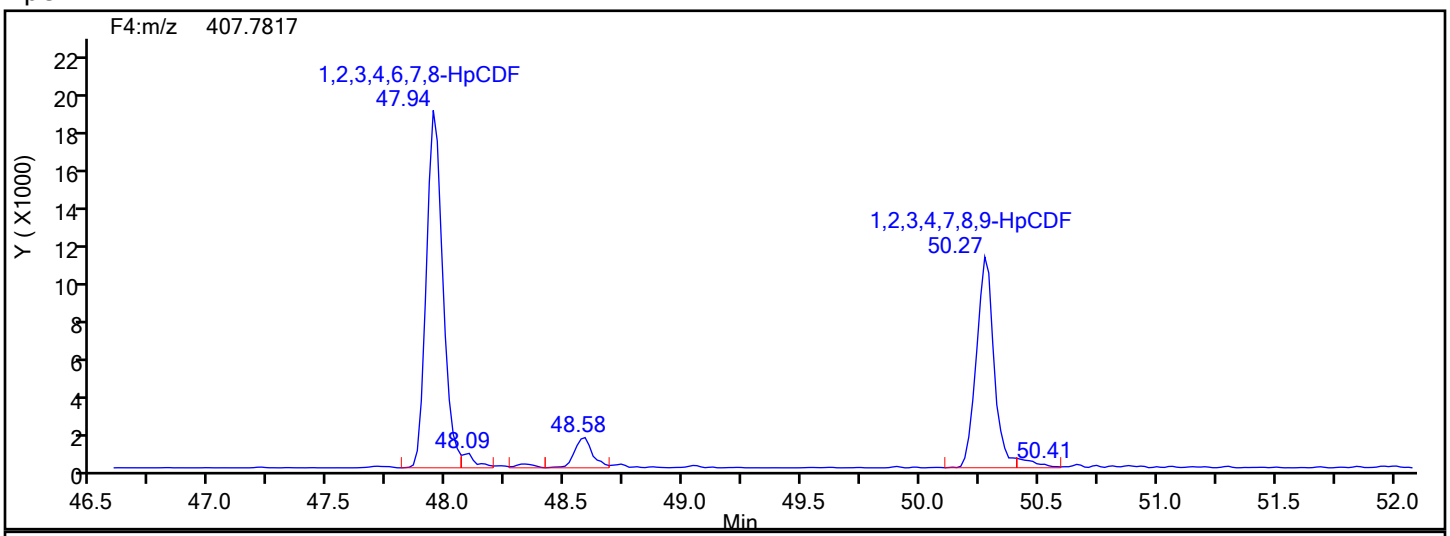


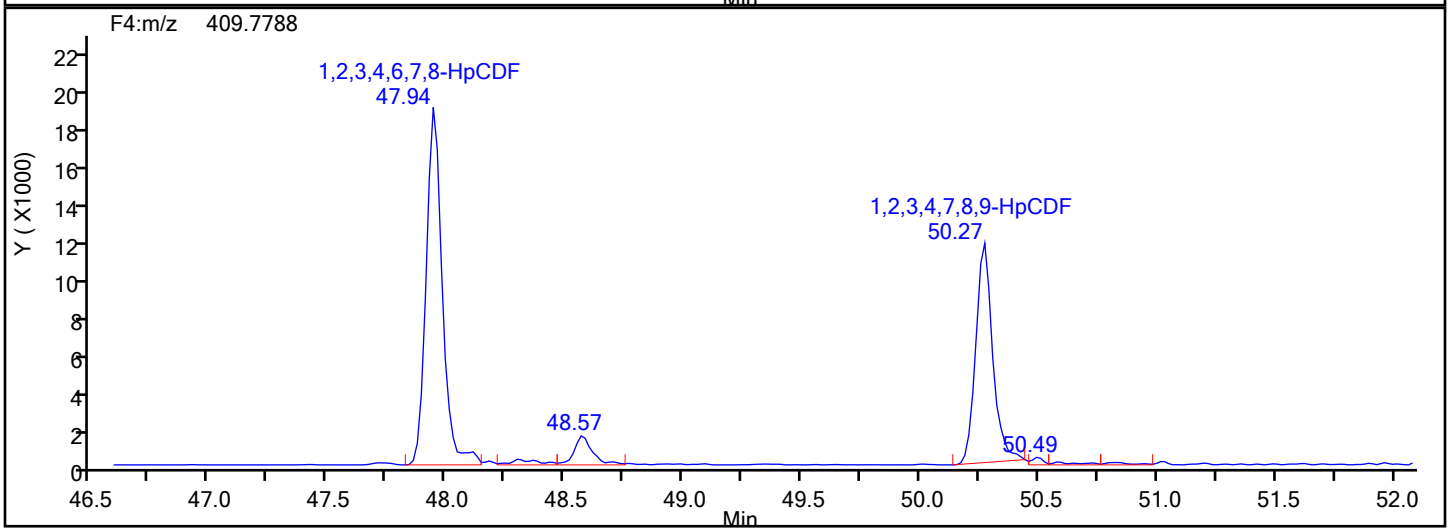
Report Date: 18-Dec-2019 12:06:26 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

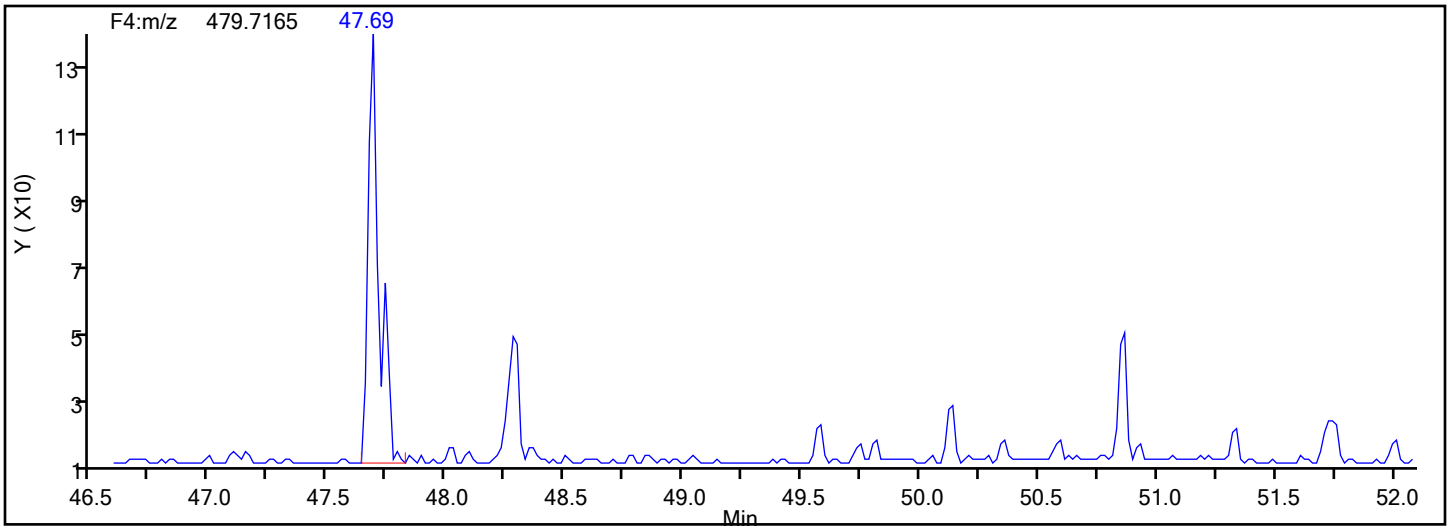
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

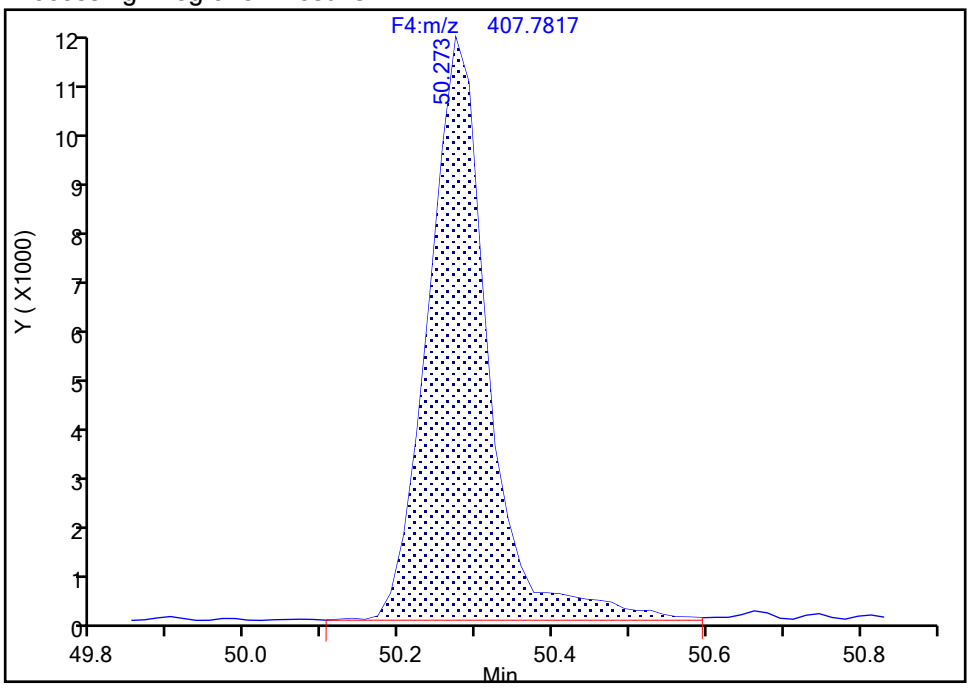
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

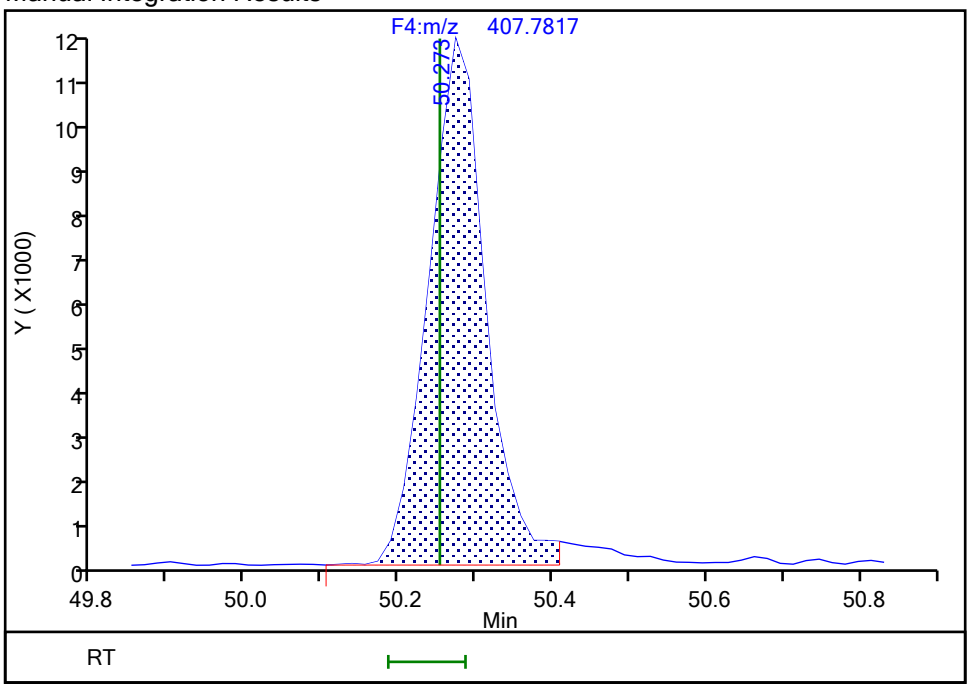
Processing Integration Results

RT: 50.27
Area: 59828
Amount: 5.876762
Amount Units: pg/ul



Manual Integration Results

RT: 50.27
Area: 57155
Amount: 5.741061
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:18:12

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

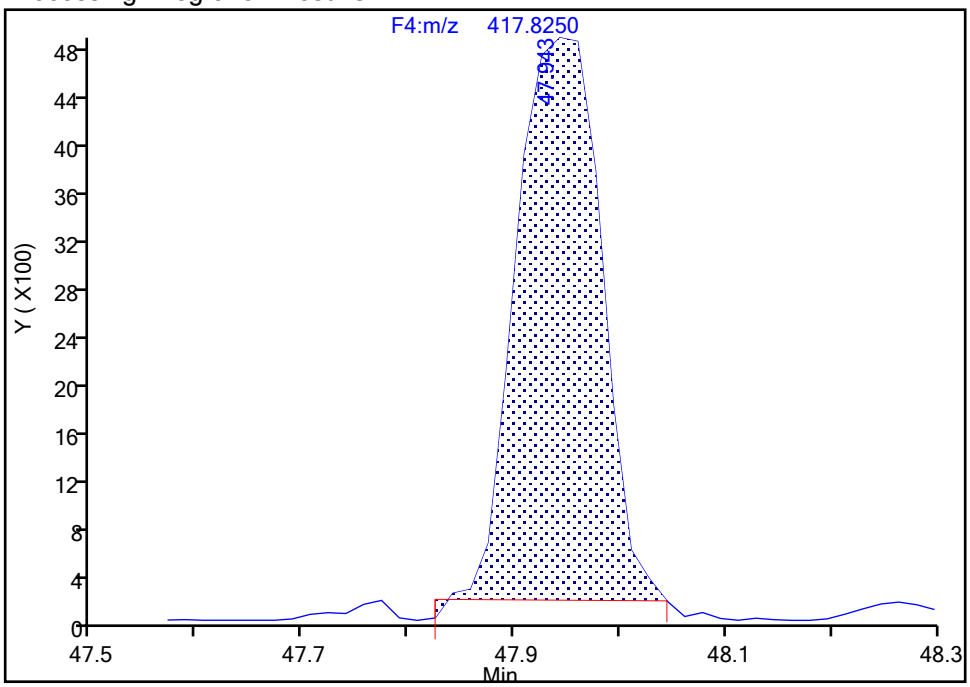
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,6,7,8-HpCDF, CAS: 109719-84-8

Signal: 1

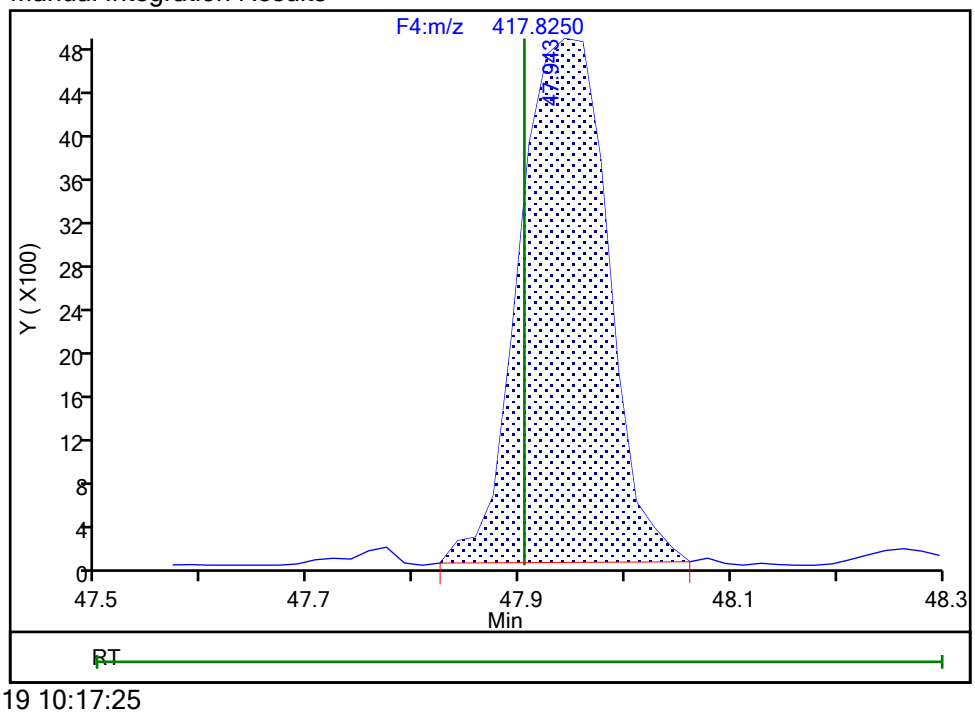
Processing Integration Results

RT: 47.94
Area: 26123
Amount: 3.107743
Amount Units: pg/ul



Manual Integration Results

RT: 47.94
Area: 28071
Amount: 3.364640
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:17:25

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

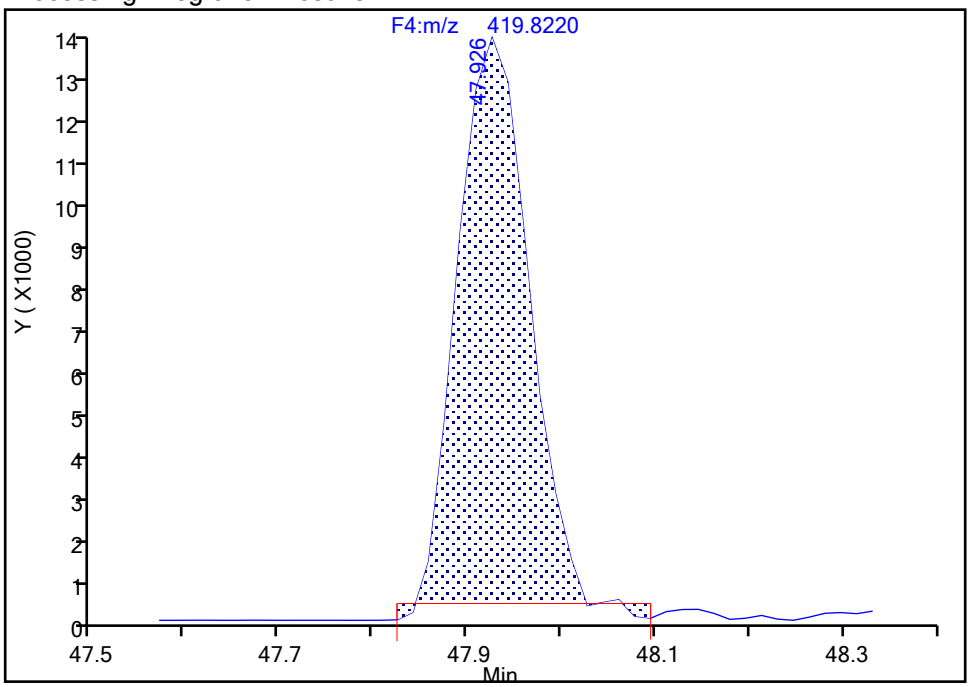
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,6,7,8-HpCDF, CAS: 109719-84-8

Signal: 2

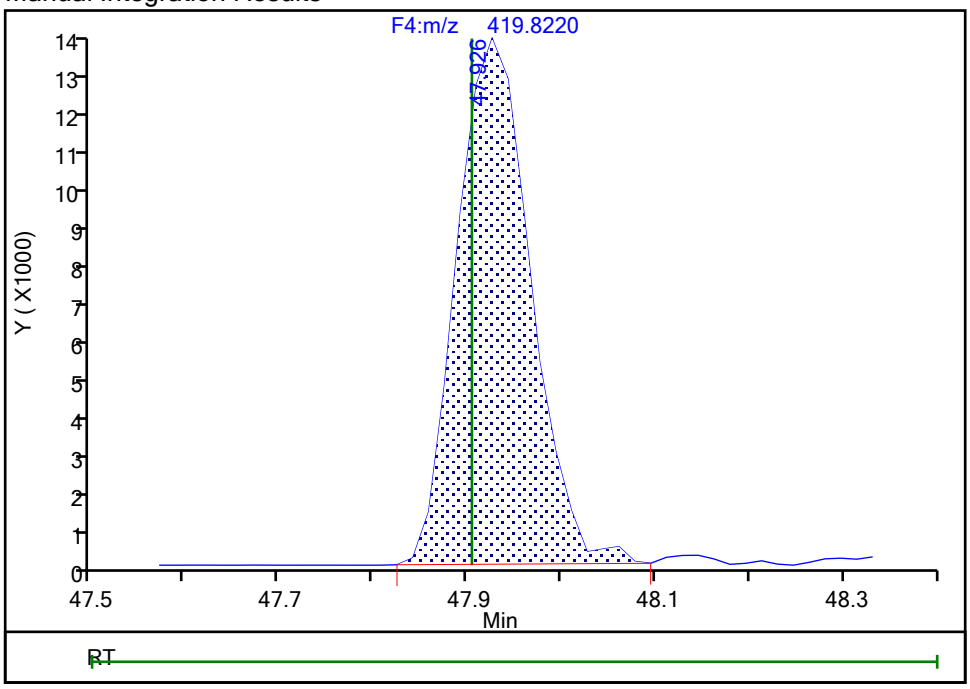
Processing Integration Results

RT: 47.93
Area: 68804
Amount: 3.107743
Amount Units: pg/ul



Manual Integration Results

RT: 47.93
Area: 74703
Amount: 3.364640
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:17:29

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

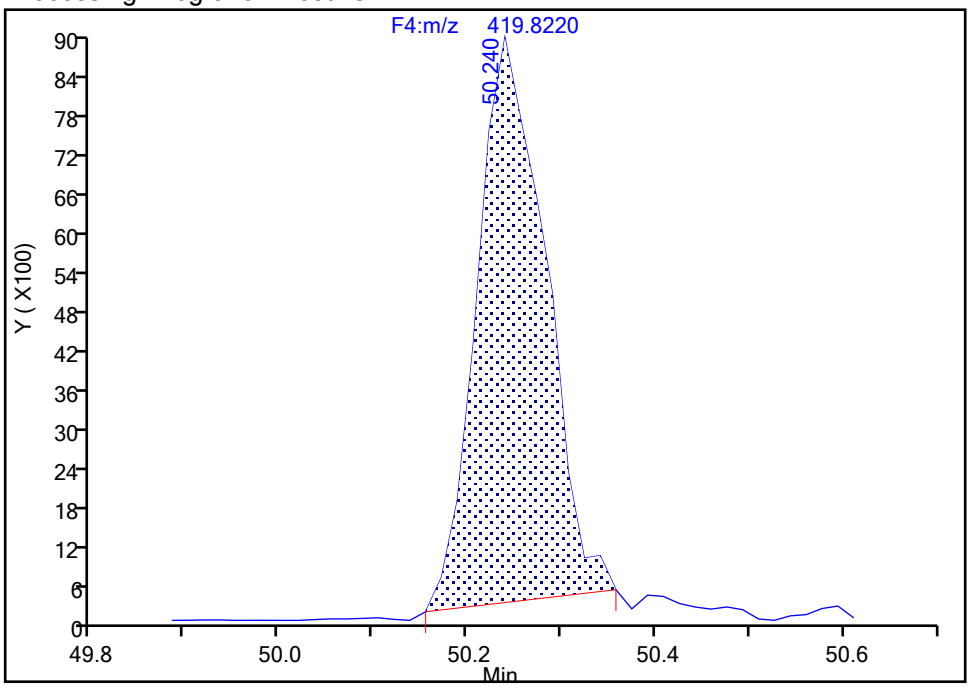
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 2

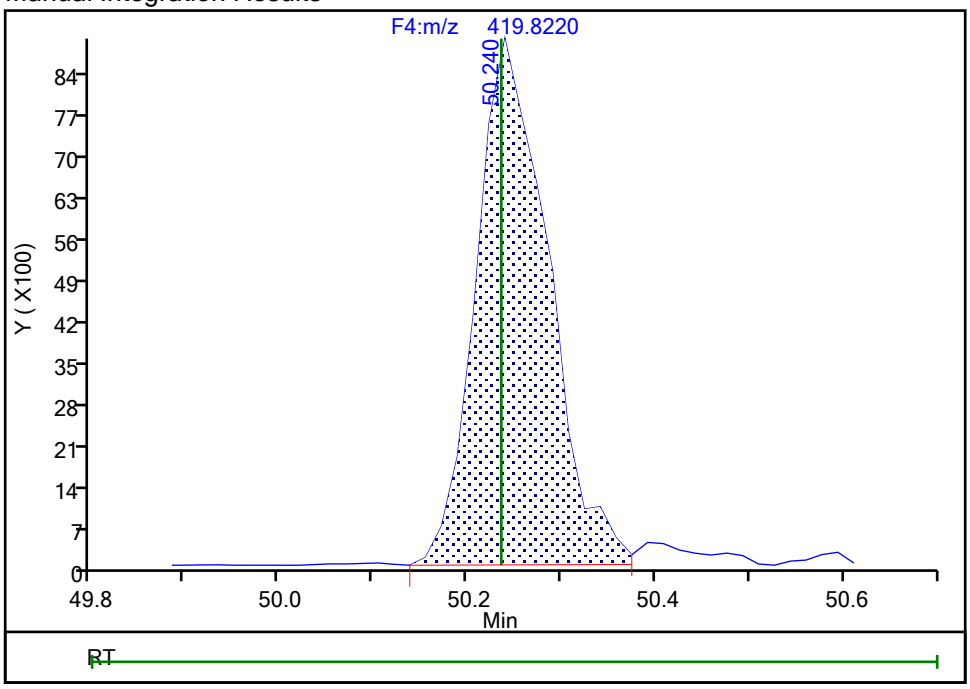
Processing Integration Results

RT: 50.24
Area: 43612
Amount: 2.488484
Amount Units: pg/ul



Manual Integration Results

RT: 50.24
Area: 47567
Amount: 2.739583
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:18:05

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

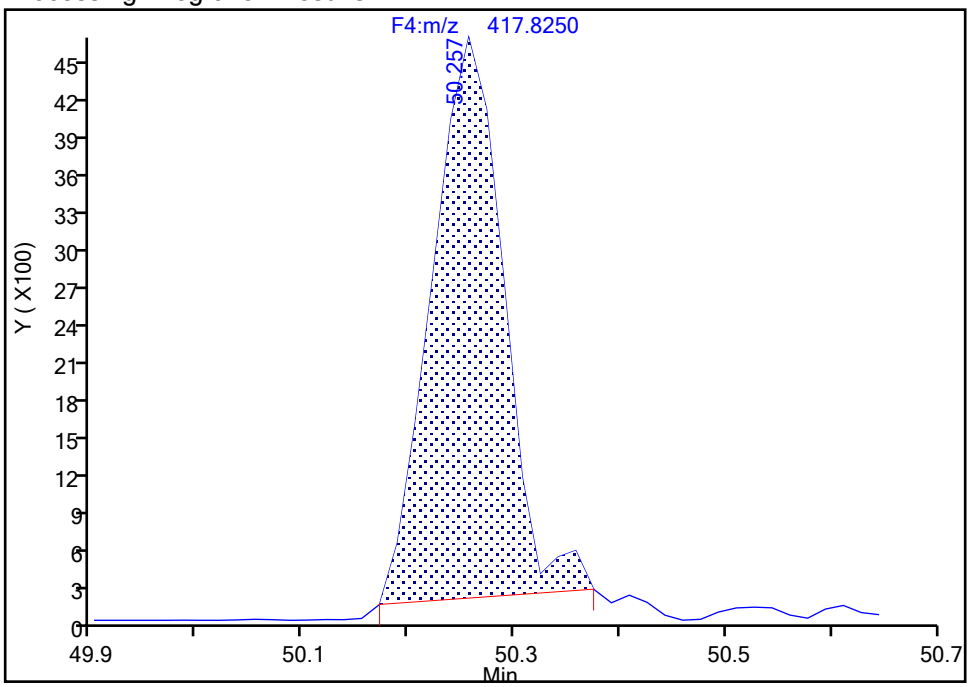
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 1

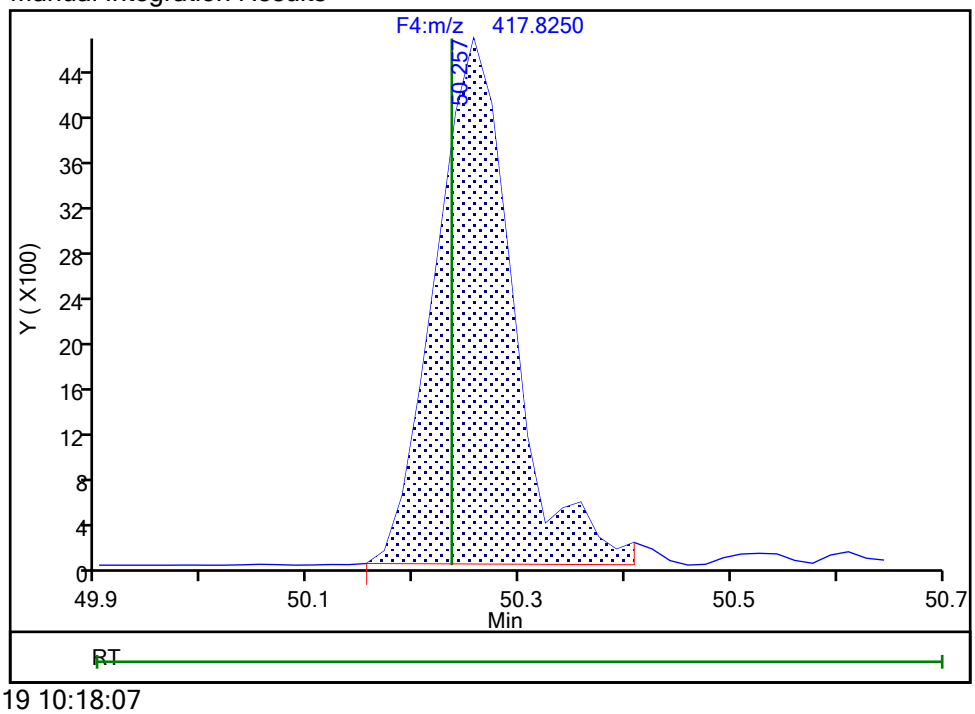
Processing Integration Results

RT: 50.26
Area: 21182
Amount: 2.488484
Amount Units: pg/ul



Manual Integration Results

RT: 50.26
Area: 23765
Amount: 2.739583
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:18:07

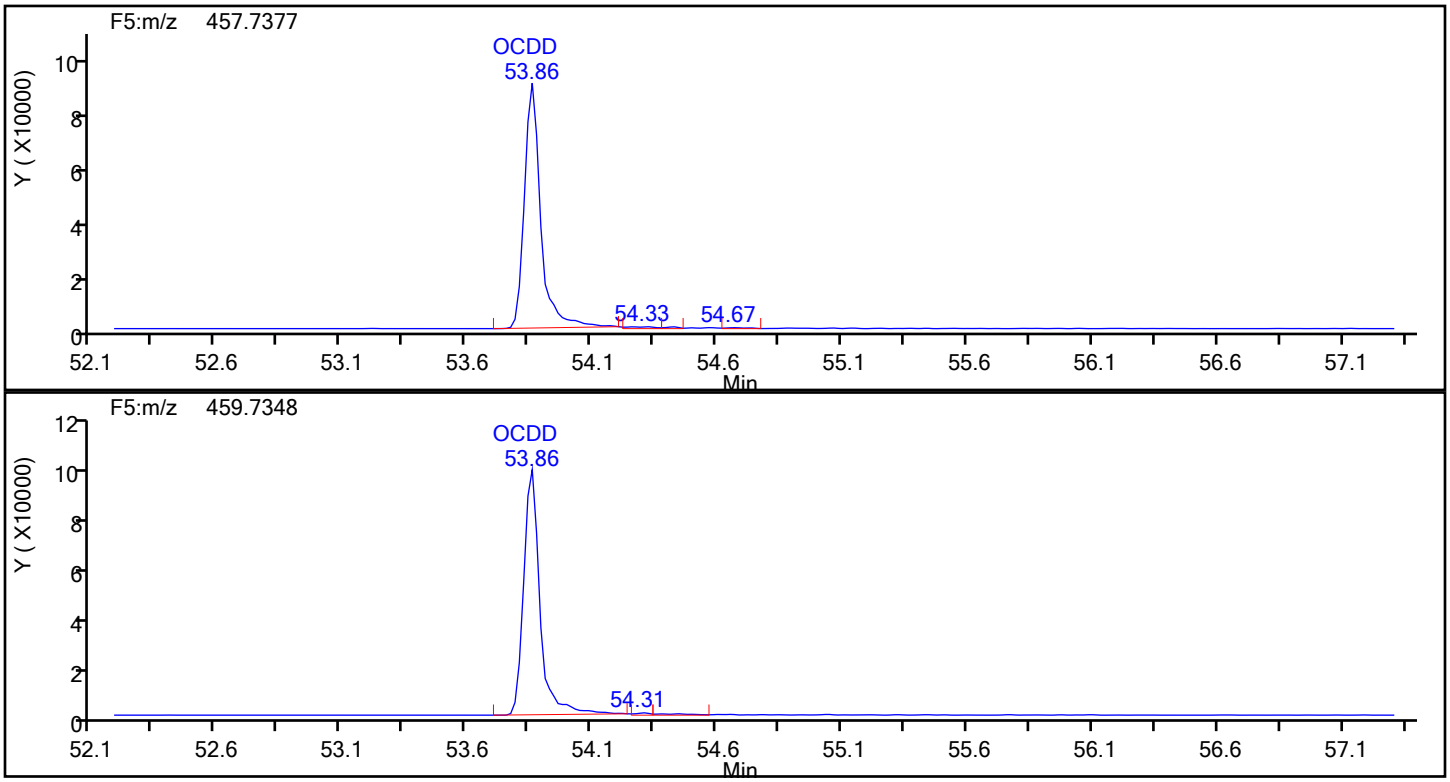
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:27 Chrom Revision: 2.3 05-Dec-2019 09:31:18

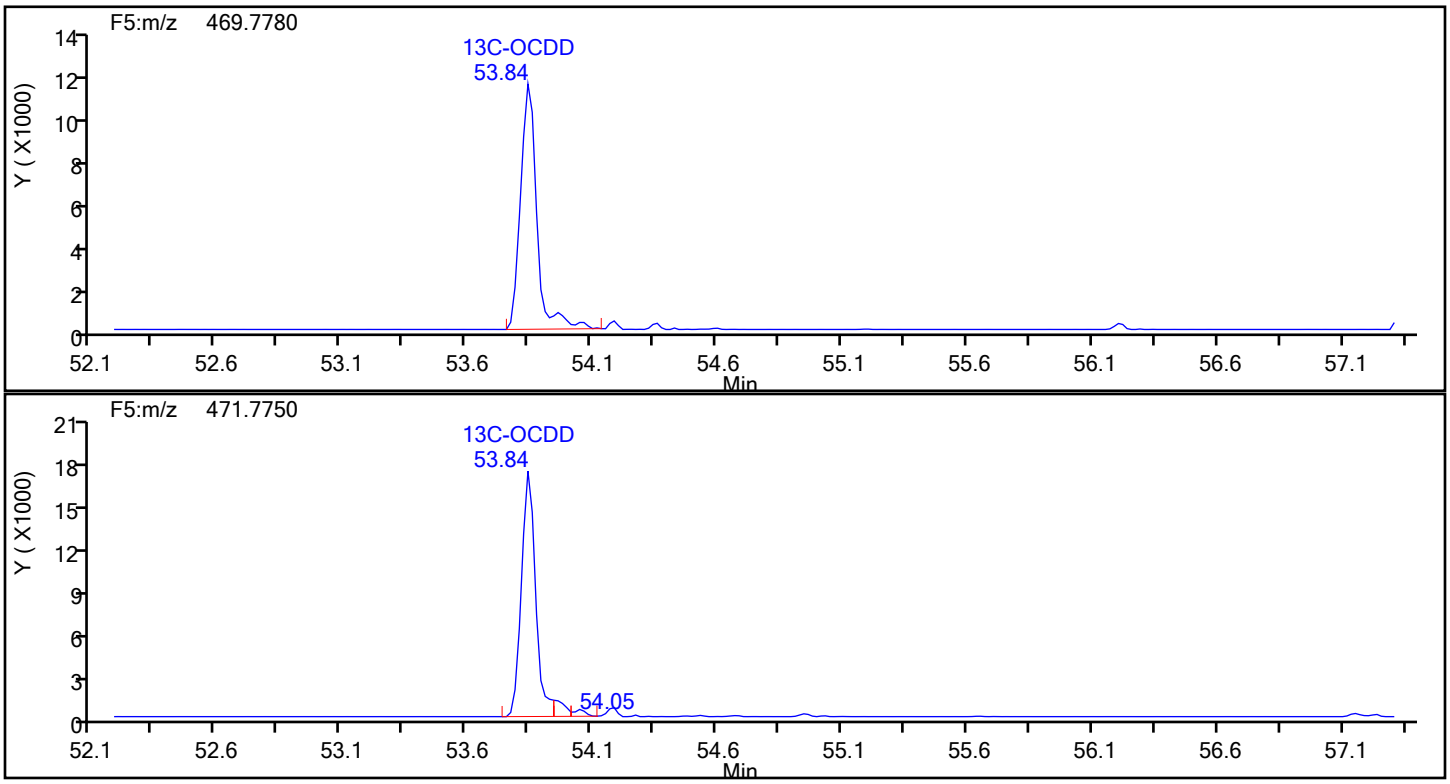
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

OCDD



OCDD Standards

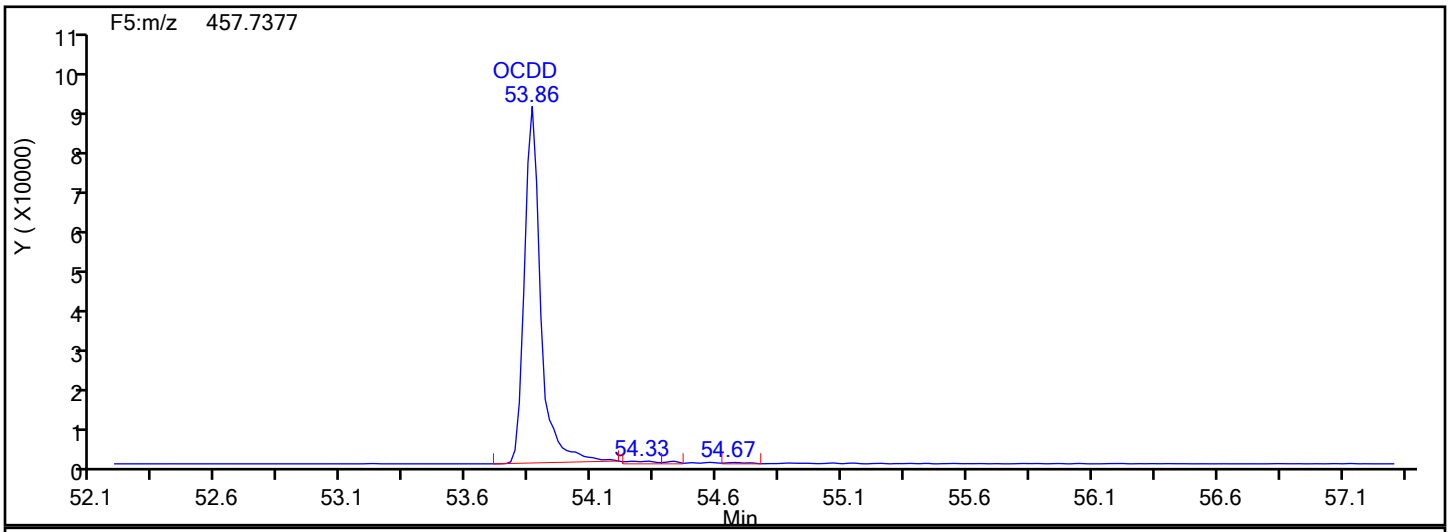


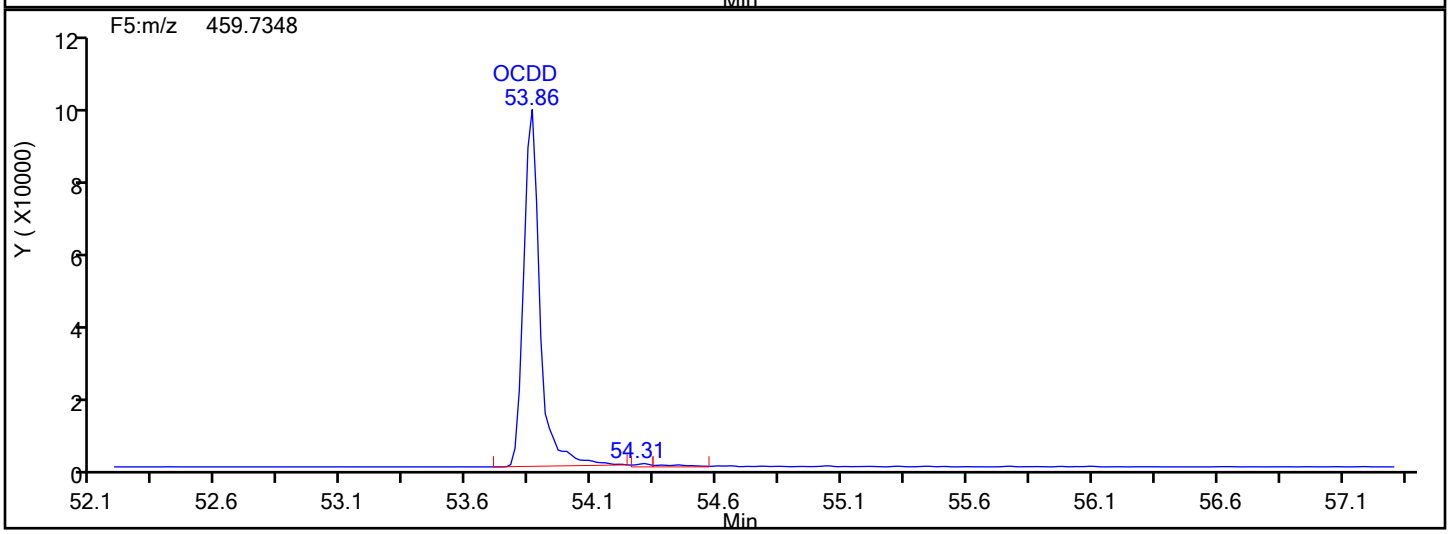
Report Date: 18-Dec-2019 12:06:27 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

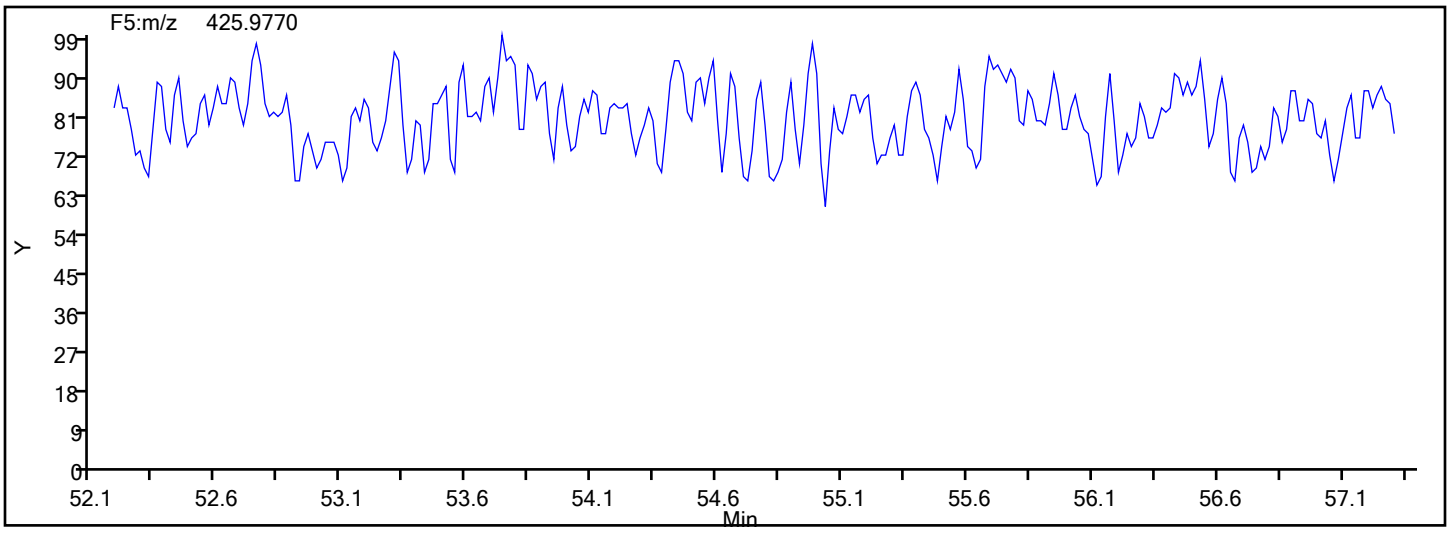
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

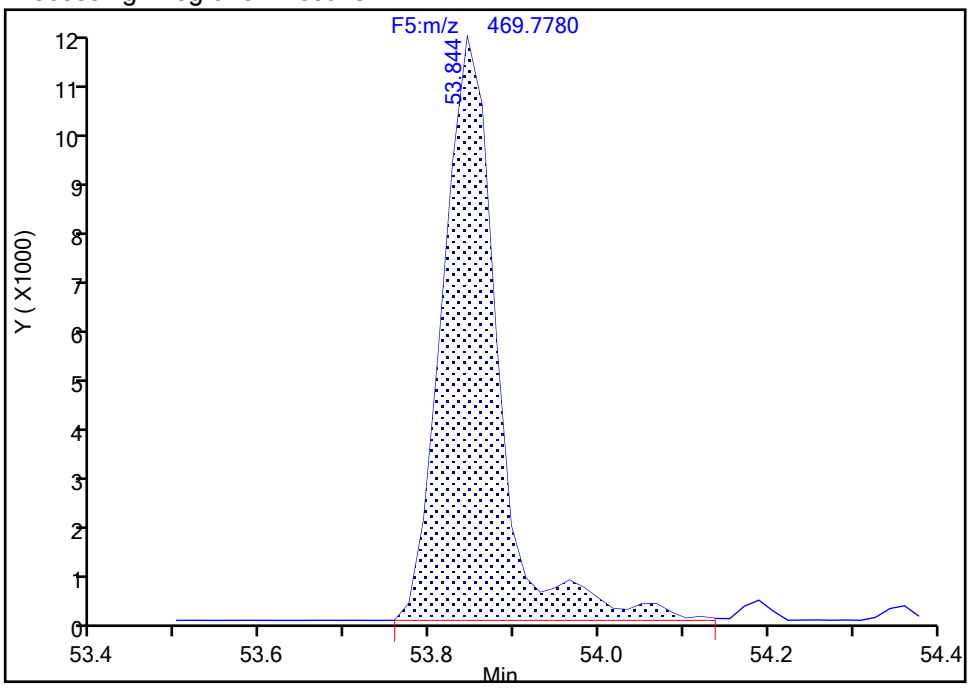
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

13C-OCDD, CAS: 114423-97-1

Signal: 1

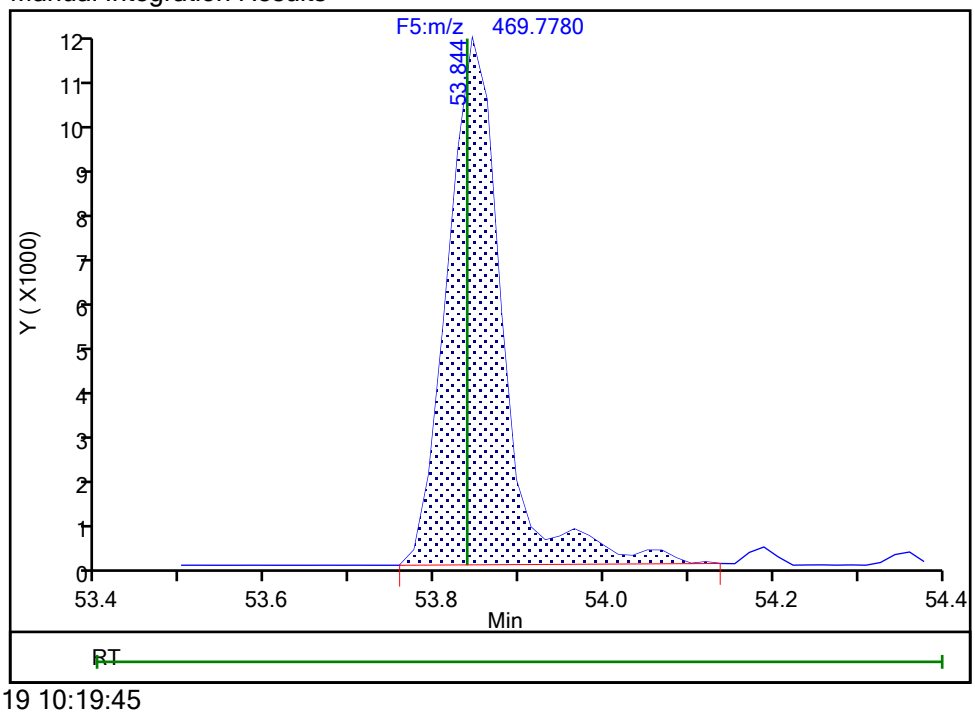
Processing Integration Results

RT: 53.84
Area: 50783
Amount: 5.674920
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 50362
Amount: 5.657797
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:19:45

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

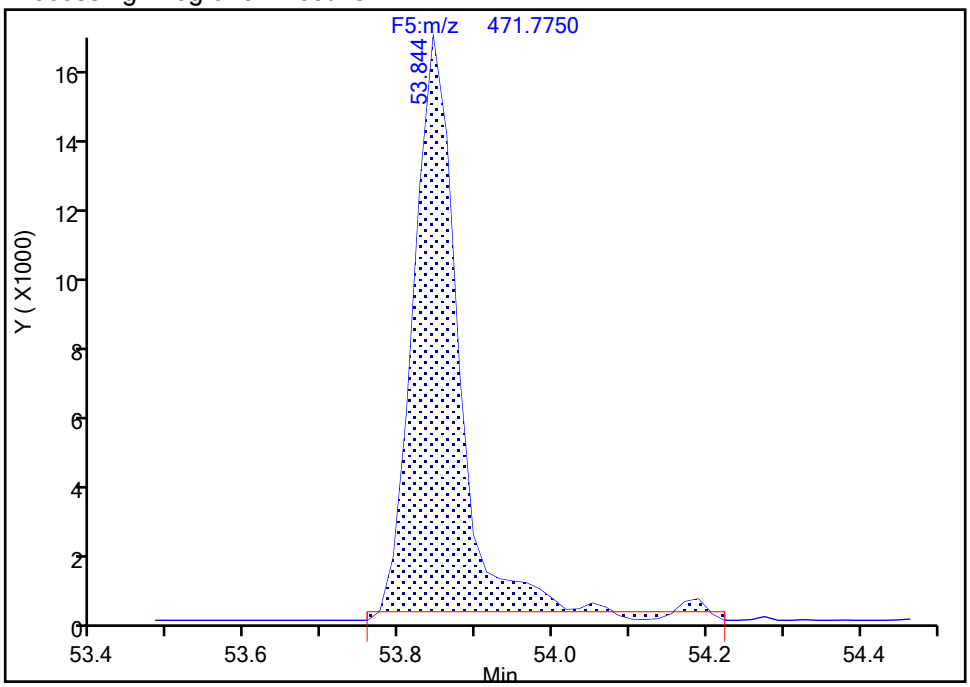
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d				
Injection Date:	18-Dec-2019 09:05:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-B MS				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

13C-OCDD, CAS: 114423-97-1

Signal: 2

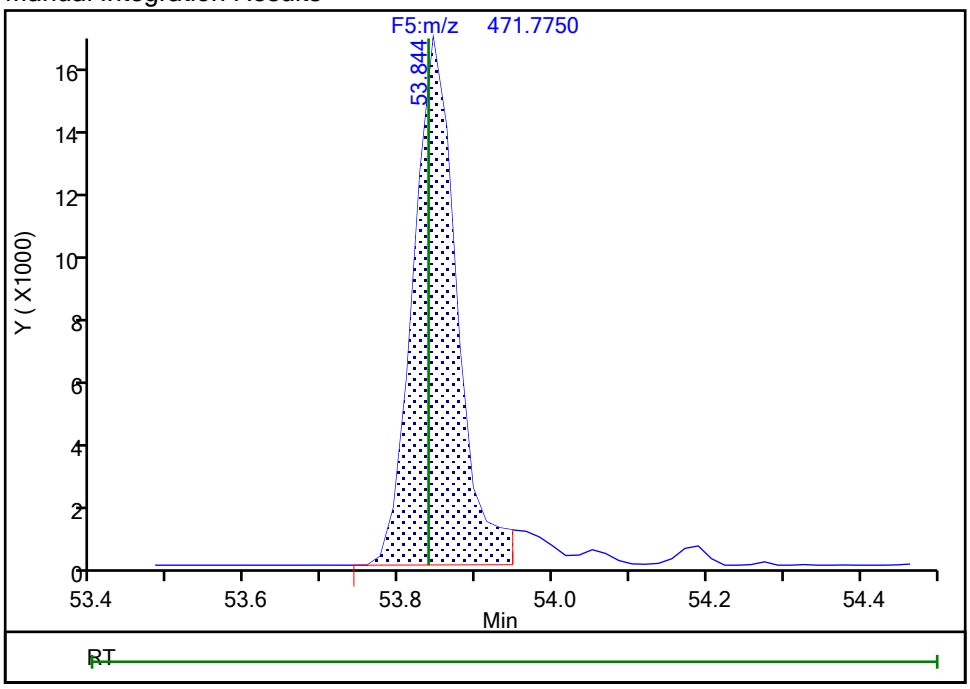
Processing Integration Results

RT: 53.84
Area: 65545
Amount: 5.674920
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 65615
Amount: 5.657797
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 10:20:08

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 12:06:27 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d

Injection Date: 18-Dec-2019 09:05:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

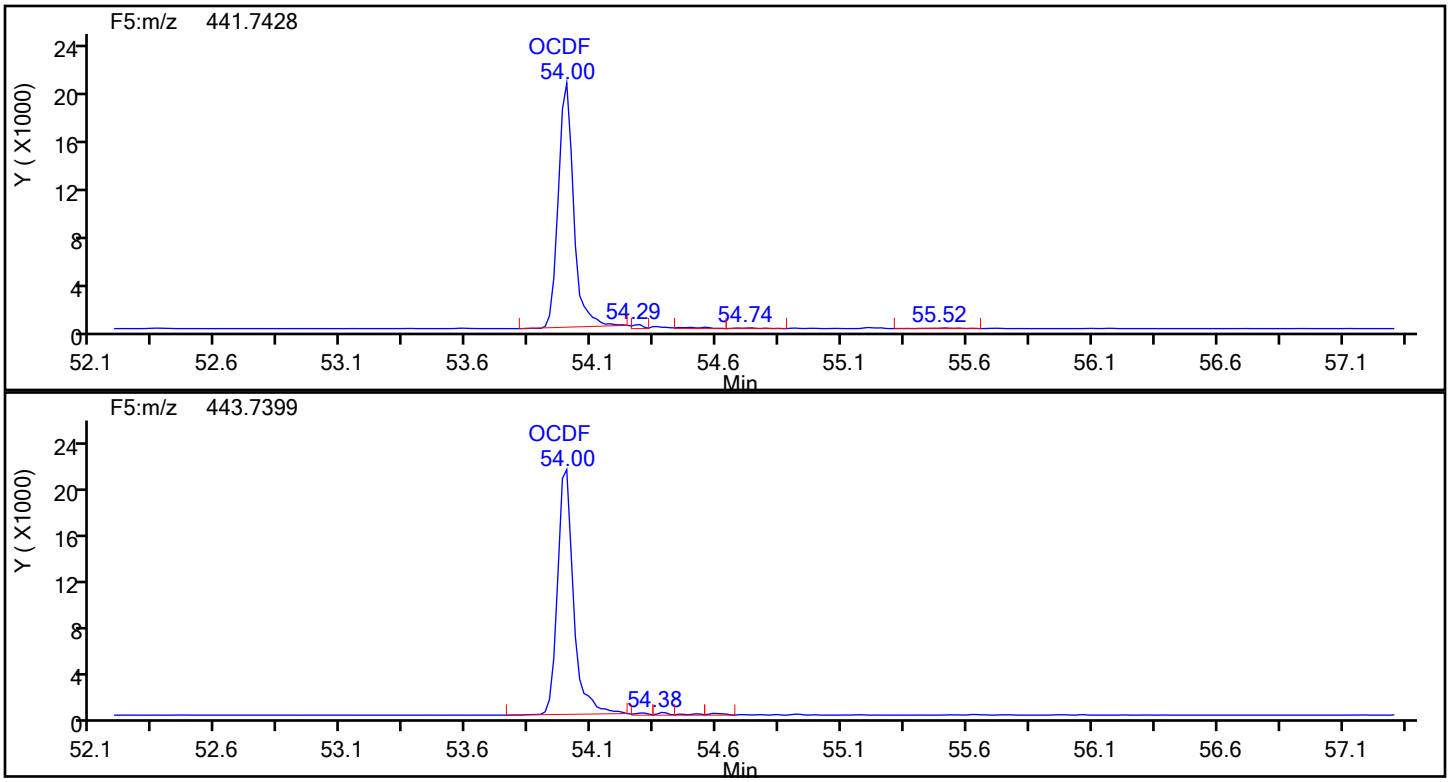
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

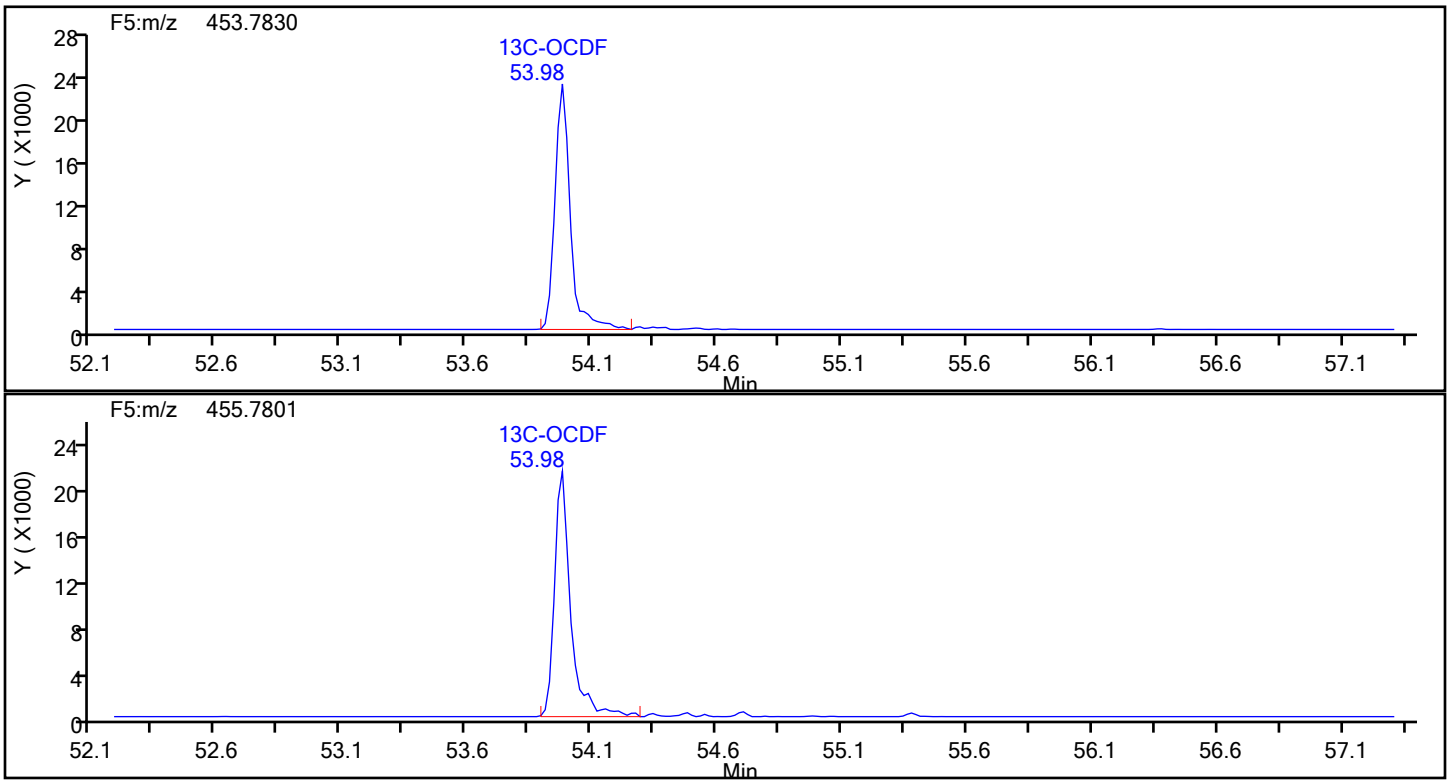
Worklist#: 36166 Sample Line#: 13

Column Type: Column Dia:

OCDF



OCDF Standards

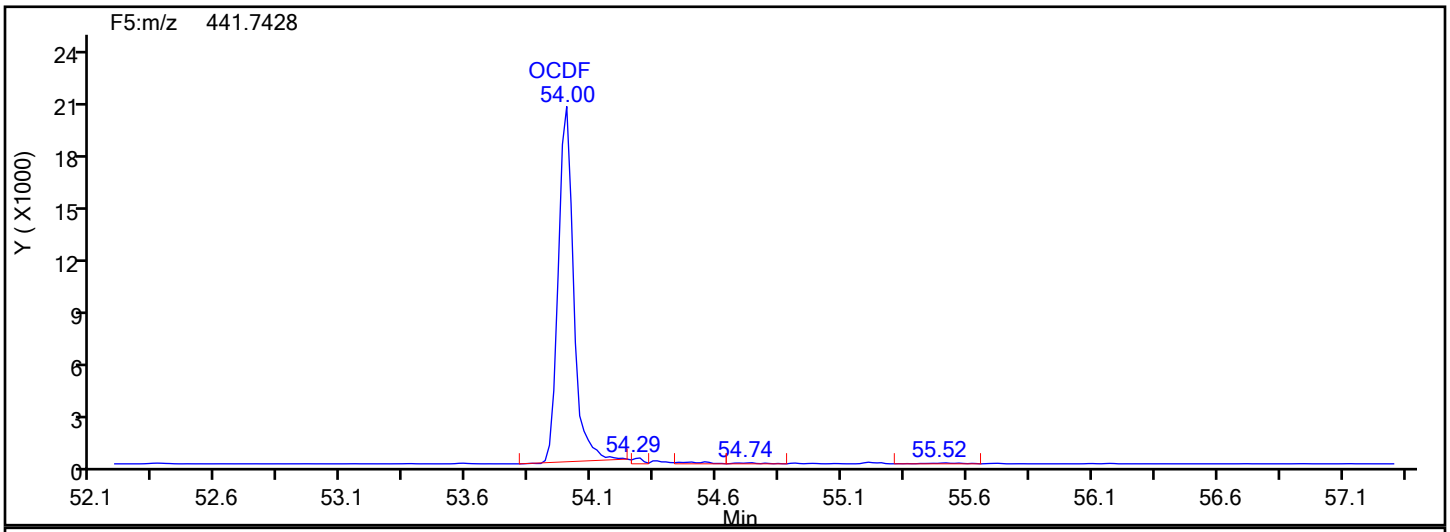


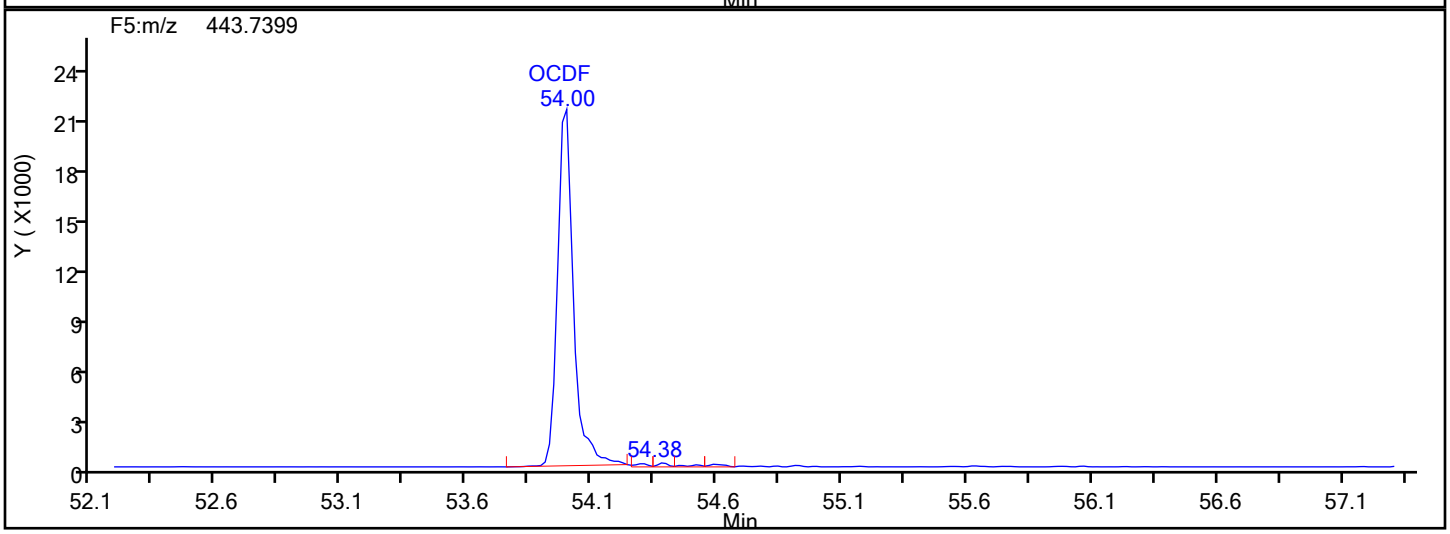
Report Date: 18-Dec-2019 12:06:27 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

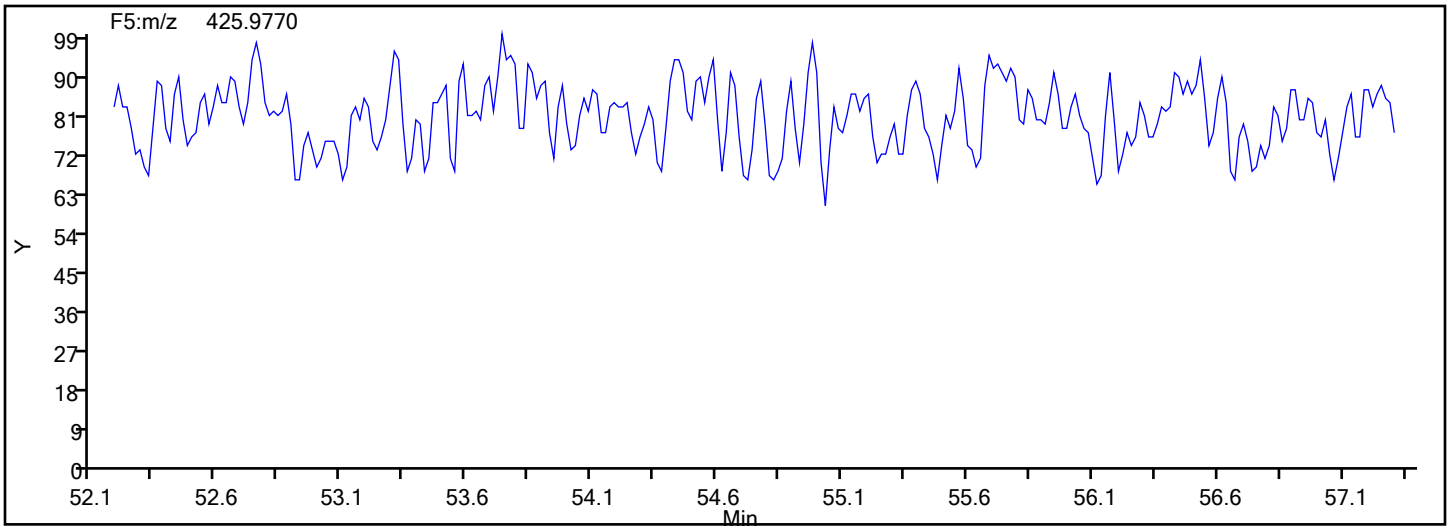
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

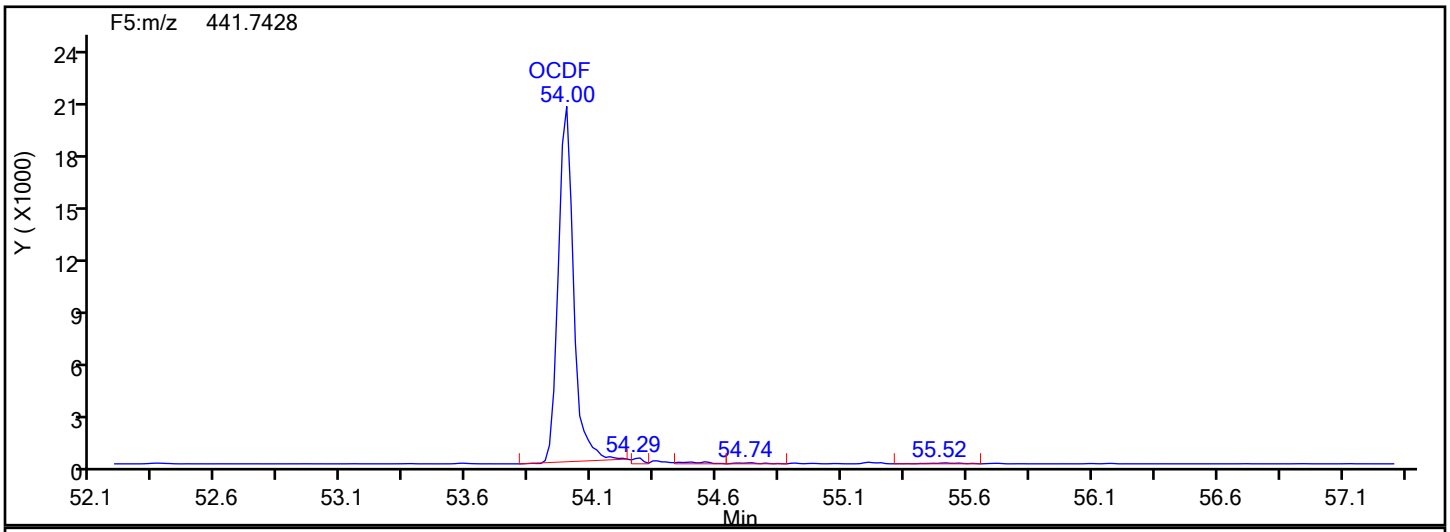


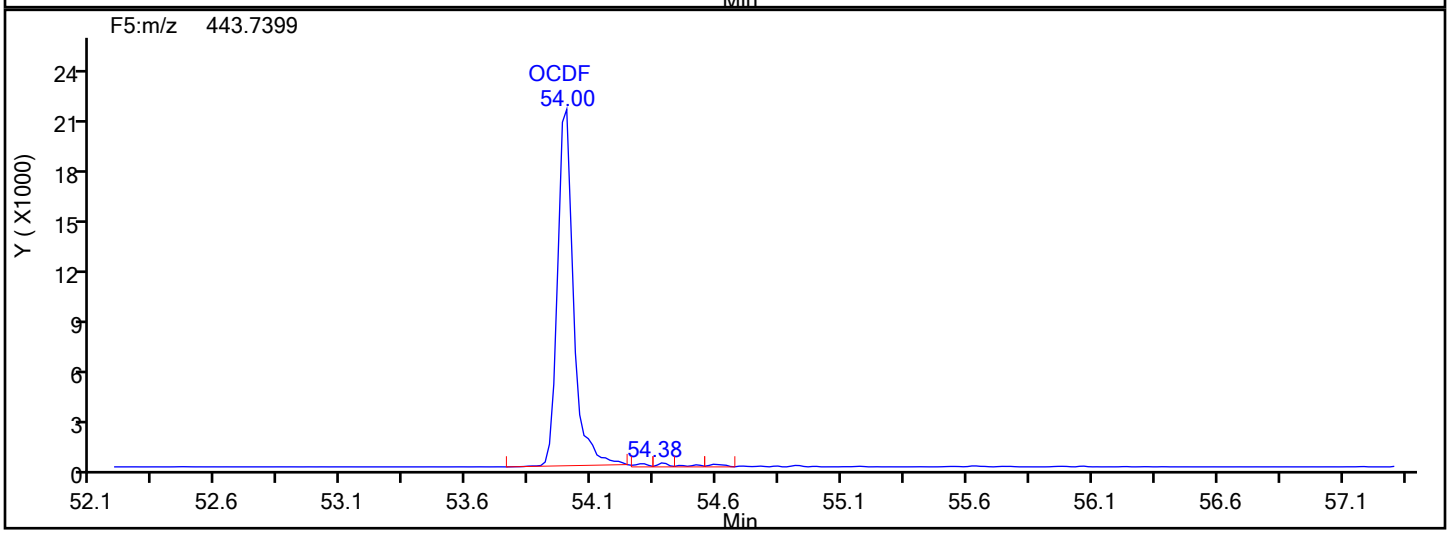
Report Date: 18-Dec-2019 12:06:27 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

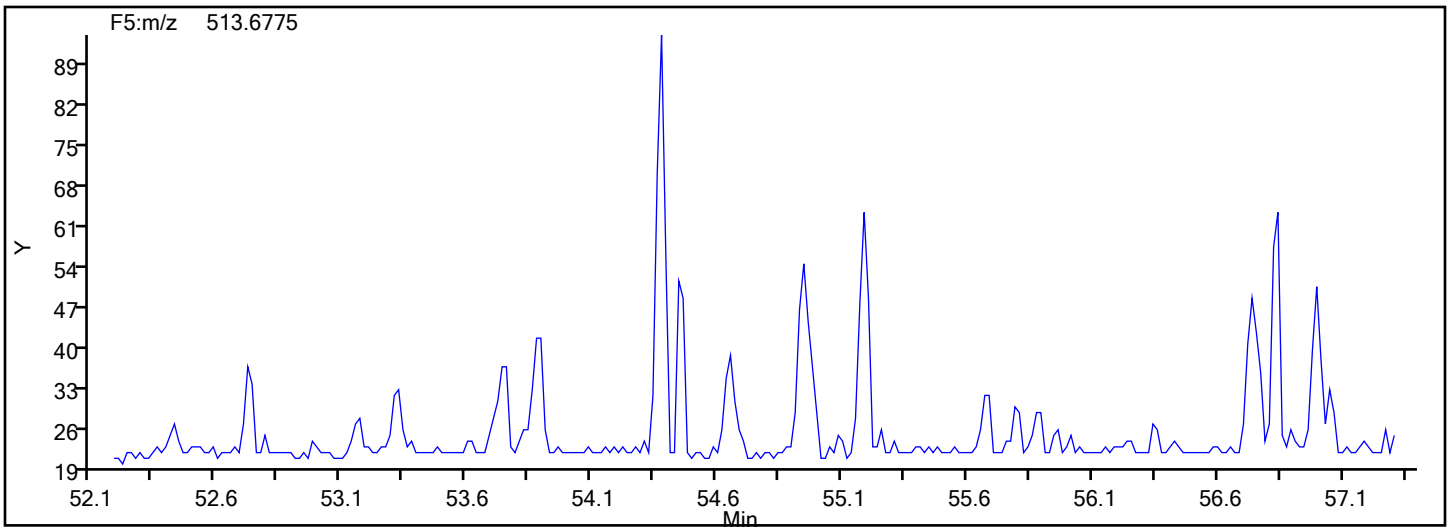
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-bmsa.d		
Injection Date:	18-Dec-2019 09:05:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	13
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MS Lab Sample ID: 140-17578-12 MS

Matrix: Sediment Lab File ID: 140-17578-a-12-bms.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 9.54(g) Date Analyzed: 12/18/2019 09:52

Con. Extract Vol.: 20(uL) Dilution Factor: 15

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	1860	4	26	6.9

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	109		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-bms.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MS
Inject. Date: 18-Dec-2019 09:52:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-017
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 10:51:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:51:32

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:42	603798	0.78	1.2213	20.3	20.3	0.1337	0.1337	3051	a
2,3,7,8-TCDF	22:14	2639223	0.80	1.1100	36.1	36.1	0.1343	0.1343	5413	
D 13C-2,3,7,8-TCDD	19:40	81021	0.87	1.0031	2.160	2.160	1.161	1.161	64.80	M
D 13C-2,3,7,8-TCDF	22:12	219615	0.81	1.6193	3.627	3.627	0.2614	0.2614	109	
$ 37Cl4-2,3,7,8-TCDD	19:42	21719		1.1834	0.4908	0.4908	0.0496	0.0496	73.63	
* 13C-1,2,3,4-TCDD	20:09	249279	0.75	1.6E+05	6.667	6.667			100	M

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-bms.d
Lims ID: 140-17578-A-12-B MS
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MS
Inject. Date: 18-Dec-2019 09:52:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-017
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 10:51:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 10:51:32

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	19:42	19:42	-1	1.002	263825	42335	124	310	341		a
321.8936	19:42	19:42	-1	1.002	339973	55174	126	315	438	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:14	-2	1.002	1171752	157652	197	492	800		
305.8987	22:14	22:14	-2	1.002	1467471	203921	201	502	1015	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											M
331.9368	19:40	19:40	-2	0.977	37634	6006	1386	3465	4		M
333.9338	19:40	19:40	-2	0.977	43387	6748	1171	2927	6	0.87(0.65-0.89)	M
13C-2,3,7,8-TCDF											
315.9419	22:12	22:13	-2	1.102	98470	10590	556	1390	19		
317.9389	22:10	22:13	-4	1.100	121145	11666	373	932	31	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19:42	19:42	-1	0.978	21719	3215	129	322	25		
13C-1,2,3,4-TCDD											M
331.9368	20:09	20:09	-1		107100	15511	1386	3465	11		M
333.9338	20:08	20:09	-2		142179	21065	1171	2927	18	0.75(0.65-0.89)	M

QC Flag Legend

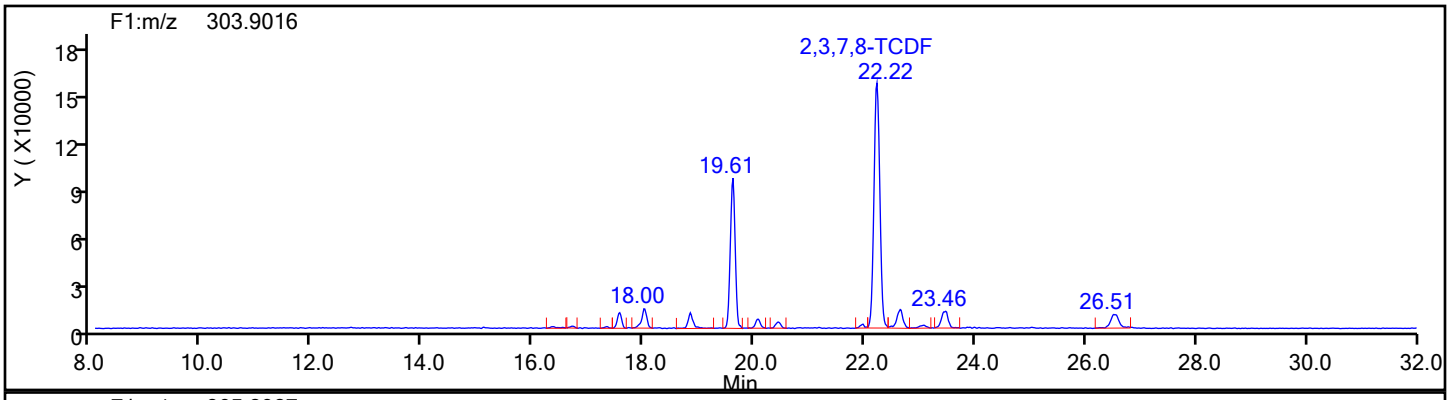
Review Flags
M - Manually Integrated
a - User Assigned ID

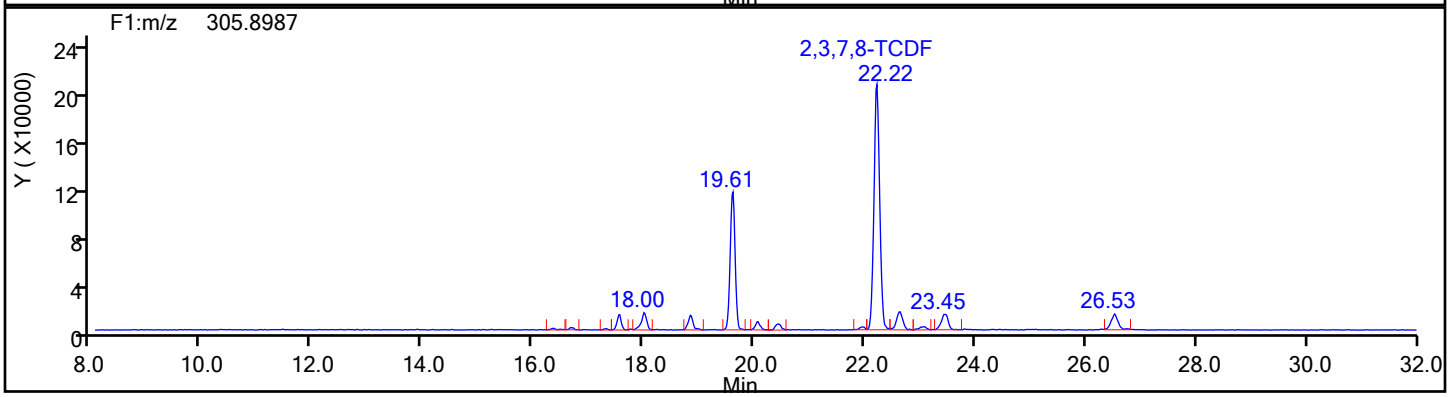
Report Date: 18-Dec-2019 10:51:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

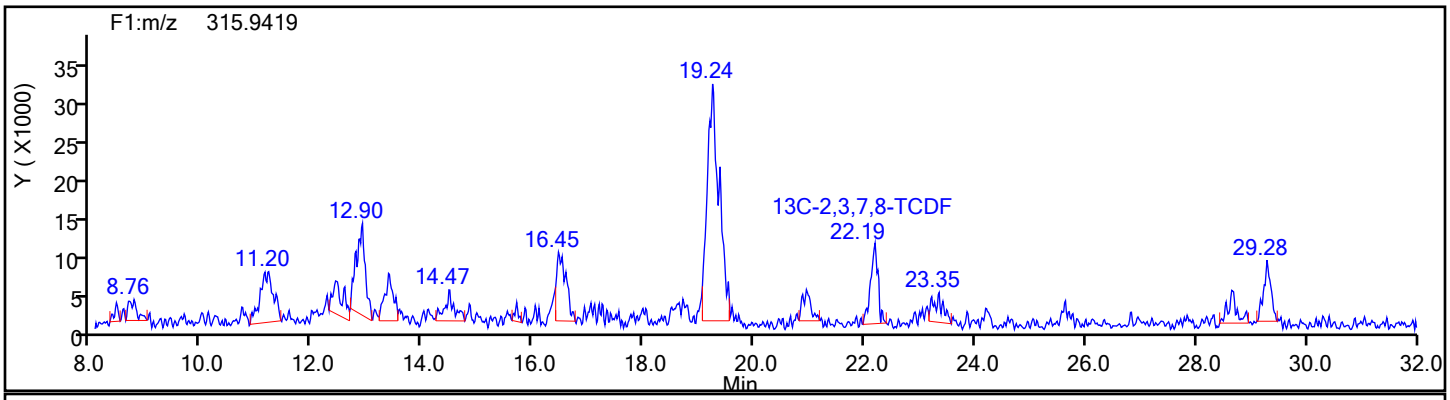
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-bms.d		
Injection Date:	18-Dec-2019 09:52:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

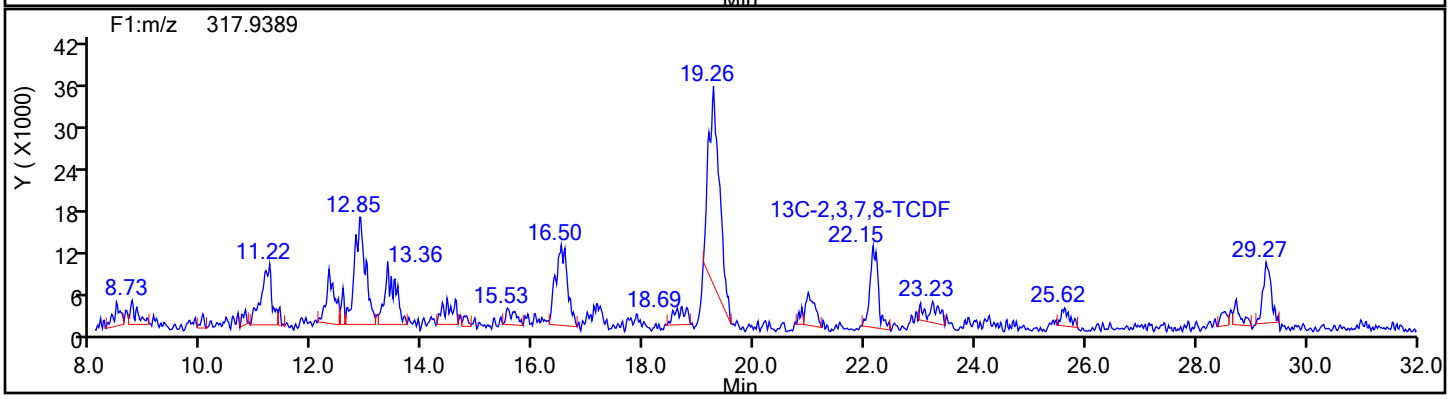
TCDF





TCDF Standards



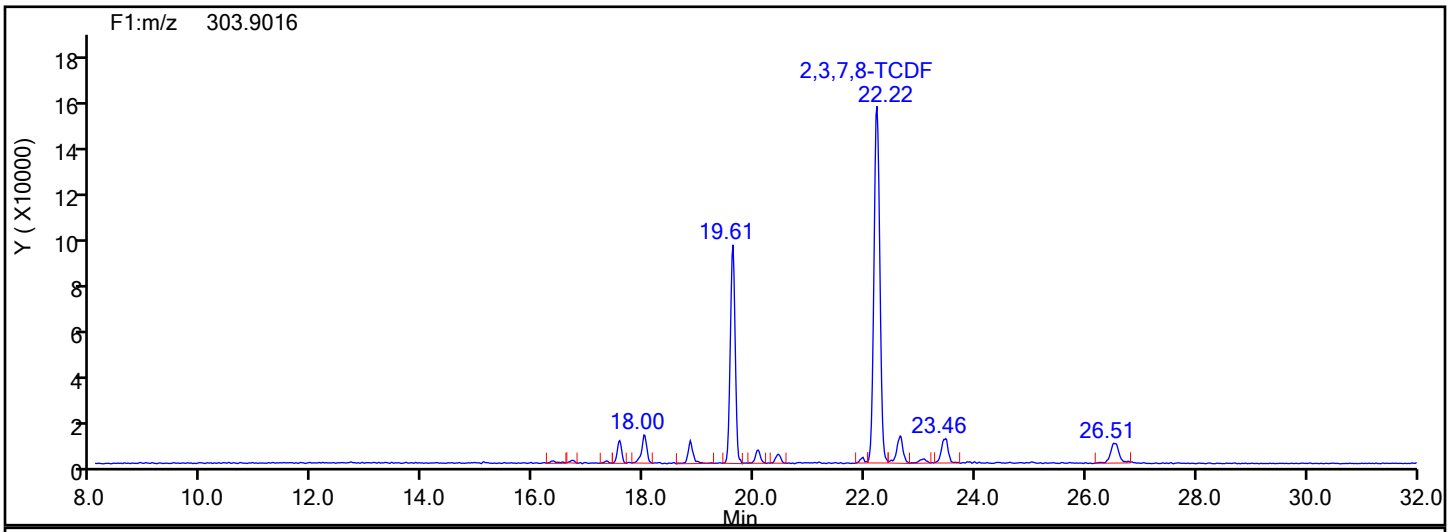


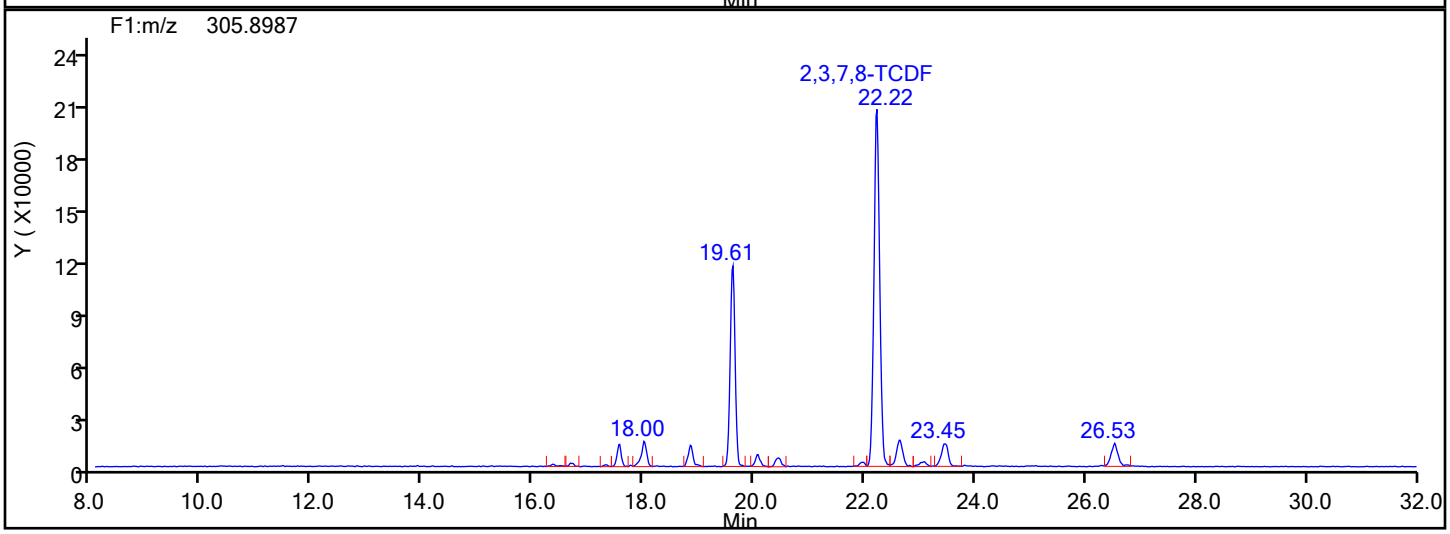
Report Date: 18-Dec-2019 10:51:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

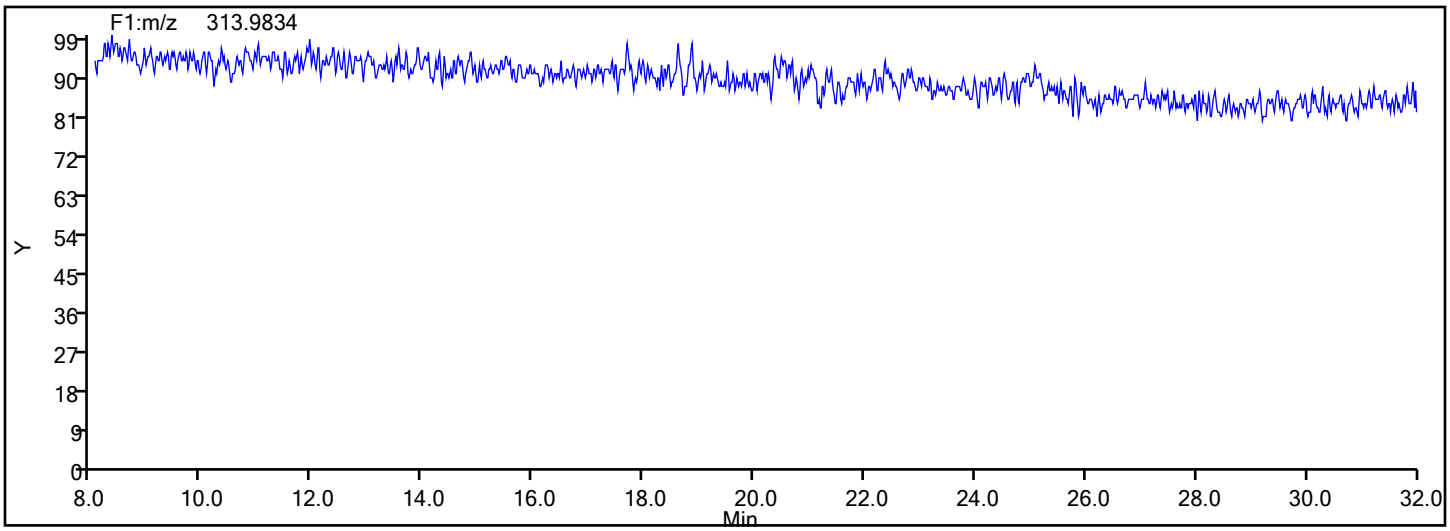
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-bms.d		
Injection Date:	18-Dec-2019 09:52:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

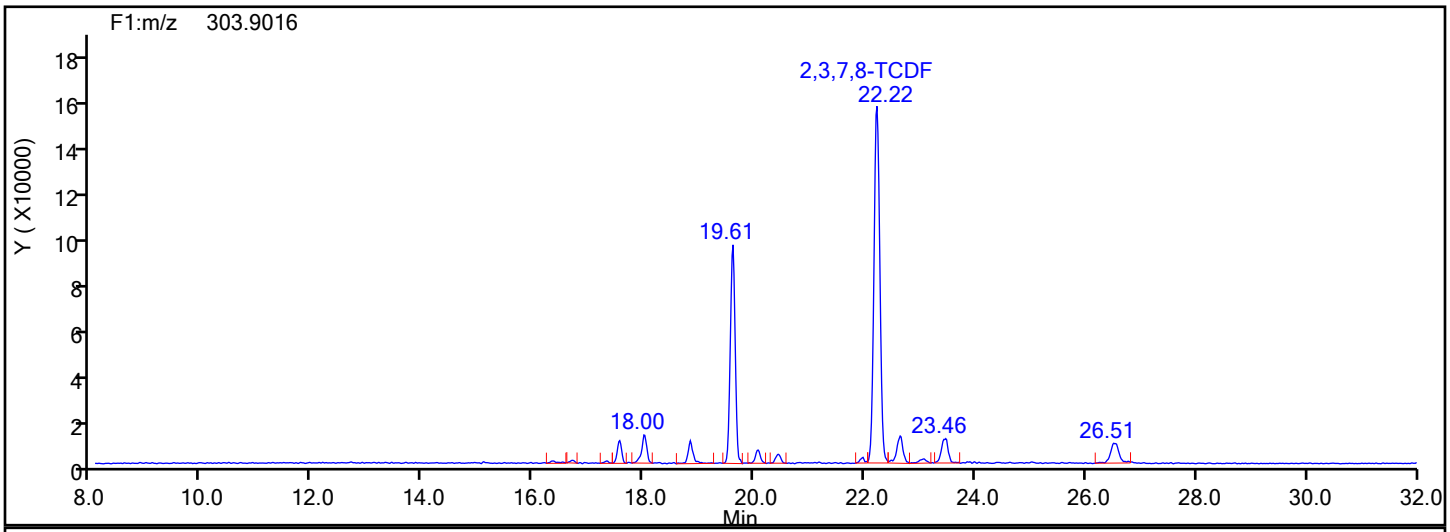


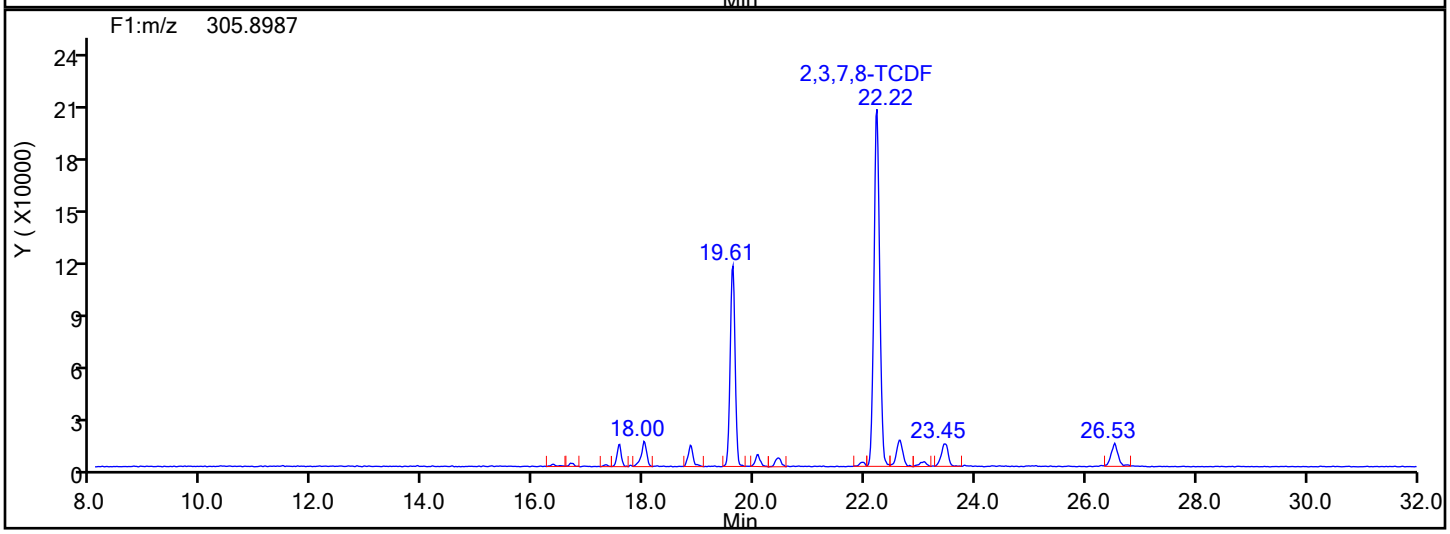
Report Date: 18-Dec-2019 10:51:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

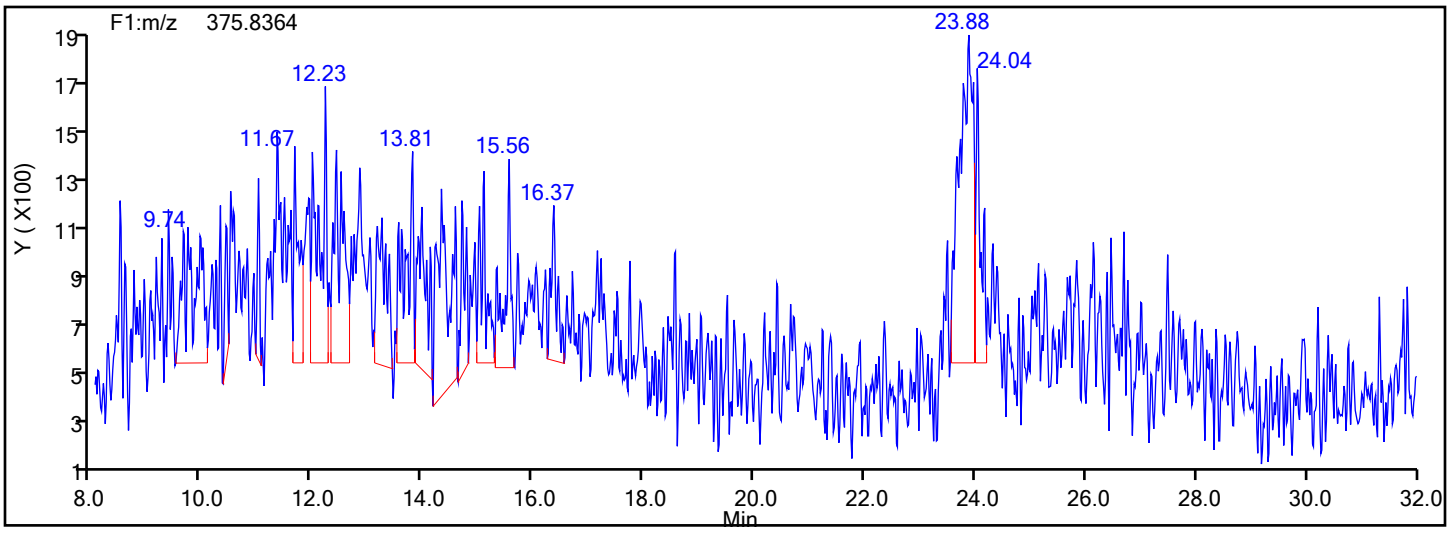
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-bms.d		
Injection Date:	18-Dec-2019 09:52:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	17
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MSD Lab Sample ID: 140-17578-12 MSD

Matrix: Sediment Lab File ID: 140-17578-a-12-cmsda.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.08(g) Date Analyzed: 12/18/2019 10:06

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1190	4	16	1.3
41903-57-5	Total TCDD	1190		16	1.3
40321-76-4	1,2,3,7,8-PeCDD	203		81	0.43
36088-22-9	Total PeCDD	203		81	0.43
39227-28-6	1,2,3,4,7,8-HxCDD	163		81	0.21
57653-85-7	1,2,3,6,7,8-HxCDD	188		81	0.24
19408-74-3	1,2,3,7,8,9-HxCDD	176		81	0.21
34465-46-8	Total HxCDD	527		81	0.22
35822-46-9	1,2,3,4,6,7,8-HpCDD	271		81	2.2
37871-00-4	Total HpCDD	271		81	2.2
3268-87-9	OCDD	1790	4	160	0.20
30402-14-3	Total TCDF	3490		16	1.1
57117-41-6	1,2,3,7,8-PeCDF	273	F1	81	1.9
57117-31-4	2,3,4,7,8-PeCDF	245	F1	81	1.9
30402-15-4	Total PeCDF	519		81	1.9
70648-26-9	1,2,3,4,7,8-HxCDF	337	F1	81	1.9
57117-44-9	1,2,3,6,7,8-HxCDF	190	F1	81	1.7
60851-34-5	2,3,4,6,7,8-HxCDF	180		81	1.9
72918-21-9	1,2,3,7,8,9-HxCDF	160		81	2.5
55684-94-1	Total HxCDF	868		81	2.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	202	F1	81	0.31
55673-89-7	1,2,3,4,7,8,9-HpCDF	220		81	0.51
38998-75-3	Total HpCDF	423		81	0.41
39001-02-0	OCDF	348		160	0.61

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MSD Lab Sample ID: 140-17578-12 MSD

Matrix: Sediment Lab File ID: 140-17578-a-12-cmsda.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.08(g) Date Analyzed: 12/18/2019 10:06

Con. Extract Vol.: 20(uL) Dilution Factor: 10

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36166 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	54		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	52		25-181
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	69		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	60		23-140
114423-97-1	13C-OCDD	66		17-157
89059-46-1	13C-2,3,7,8-TCDF	59		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	54		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	54		21-178
114423-98-2	13C-1,2,3,4,7,8-HxCDF	62	q	26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	72		26-123
116843-05-1	13C-2,3,4,6,7,8-HxCDF	69		28-136
116843-04-0	13C-1,2,3,7,8,9-HxCDF	70		29-147
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	63	q	28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	55		26-138
109719-78-0	13C-OCDF	57		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	78		35-197

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MSD
Inject. Date: 18-Dec-2019 10:06:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-014
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 11:15:38 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 11:15:38

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	30:50	567444	0.81	1.1733	36.6	36.6	0.0399	0.0399	3665	
A Non-2,3,7,8-sub-TCDD	29:27						0.0399	2.846		RQU
S Total TCDD					36.6	36.6	0.0399	0.0399		
2,3,7,8-TCDF	28:50	2784896	0.80	1.0881	107.2	107.2	0.0337	0.0337	10717	
A Non-2,3,7,8-sub-TCDF	28:10						0.0337	46.2		RQU
S Total TCDF					107.2	107.2	0.0337	0.0337		
1,2,3,7,8-PeCDD	40:34	67580	1.73	1.0434	6.219	6.219	0.0132	0.0132	124	
A Non-2,3,7,8-sub-PeCDD	39:24						0.0132	0.1345		RQU
S Total PeCDD					6.219	6.219	0.0132	0.0132		
1,2,3,7,8-PeCDF	38:46	168563	1.58	1.1898	8.394	8.394	0.0579	0.0579	168	
2,3,4,7,8-PeCDF	40:02	143637	1.53	1.1095	7.534	7.534	0.0596	0.0596	151	
A Non-2,3,7,8-sub-PeCDF	37:59						0.0587	1.370		U
S Total PeCDF					15.9	15.9	0.0587	0.0587		
1,2,3,4,7,8-HxCDD	44:49	71388	1.13	1.1409	4.990	4.990	0.006579	0.006579	99.81	
1,2,3,6,7,8-HxCDD	44:56	85570	1.32	1.1481	5.777	5.777	0.007246	0.007246	116	
1,2,3,7,8,9-HxCDD	45:20	84048	1.25	1.2212	5.411	5.411	0.006462	0.006462	108	
A Non-2,3,7,8-sub-HxCDD	44:17						0.006745	0.5156		U
S Total HxCDD					16.2	16.2	0.006762	0.006762		
1,2,3,4,7,8-HxCDF	43:48	230314	1.27	1.3629	10.4	10.4	0.0590	0.0590	207	
1,2,3,6,7,8-HxCDF	43:56	160638	1.33	1.2762	5.831	5.831	0.0513	0.0513	117	
2,3,4,6,7,8-HxCDF	44:39	130685	1.25	1.2654	5.531	5.531	0.0585	0.0585	111	
1,2,3,7,8,9-HxCDF	45:35	105949	1.20	1.2573	4.919	4.919	0.0756	0.0756	98.37	Ma
A Non-2,3,7,8-sub-HxCDF	44:08						0.0599	2.026		RMU
S Total HxCDF					26.6	26.6	0.0611	0.0611		
1,2,3,4,6,7,8-HpCDD	49:37	93293	1.05	1.1204	8.319	8.319	0.0677	0.0677	166	
A Non-2,3,7,8-sub-HpCDD	49:01						0.0677	0.0677		U
S Total HpCDD					8.319	8.319	0.0677	0.0677		
1,2,3,4,6,7,8-HpCDF	47:57	139159	1.01	1.4984	6.217	6.217	0.009578	0.009578	124	
1,2,3,4,7,8,9-HpCDF	50:17	94890	1.06	1.3807	6.767	6.767	0.0156	0.0156	135	a
A Non-2,3,7,8-sub-HpCDF	49:31						0.0120	5.253		U
S Total HpCDF					13.0	13.0	0.0126	0.0126		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
OCDD	53:52	633385	0.89	1.2073	54.9	54.9	0.006210	0.006210	549	
OCDF	53:59	146601	0.89	1.1162	10.7	10.7	0.0187	0.0187	107	
D 13C-2,3,7,8-TCDD	30:48	65981	0.73	1.0709	2.691	2.691	0.1978	0.1978	53.82	
D 13C-2,3,7,8-TCDF	28:47	119407	0.88	1.7545	2.973	2.973	0.2123	0.2123	59.46	M
D 13C-1,2,3,7,8-PeCDD	40:33	52069	1.40	0.8743	2.601	2.601	3.004	3.004	52.03	Ma
D 13C-1,2,3,7,8-PeCDF	38:45	84395	1.71	1.3704	2.690	2.690	2.709	2.709	53.80	
D 13C-2,3,4,7,8-PeCDF	40:01	85922	1.61	1.3837	2.712	2.712	2.683	2.683	54.25	
D 13C-1,2,3,4,7,8-HxCDD	44:48	62696	1.42	0.8772	3.491	3.491	0.0553	0.0553	69.82	
D 13C-1,2,3,6,7,8-HxCDD	44:55	64503	1.29	0.9171	3.436	3.436	0.0529	0.0529	68.71	
D 13C-1,2,3,4,7,8-HxCDF	43:46	75024	0.51	1.1892	3.351	3.082	2.402	2.402	67.02	RQM
D 13C-1,2,3,6,7,8-HxCDF	43:55	107922	0.58	1.4625	3.605	3.605	1.954	1.954	72.09	Ma
D 13C-2,3,4,6,7,8-HxCDF	44:38	93356	0.53	1.3197	3.456	3.456	2.165	2.165	69.11	M
D 13C-1,2,3,7,8,9-HxCDF	45:34	85660	0.51	1.2001	3.486	3.486	2.381	2.381	69.73	M
D 13C-1,2,3,4,6,7,8-HpCDD	49:35	50047	0.88	0.8155	2.998	2.998	0.0460	0.0460	59.96	
D 13C-1,2,3,4,6,7,8-HpCDF	47:56	67672	0.44	1.0496	3.476	3.149	1.536	1.536	69.53	RQM
D 13C-1,2,3,4,7,8,9-HpCDF	50:16	50780	0.39	0.8947	2.772	2.772	1.802	1.802	55.45	M
D 13C-OCDD	53:51	95536	0.91	0.7044	6.625	6.625	3.697	3.697	66.25	M
D 13C-OCDF	53:58	123036	0.96	1.0615	5.662	5.662	3.066	3.066	56.62	
$ 37Cl4-2,3,7,8-TCDD	30:48	21863		1.2266	0.7786	0.7786	0.0667	0.0667	77.86	
* 13C-1,2,3,4-TCDD	30:18	228932	0.85	9.1E+04	10.0	10.0			100	
* 13C-1,2,3,7,8,9-HxCDD	45:19	204721	1.11	1E+05	10.0	10.0			100	
1,3,6,8-TCDF	22:28						0.0	0.0		
1,3,6,8-TCDD	24:53						0.0	0.0		
1,2,8,9-TCDF	33:52	204044	0.75						0.00	
1,2,8,9-TCDD	34:00						0.0	0.0		
1,3,4,6,8-PeCDF	34:37						0.0	0.0		
1,2,4,7,9-PeCDD	37:35	1123	1.81						0.00	R
1,2,3,8,9-PeCDD	41:13						0.0	0.0		
1,2,3,8,9-PeCDF	41:20						0.0	0.0		
1,2,3,4,6,8-HxCDF	42:33						0.0	0.0		
1,2,4,6,7,9-HxCDD	43:16	26192	1.08						0.00	
1,2,3,4,8,9-HxCDF	45:43						0.0	0.0		
1,2,3,4,6,7,9-HpCDD	48:26	87392	0.99						0.00	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Report Date: 18-Dec-2019 11:15:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MSD
Inject. Date: 18-Dec-2019 10:06:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info:
Misc. Info.: 140-0014069-014
Operator ID: Xcalibur_System Instrument ID: D2A

Method: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\D2A_Dioxin.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 11:15:38 Calib Date: 16-May-2014 18:31:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\D2A\20170111-3817.b\d3140516i5.d

Column 1 : Det: F1(12.07 :34.29)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 11:15:38

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	30:50	30:52	1	1.001	253683	27734	15	37	1849		
321.8936	30:49	30:52	0	1.001	313761	34037	13	32	2618	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											U
319.8965	27:49	29:27	-97	0.903	1482	230	15	37	15		
321.8936	27:45	29:27	-101	0.901	2151	308	13	32	24	0.69(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	28:50	28:50	1	1.002	1234769	126476	25	62	5059		
305.8987	28:50	28:50	1	1.002	1550127	166959	19	47	8787	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											U
303.9016	23:21	28:10	-288	0.812	1638	253	25	62	10		
305.8987	23:22	28:10	-287	0.812	2833	402	19	47	21	0.58(0.65-0.89)	
	Empc Correction				2127	328	19	47	17		
1,2,3,7,8-PeCDD											
355.8546	40:34	40:33	1	1.000	42820	9495	5	12	1899		
357.8516	40:34	40:33	1	1.000	24760	5425	9	22	603	1.73(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											U
355.8546	38:28	39:24	-57	0.949	978	242	5	12	48		
	Empc Correction				771	230	5	12	46		
357.8516	38:28	39:24	-57	0.949	498	149	9	22	17	1.96(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	38:46	38:46	1	1.000	103176	20029	87	217	230		
341.8567	38:46	38:46	1	1.000	65387	11760	16	40	735	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	40:02	40:02	1	1.000	86933	19585	87	217	225		
341.8567	40:02	40:02	1	1.000	56704	12646	16	40	790	1.53(1.32-1.78)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											U
339.8597	37:16	37:59	-42	0.962	16657	2934	87	217	34		
341.8567	37:15	37:59	-43	0.961	10174	1470	16	40	92	1.64(1.32-1.78)	
1,2,3,4,7,8-HxCDD											
389.8158	44:49	44:49	0	1.000	37799	10057	6	15	1676		
391.8127	44:49	44:49	0	1.000	33589	9065	4	10	2266	1.13(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	44:56	44:56	0	1.000	48650	10376	6	15	1729		
391.8127	44:56	44:56	0	1.000	36920	8313	4	10	2078	1.32(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	45:20	45:19	1	1.012	46753	9990	6	15	1665		
391.8127	45:19	45:19	0	1.011	37295	8847	4	10	2212	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											U
389.8158	44:08	44:17	-9	0.982	4328	1034	6	15	172		
391.8127	44:07	44:17	-10	0.982	3346	957	4	10	239	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDF											
373.8208	43:48	43:48	0	1.000	128821	33963	68	170	499		
375.8178	43:48	43:48	0	1.000	101493	27438	71	177	386	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDF											
373.8208	43:56	43:56	0	1.000	91823	22361	68	170	329		
375.8178	43:56	43:56	0	1.000	68815	17345	71	177	244	1.33(1.05-1.43)	
2,3,4,6,7,8-HxCDF											
373.8208	44:39	44:39	1	1.000	72654	18085	68	170	266		
375.8178	44:39	44:39	1	1.000	58031	14552	71	177	205	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDF											Ma
373.8208	45:35	45:35	0	1.000	57781	12818	68	170	189		M
375.8178	45:35	45:35	0	1.000	48168	11366	71	177	160	1.20(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											MU
373.8208	42:45	44:08	-83	0.973	5219	1353	68	170	20		
375.8178	42:45	44:08	-83	0.973	3743	959	71	177	14	1.39(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD											
423.7767	49:37	49:36	1	1.001	47694	9152	25	62	366		
425.7737	49:37	49:36	1	1.001	45599	8157	34	85	240	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											U
423.7767	49:01						25	62			
425.7737	49:01						34	85			
1,2,3,4,6,7,8-HpCDF											
407.7817	47:57	47:58	0	1.000	69917	13922	10	25	1392		
409.7788	47:57	47:58	0	1.000	69242	13690	9	22	1521	1.01(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											a
407.7817	50:17	50:17	1	1.000	48758	9073	10	25	907		a
409.7788	50:16	50:17	0	1.000	46132	8151	9	22	906	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											U
407.7817	48:34	49:31	-56	1.013	5324	1076	10	25	108		
409.7788	48:34	49:31	-56	1.013	5349	937	9	22	104	1.00(0.88-1.20)	

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	53:52	53:51	1	1.000	297708	66956	2	5	33478		
459.7348	53:52	53:51	1	1.000	335677	71836	5	12	14367	0.89(0.76-1.02)	
OCDF											
441.7428	53:59	53:58	0	1.000	69114	15117	7	17	2160		
443.7399	53:59	53:58	0	1.000	77487	17338	17	42	1020	0.89(0.76-1.02)	
13C-2,3,7,8-TCDD											
331.9368	30:48	30:48	3	1.017	27785	3401	134	335	25		
333.9338	30:48	30:48	3	1.017	38196	4078	94	235	43	0.73(0.65-0.89)	
13C-2,3,7,8-TCDF											M
315.9419	28:47	28:47	1	0.950	55837	7539	128	320	59		M
317.9389	28:46	28:47	0	0.949	63570	7438	273	682	27	0.88(0.65-0.89)	
13C-1,2,3,7,8-PeCDD											Ma
367.8949	40:33	40:33	1	1.339	30335	7408	1731	4327	4		M
369.8919	40:32	40:33	0	1.338	21734	5277	1096	2740	5	1.40(1.32-1.78)	a
13C-1,2,3,7,8-PeCDF											
351.9000	38:45	38:48	1	1.279	53219	11788	2572	6430	5		
353.8970	38:45	38:48	1	1.279	31176	6879	1424	3560	5	1.71(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	40:01	40:04	1	1.321	53032	11892	2572	6430	5		
353.8970	40:01	40:04	1	1.321	32890	7550	1424	3560	5	1.61(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	44:48	44:49	0	0.989	36744	9575	82	205	117		
403.8529	44:48	44:49	0	0.989	25952	7079	6	15	1180	1.42(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	44:55	44:56	0	0.991	36363	9143	82	205	112		
403.8529	44:55	44:56	0	0.991	28140	5883	6	15	981	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDF											RQM
383.8639	43:46	43:46	0	0.966	31891	8137	2060	5150	4		M
	Empc Correction				25339	6855	2060	5150	3		
385.8610	43:46	43:46	0	0.966	49685	13443	3120	7800	4	0.64(0.43-0.59)	
13C-1,2,3,6,7,8-HxCDF											Ma
383.8639	43:55	43:55	0	0.969	39700	9867	2060	5150	5		M
385.8610	43:55	43:55	0	0.969	68222	16627	3120	7800	5	0.58(0.43-0.59)	
13C-2,3,4,6,7,8-HxCDF											M
383.8639	44:38	44:38	1	0.985	32380	8284	2060	5150	4		M
385.8610	44:38	44:38	1	0.985	60976	15152	3120	7800	5	0.53(0.43-0.59)	M
13C-1,2,3,7,8,9-HxCDF											M
383.8639	45:34	45:34	0	1.006	29000	5537	2060	5150	3		M
385.8610	45:34	45:34	0	1.006	56660	12724	3120	7800	4	0.51(0.43-0.59)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	49:35	49:37	0	1.094	23450	4708	12	30	392		
437.8140	49:35	49:37	0	1.094	26597	4989	56	140	89	0.88(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDF											RQM
417.8250	47:56	47:56	1	1.058	27703	5673	882	2205	6		M
	Empc Correction				20677	4708	882	2205	5		
419.8220	47:56	47:56	1	1.058	46995	10702	2042	5105	5	0.59(0.37-0.51)	M

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											M
417.8250	50:16	50:16	1	1.109	14356	3081	882	2205	3		M
419.8220	50:16	50:16	1	1.109	36424	7849	2042	5105	4	0.39(0.37-0.51)	M
13C-OCDD											M
469.7780	53:51	53:51	0	1.189	45595	10886	2311	5777	5		M
471.7750	53:51	53:51	0	1.189	49941	11789	2411	6027	5	0.91(0.76-1.02)	M
13C-OCDF											
453.7830	53:58	54:01	-1	1.191	60287	13095	2683	6707	5		
455.7801	53:59	54:01	0	1.192	62749	15596	3217	8042	5	0.96(0.76-1.02)	
37Cl4-2,3,7,8-TCDD											
327.8847	30:48	30:50	1	1.017	21863	2120	88	220	24		
13C-1,2,3,4-TCDD											
331.9368	30:18	30:15	3		105009	12099	134	335	90		
333.9338	30:18	30:15	3		123923	14807	94	235	158	0.85(0.65-0.89)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	45:19	45:17	1		107875	23552	82	205	287		
403.8529	45:19	45:17	1		96846	21776	6	15	3629	1.11(1.05-1.43)	
1,3,6,8-TCDF											
303.9016	22:29						25	62			
305.8987	22:29						19	47			
1,3,6,8-TCDD											
319.8965	24:56						15	37			
321.8936	24:56						13	32			
1,2,8,9-TCDF											
303.9016	33:52	33:53	0	1.177	87228	8855	25	62	354		
305.8987	33:51	33:53	-1	1.176	116816	11616	19	47	611	0.75(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	34:03						15	37			
321.8936	34:03						13	32			
1,3,4,6,8-PeCDF											
339.8597	34:38						87	217			
341.8567	34:38						16	40			
1,2,4,7,9-PeCDD											R
355.8546	37:35	37:36	-1	0.927	724	246	5	12	49		
357.8516	37:35	37:36	-1	0.927	399	126	9	22	14	1.81(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	41:13						5	12			
357.8516	41:13						9	22			
1,2,3,8,9-PeCDF											
339.8597	41:22						87	217			
341.8567	41:22						16	40			
1,2,3,4,6,8-HxCDF											
373.8208	42:34						68	170			
375.8178	42:34						71	177			

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,4,6,7,9-HxCDD											
389.8158	43:16	43:15	1	0.966	13610	3913	6	15	652		
391.8127	43:15	43:15	0	0.965	12582	3364	4	10	841	1.08(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	45:43						68	170			
375.8178	45:43						71	177			
1,2,3,4,6,7,9-HpCDD											
423.7767	48:26	48:25	1	0.977	43487	9020	25	62	361		
425.7737	48:26	48:25	1	0.977	43905	8622	34	85	254	0.99(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Report Date: 18-Dec-2019 11:15:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDD, RT: 29.435

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.173	D 13C-2,3,7,8-TCDD	50.000	65981	7479

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.173		5.000	65981	7479

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
27:49	1482	230	2151	308	0.2346	0.69	
30:20	362	113	480	98	0.0544	0.75	
30:34	2659	554	4593	641	0.4684	0.58	RQ
30:34	2659	554	3453	719	0.3948		Empc Correction
31:11	712	153	598	124	0.0846	1.19	RQ
31:11	460	95	598	124	0.0683		Empc Correction
31:17	628	188	326	111	0.0616	1.93	RQ
31:17	251	85	326	111	0.0373		Empc Correction
31:56	20489	2235	23569	2329	2.85	0.87	
32:21	587	85	240	65	0.0534	2.45	RQ
32:21	184	50	240	65	0.0274		Empc Correction
32:50	541	63	622	96	0.0751	0.87	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDF, RT: 28.156

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.088	D 13C-2,3,7,8-TCDF	50.000	119407	14977

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.088		5.000	119407	14977

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
23:21	1638	253	2833	402	0.1721	0.58	RQ
23:21	1638	253	2127	328	0.1449		Empc Correction
24:21	11295	1402	14536	1923	0.99	0.78	
24:41	1701	233	1894	362	0.1383	0.90	RQ
24:41	1458	278	1894	362	0.1290		Empc Correction
25:05	56174	6758	73490	8858	4.99	0.76	
25:39	12488	2553	19672	3774	1.24	0.63	RQ
25:39	12488	2553	16218	3315	1.10		Empc Correction
25:48	52838	6556	65617	8771	4.56	0.81	
26:15	9789	1267	13630	1570	0.9012	0.72	
26:27	31762	3929	43570	5830	2.90	0.73	
26:59	48850	5914	63626	7903	4.33	0.77	
27:13	5465	876	7153	902	0.4856	0.76	
27:44	528476	67016	672683	79884	46.2	0.79	
28:04	1327	292	2469	455	0.1461	0.54	RQ
28:04	1327	292	1723	379	0.1174		Empc Correction
28:21	27750	3161	34064	3858	2.38	0.81	
29:18	2813	342	1545	309	0.1677	1.82	RQ
29:18	1189	237	1545	309	0.1052		Empc Correction
30:03	83638	8617	98075	11208	6.99	0.85	
30:45	18903	1631	24416	2372	1.67	0.77	

Compound is Marked ND

Report Date: 18-Dec-2019 11:15:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDD, RT: 39.399

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.043	D 13C-1,2,3,7,8-PeCDD	50.000	52069	12685

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.043		5.000	52069	12685

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
38:28	978	242	498	149	0.1358	1.96	RQ
38:28	771	230	498	149	0.1168		Empc Correction
39:09	376	94	806	260	0.1088	0.47	RQ
39:09	376	94	242	60	0.0569		Empc Correction
39:50	1179	267	573	116	0.1612	2.06	RQ
39:50	888	179	573	116	0.1345		Empc Correction
40:57	608	74	291	99	0.0827	2.09	RQ
40:57	451	153	291	99	0.0683		Empc Correction

Compound is Marked ND

Report Date: 18-Dec-2019 11:15:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDF, RT: 37.968

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.190	D 13C-1,2,3,7,8-PeCDF	50.000	84395	18667
2,3,4,7,8-PeCDF	1.109	D 13C-2,3,4,7,8-PeCDF	50.000	85922	19442

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.150		5.000	85158	19054

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
37:16	16657	2934	10174	1470	1.37	1.64	
39:17	11514	2150	6458	1254	0.9179	1.78	
40:18	6929	1081	4167	687	0.5667	1.66	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDD, RT: 44.269

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.141	D 13C-1,2,3,4,7,8-HxCDD	50.000	62696	16654
1,2,3,6,7,8-HxCDD	1.148	D 13C-1,2,3,6,7,8-HxCDD	50.000	64503	15026
1,2,3,7,8,9-HxCDD	1.221				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.170		5.000	63599	15840

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
44:08	4328	1034	3346	957	0.5156	1.29	

Compound is Marked ND

Report Date: 18-Dec-2019 11:15:40 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDF, RT: 44.125

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.363	D 13C-1,2,3,4,7,8-HxCDF	50.000	81576	21580
1,2,3,6,7,8-HxCDF	1.276	D 13C-1,2,3,6,7,8-HxCDF	50.000	107922	26494
2,3,4,6,7,8-HxCDF	1.265	D 13C-2,3,4,6,7,8-HxCDF	50.000	93356	23436
1,2,3,7,8,9-HxCDF	1.257	D 13C-1,2,3,7,8,9-HxCDF	50.000	85660	18261

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.290		5.000	92128	22442

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
42:45	5219	1353	3743	959	0.3769	1.39	
45:35	0	0	48168	11366	2.03	0.00	

Compound is Marked ND

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDD, RT: 49.003

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.120	D 13C-1,2,3,4,6,7,8-HpCDD	50.000	50047	9697

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		5.000	50047	9697

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags

Compound is Marked ND

Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

AreaSum WorkSheet Report

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Inject. Date: 18-Dec-2019 10:06:00 Dil. Factor: 10.0000
Sample Type: MSD, Matrix Spike Duplicate
Instrument ID: D2A Operator: Xcalibur_System
Lims Batch ID: 36166 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDF, RT: 49.509

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.498	D 13C-1,2,3,4,6,7,8-HpCDF	50.000	74698	16375
1,2,3,4,7,8,9-HpCDF	1.381	D 13C-1,2,3,4,7,8,9-HpCDF	50.000	50780	10930

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.440		5.000	62739	13652

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
48:34	5324	1076	5349	937	0.5909	1.00	
50:17	48758	9073	46132	8151	5.25	1.06	

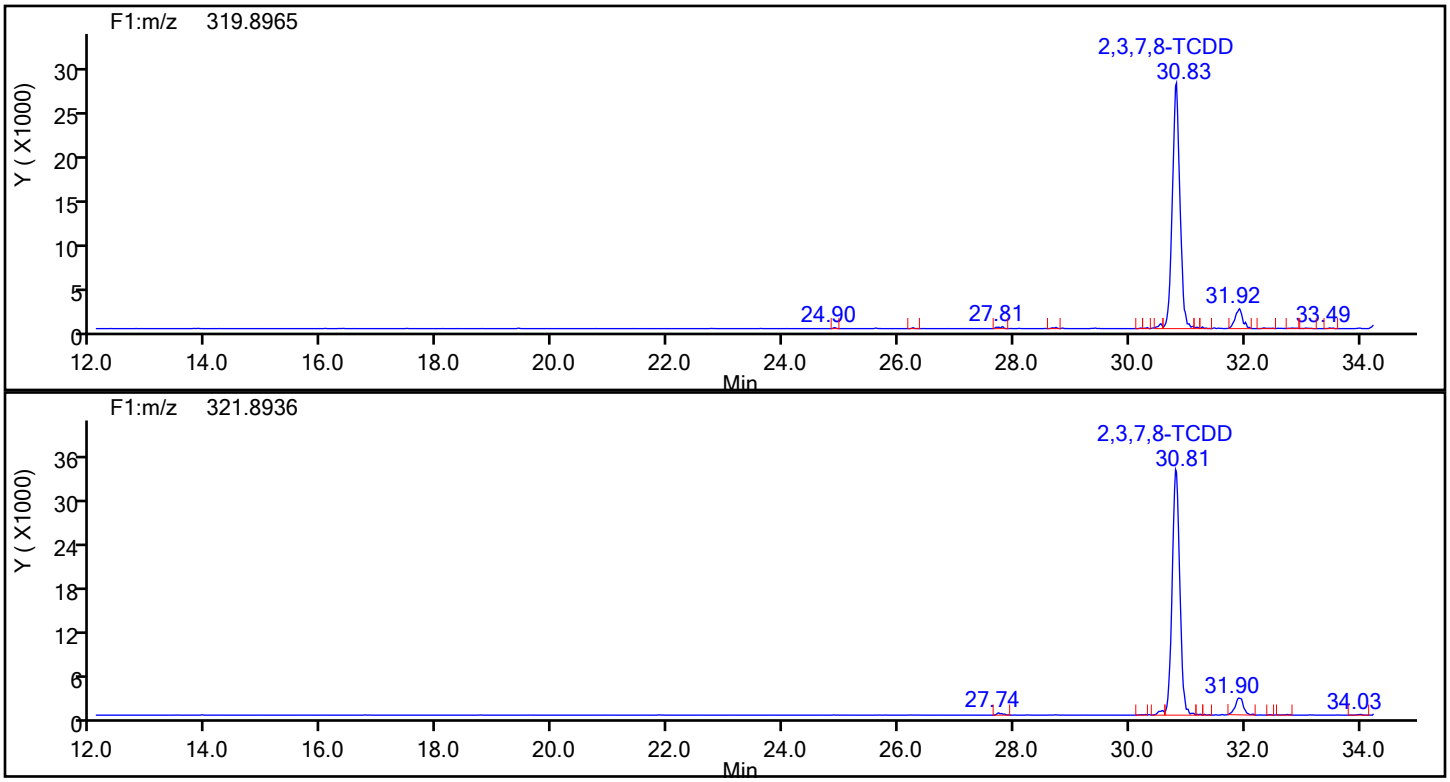
Compound is Marked ND

Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

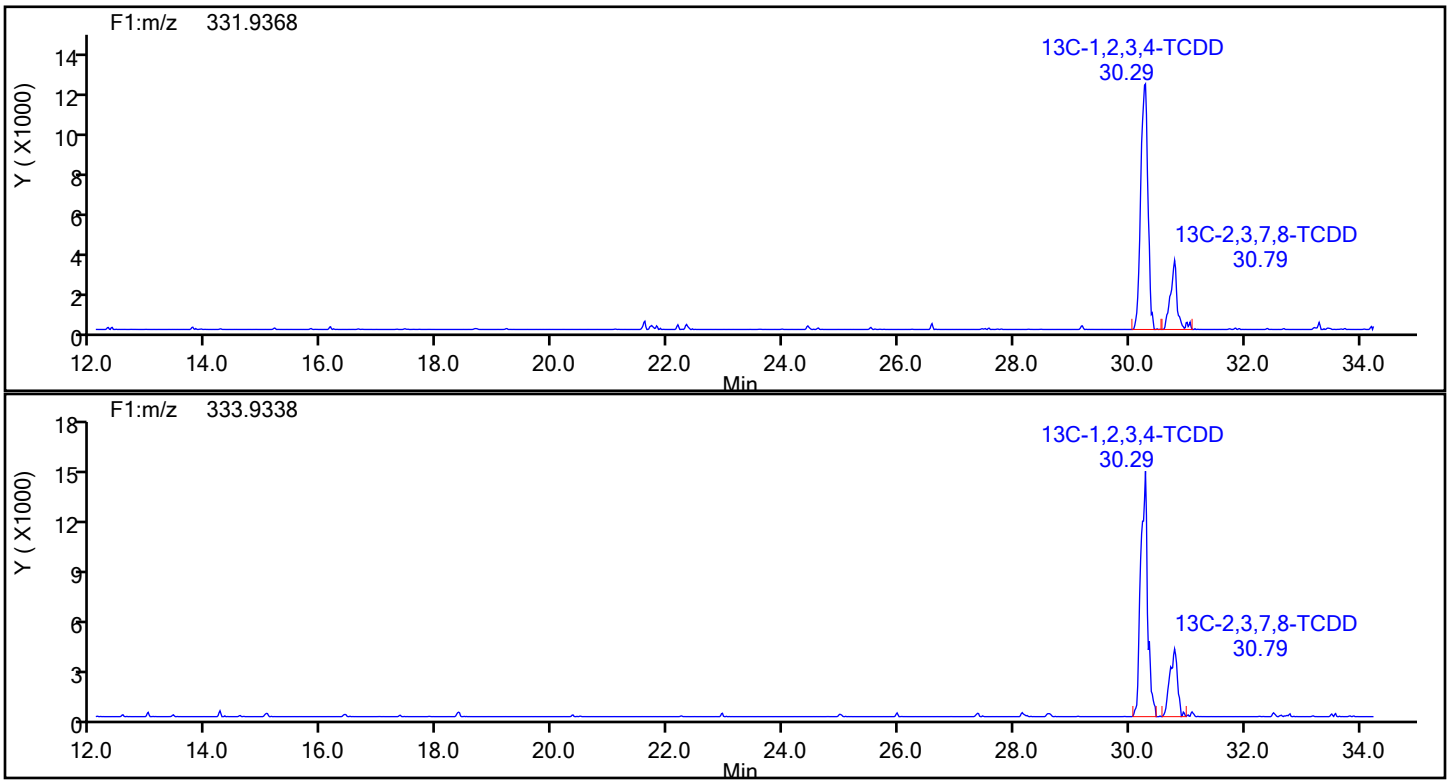
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

TCDD



TCDD Standards

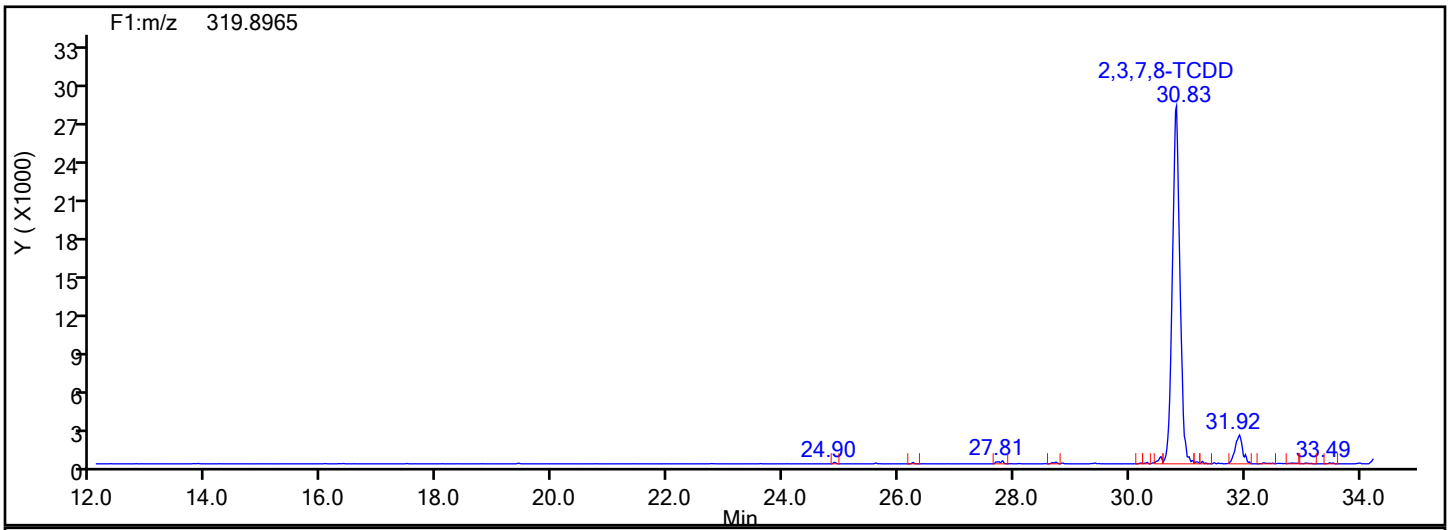


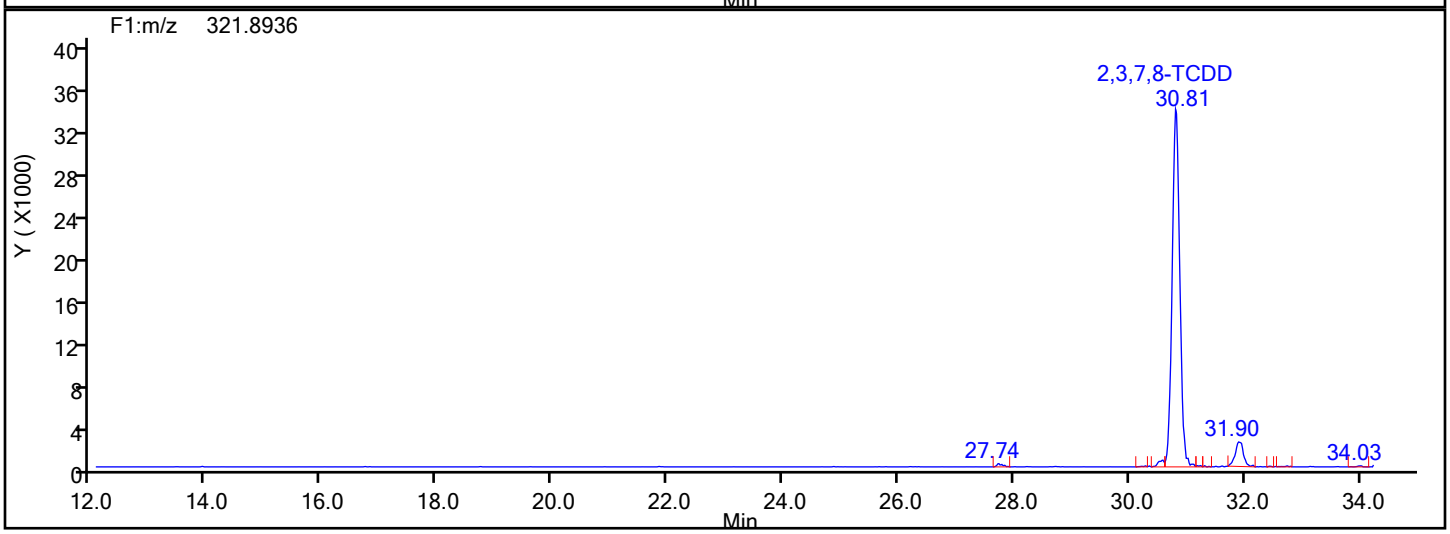
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

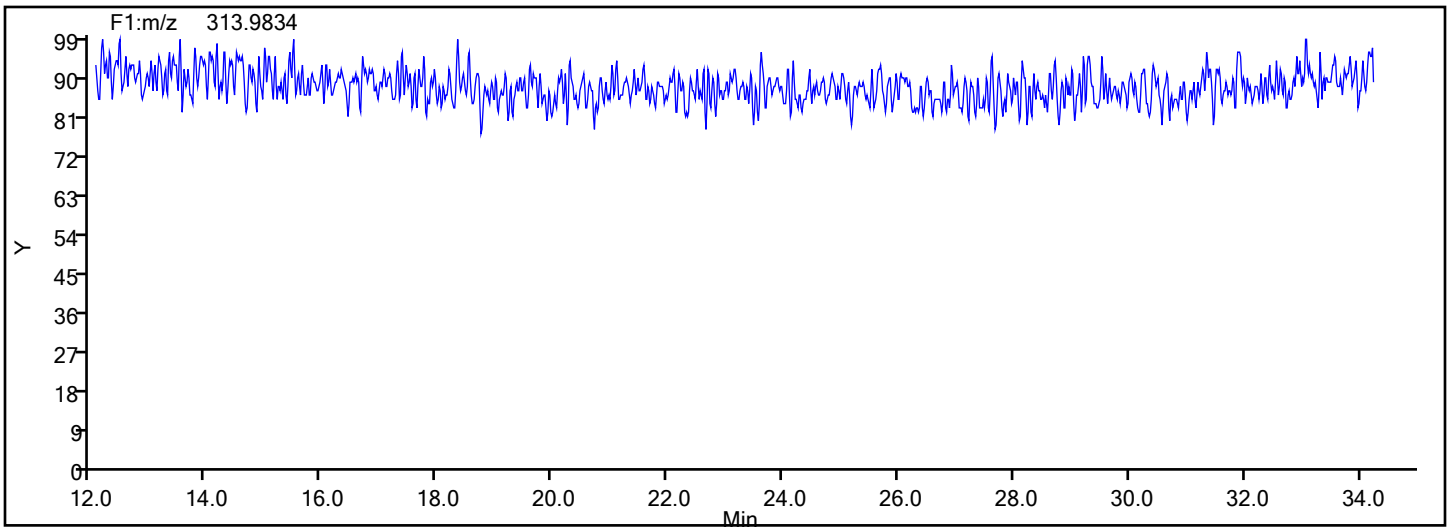
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

TCDD





TCDD Lock Mass



Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d

Injection Date: 18-Dec-2019 10:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

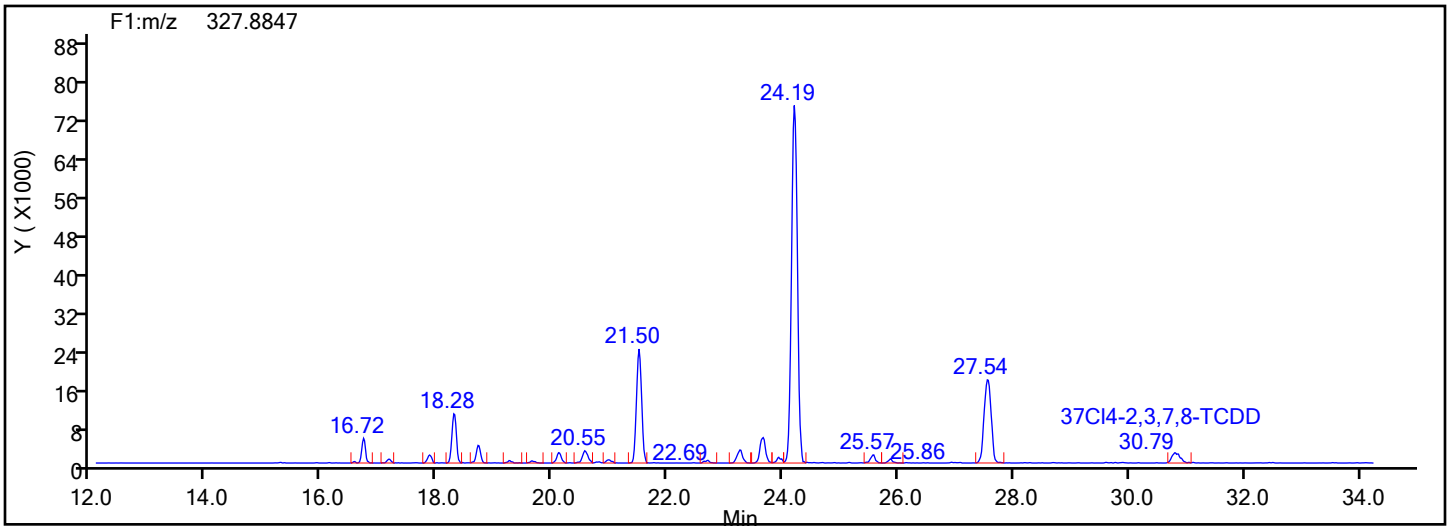
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

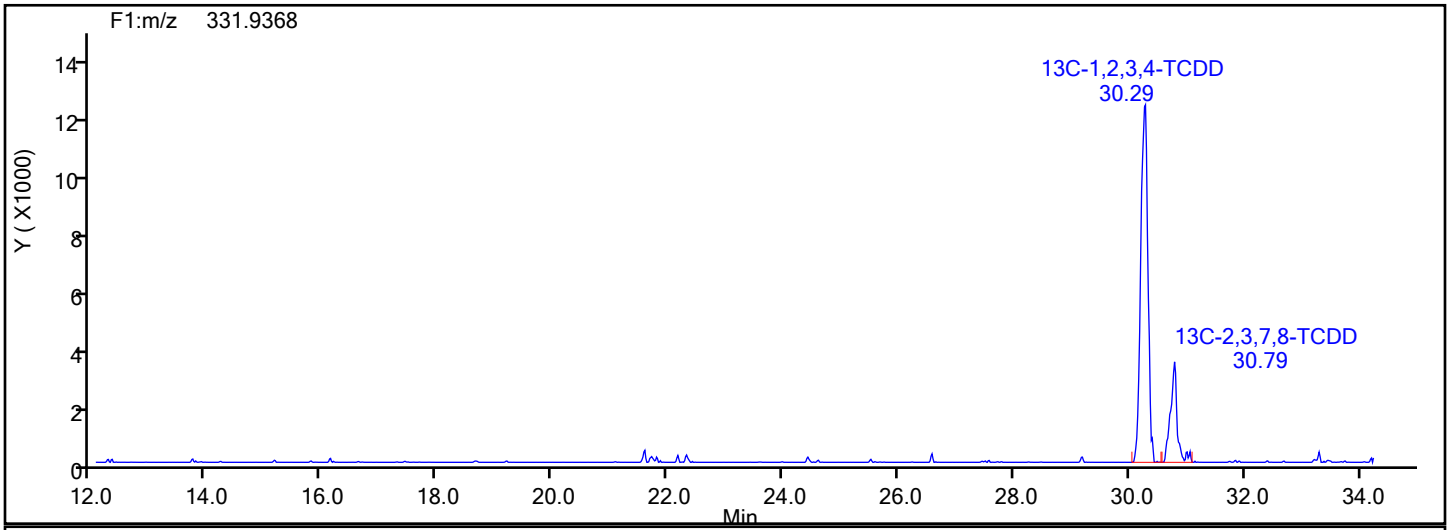
Worklist#: 36166 Sample Line#: 14

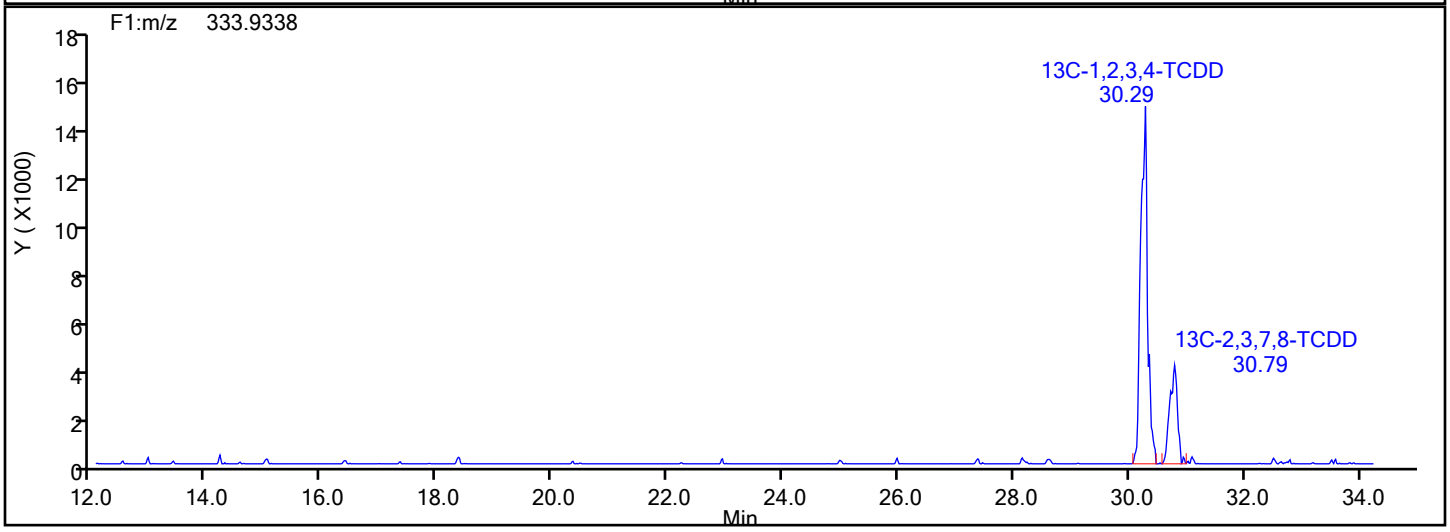
Column Type: Column Dia:

37Cl4-TCDD



37Cl4-TCDD Standards



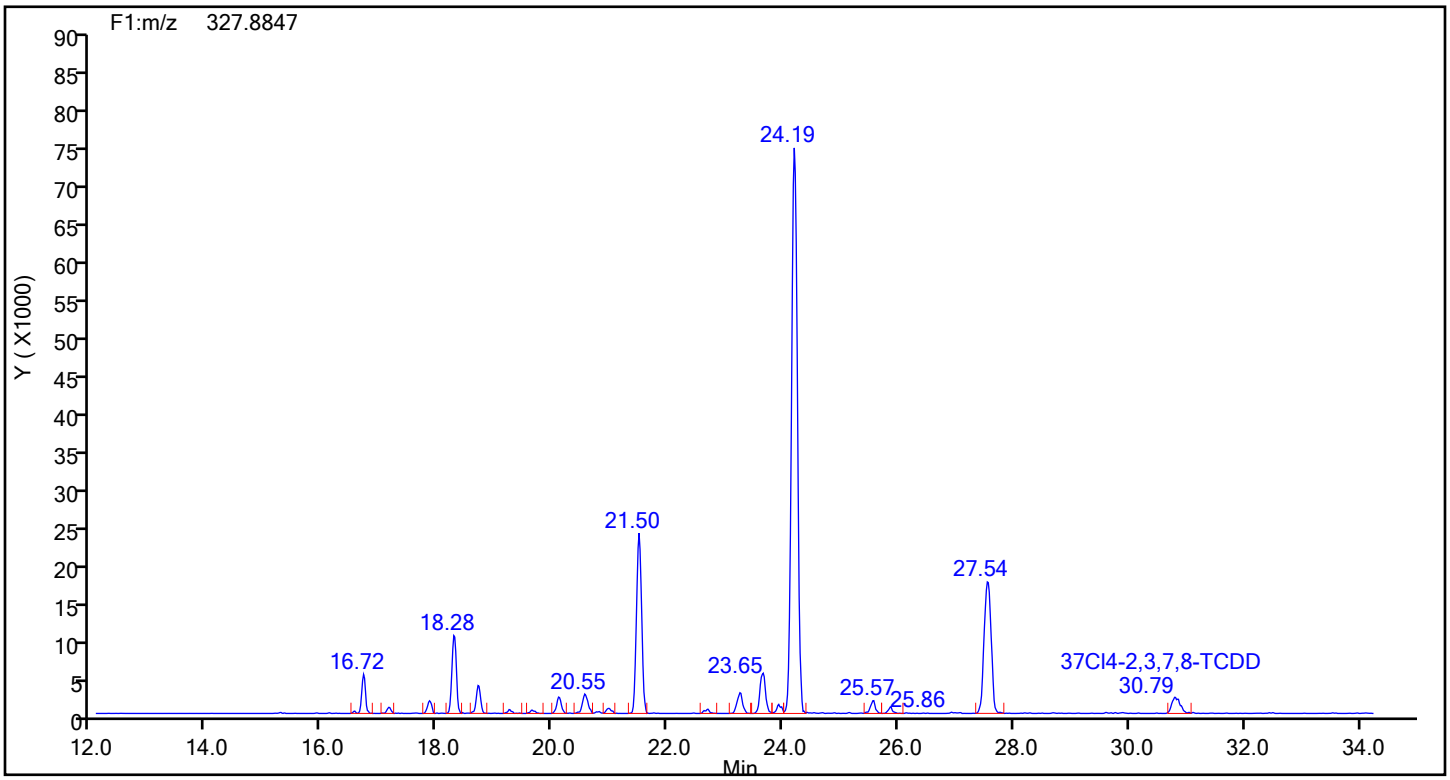


Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

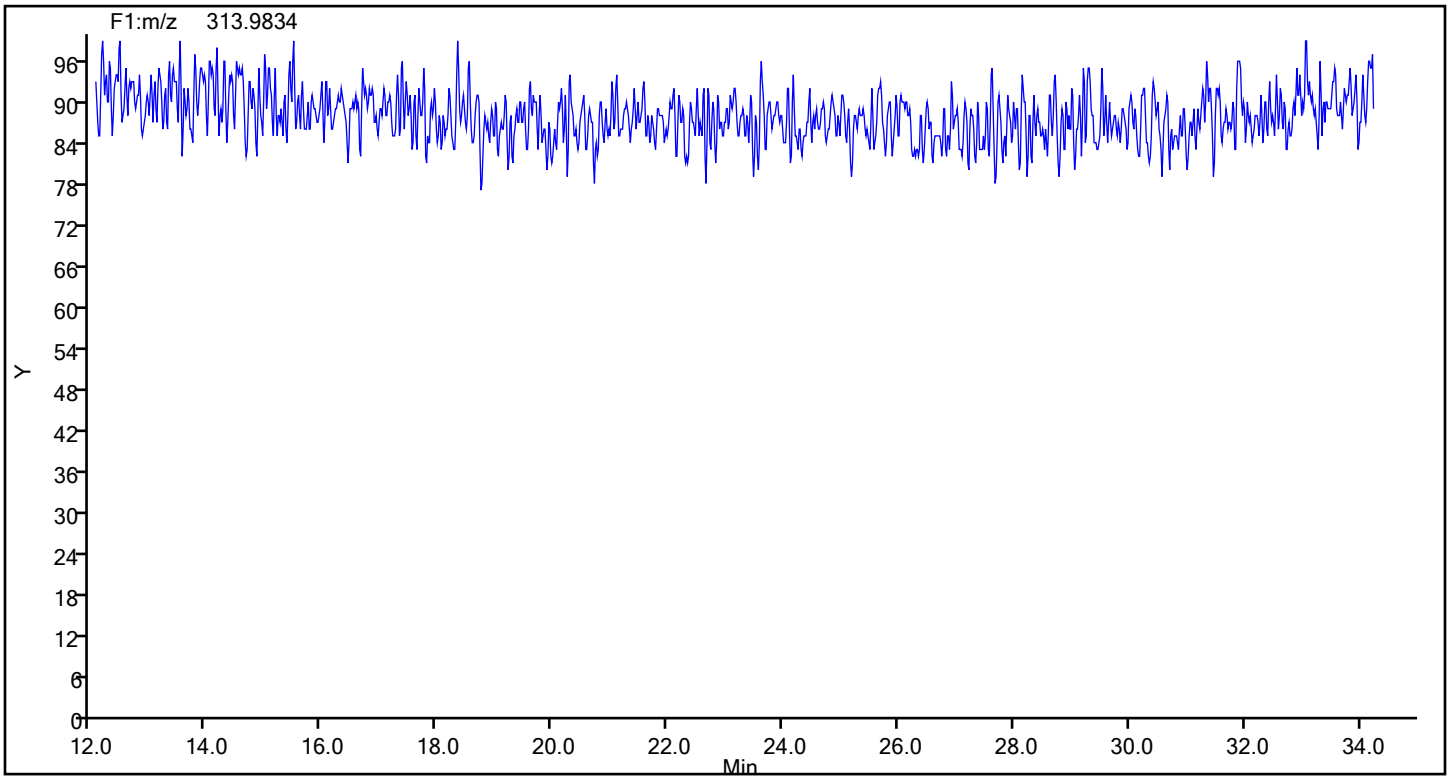
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

37Cl4-TCDD



37Cl4-TCDD Lock Mass

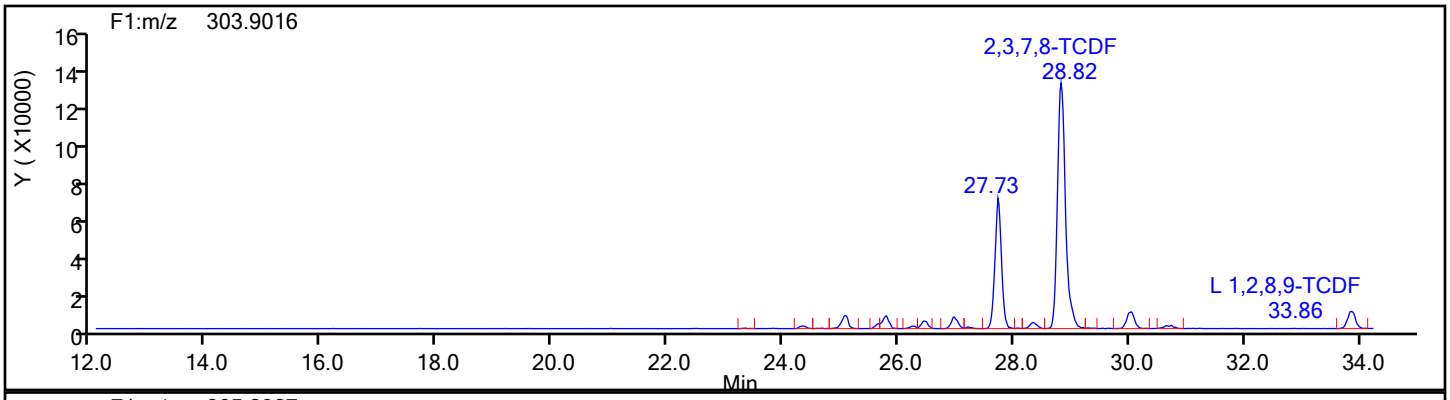


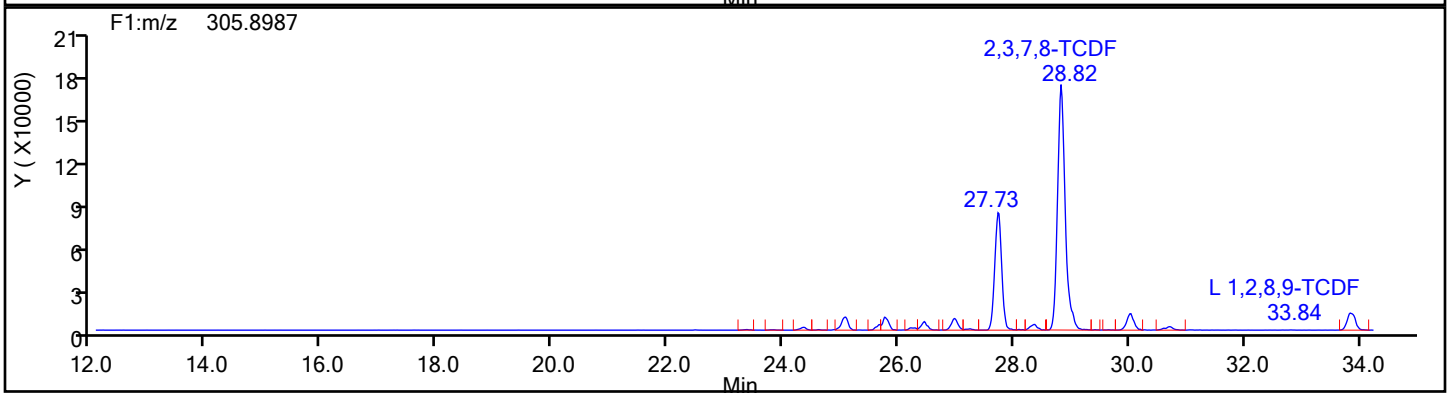
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

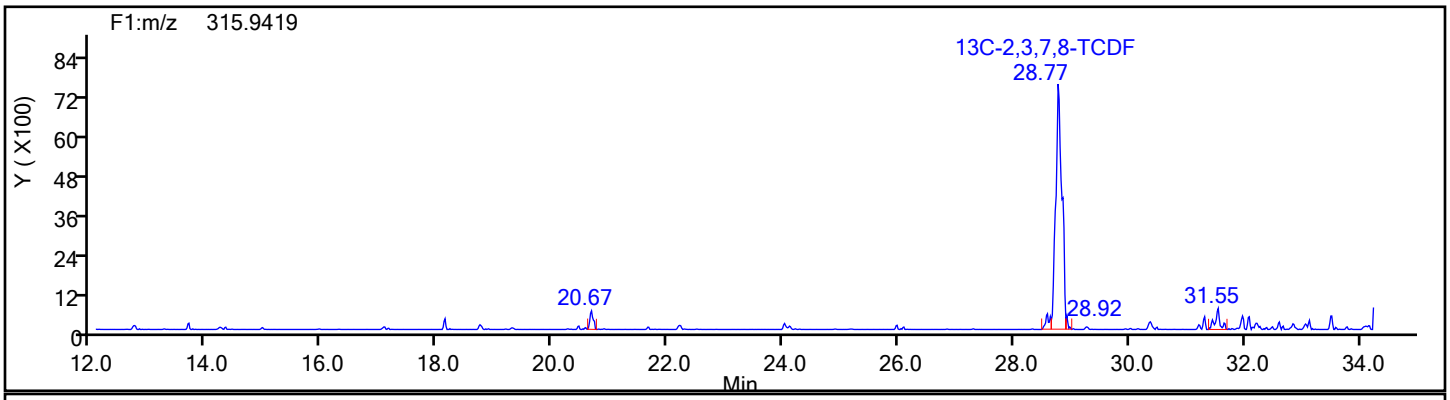
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

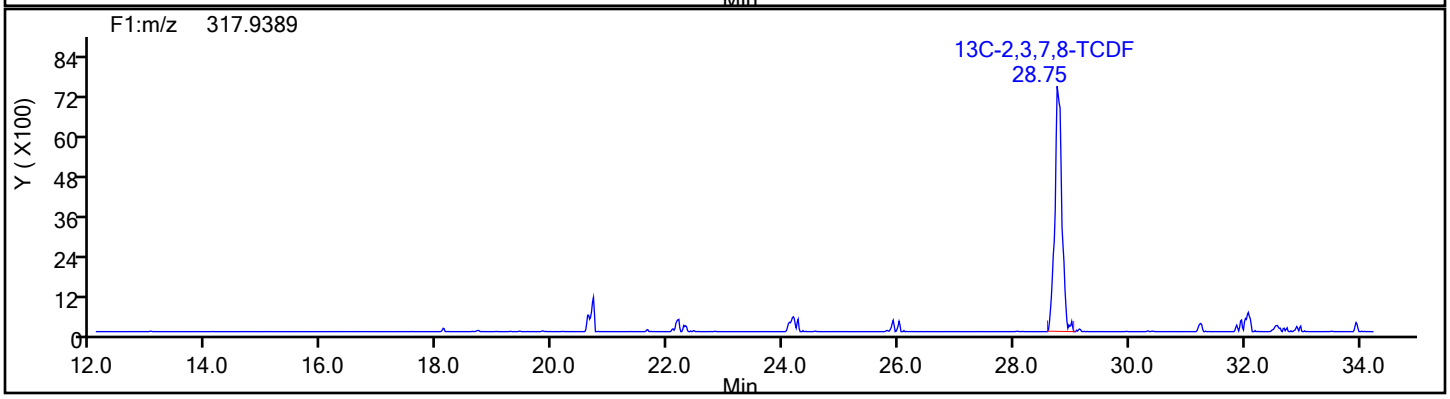
TCDF





TCDF Standards



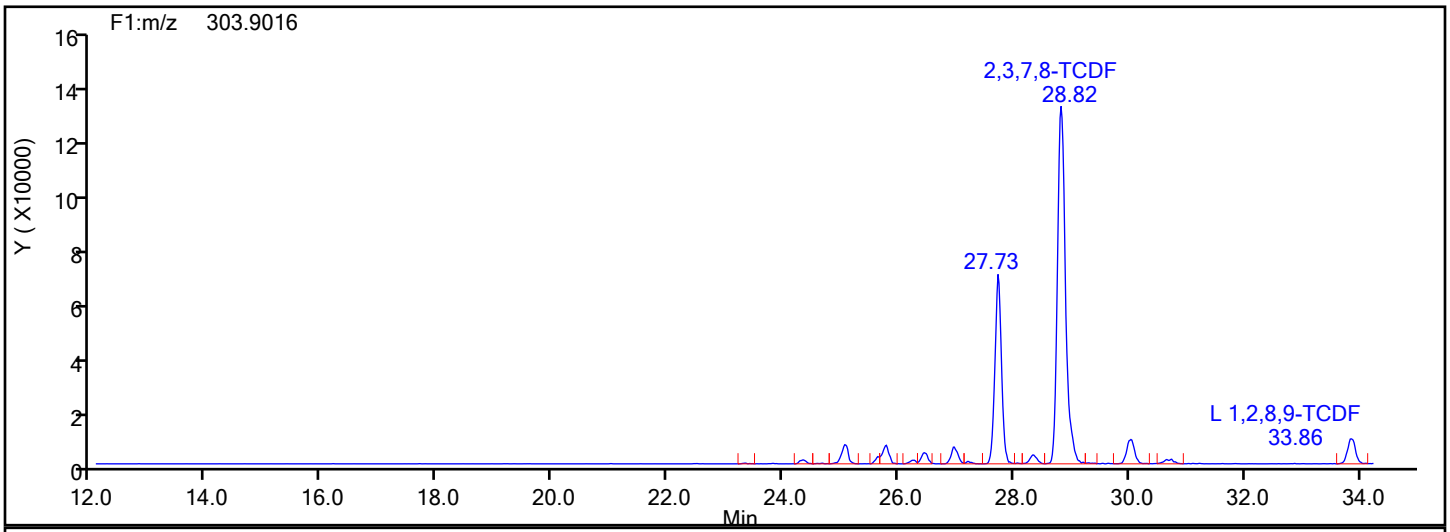


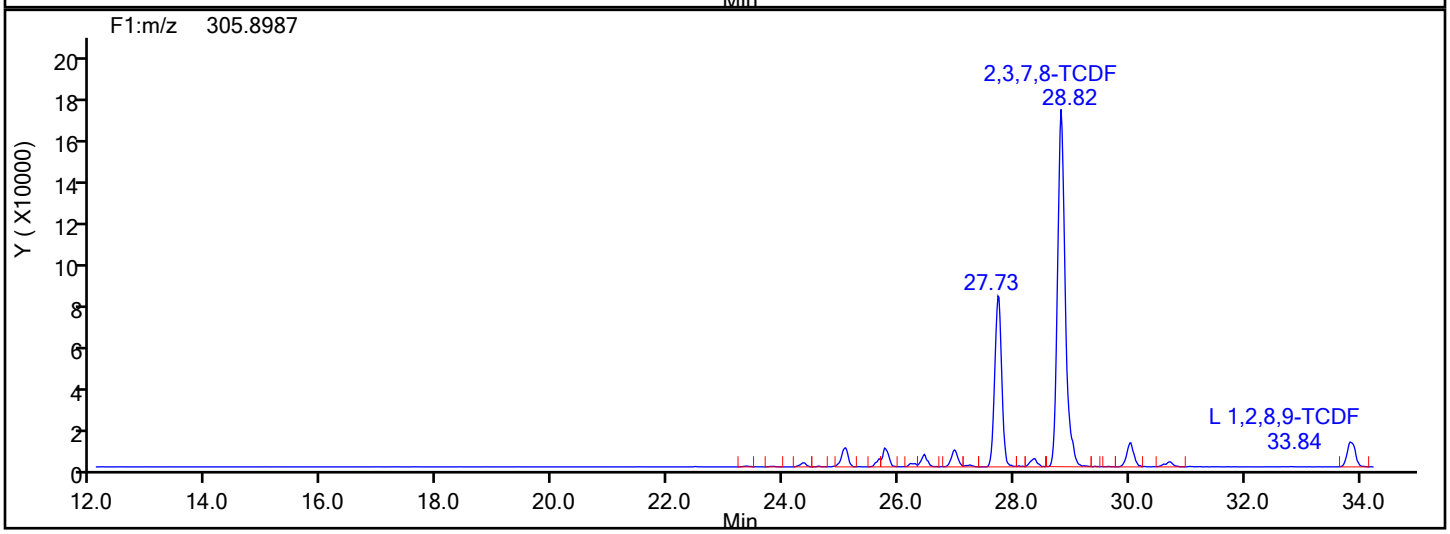
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

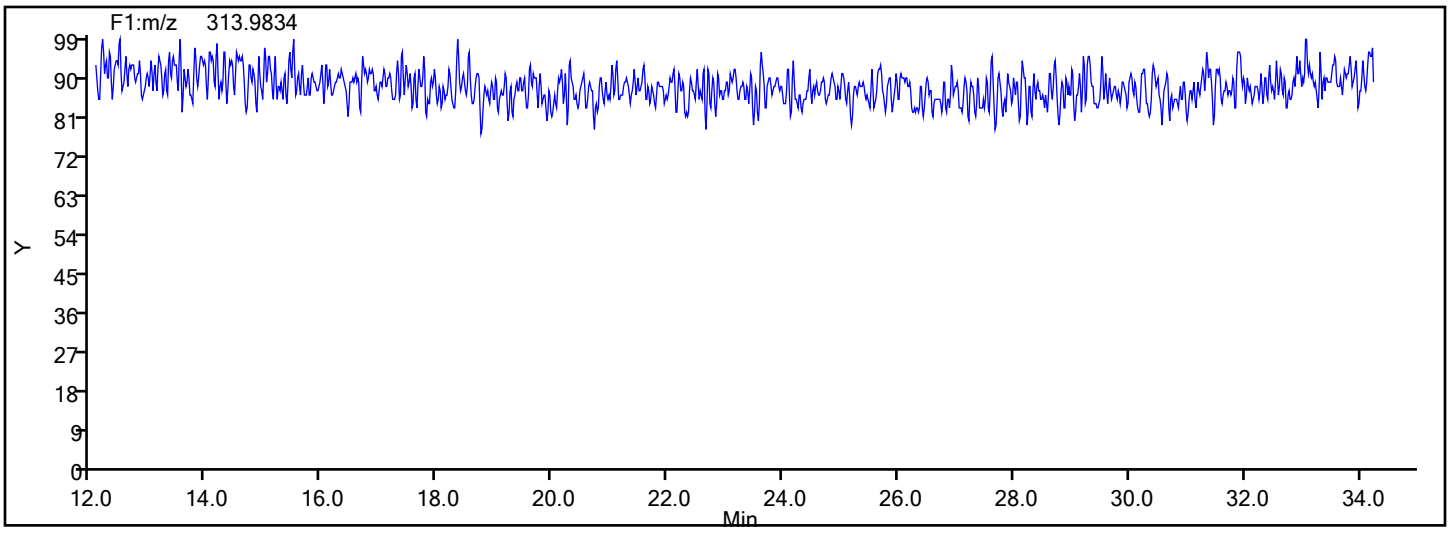
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

TCDF





TCDF Lock Mass

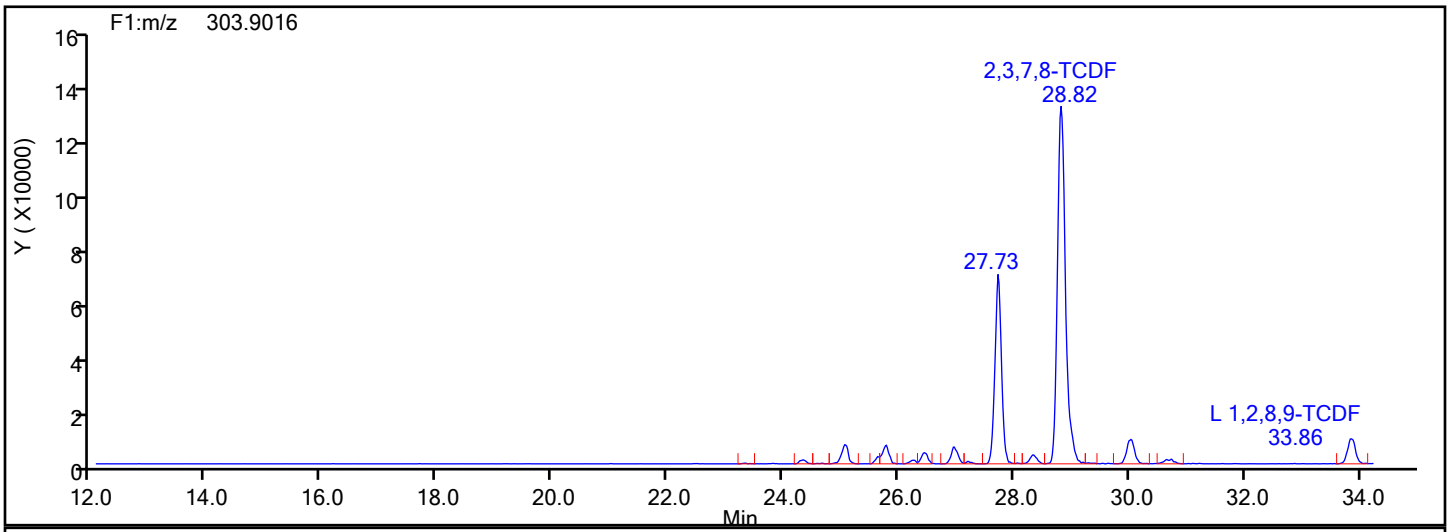


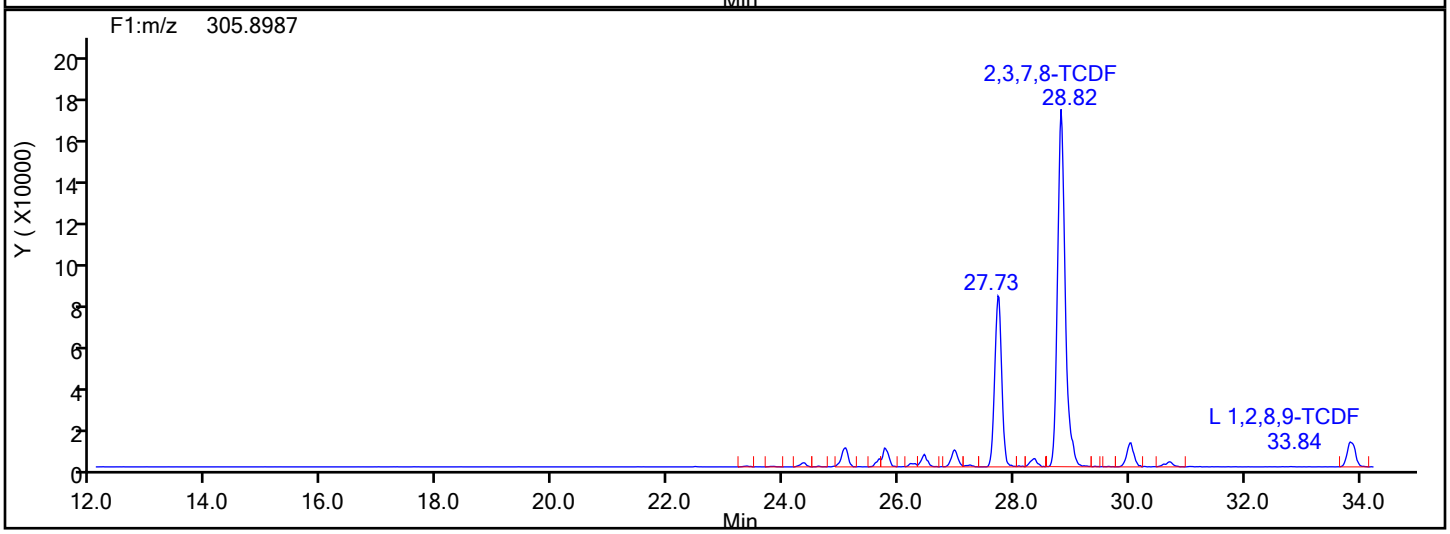
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

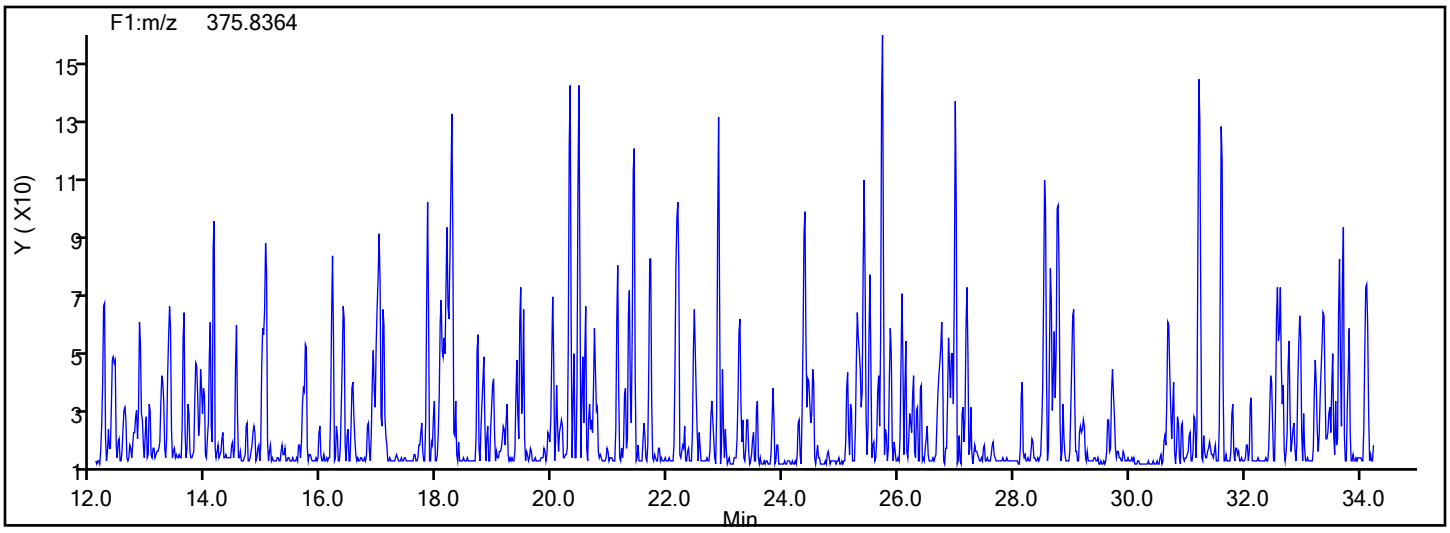
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

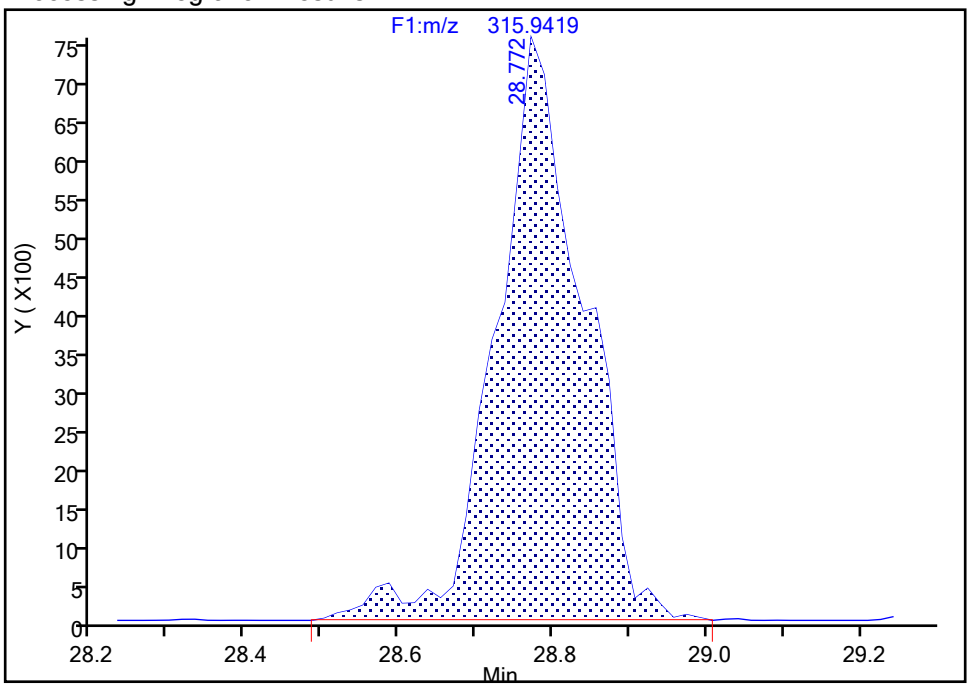
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F1(12.07 :34.29)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

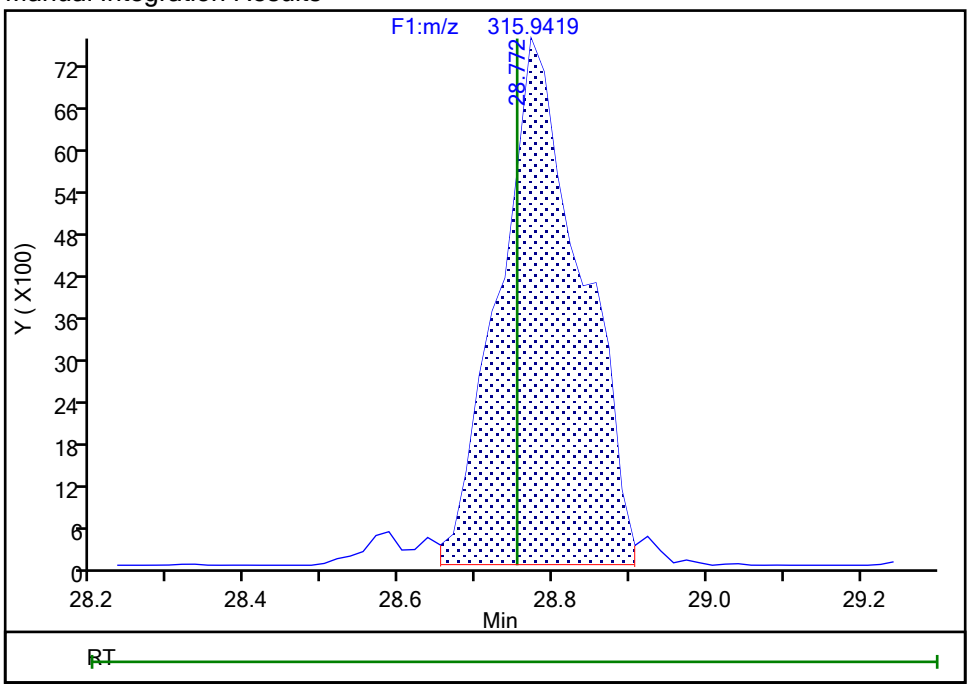
Processing Integration Results

RT: 28.77
Area: 58971
Amount: 3.050820
Amount Units: pg/ul



Manual Integration Results

RT: 28.77
Area: 55837
Amount: 2.972795
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:11:11

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d

Injection Date: 18-Dec-2019 10:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

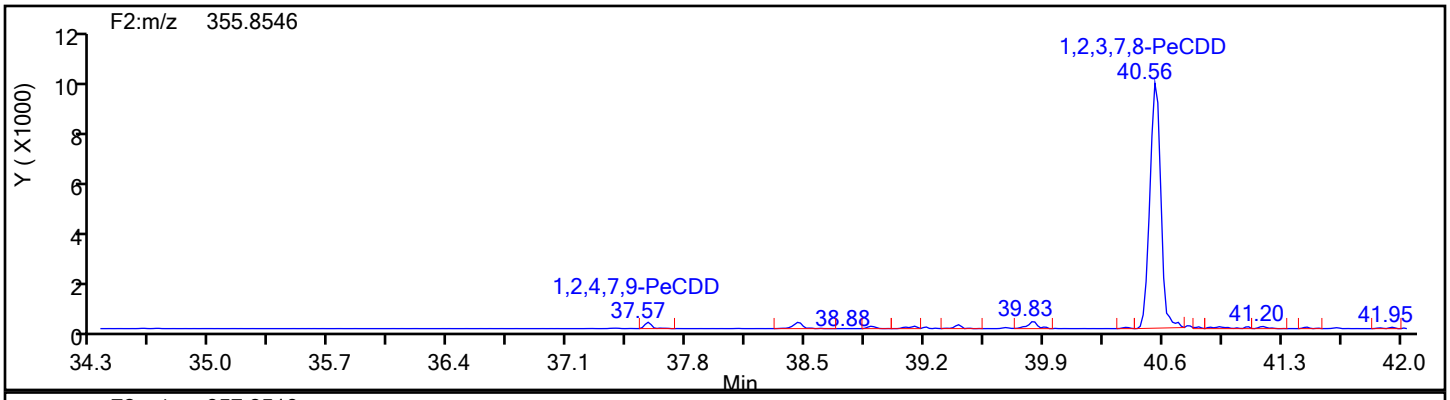
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

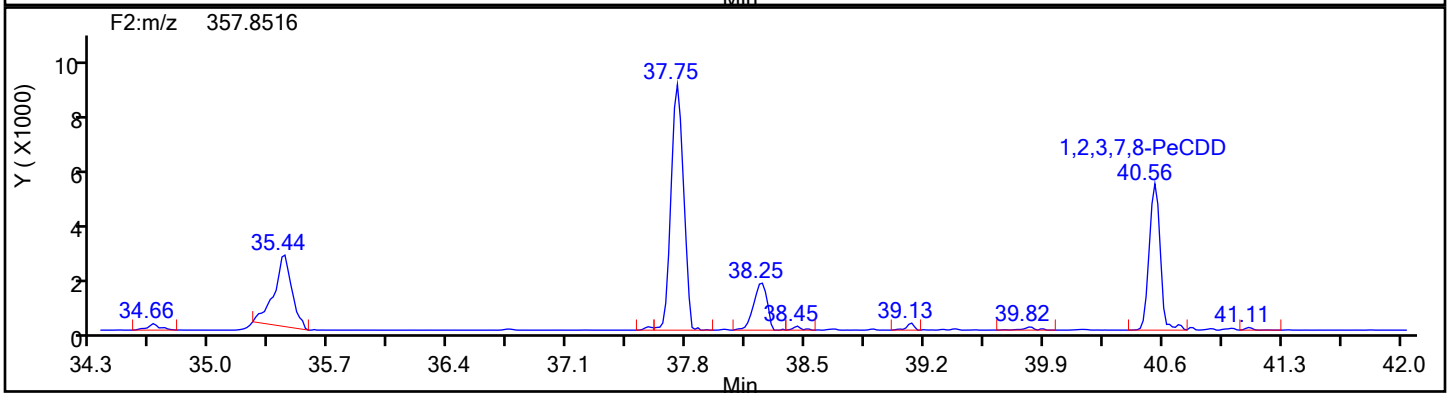
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 14

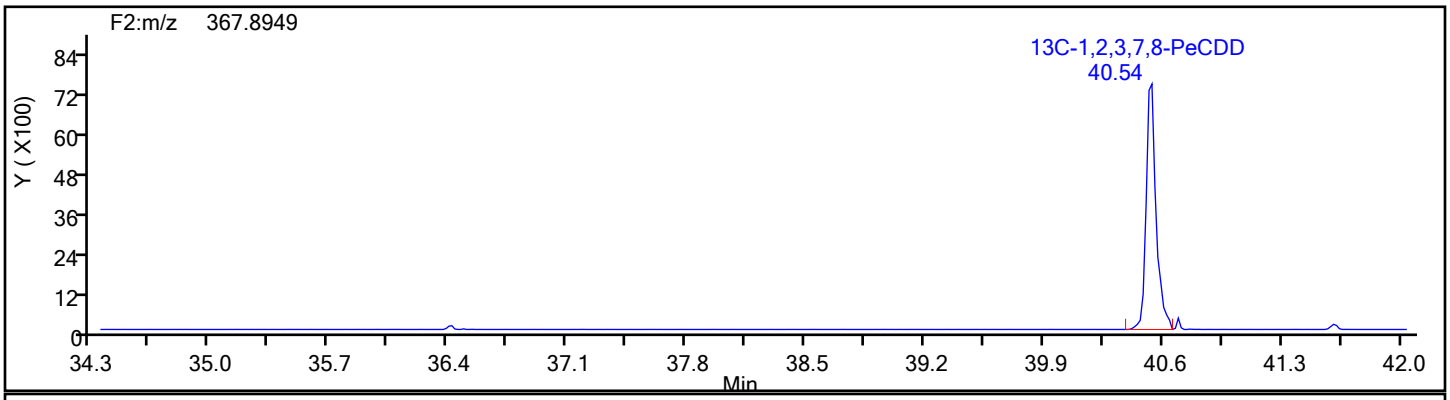
Column Type: Column Dia:

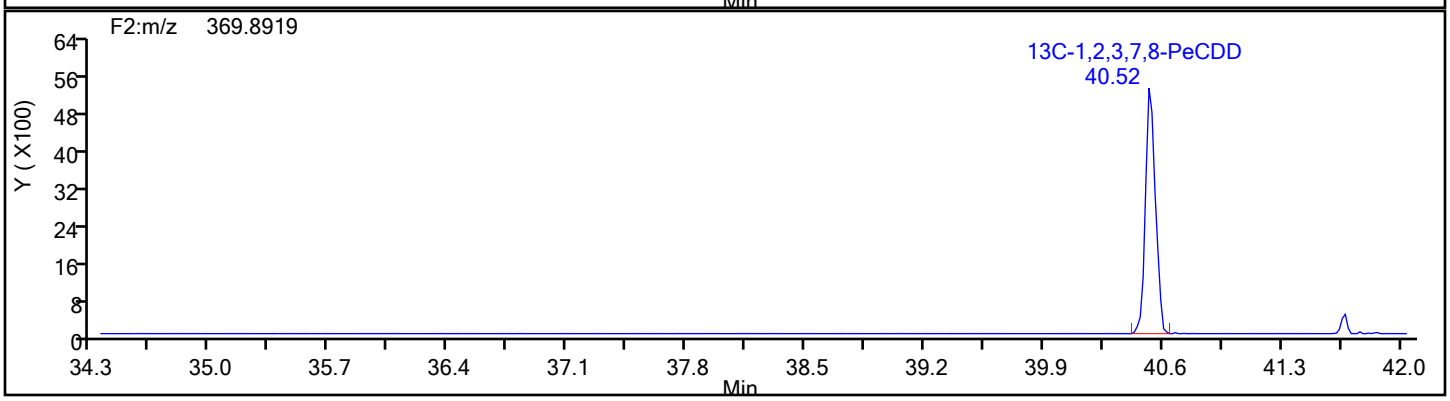
PeCDD





PeCDD Standards



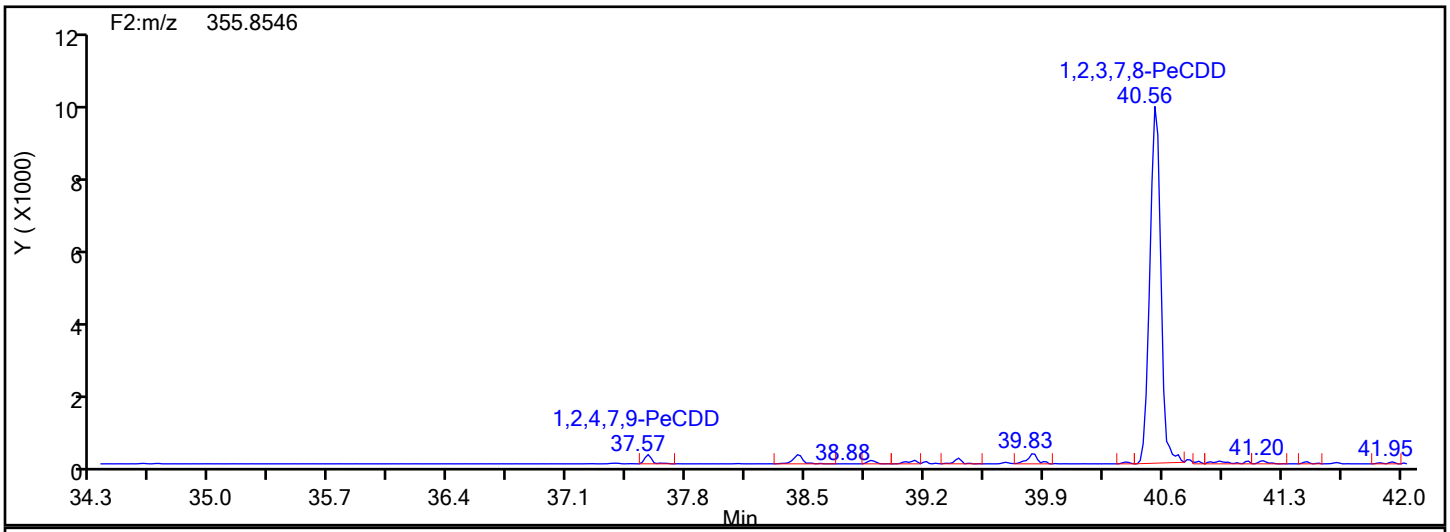


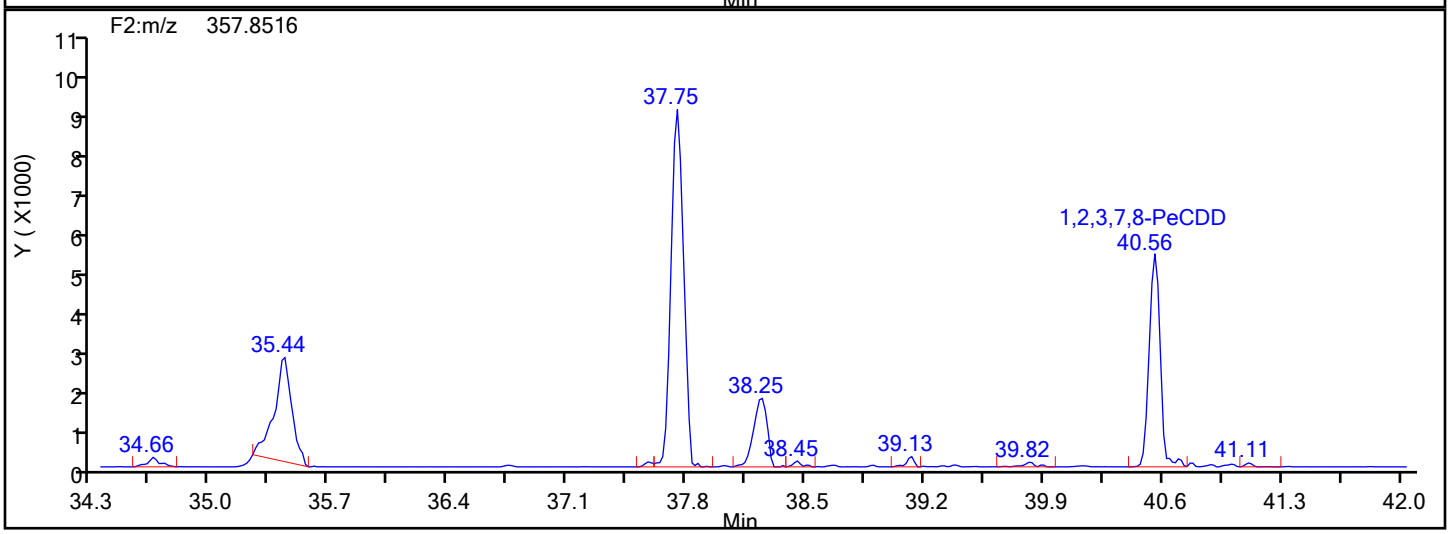
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

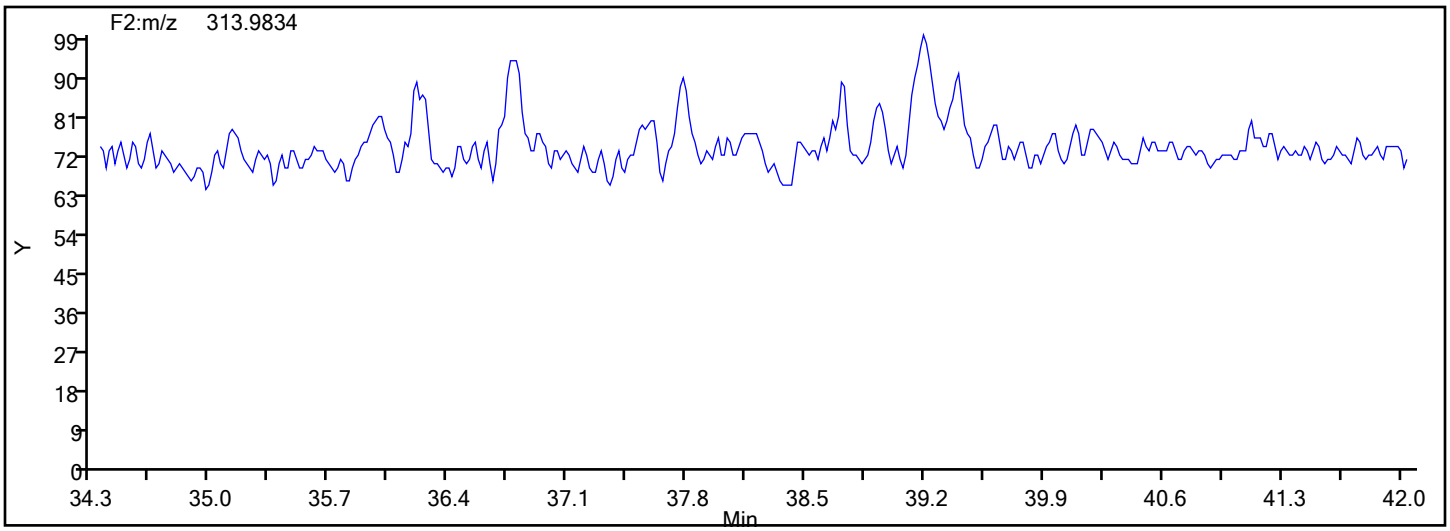
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

PeCDD





PeCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

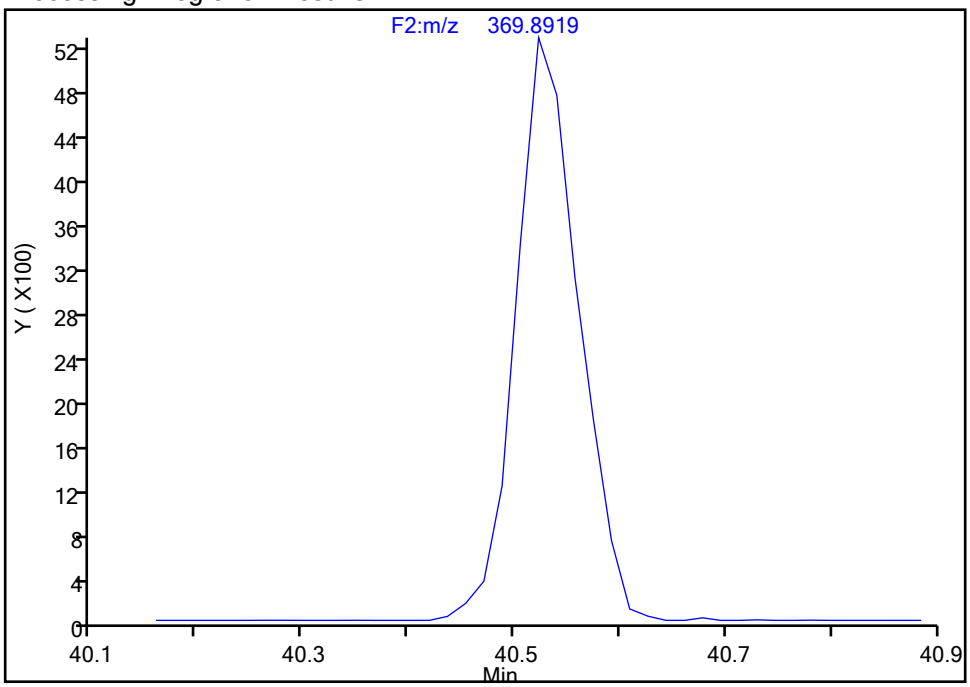
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

13C-1,2,3,7,8-PeCDD, CAS: 109719-79-1

Signal: 2

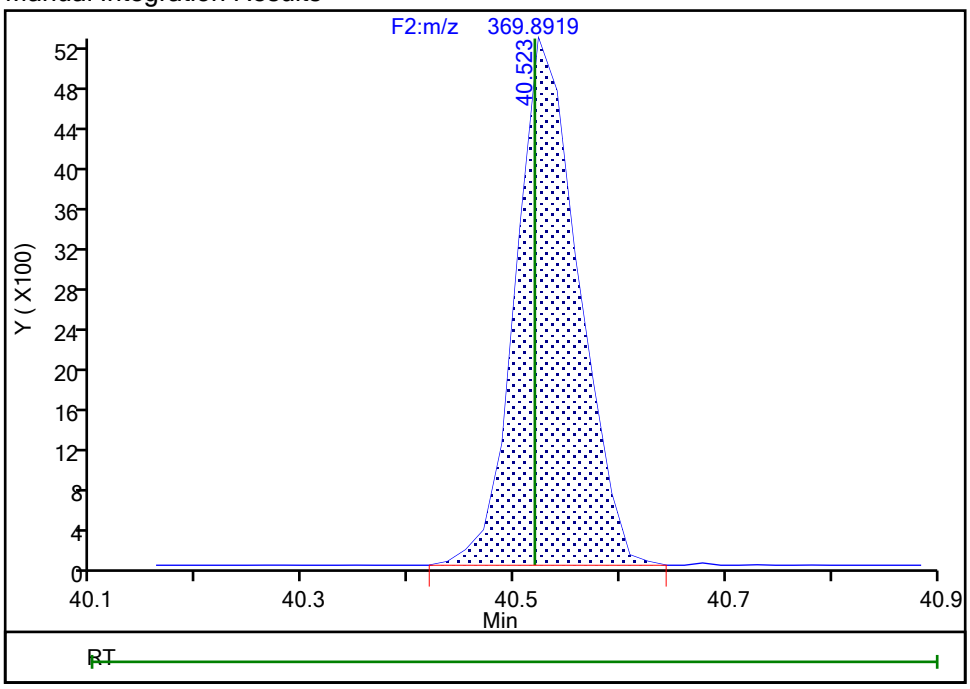
Not Detected
Expected RT: 40.52

Processing Integration Results



Manual Integration Results

RT: 40.52
Area: 21734
Amount: 2.601404
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:11:35
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

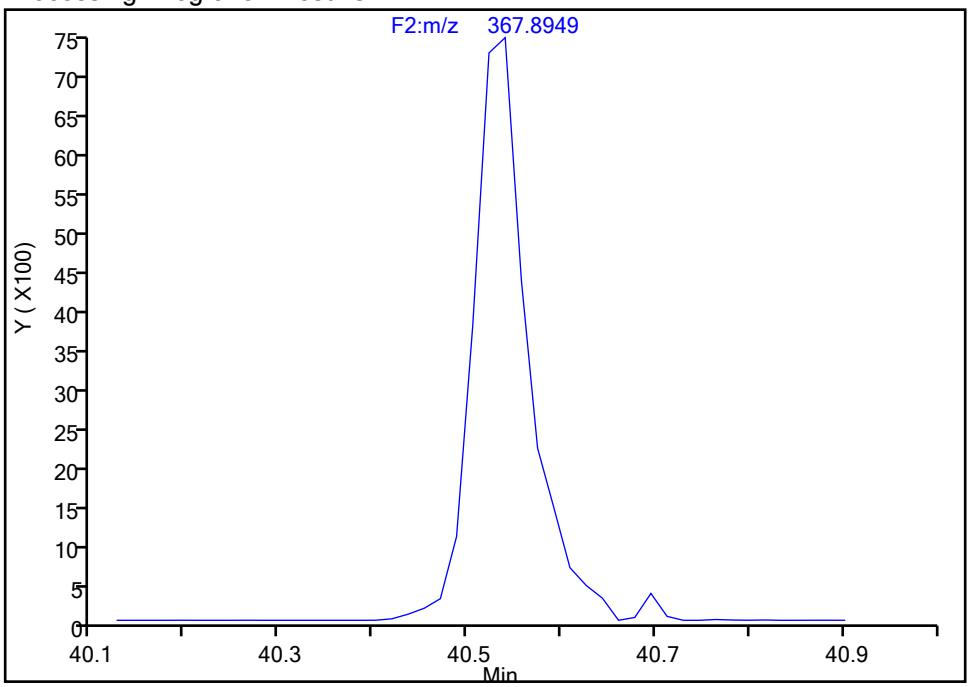
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F2(34.39 :42.21)		

13C-1,2,3,7,8-PeCDD, CAS: 109719-79-1

Signal: 1

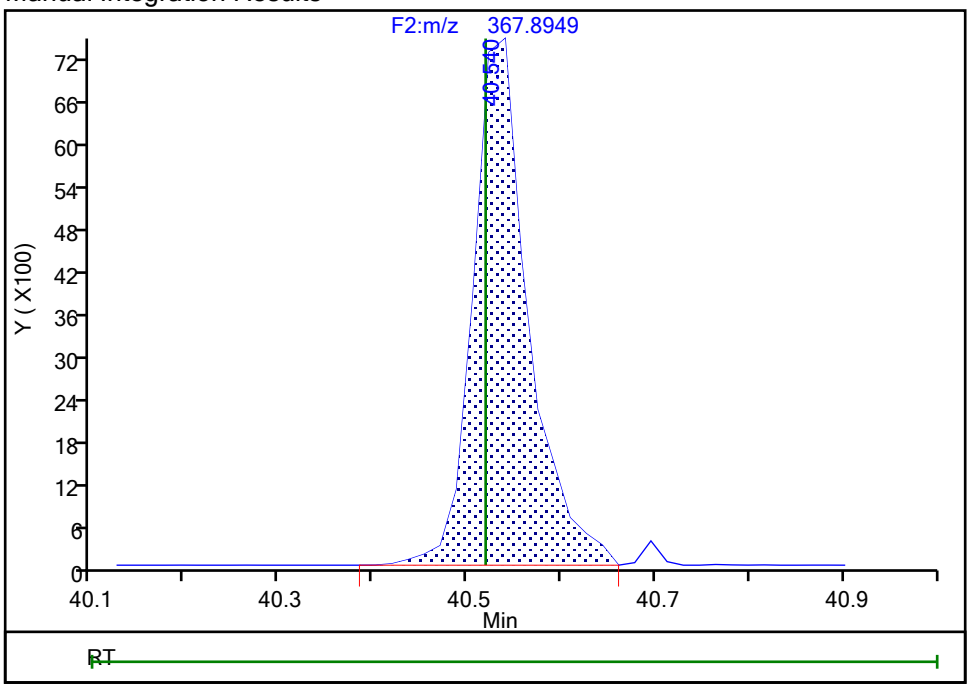
Not Detected
Expected RT: 40.52

Processing Integration Results



Manual Integration Results

RT: 40.54
Area: 30335
Amount: 2.601404
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:11:35
Audit Action: Manually Integrated Audit Reason: Baseline

Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d

Injection Date: 18-Dec-2019 10:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

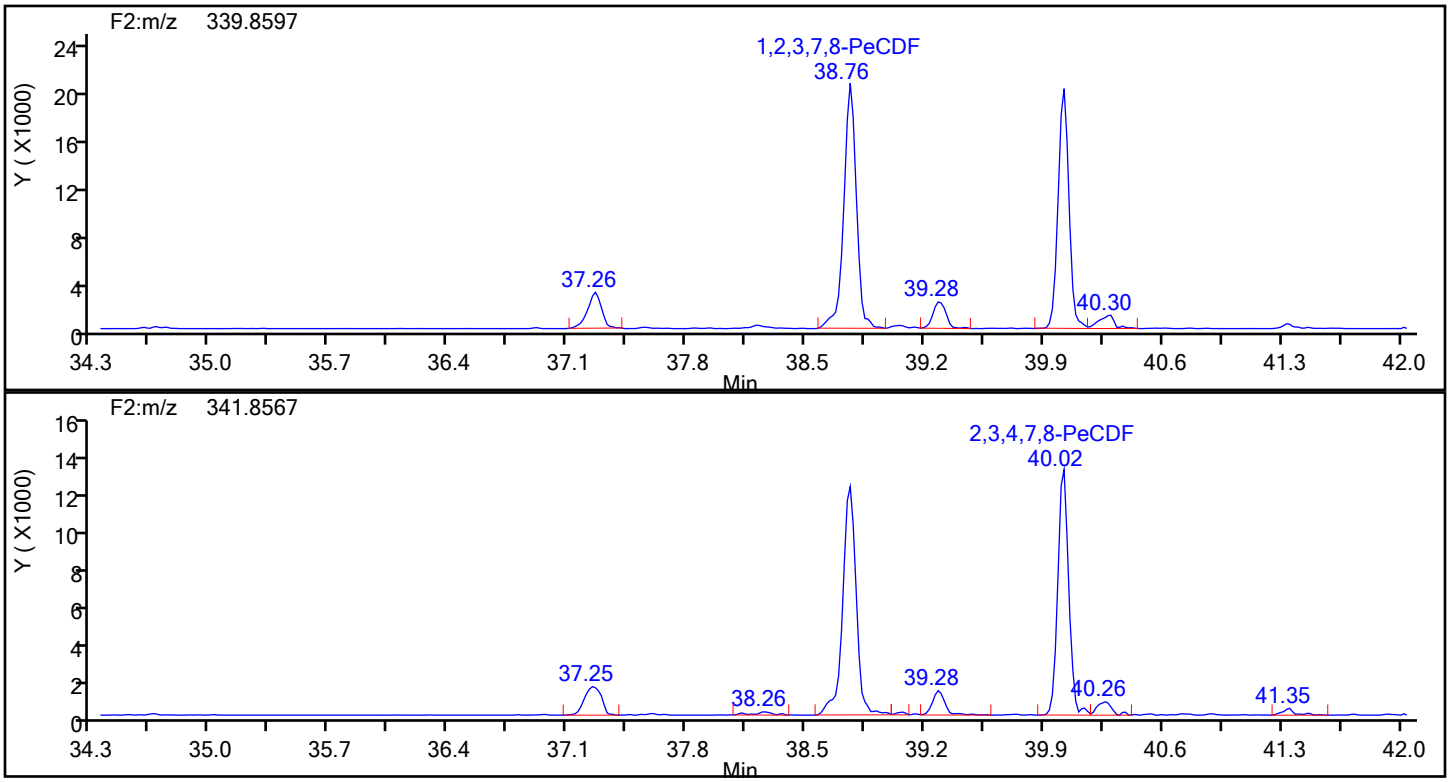
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120619-SS-SJSSA06(4-6)

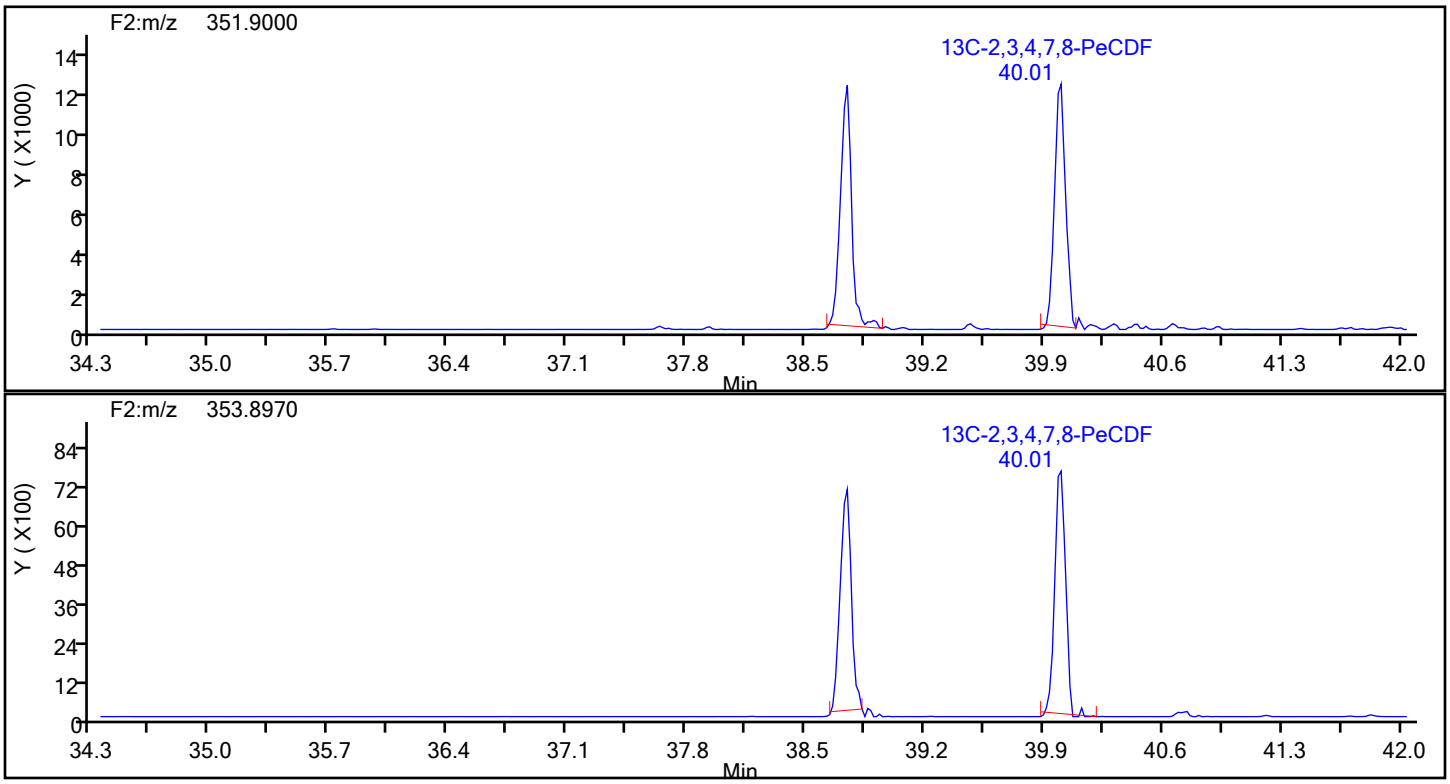
Worklist#: 36166 Sample Line#: 14

Column Type: Column Dia:

PeCDF



PeCDF Standards

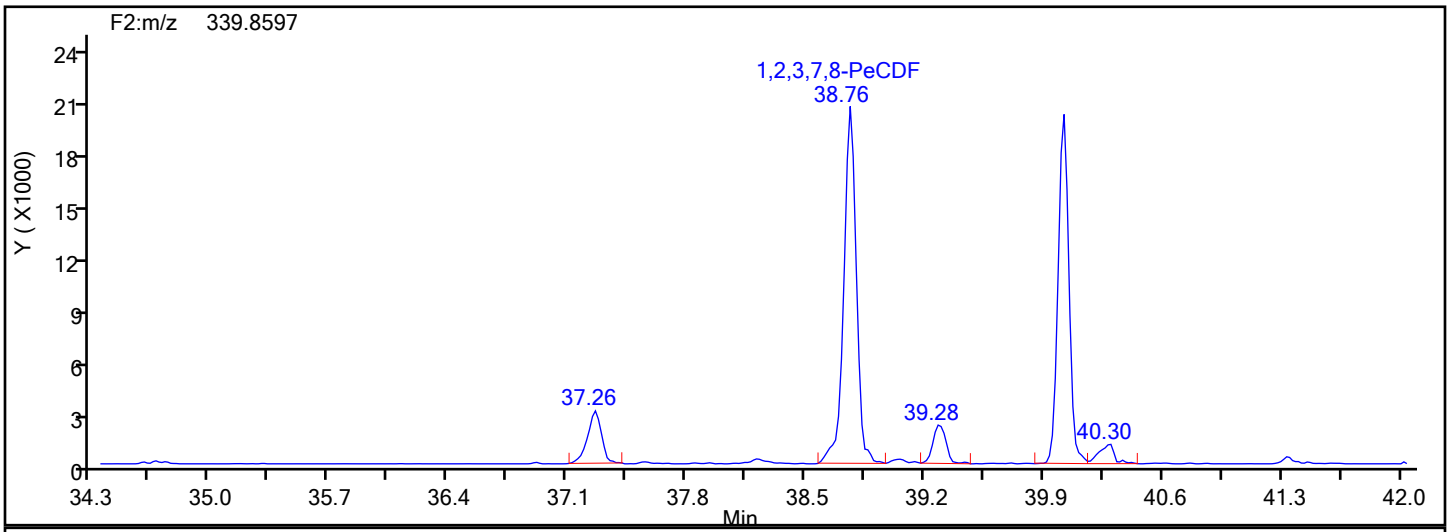


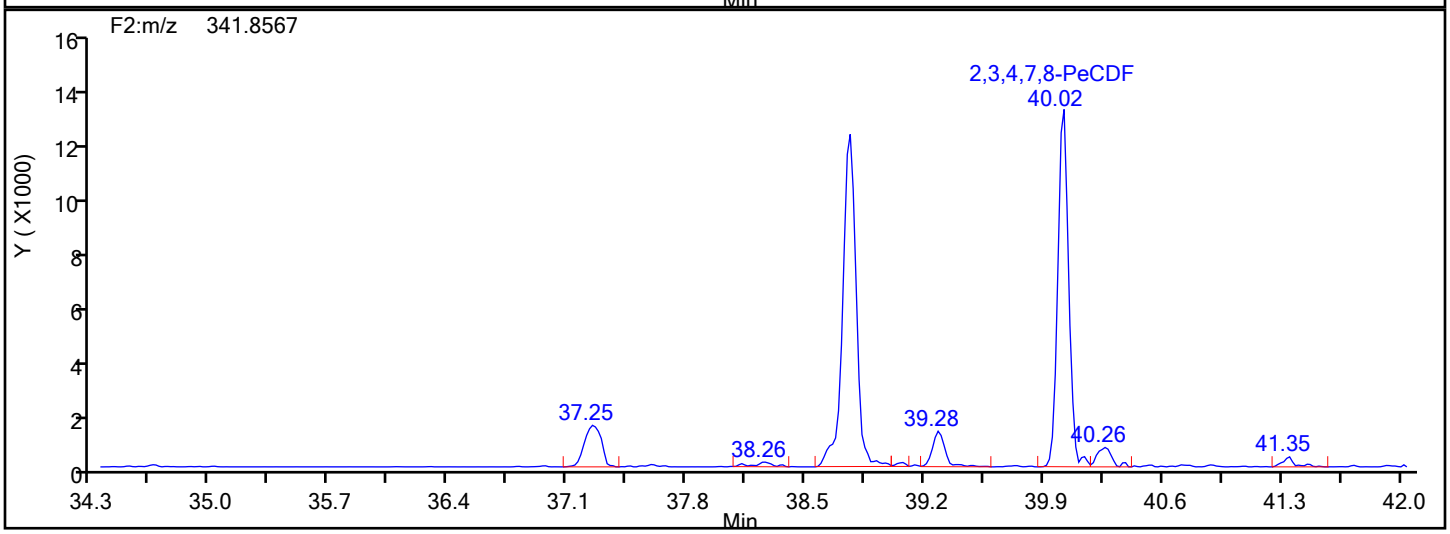
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

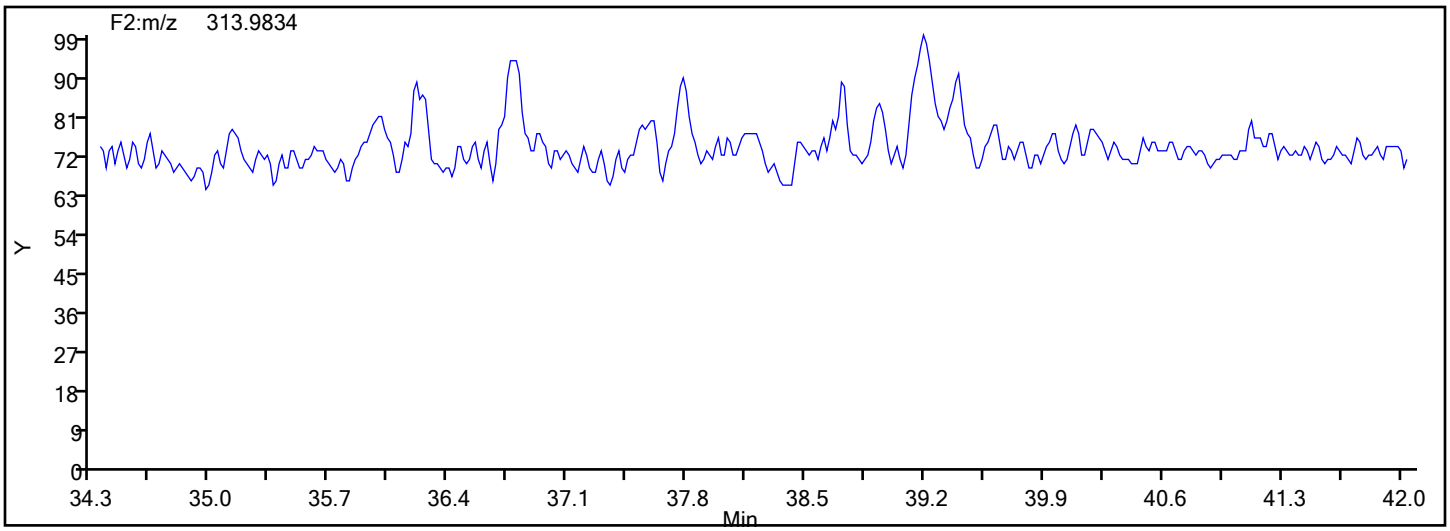
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

PeCDF





PeCDF Lock Mass

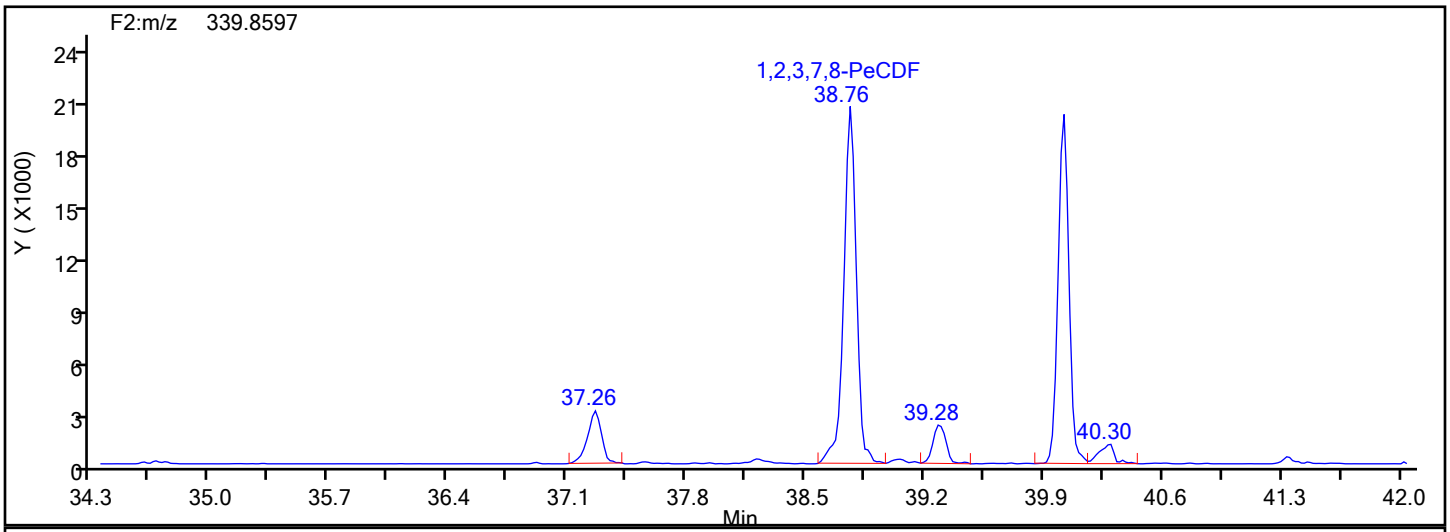


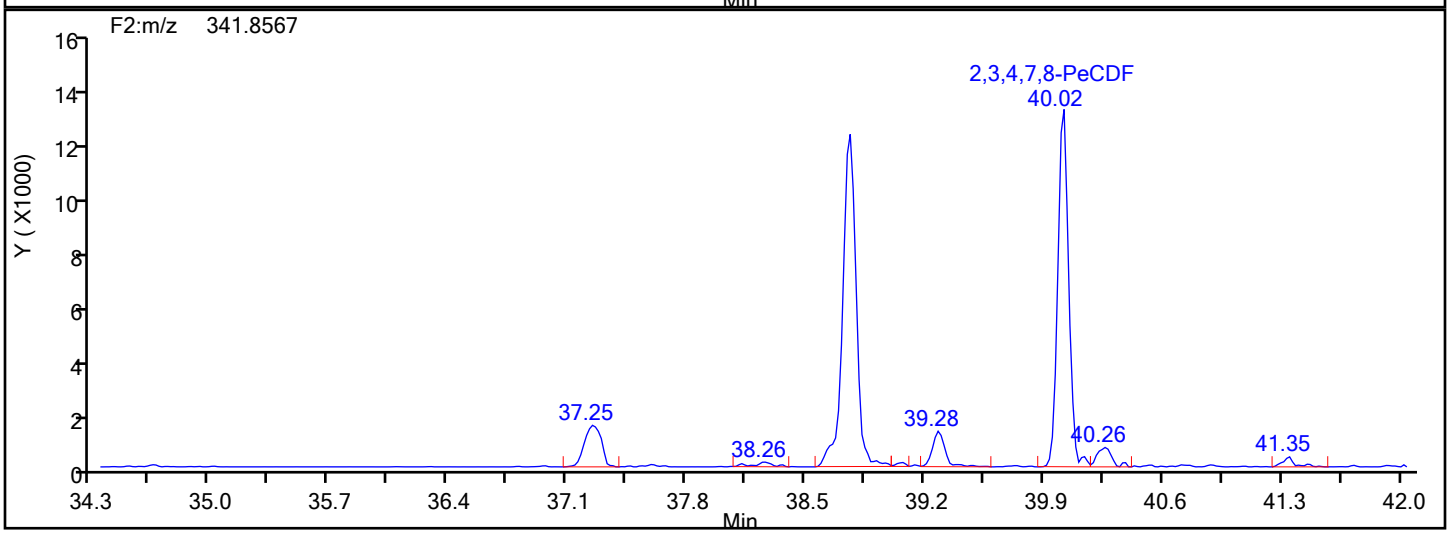
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

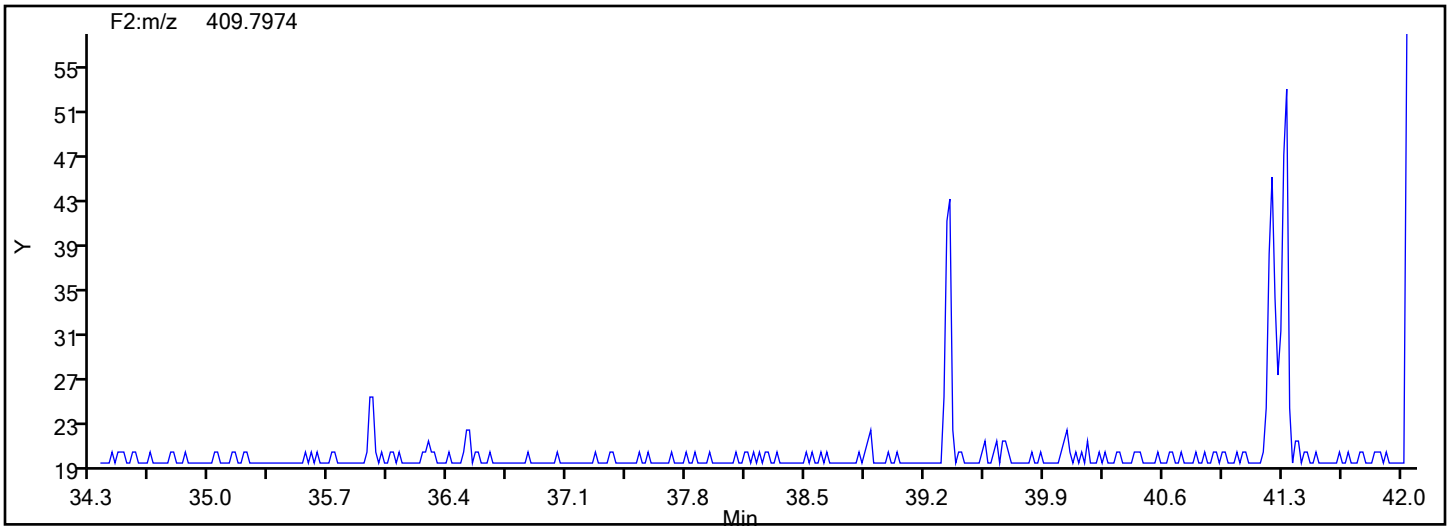
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

PeCDF





PeCDF Interference Mass



Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d

Injection Date: 18-Dec-2019 10:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

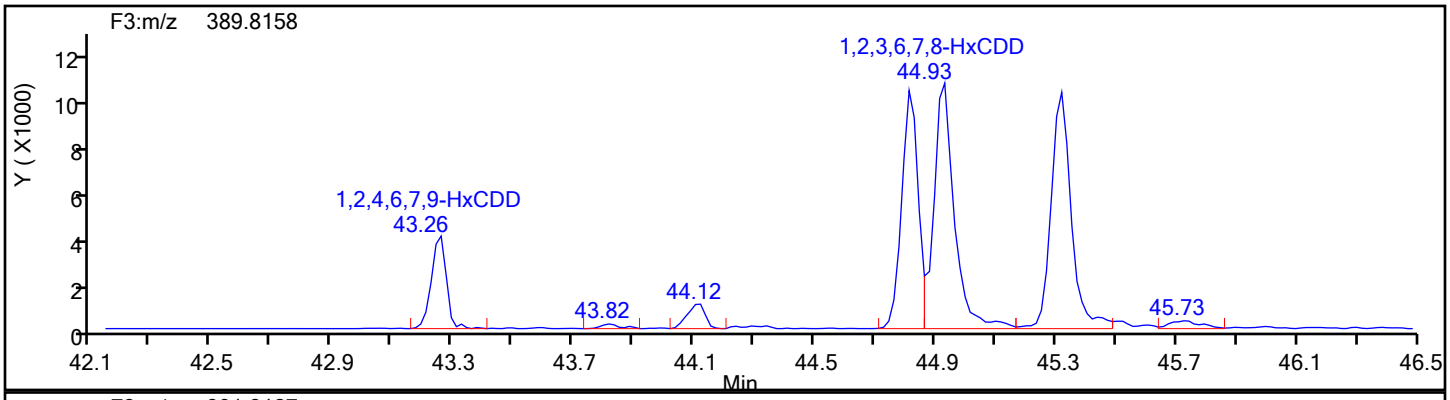
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

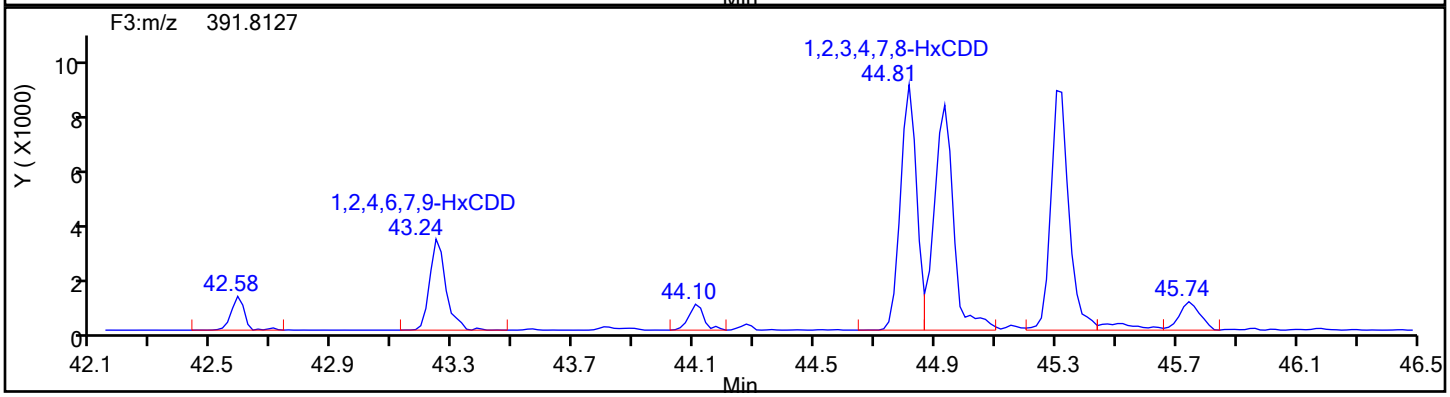
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 14

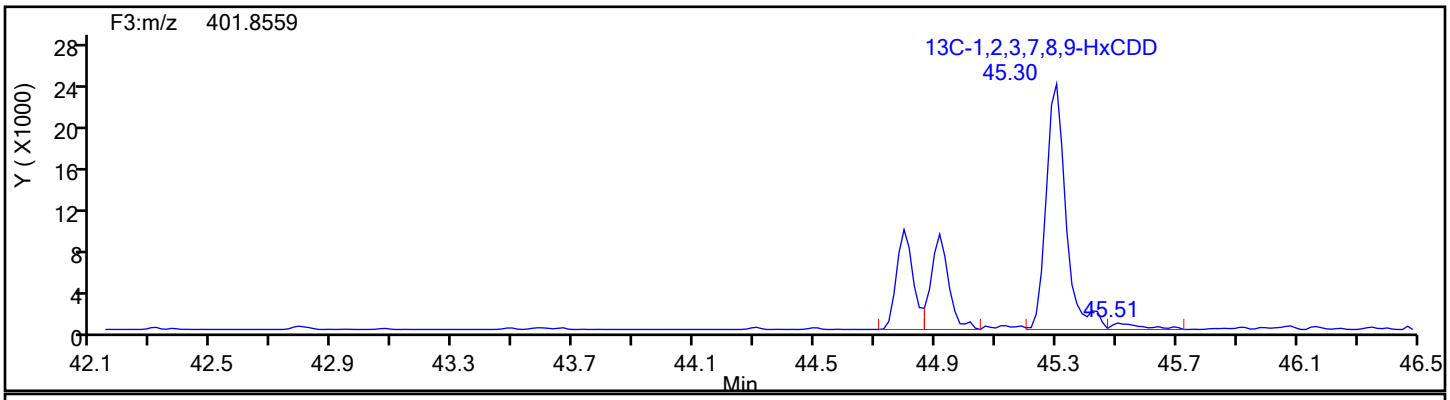
Column Type: Column Dia:

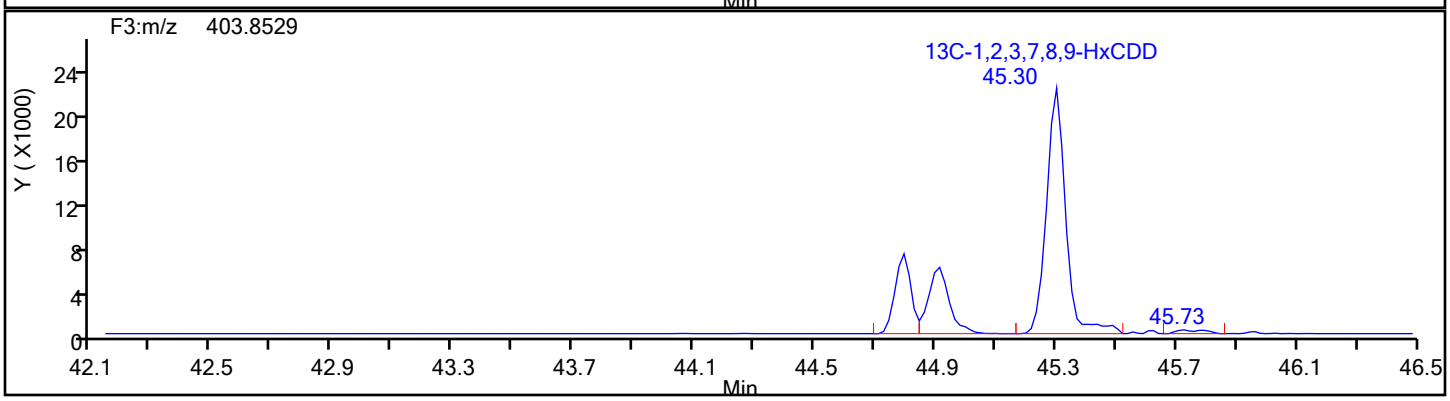
HxCDD





HxCDD Standards



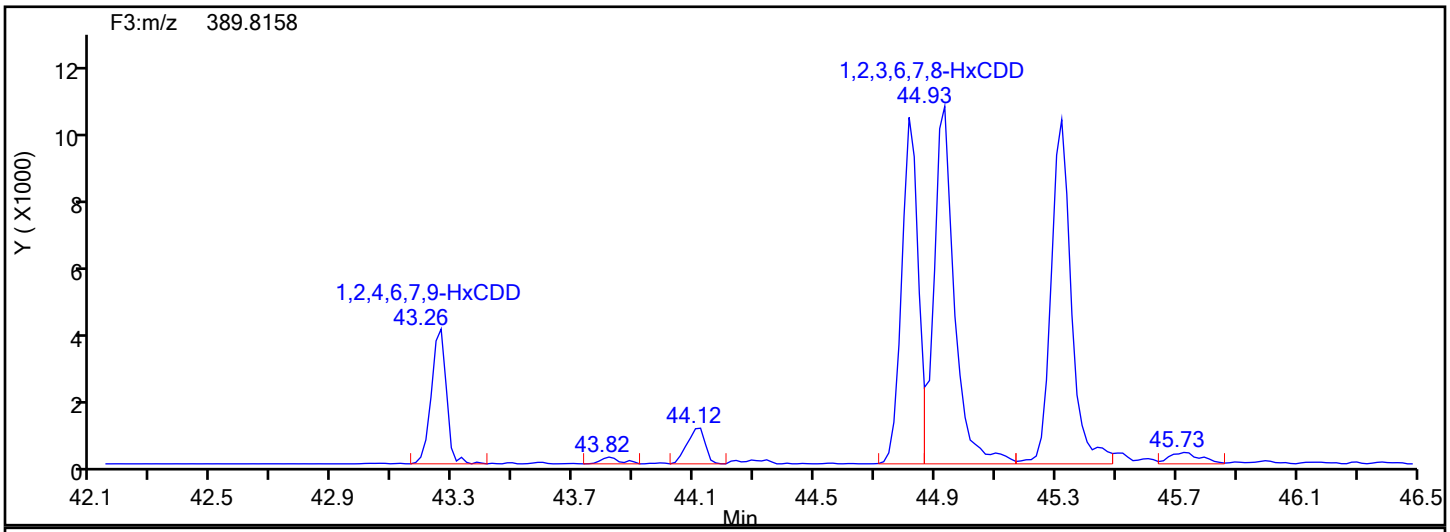


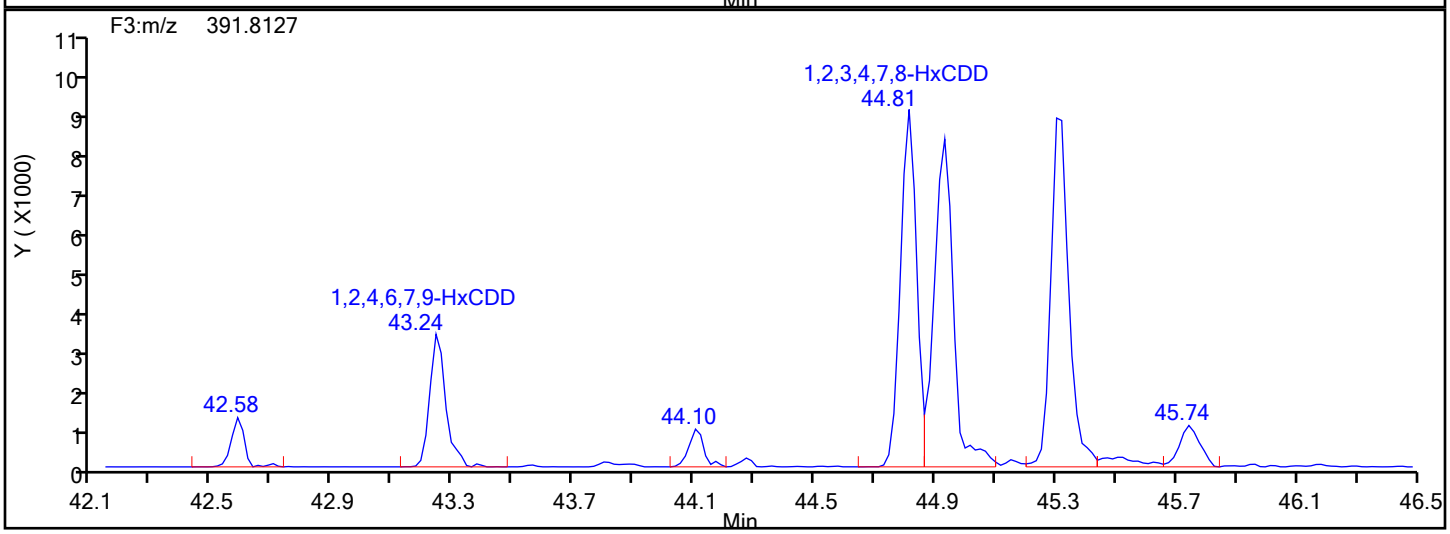
Report Date: 18-Dec-2019 11:15:41 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

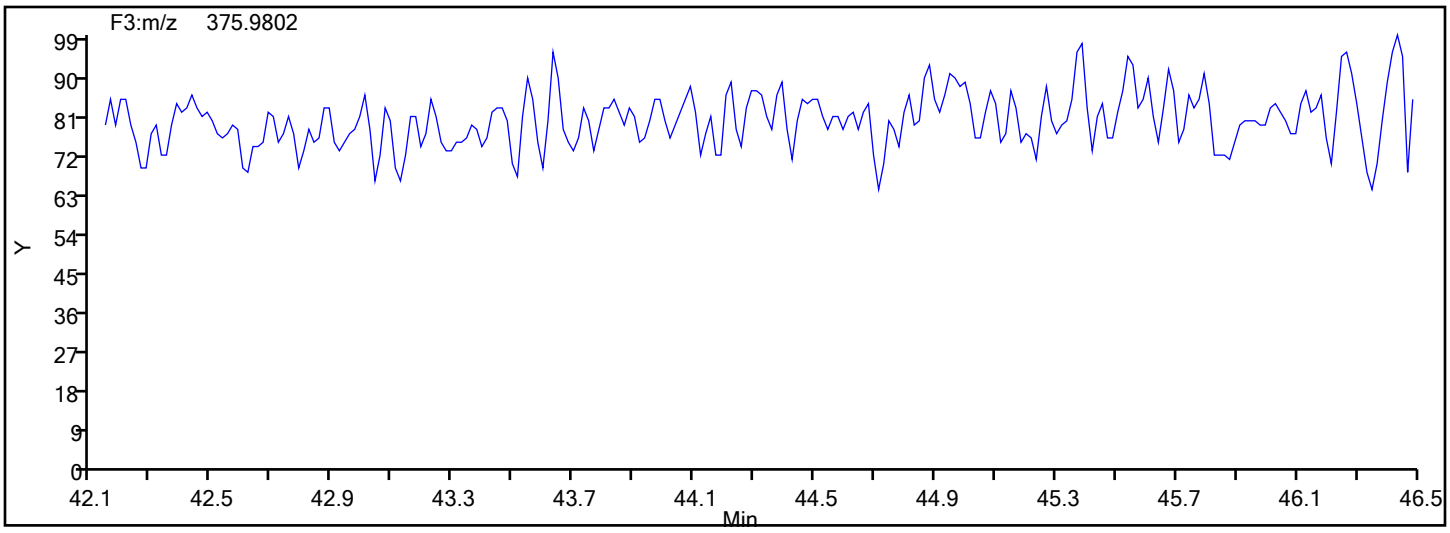
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HxCDD





HxCDD Lock Mass

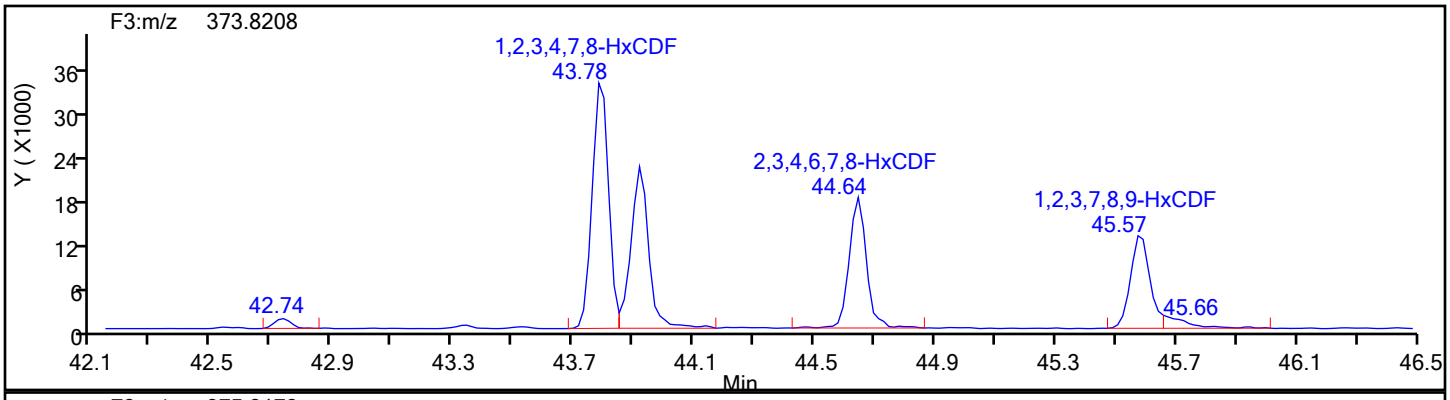


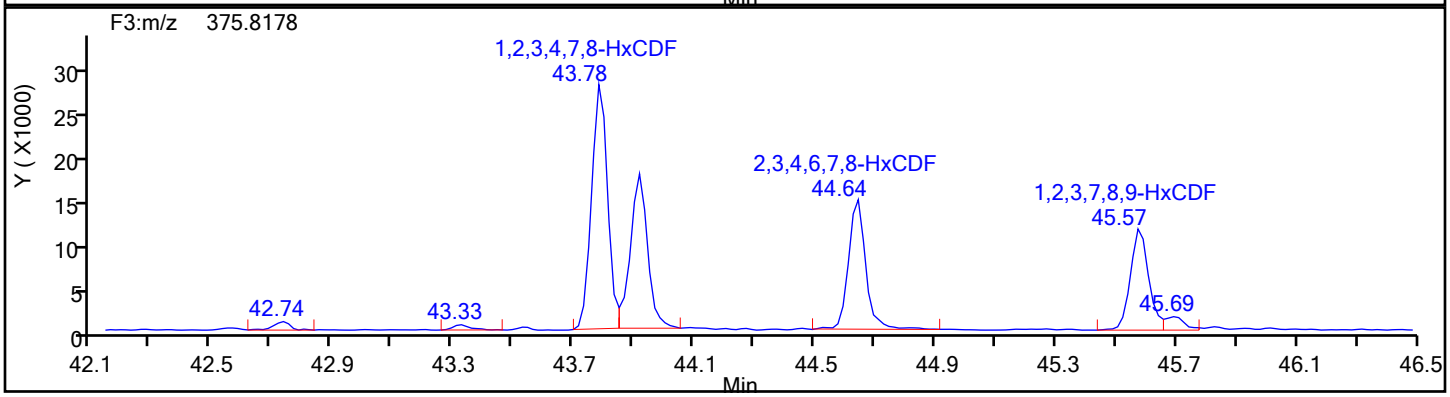
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

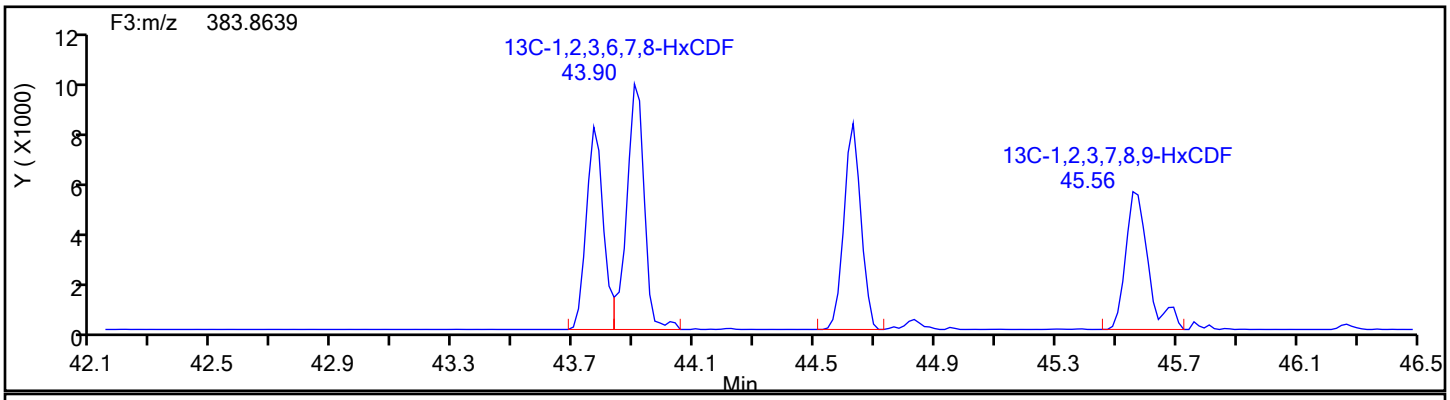
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

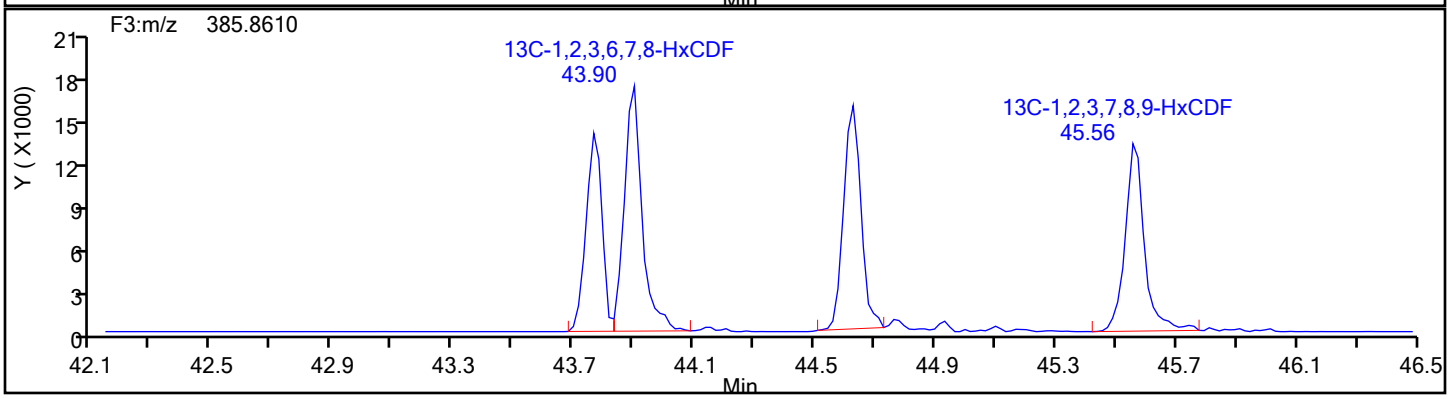
HxCDF





HxCDF Standards



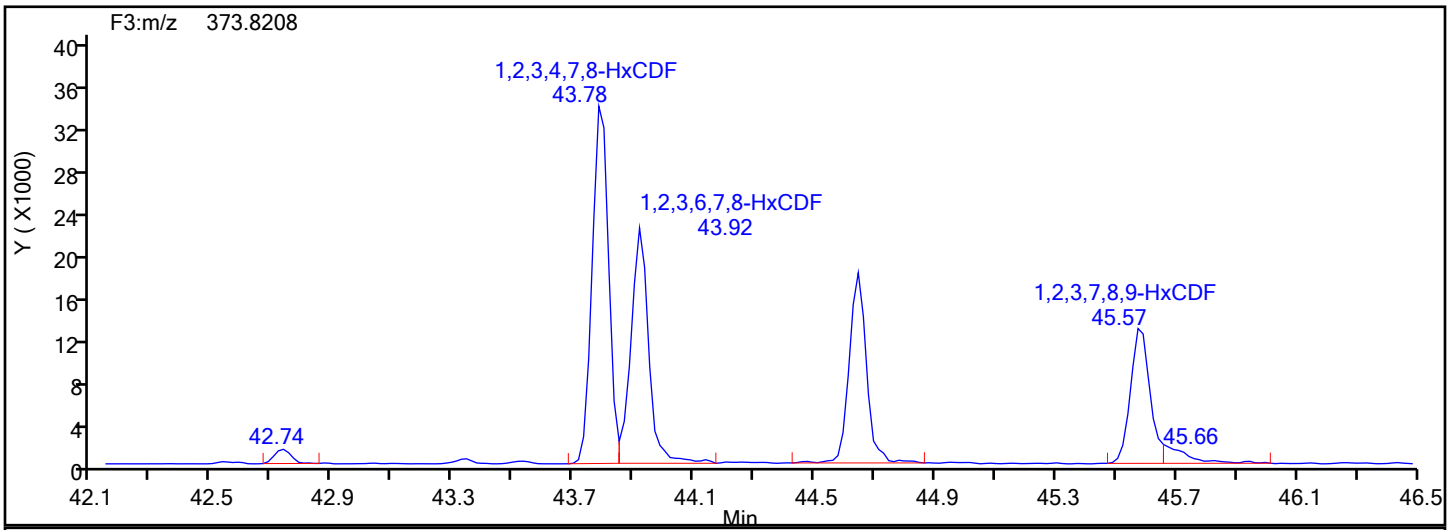


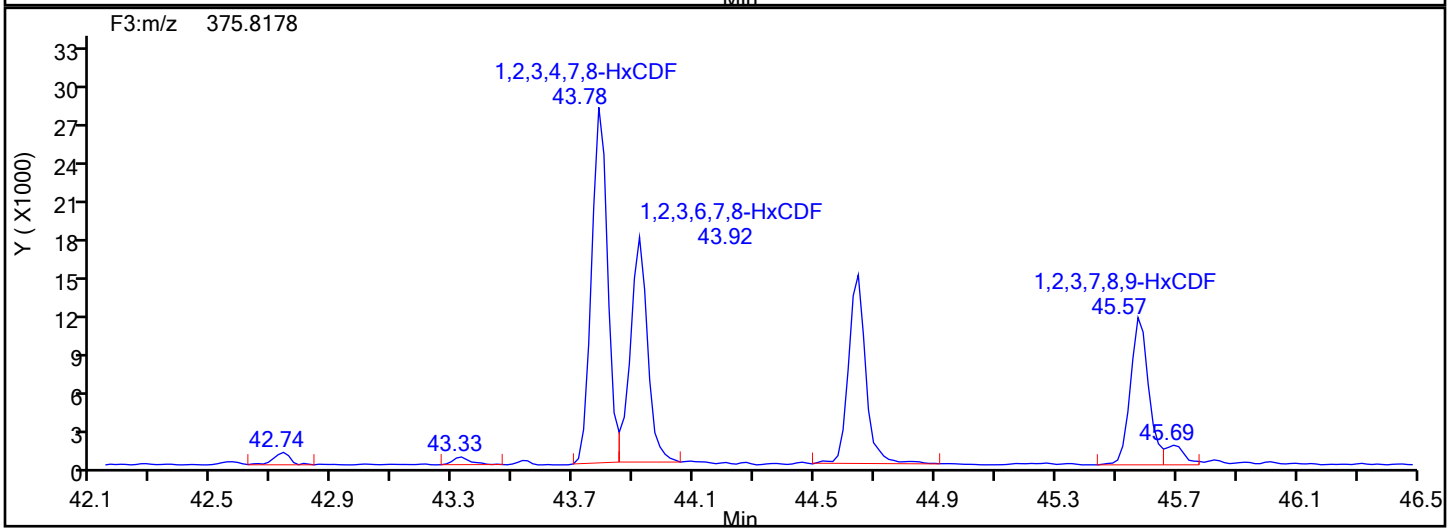
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

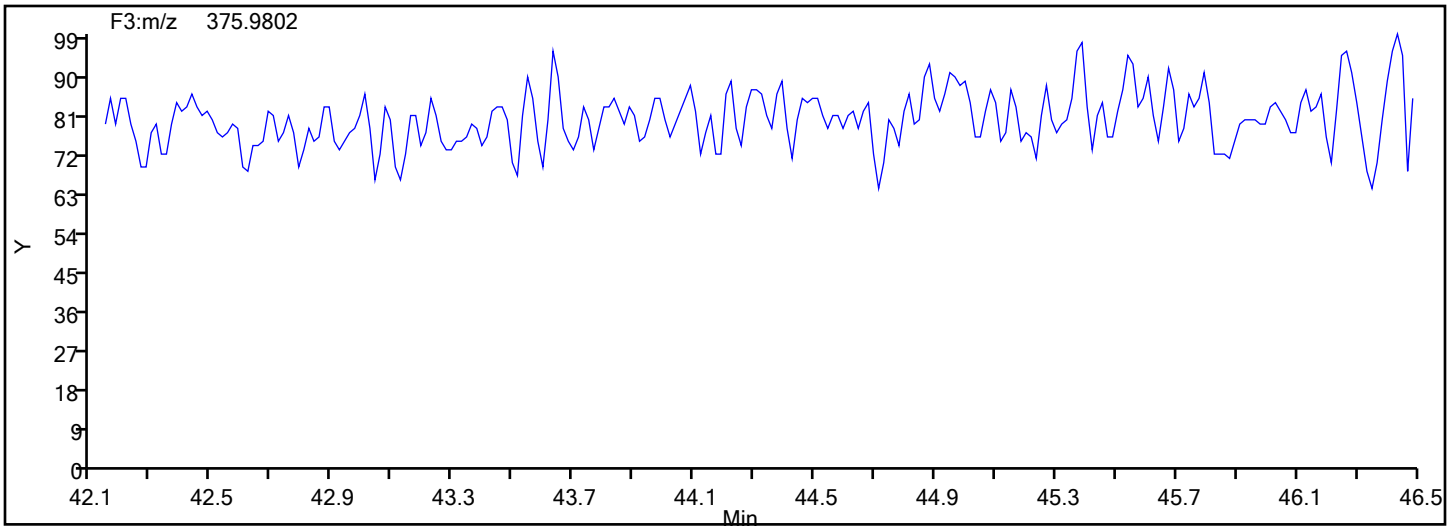
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HxCDF





HxCDF Lock Mass

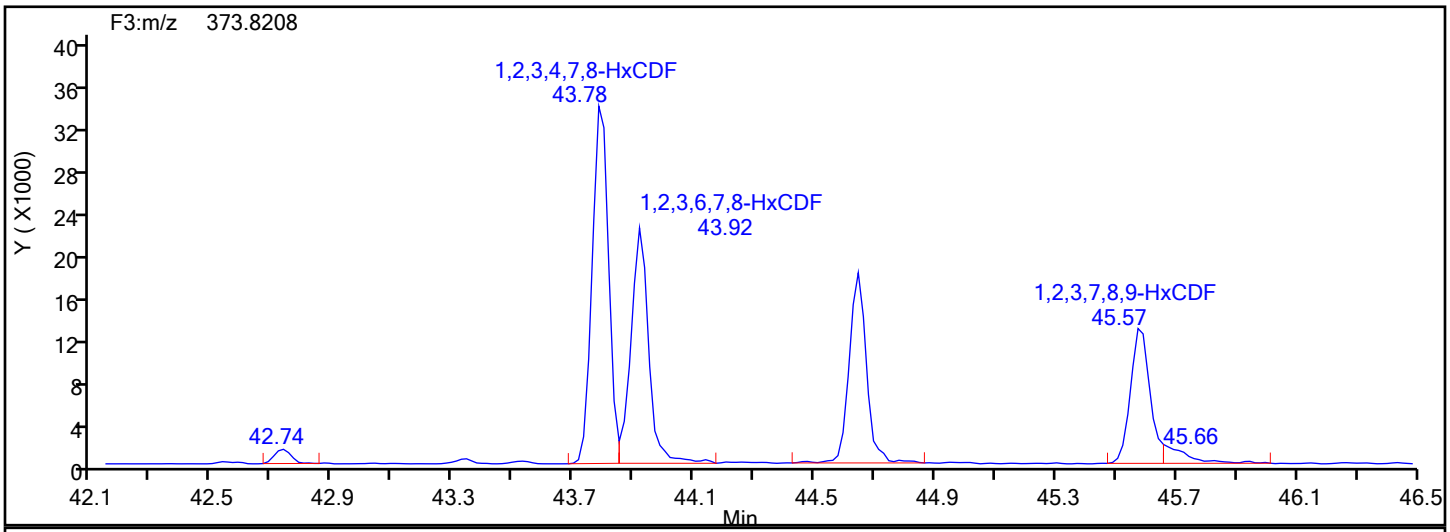


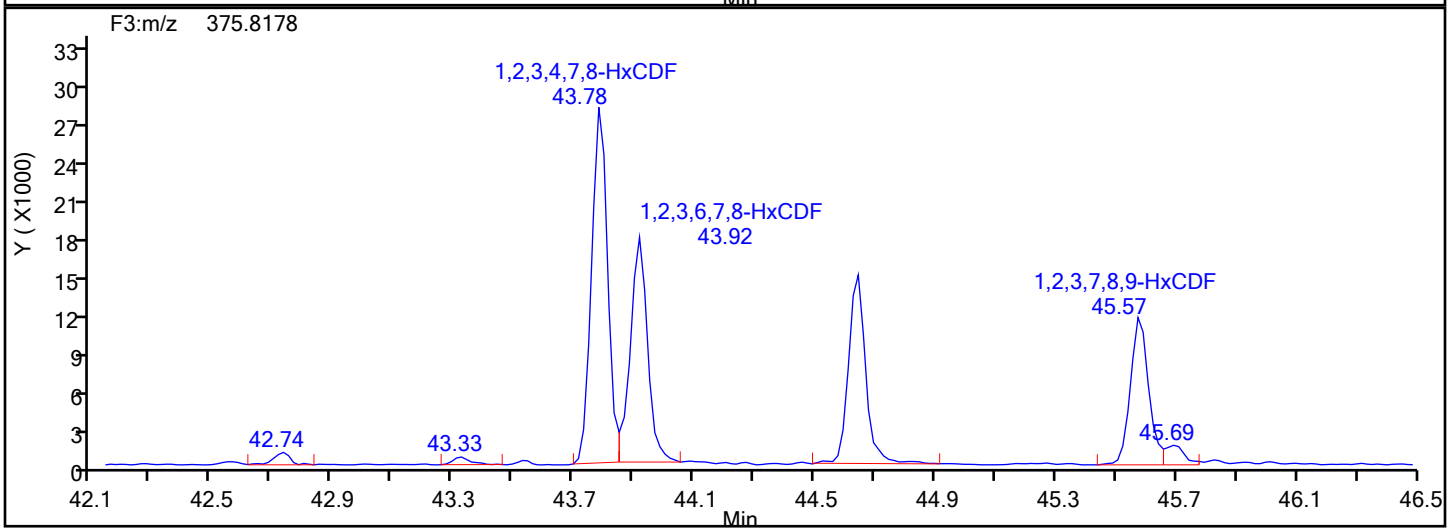
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

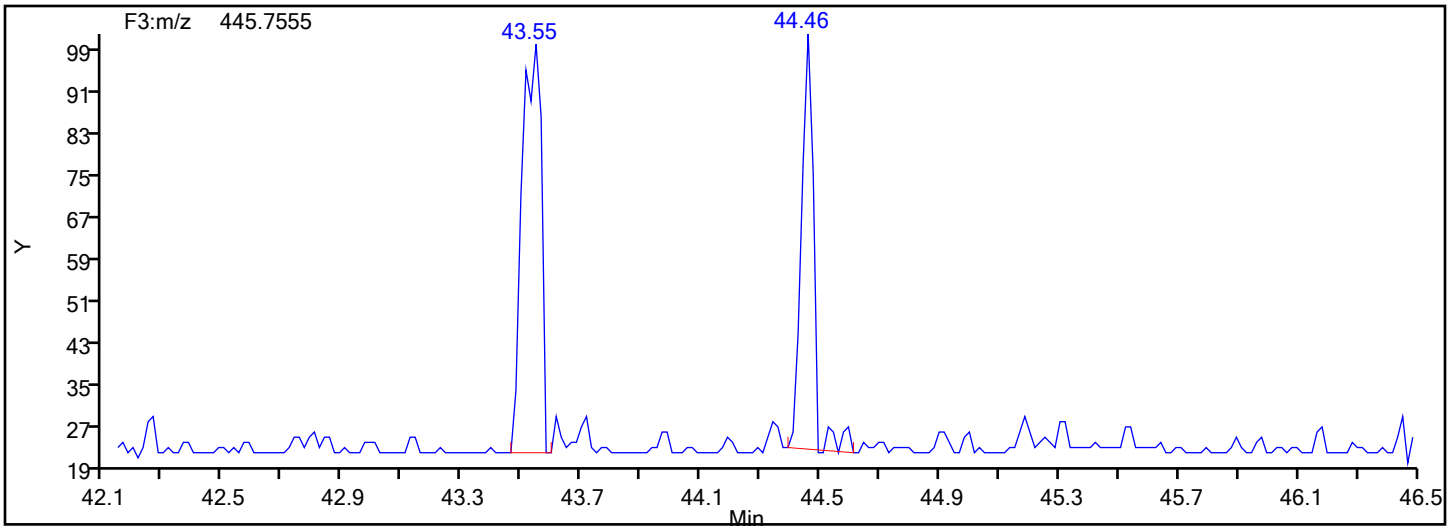
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HxCDF





HxCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 3

Processing Integration Results

RT:	44.64
Area:	130685
Amount:	6.066906
Amount Units:	pg/ul

Manual Integration Results

RT:	45.57
Area:	105949
Amount:	4.918564
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 11:13:34

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

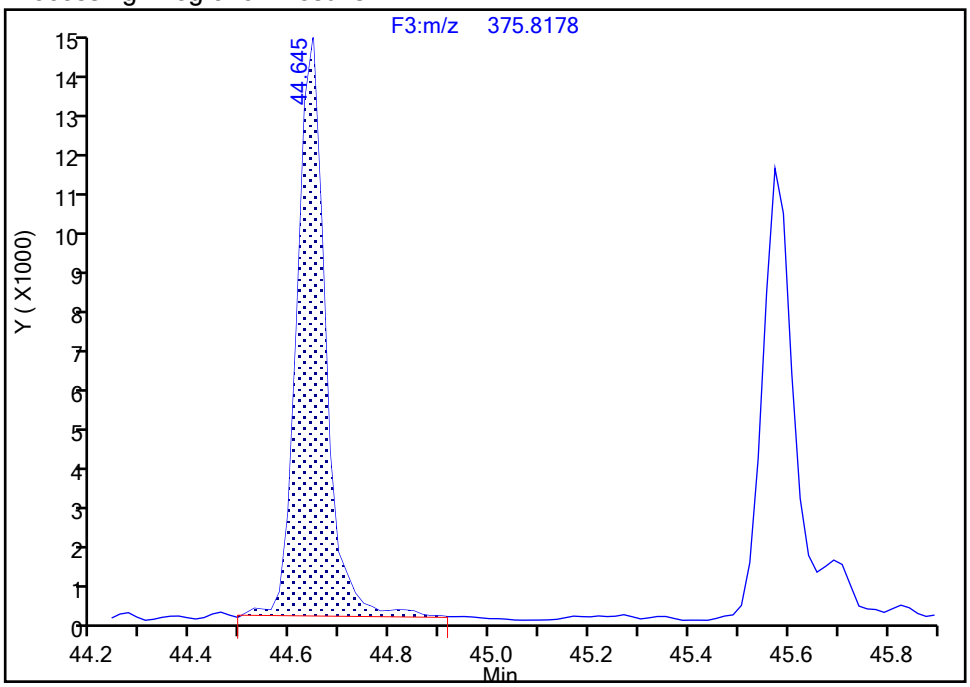
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

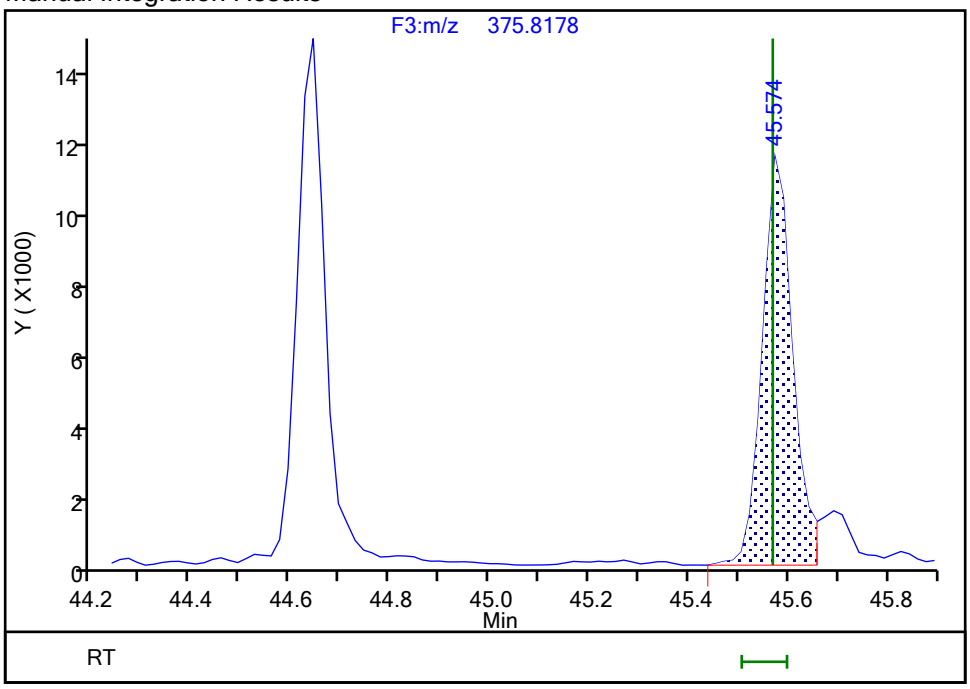
Processing Integration Results

RT: 44.64
Area: 58031
Amount: 6.066906
Amount Units: pg/ul



Manual Integration Results

RT: 45.57
Area: 48168
Amount: 4.918564
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:44
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

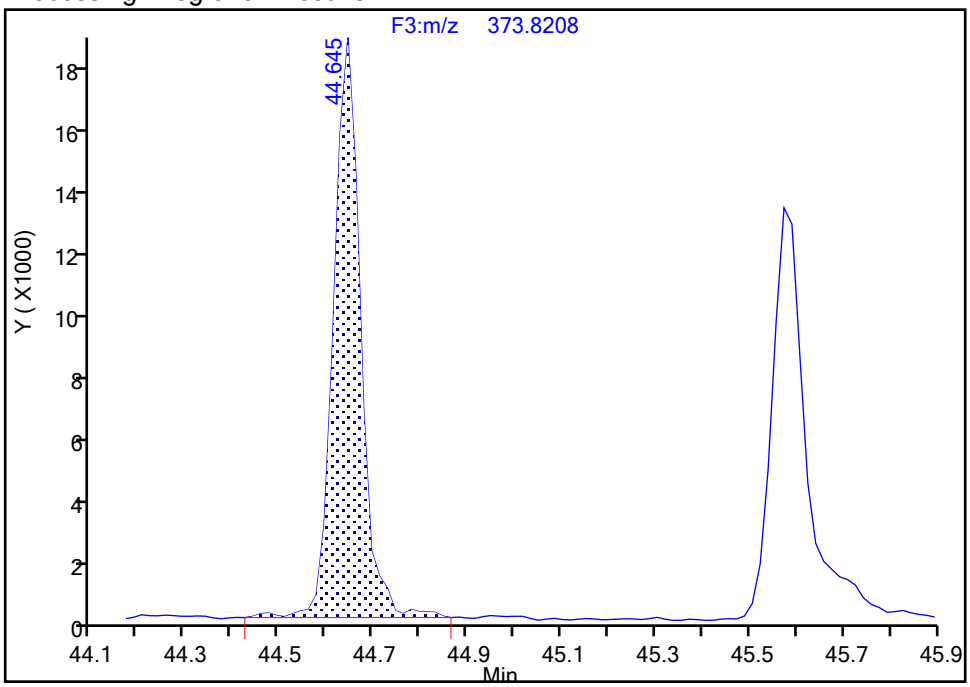
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

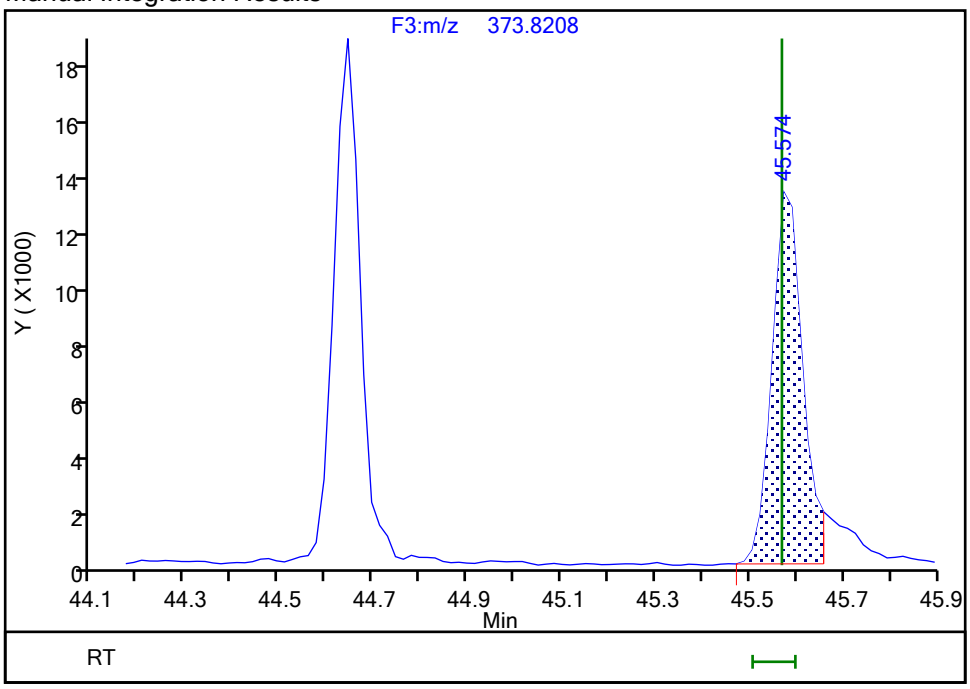
Processing Integration Results

RT: 44.64
Area: 72654
Amount: 6.066906
Amount Units: pg/ul



Manual Integration Results

RT: 45.57
Area: 57781
Amount: 4.918564
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

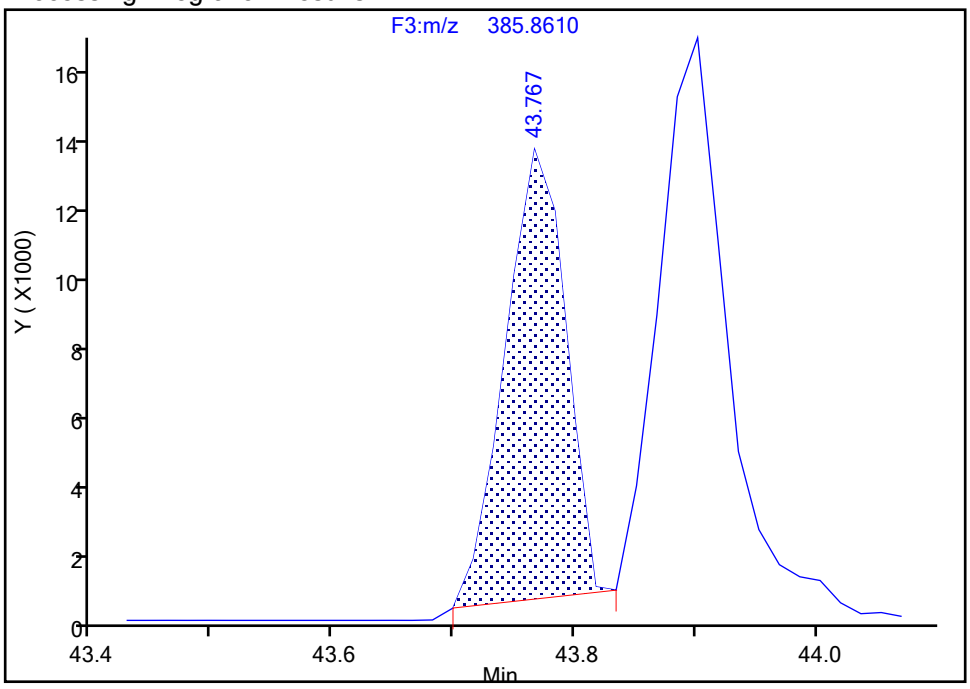
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 2

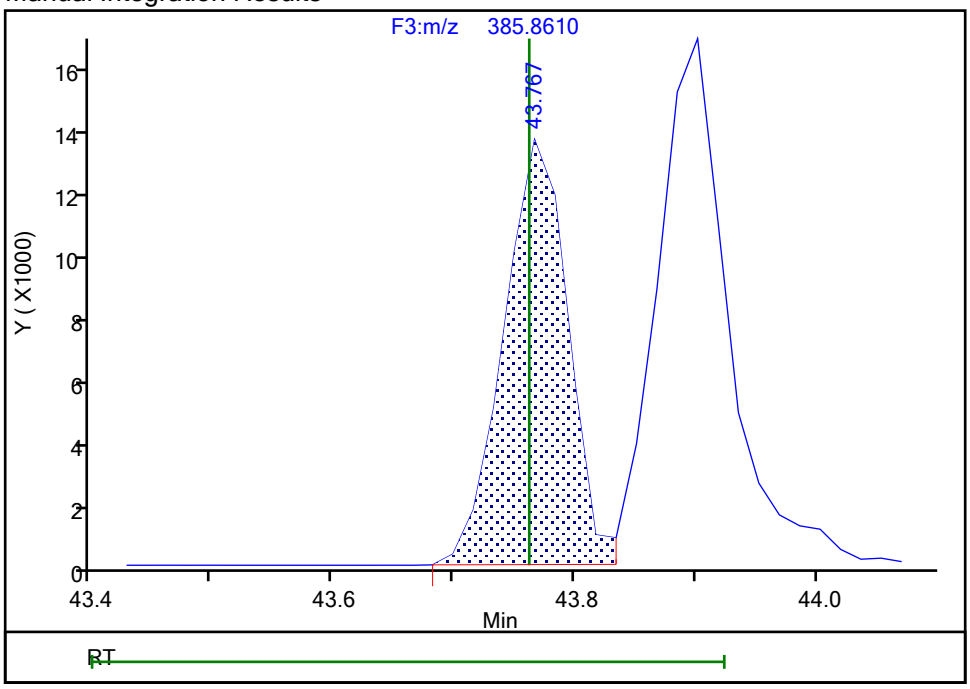
Processing Integration Results

RT: 43.77
Area: 44750
Amount: 3.101051
Amount Units: pg/ul



Manual Integration Results

RT: 43.77
Area: 49685
Amount: 3.350792
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:12:24
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Knoxville

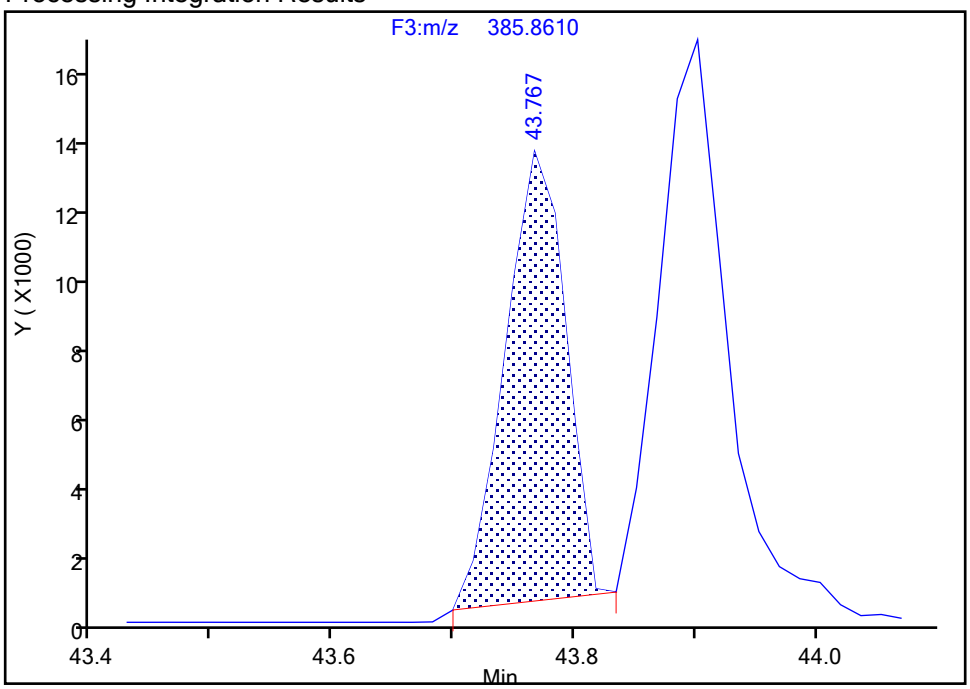
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 3

Processing Integration Results

RT: 43.77
Area: 75496
Amount: 3.101051
Amount Units: pg/ul



Manual Integration Results

RT: 43.77
Area: 81576
Amount: 3.350792
Amount Units: pg/ul
Reviewer: davidsonm, 18-Dec-2019 11:12:24
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

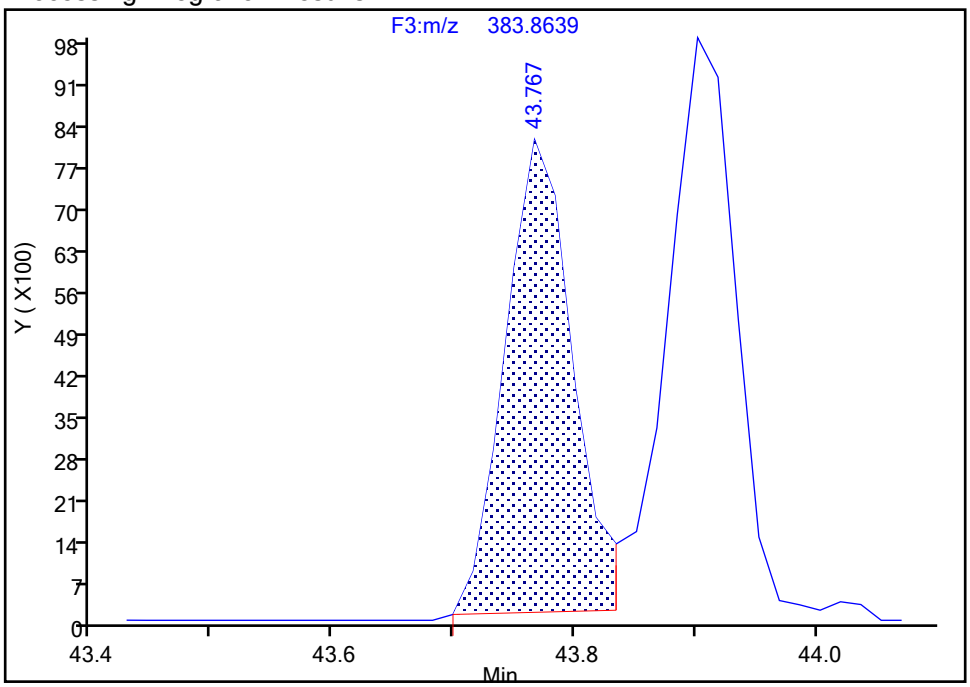
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,4,7,8-HxCDF, CAS: 114423-98-2

Signal: 1

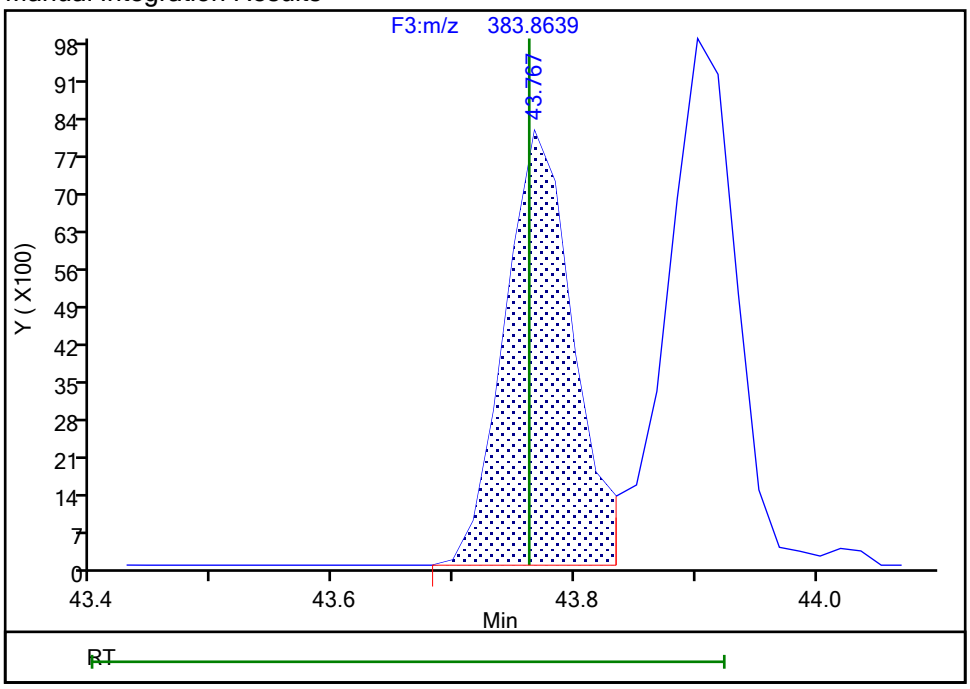
Processing Integration Results

RT: 43.77
Area: 30746
Amount: 3.101051
Amount Units: pg/ul



Manual Integration Results

RT: 43.77
Area: 31891
Amount: 3.350792
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:12:45

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Knoxville

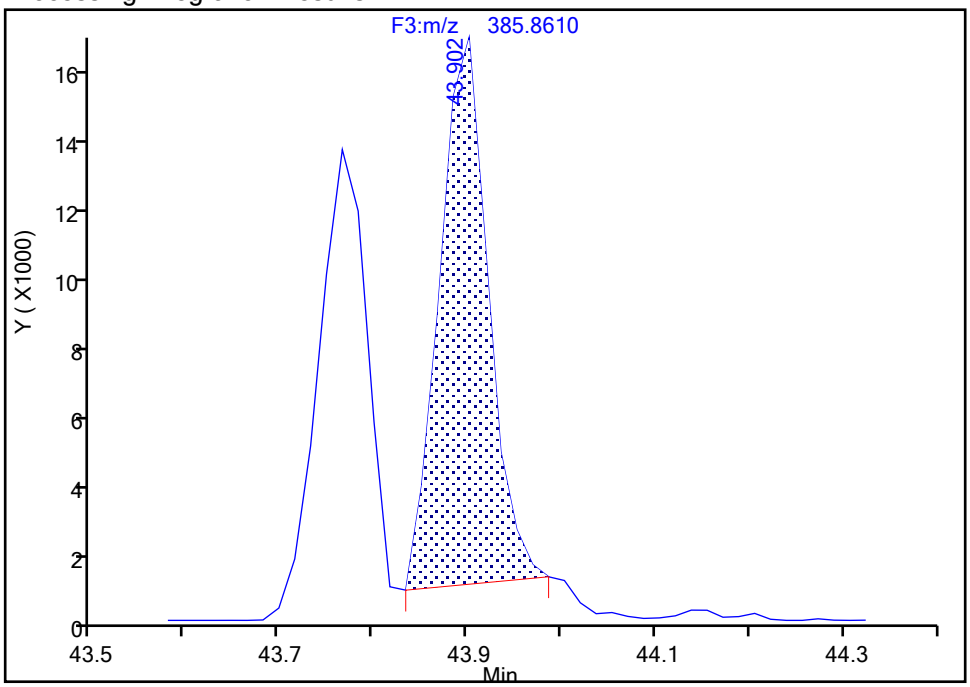
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDF, CAS: 116843-03-9

Signal: 2

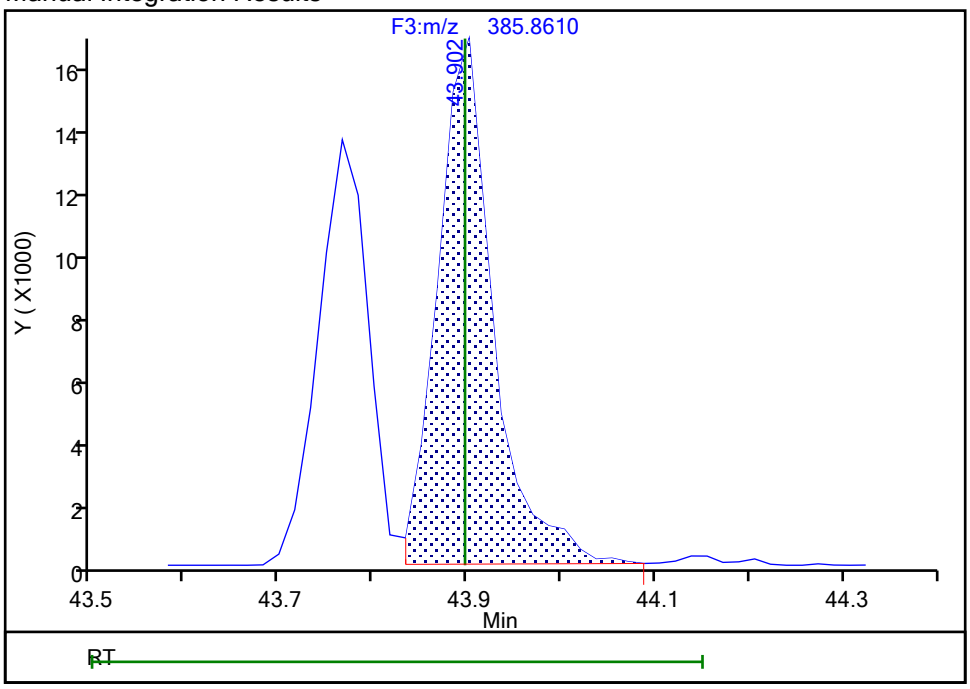
Processing Integration Results

RT: 43.90
Area: 56367
Amount: 3.128236
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 68222
Amount: 3.604663
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:12:53
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

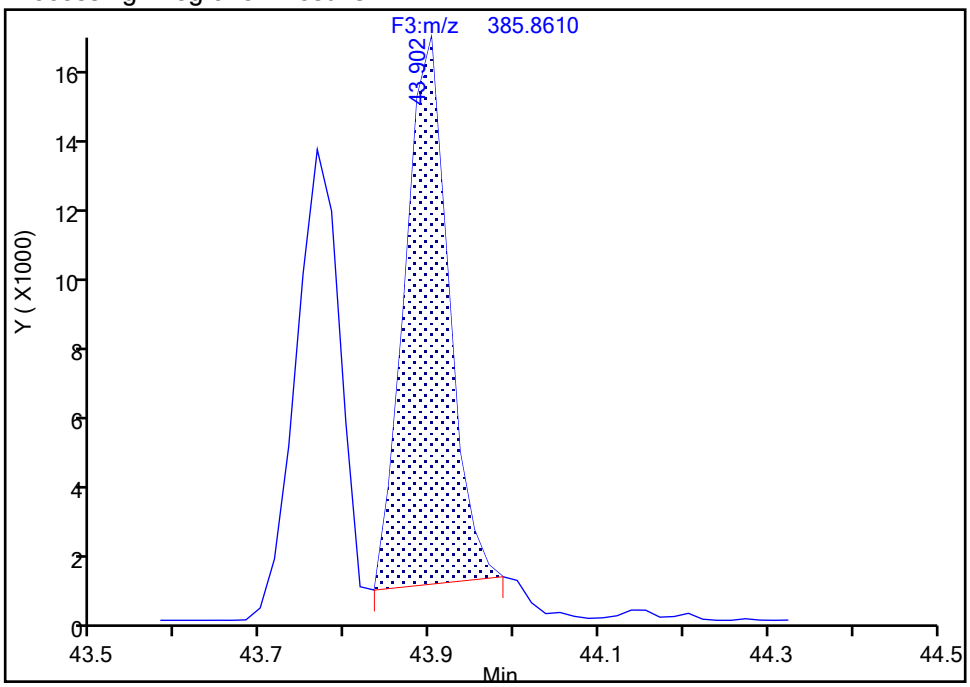
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDF, CAS: 116843-03-9

Signal: 3

Processing Integration Results

RT: 43.90
Area: 93658
Amount: 3.128236
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 107922
Amount: 3.604663
Amount Units: pg/ul
Reviewer: davidsonm, 18-Dec-2019 11:12:53
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Knoxville

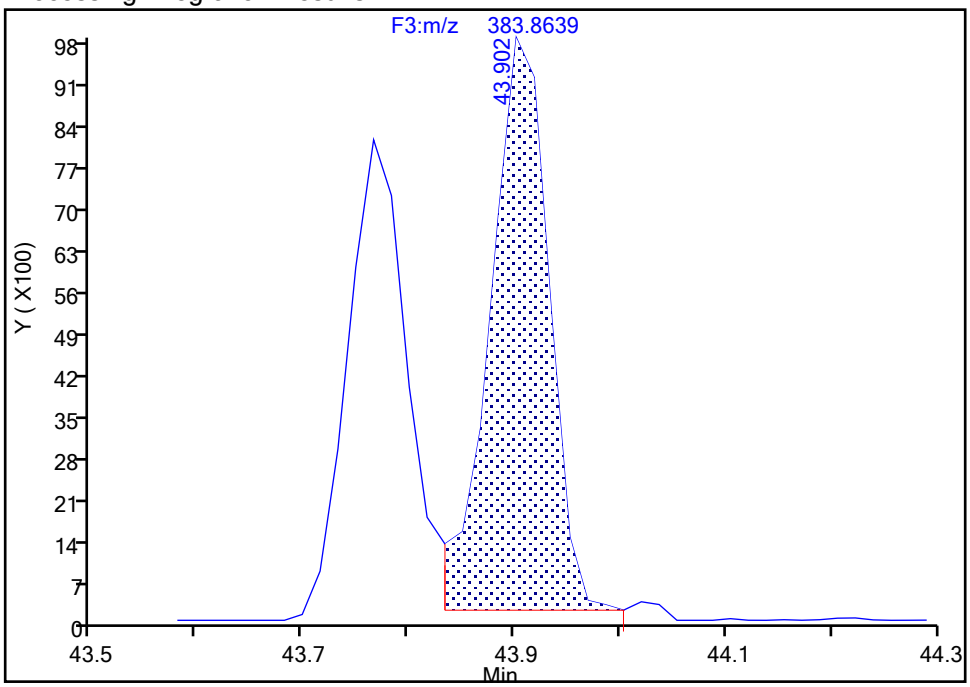
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,6,7,8-HxCDF, CAS: 116843-03-9

Signal: 1

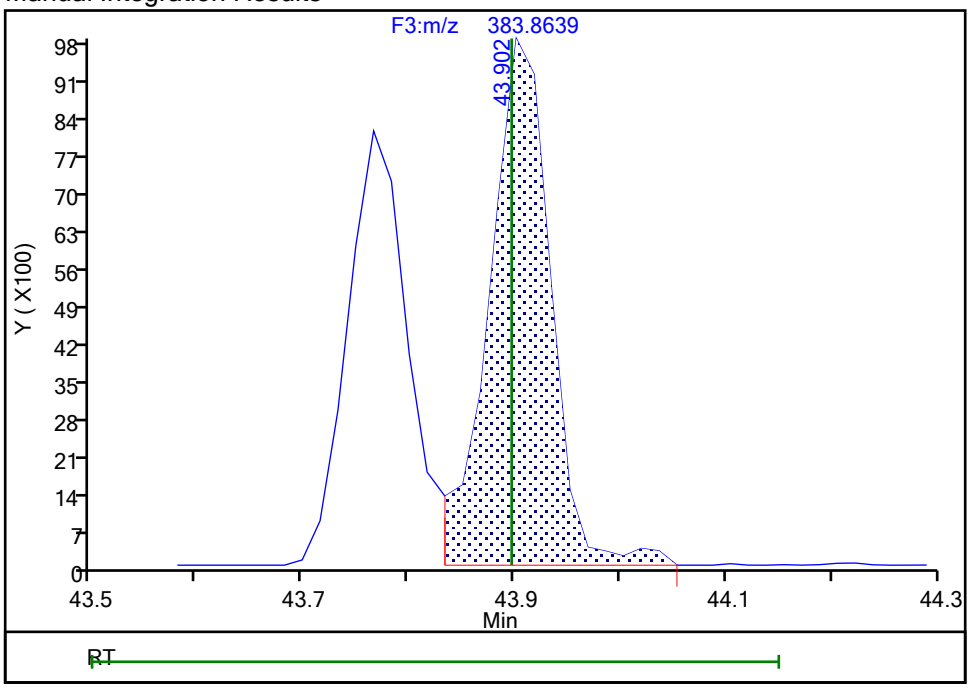
Processing Integration Results

RT: 43.90
Area: 37291
Amount: 3.128236
Amount Units: pg/ul



Manual Integration Results

RT: 43.90
Area: 39700
Amount: 3.604663
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:12:55
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

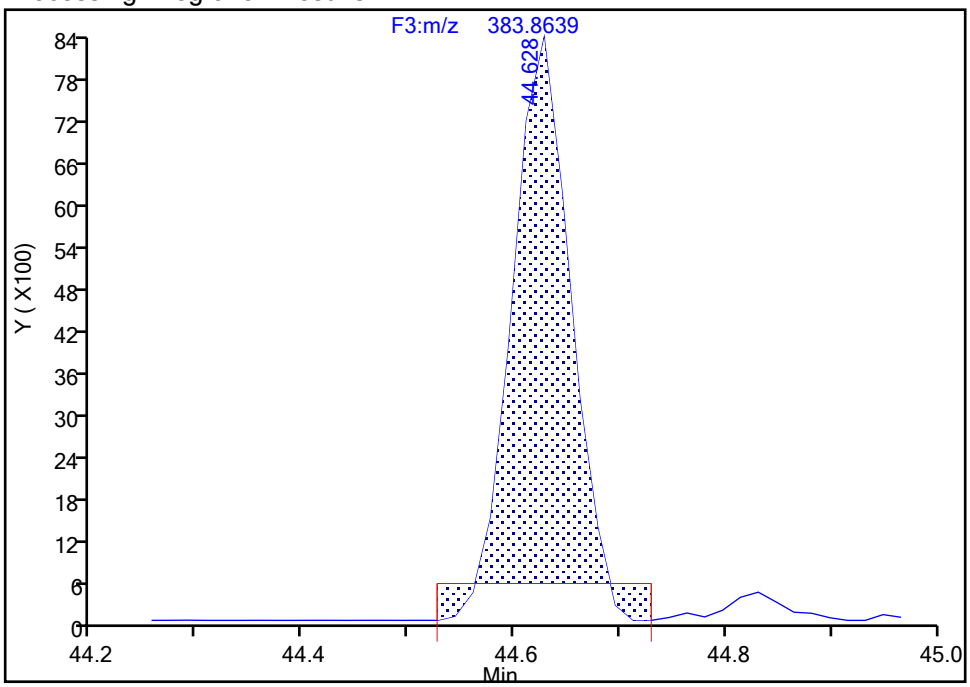
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-2,3,4,6,7,8-HxCDF, CAS: 116843-05-1

Signal: 1

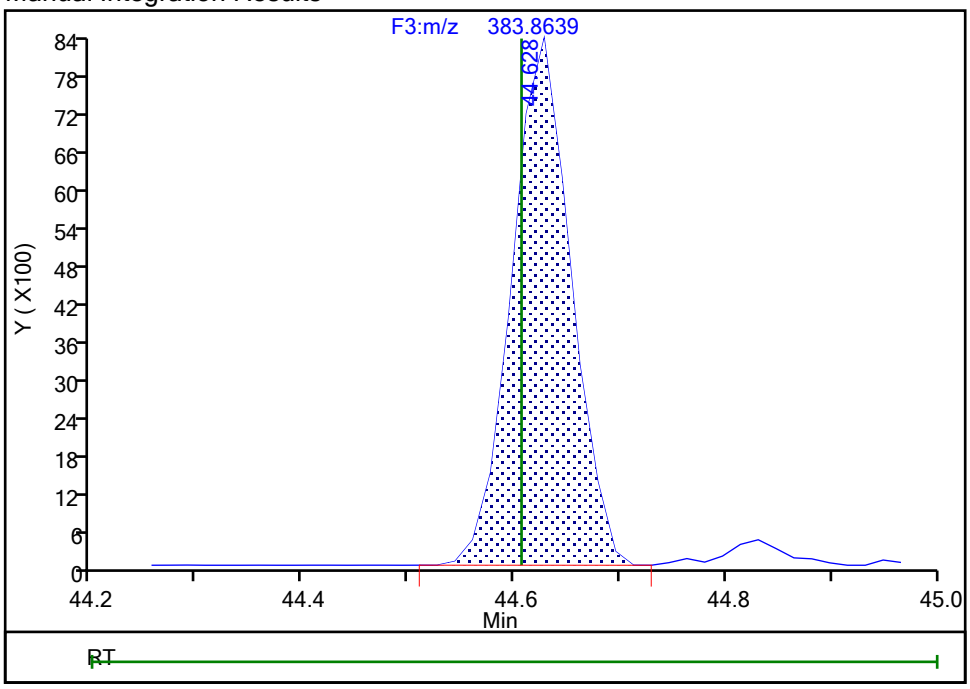
Processing Integration Results

RT: 44.63
Area: 26014
Amount: 2.974263
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 32380
Amount: 3.455526
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:07

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

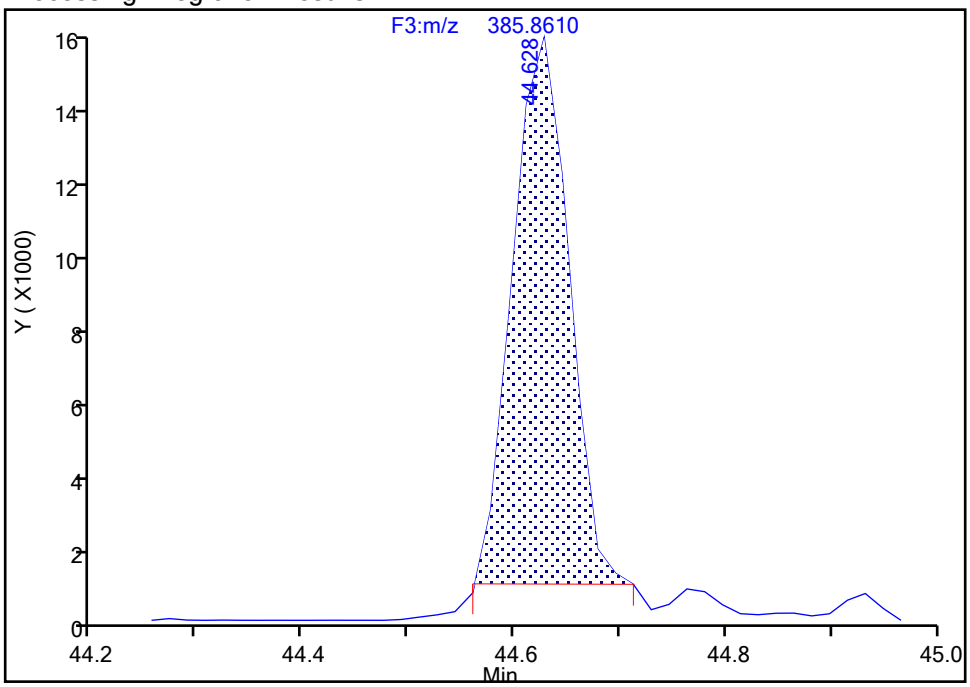
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-2,3,4,6,7,8-HxCDF, CAS: 116843-05-1

Signal: 2

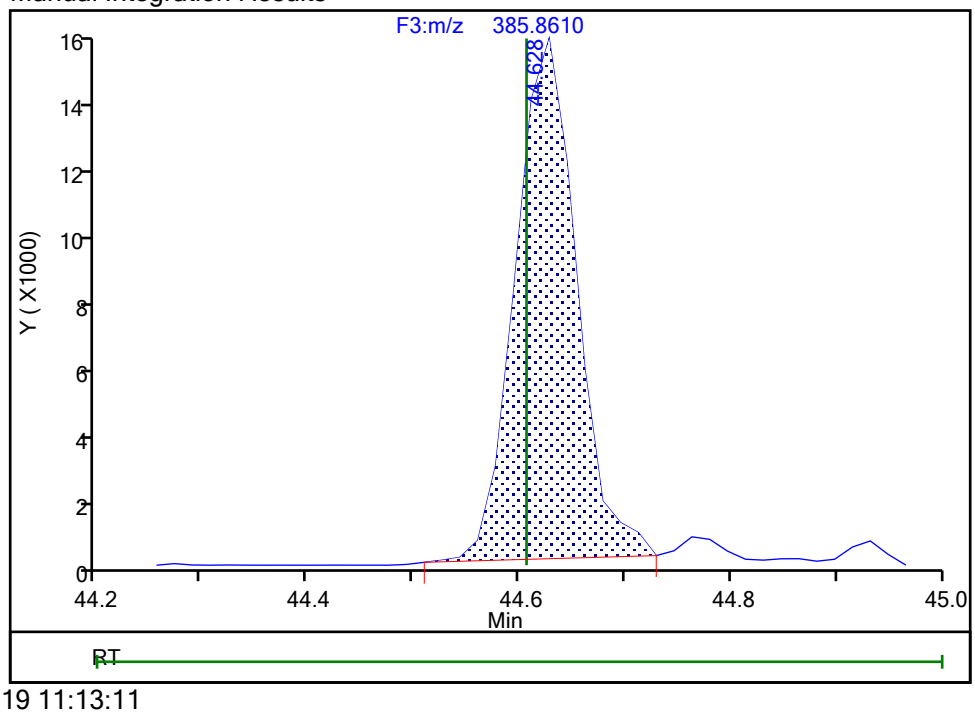
Processing Integration Results

RT: 44.63
Area: 54340
Amount: 2.974263
Amount Units: pg/ul



Manual Integration Results

RT: 44.63
Area: 60976
Amount: 3.455526
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:11

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 3

Processing Integration Results

RT:	44.63
Area:	79273
Amount:	3.226528
Amount Units:	pg/ul

Manual Integration Results

RT:	45.56
Area:	85660
Amount:	3.486488
Amount Units:	pg/ul

Reviewer: davidsonm, 18-Dec-2019 11:13:18

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

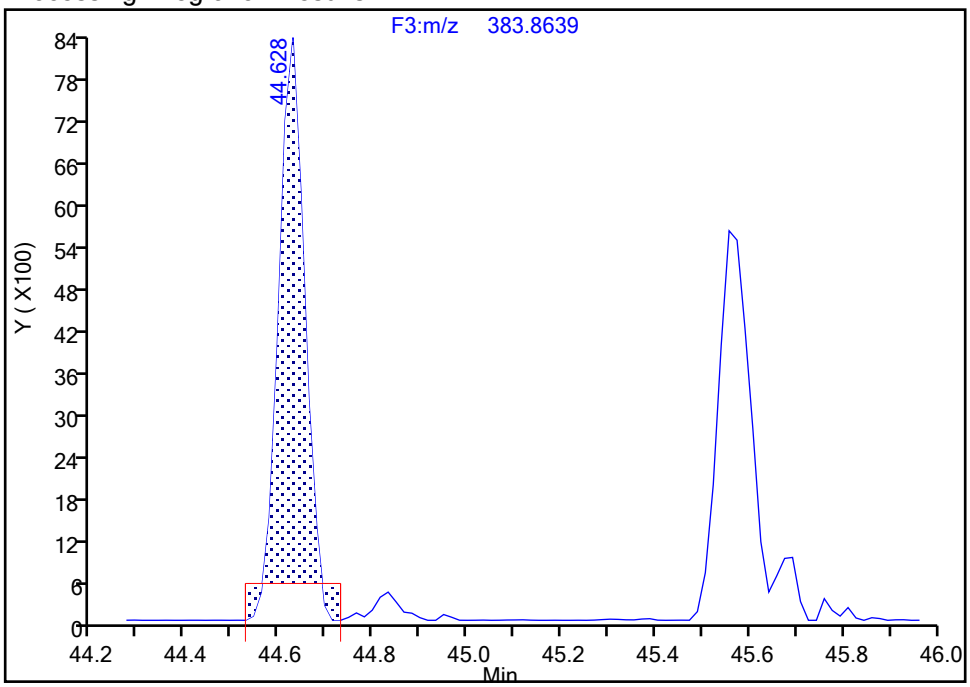
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 1

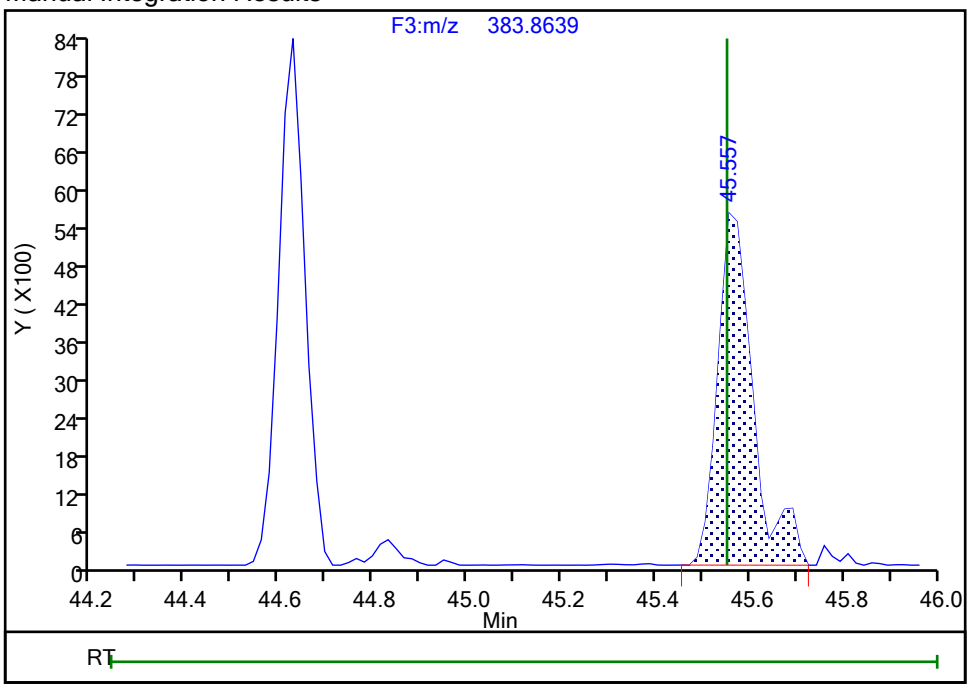
Processing Integration Results

RT: 44.63
Area: 26014
Amount: 3.226528
Amount Units: pg/ul



Manual Integration Results

RT: 45.56
Area: 29000
Amount: 3.486488
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:24

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

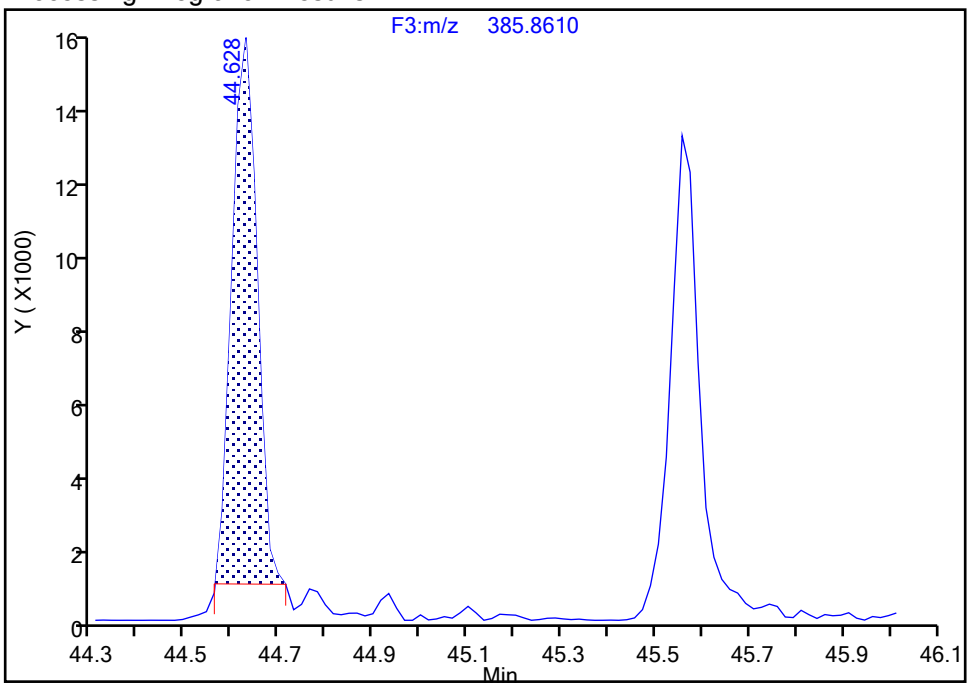
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F3(42.31 :47.08)		

13C-1,2,3,7,8,9-HxCDF, CAS: 116843-04-0

Signal: 2

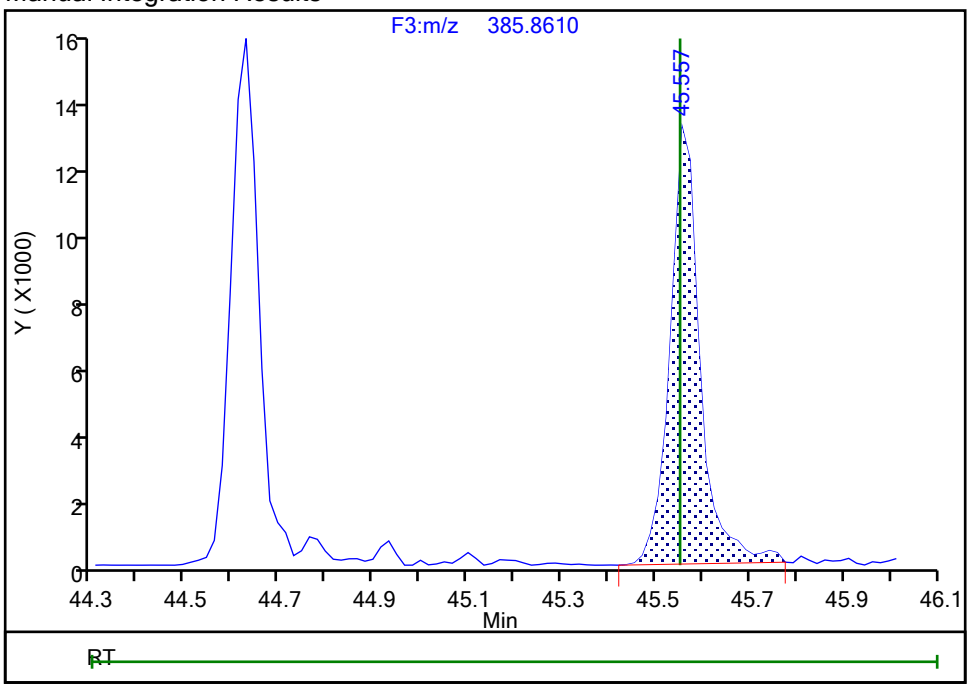
Processing Integration Results

RT: 44.63
Area: 53259
Amount: 3.226528
Amount Units: pg/ul



Manual Integration Results

RT: 45.56
Area: 56660
Amount: 3.486488
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:13:27

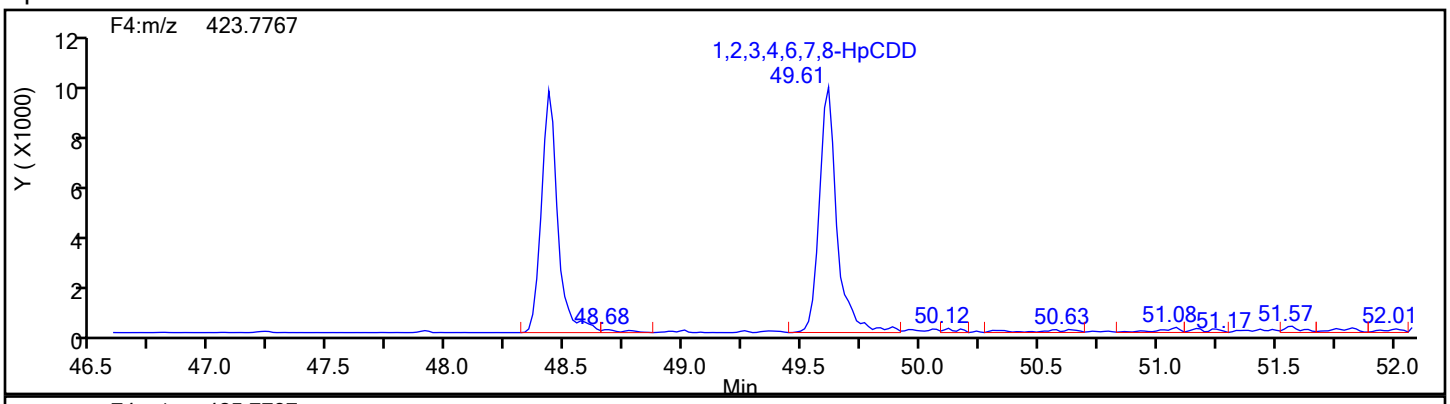
Audit Action: Manually Integrated Audit Reason: Baseline

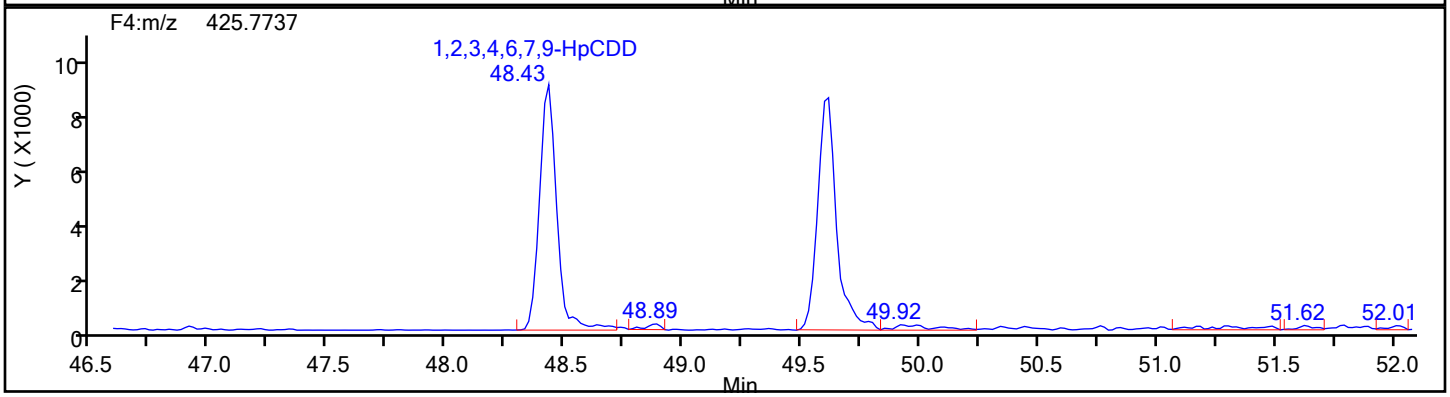
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

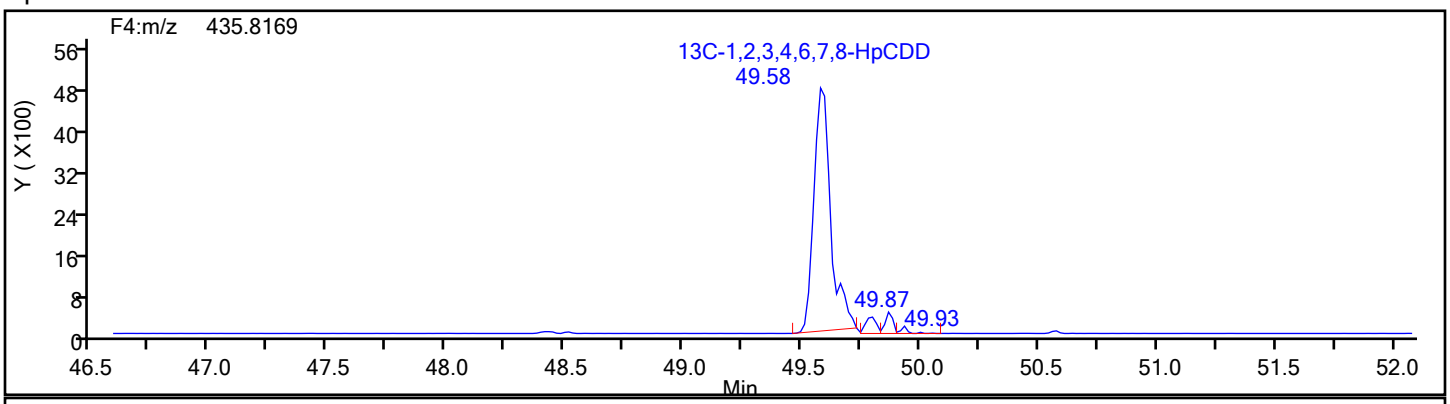
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

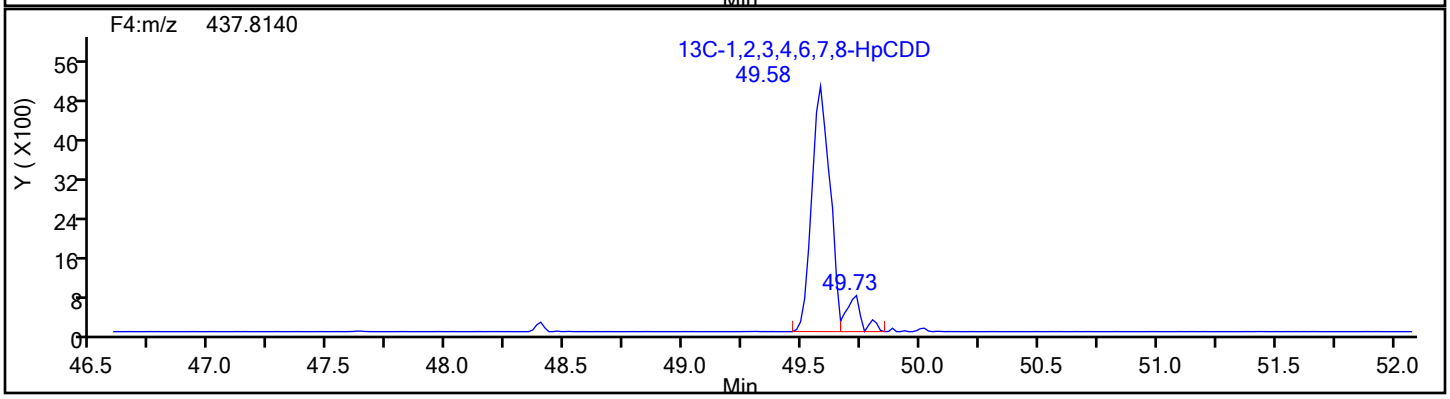
HpCDD





HpCDD Standards



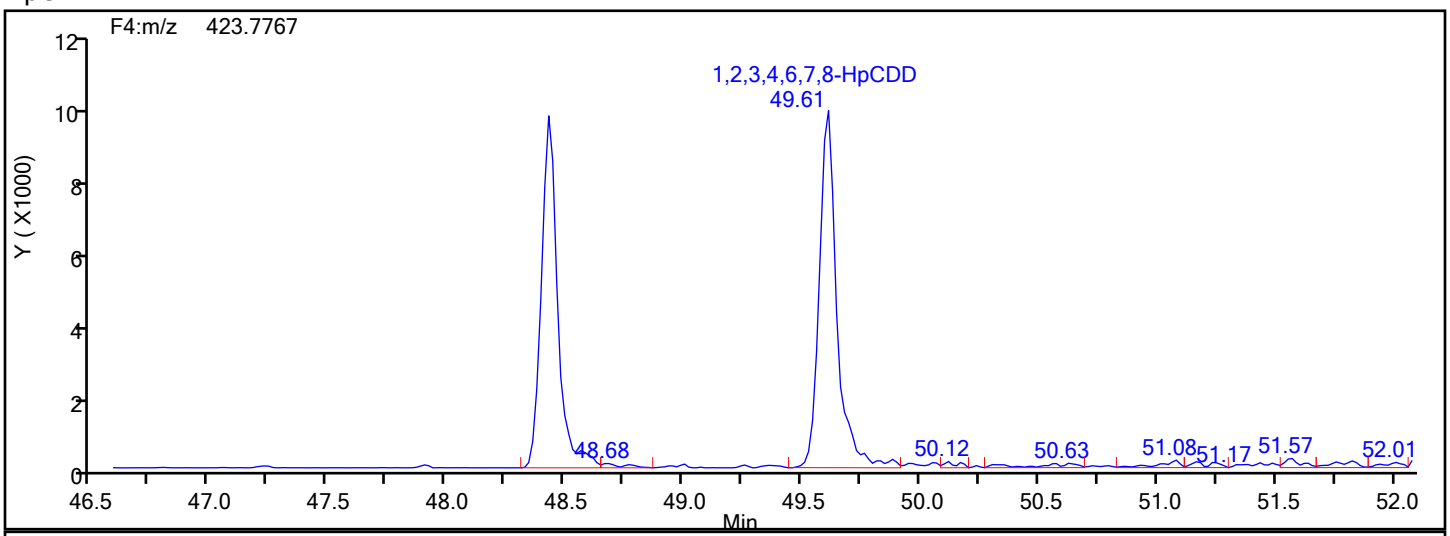


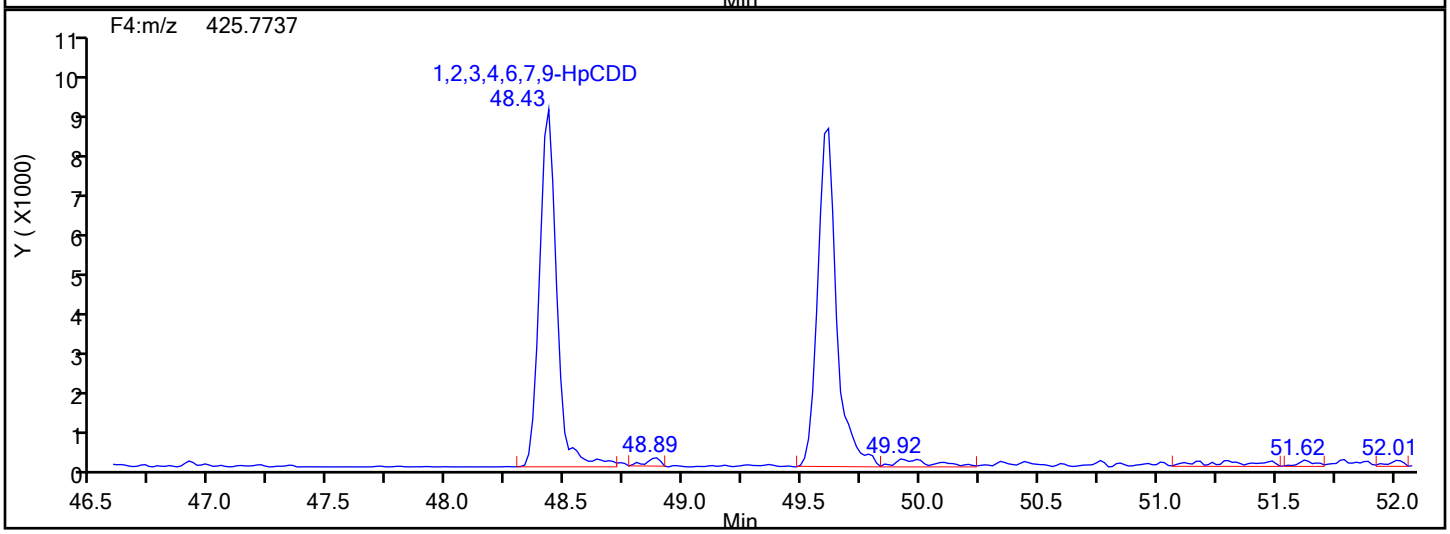
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

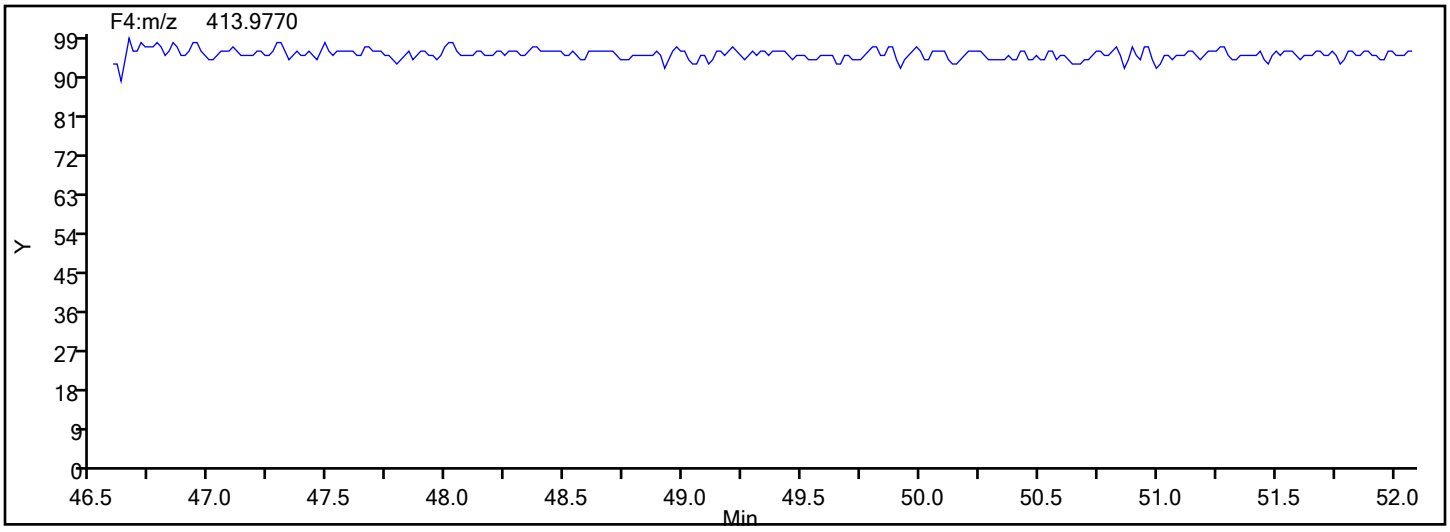
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HpCDD





HpCDD Lock Mass

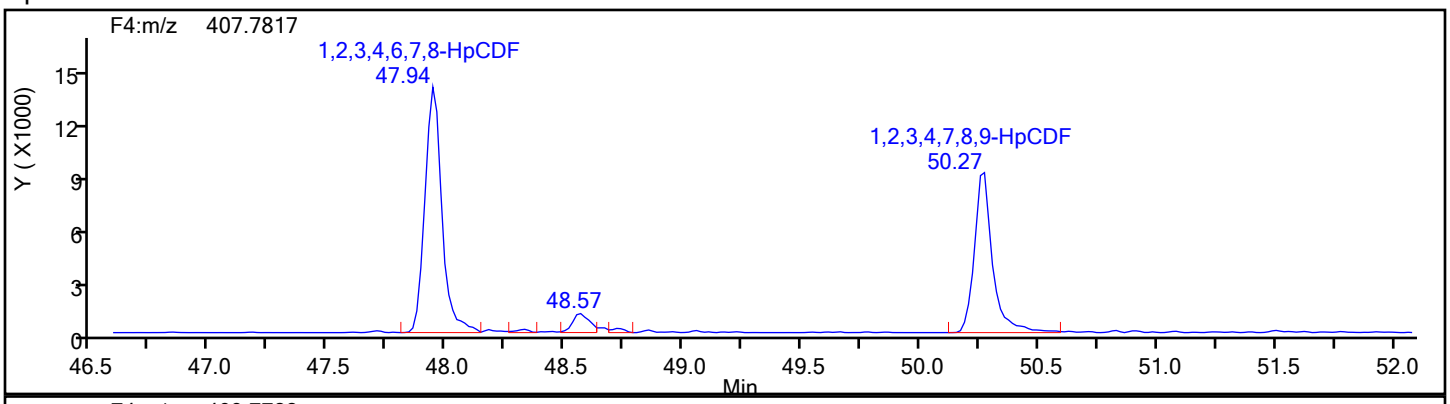


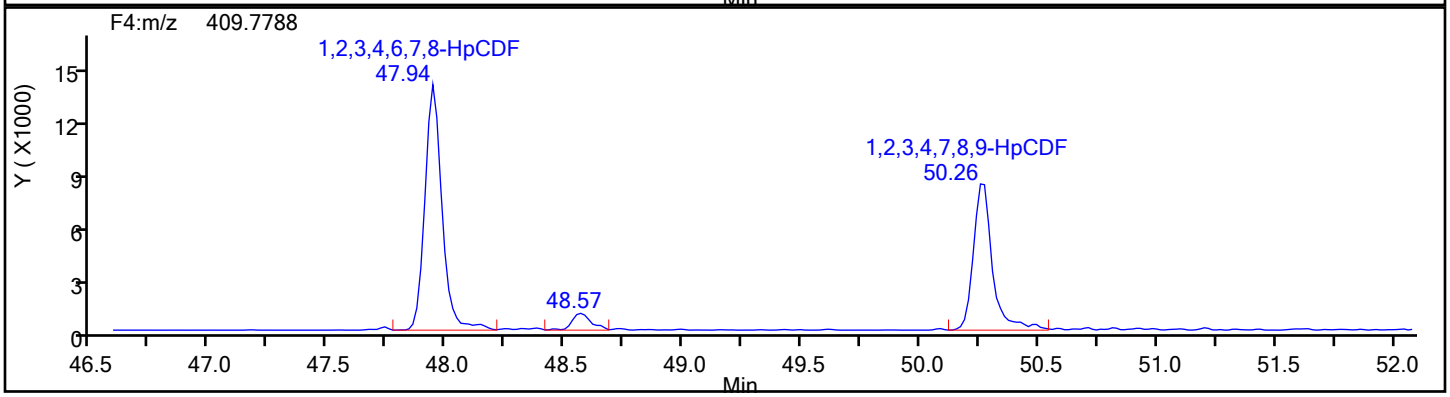
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

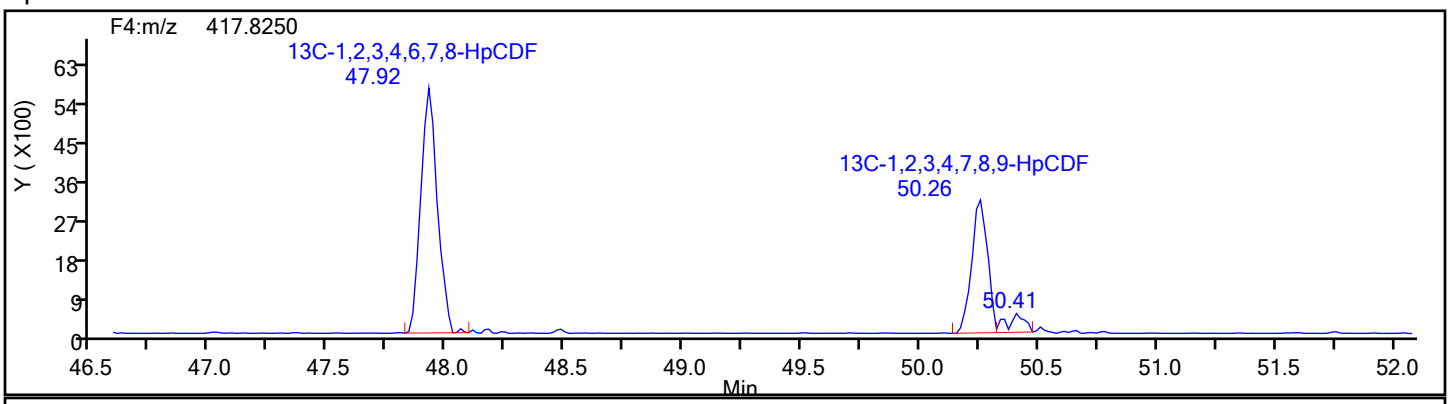
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

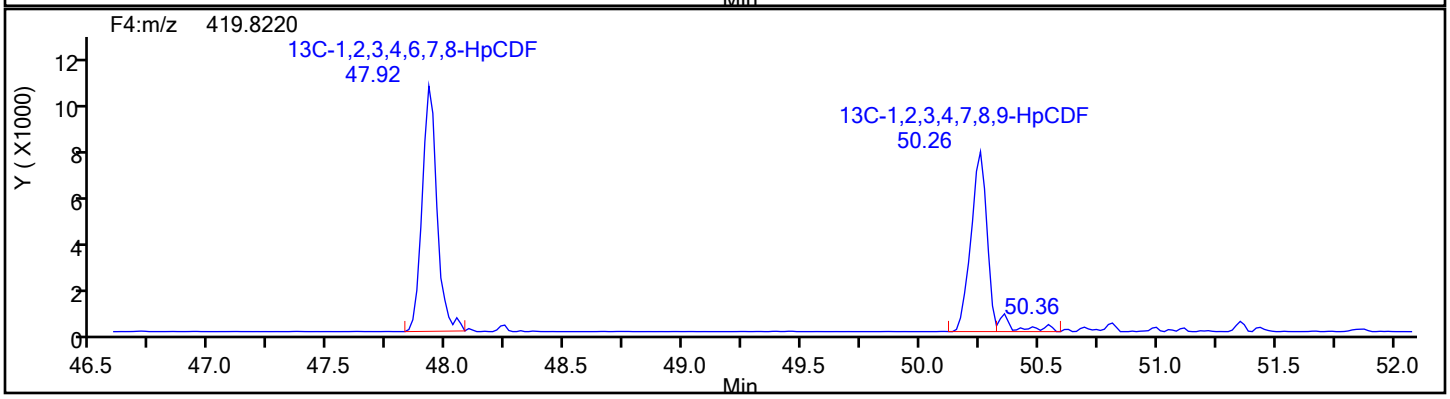
HpCDF





HpCDF Standards



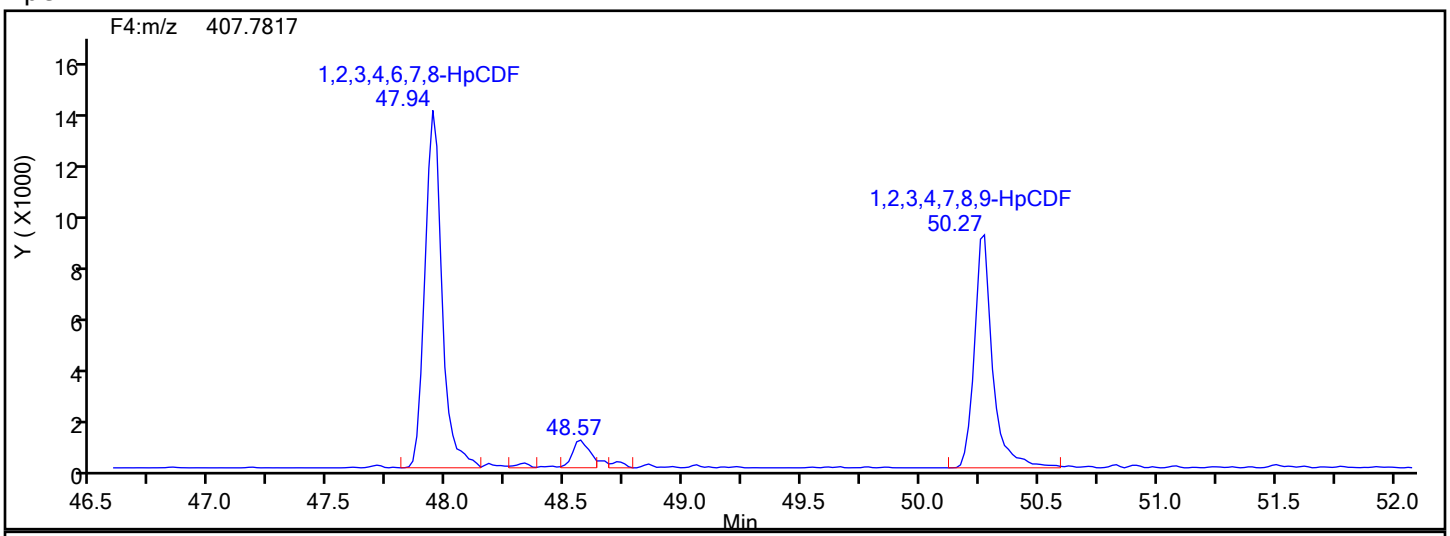


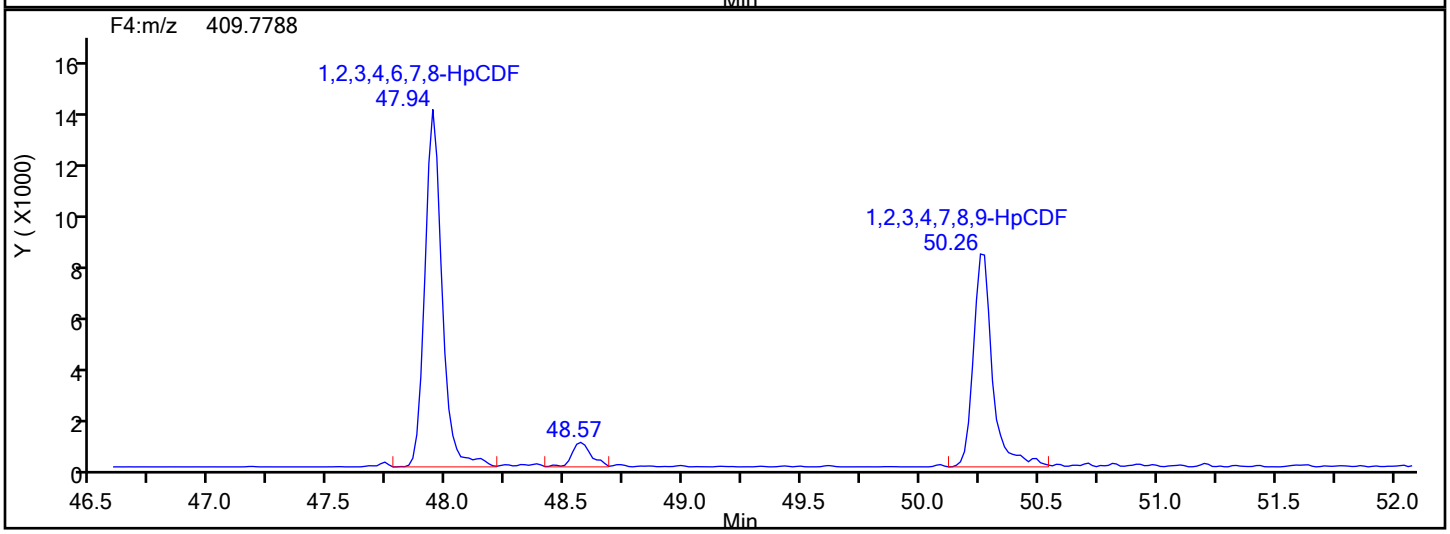
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

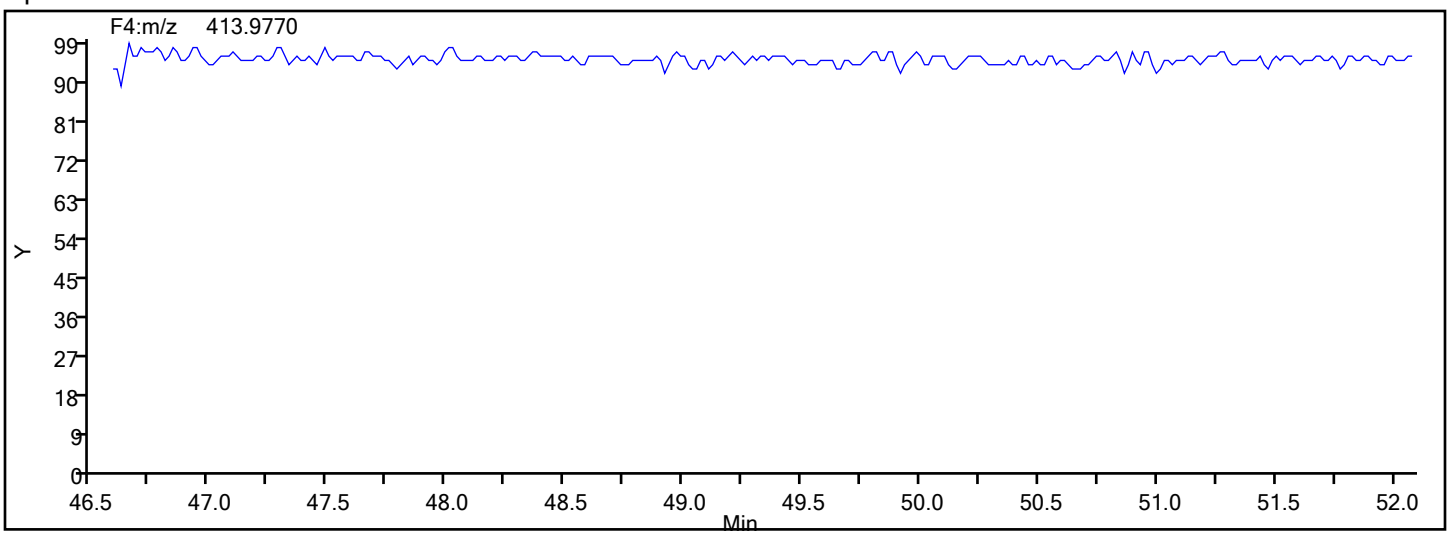
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HpCDF





HpCDF Lock Mass

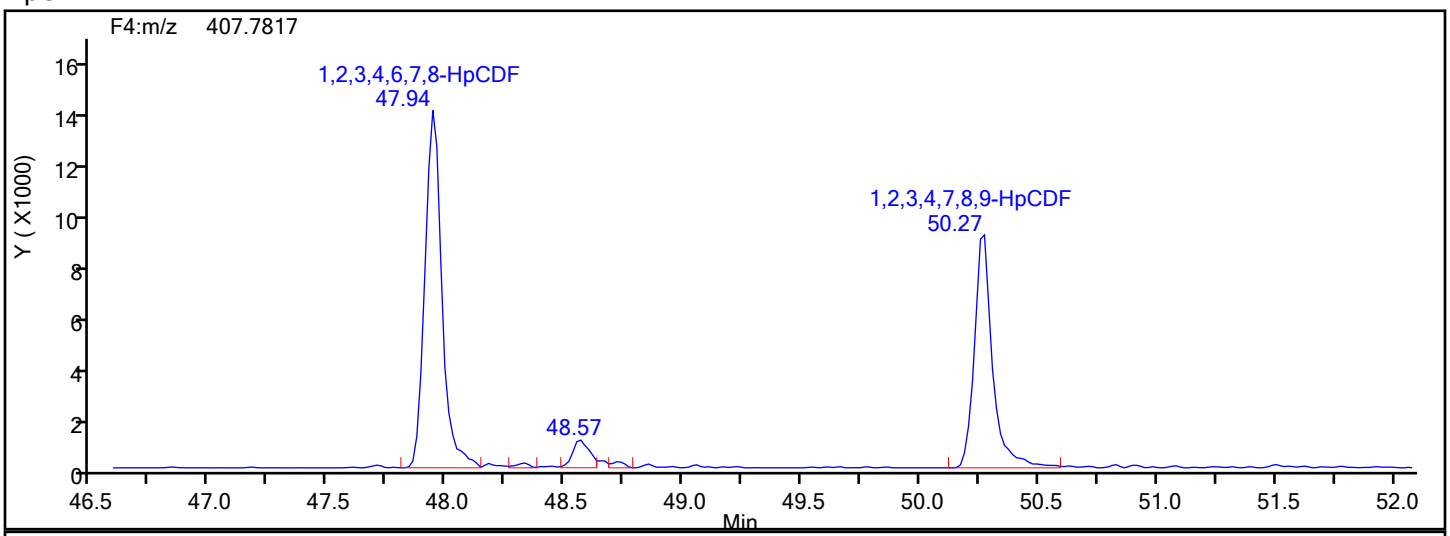


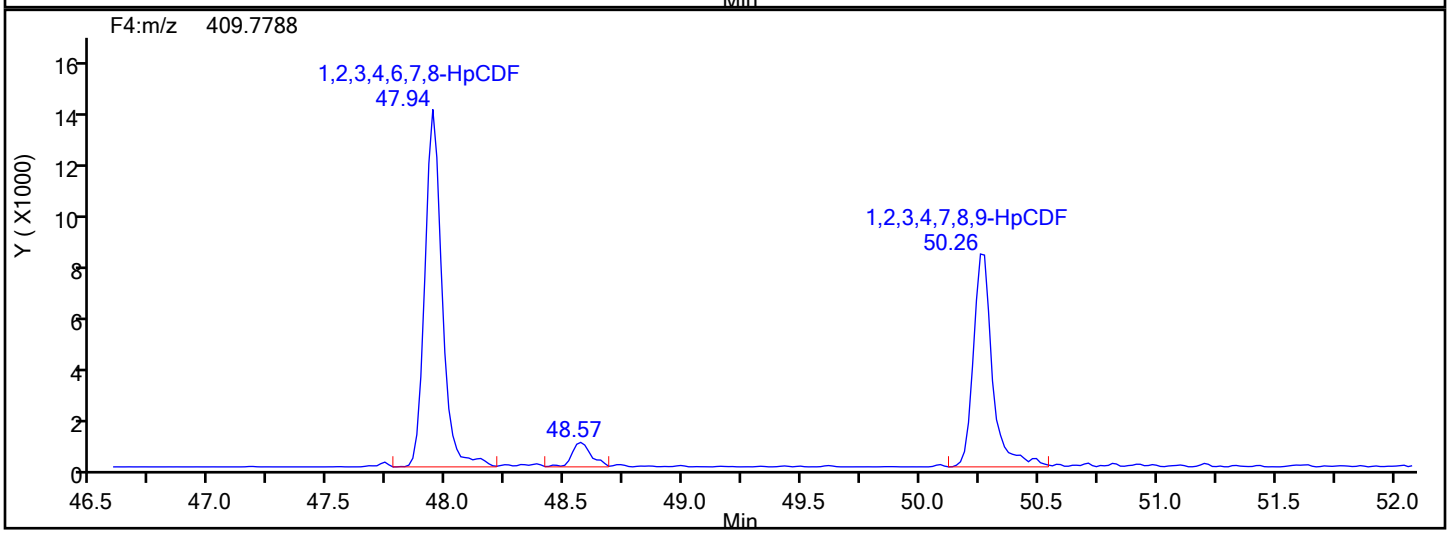
Report Date: 18-Dec-2019 11:15:42 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

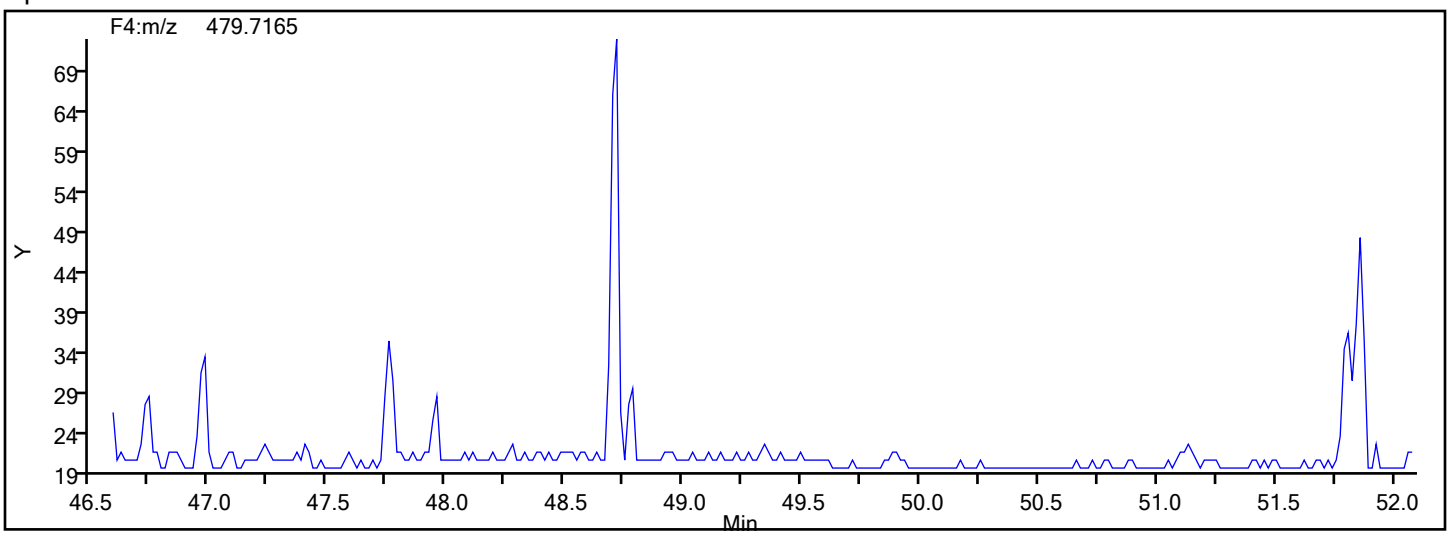
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

HpCDF





HpCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

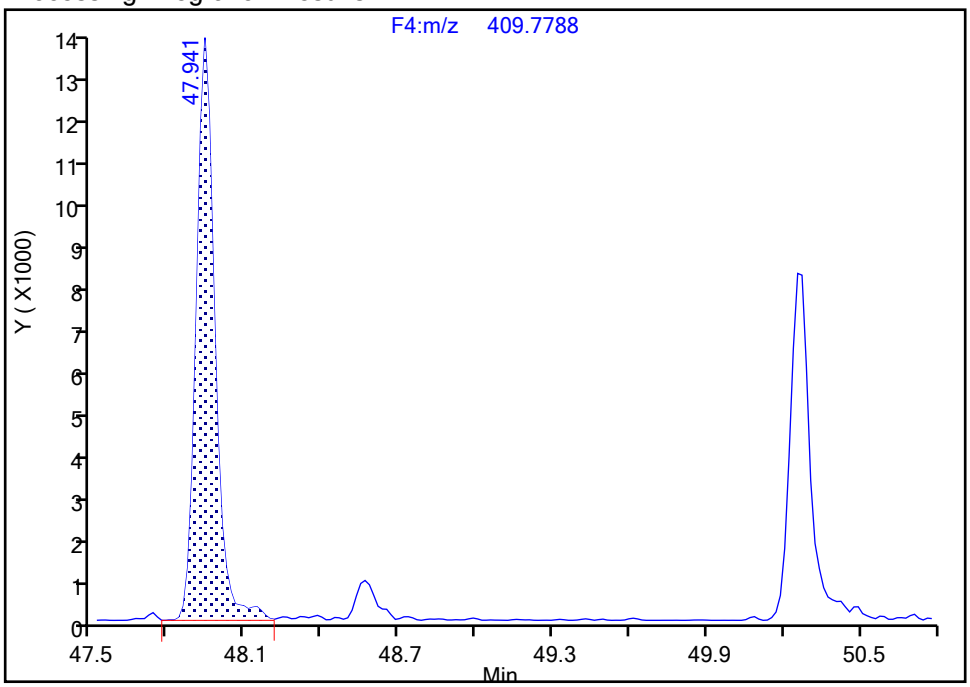
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

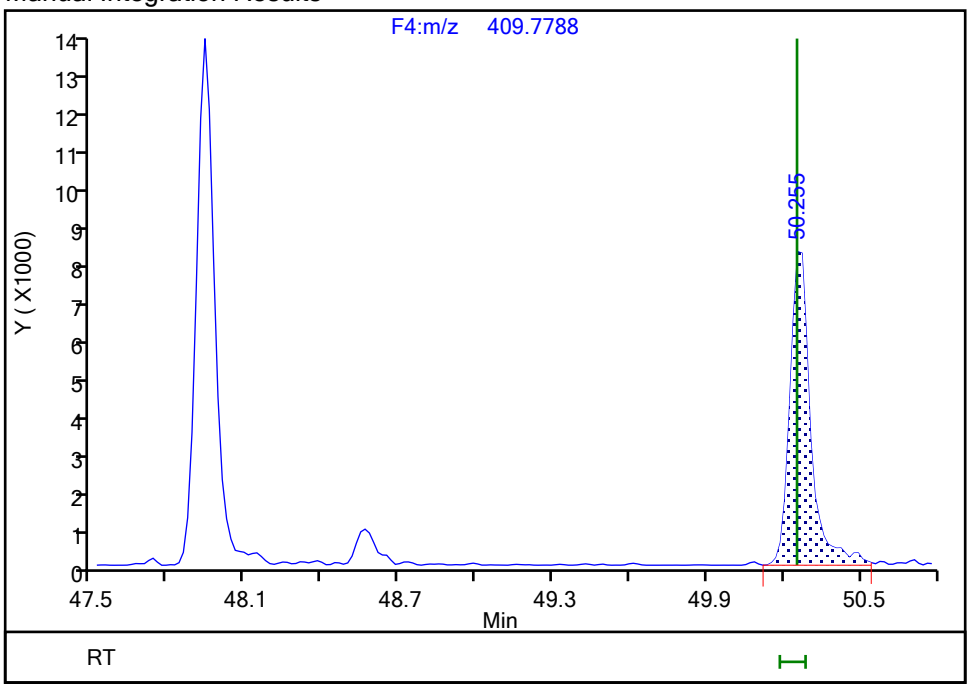
Processing Integration Results

RT: 47.94
Area: 69242
Amount: 9.923991
Amount Units: pg/ul



Manual Integration Results

RT: 50.26
Area: 46132
Amount: 6.766990
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:15:03
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

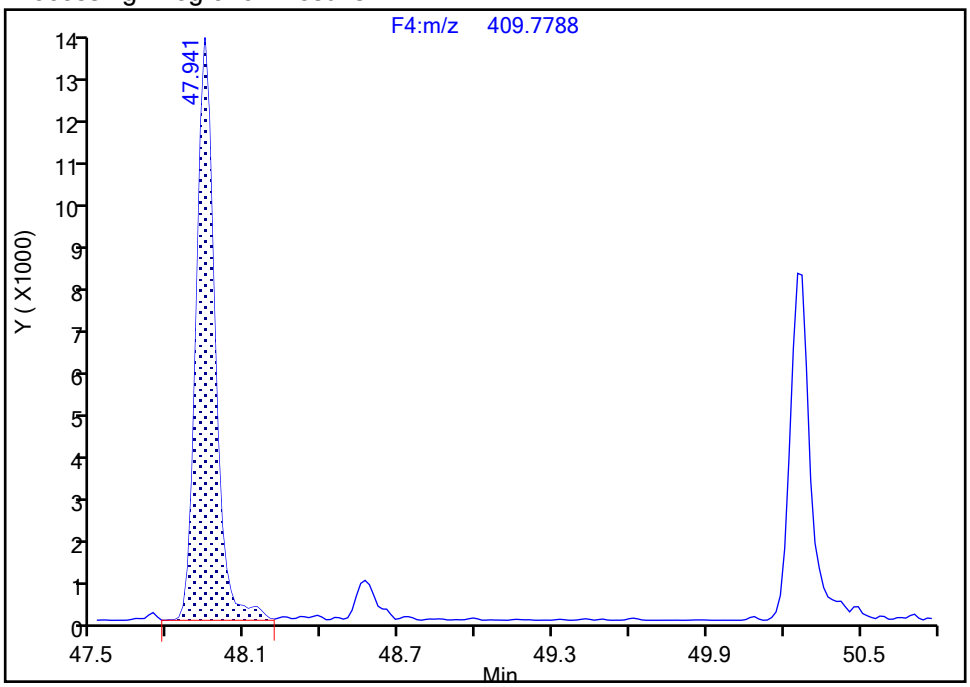
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 3

Processing Integration Results

RT: 47.94
Area: 139159
Amount: 9.923991
Amount Units: pg/ul



Manual Integration Results

RT: 50.27
Area: 94890
Amount: 6.766990
Amount Units: pg/ul
Reviewer: davidsonm, 18-Dec-2019 11:15:03
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

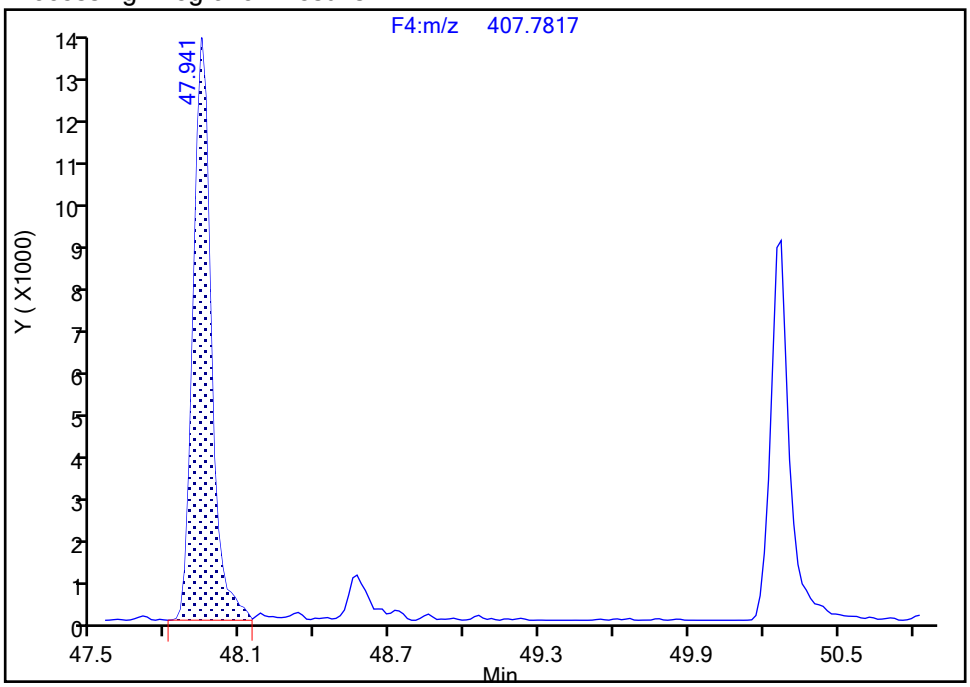
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

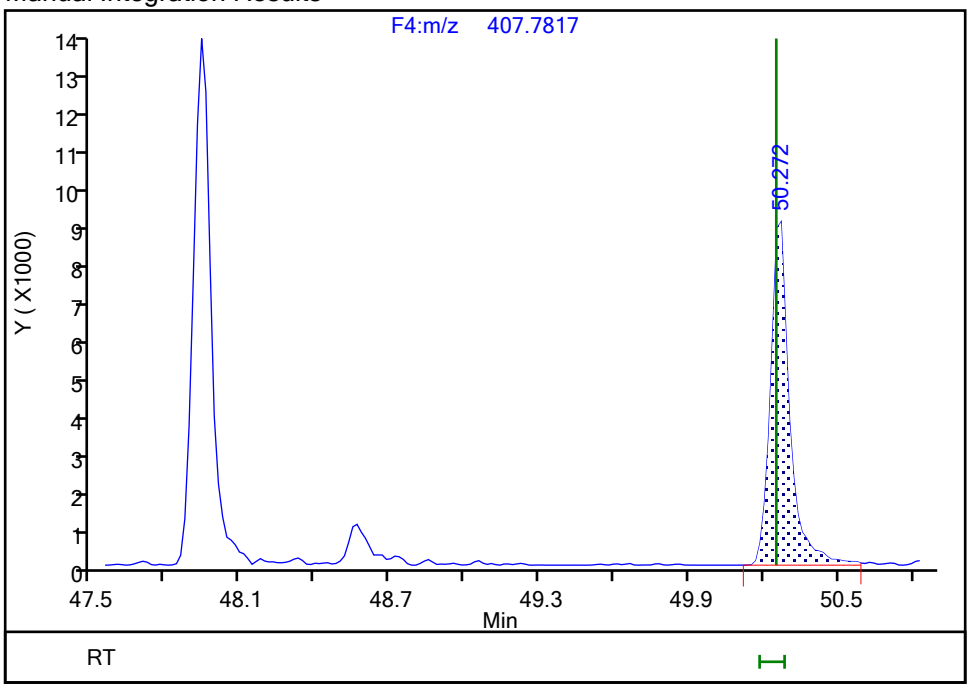
Processing Integration Results

RT: 47.94
Area: 69917
Amount: 9.923991
Amount Units: pg/ul



Manual Integration Results

RT: 50.27
Area: 48758
Amount: 6.766990
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:15:05
Audit Action: Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

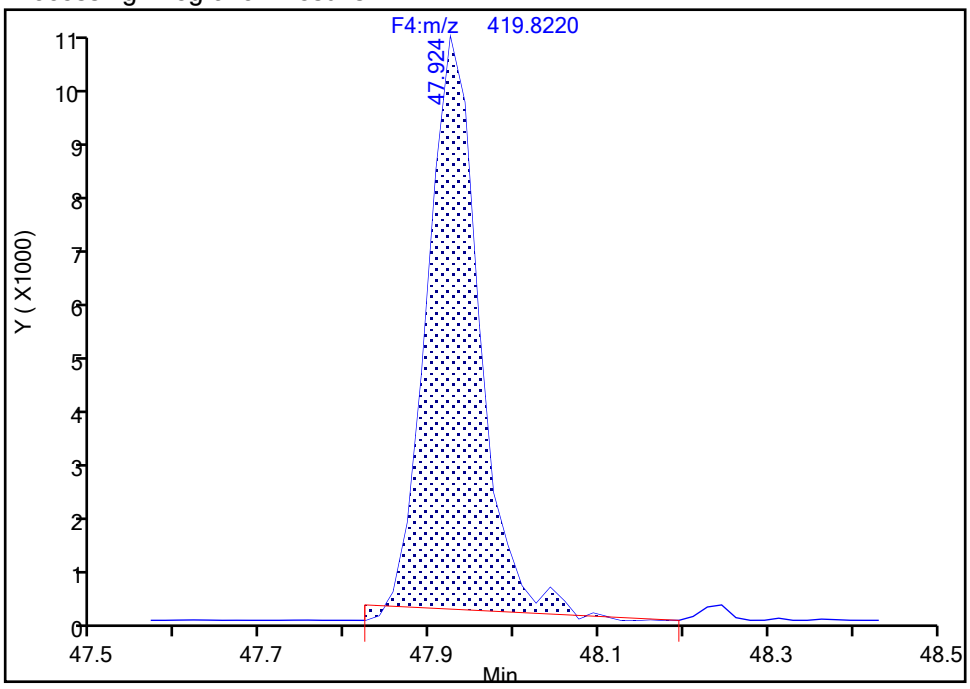
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,6,7,8-HpCDF, CAS: 109719-84-8

Signal: 2

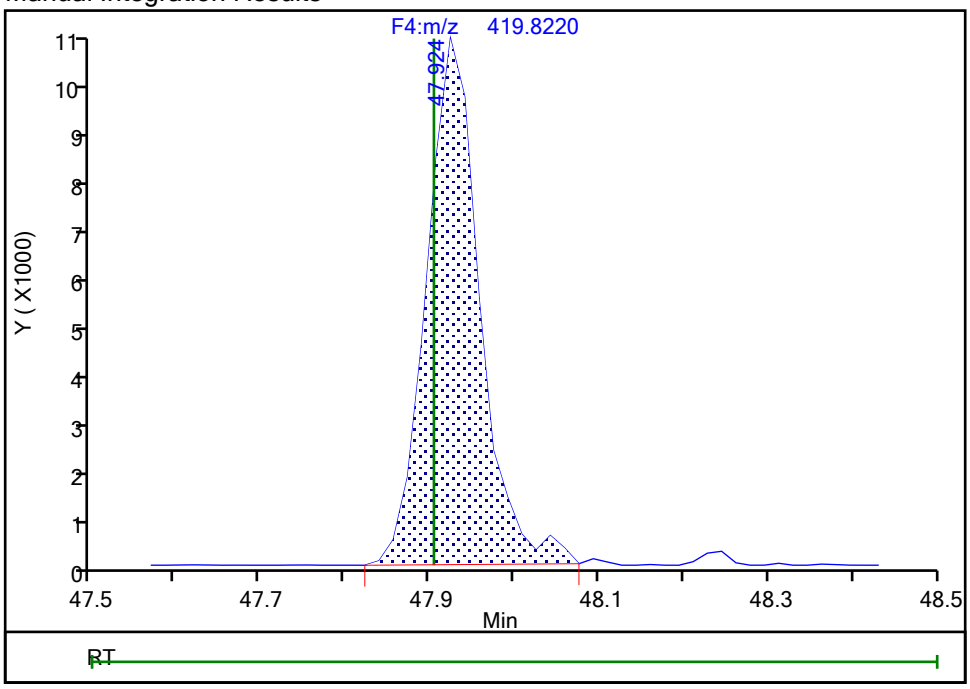
Processing Integration Results

RT: 47.92
Area: 44288
Amount: 3.235945
Amount Units: pg/ul



Manual Integration Results

RT: 47.92
Area: 46995
Amount: 3.476265
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:14:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

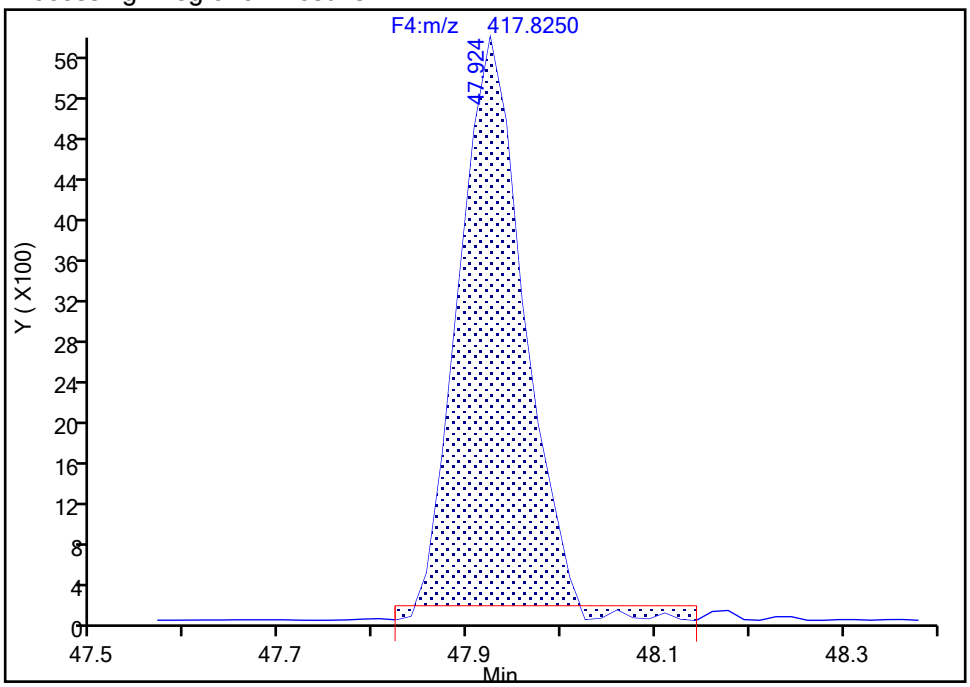
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,6,7,8-HpCDF, CAS: 109719-84-8

Signal: 1

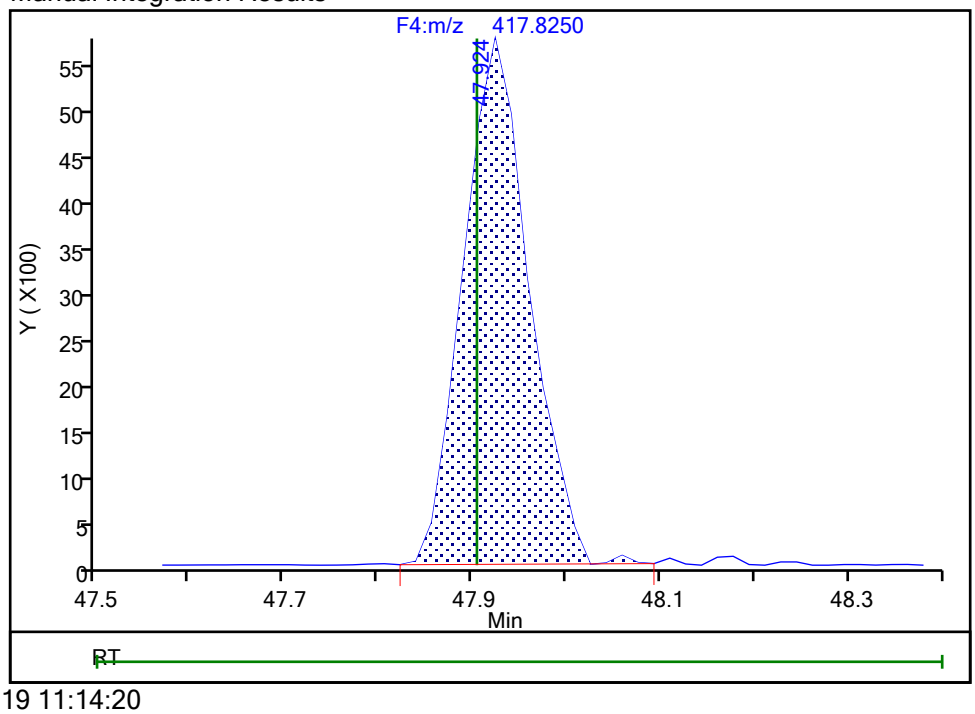
Processing Integration Results

RT: 47.92
Area: 25246
Amount: 3.235945
Amount Units: pg/ul



Manual Integration Results

RT: 47.92
Area: 27703
Amount: 3.476265
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:14:20

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

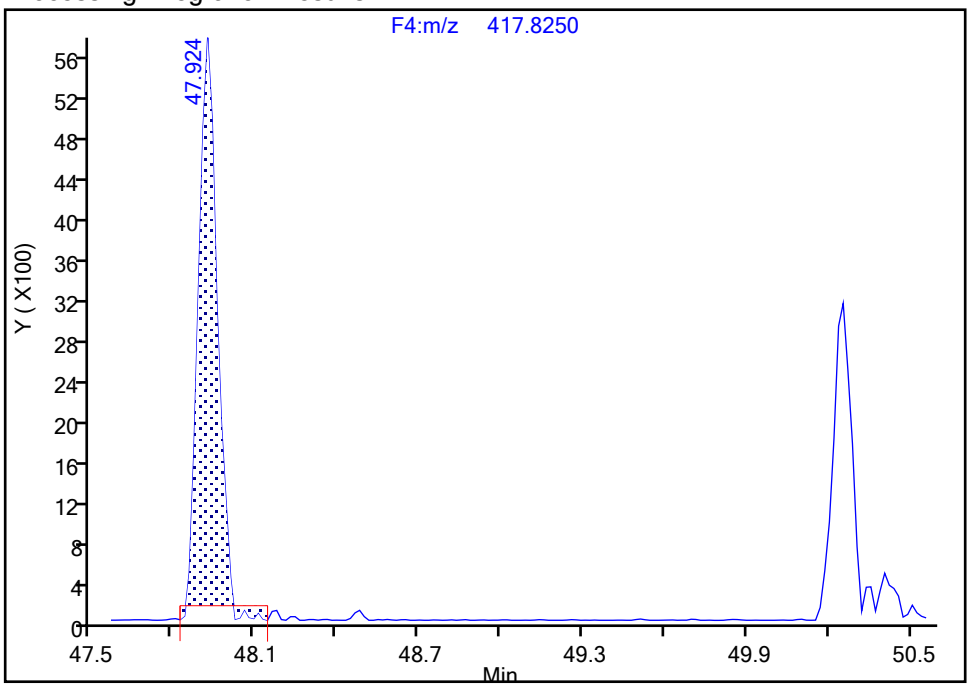
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 1

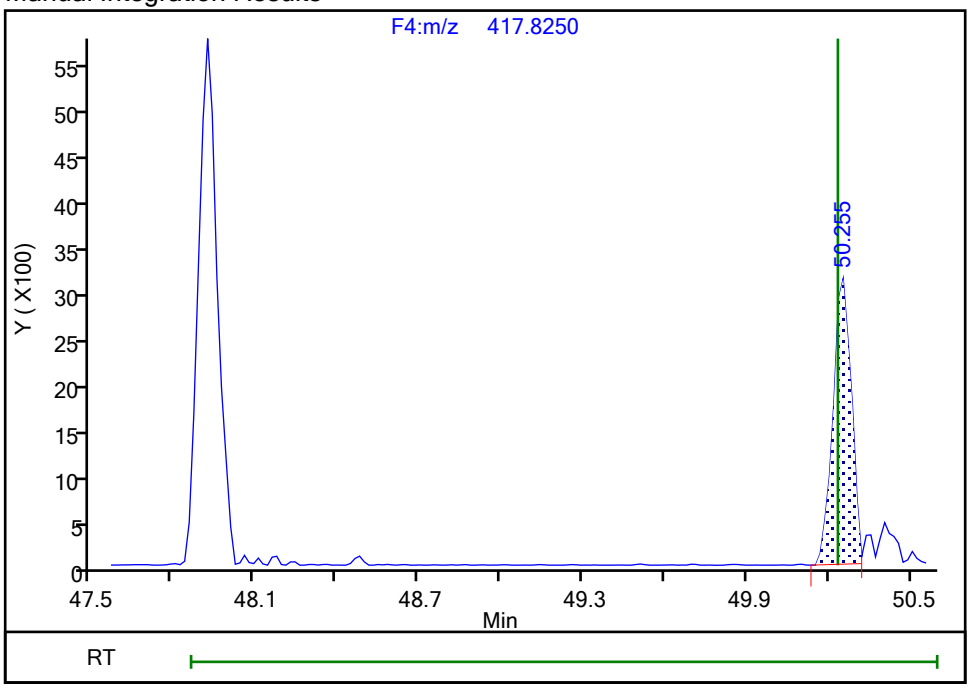
Processing Integration Results

RT: 47.92
Area: 25246
Amount: 3.796171
Amount Units: pg/ul



Manual Integration Results

RT: 50.26
Area: 14356
Amount: 2.772307
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:14:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

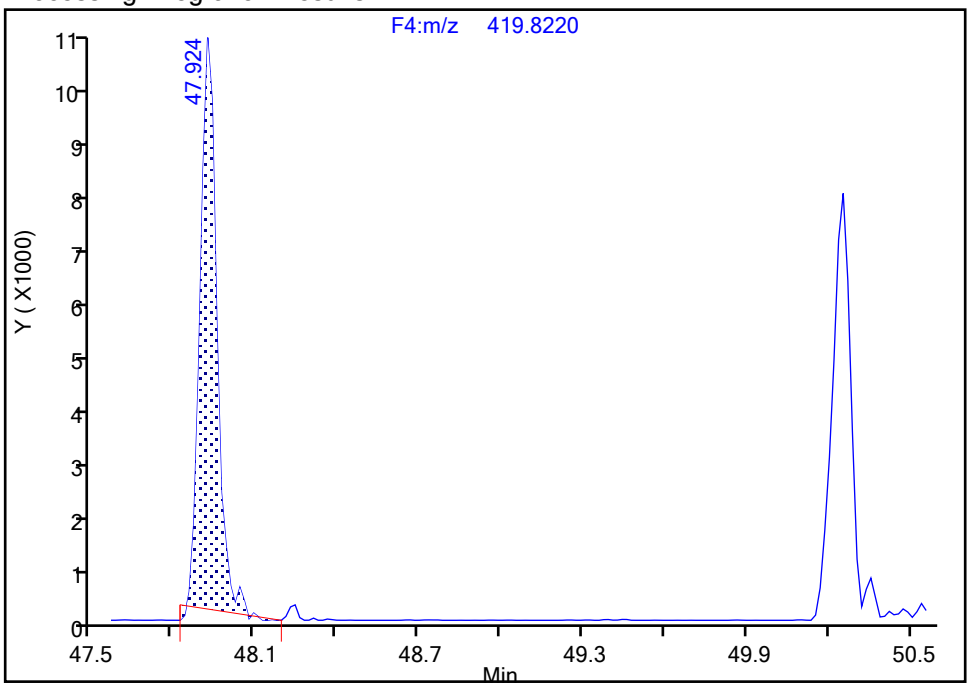
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F4(47.18 :52.50)		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 2

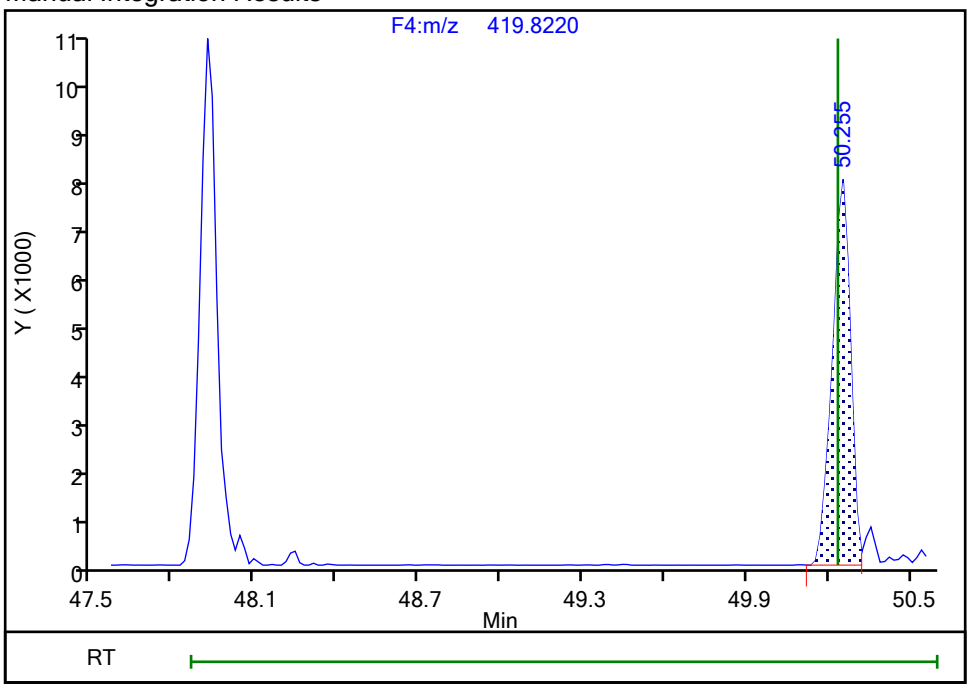
Processing Integration Results

RT: 47.92
Area: 44288
Amount: 3.796171
Amount Units: pg/ul



Manual Integration Results

RT: 50.26
Area: 36424
Amount: 2.772307
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:14:58

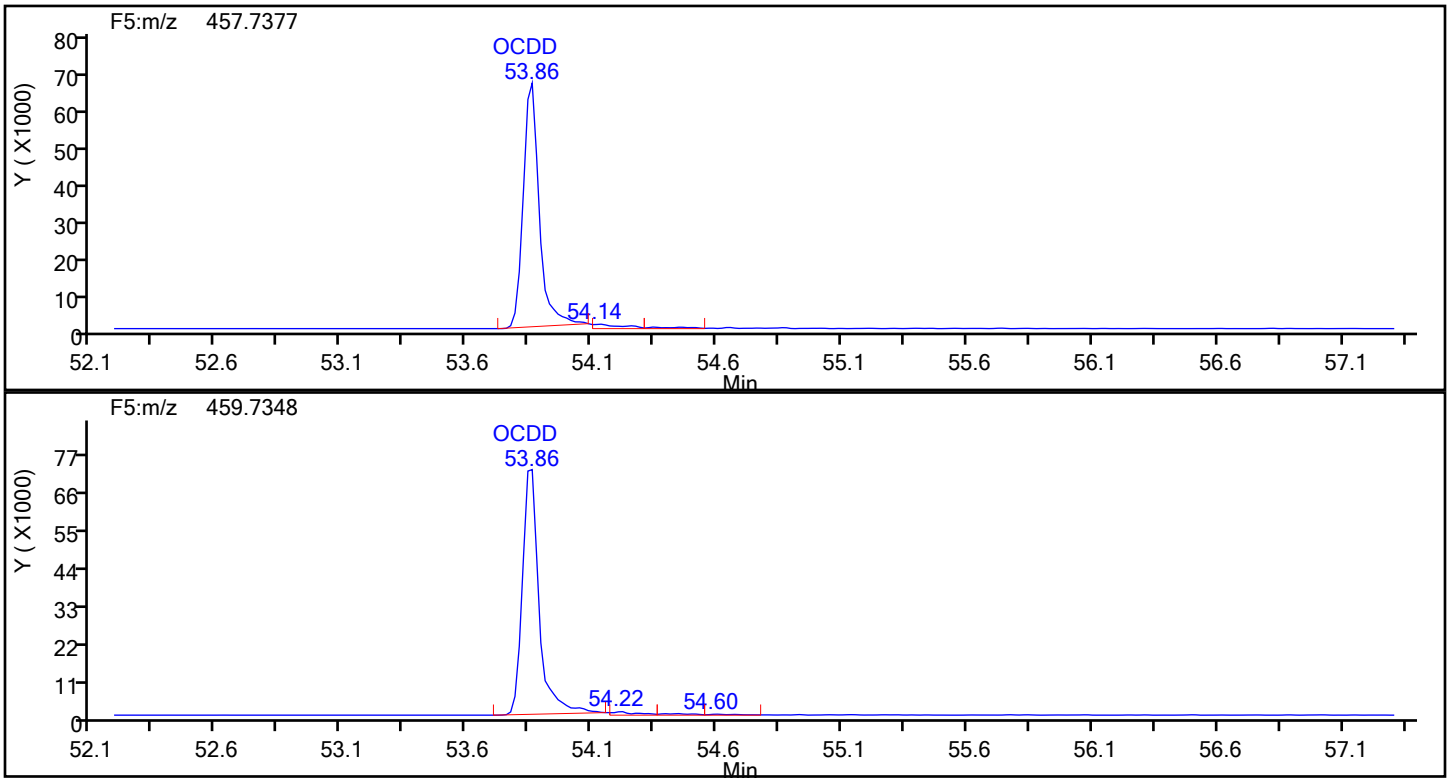
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 11:15:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

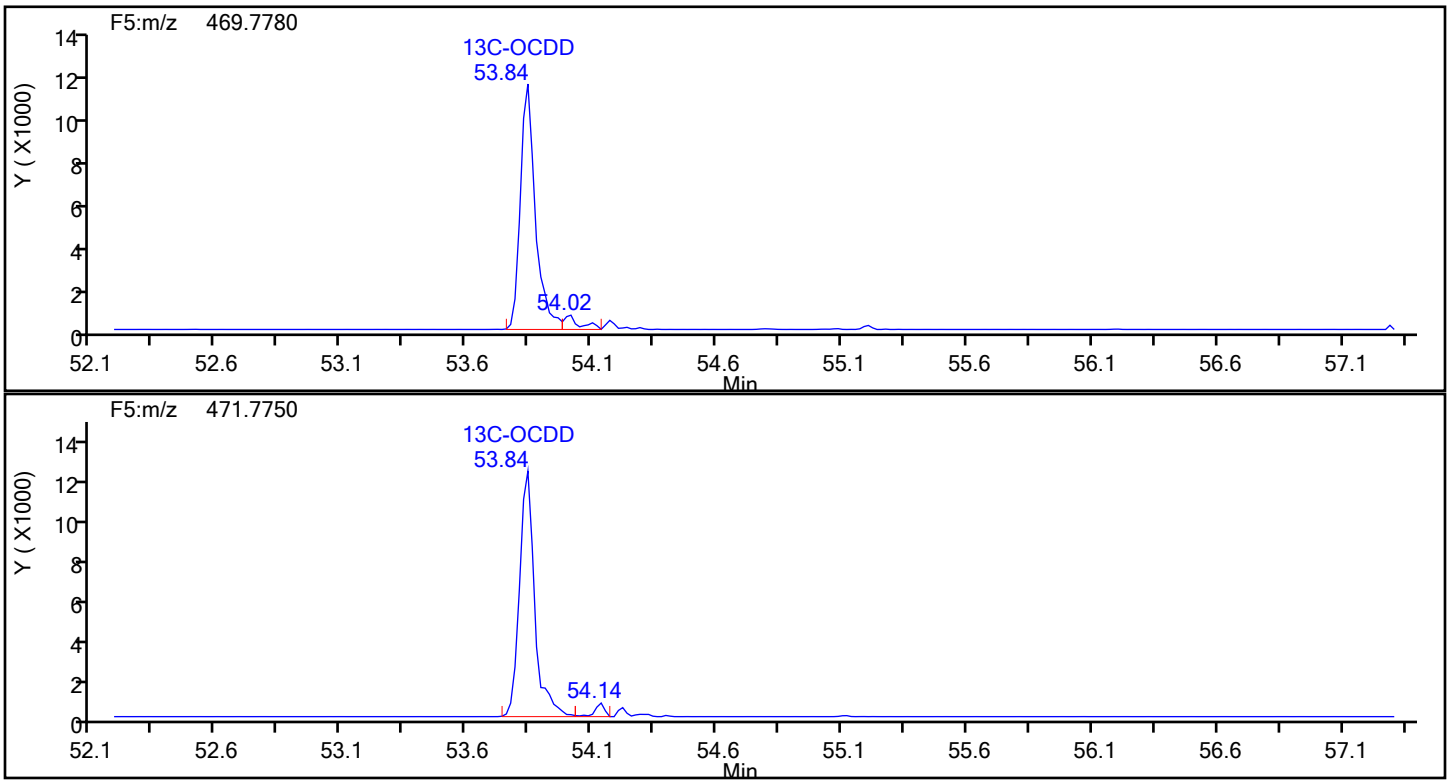
Eurofins TestAmerica, Knoxville

Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

OCDD



OCDD Standards

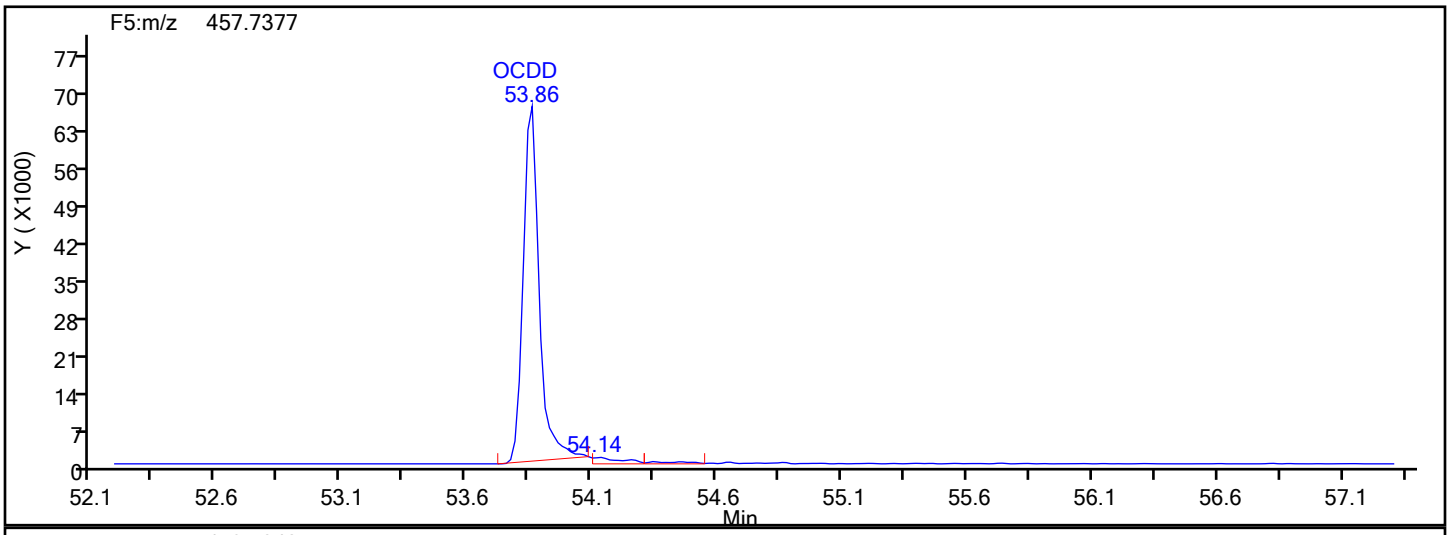


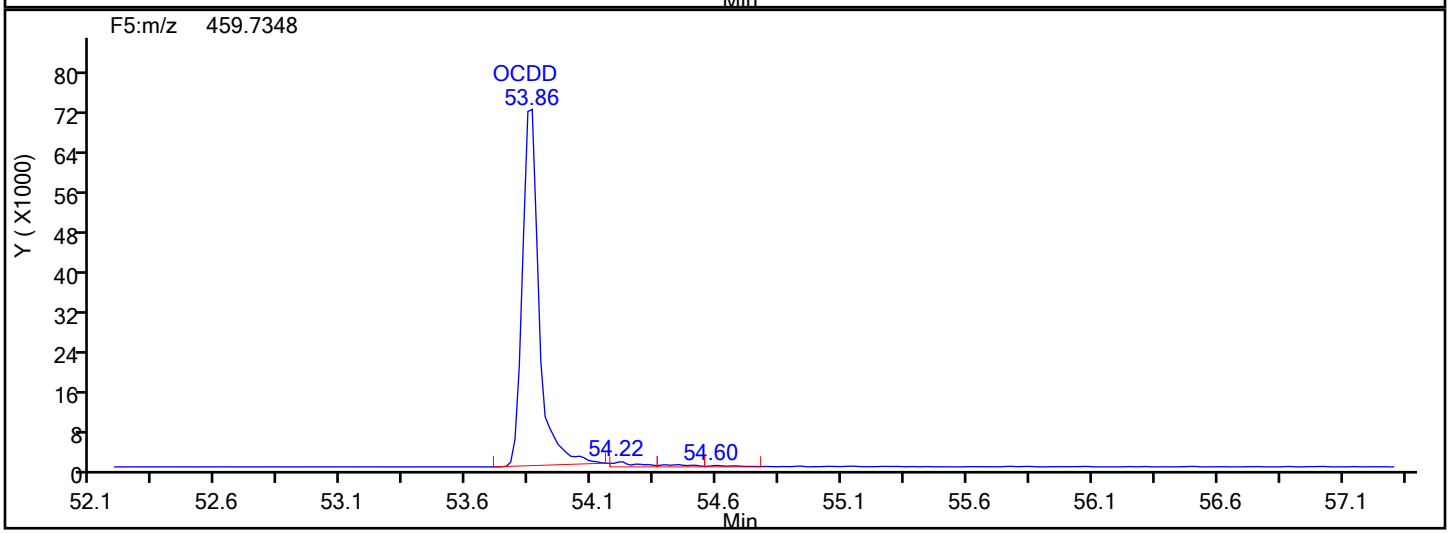
Report Date: 18-Dec-2019 11:15:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

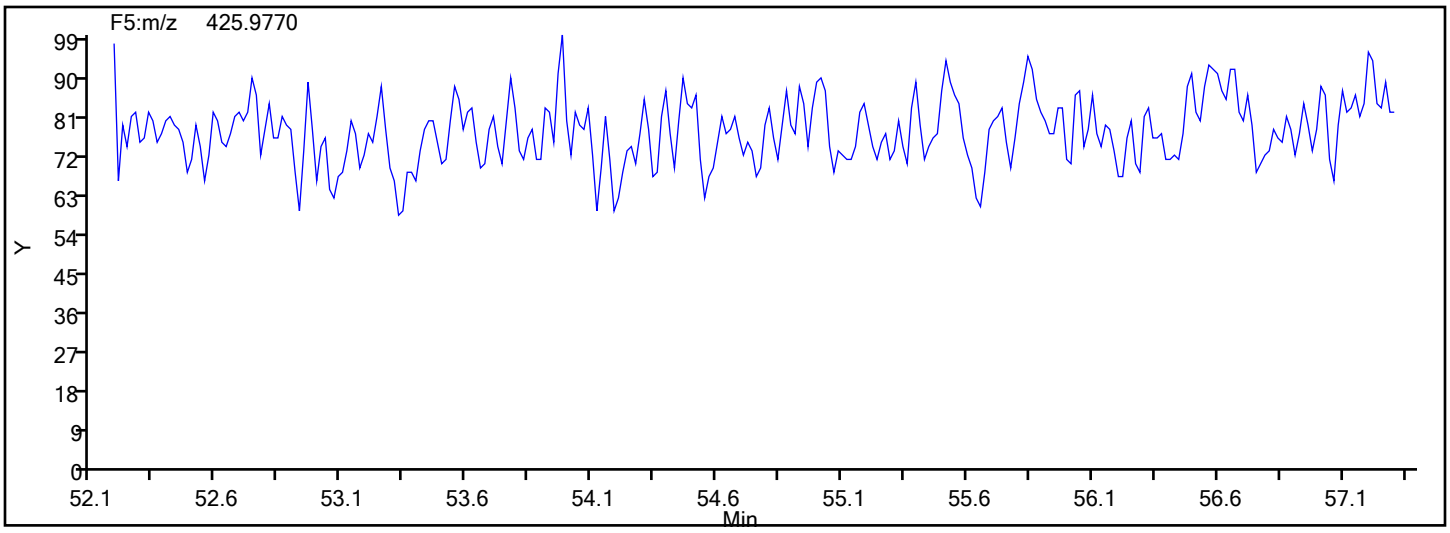
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

OCDD





OCDD Lock Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

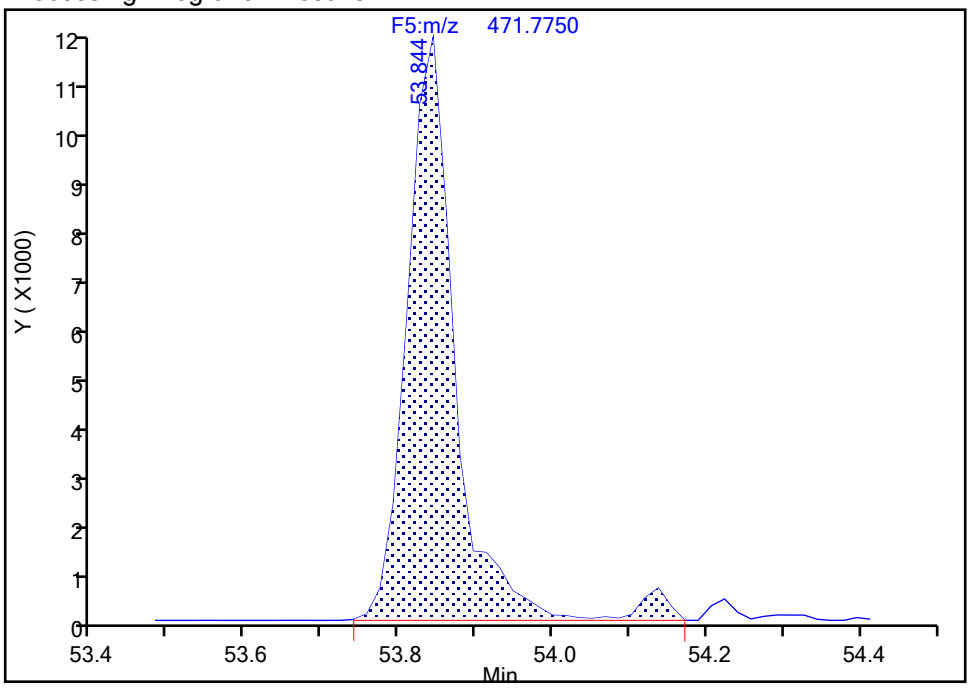
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

13C-OCDD, CAS: 114423-97-1

Signal: 2

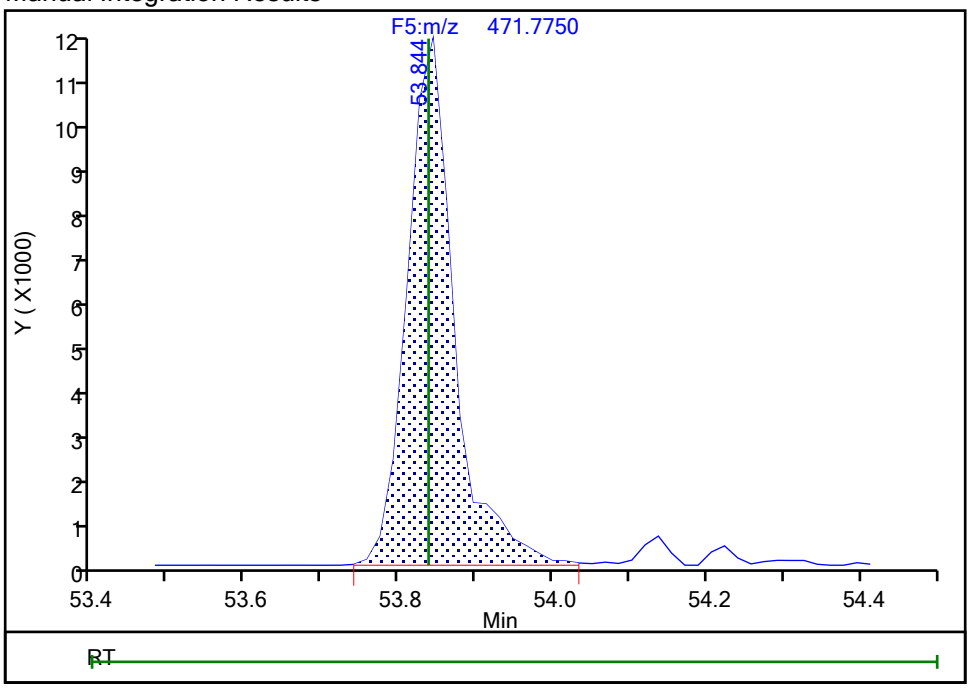
Processing Integration Results

RT: 53.84
Area: 51657
Amount: 6.928608
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 49941
Amount: 6.625079
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:15:19

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

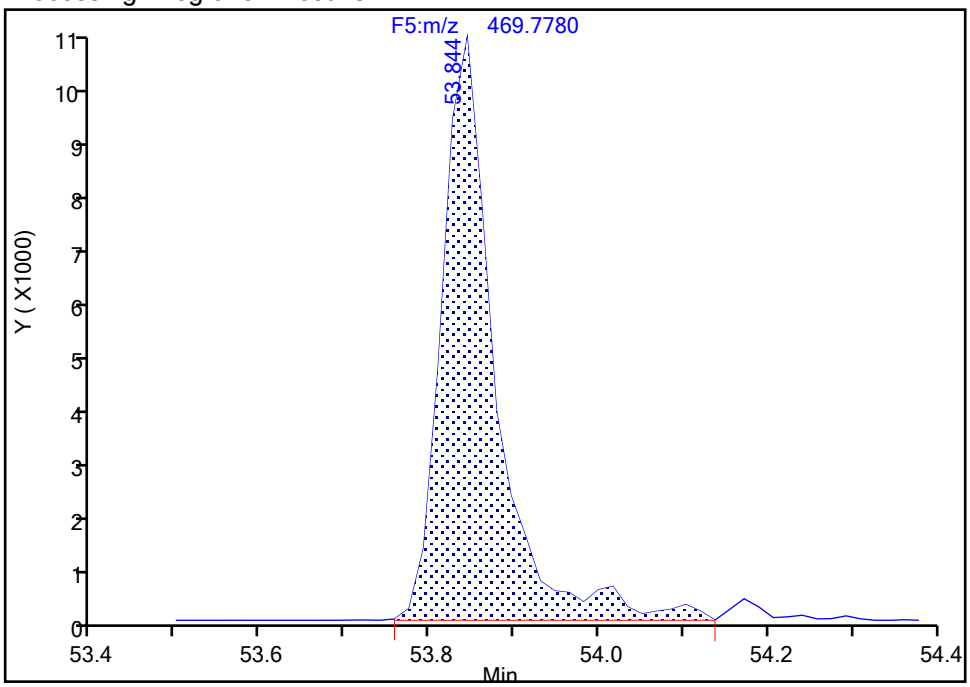
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d				
Injection Date:	18-Dec-2019 10:06:00	Instrument ID:	D2A		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	10.0000		
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL		
Column:		Detector	F5(52.61 :57.22)		

13C-OCDD, CAS: 114423-97-1

Signal: 1

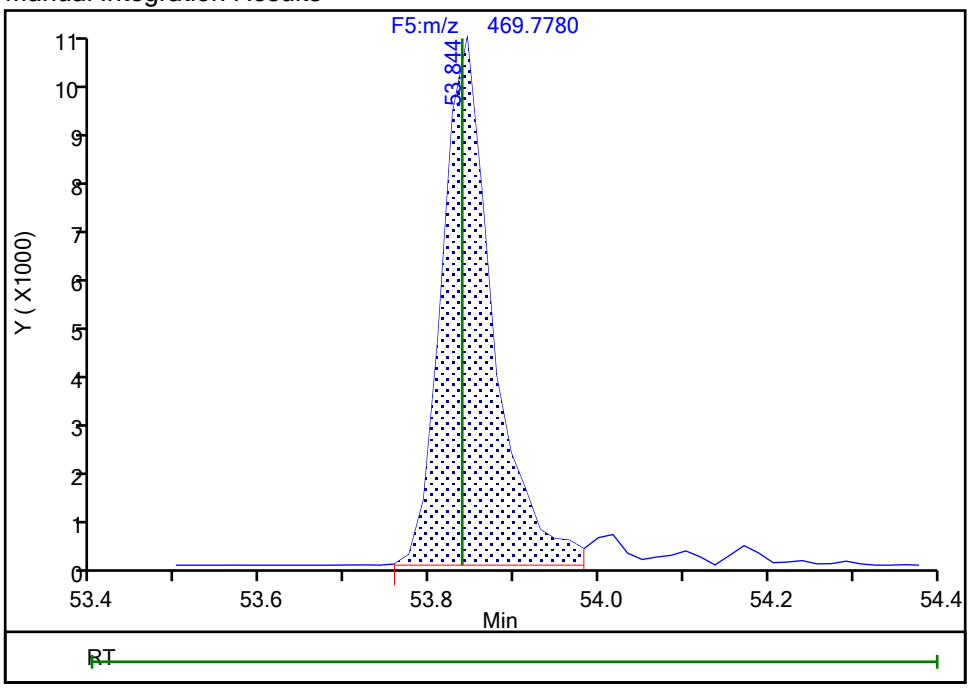
Processing Integration Results

RT: 53.84
Area: 48256
Amount: 6.928608
Amount Units: pg/ul



Manual Integration Results

RT: 53.84
Area: 45595
Amount: 6.625079
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:15:21

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 18-Dec-2019 11:15:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d

Injection Date: 18-Dec-2019 10:06:00 Injection Vol: 1.0 ul

Instrument ID: D2A Operator ID: Xcalibur_System

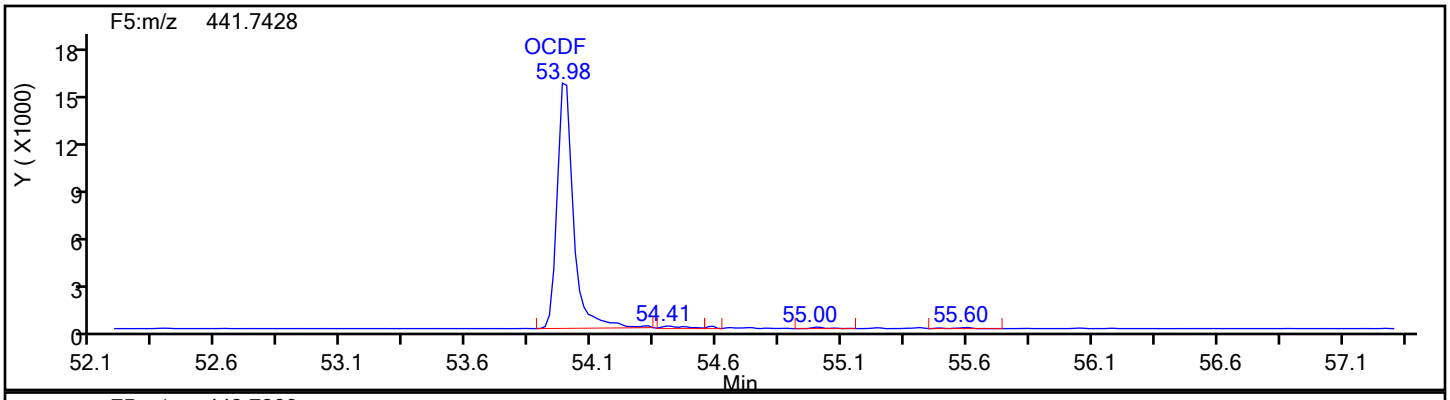
Method: D2A_Dioxin Limit Group: HR - 1613B - ICAL

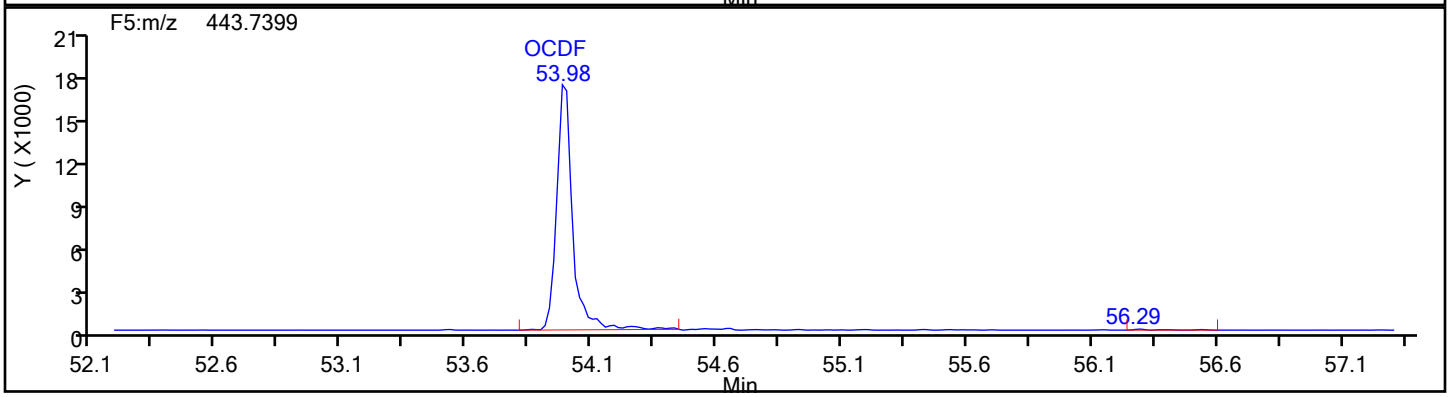
Client ID: 11187072-120619-SS-SJSSA06(4-6)

Worklist#: 36166 Sample Line#: 14

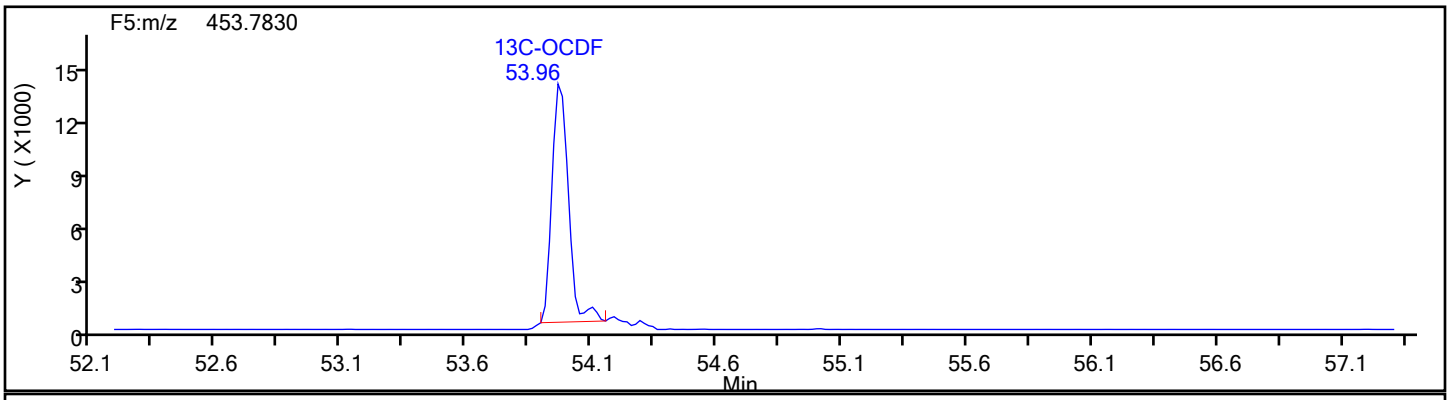
Column Type: Column Dia:

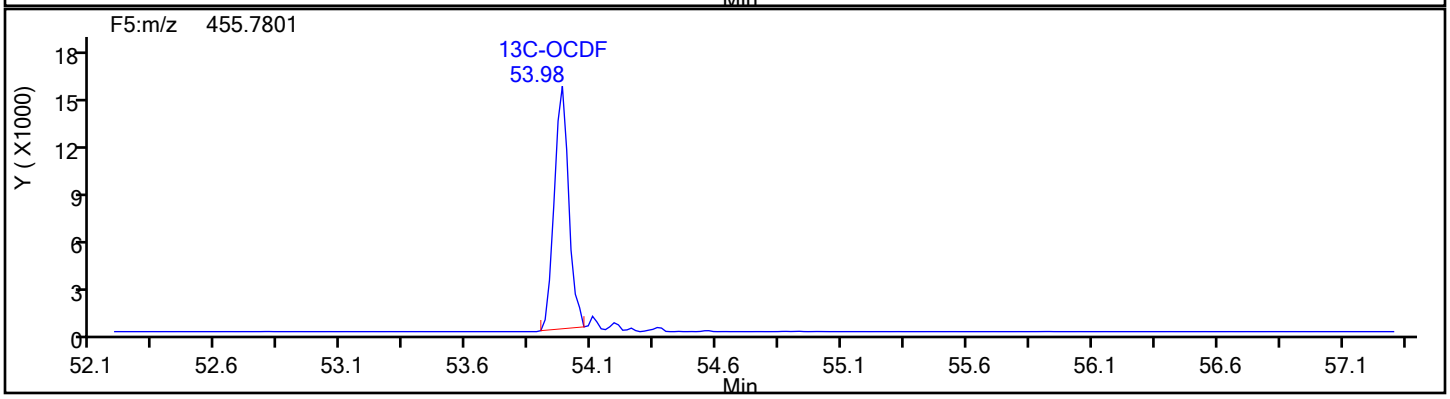
OCDF





OCDF Standards



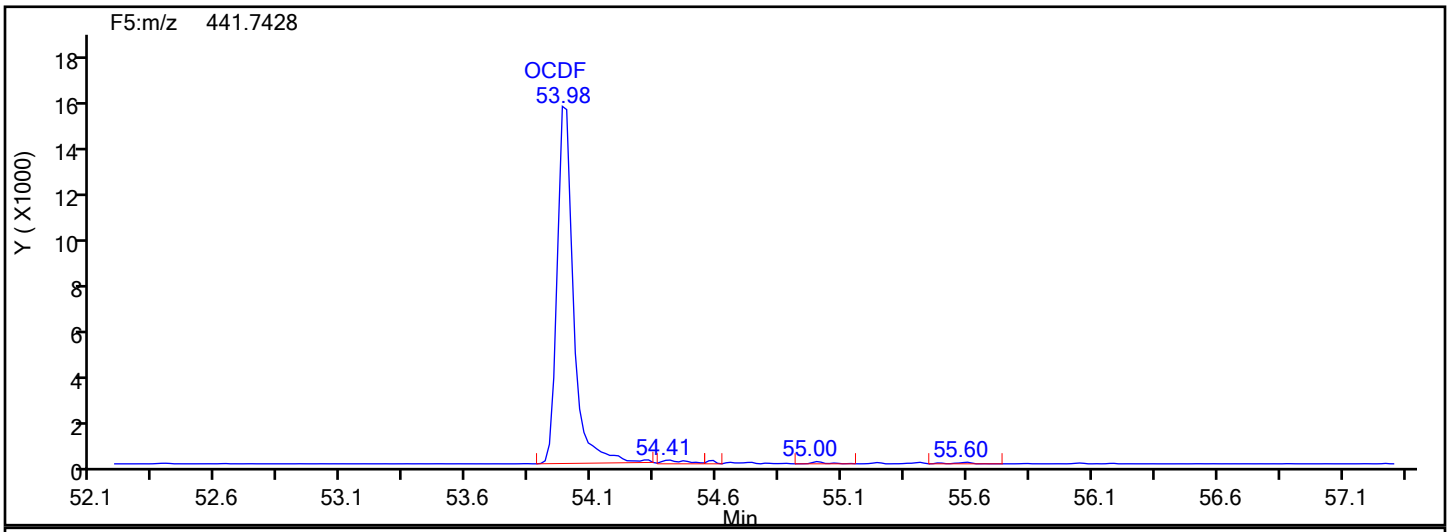


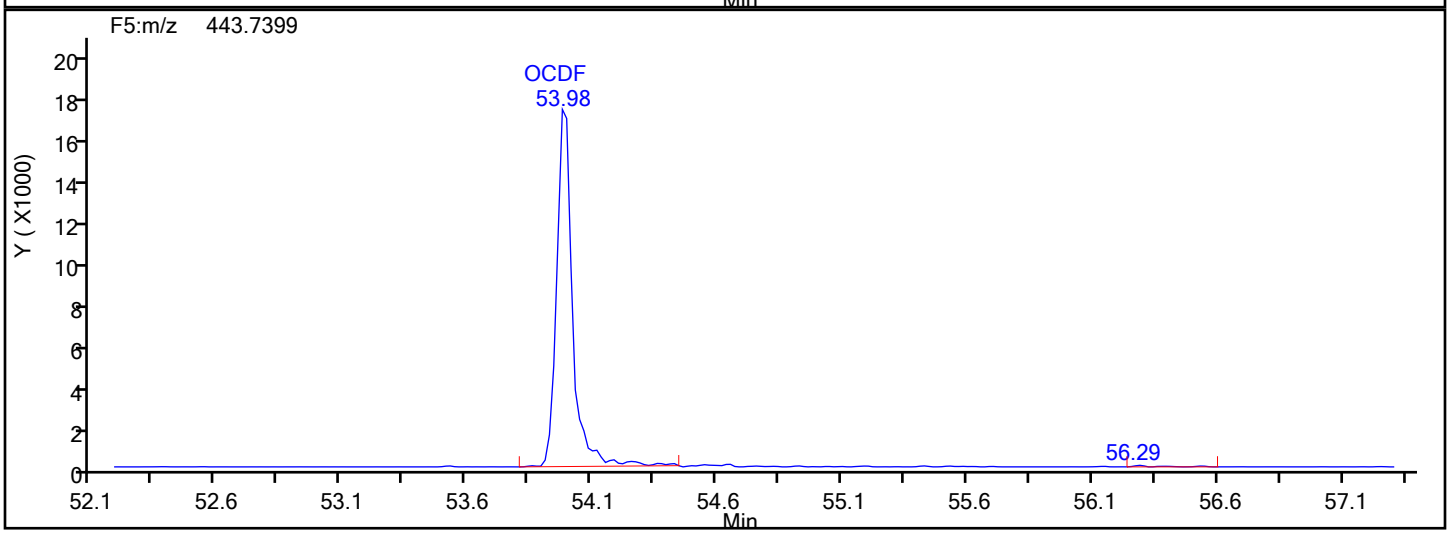
Report Date: 18-Dec-2019 11:15:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

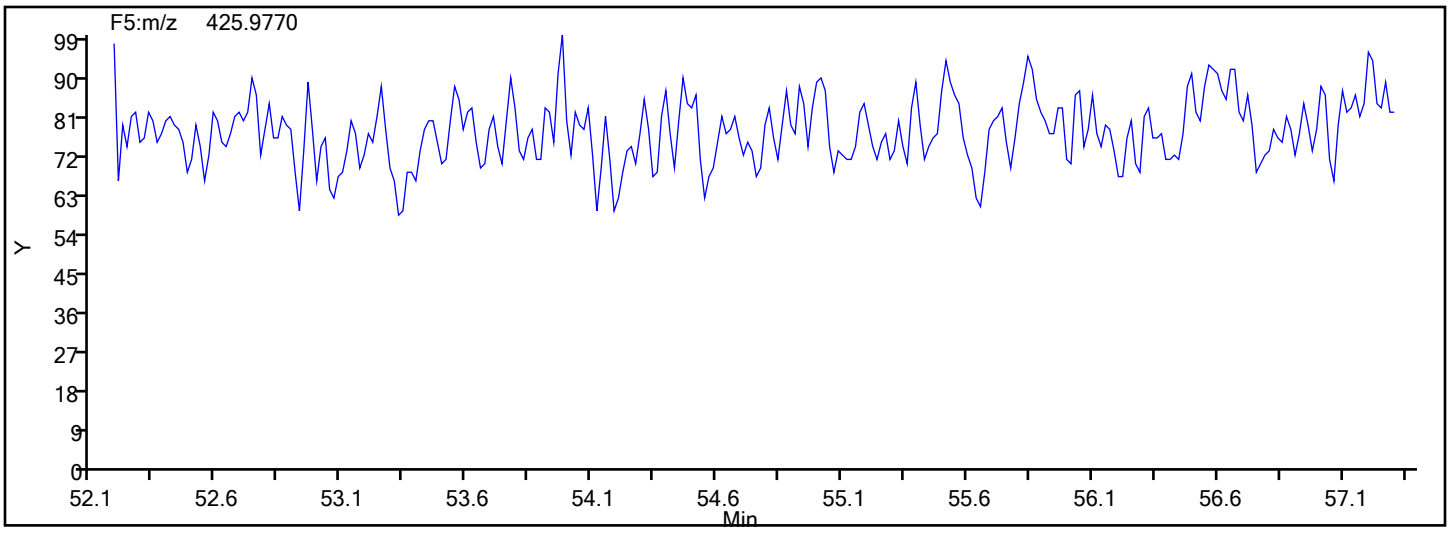
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

OCDF





OCDF Lock Mass

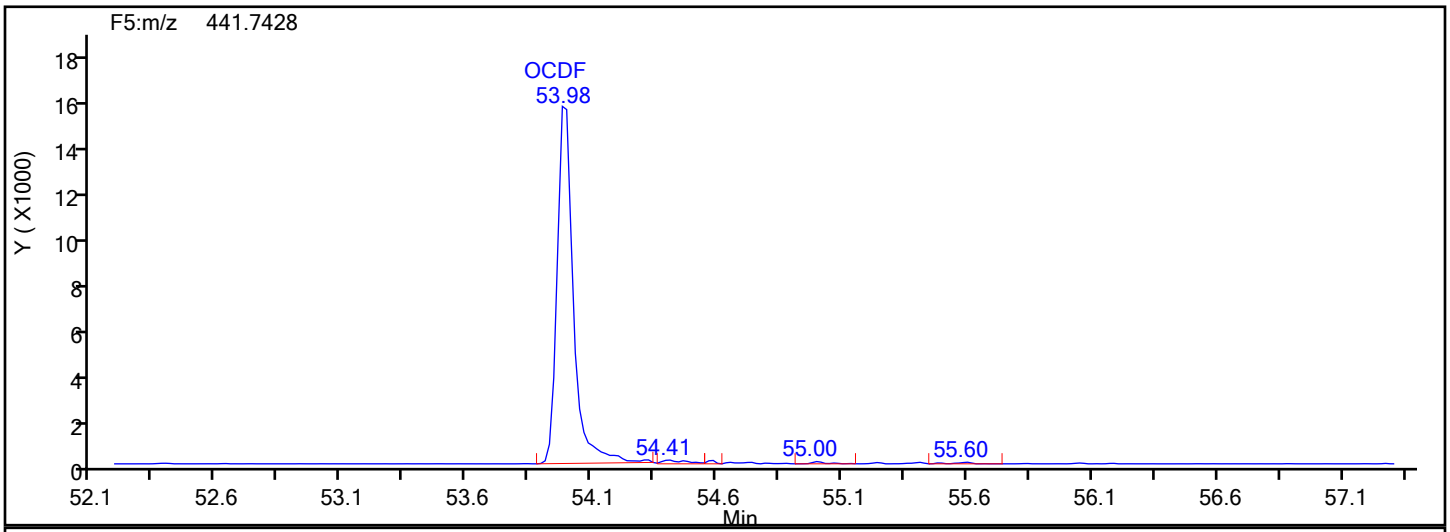


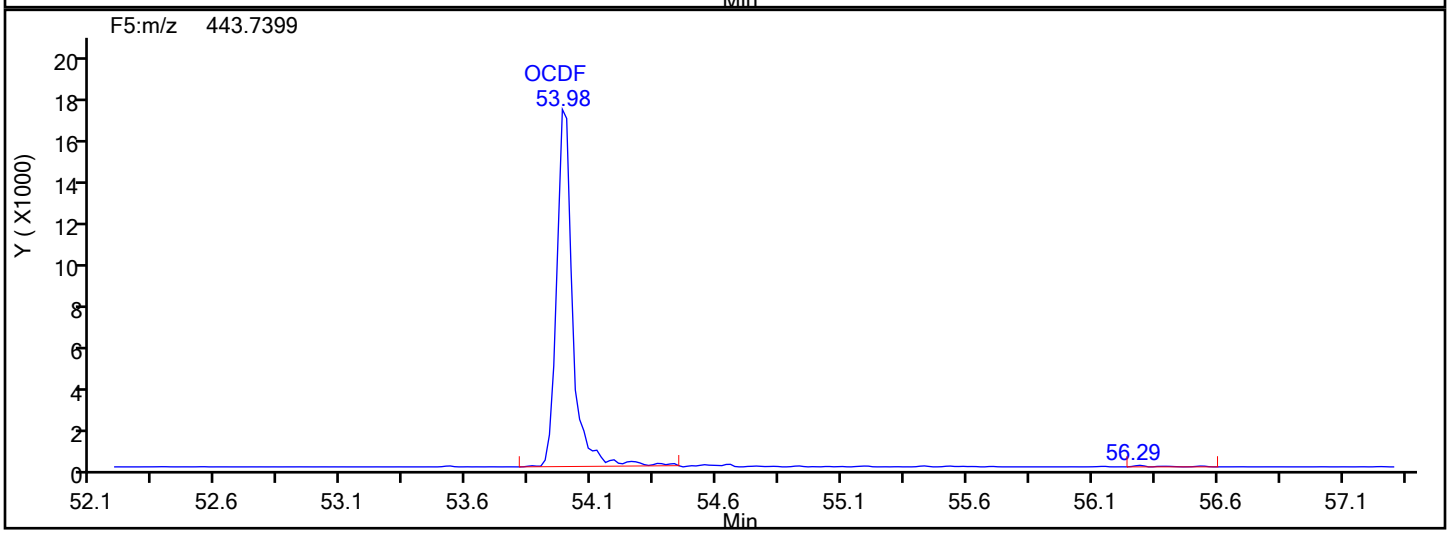
Report Date: 18-Dec-2019 11:15:43 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

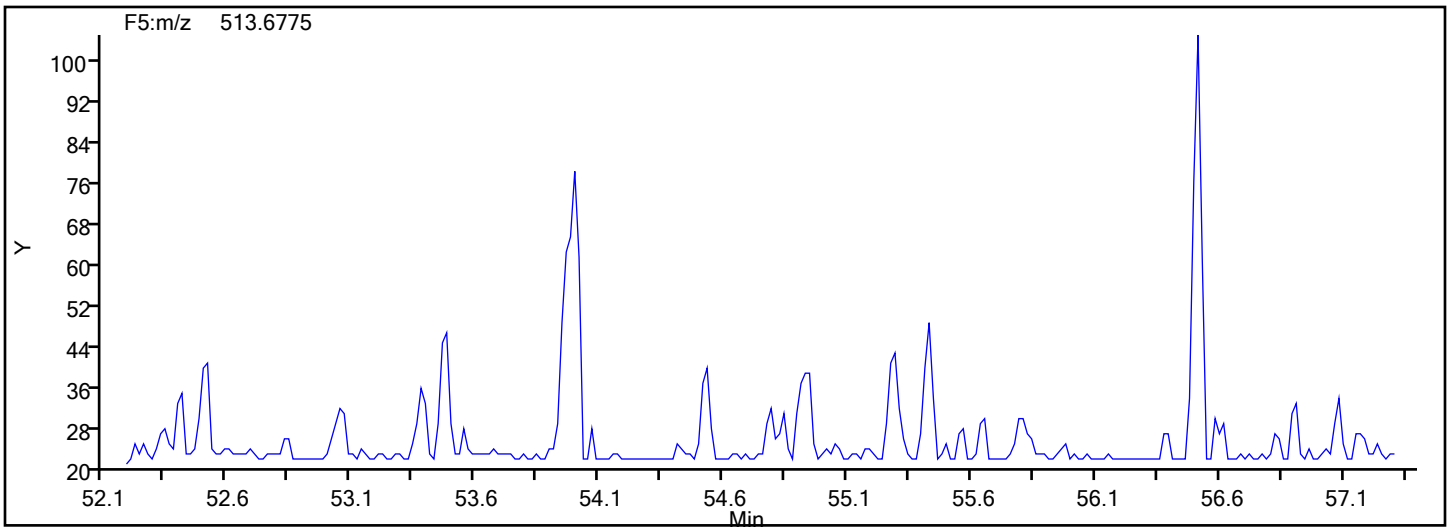
Data File:	\\chromna\Knoxville\ChromData\D2A\20191217-14069.b\140-17578-a-12-cmsda.d		
Injection Date:	18-Dec-2019 10:06:00	Injection Vol:	1.0 ul
Instrument ID:	D2A	Operator ID:	Xcalibur_System
Method:	D2A_Dioxin	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36166	Sample Line#:	14
Column Type:		Column Dia:	

OCDF





OCDF Interference Mass



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Client Sample ID: 11187072-120619-SS-SJSSA06(4-6) MSD Lab Sample ID: 140-17578-12 MSD

Matrix: Sediment Lab File ID: 140-17578-a-12-cmsd.d

Analysis Method: 1613B Date Collected: 12/06/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 10:49

Sample wt/vol: 10.08(g) Date Analyzed: 12/18/2019 10:27

Con. Extract Vol.: 20(uL) Dilution Factor: 15

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 39.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 36167 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	1950	4	24	6.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	88		24-169

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MSD
Inject. Date: 18-Dec-2019 10:27:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-018
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 11:10:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 11:10:32

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
2,3,7,8-TCDD	19:43	514299	0.82	1.2213	17.7	17.7	0.1048	0.1048	2653	a
2,3,7,8-TCDF	22:14	2277924	0.80	1.1100	39.9	39.9	0.1242	0.1242	5980	
D 13C-2,3,7,8-TCDD	19:40	79370	0.72	1.0031	2.179	2.179	0.9716	0.9716	65.38	Ma
D 13C-2,3,7,8-TCDF	22:11	171571	0.77	1.6193	2.919	2.919	0.2203	0.2203	87.56	M
$ 37Cl4-2,3,7,8-TCDD	19:43	21735		1.1834	0.5059	0.5059	0.0692	0.0692	75.89	
* 13C-1,2,3,4-TCDD	20:08	242031	0.81	1.6E+05	6.667	6.667			100	M

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d
Lims ID: 140-17578-A-12-C MSD
Client ID: 11187072-120619-SS-SJSSA06(4-6)
Sample Type: MSD
Inject. Date: 18-Dec-2019 10:27:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 15.0000
Sample Info:
Misc. Info.: 140-0014071-018
Operator ID: Xcalibur_System Instrument ID: D12C

Method: \\chromna\Knoxville\ChromData\D12C\20191217-14071.b\TCDD_TCDF_D12C.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 11:10:32 Calib Date: 03-May-2019 06:14:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Knoxville\ChromData\D12C\20190502-11646.b\icl5_190503061437.d

Column 1 : DB225 (0.32 mm) Det: F1(8.07 :27.50)
Process Host: CTX1010

First Level Reviewer: davidsonm Date: 18-Dec-2019 11:10:32

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											a
319.8965	19:43	19:43	0	1.003	231700	36727	86	215	427		a
321.8936	19:43	19:43	0	1.003	282599	44203	117	292	378	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	22:14	22:13	-1	1.002	1015367	137088	152	380	902		
305.8987	22:14	22:13	-1	1.002	1262557	169939	189	472	899	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											Ma
331.9368	19:40	19:40	-2	0.977	33333	5261	1405	3512	4		M
333.9338	19:41	19:40	-1	0.977	46037	7941	841	2102	9	0.72(0.65-0.89)	
13C-2,3,7,8-TCDF											M
315.9419	22:11	22:11	-2	1.102	74532	10683	498	1245	21		M
317.9389	22:11	22:11	-2	1.102	97039	9909	324	810	31	0.77(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	19:43	19:42	0	0.979	21735	3150	189	472	17		
13C-1,2,3,4-TCDD											M
331.9368	20:08	20:09	-1		108049	17096	1405	3512	12		M
333.9338	20:08	20:09	-1		133982	21314	841	2102	25	0.81(0.65-0.89)	

QC Flag Legend

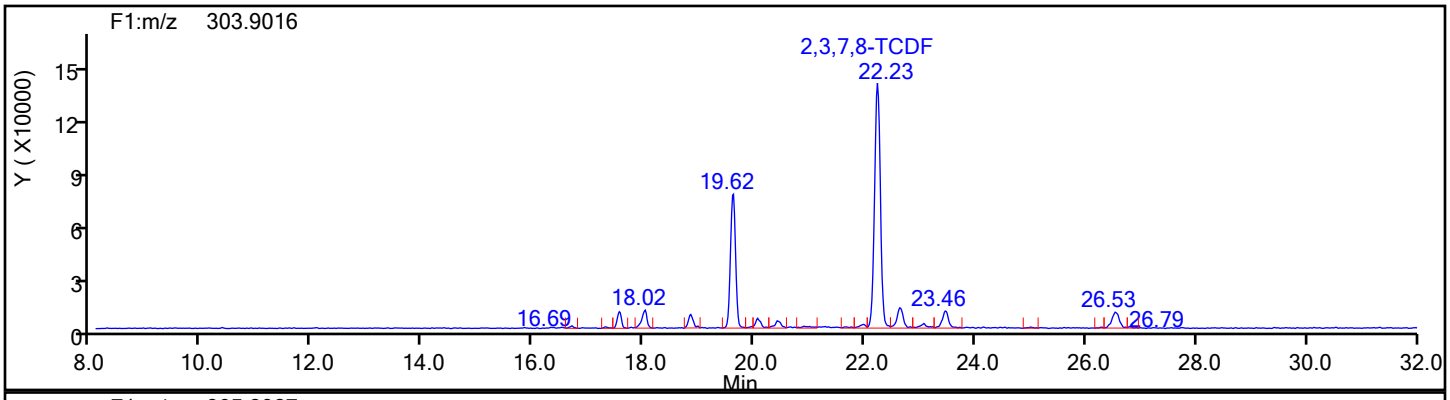
Review Flags
M - Manually Integrated
a - User Assigned ID

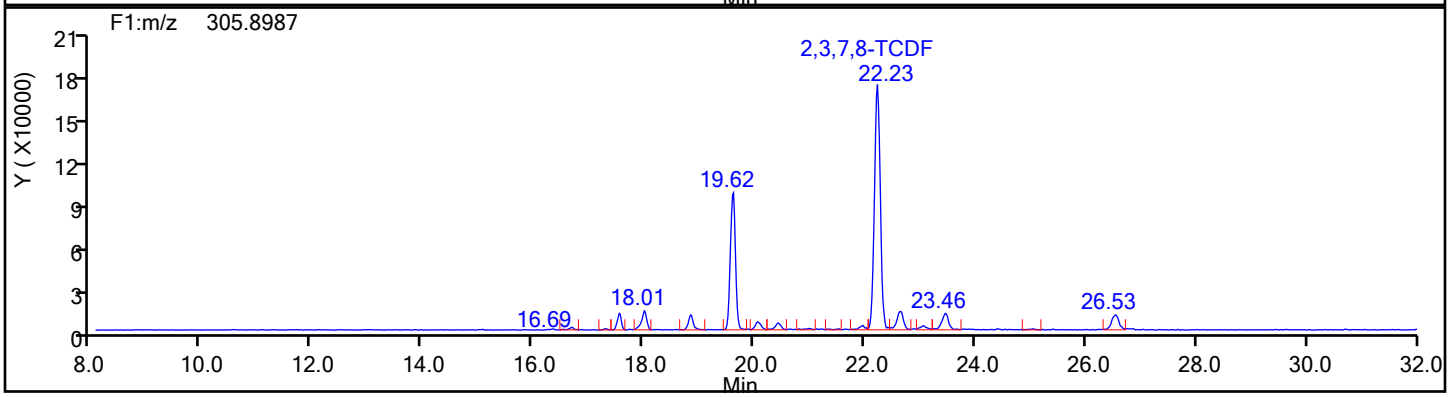
Report Date: 18-Dec-2019 11:10:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

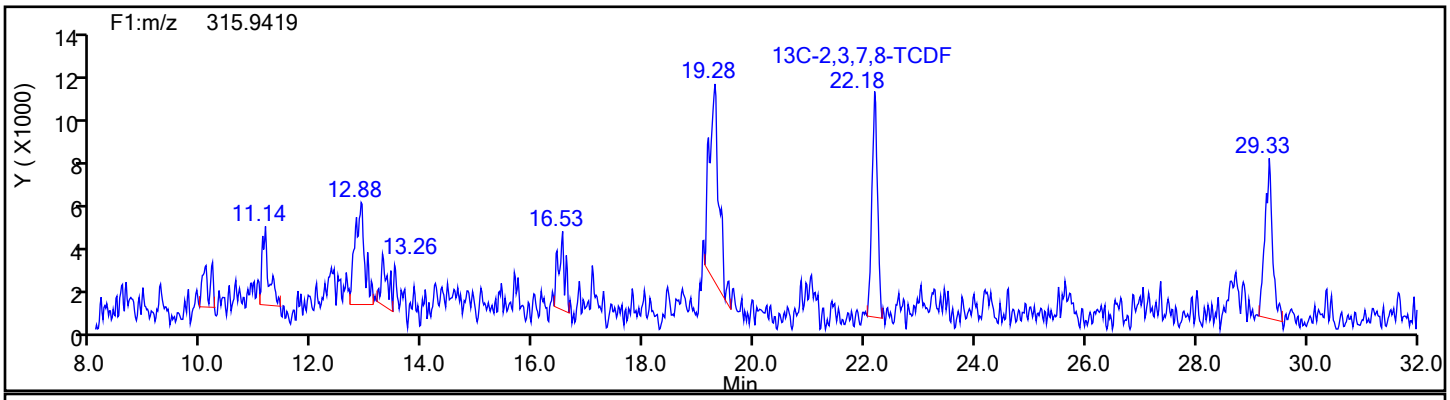
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d		
Injection Date:	18-Dec-2019 10:27:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	18
Column Type:	DB225	Column Dia:	0.32 mm

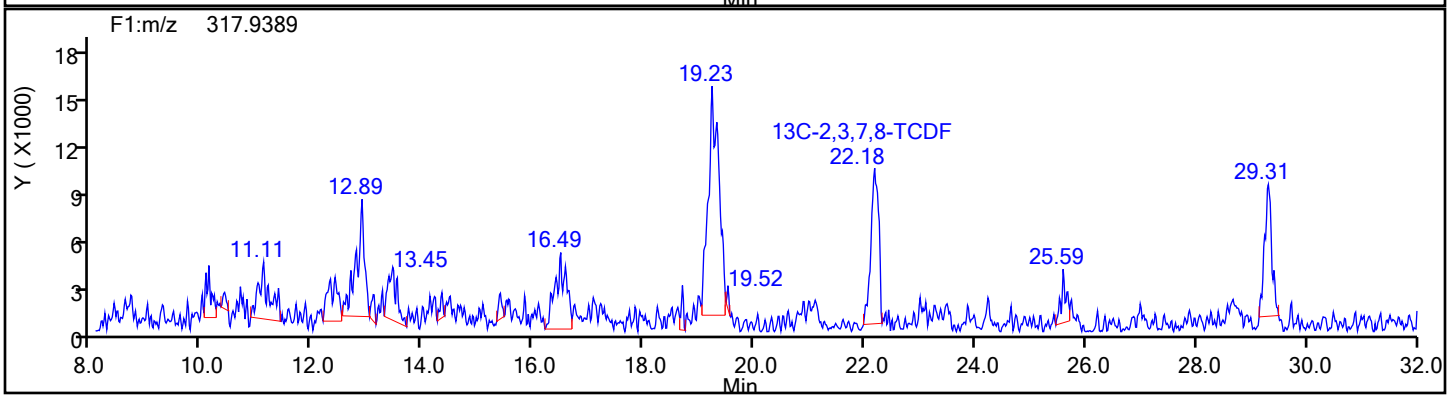
TCDF





TCDF Standards



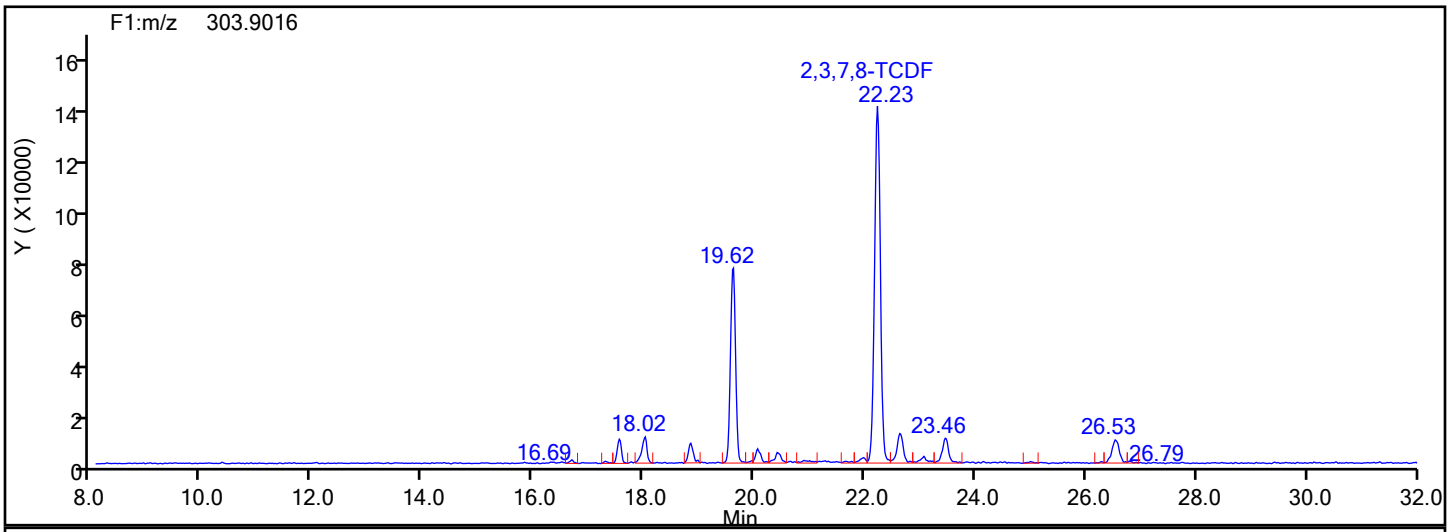


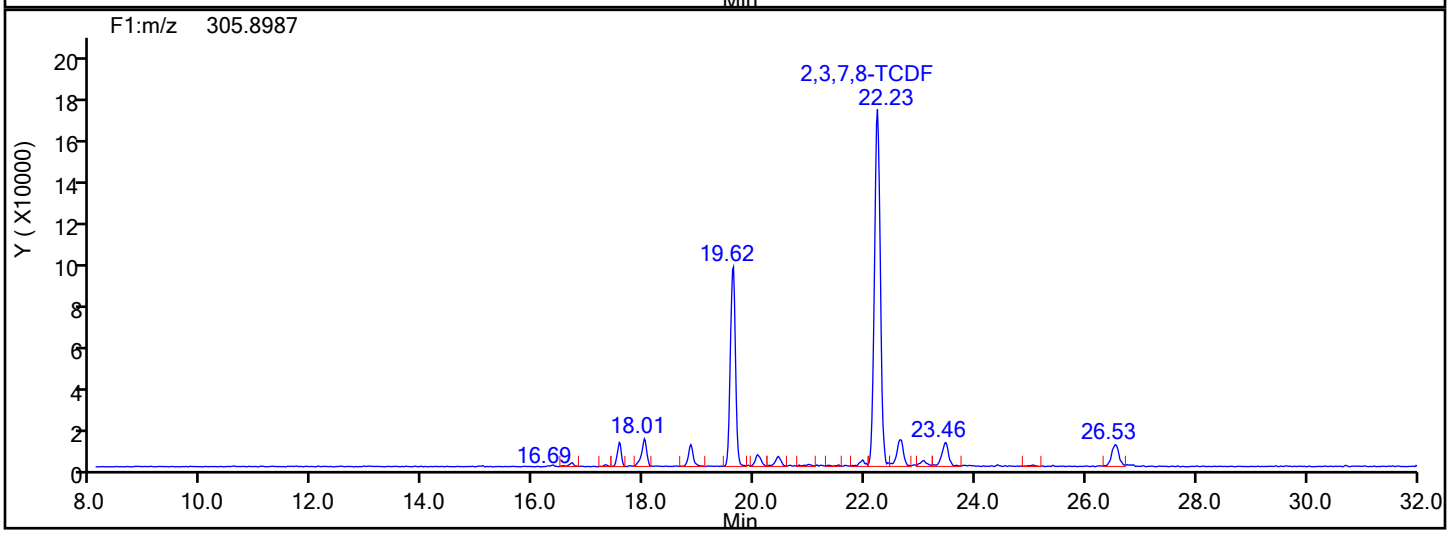
Report Date: 18-Dec-2019 11:10:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

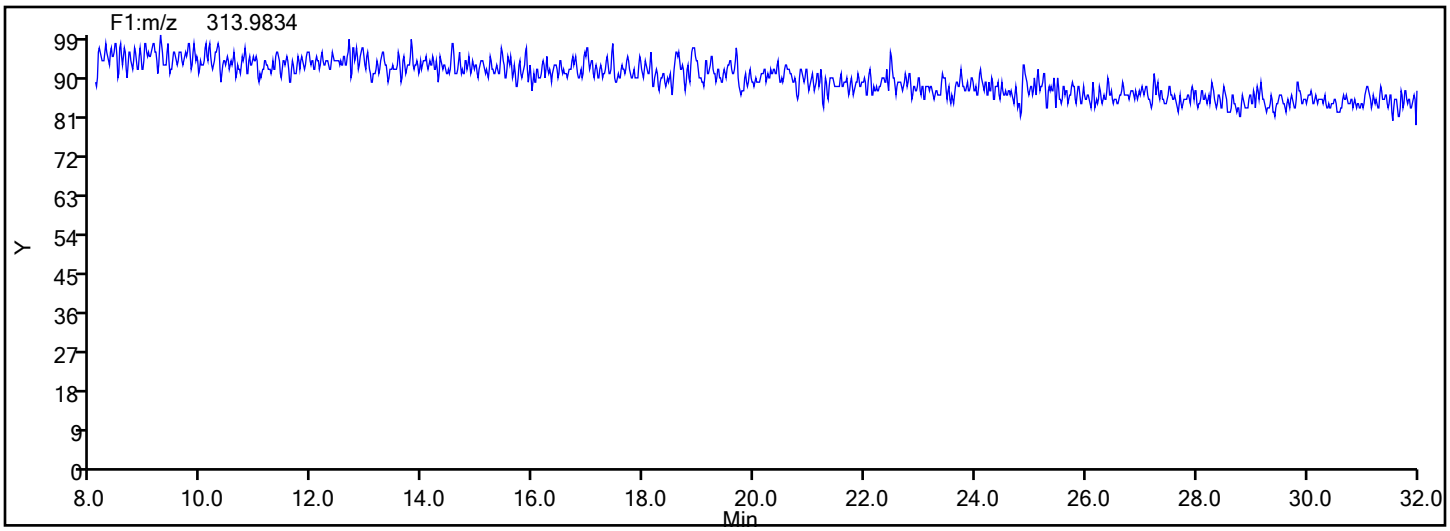
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d		
Injection Date:	18-Dec-2019 10:27:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	18
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Lock Mass

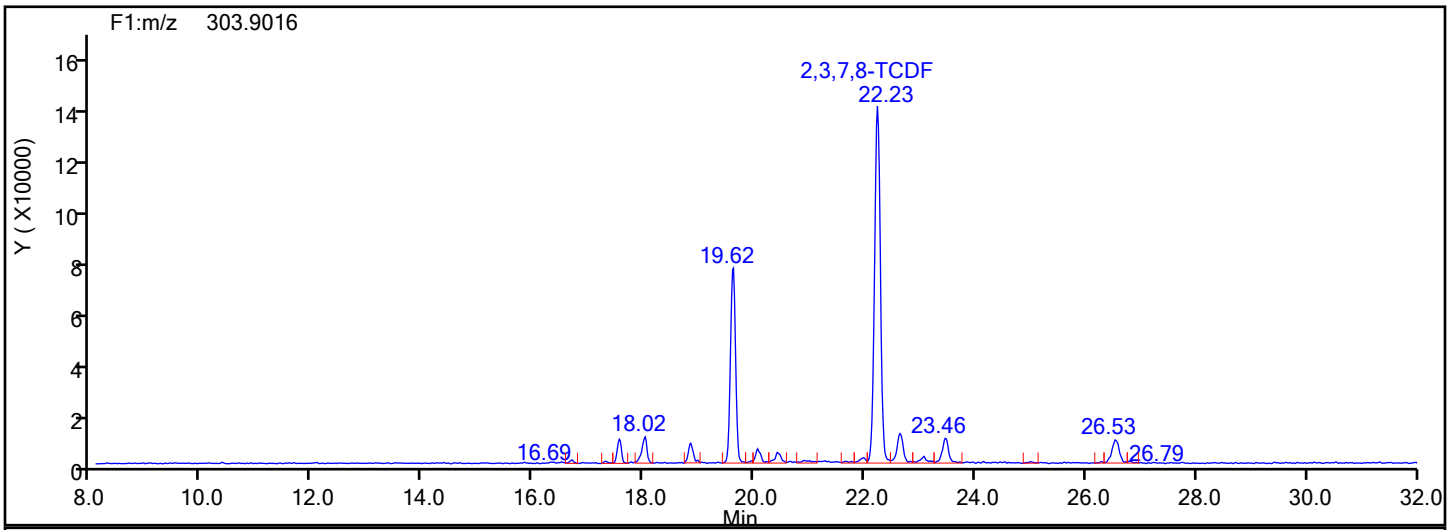


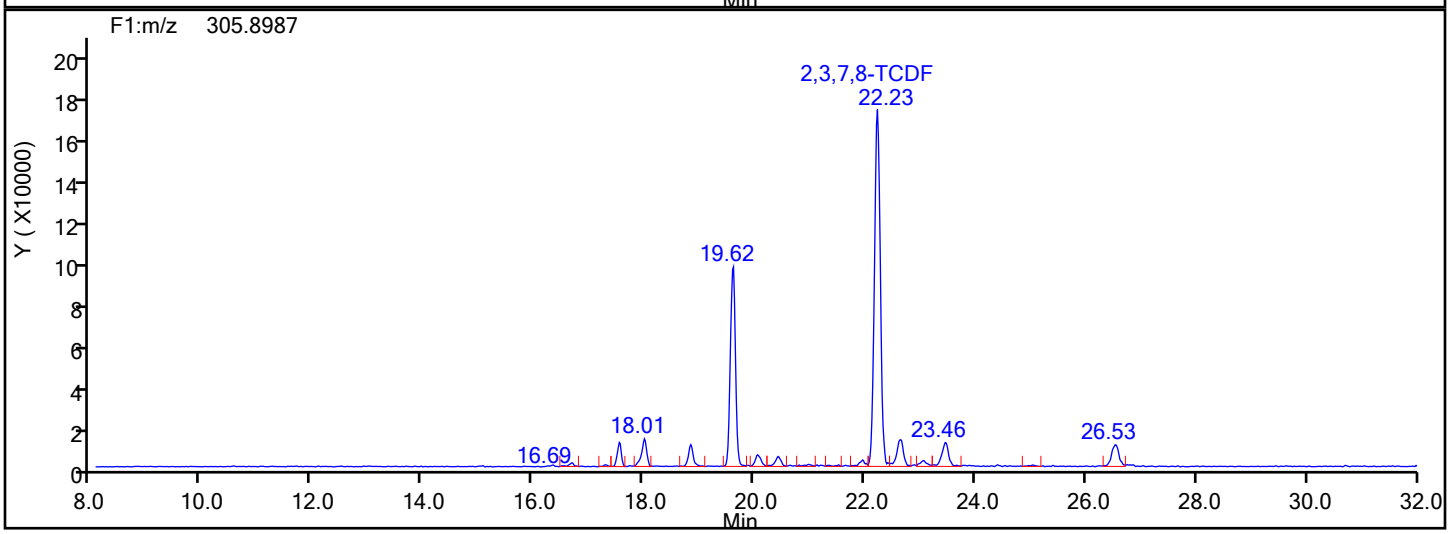
Report Date: 18-Dec-2019 11:10:33 Chrom Revision: 2.3 05-Dec-2019 09:31:18

Eurofins TestAmerica, Knoxville

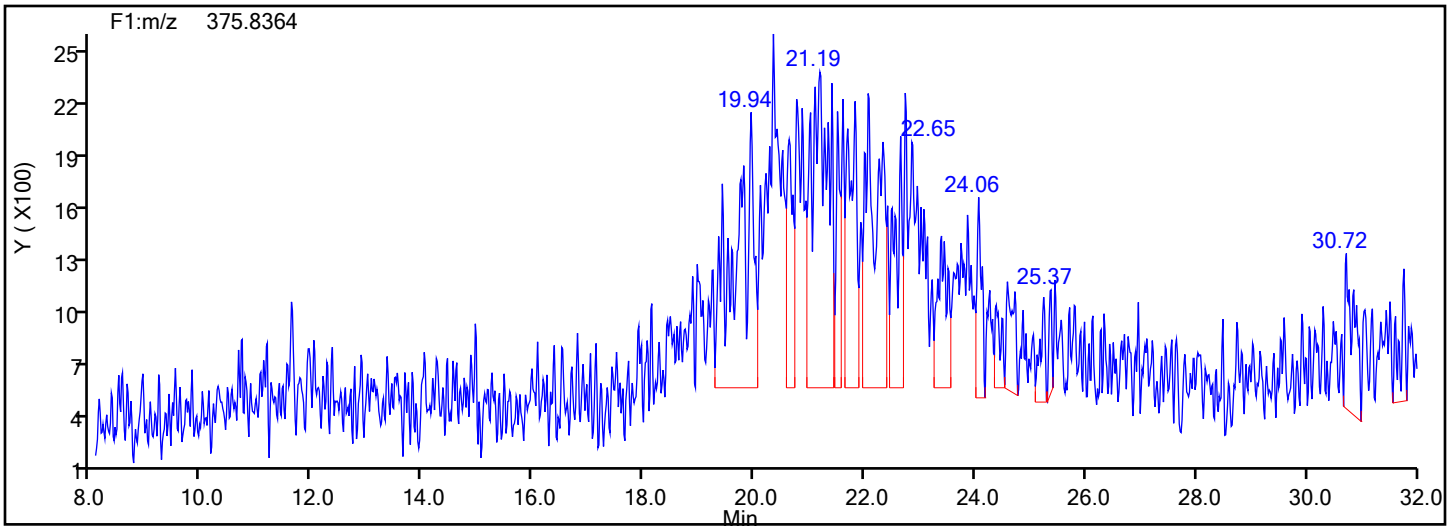
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d		
Injection Date:	18-Dec-2019 10:27:00	Injection Vol:	1.0 ul
Instrument ID:	D12C	Operator ID:	Xcalibur_System
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120619-SS-SJSSA06(4-6)		
Worklist#:	36167	Sample Line#:	18
Column Type:	DB225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

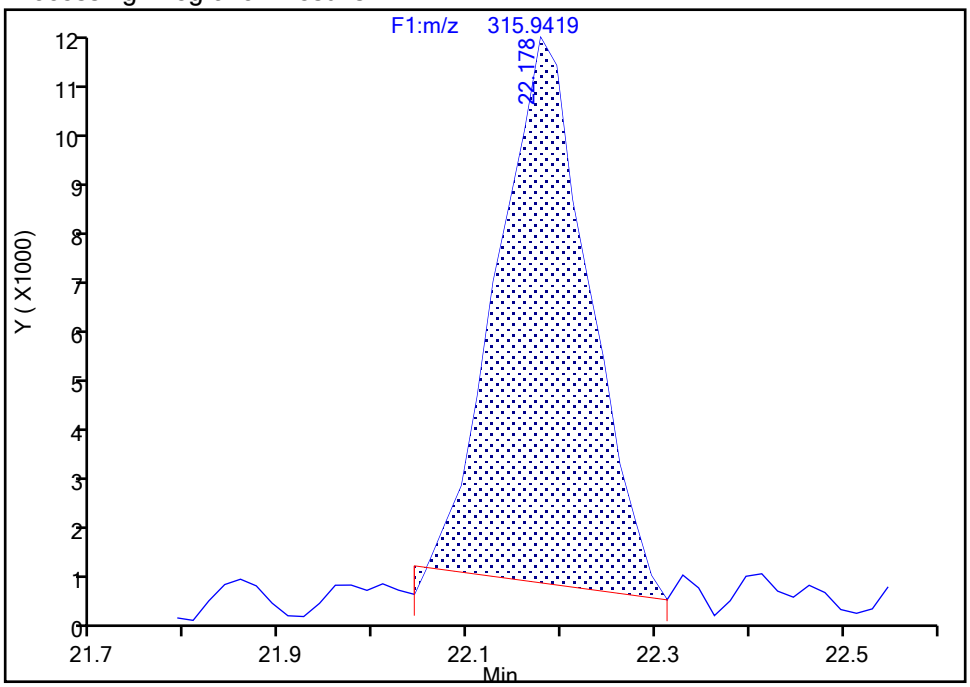
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d				
Injection Date:	18-Dec-2019 10:27:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	18
Injection Vol:	1.0 ul	Dil. Factor:	15.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 1

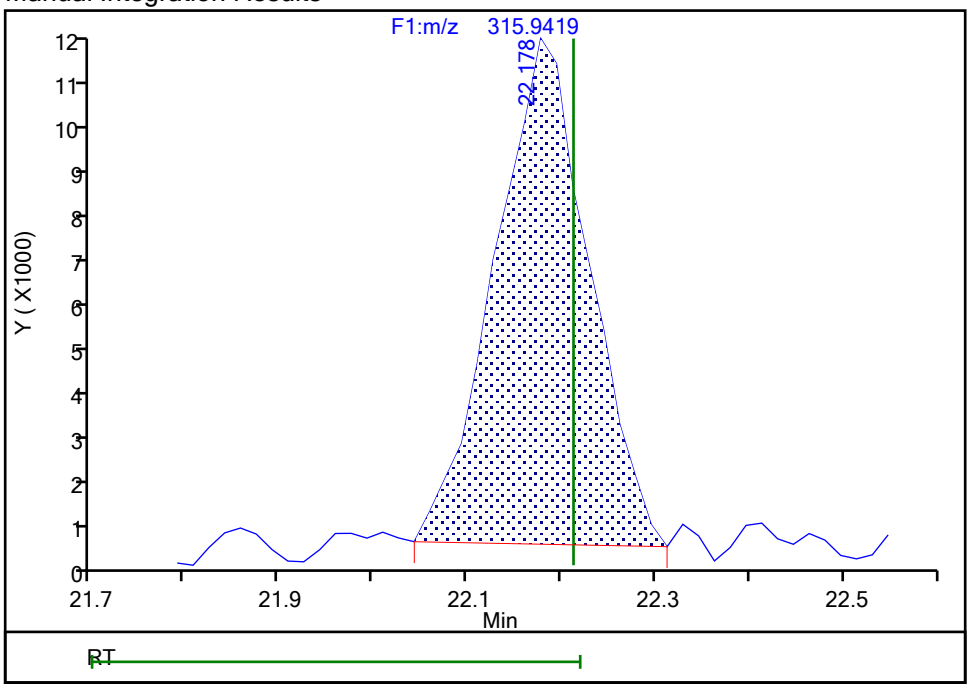
Processing Integration Results

RT: 22.18
Area: 70131
Amount: 2.743281
Amount Units: pg/ul



Manual Integration Results

RT: 22.18
Area: 74532
Amount: 2.918524
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:10:12

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Knoxville

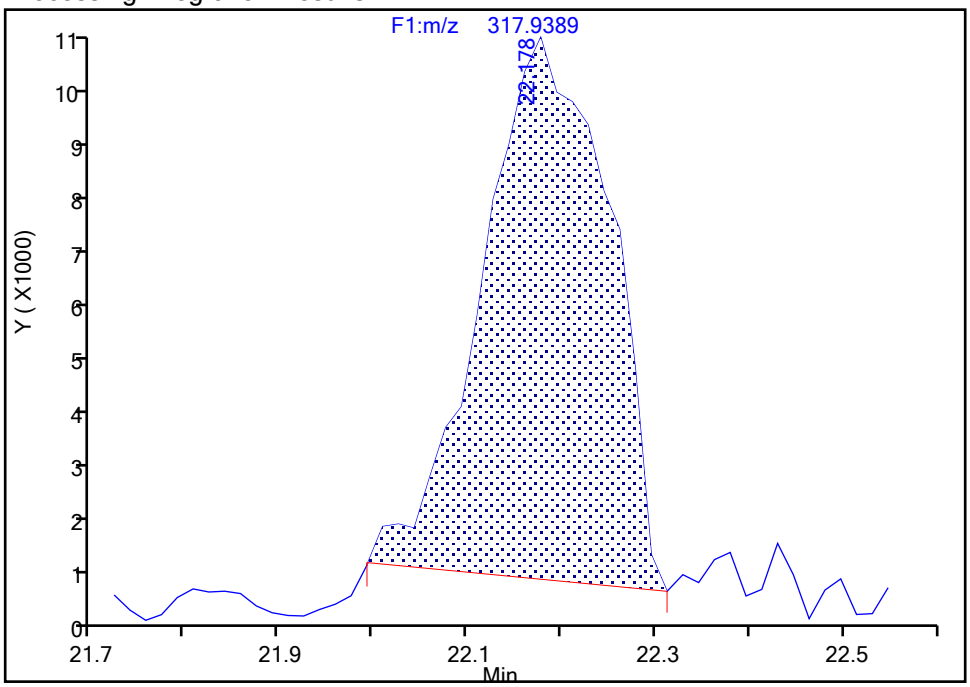
Data File:	\\chromna\Knoxville\ChromData\D12C\20191217-14071.b\140-17578-a-12-cmsd.d				
Injection Date:	18-Dec-2019 10:27:00	Instrument ID:	D12C		
Lims ID:	140-17578-A-12-C MSD				
Client ID:	11187072-120619-SS-SJSSA06(4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	18
Injection Vol:	1.0 ul	Dil. Factor:	15.0000		
Method:	TCDD_TCDF_D12C	Limit Group:	HR - 1613B - ICAL		
Column:	DB225 (0.32 mm)	Detector	F1(8.07 :27.50)		

13C-2,3,7,8-TCDF, CAS: 89059-46-1

Signal: 2

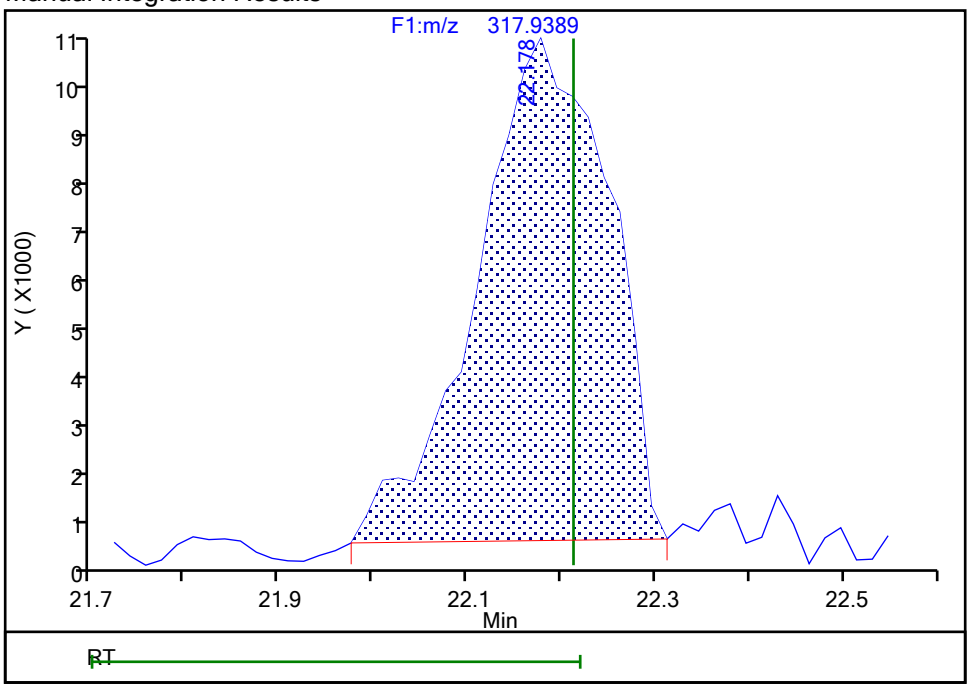
Processing Integration Results

RT: 22.18
Area: 91138
Amount: 2.743281
Amount Units: pg/ul



Manual Integration Results

RT: 22.18
Area: 97039
Amount: 2.918524
Amount Units: pg/ul



Reviewer: davidsonm, 18-Dec-2019 11:10:16

Audit Action: Manually Integrated Audit Reason: Baseline

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Start Date: 05/16/2014 10:23

Analysis Batch Number: 7768 End Date: 05/16/2014 20:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 140-7768/1		05/16/2014 10:23	1	d3140516w1.d	RTX-5 0.32(mm)
IC 140-7768/2		05/16/2014 14:26	1	d3140516i1.d	RTX-5 0.32(mm)
IC 140-7768/3		05/16/2014 15:26	1	d3140516i2.d	RTX-5 0.32(mm)
IC 140-7768/4		05/16/2014 16:27	1	d3140516i3.d	RTX-5 0.32(mm)
IC 140-7768/5		05/16/2014 17:29	1	d3140516i4.d	RTX-5 0.32(mm)
IC 140-7768/6		05/16/2014 18:31	1	d3140516i5.d	RTX-5 0.32(mm)
ICV 140-7768/7		05/16/2014 20:36	1	d3140516ss.d	RTX-5 0.32(mm)

TestAmerica Knoxville Dioxin GC/MS Initial Calibration Data Review / Narrative Checklist
Method: 1613B - KNOX-ID-0004-R12

Mass Res. / Date/Time:	5-16-14/10:01	Inst:	D2A	Win Filename:	d31405160l	Col Perf Filename:	d31405160l

CS0.5 Filename	CS1 Filename	CS2 Filename	CS3 Filename	CS4 Filename	CS5 Filename
d31405161 6	d31405161 1	d31405160 2	d31405160 3	d31405161 4	d31405161 5

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Was the mass resolution documented before beginning the initial calibration?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on PFK m/z 304.9824 and m/z 380.9760 (MAT) and > 10,000 on FC43 m/z 313.9838, 351.9802 and 363.9807? FC43 m/z 313.9838, 351.9802 and 375.9802? FC43 m/z 375.9802, 401.9770 and 413.9770? FC43 m/z 413.9775, 425.9770 and 463.9738? FC43 m/z 425.9775, 463.9743 and 501.9706? (DFS)		✓			✓
3. Was the measured exact mass of m/z 380.9760 (PFK) or m/z363.9807 (FC43) within 5 ppm at reduced accelerating voltage?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Were the five calibration standard solutions, at the concentrations specified in Table 5 of the SOP, analyzed (6 point calibration used for microwave extractions)?		✓			✓
7. Was date/time of analysis verified between analysis header and logbook as correct?		✓			✓
8. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21) and formula (Section 10.2.7)?		✓			✓
9. Is the retention time of $^{13}C_{12}$-1,2,3,4-TCDD >25.0 minutes on the DB/Rtx-5 column (15.0 minutes on the DB/Rtx-225 column)?		✓			✓
10. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3?		✓			✓
11. Are %RSD ≤20% for all unlabeled native analytes except 1,2,3,7,8,9-HxCDD and OCDF?		✓			✓
12. Are %RSD ≤35% for 1,2,3,7,8,9-HxCDD and OCDF and all labeled internal standards?		✓			✓
13. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including internal standards?		✓			✓
14. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
15. Was the second source ICV standard analyzed according to Sec 10.2.9 of the SOP?		✓			✓
16. If manual integrations were performed, are they clearly identified, initialed and dated?	✓				✓
17. Were before/after chromatograms reviewed to determine whether the software and manual integrations were appropriate?		✓			✓
18. Were manual integrations documented properly?	✓				✓
19. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				✓
20. Does the ICAL folder contain **complete** data in the following order: Data review checklist, a **complete** run log, Avg. %RSD summary, Ratio summary, Calculation summary, PFK/FC43 resolution/peak match documentation; Total RIC, EICP's and manual integration - for window and all standards, in order from low to high standard, ICV Summary Table, Calculation Summary, and chromatograms?		✓			✓

Analyst:	Date: 5/19/14	2nd Level Reviewer:	Date: 5/19/14
Comments:		Comments:	

ID023R15doo, 041913

TestAmerica Knoxville Dioxin GC/MS Initial Calibration Data Review / Narrative Checklist
Method: 8290/8290A - KNOX-ID-0004-R12

Mass Res. Y Date/Time:	5/16/14 10:01	Instr:	D2A	Win Filename:	d31405160 1	Col Perf Filename:	d31405160 1

CS0.5 Filename	CS1 Filename	CS2 Filename	CS3 Filename	CS4 Filename	CS5 Filename
d31405160 i 6	d31405160 i 1	d31405160 i 2	d31405160 i 3	d31405160 i 4	d31405160 i 5

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Was the mass resolution documented before beginning the initial calibration?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on PFK m/z 304.9824 and m/z 380.9760 (MAT) and > 10,000 on FC43 m/z 313.9838, 351.9802 and 363.9807? FC43 m/z 313.9838, 351.9802 and 375.9802? FC43 m/z 375.9802, 401.9770 and 413.9770? FC43 m/z 413.9775, 425.9770 and 463.9738? FC43 m/z 425.9775, 463.9743 and 501.9706? (DFS)		✓			✓
3. Was the measured exact mass of m/z 380.9760 (PFK) or 363.9807 (FC43) within 5 ppm at reduced accelerating voltage?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Were the five calibration standard solutions, at the concentrations specified in Table 5 of the SOP, analyzed (6 point calibration used for microwave extractions)?		✓			✓
7. Was date/time of analysis verified between analysis header and logbook as correct?		✓			✓
8. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3?		✓			✓
10. Are %RSD ≤20% for all unlabeled native analytes?		✓			✓
11. 8290, are %RSD ≤30% for all labeled internal standards?		✓			✓
12. 8090A, are %RSD ≤20% for all labeled internal standards?		✓			✓
13. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including internal standards?		✓			✓
14. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
15. Was the second source ICV standard analyzed according to Sec 10.2.9 of the SOP?		✓			✓
16. If manual integrations were performed, are they clearly identified, initialed and dated?	✓				✓
17. Were before/after chromatograms reviewed to determine whether the software and manual integrations were appropriate?		✓			✓
18. Were manual integrations documented properly?	✓				✓
19. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				✓
20. Does the ICAL folder contain **complete** data in the following order? Data review checklist, a **complete** runlog, Avg. %RSD summary, Ratio summary, Calculation summary, PFK/FC43 resolution/peak match documentation; Total RIC, EICP's and manual integration - for window and all standards, in order from low to high standard, ICV Summary Table, Calculation Summary, and chromatograms?		✓			✓

Analyst:	Date: 5/19/14	2nd Level Reviewer:	Date: 5/19/14
Comments:		Comments:	

ID022R18.doc, 042213

TestAmerica Knoxville Dioxin GC/MS Initial Calibration Data Review / Narrative Checklist
Method: 8290/8290A - KNOX-ID-0004-R14

Mass Res. ✓ Date/Time:	5/16/14 10:01	Inst:	D2A	Win Filename:	d31405l6w1	Col Perf Filename:	d31405l6w1

CS0.5 Filename	CS1 Filename	CS2 Filename	CS3 Filename	CS4 Filename	CS5 Filename
d31405l6i6	d31405l6i1	d31405l6i2	d31405l6i3	d31405l6i4	d31405l6i5

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Was the mass resolution documented before beginning the initial calibration?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on PFK m/z 304.9824 and m/z 380.9760 (MAT) and > 10,000 on FC43 m/z 313.9838, 351.9802 and 363.9807? FC43 m/z 313.9838, 351.9802 and 375.9802? FC43 m/z 375.9802, 401.9770 and 413.9770? FC43 m/z 413.9775, 425.9770 and 463.9738? FC43 m/z 425.9775, 463.9743 and 501.9706? (DFS)		✓			✓
3. Was the measured exact mass of m/z 380.9760 (PFK) or 363.9807 (FC43) within 5 ppm at reduced accelerating voltage?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met? Identification of all first and last eluters of the eight homologue retention time windows and documentation by labeling (F/L) on the chromatogram Absolute retention times for switching from one homologous series to the next ≥ 10 seconds for all components of the mixture.		✓			✓
7. Were the five calibration standard solutions, at the concentrations specified in Table 5 of the SOP, analyzed (6 point calibration used for microwave extractions)?		✓			✓
8. Was date/time of analysis verified between analysis header and logbook as correct?		✓			✓
9. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
10. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3?		✓			✓
11. Are %RSD ≤20% for all unlabeled native analytes?		✓			✓
12. 8290, are %RSD ≤30% for all labeled internal standards?		✓			✓
13. 8090A, are %RSD ≤20% for all labeled internal standards?		✓			✓
14. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including internal standards?		✓			✓
15. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
16. Was the second source ICV standard analyzed according to Sec 10.2.9 of the SOP?		✓			✓
17. Was DoD ICV Criteria met? (For unlabeled standards, RF within ± 20% D of RF established in the ICAL.For labeled standards, RF within ± 30% D of the mean RF established in ICAL.		✓			✓
1. If manual integrations were performed, are they clearly identified, initialed and dated?	✓				✓
2. Were before/after chromatograms reviewed to determine whether the software and manual integrations were appropriate?		✓			✓
3. Were manual integrations documented properly?	✓				✓
18. If criteria were not met, was a NCM generated, approved by supervisor, and copy included in folder?	✓				✓
19. Does the ICAL folder contain complete data in the following order? Data review checklist, a complete runlog, Avg. %RSD summary, Ratio summary, Calculation summary, PFK/FC43 resolution/peak match documentation; Total RIC, EICP's and manual integration - for window and all standards, in order from low to high standard, ICV Summary Table, Calculation Summary, and chromatograms?		✓			✓

Analyst:	Date: 11/18/14	2nd Level Reviewer :	Date: 11/18/14
Comments:		Comments:	

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Start Date: 05/03/2019 01:30

Analysis Batch Number: 29777 End Date: 05/03/2019 12:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 140-29777/1		05/03/2019 01:30	1	d2190503w1.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 02:05	1		DB 225 0.25(mm)
ZZZZZ		05/03/2019 02:23	1		DB 225 0.25(mm)
IC 140-29777/4		05/03/2019 02:43	1	icl1_190503024318.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 03:17	1		DB 225 0.25(mm)
IC 140-29777/6		05/03/2019 03:35	1	icl2_190503033522.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 04:10	1		DB 225 0.25(mm)
IC 140-29777/8		05/03/2019 04:28	1	icl3_190503042827.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 05:03	1		DB 225 0.25(mm)
IC 140-29777/10		05/03/2019 05:21	1	icl4_190503052133.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 05:56	1		DB 225 0.25(mm)
IC 140-29777/12		05/03/2019 06:14	1	icl5_190503061437.d	DB 225 0.25(mm)
ZZZZZ		05/03/2019 06:49	1		DB 225 0.25(mm)
ZZZZZ		05/03/2019 07:07	1		DB 225 0.25(mm)
ZZZZZ		05/03/2019 07:25	1		DB 225 0.25(mm)
ZZZZZ		05/03/2019 07:43	1		DB 225 0.25(mm)
ICV 140-29777/17		05/03/2019 12:43	1	icv_190503124322.d	DB 225 0.25(mm)

DB-225

Eurofins/TestAmerica Knoxville Dioxin GC/MS Initial Calibration Data Review / Narrative Checklist

Method: ✓8290 ✓8290A ✓1613B - KNOX-ID-0004-R19

Mass Res.✓ Date/Time:	5/3/19 1:15	Inst:	D12C	Win Filename:	N/A	Col Perf Filename:	d2190503w1
ADII Batch #(s):	29777, 79, 81, 83	WL#:	116446			2nd Source:	ICV

CS0.5 Filename	CS1Filename	CS2 Filename	CS3 Filename	CS4 Filename	CS5 Filename
N/A	IC1	IC2	IC3	IC4	IC5

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd √
1. Was the mass resolution documented before beginning the initial calibration and attached to the IC-1 in the AD II batches?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses as listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5ppm at reduced accelerating voltage for masses listed in SOP section 10.2.4 for PFK or FC43?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?	✓				✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria of F/L labeled on calibration standards met?	✓				✓
7. Were the five calibration standard solutions, at the concentrations specified in Table 5 of the SOP analyzed?		✓			✓
8. Was date/time of analysis verified as correct?		✓			✓
9. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21) and formula (Section 10.2.7)?		✓			✓
10. Is the retention time of $^{13}C_{12}$-1,2,3,4-TCDD >25.0 minutes on the Rtx-5 column (15.0 minutes on the DB-225 column)?		✓			✓
11. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B only)?		✓			✓
12. Are %RSD for all unlabeled target analytes and labeled IDA's within the limits listed in the SOP, Table 5?		✓			✓
13. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including internal standards?		✓			✓
14. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
15. Was the second source ICV standard analyzed according to Sec 10.2.9 of the SOP?		✓			✓
16. Was DoD ICV Criteria met (8290A/1613B only)? For unlabeled standards, RF within ± 20% D of RF established in the ICAL and for labeled standards, RF within ± 30% D of the ICAL RF established in ICAL. Was the ICV criteria listed in section 10.2.9.1 of the SOP met for all non-DOD analyses?		✓			✓
17. If manual integrations were performed, are the analyst's name, reason and date noted in ADII?		✓			✓
18. Were all graphics checked including before/after chromatograms reviewed to determine whether the software and manual integrations were appropriate?		✓			✓
19. If criteria were not met, was a NCM generated?	✓				✓
20. Do the ICAL AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: [signature] **Date:** 5/3/19

Comments:

2nd Level Reviewer: [signature] **Date:** 5/3/19

Comments:

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Start Date: 12/17/2019 01:01

Analysis Batch Number: 36126 End Date: 12/17/2019 11:08

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDMCCV 140-36126/1		12/17/2019 01:01	1	d3191217s1.d	RTX-5 0.32(mm)
LCS 140-35991/21-A		12/17/2019 02:04	1	lcs140-3599121-a.d	RTX-5 0.32(mm)
ZZZZZ		12/17/2019 03:04	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 03:16	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 03:28	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 03:44	1		RTX-5 0.32(mm)
MB 140-35991/20-A		12/17/2019 04:00	1	mb140-3599120-a.d	RTX-5 0.32(mm)
140-17578-1		12/17/2019 05:02	1	140-17578-a-1-a.d	RTX-5 0.32(mm)
140-17578-2		12/17/2019 06:03	1	140-17578-a-2-a.d	RTX-5 0.32(mm)
140-17578-3		12/17/2019 07:04	1	140-17578-a-3-a.d	RTX-5 0.32(mm)
140-17578-4		12/17/2019 08:05	1	140-17578-a-4-a.d	RTX-5 0.32(mm)
140-17578-5		12/17/2019 09:06	1	140-17578-a-5-a.d	RTX-5 0.32(mm)
140-17578-6		12/17/2019 10:07	1	140-17578-a-6-a.d	RTX-5 0.32(mm)
140-17578-7		12/17/2019 11:08	1	140-17578-a-7-a.d	RTX-5 0.32(mm)

Eurofins/TestAmerica Knoxville Dioxin GC/MS Continuing Calibration Review / Narrative Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

Start Mass Res. ✓:	00:49	Start Ver Filename:	231912175|	Inst/Date:	D2P
End Mass Res. ✓:	12:20	Win/CPS Filename:	1	ICAL Event #(s):	825
WL#:	14051	End Ver Filename:	NA	Job # (s):	140-17578
AD Batch #(s):	36126				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd √
1. Was the mass resolution documented at both the beginning and end of the 12 hour shift and is data verified as within the 12 hour clock? Was the continuing calibration performed at the beginning of the shift (all methods) and ending of the shift (8290/8290A)?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5 ppm at reduced accelerating voltage for masses listed in the SOP section 10.2.4?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met?		✓			✓
7. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
8. Are the measured RRFs and/or concentrations for each compound within the specified control limits in Table 7 for all PCDDs/PCDFs?		✓		☐CCV-Capping, RR Confirms (NCM#_____) ☐CCV-Capping-Detects (8290/8290A) (NCM#_____) ☐CCV-Capping-IDA (8290/8290A) (NCM#_____)	✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B)?		✓			✓
10. Is the retention time of C^{13}-1,2,3,4-TCDD >25 minutes on the Rtx-5 column and/or >15.0 min on the DB-225?		✓			✓
11. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including IDA's?		✓			✓
12. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
13. Were all reagents used for calibration verified as correct in the reagent tab?		✓			✓
14. If manual integrations were performed, are the analyst name, reason, and date noted in the AD II batches? Are before and after graphics uploaded to AD II?	✓				✓
15. Were all graphics checked after upload to AD II? Was the mass res check scanned and attached to the corresponding CCV?		✓			✓
16. If criteria were not met, was a NCM generated?	✓				✓
17. Do the AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: PMP **Date:** 12/17/19

Comments:

2nd Level Reviewer: [signature] **Date:** 12/17/19

Comments:

Eurofins/TestAmerica Knoxville Dioxin Batch Data Review Checklist WL #: 140511
Method: __8290 __8290A X1613B - KNOX-ID-0004-R20 ADII Batch #(s): 36126
Job #(s): 140-17578

Review Items	N/A	Yes	No	Why is data reportable?	2nd √
1. Was the correct ICAL used for quantitation? (Check ICAL event number in every sample and CCV.)		✓		ICAL Event # 825	✓
2. Has a Continuing Calibration Checklist been completed for each work list?		✓			✓
3. Were all special project requirements met (checked in backlog report and in AD II under notes)?		✓			✓
4. DoD requirements met?	✓			☐ NCM#140-11724: Add to Case Narrative if Manual Integrations Performed ☐ Narrate reasons for multiple analyses of samples	✓
5. Were the prep factors and dilution factors verified in AD II?		✓		☐ **Dilution-Respike IDA.** (NCM#_____)	✓
6. Is date/time of analysis correct and within the 12 hour clock?		✓			✓
7. Sample analyses done within preparation and analytical HT? (Check for H-flag in sample result in AD II.)		✓		☐ **Holding Time-Initial Analysis** (NCM#_____) ☐ **Holding Time-Reanalysis** (NCM#_____)	✓
8. Are IDA ratios within limits specified in Table 22 of the SOP?		✓		☐ **Abundance ratio outside limit** (NCM#_____)	✓
9. Are IDAs and cleanup standards within QC limits specified in Table 13?		✓		☐ **IDA-Low-S/N 10:1** (NCM#_____) ☐ **IDA-High-Isotope Dilution** (NCM#_____)	✓
10. Were reported PCDD/Fs which did not meet the criteria below properly calculated and reported as EMPCs? • RT of 2378 isomers within SOP Table 3 limits. • RT of non-2378 isomers within established first/last windows. • Both native ions maximized within ±2 seconds. • Ion abundance ratios within the control limits specified in Table 22 (not adjusted for 8290A). • No corresponding peak at PCDPE mass (**dpe tab checked and flag added in peak review**). • Ion suppression tab checked and **flags added in peak review if needed.** • Co-elution (CI) flags **added manually in AD II if needed**.		✓		all except #7.	✓
11. Were all 2378-TCDF hits greater than or equal to the ML turned to acceptable on the primary column and confirmed on the DB-225 confirmation column?		✓		Were all of the samples marked as acceptable for TCDF analyzed on a DB-225 column and the **lower** result reported?	✓
12. Are non-detects that are G-qualified narrated?	✓			☐ (NCM#_____)	✓
13. Are positive results > ML within calibration range?		✓		☐ **ICAL-Range Exceed;No Sat.** (NCM#_____) ☐ **non-2378's or OCDD/F** (NCM#_____)	✓
14. Are all manual integrations documented with analyst name, reason, and date noted in AD II?		✓			✓
15. Were all graphics uploaded into AD II?		✓			✓
16. Final report acceptable (1. Job Data Review was checked and all CCVs, QC, and samples are turned to 2nd Level, 2. The narrative was checked in Supervisor Desktop for all deviations and grammar errors, and 3. All QC links were verified and at least one sample from every job is linked to the ICAL)?		✓			✓
17. LCS/LCSD done per prep batch and all analytes within limits?		✓		☐ **LCS/LCSD-Insuff. Sample** (NCM#_____) ☐ **LCS/LCSD-%R High** (NCM#_____)	✓
18. Method blank done per prep batch, method/instrument blank analyzed with each sequence and analytes present in the method blank < ML or within specific program requirements?		✓		☐ **Method Blank-Report, 10X** (NCM#_____) ☐ **Method Blank-Report, ND** (NCM#_____) ☐ **Method Blank-Insuff. Sample** (NCM#_____)	✓

1st Level Reviewed by: [signature] **Date:** 12/17/19
Comments:

2nd Level Reviewed by: [signature] **Date:** 12-17-19
Comments:

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Start Date: 12/17/2019 12:34

Analysis Batch Number: 36146 End Date: 12/17/2019 21:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDMCCV 140-36146/1		12/17/2019 12:34	1	d3191217s2.d	RTX-5 0.32(mm)
ZZZZZ		12/17/2019 13:34	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 13:46	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 13:59	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 14:15	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 14:31	1		RTX-5 0.32(mm)
140-17578-8		12/17/2019 15:32	1	140-17578-a-8-a.d	RTX-5 0.32(mm)
140-17578-9		12/17/2019 16:33	1	140-17578-a-9-a.d	RTX-5 0.32(mm)
140-17578-10		12/17/2019 17:34	1	140-17578-a-10-a.d	RTX-5 0.32(mm)
140-17578-11		12/17/2019 18:35	1	140-17578-a-11-a.d	RTX-5 0.32(mm)
ZZZZZ		12/17/2019 19:36	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 20:37	1		RTX-5 0.32(mm)
ZZZZZ		12/17/2019 21:38	1		RTX-5 0.32(mm)

Eurofins/TestAmerica Knoxville Dioxin GC/MS Continuing Calibration Review / Narrative Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

Start Mass Res. ✓:	12:20	Start Ver Filename:	d31912152	Inst/Date:	D21A / 12.17.19
End Mass Res. ✓:	22:42	Win/CPS Filename:	1	ICAL Event #(s):	825
WL#:	14066	End Ver Filename:	NA	Job # (s):	140-17578
AD Batch #(s):	36146				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd √
1. Was the mass resolution documented at both the beginning and end of the 12 hour shift and is data verified as within the 12 hour clock? Was the continuing calibration performed at the beginning of the shift (all methods) and ending of the shift (8290/8290A)?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5 ppm at reduced accelerating voltage for masses listed in the SOP section 10.2.4?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met?	✓				✓
7. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
8. Are the measured RRFs and/or concentrations for each compound within the specified control limits in Table 7 for all PCDDs/PCDFs?		✓		☐ CCV-Capping, RR Confirms (NCM#_____) ☐ CCV-Capping-Detects (8290/8290A) (NCM#_____) ☐ CCV-Capping-IDA (8290/8290A) (NCM#_____)	✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B)?		✓			✓
10. Is the retention time of C^{13}-1,2,3,4-TCDD >25 minutes on the Rtx-5 column and/or >15.0 min on the DB-225?		✓			✓
11. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including IDA's?		✓			✓
12. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
13. Were all reagents used for calibration verified as correct in the reagent tab?		✓			✓
14. If manual integrations were performed, are the analyst name, reason, and date noted in the AD II batches? Are before and after graphics uploaded to AD II?		✓			✓
15. Were all graphics checked after upload to AD II? Was the mass res check scanned and attached to the corresponding CCV?		✓			✓
16. If criteria were not met, was a NCM generated?	✓				✓
17. Do the AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: MMD Date: 12/17/19

Comments:

2nd Level Reviewer: PMP Date: 12-17-19

Comments:

Eurofins/TestAmerica Knoxville Dioxin Batch Data Review Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

WL #: 14066
ADII Batch #(s): 36146
Job #(s): 140-17578

Review Items	N/A	Yes	No	Why is data reportable?	2nd √
1. Was the correct ICAL used for quantitation? (Check ICAL event number in every sample and CCV.)		✓		ICAL Event # 825	✓
2. Has a Continuing Calibration Checklist been completed for each work list?		✓			✓
3. Were all special project requirements met (checked in backlog report and in AD II under notes)?		✓			✓
4. DoD requirements met?	✓			☐ NCM#140-11724: Add to Case Narrative if Manual Integrations Performed ☐ Narrate reasons for multiple analyses of samples	✓
5. Were the prep factors and dilution factors verified in AD II?		✓		☐ **Dilution-Respike IDA.** (NCM#_____)	✓
6. Is date/time of analysis correct and within the 12 hour clock?		✓			✓
7. Sample analyses done within preparation and analytical HT? (Check for H-flag in sample result in AD II.)		✓		☐ **Holding Time-Initial Analysis** (NCM#_____) ☐ **Holding Time-Reanalysis** (NCM#_____)	✓
8. Are IDA ratios within limits specified in Table 22 of the SOP?		✓		☐ **Abundance ratio outside limit** (NCM#_____)	✓
9. Are IDAs and cleanup standards within QC limits specified in Table 13?		✓		☐ **IDA-Low-S/N 10:1** (NCM#_____) ☐ **IDA-High-Isotope Dilution** (NCM#_____)	✓
10. Were reported PCDD/Fs which did not meet the criteria below properly calculated and reported as EMPCs? • RT of 2378 isomers within SOP Table 3 limits. • RT of non-2378 isomers within established first/last windows. • Both native ions maximized within ±2 seconds. • Ion abundance ratios within the control limits specified in Table 22 (not adjusted for 8290A). • No corresponding peak at PCDPE mass (**dpe tab checked and flag added in peak review**). • Ion suppression tab checked and **flags added in peak review if needed.** • Co-elution (CI) flags **added manually in AD II if needed.**		✓			✓
11. Were all 2378-TCDF hits greater than or equal to the ML turned to acceptable on the primary column and confirmed on the DB-225 confirmation column?		✓ (1)		Were all of the samples marked as acceptable for TCDF analyzed on a DB-225 column and the **lower** result reported?	✓
12. Are non-detects that are G-qualified narrated?	✓			☐ (NCM#_____)	✓
13. Are positive results > ML within calibration range?		✓		☐ **ICAL-Range Exceed;No Sat.** (NCM#_____) ☐ **non-2378's or OCDD/F** (NCM#_____)	✓
14. Are all manual integrations documented with analyst name, reason, and date noted in AD II?		✓			✓
15. Were all graphics uploaded into AD II?		✓			✓
16. Final report acceptable (1. Job Data Review was checked and all CCVs, QC, and samples are turned to 2nd Level, 2. The narrative was checked in Supervisor Desktop for all deviations and grammar errors, and 3. All QC links were verified and at least one sample from every job is linked to the ICAL)?		✓			✓
17. LCS/LCSD done per prep batch and all analytes within limits?		✓		☐ **LCS/LCSD-Insuff. Sample** (NCM#_____) ☐ **LCS/LCSD-%R High** (NCM#_____)	✓
18. Method blank done per prep batch, method/instrument blank analyzed with each sequence and analytes present in the method blank < ML or within specific program requirements?		✓		☐ **Method Blank-Report, 10X** (NCM#_____) ☐ **Method Blank-Report, ND** (NCM#_____) ☐ **Method Blank-Insuff. Sample** (NCM#_____)	✓

1st Level Reviewed by: PMP **Date:** 12-18-19
Comments: (1) all

2nd Level Reviewed by: [signature] **Date:** 12-18-19
Comments:

ID023R26 doc, 111519

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D2A Start Date: 12/18/2019 00:01

Analysis Batch Number: 36166 End Date: 12/18/2019 10:06

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDMCCV 140-36166/1		12/18/2019 00:01	1	d3191217s3.d	RTX-5 0.32(mm)
ZZZZZ		12/18/2019 01:00	1		RTX-5 0.32(mm)
ZZZZZ		12/18/2019 01:12	1		RTX-5 0.32(mm)
ZZZZZ		12/18/2019 01:25	1		RTX-5 0.32(mm)
ZZZZZ		12/18/2019 01:41	1		RTX-5 0.32(mm)
ZZZZZ		12/18/2019 01:57	1		RTX-5 0.32(mm)
140-17578-13		12/18/2019 02:58	1	140-17578-a-13-a.d	RTX-5 0.32(mm)
140-17578-14		12/18/2019 03:59	1	140-17578-a-14-a.d	RTX-5 0.32(mm)
140-17578-15		12/18/2019 05:00	1	140-17578-a-15-a.d	RTX-5 0.32(mm)
140-17578-16		12/18/2019 06:01	1	140-17578-a-16-a.d	RTX-5 0.32(mm)
140-17578-17		12/18/2019 07:02	1	140-17578-a-17-a.d	RTX-5 0.32(mm)
140-17578-12		12/18/2019 08:03	10	140-17578-a-12-aa.d	RTX-5 0.32(mm)
140-17578-12 MS		12/18/2019 09:05	10	140-17578-a-12-bmsa.d	RTX-5 0.32(mm)
140-17578-12 MSD		12/18/2019 10:06	10	140-17578-a-12-cmsda.d	RTX-5 0.32(mm)

Eurofins/TestAmerica Knoxville Dioxin GC/MS Continuing Calibration Review / Narrative Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

Start Mass Res. ✓:	23:49	Start Ver Filename:	239121753	Inst/Date:	D2N 12-17-19
End Mass Res. ✓:	11:08	Win/CPS Filename:	1	ICAL Event #(s):	825
WL#:	140069	End Ver Filename:	NA	Job # (s):	140-17578
AD Batch #(s):	361666				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd ✓
1. Was the mass resolution documented at both the beginning and end of the 12 hour shift and is data verified as within the 12 hour clock? Was the continuing calibration performed at the beginning of the shift (all methods) and ending of the shift (8290/8290A)?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5 ppm at reduced accelerating voltage for masses listed in the SOP section 10.2.4?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?		✓			✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met?	✓	X		MID 12/18/19	✓
7. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
8. Are the measured RRFs and/or concentrations for each compound within the specified control limits in Table 7 for all PCDDs/PCDFs?		✓		☐CCV-Capping, RR Confirms (NCM#_____) ☐CCV-Capping-Detects (8290/8290A) (NCM#_____) ☐CCV-Capping-IDA (8290/8290A) (NCM#_____)	✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B)?		✓			✓
10. Is the retention time of C^{13}-1,2,3,4-TCDD >25 minutes on the Rtx-5 column and/or >15.0 min on the DB-225?		✓			✓
11. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including IDA's?		✓			✓
12. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
13. Were all reagents used for calibration verified as correct in the reagent tab?		✓			✓
14. If manual integrations were performed, are the analyst name, reason, and date noted in the AD II batches? Are before and after graphics uploaded to AD II?		✓			✓
15. Were all graphics checked after upload to AD II? Was the mass res check scanned and attached to the corresponding CCV?		✓			✓
16. If criteria were not met, was a NCM generated?	✓				✓
17. Do the AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: PMP Date: 12-18-19

Comments:

2nd Level Reviewer: MID Date: 12/18/19

Comments:

Eurofins/TestAmerica Knoxville Dioxin Batch Data Review Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

WL #: 140609
ADII Batch #(s): 361666
Job #(s): 140-175578

Review Items	N/A	Yes	No	Why is data reportable?	2nd √
1. Was the correct ICAL used for quantitation? (Check ICAL event number in every sample and CCV.)		✓		ICAL Event # 525	✓
2. Has a Continuing Calibration Checklist been completed for each work list?		✓			✓
3. Were all special project requirements met (checked in backlog report and in AD II under notes)?		✓			✓
4. DoD requirements met?	✓			☐ NCM#140-11724: Add to Case Narrative if Manual Integrations Performed ☐ Narrate reasons for multiple analyses of samples	✓
5. Were the prep factors and dilution factors verified in AD II?		✓		☐ **Dilution-Respike IDA.** (NCM#_____)	✓
6. Is date/time of analysis correct and within the 12 hour clock?		✓			✓
7. Sample analyses done within preparation and analytical HT? (Check for H-flag in sample result in AD II.)		✓		☐ **Holding Time-Initial Analysis** (NCM#_____) ☐ **Holding Time-Reanalysis** (NCM#_____)	✓
8. Are IDA ratios within limits specified in Table 22 of the SOP?			✓	☒ **Abundance ratio outside limit** (NCM# 140-17824)	✓
9. Are IDAs and cleanup standards within QC limits specified in Table 13?		✓		☐ **IDA-Low-S/N 10:1** (NCM#_____) A-12 ☐ **IDA-High-Isotope Dilution** (NCM#_____) MS	✓
10. Were reported PCDD/Fs which did not meet the criteria below properly calculated and reported as EMPCs? • RT of 2378 isomers within SOP Table 3 limits. • RT of non-2378 isomers within established first/last windows. • Both native ions maximized within ±2 seconds. • Ion abundance ratios within the control limits specified in Table 22 (not adjusted for 8290A). • No corresponding peak at PCDPE mass (**dpe tab checked and flag added in peak review**). • Ion suppression tab checked and **flags added in peak review if needed.** • Co-elution (CI) flags **added manually in AD II if needed.**		✓		NCM# 140-21115	✓
11. Were all 2378-TCDF hits greater than or equal to the ML turned to acceptable on the primary column and confirmed on the DB-225 confirmation column?		✓ all		Were all of the samples marked as acceptable for TCDF analyzed on a DB-225 column and the **lower** result reported?	✓
12. Are non-detects that are G-qualified narrated?	✓			☐ (NCM#_____)	✓
13. Are positive results > ML within calibration range?		✓		☐ **ICAL-Range Exceed;No Sat.** (NCM#_____) ☐ **non-2378's or OCDD/F** (NCM#_____)	✓
14. Are all manual integrations documented with analyst name, reason, and date noted in AD II?		✓			✓
15. Were all graphics uploaded into AD II?		✓			✓
16. Final report acceptable (1. Job Data Review was checked and all CCVs, QC, and samples are turned to 2nd Level, 2. The narrative was checked in Supervisor Desktop for all deviations and grammar errors, and 3. All QC links were verified and at least one sample from every job is linked to the ICAL)?		✓			✓
17. LCS/LCSD done per prep batch and all analytes within limits?		✓		☐ **LCS/LCSD-Insuff. Sample** (NCM#_____) ☐ **LCS/LCSD-%R High** (NCM#_____)	✓
18. Method blank done per prep batch, method/instrument blank analyzed with each sequence and analytes present in the method blank < ML or within specific program requirements?		✓		☐ **Method Blank-Report, 10X** (NCM#_____) ☐ **Method Blank-Report, ND** (NCM#_____) ☐ **Method Blank-Insuff. Sample** (NCM#_____)	✓

1st Level Reviewed by: MMD **Date:** 12/18/15
Comments:

2nd Level Reviewed by: [signature] **Date:** 12/18/15
Comments:

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Start Date: 12/18/2019 00:58

Analysis Batch Number: 36167 End Date: 12/18/2019 10:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 140-36167/1		12/18/2019 00:58	1	d2191218w1.d	DB225 0.32(mm)
ZZZZZ		12/18/2019 01:33	1		DB225 0.32(mm)
CCV 140-36167/3		12/18/2019 01:51	1	d2191218s1.d	DB225 0.32(mm)
ZZZZZ		12/18/2019 02:26	1		DB225 0.32(mm)
ZZZZZ		12/18/2019 02:44	1		DB225 0.32(mm)
140-17578-1		12/18/2019 03:24	1	140-17578-a-1-a.d	DB225 0.32(mm)
140-17578-6		12/18/2019 03:58	1	140-17578-a-6-a.d	DB225 0.32(mm)
140-17578-2		12/18/2019 04:33	1	140-17578-a-2-a.d	DB225 0.32(mm)
140-17578-5		12/18/2019 05:08	1	140-17578-A-5-Aa.d	DB225 0.32(mm)
140-17578-4		12/18/2019 05:44	1	140-17578-a-4-a.d	DB225 0.32(mm)
140-17578-3		12/18/2019 06:19	1	140-17578-a-3-a.d	DB225 0.32(mm)
140-17578-8		12/18/2019 06:55	1	140-17578-a-8-a.d	DB225 0.32(mm)
140-17578-9		12/18/2019 07:30	1	140-17578-a-9-a.d	DB225 0.32(mm)
140-17578-10		12/18/2019 08:05	1	140-17578-a-10-a.d	DB225 0.32(mm)
140-17578-11		12/18/2019 08:41	1	140-17578-a-11-a.d	DB225 0.32(mm)
140-17578-12		12/18/2019 09:16	15	140-17578-a-12-a.d	DB225 0.32(mm)
140-17578-12 MS		12/18/2019 09:52	15	140-17578-a-12-bms.d	DB225 0.32(mm)
140-17578-12 MSD		12/18/2019 10:27	15	140-17578-a-12-cmsd.d	DB225 0.32(mm)

1613B

Eurofins/TestAmerica Knoxville Dioxin GC/MS Continuing Calibration Review / Narrative Checklist
Method: __8290 __8290A ✓ 1613B - KNOX-ID-0004-R20

Start Mass Res. ✓:	10:42	Start Ver Filename:	d219121851	Inst/Date:	DIOC1 12-18-19
End Mass Res. ✓:	11:03	Win/CPS Filename:	d219121801	ICAL Event #(s):	1936
WL#:	14071	End Ver Filename:	N/A	Job # (s):	140-17578
AD Batch #(s):	36167				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd √
1. Was the mass resolution documented at both the beginning and end of the 12 hour shift and is data verified as within the 12 hour clock? Was the continuing calibration performed at the beginning of the shift (all methods) and ending of the shift (8290/8290A)?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5 ppm at reduced accelerating voltage for masses listed in the SOP section 10.2.4?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?	✓				✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met?	✓				✓
7. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
8. Are the measured RRFs and/or concentrations for each compound within the specified control limits in Table 7 for all PCDDs/PCDFs?		✓		☐CCV-Capping, RR Confirms (NCM#_____) ☐CCV-Capping-Detects (8290/8290A) (NCM#_____) ☐CCV-Capping-IDA (8290/8290A) (NCM#_____)	✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B)?		✓			✓
10. Is the retention time of C^{13}-1,2,3,4-TCDD >25 minutes on the Rtx-5 column and/or >15.0 min on the DB-225?		✓			✓
11. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including IDA's?		✓			✓
12. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
13. Were all reagents used for calibration verified as correct in the reagent tab?		✓			✓
14. If manual integrations were performed, are the analyst name, reason, and date noted in the AD II batches? Are before and after graphics uploaded to AD II?	✓				✓
15. Were all graphics checked after upload to AD II? Was the mass res check scanned and attached to the corresponding CCV?		✓			✓
16. If criteria were not met, was a NCM generated?	✓				✓
17. Do the AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: LVM Date: 12-18-19

Comments:

2nd Level Reviewer: MM Date: 12.18.19

Comments:

Eurofins/TestAmerica Knoxville Dioxin Batch Data Review Checklist
Method: __8290 __8290A _X_1613B - KNOX-ID-0004-R20

WL #: 14071
ADII Batch #(s): 36167
Job #(s): 140-17578

Review Items	N/A	Yes	No	Why is data reportable?	2nd √
1. Was the correct ICAL used for quantitation? (Check ICAL event number in every sample and CCV.)		✓		ICAL Event # 1936	✓
2. Has a Continuing Calibration Checklist been completed for each work list?		✓			✓
3. Were all special project requirements met (checked in backlog report and in AD II under notes)?		✓			✓
4. DoD requirements met?	✓			☐ NCM#140-11724: Add to Case Narrative if Manual Integrations Performed ☐ Narrate reasons for multiple analyses of samples	✓
5. Were the prep factors and dilution factors verified in AD II?		✓		☐ **Dilution-Respike IDA.** (NCM#_____)	✓
6. Is date/time of analysis correct and within the 12 hour clock?		✓			✓
7. Sample analyses done within preparation and analytical HT? (Check for H-flag in sample result in AD II.)		✓		☐ **Holding Time-Initial Analysis** (NCM#_____) ☐ **Holding Time-Reanalysis** (NCM#_____)	✓
8. Are IDA ratios within limits specified in Table 22 of the SOP?		✓		☐ **Abundance ratio outside limit** (NCM#_____)	✓
9. Are IDAs and cleanup standards within QC limits specified in Table 13?		✓		☐ **IDA-Low-S/N 10:1** (NCM#_____) ☐ **IDA-High-Isotope Dilution** (NCM#_____)	✓
10. Were reported PCDD/Fs which did not meet the criteria below properly calculated and reported as EMPCs? • RT of 2378 isomers within SOP Table 3 limits. • RT of non-2378 isomers within established first/last windows. • Both native ions maximized within ±2 seconds. • Ion abundance ratios within the control limits specified in Table 22 (not adjusted for 8290A). • No corresponding peak at PCDPE mass (**dpe tab checked and flag added in peak review**). • Ion suppression tab checked and **flags added in peak review if needed.** • Co-elution (CI) flags **added manually in AD II if needed**.		✓			✓
11. Were all 2378-TCDF hits greater than or equal to the ML turned to acceptable on the primary column and confirmed on the DB-225 confirmation column?		✓		Were all of the samples marked as acceptable for TCDF analyzed on a DB-225 column and the **lower** result reported?	✓
12. Are non-detects that are G-qualified narrated?	✓			☐ (NCM#_____)	✓
13. Are positive results > ML within calibration range?		✓		☐ **ICAL-Range Exceed;No Sat.** (NCM#_____) ☐ **non-2378's or OCDD/F** (NCM#_____)	✓
14. Are all manual integrations documented with analyst name, reason, and date noted in AD II?		✓			✓
15. Were all graphics uploaded into AD II?		✓			✓
16. Final report acceptable (1. Job Data Review was checked and all CCVs, QC, and samples are turned to 2nd Level, 2. The narrative was checked in Supervisor Desktop for all deviations and grammar errors, and 3. All QC links were verified and at least one sample from every job is linked to the ICAL)?		✓			✓
17. LCS/LCSD done per prep batch and all analytes within limits?		✓		☐ **LCS/LCSD-Insuff. Sample** (NCM#_____) ☐ **LCS/LCSD-%R High** (NCM#_____)	✓
18. Method blank done per prep batch, method/instrument blank analyzed with each sequence and analytes present in the method blank < ML or within specific program requirements?		✓		☐ **Method Blank-Report, 10X** (NCM#_____) ☐ **Method Blank-Report, ND** (NCM#_____) ☐ **Method Blank-Insuff. Sample** (NCM#_____)	✓

1st Level Reviewed by: WJP **Date:** 12/18/19
Comments:

2nd Level Reviewed by: [signature] **Date:** 12/18/19
Comments:

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: D12C Start Date: 12/18/2019 11:19

Analysis Batch Number: 36178 End Date: 12/18/2019 19:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 140-36178/1		12/18/2019 11:19	1	d2191218w2.d	DB225 0.32(mm)
ZZZZZ		12/18/2019 11:53	1		DB225 0.32(mm)
CCV 140-36178/3		12/18/2019 12:11	1	d2191218s2.d	DB225 0.32(mm)
ZZZZZ		12/18/2019 12:46	1		DB225 0.32(mm)
ZZZZZ		12/18/2019 13:04	1		DB225 0.32(mm)
140-17578-15		12/18/2019 13:39	1	140-17578-a-15-a.d	DB225 0.32(mm)
140-17578-16		12/18/2019 14:14	1	140-17578-a-16-a.d	DB225 0.32(mm)
140-17578-17		12/18/2019 14:50	1	140-17578-a-17-a.d	DB225 0.32(mm)
140-17578-14		12/18/2019 15:25	1	140-17578-a-14-a.d	DB225 0.32(mm)
140-17578-13		12/18/2019 19:48	5	140-17578-a-13-a.d	DB225 0.32(mm)

Eurofins/TestAmerica Knoxville Dioxin GC/MS Continuing Calibration Review / Narrative Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

Start Mass Res. ✓:	11:03	Start Ver Filename:	d21912852	Inst/Date:	DFE / 12.18.19
End Mass Res. ✓:	20:48	Win/CPS Filename:	d21912852	ICAL Event #(s):	1936
WL#:	14075	End Ver Filename:	NA	Job # (s):	140-17578
AD Batch #(s):	36178				

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd √
1. Was the mass resolution documented at both the beginning and end of the 12 hour shift and is data verified as within the 12 hour clock? Was the continuing calibration performed at the beginning of the shift (all methods) and ending of the shift (8290/8290A)?		✓			✓
2. Was the instrument resolution >10,000 (<100 ppm) on either PFK or FC43 for the masses listed in SOP section 10.2.3?		✓			✓
3. Was the measured exact mass within 5 ppm at reduced accelerating voltage for masses listed in the SOP section 10.2.4?		✓			✓
4. Was the Window Defining Mixture analyzed and the MID switchpoints set to encompass the retention time windows of each congener group?	✓				✓
5. Was the Column Performance solution analyzed and the %Valley ≤25 for separation between 2378-TCDD/F and the closest eluting non-2378 isomer on their respective columns?		✓			✓
6. Was DoD Performance check criteria met?	✓				✓
7. Were the response factors calculated for each labeled standard and unlabeled native analyte using the SOP specified reference compound (Table 3), quantitation ions (Table 21), and formula (Section 10.2.7)?		✓			✓
8. Are the measured RRFs and/or concentrations for each compound within the specified control limits in Table 7 for all PCDDs/PCDFs?		✓		☐CCV-Capping, RR Confirms (NCM#_____) ☐CCV-Capping-Detects (8290/8290A) (NCM#_____) ☐CCV-Capping-IDA (8290/8290A) (NCM#_____)	✓
9. Are the relative retention times of all PCDDs/PCDFs and all labeled compounds within the limits specified in Table 3 (1613B)?		✓			✓
10. Is the retention time of C^{13}-1,2,3,4-TCDD >25 minutes on the Rtx-5 column and/or >15.0 min on the DB-225?		✓			✓
11. Are all S/N ratios ≥10 for the GC signals in each EICP (extracted ion chromatographic profile) including IDA's?		✓			✓
12. Are the ion abundance ratios for all labeled and unlabeled analytes within the control limits specified in Table 22 of the SOP?		✓			✓
13. Were all reagents used for calibration verified as correct in the reagent tab?		✓			✓
14. If manual integrations were performed, are the analyst name, reason, and date noted in the AD II batches? Are before and after graphics uploaded to AD II?	✓				✓
15. Were all graphics checked after upload to AD II? Was the mass res check scanned and attached to the corresponding CCV?		✓			✓
16. If criteria were not met, was a NCM generated?	✓				✓
17. Do the AD II batches contain a completed checklist for this work list?		✓			✓

Analyst: [signature] Date: 12/18/19

Comments:

2nd Level Reviewer: [signature] Date: 12-18-19

Comments:

Eurofins/TestAmerica Knoxville Dioxin Batch Data Review Checklist
Method: __8290 __8290A X 1613B - KNOX-ID-0004-R20

WL #: 14075
ADII Batch #(s): 36178
Job #(s): 140-17578

Review Items	N/A	Yes	No	Why is data reportable?	2nd √
1. Was the correct ICAL used for quantitation? (Check ICAL event number in every sample and CCV.)		✓		ICAL Event # 1936	✓
2. Has a Continuing Calibration Checklist been completed for each work list?		✓			✓
3. Were all special project requirements met (checked in backlog report and in AD II under notes)?		✓			✓
4. DoD requirements met?	✓			☐ NCM#140-11724: Add to Case Narrative if Manual Integrations Performed ☐ Narrate reasons for multiple analyses of samples	✓
5. Were the prep factors and dilution factors verified in AD II?		✓		☐ **Dilution-Respike IDA.** (NCM#_____)	✓
6. Is date/time of analysis correct and within the 12 hour clock?		✓			✓
7. Sample analyses done within preparation and analytical HT? (Check for H-flag in sample result in AD II.)		✓		☐ **Holding Time-Initial Analysis** (NCM#_____) ☐ **Holding Time-Reanalysis** (NCM#_____)	✓
8. Are IDA ratios within limits specified in Table 22 of the SOP?		✓		☐ **Abundance ratio outside limit** (NCM#_____)	✓
9. Are IDAs and cleanup standards within QC limits specified in Table 13?		✓		☐ **IDA-Low-S/N 10:1** (NCM#_____) ☐ **IDA-High-Isotope Dilution** (NCM#_____)	✓
10. Were reported PCDD/Fs which did not meet the criteria below properly calculated and reported as EMPCs? • RT of 2378 isomers within SOP Table 3 limits. • RT of non-2378 isomers within established first/last windows. • Both native ions maximized within ±2 seconds. • Ion abundance ratios within the control limits specified in Table 22 (not adjusted for 8290A). • No corresponding peak at PCDPE mass (**dpe tab checked and flag added in peak review**). • Ion suppression tab checked and **flags added in peak review if needed.** • Co-elution (CI) flags **added manually in AD II if needed.**		✓			✓
11. Were all 2378-TCDF hits greater than or equal to the ML turned to acceptable on the primary column and confirmed on the DB-225 confirmation column?		✓		Were all of the samples marked as acceptable for TCDF analyzed on a DB-225 column and the **lower** result reported?	✓
12. Are non-detects that are G-qualified narrated?	✓			☐ (NCM#_____)	✓
13. Are positive results > ML within calibration range?		✓		☐ **ICAL-Range Exceed;No Sat.** (NCM#_____) ☐ **non-2378's or OCDD/F** (NCM#_____)	✓
14. Are all manual integrations documented with analyst name, reason, and date noted in AD II?		✓			✓
15. Were all graphics uploaded into AD II?		✓			✓
16. Final report acceptable (1. Job Data Review was checked and all CCVs, QC, and samples are turned to 2nd Level, 2. The narrative was checked in Supervisor Desktop for all deviations and grammar errors, and 3. All QC links were verified and at least one sample from every job is linked to the ICAL)?		✓			✓
17. LCS/LCSD done per prep batch and all analytes within limits?		✓		☐ **LCS/LCSD-Insuff. Sample** (NCM#_____) ☐ **LCS/LCSD-%R High** (NCM#_____)	✓
18. Method blank done per prep batch, method/instrument blank analyzed with each sequence and analytes present in the method blank < ML or within specific program requirements?		✓		☐ **Method Blank-Report, 10X** (NCM#_____) ☐ **Method Blank-Report, ND** (NCM#_____) ☐ **Method Blank-Insuff. Sample** (NCM#_____)	✓

1st Level Reviewed by: [signature] / LKM	**Date:** 12-18-19
Comments:	
2nd Level Reviewed by: LKM / PMP	**Date:** 12-18-19
Comments:	

ID023R26 doc, 111519

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-17578-1

SDG No.:

Batch Number: 35991 Batch Start Date: 12/11/19 10:49 Batch Analyst: Stockton, Samuel

Batch Method: HRMS-Sox Batch End Date: 12/16/19 16:52

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	10CSDFCL37CUP 00044	10IDDFC13WRKP 00073	10RSDFWRKP 00037	10SPDFNATSPKP 00030
140-17578-A-1	11187072-120419-SS-SJSSA08(0-1)	HRMS-Sox, 1613B	T	10.06 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-2	11187072-120419-SS-SJSSA08(1-2)	HRMS-Sox, 1613B	T	10.10 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-3	11187072-120419-SS-SJSSA08(2-4)	HRMS-Sox, 1613B	T	9.76 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-4	11187072-120419-SS-SJSSA08(4-6)	HRMS-Sox, 1613B	T	10.10 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-5	11187072-120619-SS-SJSSA03(0-1)	HRMS-Sox, 1613B	T	9.83 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-6	11187072-120619-SS-SJSSA03(1-2)	HRMS-Sox, 1613B	T	9.95 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-7	11187072-120619-SS-SJSSA03(2-4)	HRMS-Sox, 1613B	T	10.15 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-8	11187072-120619-SS-SJSSA03(4-6)	HRMS-Sox, 1613B	T	10.16 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-9	11187072-120619-SS-SJSSA06(0-1)	HRMS-Sox, 1613B	T	10.37 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-10	11187072-120619-SS-SJSSA06(1-2)	HRMS-Sox, 1613B	T	10.19 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-11	11187072-120619-SS-SJSSA06(2-4)	HRMS-Sox, 1613B	T	10.31 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-12	11187072-120619-SS-SJSSA06(4-6)	HRMS-Sox, 1613B	T	9.90 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-12 MS	11187072-120619-SS-SJSSA06(4-6)	HRMS-Sox, 1613B	T	9.54 g	20 uL	1 mL	1 mL	20 uL	1 mL
140-17578-A-12 MSD	11187072-120619-SS-SJSSA06(4-6)	HRMS-Sox, 1613B	T	10.08 g	20 uL	1 mL	1 mL	20 uL	1 mL
140-17578-A-13	11187072-120619-SS-DUP1	HRMS-Sox, 1613B	T	9.84 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-14	11187072-120719-SS-SJSSA02(2-4)	HRMS-Sox, 1613B	T	10.27 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-15	11187072-120719-SS-SJSSA02(4-6)	HRMS-Sox, 1613B	T	10.13 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-16	11187072-120719-SS-SJSSA02(0-1)	HRMS-Sox, 1613B	T	9.89 g	20 uL	1 mL	1 mL	20 uL	
140-17578-A-17	11187072-120719-SS-SJSSA02(1-2)	HRMS-Sox, 1613B	T	9.55 g	20 uL	1 mL	1 mL	20 uL	
MB 140-35991/20		HRMS-Sox, 1613B		10 g	20 uL	1 mL	1 mL	20 uL	
LCS 140-35991/21		HRMS-Sox, 1613B		10 g	20 uL	1 mL	1 mL	20 uL	1 mL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-17578-1

SDG No.:

Batch Number: 35991 Batch Start Date: 12/11/19 10:49 Batch Analyst: Stockton, Samuel

Batch Method: HRMS-Sox Batch End Date: 12/16/19 16:52

Batch Notes	
1:1 DCM:Cyclohexane ID	266448
65% DCM:Hexane ID	269442
75:20:5 DCM:Hexane:Benzene ID	264675
95% Hexane: MeCl ID	266448
Acid Silica ID	270889
Alumina ID	216215
Balance ID	d1
Batch Comment	gpc1, Concentrated by VGC
Carbon ID	261884
Carbon Column C/U Analyst	sa
Carbon Column C/U Date	12/12/2019
Dual Column C/U Analyst	edd
Dual Column C/U Date	12/12/2019
Deactivated Silica ID	270867, 272205
GPC Analyst	ajr
GPC Date	12/13/2019
Hexane ID	263909, 226527
MeCL2 ID	257909
Nonane ID	178724
Analyst ID - IDA Reagent Drop	ss
Analyst ID - IDA Reagent Drop Witness	abh
Analyst ID - IS Reagent Drop	als
Analyst ID - IS Reagent Drop Witness	als
Analyst ID - SU Reagent Drop	als
Analyst ID - SU Reagent Drop Witness	ss
Analyst ID - TA Reagent Drop	ss
Analyst ID - TA Reagent Drop Witness	abh
Soxhlet/Soxtherm End	12/12/19 7:25
Soxhlet/Soxtherm Start	12/11/19 13:00
Tetradecane ID	250895

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-17578-1

SDG No.:

Batch Number: 35991 Batch Start Date: 12/11/19 10:49 Batch Analyst: Stockton, Samuel

Batch Method: HRMS-Sox Batch End Date: 12/16/19 16:52

Thimble Lot ID	1699534301
Toluene Reagent ID	265947

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica Knoxville Extraction Sheet
1613B/8290/8290A Sediment/Soil/Wipes by Soxhlet - KNOX-OP-0001

Batch Number: 35991

TALS Prep Method: ☑ 1613B_P_Soxhlet
☐ 8290_P_Sox
☐ SHARED BATCH: 8290_P_Sox & 1613_P_Soxhlet

Soil ☐ Sediment ☑

Delivered: _____ Initials/Date/Time

Received: _____ Initials/Date/Time

RUSH!

Lab Sample ID	Add sample to Soxhlet thimble.	Water layer decanted? (Y/N/NA)	Add 1.0/2.0 ng/mL IS (IDA) to all samples & QC. Record in TALS.	Add 0.2/1.0/2.0 ng/mL native spike (TA) to LCS, MS, MSD. Record in TALS.	Extract for a minimum of 16 hr in toluene.	Concentrate extracts on heating mantles.	Add 100 µL tetradecane to rinsed 40 mL vials.	Concentrate/exchange to hexane on N-EVAP.	Add 0.2 ng/mL cleanup std (SU) to all 1613B extracts. Record in TALS.	Acid/Base wash extracts if needed.	Concentrate to ~2 to 4 mL on N-EVAP for dual column cleanup.	Perform silica gel/alumina column cleanup.	Concentrate to ~2 mL on N-EVAP for carbon cleanup.	Perform carbon cleanup.	Concentrate to 5 mL toluene.	Filter thru 0.45 µm filter into GPC vial containing 100 µL nonane.	Concentrate to 50 µL on N-EVAP. Adjust volume to 10 mL MeCl2.	Perform GPC cleanup.	Concentrate/solvent exchange to hexane to appropriate volume.	Concentrate to <1mL on N-EVAP.	Add 100 ng/mL recovery std (IS) to mini-vial. Record in TALS. Transfer extract to vial.	Conc to final volume in nonane. Record final volume in TALS.
140-17578-A-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	GPC1	✓	✓	✓	✓
140-17578-A-2																						
140-17578-A-3																						
140-17578-A-4																						
140-17578-A-5																						
140-17578-A-6																						
140-17578-A-7																						
140-17578-A-8																						
140-17578-A-9																						
140-17578-A-10																						
140-17578-A-11																						
140-17578-A-12																						
140-17578-A-12 MS																						
140-17578-A-12 MSD																						
140-17578-A-13																						
140-17578-A-14																						
140-17578-A-15																						
140-17578-A-16																						
140-17578-A-17																						
MB 140-35991/20																						
LCS 140-35991/21																						
	SS/ABH	→			→	SS/ABH	→	ES	ALS	→	→	EDD	SA	→	ALS	AJR	→		VGL	ALS	→	→
AC 12/16/15	12/11	→			→	12/12	→	12/12	12/12	→	→	12/12	12/12	→	12/13	12/13	→		12/16	12/16	→	→
											AC 12/15/15											

Eurofins/TestAmerica Knoxville Prep Batch Review Checklist

Batch # 35991

Split Batch # NA

Review Items	N/A	Yes	No	If No, why is data reportable?	2nd Level
1. Were the samples extracted within the required holding times?		✓		If No, NCM #: _____	✓
2. Are the final extracts free of water, precipitates, multiple phases, and for HRMS - color?		✓			✓
3. Were all project specific requirements met?		✓			✓
4. Were the correct start and completion dates entered into TALS?		✓			✓
5. Are the spike IDs and volumes correct in TALS for the method?		✓			✓
6. Does the prep batch paperwork package contain all required documentation which has been properly and completely filled out, including: • Extraction Benchsheet (Excel) • TALS Raw data worksheets • Batch Worksheets (ANLY) • Verify Protocol #'s (compare excel sheet to TALS) • Was the Excel Extraction Benchsheet and Prep Batch Review Checklist scanned and attached to batch in TALS?		✓			✓
7. Did extracts go through GPC cleanup? Has the following nonconformance been associated with all extracts?		✓		If Yes, NCM# 140-20617	✓
8. Are all additional nonconformances documented appropriately and copy included with deliverable?	✓			If Yes, NCM#: _____	✓

Analyst : AS **Date:** 12/16/19

Comments:

2nd Level Reviewer: EDD **Date:** 12/16/19

Comments:

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-17578-1

SDG No.:

Project: San Jacinto River Waste Pits Superfund

Client Sample ID	Lab Sample ID
11187072-120419-SS-SJSSA08(0-1)	140-17578-1
11187072-120419-SS-SJSSA08(1-2)	140-17578-2
11187072-120419-SS-SJSSA08(2-4)	140-17578-3
11187072-120419-SS-SJSSA08(4-6)	140-17578-4
11187072-120619-SS-SJSSA03(0-1)	140-17578-5
11187072-120619-SS-SJSSA03(1-2)	140-17578-6
11187072-120619-SS-SJSSA03(2-4)	140-17578-7
11187072-120619-SS-SJSSA03(4-6)	140-17578-8
11187072-120619-SS-SJSSA06(0-1)	140-17578-9
11187072-120619-SS-SJSSA06(1-2)	140-17578-10
11187072-120619-SS-SJSSA06(2-4)	140-17578-11
11187072-120619-SS-SJSSA06(4-6)	140-17578-12
11187072-120619-SS-DUP1	140-17578-13
11187072-120719-SS-SJSSA02(2-4)	140-17578-14
11187072-120719-SS-SJSSA02(4-6)	140-17578-15
11187072-120719-SS-SJSSA02(0-1)	140-17578-16
11187072-120719-SS-SJSSA02(1-2)	140-17578-17

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-17578-1

SDG Number:

Matrix: Sediment Instrument ID: NOEQUIP

Method: Moisture RL Date: 01/01/2015 16:10

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-17578-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: Moisture

Start Date: 12/11/2019 15:11 End Date: 12/11/2019 15:11

Lab Sample Id	D/F	Type	Time	Analytes																									
				% Sol	Moist																								
140-17578-1	1	T	15:11	X	X																								
140-17578-2	1	T	15:11	X	X																								
140-17578-3	1	T	15:11	X	X																								
140-17578-4	1	T	15:11	X	X																								
140-17578-5	1	T	15:11	X	X																								
140-17578-6	1	T	15:11	X	X																								
140-17578-7	1	T	15:11	X	X																								
140-17578-8	1	T	15:11	X	X																								
140-17578-9	1	T	15:11	X	X																								
140-17578-10	1	T	15:11	X	X																								
140-17578-11	1	T	15:11	X	X																								
140-17578-12	1	T	15:11	X	X																								
140-17578-13	1	T	15:11	X	X																								
140-17578-14	1	T	15:11	X	X																								
140-17578-15	1	T	15:11	X	X																								
140-17578-16	1	T	15:11	X	X																								
140-17578-17	1	T	15:11	X	X																								
140-17578-1 DU	1	T	15:11	X	X																								

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-17578-1

SDG No.:

Batch Number: 36008 Batch Start Date: 12/11/19 15:11 Batch Analyst: Dameron, Bryan K

Batch Method: Moisture Batch End Date: 12/12/19 10:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	DishWeight	SampleMassWet	SampleMassDry			
140-17578-A-1	11187072-120419-SS-SJSSA08(0-1)	Moisture	T	0.77 g	7.55 g	5.943 g			
140-17578-A-2	11187072-120419-SS-SJSSA08(1-2)	Moisture	T	0.80 g	6.21 g	4.452 g			
140-17578-A-3	11187072-120419-SS-SJSSA08(2-4)	Moisture	T	0.79 g	7.47 g	4.642 g			
140-17578-A-4	11187072-120419-SS-SJSSA08(4-6)	Moisture	T	0.78 g	7.28 g	5.338 g			
140-17578-A-5	11187072-120619-SS-SJSSA03(0-1)	Moisture	T	0.78 g	7.36 g	4.877 g			
140-17578-A-6	11187072-120619-SS-SJSSA03(1-2)	Moisture	T	0.83 g	7.79 g	5.828 g			
140-17578-A-7	11187072-120619-SS-SJSSA03(2-4)	Moisture	T	0.80 g	7.02 g	5.567 g			
140-17578-A-8	11187072-120619-SS-SJSSA03(4-6)	Moisture	T	0.80 g	7.54 g	5.367 g			
140-17578-A-9	11187072-120619-SS-SJSSA06(0-1)	Moisture	T	0.76 g	7.15 g	6.099 g			
140-17578-A-10	11187072-120619-SS-SJSSA06(1-2)	Moisture	T	0.83 g	6.58 g	5.980 g			
140-17578-A-11	11187072-120619-SS-SJSSA06(2-4)	Moisture	T	0.81 g	6.46 g	5.474 g			
140-17578-A-12	11187072-120619-SS-SJSSA06(4-6)	Moisture	T	0.80 g	8.58 g	5.540 g			
140-17578-A-13	11187072-120619-SS-DUP1	Moisture	T	0.82 g	8.55 g	5.072 g			
140-17578-A-14	11187072-120719-SS-SJSSA02(2-4)	Moisture	T	0.79 g	7.02 g	5.522 g			
140-17578-A-15	11187072-120719-SS-SJSSA02(4-6)	Moisture	T	0.78 g	7.07 g	5.796 g			
140-17578-A-16	11187072-120719-SS-SJSSA02(0-1)	Moisture	T	0.80 g	8.24 g	6.094 g			
140-17578-A-17	11187072-120719-SS-SJSSA02(1-2)	Moisture	T	0.81 g	7.28 g	5.676 g			
140-17578-A-1 DU	11187072-120419-SS-SJSSA08(0-1)	Moisture	T	0.79 g	8.28 g	6.787 g			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-17578-1

SDG No.:

Batch Number: 36008 Batch Start Date: 12/11/19 15:11 Batch Analyst: Dameron, Bryan K

Batch Method: Moisture Batch End Date: 12/12/19 10:15

Batch Notes	
Balance ID	S1
Date samples were placed in the oven	12/11/2019
Oven Temp In	104 Degrees C
Time samples were place in the oven	15:42
Date samples were removed from oven	12/12/2019
Oven Temp Out	104 Degrees C
Time Samples were removed from oven	09:15
Oven ID	023
Thermometer ID	023
Temperature - Start - Uncorrected	104 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive RIDC Park Knoxville
Pittsburgh, PA 15238
Phone (412) 963-7058 Fax (412) 963-2468

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Stephen Saller	Lab PM: Gamber, Carrie L	Carrier Tracking No(s):	COC No: 180-54151-11295.1
Client Contact: Janie Smith	Phone: 979-220-6642	E-Mail: carrie.gamber@testamericainc.com		Page: Page 1 of 10
Company: GHD Services Inc.				Job #:
Address: 5551 Corporate Boulevard Suite 200	Due Date Requested: normal			Preservation Codes: A - HCL M - Hexane B - NaOH N - None
City: Baton Rouge	TAT Requested (days): 10 days			
State, Zip: LA, 70808				
Phone: 225-292-9007(Tel)	PO #: Purchase Order Requested			
Email: janie.smith@ghd.com	WO #:			
Project Name: San Jacinto River Waste Pits Superfund S	Project #: 18020662			
Site: Sand Separation Area	SSOW#:			Other:

140-17578 Chain of Custody

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Dioxins/Furans	Moisture Content	Total Number of co	Special Instructions/Note:
			Preservation Code:		X	X			X	
11187072-120419-SS-SJSSA08 (0-1)	12/4/19	1530	G	S	N	N	X	X	1	
11187072-120419-SS-SJSSA08 (1-2)	↓	1535	G	S	N	N	X	X	1	See SSOW
11187072-120419-SS-SJSSA08 (2-4)	↓	1540	G	S	N	N	X	X	1	
11187072-120419-SS-SJSSA08 (4-6)	↓	1545	G	S	N	N	X	X	1	
11187072-120619-SS-SJSSA03 (0-1)	12-6-19	1220	G	S	N	N	X	X	1	NO CUSTODY SEALS
11187072-120619-SS-SJSSA03 (1-2)	12-6-19	1225	G	S	N	N	X	X	1	RECEIVED AT RT 0.2/CT 0.2°C
11187072-120619-SS-SJSSA03 (2-4)	12-6-19	1230	G	S	N	N	X	X	1	DKD 12-10-19
11187072-120619-SS-SJSSA03 (4-6)	12-6-19	1235	G	S	N	N	X	X	1	1 COOLER FEDX#
										4840 2908 4624 PO

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
N. Groves [signature]	12-9-19 1300		[signature]	12-9-19 100	SDS
[signature]	12-9-19 100	SDS	[signature]	12-10-19 10:00	ETA KNX

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
~~West Sacramento, CA 95605-1500~~ Knoxville
Phone (916) 373-5600 Fax (303) 467-7248

Chain of Custody Record

eurofins Environment Testing

Client Information	Sampler: Stephen Saller	Lab PM: Gamber, Carrie L	Carrier Tracking No(s):	COC No: 180-54151-11295.10
Client Contact: Janie Smith	Phone: 979-220-6642	E-Mail: carrie.gamber@testamericainc.com		Page: Page 10 of 10
Company: GHD Services Inc.		Analysis Requested		Job #:
Address: 5551 Corporate Boulevard Suite 200	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Baton Rouge	TAT Requested (days): 10 day			
State, Zip: LA, 70808	PO #: Purchase Order Requested			
Phone: 225-292-9007(Tel)	WO #:			Other:
Email: janie.smith@ghd.com	Project #: 18020662			
Project Name: San Jacinto River Waste Pits Superfund S	SSOW#:			
Site: Sand Separation Area				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Dioxins / Furans	Moisture Content	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
111187072-120619-SS-SJSSA06(0-1)	12-6-19	1520	G	S	N	N	X	X		
111187072-120619-SS-SJSSA06(1-2)	12-6-19	1525	G	S	N	N	X	X		See SSOW
111187072-120619-SS-SJSSA06(2-4)	12-6-19	1530	G	S	N	N	X	X		
111187072-120619-SS-SJSSA06(4-6)	12-6-19	1535	G	S	N	N	X	X		
111187072-120619-SS-Dup2	12-6-19	—	G	S	N	N	X	X		
~~111187072-120719-SS-SJSSA02(0-1)~~	~~12-7-19~~	1150								
~~111187072-120719-SS-SJSSA02(2-2)~~	~~12-7-19~~	1155								
111187072-120719-SS-SJSSA02(2-4)	12-7-19	1200	G	S	N	N	X	X		
111187072-120719-SS-SJSSA02(4-6)	12-7-19	1205	G	S	N	N	X	X		
111187072-120719-SS-SJSSA02(0-1)	12-7-19	1150	G	S	N	N	X	X		
111187072-120719-SS-SJSSA02(2-2)	12-7-19	1155	G	S	N	N	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	N. Groves	12-9-19 1300			12-9-19 100	SDS
2		12-9-19 100	SDS		12-10-19 10:00	ETA-KNX
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Loc: 140
17578

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			☐ **Containers, Broken**	7,11187072-120619-SS-SJSSA016(4-6) RECEIVED MS/MSD CONTAINER NOT LISTED ON COC FOR QC
2. Were ambient air containers received intact?			/	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			/	☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	/			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**	
5. Were all of the sample containers received intact?	/			☐ **Containers, Broken**	
6. Were samples received in appropriate containers?	/			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ **COC & Samples Do Not Match** ☑ **COC Incorrect/Incomplete** ☐ **COC Not Received**	
8. Were all of the samples listed on the COC received?	/			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**	
9. Is the date/time of sample collection noted?	/			☐ **COC; No Date/Time; Client Contacted**	
10. Was the sampler identified on the COC?	/			☐ **Sampler Not Listed on COC**	**Labeling Verified by:** **Date:**
11. Is the client and project name/# identified?	/			☐ **COC Incorrect/Incomplete**	
12. Are tests/parameters listed for each sample?	/			☐ **COC No tests on COC**	**pH test strip lot number:**
13. Is the matrix of the samples noted?	/			☐ **COC Incorrect/Incomplete**	
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ **COC Incorrect/Incomplete**	
15. Were samples received within holding time?	/			☐ **Holding Time - Receipt**	
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**	
17. Were VOA samples received without headspace?			/	☐ **Headspace (VOA only)**	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ **Residual Chlorine**	
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info	

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 12-10-19

QA026R32.doc, 062719

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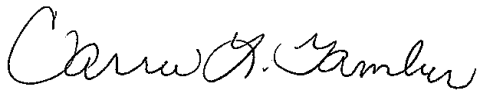
ANALYTICAL REPORT

Job Number: 320-56911-1

Job Description: San Jacinto River Waste Pits Superfund

For:
GHD Services Inc.
5551 Corporate Boulevard
Suite 200
Baton Rouge, LA 70808

Attention: Janie Smith



Approved for release.
Carrie L Gamber
Senior Project Manager
12/20/2019 8:55 AM

Carrie L Gamber, Senior Project Manager
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12/20/2019

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Definitions/Glossary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Qualifiers

Dioxin

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: GHD Services Inc.

Project: San Jacinto River Waste Pits Superfund

Report Number: 320-56911-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/10/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.9 C.

NOTE: Results for non-detect PCDD/PCDF analytes are reported using the Estimated Detection Limit (EDL) convention, which provides the lowest possible detection limits for each analyte in each sample based on the magnitude of chromatographic and detector 'noise' at the expected retention time of each analyte. EDL values are typically well below 1 pg/g, and the TEQ-weighted sum of EDL values is below the targeted action limit of 30 pg/g in each reported sample.

DIOXINS

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: 11187072-120819-BN-SJSSA09 (2-4) (320-56911-7), 11187072-120819-BN-SJSSA09 (4-6) (320-56911-8), 11187072-120819-BN-SJSSA05 (0-1) (320-56911-9), 11187072-120819-BN-SJSSA05 (1-2) (320-56911-10), 11187072-120819-BN-SJSSA05 (2-4) (320-56911-11), 11187072-120819-BN-SJSSA05 (4-6) (320-56911-12), 11187072-120819-BN-DUP2 (320-56911-13) and (CCV 320-345335/2). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument DFS 1 exceeded this criteria: 11187072-120719-SS-SJSSA01 (0-1) (320-56911-1), 11187072-120719-SS-SJSSA01 (1-2) (320-56911-2), 11187072-120719-SS-SJSSA01 (2-4) (320-56911-3), 11187072-120719-SS-SJSSA01 (4-6) (320-56911-4), 11187072-120819-BN-SJSSA09 (0-1) (320-56911-5), 11187072-120819-BN-SJSSA09 (1-2) (320-56911-6), (CCV 320-345338/2), (LCS 320-344634/2-A), (LCSD 320-344634/3-A) and (MB 320-344634/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Several analytes were detected in method blank MB 320-344634/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

PERCENT SOLIDS

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1)
Lab Sample ID: 320-56911-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	8.6		2.2	0.37	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.48	J q	11	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.1	J	11	0.17	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.75	J	11	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	1.0	J	11	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.5	J q B	11	0.29	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	3.2	J	11	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.8	J	11	0.19	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.91	J	11	0.18	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.55	J	11	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	62	B	11	1.0	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	6.6	J	11	0.23	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	1.0	J	11	0.20	pg/g	1	☼	1613B	Total/NA
OCDD	2400	B	22	2.9	pg/g	1	☼	1613B	Total/NA
OCDF	48	B	22	0.30	pg/g	1	☼	1613B	Total/NA
Total TCDD	14		2.2	0.37	pg/g	1	☼	1613B	Total/NA
Total TCDF	38		2.2	0.31	pg/g	1	☼	1613B	Total/NA
Total PeCDD	9.6	J q	11	0.28	pg/g	1	☼	1613B	Total/NA
Total PeCDF	4.0	J	11	0.18	pg/g	1	☼	1613B	Total/NA
Total HxCDD	49	q B	11	0.28	pg/g	1	☼	1613B	Total/NA
Total HxCDF	7.4	J	11	0.18	pg/g	1	☼	1613B	Total/NA
Total HpCDD	210	B	11	1.0	pg/g	1	☼	1613B	Total/NA
Total HpCDF	17	B	11	0.21	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	27		2.2	0.48	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2)
Lab Sample ID: 320-56911-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	7.0		1.7	0.33	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.74	J q	8.6	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.65	J q	8.6	0.26	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.96	J q B	8.6	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.4	J	8.6	0.25	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.79	J q	8.6	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.39	J	8.6	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.41	J q	8.6	0.11	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.20	J q	8.6	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	41	B	8.6	0.65	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.5	J	8.6	0.23	pg/g	1	☼	1613B	Total/NA
OCDD	1100	B	17	1.8	pg/g	1	☼	1613B	Total/NA
OCDF	23	B	17	0.31	pg/g	1	☼	1613B	Total/NA
Total TCDD	11		1.7	0.33	pg/g	1	☼	1613B	Total/NA
Total TCDF	31	q	1.7	0.23	pg/g	1	☼	1613B	Total/NA
Total PeCDD	5.3	J	8.6	0.32	pg/g	1	☼	1613B	Total/NA
Total PeCDF	1.5	J q	8.6	0.13	pg/g	1	☼	1613B	Total/NA
Total HxCDD	41	q B	8.6	0.26	pg/g	1	☼	1613B	Total/NA
Total HxCDF	3.5	J q	8.6	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDD	170	B	8.6	0.65	pg/g	1	☼	1613B	Total/NA
Total HpCDF	7.4	J B	8.6	0.21	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	21		1.7	0.42	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) Lab Sample ID: 320-56911-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	3.4		1.9	0.30	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.44	J	9.3	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.54	J	9.3	0.25	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.62	J q B	9.3	0.26	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.5	J	9.3	0.24	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.25	J q	9.3	0.099	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.20	J q	9.3	0.085	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	16	B	9.3	0.30	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.86	J	9.3	0.15	pg/g	1	☼	1613B	Total/NA
OCDD	330	B	19	0.73	pg/g	1	☼	1613B	Total/NA
OCDF	4.5	J B	19	0.23	pg/g	1	☼	1613B	Total/NA
Total TCDD	11	q	1.9	0.30	pg/g	1	☼	1613B	Total/NA
Total TCDF	15		1.9	0.17	pg/g	1	☼	1613B	Total/NA
Total PeCDD	6.6	J	9.3	0.29	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.44	J	9.3	0.12	pg/g	1	☼	1613B	Total/NA
Total HxCDD	27	q B	9.3	0.25	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.45	J q	9.3	0.094	pg/g	1	☼	1613B	Total/NA
Total HpCDD	63	B	9.3	0.30	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.7	J B	9.3	0.14	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	15		1.9	1.5	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	12		1.7	0.32	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.2	J	8.7	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.81	J	8.7	0.28	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.3	J B	8.7	0.29	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.5	J	8.7	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.7	J	8.7	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.74	J	8.7	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	45	B	8.7	0.50	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	3.9	J	8.7	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.65	J	8.7	0.15	pg/g	1	☼	1613B	Total/NA
OCDD	1100	B	17	1.4	pg/g	1	☼	1613B	Total/NA
OCDF	35	B	17	0.22	pg/g	1	☼	1613B	Total/NA
Total TCDD	17	q	1.7	0.32	pg/g	1	☼	1613B	Total/NA
Total TCDF	53	q	1.7	0.28	pg/g	1	☼	1613B	Total/NA
Total PeCDD	10	q	8.7	0.29	pg/g	1	☼	1613B	Total/NA
Total PeCDF	3.3	J q	8.7	0.16	pg/g	1	☼	1613B	Total/NA
Total HxCDD	46	B	8.7	0.28	pg/g	1	☼	1613B	Total/NA
Total HxCDF	5.5	J	8.7	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDD	160	B	8.7	0.50	pg/g	1	☼	1613B	Total/NA
Total HpCDF	11	q B	8.7	0.16	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	38		1.7	0.37	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	3.0		1.4	0.19	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.35	J q	7.0	0.084	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.31	J B	7.0	0.093	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) (Continued) Lab Sample ID: 320-56911-5

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8,9-HxCDD	0.34	J	7.0	0.084	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.33	J	7.0	0.077	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.13	J q	7.0	0.063	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	7.4	B	7.0	0.20	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.83	J	7.0	0.098	pg/g	1	☼	1613B	Total/NA
OCDD	300	B	14	0.56	pg/g	1	☼	1613B	Total/NA
OCDF	4.4	J B	14	0.16	pg/g	1	☼	1613B	Total/NA
Total TCDD	3.0		1.4	0.19	pg/g	1	☼	1613B	Total/NA
Total TCDF	19	q	1.4	0.15	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.76	J q	7.0	0.088	pg/g	1	☼	1613B	Total/NA
Total HxCDD	3.3	J B	7.0	0.088	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.83	J q	7.0	0.071	pg/g	1	☼	1613B	Total/NA
Total HpCDD	27	B	7.0	0.20	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.3	J B	7.0	0.093	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	13		1.4	0.27	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	4.4		1.3	0.19	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.64	J	6.5	0.075	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.50	J B	6.5	0.099	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.58	J	6.5	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.78	J	6.5	0.079	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.32	J	6.5	0.074	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.28	J	6.5	0.067	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	6.2	J B	6.5	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.2	J	6.5	0.096	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.35	J q	6.5	0.086	pg/g	1	☼	1613B	Total/NA
OCDD	180	B	13	0.42	pg/g	1	☼	1613B	Total/NA
OCDF	3.6	J B	13	0.15	pg/g	1	☼	1613B	Total/NA
Total TCDD	4.4		1.3	0.19	pg/g	1	☼	1613B	Total/NA
Total TCDF	29	q	1.3	0.16	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.74	J	6.5	0.077	pg/g	1	☼	1613B	Total/NA
Total HxCDD	4.3	J q B	6.5	0.095	pg/g	1	☼	1613B	Total/NA
Total HxCDF	3.3	J	6.5	0.073	pg/g	1	☼	1613B	Total/NA
Total HpCDD	18	B	6.5	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDF	4.0	J q B	6.5	0.091	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	20		1.3	0.41	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	9.7		1.3	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.2	J	6.3	0.11	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.61	J	6.3	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.24	J	6.3	0.090	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.21	J B q	6.3	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.44	J	6.3	0.082	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	3.3	J	6.3	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.82	J	6.3	0.13	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) (Continued) — Lab Sample ID: 320-56911-7

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8,9-HxCDF	0.46	J	6.3	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	6.1	J B	6.3	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.1	J	6.3	0.068	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.56	J	6.3	0.077	pg/g	1	☼	1613B	Total/NA
OCDD	180	B	13	0.24	pg/g	1	☼	1613B	Total/NA
OCDF	4.1	J B	13	0.10	pg/g	1	☼	1613B	Total/NA
Total TCDD	11	q	1.3	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDF	68		1.3	0.25	pg/g	1	☼	1613B	Total/NA
Total PeCDF	2.7	J q	6.3	0.11	pg/g	1	☼	1613B	Total/NA
Total HxCDD	5.0	J B q	6.3	0.088	pg/g	1	☼	1613B	Total/NA
Total HxCDF	4.6	J	6.3	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDD	22	B	6.3	0.15	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.5	J B	6.3	0.072	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	44		1.3	0.29	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) — Lab Sample ID: 320-56911-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	3.0		1.3	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.40	J	6.6	0.086	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.27	J q	6.6	0.084	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.19	J B	6.6	0.087	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.36	J	6.6	0.077	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.64	J	6.6	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.28	J	6.6	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.23	J q	6.6	0.089	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	5.5	J B	6.6	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.1	J	6.6	0.057	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.32	J	6.6	0.061	pg/g	1	☼	1613B	Total/NA
OCDD	130	B	13	0.19	pg/g	1	☼	1613B	Total/NA
OCDF	7.3	J B	13	0.14	pg/g	1	☼	1613B	Total/NA
Total TCDD	3.3	q	1.3	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDF	20	q	1.3	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	0.14	J q	6.6	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.40	J	6.6	0.089	pg/g	1	☼	1613B	Total/NA
Total HxCDD	3.3	J B q	6.6	0.083	pg/g	1	☼	1613B	Total/NA
Total HxCDF	1.2	J q	6.6	0.10	pg/g	1	☼	1613B	Total/NA
Total HpCDD	16	B	6.6	0.13	pg/g	1	☼	1613B	Total/NA
Total HpCDF	3.0	J B	6.6	0.059	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	14		1.3	0.43	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) — Lab Sample ID: 320-56911-9

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	18		1.5	0.23	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.8	J	7.7	0.15	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	1.0	J	7.7	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.37	J	7.7	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.56	J B	7.7	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.4	J	7.7	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	2.1	J	7.7	0.14	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) (Continued) — Lab Sample ID: 320-56911-9

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,6,7,8-HxCDF	0.49	J q	7.7	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	18	B	7.7	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.5	J	7.7	0.069	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.27	J q	7.7	0.076	pg/g	1	☼	1613B	Total/NA
OCDD	550	B	15	0.32	pg/g	1	☼	1613B	Total/NA
OCDF	10	J B	15	0.11	pg/g	1	☼	1613B	Total/NA
Total TCDD	22	q	1.5	0.23	pg/g	1	☼	1613B	Total/NA
Total TCDF	130	q	1.5	0.34	pg/g	1	☼	1613B	Total/NA
Total PeCDD	3.3	J q	7.7	0.18	pg/g	1	☼	1613B	Total/NA
Total PeCDF	4.5	J	7.7	0.15	pg/g	1	☼	1613B	Total/NA
Total HxCDD	20	B q	7.7	0.11	pg/g	1	☼	1613B	Total/NA
Total HxCDF	3.5	J q	7.7	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDD	70	B	7.7	0.27	pg/g	1	☼	1613B	Total/NA
Total HpCDF	3.7	J B q	7.7	0.072	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	78		1.5	0.38	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) — Lab Sample ID: 320-56911-10

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.5		1.4	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.33	J	6.8	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.36	J	6.8	0.083	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.29	J B q	6.8	0.083	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.71	J	6.8	0.075	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.26	J	6.8	0.089	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.31	J	6.8	0.065	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	8.0	B	6.8	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.49	J	6.8	0.057	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.23	J	6.8	0.061	pg/g	1	☼	1613B	Total/NA
OCDD	190	B	14	0.22	pg/g	1	☼	1613B	Total/NA
OCDF	3.4	J B	14	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	4.0	q	1.4	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDF	9.1	q	1.4	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	2.4	J q	6.8	0.15	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.33	J	6.8	0.093	pg/g	1	☼	1613B	Total/NA
Total HxCDD	11	B q	6.8	0.080	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.57	J	6.8	0.079	pg/g	1	☼	1613B	Total/NA
Total HpCDD	29	B	6.8	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.4	J B	6.8	0.059	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	6.0		1.4	0.21	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) — Lab Sample ID: 320-56911-11

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.76	J q	1.3	0.15	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.24	J	6.5	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.41	J B	6.5	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.76	J	6.5	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.21	J q	6.5	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.20	J q	6.5	0.089	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) (Continued) — Lab Sample ID: 320-56911-11

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,6,7,8-HpCDD	7.2	B	6.5	0.14	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.63	J	6.5	0.055	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	0.39	J	6.5	0.061	pg/g	1	☼	1613B	Total/NA
OCDD	140	B	13	0.19	pg/g	1	☼	1613B	Total/NA
OCDF	4.3	J B	13	0.10	pg/g	1	☼	1613B	Total/NA
Total TCDD	4.1	q	1.3	0.15	pg/g	1	☼	1613B	Total/NA
Total TCDF	4.1		1.3	0.087	pg/g	1	☼	1613B	Total/NA
Total PeCDD	3.3	J q	6.5	0.13	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.24	J	6.5	0.10	pg/g	1	☼	1613B	Total/NA
Total HxCDD	12	B q	6.5	0.11	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.41	J q	6.5	0.11	pg/g	1	☼	1613B	Total/NA
Total HpCDD	25	B	6.5	0.14	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.9	J B	6.5	0.058	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	2.9		1.3	0.20	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) — Lab Sample ID: 320-56911-12

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.3	J q	1.4	0.16	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.27	J	7.1	0.13	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.29	J q	7.1	0.10	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.31	J B	7.1	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	0.54	J	7.1	0.098	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.18	J q	7.1	0.096	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	6.6	J B	7.1	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.43	J	7.1	0.065	pg/g	1	☼	1613B	Total/NA
OCDD	160	B	14	0.20	pg/g	1	☼	1613B	Total/NA
OCDF	2.4	J B	14	0.13	pg/g	1	☼	1613B	Total/NA
Total TCDD	4.5	q	1.4	0.16	pg/g	1	☼	1613B	Total/NA
Total TCDF	6.4		1.4	0.13	pg/g	1	☼	1613B	Total/NA
Total PeCDD	3.0	J	7.1	0.20	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.27	J	7.1	0.13	pg/g	1	☼	1613B	Total/NA
Total HxCDD	10	B q	7.1	0.10	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.18	J q	7.1	0.12	pg/g	1	☼	1613B	Total/NA
Total HpCDD	24	B	7.1	0.17	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.0	J B	7.1	0.068	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	4.5		1.4	0.21	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120819-BN-DUP2 — Lab Sample ID: 320-56911-13

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	2.7		1.3	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.38	J	6.5	0.090	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.45	J	6.5	0.098	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.38	J B	6.5	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.1	J	6.5	0.091	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.28	J	6.5	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.17	J q	6.5	0.081	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	15	B	6.5	0.25	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.77	J	6.5	0.065	pg/g	1	☼	1613B	Total/NA
OCDD	380	B	13	0.34	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120819-BN-DUP2 (Continued) Lab Sample ID: 320-56911-13

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
OCDF	4.4	J B	13	0.12	pg/g	1	☼	1613B	Total/NA
Total TCDD	14	q	1.3	0.18	pg/g	1	☼	1613B	Total/NA
Total TCDF	16	q	1.3	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	7.6	q	6.5	0.16	pg/g	1	☼	1613B	Total/NA
Total PeCDF	0.85	J	6.5	0.088	pg/g	1	☼	1613B	Total/NA
Total HxCDD	28	B q	6.5	0.098	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.45	J q	6.5	0.099	pg/g	1	☼	1613B	Total/NA
Total HpCDD	65	B	6.5	0.25	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.8	J B	6.5	0.066	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	9.9		1.3	0.19	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1)
Lab Sample ID: 320-56911-1

Date Collected: 12/07/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 45.2**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	8.6		2.2	0.37	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,7,8-PeCDD	0.48	J q	11	0.28	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,7,8-PeCDF	1.1	J	11	0.17	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
2,3,4,7,8-PeCDF	0.75	J	11	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,4,7,8-HxCDD	1.0	J	11	0.28	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,6,7,8-HxCDD	1.5	J q B	11	0.29	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,7,8,9-HxCDD	3.2	J	11	0.27	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,4,7,8-HxCDF	1.8	J	11	0.19	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,6,7,8-HxCDF	0.91	J	11	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,7,8,9-HxCDF	ND		11	0.15	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
2,3,4,6,7,8-HxCDF	0.55	J	11	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,4,6,7,8-HpCDD	62	B	11	1.0	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,4,6,7,8-HpCDF	6.6	J	11	0.23	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
1,2,3,4,7,8,9-HpCDF	1.0	J	11	0.20	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
OCDD	2400	B	22	2.9	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
OCDF	48	B	22	0.30	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total TCDD	14		2.2	0.37	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total TCDF	38		2.2	0.31	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total PeCDD	9.6	J q	11	0.28	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total PeCDF	4.0	J	11	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total HxCDD	49	q B	11	0.28	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total HxCDF	7.4	J	11	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total HpCDD	210	B	11	1.0	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1
Total HpCDF	17	B	11	0.21	pg/g	☼	12/11/19 08:20	12/13/19 17:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-2,3,7,8-TCDF	*52*		*24 - 169*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,7,8-PeCDD	*54*		*25 - 181*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,7,8-PeCDF	*53*		*24 - 185*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,4,7,8-HxCDD	*59*		*32 - 141*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,6,7,8-HxCDF	*50*		*26 - 123*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,7,8,9-HxCDF	*48*		*29 - 147*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*54*		*26 - 138*	*12/11/19 08:20*	*12/13/19 17:23*	*1*
13C-OCDD	*55*		*17 - 157*	*12/11/19 08:20*	*12/13/19 17:23*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*92*		*35 - 197*	*12/11/19 08:20*	*12/13/19 17:23*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	27		2.2	0.48	pg/g	☼	12/11/19 08:20	12/17/19 16:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*54*		*24 - 169*	*12/11/19 08:20*	*12/17/19 16:06*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Date Collected: 12/07/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 45.2**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	12/11/19 08:20	12/17/19 16:06	1

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Date Collected: 12/07/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 57.4**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**7.0**		1.7	0.33	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,7,8-PeCDD	ND		8.6	0.32	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,7,8-PeCDF	**0.74**	**J q**	8.6	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
2,3,4,7,8-PeCDF	ND		8.6	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,4,7,8-HxCDD	**0.65**	**J q**	8.6	0.26	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,6,7,8-HxCDD	**0.96**	**J q B**	8.6	0.28	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,7,8,9-HxCDD	**2.4**	**J**	8.6	0.25	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,4,7,8-HxCDF	**0.79**	**J q**	8.6	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,6,7,8-HxCDF	**0.39**	**J**	8.6	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,7,8,9-HxCDF	**0.41**	**J q**	8.6	0.11	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
2,3,4,6,7,8-HxCDF	**0.20**	**J q**	8.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,4,6,7,8-HpCDD	**41**	**B**	8.6	0.65	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,4,6,7,8-HpCDF	**2.5**	**J**	8.6	0.23	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
1,2,3,4,7,8,9-HpCDF	ND		8.6	0.19	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
OCDD	**1100**	**B**	17	1.8	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
OCDF	**23**	**B**	17	0.31	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total TCDD	**11**		1.7	0.33	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total TCDF	**31**	**q**	1.7	0.23	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total PeCDD	**5.3**	**J**	8.6	0.32	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total PeCDF	**1.5**	**J q**	8.6	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total HxCDD	**41**	**q B**	8.6	0.26	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total HxCDF	**3.5**	**J q**	8.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total HpCDD	**170**	**B**	8.6	0.65	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1
Total HpCDF	**7.4**	**J B**	8.6	0.21	pg/g	☼	12/11/19 08:20	12/13/19 18:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	55		25 - 164	12/11/19 08:20	12/13/19 18:11	1
13C-2,3,7,8-TCDF	49		24 - 169	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	12/11/19 08:20	12/13/19 18:11	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,7,8,9-HxCDF	46		29 - 147	12/11/19 08:20	12/13/19 18:11	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	12/11/19 08:20	12/13/19 18:11	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138	12/11/19 08:20	12/13/19 18:11	1
13C-OCDD	50		17 - 157	12/11/19 08:20	12/13/19 18:11	1

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2)

Lab Sample ID: 320-56911-2
Date Collected: 12/07/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 57.4**

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*94*		*35 - 197*	*12/11/19 08:20*	*12/13/19 18:11*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**21**		1.7	0.42	pg/g	☼	12/11/19 08:20	12/17/19 16:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*12/11/19 08:20*	*12/17/19 16:44*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*12/11/19 08:20*	*12/17/19 16:44*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4)

Lab Sample ID: 320-56911-3
Date Collected: 12/07/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 53.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**3.4**		1.9	0.30	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,7,8-PeCDD	ND		9.3	0.29	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,7,8-PeCDF	**0.44**	**J**	9.3	0.11	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
2,3,4,7,8-PeCDF	ND		9.3	0.12	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,4,7,8-HxCDD	**0.54**	**J**	9.3	0.25	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,6,7,8-HxCDD	**0.62**	**J q B**	9.3	0.26	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,7,8,9-HxCDD	**1.5**	**J**	9.3	0.24	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,4,7,8-HxCDF	**0.25**	**J q**	9.3	0.099	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,6,7,8-HxCDF	ND		9.3	0.096	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,7,8,9-HxCDF	**0.20**	**J q**	9.3	0.085	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
2,3,4,6,7,8-HxCDF	ND		9.3	0.095	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,4,6,7,8-HpCDD	**16**	**B**	9.3	0.30	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,4,6,7,8-HpCDF	**0.86**	**J**	9.3	0.15	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
1,2,3,4,7,8,9-HpCDF	ND		9.3	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
OCDD	**330**	**B**	19	0.73	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
OCDF	**4.5**	**J B**	19	0.23	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total TCDD	**11**	**q**	1.9	0.30	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total TCDF	**15**		1.9	0.17	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total PeCDD	**6.6**	**J**	9.3	0.29	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total PeCDF	**0.44**	**J**	9.3	0.12	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total HxCDD	**27**	**q B**	9.3	0.25	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total HxCDF	**0.45**	**J q**	9.3	0.094	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total HpCDD	**63**	**B**	9.3	0.30	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1
Total HpCDF	**2.7**	**J B**	9.3	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-2,3,7,8-TCDF	*49*		*24 - 169*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*58*		*32 - 141*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*59*		*28 - 130*	*12/11/19 08:20*	*12/13/19 18:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*12/11/19 08:20*	*12/13/19 18:59*	*1*

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4)

Lab Sample ID: 320-56911-3
Date Collected: 12/07/19 15:20
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 53.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	12/11/19 08:20	12/13/19 18:59	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147	12/11/19 08:20	12/13/19 18:59	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	12/11/19 08:20	12/13/19 18:59	1
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	12/11/19 08:20	12/13/19 18:59	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	12/11/19 08:20	12/13/19 18:59	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	12/11/19 08:20	12/13/19 18:59	1
13C-OCDD	59		17 - 157	12/11/19 08:20	12/13/19 18:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	12/11/19 08:20	12/13/19 18:59	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**15**		1.9	1.5	pg/g	☼	12/11/19 08:20	12/16/19 21:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	12/11/19 08:20	12/16/19 21:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197	12/11/19 08:20	12/16/19 21:18	1

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6)

Lab Sample ID: 320-56911-4
Date Collected: 12/07/19 15:25
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 57.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**12**		1.7	0.32	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,7,8-PeCDD	ND		8.7	0.29	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,7,8-PeCDF	**1.2**	**J**	8.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
2,3,4,7,8-PeCDF	ND		8.7	0.17	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,4,7,8-HxCDD	**0.81**	**J**	8.7	0.28	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,6,7,8-HxCDD	**1.3**	**J B**	8.7	0.29	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,7,8,9-HxCDD	**2.5**	**J**	8.7	0.27	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,4,7,8-HxCDF	**1.7**	**J**	8.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,6,7,8-HxCDF	**0.74**	**J**	8.7	0.14	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,7,8,9-HxCDF	ND		8.7	0.12	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
2,3,4,6,7,8-HxCDF	ND		8.7	0.14	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,4,6,7,8-HpCDD	**45**	**B**	8.7	0.50	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,4,6,7,8-HpCDF	**3.9**	**J**	8.7	0.17	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
1,2,3,4,7,8,9-HpCDF	**0.65**	**J**	8.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
OCDD	**1100**	**B**	17	1.4	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
OCDF	**35**	**B**	17	0.22	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total TCDD	**17**	**q**	1.7	0.32	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total TCDF	**53**	**q**	1.7	0.28	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total PeCDD	**10**	**q**	8.7	0.29	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total PeCDF	**3.3**	**J q**	8.7	0.16	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total HxCDD	**46**	**B**	8.7	0.28	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total HxCDF	**5.5**	**J**	8.7	0.14	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total HpCDD	**160**	**B**	8.7	0.50	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1
Total HpCDF	**11**	**q B**	8.7	0.16	pg/g	☼	12/11/19 08:20	12/13/19 19:47	1

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Date Collected: 12/07/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 57.2**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	12/11/19 08:20	12/13/19 19:47	1
13C-2,3,7,8-TCDF	53		24 - 169	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,7,8-PeCDD	57		25 - 181	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	12/11/19 08:20	12/13/19 19:47	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	12/11/19 08:20	12/13/19 19:47	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	12/11/19 08:20	12/13/19 19:47	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	12/11/19 08:20	12/13/19 19:47	1
13C-OCDD	66		17 - 157	12/11/19 08:20	12/13/19 19:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	12/11/19 08:20	12/13/19 19:47	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**38**		1.7	0.37	pg/g	☼	12/11/19 08:20	12/16/19 21:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169	12/11/19 08:20	12/16/19 21:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	12/11/19 08:20	12/16/19 21:56	1

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Date Collected: 12/08/19 13:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 71.0**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**3.0**		1.4	0.19	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,7,8-PeCDD	ND		7.0	0.14	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,7,8-PeCDF	**0.35**	**J q**	7.0	0.084	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
2,3,4,7,8-PeCDF	ND		7.0	0.092	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,4,7,8-HxCDD	ND		7.0	0.087	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,6,7,8-HxCDD	**0.31**	**J B**	7.0	0.093	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,7,8,9-HxCDD	**0.34**	**J**	7.0	0.084	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,4,7,8-HxCDF	**0.33**	**J**	7.0	0.077	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,6,7,8-HxCDF	ND		7.0	0.073	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,7,8,9-HxCDF	**0.13**	**J q**	7.0	0.063	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
2,3,4,6,7,8-HxCDF	ND		7.0	0.070	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,4,6,7,8-HpCDD	**7.4**	**B**	7.0	0.20	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,4,6,7,8-HpCDF	**0.83**	**J**	7.0	0.098	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
1,2,3,4,7,8,9-HpCDF	ND		7.0	0.087	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
OCDD	**300**	**B**	14	0.56	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
OCDF	**4.4**	**J B**	14	0.16	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total TCDD	**3.0**		1.4	0.19	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1)

Lab Sample ID: 320-56911-5
Date Collected: 12/08/19 13:15
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 71.0

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	**19**	**q**	1.4	0.15	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total PeCDD	ND		7.0	0.14	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total PeCDF	**0.76**	**J q**	7.0	0.088	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total HxCDD	**3.3**	**J B**	7.0	0.088	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total HxCDF	**0.83**	**J q**	7.0	0.071	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total HpCDD	**27**	**B**	7.0	0.20	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1
Total HpCDF	**2.3**	**J B**	7.0	0.093	pg/g	☼	12/11/19 08:20	12/13/19 20:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-2,3,7,8-TCDF	*51*		*24 - 169*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,7,8-PeCDD	*53*		*25 - 181*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,7,8-PeCDF	*54*		*24 - 185*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*28 - 130*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,4,7,8-HxCDF	*55*		*26 - 152*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,7,8,9-HxCDF	*51*		*29 - 147*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-2,3,4,6,7,8-HxCDF	*49*		*28 - 136*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*48*		*28 - 143*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*12/11/19 08:20*	*12/13/19 20:35*	*1*
13C-OCDD	*59*		*17 - 157*	*12/11/19 08:20*	*12/13/19 20:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*97*		*35 - 197*	*12/11/19 08:20*	*12/13/19 20:35*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**13**		1.4	0.27	pg/g	☼	12/11/19 08:20	12/16/19 22:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*12/11/19 08:20*	*12/16/19 22:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*105*		*35 - 197*	*12/11/19 08:20*	*12/16/19 22:35*	*1*

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2)

Lab Sample ID: 320-56911-6
Date Collected: 12/08/19 13:20
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 75.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**4.4**		1.3	0.19	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,7,8-PeCDD	ND		6.5	0.15	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,7,8-PeCDF	**0.64**	**J**	6.5	0.075	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
2,3,4,7,8-PeCDF	ND		6.5	0.079	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,4,7,8-HxCDD	ND		6.5	0.096	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,6,7,8-HxCDD	**0.50**	**J B**	6.5	0.099	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,7,8,9-HxCDD	**0.58**	**J**	6.5	0.091	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,4,7,8-HxCDF	**0.78**	**J**	6.5	0.079	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) **Lab Sample ID: 320-56911-6**
Date Collected: 12/08/19 13:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.2**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	0.32	J	6.5	0.074	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,7,8,9-HxCDF	0.28	J	6.5	0.067	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
2,3,4,6,7,8-HxCDF	ND		6.5	0.073	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,4,6,7,8-HpCDD	6.2	J B	6.5	0.14	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,4,6,7,8-HpCDF	1.2	J	6.5	0.096	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
1,2,3,4,7,8,9-HpCDF	0.35	J q	6.5	0.086	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
OCDD	180	B	13	0.42	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
OCDF	3.6	J B	13	0.15	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total TCDD	4.4		1.3	0.19	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total TCDF	29	q	1.3	0.16	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total PeCDD	ND		6.5	0.15	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total PeCDF	0.74	J	6.5	0.077	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total HxCDD	4.3	J q B	6.5	0.095	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total HxCDF	3.3	J	6.5	0.073	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total HpCDD	18	B	6.5	0.14	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1
Total HpCDF	4.0	J q B	6.5	0.091	pg/g	☼	12/11/19 08:20	12/13/19 21:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-2,3,7,8-TCDF	*48*		*24 - 169*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-2,3,4,7,8-PeCDF	*53*		*21 - 178*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*28 - 130*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,4,7,8-HxCDF	*50*		*26 - 152*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,6,7,8-HxCDF	*51*		*26 - 123*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,7,8,9-HxCDF	*47*		*29 - 147*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*53*		*23 - 140*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*47*		*28 - 143*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*54*		*26 - 138*	*12/11/19 08:20*	*12/13/19 21:23*	*1*
13C-OCDD	*58*		*17 - 157*	*12/11/19 08:20*	*12/13/19 21:23*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*98*		*35 - 197*	*12/11/19 08:20*	*12/13/19 21:23*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	20		1.3	0.41	pg/g	☼	12/11/19 08:20	12/16/19 23:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*54*		*24 - 169*	*12/11/19 08:20*	*12/16/19 23:13*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*105*		*35 - 197*	*12/11/19 08:20*	*12/16/19 23:13*	*1*

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Date Collected: 12/08/19 13:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 78.4**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**9.7**		1.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,7,8-PeCDD	ND		6.3	0.18	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,7,8-PeCDF	**1.2**	**J**	6.3	0.11	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
2,3,4,7,8-PeCDF	**0.61**	**J**	6.3	0.11	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,4,7,8-HxCDD	**0.24**	**J**	6.3	0.090	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,6,7,8-HxCDD	**0.21**	**J B q**	6.3	0.091	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,7,8,9-HxCDD	**0.44**	**J**	6.3	0.082	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,4,7,8-HxCDF	**3.3**	**J**	6.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,6,7,8-HxCDF	**0.82**	**J**	6.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,7,8,9-HxCDF	**0.46**	**J**	6.3	0.10	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
2,3,4,6,7,8-HxCDF	ND		6.3	0.10	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,4,6,7,8-HpCDD	**6.1**	**J B**	6.3	0.15	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,4,6,7,8-HpCDF	**1.1**	**J**	6.3	0.068	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
1,2,3,4,7,8,9-HpCDF	**0.56**	**J**	6.3	0.077	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
OCDD	**180**	**B**	13	0.24	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
OCDF	**4.1**	**J B**	13	0.10	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total TCDD	**11**	**q**	1.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total TCDF	**68**		1.3	0.25	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total PeCDD	ND		6.3	0.18	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total PeCDF	**2.7**	**J q**	6.3	0.11	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total HxCDD	**5.0**	**J B q**	6.3	0.088	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total HxCDF	**4.6**	**J**	6.3	0.12	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total HpCDD	**22**	**B**	6.3	0.15	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1
Total HpCDF	**2.5**	**J B**	6.3	0.072	pg/g	☼	12/11/19 08:20	12/13/19 16:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-2,3,7,8-TCDF	*51*		*24 - 169*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,7,8-PeCDD	*58*		*25 - 181*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,4,7,8-HxCDF	*55*		*26 - 152*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,6,7,8-HxCDF	*48*		*26 - 123*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,7,8,9-HxCDF	*51*		*29 - 147*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-2,3,4,6,7,8-HxCDF	*51*		*28 - 136*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*28 - 143*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*12/11/19 08:20*	*12/13/19 16:21*	*1*
13C-OCDD	*70*		*17 - 157*	*12/11/19 08:20*	*12/13/19 16:21*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*95*		*35 - 197*	*12/11/19 08:20*	*12/13/19 16:21*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**44**		1.3	0.29	pg/g	☼	12/11/19 08:20	12/16/19 23:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*55*		*24 - 169*	*12/11/19 08:20*	*12/16/19 23:51*	*1*

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Date Collected: 12/08/19 13:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 78.4**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	12/11/19 08:20	12/16/19 23:51	1

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) Lab Sample ID: 320-56911-8

Date Collected: 12/08/19 13:30 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.4**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**3.0**		1.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,7,8-PeCDD	ND		6.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,7,8-PeCDF	**0.40**	**J**	6.6	0.086	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
2,3,4,7,8-PeCDF	ND		6.6	0.092	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,4,7,8-HxCDD	**0.27**	**J q**	6.6	0.084	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,6,7,8-HxCDD	**0.19**	**J B**	6.6	0.087	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,7,8,9-HxCDD	**0.36**	**J**	6.6	0.077	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,4,7,8-HxCDF	**0.64**	**J**	6.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,6,7,8-HxCDF	**0.28**	**J**	6.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,7,8,9-HxCDF	**0.23**	**J q**	6.6	0.089	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
2,3,4,6,7,8-HxCDF	ND		6.6	0.094	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,4,6,7,8-HpCDD	**5.5**	**J B**	6.6	0.13	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,4,6,7,8-HpCDF	**1.1**	**J**	6.6	0.057	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
1,2,3,4,7,8,9-HpCDF	**0.32**	**J**	6.6	0.061	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
OCDD	**130**	**B**	13	0.19	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
OCDF	**7.3**	**J B**	13	0.14	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total TCDD	**3.3**	**q**	1.3	0.13	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total TCDF	**20**	**q**	1.3	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total PeCDD	**0.14**	**J q**	6.6	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total PeCDF	**0.40**	**J**	6.6	0.089	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total HxCDD	**3.3**	**J B q**	6.6	0.083	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total HxCDF	**1.2**	**J q**	6.6	0.10	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total HpCDD	**16**	**B**	6.6	0.13	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1
Total HpCDF	**3.0**	**J B**	6.6	0.059	pg/g	☼	12/11/19 08:20	12/13/19 17:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	53		25 - 164	12/11/19 08:20	12/13/19 17:07	1
13C-2,3,7,8-TCDF	49		24 - 169	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	12/11/19 08:20	12/13/19 17:07	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147	12/11/19 08:20	12/13/19 17:07	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	12/11/19 08:20	12/13/19 17:07	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	12/11/19 08:20	12/13/19 17:07	1
13C-OCDD	68		17 - 157	12/11/19 08:20	12/13/19 17:07	1

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6)

Lab Sample ID: 320-56911-8
Date Collected: 12/08/19 13:30
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 75.4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197	12/11/19 08:20	12/13/19 17:07	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	14		1.3	0.43	pg/g	☼	12/11/19 08:20	12/17/19 00:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169	12/11/19 08:20	12/17/19 00:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	12/11/19 08:20	12/17/19 00:29	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1)

Lab Sample ID: 320-56911-9
Date Collected: 12/08/19 15:10
Matrix: Sediment
Date Received: 12/10/19 09:20
Percent Solids: 64.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	18		1.5	0.23	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,7,8-PeCDD	ND		7.7	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,7,8-PeCDF	1.8	J	7.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
2,3,4,7,8-PeCDF	1.0	J	7.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,4,7,8-HxCDD	0.37	J	7.7	0.11	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,6,7,8-HxCDD	0.56	J B	7.7	0.11	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,7,8,9-HxCDD	1.4	J	7.7	0.10	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,4,7,8-HxCDF	2.1	J	7.7	0.14	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,6,7,8-HxCDF	0.49	J q	7.7	0.14	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,7,8,9-HxCDF	ND		7.7	0.10	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
2,3,4,6,7,8-HxCDF	ND		7.7	0.11	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,4,6,7,8-HpCDD	18	B	7.7	0.27	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,4,6,7,8-HpCDF	1.5	J	7.7	0.069	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
1,2,3,4,7,8,9-HpCDF	0.27	J q	7.7	0.076	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
OCDD	550	B	15	0.32	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
OCDF	10	J B	15	0.11	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total TCDD	22	q	1.5	0.23	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total TCDF	130	q	1.5	0.34	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total PeCDD	3.3	J q	7.7	0.18	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total PeCDF	4.5	J	7.7	0.15	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total HxCDD	20	B q	7.7	0.11	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total HxCDF	3.5	J q	7.7	0.12	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total HpCDD	70	B	7.7	0.27	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1
Total HpCDF	3.7	J B q	7.7	0.072	pg/g	☼	12/11/19 08:20	12/13/19 17:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164	12/11/19 08:20	12/13/19 17:53	1
13C-2,3,7,8-TCDF	55		24 - 169	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	12/11/19 08:20	12/13/19 17:53	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	12/11/19 08:20	12/13/19 17:53	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) Lab Sample ID: 320-56911-9

Date Collected: 12/08/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 64.1**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	12/11/19 08:20	12/13/19 17:53	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,4,6,7,8-HpCDF	61		28 - 143	12/11/19 08:20	12/13/19 17:53	1
13C-1,2,3,4,7,8,9-HpCDF	73		26 - 138	12/11/19 08:20	12/13/19 17:53	1
13C-OCDD	85		17 - 157	12/11/19 08:20	12/13/19 17:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	12/11/19 08:20	12/13/19 17:53	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	78		1.5	0.38	pg/g	☼	12/11/19 08:20	12/17/19 01:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169	12/11/19 08:20	12/17/19 01:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	12/11/19 08:20	12/17/19 01:08	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Date Collected: 12/08/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 71.3**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.5		1.4	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,7,8-PeCDD	ND		6.8	0.15	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,7,8-PeCDF	0.33	J	6.8	0.091	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
2,3,4,7,8-PeCDF	ND		6.8	0.094	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,4,7,8-HxCDD	0.36	J	6.8	0.083	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,6,7,8-HxCDD	0.29	J B q	6.8	0.083	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,7,8,9-HxCDD	0.71	J	6.8	0.075	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,4,7,8-HxCDF	0.26	J	6.8	0.089	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,6,7,8-HxCDF	ND		6.8	0.090	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,7,8,9-HxCDF	0.31	J	6.8	0.065	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
2,3,4,6,7,8-HxCDF	ND		6.8	0.071	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,4,6,7,8-HpCDD	8.0	B	6.8	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,4,6,7,8-HpCDF	0.49	J	6.8	0.057	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
1,2,3,4,7,8,9-HpCDF	0.23	J	6.8	0.061	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
OCDD	190	B	14	0.22	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
OCDF	3.4	J B	14	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total TCDD	4.0	q	1.4	0.13	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total TCDF	9.1	q	1.4	0.12	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total PeCDD	2.4	J q	6.8	0.15	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total PeCDF	0.33	J	6.8	0.093	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total HxCDD	11	B q	6.8	0.080	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total HxCDF	0.57	J	6.8	0.079	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total HpCDD	29	B	6.8	0.14	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1
Total HpCDF	1.4	J B	6.8	0.059	pg/g	☼	12/11/19 08:20	12/13/19 18:39	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Date Collected: 12/08/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 71.3**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	58		25 - 164	12/11/19 08:20	12/13/19 18:39	1
13C-2,3,7,8-TCDF	52		24 - 169	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	12/11/19 08:20	12/13/19 18:39	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	12/11/19 08:20	12/13/19 18:39	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	12/11/19 08:20	12/13/19 18:39	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138	12/11/19 08:20	12/13/19 18:39	1
13C-OCDD	77		17 - 157	12/11/19 08:20	12/13/19 18:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	12/11/19 08:20	12/13/19 18:39	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**6.0**		1.4	0.21	pg/g	☼	12/11/19 08:20	12/17/19 01:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	12/11/19 08:20	12/17/19 01:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197	12/11/19 08:20	12/17/19 01:46	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Date Collected: 12/08/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.8**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.76**	**J q**	1.3	0.15	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,7,8-PeCDD	ND		6.5	0.13	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,7,8-PeCDF	**0.24**	**J**	6.5	0.10	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
2,3,4,7,8-PeCDF	ND		6.5	0.10	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,4,7,8-HxCDD	**0.31**	**J q**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,6,7,8-HxCDD	**0.41**	**J B**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,7,8,9-HxCDD	**0.76**	**J**	6.5	0.10	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,4,7,8-HxCDF	**0.21**	**J q**	6.5	0.12	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,6,7,8-HxCDF	ND		6.5	0.12	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,7,8,9-HxCDF	**0.20**	**J q**	6.5	0.089	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
2,3,4,6,7,8-HxCDF	ND		6.5	0.094	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,4,6,7,8-HpCDD	**7.2**	**B**	6.5	0.14	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,4,6,7,8-HpCDF	**0.63**	**J**	6.5	0.055	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
1,2,3,4,7,8,9-HpCDF	**0.39**	**J**	6.5	0.061	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
OCDD	**140**	**B**	13	0.19	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
OCDF	**4.3**	**J B**	13	0.10	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total TCDD	**4.1**	**q**	1.3	0.15	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4)
Lab Sample ID: 320-56911-11
Date Collected: 12/08/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.8**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	**4.1**		1.3	0.087	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total PeCDD	**3.3**	**J q**	6.5	0.13	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total PeCDF	**0.24**	**J**	6.5	0.10	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total HxCDD	**12**	**B q**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total HxCDF	**0.41**	**J q**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total HpCDD	**25**	**B**	6.5	0.14	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1
Total HpCDF	**1.9**	**J B**	6.5	0.058	pg/g	☼	12/11/19 08:20	12/13/19 19:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*53*		*25 - 164*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-2,3,7,8-TCDF	*50*		*24 - 169*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-2,3,4,7,8-PeCDF	*56*		*21 - 178*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*52*		*28 - 130*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*26 - 152*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,6,7,8-HxCDF	*47*		*26 - 123*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,7,8,9-HxCDF	*52*		*29 - 147*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-2,3,4,6,7,8-HxCDF	*50*		*28 - 136*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*63*		*23 - 140*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*52*		*28 - 143*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*26 - 138*	*12/11/19 08:20*	*12/13/19 19:25*	*1*
13C-OCDD	*73*		*17 - 157*	*12/11/19 08:20*	*12/13/19 19:25*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*12/11/19 08:20*	*12/13/19 19:25*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**2.9**		1.3	0.20	pg/g	☼	12/11/19 08:20	12/17/19 02:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*53*		*24 - 169*	*12/11/19 08:20*	*12/17/19 02:24*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*12/11/19 08:20*	*12/17/19 02:24*	*1*

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6)
Lab Sample ID: 320-56911-12
Date Collected: 12/08/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 68.5**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**1.3**	**J q**	1.4	0.16	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,7,8-PeCDD	ND		7.1	0.20	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,7,8-PeCDF	**0.27**	**J**	7.1	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
2,3,4,7,8-PeCDF	ND		7.1	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,4,7,8-HxCDD	**0.29**	**J q**	7.1	0.10	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,6,7,8-HxCDD	**0.31**	**J B**	7.1	0.11	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,7,8,9-HxCDD	**0.54**	**J**	7.1	0.098	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,4,7,8-HxCDF	ND		7.1	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) **Lab Sample ID: 320-56911-12**
Date Collected: 12/08/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 68.5**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	ND		7.1	0.14	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,7,8,9-HxCDF	**0.18**	**J q**	7.1	0.096	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
2,3,4,6,7,8-HxCDF	ND		7.1	0.11	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,4,6,7,8-HpCDD	**6.6**	**J B**	7.1	0.17	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,4,6,7,8-HpCDF	**0.43**	**J**	7.1	0.065	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
1,2,3,4,7,8,9-HpCDF	ND		7.1	0.071	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
OCDD	**160**	**B**	14	0.20	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
OCDF	**2.4**	**J B**	14	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total TCDD	**4.5**	**q**	1.4	0.16	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total TCDF	**6.4**		1.4	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total PeCDD	**3.0**	**J**	7.1	0.20	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total PeCDF	**0.27**	**J**	7.1	0.13	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total HxCDD	**10**	**B q**	7.1	0.10	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total HxCDF	**0.18**	**J q**	7.1	0.12	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total HpCDD	**24**	**B**	7.1	0.17	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1
Total HpCDF	**1.0**	**J B**	7.1	0.068	pg/g	☼	12/11/19 08:20	12/13/19 20:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-2,3,7,8-TCDF	*52*		*24 - 169*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,7,8-PeCDD	*60*		*25 - 181*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,7,8-PeCDF	*55*		*24 - 185*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-2,3,4,7,8-PeCDF	*58*		*21 - 178*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*56*		*28 - 130*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,6,7,8-HxCDF	*50*		*26 - 123*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-2,3,4,6,7,8-HxCDF	*53*		*28 - 136*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*55*		*28 - 143*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*26 - 138*	*12/11/19 08:20*	*12/13/19 20:11*	*1*
13C-OCDD	*74*		*17 - 157*	*12/11/19 08:20*	*12/13/19 20:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*12/11/19 08:20*	*12/13/19 20:11*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**4.5**		1.4	0.21	pg/g	☼	12/11/19 08:20	12/17/19 03:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*12/11/19 08:20*	*12/17/19 03:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*12/11/19 08:20*	*12/17/19 03:03*	*1*

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Date Collected: 12/08/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 76.5**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**2.7**		1.3	0.18	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,7,8-PeCDD	ND		6.5	0.16	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,7,8-PeCDF	**0.38**	**J**	6.5	0.090	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
2,3,4,7,8-PeCDF	ND		6.5	0.086	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,4,7,8-HxCDD	**0.45**	**J**	6.5	0.098	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,6,7,8-HxCDD	**0.38**	**J B**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,7,8,9-HxCDD	**1.1**	**J**	6.5	0.091	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,4,7,8-HxCDF	**0.28**	**J**	6.5	0.11	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,6,7,8-HxCDF	ND		6.5	0.12	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,7,8,9-HxCDF	**0.17**	**J q**	6.5	0.081	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
2,3,4,6,7,8-HxCDF	ND		6.5	0.088	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,4,6,7,8-HpCDD	**15**	**B**	6.5	0.25	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,4,6,7,8-HpCDF	**0.77**	**J**	6.5	0.065	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
1,2,3,4,7,8,9-HpCDF	ND		6.5	0.066	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
OCDD	**380**	**B**	13	0.34	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
OCDF	**4.4**	**J B**	13	0.12	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total TCDD	**14**	**q**	1.3	0.18	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total TCDF	**16**	**q**	1.3	0.12	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total PeCDD	**7.6**	**q**	6.5	0.16	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total PeCDF	**0.85**	**J**	6.5	0.088	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total HxCDD	**28**	**B q**	6.5	0.098	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total HxCDF	**0.45**	**J q**	6.5	0.099	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total HpCDD	**65**	**B**	6.5	0.25	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1
Total HpCDF	**1.8**	**J B**	6.5	0.066	pg/g	☼	12/11/19 08:20	12/13/19 20:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,7,8-PeCDF	*55*		*24 - 185*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,6,7,8-HxCDF	*44*		*26 - 123*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,7,8,9-HxCDF	*52*		*29 - 147*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-2,3,4,6,7,8-HxCDF	*47*		*28 - 136*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*12/11/19 08:20*	*12/13/19 20:57*	*1*
13C-OCDD	*60*		*17 - 157*	*12/11/19 08:20*	*12/13/19 20:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*12/11/19 08:20*	*12/13/19 20:57*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**9.9**		1.3	0.19	pg/g	☼	12/11/19 08:20	12/17/19 03:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*62*		*24 - 169*	*12/11/19 08:20*	*12/17/19 03:41*	*1*

Client Sample ID: 11187072-120819-BN-DUP2 **Lab Sample ID: 320-56911-13**
Date Collected: 12/08/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 76.5**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	12/11/19 08:20	12/17/19 03:41	1

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	8.6		2.2	0.37	pg/g	1	8.6	1613B
1,2,3,7,8-PeCDD	0.48	J q	11	0.28	pg/g	1	0.48	1613B
1,2,3,7,8-PeCDF	1.1	J	11	0.17	pg/g	0.03	0.033	1613B
2,3,4,7,8-PeCDF	0.75	J	11	0.18	pg/g	0.3	0.23	1613B
1,2,3,4,7,8-HxCDD	1.0	J	11	0.28	pg/g	0.1	0.10	1613B
1,2,3,6,7,8-HxCDD	1.5	J q B	11	0.29	pg/g	0.1	0.15	1613B
1,2,3,7,8,9-HxCDD	3.2	J	11	0.27	pg/g	0.1	0.32	1613B
1,2,3,4,7,8-HxCDF	1.8	J	11	0.19	pg/g	0.1	0.18	1613B
1,2,3,6,7,8-HxCDF	0.91	J	11	0.18	pg/g	0.1	0.091	1613B
1,2,3,7,8,9-HxCDF	ND		11	0.15	pg/g	0.1	0.0075	1613B
2,3,4,6,7,8-HxCDF	0.55	J	11	0.18	pg/g	0.1	0.055	1613B
1,2,3,4,6,7,8-HpCDD	62	B	11	1.0	pg/g	0.01	0.62	1613B
1,2,3,4,6,7,8-HpCDF	6.6	J	11	0.23	pg/g	0.01	0.066	1613B
1,2,3,4,7,8,9-HpCDF	1.0	J	11	0.20	pg/g	0.01	0.010	1613B
OCDD	2400	B	22	2.9	pg/g	0.0003	0.72	1613B
OCDF	48	B	22	0.30	pg/g	0.0003	0.014	1613B
2,3,7,8-TCDF - RA	27		2.2	0.48	pg/g	0.1	2.7	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		14	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	7.0		1.7	0.33	pg/g	1	7.0	1613B
1,2,3,7,8-PeCDD	ND		8.6	0.32	pg/g	1	0.16	1613B
1,2,3,7,8-PeCDF	0.74	J q	8.6	0.13	pg/g	0.03	0.022	1613B
2,3,4,7,8-PeCDF	ND		8.6	0.14	pg/g	0.3	0.021	1613B
1,2,3,4,7,8-HxCDD	0.65	J q	8.6	0.26	pg/g	0.1	0.065	1613B
1,2,3,6,7,8-HxCDD	0.96	J q B	8.6	0.28	pg/g	0.1	0.096	1613B
1,2,3,7,8,9-HxCDD	2.4	J	8.6	0.25	pg/g	0.1	0.24	1613B
1,2,3,4,7,8-HxCDF	0.79	J q	8.6	0.14	pg/g	0.1	0.079	1613B
1,2,3,6,7,8-HxCDF	0.39	J	8.6	0.13	pg/g	0.1	0.039	1613B
1,2,3,7,8,9-HxCDF	0.41	J q	8.6	0.11	pg/g	0.1	0.041	1613B
2,3,4,6,7,8-HxCDF	0.20	J q	8.6	0.12	pg/g	0.1	0.020	1613B
1,2,3,4,6,7,8-HpCDD	41	B	8.6	0.65	pg/g	0.01	0.41	1613B
1,2,3,4,6,7,8-HpCDF	2.5	J	8.6	0.23	pg/g	0.01	0.025	1613B
1,2,3,4,7,8,9-HpCDF	ND		8.6	0.19	pg/g	0.01	0.00095	1613B
OCDD	1100	B	17	1.8	pg/g	0.0003	0.33	1613B
OCDF	23	B	17	0.31	pg/g	0.0003	0.0069	1613B
2,3,7,8-TCDF - RA	21		1.7	0.42	pg/g	0.1	2.1	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc.
Project/Site: San Jacinto River Waste Pits Superfund

Job ID: 320-56911-1

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) (Continued)

Lab Sample ID: 320-56911-2

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		11	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4)

Lab Sample ID: 320-56911-3

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**3.4**		1.9	0.30	pg/g	1	**3.4**	1613B
1,2,3,7,8-PeCDD	ND		9.3	0.29	pg/g	1	0.15	1613B
1,2,3,7,8-PeCDF	**0.44**	**J**	9.3	0.11	pg/g	0.03	**0.013**	1613B
2,3,4,7,8-PeCDF	ND		9.3	0.12	pg/g	0.3	0.018	1613B
1,2,3,4,7,8-HxCDD	**0.54**	**J**	9.3	0.25	pg/g	0.1	**0.054**	1613B
1,2,3,6,7,8-HxCDD	**0.62**	**J q B**	9.3	0.26	pg/g	0.1	**0.062**	1613B
1,2,3,7,8,9-HxCDD	**1.5**	**J**	9.3	0.24	pg/g	0.1	**0.15**	1613B
1,2,3,4,7,8-HxCDF	**0.25**	**J q**	9.3	0.099	pg/g	0.1	**0.025**	1613B
1,2,3,6,7,8-HxCDF	ND		9.3	0.096	pg/g	0.1	0.0048	1613B
1,2,3,7,8,9-HxCDF	**0.20**	**J q**	9.3	0.085	pg/g	0.1	**0.020**	1613B
2,3,4,6,7,8-HxCDF	ND		9.3	0.095	pg/g	0.1	0.0048	1613B
1,2,3,4,6,7,8-HpCDD	**16**	**B**	9.3	0.30	pg/g	0.01	**0.16**	1613B
1,2,3,4,6,7,8-HpCDF	**0.86**	**J**	9.3	0.15	pg/g	0.01	**0.0086**	1613B
1,2,3,4,7,8,9-HpCDF	ND		9.3	0.14	pg/g	0.01	0.00070	1613B
OCDD	**330**	**B**	19	0.73	pg/g	0.0003	**0.099**	1613B
OCDF	**4.5**	**J B**	19	0.23	pg/g	0.0003	**0.0014**	1613B
2,3,7,8-TCDF - RA	**15**		1.9	1.5	pg/g	0.1	**1.5**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		5.7	TEQ

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6)

Lab Sample ID: 320-56911-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**12**		1.7	0.32	pg/g	1	**12**	1613B
1,2,3,7,8-PeCDD	ND		8.7	0.29	pg/g	1	0.15	1613B
1,2,3,7,8-PeCDF	**1.2**	**J**	8.7	0.15	pg/g	0.03	**0.036**	1613B
2,3,4,7,8-PeCDF	ND		8.7	0.17	pg/g	0.3	0.026	1613B
1,2,3,4,7,8-HxCDD	**0.81**	**J**	8.7	0.28	pg/g	0.1	**0.081**	1613B
1,2,3,6,7,8-HxCDD	**1.3**	**J B**	8.7	0.29	pg/g	0.1	**0.13**	1613B
1,2,3,7,8,9-HxCDD	**2.5**	**J**	8.7	0.27	pg/g	0.1	**0.25**	1613B
1,2,3,4,7,8-HxCDF	**1.7**	**J**	8.7	0.15	pg/g	0.1	**0.17**	1613B
1,2,3,6,7,8-HxCDF	**0.74**	**J**	8.7	0.14	pg/g	0.1	**0.074**	1613B
1,2,3,7,8,9-HxCDF	ND		8.7	0.12	pg/g	0.1	0.0060	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) (Continued) — Lab Sample ID: 320-56911-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,4,6,7,8-HxCDF	ND		8.7	0.14	pg/g	0.1	0.0070	1613B
1,2,3,4,6,7,8-HpCDD	**45**	**B**	8.7	0.50	pg/g	0.01	**0.45**	1613B
1,2,3,4,6,7,8-HpCDF	**3.9**	**J**	8.7	0.17	pg/g	0.01	**0.039**	1613B
1,2,3,4,7,8,9-HpCDF	**0.65**	**J**	8.7	0.15	pg/g	0.01	**0.0065**	1613B
OCDD	**1100**	**B**	17	1.4	pg/g	0.0003	**0.33**	1613B
OCDF	**35**	**B**	17	0.22	pg/g	0.0003	**0.011**	1613B
2,3,7,8-TCDF - RA	**38**		1.7	0.37	pg/g	0.1	**3.8**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		18	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) — Lab Sample ID: 320-56911-5

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**3.0**		1.4	0.19	pg/g	1	**3.0**	1613B
1,2,3,7,8-PeCDD	ND		7.0	0.14	pg/g	1	0.070	1613B
1,2,3,7,8-PeCDF	**0.35**	**J q**	7.0	0.084	pg/g	0.03	**0.011**	1613B
2,3,4,7,8-PeCDF	ND		7.0	0.092	pg/g	0.3	0.014	1613B
1,2,3,4,7,8-HxCDD	ND		7.0	0.087	pg/g	0.1	0.0044	1613B
1,2,3,6,7,8-HxCDD	**0.31**	**J B**	7.0	0.093	pg/g	0.1	**0.031**	1613B
1,2,3,7,8,9-HxCDD	**0.34**	**J**	7.0	0.084	pg/g	0.1	**0.034**	1613B
1,2,3,4,7,8-HxCDF	**0.33**	**J**	7.0	0.077	pg/g	0.1	**0.033**	1613B
1,2,3,6,7,8-HxCDF	ND		7.0	0.073	pg/g	0.1	0.0037	1613B
1,2,3,7,8,9-HxCDF	**0.13**	**J q**	7.0	0.063	pg/g	0.1	**0.013**	1613B
2,3,4,6,7,8-HxCDF	ND		7.0	0.070	pg/g	0.1	0.0035	1613B
1,2,3,4,6,7,8-HpCDD	**7.4**	**B**	7.0	0.20	pg/g	0.01	**0.074**	1613B
1,2,3,4,6,7,8-HpCDF	**0.83**	**J**	7.0	0.098	pg/g	0.01	**0.0083**	1613B
1,2,3,4,7,8,9-HpCDF	ND		7.0	0.087	pg/g	0.01	0.00044	1613B
OCDD	**300**	**B**	14	0.56	pg/g	0.0003	**0.090**	1613B
OCDF	**4.4**	**J B**	14	0.16	pg/g	0.0003	**0.0013**	1613B
2,3,7,8-TCDF - RA	**13**		1.4	0.27	pg/g	0.1	**1.3**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		4.7	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**4.4**		1.3	0.19	pg/g	1	**4.4**	1613B
1,2,3,7,8-PeCDD	ND		6.5	0.15	pg/g	1	0.075	1613B
1,2,3,7,8-PeCDF	**0.64**	**J**	6.5	0.075	pg/g	0.03	**0.019**	1613B
2,3,4,7,8-PeCDF	ND		6.5	0.079	pg/g	0.3	0.012	1613B
1,2,3,4,7,8-HxCDD	ND		6.5	0.096	pg/g	0.1	0.0048	1613B
1,2,3,6,7,8-HxCDD	**0.50**	**J B**	6.5	0.099	pg/g	0.1	**0.050**	1613B
1,2,3,7,8,9-HxCDD	**0.58**	**J**	6.5	0.091	pg/g	0.1	**0.058**	1613B
1,2,3,4,7,8-HxCDF	**0.78**	**J**	6.5	0.079	pg/g	0.1	**0.078**	1613B
1,2,3,6,7,8-HxCDF	**0.32**	**J**	6.5	0.074	pg/g	0.1	**0.032**	1613B
1,2,3,7,8,9-HxCDF	**0.28**	**J**	6.5	0.067	pg/g	0.1	**0.028**	1613B
2,3,4,6,7,8-HxCDF	ND		6.5	0.073	pg/g	0.1	0.0037	1613B
1,2,3,4,6,7,8-HpCDD	**6.2**	**J B**	6.5	0.14	pg/g	0.01	**0.062**	1613B
1,2,3,4,6,7,8-HpCDF	**1.2**	**J**	6.5	0.096	pg/g	0.01	**0.012**	1613B
1,2,3,4,7,8,9-HpCDF	**0.35**	**J q**	6.5	0.086	pg/g	0.01	**0.0035**	1613B
OCDD	**180**	**B**	13	0.42	pg/g	0.0003	**0.054**	1613B
OCDF	**3.6**	**J B**	13	0.15	pg/g	0.0003	**0.0011**	1613B
2,3,7,8-TCDF - RA	**20**		1.3	0.41	pg/g	0.1	**2.0**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		6.9	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**9.7**		1.3	0.13	pg/g	1	**9.7**	1613B
1,2,3,7,8-PeCDD	ND		6.3	0.18	pg/g	1	0.090	1613B
1,2,3,7,8-PeCDF	**1.2**	**J**	6.3	0.11	pg/g	0.03	**0.036**	1613B
2,3,4,7,8-PeCDF	**0.61**	**J**	6.3	0.11	pg/g	0.3	**0.18**	1613B
1,2,3,4,7,8-HxCDD	**0.24**	**J**	6.3	0.090	pg/g	0.1	**0.024**	1613B
1,2,3,6,7,8-HxCDD	**0.21**	**J B q**	6.3	0.091	pg/g	0.1	**0.021**	1613B
1,2,3,7,8,9-HxCDD	**0.44**	**J**	6.3	0.082	pg/g	0.1	**0.044**	1613B
1,2,3,4,7,8-HxCDF	**3.3**	**J**	6.3	0.13	pg/g	0.1	**0.33**	1613B
1,2,3,6,7,8-HxCDF	**0.82**	**J**	6.3	0.13	pg/g	0.1	**0.082**	1613B
1,2,3,7,8,9-HxCDF	**0.46**	**J**	6.3	0.10	pg/g	0.1	**0.046**	1613B
2,3,4,6,7,8-HxCDF	ND		6.3	0.10	pg/g	0.1	0.0050	1613B
1,2,3,4,6,7,8-HpCDD	**6.1**	**J B**	6.3	0.15	pg/g	0.01	**0.061**	1613B
1,2,3,4,6,7,8-HpCDF	**1.1**	**J**	6.3	0.068	pg/g	0.01	**0.011**	1613B
1,2,3,4,7,8,9-HpCDF	**0.56**	**J**	6.3	0.077	pg/g	0.01	**0.0056**	1613B
OCDD	**180**	**B**	13	0.24	pg/g	0.0003	**0.054**	1613B
OCDF	**4.1**	**J B**	13	0.10	pg/g	0.0003	**0.0012**	1613B
2,3,7,8-TCDF - RA	**44**		1.3	0.29	pg/g	0.1	**4.4**	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) (Continued) — Lab Sample ID: 320-56911-7

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		15	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) — Lab Sample ID: 320-56911-8

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**3.0**		1.3	0.13	pg/g	1	**3.0**	1613B
1,2,3,7,8-PeCDD	ND		6.6	0.12	pg/g	1	0.060	1613B
1,2,3,7,8-PeCDF	**0.40**	**J**	6.6	0.086	pg/g	0.03	**0.012**	1613B
2,3,4,7,8-PeCDF	ND		6.6	0.092	pg/g	0.3	0.014	1613B
1,2,3,4,7,8-HxCDD	**0.27**	**J q**	6.6	0.084	pg/g	0.1	**0.027**	1613B
1,2,3,6,7,8-HxCDD	**0.19**	**J B**	6.6	0.087	pg/g	0.1	**0.019**	1613B
1,2,3,7,8,9-HxCDD	**0.36**	**J**	6.6	0.077	pg/g	0.1	**0.036**	1613B
1,2,3,4,7,8-HxCDF	**0.64**	**J**	6.6	0.12	pg/g	0.1	**0.064**	1613B
1,2,3,6,7,8-HxCDF	**0.28**	**J**	6.6	0.12	pg/g	0.1	**0.028**	1613B
1,2,3,7,8,9-HxCDF	**0.23**	**J q**	6.6	0.089	pg/g	0.1	**0.023**	1613B
2,3,4,6,7,8-HxCDF	ND		6.6	0.094	pg/g	0.1	0.0047	1613B
1,2,3,4,6,7,8-HpCDD	**5.5**	**J B**	6.6	0.13	pg/g	0.01	**0.055**	1613B
1,2,3,4,6,7,8-HpCDF	**1.1**	**J**	6.6	0.057	pg/g	0.01	**0.011**	1613B
1,2,3,4,7,8,9-HpCDF	**0.32**	**J**	6.6	0.061	pg/g	0.01	**0.0032**	1613B
OCDD	**130**	**B**	13	0.19	pg/g	0.0003	**0.039**	1613B
OCDF	**7.3**	**J B**	13	0.14	pg/g	0.0003	**0.0022**	1613B
2,3,7,8-TCDF - RA	**14**		1.3	0.43	pg/g	0.1	**1.4**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		4.8	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) — Lab Sample ID: 320-56911-9

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**18**		1.5	0.23	pg/g	1	**18**	1613B
1,2,3,7,8-PeCDD	ND		7.7	0.18	pg/g	1	0.090	1613B
1,2,3,7,8-PeCDF	**1.8**	**J**	7.7	0.15	pg/g	0.03	**0.054**	1613B
2,3,4,7,8-PeCDF	**1.0**	**J**	7.7	0.15	pg/g	0.3	**0.30**	1613B
1,2,3,4,7,8-HxCDD	**0.37**	**J**	7.7	0.11	pg/g	0.1	**0.037**	1613B
1,2,3,6,7,8-HxCDD	**0.56**	**J B**	7.7	0.11	pg/g	0.1	**0.056**	1613B
1,2,3,7,8,9-HxCDD	**1.4**	**J**	7.7	0.10	pg/g	0.1	**0.14**	1613B
1,2,3,4,7,8-HxCDF	**2.1**	**J**	7.7	0.14	pg/g	0.1	**0.21**	1613B
1,2,3,6,7,8-HxCDF	**0.49**	**J q**	7.7	0.14	pg/g	0.1	**0.049**	1613B
1,2,3,7,8,9-HxCDF	ND		7.7	0.10	pg/g	0.1	0.0050	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) (Continued) Lab Sample ID: 320-56911-9

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,4,6,7,8-HxCDF	ND		7.7	0.11	pg/g	0.1	0.0055	1613B
1,2,3,4,6,7,8-HpCDD	**18**	**B**	7.7	0.27	pg/g	0.01	**0.18**	1613B
1,2,3,4,6,7,8-HpCDF	**1.5**	**J**	7.7	0.069	pg/g	0.01	**0.015**	1613B
1,2,3,4,7,8,9-HpCDF	**0.27**	**J q**	7.7	0.076	pg/g	0.01	**0.0027**	1613B
OCDD	**550**	**B**	15	0.32	pg/g	0.0003	**0.17**	1613B
OCDF	**10**	**J B**	15	0.11	pg/g	0.0003	**0.0030**	1613B
2,3,7,8-TCDF - RA	**78**		1.5	0.38	pg/g	0.1	**7.8**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		27	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**1.5**		1.4	0.13	pg/g	1	**1.5**	1613B
1,2,3,7,8-PeCDD	ND		6.8	0.15	pg/g	1	0.075	1613B
1,2,3,7,8-PeCDF	**0.33**	**J**	6.8	0.091	pg/g	0.03	**0.0099**	1613B
2,3,4,7,8-PeCDF	ND		6.8	0.094	pg/g	0.3	0.014	1613B
1,2,3,4,7,8-HxCDD	**0.36**	**J**	6.8	0.083	pg/g	0.1	**0.036**	1613B
1,2,3,6,7,8-HxCDD	**0.29**	**J B q**	6.8	0.083	pg/g	0.1	**0.029**	1613B
1,2,3,7,8,9-HxCDD	**0.71**	**J**	6.8	0.075	pg/g	0.1	**0.071**	1613B
1,2,3,4,7,8-HxCDF	**0.26**	**J**	6.8	0.089	pg/g	0.1	**0.026**	1613B
1,2,3,6,7,8-HxCDF	ND		6.8	0.090	pg/g	0.1	0.0045	1613B
1,2,3,7,8,9-HxCDF	**0.31**	**J**	6.8	0.065	pg/g	0.1	**0.031**	1613B
2,3,4,6,7,8-HxCDF	ND		6.8	0.071	pg/g	0.1	0.0036	1613B
1,2,3,4,6,7,8-HpCDD	**8.0**	**B**	6.8	0.14	pg/g	0.01	**0.080**	1613B
1,2,3,4,6,7,8-HpCDF	**0.49**	**J**	6.8	0.057	pg/g	0.01	**0.0049**	1613B
1,2,3,4,7,8,9-HpCDF	**0.23**	**J**	6.8	0.061	pg/g	0.01	**0.0023**	1613B
OCDD	**190**	**B**	14	0.22	pg/g	0.0003	**0.057**	1613B
OCDF	**3.4**	**J B**	14	0.13	pg/g	0.0003	**0.0010**	1613B
2,3,7,8-TCDF - RA	**6.0**		1.4	0.21	pg/g	0.1	**0.60**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		2.5	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**0.76**	**J q**	1.3	0.15	pg/g	1	**0.76**	1613B
1,2,3,7,8-PeCDD	ND		6.5	0.13	pg/g	1	0.065	1613B
1,2,3,7,8-PeCDF	**0.24**	**J**	6.5	0.10	pg/g	0.03	**0.0072**	1613B
2,3,4,7,8-PeCDF	ND		6.5	0.10	pg/g	0.3	0.015	1613B
1,2,3,4,7,8-HxCDD	**0.31**	**J q**	6.5	0.11	pg/g	0.1	**0.031**	1613B
1,2,3,6,7,8-HxCDD	**0.41**	**J B**	6.5	0.11	pg/g	0.1	**0.041**	1613B
1,2,3,7,8,9-HxCDD	**0.76**	**J**	6.5	0.10	pg/g	0.1	**0.076**	1613B
1,2,3,4,7,8-HxCDF	**0.21**	**J q**	6.5	0.12	pg/g	0.1	**0.021**	1613B
1,2,3,6,7,8-HxCDF	ND		6.5	0.12	pg/g	0.1	0.0060	1613B
1,2,3,7,8,9-HxCDF	**0.20**	**J q**	6.5	0.089	pg/g	0.1	**0.020**	1613B
2,3,4,6,7,8-HxCDF	ND		6.5	0.094	pg/g	0.1	0.0047	1613B
1,2,3,4,6,7,8-HpCDD	**7.2**	**B**	6.5	0.14	pg/g	0.01	**0.072**	1613B
1,2,3,4,6,7,8-HpCDF	**0.63**	**J**	6.5	0.055	pg/g	0.01	**0.0063**	1613B
1,2,3,4,7,8,9-HpCDF	**0.39**	**J**	6.5	0.061	pg/g	0.01	**0.0039**	1613B
OCDD	**140**	**B**	13	0.19	pg/g	0.0003	**0.042**	1613B
OCDF	**4.3**	**J B**	13	0.10	pg/g	0.0003	**0.0013**	1613B
2,3,7,8-TCDF - RA	**2.9**		1.3	0.20	pg/g	0.1	**0.29**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		1.5	TEQ

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) Lab Sample ID: 320-56911-12

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**1.3**	**J q**	1.4	0.16	pg/g	1	**1.3**	1613B
1,2,3,7,8-PeCDD	ND		7.1	0.20	pg/g	1	0.10	1613B
1,2,3,7,8-PeCDF	**0.27**	**J**	7.1	0.13	pg/g	0.03	**0.0081**	1613B
2,3,4,7,8-PeCDF	ND		7.1	0.13	pg/g	0.3	0.020	1613B
1,2,3,4,7,8-HxCDD	**0.29**	**J q**	7.1	0.10	pg/g	0.1	**0.029**	1613B
1,2,3,6,7,8-HxCDD	**0.31**	**J B**	7.1	0.11	pg/g	0.1	**0.031**	1613B
1,2,3,7,8,9-HxCDD	**0.54**	**J**	7.1	0.098	pg/g	0.1	**0.054**	1613B
1,2,3,4,7,8-HxCDF	ND		7.1	0.13	pg/g	0.1	0.0065	1613B
1,2,3,6,7,8-HxCDF	ND		7.1	0.14	pg/g	0.1	0.0070	1613B
1,2,3,7,8,9-HxCDF	**0.18**	**J q**	7.1	0.096	pg/g	0.1	**0.018**	1613B
2,3,4,6,7,8-HxCDF	ND		7.1	0.11	pg/g	0.1	0.0055	1613B
1,2,3,4,6,7,8-HpCDD	**6.6**	**J B**	7.1	0.17	pg/g	0.01	**0.066**	1613B
1,2,3,4,6,7,8-HpCDF	**0.43**	**J**	7.1	0.065	pg/g	0.01	**0.0043**	1613B
1,2,3,4,7,8,9-HpCDF	ND		7.1	0.071	pg/g	0.01	0.00036	1613B
OCDD	**160**	**B**	14	0.20	pg/g	0.0003	**0.048**	1613B
OCDF	**2.4**	**J B**	14	0.13	pg/g	0.0003	**0.00072**	1613B
2,3,7,8-TCDF - RA	**4.5**		1.4	0.21	pg/g	0.1	**0.45**	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) (Continued) Lab Sample ID: 320-56911-12

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		2.1	TEQ

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**2.7**		1.3	0.18	pg/g	1	**2.7**	1613B
1,2,3,7,8-PeCDD	ND		6.5	0.16	pg/g	1	0.080	1613B
1,2,3,7,8-PeCDF	**0.38**	**J**	6.5	0.090	pg/g	0.03	**0.011**	1613B
2,3,4,7,8-PeCDF	ND		6.5	0.086	pg/g	0.3	0.013	1613B
1,2,3,4,7,8-HxCDD	**0.45**	**J**	6.5	0.098	pg/g	0.1	**0.045**	1613B
1,2,3,6,7,8-HxCDD	**0.38**	**J B**	6.5	0.11	pg/g	0.1	**0.038**	1613B
1,2,3,7,8,9-HxCDD	**1.1**	**J**	6.5	0.091	pg/g	0.1	**0.11**	1613B
1,2,3,4,7,8-HxCDF	**0.28**	**J**	6.5	0.11	pg/g	0.1	**0.028**	1613B
1,2,3,6,7,8-HxCDF	ND		6.5	0.12	pg/g	0.1	0.0060	1613B
1,2,3,7,8,9-HxCDF	**0.17**	**J q**	6.5	0.081	pg/g	0.1	**0.017**	1613B
2,3,4,6,7,8-HxCDF	ND		6.5	0.088	pg/g	0.1	0.0044	1613B
1,2,3,4,6,7,8-HpCDD	**15**	**B**	6.5	0.25	pg/g	0.01	**0.15**	1613B
1,2,3,4,6,7,8-HpCDF	**0.77**	**J**	6.5	0.065	pg/g	0.01	**0.0077**	1613B
1,2,3,4,7,8,9-HpCDF	ND		6.5	0.066	pg/g	0.01	0.00033	1613B
OCDD	**380**	**B**	13	0.34	pg/g	0.0003	**0.11**	1613B
OCDF	**4.4**	**J B**	13	0.12	pg/g	0.0003	**0.0013**	1613B
2,3,7,8-TCDF - RA	**9.9**		1.3	0.19	pg/g	0.1	**0.99**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		4.3	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Default Detection Limits

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Prep: HRMS-Sox

Analyte	RL		Units
1,2,3,4,6,7,8-HpCDD	5.0		pg/g
1,2,3,4,6,7,8-HpCDF	5.0		pg/g
1,2,3,4,7,8,9-HpCDF	5.0		pg/g
1,2,3,4,7,8-HxCDD	5.0		pg/g
1,2,3,4,7,8-HxCDF	5.0		pg/g
1,2,3,6,7,8-HxCDD	5.0		pg/g
1,2,3,6,7,8-HxCDF	5.0		pg/g
1,2,3,7,8,9-HxCDD	5.0		pg/g
1,2,3,7,8,9-HxCDF	5.0		pg/g
1,2,3,7,8-PeCDD	5.0		pg/g
1,2,3,7,8-PeCDF	5.0		pg/g
2,3,4,6,7,8-HxCDF	5.0		pg/g
2,3,4,7,8-PeCDF	5.0		pg/g
2,3,7,8-TCDD	1.0		pg/g
2,3,7,8-TCDF	1.0		pg/g
OCDD	10		pg/g
OCDF	10		pg/g
Total HpCDD	5.0		pg/g
Total HpCDF	5.0		pg/g
Total HxCDD	5.0		pg/g
Total HxCDF	5.0		pg/g
Total PeCDD	5.0		pg/g
Total PeCDF	5.0		pg/g
Total TCDD	1.0		pg/g
Total TCDF	1.0		pg/g

Surrogate Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	37TCDD (35-197)
320-56911-1	11187072-120719-SS-SJSSA01	92
320-56911-1 - RA	11187072-120719-SS-SJSSA01 (0-1)	95
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	94
320-56911-2 - RA	11187072-120719-SS-SJSSA01 (1-2)	107
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	90
320-56911-3 - RA	11187072-120719-SS-SJSSA01 (2-4)	102
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	97
320-56911-4 - RA	11187072-120719-SS-SJSSA01 (4-6)	105
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	97
320-56911-5 - RA	11187072-120819-BN-SJSSA09 (0-1)	105
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	98
320-56911-6 - RA	11187072-120819-BN-SJSSA09 (1-2)	105
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	95
320-56911-7 - RA	11187072-120819-BN-SJSSA09 (2-4)	98
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	101
320-56911-8 - RA	11187072-120819-BN-SJSSA09 (4-6)	99
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	104
320-56911-9 - RA	11187072-120819-BN-SJSSA05 (0-1)	108
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	104
320-56911-10 - RA	11187072-120819-BN-SJSSA05 (1-2)	102
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	101
320-56911-11 - RA	11187072-120819-BN-SJSSA05 (2-4)	104
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	107
320-56911-12 - RA	11187072-120819-BN-SJSSA05 (4-6)	107
320-56911-13	11187072-120819-BN-DUP2	104
320-56911-13 - RA	11187072-120819-BN-DUP2	112
MB 320-344634/1-A	Method Blank	92

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Surrogate Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	37TCDD (31-191)							
LCS 320-344634/2-A	Lab Control Sample	94							
LCSD 320-344634/3-A	Lab Control Sample Dup	96							

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
320-56911-1	11187072-120719-SS-SJSSA01	58	52	54	53	57	59	57	52
320-56911-1 - RA	11187072-120719-SS-SJSSA01 (0-1)		54						
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	55	49	51	50	53	55	55	48
320-56911-2 - RA	11187072-120719-SS-SJSSA01 (1-2)		56						
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	54	49	52	51	54	58	59	53
320-56911-3 - RA	11187072-120719-SS-SJSSA01 (2-4)		58						
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	59	53	57	57	59	65	63	58
320-56911-4 - RA	11187072-120719-SS-SJSSA01 (4-6)		60						
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	57	51	53	54	57	60	61	55
320-56911-5 - RA	11187072-120819-BN-SJSSA09 (0-1)		59						
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	54	48	51	50	53	56	58	50
320-56911-6 - RA	11187072-120819-BN-SJSSA09 (1-2)		54						
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	54	51	58	51	55	62	53	55
320-56911-7 - RA	11187072-120819-BN-SJSSA09 (2-4)		55						
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	53	49	56	51	53	57	49	52
320-56911-8 - RA	11187072-120819-BN-SJSSA09 (4-6)		53						
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	60	55	64	58	63	69	58	61
320-56911-9 - RA	11187072-120819-BN-SJSSA05 (0-1)		61						
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	58	52	60	56	58	64	53	55
320-56911-10 - RA	11187072-120819-BN-SJSSA05 (1-2)		56						
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	53	50	57	51	56	61	52	54
320-56911-11 - RA	11187072-120819-BN-SJSSA05 (2-4)		53						
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	58	52	60	55	58	64	56	58
320-56911-12 - RA	11187072-120819-BN-SJSSA05 (4-6)		58						
320-56911-13	11187072-120819-BN-DUP2	54	56	62	55	61	60	48	51
320-56911-13 - RA	11187072-120819-BN-DUP2		62						
MB 320-344634/1-A	Method Blank	57	48	52	50	55	61	63	54

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
320-56911-1	11187072-120719-SS-SJSSA01	50	48	46	50	44	54	55

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
320-56911-1 - RA	11187072-120719-SS-SJSSA01							
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	49	46	45	48	42	51	50
320-56911-2 - RA	11187072-120719-SS-SJSSA01 (1-2)							
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	52	48	48	54	49	55	59
320-56911-3 - RA	11187072-120719-SS-SJSSA01 (2-4)							
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	56	52	51	60	53	61	66
320-56911-4 - RA	11187072-120719-SS-SJSSA01 (4-6)							
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	54	51	49	55	48	57	59
320-56911-5 - RA	11187072-120819-BN-SJSSA09 (0-1)							
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	51	47	46	53	47	54	58
320-56911-6 - RA	11187072-120819-BN-SJSSA09 (1-2)							
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	48	51	51	62	53	63	70
320-56911-7 - RA	11187072-120819-BN-SJSSA09 (2-4)							
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	44	49	48	59	49	61	68
320-56911-8 - RA	11187072-120819-BN-SJSSA09 (4-6)							
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	53	58	56	73	61	73	85
320-56911-9 - RA	11187072-120819-BN-SJSSA05 (0-1)							
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	48	53	52	66	55	67	77
320-56911-10 - RA	11187072-120819-BN-SJSSA05 (1-2)							
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	47	52	50	63	52	64	73
320-56911-11 - RA	11187072-120819-BN-SJSSA05 (2-4)							
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	50	56	53	66	55	68	74
320-56911-12 - RA	11187072-120819-BN-SJSSA05 (4-6)							
320-56911-13	11187072-120819-BN-DUP2	44	52	47	55	44	59	60
320-56911-13 - RA	11187072-120819-BN-DUP2							
MB 320-344634/1-A	Method Blank	57	48	50	56	50	55	57

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 320-56911-1

Project/Site: San Jacinto River Waste Pits Superfund

HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-344634/2-A	Lab Control Sample	58	50	54	53	57	62	62	55
LCSD 320-344634/3-A	Lab Control Sample Dup	60	52	56	55	60	65	65	58

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)	
LCS 320-344634/2-A	Lab Control Sample	56	49	50	57	52	58	61	
LCSD 320-344634/3-A	Lab Control Sample Dup	57	52	53	59	54	61	66	

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-344634/1-A **Client Sample ID: Method Blank**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 345338 **Prep Batch: 344634**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.13	pg/g		12/11/19 08:20	12/13/19 15:00	1
2,3,7,8-TCDF	ND		1.0	0.044	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,7,8-PeCDD	ND		5.0	0.10	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,7,8-PeCDF	ND		5.0	0.072	pg/g		12/11/19 08:20	12/13/19 15:00	1
2,3,4,7,8-PeCDF	ND		5.0	0.073	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.056	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,6,7,8-HxCDD	0.116	J q	5.0	0.061	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.055	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.057	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.054	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.051	pg/g		12/11/19 08:20	12/13/19 15:00	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.054	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,4,6,7,8-HpCDD	0.337	J q	5.0	0.053	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.087	pg/g		12/11/19 08:20	12/13/19 15:00	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.084	pg/g		12/11/19 08:20	12/13/19 15:00	1
OCDD	2.53	J	10	0.14	pg/g		12/11/19 08:20	12/13/19 15:00	1
OCDF	0.585	J	10	0.17	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total TCDD	ND		1.0	0.13	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total TCDF	ND		1.0	0.044	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total PeCDD	ND		5.0	0.10	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total PeCDF	ND		5.0	0.073	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total HxCDD	0.116	J q	5.0	0.057	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total HxCDF	ND		5.0	0.057	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total HpCDD	0.574	J q	5.0	0.053	pg/g		12/11/19 08:20	12/13/19 15:00	1
Total HpCDF	0.189	J q	5.0	0.085	pg/g		12/11/19 08:20	12/13/19 15:00	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-2,3,7,8-TCDF	*48*		*24 - 169*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,6,7,8-HxCDD	*63*		*28 - 130*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*26 - 152*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,7,8,9-HxCDF	*48*		*29 - 147*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-2,3,4,6,7,8-HxCDF	*50*		*28 - 136*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*28 - 143*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*12/11/19 08:20*	*12/13/19 15:00*	*1*
13C-OCDD	*57*		*17 - 157*	*12/11/19 08:20*	*12/13/19 15:00*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*92*		*35 - 197*	*12/11/19 08:20*	*12/13/19 15:00*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-344634/2-A **Client Sample ID: Lab Control Sample**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 345338 **Prep Batch: 344634**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,3,7,8-TCDD			20.0	19.4		pg/g		97	67 - 158		
2,3,7,8-TCDF			20.0	18.3		pg/g		91	75 - 158		
1,2,3,7,8-PeCDD			100	106		pg/g		106	70 - 142		
1,2,3,7,8-PeCDF			100	93.3		pg/g		93	80 - 134		
2,3,4,7,8-PeCDF			100	87.9		pg/g		88	68 - 160		
1,2,3,4,7,8-HxCDD			100	90.9		pg/g		91	70 - 164		
1,2,3,6,7,8-HxCDD			100	97.9		pg/g		98	76 - 134		
1,2,3,7,8,9-HxCDD			100	93.0		pg/g		93	64 - 162		
1,2,3,4,7,8-HxCDF			100	93.1		pg/g		93	72 - 134		
1,2,3,6,7,8-HxCDF			100	100		pg/g		100	84 - 130		
1,2,3,7,8,9-HxCDF			100	101		pg/g		101	78 - 130		
2,3,4,6,7,8-HxCDF			100	103		pg/g		103	70 - 156		
1,2,3,4,6,7,8-HpCDD			100	95.6		pg/g		96	70 - 140		
1,2,3,4,6,7,8-HpCDF			100	99.4		pg/g		99	82 - 122		
1,2,3,4,7,8,9-HpCDF			100	90.9		pg/g		91	78 - 138		
OCDD			200	194		pg/g		97	78 - 144		
OCDF			200	188		pg/g		94	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*58*		*20 - 175*
13C-2,3,7,8-TCDF	*50*		*22 - 152*
13C-1,2,3,7,8-PeCDD	*54*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*53*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*57*		*13 - 328*
13C-1,2,3,4,7,8-HxCDD	*62*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*62*		*25 - 163*
13C-1,2,3,4,7,8-HxCDF	*55*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*56*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*49*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*50*		*22 - 176*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*52*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*58*		*20 - 186*
13C-OCDD	*61*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*94*		*31 - 191*

Lab Sample ID: LCSD 320-344634/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 345338 **Prep Batch: 344634**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			20.0	19.3		pg/g		97	67 - 158	0	50
2,3,7,8-TCDF			20.0	18.4		pg/g		92	75 - 158	1	50
1,2,3,7,8-PeCDD			100	104		pg/g		104	70 - 142	2	50
1,2,3,7,8-PeCDF			100	92.5		pg/g		92	80 - 134	1	50
2,3,4,7,8-PeCDF			100	87.2		pg/g		87	68 - 160	1	50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-344634/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 345338 **Prep Batch: 344634**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD			100	91.1		pg/g		91	70 - 164	0	50
1,2,3,6,7,8-HxCDD			100	97.0		pg/g		97	76 - 134	1	50
1,2,3,7,8,9-HxCDD			100	92.2		pg/g		92	64 - 162	1	50
1,2,3,4,7,8-HxCDF			100	91.2		pg/g		91	72 - 134	2	50
1,2,3,6,7,8-HxCDF			100	99.2		pg/g		99	84 - 130	1	50
1,2,3,7,8,9-HxCDF			100	99.4		pg/g		99	78 - 130	2	50
2,3,4,6,7,8-HxCDF			100	101		pg/g		101	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD			100	95.1		pg/g		95	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF			100	99.1		pg/g		99	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF			100	90.3		pg/g		90	78 - 138	1	50
OCDD			200	189		pg/g		94	78 - 144	3	50
OCDF			200	182		pg/g		91	63 - 170	3	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*60*		*20 - 175*
13C-2,3,7,8-TCDF	*52*		*22 - 152*
13C-1,2,3,7,8-PeCDD	*56*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*55*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*60*		*13 - 328*
13C-1,2,3,4,7,8-HxCDD	*65*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*65*		*25 - 163*
13C-1,2,3,4,7,8-HxCDF	*58*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*57*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*52*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*53*		*22 - 176*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*54*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*20 - 186*
13C-OCDD	*66*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*96*		*31 - 191*

Specialty Organics

Prep Batch: 344634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-1 - RA	11187072-120719-SS-SJSSA01 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-1	11187072-120719-SS-SJSSA01 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-2 - RA	11187072-120719-SS-SJSSA01 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-3 - RA	11187072-120719-SS-SJSSA01 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-4 - RA	11187072-120719-SS-SJSSA01 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-5 - RA	11187072-120819-BN-SJSSA09 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-6 - RA	11187072-120819-BN-SJSSA09 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-7 - RA	11187072-120819-BN-SJSSA09 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-8 - RA	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-9 - RA	11187072-120819-BN-SJSSA05 (0-1)	Total/NA	Sediment	HRMS-Sox	
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-10 - RA	11187072-120819-BN-SJSSA05 (1-2)	Total/NA	Sediment	HRMS-Sox	
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-11 - RA	11187072-120819-BN-SJSSA05 (2-4)	Total/NA	Sediment	HRMS-Sox	
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-12 - RA	11187072-120819-BN-SJSSA05 (4-6)	Total/NA	Sediment	HRMS-Sox	
320-56911-13	11187072-120819-BN-DUP2	Total/NA	Sediment	HRMS-Sox	
320-56911-13 - RA	11187072-120819-BN-DUP2	Total/NA	Sediment	HRMS-Sox	
MB 320-344634/1-A	Method Blank	Total/NA	Sediment	HRMS-Sox	
LCS 320-344634/2-A	Lab Control Sample	Total/NA	Sediment	HRMS-Sox	
LCSD 320-344634/3-A	Lab Control Sample Dup	Total/NA	Sediment	HRMS-Sox	

Analysis Batch: 345335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	Total/NA	Sediment	1613B	344634
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-13	11187072-120819-BN-DUP2	Total/NA	Sediment	1613B	344634

Analysis Batch: 345338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-1	11187072-120719-SS-SJSSA01 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	Total/NA	Sediment	1613B	344634
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	Total/NA	Sediment	1613B	344634
MB 320-344634/1-A	Method Blank	Total/NA	Sediment	1613B	344634
LCS 320-344634/2-A	Lab Control Sample	Total/NA	Sediment	1613B	344634
LCSD 320-344634/3-A	Lab Control Sample Dup	Total/NA	Sediment	1613B	344634

Specialty Organics

Analysis Batch: 345960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-3 - RA	11187072-120719-SS-SJSSA01 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-4 - RA	11187072-120719-SS-SJSSA01 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-5 - RA	11187072-120819-BN-SJSSA09 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-6 - RA	11187072-120819-BN-SJSSA09 (1-2)	Total/NA	Sediment	1613B	344634
320-56911-7 - RA	11187072-120819-BN-SJSSA09 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-8 - RA	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-9 - RA	11187072-120819-BN-SJSSA05 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-10 - RA	11187072-120819-BN-SJSSA05 (1-2)	Total/NA	Sediment	1613B	344634
320-56911-11 - RA	11187072-120819-BN-SJSSA05 (2-4)	Total/NA	Sediment	1613B	344634
320-56911-12 - RA	11187072-120819-BN-SJSSA05 (4-6)	Total/NA	Sediment	1613B	344634
320-56911-13 - RA	11187072-120819-BN-DUP2	Total/NA	Sediment	1613B	344634

Analysis Batch: 346137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-1 - RA	11187072-120719-SS-SJSSA01 (0-1)	Total/NA	Sediment	1613B	344634
320-56911-2 - RA	11187072-120719-SS-SJSSA01 (1-2)	Total/NA	Sediment	1613B	344634

General Chemistry

Analysis Batch: 344979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-1	11187072-120719-SS-SJSSA01 (0-1)	Total/NA	Sediment	D 2216	
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	Total/NA	Sediment	D 2216	
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	Total/NA	Sediment	D 2216	
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	Total/NA	Sediment	D 2216	
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	D 2216	
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	Total/NA	Sediment	D 2216	
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	Total/NA	Sediment	D 2216	
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	Total/NA	Sediment	D 2216	
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	Total/NA	Sediment	D 2216	
320-56911-13	11187072-120819-BN-DUP2	Total/NA	Sediment	D 2216	
320-56911-8 DU	11187072-120819-BN-SJSSA09 (4-6)	Total/NA	Sediment	D 2216	

Analysis Batch: 345327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	Total/NA	Sediment	D 2216	
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	Total/NA	Sediment	D 2216	
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	Total/NA	Sediment	D 2216	

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Date Collected: 12/07/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Date Collected: 12/07/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 45.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346137	12/17/19 16:06	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 17:23	ALM	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Date Collected: 12/07/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	345327	12/13/19 14:32	HRB	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Date Collected: 12/07/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 57.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346137	12/17/19 16:44	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 18:11	ALM	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) Lab Sample ID: 320-56911-3

Date Collected: 12/07/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	345327	12/13/19 14:32	HRB	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) Lab Sample ID: 320-56911-3

Date Collected: 12/07/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 53.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/16/19 21:18	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 18:59	ALM	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Date Collected: 12/07/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	345327	12/13/19 14:32	HRB	TAL SAC

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Date Collected: 12/07/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 57.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/16/19 21:56	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 19:47	ALM	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Date Collected: 12/08/19 13:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Date Collected: 12/08/19 13:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 71.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/16/19 22:35	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 20:35	ALM	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Date Collected: 12/08/19 13:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Date Collected: 12/08/19 13:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/16/19 23:13	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345338	12/13/19 21:23	ALM	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Date Collected: 12/08/19 13:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Date Collected: 12/08/19 13:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 78.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 16:21	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/16/19 23:51	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) Lab Sample ID: 320-56911-8

Date Collected: 12/08/19 13:30 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) Lab Sample ID: 320-56911-8

Date Collected: 12/08/19 13:30 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 17:07	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 00:29	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) Lab Sample ID: 320-56911-9

Date Collected: 12/08/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) Lab Sample ID: 320-56911-9

Date Collected: 12/08/19 15:10 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 64.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 17:53	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 01:08	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Date Collected: 12/08/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Date Collected: 12/08/19 15:15 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 71.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 18:39	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 01:46	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Date Collected: 12/08/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Date Collected: 12/08/19 15:20 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 75.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 19:25	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 02:24	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) Lab Sample ID: 320-56911-12

Date Collected: 12/08/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) Lab Sample ID: 320-56911-12

Date Collected: 12/08/19 15:25 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 68.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 20:11	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 03:03	SMA	TAL SAC

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Date Collected: 12/08/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344979	12/12/19 11:45	HRB	TAL SAC

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Date Collected: 12/08/19 00:00 **Matrix: Sediment**
Date Received: 12/10/19 09:20 **Percent Solids: 76.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B		1	345335	12/13/19 20:57	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		344634	12/11/19 08:20	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	345960	12/17/19 03:41	SMA	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704399	05-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8,9-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,4,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	2,3,4,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDD
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDF
1613B	HRMS-Sox	Sediment	OCDD
1613B	HRMS-Sox	Sediment	OCDF
1613B	HRMS-Sox	Sediment	Total HpCDD
1613B	HRMS-Sox	Sediment	Total HpCDF
1613B	HRMS-Sox	Sediment	Total HxCDD
1613B	HRMS-Sox	Sediment	Total HxCDF
1613B	HRMS-Sox	Sediment	Total PeCDD
1613B	HRMS-Sox	Sediment	Total PeCDF
1613B	HRMS-Sox	Sediment	Total TCDD
1613B	HRMS-Sox	Sediment	Total TCDF
D 2216		Sediment	Percent Moisture
D 2216		Sediment	Percent Solids

Laboratory: Eurofins TestAmerica, Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704528-15-2	03-31-20

Method Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
TEQ	Total TEQ Calculation	TAL SOP	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
HRMS-Sox	Soxhlet Extraction	EPA	TAL SAC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
ASTM = ASTM International

EPA = US Environmental Protection Agency

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: GHD Services Inc. Job ID: 320-56911-1
Project/Site: San Jacinto River Waste Pits Superfund

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56911-1	11187072-120719-SS-SJSSA01 (0-1)	Sediment	12/07/19 15:10	12/10/19 09:20	
320-56911-2	11187072-120719-SS-SJSSA01 (1-2)	Sediment	12/07/19 15:15	12/10/19 09:20	
320-56911-3	11187072-120719-SS-SJSSA01 (2-4)	Sediment	12/07/19 15:20	12/10/19 09:20	
320-56911-4	11187072-120719-SS-SJSSA01 (4-6)	Sediment	12/07/19 15:25	12/10/19 09:20	
320-56911-5	11187072-120819-BN-SJSSA09 (0-1)	Sediment	12/08/19 13:15	12/10/19 09:20	
320-56911-6	11187072-120819-BN-SJSSA09 (1-2)	Sediment	12/08/19 13:20	12/10/19 09:20	
320-56911-7	11187072-120819-BN-SJSSA09 (2-4)	Sediment	12/08/19 13:25	12/10/19 09:20	
320-56911-8	11187072-120819-BN-SJSSA09 (4-6)	Sediment	12/08/19 13:30	12/10/19 09:20	
320-56911-9	11187072-120819-BN-SJSSA05 (0-1)	Sediment	12/08/19 15:10	12/10/19 09:20	
320-56911-10	11187072-120819-BN-SJSSA05 (1-2)	Sediment	12/08/19 15:15	12/10/19 09:20	
320-56911-11	11187072-120819-BN-SJSSA05 (2-4)	Sediment	12/08/19 15:20	12/10/19 09:20	
320-56911-12	11187072-120819-BN-SJSSA05 (4-6)	Sediment	12/08/19 15:25	12/10/19 09:20	
320-56911-13	11187072-120819-BN-DUP2	Sediment	12/08/19 00:00	12/10/19 09:20	

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: 10D5 Analysis Batch Number: 345335

Lab Sample ID: 320-56911-7 Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4)

Date Analyzed: 12/13/19 16:21 Lab File ID: 13DE1910D5_7.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	18.10	Split Peak	dadunj	12/16/19 10:36
1,2,3,4,7,8-HxCDD	31.78	Split Peak	dadunj	12/16/19 10:36
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 10:37
1,2,3,4,6,7,8-HpCDF	33.82	Split Peak	dadunj	12/16/19 10:37

Lab Sample ID: 320-56911-8 Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6)

Date Analyzed: 12/13/19 17:07 Lab File ID: 13DE1910D5_8.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	18.10	Split Peak	dadunj	12/16/19 10:39
1,2,3,7,8-PeCDF	22.41	Split Peak	dadunj	12/16/19 10:39
1,2,3,4,7,8-HxCDF	30.58	Split Peak	dadunj	12/16/19 10:39
1,2,3,6,7,8-HxCDF	30.77	Split Peak	dadunj	12/16/19 10:40
1,2,3,4,7,8-HxCDD	31.77	Split Peak	dadunj	12/16/19 10:40
1,2,3,6,7,8-HxCDD	31.88	Invalid Compound ID	dadunj	12/16/19 10:40
1,2,3,7,8,9-HxCDD	32.22	Baseline	dadunj	12/16/19 10:40

Lab Sample ID: 320-56911-9 Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1)

Date Analyzed: 12/13/19 17:53 Lab File ID: 13DE1910D5_9.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	18.10	Split Peak	dadunj	12/16/19 10:43
1,2,3,7,8-PeCDF	22.43	Baseline	dadunj	12/16/19 10:44
1,2,3,4,7,8-HxCDD	31.78	Split Peak	dadunj	12/16/19 10:45
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 10:45
1,2,3,4,6,7,8-HpCDF	33.82	Split Peak	dadunj	12/16/19 10:45

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: 10D5 Analysis Batch Number: 345335

Lab Sample ID: 320-56911-10 Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2)

Date Analyzed: 12/13/19 18:39 Lab File ID: 13DE1910D5_10.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	17.40	Split Peak	dadunj	12/16/19 10:48
1,2,3,7,8-PeCDF	22.41	Baseline	dadunj	12/16/19 10:49
1,2,3,4,7,8-HxCDD	31.77	Split Peak	dadunj	12/16/19 10:49
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 10:50
1,2,3,7,8,9-HxCDF	32.39	Baseline	dadunj	12/16/19 10:49
1,2,3,4,6,7,8-HpCDF	33.82	Split Peak	dadunj	12/16/19 10:50
1,2,3,4,7,8,9-HpCDF	34.89	Split Peak	dadunj	12/16/19 10:50

Lab Sample ID: 320-56911-11 Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4)

Date Analyzed: 12/13/19 19:25 Lab File ID: 13DE1910D5_11.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	22.44	Baseline	dadunj	12/16/19 10:52
1,2,3,4,7,8-HxCDF	30.58	Baseline	dadunj	12/16/19 10:52
1,2,3,4,7,8-HxCDD	31.78	Invalid Compound ID	dadunj	12/16/19 10:53
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 10:53
1,2,3,7,8,9-HxCDF	32.39	Baseline	dadunj	12/16/19 10:53

Lab Sample ID: 320-56911-12 Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6)

Date Analyzed: 12/13/19 20:11 Lab File ID: 13DE1910D5_12.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	17.39	Split Peak	dadunj	12/16/19 10:55
2,3,7,8-TCDD	18.10	Split Peak	dadunj	12/16/19 10:56
1,2,3,7,8-PeCDF	22.40	Baseline	dadunj	12/16/19 10:56
1,2,3,4,7,8-HxCDD	31.77	Split Peak	dadunj	12/16/19 10:57
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 10:57
1,2,3,7,8,9-HxCDD	32.21	Split Peak	dadunj	12/16/19 10:57

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: 10D5 Analysis Batch Number: 345335

Lab Sample ID: 320-56911-13 Client Sample ID: 11187072-120819-BN-DUP2

Date Analyzed: 12/13/19 20:57 Lab File ID: 13DE1910D5_13.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	18.11	Split Peak	dadunj	12/16/19 10:59
1,2,3,7,8-PeCDF	22.44	Baseline	dadunj	12/16/19 10:59
1,2,3,4,7,8-HxCDF	30.58	Baseline	dadunj	12/16/19 11:00
1,2,3,4,7,8-HxCDD	31.78	Split Peak	dadunj	12/16/19 11:01
1,2,3,6,7,8-HxCDD	31.89	Invalid Compound ID	dadunj	12/16/19 11:01
1,2,3,7,8,9-HxCDD	32.21	Invalid Compound ID	dadunj	12/16/19 11:01
1,2,3,7,8,9-HxCDF	32.39	Baseline	dadunj	12/16/19 11:00
1,2,3,4,6,7,8-HpCDF	33.82	Split Peak	dadunj	12/16/19 11:01

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: 11D2 Analysis Batch Number: 345960

Lab Sample ID: CPS 320-345960/1 Client Sample ID:

Date Analyzed: 12/16/19 19:16 Lab File ID: 16DE19A11D2_001.d GC Column: DB-225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD		Unspecified		

Lab Sample ID: 320-56911-11 RA Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) RA

Date Analyzed: 12/17/19 02:24 Lab File ID: 16DE19A11D2_012.d GC Column: DB-225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	16.59	Baseline	arghestanis	12/17/19 09:36

Lab Sample ID: 320-56911-13 RA Client Sample ID: 11187072-120819-BN-DUP2 RA

Date Analyzed: 12/17/19 03:41 Lab File ID: 16DE19A11D2_014.d GC Column: DB-225 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	16.60	Baseline	arghestanis	12/17/19 09:37

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 345338

Lab Sample ID: MB 320-344634/1-A Client Sample ID:

Date Analyzed: 12/13/19 15:00 Lab File ID: 13de19dfs1_5.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,7,8-HxCDD		Invalid Compound ID	dadunj	12/17/19 09:15
1,2,3,4,6,7,8-HpCDD	38.90	Split Peak	dadunj	12/17/19 09:15
OCDF	41.45	Baseline	dadunj	12/17/19 09:17

Lab Sample ID: 320-56911-1 Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1)

Date Analyzed: 12/13/19 17:23 Lab File ID: 13de19dfs1_8.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	19.90	Split Peak	dadunj	12/17/19 09:20
1,2,3,7,8-PeCDF	25.84	Split Peak	dadunj	12/17/19 09:20
1,2,3,4,7,8-HxCDF	33.75	Split Peak	dadunj	12/17/19 09:21
1,2,3,6,7,8-HxCDF	33.97	Invalid Compound ID	dadunj	12/17/19 09:22
2,3,4,6,7,8-HxCDF	34.94	Split Peak	dadunj	12/17/19 09:22
1,2,3,4,6,7,8-HpCDF	37.90	Split Peak	dadunj	12/17/19 09:23

Lab Sample ID: 320-56911-2 Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2)

Date Analyzed: 12/13/19 18:11 Lab File ID: 13de19dfs1_9.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	19.92	Split Peak	dadunj	12/17/19 09:26
1,2,3,4,7,8-HxCDF	33.76	Split Peak	dadunj	12/17/19 09:27
1,2,3,6,7,8-HxCDF	33.98	Split Peak	dadunj	12/17/19 09:27
2,3,4,6,7,8-HxCDF	34.93	Split Peak	dadunj	12/17/19 09:27
1,2,3,4,7,8-HxCDD	35.16	Invalid Compound ID	dadunj	12/17/19 09:29
1,2,3,6,7,8-HxCDD	35.32	Invalid Compound ID	dadunj	12/17/19 09:29
1,2,3,4,6,7,8-HpCDF	37.90	Split Peak	dadunj	12/17/19 09:29

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 345338

Lab Sample ID: 320-56911-3 Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4)

Date Analyzed: 12/13/19 18:59 Lab File ID: 13de19dfs1_10.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF	25.79	Baseline	dadunj	12/17/19 09:31
1,2,3,4,7,8-HxCDF	33.73	Split Peak	dadunj	12/17/19 09:32
1,2,3,4,7,8-HxCDD	35.17	Invalid Compound ID	dadunj	12/17/19 09:32
1,2,3,6,7,8-HxCDD	35.32	Invalid Compound ID	dadunj	12/17/19 09:32
1,2,3,7,8,9-HxCDF	35.90	Baseline	dadunj	12/17/19 09:32

Lab Sample ID: 320-56911-4 Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6)

Date Analyzed: 12/13/19 19:47 Lab File ID: 13de19dfs1_11.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,4,6,7,8-HxCDF		Invalid Compound ID	dadunj	12/17/19 09:37
2,3,7,8-TCDD	19.93	Split Peak	dadunj	12/17/19 09:36
1,2,3,4,7,8-HxCDF	33.78	Split Peak	dadunj	12/17/19 09:37
1,2,3,6,7,8-HxCDF	33.93	Invalid Compound ID	dadunj	12/17/19 09:37

Lab Sample ID: 320-56911-5 Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1)

Date Analyzed: 12/13/19 20:35 Lab File ID: 13de19dfs1_12.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,7,8-HxCDD		Invalid Compound ID	dadunj	12/17/19 09:42
1,2,3,6,7,8-HxCDF		Invalid Compound ID	dadunj	12/17/19 09:42
2,3,7,8-TCDD	19.91	Baseline	dadunj	12/17/19 09:41
1,2,3,7,8,9-HxCDD	35.71	Split Peak	dadunj	12/17/19 09:42
1,2,3,4,6,7,8-HpCDF	37.90	Baseline	dadunj	12/17/19 09:42

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56911-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 345338

Lab Sample ID: 320-56911-6 Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2)

Date Analyzed: 12/13/19 21:23 Lab File ID: 13de19dfs1_13.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,7,8-HxCDD		Invalid Compound ID	dadunj	12/17/19 09:44
2,3,7,8-TCDD	19.90	Baseline	dadunj	12/17/19 09:44
1,2,3,7,8,9-HxCDD	35.73	Split Peak	dadunj	12/17/19 09:45
1,2,3,4,7,8,9-HpCDF	39.23	Split Peak	dadunj	12/17/19 09:46

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HRDXNCP_00038	10/16/19	10/16/18	C14, Lot STBH5862	6 mL	HRDXNCP_00037	1.2 mL	13C-2,3,7,8-TCDD	40 pg/uL
							13C-2,3,7,8-TCDF	40 pg/uL
							2,3,7,8-TCDD	40 pg/uL
							2,3,7,8-TCDF	40 pg/uL
.HRDXNCP_00037	03/31/25		CIL, Lot ER03111502		(Purchased Reagent)		13C-2,3,7,8-TCDD	200 ng/mL
							13C-2,3,7,8-TCDF	200 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
HRDXNCP_00040	08/30/20	08/30/19	C14, Lot STBH7678	6 mL	HRDXNCP_00039	1.2 mL	1,2,3,4,6,7,9-HpCDD	40 pg/uL
							1,2,3,4,6,7-HxCDD	40 pg/uL
							1,2,3,4,6,8-HxCDF	40 pg/uL
							1,2,3,4,8,9-HxCDF	40 pg/uL
							1,2,3,7-TCDD	40 pg/uL
							1,2,3,8,9-PeCDD	40 pg/uL
							1,2,3,8,9-PeCDF	40 pg/uL
							1,2,3,9-TCDD	40 pg/uL
							1,2,3,9-TCDF	40 pg/uL
							1,2,4,6,7,9-HxCDD	40 pg/uL
							1,2,4,7,9-PeCDD	40 pg/uL
							1,2,8,9-TCDD	40 pg/uL
							1,2,8,9-TCDF	40 pg/uL
							1,3,4,6,8-PeCDF	40 pg/uL
							1,3,6,8-TCDD	40 pg/uL
							1,3,6,8-TCDF	40 pg/uL
							13C-2,3,7,8-TCDD	40 pg/uL
							13C-2,3,7,8-TCDF	40 pg/uL
							2,3,4,7-TCDF	40 pg/uL
							2,3,7,8-TCDD	40 pg/uL
							2,3,7,8-TCDF	40 pg/uL
.HRDXNCP_00039	03/31/25		CIL, Lot ER03111502		(Purchased Reagent)		1,2,3,4,6,7,9-HpCDD	200 ng/mL
							1,2,3,4,6,7-HxCDD	200 ng/mL
							1,2,3,4,6,8-HxCDF	200 ng/mL
							1,2,3,4,8,9-HxCDF	200 ng/mL
							1,2,3,7-TCDD	200 ng/mL
							1,2,3,8,9-PeCDD	200 ng/mL
							1,2,3,8,9-PeCDF	200 ng/mL
							1,2,3,9-TCDD	200 ng/mL
							1,2,3,9-TCDF	200 ng/mL
							1,2,4,6,7,9-HxCDD	200 ng/mL
							1,2,4,7,9-PeCDD	200 ng/mL
							1,2,8,9-TCDD	200 ng/mL
							1,2,8,9-TCDF	200 ng/mL
							1,3,4,6,8-PeCDF	200 ng/mL
							1,3,6,8-TCDD	200 ng/mL
							1,3,6,8-TCDF	200 ng/mL
							13C-2,3,7,8-TCDD	200 ng/mL
							13C-2,3,7,8-TCDF	200 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,4,7-TCDF	200 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
HRDXNIC_00042	04/29/20	07/02/19	C14, Lot STBH7678	0.5 mL	HRDXNIDA_00303	0.125 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.25 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNSU_00196	0.05 mL	37Cl4-2,3,7,8-TCDD	40 ng/mL
					HRDXNTA_00102	0.5 mL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20	CIL, Lot ER111010-01			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24	CIL, Lot ER08101404			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26	CIL, Lot ER09131601			(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26	CIL, Lot ER03031601			(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26	CIL, Lot ER02241603			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20	CIL, Lot ER100610-01			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20	CIL, Lot ER100610-02			(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24	CIL, Lot ER08041401			(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21	CIL, Lot ER012111-01			(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28	CIL, Lot ER03151801			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27	CIL, Lot ER04051701			(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25	CIL, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00102	03/01/25	Wellington Labs, Lot 13PAR0418			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
HRDXNIDA_00406	11/30/20	12/02/19	Acetone, Lot 0000236139	500 mL	HRDXNIDA_00364	5 mL	13C-1,2,3,4,6,7,8-HpCDD	2 pg/uL
							13C-1,2,3,4,6,7,8-HpCDF	2 pg/uL
							13C-2,3,7,8-TCDF	2 pg/uL
							13C-2,3,7,8-TCDD	2 pg/uL
							13C-1,2,3,6,7,8-HxCDF	2 pg/uL
							13C-1,2,3,7,8,9-HxCDF	2 pg/uL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-2,3,4,6,7,8-HxCDF	2 pg/uL
							13C-1,2,3,7,8-PeCDD	2 pg/uL
							13C-1,2,3,7,8-PeCDF	2 pg/uL
							13C-1,2,3,6,7,8-HxCDD	2 pg/uL
							13C-OCDD	4 pg/uL
					HRDXNIDA_00379	2.5 mL	13C-1,2,3,4,7,8,9-HpCDF	2 pg/uL
							13C-2,3,4,7,8-PeCDF	2 pg/uL
							13C-1,2,3,4,7,8-HxCDD	2 pg/uL
							13C-1,2,3,4,7,8-HxCDF	2 pg/uL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIDA_00379	04/11/26	04/11/19	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00375	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00376	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00377	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00378	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00375	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00376	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00377	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00378	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
HRDXNIS_00121	10/09/20	10/09/19	C14, Lot STBJ0716	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
.HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
..HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
..HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HRDXNL2_00027	04/29/20	07/02/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00303	0.25 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.5 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00217	0.625 mL	37Cl4-2,3,7,8-TCDD	0.5 ng/mL
					HRDXNTA_00113	0.125 mL	1,2,3,4,6,7,8-HpCDD	2.5 ng/mL
							1,2,3,4,6,7,8-HpCDF	2.5 ng/mL
							1,2,3,4,7,8,9-HpCDF	2.5 ng/mL
							1,2,3,4,7,8-HxCDD	2.5 ng/mL
							1,2,3,4,7,8-HxCDF	2.5 ng/mL
							1,2,3,6,7,8-HxCDD	2.5 ng/mL
							1,2,3,6,7,8-HxCDF	2.5 ng/mL
							1,2,3,7,8,9-HxCDD	2.5 ng/mL
							1,2,3,7,8,9-HxCDF	2.5 ng/mL
							1,2,3,7,8-PeCDD	2.5 ng/mL
							1,2,3,7,8-PeCDF	2.5 ng/mL
							2,3,4,6,7,8-HxCDF	2.5 ng/mL
							2,3,4,7,8-PeCDF	2.5 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							OCDD	5 ng/mL
							OCDF	5 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26	CIL, Lot ER053107-02			(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27	CIL, Lot ER01061701			(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21	CIL, Lot ER102711-01			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20	CIL, Lot ER072810-02			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00217	07/01/20	07/01/19	Isooctane, Lot 0000201867	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
...HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
....HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00113	05/29/20	05/29/19	Acetone, Lot 00000197752	25 mL	HRDXNTA_00092	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00092	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL3_00025	04/29/20	07/02/19	C14, Lot STBH7678	0.5 mL	HRDXNIDA_00303	0.125 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.25 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.5 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00217	1.25 mL	37Cl4-2,3,7,8-TCDD	2 ng/mL
					HRDXNTA_00113	0.25 mL	1,2,3,4,6,7,8-HpCDD	10 ng/mL
							1,2,3,4,6,7,8-HpCDF	10 ng/mL
							1,2,3,4,7,8,9-HpCDF	10 ng/mL
							1,2,3,4,7,8-HxCDD	10 ng/mL
							1,2,3,4,7,8-HxCDF	10 ng/mL
							1,2,3,6,7,8-HxCDD	10 ng/mL
							1,2,3,6,7,8-HxCDF	10 ng/mL
							1,2,3,7,8,9-HxCDD	10 ng/mL
							1,2,3,7,8,9-HxCDF	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8-PeCDD	10 ng/mL
							1,2,3,7,8-PeCDF	10 ng/mL
							2,3,4,6,7,8-HxCDF	10 ng/mL
							2,3,4,7,8-PeCDF	10 ng/mL
							2,3,7,8-TCDD	2 ng/mL
							2,3,7,8-TCDF	2 ng/mL
							OCDD	20 ng/mL
							OCDF	20 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNSU_00217	07/01/20	07/01/19	Isooctane, Lot 0000201867	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
...HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
....HRDXNSU_00187	07/31/25	CIL, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00113	05/29/20	05/29/19	Acetone, Lot 00000197752	25 mL	HRDXNTA_00092	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00092	04/30/26	CIL, Lot ER02241602			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL4_00084	04/29/20	07/11/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00364	0.5 mL	13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.02 mL	37Cl4-2,3,7,8-TCDD	8 ng/mL
					HRDXNTA_00093	0.025 mL	2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
HRDXNL4_00085	04/29/20	10/03/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00364	0.5 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIDA_00379	0.25 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.025 mL	37Cl4-2,3,7,8-TCDD	10 ng/mL
					HRDXNTA_00093	0.025 mL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIDA_00379	04/11/26	04/11/19	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00375	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00376	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00377	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00378	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00375	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00376	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00377	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00378	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL4_00086	04/29/20	10/03/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00364	0.5 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIDA_00379	0.25 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.025 mL	37Cl4-2,3,7,8-TCDD	10 ng/mL
					HRDXNTA_00093	0.025 mL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20	CIL, Lot ER111010-01			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24	CIL, Lot ER08101404			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26	CIL, Lot ER09131601			(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26	CIL, Lot ER03031601			(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26	CIL, Lot ER02241603			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20	CIL, Lot ER100610-01			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20	CIL, Lot ER100610-02			(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24	CIL, Lot ER08041401			(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21	CIL, Lot ER012111-01			(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28	CIL, Lot ER03151801			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27	CIL, Lot ER04051701			(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIDA_00379	04/11/26	04/11/19	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00375	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00376	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00377	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00378	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00375	05/31/26	CIL, Lot ER04251601			(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00376	01/31/27	CIL, Lot ER01061701			(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00377	06/30/26	CIL, Lot ER04211601			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00378	07/31/27	CIL, Lot ER04211701			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26	CIL, Lot ER08221601			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27	CIL, Lot ER11081602			(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25	CIL, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL5_00028	04/29/20	07/02/19	C14, Lot STBH7678	0.2 mL	HRDXNIDA_00303	0.05 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.1 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.2 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.02 mL	37Cl4-2,3,7,8-TCDD	40 ng/mL
					HRDXNTA_00093	0.02 mL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL6_00024	04/29/20	07/02/19	C14, Lot STBH7678	0.2 mL	HRDXNIDA_00303	0.05 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.1 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.2 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.1 mL	37Cl4-2,3,7,8-TCDD	200 ng/mL
					HRDXNTA_00093	0.1 mL	1,2,3,4,6,7,8-HpCDD	1000 ng/mL
							1,2,3,4,6,7,8-HpCDF	1000 ng/mL
							1,2,3,4,7,8,9-HpCDF	1000 ng/mL
							1,2,3,4,7,8-HxCDD	1000 ng/mL
							1,2,3,4,7,8-HxCDF	1000 ng/mL
							1,2,3,6,7,8-HxCDD	1000 ng/mL
							1,2,3,6,7,8-HxCDF	1000 ng/mL
							1,2,3,7,8,9-HxCDD	1000 ng/mL
							1,2,3,7,8,9-HxCDF	1000 ng/mL
							1,2,3,7,8-PeCDD	1000 ng/mL
							1,2,3,7,8-PeCDF	1000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,4,6,7,8-HxCDF	1000 ng/mL
							2,3,4,7,8-PeCDF	1000 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
							OCDD	2000 ng/mL
							OCDF	2000 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNSU_00223	12/02/20	12/02/19	Isooctane, Lot 0000221197	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
HRDXNTA_00117	10/18/20	10/18/19	Acetone, Lot 00000236139	25 mL	HRDXNTA_00093	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL

Reagent

HRDXNCP_00039

received 8/30/19 KSS

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

PCDD/PCDF Window Defining and Isomer Specificity Mix (DB-5)

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number:	EDF-4147
Solution Lot:	ER03111502
Expiration Date:	March 2025
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

March 24, 2015
Date

Component	Chromatographic Purity	Concentration
1,3,6,8-Tetrachlorodibenzo-p-dioxin	99.9%	200.3 ± 2.0 ng/mL
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin	99.8%	200.6 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzo-p-dioxin	99.2%	200.3 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.9%	200.1 ± 2.0 ng/mL
1,2,3,9-Tetrachlorodibenzo-p-dioxin	99.6%	199.9 ± 2.0 ng/mL
1,2,8,9-Tetrachlorodibenzo-p-dioxin	99.2%	200.2 ± 2.0 ng/mL
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	98.9%	200.6 ± 2.0 ng/mL
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	99.0%	200.1 ± 2.0 ng/mL
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	98.7%	200.2 ± 2.0 ng/mL
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	99.0%	200.5 ± 2.0 ng/mL
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	98.9%	200.1 ± 2.0 ng/mL
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	99.8%	200.3 ± 2.0 ng/mL
1,3,6,8-Tetrachlorodibenzofuran	98.5%	200.1 ± 2.0 ng/mL
1,2,3,9-Tetrachlorodibenzofuran	98.2%	200.4 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzofuran	99.4%	200.0 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	99.2%	200.5 ± 2.0 ng/mL
2,3,4,7-Tetrachlorodibenzofuran	98.7%	200.2 ± 2.0 ng/mL
1,2,8,9-Tetrachlorodibenzofuran	99.3%	199.9 ± 2.0 ng/mL
1,3,4,6,8-Pentachlorodibenzofuran	99.5%	200.6 ± 2.0 ng/mL
1,2,3,8,9-Pentachlorodibenzofuran	99.0%	200.5 ± 2.0 ng/mL
1,2,3,4,6,8-Hexachlorodibenzofuran	98.6%	200.5 ± 2.0 ng/mL
1,2,3,4,8,9-Hexachlorodibenzofuran	99.7%	200.5 ± 2.0 ng/mL
1,2,3,4,6,7,8-Heptachlorodibenzofuran	98.9%	200.6 ± 2.0 ng/mL
1,2,3,4,7,8,9-Heptachlorodibenzofuran	99.1%	200.1 ± 2.0 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Standard Solution Assay Parameters

Analysis Method:	GC/MS
Column:	DB-5ms 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	140°C to 200°C at 40°C/min 200°C to 300°C at 4°C/min
Injector Temp:	Cool-on-Column
Detector Temp:	280°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration ng/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
1,3,6,8-Tetrachlorodibenzo-p-dioxin	200.4	± 10%	1.6	≤ 5%
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin/ 2,3,7,8-Tetrachlorodibenzo-p-dioxin/ 1,2,3,9-Tetrachlorodibenzo-p-dioxin [1]	591.2	± 10%	1.6	≤ 5%
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	196.8	± 10%	2.7	≤ 5%
1,2,8,9-Tetrachlorodibenzo-p-dioxin	197.2	± 10%	2.8	≤ 5%
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	194.6	± 10%	2.8	≤ 5%
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	194.7	± 10%	2.3	≤ 5%
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	195.3	± 10%	1.7	≤ 5%
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	192.6	± 10%	2.3	≤ 5%
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	191.2	± 10%	2.5	≤ 5%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	196.7	± 10%	2.1	≤ 5%
1,3,6,8-Tetrachlorodibenzofuran	202.3	± 10%	2.1	≤ 5%
1,2,3,9-Tetrachlorodibenzofuran	194.4	± 10%	2.4	≤ 5%
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	198.0	± 10%	3.3	≤ 5%
2,3,4,7-Tetrachlorodibenzofuran/ 2,3,7,8-Tetrachlorodibenzofuran [1]	399.3	± 10%	2.4	≤ 5%
1,2,8,9-Tetrachlorodibenzofuran	198.9	± 10%	2.9	≤ 5%
1,3,4,6,8-Pentachlorodibenzofuran	195.0	± 10%	2.1	≤ 5%
1,2,3,8,9-Pentachlorodibenzofuran	199.6	± 10%	2.1	≤ 5%
1,2,3,4,6,8-Hexachlorodibenzofuran	195.5	± 10%	2.4	≤ 5%
1,2,3,4,8,9-Hexachlorodibenzofuran	196.4	± 10%	1.8	≤ 5%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	197.4	± 10%	2.9	≤ 5%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	195.3	± 10%	2.1	≤ 5%

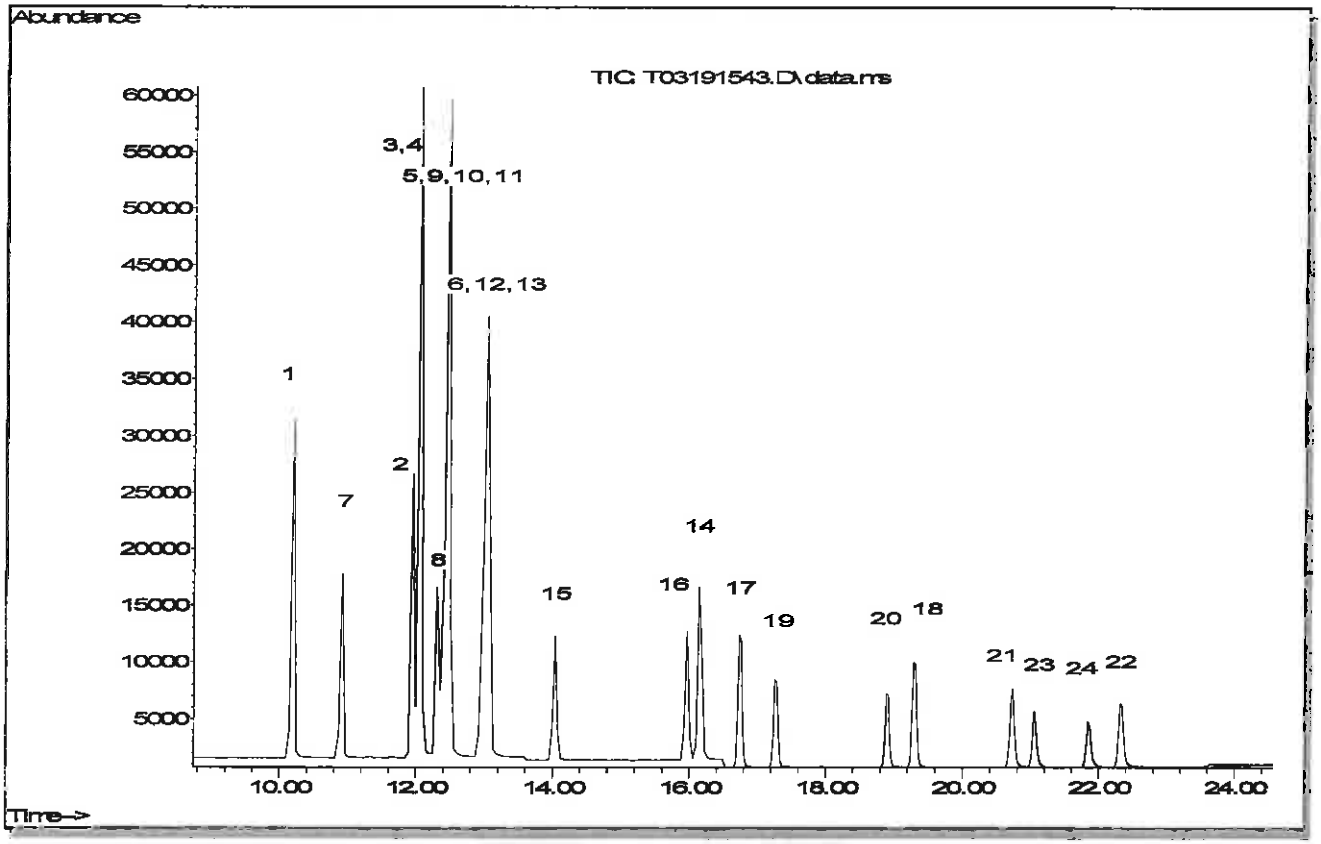
- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- Product is compared to prior lot and meets acceptance criteria of ± 10%.

[1] Compounds co-elute. Concentration is the sum of both or all analytes.

Neat Material Data

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity
1,3,6,8-Tetrachlorodibenzo-p-dioxin	ER040811-02	33423-92-6	$C_{12}H_4Cl_4O_2$	321.97	99.9%
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin	ER021510-01	NA	$C_{12}H_4Cl_4O_2$	321.97	99.8%
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ER061009-02	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	ER01031401	76523-40-5	$^{13}C_{12}H_4Cl_4O_2$	333.84	98.9%
1,2,3,9-Tetrachlorodibenzo-p-dioxin	ER0529401	71669-26-6	$C_{12}H_4Cl_4O_2$	321.97	99.6%
1,2,8,9-Tetrachlorodibenzo-p-dioxin	ER11201301	62470-54-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	ER11051302	NA	$C_{12}H_3Cl_5O_2$	356.42	98.9%
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	ER05161401	NA	$C_{12}H_3Cl_5O_2$	356.42	99.0%
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	ER08101402	NA	$C_{12}H_2Cl_6O_2$	390.86	98.7%
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	ER030107-01	NA	$C_{12}H_2Cl_6O_2$	390.86	99.0%
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	ER01201502	58200-70-7	$C_{12}HCl_7O_2$	425.31	98.9%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	ER100207-02	35822-46-9	$C_{12}HCl_7O_2$	425.31	99.8%
1,3,6,8-Tetrachlorodibenzofuran	ER021808-01	71998-72-6	$C_{12}H_4Cl_4O$	305.98	98.5%
1,2,3,9-Tetrachlorodibenzofuran	ER071107-01	NA	$C_{12}H_4Cl_4O$	305.98	98.2%
2,3,7,8-Tetrachlorodibenzofuran	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.98	99.4%
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	ER12101304	89059-46-1	$^{13}C_{12}H_4Cl_4O$	317.88	99.2%
2,3,4,7-Tetrachlorodibenzofuran	ER052307-01	NA	$C_{12}H_4Cl_4O$	305.98	98.7%
1,2,8,9-Tetrachlorodibenzofuran	ER041508-03	NA	$C_{12}H_4Cl_4O$	305.98	99.3%
1,3,4,6,8-Pentachlorodibenzofuran	ER04231401	NA	$C_{12}H_3Cl_5O$	340.42	99.5%
1,2,3,8,9-Pentachlorodibenzofuran	ER12101303	NA	$C_{12}H_3Cl_5O$	340.42	99.0%
1,2,3,4,6,8-Hexachlorodibenzofuran	ER04231402	NA	$C_{12}H_2Cl_6O$	374.86	98.6%
1,2,3,4,8,9-Hexachlorodibenzofuran	ER12091401	92341-07-6	$C_{12}H_2Cl_6O$	374.86	99.7%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%

Product Analysis



1 1,3,6,8-Tetrachlorodibenzofuran
2 2,3,4,7-Tetrachlorodibenzofuran
3 2,3,7,8-Tetrachlorodibenzofuran
4 2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$
5 1,2,3,9-Tetrachlorodibenzofuran
6 1,2,8,9-Tetrachlorodibenzofuran
7 1,3,6,8-Tetrachlorodibenzo-p-dioxin
8 1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin
9 1,2,3,9-Tetrachlorodibenzo-p-dioxin
10 2,3,7,8-Tetrachlorodibenzo-p-dioxin
11 2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$
12 1,2,8,9-Tetrachlorodibenzo-p-dioxin
13 1,3,4,6,8-Pentachlorodibenzofuran
14 1,2,3,8,9-Pentachlorodibenzofuran
15 1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin
16 1,2,3,8,9-Pentachlorodibenzo-p-dioxin
17 1,2,3,4,6,8-Hexachlorodibenzofuran
18 1,2,3,4,8,9-Hexachlorodibenzofuran
19 1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin
20 1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin
21 1,2,3,4,6,7,8-Heptachlorodibenzofuran
22 1,2,3,4,7,8,9-Heptachlorodibenzofuran
23 1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin
24 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin

COA Revision History

Revision No.	Date	Reason for Revision
00	March 24, 2015	Initial version

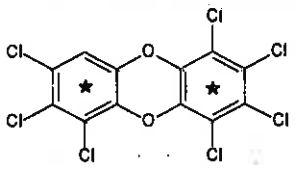
Reagent

HRDXNIDA_00075

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-972
Solution Lot:	ER111010-01
Expiration Date:	November 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature Do not store cold
Intended Use:	For laboratory use only Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Chromatographic Purity	Certified Concentration
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.9%	50.03 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and *balance and weighing technique.*
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER111010-01	50.5	± 5%	0.5	≤ 3%
Previous Lot	ER011807-01	47.4	± 5%	1.8	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

January 15, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HO_2Cl_7$
Compound Lot:	ER100110-01	**CAS Number:**	NA
		Molecular Weight:	437.22

Neat Material Characterization Summary

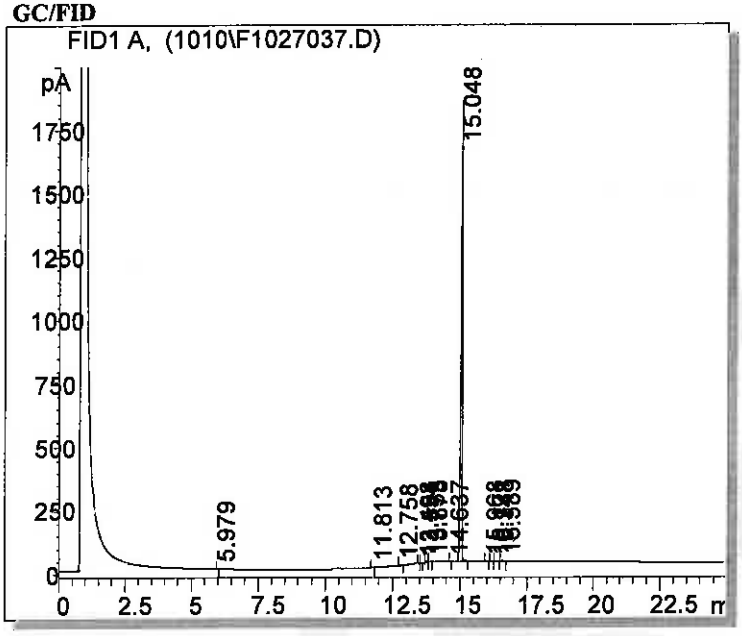
Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.9%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.10% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		98.91%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Spectral and Physical Data

GC/FID



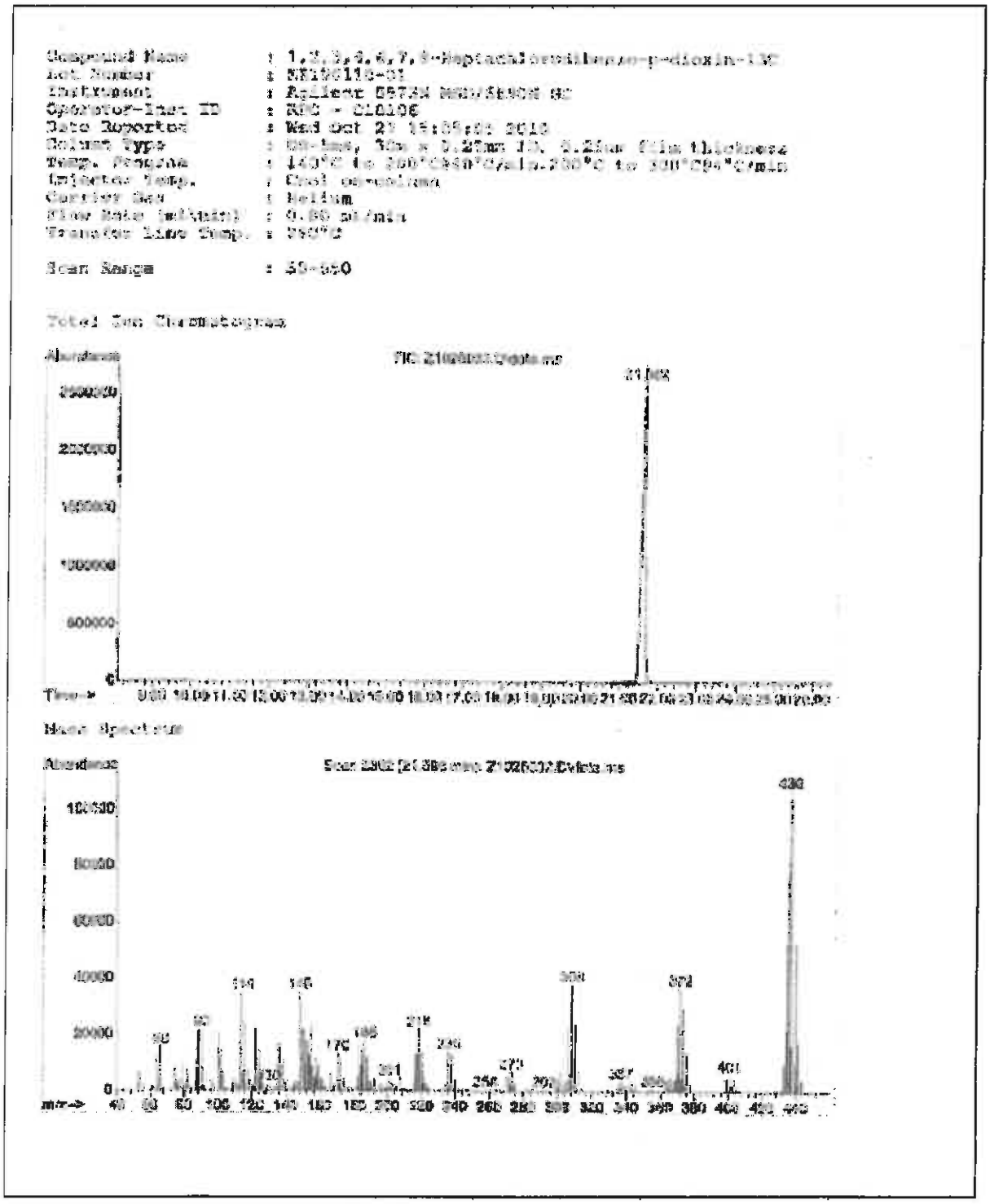
Column:	DB-5ms, 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	S:\GC\GC6\2010\1010\F1027037.D
Instrument:	GC#6
Sample Name:	ER100110-01
Acquired:	October 28, 2010

Peak #	Ret Time	Area	Height	Area %
1	5.98	0.34	0.18	0.00
2	11.81	1.00	0.08	0.01
3	12.76	10.96	2.89	0.16
4	13.50	1.19	0.32	0.02
5	13.55	2.63	0.80	0.04
6	13.75	13.39	3.28	0.19
7	13.88	7.04	1.81	0.10
8	14.64	0.86	0.28	0.01
9	15.05	6900.70	1812.09	98.81
10	15.97	3.15	0.73	0.05
11	16.17	2.25	0.55	0.03
12	16.35	5.12	1.10	0.07
13	16.59	18.93	4.26	0.27
14	26.99	15.17	0.35	0.22
15	35.58	0.06	0.21	0.00
16	41.80	0.77	0.13	0.01

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Spectral and Physical Data (cont.)

GC/MS



Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

COA Revision History

Revision No.	Date	Reason for Revision
00	November 24, 2010	Initial version
01	January 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Reagent

HRDXNIDA_00247

Received 8-17-16

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

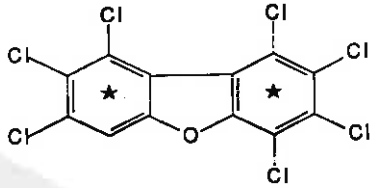
CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$

1,2,3,4,7,8,9-HpCDF



Catalog Number:	EF-988
Solution Lot:	ER04251601
Expiration Date:	March 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	99.1%	49.99 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04251601	49.11	± 5%	0.2	≤ 3%
Previous Lot	ER053107-02	50.58	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darren Ellsworth, Quality Assurance Manager

June 21, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER04041602	**CAS Number:**	109719-94-0
		Molecular Weight:	421.22

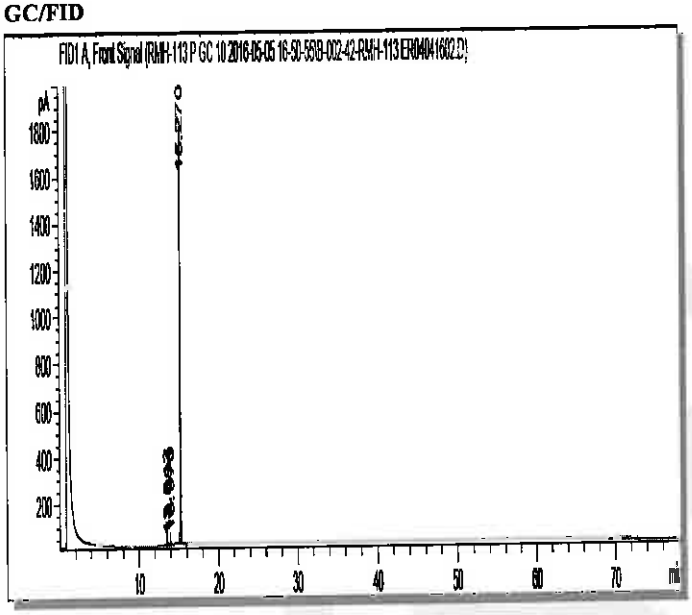
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.10%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data (cont.)

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-113 P GC 10 2016-05-05 16-50-55\B-002-42.D
Instrument:	GC#10
Sample Name:	ER04041602
Acquired:	May 05, 2016

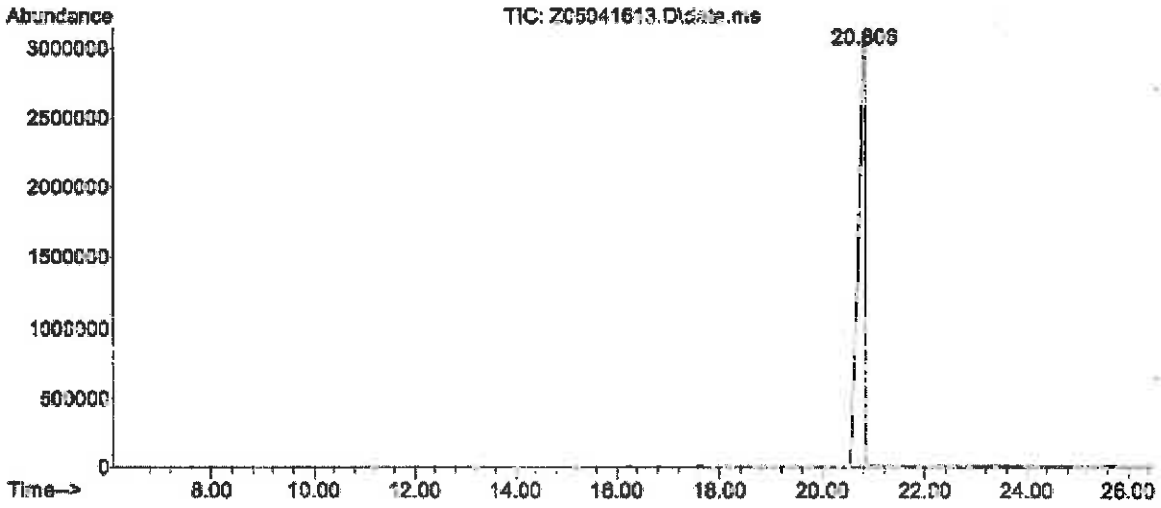
Peak #	Ret Time	Area	Height	Area %
1	13.51	8.76	2.52	0.12
2	13.68	17.42	7.45	0.24
3	13.97	39.65	15.48	0.54
4	15.27	7226.95	1798.33	99.10

Spectral and Physical Data (cont.)

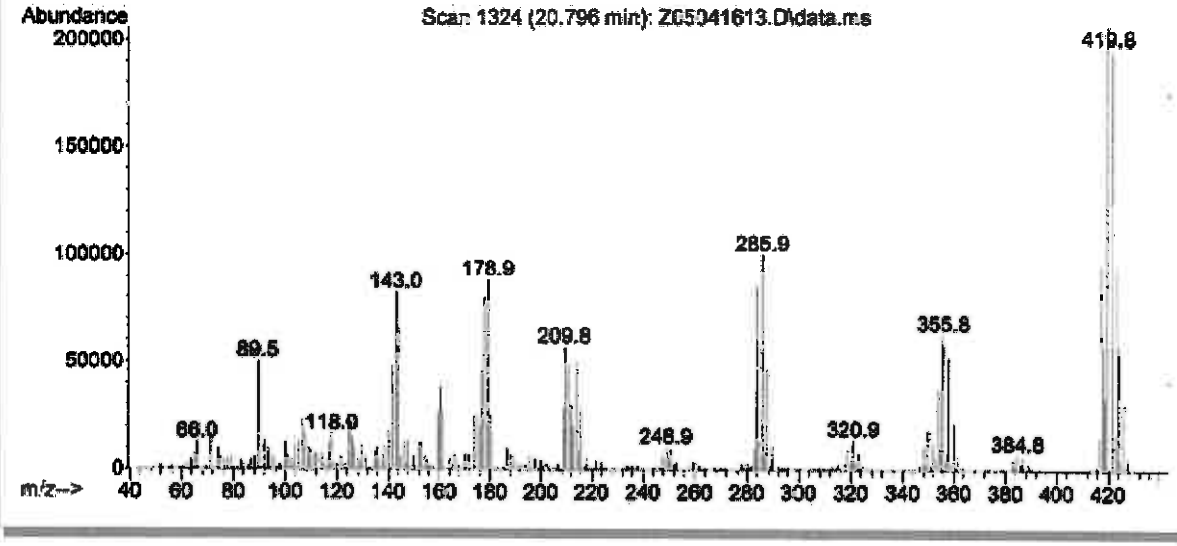
GC/MS

```
Compound Name          : 1,2,3,4,7,8,9-Heptachlorodibenzofuran-13C12
Lot Number             : ER04041602
Instrument             : Agilent GCMS
Operator               : ECM(SGZUFFRE)
Date Reported          : Wed May 04 15:34:28 2016
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	June 21, 2016	Initial version

Reagent

HRDXNIDA_00297

12/28/17 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

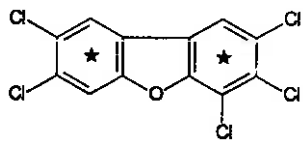
1042065
ID: HRDXNIDA_00297
Exp: 01/31/27 Prpd: SKV
13C-2,3,4,7,8-PeCDF [50ug

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-958
Solution Lot:	ER01061701
Expiration Date:	January 2027
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	97.9%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER01061701	50.51	± 5%	0.1	≤ 3%
Previous Lot	ER11041601	49.56	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

January 27, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O$
Compound Lot:	ER11101601	**CAS Number:**	116843-02-8
		Molecular Weight:	352.33

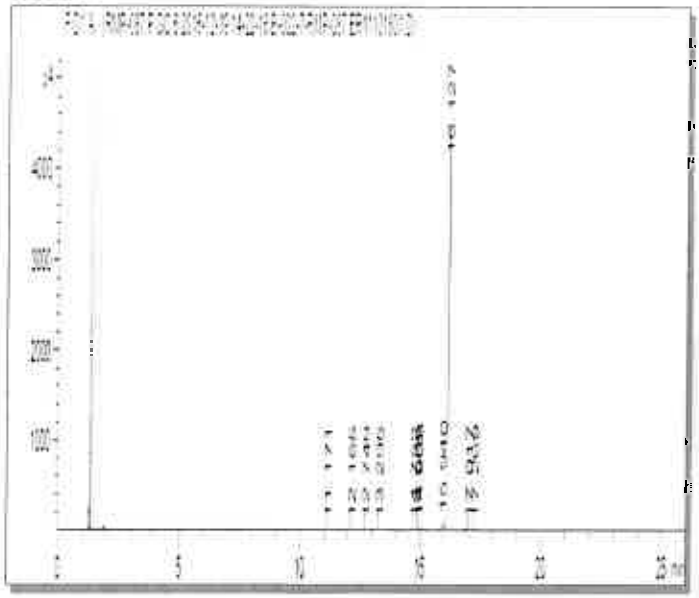
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.02% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		98.33%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Specirai and Physicai Data

GC/FID



Column: DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program: 100°C to 300°C at 15°C/min hold 10 min
Injector Temp: Cool-on-Column
Detector Temp: 325°C

Data File Name: RMP-087 P GC 6 2016-12-19 14-22-16\B-002-7.D
Instrument: GC#6
Sample Name: ER11101601
Acquired: December 19, 2016

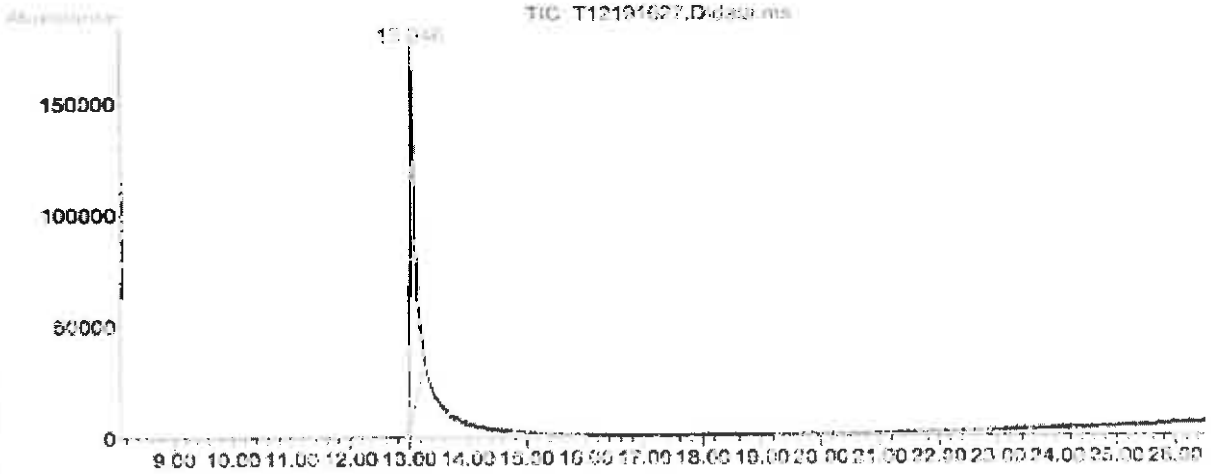
Peak #	Ret Time	Area	Height	Area %
1	11 17	0.94	0.40	0.01
2	12.17	1 30	0.39	0.01
3	12.75	0 47	0.20	0.00
4	13 30	0 90	0.35	0.01
5	14 75	1 70	0.87	0.02
6	14 91	1 09	0.56	0.01
7	14.97	32 24	17.54	0.29
8	15.94	124 38	64.36	1.13
9	16.13	10866 60	4688.80	98.41
10	17.02	6.31	2.46	0.06
11	17.27	6 76	2.34	0.06

Spectral and Physical Data (cont.)

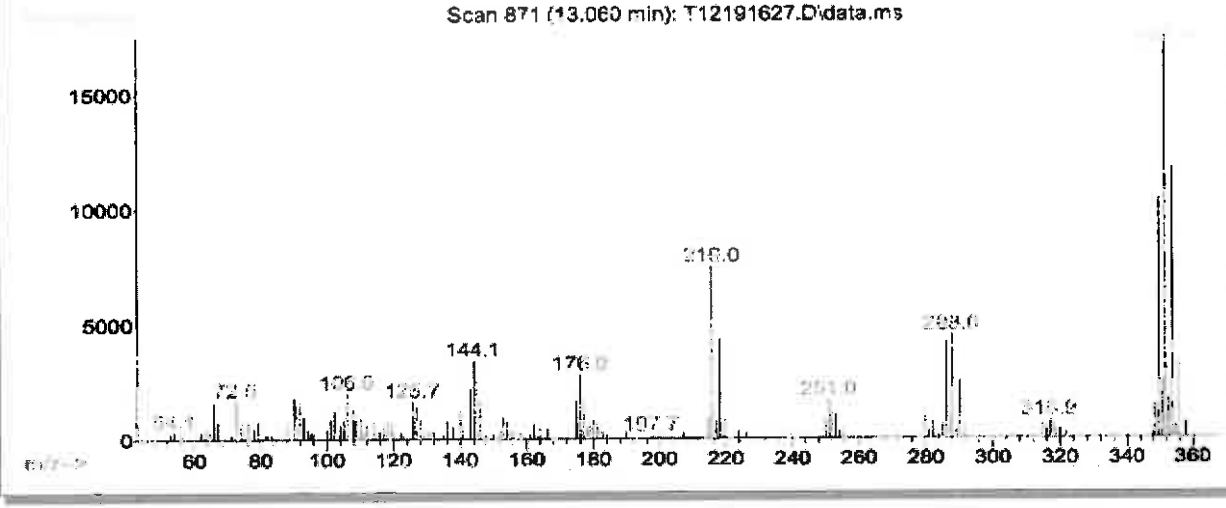
GC/MS

Compound Name	: 2,3,4,7,8-Pentachlorodibenzofuran-13C12
Lot Number	: ER11101601
Instrument	: Agilent GCMS
Operator	: ECM(SGIUFFRS)
Date Reported	: Tue Dec 20 12:19:55 2016
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	: 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.50 ml/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00301

n: 9/2017 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

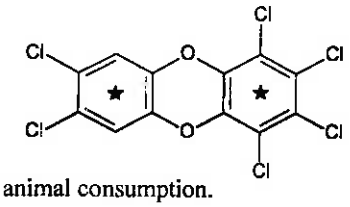
1042073
ID: HRDXNIDA_00301
Exp: 10/31/21 Prpd: SKV
13C-1,2,3,4,7,8-HxCDD [50

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-946
Solution Lot:	ER102711-01
Expiration Date:	October 2021
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.0%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER102711-01	48.2	± 5%	0.2	≤ 3%
Previous Lot	ER012208-01	49.6	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

September 17, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER011008-01	**CAS Number:**	109719-80-4
		Molecular Weight:	402.77

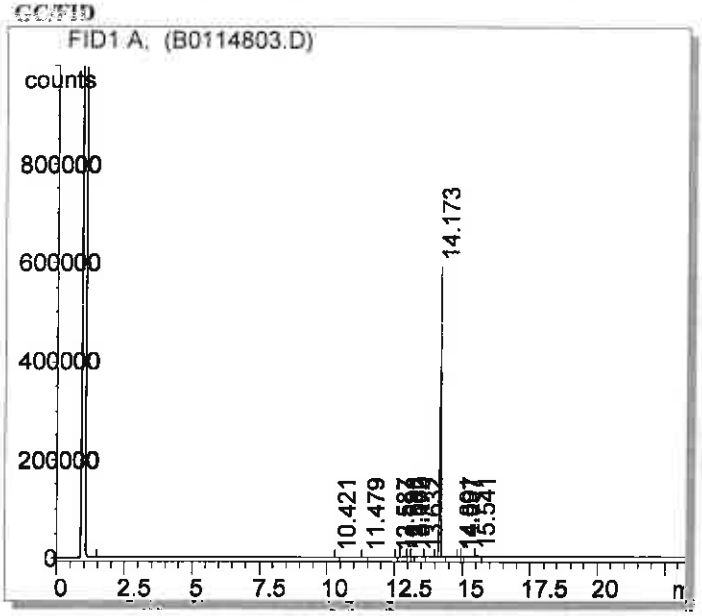
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.08% $^{13}C_0$ vs $^{13}C_{12}$
		0.19% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.19%

- Chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0114803.D
Instrument:	GC#2
Sample Name:	ER011008-01
Acquired:	January 14, 2008

Peak #	Ret Time	Area	Height	Area %
1	10.42	287.44	132.33	0.02
2	11.48	242.24	92.03	0.01
3	12.59	389.12	196.33	0.02
4	12.90	3015.36	1199.07	0.17
5	13.06	2243.36	788.13	0.13
6	13.17	2243.90	754.45	0.13
7	13.63	2349.03	134.07	0.02
8	14.17	427.02	588610.00	99.20
9	14.89	1731980.00	110.79	0.03
10	15.00	512.26	86.41	0.02
11	15.54	4077.63	1008.44	0.23

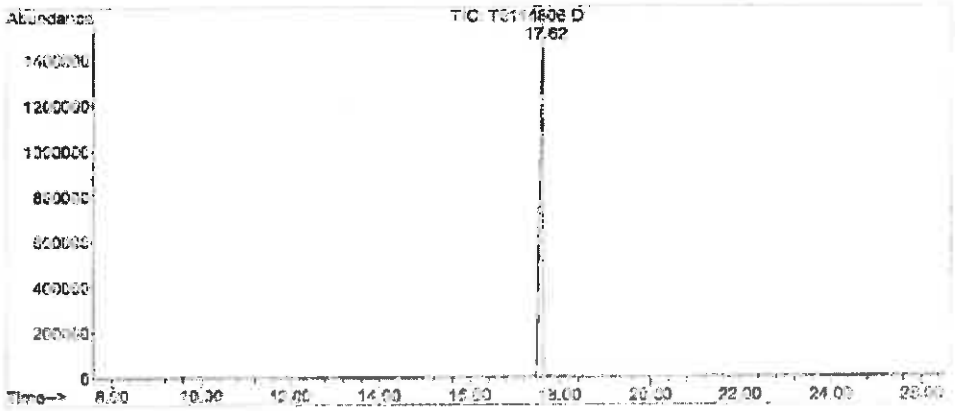
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

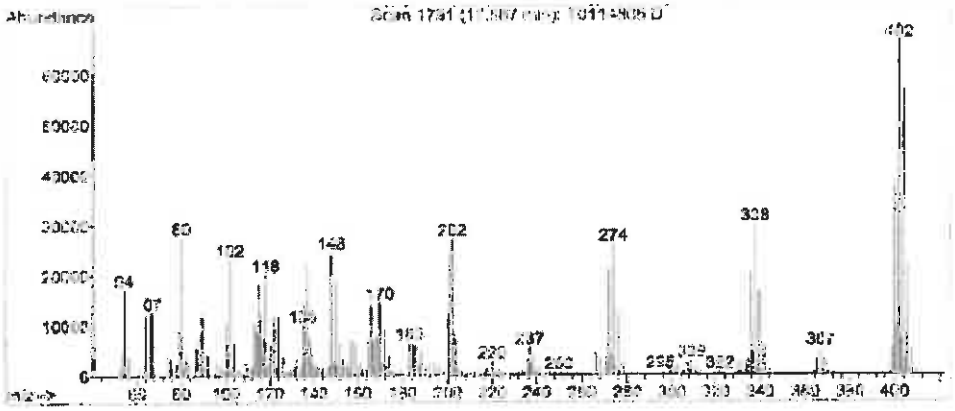
Compound Name : 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-13C12
Lot Number : MB110908-01
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : REC - C1010E
Date Reported : Wed Jan 16 11:15:58 2008
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 208°C@40°C/min, 208°C to 300°C@8°C/min (5 min)
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL/min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	November 12, 2011	Initial version
01	September 17, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"

Reagent

HRDXNIDA_00302

R: 9/20/17 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

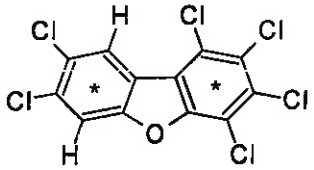
1042074
ID: HRDXNIDA_00302
Exp: 07/31/20 Prpd: SKV
13C-1,2,3,4,7,8-HxCDF [50

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-963
Solution Lot:	ER072810-02
Expiration Date:	July 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Protect from air and light, store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.6%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER072810-02	47.4	± 5%	0.3	≤ 3%
Previous Lot	LR011907-01	46.6	—	1.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

November 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2OCl_6$
Compound Lot:	35135-45	**CAS Number:**	114423-98-2
		Molecular Weight:	386.77

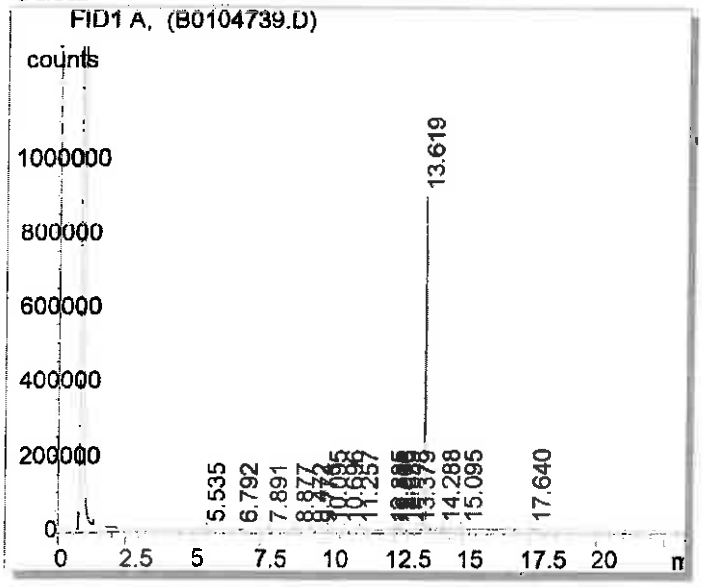
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.6%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% C_0 vs C_{12}
		0.13% C_6 vs C_{12}
Purity Factor		99.57%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

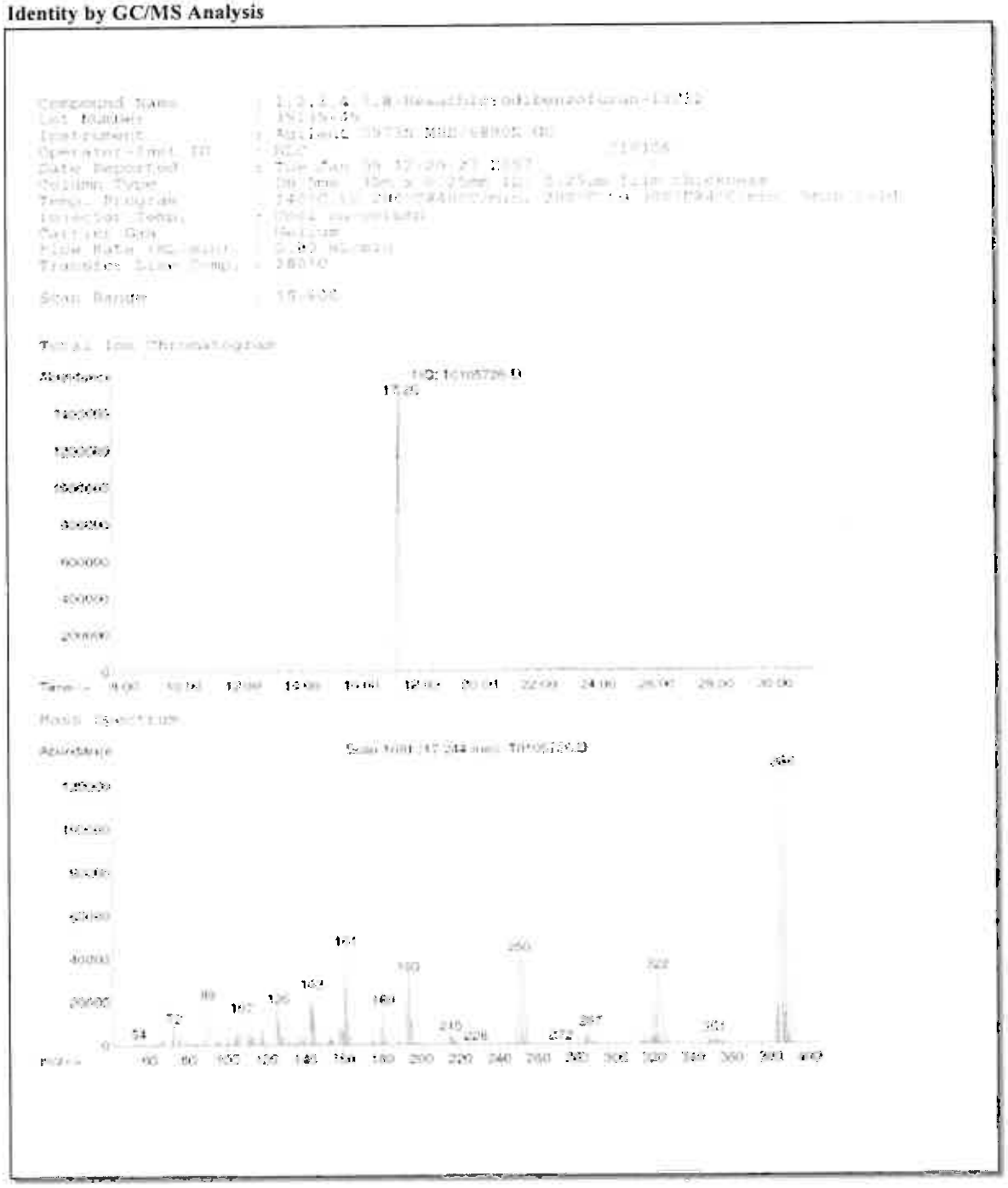


Column:	DB-5ms, 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0104739.D
Instrument:	GC#2
Sample Name:	35135-45
Acquired:	January 05, 2007

Peak #	Ret Time	Area	Height	Area %
1	4.21	615.24	161.26	0.02
2	5.21	1024.94	292.85	0.04
3	6.09	326.05	83.67	0.01
4	7.10	301.83	31.69	0.01
5	7.75	169.71	40.31	0.01
6	8.38	136.91	47.17	0.01
7	8.97	123.76	38.29	0.00
8	12.30	2684.80	1153.73	0.10
9	12.48	1162.83	467.42	0.04
10	12.56	1893.94	719.41	0.07
11	12.68	466.69	180.24	0.02
12	12.86	690.32	301.63	0.03
13	13.62	2651450.00	979725.00	99.58
14	14.34	274.11	82.01	0.01
15	15.17	1208.09	320.67	0.05
16	19.00	166.44	32.66	0.01

Spectral and Physical Data (cont.)

Identity by GC/MS Analysis



COA Revision History

Revision No.	Date	Reason for Revision
00	September 22, 2010	Initial version
01	September 22, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"
02	November 15, 2016	Corrected Molecular Weight from 368.77 to 386.77

Reagent

HRDXNIDA_00353

Cerilliant
Analytical Reference Standards
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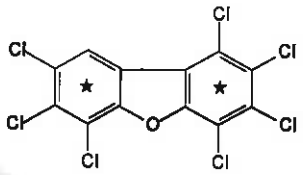
CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-974
Solution Lot: ER08101404
Expiration Date: November 2024
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$	98.3%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08101404	48.75	± 5%	0.3	≤ 3%
Previous Lot	ER102711-02	51.49	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS
REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

December 03, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER020507-02	**CAS Number:**	109719-84-8
		Molecular Weight:	421.22

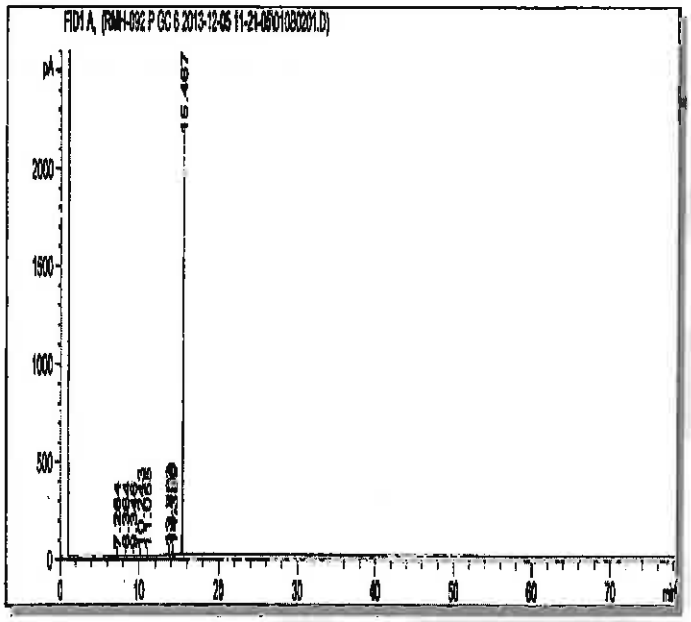
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	98.7%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS	SP10-0105	Pass
		no single DD/DF impurity ≥1.0%
Purity Factor		98.69%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-092 P GC 6 2013-12-05 11-21-05\010B0201.D
Instrument:	GC#6
Sample Name:	ER020507-02
Acquired:	December 05, 2013

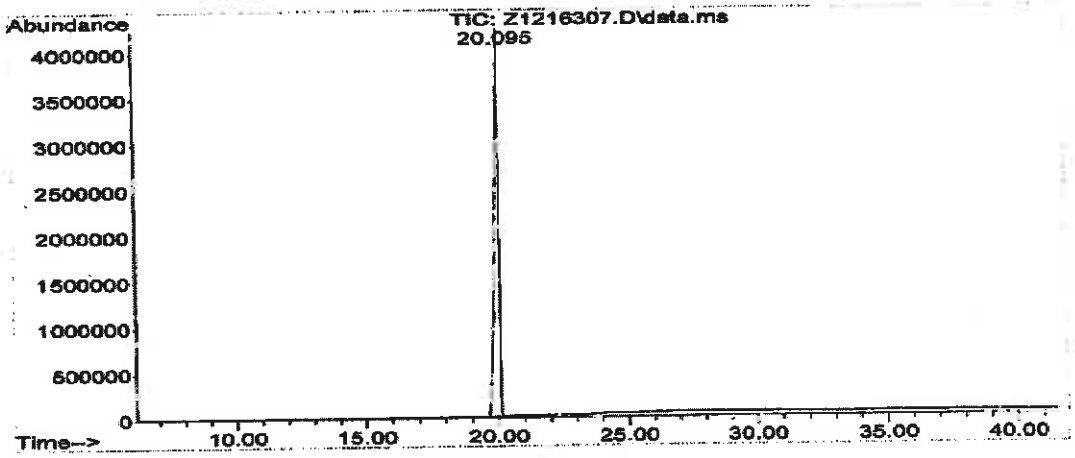
Peak #	Ret Time	Area	Height	Area %
1	7.26	4.41	2.08	0.05
2	8.36	11.76	5.45	0.12
3	9.35	5.20	2.32	0.05
4	10.24	1.47	0.62	0.02
5	11.06	0.34	0.17	0.00
6	13.75	8.81	4.38	0.09
7	13.80	23.67	9.98	0.25
8	14.13	43.07	16.42	0.45
9	14.20	21.73	8.77	0.23
10	14.39	4.79	1.81	0.05
11	15.47	9349.36	2200.33	98.68

Spectral and Physical Data (cont.)

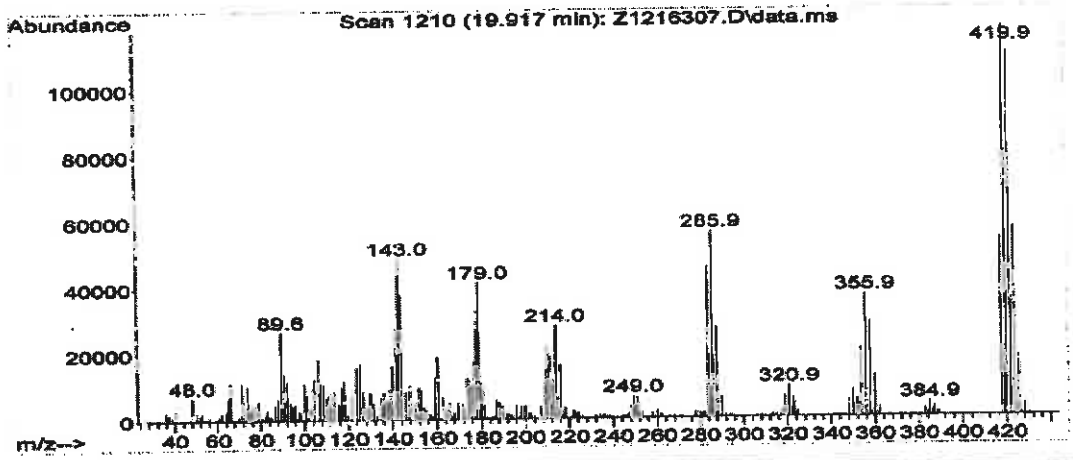
GC/MS

Compound Name : 1,2,3,4,6,7,8-Heptachlorodibenzofuran-13C12
Lot Number : ER020507-02
Instrument : Agilent GCMS
Operator : ECM(BRYAN_DOCKERY)
Date Reported : Tue Dec 17 09:08:58 2013
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C
Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	January 19, 2015	Initial version
01	December 04, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"

Reagent

HRDXNIDA_00354

Rec: 11/28/18 SKV

Cerilliant
Analytical Reference Standards
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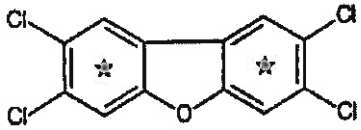
CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-904
Solution Lot: ER09131601
Expiration Date: September 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	99.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER09131601	49.91	± 5%	0.2	≤ 3%
Previous Lot	ER12101304	51.13	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darren Ellsworth, Quality Assurance Manager

November 02, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

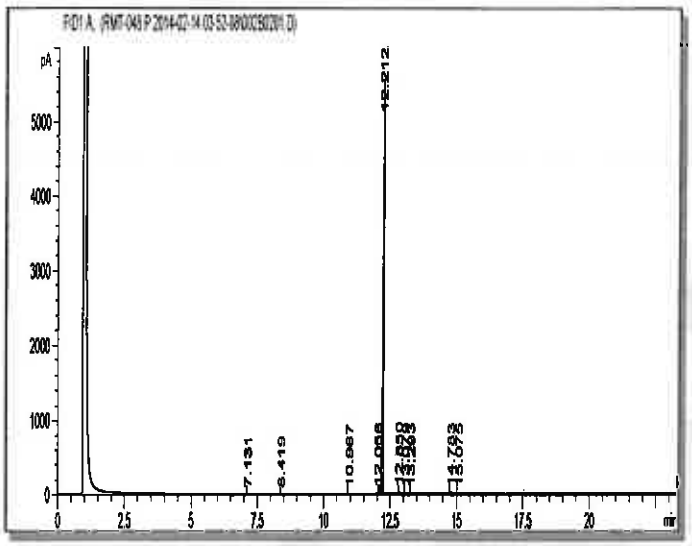
Compound Name:	2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O$
Compound Lot:	ER01161401	**CAS Number:**	89059-46-1
		Molecular Weight:	317.88

Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	No single DD/DF ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.00% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.24%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

GC/FID



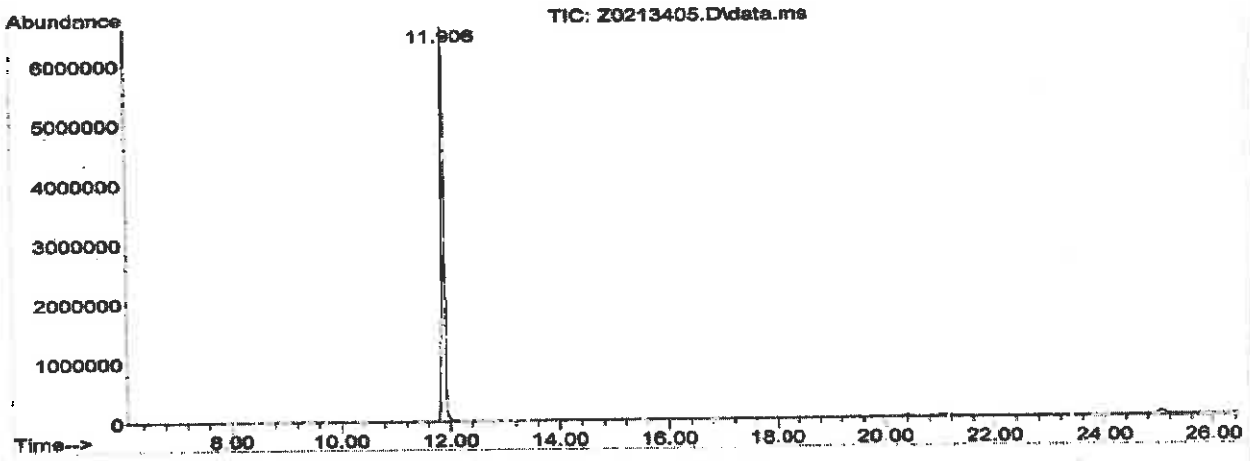
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-048 P 2014-02-14 03-52-08\002B0201.D
Instrument:	GC#10
Sample Name:	ER01161401
Acquired:	February 14, 2014

Peak #	Ret Time	Area	Height	Area %
1	7.13	1.19	0.61	0.01
2	8.42	3.23	1.42	0.03
3	10.97	3.57	1.04	0.03
4	12.06	20.86	12.47	0.18
5	12.21	11764.70	5466.96	99.29
6	12.85	30.72	15.48	0.26
7	13.08	7.62	4.03	0.06
8	13.29	5.47	2.91	0.05
9	14.78	7.62	2.76	0.06
10	15.08	3.87	1.33	0.03

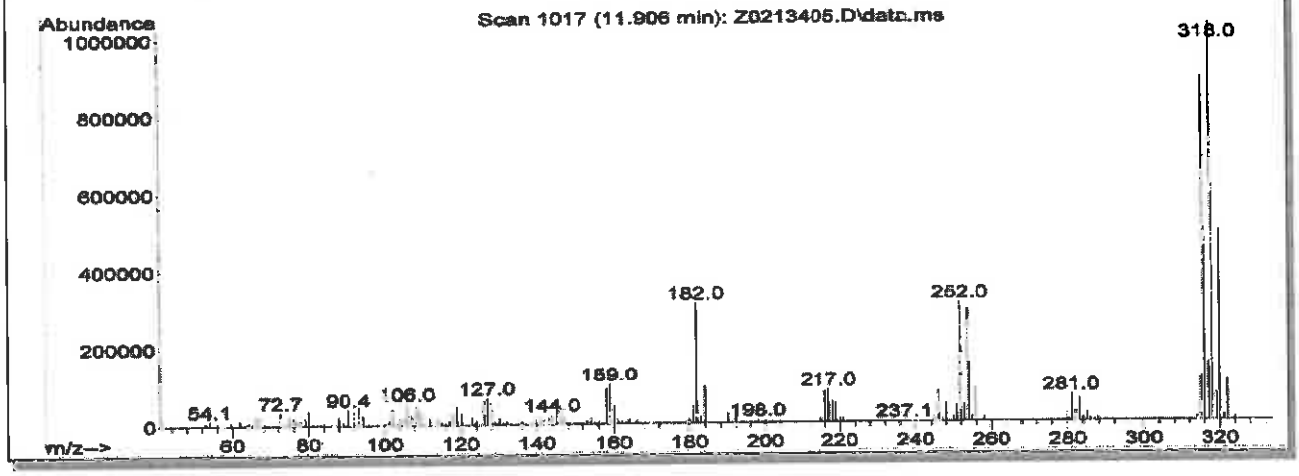
GC/MS

Compound Name	:	2,3,7,8-Tetrachlorodibenzofuran-13C12
Lot Number	:	ER01161401
Instrument	:	Agilent GCMS
Operator	:	ECM(SAMUEL_GIUFFRE)
Date Reported	:	Thu Feb 13 11:57:07 2014
Column Type	:	DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	:	140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	:	Cool on-column
Carrier Gas	:	Helium
Flow Rate (mL\min)	:	0.80 mL/min
Transfer Line Temp.	:	280°C
Scan Range	:	50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	November 02, 2016	Initial version

Reagent

HRDXNIDA_00355

Rec: 11/28/18 SRV

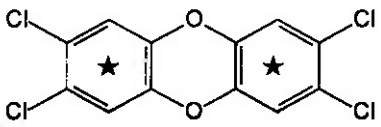
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO TS17M
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-900
Solution Lot: ER03031601
Expiration Date: March 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.4%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER03031601	52.66	± 5%	0.3	≤ 3%
Previous Lot	ER01031401	49.83	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

March 24, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-35ms 30 m x 0.53 mm ID, 1.0 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O_2$
Compound Lot:	ER01201405	**CAS Number:**	76523-40-5
		Molecular Weight:	333.88

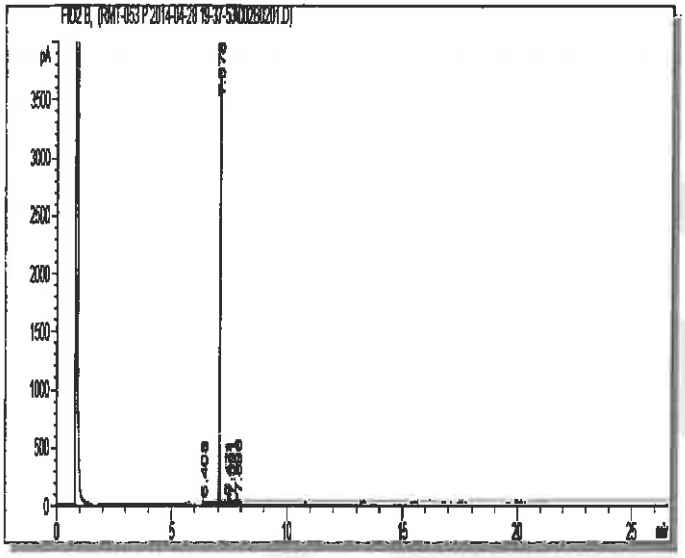
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity and Distribution by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.05% $^{13}C_6$ vs $^{13}C_{12}$
Impurities by GC/MS SIM Analysis	SP10-0105	no single DD/DF impurity ≥ 0.5%
Mass Balance Purity Factor		99.34%

- The primary chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Mass Balance Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-35ms, 30 m x 0.53 mm ID, 1.0 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-053 P 2014-04-28 19-37-53\002B0201.D
Instrument:	GC#6
Sample Name:	ER01201405
Acquired:	April 28, 2014

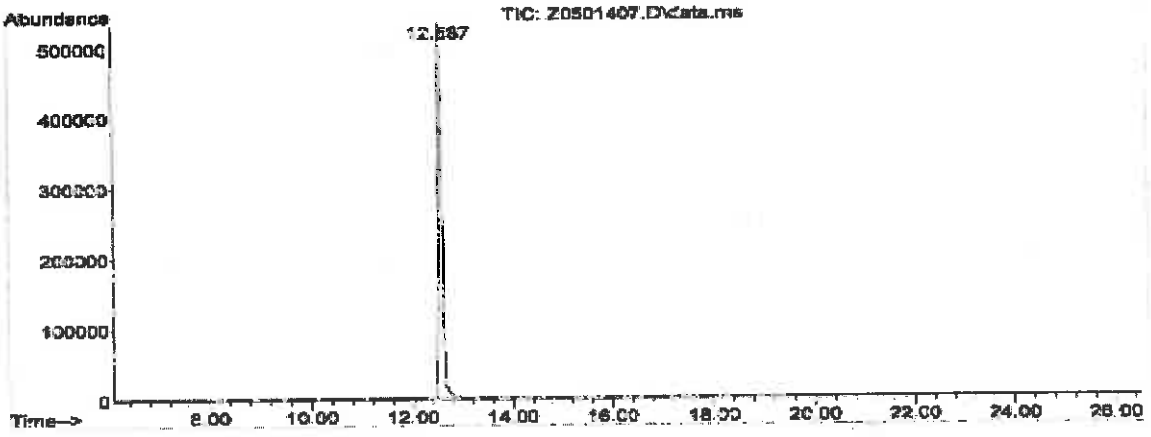
Peak #	Ret Time	Area	Height	Area %
1	6.41	4 36	2.80	0.08
2	7 08	5225 21	3678.99	99.32
3	7 47	5 29	3.00	0.10
4	7 59	9 11	4.81	0.17
5	7.90	17 05	9.22	0.32

Spectral and Physical Data (cont.)

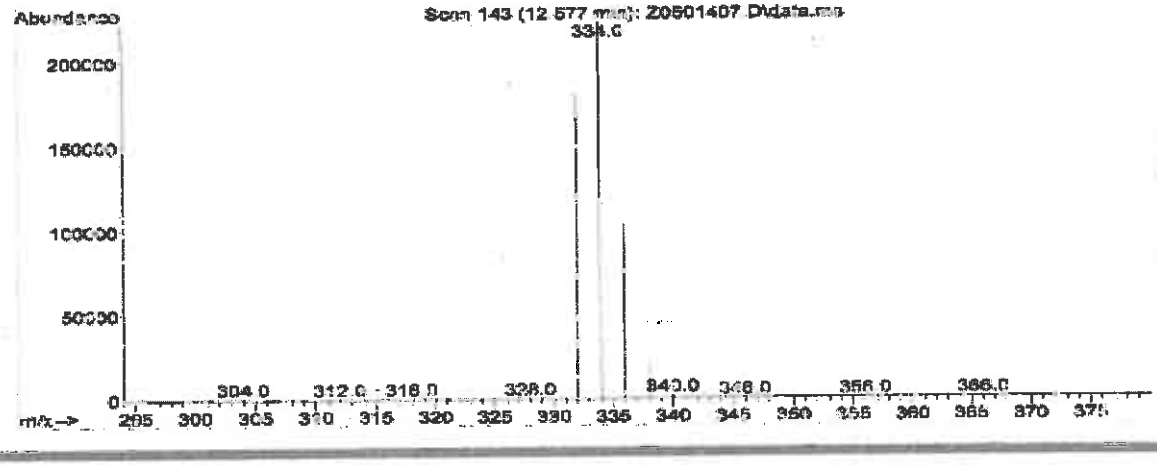
GC/MS

```
Compound Name          : 2,3,7,8-Tetrachlorodibenzo-p-dioxin-13C12
Lot Number             : ER032201405
Instrument             : Agilent GCMS
Operator               : ECM(SAMUEL_GIUFFRE)
Date Reported          : Tue May 06 09:30:26 2014
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00357

R: 1/15/19 SKV

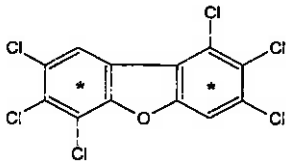
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Certificate of Analysis

1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-985
Solution Lot:	ER02241603
Expiration Date:	April 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.6%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER02241603	50.09	± 5%	0.4	≤ 3%
Previous Lot	ER053107-03	50.81	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

May 04, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O$
Compound Lot:	ER051607-01	**CAS Number:**	116843-03-9
		Molecular Weight:	386.77

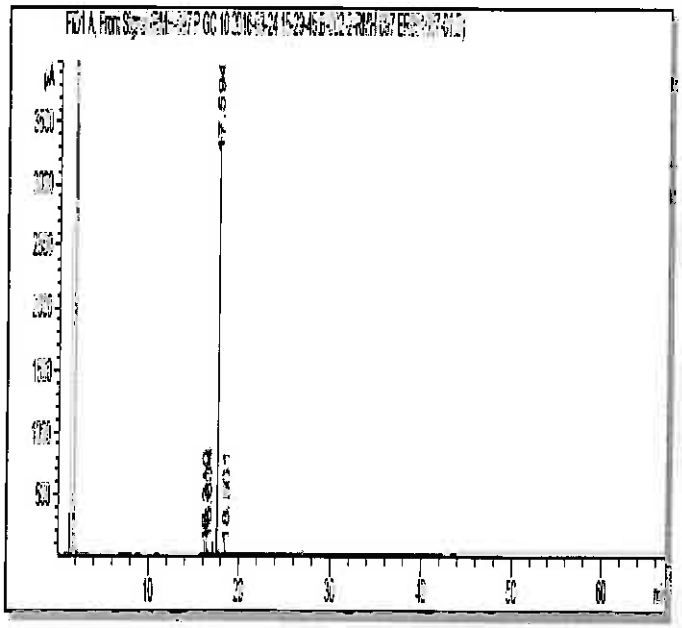
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.06% $^{13}C_6$ vs $^{13}C_{12}$
Impurities by GC/MS SIM Analysis	SP10-0105	no single DD/DF impurity $\geq$ 0.5%
Mass Balance Purity Factor		99.01%

- The chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Mass Balance Purity Factor
- Mass Balance Purity Factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-097 P GC 10 2016-03-24 15-29-45\B-002-2.D
Instrument:	GC#10
Sample Name:	ER051607-01
Acquired:	March 24, 2016

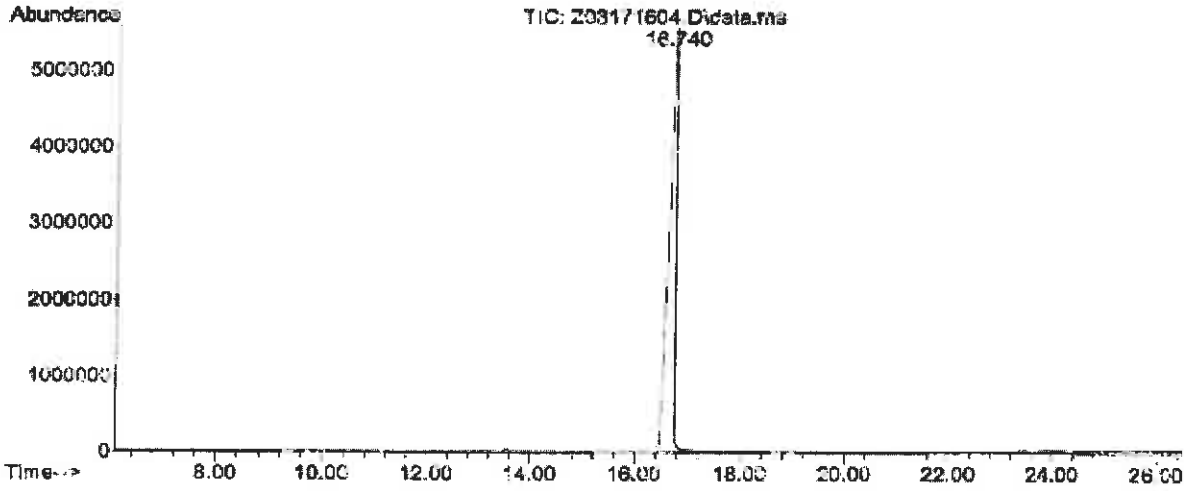
Peak #	Ret Time	Area	Height	Area %
1	16.31	6.97	3.21	0.08
2	16.60	77.08	33.51	0.83
3	17.59	9156.82	3458.38	99.00
4	18.56	8.48	2.69	0.09

Spectral and Physical Data (cont.)

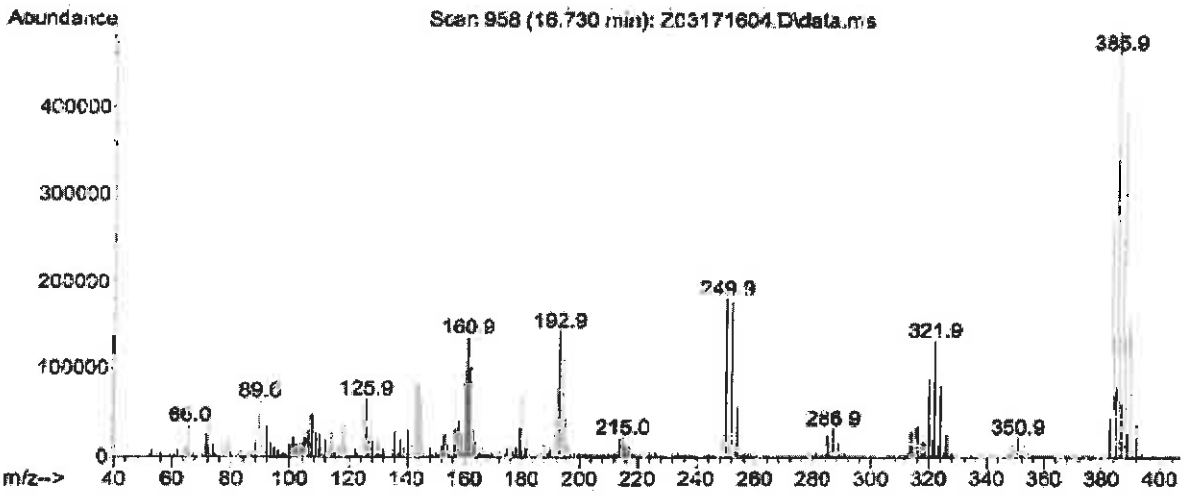
GC/MS

Compound Name	: 1,2,3,6,7,8 Hexachlorodibenzofuran-13C12
Lot Number	: ER051607-01
Instrument	: Agilent GCMS
Operator	: ECM(SGIUFFRE)
Date Reported	: Fri Mar 18 07:08:54 2016
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp Program	: 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.80 mL/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	May 04, 2016	Initial version

Reagent

HRDXNIDA_00358

r: 1/15/19 SK✓

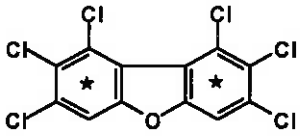
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

1,2,3,7,8,9-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-986
Solution Lot: ER100610-01
Expiration Date: December 2020
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For laboratory use only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,7,8,9-Hexachlorodibenzofuran-$^{13}C_{12}$	99.5%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER100610-01	51.2	± 5%	0.4	≤ 3%
Previous Lot	ER100107-01	49.9	± 5%	1.4	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

February 14, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2OCl_6$
Compound Lot:	ER080108-03	**CAS Number:**	116843-04-0
		Molecular Weight:	386.77

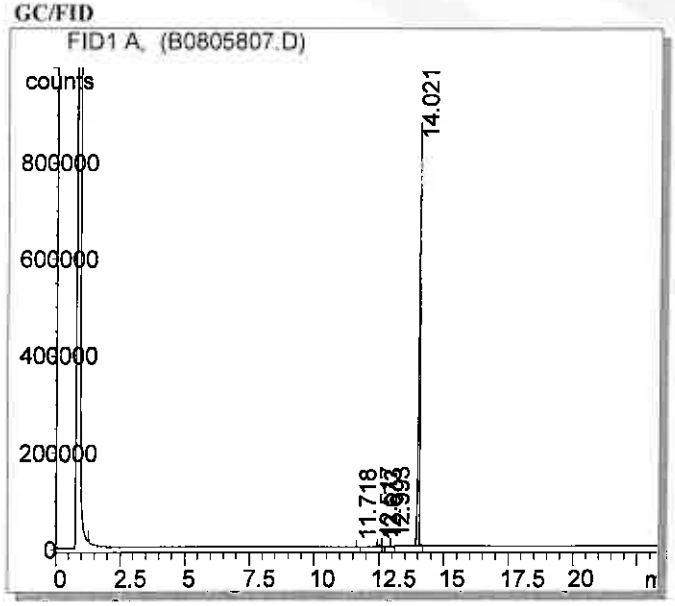
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.5%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.03% $^{13}C_0$ vs $^{13}C_{12}$
		0.09% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.49%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

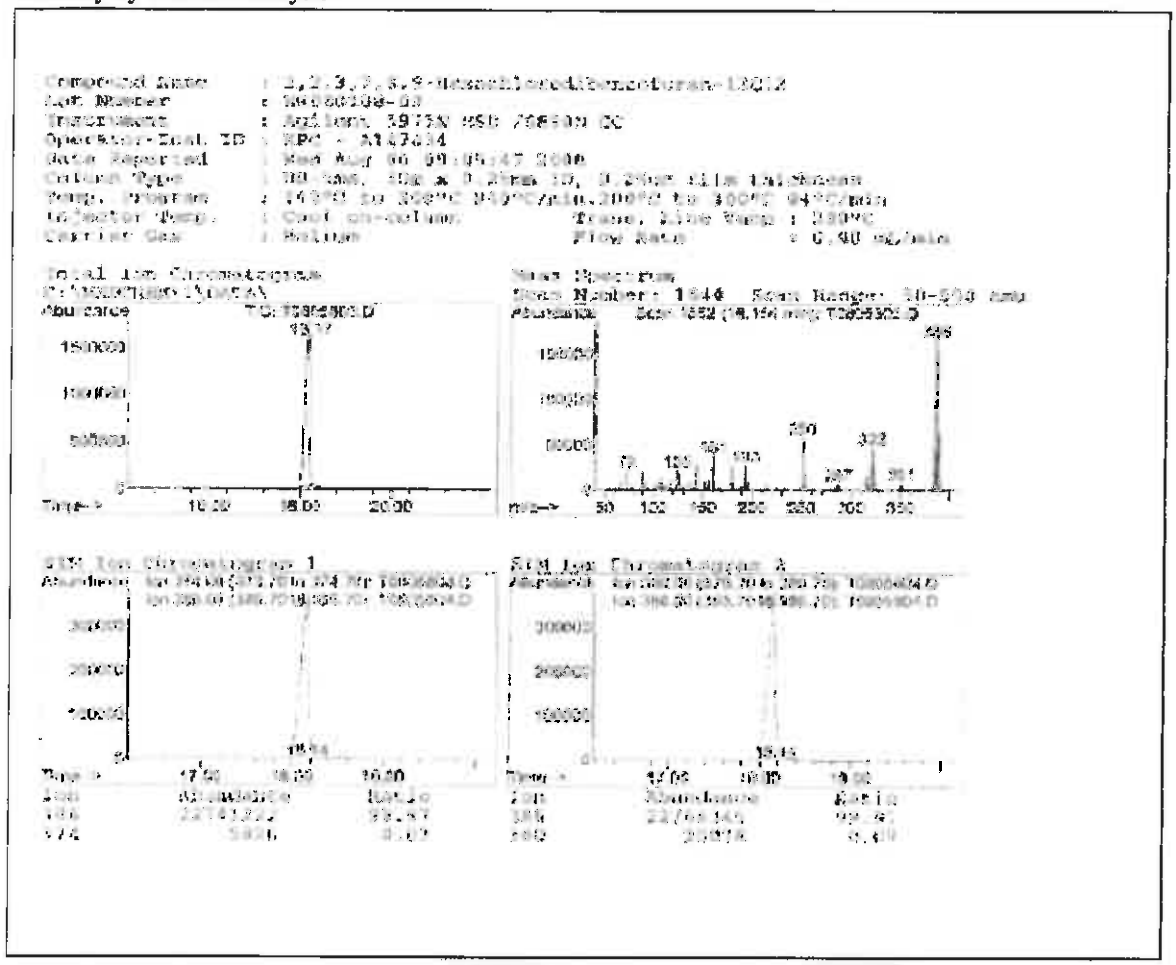


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0805807.D
Instrument:	GC#2
Sample Name:	ER080108-03
Acquired:	August 05, 2008

Peak #	Ret Time	Area	Height	Area %
1	11.72	318.47	152.10	0.01
2	12.52	8294.54	2994.64	0.30
3	12.67	155.17	67.29	0.01
4	12.99	4248.66	1646.53	0.16
5	14.02	2708910.00	880320.00	99.52

Spectral and Physical Data (cont.)

Identity by GC/MS Analysis



COA Revision History

Revision No.	Date	Reason for Revision
00	January 12, 2011	Initial version
01	November 05, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".
02	February 14, 2017	Corrected Isotopic Purity by GC/MS SIM from C to ^{13}C.

Reagent

HRDXNIDA_00359

r: 1/15/19 SKV

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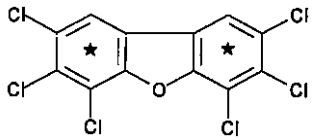
ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-987
Solution Lot: ER100610-02
Expiration Date: December 2020
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For laboratory use only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Chromatographic Purity	Certified Concentration
2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.4%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER100610-02	50.9	± 5%	0.6	≤ 3%
Previous Lot	ER031507-03	50.3	± 5%	1.8	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

January 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O$
Compound Lot:	ER061906-02	**CAS Number:**	116843-05-1
		Molecular Weight:	386.73

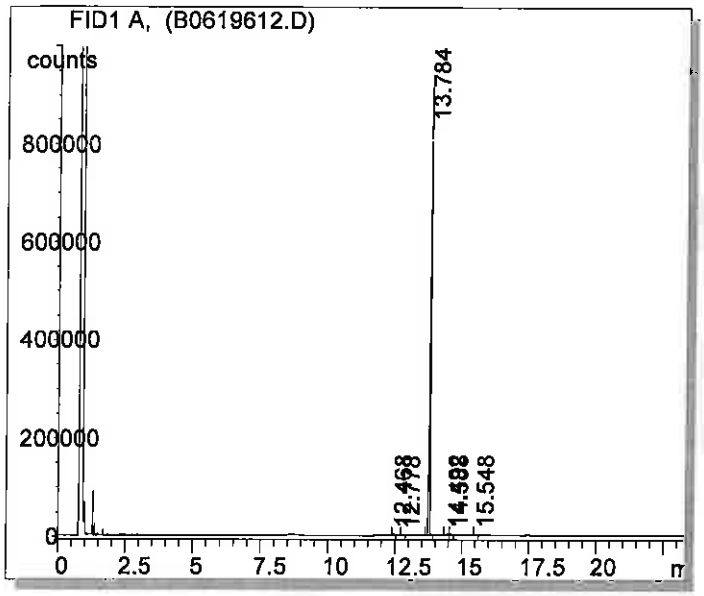
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.4%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.04% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.40%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

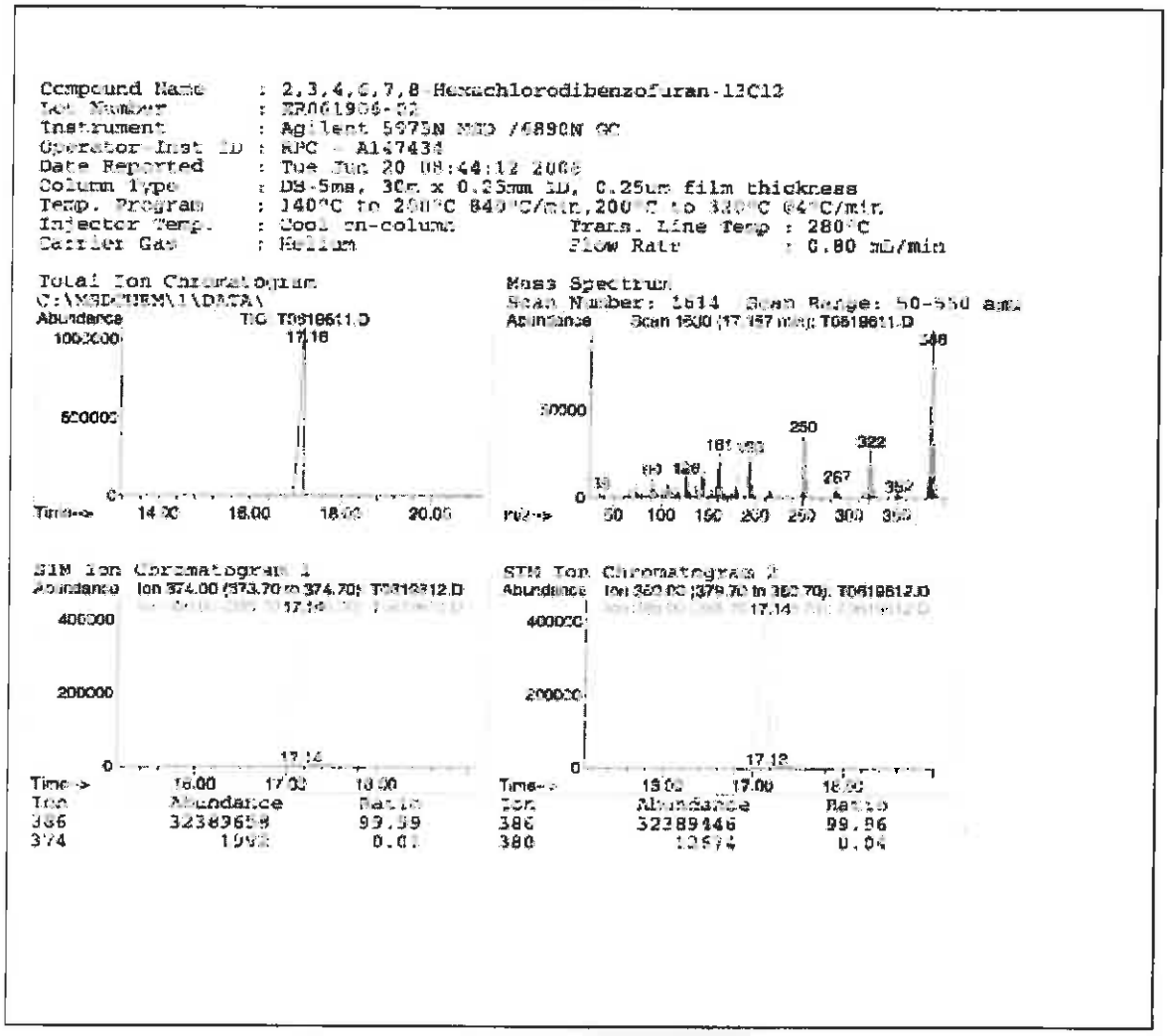


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0619612.D
Instrument:	GC#2
Sample Name:	ER061906-02
Acquired:	June 19, 2006

Peak #	Ret Time	Area	Height	Area %
1	12.47	4458	1822	0.18
2	12.78	3496	1304	0.14
3	13.78	2443150	925399	99.39
4	14.49	1528	387	0.06
5	14.59	4236	1332	0.17
6	15.55	1361	348	0.06

Spectral and Physical Data (cont.)

GC/MS



COA Revision History

Revision No.	Date	Reason for Revision
00	January 04, 2011	Initial version
01	January 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00360

r: 1/15/19 SKV

Cerilliant
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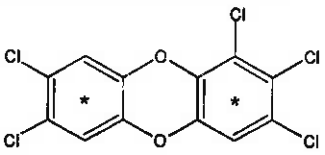
CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Certificate of Analysis

1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-955
Solution Lot: ER08041401
Expiration Date: August 2024
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.2%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08041401	48.80	± 5%	0.3	≤ 3%
Previous Lot	ER030907-02	49.84	± 5%	0.4	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACCLASS

Darron Ellsworth, Quality Assurance Manager

February 10, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O_2$
Compound Lot:	ER06241403	**CAS Number.**	109719-79-1
		Molecular Weight.	368.33

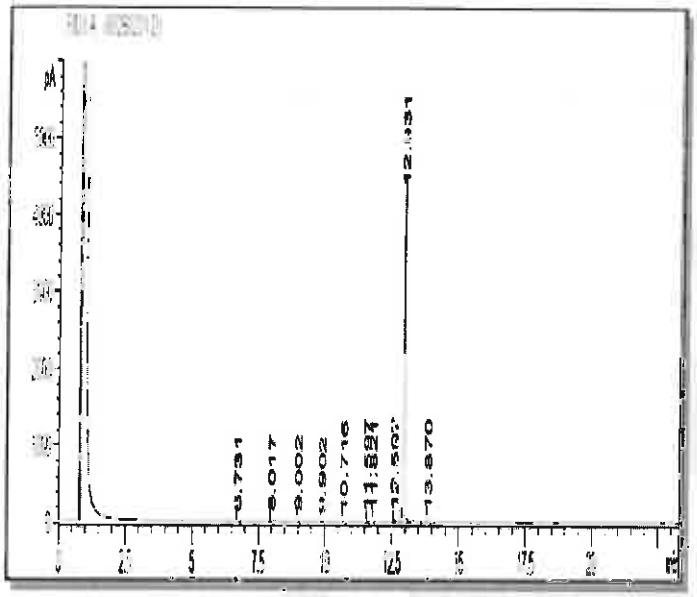
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.9%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS-SIM Analysis	SP10-0105	0.07% $^{13}C_0$ vs $^{13}C_{12}$ 0.14% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS	SP10-0105	No single DD/DF $\geq$ 0.5%
Mass Balance Purity Factor		98.90%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

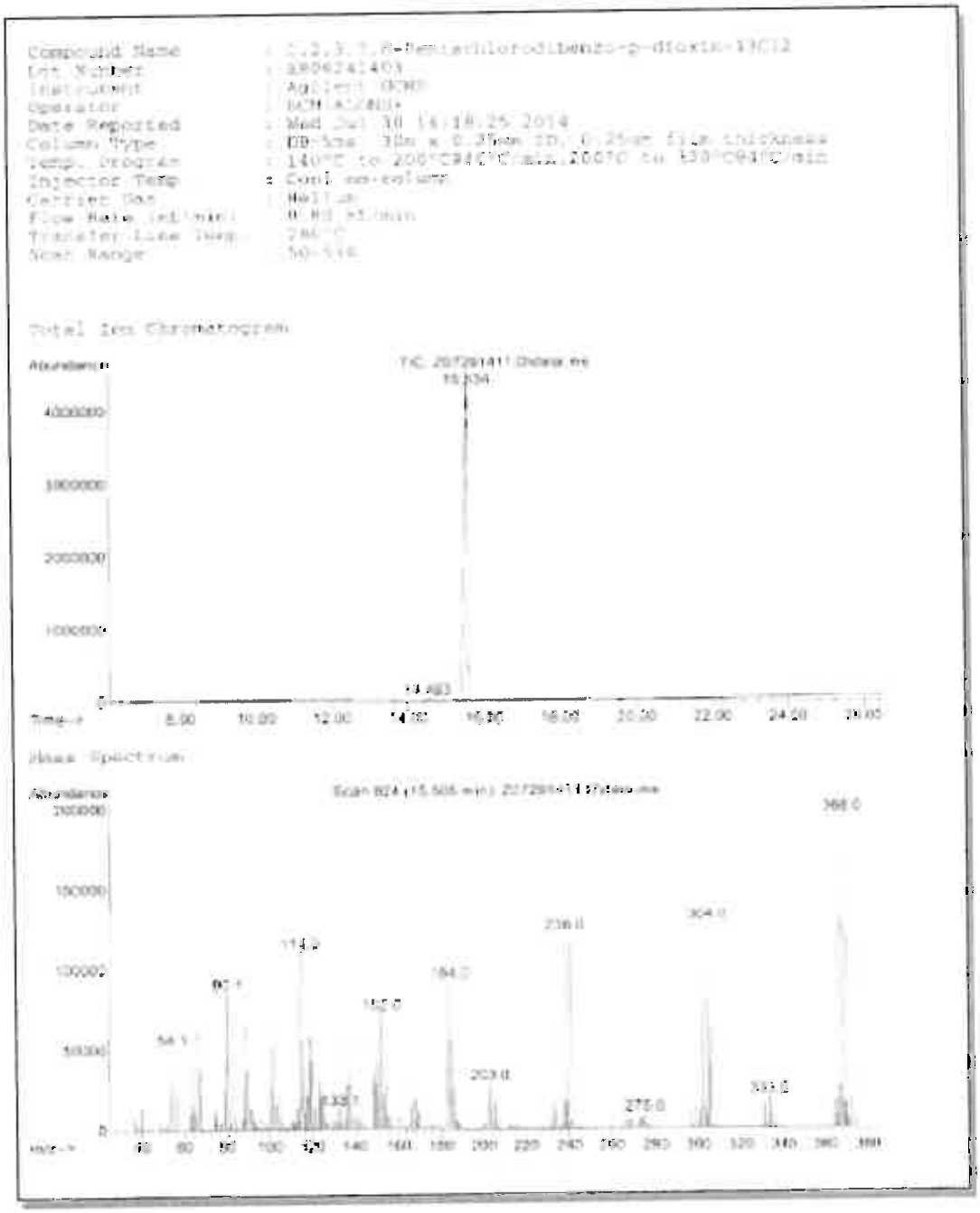


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min, hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMP-085 P GC 6 2014-07-30 18-11-11\002B0201.D
Instrument:	GC#6
Sample Name:	ER06241403
Acquired:	July 30, 2014

Peak #	Ret Time	Area	Height	Area %
1	6 73	7.32	3.42	0.07
2	8.02	3 79	1.60	0.04
3	9.00	8 74	3.64	0.08
4	9 90	3 38	1.35	0.03
5	10 72	1 31	0.45	0.01
6	11 60	14 46	6.69	0.14
7	11 82	2 21	1.11	0.02
8	12.60	68 05	28.10	0.64
9	12.93	10594 10	4235.85	98.91
10	13.87	7 09	2.57	0.07

Spectral and Physical Data (cont.)

GC/MS



COA Revision History

Revision No.	Date	Reason for Revision
00	September 24, 2014	Initial version
01	February 10, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00361

r: 1/15/19 SKV

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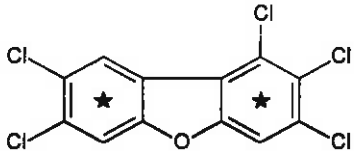
Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$

Catalog Number: EF-952
Solution Lot: ER012111-01
Expiration Date: January 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For laboratory use only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**



- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	99.2%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER012111-01	50.7	± 5%	0.4	≤ 3%
Previous Lot	ER0100407-02	51.0	± 5%	0.5	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

February 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3OCl_5$
Compound Lot:	ER090110-01	**CAS Number:**	109719-77-9
		Molecular Weight:	352.33

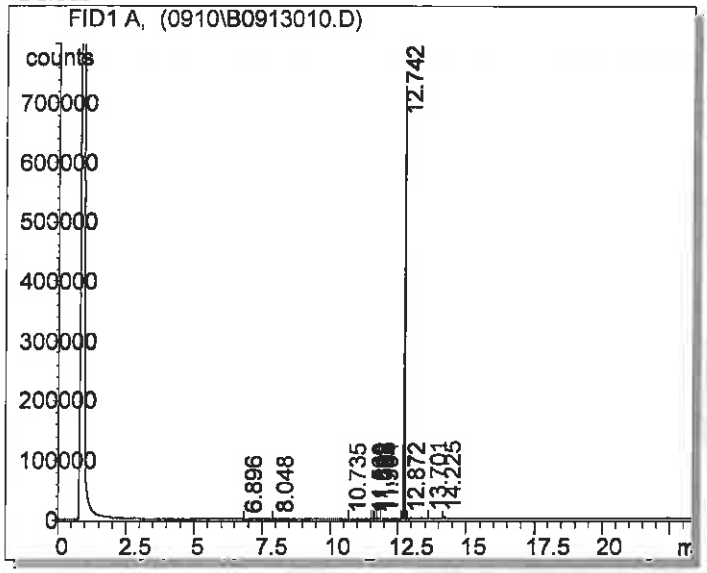
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.03% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.17%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	S:\GC\GC2\2010\0910\B0913010.D
Instrument:	GC#2
Sample Name:	ER090110-01
Acquired:	September 13, 2010

Peak #	Ret Time	Area	Height	Area %
1	6.90	618.64	296.84	0.04
2	8.05	254 50	102.70	0.01
3	10.74	162 25	70.86	0.01
4	11 57	145 03	82.11	0.01
5	11 62	468 46	216.27	0.03
6	11 69	1863 76	870.51	0.11
7	11.79	1631 76	576.35	0.10
8	11.90	421 31	184.81	0.02
9	12.74	1702290 00	729831.00	99.20
10	12.87	308 15	147.54	0.02
11	13.70	3743 55	1299.40	0.22
12	14.23	4032 24	1491.01	0.23

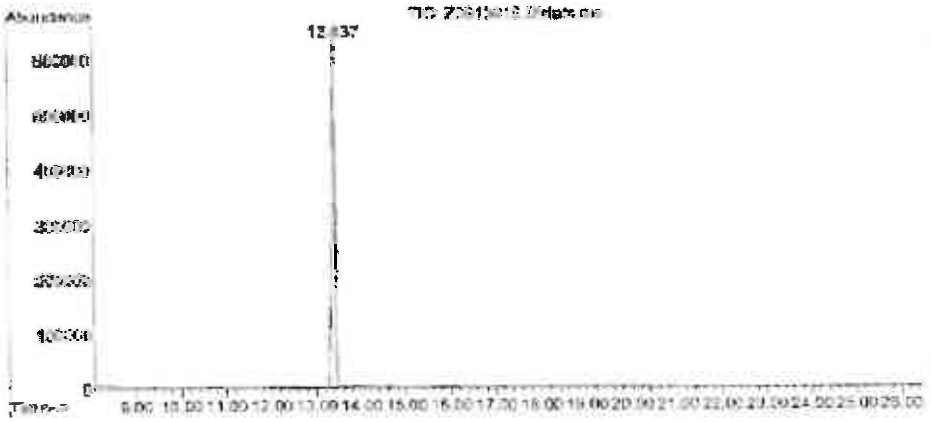
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

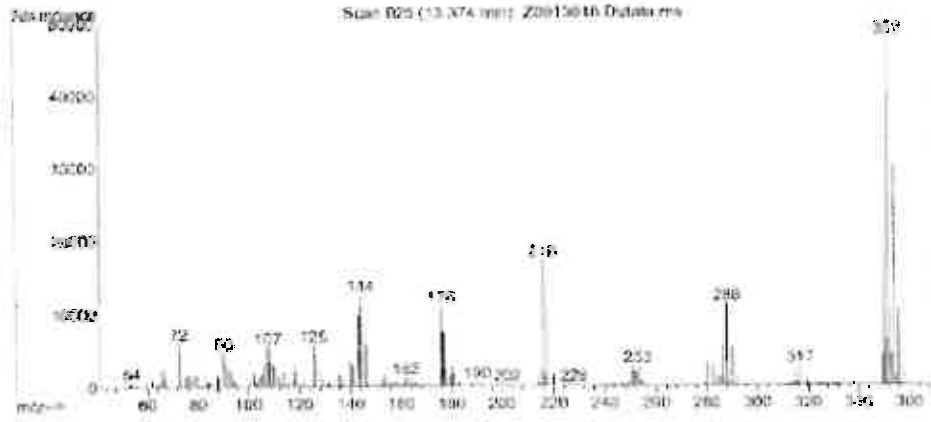
Compound Name : 1,2,3,7,8-Pentachlorodibenzofuran-13C12
Lot Number : ER090110-01
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : RPC - C10106
Date Reported : Tue Sep 14 11:05:33 2010
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@40°C/min,200°C to 300°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL/min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	February 11, 2011	Initial version
01	March 01, 2011	Corrected typographical error: Chemical Structure
02	February 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00362

P: 1/15/19 SKV

Cerilliant
Analytical Reference Standards
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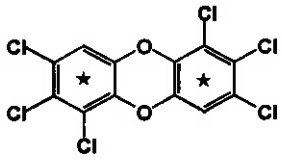
CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-966
Solution Lot:	ER03151801
Expiration Date:	March 2028
Solvent:	n-Nonane:Toluene (80:20) (v/v)
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	> 99.9%	50.03 ± 0.28 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER03151801	52.29	± 5%	0.2	≤ 3%
Previous Lot	ER010209-01	48.05	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using balances that have been qualified and calibrated to ISO 17025 requirements. All calibrations utilize NIST traceable weights which are calibrated externally by a qualified ISO 17025 accredited calibration laboratory to NIST standards. Qualification of each balance includes the assignment of a minimum weighing by a qualified and ISO 17025 accredited calibration vendor taking into consideration the balance and installed environmental conditions to ensure compliance with USP tolerances of NMT 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darren Ellsworth, Quality Assurance Manager

April 19, 2018
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	FN01151802	**CAS Number:**	109719-81-5
		Molecular Weight:	402.77

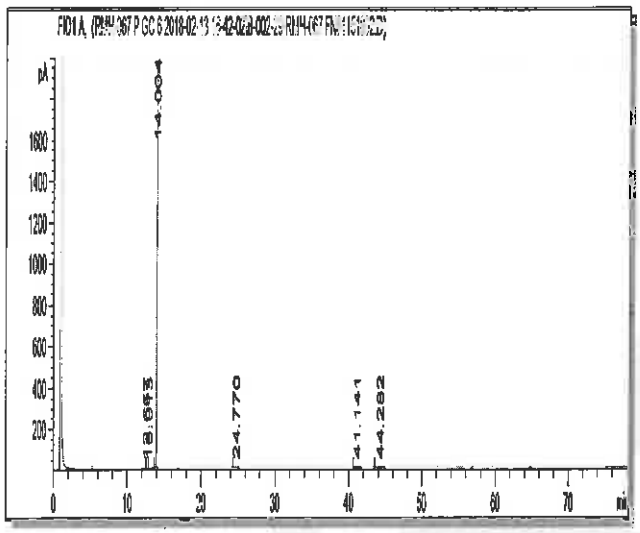
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$ 0.04% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 1.0%
Mass Balance Purity Factor		98.96%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-067 P GC 6 2018-02-13 16-42-02\B-002-29.D
Instrument:	GC#6
Sample Name:	FN01151802
Acquired:	February 13, 2018

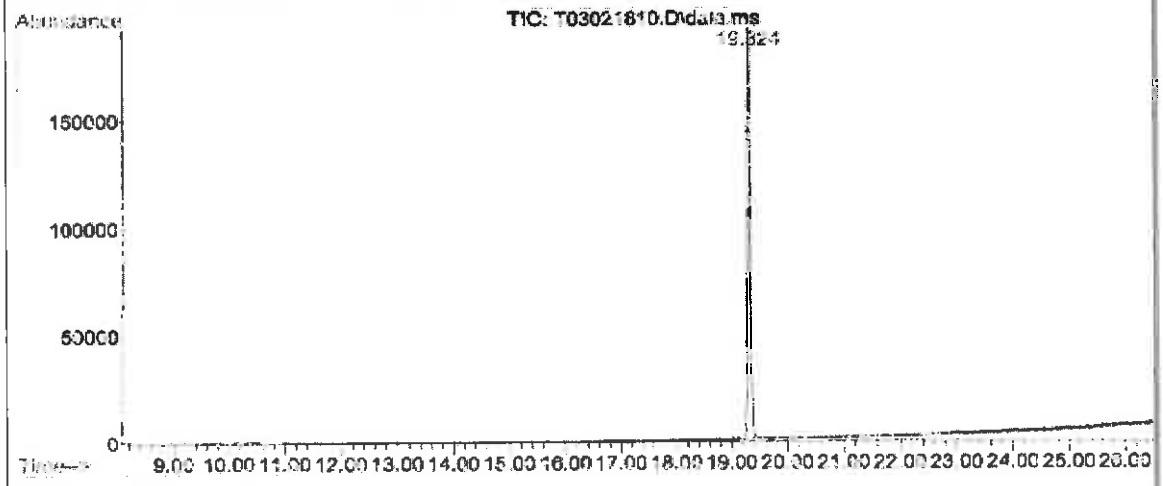
Peak #	Ret Time	Area	Height	Area %
1	12.66	1 69	0.62	0.03
2	13.01	1 96	0.53	0.03
3	14 00	5617 62	1952.76	98.87
4	24 77	5.26	0.34	0.09
5	41 14	10.58	0.38	0.19
6	44 28	44.69	1.49	0.79

Spectral and Physical Data (cont.)

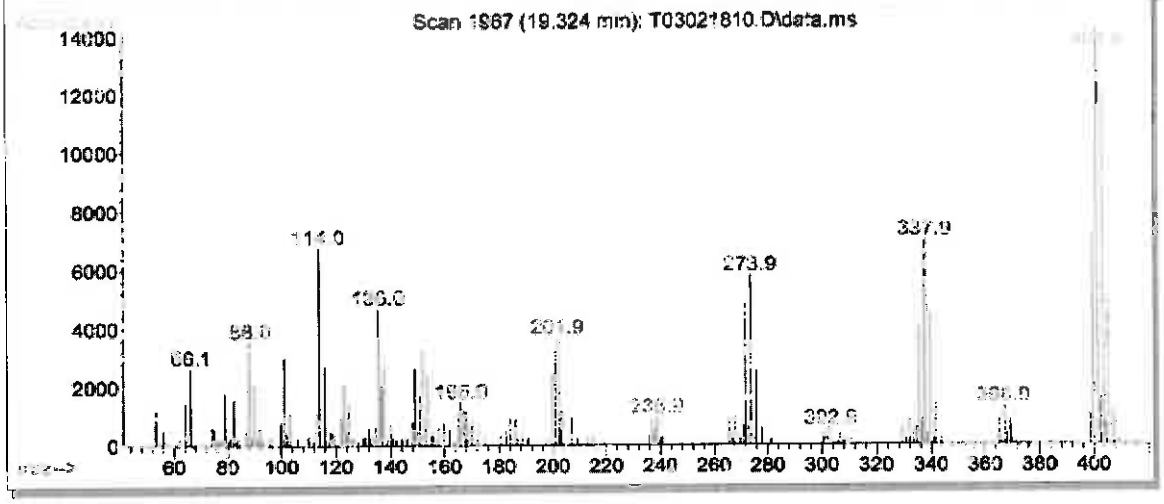
GC/MS

```
Compound Name          : 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-13C12
Lot Number             : FM01151802
Instrument             : Agilent GCMS
Operator               : ECM(SGIUPTRE)
Date Reported          : Mon Mar 05 10:17:32 2018
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00365

Rec 11/28/18 SKV

1450145
ID: HRDXNIDA_00347
Exp: 04/30/27 Prpd: SKV
13C-OCDD [10 ug/mL]

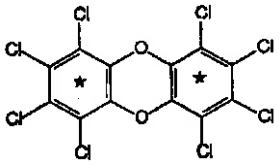
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Octachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-981-1.2
Solution Lot: ER04051701
Expiration Date: April 2027
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
Octachlorodibenzo-p-dioxin-$^{13}C_{12}$	> 99.9%	10.00 ± 0.05 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04057101	10.22	± 5%	1.1	≤ 5%
Previous Lot	ER06061601	10.17	± 5%	0 8	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

May 19, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	70°C to 200°C at 40°C/min 200°C to 280°C at 10°C/min hold 15 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	3
Linearity (r):	0.997

Neat Material Data

Compound Name:	Octachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}Cl_8O_2$
Compound Lot:	ER04041601	**CAS Number:**	114423-97-1
		Molecular Weight:	471.66

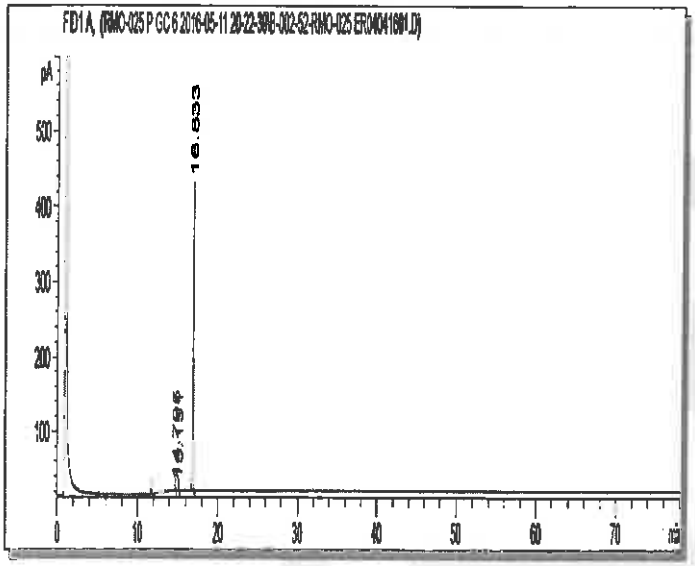
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.07% $^{13}C_0$ vs $^{13}C_{12}$
		0.96% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.15%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMO-025 P GC 6 2016-05-11 20-22-39\B-002-52.D
Instrument:	GC#6
Sample Name:	ER04041601
Acquired:	May 11, 2016

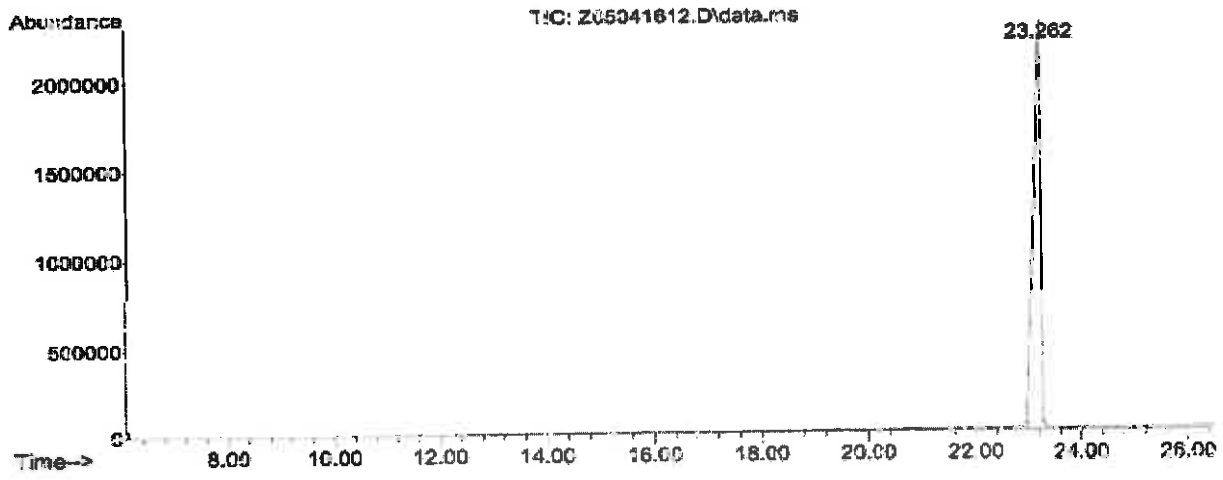
Peak #	Ret Time	Area	Height	Area %
1	14.80	12.12	3.62	0.61
2	15.15	4.72	1.32	0.24
3	16.83	1980.56	409.54	99.16

Spectral and Physical Data (cont.)

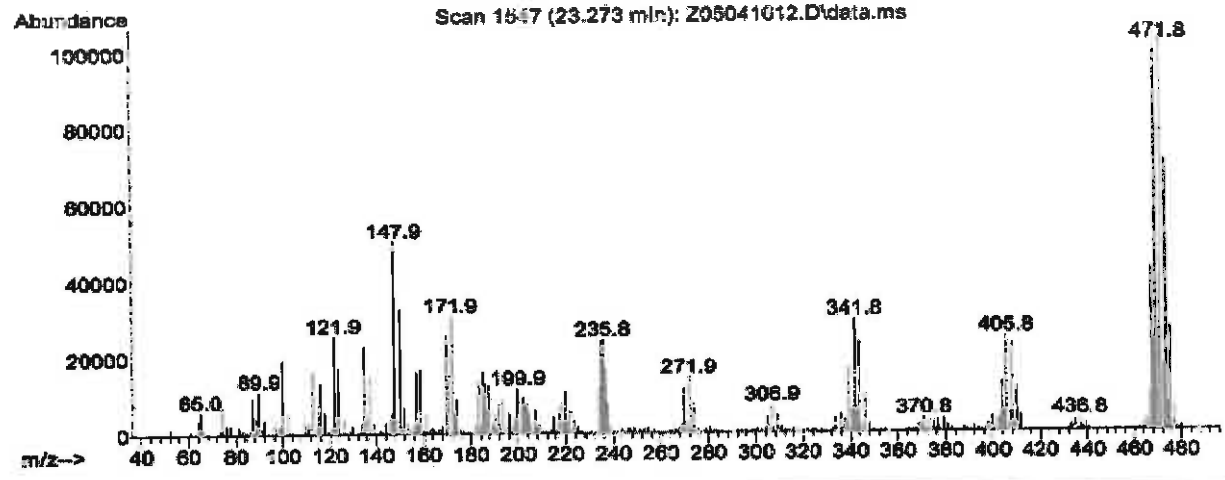
GC/MS

Compound Name	: Octachlorodibenzo-p-dioxin-13C12
Lot Number	: ERC-041601
Instrument	: Agilent GCMS
Operator	: ECM(SGIUFFRE)
Date Reported	: Wed May 04 13:45:40 2016
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	: 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.80 mL/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



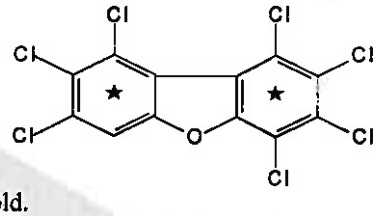
Reagent

HRDXNIDA_00375

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-988
Solution Lot: ER04251601
Expiration Date: May 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	99.1%	49.99 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass, Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04251601	49.11	± 5%	0.2	≤ 3%
Previous Lot	ER053107-02	50.58	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

November 09, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER04041602	**CAS Number:**	109719-94-0
		Molecular Weight:	421.22

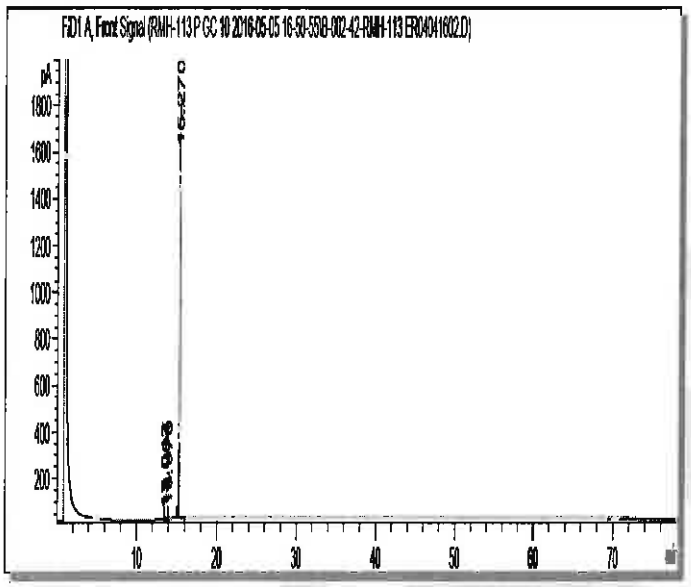
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.10%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data (cont.)

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-113 P GC 10 2016-05-05 16-50-55\B-002-42.D
Instrument:	GC#10
Sample Name:	ER04041602
Acquired:	May 05, 2016

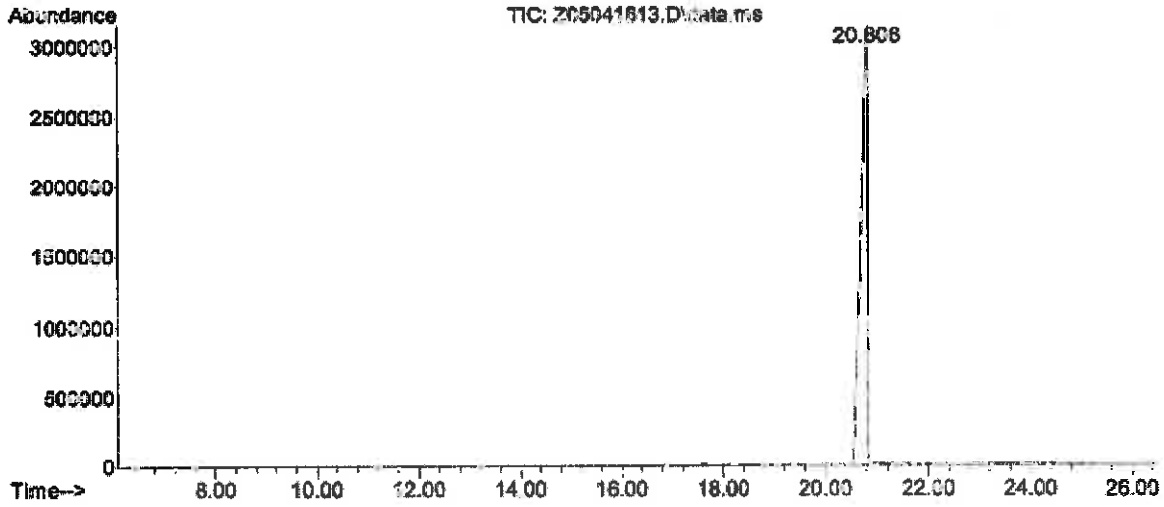
Peak #	Ret Time	Area	Height	Area %
1	13.51	8.76	2.52	0.12
2	13.68	17.42	7.45	0.24
3	13.97	39.65	15.48	0.54
4	15.27	7226.95	1798.33	99.10

Spectral and Physical Data (cont.)

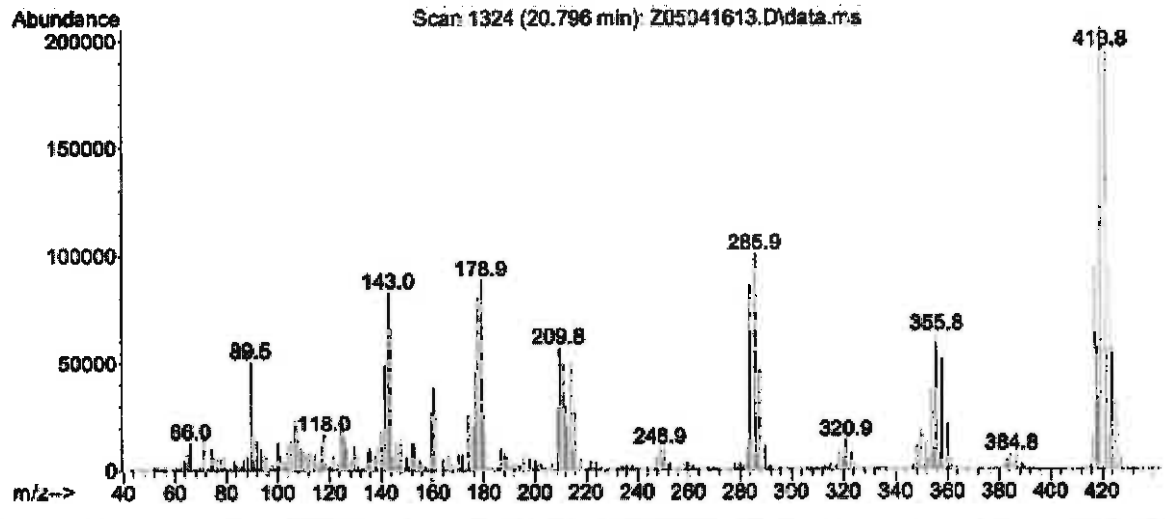
GC/MS

Compound Name	:	1,2,3,4,7,8,9-Heptachlorodibenzofuran-13C12
Lot Number	:	EN04041602
Instrument	:	Agilent GCMS
Operator	:	ECM(SGIUFFRE)
Date Reported	:	Wed May 04 15:34:28 2016
Column Type	:	DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	:	140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	:	Cool on-column
Carrier Gas	:	Helium
Flow Rate (mL\min)	:	0.80 mL/min
Transfer Line Temp.	:	280°C
Scan Range	:	50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	June 21, 2016	Initial version
01	November 09, 2016	Corrected Expiration Date from March 2026 to May 2026.

Reagent

HRDXNIDA_00376

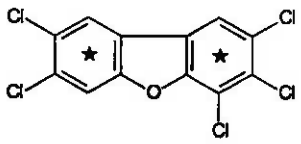
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-958
Solution Lot: ER01061701
Expiration Date: January 2027
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	97.9%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass, Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER01061701	50.51	± 5%	0.1	≤ 3%
Previous Lot	ER11041601	49.56	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

January 27, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O$
Compound Lot:	ER11101601	**CAS Number:**	116843-02-8
		Molecular Weight:	352.33

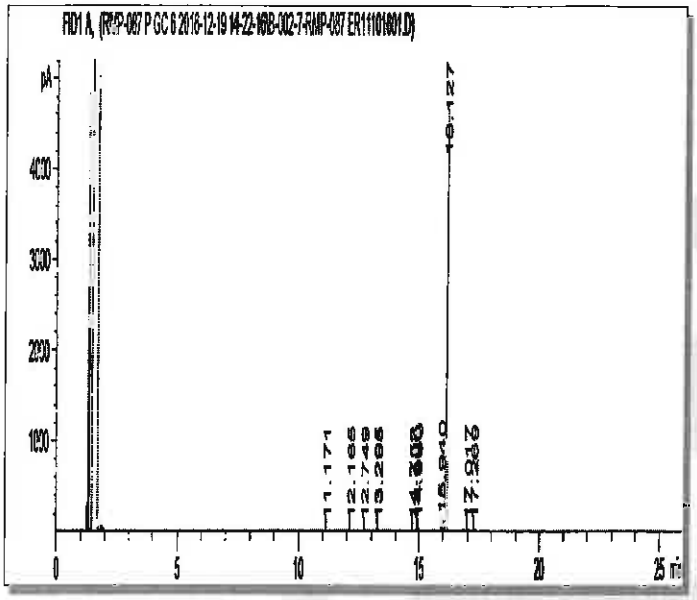
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.02% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		**98.33%**

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMP-087 P GC 6 2016-12-19 14-22-16\B-002-7.D
Instrument:	GC#6
Sample Name:	ER11101601
Acquired:	December 19, 2016

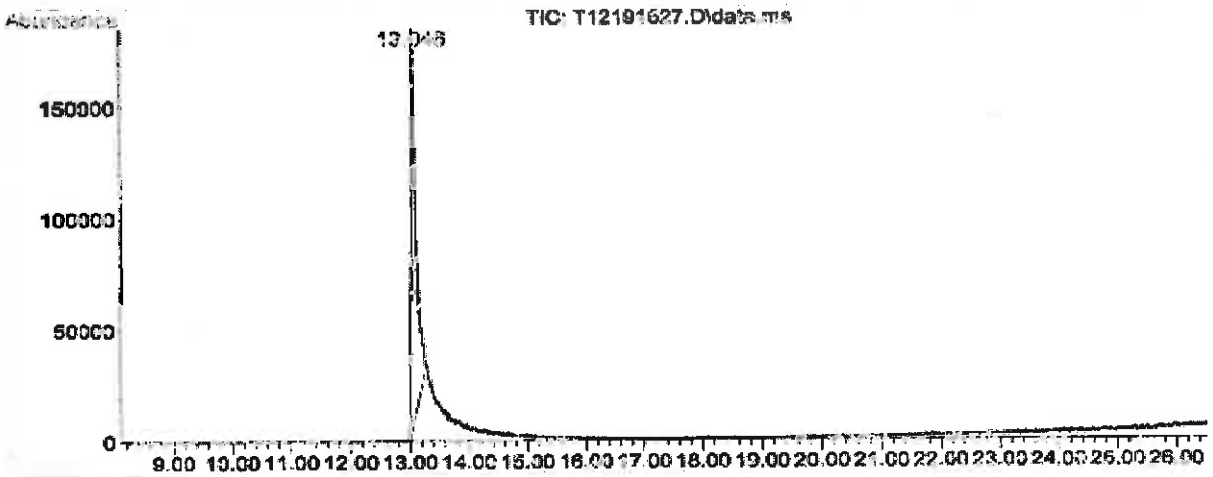
Peak #	Ret Time	Area	Height	Area %
1	11.17	0.94	0.40	0.01
2	12.17	1.30	0.39	0.01
3	12.75	0.47	0.20	0.00
4	13.30	0.90	0.35	0.01
5	14.75	1.70	0.87	0.02
6	14.91	1.09	0.56	0.01
7	14.97	32.24	17.54	0.29
8	15.94	124.38	64.36	1.13
9	16.13	10866.60	4688.80	98.41
10	17.02	6.31	2.46	0.06
11	17.27	6.76	2.34	0.06

Spectral and Physical Data (cont.)

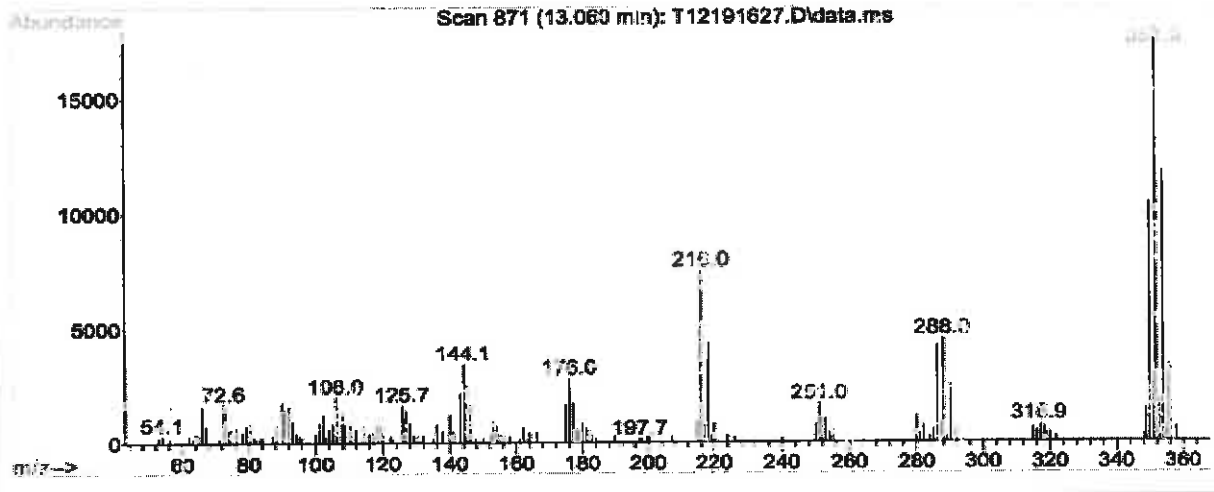
GC/MS

```
Compound Name          : 2,3,4,7,8-Pentachlorodibenzofuran-13C12
Lot Number             : ER111201601
Instrument             : Agilent GCMS
Operator               : ECM(SGUFFRE)
Date Reported          : Tue Dec 20 12:19:55 2016
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00377

r: 4/8/19 SKJ

Cerilliant
Analytical Reference Standards
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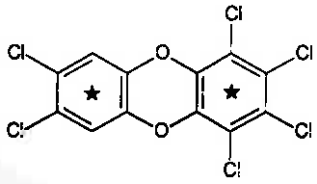
CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-946
Solution Lot: ER04211601
Expiration Date: June 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.3%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL)		%RSD - Homogeneity	
		Actual Results	Acceptance Criteria	Actual Results	Acceptance Criteria
New Lot	ER04211601	49.24	± 5%	0.4	≤ 3%
Previous Lot	ER102711-01	49.69	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darren Ellsworth, Quality Assurance Manager

August 11, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER011008-01	**CAS Number:**	109719-80-4
		Molecular Weight:	402.77

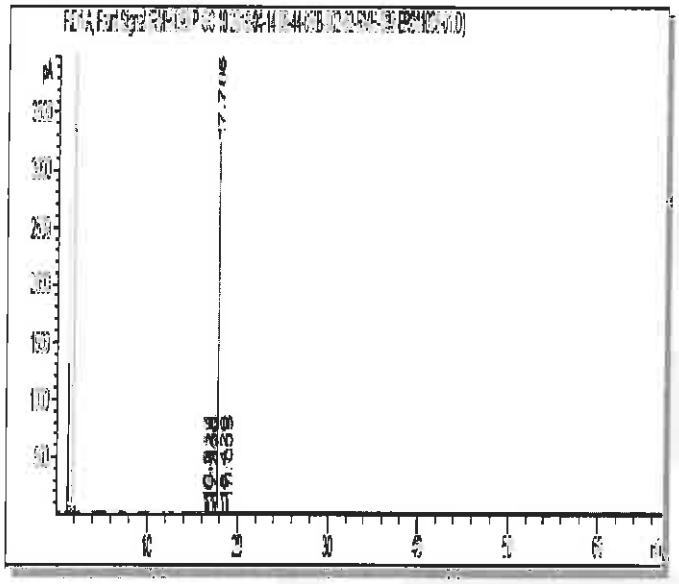
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.08% $^{13}C_0$ vs $^{13}C_{12}$
		0.21% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.26%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

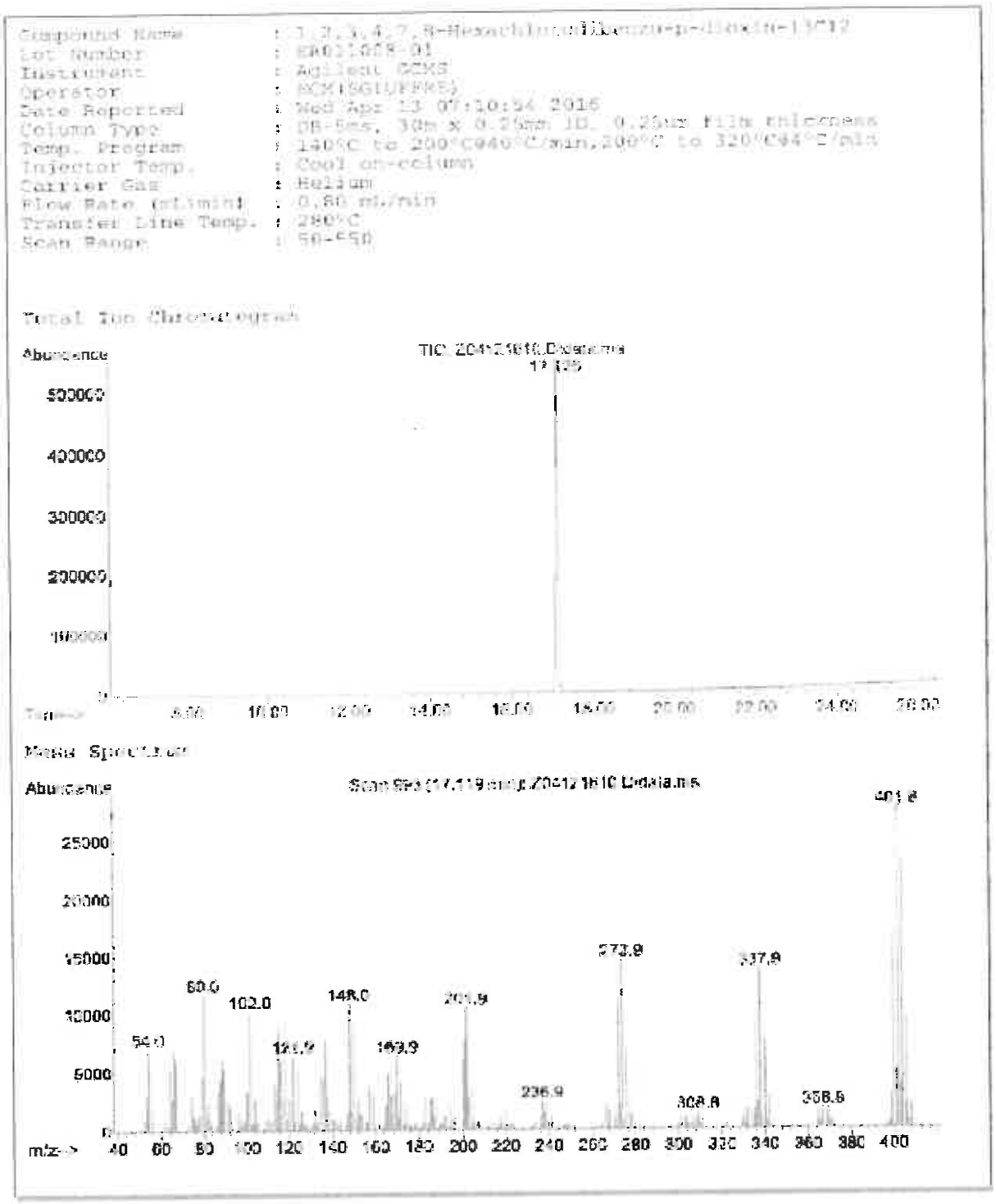


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-098 P GC 10 2016-04-14 08-44-08\B-002-62.D
Instrument:	GC#10
Sample Name:	ER011008-01
Acquired:	April 14, 2016

Peak #	Ret Time	Area	Height	Area %
1	16.56	16.58	7.74	0.19
2	16.72	11.25	5.08	0.13
3	16.83	8.45	4.05	0.10
4	17.30	1.81	0.71	0.02
5	17.48	1.07	0.50	0.01
6	17.79	8682.22	3203.58	99.29
7	18.43	1.99	0.68	0.02
8	19.01	20.62	6.08	0.24

Spectral and Physical Data (cont.)

GC/MS



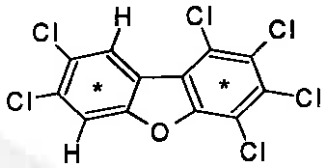
Reagent

HRDXNIDA_00378

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-963
Solution Lot:	ER04211701
Expiration Date:	July 2027
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.4%	50.00 ± 0.28 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04211701	49.47	± 5%	0.2	≤ 3%
Previous Lot	ER072810-02	45.87	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release

Traceability

- Gravimetrically prepared using balances that have been qualified and calibrated to ISO 17025 requirements. All calibrations utilize NIST traceable weights which are calibrated externally by a qualified ISO 17025 accredited calibration laboratory to NIST standards. Qualification of each balance includes the assignment of a minimum weighing by a qualified and ISO 17025 accredited calibration vendor taking into consideration the balance and installed environmental conditions to ensure compliance with USP tolerances of NMT 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

September 11, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}Cl_6H_2O$
Compound Lot:	ER11281601	**CAS Number:**	114423-98-2
		Molecular Weight:	386.77

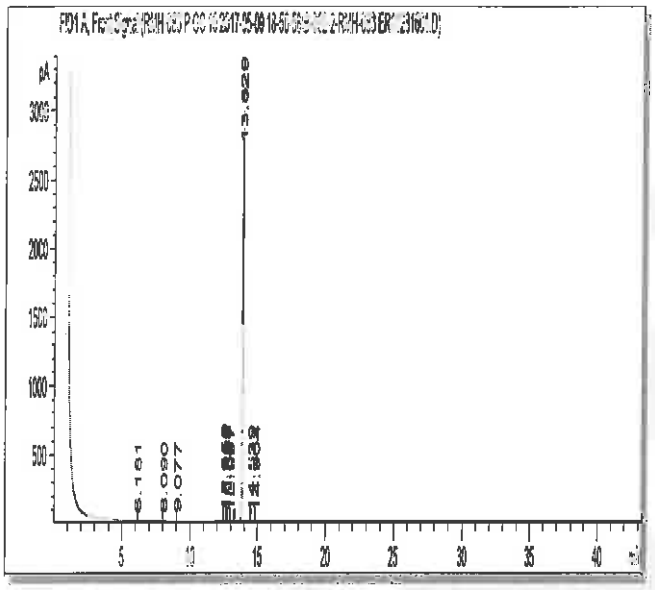
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.06% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		99.31%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 30 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-083 P GC 10 2017-05-09 18-50-58\B-002-2.D
Instrument:	GC#10
Sample Name:	ER11281601
Acquired:	May 09, 2017

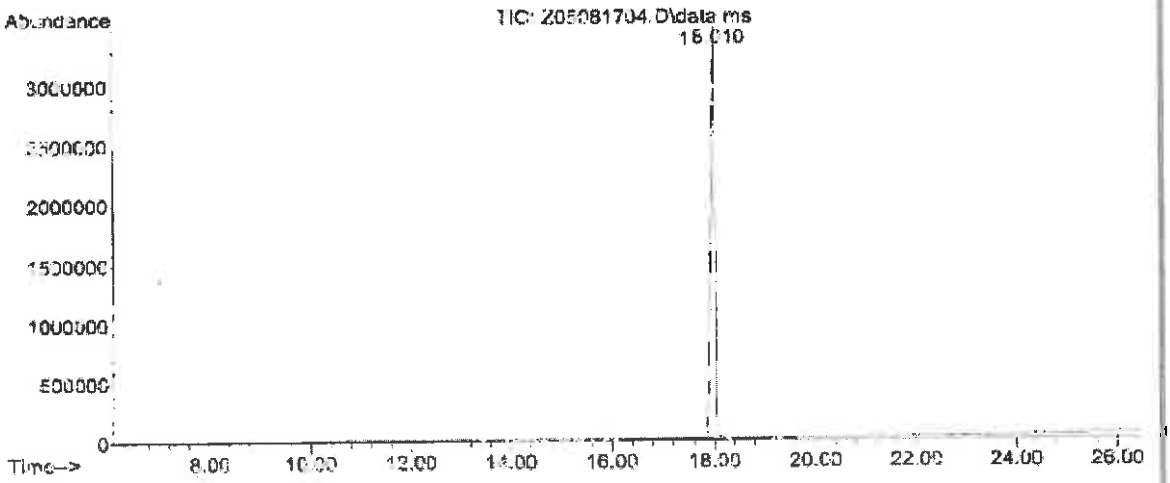
Peak #	Ret Time	Area	Height	Area %
1	6.18	1.10	0.64	0.01
2	8.09	2.00	0.70	0.02
3	9.08	1.17	0.48	0.01
4	12.55	14.76	7.25	0.16
5	12.73	32.67	11.32	0.36
6	12.84	5.45	2.50	0.06
7	13.00	2.51	1.30	0.03
8	13.83	8993.56	3122.16	99.30
9	14.54	1.11	0.20	0.01
10	14.90	2.71	0.86	0.03

Spectral and Physical Data (cont.)

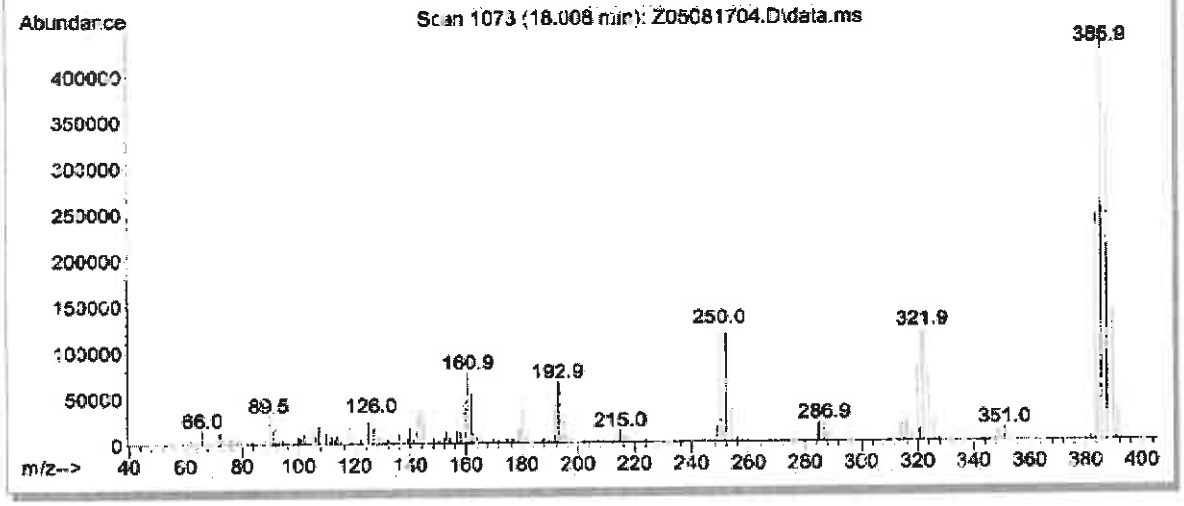
GC/MS

Compound Name : 1,2,3,4,7,8-hexachlorodibenzofuran-13C12
Lot Number : ERL180160
Instrument : Agilent GCMS
Operator : ECM(SGIUFFRE)
Date Reported : Mon May 08 09:30:09 2017
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@6°C/min,200°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C
Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIS_00110

R: 9/4/18 SKV

Cerilliant
Analytical Reference Standards
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CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$

Catalog Number: ED-996
Solution Lot: ER08221601
Expiration Date: September 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Acceptance Criteria	%RSD - Homogeneity Actual Results	Acceptance Criteria
New Lot	ER08221601	49.20	± 5%	0.3	≤ 3%
Previous Lot	ER021313-01	49.56	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

September 28, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER110510-01	**CAS Number:**	109719-82-6
		Molecular Weight:	402.77

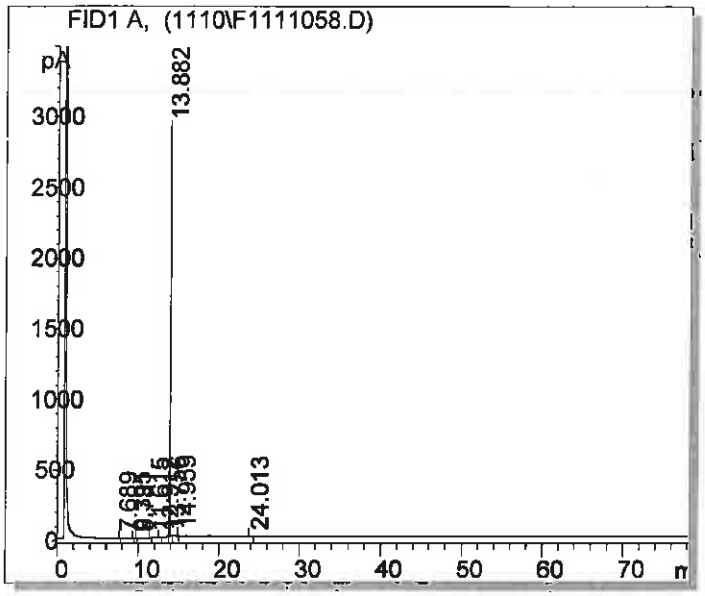
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.04% $^{13}C_0$ vs $^{13}C_{12}$
		0.27% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.02%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	S:\GC\GC6\2010\1110\F1111058.D
Instrument:	GC#6
Sample Name:	ER110510-01
Acquired:	November 12, 2010

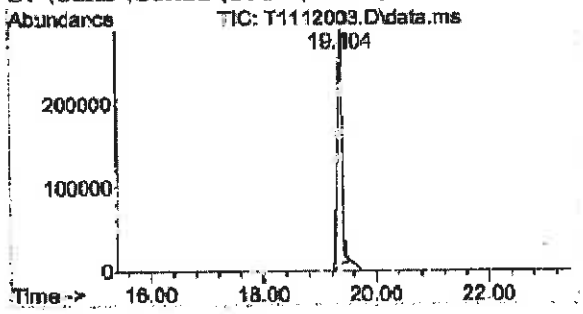
Peak #	Ret Time	Area	Height	Area %
1	4 69	0.45	0.10	0.01
2	9.40	0 72	0.14	0.01
3	9.78	0 80	0.13	0.01
4	11 62	7.34	2.54	0.09
5	12 91	2.59	0.23	0.03
6	13 76	1.91	1.00	0.02
7	13 88	8026.07	2938.74	99.11
8	14.96	36.82	11.38	0.45
9	24.01	21.08	1.62	0.26

Spectral and Physical Data (cont.)

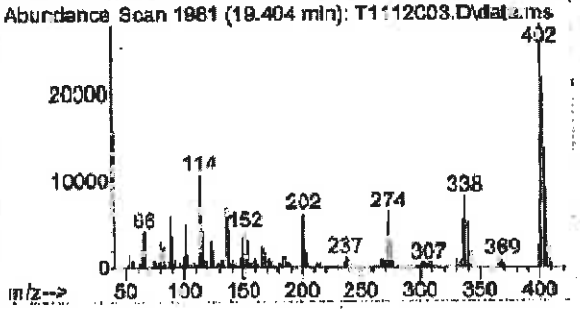
GC/MS

```
Compound Name     : 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-13C12
Lot Number        : ER110510-01
Instrument        : Agilent 5973N MSD /6890N GC
Operator-Inst ID  : RPC - A147434
Date Reported     : Fri Nov 12 16:41:14 2010
Column Type       : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program     : 140°C to 200°C @40°C/min,200°C to 320°C @4°C/min
Injector Temp.    : Cool on-column          Trans. Line Temp : 280°C
Carrier Gas       : Helium                  Flow Rate        : 0.80 mL/min
```

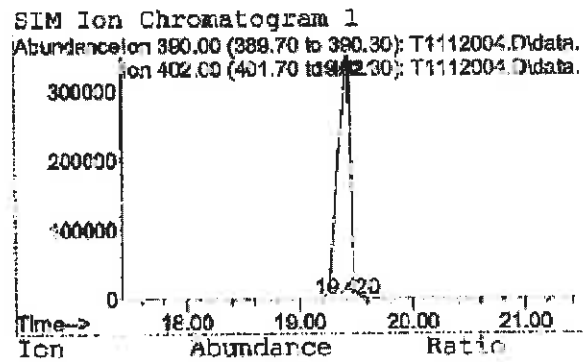
Total Ion Chromatogram
S:\GCMS\GCMS2\2010\1110\



Mass Spectrum
Scan Number: 1976 Scan Range: 50-550 amu

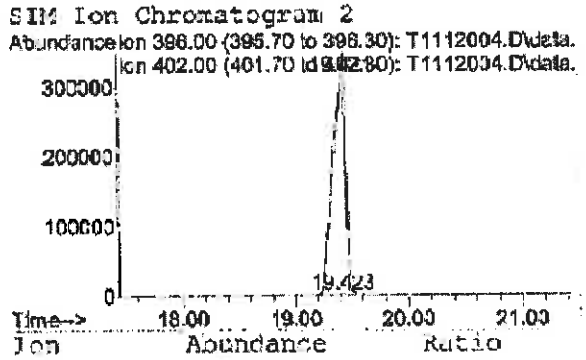


SIM Ion Chromatogram 1



Ion	Abundance	Ratio
402	26368380	99.96
390	9776	0.04

SIM Ion Chromatogram 2



Ion	Abundance	Ratio
402	26368380	99.73
396	71626	0.27

Reagent

HRDXNIS_00111

Rec: 9/4/18 SKV

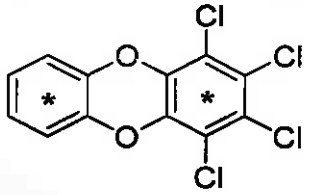
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP



Catalog Number: ED-911
Solution Lot: ER11081602
Expiration Date: January 2027
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.7%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER11081602	51.01	± 10%	0.1	≤ 3%
Previous Lot	ER060710-01	50.59	± 10%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

January 23, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O_2$
Compound Lot:	ER02021602	**CAS Number:**	114423-99-3
		Molecular Weight:	333.88

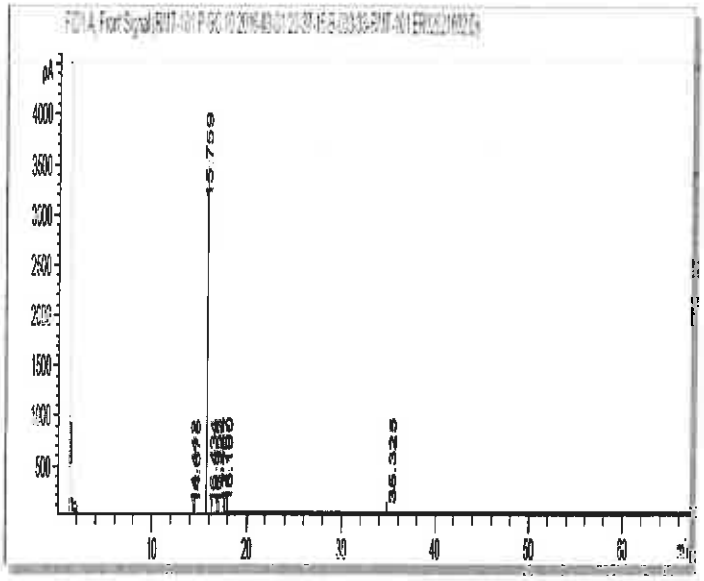
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 1.0%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.03% $^{13}C_0$ vs $^{13}C_{12}$ 0.01% $^{13}C_6$ vs $^{13}C_{12}$
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent by ^{1}H-NMR Analysis	USP <761>, SP10-0116	0.31% Dichloromethane
Mass Balance Purity Factor		98.71%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

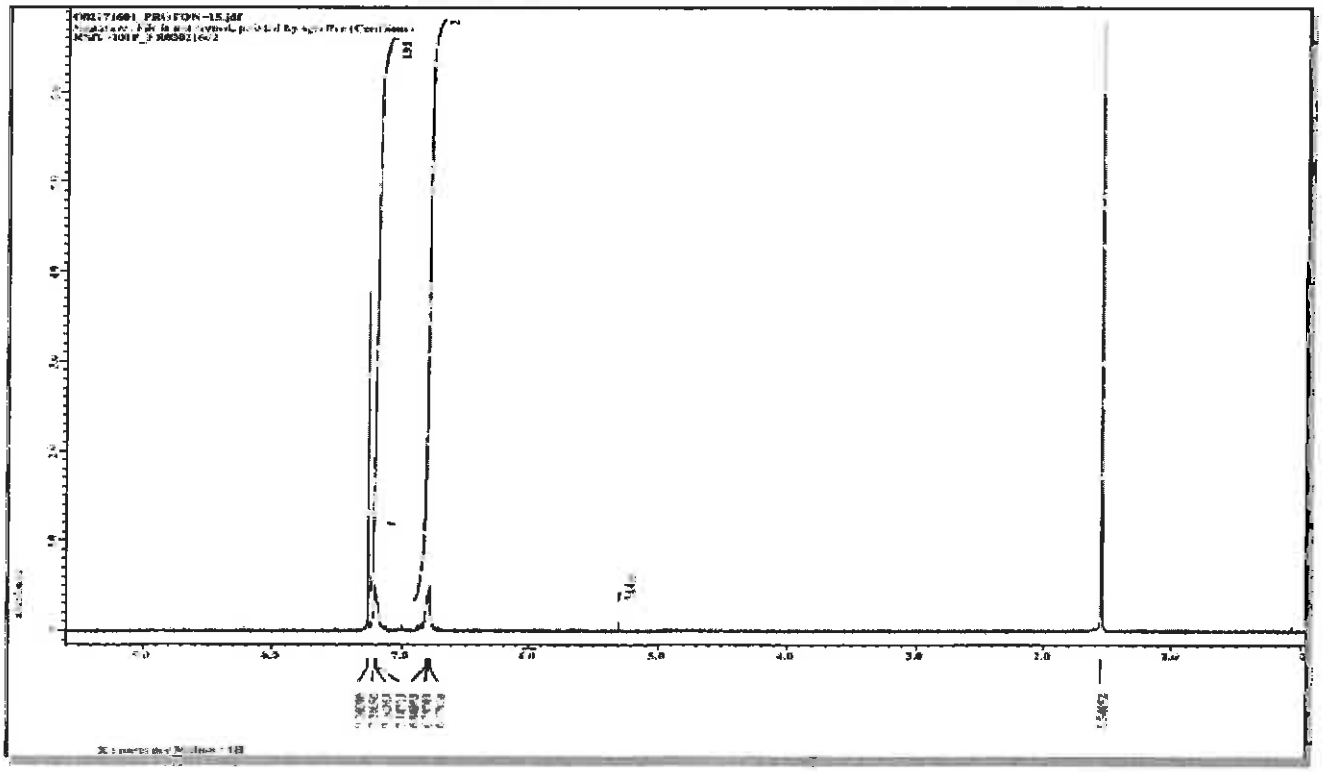


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-101 P GC 10 2016-03-01 20-37-15\B-003-33.D
Instrument:	GC#10
Sample Name:	ER02021602
Acquired:	March 01, 2016

Peak #	Ret Time	Area	Height	Area %
1	14.44	1.34	0.53	0.02
2	14.68	3.60	0.58	0.05
3	15.76	7522.29	3054.11	99.22
4	16.43	3.51	0.80	0.05
5	16.96	2.38	1.09	0.03
6	17.13	4.79	2.26	0.06
7	17.77	8.72	3.38	0.11
8	18.10	1.68	0.54	0.02
9	35.33	32.94	1.28	0.43

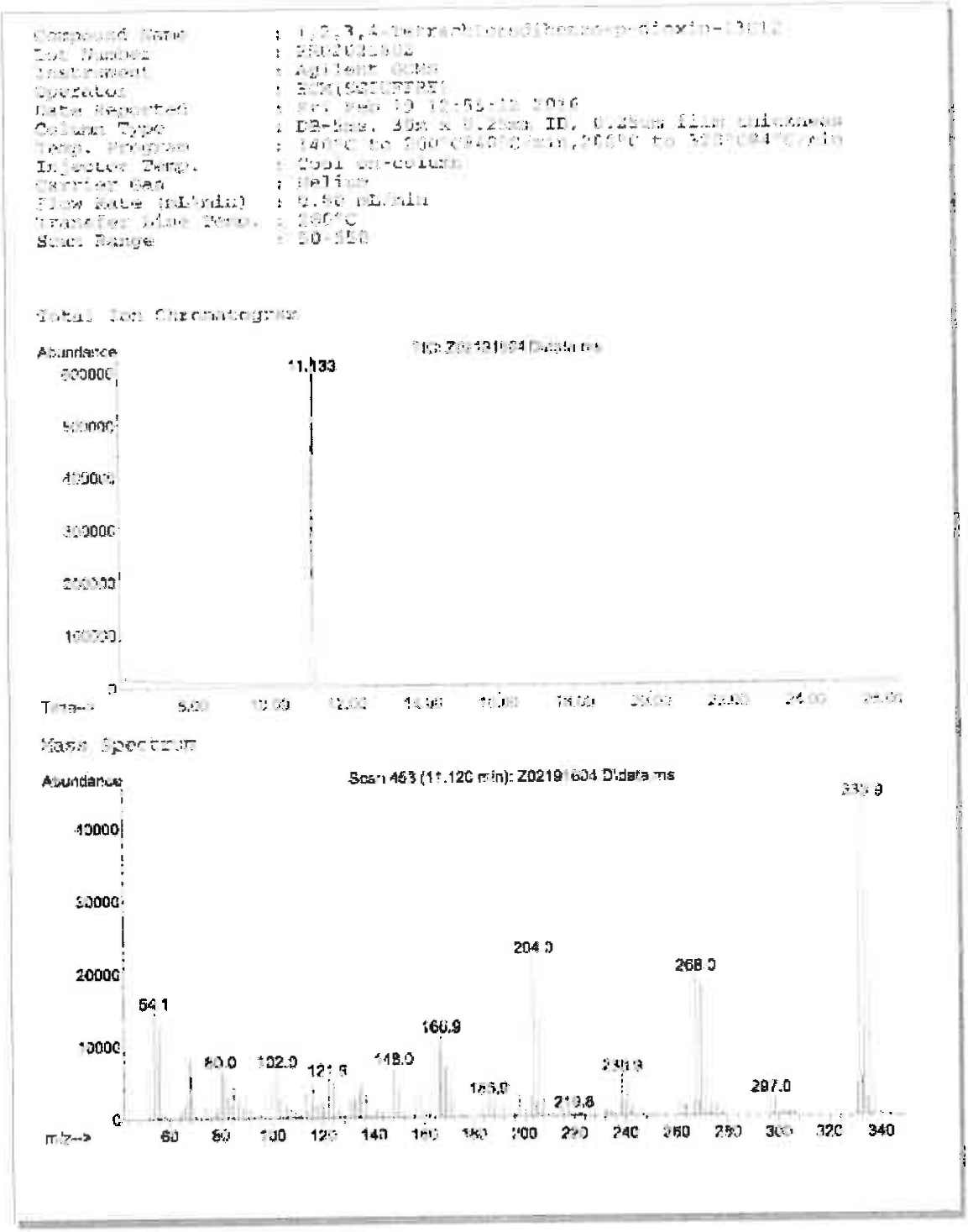
^{1}H NMR

Instrument:	JEOL ECS 400
Solvent:	Chloroform-D



Spectral and Physical Data (cont.)

GC/MS



Reagent

HRDXNSU_00187

R: 7/30/18 SRV

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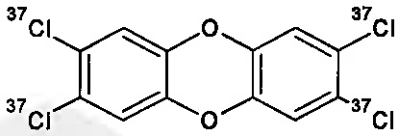
Revision 0

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$



Catalog Number:	ED-907
Solution Lot:	ER05211501
Expiration Date:	July 2025
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold
Shipping:	Ambient.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Instructions for Use:	Sonicate before use.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration
- For MS Applications, we advise laboratories not to mix lots during a single sequence.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$	98.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER05211501	50.60	± 10%	0.2	≤ 5%
Previous Lot	ER052010-02	49.73	± 10%	0.5	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after

ACLASS ACCREDITED
REFERENCE MATERIAL PRODUCER

Darren Ellsworth, Quality Assurance Manager

August 03, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$	**Chemical Formula:**	$C_{12}H_4O_2{}^{37}Cl_4$
Compound Lot:	ER040510-01	**CAS Number**	85508-50-5
		Molecular Weight	328.02

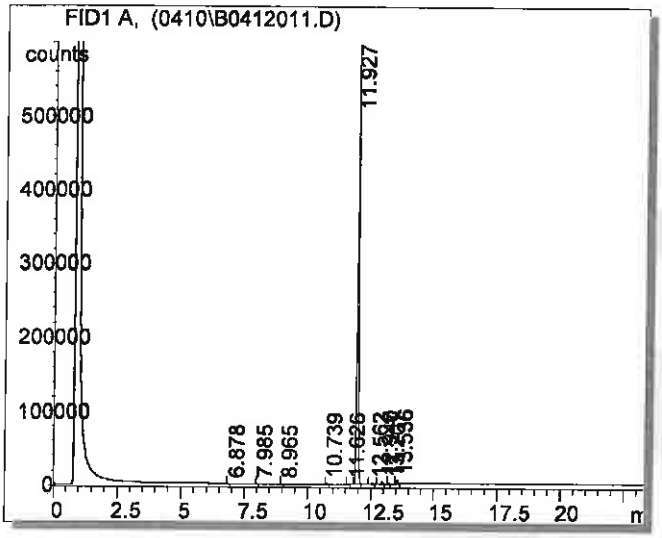
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{37}Cl_0$ vs $^{37}Cl_4$
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent Analysis by ^{1}H-NMR	USP <761>, SP10-0116	1.2% Chloroform
Purity Factor		97.14%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

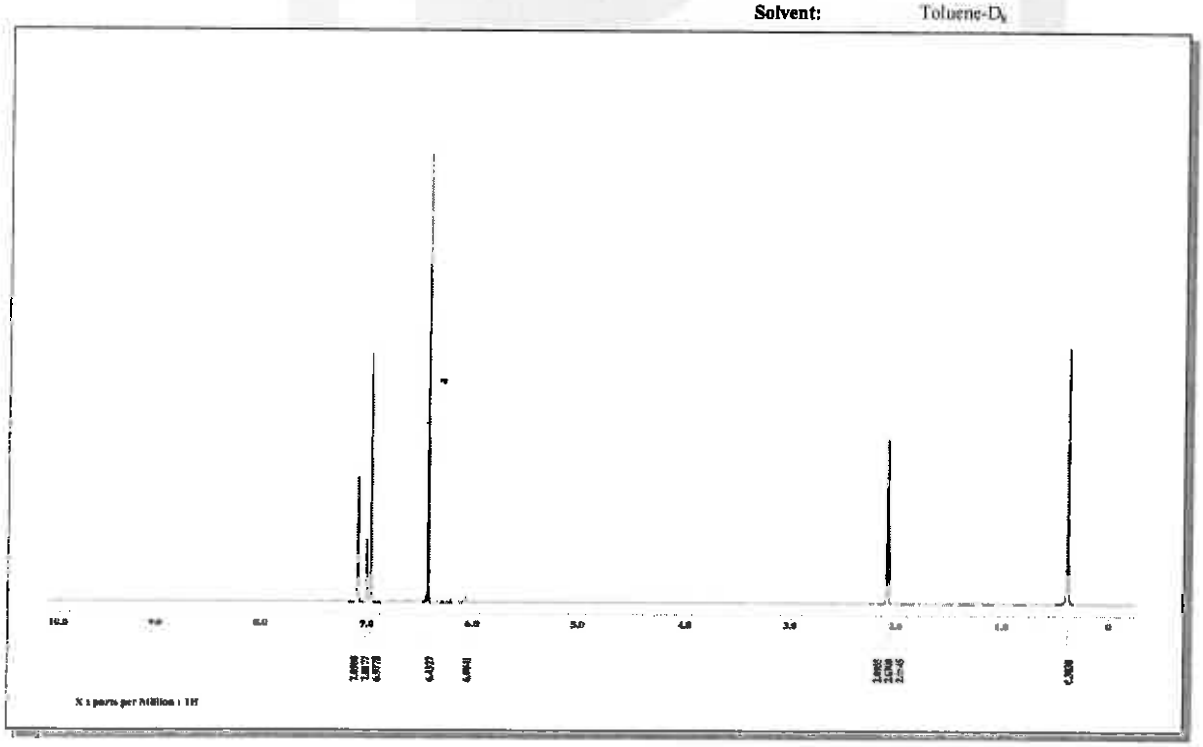


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	S:\GC\GC2\2010\0410\B0412011.D
Instrument:	GC#2
Sample Name:	ER040510-01
Acquired:	April 13, 2010

Peak #	Ret Time	Area	Height	Area %
1	6.88	245.58	89.37	0.01
2	7.99	304.03	131.27	0.01
3	8.97	233.91	72.32	0.01
4	10.74	931.14	265.29	0.04
5	11.63	127.86	46.74	0.01
6	11.93	2261830.00	580792.00	98.34
7	12.56	6435.54	1838.17	0.28
8	12.94	13336.80	4373.86	0.58
9	13.20	2178.30	729.98	0.09
10	13.54	14483.80	5038.43	0.63

^{1}H NMR

Instrument:	JEOL ECS 400
Solvent:	Toluene-D_8



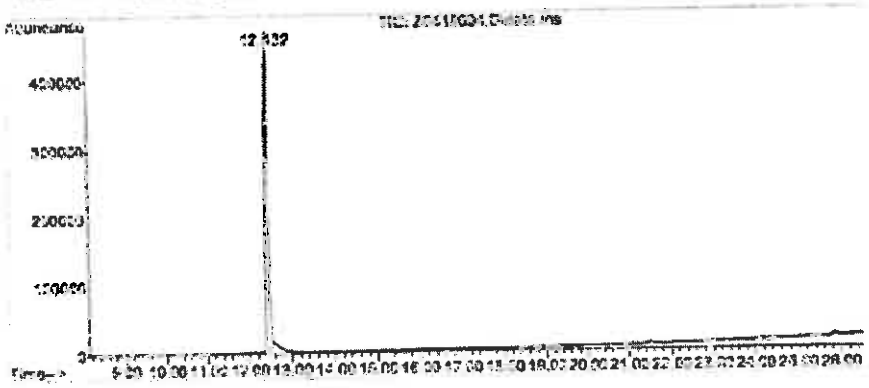
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

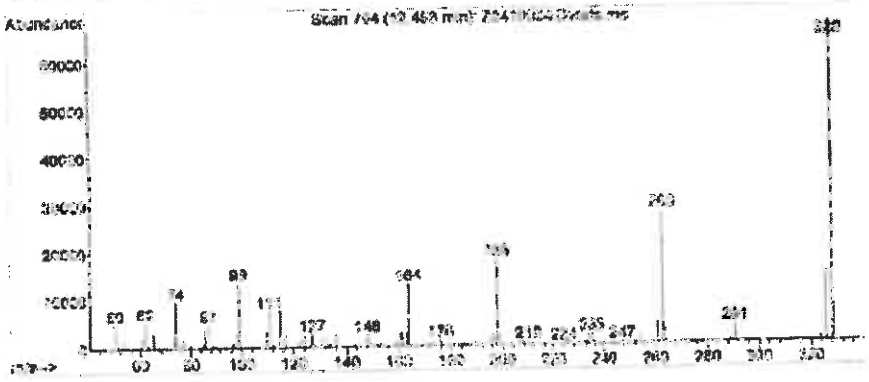
Compound Name : 2,3,7,8-Tetrachlorodibenzo-p-dioxin-37Cl4
Lot Number : WR060510-02
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : RPC - C10106
Date Acquired : Mon Apr 19 13:23:09 2010
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 240°C@40°C/min,240°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNTA_00092

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Certificate of Analysis

Method 1613 PAR Stock Solution

Certificate Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number: EDF-7999-10X
Solution Lot: ER02241602
Expiration Date: April 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1 2 volume We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TeCDD	ER04271502	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%	399.9 ± 4.0 ng/mL
2,3,7,8-TeCDF	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.97	99.4%	399.9 ± 4.0 ng/mL
1,2,3,7,8-PeCDD	ER110909-02	40321-76-4	$C_{12}H_3Cl_5O_2$	356.42	99.2%	2000 ± 20 ng/mL
1,2,3,7,8-PeCDF	ER03121401	57117-41-6	$C_{12}H_3Cl_5O$	340.42	99.5%	1999 ± 20 ng/mL
2,3,4,7,8-PeCDF	ER070710-01	57117-31-4	$C_{12}H_3Cl_5O$	340.42	99.4%	1999 ± 20 ng/mL
1,2,3,4,7,8-HxCDD	ER080108-02	39227-28-6	$C_{12}H_2Cl_6O_2$	390.86	98.6%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDD	ER03231501	57653-85-7	$C_{12}H_2Cl_6O_2$	390.86	99.6%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDD	ER02041601	19408-74-3	$C_{12}H_2Cl_6O_2$	390.86	99.2%	2000 ± 20 ng/mL
1,2,3,4,7,8-HxCDF	ER021110-01	70648-26-9	$C_{12}H_2Cl_6O$	374.86	99.0%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDF	ER04161501	57117-44-9	$C_{12}H_2Cl_6O$	374.86	99.8%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDF	ER060107-01	72918-21-9	$C_{12}H_2Cl_6O$	374.86	97.5%	1999 ± 20 ng/mL
2,3,4,6,7,8-HxCDF	ER02041602	60851-34-5	$C_{12}H_2Cl_6O$	374.86	99.1%	2001 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDD	ER01201504	35822-46-9	$C_{12}HCl_7O_2$	425.31	98.5%	1999 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDF	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%	1999 ± 20 ng/mL
1,2,3,4,7,8,9-HpCDF	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%	1999 ± 20 ng/mL
OCDD	ER05221301	3268-87-9	$C_{12}Cl_8O_2$	459.75	99.9%	3999 ± 40 ng/mL
OCDF	ER040811-01	39001-02-0	$C_{12}Cl_8O$	443.75	98.9%	4000 ± 40 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

April 28, 2016
Date

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Standard Solution Assay Parameters

Analysis Method:	GC/ECD
Column:	DB-5ms, 30 m x 0.25 mm ID, 0 25 µm film thickness
Temp Program:	140°C to 200°C at 40°C/min, 200°C to 300°C at 4°C/min hold 3 min
Injector Temp:	Cool on-column
Detector Temp:	280°C

Calibration Curve

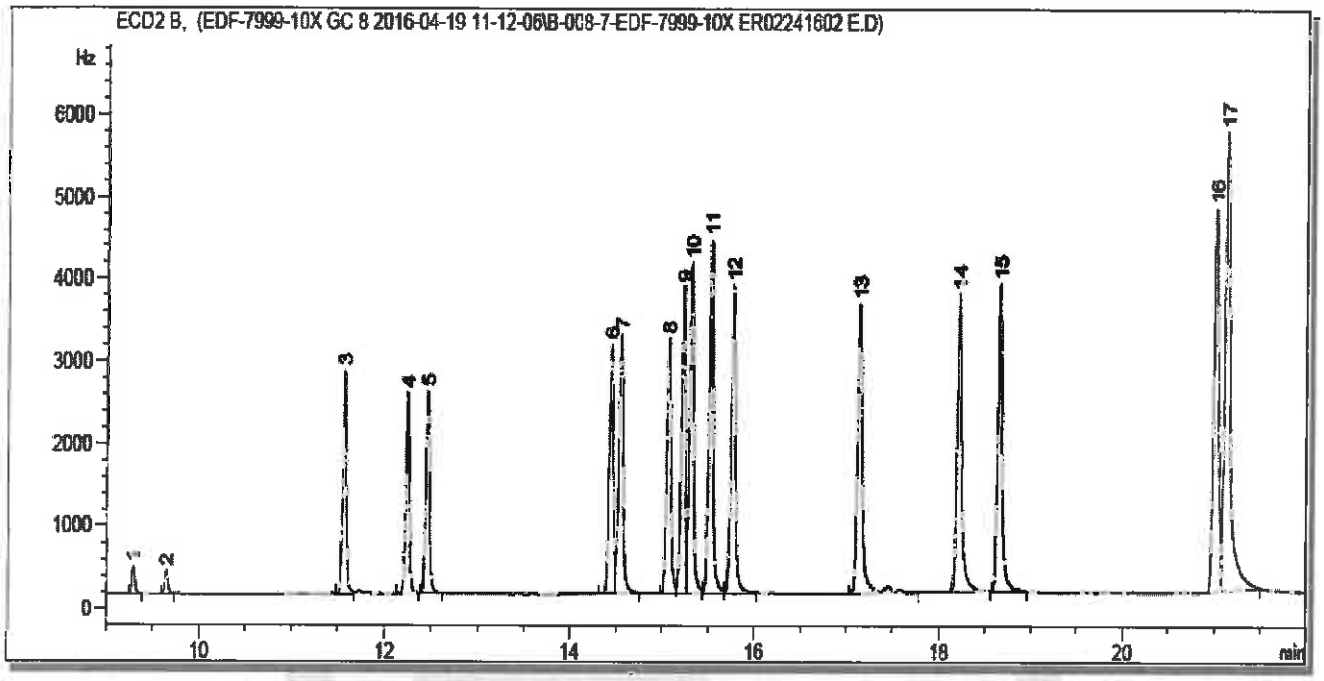
Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration ng/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
2,3,7,8-TeCDD	397 1	± 10%	0.7	≤ 5%
2,3,7,8-TeCDF	386 6	± 10%	0.7	≤ 5%
1,2,3,7,8-PeCDD	1937	± 10%	0 8	≤ 5%
1,2,3,7,8-PeCDF	1919	± 10%	0.8	≤ 5%
2,3,4,7,8-PeCDF	1941	± 10%	0.8	≤ 5%
1,2,3,4,7,8-HxCDD	1932	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDD	1987	± 10%	0 8	≤ 5%
1,2,3,7,8,9-HxCDD	1943	± 10%	0 7	≤ 5%
1,2,3,4,7,8-HxCDF	1933	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDF	1909	± 10%	0.9	≤ 5%
1,2,3,7,8,9-HxCDF	1942	± 10%	0.7	≤ 5%
2,3,4,6,7,8-HxCDF	1950	± 10%	0.8	≤ 5%
1.2.3.4.6.7.8-HpCDD	1930	± 10%	0.9	≤ 5%
1,2,3,4,6,7,8-HpCDF	1919	± 10%	0.9	≤ 5%
1,2,3,4,7,8,9-HpCDF	1943	± 10%	1.0	≤ 5%
OCDD	3844	± 10%	1.0	≤ 5%
OCDF	3906	± 10%	0.9	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- Product is compared to prior lot and meets acceptance criteria of ± 10%.

Product Analysis



Peak:	Analyte:
1	2,3,7,8-Tetrachlorodibenzofuran
2	2,3,7,8-Tetrachloro-p-dioxin
3	1,2,3,7,8-Pentachlorodibenzofuran
4	2,3,4,7,8-Pentachlorodibenzofuran
5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
6	1,2,3,4,7,8-Hexachlorodibenzofuran
7	1,2,3,6,7,8-Hexachlorodibenzofuran
8	2,3,4,6,7,8-Hexachlorodibenzofuran
9	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
10	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
11	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
12	1,2,3,7,8,9-Hexachlorodibenzofuran
13	1,2,3,4,6,7,8-Heptachlorodibenzofuran
14	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
15	1,2,3,4,7,8,9-Heptachlorodibenzofuran
16	Octachlorodibenzo-p-dioxin
17	Octachlorodibenzofuran

COA Revision History

Revision No.	Date	Reason for Revision
00	April 28, 2016	Initial version

Reagent

HRDXNTA_00093

D: 7/6/18 SRJ

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Method 1613 PAR Stock Solution

Certificate Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number: EDF-7999-10X
Solution Lot: ER02241602
Expiration Date: April 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1 2 volume We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TeCDD	ER04271502	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%	399.9 ± 4.0 ng/mL
2,3,7,8-TeCDF	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.97	99.4%	399.9 ± 4.0 ng/mL
1,2,3,7,8-PeCDD	ER110909-02	40321-76-4	$C_{12}H_3Cl_5O_2$	356.42	99.2%	2000 ± 20 ng/mL
1,2,3,7,8-PeCDF	ER03121401	57117-41-6	$C_{12}H_3Cl_5O$	340.42	99.5%	1999 ± 20 ng/mL
2,3,4,7,8-PeCDF	ER070710-01	57117-31-4	$C_{12}H_3Cl_5O$	340.42	99.4%	1999 ± 20 ng/mL
1,2,3,4,7,8-HxCDD	ER080108-02	39227-28-6	$C_{12}H_2Cl_6O_2$	390.86	98.6%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDD	ER03231501	57653-85-7	$C_{12}H_2Cl_6O_2$	390.86	99.6%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDD	ER02041601	19408-74-3	$C_{12}H_2Cl_6O_2$	390.86	99.2%	2000 ± 20 ng/mL
1,2,3,4,7,8-HxCDF	ER021110-01	70648-26-9	$C_{12}H_2Cl_6O$	374.86	99.0%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDF	ER04161501	57117-44-9	$C_{12}H_2Cl_6O$	374.86	99.8%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDF	ER060107-01	72918-21-9	$C_{12}H_2Cl_6O$	374.86	97.5%	1999 ± 20 ng/mL
2,3,4,6,7,8-HxCDF	ER02041602	60851-34-5	$C_{12}H_2Cl_6O$	374.86	99.1%	2001 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDD	ER01201504	35822-46-9	$C_{12}HCl_7O_2$	425.31	98.5%	1999 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDF	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%	1999 ± 20 ng/mL
1,2,3,4,7,8,9-HpCDF	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%	1999 ± 20 ng/mL
OCDD	ER05221301	3268-87-9	$C_{12}Cl_8O_2$	459.75	99.9%	3999 ± 40 ng/mL
OCDF	ER040811-01	39001-02-0	$C_{12}Cl_8O$	443.75	98.9%	4000 ± 40 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

April 28, 2016
Date

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Standard Solution Assay Parameters

Analysis Method:	GC/ECD
Column:	DB-5ms, 30 m x 0.25 mm ID, 0 25 µm film thickness
Temp Program:	140°C to 200°C at 40°C/min, 200°C to 300°C at 4°C/min hold 3 min
Injector Temp:	Cool on-column
Detector Temp:	280°C

Calibration Curve

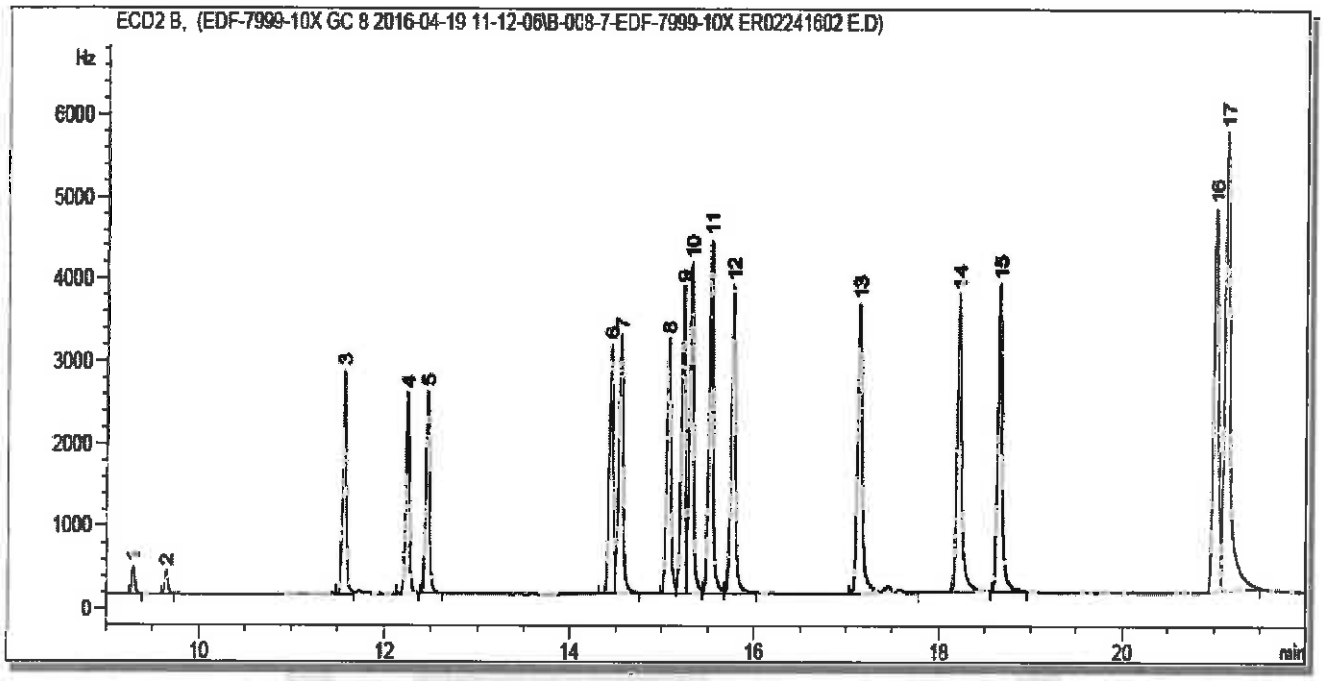
Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration ng/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
2,3,7,8-TeCDD	397 1	± 10%	0.7	≤ 5%
2,3,7,8-TeCDF	386 6	± 10%	0.7	≤ 5%
1,2,3,7,8-PeCDD	1937	± 10%	0 8	≤ 5%
1,2,3,7,8-PeCDF	1919	± 10%	0.8	≤ 5%
2,3,4,7,8-PeCDF	1941	± 10%	0.8	≤ 5%
1,2,3,4,7,8-HxCDD	1932	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDD	1987	± 10%	0 8	≤ 5%
1,2,3,7,8,9-HxCDD	1943	± 10%	0 7	≤ 5%
1,2,3,4,7,8-HxCDF	1933	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDF	1909	± 10%	0.9	≤ 5%
1,2,3,7,8,9-HxCDF	1942	± 10%	0.7	≤ 5%
2,3,4,6,7,8-HxCDF	1950	± 10%	0.8	≤ 5%
1.2.3.4.6.7.8-HpCDD	1930	± 10%	0.9	≤ 5%
1,2,3,4,6,7,8-HpCDF	1919	± 10%	0.9	≤ 5%
1,2,3,4,7,8,9-HpCDF	1943	± 10%	1.0	≤ 5%
OCDD	3844	± 10%	1.0	≤ 5%
OCDF	3906	± 10%	0.9	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- Product is compared to prior lot and meets acceptance criteria of ± 10%.

Product Analysis



Peak:	Analyte:
1	2,3,7,8-Tetrachlorodibenzofuran
2	2,3,7,8-Tetrachloro-p-dioxin
3	1,2,3,7,8-Pentachlorodibenzofuran
4	2,3,4,7,8-Pentachlorodibenzofuran
5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
6	1,2,3,4,7,8-Hexachlorodibenzofuran
7	1,2,3,6,7,8-Hexachlorodibenzofuran
8	2,3,4,6,7,8-Hexachlorodibenzofuran
9	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
10	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
11	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
12	1,2,3,7,8,9-Hexachlorodibenzofuran
13	1,2,3,4,6,7,8-Heptachlorodibenzofuran
14	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
15	1,2,3,4,7,8,9-Heptachlorodibenzofuran
16	Octachlorodibenzo-p-dioxin
17	Octachlorodibenzofuran

COA Revision History

Revision No.	Date	Reason for Revision
00	April 28, 2016	Initial version

Reagent

HRDXNTA_00102

Rec: 1/31/19 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF
Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR0418
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	04/11/2018
LAST TESTED: (mm/dd/yyyy)	04/12/2018
EXPIRY DATE: (mm/dd/yyyy)	03/01/2025
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted chlorinated dibenzo-p-dioxins (PCDDs) and 2,3,7,8-substituted dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual PCDDs and PCDFs all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

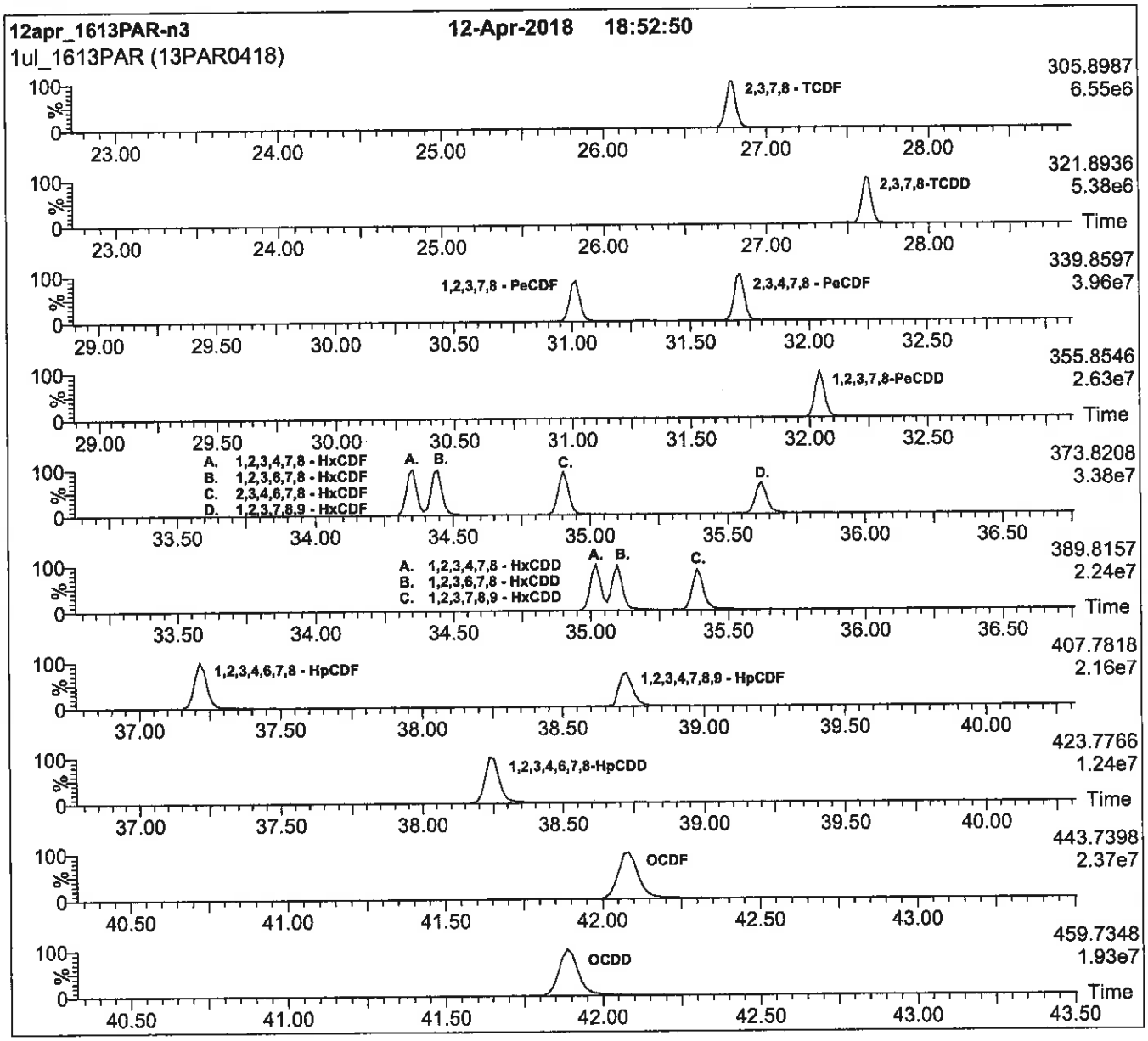
Table A: **EPA-1613PAR; Components and Concentrations (ng/ml, ± 5% in nonane/ 2.4% toluene)**

	Concentration (ng/ml)
PCDDs:	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	40
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	200
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	200
Octachlorodibenzo-p-dioxin	400
PCDFs:	
2,3,7,8-Tetrachlorodibenzofuran	40
1,2,3,7,8-Pentachlorodibenzofuran	200
2,3,4,7,8-Pentachlorodibenzofuran	200
1,2,3,4,7,8-Hexachlorodibenzofuran	200
1,2,3,6,7,8-Hexachlorodibenzofuran	200
1,2,3,7,8,9-Hexachlorodibenzofuran	200
2,3,4,6,7,8-Hexachlorodibenzofuran	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	200
Octachlorodibenzofuran	400

Certified By: _____ **Date:** 04/16/2018
(mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

Method 1613B

Dioxins and Furans (HRGC/HRMS) by Method 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
	LCS 320-344634/2-A	50	58	94	53	57	54	55	56
	LCSD 320-344634/3-A	52	60	96	55	60	56	58	57

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	22-152
TCDD = 13C-2,3,7,8-TCDD	20-175
37TCDD = 37Cl4-2,3,7,8-TCDD	31-191
PeCDF = 13C-1,2,3,7,8-PeCDF	21-192
PeCF = 13C-2,3,4,7,8-PeCDF	13-328
PeCDD = 13C-1,2,3,7,8-PeCDD	21-227
HxCDF = 13C-1,2,3,4,7,8-HxCDF	19-202
HxDF = 13C-1,2,3,6,7,8-HxCDF	21-159

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
	LCS 320-344634/2-A	50	62	62	49	52	57	58	61
	LCSD 320-344634/3-A	53	65	65	52	54	59	61	66

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	22-176
HxCDD = 13C-1,2,3,4,7,8-HxCDD	21-193
HxDD = 13C-1,2,3,6,7,8-HxCDD	25-163
HxCF = 13C-1,2,3,7,8,9-HxCDF	17-205
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	21-158
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	26-166
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	20-186
OCDD = 13C-OCDD	13-199

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-225 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	37TCDD #
11187072-120719-SS-SJSSA01 (0-1) RA	320-56911-1 RA	54	95
11187072-120719-SS-SJSSA01 (1-2) RA	320-56911-2 RA	56	107
11187072-120719-SS-SJSSA01 (2-4) RA	320-56911-3 RA	58	102
11187072-120719-SS-SJSSA01 (4-6) RA	320-56911-4 RA	60	105
11187072-120819-BN-SJSSA09 (0-1) RA	320-56911-5 RA	59	105
11187072-120819-BN-SJSSA09 (1-2) RA	320-56911-6 RA	54	105
11187072-120819-BN-SJSSA09 (2-4) RA	320-56911-7 RA	55	98
11187072-120819-BN-SJSSA09 (4-6) RA	320-56911-8 RA	53	99
11187072-120819-BN-SJSSA05 (0-1) RA	320-56911-9 RA	61	108
11187072-120819-BN-SJSSA05 (1-2) RA	320-56911-10 RA	56	102
11187072-120819-BN-SJSSA05 (2-4) RA	320-56911-11 RA	53	104
11187072-120819-BN-SJSSA05 (4-6) RA	320-56911-12 RA	58	107
11187072-120819-BN-DUP2 RA	320-56911-13 RA	62	112

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
37TCDD = 37Cl4-2,3,7,8-TCDD	35-197

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
11187072-120719-SS-SJSSA01 (0-1)	320-56911-1	52	58	92	53	57	54	52	50
11187072-120719-SS-SJSSA01 (1-2)	320-56911-2	49	55	94	50	53	51	48	49
11187072-120719-SS-SJSSA01 (2-4)	320-56911-3	49	54	90	51	54	52	53	52
11187072-120719-SS-SJSSA01 (4-6)	320-56911-4	53	59	97	57	59	57	58	56
11187072-120819-BN-SJSSA09 (0-1)	320-56911-5	51	57	97	54	57	53	55	54
11187072-120819-BN-SJSSA09 (1-2)	320-56911-6	48	54	98	50	53	51	50	51
11187072-120819-BN-SJSSA09 (2-4)	320-56911-7	51	54	95	51	55	58	55	48
11187072-120819-BN-SJSSA09 (4-6)	320-56911-8	49	53	101	51	53	56	52	44
11187072-120819-BN-SJSSA05 (0-1)	320-56911-9	55	60	104	58	63	64	61	53
11187072-120819-BN-SJSSA05 (1-2)	320-56911-10	52	58	104	56	58	60	55	48
11187072-120819-BN-SJSSA05 (2-4)	320-56911-11	50	53	101	51	56	57	54	47
11187072-120819-BN-SJSSA05 (4-6)	320-56911-12	52	58	107	55	58	60	58	50
11187072-120819-BN-DUP2	320-56911-13	56	54	104	55	61	62	51	44
	MB 320-344634/1-A	48	57	92	50	55	52	54	57

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
TCDD = 13C-2,3,7,8-TCDD	25-164
37TCDD = 37Cl4-2,3,7,8-TCDD	35-197
PeCDF = 13C-1,2,3,7,8-PeCDF	24-185
PeCF = 13C-2,3,4,7,8-PeCDF	21-178
PeCDD = 13C-1,2,3,7,8-PeCDD	25-181
HxCDF = 13C-1,2,3,4,7,8-HxCDF	26-152
HxDF = 13C-1,2,3,6,7,8-HxCDF	26-123

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
11187072-120719-SS-SJSSA01 (0-1)	320-56911-1	46	59	57	48	44	50	54	55
11187072-120719-SS-SJSSA01 (1-2)	320-56911-2	45	55	55	46	42	48	51	50
11187072-120719-SS-SJSSA01 (2-4)	320-56911-3	48	58	59	48	49	54	55	59
11187072-120719-SS-SJSSA01 (4-6)	320-56911-4	51	65	63	52	53	60	61	66
11187072-120819-BN-SJSSA09 (0-1)	320-56911-5	49	60	61	51	48	55	57	59
11187072-120819-BN-SJSSA09 (1-2)	320-56911-6	46	56	58	47	47	53	54	58
11187072-120819-BN-SJSSA09 (2-4)	320-56911-7	51	62	53	51	53	62	63	70
11187072-120819-BN-SJSSA09 (4-6)	320-56911-8	48	57	49	49	49	59	61	68
11187072-120819-BN-SJSSA05 (0-1)	320-56911-9	56	69	58	58	61	73	73	85
11187072-120819-BN-SJSSA05 (1-2)	320-56911-10	52	64	53	53	55	66	67	77
11187072-120819-BN-SJSSA05 (2-4)	320-56911-11	50	61	52	52	52	63	64	73
11187072-120819-BN-SJSSA05 (4-6)	320-56911-12	53	64	56	56	55	66	68	74
11187072-120819-BN-DUP2	320-56911-13	47	60	48	52	44	55	59	60
	MB 320-344634/1-A	50	61	63	48	50	56	55	57

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	28-136
HxCDD = 13C-1,2,3,4,7,8-HxCDD	32-141
HxDD = 13C-1,2,3,6,7,8-HxCDD	28-130
HxCF = 13C-1,2,3,7,8,9-HxCDF	29-147
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	28-143
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	23-140
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	26-138
OCDD = 13C-OCDD	17-157

Column to be used to flag recovery values

FORM II 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 13de19dfs1_6.d

Lab ID: LCS 320-344634/2-A Client ID:

COMPOUND	SPIKE ADDED (pg/g)	LCS CONCENTRATION (pg/g)	LCS % REC	QC LIMITS REC	#
2,3,7,8-TCDD	20.0	19.4	97	67-158	
2,3,7,8-TCDF	20.0	18.3	91	75-158	
1,2,3,7,8-PeCDD	100	106	106	70-142	
1,2,3,7,8-PeCDF	100	93.3	93	80-134	
2,3,4,7,8-PeCDF	100	87.9	88	68-160	
1,2,3,4,7,8-HxCDD	100	90.9	91	70-164	
1,2,3,6,7,8-HxCDD	100	97.9	98	76-134	
1,2,3,7,8,9-HxCDD	100	93.0	93	64-162	
1,2,3,4,7,8-HxCDF	100	93.1	93	72-134	
1,2,3,6,7,8-HxCDF	100	100	100	84-130	
1,2,3,7,8,9-HxCDF	100	101	101	78-130	
2,3,4,6,7,8-HxCDF	100	103	103	70-156	
1,2,3,4,6,7,8-HpCDD	100	95.6	96	70-140	
1,2,3,4,6,7,8-HpCDF	100	99.4	99	82-122	
1,2,3,4,7,8,9-HpCDF	100	90.9	91	78-138	
OCDD	200	194	97	78-144	
OCDF	200	188	94	63-170	
13C-2,3,7,8-TCDD	200	115	58	20-175	
13C-2,3,7,8-TCDF	200	99.5	50	22-152	
13C-1,2,3,7,8-PeCDD	200	107	54	21-227	
13C-1,2,3,7,8-PeCDF	200	106	53	21-192	
13C-2,3,4,7,8-PeCDF	200	113	57	13-328	
13C-1,2,3,4,7,8-HxCDD	200	124	62	21-193	
13C-1,2,3,6,7,8-HxCDD	200	124	62	25-163	
13C-1,2,3,4,7,8-HxCDF	200	109	55	19-202	
13C-1,2,3,6,7,8-HxCDF	200	112	56	21-159	
13C-1,2,3,7,8,9-HxCDF	200	98.4	49	17-205	
13C-2,3,4,6,7,8-HxCDF	200	99.7	50	22-176	
13C-1,2,3,4,6,7,8-HpCDD	200	114	57	26-166	
13C-1,2,3,4,6,7,8-HpCDF	200	103	52	21-158	
13C-1,2,3,4,7,8,9-HpCDF	200	117	58	20-186	
13C-OCDD	400	245	61	13-199	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 13de19dfs1_7.d

Lab ID: LCSD 320-344634/3-A Client ID:

COMPOUND	SPIKE ADDED (pg/g)	LCSD CONCENTRATION (pg/g)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,3,7,8-TCDD	20.0	19.3	97	0	50	67-158	
2,3,7,8-TCDF	20.0	18.4	92	1	50	75-158	
1,2,3,7,8-PeCDD	100	104	104	2	50	70-142	
1,2,3,7,8-PeCDF	100	92.5	92	1	50	80-134	
2,3,4,7,8-PeCDF	100	87.2	87	1	50	68-160	
1,2,3,4,7,8-HxCDD	100	91.1	91	0	50	70-164	
1,2,3,6,7,8-HxCDD	100	97.0	97	1	50	76-134	
1,2,3,7,8,9-HxCDD	100	92.2	92	1	50	64-162	
1,2,3,4,7,8-HxCDF	100	91.2	91	2	50	72-134	
1,2,3,6,7,8-HxCDF	100	99.2	99	1	50	84-130	
1,2,3,7,8,9-HxCDF	100	99.4	99	2	50	78-130	
2,3,4,6,7,8-HxCDF	100	101	101	2	50	70-156	
1,2,3,4,6,7,8-HpCDD	100	95.1	95	1	50	70-140	
1,2,3,4,6,7,8-HpCDF	100	99.1	99	0	50	82-122	
1,2,3,4,7,8,9-HpCDF	100	90.3	90	1	50	78-138	
OCDD	200	189	94	3	50	78-144	
OCDF	200	182	91	3	50	63-170	
13C-2,3,7,8-TCDD	200	121	60			20-175	
13C-2,3,7,8-TCDF	200	105	52			22-152	
13C-1,2,3,7,8-PeCDD	200	113	56			21-227	
13C-1,2,3,7,8-PeCDF	200	111	55			21-192	
13C-2,3,4,7,8-PeCDF	200	119	60			13-328	
13C-1,2,3,4,7,8-HxCDD	200	129	65			21-193	
13C-1,2,3,6,7,8-HxCDD	200	129	65			25-163	
13C-1,2,3,4,7,8-HxCDF	200	116	58			19-202	
13C-1,2,3,6,7,8-HxCDF	200	115	57			21-159	
13C-1,2,3,7,8,9-HxCDF	200	104	52			17-205	
13C-2,3,4,6,7,8-HxCDF	200	107	53			22-176	
13C-1,2,3,4,6,7,8-HpCDD	200	118	59			26-166	
13C-1,2,3,4,6,7,8-HpCDF	200	108	54			21-158	
13C-1,2,3,4,7,8,9-HpCDF	200	122	61			20-186	
13C-OCDD	400	263	66			13-199	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab File ID: 13de19dfs1_5.d Lab Sample ID: MB 320-344634/1-A

Matrix: Sediment Date Extracted: 12/11/2019 08:20

Instrument ID: DFS 1 Date Analyzed: 12/13/2019 15:00

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-344634/2-A	13de19dfs1_6.d	12/13/2019 15:48
11187072-120819-BN-SJSSA09 (2-4)	320-56911-7	13DE1910D5_7.d	12/13/2019 16:21
	LCSD 320-344634/3-A	13de19dfs1_7.d	12/13/2019 16:36
11187072-120819-BN-SJSSA09 (4-6)	320-56911-8	13DE1910D5_8.d	12/13/2019 17:07
11187072-120719-SS-SJSSA01 (0-1)	320-56911-1	13de19dfs1_8.d	12/13/2019 17:23
11187072-120819-BN-SJSSA05 (0-1)	320-56911-9	13DE1910D5_9.d	12/13/2019 17:53
11187072-120719-SS-SJSSA01 (1-2)	320-56911-2	13de19dfs1_9.d	12/13/2019 18:11
11187072-120819-BN-SJSSA05 (1-2)	320-56911-10	13DE1910D5_10.d	12/13/2019 18:39
11187072-120719-SS-SJSSA01 (2-4)	320-56911-3	13de19dfs1_10.d	12/13/2019 18:59
11187072-120819-BN-SJSSA05 (2-4)	320-56911-11	13DE1910D5_11.d	12/13/2019 19:25
11187072-120719-SS-SJSSA01 (4-6)	320-56911-4	13de19dfs1_11.d	12/13/2019 19:47
11187072-120819-BN-SJSSA05 (4-6)	320-56911-12	13DE1910D5_12.d	12/13/2019 20:11
11187072-120819-BN-SJSSA09 (0-1)	320-56911-5	13de19dfs1_12.d	12/13/2019 20:35
11187072-120819-BN-DUP2	320-56911-13	13DE1910D5_13.d	12/13/2019 20:57
11187072-120819-BN-SJSSA09 (1-2)	320-56911-6	13de19dfs1_13.d	12/13/2019 21:23
11187072-120719-SS-SJSSA01 (2-4) RA	320-56911-3 RA	16DE19A11D2_004.d	12/16/2019 21:18
11187072-120719-SS-SJSSA01 (4-6) RA	320-56911-4 RA	16DE19A11D2_005.d	12/16/2019 21:56
11187072-120819-BN-SJSSA09 (0-1) RA	320-56911-5 RA	16DE19A11D2_006.d	12/16/2019 22:35
11187072-120819-BN-SJSSA09 (1-2) RA	320-56911-6 RA	16DE19A11D2_007.d	12/16/2019 23:13
11187072-120819-BN-SJSSA09 (2-4) RA	320-56911-7 RA	16DE19A11D2_008.d	12/16/2019 23:51
11187072-120819-BN-SJSSA09 (4-6) RA	320-56911-8 RA	16DE19A11D2_009.d	12/17/2019 00:29
11187072-120819-BN-SJSSA05 (0-1) RA	320-56911-9 RA	16DE19A11D2_010.d	12/17/2019 01:08

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab File ID: 13de19dfs1_5.d Lab Sample ID: MB 320-344634/1-A

Matrix: Sediment Date Extracted: 12/11/2019 08:20

Instrument ID: DFS 1 Date Analyzed: 12/13/2019 15:00

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
11187072-120819-BN-SJSSA05 (1-2) RA	320-56911-10 RA	16DE19A11D2 011.d	12/17/2019 01:46
11187072-120819-BN-SJSSA05 (2-4) RA	320-56911-11 RA	16DE19A11D2 012.d	12/17/2019 02:24
11187072-120819-BN-SJSSA05 (4-6) RA	320-56911-12 RA	16DE19A11D2 013.d	12/17/2019 03:03
11187072-120819-BN-DUP2 RA	320-56911-13 RA	16DE19A11D2 014.d	12/17/2019 03:41
11187072-120719-SS-SJSSA01 (0-1) RA	320-56911-1 RA	17DE1911D2_ 004.d	12/17/2019 16:06
11187072-120719-SS-SJSSA01 (1-2) RA	320-56911-2 RA	17DE1911D2_ 005.d	12/17/2019 16:44

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Matrix: Sediment Lab File ID: 13de19dfs1_8.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 17:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 54.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	8.6		2.2	0.37
40321-76-4	1,2,3,7,8-PeCDD	0.48	J q	11	0.28
57117-41-6	1,2,3,7,8-PeCDF	1.1	J	11	0.17
57117-31-4	2,3,4,7,8-PeCDF	0.75	J	11	0.18
39227-28-6	1,2,3,4,7,8-HxCDD	1.0	J	11	0.28
57653-85-7	1,2,3,6,7,8-HxCDD	1.5	J q B	11	0.29
19408-74-3	1,2,3,7,8,9-HxCDD	3.2	J	11	0.27
70648-26-9	1,2,3,4,7,8-HxCDF	1.8	J	11	0.19
57117-44-9	1,2,3,6,7,8-HxCDF	0.91	J	11	0.18
72918-21-9	1,2,3,7,8,9-HxCDF	ND		11	0.15
60851-34-5	2,3,4,6,7,8-HxCDF	0.55	J	11	0.18
35822-46-9	1,2,3,4,6,7,8-HpCDD	62	B	11	1.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	6.6	J	11	0.23
55673-89-7	1,2,3,4,7,8,9-HpCDF	1.0	J	11	0.20
3268-87-9	OCDD	2400	B	22	2.9
39001-02-0	OCDF	48	B	22	0.30
41903-57-5	Total TCDD	14		2.2	0.37
30402-14-3	Total TCDF	38		2.2	0.31
36088-22-9	Total PeCDD	9.6	J q	11	0.28
30402-15-4	Total PeCDF	4.0	J	11	0.18
34465-46-8	Total HxCDD	49	q B	11	0.28
55684-94-1	Total HxCDF	7.4	J	11	0.18
37871-00-4	Total HpCDD	210	B	11	1.0
38998-75-3	Total HpCDF	17	B	11	0.21

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) Lab Sample ID: 320-56911-1

Matrix: Sediment Lab File ID: 13de19dfs1_8.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 17:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 54.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	58		25-164
89059-46-1	13C-2,3,7,8-TCDF	52		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	54		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	53		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	57		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	59		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	57		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	52		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	50		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	48		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	46		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	50		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	44		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	54		26-138
114423-97-1	13C-OCDD	55		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	92		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:23:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-1-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:24:53 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:05:03

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.538	7550584	0.81	5.2E+04	100.0	100.0				a
D 13C-2,3,7,8-TCDF	18.647	6329776	0.79	1.6096	52.1	52.1	0.1945	0.1945	52.08	
2,3,7,8-TCDF	18.673	444461	0.81	1.2332	5.694	5.694	0.0696	0.0696		
A Non-2,3,7,8-sub-TCDF	18.244	224079	0.81	1.2332	2.871	2.871	0.0696	2.540		
S Total TCDF					8.564	8.564	0.0696	0.0696		
D 13C-2,3,7,8-TCDD	19.884	4375600	0.80	0.9984	58.0	58.0	0.2089	0.2089	58.04	
2,3,7,8-TCDD	19.901	103069	0.80	1.1988	1.965	1.965	0.0844	0.0844		M
$ 37Cl4-2,3,7,8-TCDD	19.910	4018556		1.4510	36.7	36.7	0.0357	0.0357	91.70	
A Non-2,3,7,8-sub-TCDD	19.035	66141	0.76	1.1988	1.261	1.261	0.0844	1.003		
S Total TCDD					3.226	3.226	0.0844	0.0844		
D 13C-1,2,3,7,8-PeCDF	25.794	5511096	1.57	1.3678	53.4	53.4	0.2221	0.2221	53.36	
1,2,3,7,8-PeCDF	25.836	16563	1.69	1.1689	0.2571	0.2571	0.0394	0.0394		M
D 13C-2,3,4,7,8-PeCDF	27.212	5570299	1.59	1.3045	56.6	56.6	0.2329	0.2329	56.55	
2,3,4,7,8-PeCDF	27.237	11310	1.65	1.1861	0.1712	0.1712	0.0412	0.0412		
A F1 PeCDFs	23.266	10804	1.72	1.1775	0.1656	0.1656	0.0173	0.1656		
A Non-2,3,7,8-sub-PeCDF	26.724	21082	1.74	1.1775	0.3231	0.3231	0.0402	0.3231		M
S Total PeCDF					0.9170	0.9170	0.0403	0.0403		
D 13C-1,2,3,7,8-PeCDD	27.975	3368785	1.63	0.8292	53.8	53.8	0.1001	0.1001	53.81	
1,2,3,7,8-PeCDD	28.017	4132	1.55	1.1200	0.1218	0.1095	0.0642	0.0642		RQ
A Non-2,3,7,8-sub-PeCDD	26.851	78870	1.55	1.1200	2.179	2.090	0.0642	1.059		RQ
S Total PeCDD					2.301	2.200	0.0642	0.0642		RQ
D 13C-1,2,3,4,7,8-HxCDF	33.739	4474520	0.53	1.1700	52.0	52.0	0.2235	0.2235	51.96	
1,2,3,4,7,8-HxCDF	33.747	23668	1.22	1.3021	0.4062	0.4062	0.0440	0.0440		Ma
D 13C-1,2,3,6,7,8-HxCDF	33.940	4880117	0.53	1.3168	50.4	50.4	0.1986	0.1986	50.36	
1,2,3,6,7,8-HxCDF	33.965	13093	1.28	1.2907	0.2079	0.2079	0.0412	0.0412		Ma
D 13C-2,3,4,6,7,8-HxCDF	34.904	4385487	0.53	1.2873	46.3	46.3	0.2031	0.2031	46.29	
2,3,4,6,7,8-HxCDF	34.938	7163	1.24	1.3039	0.1253	0.1253	0.0411	0.0411		M
D 13C-1,2,3,7,8,9-HxCDF	35.911	4232604	0.53	1.1987	48.0	48.0	0.2181	0.2181	47.98	
1,2,3,7,8,9-HxCDF	35.894						0.0350	0.0350		
A Non-2,3,7,8-sub-HxCDF	33.751	55792	1.28	1.3074	0.9497	0.9497	0.0401	0.4412		Ma
S Total HxCDF					1.689	1.689	0.0403	0.0403		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.709	7359612	1.26	5.8E+04	100.0	100.0				a
D 13C-1,2,3,4,7,8-HxCDD	35.156	3605684	1.30	0.8364	58.6	58.6	0.1881	0.1881	58.58	
1,2,3,4,7,8-HxCDD	35.164	9711	1.06	1.1725	0.2297	0.2297	0.0641	0.0641		
D 13C-1,2,3,6,7,8-HxCDD	35.290	3777780	1.29	0.9040	56.8	56.8	0.1740	0.1740	56.78	
1,2,3,6,7,8-HxCDD	35.315	15037	1.24	1.1256	0.3931	0.3536	0.0667	0.0667		RQ
1,2,3,7,8,9-HxCDD	35.726	33633	1.18	1.2327	0.7391	0.7391	0.0609	0.0609		
A Non-2,3,7,8-sub-HxCDD	34.284	431801	1.24	1.1769	9.971	9.938	0.0638	7.060		RQ
S Total HxCDD					11.3	11.3	0.0639	0.0639		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	37.893	3132972	0.46	0.9689	43.9	43.9	0.2928	0.2928	43.94	
1,2,3,4,6,7,8-HpCDF	37.902	76179	1.08	1.6176	1.503	1.503	0.0525	0.0525		M
D 13C-1,2,3,4,7,8,9-HpCDF	39.210	3642268	0.46	0.9231	53.6	53.6	0.3073	0.3073	53.61	
1,2,3,4,7,8,9-HpCDF	39.218	12196	0.89	1.4672	0.2282	0.2282	0.0455	0.0455		
A Non-2,3,7,8-sub-HpCDF	38.556	108678	1.05	1.5424	2.080	2.080	0.0485	1.914		
S Total HpCDF					3.811	3.811	0.0490	0.0490		
D 13C-1,2,3,4,6,7,8-HpCDD	38.900	3382276	1.07	0.9114	50.4	50.4	0.1479	0.1479	50.42	
1,2,3,4,6,7,8-HpCDD	38.908	539298	1.02	1.1237	14.2	14.2	0.2377	0.2377		
A Non-2,3,7,8-sub-HpCDD	38.803	1300171	1.03	1.1237	34.2	34.2	0.2377	34.2		
S Total HpCDD					48.4	48.4	0.2377	0.2377		
D 13C-OCDD	41.336	5098429	0.90	0.6272	110.4	110.4	0.1968	0.1968	55.22	
OCDF	41.412	431050	0.88	1.5416	11.0	11.0	0.0696	0.0696		
OCDD	41.345	16529156	0.89	1.1855	546.9	546.9	0.6625	0.6625		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:23:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-1-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:24:53 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:05:03

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	19.538	19.502	2		3368861	518300	701	1752	739		a
333.9338	19.538	19.502	2		4181723	668473	289	722	2313	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.647	18.611	2	0.954	2792723	457172	1052	2630	435		
317.9389	18.647	18.611	2	0.954	3537053	561690	434	1085	1294	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.673	18.637	2	1.001	199374	30353	144	360	211		
305.8987	18.664	18.637	2	1.001	245087	37882	206	515	184	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.788	18.244	-87	0.900	10645	1882	144	360	13		
305.8987	16.788	18.244	-87	0.900	15162	2665	206	515	13	0.70(0.65-0.89)	
303.9016	18.008	18.244	-14	0.966	89903	14273	144	360	99		
305.8987	18.016	18.244	-14	0.966	108369	18764	206	515	91	0.83(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.884	19.848	2	1.018	1942312	296727	701	1752	423		
333.9338	19.884	19.848	2	1.018	2433288	355953	289	722	1232	0.80(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	19.901	19.874	2	1.001	45868	6692	203	507	33		M
321.8936	19.910	19.874	2	1.001	57201	8771	61	152	144	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.910	19.882	2	1.019	4018556	598690	246	615	2434		
A Non-2,3,7,8-sub-TCDD											
319.8965	17.973	19.035	-64	0.904	22913	4108	203	507	20		
321.8936	17.973	19.035	-64	0.904	29698	5620	61	152	92	0.77(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	19.494	19.035	27	0.980	5550	1060	203	507	5		
321.8936	19.529	19.035	30	0.982	7980	1309	61	152	21	0.70(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	25.794	25.760	2	1.320	3366855	570121	814	2035	700		
353.8970	25.794	25.760	2	1.320	2144241	363585	628	1570	579	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	25.836	25.785	3	1.002	10404	1601	51	127	31		
341.8567	25.820	25.785	2	1.001	6159	1100	121	302	9	1.69(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	27.212	27.177	2	1.393	3421385	545158	814	2035	670		
353.8970	27.212	27.177	2	1.393	2148914	335742	628	1570	535	1.59(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.237	27.202	2	1.001	7037	1205	51	127	24		
341.8567	27.220	27.202	1	1.000	4273	645	121	302	5	1.65(1.32-1.78)	
A F1 PeCDFs											
339.8597	22.374	23.266	-53	0.867	6832	791	4	10	198		
341.8567	22.374	23.266	-53	0.867	3972	634	70	175	9	1.72(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											M
339.8597	24.452	26.724	-136	0.948	13396	1912	51	127	37		M
341.8567	24.436	26.724	-137	0.947	7686	1378	121	302	11	1.74(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	27.975	27.949	2	1.432	2087787	317223	204	510	1555		
369.8919	27.975	27.949	2	1.432	1280998	197141	190	475	1038	1.63(1.32-1.78)	
1,2,3,7,8-PeCDD											RQ
355.8546	28.017	27.965	3	1.001	2512	527	107	267	5		
357.8516	28.008	27.965	3	1.001	2084	329	41	102	8	1.21(1.32-1.78)	
	Empc Correction				1620	340	41	102	8		
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	24.721	26.851	-128	0.884	11038	2033	107	267	19		
357.8516	24.729	26.851	-127	0.884	9840	1317	41	102	32	1.12(1.32-1.78)	
	Empc Correction				7121	1311	41	102	32		
355.8546	25.476	26.851	-82	0.911	25273	4520	107	267	42		
357.8516	25.476	26.851	-82	0.911	14692	2424	41	102	59	1.72(1.32-1.78)	
355.8546	26.817	26.851	-2	0.959	2493	443	107	267	4		
	Empc Correction				1866	513	107	267	5		
357.8516	26.826	26.851	-2	0.959	1204	331	41	102	8	2.07(1.32-1.78)	
355.8546	27.002	26.851	9	0.965	10668	1555	107	267	15		
357.8516	27.002	26.851	9	0.965	7008	897	41	102	22	1.52(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.739	33.714	2	0.945	1545228	271589	460	1150	590		
385.8610	33.739	33.714	2	0.945	2929292	508642	1190	2975	427	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											Ma
373.8208	33.747	33.739	0	1.000	12987	1734	107	267	16		M
375.8178	33.764	33.739	1	1.001	10681	1658	72	180	23	1.22(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.940	33.915	2	0.950	1685979	290889	460	1150	632		
385.8610	33.940	33.915	2	0.950	3194138	549228	1190	2975	462	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											Ma
373.8208	33.965	33.932	2	1.001	7355	1182	107	267	11		M
375.8178	33.965	33.932	2	1.001	5738	845	72	180	12	1.28(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.904	34.880	1	0.977	1523828	280049	460	1150	609		
385.8610	34.913	34.880	2	0.978	2861659	553786	1190	2975	465	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											M
373.8208	34.938	34.905	2	1.001	3959	863	107	267	8		M
375.8178	34.946	34.905	2	1.001	3204	853	72	180	12	1.24(1.05-1.43)	M
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.911	35.878	2	1.006	1464055	330348	460	1150	718		
385.8610	35.911	35.878	2	1.006	2768549	626690	1190	2975	527	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	35.894						107	267			
375.8178	35.894						72	180			
A Non-2,3,7,8-sub-HxCDF											Ma
373.8208	31.868	33.751	-113	0.945	14251	1728	107	267	16		
375.8178	31.851	33.751	-114	0.944	11665	1749	72	180	24	1.22(1.05-1.43)	
373.8208	32.984	33.751	-46	0.978	13598	1980	107	267	19		
375.8178	32.975	33.751	-46	0.977	10233	1701	72	180	24	1.33(1.05-1.43)	
373.8208	34.812	33.751	64	1.032	3445	614	107	267	6		M
375.8178	34.795	33.751	63	1.031	2600	562	72	180	8	1.33(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											a
401.8559	35.709	35.685	1		4105011	882626	537	1342	1644		a
403.8529	35.701	35.685	1		3254601	694995	456	1140	1524	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.156	35.131	1	0.984	2036402	436019	537	1342	812		
403.8529	35.156	35.131	1	0.984	1569282	342591	456	1140	751	1.30(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.164	35.148	1	1.000	5006	1313	115	287	11		
391.8127	35.173	35.148	1	1.000	4705	1119	119	297	9	1.06(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.290	35.265	1	0.988	2129516	441154	537	1342	822		
403.8529	35.299	35.265	2	0.988	1648264	337756	456	1140	741	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQ
389.8158	35.315	35.282	2	1.001	10001	1970	115	287	17		
	Empc Correction				8324	1806	115	287	16		
391.8127	35.324	35.282	3	1.001	6713	1457	119	297	12	1.49(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	35.726	35.693	2	1.016	18170	3456	115	287	30		
391.8127	35.726	35.693	2	1.016	15463	2284	119	297	19	1.18(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	32.908	34.284	-82	0.933	169286	25179	115	287	219		
391.8127	32.908	34.284	-82	0.933	137449	20227	119	297	170	1.23(1.05-1.43)	
389.8158	33.881	34.284	-24	0.960	8889	1421	115	287	12		
	Empc Correction				7477	1313	115	287	11		
391.8127	33.864	34.284	-25	0.960	6030	1059	119	297	9	1.47(1.05-1.43)	
389.8158	34.284	34.284	0	0.971	54748	9167	115	287	80		
391.8127	34.275	34.284	-1	0.971	42076	7159	119	297	60	1.30(1.05-1.43)	
389.8158	34.519	34.284	14	0.978	8397	1399	115	287	12		
391.8127	34.477	34.284	12	0.977	6338	1291	119	297	11	1.32(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.893	37.877	1	1.061	983672	238092	709	1772	336		
419.8220	37.893	37.877	1	1.061	2149300	526736	1081	2702	487	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	37.902	37.886	1	1.000	39496	9364	189	472	50		
409.7788	37.902	37.886	1	1.000	36683	9158	71	177	129	1.08(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.210	39.194	1	1.098	1145843	306938	709	1772	433		
419.8220	39.210	39.194	1	1.098	2496425	666547	1081	2702	617	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.218	39.202	1	1.000	5733	1571	189	472	8		
409.7788	39.227	39.202	1	1.000	6463	1830	71	177	26	0.89(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.128	38.556	-26	1.006	4075	1085	189	472	6		
409.7788	38.136	38.556	-25	1.006	4585	1308	71	177	18	0.89(0.88-1.20)	
407.7817	38.287	38.556	-16	1.010	51702	13391	189	472	71		
409.7788	38.287	38.556	-16	1.010	48316	12411	71	177	175	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.900	38.892	0	1.089	1747259	448103	470	1175	953		
437.8140	38.900	38.892	0	1.089	1635017	423252	381	952	1111	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.908	38.901	0	1.000	272422	69605	503	1257	138		
425.7737	38.908	38.901	0	1.000	266876	66994	428	1070	157	1.02(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.237	38.803	-34	0.983	659541	165361	503	1257	329		
425.7737	38.237	38.803	-34	0.983	640630	160265	428	1070	374	1.03(0.88-1.20)	
13C-OCDD											
469.7780	41.336	41.345	-1	1.158	2420744	489217	441	1102	1109		
471.7750	41.336	41.345	-1	1.158	2677685	545180	338	845	1613	0.90(0.76-1.02)	
OCDF											
441.7428	41.412	41.413	0	1.002	201645	45236	76	190	595		
443.7399	41.412	41.413	0	1.002	229405	52763	146	365	361	0.88(0.76-1.02)	
OCDD											
457.7377	41.345	41.345	0	1.000	7772836	1568767	788	1970	1991		
459.7348	41.345	41.345	0	1.000	8756320	1765801	837	2092	2110	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	6329776	1018862

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	6329776	1018862

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.788	10645	1882	15162	2665	0.3306	0.70	
18.008	89903	14273	108369	18764	2.54	0.83	
Signal Totals:							
	100548	16155	123531	21429			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	224079	37584				0.81	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.871 = (224079 * 100.000) / (6329776 * 1.233)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 19.035

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	100.000	4375600	652680

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		100.000	4375600	652680

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.973	22913	4108	29698	5620	1.00	0.77	
19.494	5550	1060	7980	1309	0.2579	0.70	
Signal Totals:							
	28463	5168	37678	6929			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	66141	12097				0.76	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.261 = (66141 * 100.000) / (4375600 * 1.199)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

F1 PeCDFs, RT: 23.266

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5511096	933706
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5570299	880900

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5540697	907303

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.374	6832	791	3972	634	0.1656	1.72	
Signal Totals:							
	6832	791	3972	634			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10804	1425				1.72	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1656 = (10804 * 100.000) / (5540697 * 1.178)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDF, RT: 26.724

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5511096	933706
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5570299	880900

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5540697	907303

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
24.452	13396	1912	7686	1378	0.3231	1.74	M
Signal Totals:							
	13396	1912	7686	1378			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	21082	3290				1.74	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3231 = (21082 * 100.000) / (5540697 * 1.178)

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 17-Dec-2019 09:24:55 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDD, RT: 26.851

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120	D 13C-1,2,3,7,8-PeCDD	100.000	3368785	514364

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	3368785	514364

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
24.721	11038	2033	9840	1317	0.5534	1.12	RQ
24.721	11038	2033	7121	1311	0.4813		Empc Correction
25.476	25273	4520	14692	2424	1.06	1.72	
26.817	2493	443	1204	331	0.0980	2.07	RQ
26.817	1866	513	1204	331	0.0814		Empc Correction
27.002	10668	1555	7008	897	0.4685	1.52	
Signal Totals:							
	48845	8621	30025	4963			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	82216	13520				1.51	RQ
	78870	13584					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.179 = (82216 * 100.000) / (3368785 * 1.120)
Empc Amount: 2.090 = (78870 * 100.000) / (3368785 * 1.120)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 17-Dec-2019 09:24:55 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	4474520	780231
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	4880117	840117
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	4385487	833835
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	4232604	957038

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	4493182	852805

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
31.868	14251	1728	11665	1749	0.4412	1.22	
32.984	13598	1980	10233	1701	0.4057	1.33	
34.812	3445	614	2600	562	0.1029	1.33	Ma
Signal Totals:							
	31294	4322	24498	4012			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	55792	8334				1.28	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9497 = (55792 * 100.000) / (4493182 * 1.307)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 09:24:55 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3605684	778610
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	3777780	778910
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	3691732	778760

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.908	169286	25179	137449	20227	7.06	1.23	
33.881	8889	1421	6030	1059	0.3434	1.47	RQ
33.881	7477	1313	6030	1059	0.3109		Empc Correction
34.284	54748	9167	42076	7159	2.23	1.30	
34.519	8397	1399	6338	1291	0.3391	1.32	
Signal Totals:							
	239908	37058	191893	29736			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	433213	66902				1.26	RQ
	431801	66794					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.971 = (433213 * 100.000) / (3691732 * 1.177)
Empc Amount: 9.938 = (431801 * 100.000) / (3691732 * 1.177)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3132972	764828
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3642268	973485

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3387620	869156

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.128	4075	1085	4585	1308	0.1657	0.89	
38.287	51702	13391	48316	12411	1.91	1.07	
Signal Totals:	55777	14476	52901	13719			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	108678	28195				1.05	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.080 = (108678 * 100.000) / (3387620 * 1.542)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Inject. Date: 13-Dec-2019 17:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3382276	871355

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3382276	871355

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.237	659541	165361	640630	160265	34.2	1.03	
Signal Totals:							
	659541	165361	640630	160265			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1300171	325626				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 34.209 = (1300171 * 100.000) / (3382276 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

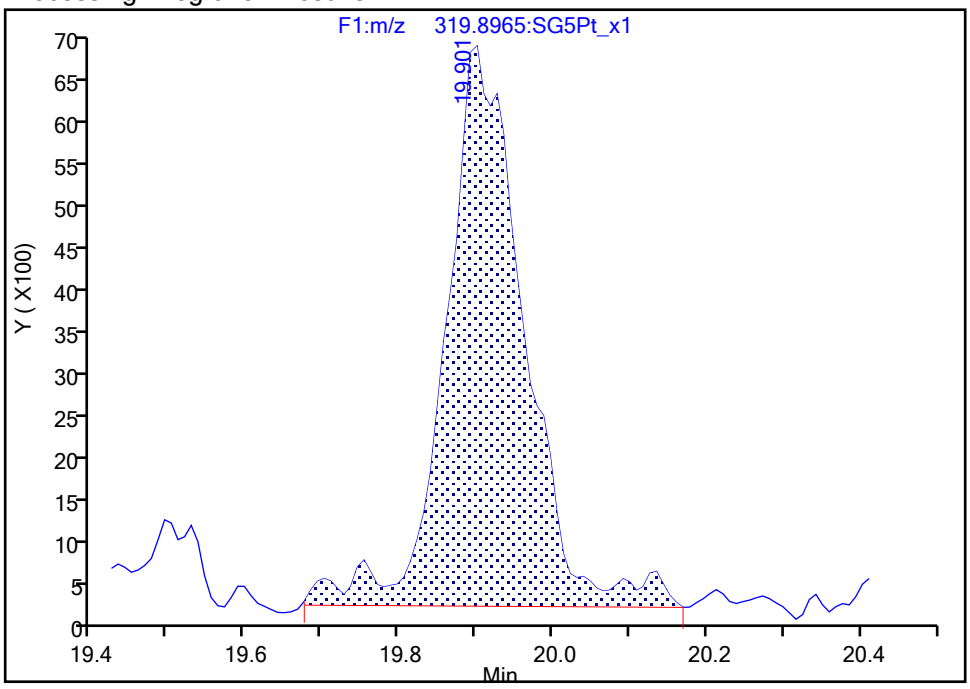
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

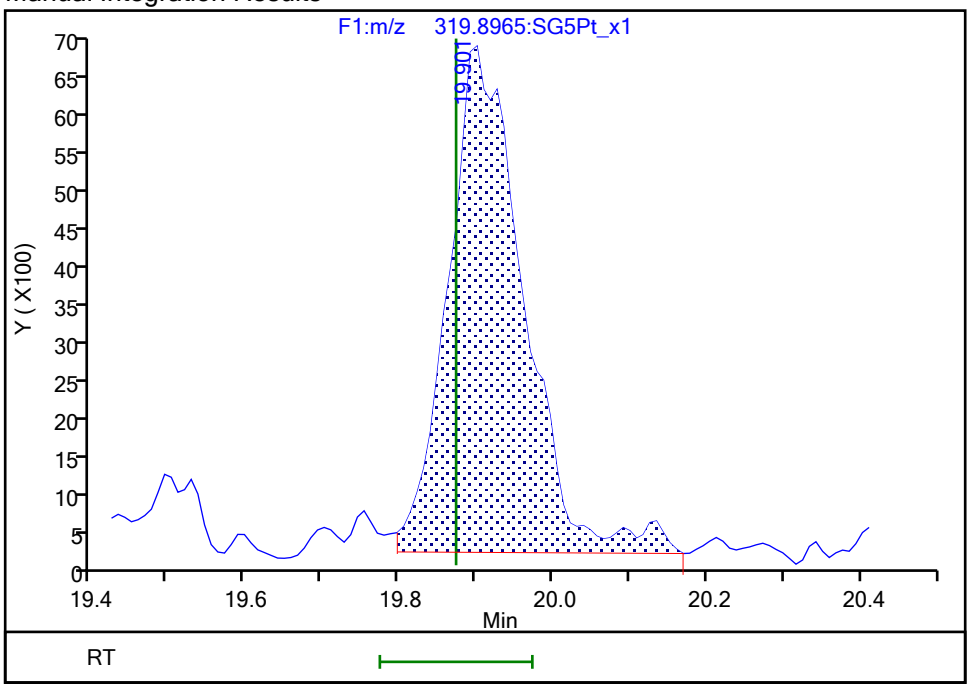
Processing Integration Results

RT: 19.90
Area: 47891
Amount: 2.003453
Amount Units: pg/ul



Manual Integration Results

RT: 19.90
Area: 45868
Amount: 1.964887
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:20:29

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

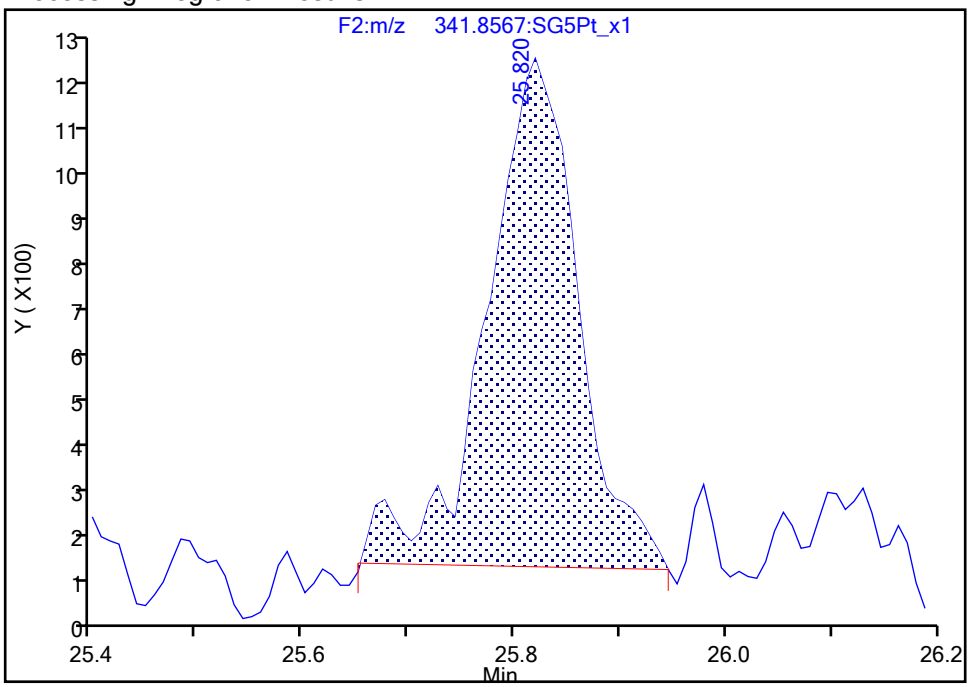
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

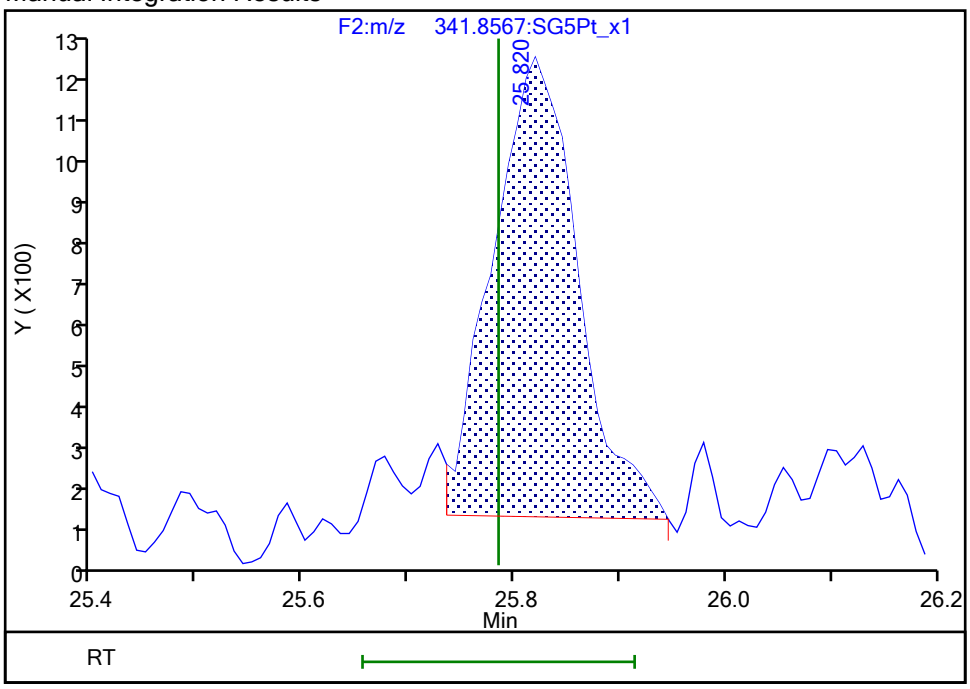
Processing Integration Results

RT: 25.82
Area: 6640
Amount: 0.264579
Amount Units: pg/ul



Manual Integration Results

RT: 25.82
Area: 6159
Amount: 0.257112
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:20:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

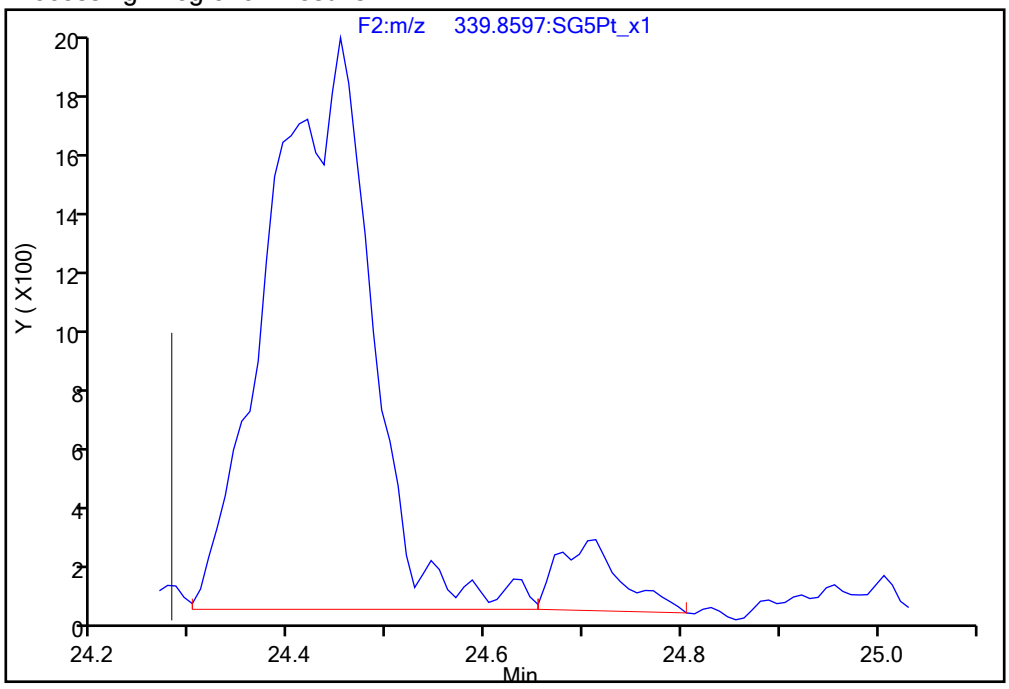
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (24.28- 29.17)

Signal: 1

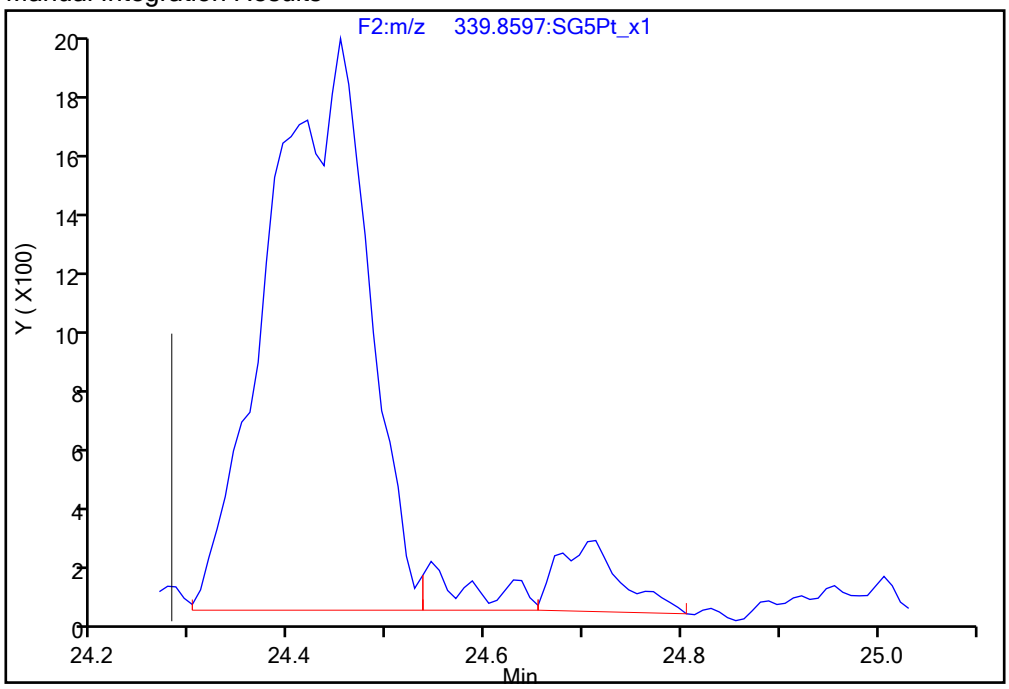
Processing Integration Results

RT = 24.452 Area = 13932



Manual Integration Results

RT = 24.452 Area = 13396 M



Reviewer: dadunj, 17-Dec-2019 09:20:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

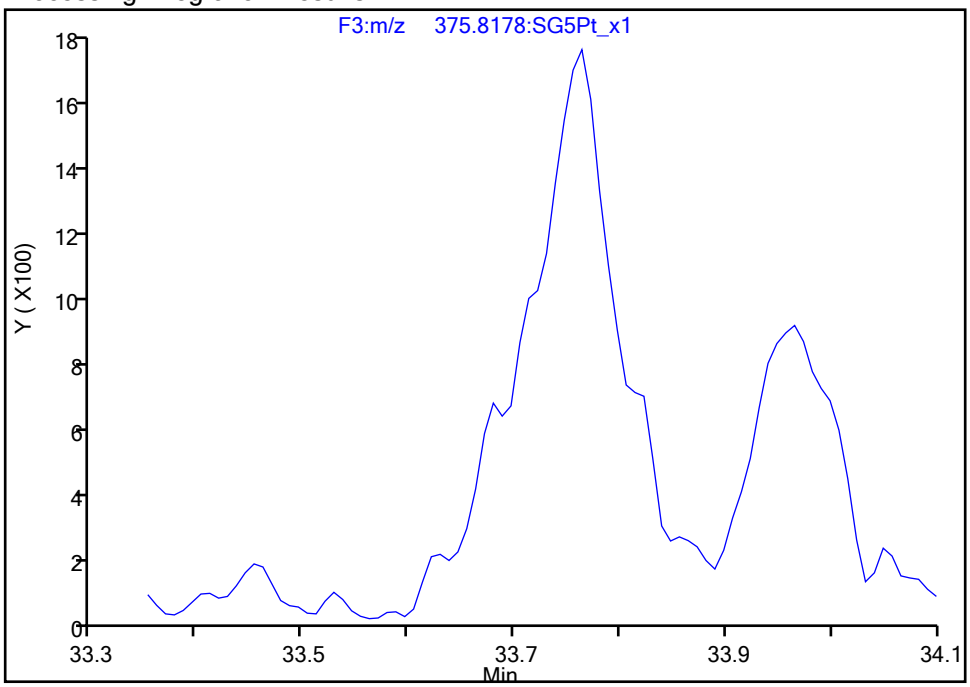
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

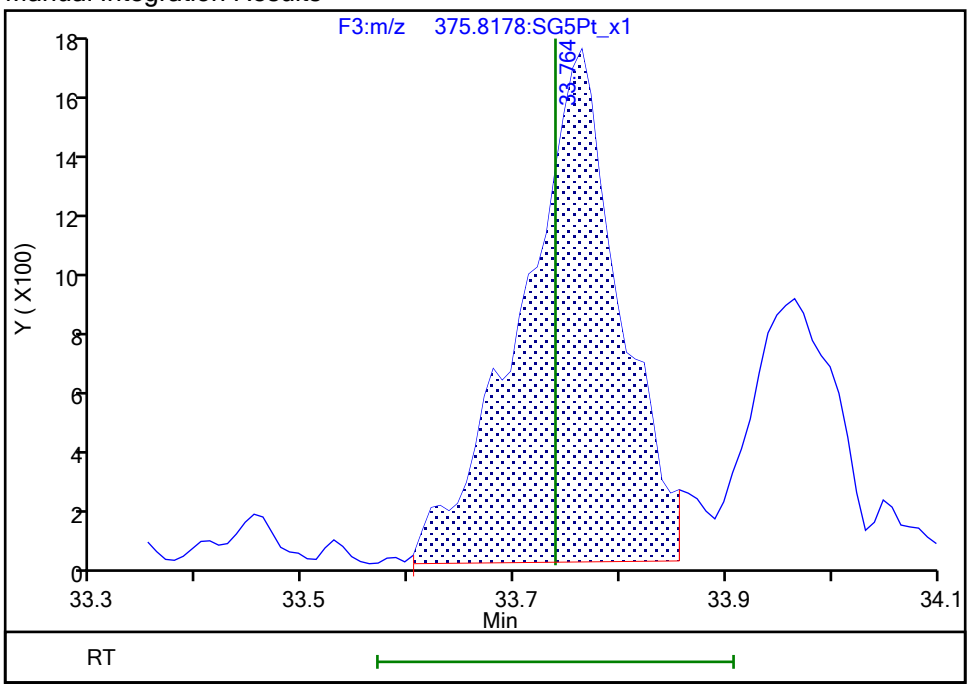
Not Detected
Expected RT: 33.74

Processing Integration Results



Manual Integration Results

RT: 33.76
Area: 10681
Amount: 0.406218
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:21:50
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

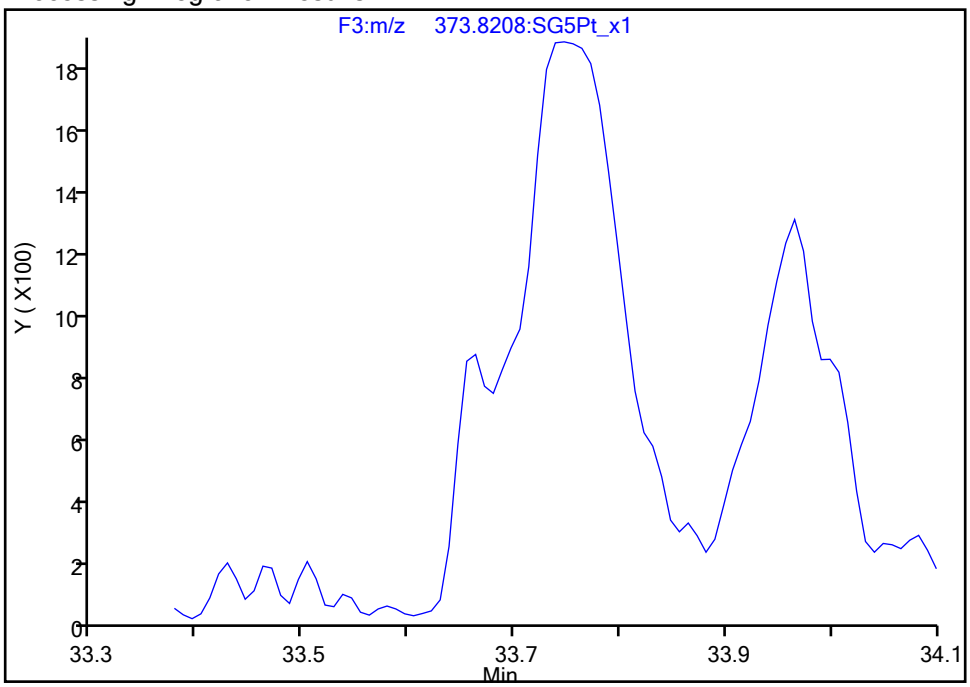
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

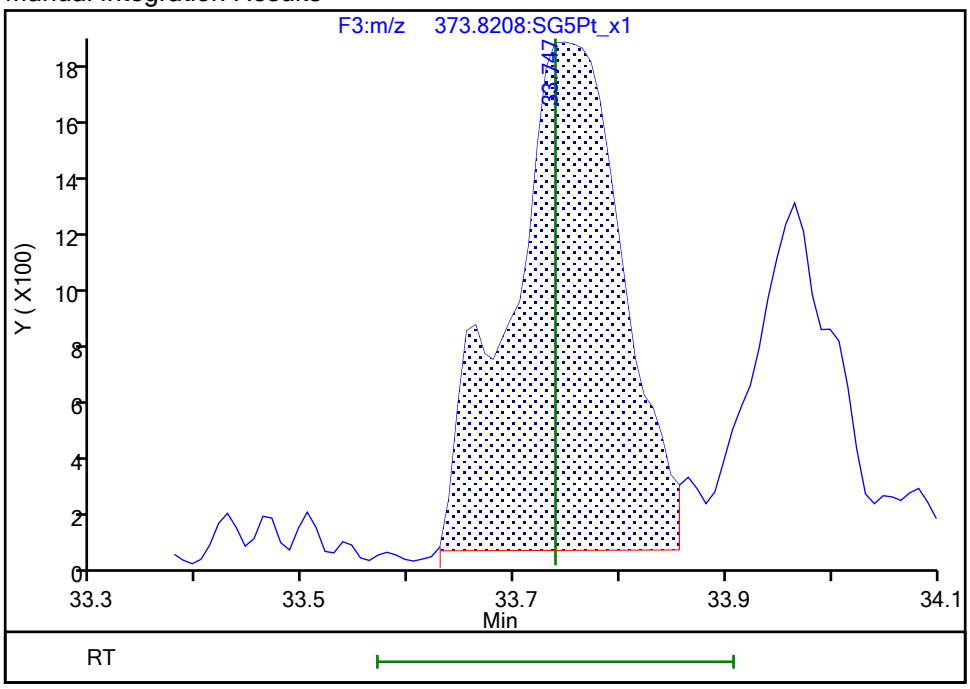
Processing Integration Results

Not Detected
Expected RT: 33.74



Manual Integration Results

RT: 33.75
Area: 12987
Amount: 0.406218
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:22:19
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

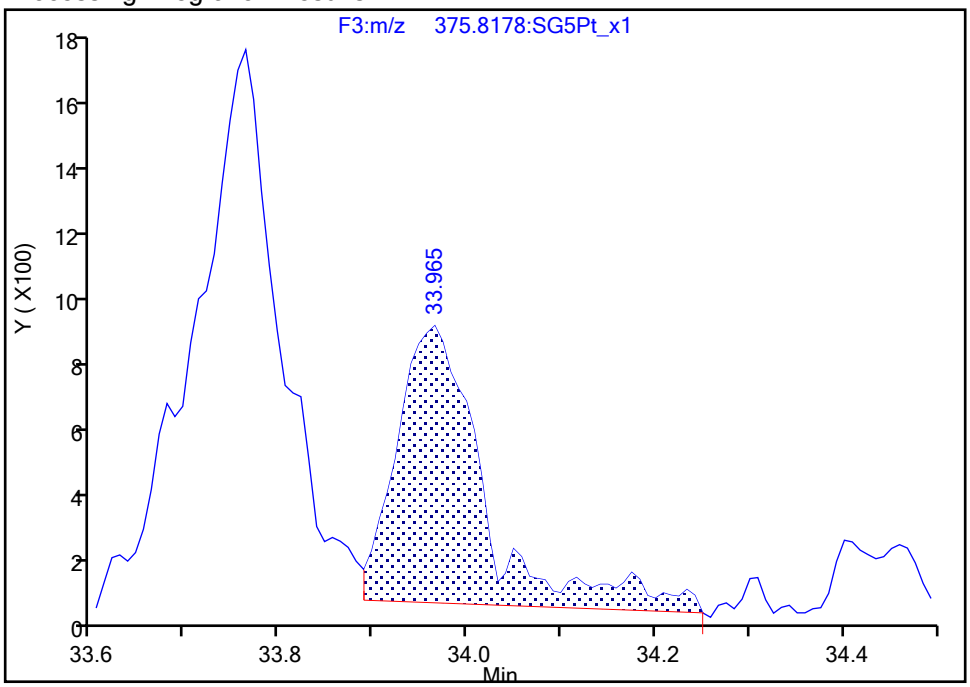
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

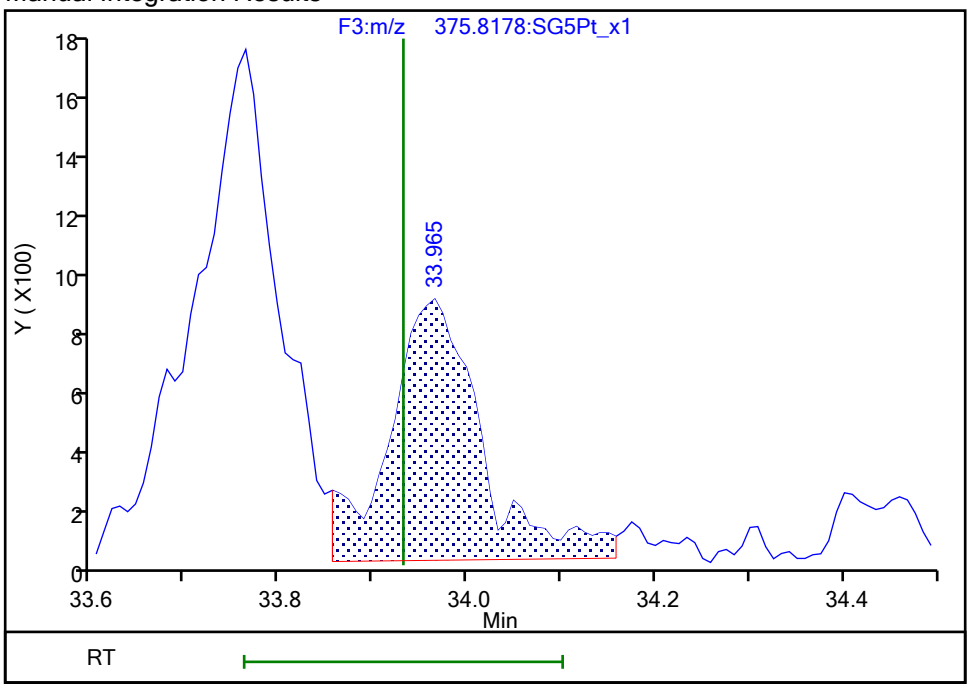
Processing Integration Results

RT: 33.97
Area: 5247
Amount: 0.200001
Amount Units: pg/ul



Manual Integration Results

RT: 33.97
Area: 5738
Amount: 0.207859
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:22:10
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

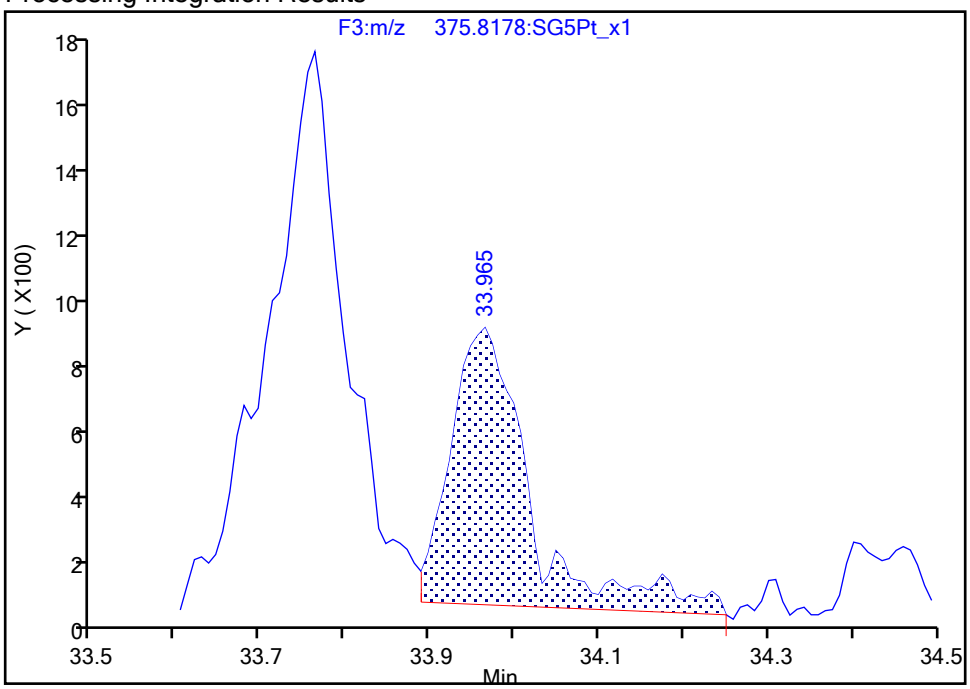
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 3

Processing Integration Results

RT: 33.97
Area: 12598
Amount: 0.200001
Amount Units: pg/ul



Manual Integration Results

RT: 33.97
Area: 13093
Amount: 0.207859
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:22:10
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

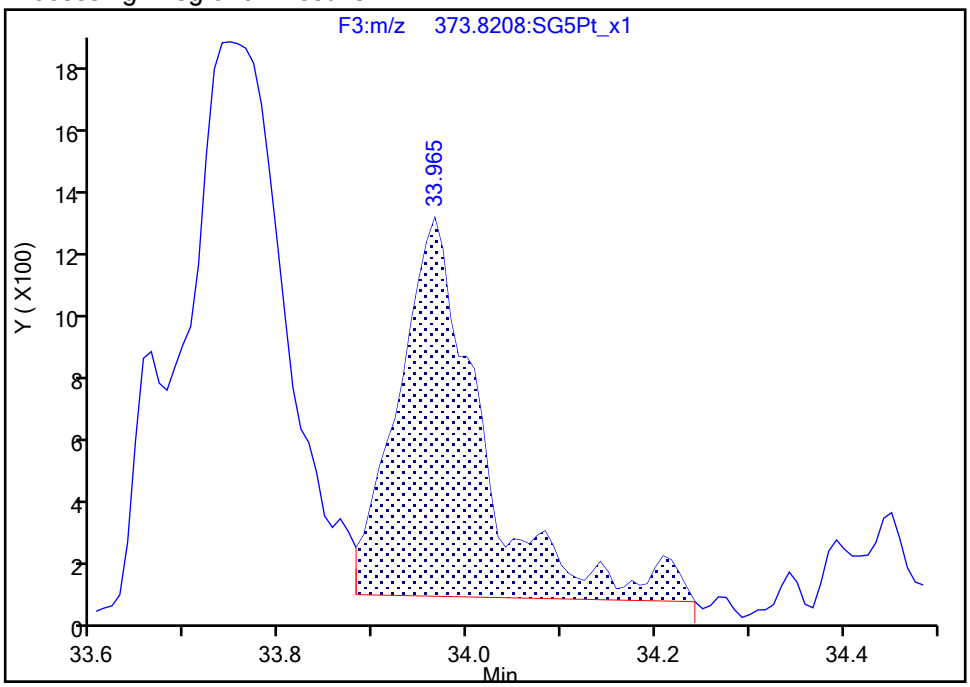
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

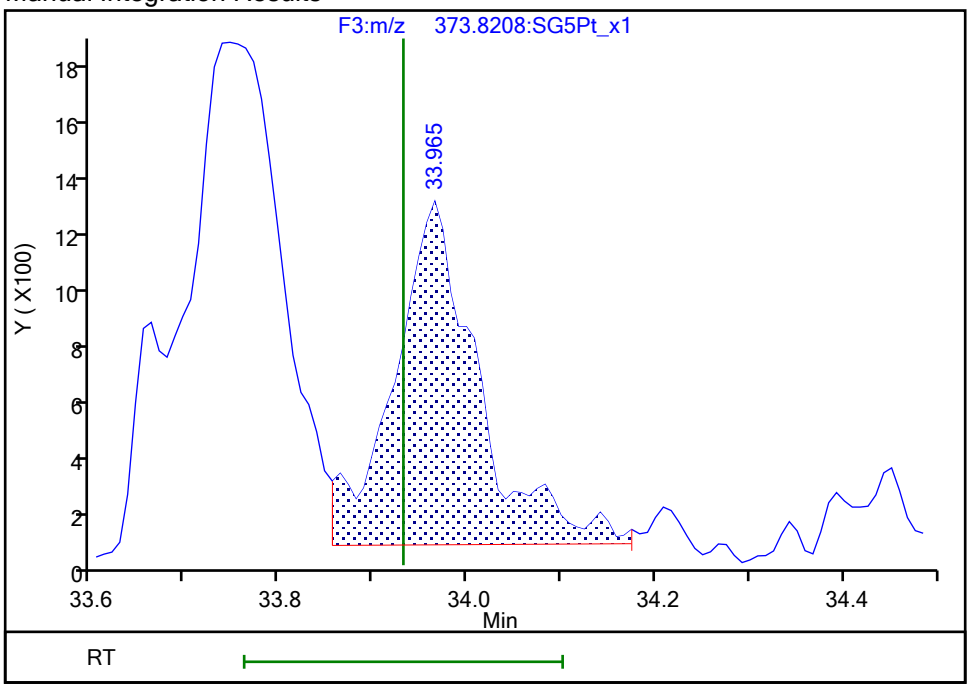
Processing Integration Results

RT: 33.97
Area: 7351
Amount: 0.200001
Amount Units: pg/ul



Manual Integration Results

RT: 33.97
Area: 7355
Amount: 0.207859
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:22:16

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

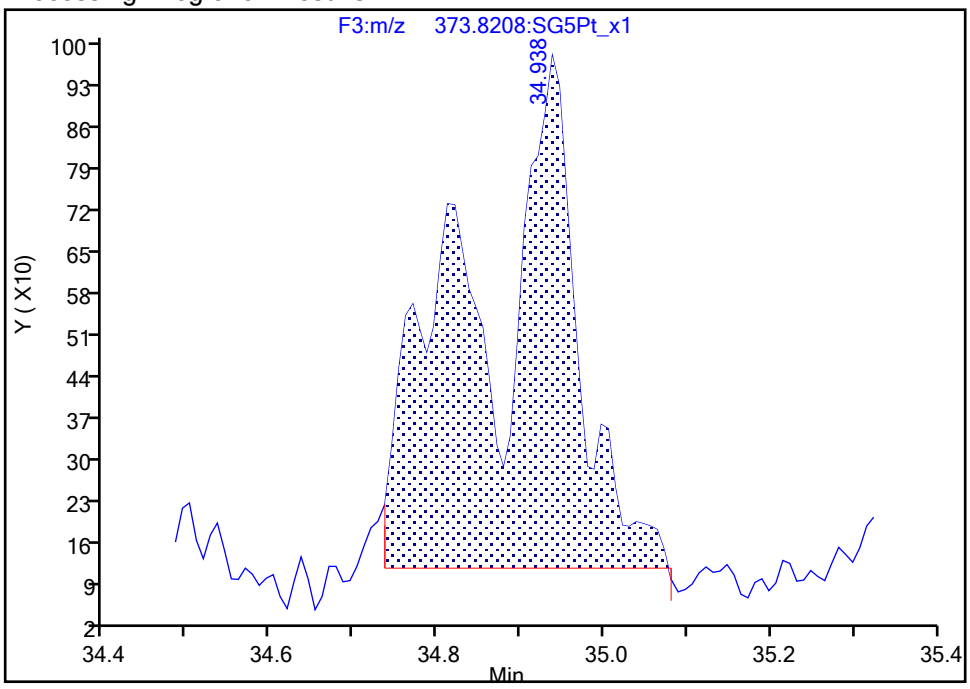
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

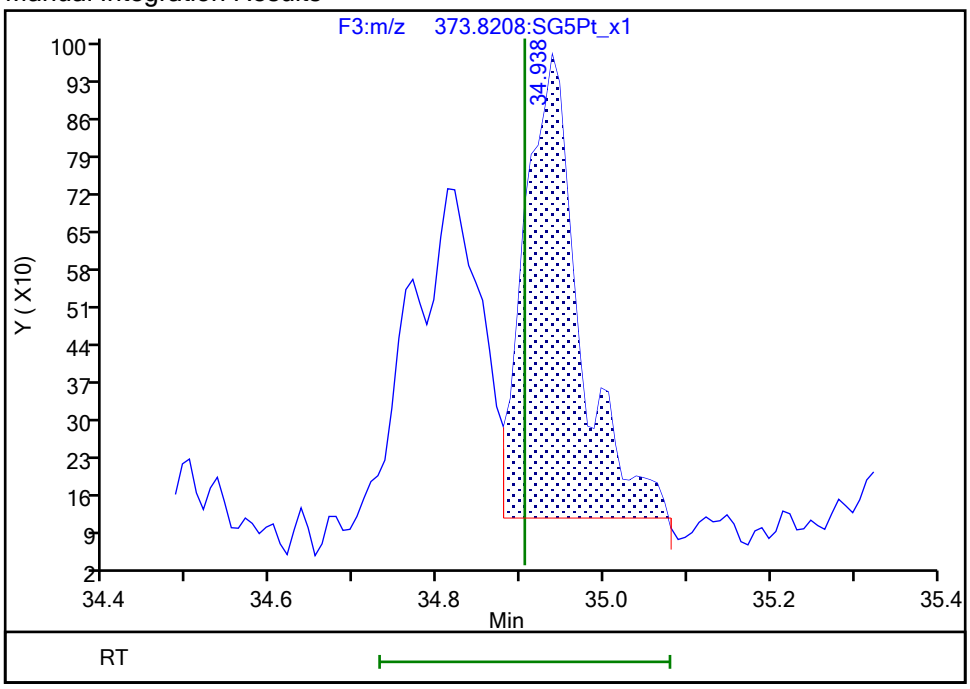
Processing Integration Results

RT: 34.94
Area: 7404
Amount: 0.176434
Amount Units: pg/ul



Manual Integration Results

RT: 34.94
Area: 3959
Amount: 0.125265
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:22:44

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

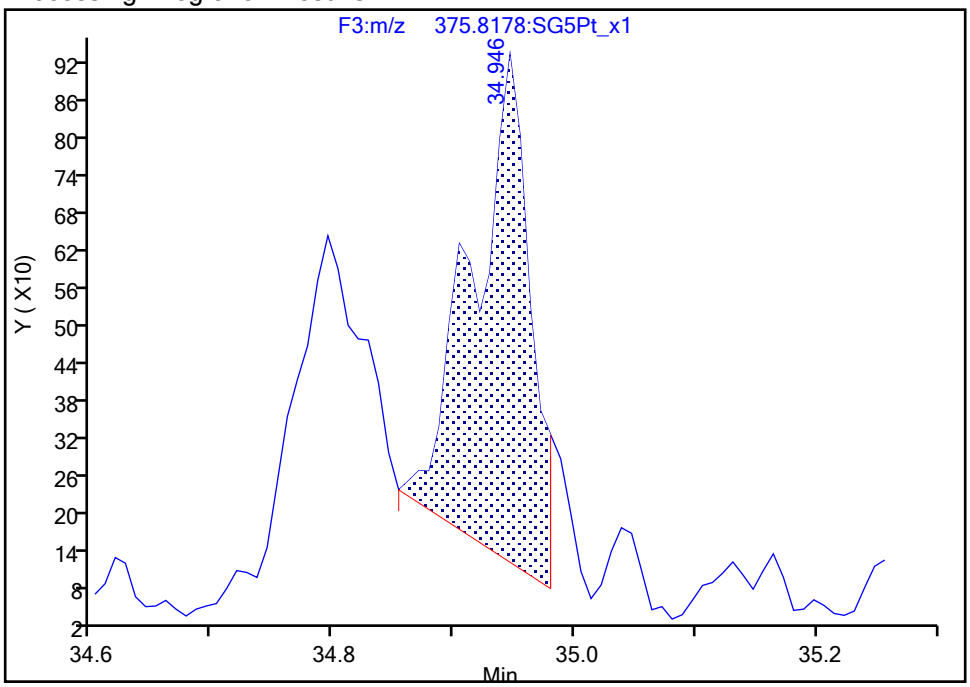
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

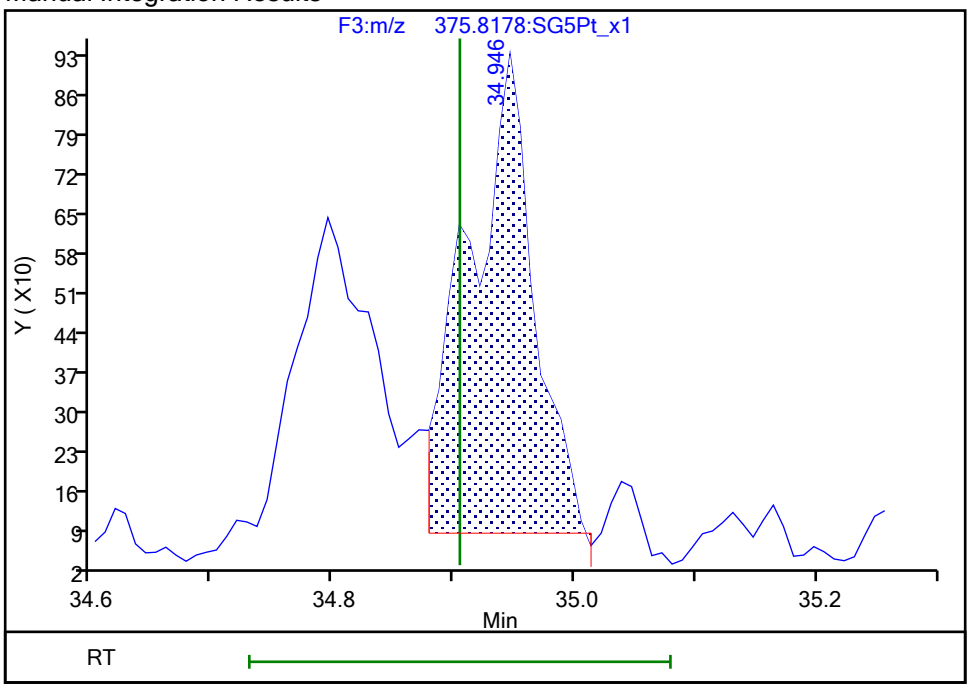
Processing Integration Results

RT: 34.95
Area: 2685
Amount: 0.176434
Amount Units: pg/ul



Manual Integration Results

RT: 34.95
Area: 3204
Amount: 0.125265
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:22:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

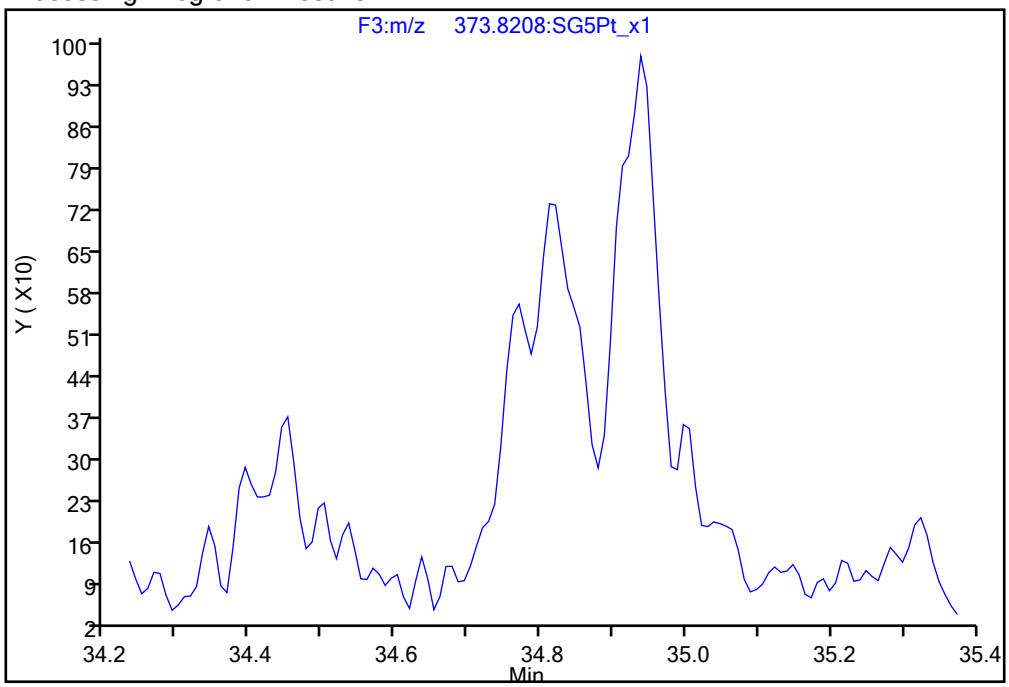
Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (31.44- 36.06)

Signal: 1

Not Detected

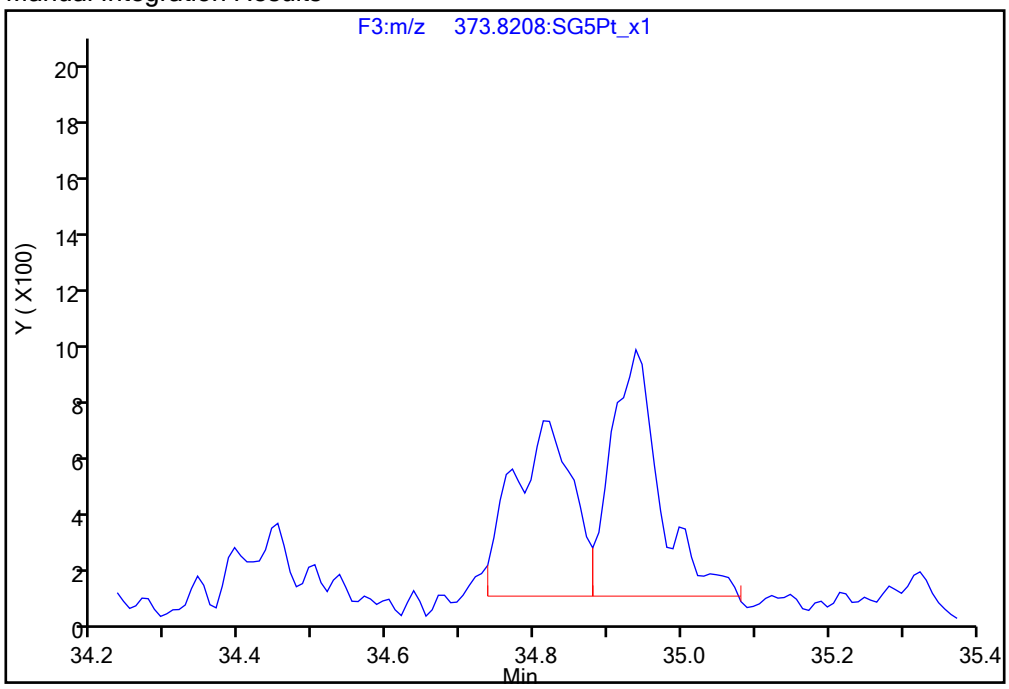
RT: 31.44- 36.06

Processing Integration Results



Manual Integration Results

RT = 34.812 Area = 3445 M



Reviewer: dadunj, 17-Dec-2019 09:23:03

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

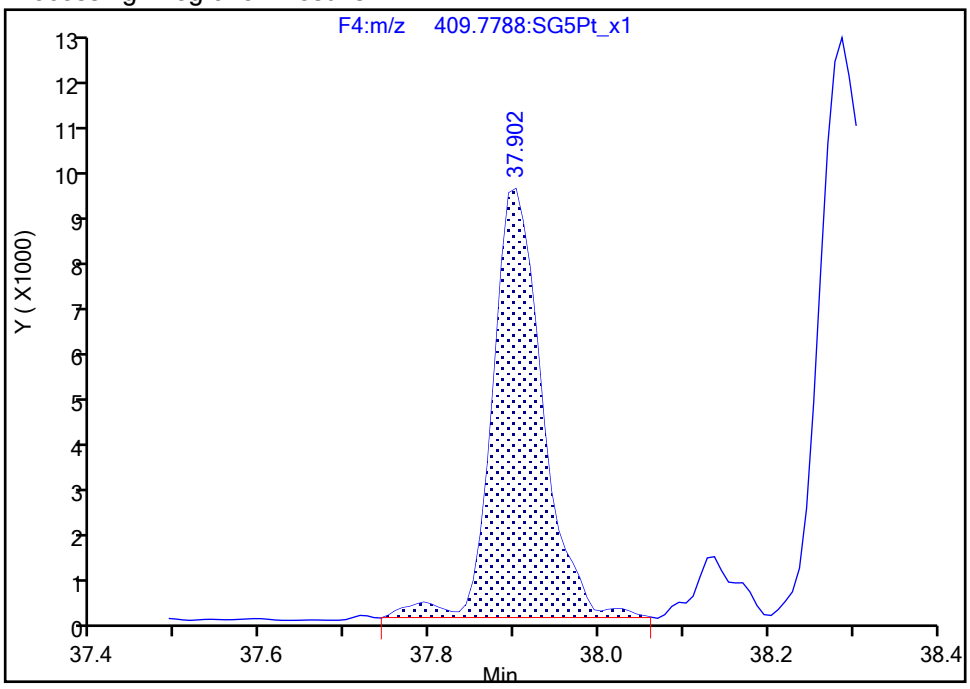
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d				
Injection Date:	13-Dec-2019 17:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-1-A	Lab Sample ID:	320-56911-1		
Client ID:	11187072-120719-SS-SJSSA01 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

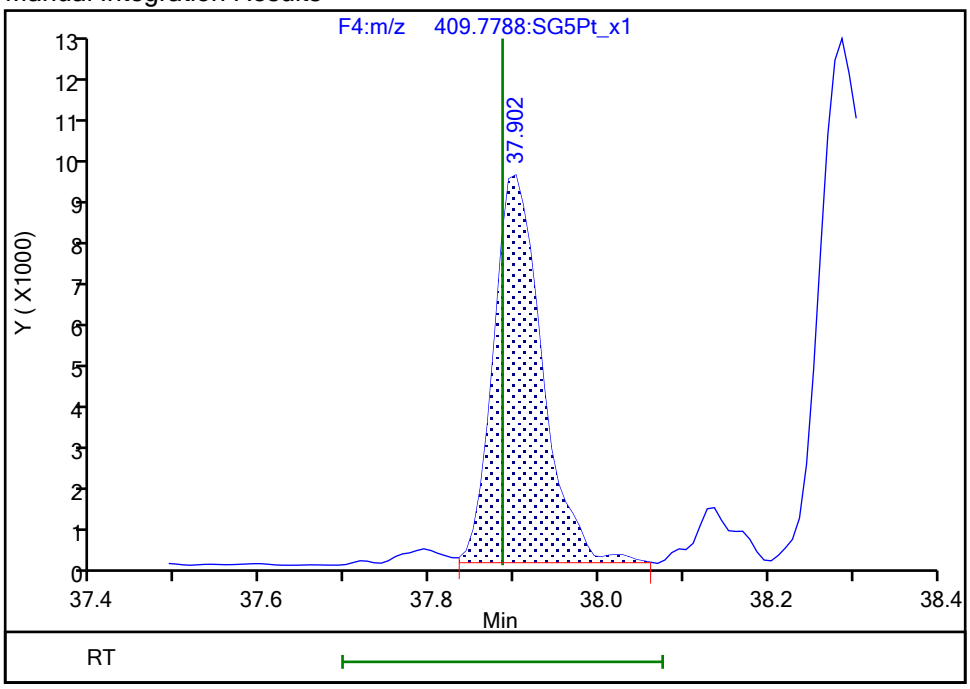
Processing Integration Results

RT: 37.90
Area: 37737
Amount: 1.523940
Amount Units: pg/ul



Manual Integration Results

RT: 37.90
Area: 36683
Amount: 1.503143
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:23:20

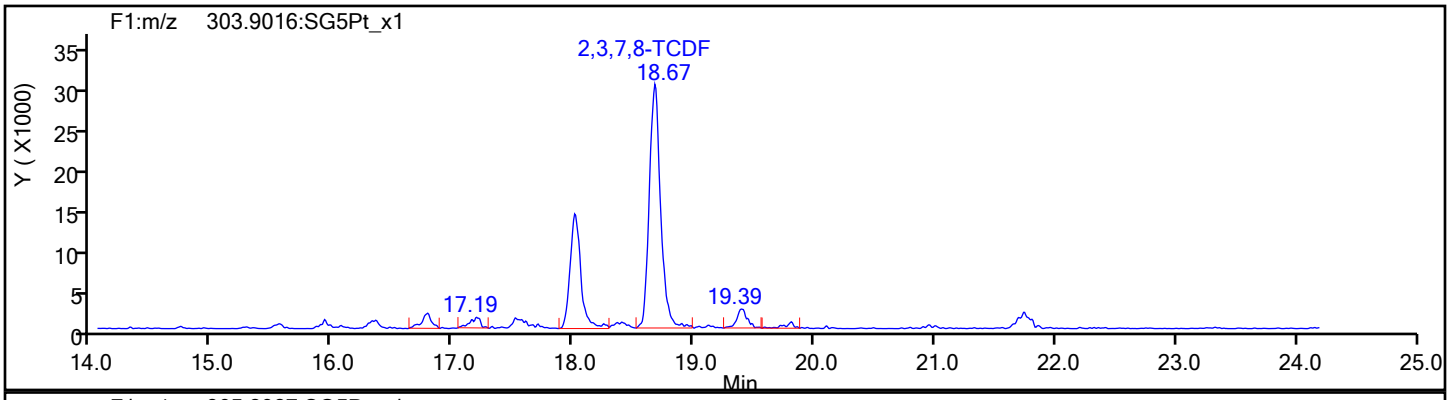
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

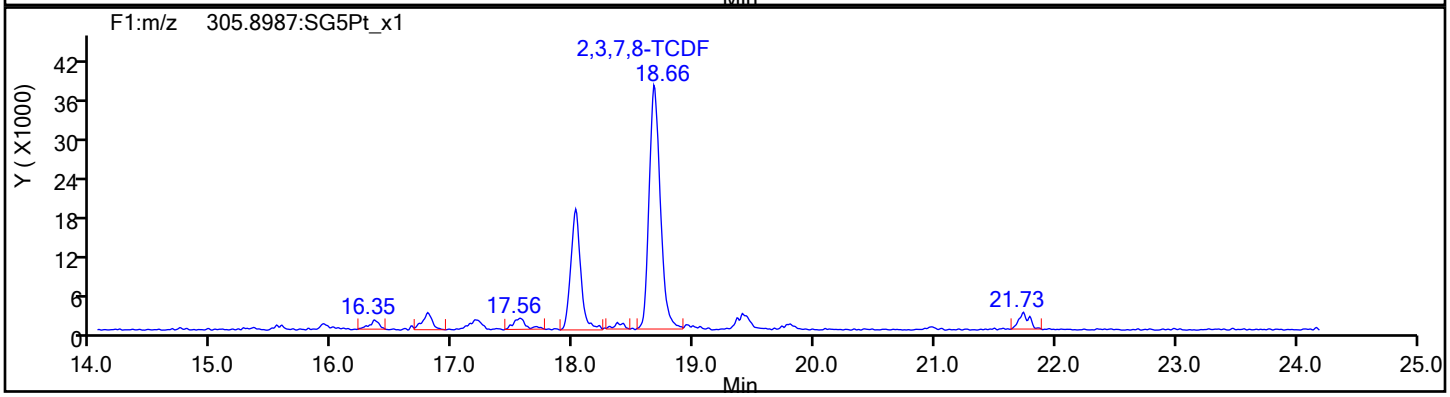
Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

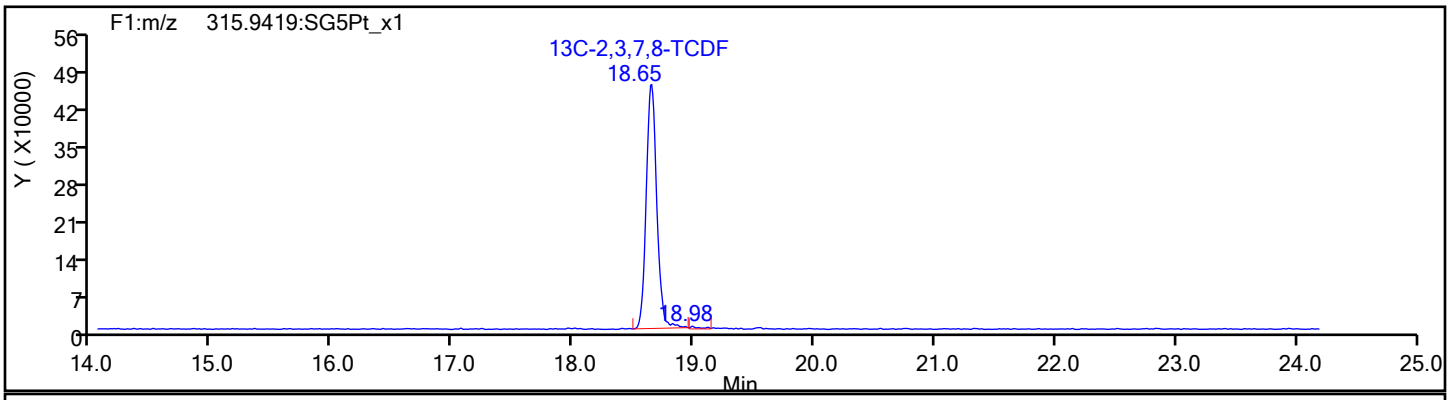
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

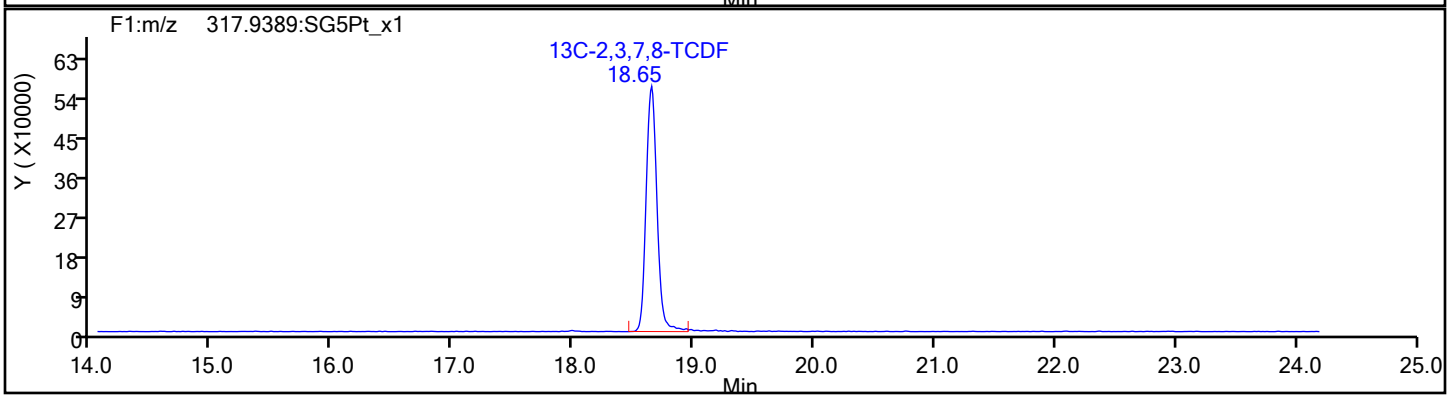
TCDF





TCDF Standards



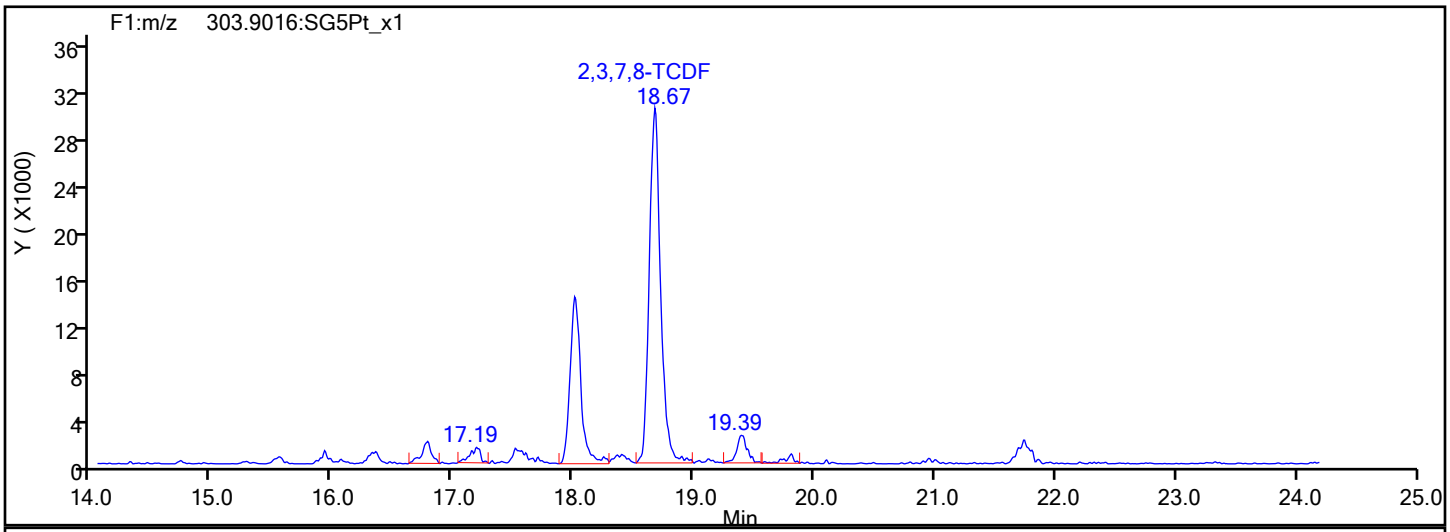


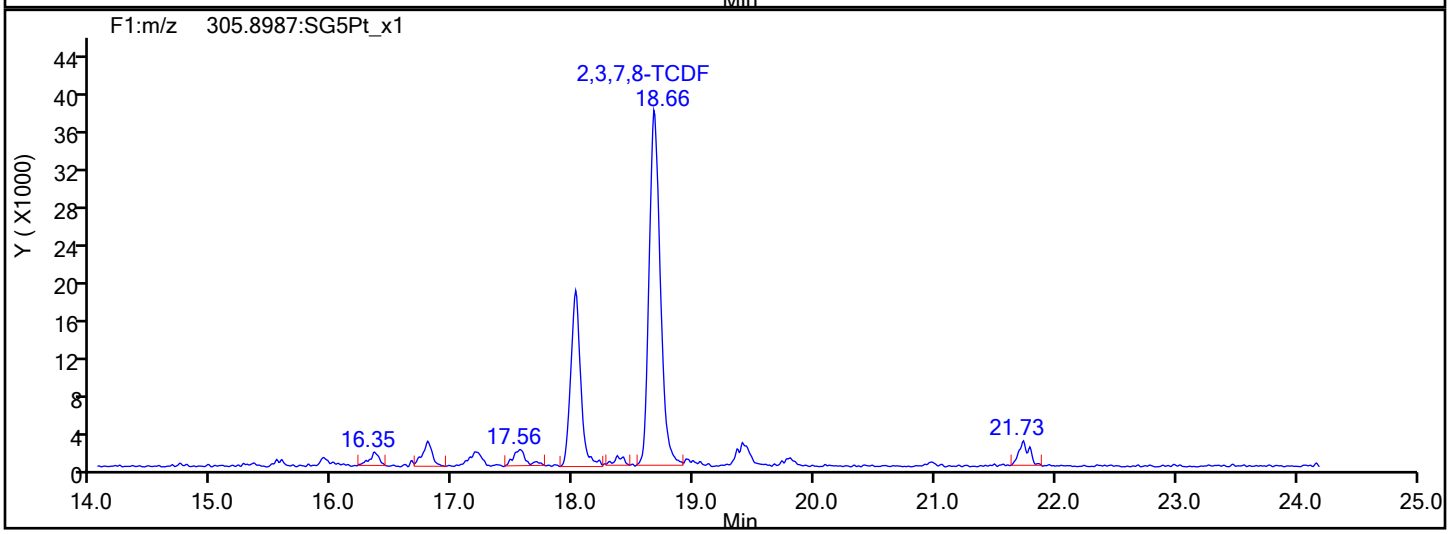
Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

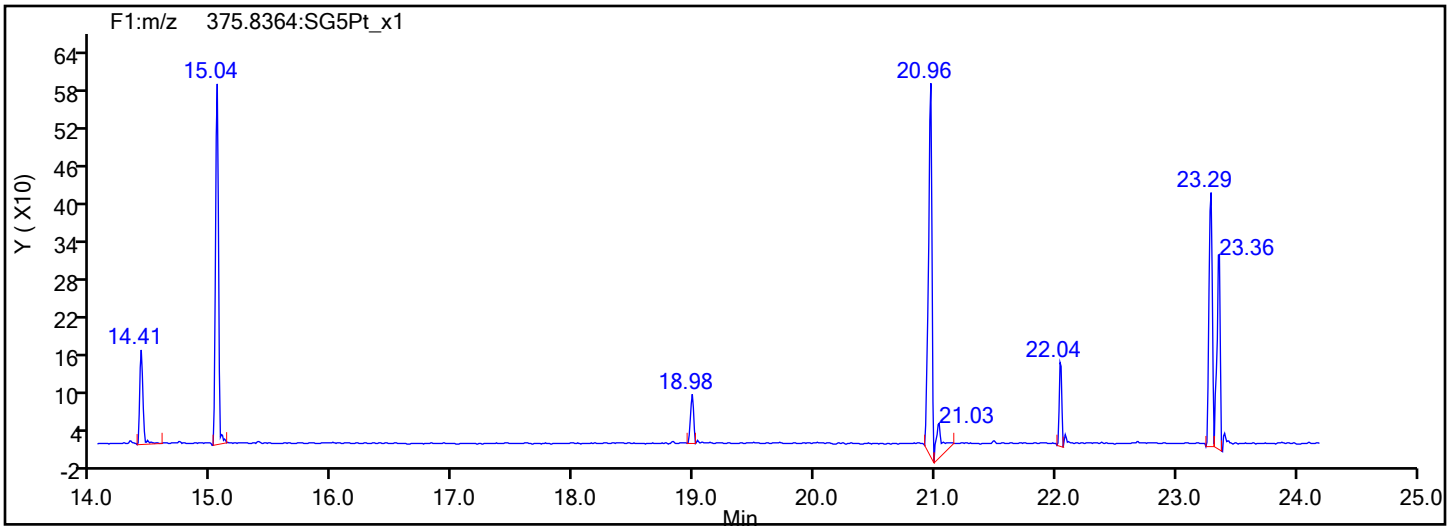
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

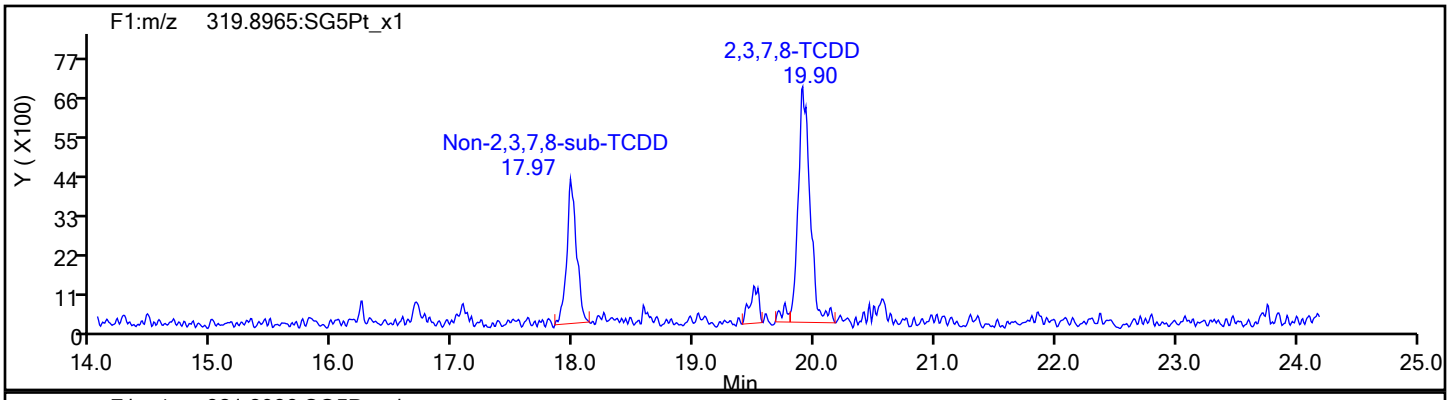


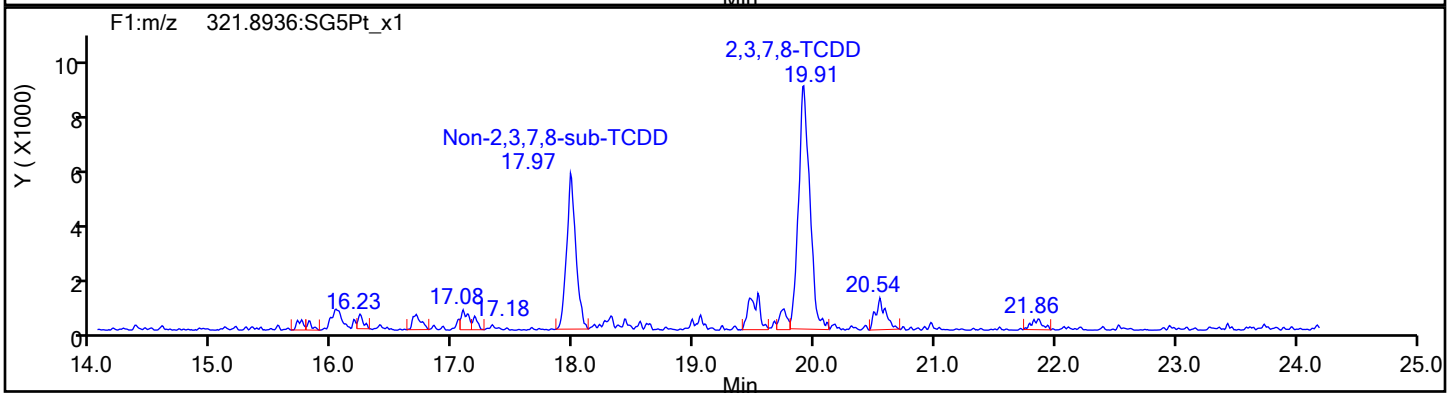
Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

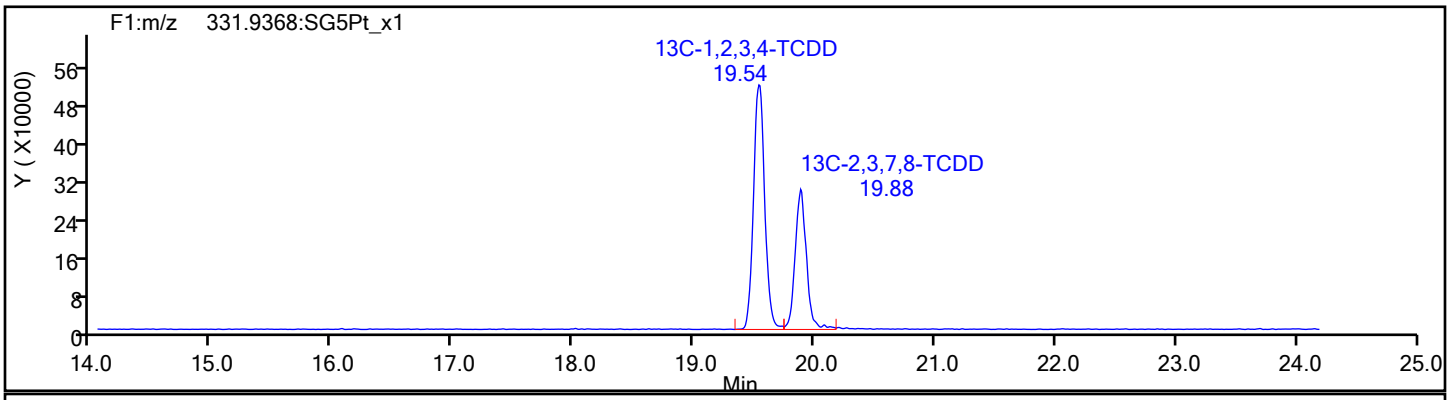
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

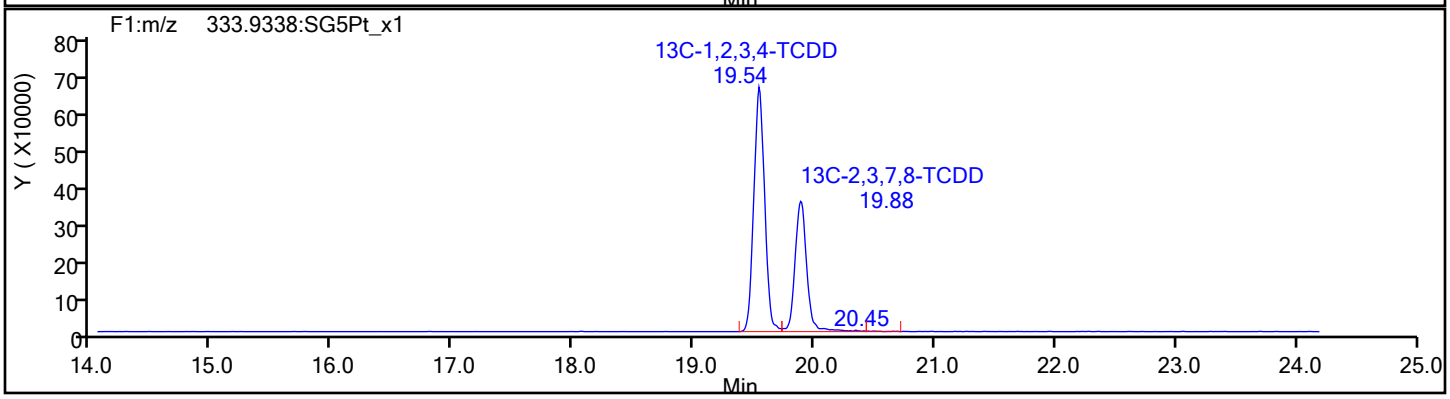
TCDD





TCDD Standards



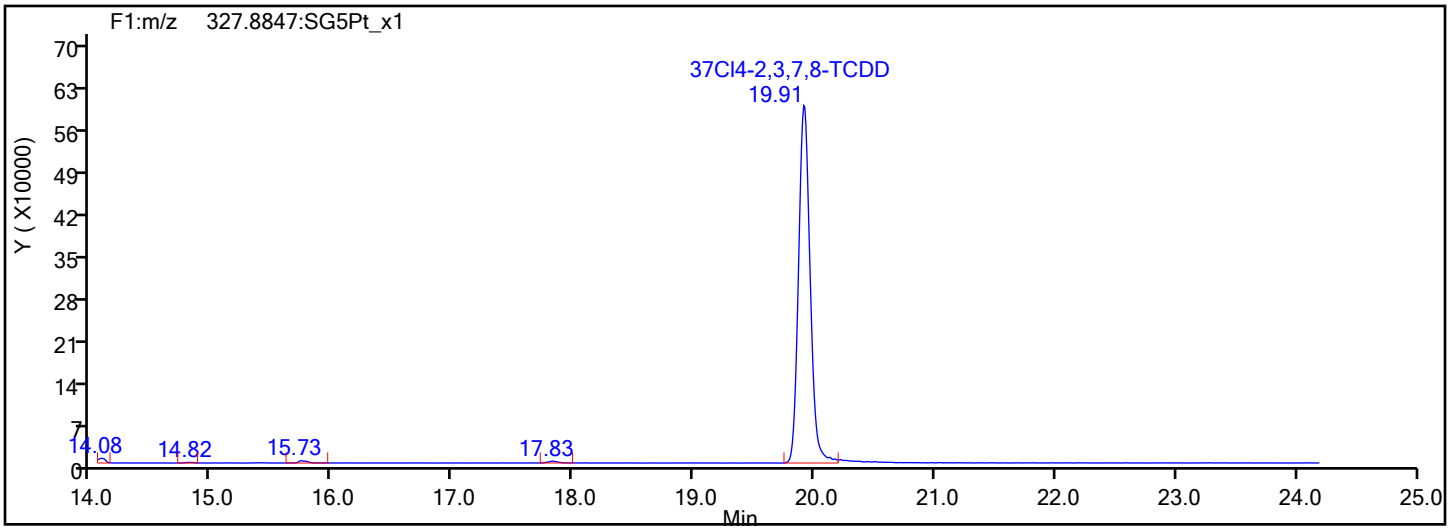


Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

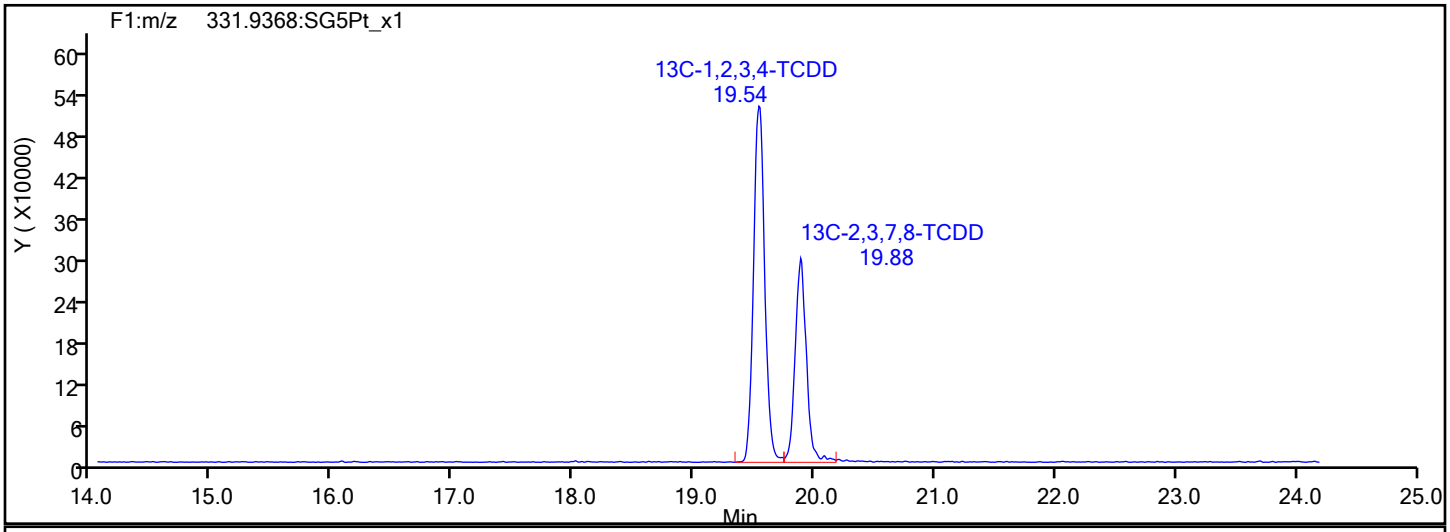
Eurofins TestAmerica, Sacramento

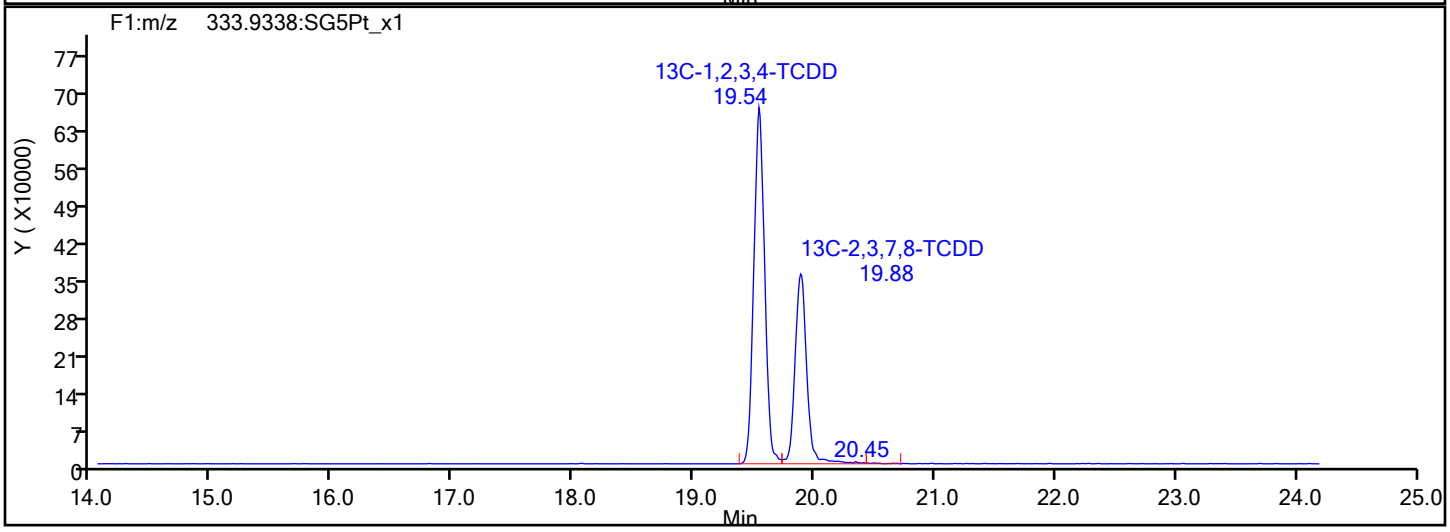
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



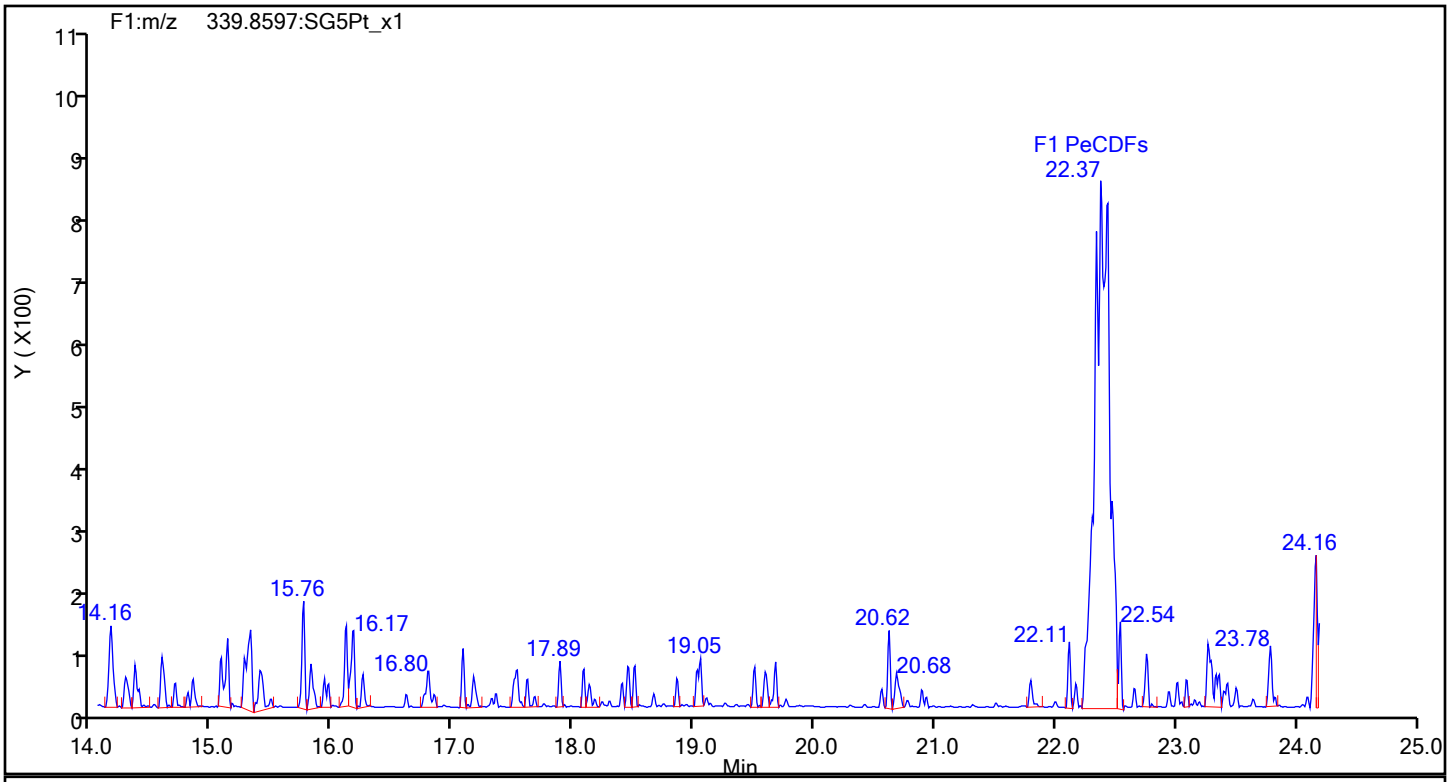


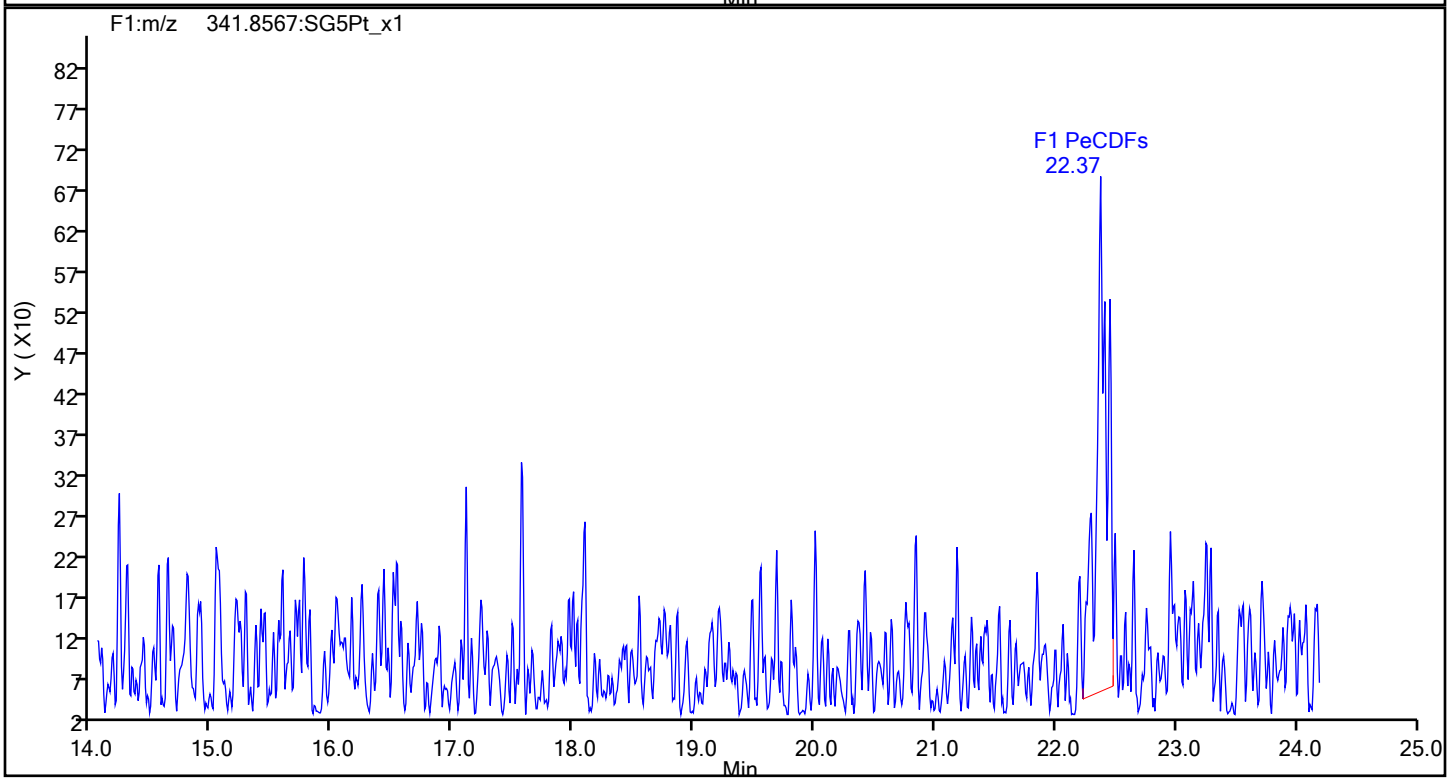
Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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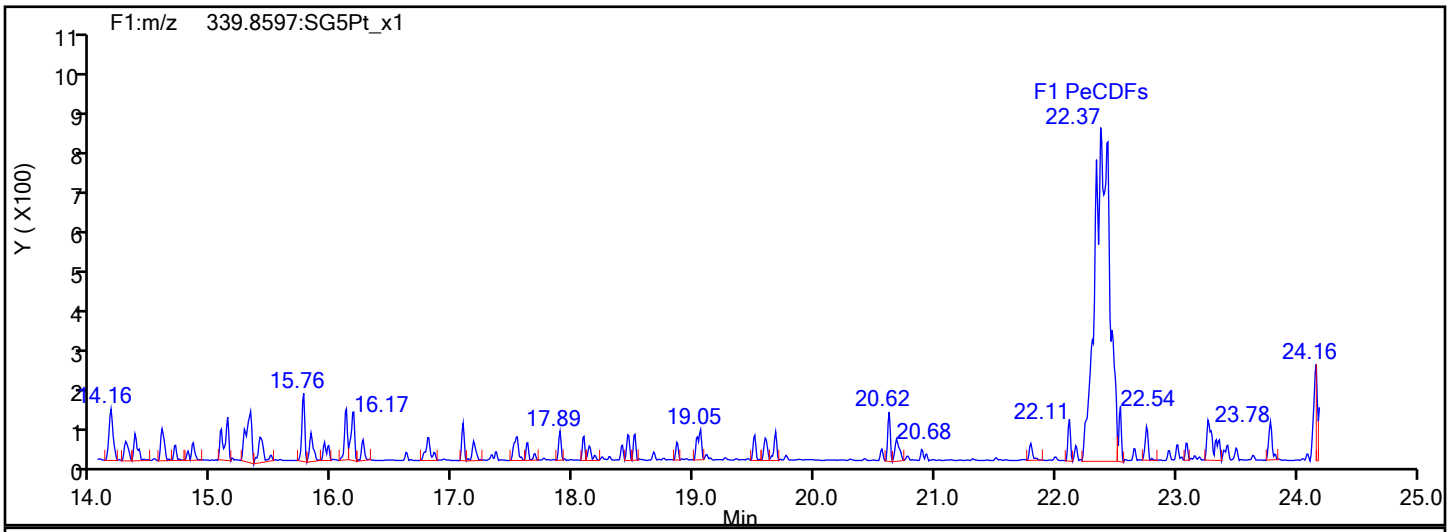
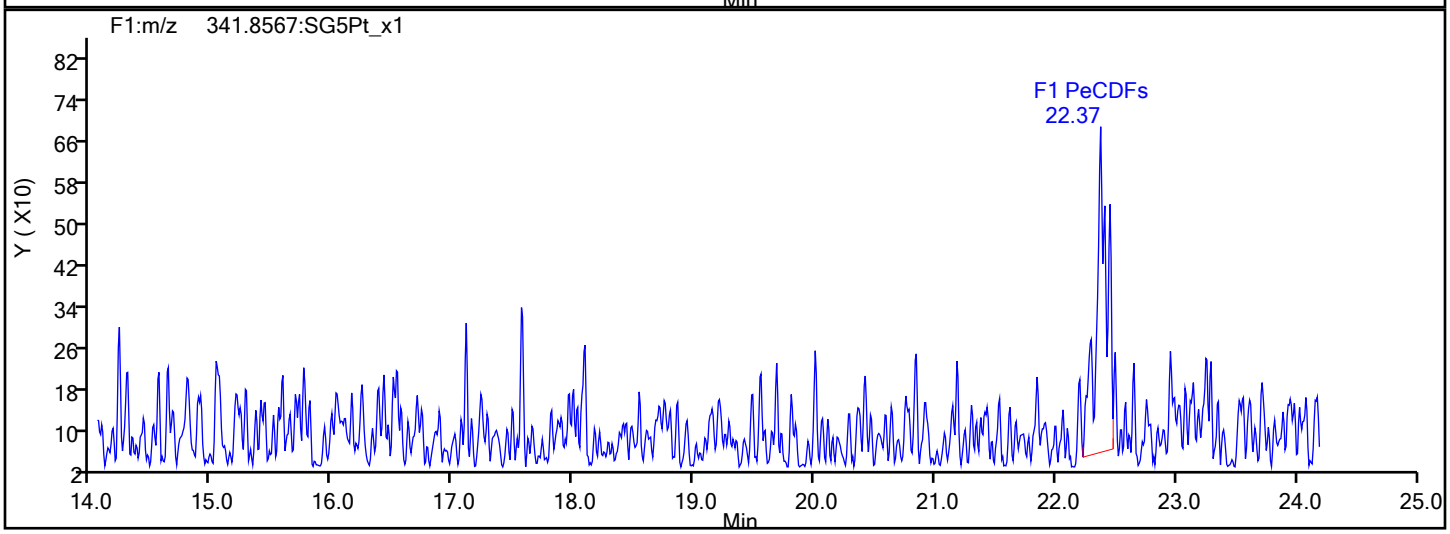
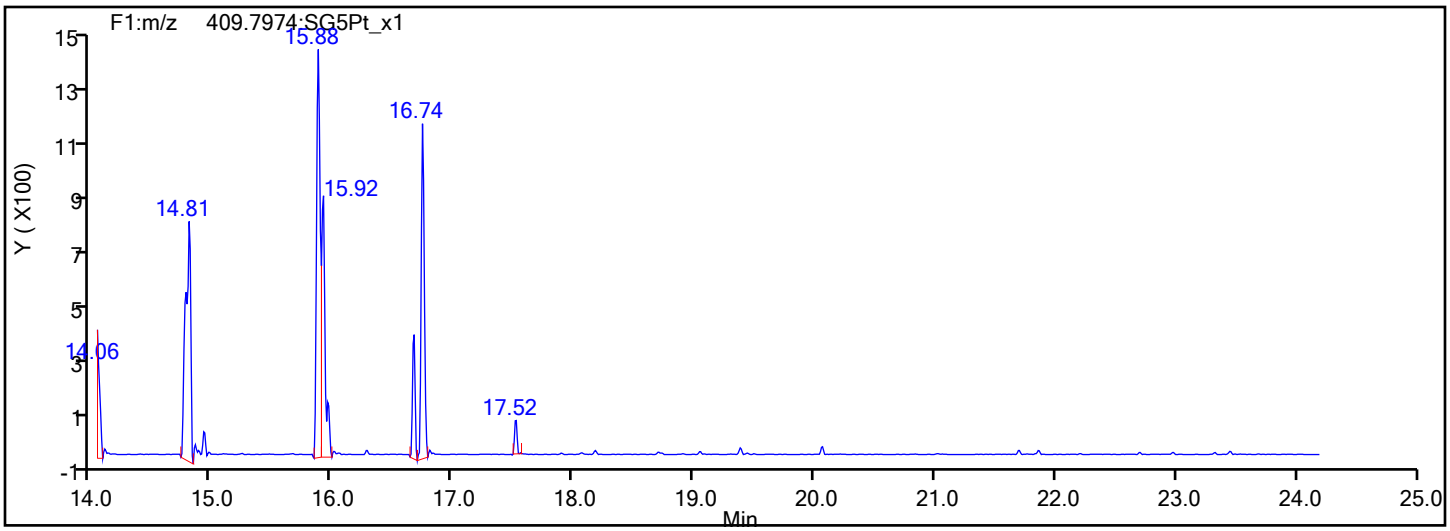
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
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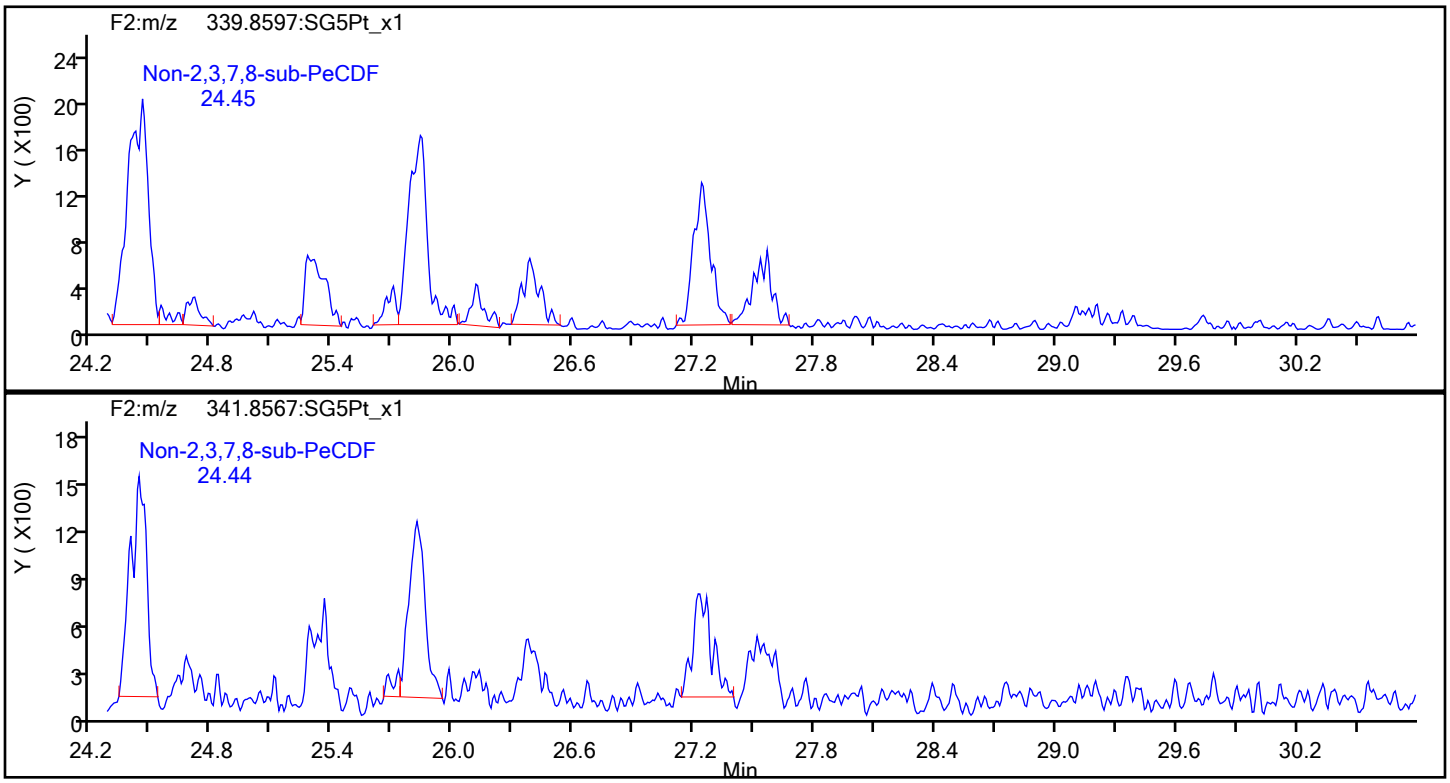
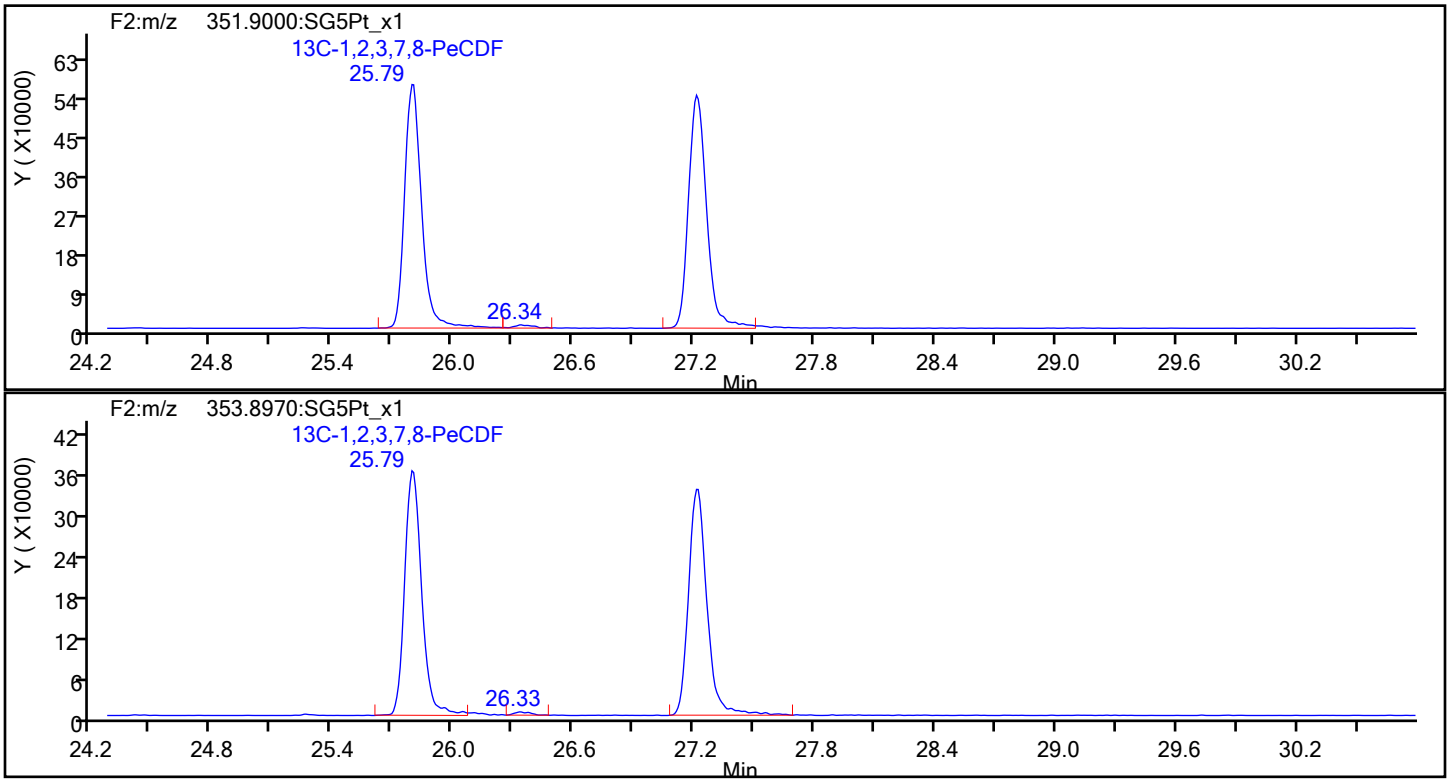


PeCDF Standards



Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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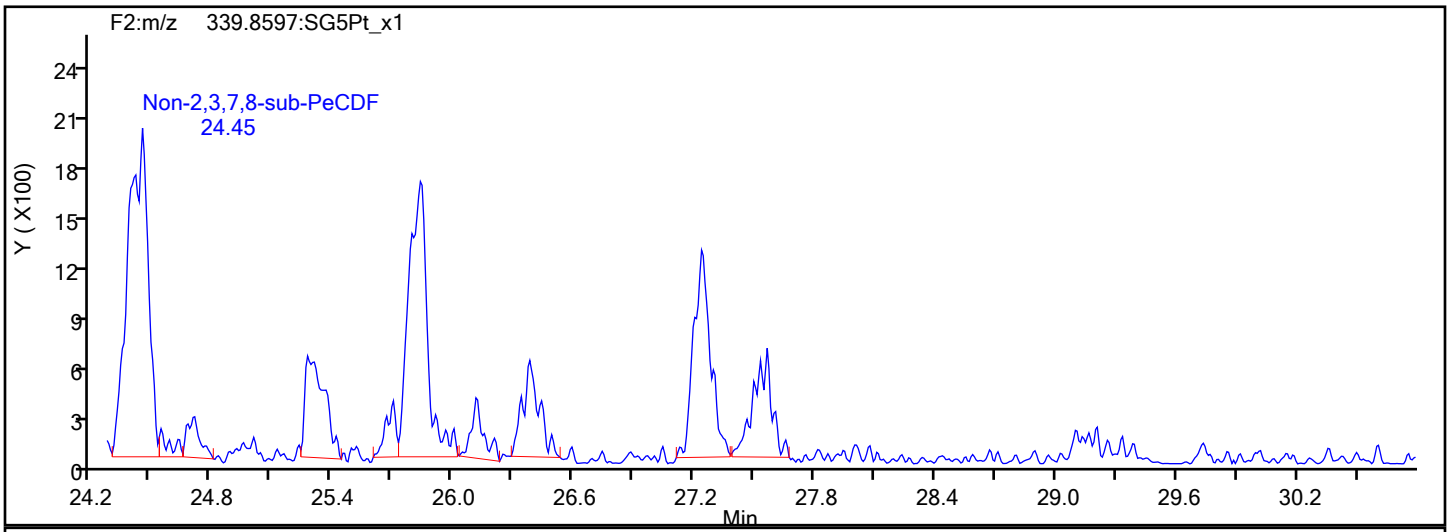
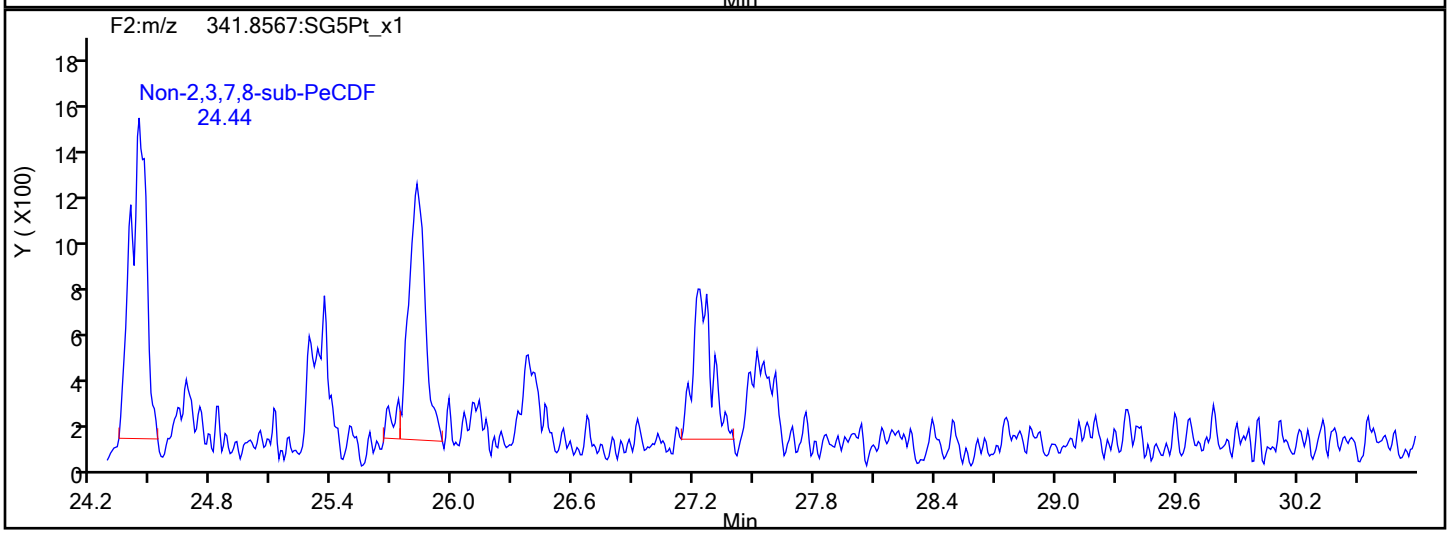
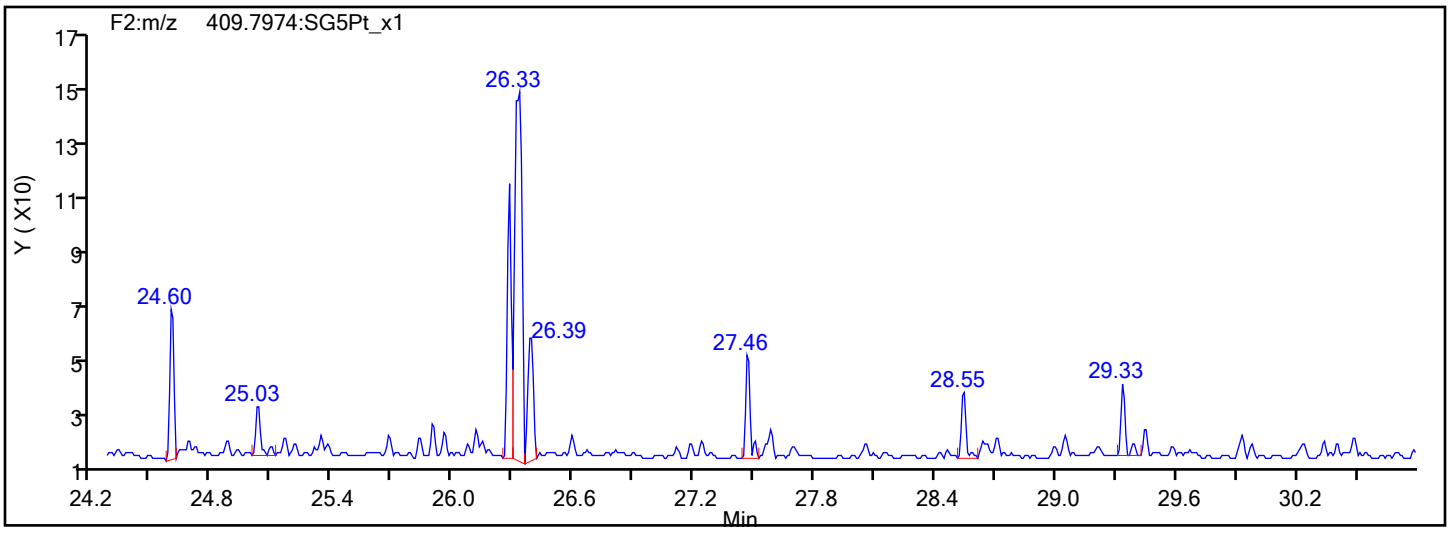




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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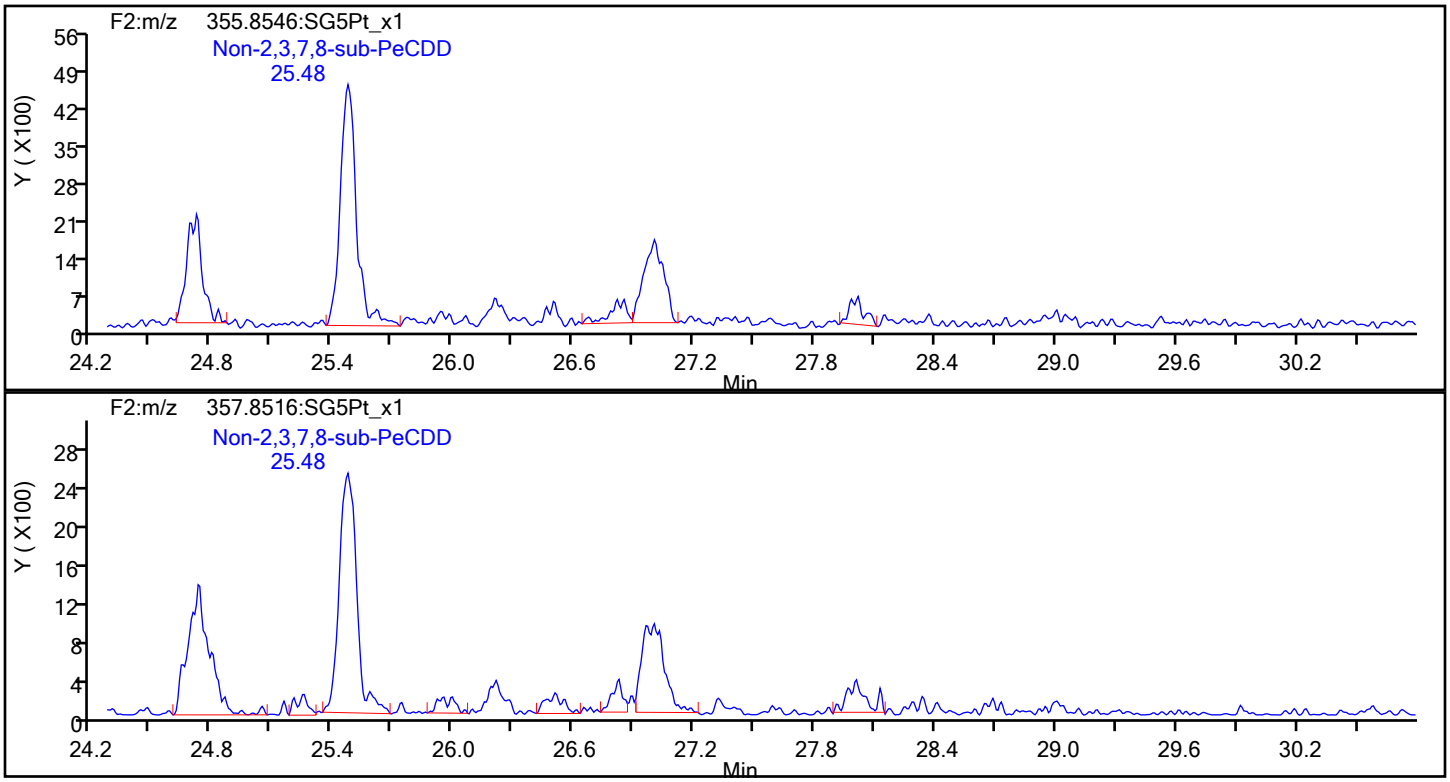

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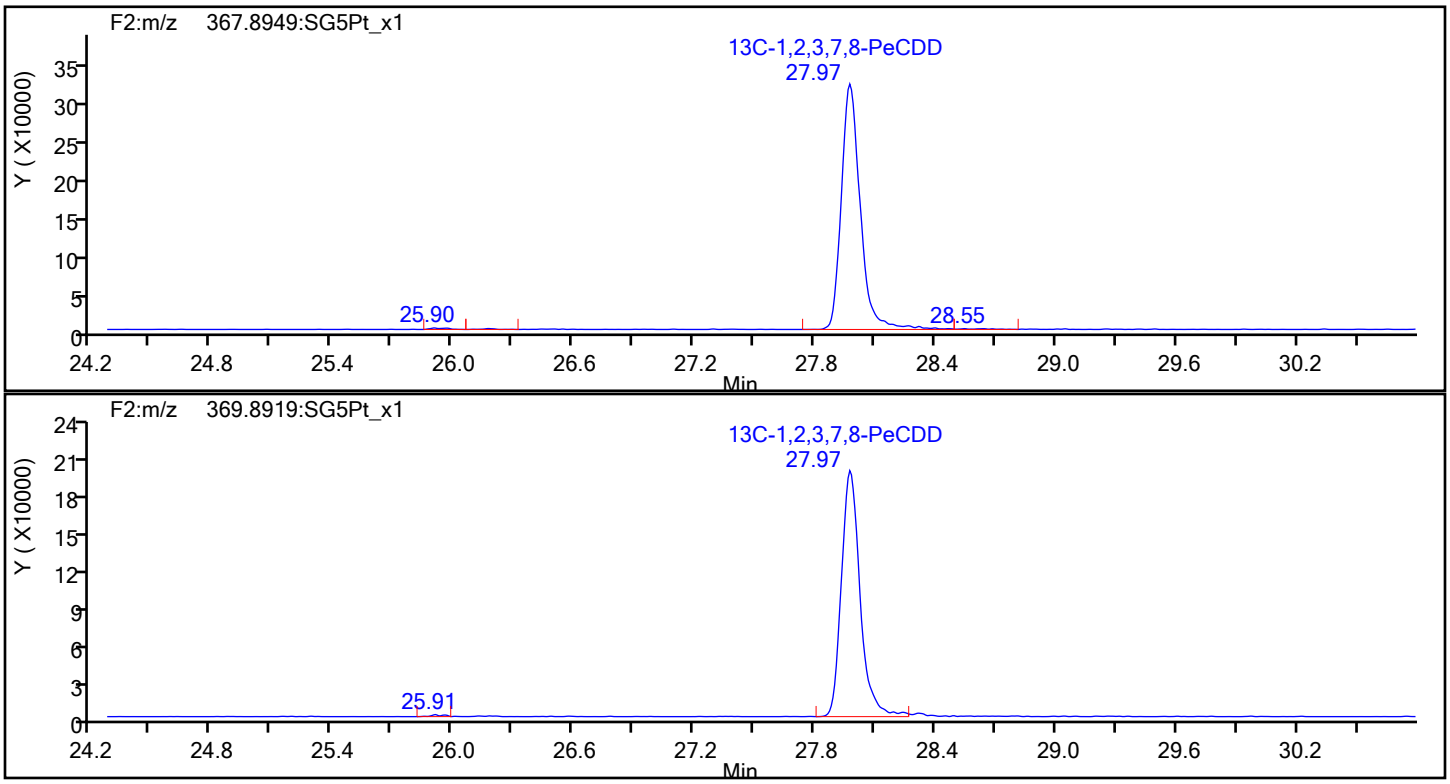

Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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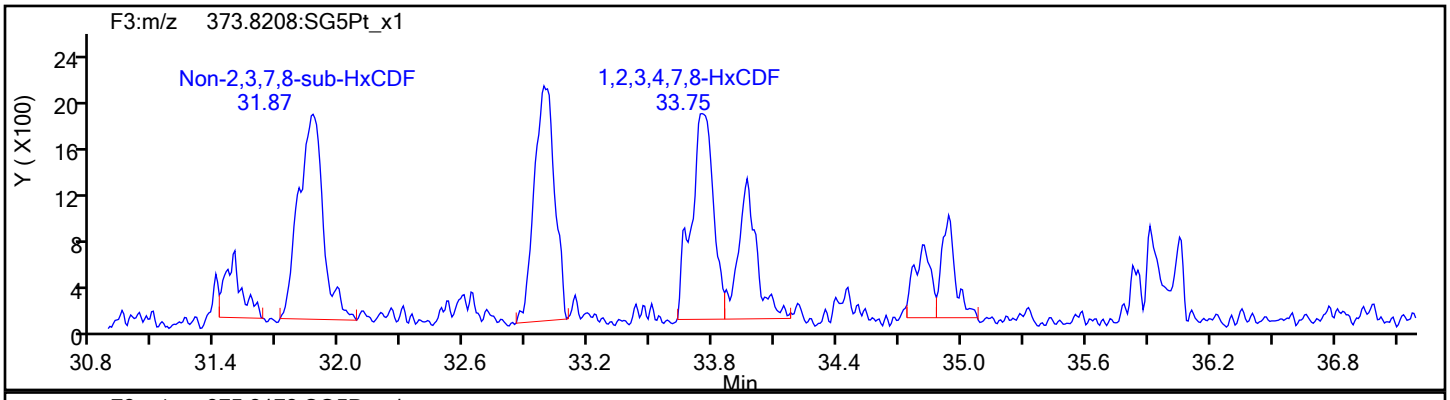
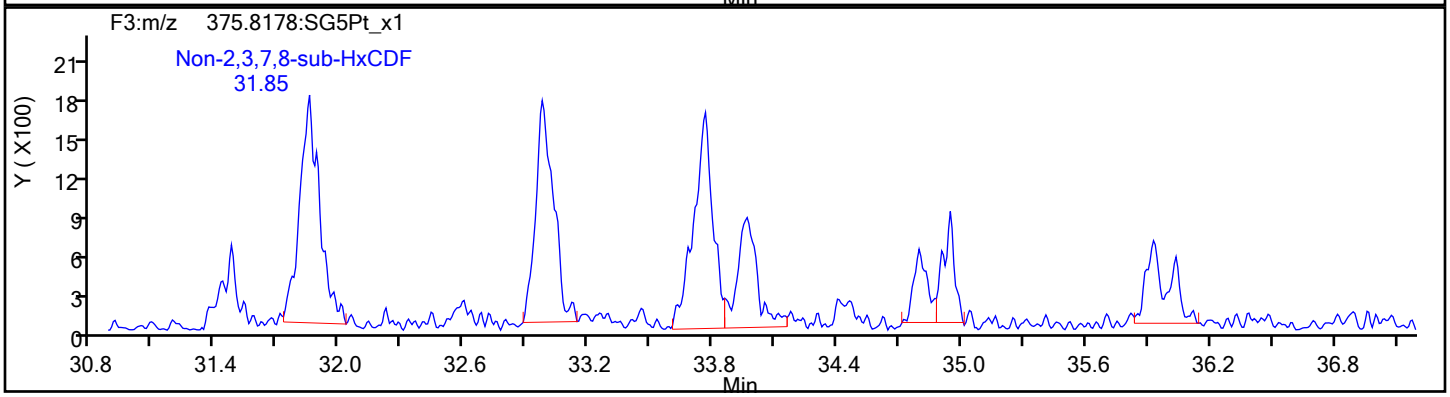
HxCDF





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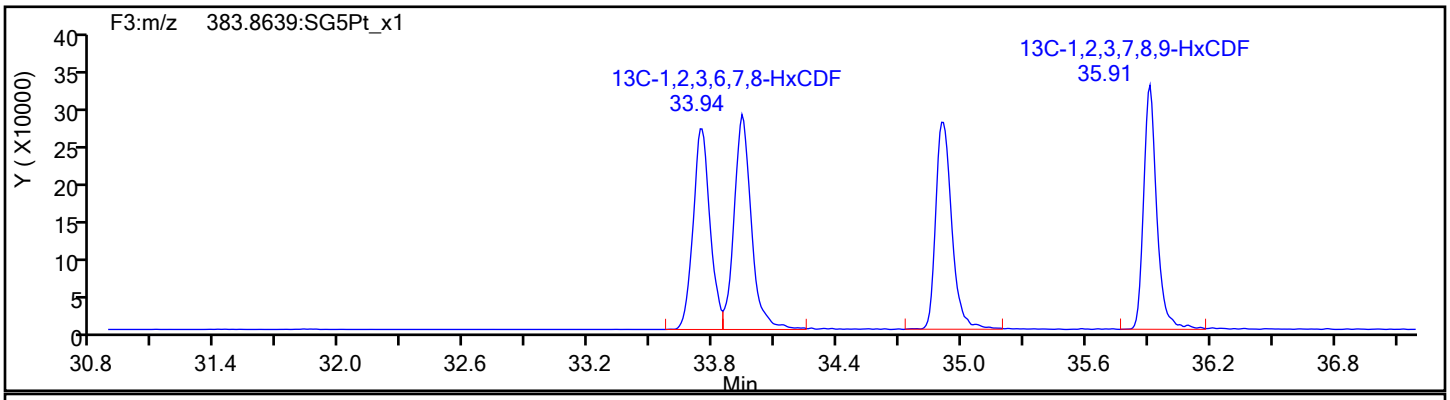

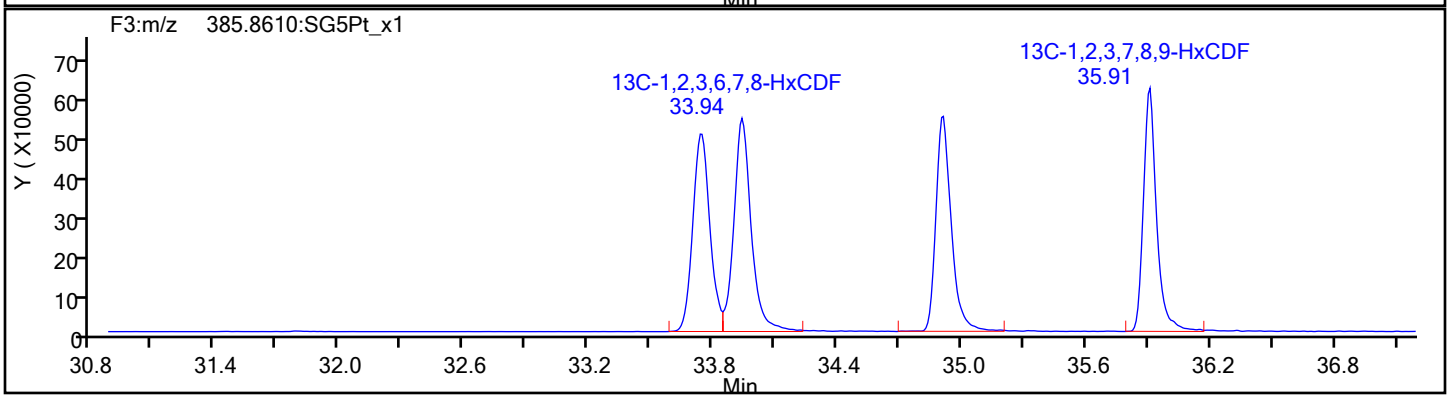

Report Date: 17-Dec-2019 09:24:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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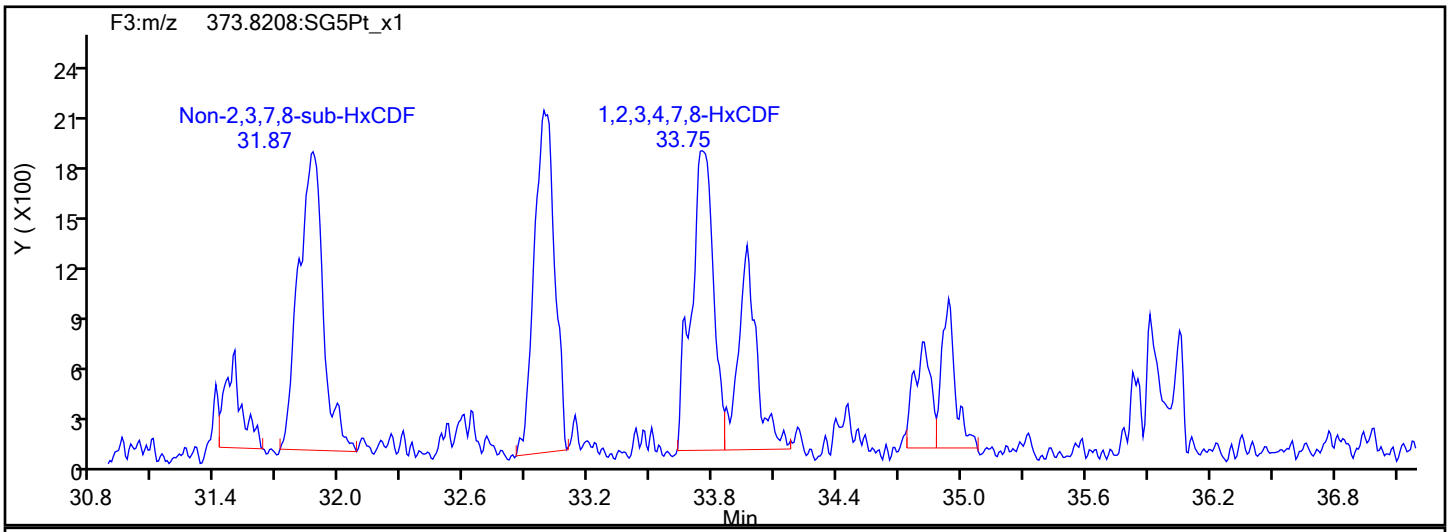
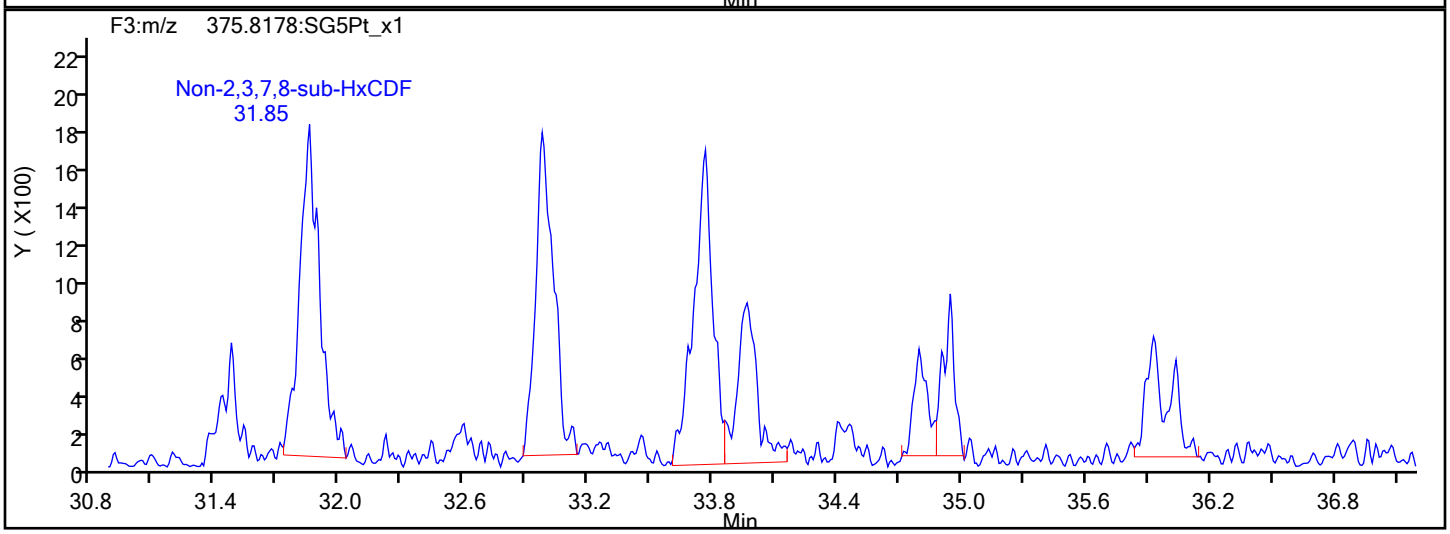
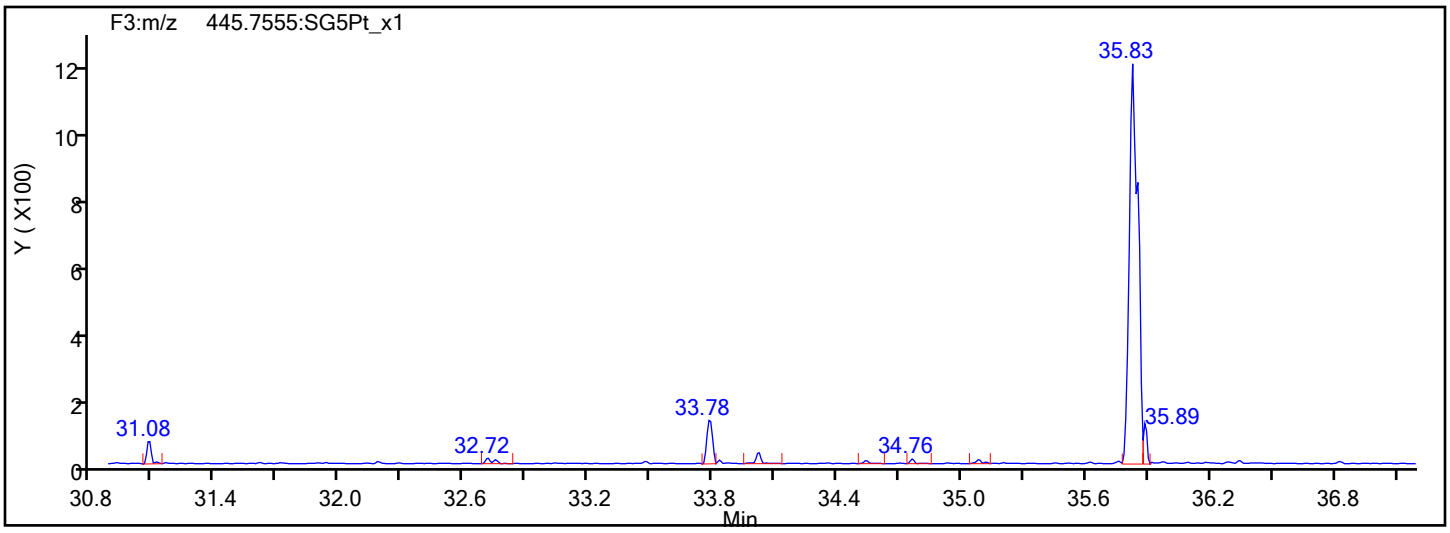




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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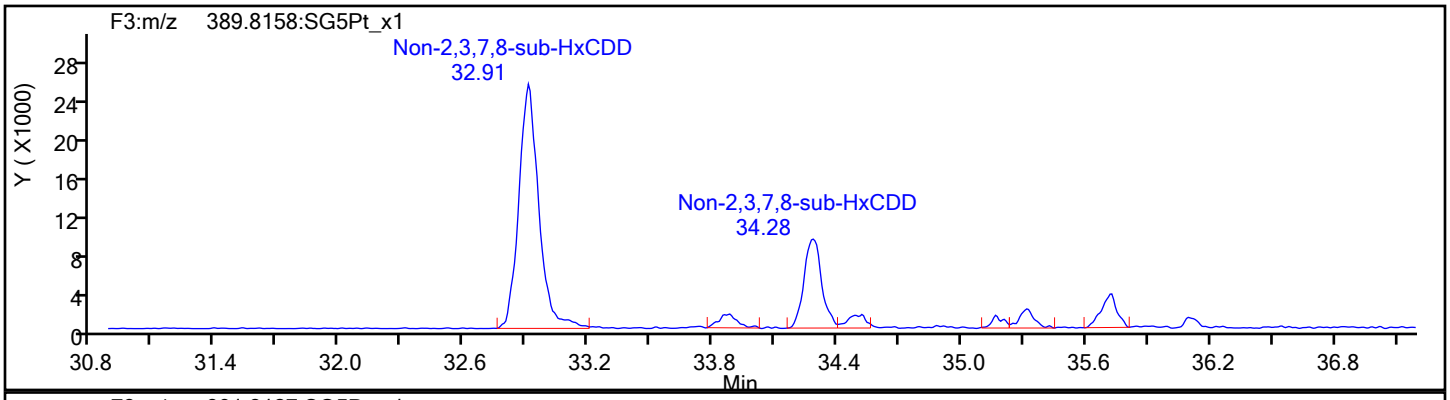
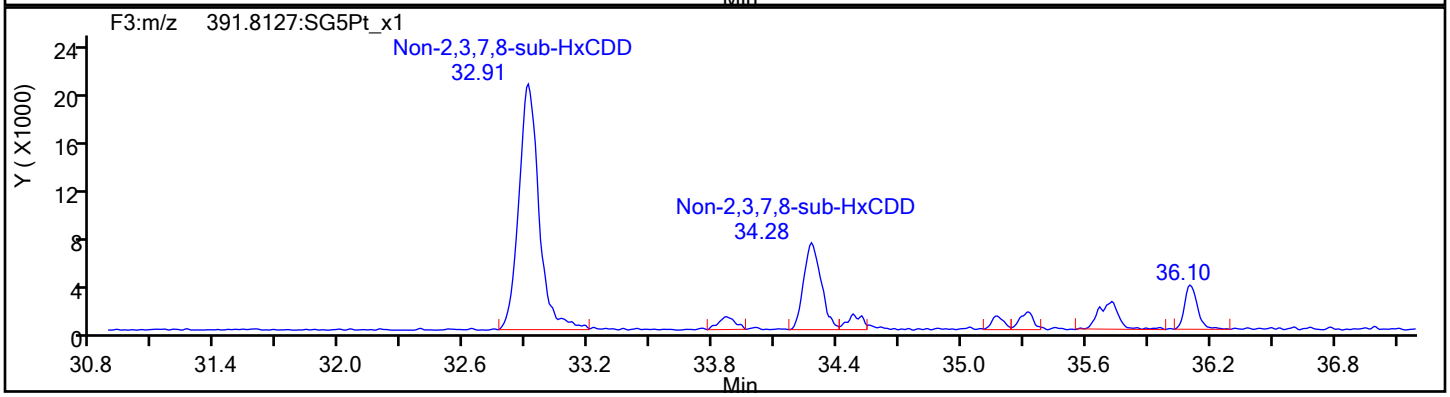
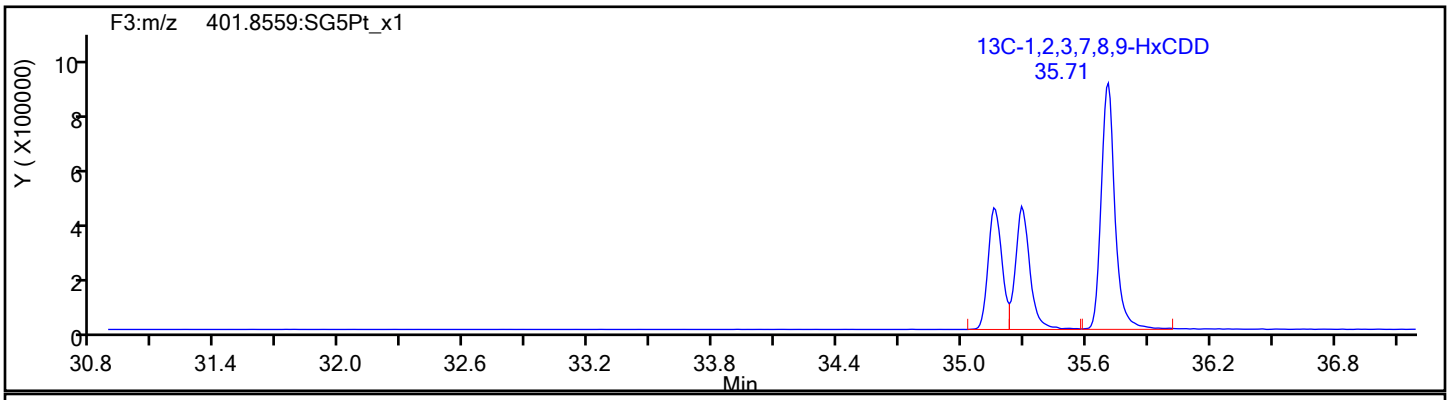
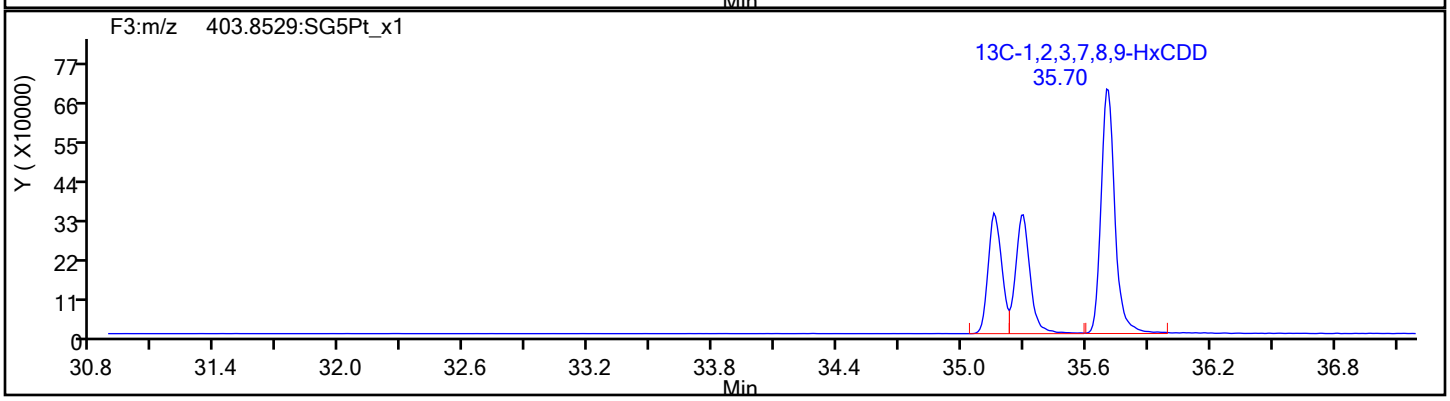




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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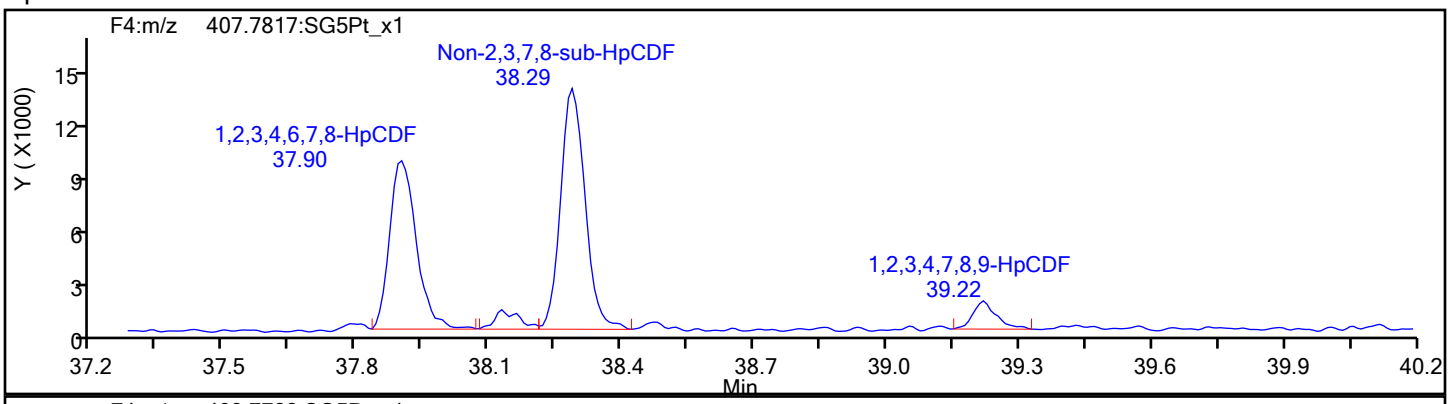
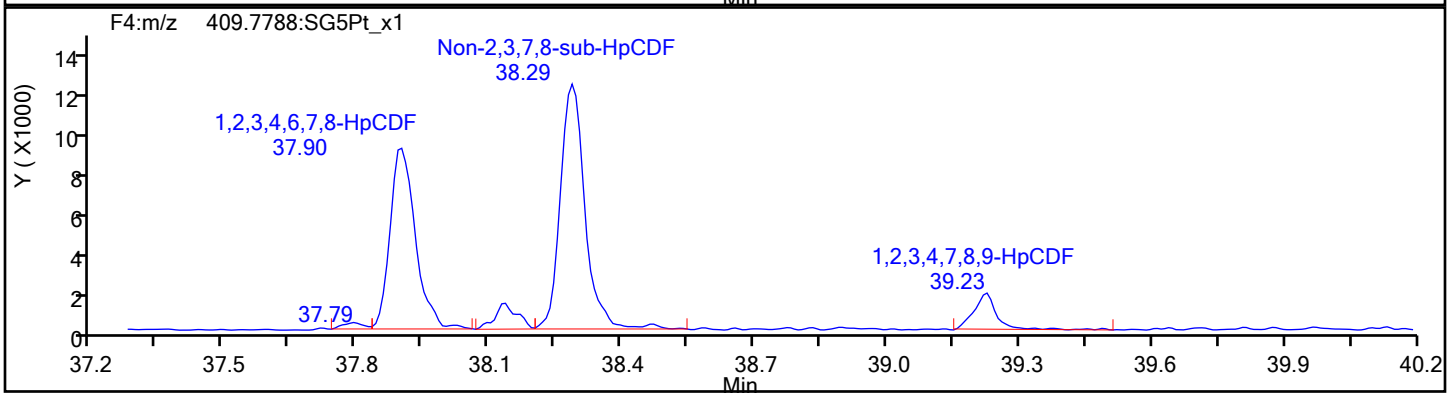
HpCDF





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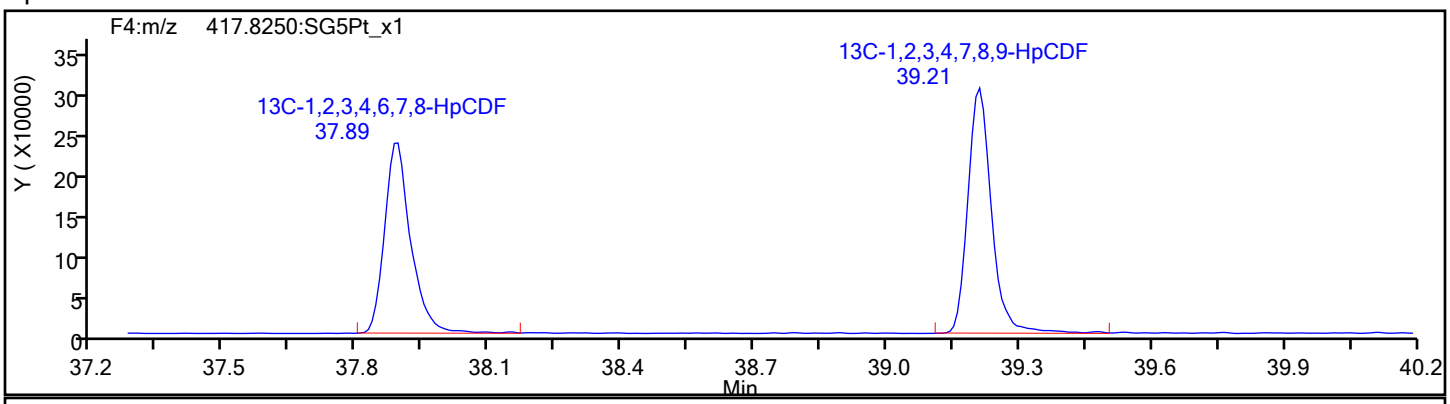

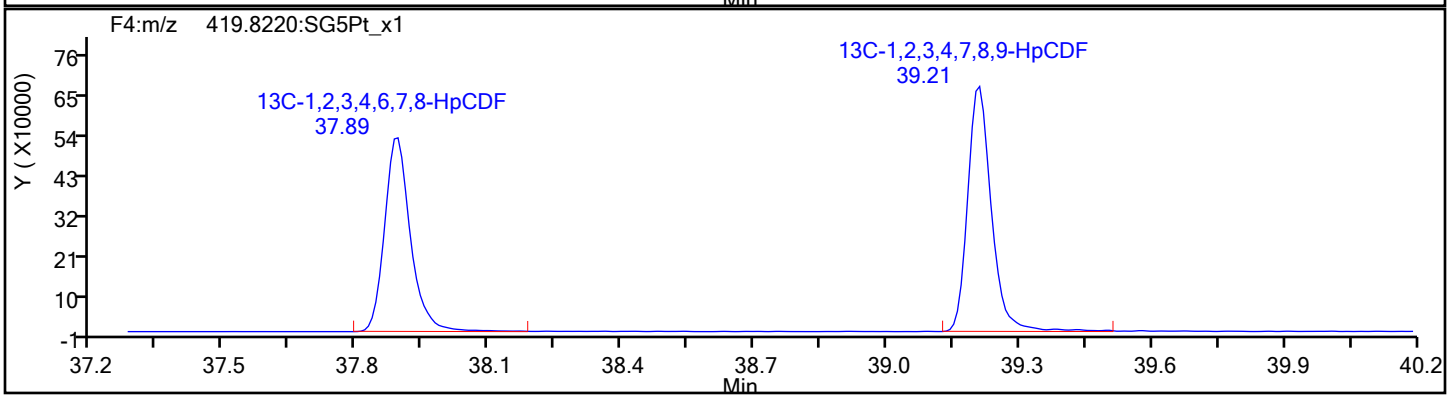

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Eurofins TestAmerica, Sacramento

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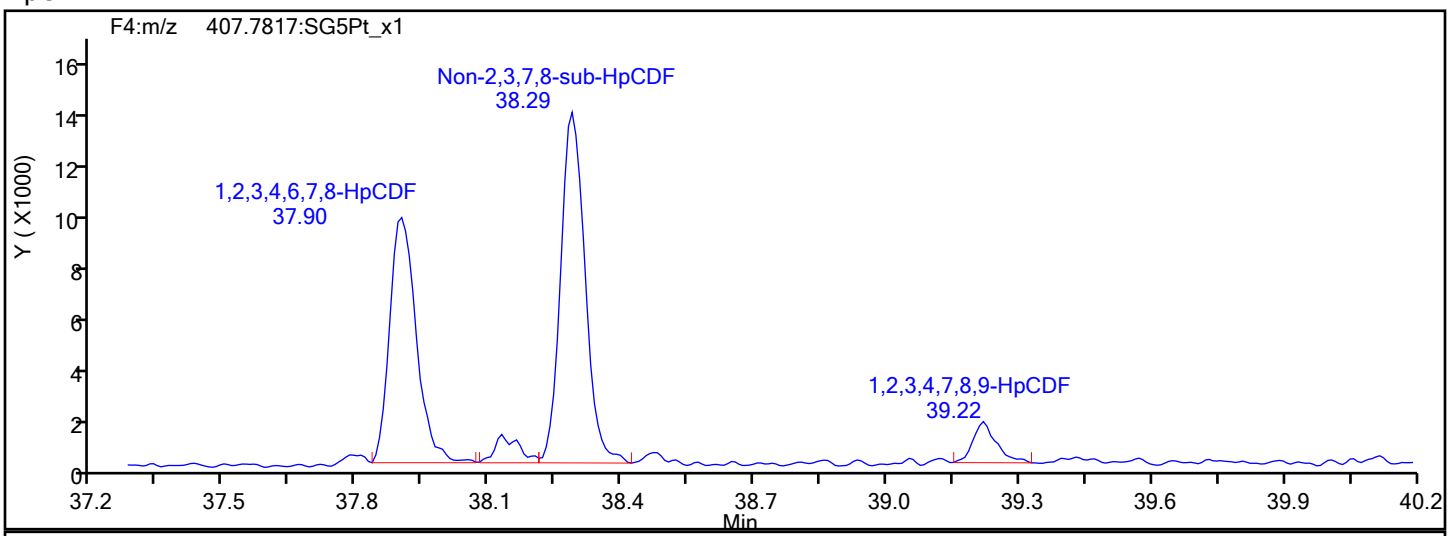
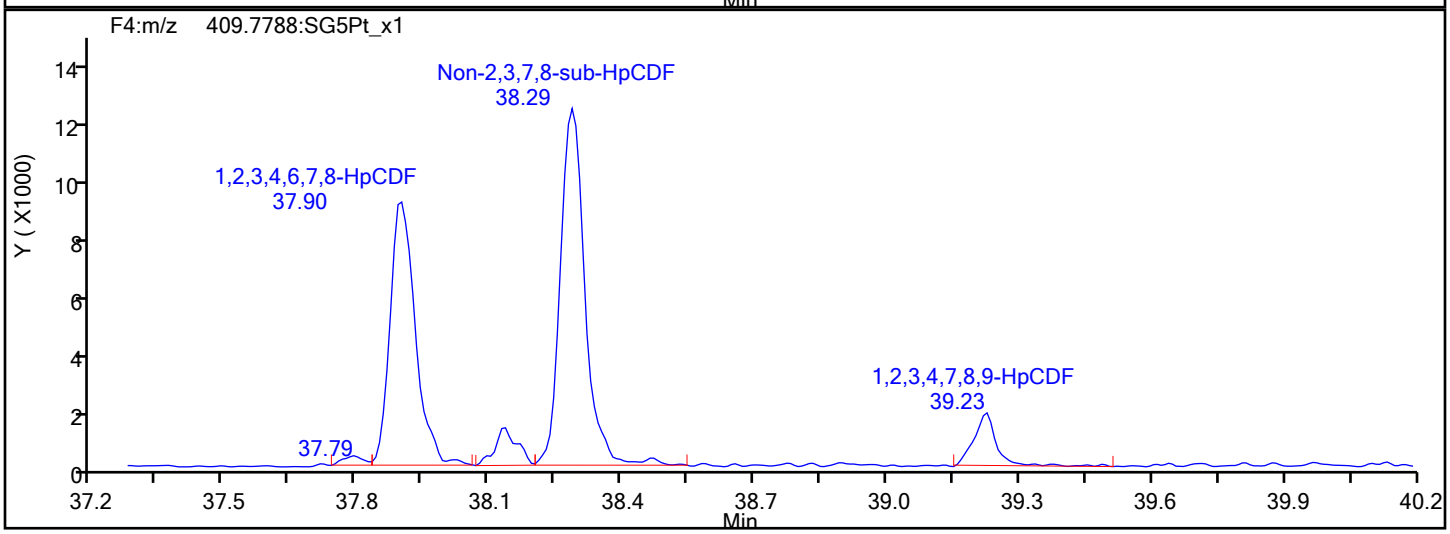
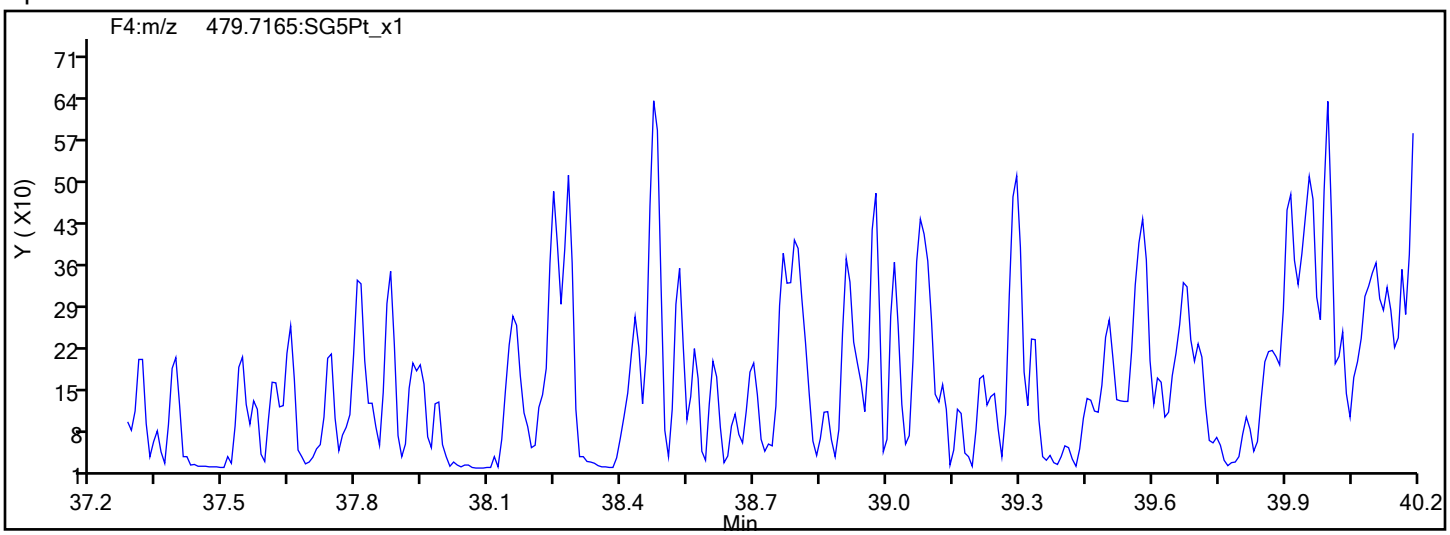




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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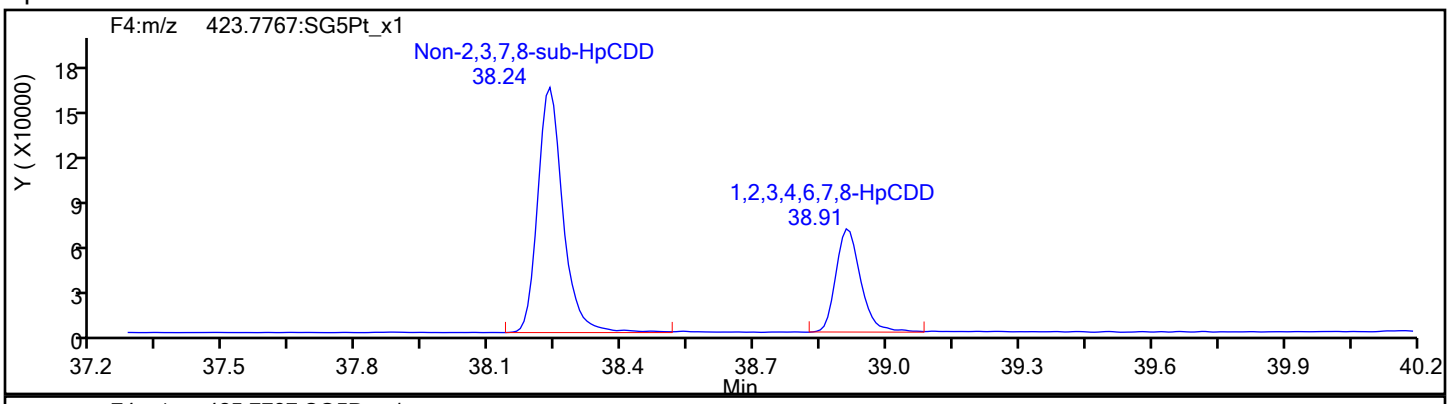
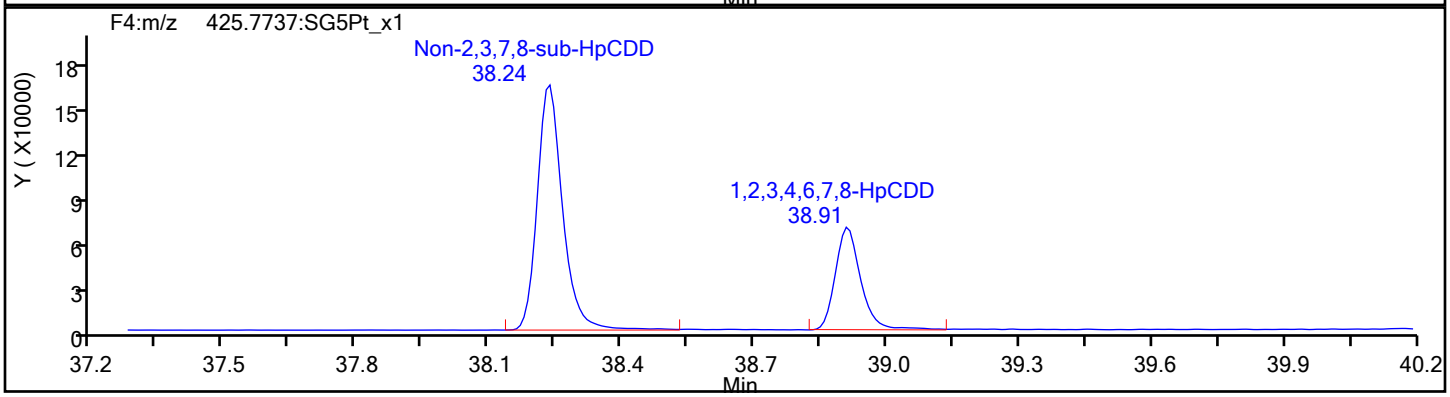
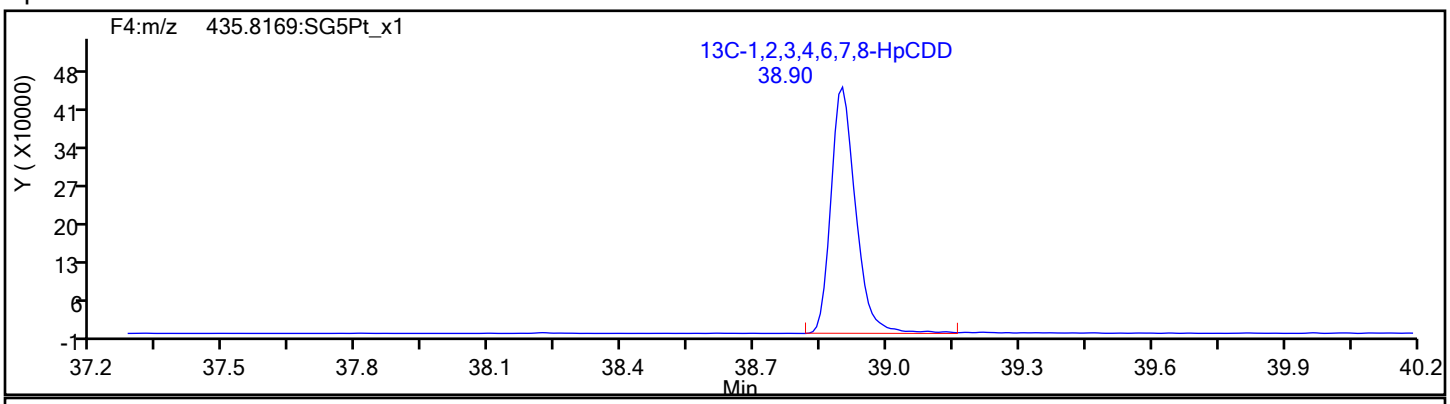
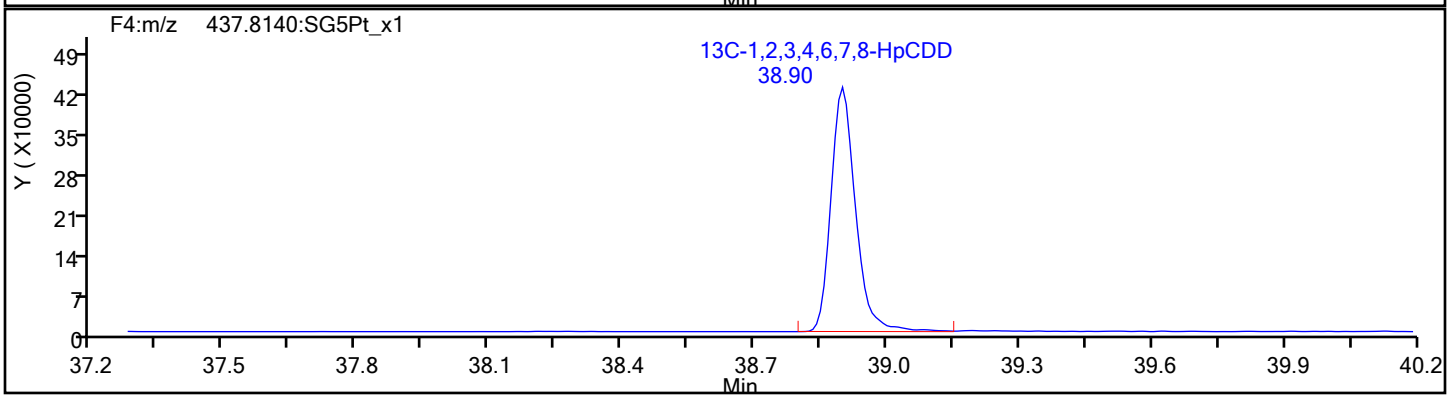
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 09:24:57 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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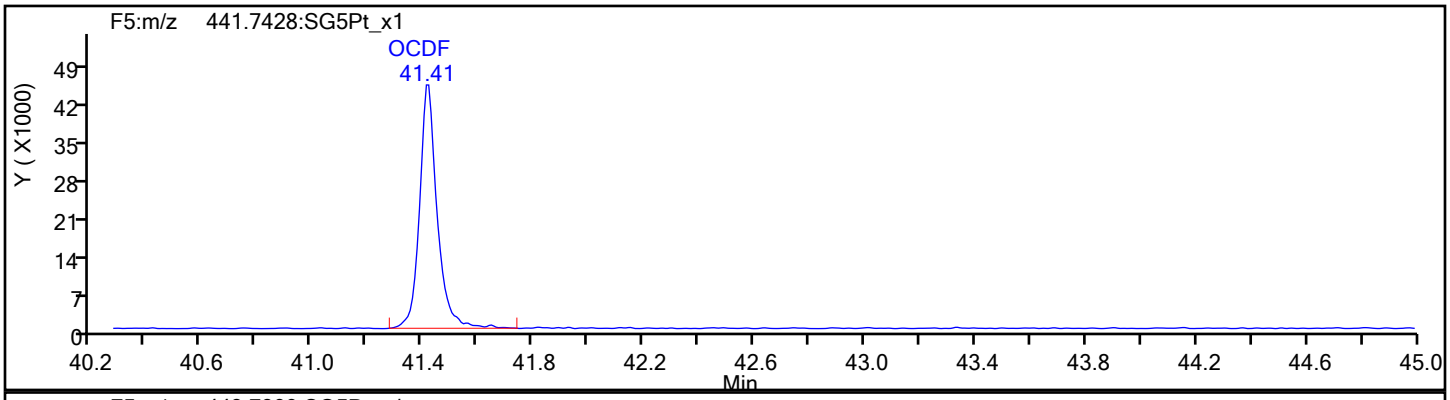
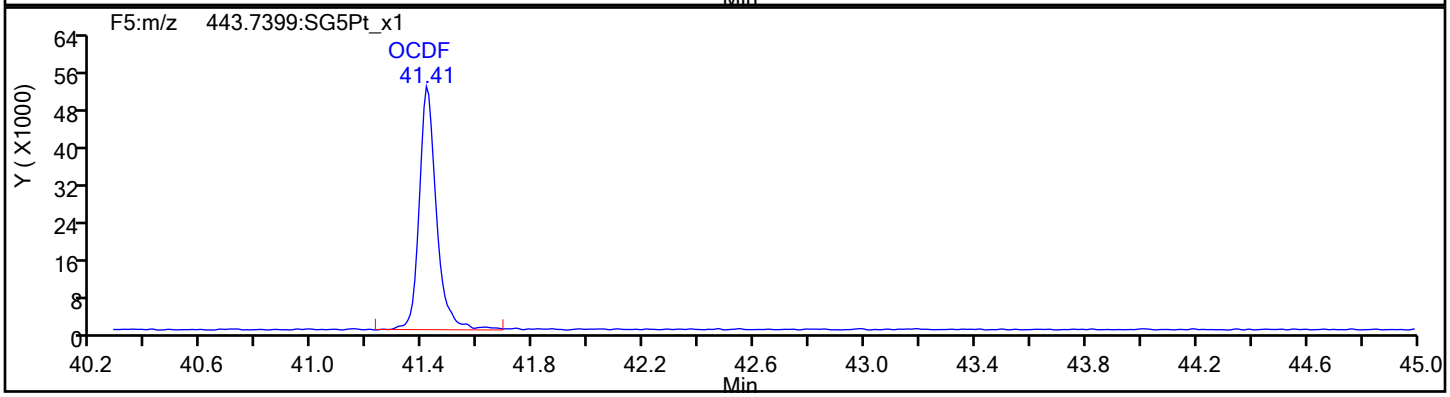
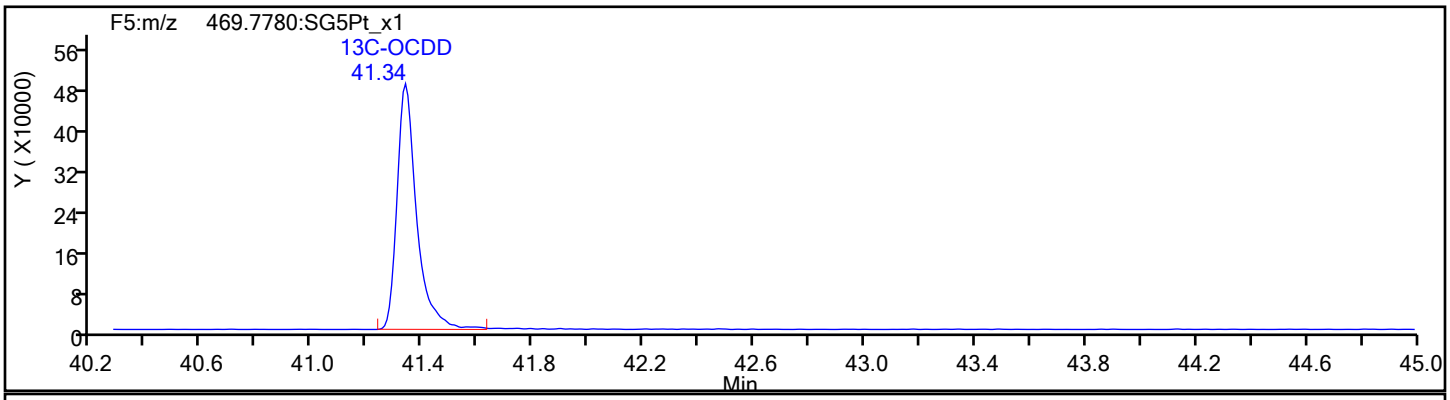
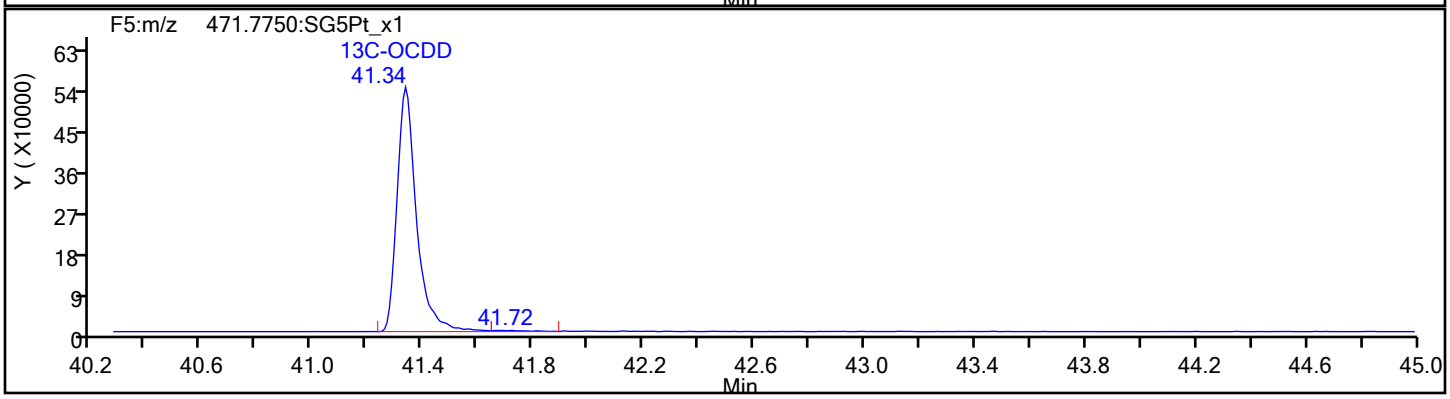
OCDF





OCDF Standards





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Eurofins TestAmerica, Sacramento

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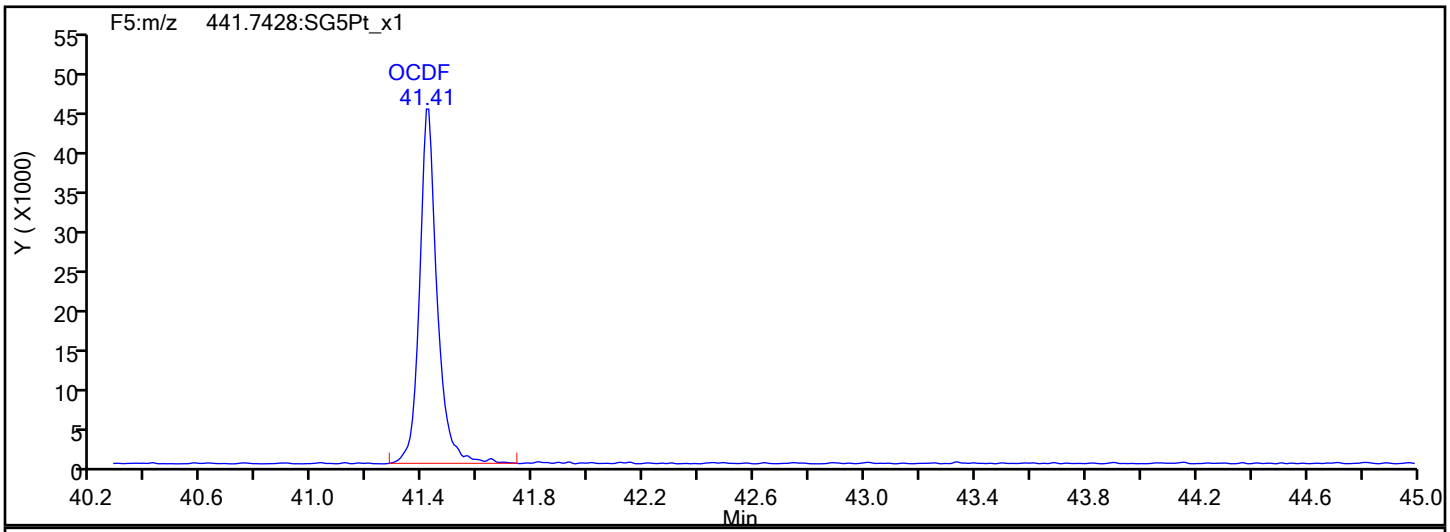
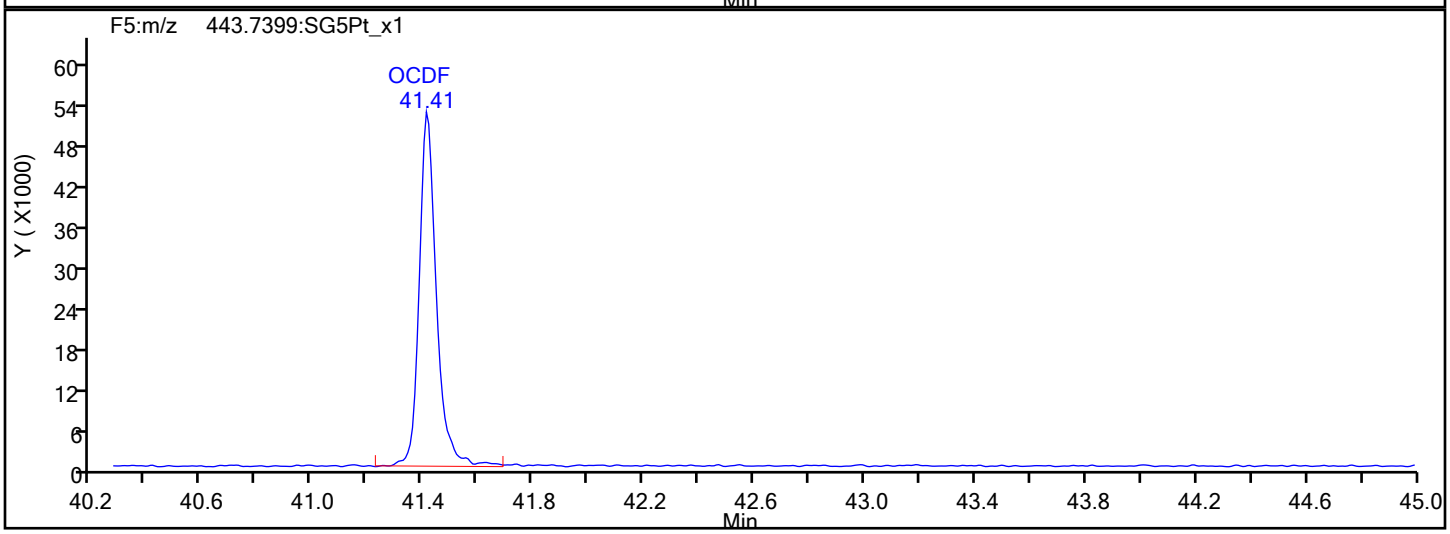
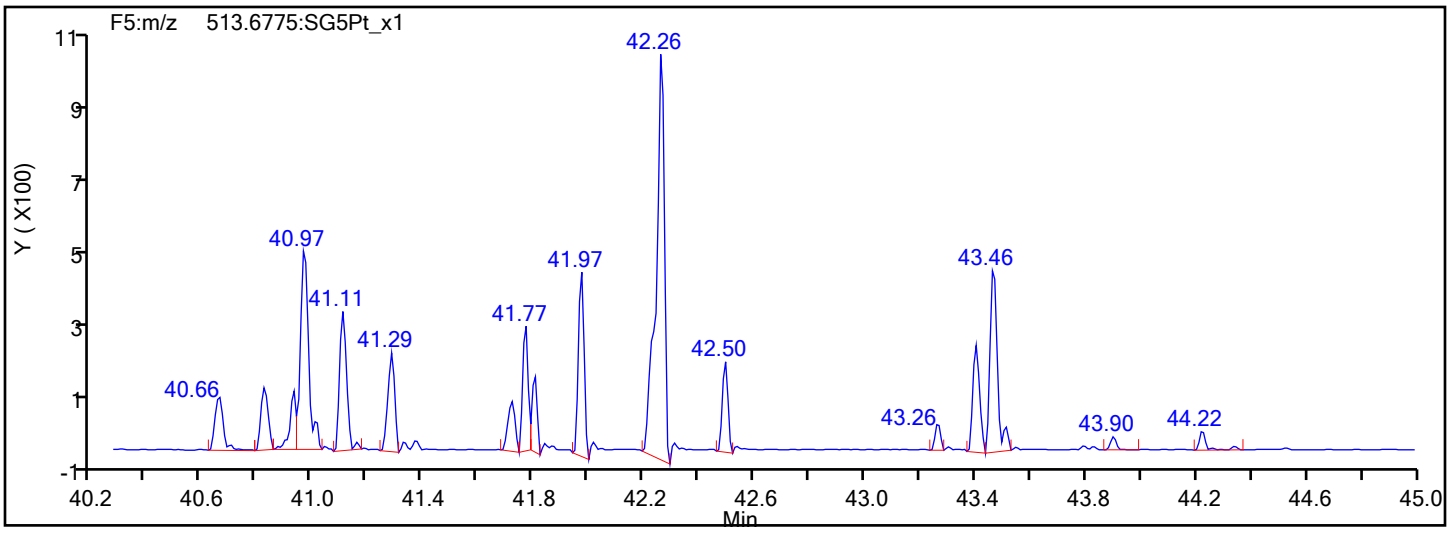




OCDF Interference Mass



Report Date: 17-Dec-2019 09:24:57 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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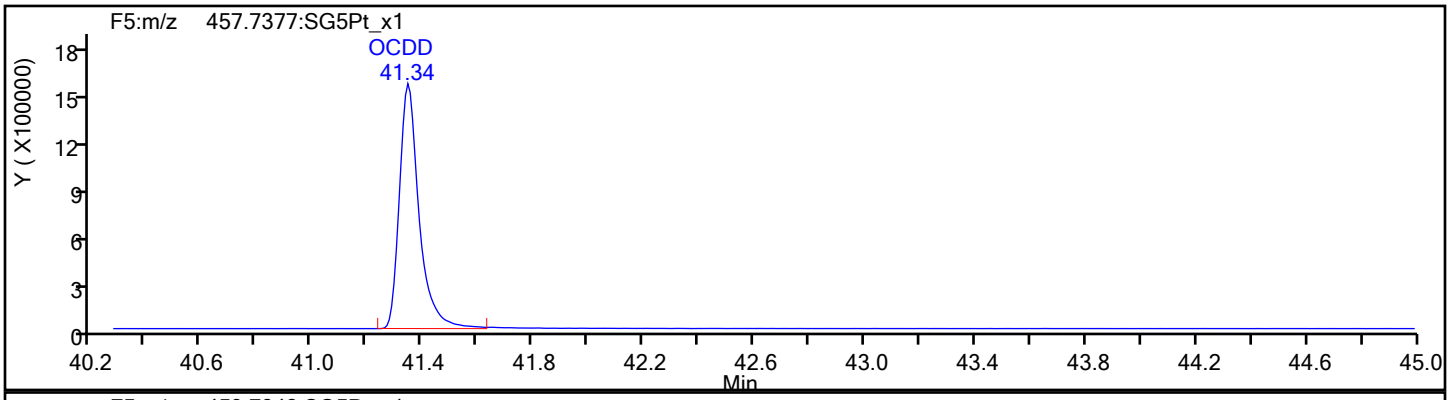
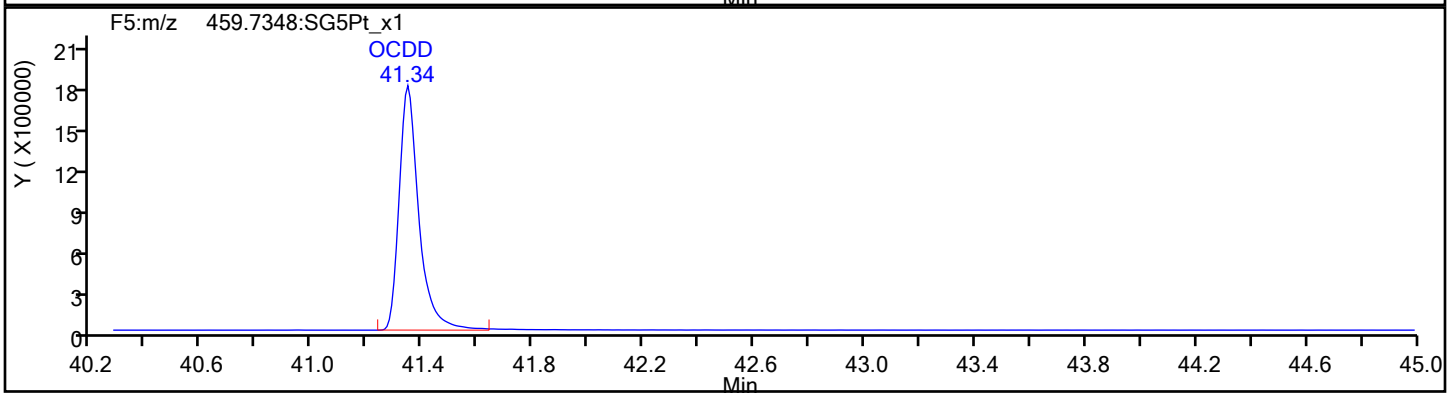
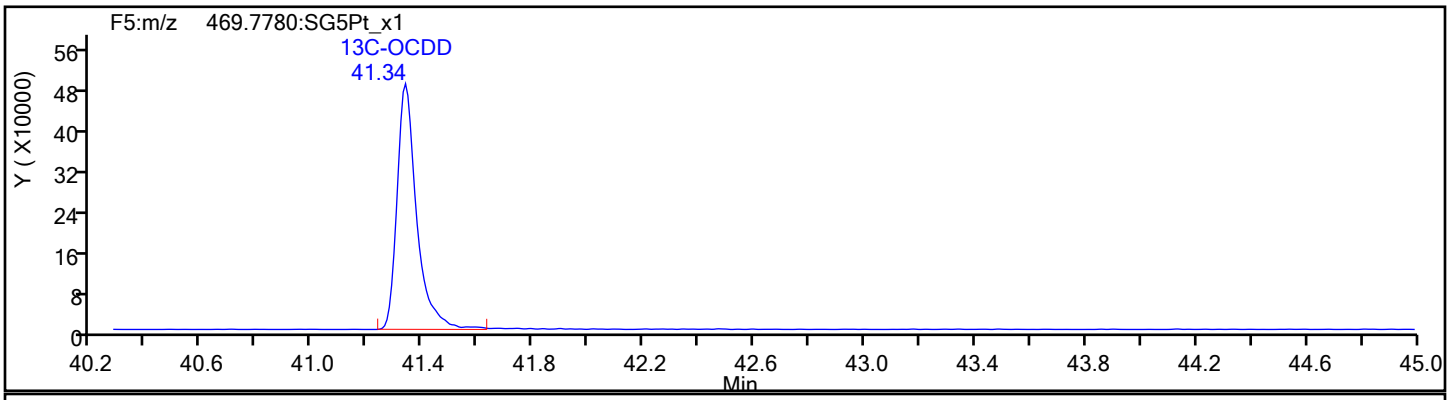
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

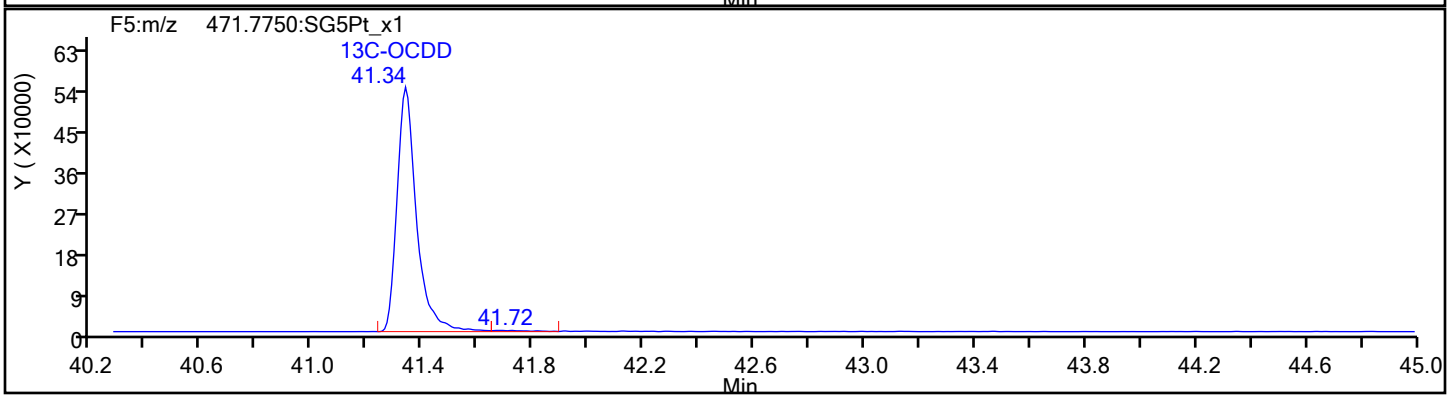
OCDD





OCDD Standards

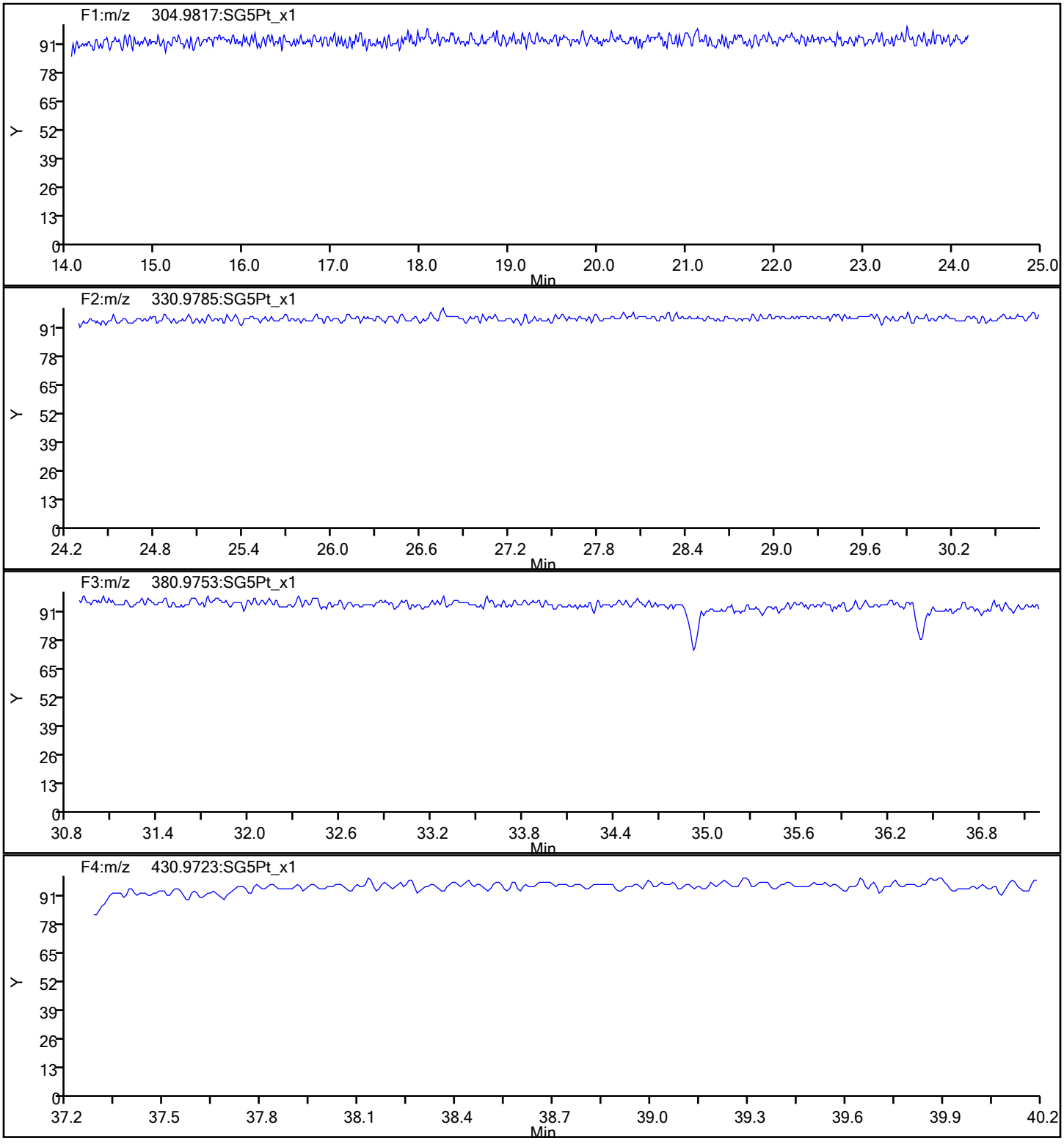




Report Date: 17-Dec-2019 09:24:57 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

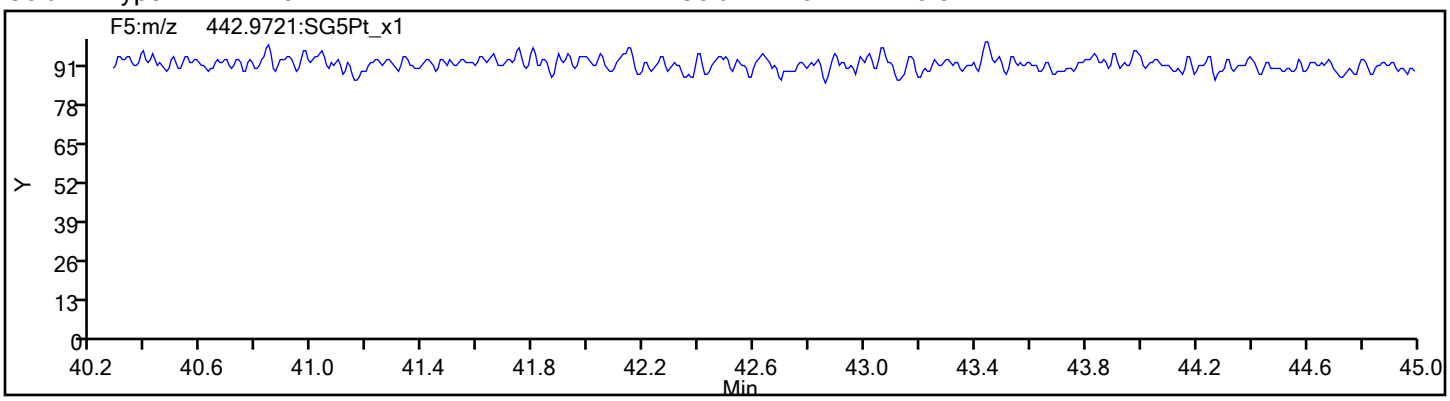
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:24:57 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_8.d		
Injection Date:	13-Dec-2019 17:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	345338	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (0-1) RA Lab Sample ID: 320-56911-1 RA

Matrix: Sediment Lab File ID: 17DE1911D2_004.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/17/2019 16:06

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 54.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346137 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	27		2.2	0.48

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	54		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	95		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:06:24 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-1-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:21 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: shardaa Date: 18-Dec-2019 14:53:27

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.380	82169144	0.77	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.574	59845718	0.79	1.3379	54.4	54.4	0.3331	0.3331	54.44	
2,3,7,8-TCDF	16.601	3099984	0.65	0.8389	6.175	6.175	0.1088	0.1088		
D 13C-2,3,7,8-TCDD	15.133	40472438	0.74	0.9388	52.5	52.5	0.5284	0.5284	52.47	
2,3,7,8-TCDD	15.147	1026418	0.85	1.1538	2.198	2.198	0.1266	0.1266		
$ 37Cl4-2,3,7,8-TCDD	15.147	36994295		1.1816	38.1	38.1	0.0880	0.0880	95.25	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d
Lims ID: 320-56911-A-1-A
Client ID: 11187072-120719-SS-SJSSA01 (0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:06:24 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-1-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:21 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: shardaa Date: 18-Dec-2019 14:53:27

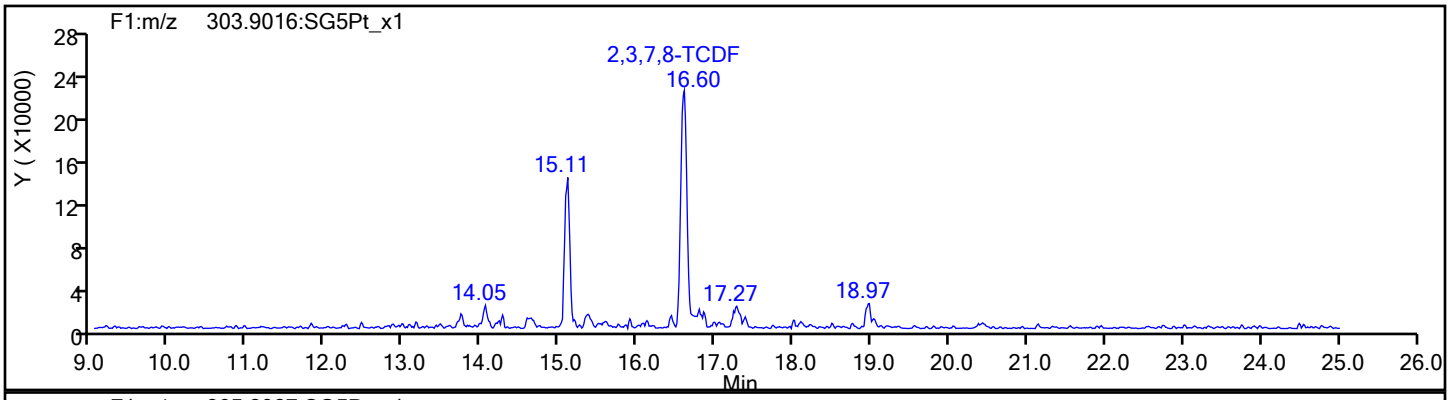
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.380	15.378	0		35755144	7622963	18646	46615	409		
333.9339	15.380	15.378	0		46414000	9926705	16180	40450	614	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.574	16.571	0	1.078	26458814	5008954	19371	48427	259		
317.9389	16.574	16.571	0	1.078	33386904	6640072	11916	29790	557	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.601	16.585	1	1.002	1222505	219531	1522	3805	144		
305.8987	16.588	16.585	0	1.001	1877479	336845	2733	6832	123	0.65(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.133	15.131	0	0.984	17148522	3620036	18646	46615	194		
333.9339	15.133	15.131	0	0.984	23323916	4991732	16180	40450	309	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.147	15.144	0	1.001	471832	90789	3122	7805	29		
321.8936	15.147	15.144	0	1.001	554586	114690	1909	4772	60	0.85(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.147	15.144	0	0.985	36994295	7968879	7297	18242	1092		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

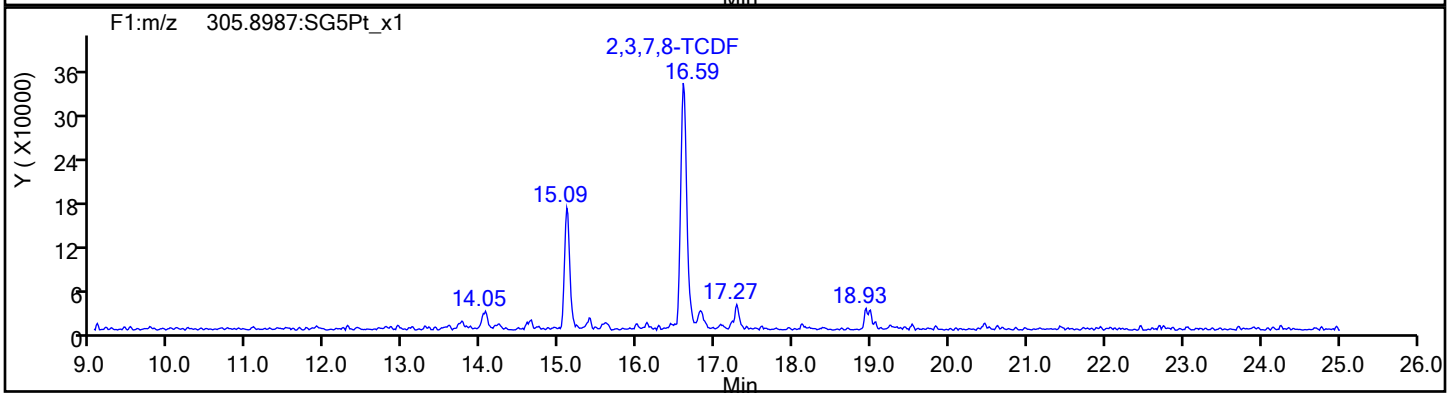
Report Date: 18-Dec-2019 14:53:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

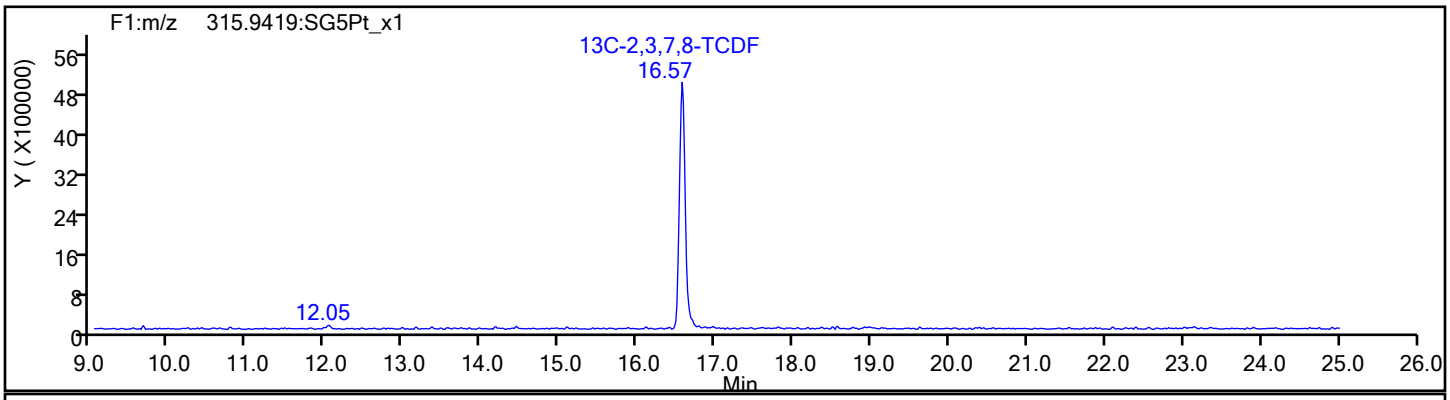
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d		
Injection Date:	17-Dec-2019 16:06:24	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	346137	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

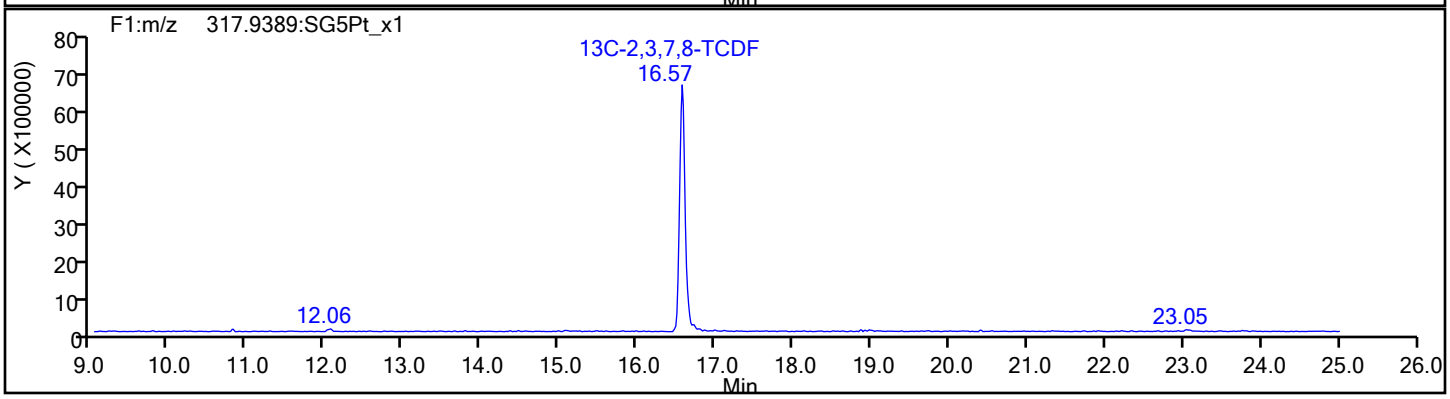
TCDF





TCDF Standards



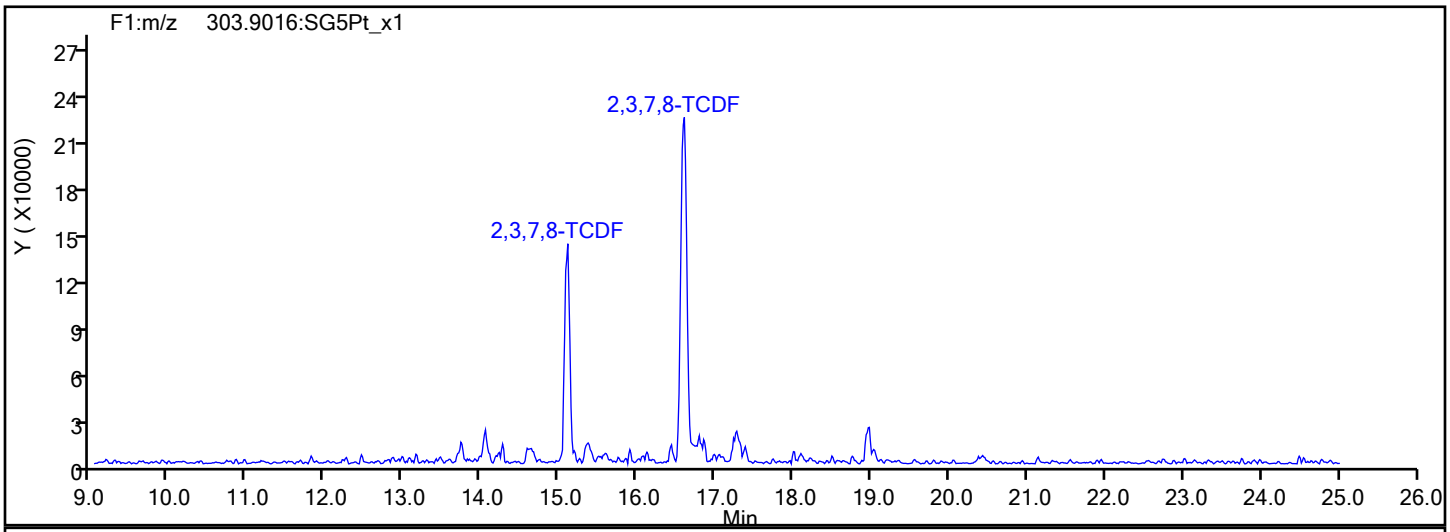


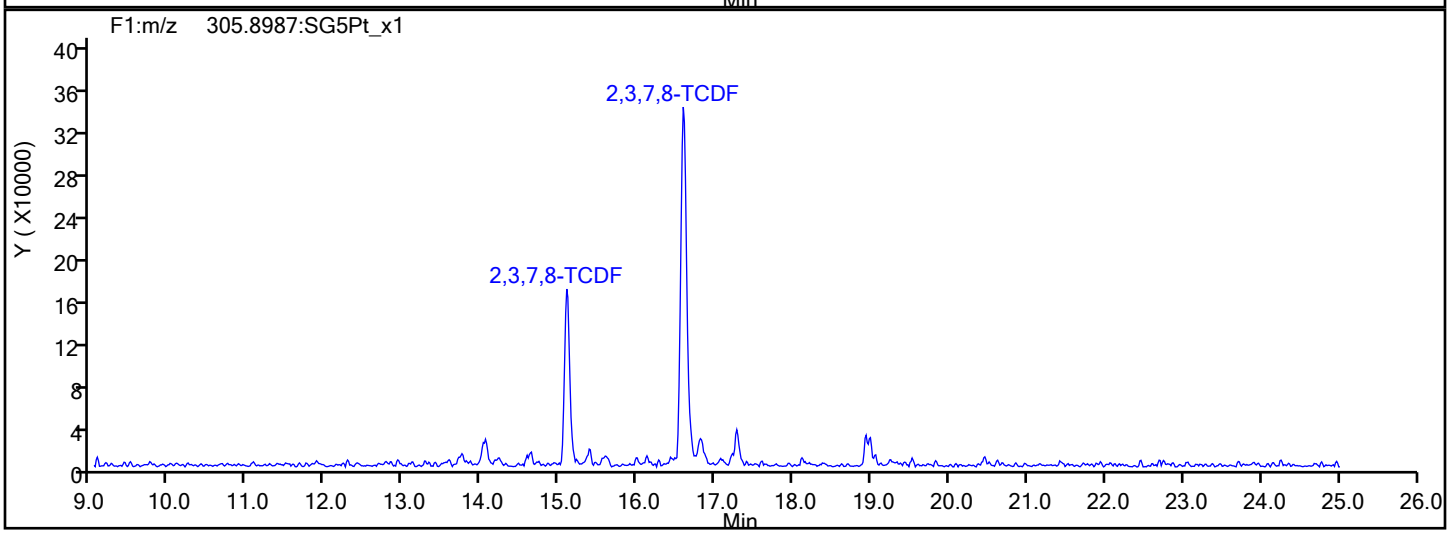
Report Date: 18-Dec-2019 14:53:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

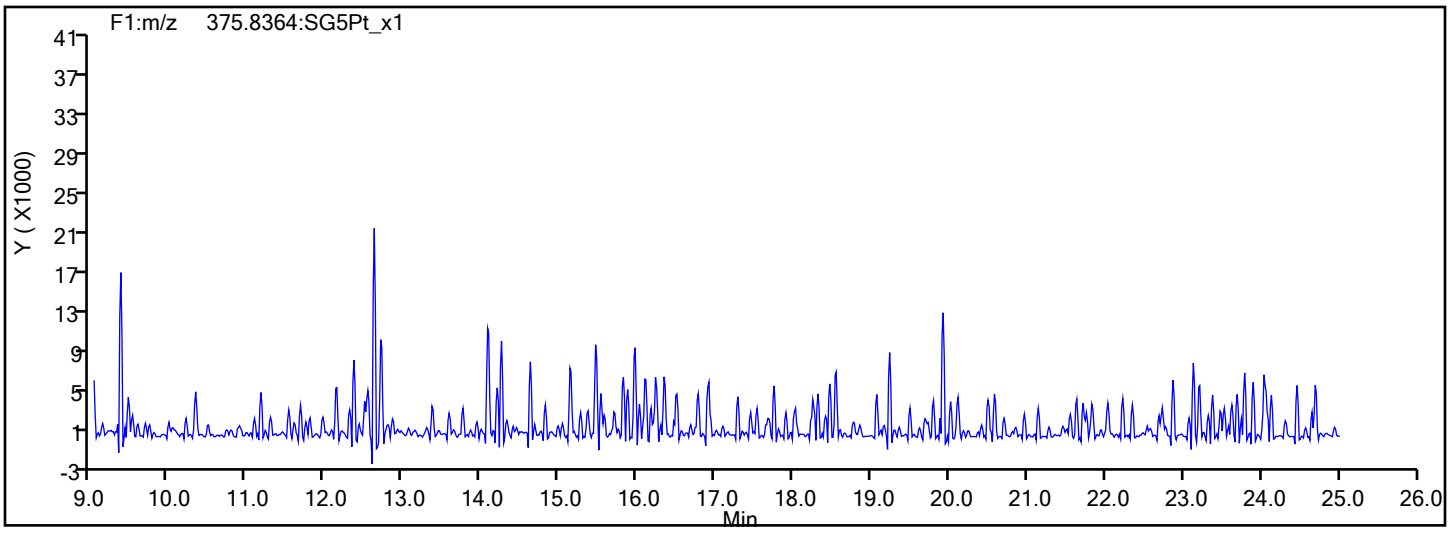
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d		
Injection Date:	17-Dec-2019 16:06:24	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	346137	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

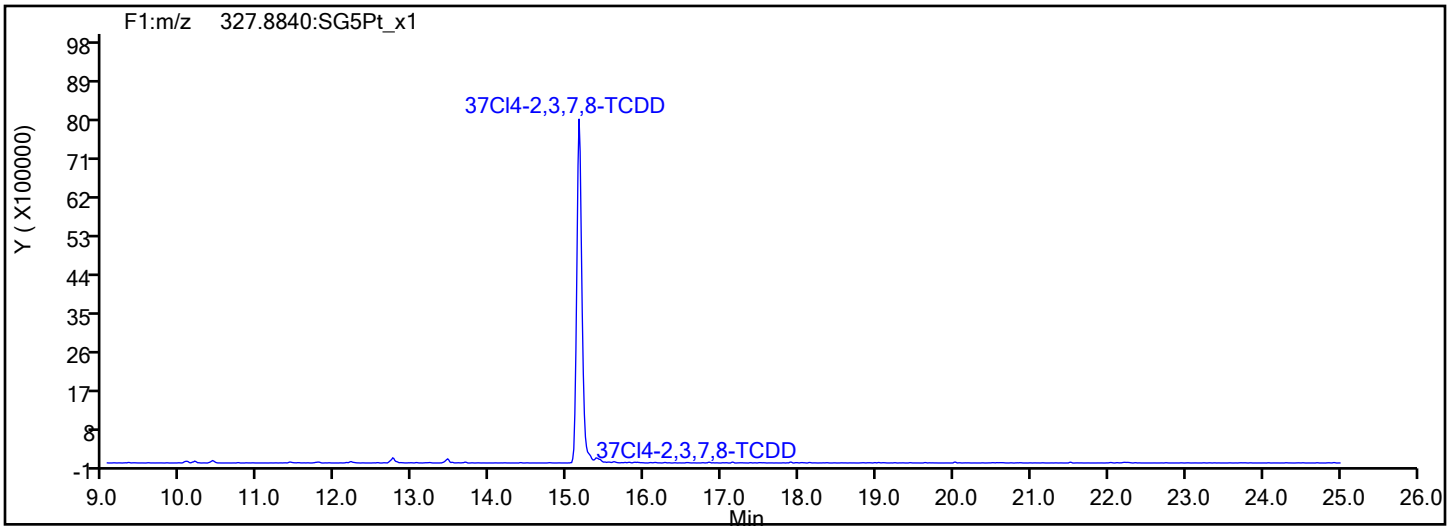


Report Date: 18-Dec-2019 14:53:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

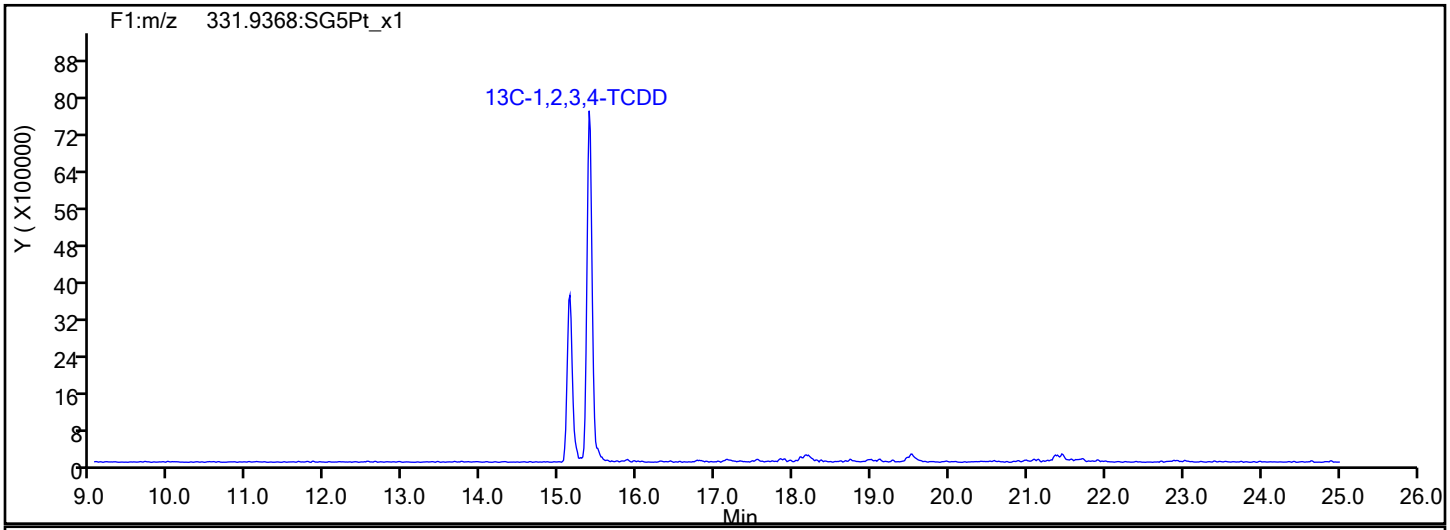
Eurofins TestAmerica, Sacramento

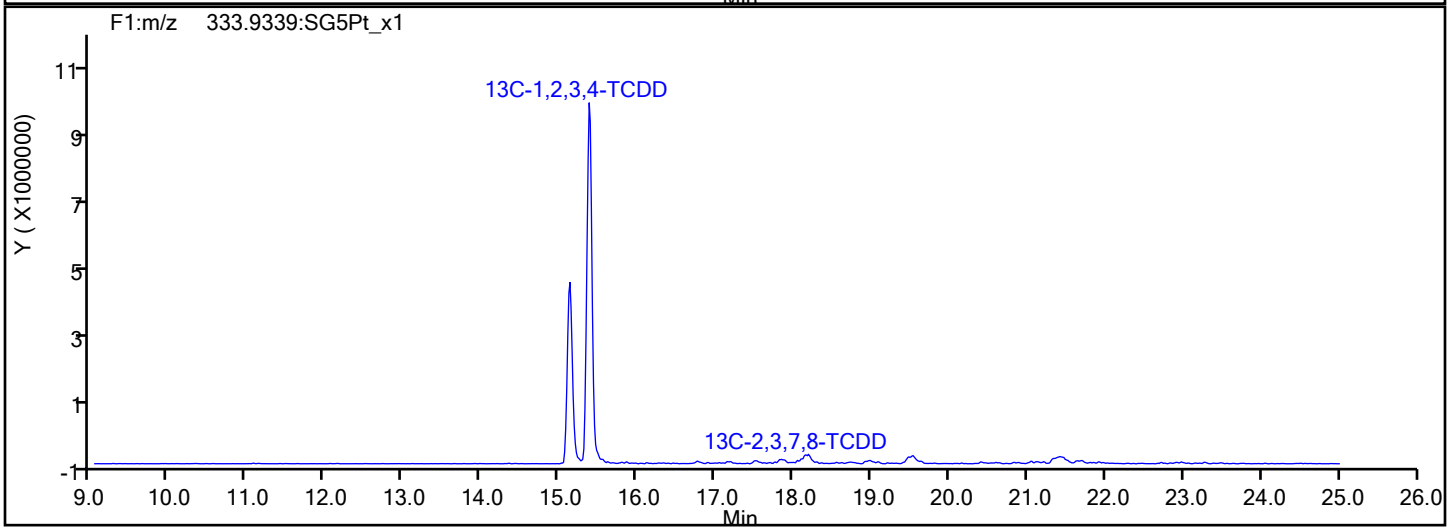
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d		
Injection Date:	17-Dec-2019 16:06:24	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	346137	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

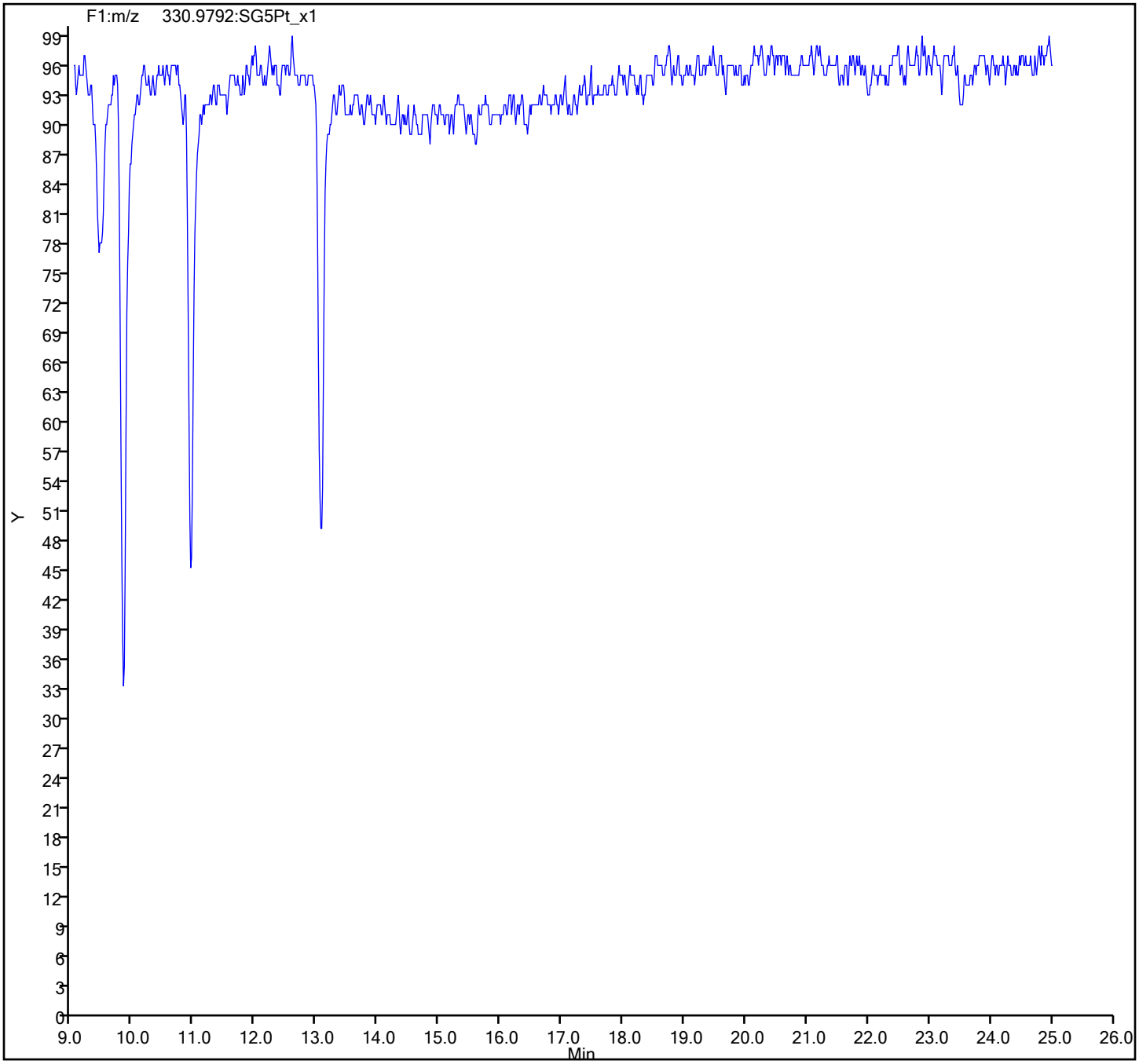




Report Date: 18-Dec-2019 14:53:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_004.d		
Injection Date:	17-Dec-2019 16:06:24	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (0-1)		
Worklist#:	346137	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Matrix: Sediment Lab File ID: 13de19dfs1_9.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 18:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	7.0		1.7	0.33
40321-76-4	1,2,3,7,8-PeCDD	ND		8.6	0.32
57117-41-6	1,2,3,7,8-PeCDF	0.74	J q	8.6	0.13
57117-31-4	2,3,4,7,8-PeCDF	ND		8.6	0.14
39227-28-6	1,2,3,4,7,8-HxCDD	0.65	J q	8.6	0.26
57653-85-7	1,2,3,6,7,8-HxCDD	0.96	J q B	8.6	0.28
19408-74-3	1,2,3,7,8,9-HxCDD	2.4	J	8.6	0.25
70648-26-9	1,2,3,4,7,8-HxCDF	0.79	J q	8.6	0.14
57117-44-9	1,2,3,6,7,8-HxCDF	0.39	J	8.6	0.13
72918-21-9	1,2,3,7,8,9-HxCDF	0.41	J q	8.6	0.11
60851-34-5	2,3,4,6,7,8-HxCDF	0.20	J q	8.6	0.12
35822-46-9	1,2,3,4,6,7,8-HpCDD	41	B	8.6	0.65
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.5	J	8.6	0.23
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		8.6	0.19
3268-87-9	OCDD	1100	B	17	1.8
39001-02-0	OCDF	23	B	17	0.31
41903-57-5	Total TCDD	11		1.7	0.33
30402-14-3	Total TCDF	31	q	1.7	0.23
36088-22-9	Total PeCDD	5.3	J	8.6	0.32
30402-15-4	Total PeCDF	1.5	J q	8.6	0.13
34465-46-8	Total HxCDD	41	q B	8.6	0.26
55684-94-1	Total HxCDF	3.5	J q	8.6	0.12
37871-00-4	Total HpCDD	170	B	8.6	0.65
38998-75-3	Total HpCDF	7.4	J B	8.6	0.21

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) Lab Sample ID: 320-56911-2

Matrix: Sediment Lab File ID: 13de19dfs1_9.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 18:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	55		25-164
89059-46-1	13C-2,3,7,8-TCDF	49		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	51		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	50		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	53		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	55		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	55		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	48		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	49		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	46		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	45		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	48		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	42		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	51		26-138
114423-97-1	13C-OCDD	50		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	94		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:11:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-2-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:30:50 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:07:18

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.544	7250167	0.81	5.2E+04	100.0	100.0				a
D 13C-2,3,7,8-TCDF	18.645	5770867	0.79	1.6096	49.5	49.5	0.2069	0.2069	49.45	
2,3,7,8-TCDF	18.662	398508	0.82	1.2332	5.600	5.600	0.0672	0.0672		
A Non-2,3,7,8-sub-TCDF	18.244	234130	0.77	1.2332	3.343	3.290	0.0672	2.439		RQM
S Total TCDF					8.942	8.889	0.0672	0.0672		RQ
D 13C-2,3,7,8-TCDD	19.881	3973941	0.80	0.9984	54.9	54.9	0.2319	0.2319	54.90	
2,3,7,8-TCDD	19.916	97109	0.76	1.1988	2.038	2.038	0.0969	0.0969		M
$ 37Cl4-2,3,7,8-TCDD	19.916	3963873		1.4510	37.7	37.7	0.0411	0.0411	94.20	
A Non-2,3,7,8-sub-TCDD	19.035	48389	0.74	1.1988	1.016	1.016	0.0969	1.016		
S Total TCDD					3.054	3.054	0.0969	0.0969		
D 13C-1,2,3,7,8-PeCDF	25.800	4947379	1.57	1.3678	49.9	49.9	0.2206	0.2206	49.89	
1,2,3,7,8-PeCDF	25.825	12339	1.55	1.1689	0.2454	0.2134	0.0367	0.0367		RQ
D 13C-2,3,4,7,8-PeCDF	27.217	5021813	1.56	1.3045	53.1	53.1	0.2313	0.2313	53.10	
2,3,4,7,8-PeCDF	27.205						0.0399	0.0399		
A F1 PeCDFs	23.266						0.0180	0.0180		
A Non-2,3,7,8-sub-PeCDF	26.724	12183	1.61	1.1775	0.2076	0.2076	0.0382	0.2076		
S Total PeCDF					0.4529	0.4209	0.0383	0.0383		RQ
D 13C-1,2,3,7,8-PeCDD	27.980	3054144	1.60	0.8292	50.8	50.8	0.0867	0.0867	50.80	
1,2,3,7,8-PeCDD	27.965						0.0924	0.0924		
A Non-2,3,7,8-sub-PeCDD	26.851	52751	1.52	1.1200	1.542	1.542	0.0924	1.058		
S Total PeCDD					1.542	1.542	0.0924	0.0924		
D 13C-1,2,3,4,7,8-HxCDF	33.747	3857159	0.53	1.1700	48.3	48.3	0.1956	0.1956	48.35	
1,2,3,4,7,8-HxCDF	33.755	11522	1.24	1.3021	0.2622	0.2294	0.0394	0.0394		RQM
D 13C-1,2,3,6,7,8-HxCDF	33.940	4407883	0.53	1.3168	49.1	49.1	0.1738	0.1738	49.09	
1,2,3,6,7,8-HxCDF	33.982	6413	1.13	1.2907	0.1127	0.1127	0.0366	0.0366		Ma
D 13C-2,3,4,6,7,8-HxCDF	34.912	3944863	0.53	1.2873	44.9	44.9	0.1778	0.1778	44.94	
2,3,4,6,7,8-HxCDF	34.929	2923	1.24	1.3039	0.0620	0.0568	0.0358	0.0358		RQM
D 13C-1,2,3,7,8,9-HxCDF	35.910	3733027	0.54	1.1987	45.7	45.7	0.1909	0.1909	45.67	
1,2,3,7,8,9-HxCDF	35.919	5976	1.24	1.3329	0.1356	0.1201	0.0315	0.0315		RQ
A Non-2,3,7,8-sub-HxCDF	33.751	25755	1.20	1.3074	0.4942	0.4942	0.0356	0.2665		Ma
S Total HxCDF					1.067	1.013	0.0358	0.0358		RQ

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.709	6818861	1.29	5.8E+04	100.0	100.0				a
D 13C-1,2,3,4,7,8-HxCDD	35.164	3109508	1.28	0.8364	54.5	54.5	0.2012	0.2012	54.52	
1,2,3,4,7,8-HxCDD	35.164	6831	1.24	1.1725	0.2120	0.1874	0.0743	0.0743		RQMa
D 13C-1,2,3,6,7,8-HxCDD	35.290	3365614	1.29	0.9040	54.6	54.6	0.1862	0.1862	54.60	
1,2,3,6,7,8-HxCDD	35.315	10541	1.24	1.1256	0.3034	0.2783	0.0803	0.0803		RQMa
1,2,3,7,8,9-HxCDD	35.709	27540	1.30	1.2327	0.6901	0.6901	0.0720	0.0720		
A Non-2,3,7,8-sub-HxCDD	34.284	410998	1.24	1.1769	10.8	10.8	0.0754	7.877		RQ
S Total HxCDD					12.0	11.9	0.0755	0.0755		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	37.894	2764876	0.44	0.9689	41.8	41.8	0.3052	0.3052	41.85	
1,2,3,4,6,7,8-HpCDF	37.902	32508	1.11	1.6176	0.7268	0.7268	0.0673	0.0673		M
D 13C-1,2,3,4,7,8,9-HpCDF	39.210	3203210	0.46	0.9231	50.9	50.9	0.3204	0.3204	50.89	
1,2,3,4,7,8,9-HpCDF	39.202						0.0542	0.0542		
A Non-2,3,7,8-sub-HpCDF	38.556	65972	1.02	1.5424	1.433	1.433	0.0596	1.433		
S Total HpCDF					2.160	2.160	0.0608	0.0608		
D 13C-1,2,3,4,6,7,8-HpCDD	38.900	2964097	1.04	0.9114	47.7	47.7	0.1419	0.1419	47.69	
1,2,3,4,6,7,8-HpCDD	38.908	396207	1.01	1.1237	11.9	11.9	0.1891	0.1891		
A Non-2,3,7,8-sub-HpCDD	38.803	1205335	1.04	1.1237	36.2	36.2	0.1891	36.2		
S Total HpCDD					48.1	48.1	0.1891	0.1891		
D 13C-OCDD	41.338	4248719	0.91	0.6272	99.3	99.3	0.1808	0.1808	49.67	
OCDF	41.422	214914	0.87	1.5416	6.562	6.562	0.0908	0.0908		
OCDD	41.346	8262195	0.88	1.1855	328.1	328.1	0.5301	0.5301		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:11:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-2-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:30:50 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:07:18

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	19.544	19.502	3		3250393	511613	784	1960	653		a
333.9338	19.544	19.502	3		3999774	629329	273	682	2305	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.645	18.611	2	0.954	2545722	404229	999	2497	405		
317.9389	18.645	18.611	2	0.954	3225145	509461	521	1302	978	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.662	18.637	1	1.001	179090	25618	101	252	254		
305.8987	18.679	18.637	3	1.002	219418	33439	202	505	166	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	16.795	18.244	-87	0.901	7765	1315	101	252	13		
	Empc Correction				6507	912	101	252	9		
305.8987	16.778	18.244	-88	0.900	8451	1185	202	505	6	0.92(0.65-0.89)	
303.9016	17.556	18.244	-41	0.942	9059	1304	101	252	13		
	Empc Correction				6544	1359	101	252	13		
305.8987	17.539	18.244	-42	0.941	8500	1766	202	505	9	1.07(0.65-0.89)	
303.9016	18.014	18.244	-14	0.966	75385	13348	101	252	132		
305.8987	18.023	18.244	-13	0.967	98170	16627	202	505	82	0.77(0.65-0.89)	M
303.9016	19.414	18.244	70	1.041	12511	2072	101	252	21		
305.8987	19.414	18.244	70	1.041	18062	2789	202	505	14	0.69(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.881	19.848	2	1.017	1768427	257771	784	1960	329		
333.9338	19.881	19.848	2	1.017	2205514	319187	273	682	1169	0.80(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	19.916	19.874	3	1.002	41928	6566	193	482	34		M
321.8936	19.907	19.874	2	1.001	55181	9099	75	187	121	0.76(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	19.916	19.882	2	1.019	3963873	581584	272	680	2138		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-TCDD											
319.8965	17.988	19.035	-63	0.905	20539	3278	193	482	17		
321.8936	17.988	19.035	-63	0.905	27850	4886	75	187	65	0.74(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	25.800	25.760	2	1.320	3024078	519639	847	2117	614		
353.8970	25.800	25.760	2	1.320	1923301	331092	530	1325	625	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											RQ
339.8597	25.825	25.785	2	1.001	9350	1719	43	107	40		
	Empc Correction				7500	1785	43	107	42		
341.8567	25.825	25.785	2	1.001	4839	1152	103	257	11	1.93(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.217	27.177	2	1.393	3063390	475609	847	2117	562		
353.8970	27.217	27.177	2	1.393	1958423	295136	530	1325	557	1.56(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						43	107			
341.8567	27.202						103	257			
A F1 PeCDFs											
339.8597	23.266						4	10			
341.8567	23.266						65	162			
A Non-2,3,7,8-sub-PeCDF											
339.8597	24.433	26.724	-137	0.947	7514	1198	43	107	28		
341.8567	24.433	26.724	-137	0.947	4669	707	103	257	7	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	27.980	27.949	2	1.432	1878220	285149	201	502	1419		
369.8919	27.980	27.949	2	1.432	1175924	169030	127	317	1331	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						122	305			
357.8516	27.965						66	165			
A Non-2,3,7,8-sub-PeCDD											
355.8546	24.726	26.851	-127	0.884	9565	1460	122	305	12		
357.8516	24.709	26.851	-128	0.883	7009	1015	66	165	15	1.36(1.32-1.78)	
355.8546	25.473	26.851	-83	0.910	22261	3848	122	305	32		
357.8516	25.464	26.851	-83	0.910	13916	2432	66	165	37	1.60(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.747	33.714	2	0.945	1333644	219222	611	1527	359		
385.8610	33.738	33.714	1	0.945	2523515	428111	693	1732	618	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											RQM
373.8208	33.755	33.739	1	1.000	8027	1259	78	195	16		M
	Empc Correction				6378	964	78	195	12		
375.8178	33.755	33.739	1	1.000	5144	778	55	137	14	1.56(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.940	33.915	1	0.950	1526068	244586	611	1527	400		
385.8610	33.940	33.915	1	0.950	2881815	458036	693	1732	661	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											Ma
373.8208	33.982	33.932	3	1.001	3402	784	78	195	10		M
375.8178	33.998	33.932	4	1.002	3011	533	55	137	10	1.13(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.912	34.880	2	0.978	1365909	246134	611	1527	403		
385.8610	34.912	34.880	2	0.978	2578954	466026	693	1732	672	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											RQM
373.8208	34.929	34.905	1	1.000	1885	330	78	195	4		
	Empc Correction				1618	580	78	195	7		
375.8178	34.929	34.905	1	1.000	1305	468	55	137	9	1.44(1.05-1.43)	M
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.910	35.878	2	1.006	1304151	282804	611	1527	463		
385.8610	35.902	35.878	1	1.005	2428876	507499	693	1732	732	0.54(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQ
373.8208	35.919	35.894	1	1.000	4079	644	78	195	8		
	Empc Correction				3308	742	78	195	10		
375.8178	35.919	35.894	1	1.000	2668	599	55	137	11	1.53(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											Ma
373.8208	31.868	33.751	-113	0.944	6277	853	78	195	11		M
375.8178	31.860	33.751	-113	0.944	5590	602	55	137	11	1.12(1.05-1.43)	
373.8208	32.992	33.751	-45	0.978	7772	1274	78	195	16		M
375.8178	32.975	33.751	-46	0.977	6116	1039	55	137	19	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											a
401.8559	35.709	35.685	1		3837126	795822	553	1382	1439		a
403.8529	35.709	35.685	1		2981735	628462	406	1015	1548	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.164	35.131	2	0.985	1746938	379963	553	1382	687		
403.8529	35.164	35.131	2	0.985	1362570	297385	406	1015	732	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQMa
389.8158	35.164	35.148	1	1.000	3782	844	121	302	7		M
391.8127	35.147	35.148	0	1.000	3947	733	115	287	6	0.96(1.05-1.43)	
	Empc Correction				3049	680	115	287	6		
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.290	35.265	1	0.988	1894103	364983	553	1382	660		
403.8529	35.290	35.265	1	0.988	1471511	287524	406	1015	708	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMa
389.8158	35.315	35.282	2	1.001	6788	1362	121	302	11		M
	Empc Correction				5835	1417	121	302	12		
391.8127	35.315	35.282	2	1.001	4706	1143	115	287	10	1.44(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	35.709	35.693	1	1.015	15565	2629	121	302	22		
391.8127	35.717	35.693	1	1.016	11975	2238	115	287	19	1.30(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8158	32.916	34.284	-82	0.933	165463	22876	121	302	189		
391.8127	32.908	34.284	-82	0.933	134695	18994	115	287	165	1.23(1.05-1.43)	
389.8158	33.864	34.284	-25	0.960	8721	1200	121	302	10		
	Empc Correction				7035	1176	121	302	10		
391.8127	33.881	34.284	-24	0.960	5674	949	115	287	8	1.54(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
389.8158	34.275	34.284	-1	0.971	43552	7808	121	302	65		
391.8127	34.283	34.284	0	0.971	36534	5594	115	287	49	1.19(1.05-1.43)	
389.8158	34.493	34.284	13	0.977	9386	1807	121	302	15		
391.8127	34.518	34.284	14	0.978	8659	1504	115	287	13	1.08(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.894	37.877	1	1.061	845632	191623	602	1505	318		
419.8220	37.894	37.877	1	1.061	1919244	429862	1083	2707	397	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7817	37.902	37.886	1	1.000	17085	3771	200	500	19		
409.7788	37.894	37.886	0	1.000	15423	3368	71	177	47	1.11(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.210	39.194	1	1.098	1006037	267360	602	1505	444		
419.8220	39.210	39.194	1	1.098	2197173	584178	1083	2707	539	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.202						200	500			
409.7788	39.202						71	177			
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.288	38.556	-16	1.010	33328	8229	200	500	41		
409.7788	38.288	38.556	-16	1.010	32644	8737	71	177	123	1.02(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.900	38.892	0	1.089	1512732	368512	384	960	960		
437.8140	38.900	38.892	0	1.089	1451365	366511	353	882	1038	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.908	38.901	0	1.000	199459	50273	349	872	144		
425.7737	38.908	38.901	0	1.000	196748	47130	276	690	171	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.237	38.803	-34	0.983	615745	147327	349	872	422		
425.7737	38.229	38.803	-34	0.983	589590	138258	276	690	501	1.04(0.88-1.20)	
13C-OCDD											
469.7780	41.338	41.345	0	1.158	2027623	380755	351	877	1085		
471.7750	41.338	41.345	0	1.158	2221096	414798	295	737	1406	0.91(0.76-1.02)	
OCDF											
441.7428	41.422	41.413	1	1.002	100243	19453	69	172	282		
443.7399	41.422	41.413	1	1.002	114671	24391	154	385	158	0.87(0.76-1.02)	
OCDD											
457.7377	41.346	41.345	0	1.000	3868791	719135	476	1190	1511		
459.7348	41.346	41.345	0	1.000	4393404	811286	524	1310	1548	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 17-Dec-2019 09:30:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	5770867	913690

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	5770867	913690

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.795	7765	1315	8451	1185	0.2279	0.92	RQ
16.795	6507	912	8451	1185	0.2102		Empc Correction
17.556	9059	1304	8500	1766	0.2467	1.07	RQ
17.556	6544	1359	8500	1766	0.2114		Empc Correction
18.014	75385	13348	98170	16627	2.44	0.77	M
19.414	12511	2072	18062	2789	0.4296	0.69	
Signal Totals:							
	100947	17691	133183	22367			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	237903	40406				0.79	RQM
	234130	40058					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.343 = (237903 * 100.000) / (5770867 * 1.233)
Empc Amount: 3.290 = (234130 * 100.000) / (5770867 * 1.233)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 19.035

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	100.000	3973941	576958

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		100.000	3973941	576958

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.988	20539	3278	27850	4886	1.02	0.74	
Signal Totals:							
	20539	3278	27850	4886			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	48389	8164				0.74	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.016 = (48389 * 100.000) / (3973941 * 1.199)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDF, RT: 26.724

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	4947379	850731
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5021813	770745

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	4984596	810738

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
24.433	7514	1198	4669	707	0.2076	1.61	
Signal Totals:							
	7514	1198	4669	707			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	12183	1905				1.61	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2076 = (12183 * 100.000) / (4984596 * 1.178)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 26.851

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120	D 13C-1,2,3,7,8-PeCDD	100.000	3054144	454179

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	3054144	454179

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
24.726	9565	1460	7009	1015	0.4845	1.36	
25.473	22261	3848	13916	2432	1.06	1.60	
Signal Totals:							
	31826	5308	20925	3447			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	52751	8755				1.52	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.542 = (52751 * 100.000) / (3054144 * 1.120)

Report Date: 17-Dec-2019 09:30:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	3857159	647333
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	4407883	702622
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	3944863	712160
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	3733027	790303

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	3985733	713104

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
31.868	6277	853	5590	602	0.2277	1.12	Ma
32.992	7772	1274	6116	1039	0.2665	1.27	Ma
Signal Totals:	14049	2127	11706	1641			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	25755	3768				1.20	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4942 = (25755 * 100.000) / (3985733 * 1.307)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 17-Dec-2019 09:30:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3109508	677348
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	3365614	652507
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	3237561	664927

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.916	165463	22876	134695	18994	7.88	1.23	
33.864	8721	1200	5674	949	0.3778	1.54	RQ
33.864	7035	1176	5674	949	0.3335		Empc Correction
34.275	43552	7808	36534	5594	2.10	1.19	
34.493	9386	1807	8659	1504	0.4736	1.08	
Signal Totals:							
	225436	33667	185562	27041			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	412684	60732				1.22	RQ
	410998	60708					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 10.831 = (412684 * 100.000) / (3237561 * 1.177)
Empc Amount: 10.786 = (410998 * 100.000) / (3237561 * 1.177)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	2764876	621485
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3203210	851538

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	2984043	736511

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.288	33328	8229	32644	8737	1.43	1.02	
Signal Totals:							
	33328	8229	32644	8737			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	65972	16966				1.02	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.433 = (65972 * 100.000) / (2984043 * 1.542)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Inject. Date: 13-Dec-2019 18:11:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	2964097	735023

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	2964097	735023

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.237	615745	147327	589590	138258	36.2	1.04	
Signal Totals:							
	615745	147327	589590	138258			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1205335	285585				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 36.188 = (1205335 * 100.000) / (2964097 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

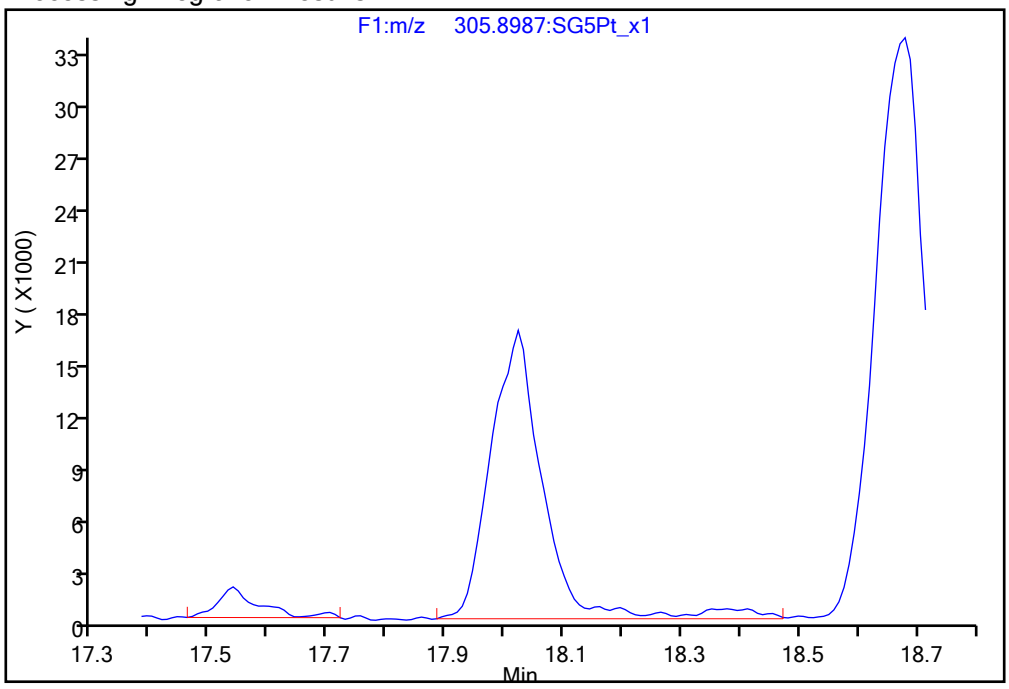
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (14.72- 21.77)

Signal: 2

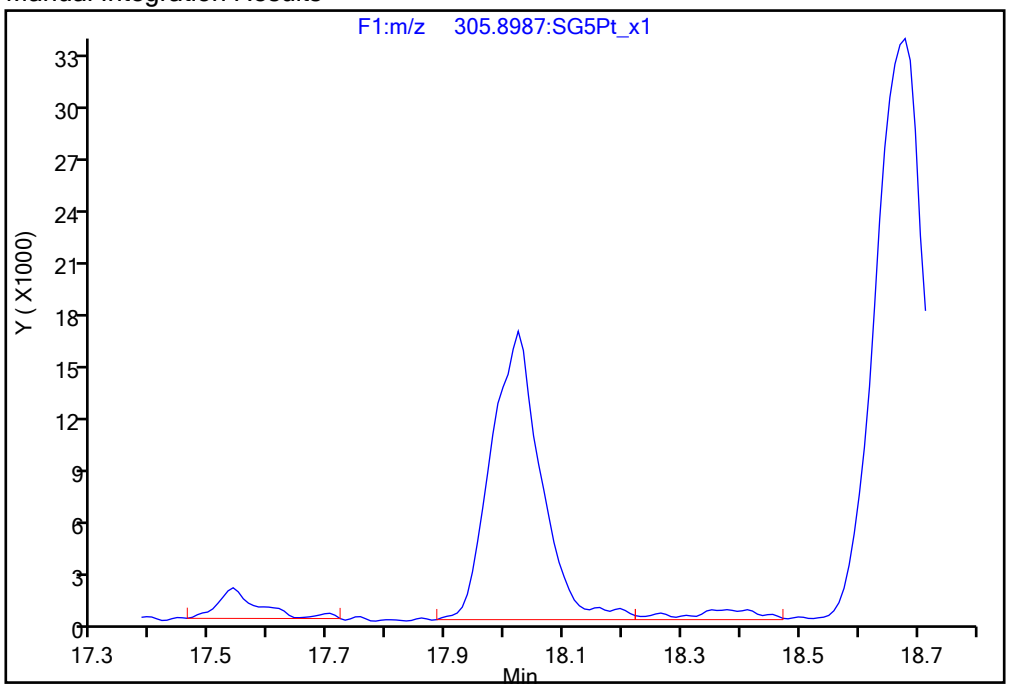
Processing Integration Results

RT = 18.023 Area = 103286



Manual Integration Results

RT = 18.023 Area = 98170 M



Reviewer: dadunj, 17-Dec-2019 09:25:50

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

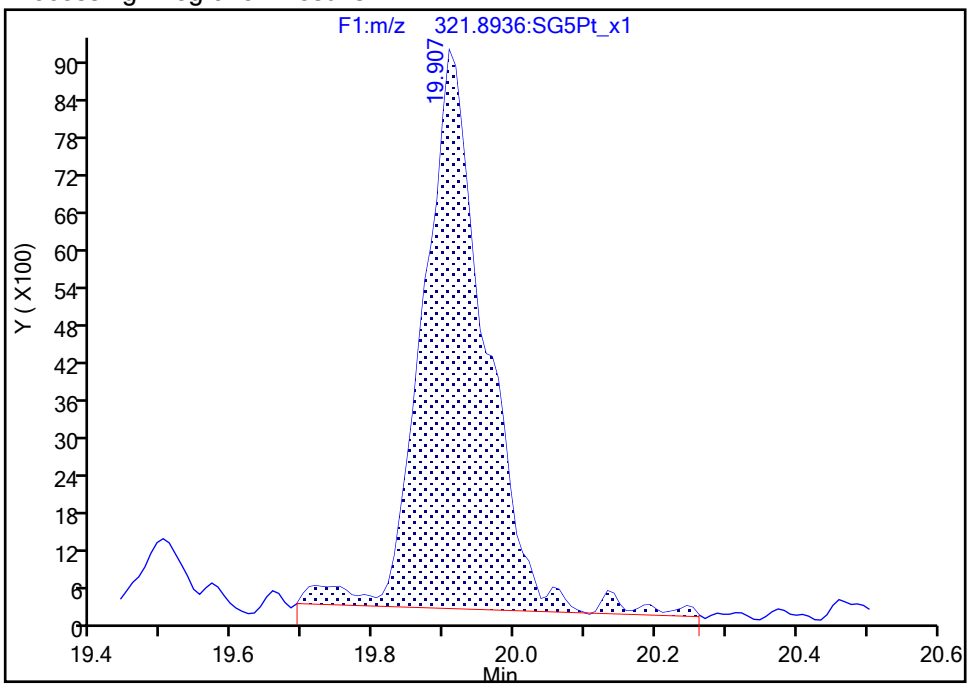
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

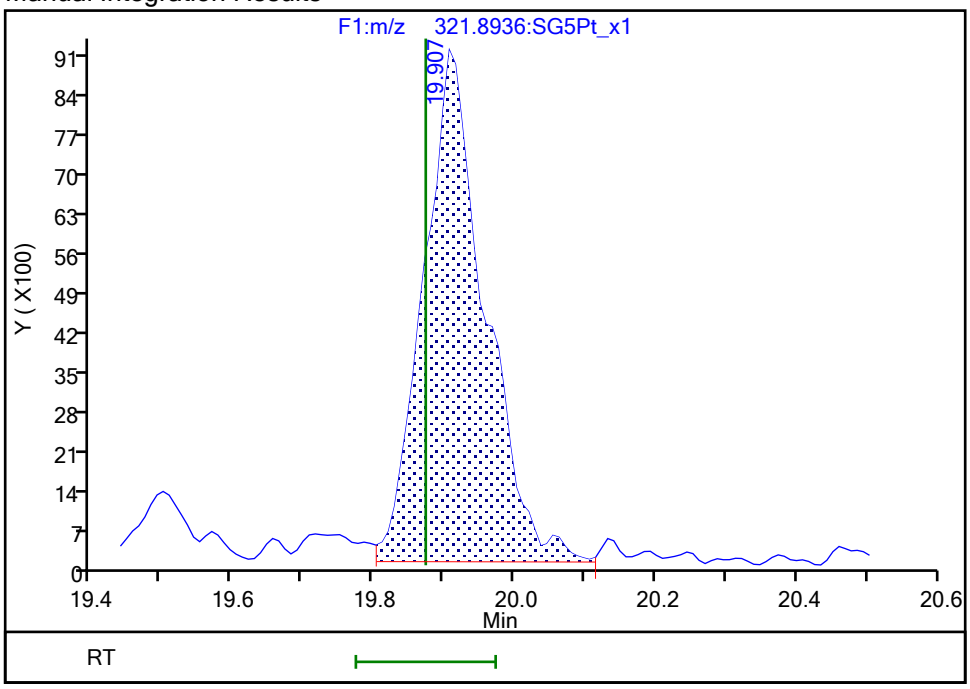
Processing Integration Results

RT: 19.91
Area: 55794
Amount: 2.089199
Amount Units: pg/ul



Manual Integration Results

RT: 19.91
Area: 55181
Amount: 2.038381
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:26:12

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

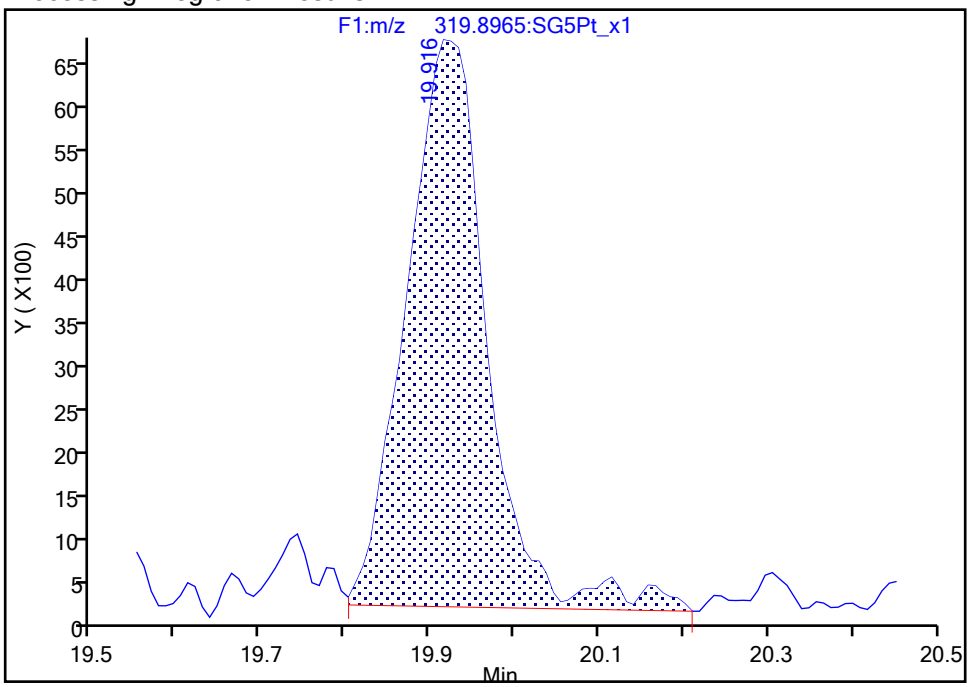
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

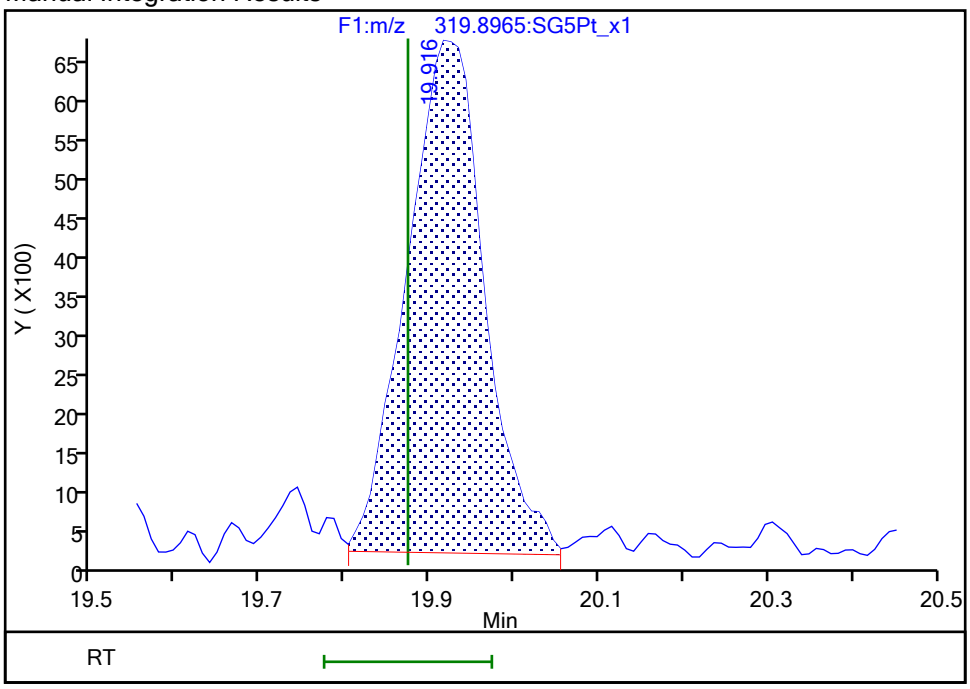
Processing Integration Results

RT: 19.92
Area: 43736
Amount: 2.089199
Amount Units: pg/ul



Manual Integration Results

RT: 19.92
Area: 41928
Amount: 2.038381
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:26:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

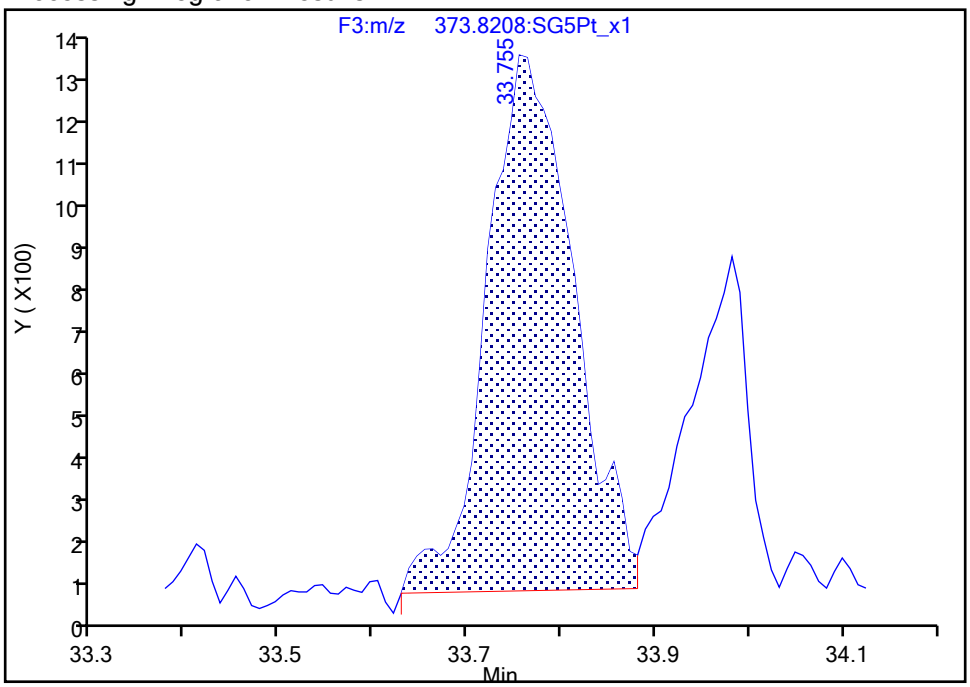
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

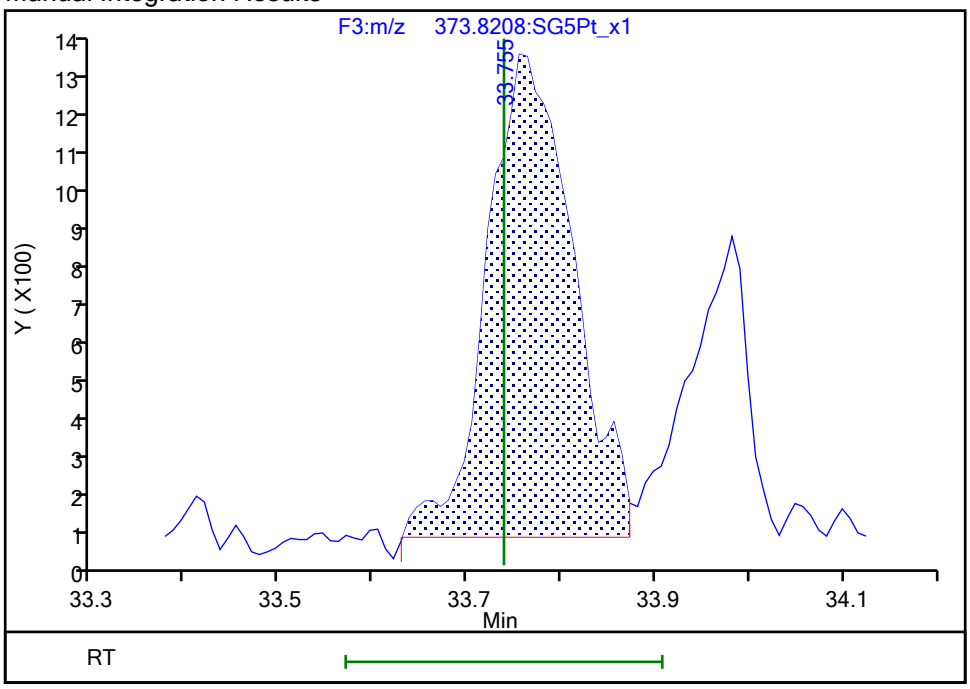
Processing Integration Results

RT: 33.76
Area: 8122
Amount: 0.265523
Amount Units: pg/ul



Manual Integration Results

RT: 33.76
Area: 8027
Amount: 0.262238
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:27:36

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

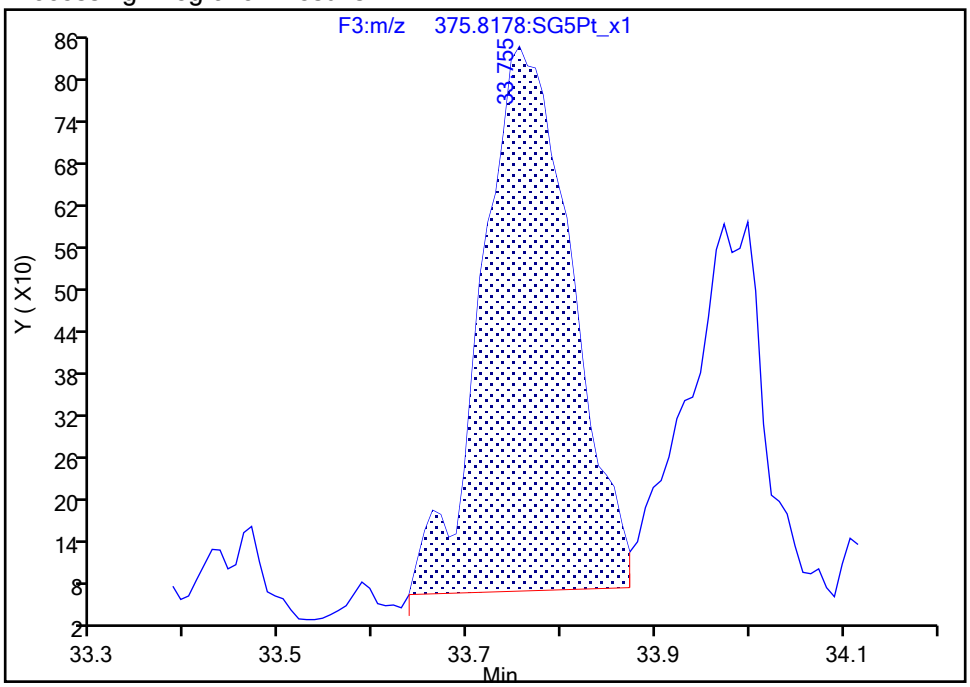
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

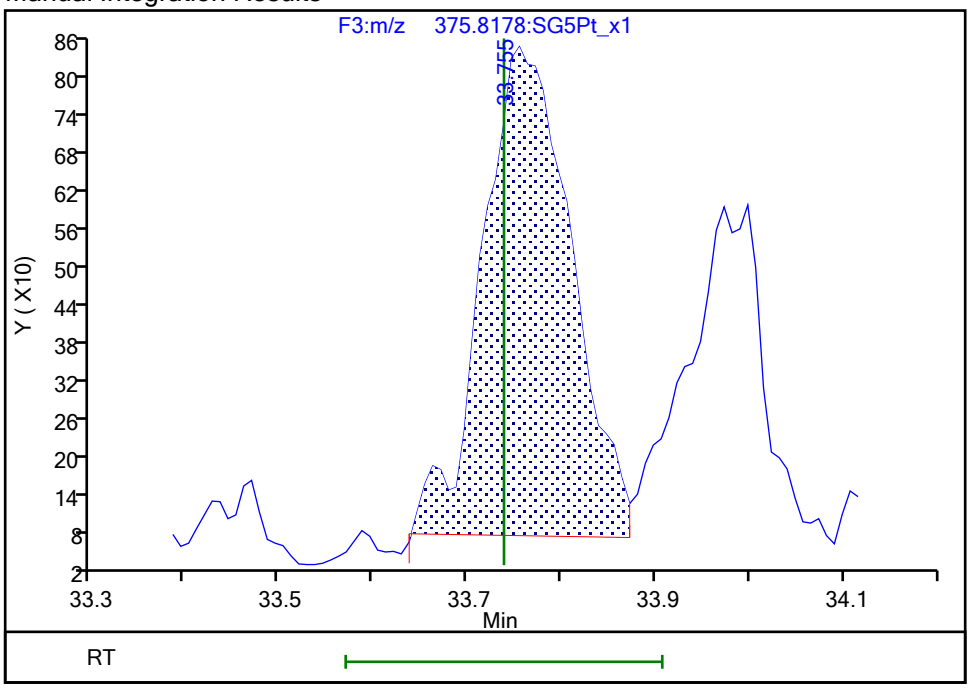
Processing Integration Results

RT: 33.76
Area: 5214
Amount: 0.265523
Amount Units: pg/ul



Manual Integration Results

RT: 33.76
Area: 5144
Amount: 0.262238
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:27:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

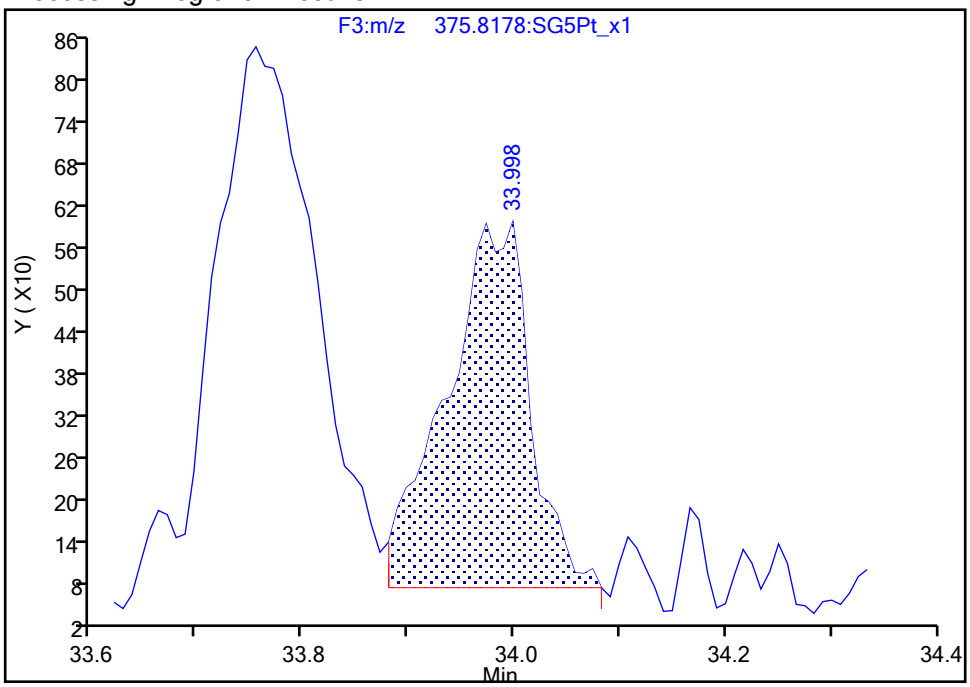
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

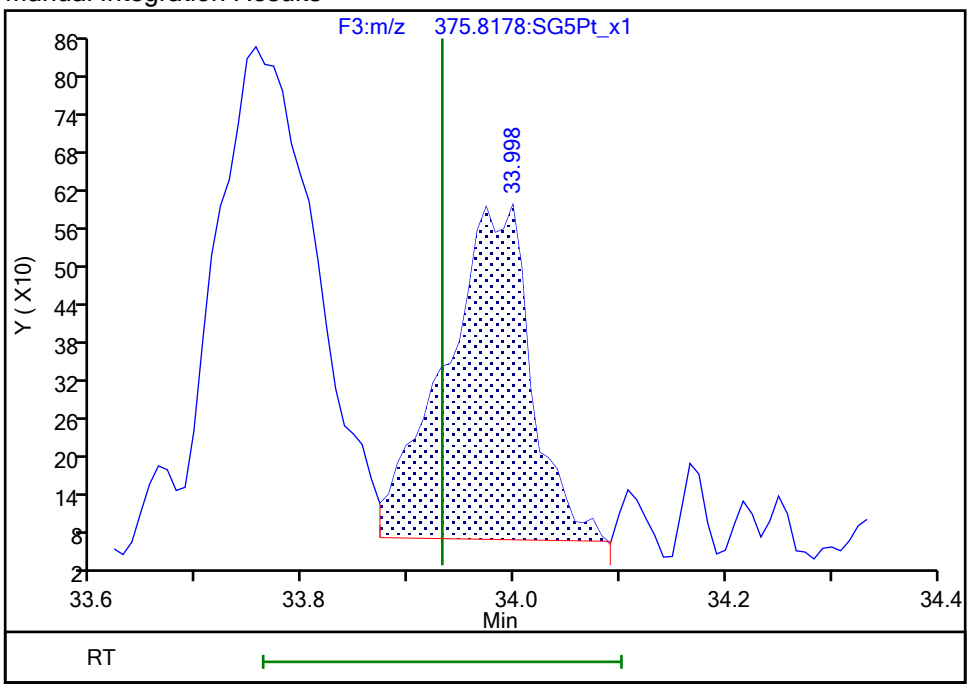
Processing Integration Results

RT: 34.00
Area: 2906
Amount: 0.127130
Amount Units: pg/ul



Manual Integration Results

RT: 34.00
Area: 3011
Amount: 0.112717
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:27:32

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

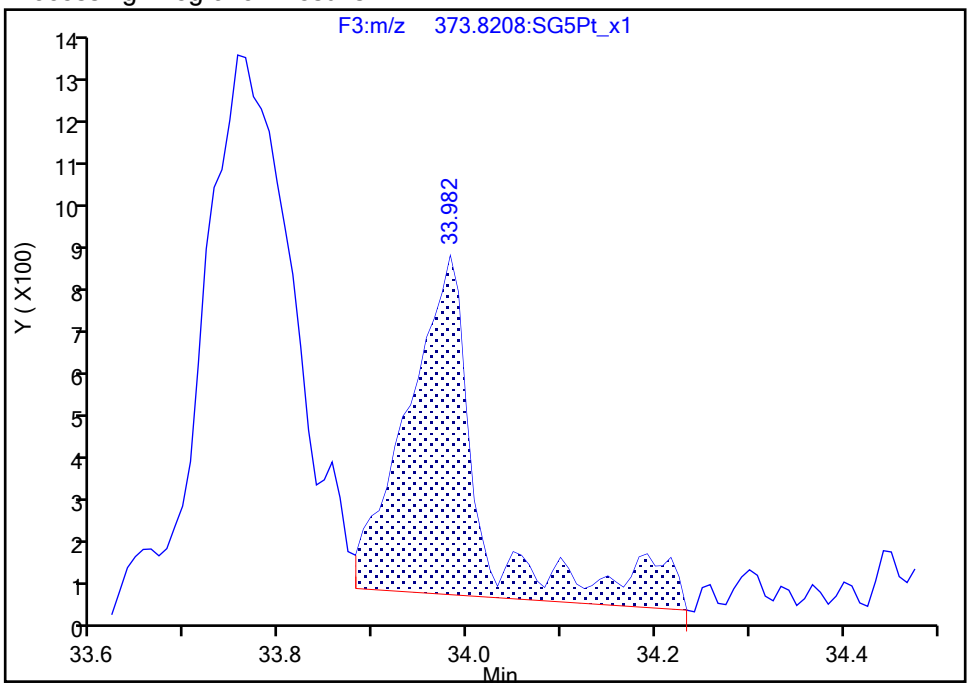
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

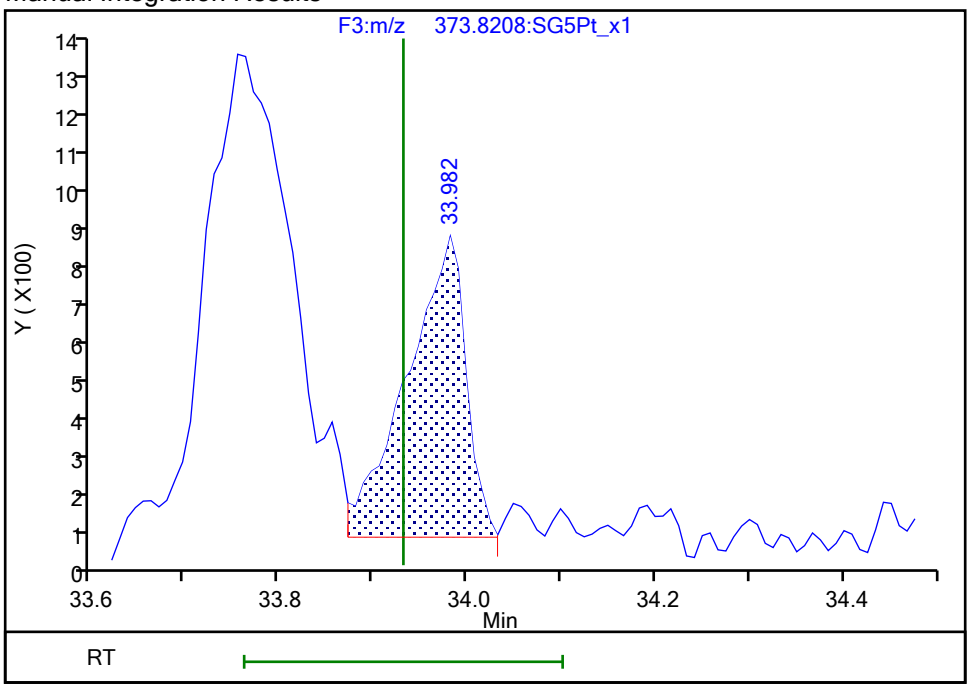
Processing Integration Results

RT: 33.98
Area: 4327
Amount: 0.127130
Amount Units: pg/ul



Manual Integration Results

RT: 33.98
Area: 3402
Amount: 0.112717
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:27:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

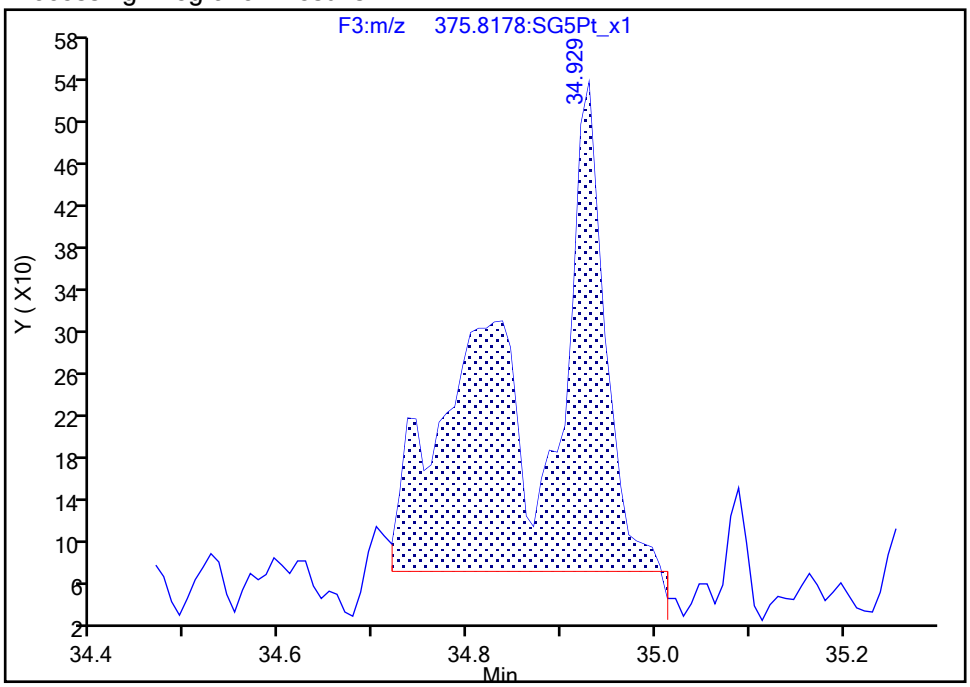
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

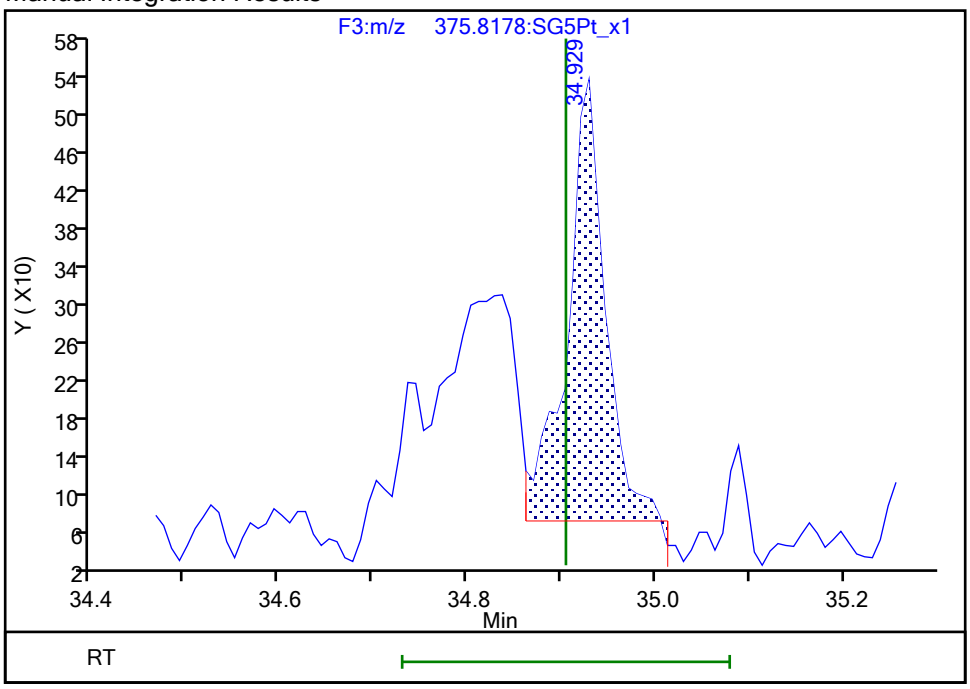
Processing Integration Results

RT: 34.93
Area: 2705
Amount: 0.089235
Amount Units: pg/ul



Manual Integration Results

RT: 34.93
Area: 1305
Amount: 0.062017
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:27:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

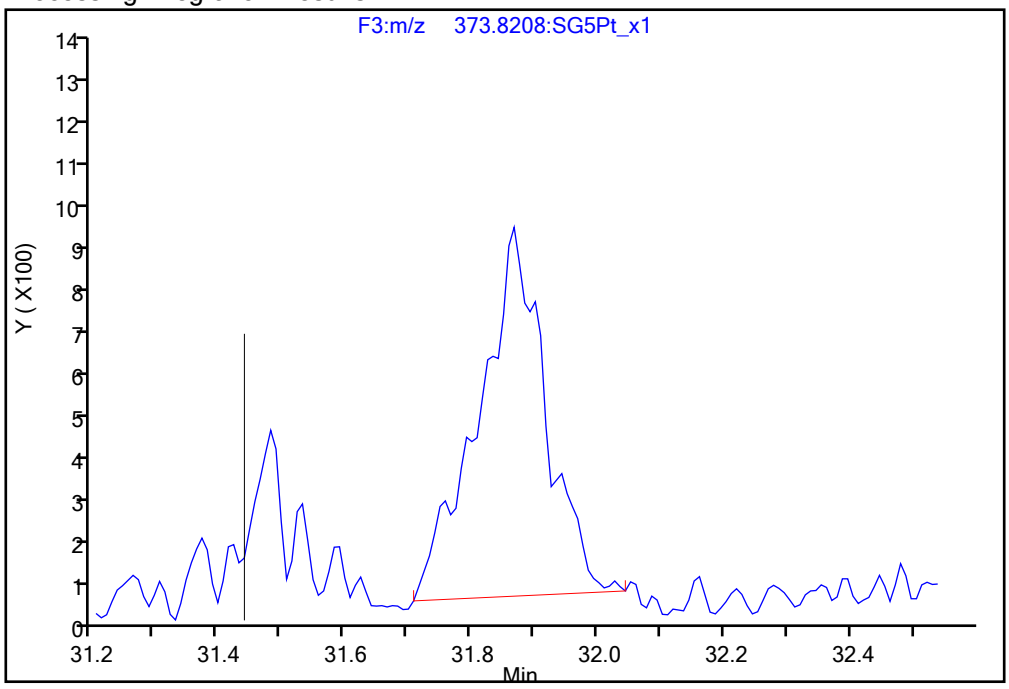
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (31.44- 36.06)

Signal: 1

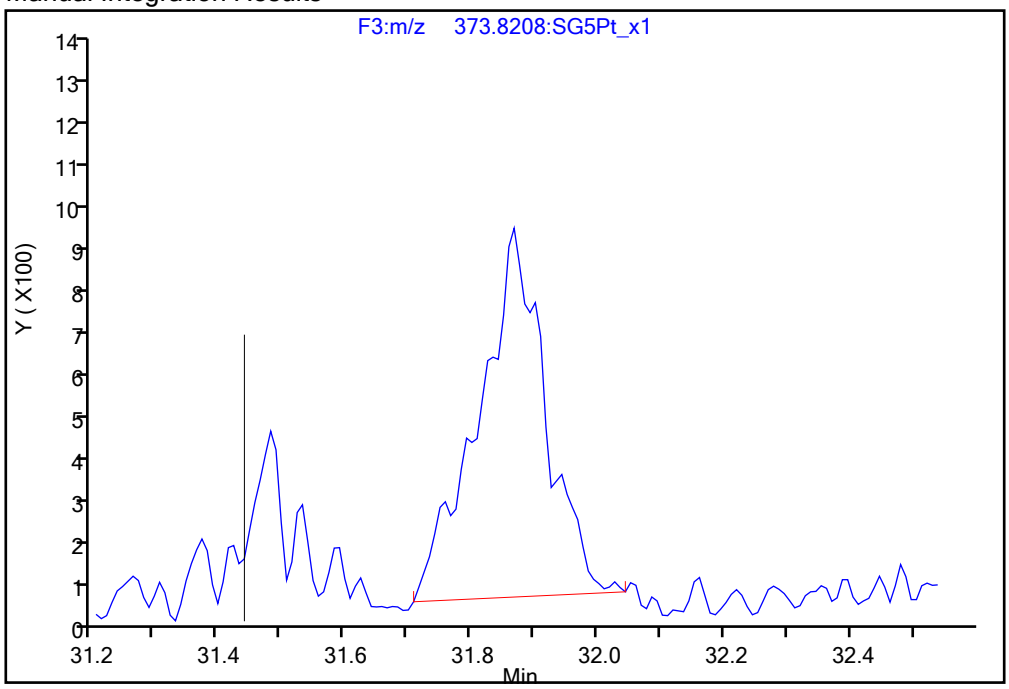
Processing Integration Results

RT = 31.868 Area = 6277



Manual Integration Results

RT = 31.868 Area = 6277



Reviewer: dadunj, 17-Dec-2019 09:29:07

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

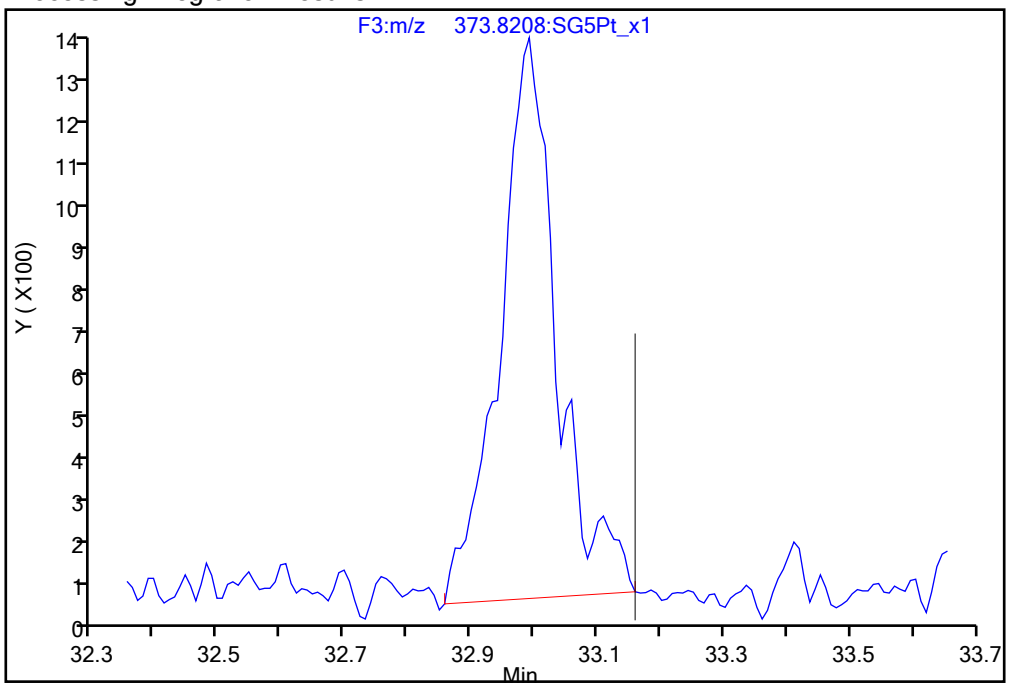
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (31.44- 36.06)

Signal: 1

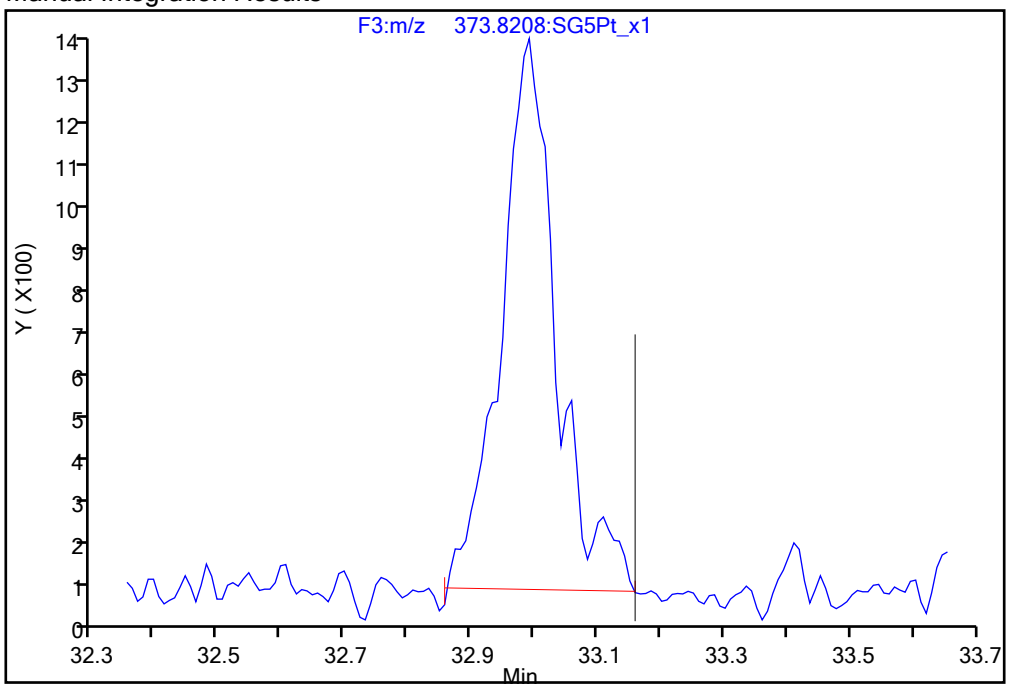
Processing Integration Results

RT = 32.992 Area = 8152



Manual Integration Results

RT = 32.992 Area = 7772 M



Reviewer: dadunj, 17-Dec-2019 09:29:07

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

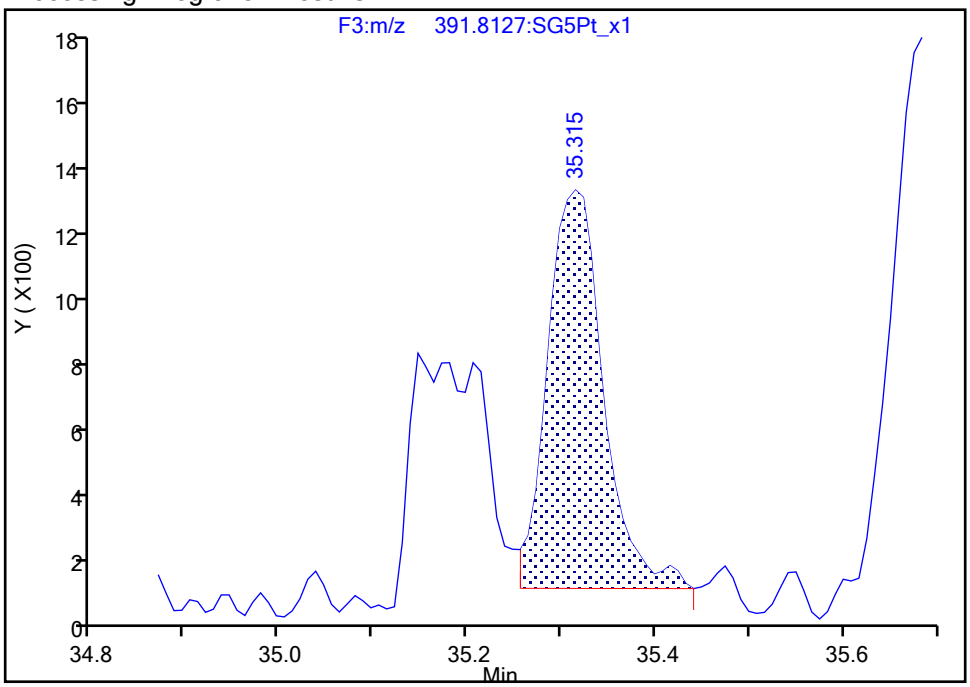
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

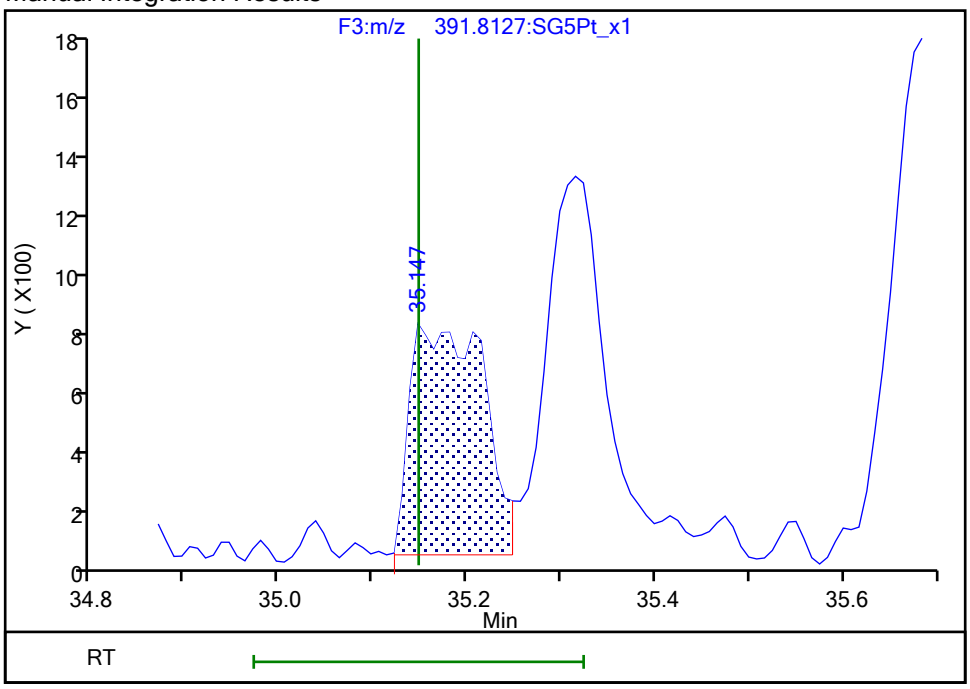
Processing Integration Results

RT: 35.31
Area: 4706
Amount: 0.419024
Amount Units: pg/ul



Manual Integration Results

RT: 35.15
Area: 3947
Amount: 0.211994
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:29:34

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

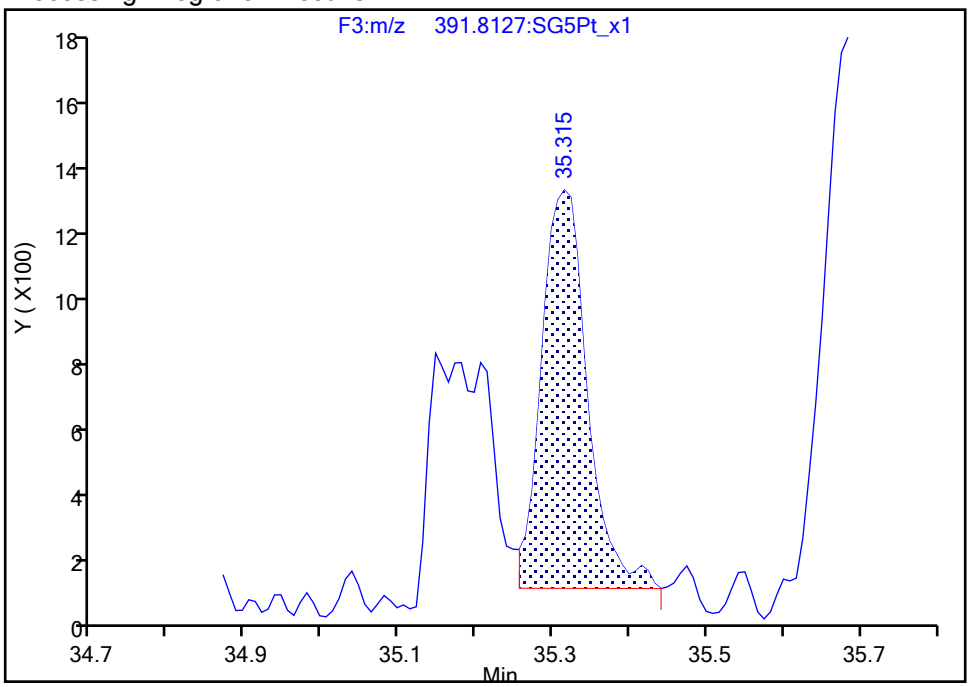
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 3

Processing Integration Results

RT: 35.31
Area: 15277
Amount: 0.419024
Amount Units: pg/ul



Manual Integration Results

RT: 35.16
Area: 7729
Amount: 0.211994
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:29:34
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

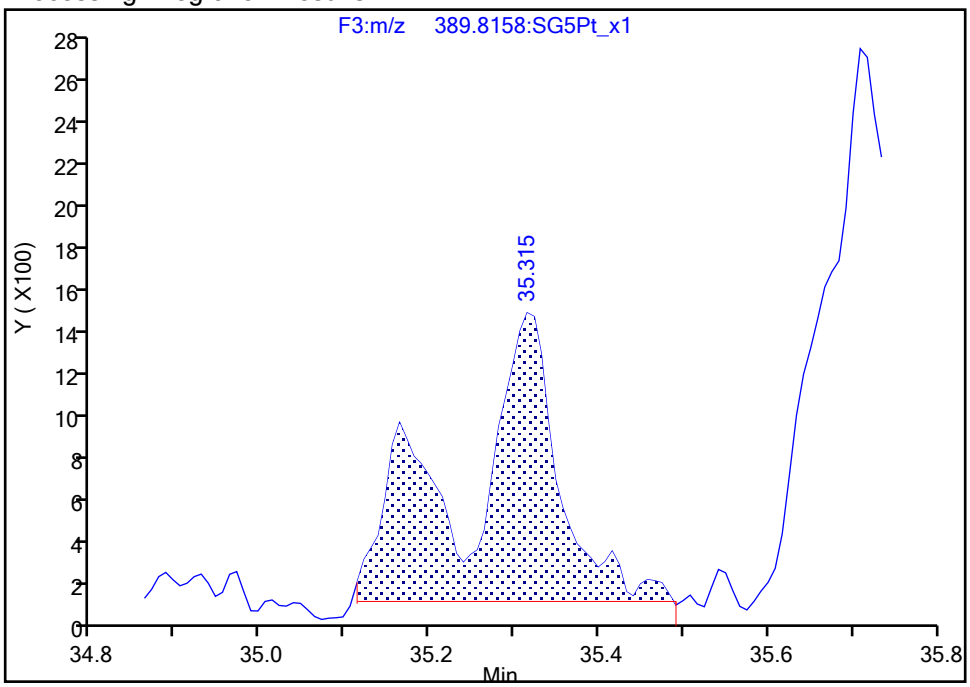
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

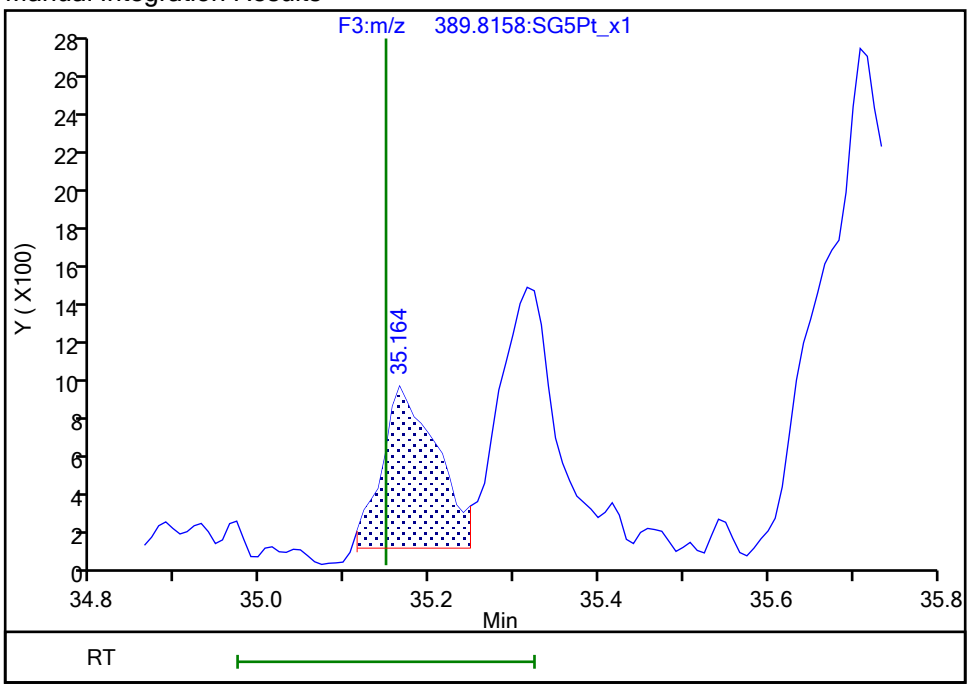
Processing Integration Results

RT: 35.31
Area: 10571
Amount: 0.419024
Amount Units: pg/ul



Manual Integration Results

RT: 35.16
Area: 3782
Amount: 0.211994
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:29:35

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

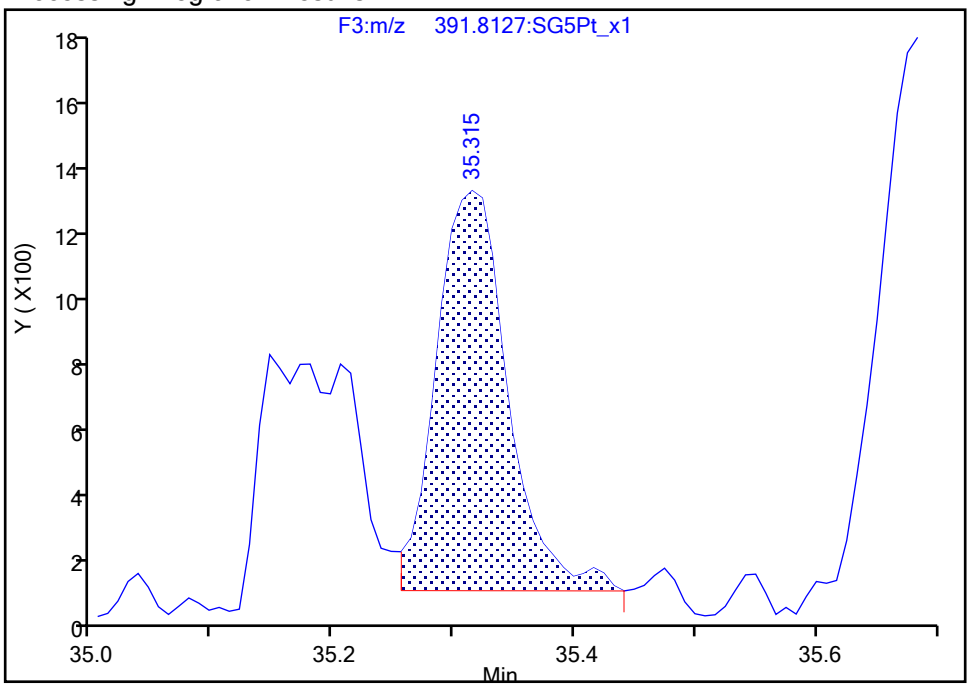
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

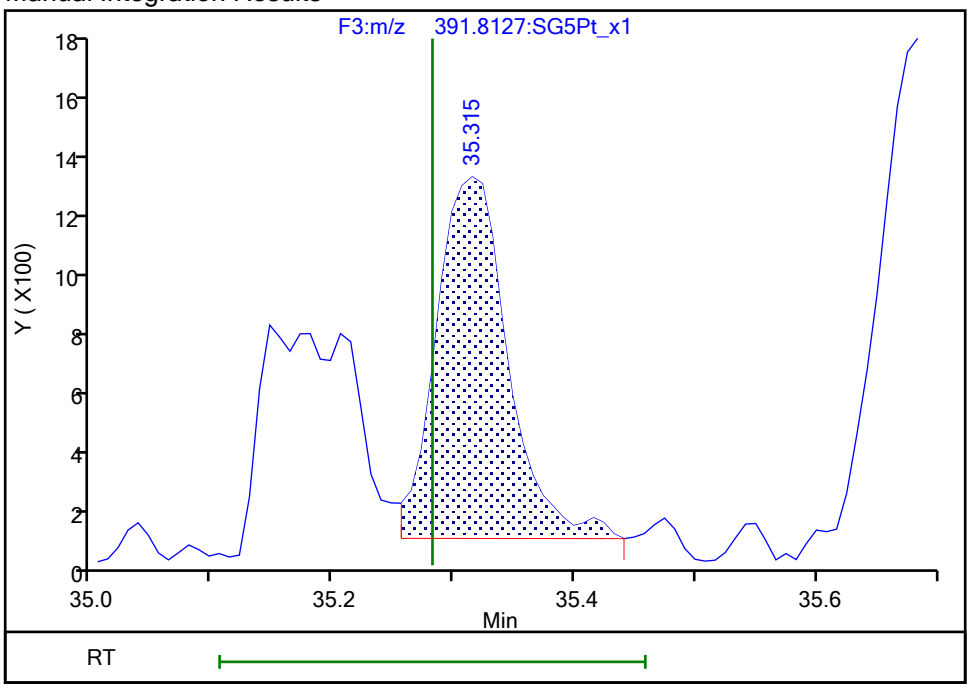
Processing Integration Results

RT: 35.31
Area: 4706
Amount: 0.403267
Amount Units: pg/ul



Manual Integration Results

RT: 35.31
Area: 4706
Amount: 0.303407
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:29:40

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

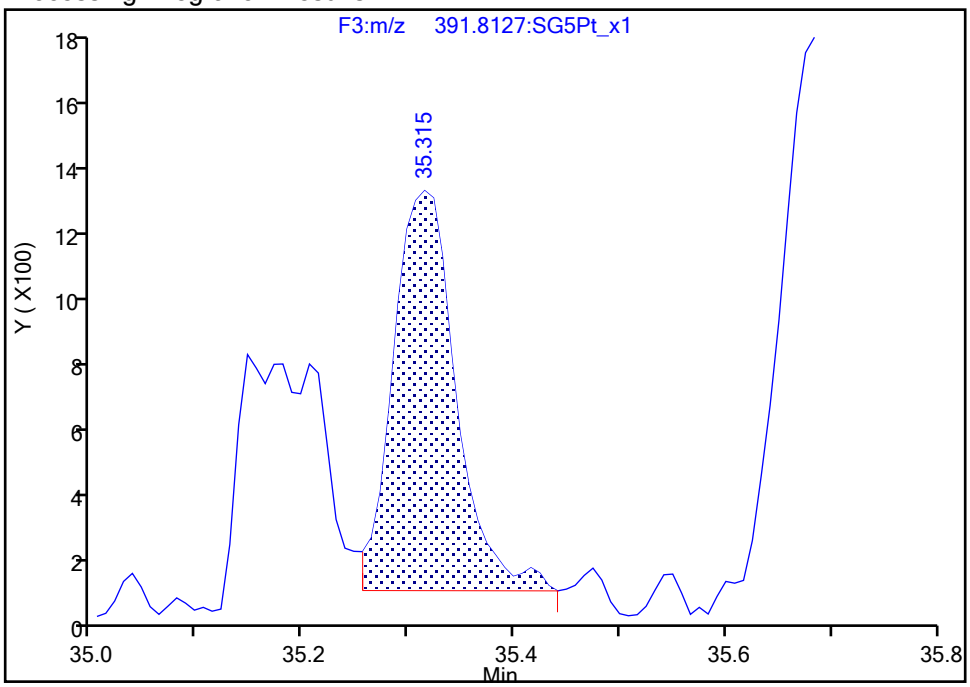
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 35.31
Area: 15277
Amount: 0.403267
Amount Units: pg/ul



Manual Integration Results

RT: 35.31
Area: 11494
Amount: 0.303407
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:29:40
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

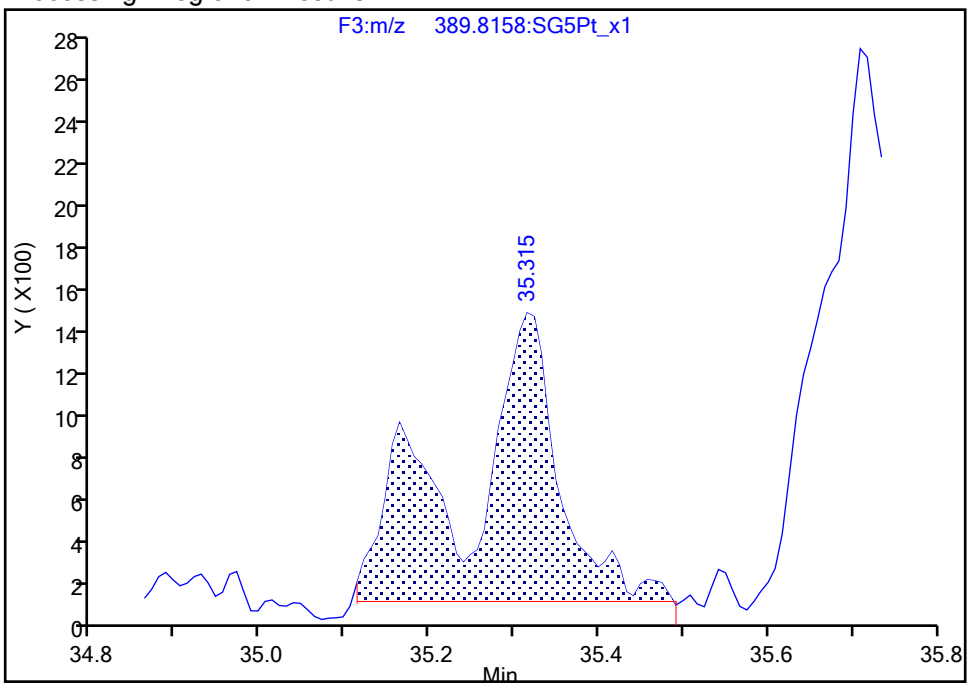
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

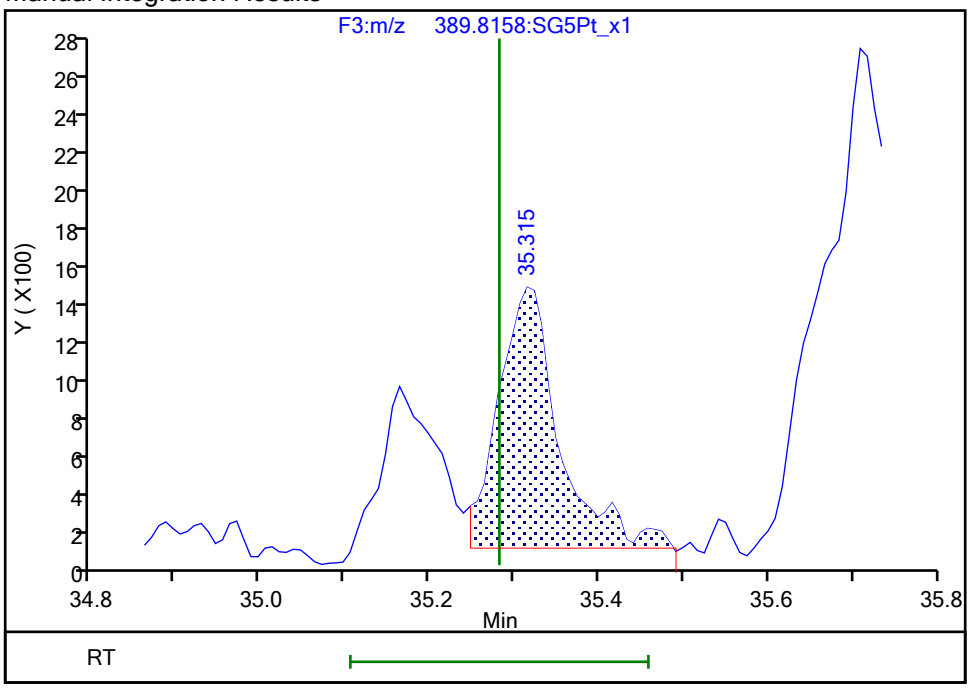
Processing Integration Results

RT: 35.31
Area: 10571
Amount: 0.403267
Amount Units: pg/ul



Manual Integration Results

RT: 35.31
Area: 6788
Amount: 0.303407
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:29:41

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

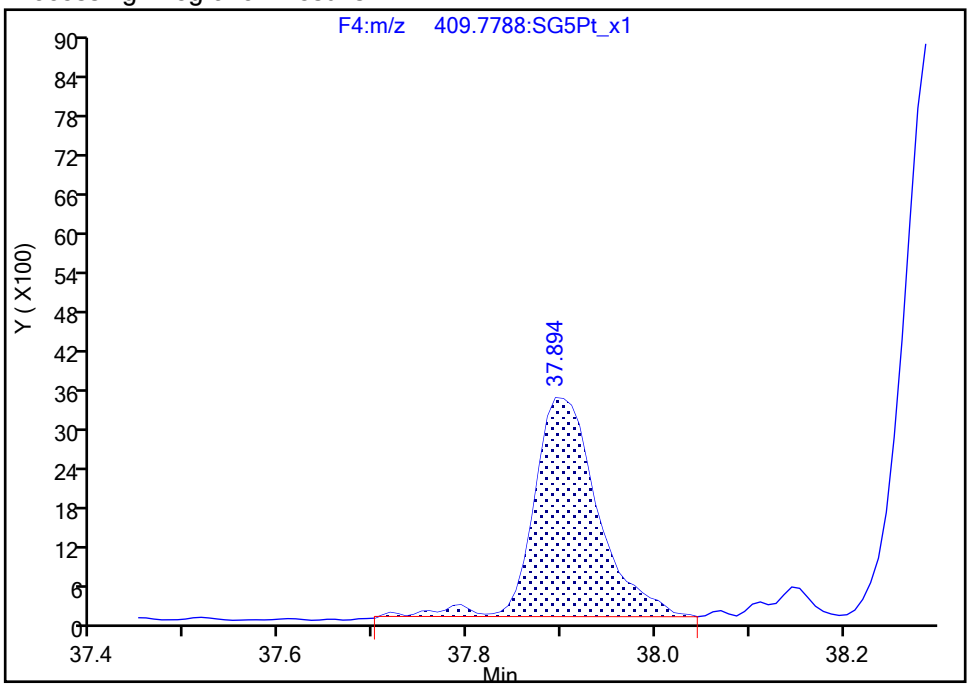
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d				
Injection Date:	13-Dec-2019 18:11:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-2-A	Lab Sample ID:	320-56911-2		
Client ID:	11187072-120719-SS-SJSSA01 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

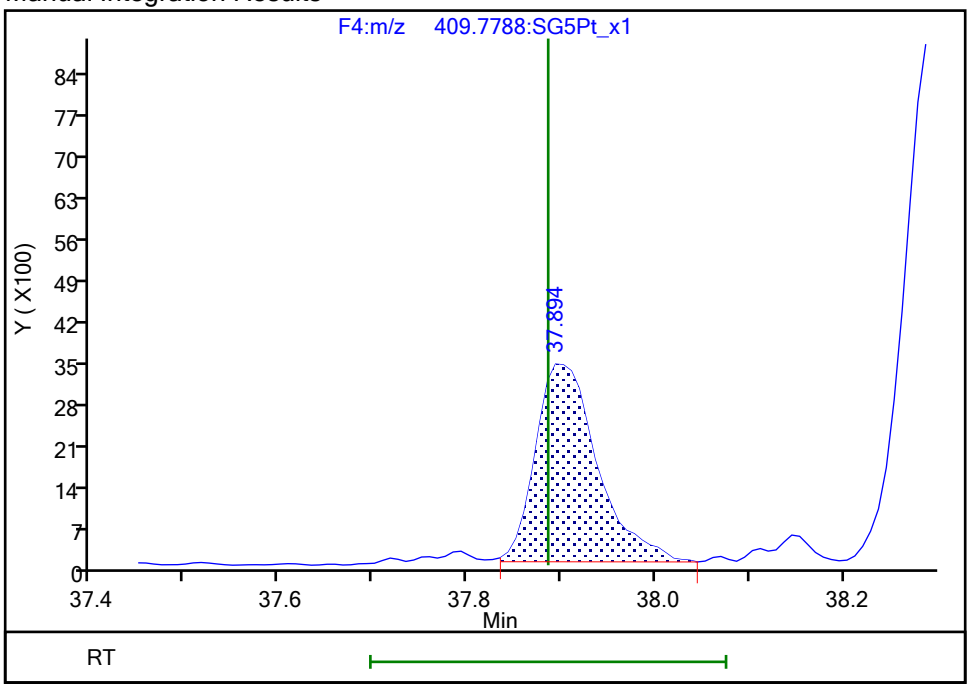
Processing Integration Results

RT: 37.89
Area: 15965
Amount: 0.738954
Amount Units: pg/ul



Manual Integration Results

RT: 37.89
Area: 15423
Amount: 0.726835
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:29:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 17-Dec-2019 09:30:52 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
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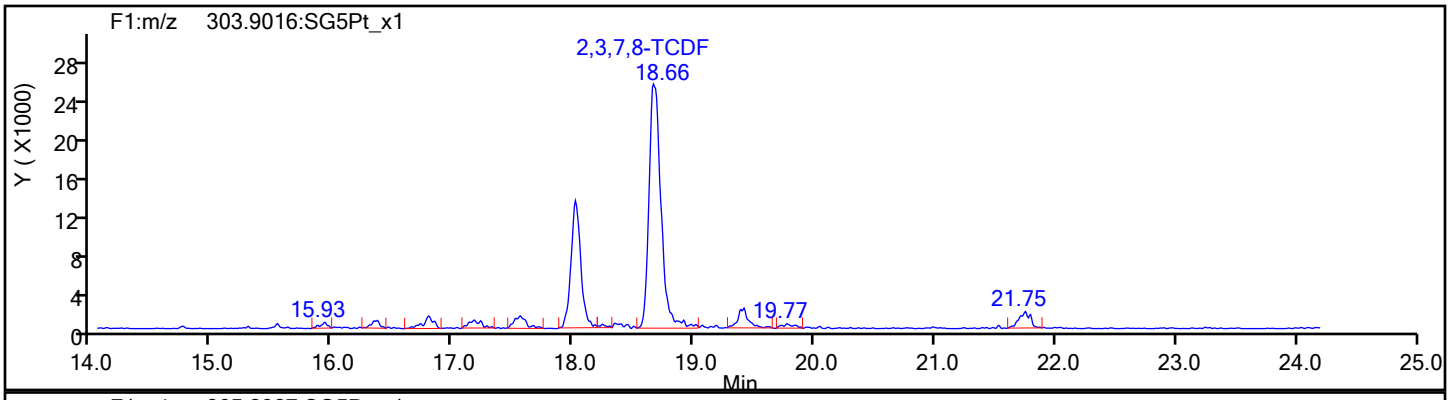
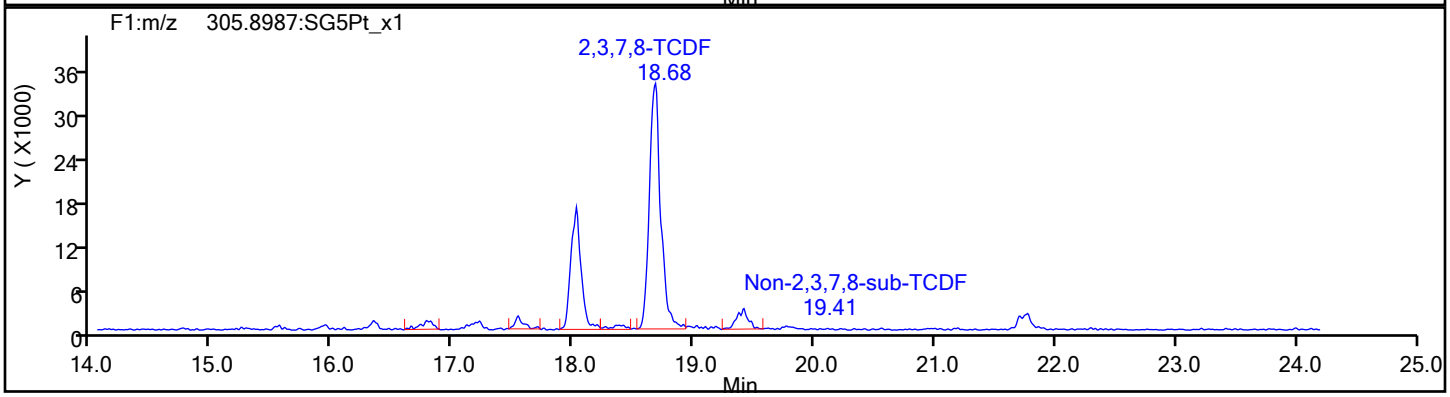
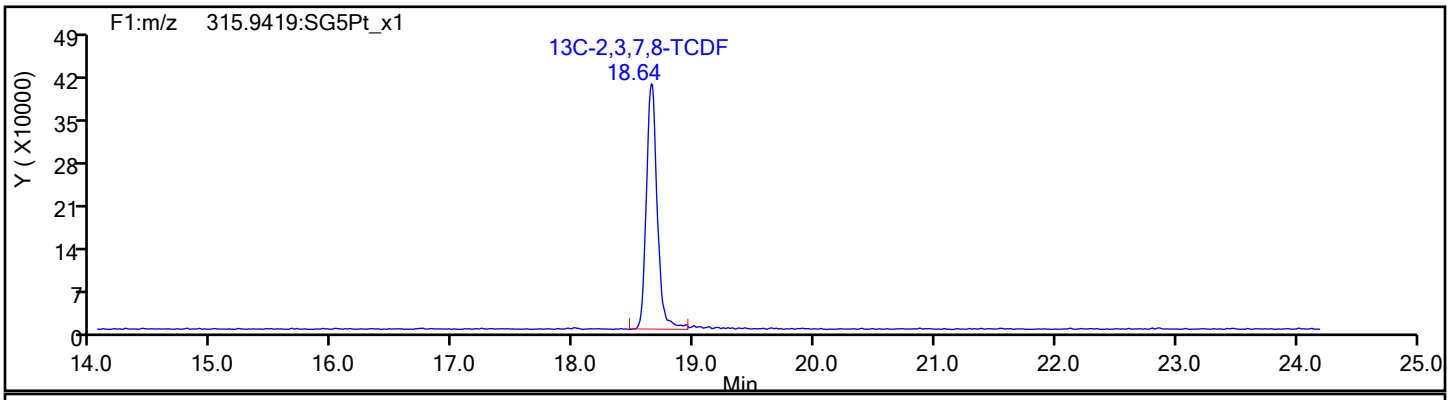
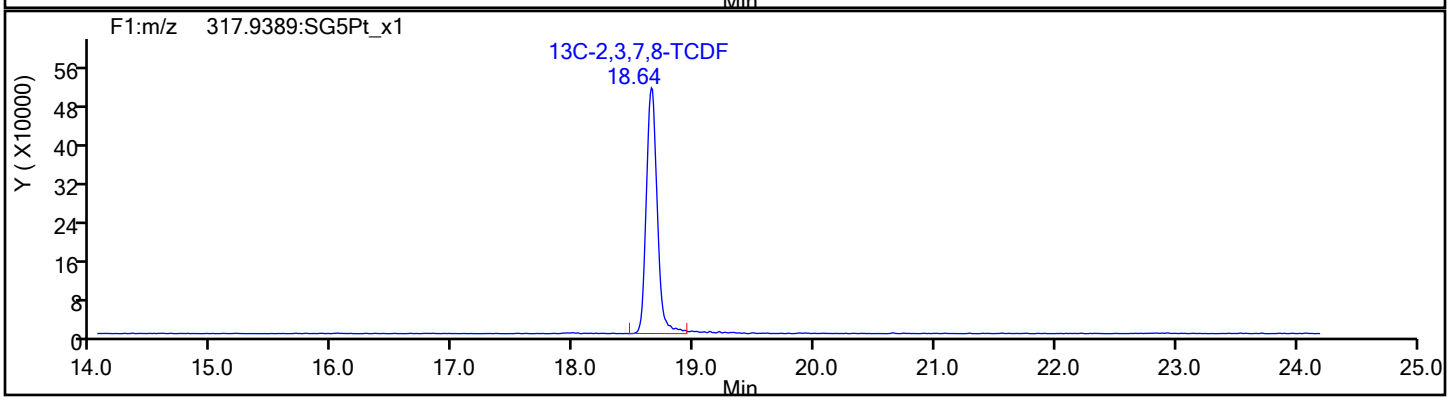
TCDF





TCDF Standards





Report Date: 17-Dec-2019 09:30:52 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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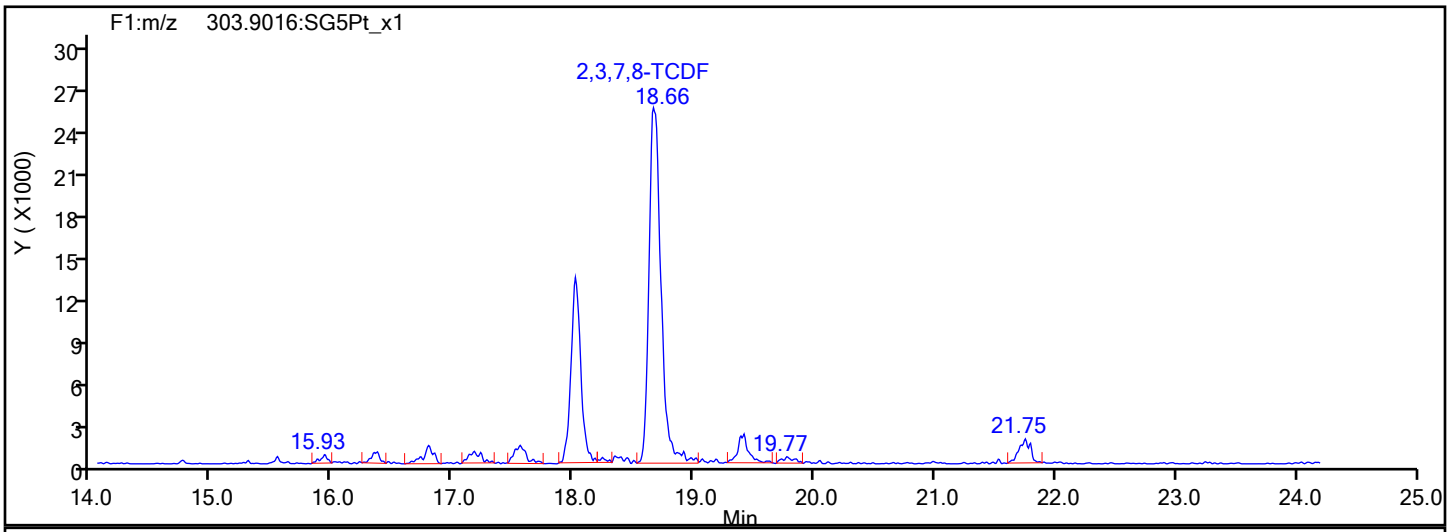
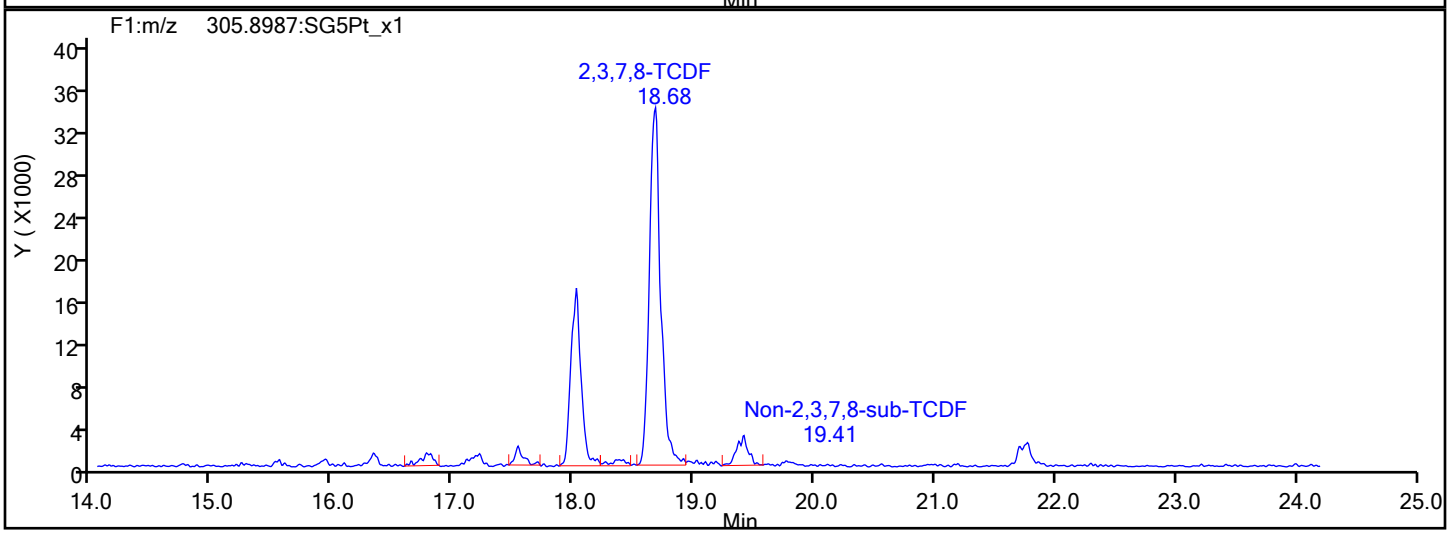
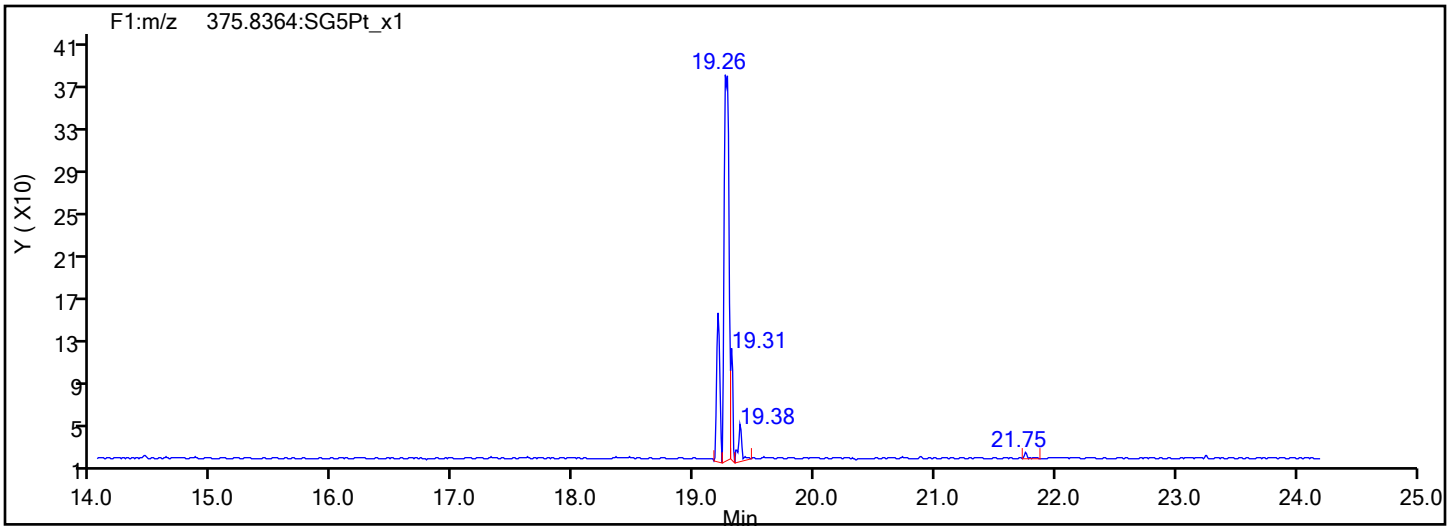




TCDF Interference Mass



Report Date: 17-Dec-2019 09:30:52 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
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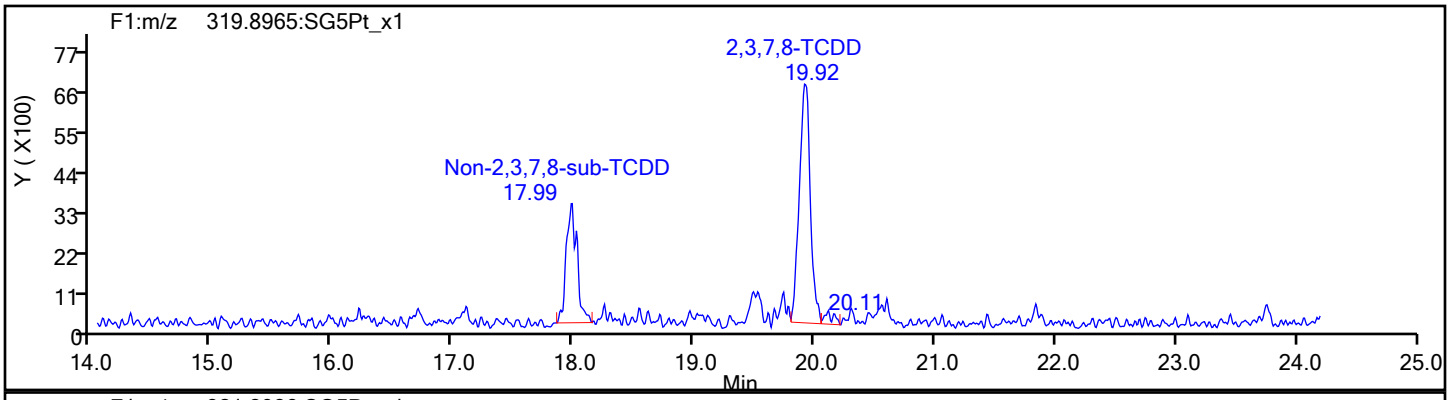
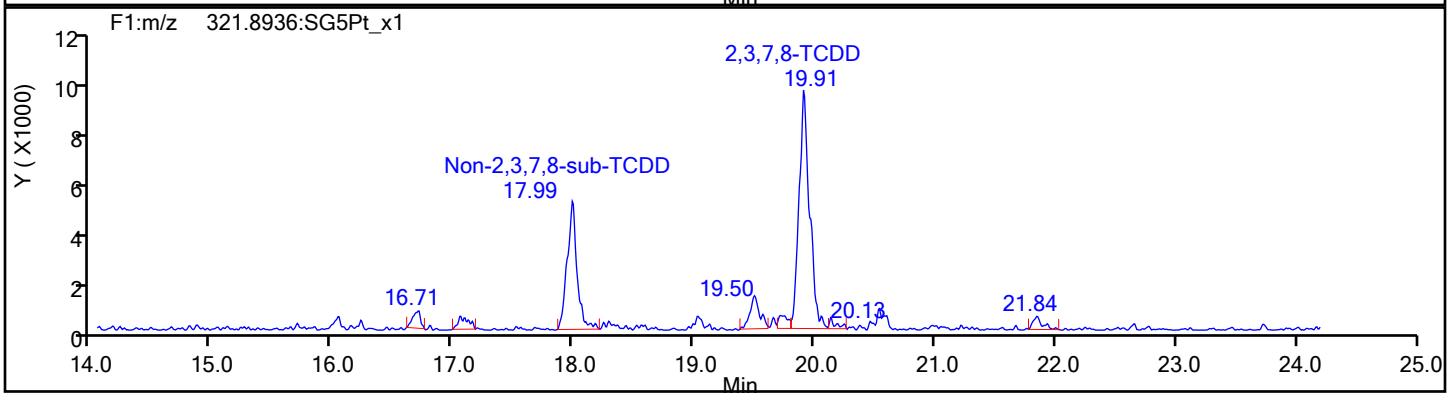
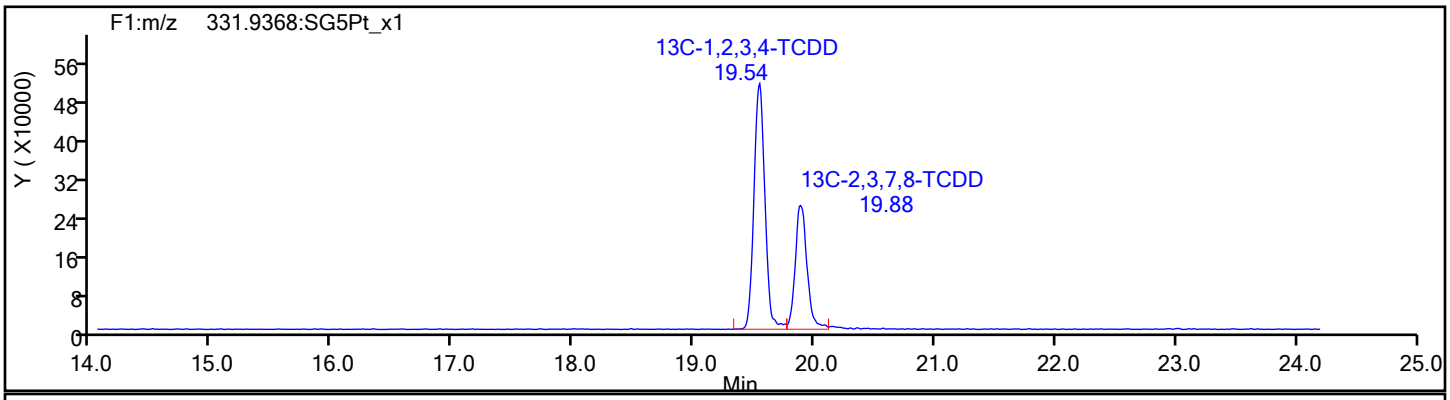
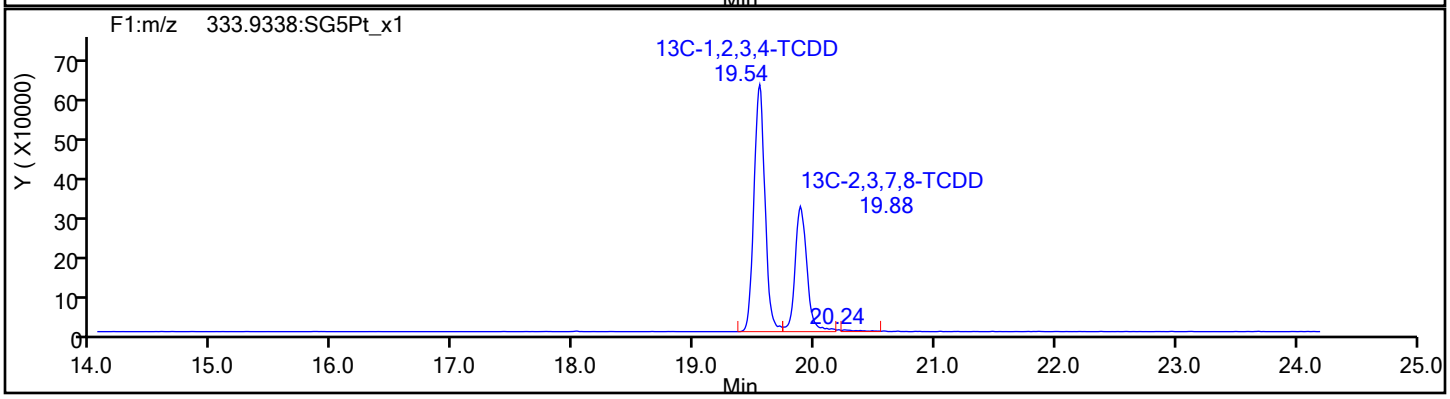
TCDD





TCDD Standards





Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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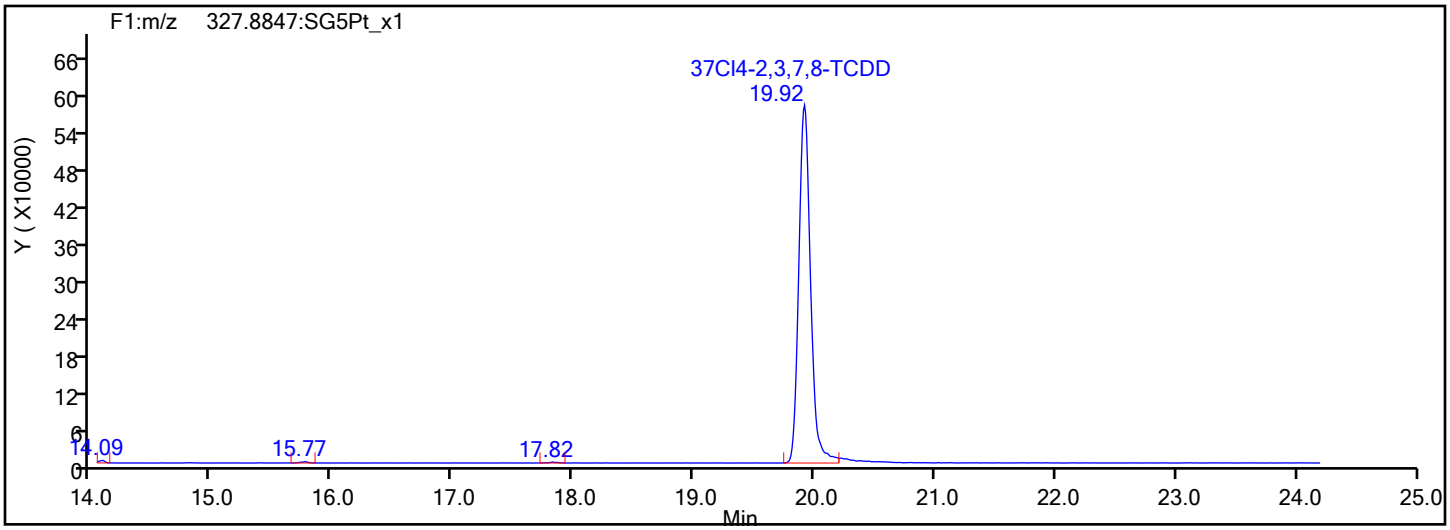
37Cl4-TCDD



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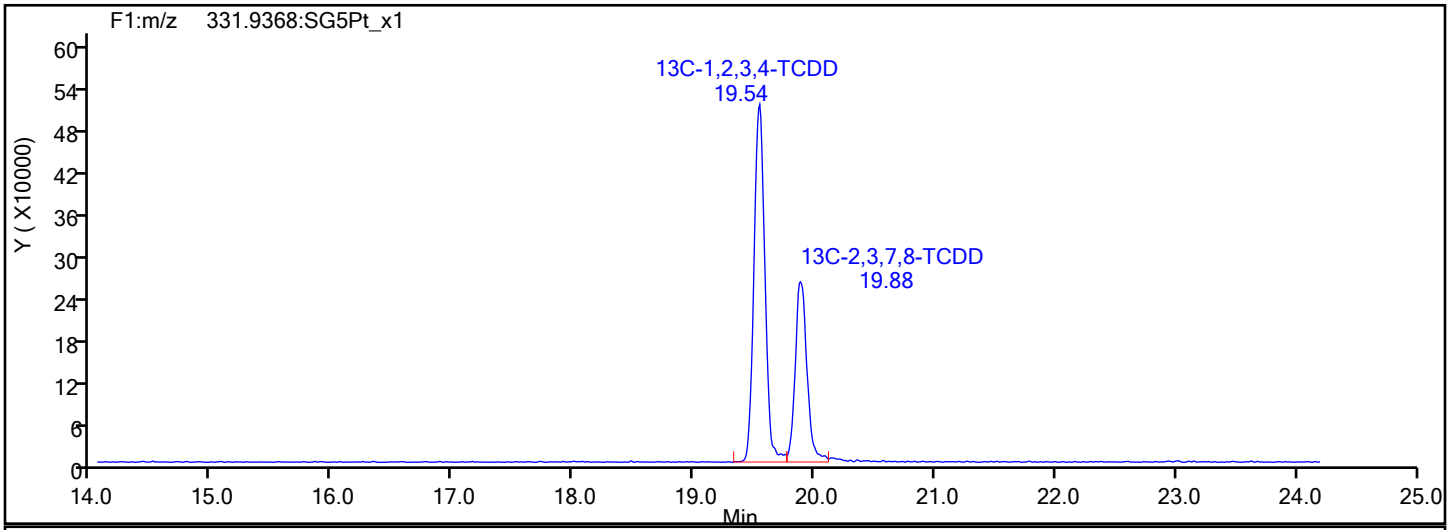

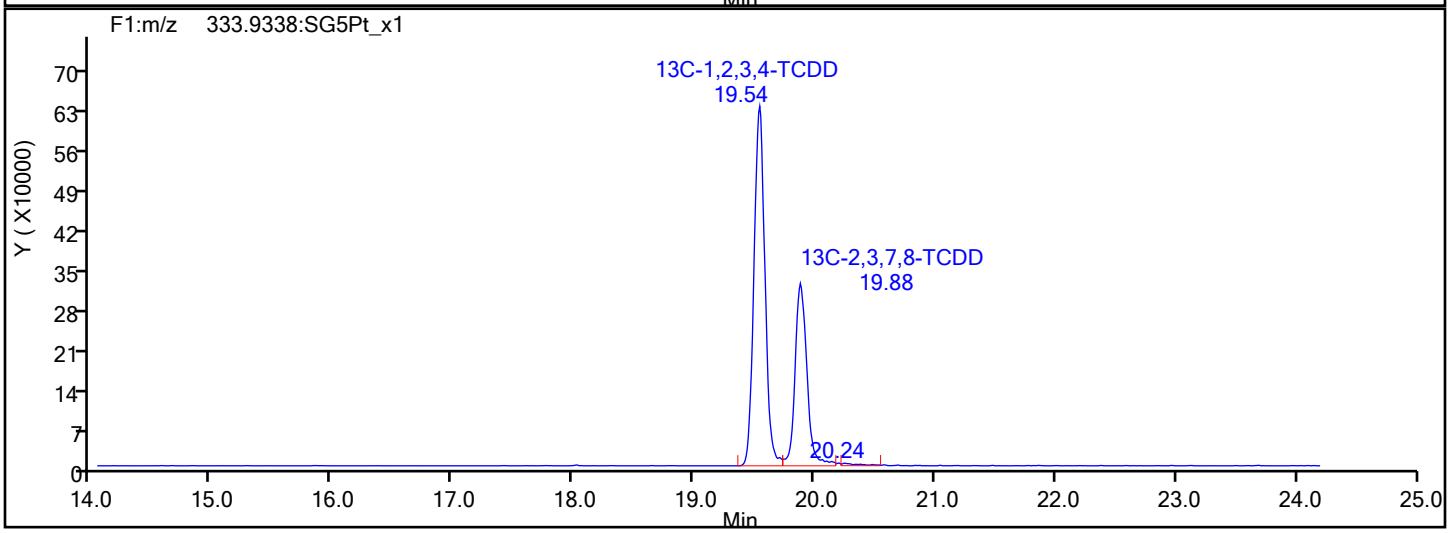

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Eurofins TestAmerica, Sacramento

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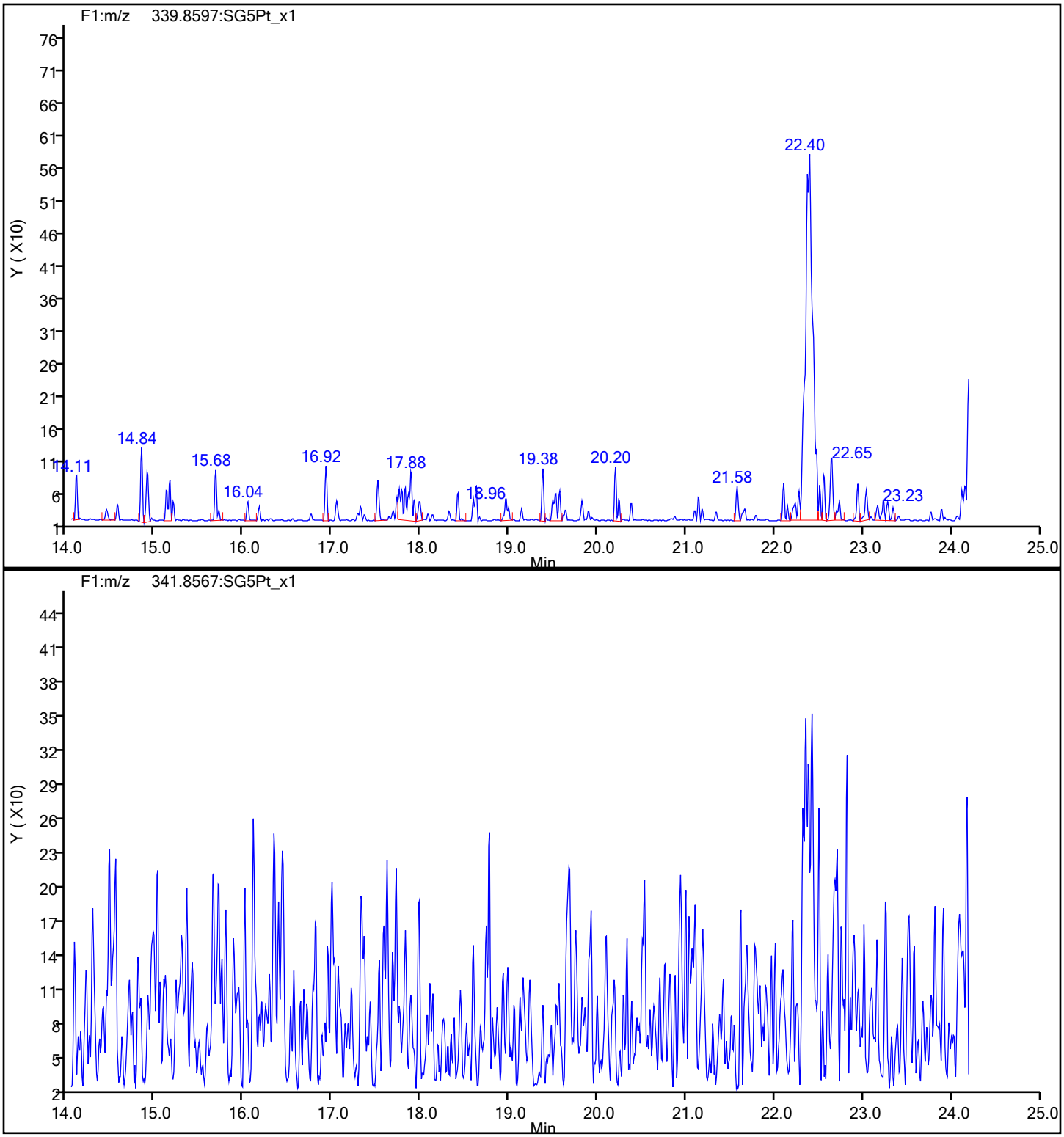
F1 PeCDFs



Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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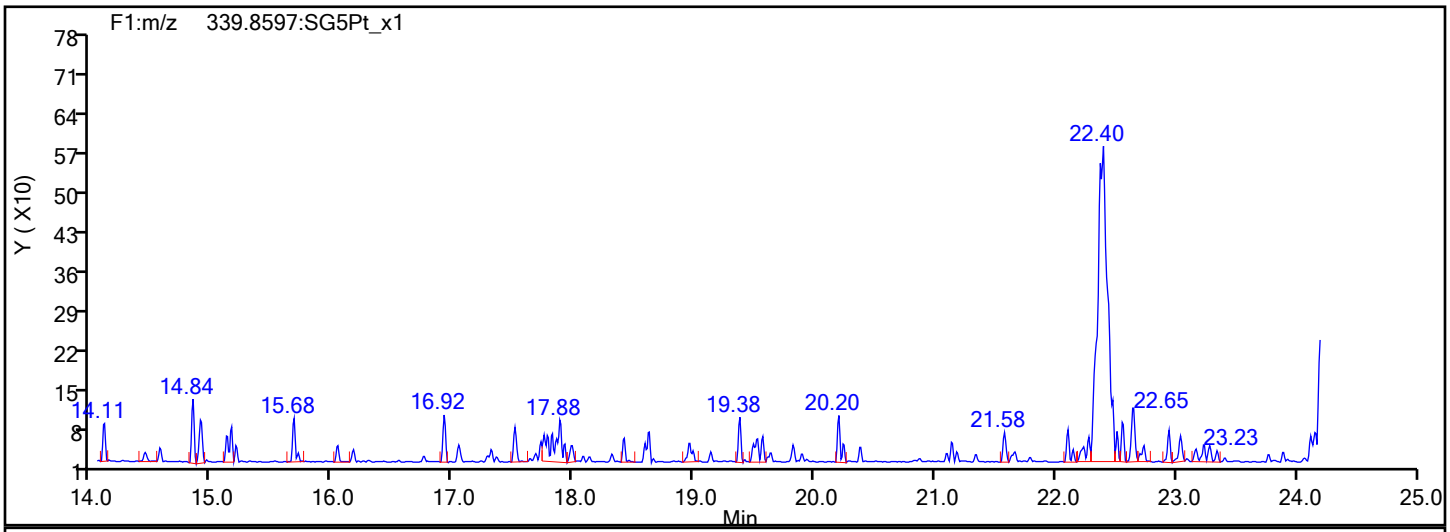
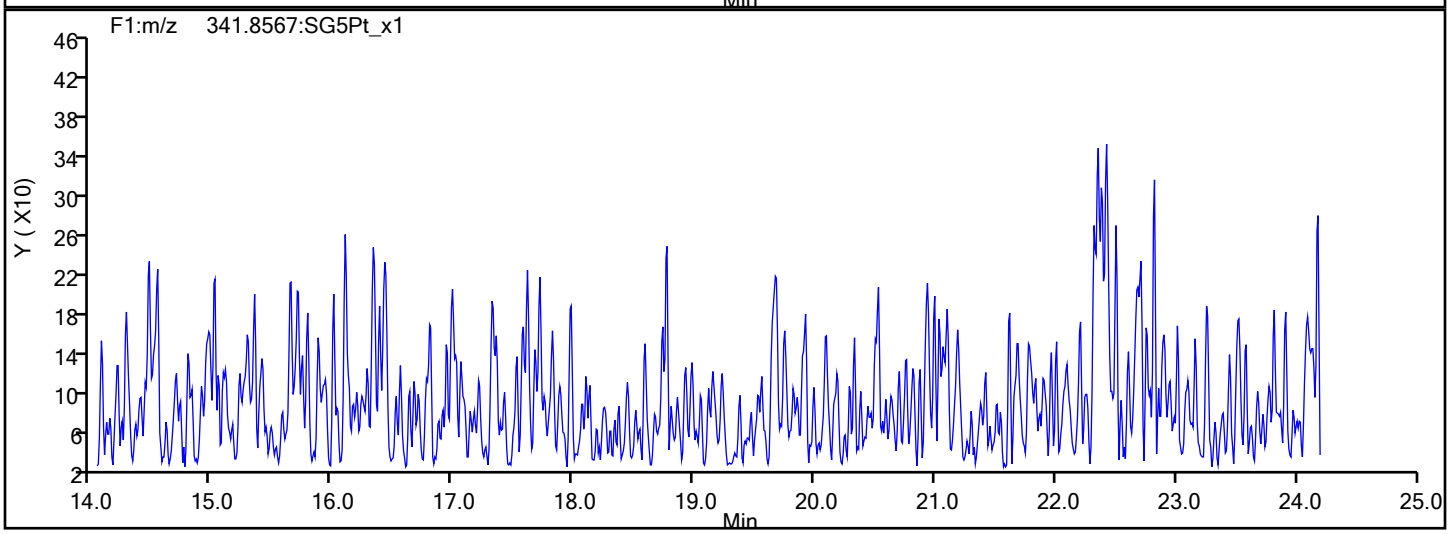
F1 PeCDFs





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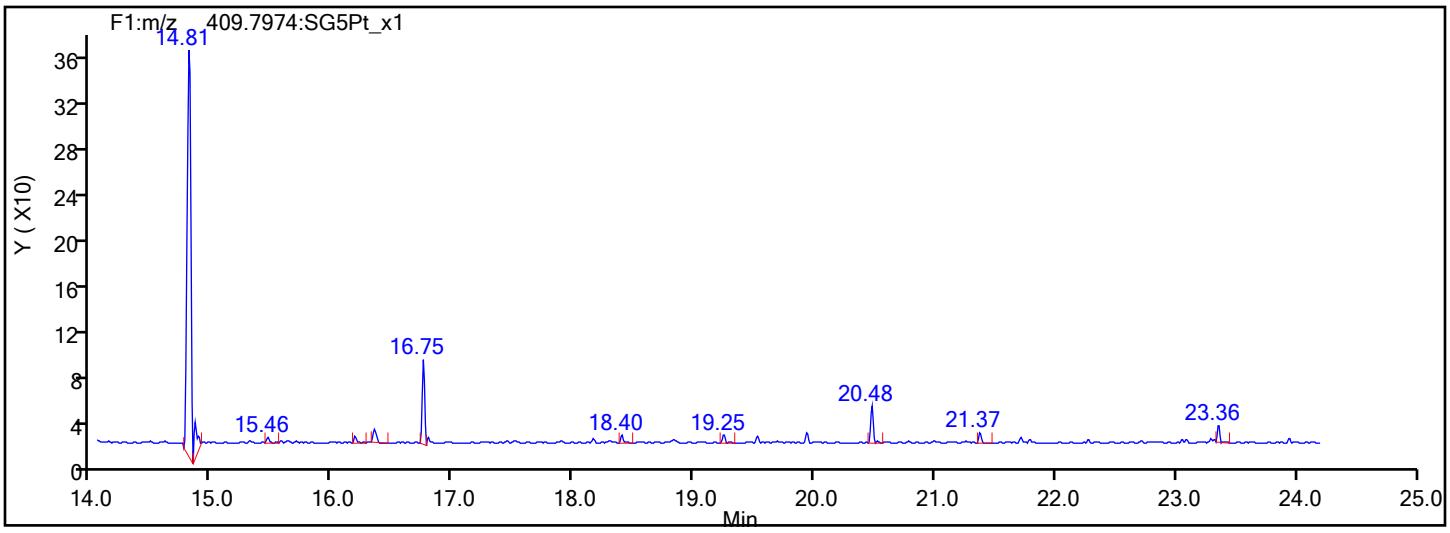

Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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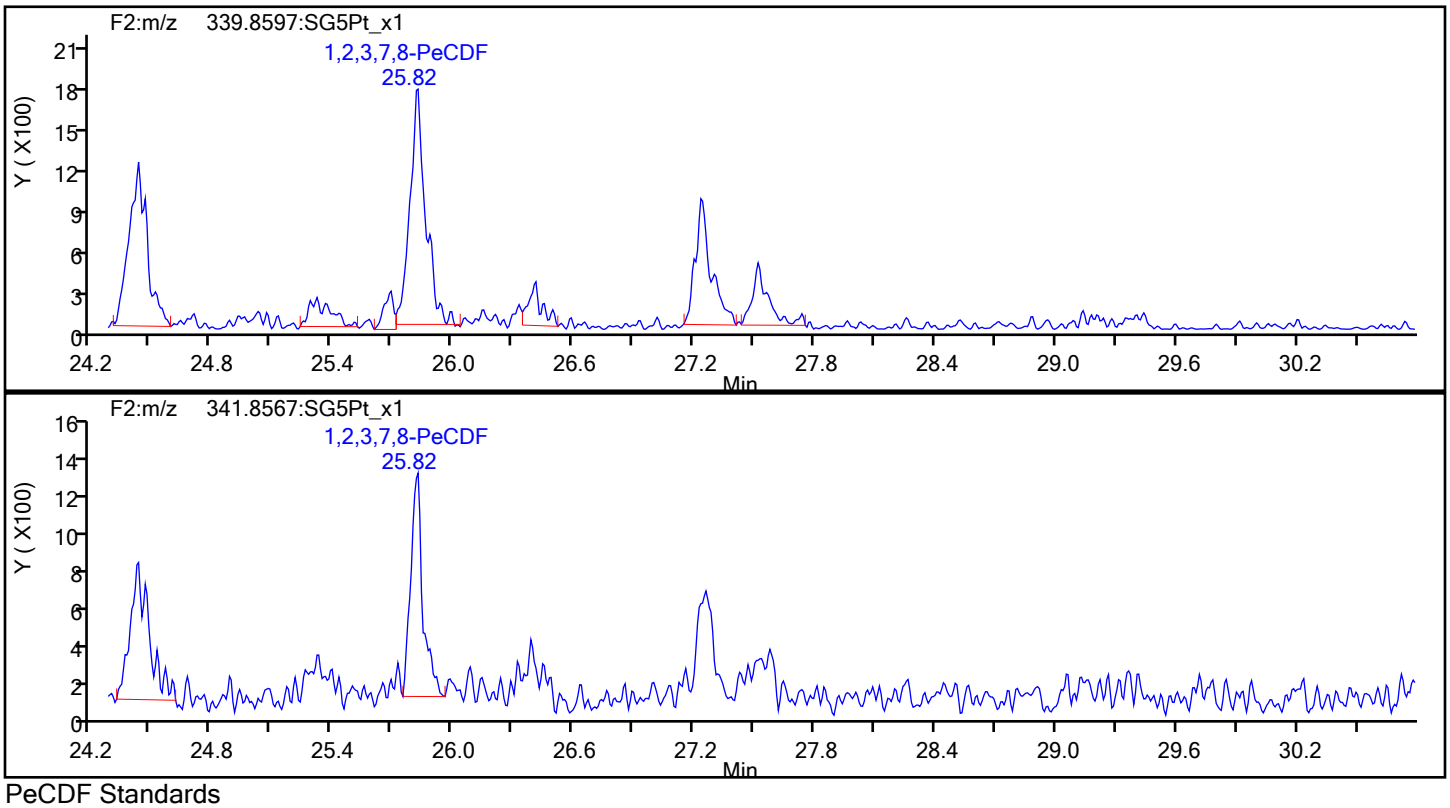
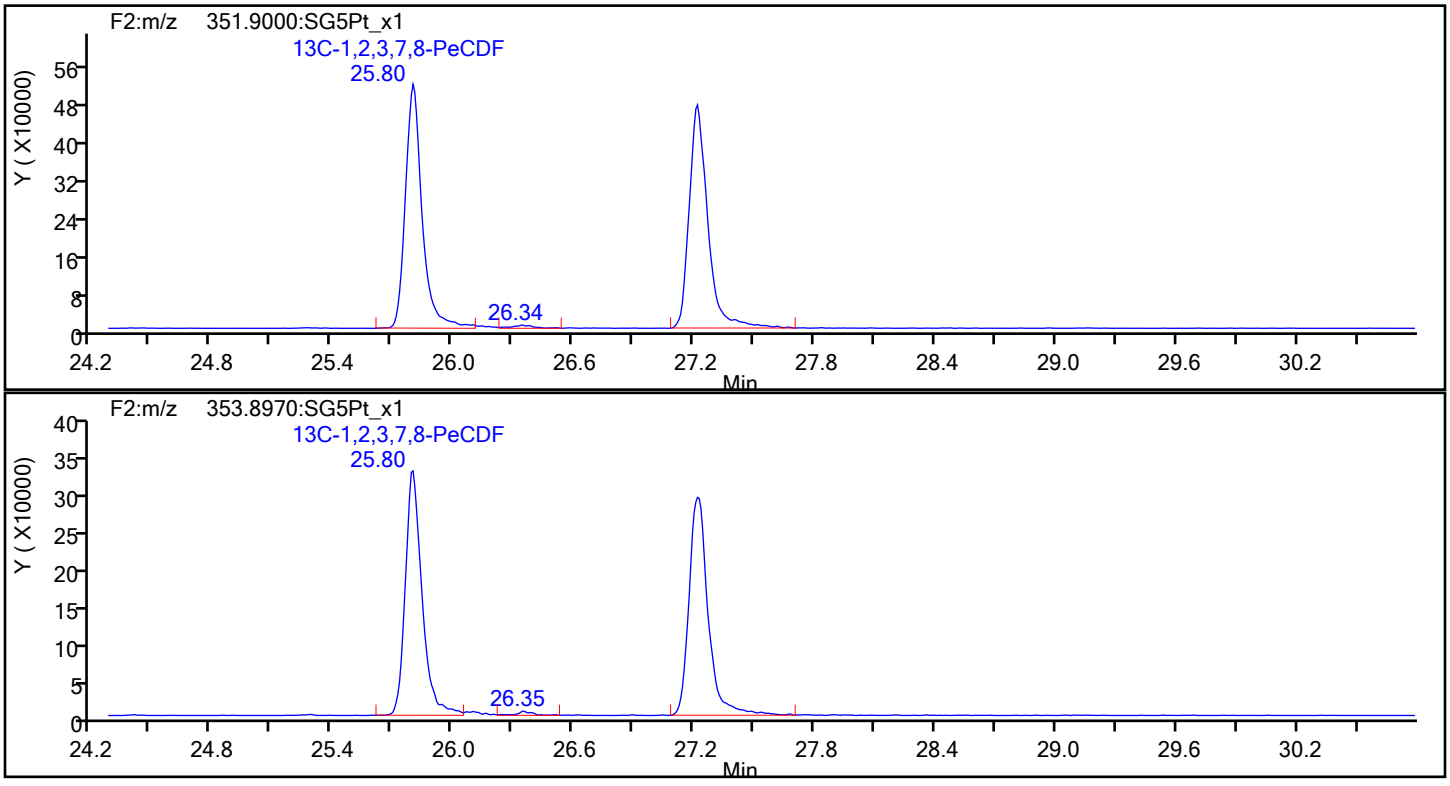
PeCDF



PeCDF Standards



Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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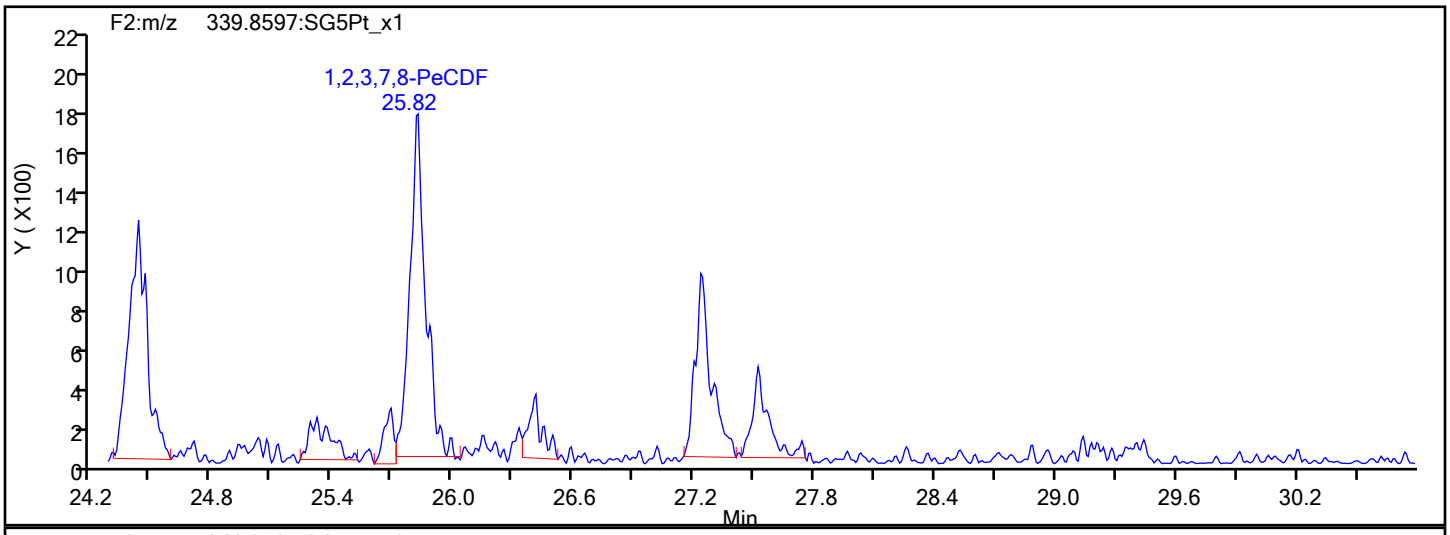
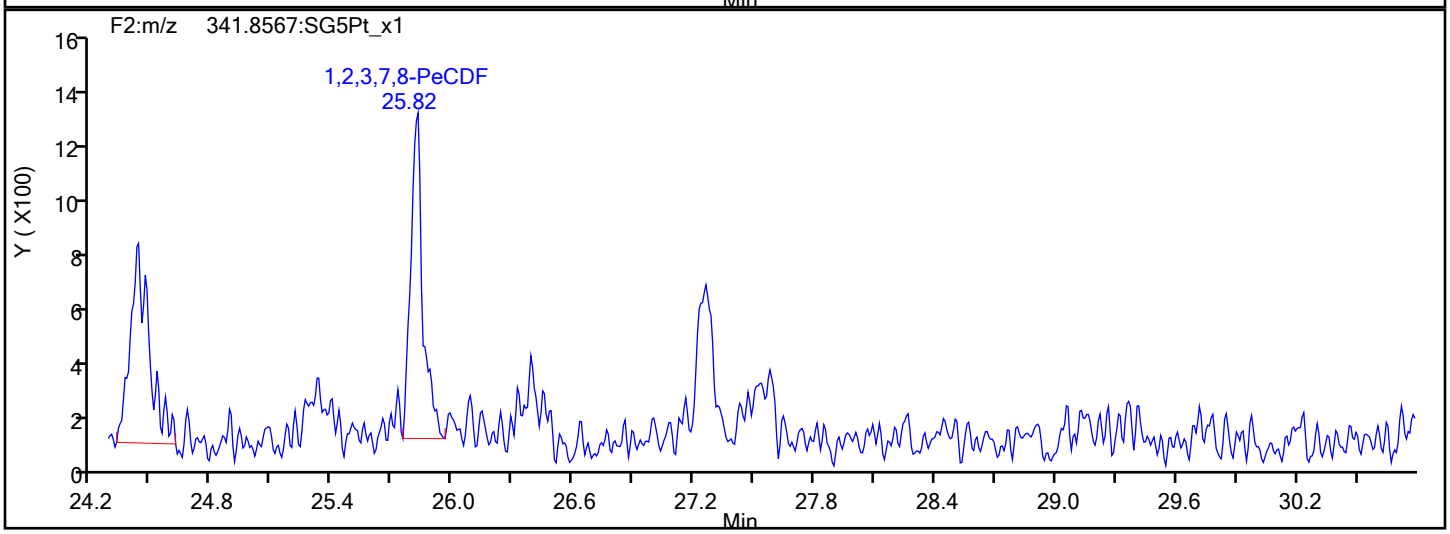
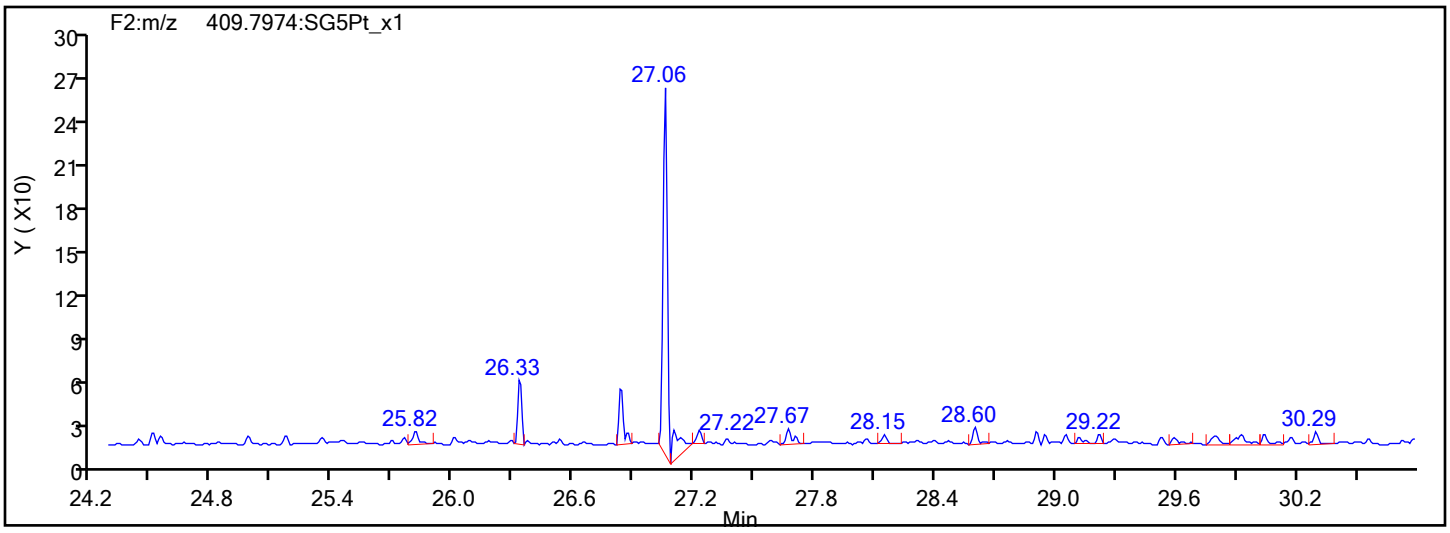
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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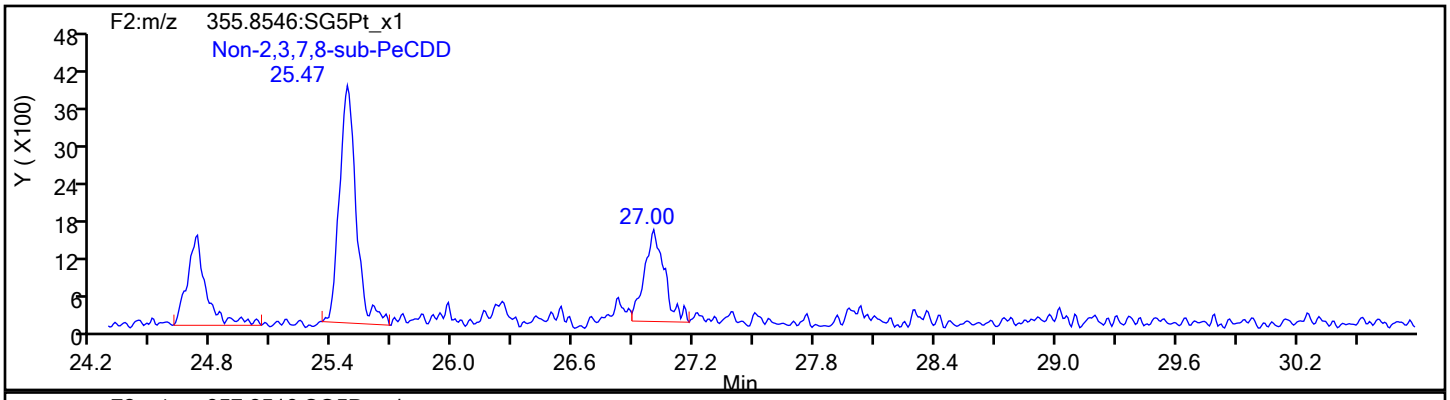
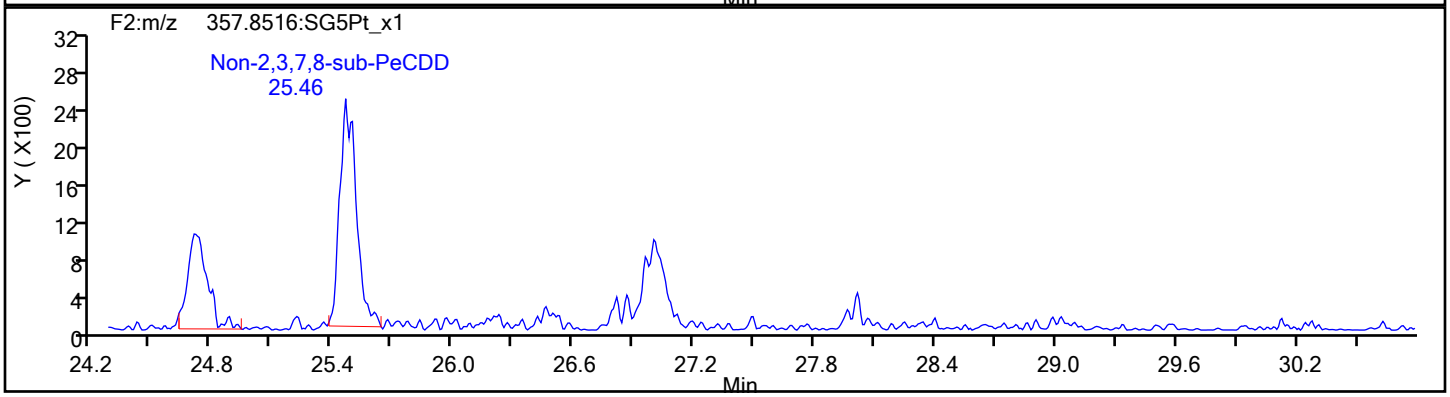
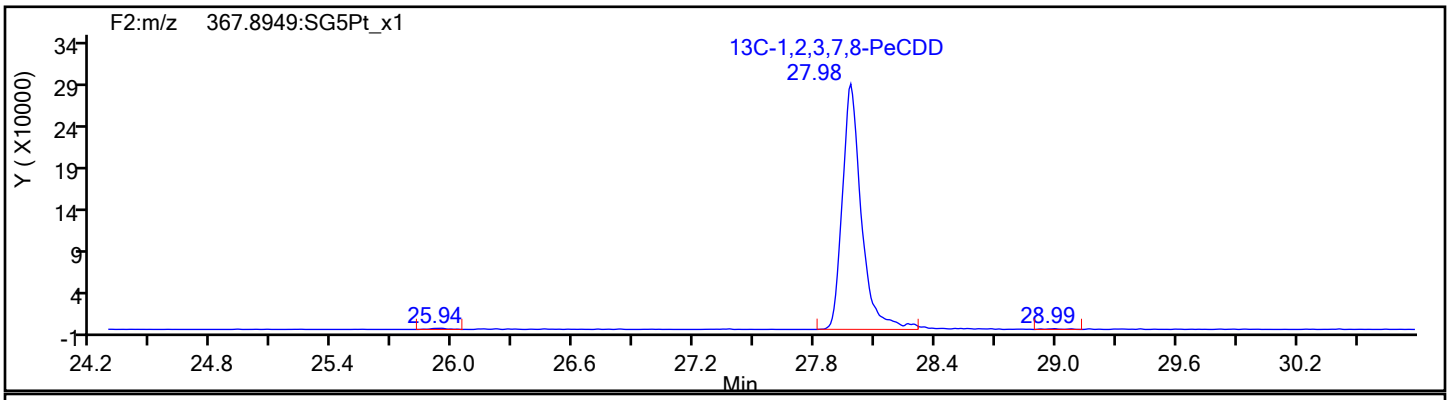
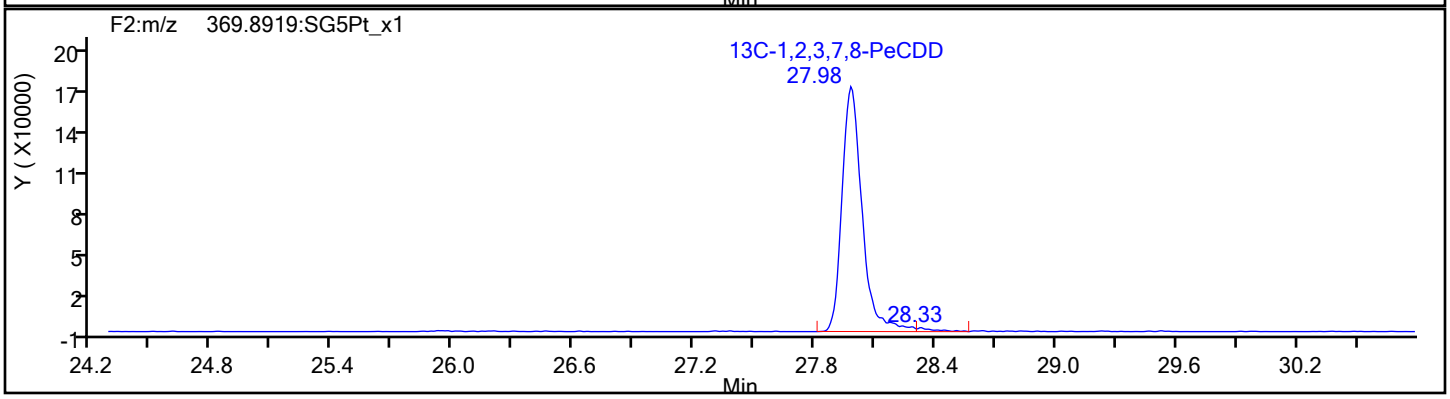
PeCDD





PeCDD Standards





Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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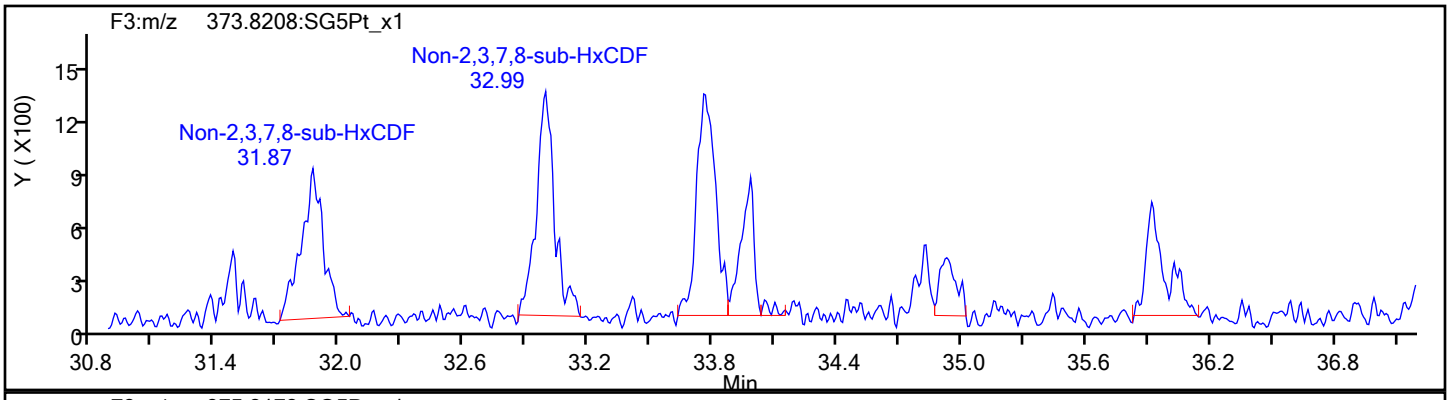
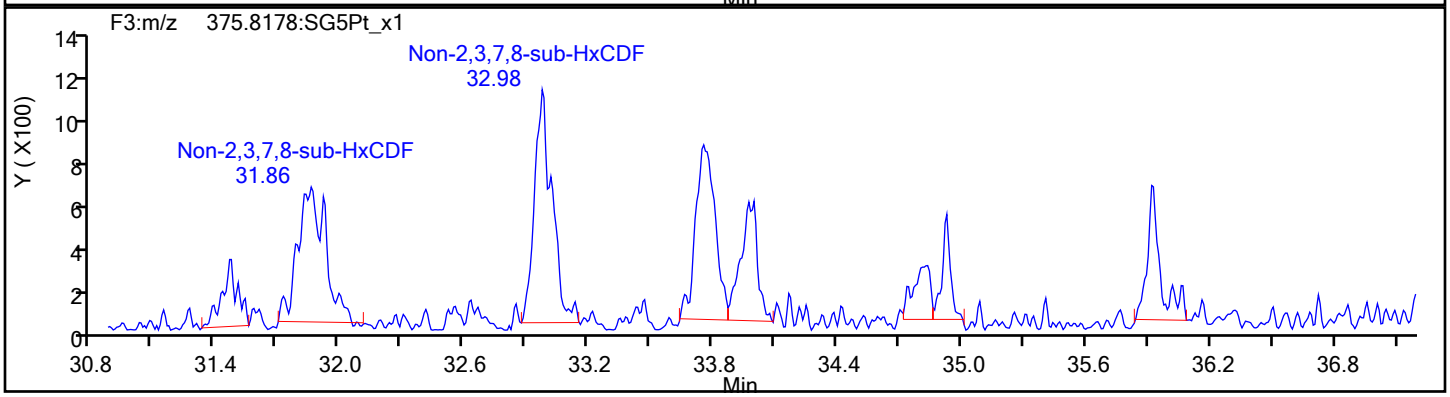
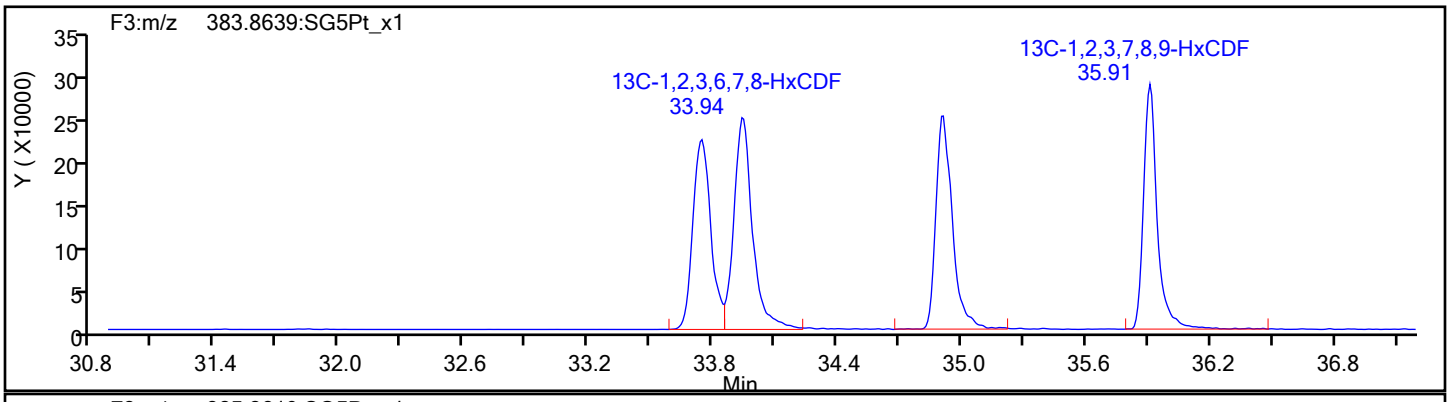
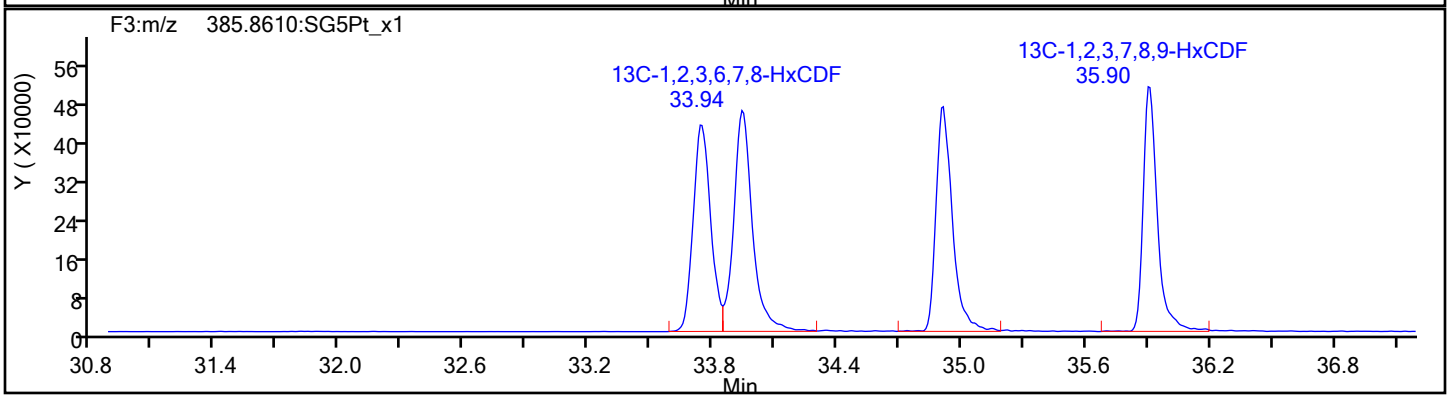
HxCDF





HxCDF Standards





Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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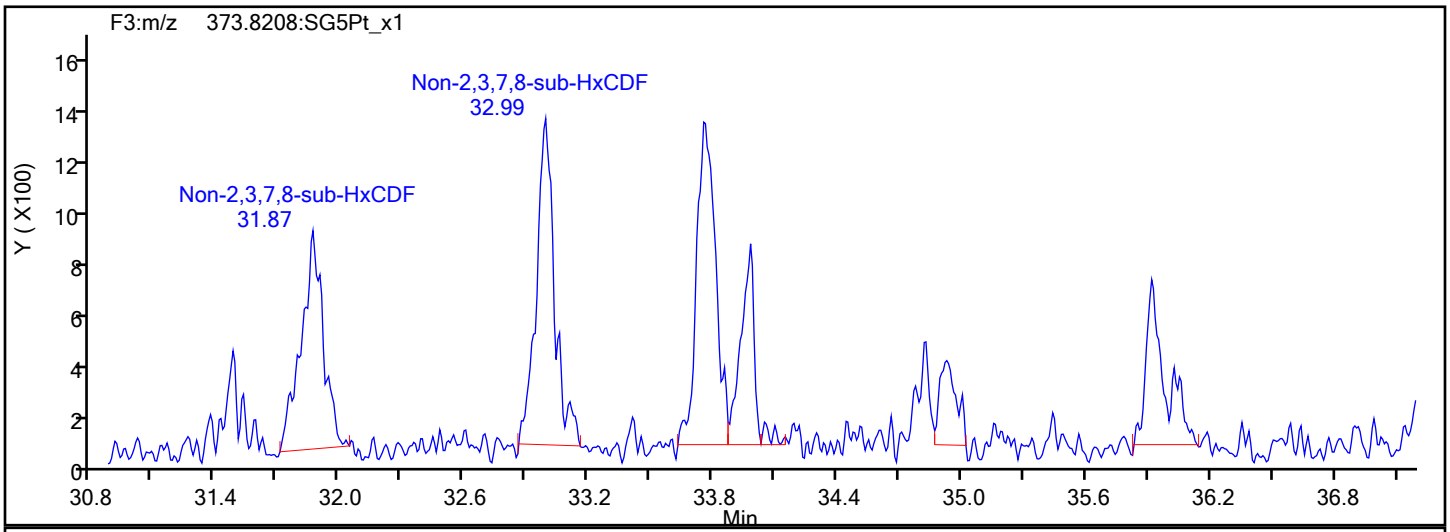
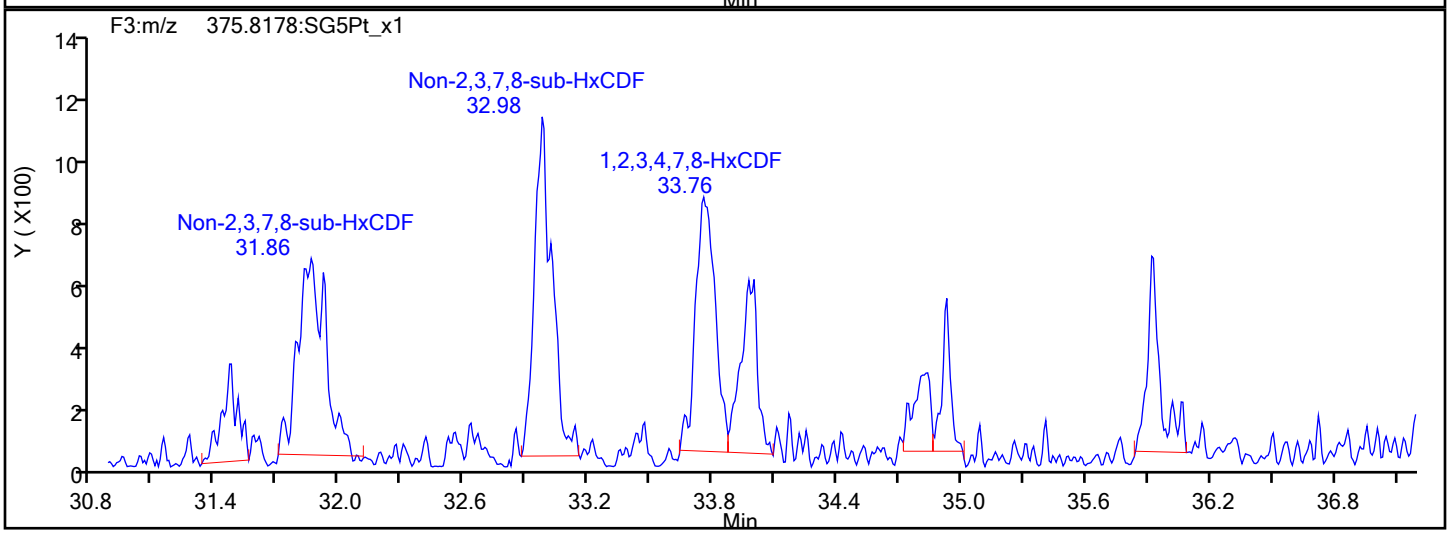
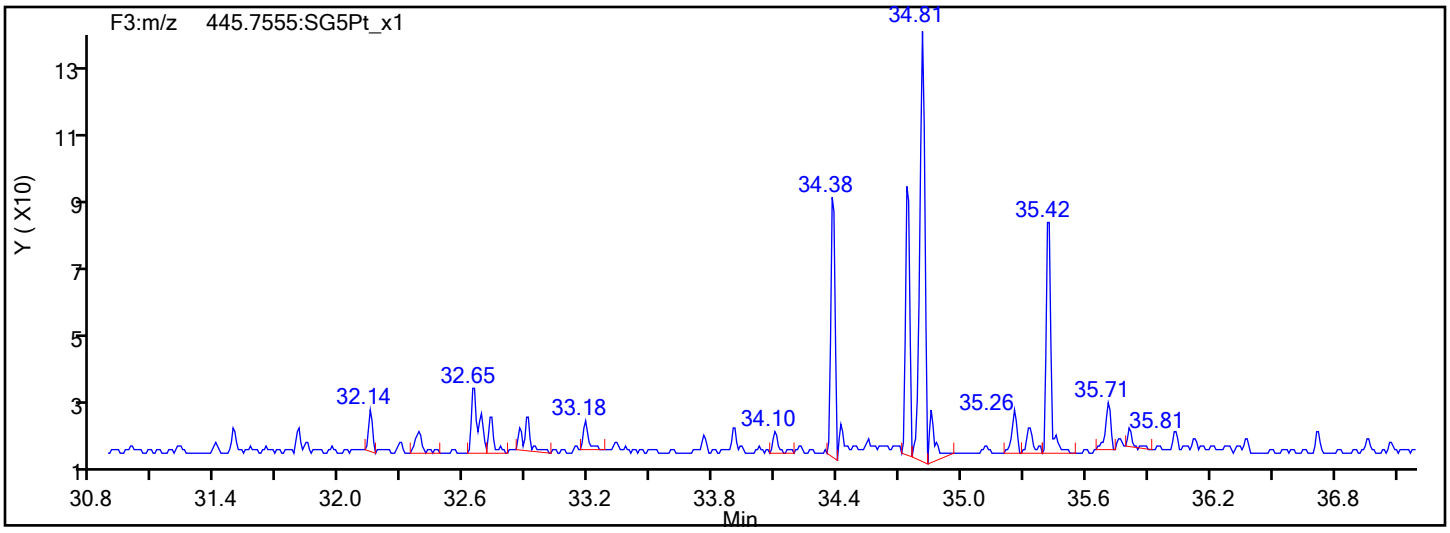




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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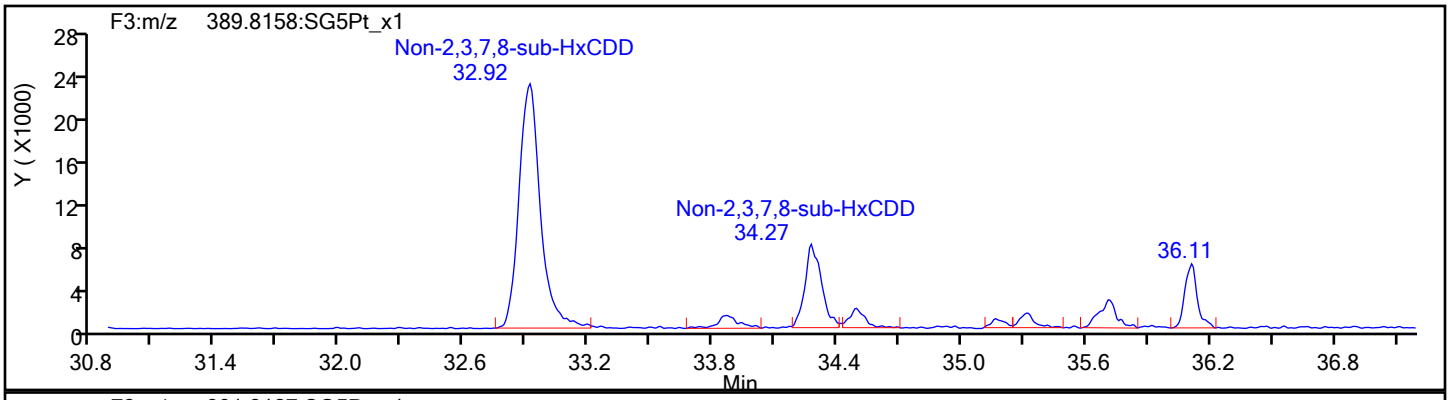
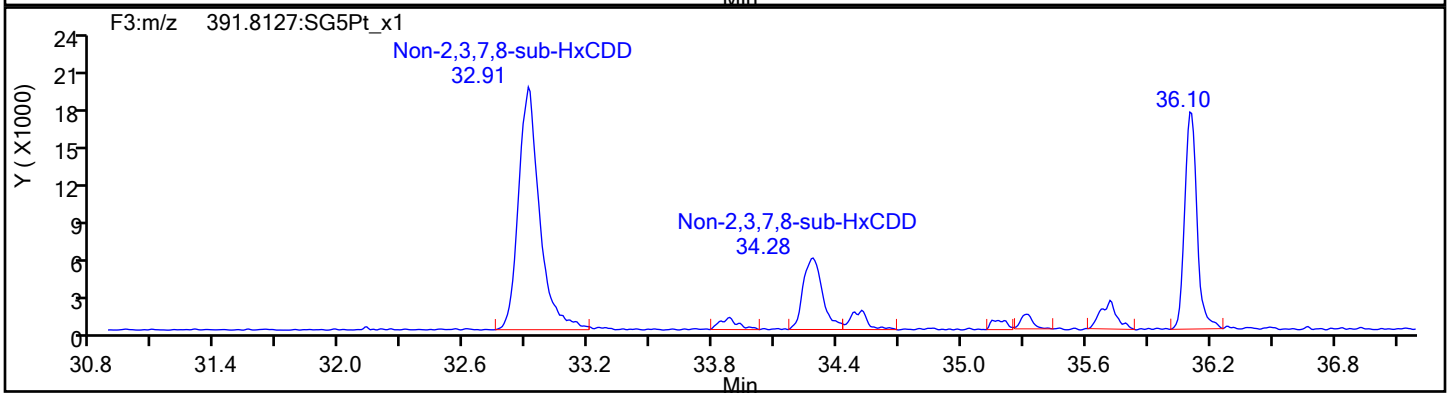
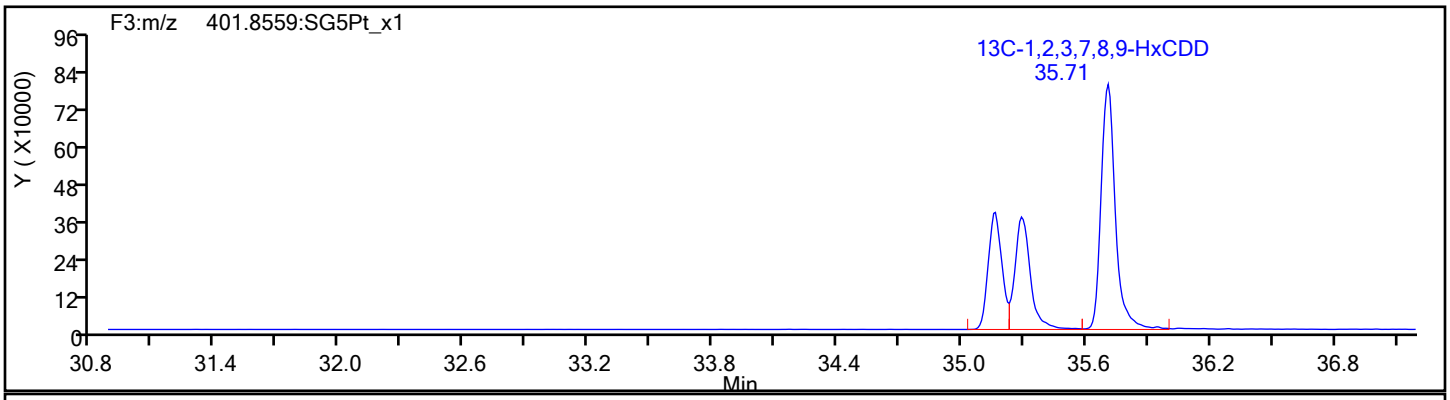
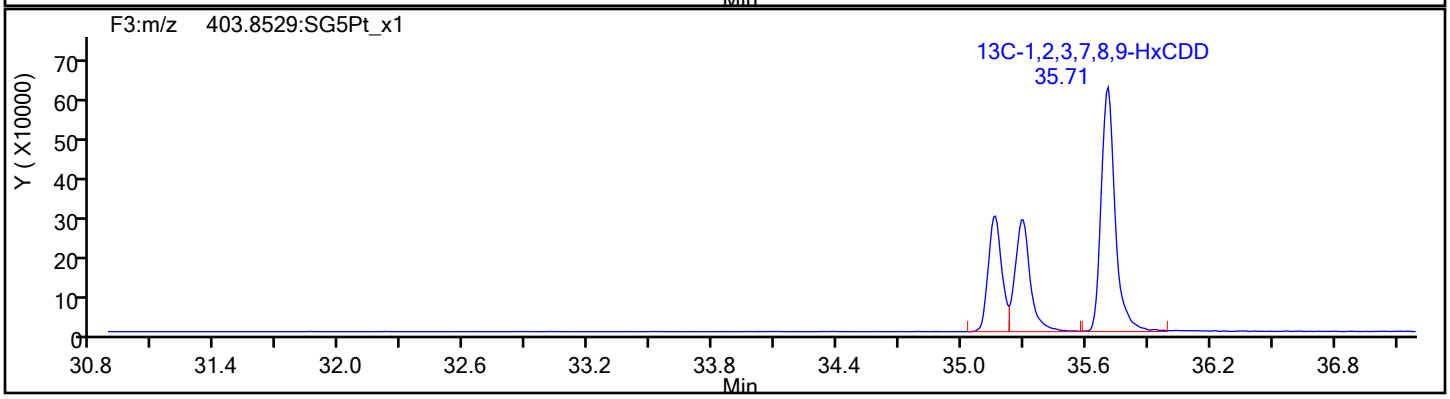
HxCDD





HxCDD Standards





Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
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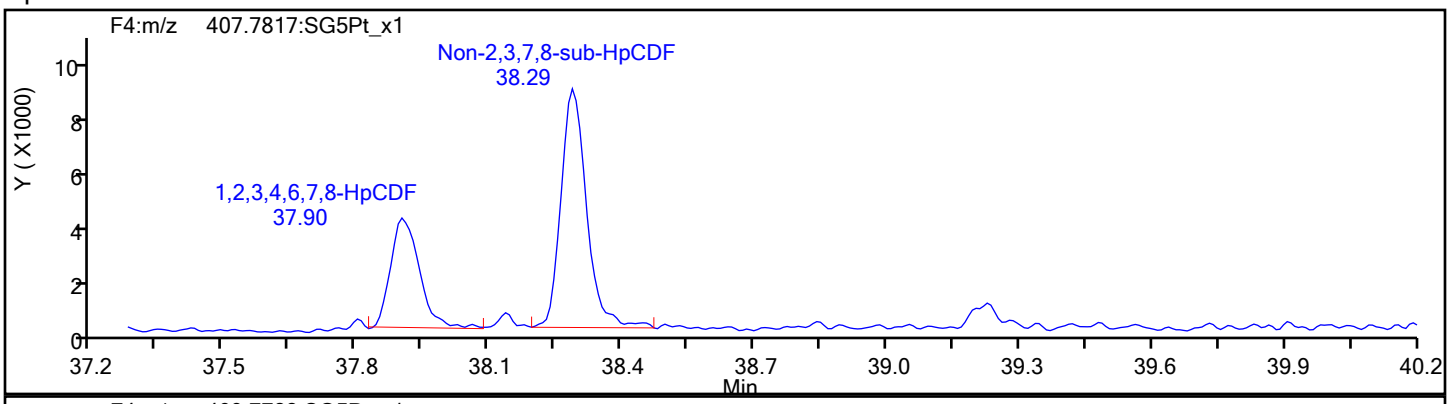
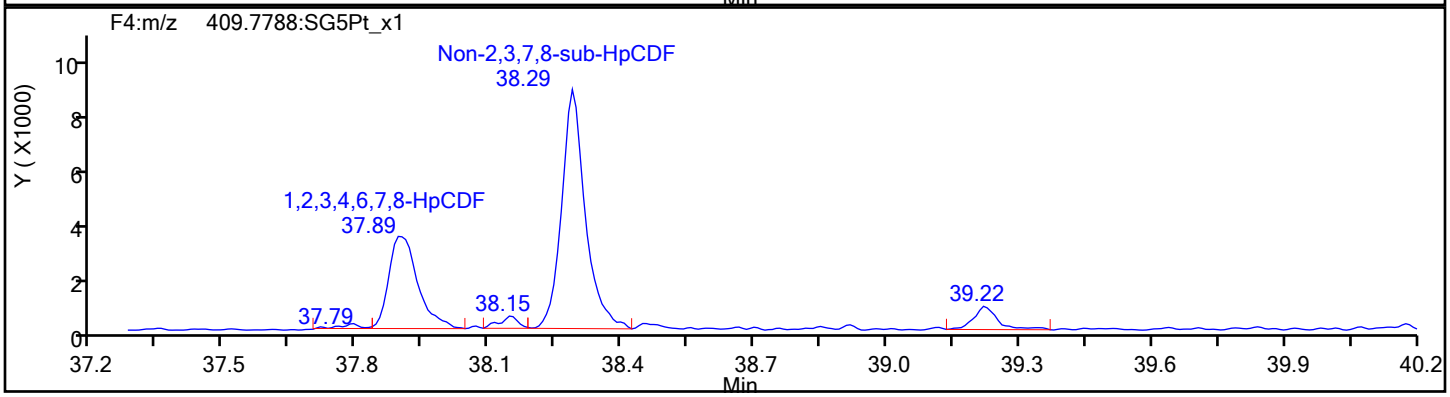
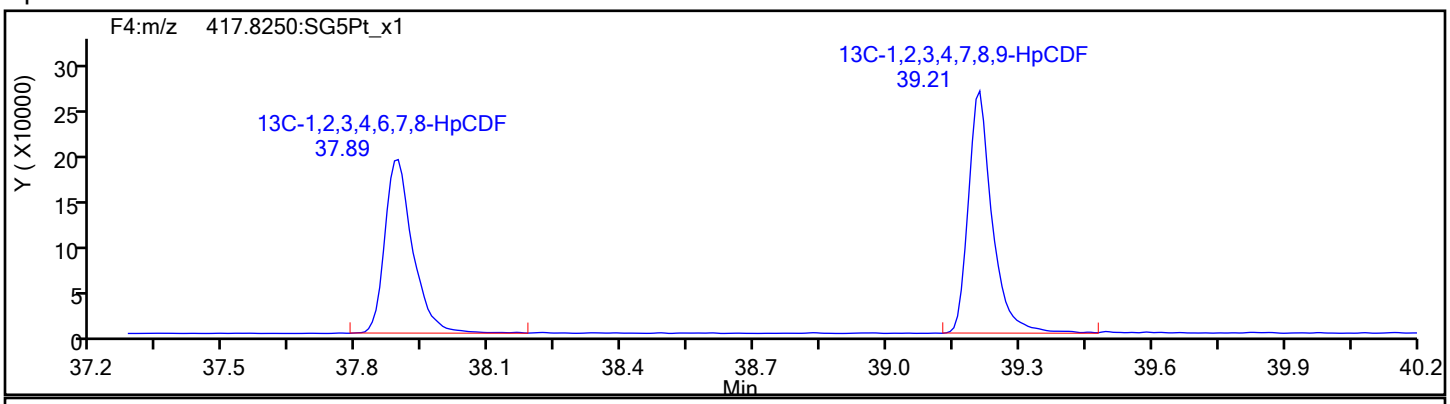
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

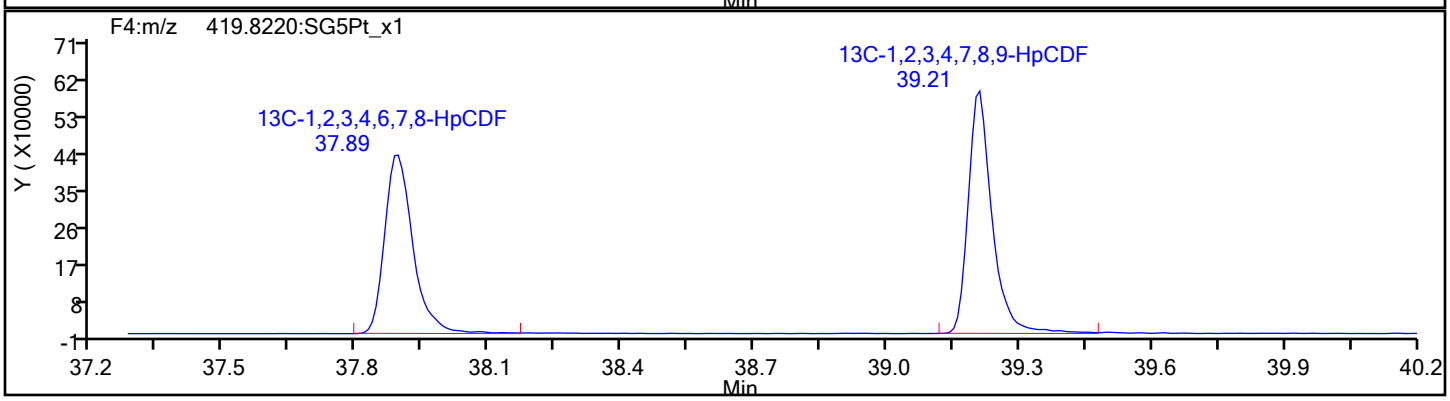
HpCDF





HpCDF Standards



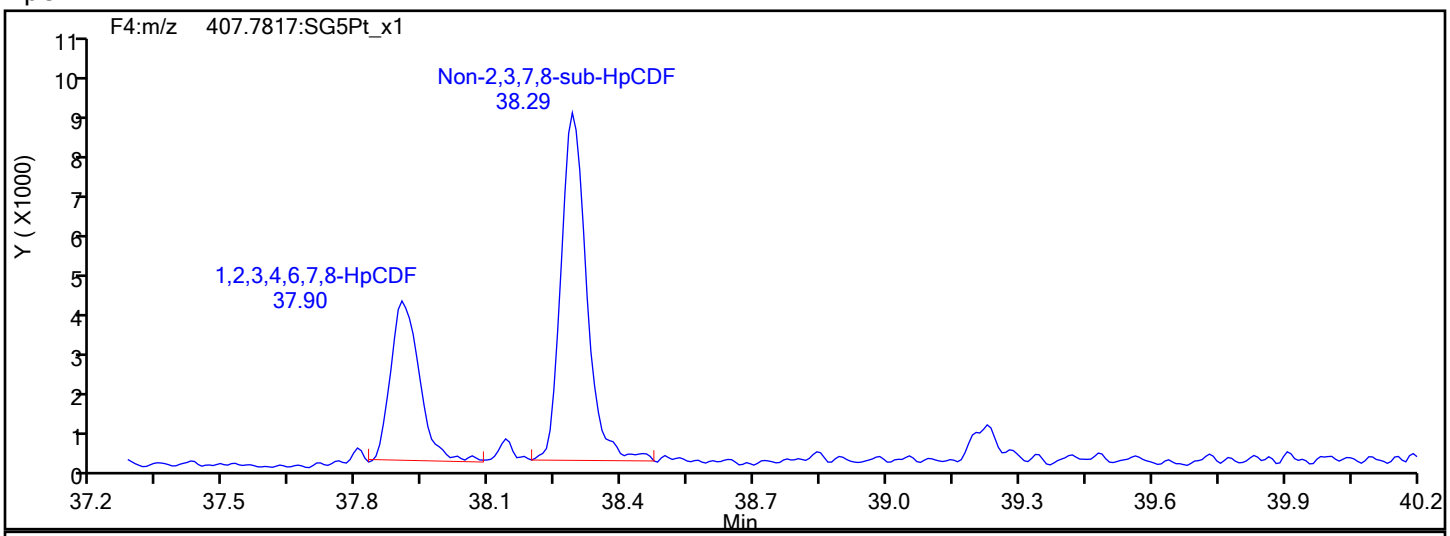


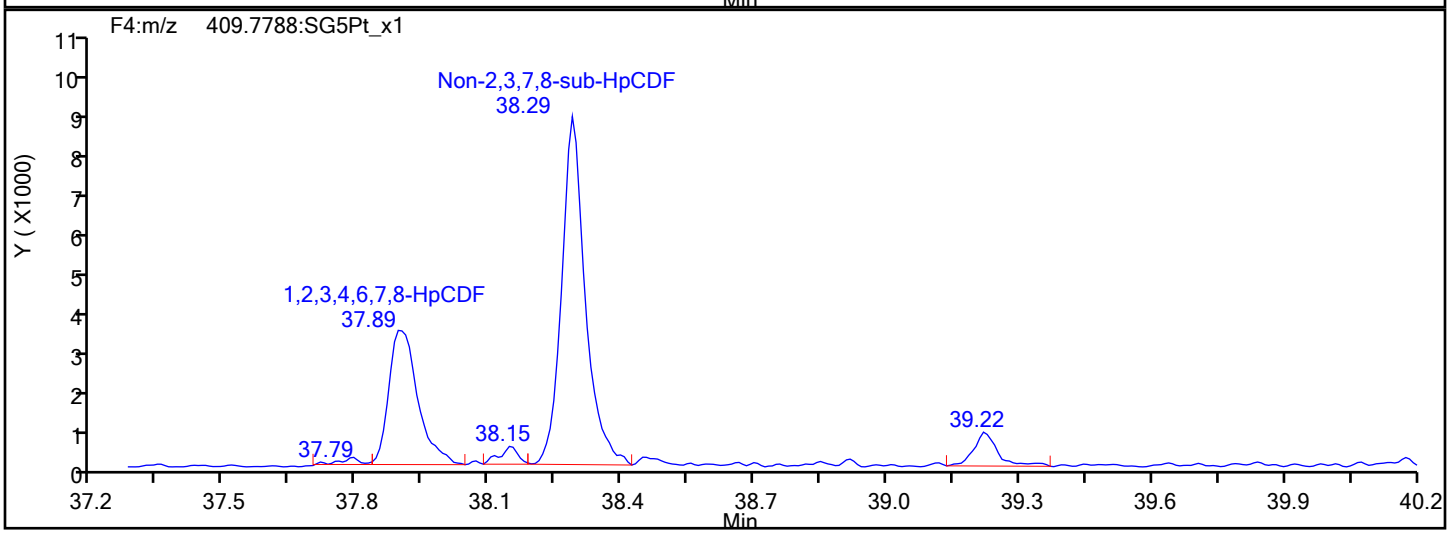
Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

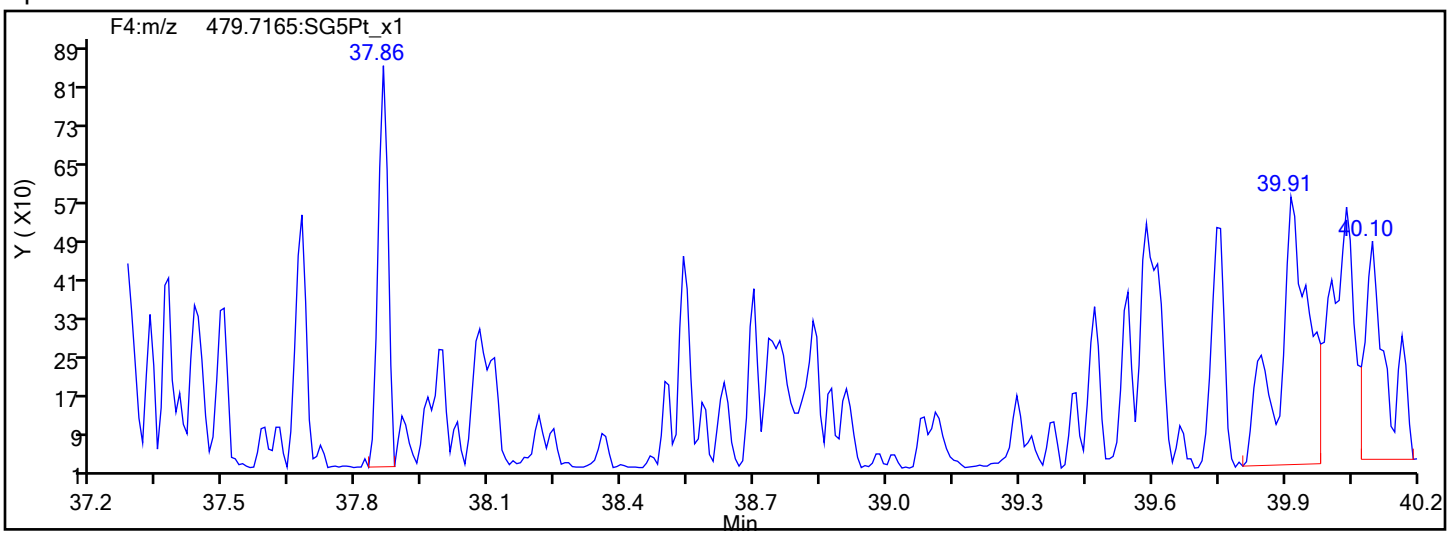
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

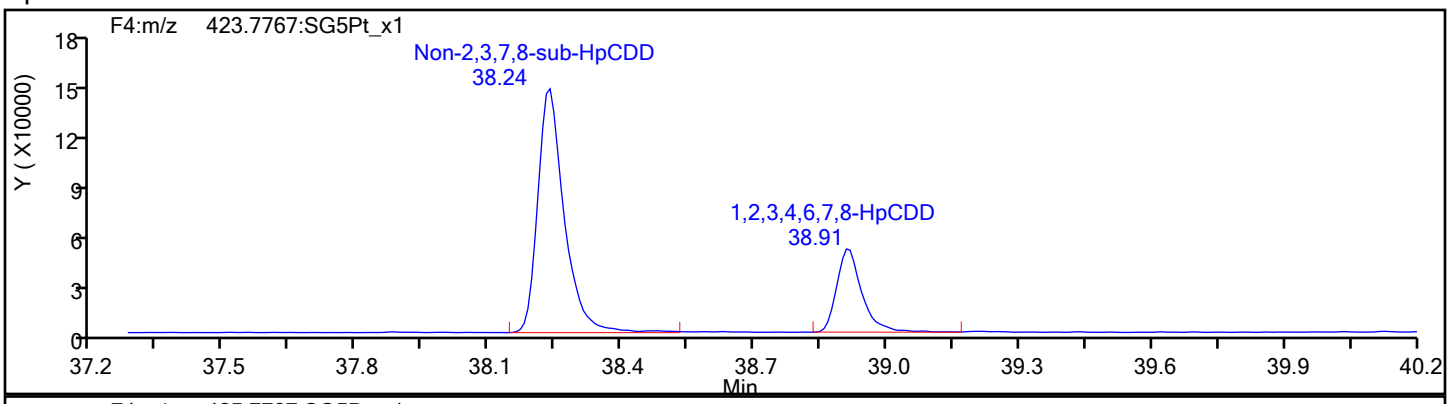


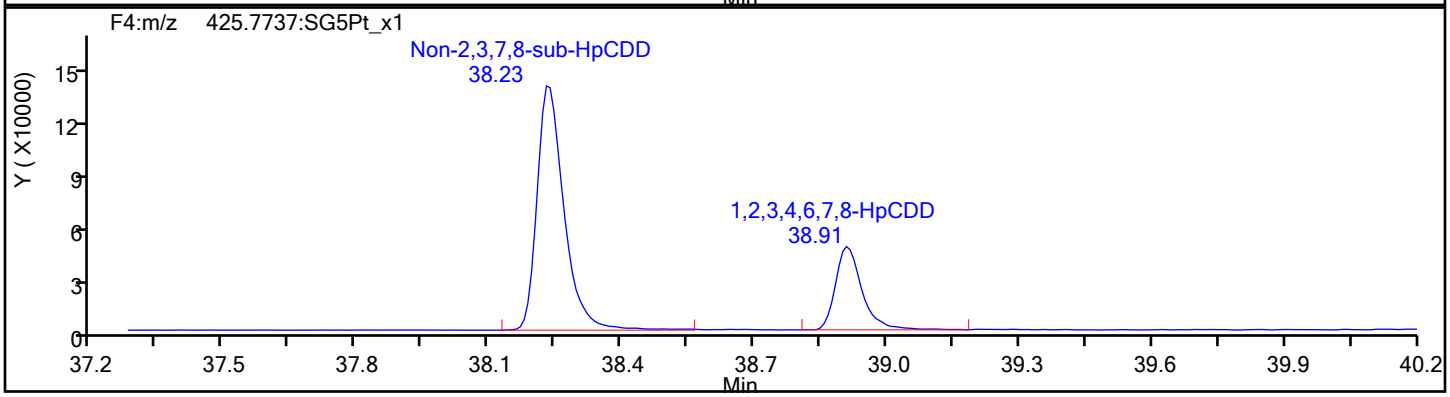
Report Date: 17-Dec-2019 09:30:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

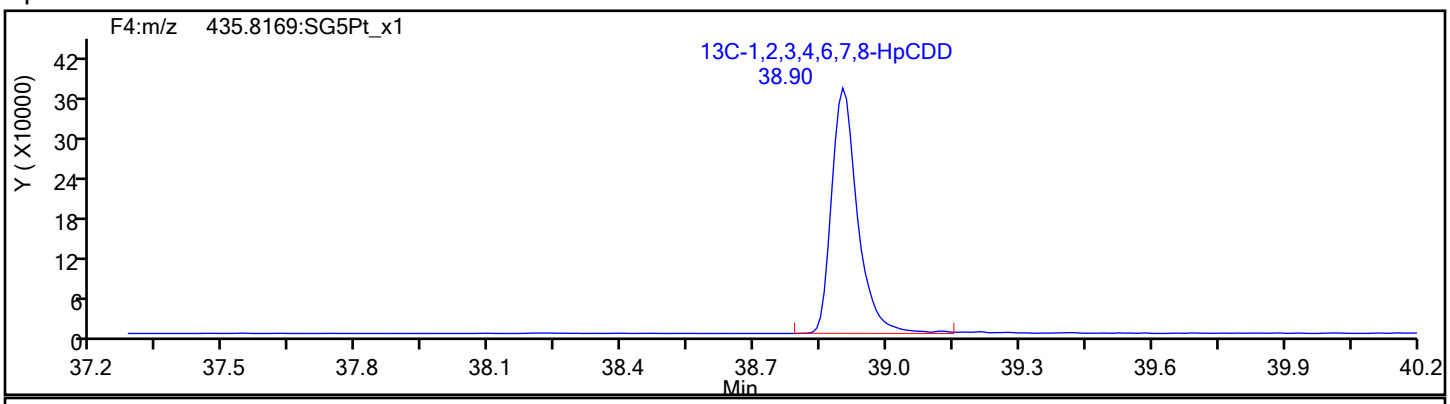
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

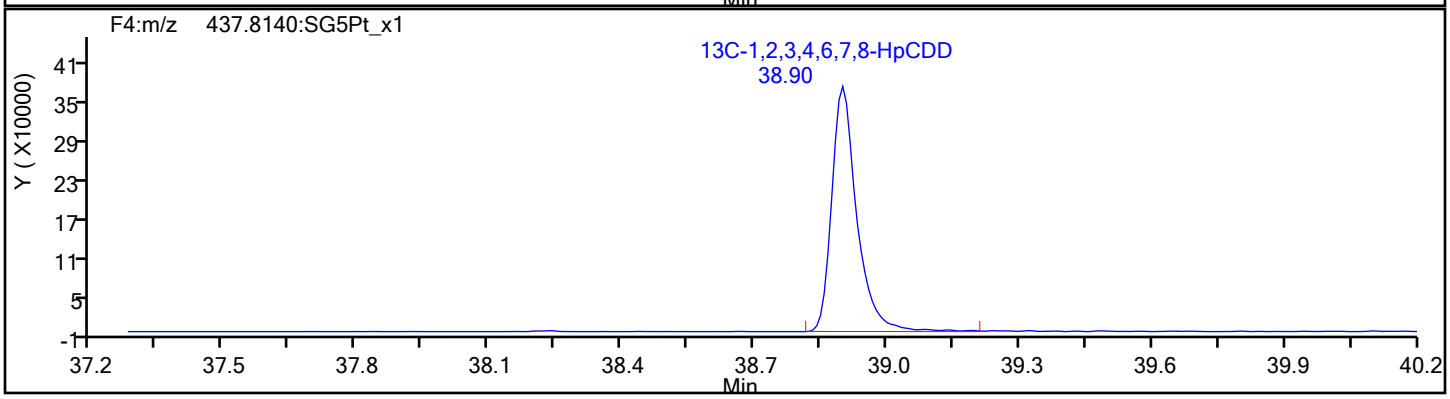
HpCDD





HpCDD Standards



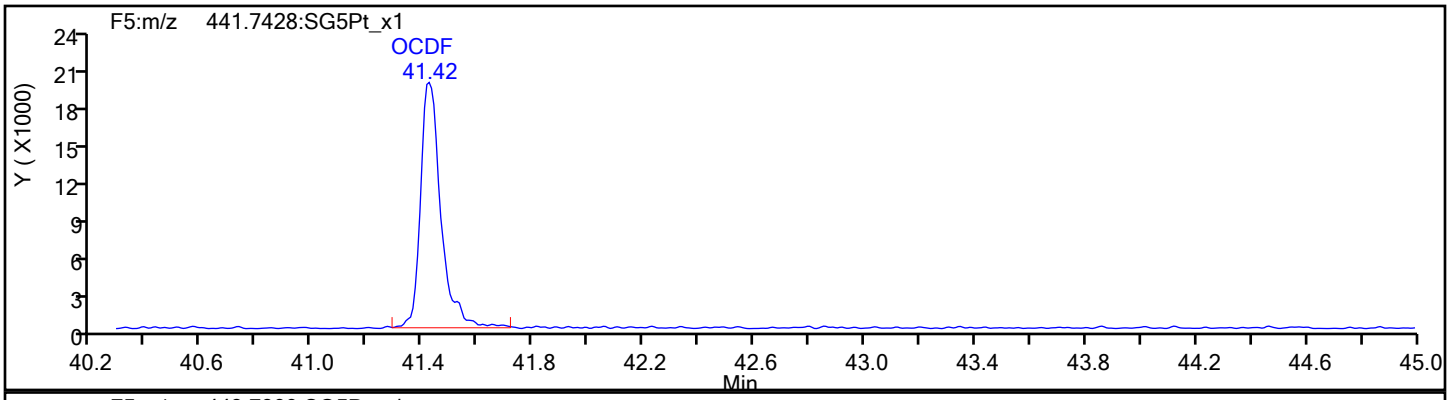


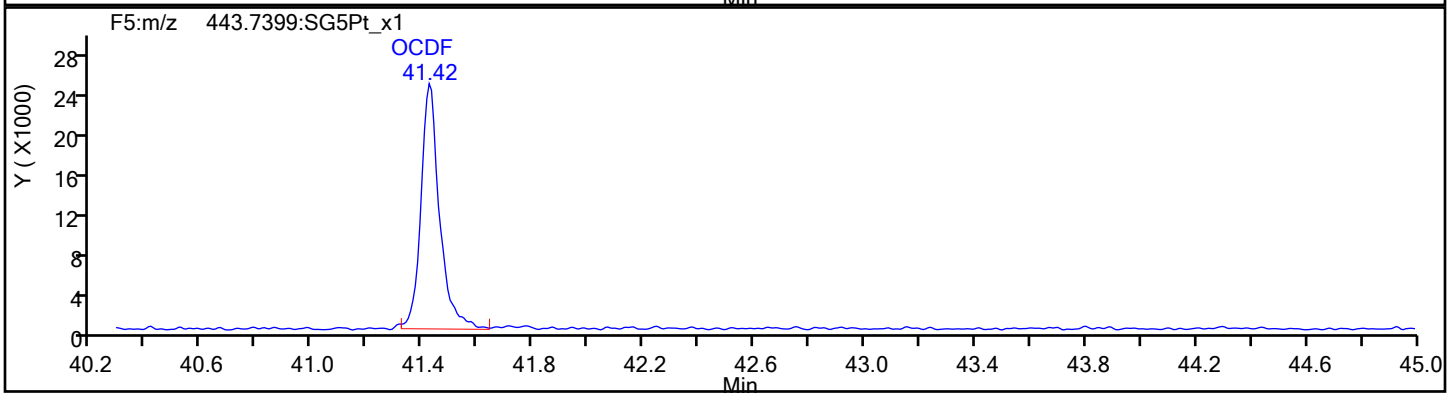
Report Date: 17-Dec-2019 09:30:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

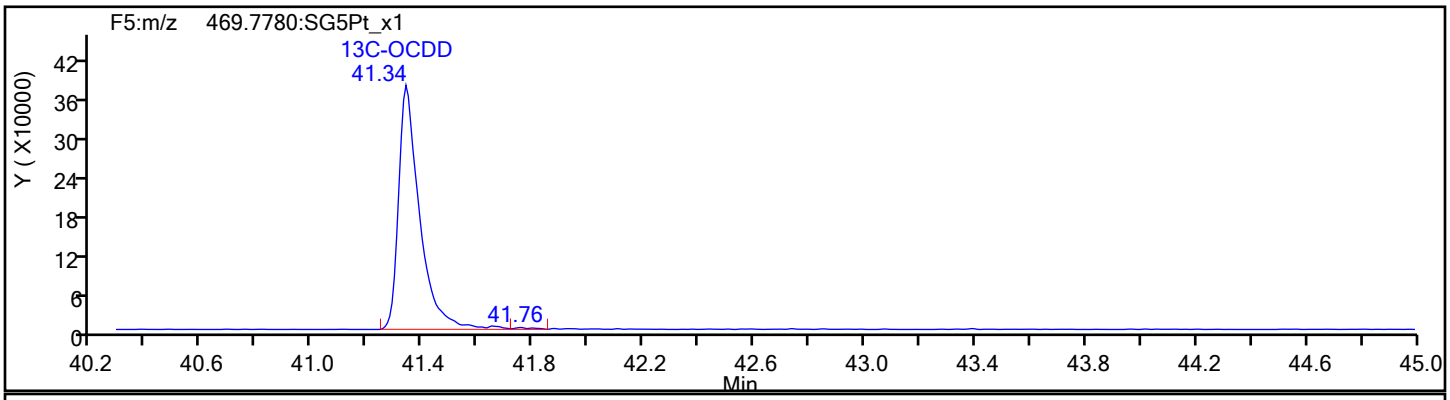
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

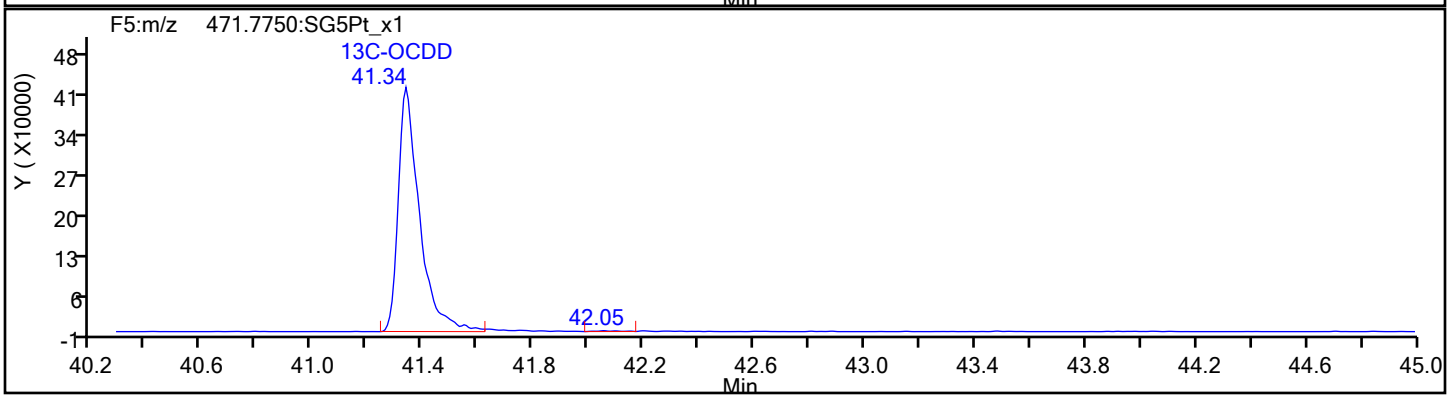
OCDF





OCDF Standards



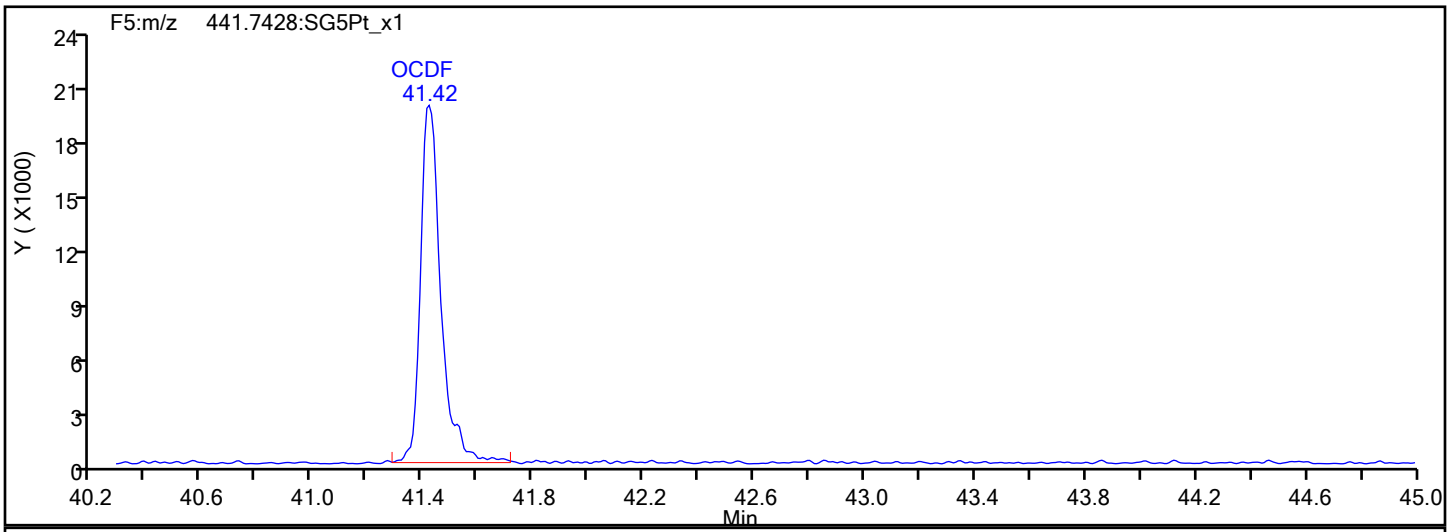


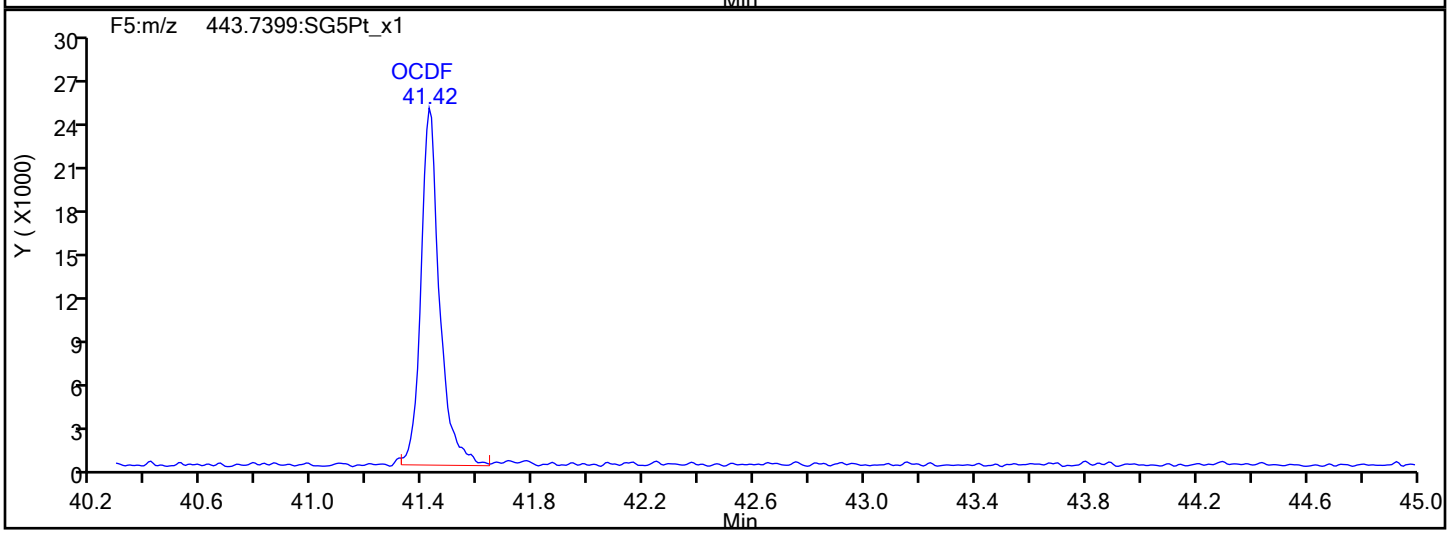
Report Date: 17-Dec-2019 09:30:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

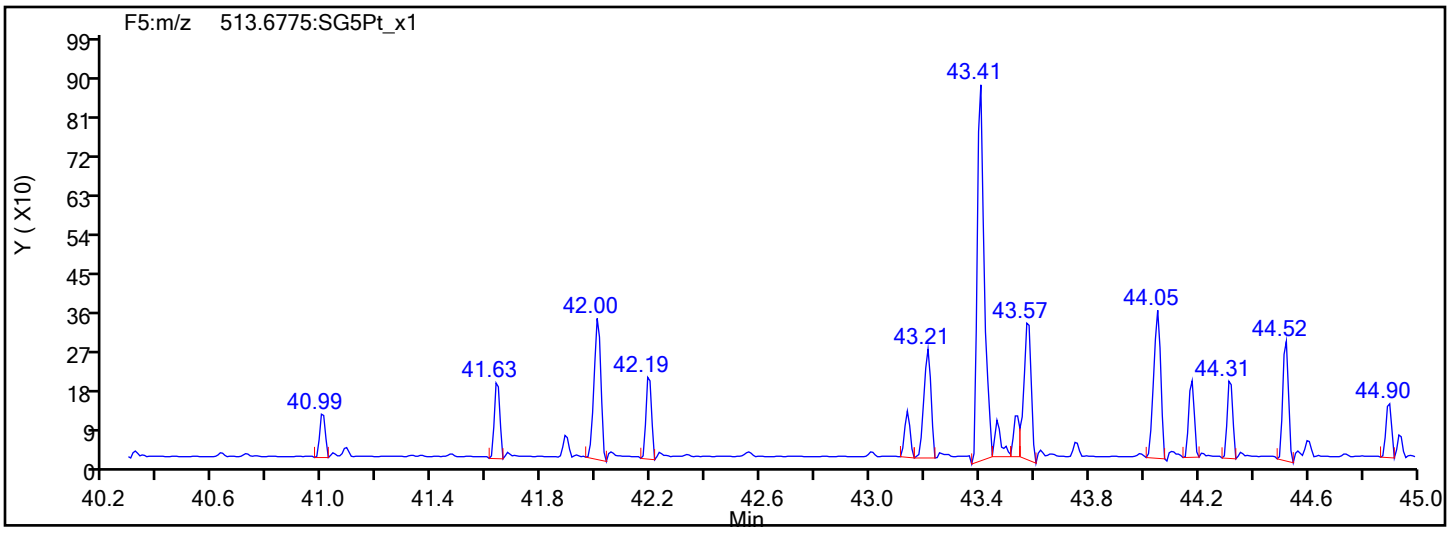
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

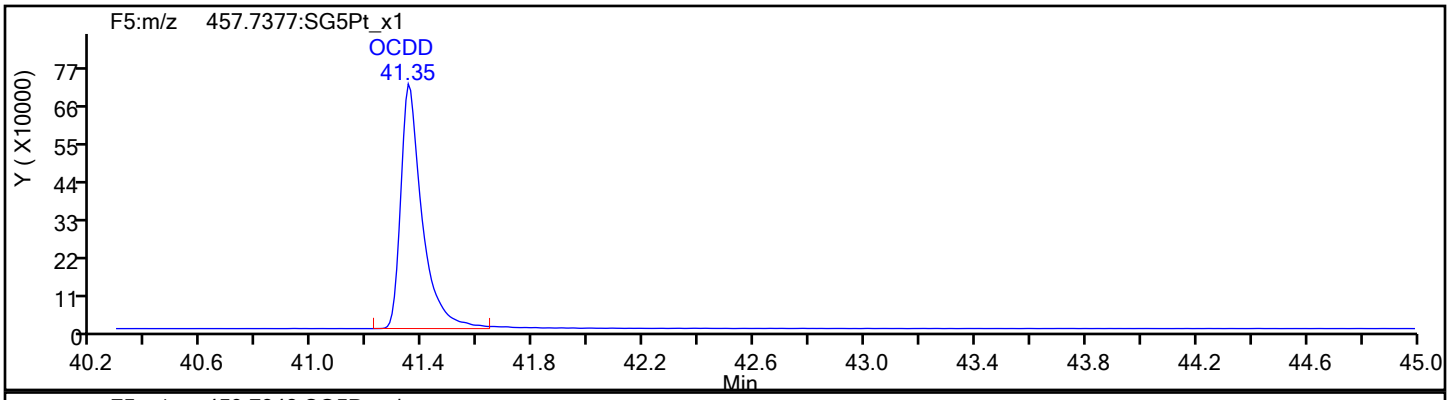


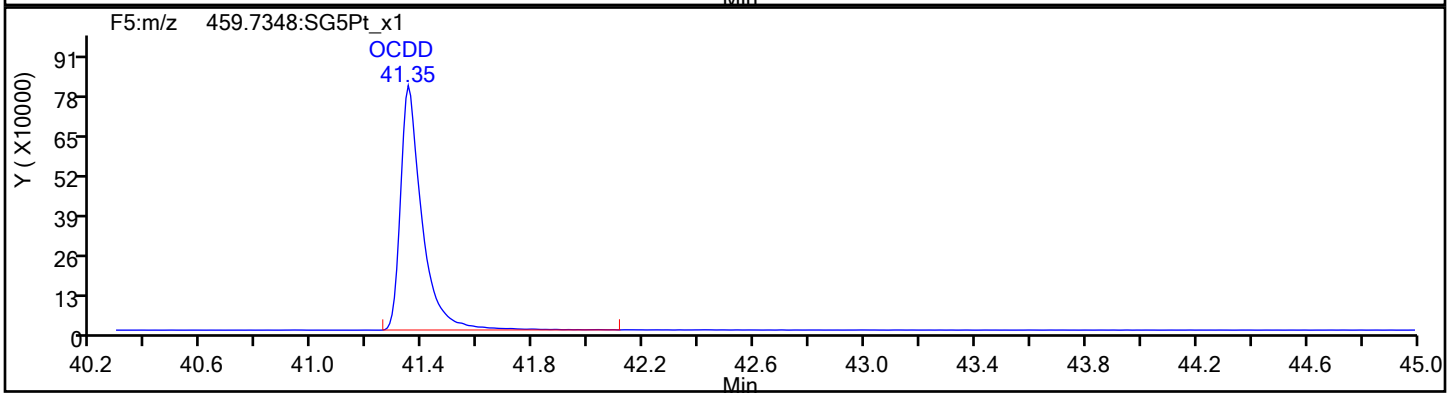
Report Date: 17-Dec-2019 09:30:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

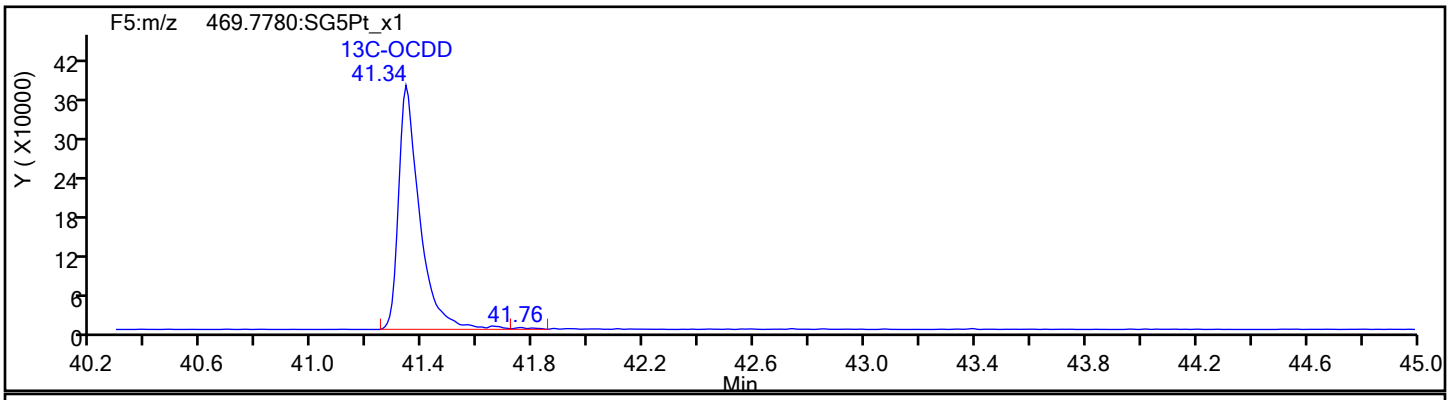
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

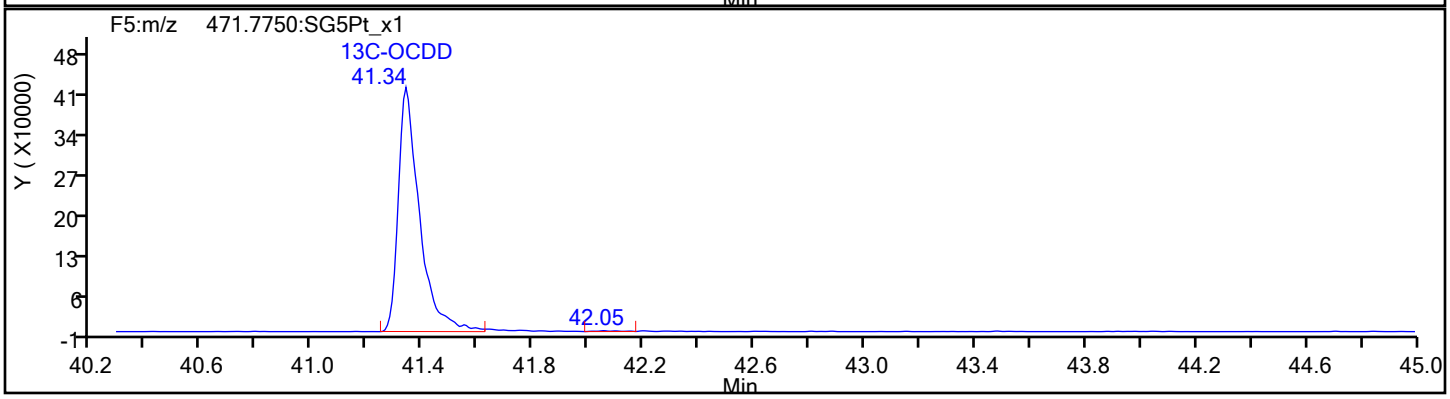
OCDD





OCDD Standards

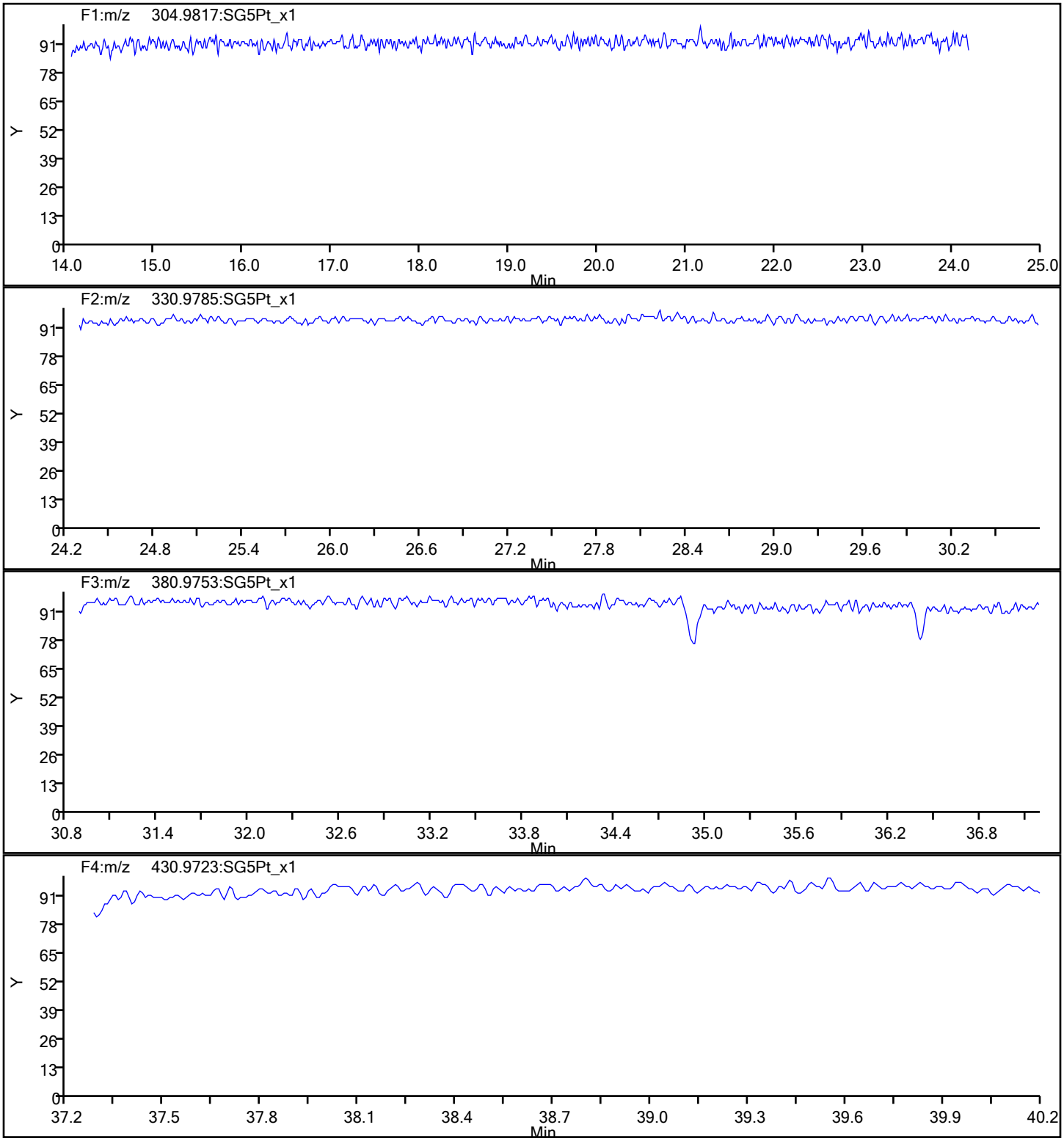




Report Date: 17-Dec-2019 09:30:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

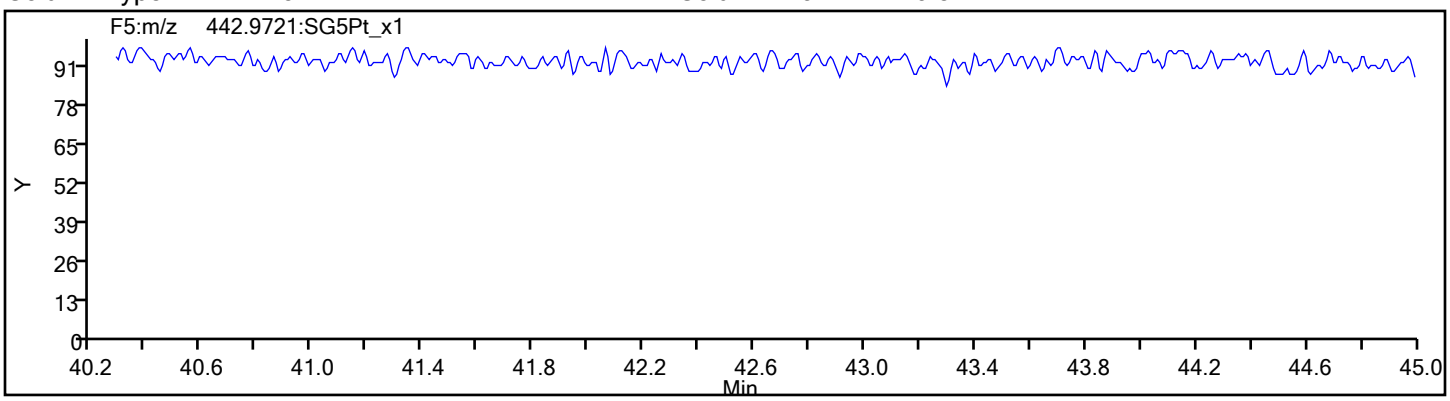
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:30:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_9.d		
Injection Date:	13-Dec-2019 18:11:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	345338	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (1-2) RA Lab Sample ID: 320-56911-2 RA

Matrix: Sediment Lab File ID: 17DE1911D2_005.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/17/2019 16:44

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 42.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346137 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	21		1.7	0.42

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	56		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	107		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:44:47 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-2-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:00:28 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.382	71605995	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.562	53605554	0.80	1.3379	56.0	56.0	0.4395	0.4395	55.95	
2,3,7,8-TCDF	16.589	2777094	0.80	0.8389	6.176	6.176	0.1221	0.1221		
D 13C-2,3,7,8-TCDD	15.121	36456531	0.75	0.9388	54.2	54.2	0.6225	0.6225	54.23	
2,3,7,8-TCDD	15.135	840651	0.83	1.1538	1.999	1.999	0.1395	0.1395		
$ 37Cl4-2,3,7,8-TCDD	15.149	36290629		1.1816	42.9	42.9	0.0779	0.0779	107	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d
Lims ID: 320-56911-A-2-A
Client ID: 11187072-120719-SS-SJSSA01 (1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 16:44:47 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-2-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:00:28 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

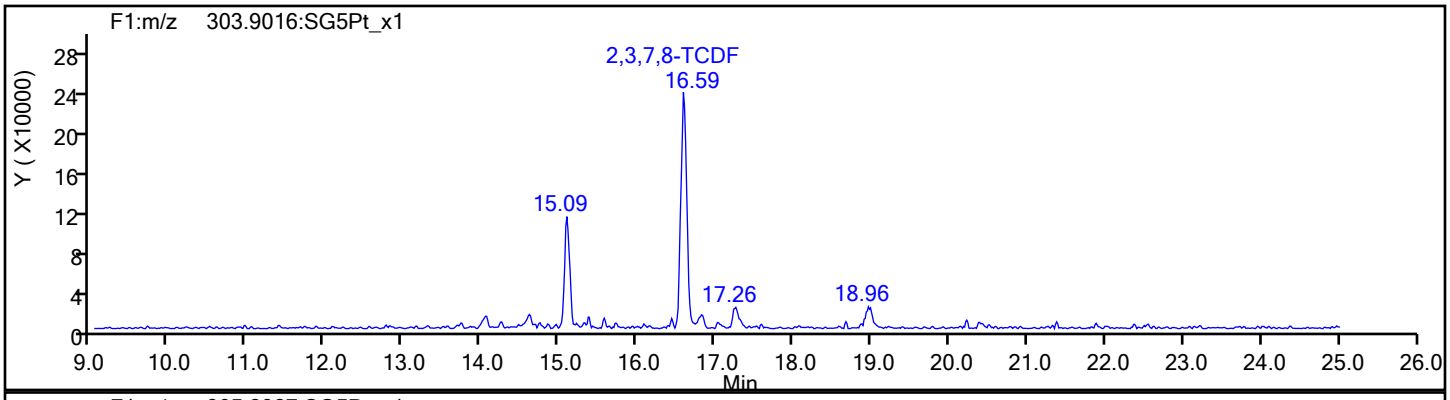
Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.382	15.378	0		31294707	6685516	19386	48465	345		
333.9339	15.382	15.378	0		40311288	8437194	15968	39920	528	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.562	16.571	-1	1.077	23857621	4339461	22573	56432	192		
317.9389	16.575	16.571	0	1.078	29747933	5268070	12998	32495	405	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.589	16.604	0	1.002	1232515	232822	1376	3440	169		
305.8987	16.589	16.604	0	1.002	1544579	301556	2561	6402	118	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.121	15.131	-1	0.983	15618075	3379259	19386	48465	174		
333.9339	15.135	15.131	0	0.984	20838456	4308199	15968	39920	270	0.75(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.135	15.144	-1	1.001	382063	83740	2825	7062	30		
321.8936	15.162	15.144	1	1.003	458588	93809	2125	5312	44	0.83(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.149	15.144	0	0.985	36290629	7739976	5568	13920	1390		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

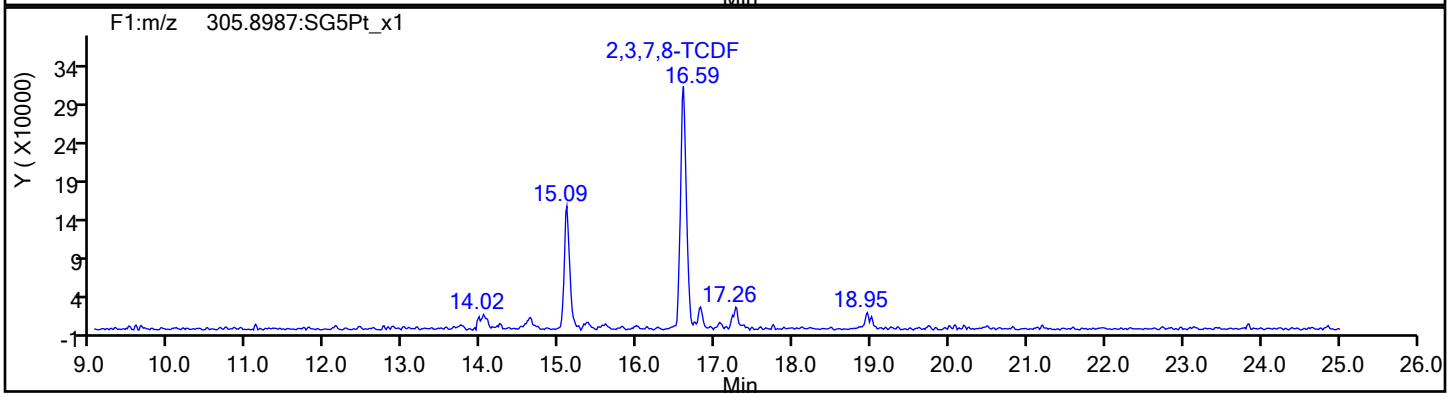
Report Date: 18-Dec-2019 01:04:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

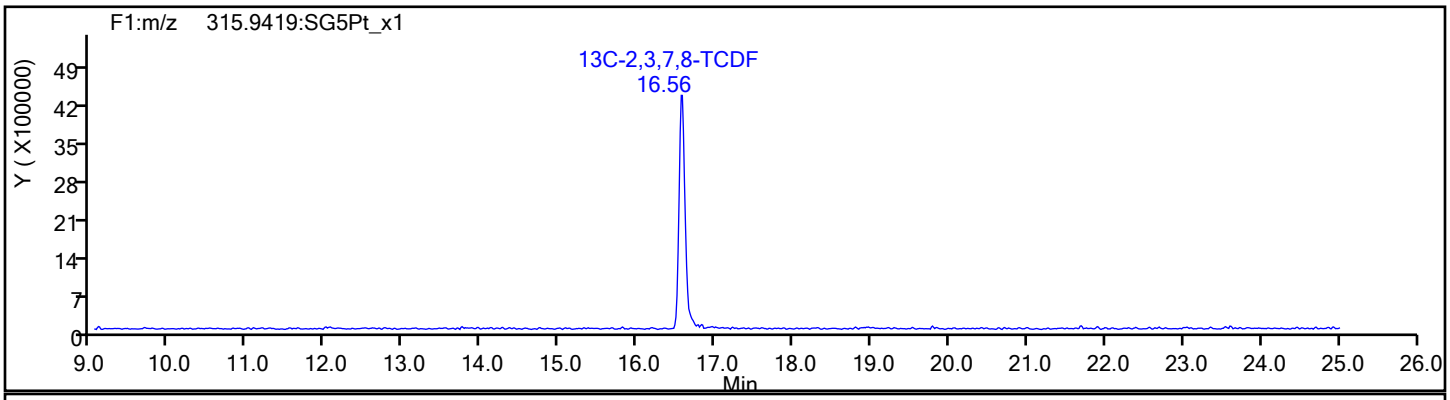
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d		
Injection Date:	17-Dec-2019 16:44:47	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	346137	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

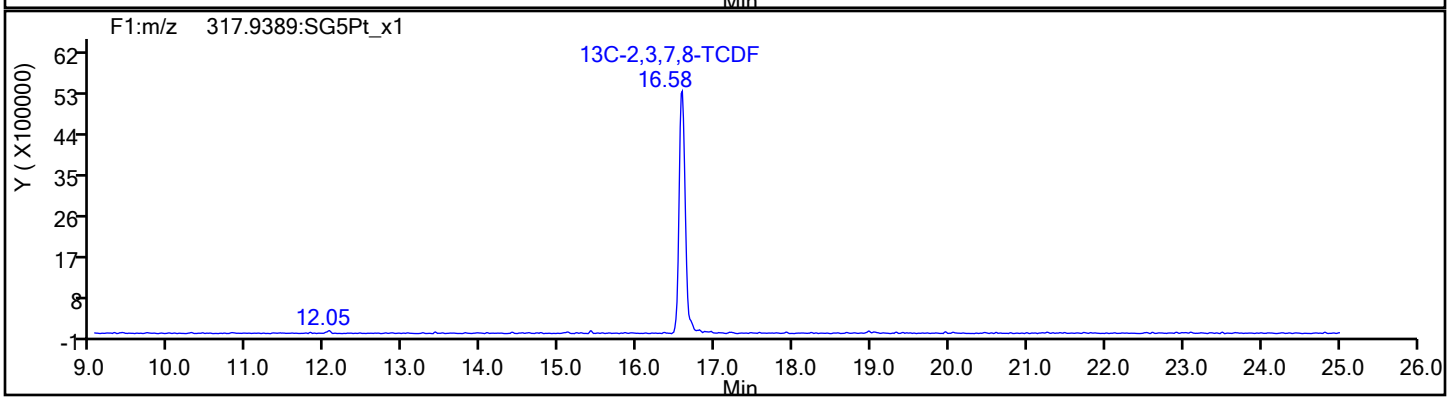
TCDF





TCDF Standards



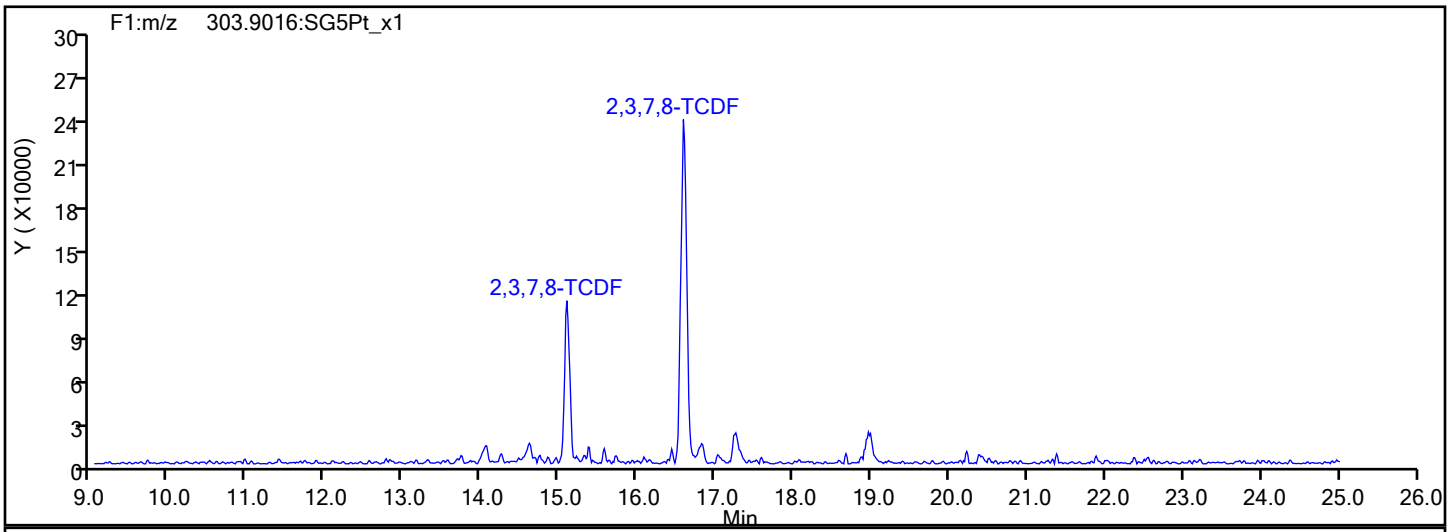


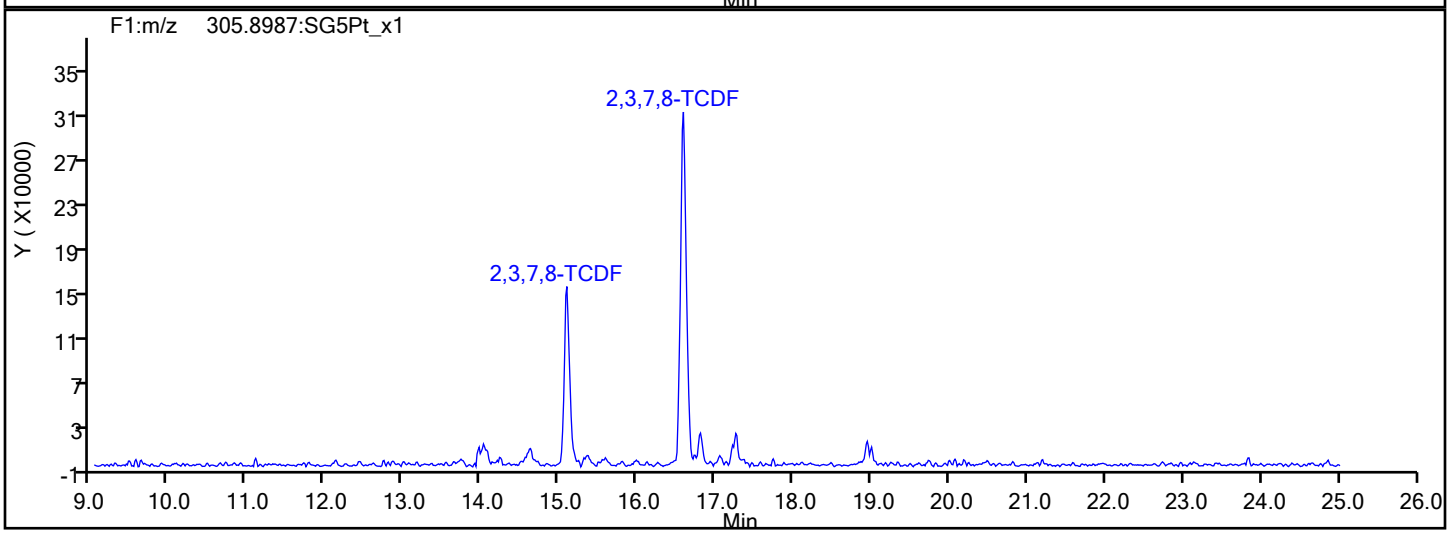
Report Date: 18-Dec-2019 01:04:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

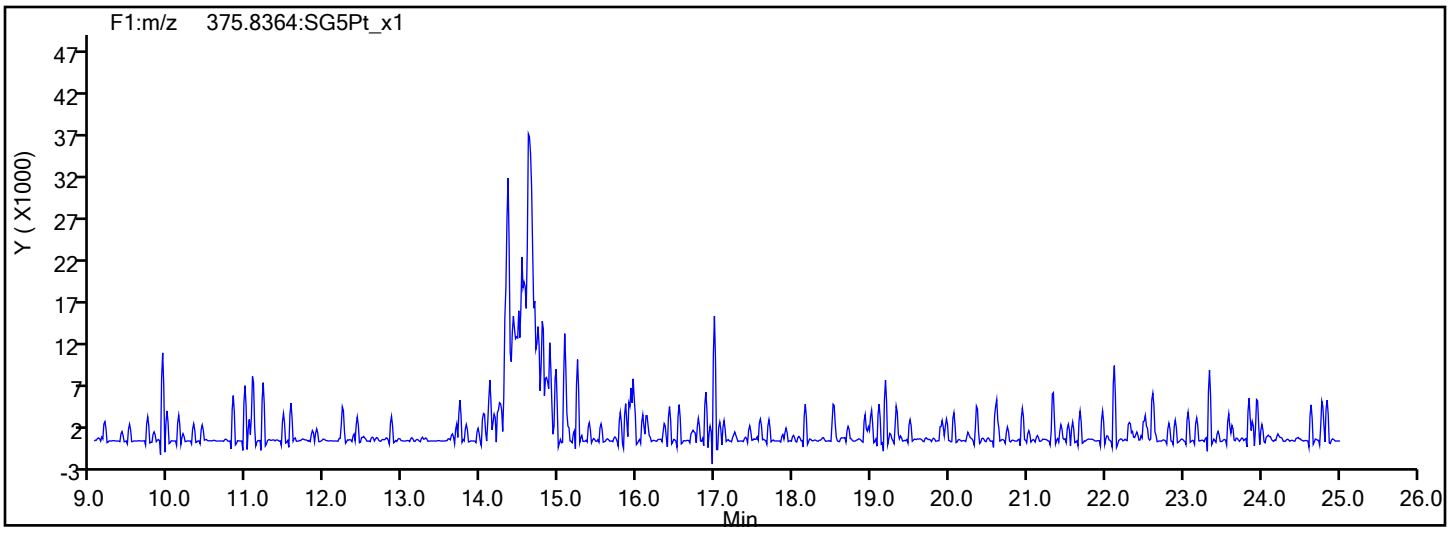
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d		
Injection Date:	17-Dec-2019 16:44:47	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	346137	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

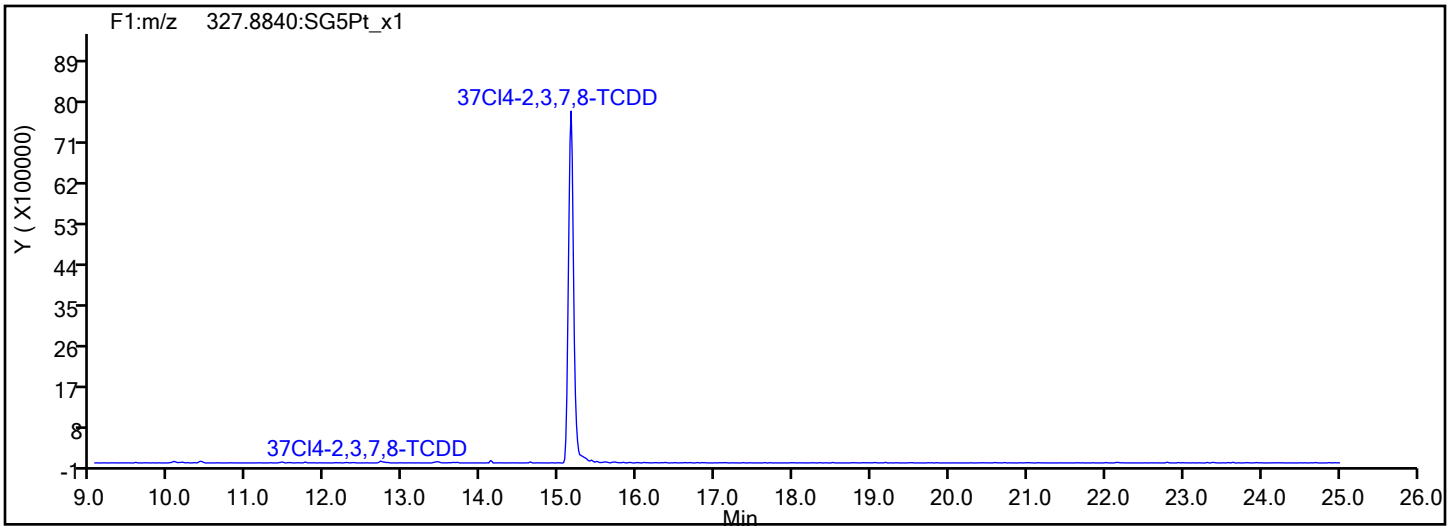


Report Date: 18-Dec-2019 01:04:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

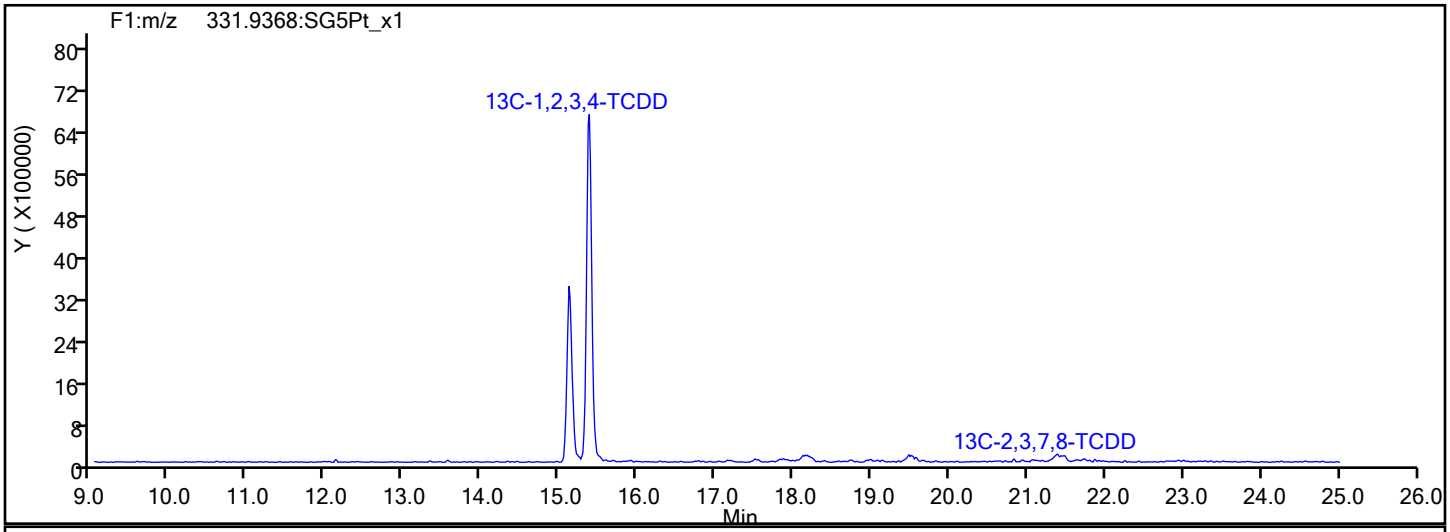
Eurofins TestAmerica, Sacramento

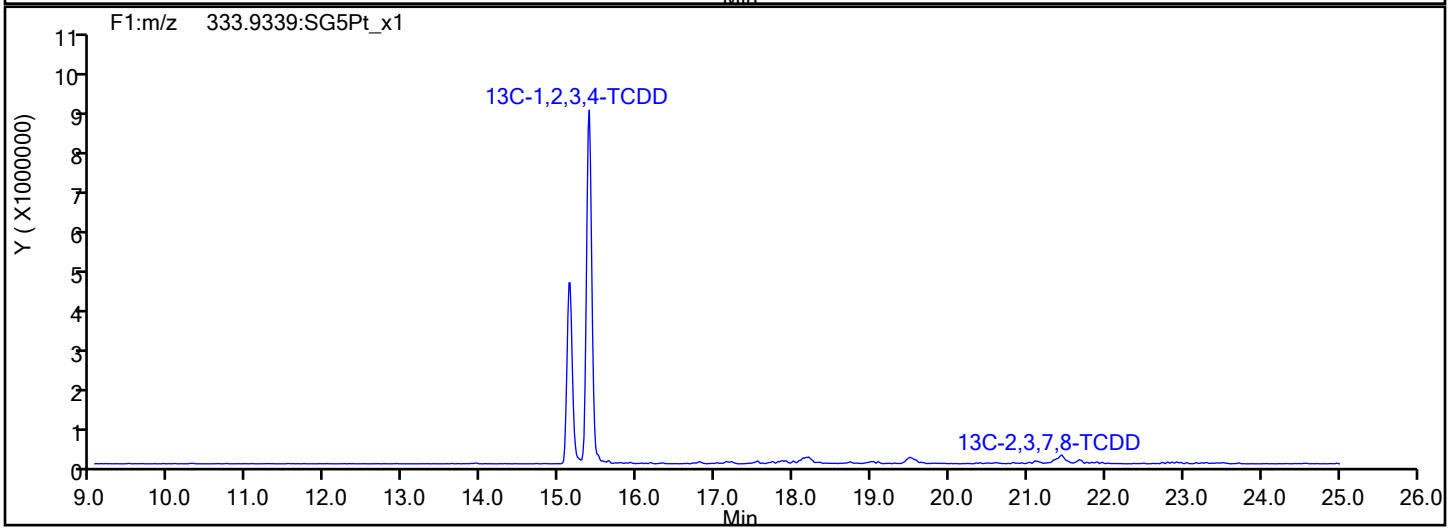
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d		
Injection Date:	17-Dec-2019 16:44:47	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	346137	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

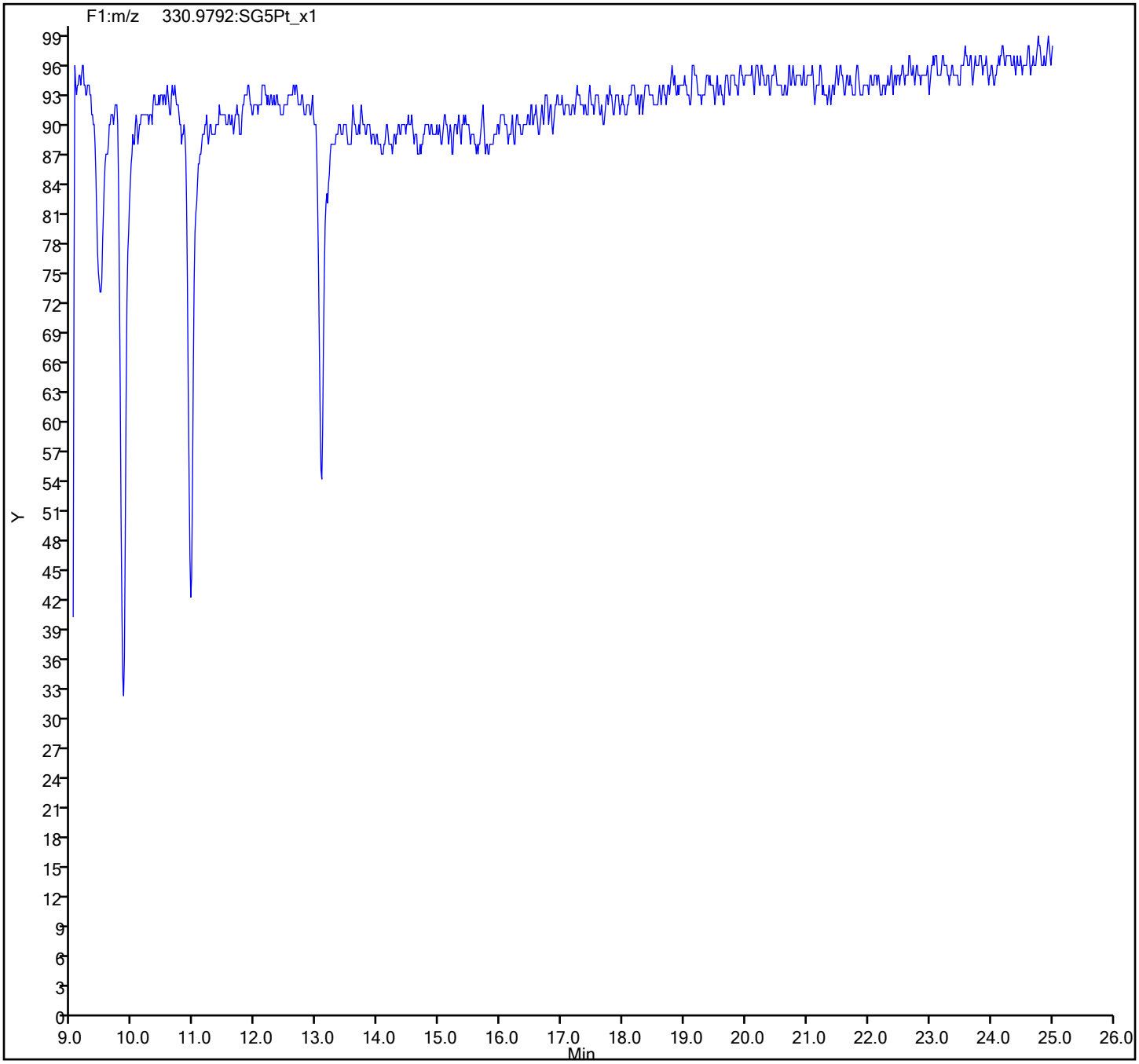




Report Date: 18-Dec-2019 01:04:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_005.d		
Injection Date:	17-Dec-2019 16:44:47	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (1-2)		
Worklist#:	346137	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) Lab Sample ID: 320-56911-3

Matrix: Sediment Lab File ID: 13de19dfs1_10.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.02(g) Date Analyzed: 12/13/2019 18:59

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 46.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	3.4		1.9	0.30
40321-76-4	1,2,3,7,8-PeCDD	ND		9.3	0.29
57117-41-6	1,2,3,7,8-PeCDF	0.44	J	9.3	0.11
57117-31-4	2,3,4,7,8-PeCDF	ND		9.3	0.12
39227-28-6	1,2,3,4,7,8-HxCDD	0.54	J	9.3	0.25
57653-85-7	1,2,3,6,7,8-HxCDD	0.62	J q B	9.3	0.26
19408-74-3	1,2,3,7,8,9-HxCDD	1.5	J	9.3	0.24
70648-26-9	1,2,3,4,7,8-HxCDF	0.25	J q	9.3	0.099
57117-44-9	1,2,3,6,7,8-HxCDF	ND		9.3	0.096
72918-21-9	1,2,3,7,8,9-HxCDF	0.20	J q	9.3	0.085
60851-34-5	2,3,4,6,7,8-HxCDF	ND		9.3	0.095
35822-46-9	1,2,3,4,6,7,8-HpCDD	16	B	9.3	0.30
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.86	J	9.3	0.15
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		9.3	0.14
3268-87-9	OCDD	330	B	19	0.73
39001-02-0	OCDF	4.5	J B	19	0.23
41903-57-5	Total TCDD	11	q	1.9	0.30
30402-14-3	Total TCDF	15		1.9	0.17
36088-22-9	Total PeCDD	6.6	J	9.3	0.29
30402-15-4	Total PeCDF	0.44	J	9.3	0.12
34465-46-8	Total HxCDD	27	q B	9.3	0.25
55684-94-1	Total HxCDF	0.45	J q	9.3	0.094
37871-00-4	Total HpCDD	63	B	9.3	0.30
38998-75-3	Total HpCDF	2.7	J B	9.3	0.14

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) Lab Sample ID: 320-56911-3

Matrix: Sediment Lab File ID: 13de19dfs1_10.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.02(g) Date Analyzed: 12/13/2019 18:59

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 46.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	54		25-164
89059-46-1	13C-2,3,7,8-TCDF	49		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	52		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	51		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	54		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	58		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	59		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	53		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	52		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	48		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	48		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	54		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	49		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	55		26-138
114423-97-1	13C-OCDD	59		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	90		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:59:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-3-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:34:40 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:34:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.521	7930954	0.81	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	18.630	6239434	0.78	1.6096	48.9	48.9	0.1919	0.1919	48.88	
2,3,7,8-TCDF	18.665	217592	0.79	1.2332	2.828	2.828	0.0467	0.0467		
A Non-2,3,7,8-sub-TCDF	18.244	89407	0.74	1.2332	1.162	1.162	0.0467	1.162		
S Total TCDF					3.990	3.990	0.0467	0.0467		
D 13C-2,3,7,8-TCDD	19.867	4281798	0.79	0.9984	54.1	54.1	0.1947	0.1947	54.08	
2,3,7,8-TCDD	19.893	46729	0.82	1.1988	0.9103	0.9103	0.0797	0.0797		
$ 37Cl4-2,3,7,8-TCDD	19.893	4155370		1.4510	36.1	36.1	0.0399	0.0399	90.27	
A Non-2,3,7,8-sub-TCDD	19.035	107608	0.77	1.1988	2.167	2.096	0.0797	1.766		RQ
S Total TCDD					3.077	3.007	0.0797	0.0797		RQ
D 13C-1,2,3,7,8-PeCDF	25.778	5571130	1.55	1.3678	51.4	51.4	0.2333	0.2333	51.36	
1,2,3,7,8-PeCDF	25.794	7632	1.75	1.1689	0.1172	0.1172	0.0304	0.0304		M
D 13C-2,3,4,7,8-PeCDF	27.195	5580084	1.57	1.3045	53.9	53.9	0.2446	0.2446	53.94	
2,3,4,7,8-PeCDF	27.205						0.0321	0.0321		
A F1 PeCDFs	23.266						0.0135	0.0135		
A Non-2,3,7,8-sub-PeCDF	26.724						0.0312	0.0312		
S Total PeCDF					0.1172	0.1172	0.0312	0.0312		
D 13C-1,2,3,7,8-PeCDD	27.967	3388223	1.59	0.8292	51.5	51.5	0.1394	0.1394	51.52	
1,2,3,7,8-PeCDD	27.965						0.0771	0.0771		
A Non-2,3,7,8-sub-PeCDD	26.851	67538	1.49	1.1200	1.780	1.780	0.0771	1.280		
S Total PeCDD					1.780	1.780	0.0771	0.0771		
D 13C-1,2,3,4,7,8-HxCDF	33.723	4684020	0.52	1.1700	52.5	52.5	0.2007	0.2007	52.54	
1,2,3,4,7,8-HxCDF	33.732	4173	1.24	1.3021	0.0855	0.0684	0.0265	0.0265		RQM
D 13C-1,2,3,6,7,8-HxCDF	33.925	5246645	0.52	1.3168	52.3	52.3	0.1784	0.1784	52.29	
1,2,3,6,7,8-HxCDF	33.918						0.0257	0.0257		
D 13C-2,3,4,6,7,8-HxCDF	34.889	4661594	0.53	1.2873	47.5	47.5	0.1824	0.1824	47.52	
2,3,4,6,7,8-HxCDF	34.905						0.0255	0.0255		
D 13C-1,2,3,7,8,9-HxCDF	35.896	4407909	0.53	1.1987	48.3	48.3	0.1959	0.1959	48.25	
1,2,3,7,8,9-HxCDF	35.904	3125	1.24	1.3329	0.0666	0.0532	0.0229	0.0229		RQM
A Non-2,3,7,8-sub-HxCDF	33.751						0.0251	0.0251		U
S Total HxCDF					0.1521	0.1216	0.0252	0.0252		RQ

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.686	7620244	1.29	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.141	3712083	1.26	0.8364	58.2	58.2	0.2010	0.2010	58.24	
1,2,3,4,7,8-HxCDD	35.174	6316	1.07	1.1725	0.1451	0.1451	0.0664	0.0664		Ma
D 13C-1,2,3,6,7,8-HxCDD	35.275	4033423	1.30	0.9040	58.5	58.5	0.1860	0.1860	58.55	
1,2,3,6,7,8-HxCDD	35.317	7588	1.24	1.1256	0.1970	0.1671	0.0700	0.0700		RQMa
1,2,3,7,8,9-HxCDD	35.694	19739	1.32	1.2327	0.4135	0.4135	0.0635	0.0635		
A Non-2,3,7,8-sub-HxCDD	34.284	297427	1.24	1.1769	6.525	6.525	0.0665	5.496		
S Total HxCDD					7.281	7.251	0.0666	0.0666		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	37.872	3604566	0.44	0.9689	48.8	48.8	0.3304	0.3304	48.82	
1,2,3,4,6,7,8-HpCDF	37.905	13466	1.10	1.6176	0.2309	0.2309	0.0399	0.0399		
D 13C-1,2,3,4,7,8,9-HpCDF	39.188	3880888	0.45	0.9231	55.2	55.2	0.3468	0.3468	55.17	
1,2,3,4,7,8,9-HpCDF	39.202						0.0370	0.0370		
A Non-2,3,7,8-sub-HpCDF	38.556	28755	1.03	1.5424	0.4981	0.4981	0.0382	0.4981		M
S Total HpCDF					0.7290	0.7290	0.0385	0.0385		
D 13C-1,2,3,4,6,7,8-HpCDD	38.886	3744564	1.07	0.9114	53.9	53.9	0.1381	0.1381	53.92	
1,2,3,4,6,7,8-HpCDD	38.895	182484	1.10	1.1237	4.337	4.337	0.0792	0.0792		
A Non-2,3,7,8-sub-HpCDD	38.803	532021	1.04	1.1237	12.6	12.6	0.0792	12.6		
S Total HpCDD					17.0	17.0	0.0792	0.0792		
D 13C-OCDD	41.324	5652656	0.90	0.6272	118.3	118.3	0.2291	0.2291	59.13	
OCDF	41.416	52396	0.90	1.5416	1.203	1.203	0.0628	0.0628		
OCDD	41.332	3012434	0.89	1.1855	89.9	89.9	0.1948	0.1948		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:59:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-3-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:34:40 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:34:39

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	19.521	19.502	1		3555128	555069	683	1707	813		
333.9338	19.521	19.502	1		4375826	670429	270	675	2483	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.630	18.611	1	0.954	2732955	450171	1014	2535	444		
317.9389	18.622	18.611	1	0.954	3506479	575233	500	1250	1150	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.665	18.637	2	1.002	95910	14470	78	195	186		
305.8987	18.648	18.637	1	1.001	121682	17479	158	395	111	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	18.008	18.244	-14	0.967	37995	6088	78	195	78		
305.8987	17.982	18.244	-16	0.965	51412	8016	158	395	51	0.74(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.867	19.848	1	1.018	1887124	282569	683	1707	414		
333.9338	19.867	19.848	1	1.018	2394674	361217	270	675	1338	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.893	19.874	1	1.001	21078	3201	179	447	18		
321.8936	19.867	19.874	0	1.000	25651	3361	67	167	50	0.82(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.893	19.882	1	1.019	4155370	609122	284	710	2145		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	17.956	19.035	-65	0.904	38634	6856	179	447	38		
321.8936	17.964	19.035	-64	0.904	52025	8994	67	167	134	0.74(0.65-0.89)	
319.8965	19.460	19.035	25	0.980	10985	1638	179	447	9		
	Empc Correction				7373	1358	179	447	8		
321.8936	19.486	19.035	27	0.981	9576	1764	67	167	26	1.15(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	25.778	25.760	1	1.321	3385227	581042	1032	2580	563		
353.8970	25.778	25.760	1	1.321	2185903	362943	532	1330	682	1.55(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	25.794	25.785	1	1.001	4855	860	28	70	31		M
341.8567	25.786	25.785	0	1.000	2777	560	106	265	5	1.75(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	27.195	27.177	1	1.393	3409187	537438	1032	2580	521		
353.8970	27.195	27.177	1	1.393	2170897	342568	532	1330	644	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						28	70			
341.8567	27.202						106	265			
A F1 PeCDFs											
339.8597	23.266						2	5			
341.8567	23.266						56	140			
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.724						28	70			
341.8567	26.724						106	265			
13C-1,2,3,7,8-PeCDD											
367.8949	27.967	27.949	1	1.433	2081283	309991	276	690	1123		
369.8919	27.958	27.949	1	1.432	1306940	190479	291	727	655	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						132	330			
357.8516	27.965						41	102			
A Non-2,3,7,8-sub-PeCDD											
355.8546	25.459	26.851	-83	0.910	28451	5249	132	330	40		
357.8516	25.451	26.851	-84	0.910	20121	3803	41	102	93	1.41(1.32-1.78)	
355.8546	26.969	26.851	7	0.964	11933	1742	132	330	13		
357.8516	26.977	26.851	8	0.965	7033	1102	41	102	27	1.70(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.723	33.714	1	0.945	1603853	276438	701	1752	394		
385.8610	33.723	33.714	1	0.945	3080167	548970	850	2125	646	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											RQM
373.8208	33.732	33.739	0	1.000	3353	626	75	187	8		
	Empc Correction				2310	659	75	187	9		
375.8178	33.740	33.739	0	1.000	1863	532	39	97	14	1.80(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.925	33.915	1	0.951	1788507	291693	701	1752	416		
385.8610	33.925	33.915	1	0.951	3458138	565973	850	2125	666	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.932						75	187			
375.8178	33.932						39	97			
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.889	34.880	1	0.978	1608925	295302	701	1752	421		
385.8610	34.889	34.880	1	0.978	3052669	562899	850	2125	662	0.53(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,6,7,8-HxCDF											
373.8208	34.905						75	187			
375.8178	34.905						39	97			
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.896	35.878	1	1.006	1519841	320379	701	1752	457		
385.8610	35.887	35.878	1	1.006	2888068	611988	850	2125	720	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQM
373.8208	35.904	35.894	1	1.000	1730	600	75	187	8		M
375.8178	35.904	35.894	1	1.000	2183	693	39	97	18	0.79(1.05-1.43)	
	Empc Correction				1395	483	39	97	12		
A Non-2,3,7,8-sub-HxCDF											U
373.8208	33.751						75	187			
375.8178	33.751						39	97			
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.686	35.685	0		4287696	935051	578	1445	1618		
403.8529	35.686	35.685	0		3332548	715691	532	1330	1345	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.141	35.131	1	0.985	2067704	462819	578	1445	801		
403.8529	35.141	35.131	1	0.985	1644379	346768	532	1330	652	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											Ma
389.8158	35.174	35.148	2	1.001	3264	742	146	365	5		M
391.8127	35.174	35.148	2	1.001	3052	615	106	265	6	1.07(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.275	35.265	1	0.988	2279128	453428	578	1445	784		
403.8529	35.275	35.265	1	0.988	1754295	346519	532	1330	651	1.30(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMa
389.8158	35.317	35.282	2	1.001	4201	801	146	365	5		M
391.8127	35.308	35.282	2	1.001	4741	784	106	265	7	0.89(1.05-1.43)	
	Empc Correction				3387	645	106	265	6		
1,2,3,7,8,9-HxCDD											
389.8158	35.694	35.693	0	1.016	11224	1739	146	365	12		
391.8127	35.703	35.693	1	1.016	8515	1401	106	265	13	1.32(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	32.901	34.284	-83	0.933	139203	19649	146	365	135		
391.8127	32.885	34.284	-84	0.932	111298	16035	106	265	151	1.25(1.05-1.43)	
389.8158	34.252	34.284	-2	0.971	25561	4008	146	365	27		
391.8127	34.268	34.284	-1	0.971	21365	4167	106	265	39	1.20(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.872	37.877	0	1.061	1106233	261112	845	2112	309		
419.8220	37.872	37.877	0	1.061	2498333	575296	1269	3172	453	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.905	37.886	1	1.001	7041	1523	165	412	9		
409.7788	37.897	37.886	1	1.001	6425	1658	51	127	33	1.10(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.188	39.194	0	1.098	1207921	310920	845	2112	368		
419.8220	39.188	39.194	0	1.098	2672967	683615	1269	3172	539	0.45(0.37-0.51)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8,9-HpCDF											
407.7817	39.202						165	412			
409.7788	39.202						51	127			
A Non-2,3,7,8-sub-HpCDF											M
407.7817	38.282	38.556	-16	1.011	14618	3550	165	412	22		M
409.7788	38.274	38.556	-17	1.011	14137	3494	51	127	69	1.03(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.886	38.892	0	1.090	1931554	468464	397	992	1180		
437.8140	38.878	38.892	-1	1.089	1813010	437968	434	1085	1009	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.895	38.901	0	1.000	95767	22240	179	447	124		
425.7737	38.895	38.901	0	1.000	86717	20293	144	360	141	1.10(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.224	38.803	-35	0.983	271380	64554	179	447	361		
425.7737	38.224	38.803	-35	0.983	260641	61470	144	360	427	1.04(0.88-1.20)	
13C-OCDD											
469.7780	41.324	41.345	-1	1.158	2680900	474586	485	1212	979		
471.7750	41.324	41.345	-1	1.158	2971756	548803	464	1160	1183	0.90(0.76-1.02)	
OCDF											
441.7428	41.416	41.413	0	1.002	24865	5342	55	137	97		
443.7399	41.408	41.413	0	1.002	27531	5994	143	357	42	0.90(0.76-1.02)	
OCDD											
457.7377	41.332	41.345	-1	1.000	1417278	259550	237	592	1095		
459.7348	41.332	41.345	-1	1.000	1595156	295698	236	590	1253	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	6239434	1025404

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	6239434	1025404

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
18.008	37995	6088	51412	8016	1.16	0.74	
Signal Totals:							
	37995	6088	51412	8016			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	89407	14104				0.74	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.162 = (89407 * 100.000) / (6239434 * 1.233)

Report Date: 17-Dec-2019 09:34:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 19.035

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	100.000	4281798	643786

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		100.000	4281798	643786

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.956	38634	6856	52025	8994	1.77	0.74	
19.460	10985	1638	9576	1764	0.4006	1.15	RQ
19.460	7373	1358	9576	1764	0.3302		Empc Correction
Signal Totals:							
	46007	8214	61601	10758			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	111220	19252				0.81	RQ
	107608	18972					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.167 = (111220 * 100.000) / (4281798 * 1.199)
Empc Amount: 2.096 = (107608 * 100.000) / (4281798 * 1.199)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 26.851

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120	D 13C-1,2,3,7,8-PeCDD	100.000	3388223	500470

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	3388223	500470

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
25.459	28451	5249	20121	3803	1.28	1.41	
26.969	11933	1742	7033	1102	0.4998	1.70	
Signal Totals:							
	40384	6991	27154	4905			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	67538	11896				1.49	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.780 = (67538 * 100.000) / (3388223 * 1.120)

Report Date: 17-Dec-2019 09:34:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	4684020	825408
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	5246645	857666
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	4661594	858201
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	4407909	932367

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	4750042	868410

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags

Compound is Marked ND

Report Date: 17-Dec-2019 09:34:51 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3712083	809587
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	4033423	799947
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	3872753	804767

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.901	139203	19649	111298	16035	5.50	1.25	
34.252	25561	4008	21365	4167	1.03	1.20	
Signal Totals:							
	164764	23657	132663	20202			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	297427	43859				1.24	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.525 = (297427 * 100.000) / (3872753 * 1.177)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3604566	836408
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3880888	994535

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3742727	915471

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.282	14618	3550	14137	3494	0.4981	1.03	M
Signal Totals:							
	14618	3550	14137	3494			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28755	7044				1.03	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4981 = (28755 * 100.000) / (3742727 * 1.542)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Inject. Date: 13-Dec-2019 18:59:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3744564	906432

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3744564	906432

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.224	271380	64554	260641	61470	12.6	1.04	
Signal Totals:							
	271380	64554	260641	61470			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	532021	126024				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 12.644 = (532021 * 100.000) / (3744564 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

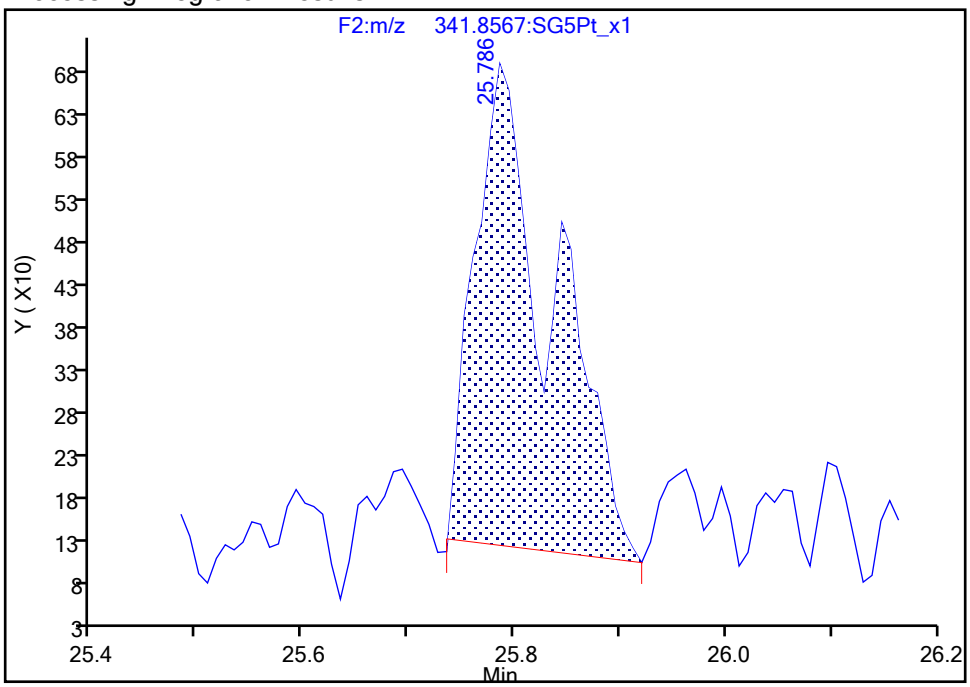
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

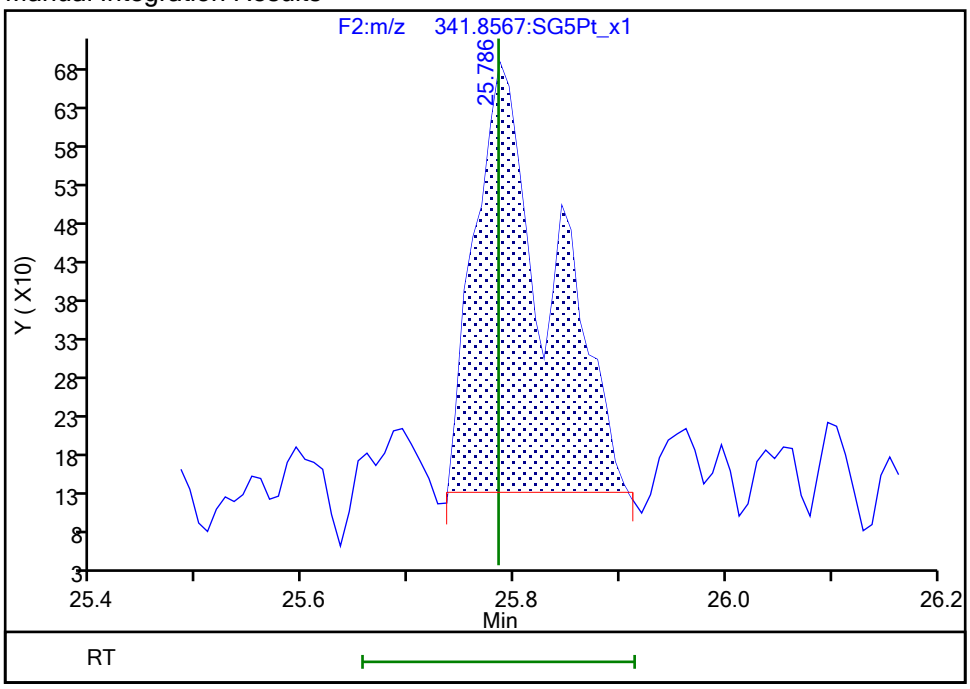
Processing Integration Results

RT: 25.79
Area: 2912
Amount: 0.124015
Amount Units: pg/ul



Manual Integration Results

RT: 25.79
Area: 2777
Amount: 0.117197
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:31:48

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

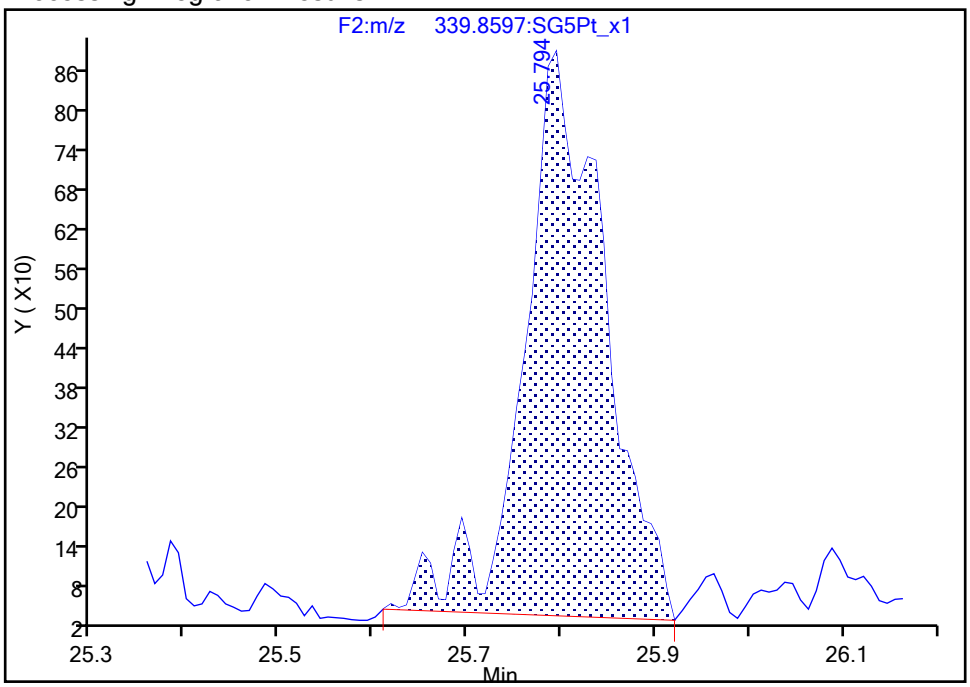
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

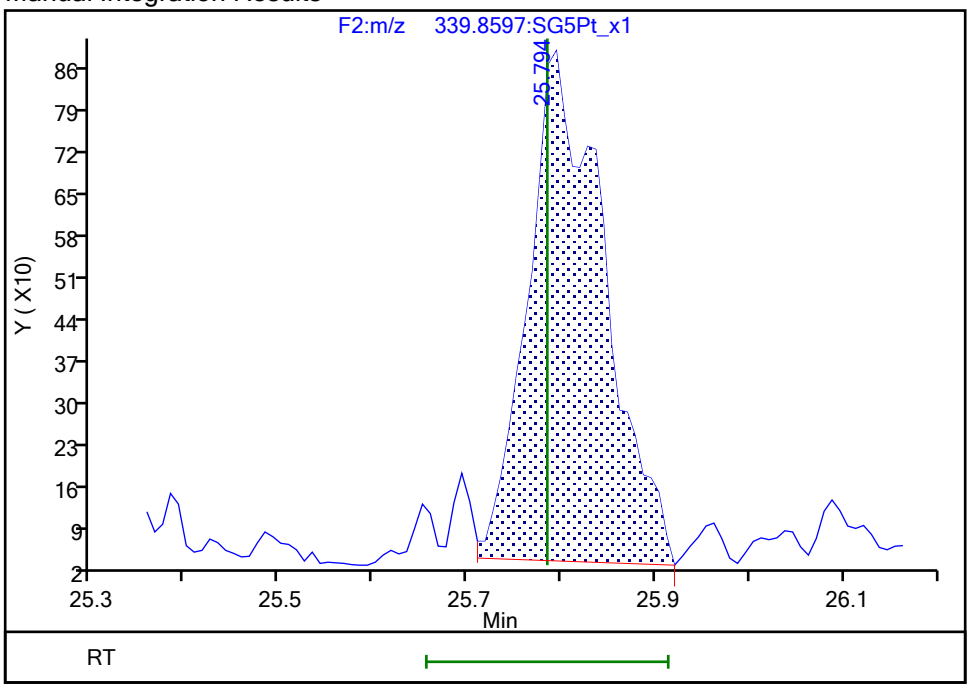
Processing Integration Results

RT: 25.79
Area: 5164
Amount: 0.124015
Amount Units: pg/ul



Manual Integration Results

RT: 25.79
Area: 4855
Amount: 0.117197
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:31:52
Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

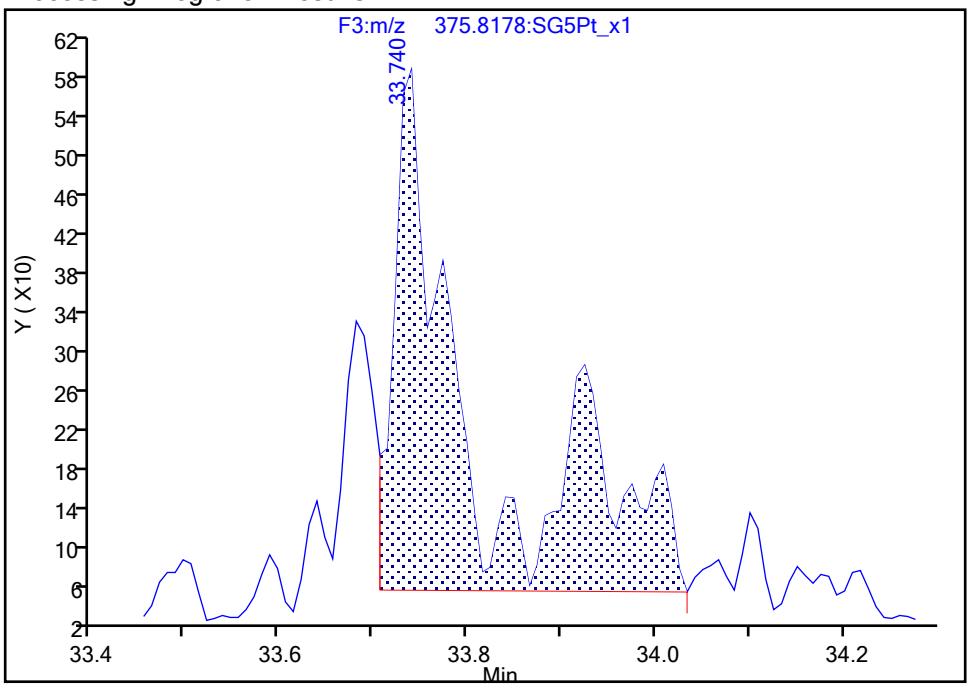
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

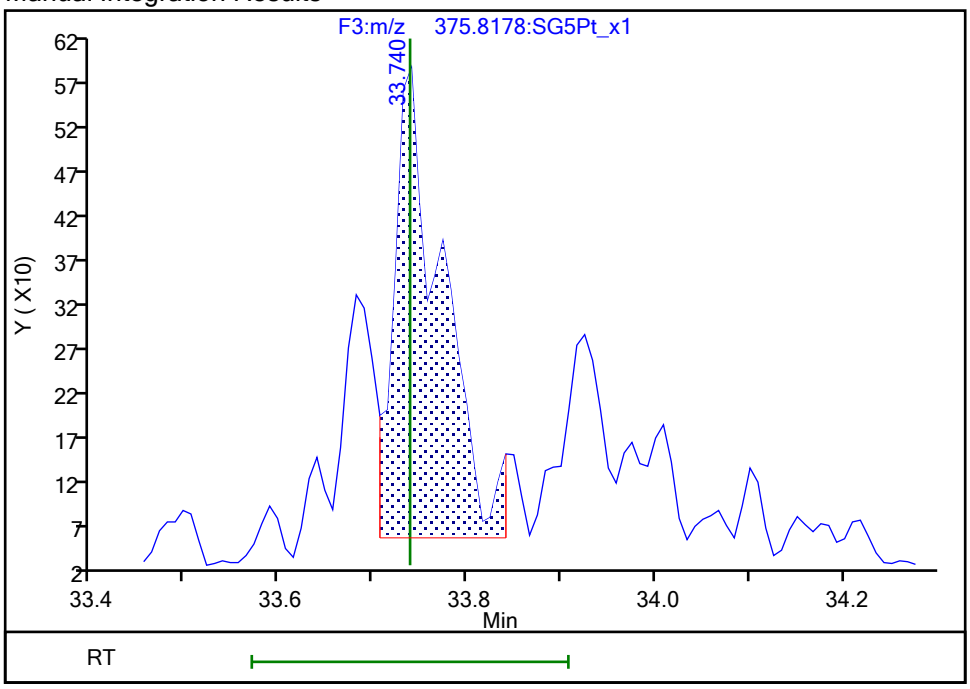
Processing Integration Results

RT: 33.74
Area: 3016
Amount: 0.104423
Amount Units: pg/ul



Manual Integration Results

RT: 33.74
Area: 1863
Amount: 0.085519
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:32:16

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

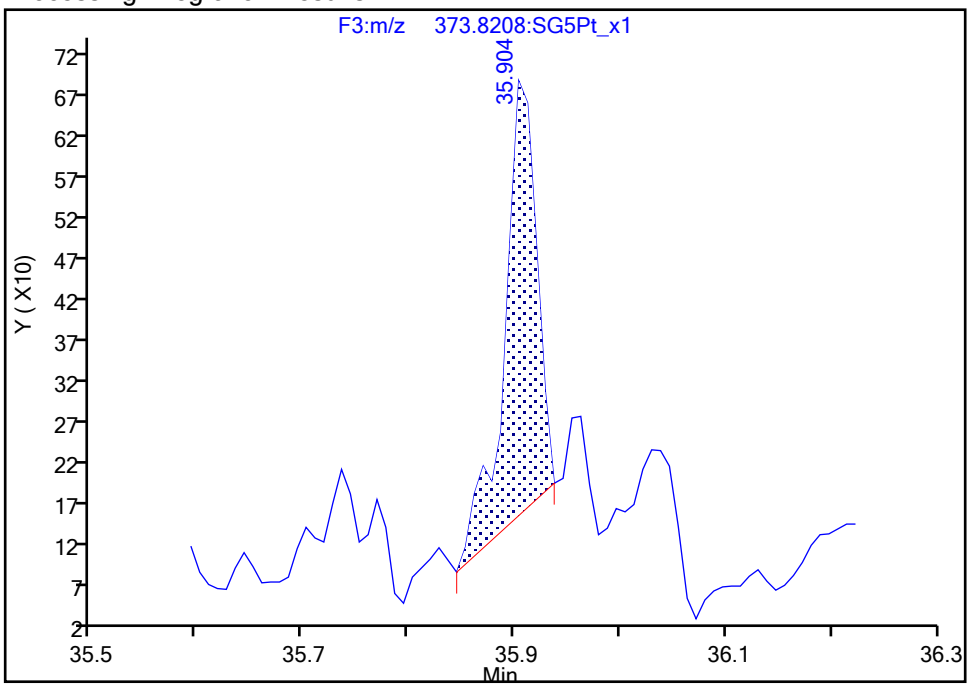
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

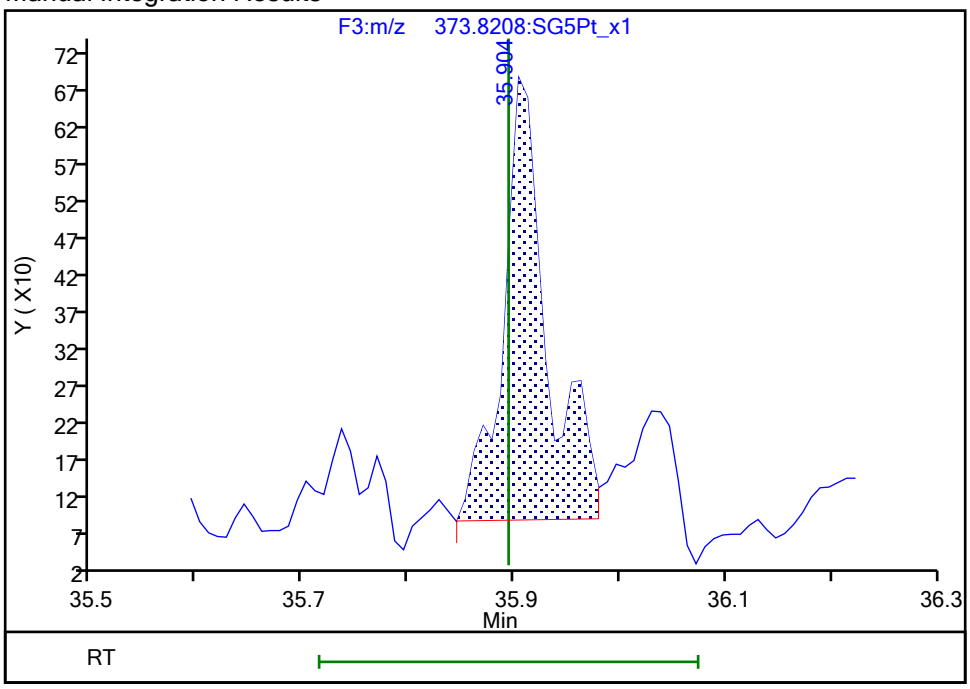
Processing Integration Results

RT: 35.90
Area: 1107
Amount: 0.055999
Amount Units: pg/ul



Manual Integration Results

RT: 35.90
Area: 1730
Amount: 0.066603
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:32:33

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

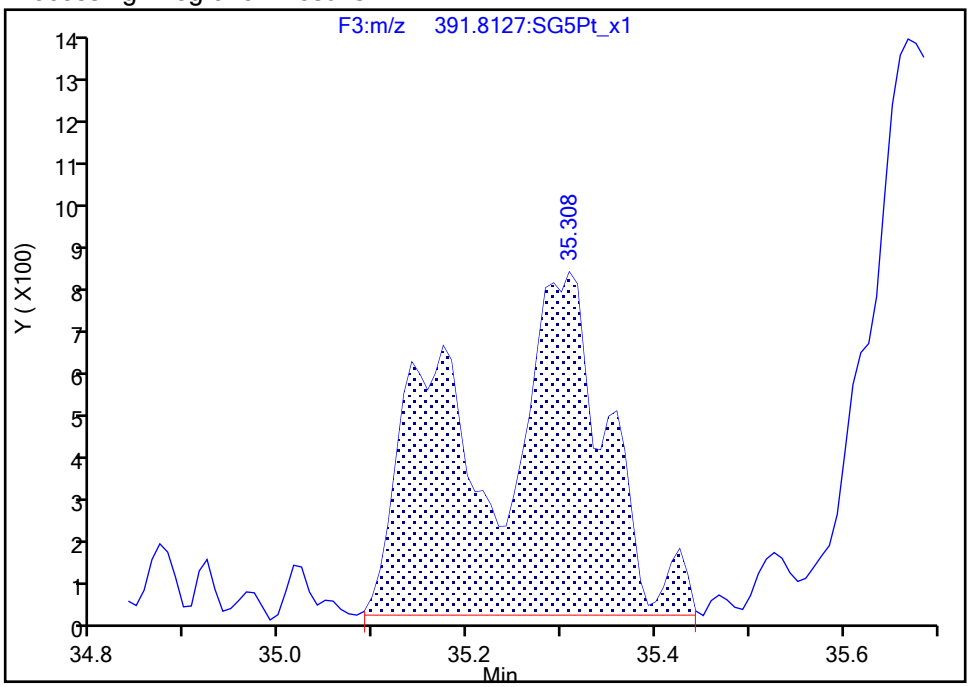
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

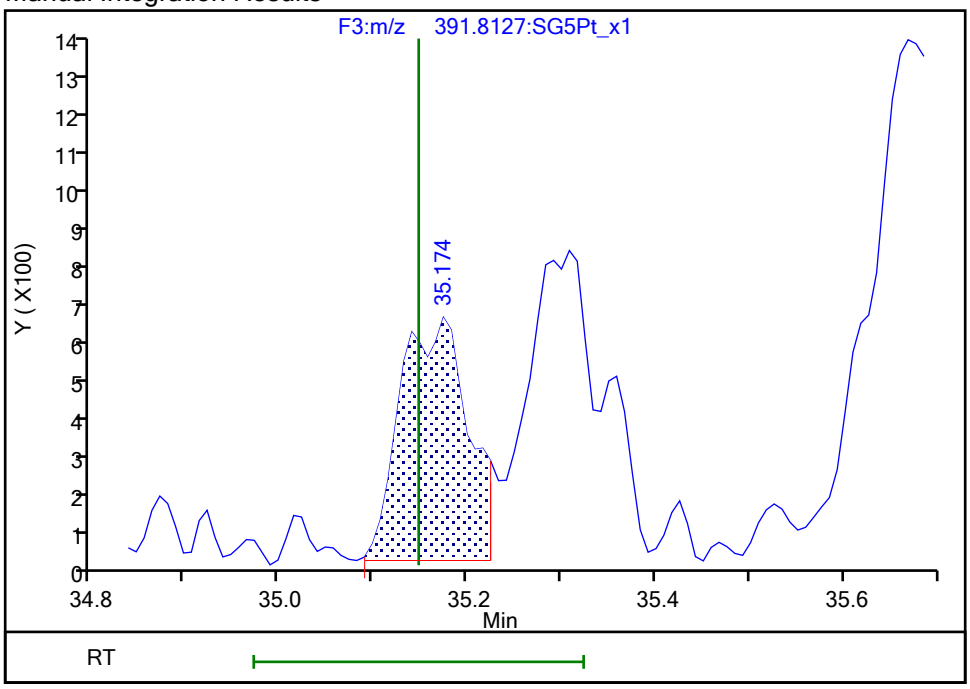
Processing Integration Results

RT: 35.31
Area: 7793
Amount: 0.275574
Amount Units: pg/ul



Manual Integration Results

RT: 35.17
Area: 3052
Amount: 0.145116
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:32:54

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

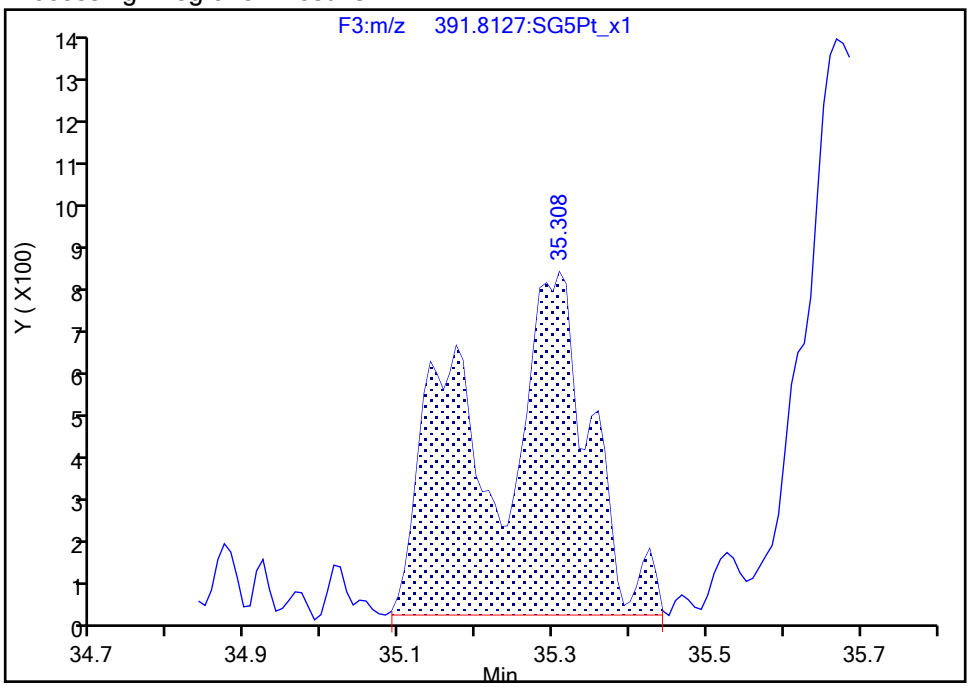
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 3

Processing Integration Results

RT: 35.32
Area: 11994
Amount: 0.275574
Amount Units: pg/ul



Manual Integration Results

RT: 35.17
Area: 6316
Amount: 0.145116
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:32:54
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

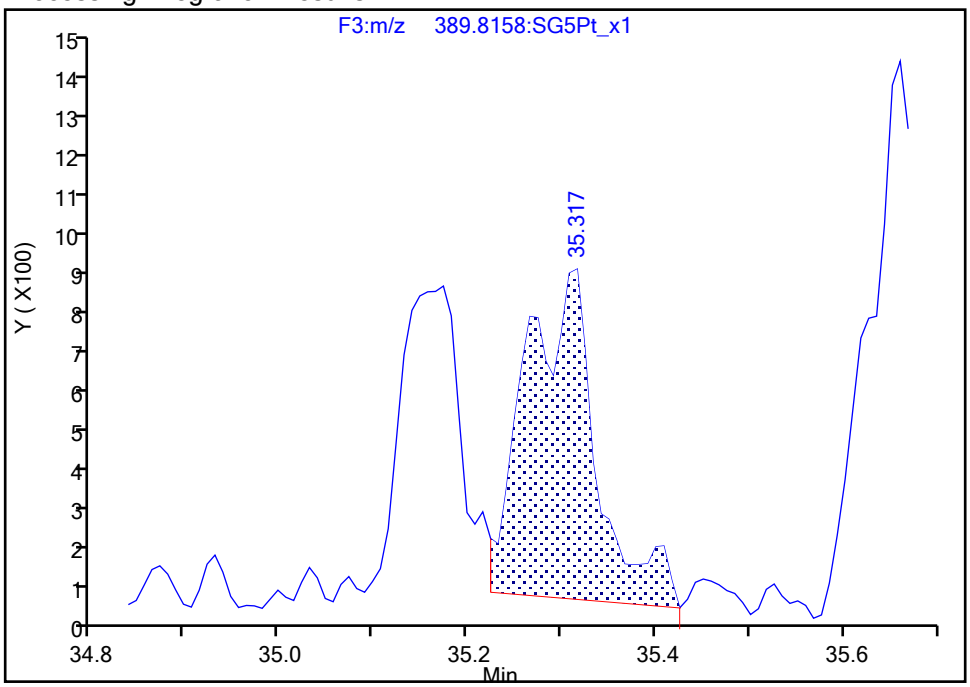
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

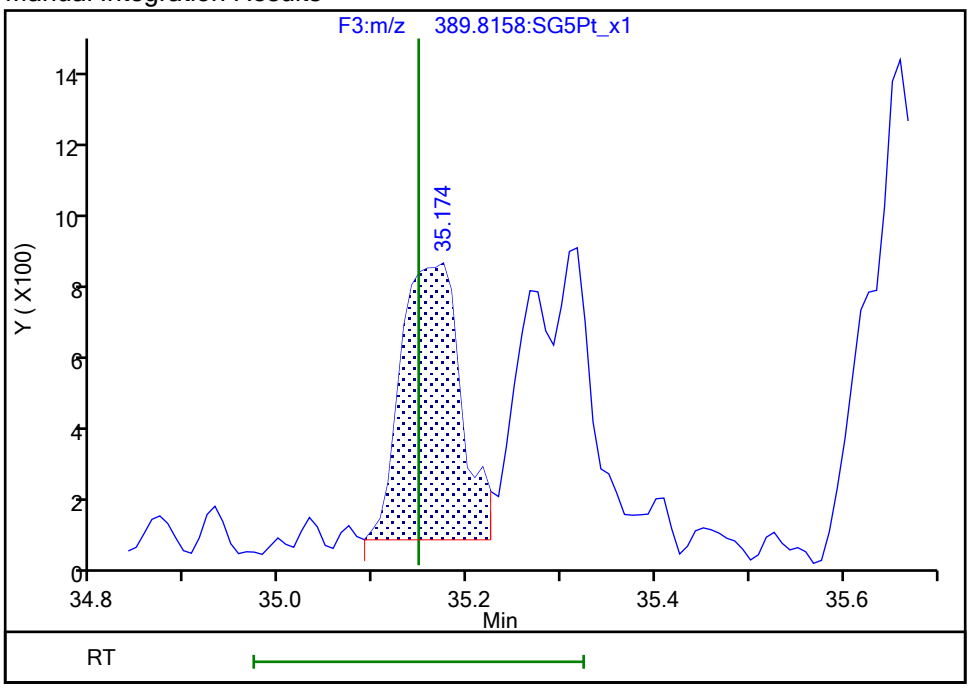
Processing Integration Results

RT: 35.32
Area: 4201
Amount: 0.275574
Amount Units: pg/ul



Manual Integration Results

RT: 35.17
Area: 3264
Amount: 0.145116
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:32:55
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

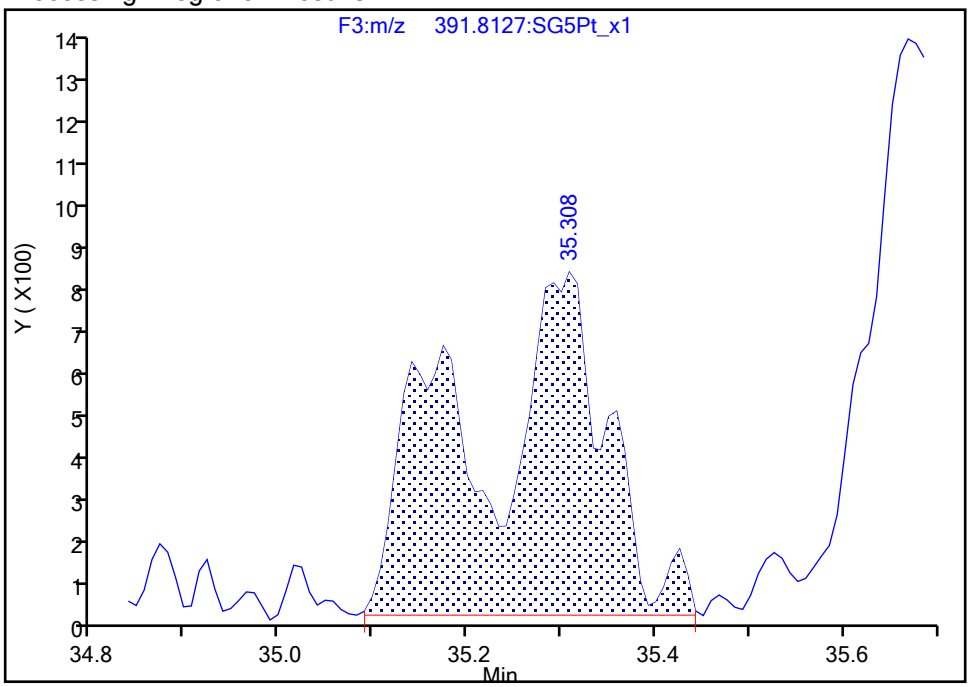
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

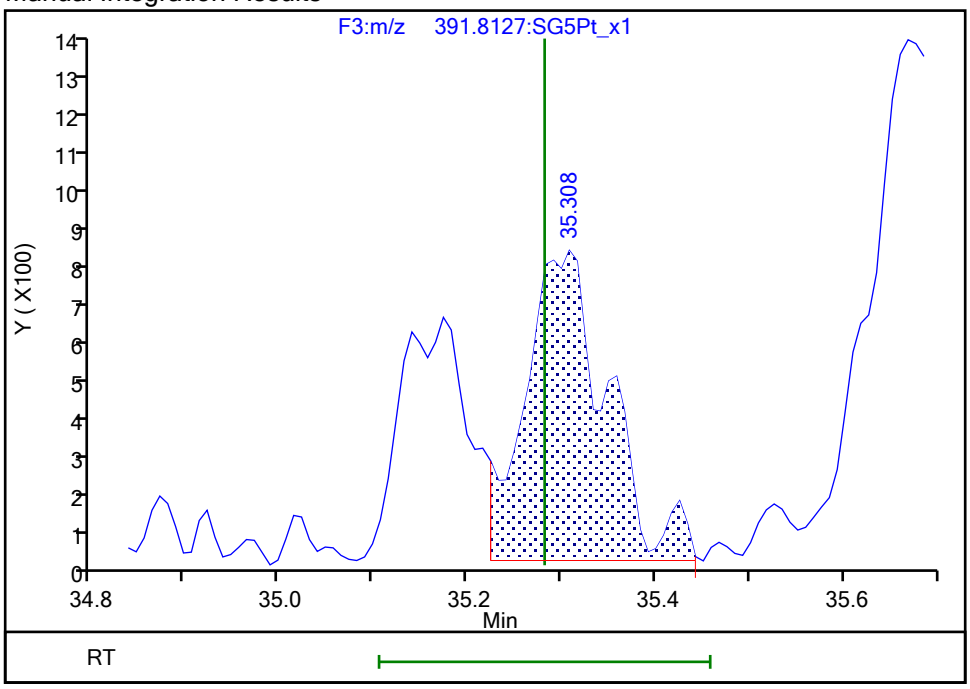
Processing Integration Results

RT: 35.31
Area: 7793
Amount: 0.264186
Amount Units: pg/ul



Manual Integration Results

RT: 35.31
Area: 4741
Amount: 0.196961
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:32:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

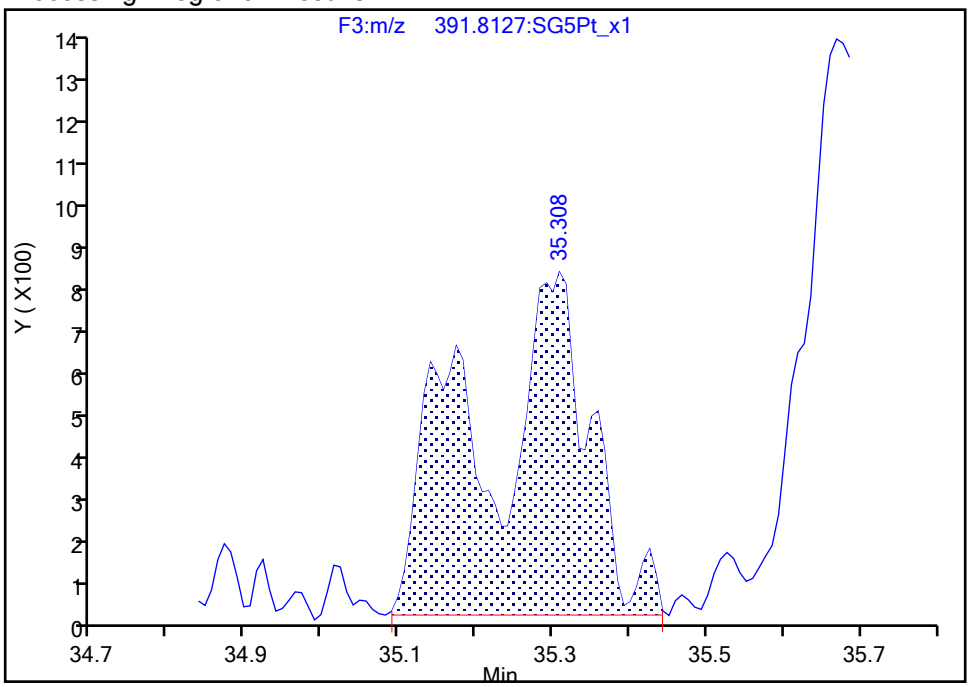
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 35.32
Area: 11994
Amount: 0.264186
Amount Units: pg/ul



Manual Integration Results

RT: 35.32
Area: 8942
Amount: 0.196961
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:32:59
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

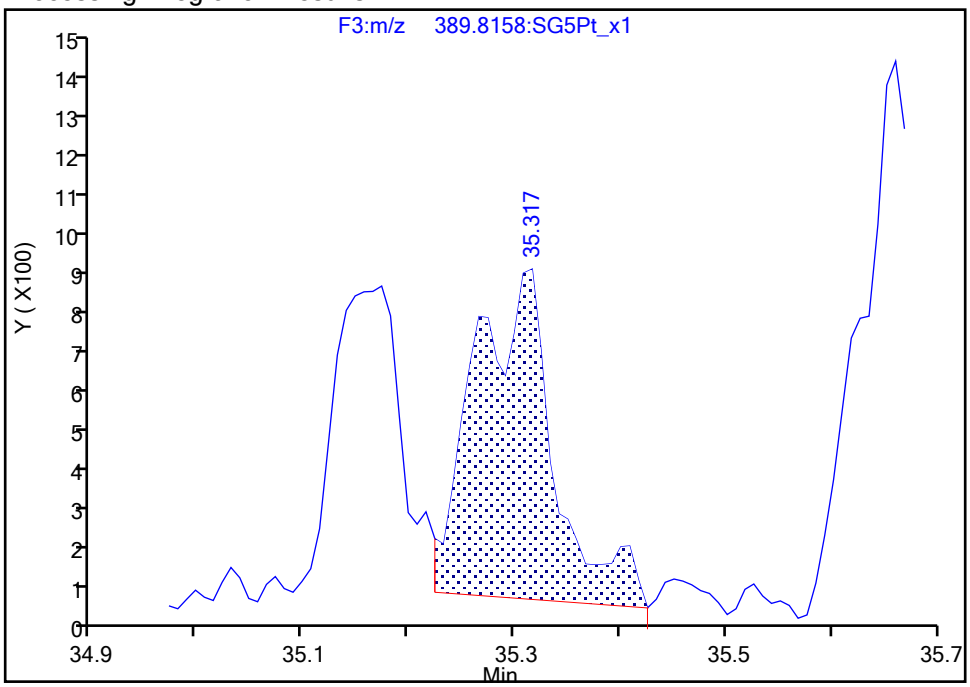
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

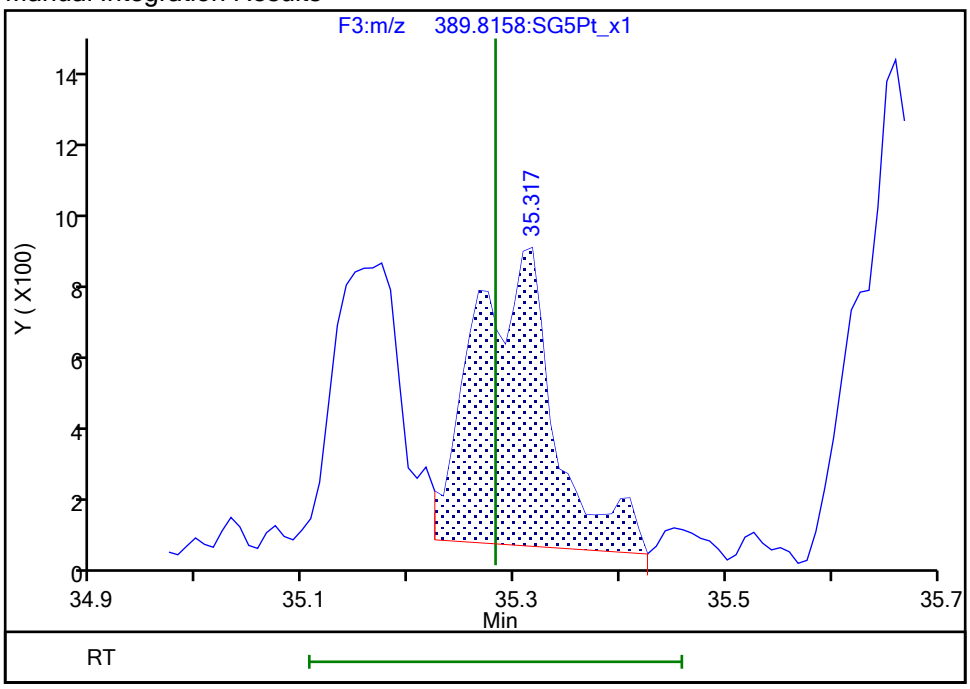
Processing Integration Results

RT: 35.32
Area: 4201
Amount: 0.264186
Amount Units: pg/ul



Manual Integration Results

RT: 35.32
Area: 4201
Amount: 0.196961
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:33:01

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

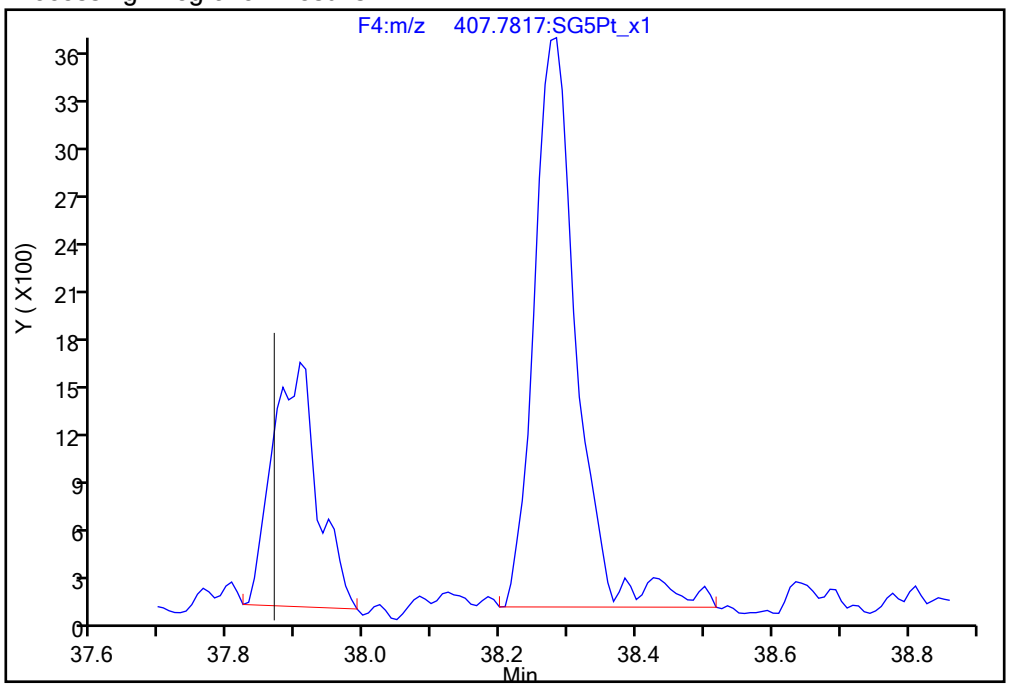
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7817, RT: (37.87- 39.24)

Signal: 1

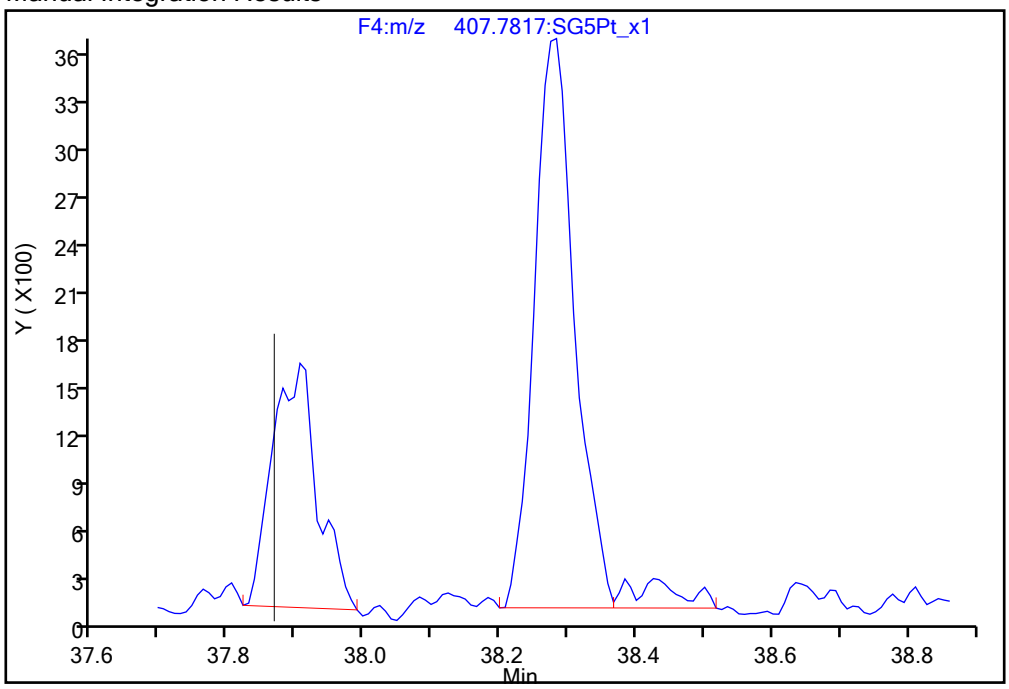
Processing Integration Results

RT = 38.282 Area = 15557



Manual Integration Results

RT = 38.282 Area = 14618 M



Reviewer: dadunj, 17-Dec-2019 09:33:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

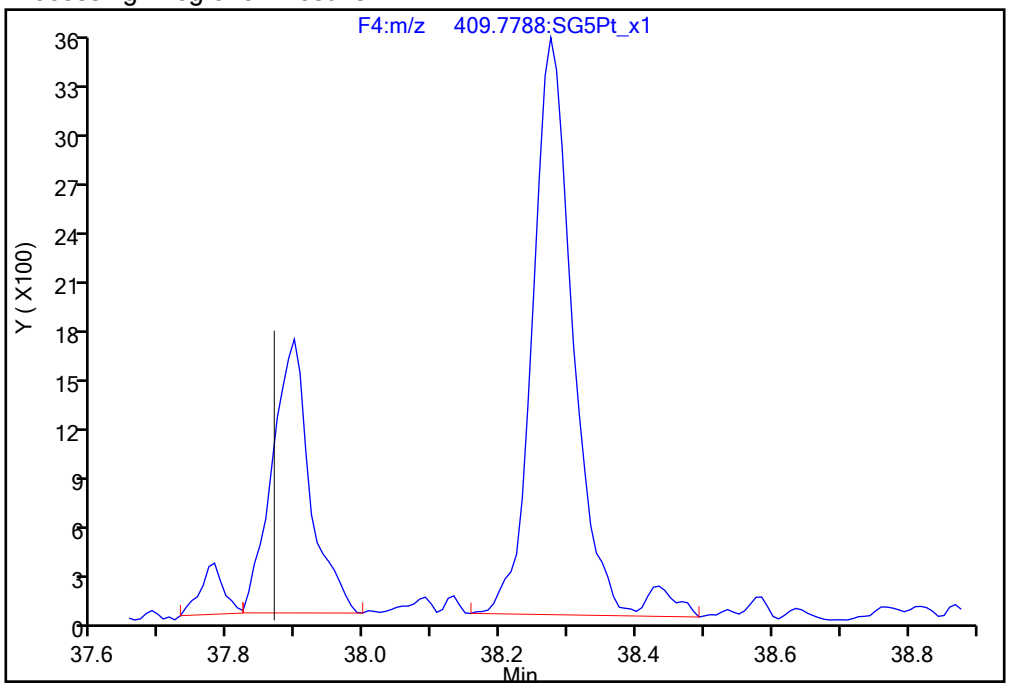
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d				
Injection Date:	13-Dec-2019 18:59:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-3-A	Lab Sample ID:	320-56911-3		
Client ID:	11187072-120719-SS-SJSSA01 (2-4)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (37.87- 39.24)

Signal: 2

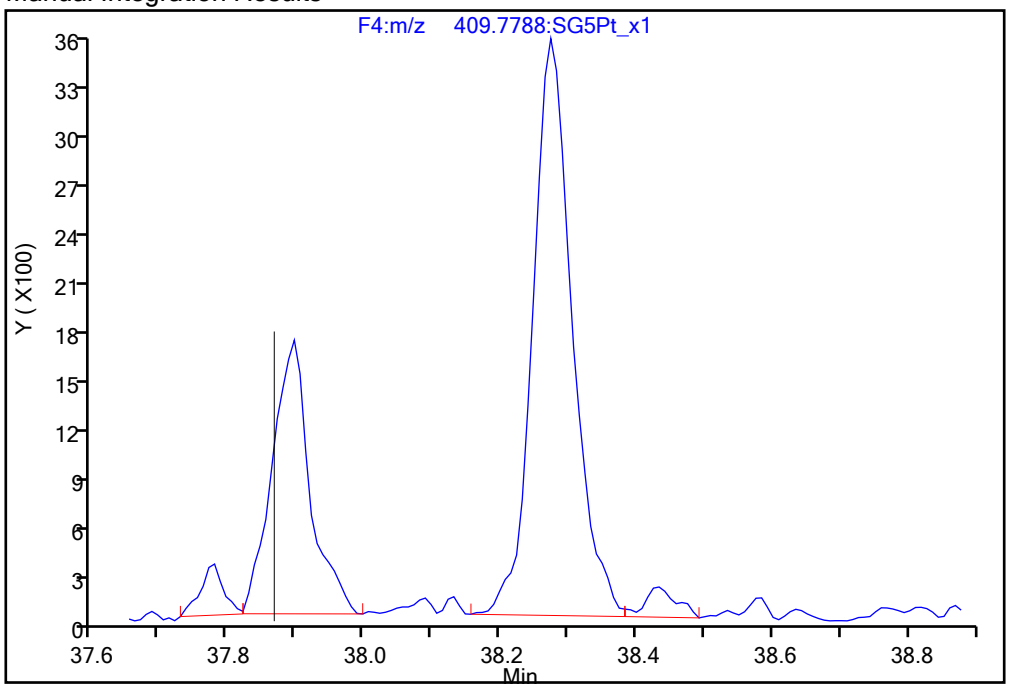
Processing Integration Results

RT = 38.274 Area = 14742



Manual Integration Results

RT = 38.274 Area = 14137 M



Reviewer: dadunj, 17-Dec-2019 09:33:15

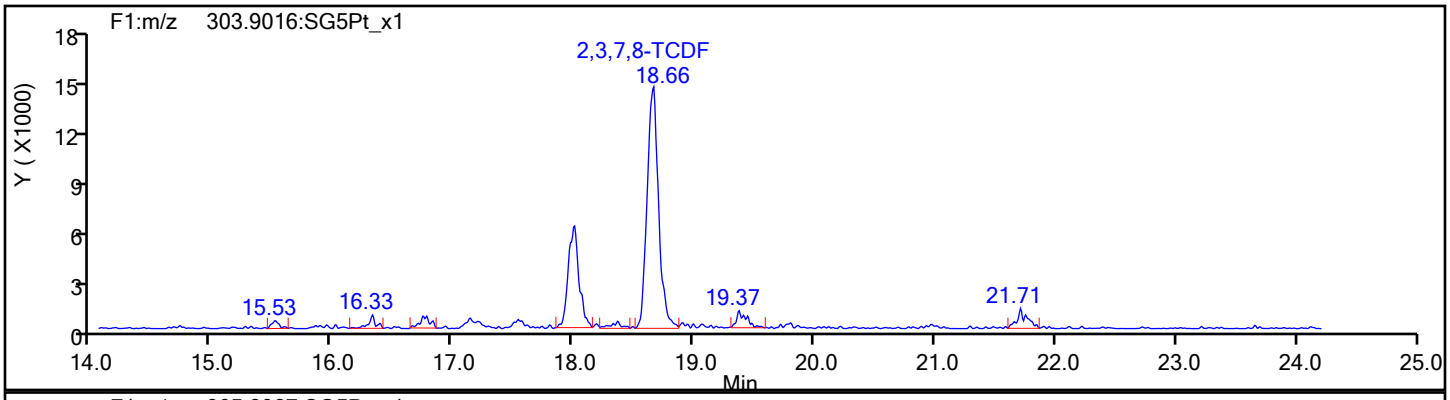
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

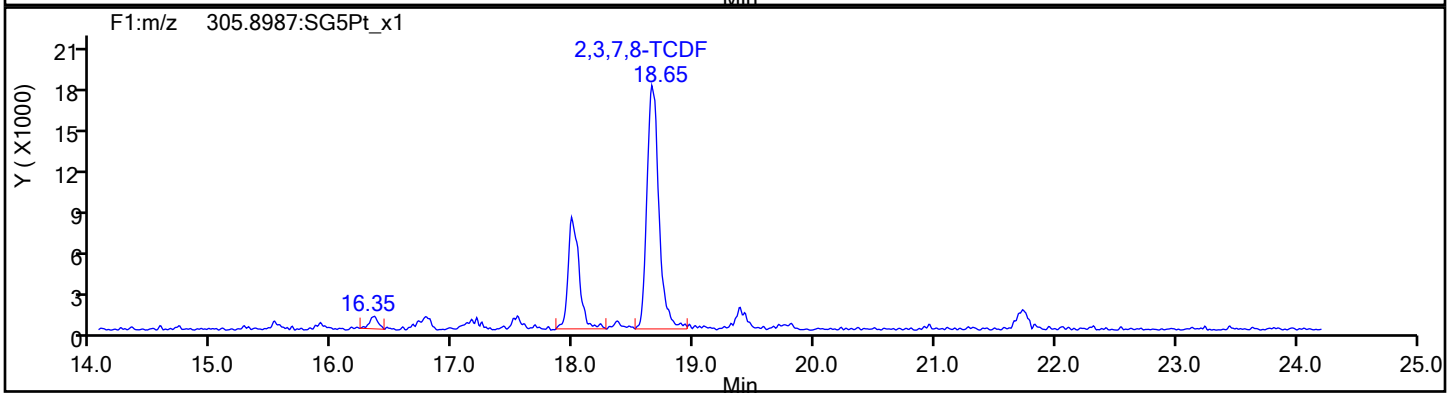
Report Date: 17-Dec-2019 09:34:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

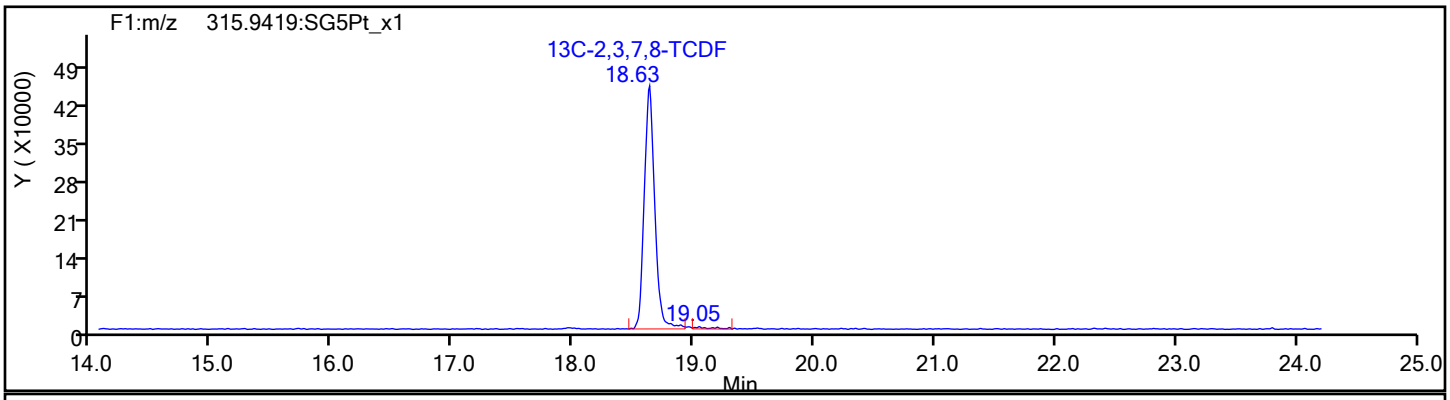
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

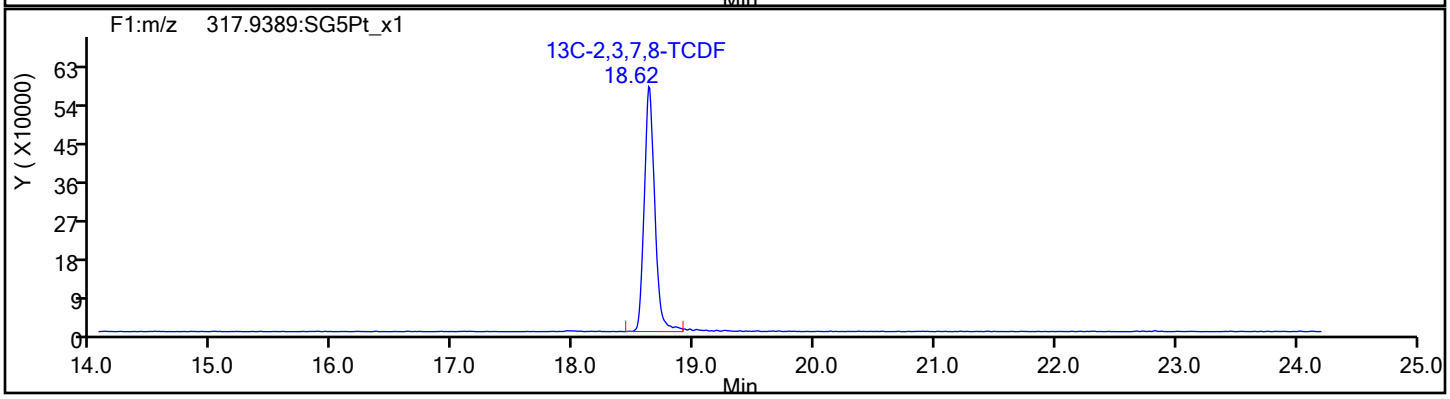
TCDF





TCDF Standards





Report Date: 17-Dec-2019 09:34:53 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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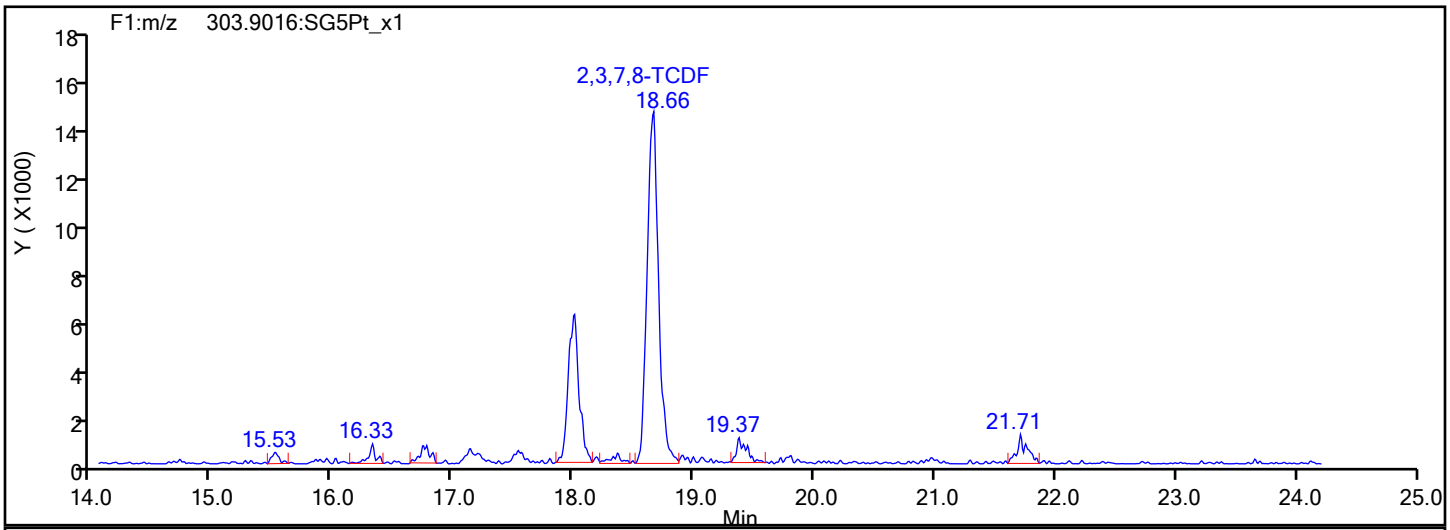
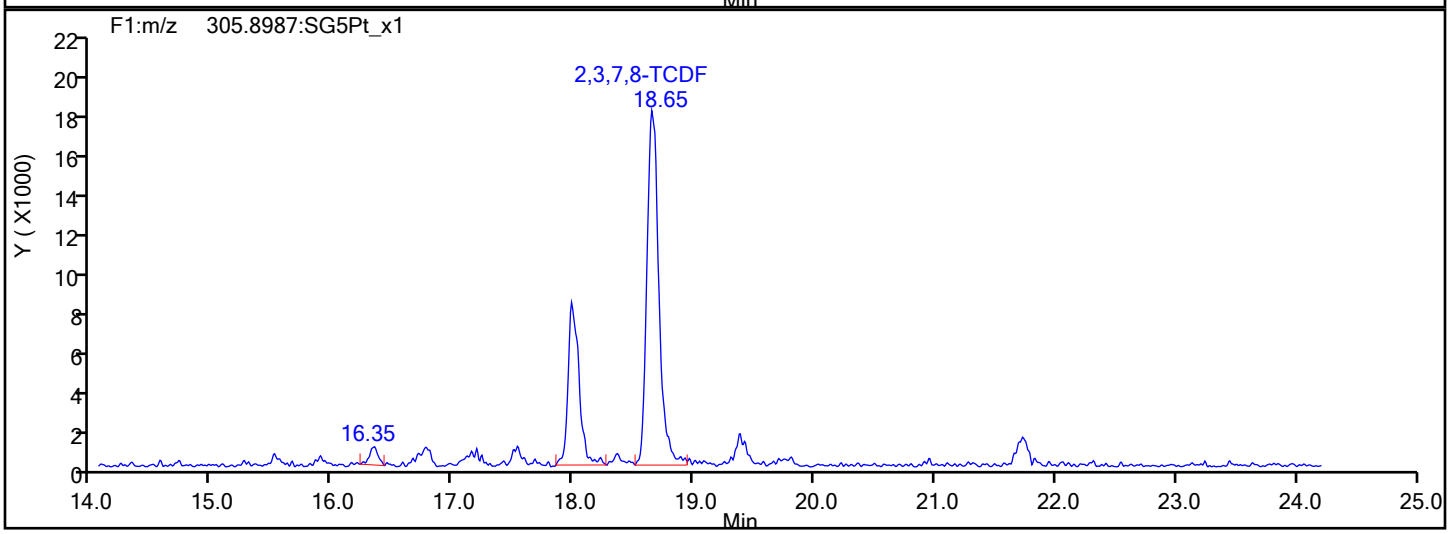
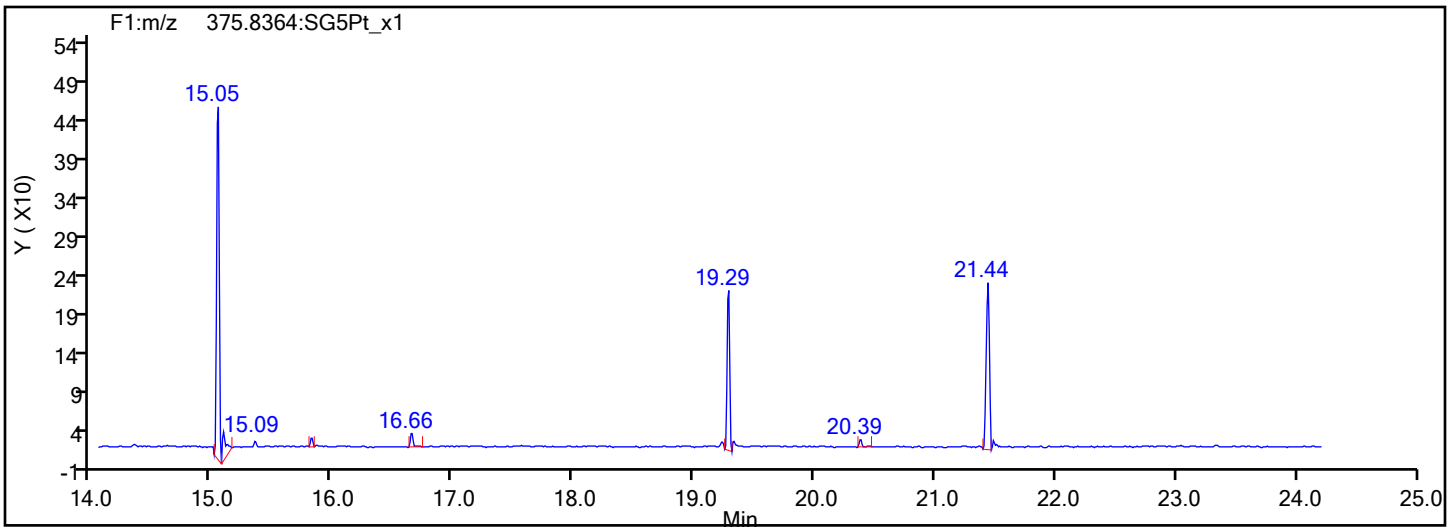
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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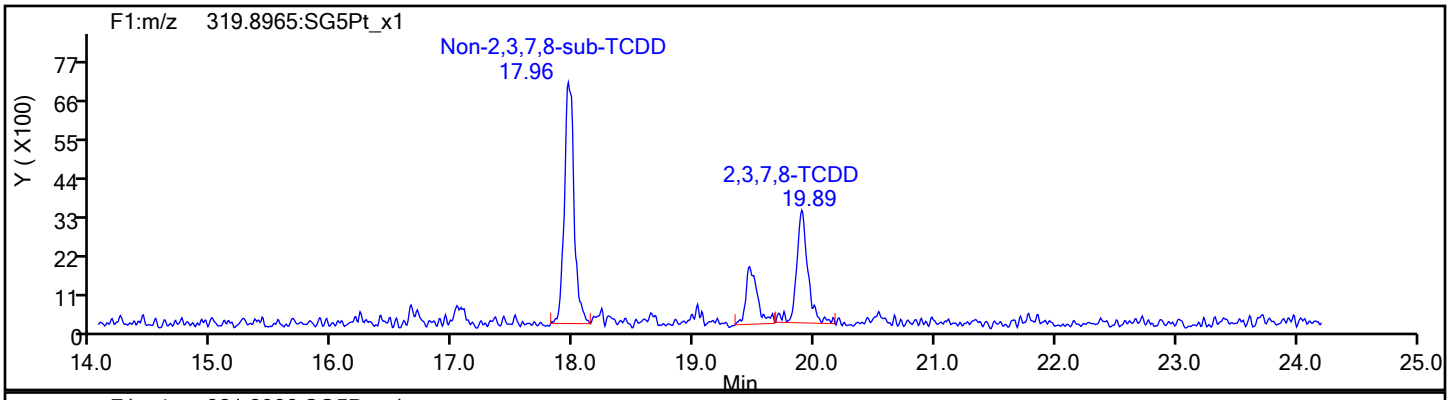
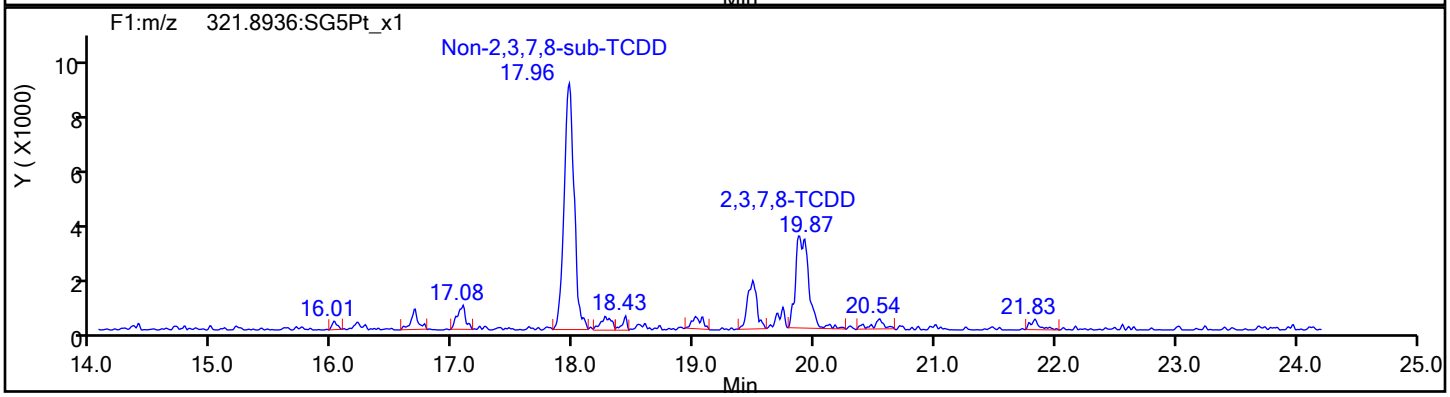
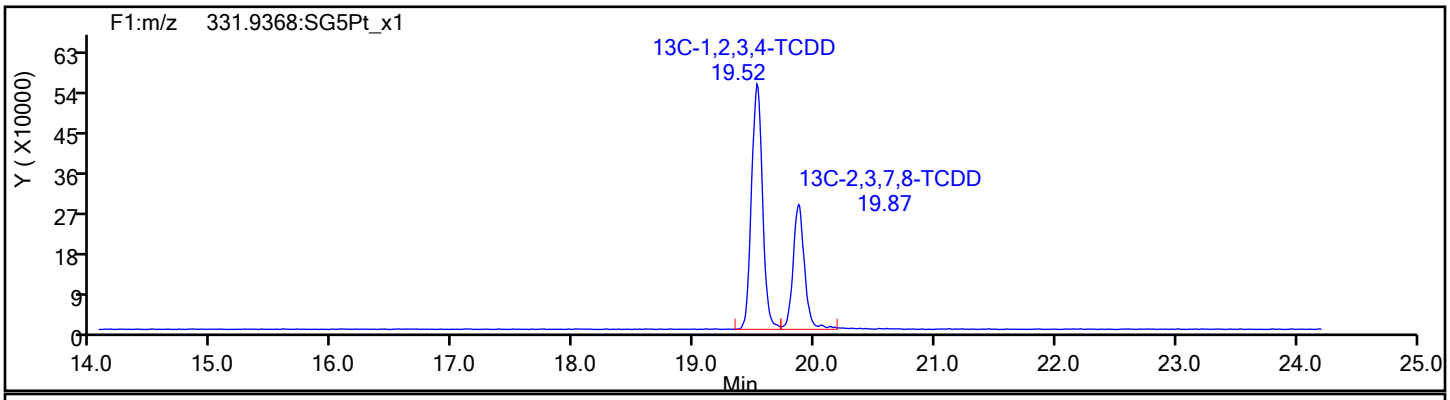
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

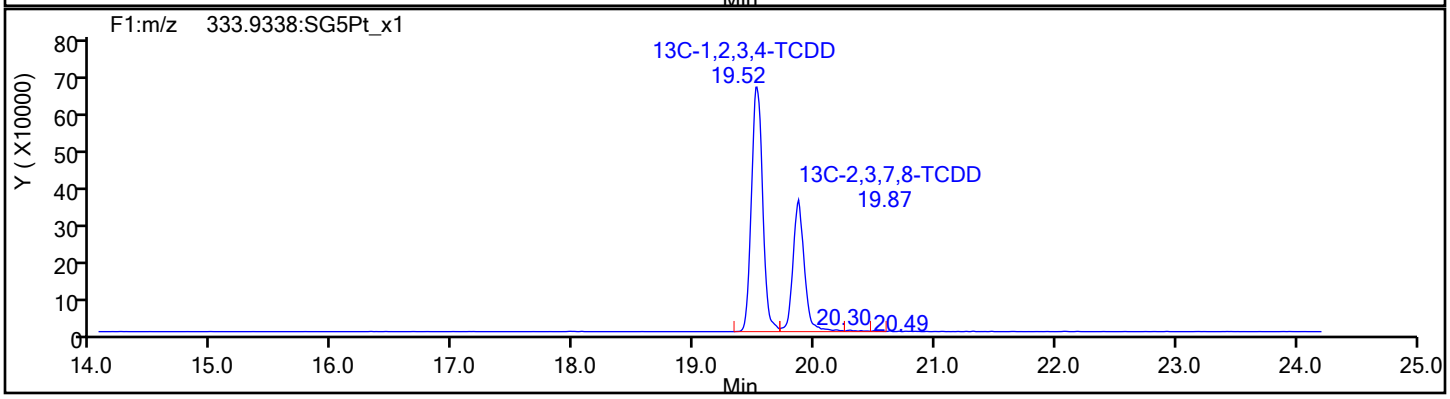
TCDD





TCDD Standards





Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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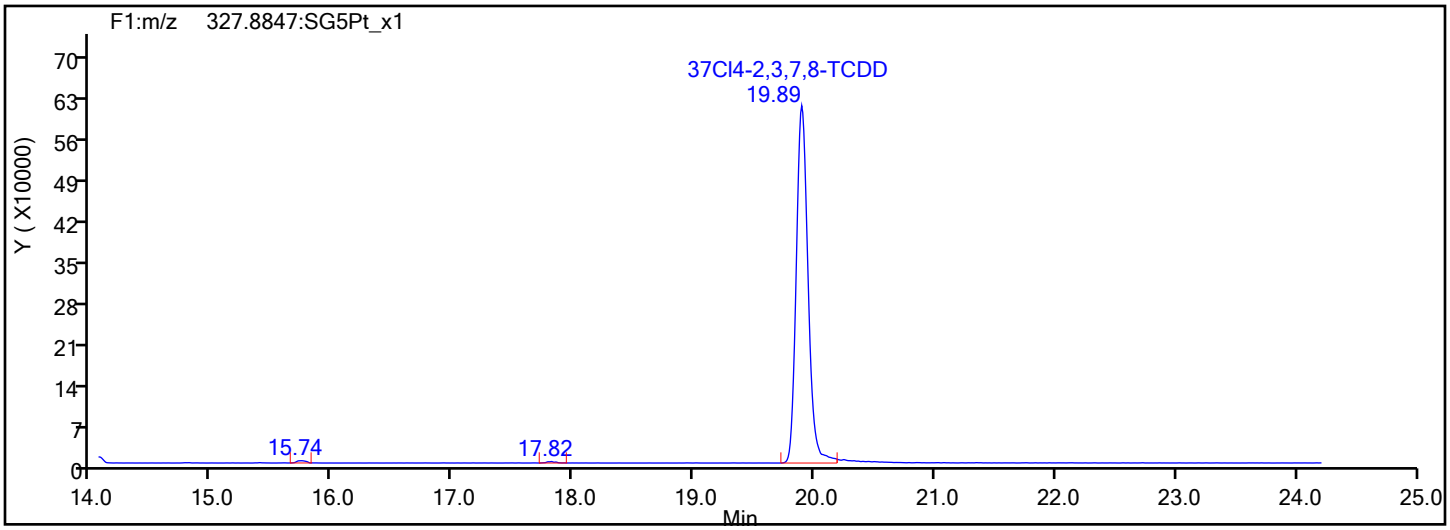
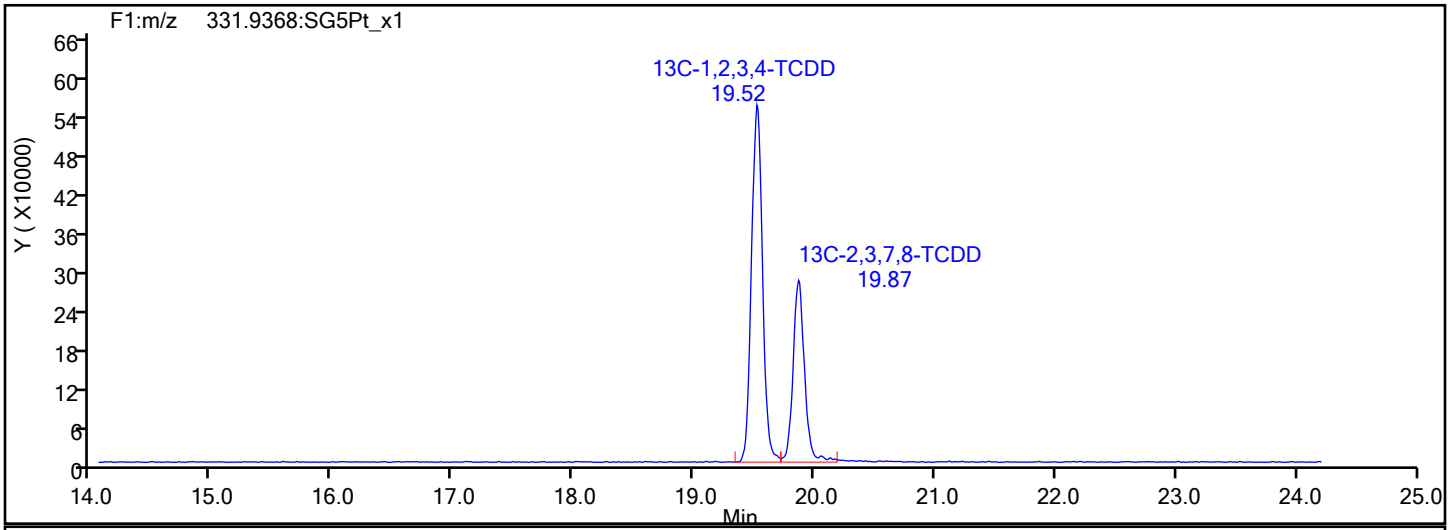
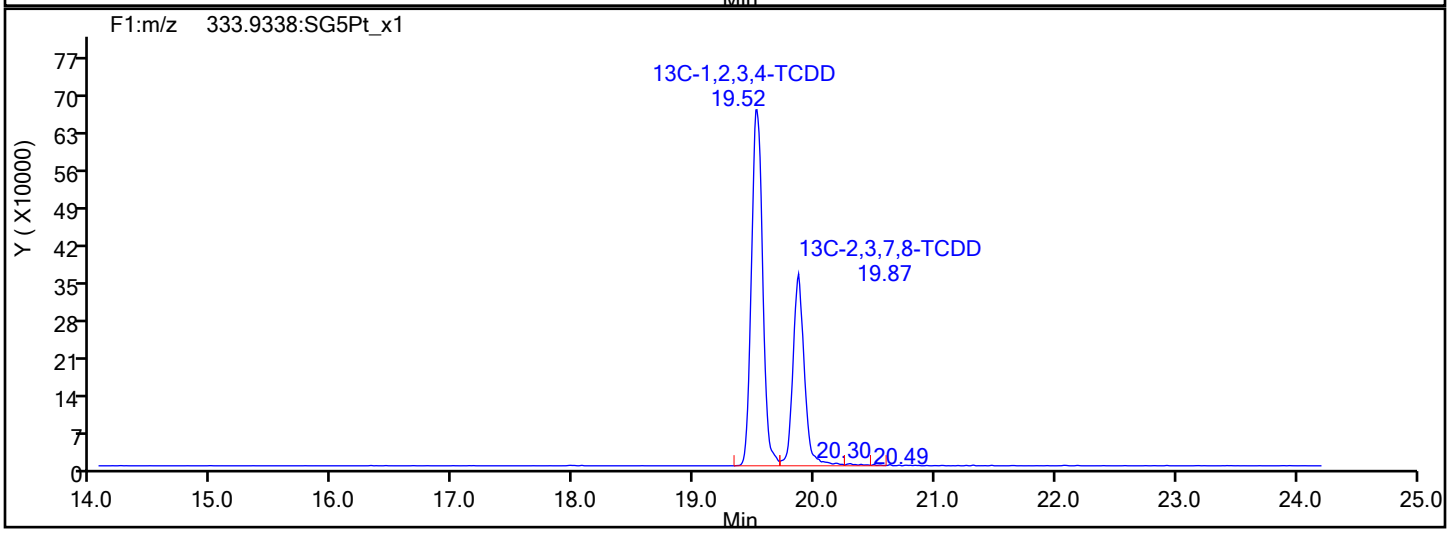
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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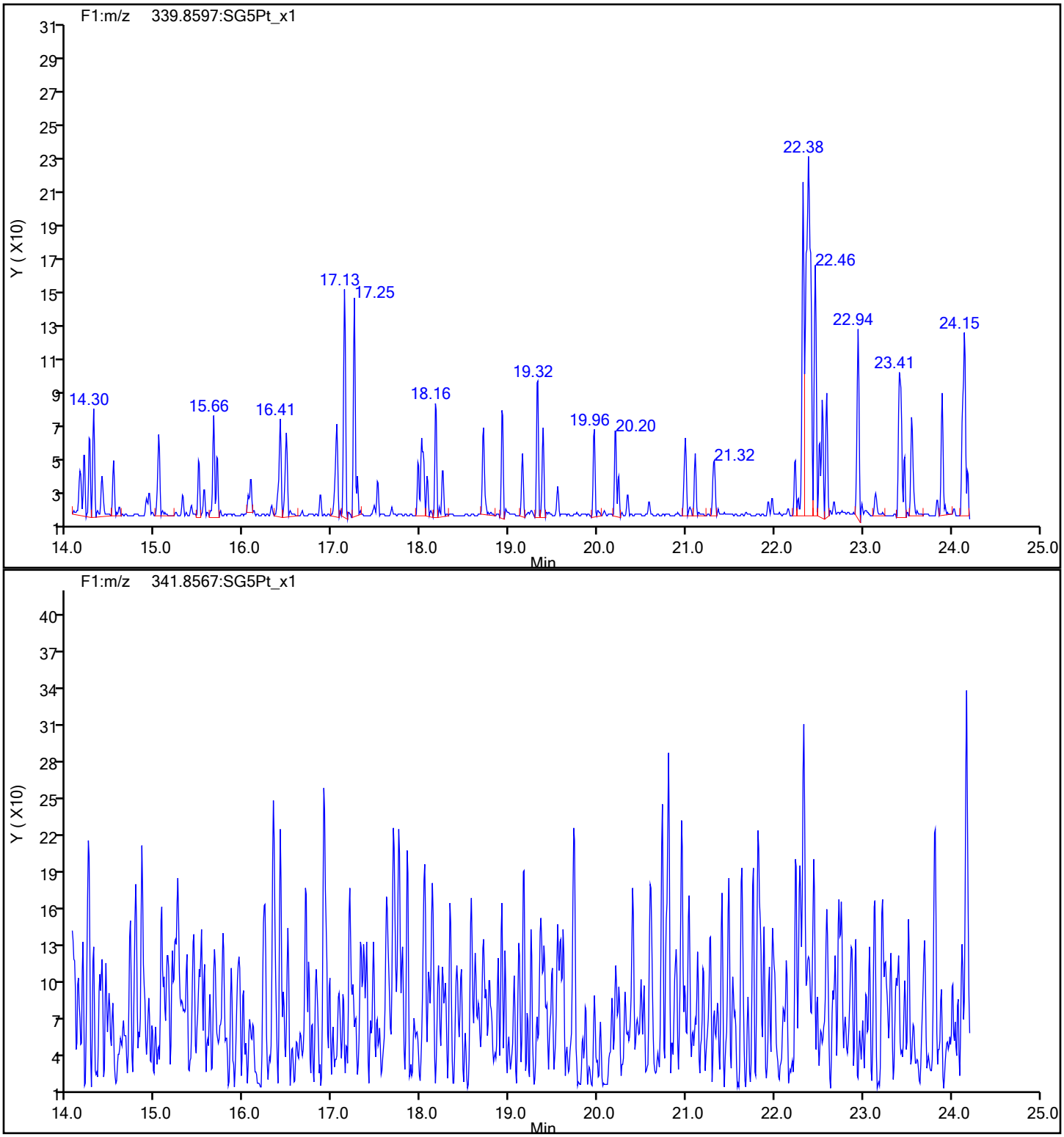
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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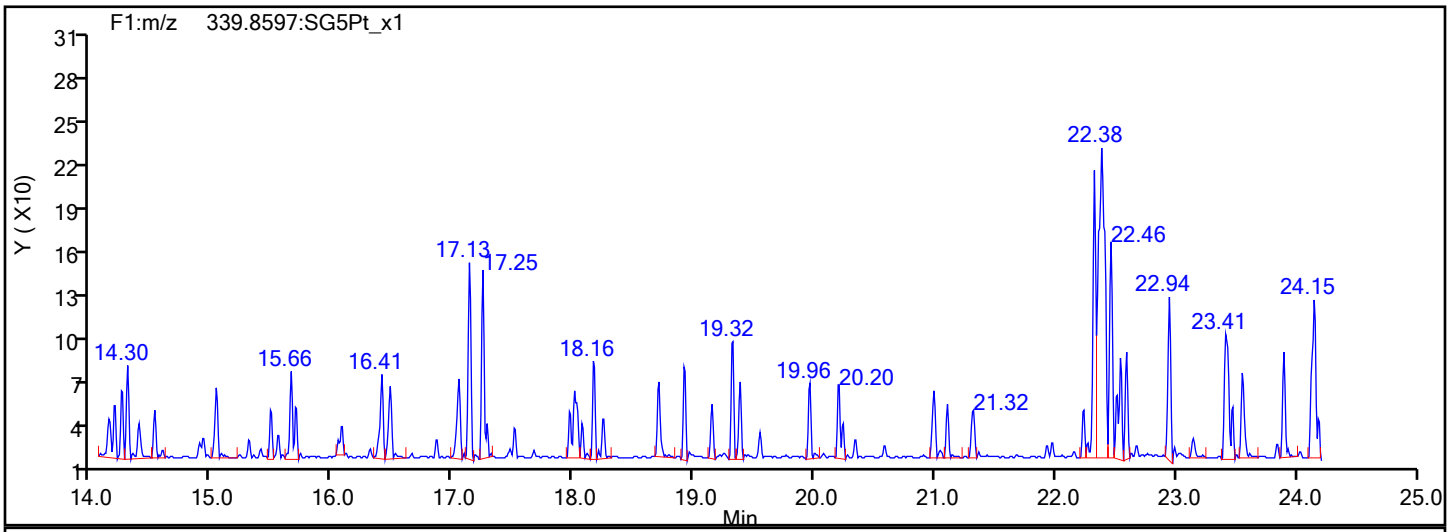
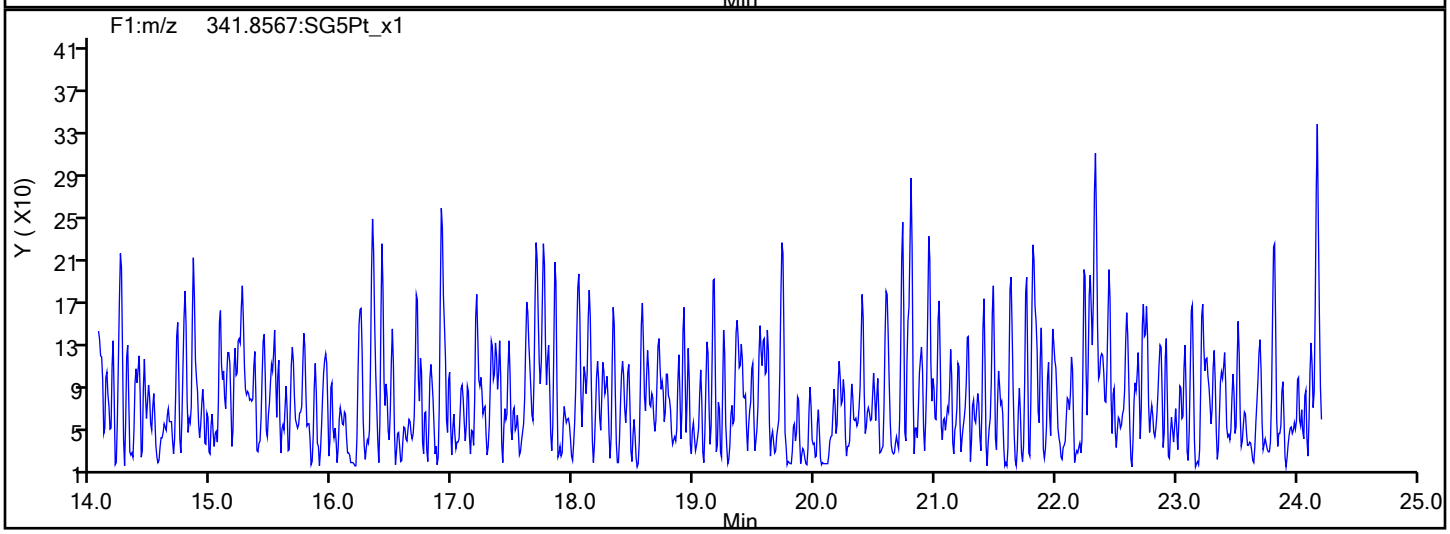
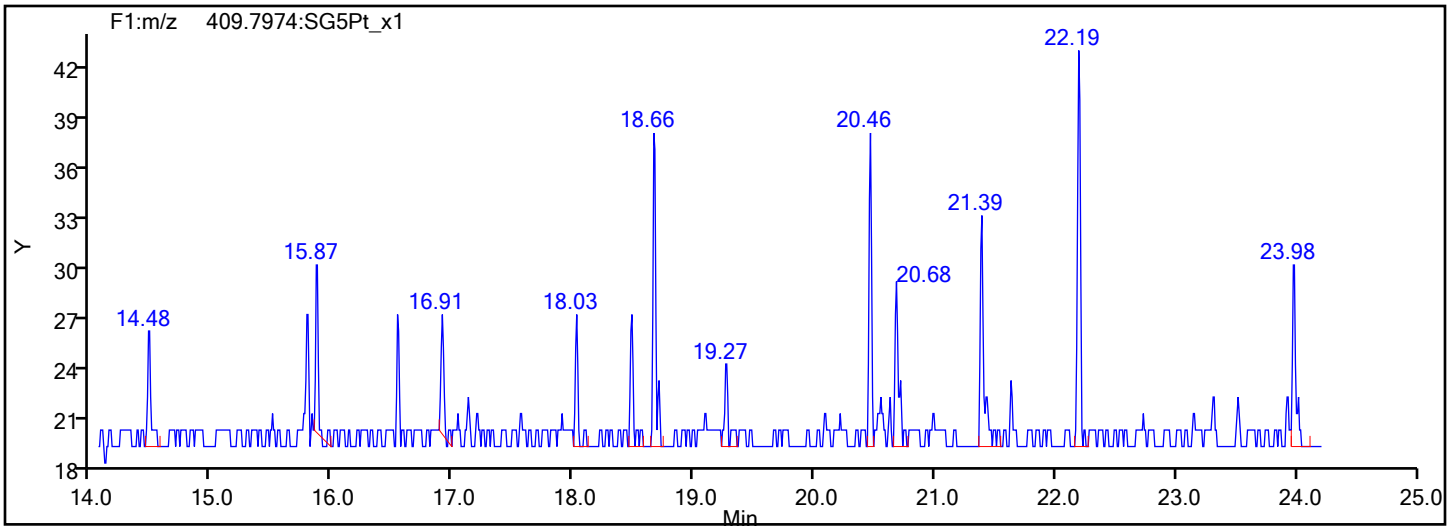
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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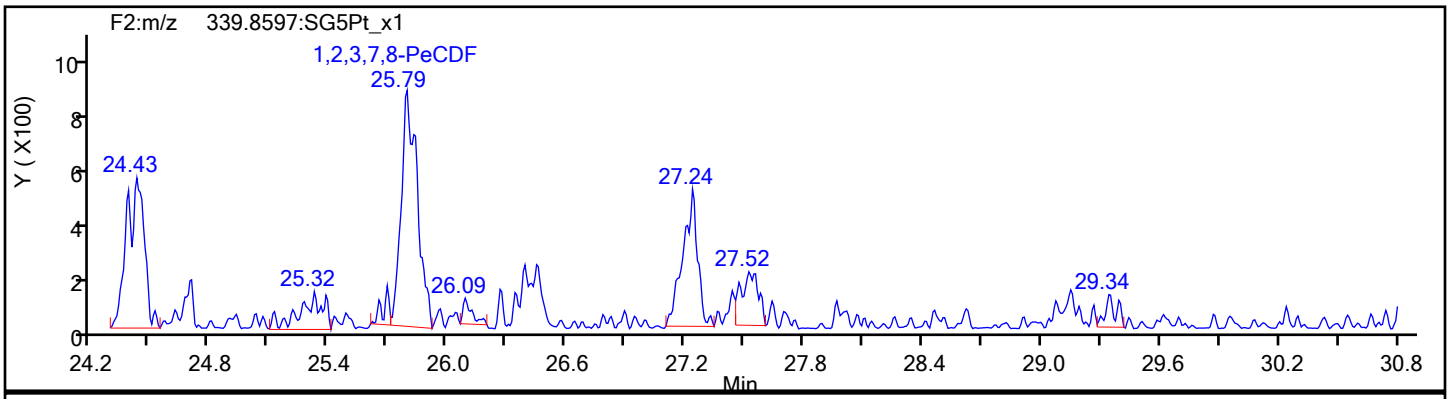
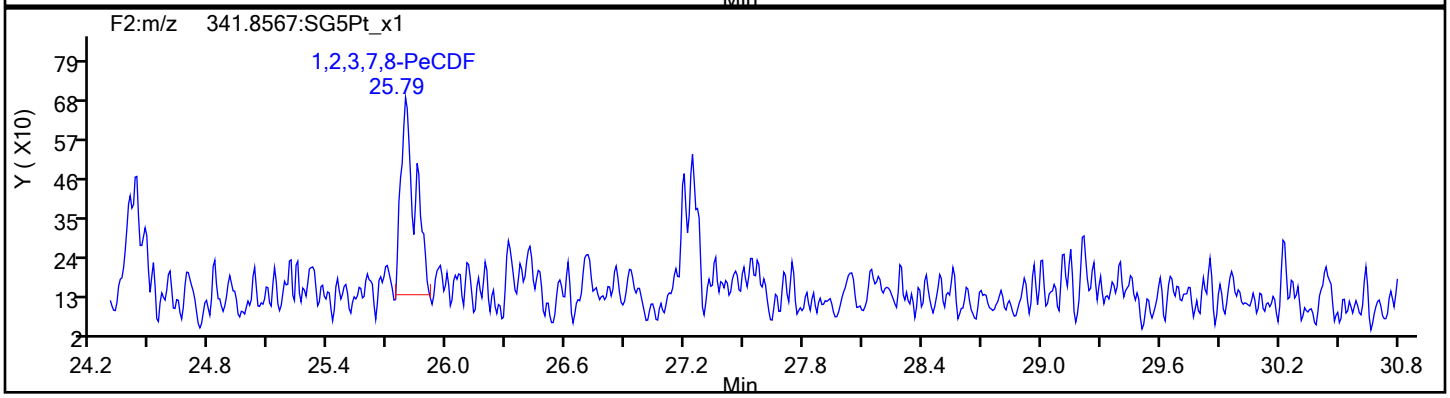
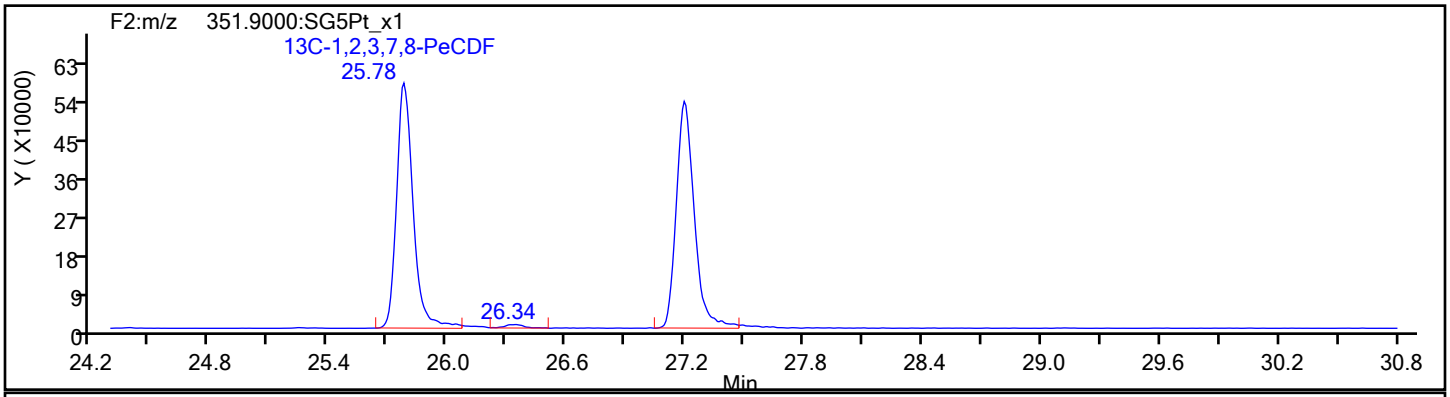
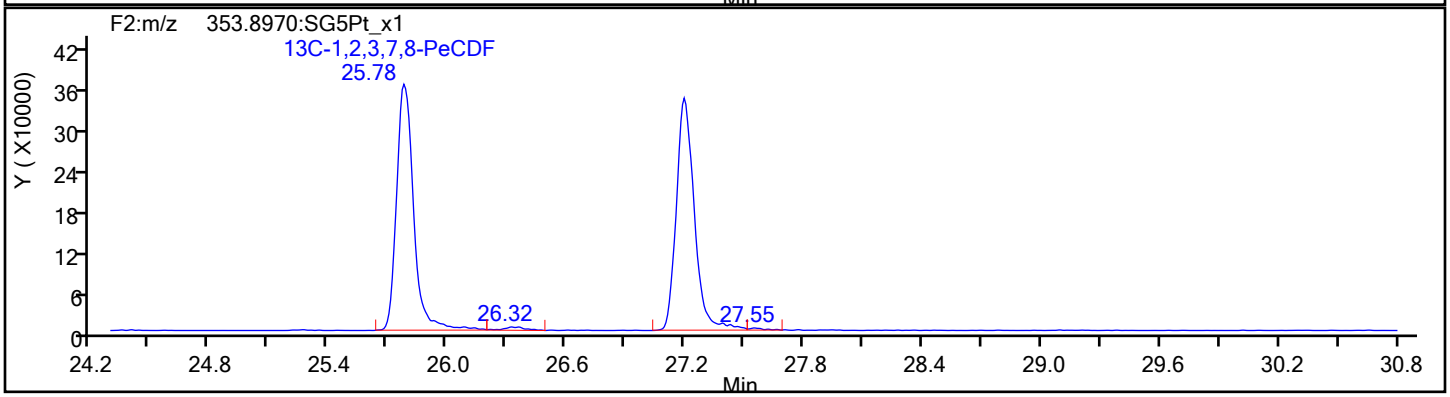
PeCDF





PeCDF Standards





Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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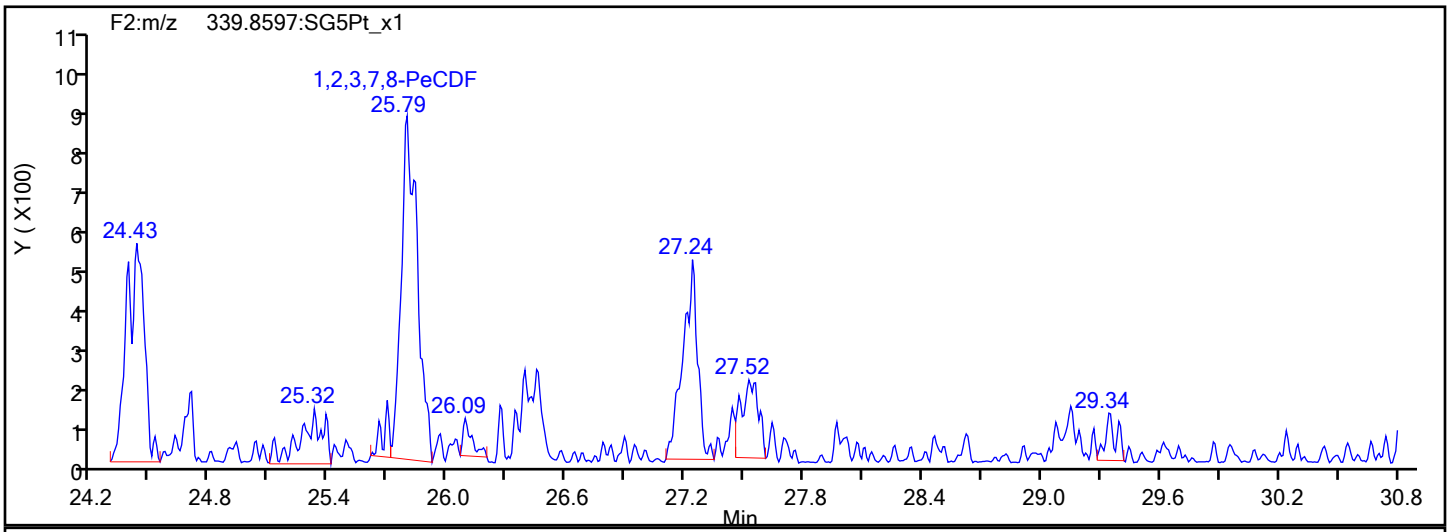
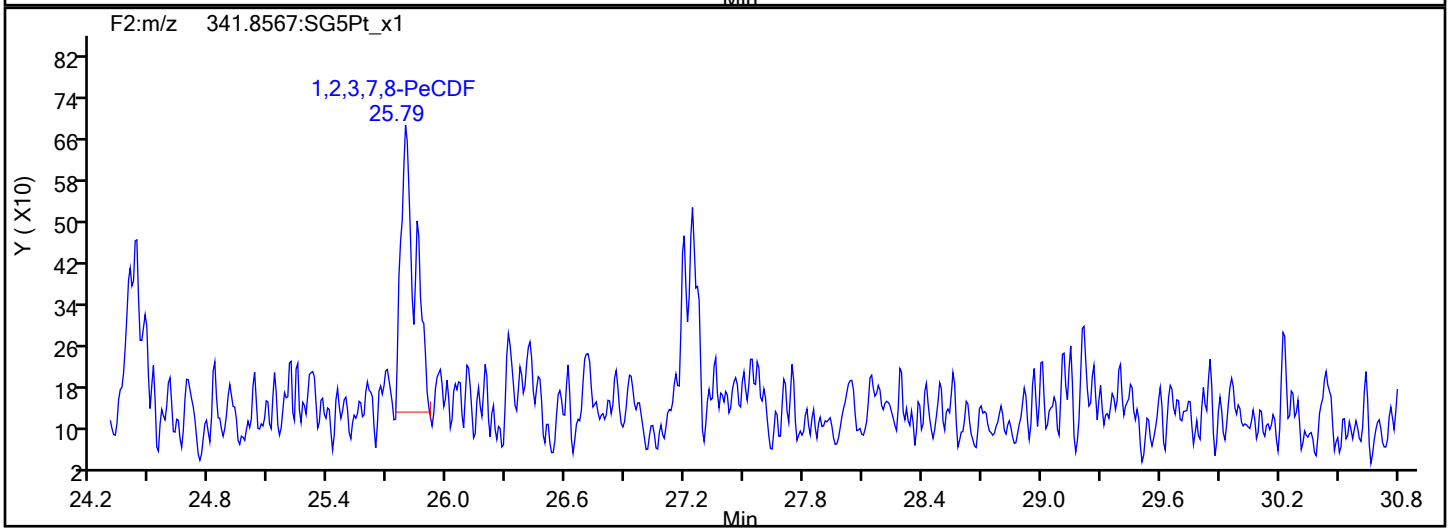
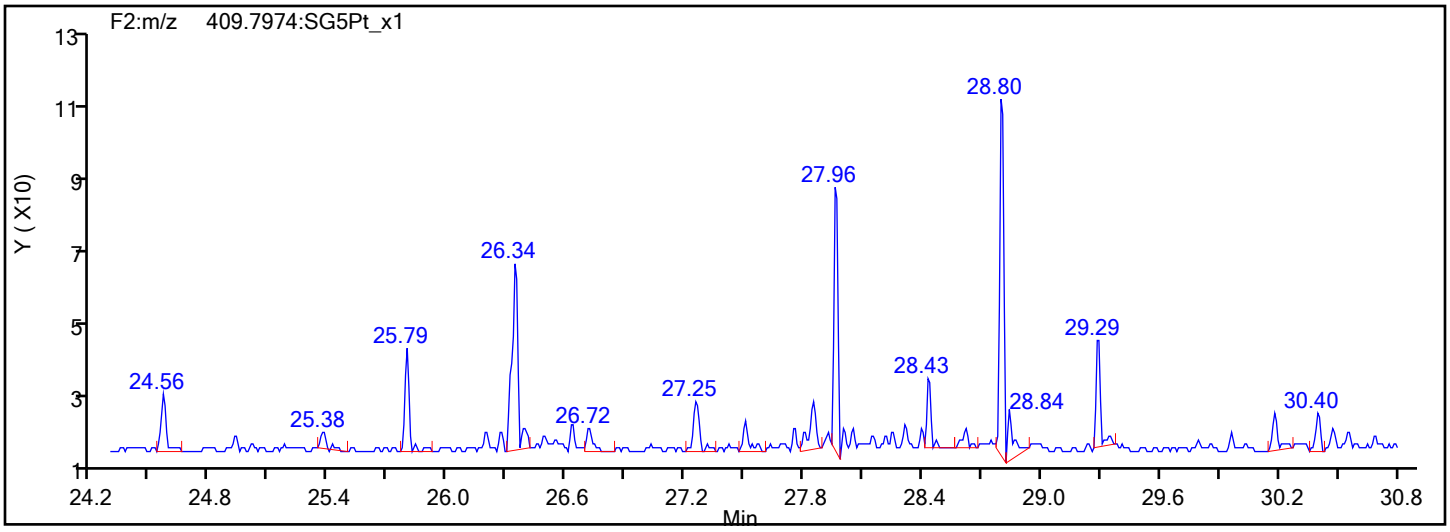
PeCDF





PeCDF Interference Mass



Report Date: 17-Dec-2019 09:34:54 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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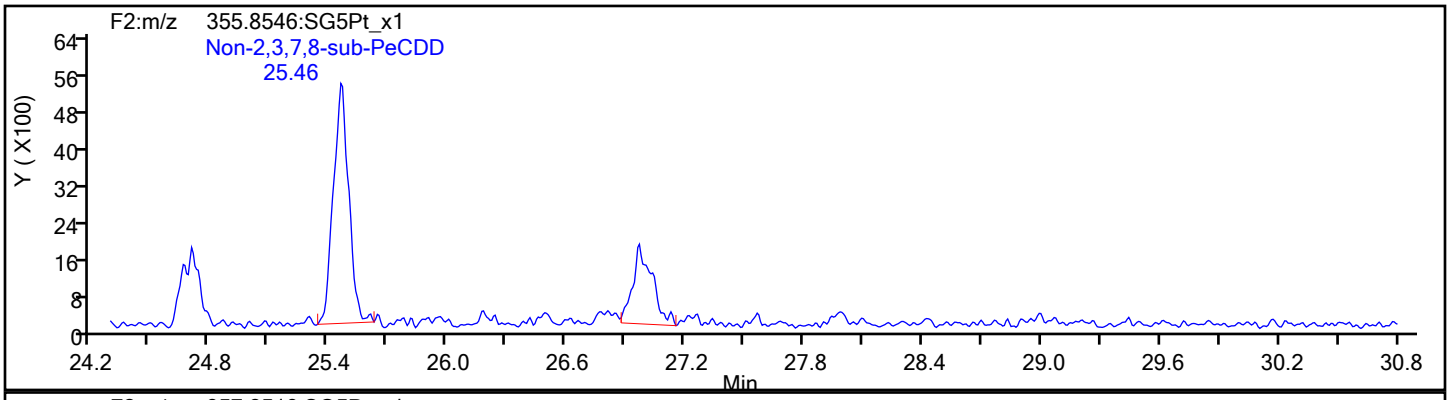
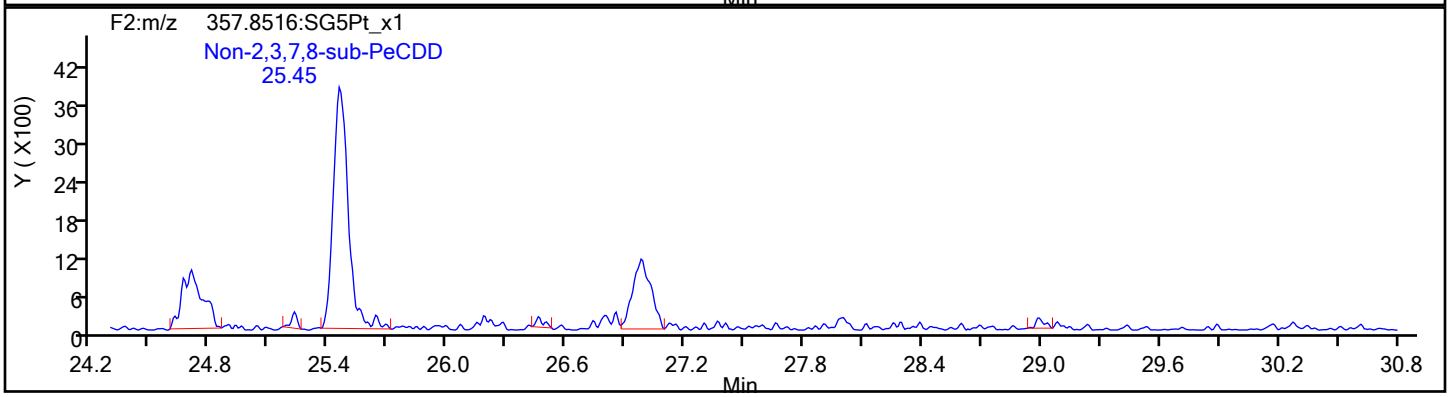
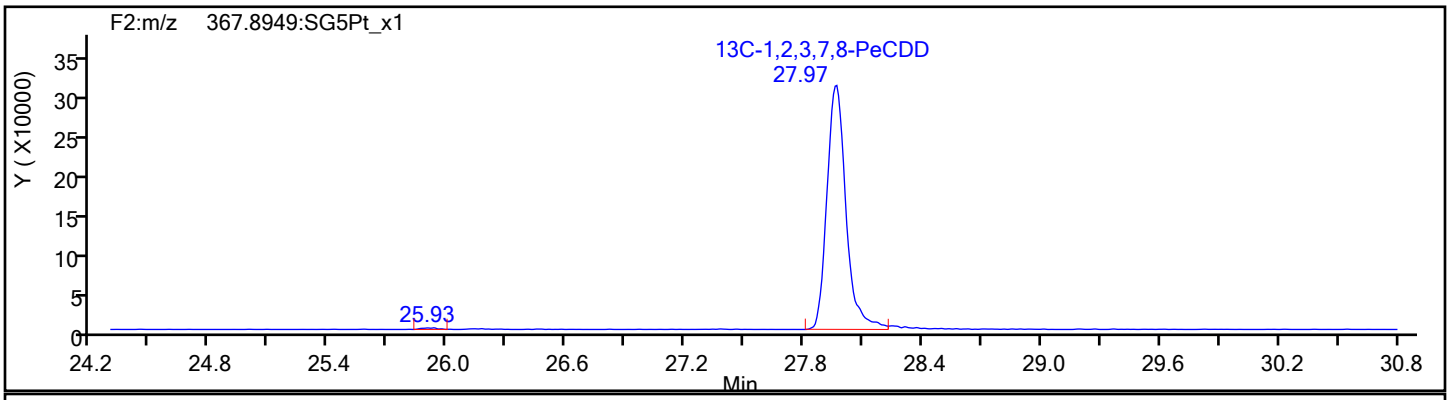
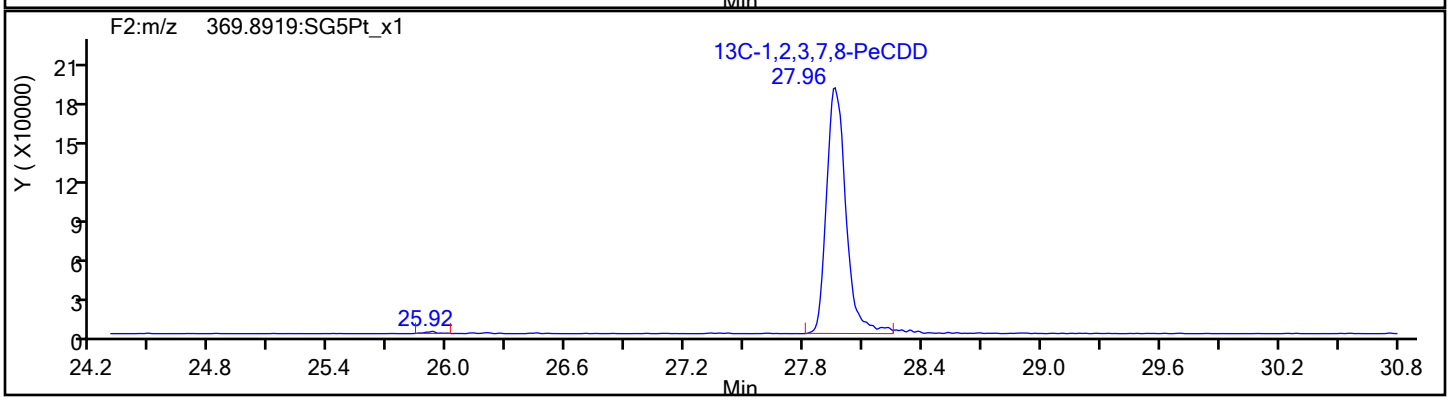
PeCDD





PeCDD Standards





Report Date: 17-Dec-2019 09:34:55 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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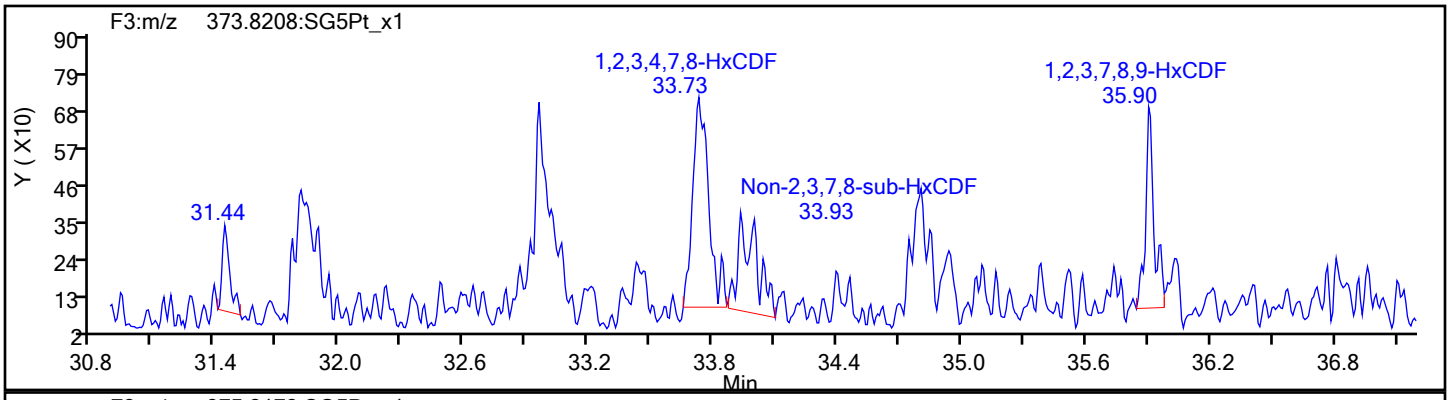
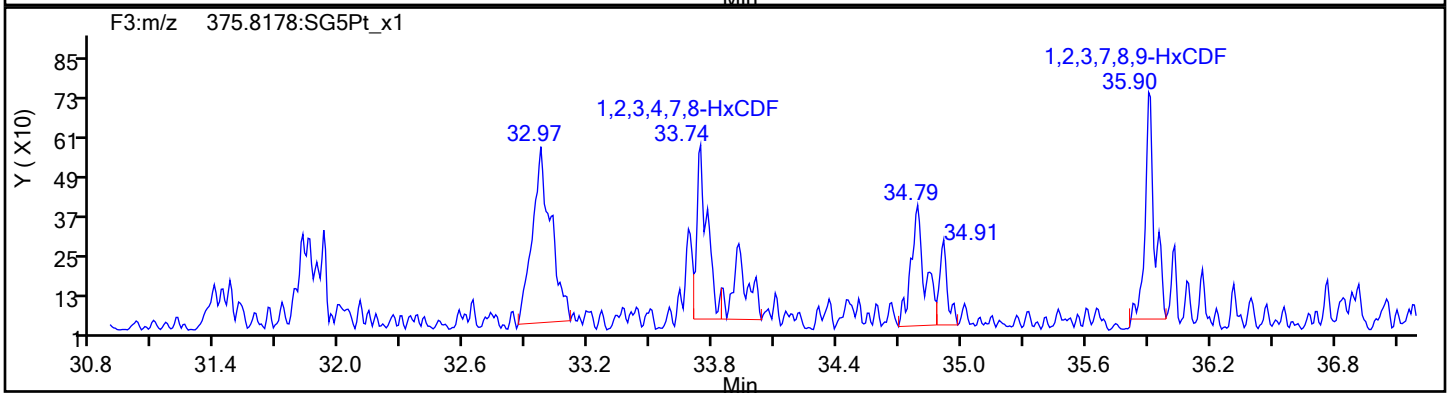
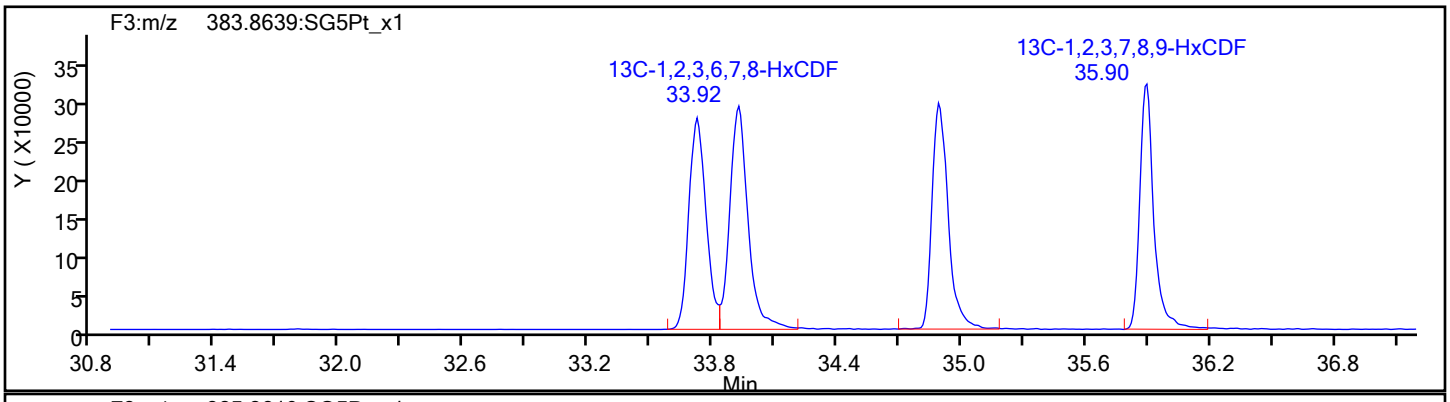
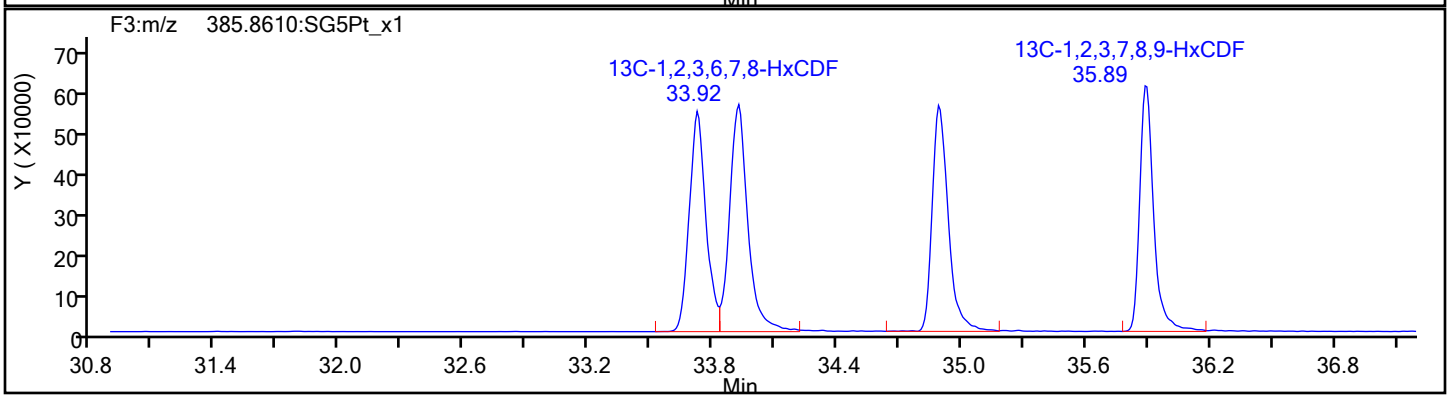
HxCDF





HxCDF Standards





Report Date: 17-Dec-2019 09:34:55 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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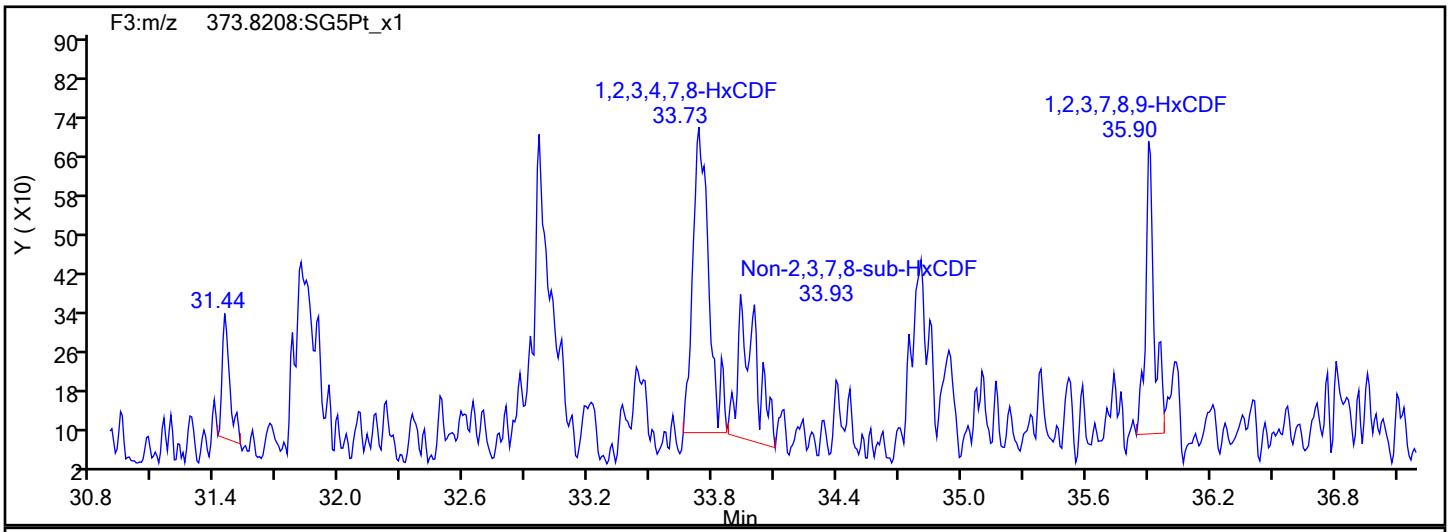
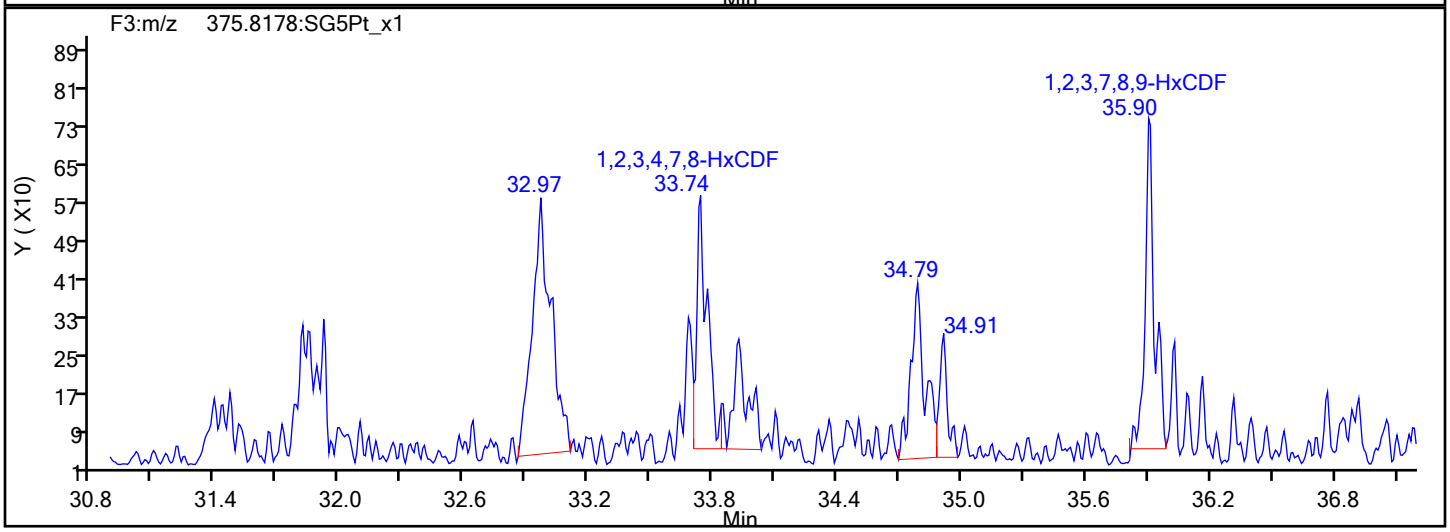
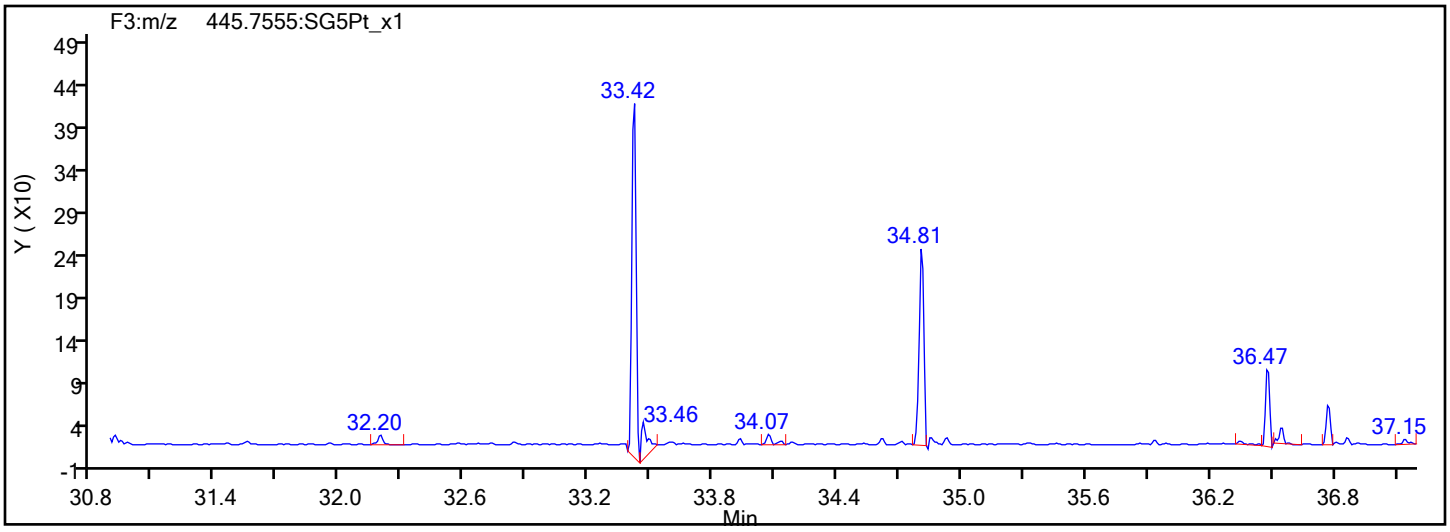
HxCDF





HxCDF Interference Mass



Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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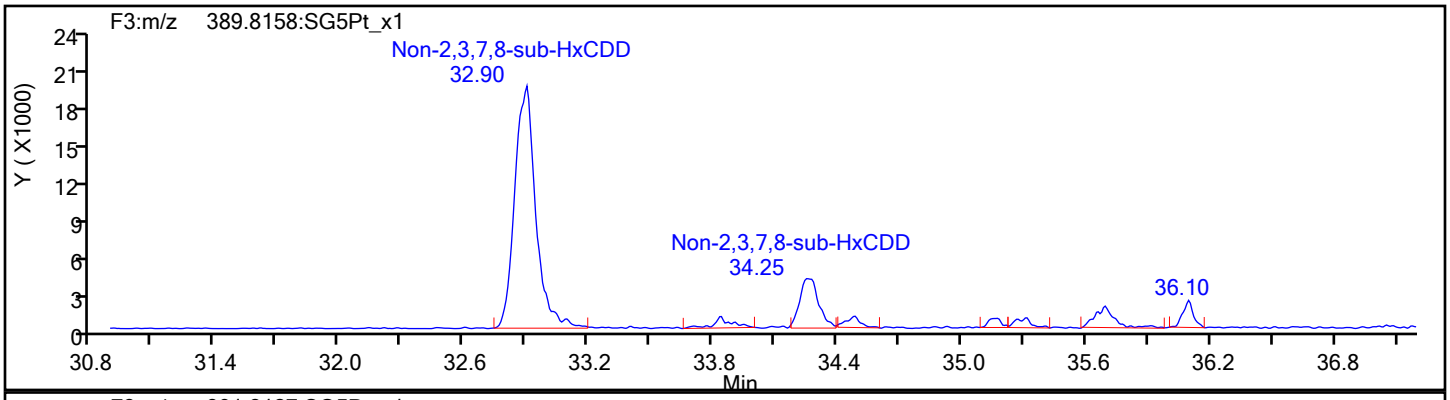
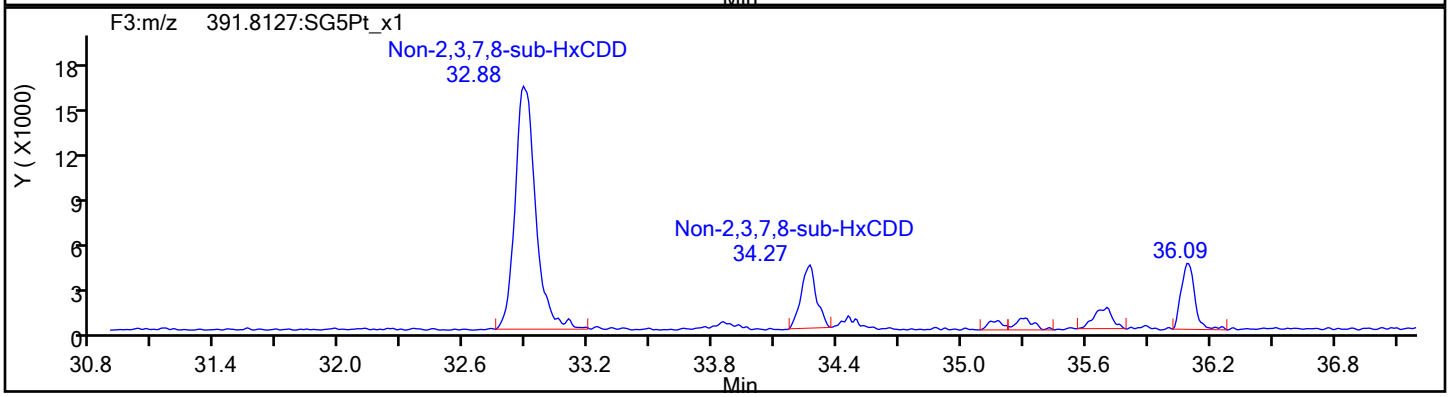
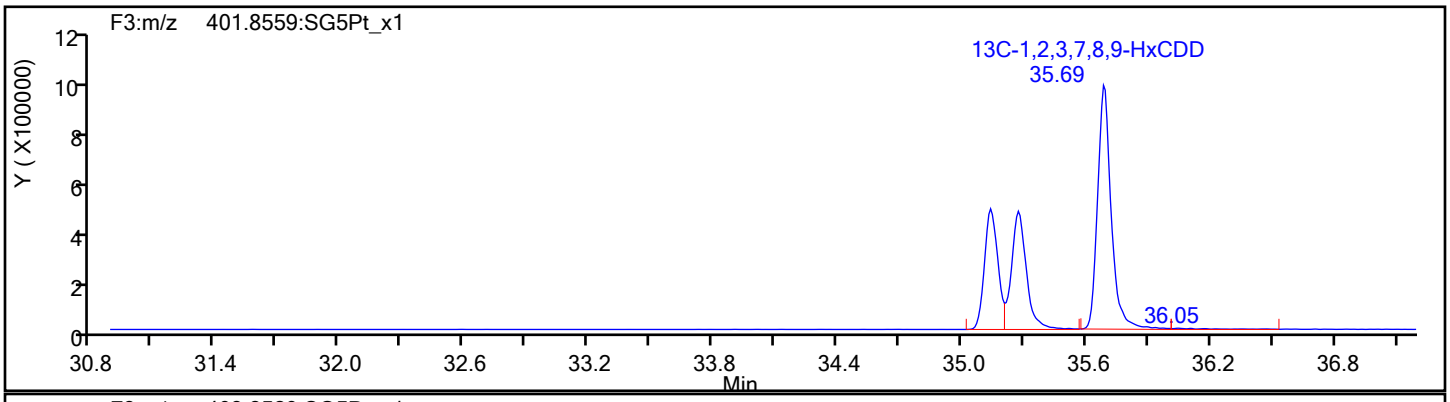
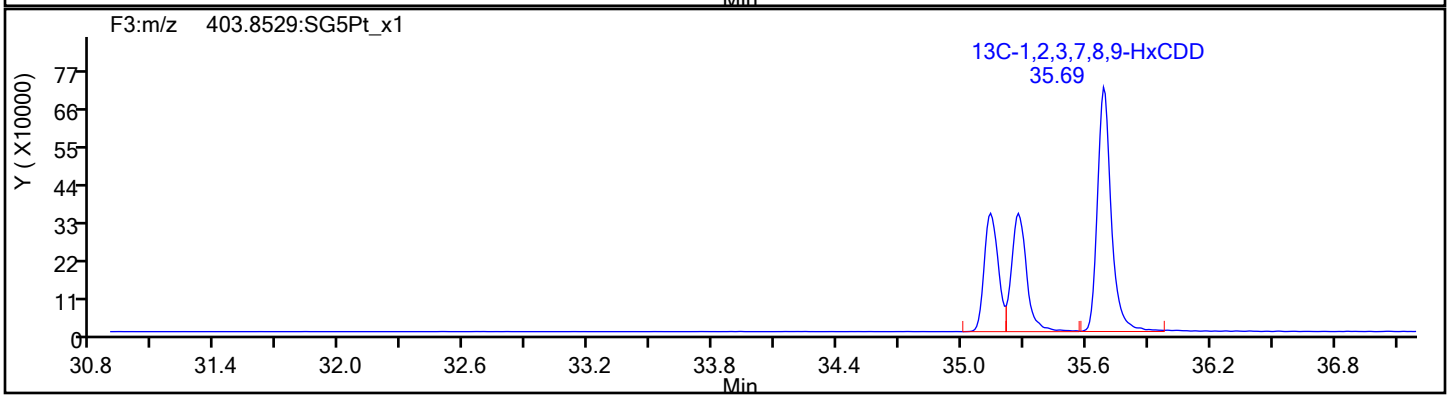
HxCDD





HxCDD Standards





Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
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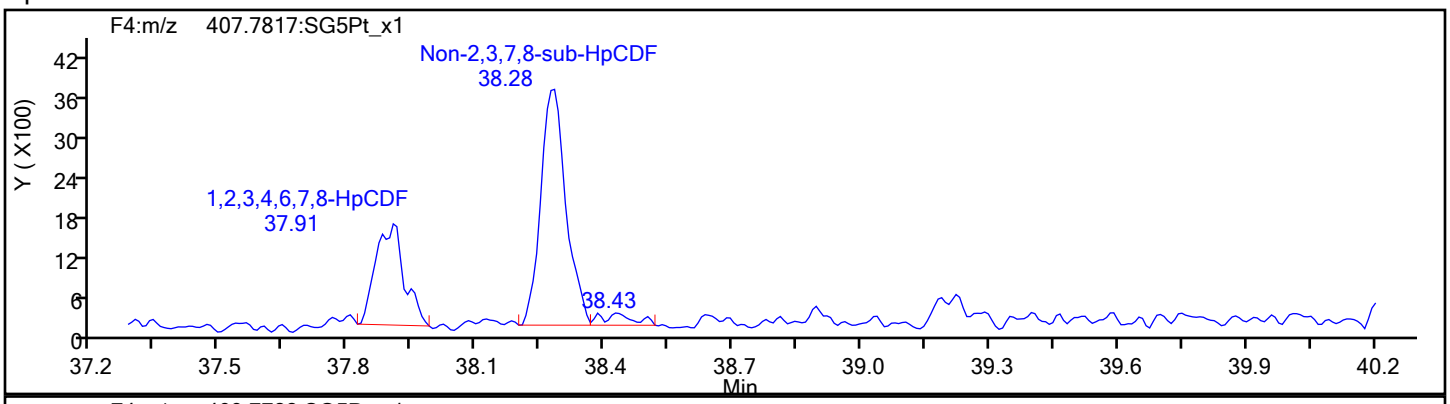
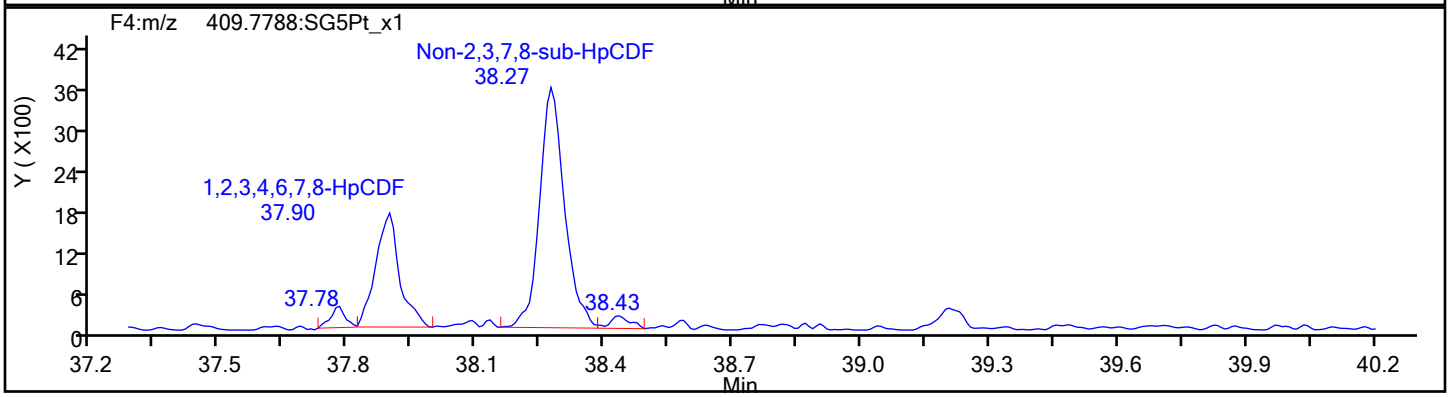
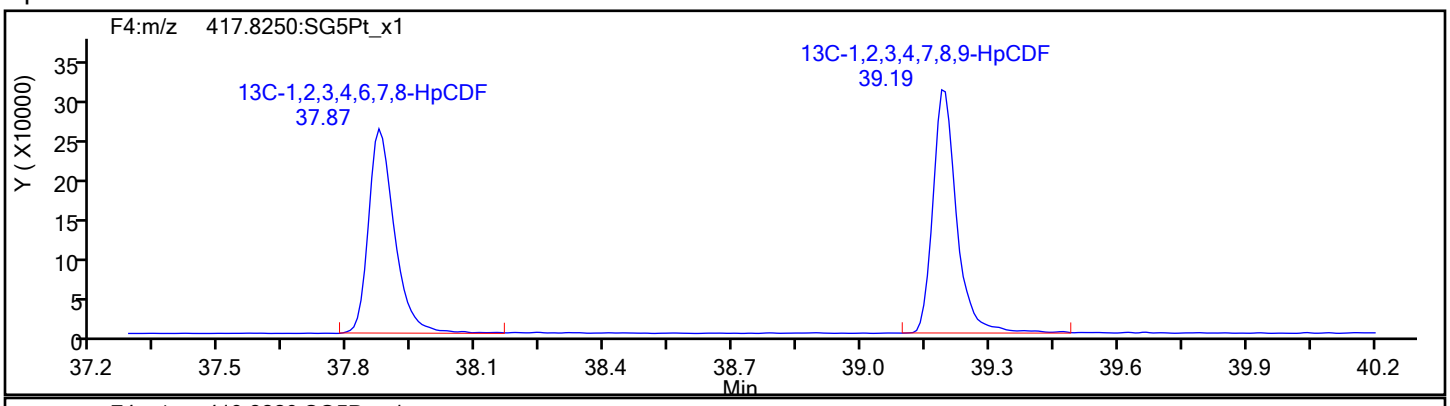
Column Type:	DB-5	Column Dia:	0.32 mm

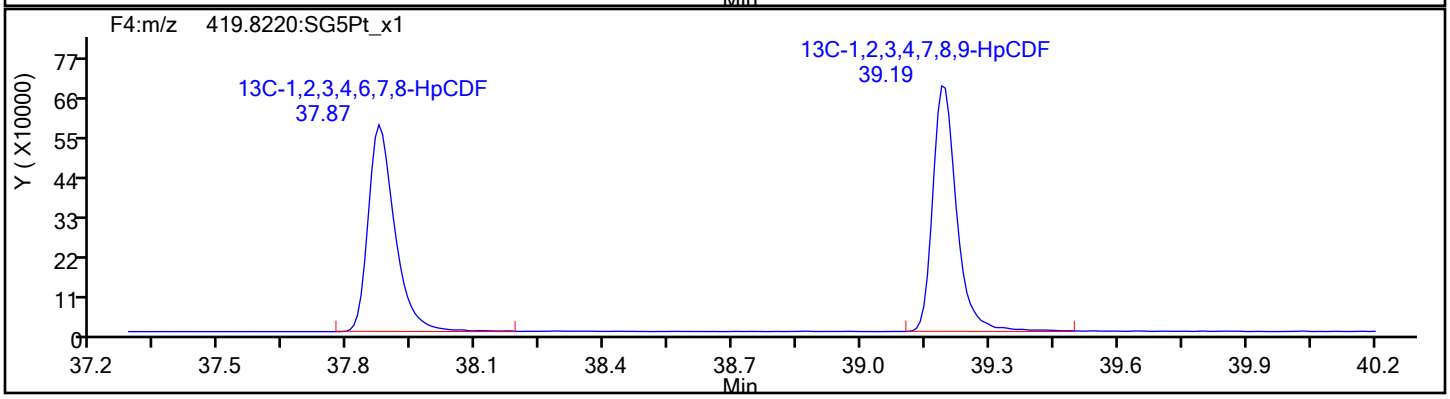
HpCDF





HpCDF Standards



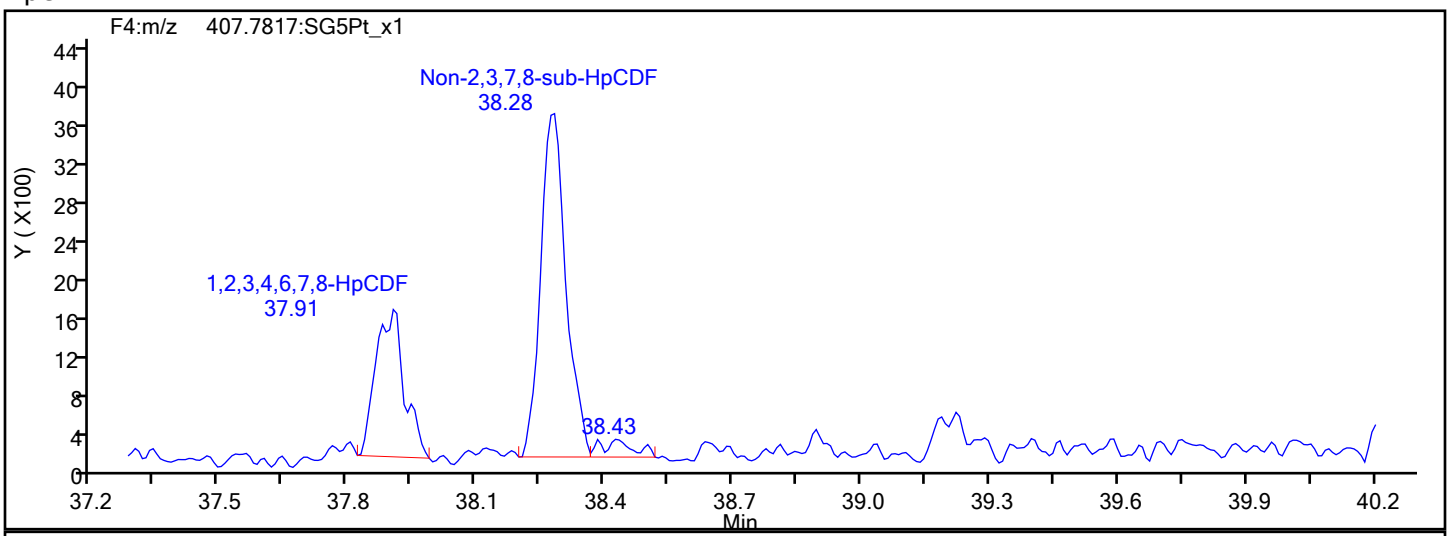


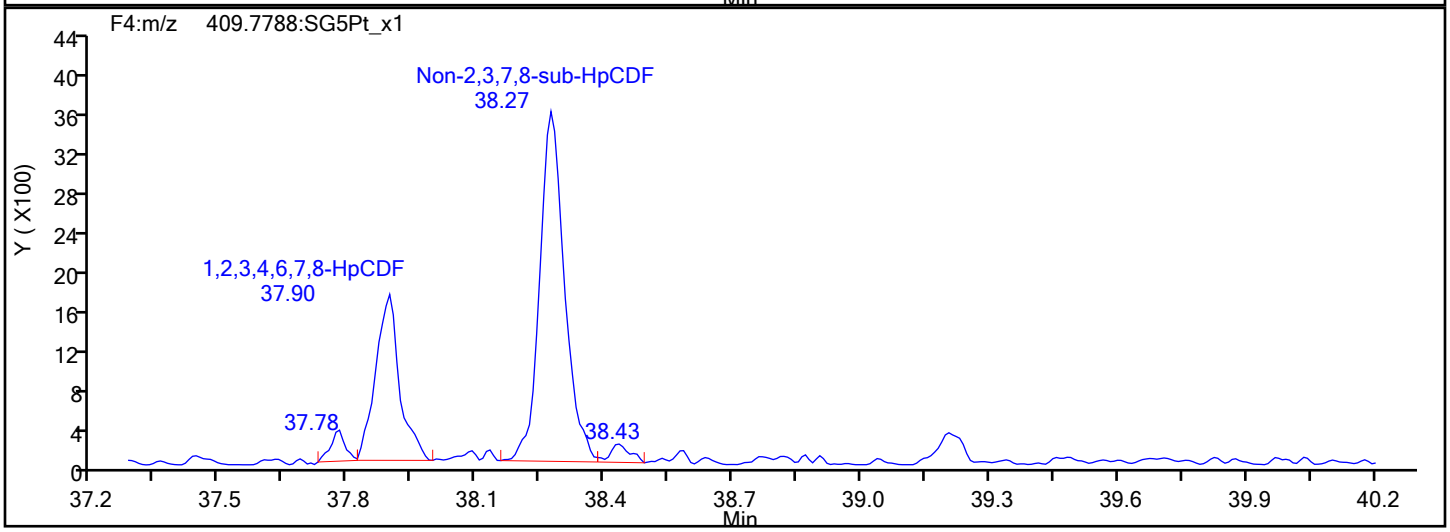
Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

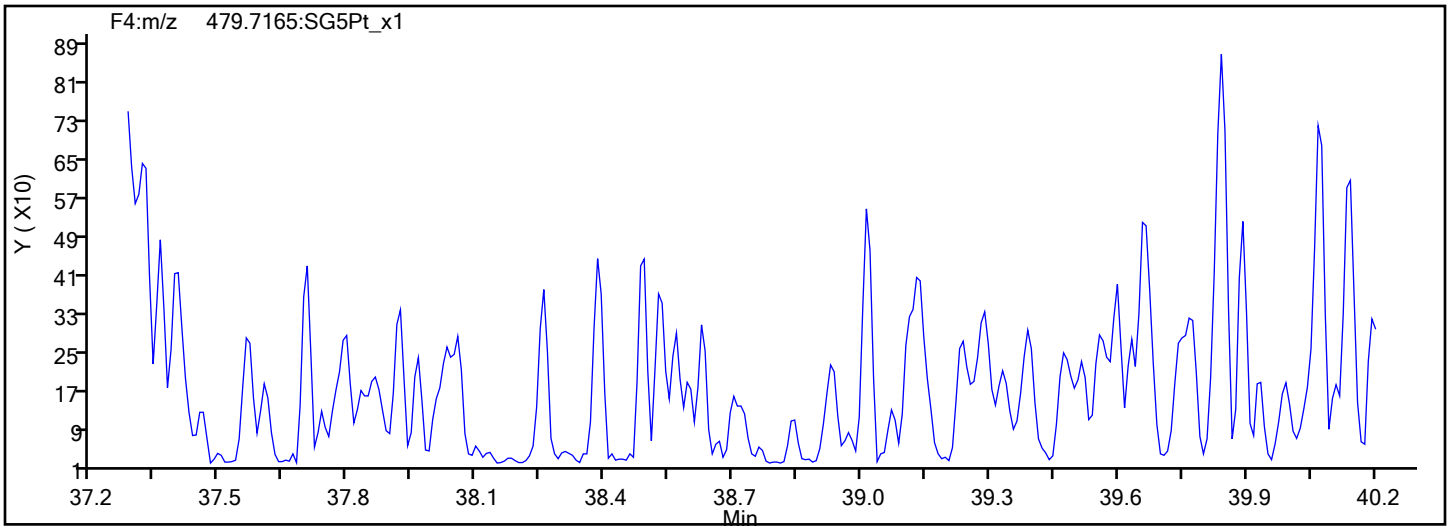
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

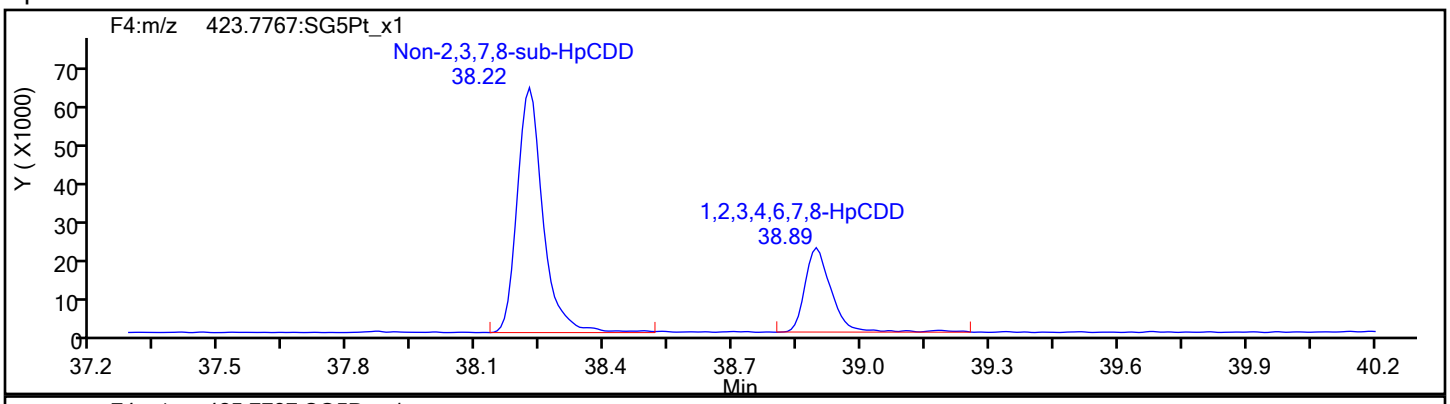


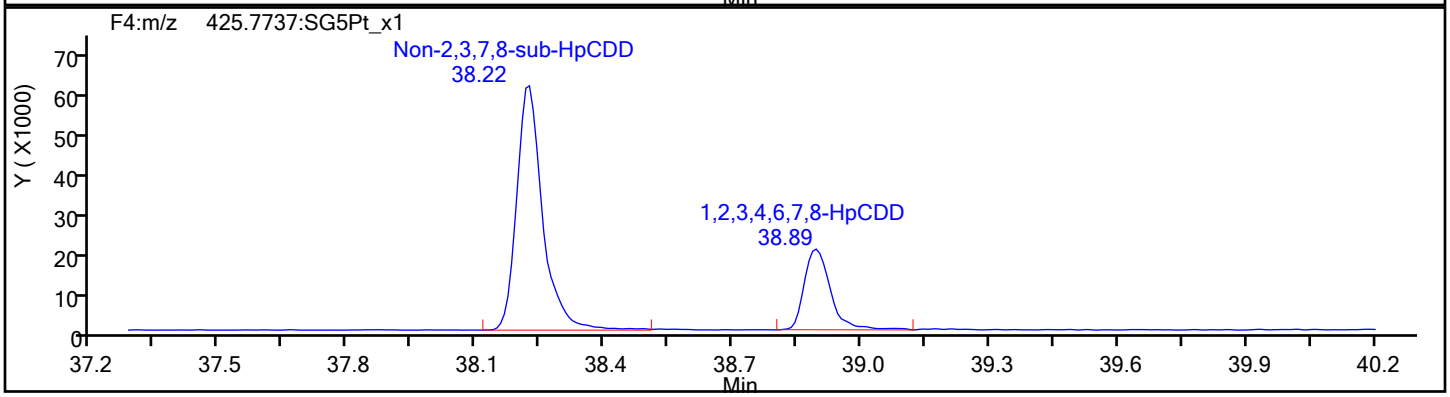
Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

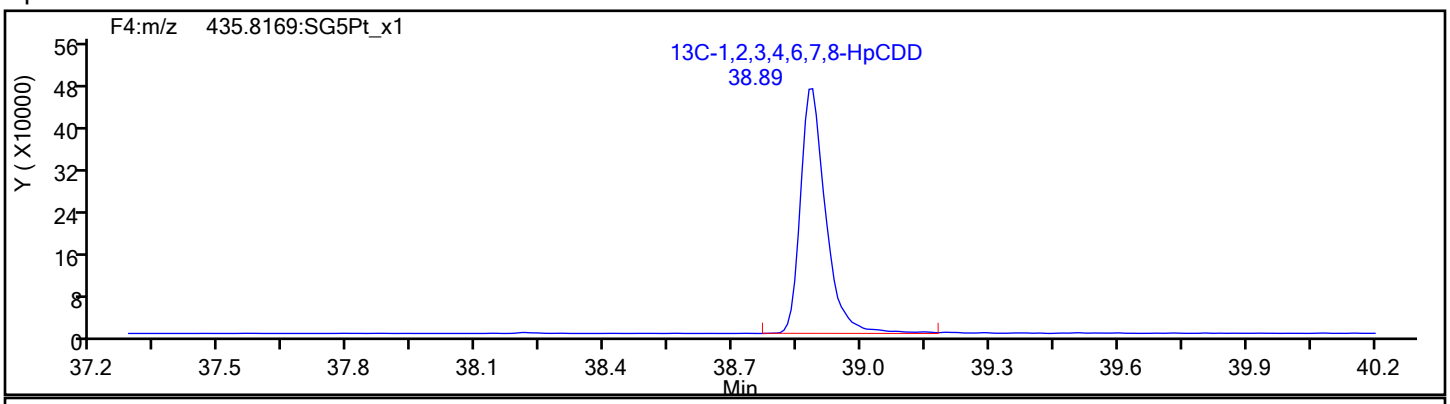
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

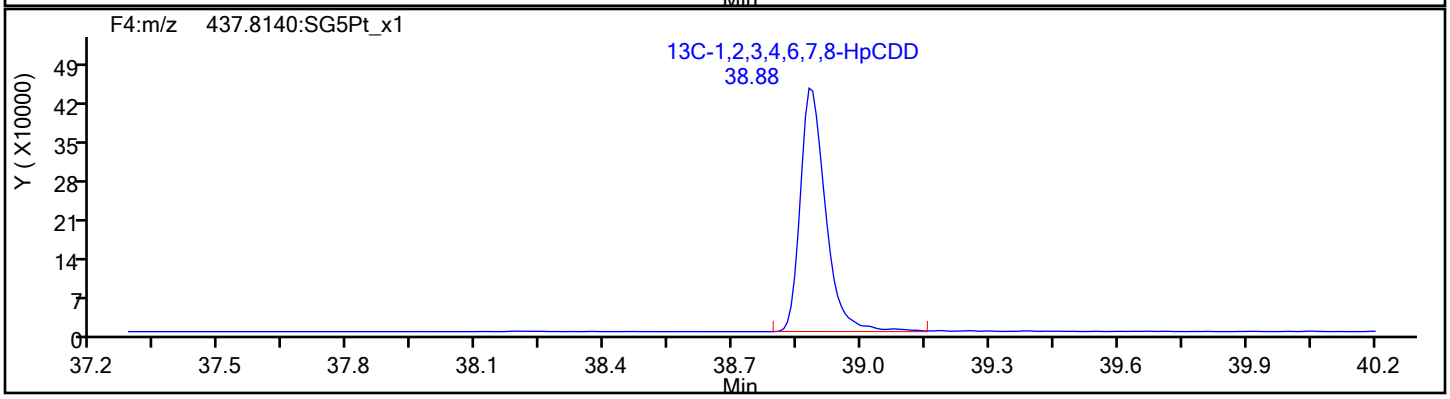
HpCDD





HpCDD Standards



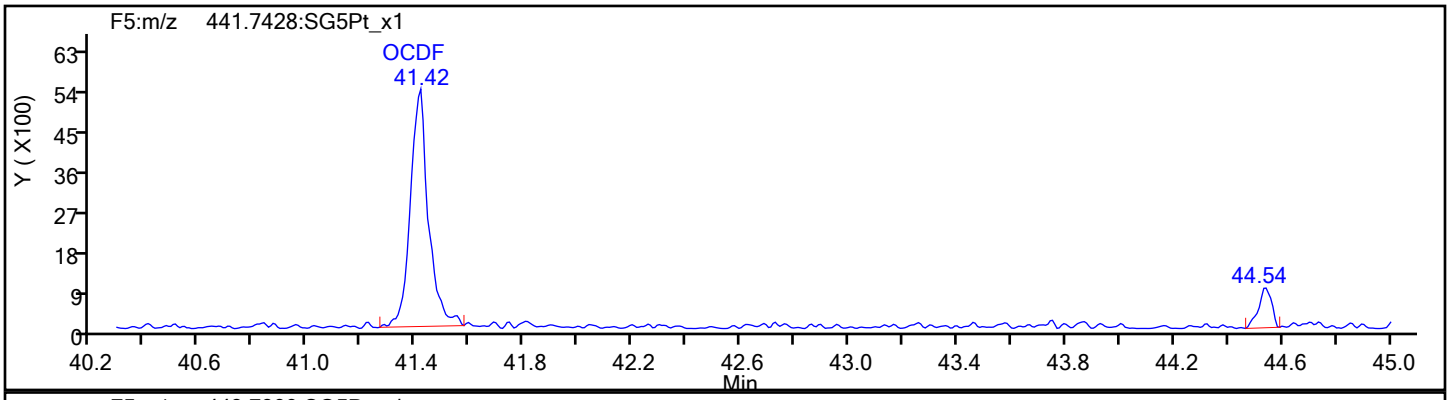


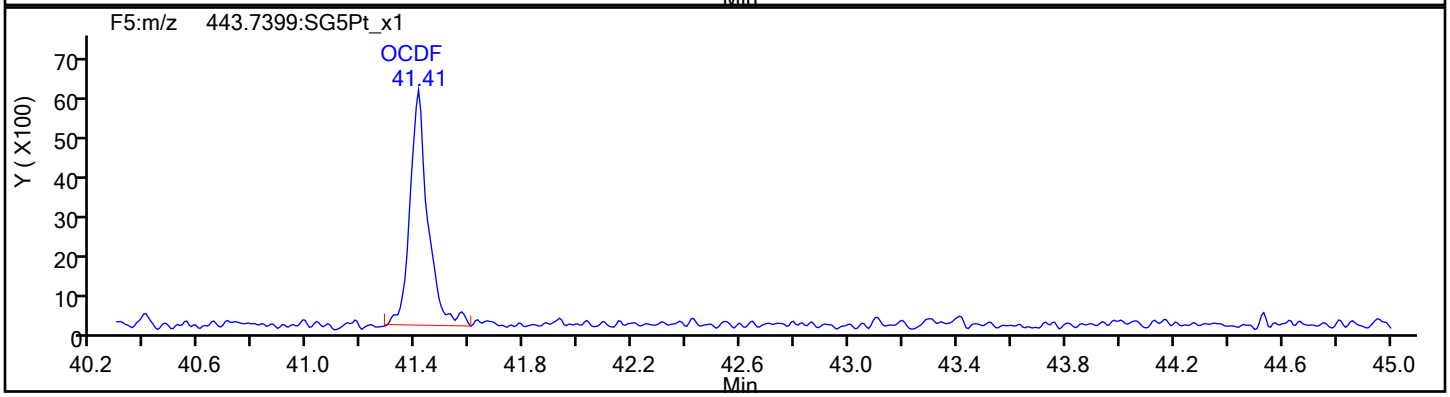
Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

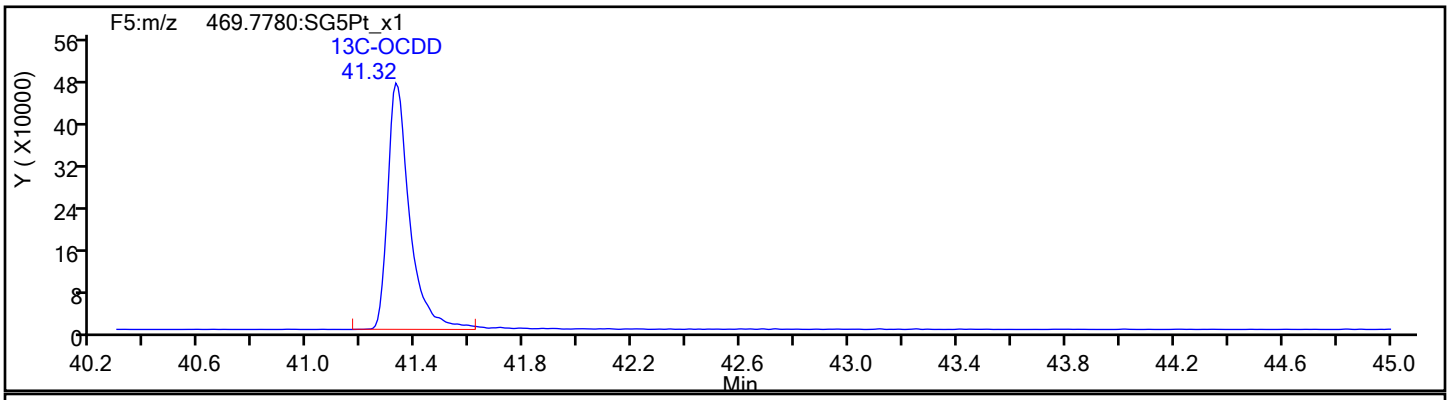
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

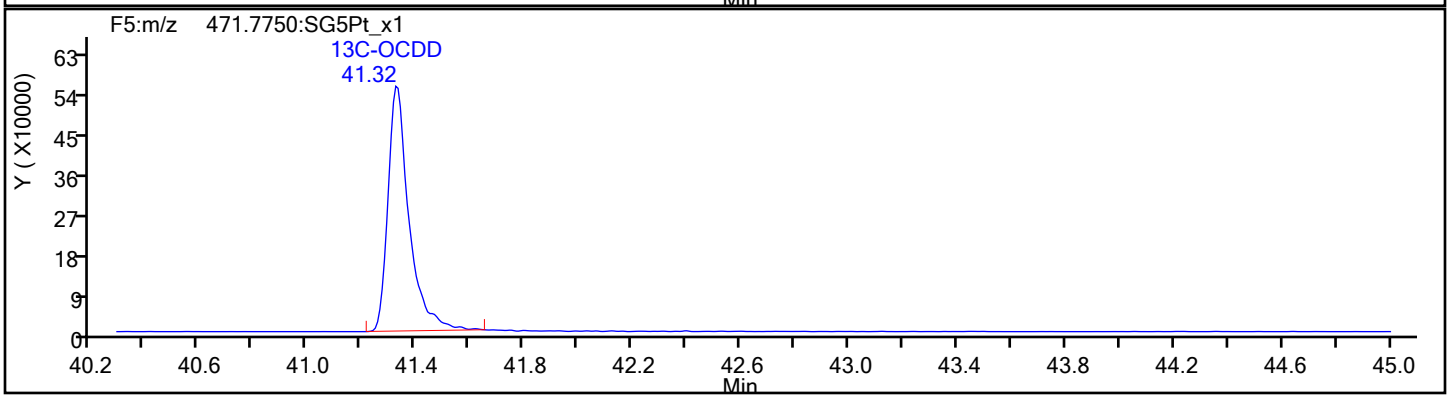
OCDF





OCDF Standards



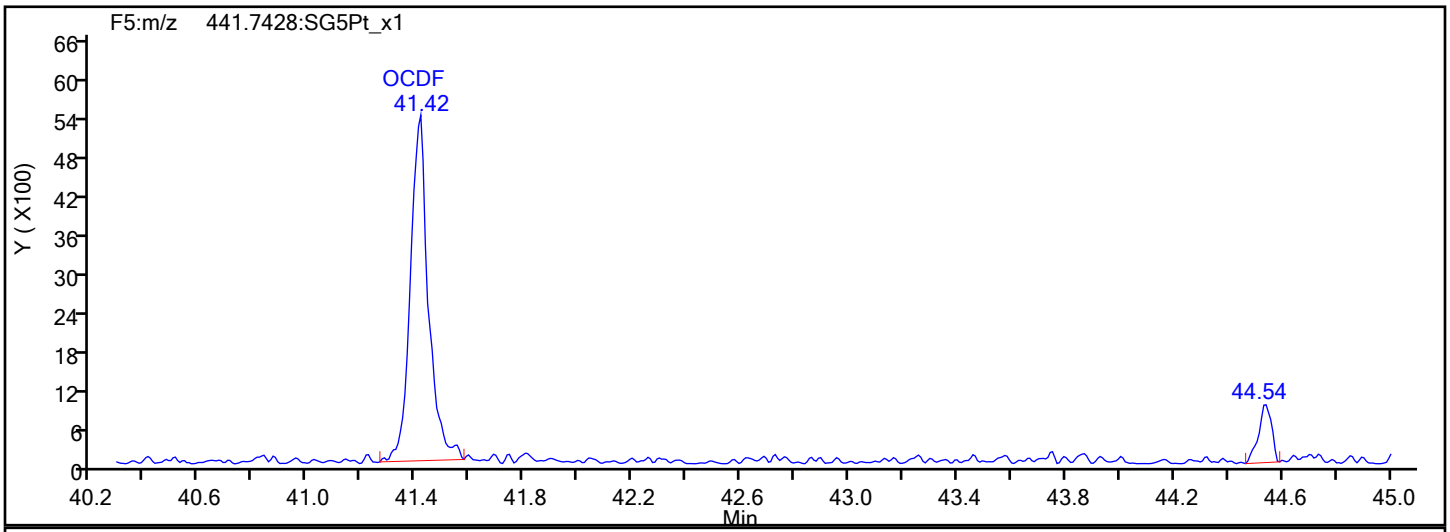


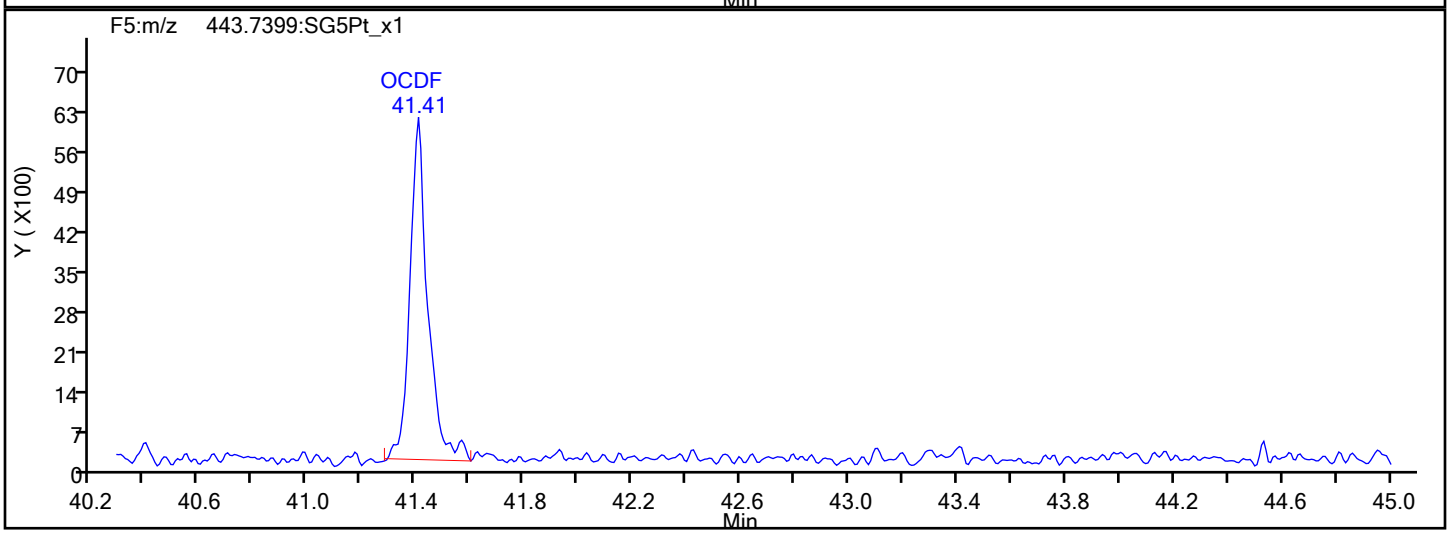
Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

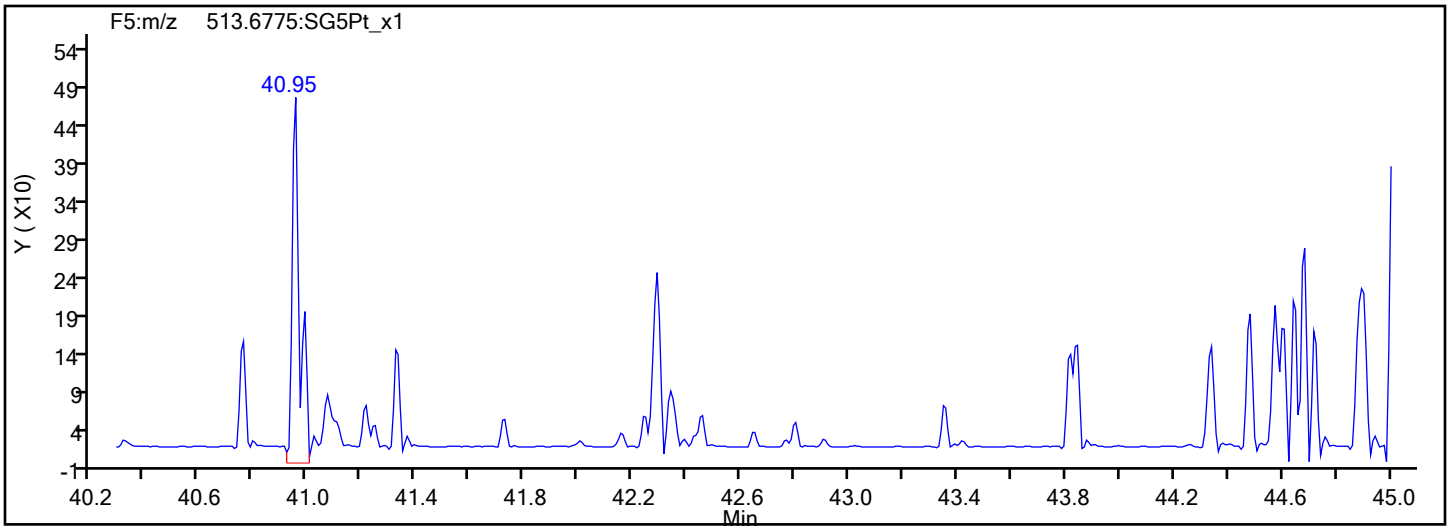
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

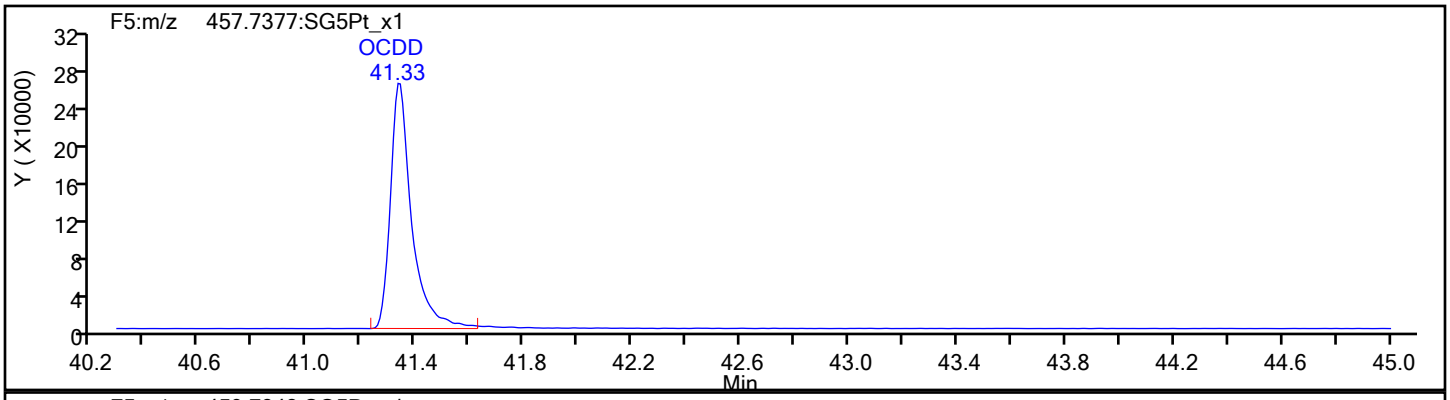


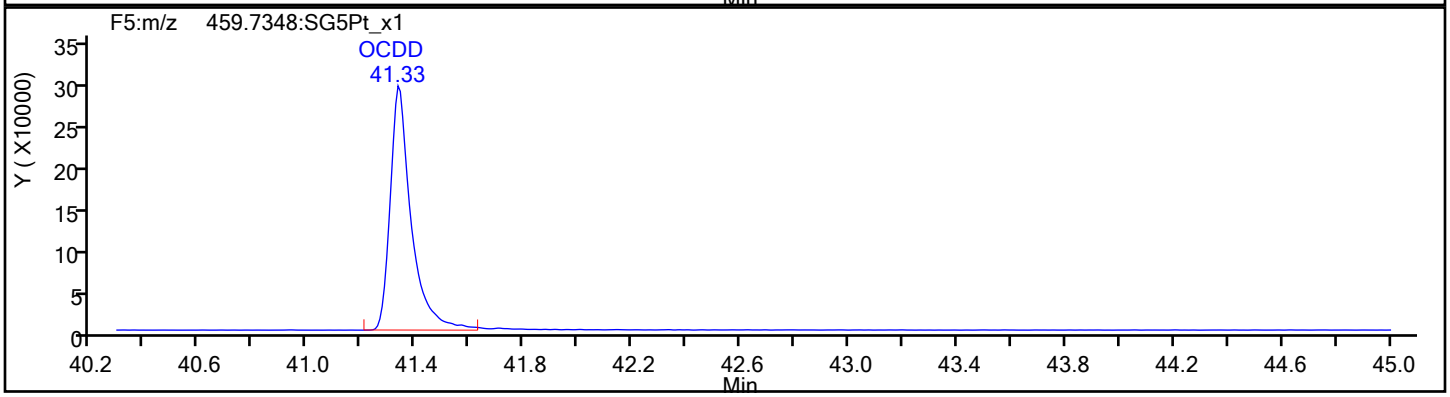
Report Date: 17-Dec-2019 09:34:56 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

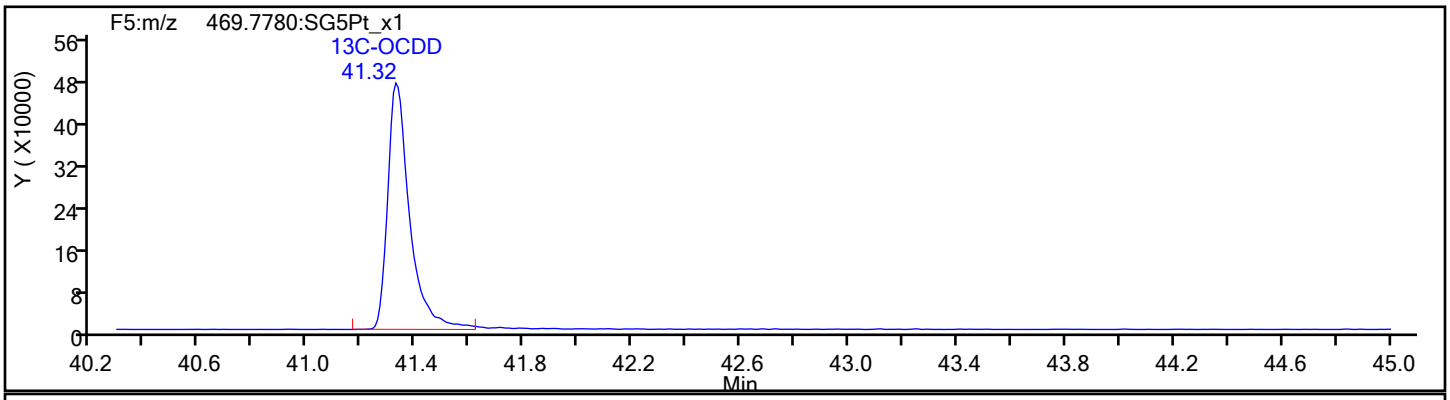
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

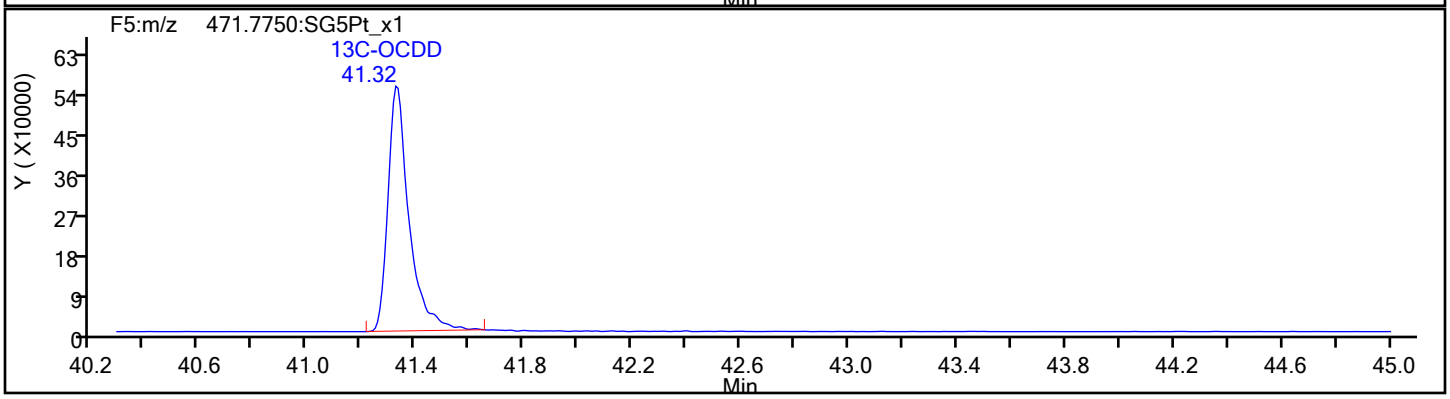
OCDD





OCDD Standards

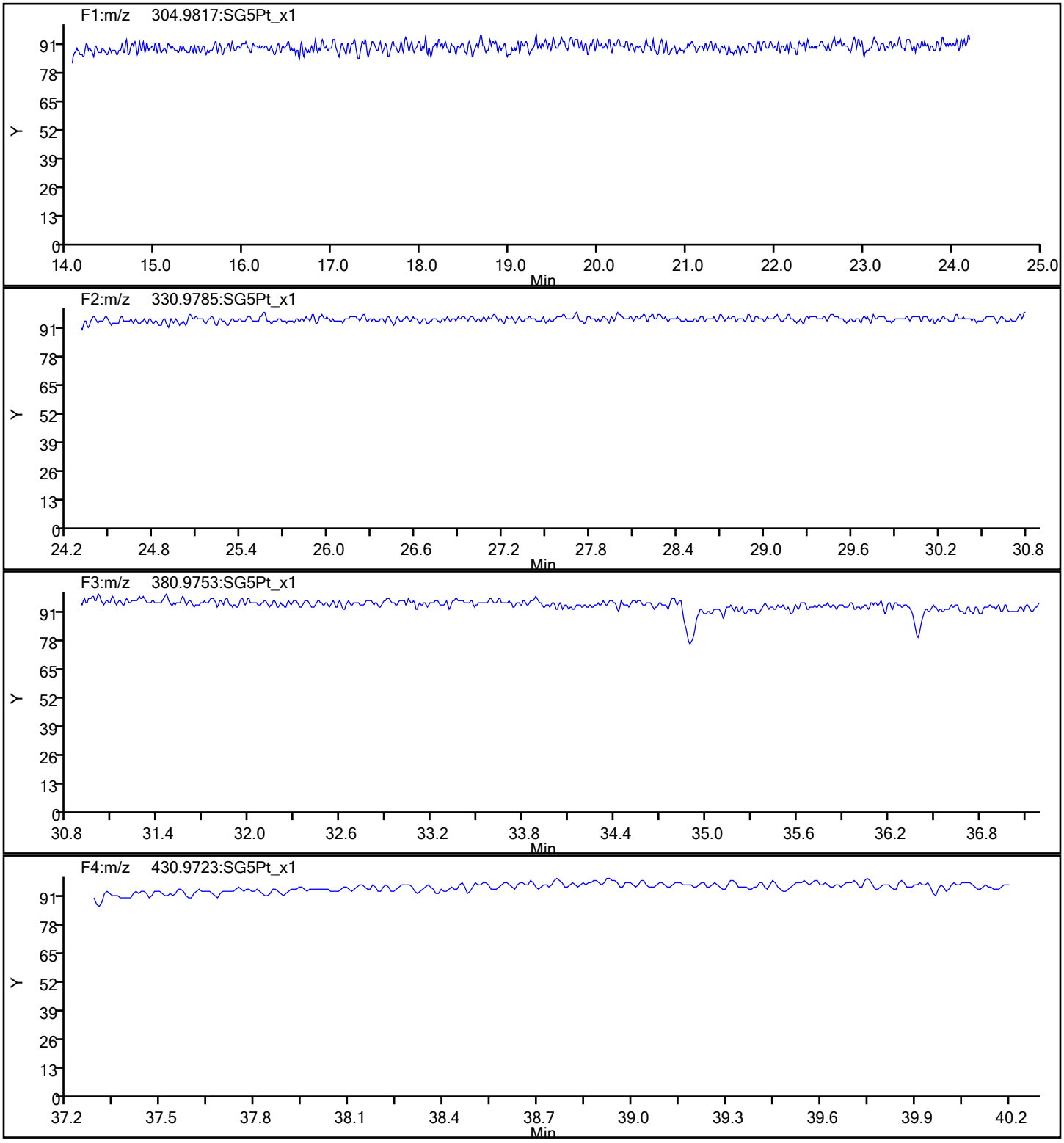




Report Date: 17-Dec-2019 09:34:58 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

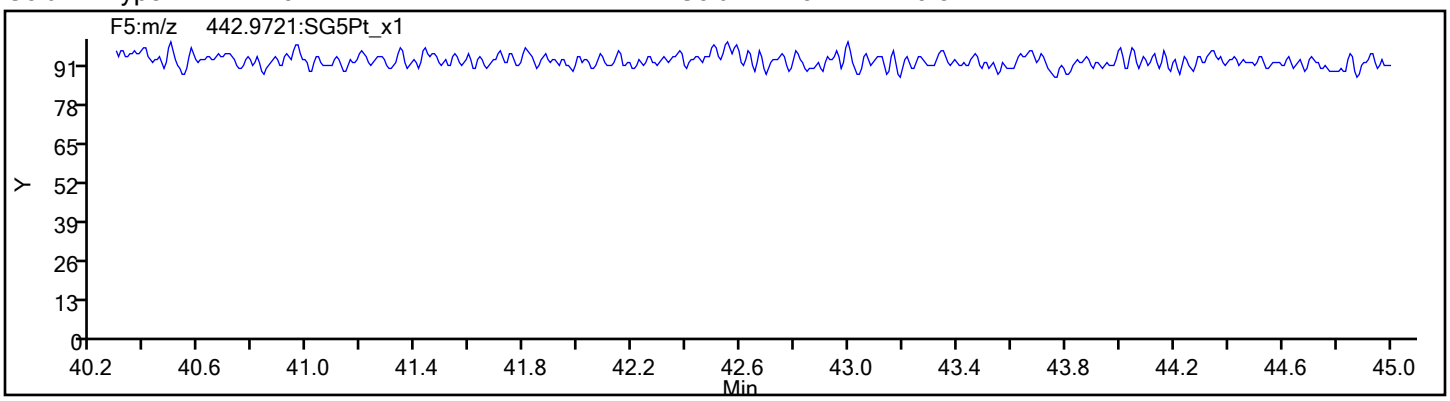
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:34:58 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_10.d		
Injection Date:	13-Dec-2019 18:59:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345338	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (2-4) RA Lab Sample ID: 320-56911-3 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_004.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.02(g) Date Analyzed: 12/16/2019 21:18

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 46.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	15		1.9	1.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	58		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	102		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Sample Type: Client
Inject. Date: 16-Dec-2019 21:18:25 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-3-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:32:50

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.378	19499611	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.585	15150165	0.79	1.3379	58.1	58.1	1.238	1.238	58.07	
2,3,7,8-TCDF	16.585	523388	0.85	0.8389	4.118	4.118	0.3921	0.3921		
D 13C-2,3,7,8-TCDD	15.131	9919616	0.80	0.9388	54.2	54.2	1.311	1.311	54.19	
2,3,7,8-TCDD	15.149						0.4556	0.4556		
$ 37Cl4-2,3,7,8-TCDD	15.159	9363771		1.1816	40.6	40.6	0.3070	0.3070	102	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d
Lims ID: 320-56911-A-3-A
Client ID: 11187072-120719-SS-SJSSA01 (2-4)
Sample Type: Client
Inject. Date: 16-Dec-2019 21:18:25 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-3-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:32:50

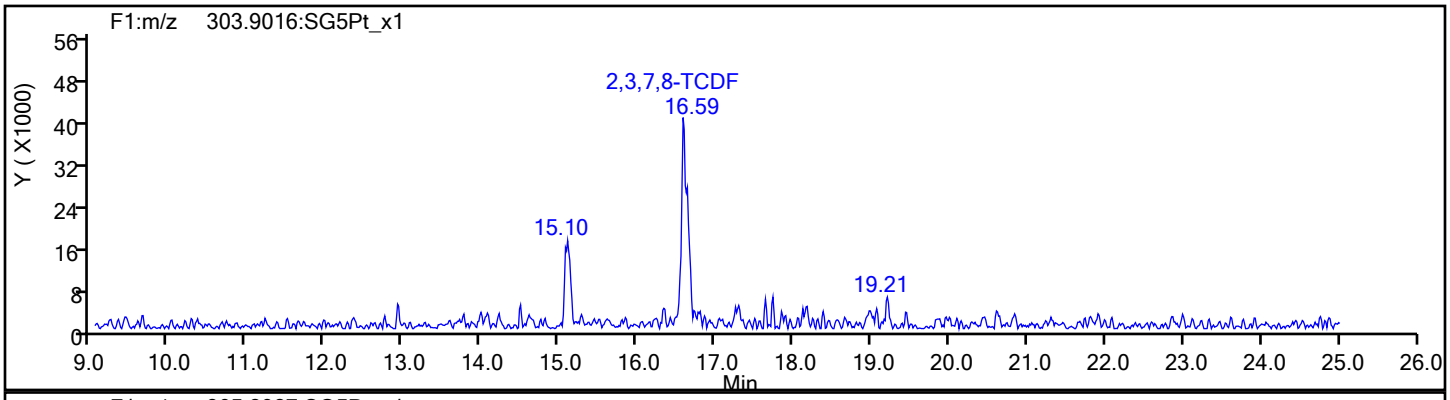
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.378	15.383	0		8599087	1654247	12542	31355	132		
333.9339	15.392	15.383	1		10900524	2278072	6814	17035	334	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.585	16.576	1	1.079	6703240	1200675	15872	39680	76		
317.9389	16.585	16.576	1	1.079	8446925	1523408	10172	25430	150	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.585	16.590	0	1.000	240975	40057	1424	3560	28		
305.8987	16.599	16.590	1	1.001	282413	58979	2160	5400	27	0.85(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.131	15.122	1	0.984	4403359	913883	12542	31355	73		
333.9339	15.131	15.122	1	0.984	5516257	1218811	6814	17035	179	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.149						3065	7662			
321.8936	15.149						1419	3547			
37Cl4-2,3,7,8-TCDD											
327.8840	15.159	15.149	1	0.986	9363771	1930743	5706	14265	338		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

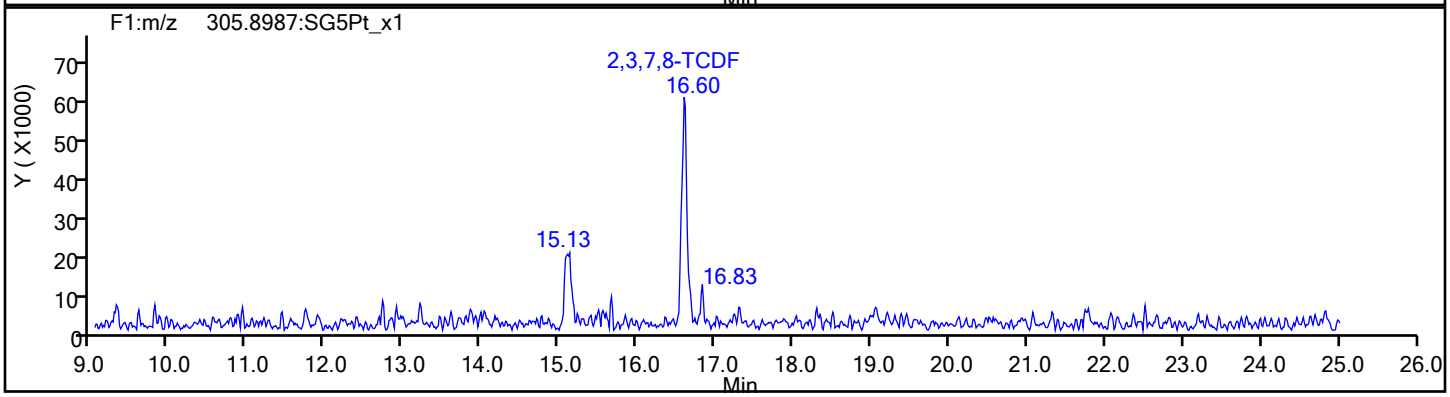
Report Date: 17-Dec-2019 09:38:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

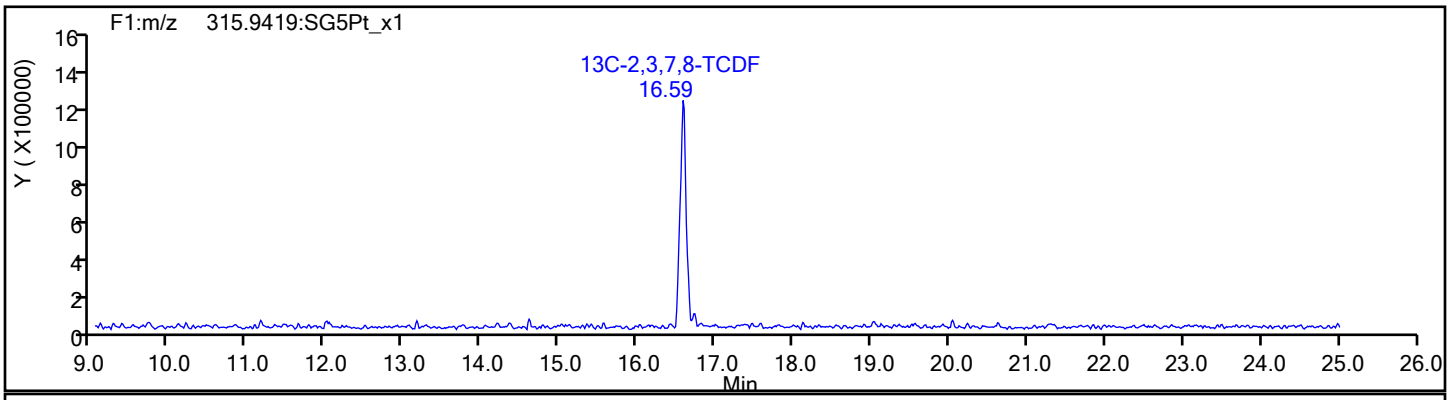
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d		
Injection Date:	16-Dec-2019 21:18:25	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345960	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

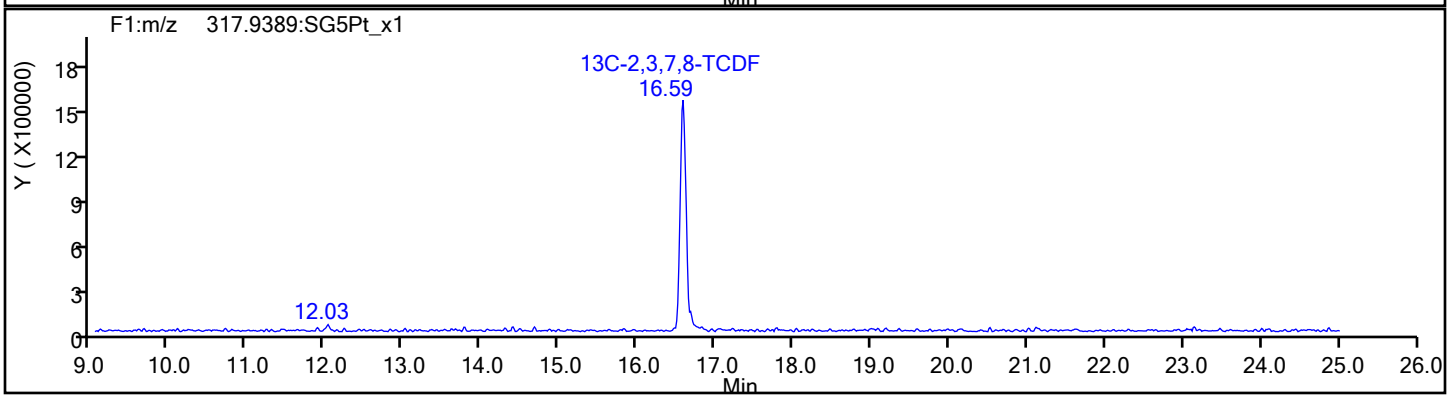
TCDF





TCDF Standards



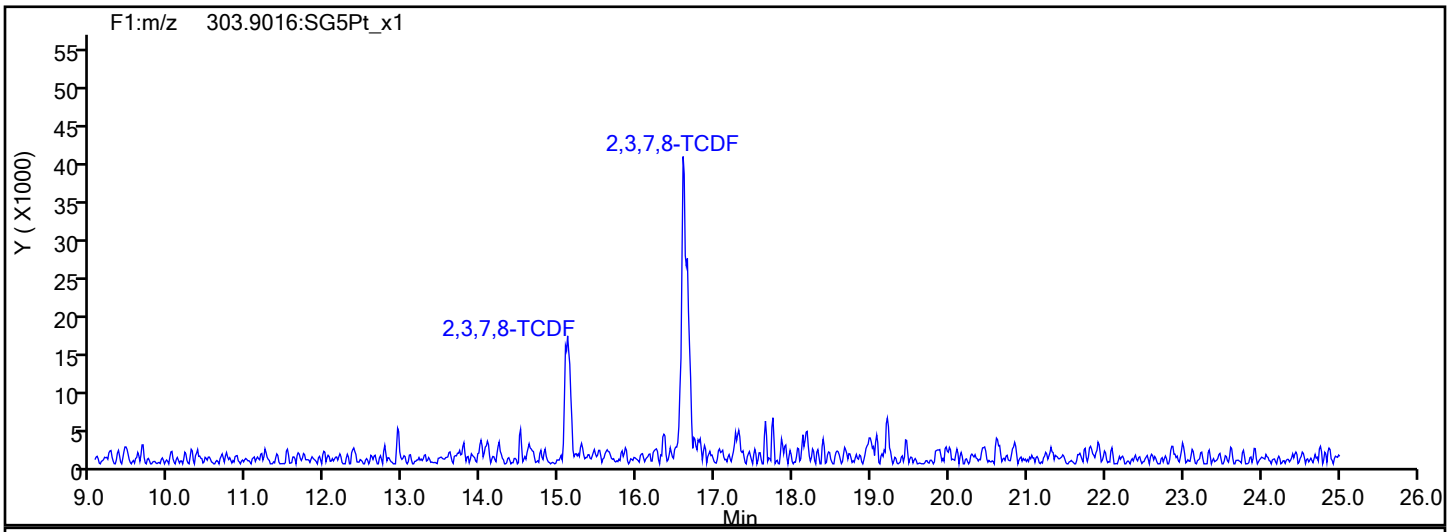


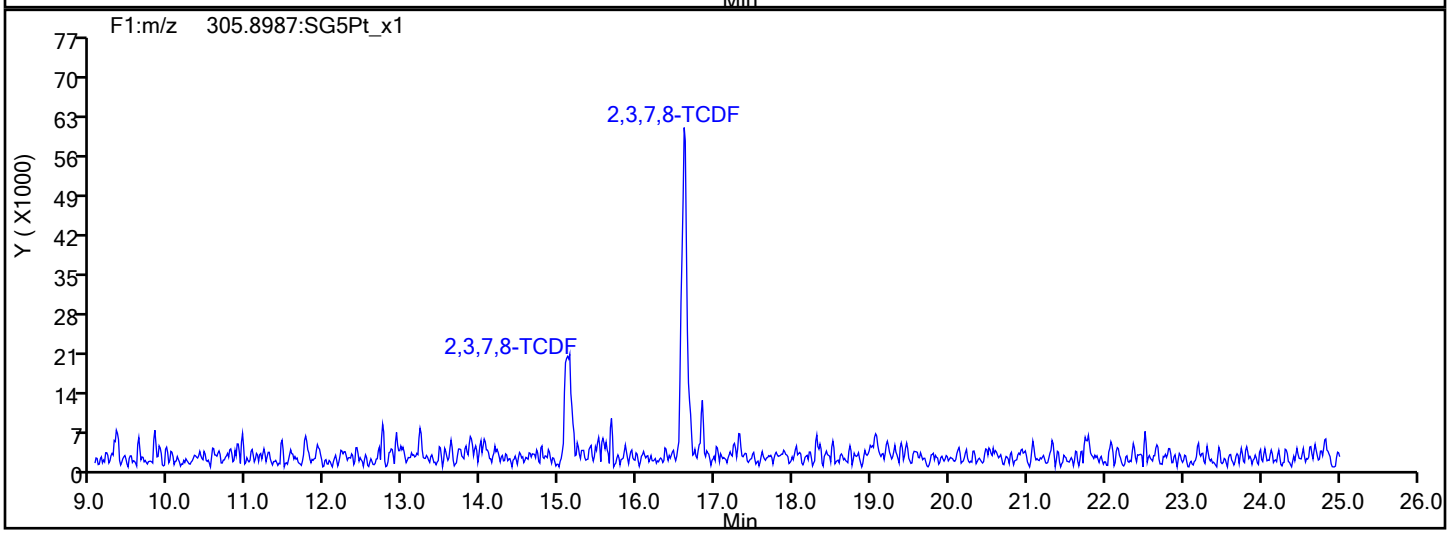
Report Date: 17-Dec-2019 09:38:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

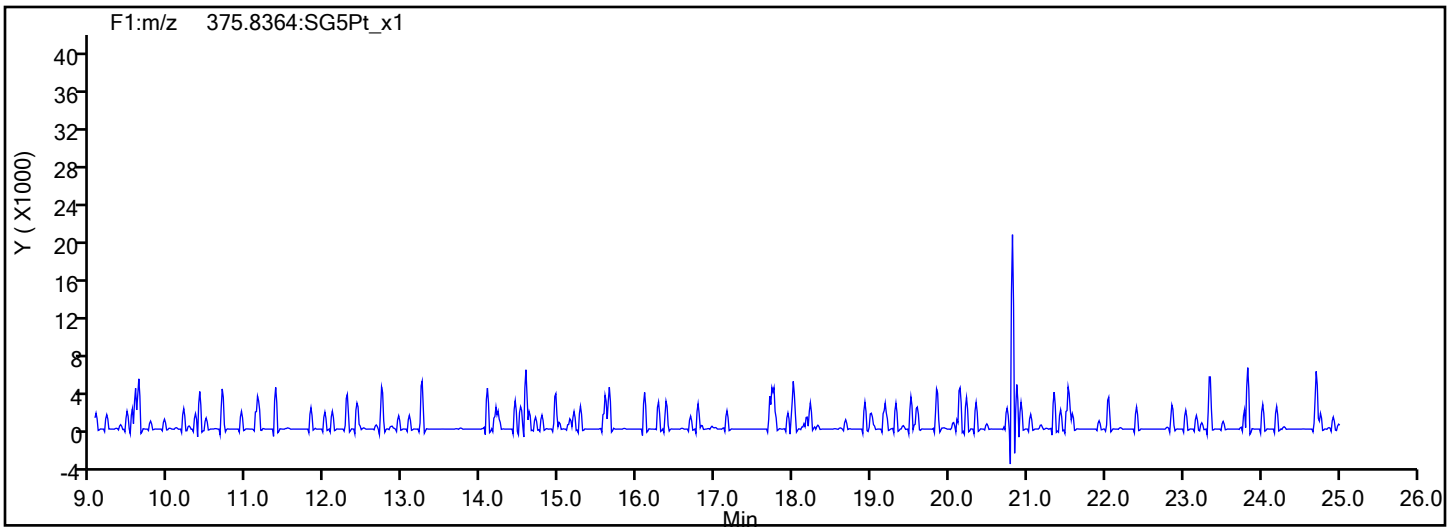
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d		
Injection Date:	16-Dec-2019 21:18:25	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345960	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

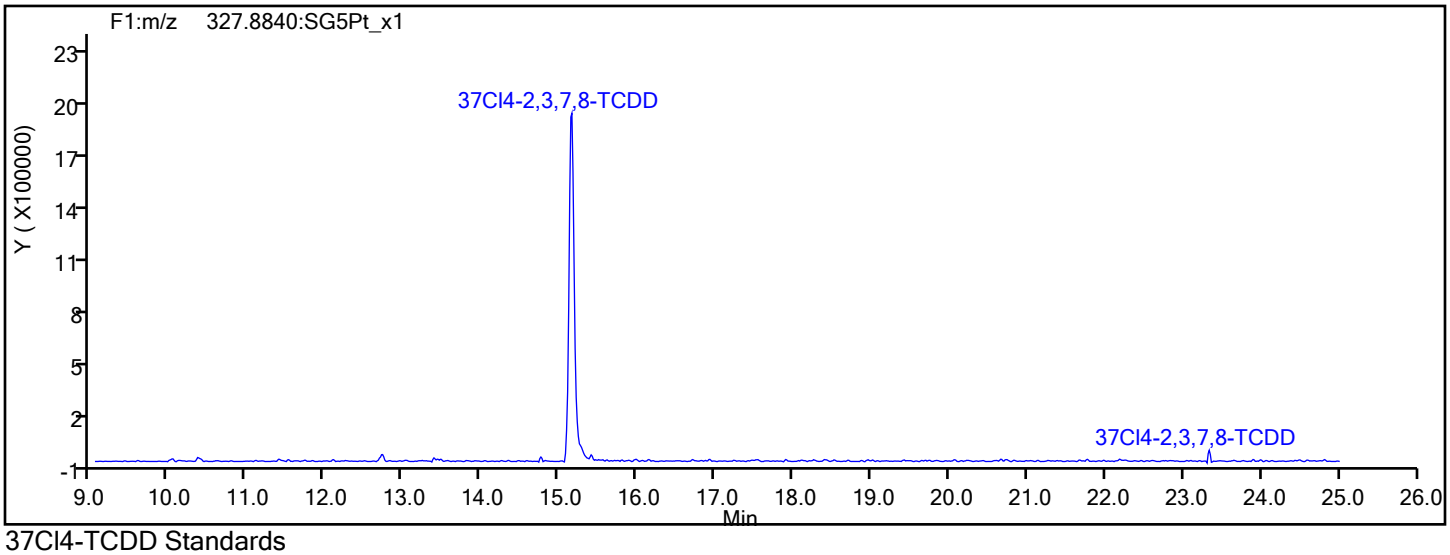


Report Date: 17-Dec-2019 09:38:23 Chrom Revision: 2.3 15-Dec-2019 06:20:02

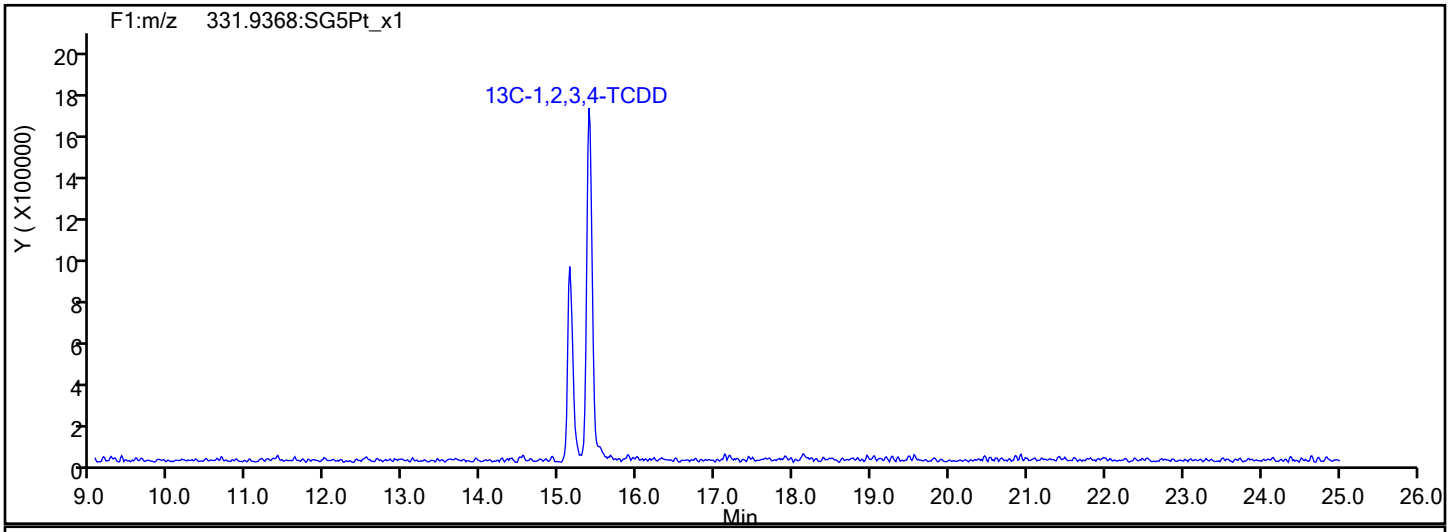
Eurofins TestAmerica, Sacramento

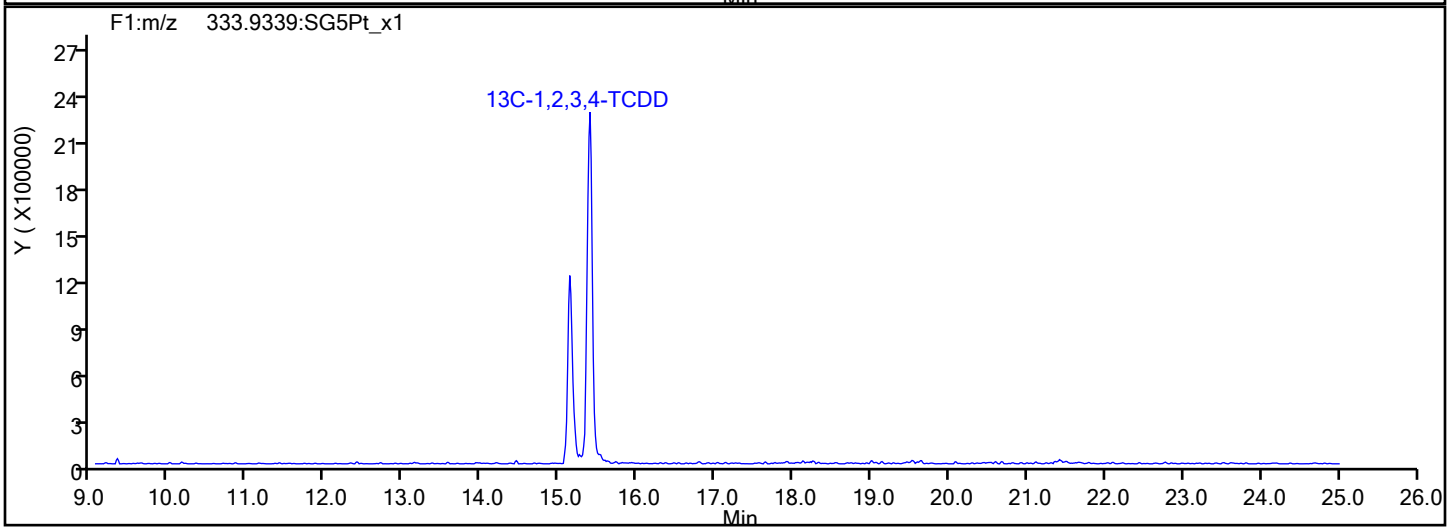
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d		
Injection Date:	16-Dec-2019 21:18:25	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345960	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

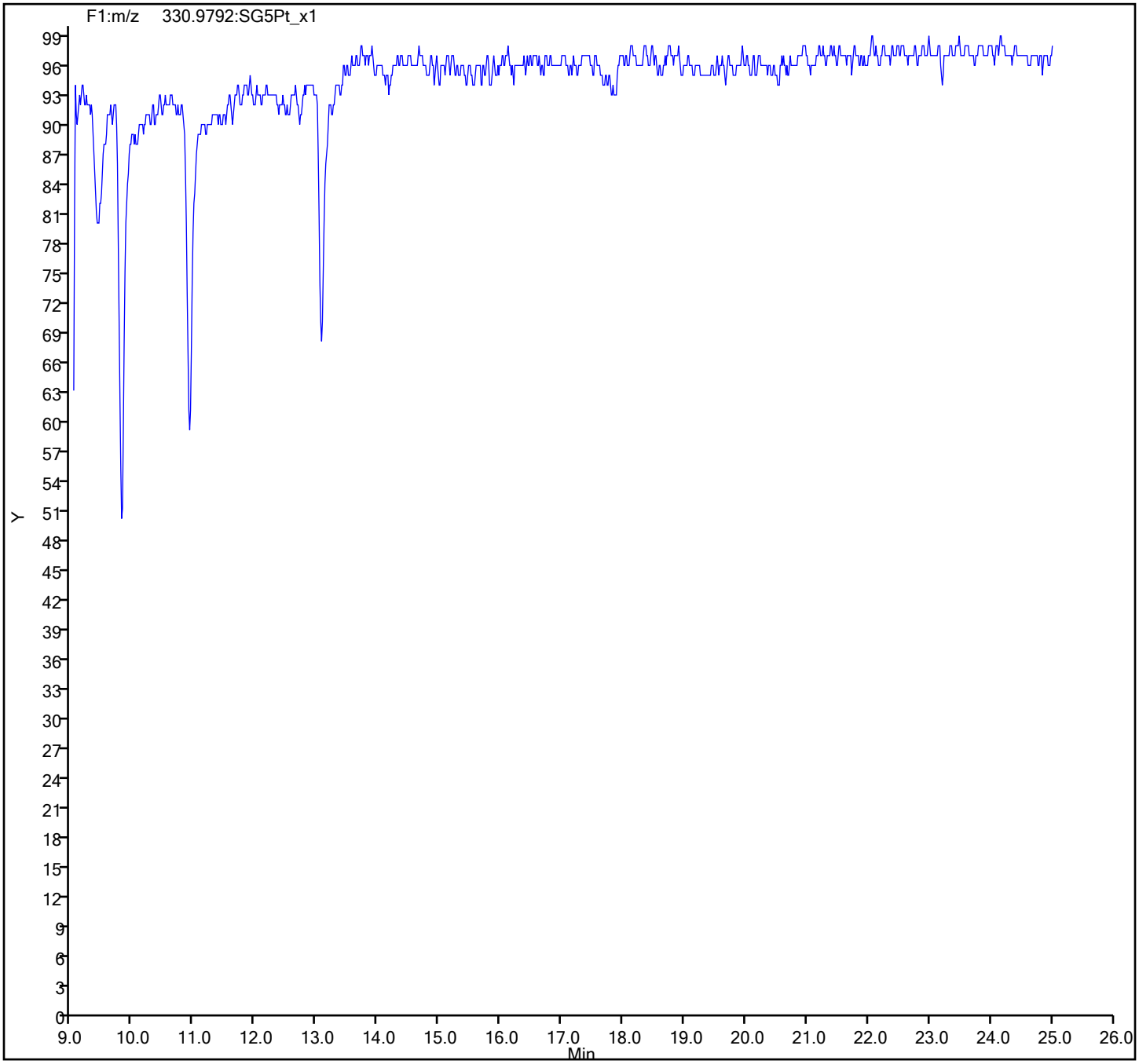




Report Date: 17-Dec-2019 09:38:23 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_004.d		
Injection Date:	16-Dec-2019 21:18:25	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (2-4)		
Worklist#:	345960	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Matrix: Sediment Lab File ID: 13de19dfs1_11.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/13/2019 19:47

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	12		1.7	0.32
40321-76-4	1,2,3,7,8-PeCDD	ND		8.7	0.29
57117-41-6	1,2,3,7,8-PeCDF	1.2	J	8.7	0.15
57117-31-4	2,3,4,7,8-PeCDF	ND		8.7	0.17
39227-28-6	1,2,3,4,7,8-HxCDD	0.81	J	8.7	0.28
57653-85-7	1,2,3,6,7,8-HxCDD	1.3	J B	8.7	0.29
19408-74-3	1,2,3,7,8,9-HxCDD	2.5	J	8.7	0.27
70648-26-9	1,2,3,4,7,8-HxCDF	1.7	J	8.7	0.15
57117-44-9	1,2,3,6,7,8-HxCDF	0.74	J	8.7	0.14
72918-21-9	1,2,3,7,8,9-HxCDF	ND		8.7	0.12
60851-34-5	2,3,4,6,7,8-HxCDF	ND		8.7	0.14
35822-46-9	1,2,3,4,6,7,8-HpCDD	45	B	8.7	0.50
67562-39-4	1,2,3,4,6,7,8-HpCDF	3.9	J	8.7	0.17
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.65	J	8.7	0.15
3268-87-9	OCDD	1100	B	17	1.4
39001-02-0	OCDF	35	B	17	0.22
41903-57-5	Total TCDD	17	q	1.7	0.32
30402-14-3	Total TCDF	53	q	1.7	0.28
36088-22-9	Total PeCDD	10	q	8.7	0.29
30402-15-4	Total PeCDF	3.3	J q	8.7	0.16
34465-46-8	Total HxCDD	46	B	8.7	0.28
55684-94-1	Total HxCDF	5.5	J	8.7	0.14
37871-00-4	Total HpCDD	160	B	8.7	0.50
38998-75-3	Total HpCDF	11	q B	8.7	0.16

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) Lab Sample ID: 320-56911-4

Matrix: Sediment Lab File ID: 13de19dfs1_11.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/13/2019 19:47

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 42.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	59		25-164
89059-46-1	13C-2,3,7,8-TCDF	53		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	57		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	57		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	59		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	63		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	58		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	56		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	52		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	51		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	60		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	53		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		26-138
114423-97-1	13C-OCDD	66		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	97		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 19:47:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-4-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:40:11 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:08:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.539	7471136	0.82	5.2E+04	100.0	100.0				a
D 13C-2,3,7,8-TCDF	18.649	6414004	0.77	1.6096	53.3	53.3	0.2081	0.2081	53.34	
2,3,7,8-TCDF	18.684	729485	0.80	1.2332	9.222	9.222	0.0815	0.0815		
A Non-2,3,7,8-sub-TCDF	18.244	485807	0.77	1.2332	6.180	6.142	0.0815	3.948		RQ
S Total TCDF					15.4	15.4	0.0815	0.0815		RQ
D 13C-2,3,7,8-TCDD	19.885	4365199	0.84	0.9984	58.5	58.5	0.2036	0.2036	58.52	
2,3,7,8-TCDD	19.928	183459	0.79	1.1988	3.506	3.506	0.0931	0.0931		M
$ 37Cl4-2,3,7,8-TCDD	19.920	4226309		1.4510	39.0	39.0	0.0433	0.0433	97.47	
A Non-2,3,7,8-sub-TCDD	19.035	78752	0.77	1.1988	1.530	1.505	0.0931	1.358		RQ
S Total TCDD					5.035	5.011	0.0931	0.0931		RQ
D 13C-1,2,3,7,8-PeCDF	25.796	5793701	1.58	1.3678	56.7	56.7	0.2252	0.2252	56.70	
1,2,3,7,8-PeCDF	25.821	24387	1.70	1.1689	0.3601	0.3601	0.0437	0.0437		
D 13C-2,3,4,7,8-PeCDF	27.222	5791966	1.58	1.3045	59.4	59.4	0.2361	0.2361	59.43	
2,3,4,7,8-PeCDF	27.205						0.0476	0.0476		
A F1 PeCDFs	23.266	10060	1.55	1.1775	0.1598	0.1475	0.0142	0.1475		RQ
A Non-2,3,7,8-sub-PeCDF	26.724	30565	1.55	1.1775	0.4886	0.4481	0.0455	0.3297		RQM
S Total PeCDF					1.009	0.9557	0.0457	0.0457		RQ
D 13C-1,2,3,7,8-PeCDD	27.976	3505665	1.58	0.8292	56.6	56.6	0.1109	0.1109	56.59	
1,2,3,7,8-PeCDD	27.965						0.0837	0.0837		
A Non-2,3,7,8-sub-PeCDD	26.851	115209	1.55	1.1200	2.994	2.934	0.0837	1.465		RQM
S Total PeCDD					2.994	2.934	0.0837	0.0837		RQ
D 13C-1,2,3,4,7,8-HxCDF	33.749	4860506	0.53	1.1700	57.8	57.8	0.2153	0.2153	57.80	
1,2,3,4,7,8-HxCDF	33.782	31042	1.35	1.3021	0.4905	0.4905	0.0419	0.0419		M
D 13C-1,2,3,6,7,8-HxCDF	33.941	5330941	0.52	1.3168	56.3	56.3	0.1913	0.1913	56.33	
1,2,3,6,7,8-HxCDF	33.933	14654	1.08	1.2907	0.2130	0.2130	0.0396	0.0396		Ma
D 13C-2,3,4,6,7,8-HxCDF	34.914	4708960	0.54	1.2873	50.9	50.9	0.1957	0.1957	50.90	
2,3,4,6,7,8-HxCDF	34.772						0.0401	0.0401		RQU
D 13C-1,2,3,7,8,9-HxCDF	35.912	4496491	0.53	1.1987	52.2	52.2	0.2102	0.2102	52.19	
1,2,3,7,8,9-HxCDF	35.889						0.0346	0.0346		
A Non-2,3,7,8-sub-HxCDF	33.751	56108	1.25	1.3074	0.8850	0.8850	0.0389	0.4573		Ma
S Total HxCDF					1.588	1.588	0.0390	0.0390		

Report Date: 17-Dec-2019 09:40:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.711	7186927	1.28	5.8E+04	100.0	100.0				a
D 13C-1,2,3,4,7,8-HxCDD	35.157	3900941	1.29	0.8364	64.9	64.9	0.1967	0.1967	64.90	
1,2,3,4,7,8-HxCDD	35.183	10638	1.13	1.1725	0.2326	0.2326	0.0804	0.0804		
D 13C-1,2,3,6,7,8-HxCDD	35.292	4121636	1.29	0.9040	63.4	63.4	0.1820	0.1820	63.44	
1,2,3,6,7,8-HxCDD	35.325	18047	1.27	1.1256	0.3890	0.3890	0.0846	0.0846		
1,2,3,7,8,9-HxCDD	35.711	35942	1.33	1.2327	0.7269	0.7269	0.0768	0.0768		
A Non-2,3,7,8-sub-HxCDD	34.284	561621	1.21	1.1769	11.9	11.9	0.0805	9.400		Ma
S Total HxCDD					13.2	13.2	0.0806	0.0806		
D 13C-1,2,3,4,6,7,8-HpCDF	37.894	3724779	0.45	0.9689	53.5	53.5	0.3196	0.3196	53.49	
1,2,3,4,6,7,8-HpCDF	37.911	68391	1.04	1.6176	1.135	1.135	0.0490	0.0490		
D 13C-1,2,3,4,7,8,9-HpCDF	39.211	4014739	0.46	0.9231	60.5	60.5	0.3354	0.3354	60.52	
1,2,3,4,7,8,9-HpCDF	39.219	11100	1.00	1.4672	0.1884	0.1884	0.0441	0.0441		
A Non-2,3,7,8-sub-HpCDF	38.556	108296	1.04	1.5424	1.824	1.814	0.0462	1.713		RQM
S Total HpCDF					3.148	3.138	0.0465	0.0465		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	38.900	3933775	1.07	0.9114	60.1	60.1	0.1609	0.1609	60.06	
1,2,3,4,6,7,8-HpCDD	38.917	572186	1.03	1.1237	12.9	12.9	0.1431	0.1431		
A Non-2,3,7,8-sub-HpCDD	38.803	1413895	1.06	1.1237	32.0	32.0	0.1431	32.0		
S Total HpCDD					44.9	44.9	0.1431	0.1431		
D 13C-OCDD	41.346	5991021	0.93	0.6272	132.9	132.9	0.1990	0.1990	66.45	
OCDF	41.422	464453	0.91	1.5416	10.1	10.1	0.0629	0.0629		
OCDD	41.355	11179736	0.89	1.1855	314.8	314.8	0.4175	0.4175		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 19:47:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-4-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:40:11 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:08:39

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	19.539	19.502	2		3369679	531545	750	1875	709		a
333.9338	19.539	19.502	2		4101457	654097	214	535	3057	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.649	18.611	2	0.954	2797593	437836	1071	2677	409		
317.9389	18.649	18.611	2	0.954	3616411	582410	518	1295	1124	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.684	18.637	3	1.002	324198	47140	141	352	334		
305.8987	18.666	18.637	2	1.001	405287	61660	269	672	229	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	15.925	18.244	-139	0.854	6152	1085	141	352	8		
	Empc Correction				5277	1391	141	352	10		
305.8987	15.925	18.244	-139	0.854	6854	1807	269	672	7	0.90(0.65-0.89)	
303.9016	16.799	18.244	-87	0.901	17105	2841	141	352	20		
305.8987	16.816	18.244	-86	0.902	23282	3208	269	672	12	0.73(0.65-0.89)	
303.9016	17.534	18.244	-43	0.940	15090	2044	141	352	14		
	Empc Correction				12941	2113	141	352	15		
305.8987	17.534	18.244	-43	0.940	16807	2745	269	672	10	0.90(0.65-0.89)	
303.9016	18.018	18.244	-14	0.966	137024	21482	141	352	152		
305.8987	18.009	18.244	-14	0.966	175225	30488	269	672	113	0.78(0.65-0.89)	
303.9016	19.401	18.244	69	1.040	21144	3187	141	352	23		
305.8987	19.418	18.244	70	1.041	26615	4355	269	672	16	0.79(0.65-0.89)	
303.9016	21.762	18.244	211	1.167	18844	2680	141	352	19		
305.8987	21.727	18.244	209	1.165	24689	3334	269	672	12	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.885	19.848	2	1.018	1996976	300640	750	1875	401		
333.9338	19.885	19.848	2	1.018	2368223	357915	214	535	1673	0.84(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	19.928	19.874	3	1.002	80995	12498	210	525	60		M
321.8936	19.911	19.874	2	1.001	102464	16065	84	210	191	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.920	19.882	2	1.019	4226309	635938	298	745	2134		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	16.686	19.035	-141	0.839	3341	804	210	525	4		
321.8936	16.721	19.035	-139	0.841	5634	1335	84	210	16	0.59(0.65-0.89)	
	Empc Correction				4338	1044	84	210	12		
319.8965	17.983	19.035	-63	0.904	31204	5855	210	525	28		
321.8936	17.974	19.035	-64	0.904	39869	6702	84	210	80	0.78(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	25.796	25.760	2	1.320	3547114	598396	878	2195	682		
353.8970	25.796	25.760	2	1.320	2246587	390452	583	1457	670	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	25.821	25.785	2	1.001	15366	2883	71	177	41		
341.8567	25.804	25.785	1	1.000	9021	1542	131	327	12	1.70(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.222	27.177	3	1.393	3549245	547766	878	2195	624		
353.8970	27.213	27.177	2	1.393	2242721	346468	583	1457	594	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						71	177			
341.8567	27.202						131	327			
A F1 PeCDFs											RQ
339.8597	22.393	23.266	-52	0.868	6115	903	4	10	226		
341.8567	22.401	23.266	-52	0.868	4788	763	59	147	13	1.28(1.32-1.78)	
	Empc Correction				3945	582	59	147	10		
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	24.437	26.724	-137	0.947	16436	2352	71	177	33		M
	Empc Correction				13670	2005	71	177	28		
341.8567	24.454	26.724	-136	0.948	8820	1294	131	327	10	1.86(1.32-1.78)	M
339.8597	27.557	26.724	50	1.068	5070	742	71	177	10		
341.8567	27.498	26.724	46	1.066	3005	446	131	327	3	1.69(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	27.976	27.949	2	1.432	2149228	340223	315	787	1080		
369.8919	27.976	27.949	2	1.432	1356437	211542	121	302	1748	1.58(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						145	362			
357.8516	27.965						62	155			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	24.706	26.851	-128	0.883	16768	2868	145	362	20		
357.8516	24.697	26.851	-129	0.883	13174	1952	62	155	31	1.27(1.32-1.78)	
	Empc Correction				10818	1850	62	155	30		
355.8546	25.460	26.851	-83	0.910	34378	5824	145	362	40		
357.8516	25.460	26.851	-83	0.910	23154	4405	62	155	71	1.48(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
355.8546	26.987	26.851	8	0.965	18279	2529	145	362	17		M
357.8516	27.029	26.851	11	0.966	11812	1562	62	155	25	1.55(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.749	33.714	2	0.945	1688189	293759	671	1677	438		
385.8610	33.749	33.714	2	0.945	3172317	540538	879	2197	615	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	33.782	33.739	3	1.001	17844	3165	108	270	29		
375.8178	33.774	33.739	2	1.001	13198	2334	74	185	32	1.35(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.941	33.915	2	0.950	1831859	302412	671	1677	451		
385.8610	33.941	33.915	2	0.950	3499082	588810	879	2197	670	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											Ma
373.8208	33.933	33.932	0	1.000	7617	1377	108	270	13		M
375.8178	33.958	33.932	2	1.000	7037	1137	74	185	15	1.08(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.914	34.880	2	0.978	1655447	300166	671	1677	447		
385.8610	34.906	34.880	2	0.977	3053513	569974	879	2197	648	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											RQU
373.8208	34.905						108	270			
375.8178	34.905						74	185			
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.912	35.878	2	1.006	1557413	343019	671	1677	511		
385.8610	35.912	35.878	2	1.006	2939078	642518	879	2197	731	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	35.894						108	270			
375.8178	35.894						74	185			
A Non-2,3,7,8-sub-HxCDF											Ma
373.8208	31.870	33.751	-113	0.944	15723	1886	108	270	17		
375.8178	31.820	33.751	-116	0.943	13272	1472	74	185	20	1.18(1.05-1.43)	
373.8208	32.986	33.751	-46	0.977	15473	2156	108	270	20		M
375.8178	32.960	33.751	-47	0.977	11640	1617	74	185	22	1.33(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											a
401.8559	35.711	35.685	2		4028644	863515	549	1372	1573		a
403.8529	35.703	35.685	1		3158283	674541	463	1157	1457	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.157	35.131	2	0.985	2194276	482844	549	1372	879		
403.8529	35.166	35.131	2	0.985	1706665	360821	463	1157	779	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.183	35.148	2	1.001	5655	1132	181	452	6		
391.8127	35.183	35.148	2	1.001	4983	1259	137	342	9	1.13(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.292	35.265	2	0.988	2318638	471857	549	1372	859		
403.8529	35.300	35.265	2	0.988	1802998	363404	463	1157	785	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.325	35.282	3	1.001	10099	2215	181	452	12		
391.8127	35.317	35.282	2	1.001	7948	1634	137	342	12	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDD											
389.8158	35.711	35.693	1	1.016	20509	3623	181	452	20		
391.8127	35.711	35.693	1	1.016	15433	2482	137	342	18	1.33(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											Ma
389.8158	32.902	34.284	-83	0.932	244480	36079	181	452	199		
391.8127	32.919	34.284	-82	0.933	199307	28607	137	342	209	1.23(1.05-1.43)	
389.8158	34.294	34.284	1	0.972	62443	11290	181	452	62		M
391.8127	34.285	34.284	0	0.971	55391	9364	137	342	68	1.13(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.894	37.877	1	1.061	1160105	274423	741	1852	370		
419.8220	37.894	37.877	1	1.061	2564674	617898	1164	2910	531	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.911	37.886	2	1.000	34936	8214	191	477	43		
409.7788	37.903	37.886	1	1.000	33455	8133	92	230	88	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.211	39.194	1	1.098	1267067	340670	741	1852	460		
419.8220	39.211	39.194	1	1.098	2747672	752401	1164	2910	646	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.219	39.202	1	1.000	5563	1610	191	477	8		
409.7788	39.219	39.202	1	1.000	5537	1548	92	230	17	1.00(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											RQM
407.7817	38.146	38.556	-25	1.007	3692	1048	191	477	5		
	Empc Correction				3092	952	191	477	5		
409.7788	38.146	38.556	-25	1.007	2974	916	92	230	10	1.24(0.88-1.20)	
407.7817	38.297	38.556	-16	1.011	52482	14361	191	477	75		
409.7788	38.288	38.556	-16	1.010	49748	13919	92	230	151	1.05(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.900	38.892	0	1.089	2030984	515002	398	995	1294		
437.8140	38.900	38.892	0	1.089	1902791	487824	504	1260	968	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.917	38.901	1	1.000	290059	76193	342	855	223		
425.7737	38.917	38.901	1	1.000	282127	73410	303	757	242	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.238	38.803	-34	0.983	728015	184159	342	855	538		
425.7737	38.238	38.803	-34	0.983	685880	174517	303	757	576	1.06(0.88-1.20)	
13C-OCDD											
469.7780	41.346	41.345	0	1.158	2886294	554615	356	890	1558		
471.7750	41.338	41.345	0	1.158	3104727	610060	412	1030	1481	0.93(0.76-1.02)	
OCDF											
441.7428	41.422	41.413	1	1.002	220835	50924	70	175	727		
443.7399	41.422	41.413	1	1.002	243618	56879	156	390	365	0.91(0.76-1.02)	
OCDD											
457.7377	41.355	41.345	1	1.000	5264375	1035126	565	1412	1832		
459.7348	41.355	41.345	1	1.000	5915361	1159610	588	1470	1972	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	6414004	1020246

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	6414004	1020246

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.925	6152	1085	6854	1807	0.1644	0.90	RQ
15.925	5277	1391	6854	1807	0.1534		Empc Correction
16.799	17105	2841	23282	3208	0.5106	0.73	
17.534	15090	2044	16807	2745	0.4033	0.90	RQ
17.534	12941	2113	16807	2745	0.3761		Empc Correction
18.018	137024	21482	175225	30488	3.95	0.78	
19.401	21144	3187	26615	4355	0.6038	0.79	
21.762	18844	2680	24689	3334	0.5504	0.76	
Signal Totals:							
	212335	33694	273472	45937			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	488831	79256				0.79	RQ
	485807	79631					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.180 = (488831 * 100.000) / (6414004 * 1.233)
Empc Amount: 6.142 = (485807 * 100.000) / (6414004 * 1.233)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 17-Dec-2019 09:40:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 19.035

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	100.000	4365199	658555

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		100.000	4365199	658555

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.686	3341	804	5634	1335	0.1715	0.59	RQ
16.686	3341	804	4338	1044	0.1467		Empc Correction
17.983	31204	5855	39869	6702	1.36	0.78	
Signal Totals:							
	34545	6659	44207	7746			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	80048	14696				0.76	RQ
	78752	14405					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.530 = (80048 * 100.000) / (4365199 * 1.199)
Empc Amount: 1.505 = (78752 * 100.000) / (4365199 * 1.199)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

F1 PeCDFs, RT: 23.266

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5793701	988848
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5791966	894234

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5792833	941541

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.393	6115	903	4788	763	0.1598	1.28	RQ
22.393	6115	903	3945	582	0.1475		Empc Correction
Signal Totals:	6115	903	3945	582			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10903	1666				1.28	RQ
	10060	1485					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1598 = (10903 * 100.000) / (5792833 * 1.178)
Empc Amount: 0.1475 = (10060 * 100.000) / (5792833 * 1.178)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDF, RT: 26.724

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5793701	988848
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5791966	894234

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5792833	941541

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
24.437	16436	2352	8820	1294	0.3703	1.86	RQM
24.437	13670	2005	8820	1294	0.3297		Empc Correction
27.557	5070	742	3005	446	0.1184	1.69	
Signal Totals:							
	18740	2747	11825	1740			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	33331	4834				1.82	RQM
	30565	4487					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4886 = (33331 * 100.000) / (5792833 * 1.178)
Empc Amount: 0.4481 = (30565 * 100.000) / (5792833 * 1.178)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 17-Dec-2019 09:40:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 26.851

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120	D 13C-1,2,3,7,8-PeCDD	100.000	3505665	551765

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	3505665	551765

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
24.706	16768	2868	13174	1952	0.7626	1.27	RQ
24.706	16768	2868	10818	1850	0.7026		Empc Correction
25.460	34378	5824	23154	4405	1.47	1.48	
26.987	18279	2529	11812	1562	0.7664	1.55	M
Signal Totals:							
	69425	11221	45784	7817			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	117565	19140				1.44	RQM
	115209	19038					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.994 = (117565 * 100.000) / (3505665 * 1.120)
Empc Amount: 2.934 = (115209 * 100.000) / (3505665 * 1.120)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	4860506	834297
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	5330941	891222
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	4708960	870140
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	4496491	985537

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	4849224	895299

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
31.870	15723	1886	13272	1472	0.4573	1.18	
32.986	15473	2156	11640	1617	0.4277	1.33	Ma
Signal Totals:							
	31196	4042	24912	3089			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	56108	7131				1.25	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.8850 = (56108 * 100.000) / (4849224 * 1.307)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3900941	843665
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	4121636	835261
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	4011288	839463

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.902	244480	36079	199307	28607	9.40	1.23	
34.294	62443	11290	55391	9364	2.50	1.13	Ma
Signal Totals:							
	306923	47369	254698	37971			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	561621	85340				1.21	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 11.896 = (561621 * 100.000) / (4011288 * 1.177)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3724779	892321
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	4014739	1093071

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3869759	992696

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.146	3692	1048	2974	916	0.1117	1.24	RQ
38.146	3092	952	2974	916	0.1016		Empc Correction
38.297	52482	14361	49748	13919	1.71	1.05	M
Signal Totals:							
	55574	15313	52722	14835			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	108896	30244				1.07	RQM
	108296	30148					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.824 = (108896 * 100.000) / (3869759 * 1.542)
Empc Amount: 1.814 = (108296 * 100.000) / (3869759 * 1.542)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Inject. Date: 13-Dec-2019 19:47:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3933775	1002826

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3933775	1002826

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.238	728015	184159	685880	174517	32.0	1.06	
Signal Totals:							
	728015	184159	685880	174517			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1413895	358676				1.06	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 31.986 = (1413895 * 100.000) / (3933775 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

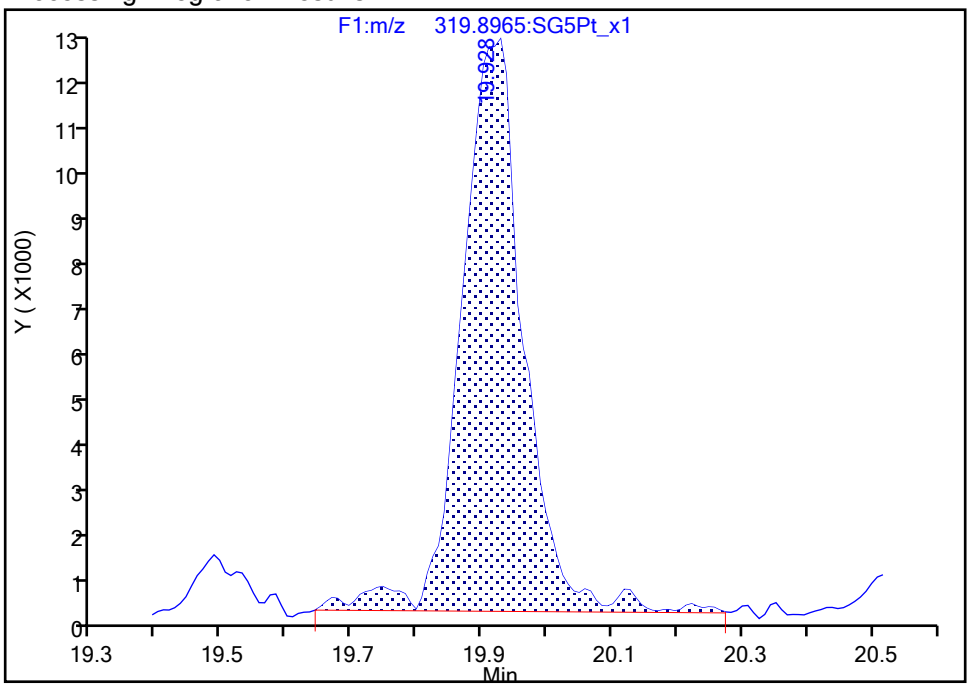
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

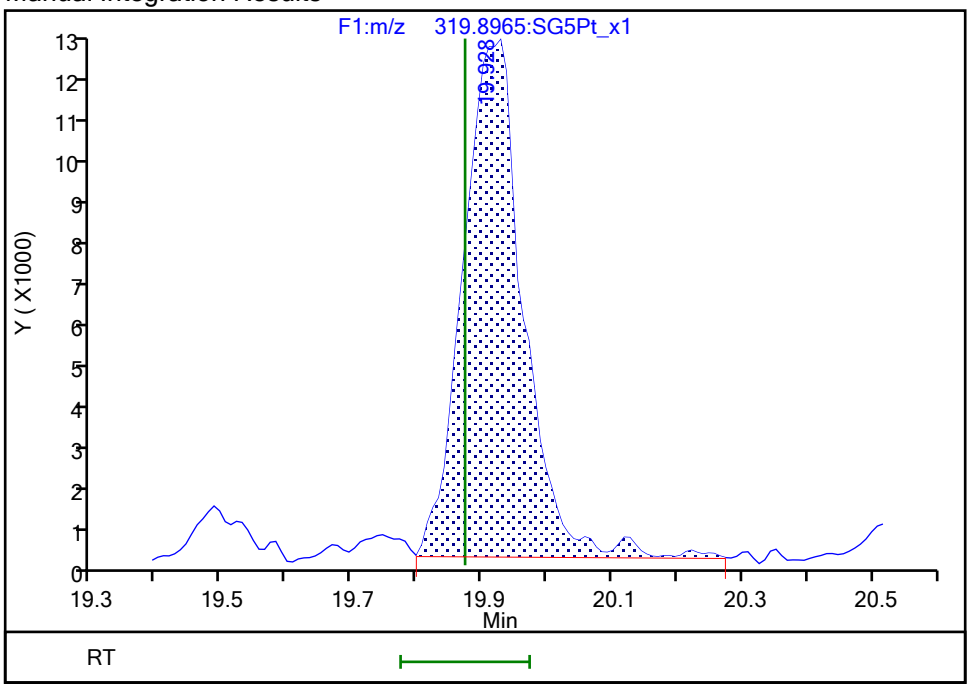
Processing Integration Results

RT: 19.93
Area: 83766
Amount: 3.558712
Amount Units: pg/ul



Manual Integration Results

RT: 19.93
Area: 80995
Amount: 3.505760
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:36:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

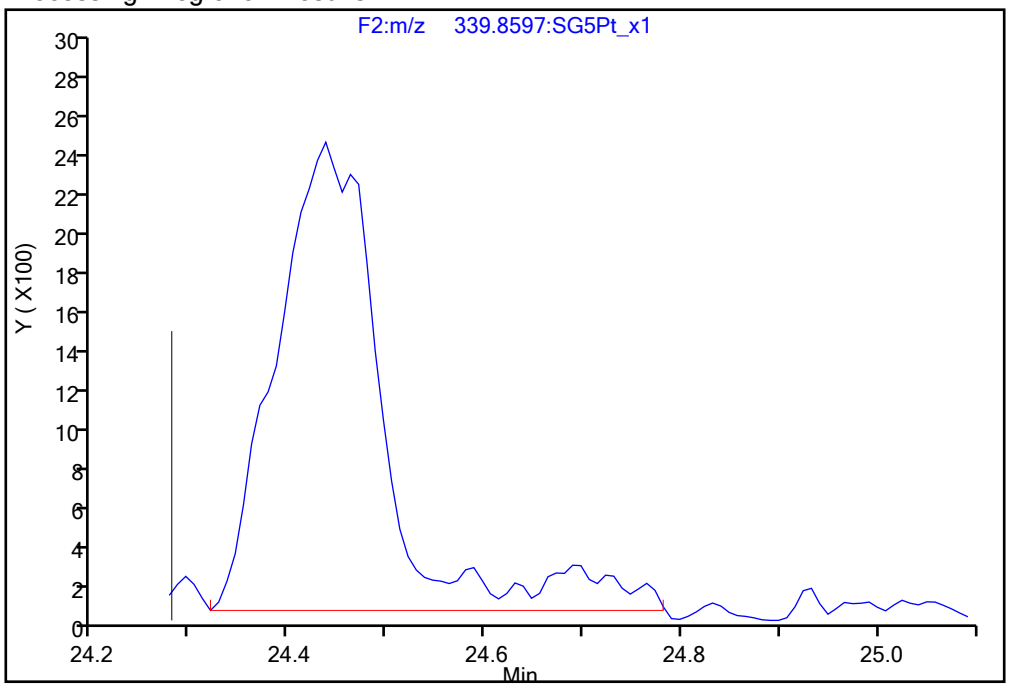
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (24.28- 29.17)

Signal: 1

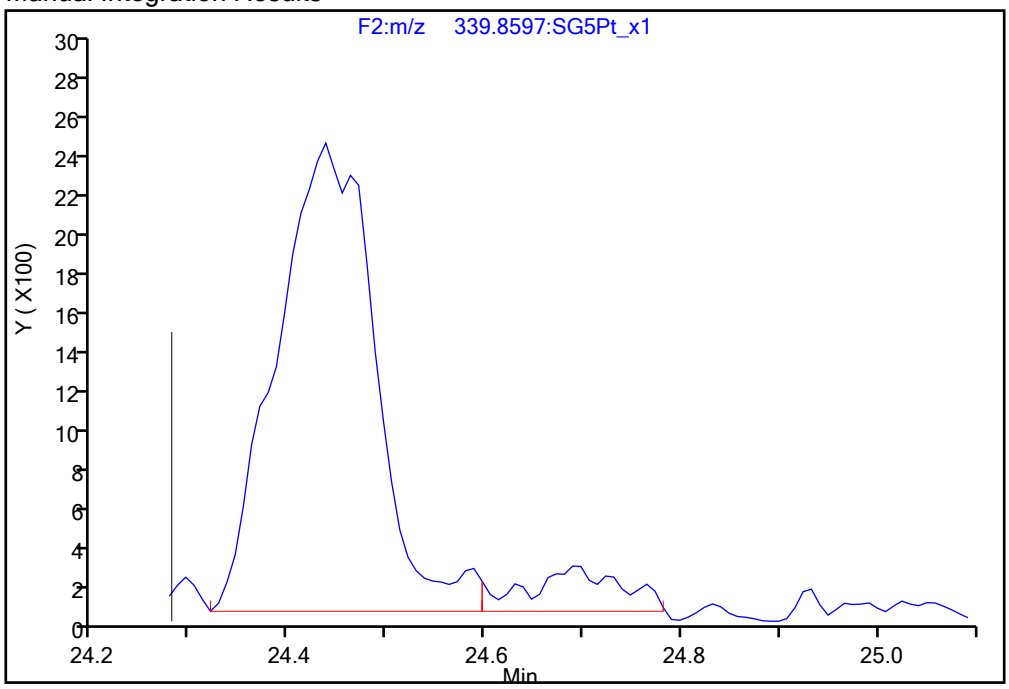
Processing Integration Results

RT = 24.437 Area = 17892



Manual Integration Results

RT = 24.437 Area = 16436 M



Reviewer: dadunj, 17-Dec-2019 09:37:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

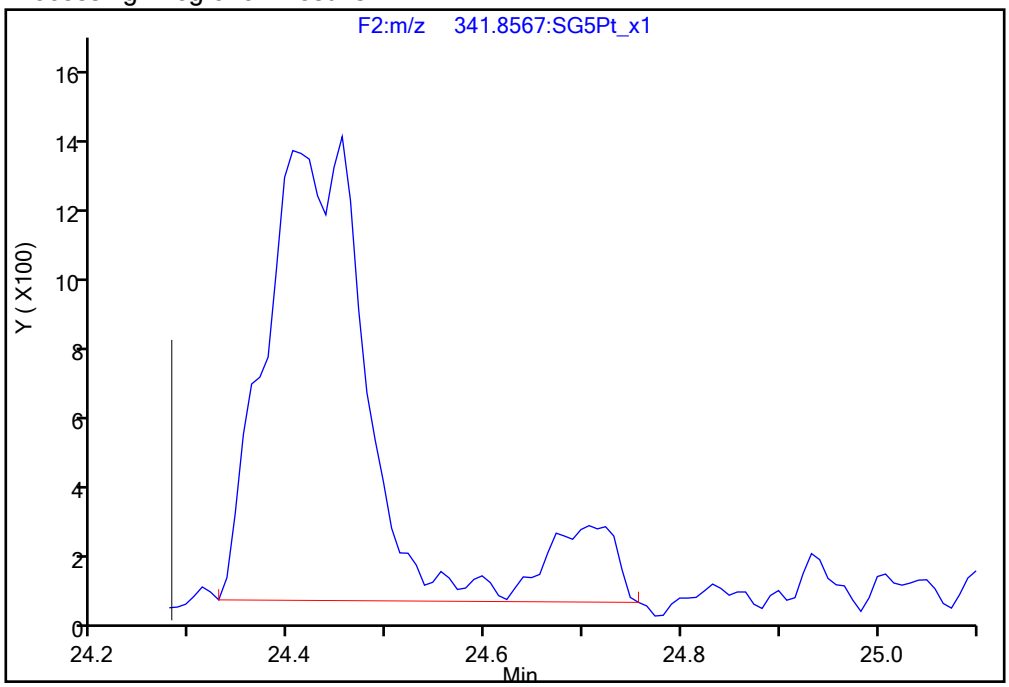
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (24.28- 29.17)

Signal: 2

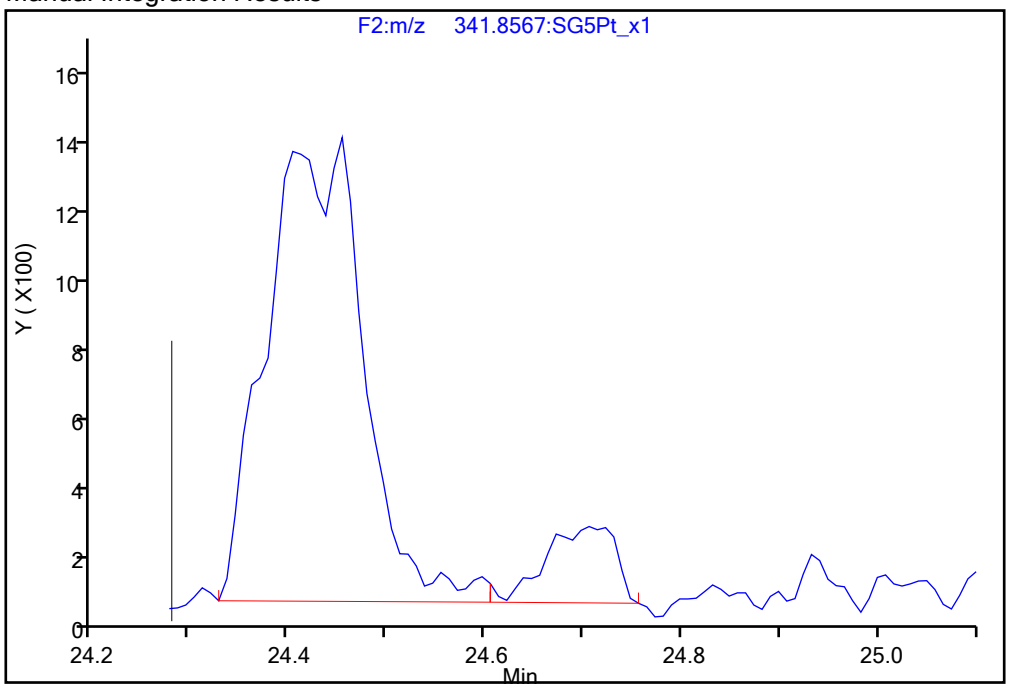
Processing Integration Results

RT = 24.454 Area = 9884



Manual Integration Results

RT = 24.454 Area = 8820 M



Reviewer: dadunj, 17-Dec-2019 09:37:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

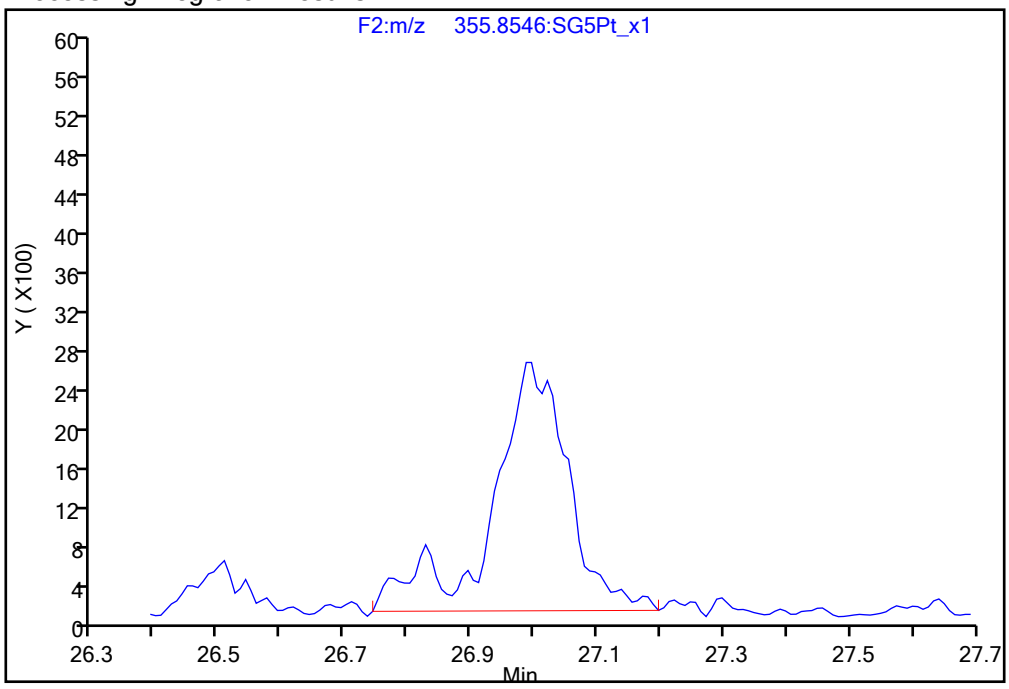
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2(22.22 :29.20)		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (24.68- 29.02)

Signal: 1

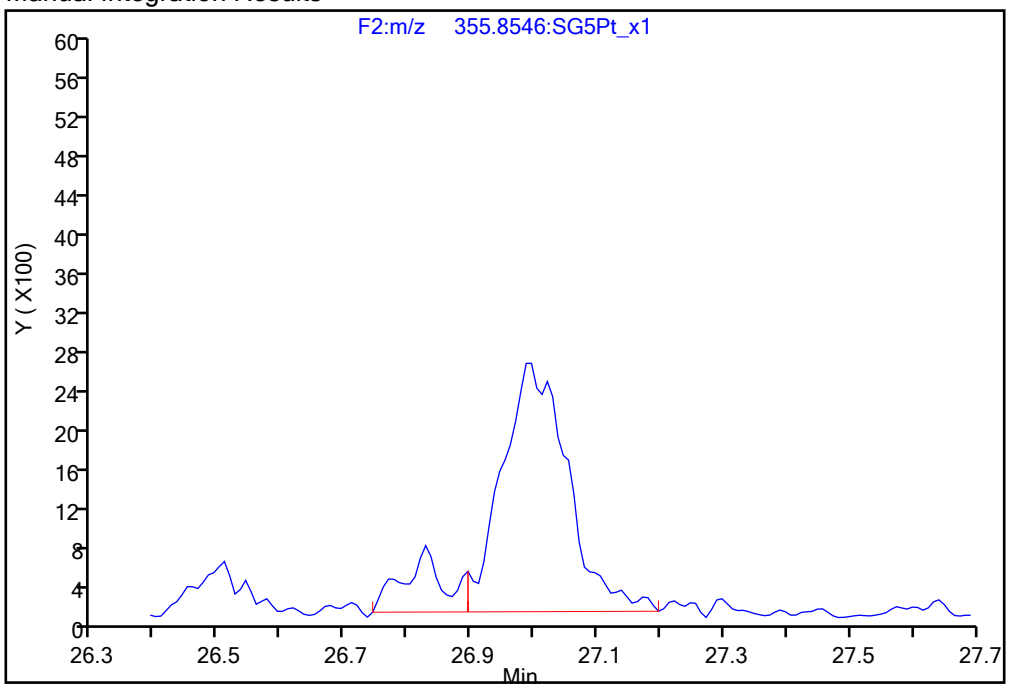
Processing Integration Results

RT = 26.995 Area = 21174



Manual Integration Results

RT = 26.987 Area = 18279 M



Reviewer: dadunj, 17-Dec-2019 09:37:15

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

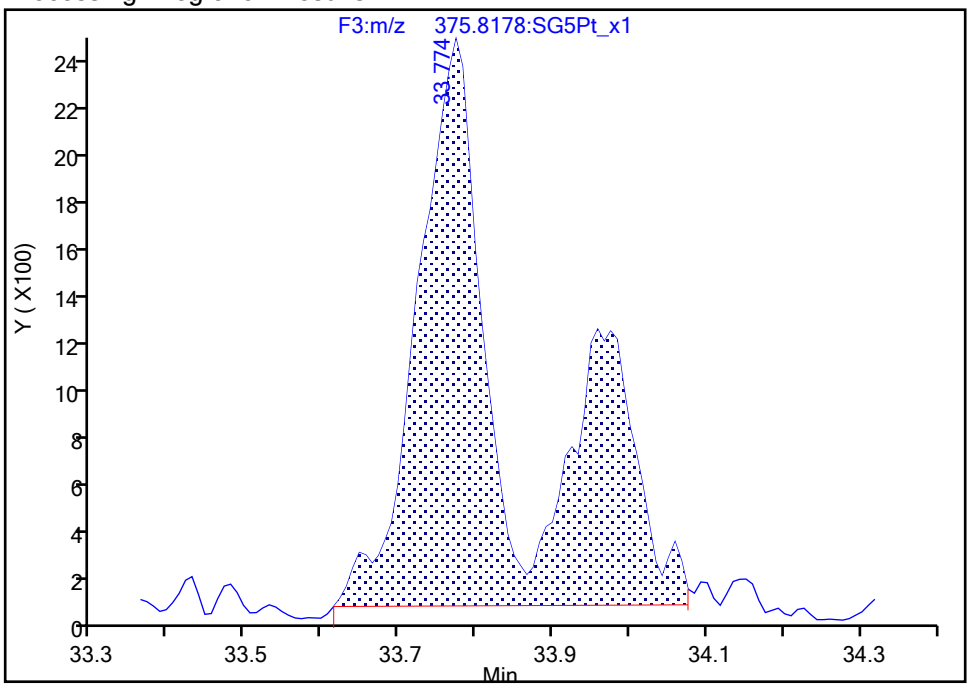
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

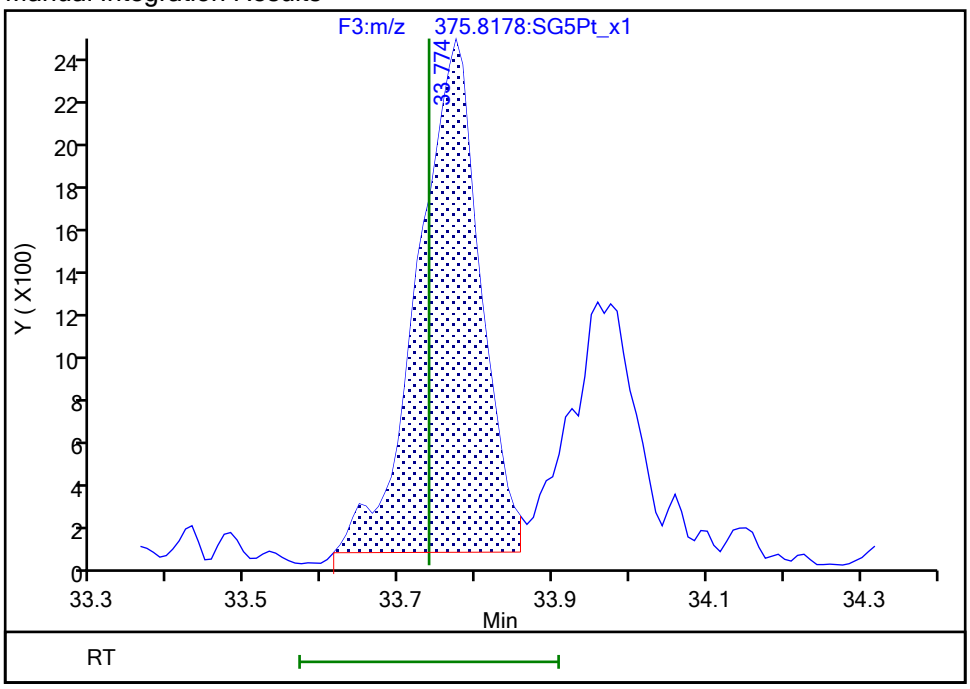
Processing Integration Results

RT: 33.77
Area: 20226
Amount: 0.601514
Amount Units: pg/ul



Manual Integration Results

RT: 33.77
Area: 13198
Amount: 0.490470
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:37:26

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

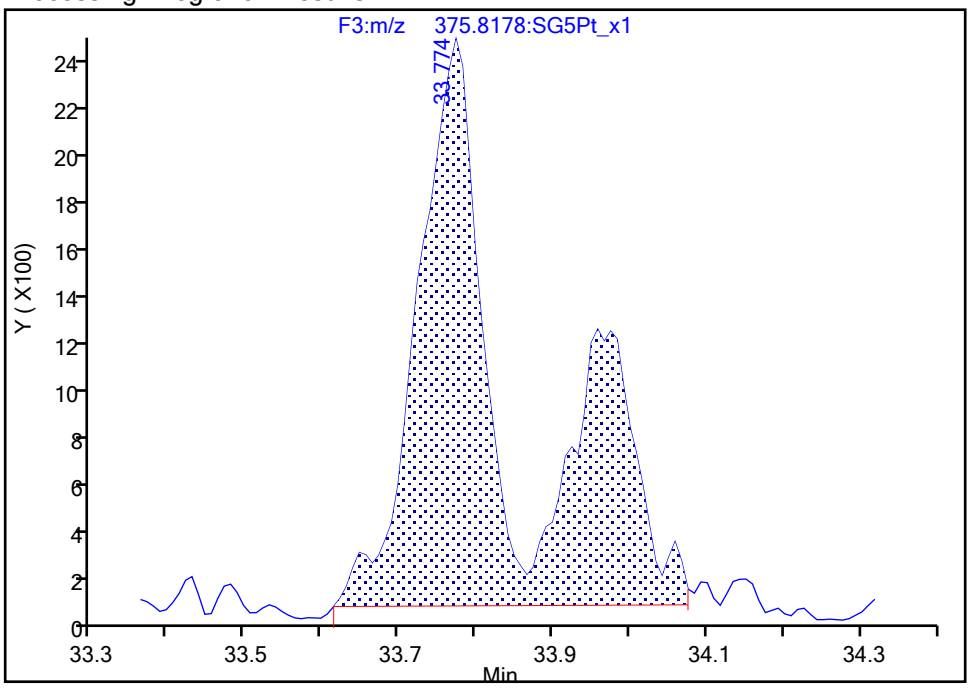
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

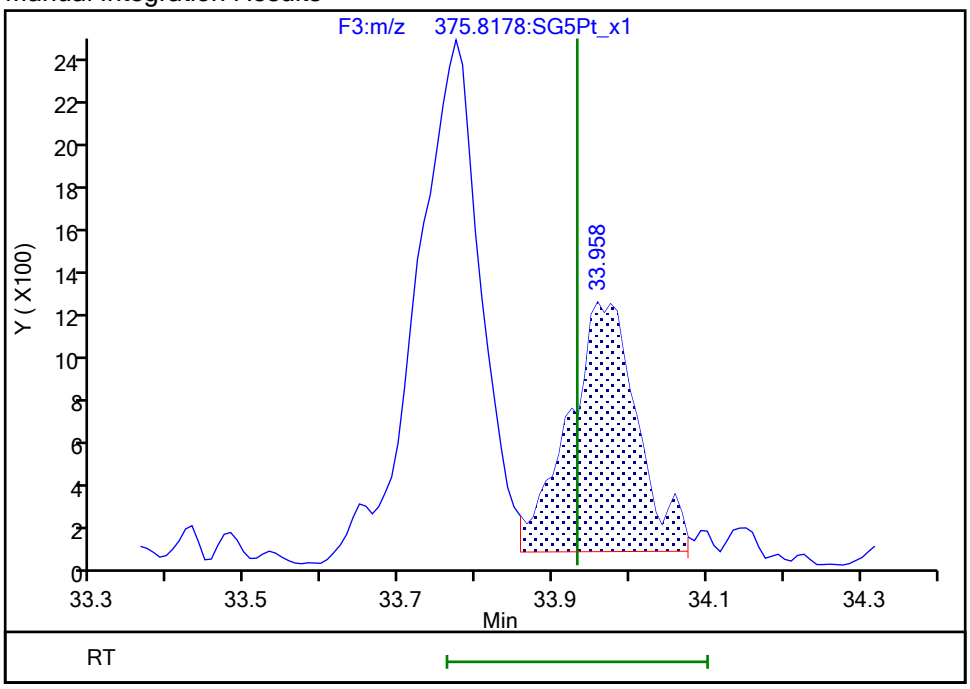
Processing Integration Results

RT: 33.77
Area: 20226
Amount: 0.553272
Amount Units: pg/ul



Manual Integration Results

RT: 33.96
Area: 7037
Amount: 0.212967
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:37:31

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

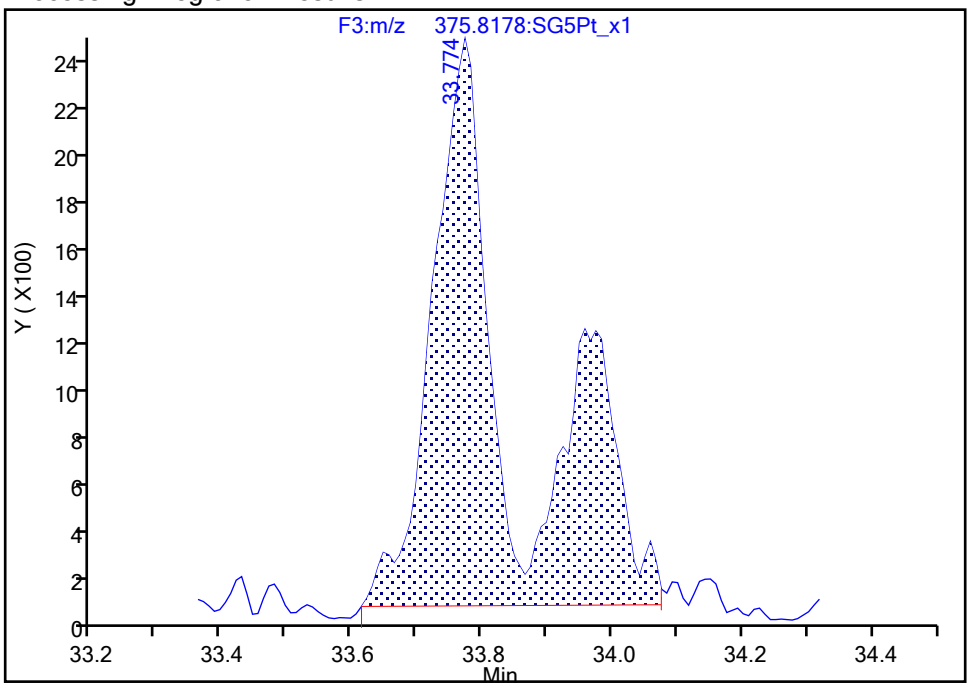
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 3

Processing Integration Results

RT: 33.78
Area: 38070
Amount: 0.553272
Amount Units: pg/ul



Manual Integration Results

RT: 33.93
Area: 14654
Amount: 0.212967
Amount Units: pg/ul
Reviewer: dadunj, 17-Dec-2019 09:37:31
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

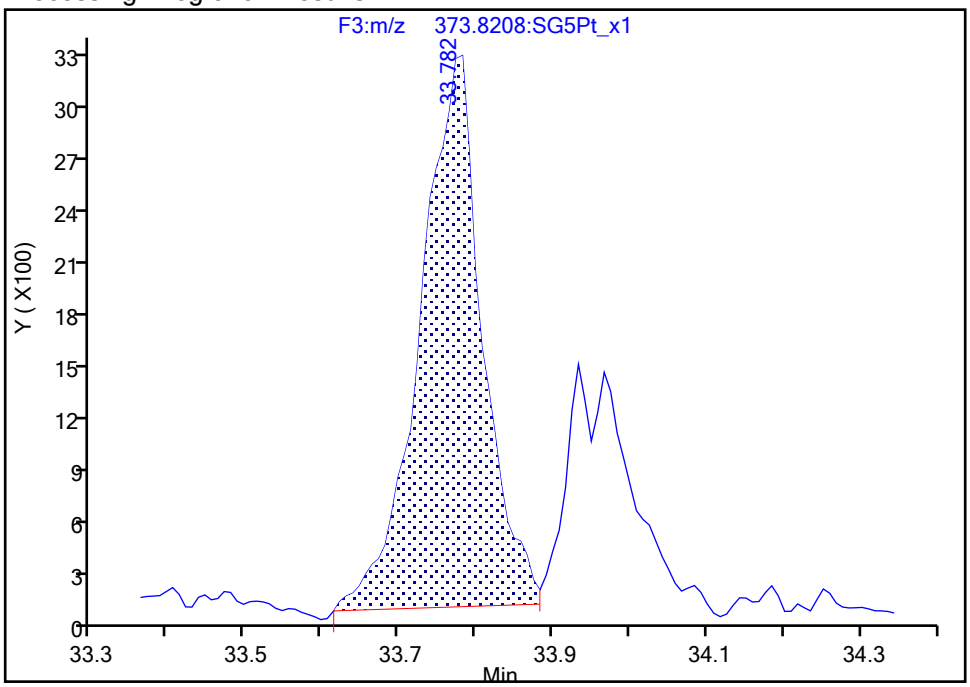
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

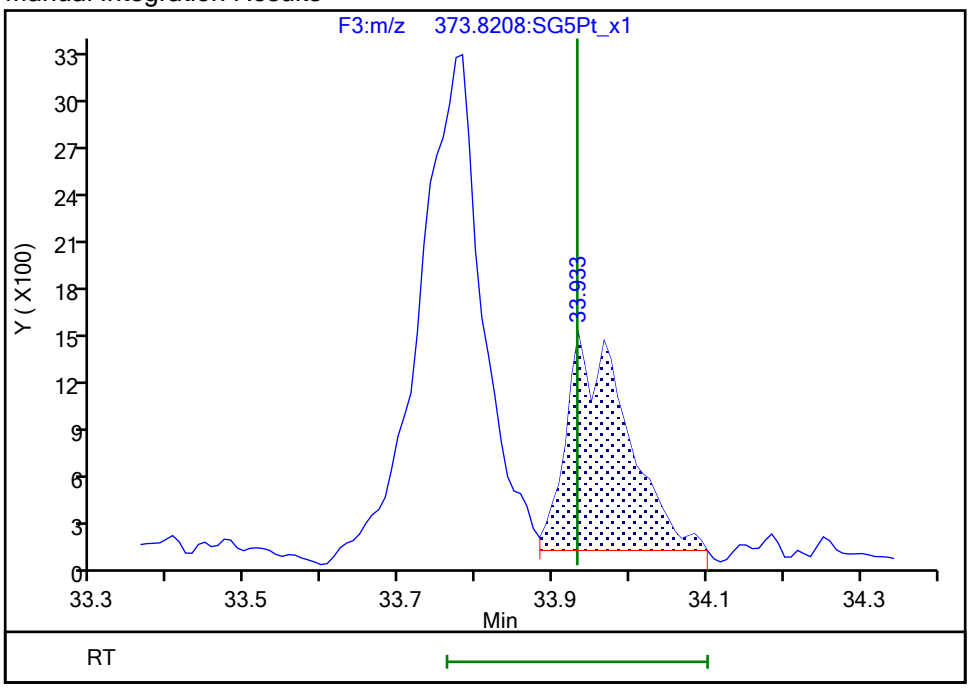
Processing Integration Results

RT: 33.78
Area: 17844
Amount: 0.553272
Amount Units: pg/ul



Manual Integration Results

RT: 33.93
Area: 7617
Amount: 0.212967
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:37:32
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

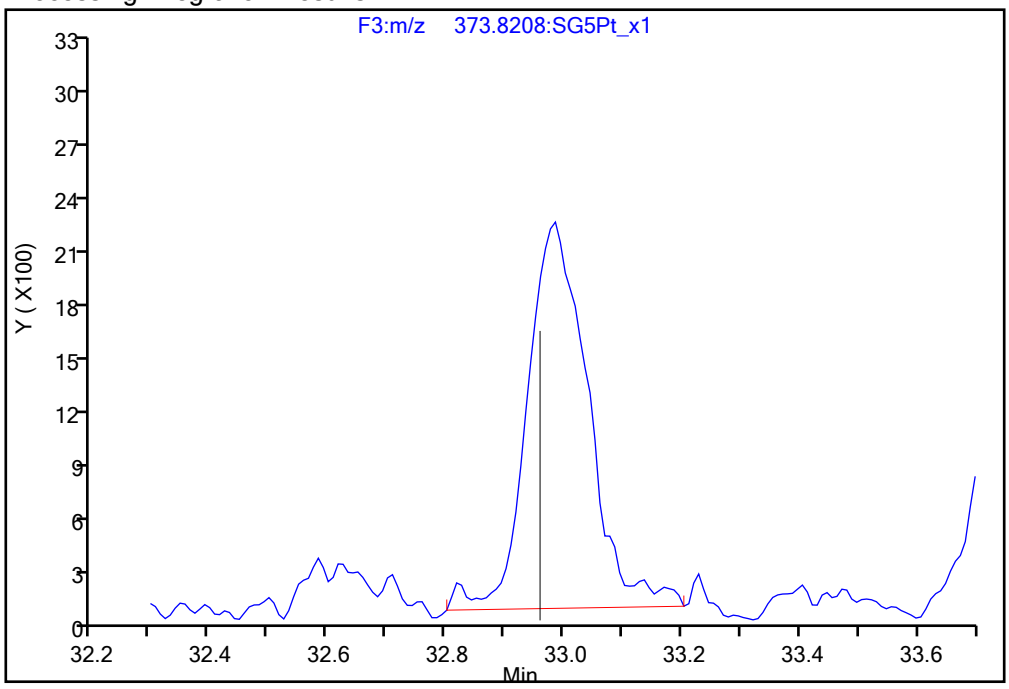
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (31.44- 36.06)

Signal: 1

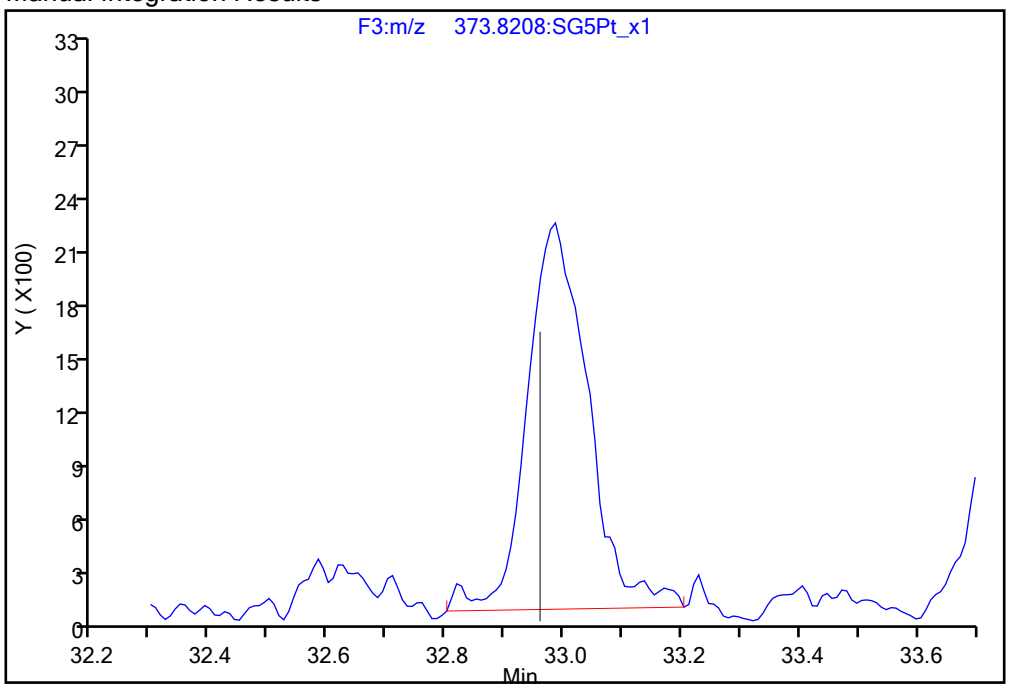
Processing Integration Results

RT = 32.986 Area = 15473



Manual Integration Results

RT = 32.986 Area = 15473



Reviewer: dadunj, 17-Dec-2019 09:38:05

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

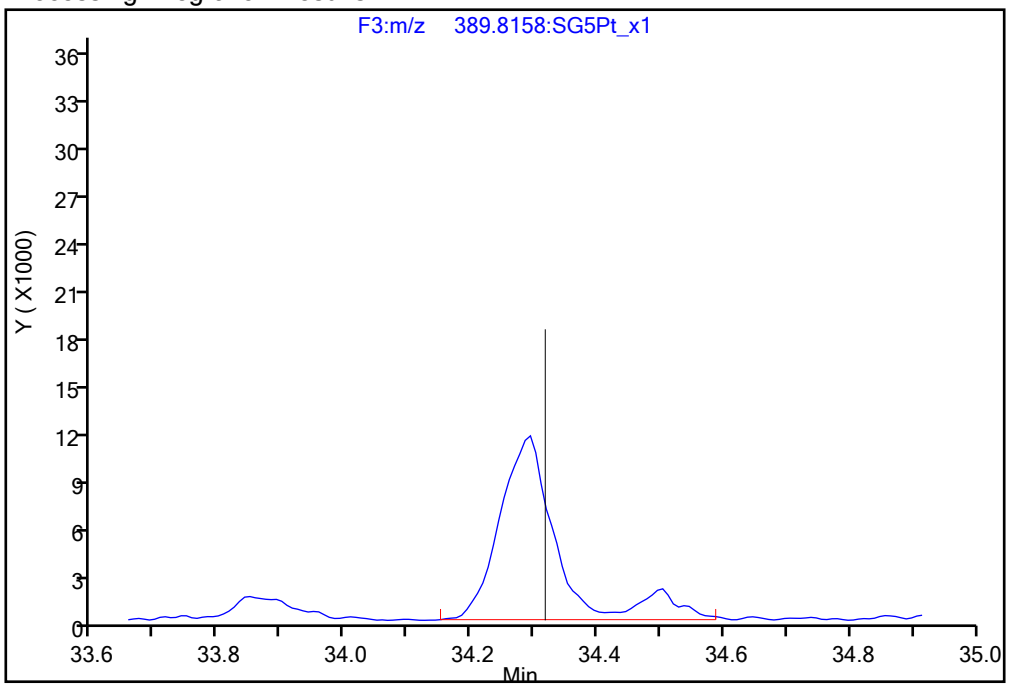
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (32.88- 35.68)

Signal: 1

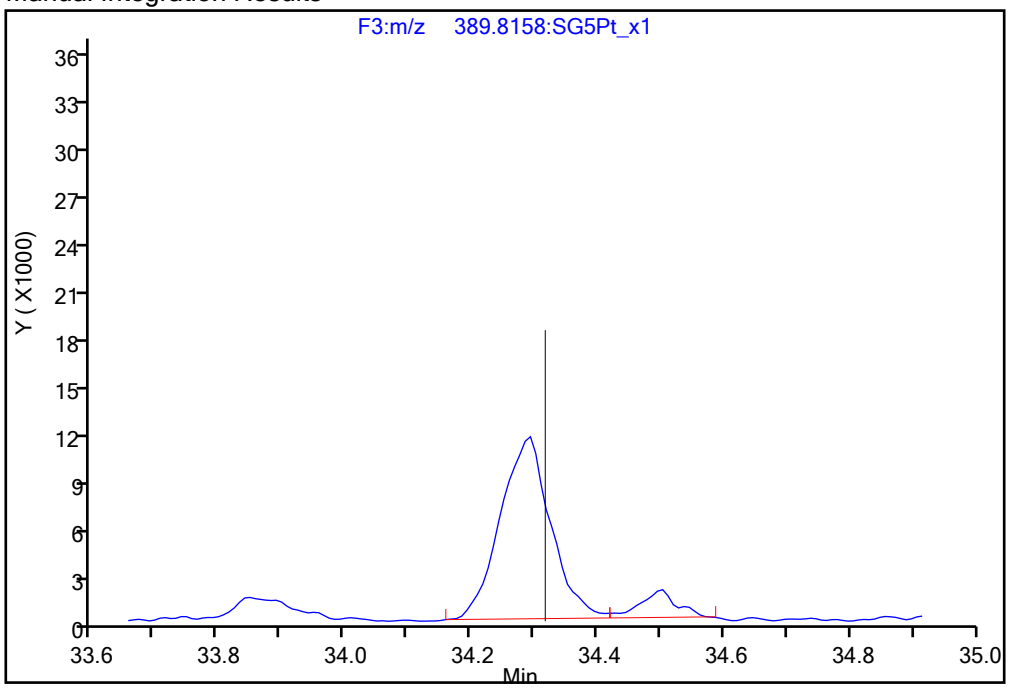
Processing Integration Results

RT = 34.294 Area = 72874



Manual Integration Results

RT = 34.294 Area = 62443 M



Reviewer: dadunj, 17-Dec-2019 09:38:41

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

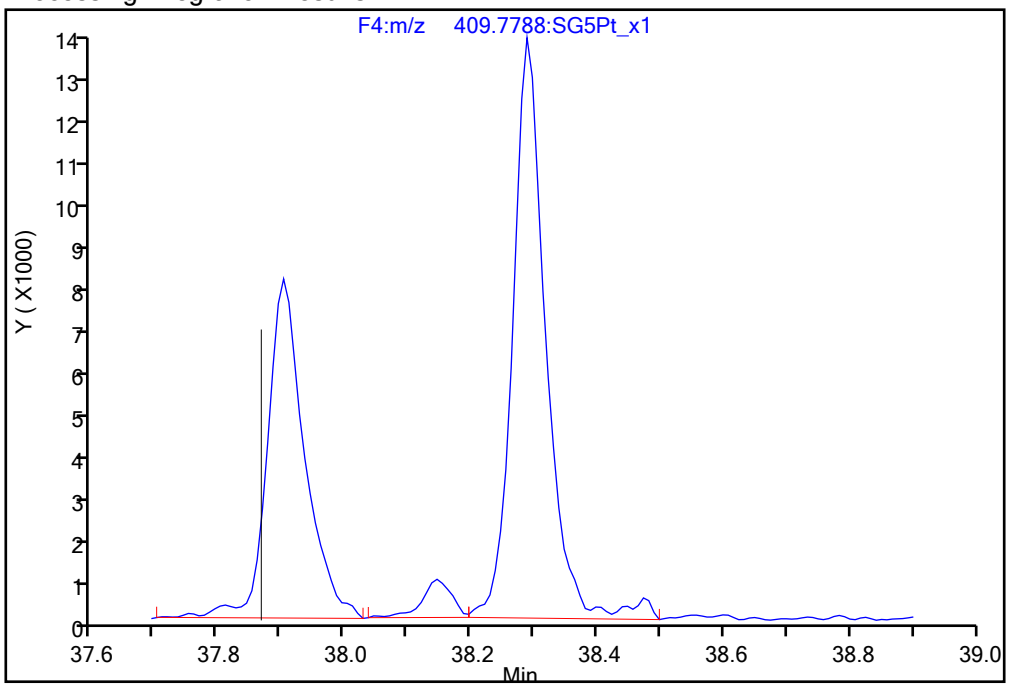
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d				
Injection Date:	13-Dec-2019 19:47:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-4-A	Lab Sample ID:	320-56911-4		
Client ID:	11187072-120719-SS-SJSSA01 (4-6)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7788, RT: (37.87- 39.24)

Signal: 2

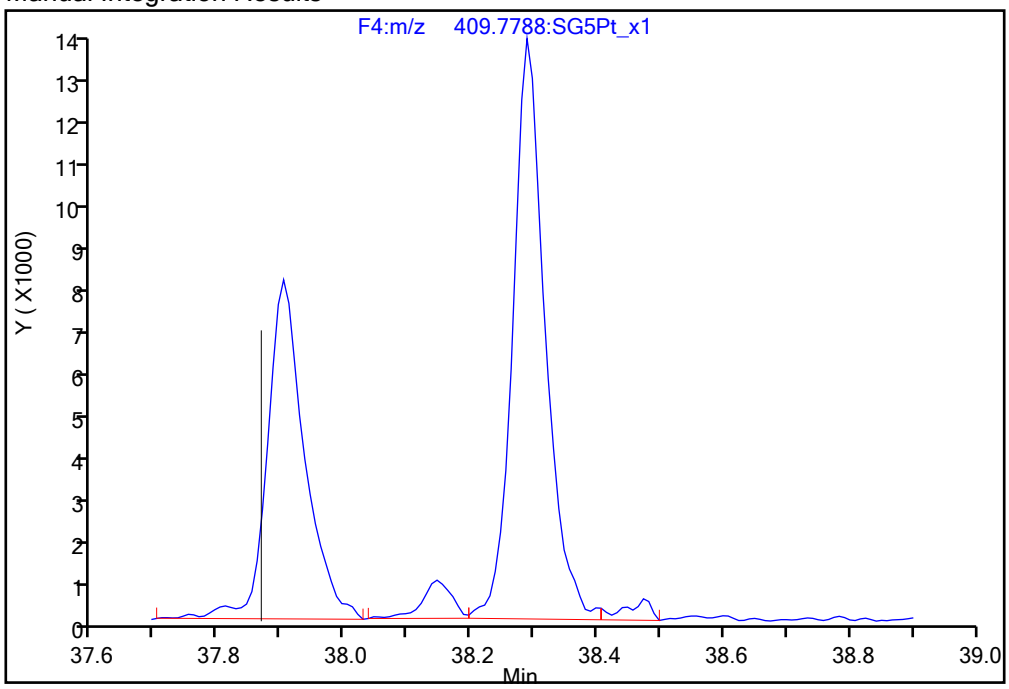
Processing Integration Results

RT = 38.288 Area = 51213



Manual Integration Results

RT = 38.288 Area = 49748 M



Reviewer: dadunj, 17-Dec-2019 09:38:58

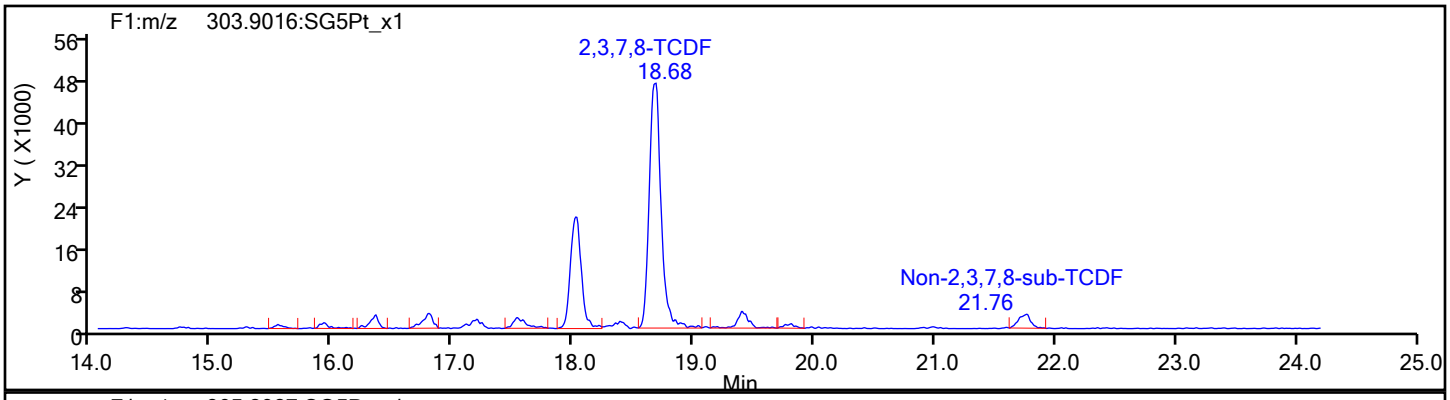
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

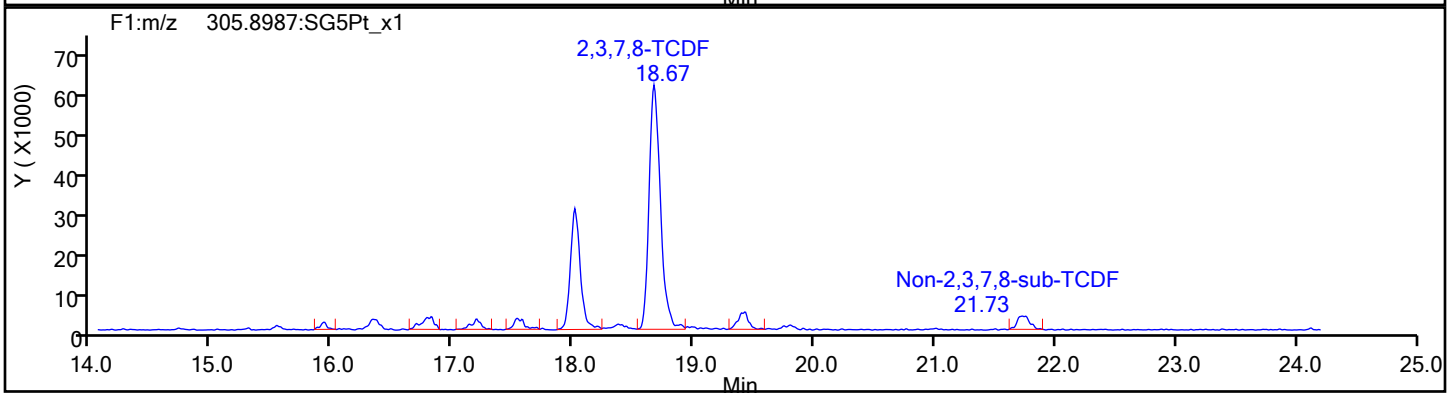
Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

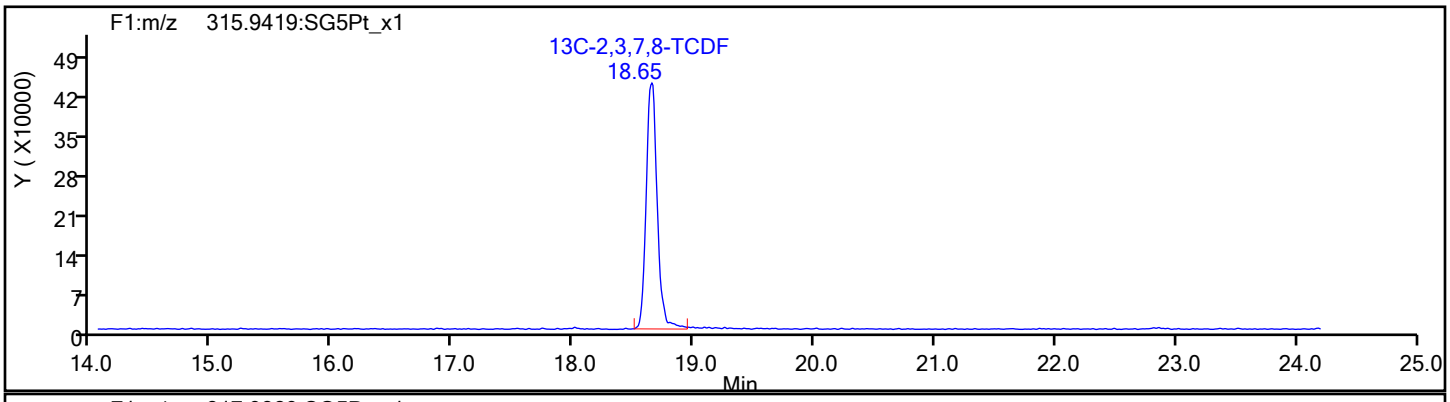
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

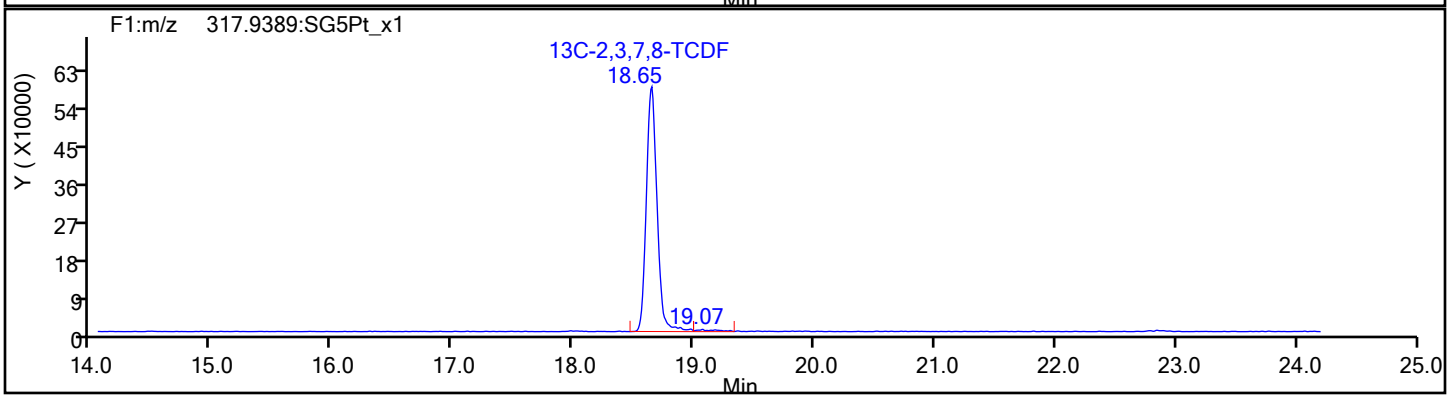
TCDF





TCDF Standards





Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
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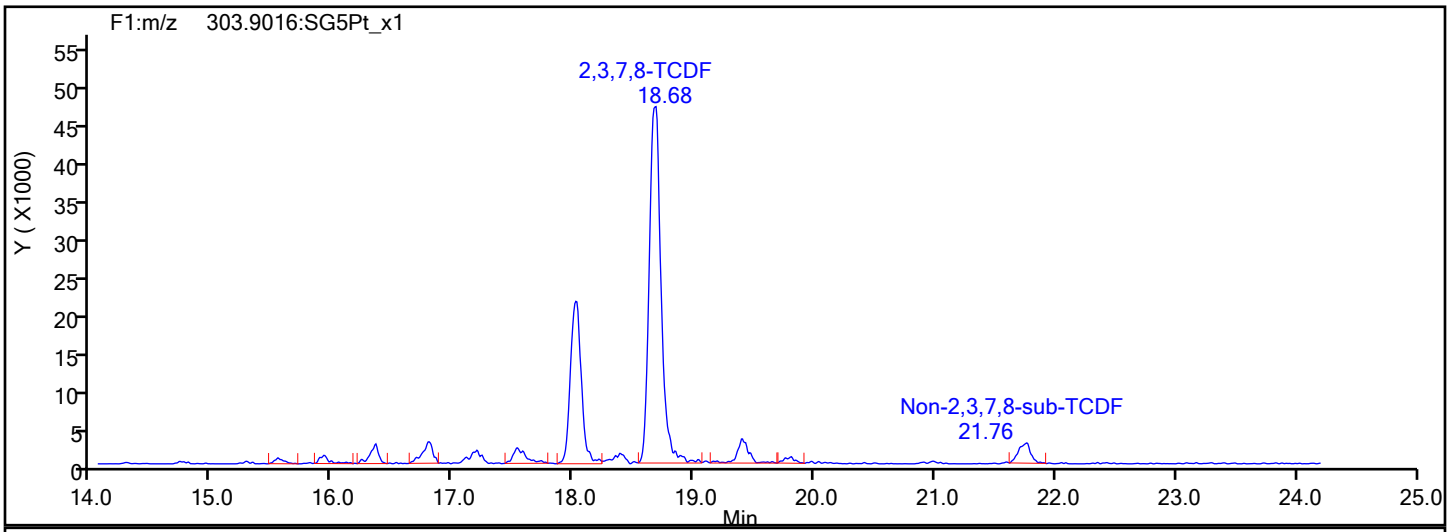
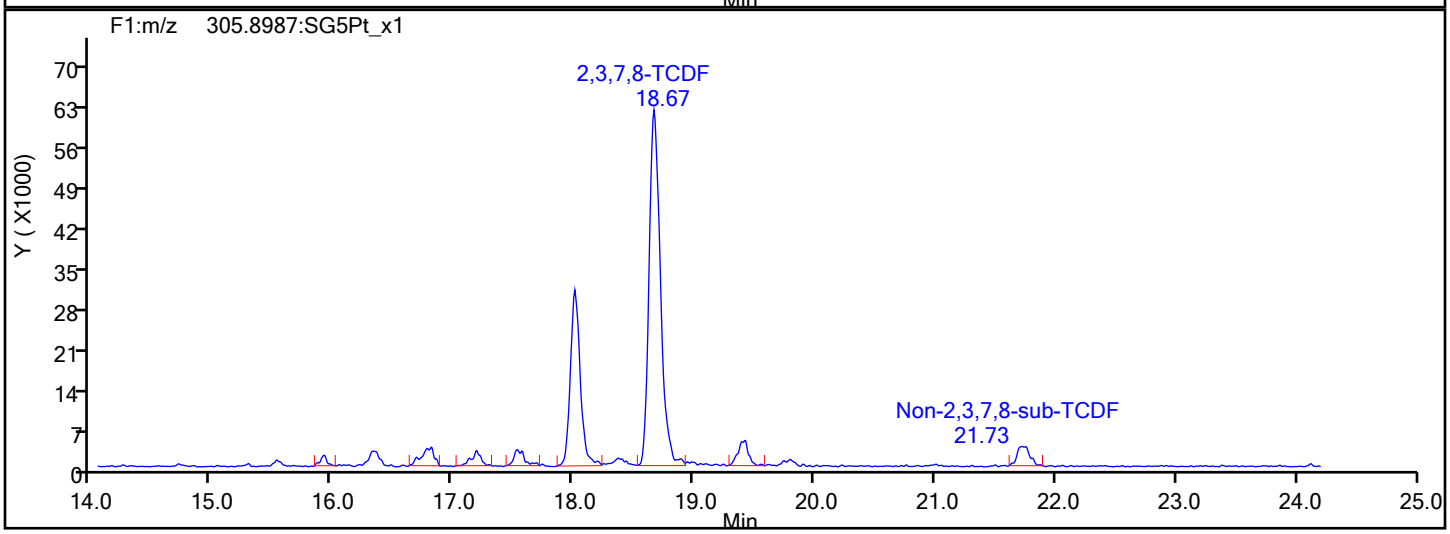
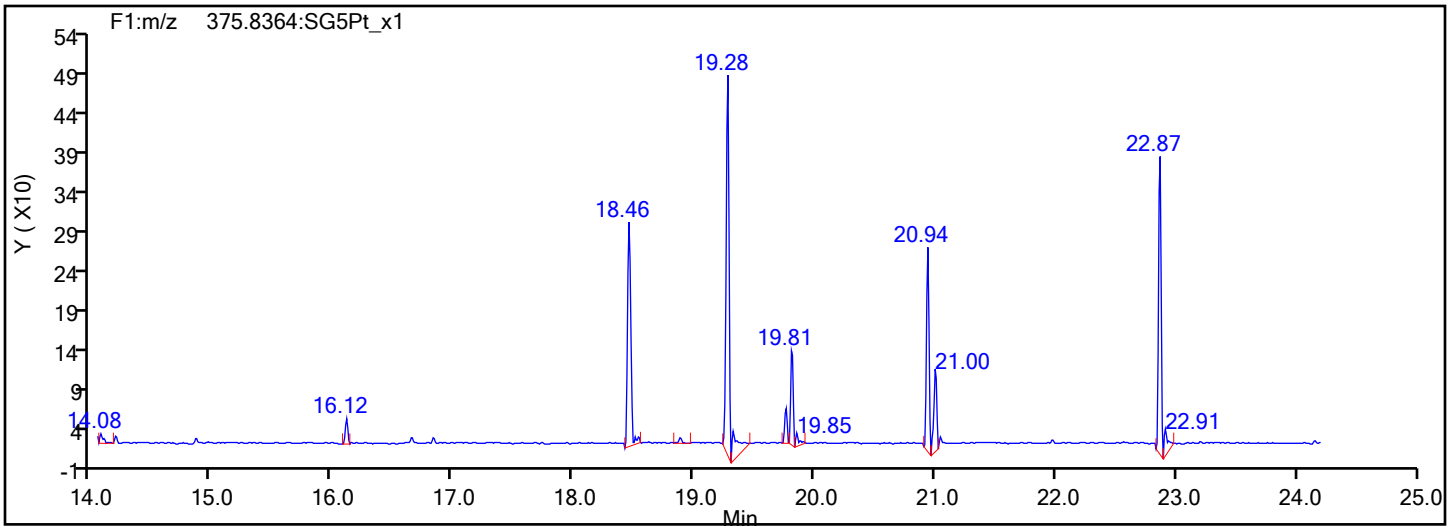
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

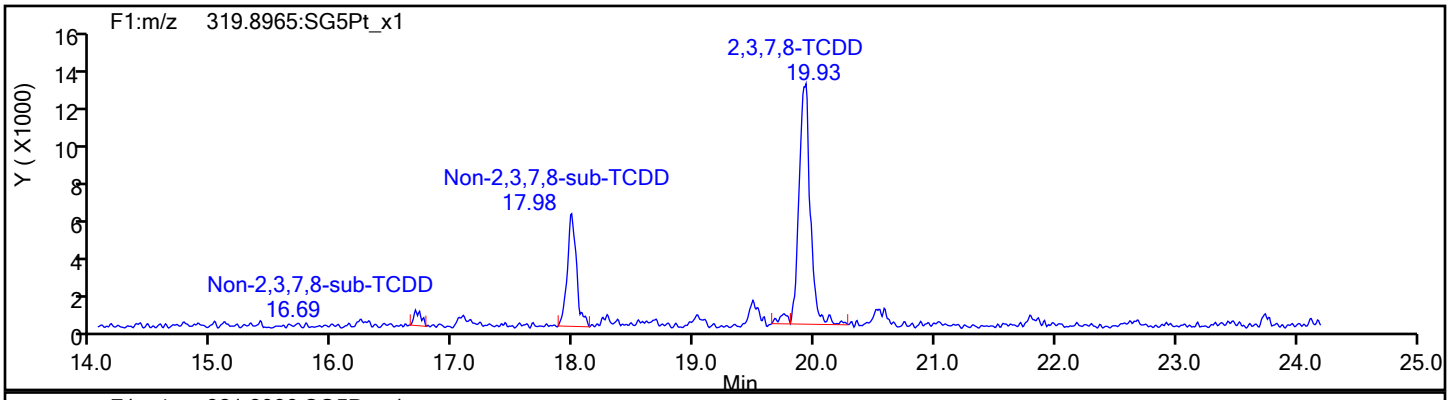


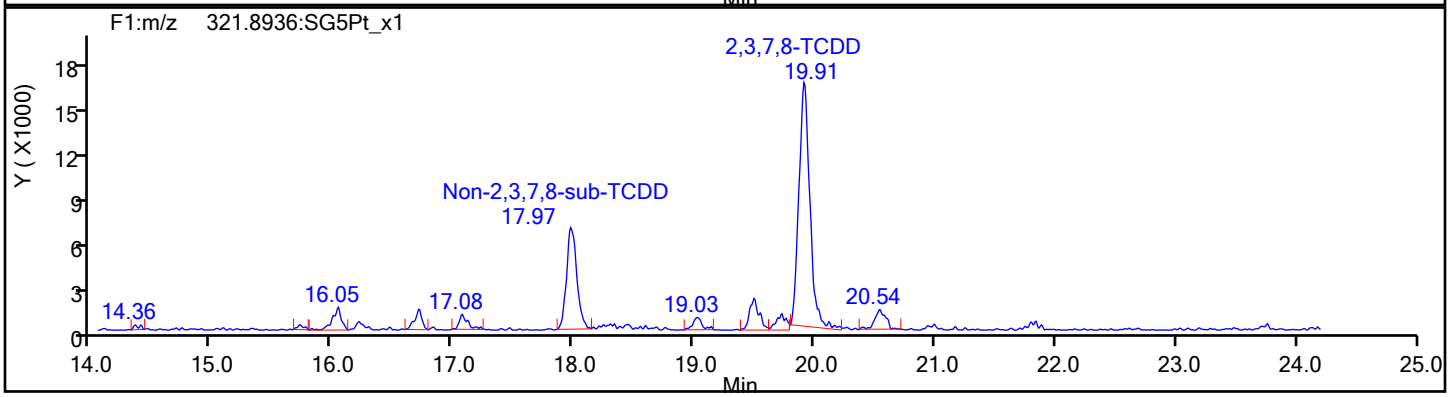
Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

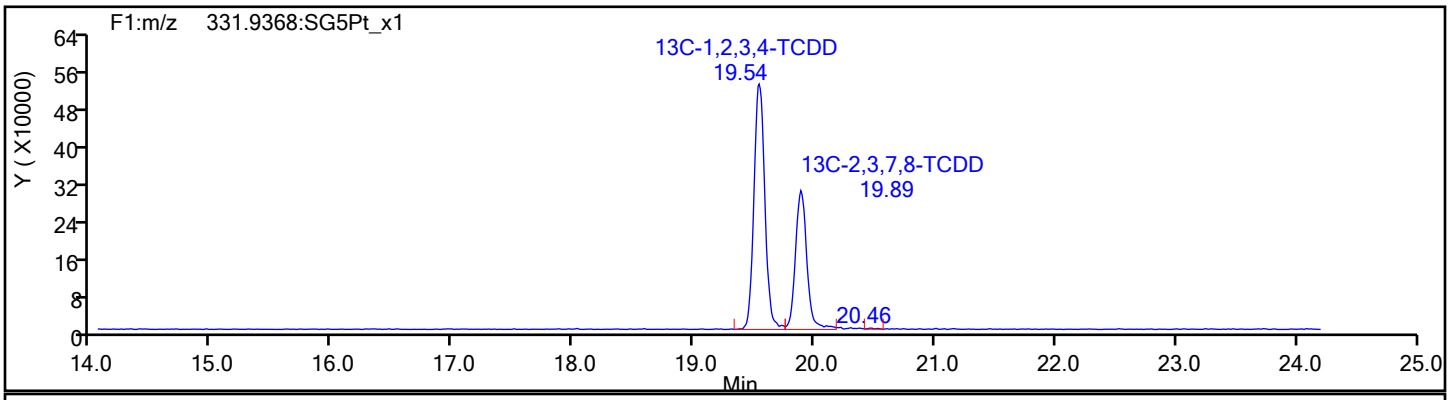
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

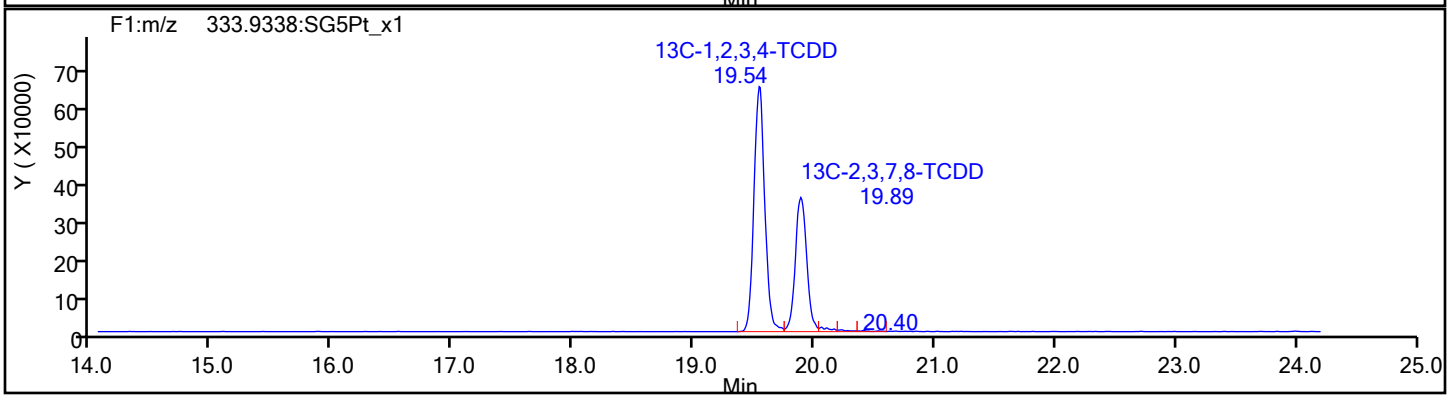
TCDD





TCDD Standards





Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
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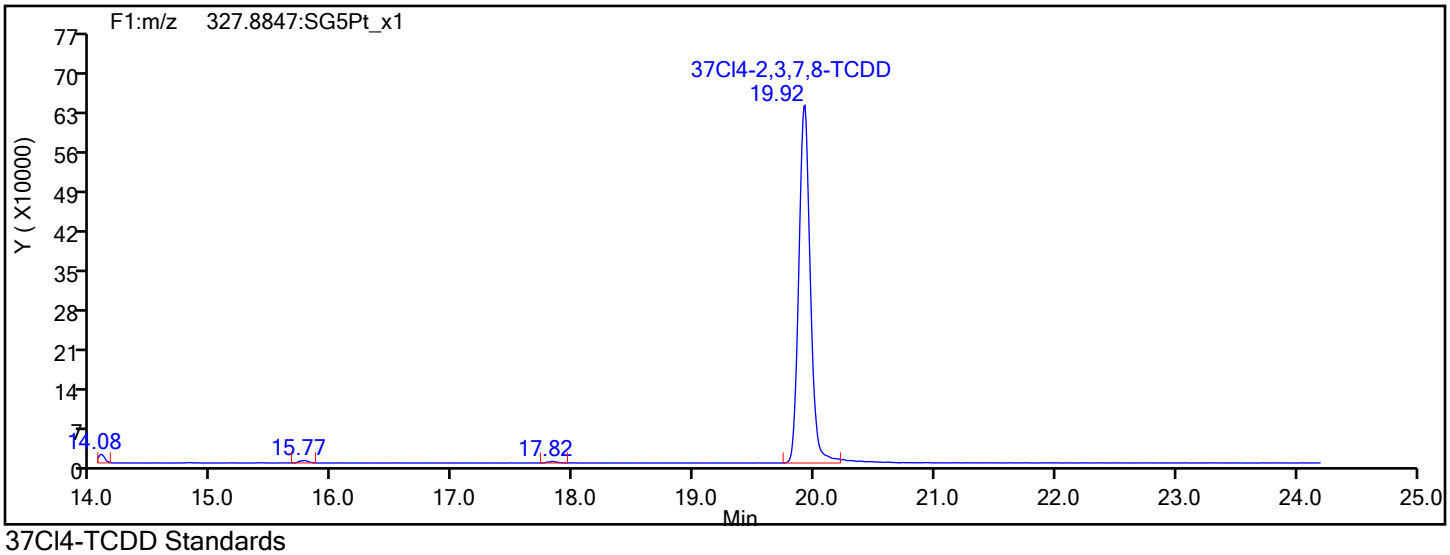
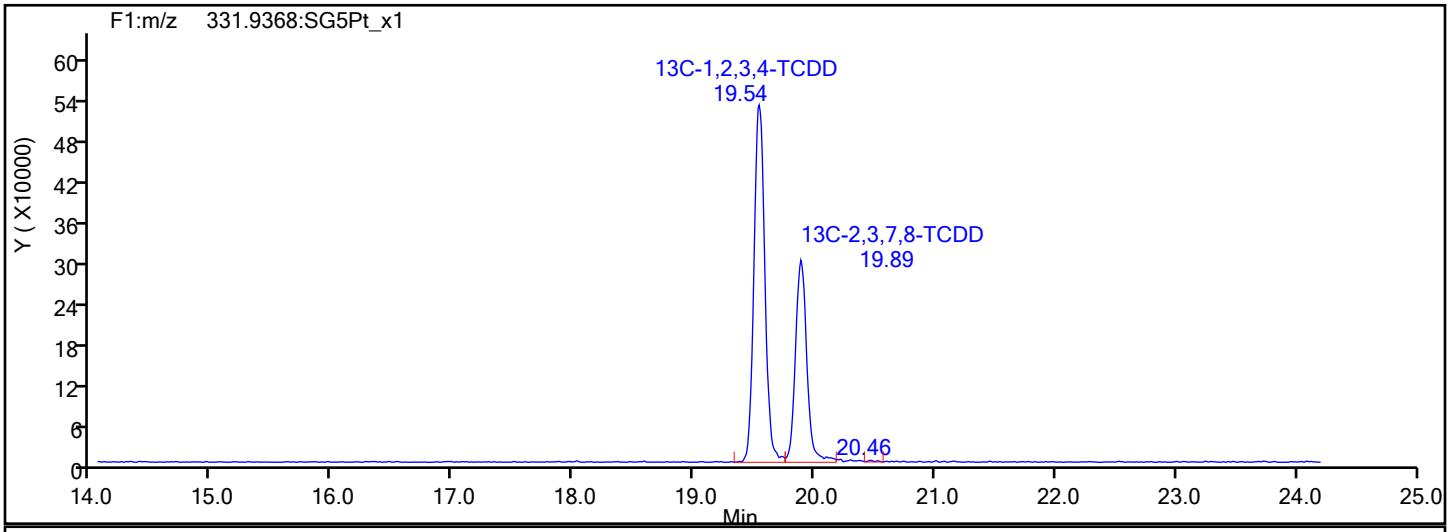
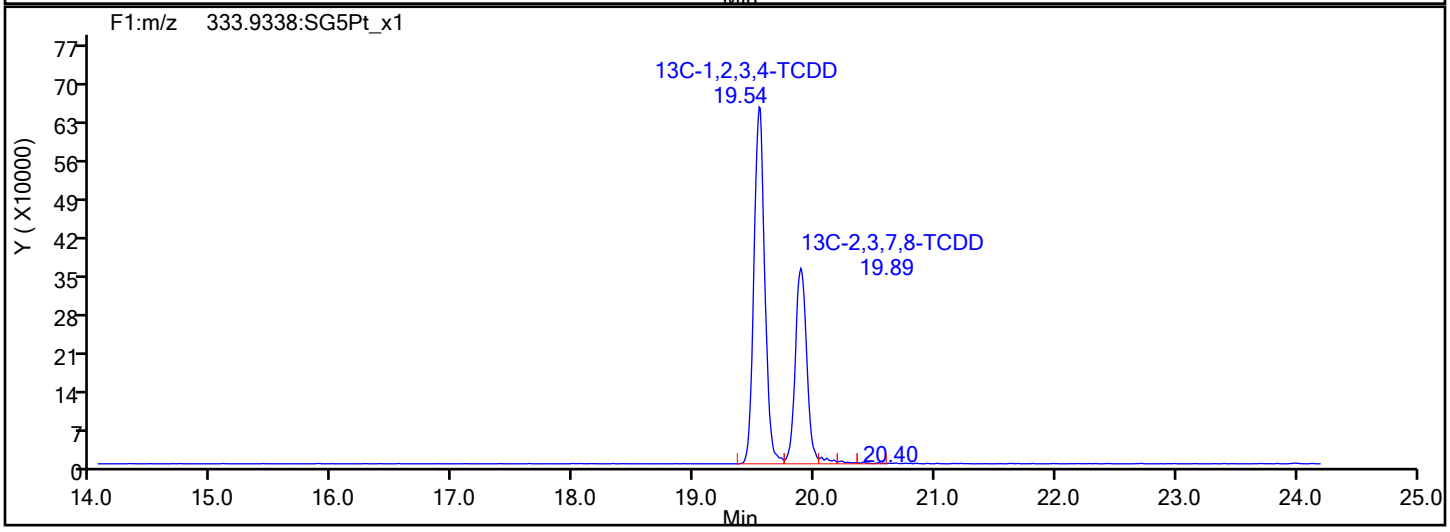
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



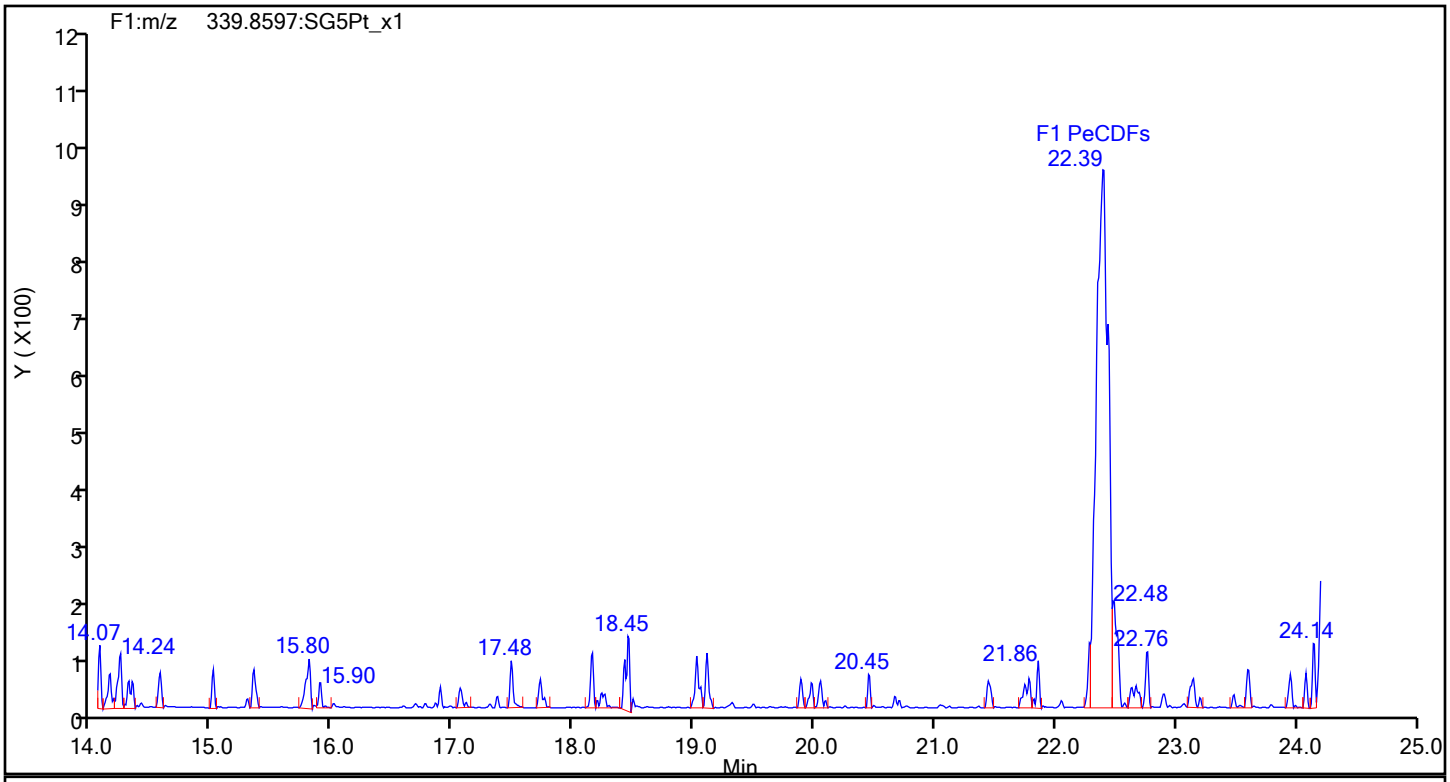


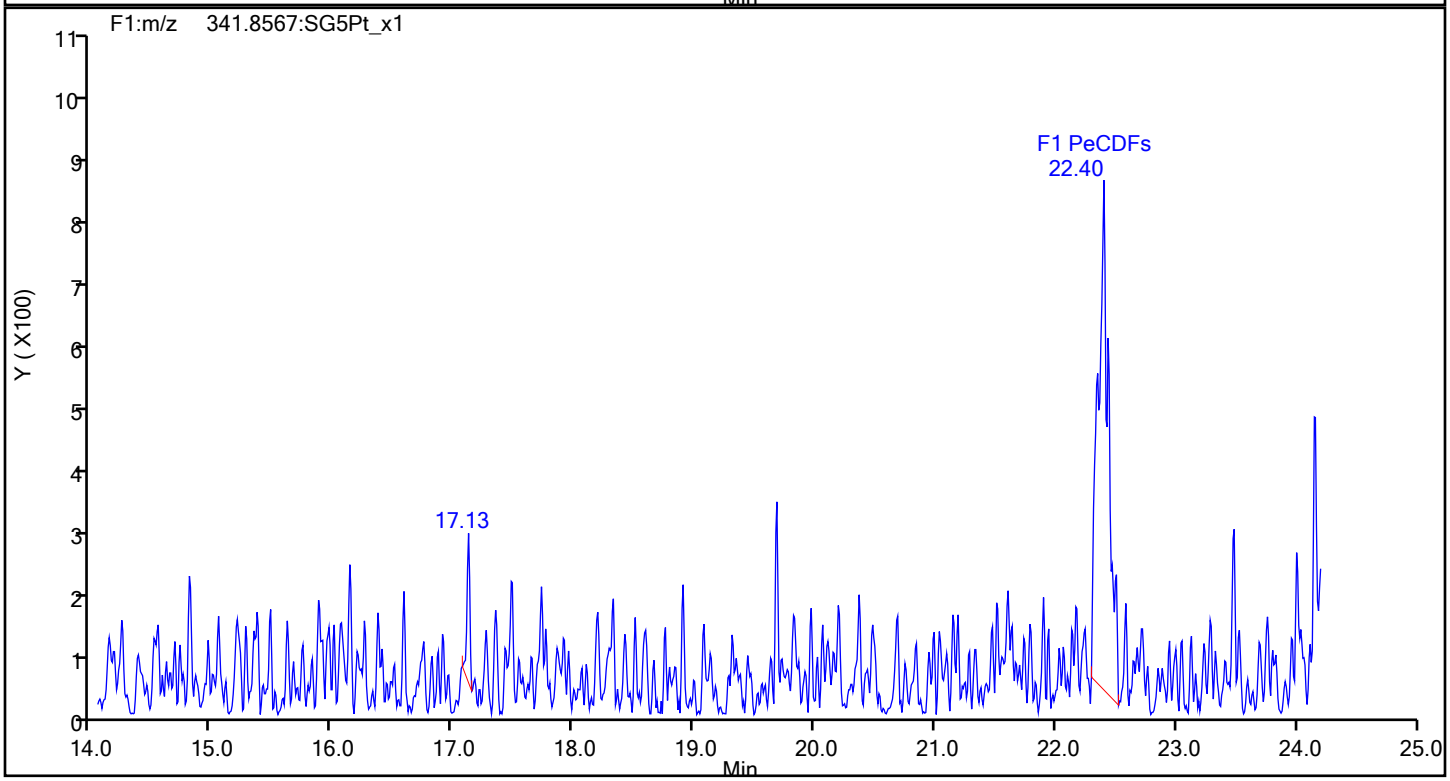
Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



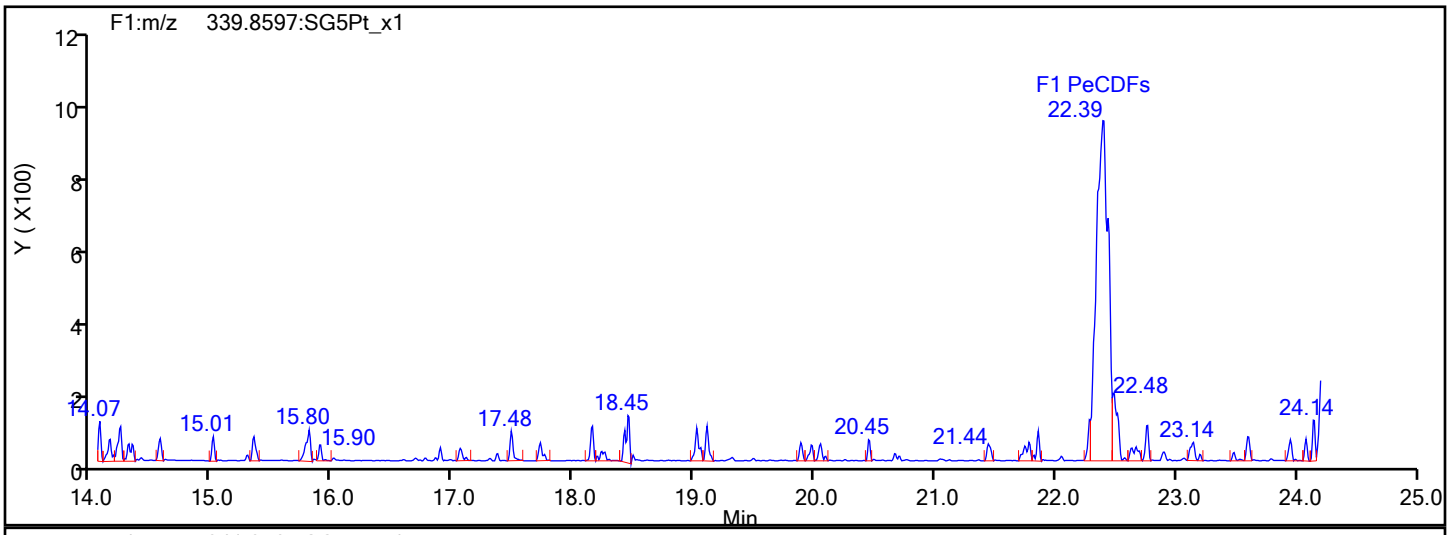


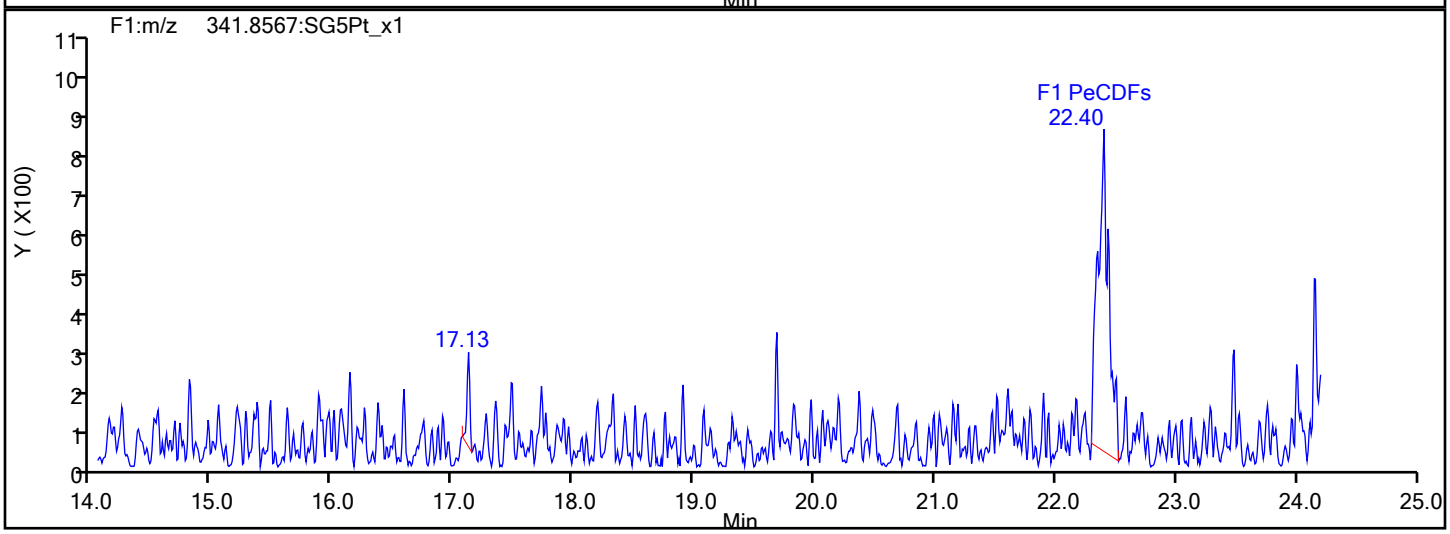
Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

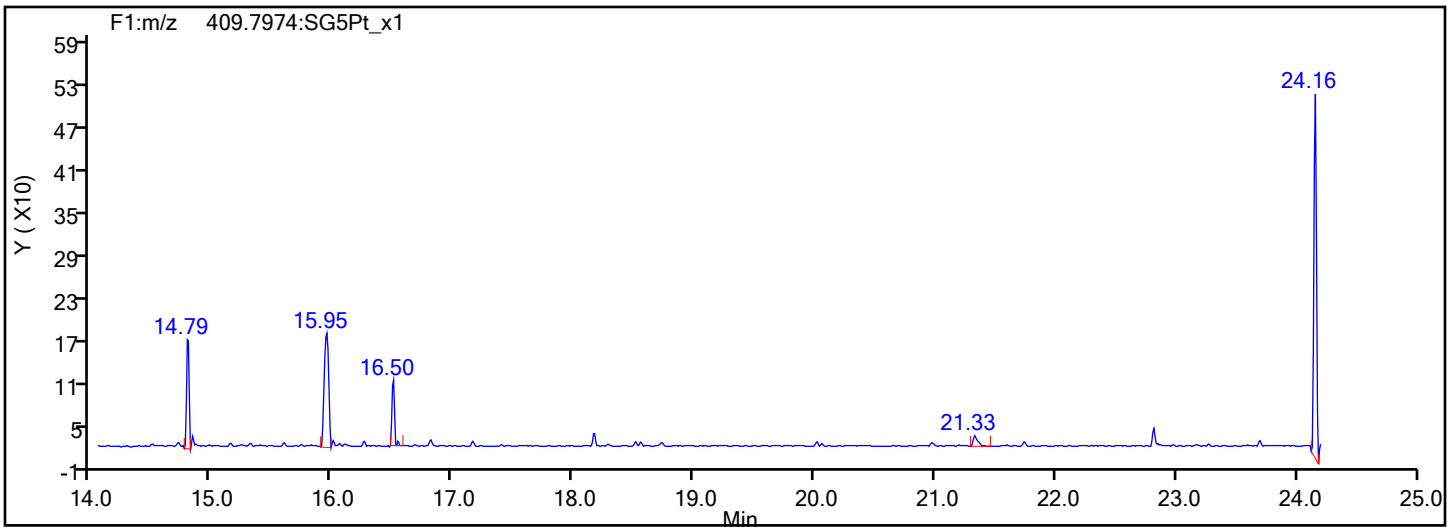
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

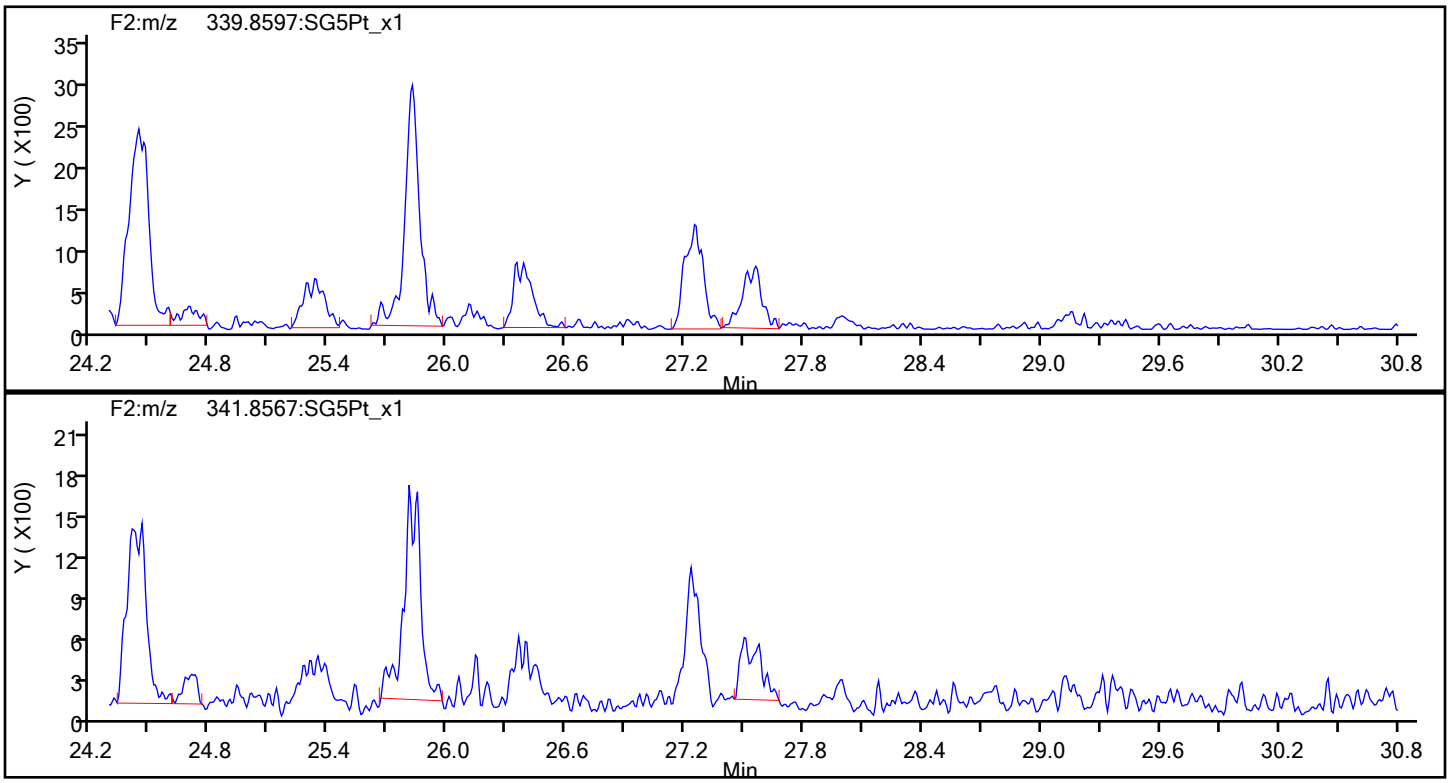


Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

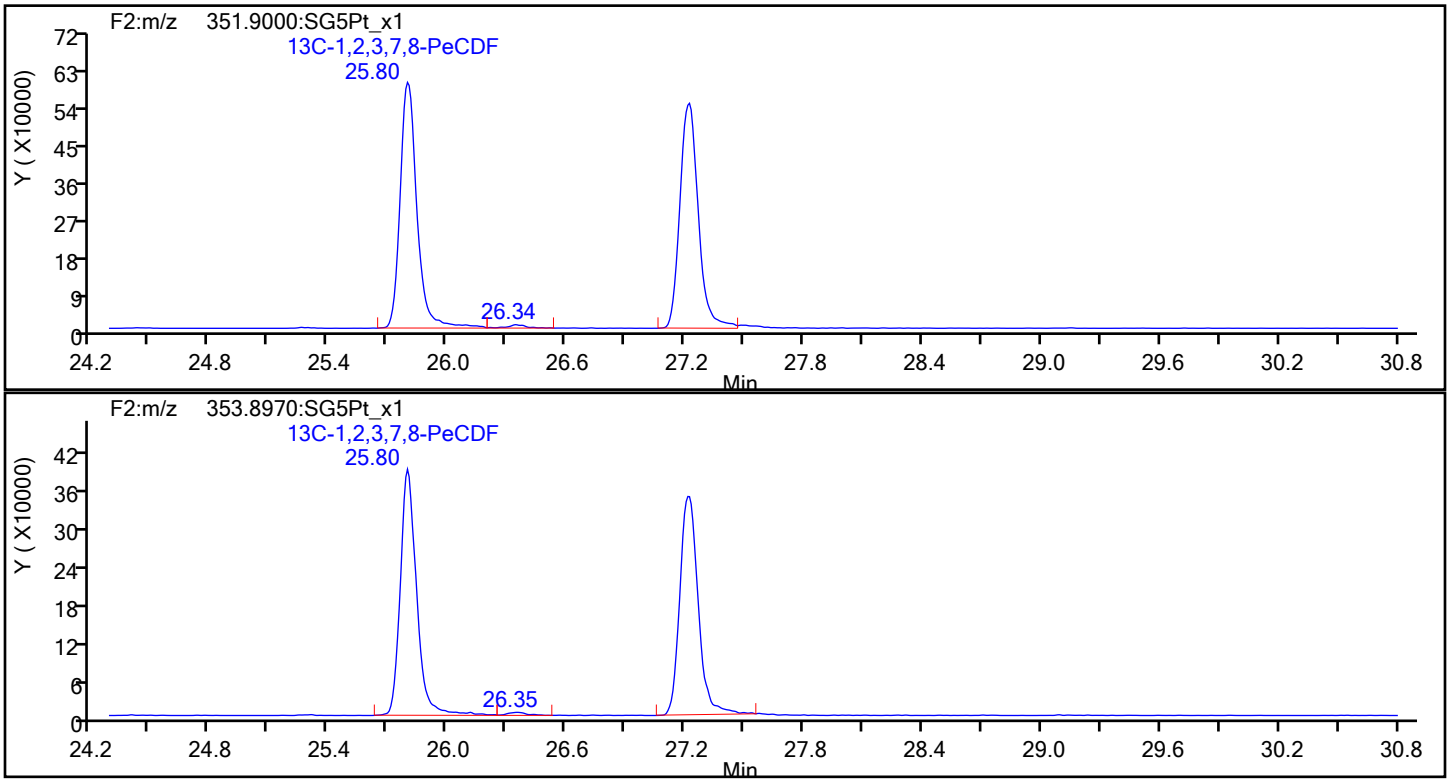
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

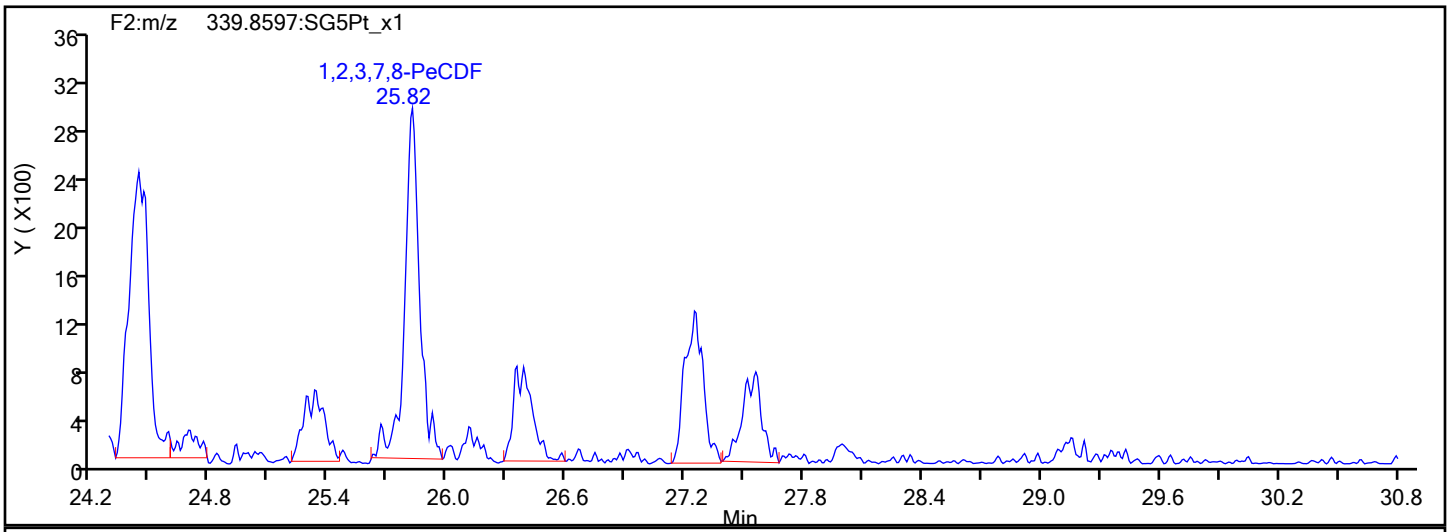


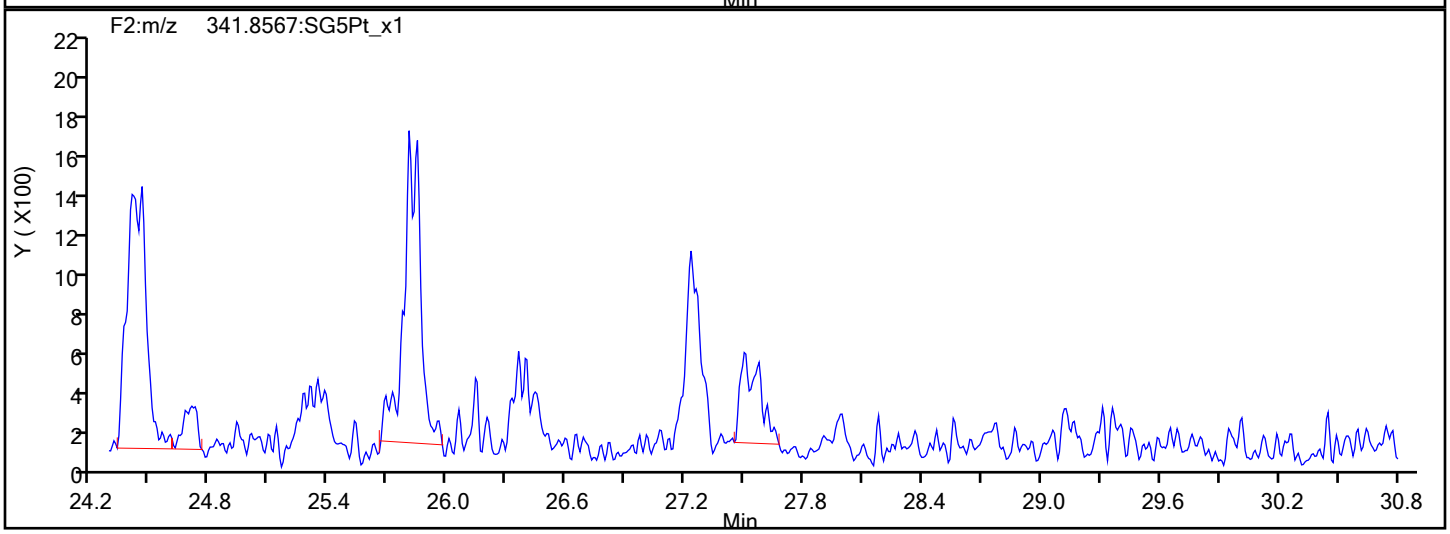
Report Date: 17-Dec-2019 09:40:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

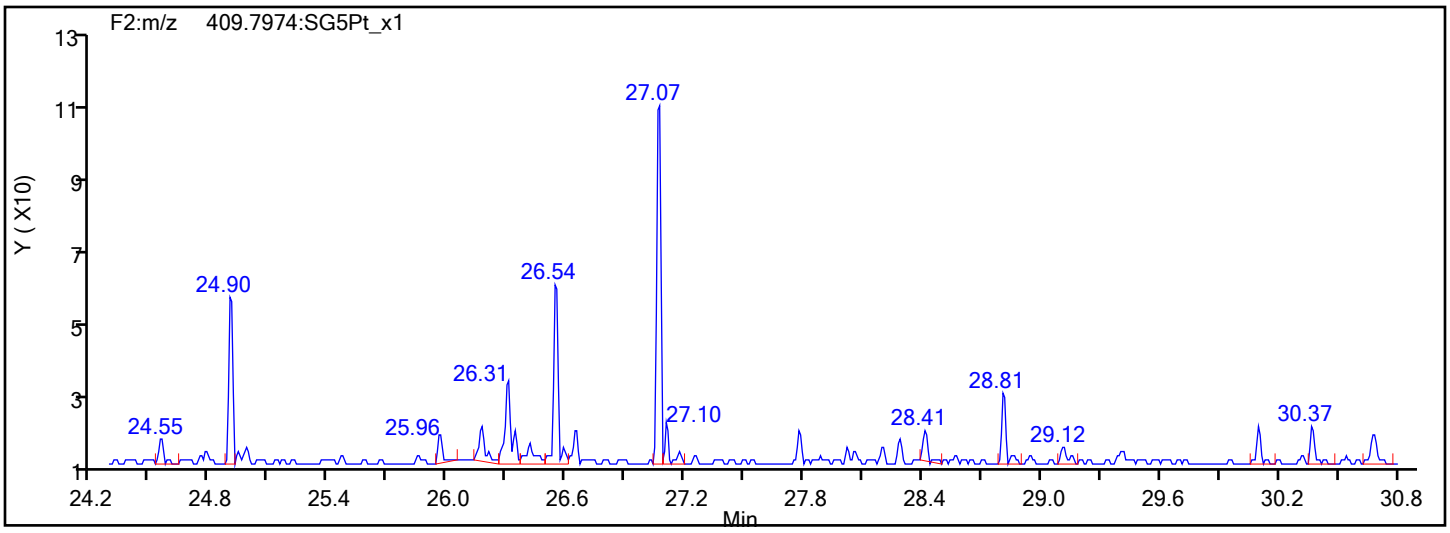
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
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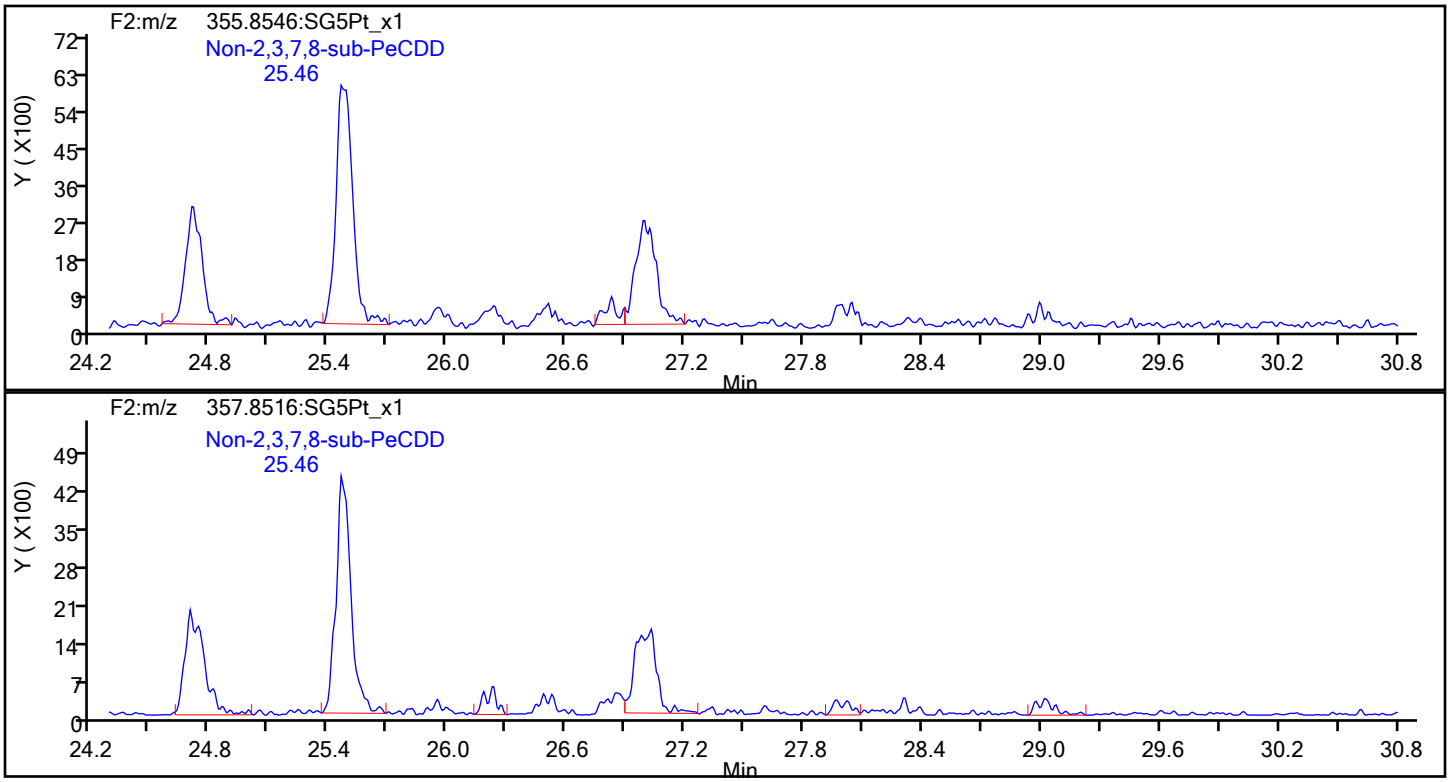
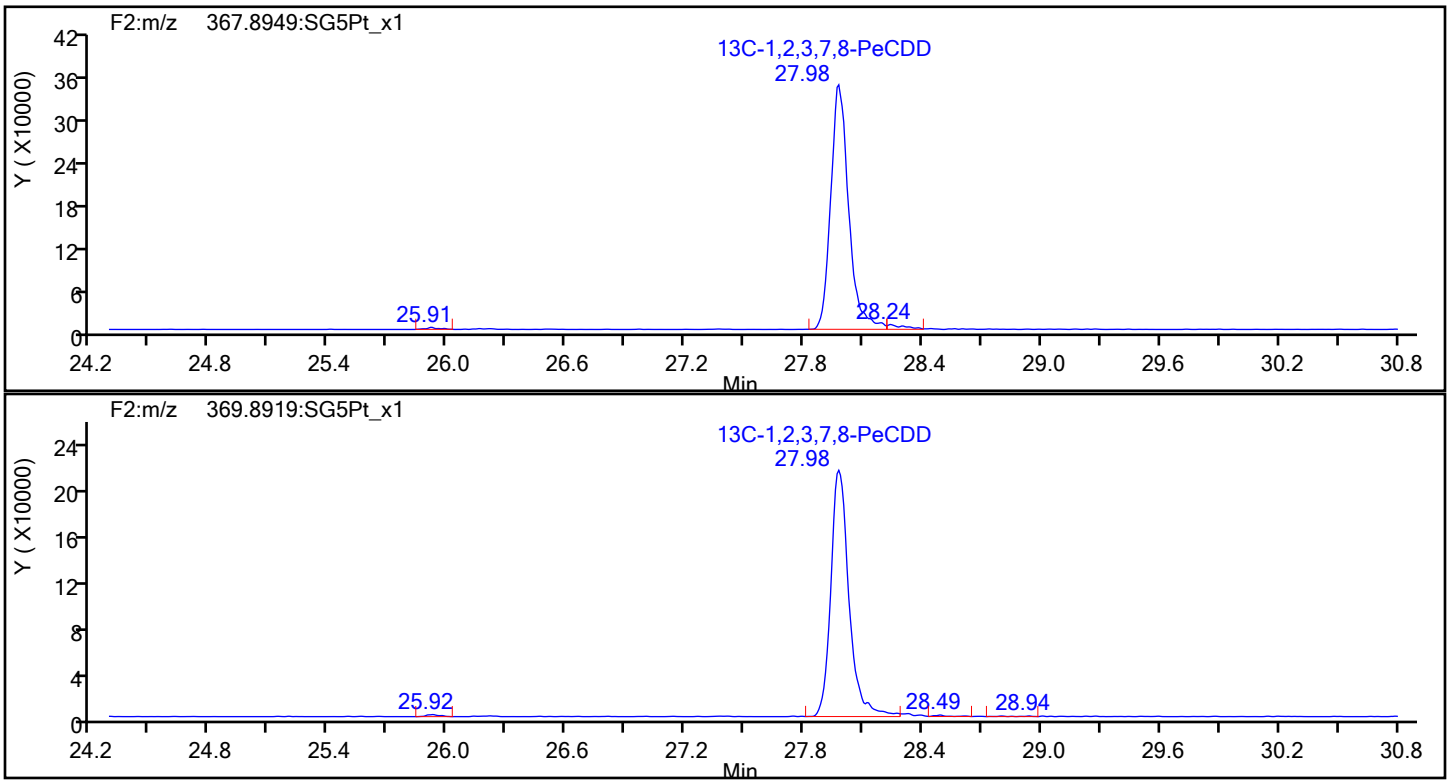
PeCDD



PeCDD Standards

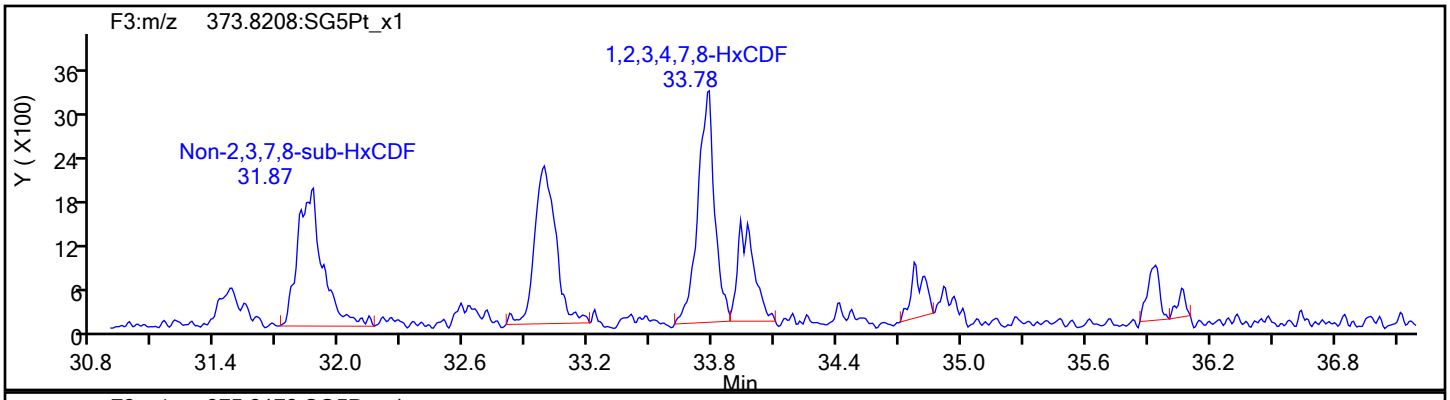


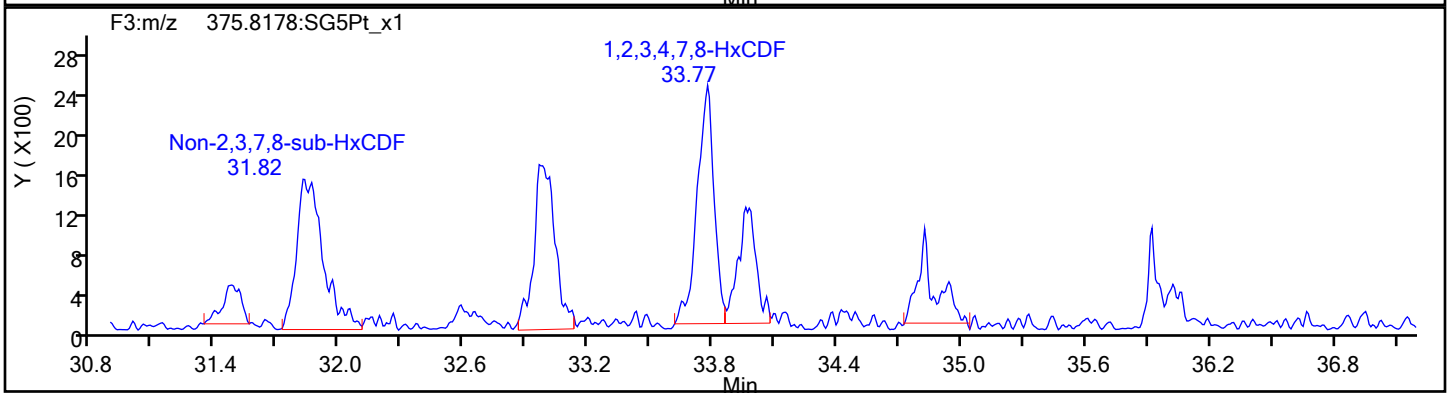
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

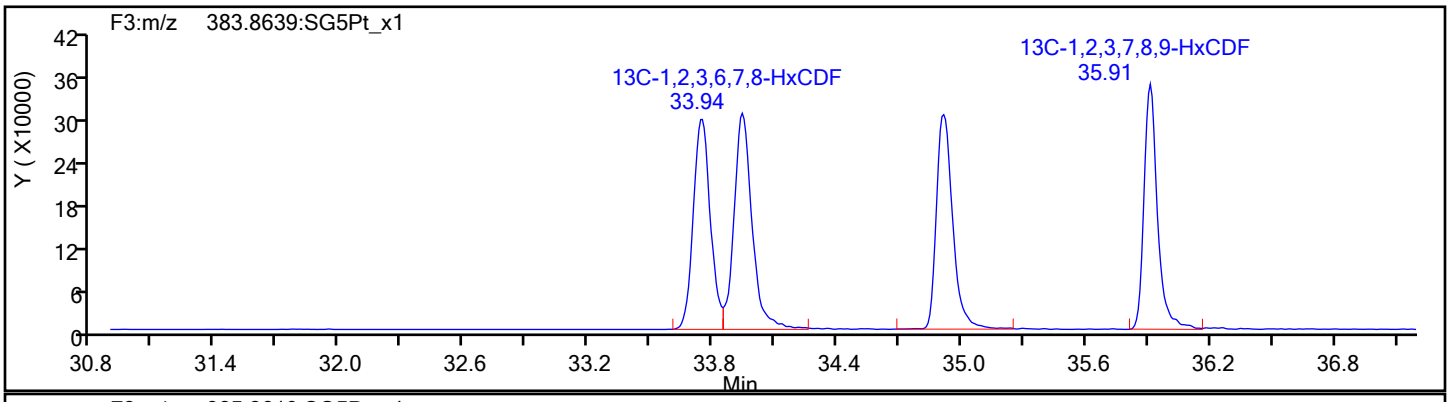
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

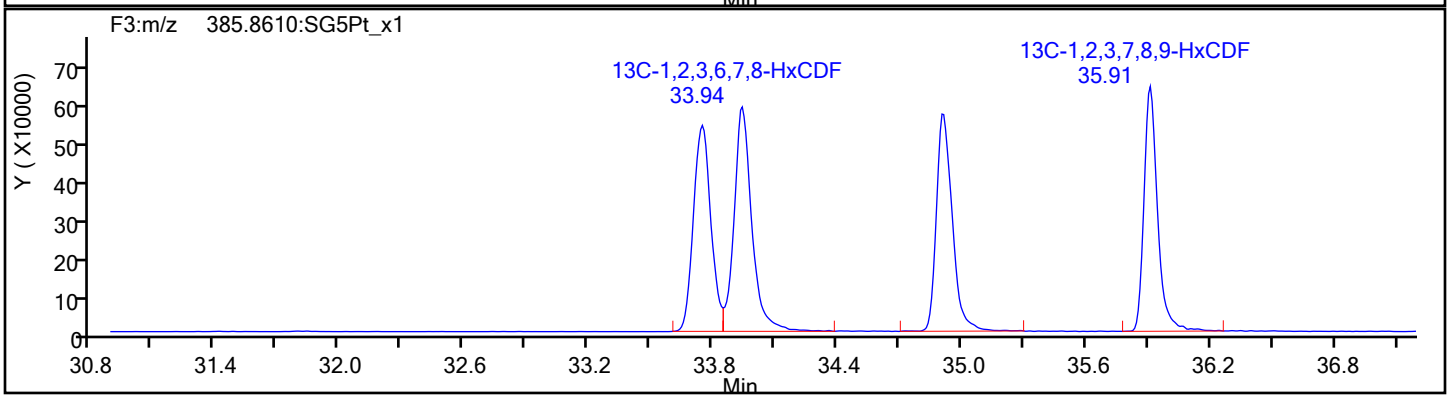
HxCDF





HxCDF Standards



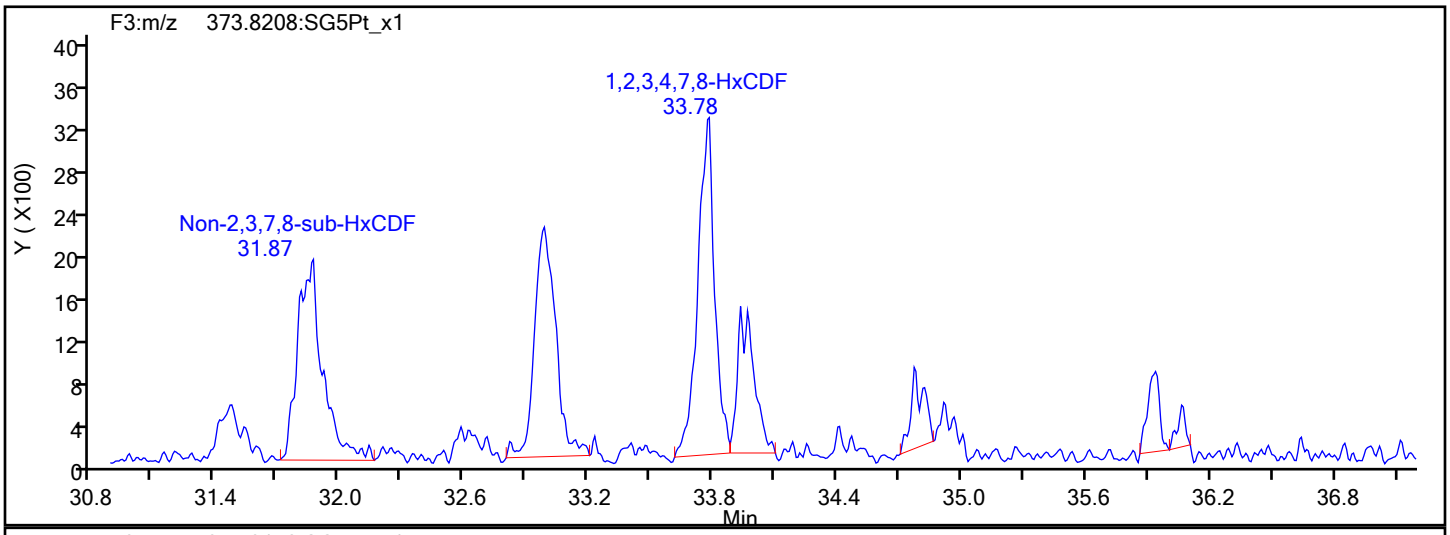


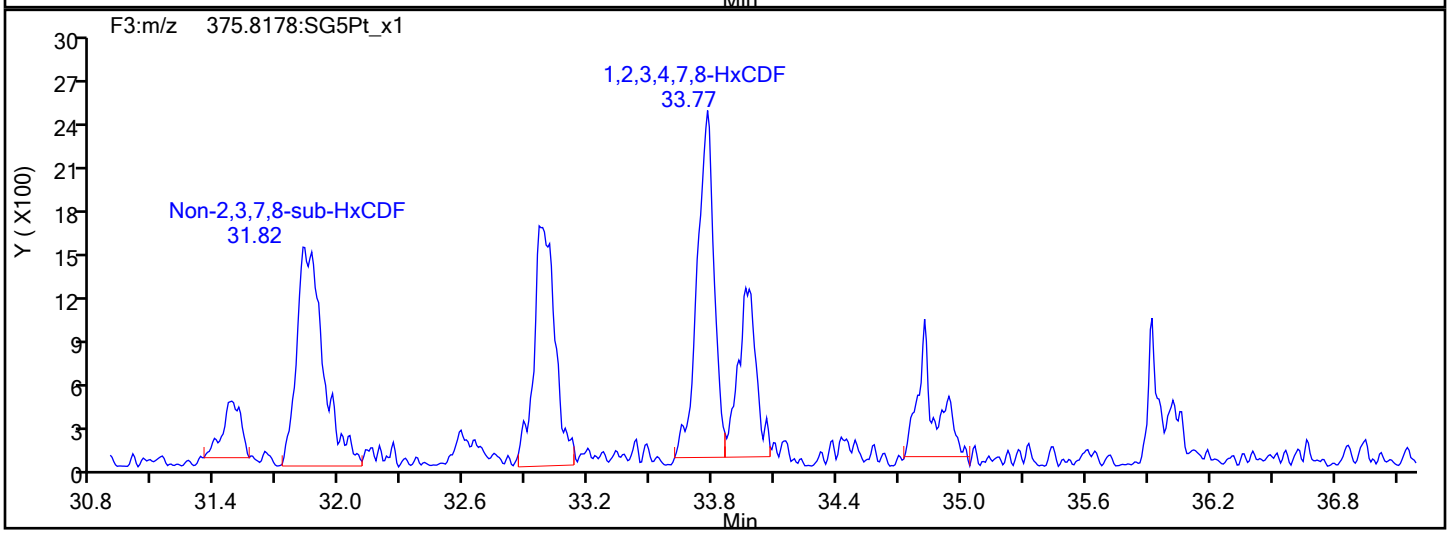
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

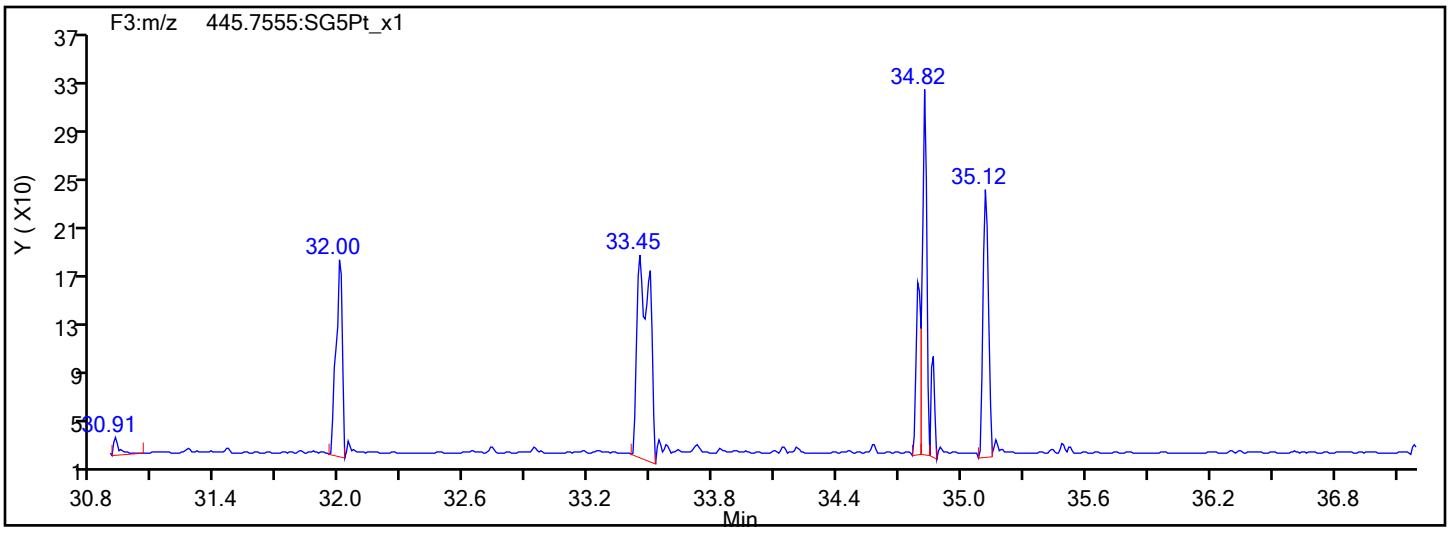
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

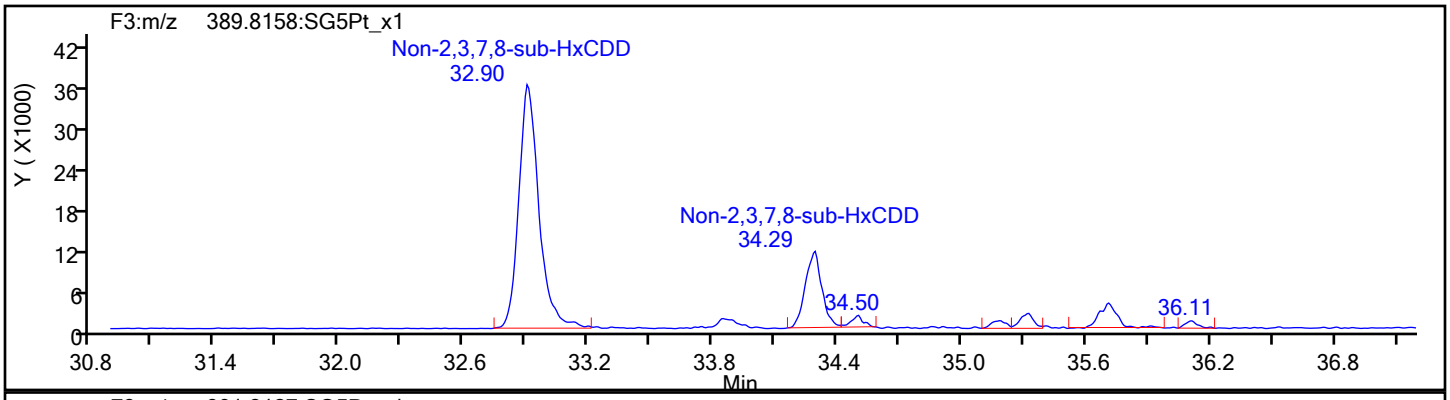


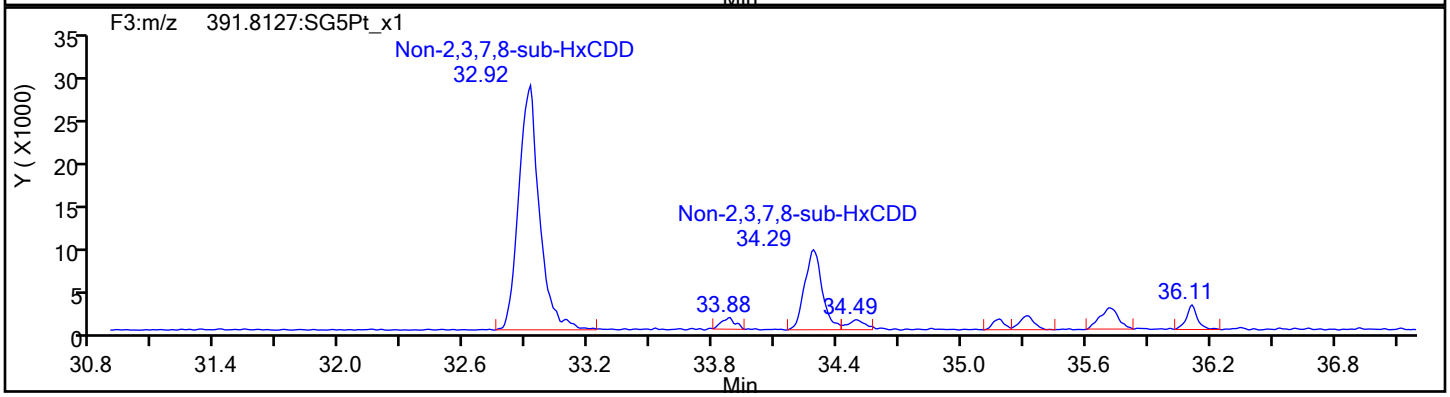
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

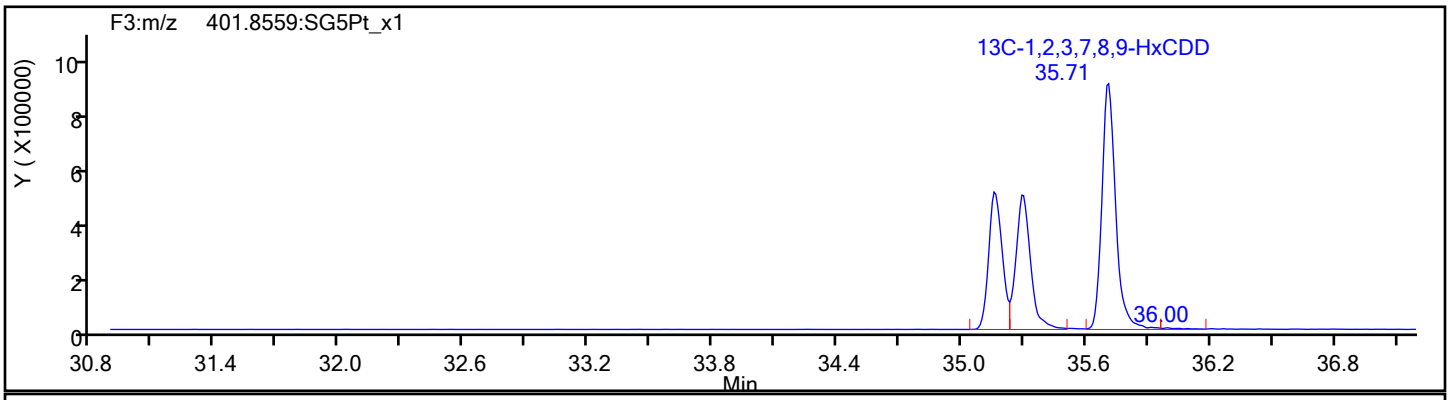
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

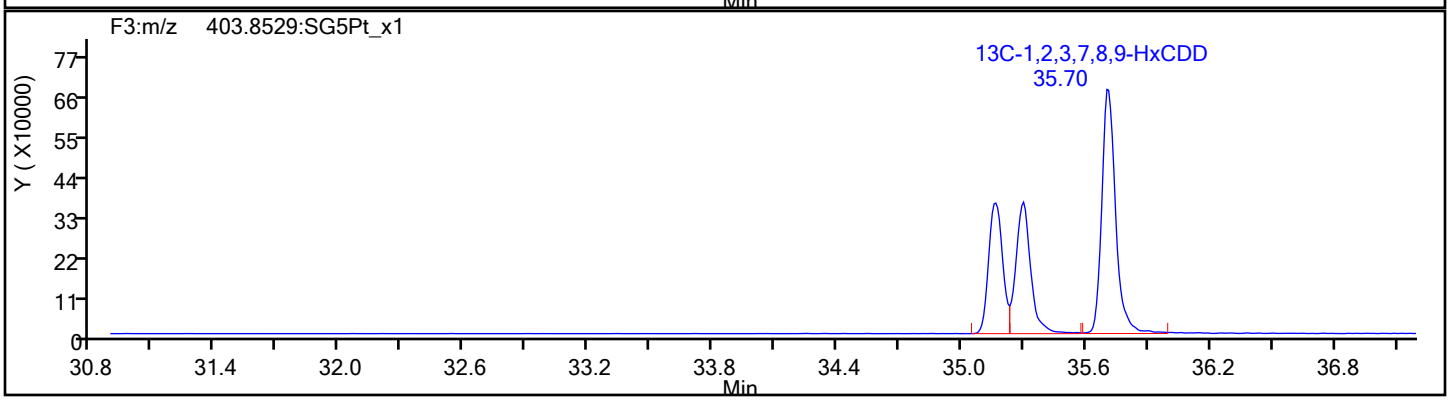
HxCDD





HxCDD Standards



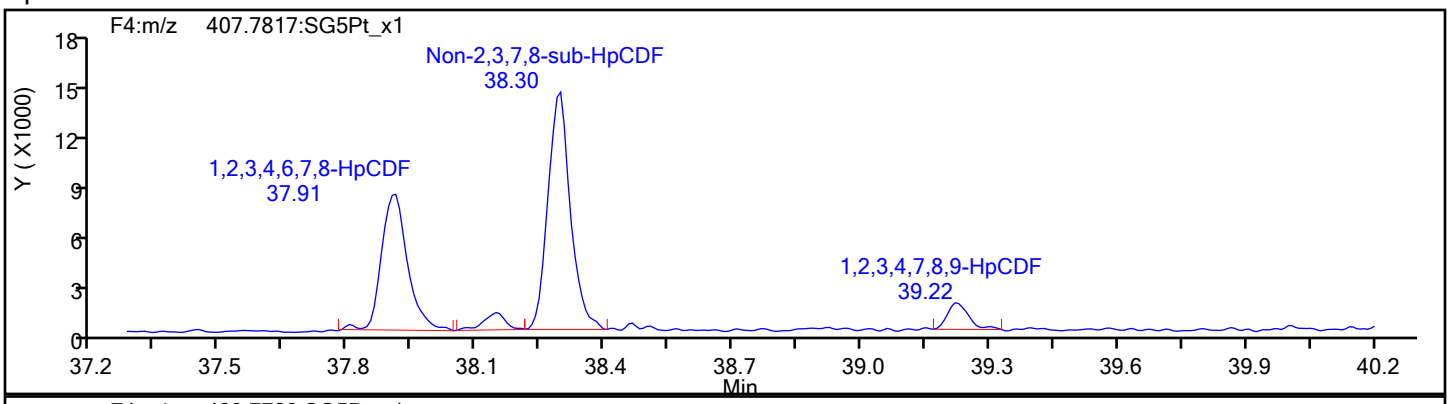


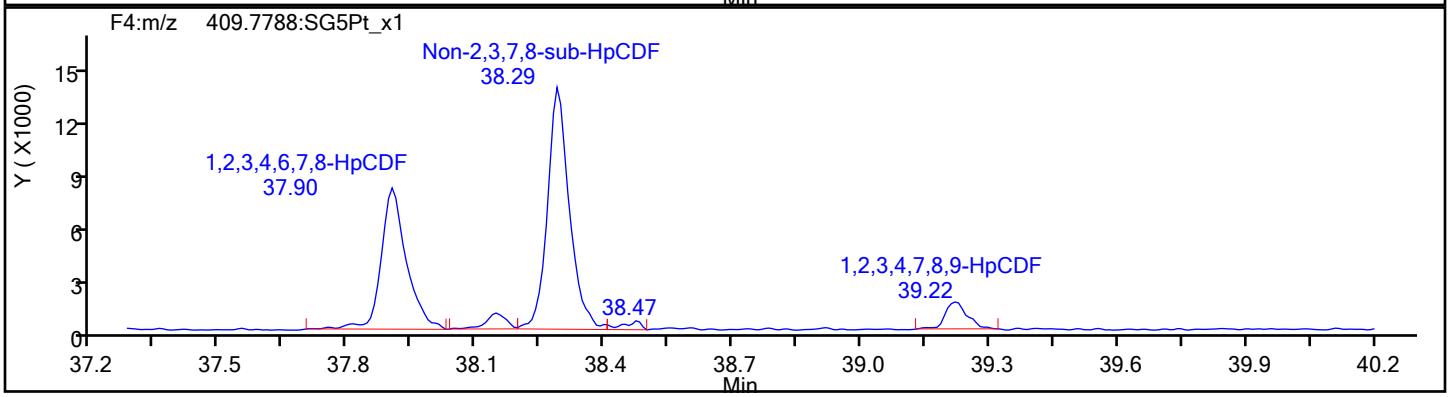
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

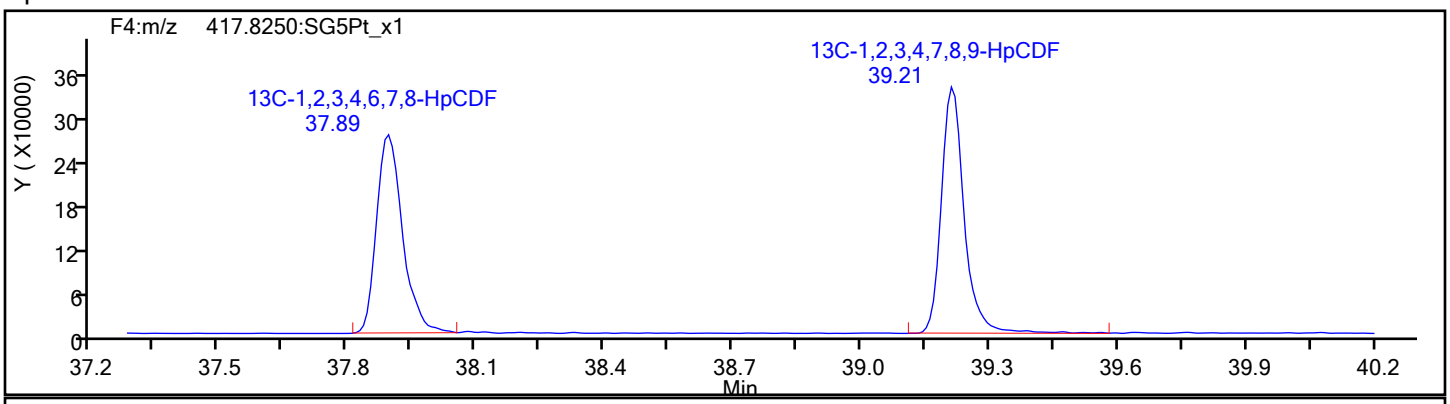
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

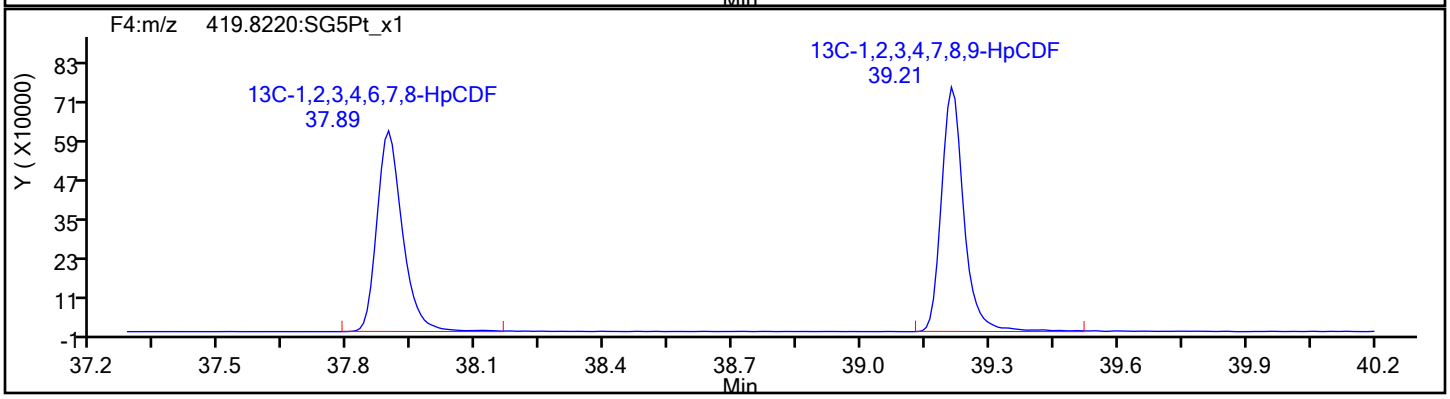
HpCDF





HpCDF Standards



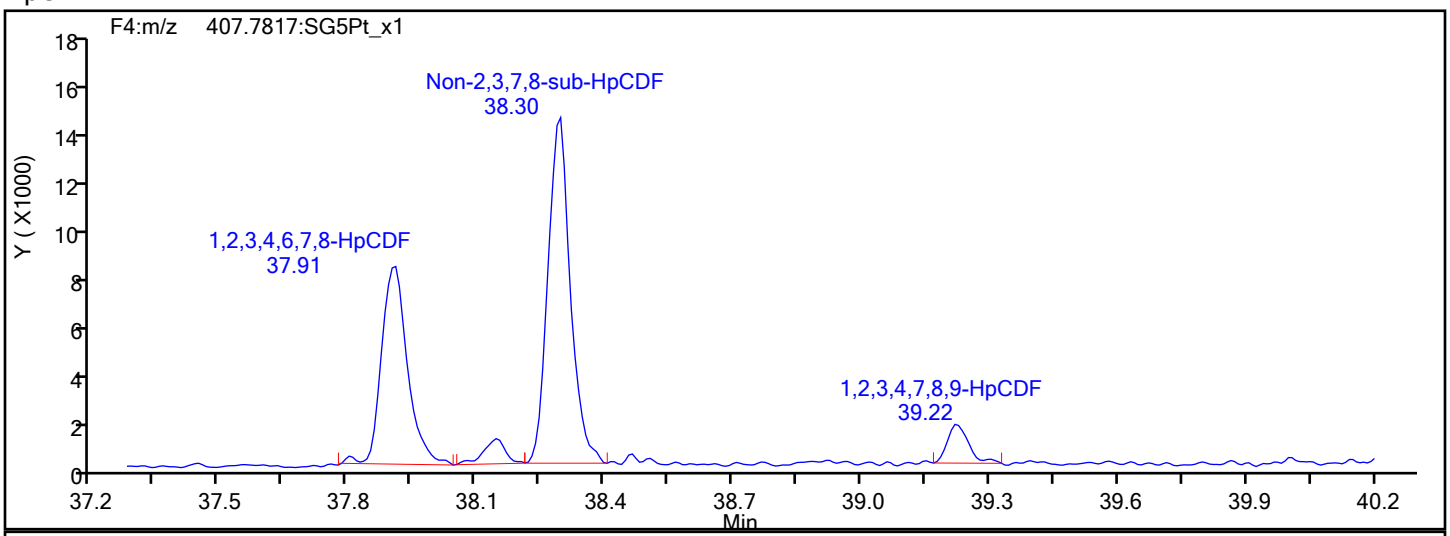


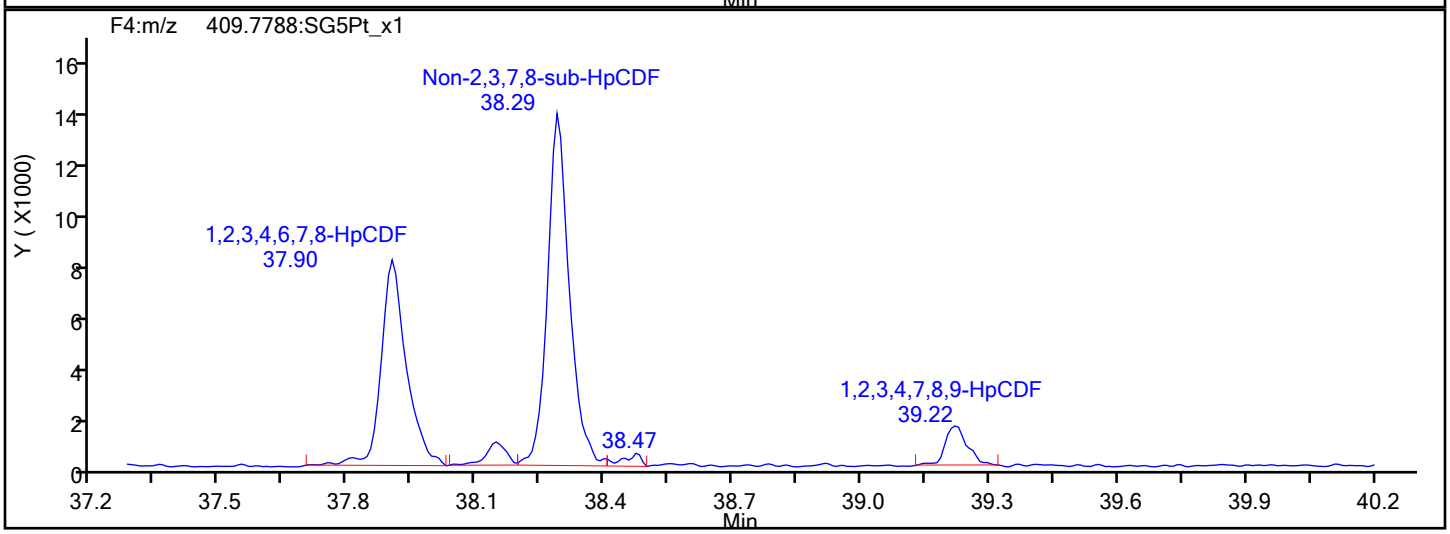
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

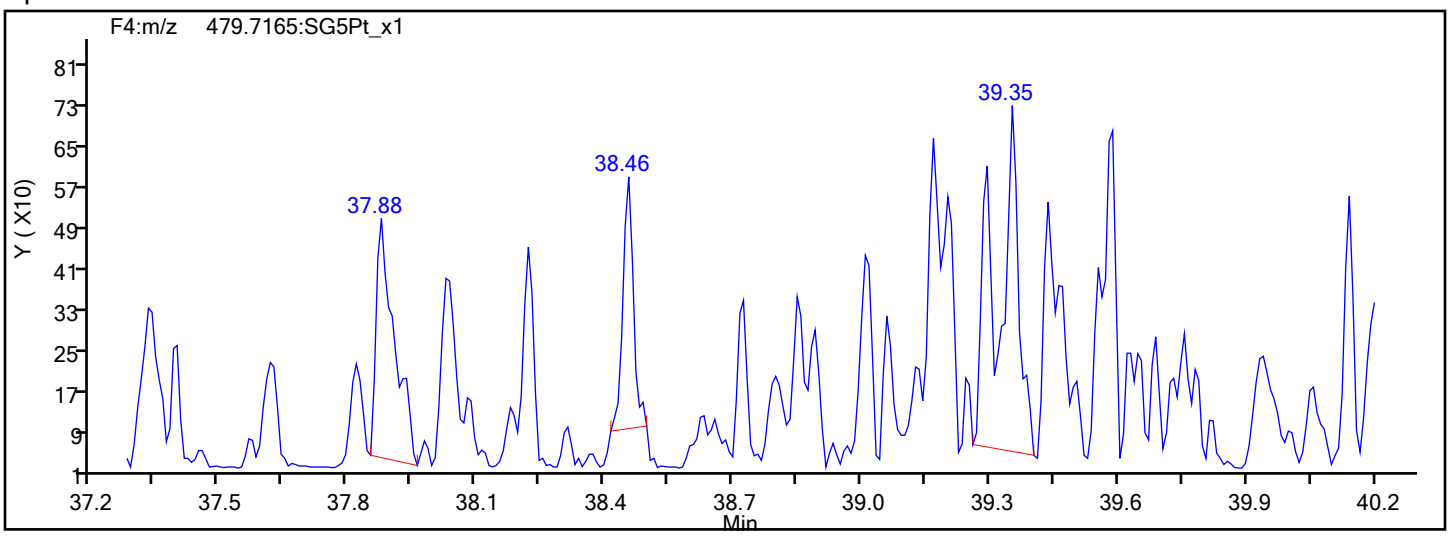
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

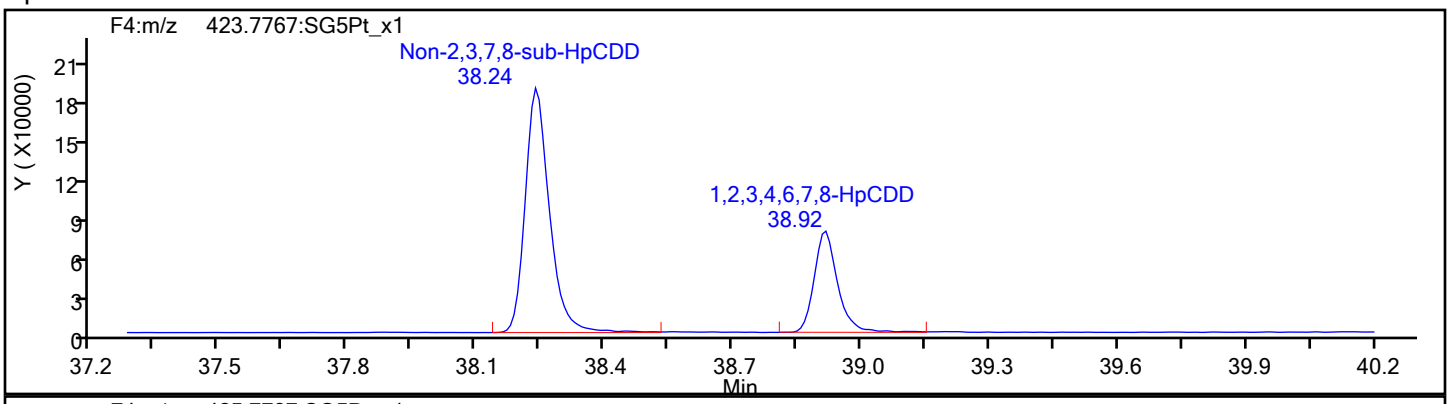


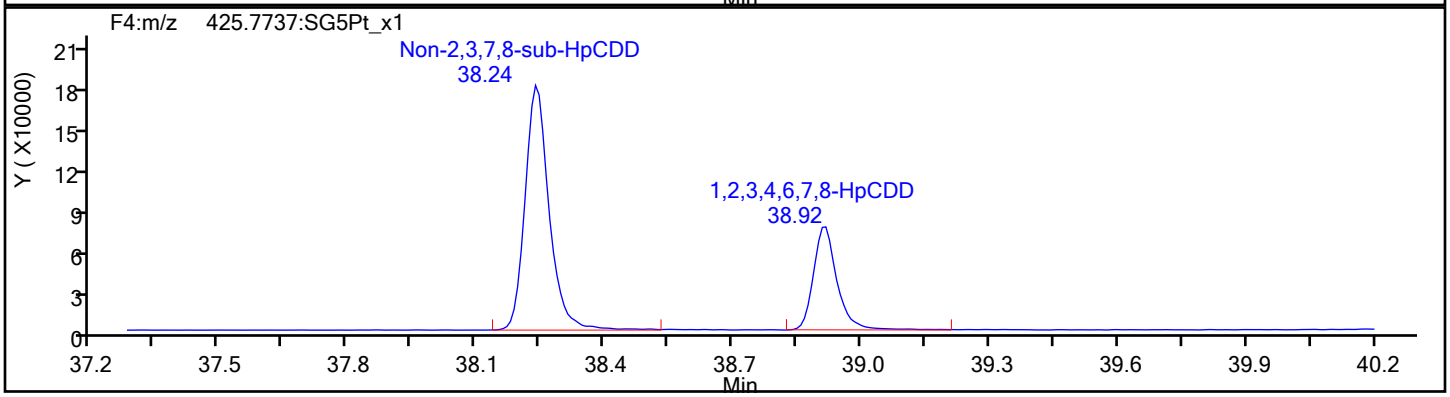
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

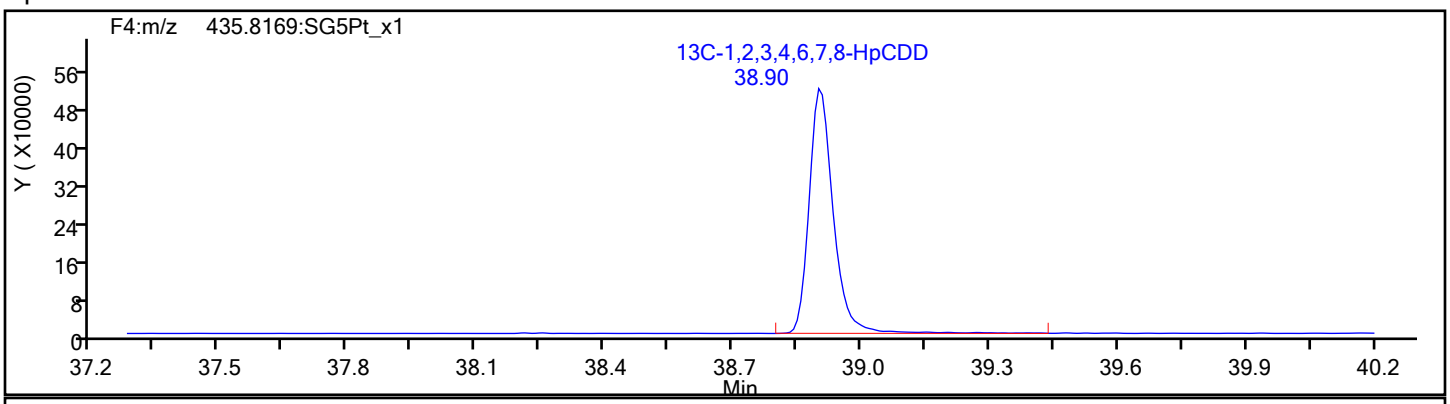
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

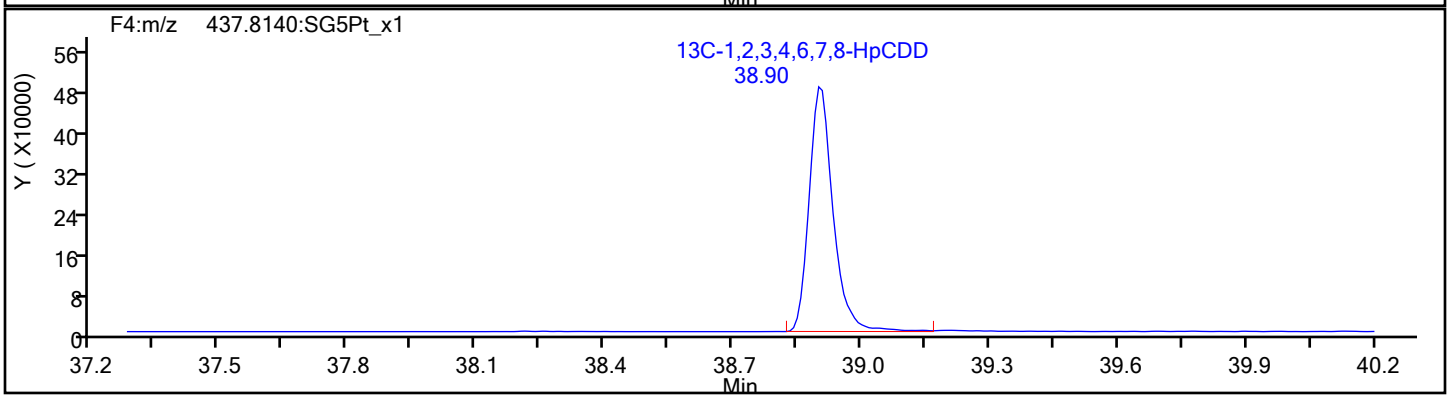
HpCDD





HpCDD Standards



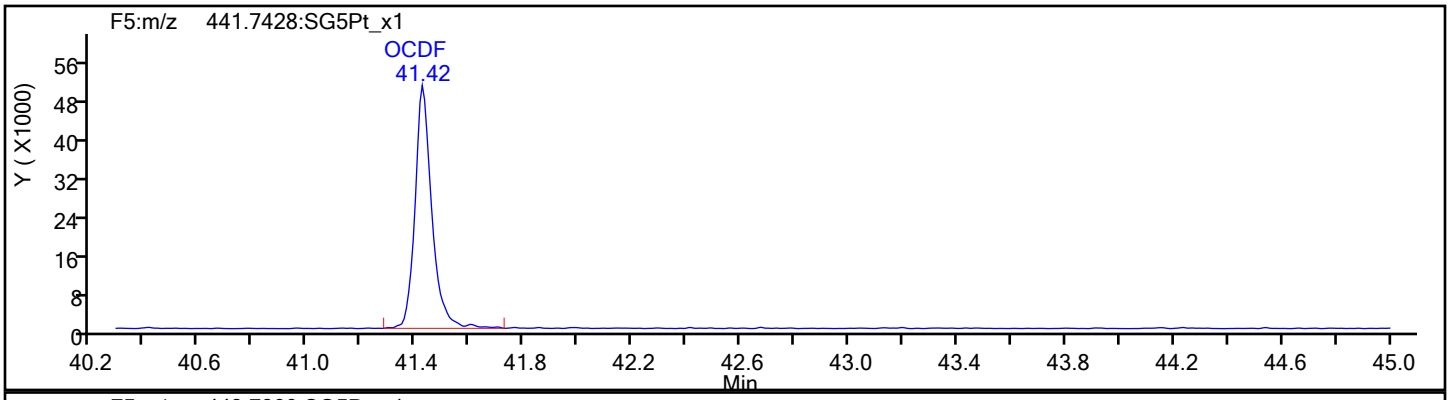


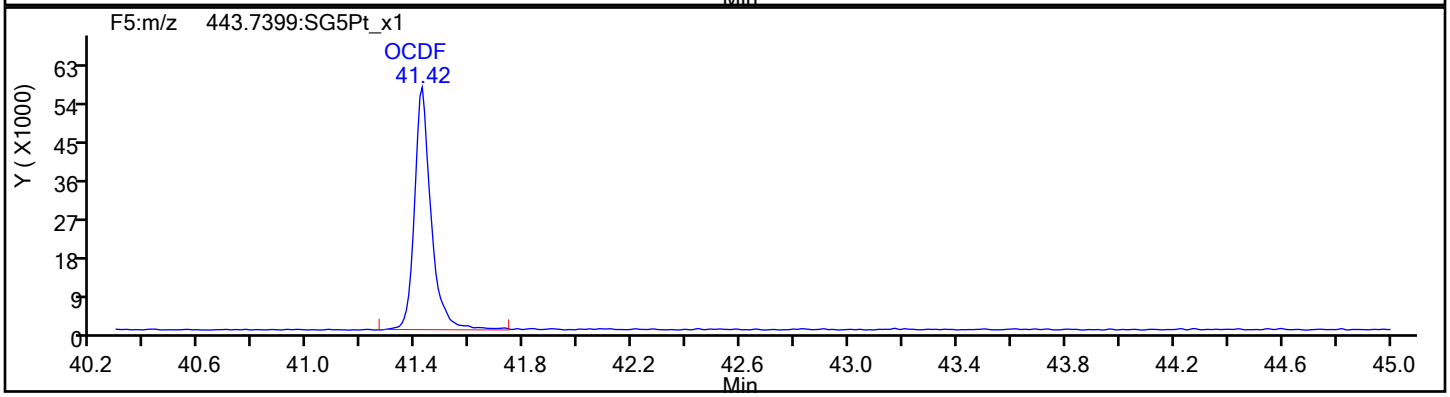
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

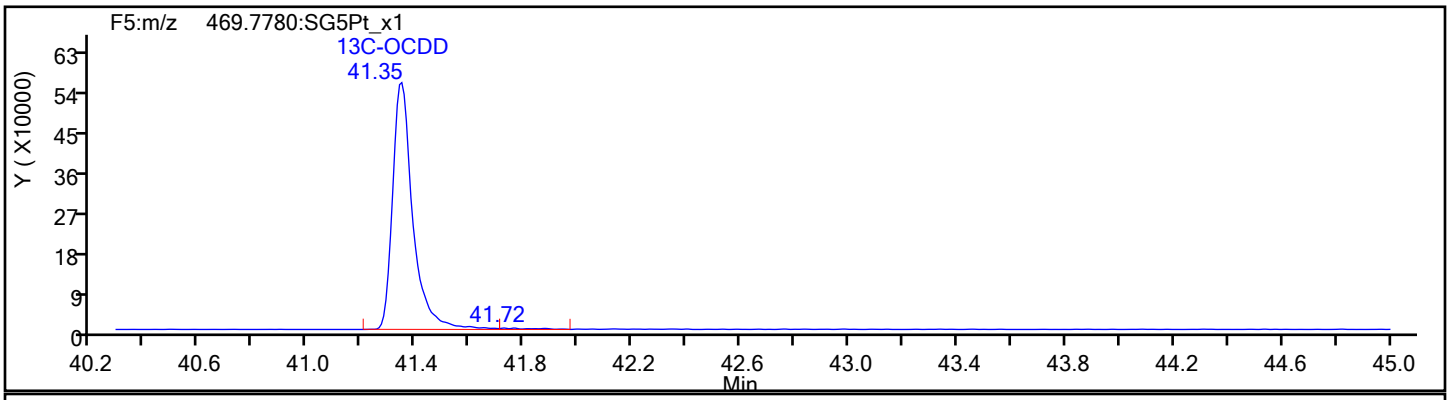
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

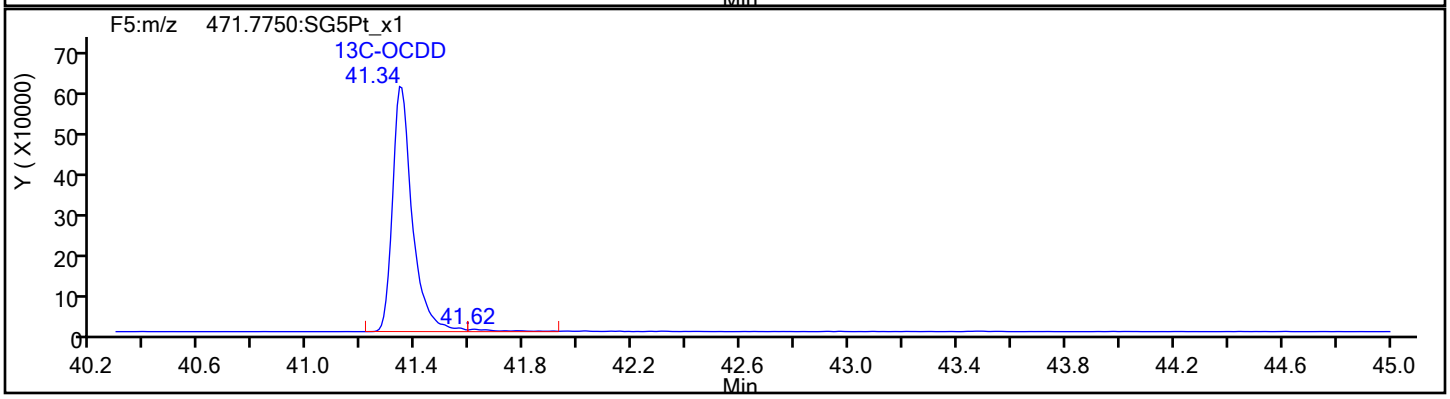
OCDF





OCDF Standards



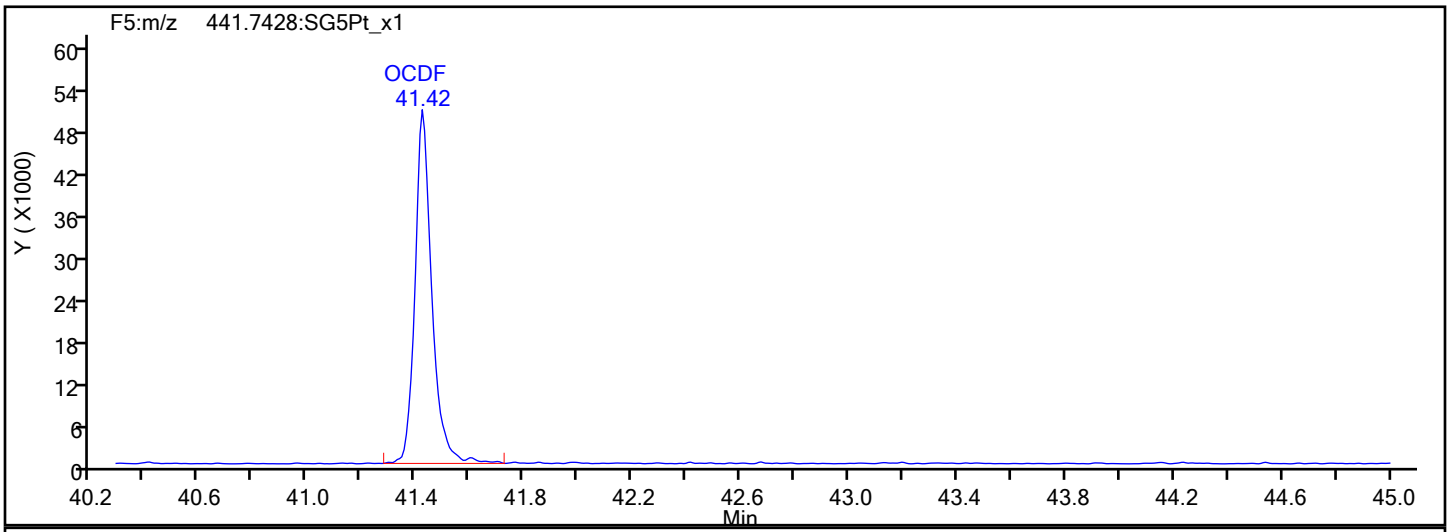


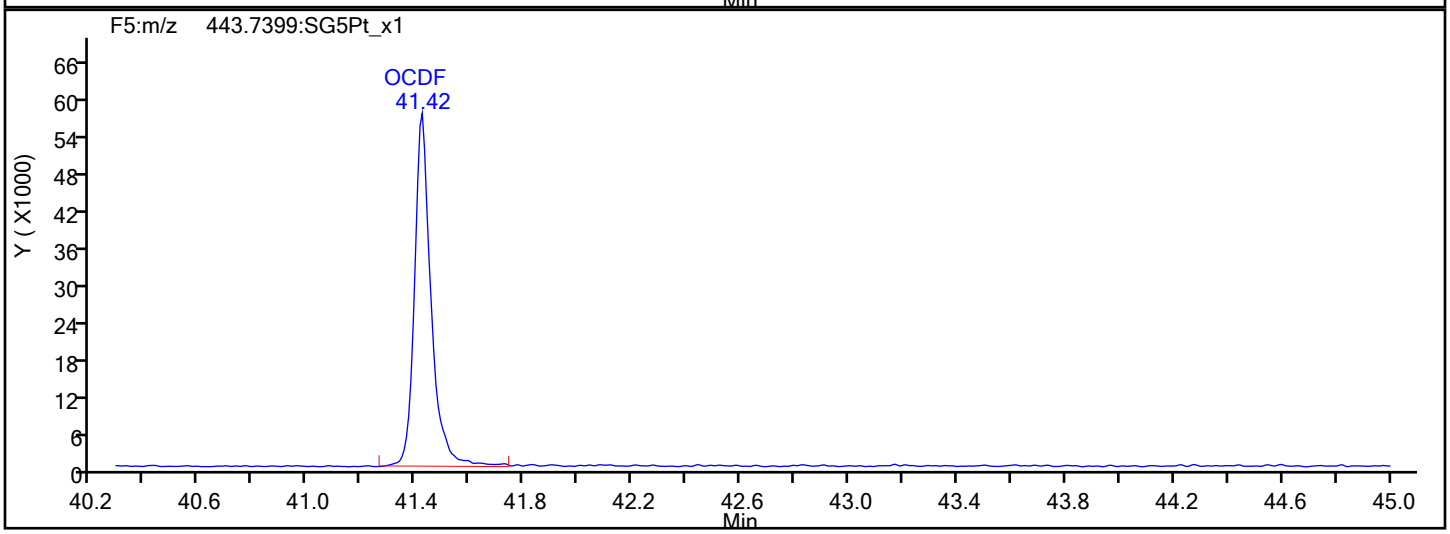
Report Date: 17-Dec-2019 09:40:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

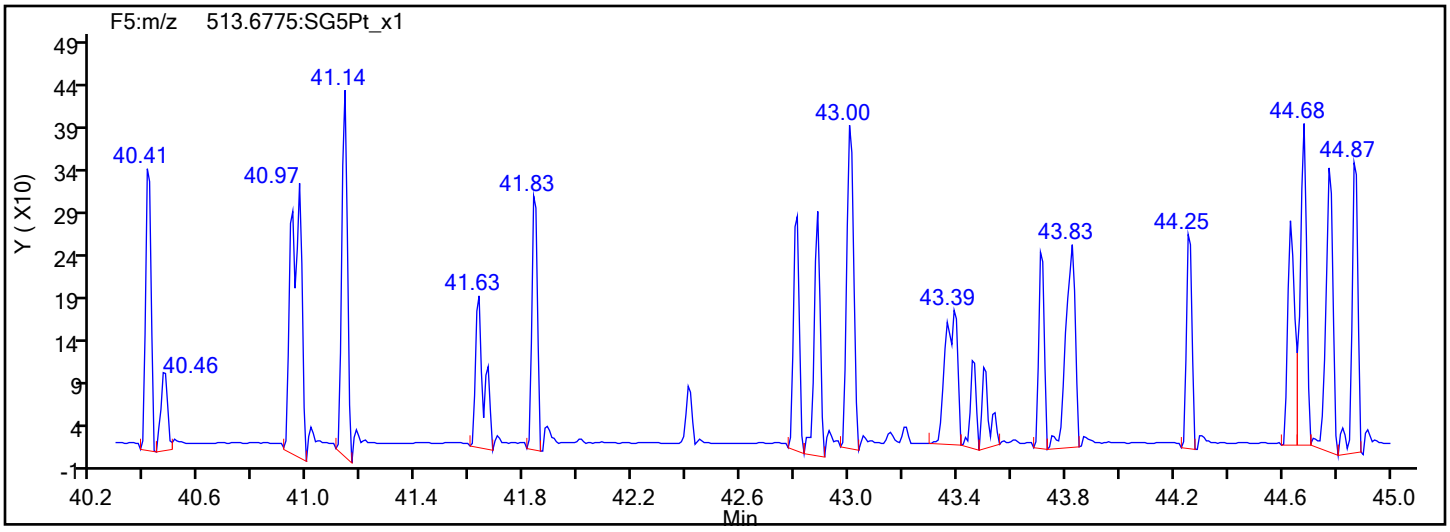
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

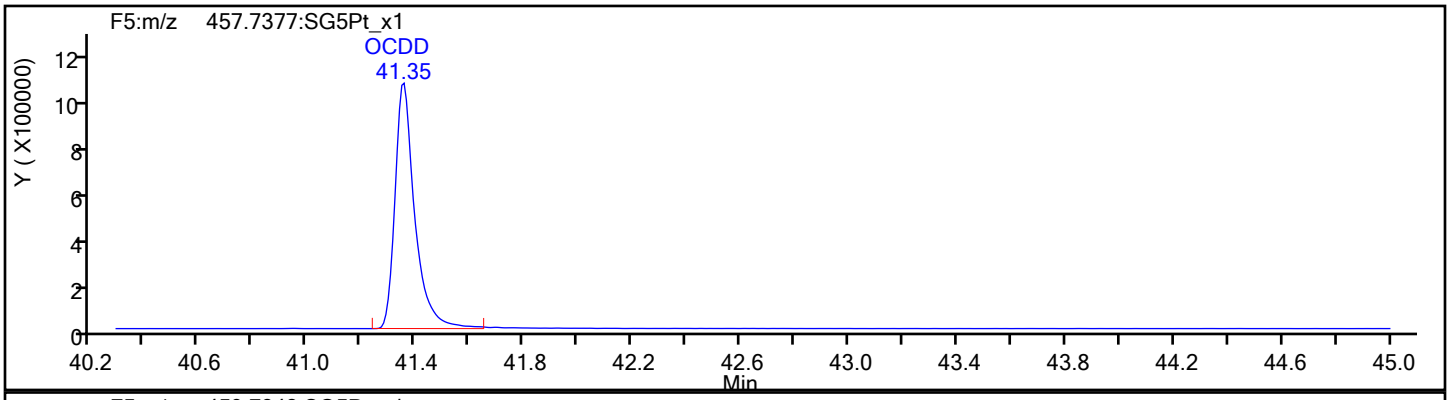


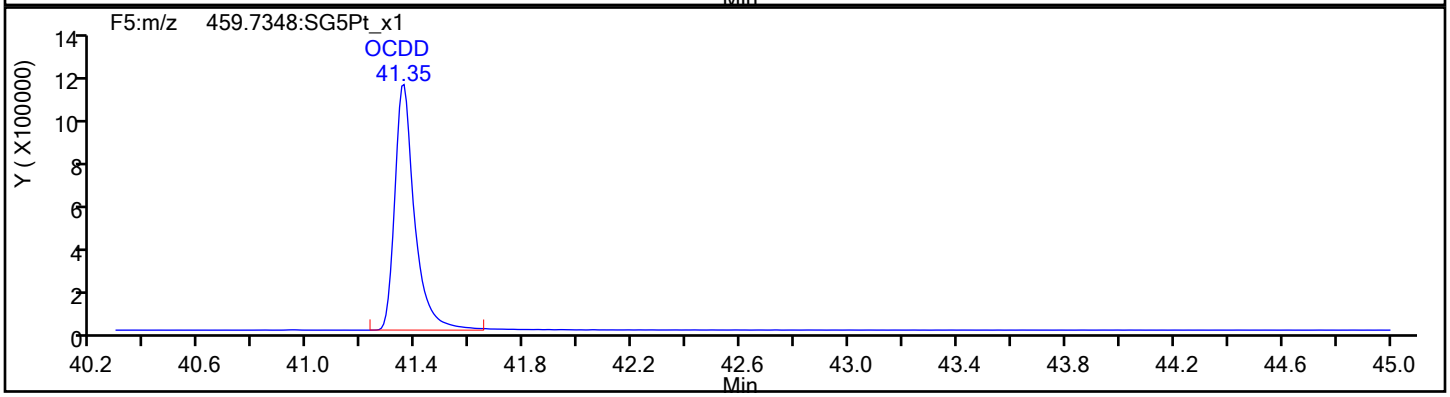
Report Date: 17-Dec-2019 09:40:23 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

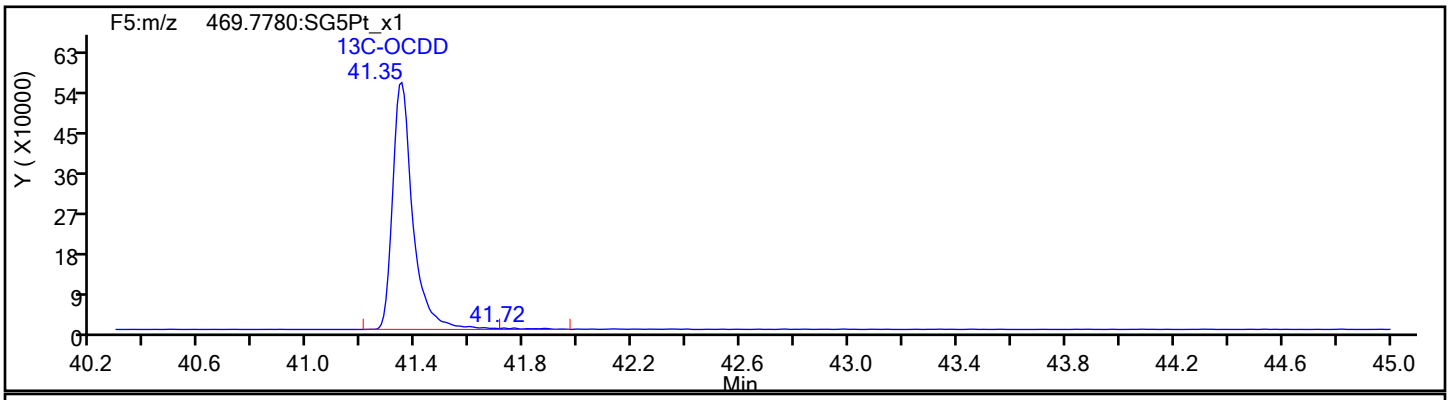
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

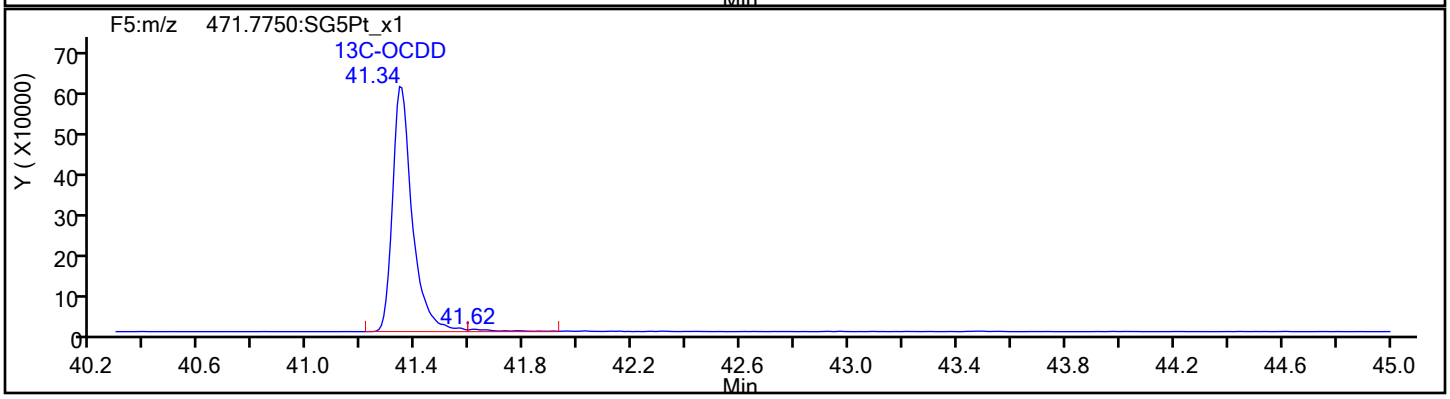
OCDD





OCDD Standards

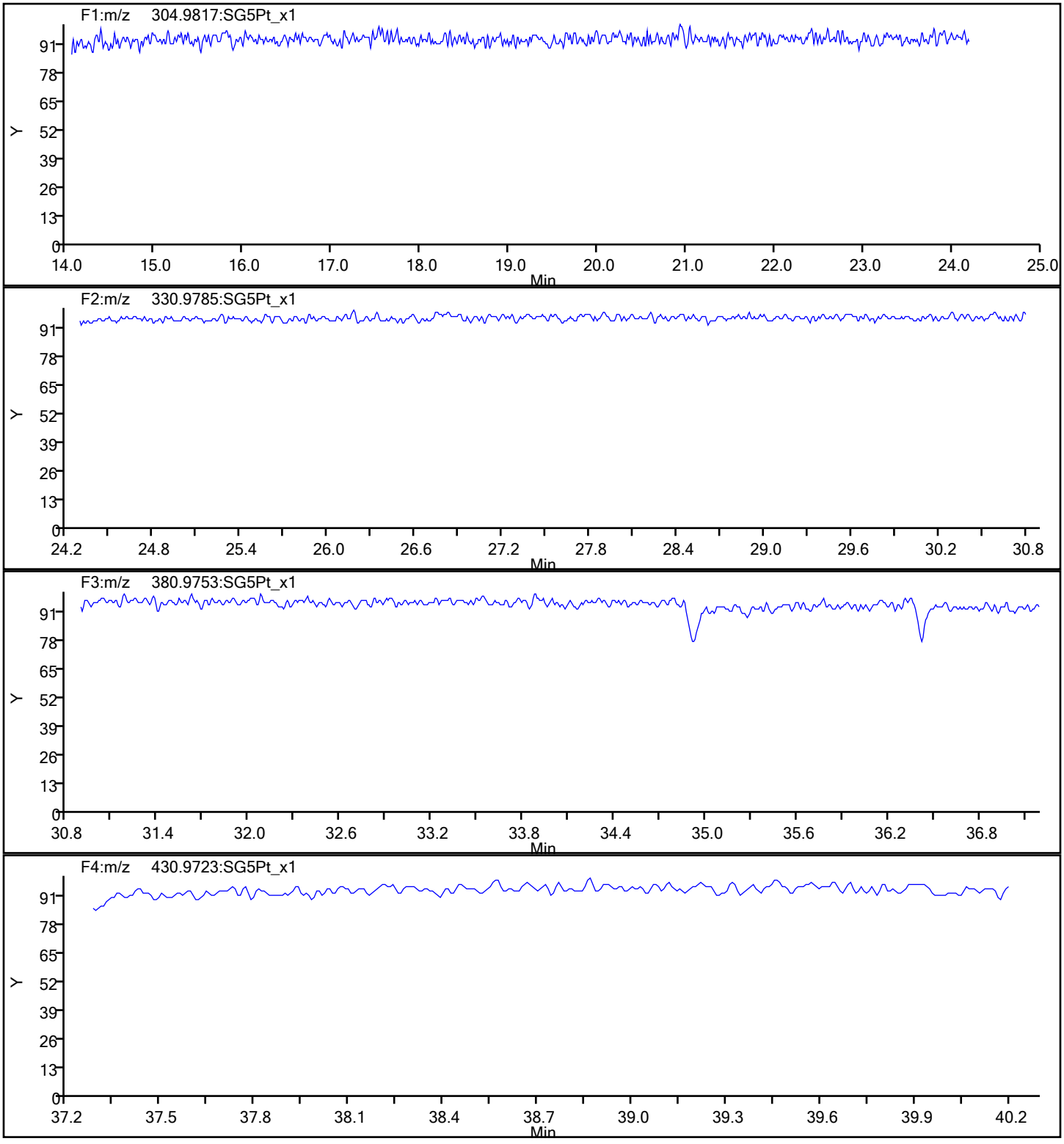




Report Date: 17-Dec-2019 09:40:23 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

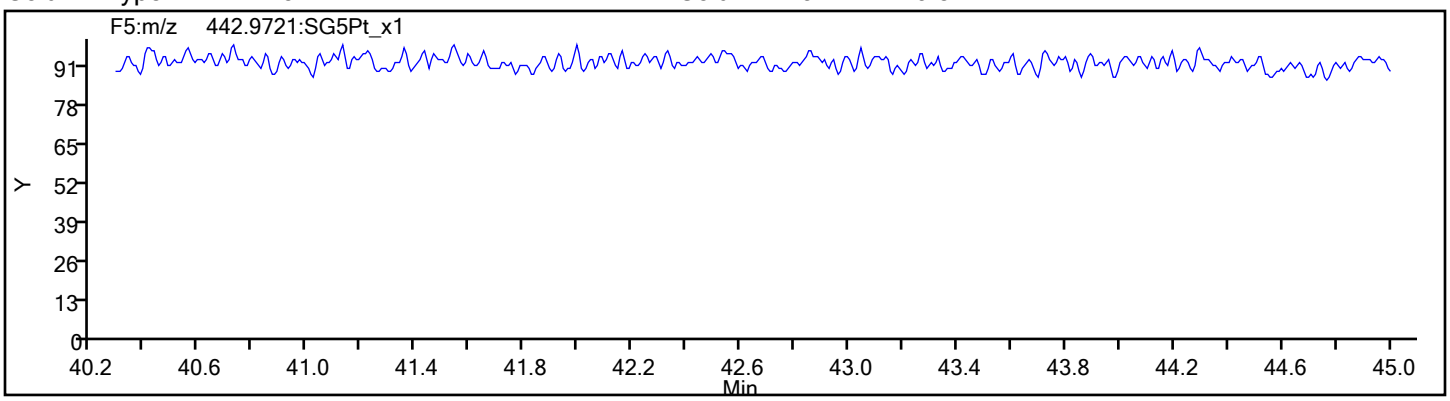
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:40:23 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_11.d		
Injection Date:	13-Dec-2019 19:47:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345338	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120719-SS-SJSSA01 (4-6) RA Lab Sample ID: 320-56911-4 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_005.d

Analysis Method: 1613B Date Collected: 12/07/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/16/2019 21:56

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 42.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	38		1.7	0.37

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	60		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	105		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Sample Type: Client
Inject. Date: 16-Dec-2019 21:56:43 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-4-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:11

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.380	82847221	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.560	66415808	0.79	1.3379	59.9	59.9	0.3430	0.3430	59.92	
2,3,7,8-TCDF	16.587	6185346	0.79	0.8389	11.1	11.1	0.1056	0.1056		
D 13C-2,3,7,8-TCDD	15.119	44638115	0.77	0.9388	57.4	57.4	0.6958	0.6958	57.39	
2,3,7,8-TCDD	15.133	1812603	0.77	1.1538	3.904	3.519	0.1275	0.1275		RQ
$ 37Cl4-2,3,7,8-TCDD	15.147	41192822		1.1816	42.1	42.1	0.0707	0.0707	105	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d
Lims ID: 320-56911-A-4-A
Client ID: 11187072-120719-SS-SJSSA01 (4-6)
Sample Type: Client
Inject. Date: 16-Dec-2019 21:56:43 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-4-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:11

Signal	RT (min.)	Adj RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.380	15.383	0		36461418	7772273	26023	65057	299		
333.9339	15.380	15.383	0		46385803	9912369	20184	50460	491	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.560	16.576	-1	1.077	29326453	5685064	18458	46145	308		
317.9389	16.560	16.576	-1	1.077	37089355	7084177	14007	35017	506	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.587	16.590	0	1.002	2737626	522964	1823	4557	287		
305.8987	16.587	16.590	0	1.002	3447720	664163	2703	6757	246	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.119	15.122	0	0.983	19470497	4190940	26023	65057	161		
333.9339	15.119	15.122	0	0.983	25167618	5453276	20184	50460	270	0.77(0.65-0.89)	
2,3,7,8-TCDD											RQ
319.8965	15.133	15.149	-1	1.001	986705	180173	3614	9035	50		
	Empc Correction				788533	154237	3614	9035	43		
321.8936	15.133	15.149	-1	1.001	1024070	200308	2063	5157	97	0.96(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.147	15.149	0	0.985	41192822	8408598	5911	14777	1423		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

QC Flag Legend

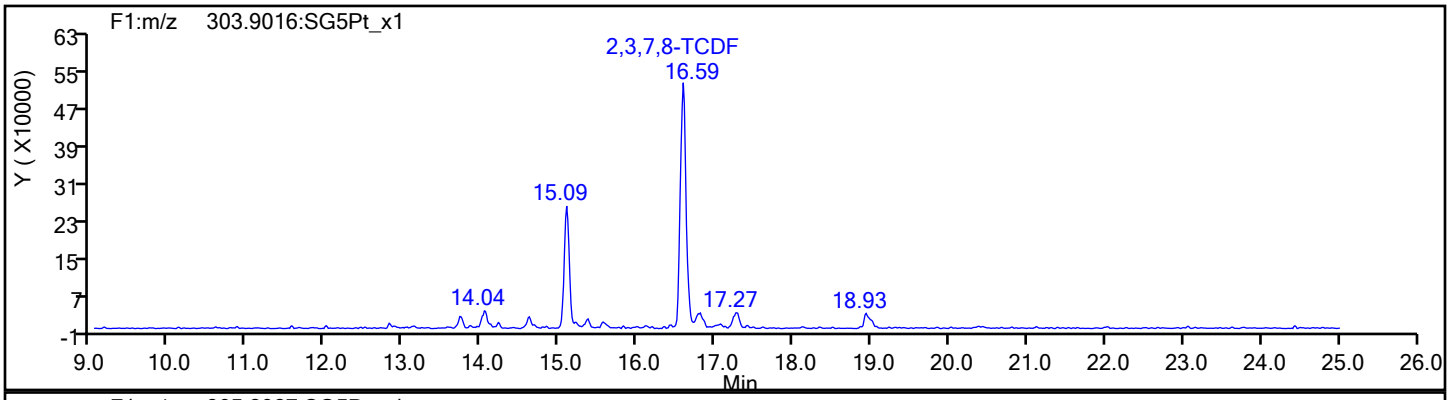
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

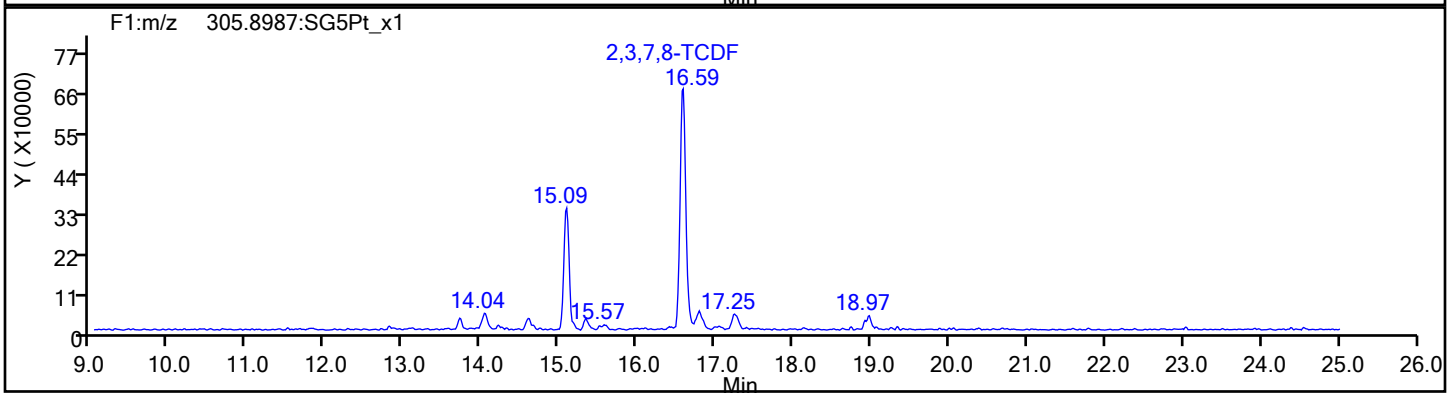
Report Date: 17-Dec-2019 09:38:24 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

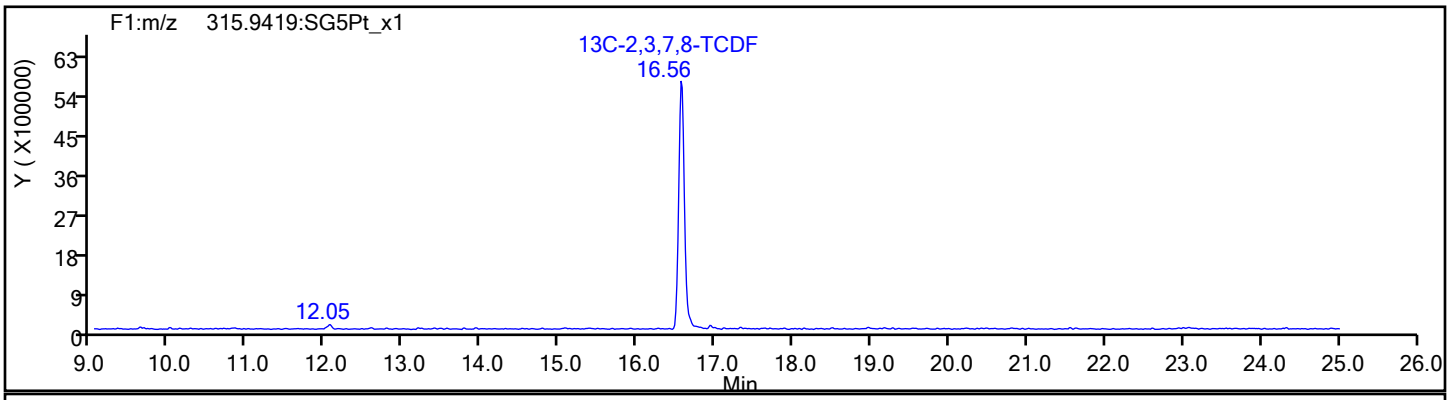
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d		
Injection Date:	16-Dec-2019 21:56:43	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345960	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

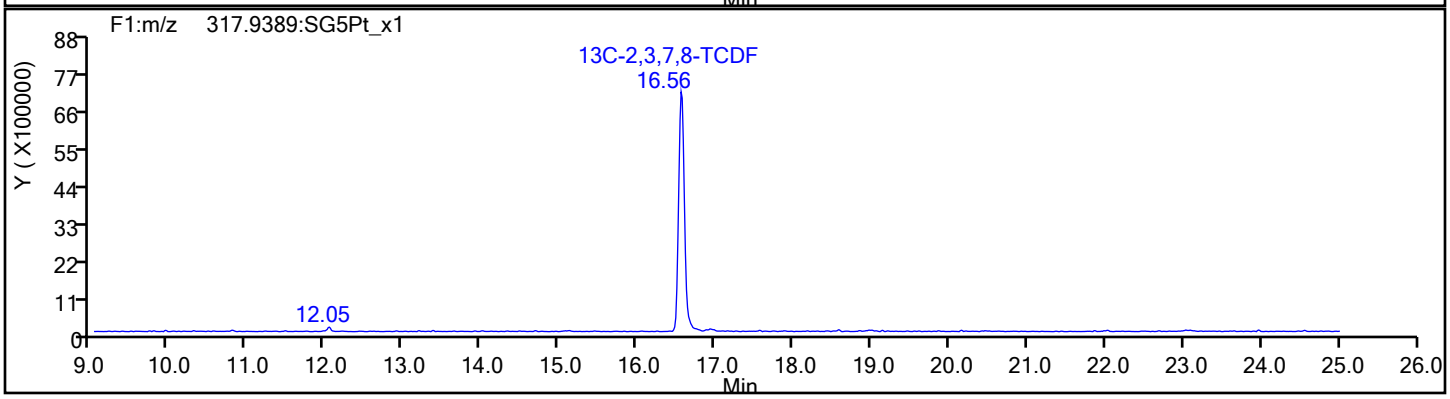
TCDF





TCDF Standards



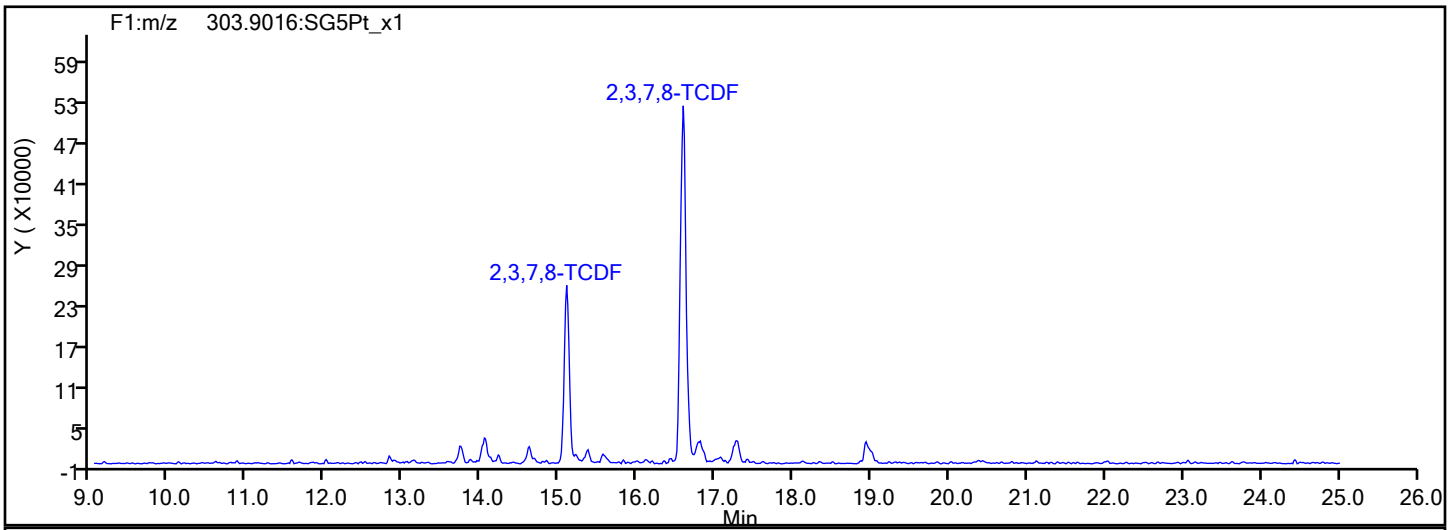


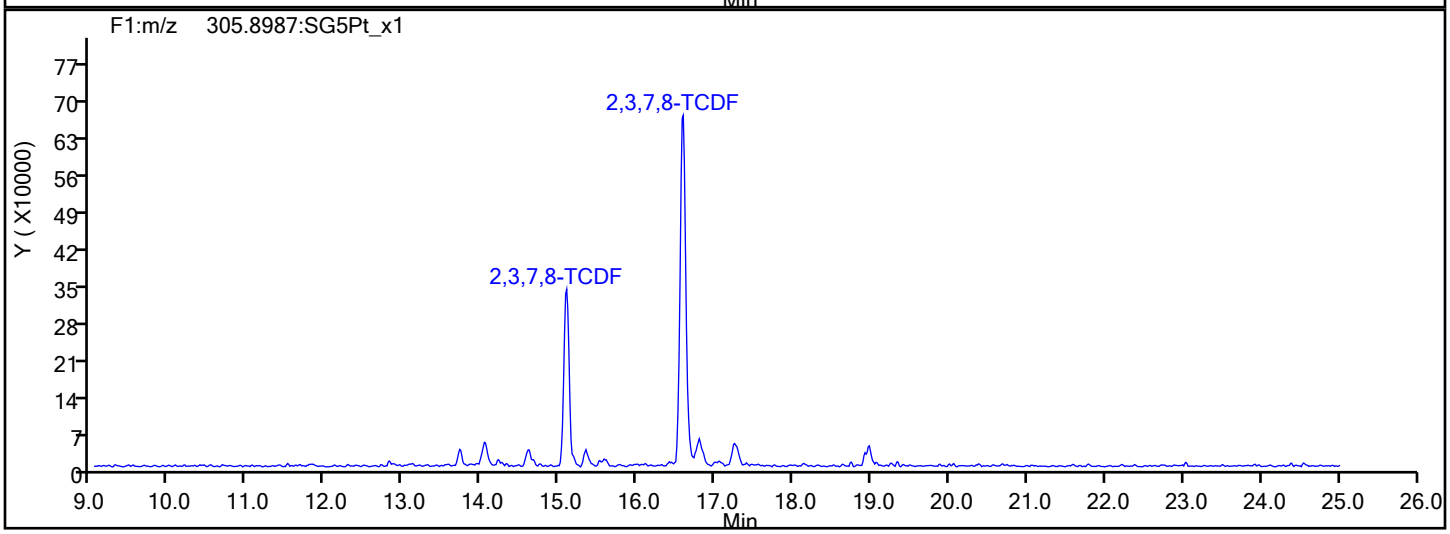
Report Date: 17-Dec-2019 09:38:24 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

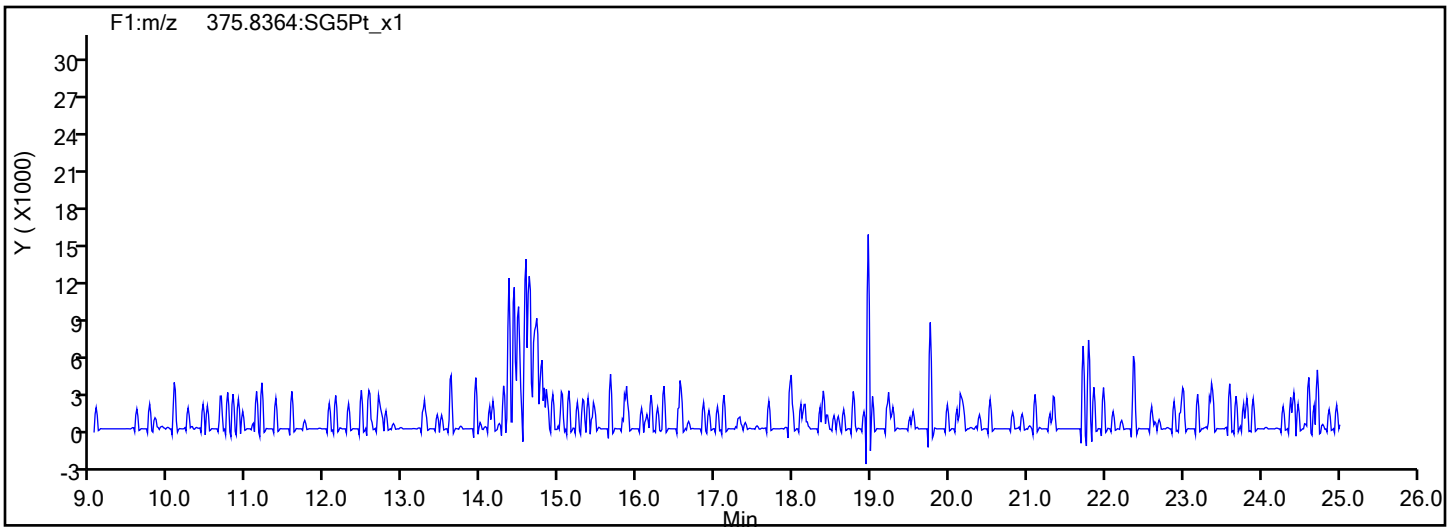
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d		
Injection Date:	16-Dec-2019 21:56:43	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345960	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

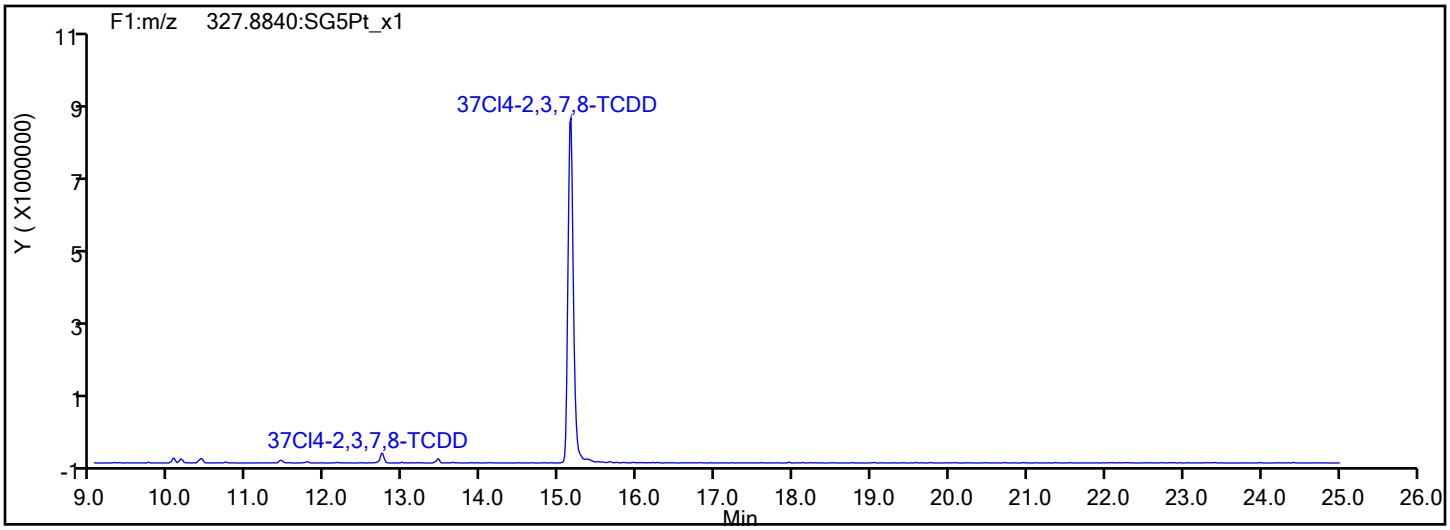


Report Date: 17-Dec-2019 09:38:24 Chrom Revision: 2.3 15-Dec-2019 06:20:02

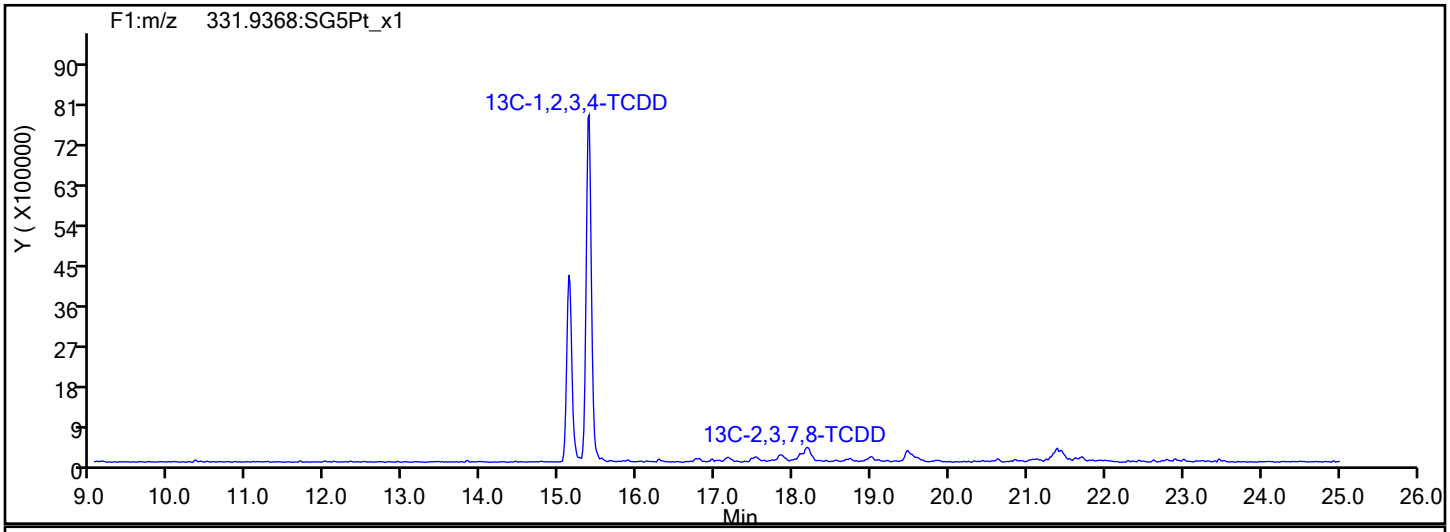
Eurofins TestAmerica, Sacramento

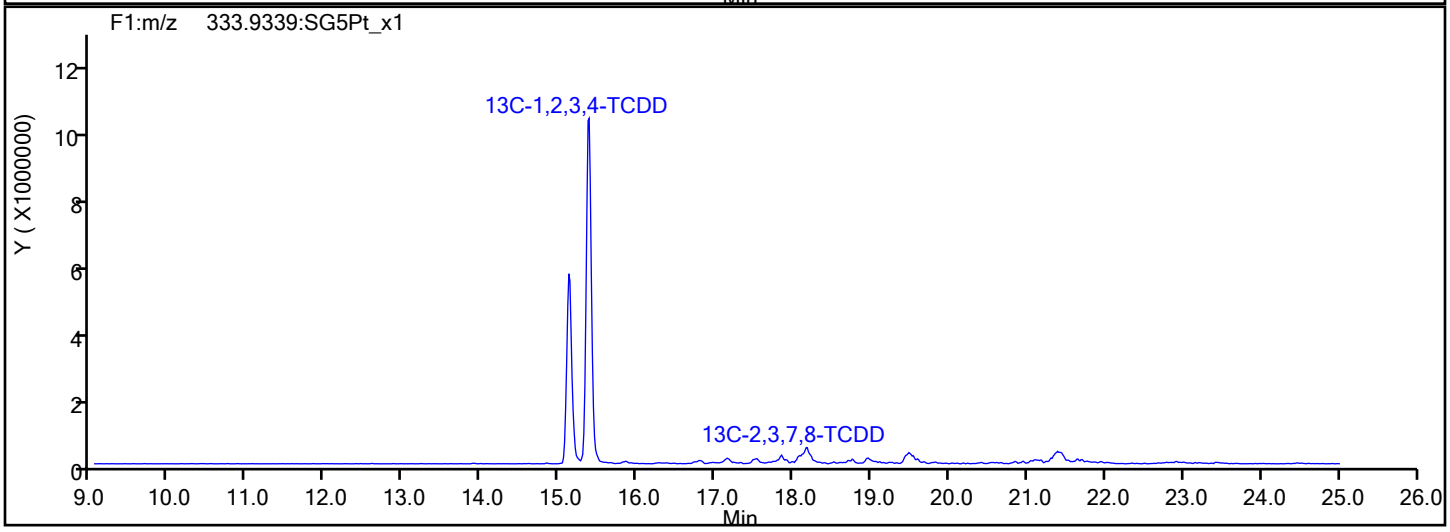
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d		
Injection Date:	16-Dec-2019 21:56:43	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345960	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

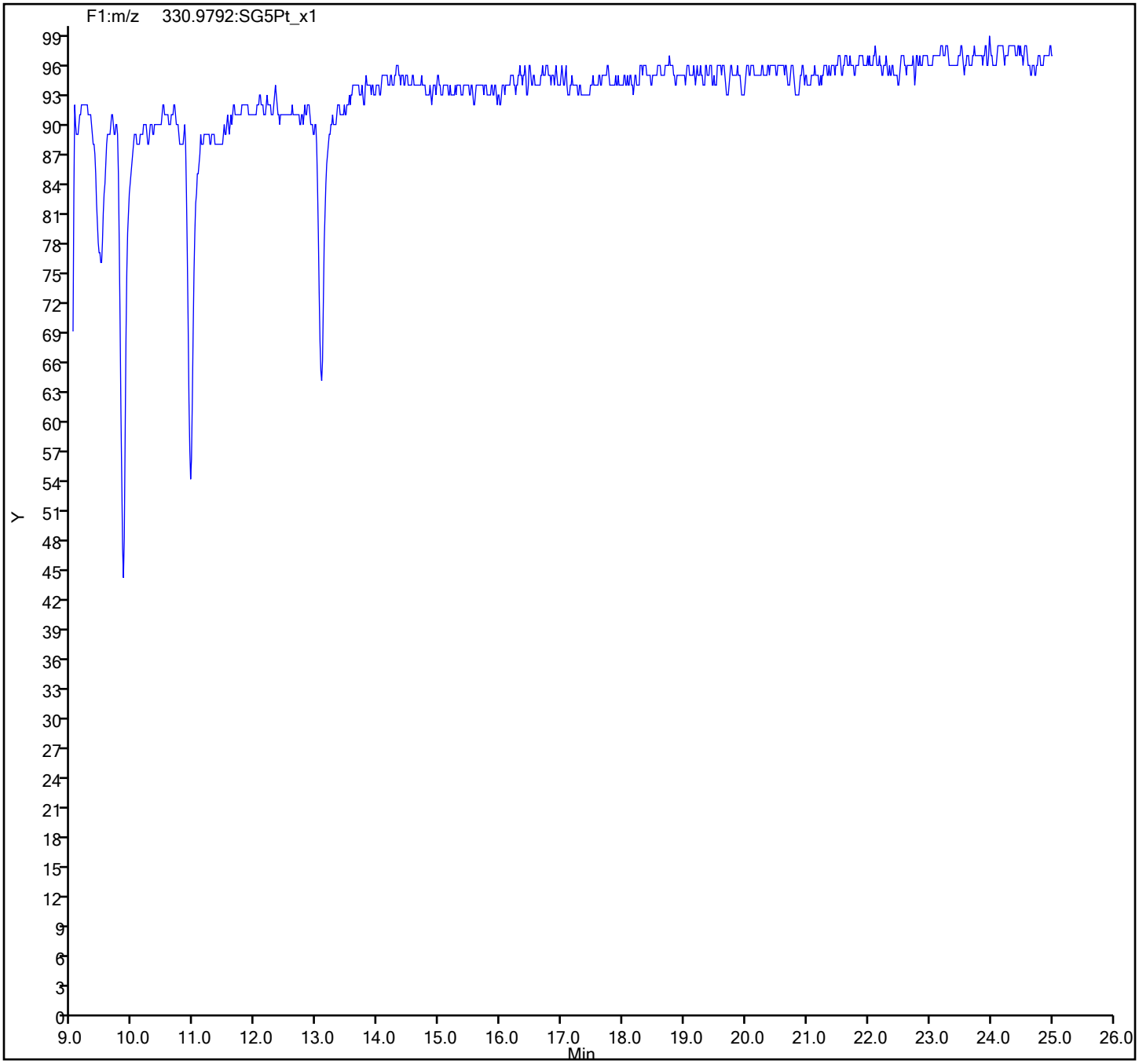




Report Date: 17-Dec-2019 09:38:24 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_005.d		
Injection Date:	16-Dec-2019 21:56:43	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120719-SS-SJSSA01 (4-6)		
Worklist#:	345960	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Matrix: Sediment Lab File ID: 13de19dfs1_12.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 9.99(g) Date Analyzed: 12/13/2019 20:35

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 29.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	3.0		1.4	0.19
40321-76-4	1,2,3,7,8-PeCDD	ND		7.0	0.14
57117-41-6	1,2,3,7,8-PeCDF	0.35	J q	7.0	0.084
57117-31-4	2,3,4,7,8-PeCDF	ND		7.0	0.092
39227-28-6	1,2,3,4,7,8-HxCDD	ND		7.0	0.087
57653-85-7	1,2,3,6,7,8-HxCDD	0.31	J B	7.0	0.093
19408-74-3	1,2,3,7,8,9-HxCDD	0.34	J	7.0	0.084
70648-26-9	1,2,3,4,7,8-HxCDF	0.33	J	7.0	0.077
57117-44-9	1,2,3,6,7,8-HxCDF	ND		7.0	0.073
72918-21-9	1,2,3,7,8,9-HxCDF	0.13	J q	7.0	0.063
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.0	0.070
35822-46-9	1,2,3,4,6,7,8-HpCDD	7.4	B	7.0	0.20
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.83	J	7.0	0.098
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		7.0	0.087
3268-87-9	OCDD	300	B	14	0.56
39001-02-0	OCDF	4.4	J B	14	0.16
41903-57-5	Total TCDD	3.0		1.4	0.19
30402-14-3	Total TCDF	19	q	1.4	0.15
36088-22-9	Total PeCDD	ND		7.0	0.14
30402-15-4	Total PeCDF	0.76	J q	7.0	0.088
34465-46-8	Total HxCDD	3.3	J B	7.0	0.088
55684-94-1	Total HxCDF	0.83	J q	7.0	0.071
37871-00-4	Total HpCDD	27	B	7.0	0.20
38998-75-3	Total HpCDF	2.3	J B	7.0	0.093

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) Lab Sample ID: 320-56911-5

Matrix: Sediment Lab File ID: 13de19dfs1_12.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 9.99(g) Date Analyzed: 12/13/2019 20:35

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 29.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	57		25-164
89059-46-1	13C-2,3,7,8-TCDF	51		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	53		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	54		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	57		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	60		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	61		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	55		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	54		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	51		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	49		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	55		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	48		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	57		26-138
114423-97-1	13C-OCDD	59		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	97		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 20:35:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-5-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:43:45 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:43:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.528	7470389	0.82	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	18.629	6163903	0.79	1.6096	51.3	51.3	0.2144	0.2144	51.26	
2,3,7,8-TCDF	18.655	308102	0.78	1.2332	4.053	4.053	0.0524	0.0524		
A Non-2,3,7,8-sub-TCDF	18.244	206571	0.77	1.2332	2.757	2.717	0.0524	1.880		RQ
S Total TCDF					6.810	6.771	0.0524	0.0524		RQ
D 13C-2,3,7,8-TCDD	19.866	4245093	0.80	0.9984	56.9	56.9	0.1996	0.1996	56.92	
2,3,7,8-TCDD	19.909	54064	0.65	1.1988	1.062	1.062	0.0676	0.0676		M
$ 37Cl4-2,3,7,8-TCDD	19.900	4200433		1.4510	38.8	38.8	0.0342	0.0342	96.88	
A Non-2,3,7,8-sub-TCDD	19.035						0.0676	0.0676		
S Total TCDD					1.062	1.062	0.0676	0.0676		
D 13C-1,2,3,7,8-PeCDF	25.785	5474215	1.55	1.3678	53.6	53.6	0.2236	0.2236	53.58	
1,2,3,7,8-PeCDF	25.818	7950	1.55	1.1689	0.1398	0.1242	0.0296	0.0296		RQ
D 13C-2,3,4,7,8-PeCDF	27.202	5537839	1.58	1.3045	56.8	56.8	0.2344	0.2344	56.83	
2,3,4,7,8-PeCDF	27.205						0.0326	0.0326		
A F1 PeCDFs	23.266						0.0128	0.0128		
A Non-2,3,7,8-sub-PeCDF	26.724	9483	1.69	1.1775	0.1463	0.1463	0.0310	0.1463		
S Total PeCDF					0.2860	0.2705	0.0311	0.0311		RQ
D 13C-1,2,3,7,8-PeCDD	27.966	3254347	1.64	0.8292	52.5	52.5	0.1486	0.1486	52.54	
1,2,3,7,8-PeCDD	27.965						0.0504	0.0504		
A Non-2,3,7,8-sub-PeCDD	26.851						0.0504	0.0504		
S Total PeCDD							0.0504	0.0504		
D 13C-1,2,3,4,7,8-HxCDF	33.723	4622470	0.52	1.1700	54.8	54.8	0.1809	0.1809	54.84	
1,2,3,4,7,8-HxCDF	33.757	7128	1.27	1.3021	0.1184	0.1184	0.0271	0.0271		
D 13C-1,2,3,6,7,8-HxCDF	33.925	5090708	0.53	1.3168	53.7	53.7	0.1607	0.1607	53.66	
1,2,3,6,7,8-HxCDF	33.757						0.0258	0.0258		U
D 13C-2,3,4,6,7,8-HxCDF	34.897	4560100	0.52	1.2873	49.2	49.2	0.1644	0.1644	49.17	
2,3,4,6,7,8-HxCDF	34.905						0.0250	0.0250		
D 13C-1,2,3,7,8,9-HxCDF	35.895	4379073	0.53	1.1987	50.7	50.7	0.1765	0.1765	50.70	
1,2,3,7,8,9-HxCDF	35.921	2739	1.24	1.3329	0.0540	0.0469	0.0224	0.0224		RQ
A Non-2,3,7,8-sub-HxCDF	33.751	7931	1.34	1.3074	0.1301	0.1301	0.0250	0.1301		
S Total HxCDF					0.3025	0.2954	0.0251	0.0251		RQ

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.694	7204641	1.28	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.149	3638540	1.28	0.8364	60.4	60.4	0.1956	0.1956	60.38	
1,2,3,4,7,8-HxCDD	35.317						0.0308	0.0308		U
D 13C-1,2,3,6,7,8-HxCDD	35.283	3996778	1.27	0.9040	61.4	61.4	0.1810	0.1810	61.36	
1,2,3,6,7,8-HxCDD	35.317	4934	1.40	1.1256	0.1097	0.1097	0.0328	0.0328		
1,2,3,7,8,9-HxCDD	35.711	5666	1.14	1.2327	0.1204	0.1204	0.0296	0.0296		M
A Non-2,3,7,8-sub-HxCDD	34.284	42763	1.22	1.1769	0.9517	0.9517	0.0310	0.6333		
S Total HxCDD					1.182	1.182	0.0311	0.0311		
D 13C-1,2,3,4,6,7,8-HpCDF	37.879	3374987	0.46	0.9689	48.3	48.3	0.3274	0.3274	48.35	
1,2,3,4,6,7,8-HpCDF	37.896	15980	1.05	1.6176	0.2927	0.2927	0.0348	0.0348		M
D 13C-1,2,3,4,7,8,9-HpCDF	39.196	3797308	0.45	0.9231	57.1	57.1	0.3437	0.3437	57.10	
1,2,3,4,7,8,9-HpCDF	39.202						0.0309	0.0309		
A Non-2,3,7,8-sub-HpCDF	38.556	28449	0.99	1.5424	0.5143	0.5143	0.0326	0.5143		
S Total HpCDF					0.8070	0.8070	0.0329	0.0329		
D 13C-1,2,3,4,6,7,8-HpCDD	38.885	3580209	1.06	0.9114	54.5	54.5	0.1547	0.1547	54.52	
1,2,3,4,6,7,8-HpCDD	38.902	104921	1.03	1.1237	2.608	2.608	0.0712	0.0712		
A Non-2,3,7,8-sub-HpCDD	38.803	281192	0.98	1.1237	6.989	6.989	0.0712	6.989		
S Total HpCDD					9.597	9.597	0.0712	0.0712		
D 13C-OCDD	41.331	5348335	0.89	0.6272	118.4	118.4	0.2229	0.2229	59.18	
OCDF	41.415	63690	0.82	1.5416	1.545	1.545	0.0577	0.0577		
OCDD	41.339	3320626	0.88	1.1855	104.7	104.7	0.1999	0.1999		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 20:35:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-5-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:43:45 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:43:45

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	19.528	19.502	2		3364063	538845	721	1802	747		
333.9338	19.528	19.502	2		4106326	643983	222	555	2901	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.629	18.611	1	0.954	2720268	439764	1033	2582	426		
317.9389	18.629	18.611	1	0.954	3443635	561282	600	1500	935	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.655	18.637	1	1.001	134721	19373	91	227	213		
305.8987	18.655	18.637	1	1.001	173381	24466	168	420	146	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	16.347	18.244	-114	0.877	5893	1267	91	227	14		
	Empc Correction				4918	1064	91	227	12		
305.8987	16.347	18.244	-114	0.877	6388	1382	168	420	8	0.92(0.65-0.89)	
303.9016	16.779	18.244	-88	0.901	9221	1515	91	227	17		
305.8987	16.770	18.244	-88	0.900	11271	1900	168	420	11	0.82(0.65-0.89)	
303.9016	17.185	18.244	-63	0.922	3992	910	91	227	10		
305.8987	17.185	18.244	-63	0.922	7234	1097	168	420	7	0.55(0.65-0.89)	
	Empc Correction				5184	1181	168	420	7		
303.9016	18.007	18.244	-14	0.967	64811	9392	91	227	103		
305.8987	18.007	18.244	-14	0.967	78092	13021	168	420	78	0.83(0.65-0.89)	
303.9016	21.724	18.244	208	1.166	9659	1593	91	227	18		
305.8987	21.742	18.244	209	1.167	13035	1777	168	420	11	0.74(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.866	19.848	1	1.017	1881055	272590	721	1802	378		
333.9338	19.866	19.848	1	1.017	2364038	341091	222	555	1536	0.80(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											M
319.8965	19.909	19.874	2	1.002	21325	3618	164	410	22		
321.8936	19.918	19.874	3	1.003	32739	5256	35	87	150	0.65(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	19.900	19.882	1	1.019	4200433	619462	235	587	2636		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.035						164	410			
321.8936	19.035						35	87			
13C-1,2,3,7,8-PeCDF											
351.9000	25.785	25.760	2	1.320	3331154	579333	896	2240	647		
353.8970	25.785	25.760	2	1.320	2143061	379558	551	1377	689	1.55(1.32-1.78)	
1,2,3,7,8-PeCDF											RQ
339.8597	25.818	25.785	2	1.001	5825	1087	26	65	42		
	Empc Correction				4832	764	26	65	29		
341.8567	25.793	25.785	1	1.000	3118	493	107	267	5	1.87(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.202	27.177	2	1.393	3392043	523917	896	2240	585		
353.8970	27.194	27.177	1	1.393	2145796	333521	551	1377	605	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						26	65			
341.8567	27.202						107	267			
A F1 PeCDFs											
339.8597	23.266						3	7			
341.8567	23.266						52	130			
A Non-2,3,7,8-sub-PeCDF											
339.8597	24.409	26.724	-139	0.947	5953	1004	26	65	39		
341.8567	24.409	26.724	-139	0.947	3530	673	107	267	6	1.69(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	27.966	27.949	1	1.432	2022303	305671	287	717	1065		
369.8919	27.966	27.949	1	1.432	1232044	189935	296	740	642	1.64(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						92	230			
357.8516	27.965						20	50			
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.851						92	230			
357.8516	26.851						20	50			
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.723	33.714	1	0.945	1585138	273714	481	1202	569		
385.8610	33.732	33.714	1	0.945	3037332	518404	828	2070	626	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.757	33.739	1	1.001	3983	791	70	175	11		
375.8178	33.740	33.739	0	1.000	3145	724	42	105	17	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.925	33.915	1	0.950	1764993	301339	481	1202	626		
385.8610	33.925	33.915	1	0.950	3325715	538362	828	2070	650	0.53(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDF											U
373.8208	33.932						70	175			
375.8178	33.932						42	105			
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.897	34.880	1	0.978	1567402	301892	481	1202	628		
385.8610	34.897	34.880	1	0.978	2992698	558133	828	2070	674	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.905						70	175			
375.8178	34.905						42	105			
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.895	35.878	1	1.006	1510135	316135	481	1202	657		
385.8610	35.895	35.878	1	1.006	2868938	620007	828	2070	749	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQ
373.8208	35.921	35.894	2	1.001	1929	363	70	175	5		
	Empc Correction				1516	321	70	175	5		
375.8178	35.912	35.894	1	1.000	1223	259	42	105	6	1.58(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	32.969	33.751	-47	0.978	4545	804	70	175	11		
375.8178	33.019	33.751	-44	0.979	3386	503	42	105	12	1.34(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.694	35.685	1		4039468	866942	531	1327	1633		
403.8529	35.694	35.685	1		3165173	679244	481	1202	1412	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.149	35.131	1	0.985	2042137	451100	531	1327	850		
403.8529	35.149	35.131	1	0.985	1596403	356763	481	1202	742	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											U
389.8158	35.148						59	147			
391.8127	35.148						58	145			
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.283	35.265	1	0.988	2235123	448299	531	1327	844		
403.8529	35.283	35.265	1	0.988	1761655	342453	481	1202	712	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.317	35.282	2	1.001	2881	615	59	147	10		
391.8127	35.291	35.282	1	1.000	2053	585	58	145	10	1.40(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	35.711	35.693	1	1.016	3017	576	59	147	10		M
391.8127	35.702	35.693	1	1.016	2649	622	58	145	11	1.14(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	32.910	34.284	-82	0.933	15851	2682	59	147	45		
391.8127	32.910	34.284	-82	0.933	12603	1926	58	145	33	1.26(1.05-1.43)	
389.8158	34.277	34.284	0	0.971	7644	1355	59	147	23		
391.8127	34.285	34.284	0	0.972	6665	1083	58	145	19	1.15(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.879	37.877	0	1.061	1061400	249181	715	1787	349		
419.8220	37.879	37.877	0	1.061	2313587	541188	1247	3117	434	0.46(0.37-0.51)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDF											M
407.7817	37.896	37.886	1	1.000	8182	2098	138	345	15		M
409.7788	37.896	37.886	1	1.000	7798	1733	40	100	43	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.196	39.194	0	1.098	1180686	311467	715	1787	436		
419.8220	39.196	39.194	0	1.098	2616622	670249	1247	3117	537	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.202						138	345			
409.7788	39.202						40	100			
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.282	38.556	-16	1.011	14169	3304	138	345	24		
409.7788	38.282	38.556	-16	1.011	14280	3690	40	100	92	0.99(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.885	38.892	0	1.089	1841956	462720	459	1147	1008		
437.8140	38.885	38.892	0	1.089	1738253	443283	413	1032	1073	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.902	38.901	0	1.000	53338	12900	169	422	76		
425.7737	38.894	38.901	0	1.000	51583	12742	121	302	105	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.231	38.803	-34	0.983	139367	33113	169	422	196		
425.7737	38.231	38.803	-34	0.983	141825	33526	121	302	277	0.98(0.88-1.20)	
13C-OCDD											
469.7780	41.331	41.345	-1	1.158	2522019	504754	506	1265	998		
471.7750	41.331	41.345	-1	1.158	2826316	546080	359	897	1521	0.89(0.76-1.02)	
OCDF											
441.7428	41.415	41.413	0	1.002	28701	6763	54	135	125		
443.7399	41.398	41.413	-1	1.002	34989	6540	133	332	49	0.82(0.76-1.02)	
OCDD											
457.7377	41.339	41.345	0	1.000	1556506	305206	240	600	1272		
459.7348	41.339	41.345	0	1.000	1764120	341807	258	645	1325	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	6163903	1001046

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	6163903	1001046

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.347	5893	1267	6388	1382	0.1616	0.92	RQ
16.347	4918	1064	6388	1382	0.1487		Empc Correction
16.779	9221	1515	11271	1900	0.2696	0.82	
17.185	3992	910	7234	1097	0.1477	0.55	RQ
17.185	3992	910	5184	1181	0.1207		Empc Correction
18.007	64811	9392	78092	13021	1.88	0.83	
21.724	9659	1593	13035	1777	0.2985	0.74	
Signal Totals:							
	92601	14474	113970	19261			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	209596	33854				0.81	RQ
	206571	33735					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.757 = (209596 * 100.000) / (6163903 * 1.233)
Empc Amount: 2.717 = (206571 * 100.000) / (6163903 * 1.233)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDF, RT: 26.724

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5474215	958891
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5537839	857438

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5506027	908164

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
24.409	5953	1004	3530	673	0.1463	1.69	
Signal Totals:							
	5953	1004	3530	673			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9483	1677				1.69	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1463 = (9483 * 100.000) / (5506027 * 1.178)

Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	4622470	792118
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	5090708	839701
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	4560100	860025
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	4379073	936142

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	4663087	856996

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
32.969	4545	804	3386	503	0.1301	1.34	
Signal Totals:							
	4545	804	3386	503			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	7931	1307				1.34	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1301 = (7931 * 100.000) / (4663087 * 1.307)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3638540	807863
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	3996778	790752
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	3817659	799307

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.910	15851	2682	12603	1926	0.6333	1.26	
34.277	7644	1355	6665	1083	0.3185	1.15	
Signal Totals:							
	23495	4037	19268	3009			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	42763	7046				1.22	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9517 = (42763 * 100.000) / (3817659 * 1.177)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3374987	790369
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3797308	981716

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3586147	886042

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.282	14169	3304	14280	3690	0.5143	0.99	
Signal Totals:							
	14169	3304	14280	3690			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28449	6994				0.99	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5143 = (28449 * 100.000) / (3586147 * 1.542)

Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Inject. Date: 13-Dec-2019 20:35:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3580209	906003

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3580209	906003

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.231	139367	33113	141825	33526	6.99	0.98	
Signal Totals:							
	139367	33113	141825	33526			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	281192	66639				0.98	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.989 = (281192 * 100.000) / (3580209 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

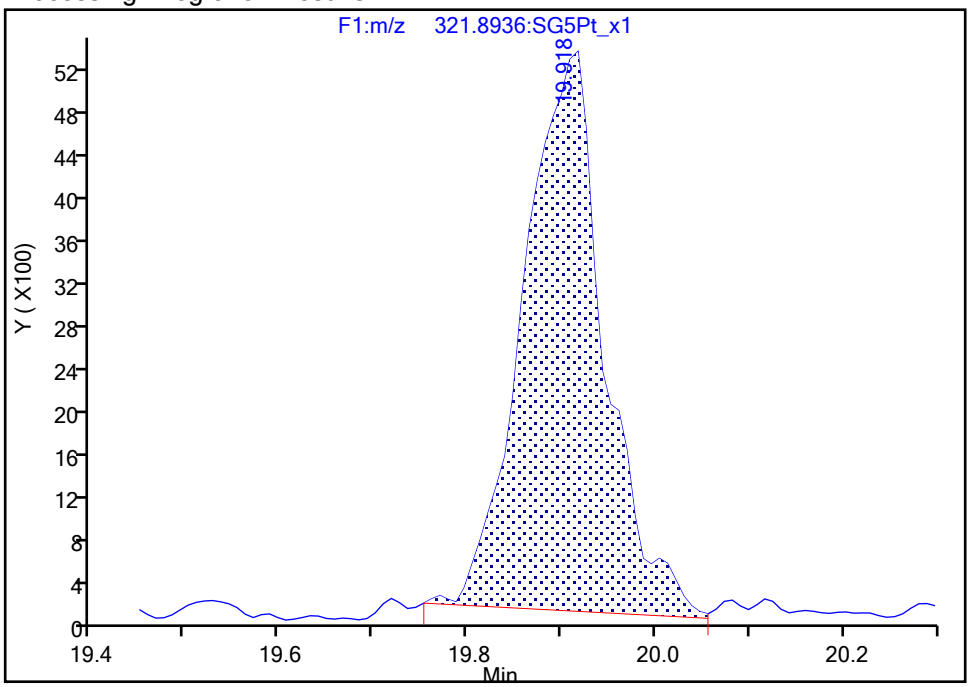
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d				
Injection Date:	13-Dec-2019 20:35:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-5-A	Lab Sample ID:	320-56911-5		
Client ID:	11187072-120819-BN-SJSSA09 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

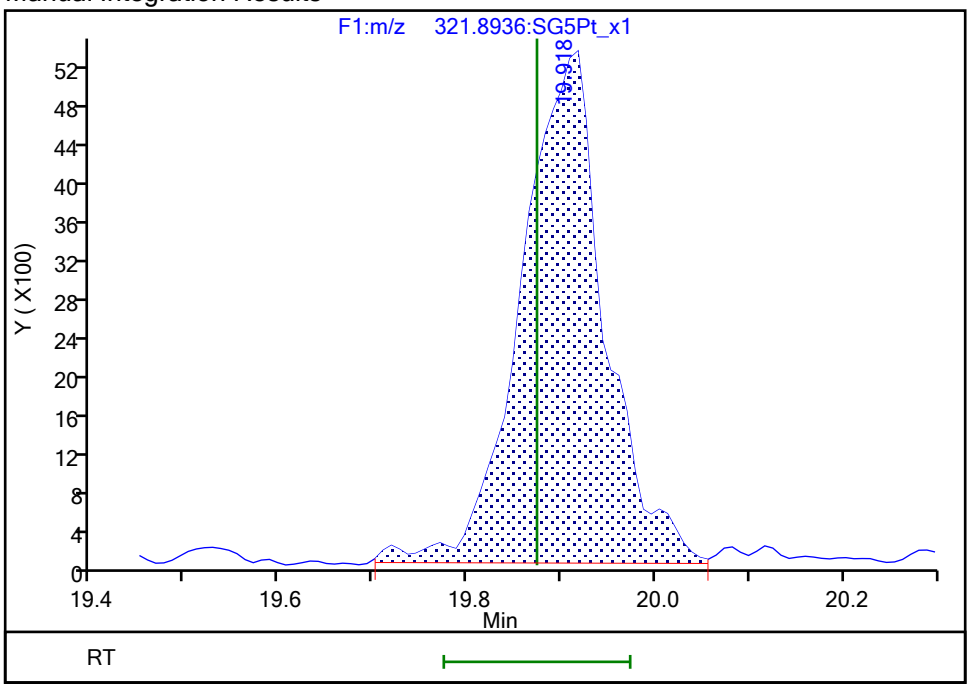
Processing Integration Results

RT: 19.92
Area: 31153
Amount: 1.031187
Amount Units: pg/ul



Manual Integration Results

RT: 19.92
Area: 32739
Amount: 1.062351
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:41:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

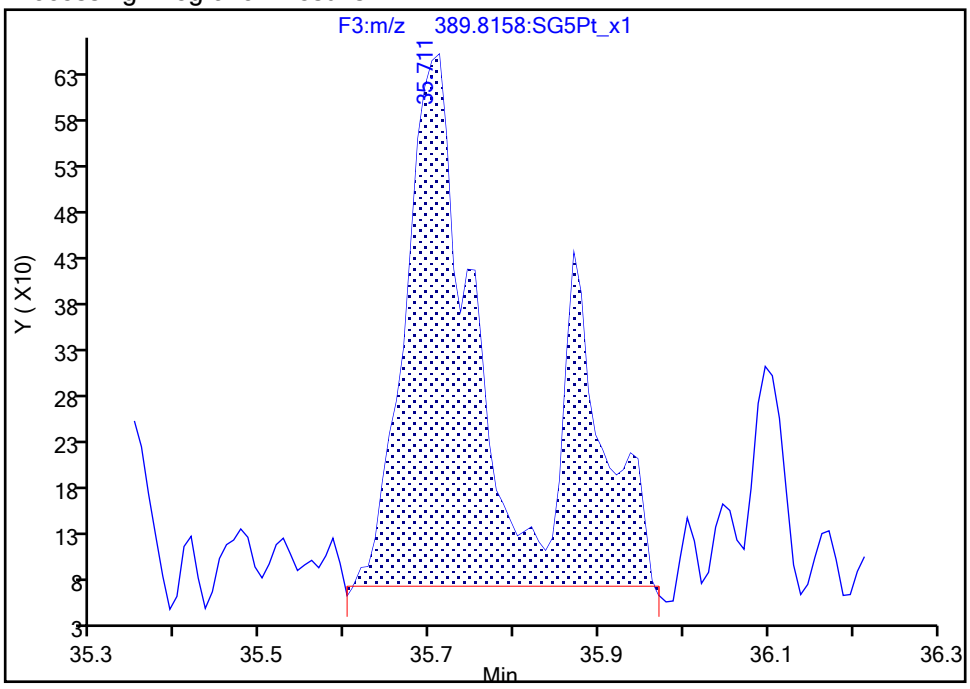
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d				
Injection Date:	13-Dec-2019 20:35:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-5-A	Lab Sample ID:	320-56911-5		
Client ID:	11187072-120819-BN-SJSSA09 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

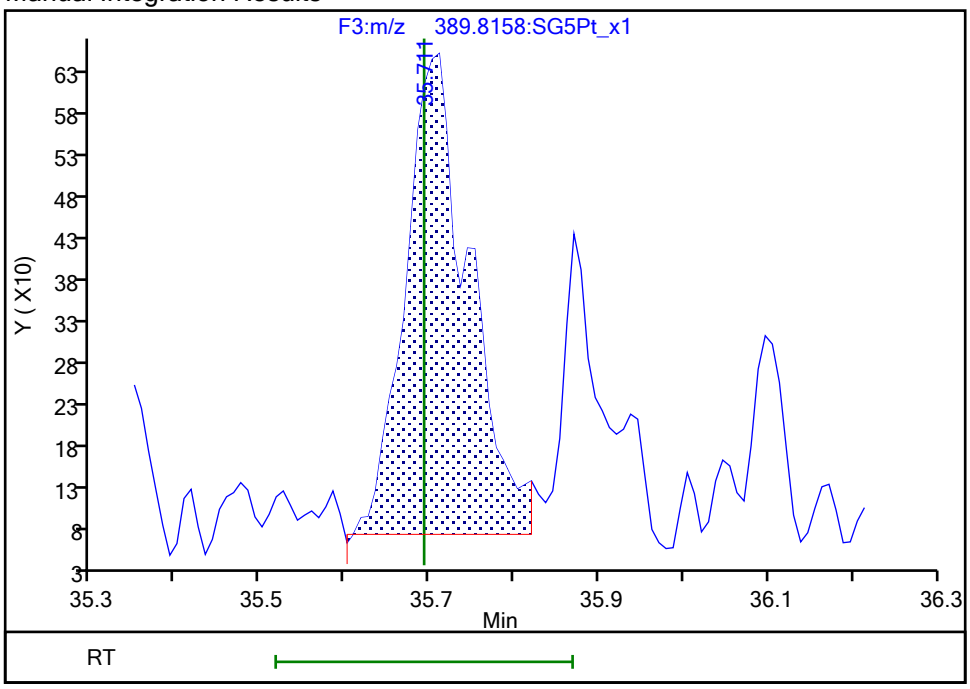
Processing Integration Results

RT: 35.71
Area: 4257
Amount: 0.146749
Amount Units: pg/ul



Manual Integration Results

RT: 35.71
Area: 3017
Amount: 0.120399
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:42:26

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

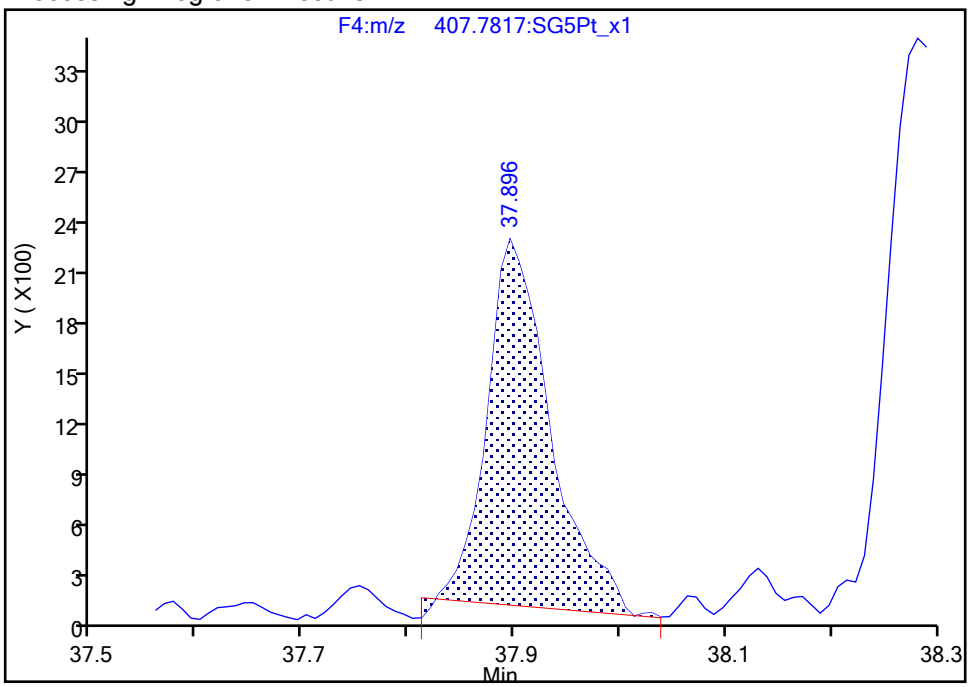
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d				
Injection Date:	13-Dec-2019 20:35:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-5-A	Lab Sample ID:	320-56911-5		
Client ID:	11187072-120819-BN-SJSSA09 (0-1)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

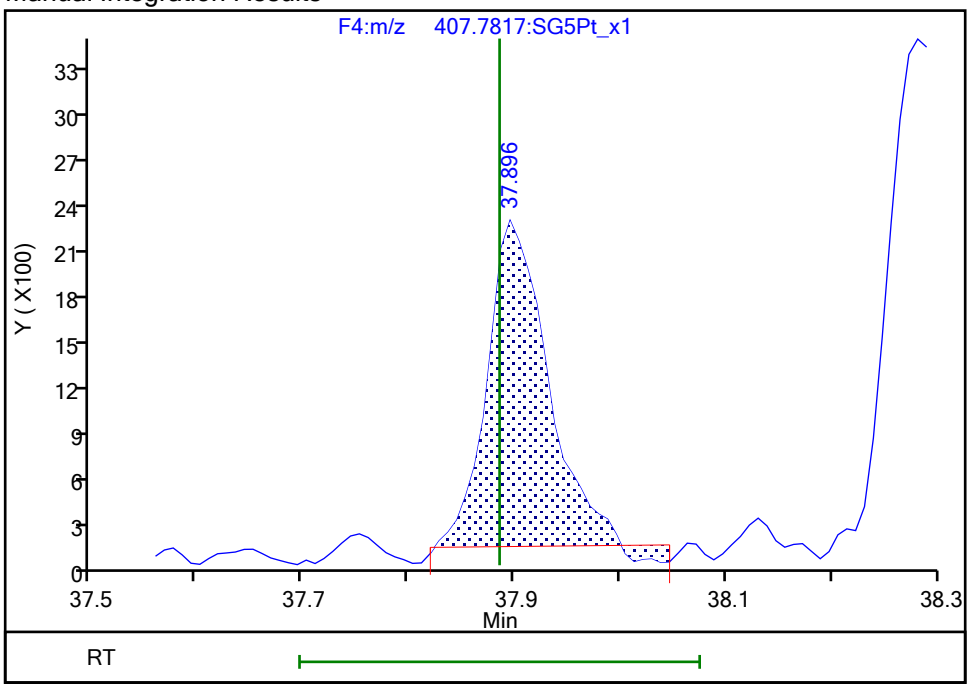
Processing Integration Results

RT: 37.90
Area: 8868
Amount: 0.305268
Amount Units: pg/ul



Manual Integration Results

RT: 37.90
Area: 8182
Amount: 0.292702
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:42:52

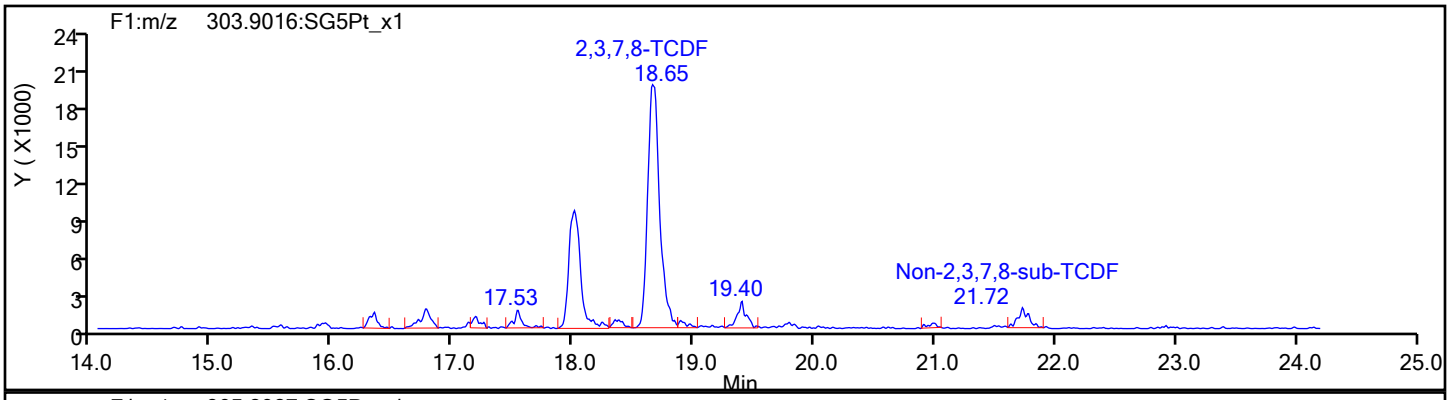
Audit Action: Manually Integrated Audit Reason: Baseline

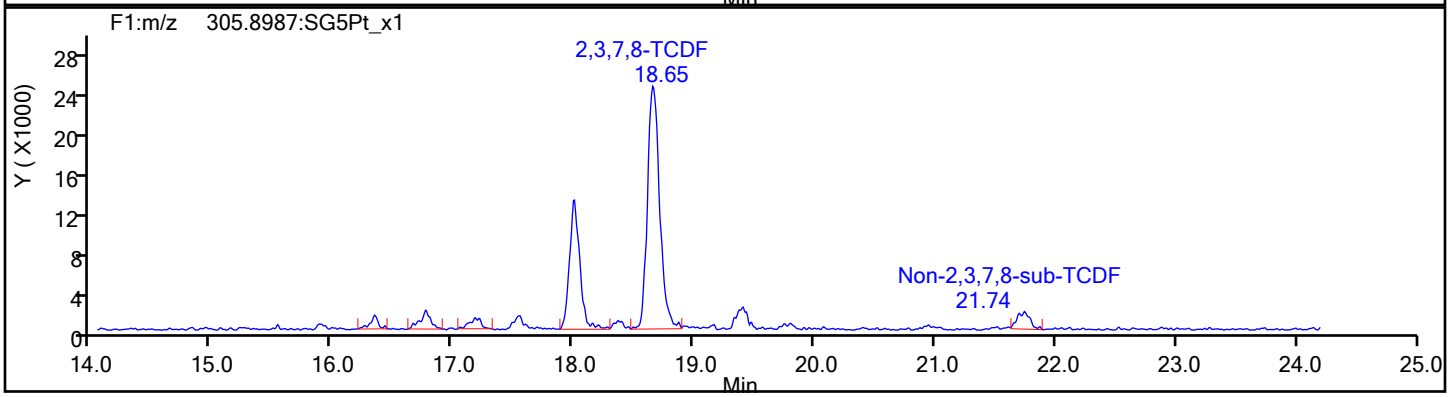
Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

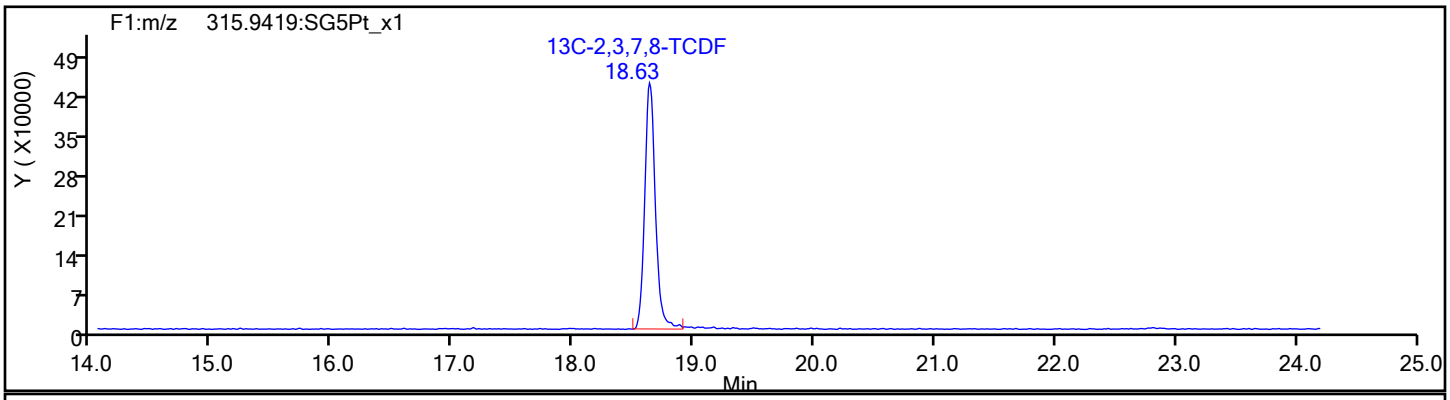
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

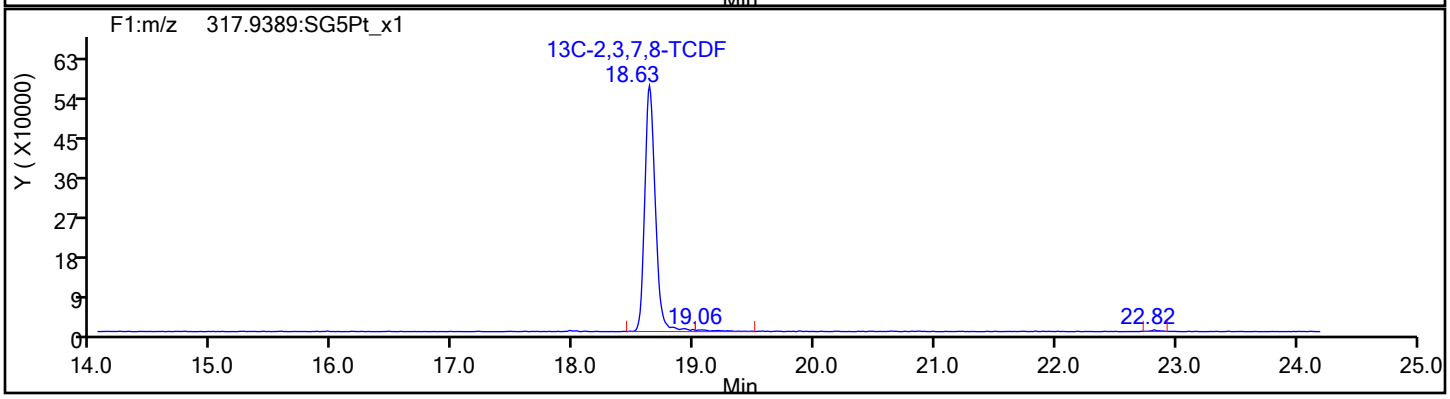
TCDF





TCDF Standards



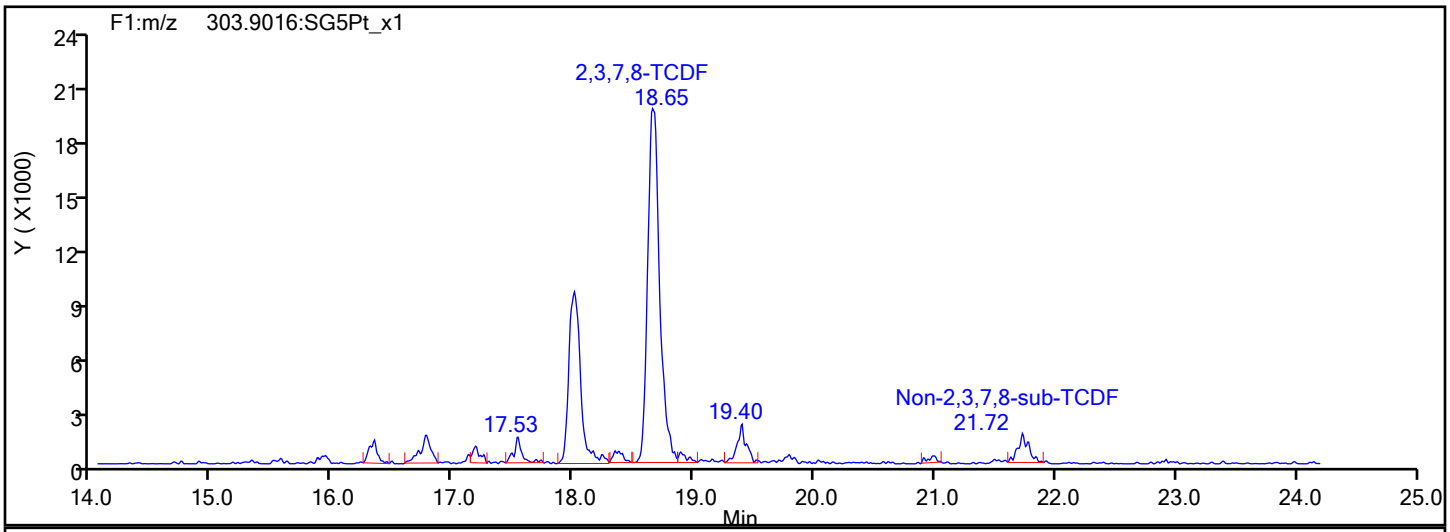


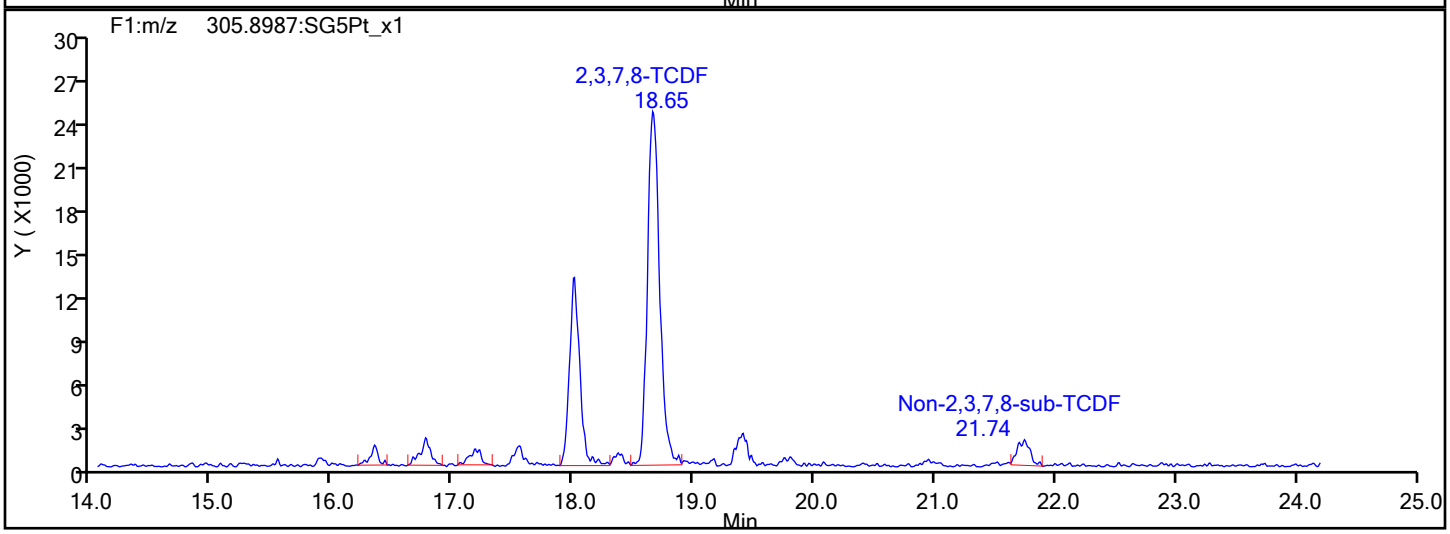
Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

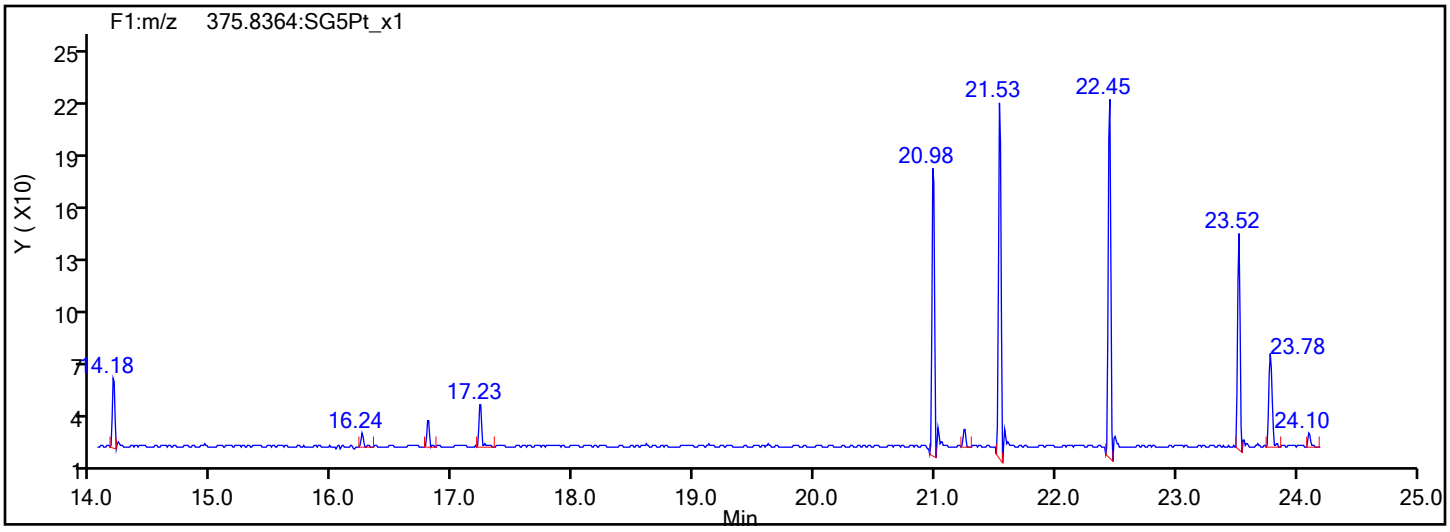
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

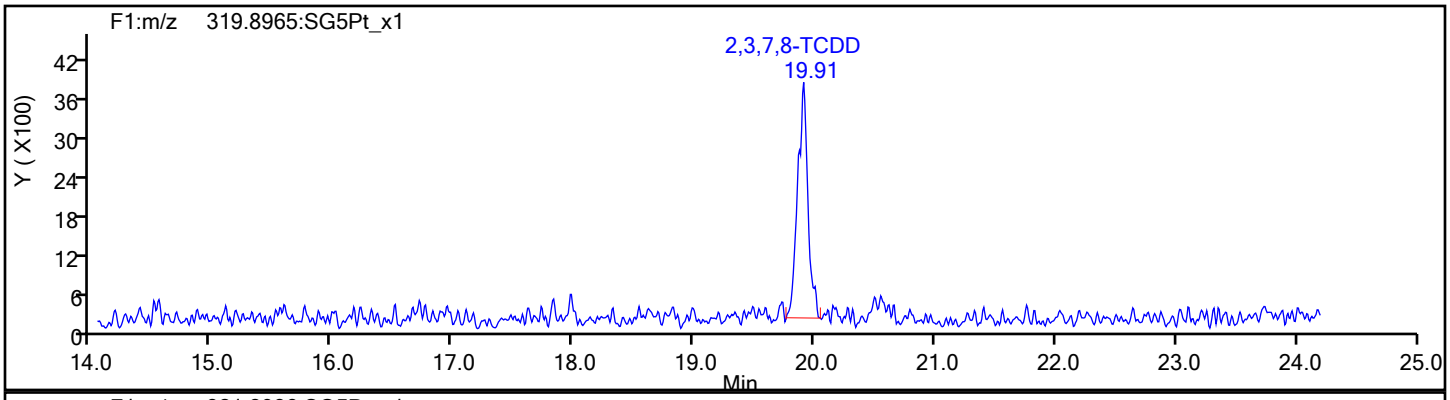


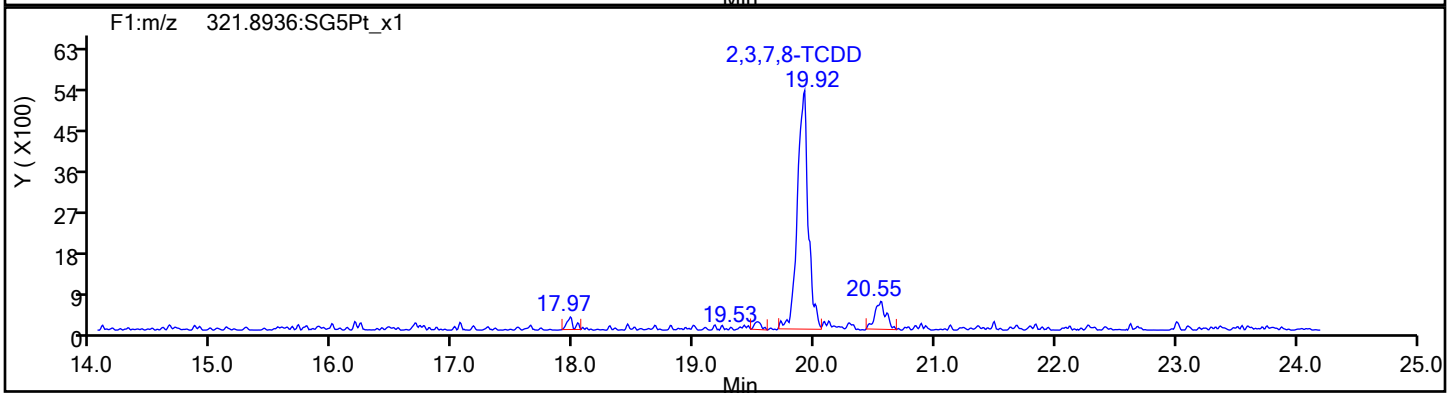
Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

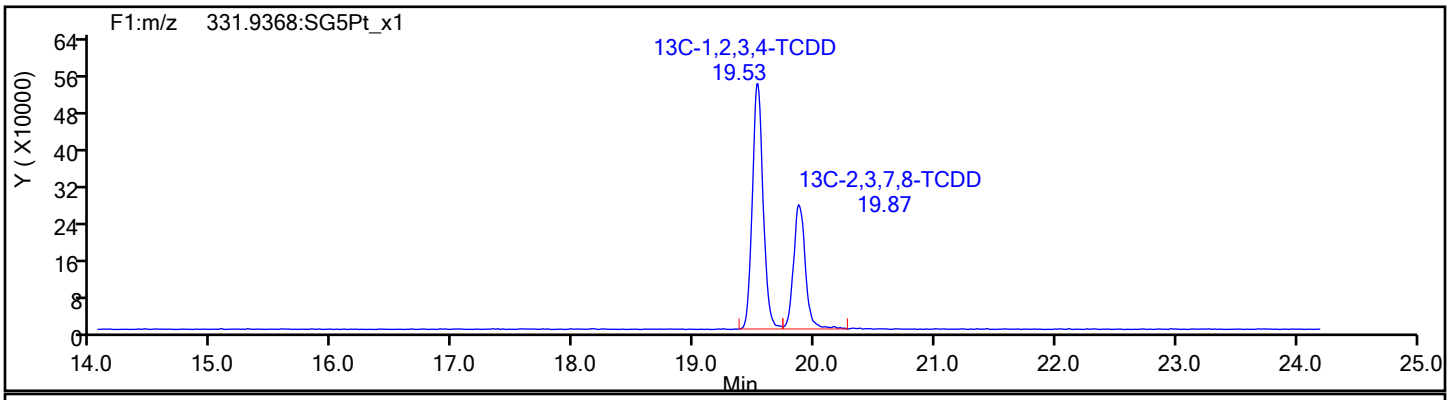
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

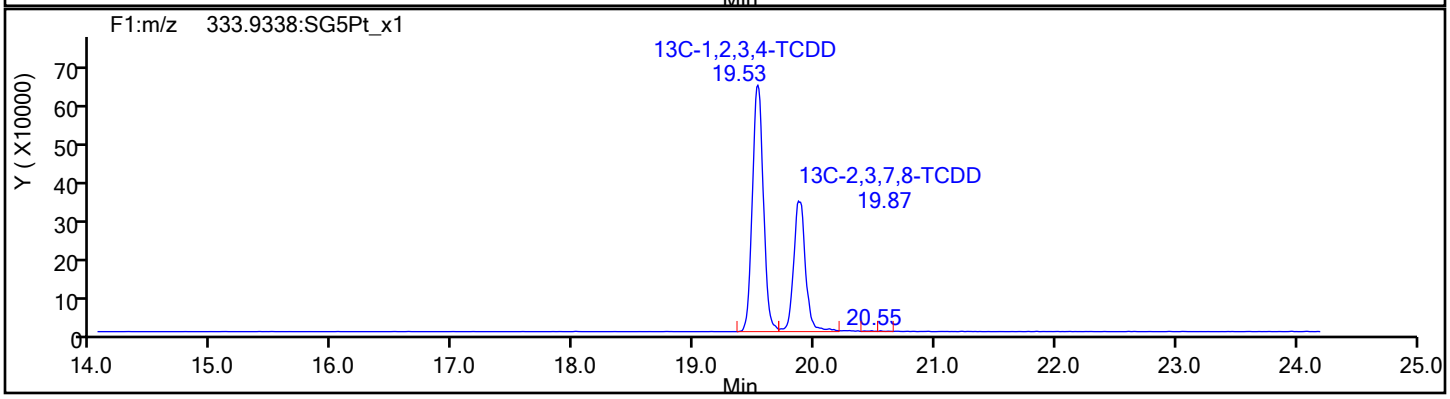
TCDD





TCDD Standards



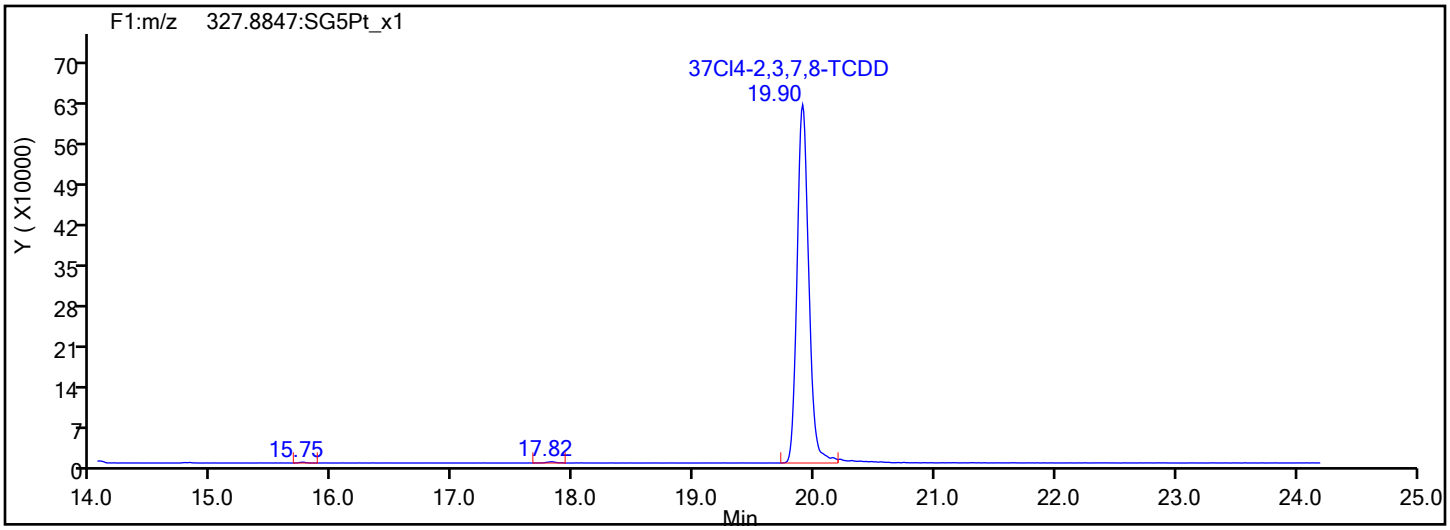


Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

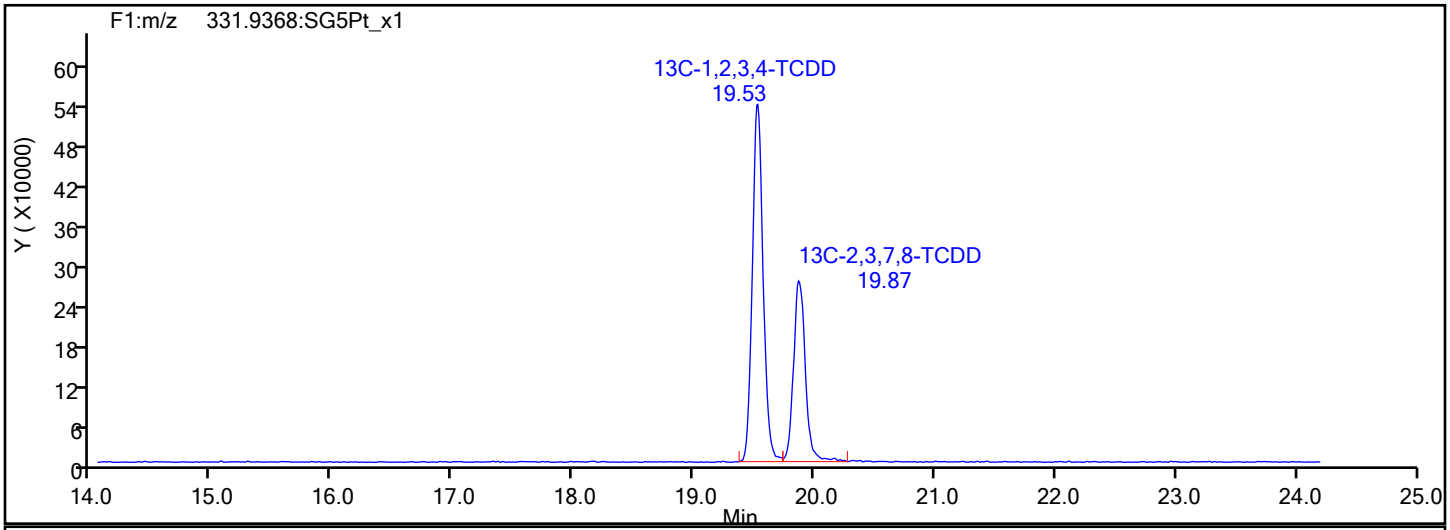
Eurofins TestAmerica, Sacramento

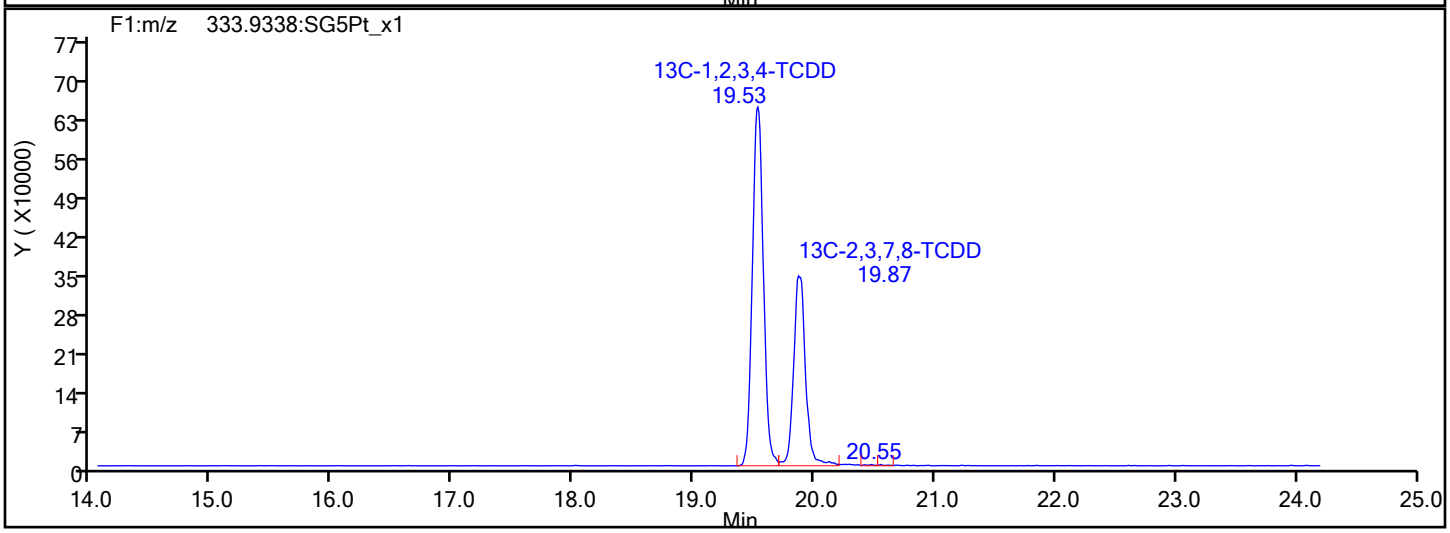
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



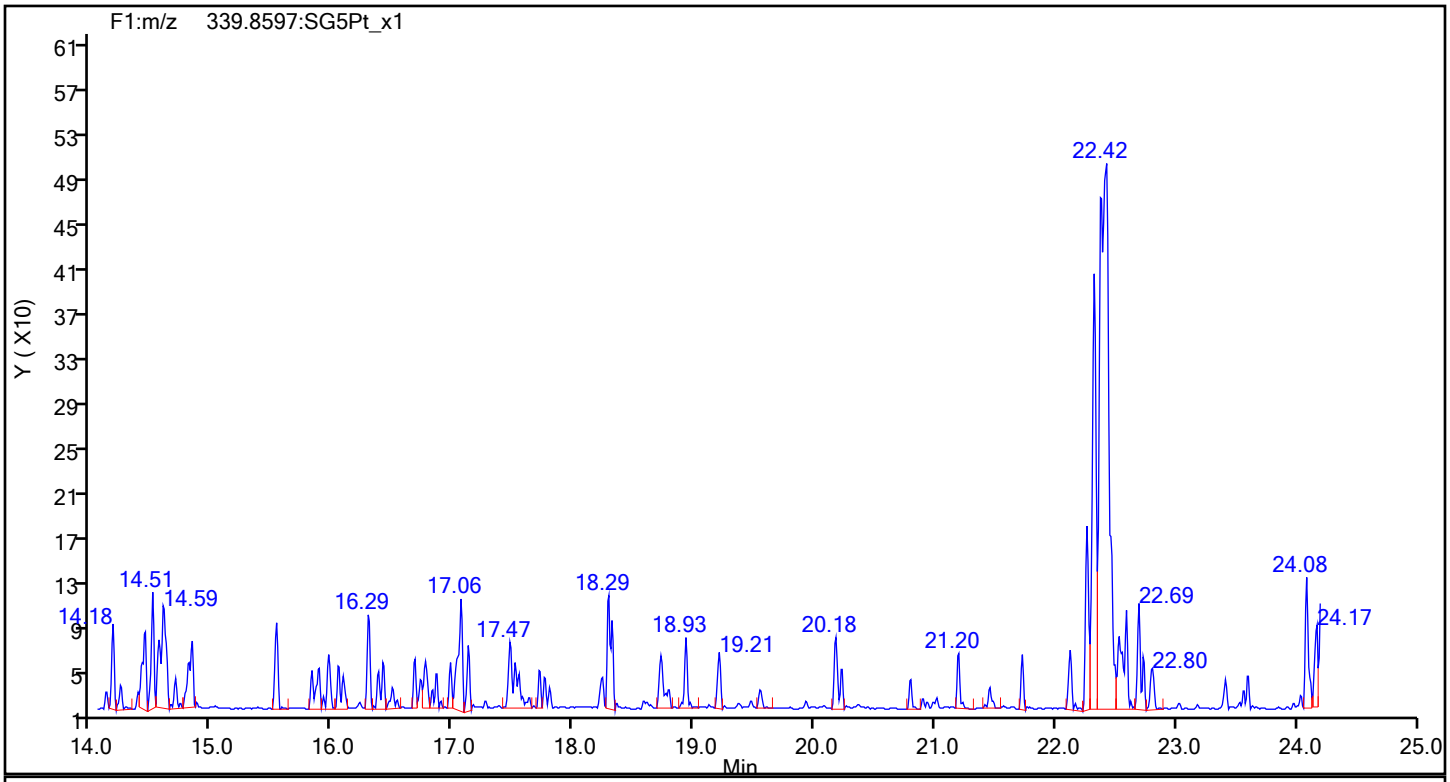


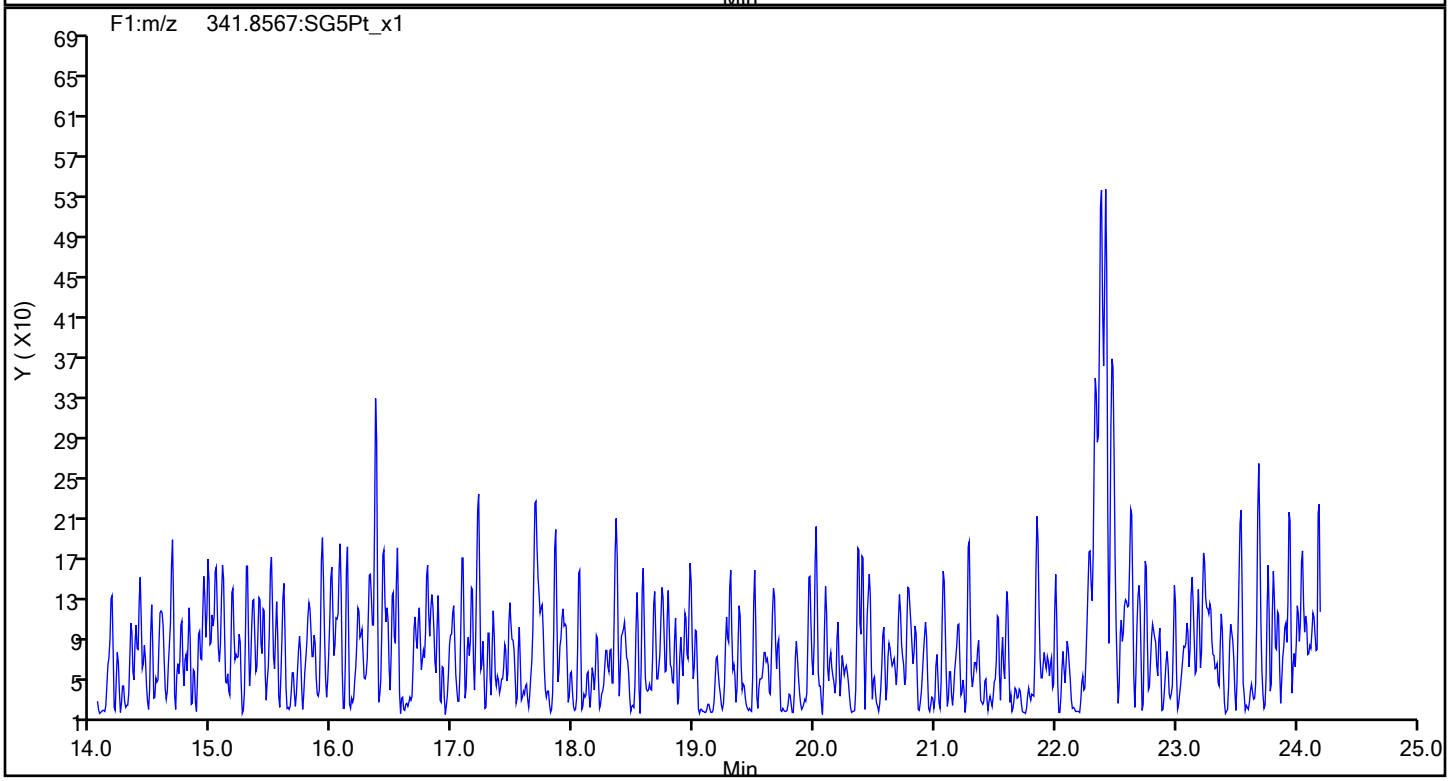
Report Date: 17-Dec-2019 09:43:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
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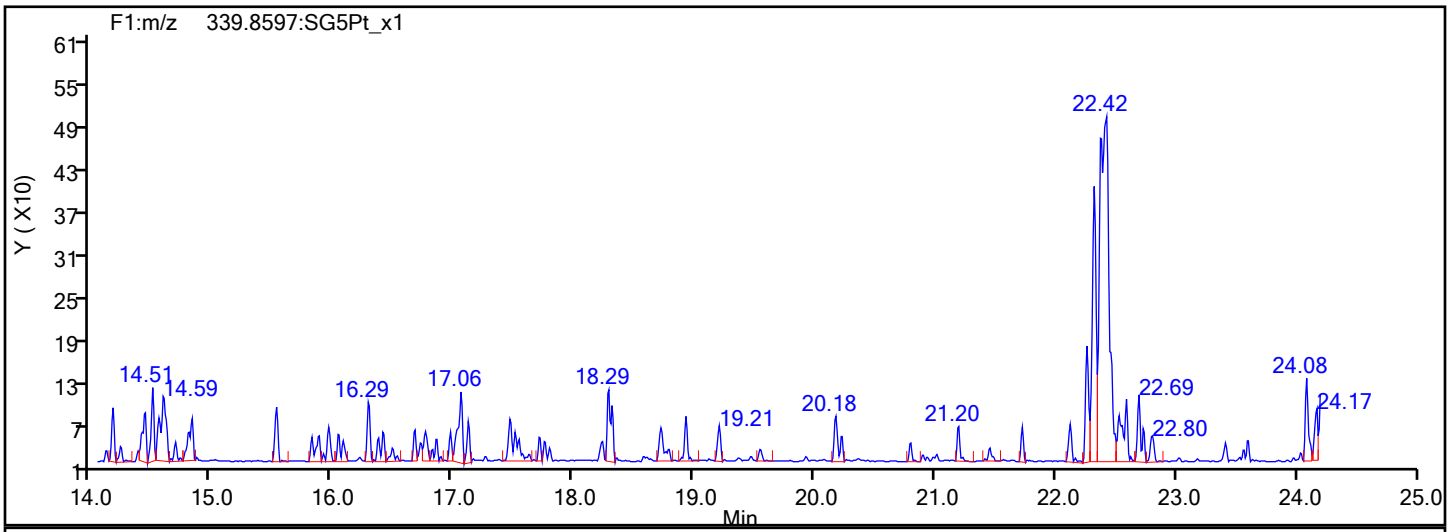
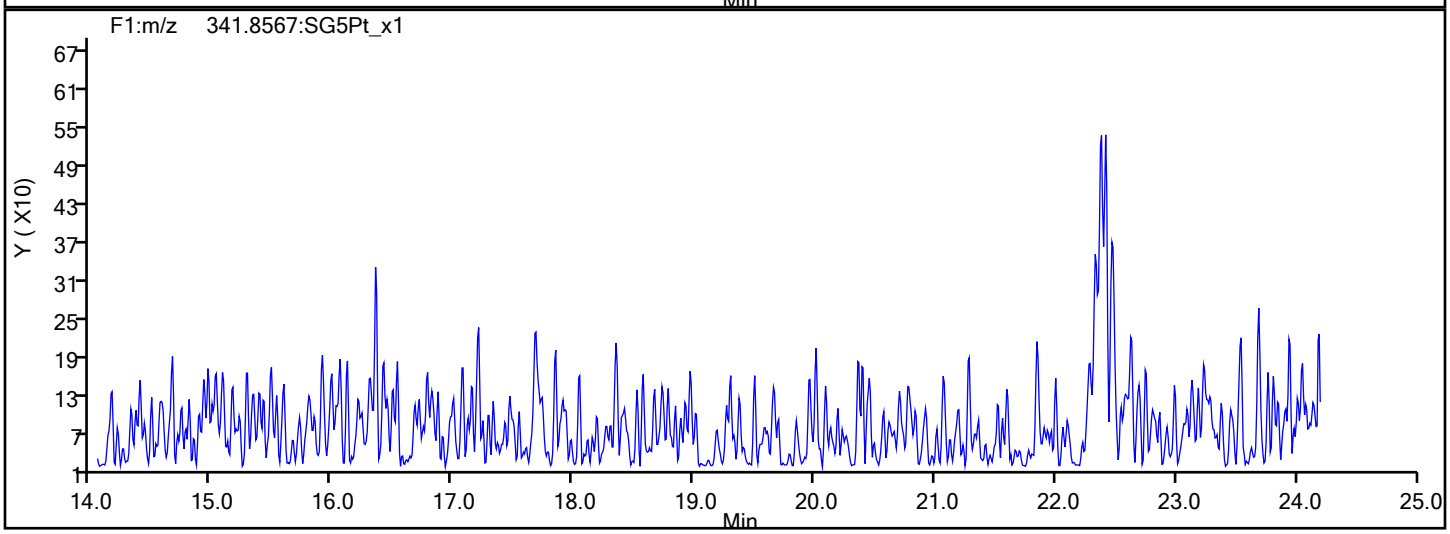
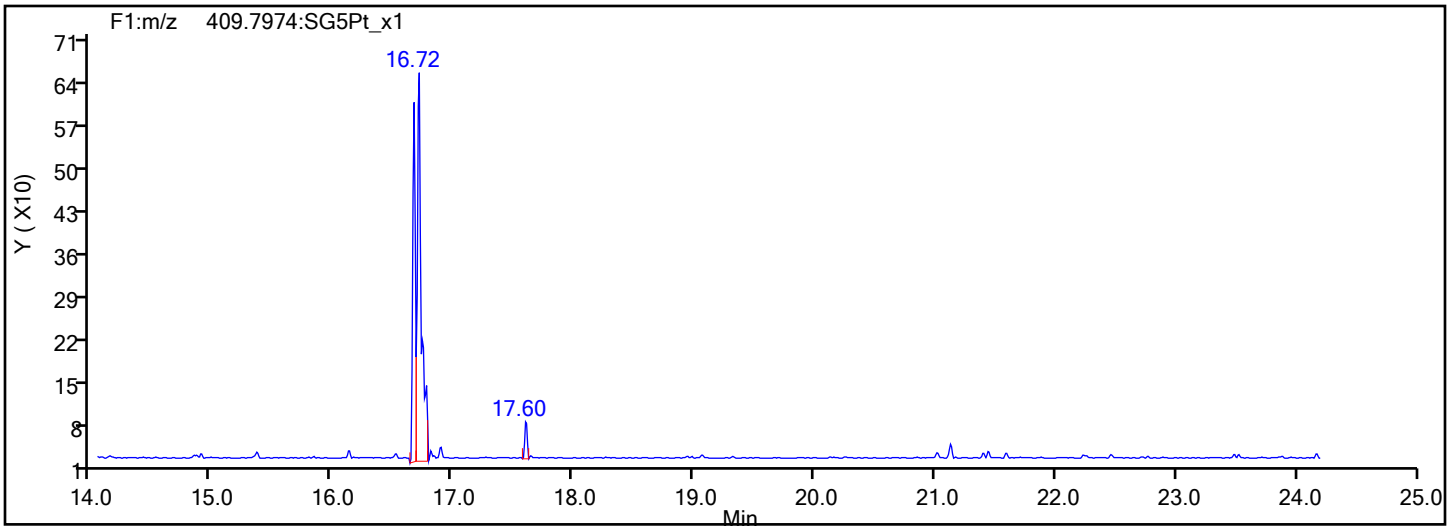
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

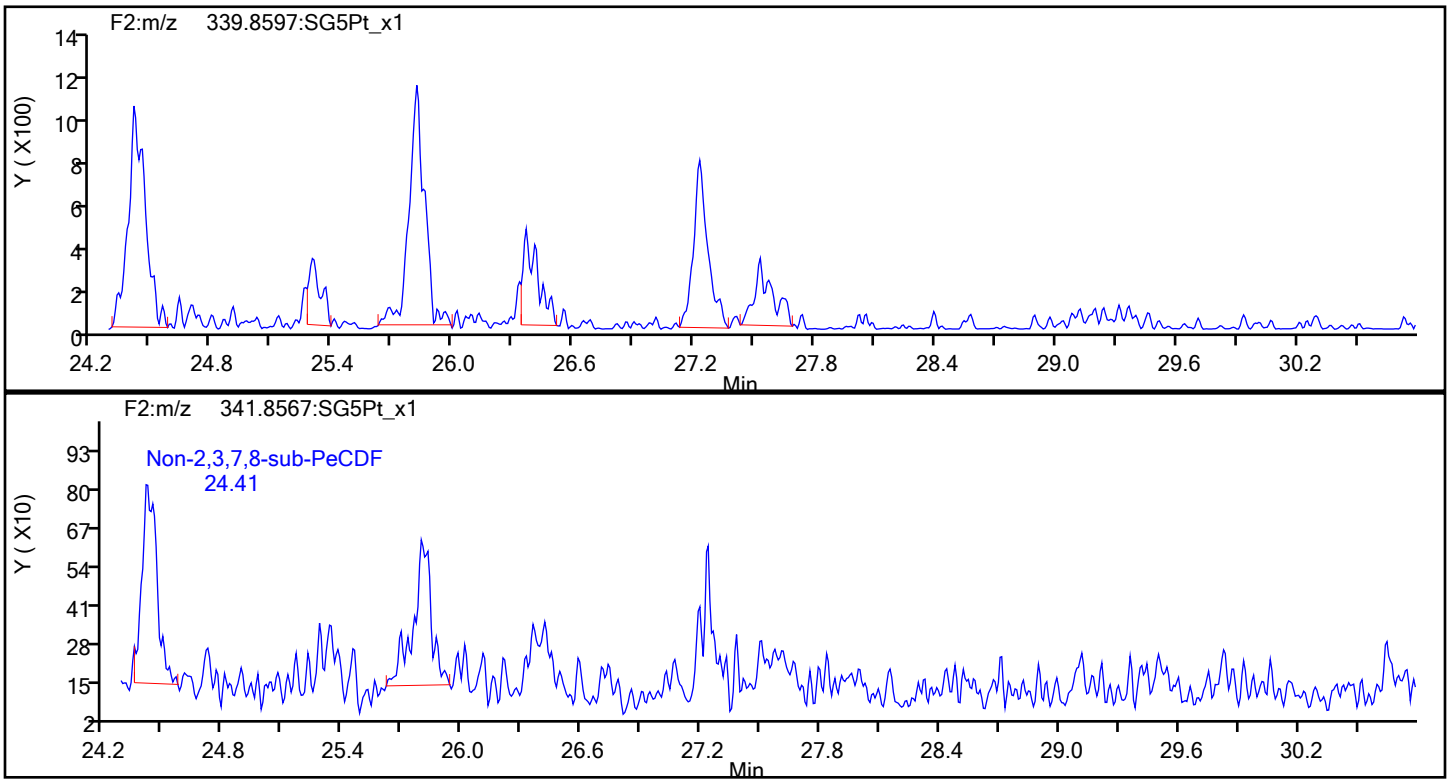


Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

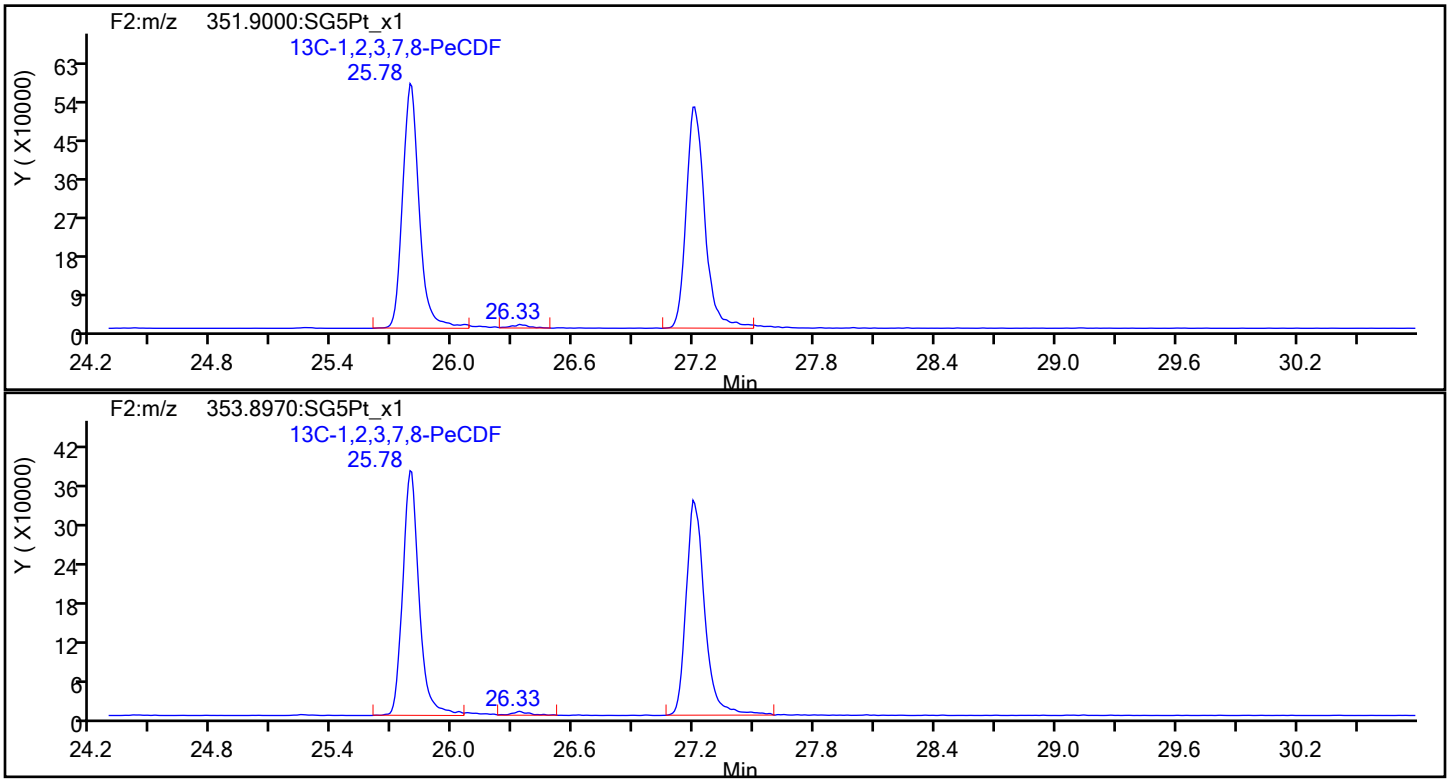
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

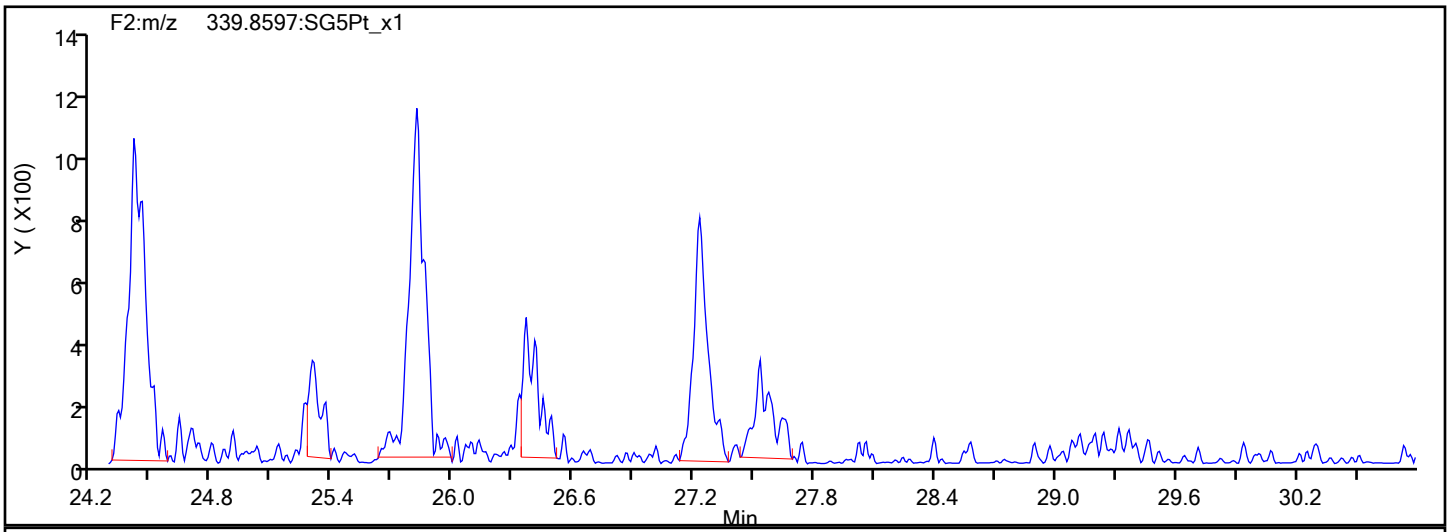


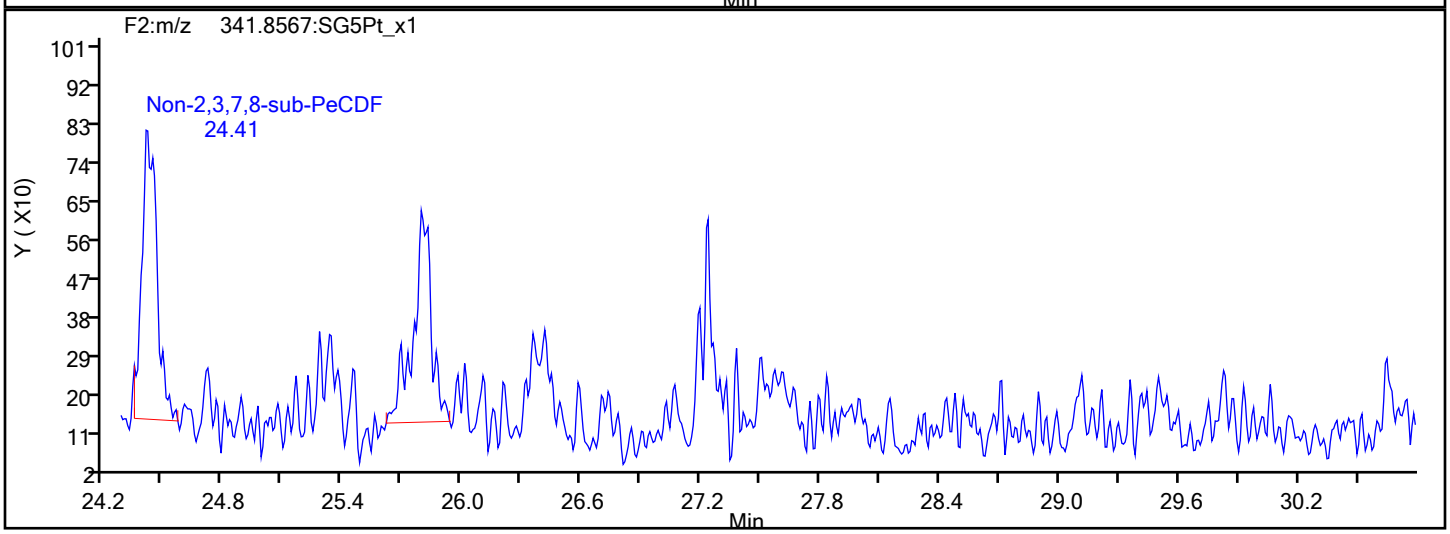
Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

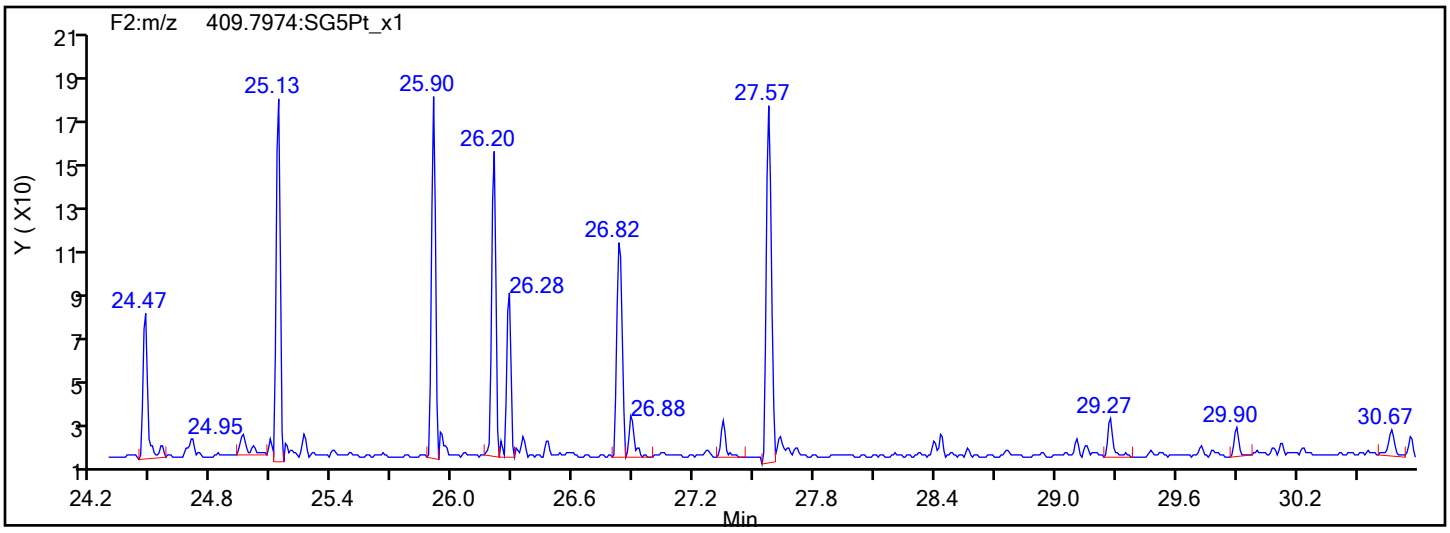
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass

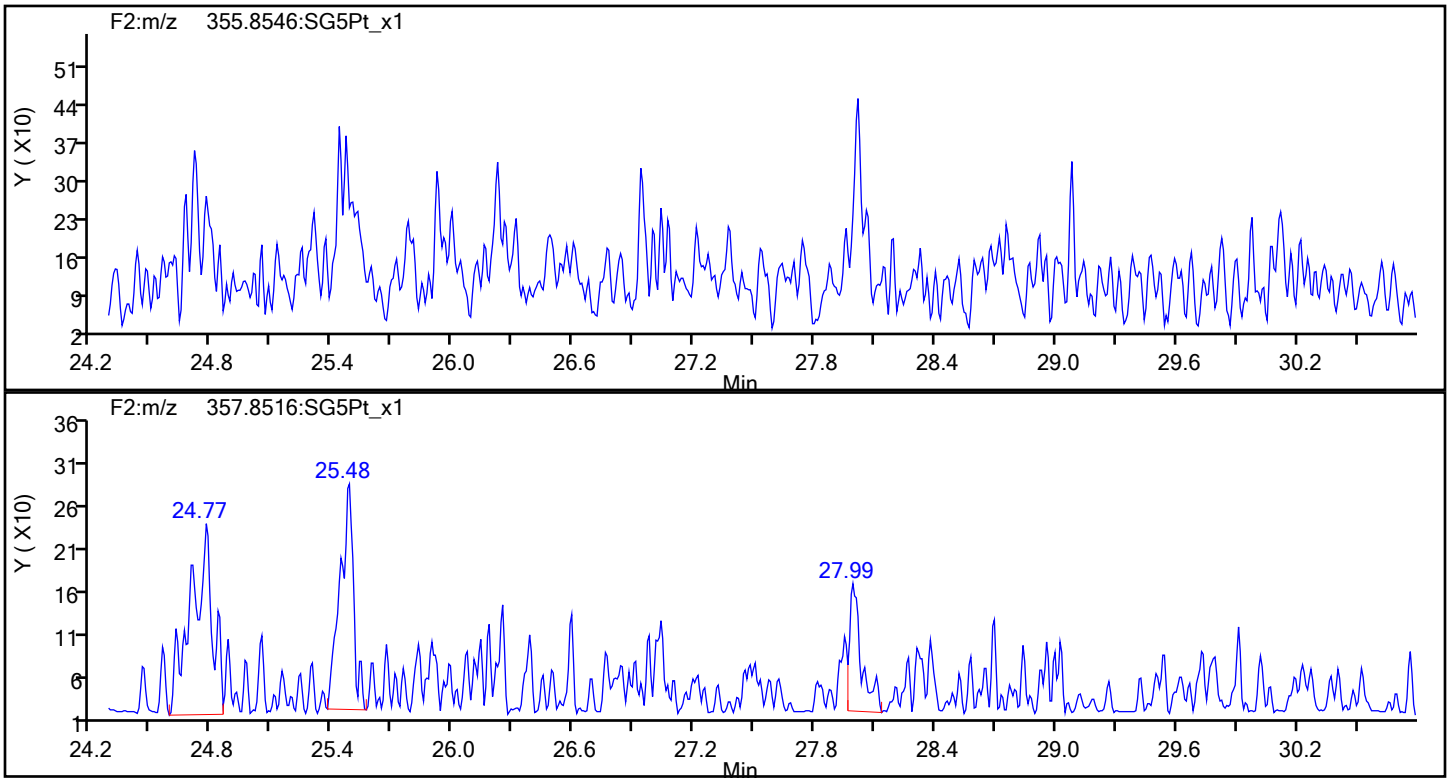


Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

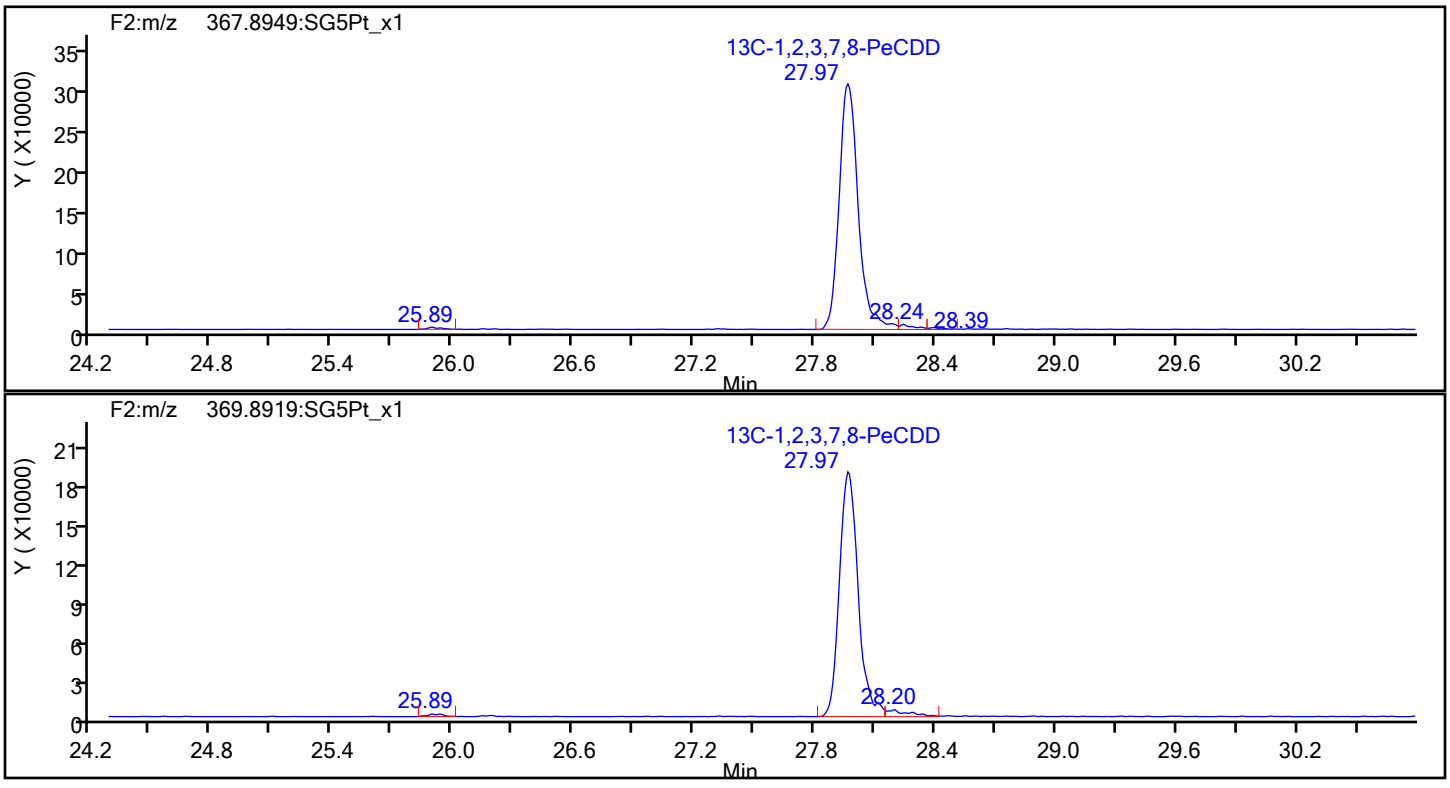
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
Injection Date:	13-Dec-2019 20:35:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards



Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
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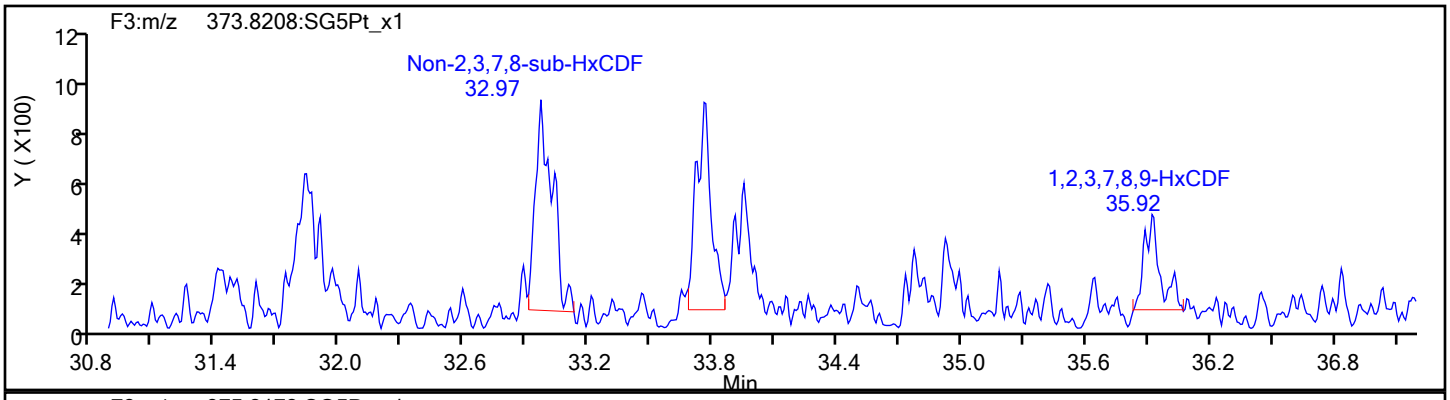
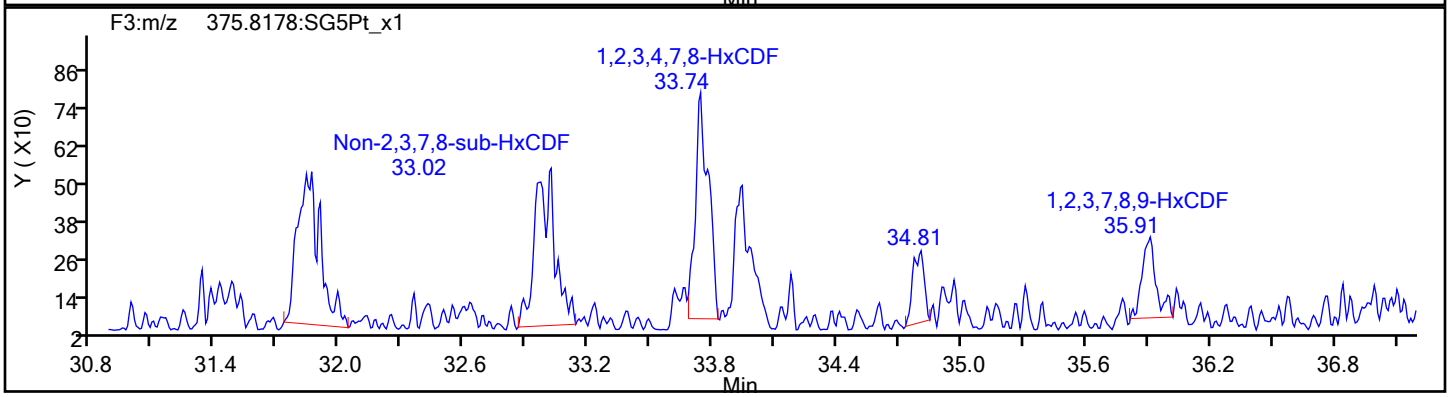
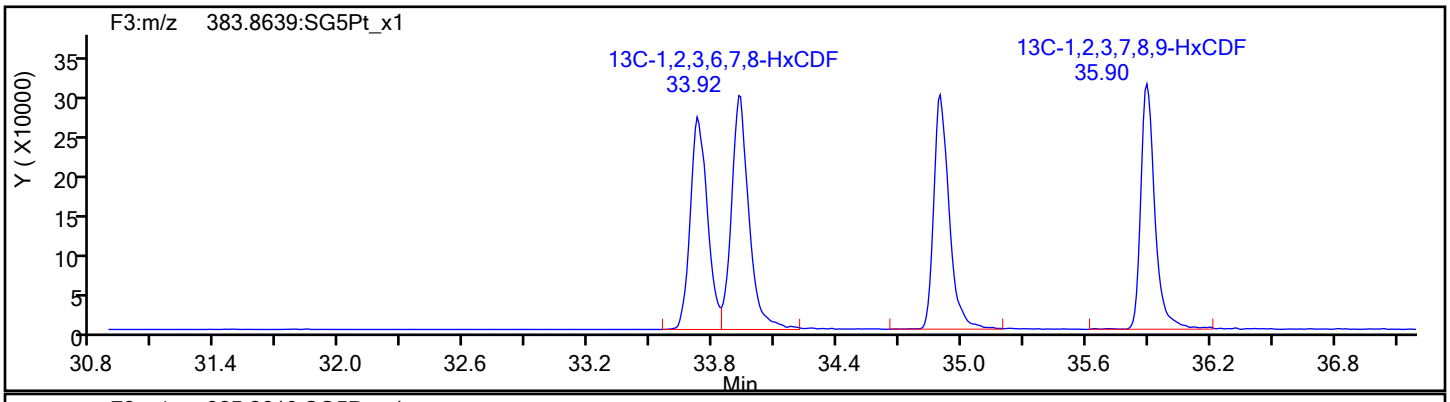
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

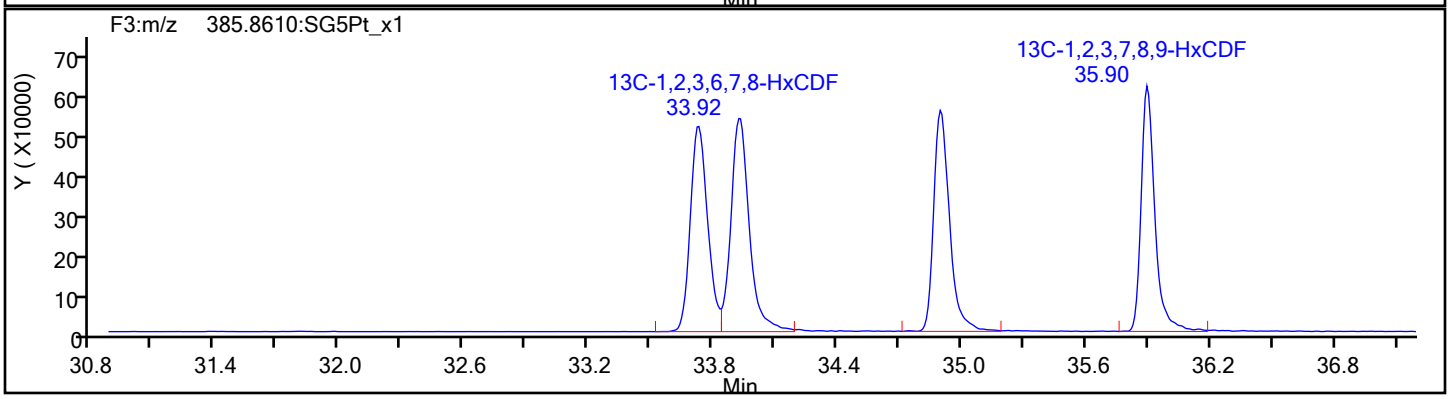
HxCDF





HxCDF Standards





Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
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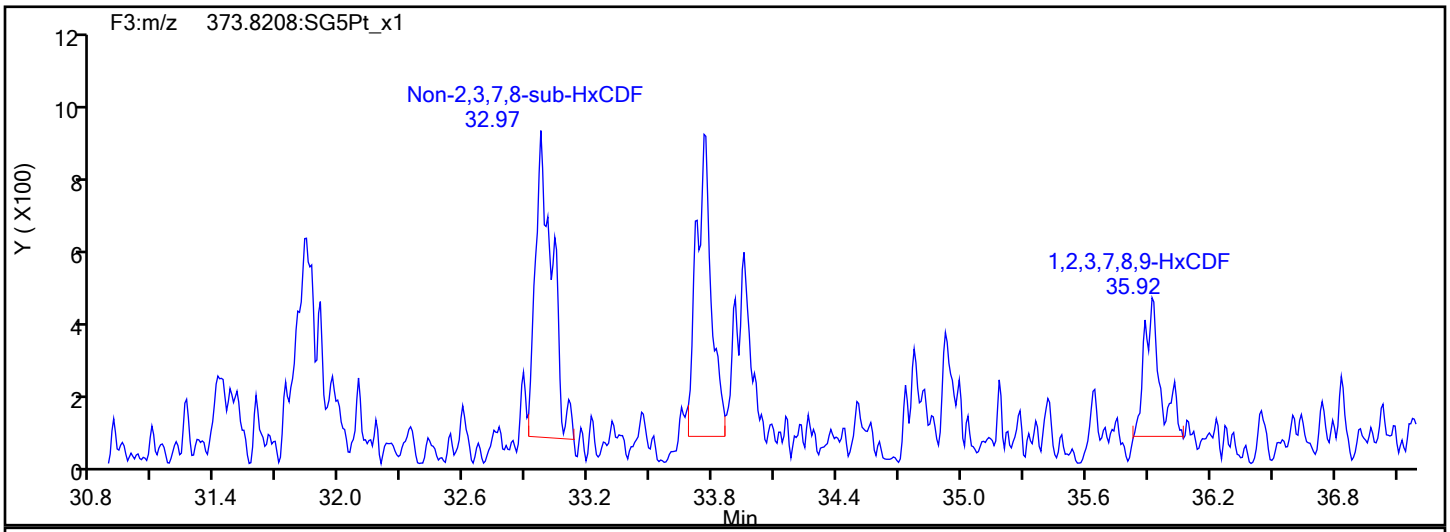
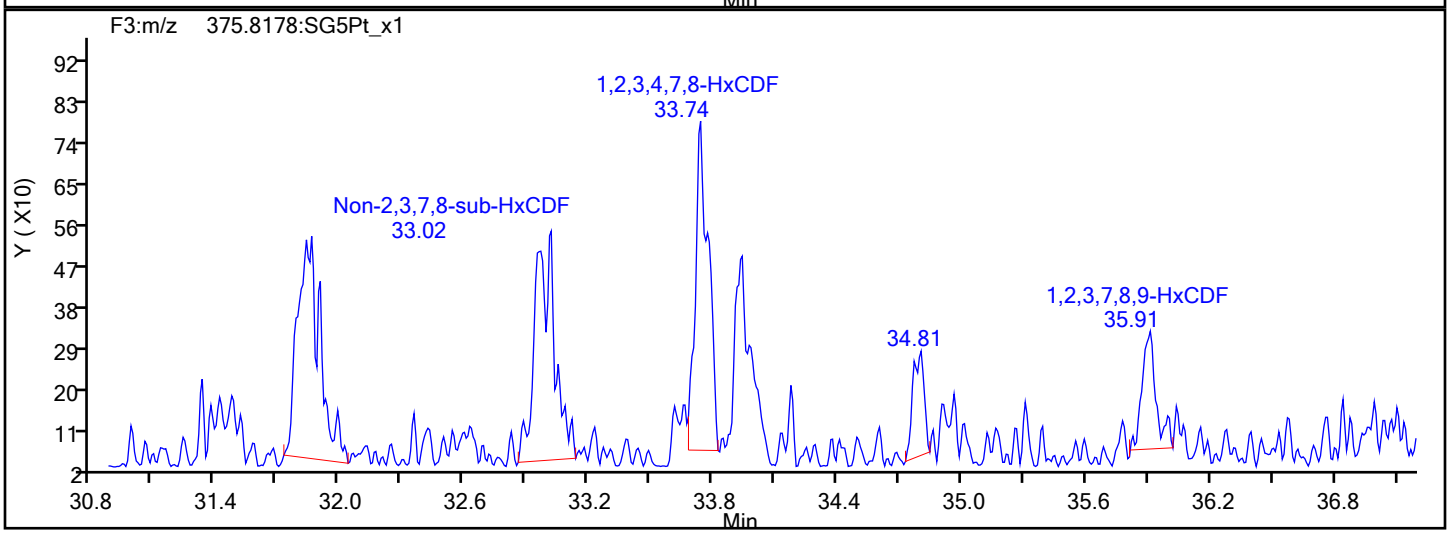
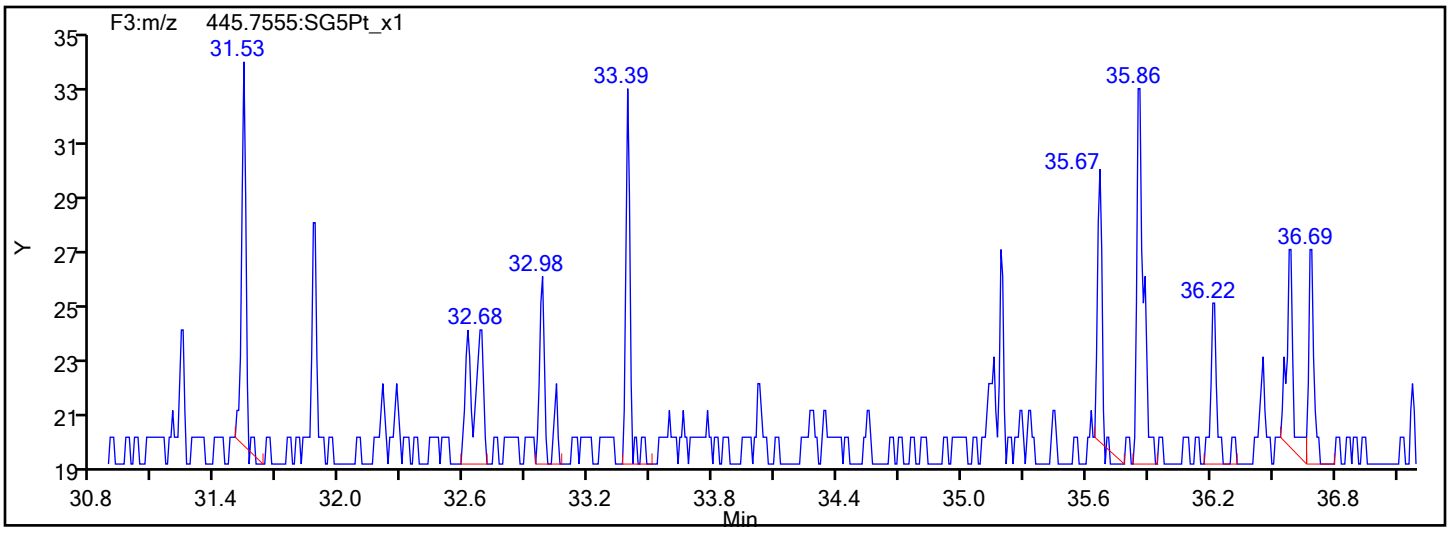




HxCDF Interference Mass



Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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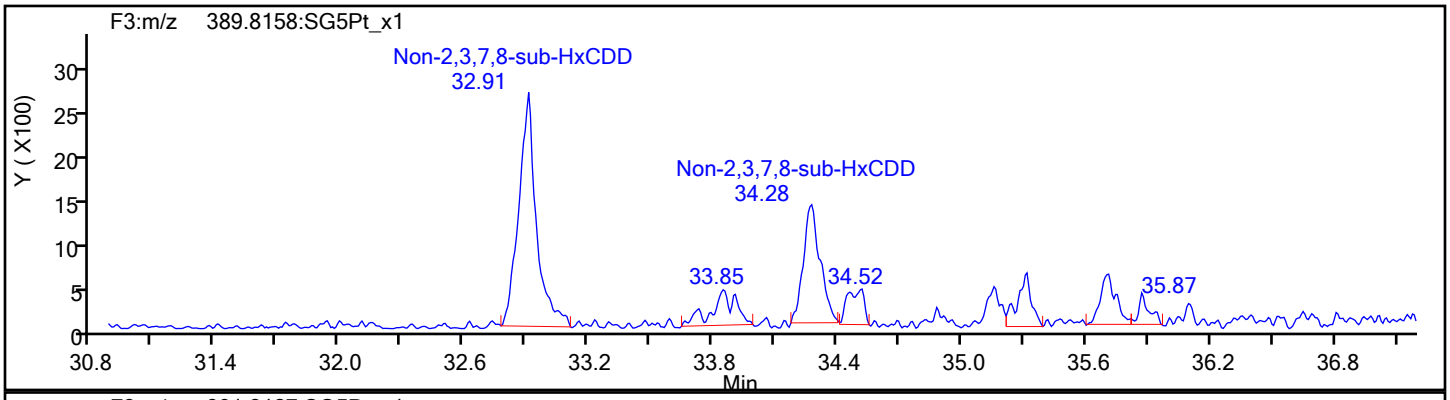
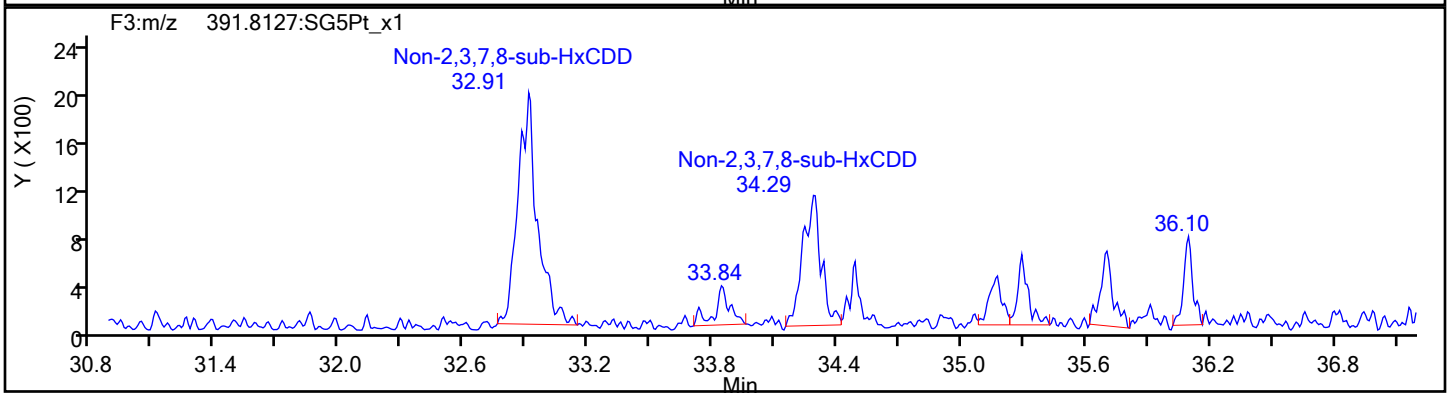
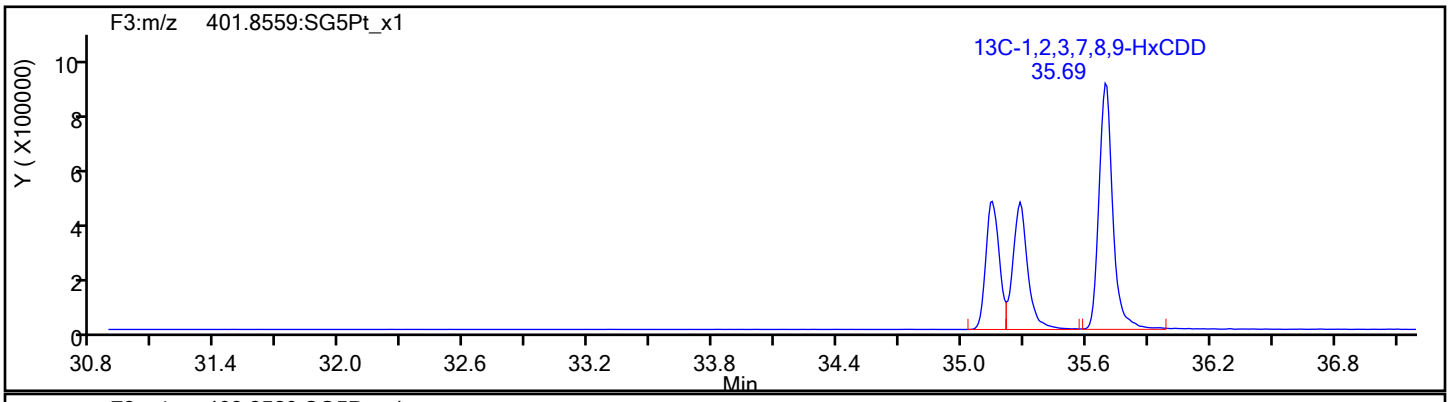
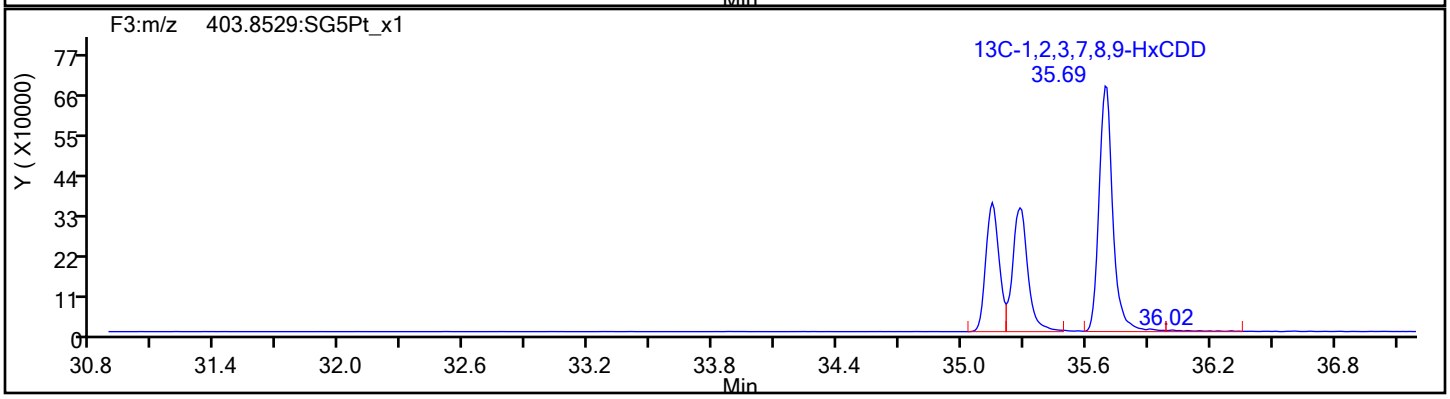
HxCDD





HxCDD Standards





Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_12.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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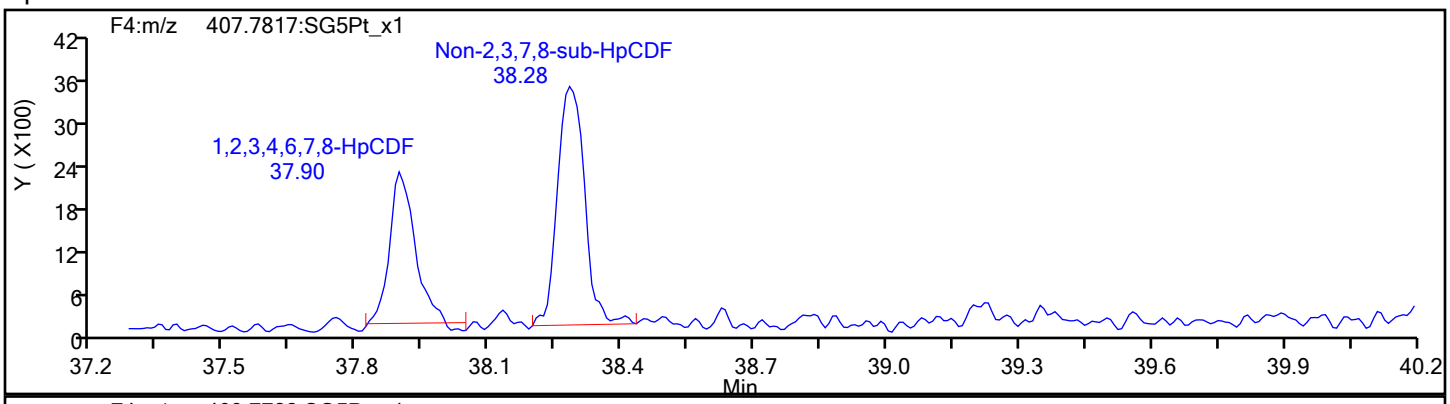
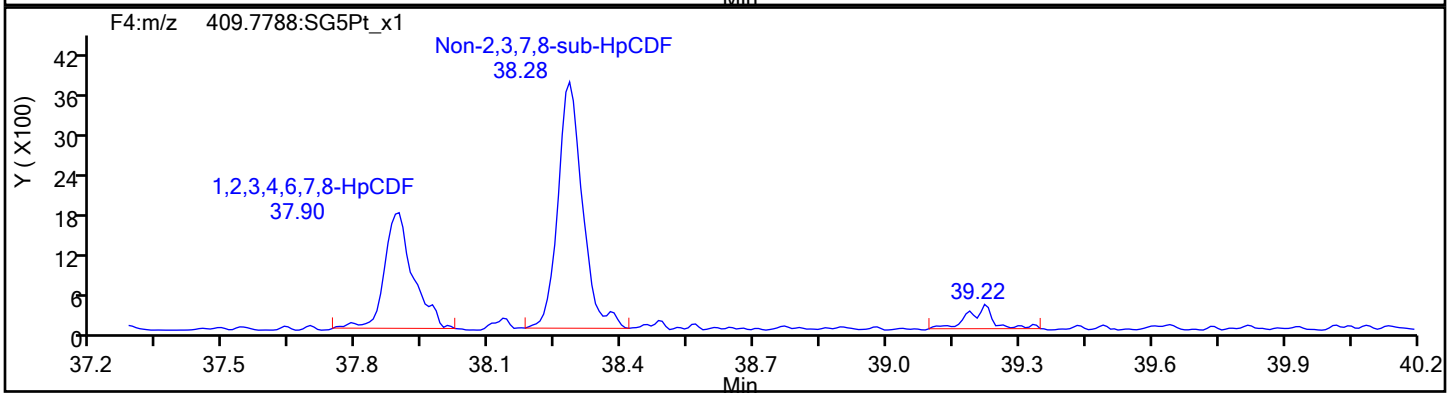
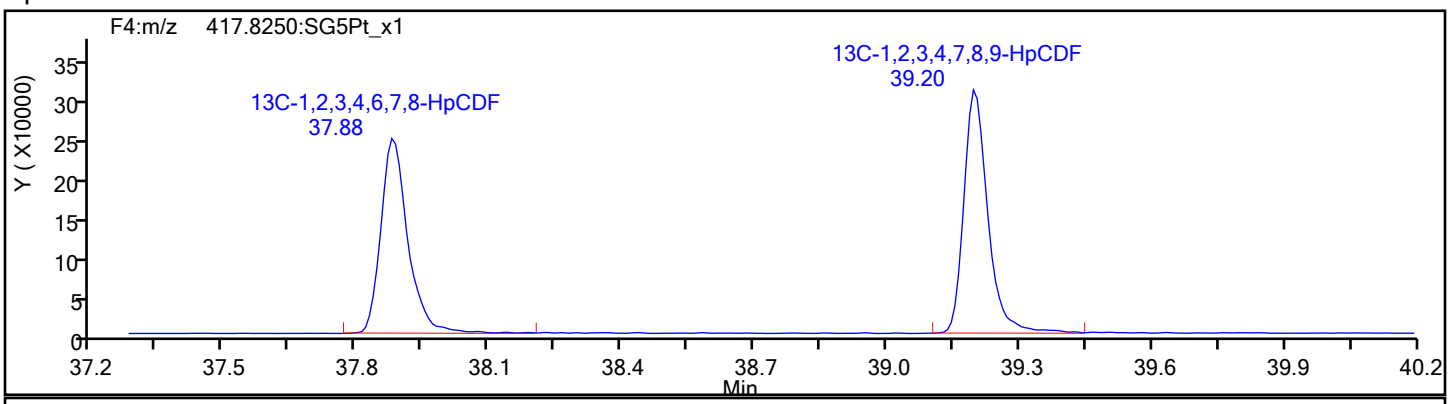
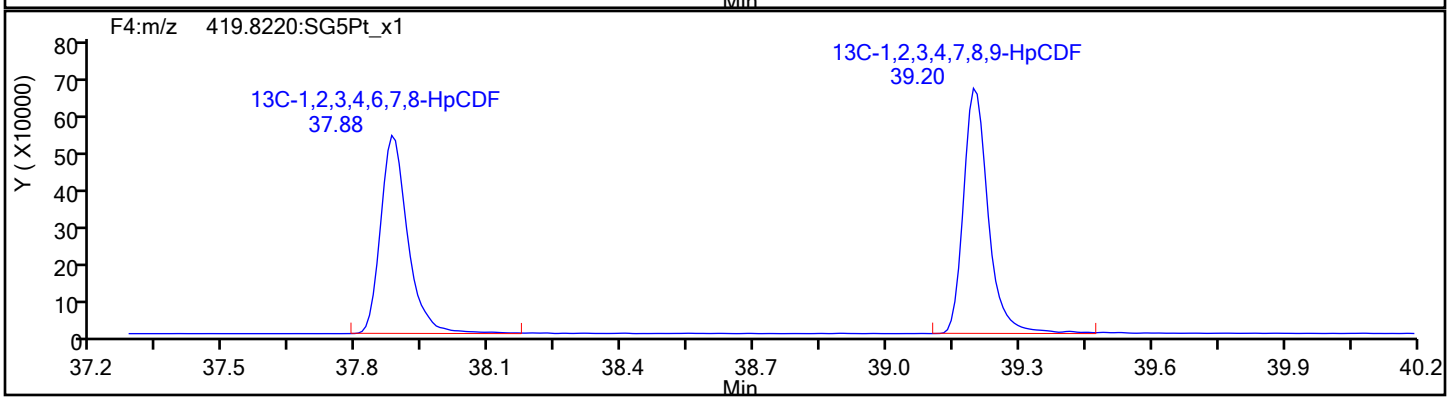




HpCDF Standards





Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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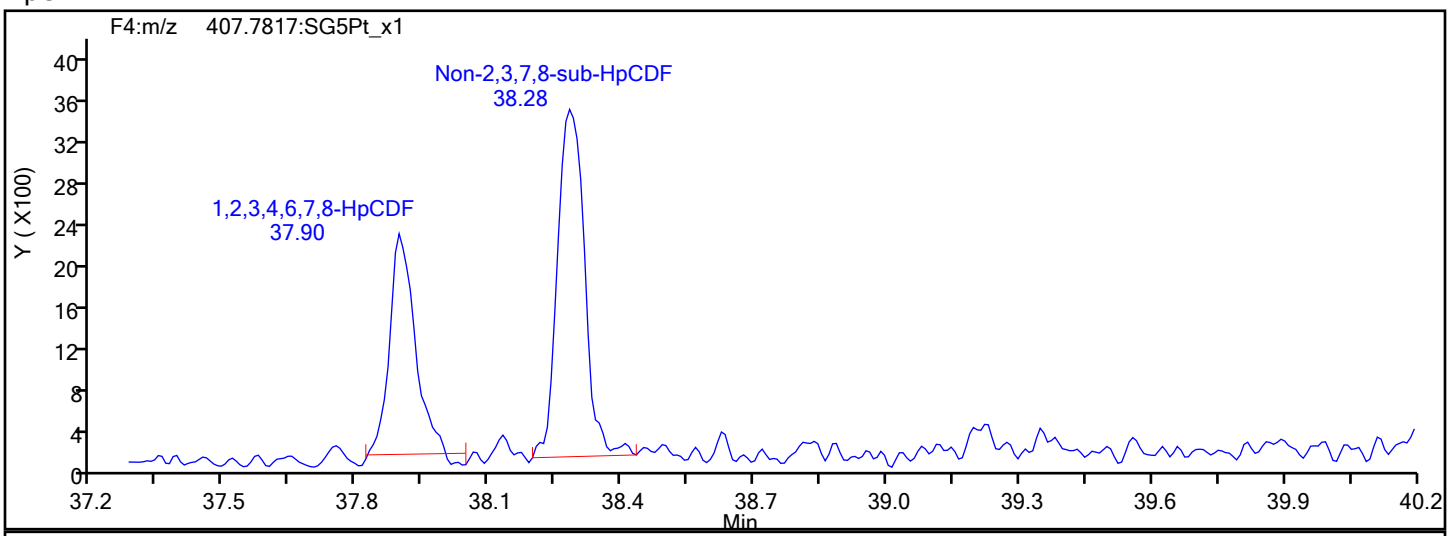
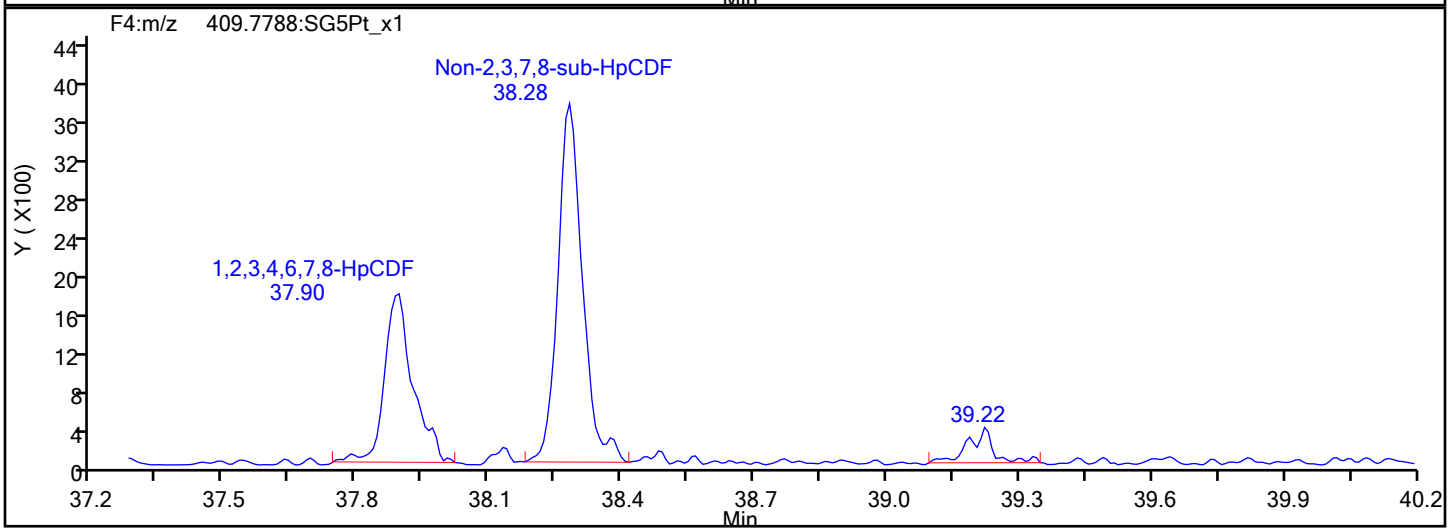
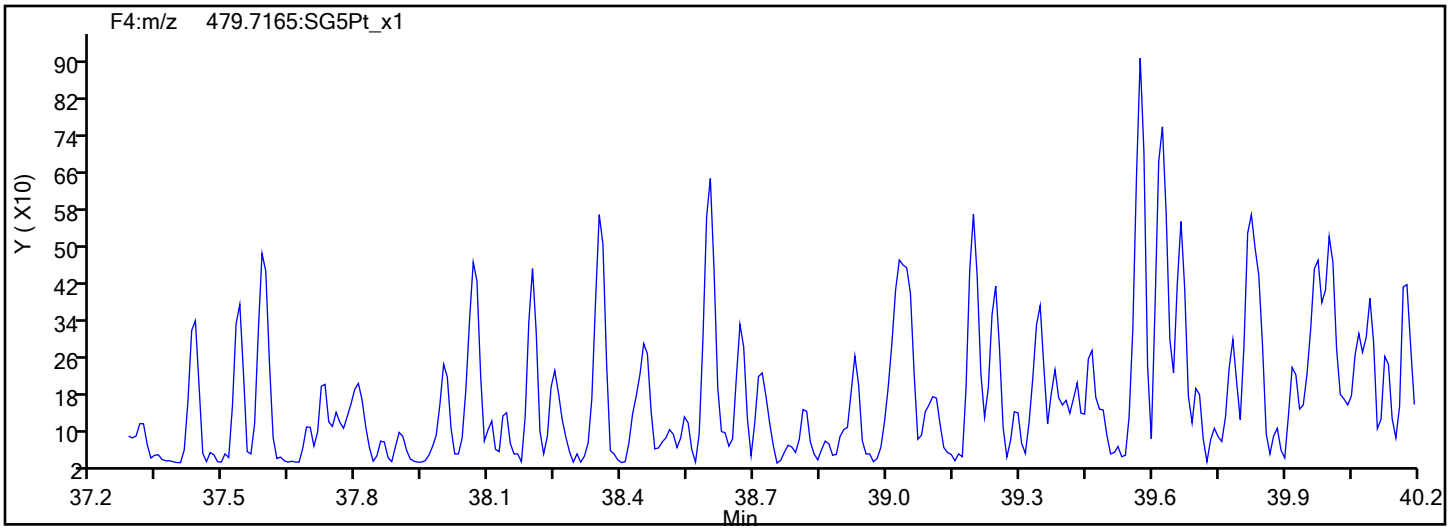




HpCDF Interference Mass



Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
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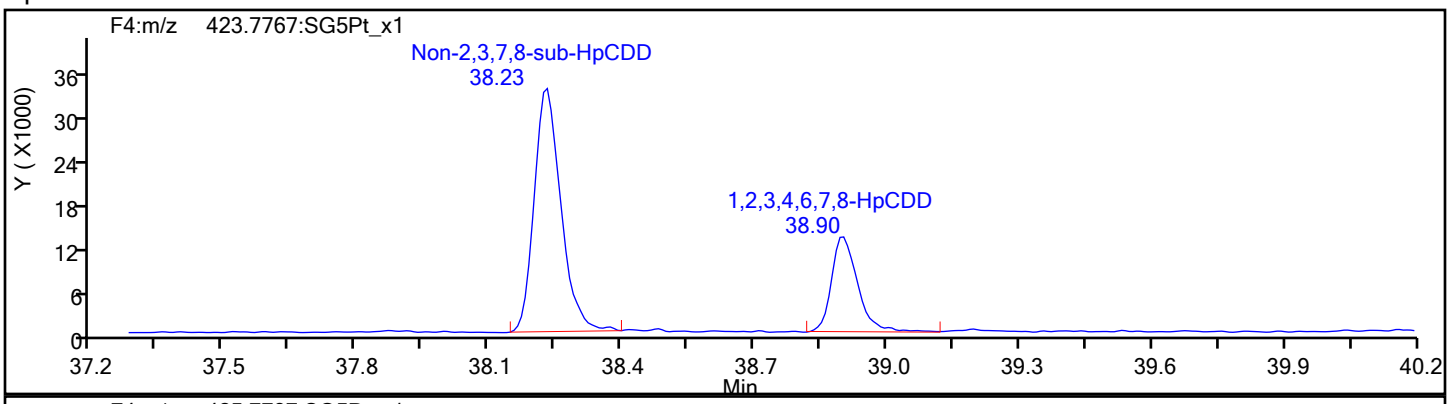
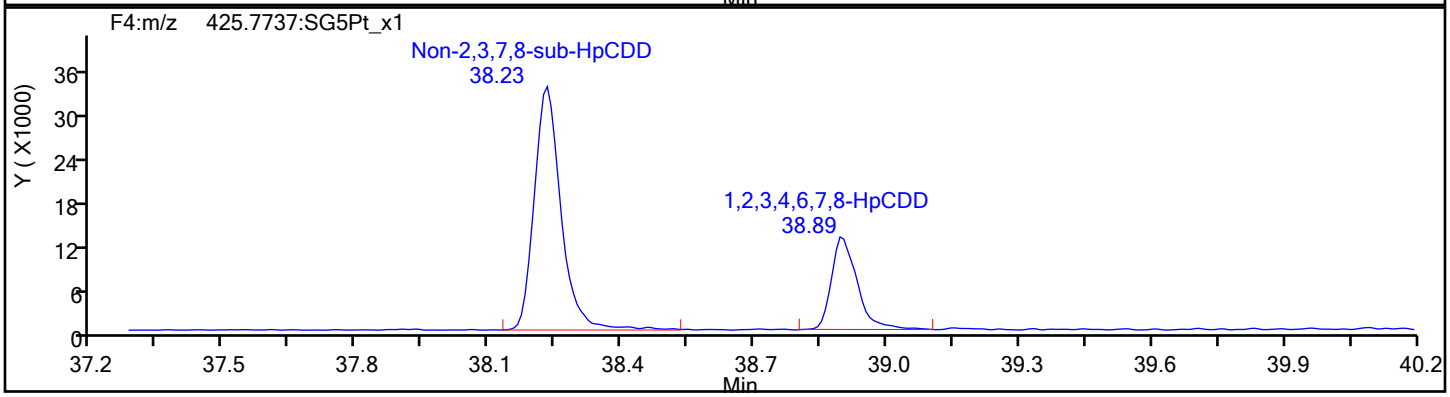
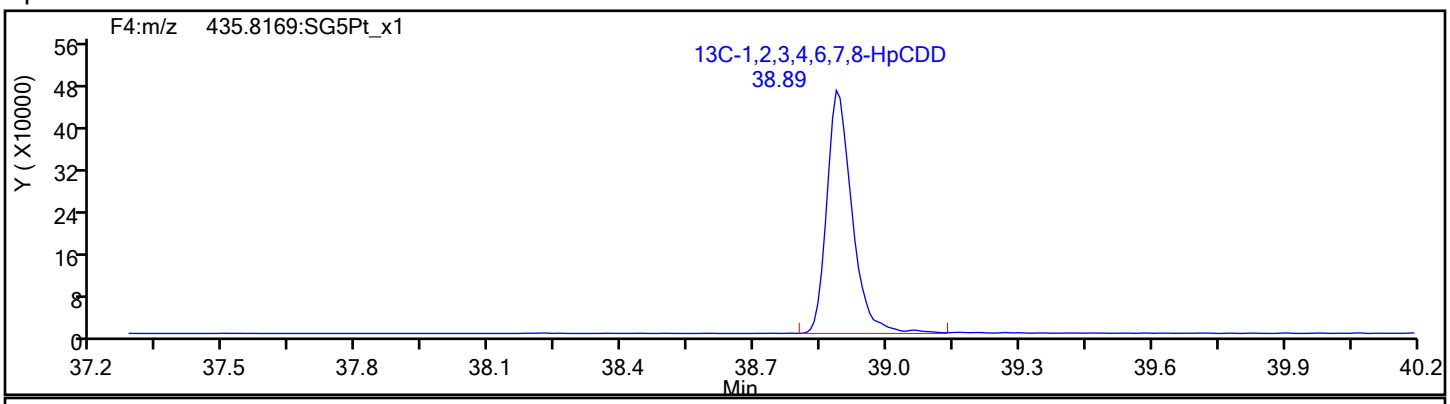
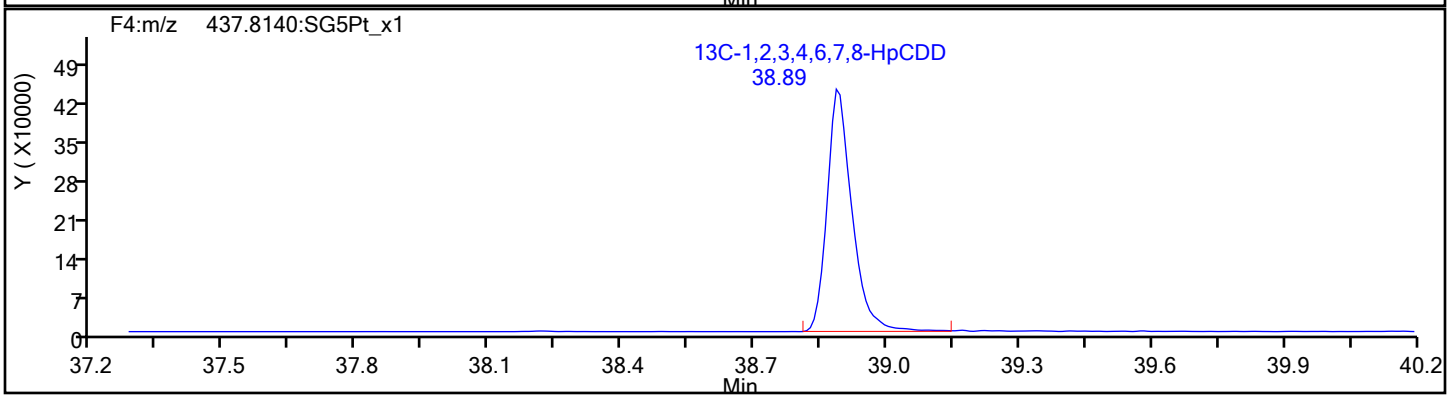
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 09:43:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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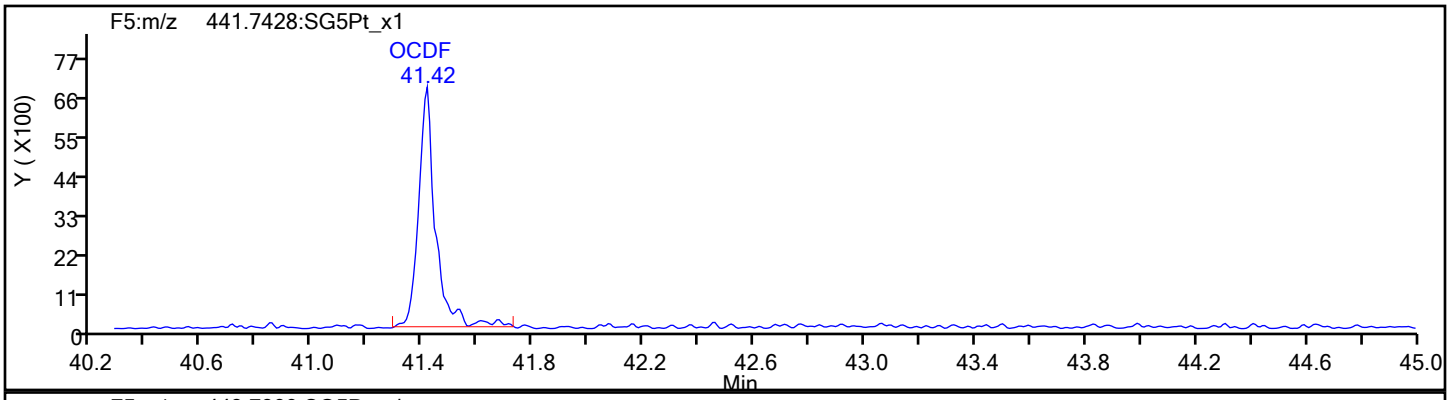
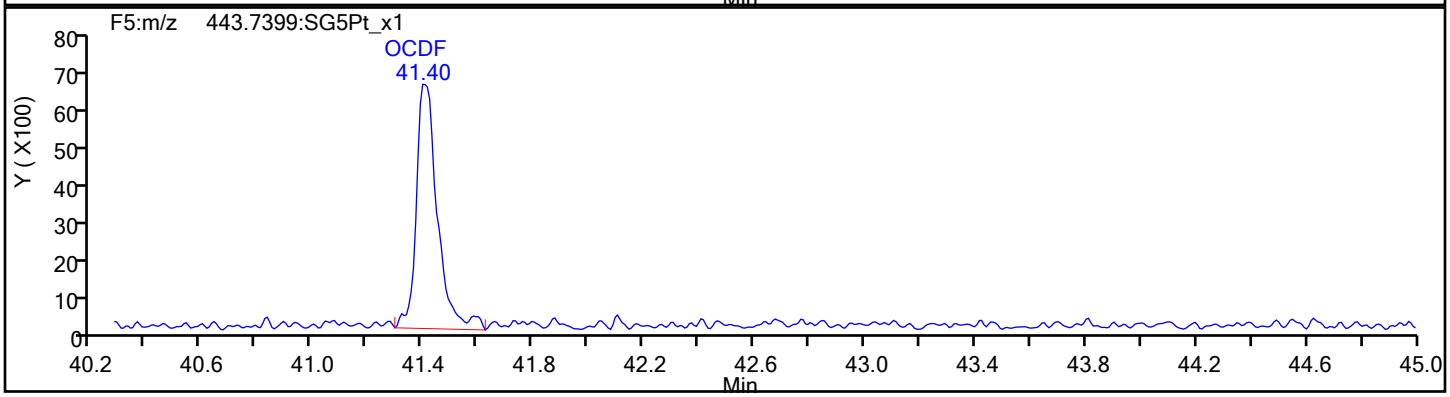
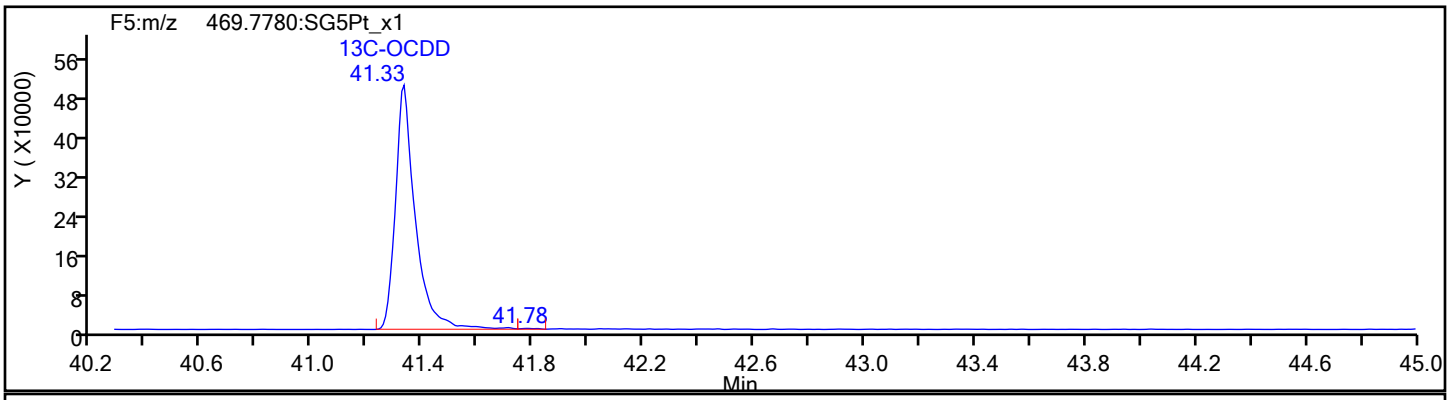
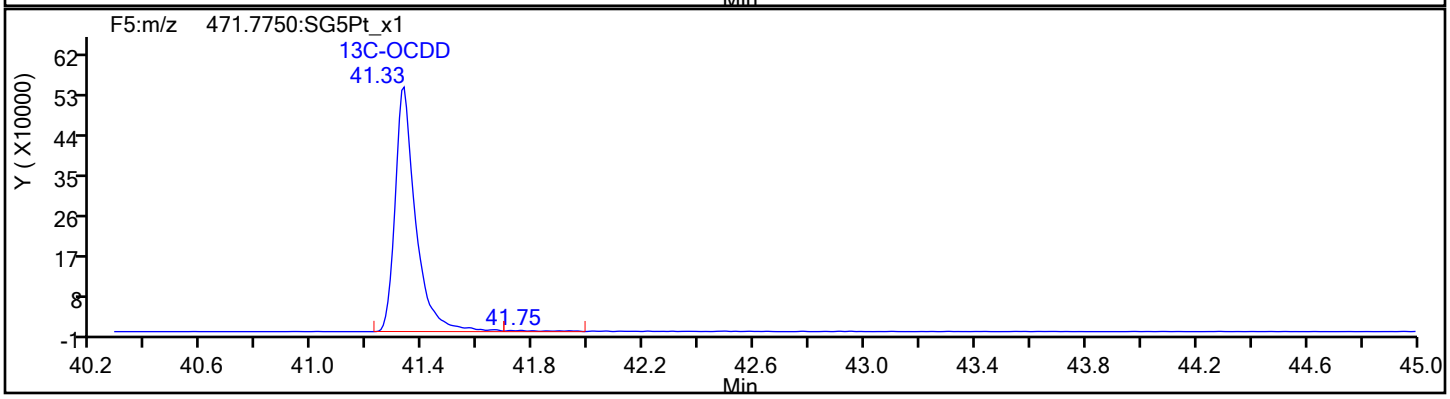
OCDF





OCDF Standards





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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
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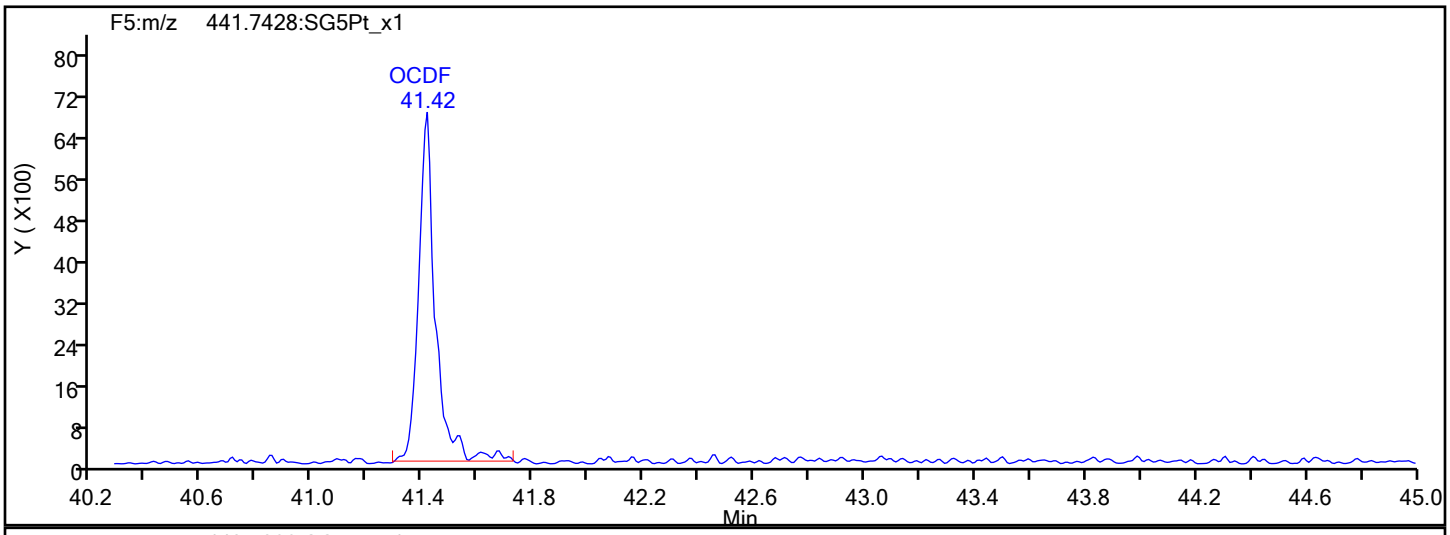
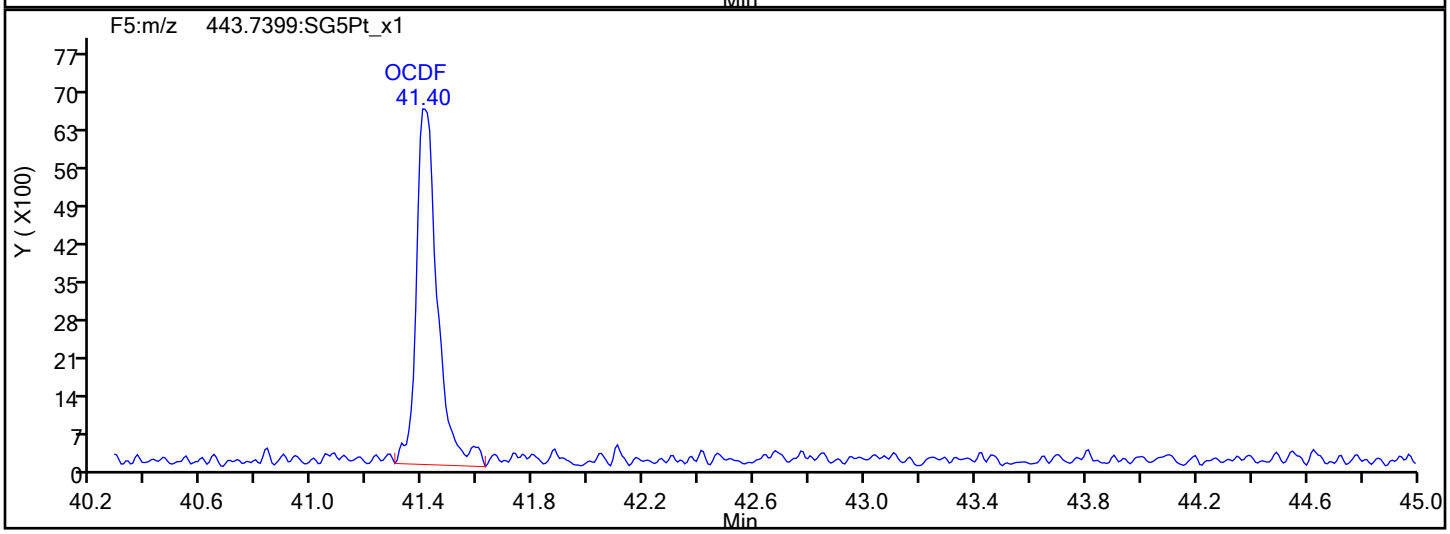
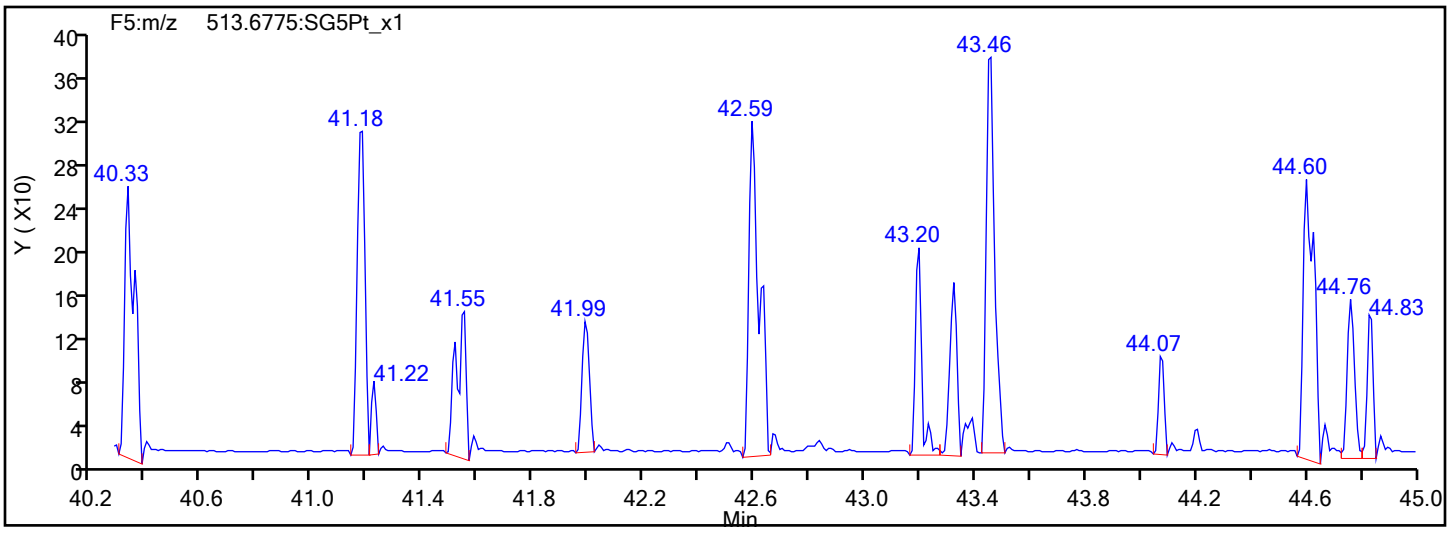
OCDF





OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
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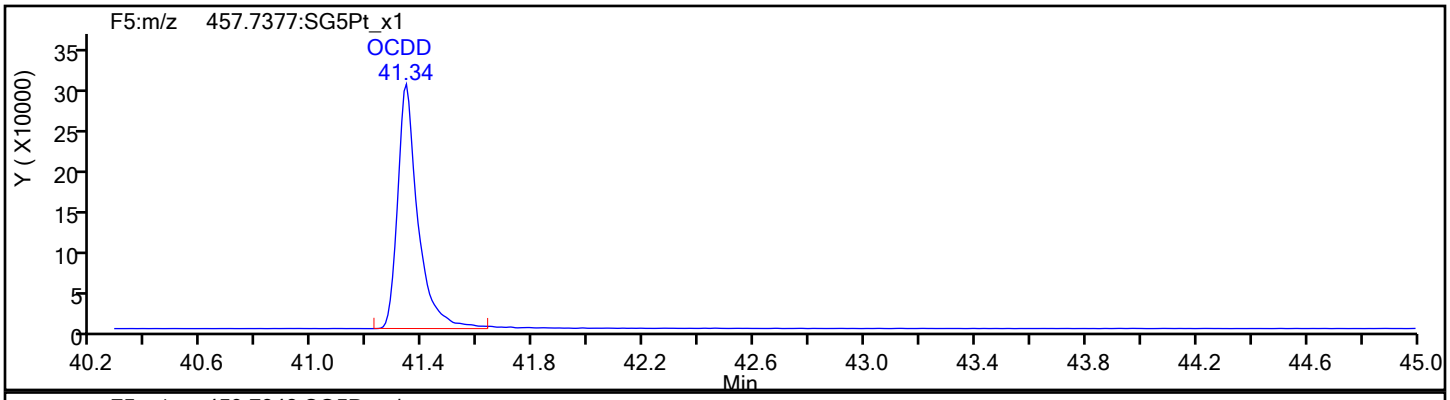
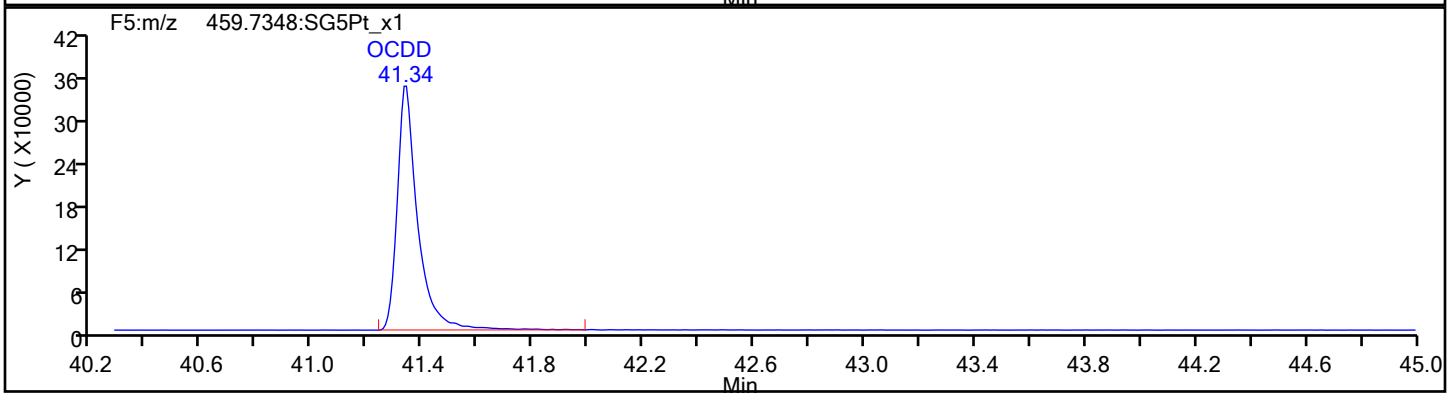
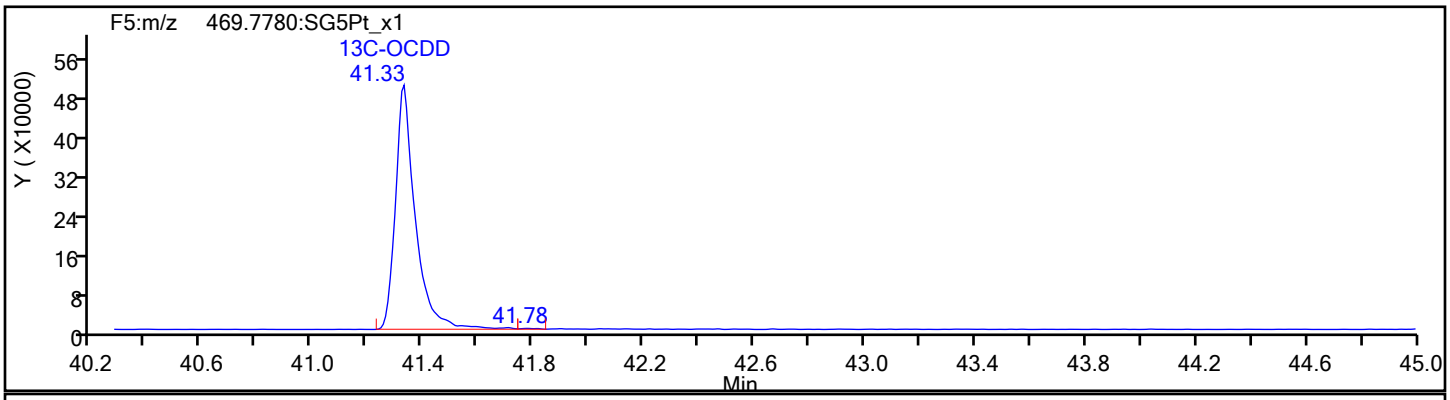
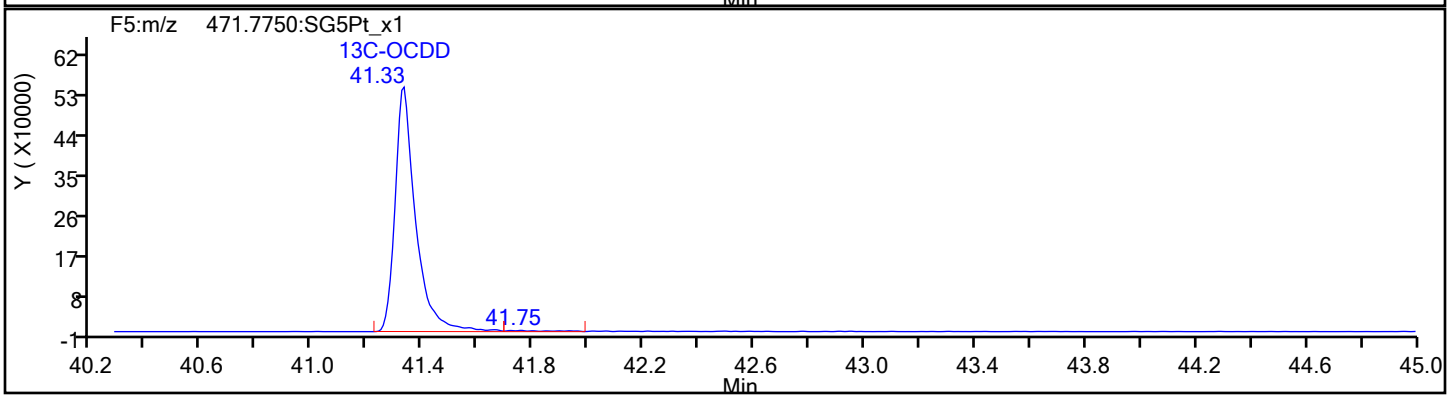




OCDD Standards





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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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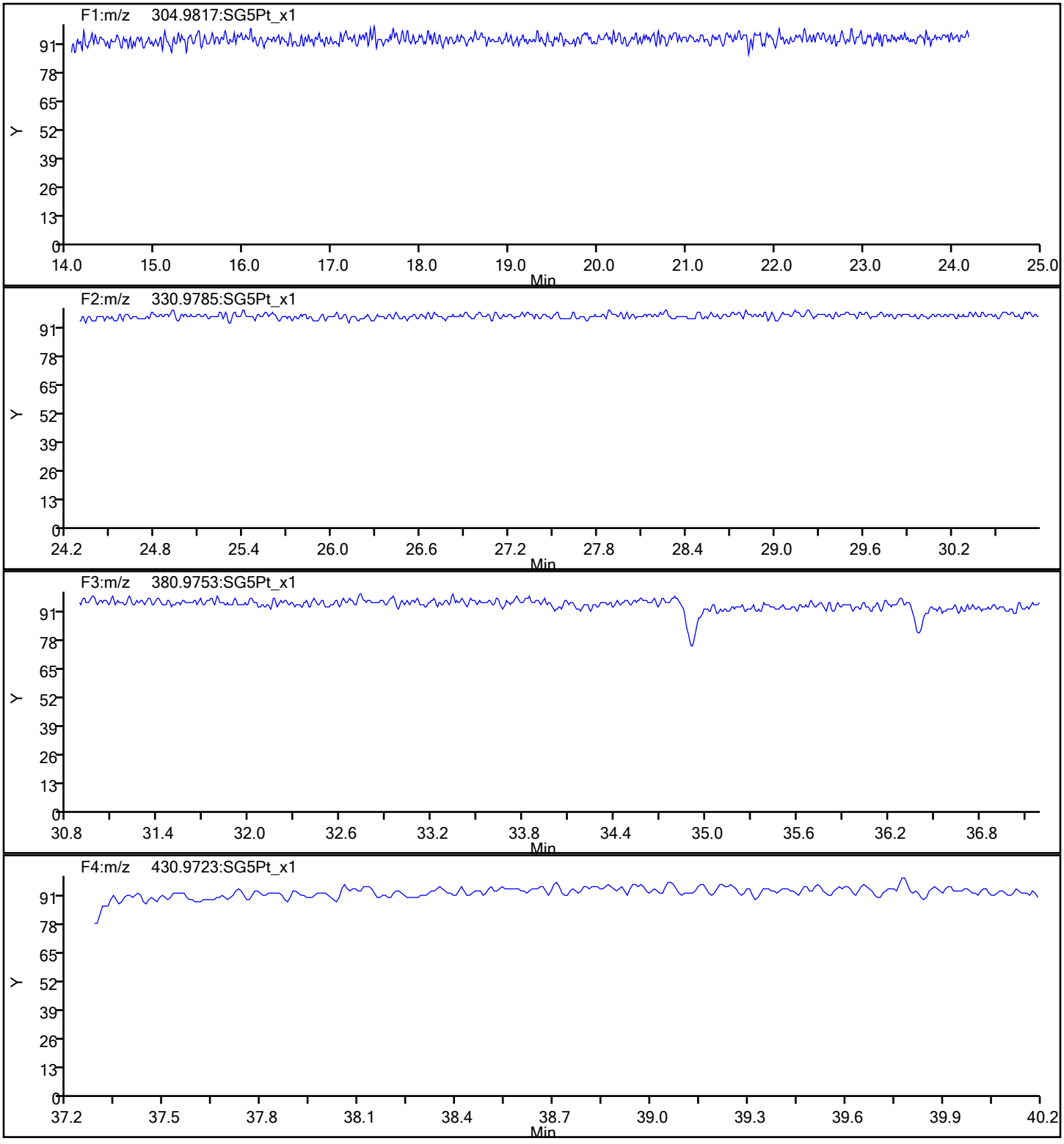
Worklist#:	345338	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm



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Eurofins TestAmerica, Sacramento

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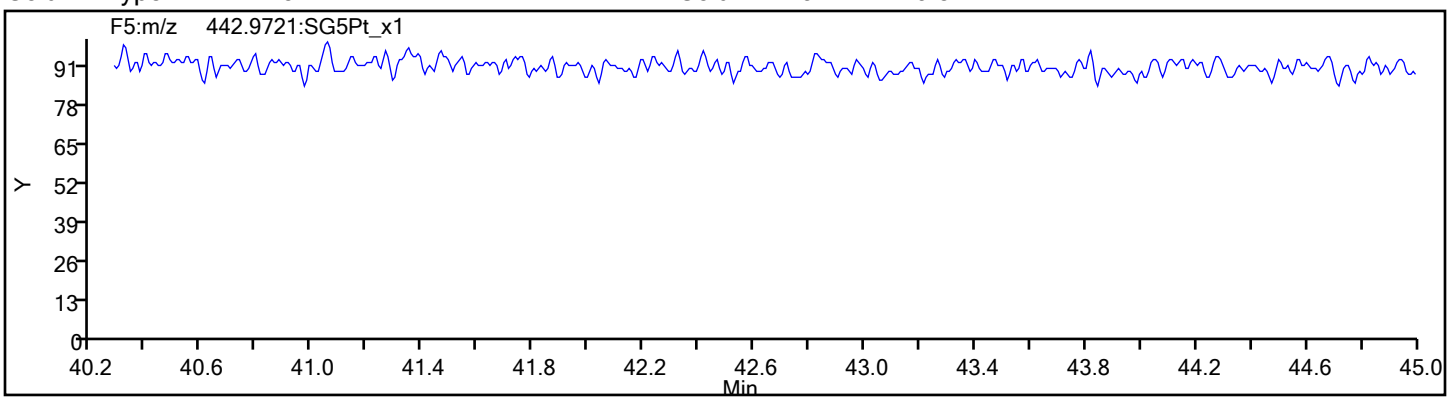


FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (0-1) RA Lab Sample ID: 320-56911-5 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_006.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 9.99(g) Date Analyzed: 12/16/2019 22:35

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 29.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	13		1.4	0.27

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	59		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	105		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Sample Type: Client
Inject. Date: 16-Dec-2019 22:35:03 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-5-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:28

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.371	80473754	0.77	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.564	63123741	0.80	1.3379	58.6	58.6	0.2761	0.2761	58.63	
2,3,7,8-TCDF	16.564	2510132	0.78	0.8389	4.740	4.740	0.0961	0.0961		
D 13C-2,3,7,8-TCDD	15.110	43386356	0.76	0.9388	57.4	57.4	0.4943	0.4943	57.43	
2,3,7,8-TCDD	15.137	517997	0.80	1.1538	1.035	1.035	0.1103	0.1103		
$ 37Cl4-2,3,7,8-TCDD	15.137	39819425		1.1816	41.9	41.9	0.0583	0.0583	105	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d
Lims ID: 320-56911-A-5-A
Client ID: 11187072-120819-BN-SJSSA09 (0-1)
Sample Type: Client
Inject. Date: 16-Dec-2019 22:35:03 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-5-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:28

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.371	15.383	-1		35044804	7595820	18758	46895	405		
333.9339	15.371	15.383	-1		45428950	9878795	13676	34190	722	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.564	16.576	-1	1.078	28118652	5286745	15327	38317	345		
317.9389	16.551	16.576	-2	1.077	35005089	6807341	10496	26240	649	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.564	16.590	-2	1.000	1101094	203733	1487	3717	137		
305.8987	16.564	16.590	-2	1.000	1409038	257380	2411	6027	107	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.110	15.122	-1	0.983	18735459	3984998	18758	46895	212		
333.9339	15.124	15.122	0	0.984	24650897	5199007	13676	34190	380	0.76(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.137	15.149	-1	1.002	230199	50629	2948	7370	17		
321.8936	15.137	15.149	-1	1.002	287798	65462	1726	4315	38	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.137	15.149	-1	0.985	39819425	8352125	4813	12032	1735		

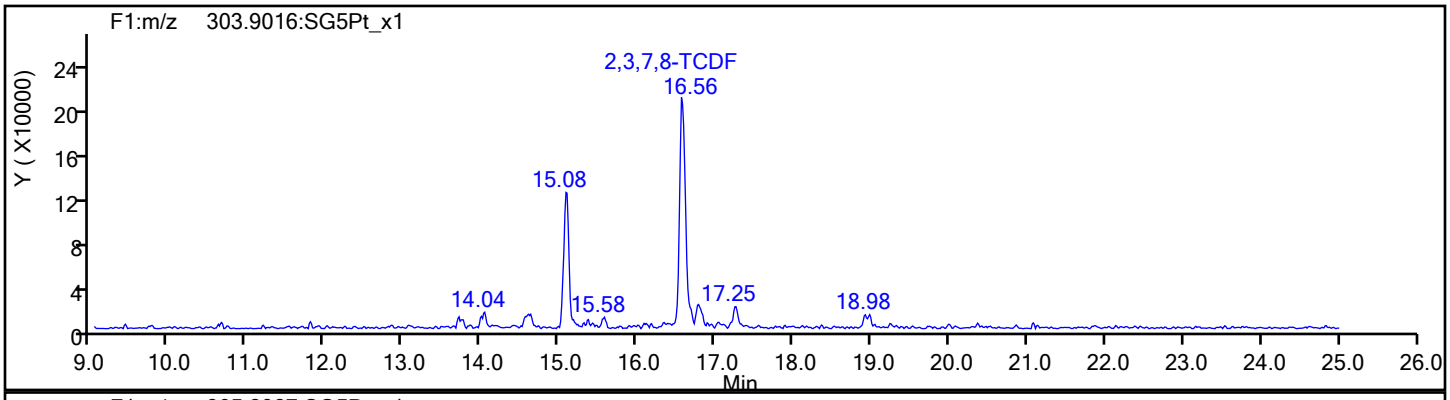
Total 2378-Chlorinated Dioxins & Furans
0.0 0

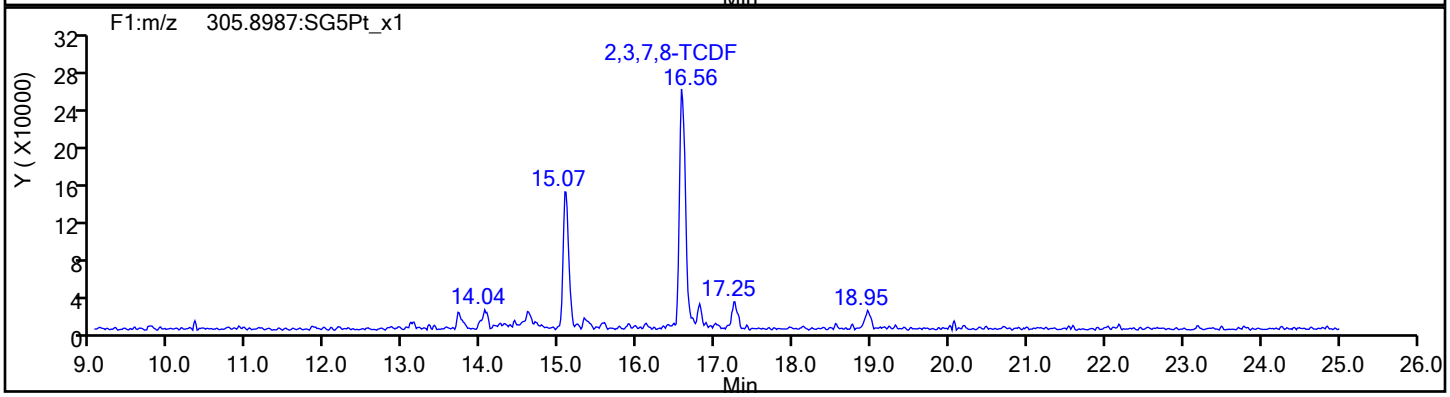
Report Date: 17-Dec-2019 09:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

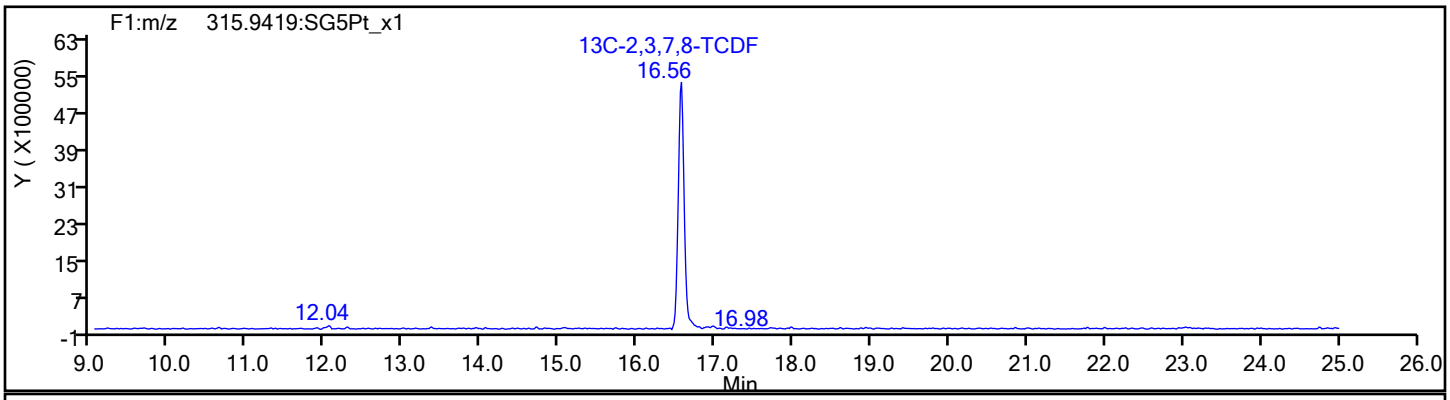
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d		
Injection Date:	16-Dec-2019 22:35:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345960	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

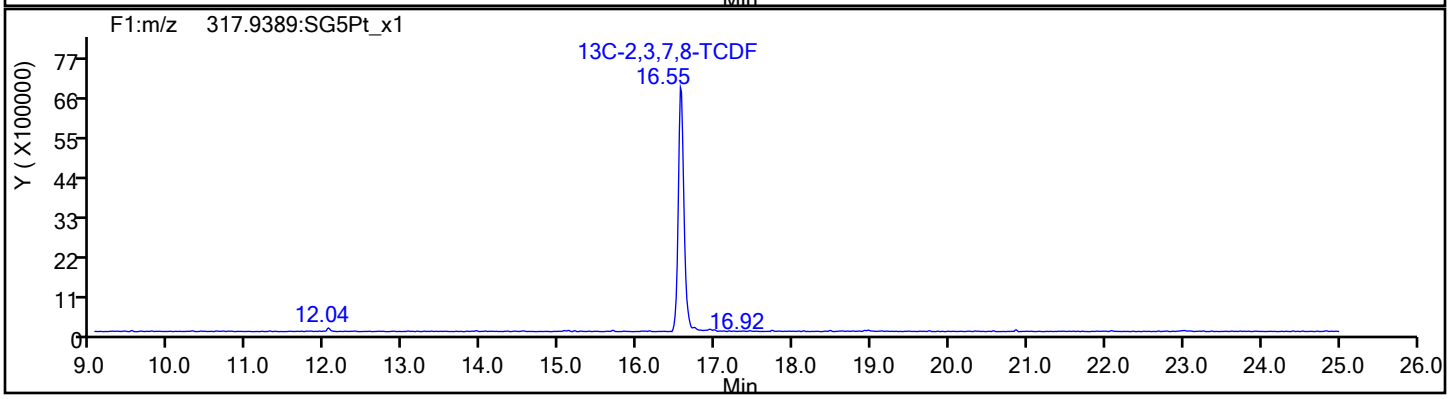
TCDF





TCDF Standards



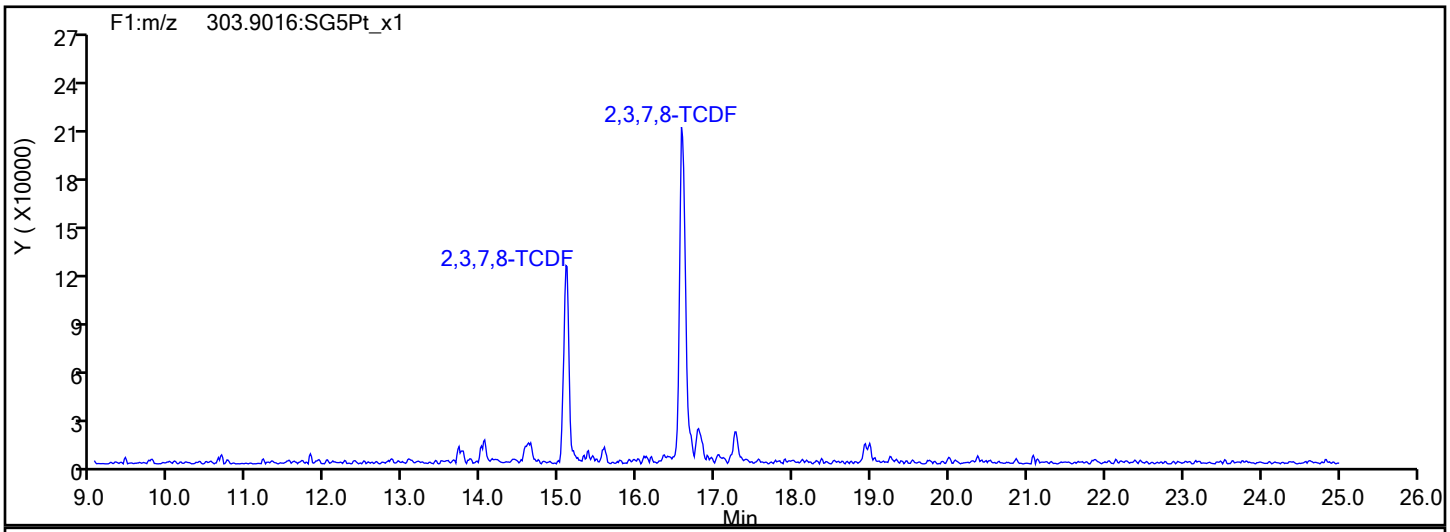


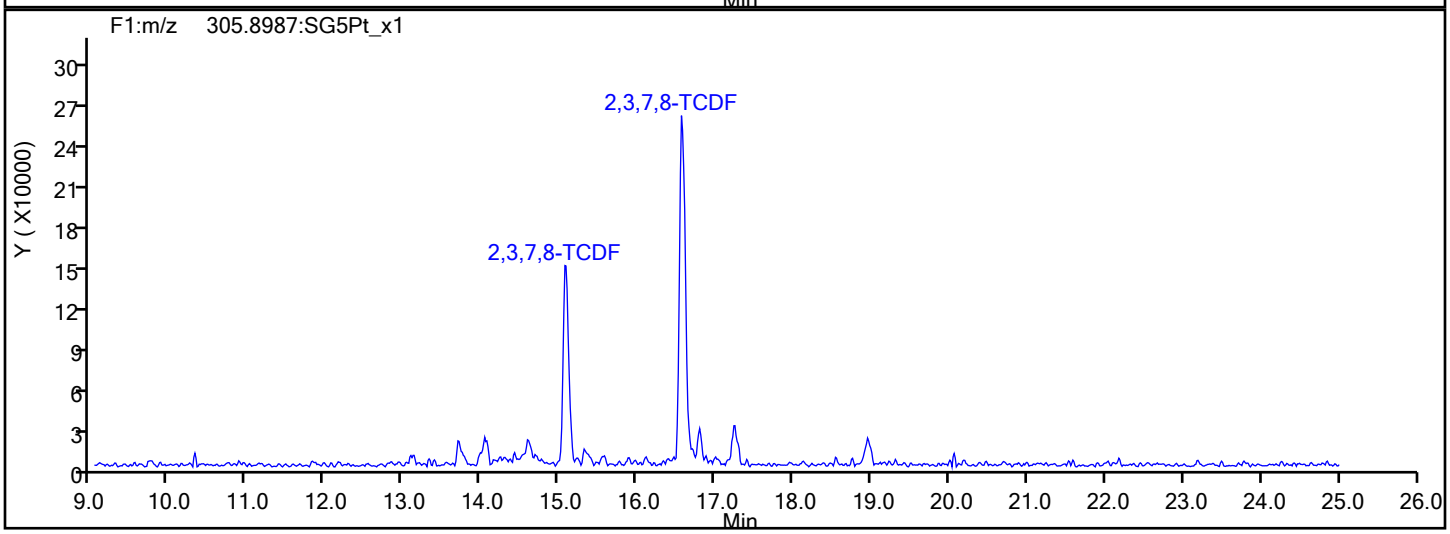
Report Date: 17-Dec-2019 09:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

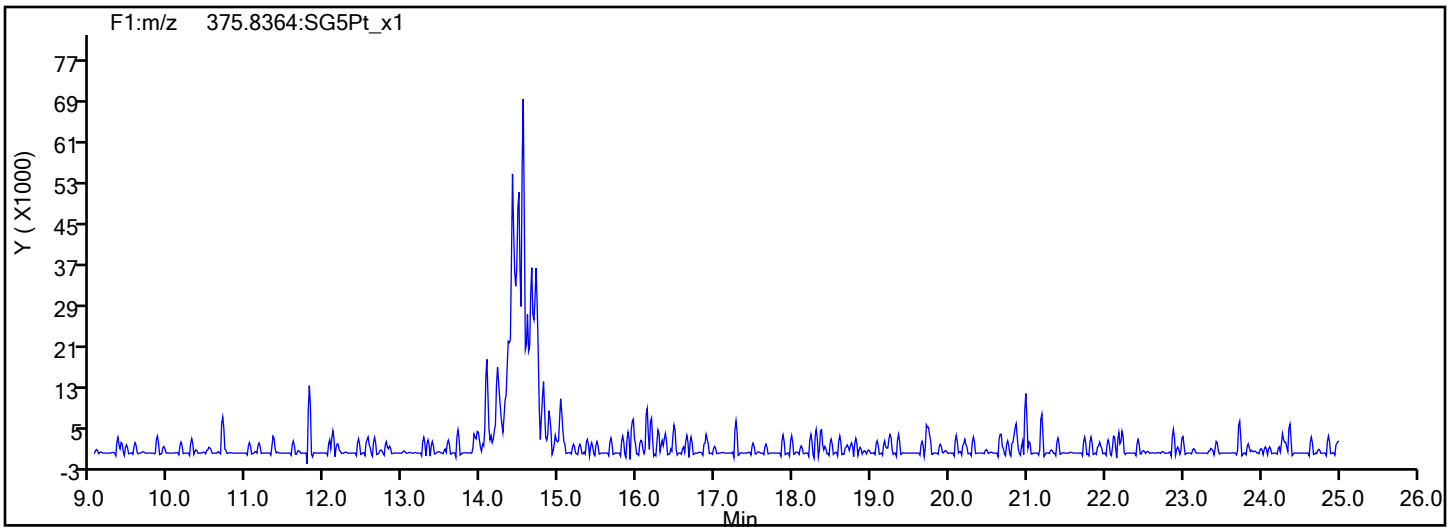
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d		
Injection Date:	16-Dec-2019 22:35:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345960	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

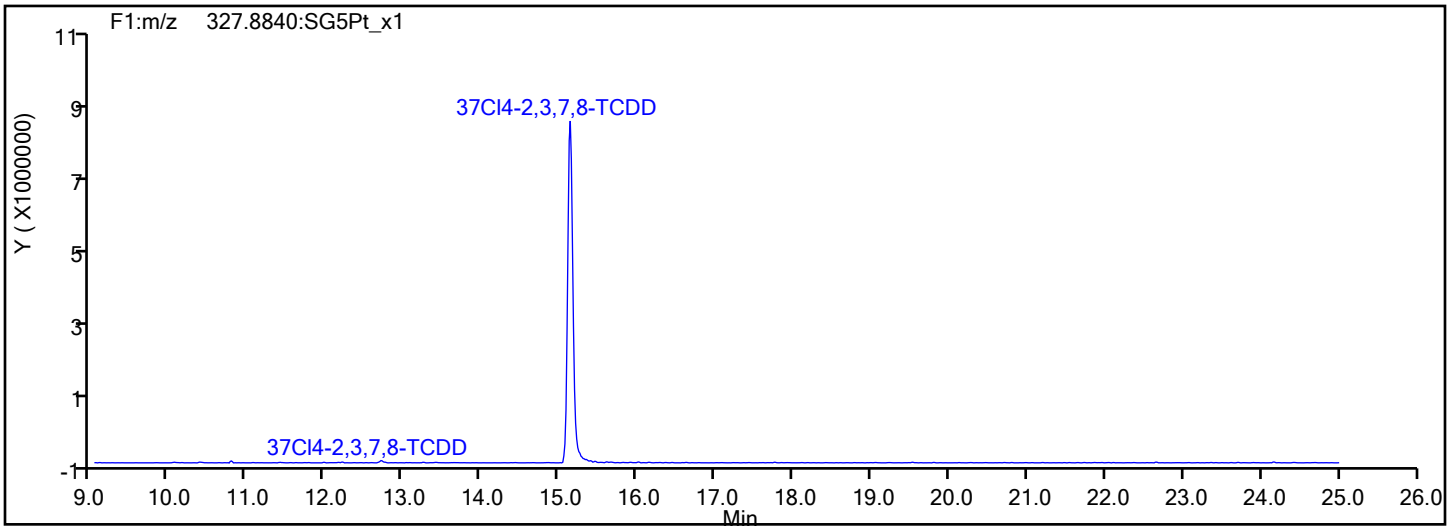


Report Date: 17-Dec-2019 09:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

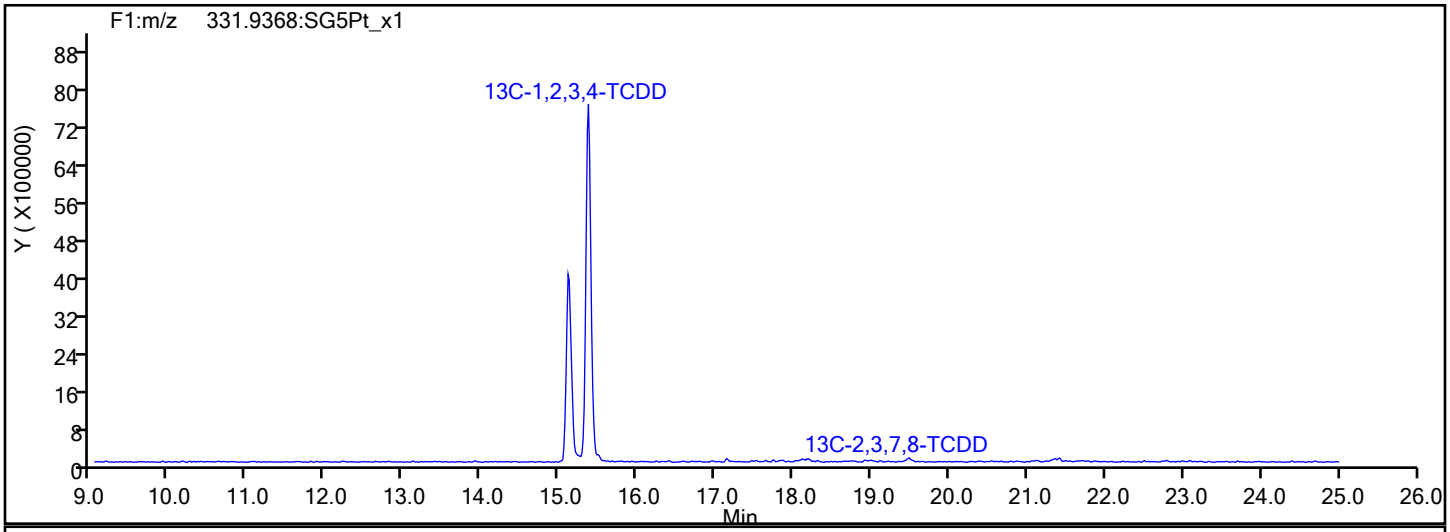
Eurofins TestAmerica, Sacramento

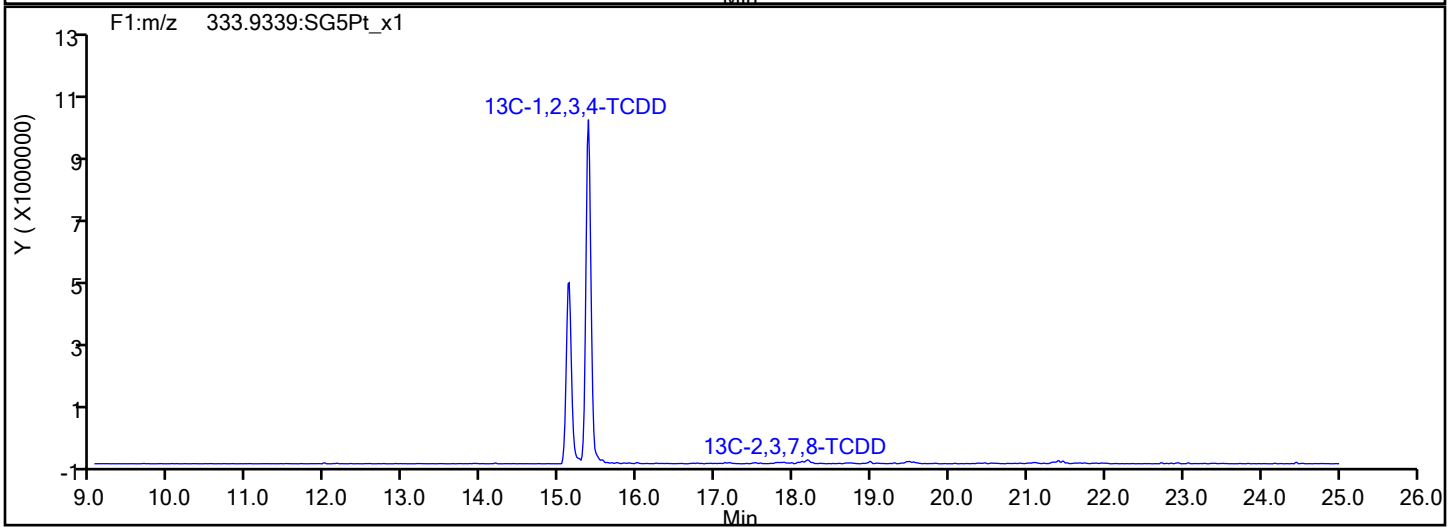
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d		
Injection Date:	16-Dec-2019 22:35:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345960	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

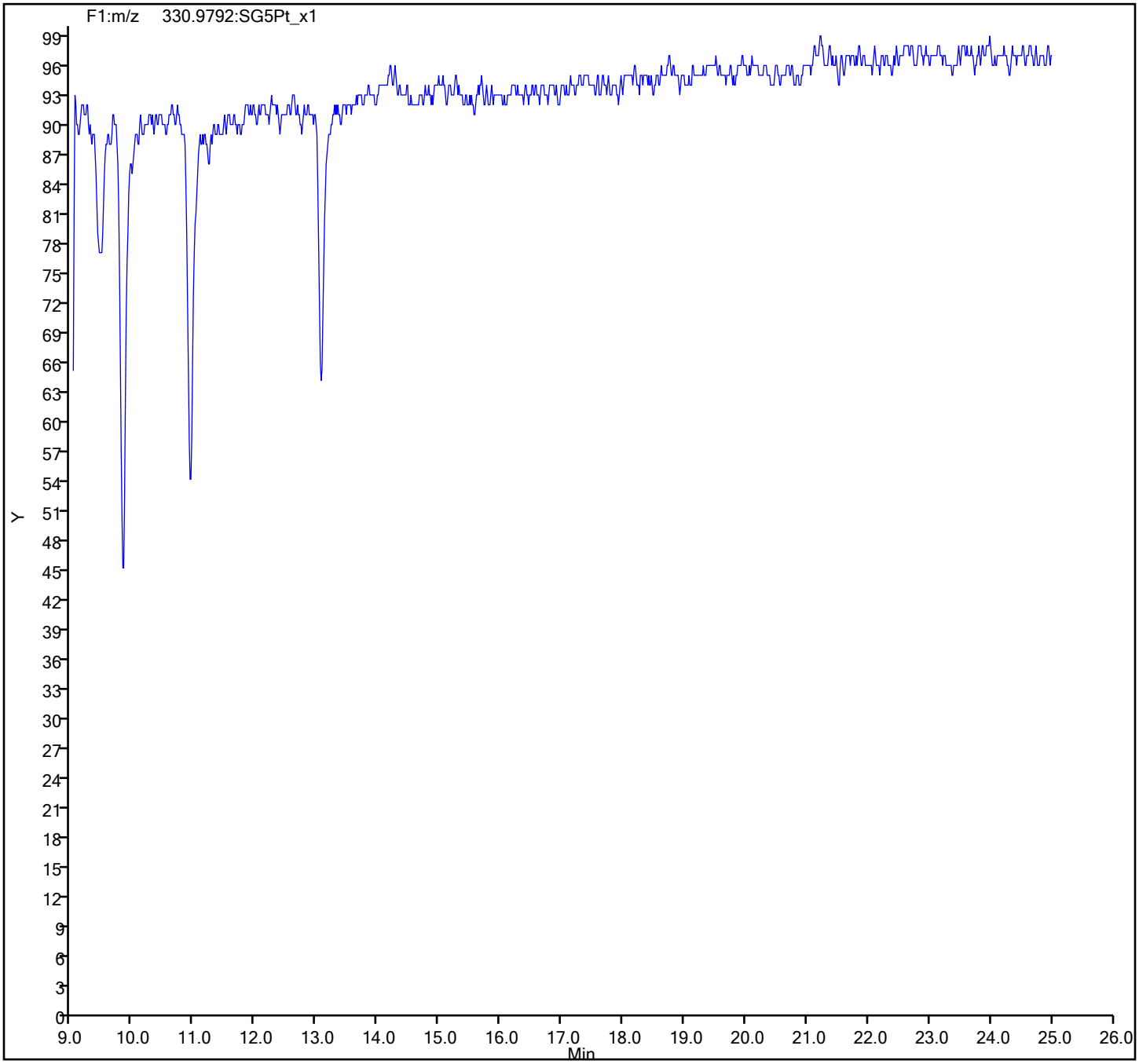




Report Date: 17-Dec-2019 09:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_006.d		
Injection Date:	16-Dec-2019 22:35:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (0-1)		
Worklist#:	345960	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Matrix: Sediment Lab File ID: 13de19dfs1_13.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.21(g) Date Analyzed: 12/13/2019 21:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	4.4		1.3	0.19
40321-76-4	1,2,3,7,8-PeCDD	ND		6.5	0.15
57117-41-6	1,2,3,7,8-PeCDF	0.64	J	6.5	0.075
57117-31-4	2,3,4,7,8-PeCDF	ND		6.5	0.079
39227-28-6	1,2,3,4,7,8-HxCDD	ND		6.5	0.096
57653-85-7	1,2,3,6,7,8-HxCDD	0.50	J B	6.5	0.099
19408-74-3	1,2,3,7,8,9-HxCDD	0.58	J	6.5	0.091
70648-26-9	1,2,3,4,7,8-HxCDF	0.78	J	6.5	0.079
57117-44-9	1,2,3,6,7,8-HxCDF	0.32	J	6.5	0.074
72918-21-9	1,2,3,7,8,9-HxCDF	0.28	J	6.5	0.067
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.5	0.073
35822-46-9	1,2,3,4,6,7,8-HpCDD	6.2	J B	6.5	0.14
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.2	J	6.5	0.096
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.35	J q	6.5	0.086
3268-87-9	OCDD	180	B	13	0.42
39001-02-0	OCDF	3.6	J B	13	0.15
41903-57-5	Total TCDD	4.4		1.3	0.19
30402-14-3	Total TCDF	29	q	1.3	0.16
36088-22-9	Total PeCDD	ND		6.5	0.15
30402-15-4	Total PeCDF	0.74	J	6.5	0.077
34465-46-8	Total HxCDD	4.3	J q B	6.5	0.095
55684-94-1	Total HxCDF	3.3	J	6.5	0.073
37871-00-4	Total HpCDD	18	B	6.5	0.14
38998-75-3	Total HpCDF	4.0	J q B	6.5	0.091

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) Lab Sample ID: 320-56911-6

Matrix: Sediment Lab File ID: 13de19dfs1_13.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.21(g) Date Analyzed: 12/13/2019 21:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	54		25-164
89059-46-1	13C-2,3,7,8-TCDF	48		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	51		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	50		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	53		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	56		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	58		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	50		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	51		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	47		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	46		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	53		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	47		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	54		26-138
114423-97-1	13C-OCDD	58		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	98		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 21:23:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-6-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:47:11 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:09:52

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.536	7777302	0.80	5.2E+04	100.0	100.0				a
D 13C-2,3,7,8-TCDF	18.646	5951926	0.80	1.6096	47.5	47.5	0.1801	0.1801	47.55	
2,3,7,8-TCDF	18.672	471385	0.81	1.2332	6.422	6.422	0.0598	0.0598		
A Non-2,3,7,8-sub-TCDF	18.244	337985	0.77	1.2332	4.678	4.605	0.0598	2.861		RQM
S Total TCDF					11.1	11.0	0.0598	0.0598		RQ
D 13C-2,3,7,8-TCDD	19.882	4171139	0.83	0.9984	53.7	53.7	0.2052	0.2052	53.72	
2,3,7,8-TCDD	19.899	83785	0.72	1.1988	1.676	1.676	0.0741	0.0741		M
$ 37Cl4-2,3,7,8-TCDD	19.908	4428709		1.4510	39.2	39.2	0.0436	0.0436	98.11	
A Non-2,3,7,8-sub-TCDD	19.035						0.0741	0.0741		
S Total TCDD					1.676	1.676	0.0741	0.0741		
D 13C-1,2,3,7,8-PeCDF	25.801	5308325	1.60	1.3678	49.9	49.9	0.2273	0.2273	49.90	
1,2,3,7,8-PeCDF	25.810	15245	1.77	1.1689	0.2457	0.2457	0.0288	0.0288		
D 13C-2,3,4,7,8-PeCDF	27.219	5423860	1.54	1.3045	53.5	53.5	0.2383	0.2383	53.46	
2,3,4,7,8-PeCDF	27.205						0.0305	0.0305		
A F1 PeCDFs	23.266	2514	1.66	1.1775	0.0398	0.0398	0.0147	0.0398		
A Non-2,3,7,8-sub-PeCDF	26.724						0.0296	0.0296		
S Total PeCDF					0.2855	0.2855	0.0297	0.0297		
D 13C-1,2,3,7,8-PeCDD	27.973	3309022	1.62	0.8292	51.3	51.3	0.0910	0.0910	51.31	
1,2,3,7,8-PeCDD	27.965						0.0580	0.0580		
A Non-2,3,7,8-sub-PeCDD	26.851						0.0580	0.0580		
S Total PeCDD							0.0580	0.0580		
D 13C-1,2,3,4,7,8-HxCDF	33.739	4434381	0.53	1.1700	49.8	49.8	0.1998	0.1998	49.79	
1,2,3,4,7,8-HxCDF	33.764	17253	1.39	1.3021	0.2988	0.2988	0.0304	0.0304		
D 13C-1,2,3,6,7,8-HxCDF	33.940	5062504	0.52	1.3168	50.5	50.5	0.1775	0.1775	50.51	
1,2,3,6,7,8-HxCDF	33.957	8001	1.38	1.2907	0.1224	0.1224	0.0283	0.0283		
D 13C-2,3,4,6,7,8-HxCDF	34.904	4533304	0.52	1.2873	46.3	46.3	0.1815	0.1815	46.27	
2,3,4,6,7,8-HxCDF	34.905						0.0279	0.0279		
D 13C-1,2,3,7,8,9-HxCDF	35.911	4252796	0.51	1.1987	46.6	46.6	0.1950	0.1950	46.61	
1,2,3,7,8,9-HxCDF	35.919	6074	1.37	1.3329	0.1072	0.1072	0.0259	0.0259		
A Non-2,3,7,8-sub-HxCDF	33.751	45022	1.27	1.3074	0.7534	0.7534	0.0280	0.5716		
S Total HxCDF					1.282	1.282	0.0281	0.0281		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.701	7611457	1.26	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.164	3589937	1.26	0.8364	56.4	56.4	0.2168	0.2168	56.39	
1,2,3,4,7,8-HxCDD	35.315						0.0367	0.0367		U
D 13C-1,2,3,6,7,8-HxCDD	35.290	4013947	1.28	0.9040	58.3	58.3	0.2006	0.2006	58.33	
1,2,3,6,7,8-HxCDD	35.315	8636	1.30	1.1256	0.1911	0.1911	0.0379	0.0379		
1,2,3,7,8,9-HxCDD	35.726	10483	1.21	1.2327	0.2237	0.2237	0.0348	0.0348		M
A Non-2,3,7,8-sub-HxCDD	34.284	54733	1.24	1.1769	1.253	1.223	0.0364	0.7820		RQM
S Total HxCDD					1.668	1.638	0.0365	0.0365		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	37.893	3474638	0.45	0.9689	47.1	47.1	0.3397	0.3397	47.12	
1,2,3,4,6,7,8-HpCDF	37.918	26944	1.15	1.6176	0.4794	0.4794	0.0367	0.0367		
D 13C-1,2,3,4,7,8,9-HpCDF	39.210	3802438	0.45	0.9231	54.1	54.1	0.3566	0.3566	54.12	
1,2,3,4,7,8,9-HpCDF	39.226	7513	1.04	1.4672	0.1469	0.1347	0.0329	0.0329		RQM
A Non-2,3,7,8-sub-HpCDF	38.556	51575	1.10	1.5424	0.9190	0.9190	0.0345	0.9190		
S Total HpCDF					1.545	1.533	0.0348	0.0348		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	38.899	3655431	1.05	0.9114	52.7	52.7	0.1473	0.1473	52.69	
1,2,3,4,6,7,8-HpCDD	38.908	98489	1.10	1.1237	2.398	2.398	0.0544	0.0544		
A Non-2,3,7,8-sub-HpCDD	38.803	187811	1.04	1.1237	4.572	4.572	0.0544	4.572		
S Total HpCDD					6.970	6.970	0.0544	0.0544		
D 13C-OCDD	41.338	5551777	0.89	0.6272	116.3	116.3	0.2354	0.2354	58.14	
OCDF	41.430	58649	0.90	1.5416	1.371	1.371	0.0573	0.0573		
OCDD	41.346	2326412	0.88	1.1855	70.7	70.7	0.1630	0.1630		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 21:23:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-6-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:47:11 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: messecara Date: 14-Dec-2019 01:09:52

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	19.536	19.502	2		3452447	537091	695	1737	773		a
333.9338	19.536	19.502	2		4324855	684281	306	765	2236	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.646	18.611	2	0.954	2645100	426570	924	2310	462		
317.9389	18.646	18.611	2	0.954	3306826	515335	492	1230	1047	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.672	18.637	2	1.001	211462	30853	99	247	312		
305.8987	18.672	18.637	2	1.001	259923	40361	179	447	225	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	16.354	18.244	-113	0.877	7950	1649	99	247	17		
	Empc Correction				6799	1435	99	247	14		
305.8987	16.337	18.244	-114	0.876	8831	1864	179	447	10	0.90(0.65-0.89)	
303.9016	16.804	18.244	-86	0.901	12313	1976	99	247	20		
305.8987	16.795	18.244	-87	0.901	14895	2311	179	447	13	0.83(0.65-0.89)	
303.9016	17.210	18.244	-62	0.923	6815	1016	99	247	10		
305.8987	17.202	18.244	-62	0.923	8335	1457	179	447	8	0.82(0.65-0.89)	
303.9016	18.014	18.244	-14	0.966	90783	16017	99	247	162		M
305.8987	18.006	18.244	-14	0.966	119204	19919	179	447	111	0.76(0.65-0.89)	
303.9016	19.415	18.244	70	1.041	16443	2641	99	247	27		
305.8987	19.398	18.244	69	1.040	18554	2907	179	447	16	0.89(0.65-0.89)	
303.9016	19.813	18.244	94	1.063	3594	642	99	247	6		
	Empc Correction				2769	629	99	247	6		
305.8987	19.796	18.244	93	1.062	3597	818	179	447	5	1.00(0.65-0.89)	
303.9016	21.758	18.244	210	1.167	15841	2497	99	247	25		
	Empc Correction				12462	1953	99	247	20		
305.8987	21.732	18.244	209	1.166	16185	2537	179	447	14	0.98(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDD											
331.9368	19.882	19.848	2	1.018	1895223	278934	695	1737	401		
333.9338	19.882	19.848	2	1.018	2275916	330957	306	765	1082	0.83(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	19.899	19.874	2	1.001	35209	6131	177	442	35		
321.8936	19.908	19.874	2	1.001	48576	7624	40	100	191	0.72(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	19.908	19.882	2	1.019	4428709	663798	309	772	2148		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.035						177	442			
321.8936	19.035						40	100			
13C-1,2,3,7,8-PeCDF											
351.9000	25.801	25.760	2	1.321	3266328	560398	907	2267	618		
353.8970	25.793	25.760	2	1.320	2041997	350011	612	1530	572	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	25.810	25.785	1	1.000	9751	1564	23	57	68		
341.8567	25.818	25.785	2	1.001	5494	1147	100	250	11	1.77(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.219	27.177	2	1.393	3290197	515351	907	2267	568		
353.8970	27.219	27.177	2	1.393	2133663	333042	612	1530	544	1.54(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						23	57			
341.8567	27.202						100	250			
A F1 PeCDFs											
339.8597	22.389	23.266	-52	0.868	1569	332	7	17	47		
341.8567	22.346	23.266	-55	0.866	945	239	54	135	4	1.66(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.724						23	57			
341.8567	26.724						100	250			
13C-1,2,3,7,8-PeCDD											
367.8949	27.973	27.949	1	1.432	2043803	312053	202	505	1545		
369.8919	27.982	27.949	2	1.432	1265219	183678	167	417	1100	1.62(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						104	260			
357.8516	27.965						25	62			
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.851						104	260			
357.8516	26.851						25	62			
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.739	33.714	2	0.945	1538810	266910	671	1677	398		
385.8610	33.739	33.714	2	0.945	2895571	508323	869	2172	585	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.764	33.739	2	1.001	10035	2017	78	195	26		
375.8178	33.764	33.739	2	1.001	7218	1535	45	112	34	1.39(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.940	33.915	2	0.951	1741388	286083	671	1677	426		
385.8610	33.940	33.915	2	0.951	3321116	555407	869	2172	639	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.957	33.932	2	1.000	4642	929	78	195	12		
375.8178	33.957	33.932	2	1.000	3359	606	45	112	13	1.38(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.904	34.880	1	0.978	1557123	293088	671	1677	437		
385.8610	34.904	34.880	1	0.978	2976181	549701	869	2172	633	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.905						78	195			
375.8178	34.905						45	112			
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.911	35.878	2	1.006	1428317	300975	671	1677	449		
385.8610	35.911	35.878	2	1.006	2824479	589150	869	2172	678	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	35.919	35.894	1	1.000	3507	955	78	195	12		
375.8178	35.911	35.894	1	1.000	2567	650	45	112	14	1.37(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	31.818	33.751	-116	0.943	5839	712	78	195	9		
375.8178	31.876	33.751	-112	0.945	5024	723	45	112	16	1.16(1.05-1.43)	
373.8208	32.992	33.751	-45	0.978	19343	2834	78	195	36		
375.8178	33.009	33.751	-44	0.978	14816	2110	45	112	47	1.31(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.701	35.685	1		4249332	920530	607	1517	1517		
403.8529	35.709	35.685	1		3362125	726825	588	1470	1236	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.164	35.131	2	0.985	1999973	445836	607	1517	734		
403.8529	35.156	35.131	1	0.985	1589964	361194	588	1470	614	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											U
389.8158	35.148						65	162			
391.8127	35.148						74	185			
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.290	35.265	1	0.988	2254493	456020	607	1517	751		
403.8529	35.290	35.265	1	0.988	1759454	356675	588	1470	607	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.315	35.282	2	1.001	4877	917	65	162	14		
391.8127	35.324	35.282	2	1.001	3759	587	74	185	8	1.30(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8158	35.726	35.693	2	1.016	5733	1266	65	162	19		M
391.8127	35.701	35.693	0	1.015	4750	799	74	185	11	1.21(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQM
389.8158	32.892	34.284	-83	0.932	19119	2993	65	162	46		M
391.8127	32.908	34.284	-82	0.933	15874	2513	74	185	34	1.20(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
389.8158	33.881	34.284	-24	0.960	3259	609	65	162	9		
391.8127	33.856	34.284	-26	0.959	2389	457	74	185	6	1.36(1.05-1.43)	
389.8158	34.301	34.284	1	0.972	7801	1333	65	162	21		
391.8127	34.284	34.284	0	0.971	7645	1291	74	185	17	1.02(1.05-1.43)	M
	Empc Correction				6291	1074	74	185	15		
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.893	37.877	1	1.061	1072817	255969	792	1980	323		
419.8220	37.893	37.877	1	1.061	2401821	551794	1377	3442	401	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.918	37.886	2	1.001	14415	2927	141	352	21		
409.7788	37.910	37.886	1	1.000	12529	2831	51	127	56	1.15(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.210	39.194	1	1.098	1184854	313278	792	1980	396		
419.8220	39.210	39.194	1	1.098	2617584	681933	1377	3442	495	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											RQM
407.7817	39.226	39.202	1	1.000	4513	1118	141	352	8		M
	Empc Correction				3830	998	141	352	7		
409.7788	39.218	39.202	1	1.000	3683	960	51	127	19	1.23(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.295	38.556	-16	1.011	27012	6517	141	352	46		
409.7788	38.295	38.556	-16	1.011	24563	6138	51	127	120	1.10(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.899	38.892	0	1.090	1874673	444474	521	1302	853		
437.8140	38.899	38.892	0	1.090	1780758	434040	364	910	1192	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	38.908	38.901	0	1.000	51511	11252	129	322	87		
425.7737	38.908	38.901	0	1.000	46978	10915	86	215	127	1.10(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.237	38.803	-34	0.983	95714	22582	129	322	175		
425.7737	38.237	38.803	-34	0.983	92097	21569	86	215	251	1.04(0.88-1.20)	
13C-OCDD											
469.7780	41.338	41.345	0	1.158	2609873	489178	543	1357	901		
471.7750	41.338	41.345	0	1.158	2941904	540918	430	1075	1258	0.89(0.76-1.02)	
OCDF											
441.7428	41.430	41.413	1	1.002	27784	5648	52	130	109		
443.7399	41.422	41.413	1	1.002	30865	6436	130	325	50	0.90(0.76-1.02)	
OCDD											
457.7377	41.346	41.345	0	1.000	1088288	196546	189	472	1040		
459.7348	41.346	41.345	0	1.000	1238124	226142	209	522	1082	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
U - Marked Undetected
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	5951926	941905

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	5951926	941905

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.354	7950	1649	8831	1864	0.2286	0.90	RQ
16.354	6799	1435	8831	1864	0.2129		Empc Correction
16.804	12313	1976	14895	2311	0.3707	0.83	
17.210	6815	1016	8335	1457	0.2064	0.82	
18.014	90783	16017	119204	19919	2.86	0.76	M
19.415	16443	2641	18554	2907	0.4768	0.89	
19.813	3594	642	3597	818	0.0980	1.00	RQ
19.813	2769	629	3597	818	0.0867		Empc Correction
21.758	15841	2497	16185	2537	0.4363	0.98	RQ
21.758	12462	1953	16185	2537	0.3903		Empc Correction
Signal Totals:							
	148384	25667	189601	31813			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	343340	58251				0.81	RQM
	337985	57480					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.678 = (343340 * 100.000) / (5951926 * 1.233)
Empc Amount: 4.605 = (337985 * 100.000) / (5951926 * 1.233)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

F1 PeCDFs, RT: 23.266

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5308325	910409
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	5423860	848393

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	5366092	879401

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.389	1569	332	945	239	0.0398	1.66	
Signal Totals:							
	1569	332	945	239			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2514	571				1.66	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0398 = (2514 * 100.000) / (5366092 * 1.178)

Report Date: 17-Dec-2019 09:47:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDF, RT: 33.751

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302	D 13C-1,2,3,4,7,8-HxCDF	100.000	4434381	775233
1,2,3,6,7,8-HxCDF	1.291	D 13C-1,2,3,6,7,8-HxCDF	100.000	5062504	841490
2,3,4,6,7,8-HxCDF	1.304	D 13C-2,3,4,6,7,8-HxCDF	100.000	4533304	842789
1,2,3,7,8,9-HxCDF	1.333	D 13C-1,2,3,7,8,9-HxCDF	100.000	4252796	890125

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.307		100.000	4570746	837409

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
31.818	5839	712	5024	723	0.1818	1.16	
32.992	19343	2834	14816	2110	0.5716	1.31	
Signal Totals:	25182	3546	19840	2833			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	45022	6379				1.27	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7534 = (45022 * 100.000) / (4570746 * 1.307)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDD, RT: 34.284

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172	D 13C-1,2,3,4,7,8-HxCDD	100.000	3589937	807030
1,2,3,6,7,8-HxCDD	1.126	D 13C-1,2,3,6,7,8-HxCDD	100.000	4013947	812695
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.177		100.000	3801942	809862

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
32.892	19119	2993	15874	2513	0.7820	1.20	M
33.881	3259	609	2389	457	0.1262	1.36	
34.301	7801	1333	7645	1291	0.3452	1.02	RQM
34.301	7801	1333	6291	1074	0.3149		Empc Correction
Signal Totals:							
	30179	4935	24554	4044			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	56087	9196				1.16	RQM
	54733	8979					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.253 = (56087 * 100.000) / (3801942 * 1.177)
Empc Amount: 1.223 = (54733 * 100.000) / (3801942 * 1.177)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3474638	807763
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3802438	995211

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3638538	901487

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.295	27012	6517	24563	6138	0.9190	1.10	
Signal Totals:							
	27012	6517	24563	6138			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	51575	12655				1.10	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9190 = (51575 * 100.000) / (3638538 * 1.542)

Report Date: 17-Dec-2019 09:47:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Inject. Date: 13-Dec-2019 21:23:00 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3655431	878514

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3655431	878514

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.237	95714	22582	92097	21569	4.57	1.04	
Signal Totals:							
	95714	22582	92097	21569			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	187811	44151				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.572 = (187811 * 100.000) / (3655431 * 1.124)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

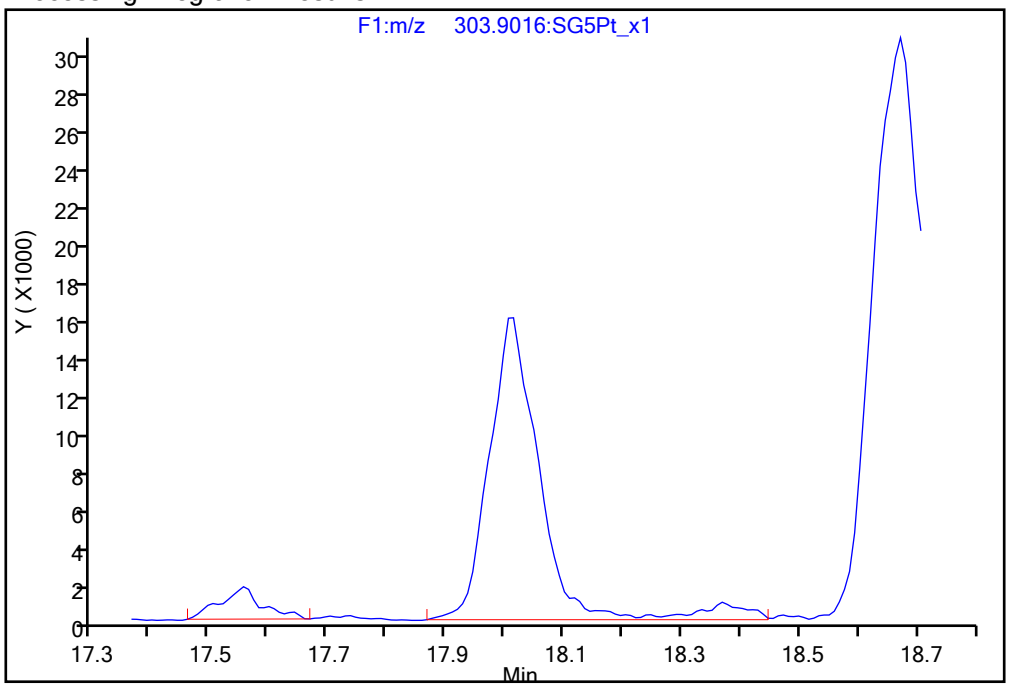
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (14.72- 21.77)

Signal: 1

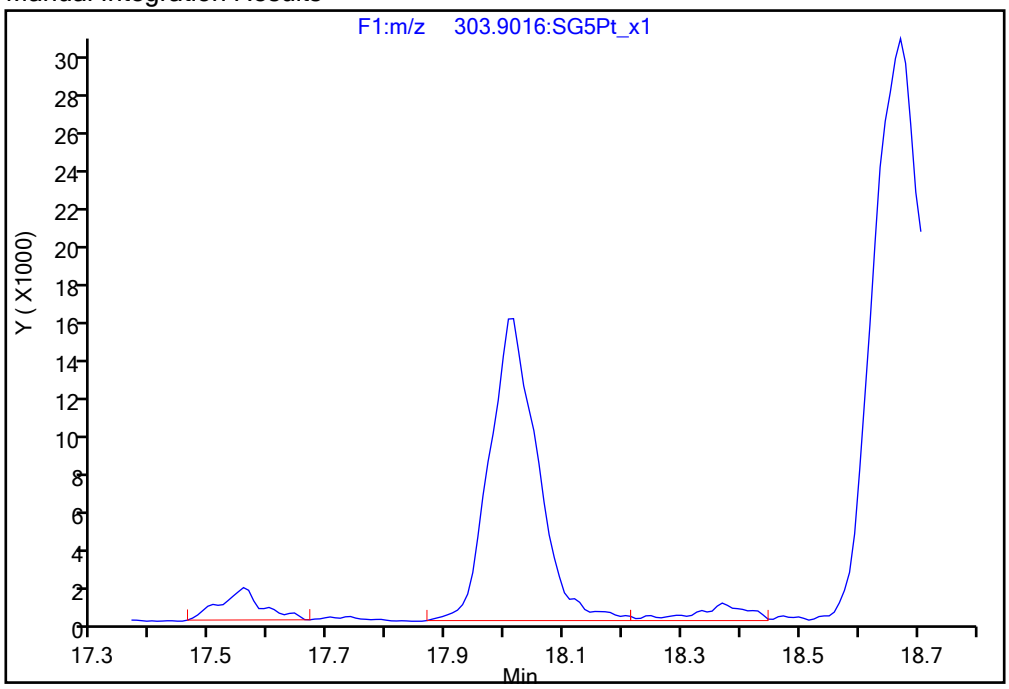
Processing Integration Results

RT = 18.014 Area = 96421



Manual Integration Results

RT = 18.014 Area = 90783 M



Reviewer: dadunj, 17-Dec-2019 09:44:10

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

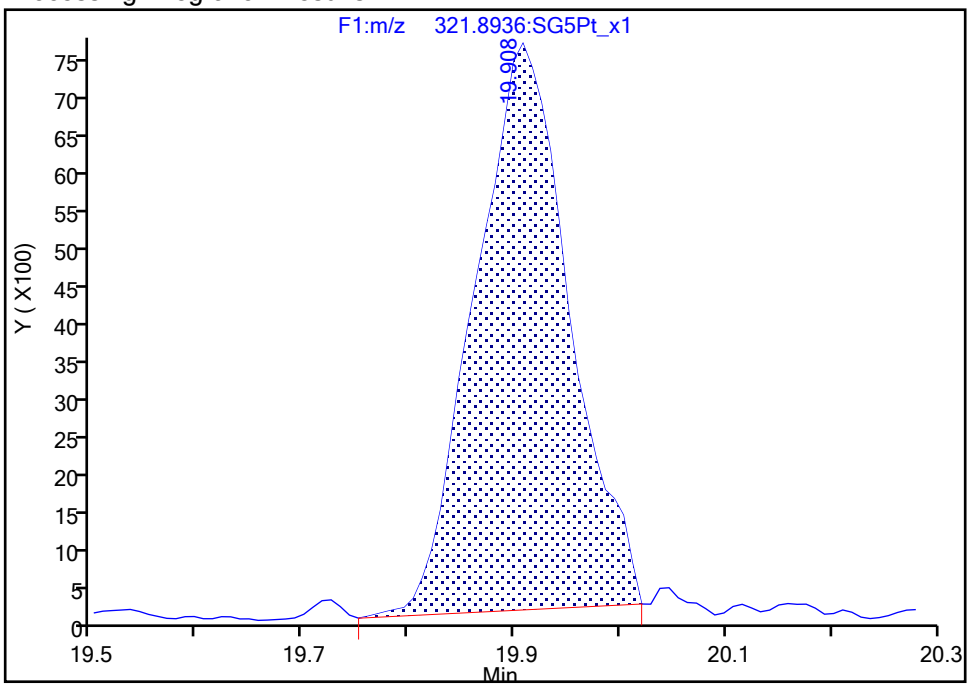
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1(14.07 :22.11)		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

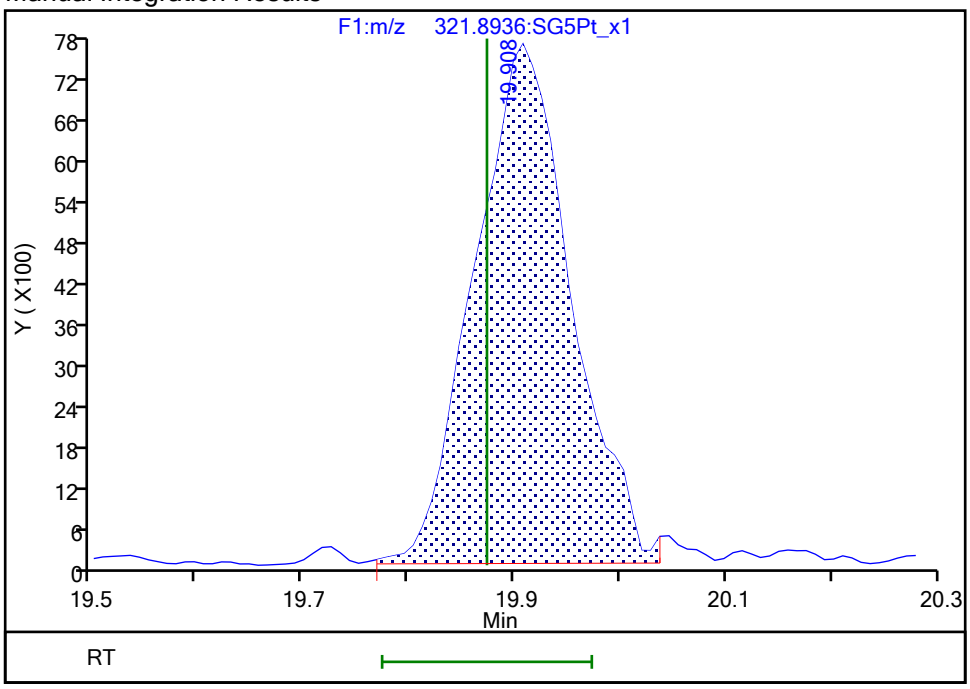
Processing Integration Results

RT: 19.91
Area: 46795
Amount: 1.639939
Amount Units: pg/ul



Manual Integration Results

RT: 19.91
Area: 48576
Amount: 1.675556
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:44:25

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

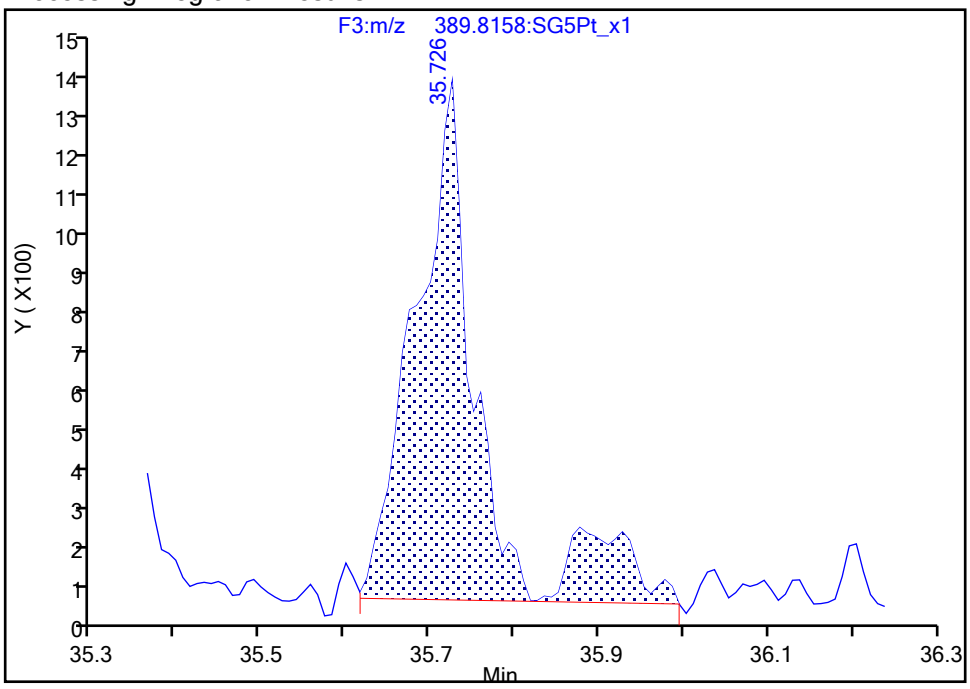
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

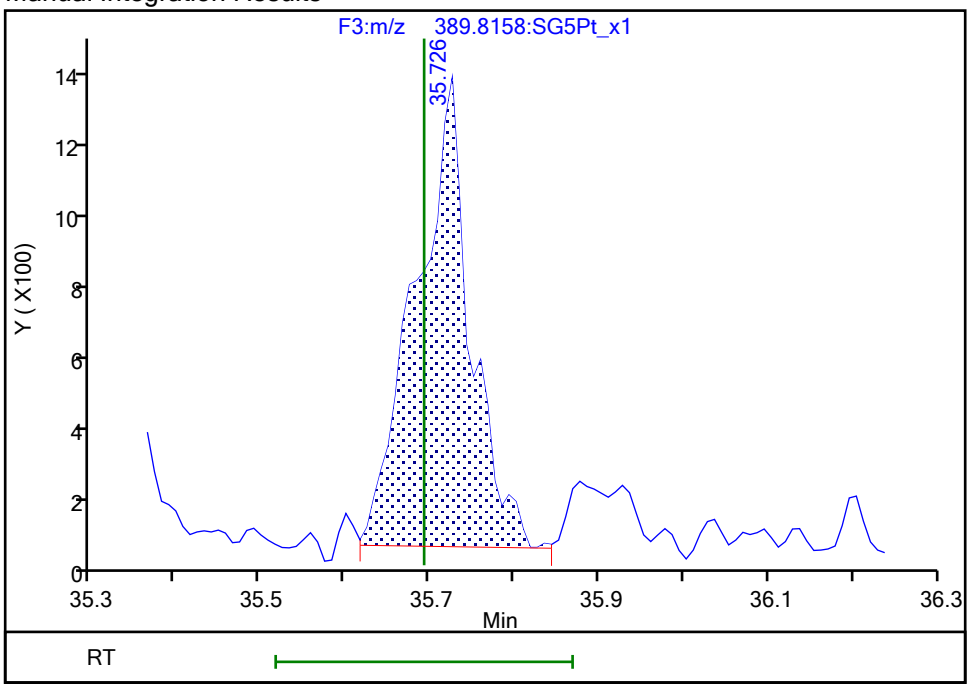
Processing Integration Results

RT: 35.73
Area: 6676
Amount: 0.243800
Amount Units: pg/ul



Manual Integration Results

RT: 35.73
Area: 5733
Amount: 0.223679
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:45:00
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

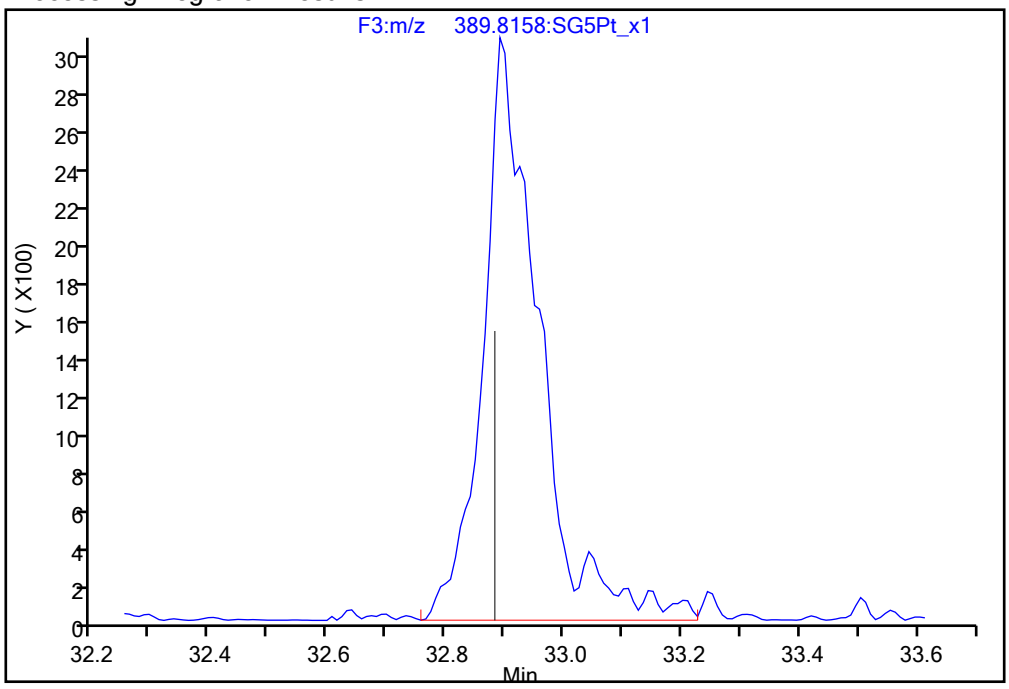
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8158, RT: (32.88- 35.68)

Signal: 1

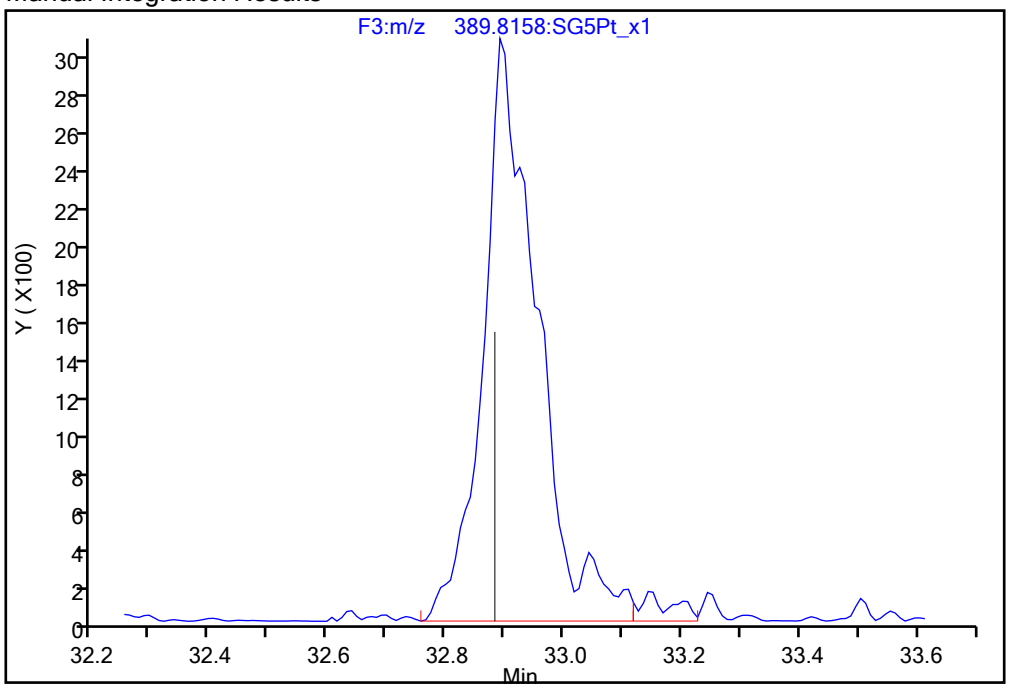
Processing Integration Results

RT = 32.892 Area = 19676



Manual Integration Results

RT = 32.892 Area = 19119 M



Reviewer: dadunj, 17-Dec-2019 09:45:11

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

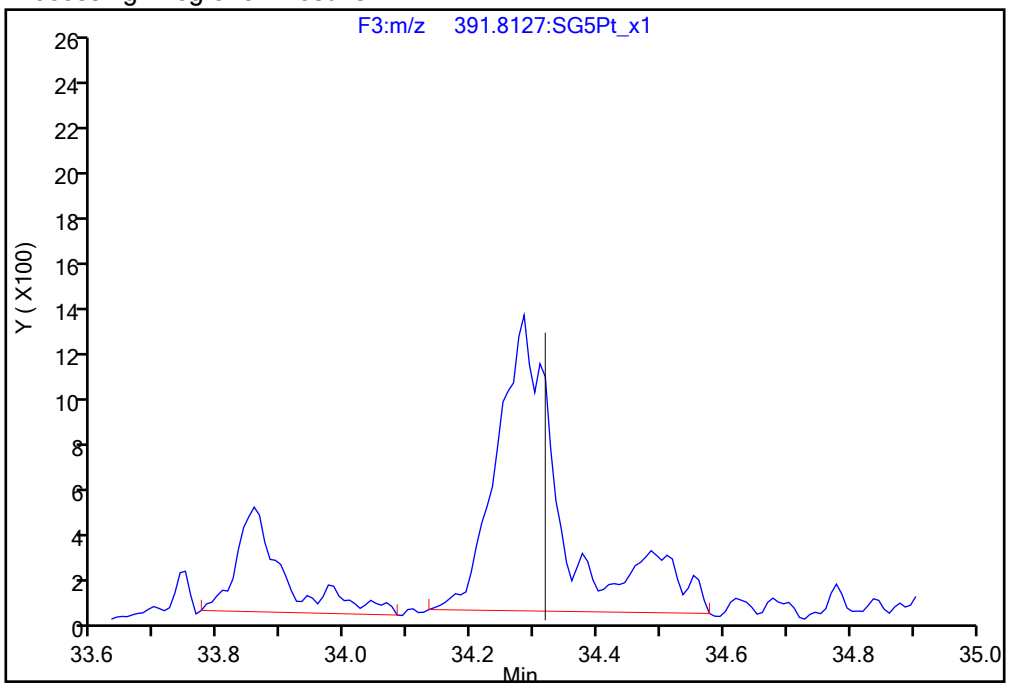
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3(29.31 :34.00)		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (32.88- 35.68)

Signal: 2

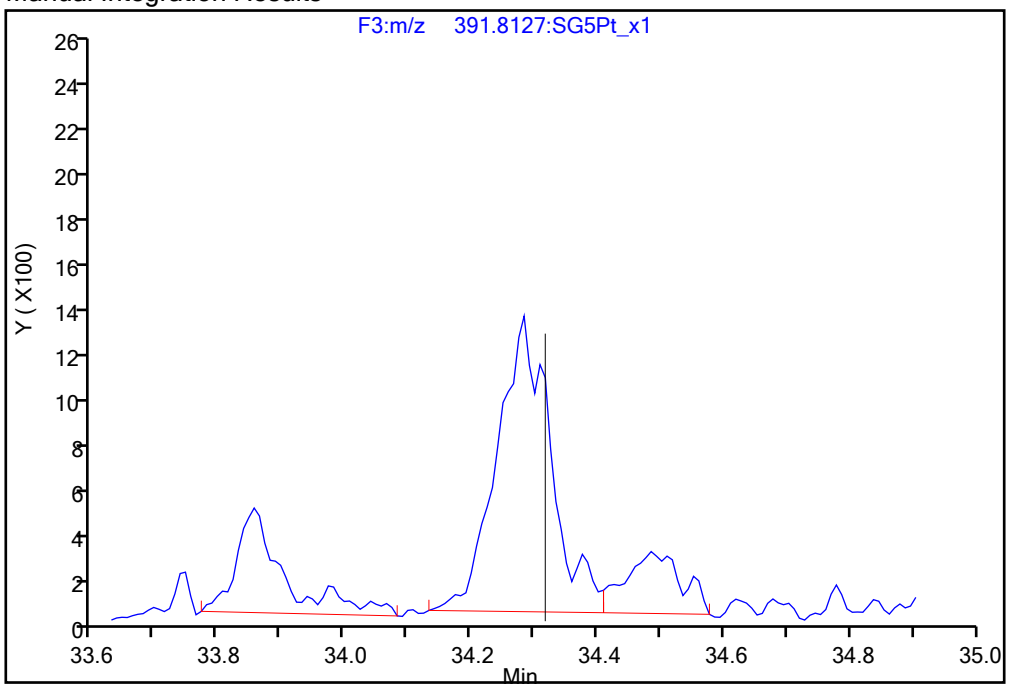
Processing Integration Results

RT = 34.284 Area = 9319



Manual Integration Results

RT = 34.284 Area = 7645 M



Reviewer: dadunj, 17-Dec-2019 09:45:14

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

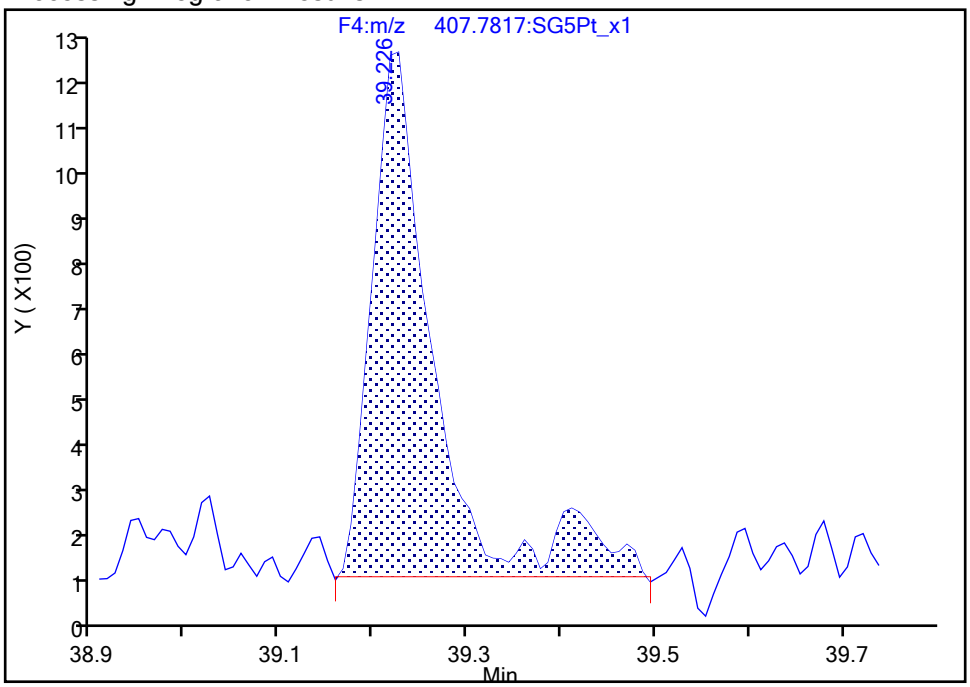
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d				
Injection Date:	13-Dec-2019 21:23:00	Instrument ID:	DFS 1		
Lims ID:	320-56911-A-6-A	Lab Sample ID:	320-56911-6		
Client ID:	11187072-120819-BN-SJSSA09 (1-2)				
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

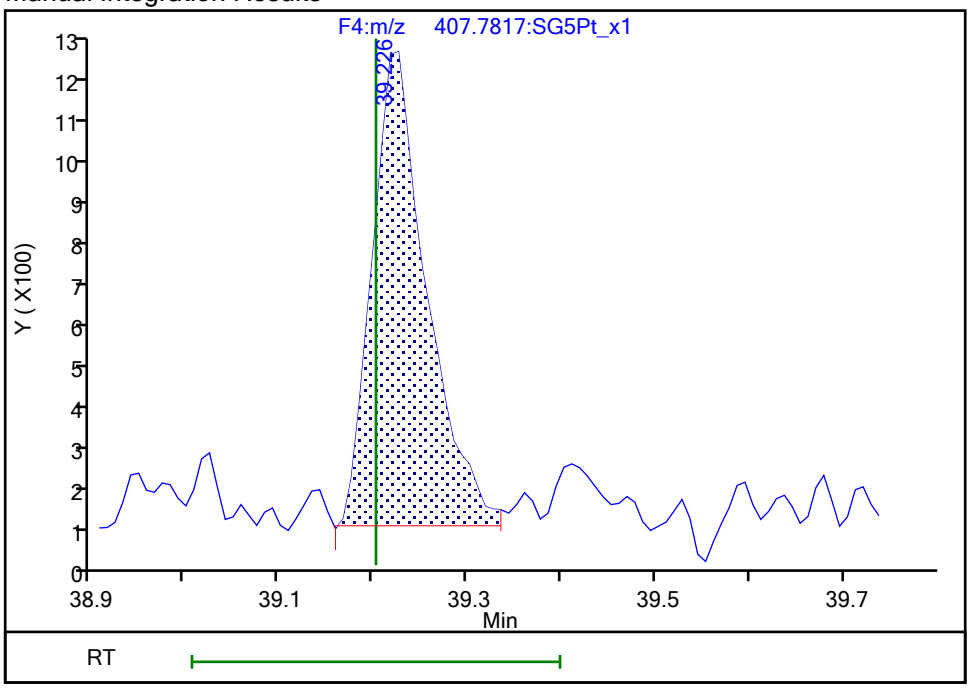
Processing Integration Results

RT: 39.23
Area: 5170
Amount: 0.158684
Amount Units: pg/ul



Manual Integration Results

RT: 39.23
Area: 4513
Amount: 0.146908
Amount Units: pg/ul



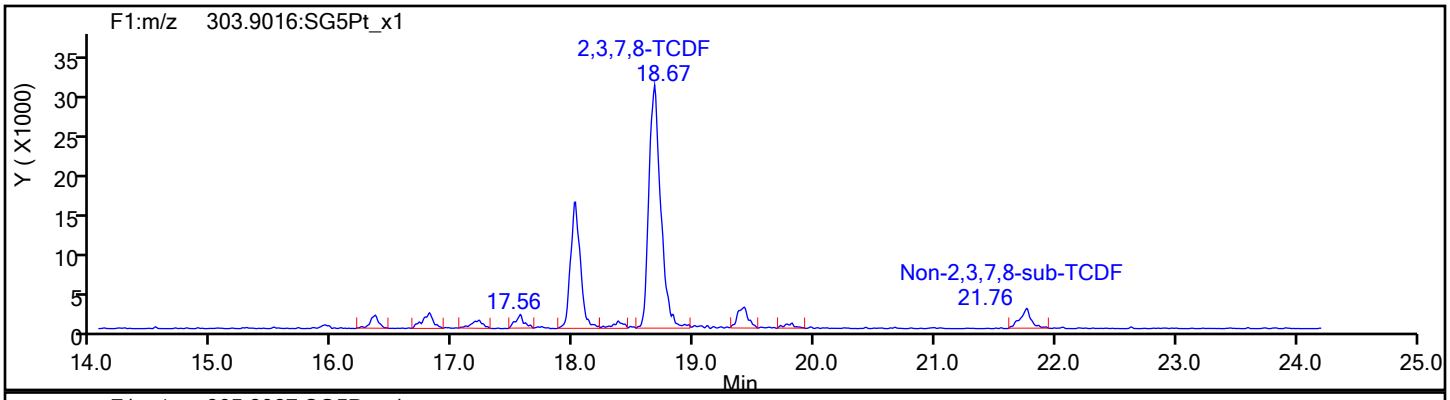
Reviewer: dadunj, 17-Dec-2019 09:46:17
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

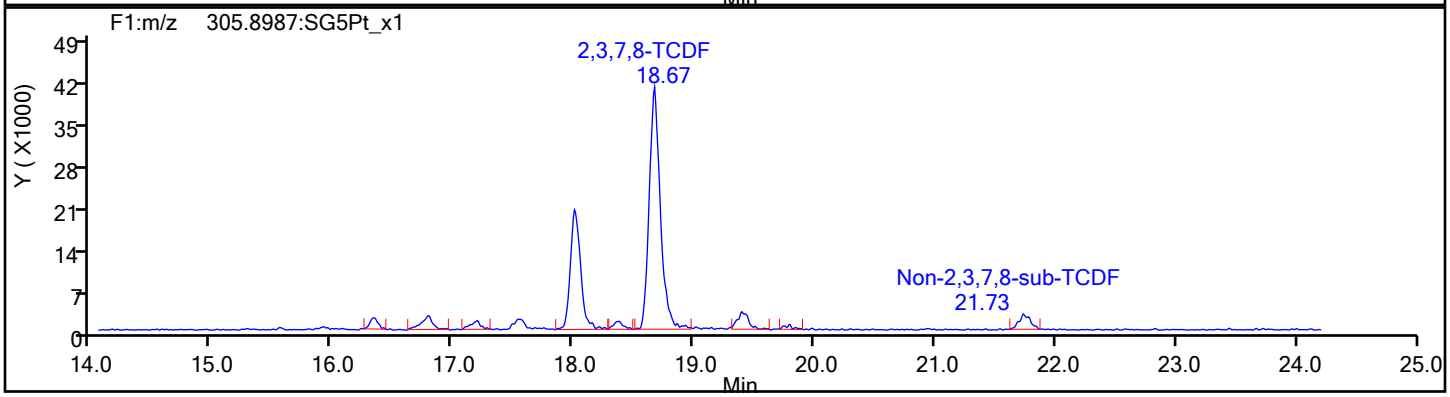
Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

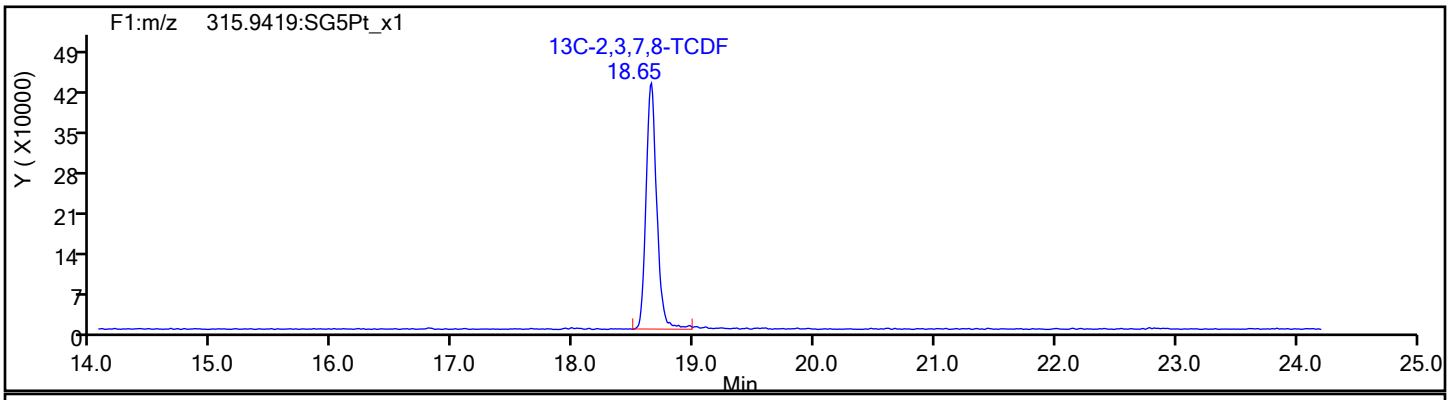
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

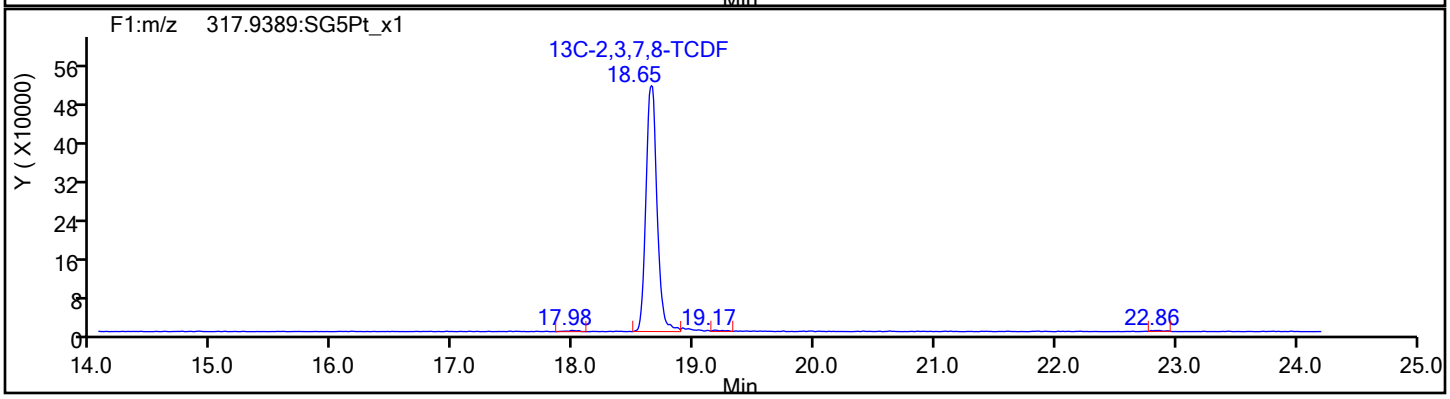
TCDF





TCDF Standards



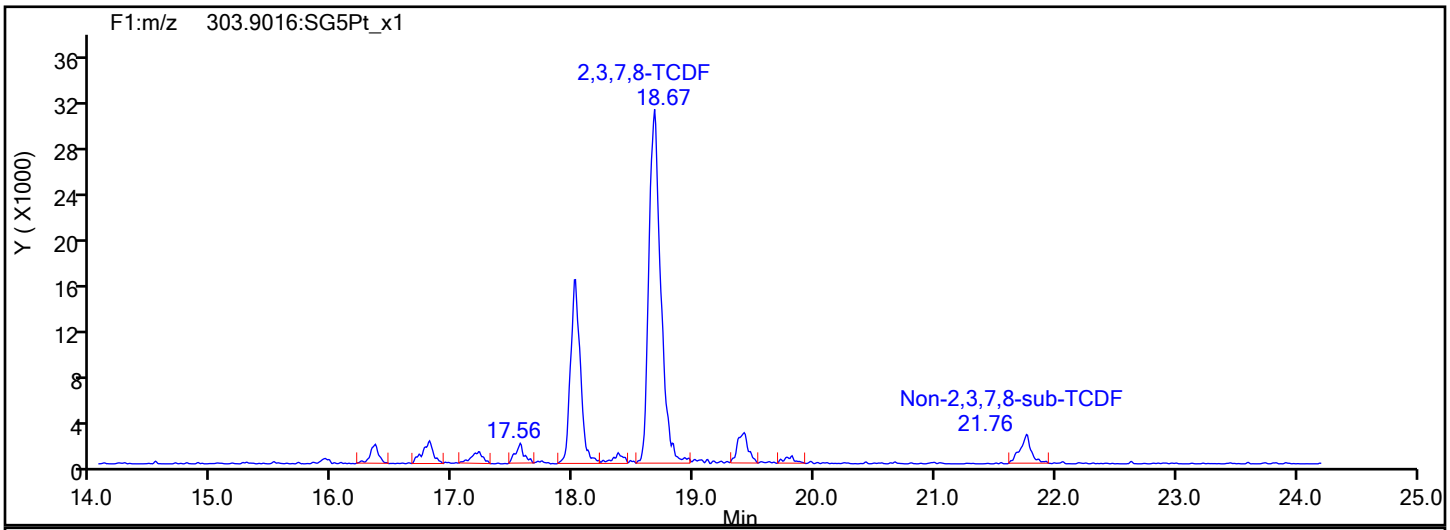


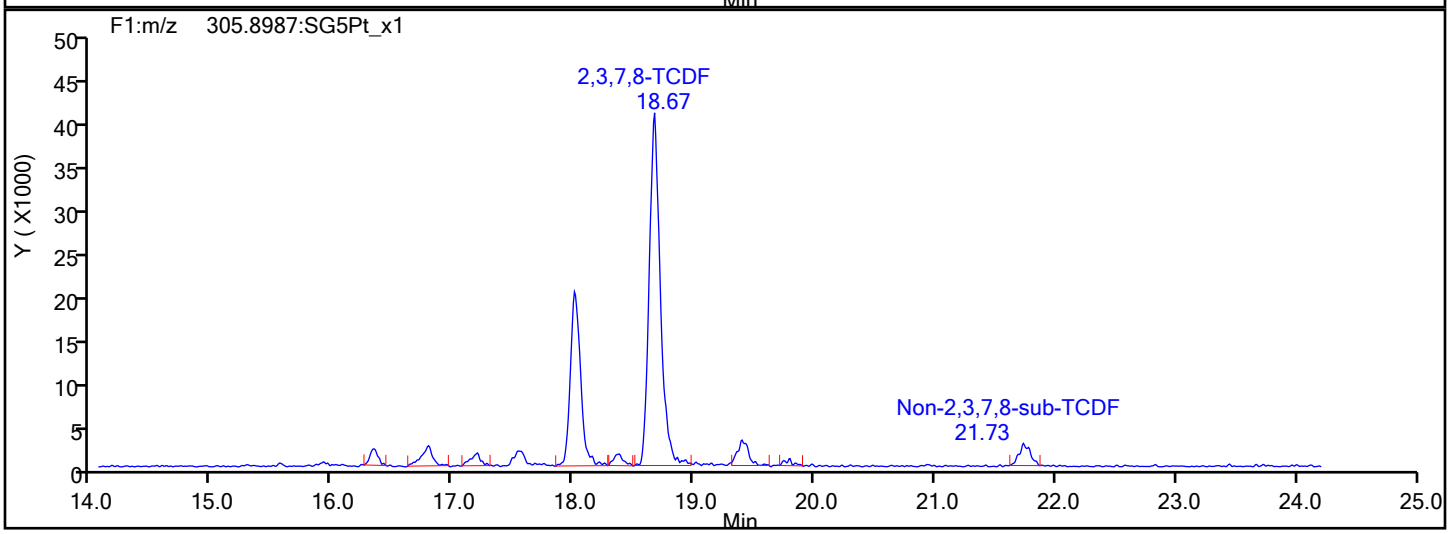
Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

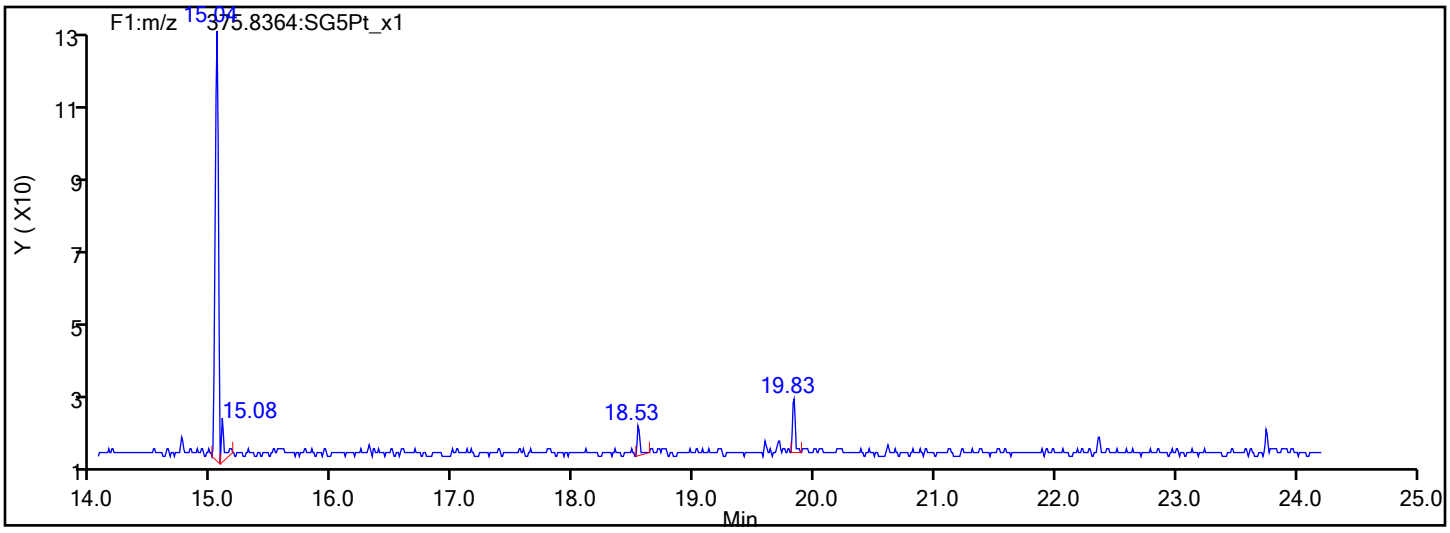
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

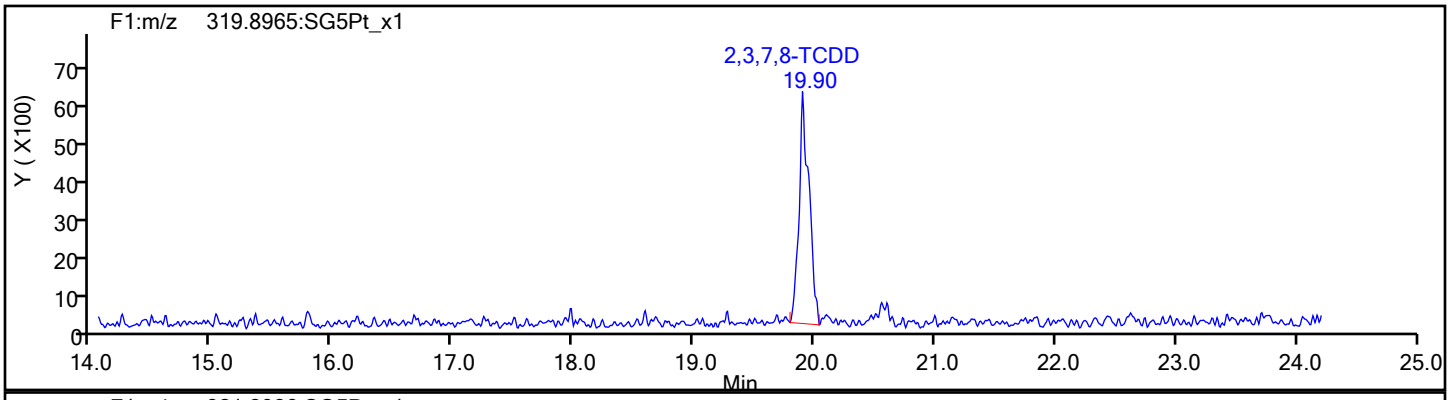


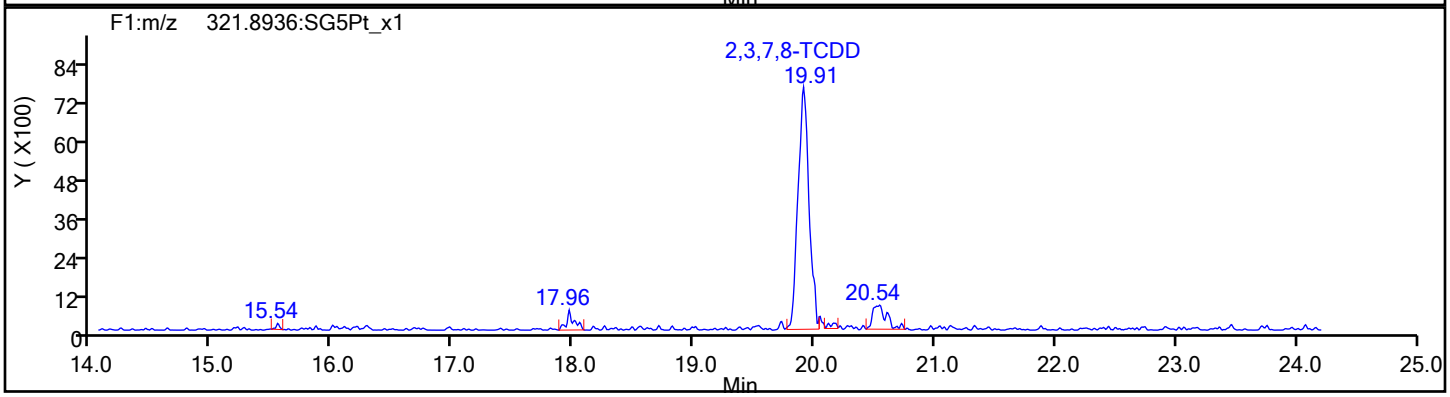
Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

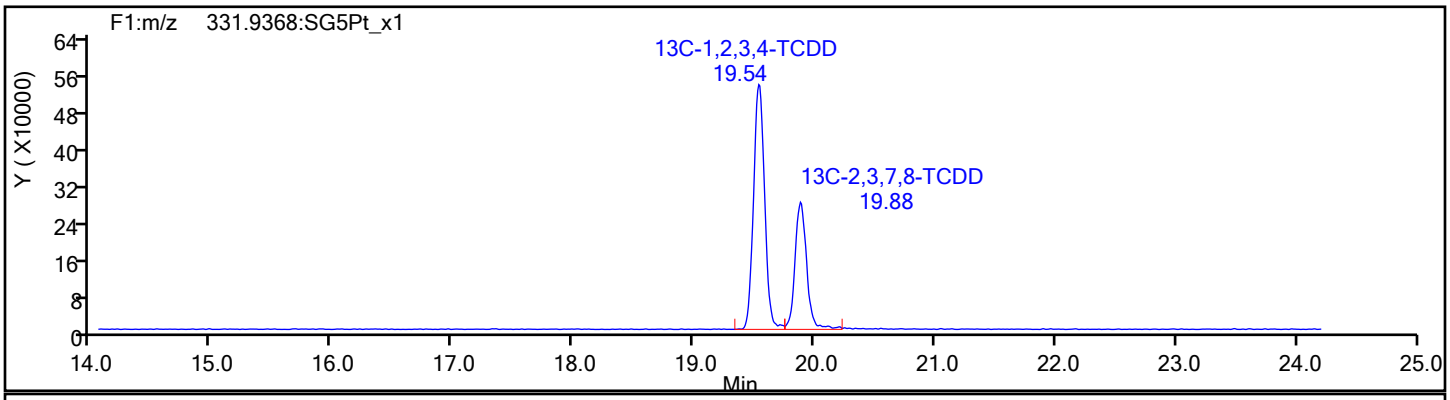
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

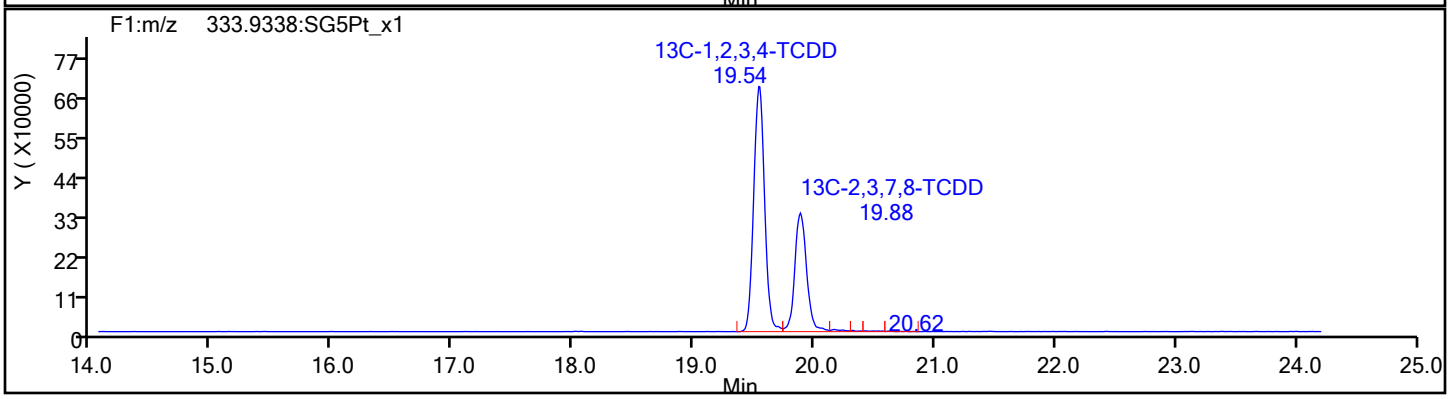
TCDD





TCDD Standards





Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
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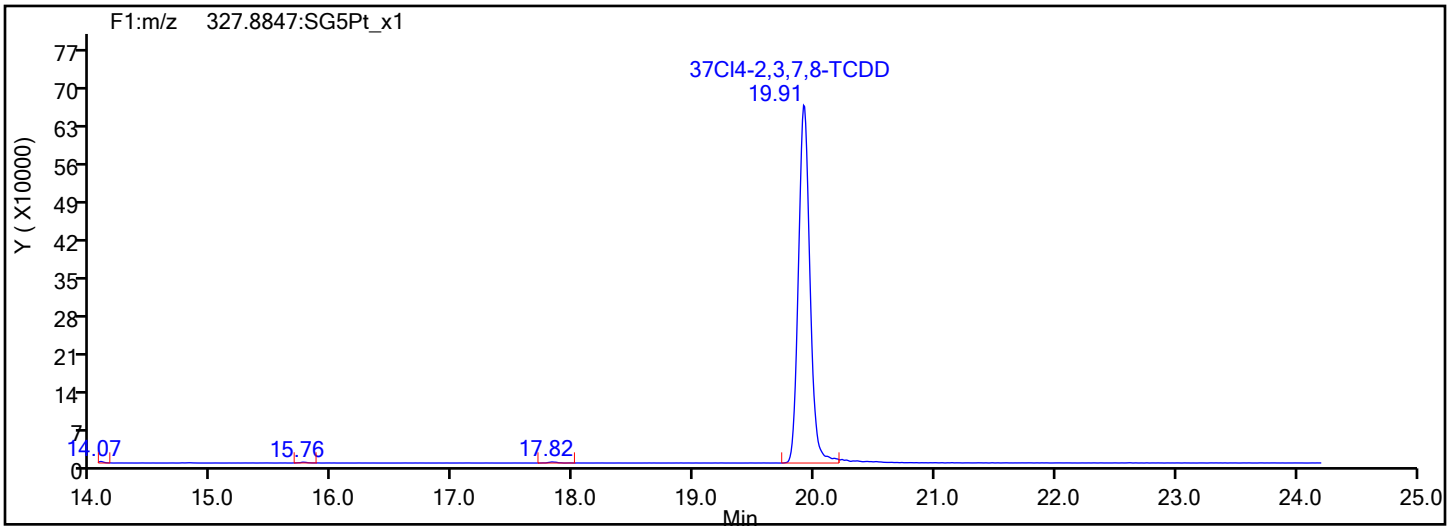
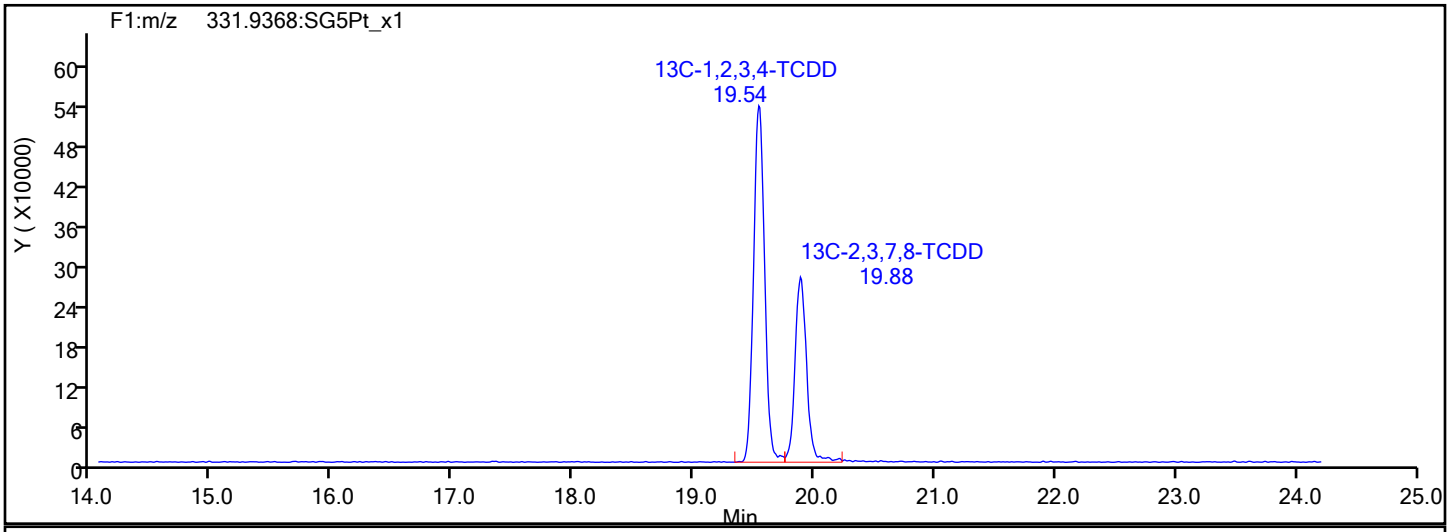
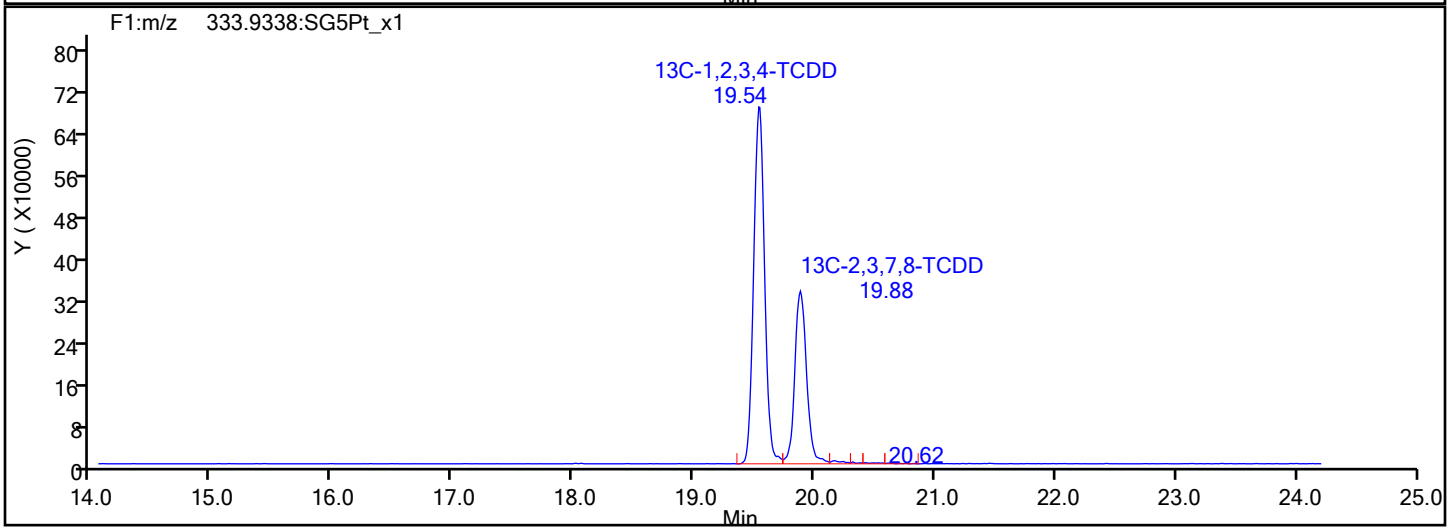
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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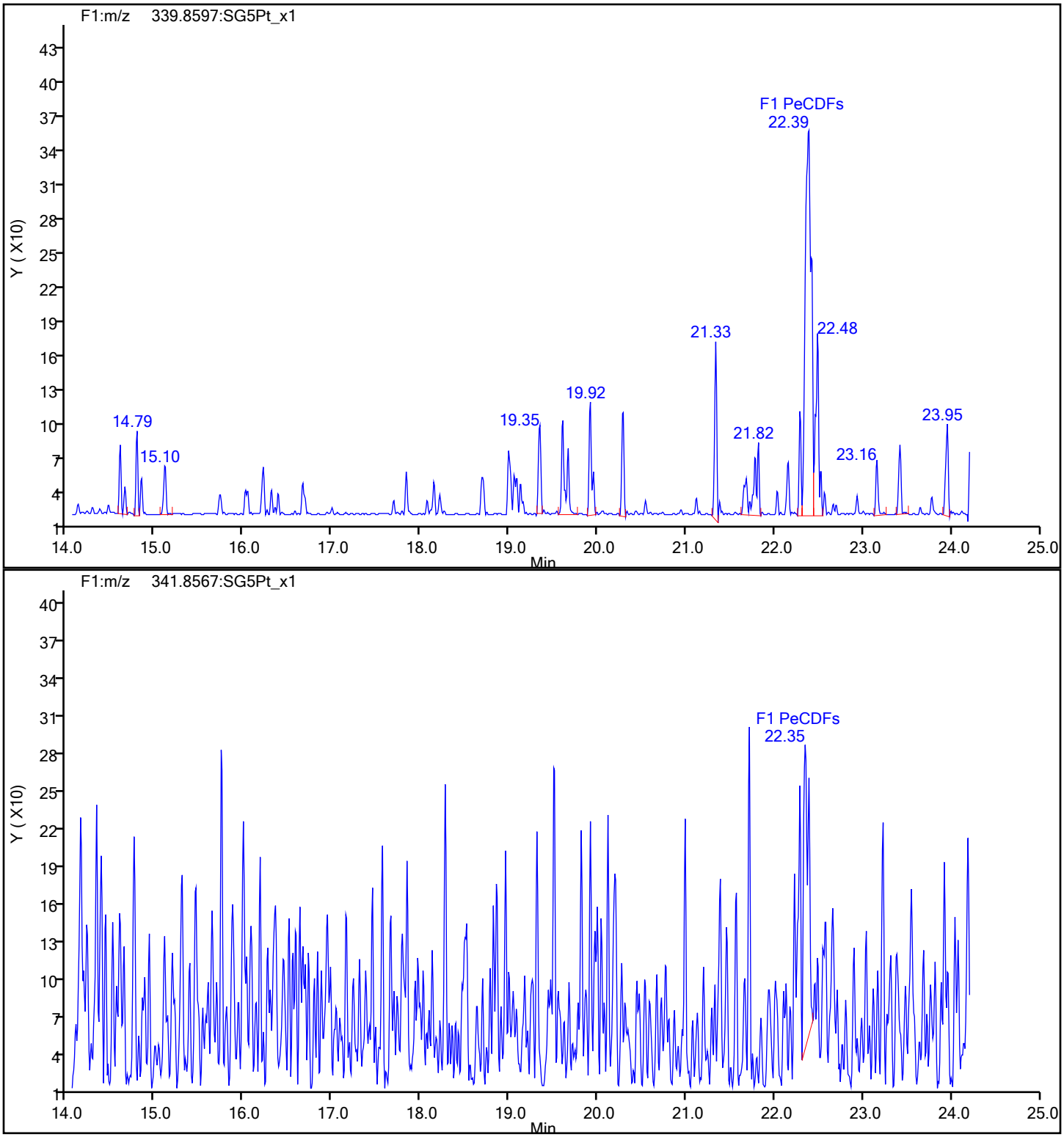
F1 PeCDFs



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Eurofins TestAmerica, Sacramento

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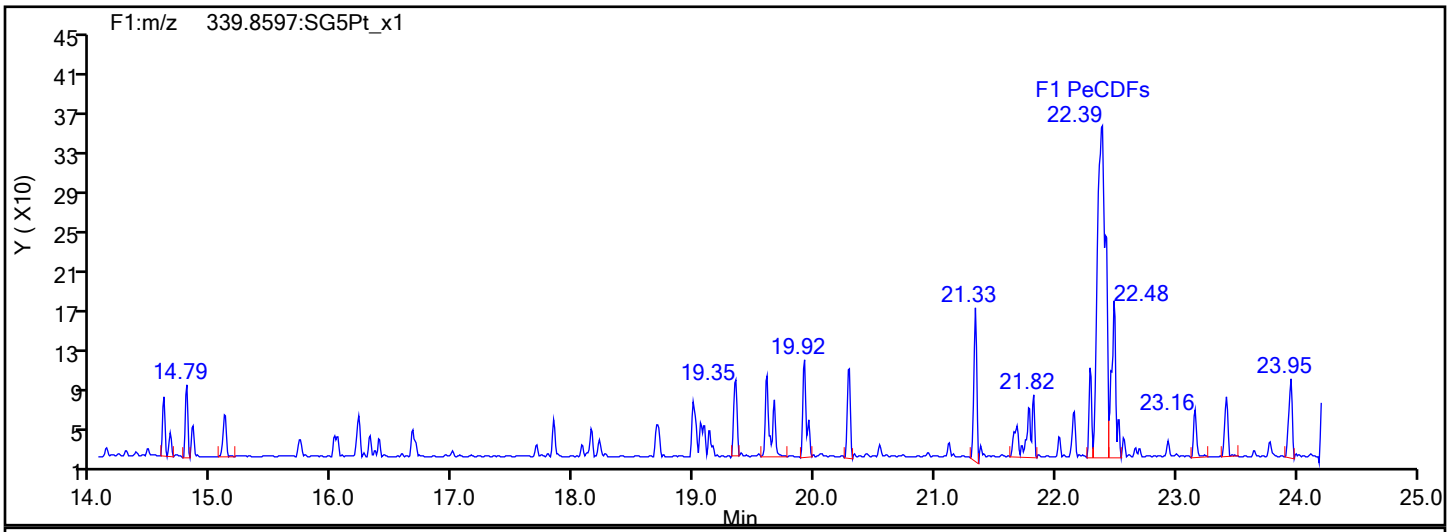
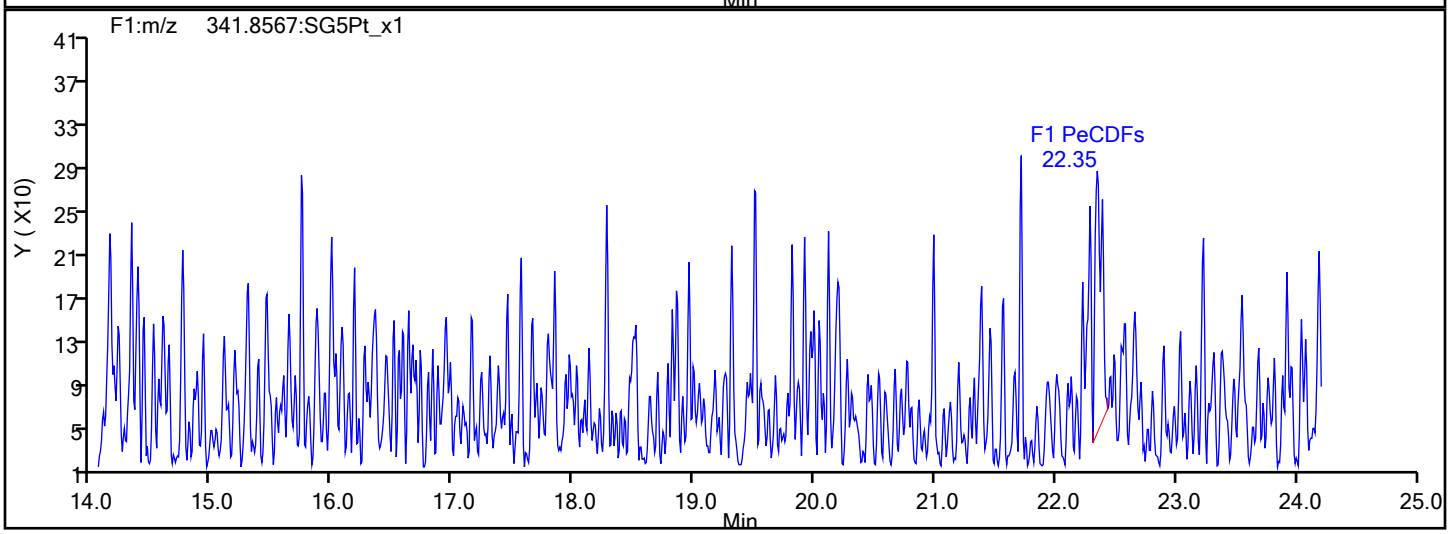
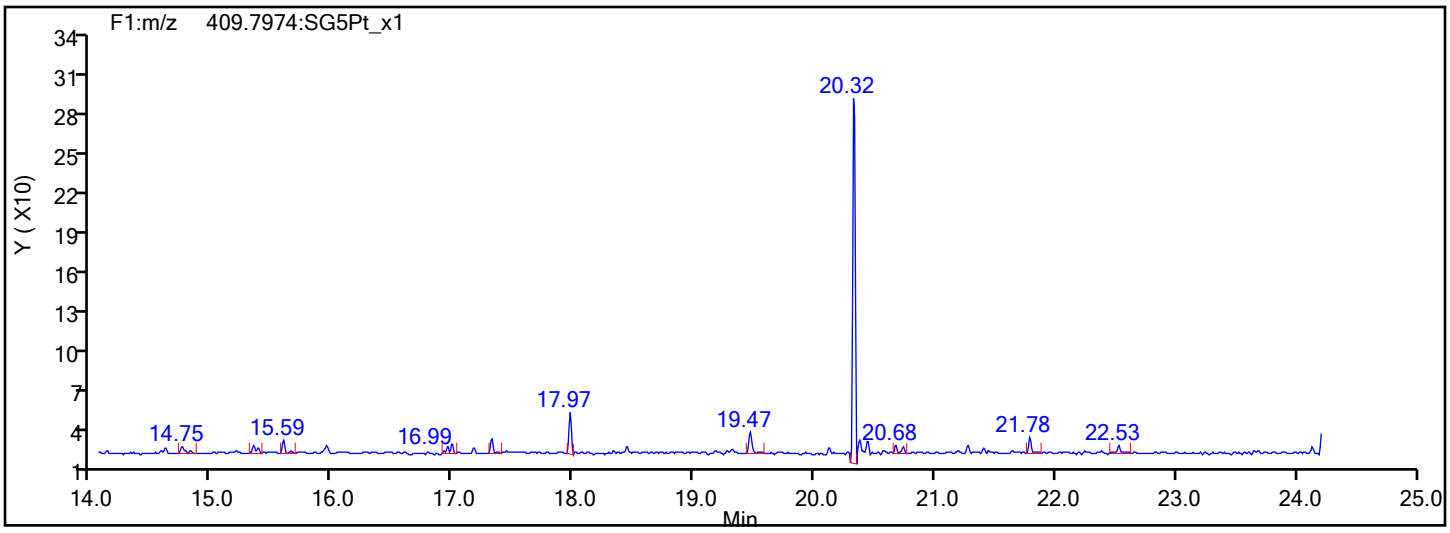




F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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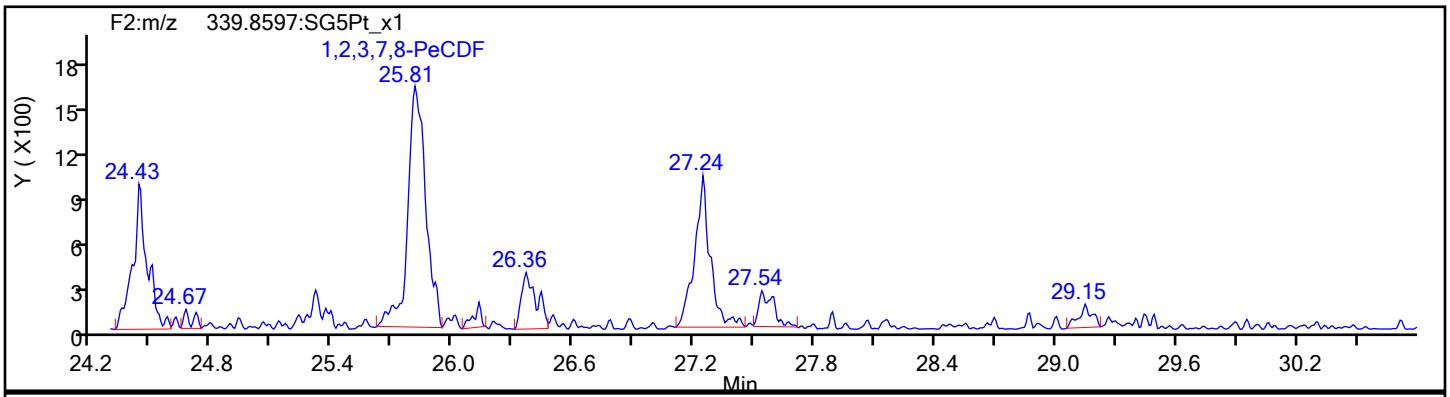
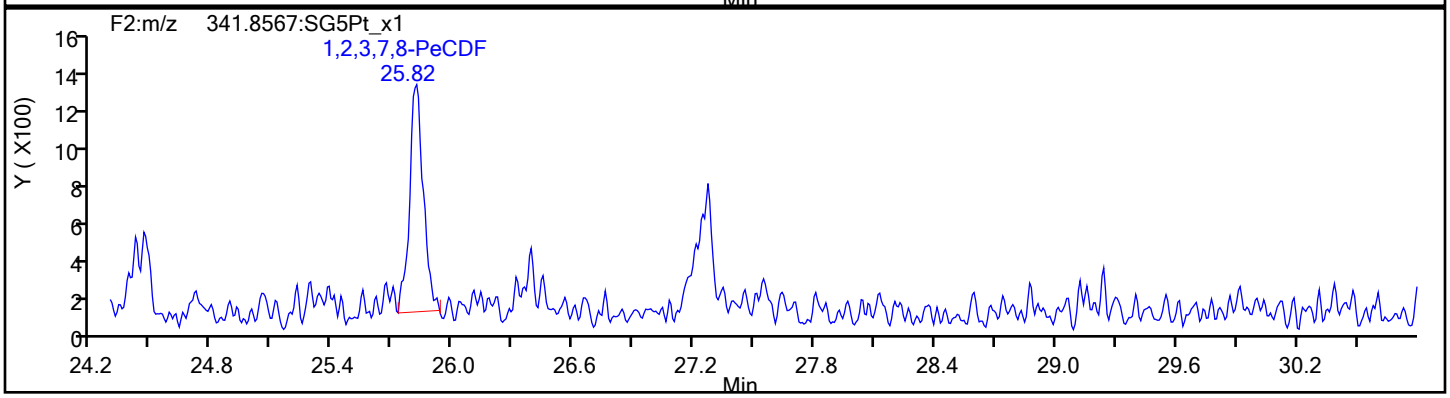
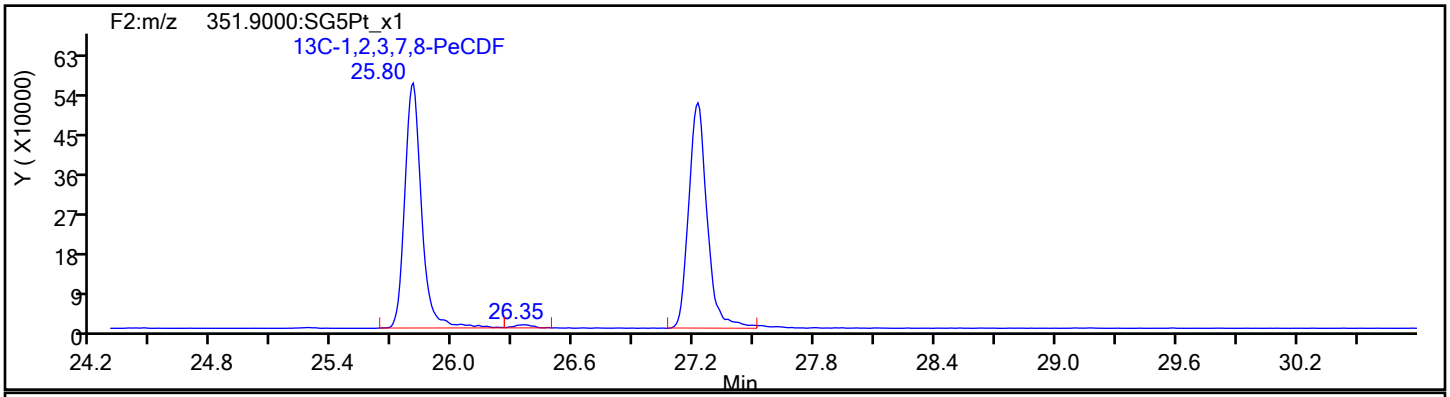
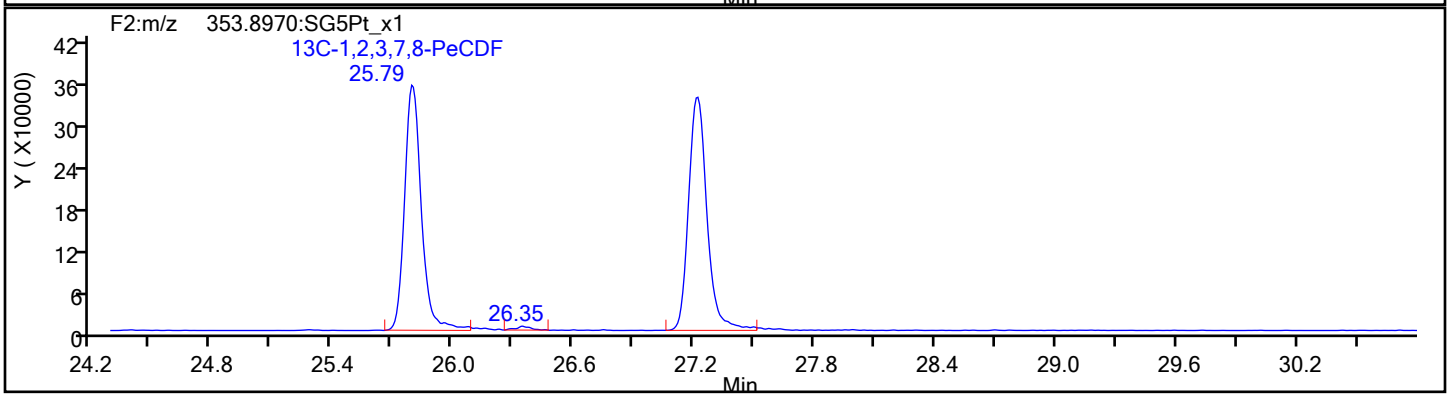
PeCDF





PeCDF Standards





Report Date: 17-Dec-2019 09:47:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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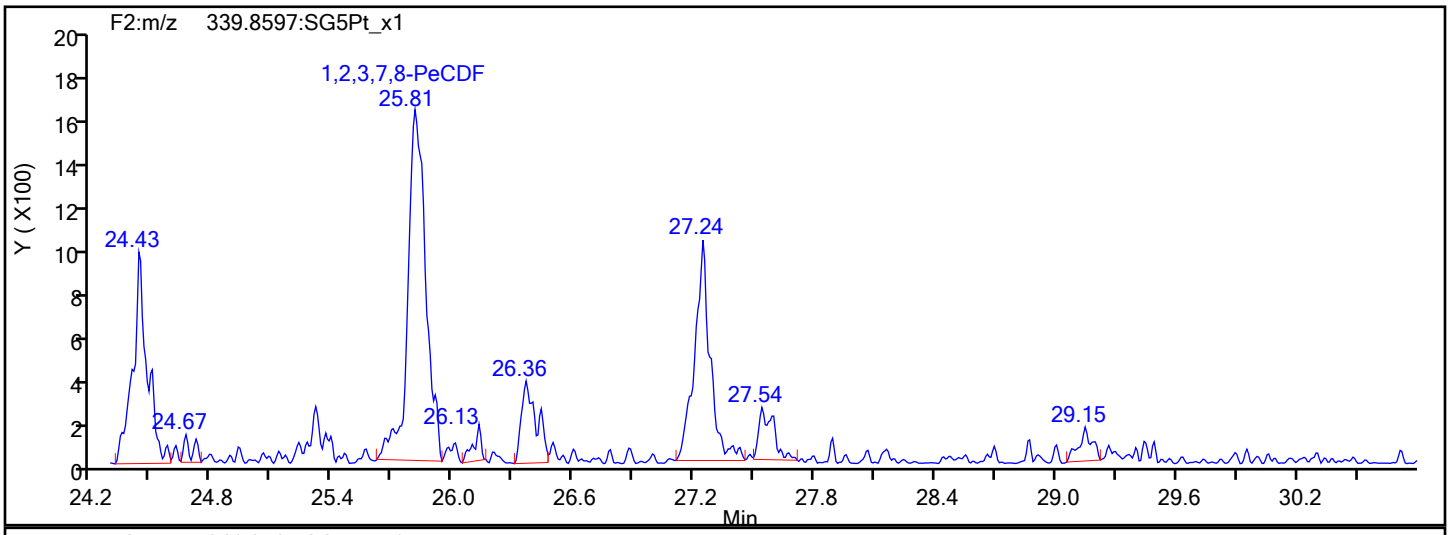
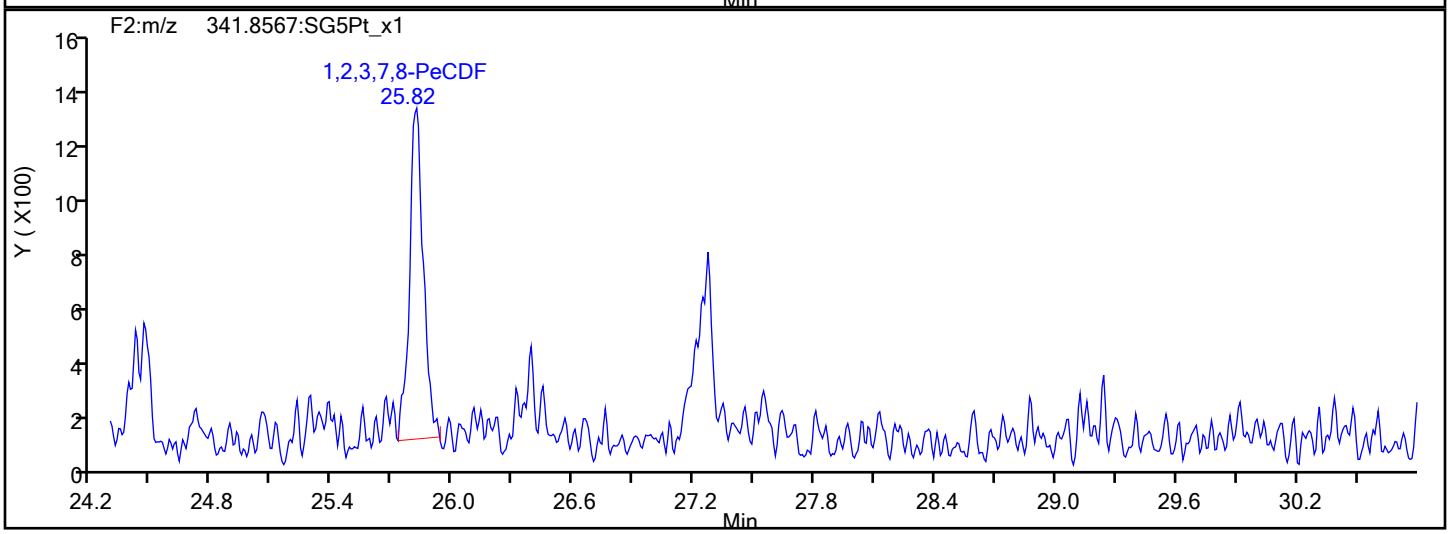
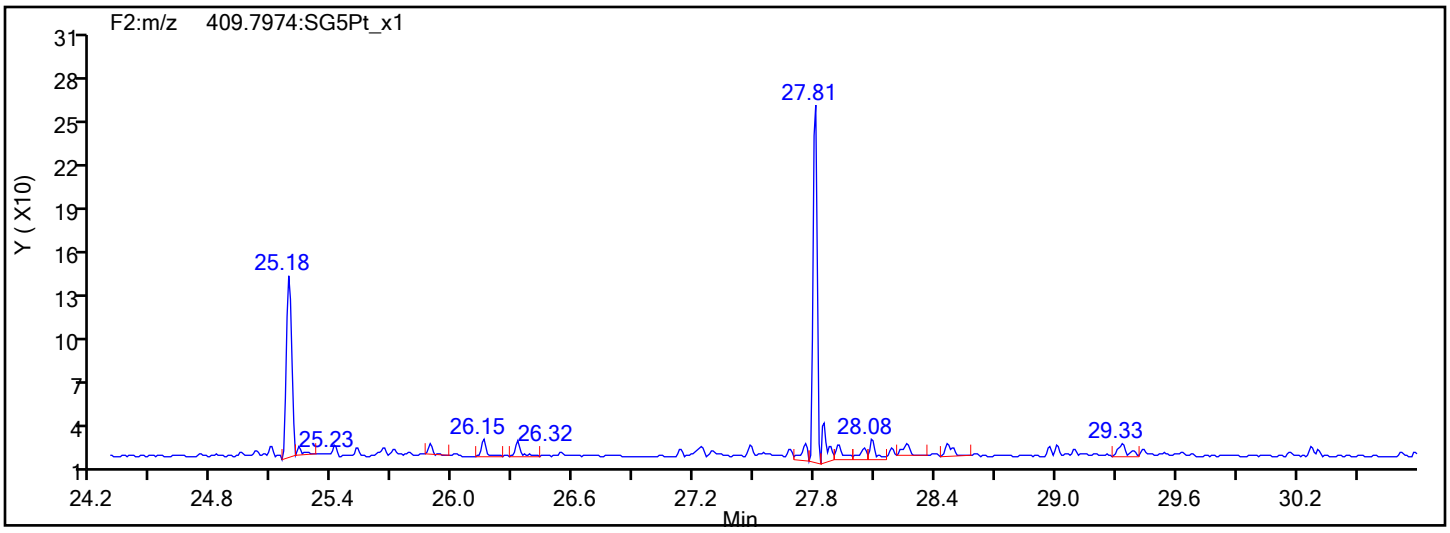
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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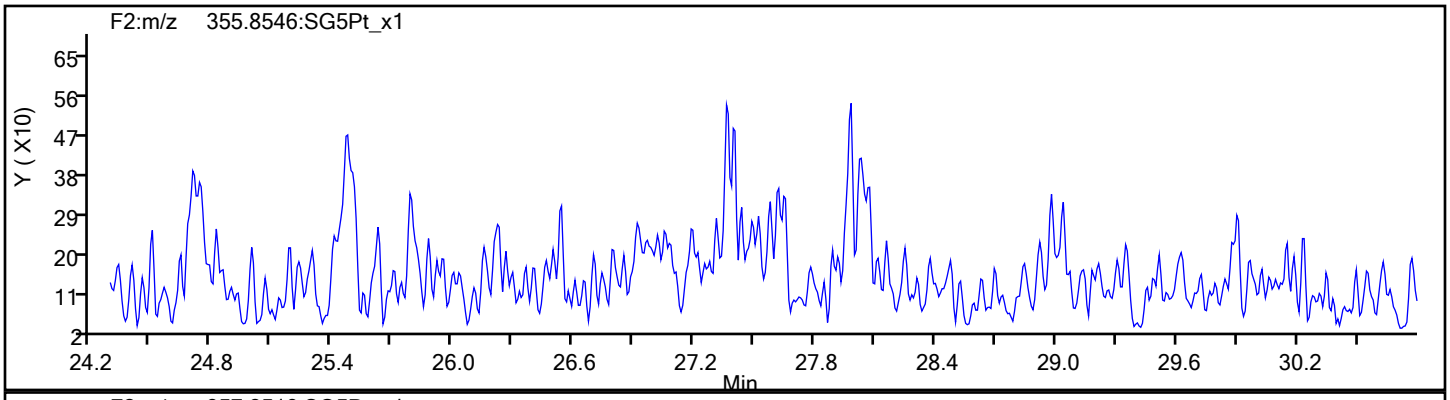
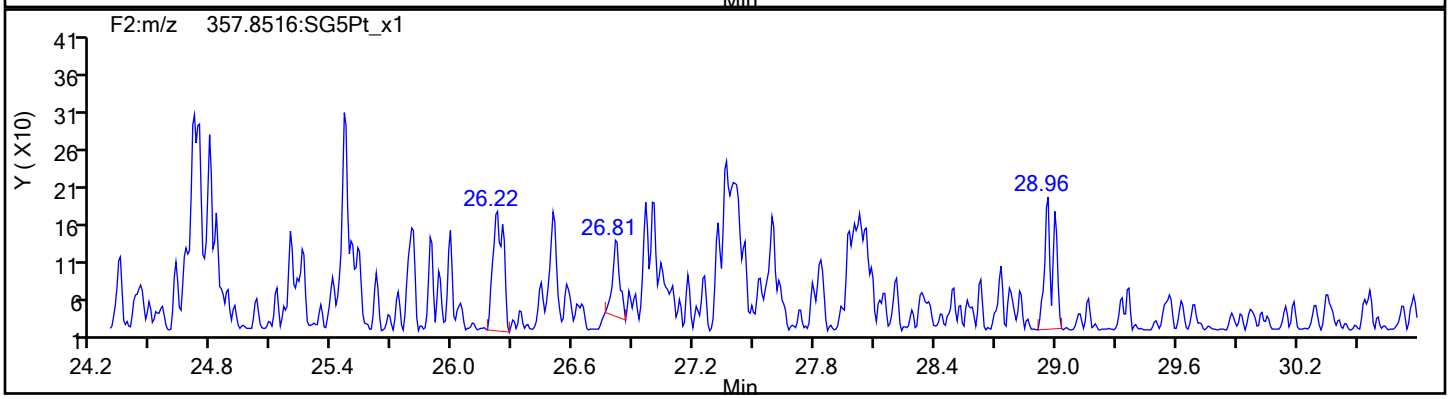
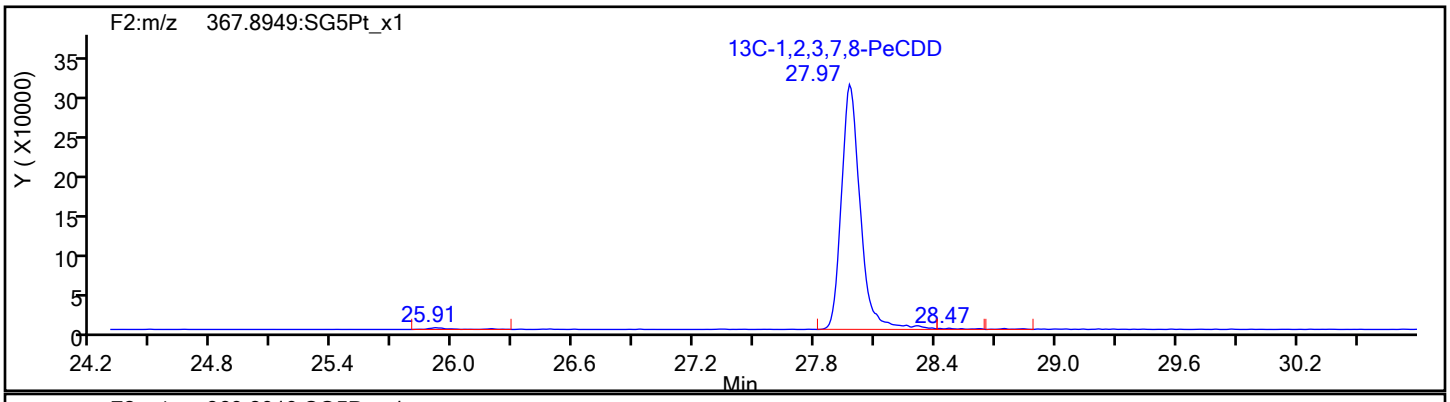
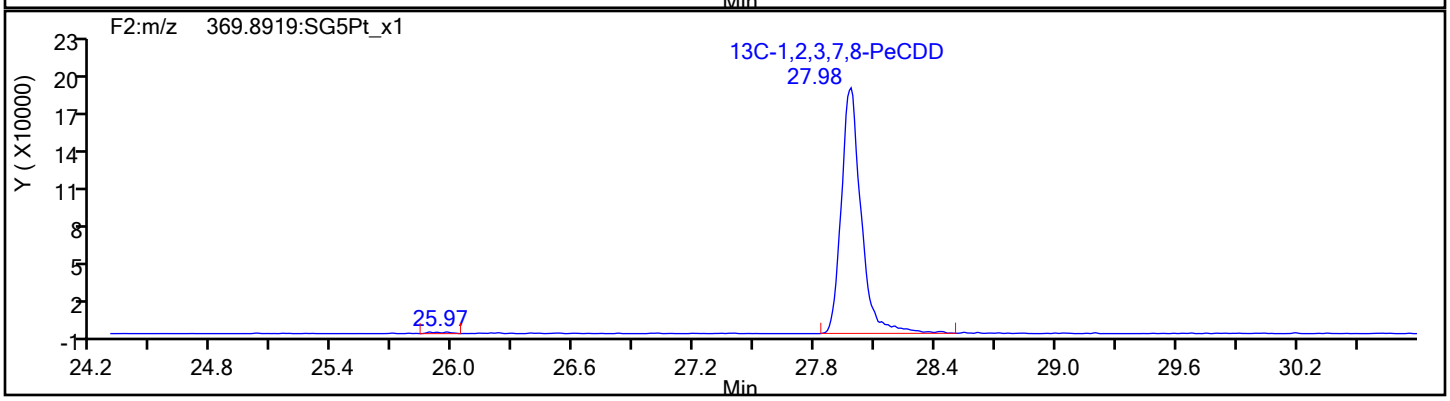
PeCDD





PeCDD Standards





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Eurofins TestAmerica, Sacramento

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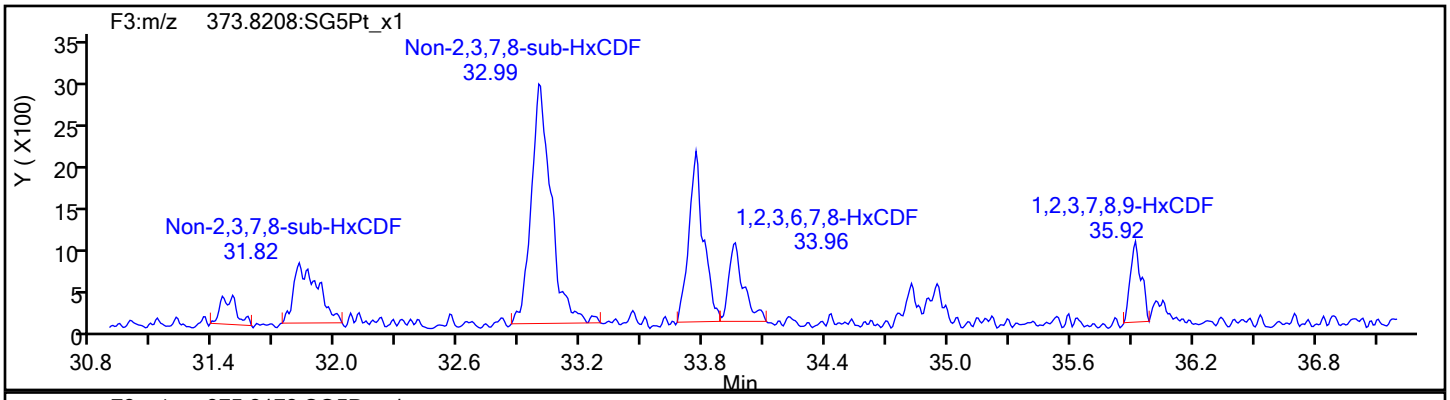
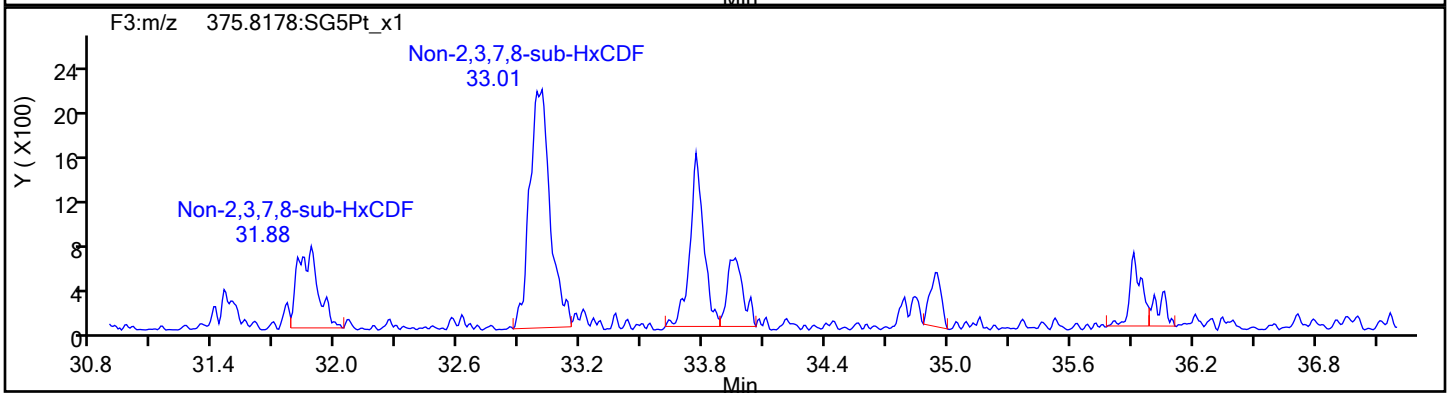
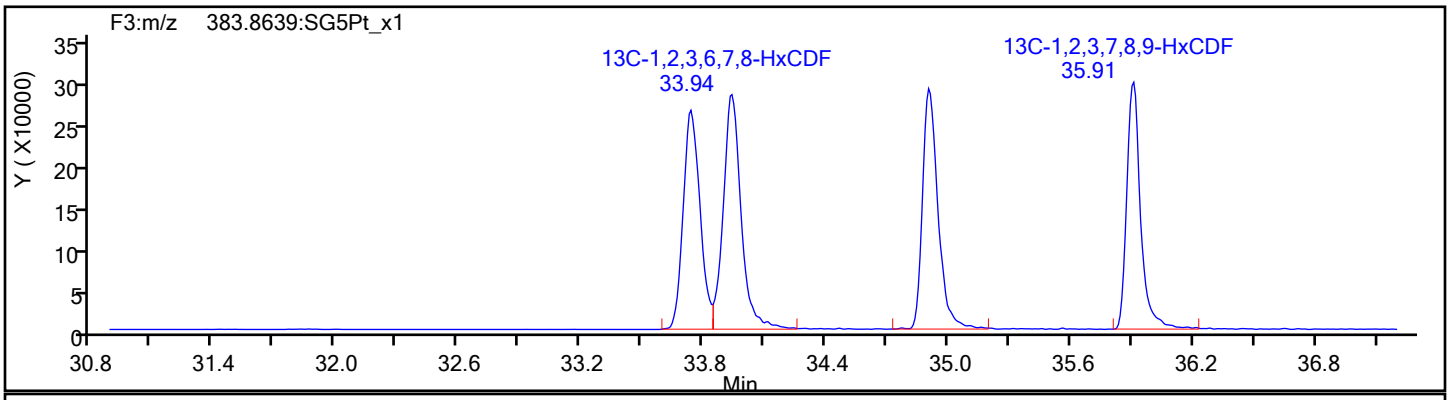
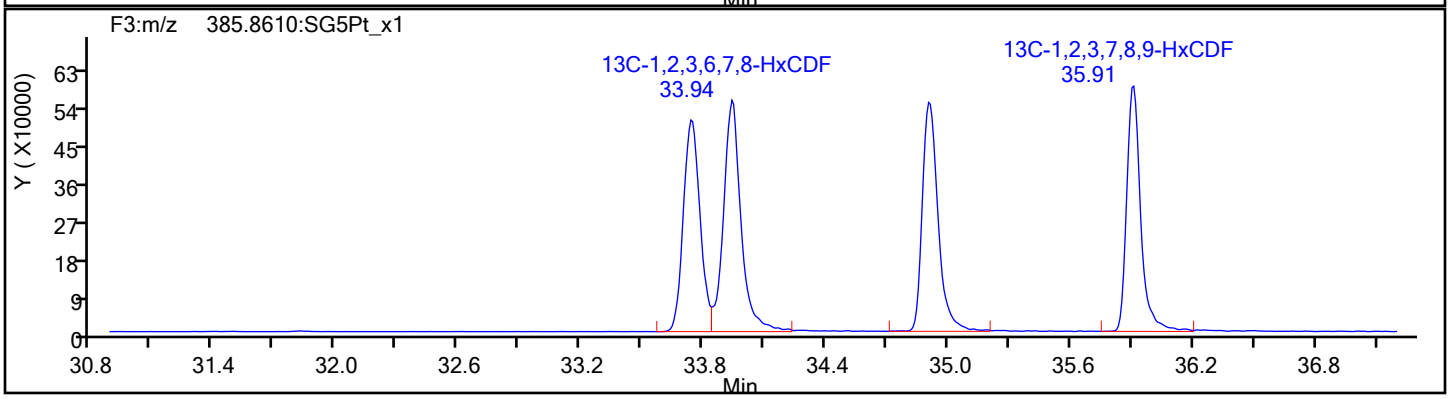
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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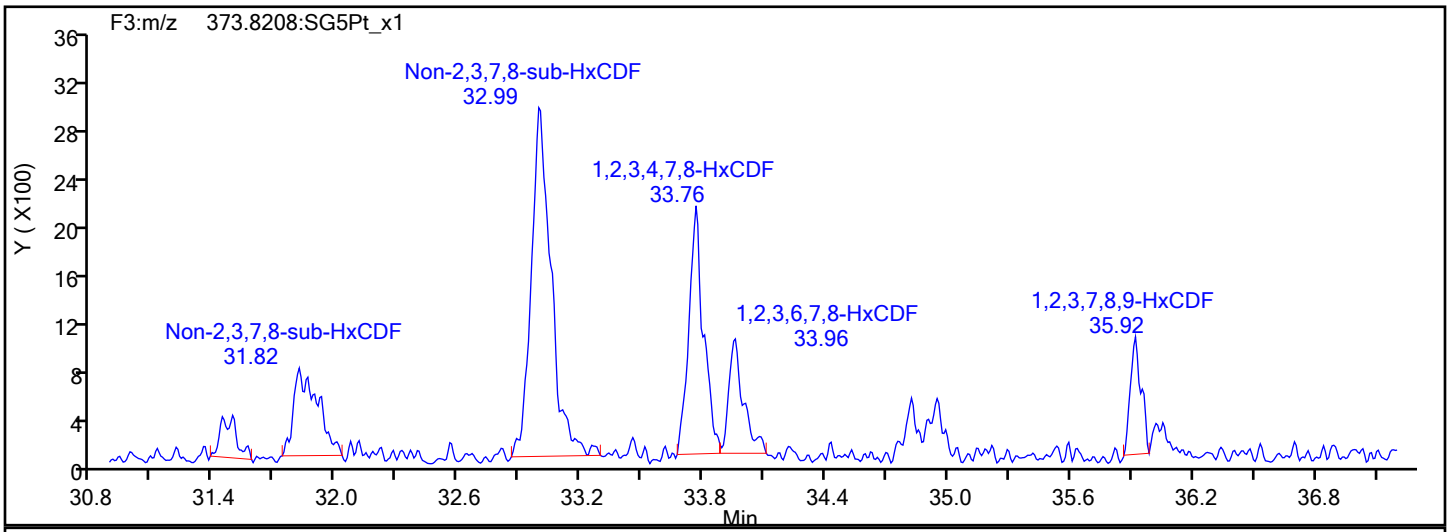
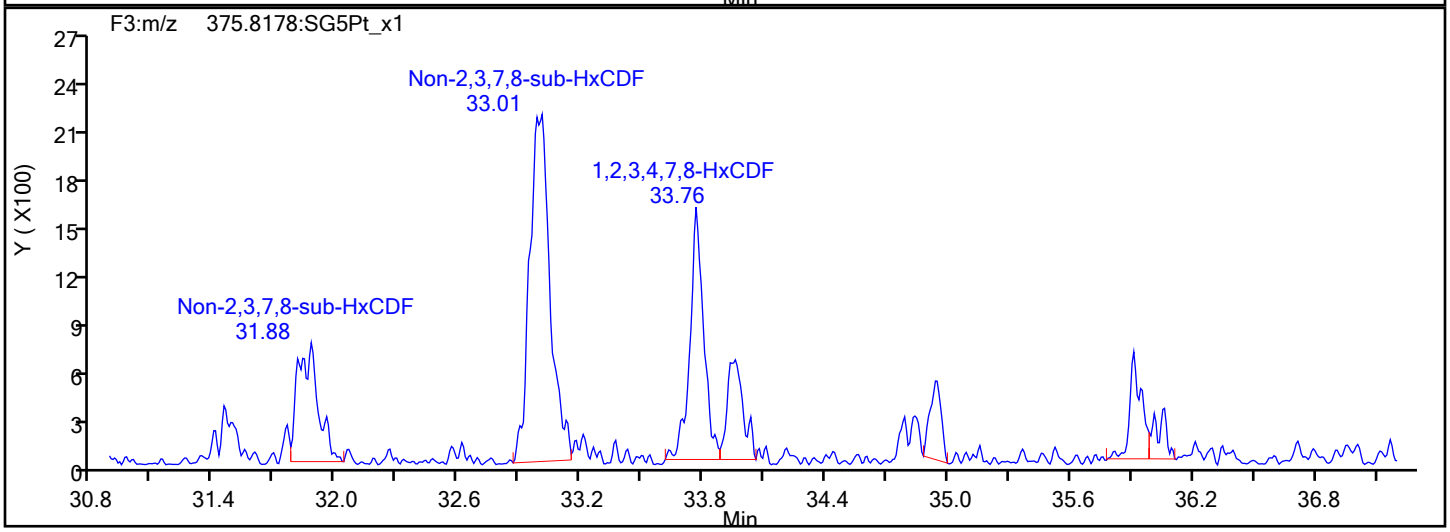
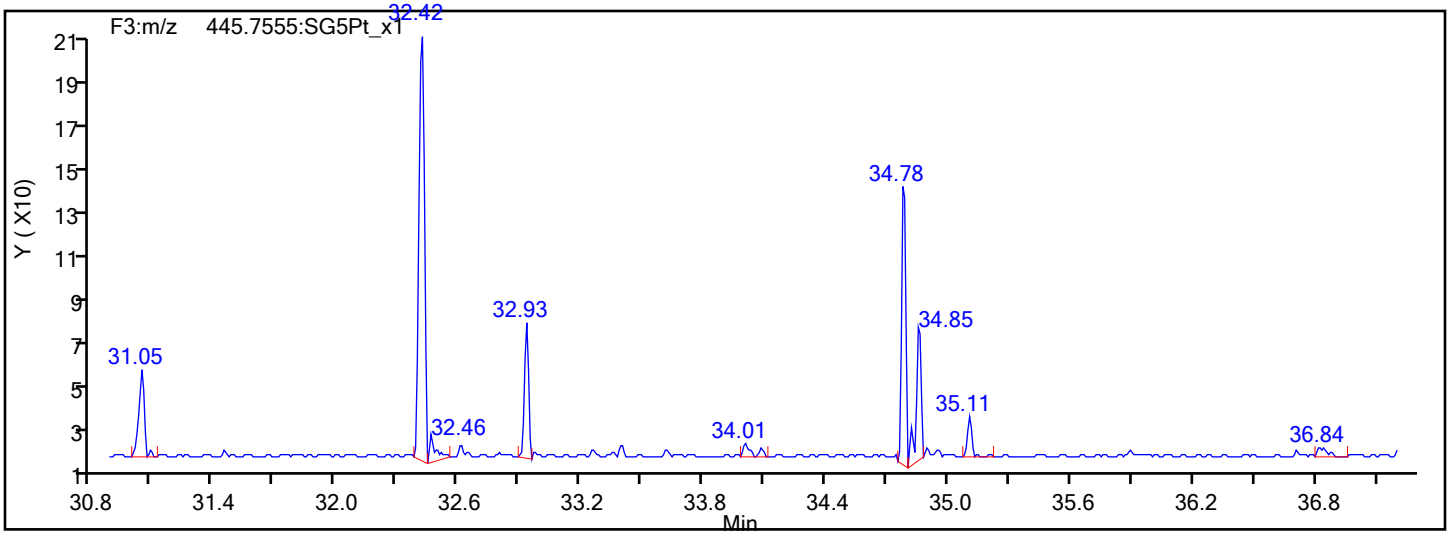




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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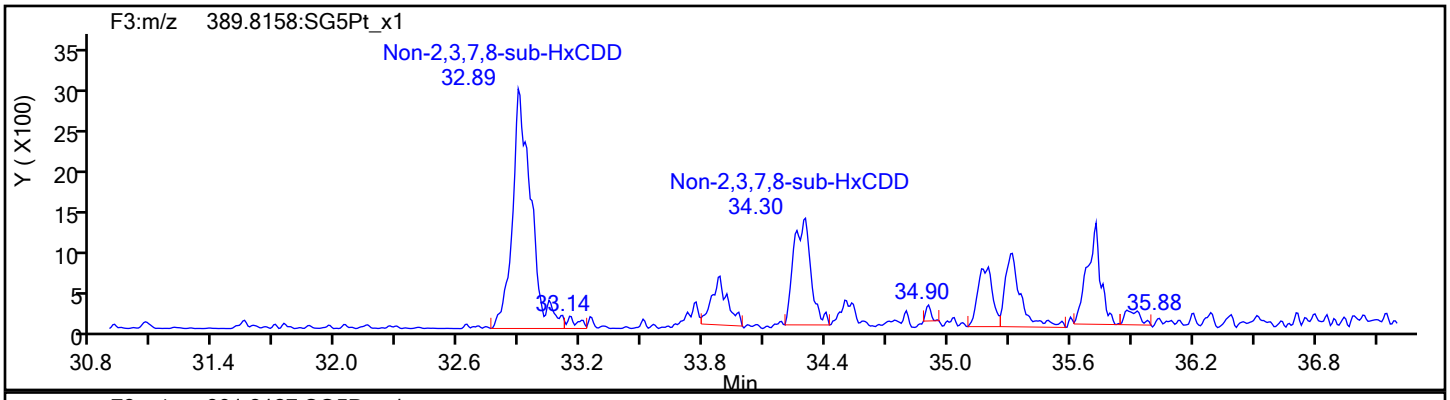
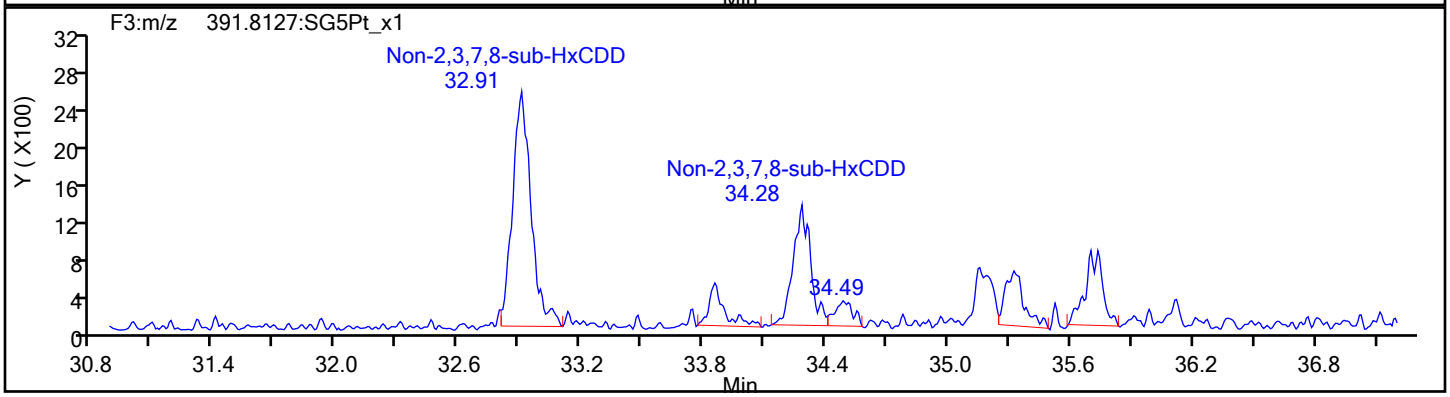
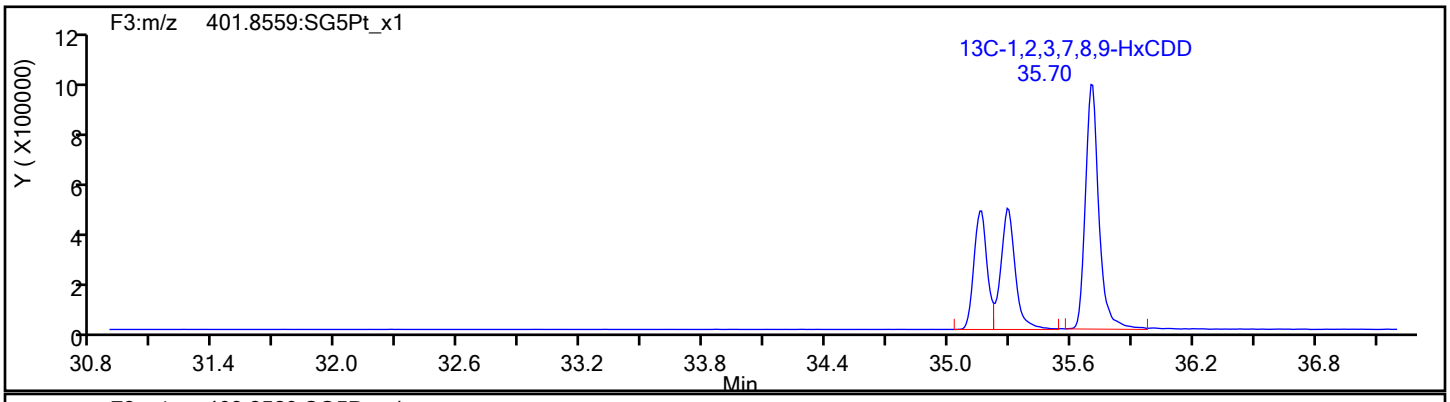
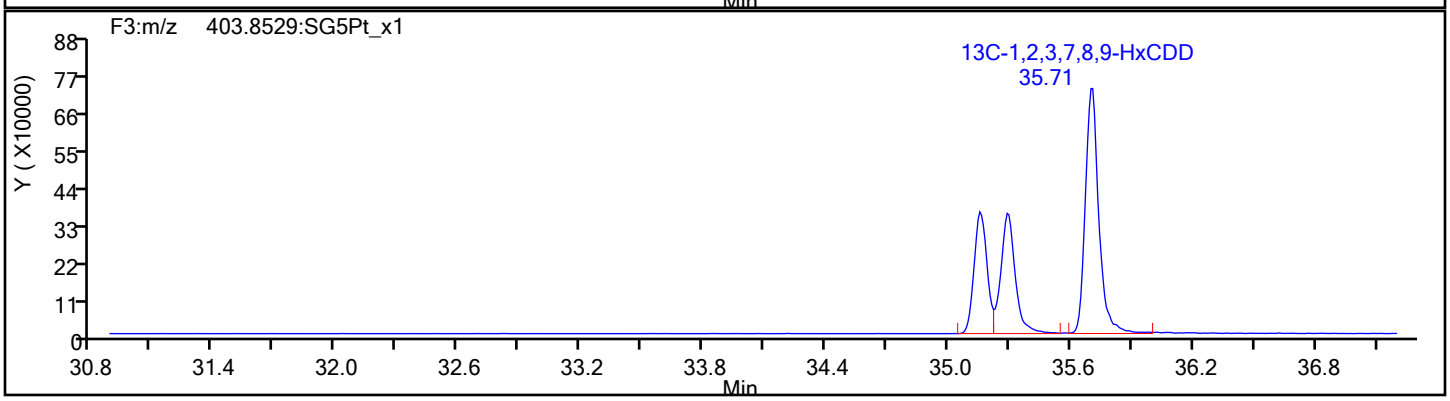




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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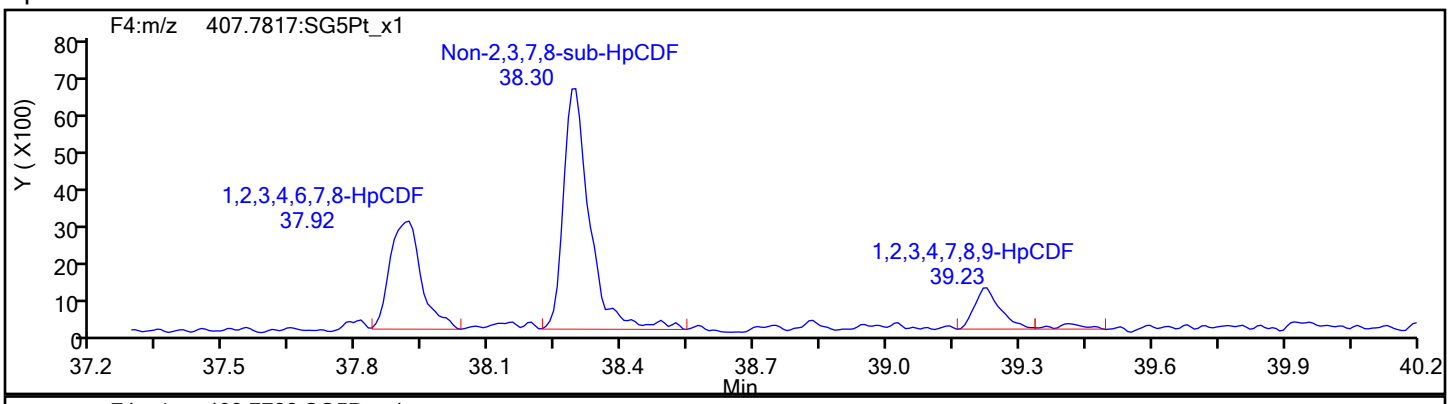
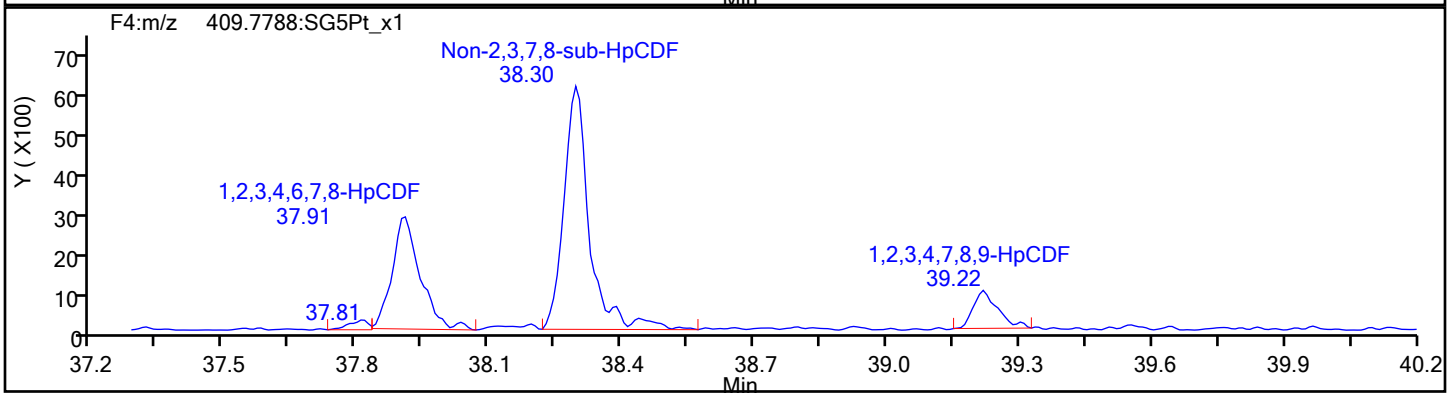
HpCDF





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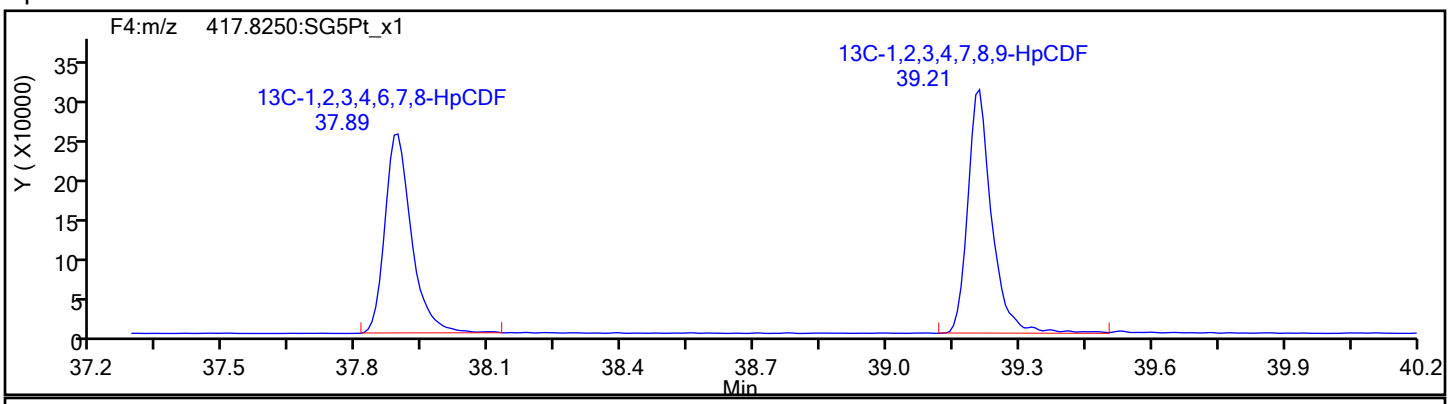

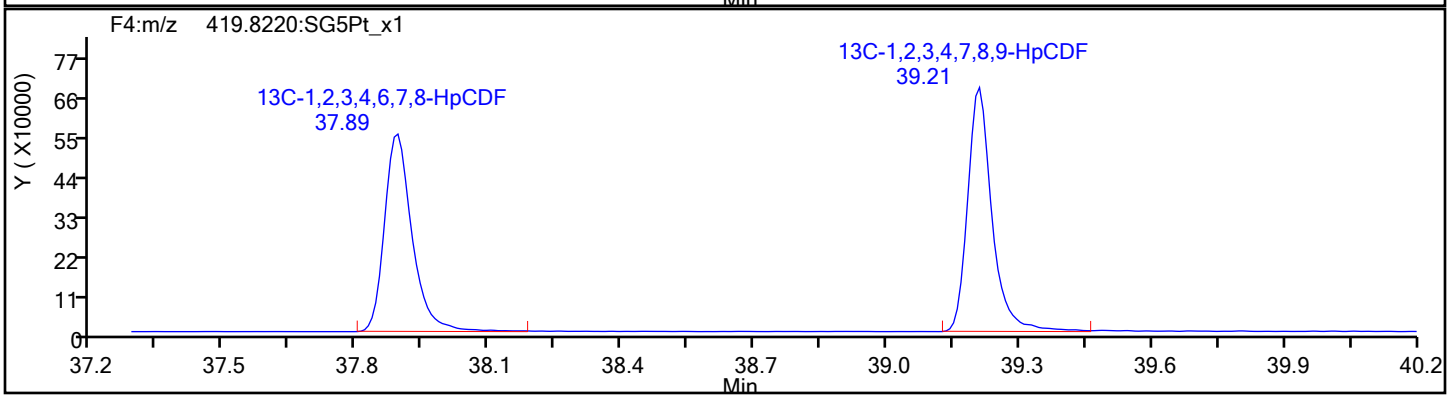

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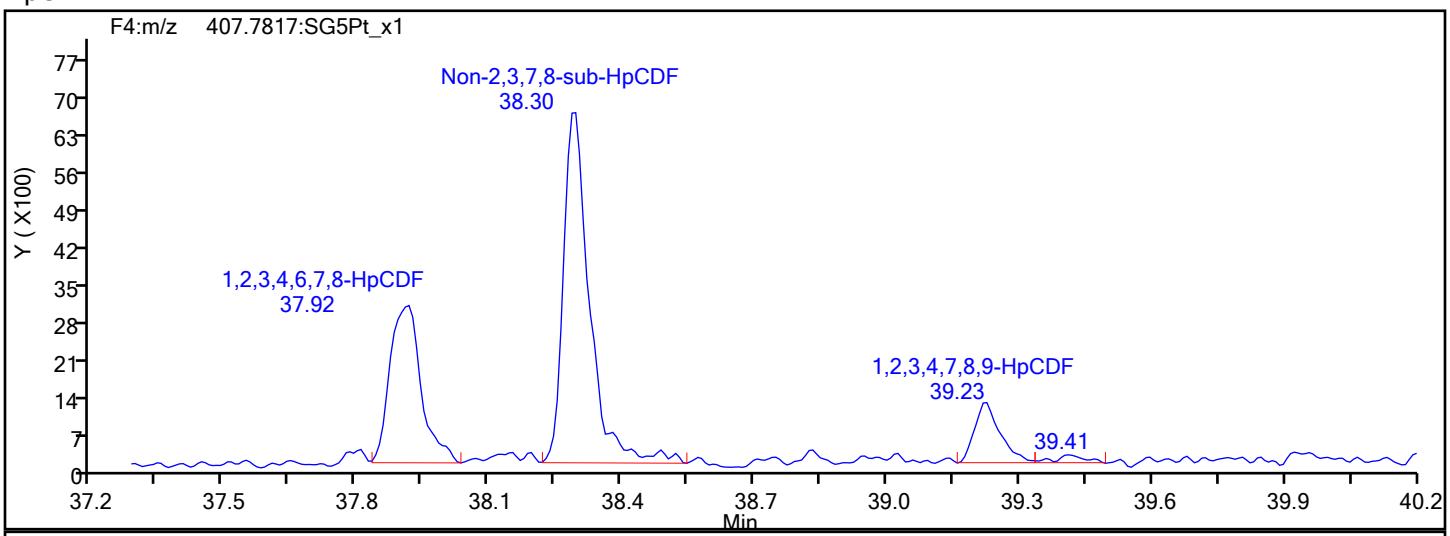
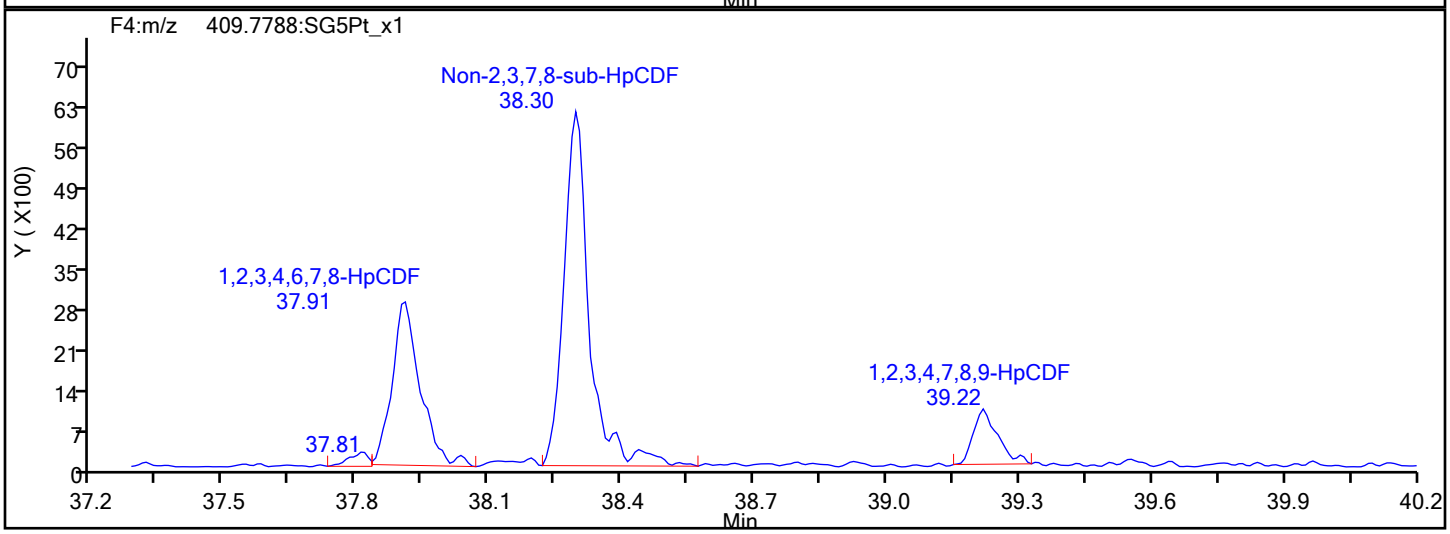
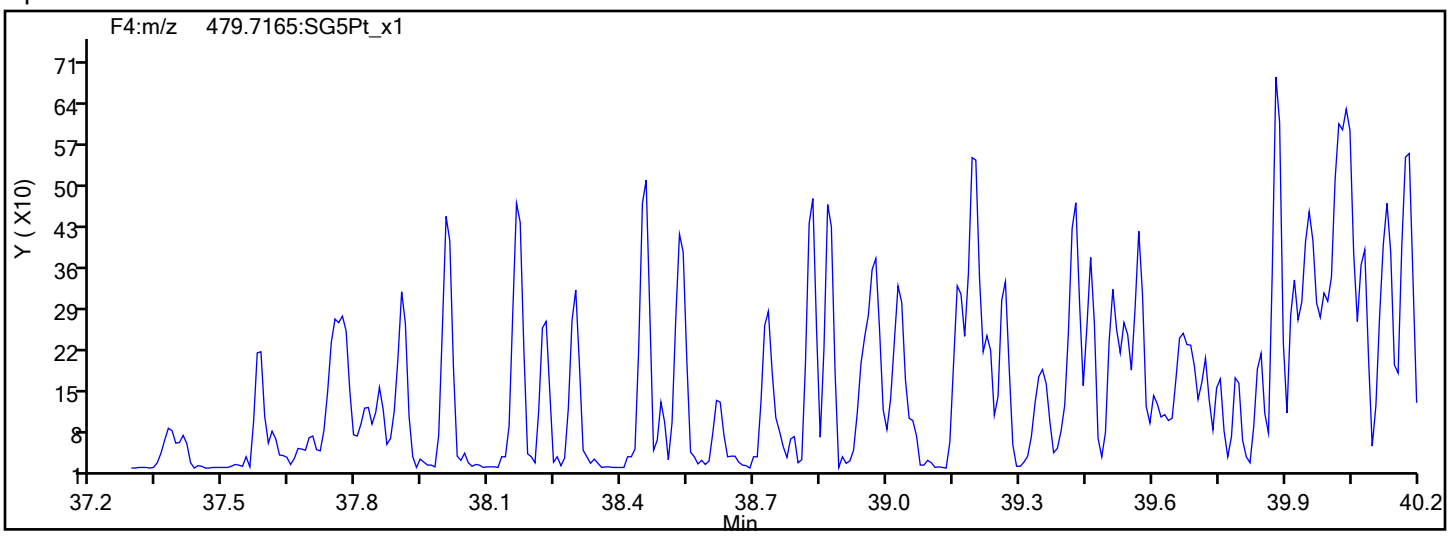




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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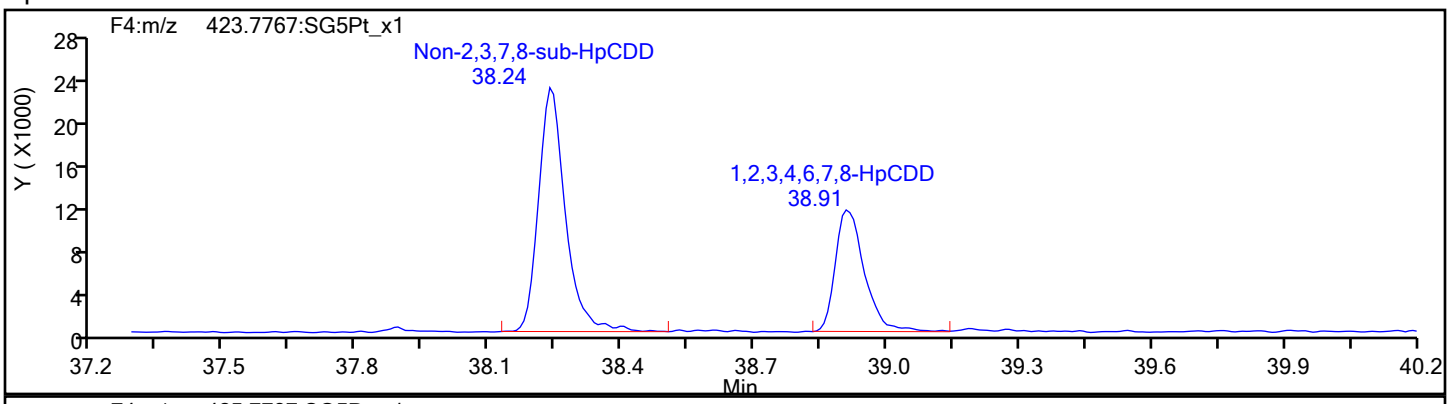
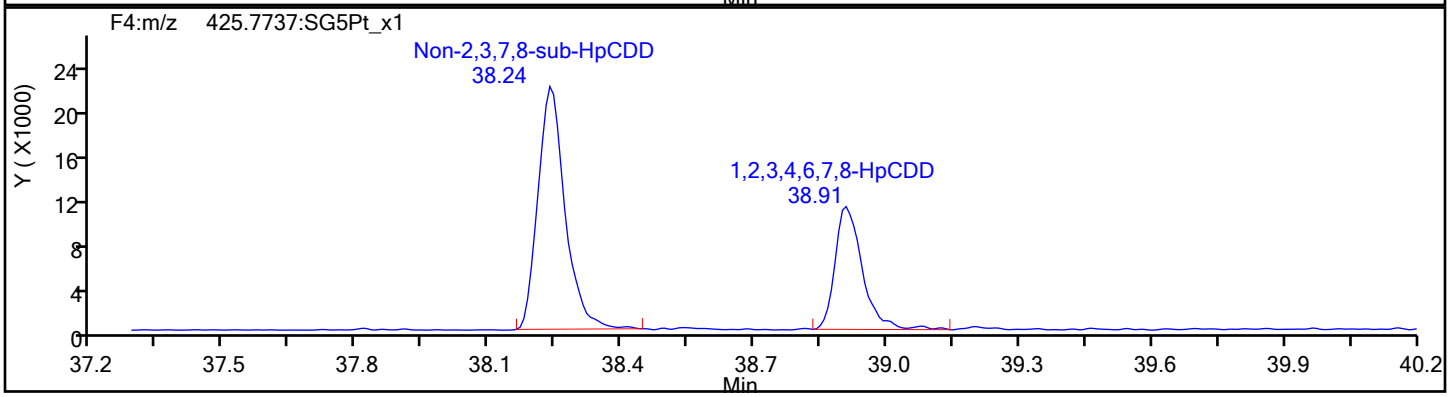
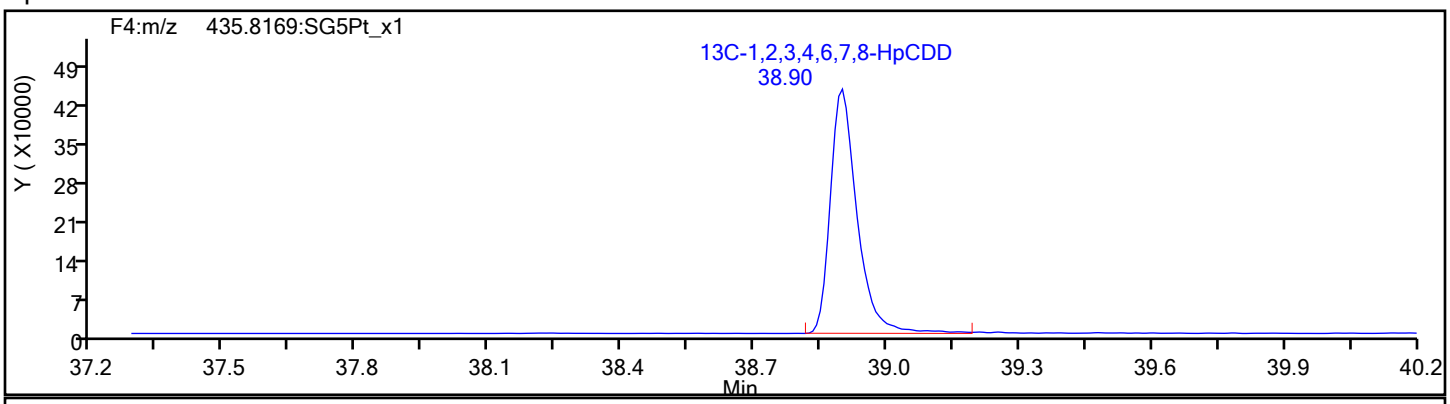
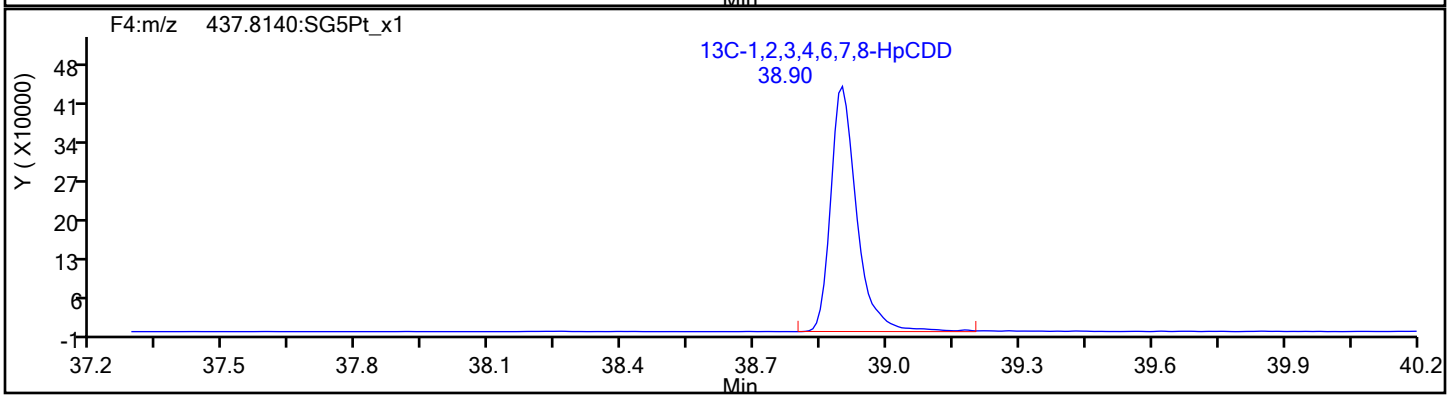
HpCDD





HpCDD Standards



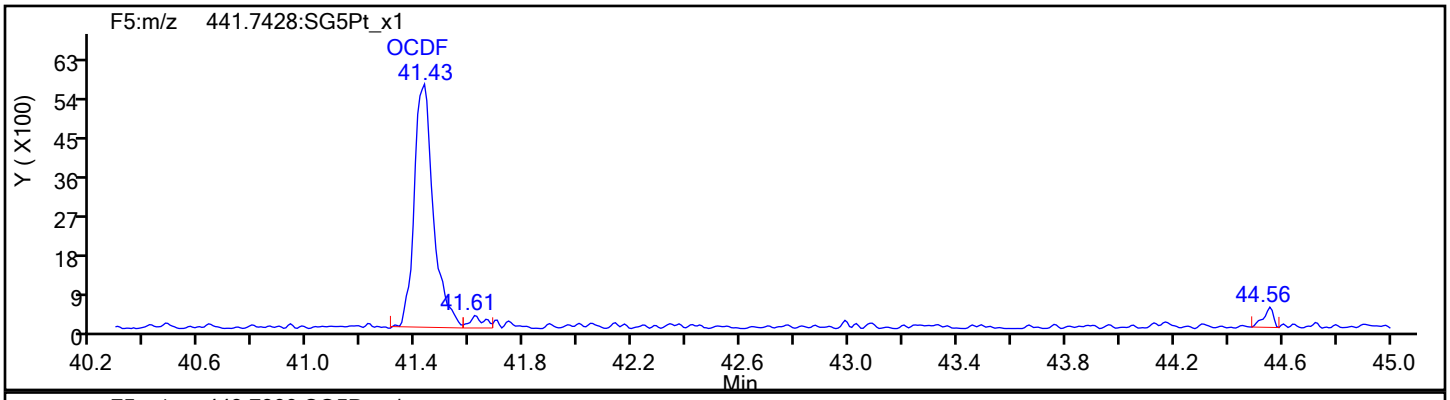


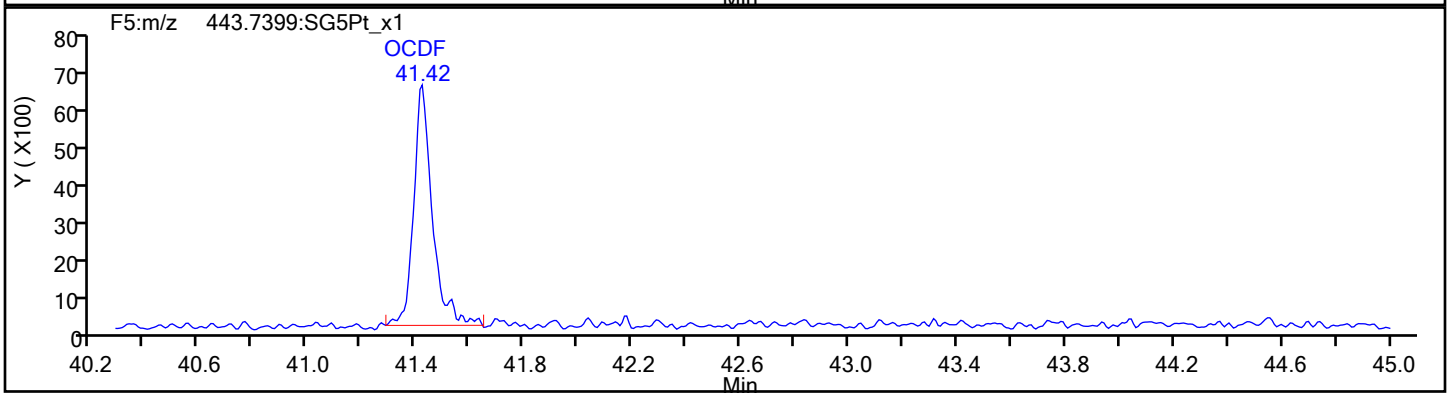
Report Date: 17-Dec-2019 09:47:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

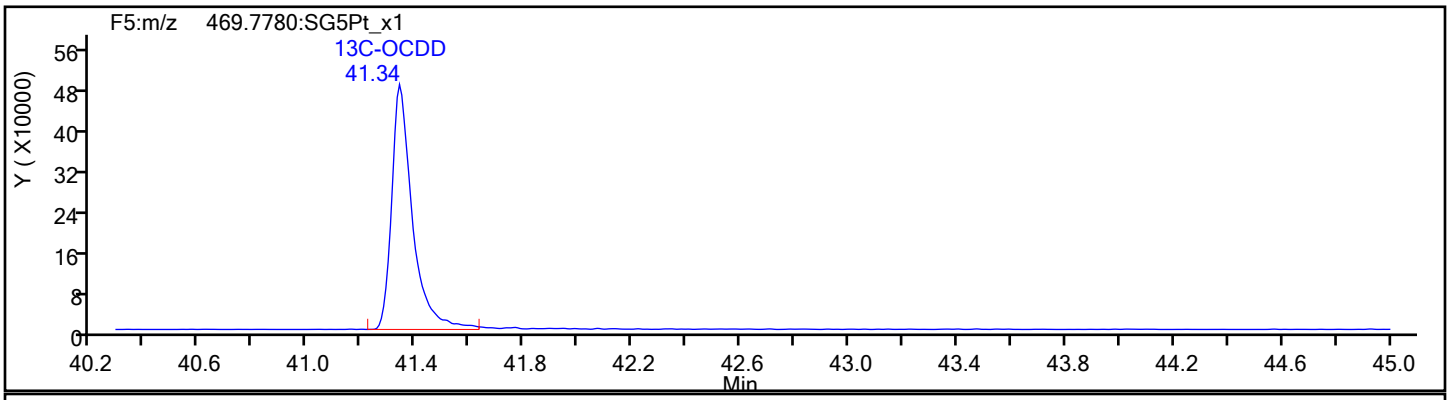
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

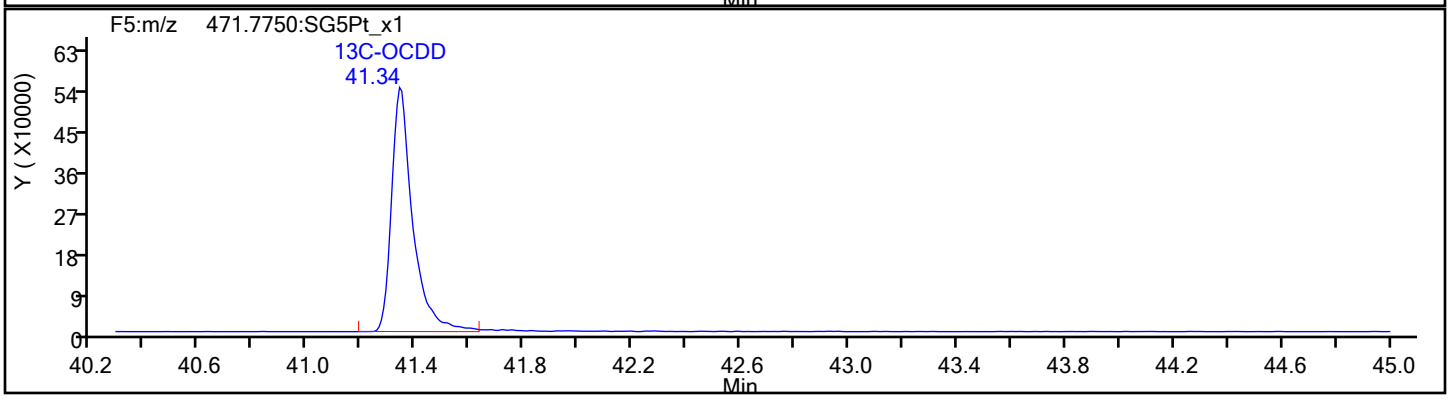
OCDF





OCDF Standards



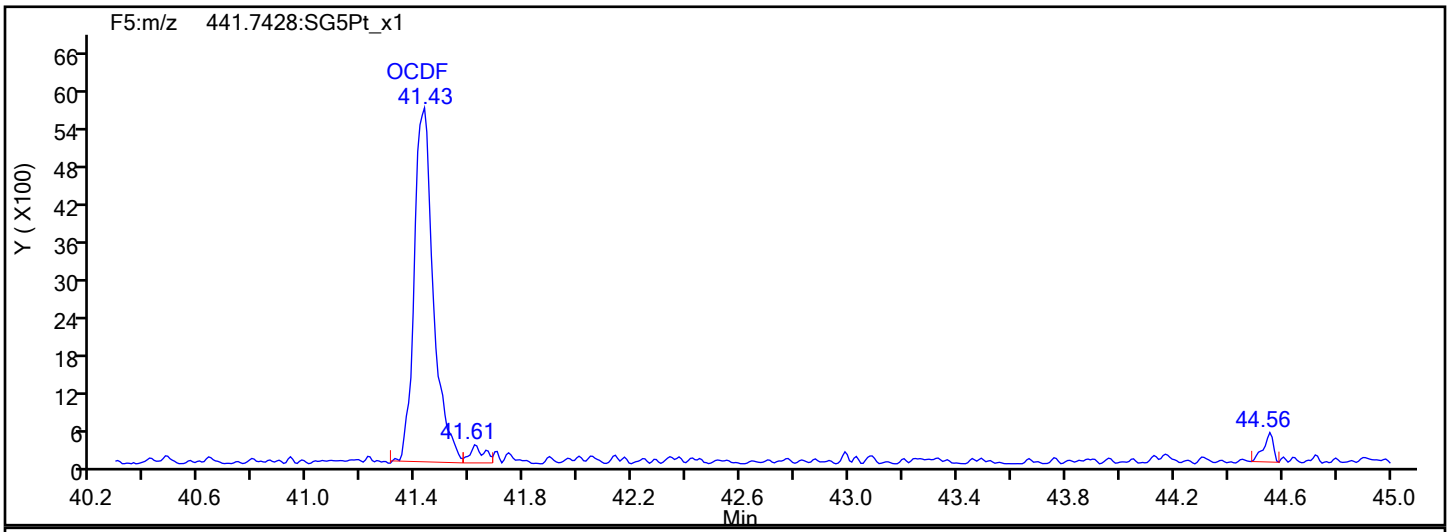


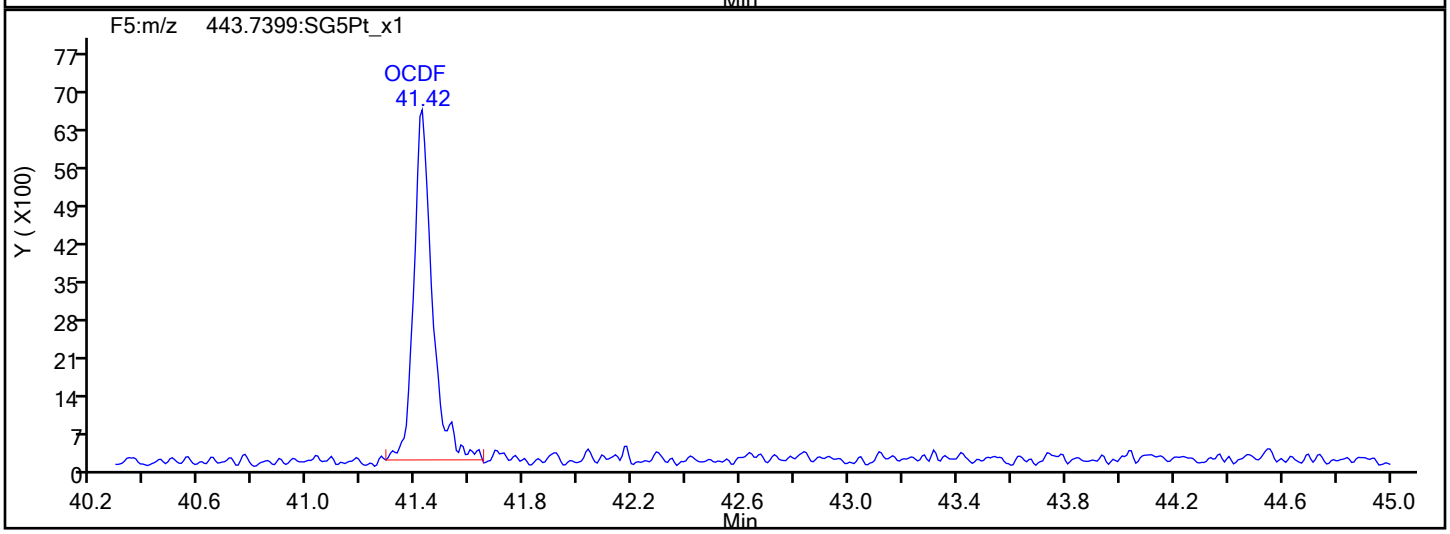
Report Date: 17-Dec-2019 09:47:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

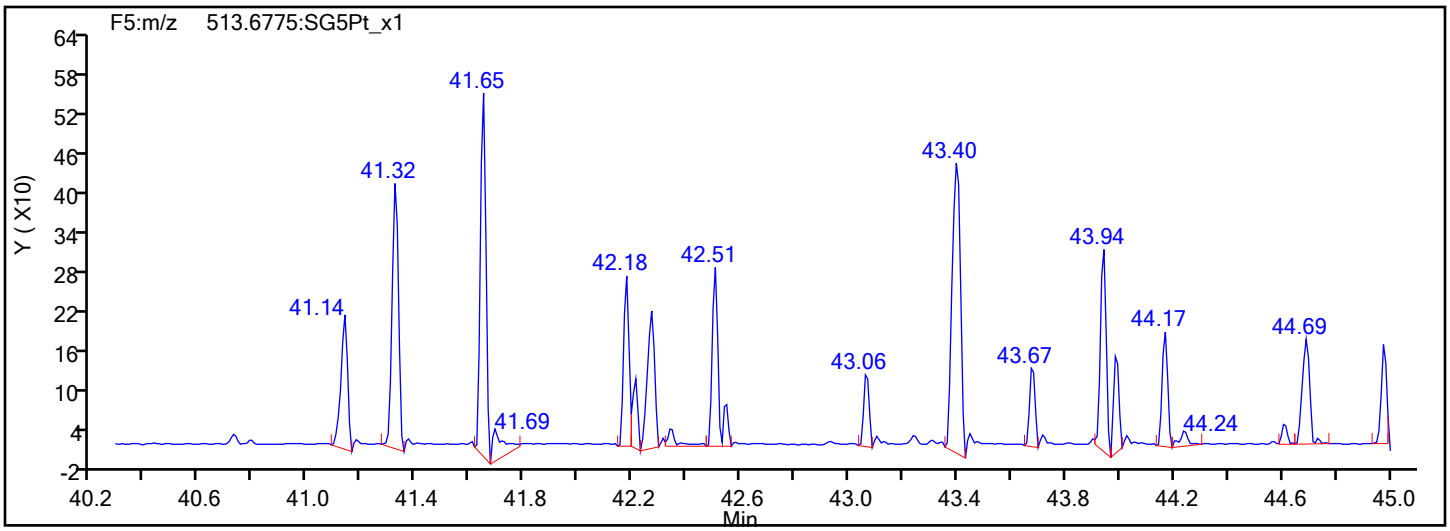
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

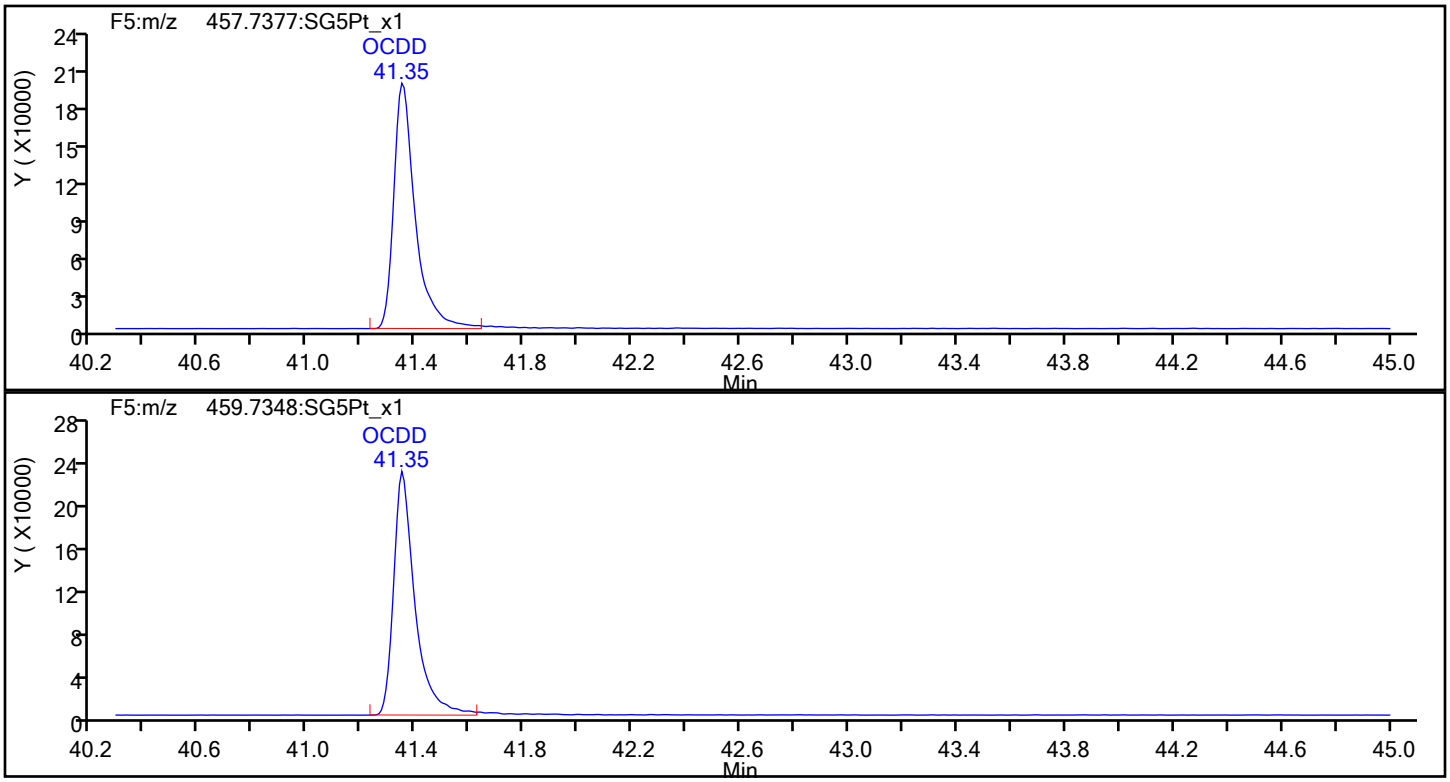


Report Date: 17-Dec-2019 09:47:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

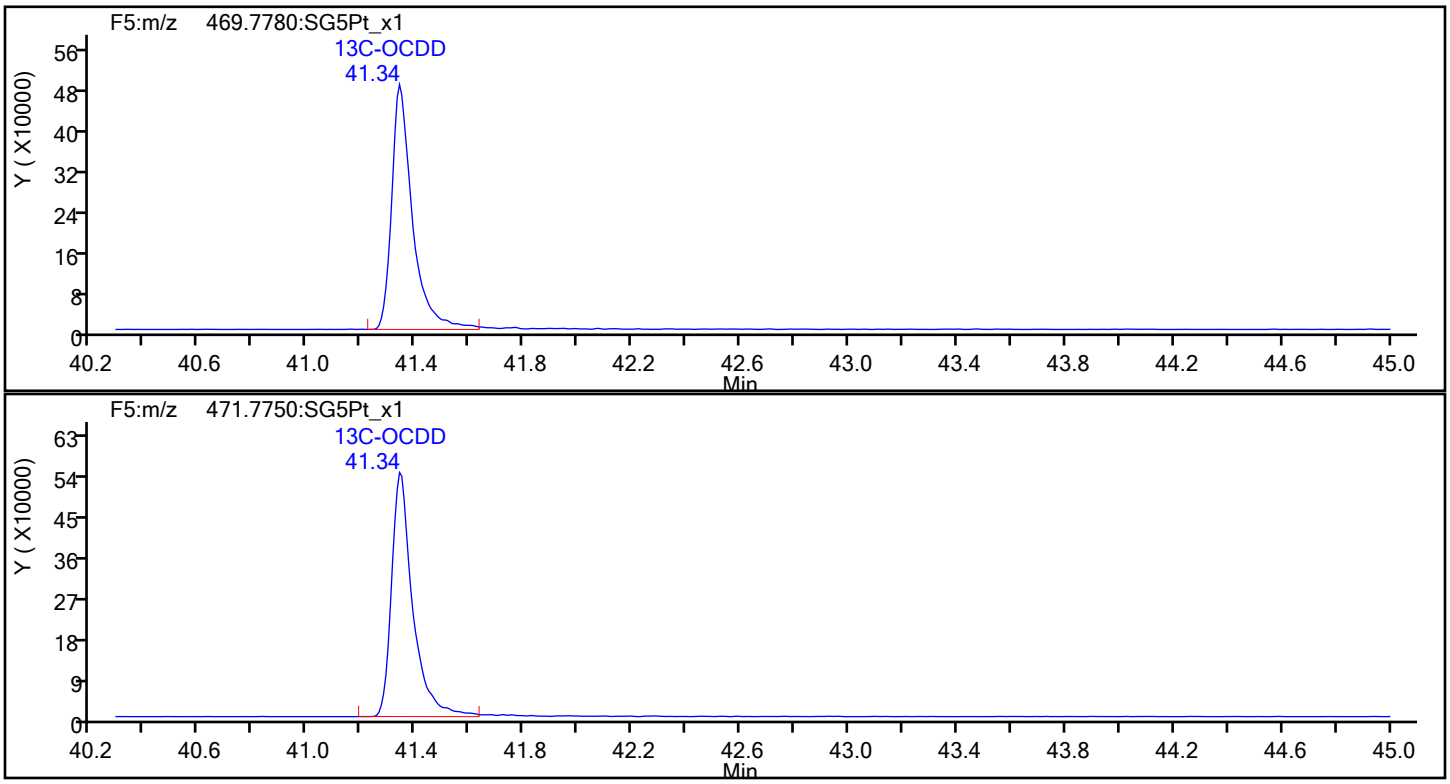
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

OCDD



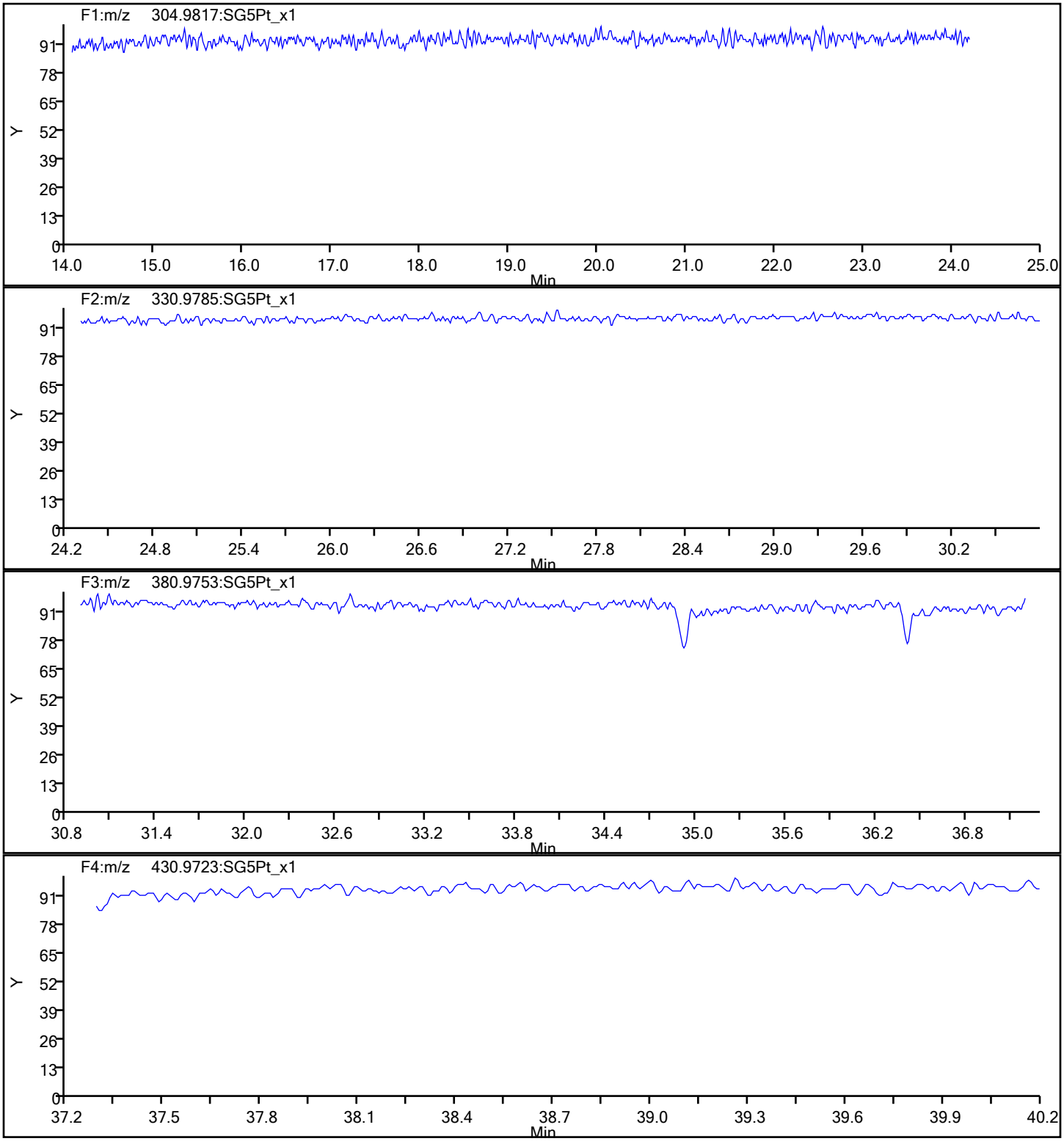
OCDD Standards



Report Date: 17-Dec-2019 09:47:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

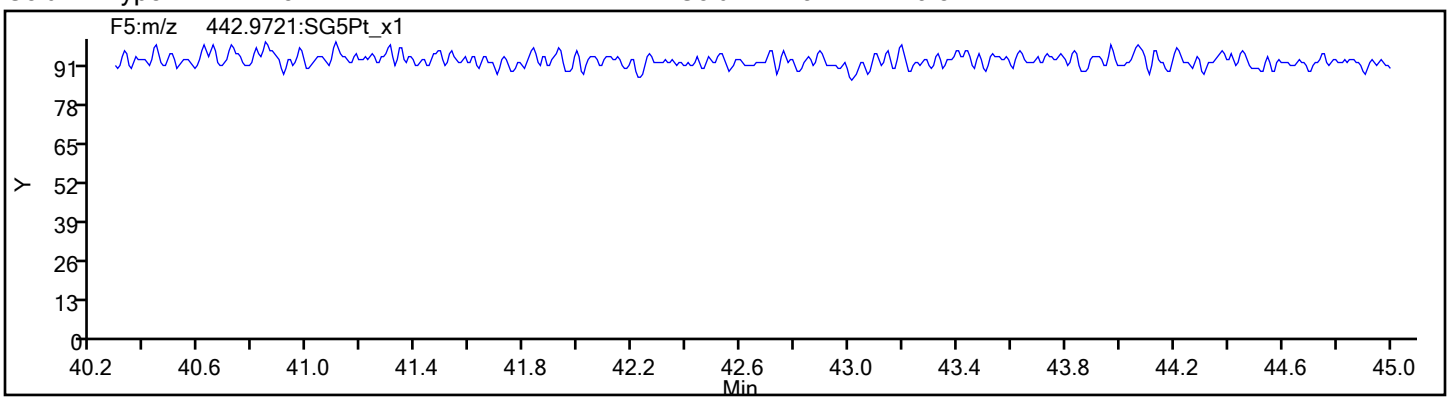
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:47:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_13.d		
Injection Date:	13-Dec-2019 21:23:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345338	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (1-2) RA Lab Sample ID: 320-56911-6 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_007.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.21(g) Date Analyzed: 12/16/2019 23:13

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	20		1.3	0.41

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	54		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	105		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Sample Type: Client
Inject. Date: 16-Dec-2019 23:13:21 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-6-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:44

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.393	66597224	0.74	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.587	47880831	0.78	1.3379	53.7	53.7	0.3648	0.3648	53.74	
2,3,7,8-TCDF	16.601	3086551	0.80	0.8389	7.684	7.684	0.1558	0.1558		
D 13C-2,3,7,8-TCDD	15.133	31490253	0.76	0.9388	50.4	50.4	0.5894	0.5894	50.37	
2,3,7,8-TCDD	15.146	674862	0.72	1.1538	1.857	1.857	0.1622	0.1622		
$ 37Cl4-2,3,7,8-TCDD	15.160	33150200		1.1816	42.1	42.1	0.0783	0.0783	105	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d
Lims ID: 320-56911-A-6-A
Client ID: 11187072-120819-BN-SJSSA09 (1-2)
Sample Type: Client
Inject. Date: 16-Dec-2019 23:13:21 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-6-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:33:44

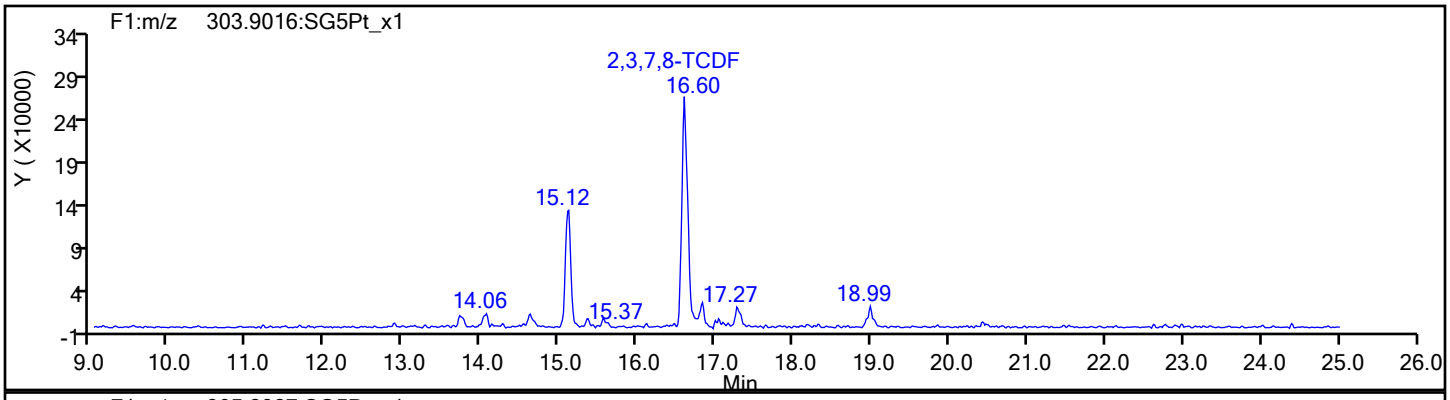
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.393	15.383	1		28305562	6064319	18904	47260	321		
333.9339	15.393	15.383	1		38291662	8149942	12557	31392	649	0.74(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.587	16.576	1	1.078	20969008	3964010	16906	42265	234		
317.9389	16.587	16.576	1	1.078	26911823	5093864	10844	27110	470	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.601	16.590	1	1.001	1368890	261371	2067	5167	126		
305.8987	16.601	16.590	1	1.001	1717661	316355	2668	6670	119	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.133	15.122	1	0.983	13633979	2693179	18904	47260	142		
333.9339	15.133	15.122	1	0.983	17856274	3774870	12557	31392	301	0.76(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.146	15.149	0	1.001	283409	49094	3254	8135	15		
321.8936	15.160	15.149	1	1.002	391453	67850	1588	3970	43	0.72(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.160	15.149	1	0.985	33150200	6819894	5263	13157	1296		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

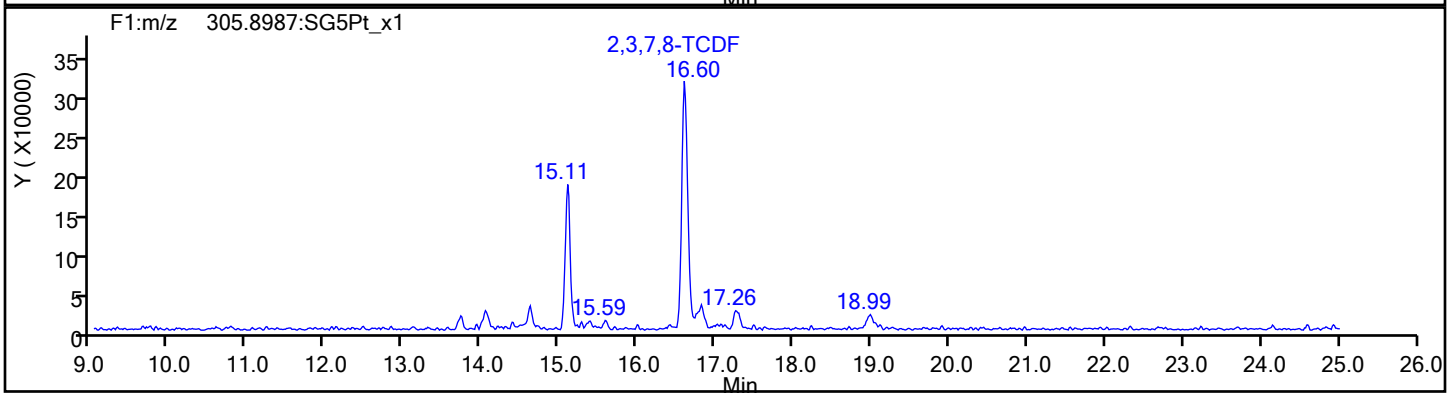
Report Date: 17-Dec-2019 09:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

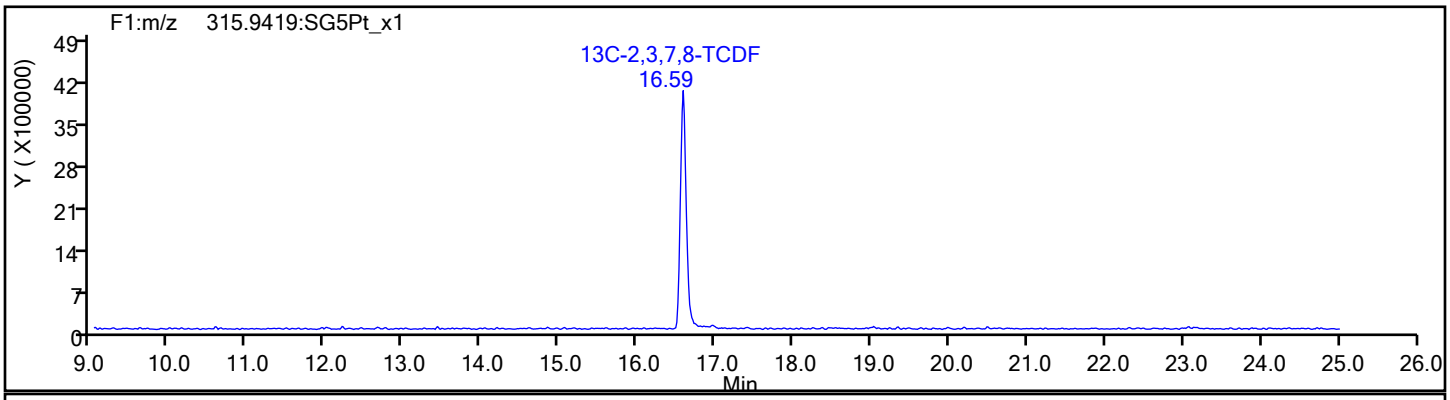
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d		
Injection Date:	16-Dec-2019 23:13:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345960	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

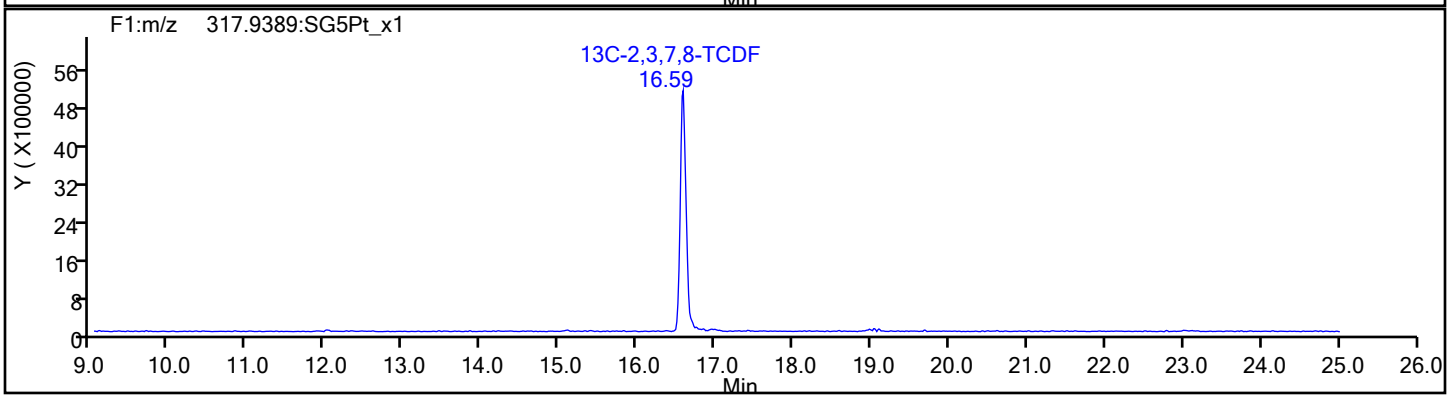
TCDF





TCDF Standards



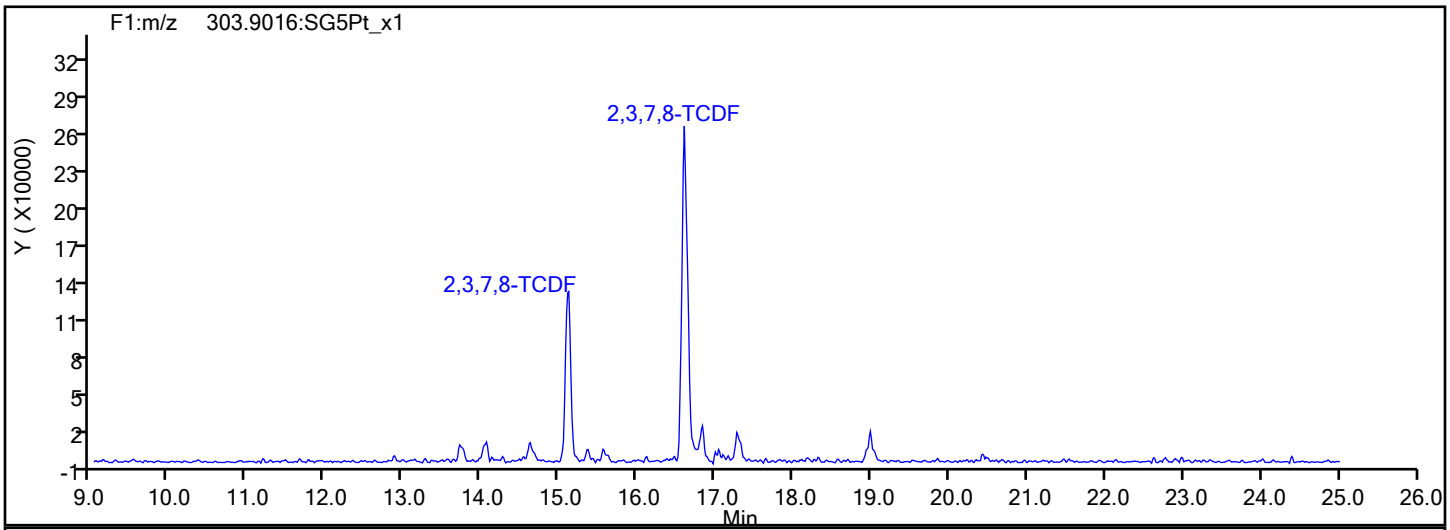


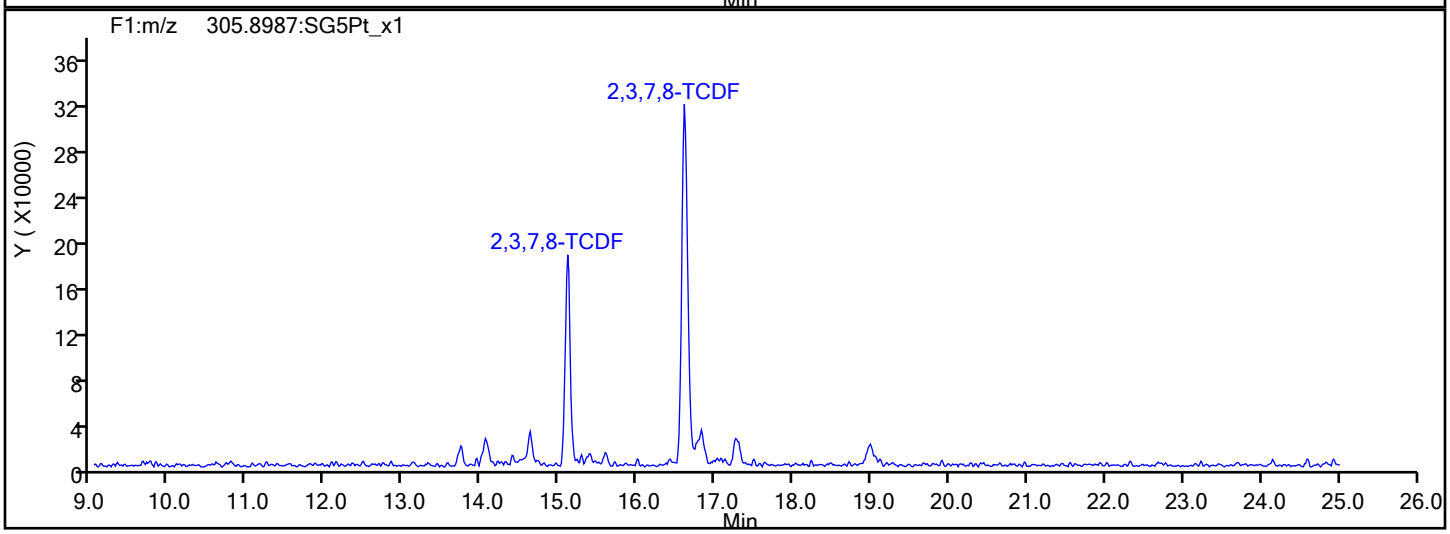
Report Date: 17-Dec-2019 09:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

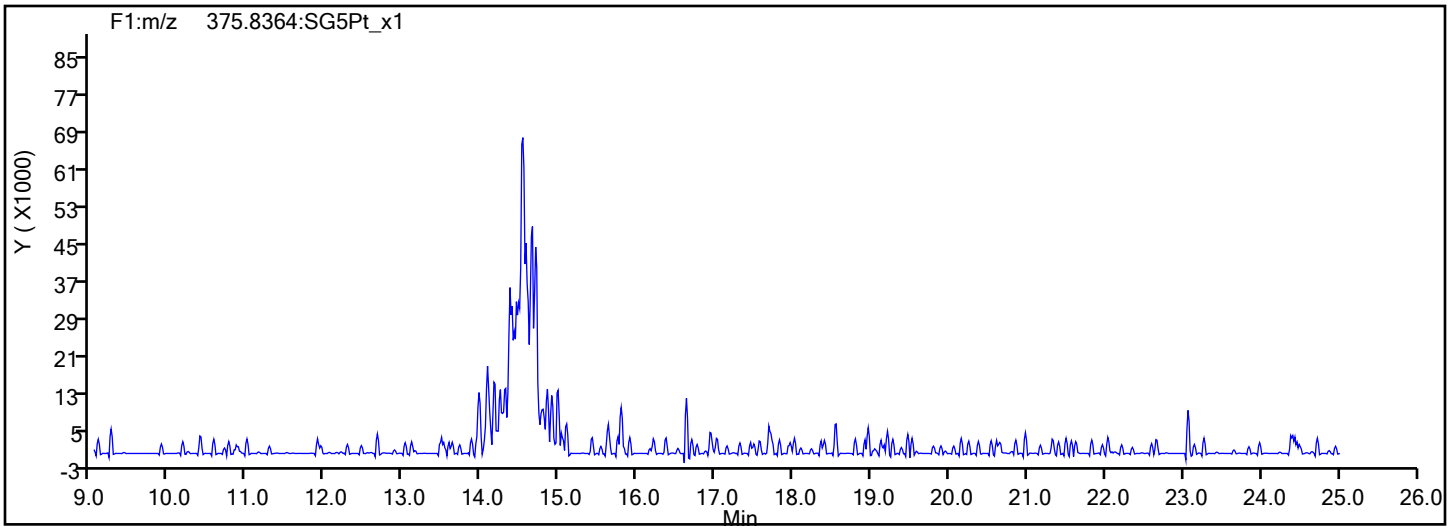
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d		
Injection Date:	16-Dec-2019 23:13:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345960	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

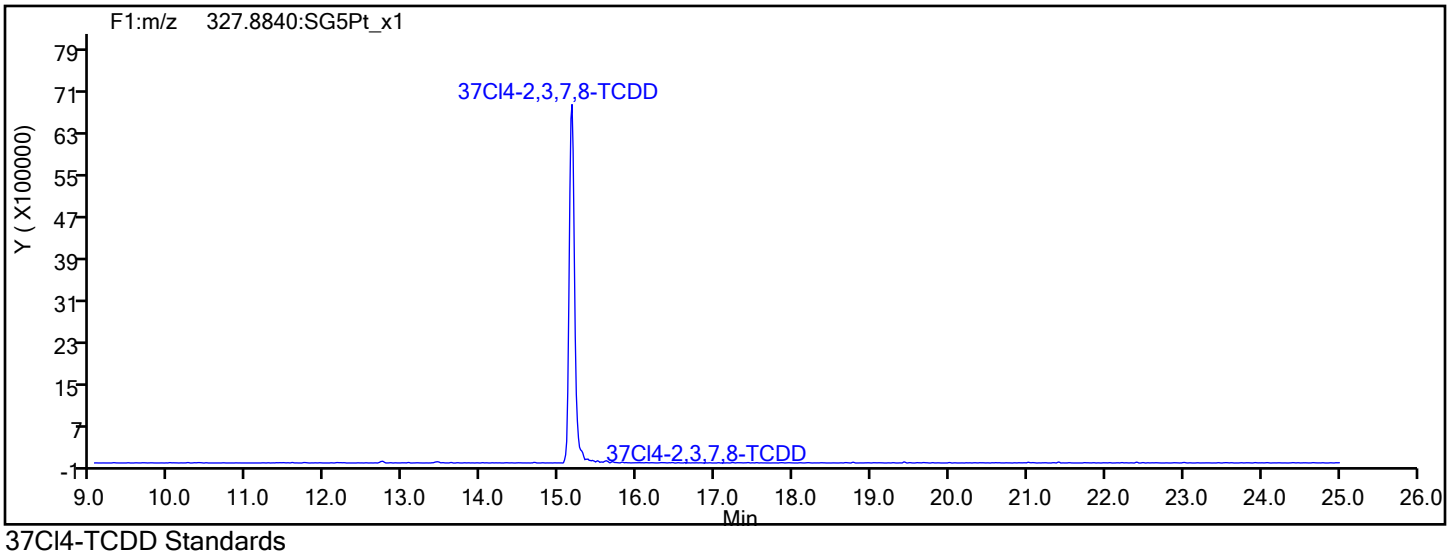


Report Date: 17-Dec-2019 09:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

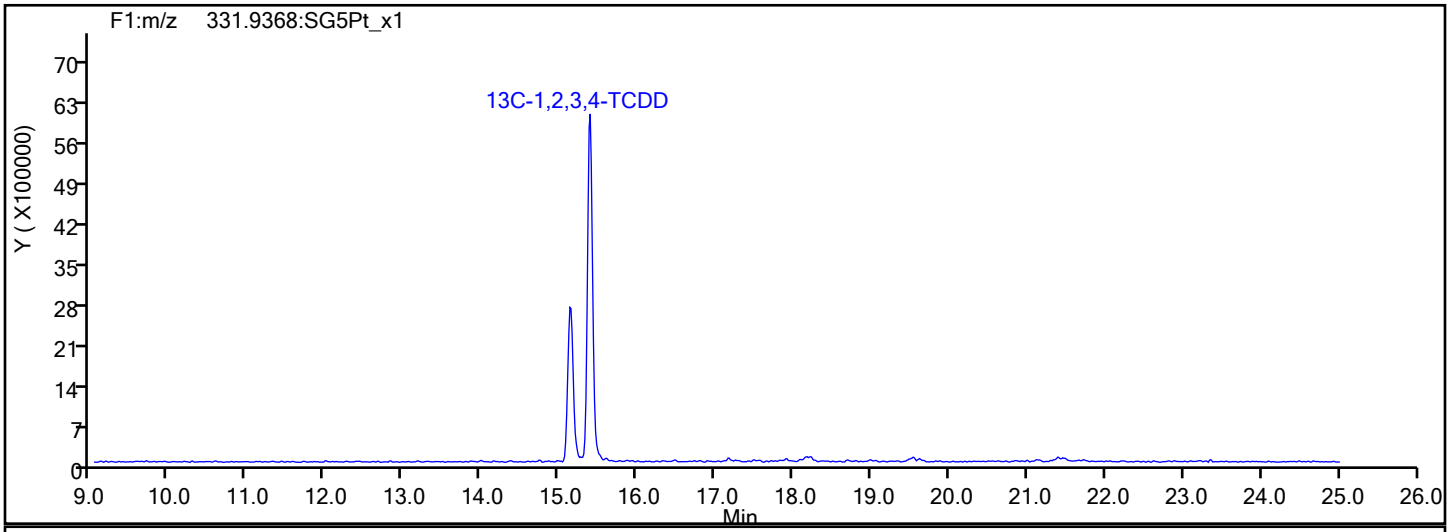
Eurofins TestAmerica, Sacramento

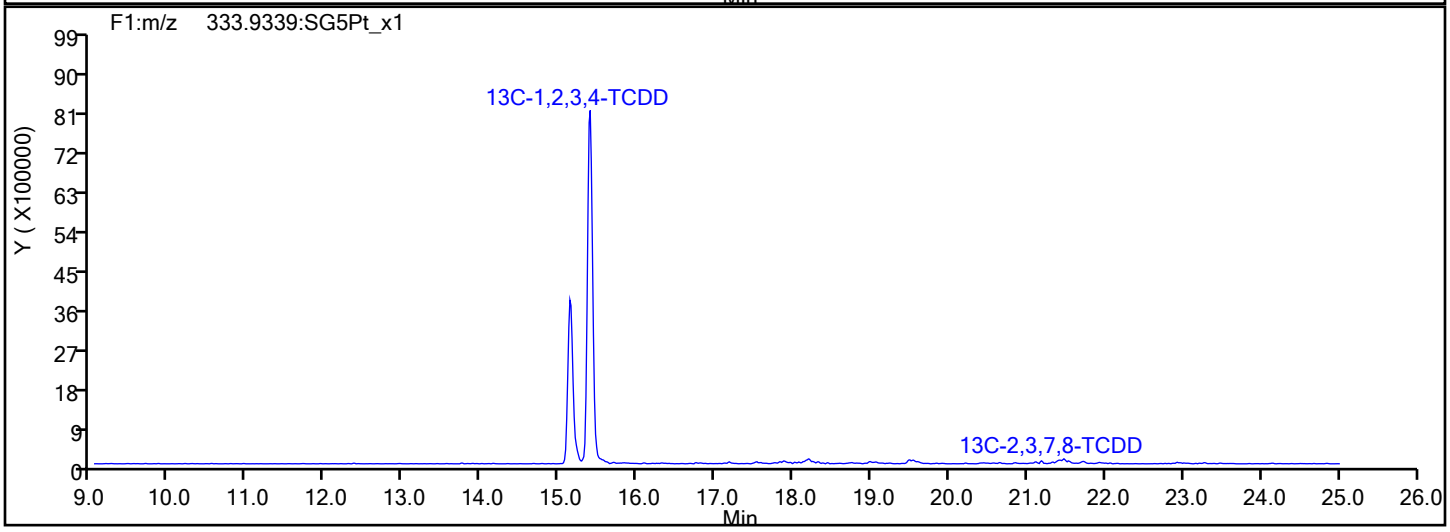
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d		
Injection Date:	16-Dec-2019 23:13:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345960	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

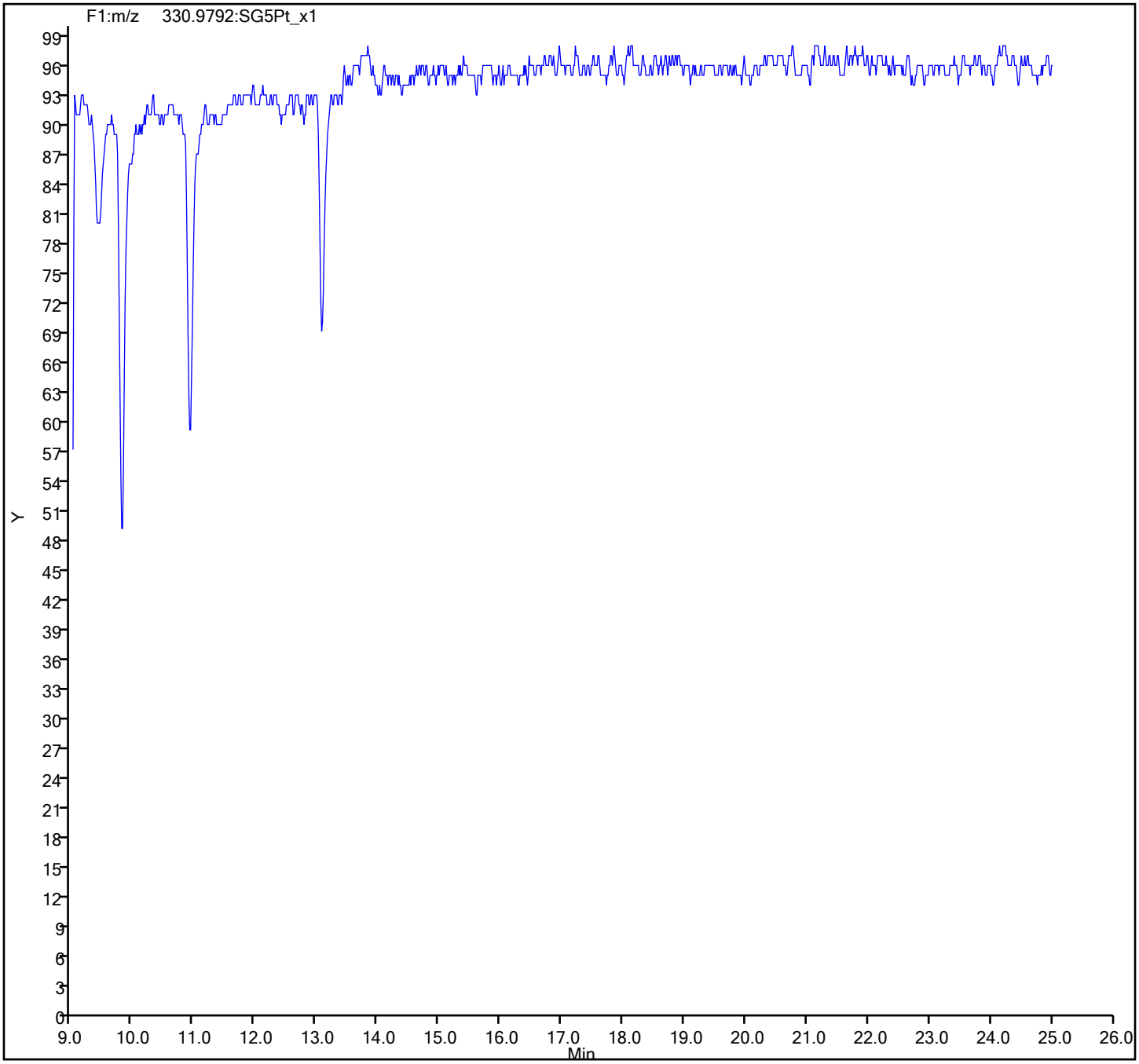




Report Date: 17-Dec-2019 09:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_007.d		
Injection Date:	16-Dec-2019 23:13:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (1-2)		
Worklist#:	345960	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Matrix: Sediment Lab File ID: 13DE1910D5_7.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 16:21

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 21.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	9.7		1.3	0.13
40321-76-4	1,2,3,7,8-PeCDD	ND		6.3	0.18
57117-41-6	1,2,3,7,8-PeCDF	1.2	J	6.3	0.11
57117-31-4	2,3,4,7,8-PeCDF	0.61	J	6.3	0.11
39227-28-6	1,2,3,4,7,8-HxCDD	0.24	J	6.3	0.090
57653-85-7	1,2,3,6,7,8-HxCDD	0.21	J B q	6.3	0.091
19408-74-3	1,2,3,7,8,9-HxCDD	0.44	J	6.3	0.082
70648-26-9	1,2,3,4,7,8-HxCDF	3.3	J	6.3	0.13
57117-44-9	1,2,3,6,7,8-HxCDF	0.82	J	6.3	0.13
72918-21-9	1,2,3,7,8,9-HxCDF	0.46	J	6.3	0.10
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.3	0.10
35822-46-9	1,2,3,4,6,7,8-HpCDD	6.1	J B	6.3	0.15
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.1	J	6.3	0.068
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.56	J	6.3	0.077
3268-87-9	OCDD	180	B	13	0.24
39001-02-0	OCDF	4.1	J B	13	0.10
41903-57-5	Total TCDD	11	q	1.3	0.13
30402-14-3	Total TCDF	68		1.3	0.25
36088-22-9	Total PeCDD	ND		6.3	0.18
30402-15-4	Total PeCDF	2.7	J q	6.3	0.11
34465-46-8	Total HxCDD	5.0	J B q	6.3	0.088
55684-94-1	Total HxCDF	4.6	J	6.3	0.12
37871-00-4	Total HpCDD	22	B	6.3	0.15
38998-75-3	Total HpCDF	2.5	J B	6.3	0.072

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) Lab Sample ID: 320-56911-7

Matrix: Sediment Lab File ID: 13DE1910D5_7.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 16:21

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 21.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	54		25-164
89059-46-1	13C-2,3,7,8-TCDF	51		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	58		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	51		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	55		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	62		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	53		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	55		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	48		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	51		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	51		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	62		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	53		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	63		26-138
114423-97-1	13C-OCDD	70		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	95		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 16:21:47 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-7-A 320-56911-A-7-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:45:26 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 13-Dec-2019 17:44:47

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	50983376	0.76	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.372	34442495	0.76	1.3318	50.7	50.7	0.1155	0.1155	50.72	
2,3,7,8-TCDF	17.402	4825953	0.75	0.9005	15.6	15.6	0.0990	0.0990		
A Non-2,3,7,8-sub-TCDF	17.062	3506759	0.78	0.9005	11.3	11.3	0.0990	6.500		a
S Total TCDF					26.9	26.9	0.0990	0.0990		
D 13C-2,3,7,8-TCDD	18.083	26543866	0.80	0.9647	54.0	54.0	0.1291	0.1291	53.97	
2,3,7,8-TCDD	18.098	1089163	0.79	1.0698	3.836	3.836	0.0503	0.0503		M
$ 37Cl4-2,3,7,8-TCDD	18.098	25356201		1.3082	38.0	38.0	0.0322	0.0322	95.04	
A Non-2,3,7,8-sub-TCDD	17.516	161199	0.77	1.0698	0.6288	0.5677	0.0503	0.3800		RQMa
S Total TCDD					4.464	4.403	0.0503	0.0503		RQ
D 13C-1,2,3,7,8-PeCDF	22.399	27138529	1.61	1.0537	50.5	50.5	0.1112	0.1112	50.52	
1,2,3,7,8-PeCDF	22.427	128570	1.45	0.9704	0.4882	0.4882	0.0455	0.0455		
D 13C-2,3,4,7,8-PeCDF	23.750	28426390	1.56	1.0173	54.8	54.8	0.1152	0.1152	54.81	
2,3,4,7,8-PeCDF	23.777	68292	1.57	0.9986	0.2406	0.2406	0.0446	0.0446		
A F1 PeCDFs	19.776						0.0386	0.0386		
A Non-2,3,7,8-sub-PeCDF	22.933	92778	1.55	0.9845	0.3493	0.3392	0.0451	0.2257		RQ
S Total PeCDF					1.078	1.068	0.0451	0.0451		RQ
D 13C-1,2,3,7,8-PeCDD	24.472	21559906	1.59	0.7281	58.1	58.1	0.0850	0.0850	58.08	
1,2,3,7,8-PeCDD	24.472						0.0726	0.0726		
A Non-2,3,7,8-sub-PeCDD	23.368						0.0726	0.0726		
S Total PeCDD							0.0726	0.0726		
D 13C-1,2,3,4,7,8-HxCDF	30.570	21120443	0.50	0.9632	54.6	54.6	0.1481	0.1481	54.59	
1,2,3,4,7,8-HxCDF	30.597	287277	1.20	1.0315	1.319	1.319	0.0513	0.0513		
D 13C-1,2,3,6,7,8-HxCDF	30.756	20606800	0.51	1.0646	48.2	48.2	0.1340	0.1340	48.19	
1,2,3,6,7,8-HxCDF	30.770	68713	1.15	1.0235	0.3258	0.3258	0.0523	0.0523		
D 13C-2,3,4,6,7,8-HxCDF	31.582	19802913	0.50	0.9696	50.8	50.8	0.1472	0.1472	50.84	
2,3,4,6,7,8-HxCDF	31.568						0.0401	0.0401		
D 13C-1,2,3,7,8,9-HxCDF	32.380	18494519	0.50	0.8955	51.4	51.4	0.1593	0.1593	51.41	
1,2,3,7,8,9-HxCDF	32.487	35960	1.21	1.0664	0.1823	0.1823	0.0395	0.0395		
A Non-2,3,7,8-sub-HxCDF	30.237						0.0451	0.0451		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					1.827	1.827	0.0458	0.0458		
* 13C-1,2,3,7,8,9-HxCDD	32.207	40171396	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.768	18951735	1.25	0.7590	62.2	62.2	0.1611	0.1611	62.16	
1,2,3,4,7,8-HxCDD	31.781	17939	1.13	1.0054	0.0941	0.0941	0.0356	0.0356		M
D 13C-1,2,3,6,7,8-HxCDD	31.875	19782969	1.27	0.9247	53.3	53.3	0.1322	0.1322	53.26	
1,2,3,6,7,8-HxCDD	31.888	16294	1.24	0.9833	0.0933	0.0838	0.0363	0.0363		RQMa
1,2,3,7,8,9-HxCDD	32.221	37332	1.14	1.1036	0.1747	0.1747	0.0324	0.0324		
A Non-2,3,7,8-sub-HxCDD	30.870	325080	1.16	1.0308	1.628	1.628	0.0347	1.213		M
S Total HxCDD					1.991	1.981	0.0348	0.0348		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.805	16816716	0.44	0.7930	52.8	52.8	0.2786	0.2786	52.79	
1,2,3,4,6,7,8-HpCDF	33.817	104624	1.08	1.4240	0.4369	0.4369	0.0270	0.0270		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.874	18394421	0.42	0.7296	62.8	62.8	0.3028	0.3028	62.76	
1,2,3,4,7,8,9-HpCDF	34.886	51982	0.96	1.2834	0.2202	0.2202	0.0304	0.0304		
A Non-2,3,7,8-sub-HpCDF	34.340	76197	1.01	1.3537	0.3197	0.3197	0.0286	0.3197		
S Total HpCDF					0.9768	0.9768	0.0287	0.0287		
D 13C-1,2,3,4,6,7,8-HpCDD	34.595	18753592	1.04	0.7532	62.0	62.0	0.1671	0.1671	61.98	
1,2,3,4,6,7,8-HpCDD	34.595	462362	1.01	1.0174	2.423	2.423	0.0600	0.0600		
A Non-2,3,7,8-sub-HpCDD	34.309	1234154	1.06	1.0174	6.468	6.468	0.0600	6.468		
S Total HpCDD					8.892	8.892	0.0600	0.0600		
D 13C-OCDD	36.915	31410493	0.88	0.5621	139.1	139.1	0.1023	0.1023	69.56	
OCDF	37.011	332625	0.83	1.3047	1.623	1.623	0.0402	0.0402		
OCDD	36.927	12271999	0.89	1.0997	71.1	71.1	0.0944	0.0944		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 16:21:47 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-7-A 320-56911-A-7-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:45:26 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 13-Dec-2019 17:44:47

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.886	17.856	2		21939399	5481184	3654	9135	1500		
333.9339	17.886	17.856	2		29043977	7197808	2662	6655	2704	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.372	17.357	1	0.971	14895017	3708537	4733	11832	784		
317.9389	17.372	17.357	1	0.971	19547478	4908114	3070	7675	1599	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.402	17.372	2	1.002	2071524	482809	1323	3307	365		
305.8987	17.402	17.372	2	1.002	2754429	638017	1749	4372	365	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											a
303.9016	15.981	17.062	-65	0.920	51193	13644	1323	3307	10		
305.8987	15.981	17.062	-65	0.920	68578	18916	1749	4372	11	0.75(0.65-0.89)	
303.9016	16.253	17.062	-48	0.936	81843	15579	1323	3307	12		
305.8987	16.268	17.062	-48	0.936	111060	23460	1749	4372	13	0.74(0.65-0.89)	
303.9016	16.495	17.062	-34	0.950	68992	17249	1323	3307	13		
305.8987	16.480	17.062	-35	0.949	84895	23061	1749	4372	13	0.81(0.65-0.89)	
303.9016	16.737	17.062	-19	0.963	87827	18359	1323	3307	14		
305.8987	16.722	17.062	-20	0.963	107045	24157	1749	4372	14	0.82(0.65-0.89)	
303.9016	17.009	17.062	-3	0.979	876096	217038	1323	3307	164		
305.8987	17.009	17.062	-3	0.979	1139878	280782	1749	4372	161	0.77(0.65-0.89)	
303.9016	17.236	17.062	10	0.992	44239	11166	1323	3307	8		
305.8987	17.236	17.062	10	0.992	50781	10923	1749	4372	6	0.87(0.65-0.89)	
303.9016	17.826	17.062	46	1.026	141647	29184	1323	3307	22		
305.8987	17.826	17.062	46	1.026	177785	43573	1749	4372	25	0.80(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	18.083	17.062	61	1.041	34932	7059	1323	3307	5		
305.8987	18.083	17.062	61	1.041	45898	10260	1749	4372	6	0.76(0.65-0.89)	
303.9016	19.232	17.062	130	1.107	153322	34246	1323	3307	26		a
305.8987	19.232	17.062	130	1.107	180748	37634	1749	4372	22	0.85(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	11782329	2854559	3654	9135	781		
333.9339	18.083	18.052	2	1.011	14761537	3589381	2662	6655	1348	0.80(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	18.098	18.068	2	1.001	479753	109443	844	2110	130		M
321.8936	18.098	18.068	2	1.001	609410	145013	542	1355	268	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	25356201	5934575	2134	5335	2781		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.949	17.516	-34	0.937	16486	3315	844	2110	4		
321.8936	16.964	17.516	-33	0.938	20582	4732	542	1355	9	0.80(0.65-0.89)	
319.8965	18.022	17.516	30	0.997	7088	2341	844	2110	3		M
321.8936	18.007	17.516	29	0.996	9132	3414	542	1355	6	0.78(0.65-0.89)	
319.8965	18.476	17.516	57	1.022	64313	10041	844	2110	12		
	Empc Correction				46944	9344	844	2110	11		
321.8936	18.461	17.516	57	1.021	60967	12136	542	1355	22	1.05(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.399	22.372	2	1.252	16745050	2982331	3528	8820	845		
353.8970	22.399	22.372	2	1.252	10393479	1823406	2417	6042	754	1.61(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.427	22.400	2	1.001	76175	12626	406	1015	31		
341.8567	22.440	22.400	2	1.002	52395	7922	443	1107	18	1.45(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	17323050	2905306	3528	8820	823		
353.8970	23.750	23.722	2	1.328	11103340	1855817	2417	6042	768	1.56(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.777	23.750	2	1.001	41765	8125	406	1015	20		
341.8567	23.777	23.750	2	1.001	26527	4375	443	1107	10	1.57(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.776						281	702			
341.8567	19.776						447	1117			
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	21.063	22.933	-112	0.940	38300	6972	406	1015	17		
341.8567	21.063	22.933	-112	0.940	23443	5201	443	1107	12	1.63(1.32-1.78)	
339.8597	22.958	22.933	2	1.025	18865	3212	406	1015	8		
341.8567	22.972	22.933	2	1.026	14925	3086	443	1107	7	1.26(1.32-1.78)	
	Empc Correction				12170	2072	443	1107	5		
13C-1,2,3,7,8-PeCDD											
367.8949	24.472	24.445	2	1.368	13225641	2056969	1709	4272	1204		
369.8919	24.472	24.445	2	1.368	8334265	1310825	1429	3572	917	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDD											
355.8546	24.472						599	1497			
357.8516	24.472						381	952			
A Non-2,3,7,8-sub-PeCDD											
355.8546	23.368						599	1497			
357.8516	23.368						381	952			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.570	30.543	2	0.949	7048258	1311218	2083	5207	629		
385.8610	30.570	30.543	2	0.949	14072185	2673640	4002	10005	668	0.50(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.597	30.557	2	1.001	156509	31164	502	1255	62		
375.8178	30.583	30.557	2	1.000	130768	27017	342	855	79	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.756	30.716	2	0.955	6917736	1333140	2083	5207	640		
385.8610	30.756	30.716	2	0.955	13689064	2606421	4002	10005	651	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.770	30.743	2	1.000	36732	6982	502	1255	14		
375.8178	30.783	30.743	2	1.001	31981	5704	342	855	17	1.15(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.582	31.555	2	0.981	6626525	1655326	2083	5207	795		
385.8610	31.582	31.555	2	0.981	13176388	3286820	4002	10005	821	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						502	1255			
375.8178	31.568						342	855			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.380	32.367	1	1.005	6127529	1675391	2083	5207	804		
385.8610	32.380	32.367	1	1.005	12366990	3327775	4002	10005	832	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.487	32.380	6	1.003	19690	3041	502	1255	6		
375.8178	32.407	32.380	2	1.001	16270	2374	342	855	7	1.21(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						502	1255			
375.8178	30.237						342	855			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.207	32.181	2		22347709	5927255	2784	6960	2129		
403.8529	32.194	32.181	1		17823687	4733821	2429	6072	1949	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.768	31.741	2	0.986	10521709	2841483	2784	6960	1021		
403.8529	31.768	31.741	2	0.986	8430026	2222973	2429	6072	915	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											M
389.8157	31.781	31.755	2	1.000	9520	2376	352	880	7		M
391.8127	31.795	31.755	2	1.001	8419	2065	374	935	6	1.13(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.875	31.848	2	0.990	11087086	2841215	2784	6960	1021		
403.8529	31.875	31.848	2	0.990	8695883	2250512	2429	6072	927	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											RQMa
389.8157	31.888	31.861	2	1.000	9020	1999	352	880	6		M
391.8127	31.888	31.861	2	1.000	9136	1592	374	935	4	0.99(1.05-1.43)	
	Empc Correction				7274	1612	374	935	4		
1,2,3,7,8,9-HxCDD											
389.8157	32.221	32.194	2	1.014	19886	3677	352	880	10		
391.8127	32.194	32.194	0	1.013	17446	3025	374	935	8	1.14(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											M
389.8157	29.585	30.870	-77	0.928	129386	16338	352	880	46		
391.8127	29.638	30.870	-74	0.930	112758	13656	374	935	37	1.15(1.05-1.43)	
389.8157	31.036	30.870	10	0.974	45343	8081	352	880	23		
391.8127	31.036	30.870	10	0.974	37593	6915	374	935	18	1.21(1.05-1.43)	M
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.805	33.780	1	1.050	5100136	1785659	2711	6777	659		
419.8220	33.805	33.780	1	1.050	11716580	4035196	6710	16775	601	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.817	33.793	1	1.000	54348	18616	553	1382	34		M
409.7789	33.817	33.793	1	1.000	50276	16852	342	855	49	1.08(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.874	34.862	1	1.083	5433738	1739092	2711	6777	641		
419.8220	34.874	34.862	1	1.083	12960683	3997834	6710	16775	596	0.42(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.886	34.862	1	1.000	25403	6675	553	1382	12		
409.7789	34.886	34.862	1	1.000	26579	8132	342	855	24	0.96(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.109	34.340	-14	1.009	38292	12247	553	1382	22		
409.7789	34.121	34.340	-13	1.009	37905	10797	342	855	32	1.01(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.595	34.570	1	1.074	9576070	3009072	2839	7097	1060		
437.8140	34.595	34.570	1	1.074	9177522	2905066	2528	6320	1149	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	231821	71393	749	1872	95		
425.7737	34.595	34.583	1	1.000	230541	69291	696	1740	100	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.060	34.309	-15	0.985	634600	200400	749	1872	268		
425.7737	34.060	34.309	-15	0.985	599554	189453	696	1740	272	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.915	36.891	1	1.146	14735896	4018981	1223	3057	3286		
471.7750	36.915	36.891	1	1.146	16674597	4490229	1230	3075	3651	0.88(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	150984	36323	340	850	107		
443.7399	37.011	36.999	1	1.003	181641	45281	553	1382	82	0.83(0.76-1.02)	
OCDD											
457.7377	36.927	36.903	1	1.000	5783325	1525036	898	2245	1698		
459.7348	36.915	36.903	1	1.000	6488674	1709746	868	2170	1970	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 16-Dec-2019 08:45:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	34442495	8616651

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	34442495	8616651

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.981	51193	13644	68578	18916	0.3862	0.75	
16.253	81843	15579	111060	23460	0.6219	0.74	
16.495	68992	17249	84895	23061	0.4962	0.81	
16.737	87827	18359	107045	24157	0.6283	0.82	
17.009	876096	217038	1139878	280782	6.50	0.77	
17.236	44239	11166	50781	10923	0.3064	0.87	
17.826	141647	29184	177785	43573	1.03	0.80	
18.083	34932	7059	45898	10260	0.2606	0.76	
19.232	153322	34246	180748	37634	1.08	0.85	a
Signal Totals:							
	1540091	363524	1966668	472766			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3506759	836290				0.78	a

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 11.306 = (3506759 * 100.000) / (34442495 * 0.901)

QC Flag Legend

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	26543866	6443940

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	26543866	6443940

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.949	16486	3315	20582	4732	0.1305	0.80	
18.022	7088	2341	9132	3414	0.0571	0.78	Ma
18.476	64313	10041	60967	12136	0.4412	1.05	RQ
18.476	46944	9344	60967	12136	0.3800		Empc Correction
Signal Totals:							
	70518	15000	90681	20282			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	178568	35979				0.97	RQMa
	161199	35282					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6288 = (178568 * 100.000) / (26543866 * 1.070)
Empc Amount: 0.5677 = (161199 * 100.000) / (26543866 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 16-Dec-2019 08:45:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDF, RT: 22.933

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	27138529	4805737
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	28426390	4761123

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	27782459	4783430

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
21.063	38300	6972	23443	5201	0.2257	1.63	
22.958	18865	3212	14925	3086	0.1235	1.26	RQ
22.958	18865	3212	12170	2072	0.1135		Empc Correction
Signal Totals:							
	57165	10184	35613	7273			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	95533	18471				1.49	RQ
	92778	17457					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3493 = (95533 * 100.000) / (27782459 * 0.984)
Empc Amount: 0.3392 = (92778 * 100.000) / (27782459 * 0.984)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 16-Dec-2019 08:45:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	18951735	5064456
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	19782969	5091727
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	19367352	5078091

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.585	129386	16338	112758	13656	1.21	1.15	
31.036	45343	8081	37593	6915	0.4154	1.21	M
Signal Totals:	174729	24419	150351	20571			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	325080	44990				1.16	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.628 = (325080 * 100.000) / (19367352 * 1.031)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	16816716	5820855
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	18394421	5736926

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	17605568	5778890

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	38292	12247	37905	10797	0.3197	1.01	
Signal Totals:							
	38292	12247	37905	10797			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	76197	23044				1.01	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3197 = (76197 * 100.000) / (17605568 * 1.354)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Inject. Date: 13-Dec-2019 16:21:47 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	18753592	5914138

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	18753592	5914138

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.060	634600	200400	599554	189453	6.47	1.06	
Signal Totals:							
	634600	200400	599554	189453			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1234154	389853				1.06	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.468 = (1234154 * 100.000) / (18753592 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

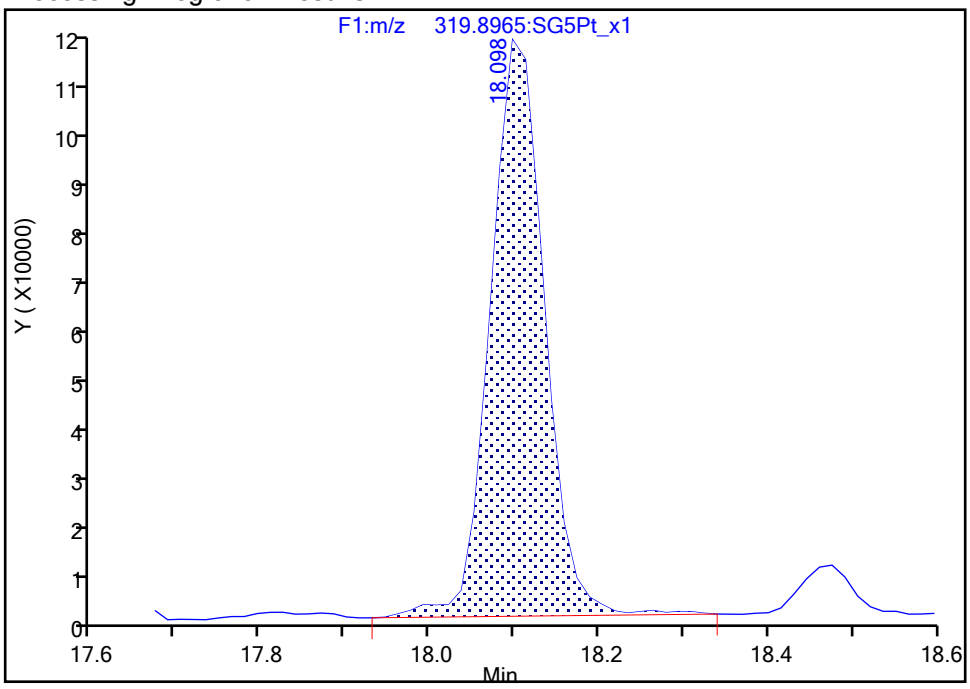
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

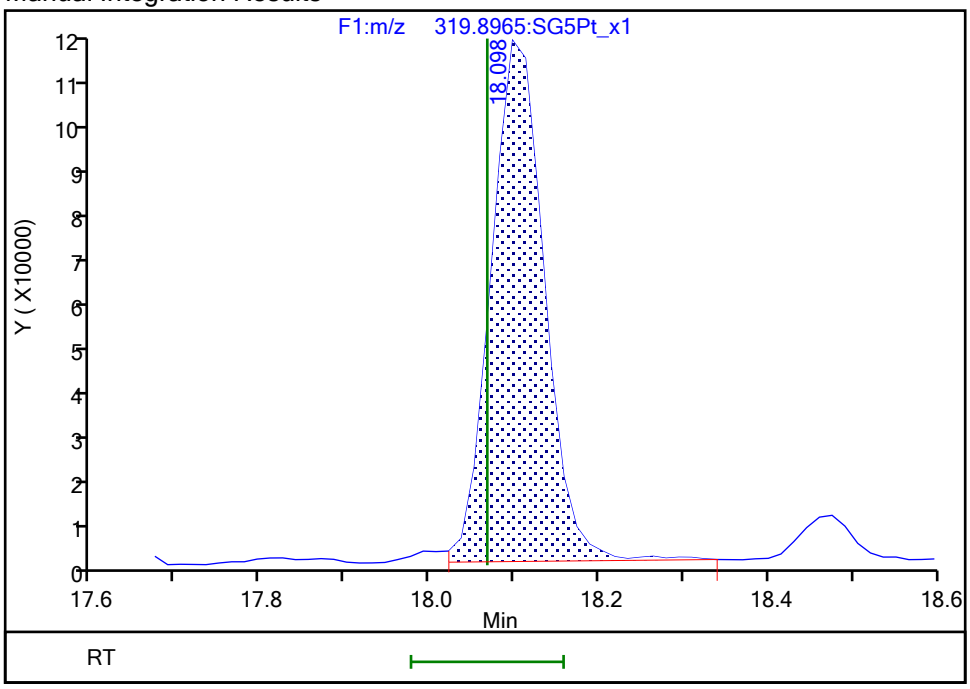
Processing Integration Results

RT: 18.10
Area: 486799
Amount: 3.860387
Amount Units: pg/ul



Manual Integration Results

RT: 18.10
Area: 479753
Amount: 3.835573
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:36:09

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

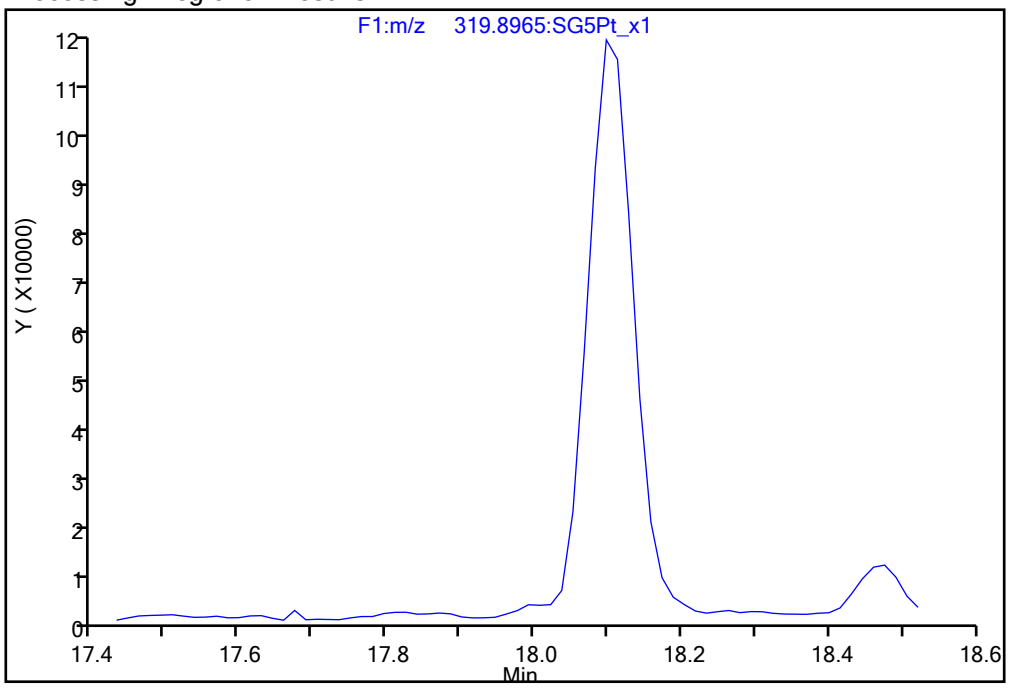
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.82- 19.22)

Signal: 1

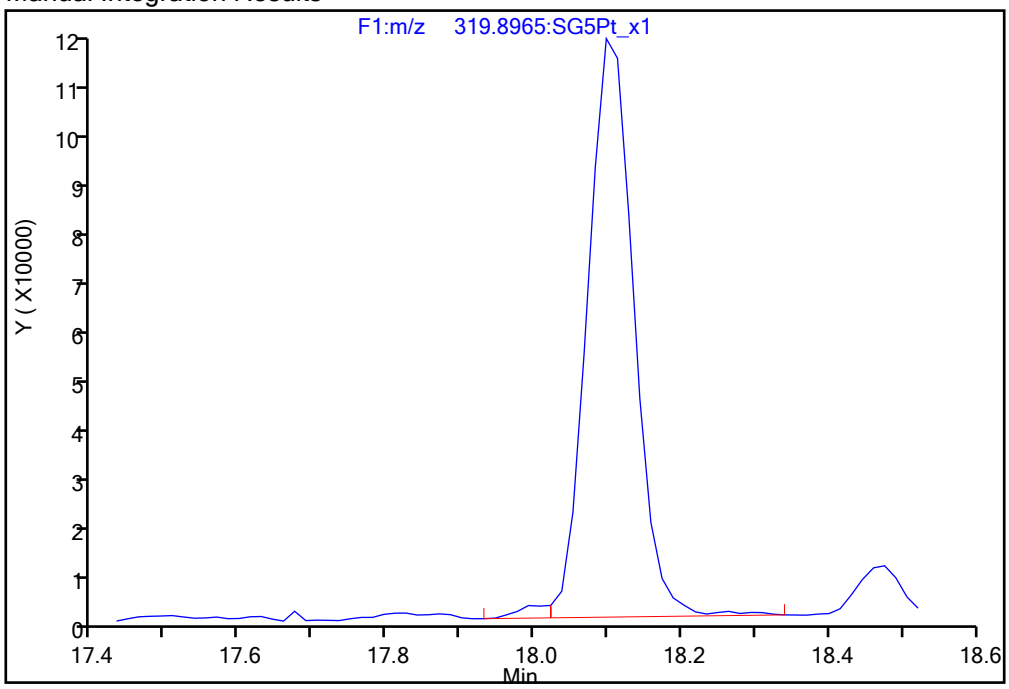
Not Detected
RT: 15.82- 19.22

Processing Integration Results



Manual Integration Results

RT = 18.022 Area = 7088 M



Reviewer: dadunj, 16-Dec-2019 10:36:18
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

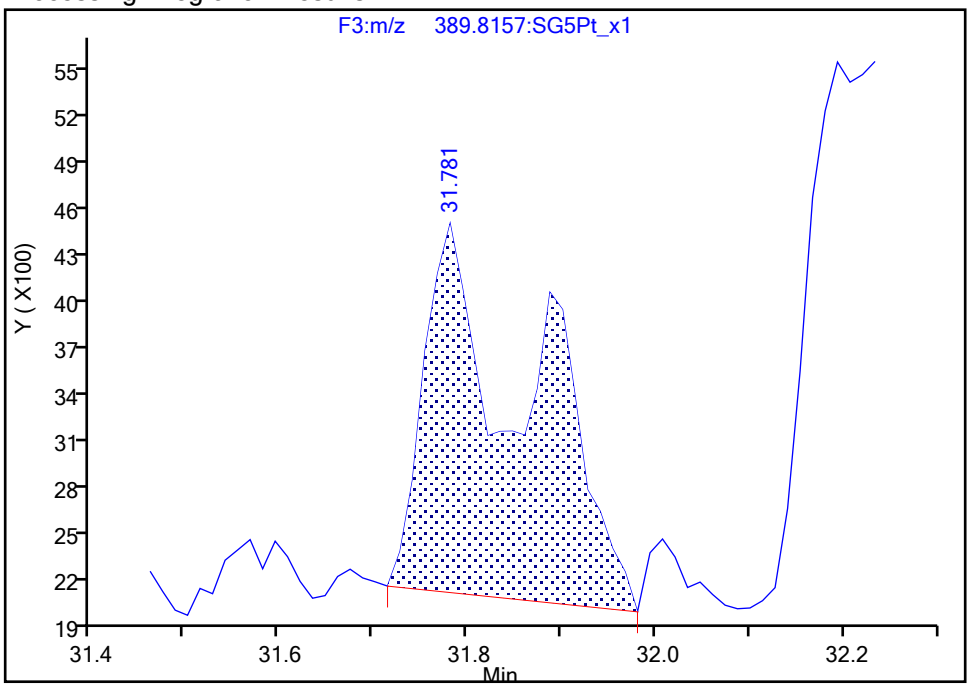
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

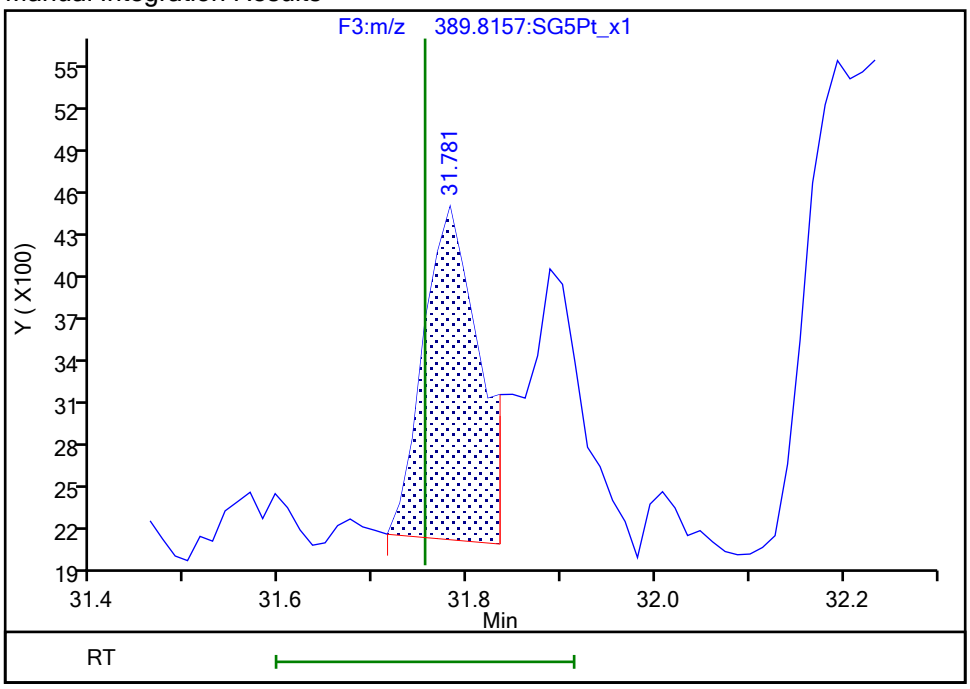
Processing Integration Results

RT: 31.78
Area: 18579
Amount: 0.189596
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 9520
Amount: 0.094150
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:36:55
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

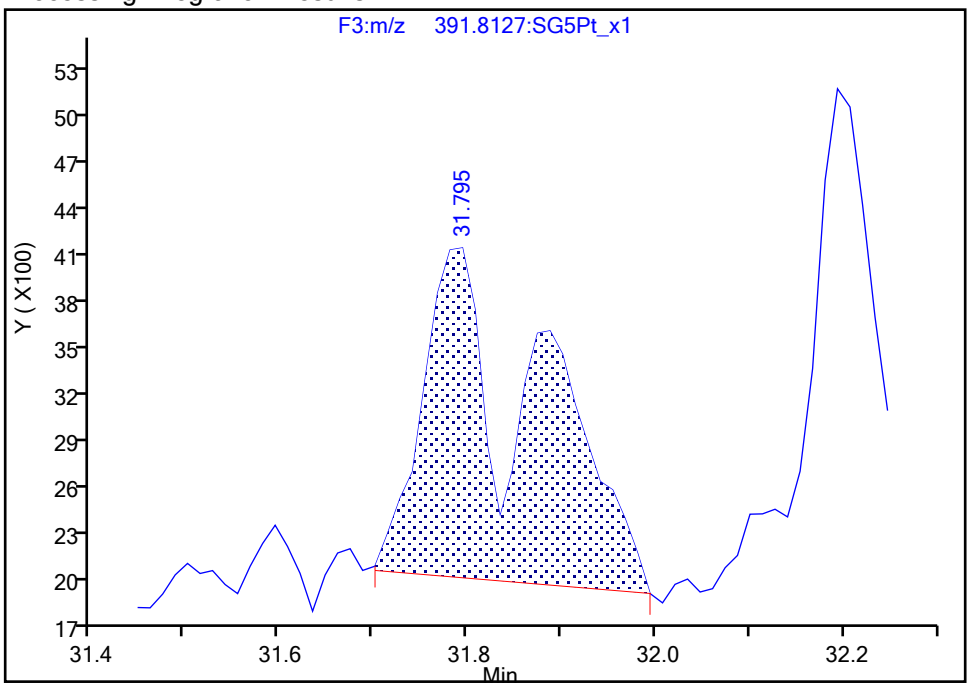
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

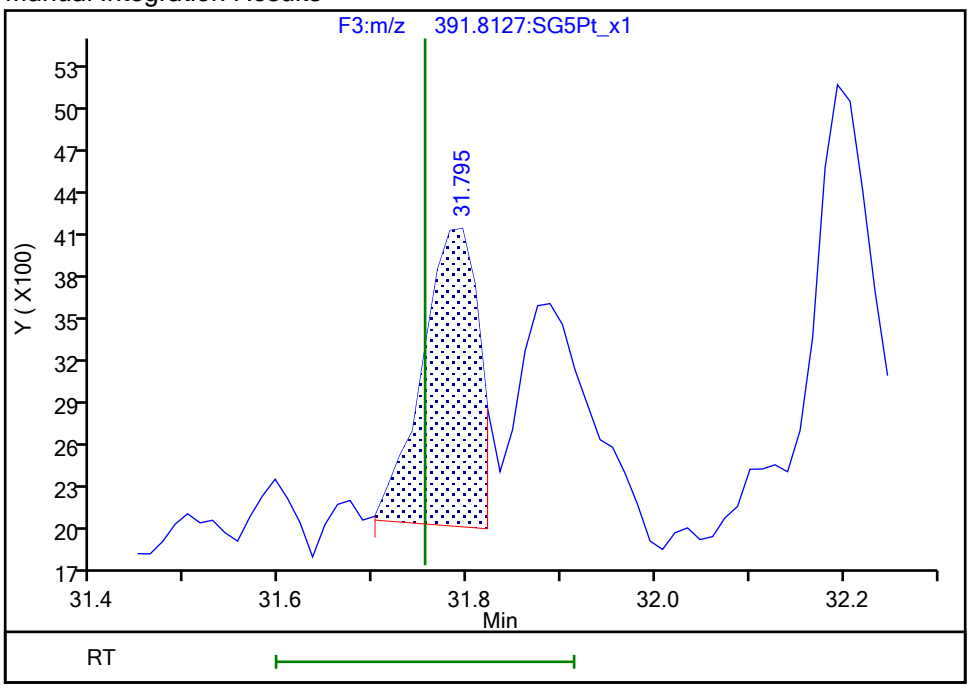
Processing Integration Results

RT: 31.79
Area: 17546
Amount: 0.189596
Amount Units: pg/ul



Manual Integration Results

RT: 31.79
Area: 8419
Amount: 0.094150
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:37:09

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

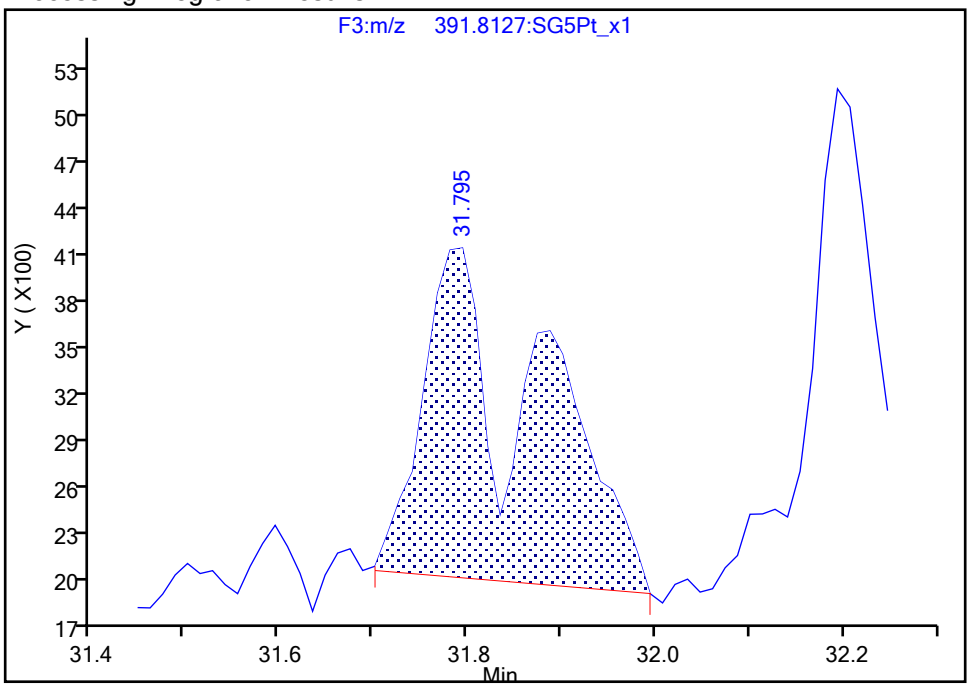
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

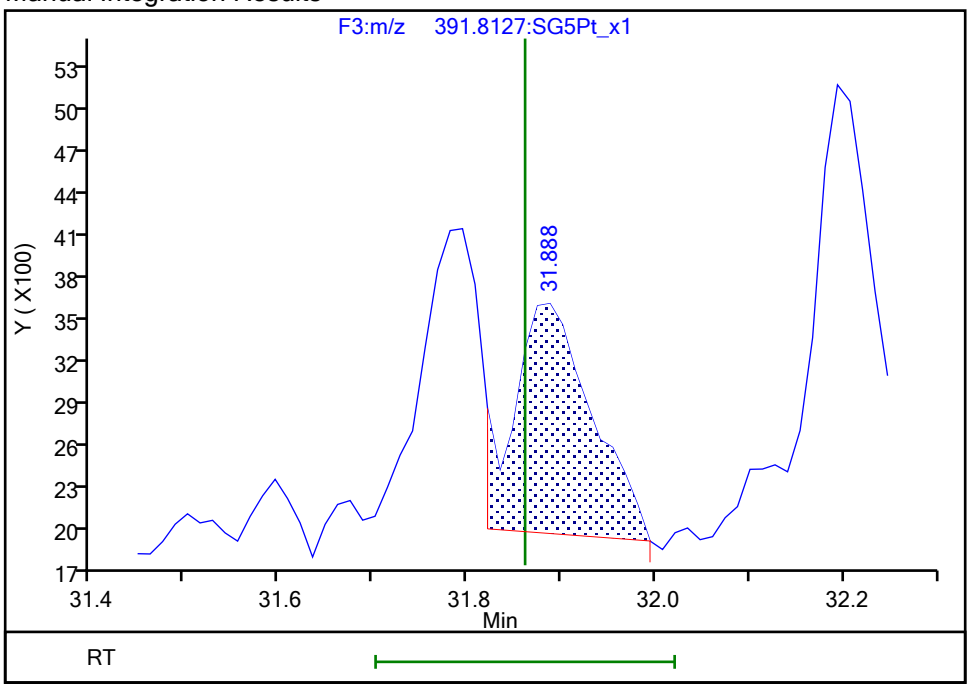
Processing Integration Results

RT: 31.79
Area: 17546
Amount: 0.185706
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 9136
Amount: 0.093334
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:37:15
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

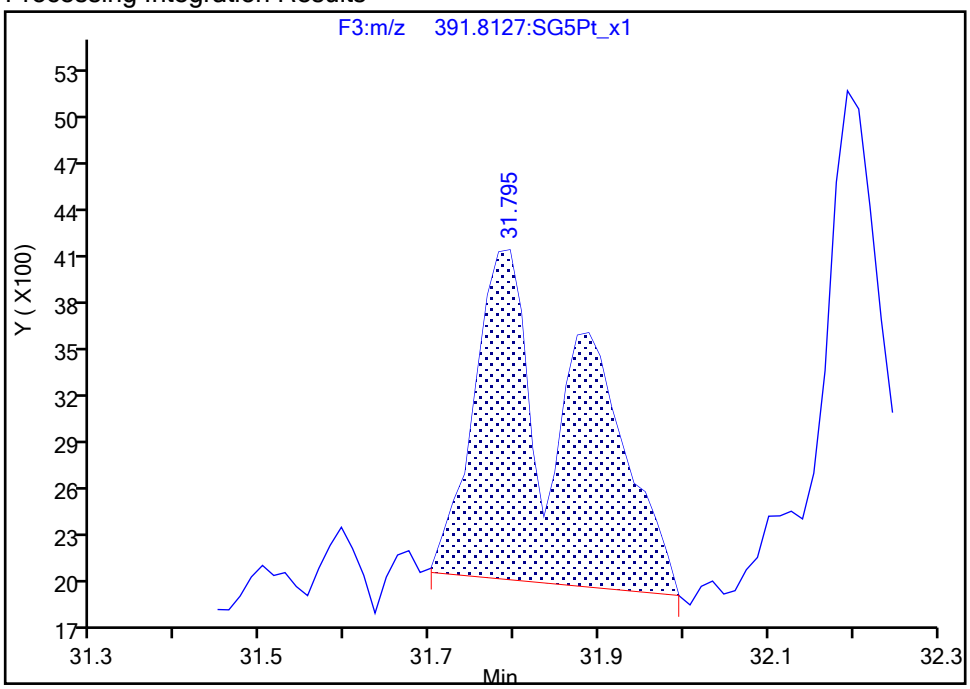
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.78
Area: 36125
Amount: 0.185706
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 18156
Amount: 0.093334
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 10:37:15
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

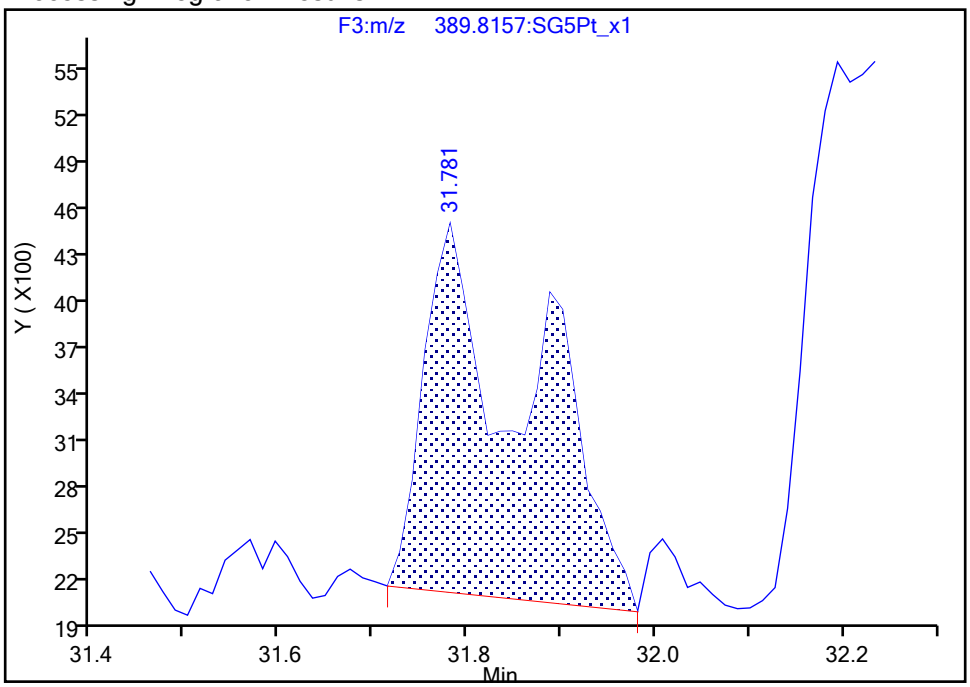
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

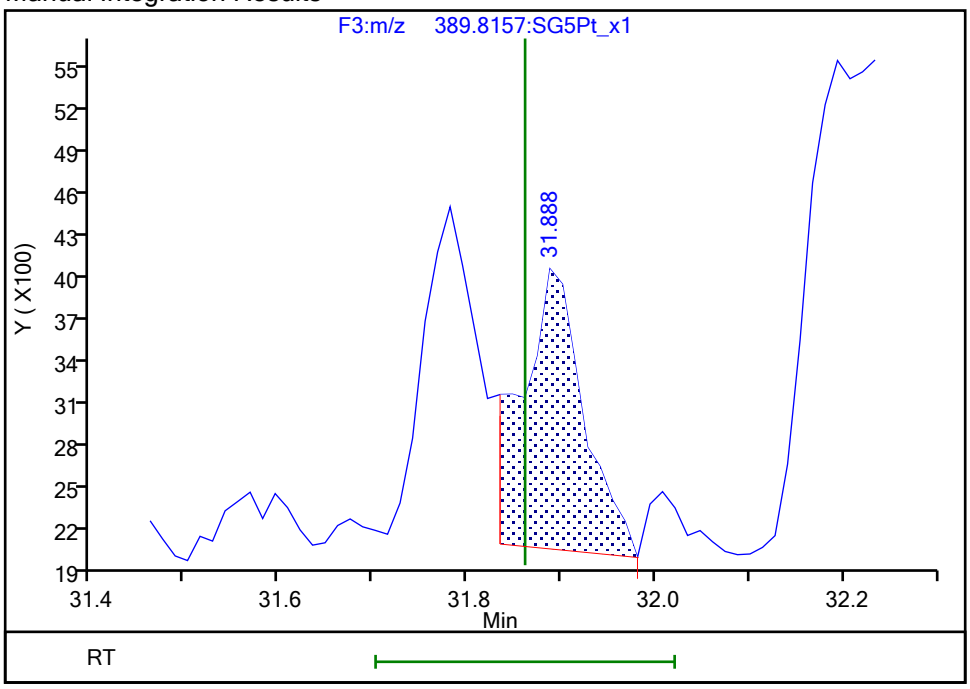
Processing Integration Results

RT: 31.78
Area: 18579
Amount: 0.185706
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 9020
Amount: 0.093334
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:37:17

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

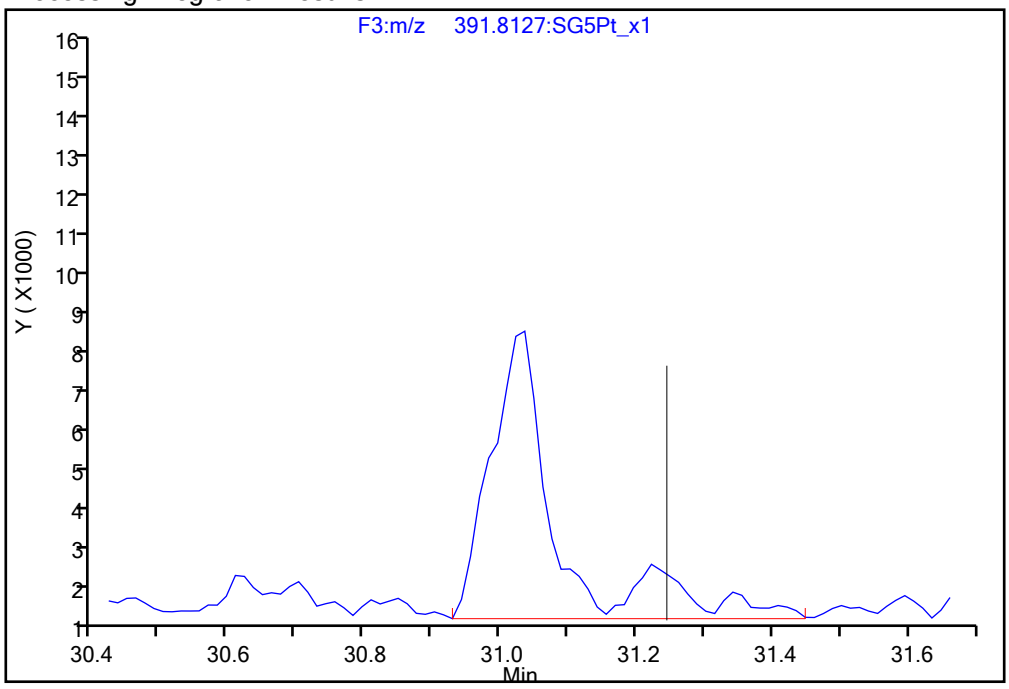
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (29.56- 32.18)

Signal: 2

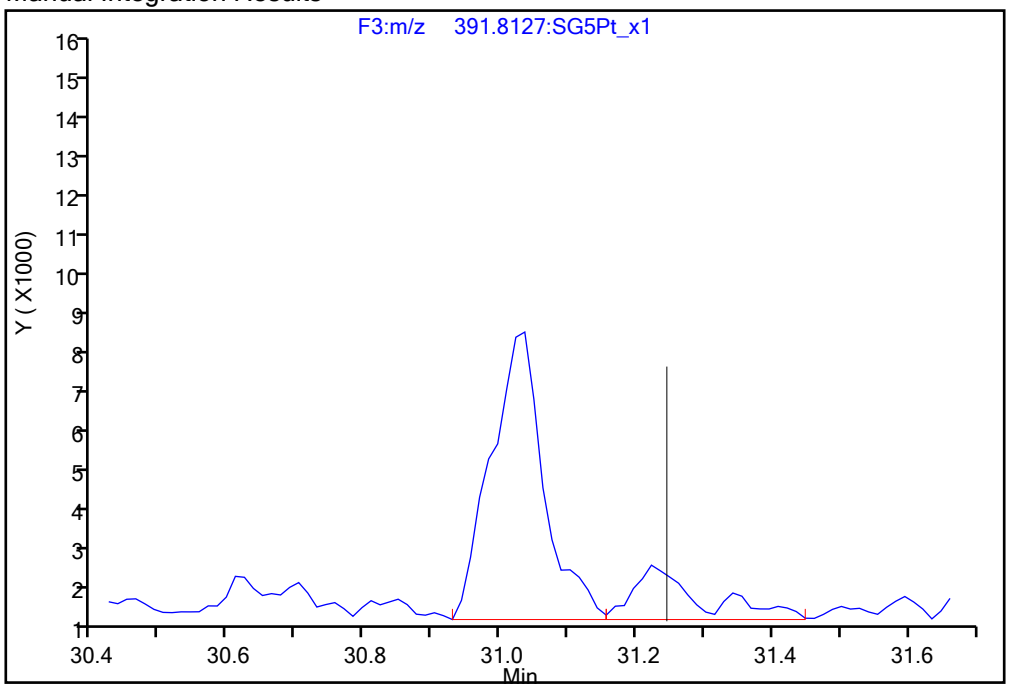
Processing Integration Results

RT = 31.036 Area = 46605



Manual Integration Results

RT = 31.036 Area = 37593 M



Reviewer: dadunj, 16-Dec-2019 10:37:23

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

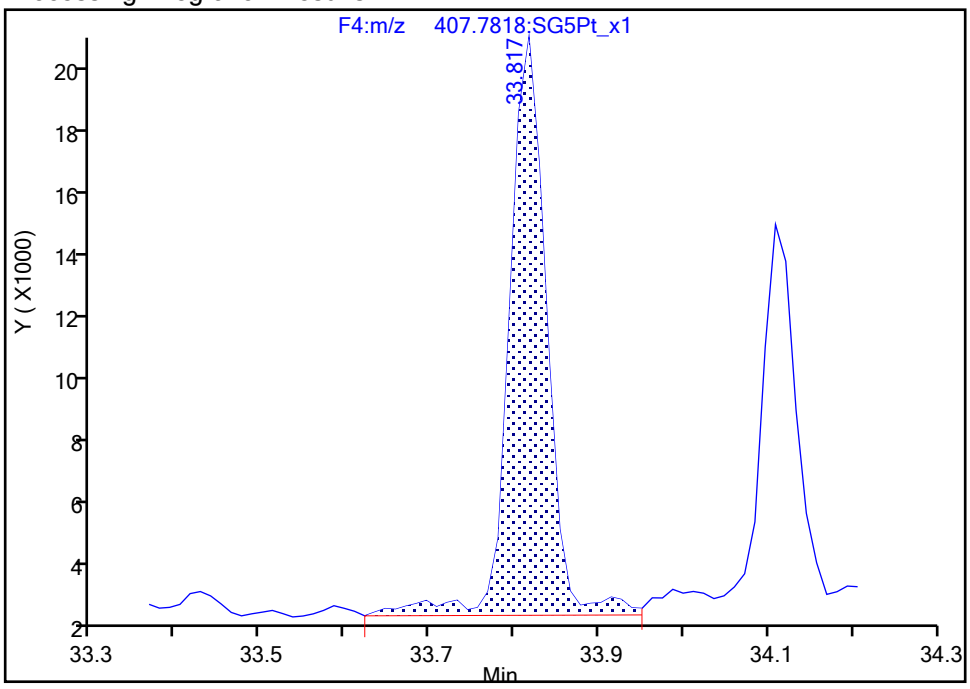
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d				
Injection Date:	13-Dec-2019 16:21:47	Instrument ID:	10D5		
Lims ID:	320-56911-A-7-A	Lab Sample ID:	320-56911-7		
Client ID:	11187072-120819-BN-SJSSA09 (2-4)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

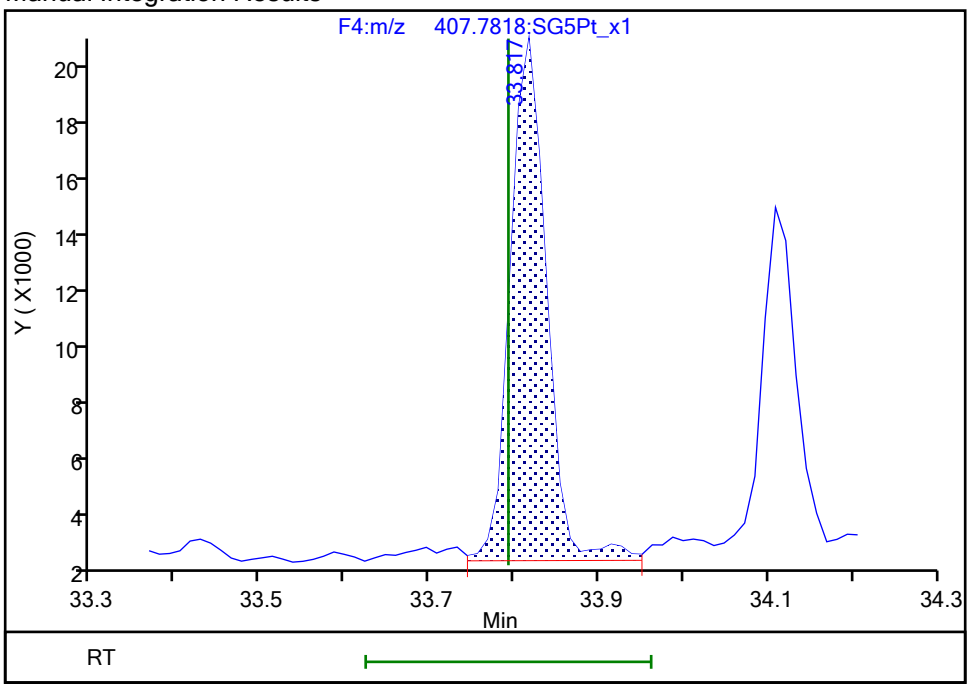
Processing Integration Results

RT: 33.82
Area: 56485
Amount: 0.445810
Amount Units: pg/ul



Manual Integration Results

RT: 33.82
Area: 54348
Amount: 0.436886
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:37:28

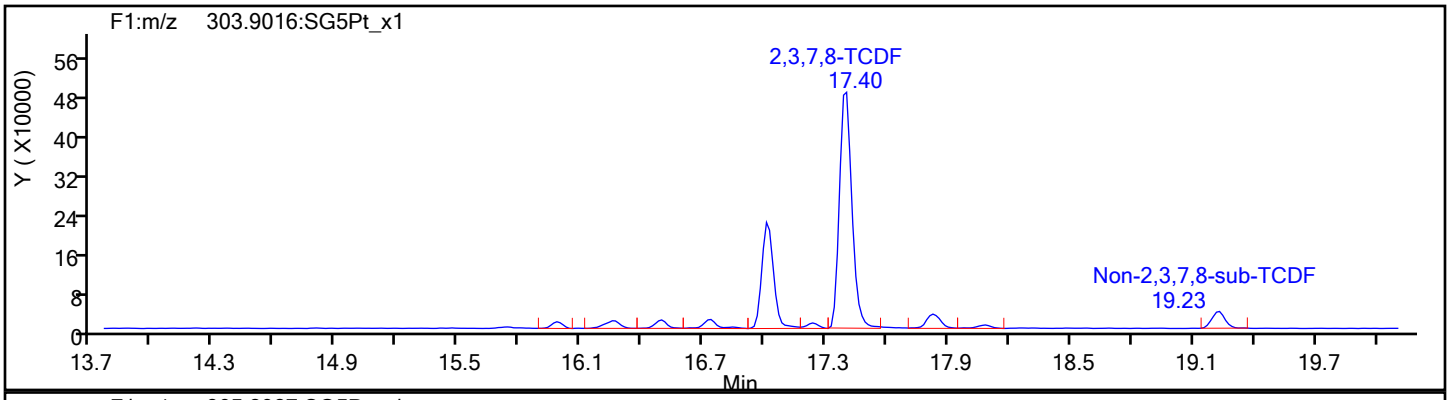
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

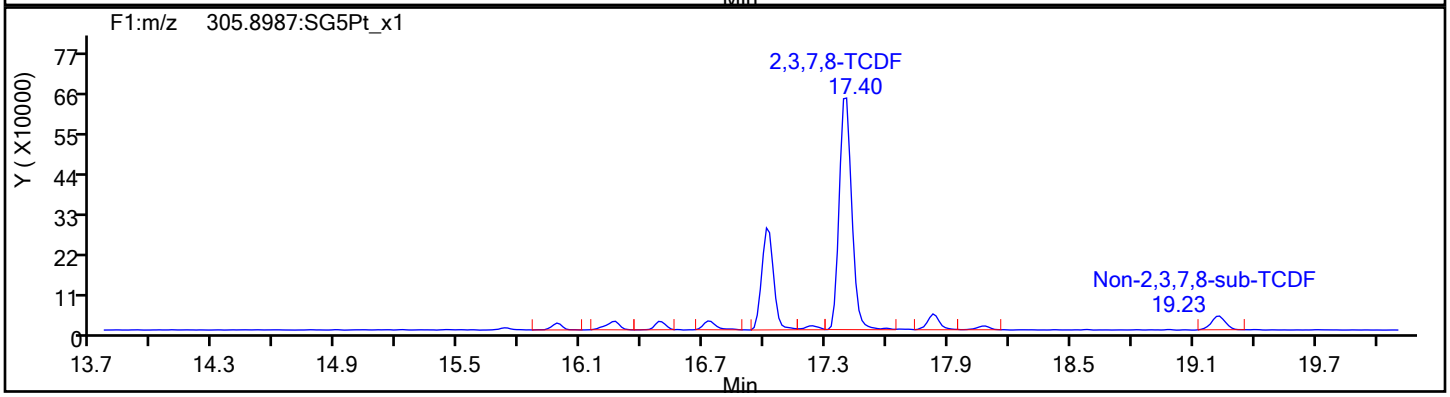
Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

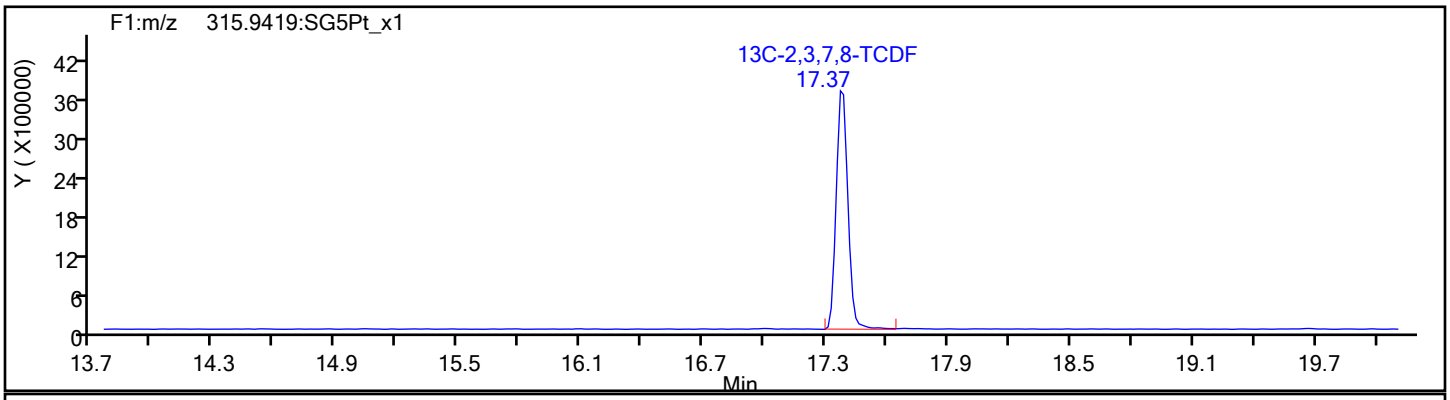
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

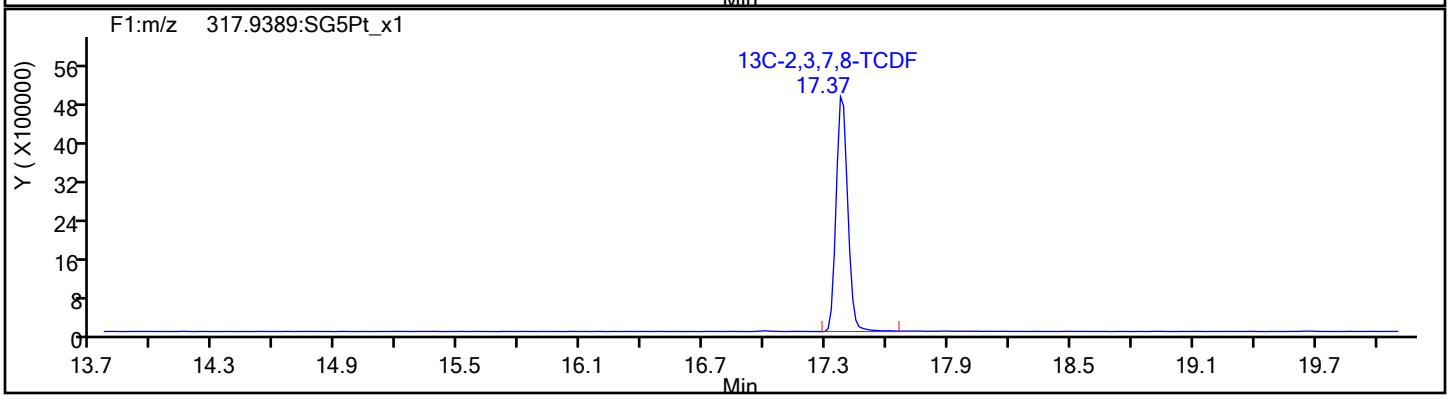
TCDF





TCDF Standards



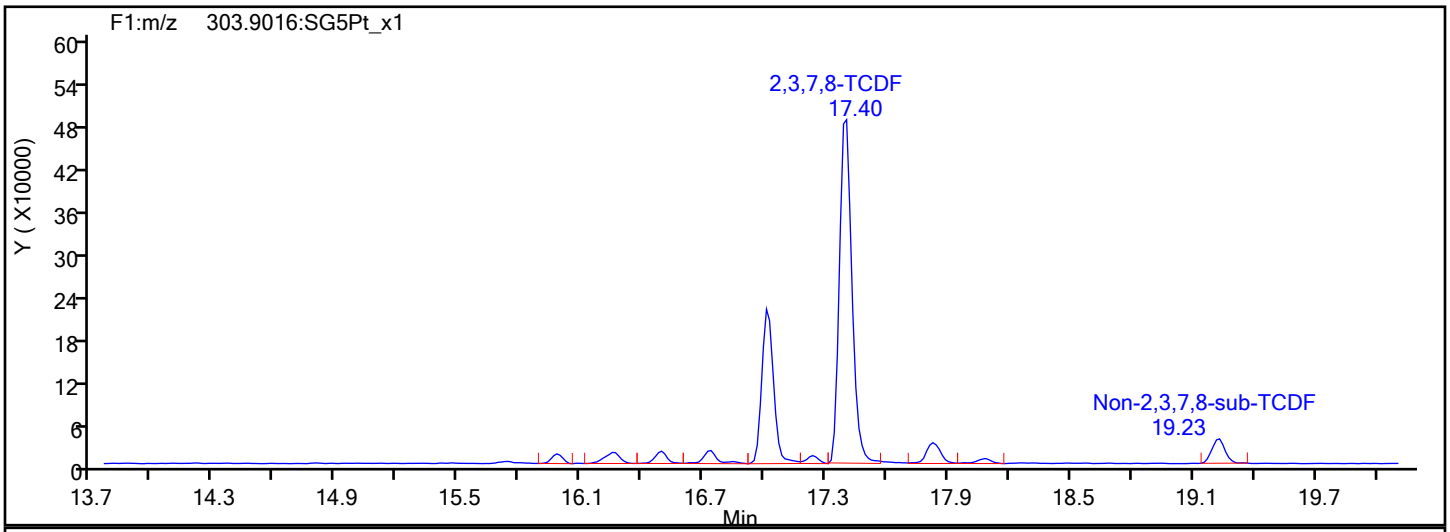


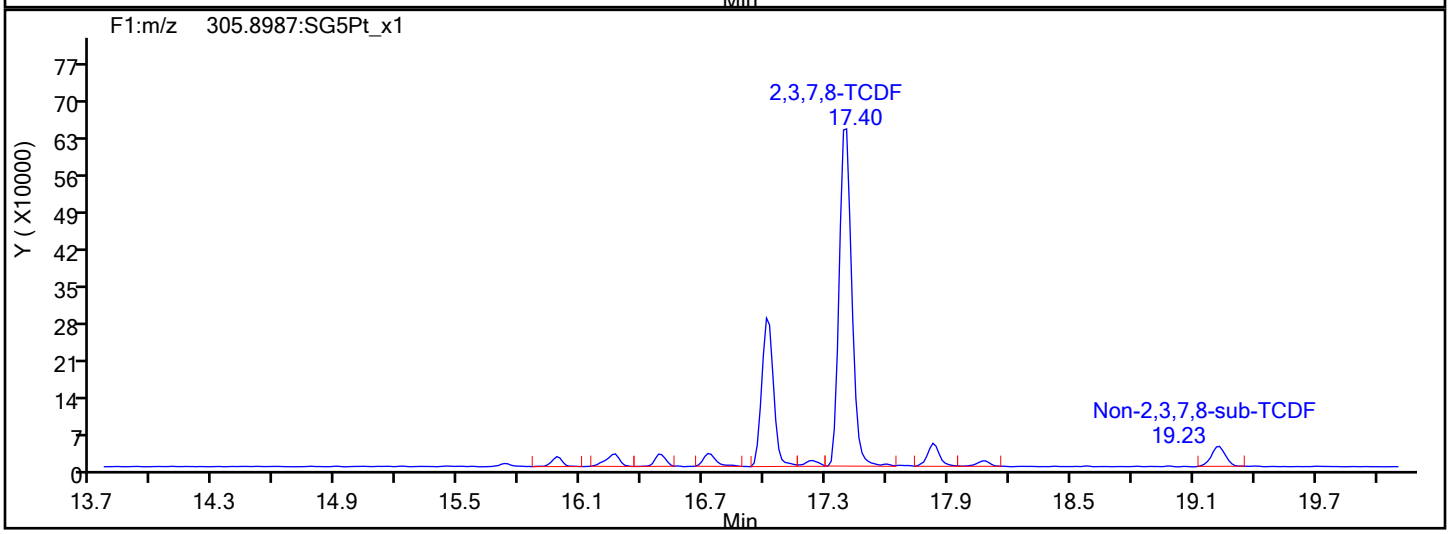
Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

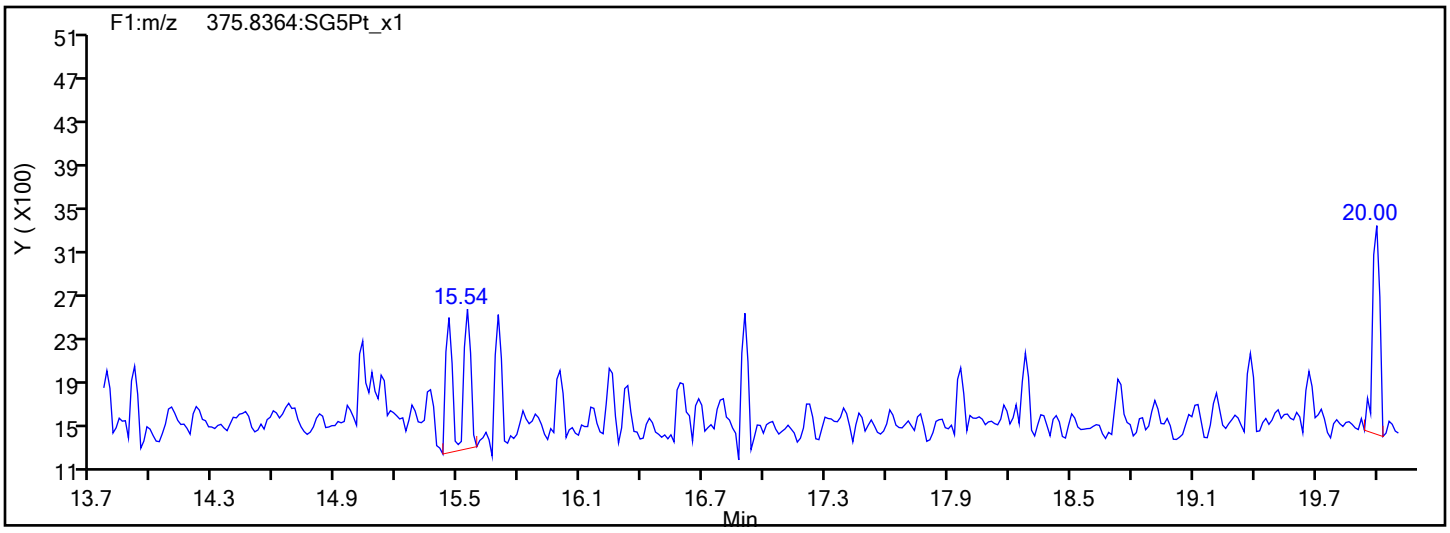
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

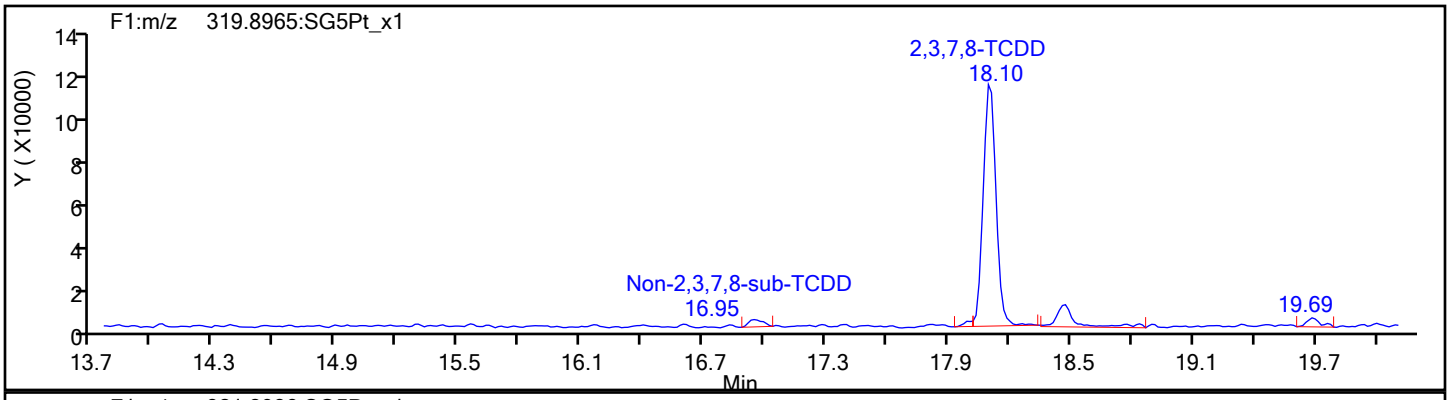


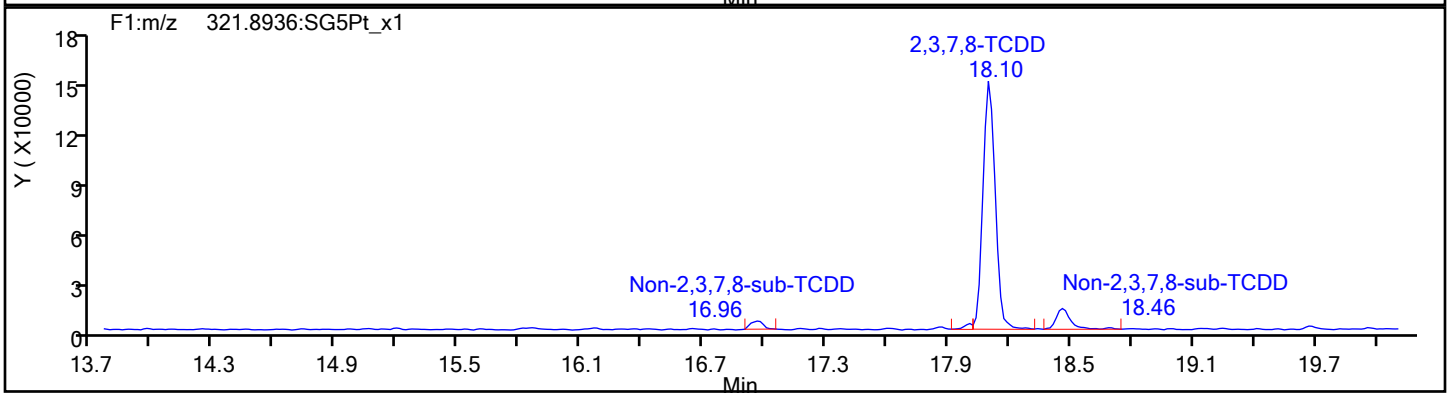
Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

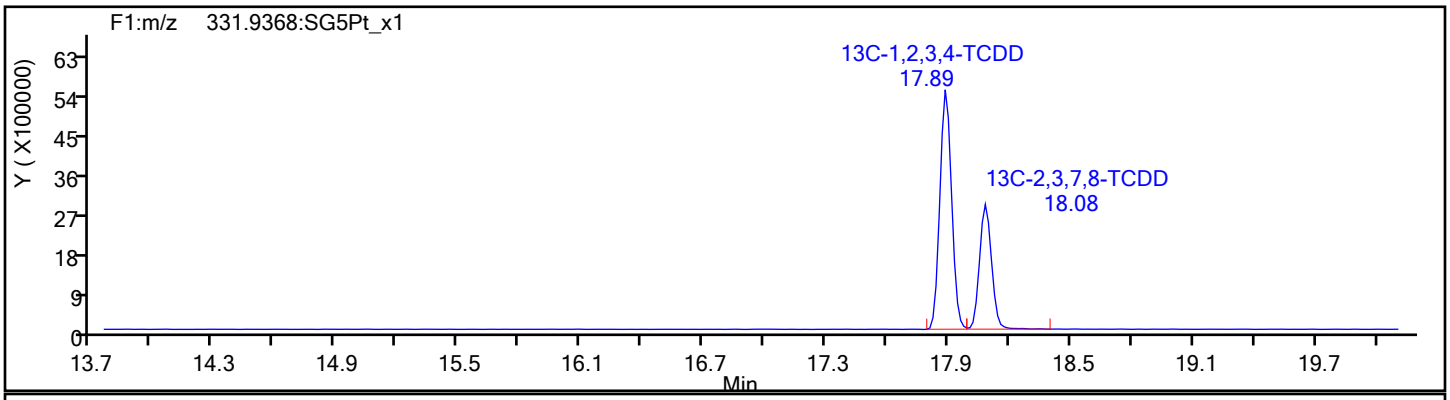
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

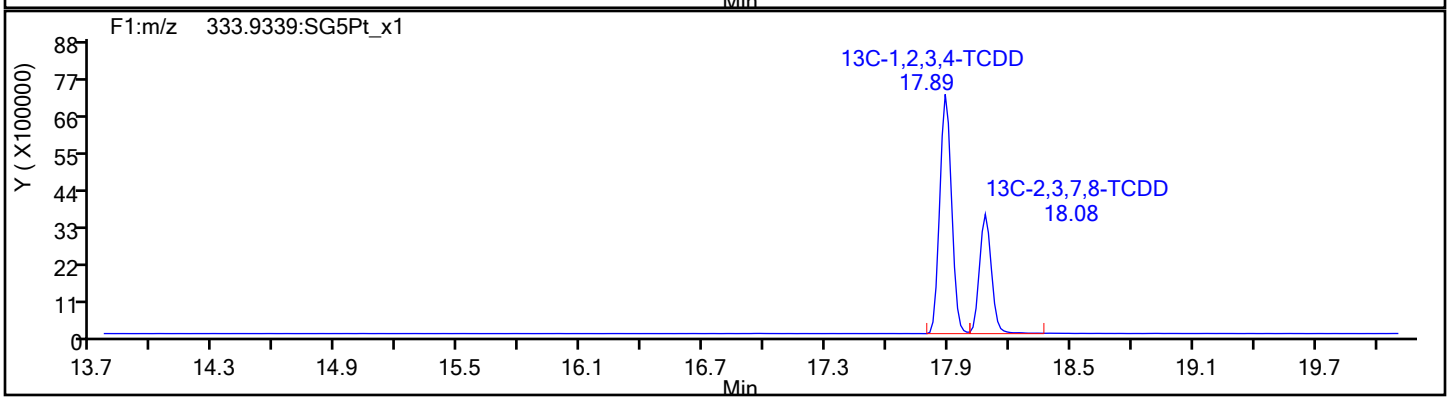
TCDD





TCDD Standards



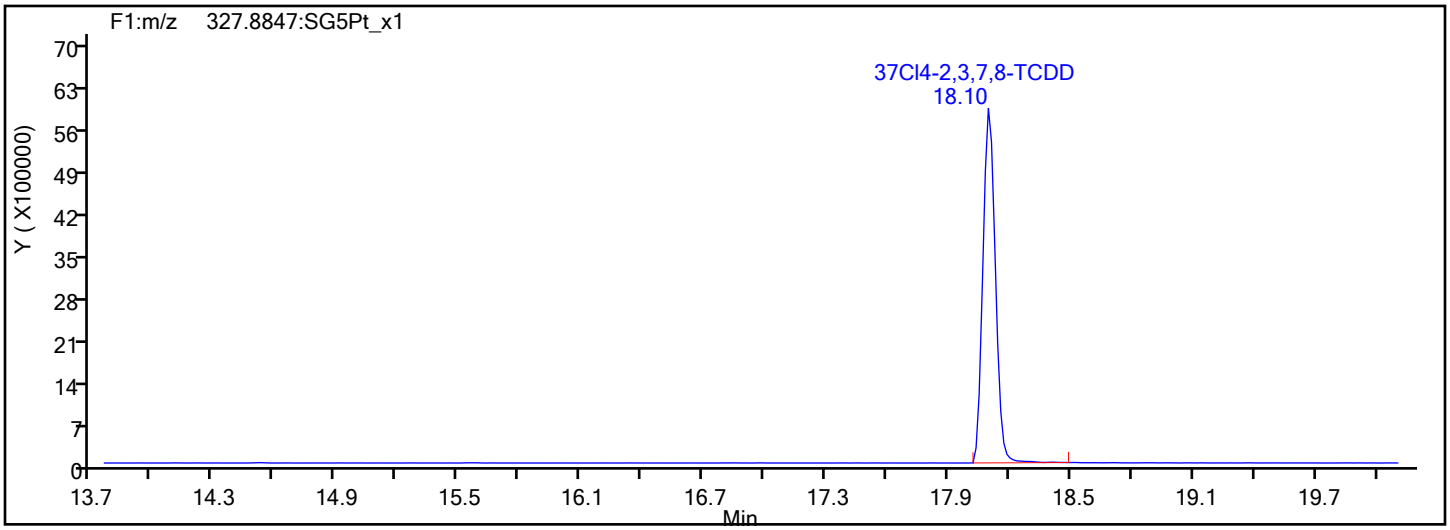


Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

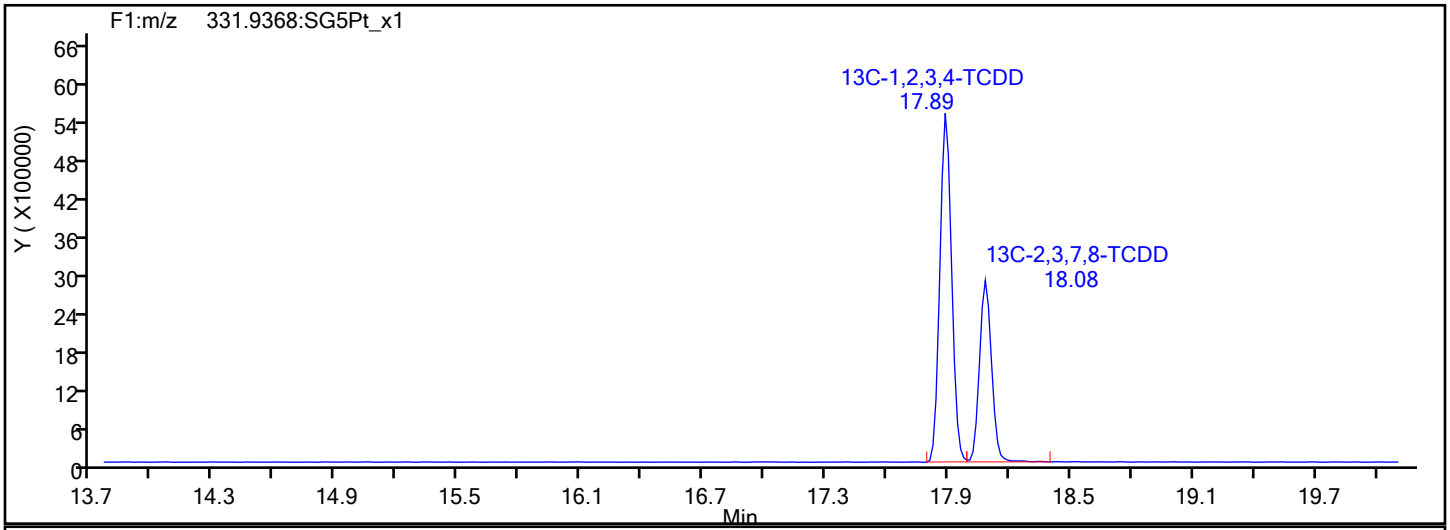
Eurofins TestAmerica, Sacramento

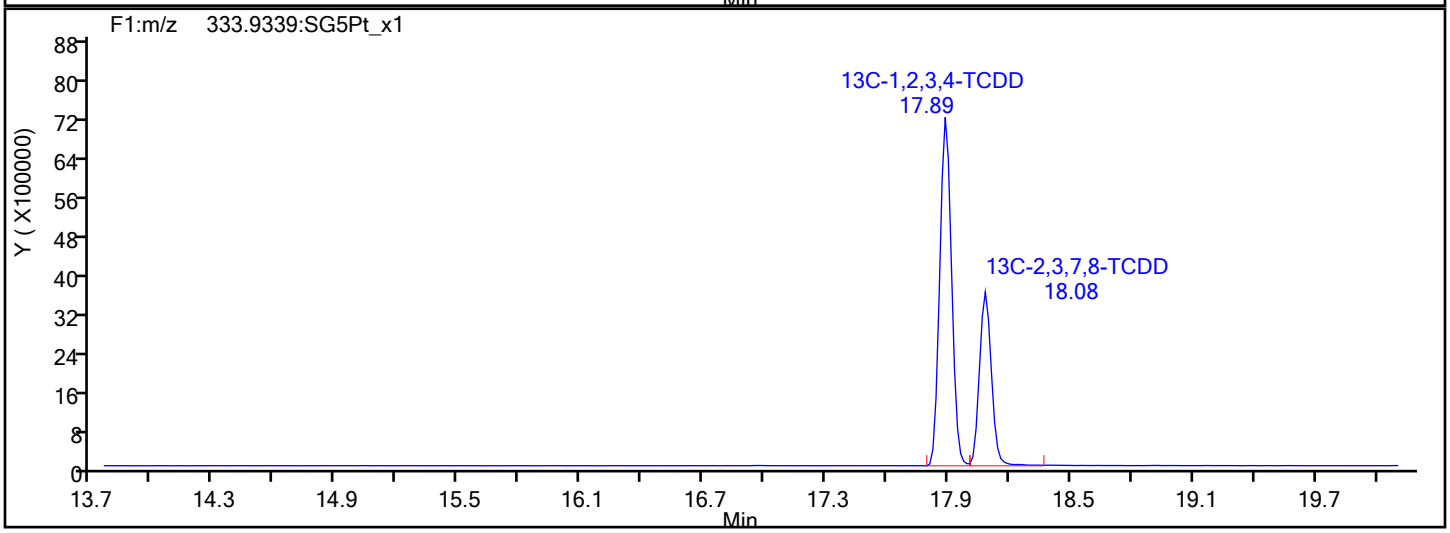
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



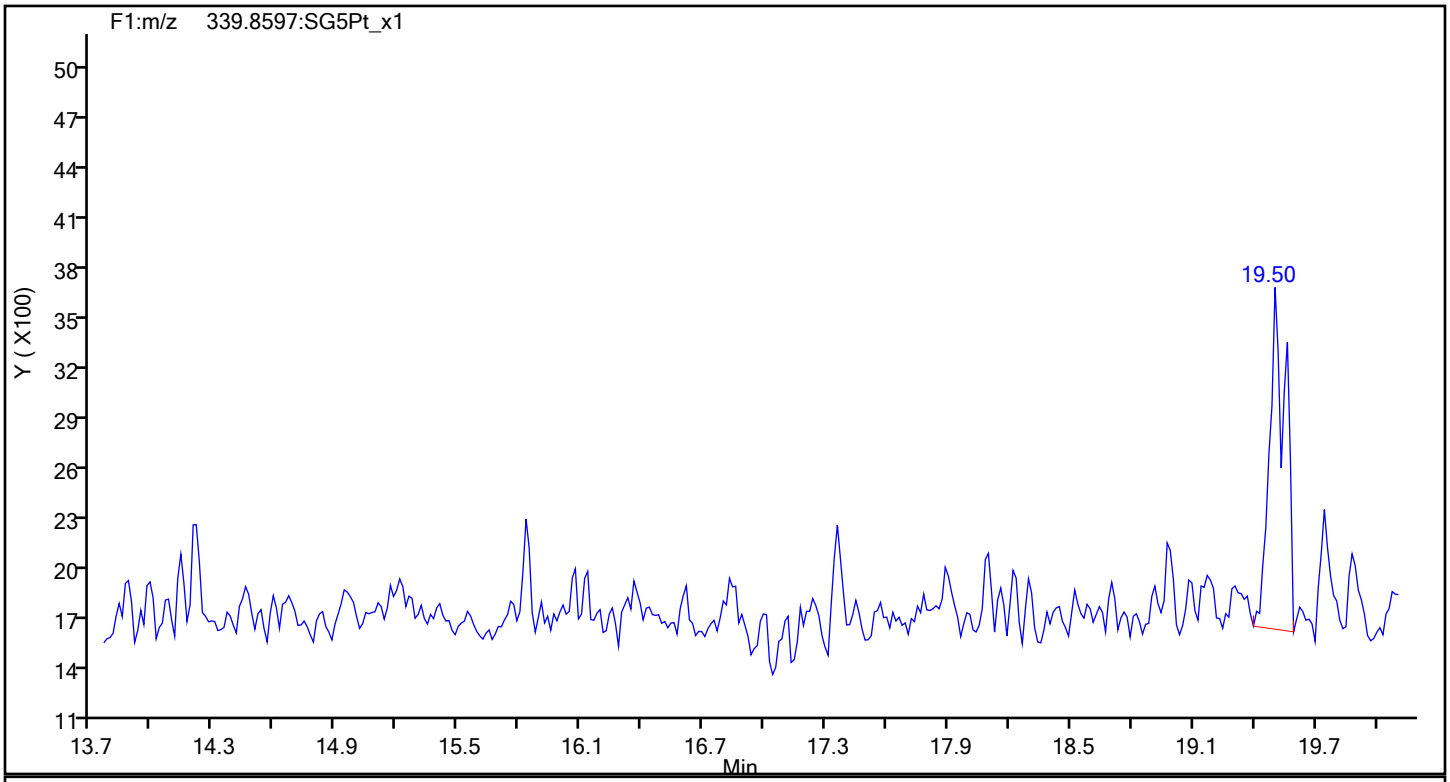


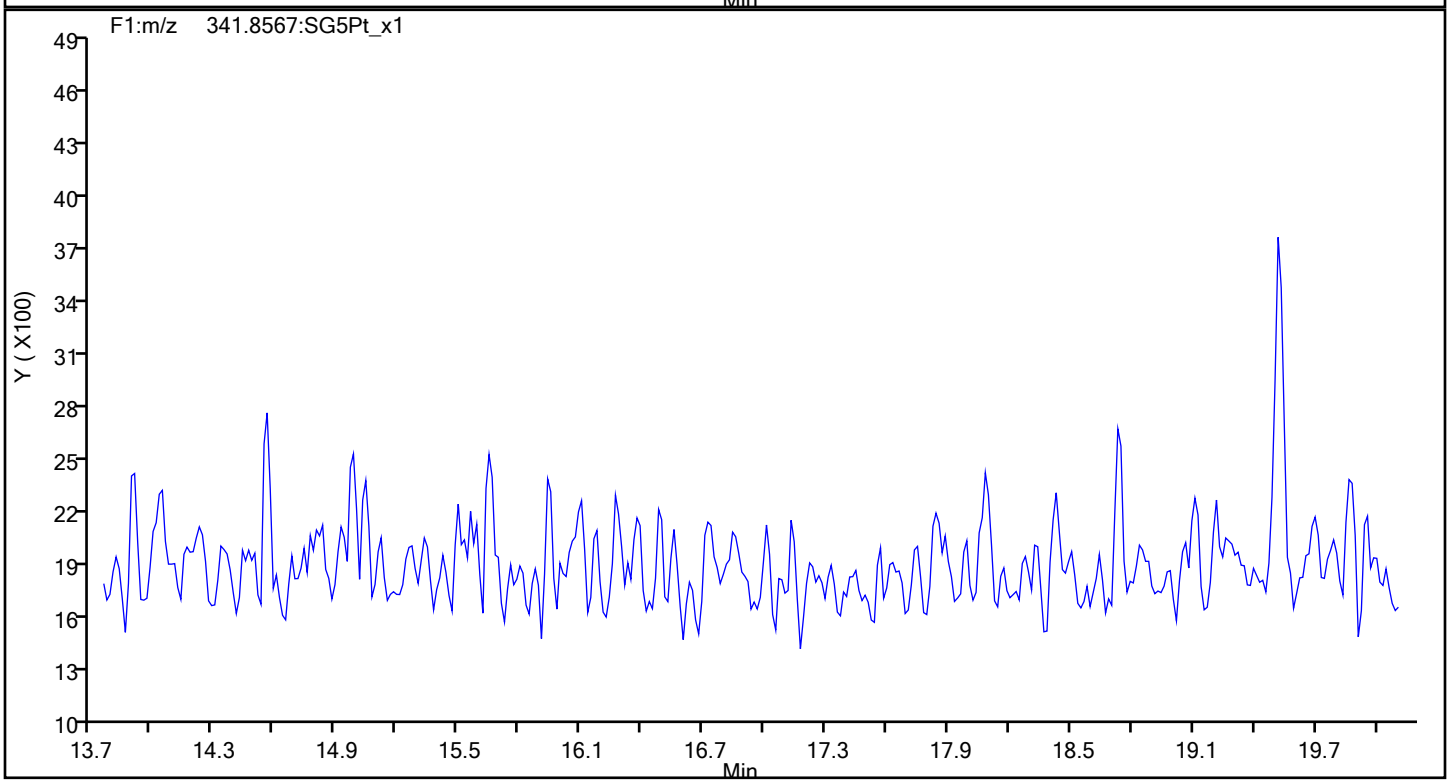
Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



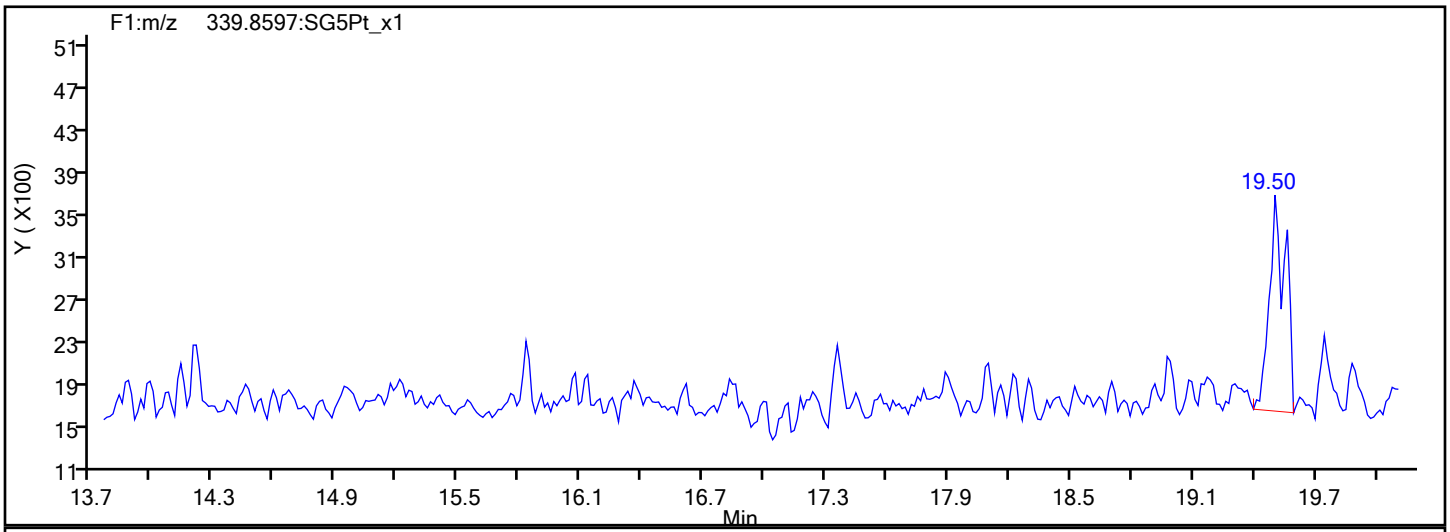


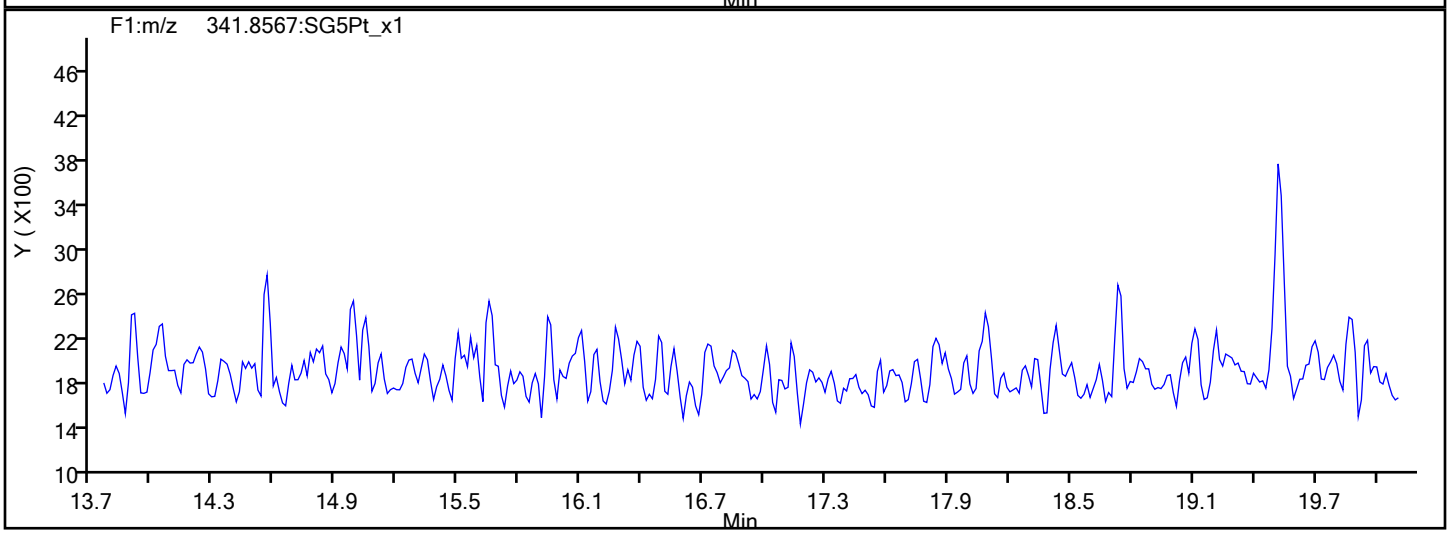
Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

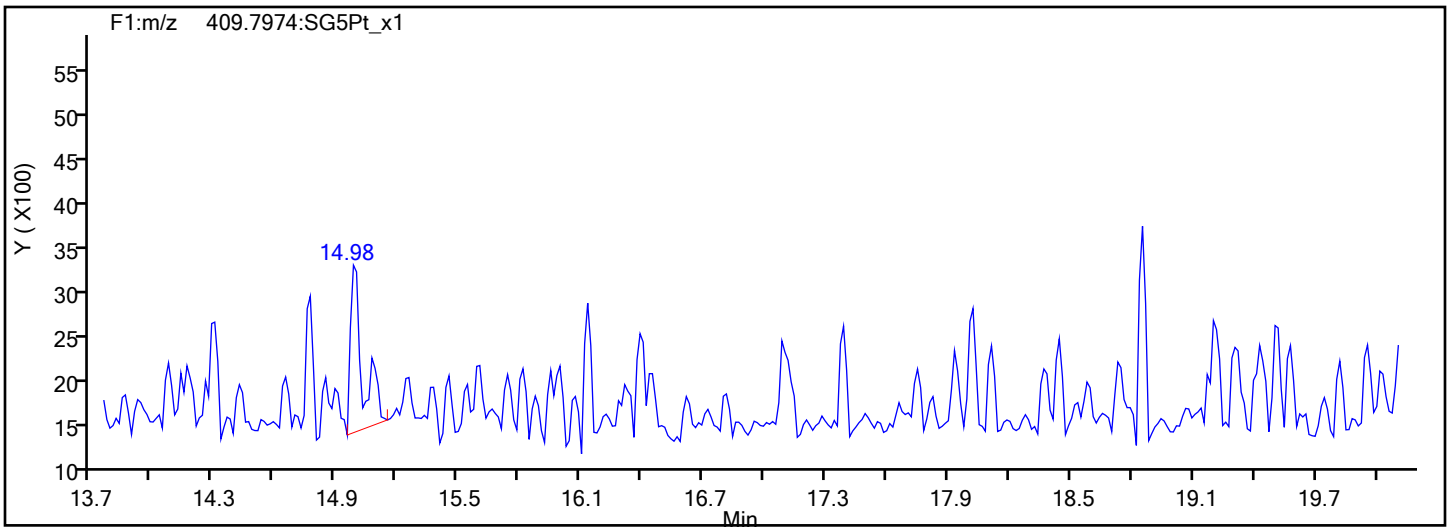
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 16-Dec-2019 08:45:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
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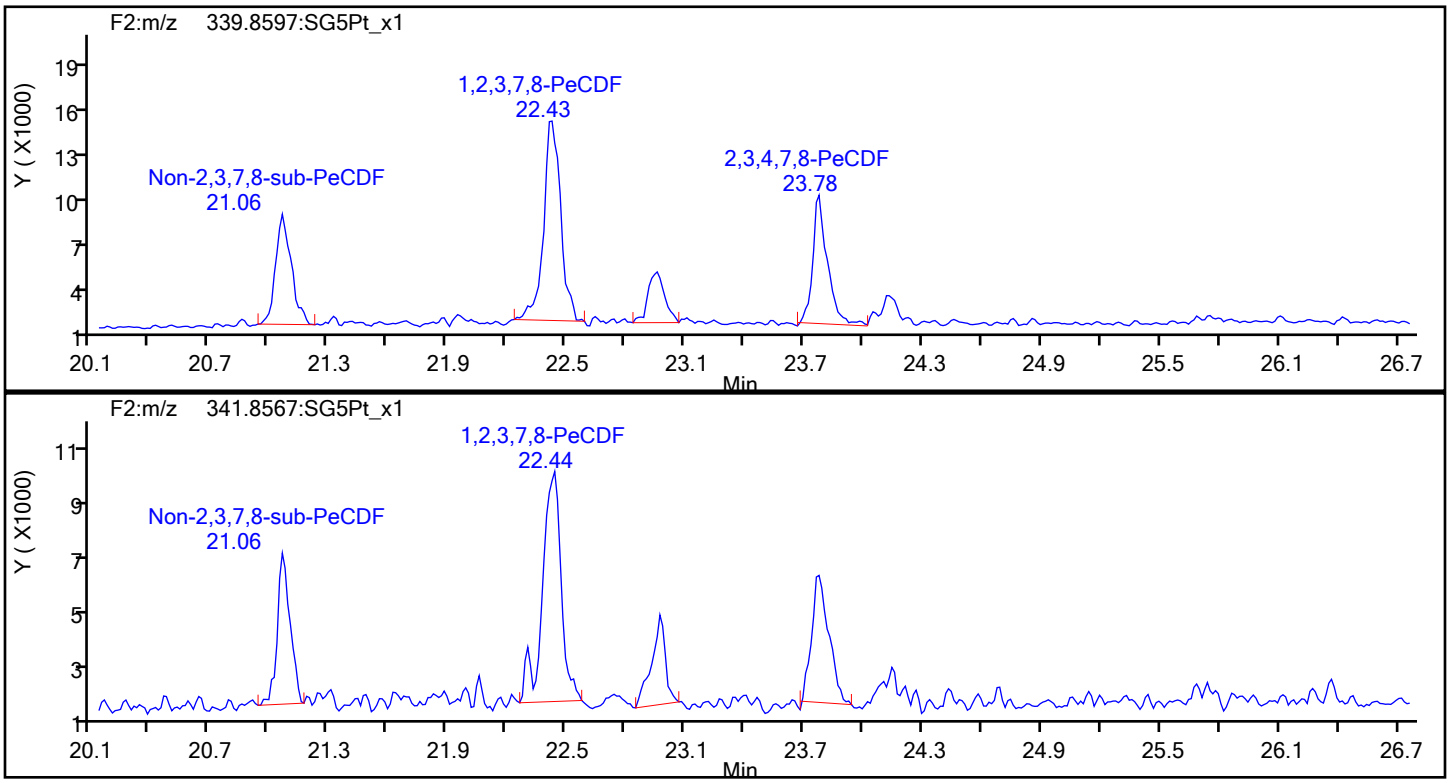
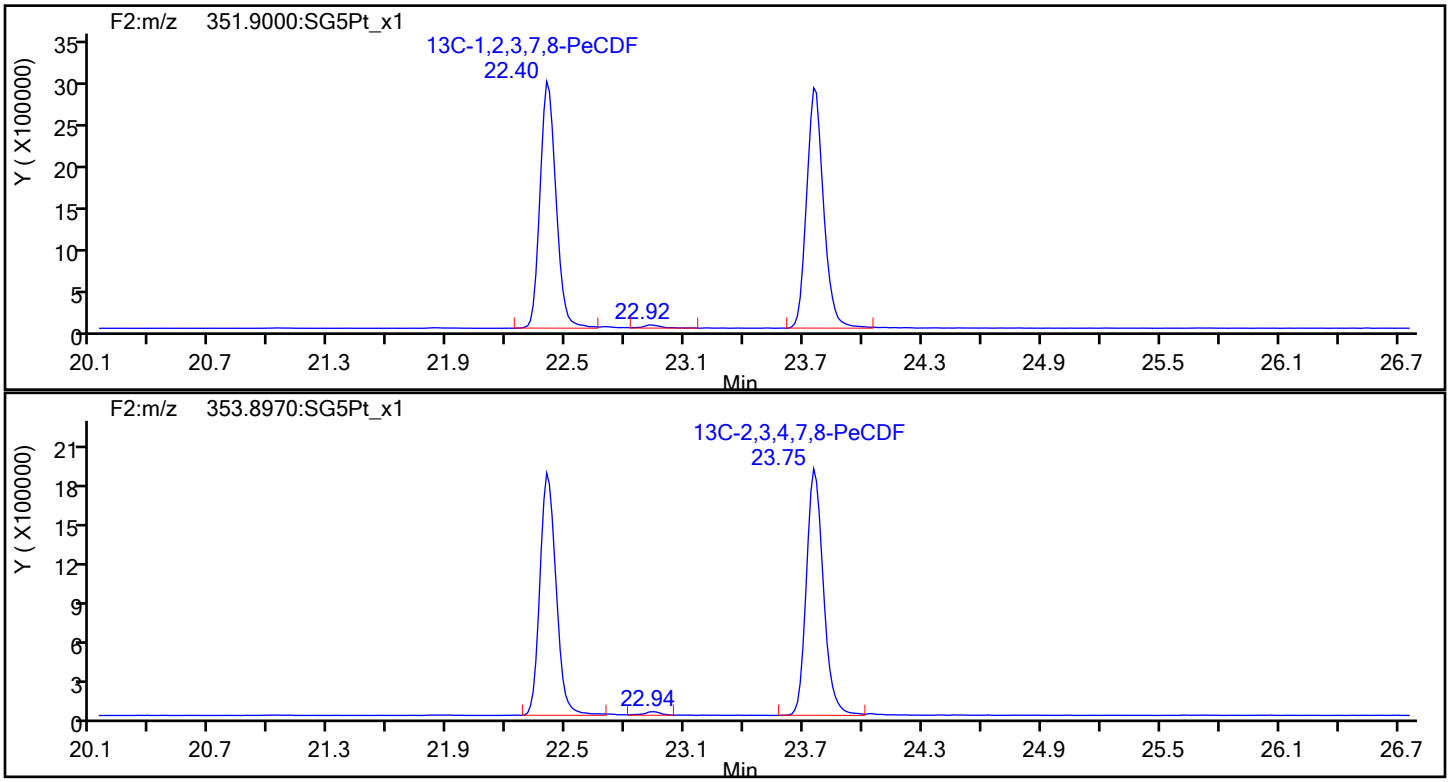
PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

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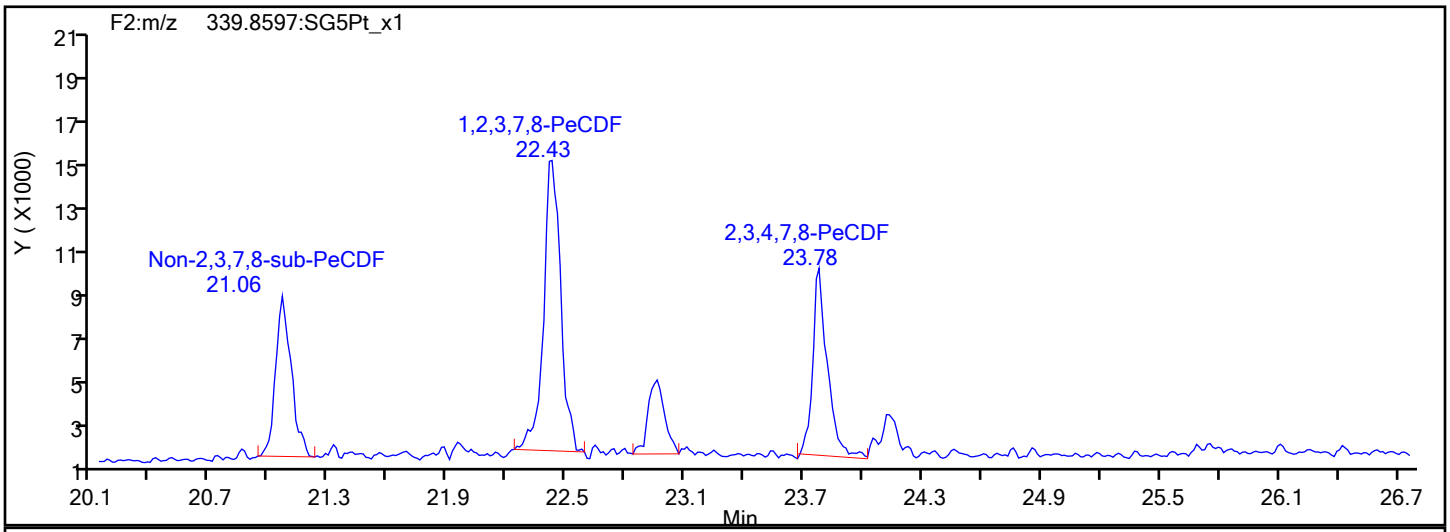
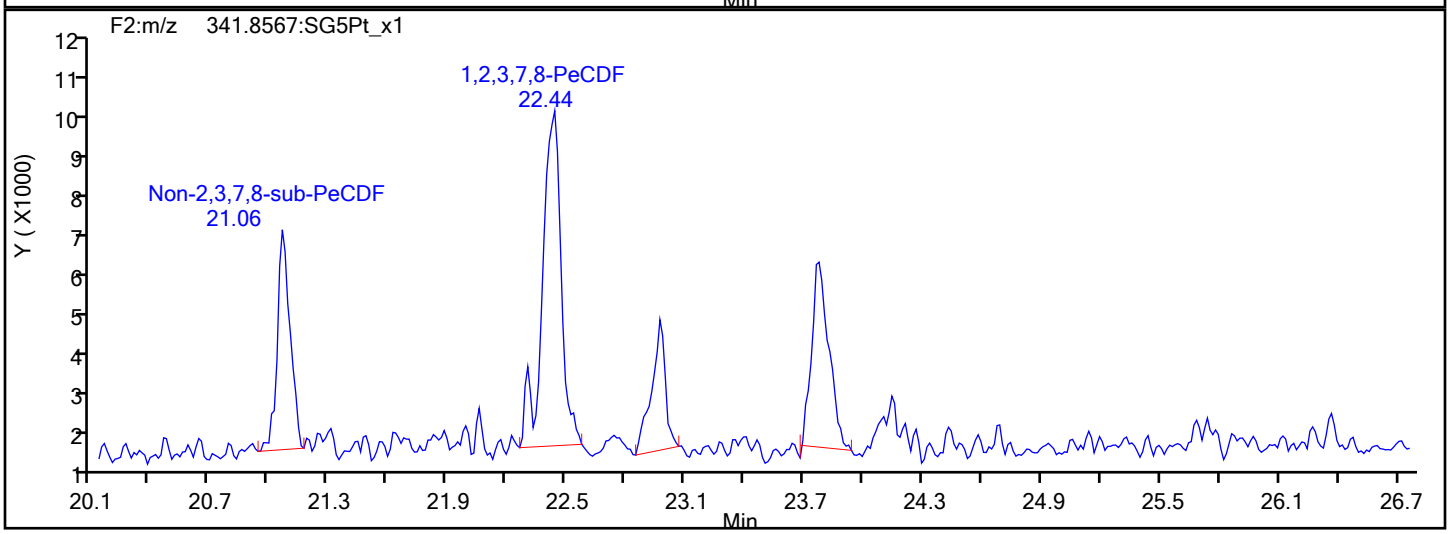
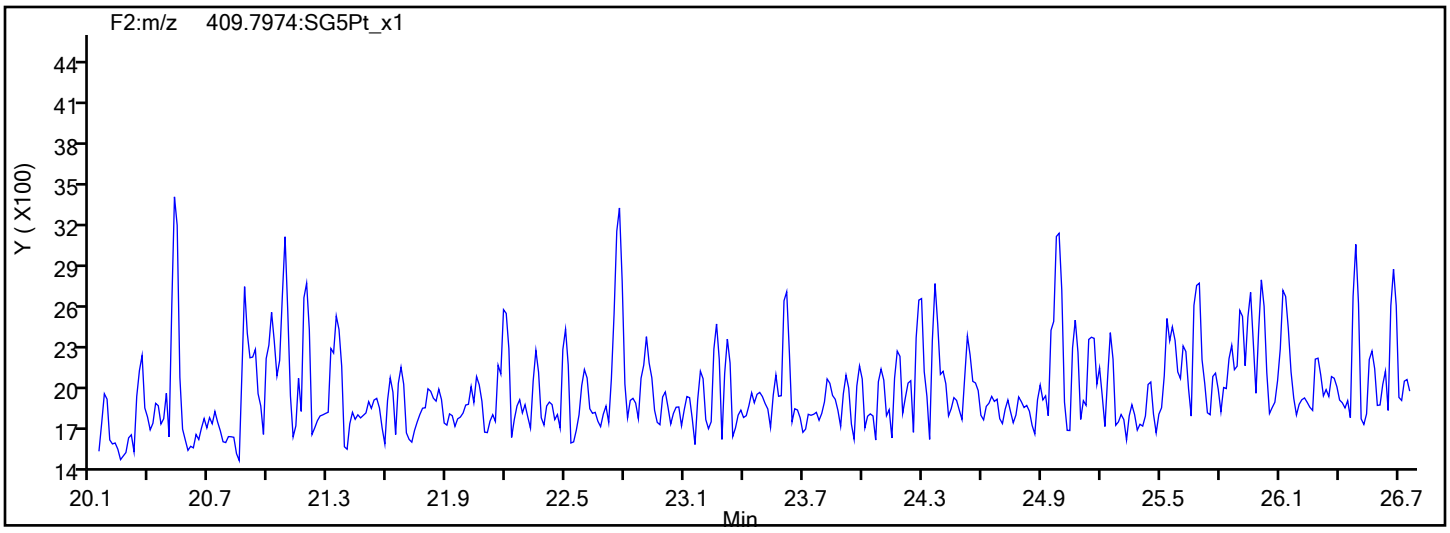




PeCDF Interference Mass



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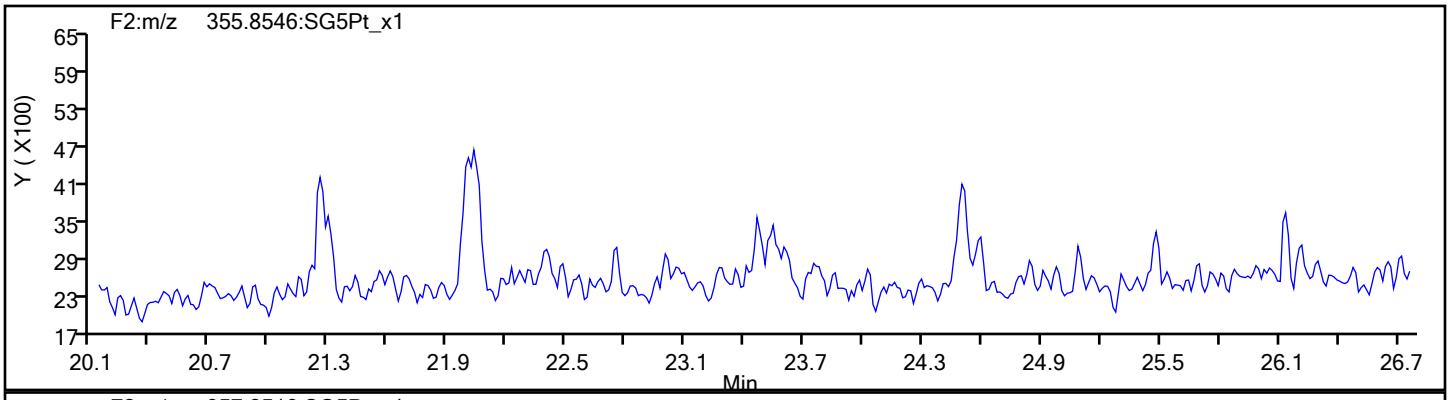

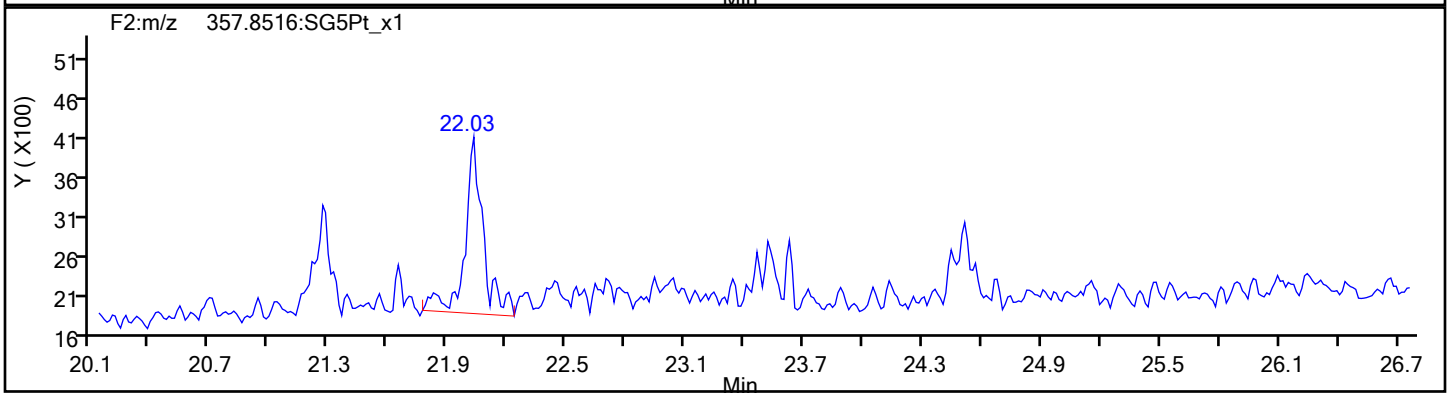

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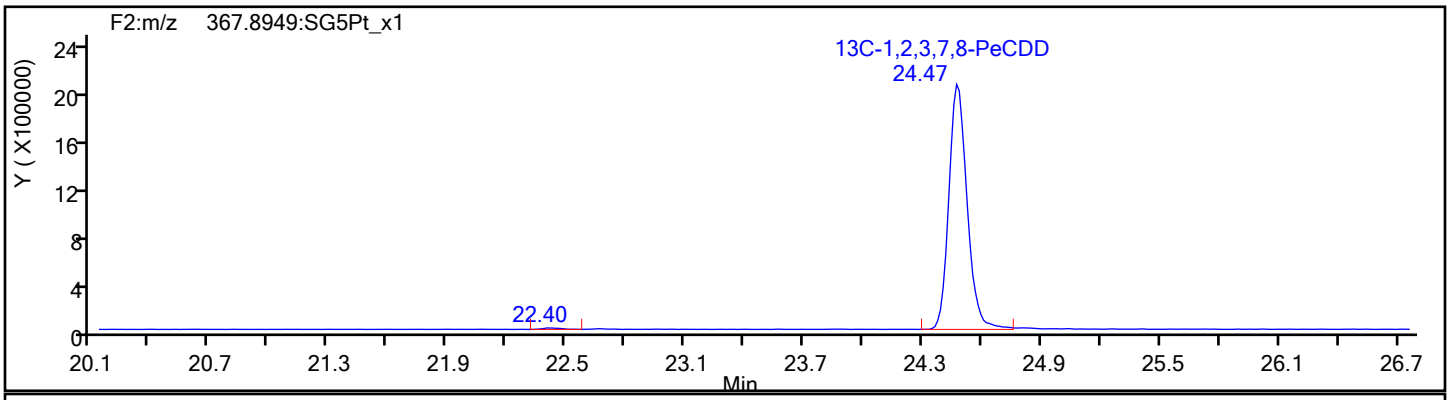

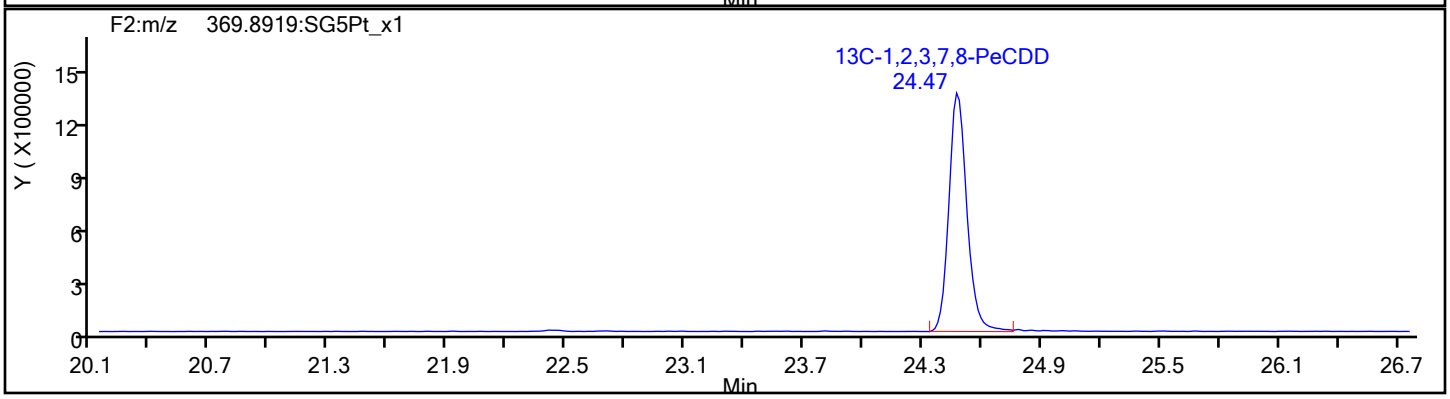

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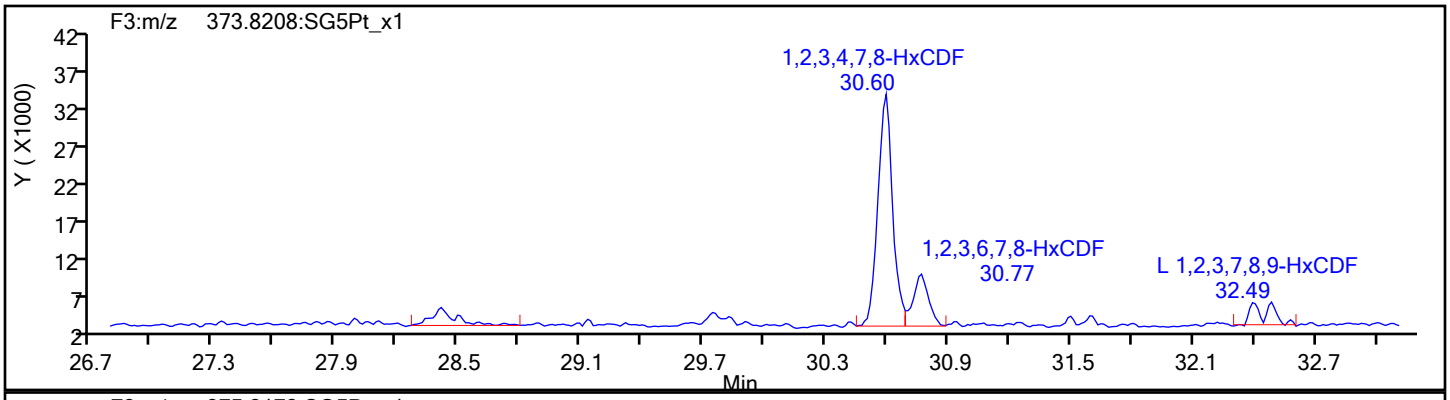

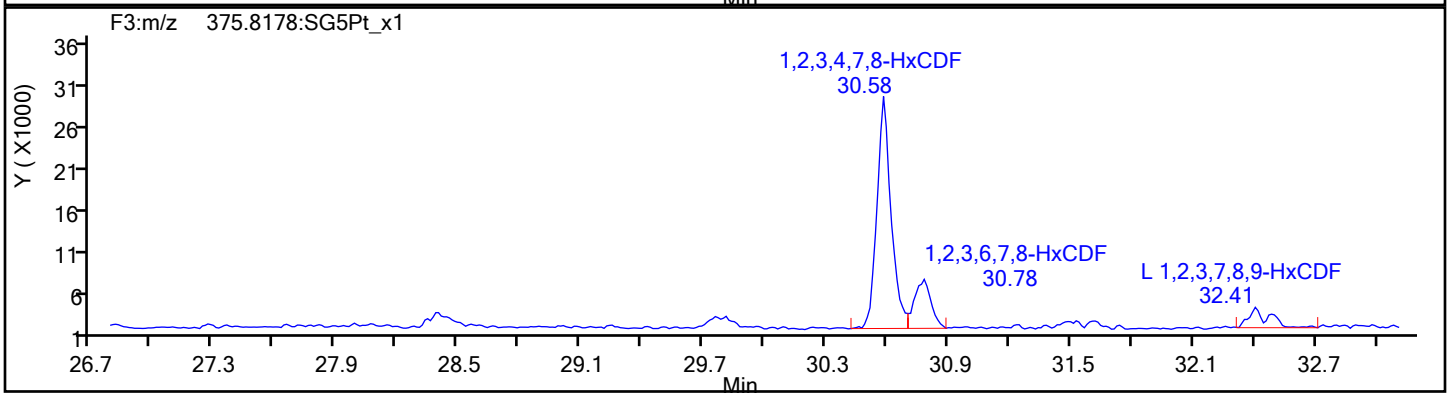

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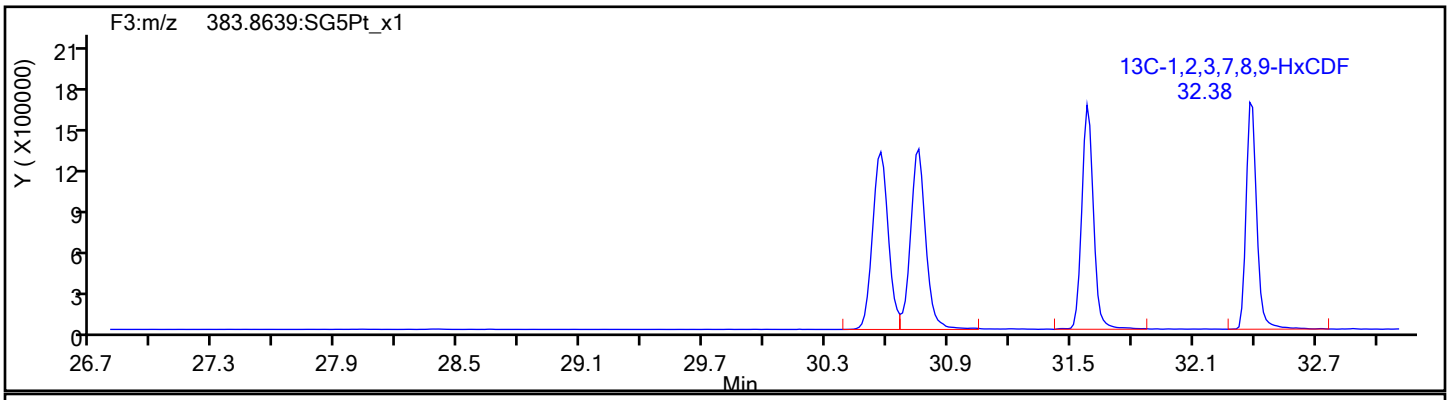

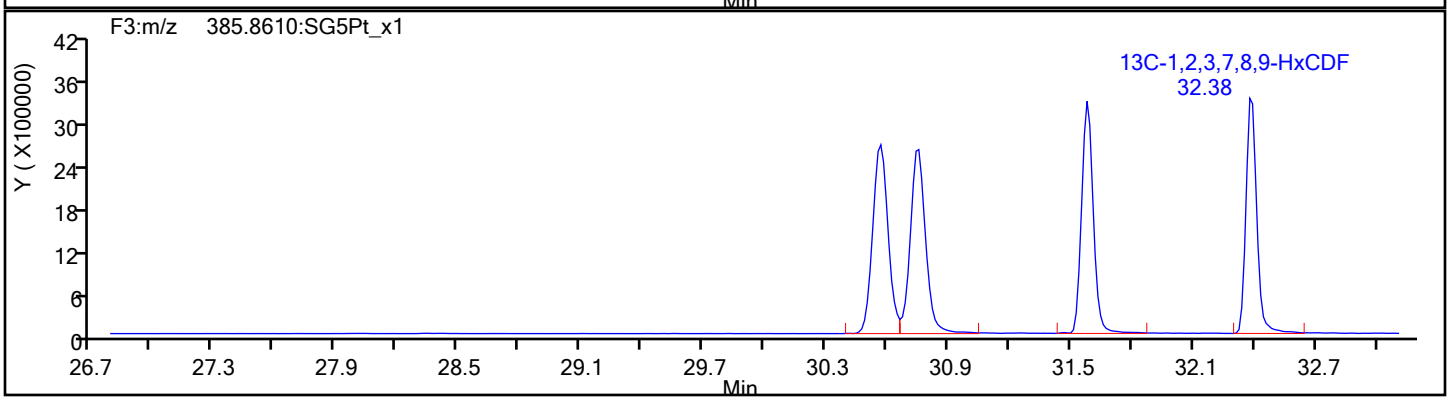

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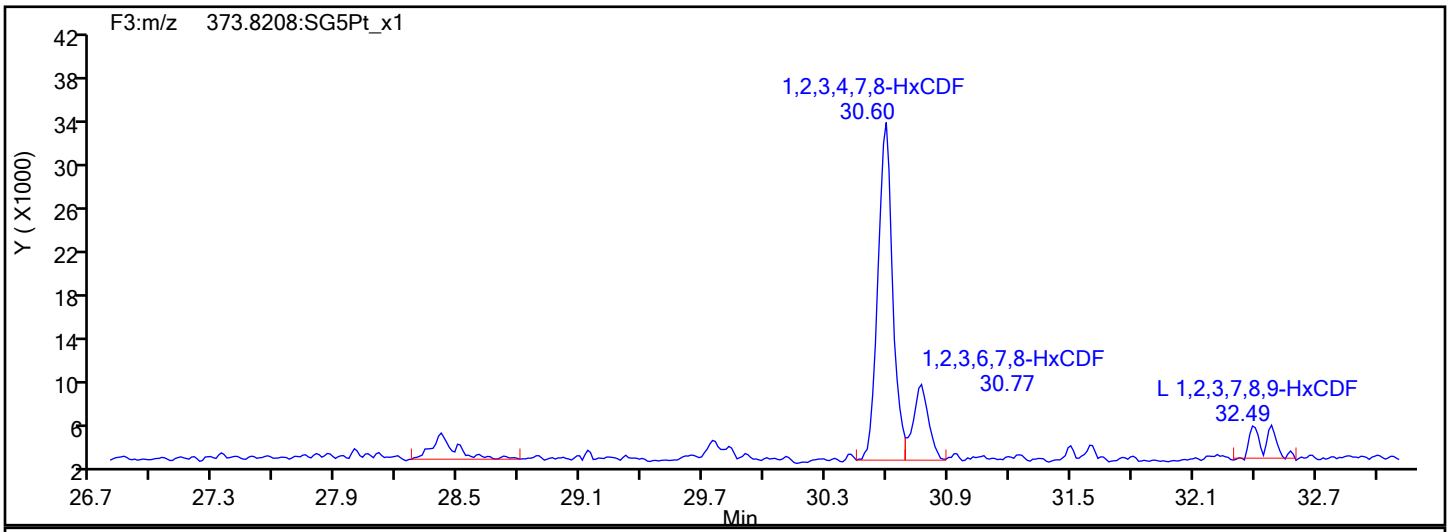
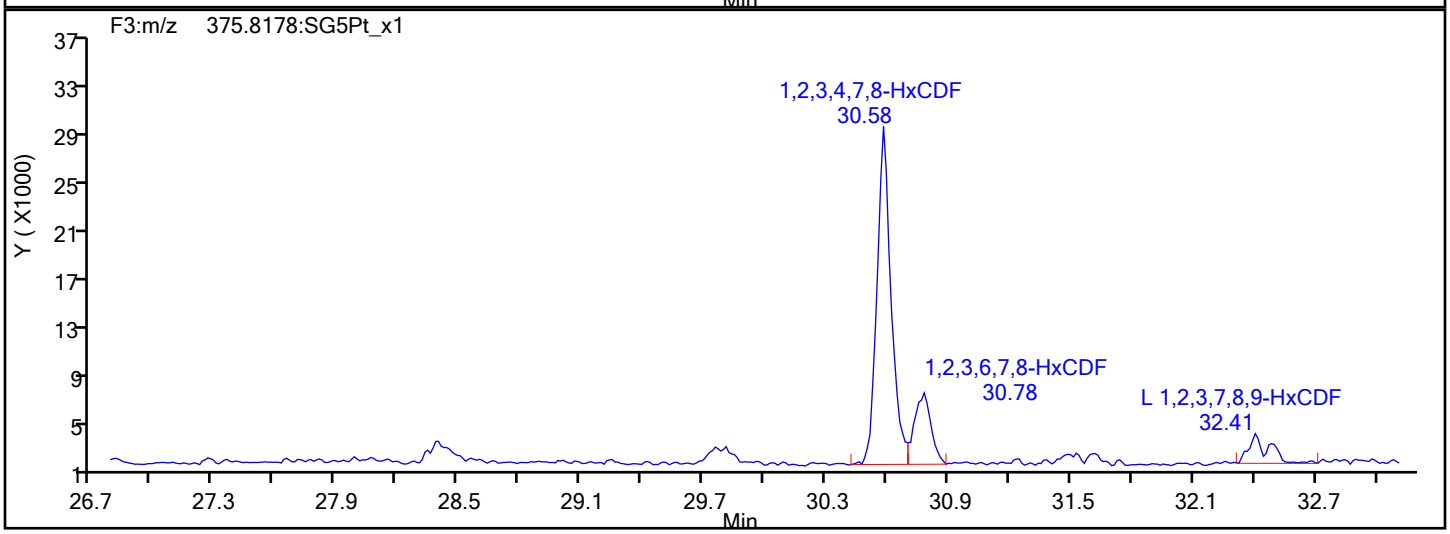
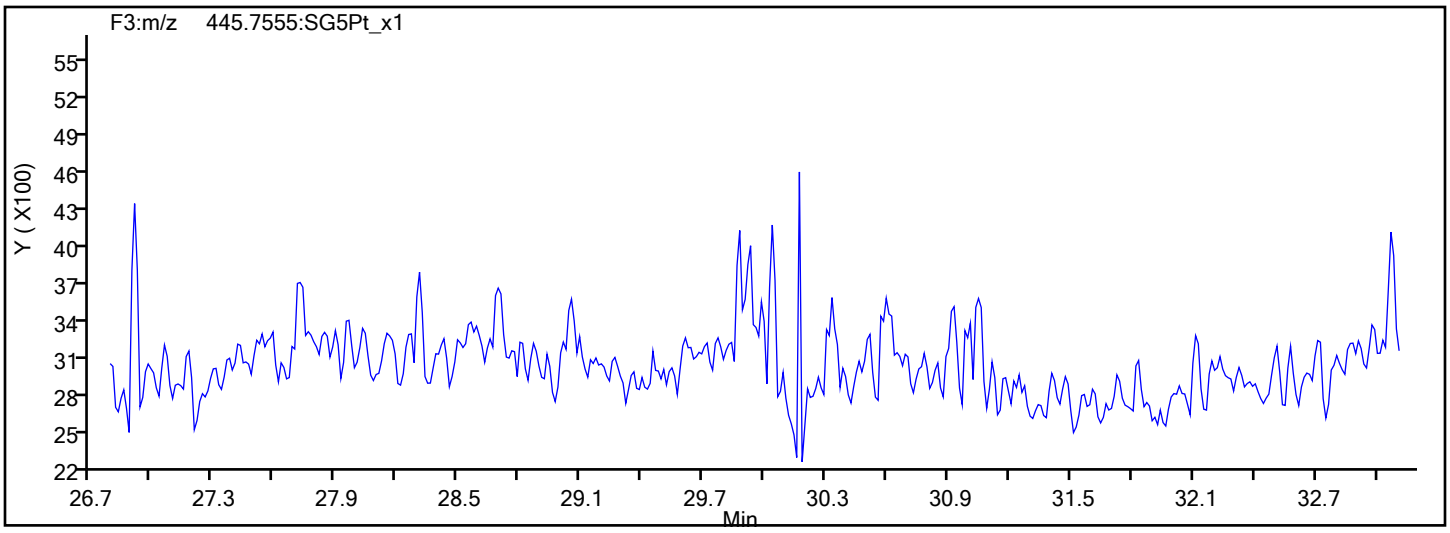




HxCDF Interference Mass



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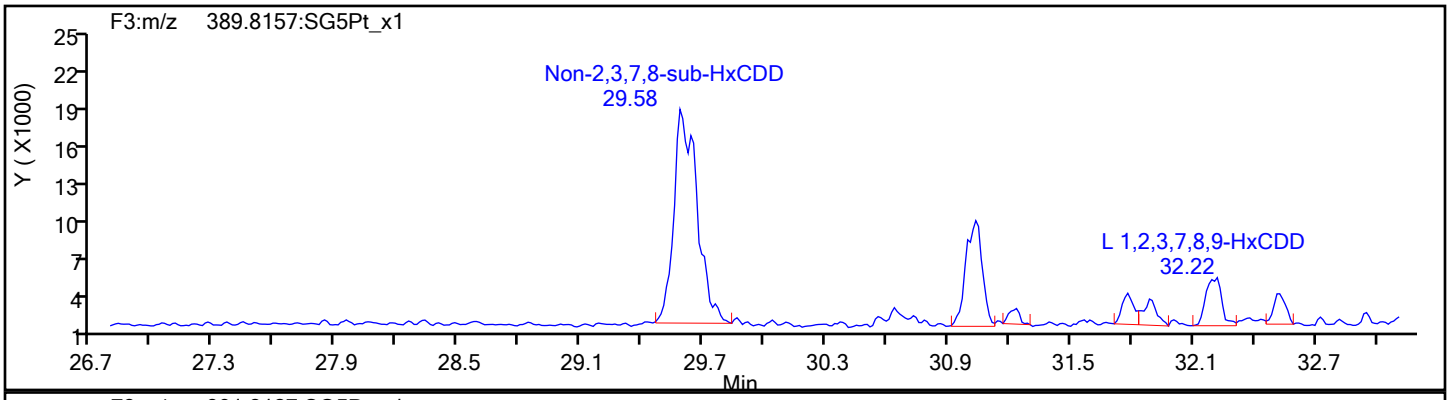
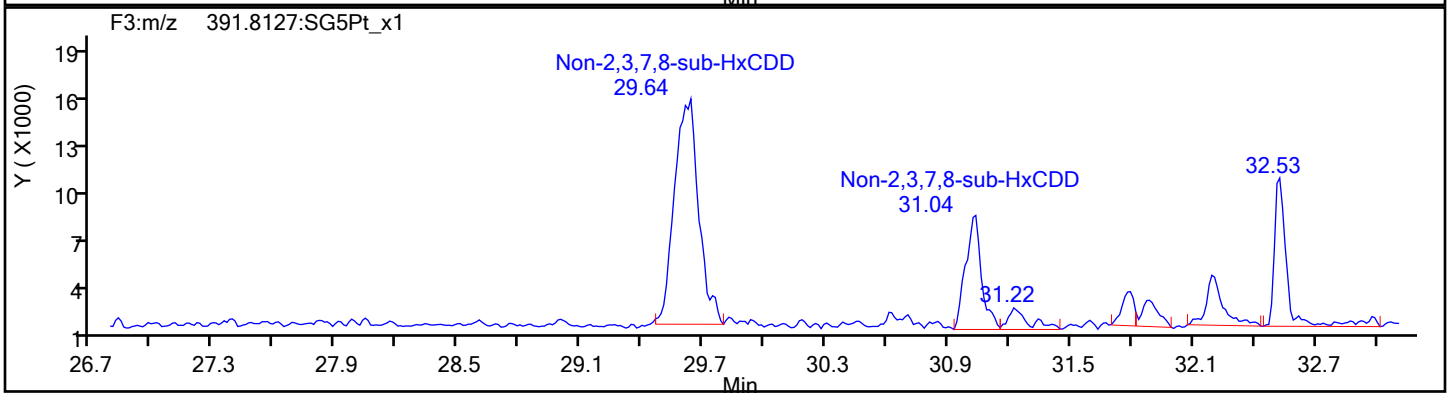
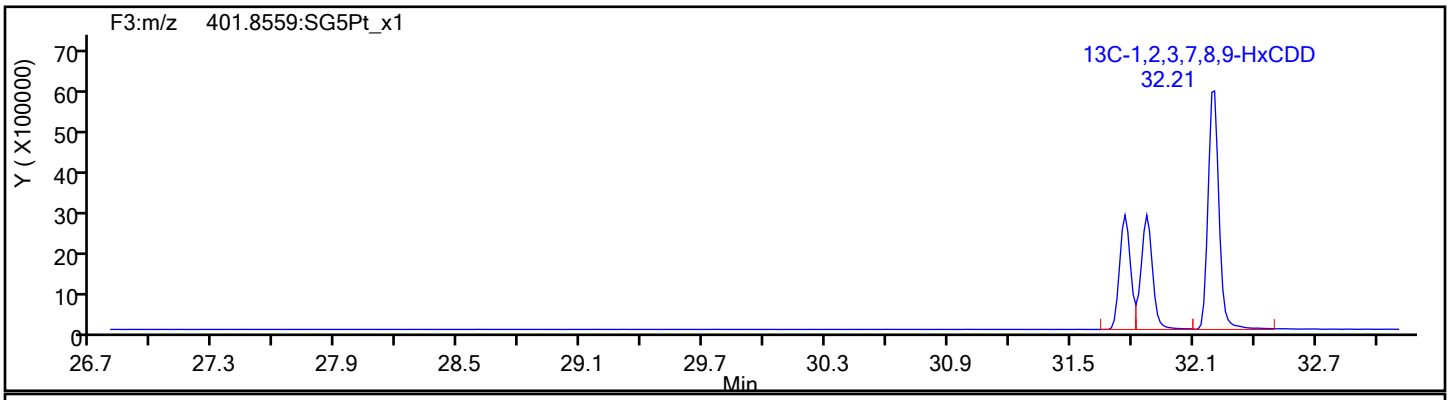
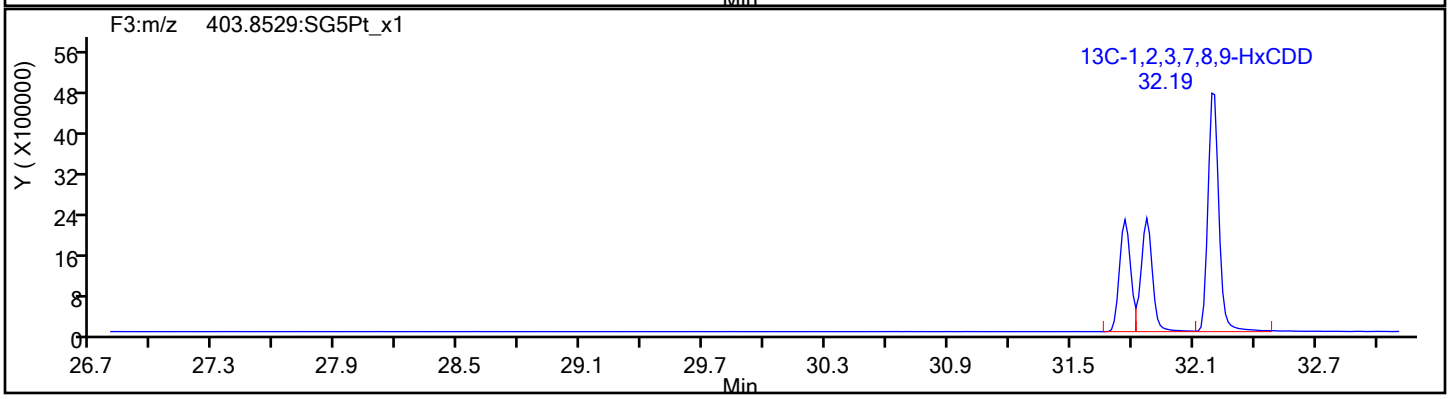




HxCDD Standards





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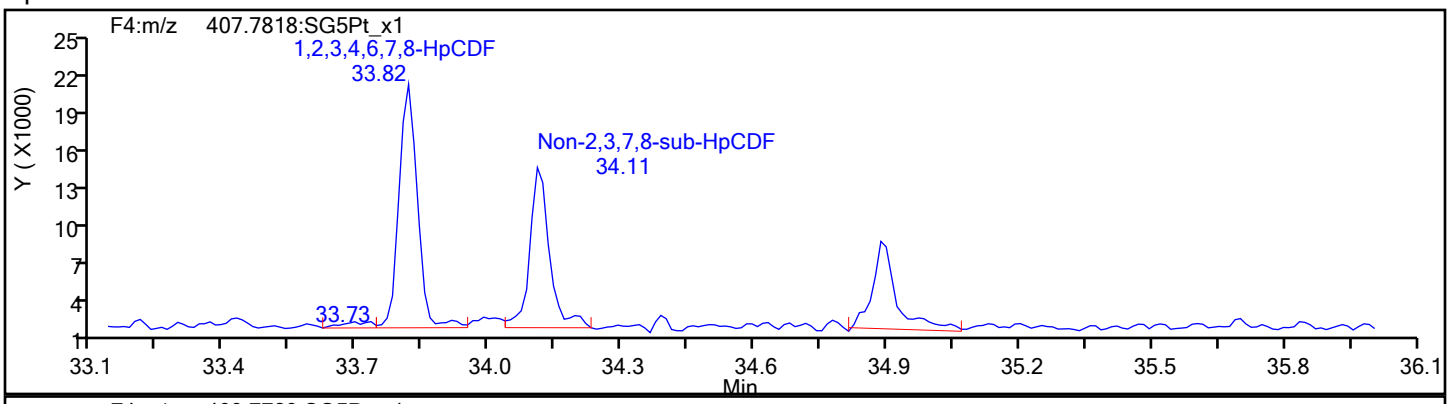

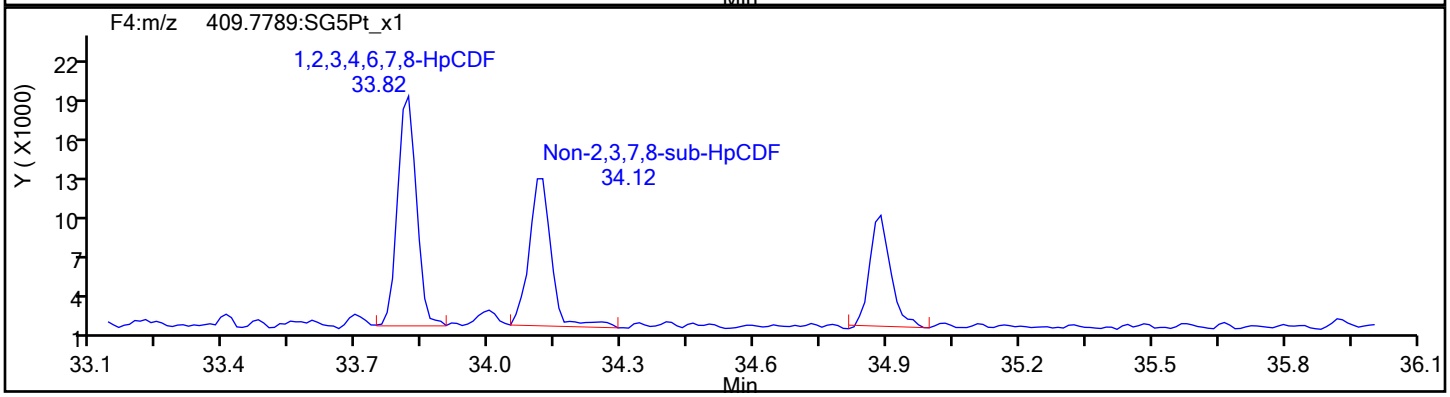

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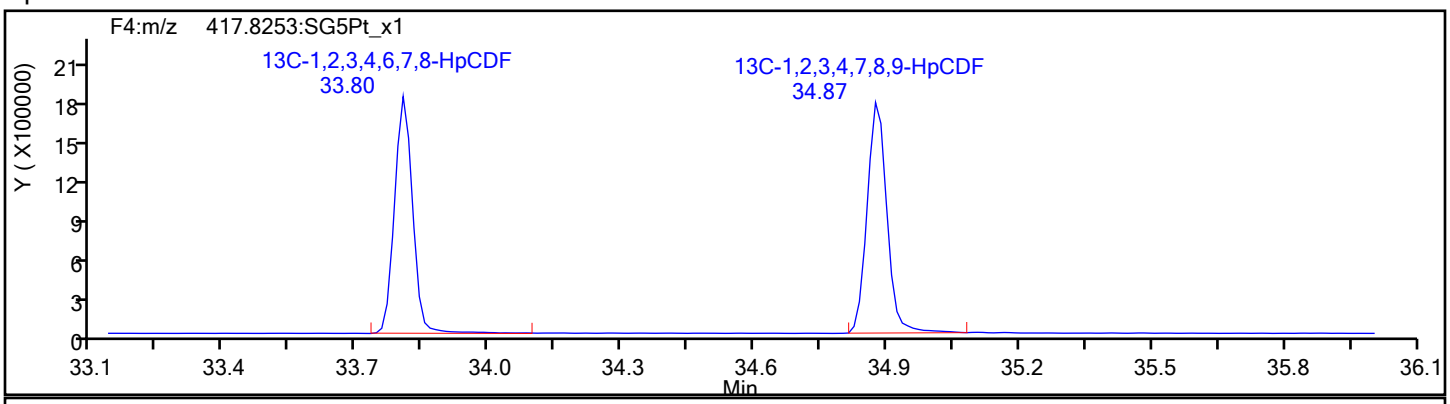

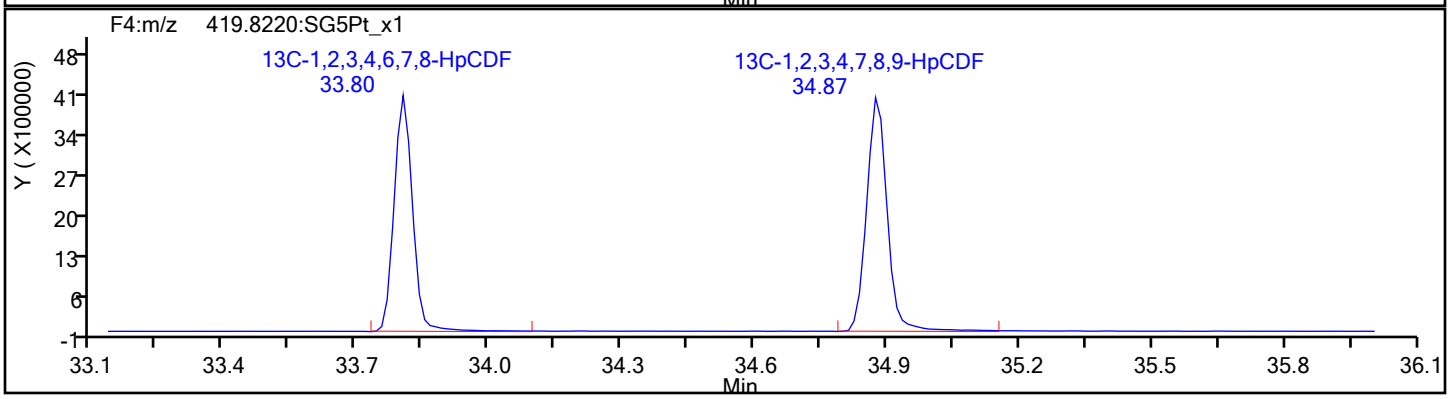

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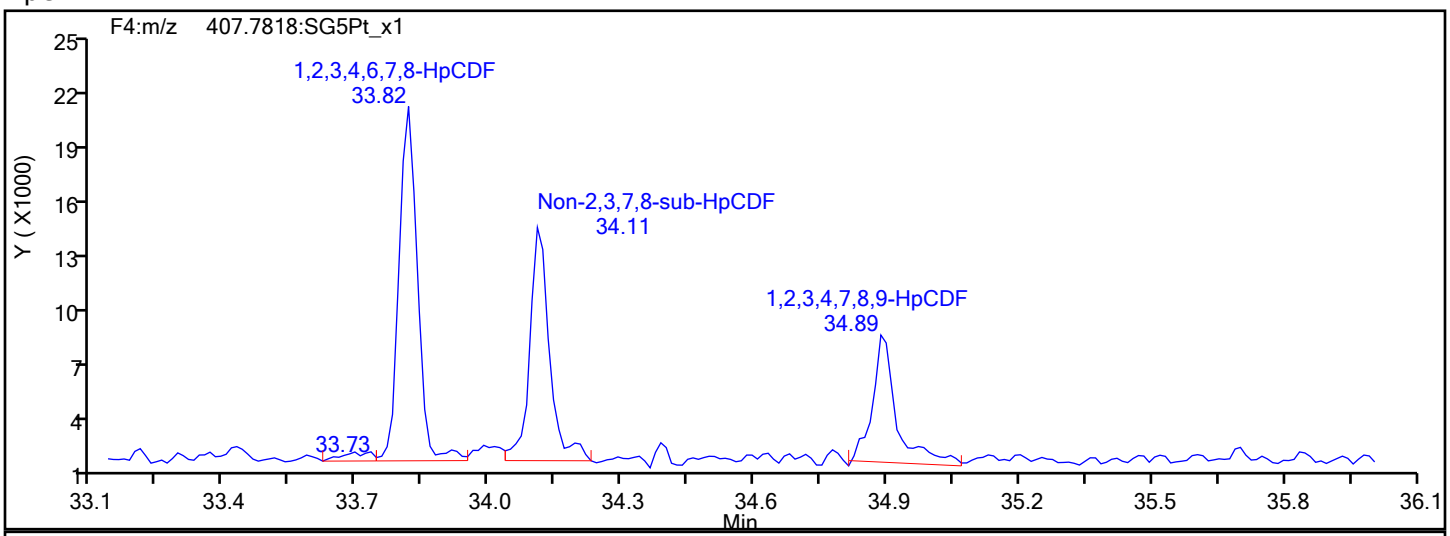
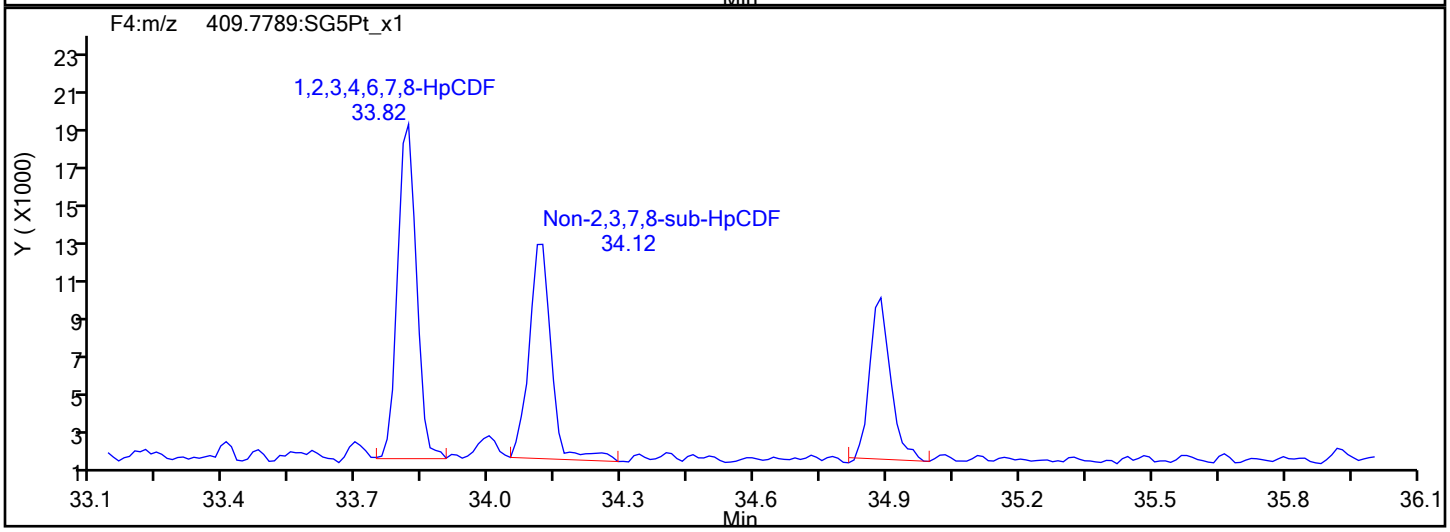
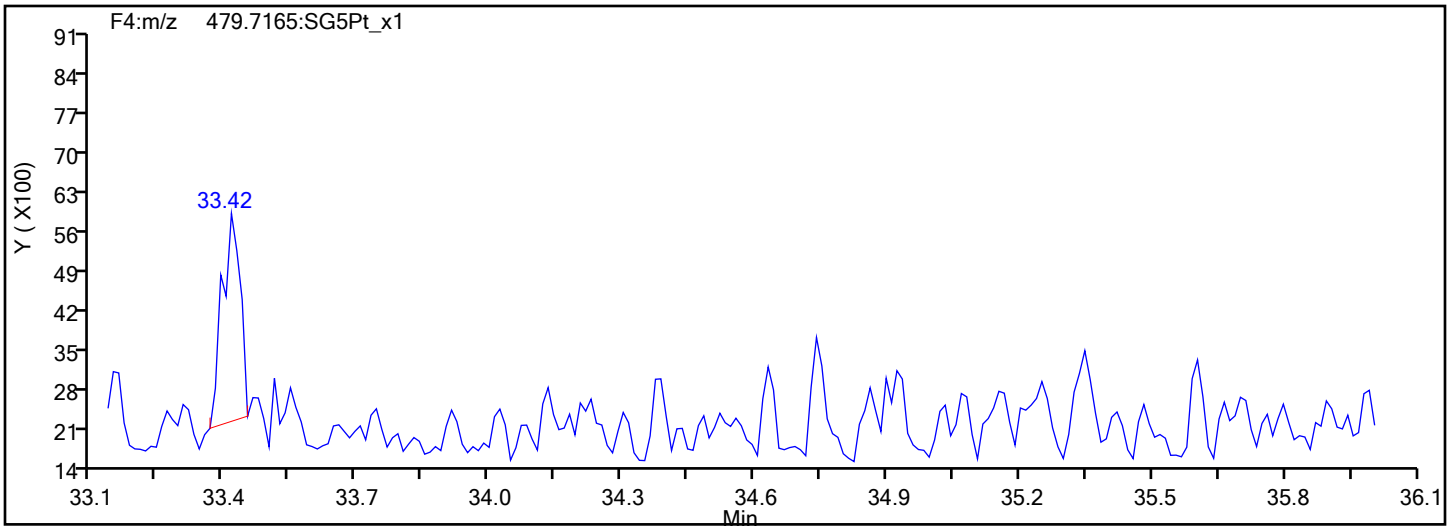
HpCDF





HpCDF Interference Mass



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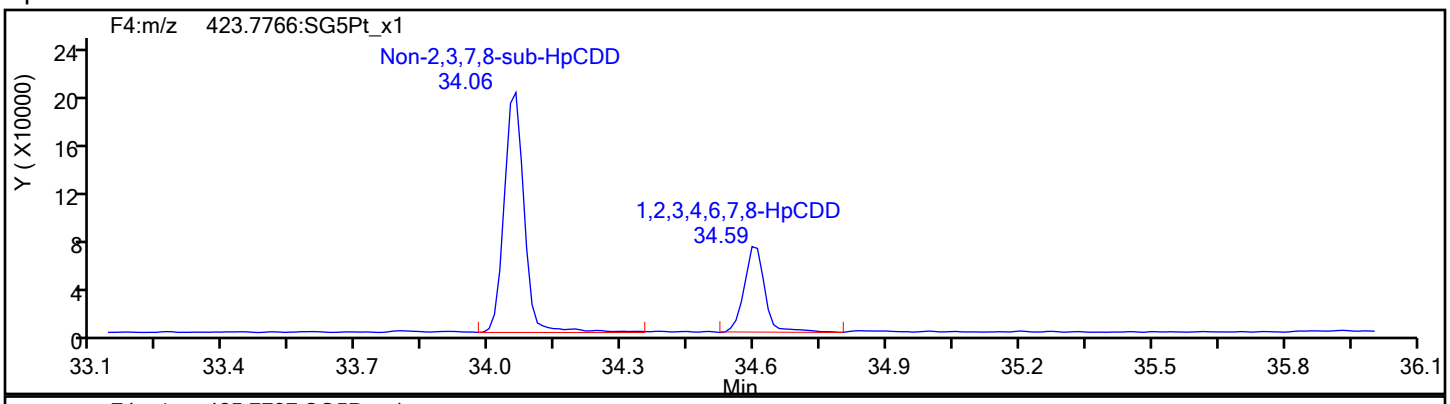

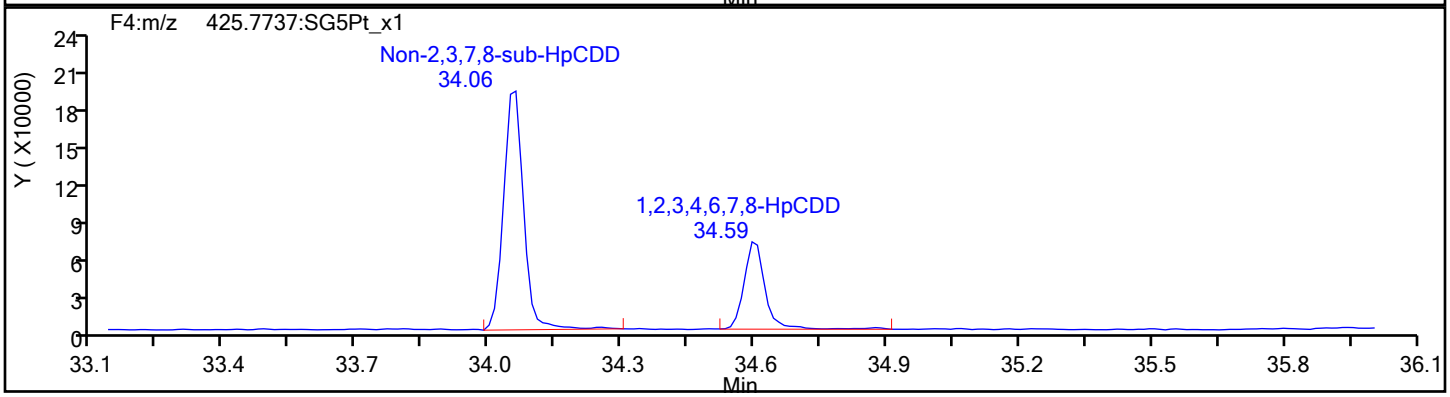

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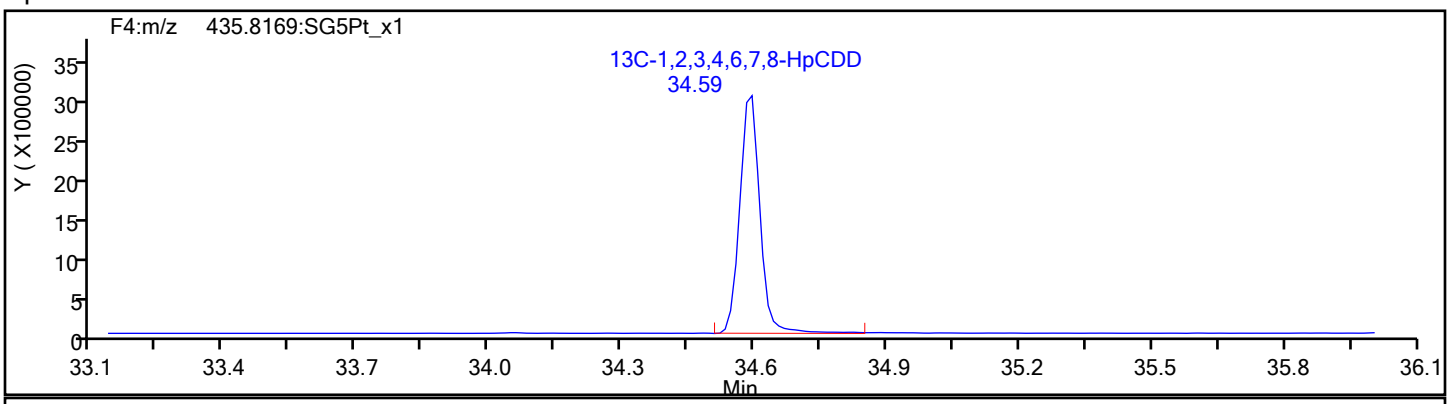

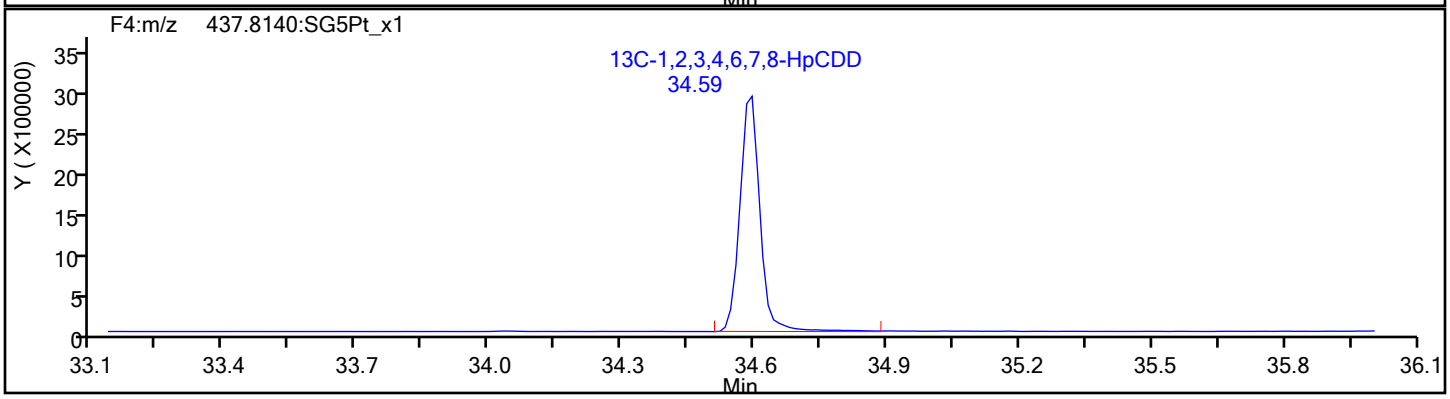

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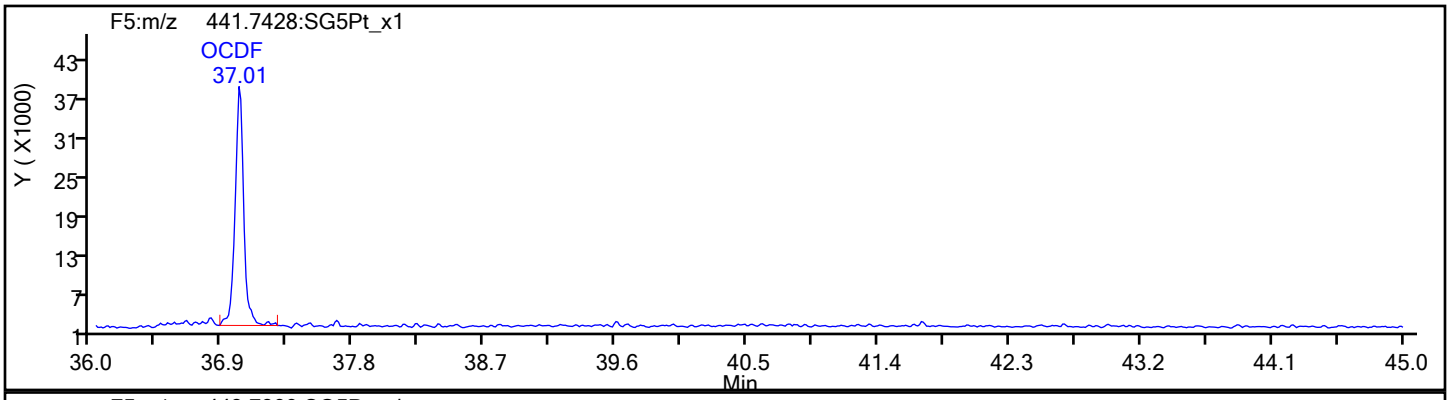

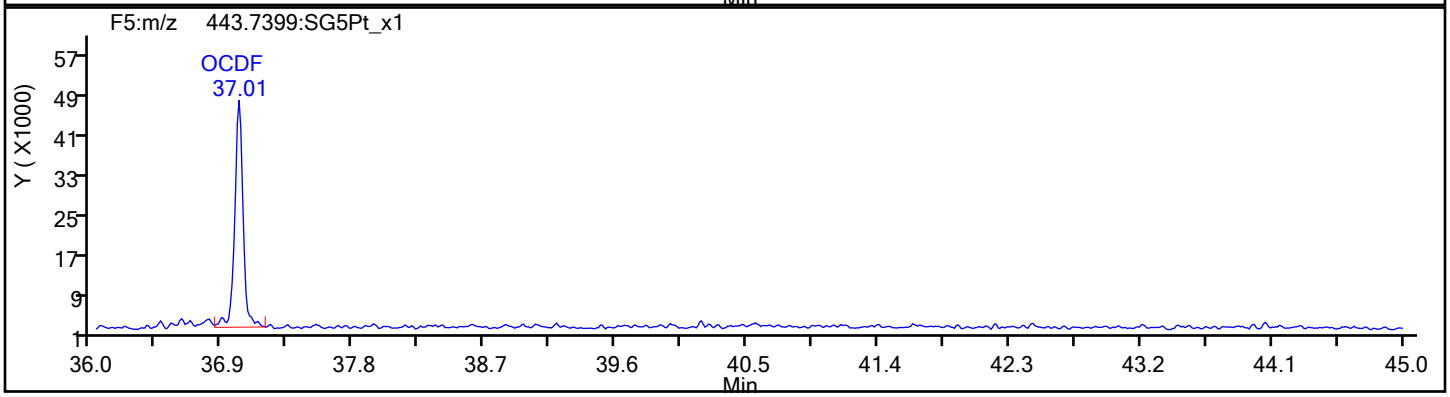

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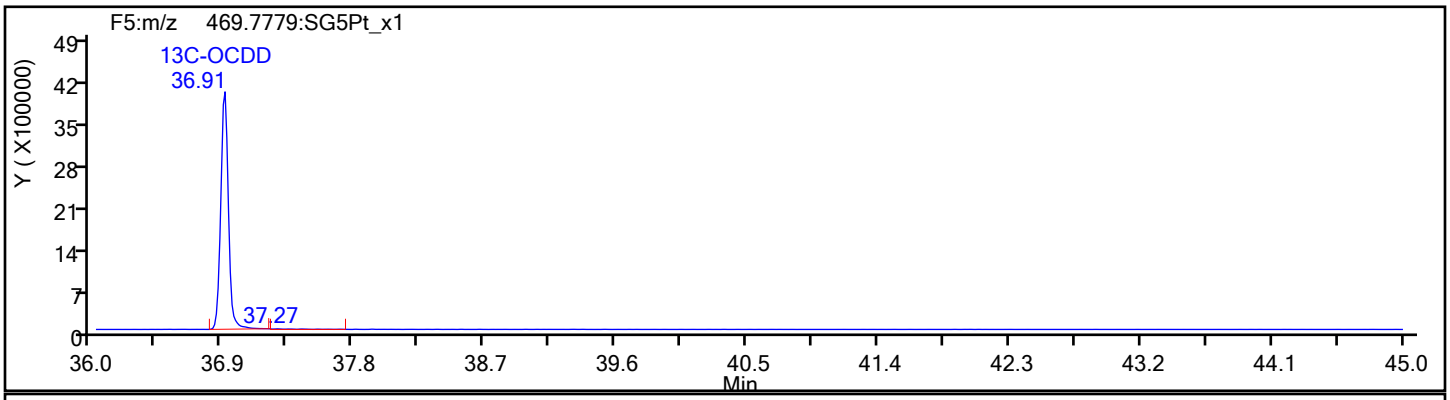

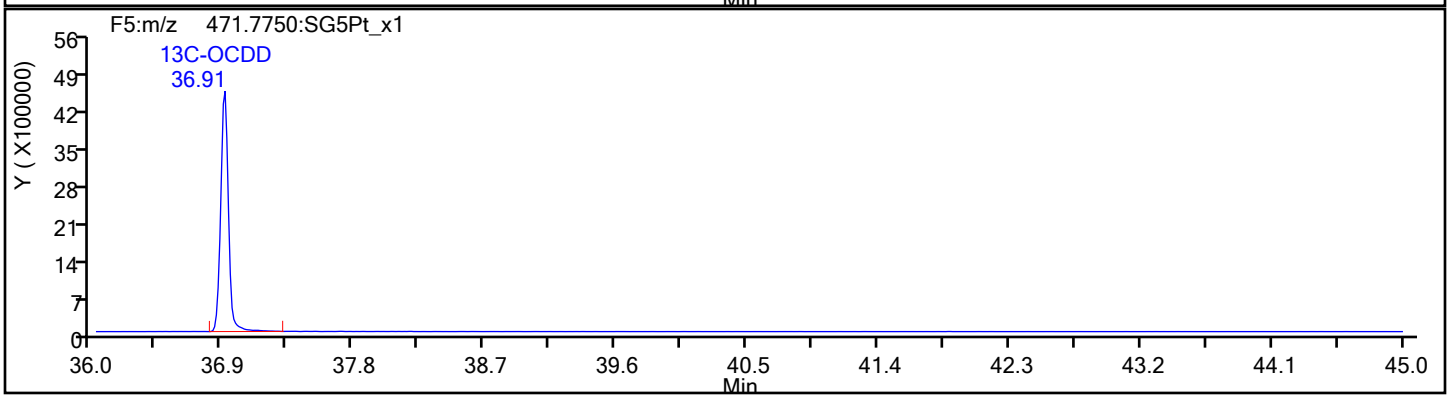

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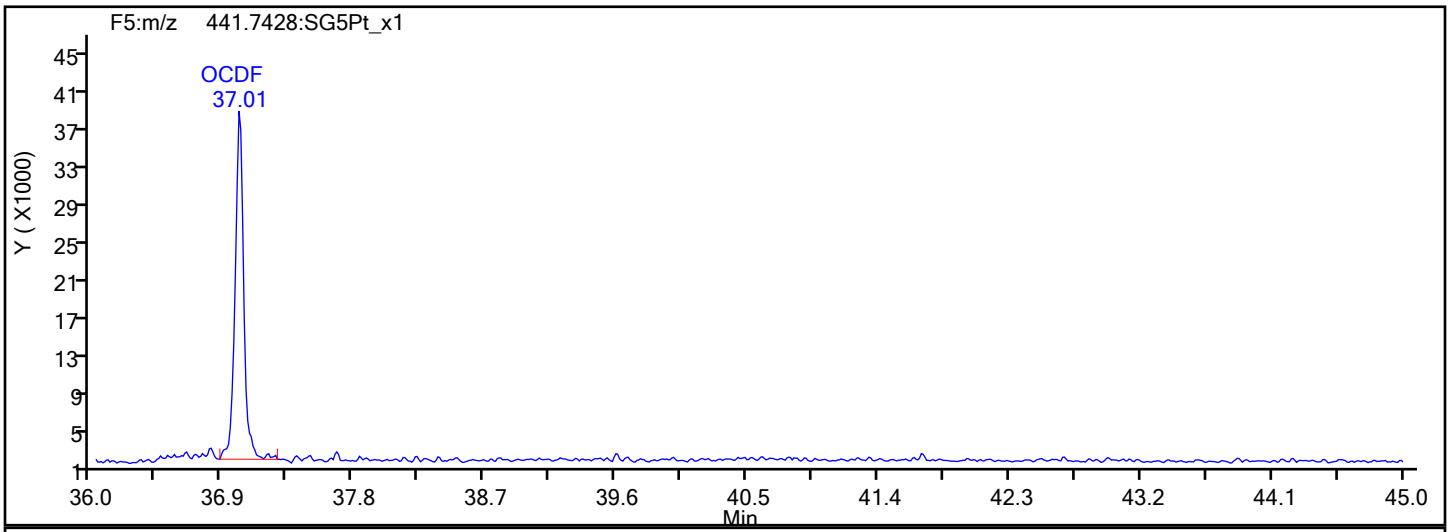
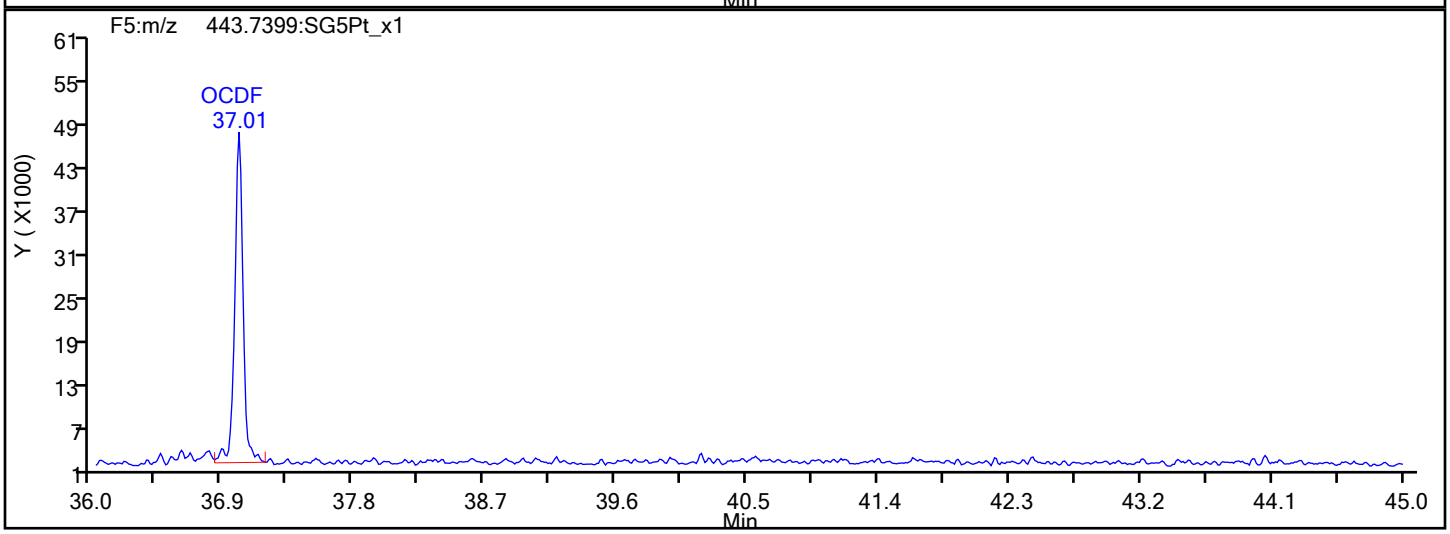
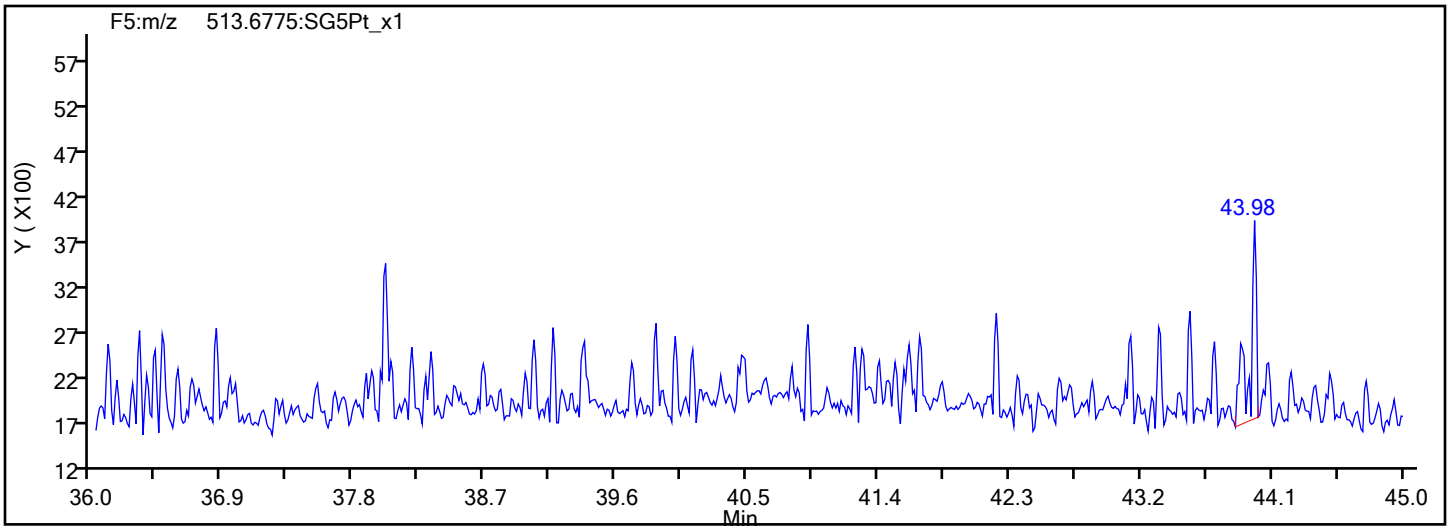




OCDF Interference Mass



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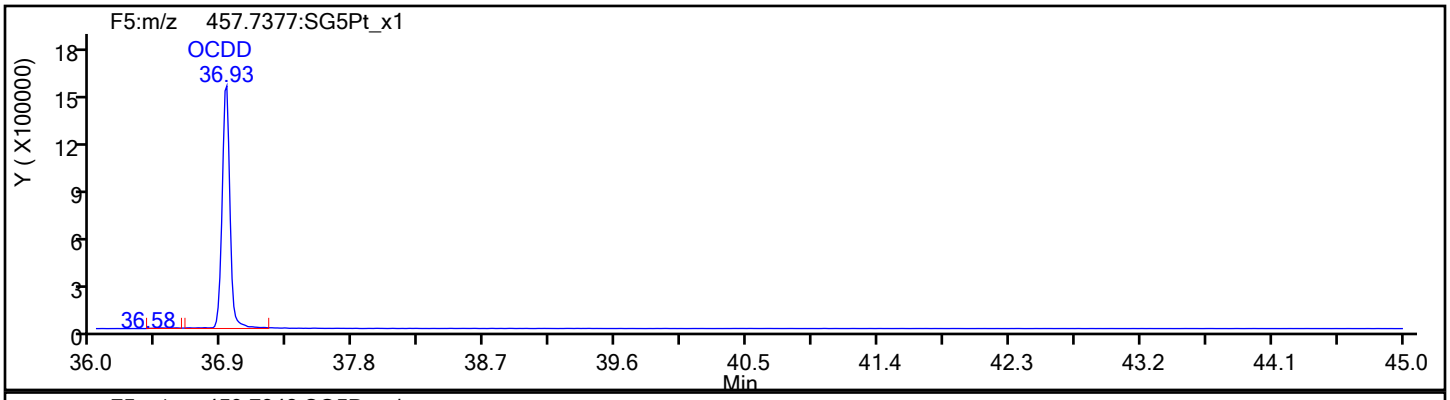
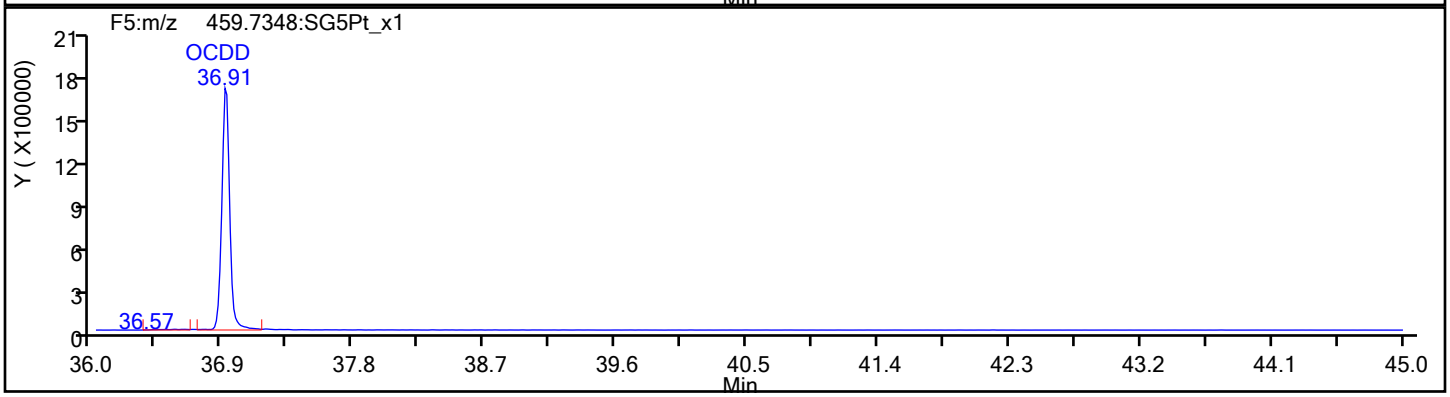
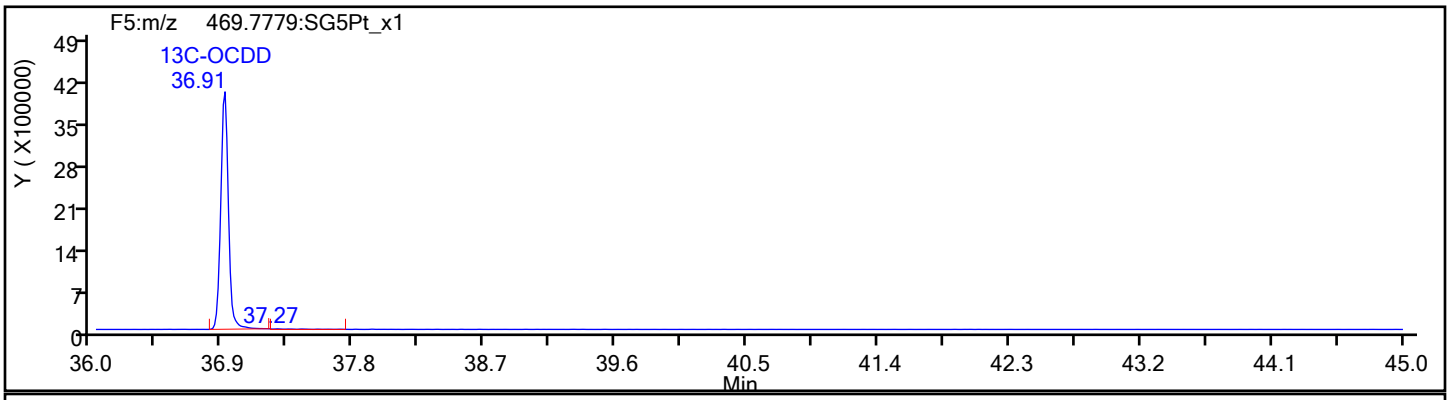
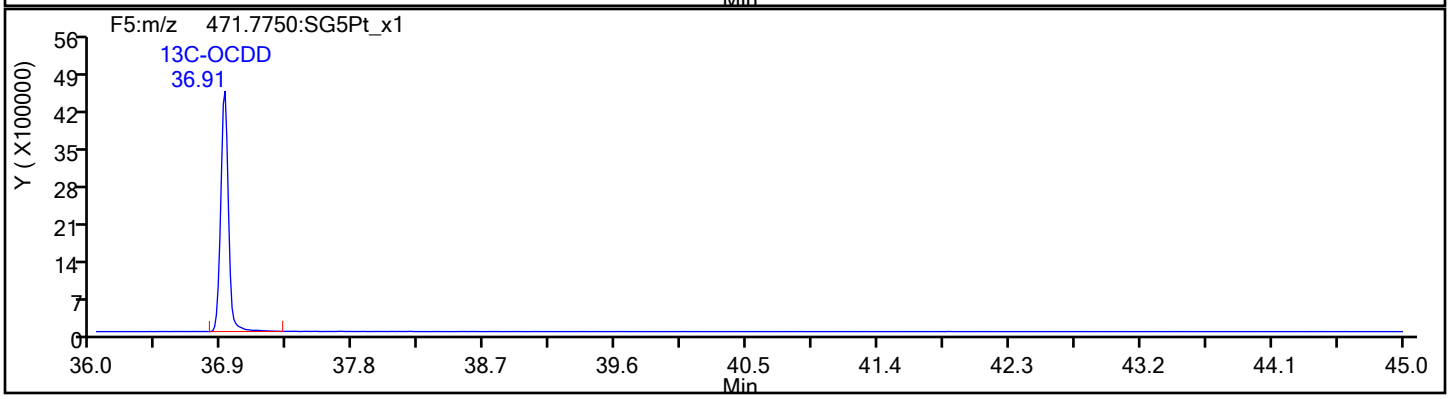
OCDD





OCDD Standards

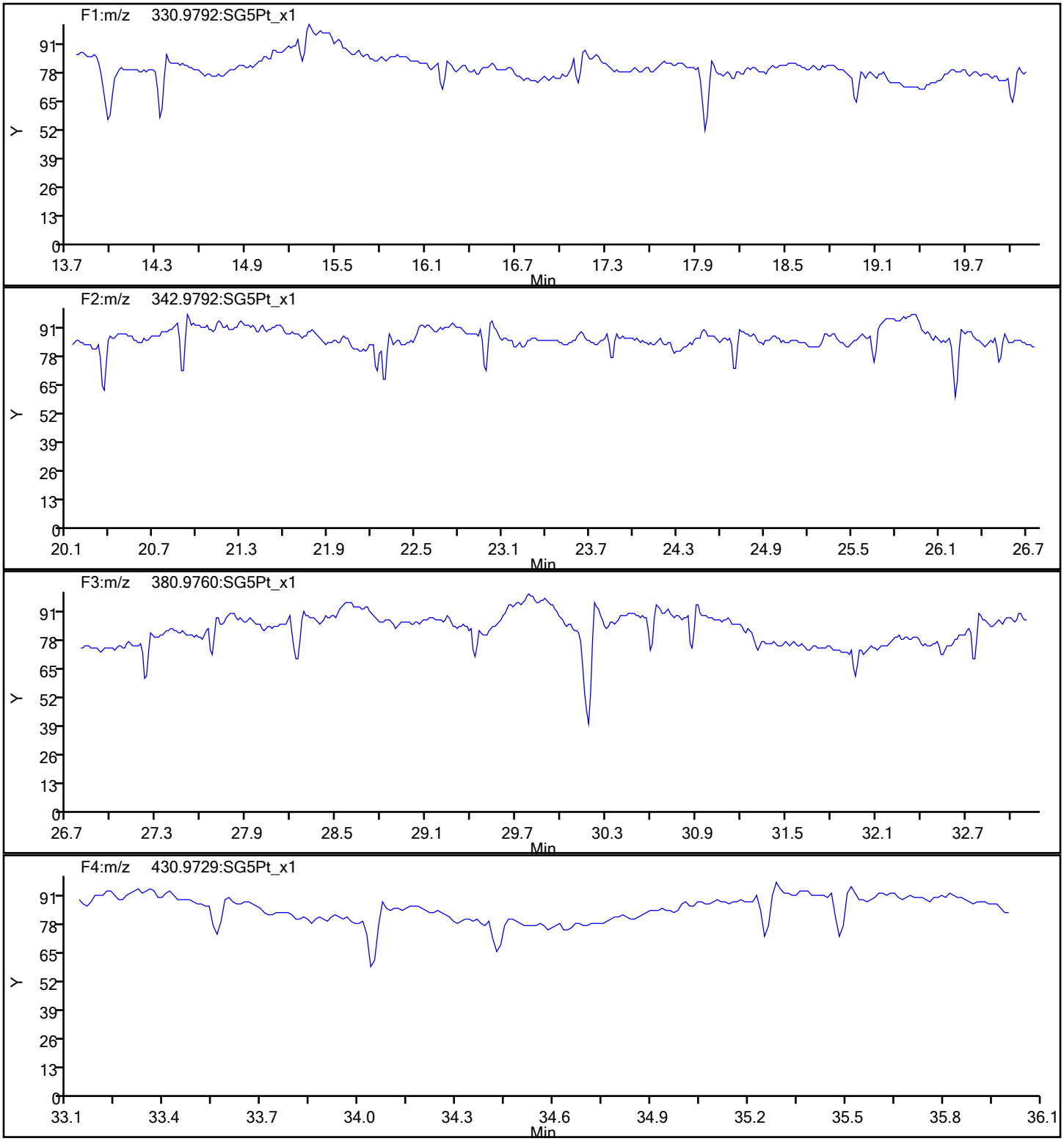




Report Date: 16-Dec-2019 08:45:30 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

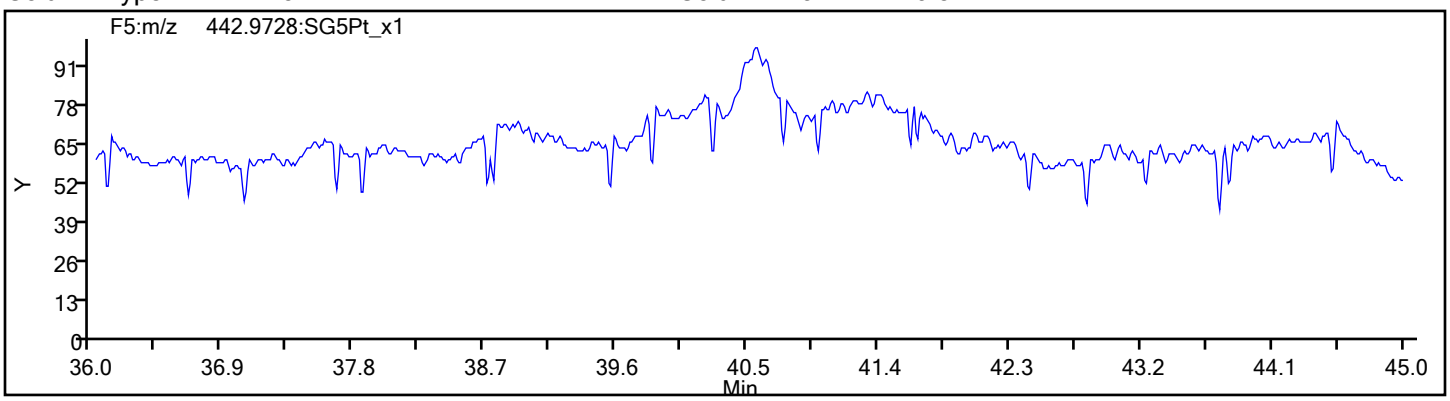
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 08:45:30 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_7.d		
Injection Date:	13-Dec-2019 16:21:47	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345335	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (2-4) RA Lab Sample ID: 320-56911-7 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_008.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/16/2019 23:51

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 21.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	44		1.3	0.29

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	55		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	98		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Sample Type: Client
Inject. Date: 16-Dec-2019 23:51:39 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-7-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:01

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.379	89800548	0.76	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.572	66450882	0.79	1.3379	55.3	55.3	0.2639	0.2639	55.31	
2,3,7,8-TCDF	16.586	9684656	0.78	0.8389	17.4	17.4	0.1146	0.1146		
D 13C-2,3,7,8-TCDD	15.132	44017149	0.77	0.9388	52.2	52.2	0.7012	0.7012	52.21	
2,3,7,8-TCDD	15.146	2264876	0.80	1.1538	4.460	4.460	0.1107	0.1107		
$ 37Cl4-2,3,7,8-TCDD	15.146	41591212		1.1816	39.2	39.2	0.0624	0.0624	97.99	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d
Lims ID: 320-56911-A-7-A
Client ID: 11187072-120819-BN-SJSSA09 (2-4)
Sample Type: Client
Inject. Date: 16-Dec-2019 23:51:39 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-7-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:01

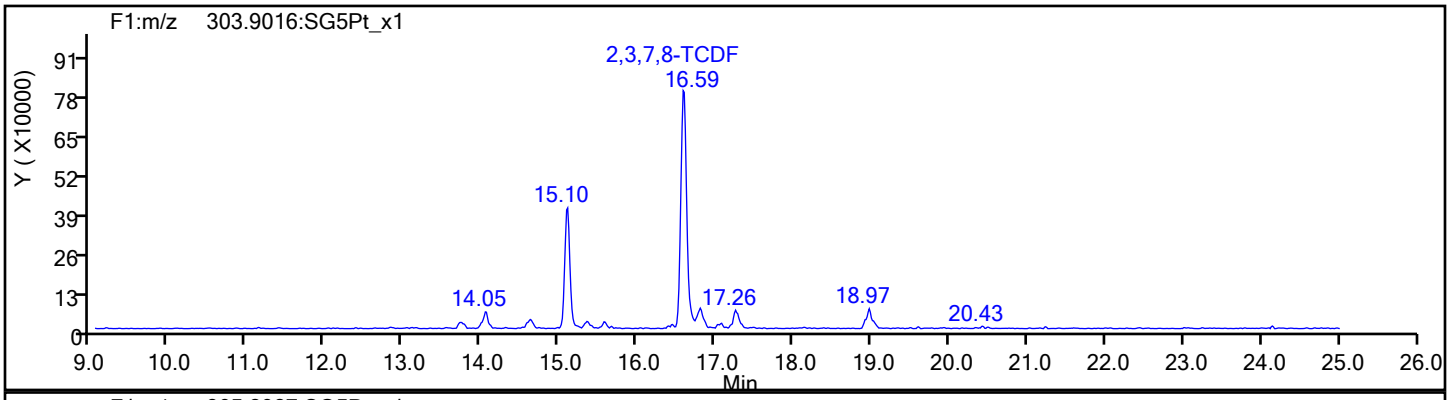
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.379	15.383	0		38799838	8398713	30017	75042	280		
333.9339	15.379	15.383	0		51000710	10965571	20970	52425	523	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.572	16.576	0	1.078	29228006	5577332	15191	37977	367		
317.9389	16.572	16.576	0	1.078	37222876	7375379	12153	30382	607	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.586	16.590	0	1.001	4234318	795007	1735	4337	458		
305.8987	16.586	16.590	0	1.001	5450338	1040409	3244	8110	321	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.132	15.122	1	0.984	19124216	4158642	30017	75042	139		
333.9339	15.132	15.122	1	0.984	24892933	5313847	20970	52425	253	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.146	15.149	0	1.001	1008051	179009	3067	7667	58		
321.8936	15.146	15.149	0	1.001	1256825	274954	1771	4427	155	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.146	15.149	0	0.985	41591212	8967152	5713	14282	1570		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

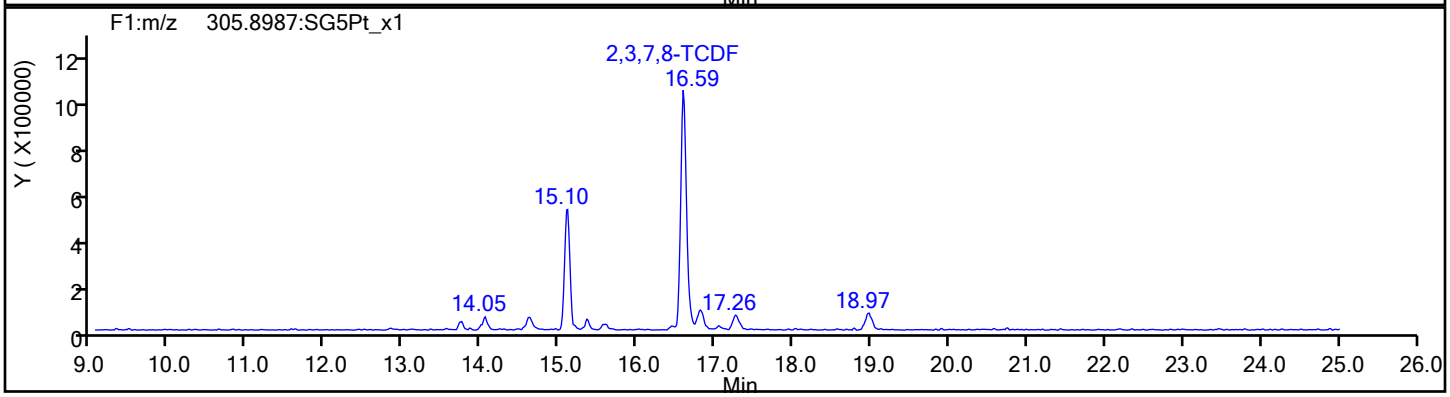
Report Date: 17-Dec-2019 09:38:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

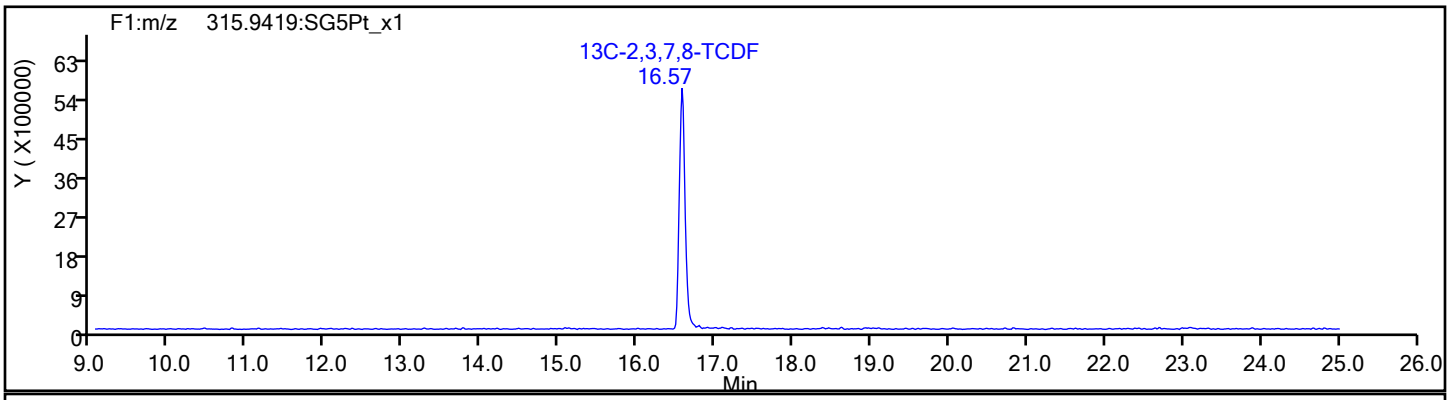
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d		
Injection Date:	16-Dec-2019 23:51:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345960	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

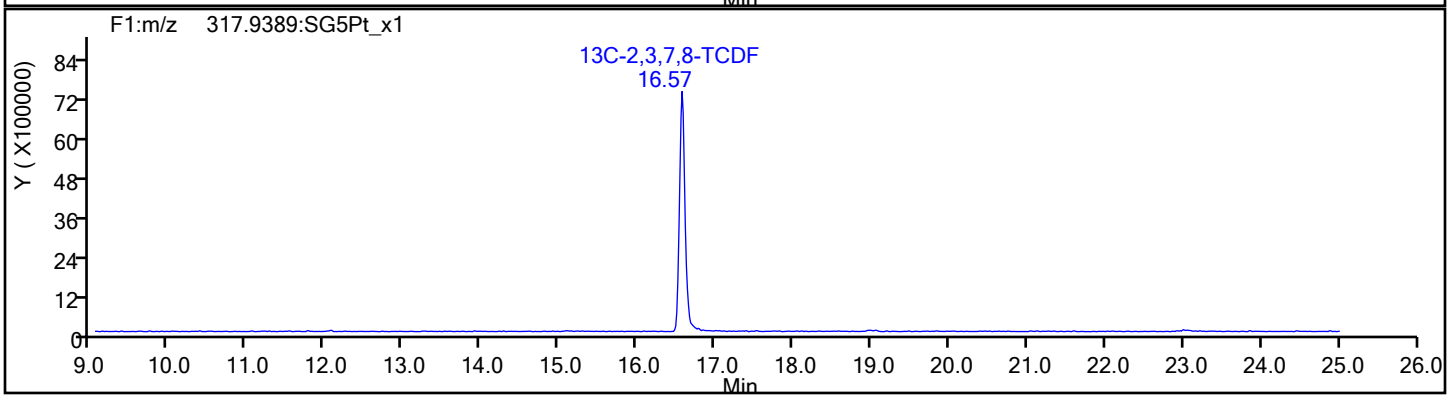
TCDF





TCDF Standards



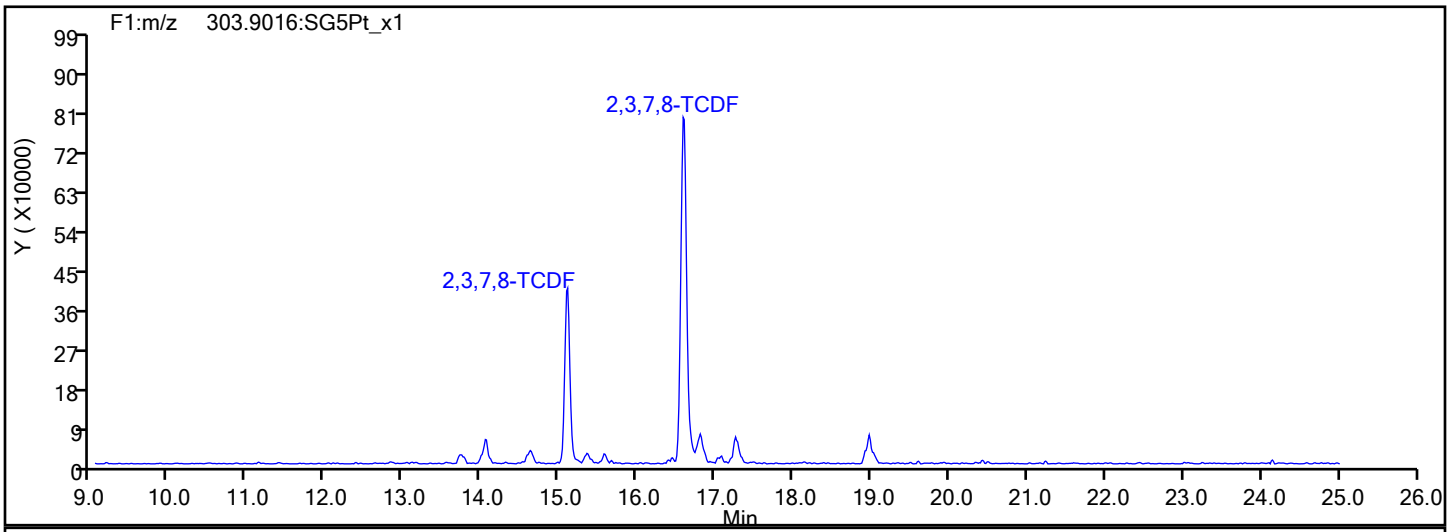


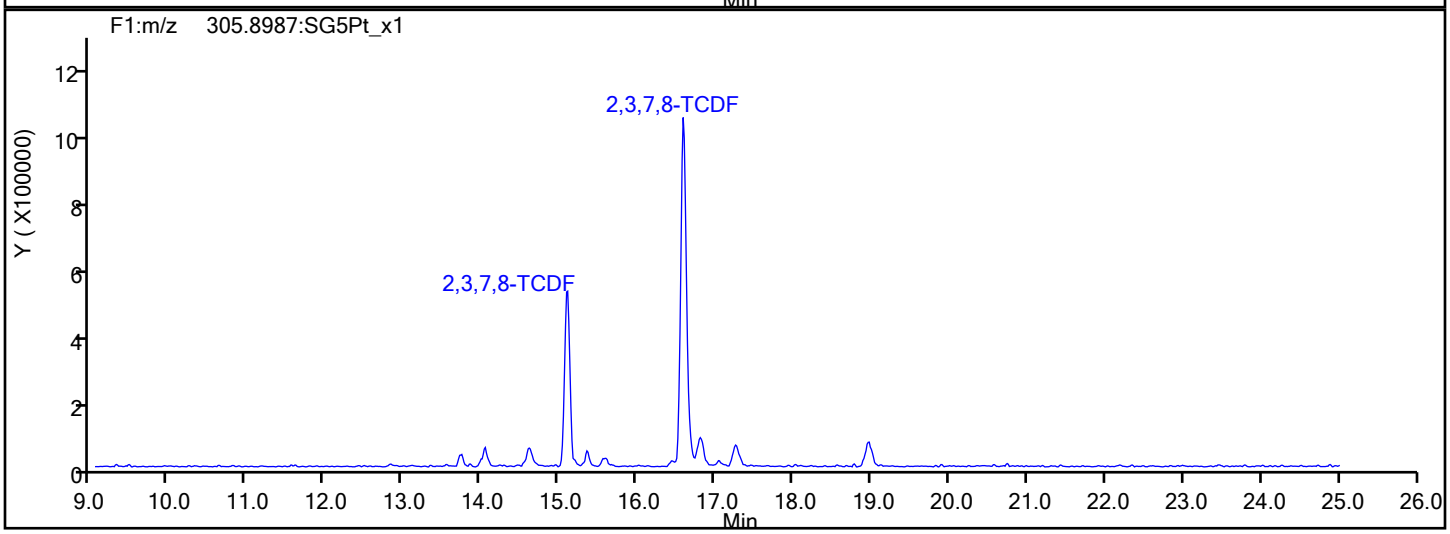
Report Date: 17-Dec-2019 09:38:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

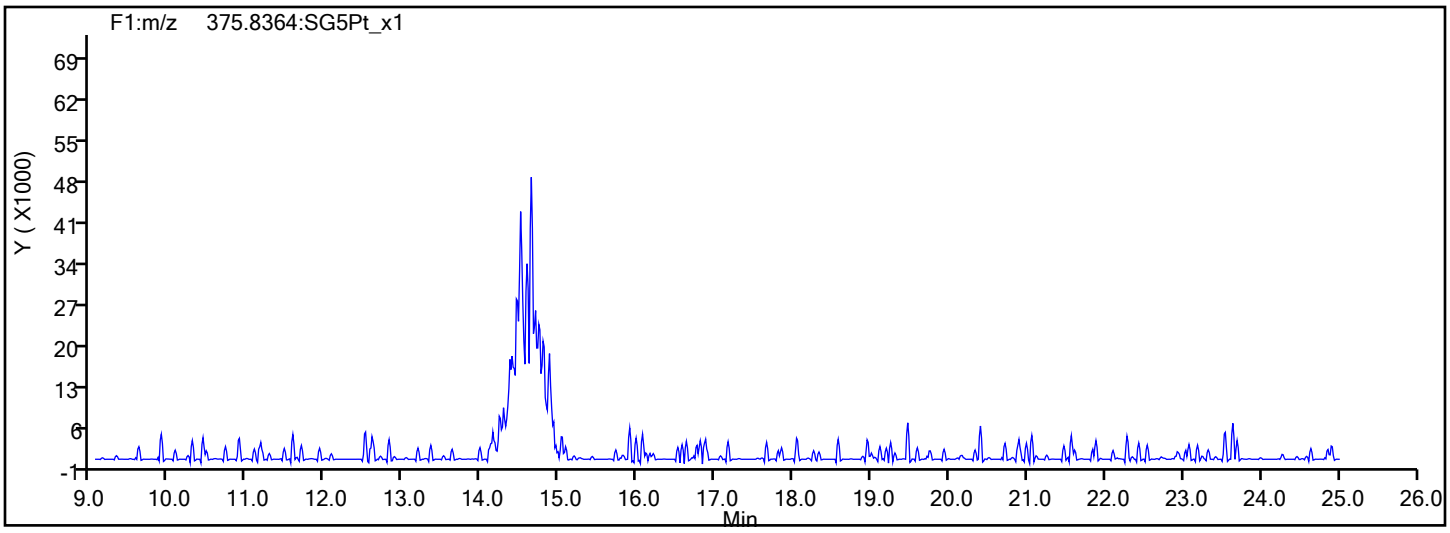
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d		
Injection Date:	16-Dec-2019 23:51:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345960	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

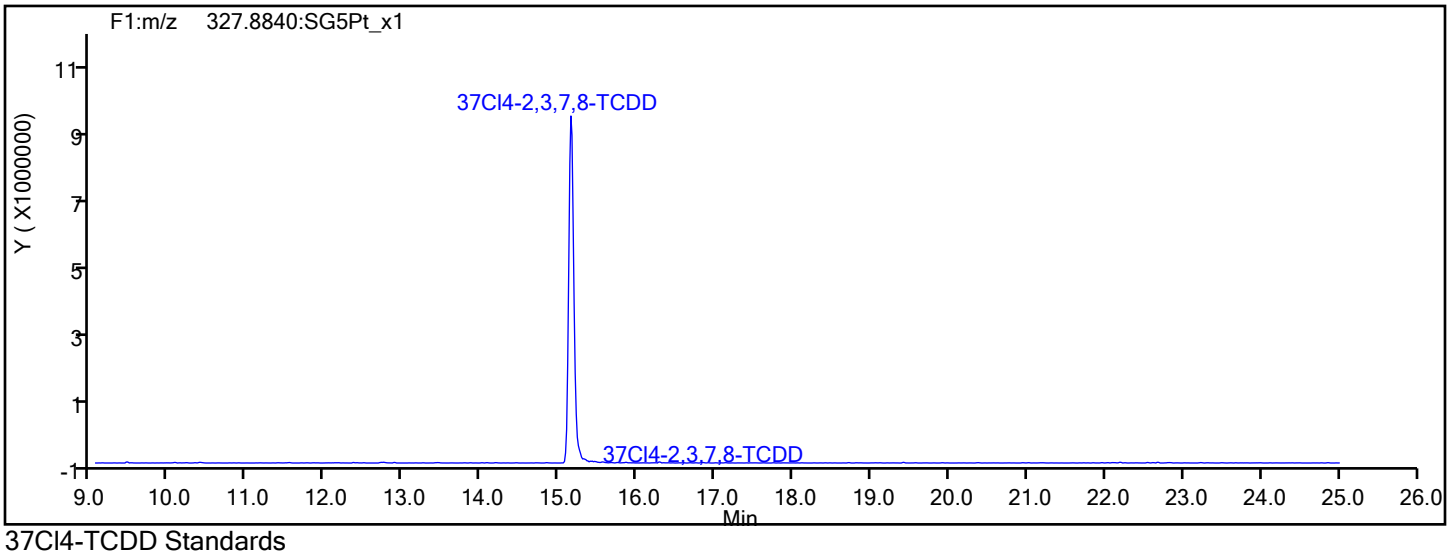


Report Date: 17-Dec-2019 09:38:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

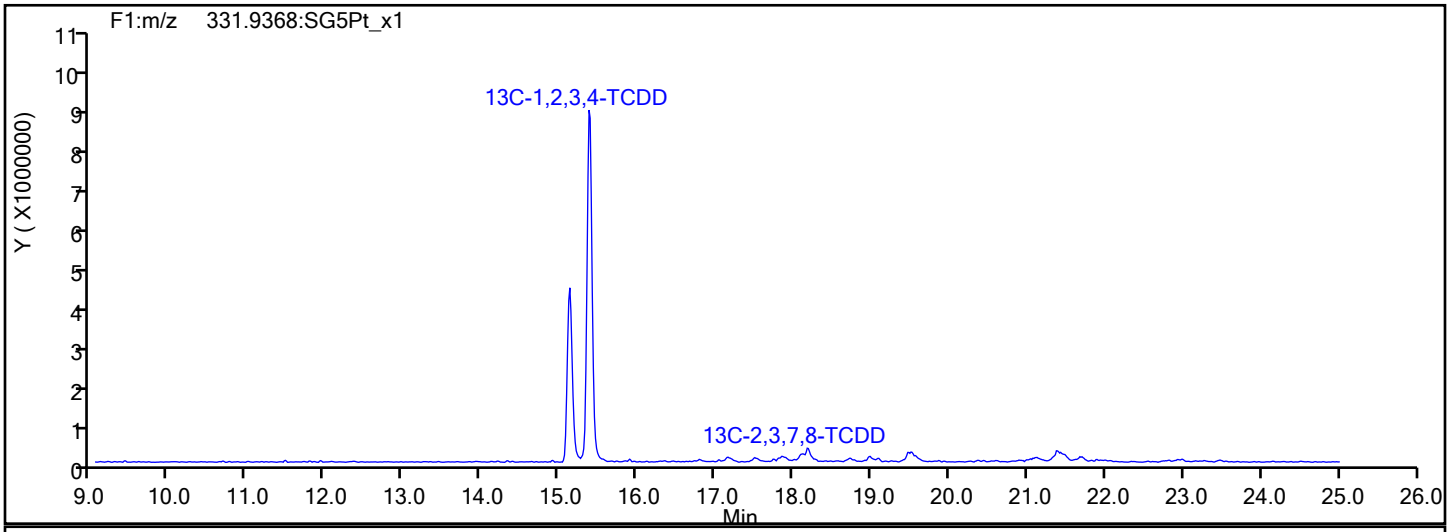
Eurofins TestAmerica, Sacramento

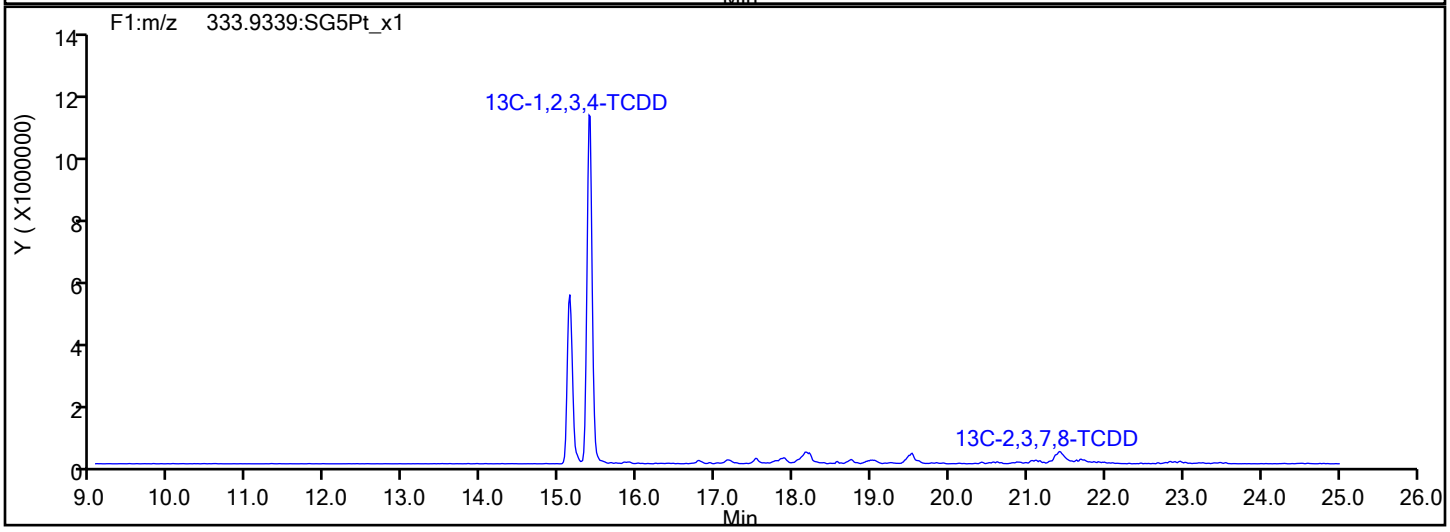
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d		
Injection Date:	16-Dec-2019 23:51:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345960	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

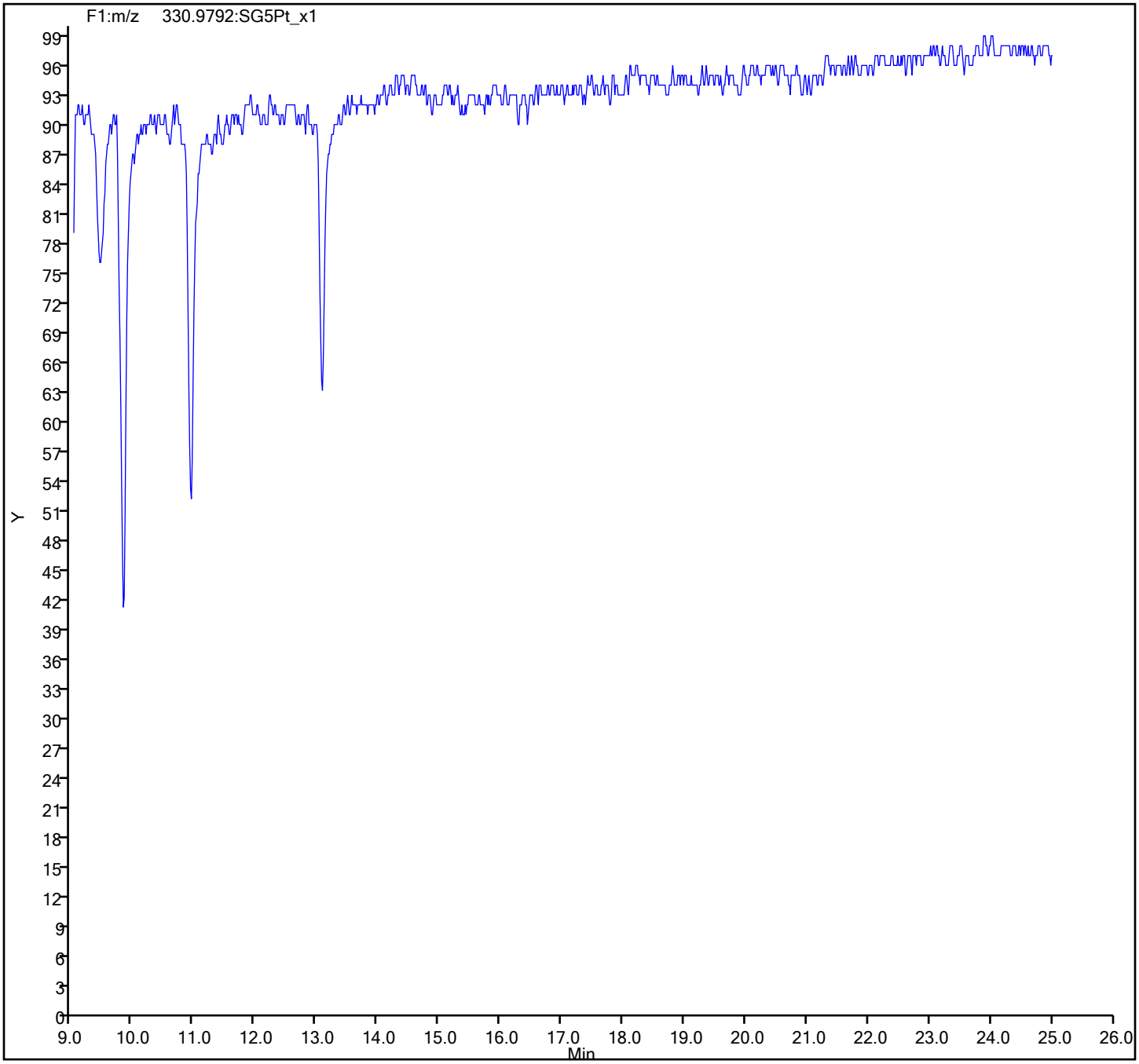




Report Date: 17-Dec-2019 09:38:28 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_008.d		
Injection Date:	16-Dec-2019 23:51:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (2-4)		
Worklist#:	345960	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) Lab Sample ID: 320-56911-8

Matrix: Sediment Lab File ID: 13DE1910D5_8.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.10(g) Date Analyzed: 12/13/2019 17:07

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	3.0		1.3	0.13
40321-76-4	1,2,3,7,8-PeCDD	ND		6.6	0.12
57117-41-6	1,2,3,7,8-PeCDF	0.40	J	6.6	0.086
57117-31-4	2,3,4,7,8-PeCDF	ND		6.6	0.092
39227-28-6	1,2,3,4,7,8-HxCDD	0.27	J q	6.6	0.084
57653-85-7	1,2,3,6,7,8-HxCDD	0.19	J B	6.6	0.087
19408-74-3	1,2,3,7,8,9-HxCDD	0.36	J	6.6	0.077
70648-26-9	1,2,3,4,7,8-HxCDF	0.64	J	6.6	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	0.28	J	6.6	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	0.23	J q	6.6	0.089
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.6	0.094
35822-46-9	1,2,3,4,6,7,8-HpCDD	5.5	J B	6.6	0.13
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.1	J	6.6	0.057
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.32	J	6.6	0.061
3268-87-9	OCDD	130	B	13	0.19
39001-02-0	OCDF	7.3	J B	13	0.14
41903-57-5	Total TCDD	3.3	q	1.3	0.13
30402-14-3	Total TCDF	20	q	1.3	0.12
36088-22-9	Total PeCDD	0.14	J q	6.6	0.12
30402-15-4	Total PeCDF	0.40	J	6.6	0.089
34465-46-8	Total HxCDD	3.3	J B q	6.6	0.083
55684-94-1	Total HxCDF	1.2	J q	6.6	0.10
37871-00-4	Total HpCDD	16	B	6.6	0.13
38998-75-3	Total HpCDF	3.0	J B	6.6	0.059

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) Lab Sample ID: 320-56911-8

Matrix: Sediment Lab File ID: 13DE1910D5_8.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.10(g) Date Analyzed: 12/13/2019 17:07

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	53		25-164
89059-46-1	13C-2,3,7,8-TCDF	49		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	56		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	51		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	53		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	57		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	49		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	52		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	44		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	49		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	48		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	59		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	49		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		26-138
114423-97-1	13C-OCDD	68		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	101		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:07:58 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-8-A 320-56911-A-8-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:46:45 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:42:13

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	51134166	0.78	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.372	33493350	0.77	1.3318	49.2	49.2	0.1234	0.1234	49.18	
2,3,7,8-TCDF	17.387	1319664	0.71	0.9005	4.375	4.375	0.0445	0.0445		
A Non-2,3,7,8-sub-TCDF	17.062	1016471	0.77	0.9005	3.416	3.370	0.0445	2.023		RQa
S Total TCDF					7.791	7.745	0.0445	0.0445		RQ
D 13C-2,3,7,8-TCDD	18.083	26266409	0.74	0.9647	53.2	53.2	0.1192	0.1192	53.25	
2,3,7,8-TCDD	18.098	324363	0.83	1.0698	1.154	1.154	0.0509	0.0509		M
$ 37Cl4-2,3,7,8-TCDD	18.098	26927410		1.3082	40.3	40.3	0.0685	0.0685	101	
A Non-2,3,7,8-sub-TCDD	17.516	27730	0.77	1.0698	0.1361	0.0987	0.0509	0.0987		RQ
S Total TCDD					1.290	1.253	0.0509	0.0509		RQ
D 13C-1,2,3,7,8-PeCDF	22.400	27680977	1.58	1.0537	51.4	51.4	0.1054	0.1054	51.37	
1,2,3,7,8-PeCDF	22.413	40419	1.41	0.9704	0.1505	0.1505	0.0328	0.0328		M
D 13C-2,3,4,7,8-PeCDF	23.750	27583715	1.58	1.0173	53.0	53.0	0.1092	0.1092	53.03	
2,3,4,7,8-PeCDF	23.750						0.0349	0.0349		
A F1 PeCDFs	19.776						0.0334	0.0334		
A Non-2,3,7,8-sub-PeCDF	22.933						0.0338	0.0338		
S Total PeCDF					0.1505	0.1505	0.0339	0.0339		
D 13C-1,2,3,7,8-PeCDD	24.472	21000994	1.55	0.7281	56.4	56.4	0.0837	0.0837	56.41	
1,2,3,7,8-PeCDD	24.472						0.0444	0.0444		
A Non-2,3,7,8-sub-PeCDD	23.368	11581	1.55	1.0023	0.0609	0.0550	0.0444	0.0550		RQM
S Total PeCDD					0.0609	0.0550	0.0444	0.0444		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.557	22221926	0.50	0.9632	52.3	52.3	0.1298	0.1298	52.31	
1,2,3,4,7,8-HxCDF	30.583	56175	1.28	1.0315	0.2451	0.2451	0.0439	0.0439		M
D 13C-1,2,3,6,7,8-HxCDF	30.743	20849212	0.49	1.0646	44.4	44.4	0.1174	0.1174	44.41	
1,2,3,6,7,8-HxCDF	30.770	22679	1.29	1.0235	0.1063	0.1063	0.0452	0.0452		Ma
D 13C-2,3,4,6,7,8-HxCDF	31.569	20380225	0.51	0.9696	47.7	47.7	0.1289	0.1289	47.66	
2,3,4,6,7,8-HxCDF	31.568						0.0357	0.0357		
D 13C-1,2,3,7,8,9-HxCDF	32.381	19292047	0.50	0.8955	48.8	48.8	0.1396	0.1396	48.85	
1,2,3,7,8,9-HxCDF	32.381	18134	1.24	1.0664	0.1112	0.0881	0.0338	0.0338		RQ
A Non-2,3,7,8-sub-HxCDF	30.237						0.0391	0.0391		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.4625	0.4395	0.0396	0.0396		RQ
* 13C-1,2,3,7,8,9-HxCDD	32.194	44103363	1.26	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.755	19232756	1.25	0.7590	57.5	57.5	0.1361	0.1361	57.46	
1,2,3,4,7,8-HxCDD	31.768	19646	1.24	1.0054	0.1146	0.1016	0.0320	0.0320		RQM
D 13C-1,2,3,6,7,8-HxCDD	31.861	20149551	1.25	0.9247	49.4	49.4	0.1117	0.1117	49.41	
1,2,3,6,7,8-HxCDD	31.875	14660	1.10	0.9833	0.0740	0.0740	0.0330	0.0330		Ma
1,2,3,7,8,9-HxCDD	32.221	29969	1.42	1.1036	0.1379	0.1379	0.0293	0.0293		M
A Non-2,3,7,8-sub-HxCDD	30.870	192844	1.31	1.0308	0.9501	0.9501	0.0314	0.7166		
S Total HxCDD					1.277	1.264	0.0314	0.0314		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.793	17004032	0.45	0.7930	48.6	48.6	0.3243	0.3243	48.62	
1,2,3,4,6,7,8-HpCDF	33.805	104862	1.10	1.4240	0.4331	0.4331	0.0215	0.0215		
D 13C-1,2,3,4,7,8,9-HpCDF	34.862	19550620	0.43	0.7296	60.8	60.8	0.3525	0.3525	60.76	
1,2,3,4,7,8,9-HpCDF	34.887	30350	1.12	1.2834	0.1210	0.1210	0.0232	0.0232		
A Non-2,3,7,8-sub-HpCDF	34.340	144903	1.05	1.3537	0.5857	0.5857	0.0223	0.5857		M
S Total HpCDF					1.140	1.140	0.0224	0.0224		
D 13C-1,2,3,4,6,7,8-HpCDD	34.583	19743789	1.05	0.7532	59.4	59.4	0.1382	0.1382	59.44	
1,2,3,4,6,7,8-HpCDD	34.595	424412	1.09	1.0174	2.113	2.113	0.0478	0.0478		
A Non-2,3,7,8-sub-HpCDD	34.309	775755	1.02	1.0174	3.862	3.862	0.0478	3.862		
S Total HpCDD					5.975	5.975	0.0478	0.0478		
D 13C-OCDD	36.903	33789063	0.90	0.5621	136.3	136.3	0.0930	0.0930	68.16	
OCDF	37.011	614473	0.88	1.3047	2.788	2.788	0.0522	0.0522		
OCDD	36.915	9218334	0.88	1.0997	49.6	49.6	0.0709	0.0709		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:07:58 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-8-A 320-56911-A-8-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:46:45 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:42:13

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.886	17.856	2		22440310	5636547	3747	9367	1504		
333.9339	17.886	17.856	2		28693856	7191714	2152	5380	3342	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.372	17.357	1	0.971	14573768	3646433	5314	13285	686		
317.9389	17.372	17.357	1	0.971	18919582	4780164	3118	7795	1533	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.387	17.372	1	1.001	548086	129623	554	1385	234		
305.8987	17.387	17.372	1	1.001	771578	179478	796	1990	225	0.71(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	15.981	17.062	-65	0.920	22305	5402	554	1385	10		
305.8987	15.981	17.062	-65	0.920	36588	9297	796	1990	12	0.61(0.65-0.89)	
	Empc Correction				28967	7015	796	1990	9		
303.9016	16.253	17.062	-48	0.936	27761	5641	554	1385	10		
305.8987	16.238	17.062	-49	0.935	42943	7924	796	1990	10	0.65(0.65-0.89)	
303.9016	16.495	17.062	-34	0.950	21560	4357	554	1385	8		
305.8987	16.480	17.062	-35	0.949	25600	6621	796	1990	8	0.84(0.65-0.89)	
303.9016	16.737	17.062	-19	0.963	21149	4503	554	1385	8		
305.8987	16.722	17.062	-20	0.963	33673	7670	796	1990	10	0.63(0.65-0.89)	
	Empc Correction				27466	5848	796	1990	7		
303.9016	17.009	17.062	-3	0.979	252268	62836	554	1385	113		
305.8987	17.009	17.062	-3	0.979	357855	82721	796	1990	104	0.70(0.65-0.89)	
303.9016	17.826	17.062	46	1.026	42716	8002	554	1385	14		
305.8987	17.826	17.062	46	1.026	52103	11697	796	1990	15	0.82(0.65-0.89)	
303.9016	19.232	17.062	130	1.107	43347	9271	554	1385	17		a
305.8987	19.216	17.062	129	1.106	50431	11002	796	1990	14	0.86(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	11173123	2629515	3747	9367	702		
333.9339	18.083	18.052	2	1.011	15093286	3573127	2152	5380	1660	0.74(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	18.098	18.068	2	1.001	146867	30774	886	2215	35		M
321.8936	18.098	18.068	2	1.001	177496	40244	465	1162	87	0.83(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	26927410	6172444	4599	11497	1342		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	18.476	17.516	57	1.022	22581	3374	886	2215	4		
	Empc Correction				12063	2475	886	2215	3		
321.8936	18.476	17.516	57	1.022	15667	3215	465	1162	7	1.44(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.400	22.372	2	1.252	16944380	3053162	3360	8400	909		
353.8970	22.400	22.372	2	1.252	10736597	1950525	2341	5852	833	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.413	22.400	1	1.001	23674	4560	253	632	18		M
341.8567	22.413	22.400	1	1.001	16745	2961	384	960	8	1.41(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	16893442	2817292	3360	8400	838		
353.8970	23.750	23.722	2	1.328	10690273	1747117	2341	5852	746	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750						253	632			
341.8567	23.750						384	960			
A F1 PeCDFs											
339.8597	19.776						256	640			
341.8567	19.776						374	935			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.933						253	632			
341.8567	22.933						384	960			
13C-1,2,3,7,8-PeCDD											
367.8949	24.472	24.445	2	1.368	12766843	1959113	1861	4652	1053		
369.8919	24.472	24.445	2	1.368	8234151	1269059	1265	3162	1003	1.55(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						360	900			
357.8516	24.472						215	537			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	21.254	23.368	-127	0.868	7040	1284	360	900	4		M
357.8516	21.281	23.368	-125	0.870	5775	1074	215	537	5	1.22(1.32-1.78)	M
	Empc Correction				4541	828	215	537	4		
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.557	30.543	1	0.949	7367191	1396266	2311	5777	604		
385.8610	30.557	30.543	1	0.949	14854735	2770733	3762	9405	737	0.50(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	30.583	30.557	2	1.001	31545	6787	475	1187	14		
375.8178	30.570	30.557	1	1.000	24630	4938	279	697	18	1.28(1.05-1.43)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.743	30.716	2	0.955	6876149	1352412	2311	5777	585		
385.8610	30.743	30.716	2	0.955	13973063	2718532	3762	9405	723	0.49(0.43-0.59)	
1,2,3,6,7,8-HxCDF											Ma
373.8208	30.770	30.743	2	1.001	12773	3195	475	1187	7		M
375.8178	30.783	30.743	2	1.001	9906	1718	279	697	6	1.29(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.569	31.555	1	0.981	6869562	1647762	2311	5777	713		
385.8610	31.569	31.555	1	0.981	13510663	3316036	3762	9405	881	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						475	1187			
375.8178	31.568						279	697			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.381	32.367	1	1.006	6424926	1734460	2311	5777	751		
385.8610	32.381	32.367	1	1.006	12867121	3493037	3762	9405	929	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQ
373.8208	32.381	32.380	0	1.000	10039	2193	475	1187	5		
375.8178	32.394	32.380	1	1.000	12830	2697	279	697	10	0.78(1.05-1.43)	
	Empc Correction				8095	1768	279	697	6		
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						475	1187			
375.8178	30.237						279	697			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.194	32.181	1		24625294	6768320	2800	7000	2417		
403.8529	32.194	32.181	1		19478069	5379396	2221	5552	2422	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.755	31.741	1	0.986	10694870	2838070	2800	7000	1014		
403.8529	31.755	31.741	1	0.986	8537886	2298602	2221	5552	1035	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQM
389.8157	31.768	31.755	1	1.000	10876	2627	340	850	8		M
391.8127	31.768	31.755	1	1.000	11282	2966	322	805	9	0.96(1.05-1.43)	M
	Empc Correction				8770	2118	322	805	7		
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.861	31.848	1	0.990	11201398	2824687	2800	7000	1009		
403.8529	31.861	31.848	1	0.990	8948153	2276156	2221	5552	1025	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.875	31.861	1	1.000	7680	2315	340	850	7		M
391.8127	31.861	31.861	0	1.000	6980	1847	322	805	6	1.10(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	32.221	32.194	2	1.015	17563	3703	340	850	11		
391.8127	32.194	32.194	0	1.014	12406	2428	322	805	8	1.42(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											
389.8157	29.598	30.870	-76	0.929	82381	8578	340	850	25		
391.8127	29.625	30.870	-75	0.930	63074	6988	322	805	22	1.31(1.05-1.43)	
389.8157	31.036	30.870	10	0.974	27119	5256	340	850	15		
391.8127	31.009	30.870	8	0.973	20270	3691	322	805	11	1.34(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.793	33.780	1	1.050	5256761	1707282	4444	11110	384		
419.8220	33.793	33.780	1	1.050	11747271	3908144	8052	20130	485	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.805	33.793	1	1.000	54815	18776	433	1082	43		
409.7789	33.805	33.793	1	1.000	50047	17115	256	640	67	1.10(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.862	34.862	0	1.083	5904056	1742775	4444	11110	392		
419.8220	34.862	34.862	0	1.083	13646564	4039685	8052	20130	502	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.887	34.862	1	1.001	16025	4188	433	1082	10		
409.7789	34.875	34.862	1	1.000	14325	3605	256	640	14	1.12(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											M
407.7818	34.109	34.340	-14	1.009	74362	25273	433	1082	58		
409.7789	34.097	34.340	-15	1.009	70541	21615	256	640	84	1.05(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.583	34.570	1	1.074	10109728	3124528	2678	6695	1167		
437.8140	34.583	34.570	1	1.074	9634061	2970418	2378	5945	1249	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	221240	65552	659	1647	99		
425.7737	34.595	34.583	1	1.000	203172	60825	528	1320	115	1.09(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.048	34.309	-16	0.985	392559	123114	659	1647	187		
425.7737	34.048	34.309	-16	0.985	383196	120794	528	1320	229	1.02(0.88-1.20)	
13C-OCDD											
469.7779	36.903	36.891	1	1.146	15971689	4164299	1261	3152	3302		
471.7750	36.903	36.891	1	1.146	17817374	4666926	1280	3200	3646	0.90(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	287102	72206	426	1065	169		
443.7399	36.999	36.999	0	1.003	327371	75401	778	1945	97	0.88(0.76-1.02)	
OCDD											
457.7377	36.915	36.903	1	1.000	4322696	1113759	686	1715	1624		
459.7348	36.915	36.903	1	1.000	4895638	1272456	691	1727	1841	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	33493350	8426597

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	33493350	8426597

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.981	22305	5402	36588	9297	0.1953	0.61	RQ
15.981	22305	5402	28967	7015	0.1700		Empc Correction
16.253	27761	5641	42943	7924	0.2344	0.65	
16.495	21560	4357	25600	6621	0.1564	0.84	
16.737	21149	4503	33673	7670	0.1818	0.63	RQ
16.737	21149	4503	27466	5848	0.1612		Empc Correction
17.009	252268	62836	357855	82721	2.02	0.70	
17.826	42716	8002	52103	11697	0.3144	0.82	
19.232	43347	9271	50431	11002	0.3109	0.86	a
Signal Totals:							
	431106	100012	585365	132828			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1030299	236944				0.72	RQa
	1016471	232840					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.416 = (1030299 * 100.000) / (33493350 * 0.901)
Empc Amount: 3.370 = (1016471 * 100.000) / (33493350 * 0.901)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	26266409	6202642

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	26266409	6202642

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
18.476	22581	3374	15667	3215	0.1361	1.44	RQ
18.476	12063	2475	15667	3215	0.0987		Empc Correction
Signal Totals:							
	12063	2475	15667	3215			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	38248	6589				1.44	RQ
	27730	5690					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1361 = (38248 * 100.000) / (26266409 * 1.070)
Empc Amount: 0.0987 = (27730 * 100.000) / (26266409 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	21000994	3228172

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	21000994	3228172

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.254	7040	1284	5775	1074	0.0609	1.22	RQM
21.254	7040	1284	4541	828	0.0550		Empc Correction
Signal Totals:							
	7040	1284	4541	828			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	12815	2358				1.22	RQM
	11581	2112					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0609 = (12815 * 100.000) / (21000994 * 1.002)
Empc Amount: 0.0550 = (11581 * 100.000) / (21000994 * 1.002)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	19232756	5136672
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	20149551	5100843
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	19691153	5118757

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.598	82381	8578	63074	6988	0.7166	1.31	
31.036	27119	5256	20270	3691	0.2335	1.34	
Signal Totals:	109500	13834	83344	10679			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	192844	24513				1.31	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9501 = (192844 * 100.000) / (19691153 * 1.031)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	17004032	5615426
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	19550620	5782460

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	18277326	5698943

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	74362	25273	70541	21615	0.5857	1.05	M
Signal Totals:							
	74362	25273	70541	21615			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	144903	46888				1.05	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5857 = (144903 * 100.000) / (18277326 * 1.354)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Inject. Date: 13-Dec-2019 17:07:58 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	19743789	6094946

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	19743789	6094946

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.048	392559	123114	383196	120794	3.86	1.02	
Signal Totals:							
	392559	123114	383196	120794			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	775755	243908				1.02	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.862 = (775755 * 100.000) / (19743789 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

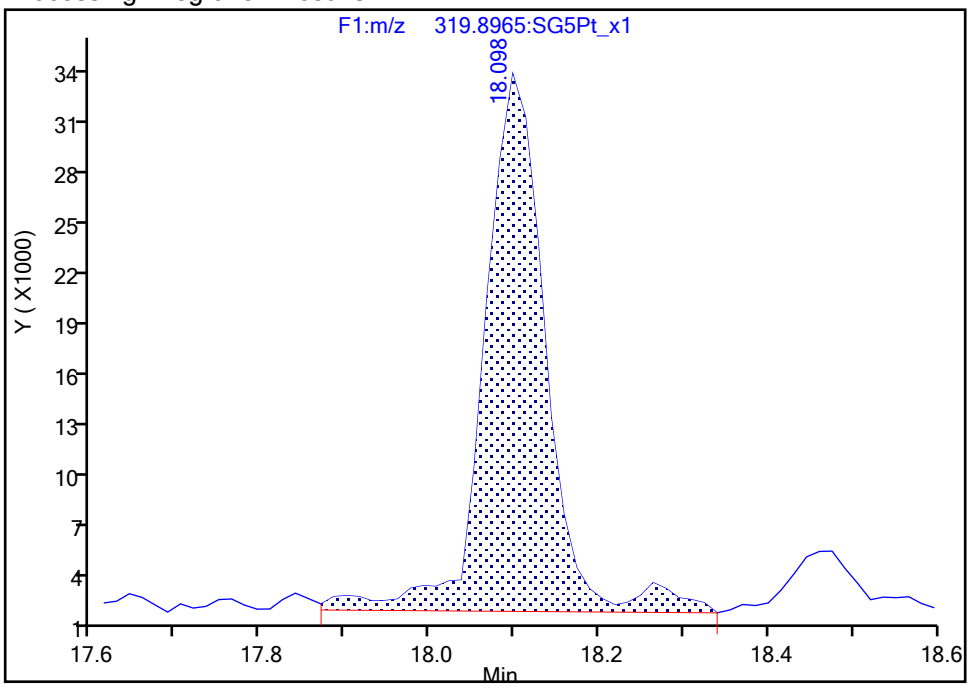
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

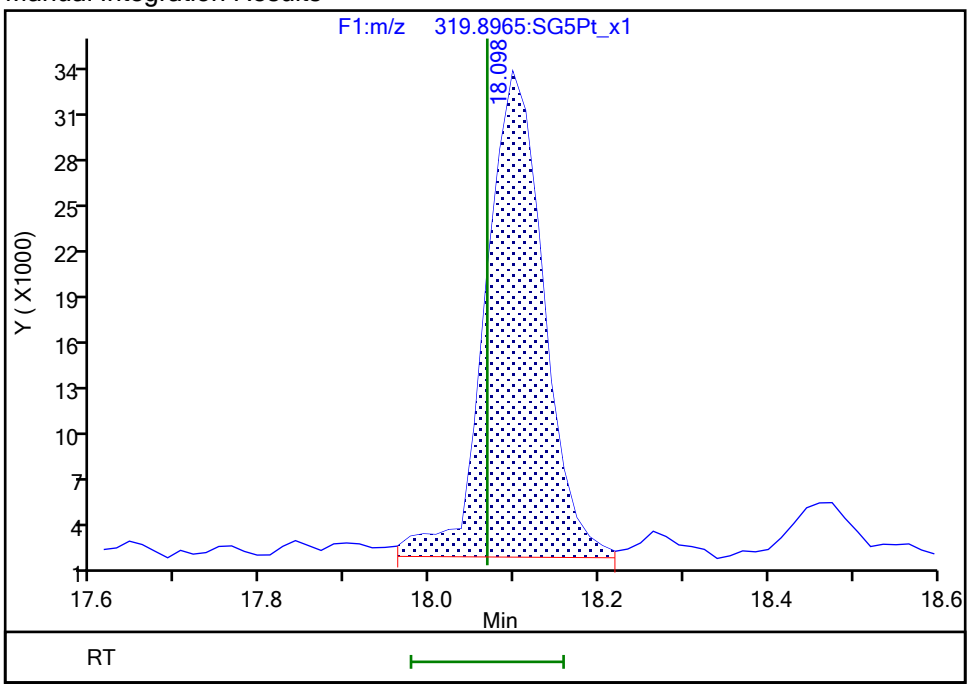
Processing Integration Results

RT: 18.10
Area: 156752
Amount: 1.189514
Amount Units: pg/ul



Manual Integration Results

RT: 18.10
Area: 146867
Amount: 1.154336
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:39:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

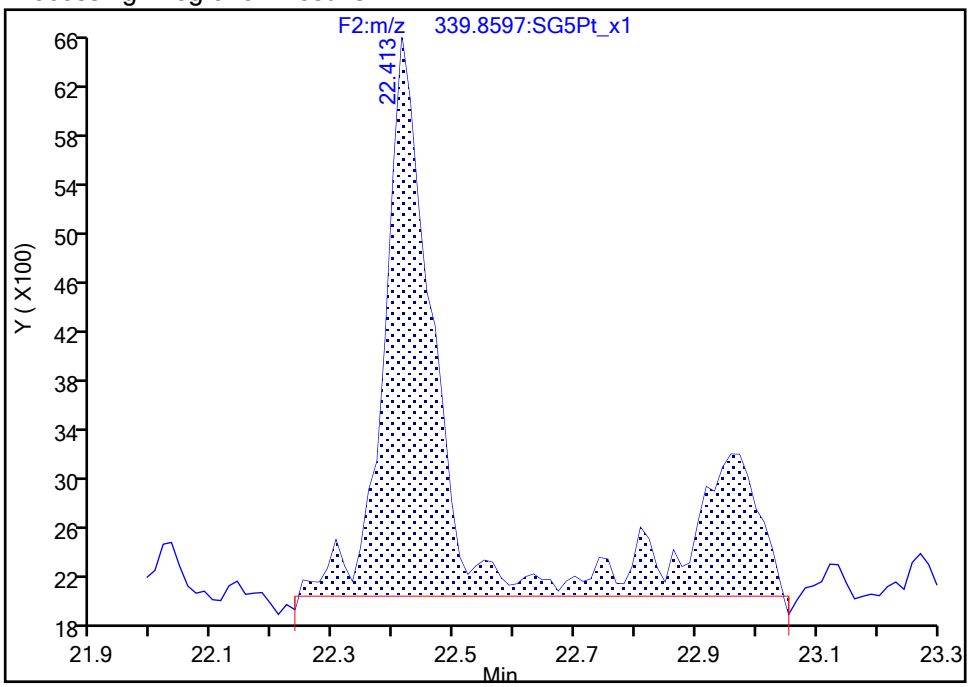
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

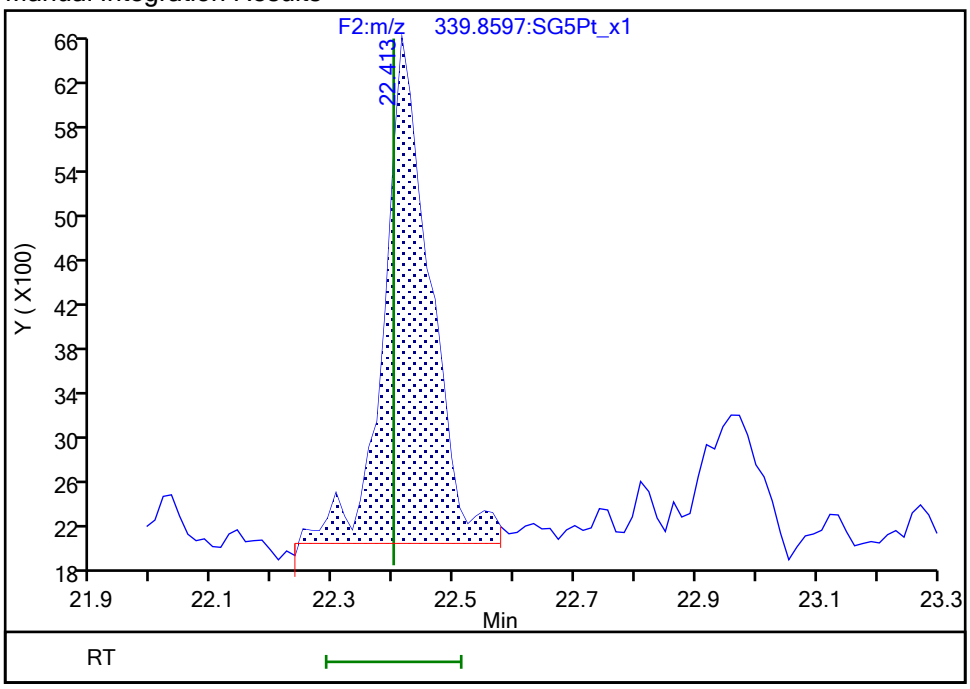
Processing Integration Results

RT: 22.41
Area: 34197
Amount: 0.189647
Amount Units: pg/ul



Manual Integration Results

RT: 22.41
Area: 23674
Amount: 0.150472
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:39:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

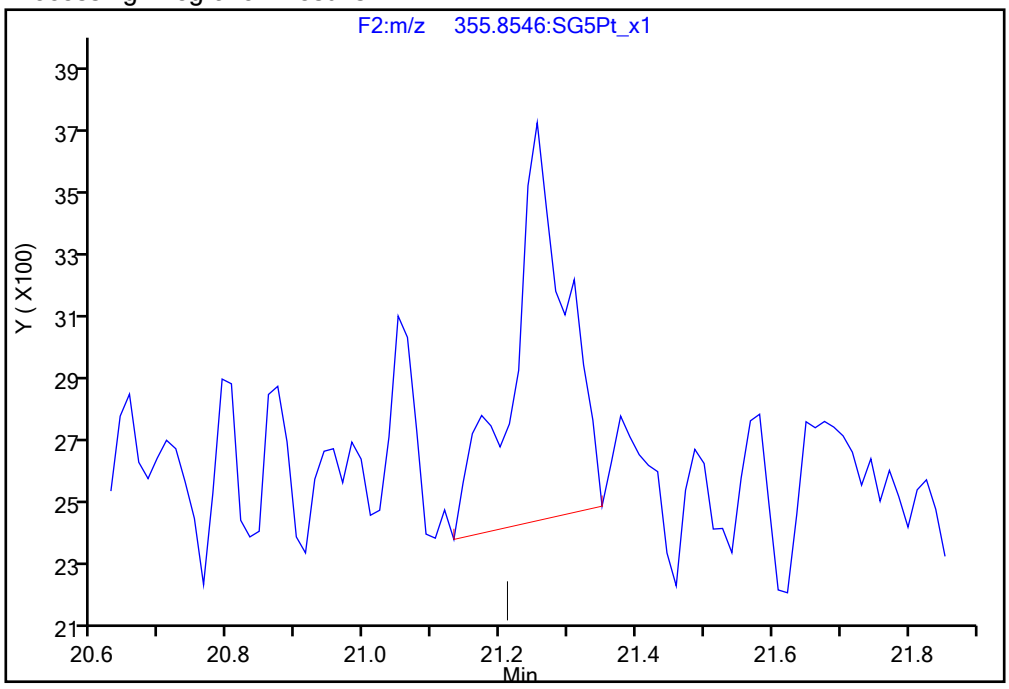
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

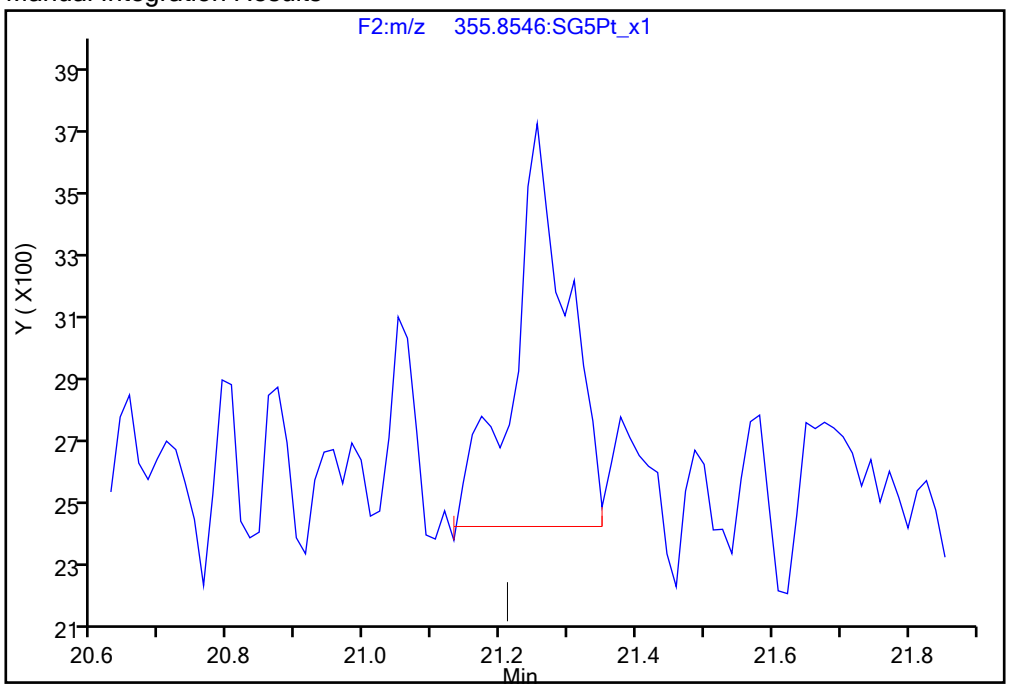
Processing Integration Results

RT = 21.254 Area = 6922



Manual Integration Results

RT = 21.254 Area = 7040 M



Reviewer: dadunj, 16-Dec-2019 10:39:32

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

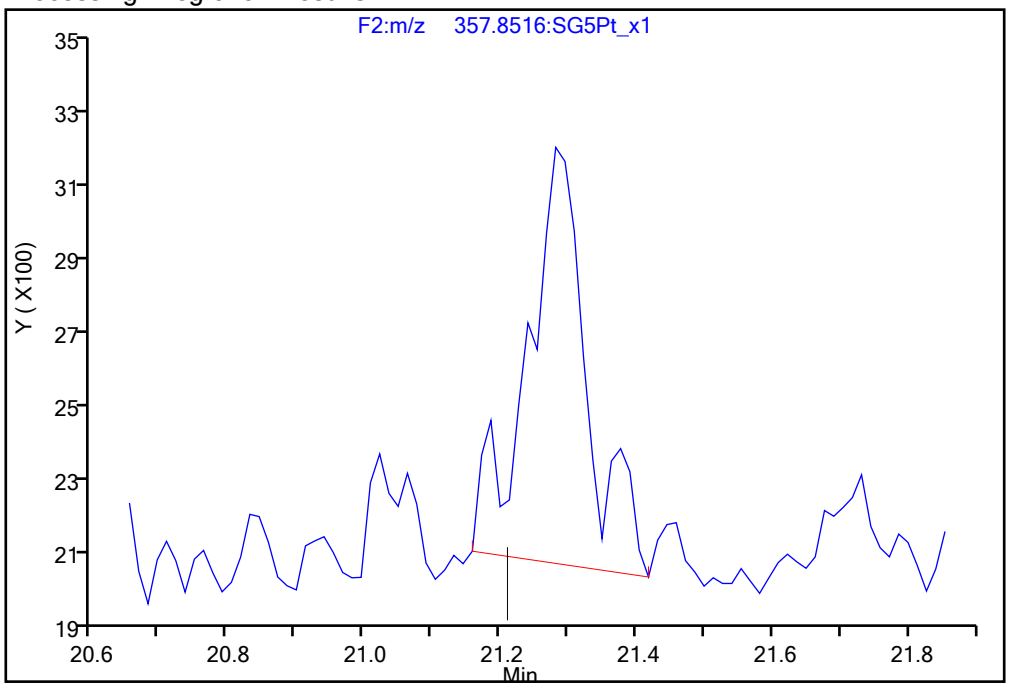
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 2, m/z: 357.8516, RT: (21.21- 25.53)

Signal: 2

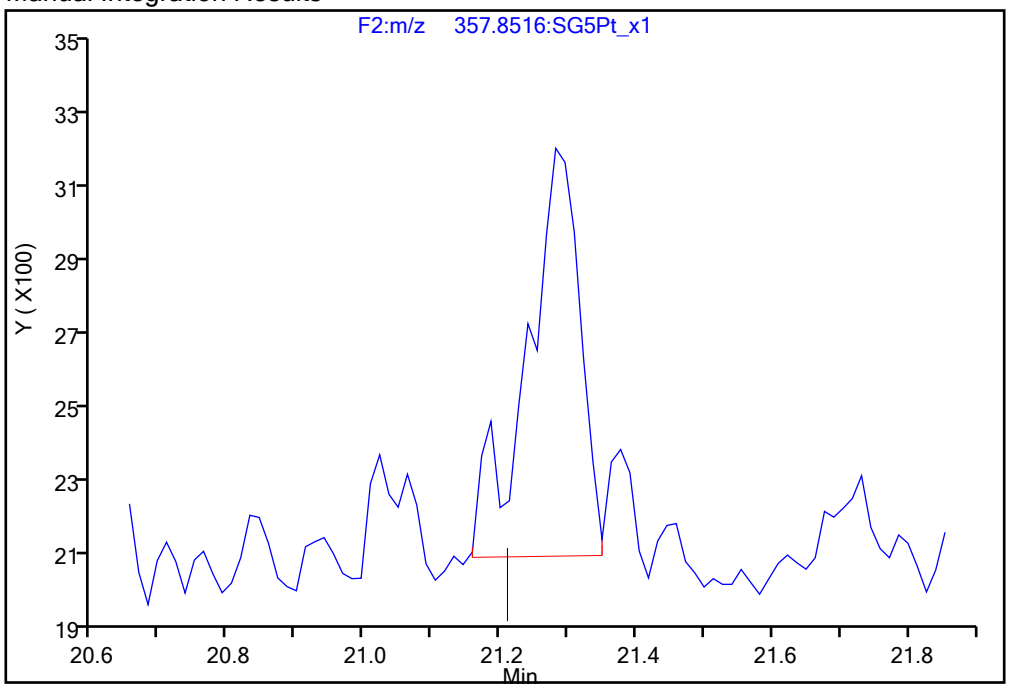
Processing Integration Results

RT = 21.281 Area = 6747



Manual Integration Results

RT = 21.281 Area = 5775 M



Reviewer: dadunj, 16-Dec-2019 10:39:47

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

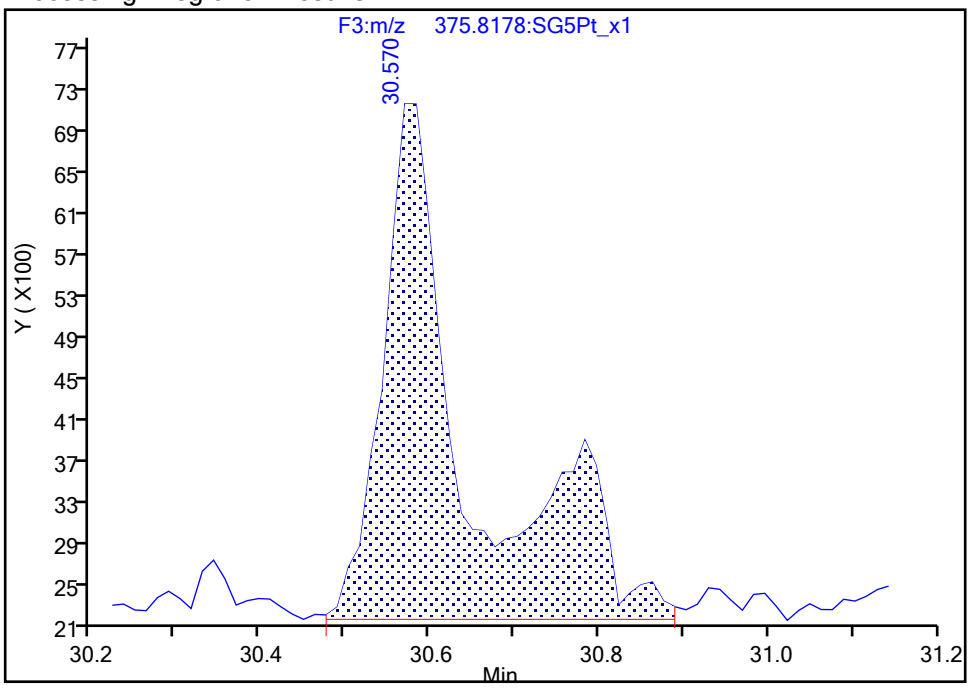
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

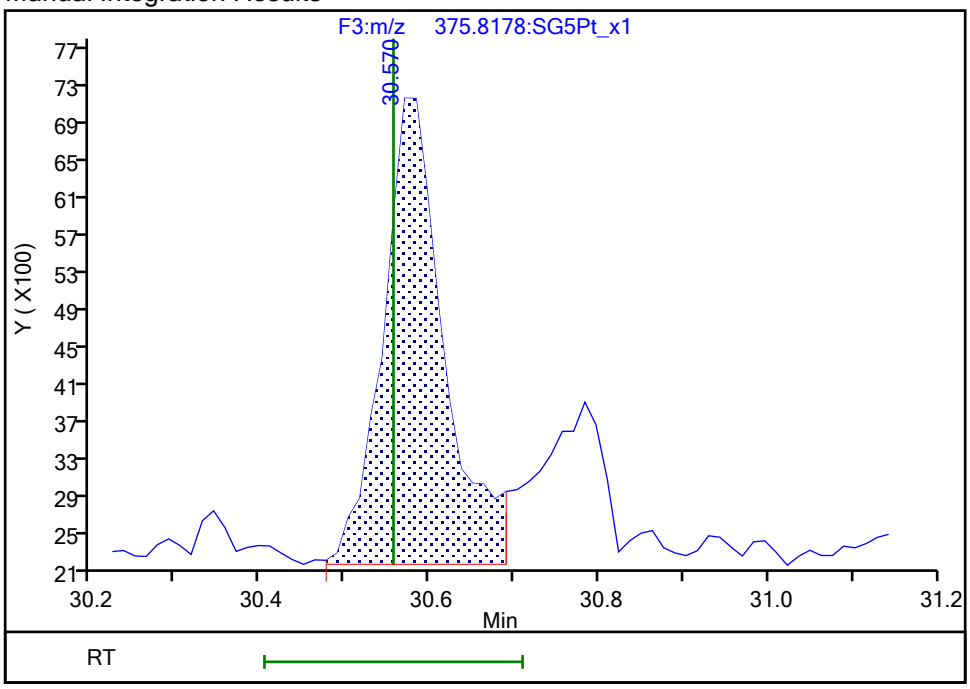
Processing Integration Results

RT: 30.57
Area: 34536
Amount: 0.288299
Amount Units: pg/ul



Manual Integration Results

RT: 30.57
Area: 24630
Amount: 0.245081
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:39:59

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

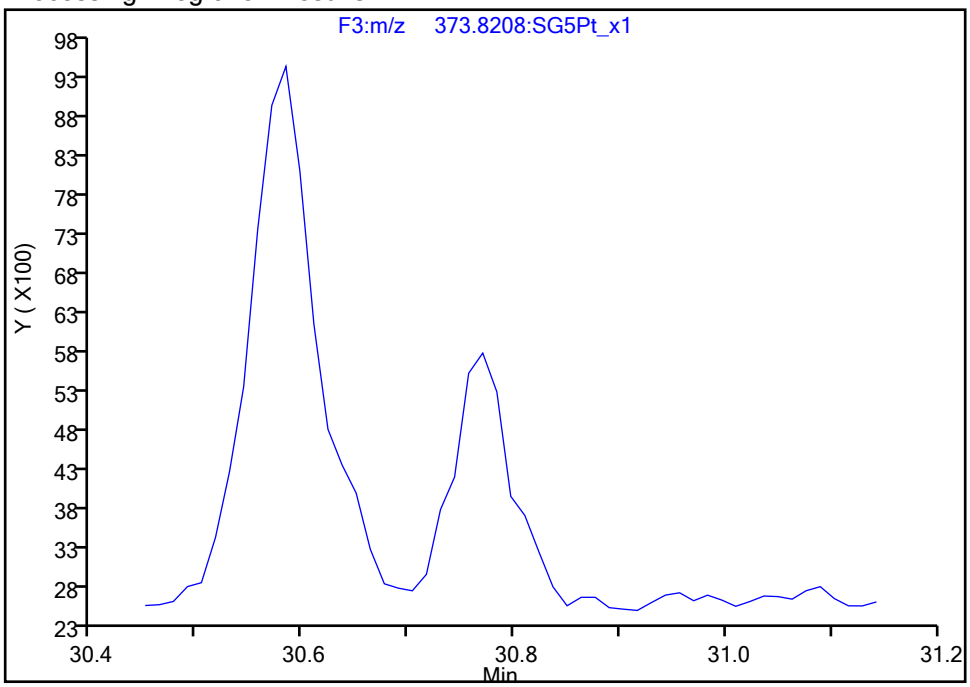
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

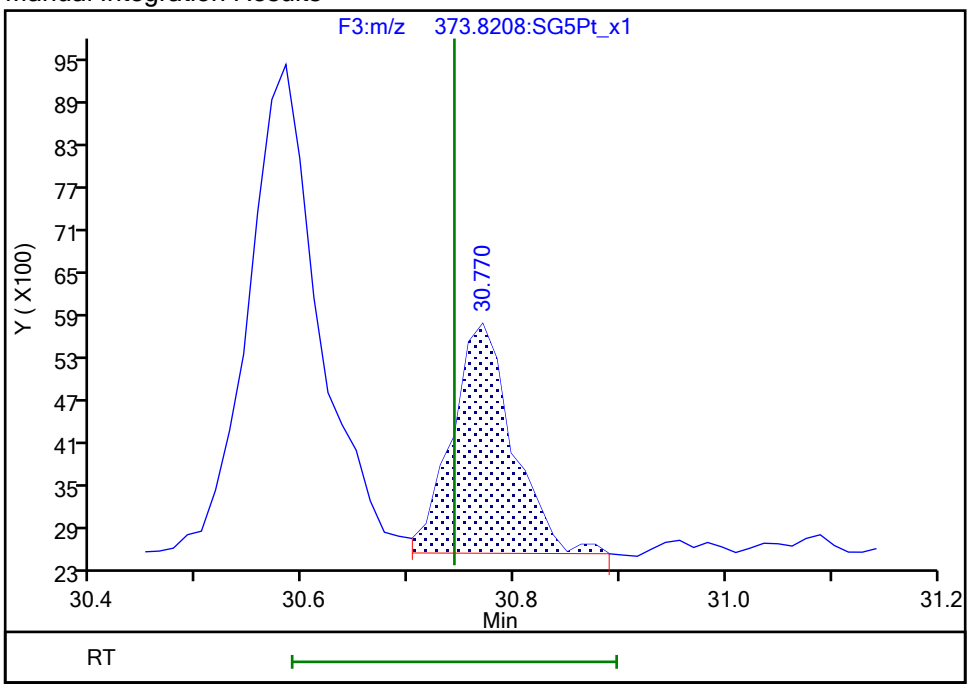
Not Detected
Expected RT: 30.74

Processing Integration Results



Manual Integration Results

RT: 30.77
Area: 12773
Amount: 0.106275
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:05
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

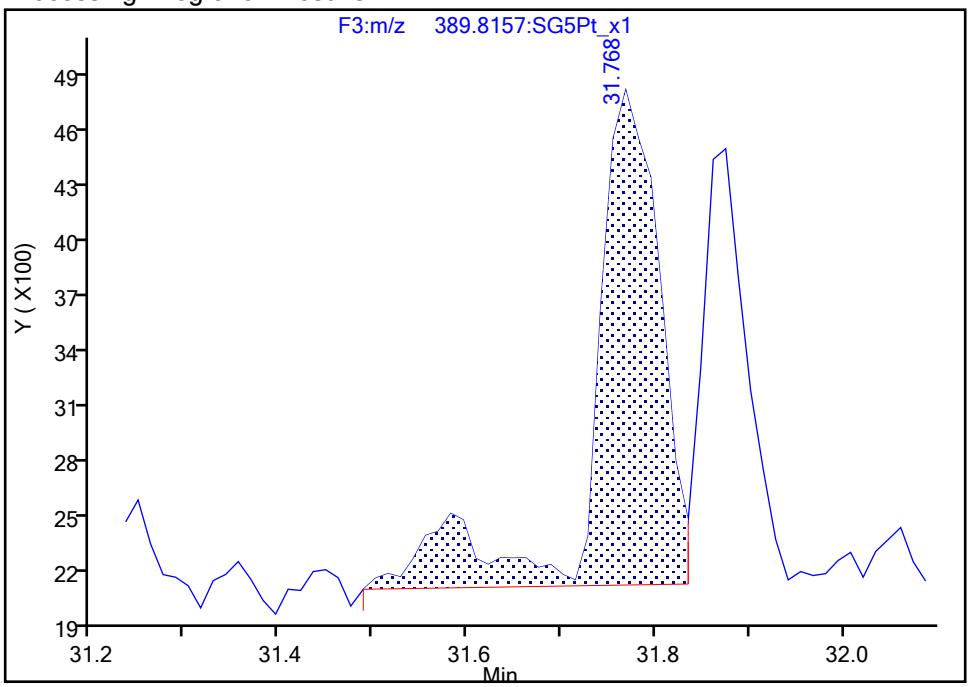
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

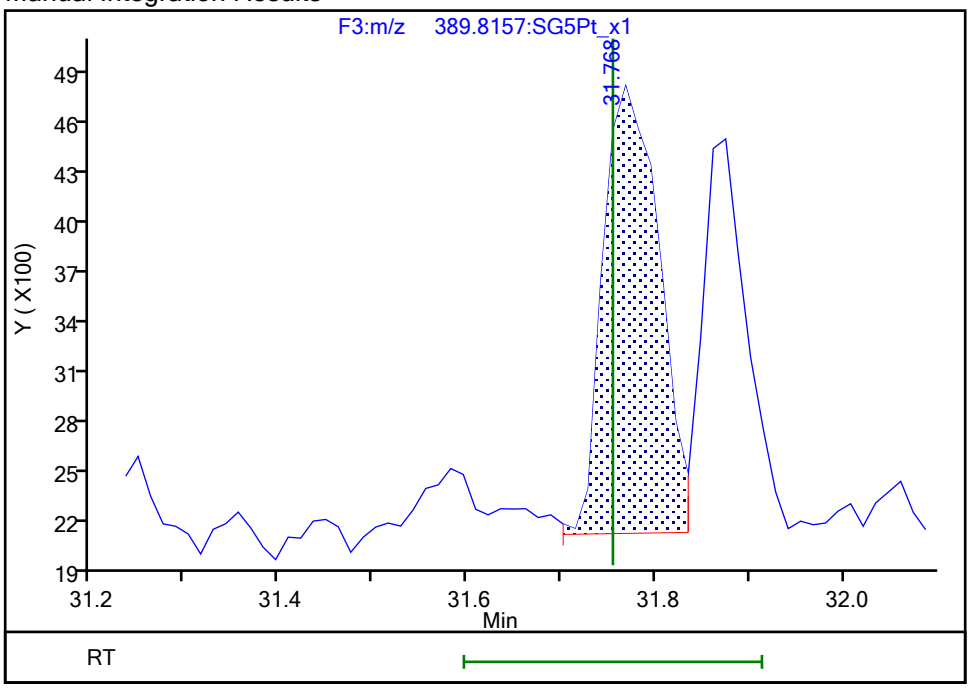
Processing Integration Results

RT: 31.77
Area: 13006
Amount: 0.161691
Amount Units: pg/ul



Manual Integration Results

RT: 31.77
Area: 10876
Amount: 0.114593
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:18

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

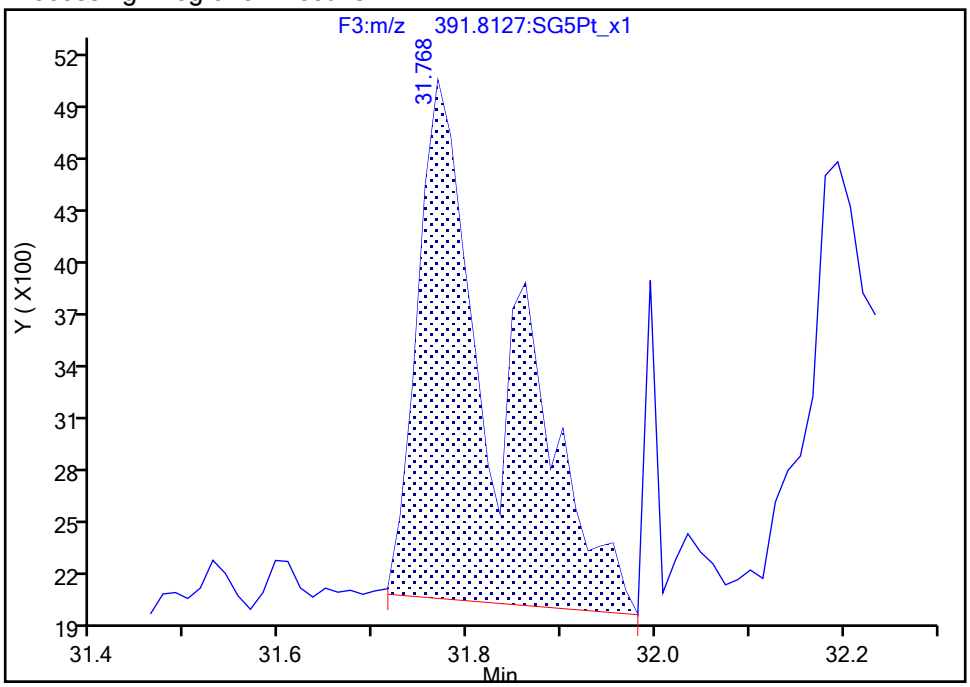
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

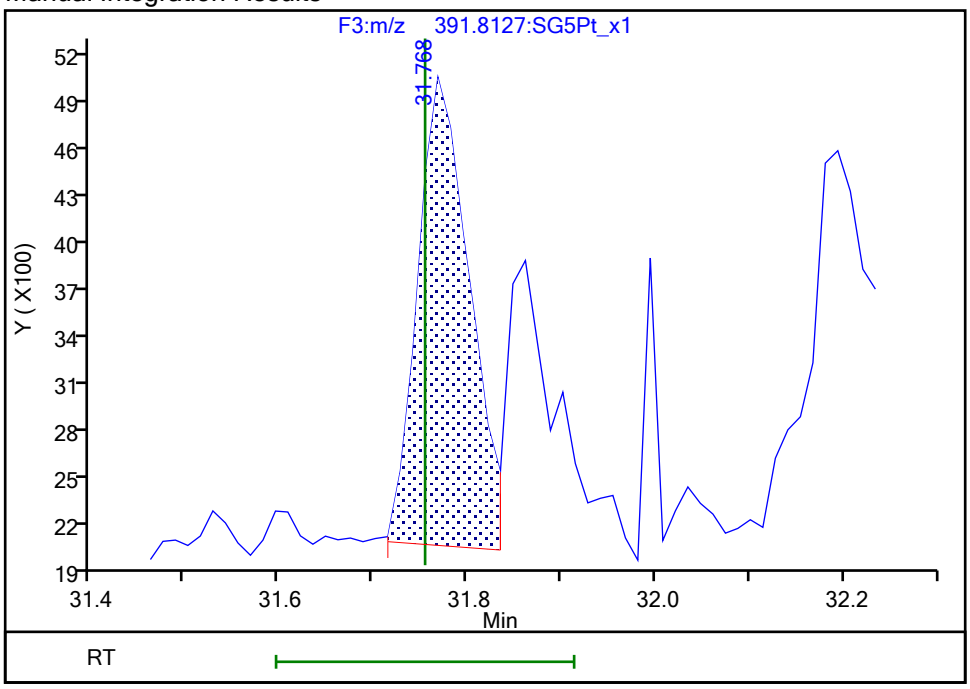
Processing Integration Results

RT: 31.77
Area: 18259
Amount: 0.161691
Amount Units: pg/ul



Manual Integration Results

RT: 31.77
Area: 11282
Amount: 0.114593
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

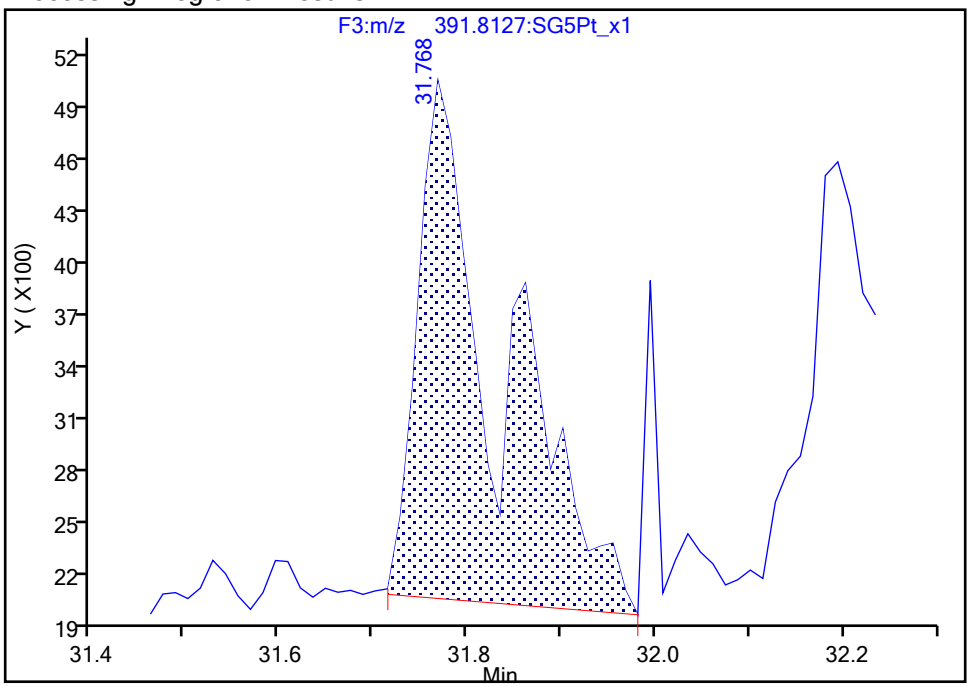
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

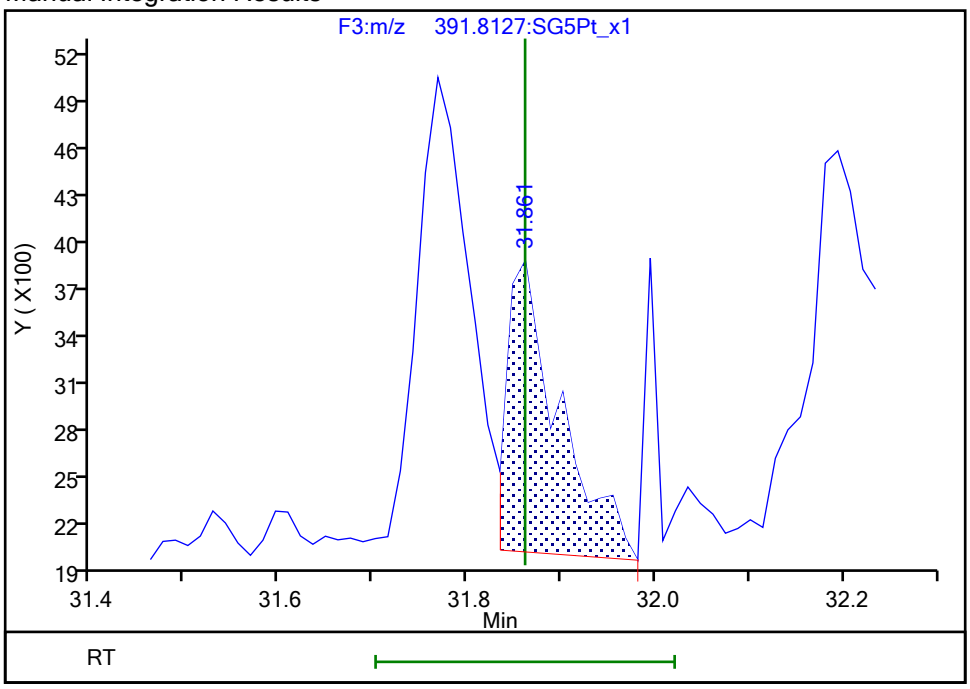
Processing Integration Results

RT: 31.77
Area: 18259
Amount: 0.157799
Amount Units: pg/ul



Manual Integration Results

RT: 31.86
Area: 6980
Amount: 0.073991
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:23
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

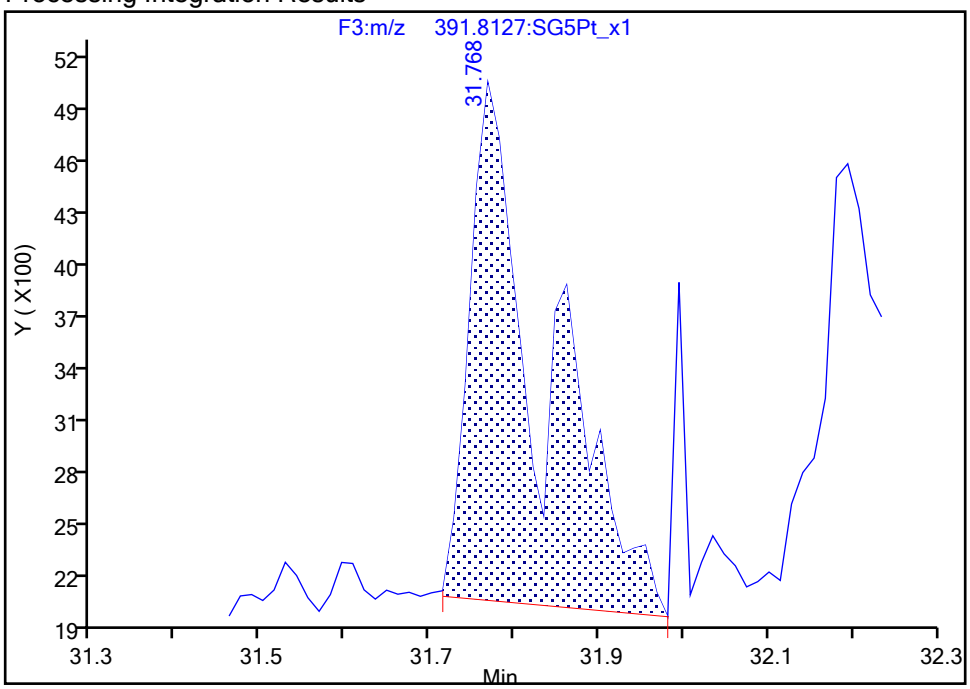
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.77
Area: 31265
Amount: 0.157799
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 14660
Amount: 0.073991
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 10:40:23
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

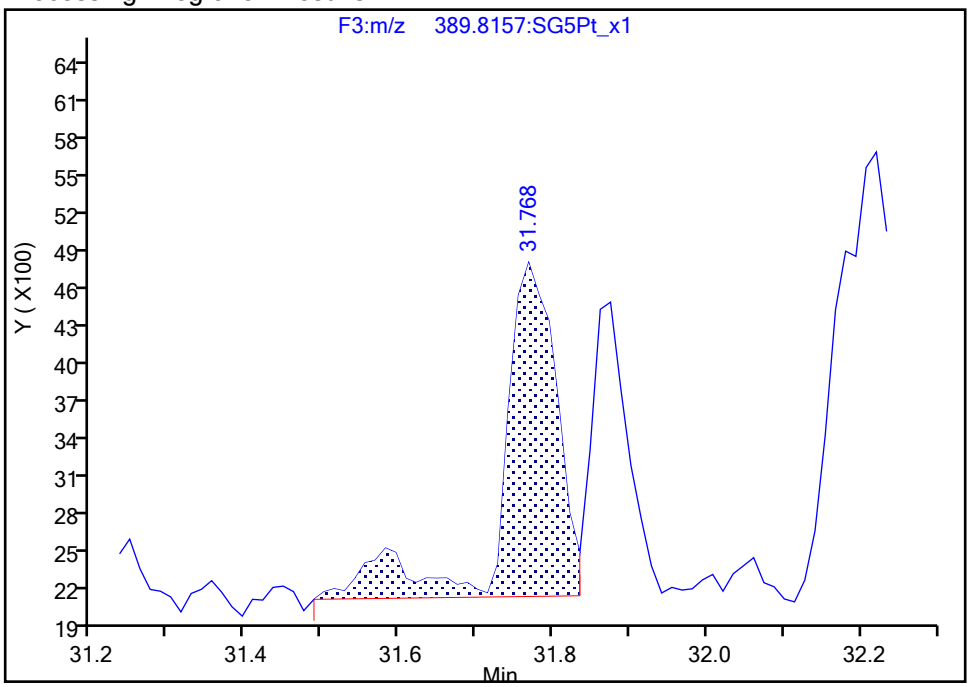
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

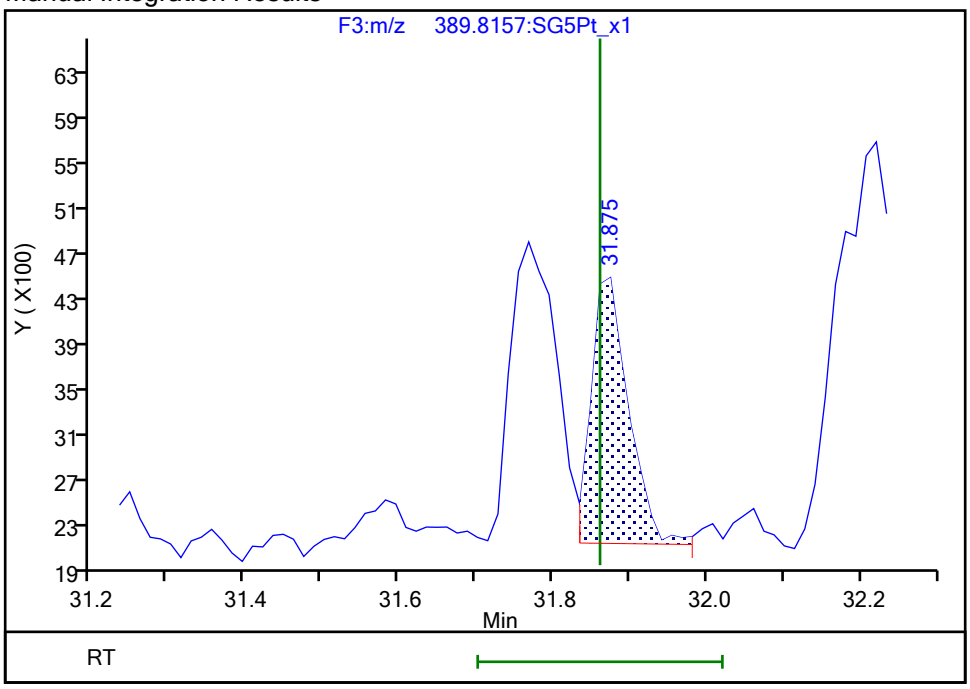
Processing Integration Results

RT: 31.77
Area: 13006
Amount: 0.157799
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 7680
Amount: 0.073991
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:26
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

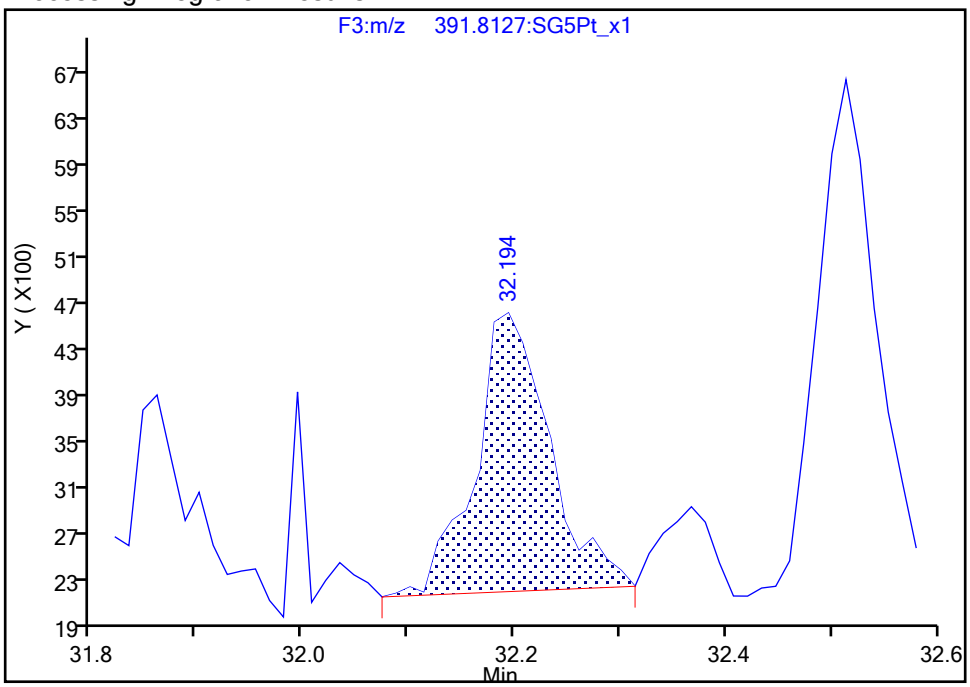
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

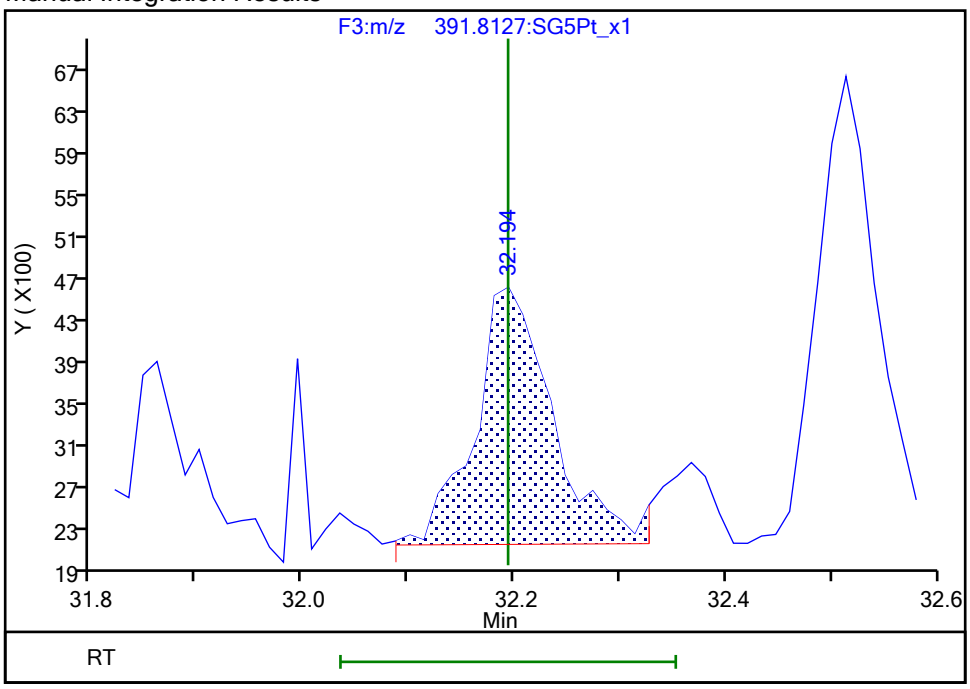
Processing Integration Results

RT: 32.19
Area: 11544
Amount: 0.133943
Amount Units: pg/ul



Manual Integration Results

RT: 32.19
Area: 12406
Amount: 0.137910
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:40:39

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

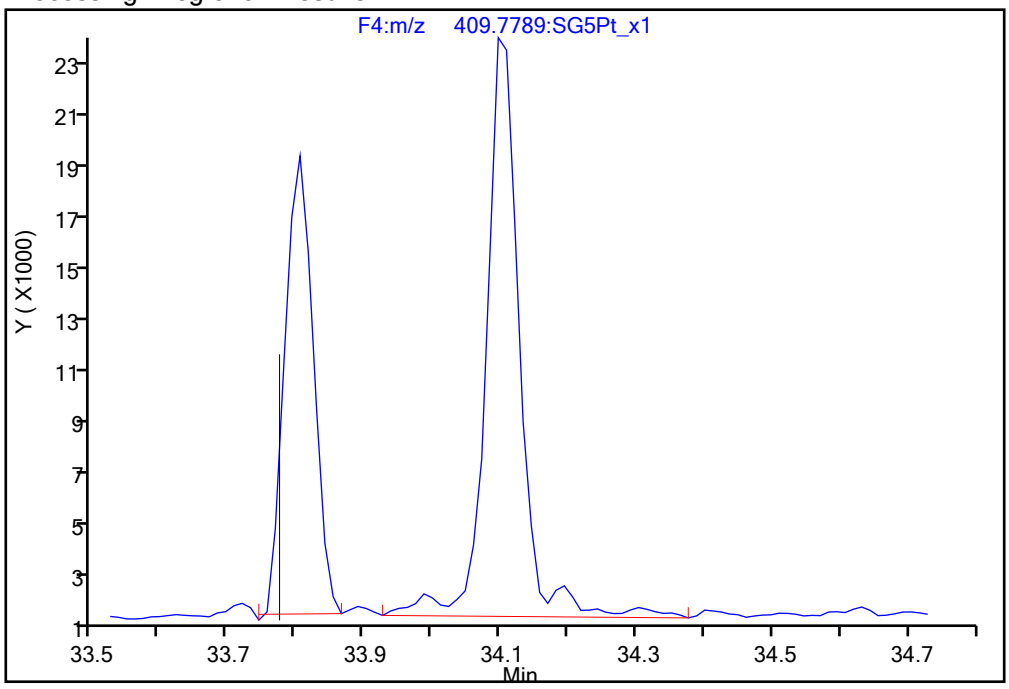
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d				
Injection Date:	13-Dec-2019 17:07:58	Instrument ID:	10D5		
Lims ID:	320-56911-A-8-A	Lab Sample ID:	320-56911-8		
Client ID:	11187072-120819-BN-SJSSA09 (4-6)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.78- 34.90)

Signal: 2

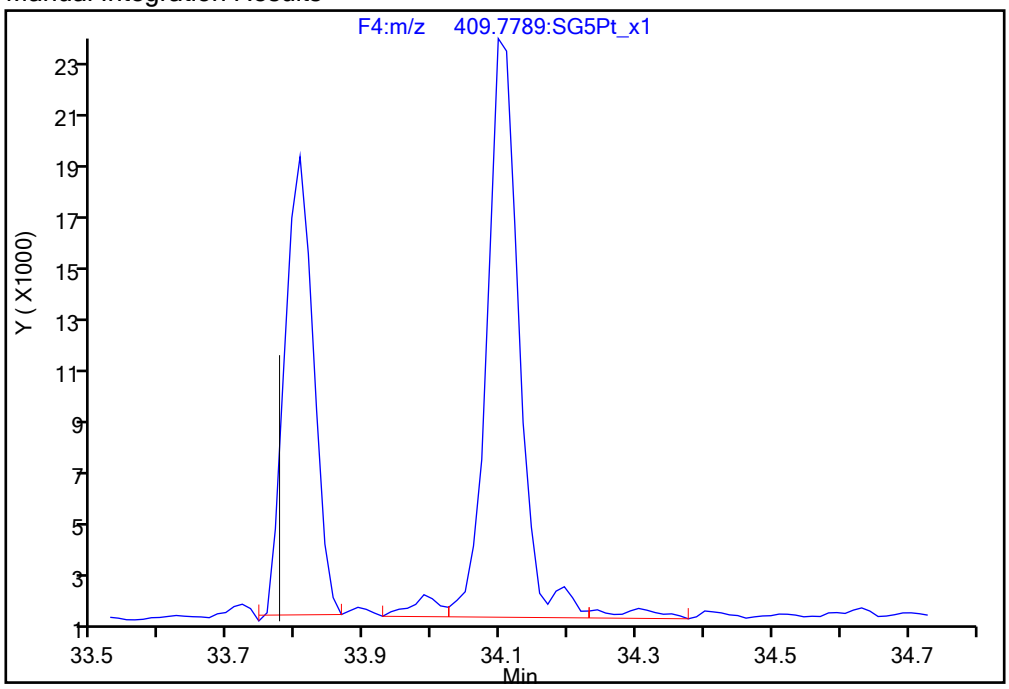
Processing Integration Results

RT = 34.097 Area = 74800



Manual Integration Results

RT = 34.097 Area = 70541 M



Reviewer: dadunj, 16-Dec-2019 10:40:58

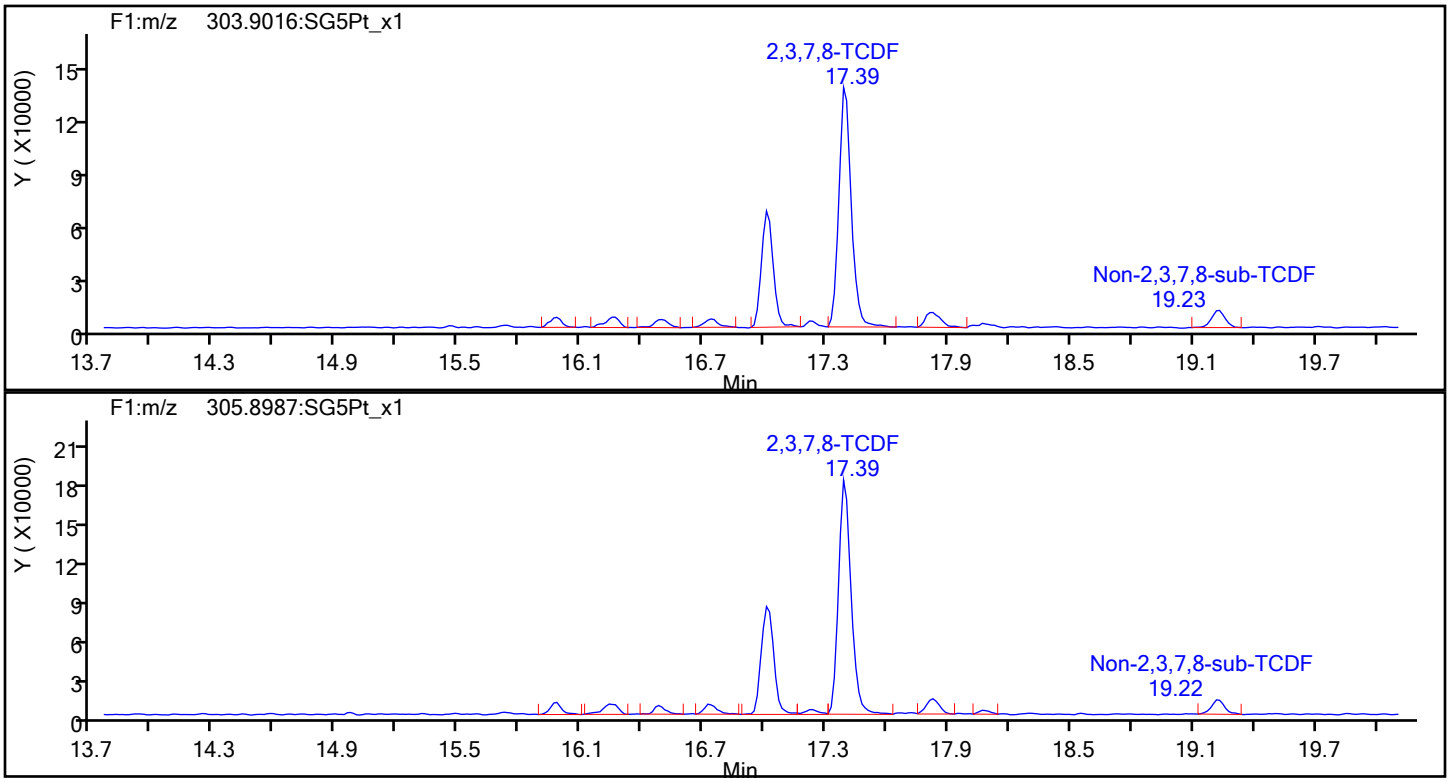
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

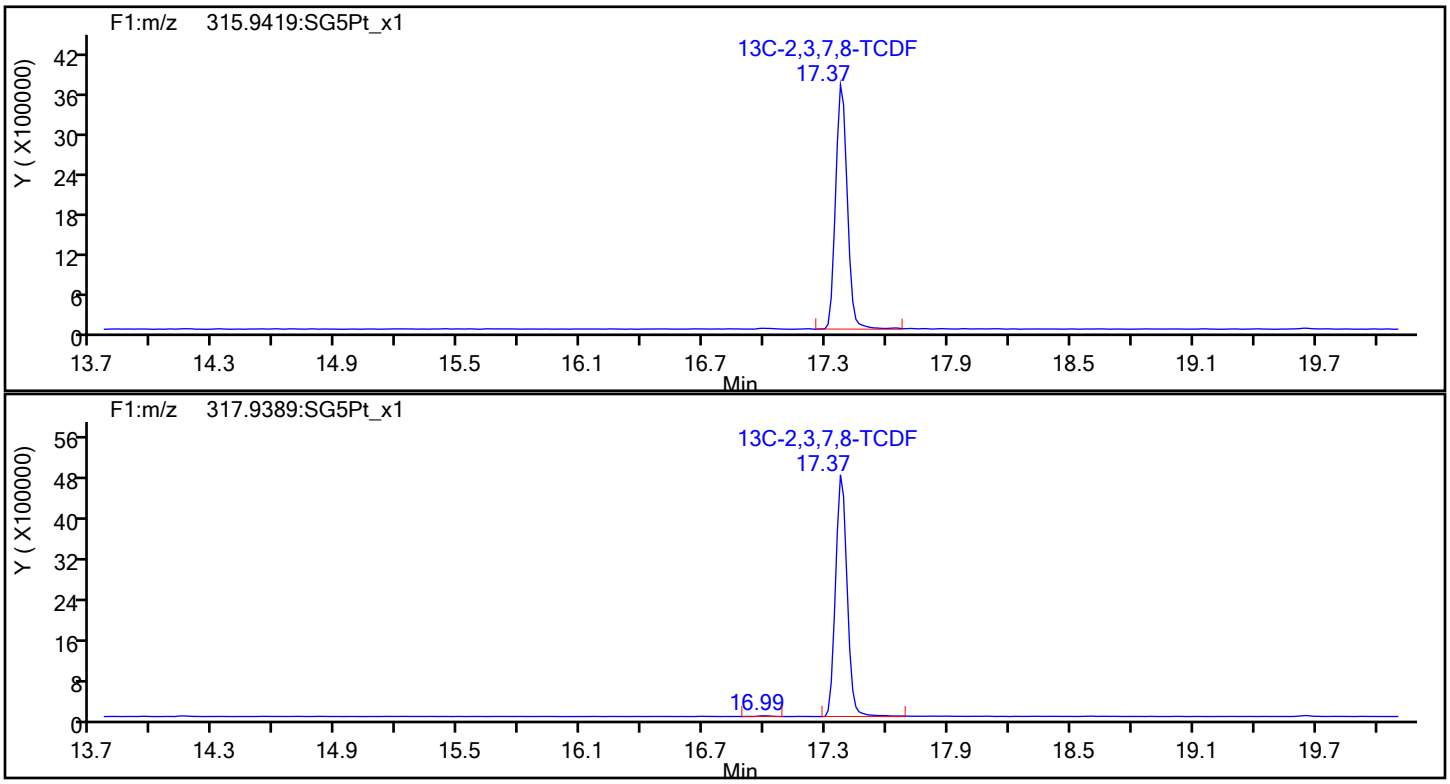
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF



TCDF Standards

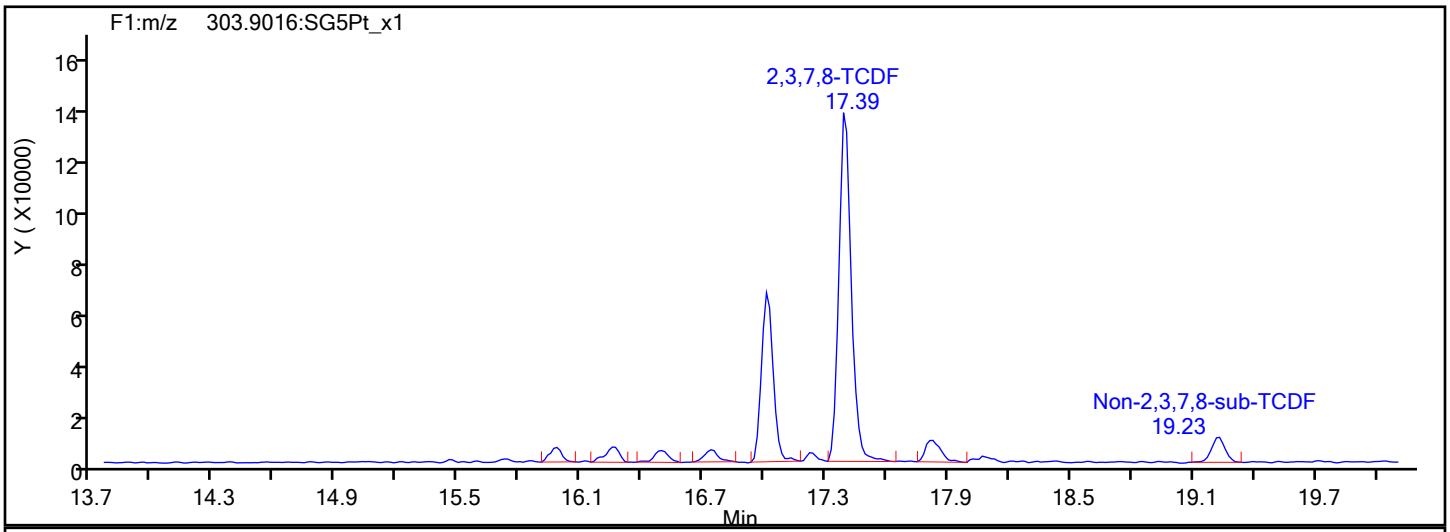


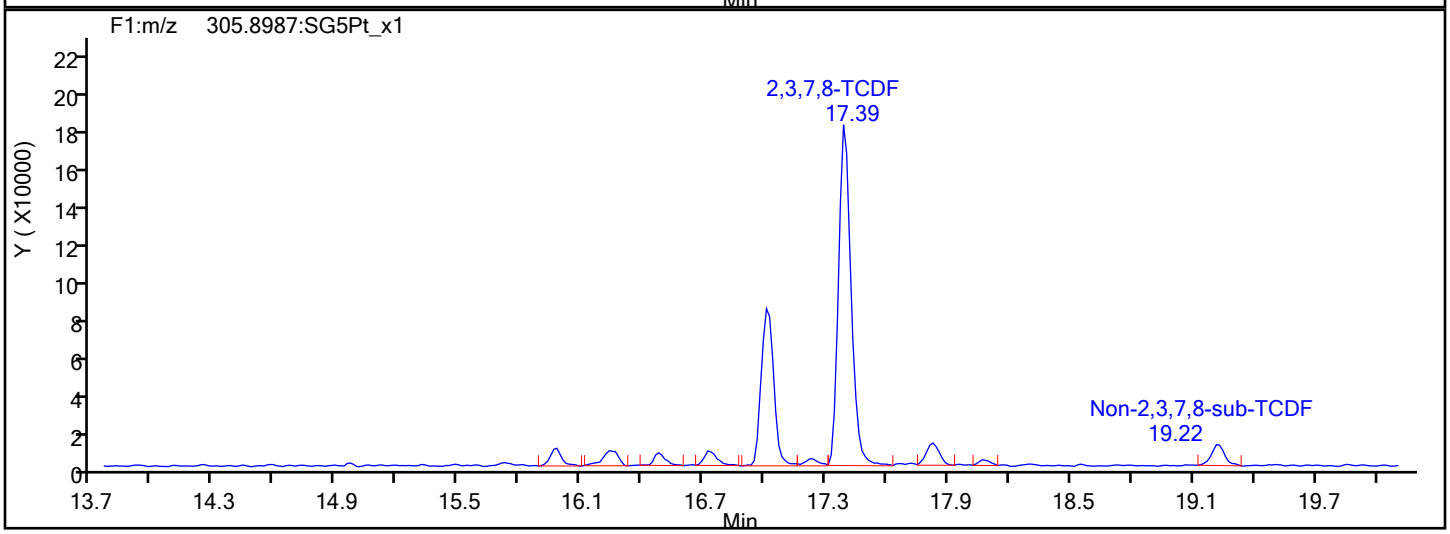
Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

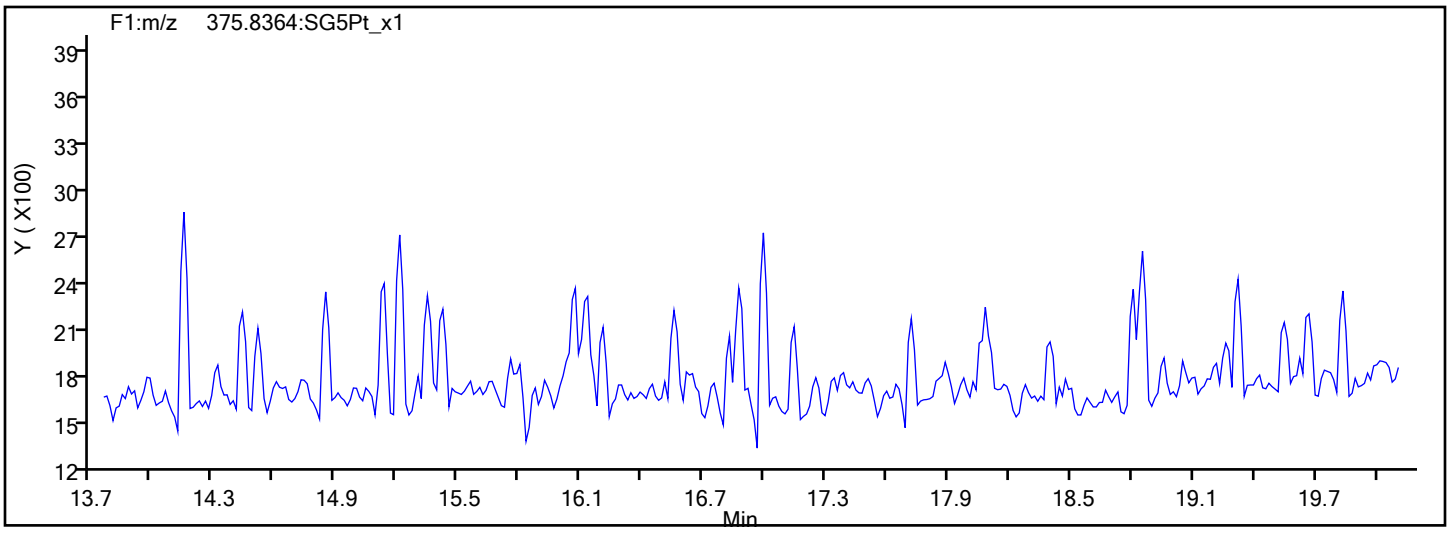
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

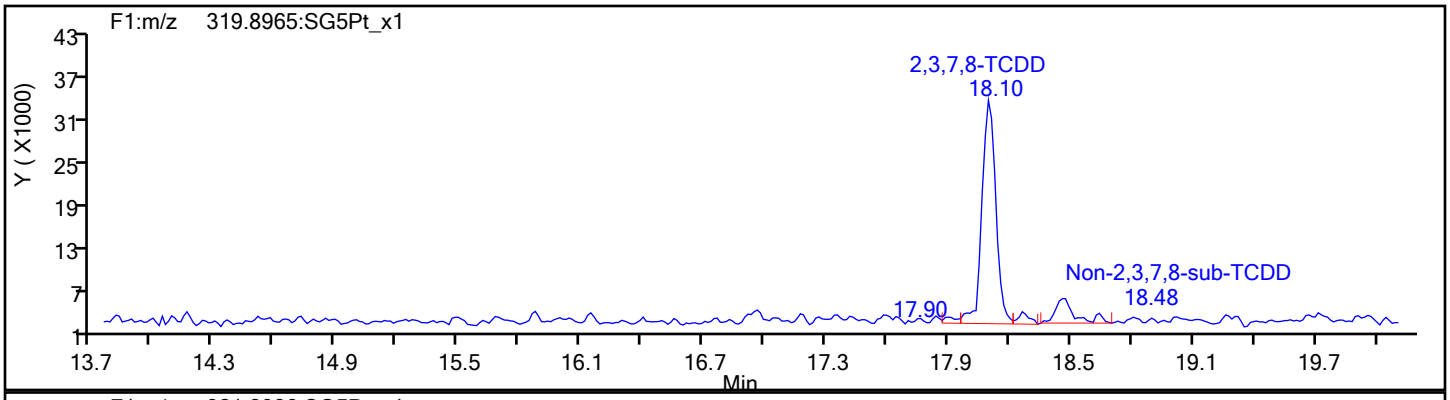


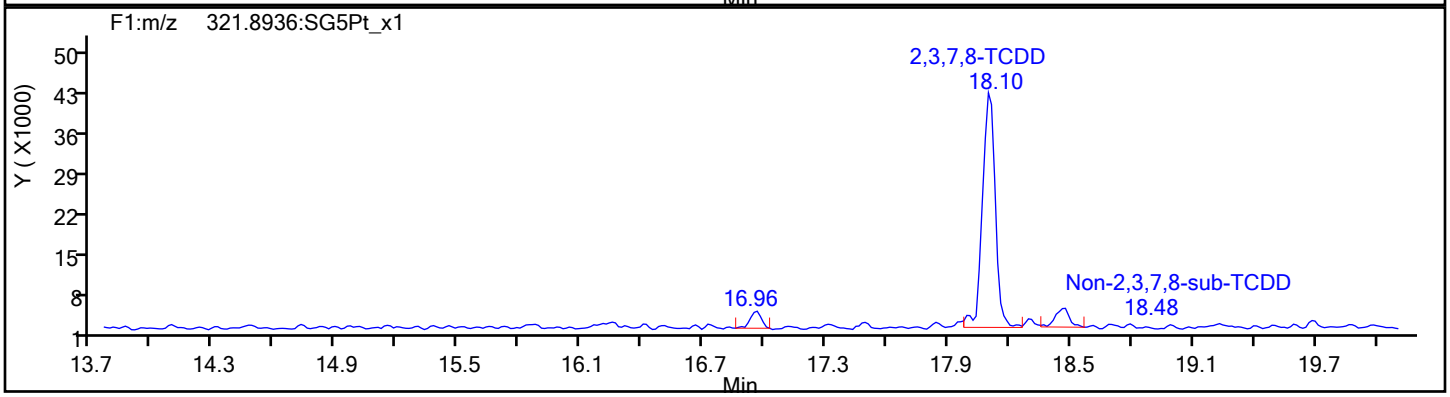
Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

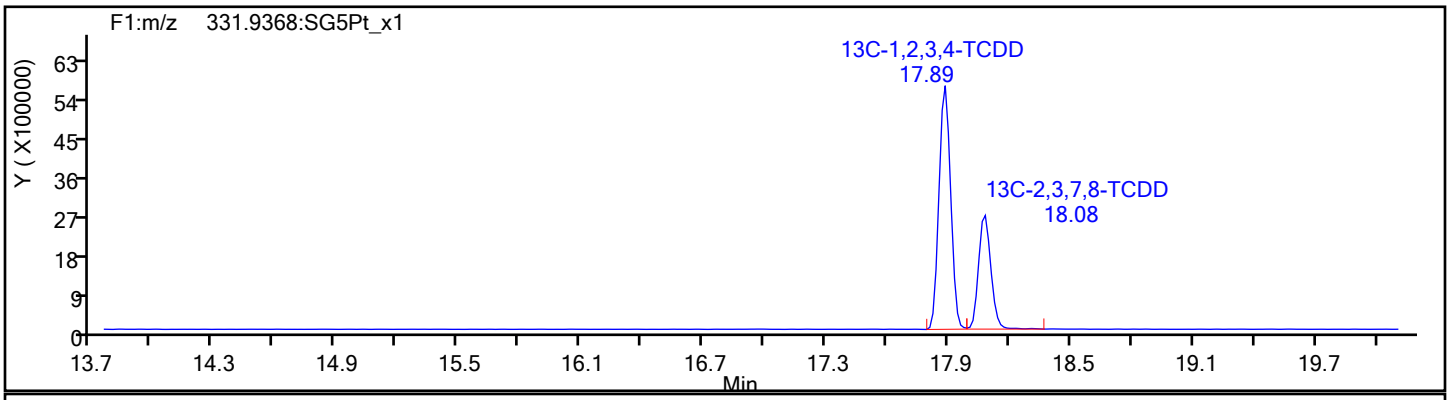
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

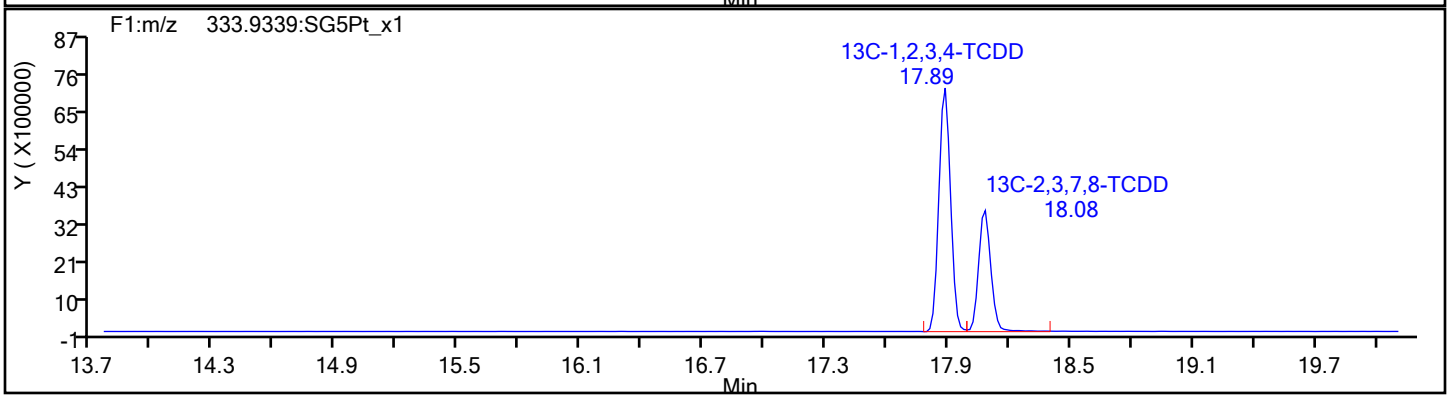
TCDD





TCDD Standards



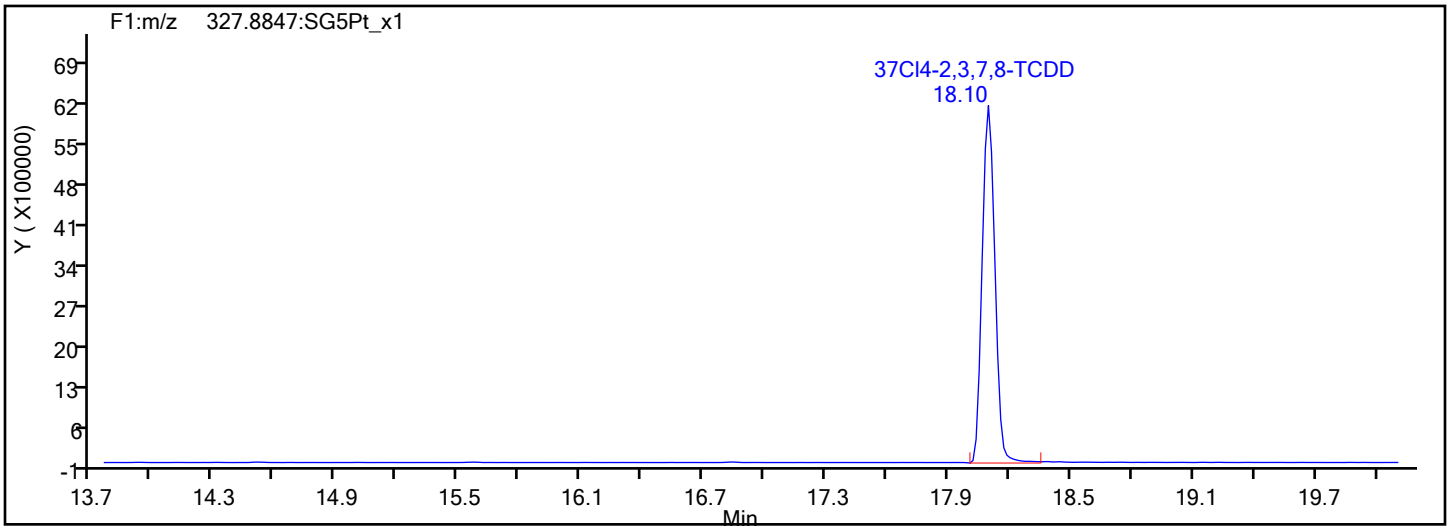


Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

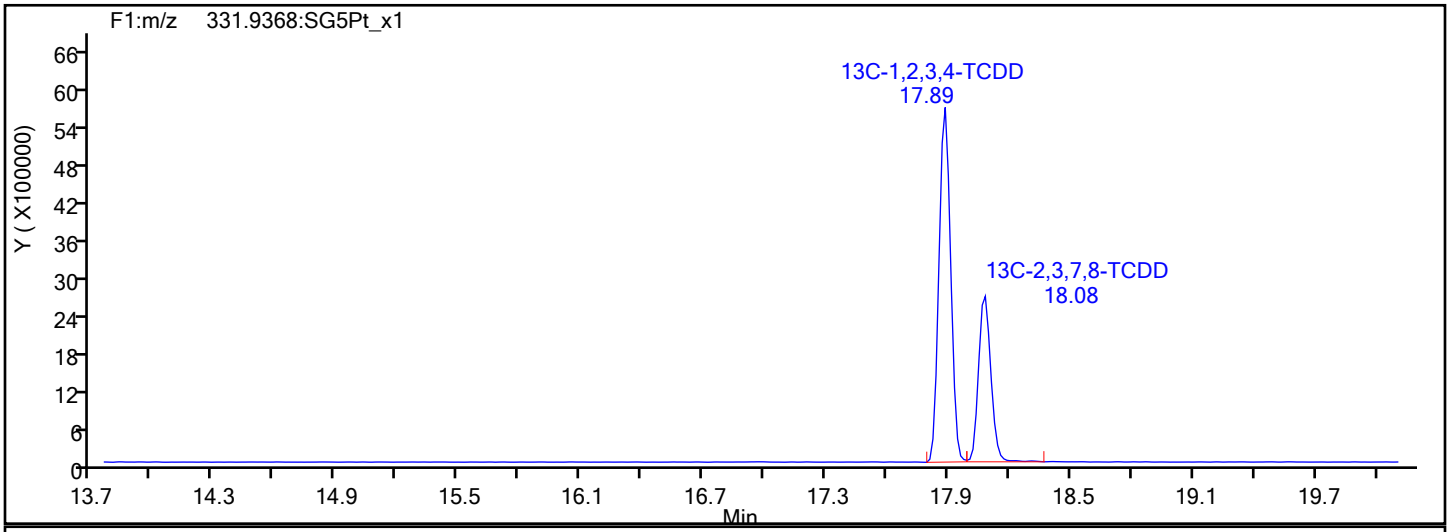
Eurofins TestAmerica, Sacramento

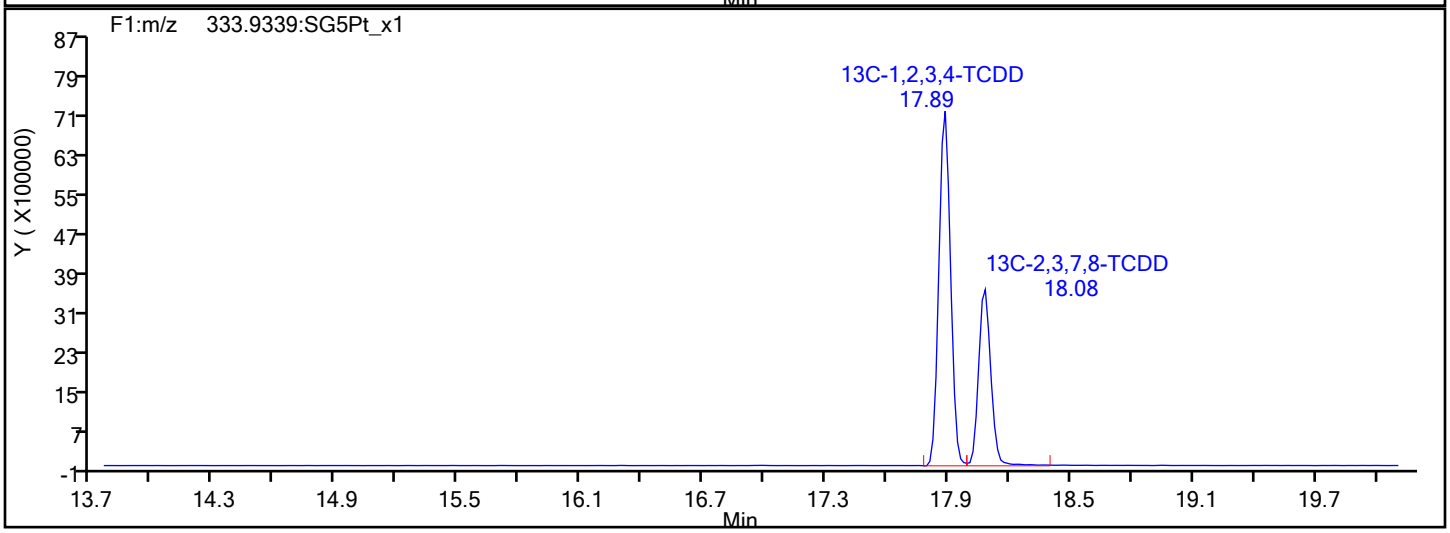
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



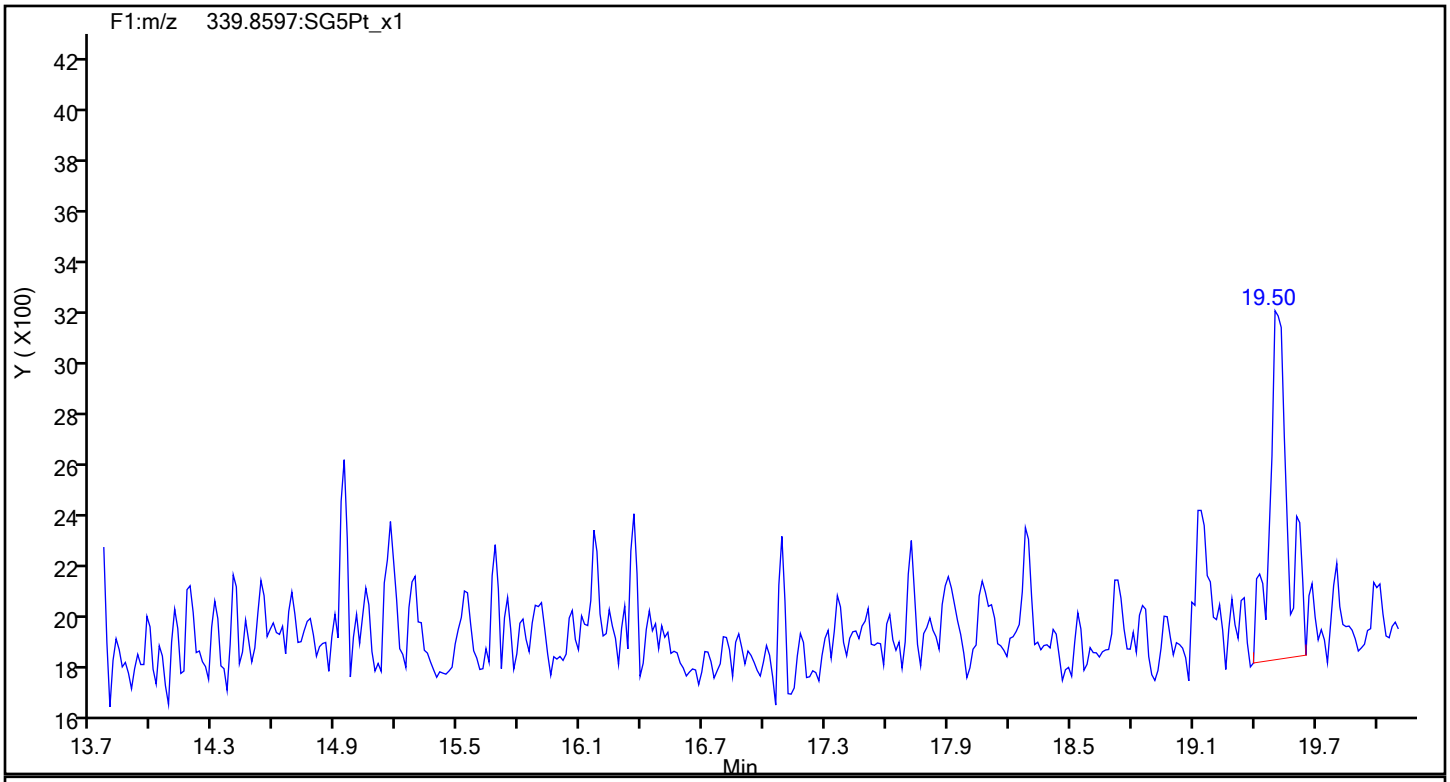


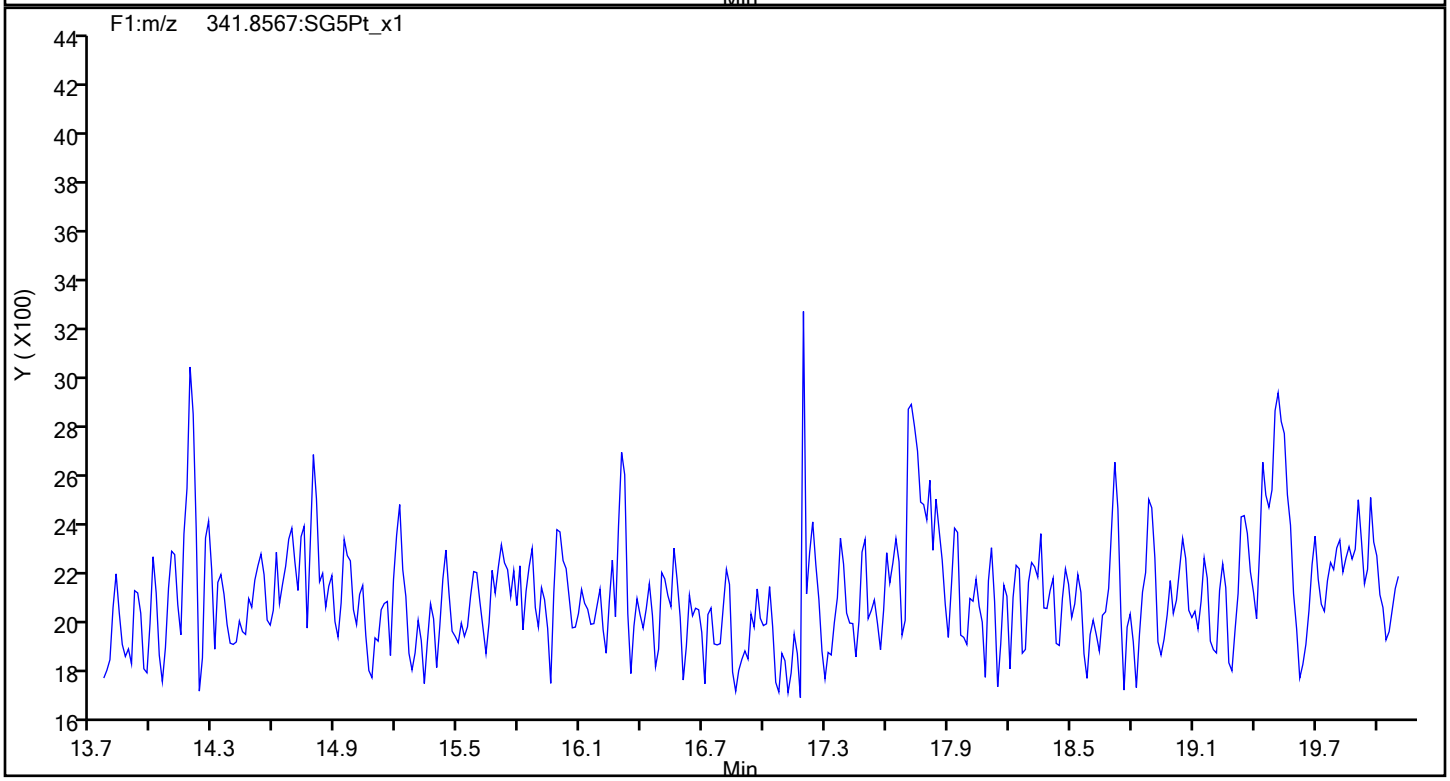
Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



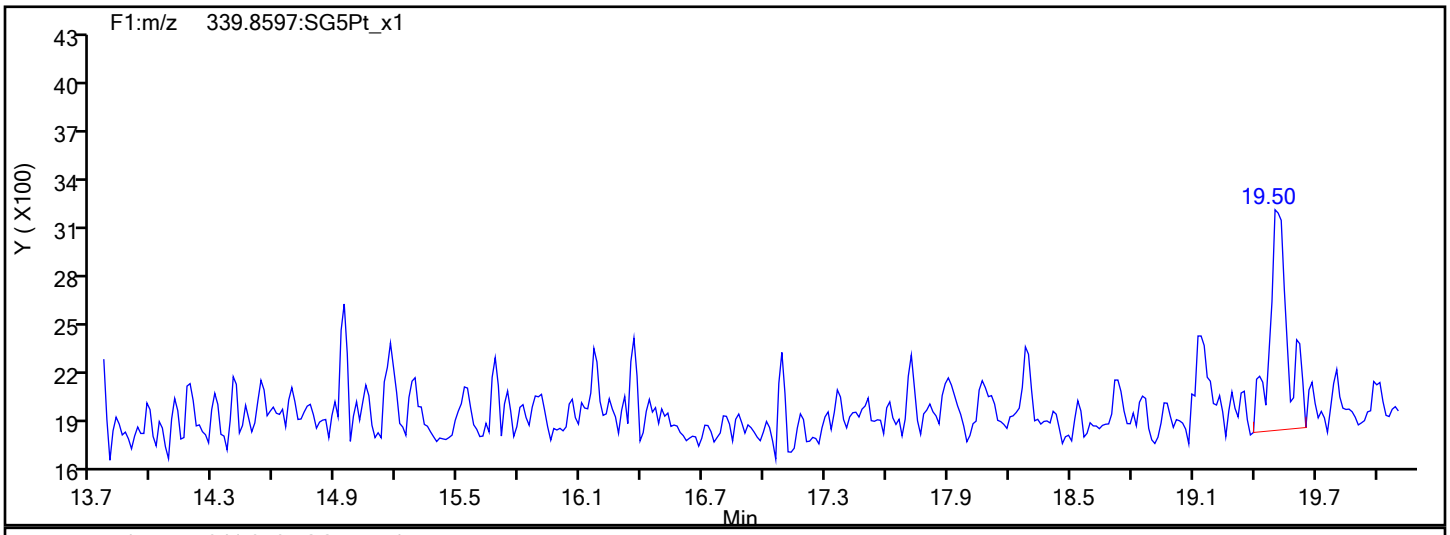


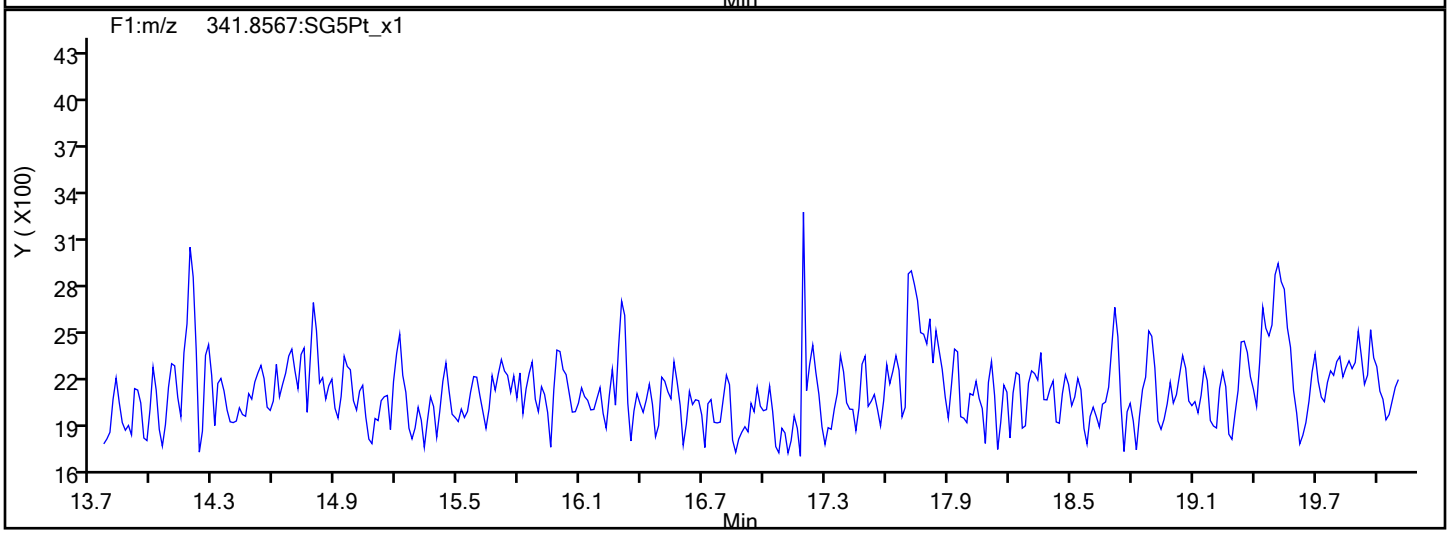
Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

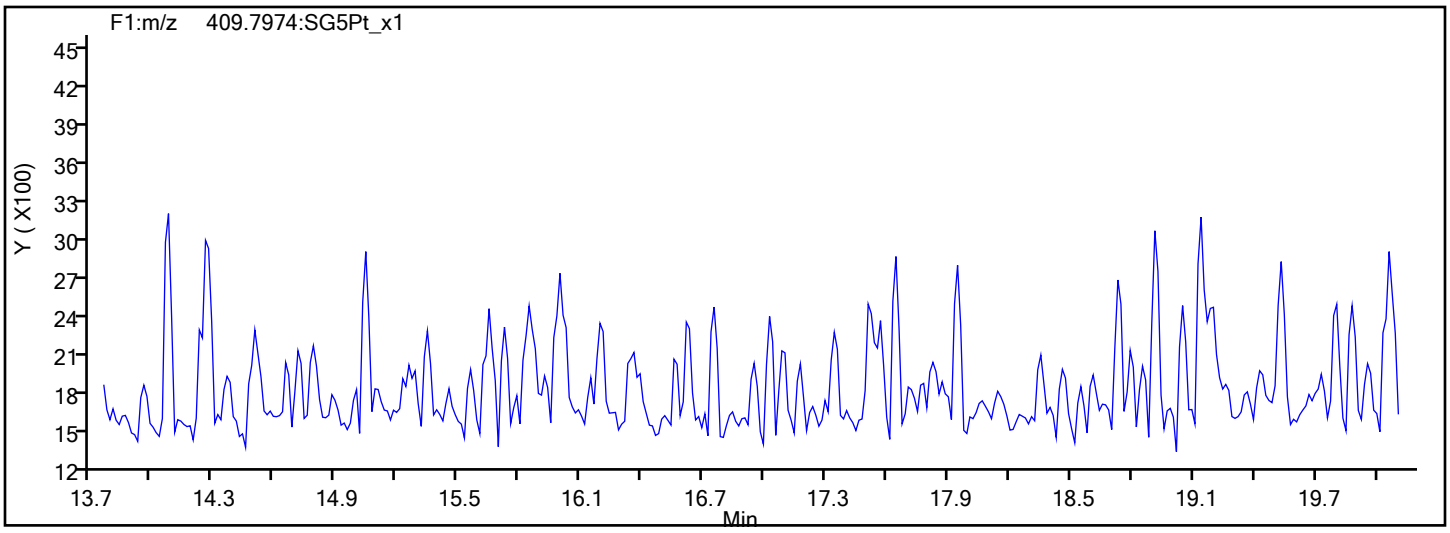
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

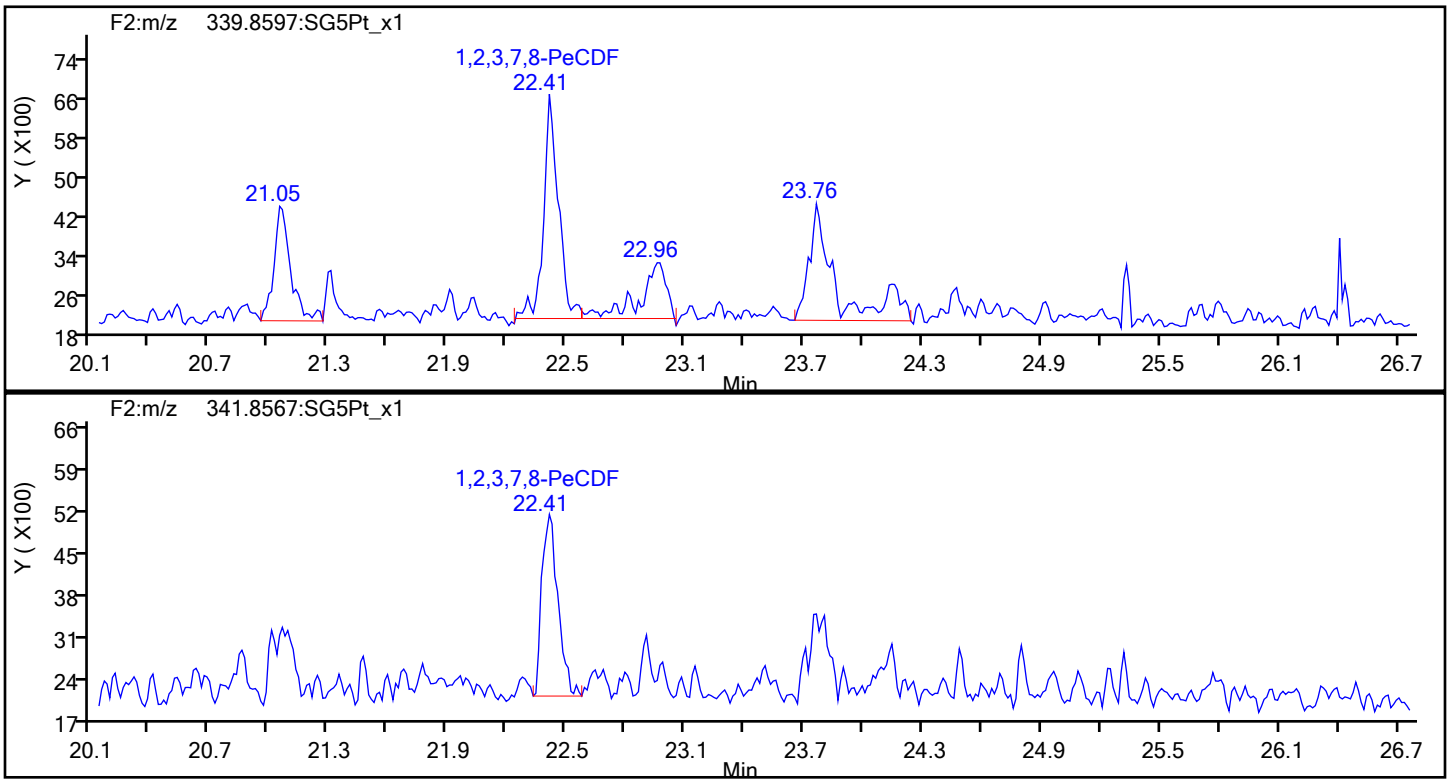


Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

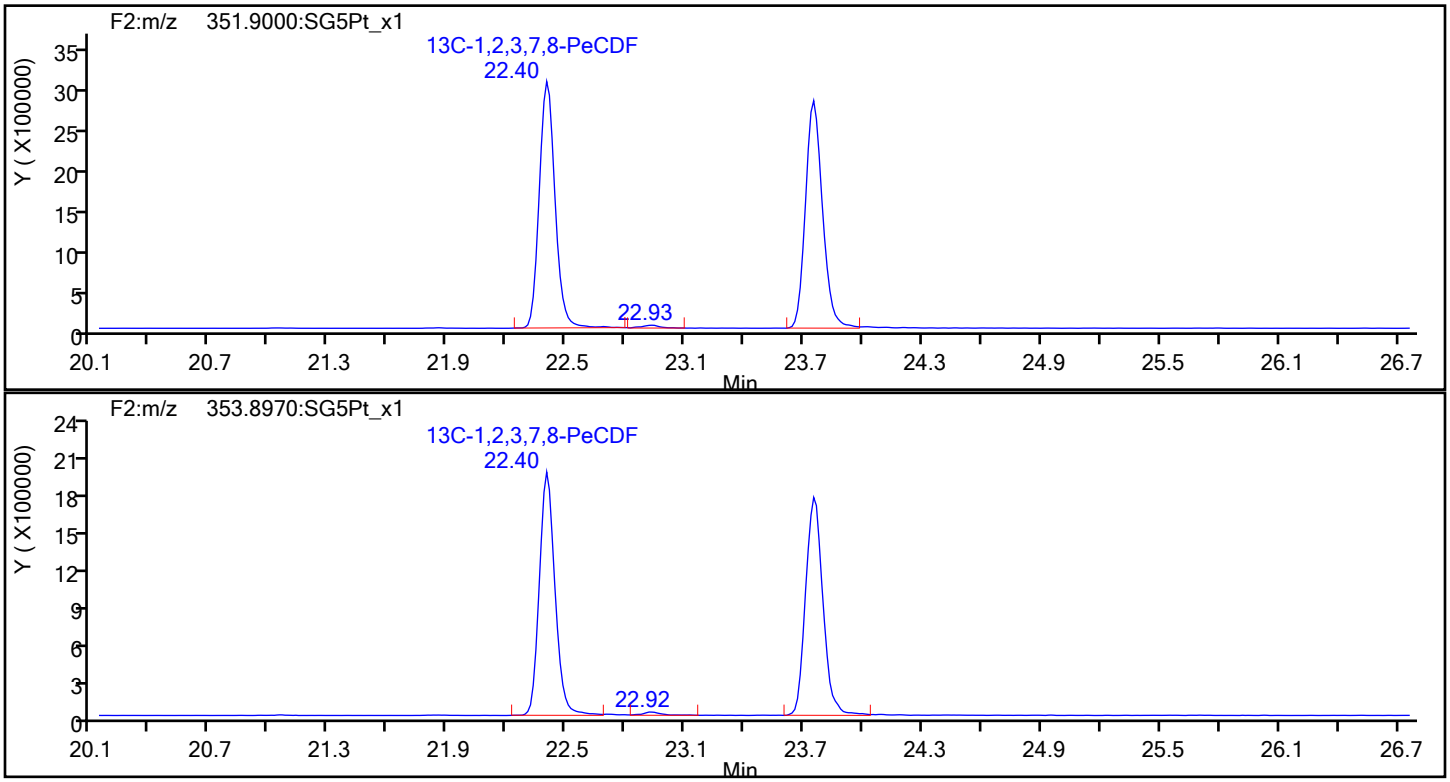
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 16-Dec-2019 08:46:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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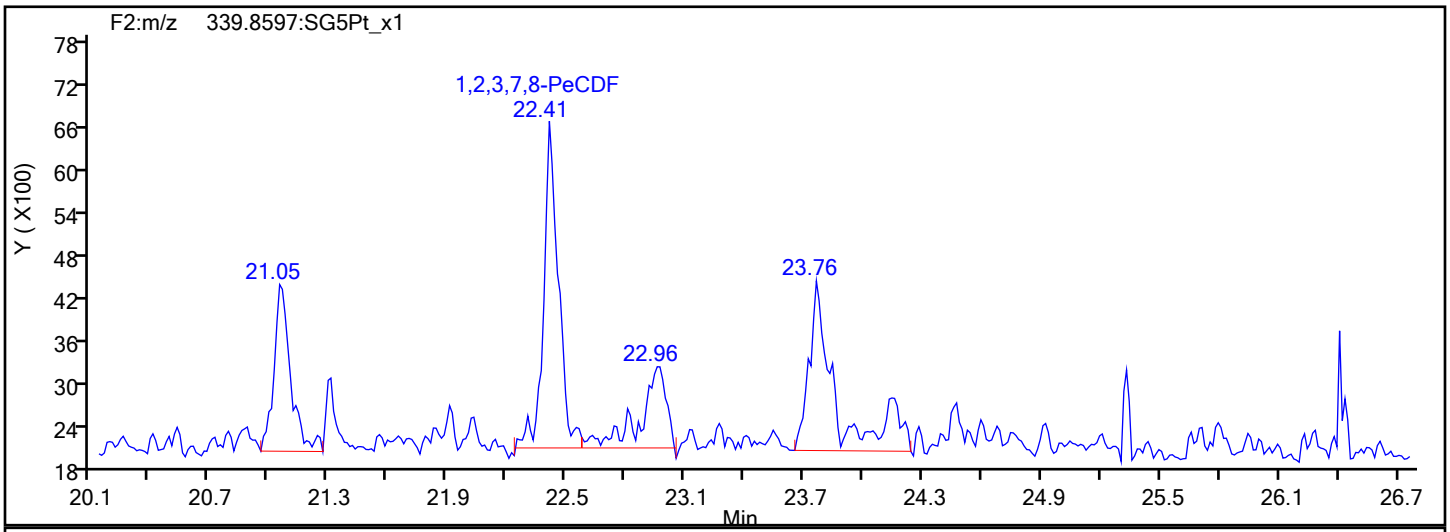
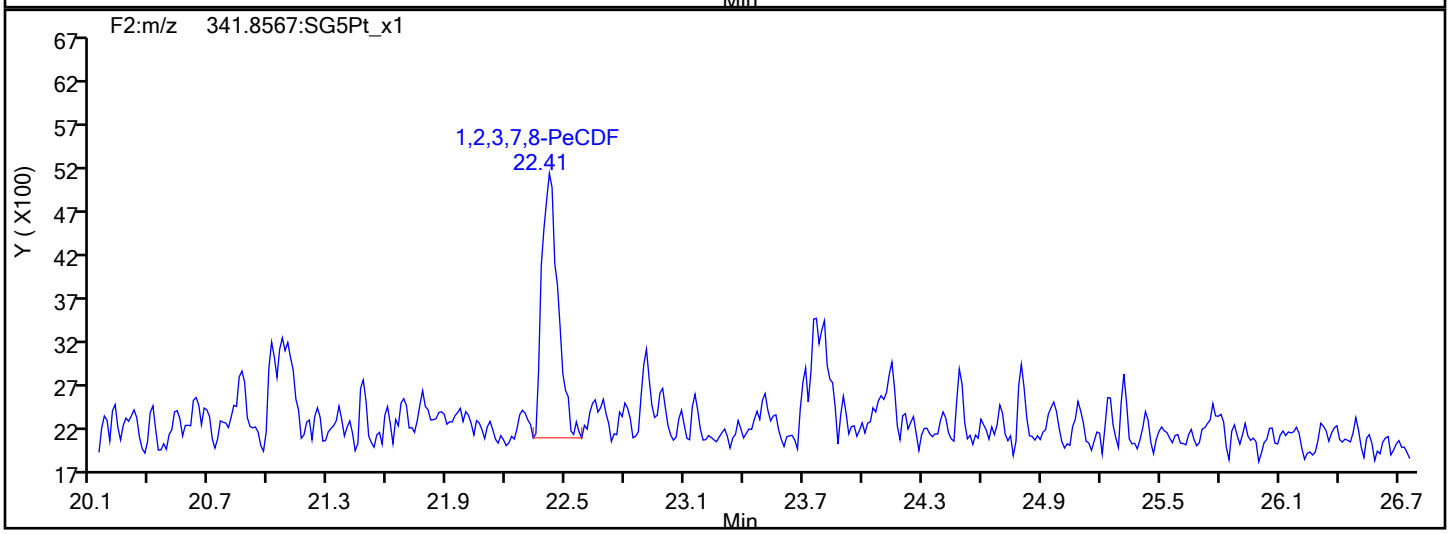
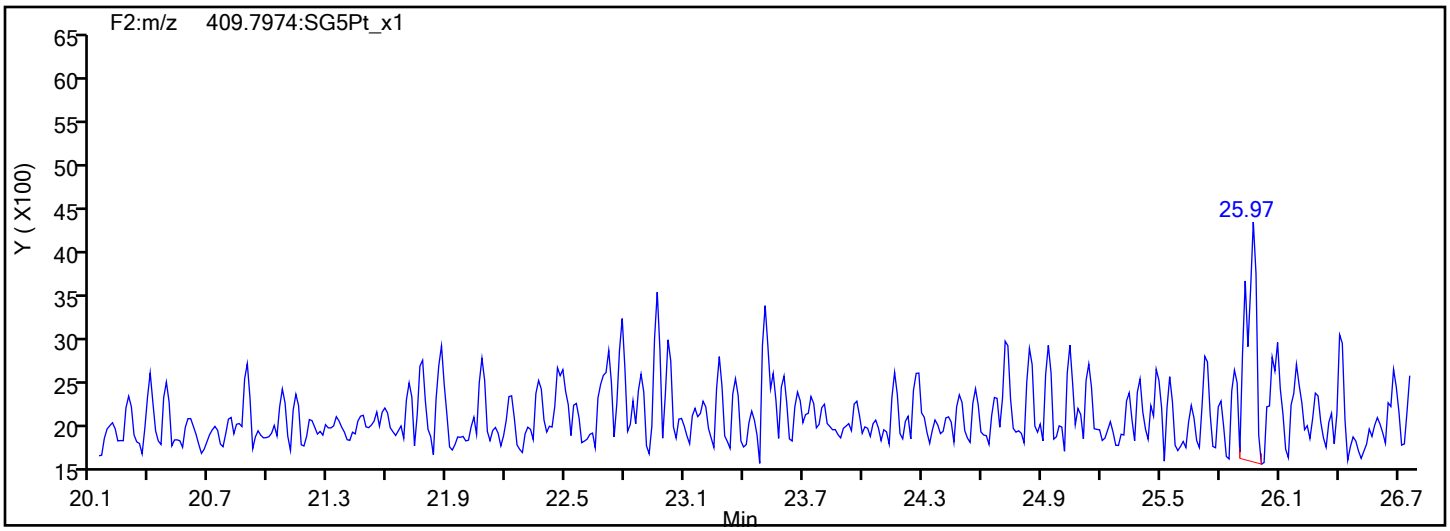




PeCDF Interference Mass



Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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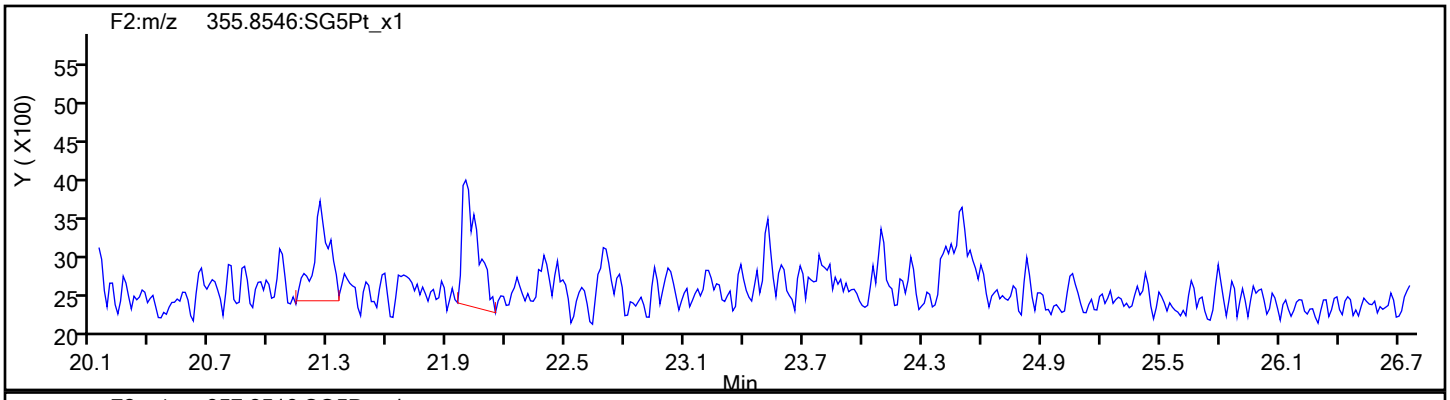

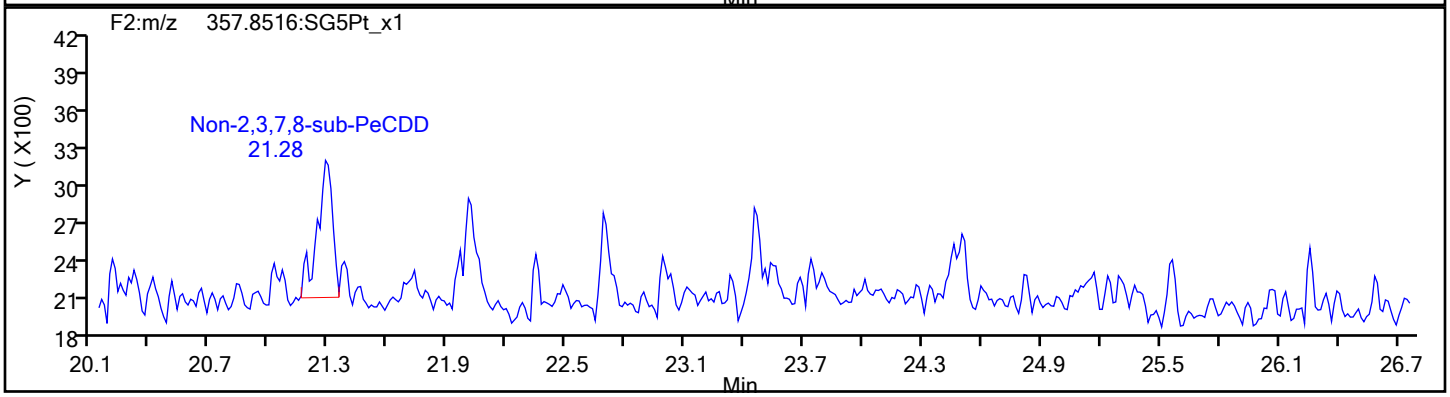

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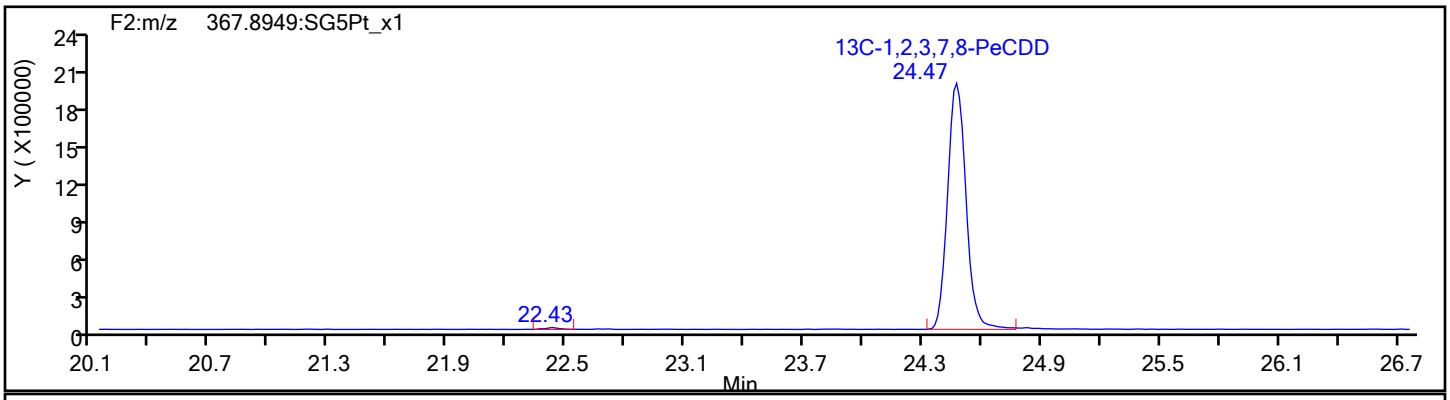

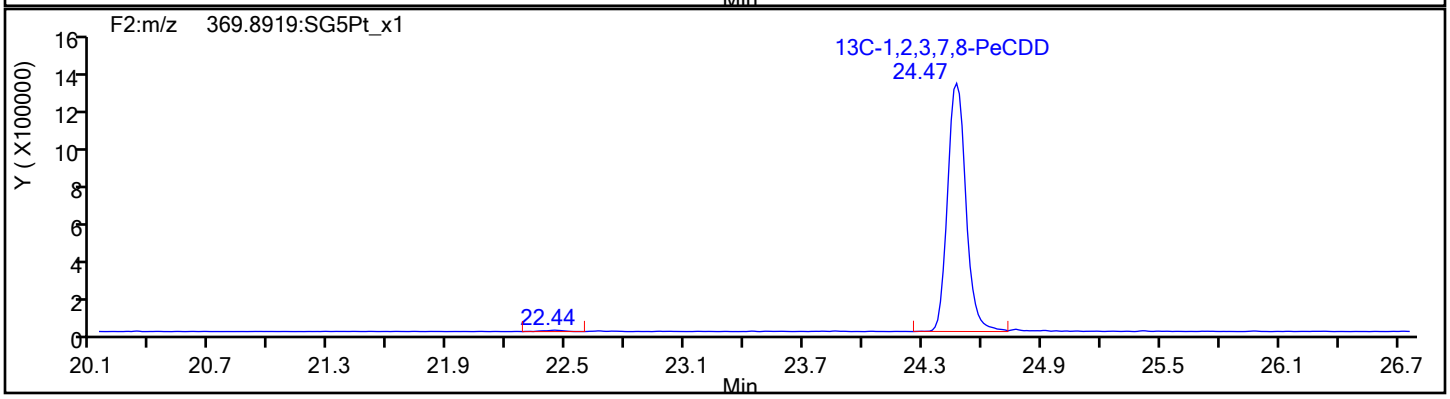

Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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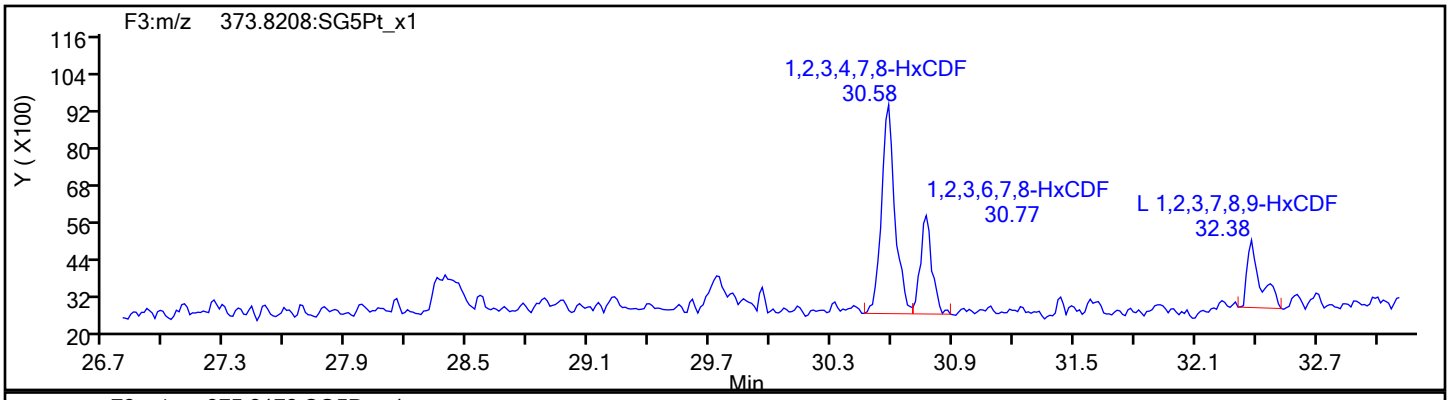
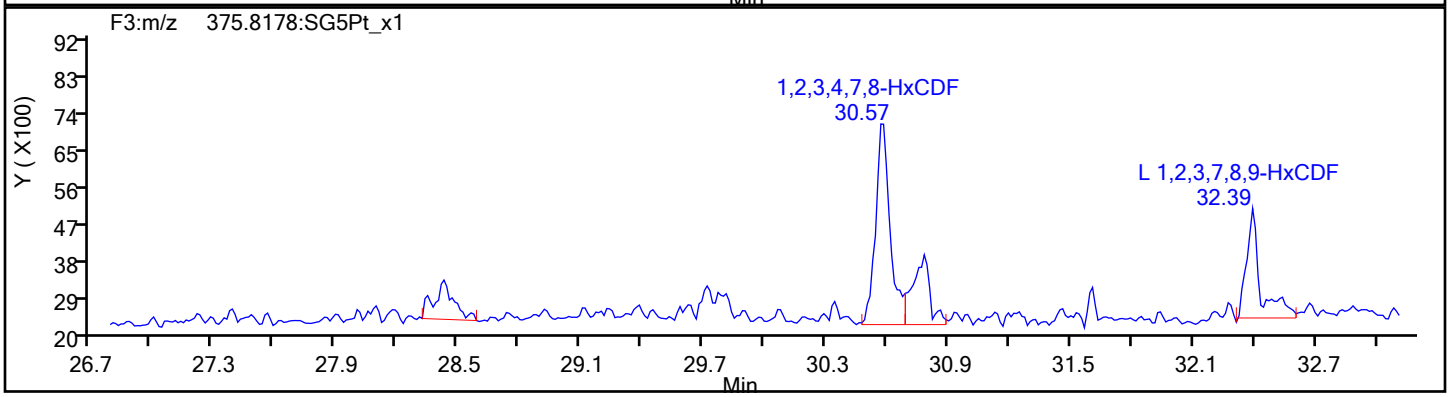
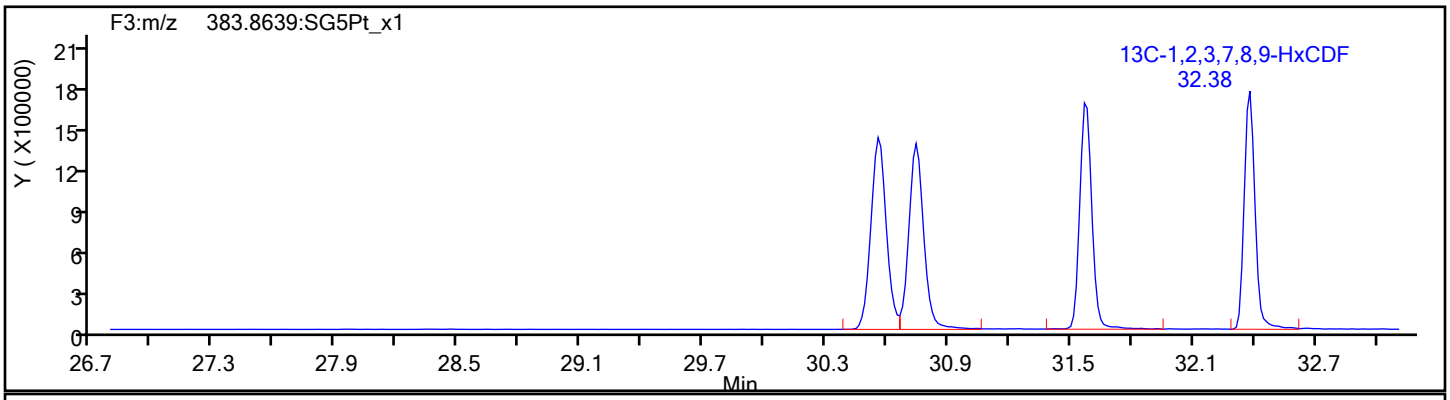
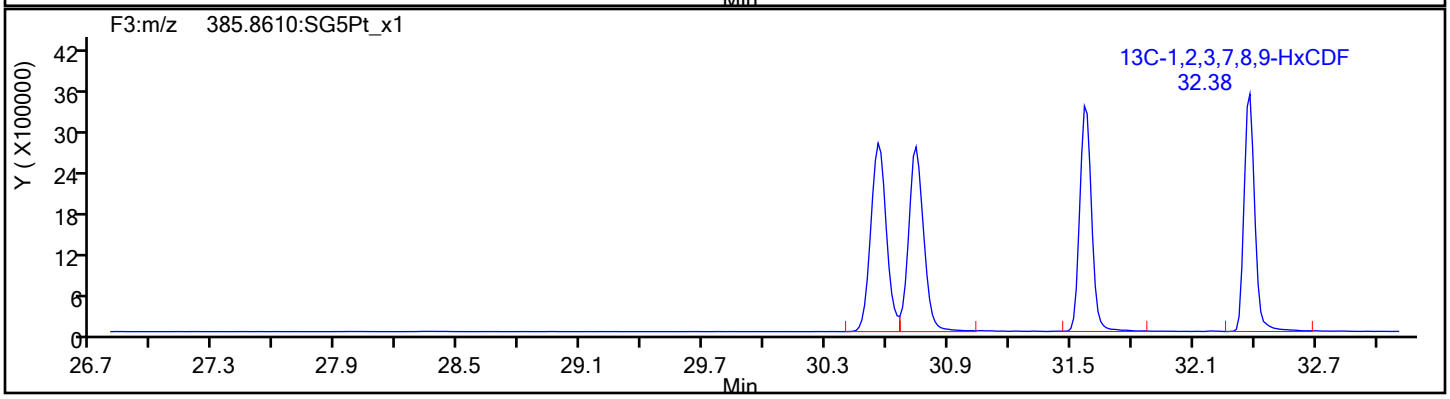
HxCDF





HxCDF Standards





Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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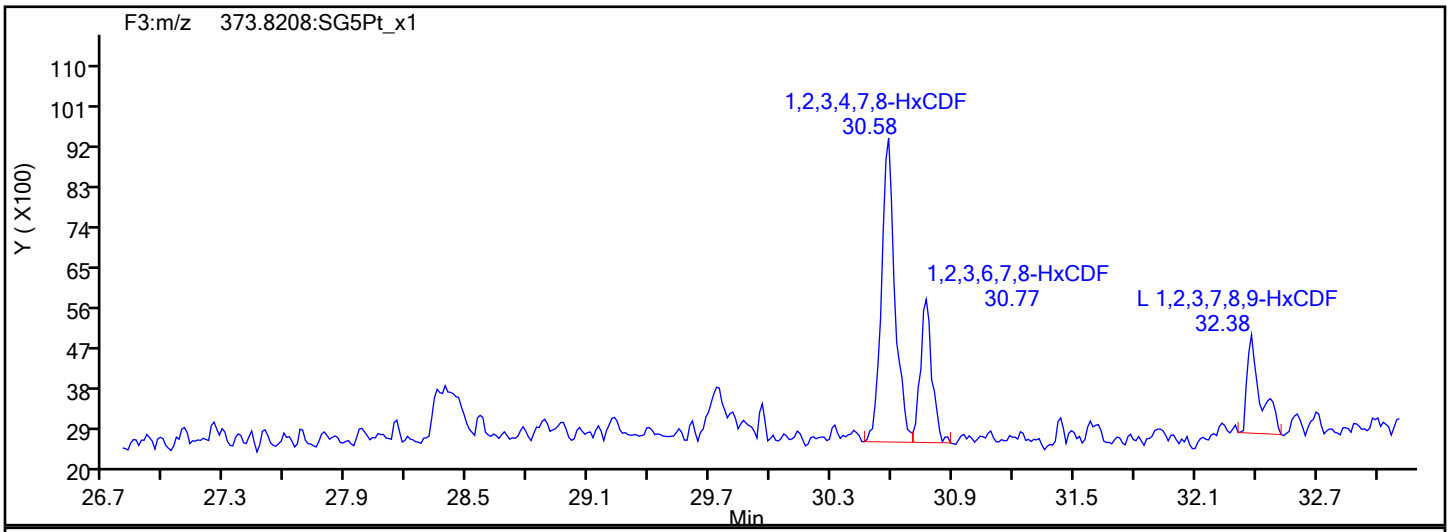
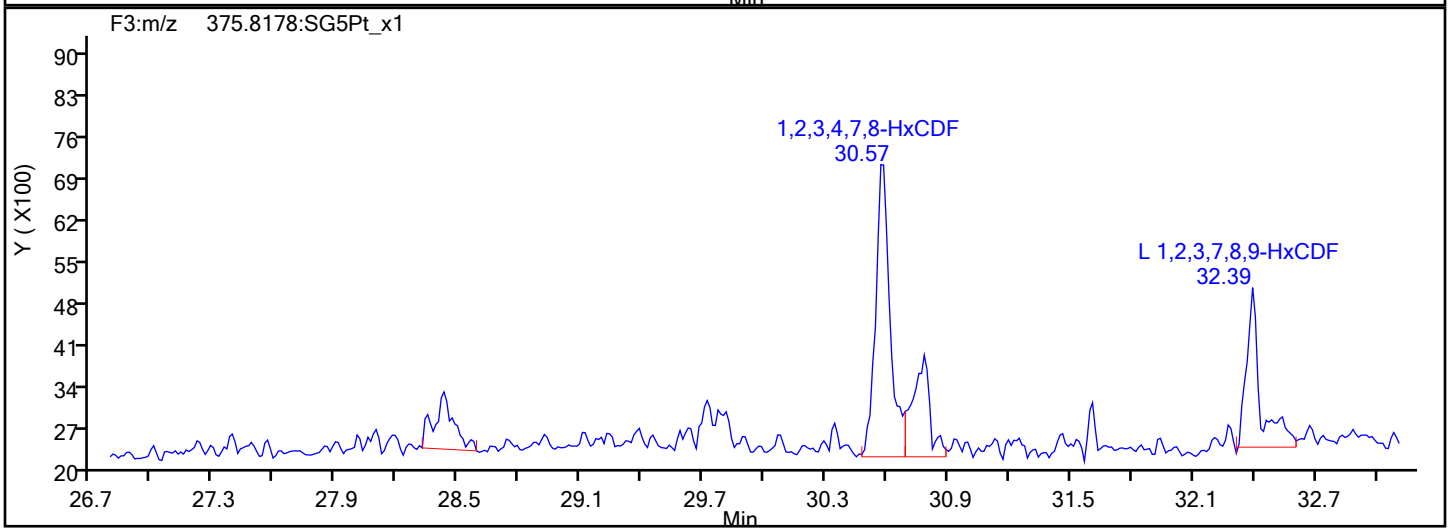
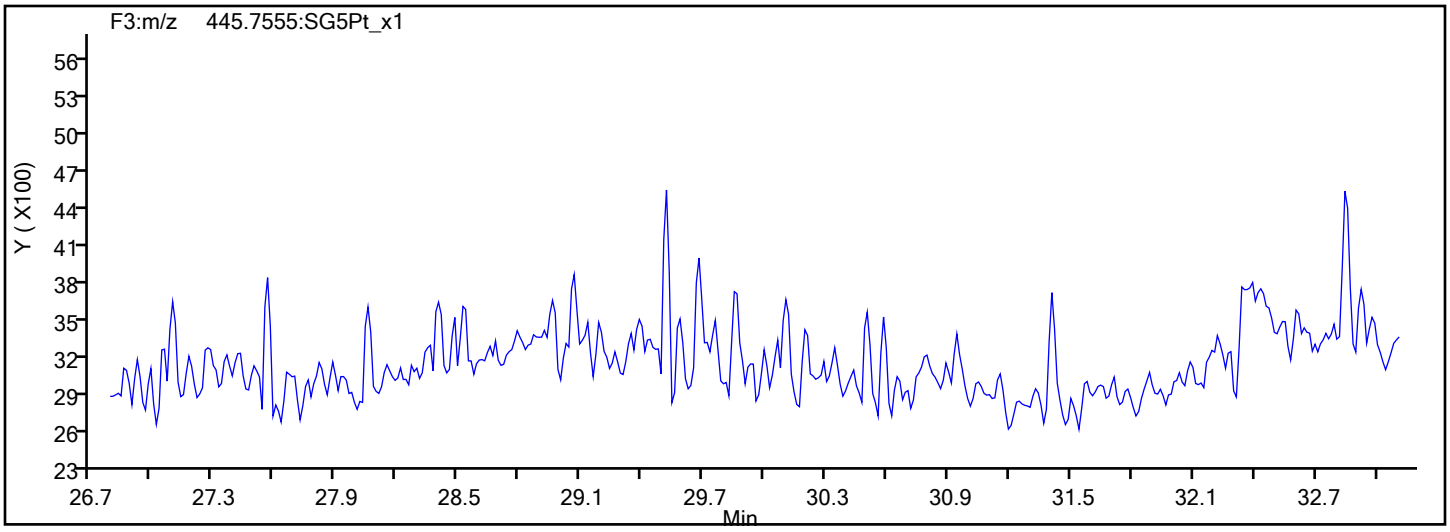
HxCDF





HxCDF Interference Mass



Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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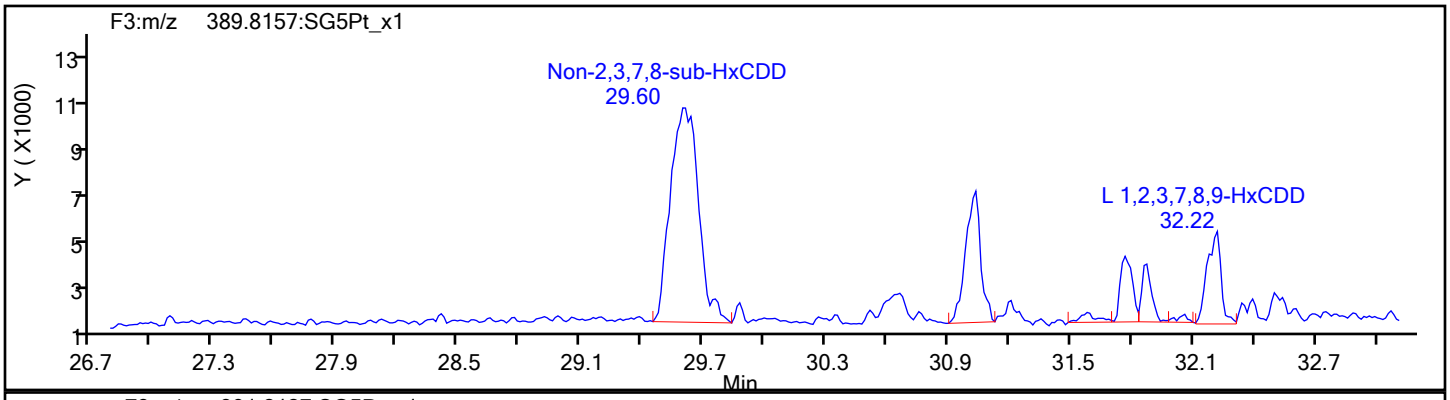
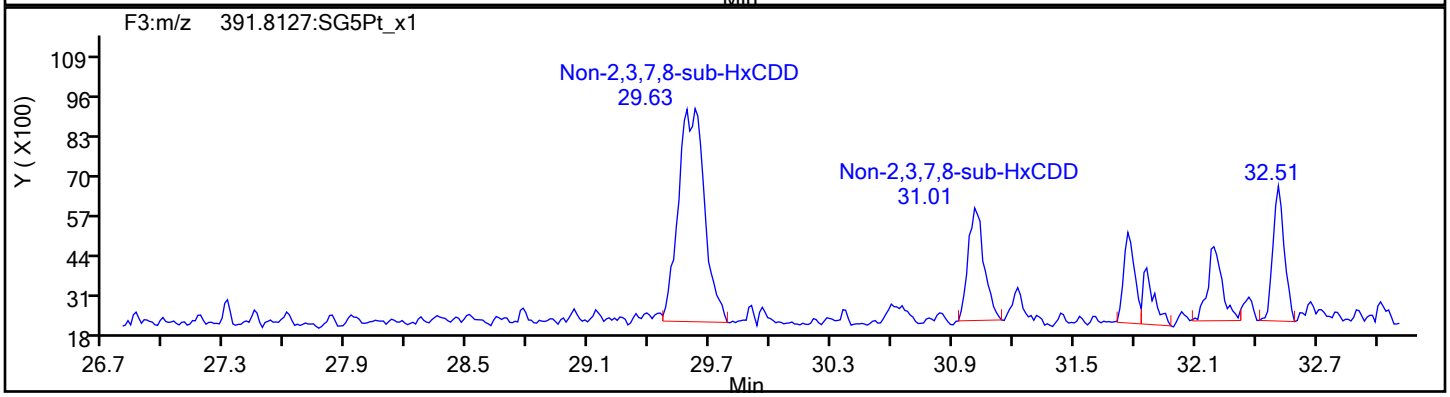
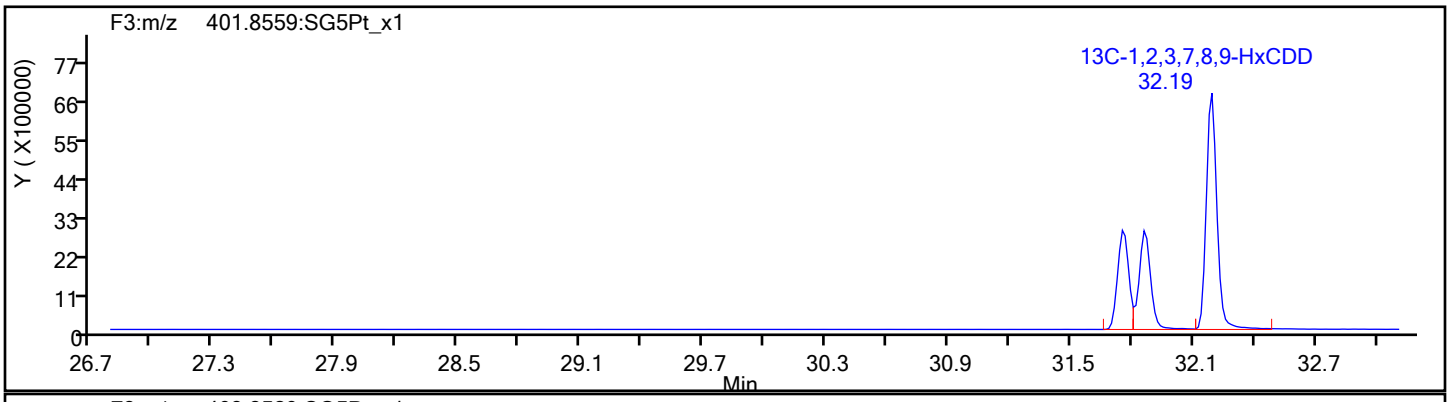
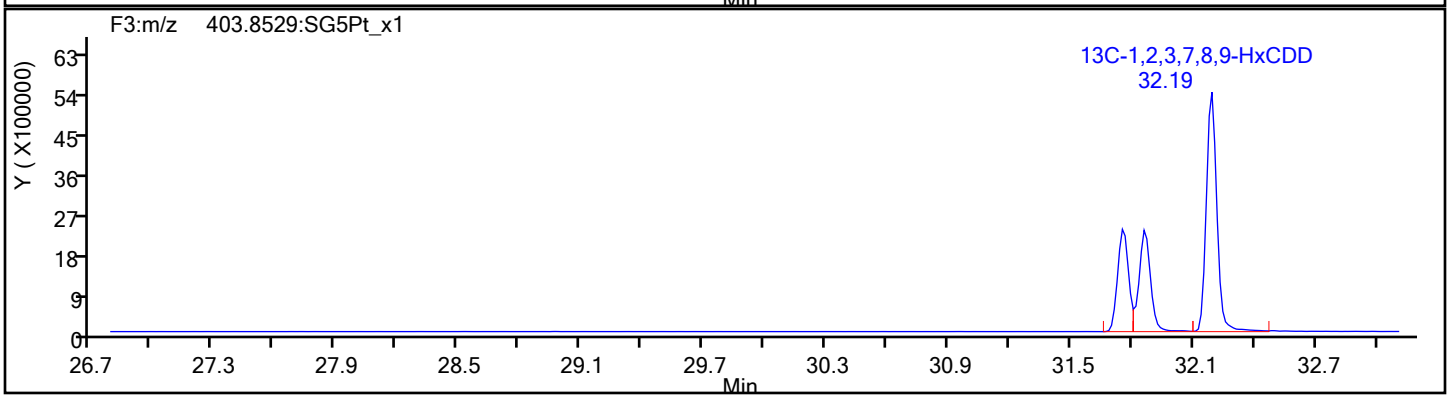
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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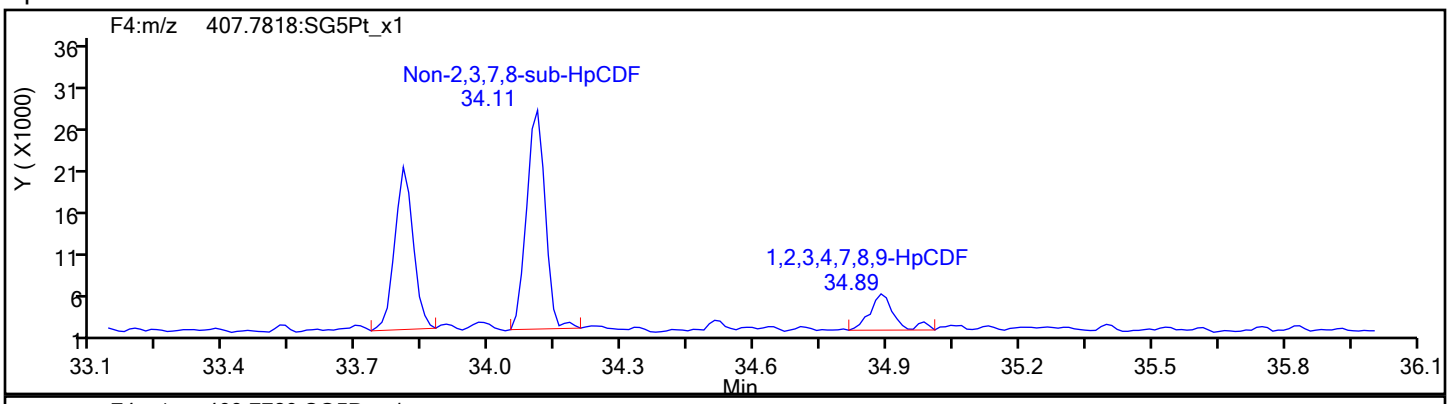
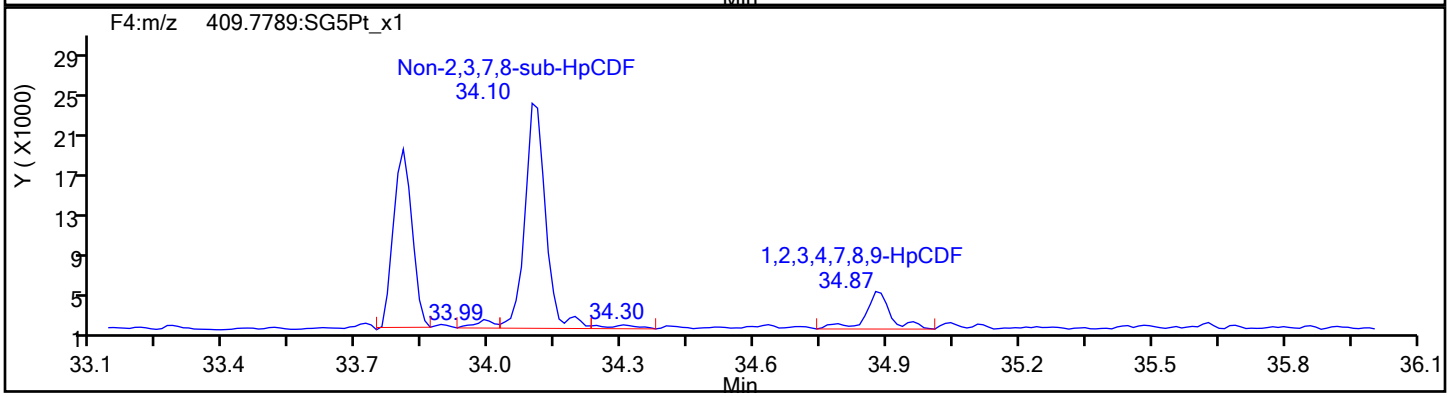
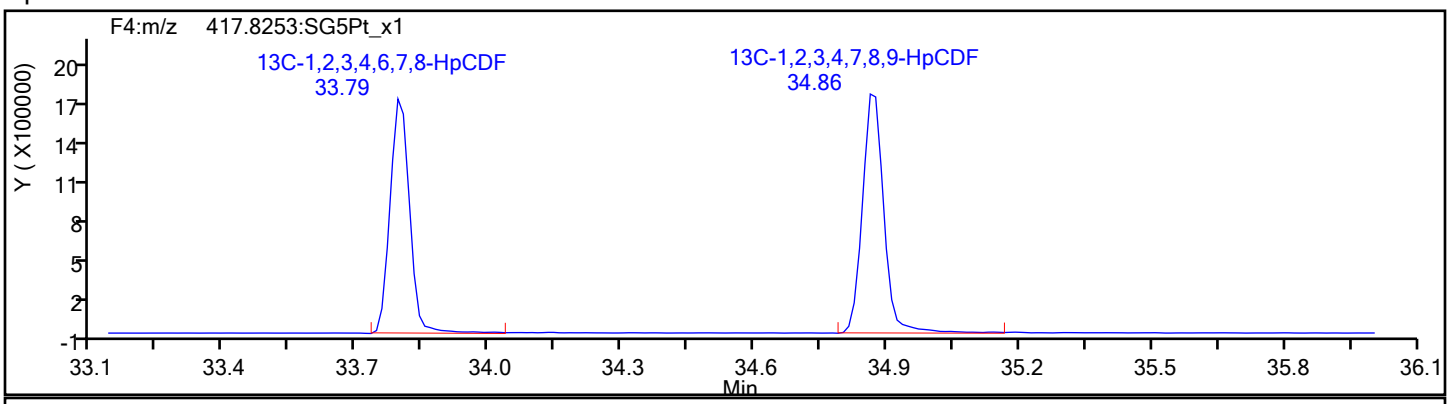
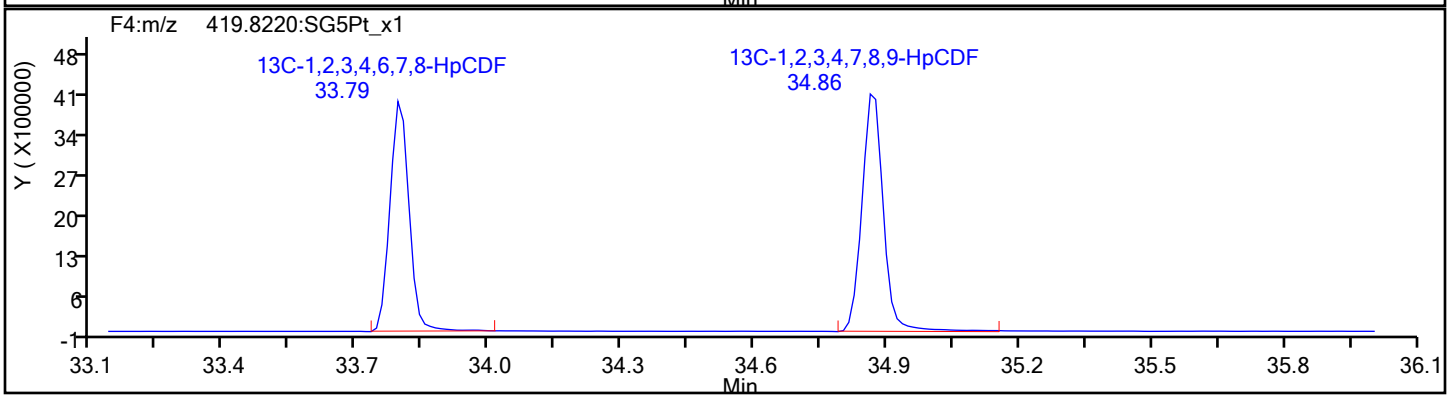
HpCDF





HpCDF Standards





Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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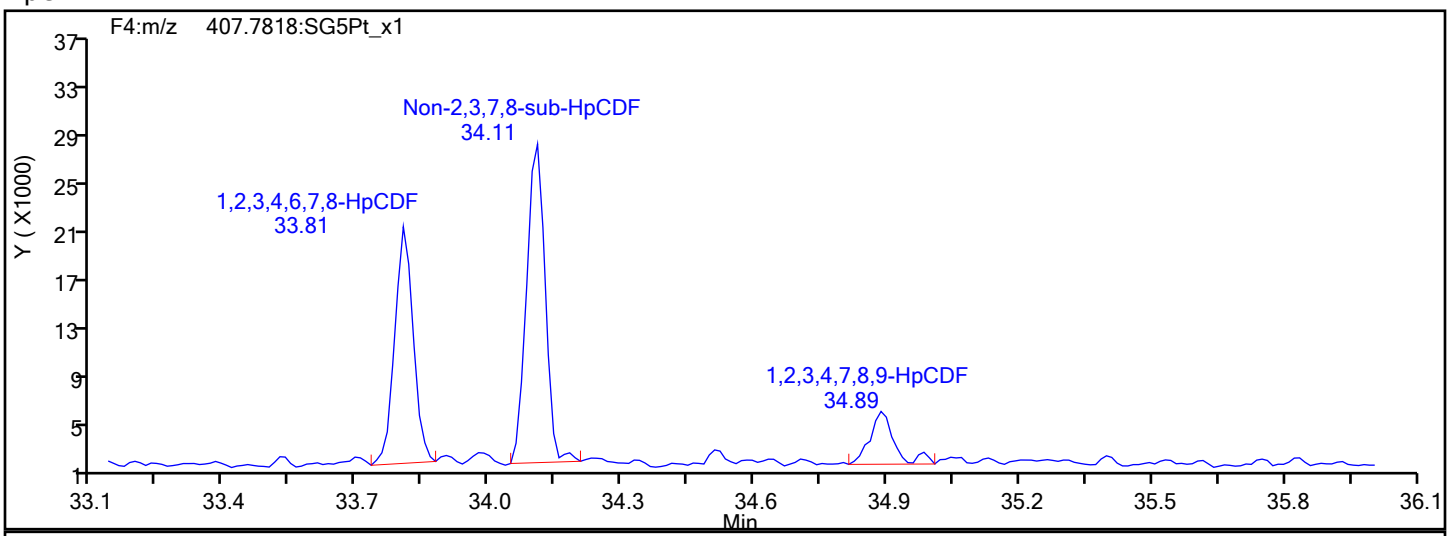
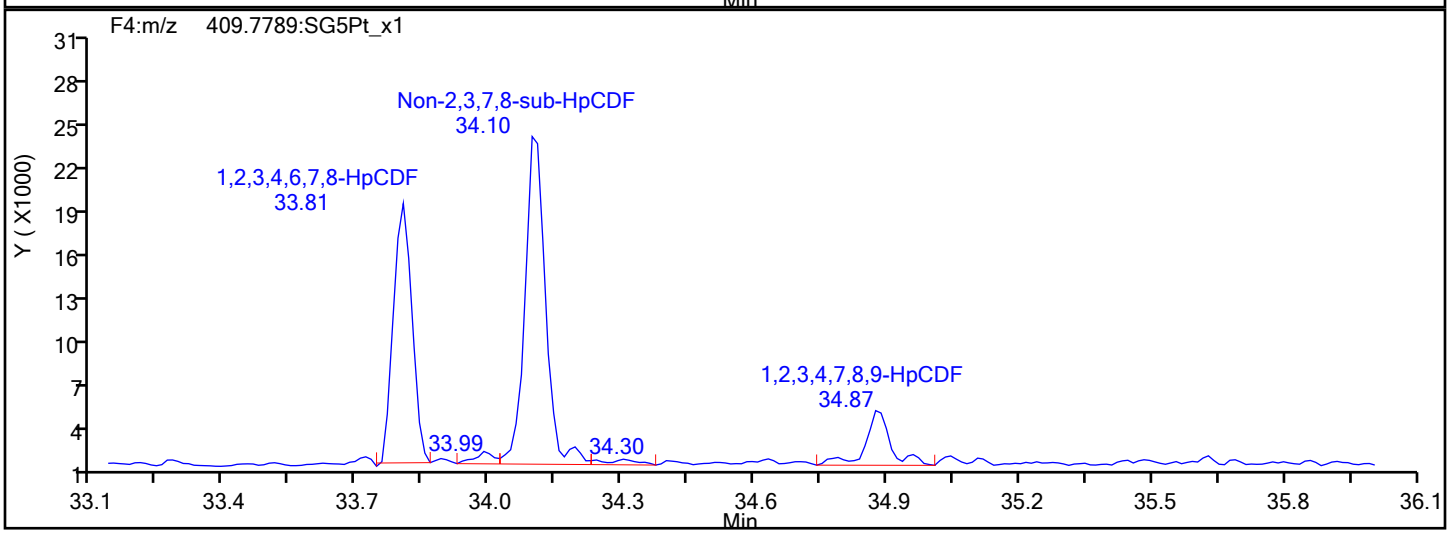
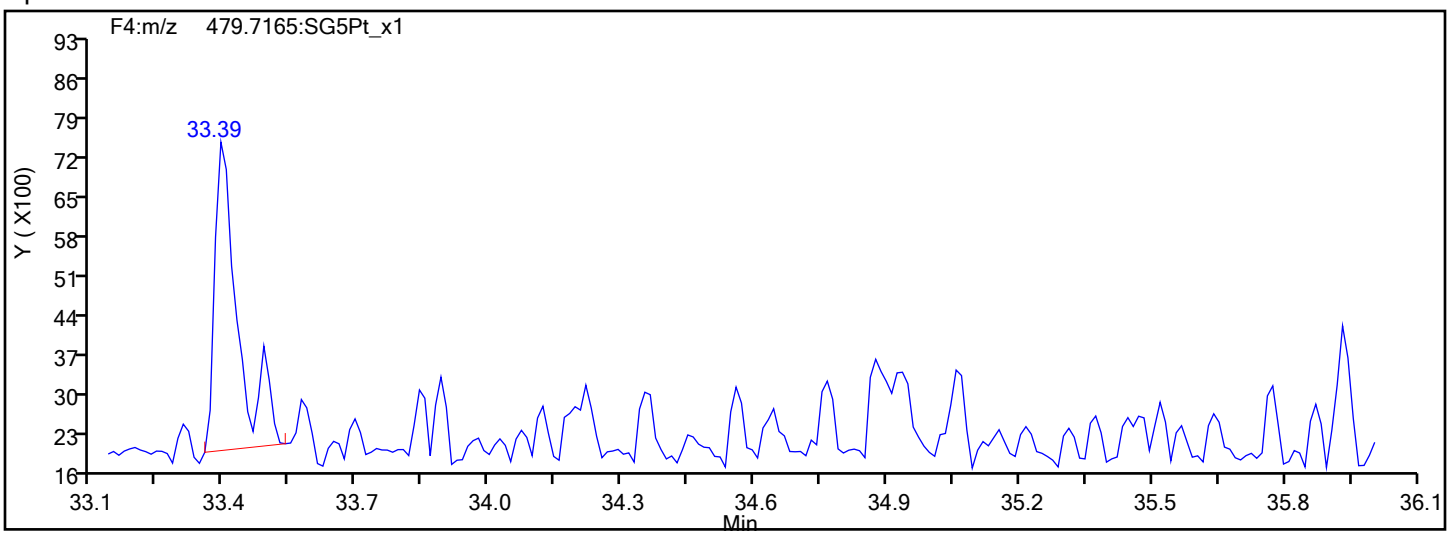
HpCDF





HpCDF Interference Mass



Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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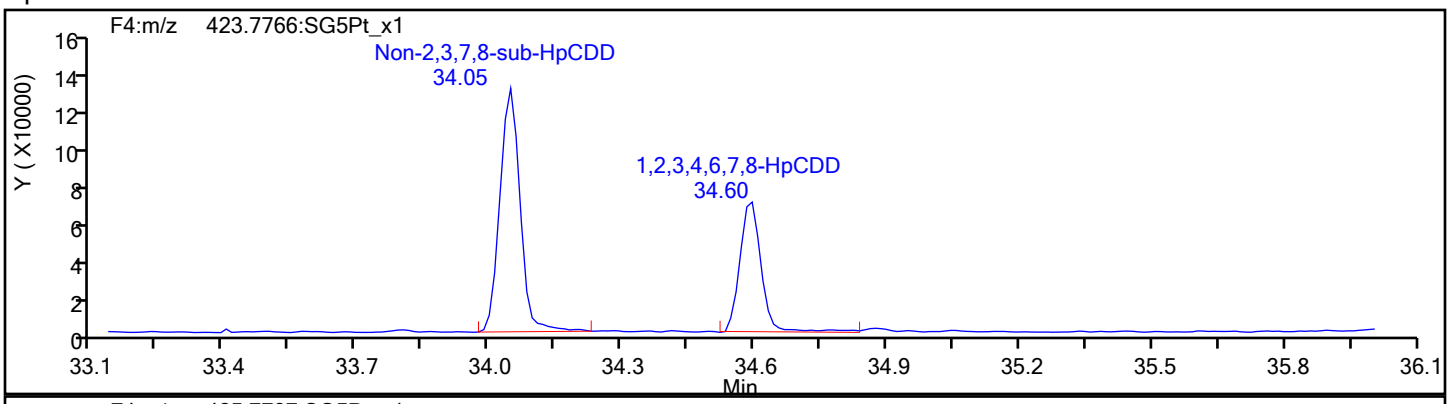
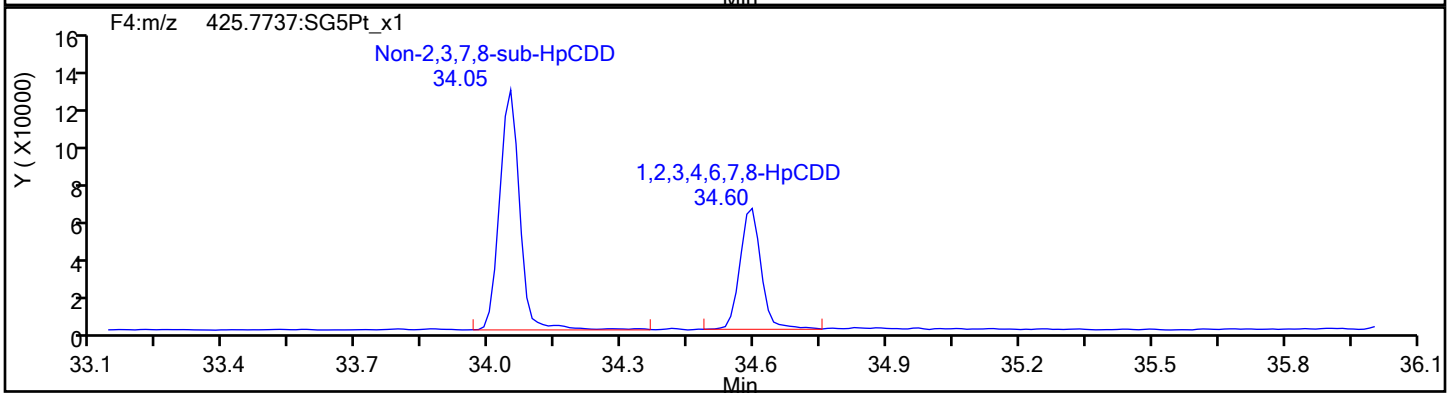
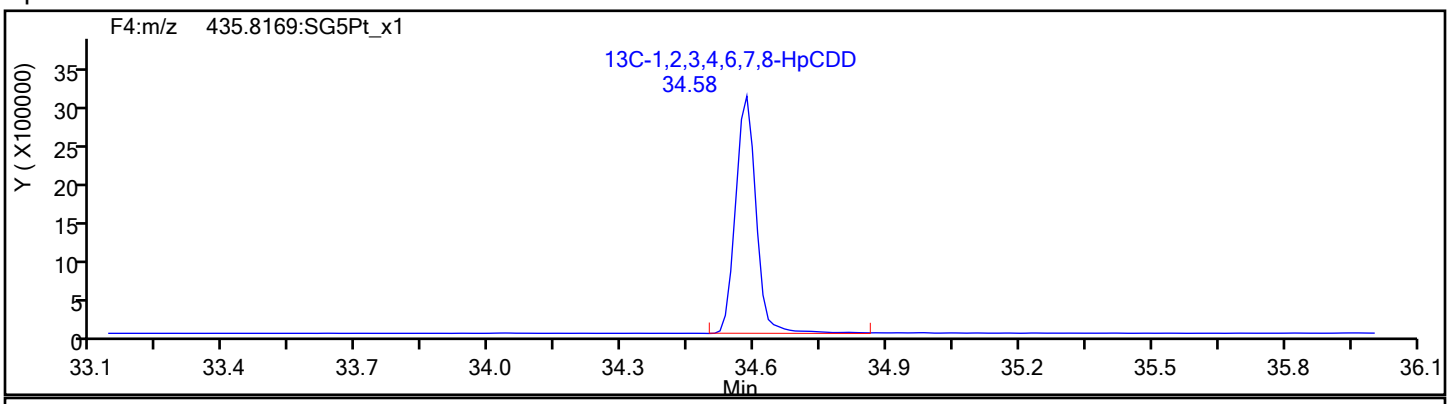
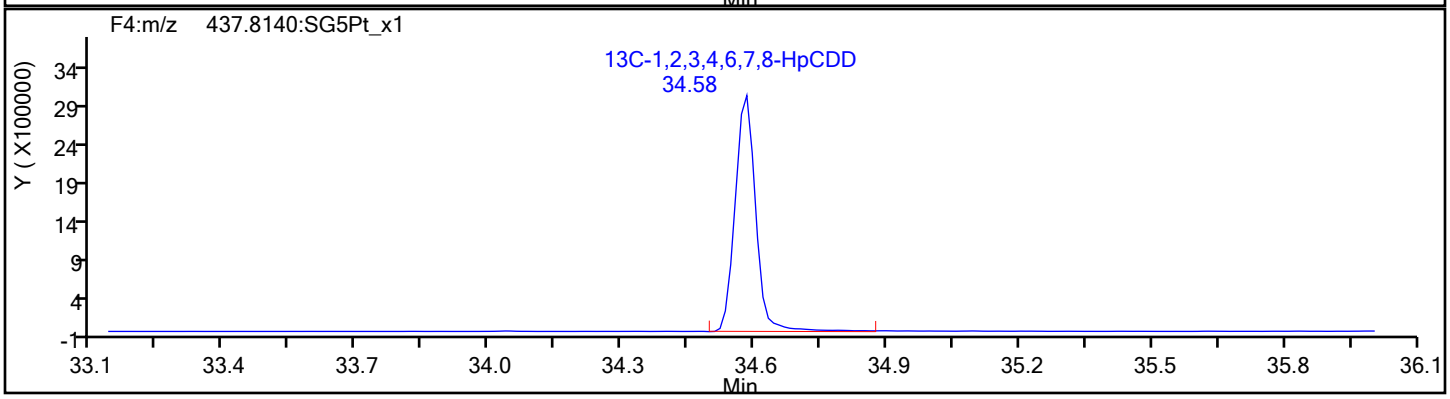
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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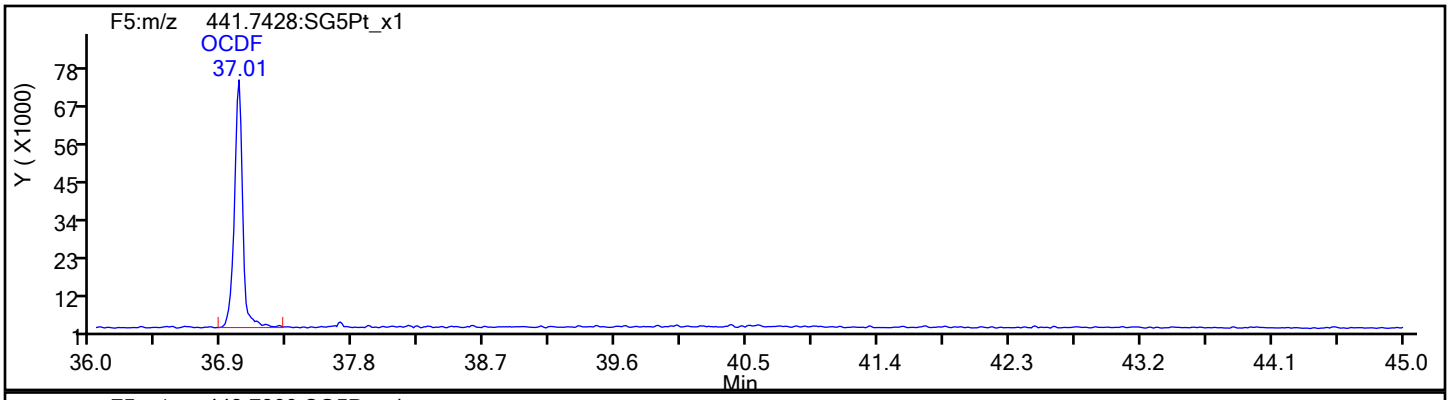
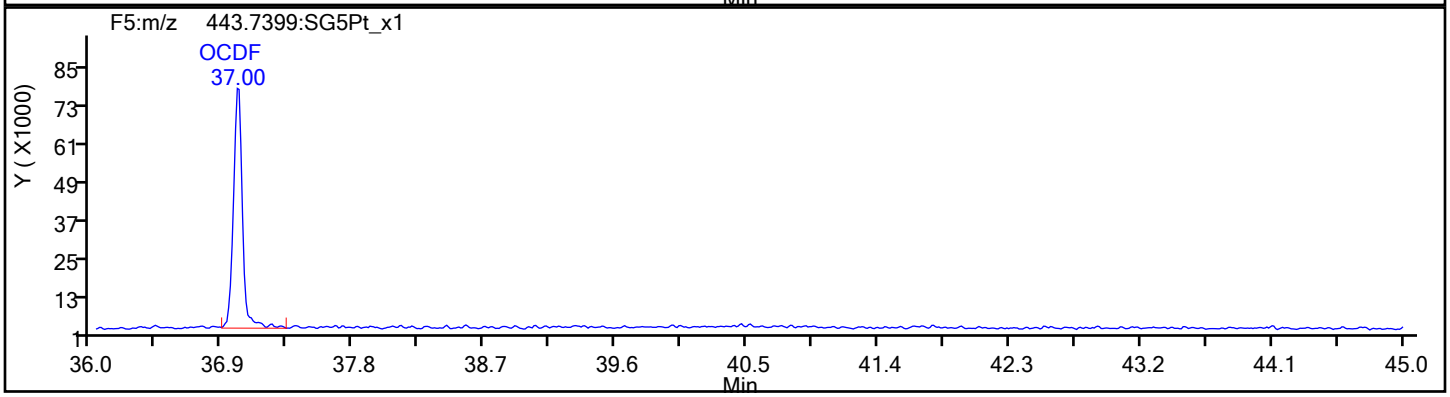
OCDF





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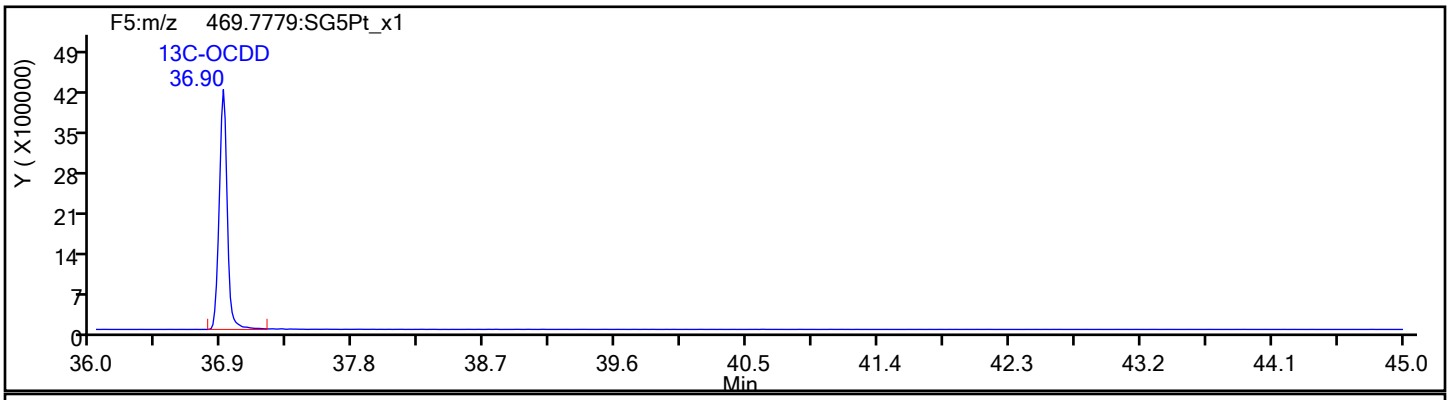

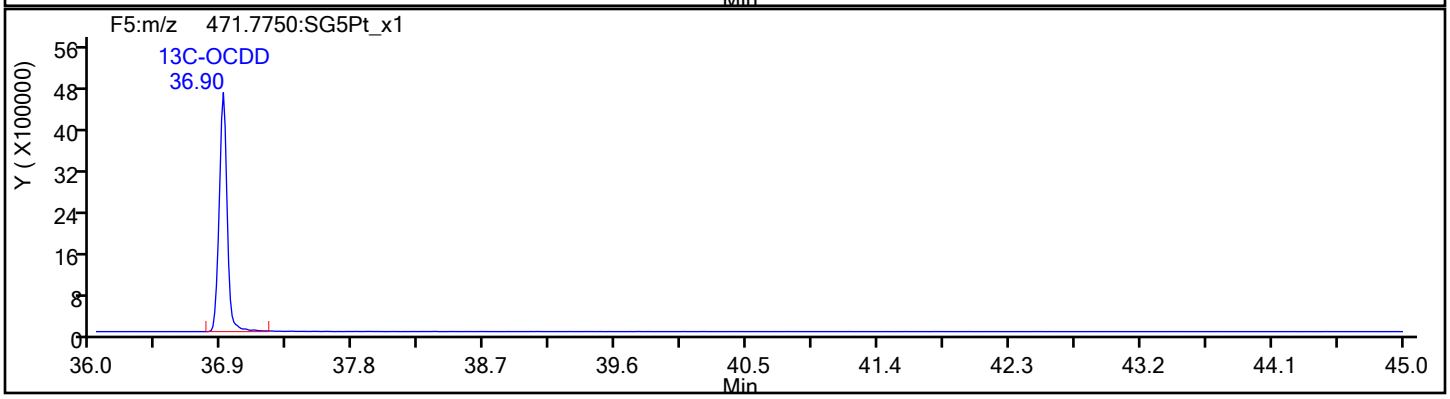

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Eurofins TestAmerica, Sacramento

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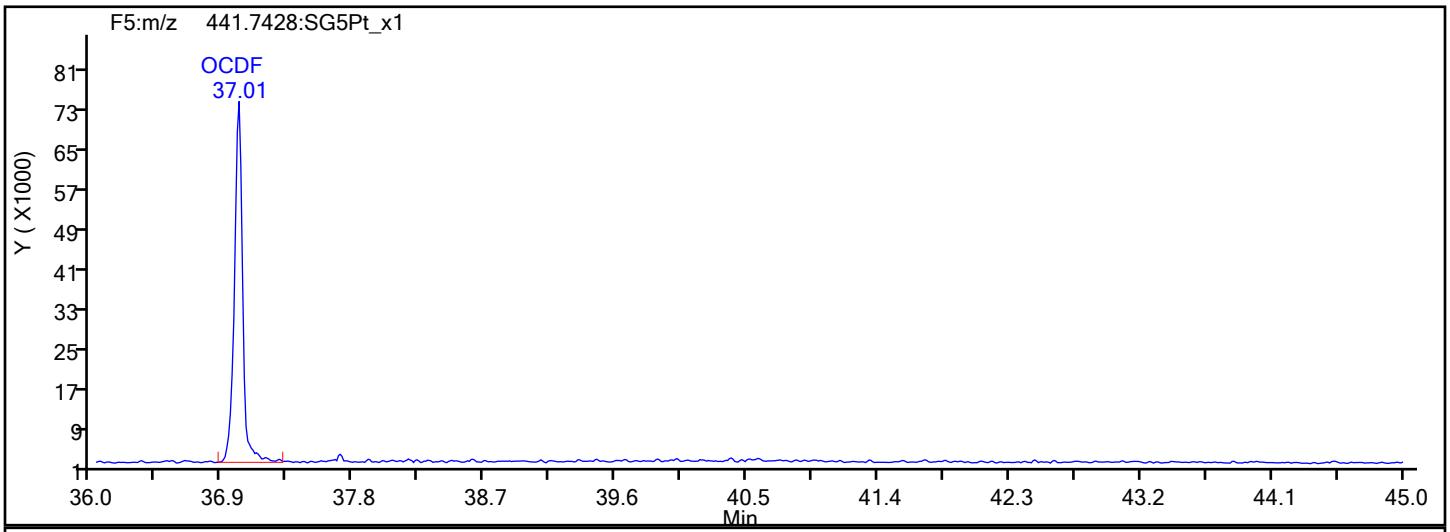
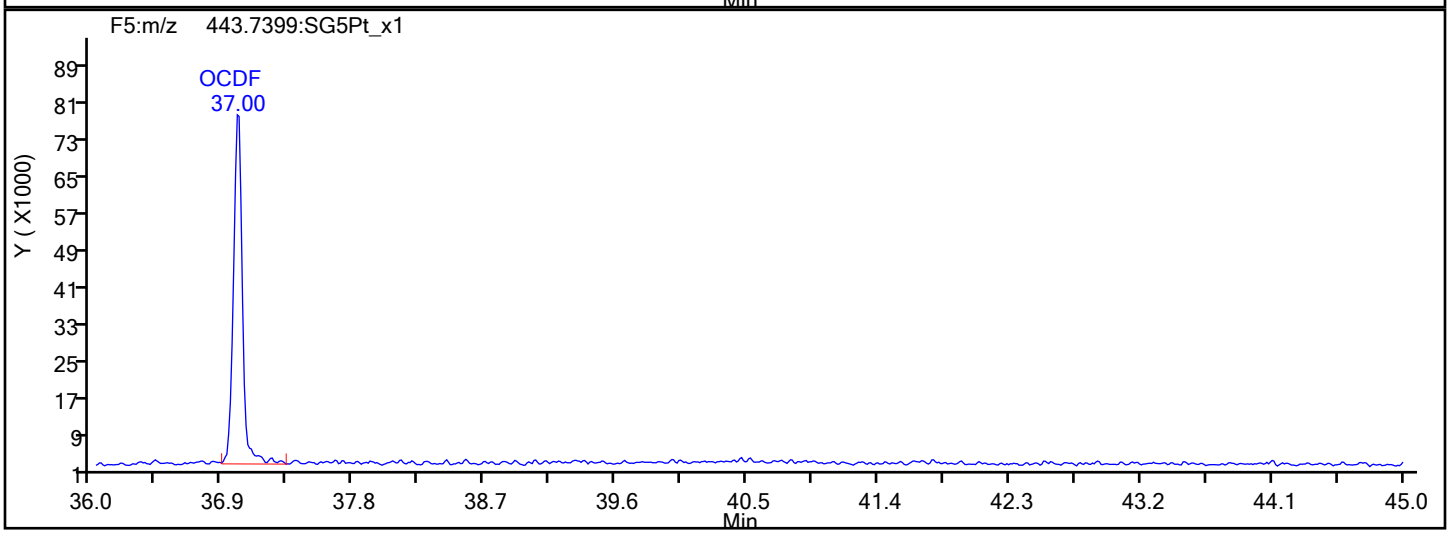
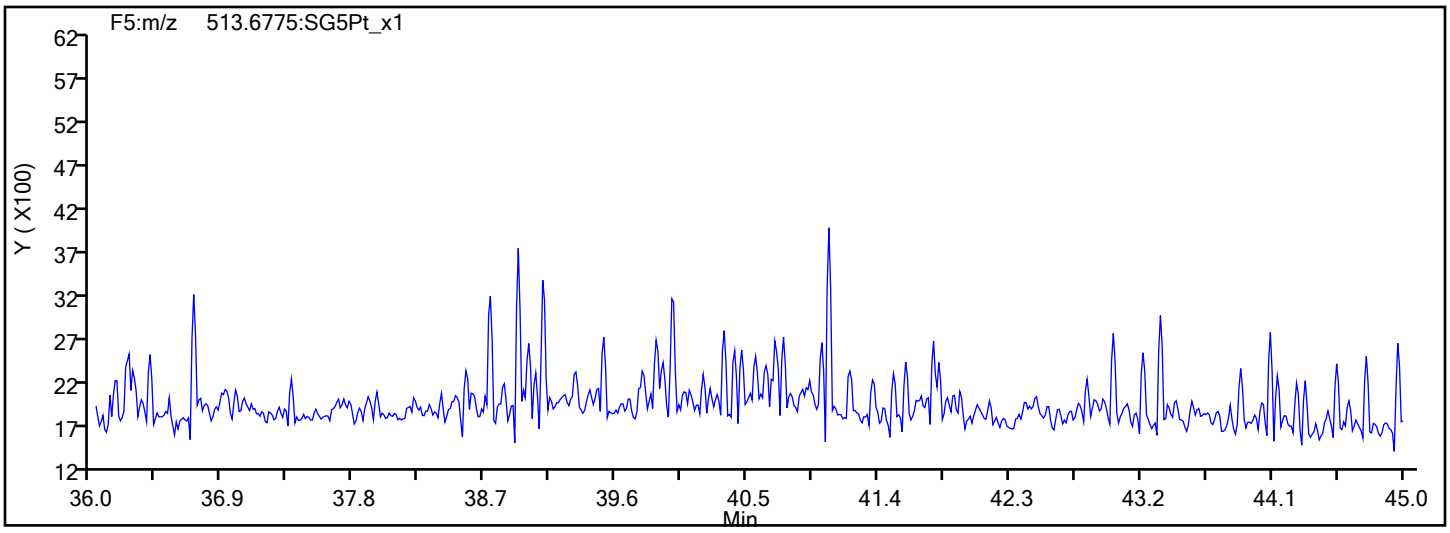
OCDF





OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
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Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
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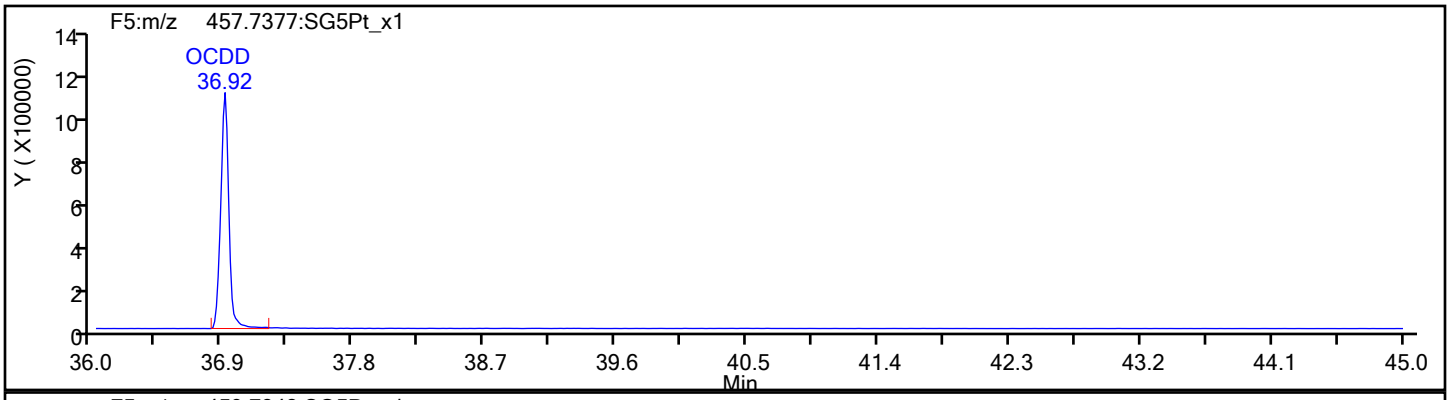
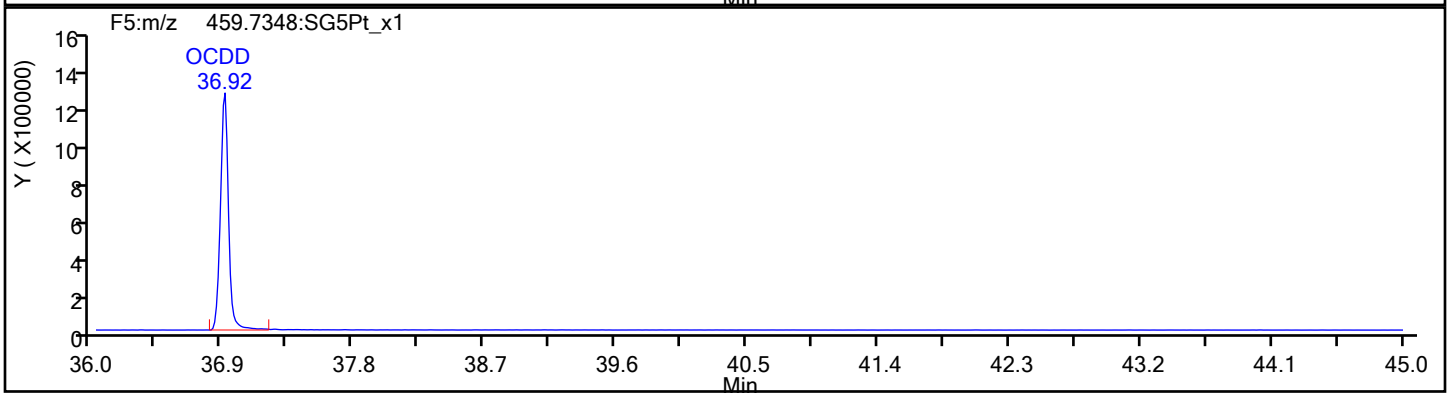
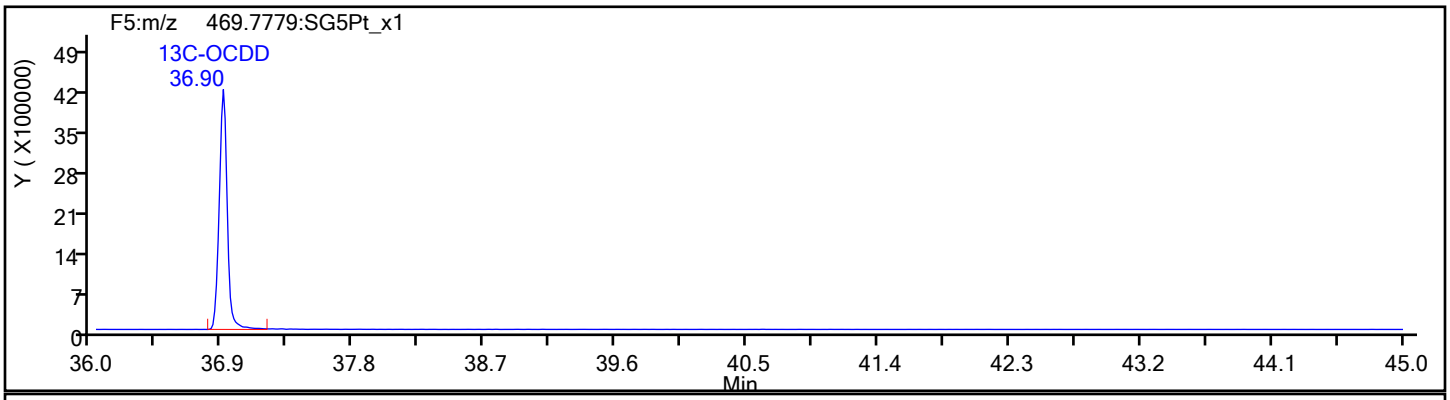
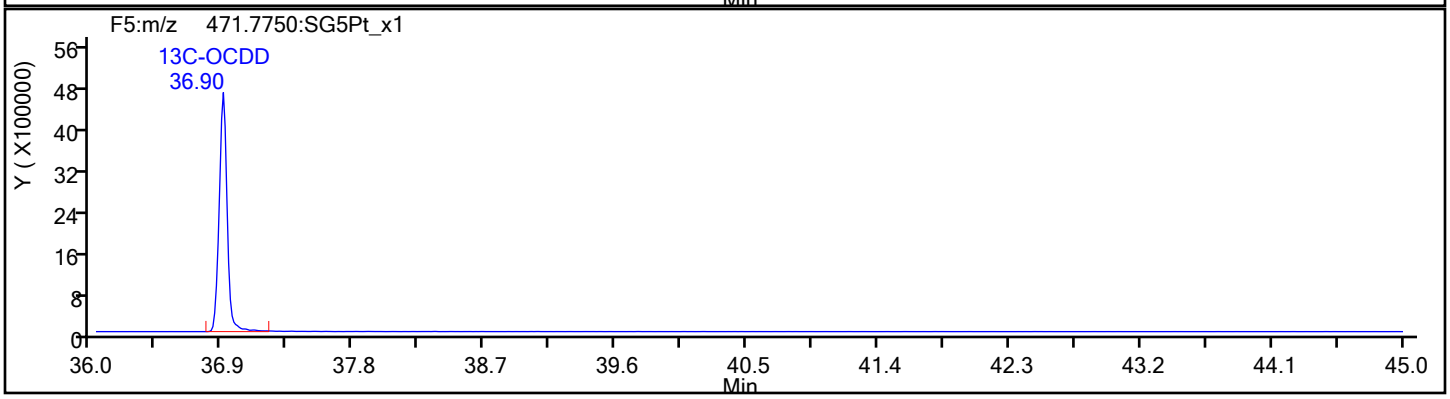
OCDD





OCDD Standards

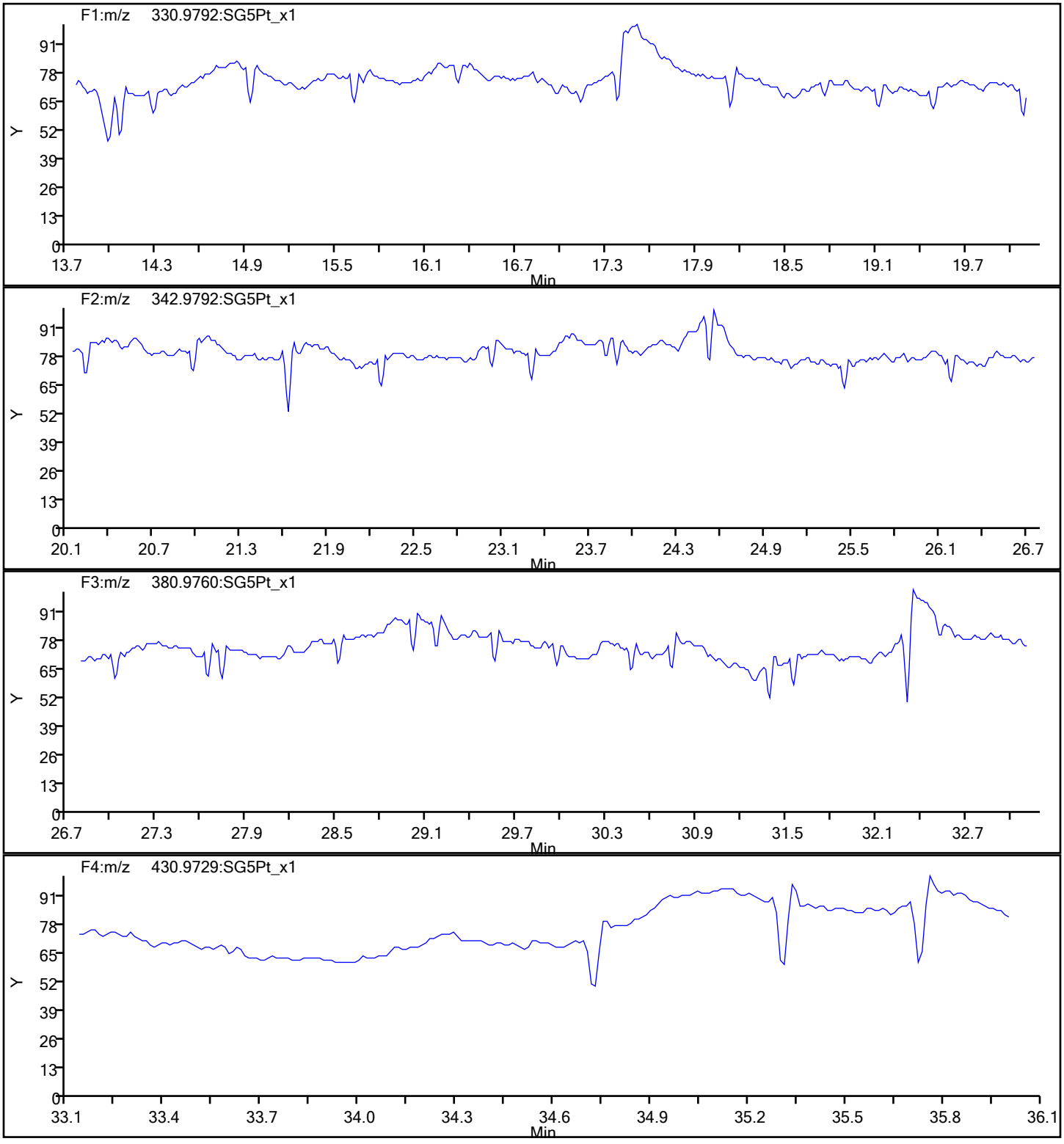




Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

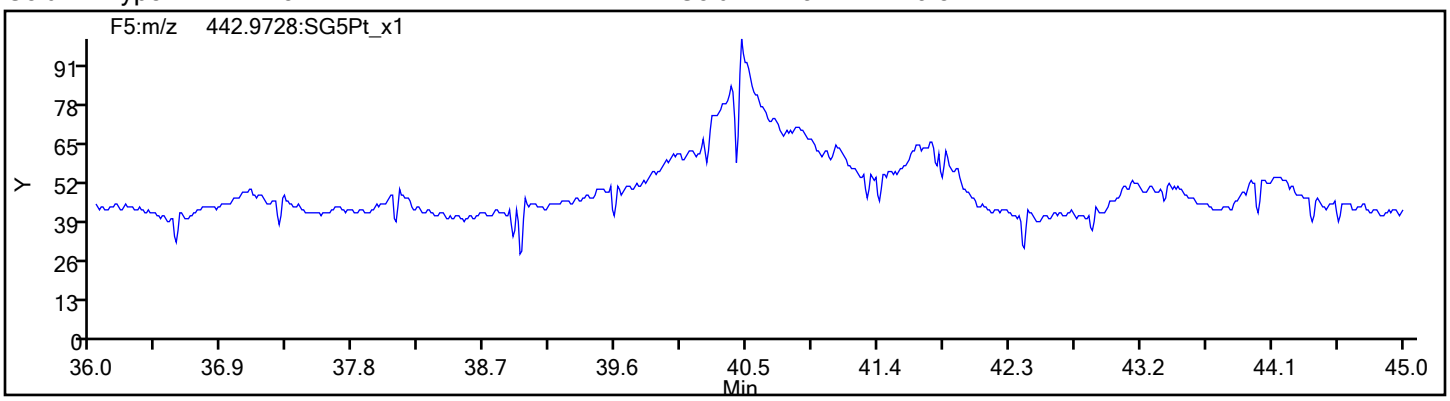
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 08:46:48 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_8.d		
Injection Date:	13-Dec-2019 17:07:58	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345335	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA09 (4-6) RA Lab Sample ID: 320-56911-8 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_009.d

Analysis Method: 1613B Date Collected: 12/08/2019 13:30

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.10(g) Date Analyzed: 12/17/2019 00:29

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	14		1.3	0.43

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	53		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	99		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 00:29:57 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-8-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:24

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.393	45477090	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.600	32230673	0.77	1.3379	53.0	53.0	0.4808	0.4808	52.97	
2,3,7,8-TCDF	16.600	1419271	0.87	0.8389	5.249	5.249	0.1651	0.1651		
D 13C-2,3,7,8-TCDD	15.146	21506205	0.74	0.9388	50.4	50.4	0.6917	0.6917	50.37	
2,3,7,8-TCDD	15.173	300673	0.74	1.1538	1.212	1.212	0.1924	0.1924		
$ 37Cl4-2,3,7,8-TCDD	15.160	21226222		1.1816	39.5	39.5	0.0955	0.0955	98.75	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d
Lims ID: 320-56911-A-8-A
Client ID: 11187072-120819-BN-SJSSA09 (4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 00:29:57 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-8-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:24

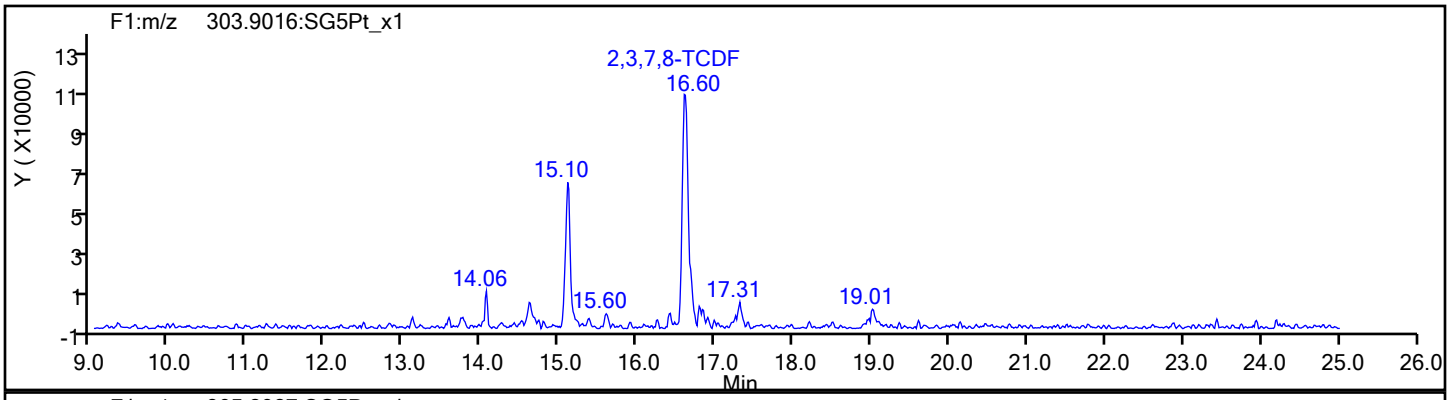
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.393	15.383	1		19994293	4242565	15346	38365	276		
333.9339	15.393	15.383	1		25482797	5540684	10068	25170	550	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.600	16.576	1	1.078	13997702	2601916	14432	36080	180		
317.9389	16.600	16.576	1	1.078	18232971	3347818	10744	26860	312	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.600	16.590	1	1.000	658949	106701	1232	3080	87		
305.8987	16.614	16.590	1	1.001	760322	144471	2065	5162	70	0.87(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.146	15.122	1	0.984	9145919	1947669	15346	38365	127		
333.9339	15.146	15.122	1	0.984	12360286	2674543	10068	25170	266	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.173	15.149	1	1.002	128162	19741	2640	6600	7		
321.8936	15.160	15.149	1	1.001	172511	29795	1465	3662	20	0.74(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.160	15.149	1	0.985	21226222	4366313	4414	11035	989		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

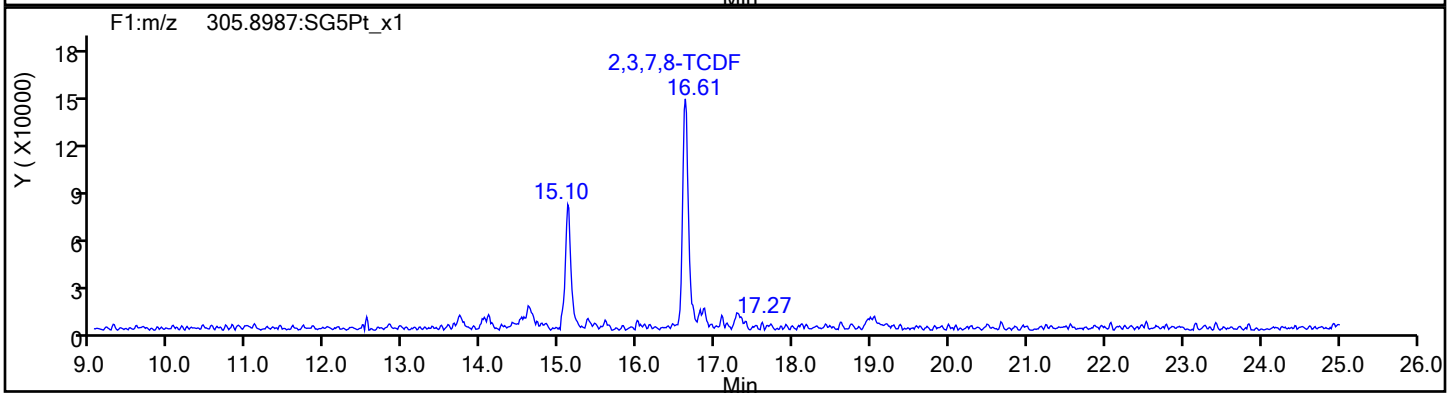
Report Date: 17-Dec-2019 09:38:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

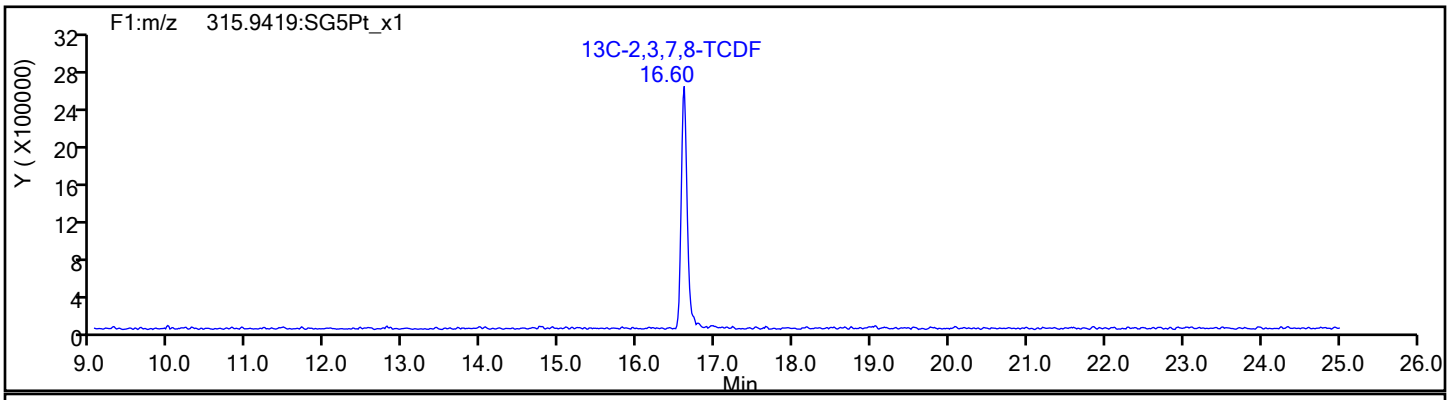
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d		
Injection Date:	17-Dec-2019 00:29:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345960	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

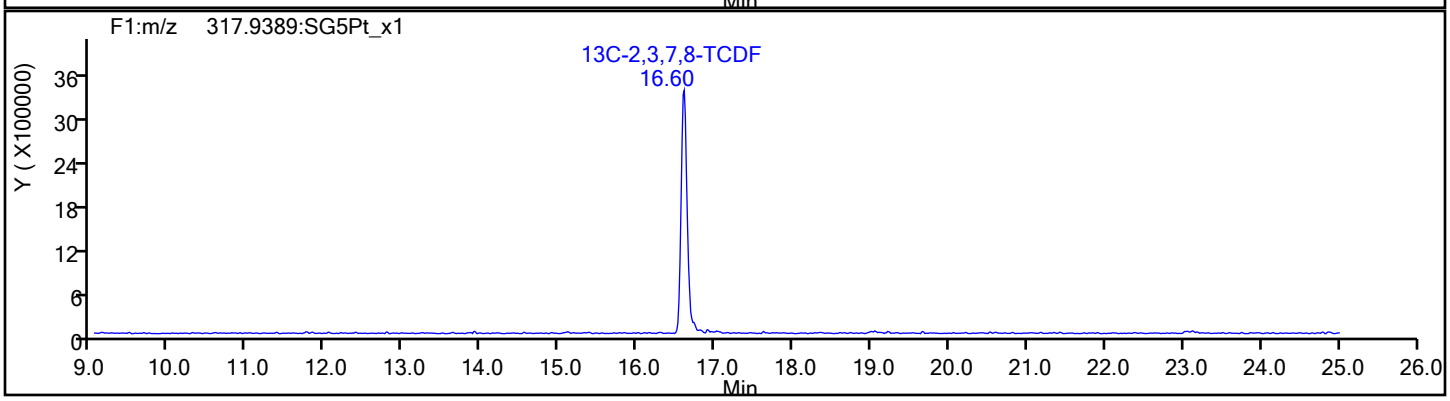
TCDF





TCDF Standards



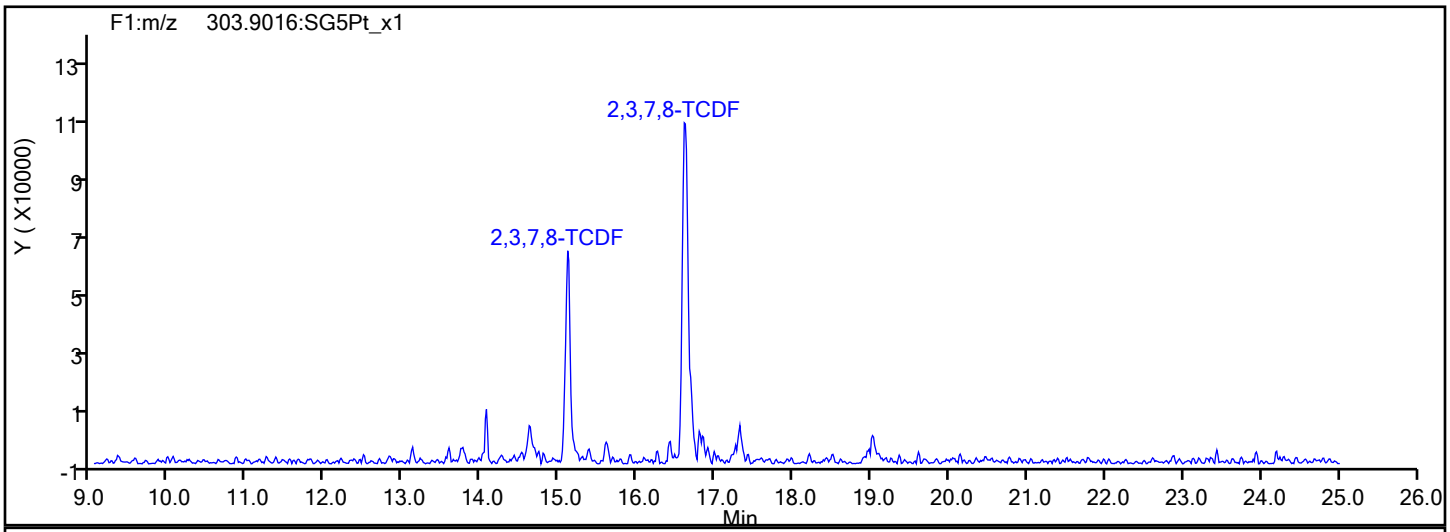


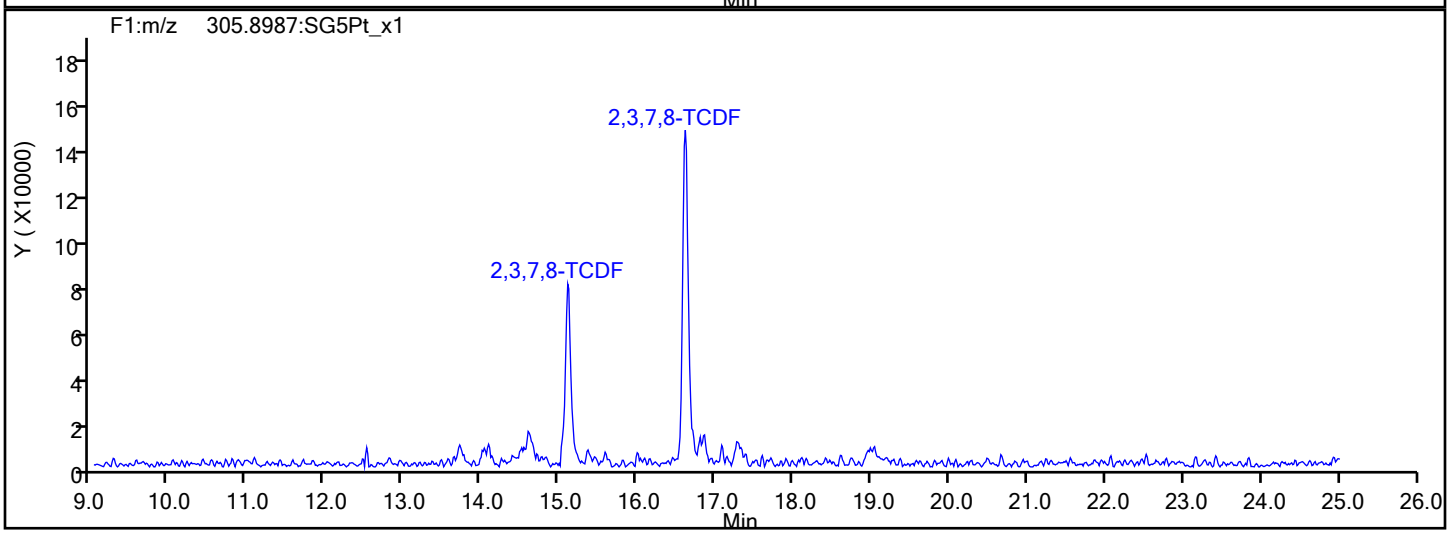
Report Date: 17-Dec-2019 09:38:29 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

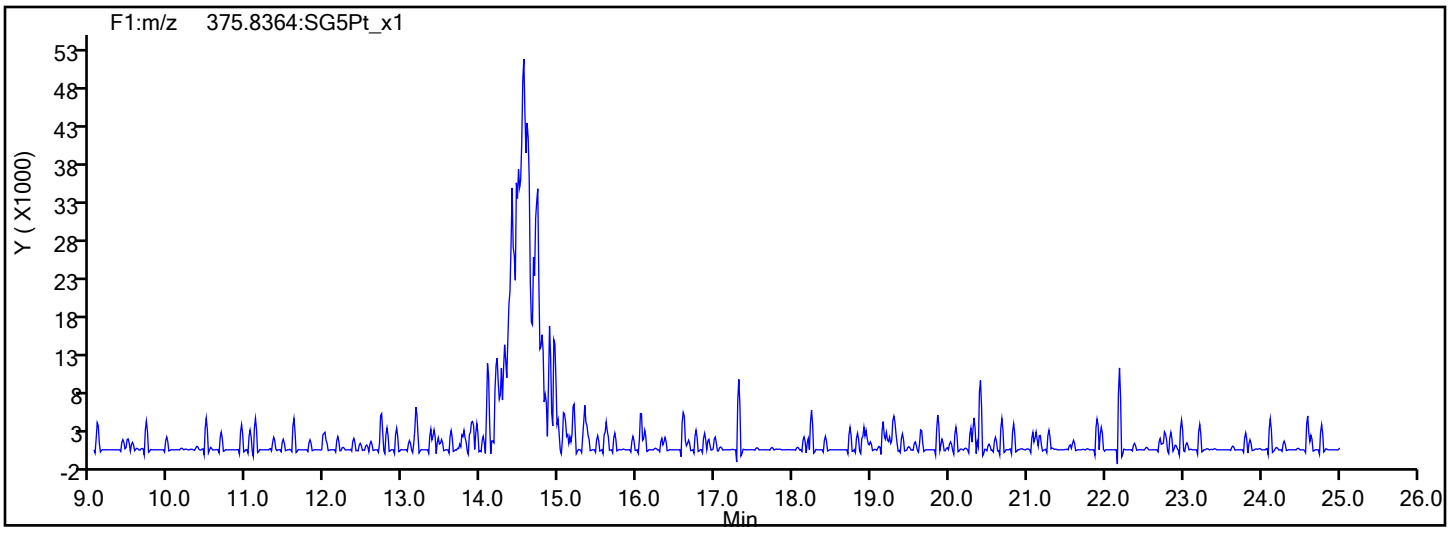
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d		
Injection Date:	17-Dec-2019 00:29:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345960	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

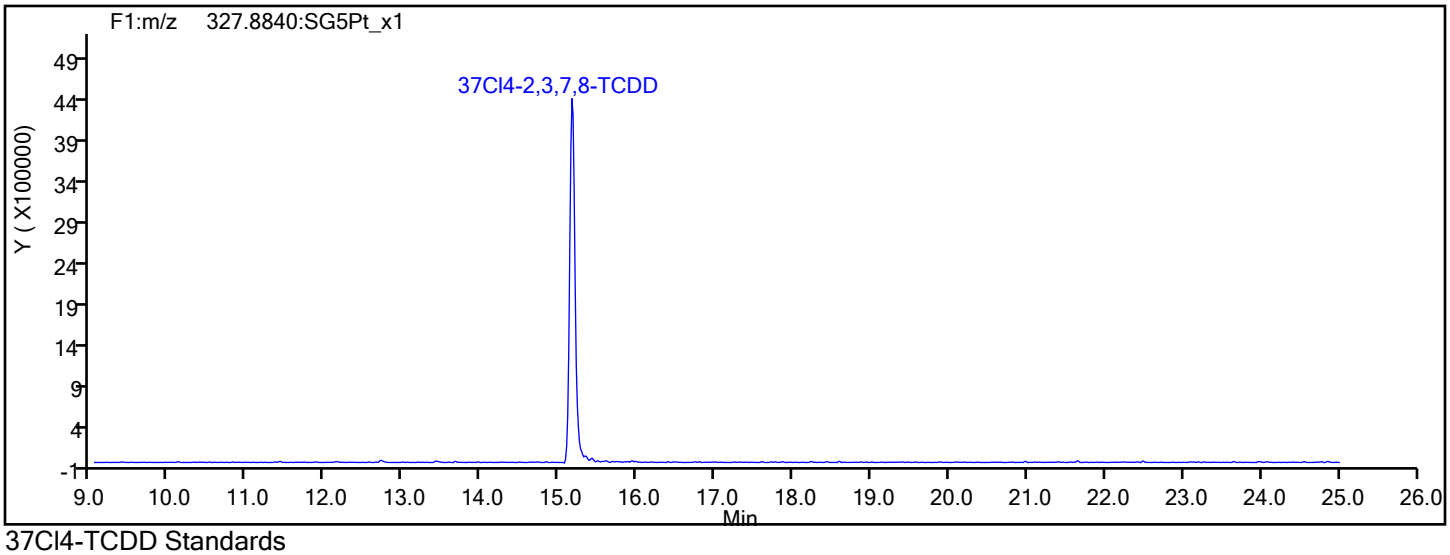


Report Date: 17-Dec-2019 09:38:30 Chrom Revision: 2.3 15-Dec-2019 06:20:02

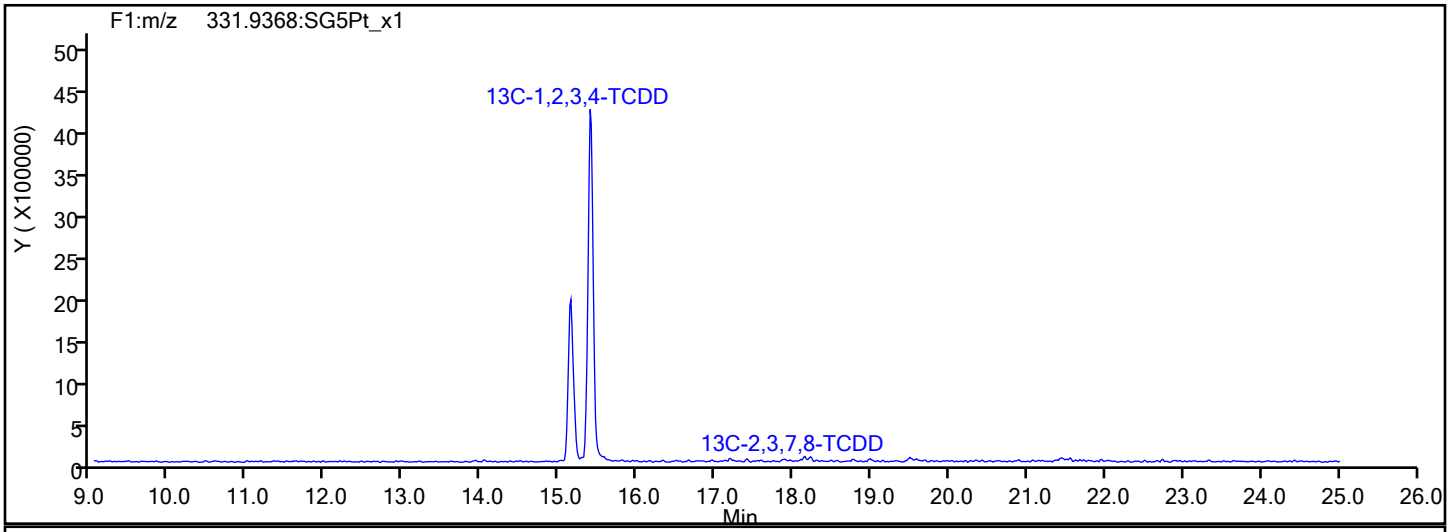
Eurofins TestAmerica, Sacramento

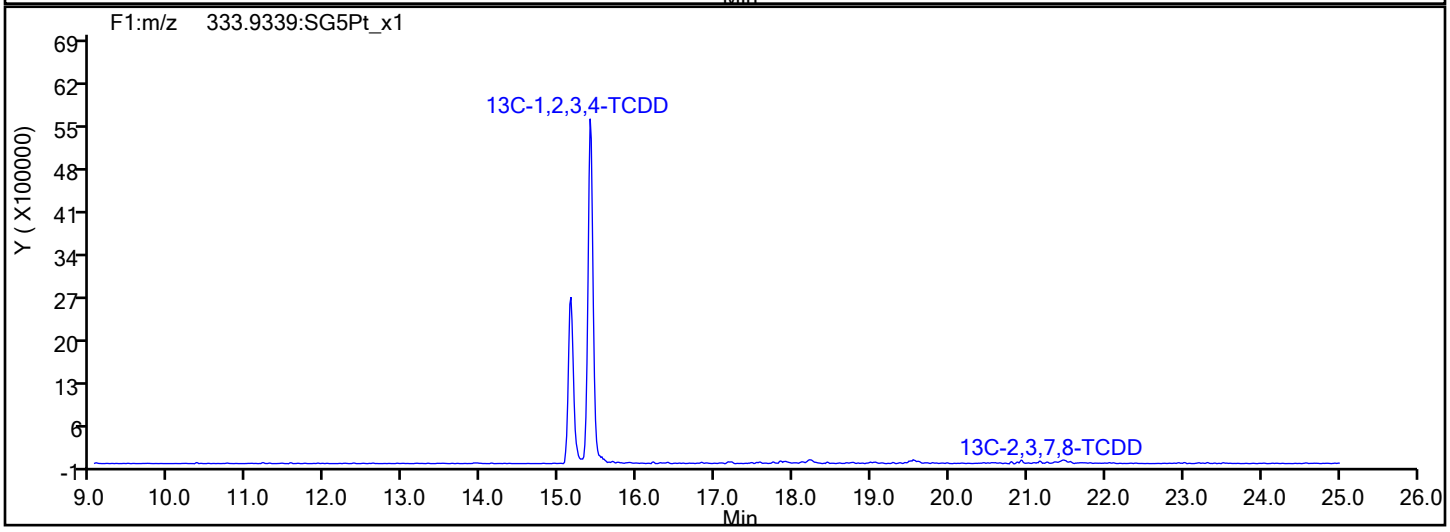
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d		
Injection Date:	17-Dec-2019 00:29:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345960	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

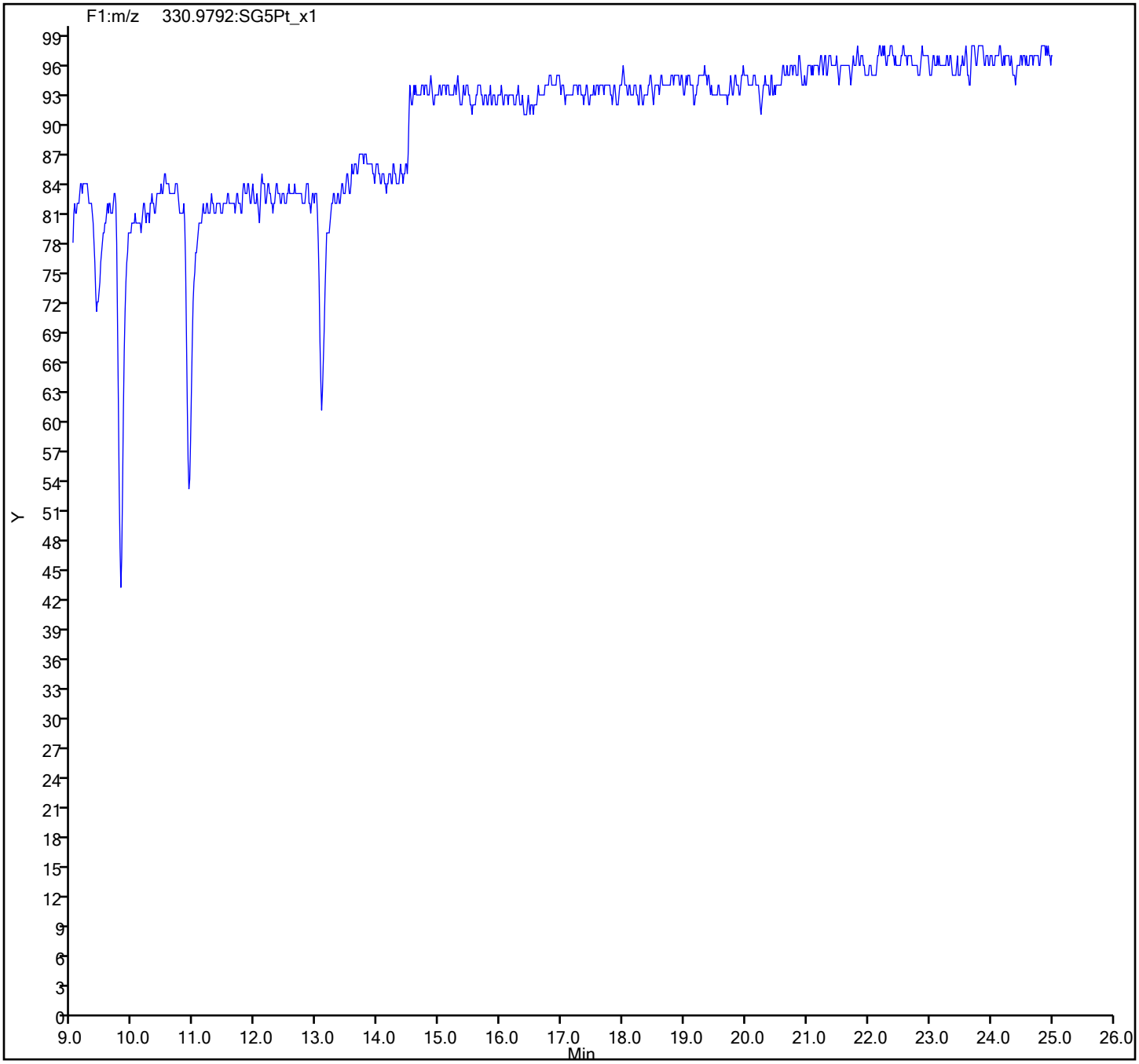




Report Date: 17-Dec-2019 09:38:30 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_009.d		
Injection Date:	17-Dec-2019 00:29:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA09 (4-6)		
Worklist#:	345960	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) Lab Sample ID: 320-56911-9

Matrix: Sediment Lab File ID: 13DE1910D5_9.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.15(g) Date Analyzed: 12/13/2019 17:53

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	18		1.5	0.23
40321-76-4	1,2,3,7,8-PeCDD	ND		7.7	0.18
57117-41-6	1,2,3,7,8-PeCDF	1.8	J	7.7	0.15
57117-31-4	2,3,4,7,8-PeCDF	1.0	J	7.7	0.15
39227-28-6	1,2,3,4,7,8-HxCDD	0.37	J	7.7	0.11
57653-85-7	1,2,3,6,7,8-HxCDD	0.56	J B	7.7	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	1.4	J	7.7	0.10
70648-26-9	1,2,3,4,7,8-HxCDF	2.1	J	7.7	0.14
57117-44-9	1,2,3,6,7,8-HxCDF	0.49	J q	7.7	0.14
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.7	0.10
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.7	0.11
35822-46-9	1,2,3,4,6,7,8-HpCDD	18	B	7.7	0.27
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.5	J	7.7	0.069
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.27	J q	7.7	0.076
3268-87-9	OCDD	550	B	15	0.32
39001-02-0	OCDF	10	J B	15	0.11
41903-57-5	Total TCDD	22	q	1.5	0.23
30402-14-3	Total TCDF	130	q	1.5	0.34
36088-22-9	Total PeCDD	3.3	J q	7.7	0.18
30402-15-4	Total PeCDF	4.5	J	7.7	0.15
34465-46-8	Total HxCDD	20	B q	7.7	0.11
55684-94-1	Total HxCDF	3.5	J q	7.7	0.12
37871-00-4	Total HpCDD	70	B	7.7	0.27
38998-75-3	Total HpCDF	3.7	J B q	7.7	0.072

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) Lab Sample ID: 320-56911-9

Matrix: Sediment Lab File ID: 13DE1910D5_9.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.15(g) Date Analyzed: 12/13/2019 17:53

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	60		25-164
89059-46-1	13C-2,3,7,8-TCDF	55		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	64		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	58		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	69		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	58		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	61		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	53		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	58		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	56		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	73		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	61		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	73		26-138
114423-97-1	13C-OCDD	85		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	104		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:53:57 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-9-A 320-56911-A-9-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:48:13 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:47:21

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	46896693	0.79	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.387	34602943	0.77	1.3318	55.4	55.4	0.1641	0.1641	55.40	
2,3,7,8-TCDF	17.402	7505422	0.75	0.9005	24.1	24.1	0.1118	0.1118		
A Non-2,3,7,8-sub-TCDF	17.062	5586816	0.77	0.9005	18.0	17.9	0.1118	10.2		RQa
S Total TCDF					42.1	42.0	0.1118	0.1118		RQ
D 13C-2,3,7,8-TCDD	18.083	27056171	0.77	0.9647	59.8	59.8	0.1273	0.1273	59.81	
2,3,7,8-TCDD	18.098	1658923	0.76	1.0698	5.731	5.731	0.0740	0.0740		M
$ 37Cl4-2,3,7,8-TCDD	18.098	25621590		1.3082	41.8	41.8	0.0561	0.0561	104	
A Non-2,3,7,8-sub-TCDD	17.516	399135	0.77	1.0698	1.440	1.379	0.0740	0.6234		RQMa
S Total TCDD					7.172	7.110	0.0740	0.0740		RQ
D 13C-1,2,3,7,8-PeCDF	22.413	28768084	1.59	1.0537	58.2	58.2	0.1197	0.1197	58.22	
1,2,3,7,8-PeCDF	22.427	163763	1.55	0.9704	0.5866	0.5866	0.0483	0.0483		M
D 13C-2,3,4,7,8-PeCDF	23.750	29867711	1.57	1.0173	62.6	62.6	0.1240	0.1240	62.61	
2,3,4,7,8-PeCDF	23.777	97159	1.57	0.9986	0.3258	0.3258	0.0501	0.0501		
A F1 PeCDFs	19.776	23714	1.33	0.9845	0.0822	0.0822	0.0380	0.0822		M
A Non-2,3,7,8-sub-PeCDF	22.933	135768	1.41	0.9845	0.4704	0.4704	0.0492	0.3130		M
S Total PeCDF					1.465	1.465	0.0492	0.0492		
D 13C-1,2,3,7,8-PeCDD	24.486	21830438	1.58	0.7281	63.9	63.9	0.0869	0.0869	63.93	
1,2,3,7,8-PeCDD	24.472						0.0583	0.0583		
A Non-2,3,7,8-sub-PeCDD	23.368	233682	1.55	1.0023	1.232	1.068	0.0583	0.5734		RQM
S Total PeCDD					1.232	1.068	0.0583	0.0583		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.570	22818936	0.51	0.9632	61.3	61.3	0.1527	0.1527	61.34	
1,2,3,4,7,8-HxCDF	30.597	159267	1.24	1.0315	0.6767	0.6767	0.0441	0.0441		
D 13C-1,2,3,6,7,8-HxCDF	30.756	21814650	0.50	1.0646	53.1	53.1	0.1381	0.1381	53.05	
1,2,3,6,7,8-HxCDF	30.743	35697	1.24	1.0235	0.2021	0.1599	0.0464	0.0464		RQ
D 13C-2,3,4,6,7,8-HxCDF	31.581	20818718	0.50	0.9696	55.6	55.6	0.1517	0.1517	55.59	
2,3,4,6,7,8-HxCDF	31.568						0.0354	0.0354		
D 13C-1,2,3,7,8,9-HxCDF	32.380	20193009	0.49	0.8955	58.4	58.4	0.1642	0.1642	58.38	
1,2,3,7,8,9-HxCDF	32.380						0.0335	0.0335		
A Non-2,3,7,8-sub-HxCDF	30.237	65143	1.16	1.0465	0.2907	0.2907	0.0392	0.1536		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					1.170	1.127	0.0398	0.0398		RQ
* 13C-1,2,3,7,8,9-HxCDD	32.194	38625568	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.768	20203978	1.27	0.7590	68.9	68.9	0.1626	0.1626	68.92	
1,2,3,4,7,8-HxCDD	31.781	24668	1.22	1.0054	0.1214	0.1214	0.0365	0.0365		M
D 13C-1,2,3,6,7,8-HxCDD	31.874	20737338	1.26	0.9247	58.1	58.1	0.1335	0.1335	58.06	
1,2,3,6,7,8-HxCDD	31.888	37361	1.16	0.9833	0.1832	0.1832	0.0373	0.0373		Ma
1,2,3,7,8,9-HxCDD	32.220	100768	1.26	1.1036	0.4461	0.4461	0.0333	0.0333		
A Non-2,3,7,8-sub-HxCDD	30.870	1247787	1.24	1.0308	5.971	5.914	0.0356	4.530		RQ
S Total HxCDD					6.721	6.664	0.0357	0.0357		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.805	18561549	0.43	0.7930	60.6	60.6	0.2777	0.2777	60.60	
1,2,3,4,6,7,8-HpCDF	33.817	132380	0.94	1.4240	0.5008	0.5008	0.0225	0.0225		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.874	20474709	0.43	0.7296	72.7	72.7	0.3019	0.3019	72.66	
1,2,3,4,7,8,9-HpCDF	34.874	22942	1.04	1.2834	0.1032	0.0873	0.0246	0.0246		RQ
A Non-2,3,7,8-sub-HpCDF	34.340	166524	1.07	1.3537	0.6303	0.6303	0.0235	0.6303		
S Total HpCDF					1.234	1.218	0.0236	0.0236		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	34.595	21091287	1.04	0.7532	72.5	72.5	0.1686	0.1686	72.50	
1,2,3,4,6,7,8-HpCDD	34.595	1264870	1.05	1.0174	5.895	5.895	0.0873	0.0873		
A Non-2,3,7,8-sub-HpCDD	34.309	3654318	1.05	1.0174	17.0	17.0	0.0873	17.0		
S Total HpCDD					22.9	22.9	0.0873	0.0873		
D 13C-OCDD	36.915	36741470	0.91	0.5621	169.2	169.2	0.1059	0.1059	84.62	
OCDF	37.011	812028	0.92	1.3047	3.388	3.388	0.0358	0.0358		
OCDD	36.915	35992297	0.88	1.0997	178.2	178.2	0.1027	0.1027		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Sample Type: Client
Inject. Date: 13-Dec-2019 17:53:57 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-9-A 320-56911-A-9-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:48:13 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:47:21

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.886	17.856	2		20753314	5065583	3199	7997	1583		
333.9339	17.886	17.856	2		26143379	6516883	2490	6225	2617	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.387	17.357	2	0.972	15099152	3847163	6258	15645	615		
317.9389	17.387	17.357	2	0.972	19503791	4931574	3867	9667	1275	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.402	17.372	2	1.001	3213188	764084	1310	3275	583		
305.8987	17.402	17.372	2	1.001	4292234	1036133	2225	5562	466	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	15.724	17.062	-80	0.904	19263	5633	1310	3275	4		
305.8987	15.724	17.062	-80	0.904	32912	8771	2225	5562	4	0.59(0.65-0.89)	
	Empc Correction				25016	7315	2225	5562	3		
303.9016	15.981	17.062	-65	0.919	111123	30948	1310	3275	24		
305.8987	15.981	17.062	-65	0.919	151816	40715	2225	5562	18	0.73(0.65-0.89)	
303.9016	16.268	17.062	-48	0.936	144636	32591	1310	3275	25		
305.8987	16.268	17.062	-48	0.936	194118	42023	2225	5562	19	0.75(0.65-0.89)	
303.9016	16.495	17.062	-34	0.949	96345	25259	1310	3275	19		
305.8987	16.495	17.062	-34	0.949	127371	31255	2225	5562	14	0.76(0.65-0.89)	
303.9016	16.737	17.062	-19	0.963	136212	30112	1310	3275	23		
305.8987	16.737	17.062	-19	0.963	173920	40705	2225	5562	18	0.78(0.65-0.89)	
303.9016	17.009	17.062	-3	0.978	1390261	345416	1310	3275	264		
305.8987	17.024	17.062	-2	0.979	1777371	442525	2225	5562	199	0.78(0.65-0.89)	
303.9016	17.236	17.062	10	0.991	79714	17178	1310	3275	13		
305.8987	17.236	17.062	10	0.991	93341	22948	2225	5562	10	0.85(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	17.826	17.062	46	1.025	207930	47190	1310	3275	36		
305.8987	17.826	17.062	46	1.025	264353	59676	2225	5562	27	0.79(0.65-0.89)	
303.9016	18.067	17.062	60	1.039	43033	8419	1310	3275	6		
	Empc Correction				21044	7879	1310	3275	6		
305.8987	18.052	17.062	59	1.038	27331	10233	2225	5562	5	1.57(0.65-0.89)	
303.9016	19.232	17.062	130	1.106	245410	47677	1310	3275	36		a
305.8987	19.232	17.062	130	1.106	300241	63926	2225	5562	29	0.82(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	11755940	2826914	3199	7997	884		
333.9339	18.083	18.052	2	1.011	15300231	3674286	2490	6225	1476	0.77(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	18.098	18.068	2	1.001	714047	160090	1059	2647	151		M
321.8936	18.098	18.068	2	1.001	944876	217491	999	2497	218	0.76(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	25621590	5838239	3403	8507	1716		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.964	17.516	-33	0.938	77423	21608	1059	2647	20		
321.8936	16.964	17.516	-33	0.938	103002	28235	999	2497	28	0.75(0.65-0.89)	
319.8965	17.856	17.516	20	0.987	17172	4337	1059	2647	4		
321.8936	17.856	17.516	20	0.987	27369	6428	999	2497	6	0.63(0.65-0.89)	
	Empc Correction				22301	5632	999	2497	6		
319.8965	18.022	17.516	30	0.997	13556	3874	1059	2647	4		M
321.8936	18.007	17.516	29	0.996	17678	5679	999	2497	6	0.77(0.65-0.89)	
319.8965	18.461	17.516	57	1.021	77091	16366	1059	2647	15		
	Empc Correction				64385	14375	1059	2647	14		
321.8936	18.461	17.516	57	1.021	83618	18669	999	2497	19	0.92(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.413	22.372	2	1.253	17643197	3207651	3566	8915	900		
353.8970	22.413	22.372	2	1.253	11124887	2033699	2277	5692	893	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.427	22.400	2	1.001	99595	16444	392	980	42		M
341.8567	22.427	22.400	2	1.001	64168	10320	590	1475	17	1.55(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	18256168	2993073	3566	8915	839		
353.8970	23.763	23.722	2	1.329	11611543	1910224	2277	5692	839	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.777	23.750	2	1.001	59310	9813	392	980	25		
341.8567	23.791	23.750	2	1.002	37849	5253	590	1475	9	1.57(1.32-1.78)	
A F1 PeCDFs											M
339.8597	19.504	19.776	-16	0.870	13540	2560	367	917	7		
341.8567	19.504	19.776	-16	0.870	10174	1826	393	982	5	1.33(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDF											M
339.8597	21.063	22.933	-112	0.940	52351	8616	392	980	22		
341.8567	21.090	22.933	-110	0.941	37988	6131	590	1475	10	1.38(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	22.945	22.933	1	1.024	27178	4429	392	980	11		M
341.8567	22.945	22.933	1	1.024	18251	3202	590	1475	5	1.49(1.32-1.78)	M
13C-1,2,3,7,8-PeCDD											
367.8949	24.486	24.445	2	1.369	13355878	2024903	1706	4265	1187		
369.8919	24.472	24.445	2	1.368	8474560	1341838	1227	3067	1094	1.58(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						443	1107			
357.8516	24.472						344	860			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	21.281	23.368	-125	0.869	33254	6299	443	1107	14		
357.8516	21.281	23.368	-125	0.869	53163	9027	344	860	26	0.63(1.32-1.78)	
	Empc Correction				21454	4063	344	860	12		
355.8546	22.018	23.368	-81	0.899	73744	14474	443	1107	33		M
357.8516	22.031	23.368	-80	0.900	51728	10033	344	860	29	1.43(1.32-1.78)	
355.8546	23.531	23.368	10	0.961	32521	3777	443	1107	9		
357.8516	23.518	23.368	9	0.960	25216	3354	344	860	10	1.29(1.32-1.78)	
	Empc Correction				20981	2436	344	860	7		
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.570	30.543	2	0.950	7664780	1434100	1986	4965	722		
385.8610	30.570	30.543	2	0.950	15154156	2861513	4124	10310	694	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.597	30.557	2	1.001	88136	15914	418	1045	38		
375.8178	30.570	30.557	1	1.000	71131	12117	364	910	33	1.24(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.756	30.716	2	0.955	7257662	1379822	1986	4965	695		
385.8610	30.756	30.716	2	0.955	14556988	2739849	4124	10310	664	0.50(0.43-0.59)	
1,2,3,6,7,8-HxCDF											RQ
373.8208	30.743	30.743	0	1.000	19761	3554	418	1045	9		
375.8178	30.783	30.743	2	1.001	25365	5224	364	910	14	0.78(1.05-1.43)	
	Empc Correction				15936	2866	364	910	8		
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.581	31.555	2	0.981	6985578	1747909	1986	4965	880		
385.8610	31.581	31.555	2	0.981	13833140	3440168	4124	10310	834	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						418	1045			
375.8178	31.568						364	910			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.380	32.367	1	1.006	6604458	1789497	1986	4965	901		
385.8610	32.380	32.367	1	1.006	13588551	3685585	4124	10310	894	0.49(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.380						418	1045			
375.8178	32.380						364	910			
A Non-2,3,7,8-sub-HxCDF											
373.8208	28.414	30.237	-109	0.929	18578	2324	418	1045	6		
375.8178	28.400	30.237	-110	0.929	15832	2632	364	910	7	1.17(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	29.785	30.237	-27	0.974	16381	2302	418	1045	6		
375.8178	29.745	30.237	-29	0.973	14352	1798	364	910	5	1.14(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.194	32.181	1		21494287	5715601	2741	6852	2085		
403.8529	32.194	32.181	1		17131281	4670823	2387	5967	1957	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.768	31.741	2	0.987	11298192	3049095	2741	6852	1112		
403.8529	31.768	31.741	2	0.987	8905786	2412519	2387	5967	1011	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											M
389.8157	31.781	31.755	2	1.000	13558	4106	371	927	11		M
391.8127	31.768	31.755	1	1.000	11110	2978	431	1077	7	1.22(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.874	31.848	2	0.990	11553863	3007169	2741	6852	1097		
403.8529	31.874	31.848	2	0.990	9183475	2456090	2387	5967	1029	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.888	31.861	2	1.000	20087	4329	371	927	12		M
391.8127	31.874	31.861	1	1.000	17274	3858	431	1077	9	1.16(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.220	32.194	2	1.014	56268	8928	371	927	24		
391.8127	32.194	32.194	0	1.013	44500	7955	431	1077	18	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.598	30.870	-76	0.929	521248	59372	371	927	160		
391.8127	29.612	30.870	-75	0.929	434694	53264	431	1077	124	1.20(1.05-1.43)	
389.8157	30.636	30.870	-14	0.961	26994	3902	371	927	11		
	Empc Correction				18526	3423	371	927	9		
391.8127	30.663	30.870	-12	0.962	14941	2761	431	1077	6	1.81(1.05-1.43)	
389.8157	31.022	30.870	9	0.973	123252	24099	371	927	65		
391.8127	31.022	30.870	9	0.973	107835	21109	431	1077	49	1.14(1.05-1.43)	
389.8157	31.222	30.870	21	0.980	15108	3379	371	927	9		
391.8127	31.222	30.870	21	0.980	15729	4038	431	1077	9	0.96(1.05-1.43)	
	Empc Correction				12183	2724	431	1077	6		
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.805	33.780	1	1.050	5537477	1939197	3159	7897	614		
419.8220	33.805	33.780	1	1.050	13024072	4491425	5991	14977	750	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.817	33.793	1	1.000	64010	20633	465	1162	44		
409.7789	33.817	33.793	1	1.000	68370	23763	360	900	66	0.94(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.874	34.862	1	1.083	6126606	1953884	3159	7897	619		
419.8220	34.874	34.862	1	1.083	14348103	4578393	5991	14977	764	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											RQ
407.7818	34.874	34.862	1	1.000	11696	3127	465	1162	7		
409.7789	34.887	34.862	1	1.000	15434	4311	360	900	12	0.76(0.88-1.20)	
	Empc Correction				11246	3006	360	900	8		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.109	34.340	-14	1.009	86239	27817	465	1162	60		
409.7789	34.109	34.340	-14	1.009	80285	24543	360	900	68	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.595	34.570	1	1.075	10746207	3352422	2741	6852	1223		
437.8140	34.583	34.570	1	1.074	10345080	3210463	2536	6340	1266	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	646605	194554	1203	3007	162		
425.7737	34.595	34.583	1	1.000	618265	196165	1130	2825	174	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.060	34.309	-15	0.985	1870996	598669	1203	3007	498		
425.7737	34.048	34.309	-16	0.984	1783322	571978	1130	2825	506	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.915	36.891	1	1.147	17517325	4933302	1265	3162	3900		
471.7750	36.915	36.891	1	1.147	19224145	5318415	1208	3020	4403	0.91(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	389017	98964	362	905	273		
443.7399	37.011	36.999	1	1.003	423011	107621	597	1492	180	0.92(0.76-1.02)	
OCDD											
457.7377	36.915	36.903	1	1.000	16875610	4640792	1099	2747	4223		
459.7348	36.915	36.903	1	1.000	19116687	5301154	1217	3042	4356	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 16-Dec-2019 08:48:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	34602943	8778737

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	34602943	8778737

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.724	19263	5633	32912	8771	0.1674	0.59	RQ
15.724	19263	5633	25016	7315	0.1421		Empc Correction
15.981	111123	30948	151816	40715	0.8438	0.73	
16.268	144636	32591	194118	42023	1.09	0.75	
16.495	96345	25259	127371	31255	0.7179	0.76	
16.737	136212	30112	173920	40705	1.00	0.78	
17.009	1390261	345416	1777371	442525	10.2	0.78	
17.236	79714	17178	93341	22948	0.5554	0.85	
17.826	207930	47190	264353	59676	1.52	0.79	
18.067	43033	8419	27331	10233	0.2258	1.57	RQ
18.067	21044	7879	27331	10233	0.1552		Empc Correction
19.232	245410	47677	300241	63926	1.75	0.82	a
Signal Totals:							
	2451938	589883	3134878	761321			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	5616701	1353200				0.79	RQa
	5586816	1351204					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 18.025 = (5616701 * 100.000) / (34602943 * 0.901)
Empc Amount: 17.929 = (5586816 * 100.000) / (34602943 * 0.901)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Report Date: 16-Dec-2019 08:48:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	27056171	6501200

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	27056171	6501200

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.964	77423	21608	103002	28235	0.6234	0.75	
17.856	17172	4337	27369	6428	0.1539	0.63	RQ
17.856	17172	4337	22301	5632	0.1364		Empc Correction
18.022	13556	3874	17678	5679	0.1079	0.77	Ma
18.461	77091	16366	83618	18669	0.5552	0.92	RQ
18.461	64385	14375	83618	18669	0.5113		Empc Correction
Signal Totals:							
	172536	44194	226599	58215			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	416909	105196				0.80	RQMa
	399135	102409					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.440 = (416909 * 100.000) / (27056171 * 1.070)
Empc Amount: 1.379 = (399135 * 100.000) / (27056171 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

F1 PeCDFs, RT: 19.776

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	28768084	5241350
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	29867711	4903297

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	29317897	5072323

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
19.504	13540	2560	10174	1826	0.0822	1.33	M
Signal Totals:							
	13540	2560	10174	1826			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	23714	4386				1.33	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0822 = (23714 * 100.000) / (29317897 * 0.984)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDF, RT: 22.933

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	28768084	5241350
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	29867711	4903297

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	29317897	5072323

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
21.063	52351	8616	37988	6131	0.3130	1.38	
22.945	27178	4429	18251	3202	0.1574	1.49	M
Signal Totals:	79529	13045	56239	9333			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	135768	22378				1.41	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4704 = (135768 * 100.000) / (29317897 * 0.984)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	21830438	3366741

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	21830438	3366741

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.281	33254	6299	53163	9027	0.3949	0.63	RQ
21.281	33254	6299	21454	4063	0.2500		Empc Correction
22.018	73744	14474	51728	10033	0.5734	1.43	M
23.531	32521	3777	25216	3354	0.2639	1.29	RQ
23.531	32521	3777	20981	2436	0.2445		Empc Correction
Signal Totals:							
	139519	24550	94163	16532			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	269626	46964				1.07	RQM
	233682	41082					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.232 = (269626 * 100.000) / (21830438 * 1.002)
Empc Amount: 1.068 = (233682 * 100.000) / (21830438 * 1.002)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 16-Dec-2019 08:48:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDF, RT: 30.237

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.031	D 13C-1,2,3,4,7,8-HxCDF	100.000	22818936	4295613
1,2,3,6,7,8-HxCDF	1.024	D 13C-1,2,3,6,7,8-HxCDF	100.000	21814650	4119671
2,3,4,6,7,8-HxCDF	1.065	D 13C-2,3,4,6,7,8-HxCDF	100.000	20818718	5188077
1,2,3,7,8,9-HxCDF	1.066	D 13C-1,2,3,7,8,9-HxCDF	100.000	20193009	5475082

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.046		100.000	21411328	4769610

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
28.414	18578	2324	15832	2632	0.1536	1.17	
29.785	16381	2302	14352	1798	0.1372	1.14	
Signal Totals:							
	34959	4626	30184	4430			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	65143	9056				1.16	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2907 = (65143 * 100.000) / (21411328 * 1.046)

Report Date: 16-Dec-2019 08:48:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	20203978	5461614
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	20737338	5463259
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	20470658	5462436

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.598	521248	59372	434694	53264	4.53	1.20	
30.636	26994	3902	14941	2761	0.1987	1.81	RQ
30.636	18526	3423	14941	2761	0.1586		Empc Correction
31.022	123252	24099	107835	21109	1.10	1.14	
31.222	15108	3379	15729	4038	0.1461	0.96	RQ
31.222	15108	3379	12183	2724	0.1293		Empc Correction
Signal Totals:							
	678134	90273	569653	79858			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1259801	171924				1.20	RQ
	1247787	170131					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.971 = (1259801 * 100.000) / (20470658 * 1.031)
Empc Amount: 5.914 = (1247787 * 100.000) / (20470658 * 1.031)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	18561549	6430622
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	20474709	6532277

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	19518129	6481449

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	86239	27817	80285	24543	0.6303	1.07	
Signal Totals:							
	86239	27817	80285	24543			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	166524	52360				1.07	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6303 = (166524 * 100.000) / (19518129 * 1.354)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Inject. Date: 13-Dec-2019 17:53:57 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	21091287	6562885

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	21091287	6562885

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.060	1870996	598669	1783322	571978	17.0	1.05	
Signal Totals:							
	1870996	598669	1783322	571978			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3654318	1170647				1.05	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 17.030 = (3654318 * 100.000) / (21091287 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

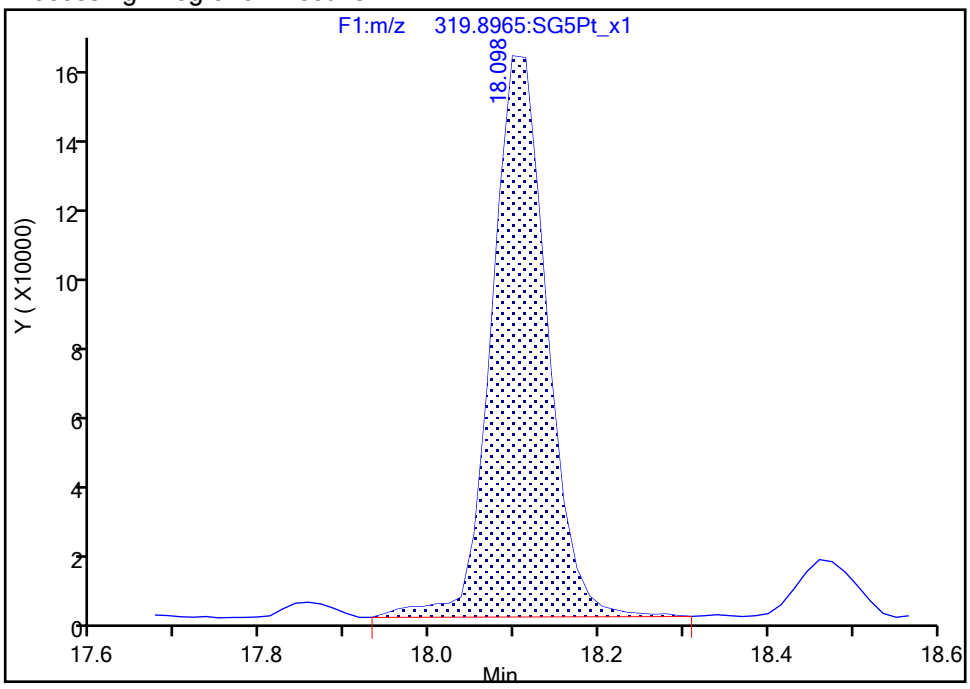
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

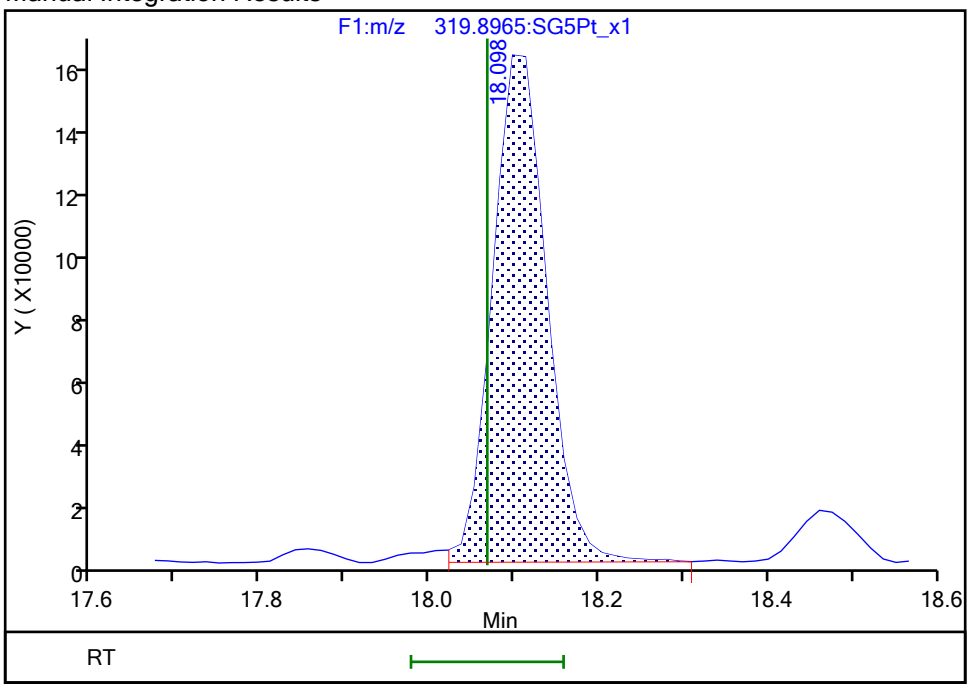
Processing Integration Results

RT: 18.10
Area: 727599
Amount: 5.839310
Amount Units: pg/ul



Manual Integration Results

RT: 18.10
Area: 714047
Amount: 5.731410
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:43:19

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

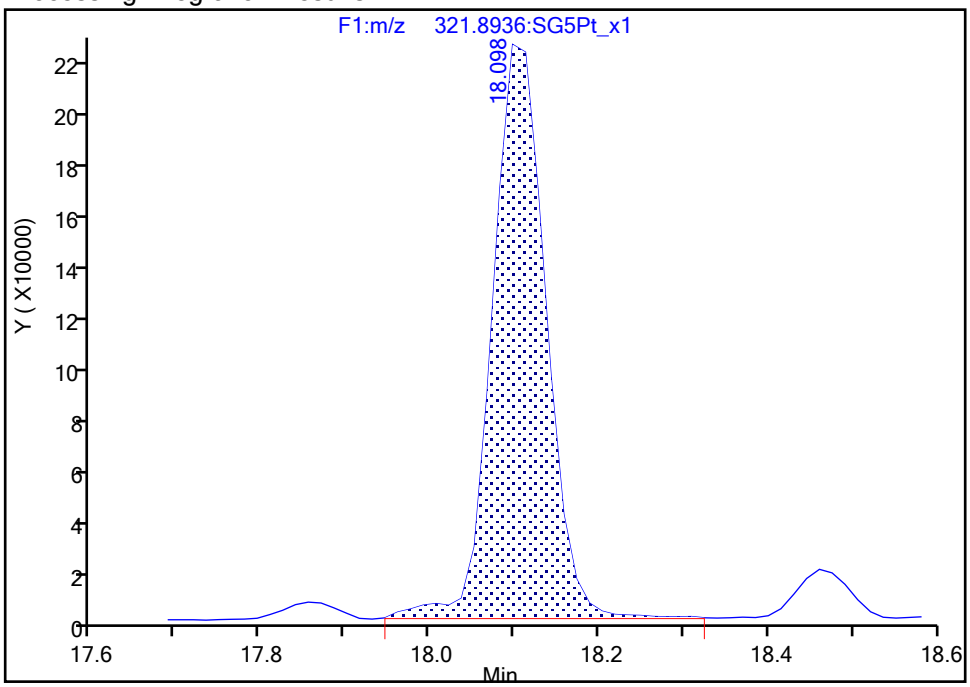
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

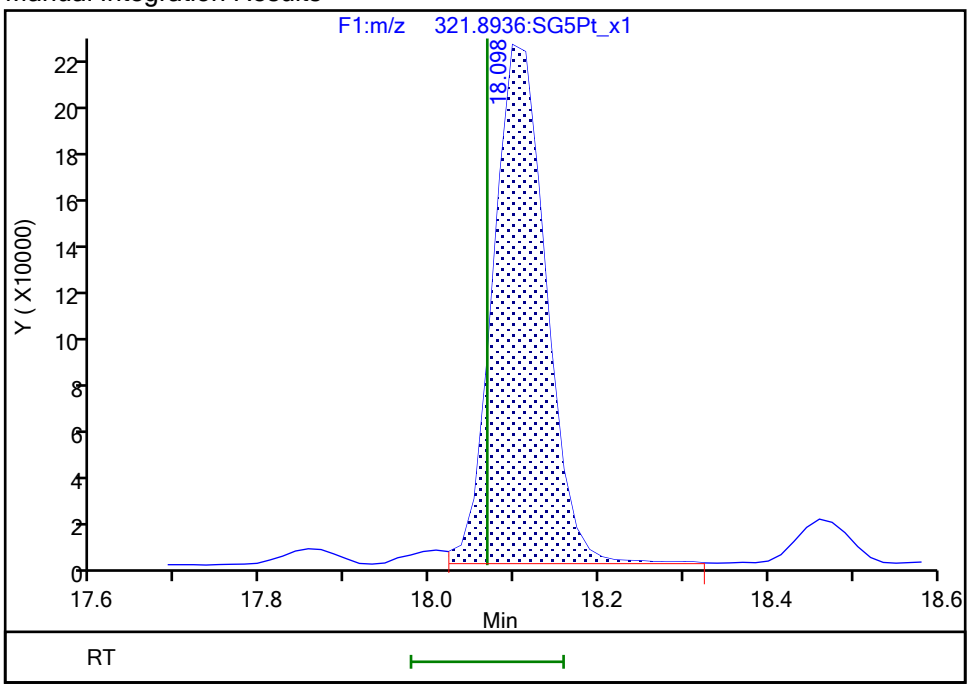
Processing Integration Results

RT: 18.10
Area: 962555
Amount: 5.839310
Amount Units: pg/ul



Manual Integration Results

RT: 18.10
Area: 944876
Amount: 5.731410
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:43:22

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

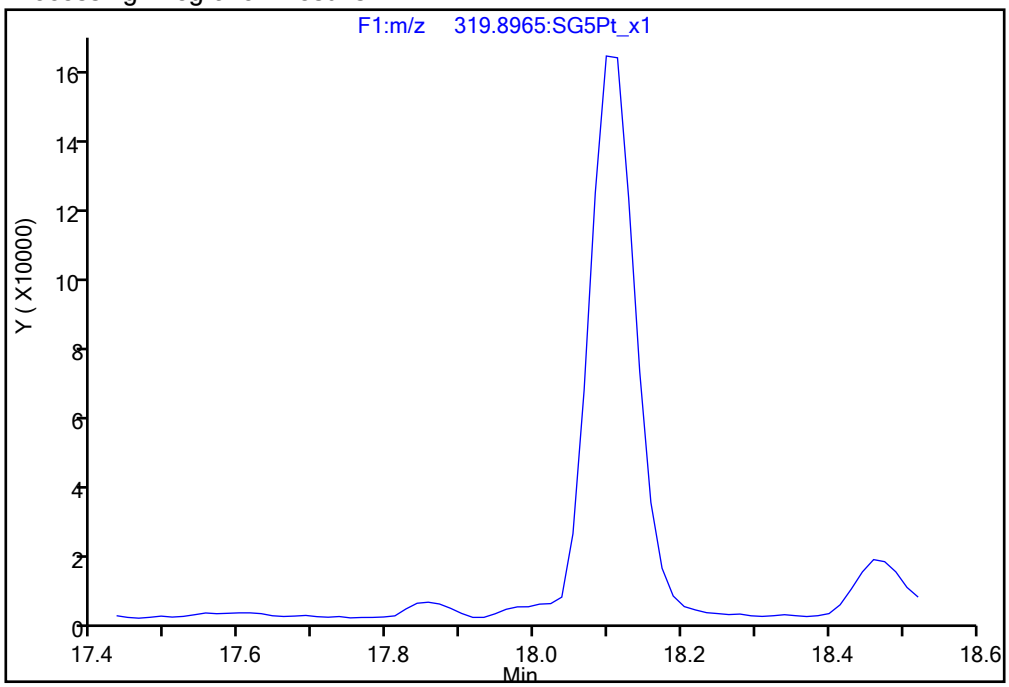
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.82- 19.22)

Signal: 1

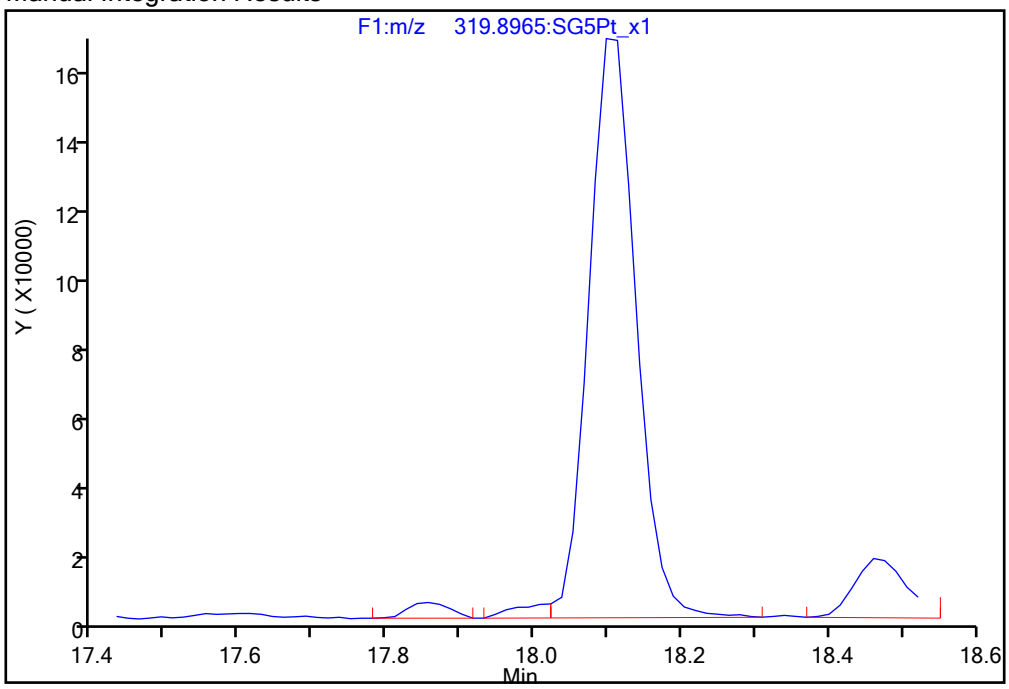
Not Detected
RT: 15.82- 19.22

Processing Integration Results



Manual Integration Results

RT = 18.022 Area = 13556 M



Reviewer: dadunj, 16-Dec-2019 10:43:39
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

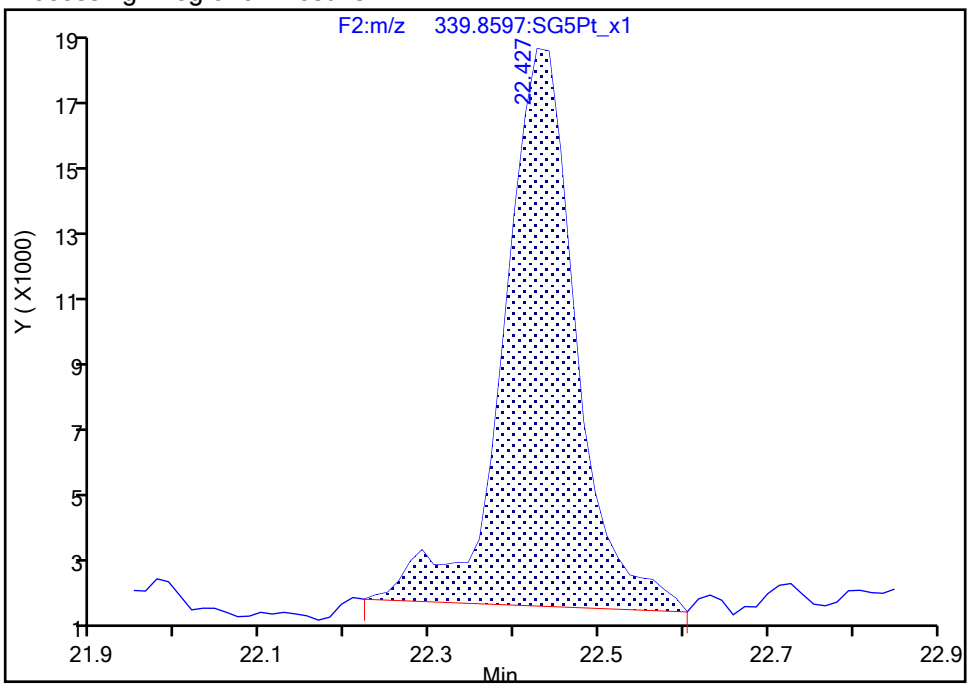
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

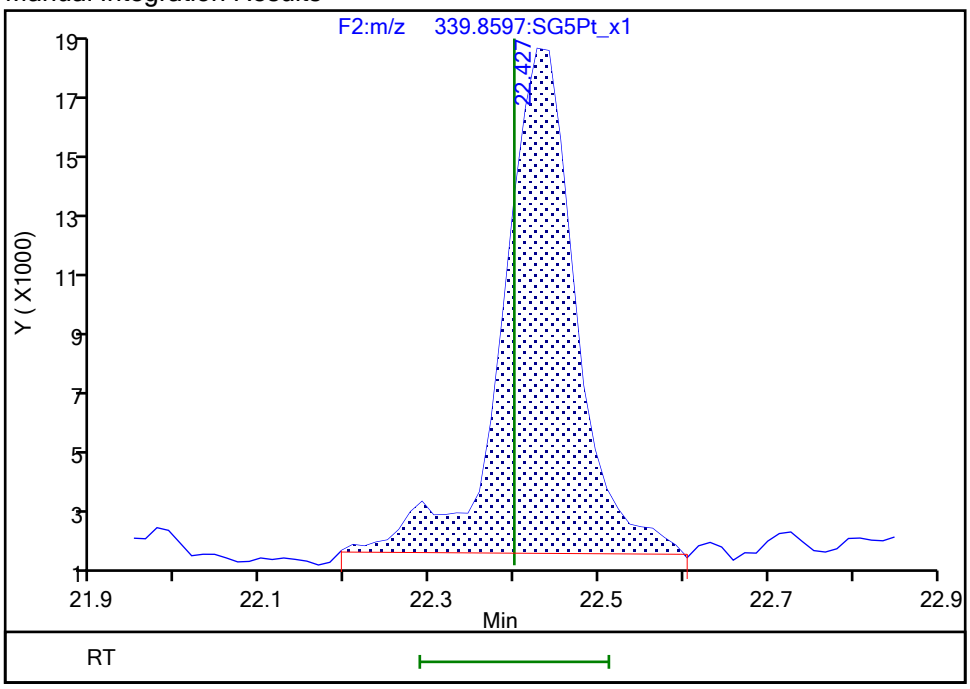
Processing Integration Results

RT: 22.43
Area: 98276
Amount: 0.598556
Amount Units: pg/ul



Manual Integration Results

RT: 22.43
Area: 99595
Amount: 0.586620
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:44:06

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

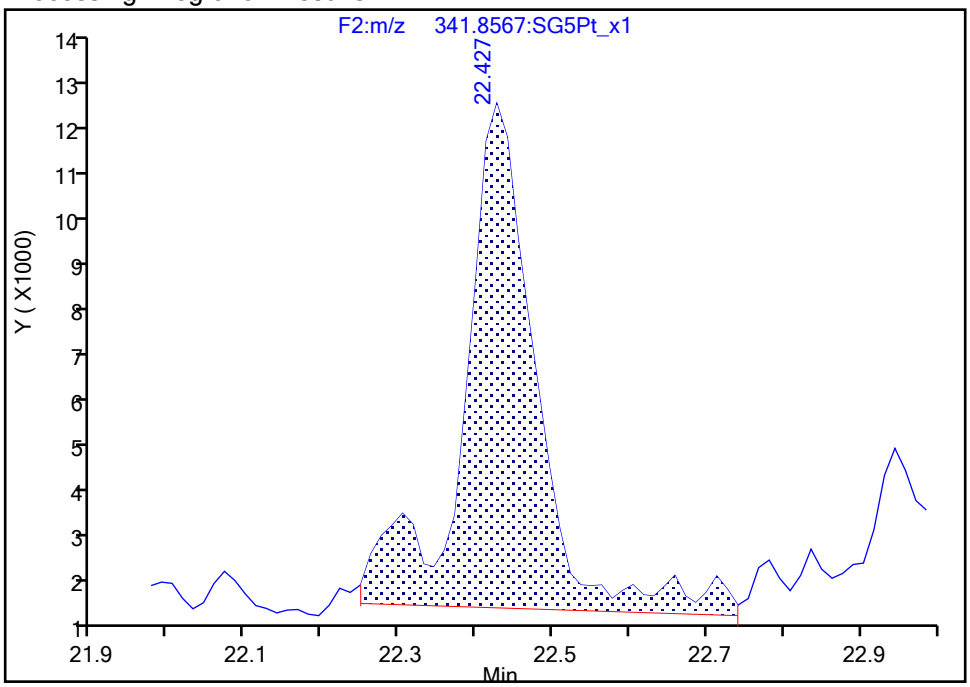
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

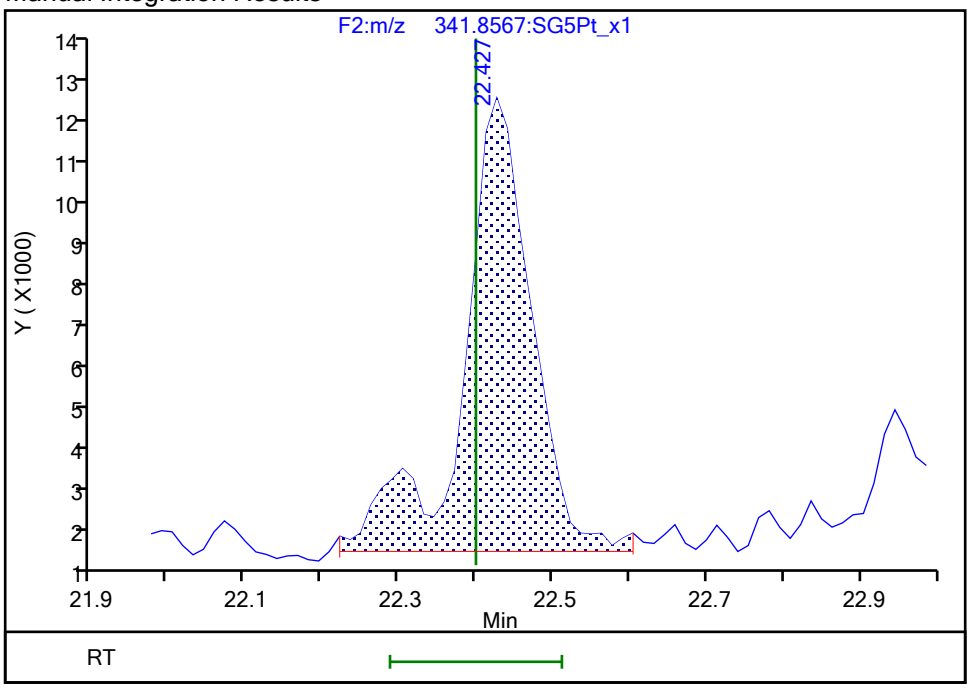
Processing Integration Results

RT: 22.43
Area: 68819
Amount: 0.598556
Amount Units: pg/ul



Manual Integration Results

RT: 22.43
Area: 64168
Amount: 0.586620
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:44:11

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

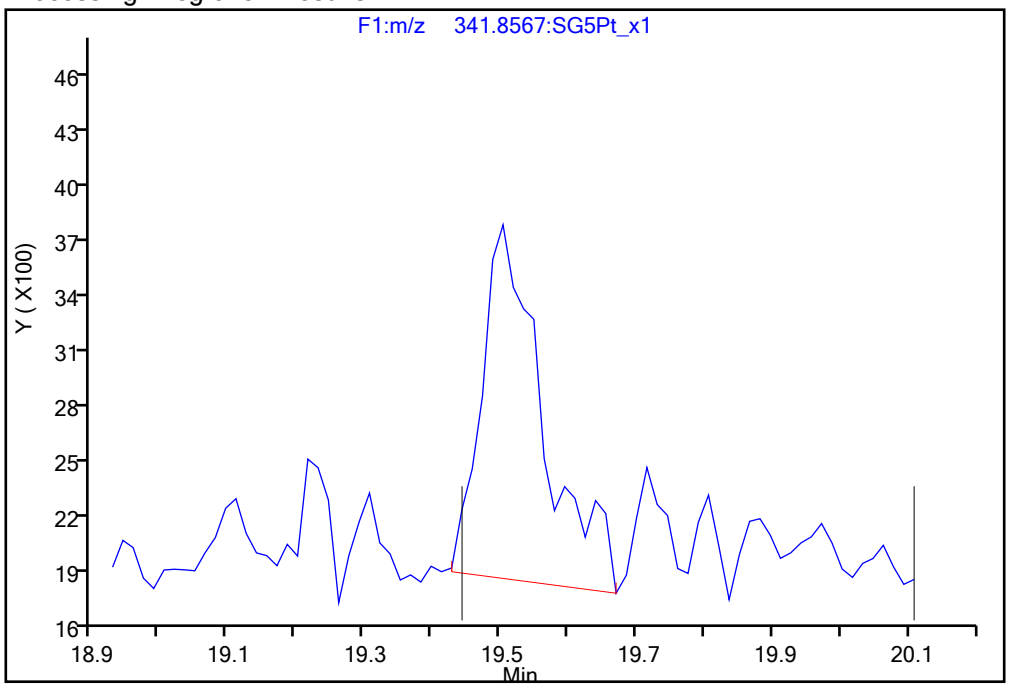
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

F1 PeCDFs, Signal: 2, m/z: 341.8567, RT: (19.44- 20.11)

Signal: 2

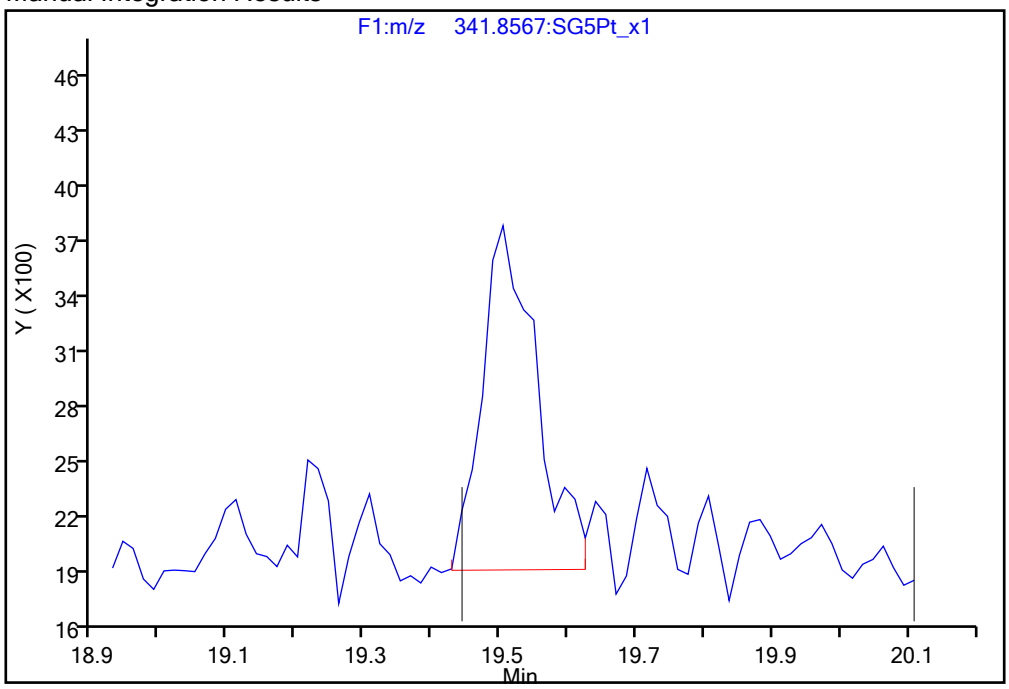
Processing Integration Results

RT = 19.504 Area = 11824



Manual Integration Results

RT = 19.504 Area = 10174 M



Reviewer: dadunj, 16-Dec-2019 10:44:26

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

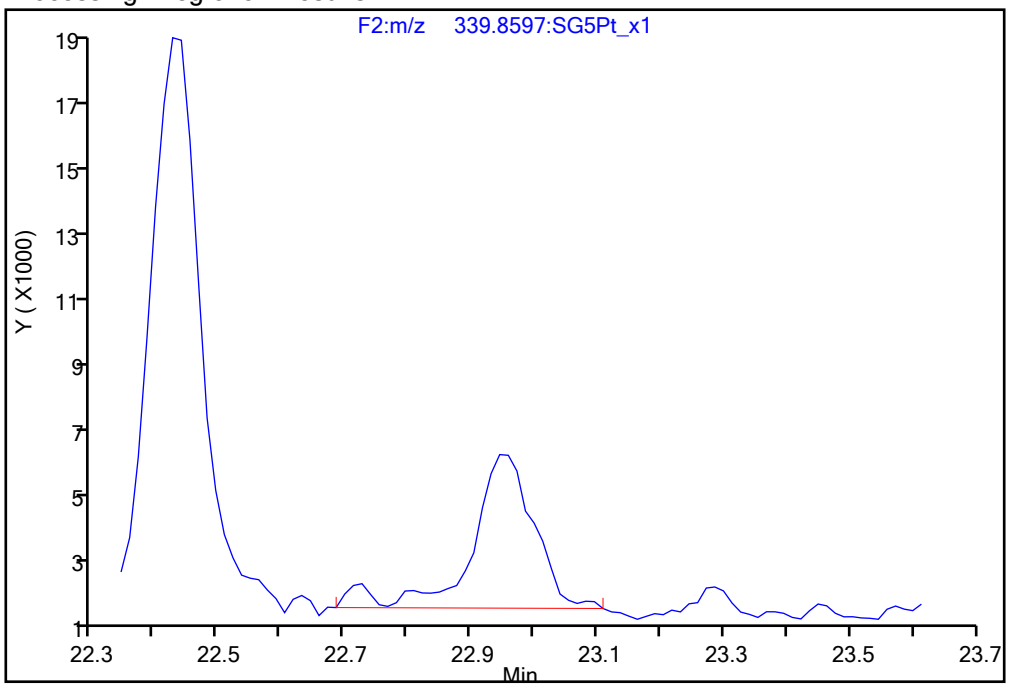
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (20.12- 25.74)

Signal: 1

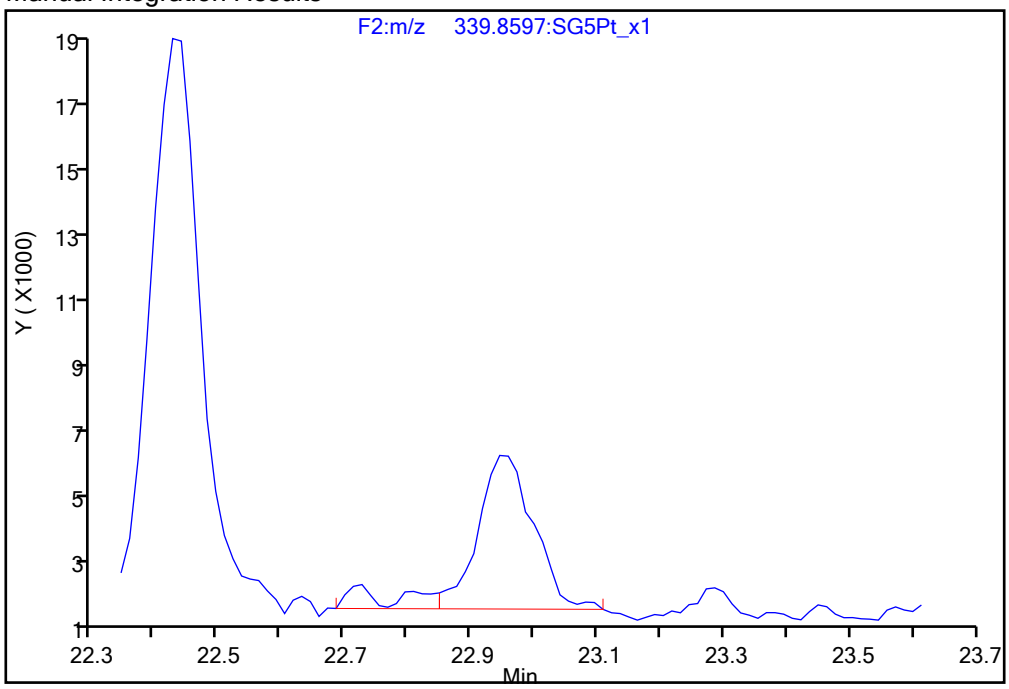
Processing Integration Results

RT = 22.945 Area = 30815



Manual Integration Results

RT = 22.945 Area = 27178 M



Reviewer: dadunj, 16-Dec-2019 10:44:48

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

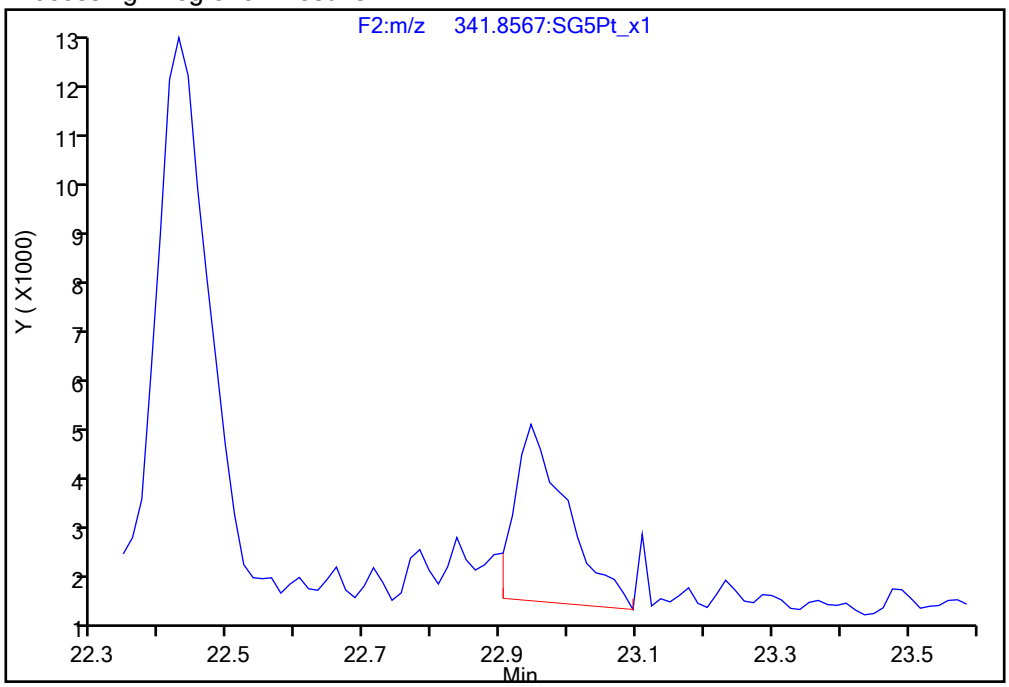
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (20.12- 25.74)

Signal: 2

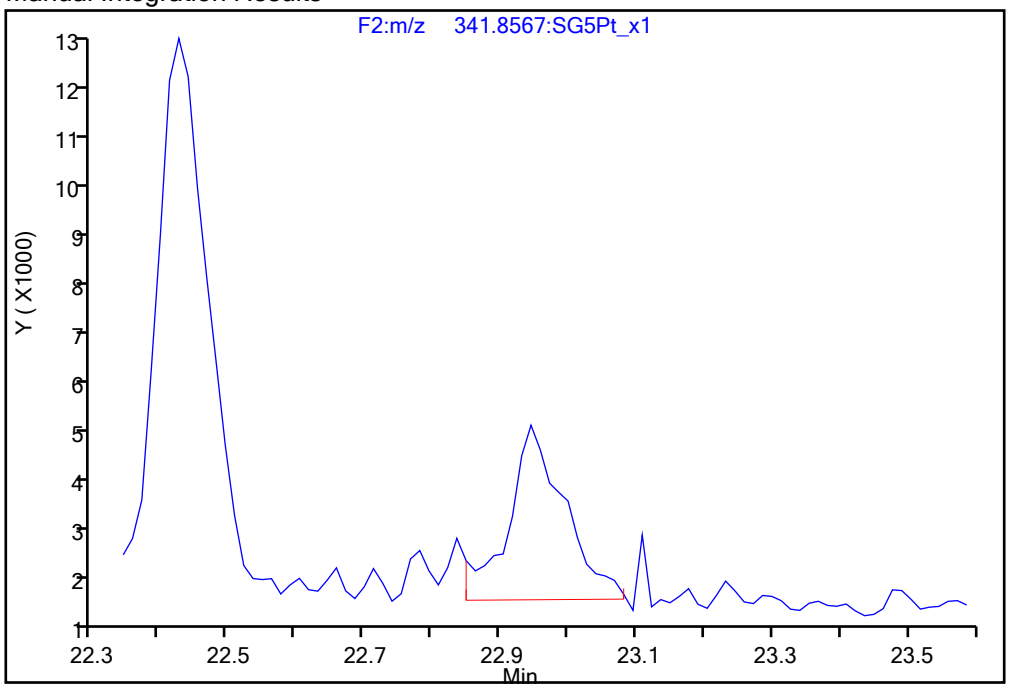
Processing Integration Results

RT = 22.945 Area = 17043



Manual Integration Results

RT = 22.945 Area = 18251 M



Reviewer: dadunj, 16-Dec-2019 10:44:42

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

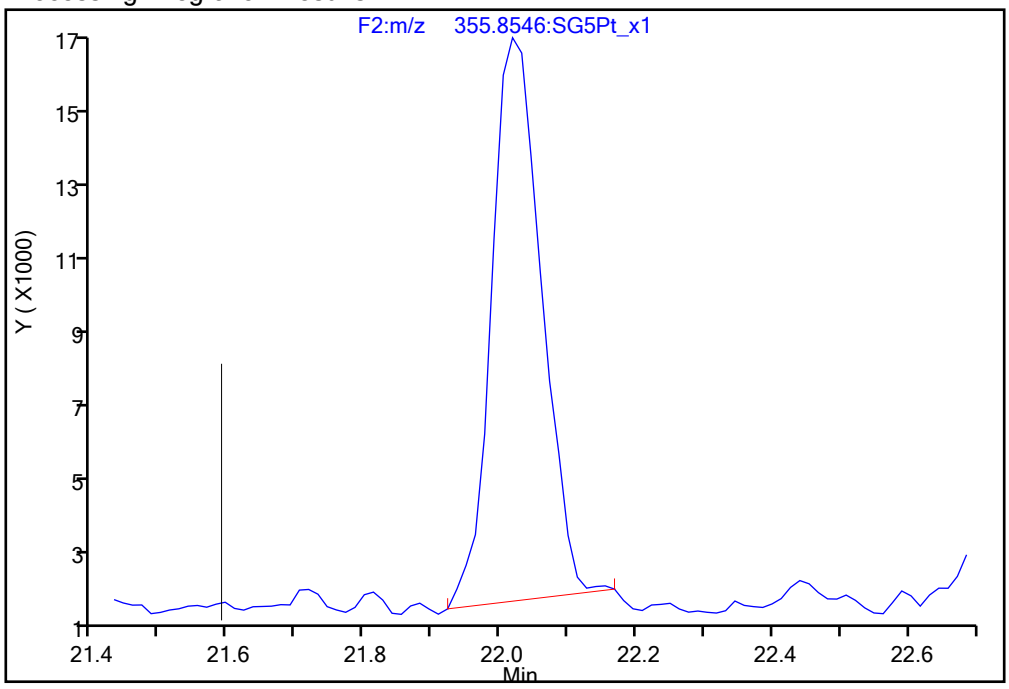
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

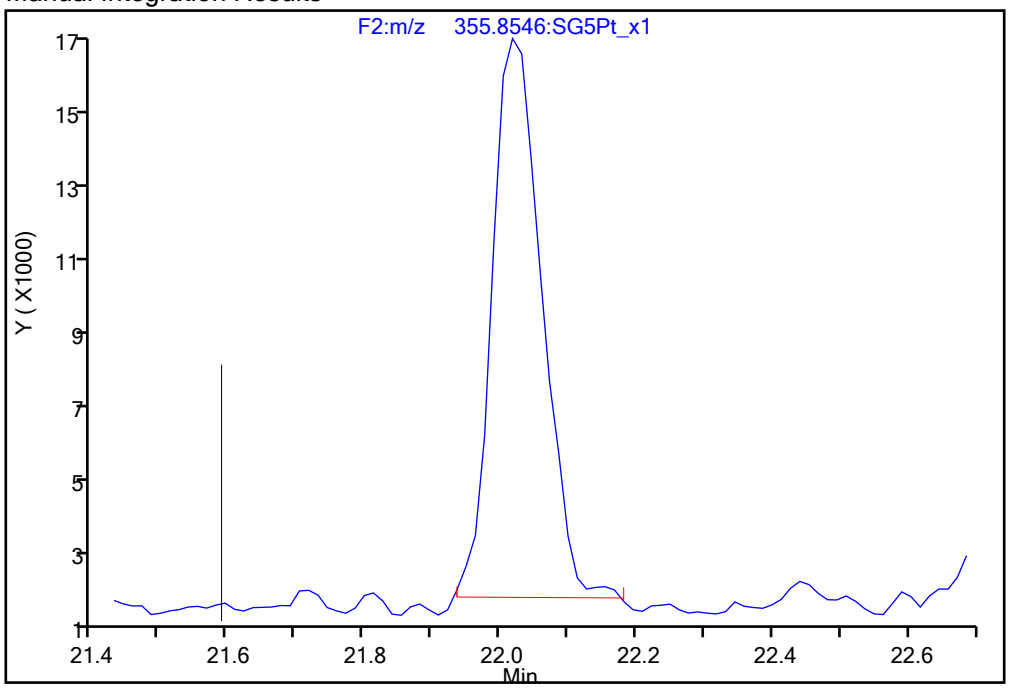
Processing Integration Results

RT = 22.018 Area = 74556



Manual Integration Results

RT = 22.018 Area = 73744 M



Reviewer: dadunj, 16-Dec-2019 10:45:03

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

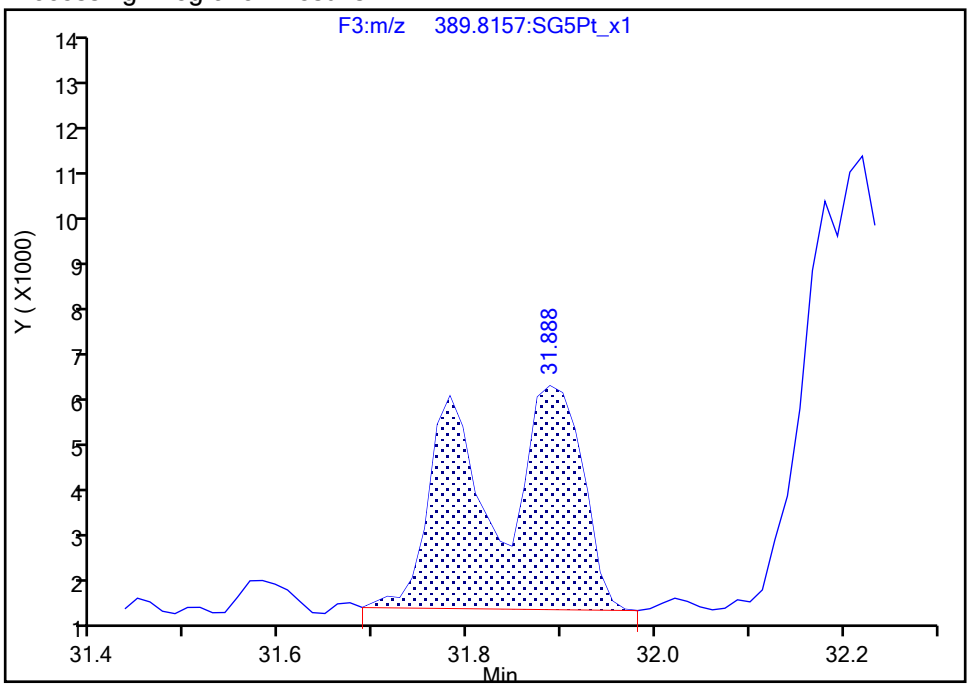
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

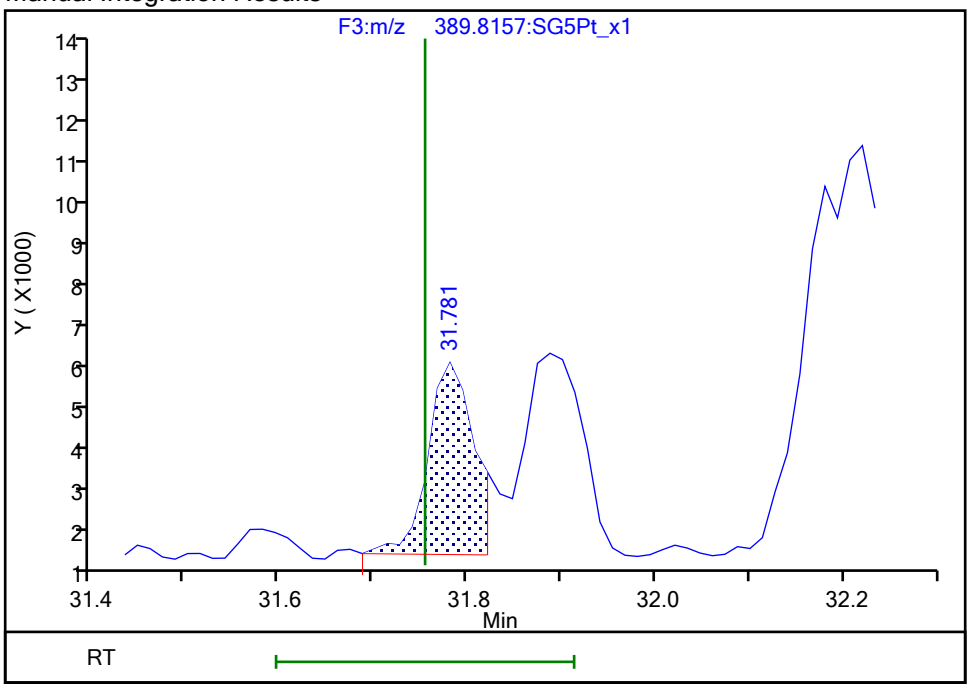
Processing Integration Results

RT: 31.89
Area: 33644
Amount: 0.305361
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 13558
Amount: 0.121441
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:45:38

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

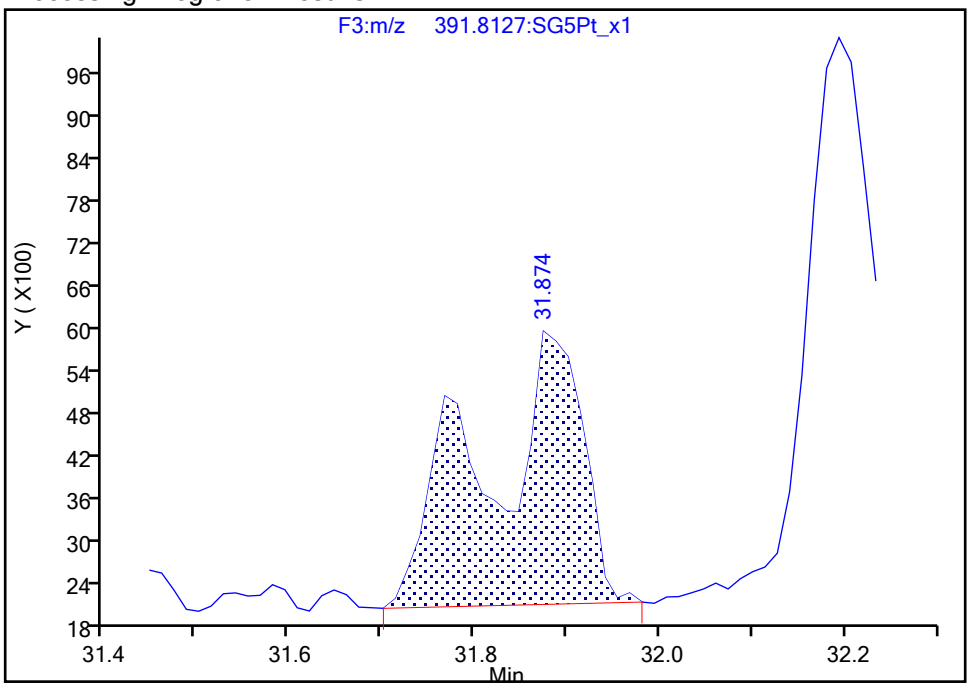
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

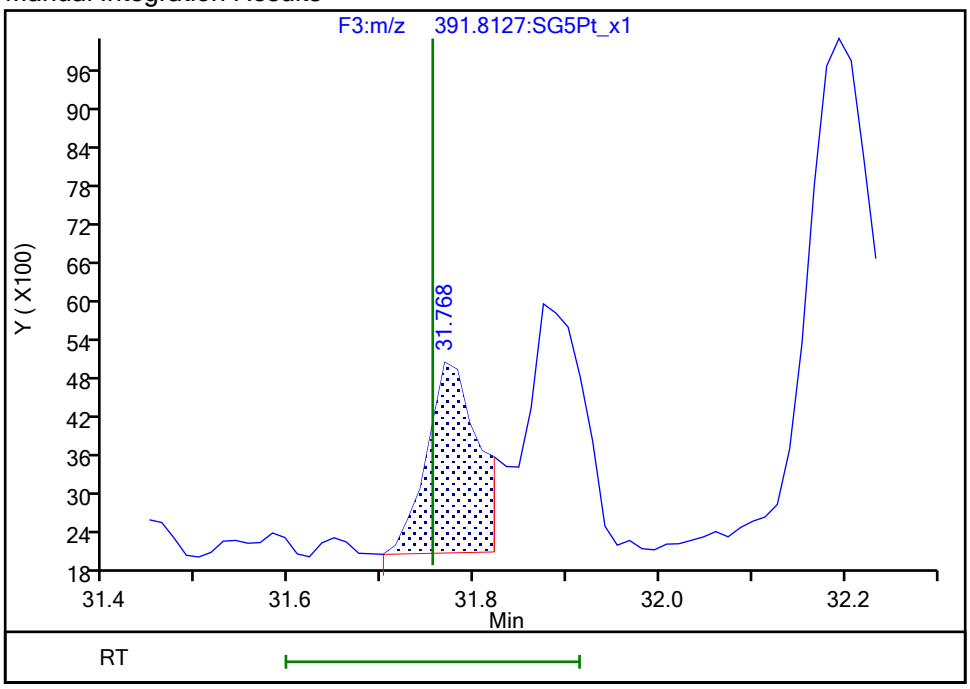
Processing Integration Results

RT: 31.87
Area: 28383
Amount: 0.305361
Amount Units: pg/ul



Manual Integration Results

RT: 31.77
Area: 11110
Amount: 0.121441
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:45:40

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

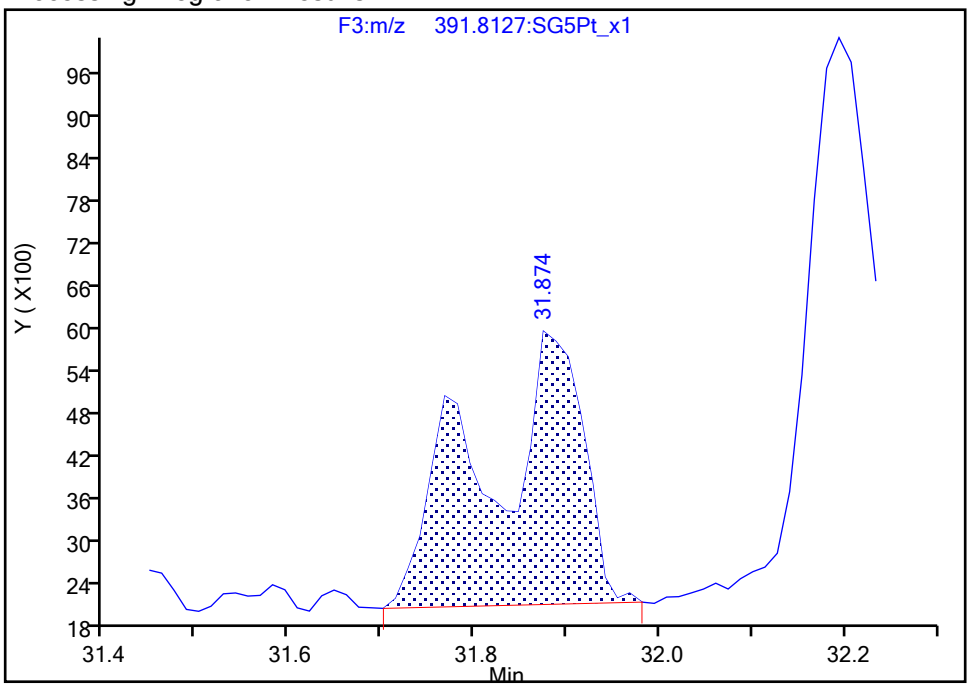
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

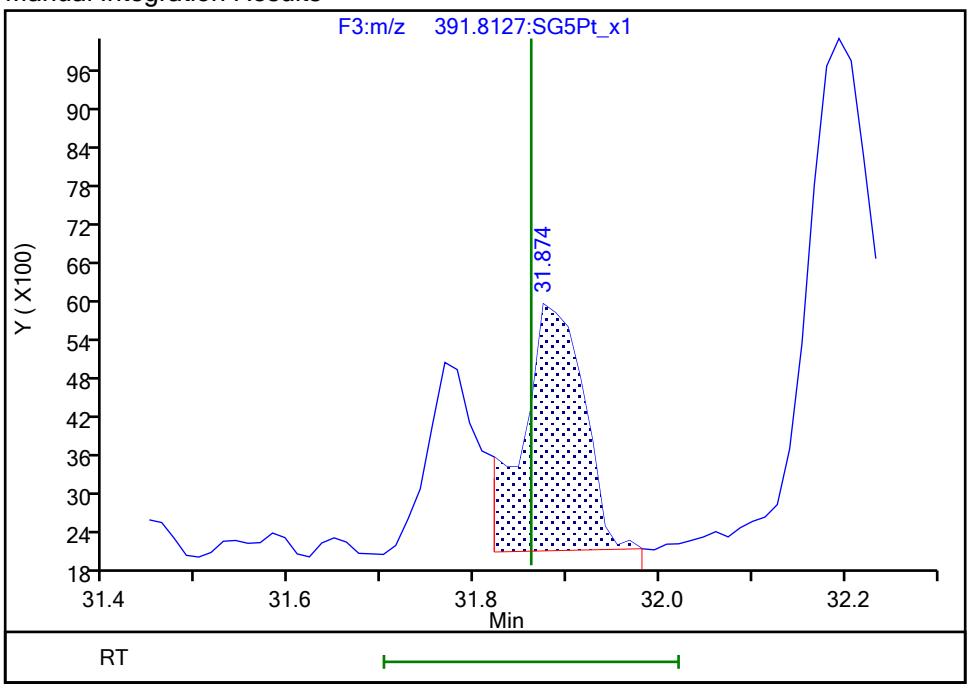
Processing Integration Results

RT: 31.87
Area: 28383
Amount: 0.304185
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 17274
Amount: 0.183221
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:45:45

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

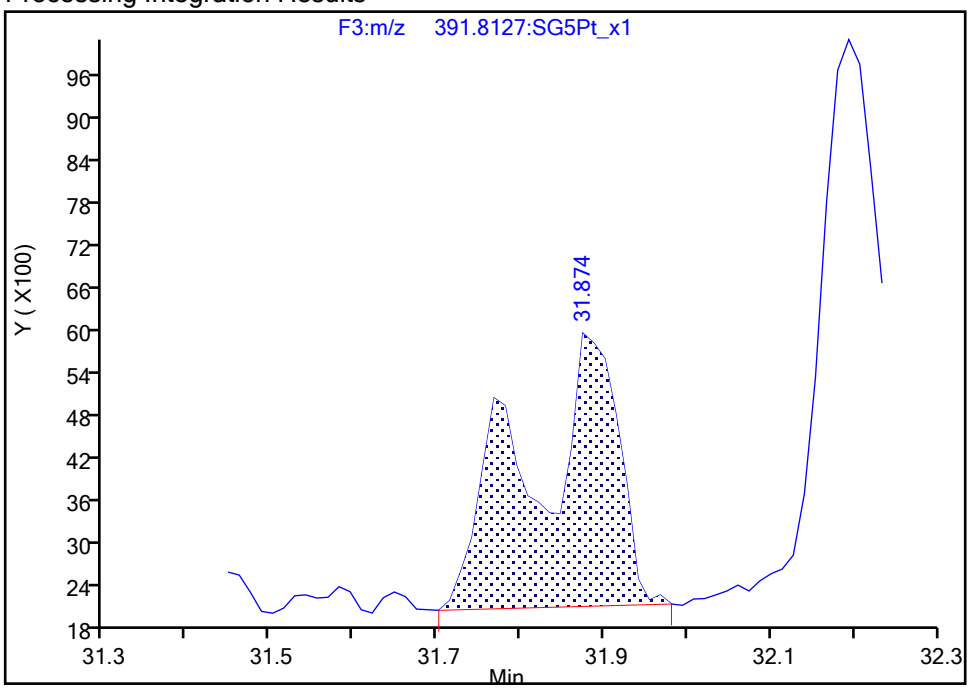
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.89
Area: 62027
Amount: 0.304185
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 37361
Amount: 0.183221
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 10:45:45
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

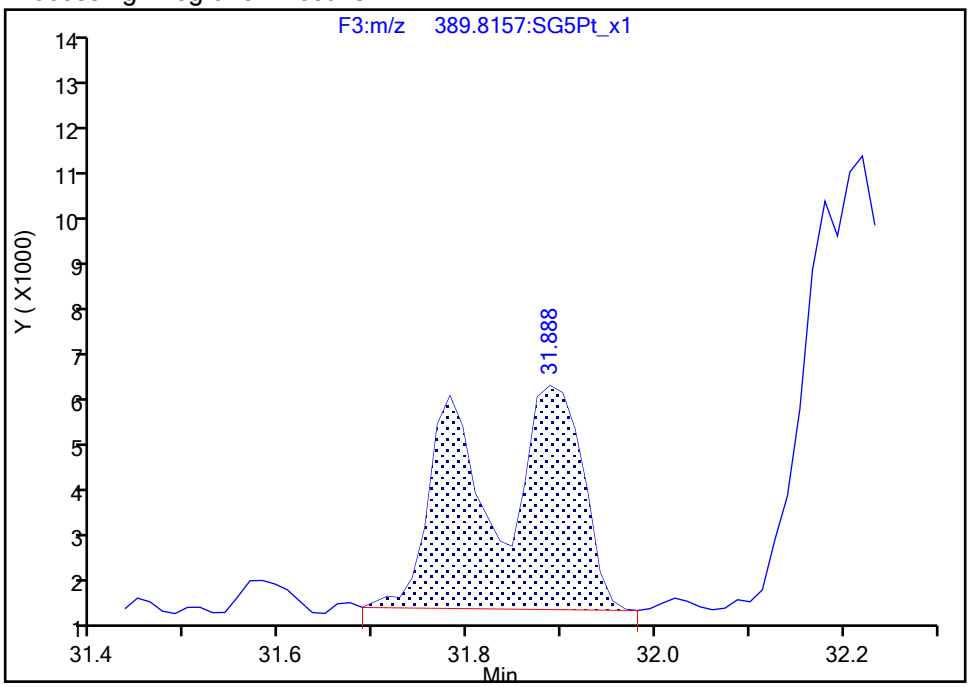
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

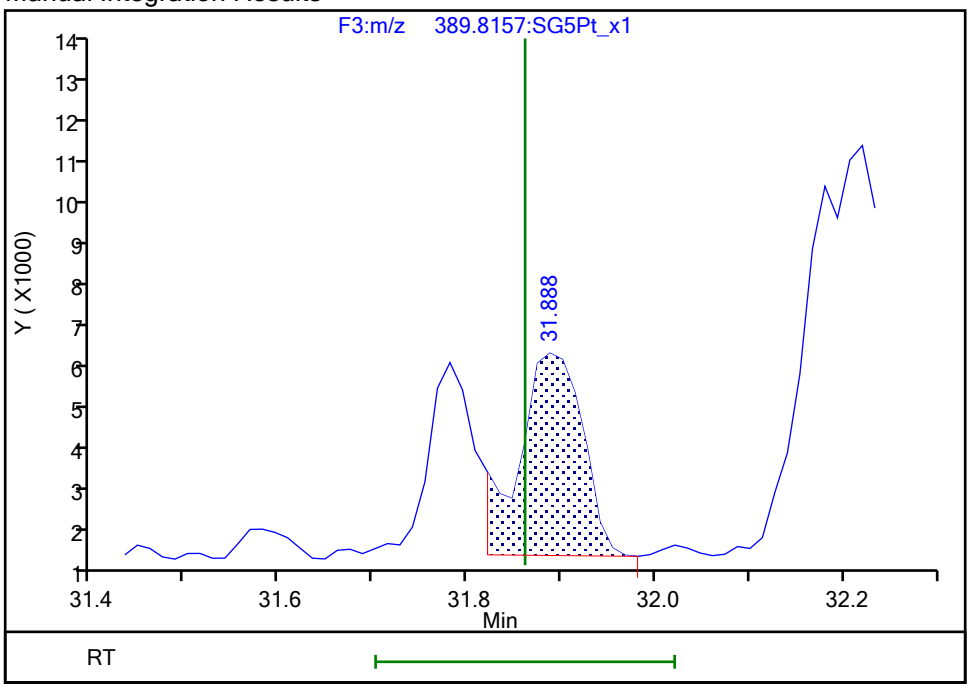
Processing Integration Results

RT: 31.89
Area: 33644
Amount: 0.304185
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 20087
Amount: 0.183221
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:45:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

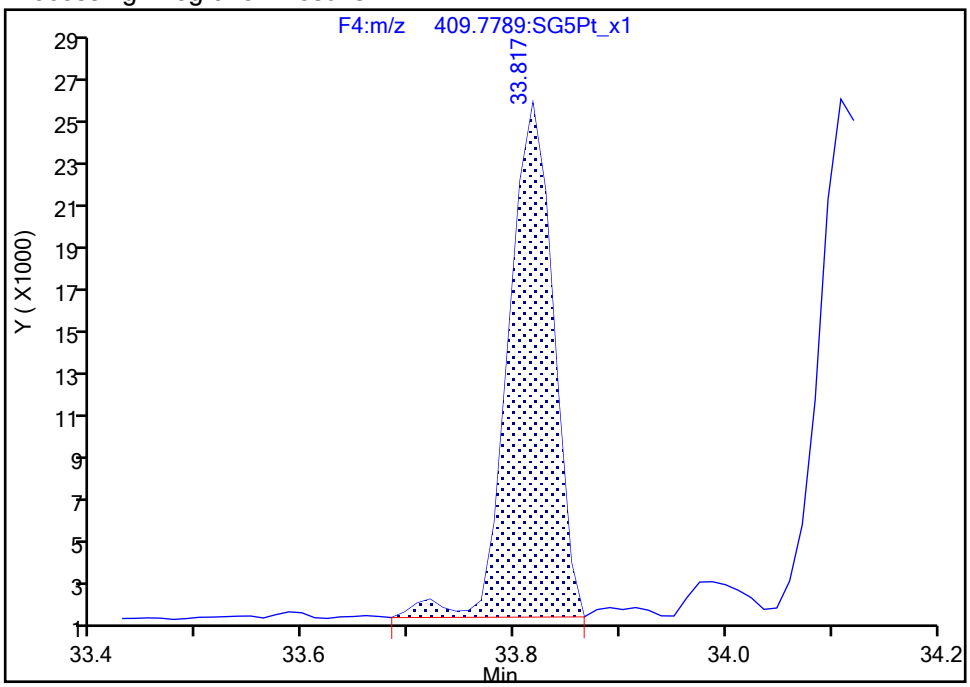
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d				
Injection Date:	13-Dec-2019 17:53:57	Instrument ID:	10D5		
Lims ID:	320-56911-A-9-A	Lab Sample ID:	320-56911-9		
Client ID:	11187072-120819-BN-SJSSA05 (0-1)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

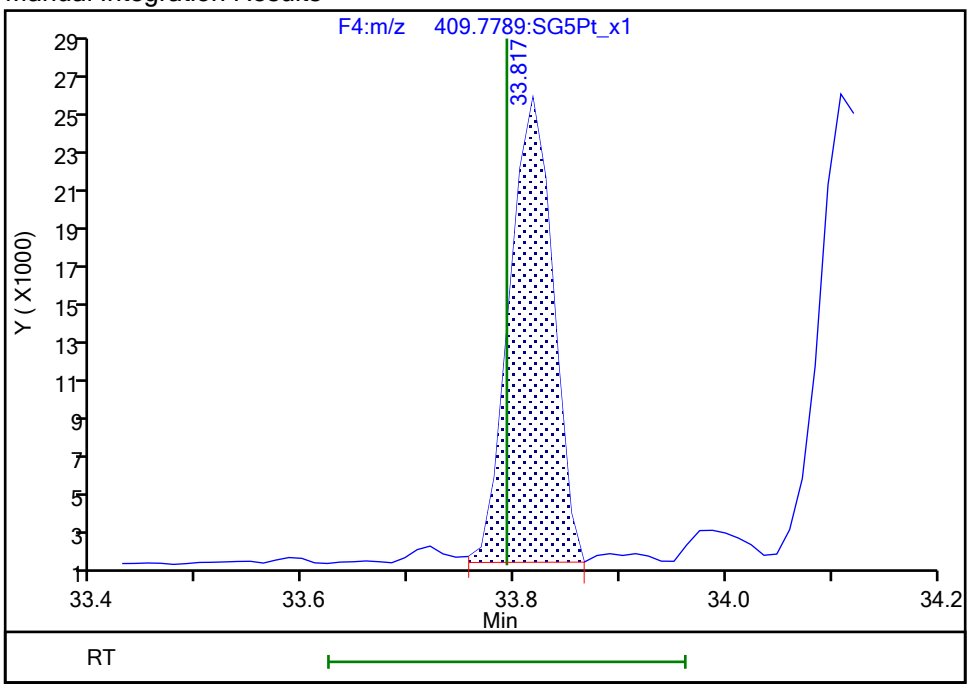
Processing Integration Results

RT: 33.82
Area: 70289
Amount: 0.508085
Amount Units: pg/ul



Manual Integration Results

RT: 33.82
Area: 68370
Amount: 0.500825
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:45:57

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
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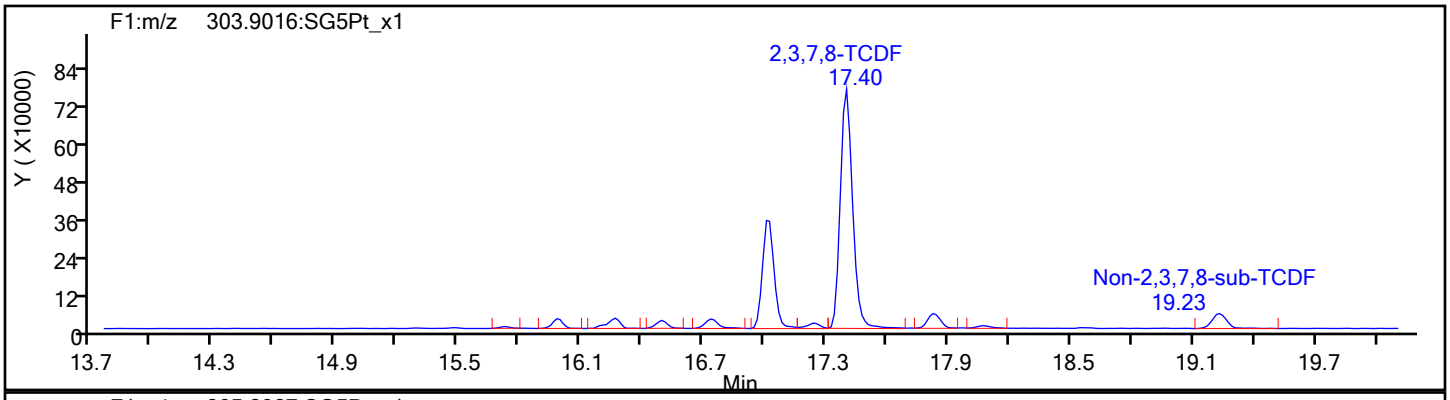
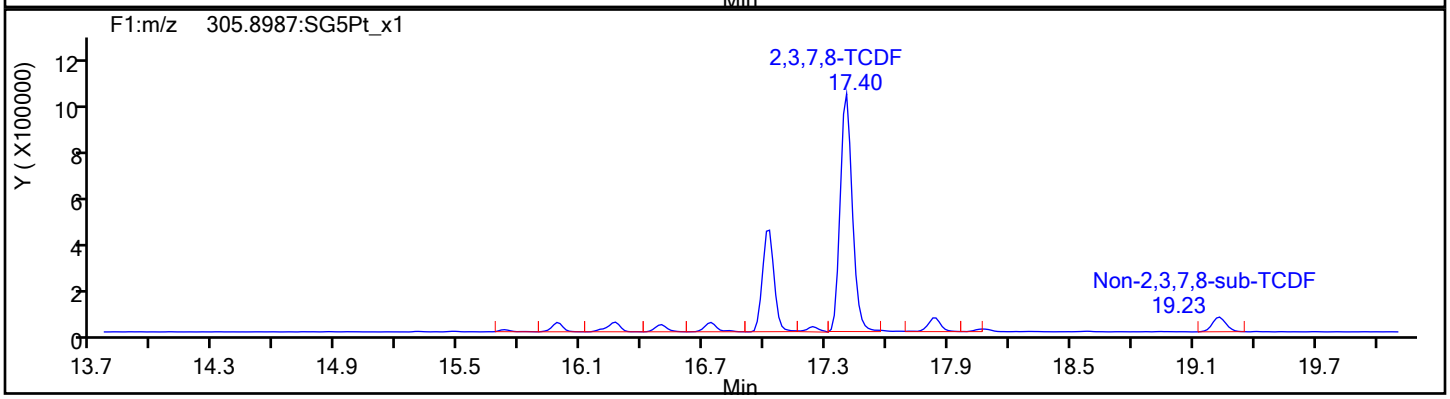
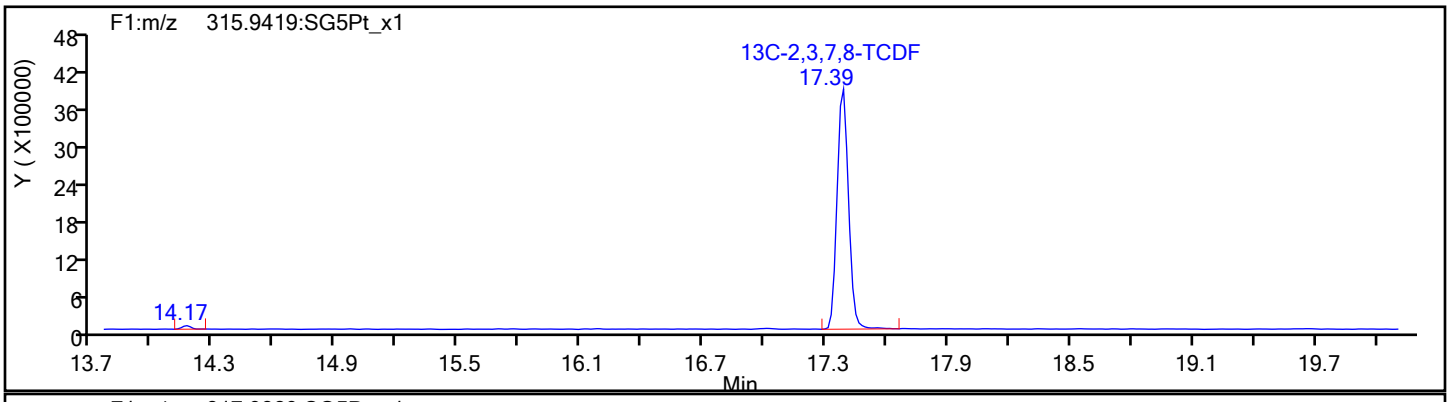
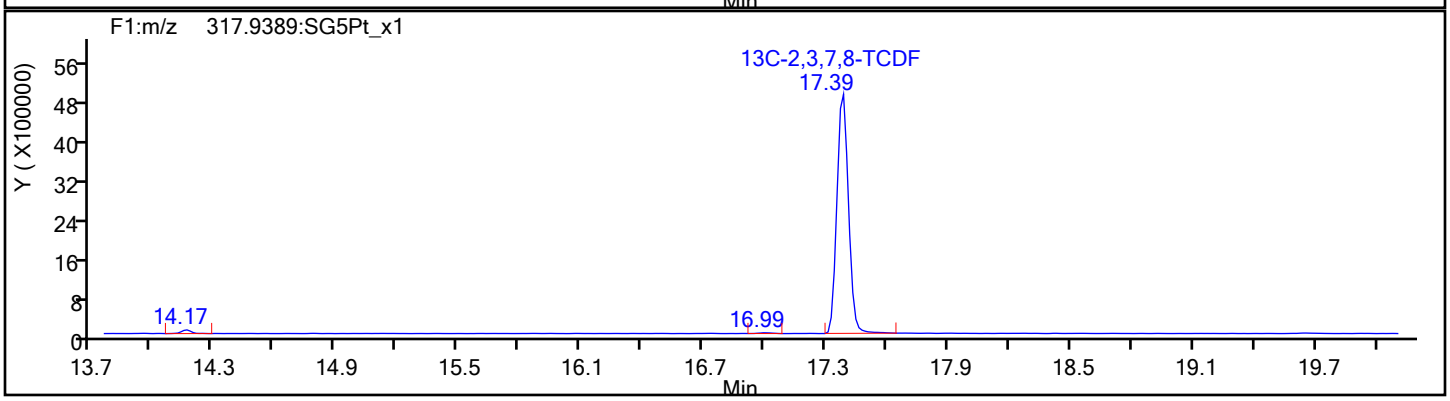
TCDF





TCDF Standards





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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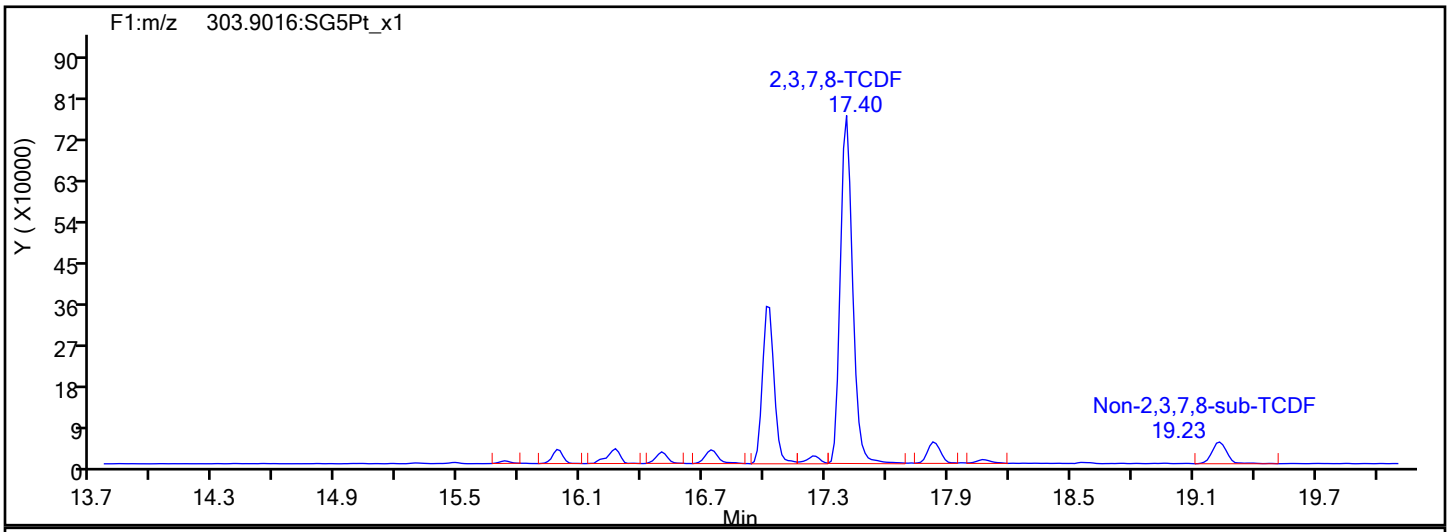
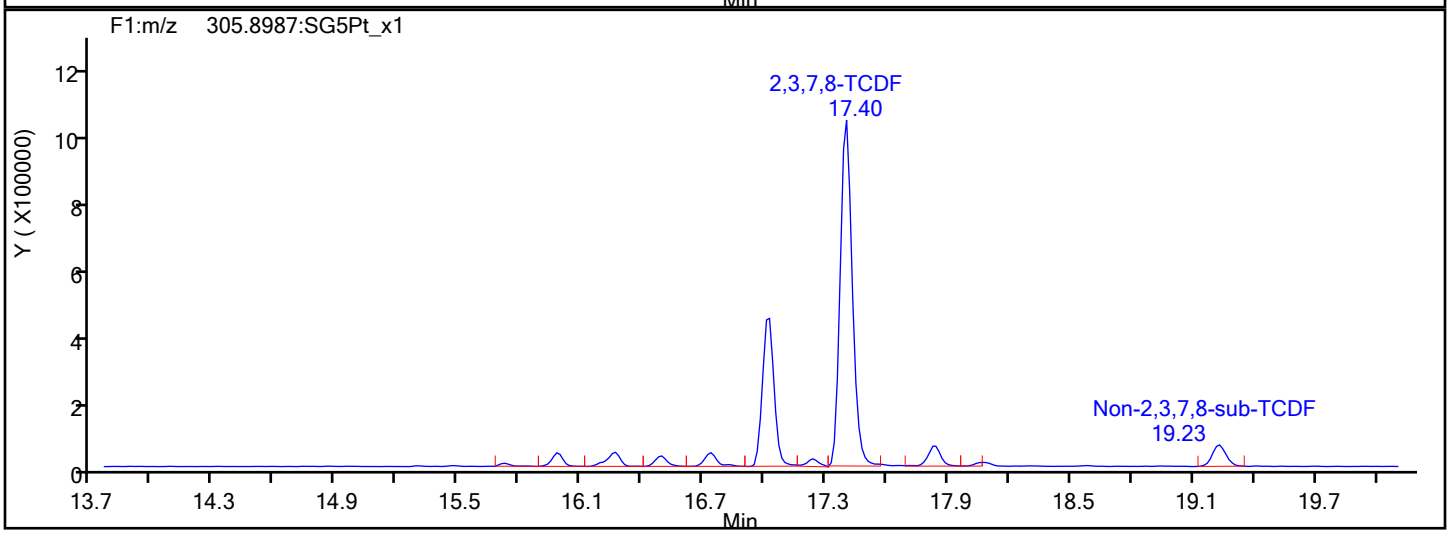
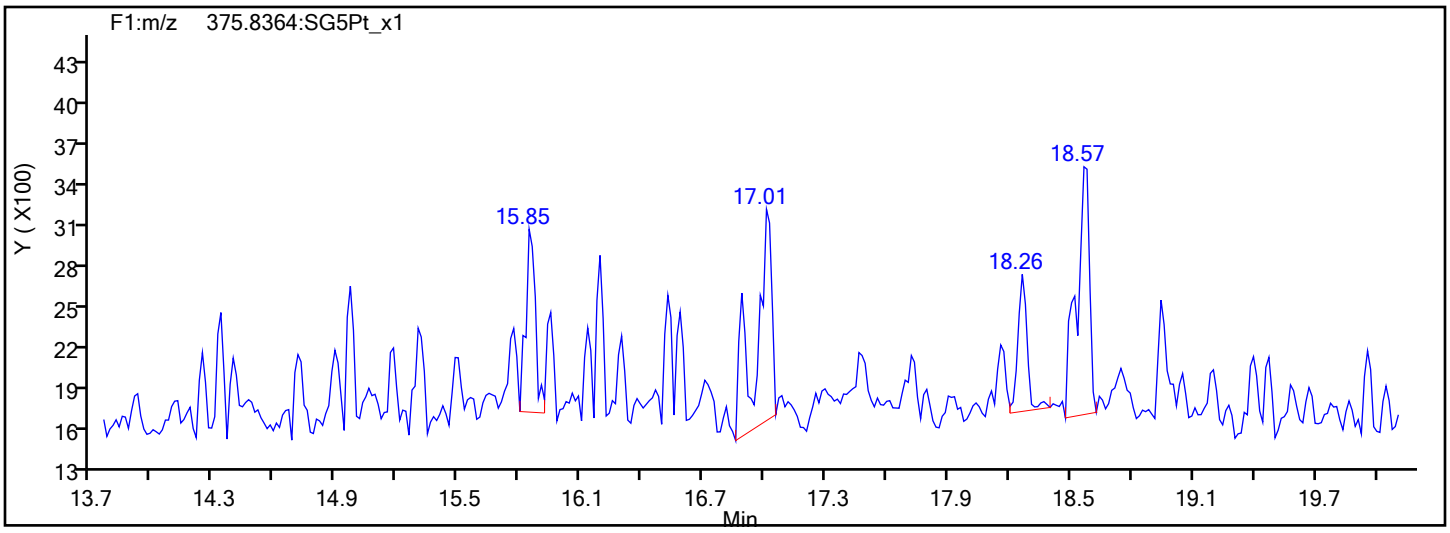
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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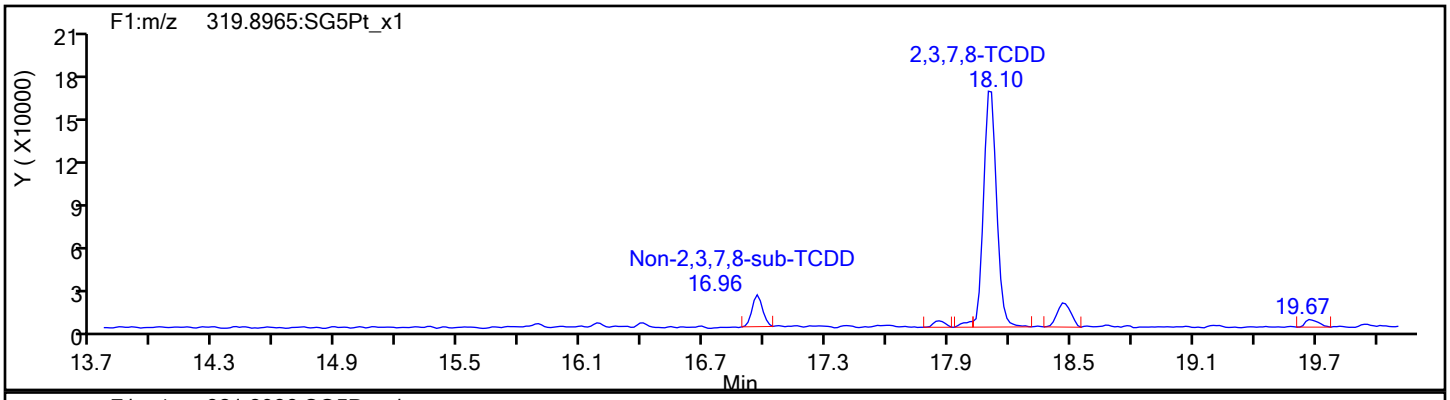
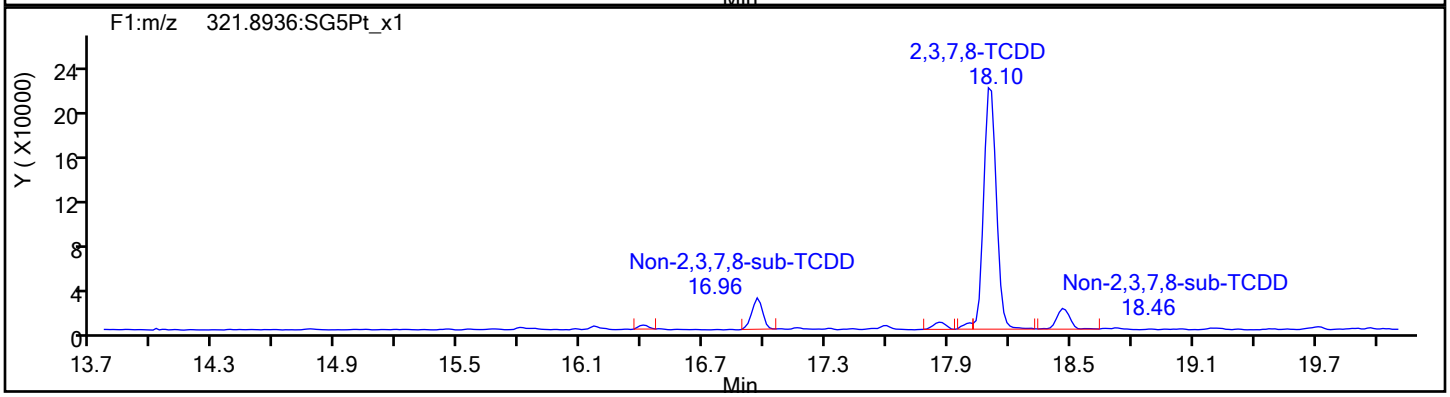
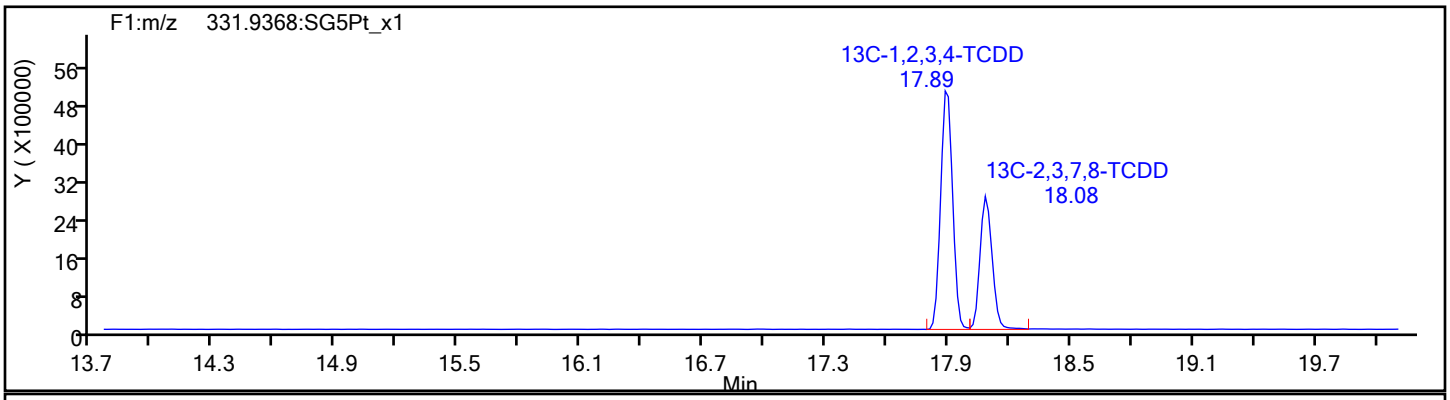
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

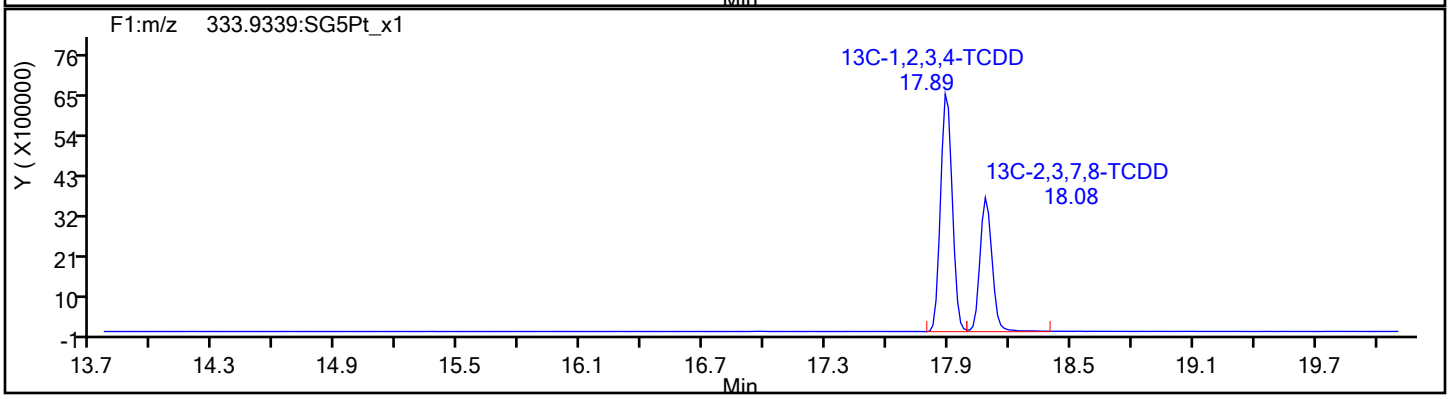
TCDD





TCDD Standards





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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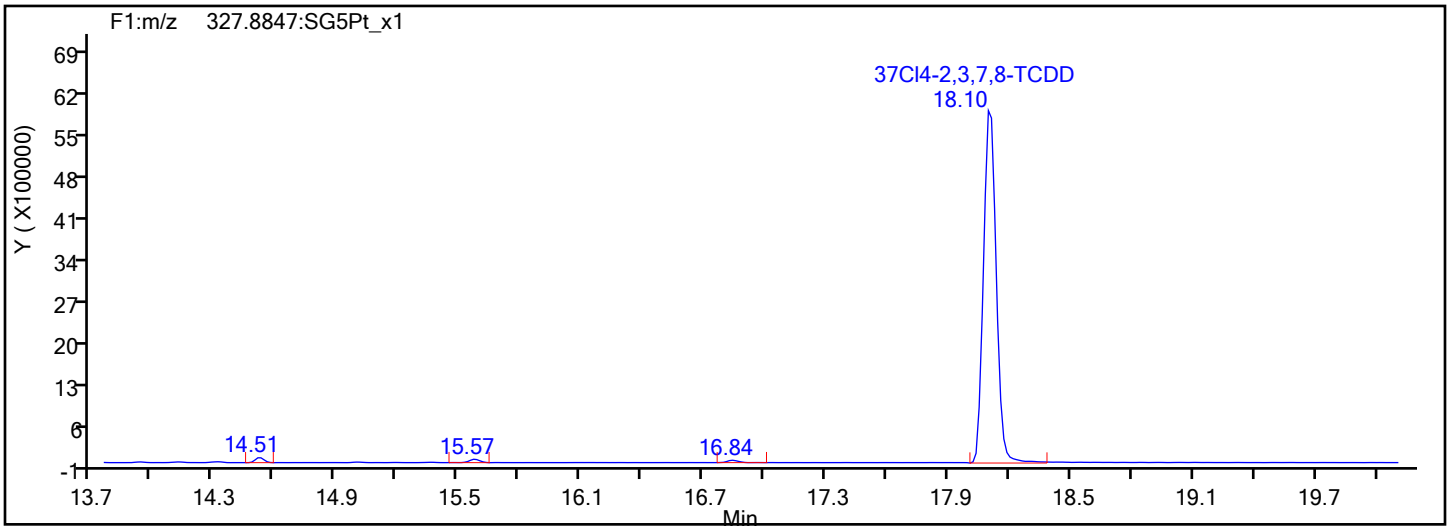
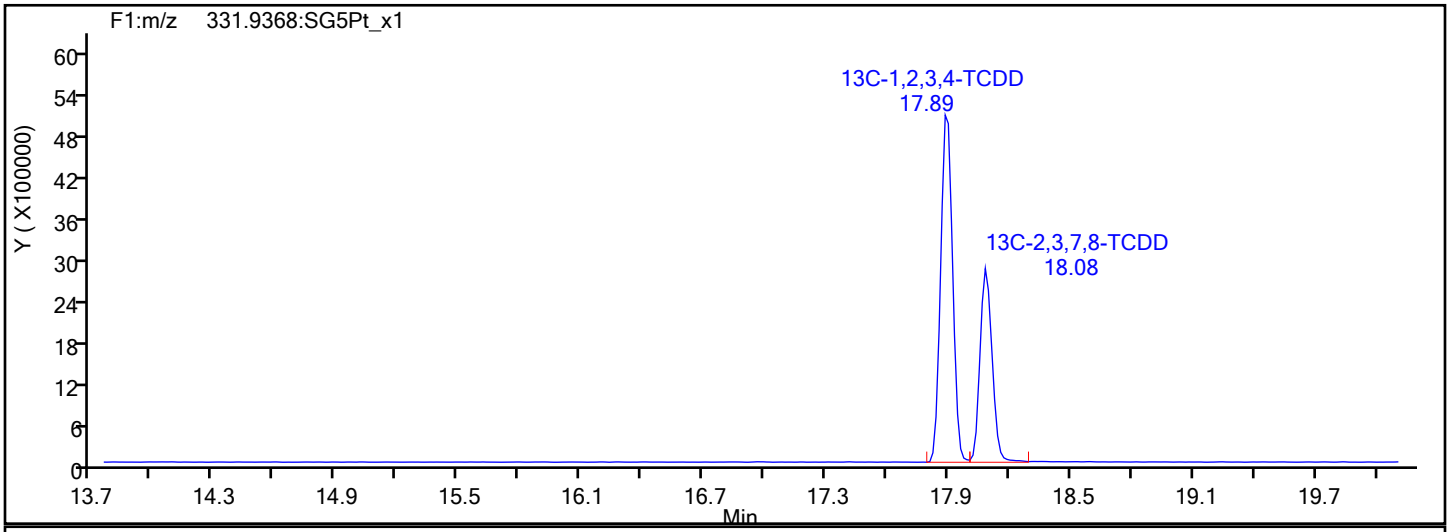
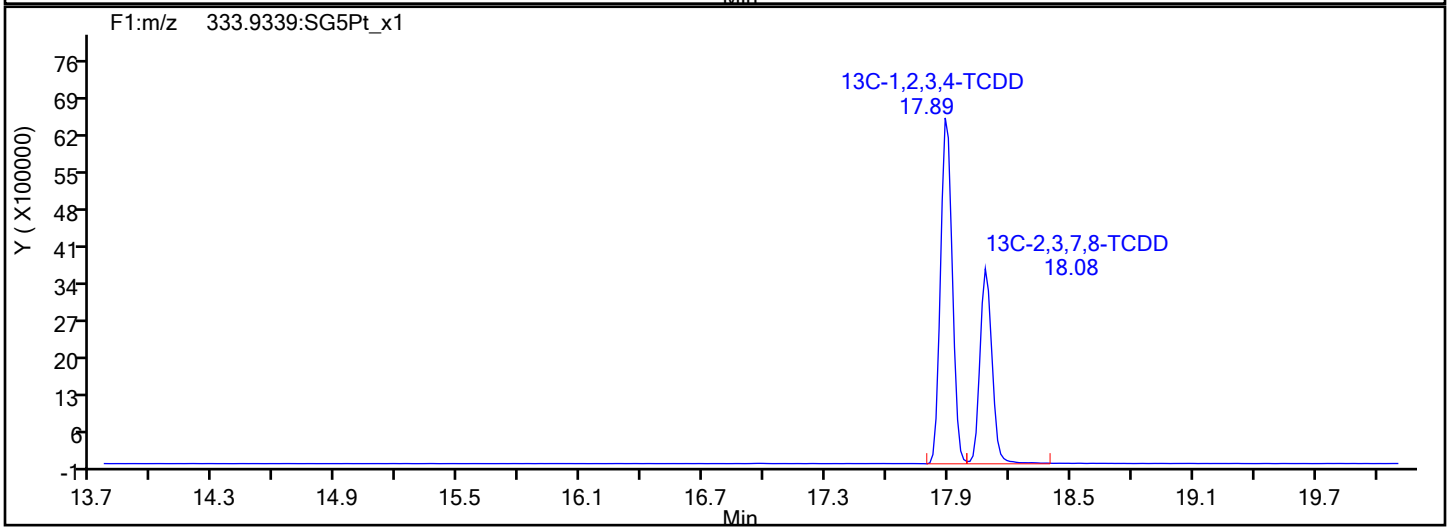
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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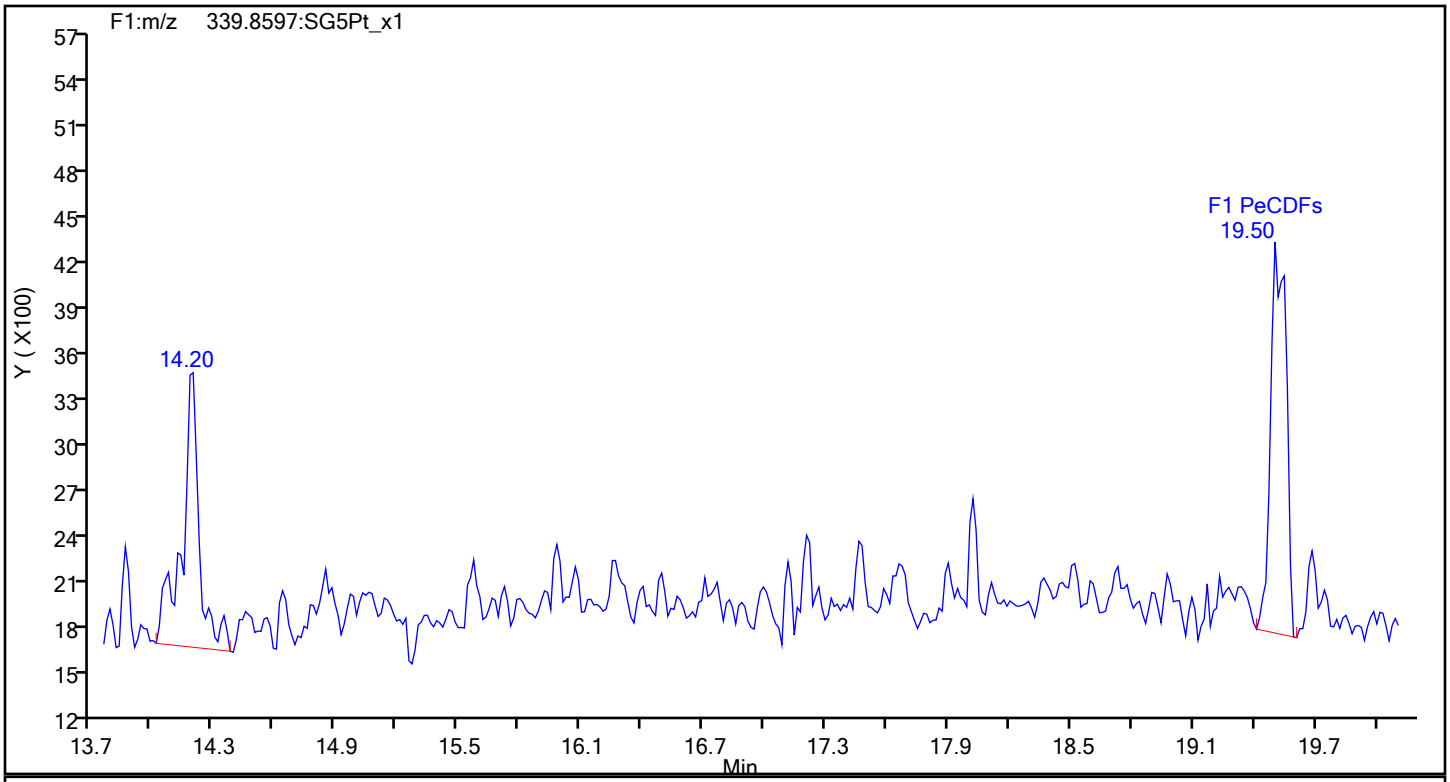
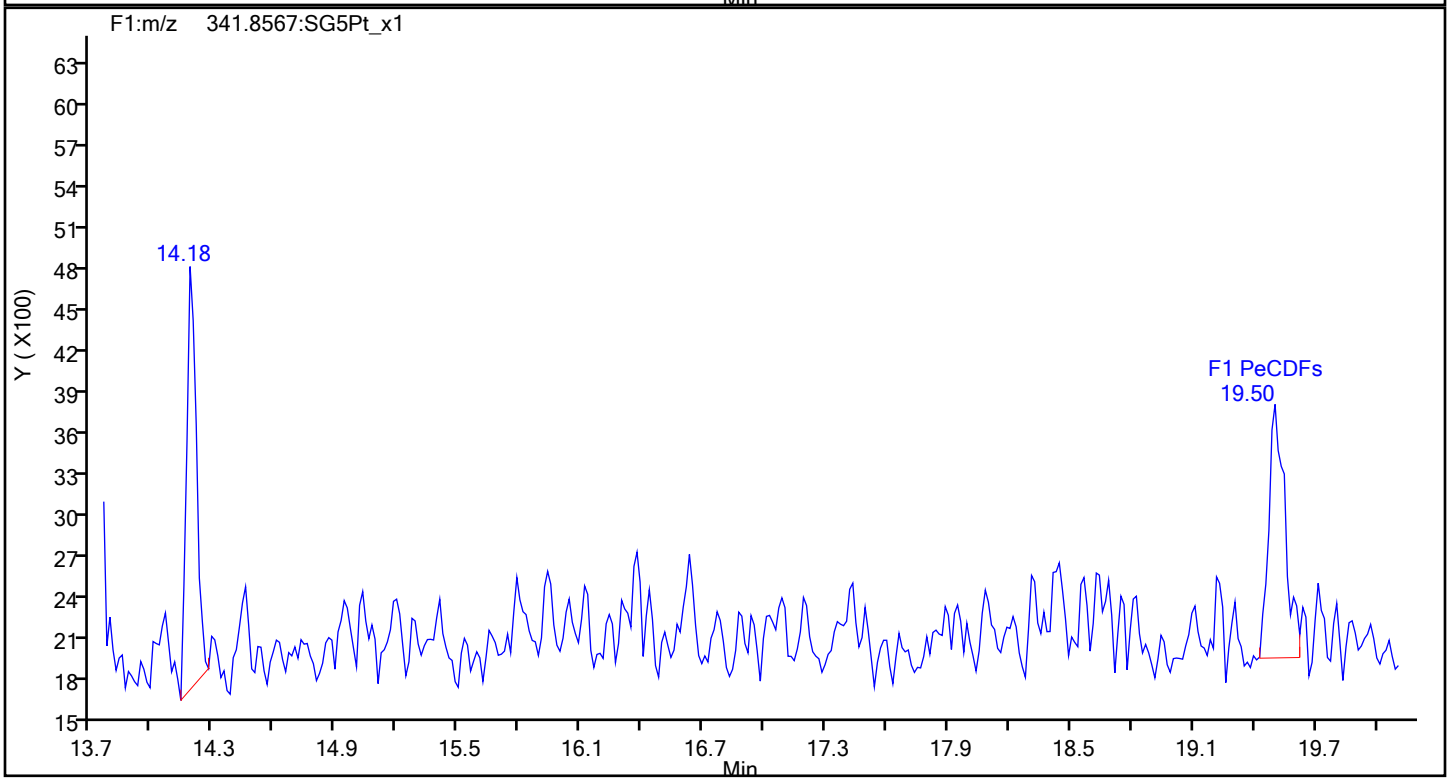
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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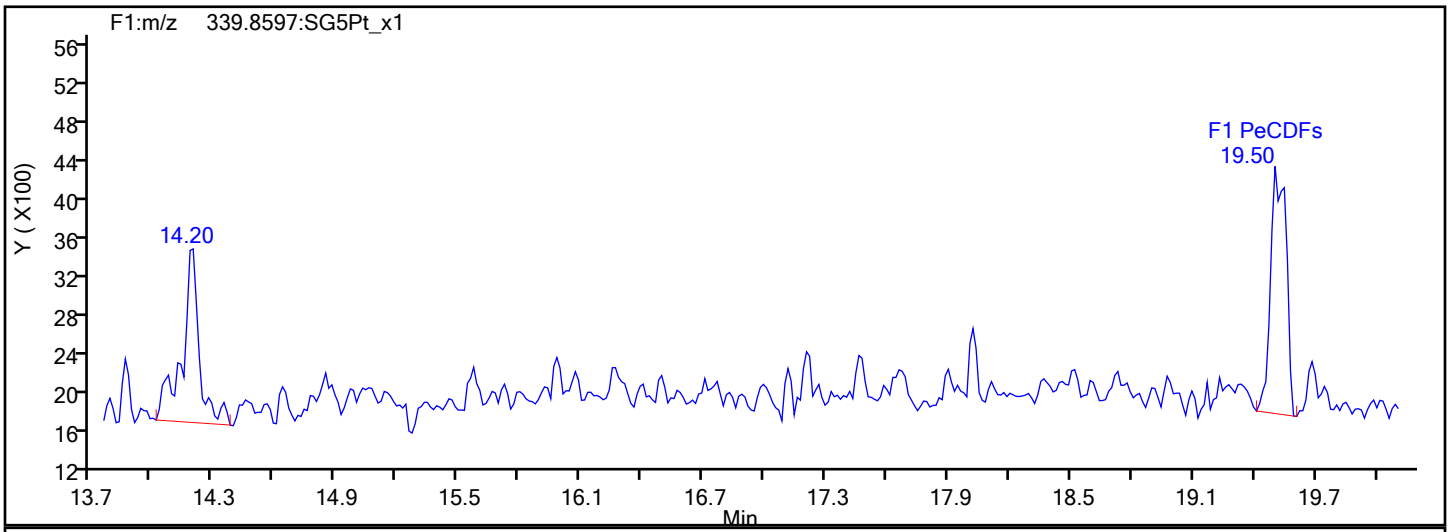
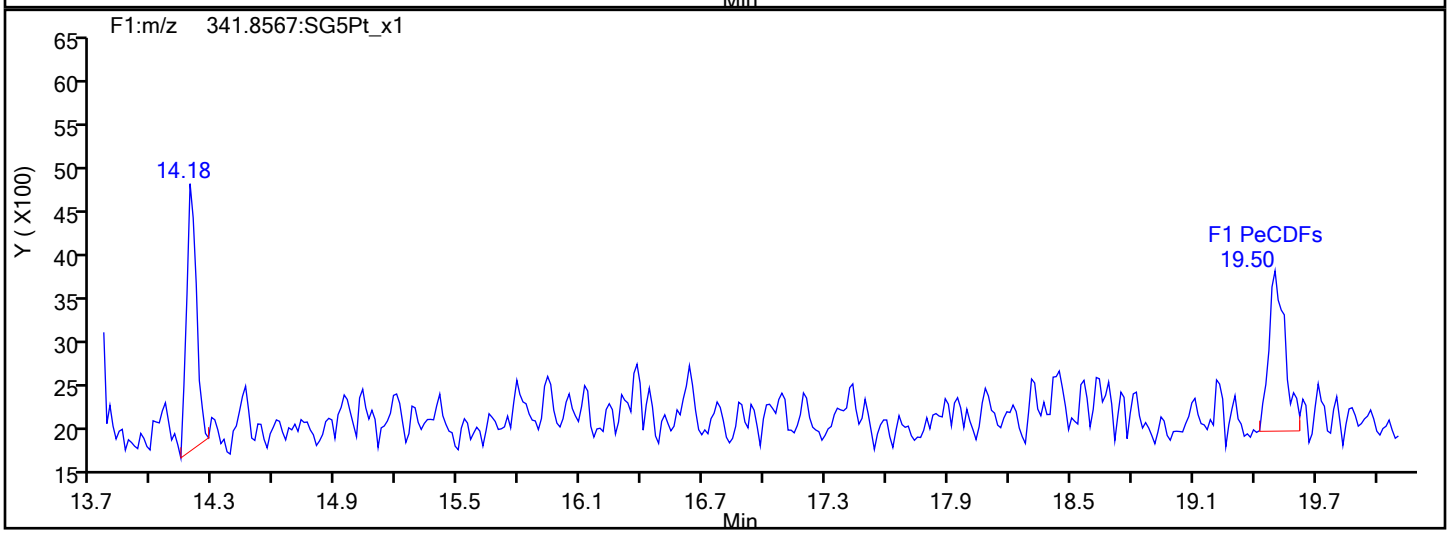
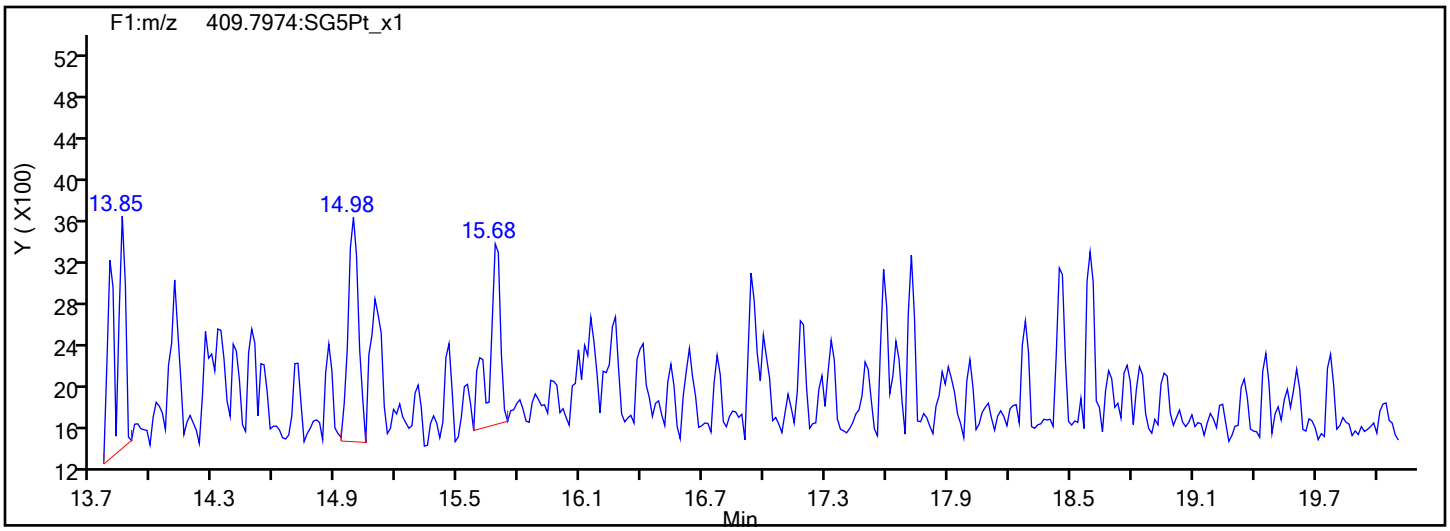
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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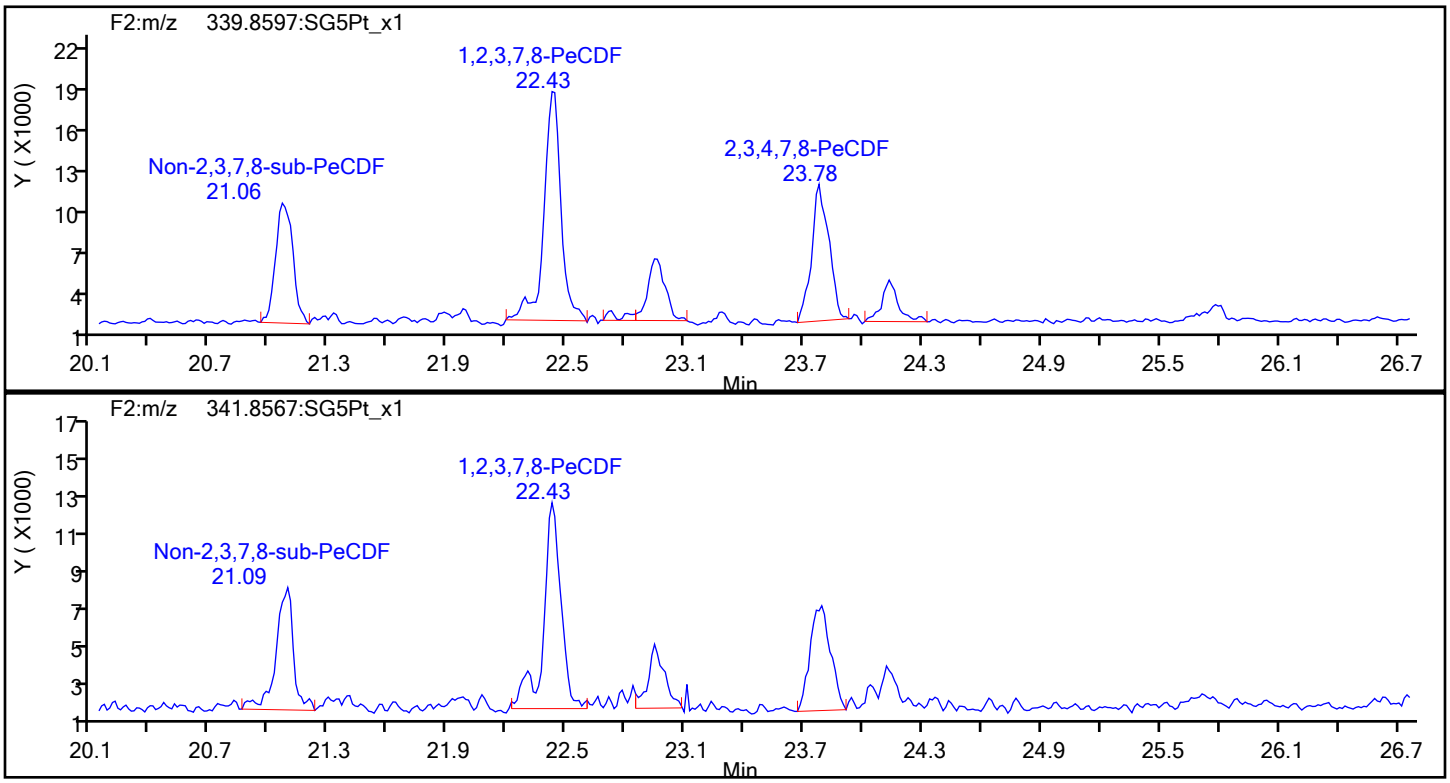
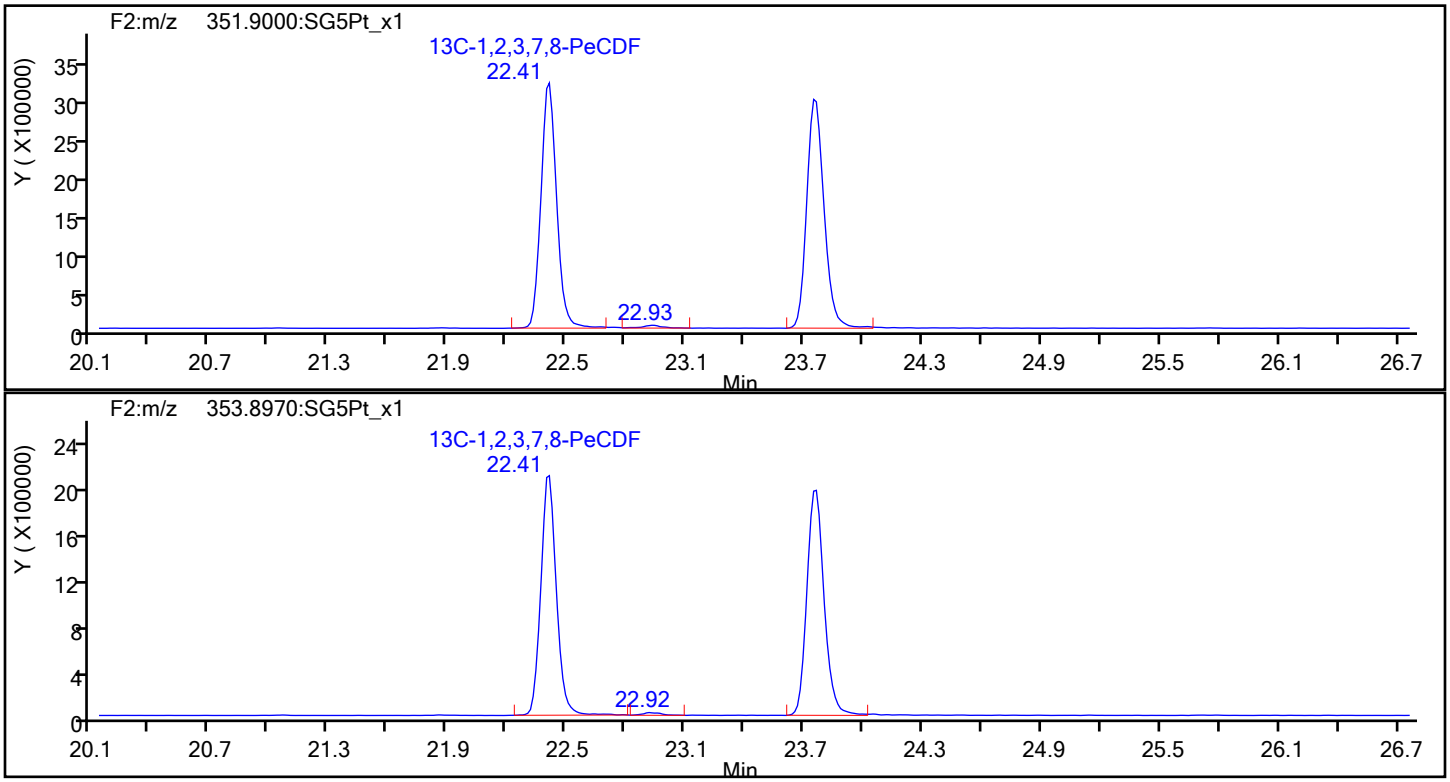
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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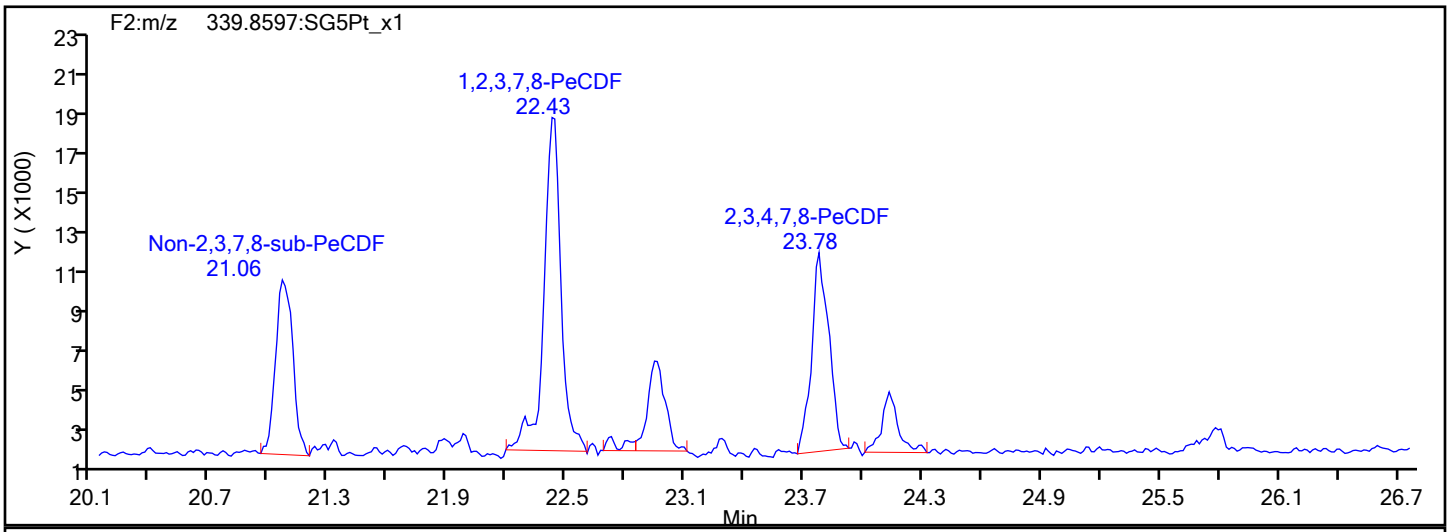
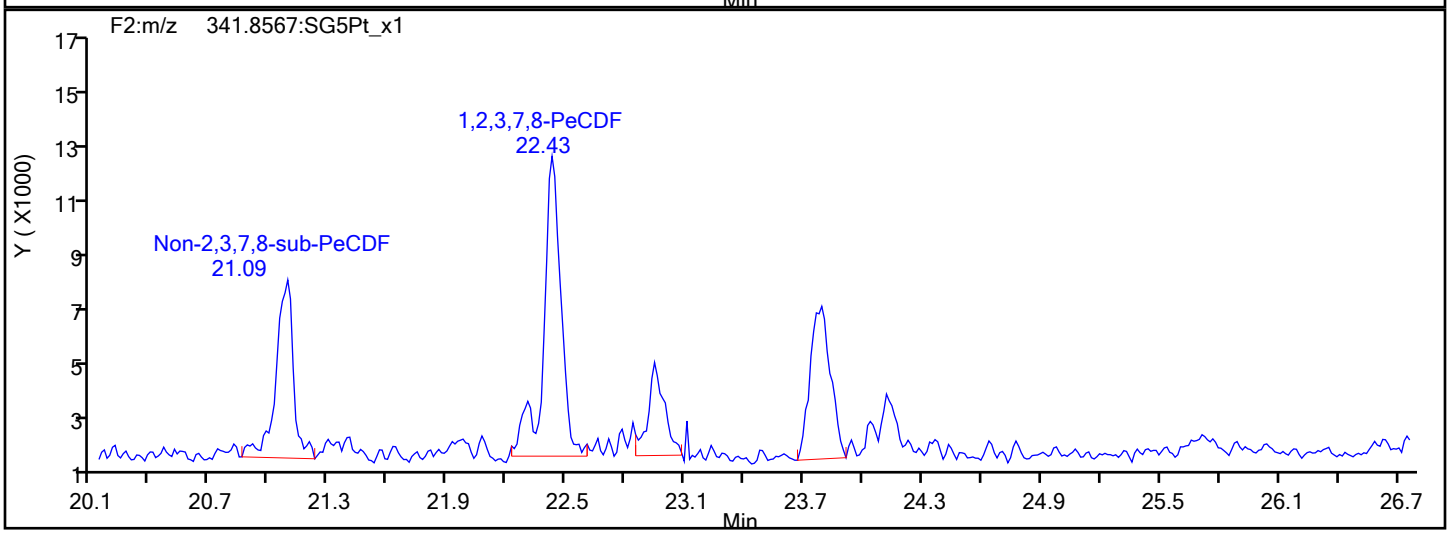
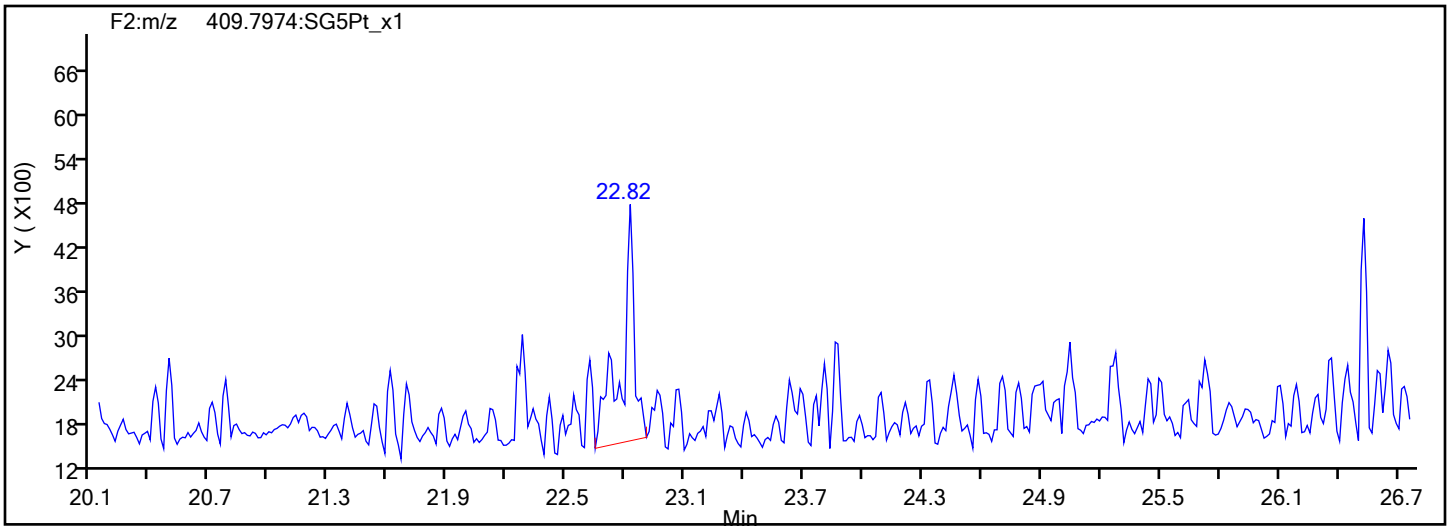
PeCDF





PeCDF Interference Mass



Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
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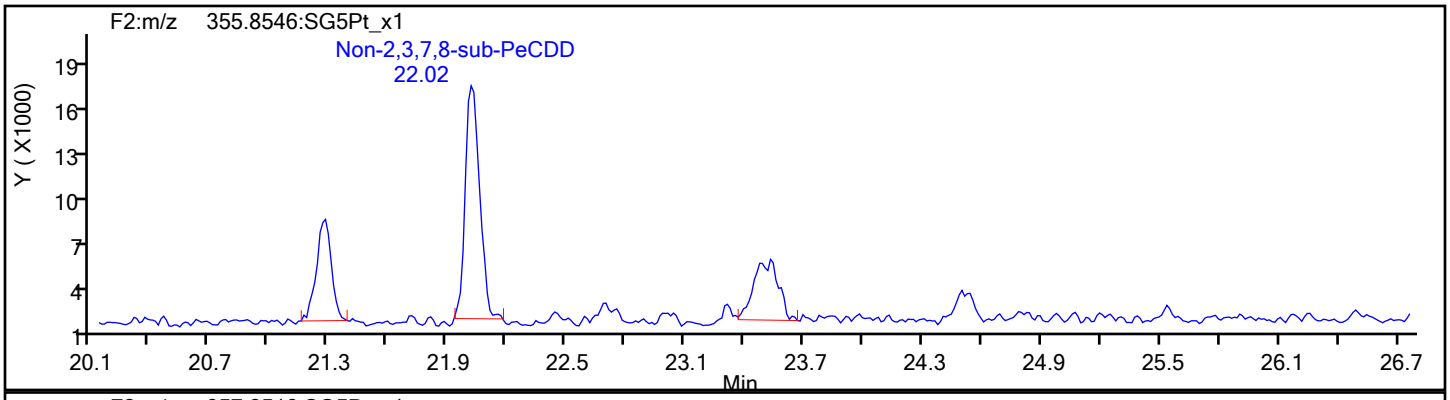
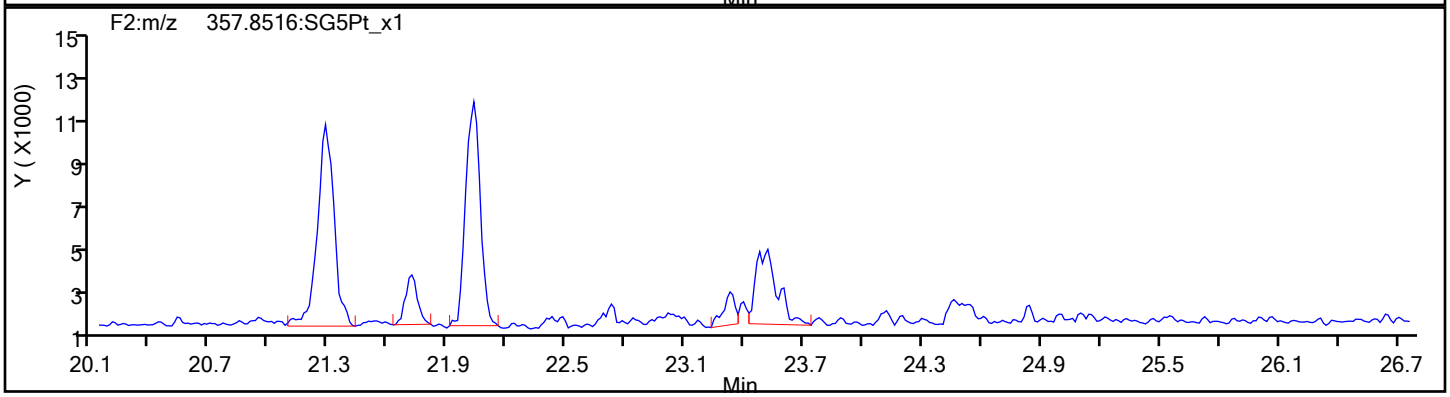
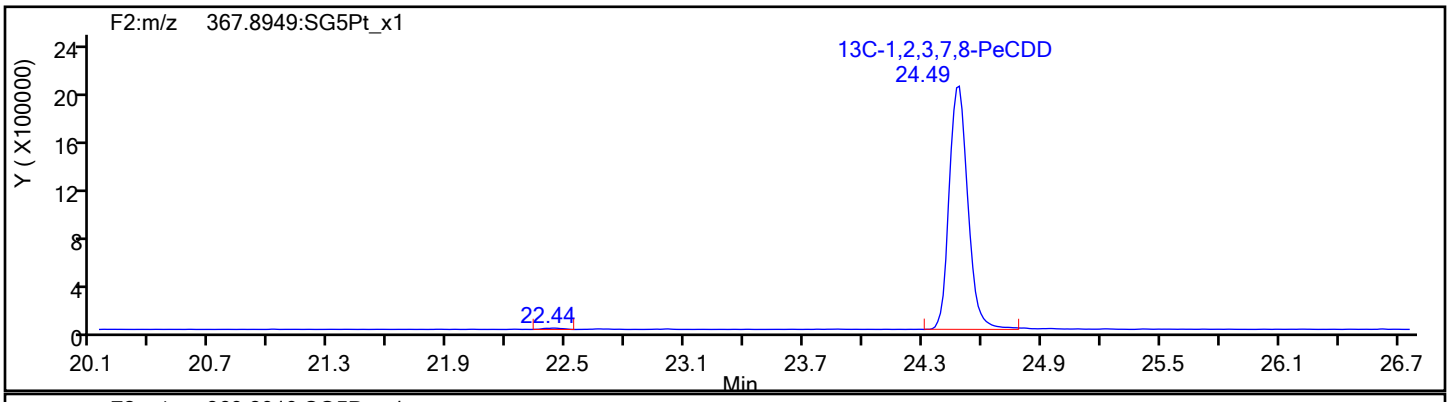
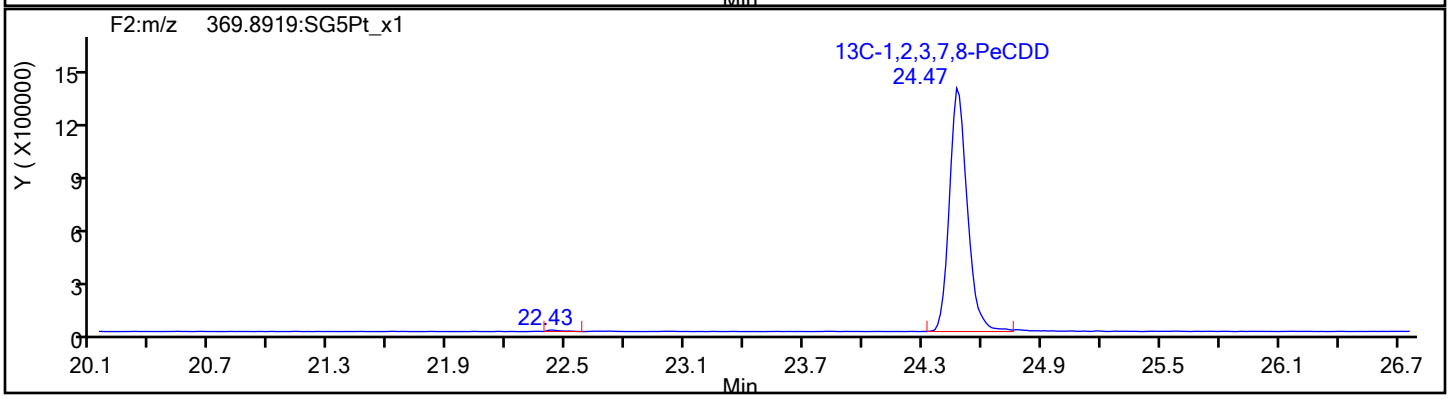
PeCDD





PeCDD Standards





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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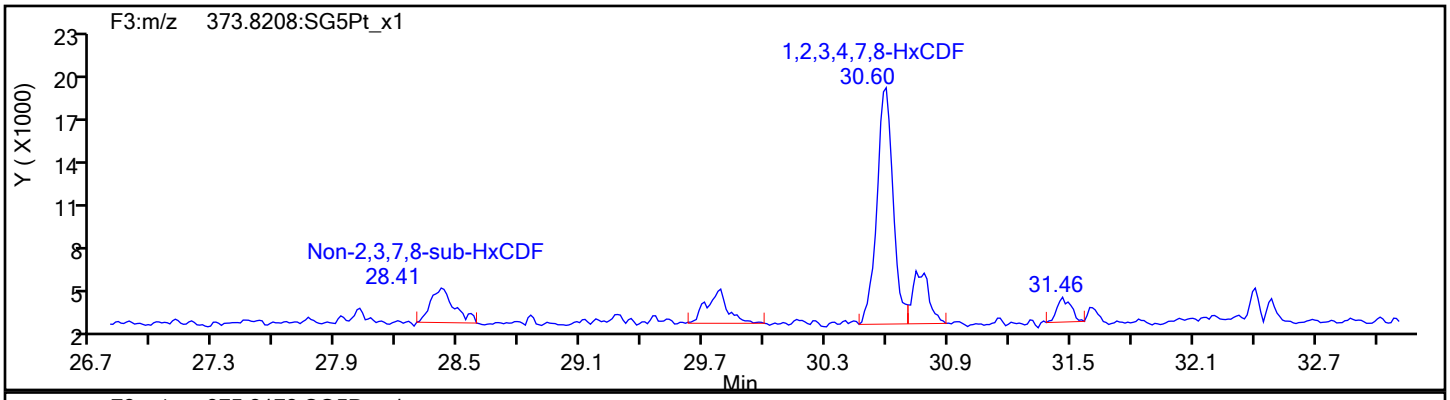
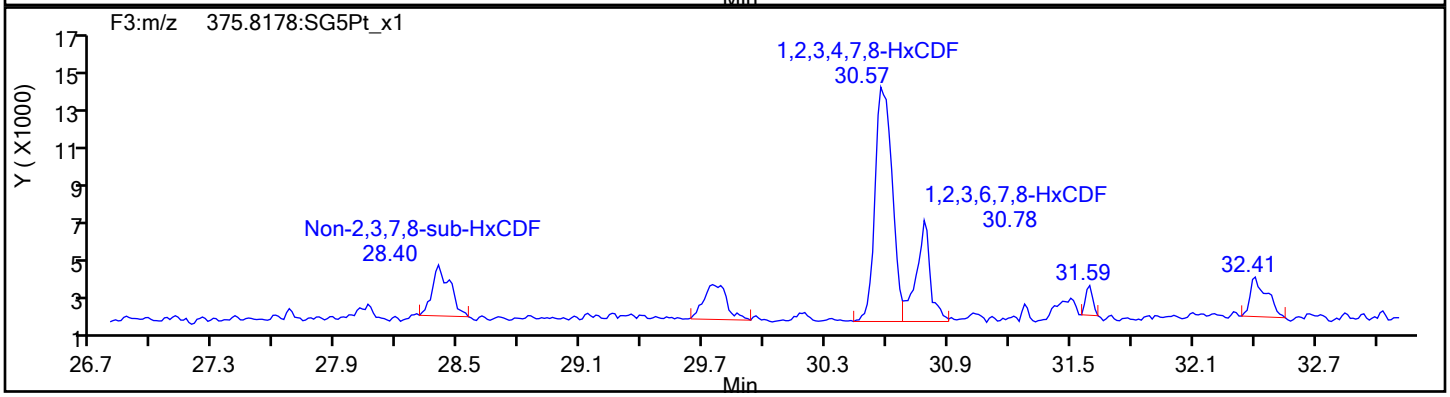
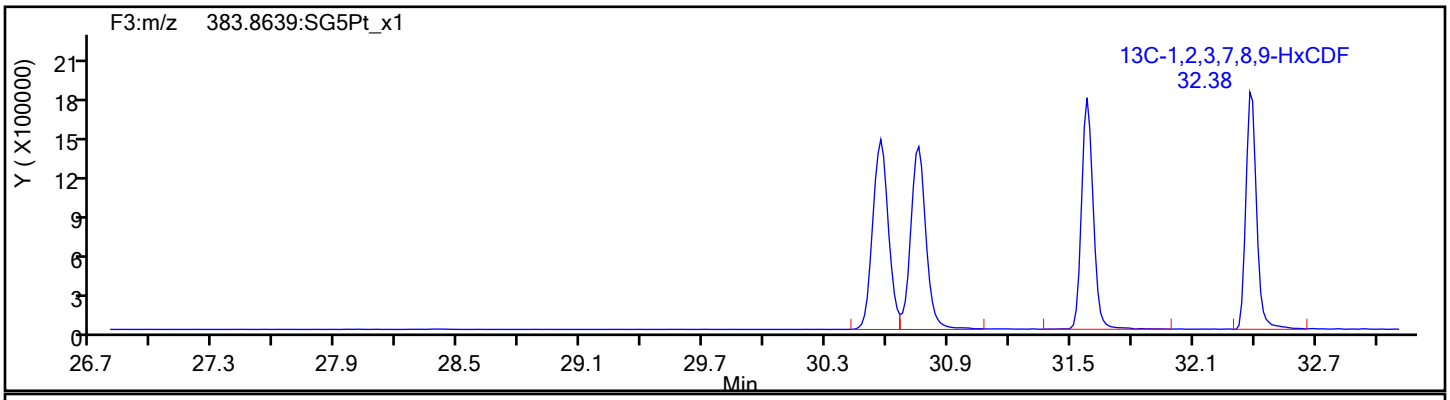
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

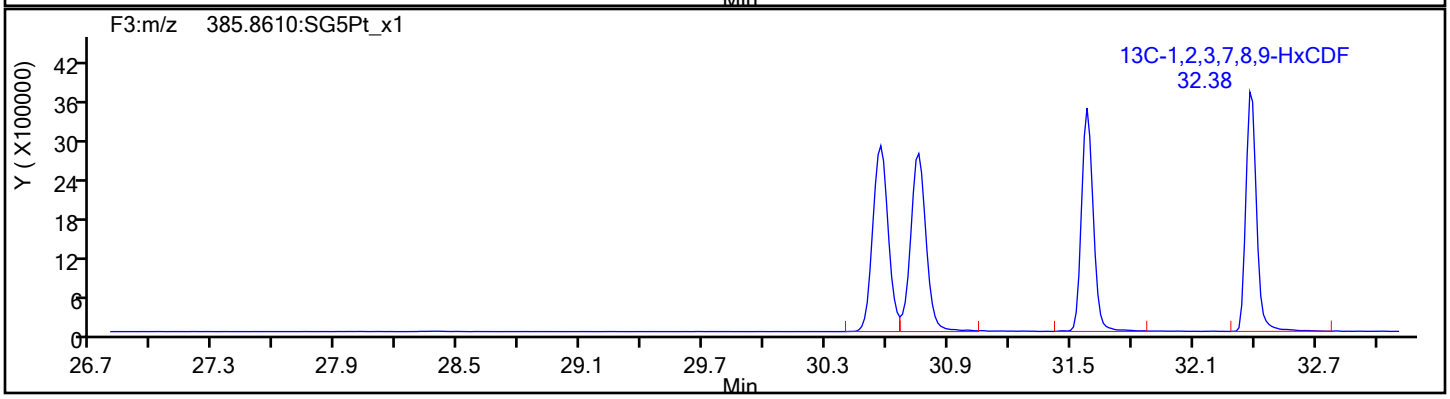
HxCDF





HxCDF Standards



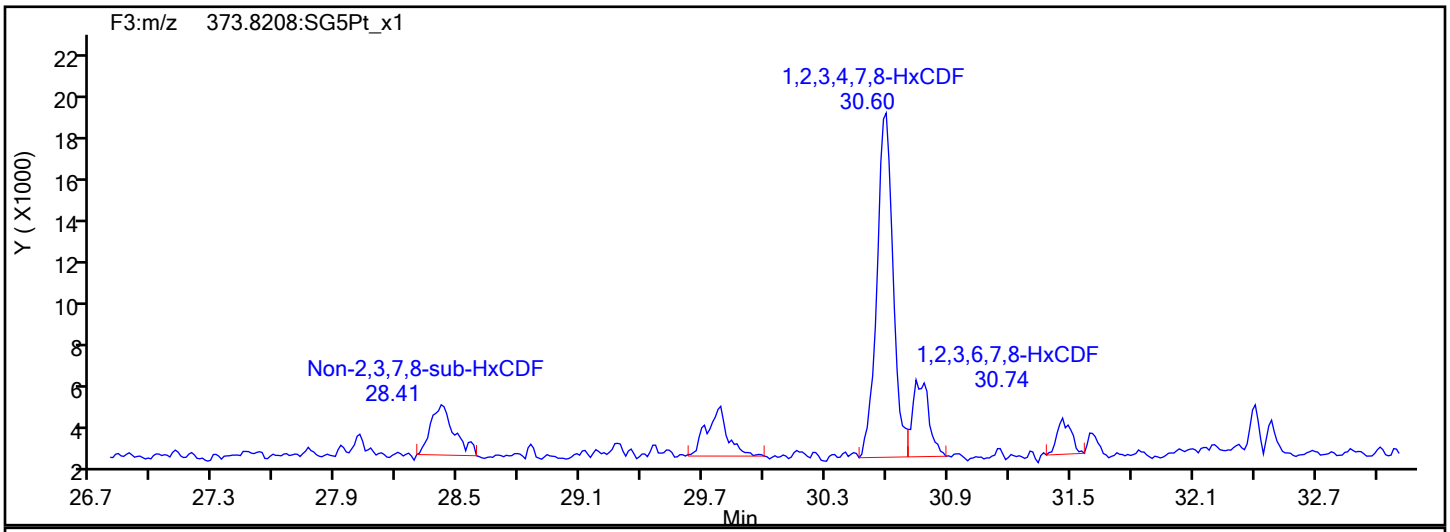


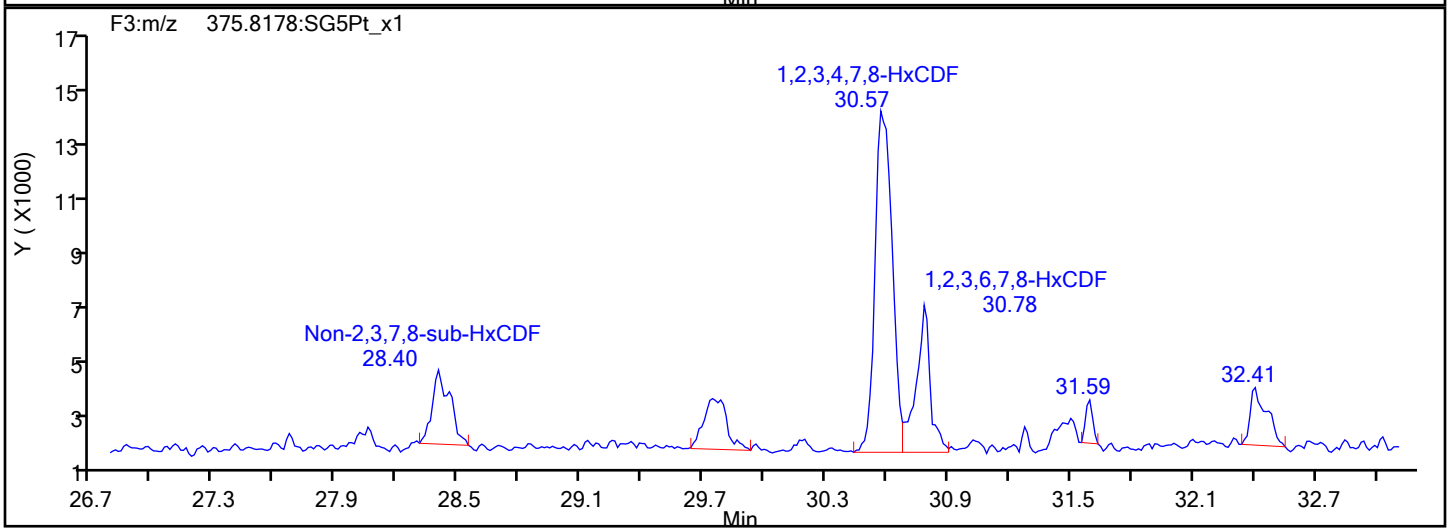
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

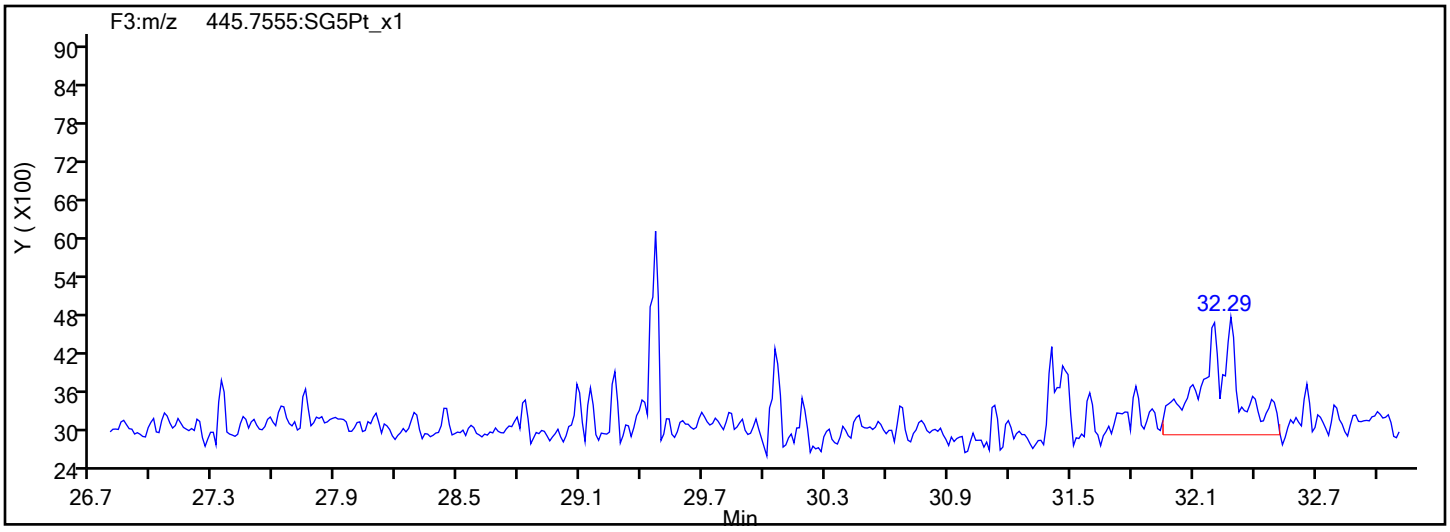
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

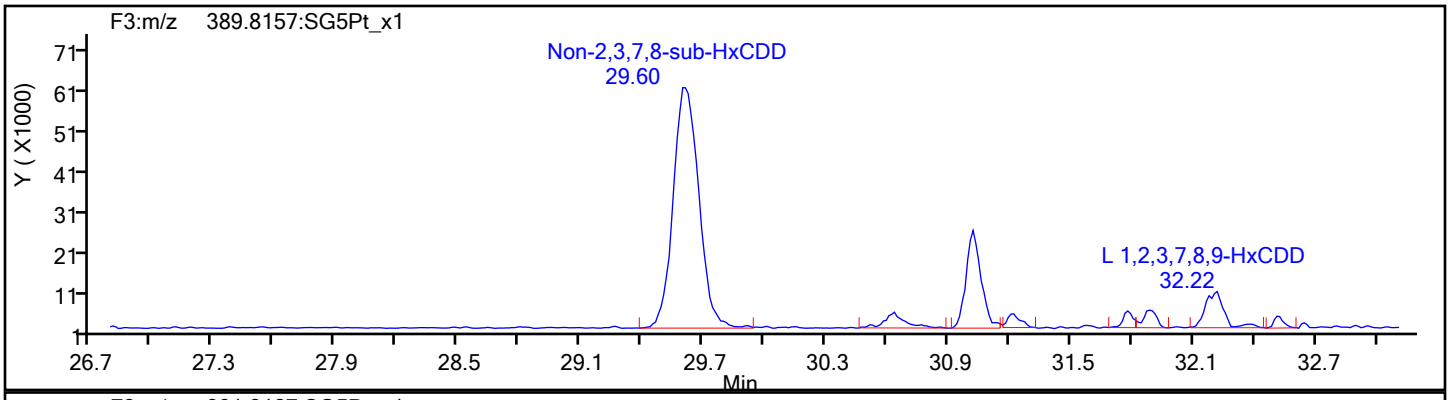


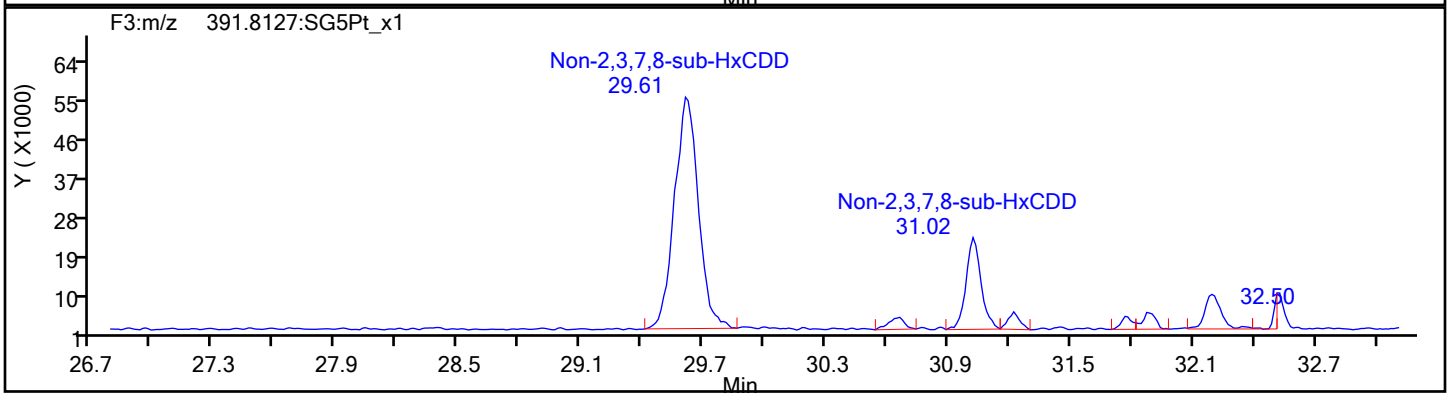
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

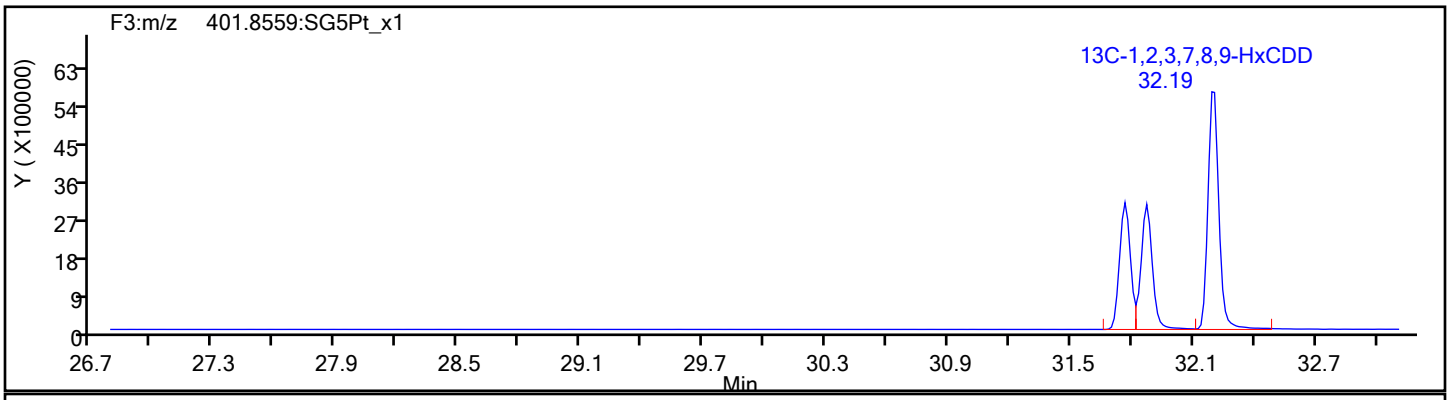
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

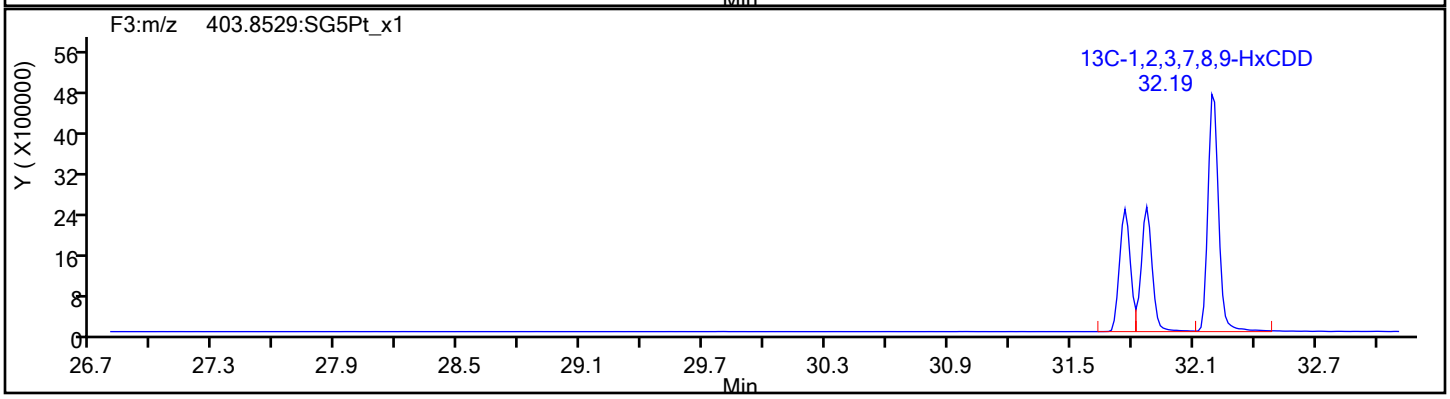
HxCDD





HxCDD Standards



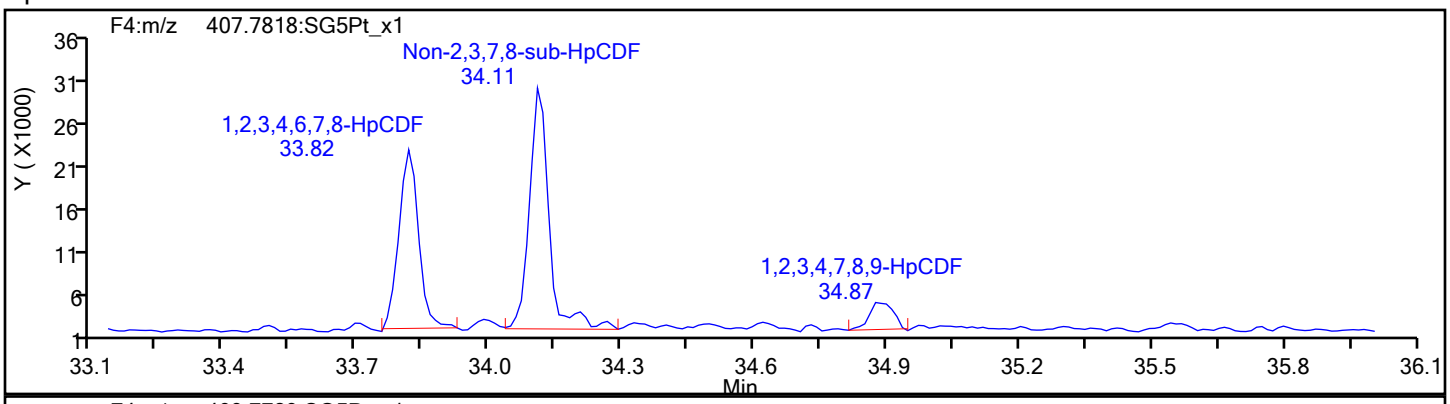


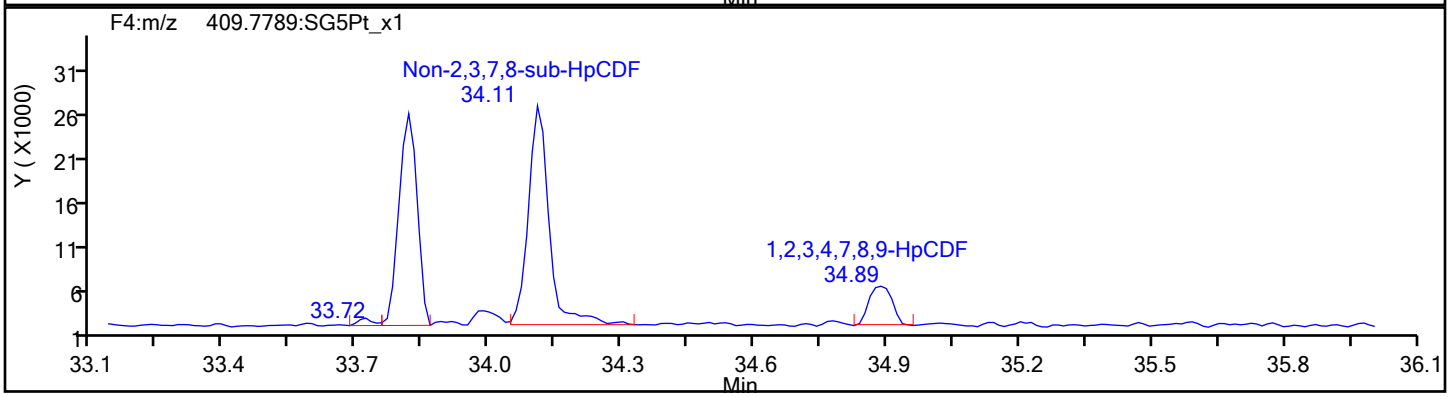
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

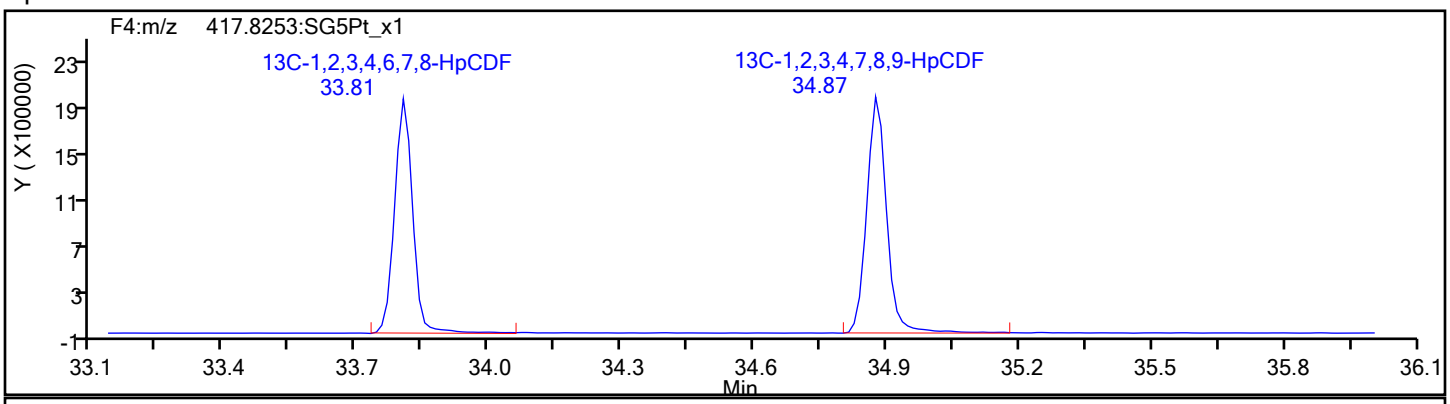
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

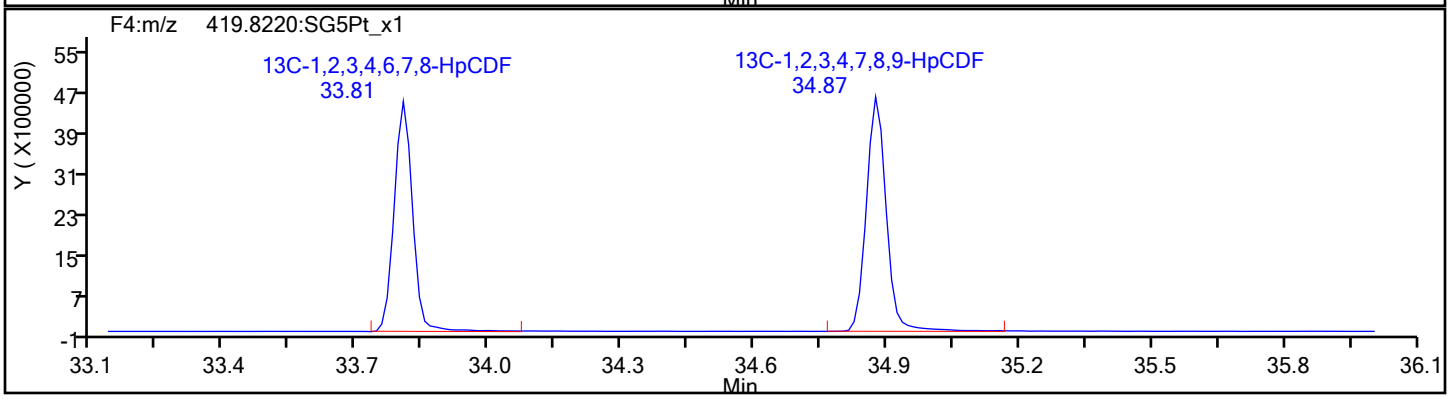
HpCDF





HpCDF Standards



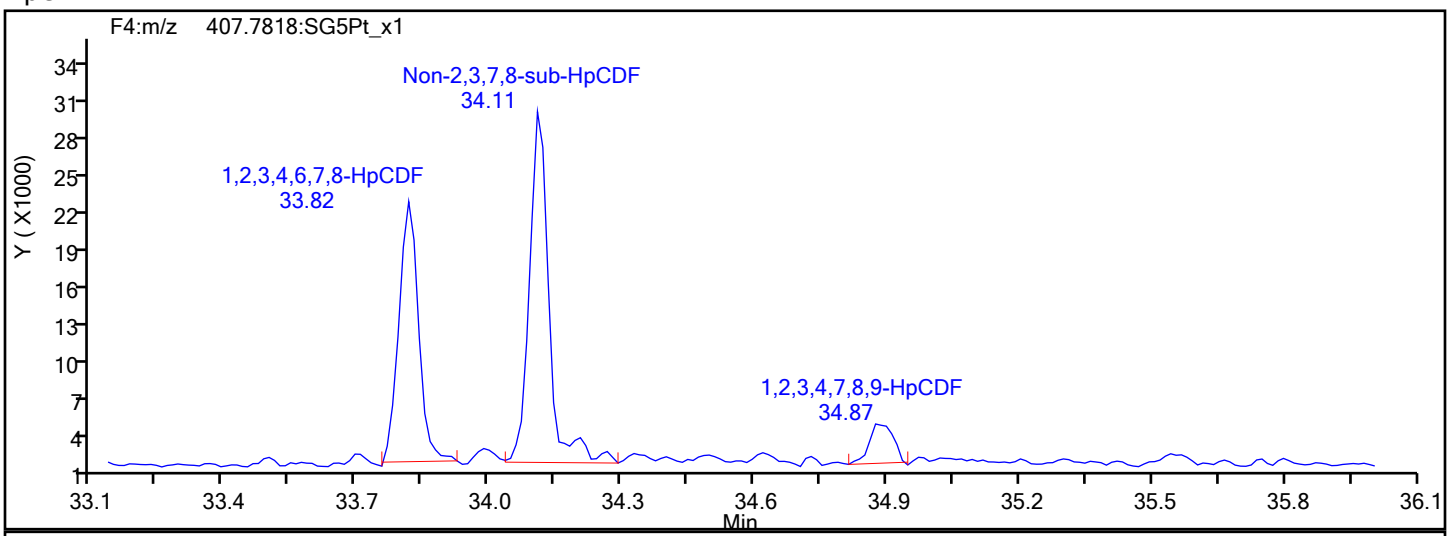


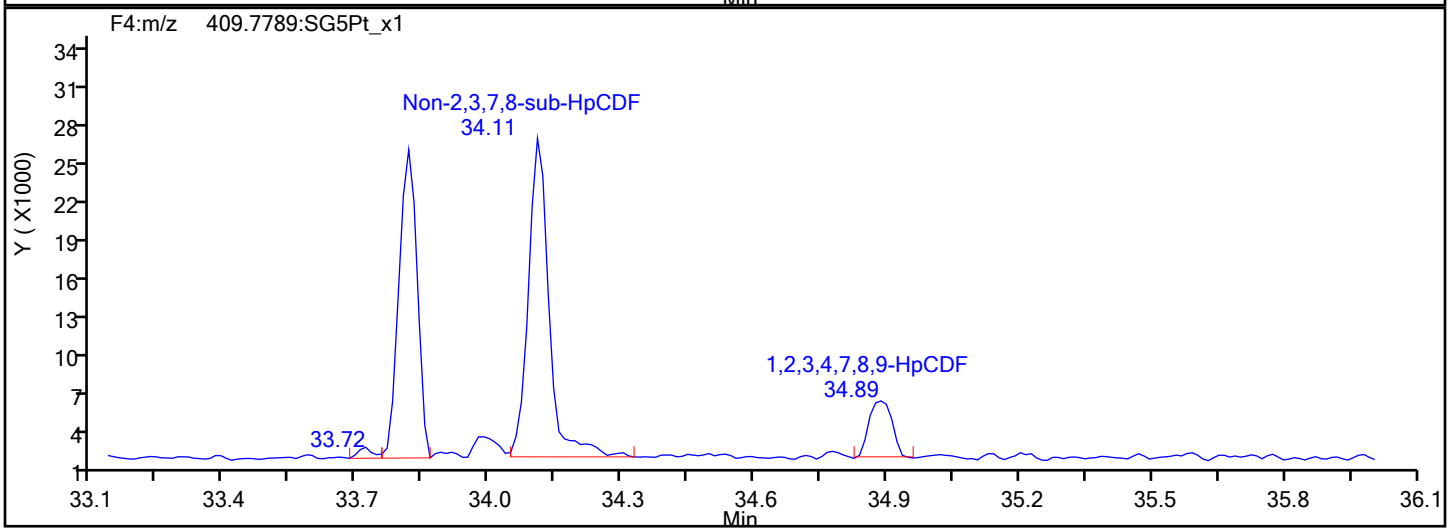
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

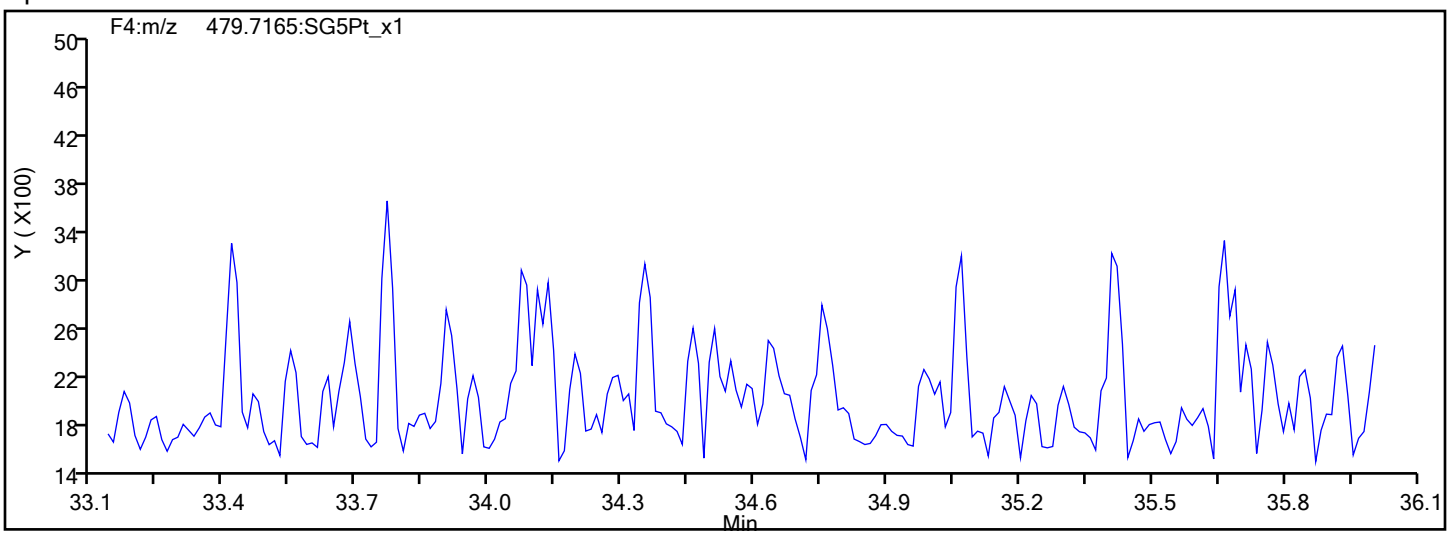
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

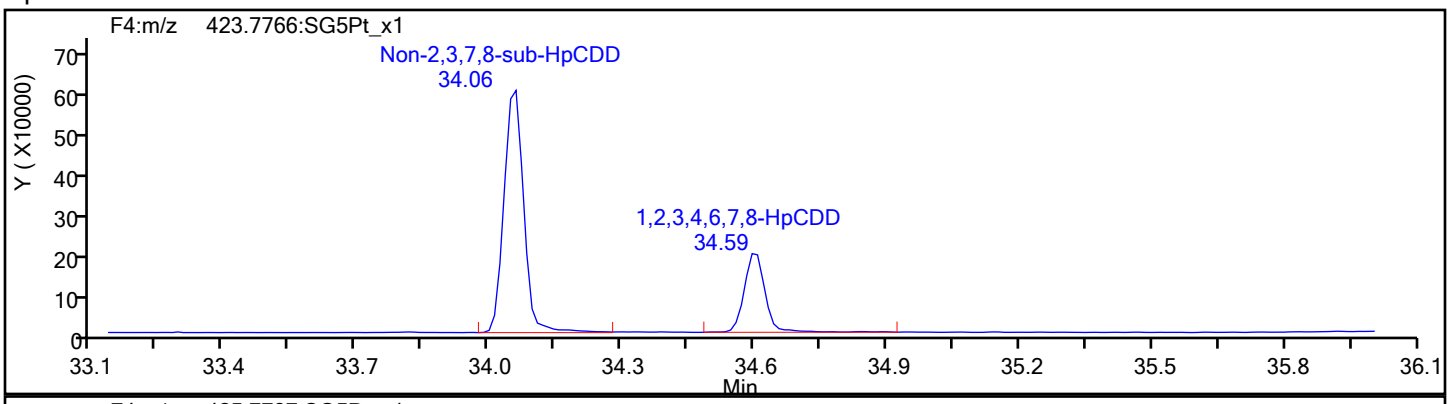


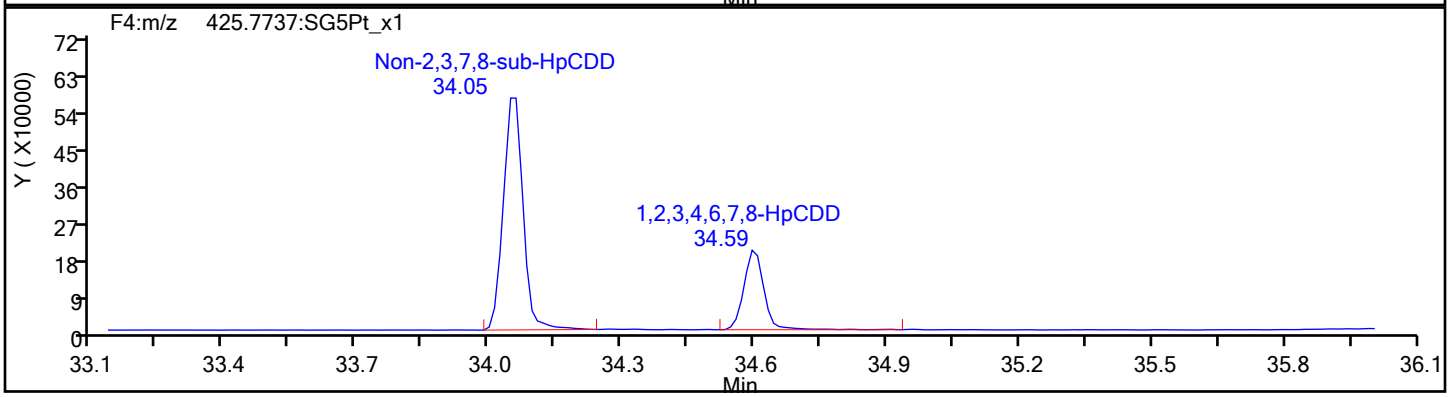
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

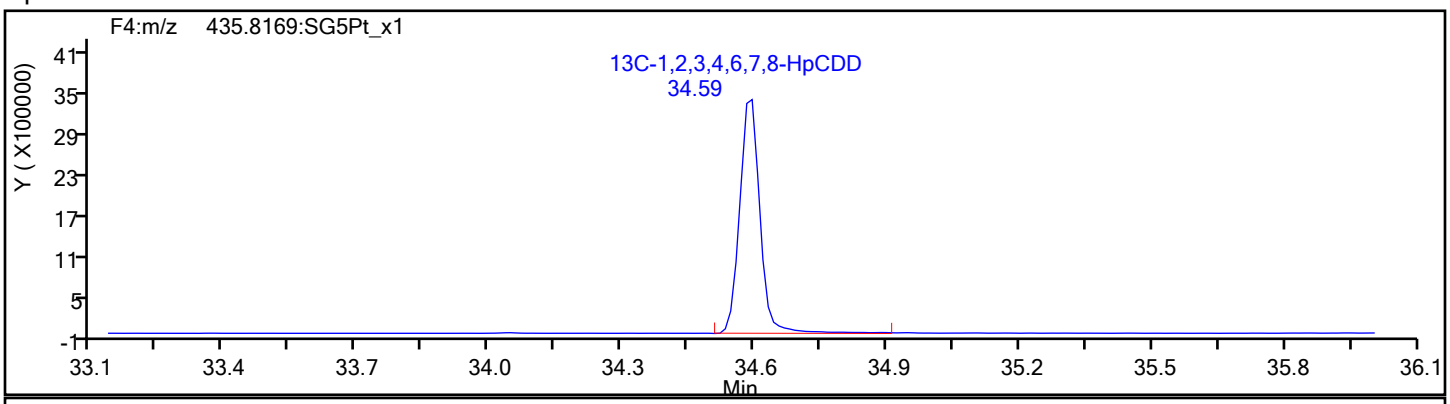
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

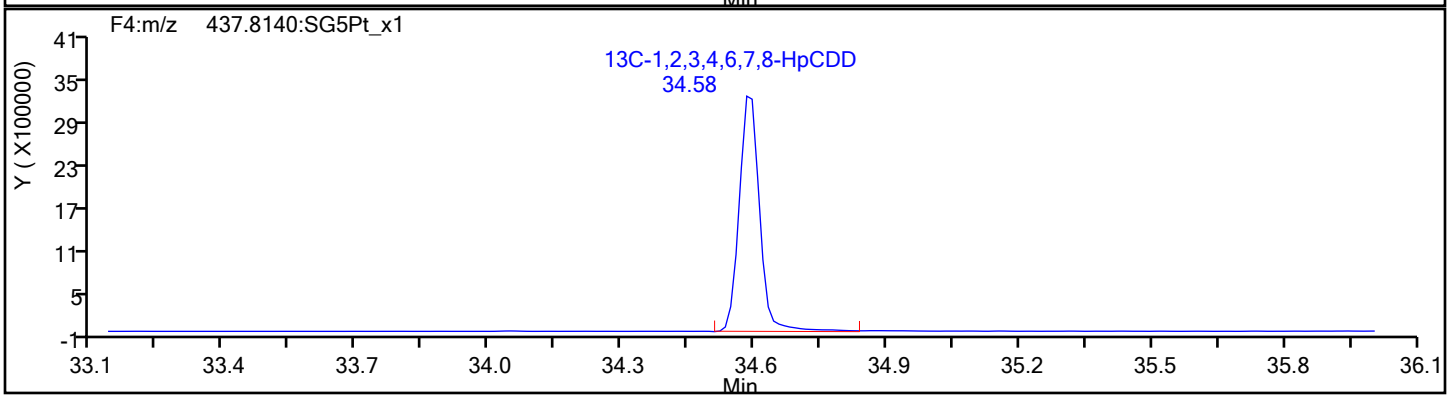
HpCDD





HpCDD Standards





Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
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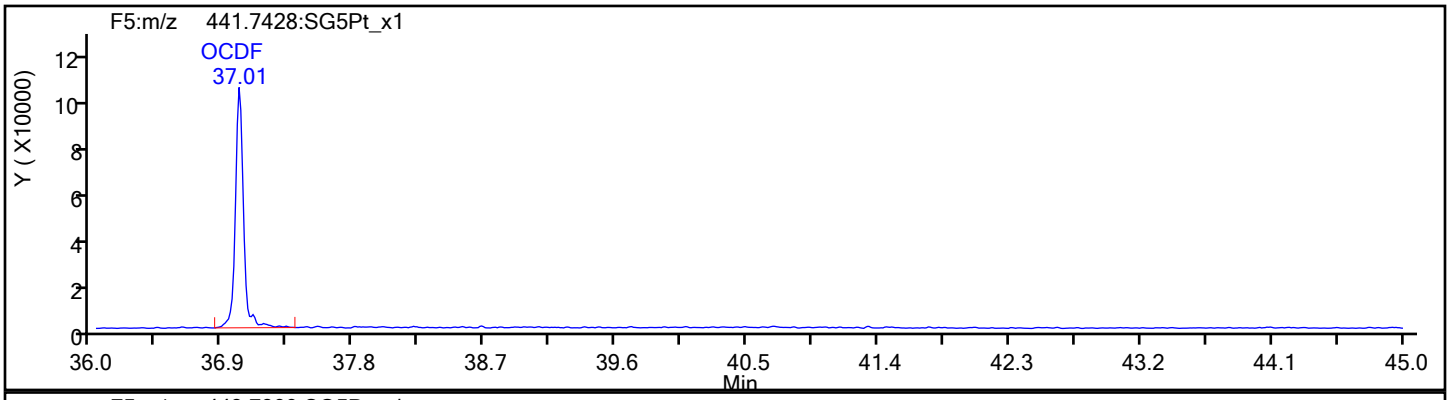
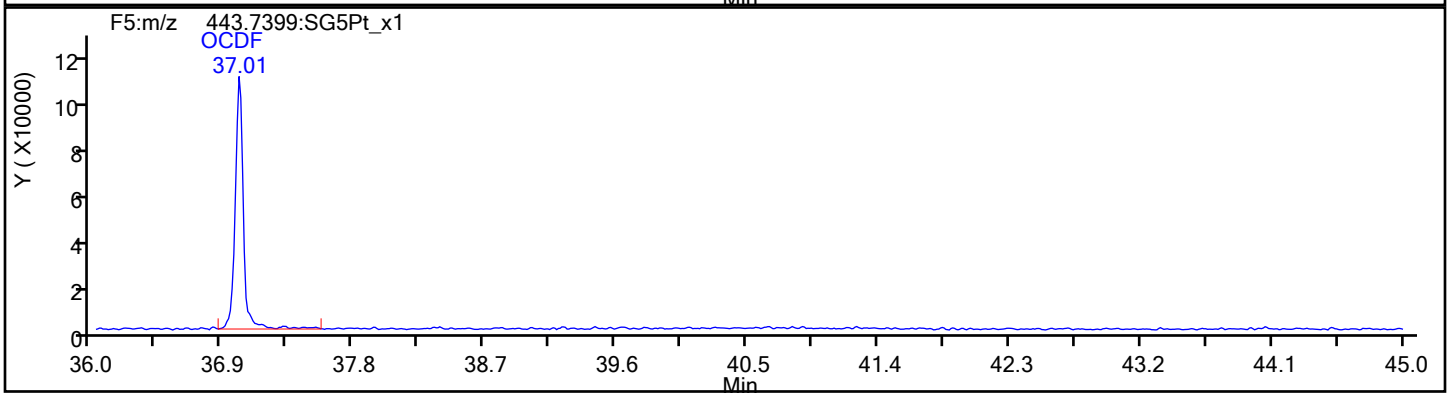
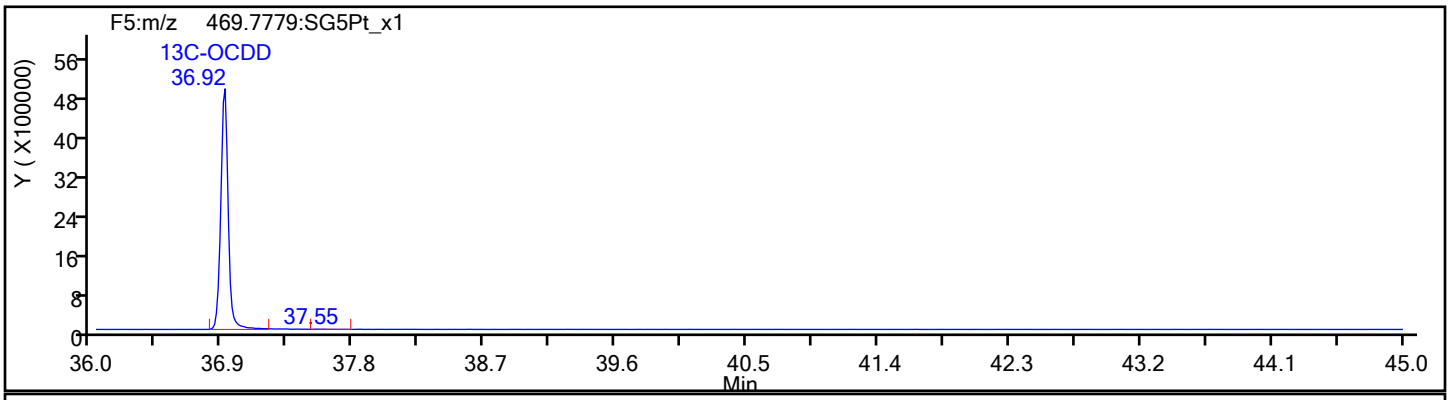
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

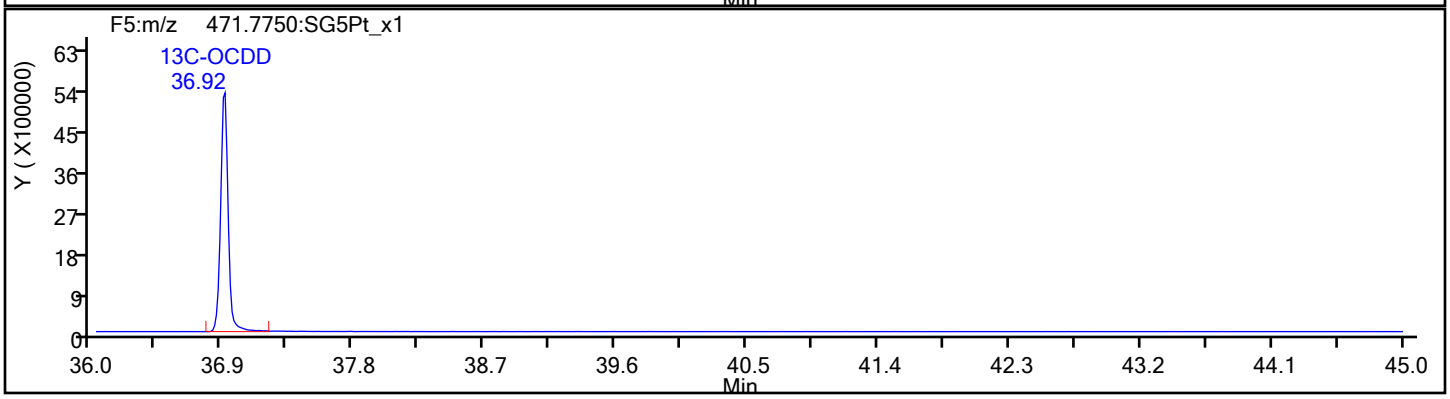
OCDF





OCDF Standards



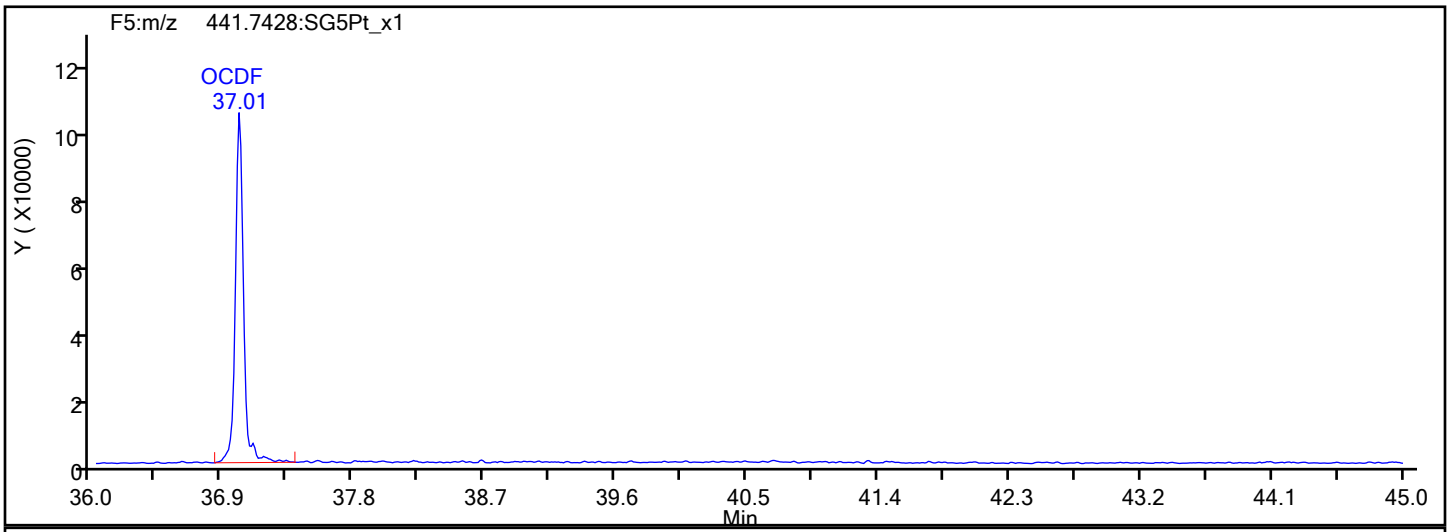


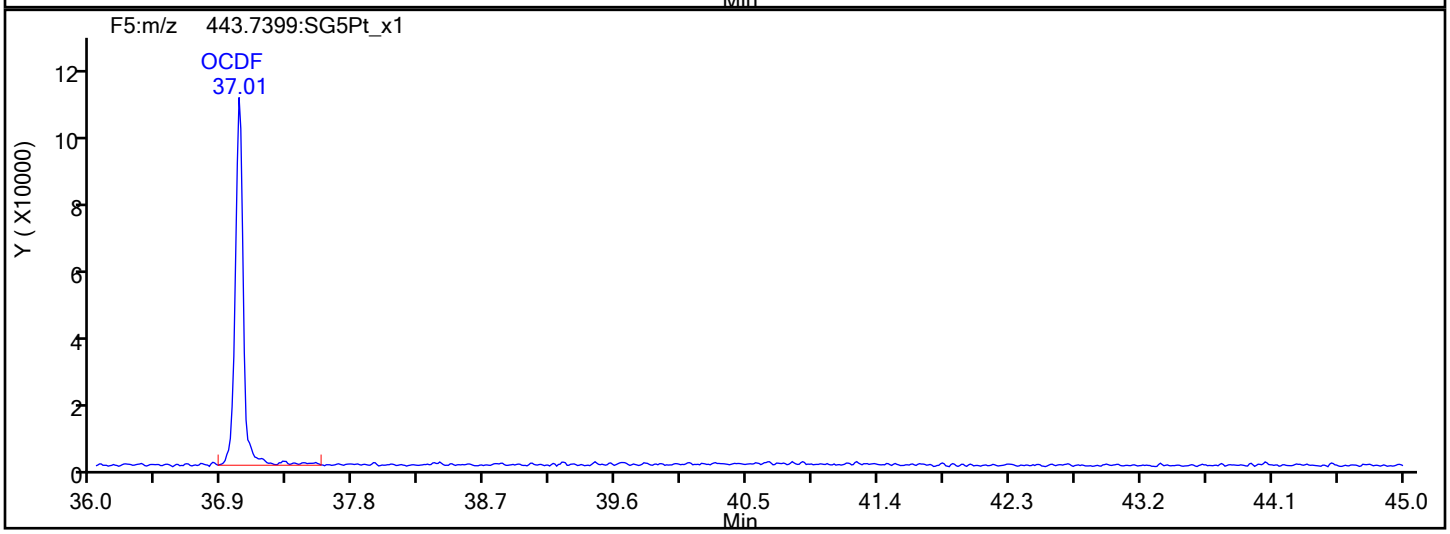
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

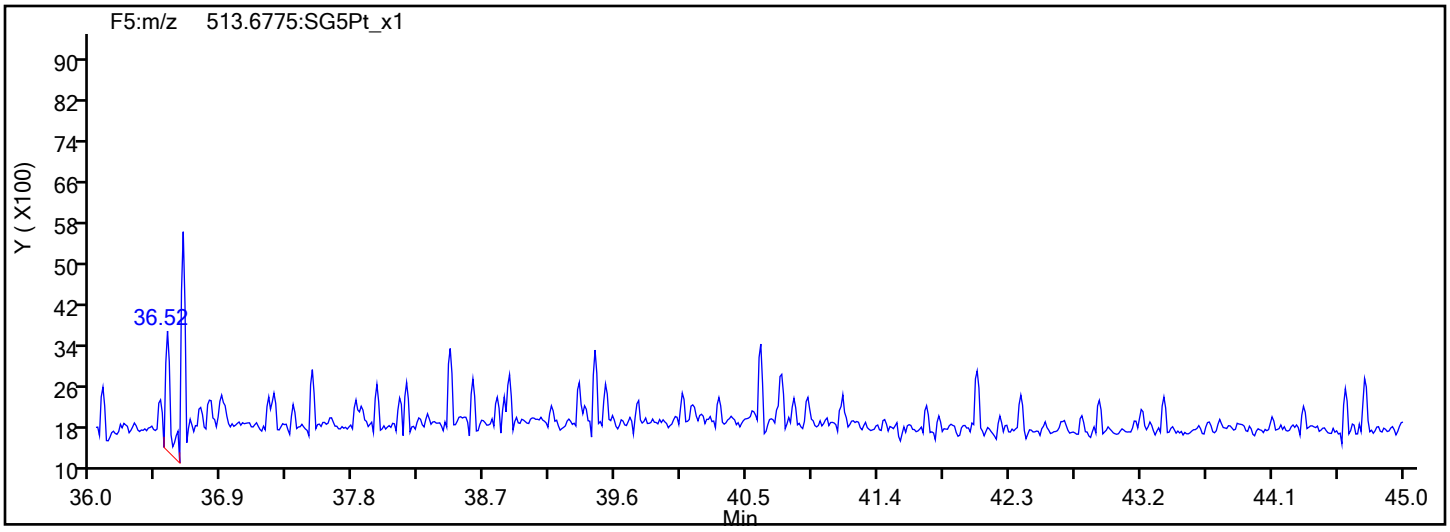
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

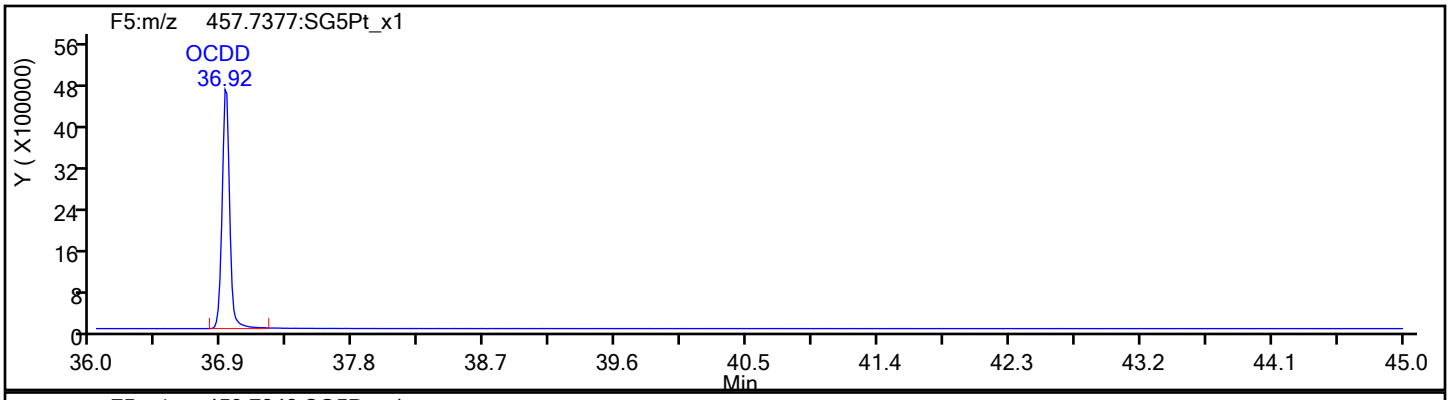


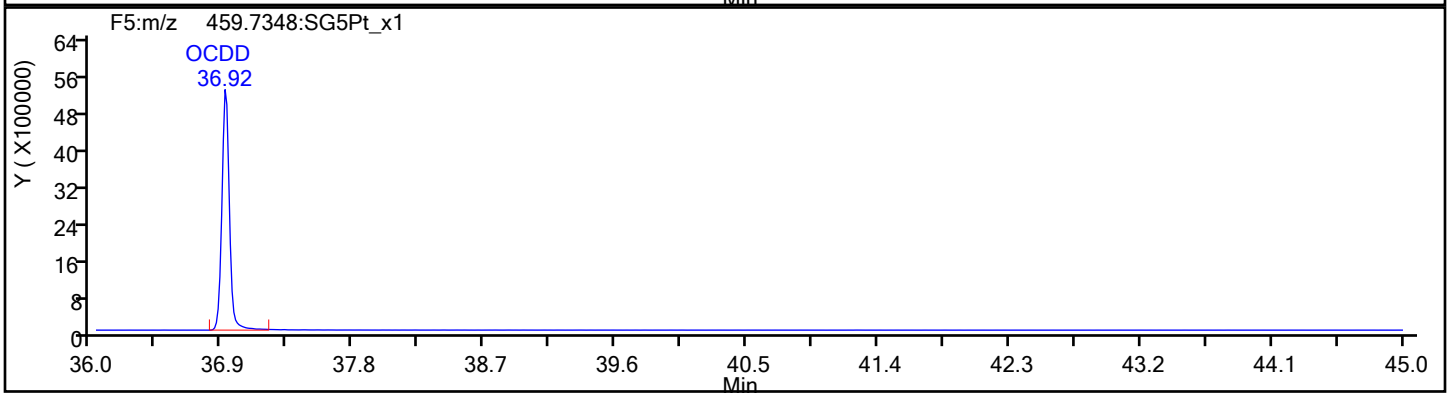
Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

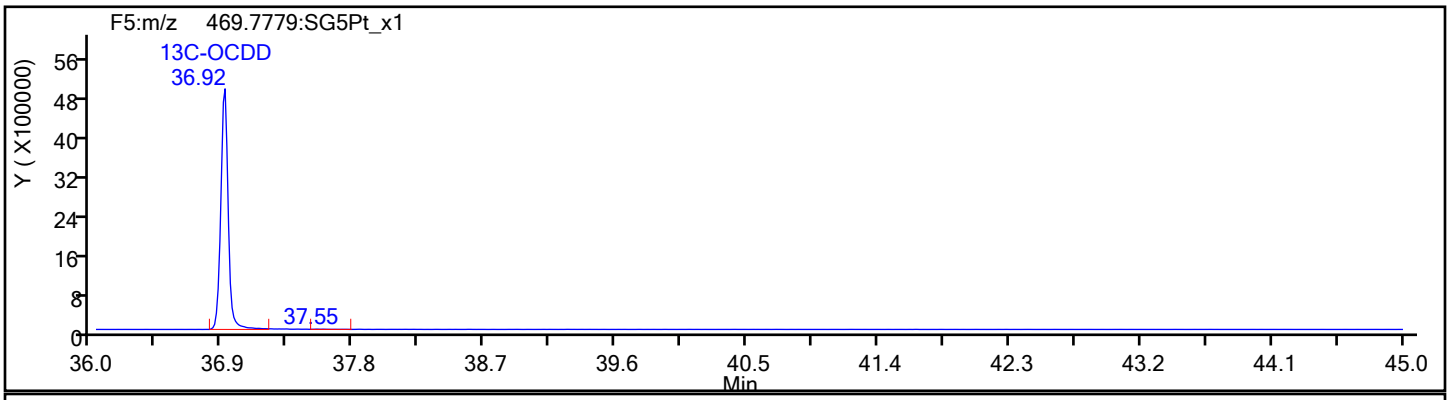
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

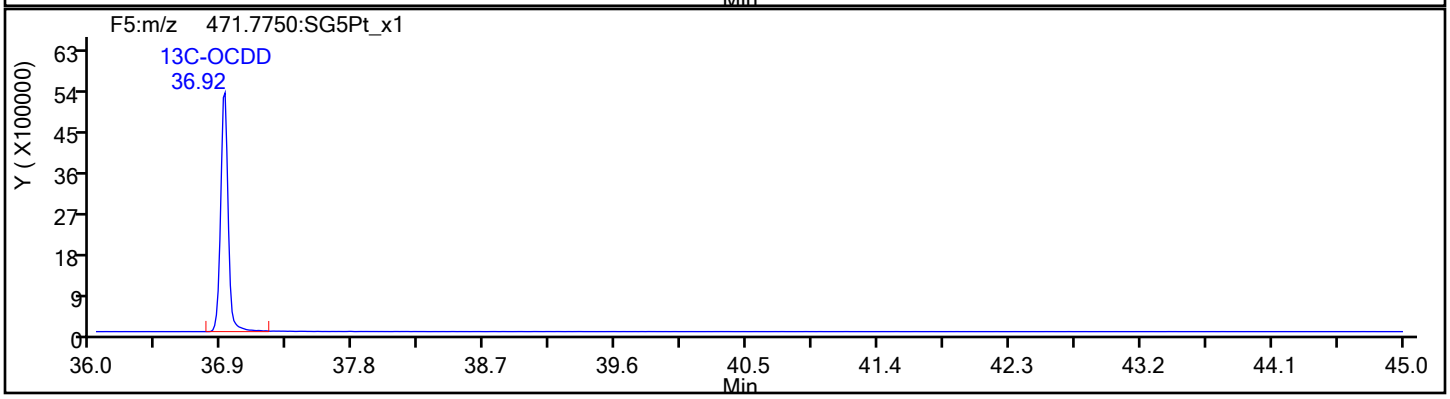
OCDD





OCDD Standards

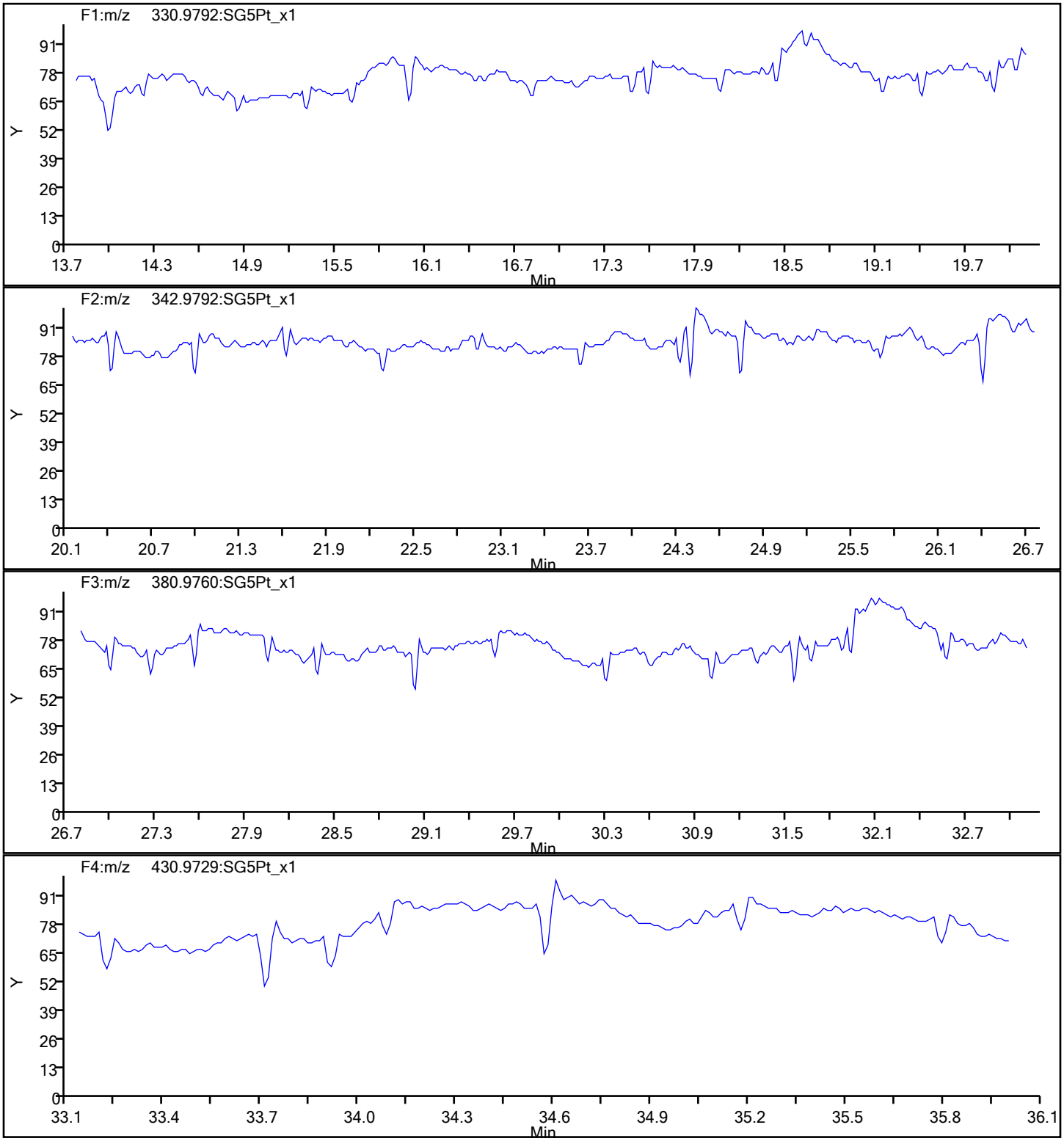




Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

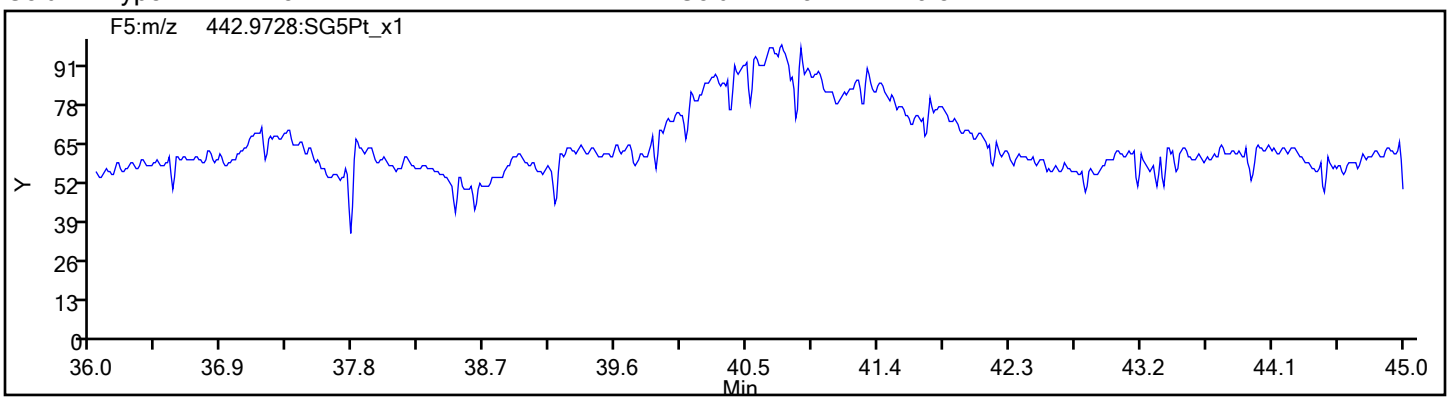
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 08:48:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_9.d		
Injection Date:	13-Dec-2019 17:53:57	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345335	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (0-1) RA Lab Sample ID: 320-56911-9 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_010.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:10

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.15(g) Date Analyzed: 12/17/2019 01:08

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	78		1.5	0.38

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	61		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	108		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 01:08:15 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-9-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:41

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.382	83193629	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.562	67555455	0.81	1.3379	60.7	60.7	0.3074	0.3074	60.69	
2,3,7,8-TCDF	16.589	14355333	0.77	0.8389	25.3	25.3	0.1236	0.1236		
D 13C-2,3,7,8-TCDD	15.135	46993644	0.74	0.9388	60.2	60.2	0.8122	0.8122	60.17	
2,3,7,8-TCDD	15.149	3053007	0.66	1.1538	5.631	5.631	0.1154	0.1154		
$ 37Cl4-2,3,7,8-TCDD	15.149	42652142		1.1816	43.4	43.4	0.1007	0.1007	108	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d
Lims ID: 320-56911-A-9-A
Client ID: 11187072-120819-BN-SJSSA05 (0-1)
Sample Type: Client
Inject. Date: 17-Dec-2019 01:08:15 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-9-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:34:41

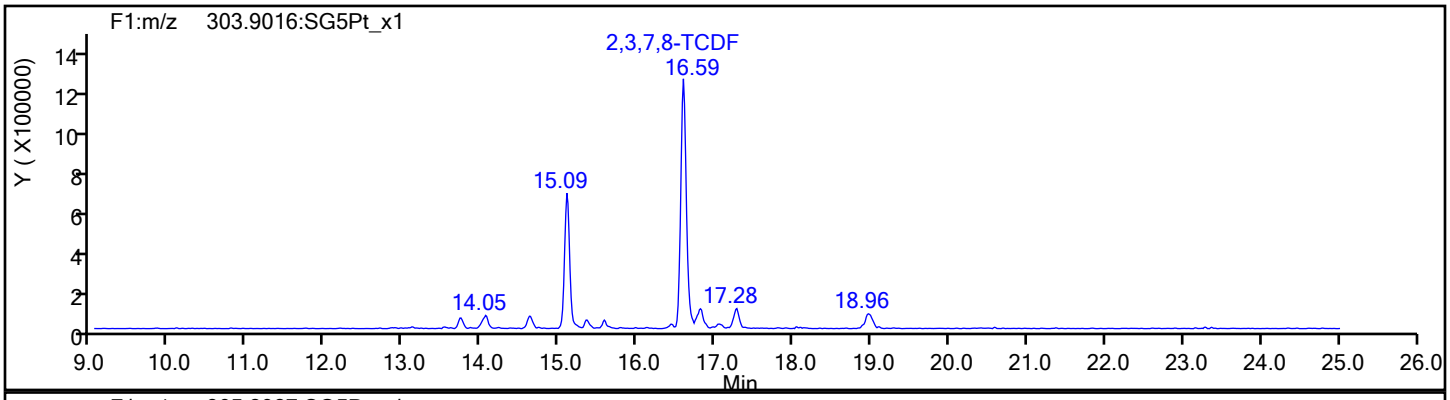
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.382	15.383	0		36833943	8012755	29152	72880	275		
333.9339	15.382	15.383	0		46359686	10261046	26585	66462	386	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.562	16.576	-1	1.077	30315303	5911929	17349	43372	341		
317.9389	16.575	16.576	0	1.078	37240152	7132262	12709	31772	561	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.589	16.590	0	1.002	6266709	1248924	2271	5677	550		
305.8987	16.589	16.590	0	1.002	8088624	1605919	3138	7845	512	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.135	15.122	1	0.984	19953291	4340612	29152	72880	149		
333.9339	15.135	15.122	1	0.984	27040353	6091385	26585	66462	229	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.149	15.149	0	1.001	1219014	286776	3422	8555	84		
321.8936	15.149	15.149	0	1.001	1833993	372258	2133	5332	175	0.66(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.149	15.149	0	0.985	42652142	9174970	8694	21735	1055		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

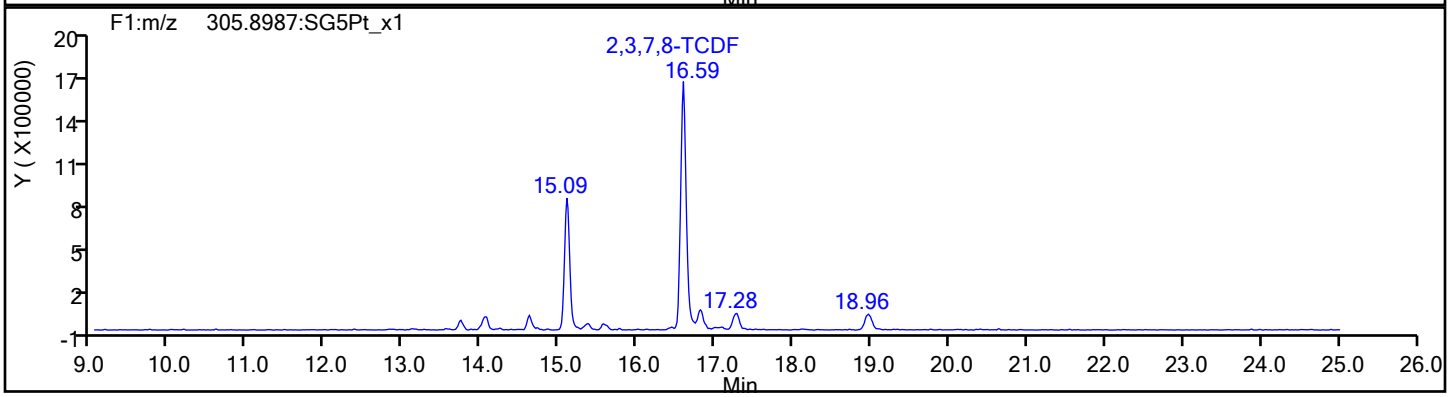
Report Date: 17-Dec-2019 09:38:31 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

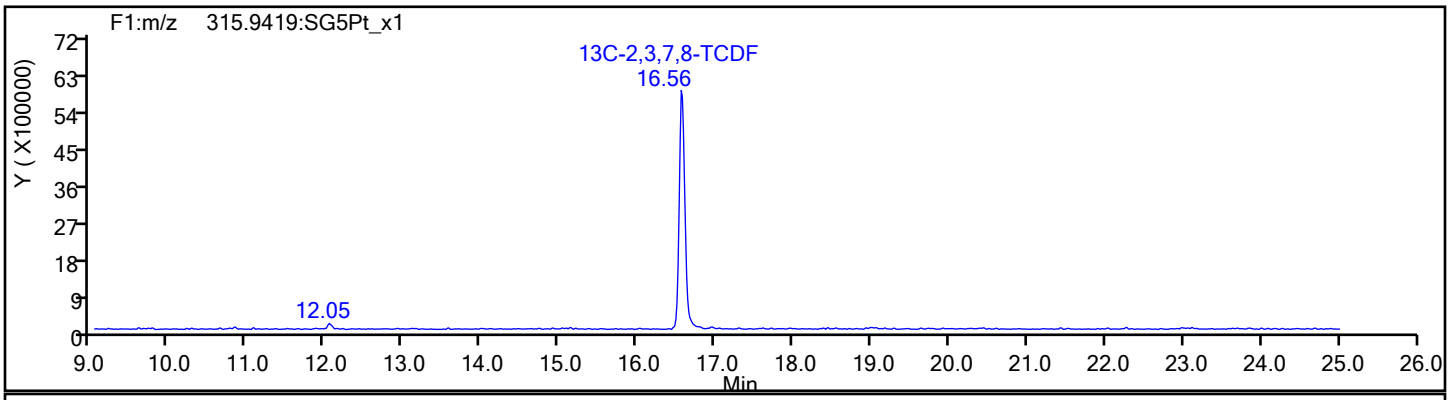
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d		
Injection Date:	17-Dec-2019 01:08:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345960	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

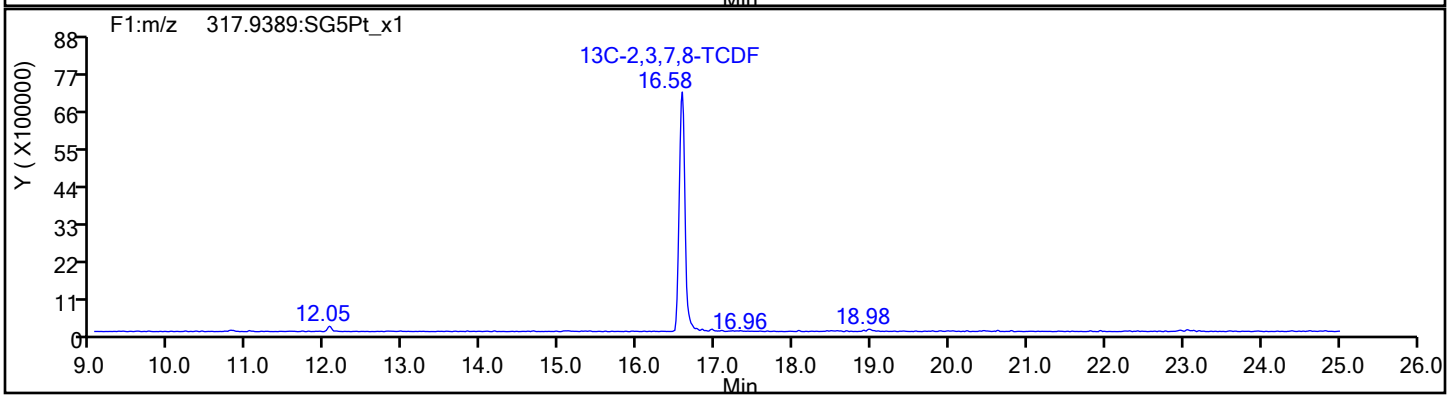
TCDF





TCDF Standards



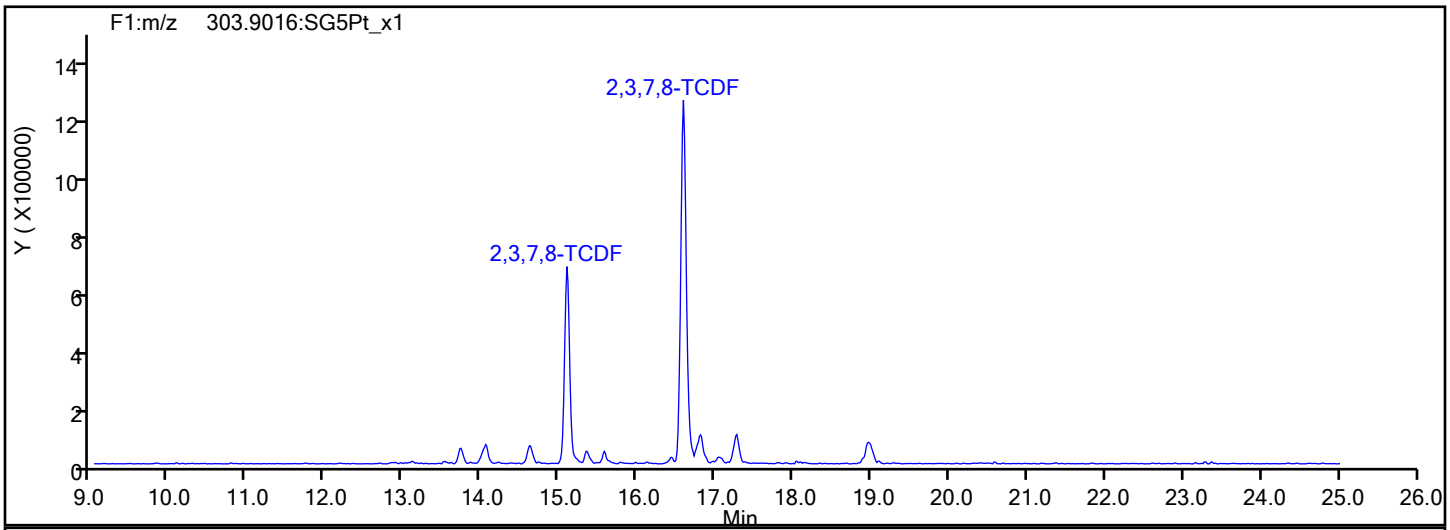


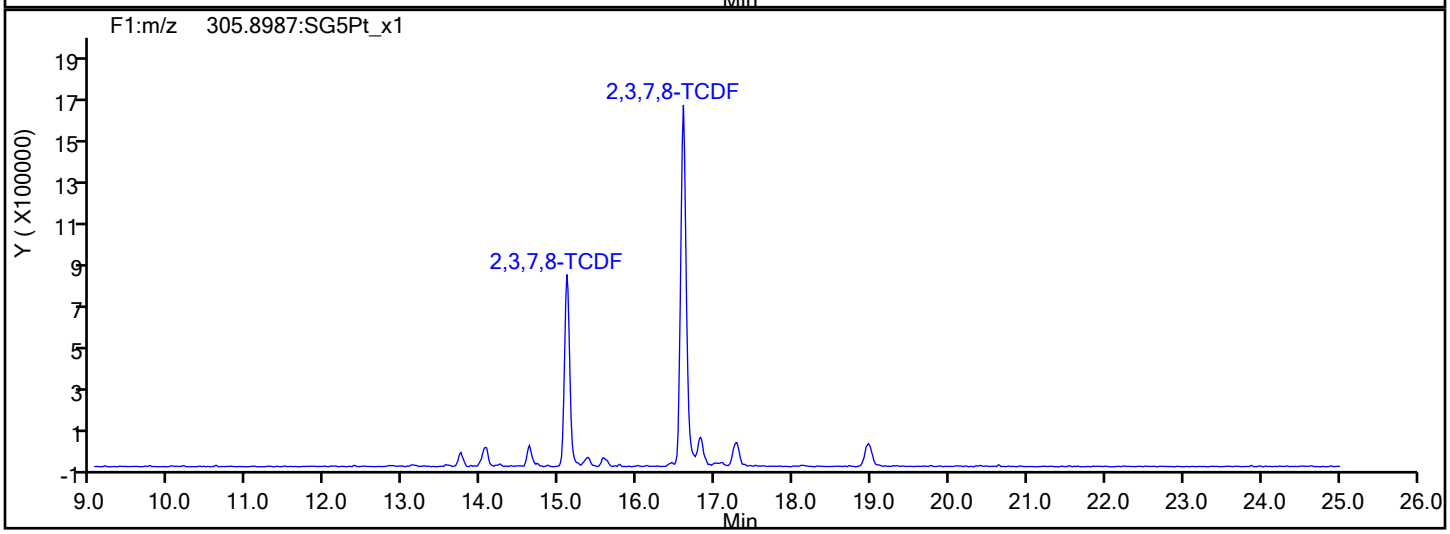
Report Date: 17-Dec-2019 09:38:31 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

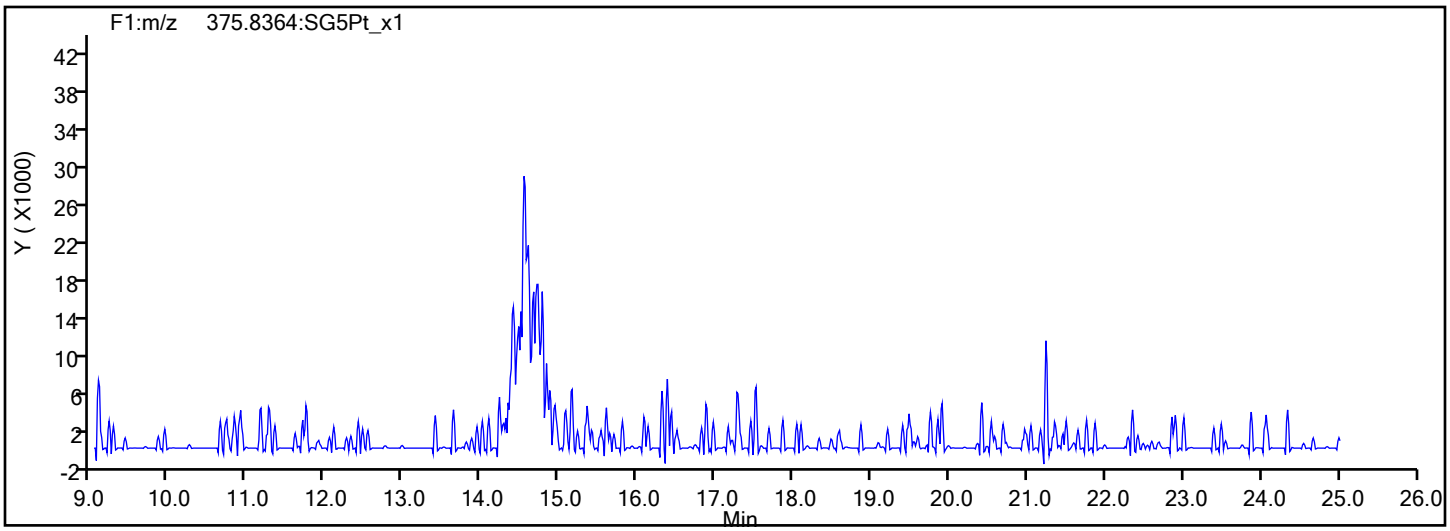
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d		
Injection Date:	17-Dec-2019 01:08:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345960	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

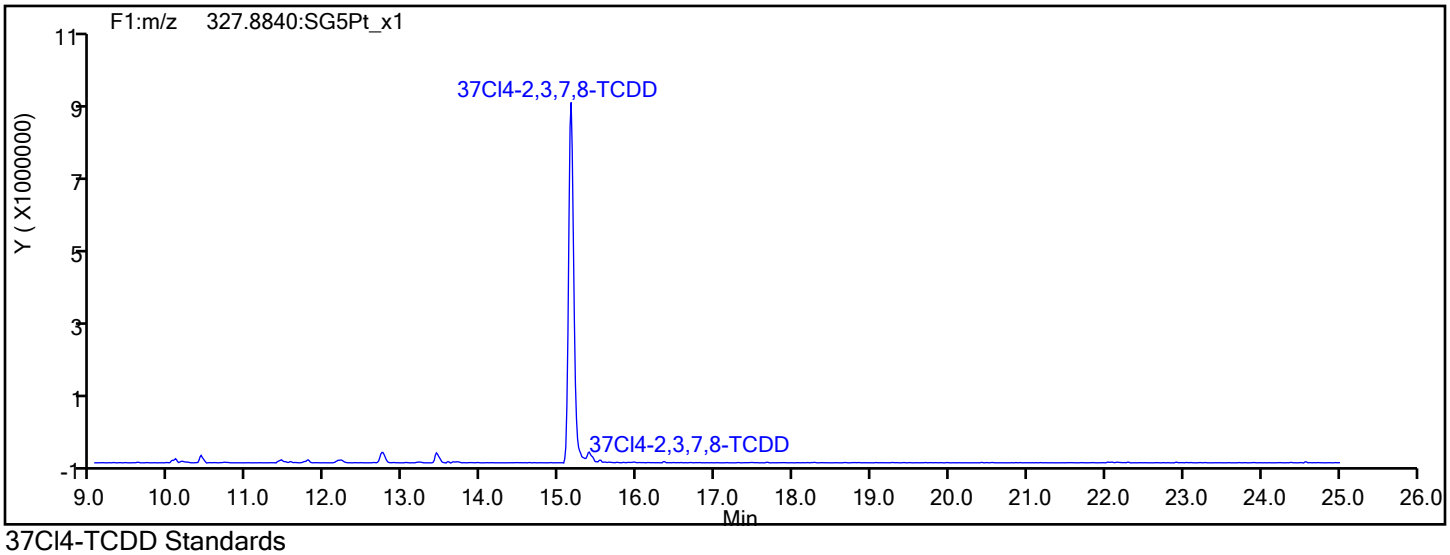


Report Date: 17-Dec-2019 09:38:31 Chrom Revision: 2.3 15-Dec-2019 06:20:02

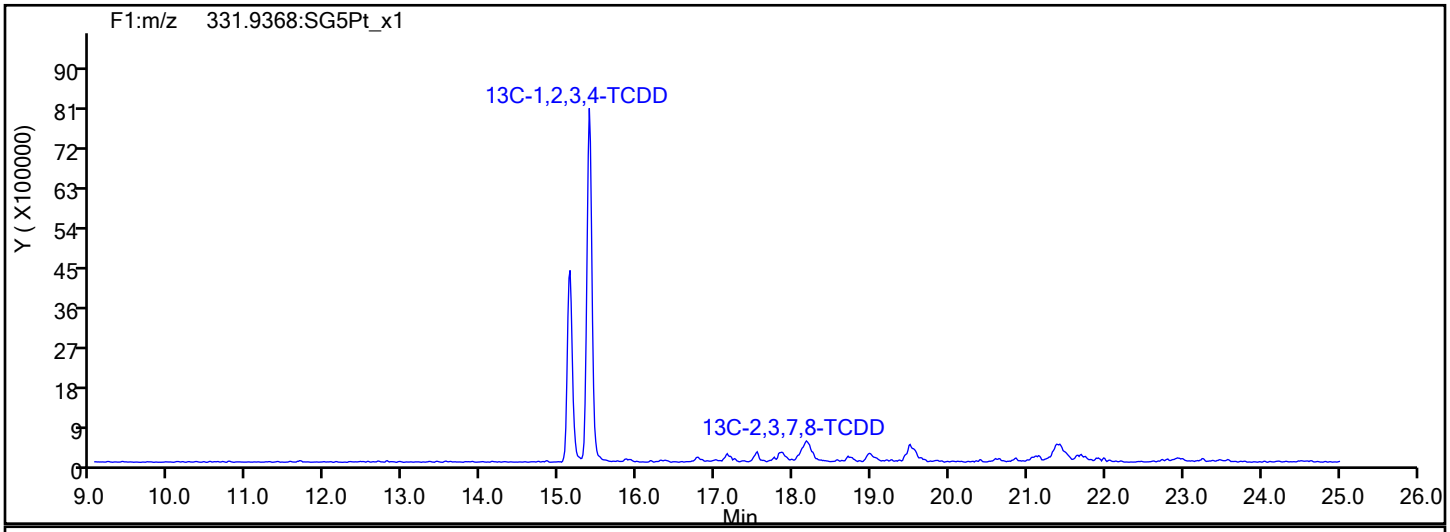
Eurofins TestAmerica, Sacramento

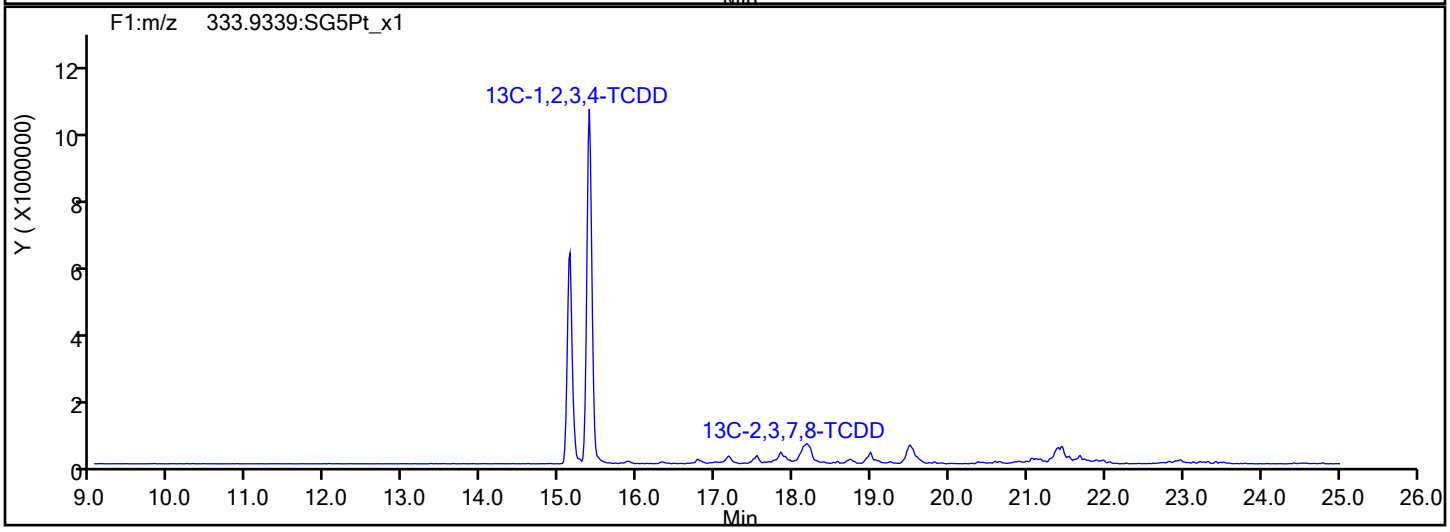
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d		
Injection Date:	17-Dec-2019 01:08:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345960	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

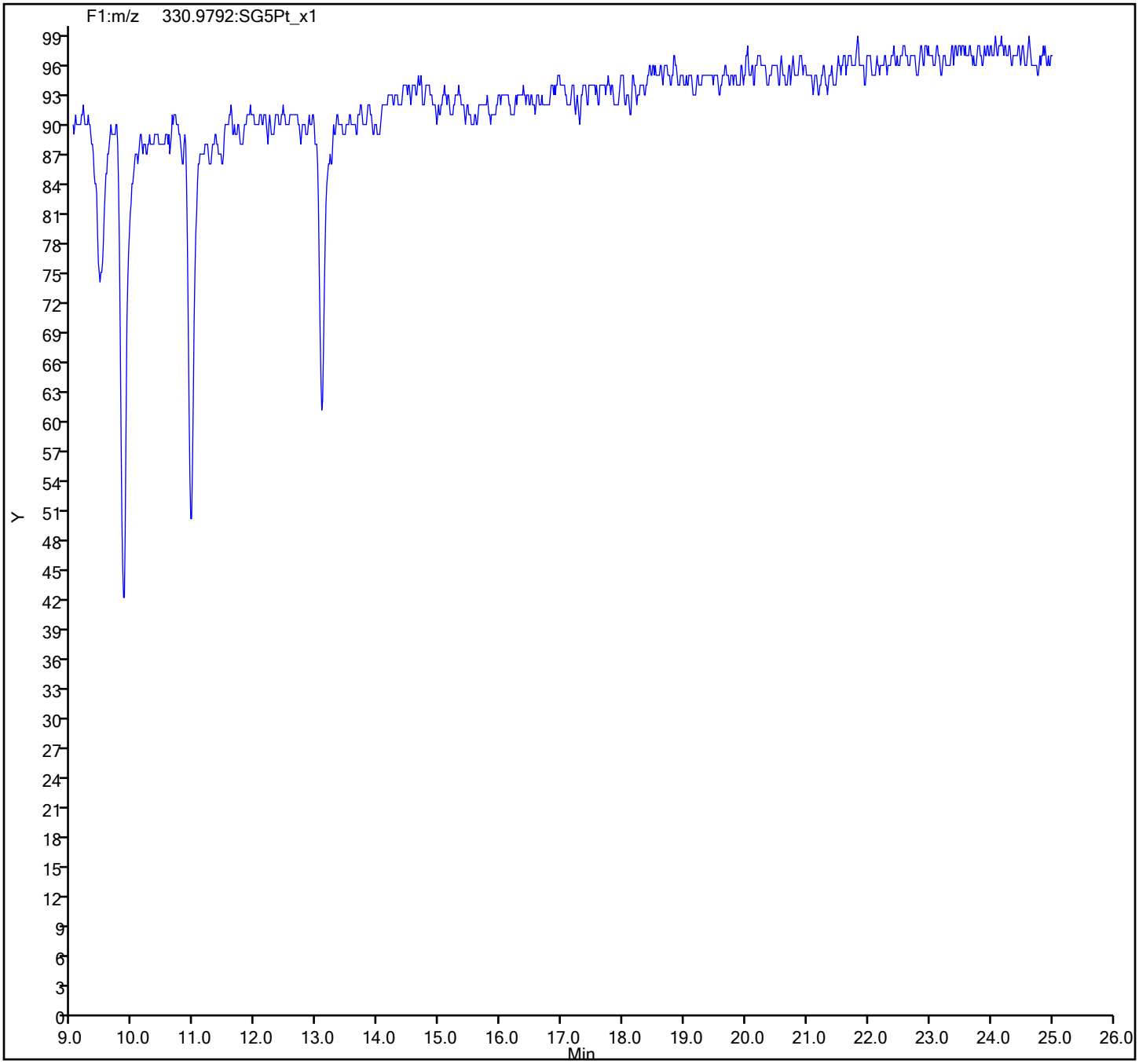




Report Date: 17-Dec-2019 09:38:31 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_010.d		
Injection Date:	17-Dec-2019 01:08:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (0-1)		
Worklist#:	345960	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Matrix: Sediment Lab File ID: 13DE1910D5_10.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.32(g) Date Analyzed: 12/13/2019 18:39

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 28.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1.5		1.4	0.13
40321-76-4	1,2,3,7,8-PeCDD	ND		6.8	0.15
57117-41-6	1,2,3,7,8-PeCDF	0.33	J	6.8	0.091
57117-31-4	2,3,4,7,8-PeCDF	ND		6.8	0.094
39227-28-6	1,2,3,4,7,8-HxCDD	0.36	J	6.8	0.083
57653-85-7	1,2,3,6,7,8-HxCDD	0.29	J B q	6.8	0.083
19408-74-3	1,2,3,7,8,9-HxCDD	0.71	J	6.8	0.075
70648-26-9	1,2,3,4,7,8-HxCDF	0.26	J	6.8	0.089
57117-44-9	1,2,3,6,7,8-HxCDF	ND		6.8	0.090
72918-21-9	1,2,3,7,8,9-HxCDF	0.31	J	6.8	0.065
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.8	0.071
35822-46-9	1,2,3,4,6,7,8-HpCDD	8.0	B	6.8	0.14
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.49	J	6.8	0.057
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.23	J	6.8	0.061
3268-87-9	OCDD	190	B	14	0.22
39001-02-0	OCDF	3.4	J B	14	0.13
41903-57-5	Total TCDD	4.0	q	1.4	0.13
30402-14-3	Total TCDF	9.1	q	1.4	0.12
36088-22-9	Total PeCDD	2.4	J q	6.8	0.15
30402-15-4	Total PeCDF	0.33	J	6.8	0.093
34465-46-8	Total HxCDD	11	B q	6.8	0.080
55684-94-1	Total HxCDF	0.57	J	6.8	0.079
37871-00-4	Total HpCDD	29	B	6.8	0.14
38998-75-3	Total HpCDF	1.4	J B	6.8	0.059

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) Lab Sample ID: 320-56911-10

Matrix: Sediment Lab File ID: 13DE1910D5_10.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.32(g) Date Analyzed: 12/13/2019 18:39

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 28.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	58		25-164
89059-46-1	13C-2,3,7,8-TCDF	52		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	60		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	56		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	58		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	64		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	53		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	55		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	48		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	53		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	52		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	55		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	67		26-138
114423-97-1	13C-OCDD	77		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	104		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:39:56 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-10-A 320-56911-A-10-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:49:31 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:51:10

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	50833207	0.77	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.372	35474739	0.79	1.3318	52.4	52.4	0.1323	0.1323	52.40	
2,3,7,8-TCDF	17.402	670910	0.77	0.9005	2.100	2.100	0.0431	0.0431		M
A Non-2,3,7,8-sub-TCDF	17.062	401432	0.77	0.9005	1.341	1.257	0.0431	0.8427		RQa
S Total TCDF					3.441	3.357	0.0431	0.0431		RQ
D 13C-2,3,7,8-TCDD	18.083	28224103	0.79	0.9647	57.6	57.6	0.1248	0.1248	57.56	
2,3,7,8-TCDD	18.113	170280	0.69	1.0698	0.5640	0.5640	0.0485	0.0485		
$ 37Cl4-2,3,7,8-TCDD	18.098	27750533		1.3082	41.7	41.7	0.0321	0.0321	104	
A Non-2,3,7,8-sub-TCDD	17.516	279366	0.77	1.0698	0.9490	0.9252	0.0485	0.7667		RQ
S Total TCDD					1.513	1.489	0.0485	0.0485		RQ
D 13C-1,2,3,7,8-PeCDF	22.399	29918564	1.56	1.0537	55.9	55.9	0.1120	0.1120	55.86	
1,2,3,7,8-PeCDF	22.413	35228	1.38	0.9704	0.1213	0.1213	0.0336	0.0336		M
D 13C-2,3,4,7,8-PeCDF	23.750	30177940	1.59	1.0173	58.4	58.4	0.1160	0.1160	58.36	
2,3,4,7,8-PeCDF	23.750						0.0346	0.0346		
A F1 PeCDFs	19.776						0.0342	0.0342		
A Non-2,3,7,8-sub-PeCDF	22.933						0.0341	0.0341		
S Total PeCDF					0.1213	0.1213	0.0341	0.0341		
D 13C-1,2,3,7,8-PeCDD	24.472	22213840	1.53	0.7281	60.0	60.0	0.0826	0.0826	60.02	
1,2,3,7,8-PeCDD	24.472						0.0539	0.0539		
A Non-2,3,7,8-sub-PeCDD	23.368	195556	1.55	1.0023	0.9491	0.8783	0.0539	0.4508		RQ
S Total PeCDD					0.9491	0.8783	0.0539	0.0539		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.557	23199436	0.50	0.9632	55.4	55.4	0.1334	0.1334	55.42	
1,2,3,4,7,8-HxCDF	30.570	23068	1.20	1.0315	0.0964	0.0964	0.0329	0.0329		
D 13C-1,2,3,6,7,8-HxCDF	30.743	22291435	0.50	1.0646	48.2	48.2	0.1207	0.1207	48.18	
1,2,3,6,7,8-HxCDF	30.743						0.0331	0.0331		
D 13C-2,3,4,6,7,8-HxCDF	31.582	21721625	0.50	0.9696	51.5	51.5	0.1326	0.1326	51.54	
2,3,4,6,7,8-HxCDF	31.568						0.0260	0.0260		
D 13C-1,2,3,7,8,9-HxCDF	32.381	20748070	0.51	0.8955	53.3	53.3	0.1435	0.1435	53.31	
1,2,3,7,8,9-HxCDF	32.394	25093	1.24	1.0664	0.1134	0.1134	0.0240	0.0240		M
A Non-2,3,7,8-sub-HxCDF	30.237						0.0285	0.0285		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.2098	0.2098	0.0290	0.0290		
* 13C-1,2,3,7,8,9-HxCDD	32.194	43462280	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.768	20974104	1.25	0.7590	63.6	63.6	0.1454	0.1454	63.58	
1,2,3,4,7,8-HxCDD	31.768	28137	1.19	1.0054	0.1334	0.1334	0.0305	0.0305		M
D 13C-1,2,3,6,7,8-HxCDD	31.875	21106118	1.24	0.9247	52.5	52.5	0.1194	0.1194	52.51	
1,2,3,6,7,8-HxCDD	31.888	22350	1.24	0.9833	0.1306	0.1077	0.0304	0.0304		RQMa
1,2,3,7,8,9-HxCDD	32.208	60781	1.17	1.1036	0.2618	0.2618	0.0274	0.0274		
A Non-2,3,7,8-sub-HxCDD	30.870	758313	1.24	1.0308	3.505	3.497	0.0294	2.791		RQ
S Total HxCDD					4.030	3.999	0.0295	0.0295		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.805	18783620	0.43	0.7930	54.5	54.5	0.2434	0.2434	54.50	
1,2,3,4,6,7,8-HpCDF	33.817	48054	1.13	1.4240	0.1797	0.1797	0.0209	0.0209		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.875	21110320	0.43	0.7296	66.6	66.6	0.2646	0.2646	66.58	
1,2,3,4,7,8,9-HpCDF	34.887	22976	0.95	1.2834	0.0848	0.0848	0.0223	0.0223		M
A Non-2,3,7,8-sub-HpCDF	34.340	64656	0.96	1.3537	0.2394	0.2394	0.0216	0.2394		
S Total HpCDF					0.5039	0.5039	0.0216	0.0216		
D 13C-1,2,3,4,6,7,8-HpCDD	34.583	21583121	1.05	0.7532	65.9	65.9	0.2353	0.2353	65.93	
1,2,3,4,6,7,8-HpCDD	34.595	649664	1.03	1.0174	2.959	2.959	0.0515	0.0515		
A Non-2,3,7,8-sub-HpCDD	34.309	1724851	1.01	1.0174	7.855	7.855	0.0515	7.855		
S Total HpCDD					10.8	10.8	0.0515	0.0515		
D 13C-OCDD	36.903	37788613	0.90	0.5621	154.7	154.7	0.1012	0.1012	77.35	
OCDF	37.011	307316	0.91	1.3047	1.247	1.247	0.0485	0.0485		
OCDD	36.915	14378600	0.89	1.0997	69.2	69.2	0.0792	0.0792		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Sample Type: Client
Inject. Date: 13-Dec-2019 18:39:56 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-10-A 320-56911-A-10-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 08:49:31 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: dadunj Date: 16-Dec-2019 10:51:10

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.886	17.856	2		22082233	5504203	3766	9415	1462		
333.9339	17.886	17.856	2		28750974	7175067	2340	5850	3066	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.372	17.357	1	0.971	15656862	3793966	5457	13642	695		
317.9389	17.372	17.357	1	0.971	19817877	4886050	3479	8697	1404	0.79(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	17.402	17.372	2	1.002	292295	68664	575	1437	119		M
305.8987	17.402	17.372	2	1.002	378615	85538	772	1930	111	0.77(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	15.996	17.062	-64	0.921	8533	2298	575	1437	4		
305.8987	15.981	17.062	-65	0.920	12660	3473	772	1930	4	0.67(0.65-0.89)	
303.9016	16.737	17.062	-19	0.963	10597	3243	575	1437	6		
305.8987	16.737	17.062	-19	0.963	16656	3613	772	1930	5	0.64(0.65-0.89)	
	Empc Correction				13762	4211	772	1930	5		
303.9016	17.024	17.062	-2	0.980	115039	28854	575	1437	50		
305.8987	17.009	17.062	-3	0.979	154181	36243	772	1930	47	0.75(0.65-0.89)	
303.9016	17.826	17.062	46	1.026	21221	3974	575	1437	7		
305.8987	17.826	17.062	46	1.026	40137	7768	772	1930	10	0.53(0.65-0.89)	
	Empc Correction				27559	5161	772	1930	7		
303.9016	19.232	17.062	130	1.107	16479	3879	575	1437	7		a
305.8987	19.216	17.062	129	1.106	32892	5049	772	1930	7	0.50(0.65-0.89)	
	Empc Correction				21401	5037	772	1930	7		
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	12449453	3032386	3766	9415	805		
333.9339	18.083	18.052	2	1.011	15774650	3820949	2340	5850	1633	0.79(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,7,8-TCDD											
319.8965	18.113	18.068	3	1.002	69447	15083	880	2200	17		
321.8936	18.098	18.068	2	1.001	100833	23941	542	1355	44	0.69(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	27750533	6611769	2127	5317	3108		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	16.964	17.516	-33	0.938	97637	24089	880	2200	27		
321.8936	16.964	17.516	-33	0.938	133860	37225	542	1355	69	0.73(0.65-0.89)	
319.8965	17.856	17.516	20	0.987	27993	6089	880	2200	7		
	Empc Correction				20824	4844	880	2200	6		
321.8936	17.856	17.516	20	0.987	27045	6291	542	1355	12	1.04(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.399	22.372	2	1.252	18221889	3221946	3447	8617	935		
353.8970	22.399	22.372	2	1.252	11696675	2100640	2538	6345	828	1.56(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.413	22.400	1	1.001	20409	3381	313	782	11		M
341.8567	22.454	22.400	3	1.002	14819	2466	381	952	6	1.38(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	18522762	3078357	3447	8617	893		
353.8970	23.750	23.722	2	1.328	11655178	1937018	2538	6345	763	1.59(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750						313	782			
341.8567	23.750						381	952			
A F1 PeCDFs											
339.8597	19.776						268	670			
341.8567	19.776						429	1072			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.933						313	782			
341.8567	22.933						381	952			
13C-1,2,3,7,8-PeCDD											
367.8949	24.472	24.445	2	1.368	13429910	2152259	1677	4192	1283		
369.8919	24.472	24.445	2	1.368	8783930	1400119	1375	3437	1018	1.53(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						433	1082			
357.8516	24.472						335	837			
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	21.295	23.368	-124	0.870	31630	4355	433	1082	10		
357.8516	21.268	23.368	-126	0.869	20773	3733	335	837	11	1.52(1.32-1.78)	
355.8546	22.031	23.368	-80	0.900	61012	12889	433	1082	30		
357.8516	22.018	23.368	-81	0.900	48757	8589	335	837	26	1.25(1.32-1.78)	
	Empc Correction				39362	8315	335	837	25		
355.8546	23.504	23.368	8	0.960	26003	3485	433	1082	8		
357.8516	23.504	23.368	8	0.960	23147	3247	335	837	10	1.12(1.32-1.78)	
	Empc Correction				16776	2248	335	837	7		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.557	30.543	1	0.949	7684083	1403911	2147	5367	654		
385.8610	30.557	30.543	1	0.949	15515353	2905661	3992	9980	728	0.50(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.570	30.557	1	1.000	12580	2546	337	842	8		
375.8178	30.583	30.557	2	1.001	10488	1926	248	620	8	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.743	30.716	2	0.955	7433945	1452520	2147	5367	677		
385.8610	30.743	30.716	2	0.955	14857490	2864609	3992	9980	718	0.50(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.743						337	842			
375.8178	30.743						248	620			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.582	31.555	2	0.981	7281864	1811126	2147	5367	844		
385.8610	31.582	31.555	2	0.981	14439761	3467670	3992	9980	869	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						337	842			
375.8178	31.568						248	620			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.381	32.367	1	1.006	6968079	1923871	2147	5367	896		
385.8610	32.381	32.367	1	1.006	13779991	3793902	3992	9980	950	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											M
373.8208	32.394	32.380	1	1.000	13866	2935	337	842	9		M
375.8178	32.381	32.380	0	1.000	11227	2178	248	620	9	1.24(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						337	842			
375.8178	30.237						248	620			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.194	32.181	1		24107855	6651751	2910	7275	2286		
403.8529	32.194	32.181	1		19354425	5289169	2363	5907	2238	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.768	31.741	2	0.987	11654202	2941418	2910	7275	1011		
403.8529	31.768	31.741	2	0.987	9319902	2335928	2363	5907	989	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											M
389.8157	31.768	31.755	1	1.000	15311	3976	326	815	12		M
391.8127	31.781	31.755	2	1.000	12826	3711	321	802	12	1.19(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.875	31.848	2	0.990	11679546	2973554	2910	7275	1022		
403.8529	31.875	31.848	2	0.990	9426572	2429271	2363	5907	1028	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMa
389.8157	31.888	31.861	2	1.000	17135	3690	326	815	11		M
	Empc Correction				12372	2775	326	815	9		
391.8127	31.875	31.861	1	1.000	9978	2238	321	802	7	1.72(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.208	32.194	1	1.014	32823	7467	326	815	23		
391.8127	32.208	32.194	1	1.014	27958	4477	321	802	14	1.17(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.598	30.870	-76	0.929	335903	39857	326	815	122		
391.8127	29.612	30.870	-75	0.929	269418	34408	321	802	107	1.25(1.05-1.43)	
389.8157	30.650	30.870	-13	0.962	11489	1762	326	815	5		
391.8127	30.637	30.870	-14	0.961	9770	1821	321	802	6	1.18(1.05-1.43)	
389.8157	31.010	30.870	8	0.973	64515	10808	326	815	33		
391.8127	31.036	30.870	10	0.974	52851	10170	321	802	32	1.22(1.05-1.43)	
389.8157	31.236	30.870	22	0.980	9672	2461	326	815	8		
	Empc Correction				7953	2220	326	815	7		
391.8127	31.222	30.870	21	0.980	6414	1791	321	802	6	1.51(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.805	33.780	1	1.050	5661807	1815553	2726	6815	666		
419.8220	33.805	33.780	1	1.050	13121813	4210540	6495	16237	648	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.817	33.793	1	1.000	25531	8682	429	1072	20		M
409.7789	33.805	33.793	1	1.000	22523	6710	289	722	23	1.13(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.875	34.862	1	1.083	6306678	1855775	2726	6815	681		
419.8220	34.875	34.862	1	1.083	14803642	4418812	6495	16237	680	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											M
407.7818	34.887	34.862	1	1.000	11172	3239	429	1072	8		M
409.7789	34.887	34.862	1	1.000	11804	3023	289	722	10	0.95(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.109	34.340	-14	1.009	31632	9240	429	1072	22		
409.7789	34.097	34.340	-15	1.009	33024	9290	289	722	32	0.96(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.583	34.570	1	1.074	11056022	3409786	4351	10877	784		
437.8140	34.583	34.570	1	1.074	10527099	3207153	4114	10285	780	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	330289	102046	740	1850	138		
425.7737	34.595	34.583	1	1.000	319375	92271	647	1617	143	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.048	34.309	-16	0.985	866636	274652	740	1850	371		
425.7737	34.048	34.309	-16	0.985	858215	268143	647	1617	414	1.01(0.88-1.20)	
13C-OCDD											
469.7779	36.903	36.891	1	1.146	17923681	4464291	1341	3352	3329		
471.7750	36.903	36.891	1	1.146	19864932	4962731	1376	3440	3607	0.90(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	146701	34491	503	1257	69		
443.7399	37.011	36.999	1	1.003	160615	36269	690	1725	53	0.91(0.76-1.02)	
OCDD											
457.7377	36.915	36.903	1	1.000	6770424	1750241	847	2117	2066		
459.7348	36.915	36.903	1	1.000	7608176	1976199	795	1987	2486	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Report Date: 16-Dec-2019 08:49:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	35474739	8680016

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	35474739	8680016

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.996	8533	2298	12660	3473	0.0663	0.67	
16.737	10597	3243	16656	3613	0.0853	0.64	RQ
16.737	10597	3243	13762	4211	0.0763		Empc Correction
17.024	115039	28854	154181	36243	0.8427	0.75	
17.826	21221	3974	40137	7768	0.1921	0.53	RQ
17.826	21221	3974	27559	5161	0.1527		Empc Correction
19.232	16479	3879	32892	5049	0.1545	0.50	RQa
19.232	16479	3879	21401	5037	0.1186		Empc Correction
Signal Totals:							
	171869	42248	229563	54125			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	428395	98394				0.67	RQa
	401432	96373					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.341 = (428395 * 100.000) / (35474739 * 0.901)
Empc Amount: 1.257 = (401432 * 100.000) / (35474739 * 0.901)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Report Date: 16-Dec-2019 08:49:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	28224103	6853335

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	28224103	6853335

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.964	97637	24089	133860	37225	0.7667	0.73	
17.856	27993	6089	27045	6291	0.1823	1.04	RQ
17.856	20824	4844	27045	6291	0.1585		Empc Correction
Signal Totals:							
	118461	28933	160905	43516			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	286535	73694				0.78	RQ
	279366	72449					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9490 = (286535 * 100.000) / (28224103 * 1.070)
Empc Amount: 0.9252 = (279366 * 100.000) / (28224103 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	22213840	3552378

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	22213840	3552378

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.295	31630	4355	20773	3733	0.2354	1.52	
22.031	61012	12889	48757	8589	0.4930	1.25	RQ
22.031	61012	12889	39362	8315	0.4508		Empc Correction
23.504	26003	3485	23147	3247	0.2207	1.12	RQ
23.504	26003	3485	16776	2248	0.1921		Empc Correction
Signal Totals:							
	118645	20729	76911	14296			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	211322	36298				1.28	RQ
	195556	35025					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9491 = (211322 * 100.000) / (22213840 * 1.002)
Empc Amount: 0.8783 = (195556 * 100.000) / (22213840 * 1.002)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 16-Dec-2019 08:49:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	20974104	5277346
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	21106118	5402825
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	21040111	5340085

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.598	335903	39857	269418	34408	2.79	1.25	
30.650	11489	1762	9770	1821	0.0980	1.18	
31.010	64515	10808	52851	10170	0.5412	1.22	
31.236	9672	2461	6414	1791	0.0742	1.51	RQ
31.236	7953	2220	6414	1791	0.0662		Empc Correction
Signal Totals:							
	419860	54647	338453	48190			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	760032	103078				1.25	RQ
	758313	102837					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.505 = (760032 * 100.000) / (21040111 * 1.031)
Empc Amount: 3.497 = (758313 * 100.000) / (21040111 * 1.031)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	18783620	6026093
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	21110320	6274587

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	19946970	6150340

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	31632	9240	33024	9290	0.2394	0.96	
Signal Totals:							
	31632	9240	33024	9290			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	64656	18530				0.96	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2394 = (64656 * 100.000) / (19946970 * 1.354)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Inject. Date: 13-Dec-2019 18:39:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	21583121	6616939

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	21583121	6616939

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.048	866636	274652	858215	268143	7.85	1.01	
Signal Totals:							
	866636	274652	858215	268143			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1724851	542795				1.01	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.855 = (1724851 * 100.000) / (21583121 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

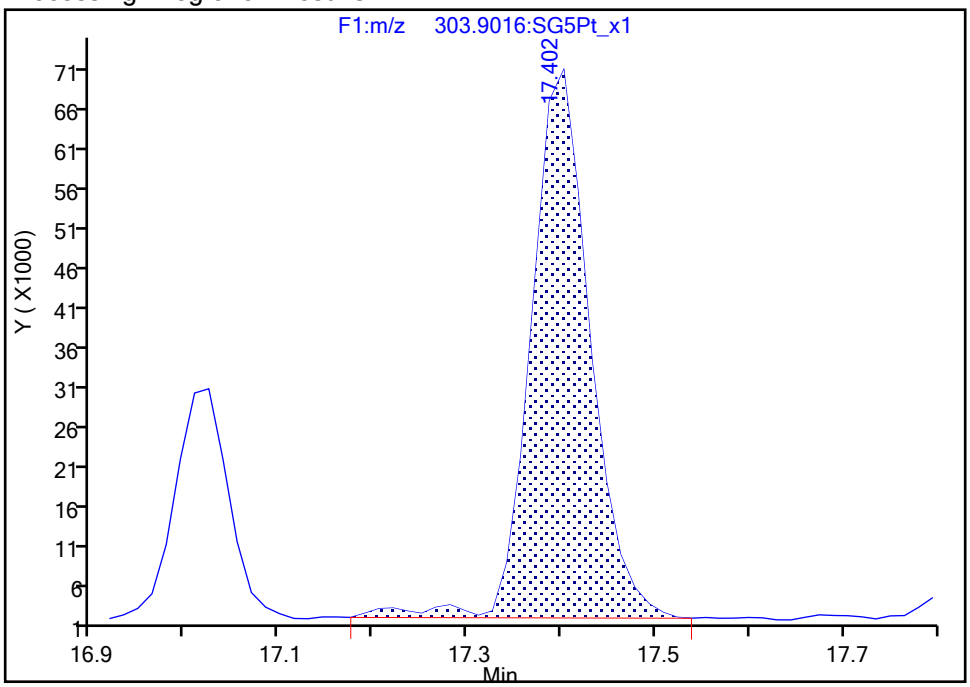
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

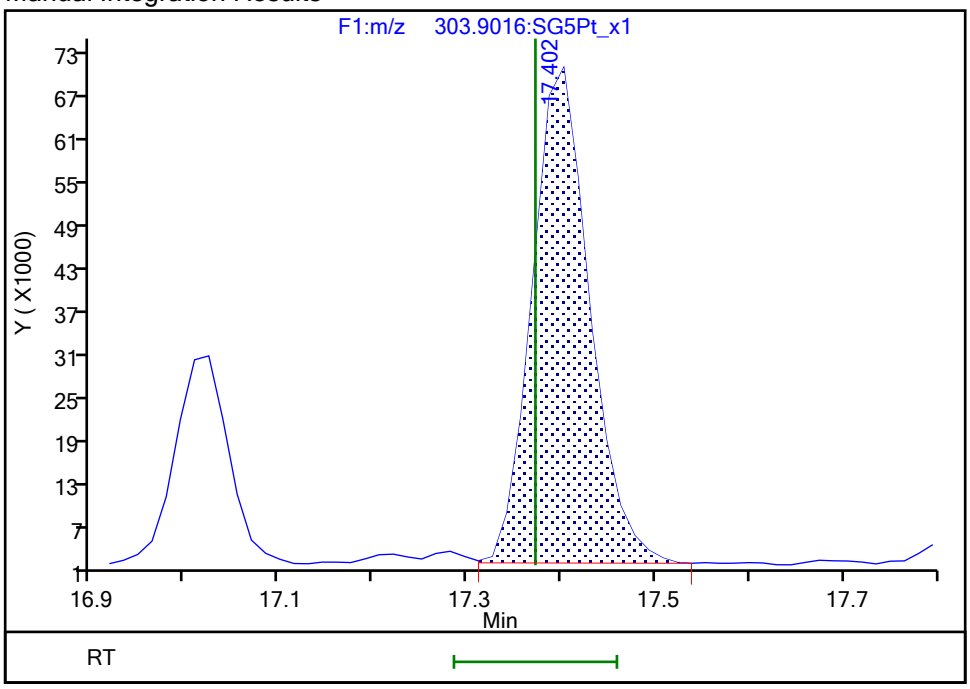
Processing Integration Results

RT: 17.40
Area: 299590
Amount: 2.123003
Amount Units: pg/ul



Manual Integration Results

RT: 17.40
Area: 292295
Amount: 2.100168
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:48:29

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

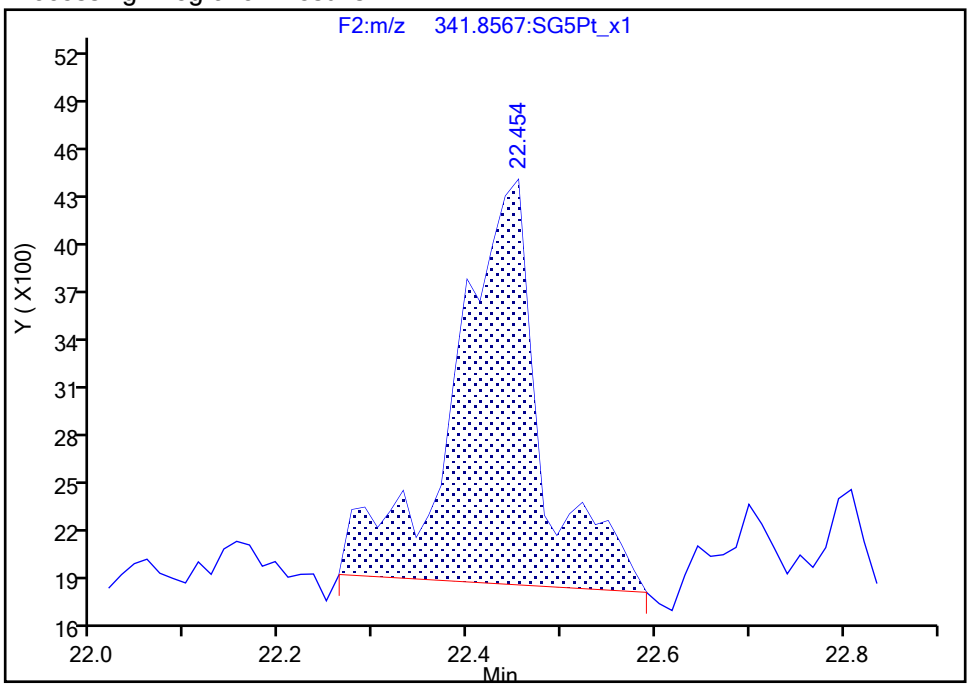
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

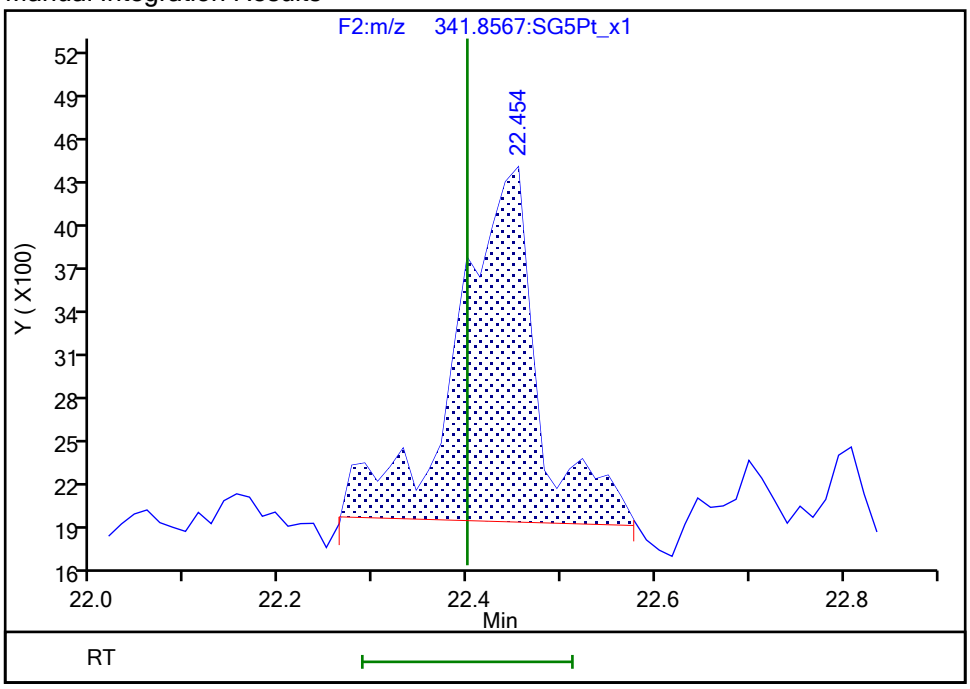
Processing Integration Results

RT: 22.45
Area: 16223
Amount: 0.137417
Amount Units: pg/ul



Manual Integration Results

RT: 22.45
Area: 14819
Amount: 0.121339
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:49:02

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

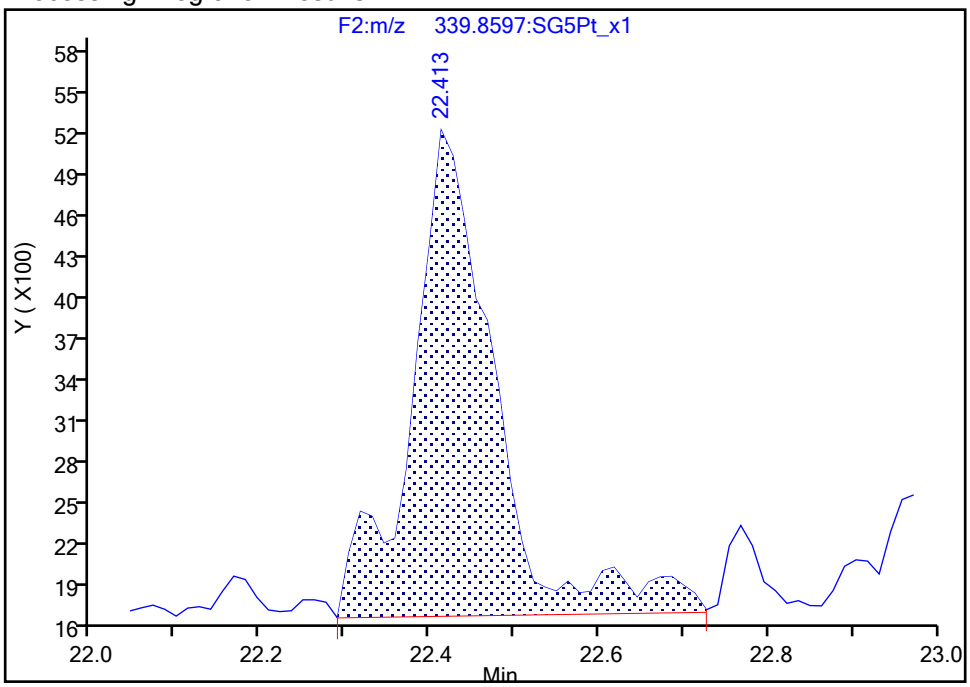
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

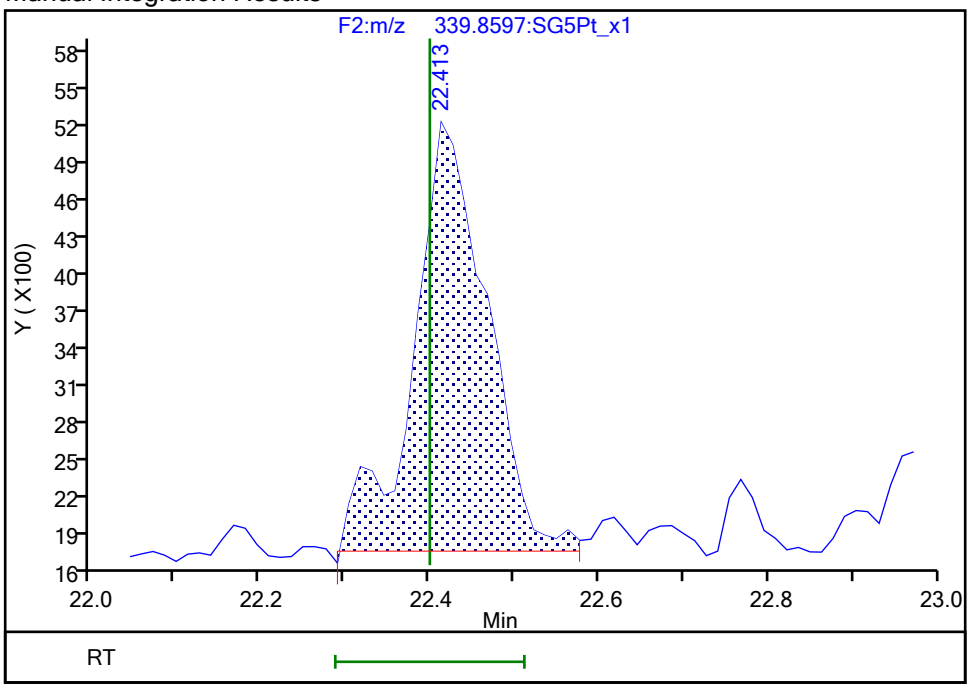
Processing Integration Results

RT: 22.41
Area: 23673
Amount: 0.137417
Amount Units: pg/ul



Manual Integration Results

RT: 22.41
Area: 20409
Amount: 0.121339
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:49:06

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

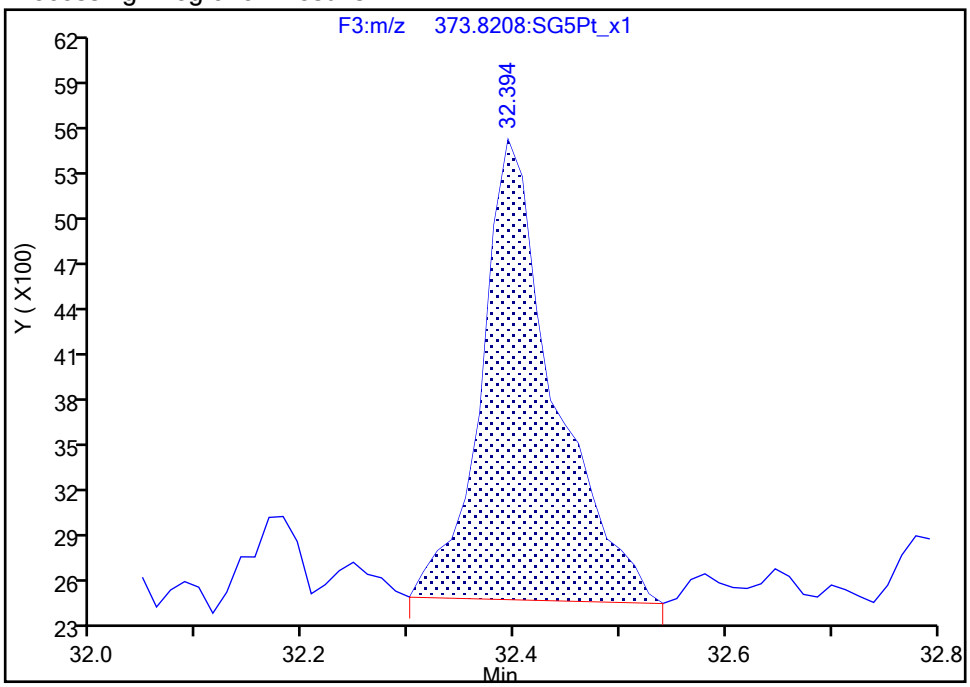
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

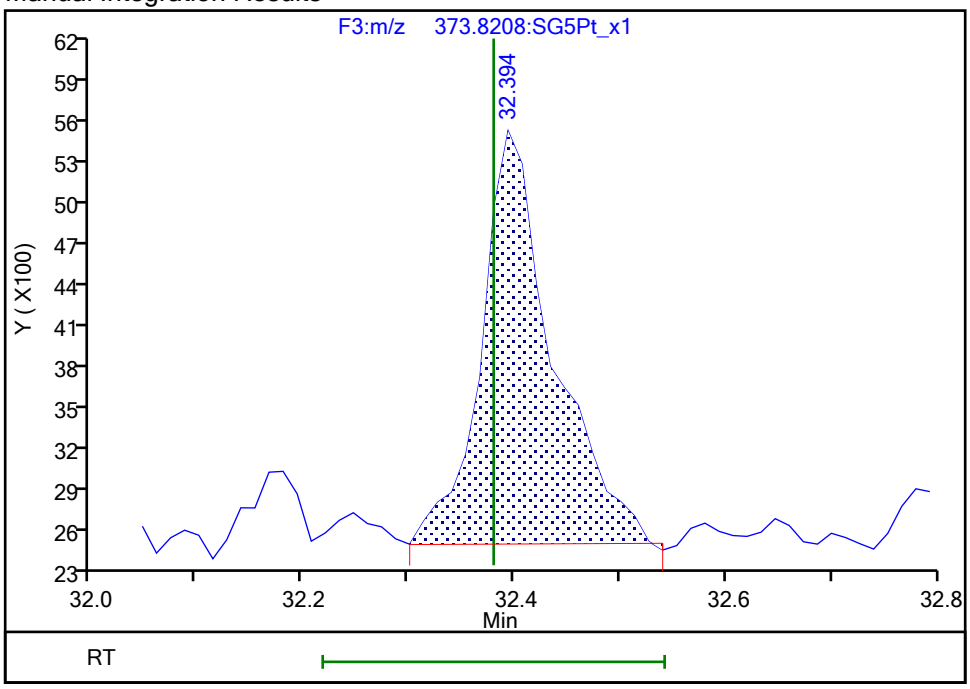
Processing Integration Results

RT: 32.39
Area: 14197
Amount: 0.118808
Amount Units: pg/ul



Manual Integration Results

RT: 32.39
Area: 13866
Amount: 0.113411
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:49:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

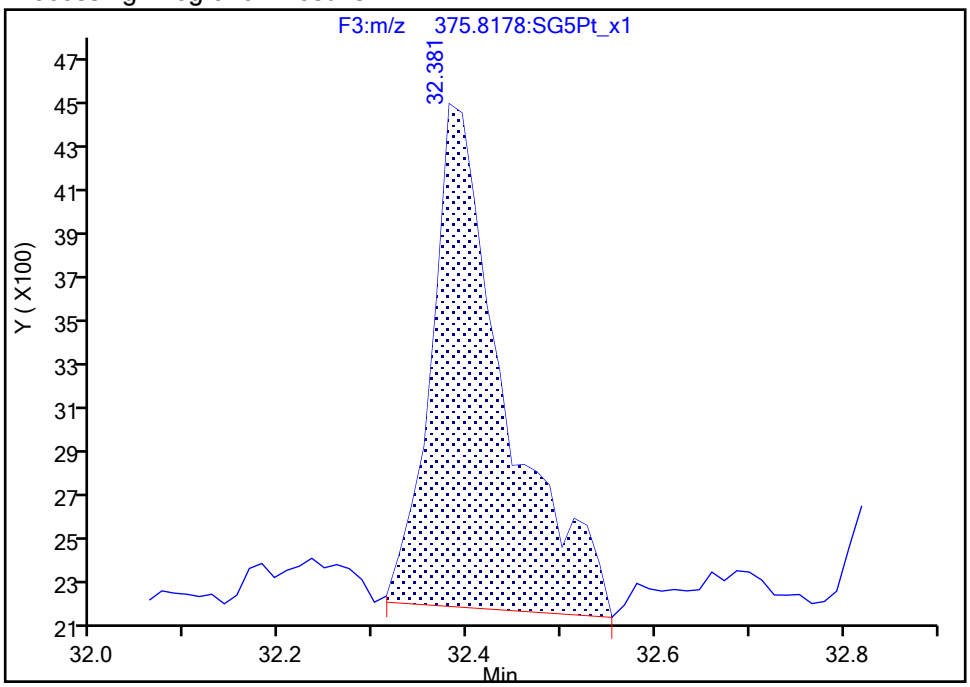
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

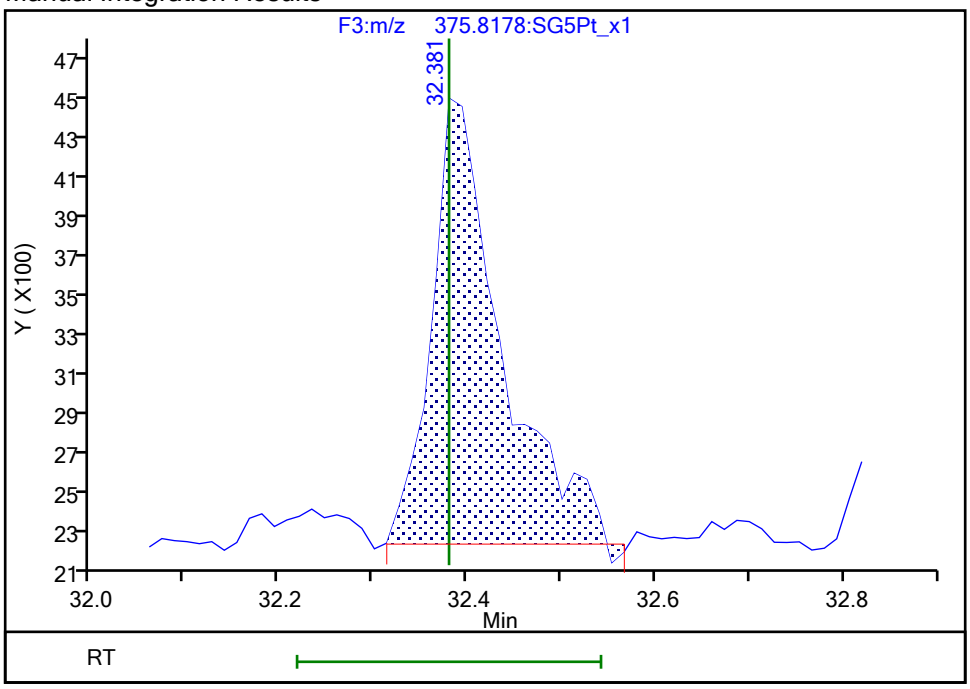
Processing Integration Results

RT: 32.38
Area: 12090
Amount: 0.118808
Amount Units: pg/ul



Manual Integration Results

RT: 32.38
Area: 11227
Amount: 0.113411
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:49:44

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

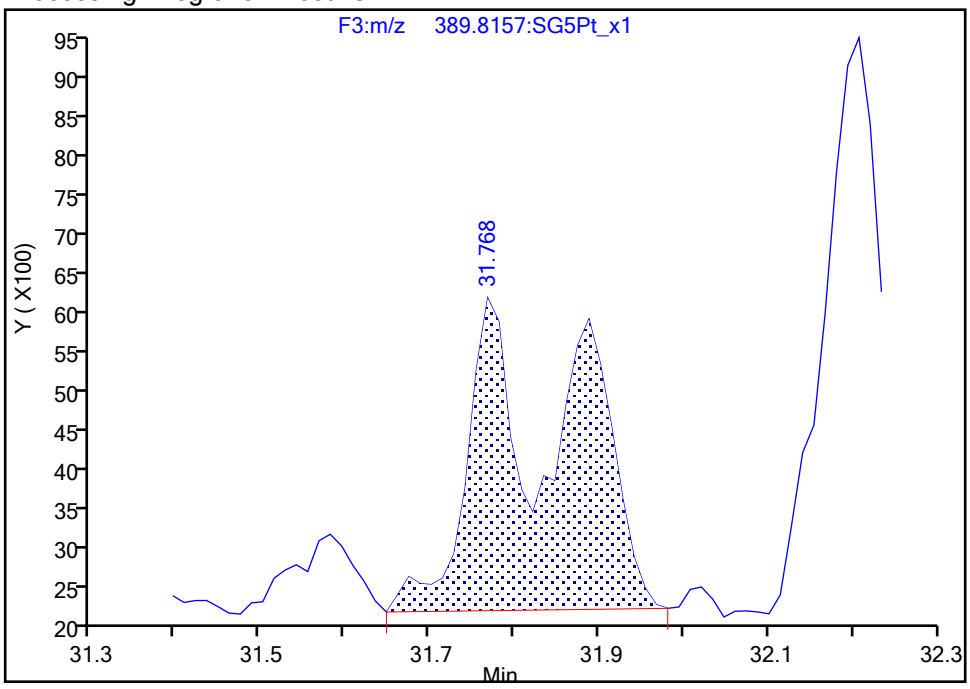
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

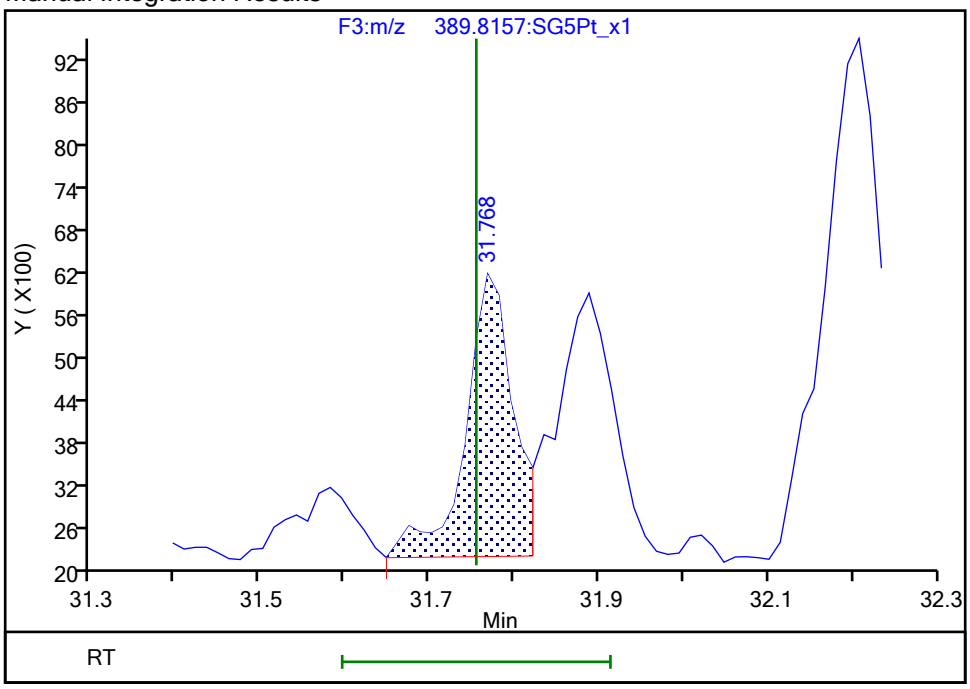
Processing Integration Results

RT: 31.77
Area: 32442
Amount: 0.262005
Amount Units: pg/ul



Manual Integration Results

RT: 31.77
Area: 15311
Amount: 0.133433
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:49:58

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

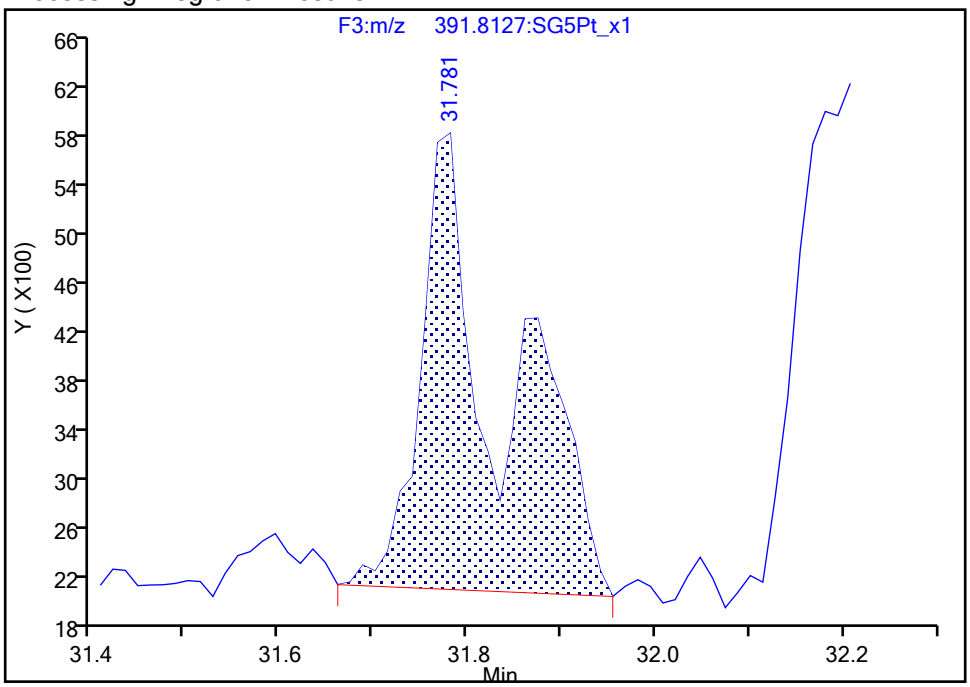
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

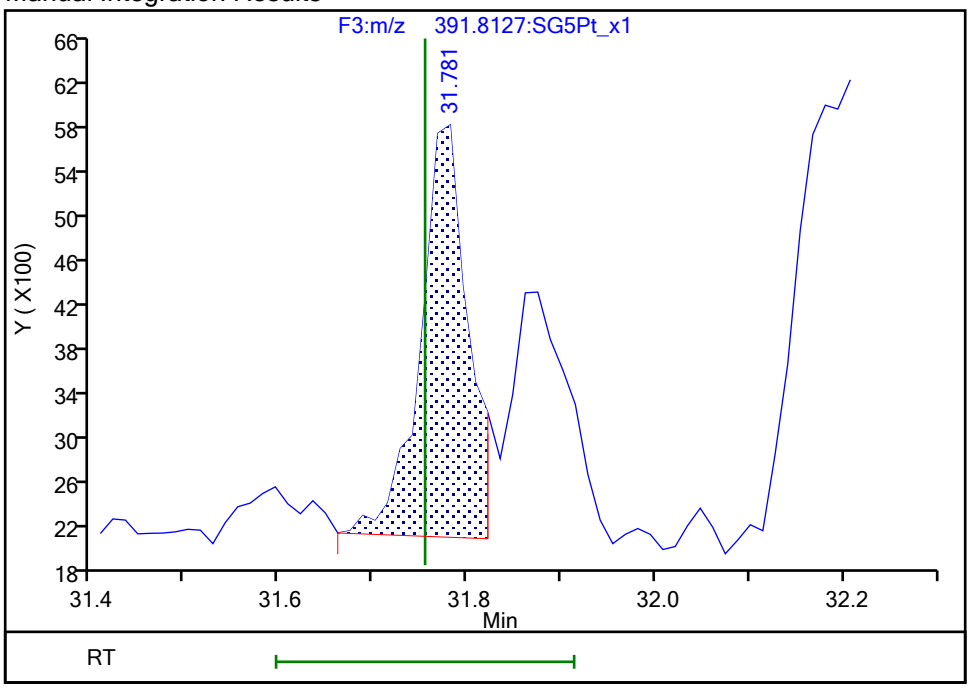
Processing Integration Results

RT: 31.78
Area: 22807
Amount: 0.262005
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 12826
Amount: 0.133433
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:50:01
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

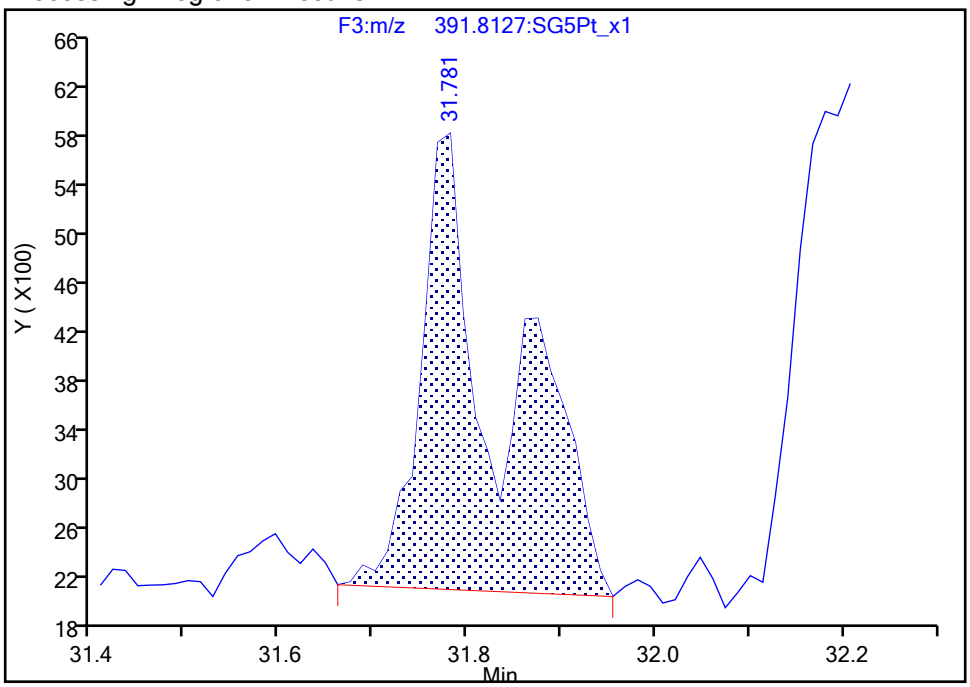
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

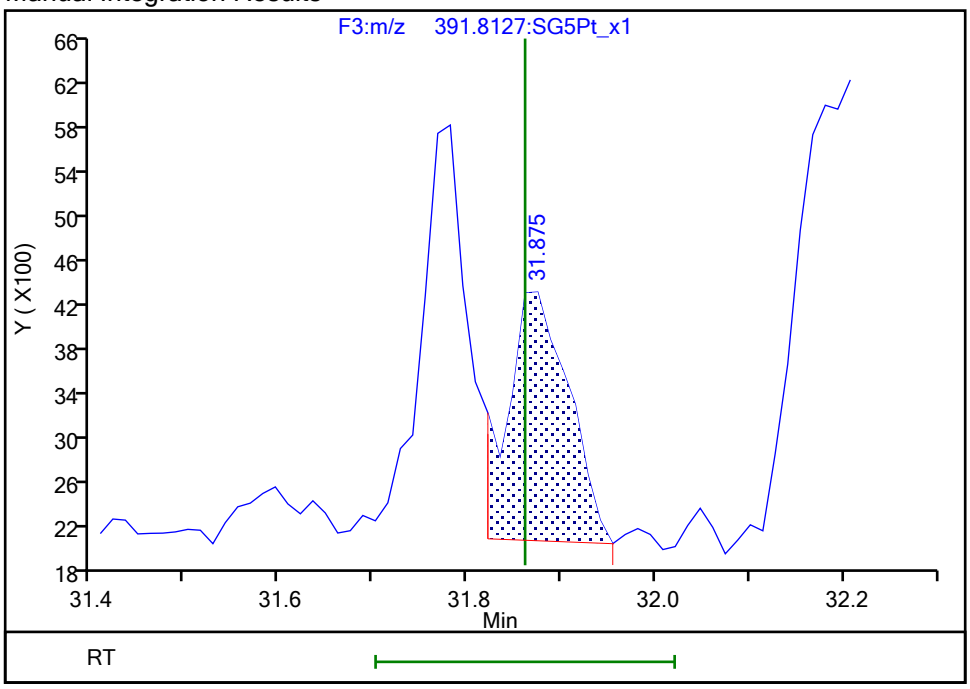
Processing Integration Results

RT: 31.78
Area: 22807
Amount: 0.266211
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 9978
Amount: 0.130641
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:50:07

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

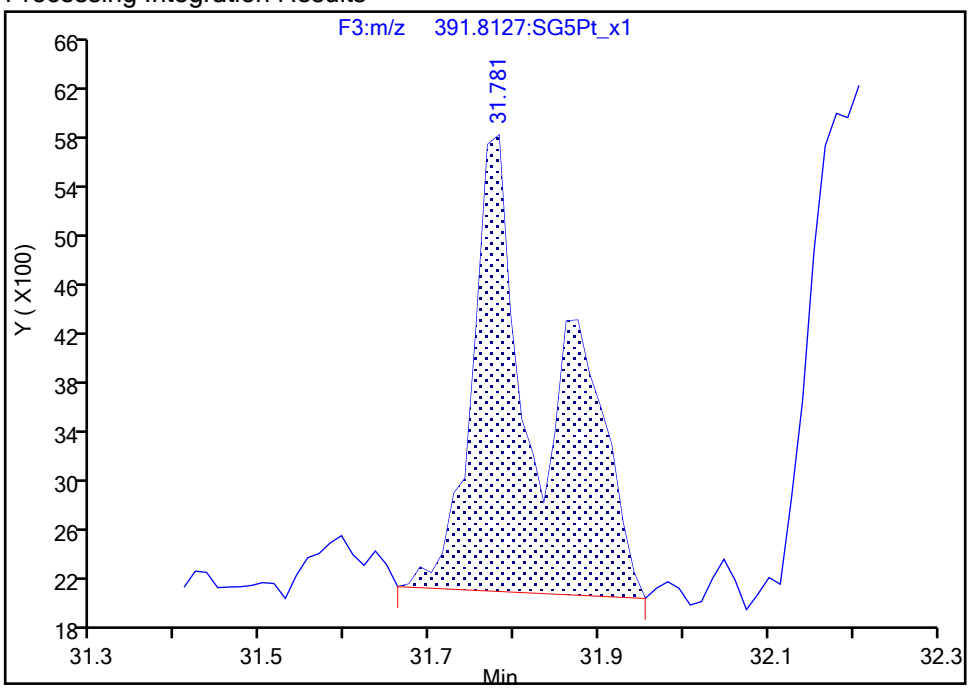
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.77
Area: 55249
Amount: 0.266211
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 27113
Amount: 0.130641
Amount Units: pg/ul

Reviewer: dadunj, 16-Dec-2019 10:50:07

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

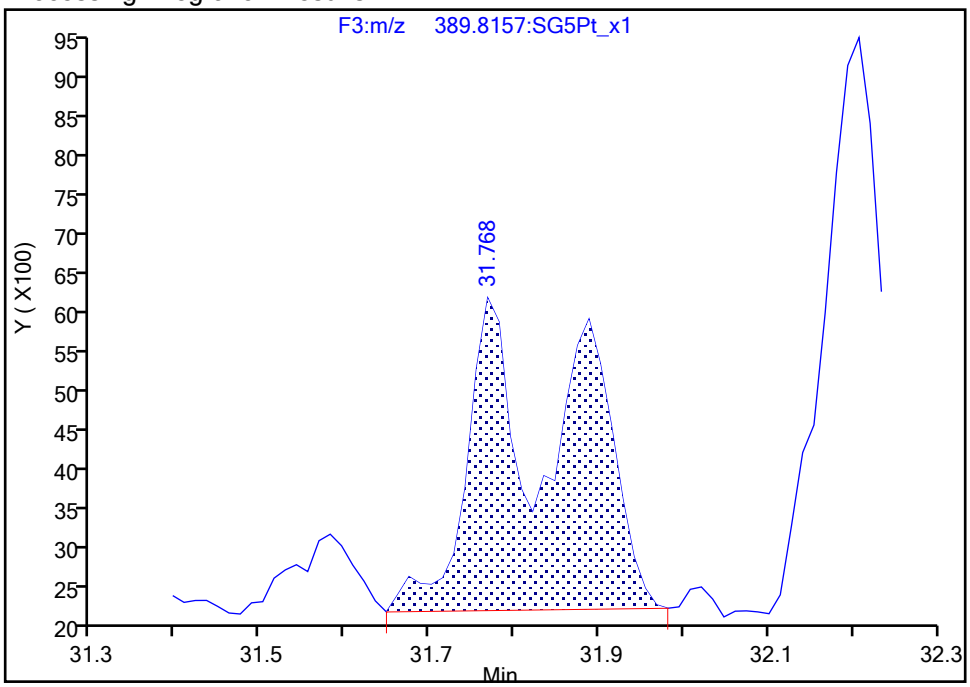
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

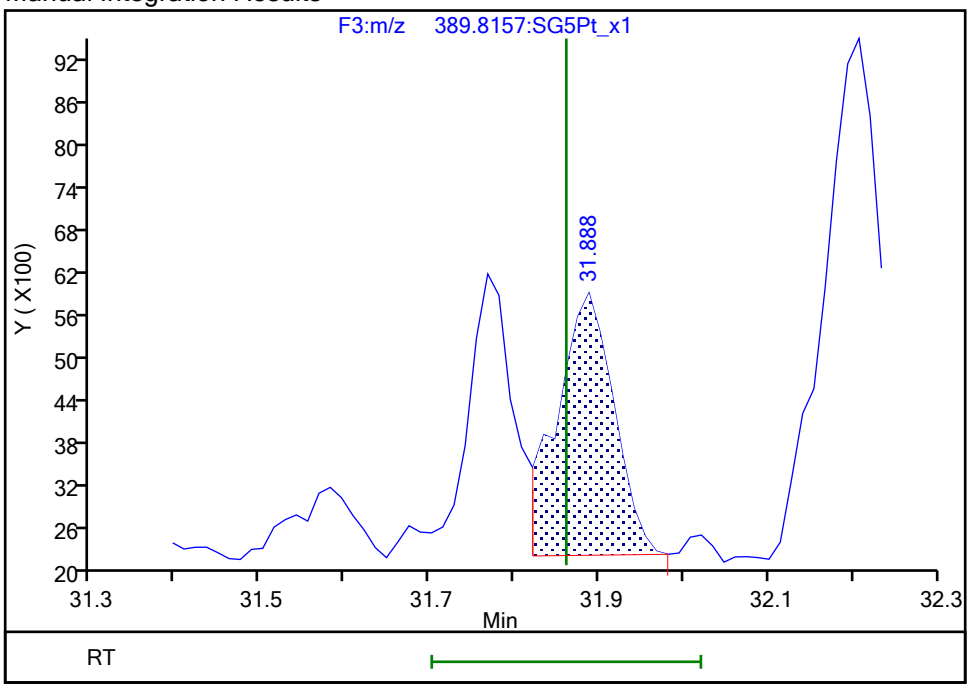
Processing Integration Results

RT: 31.77
Area: 32442
Amount: 0.266211
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 17135
Amount: 0.130641
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:50:08
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

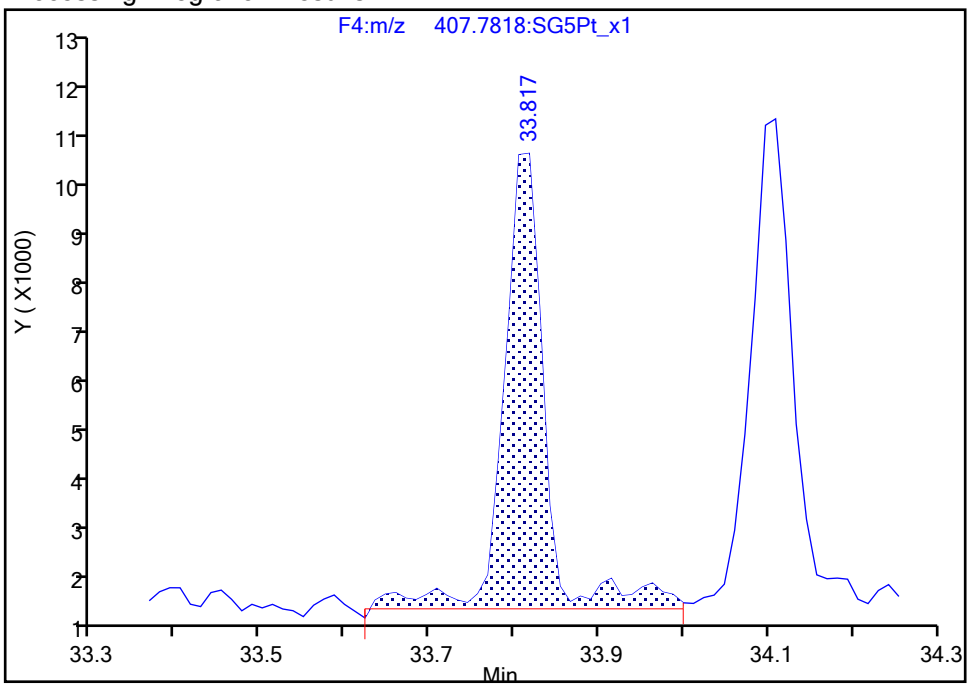
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

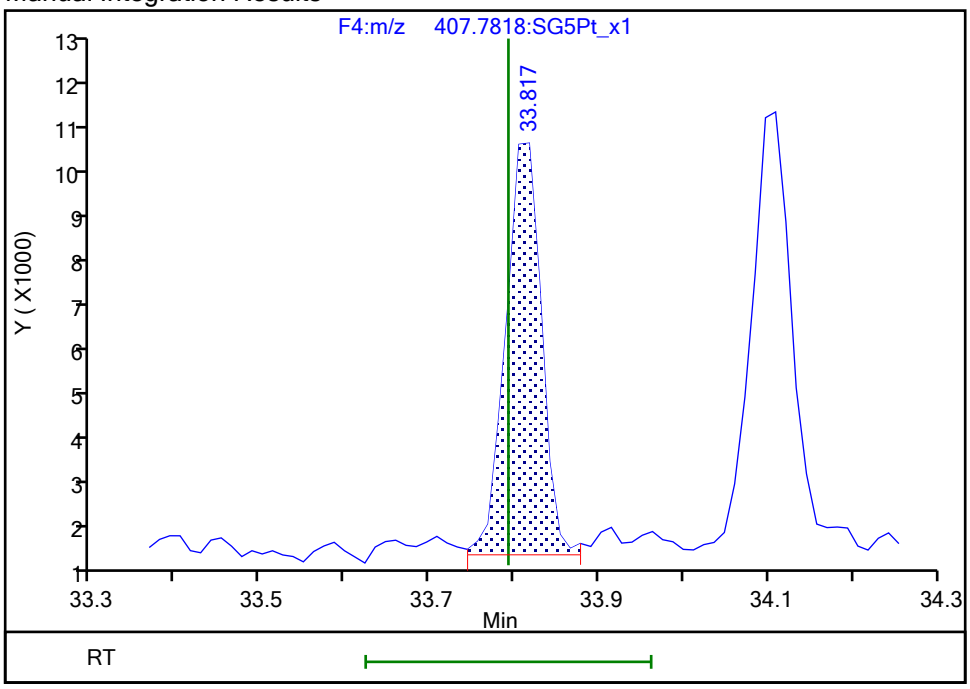
Processing Integration Results

RT: 33.82
Area: 29604
Amount: 0.194877
Amount Units: pg/ul



Manual Integration Results

RT: 33.82
Area: 25531
Amount: 0.179650
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:50:17
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

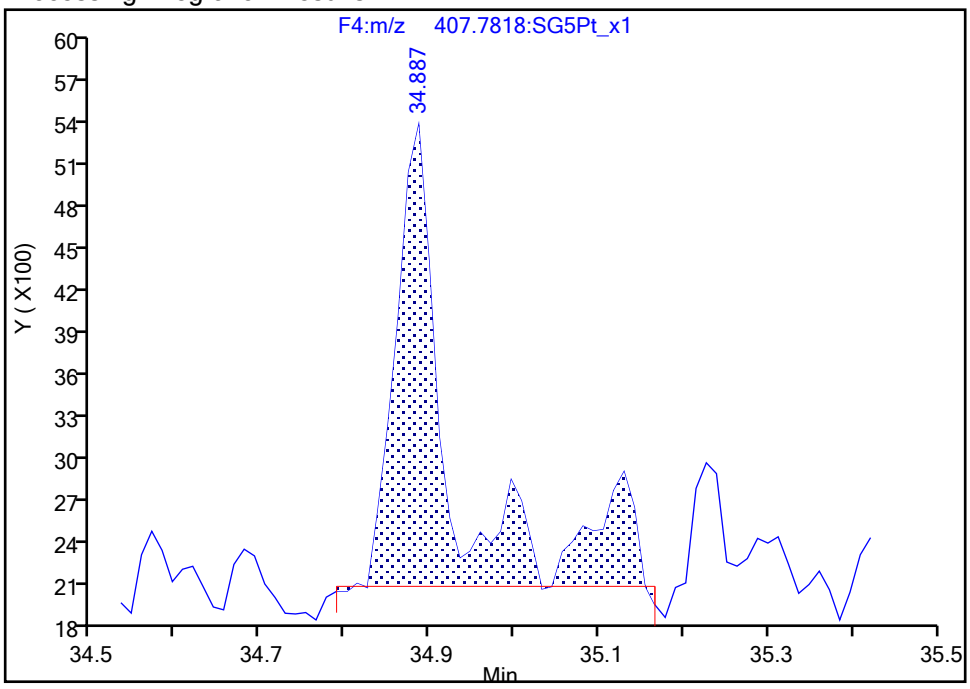
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d				
Injection Date:	13-Dec-2019 18:39:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-10-A	Lab Sample ID:	320-56911-10		
Client ID:	11187072-120819-BN-SJSSA05 (1-2)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

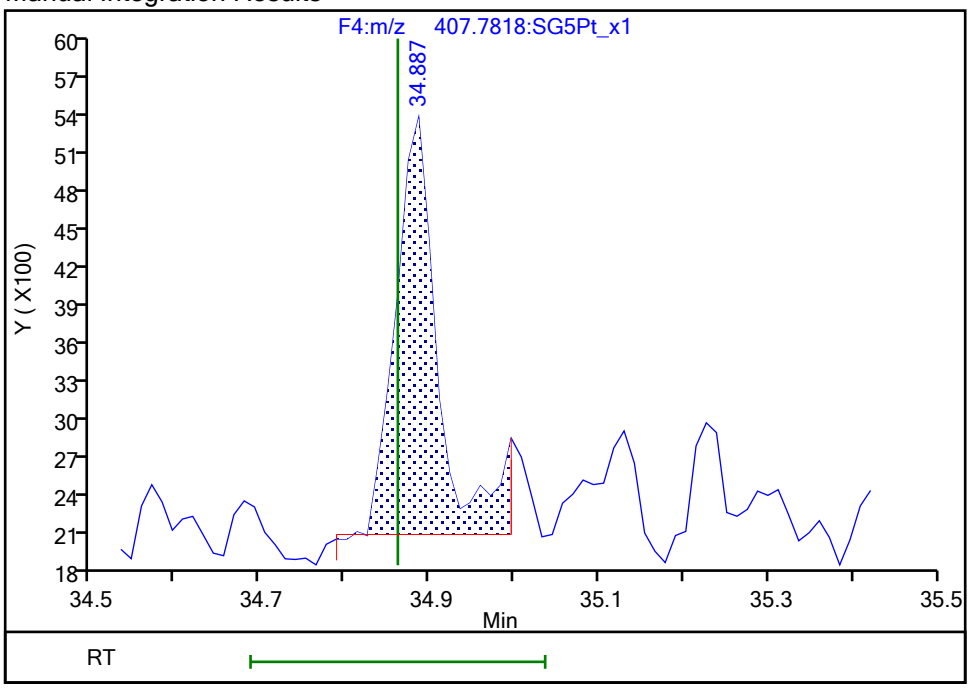
Processing Integration Results

RT: 34.89
Area: 14812
Amount: 0.098242
Amount Units: pg/ul



Manual Integration Results

RT: 34.89
Area: 11172
Amount: 0.084806
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:50:20
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
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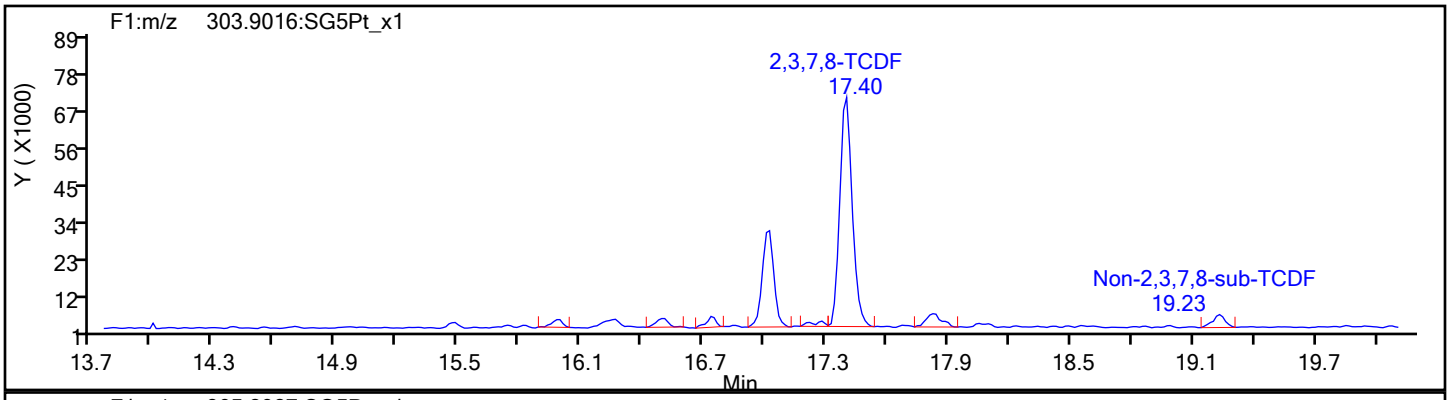
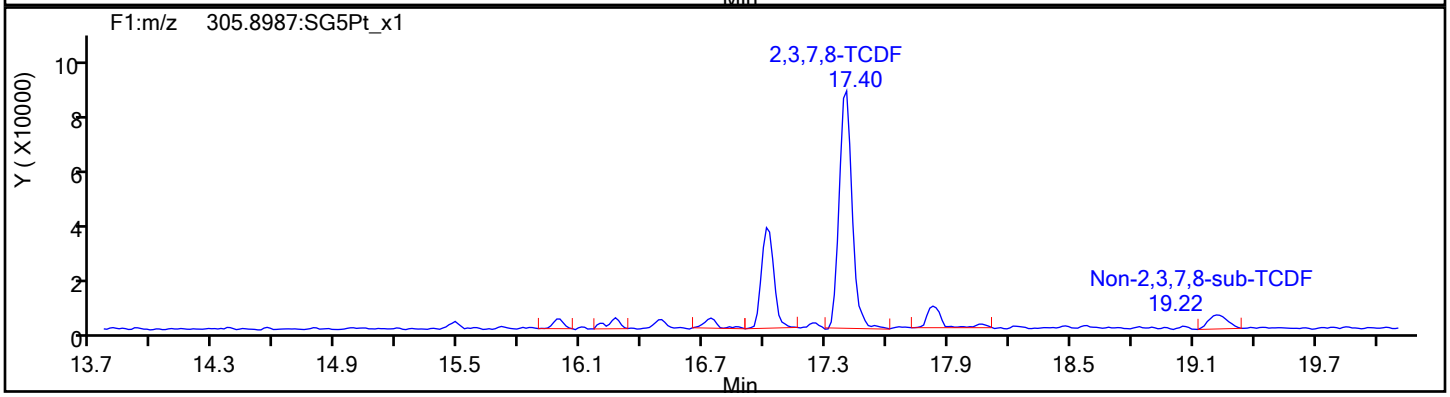
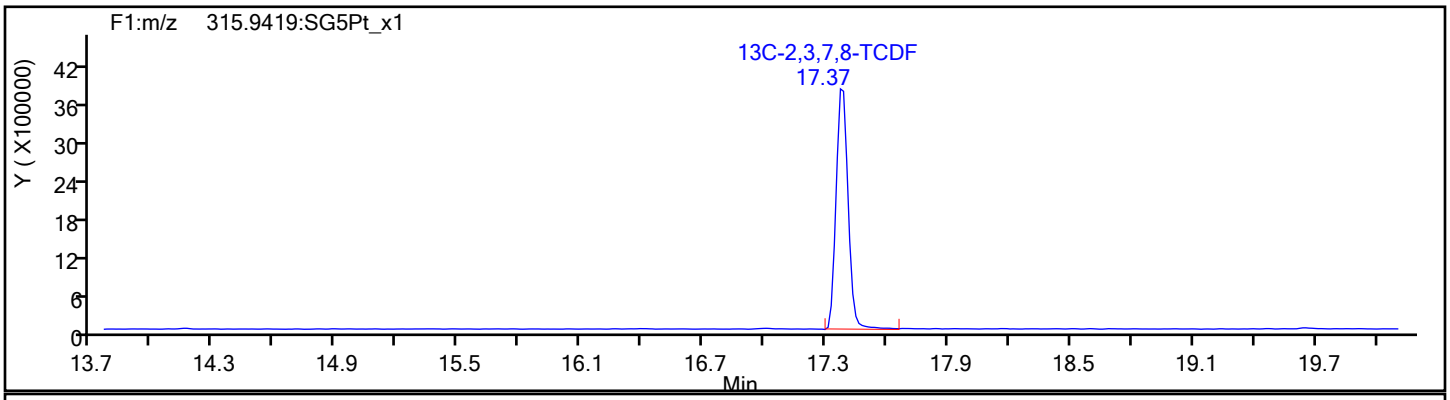
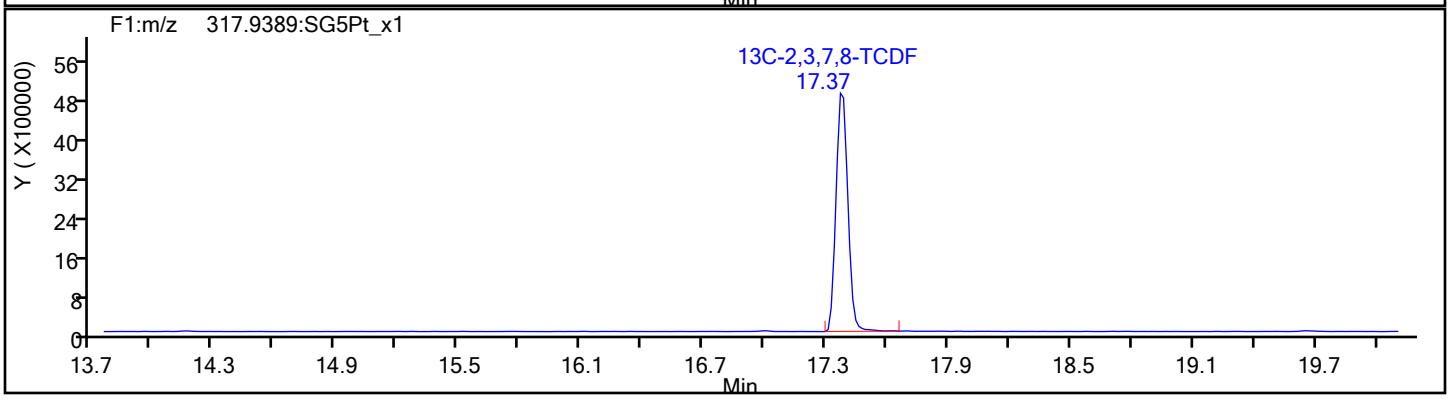
TCDF





TCDF Standards





Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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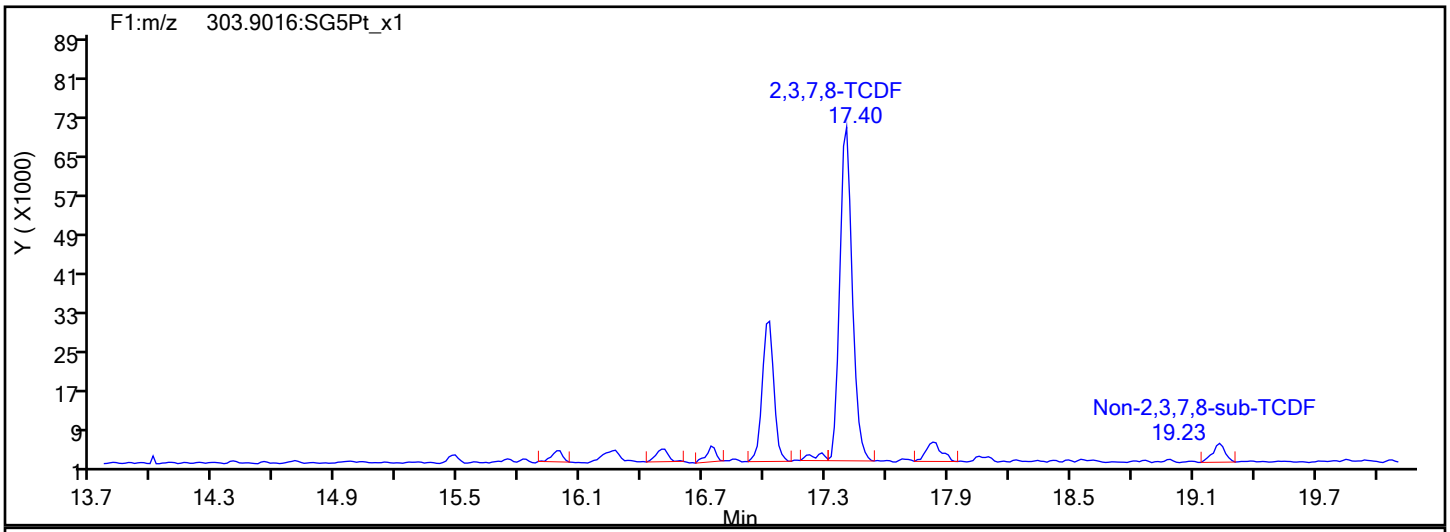
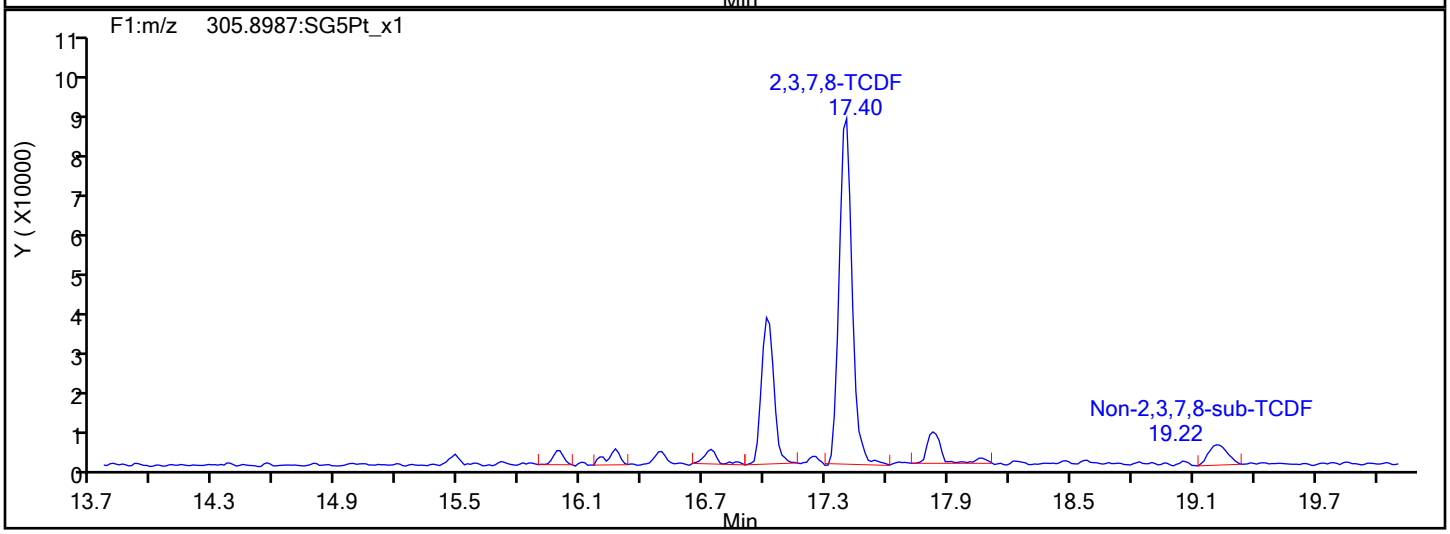
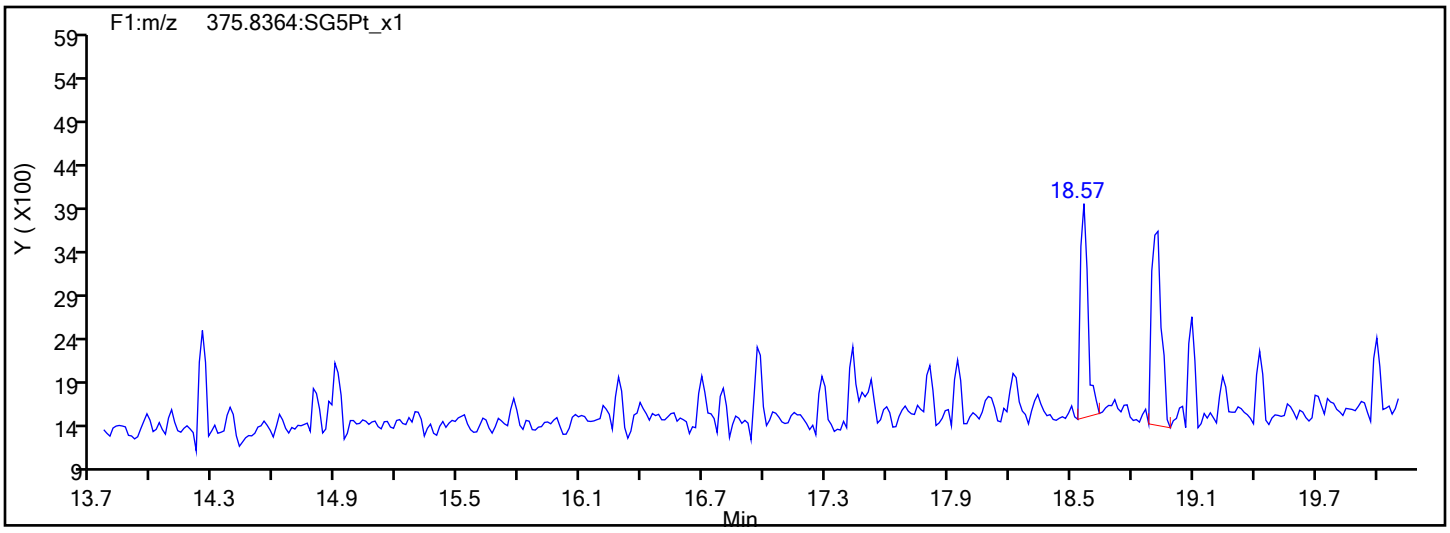
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
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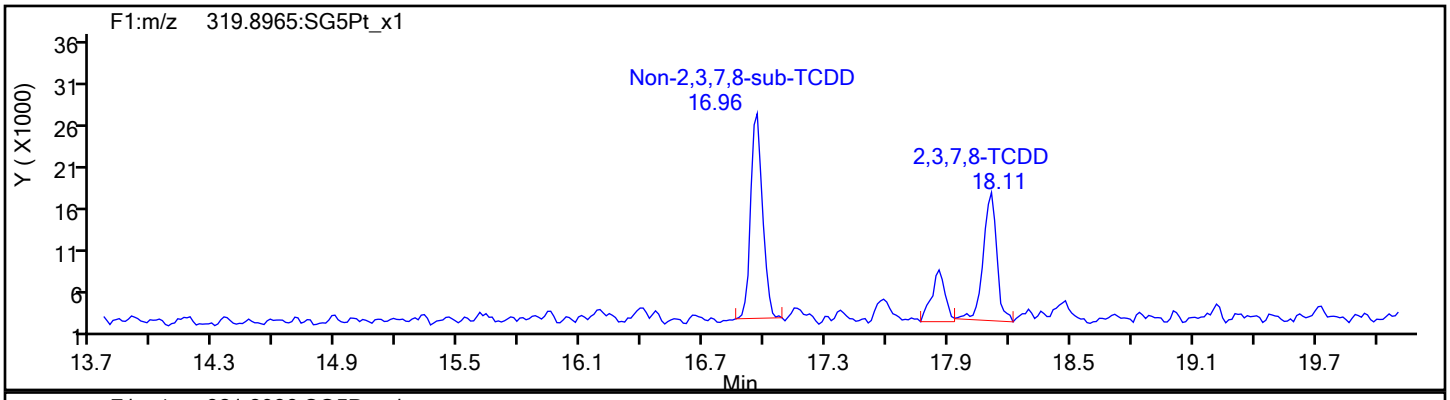
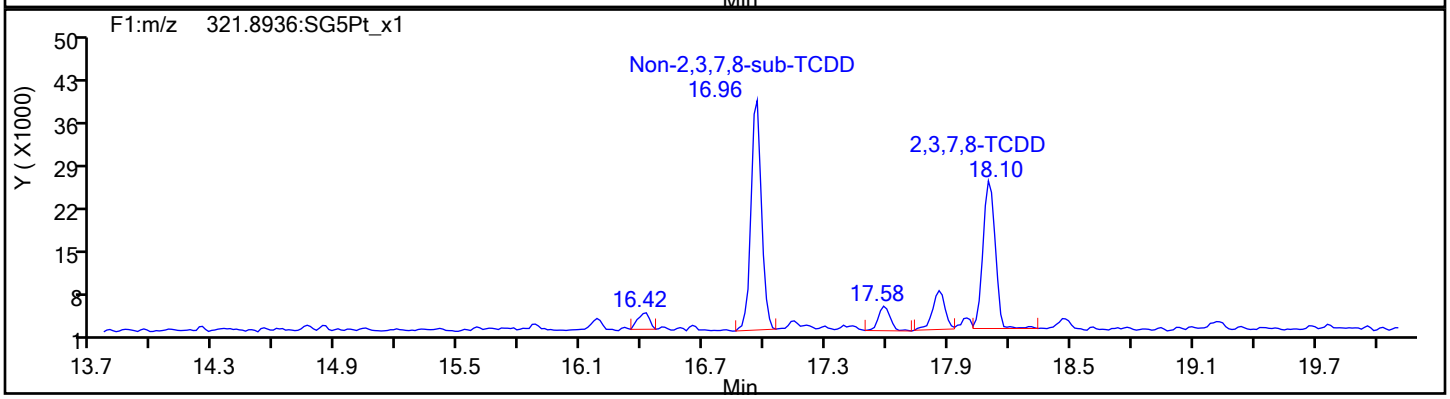
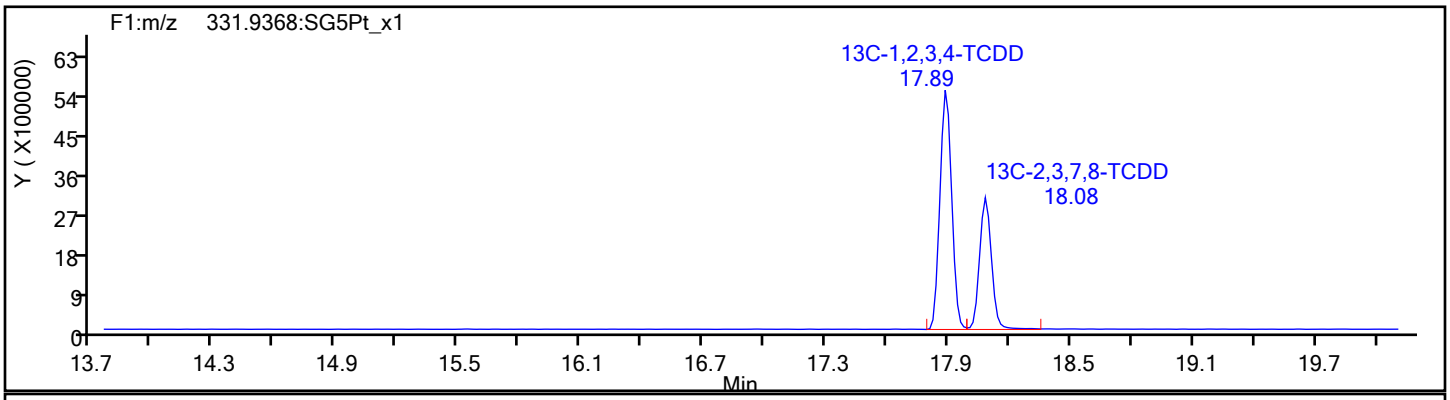
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

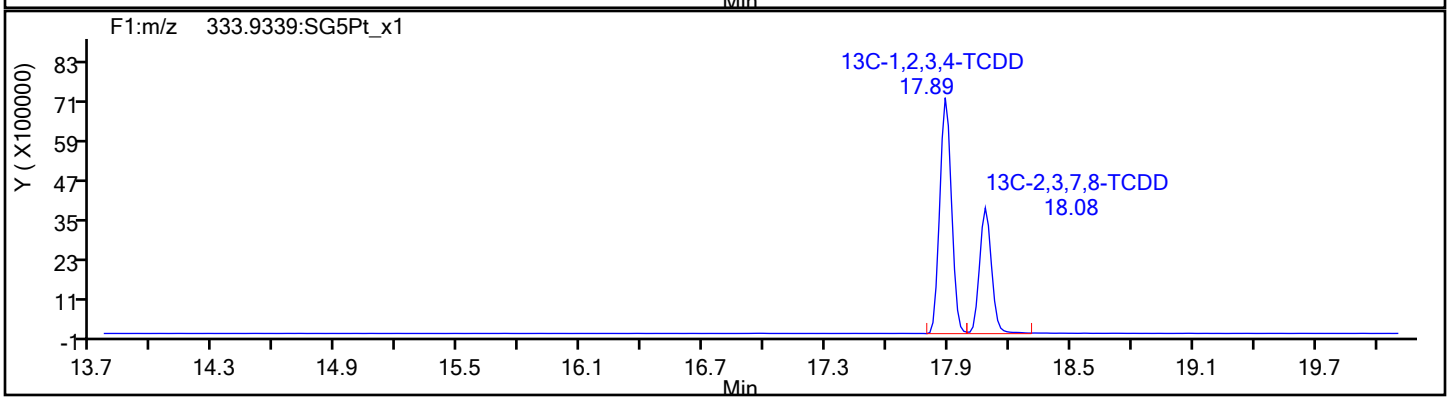
TCDD





TCDD Standards



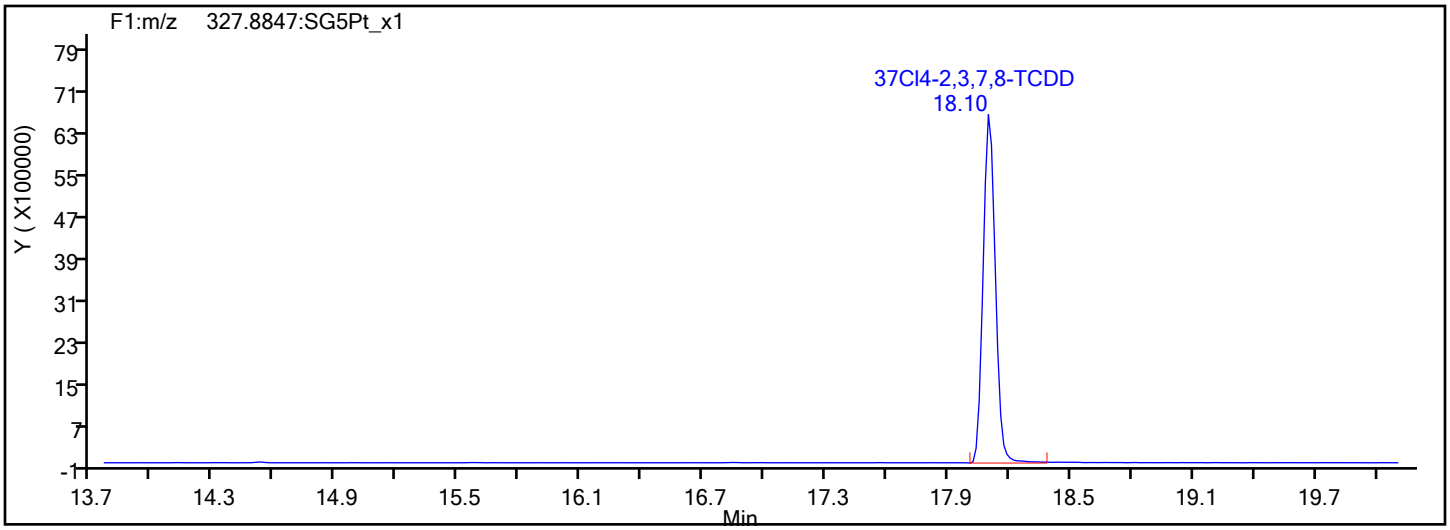


Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

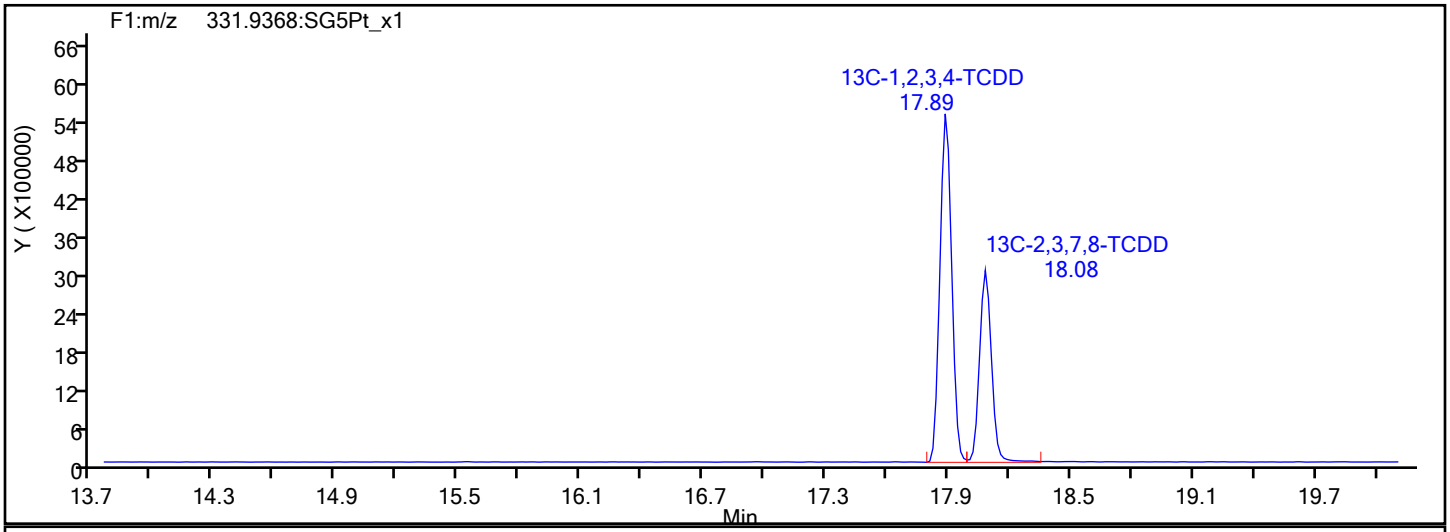
Eurofins TestAmerica, Sacramento

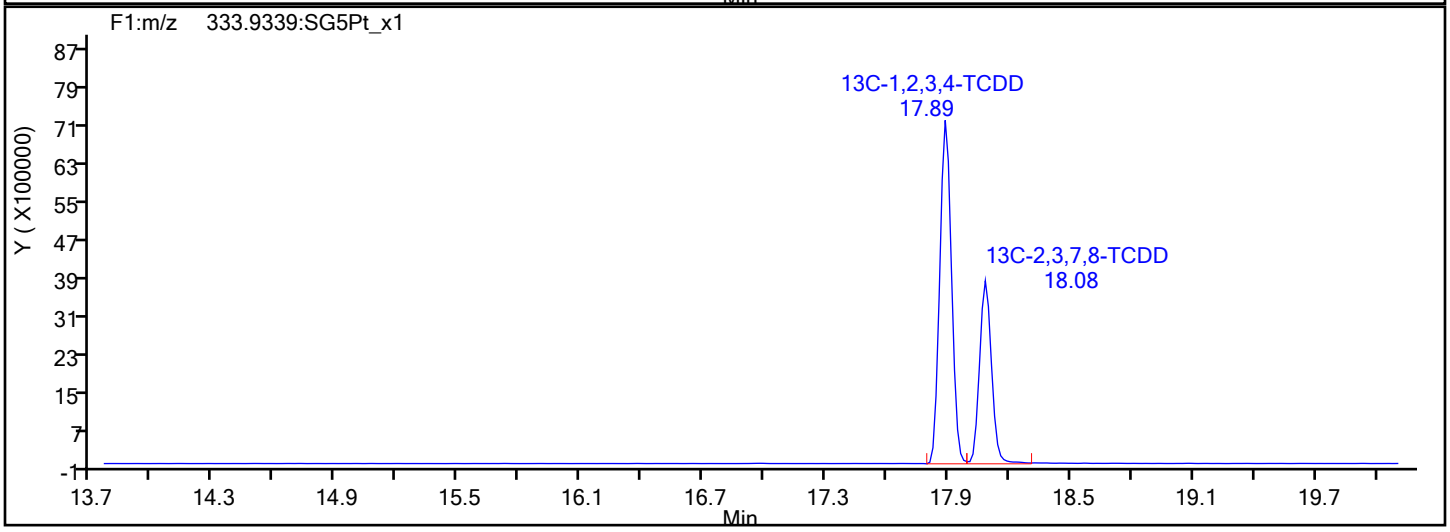
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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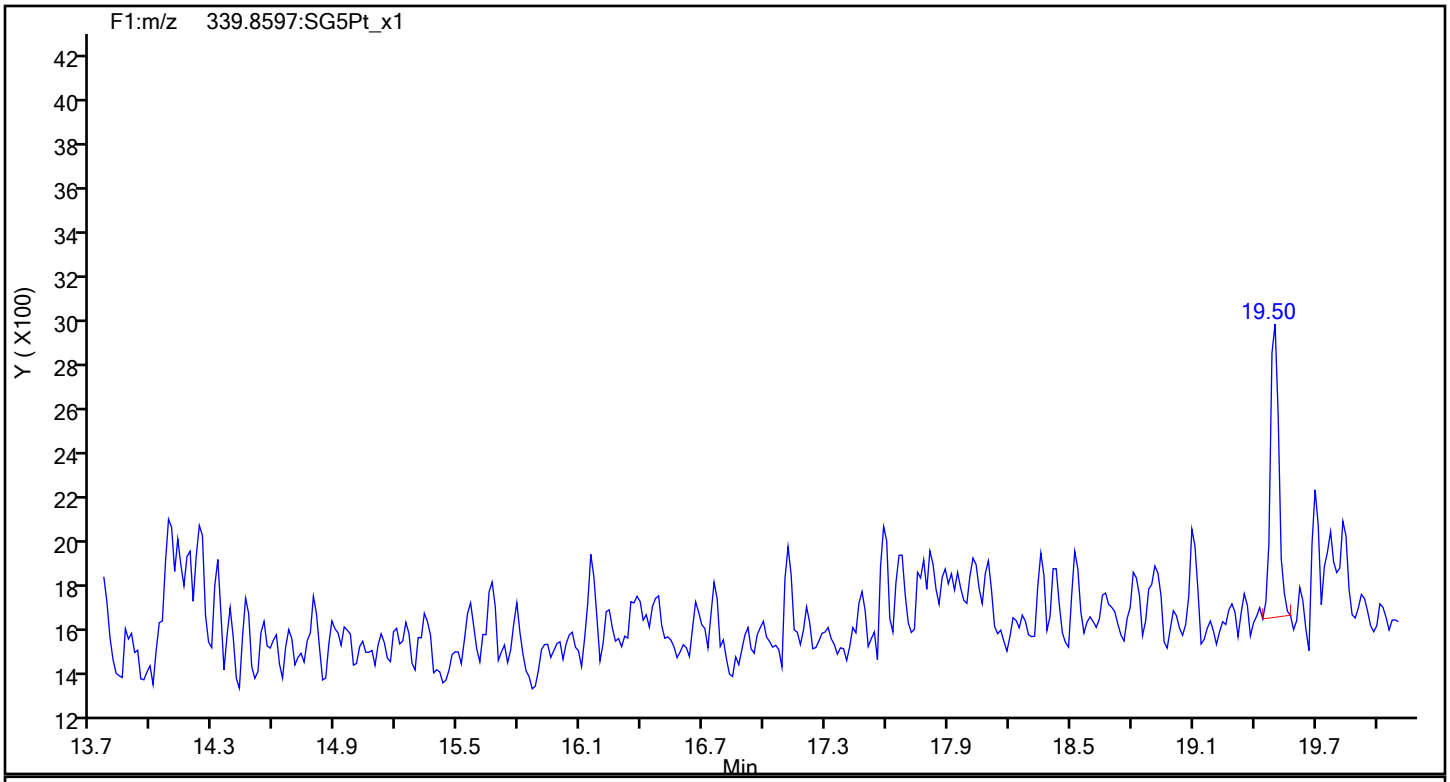
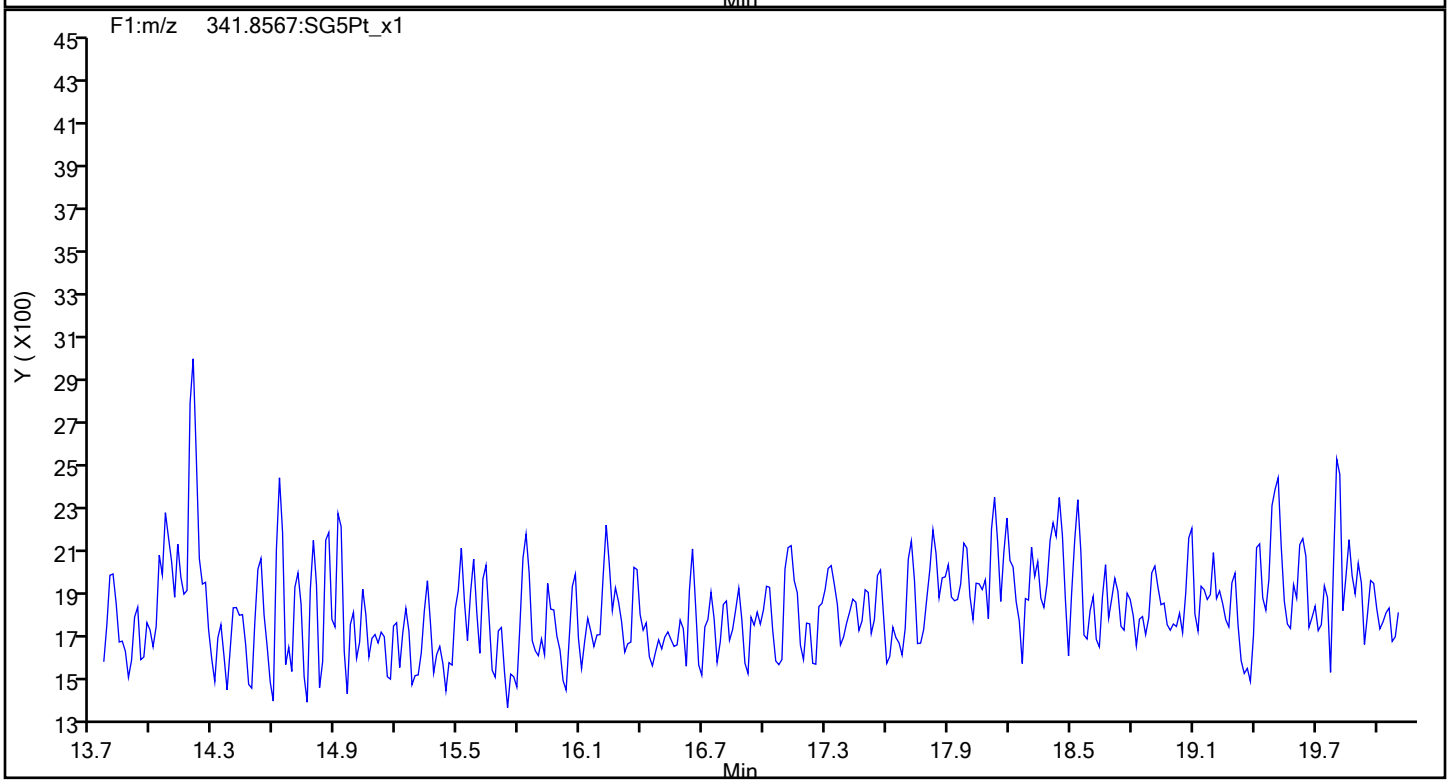
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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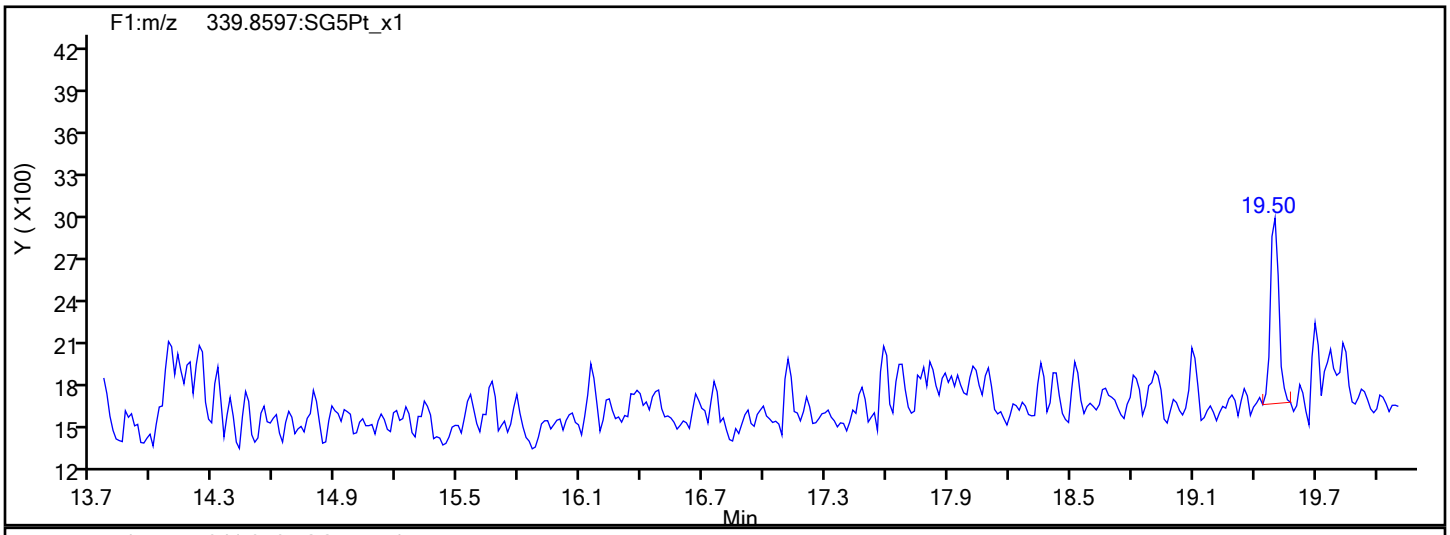
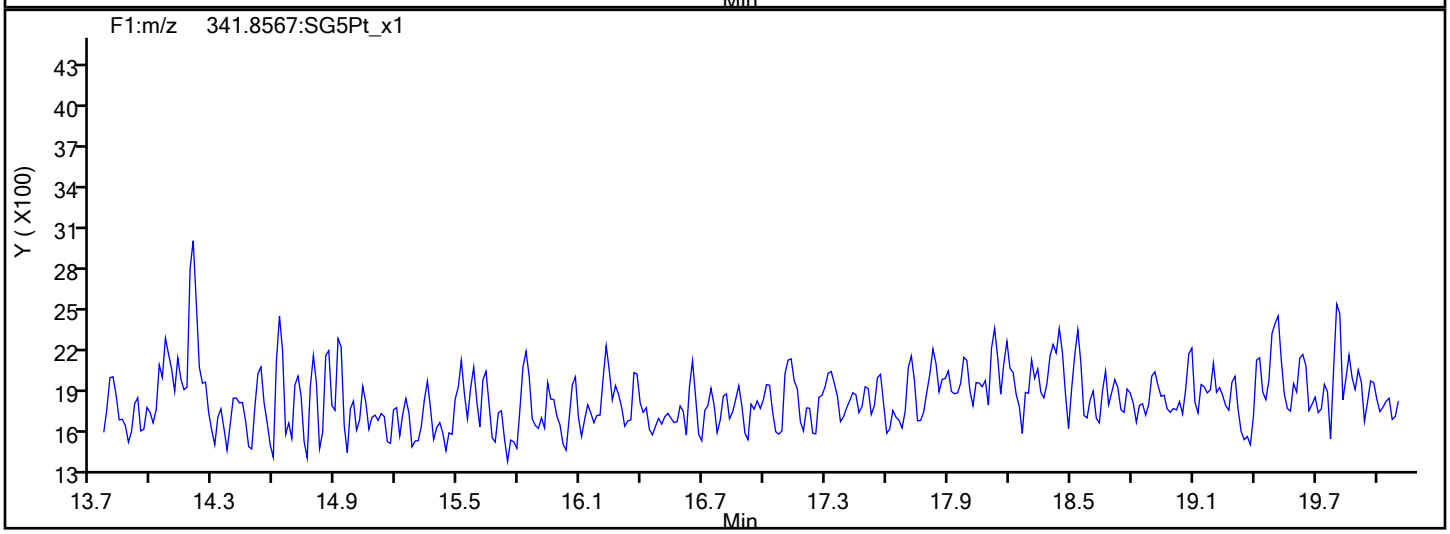
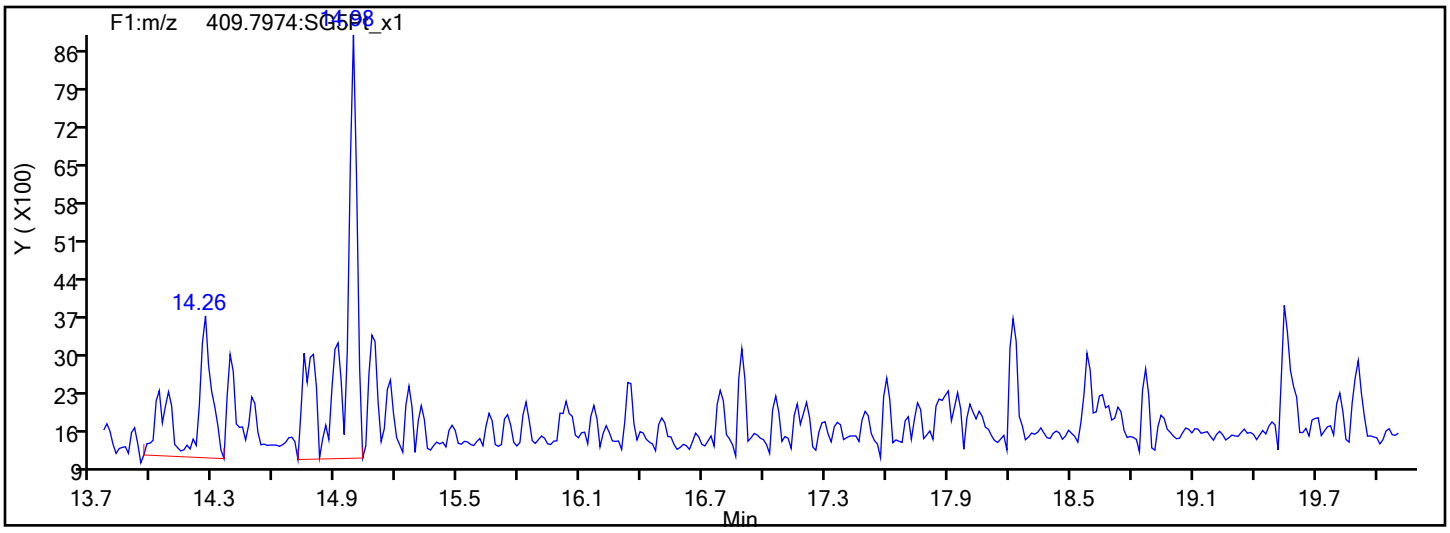
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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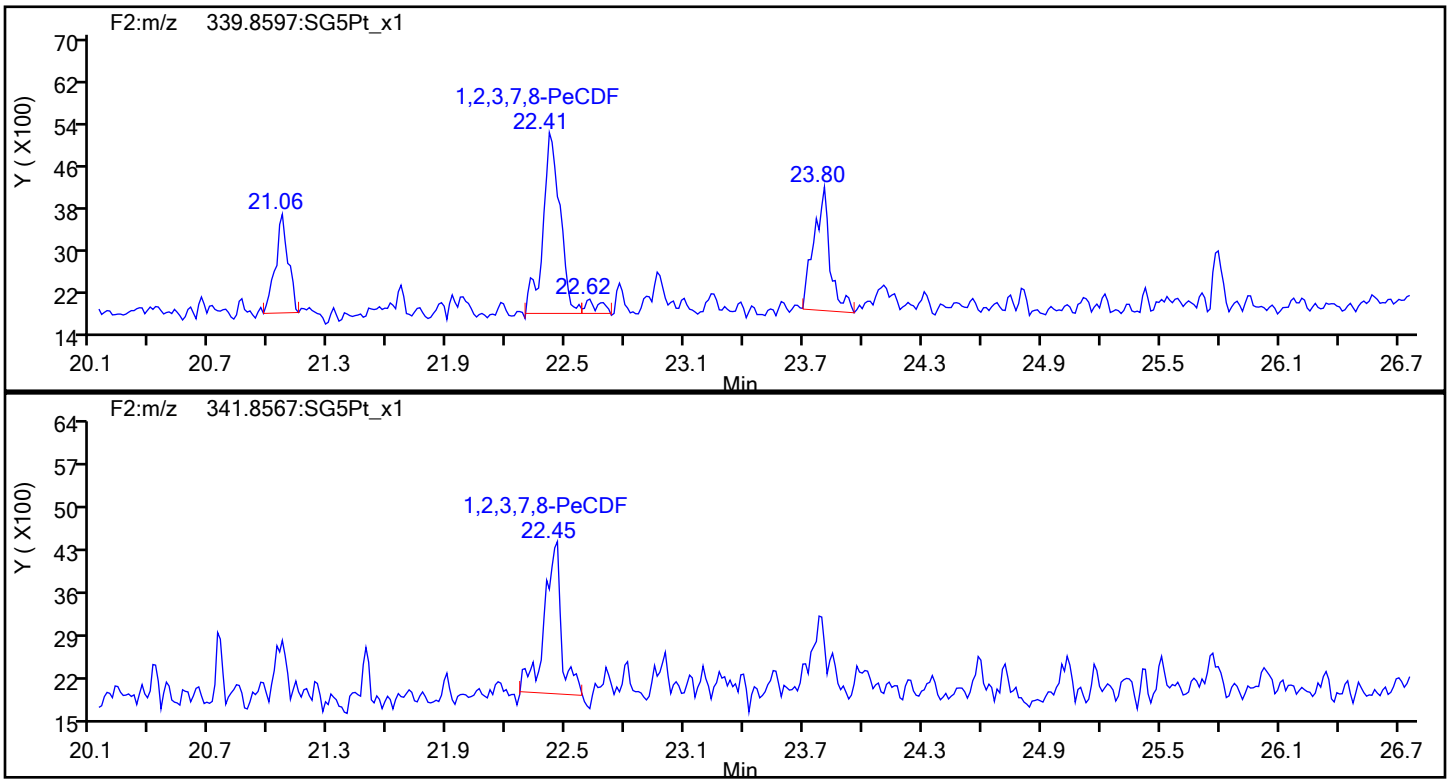
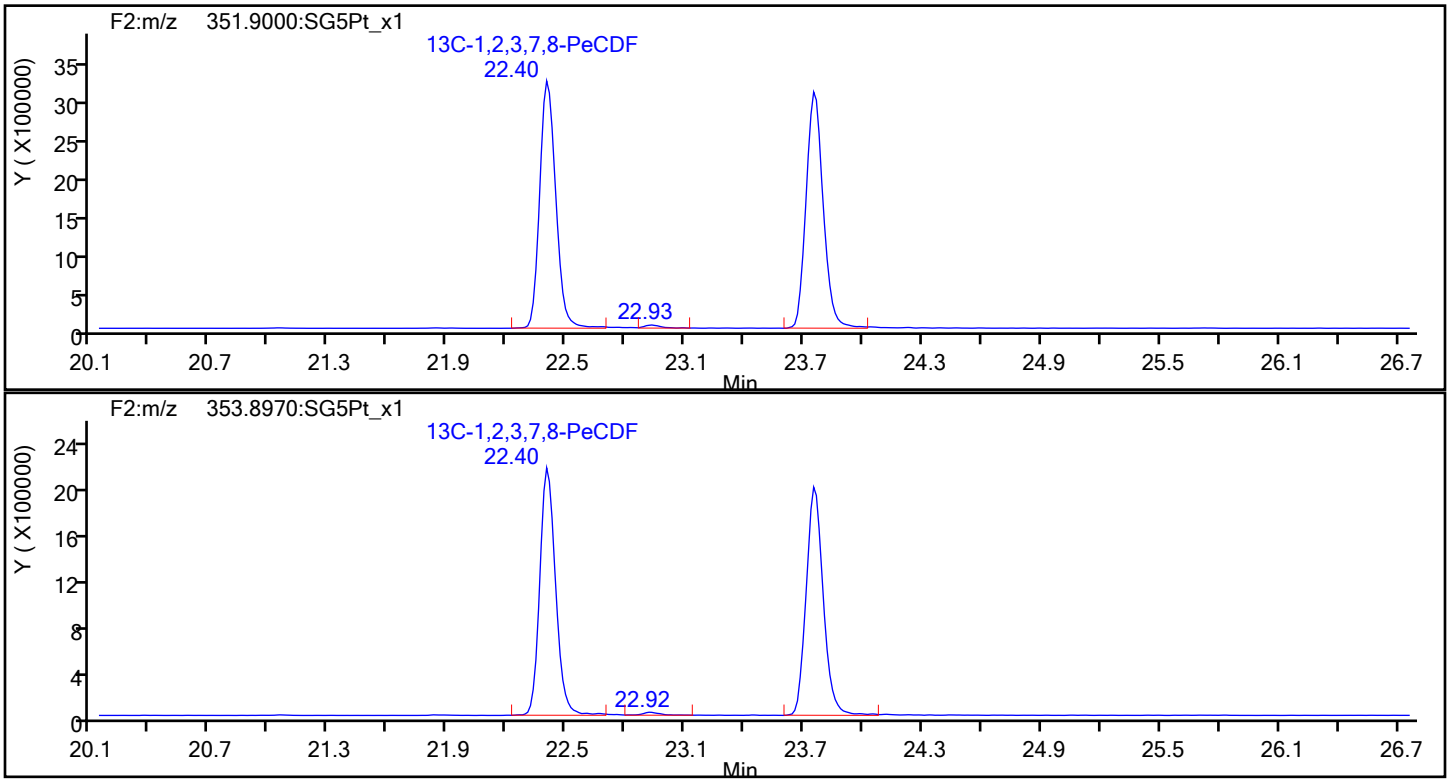
PeCDF



PeCDF Standards



Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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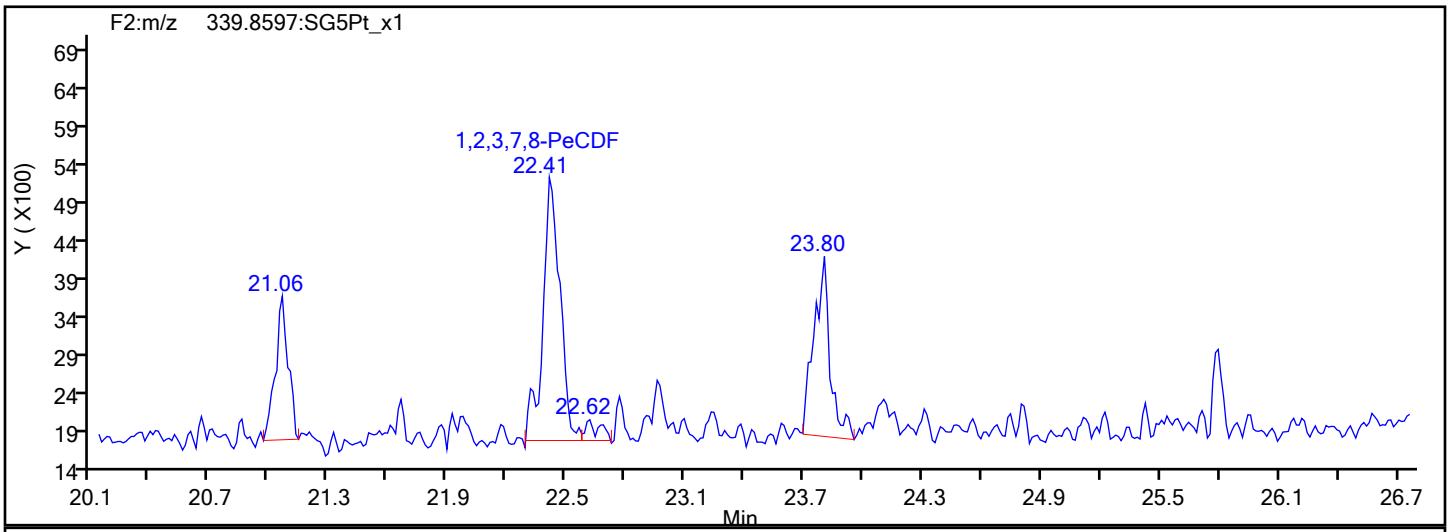
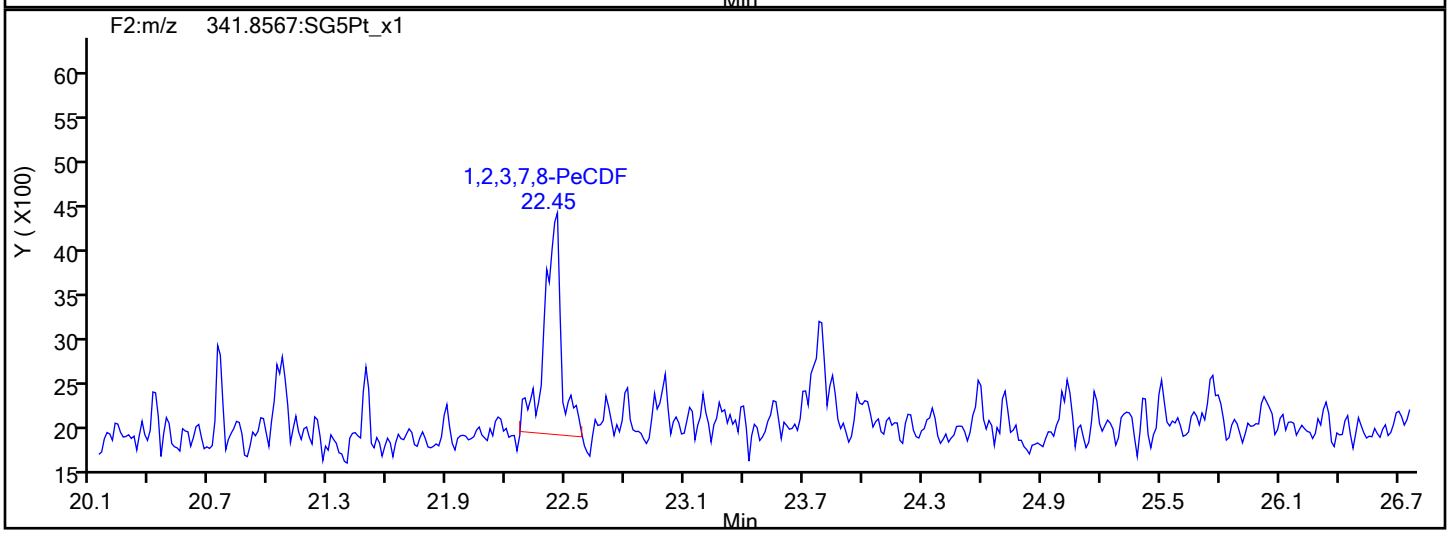
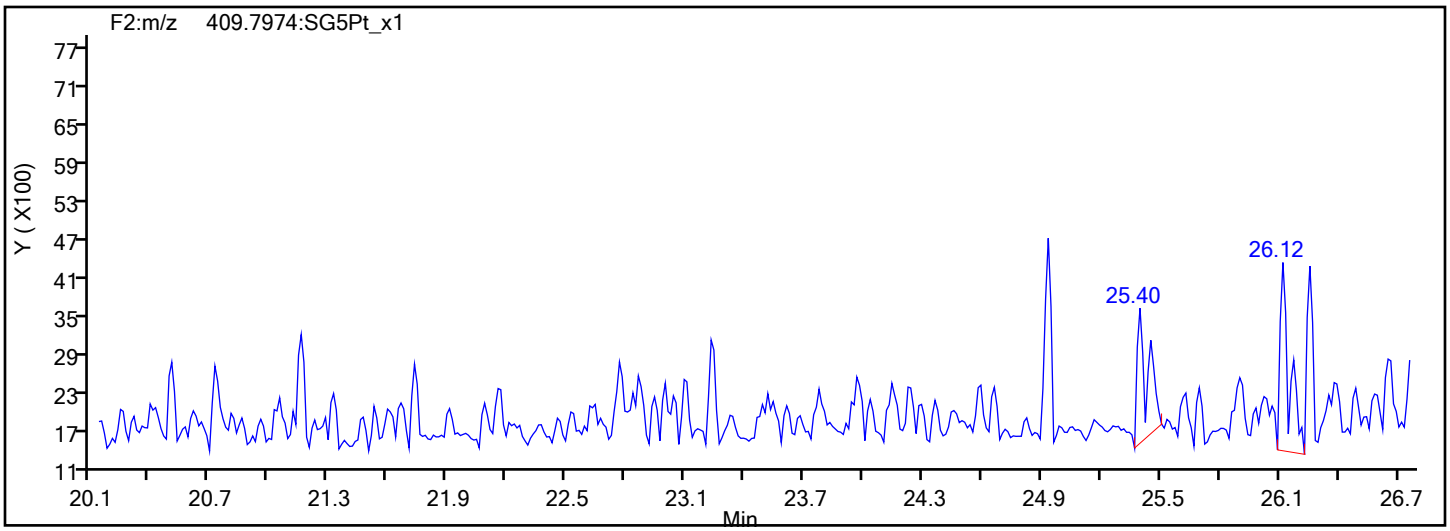
PeCDF





PeCDF Interference Mass



Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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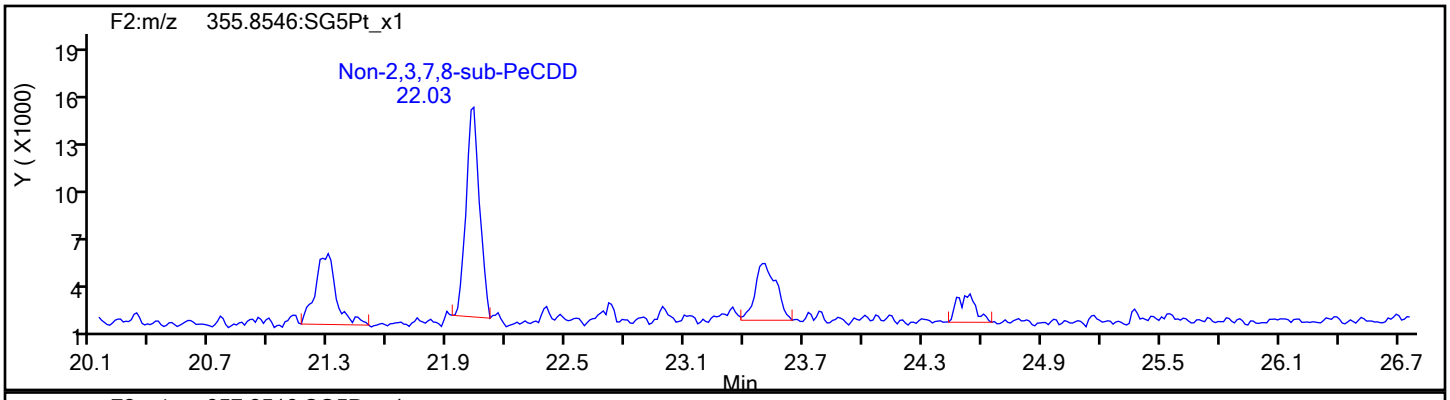
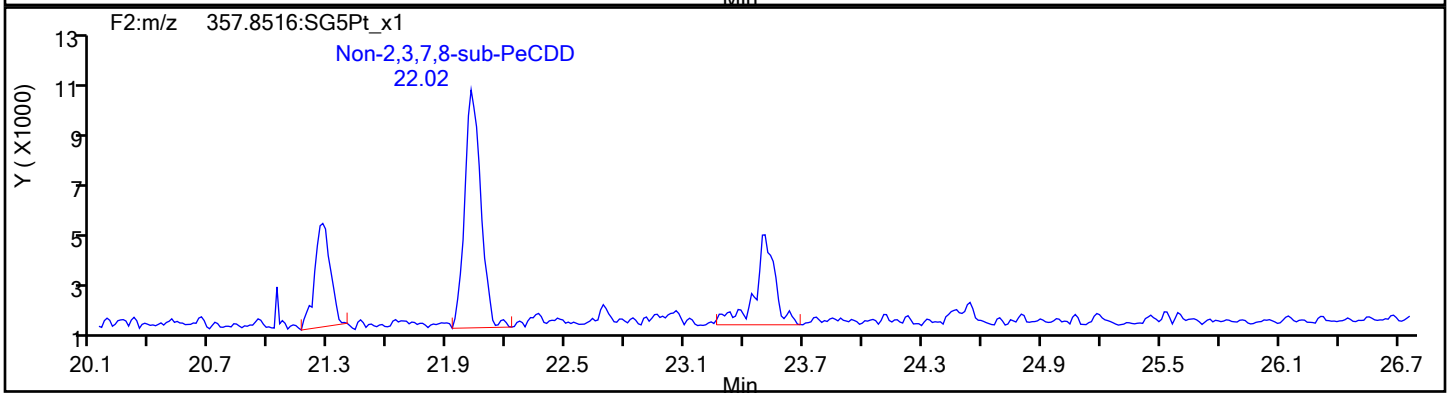
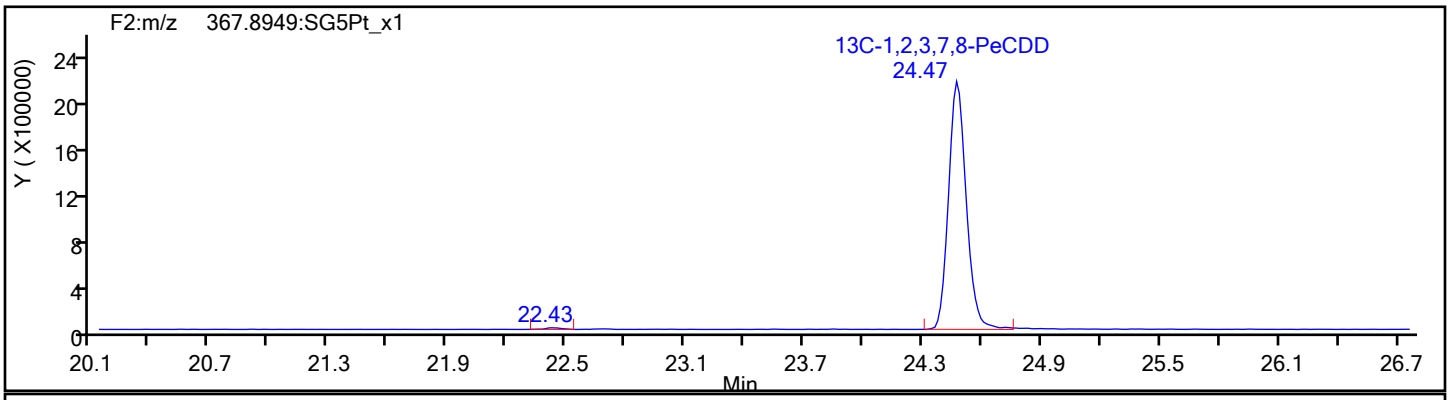
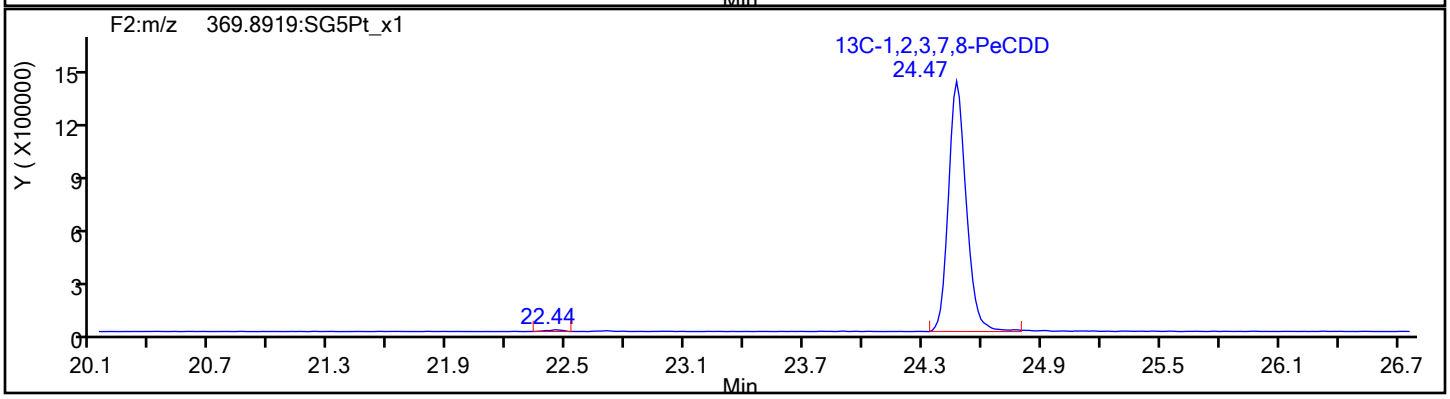
PeCDD





PeCDD Standards





Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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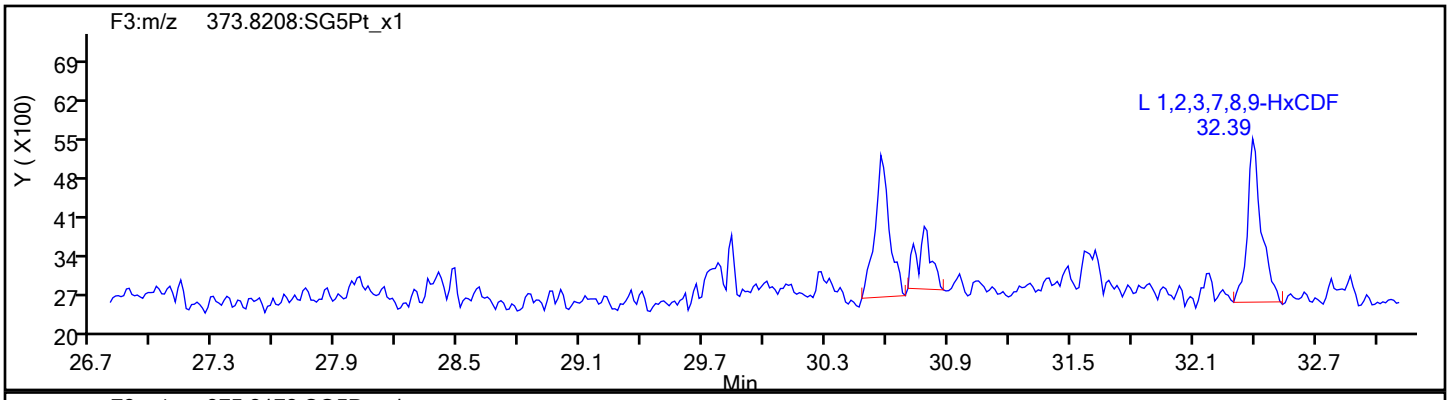
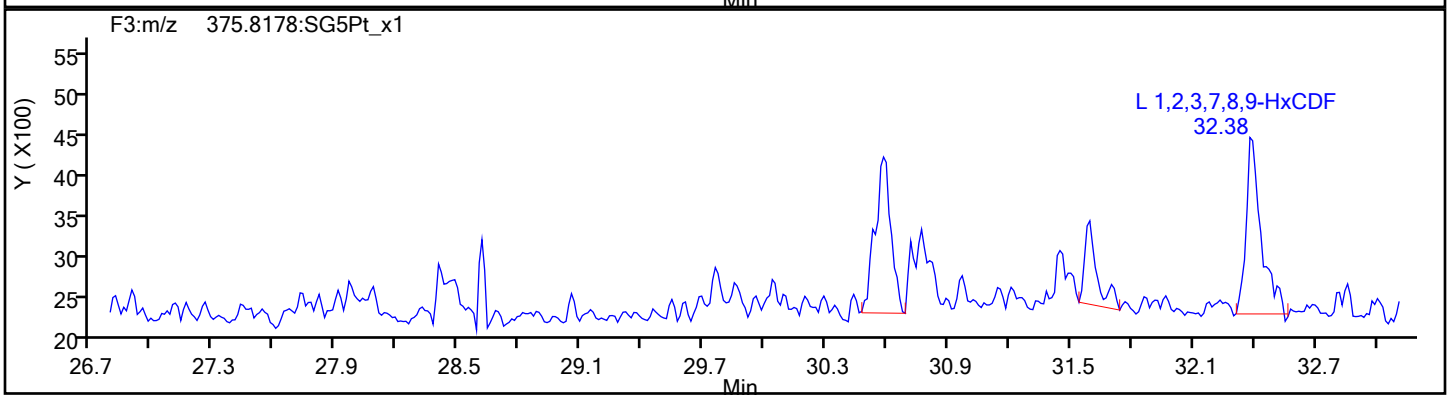
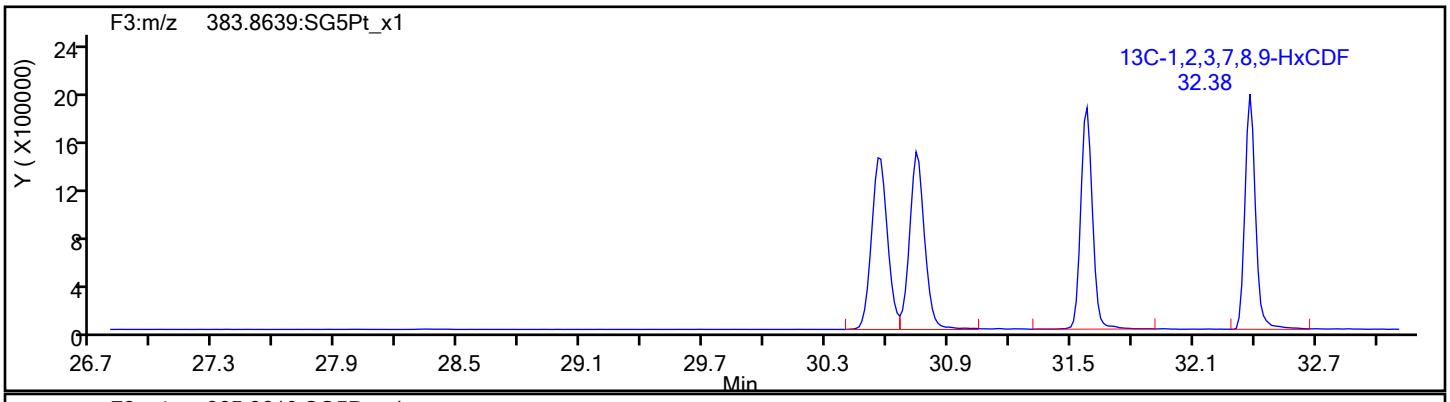
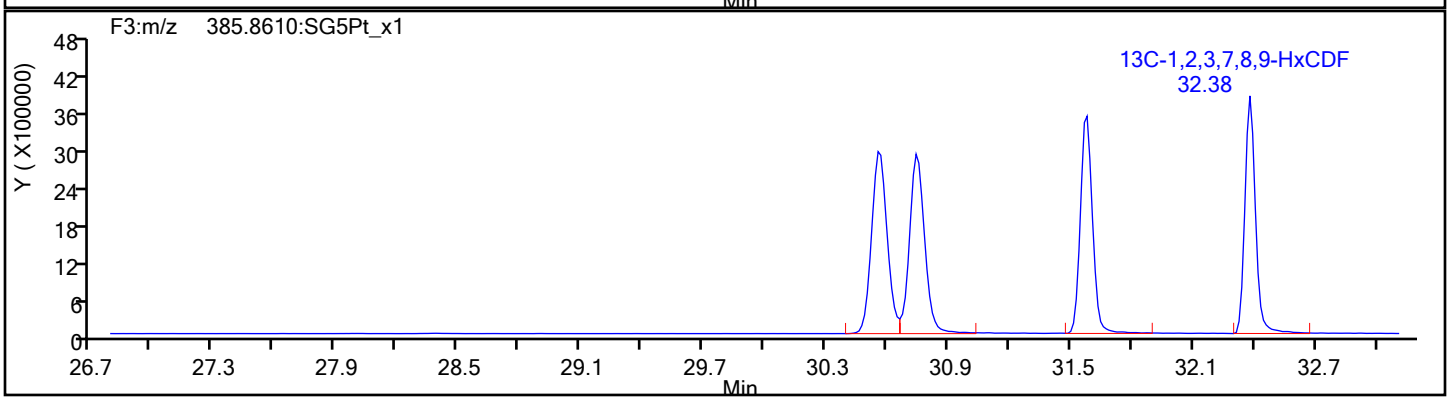
HxCDF





HxCDF Standards





Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
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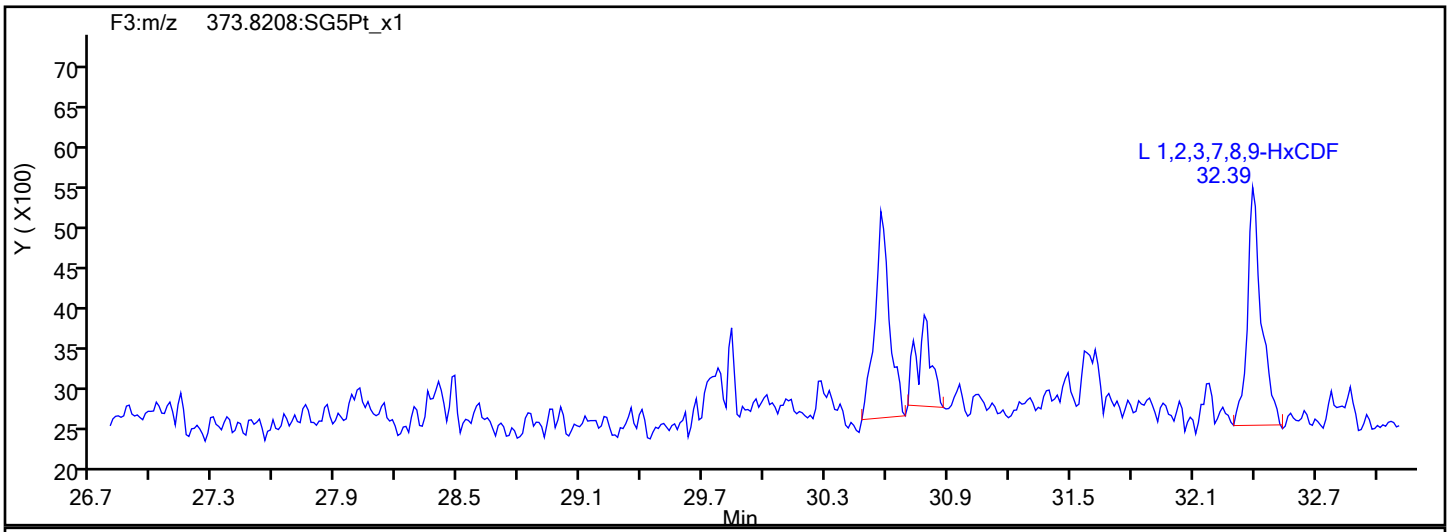
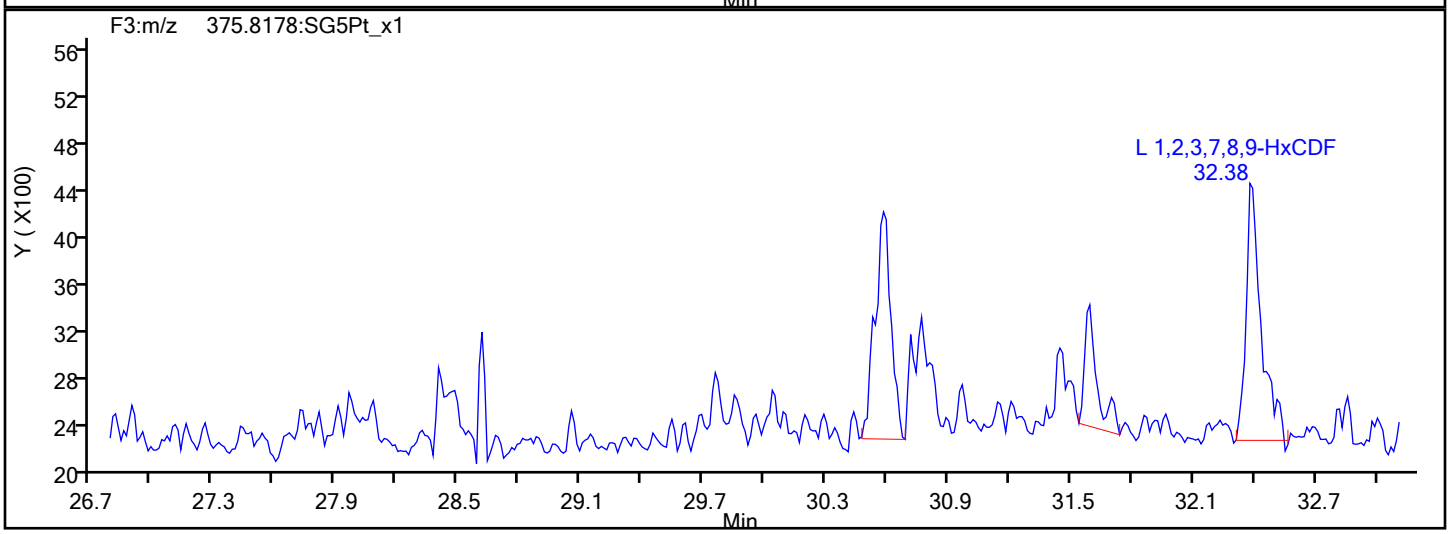
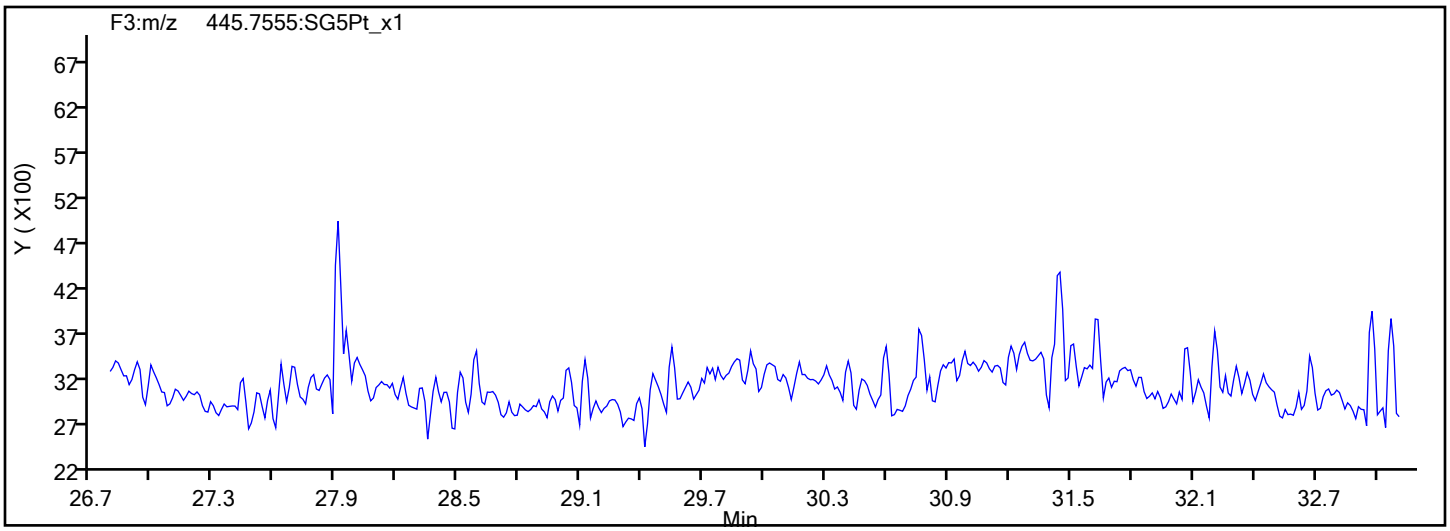
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

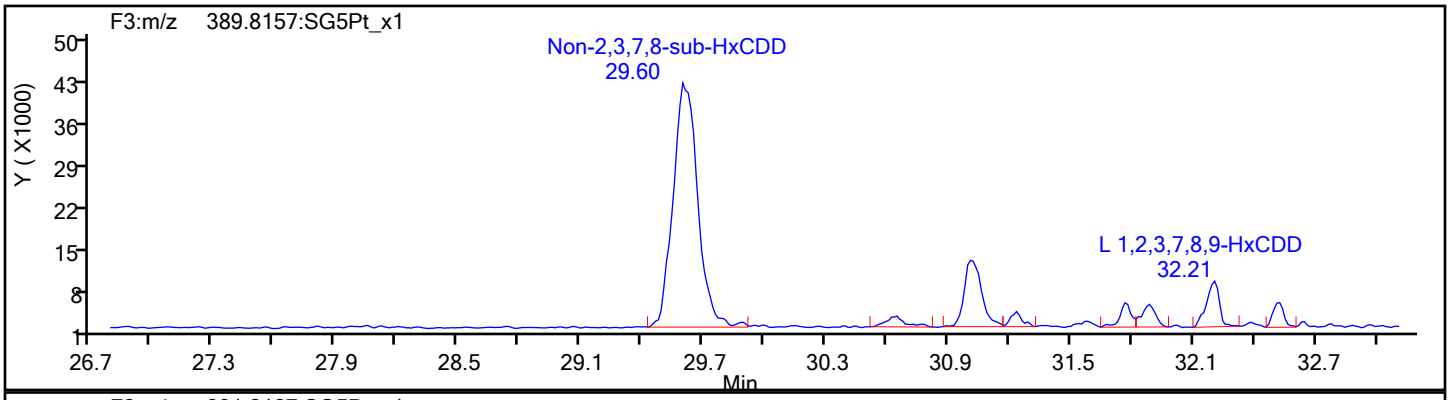


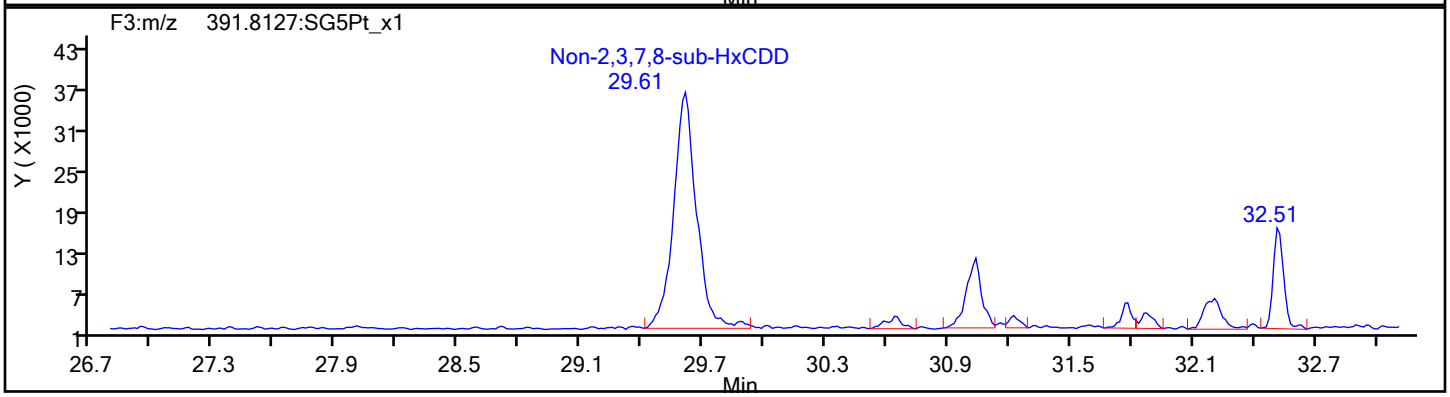
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

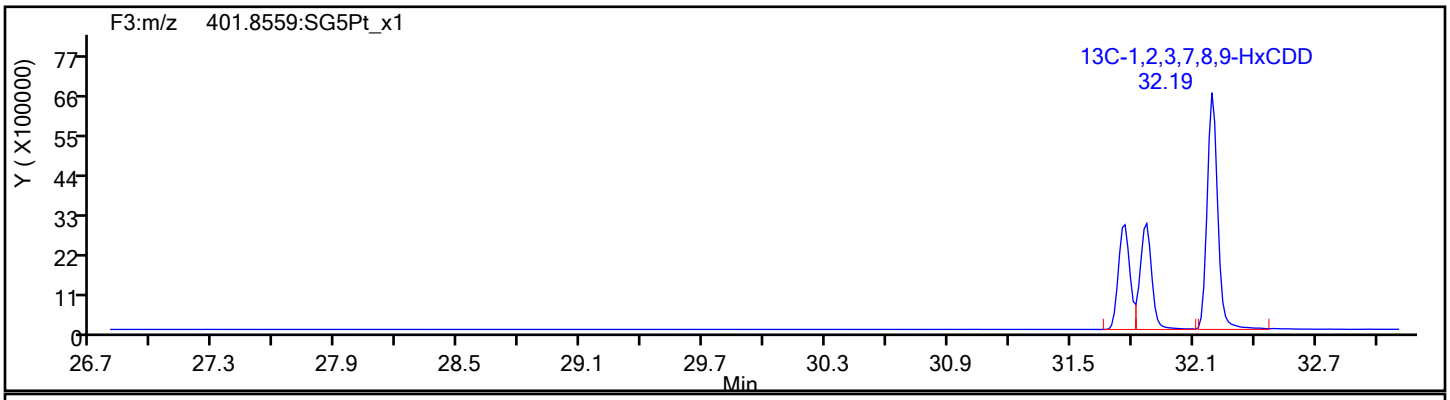
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

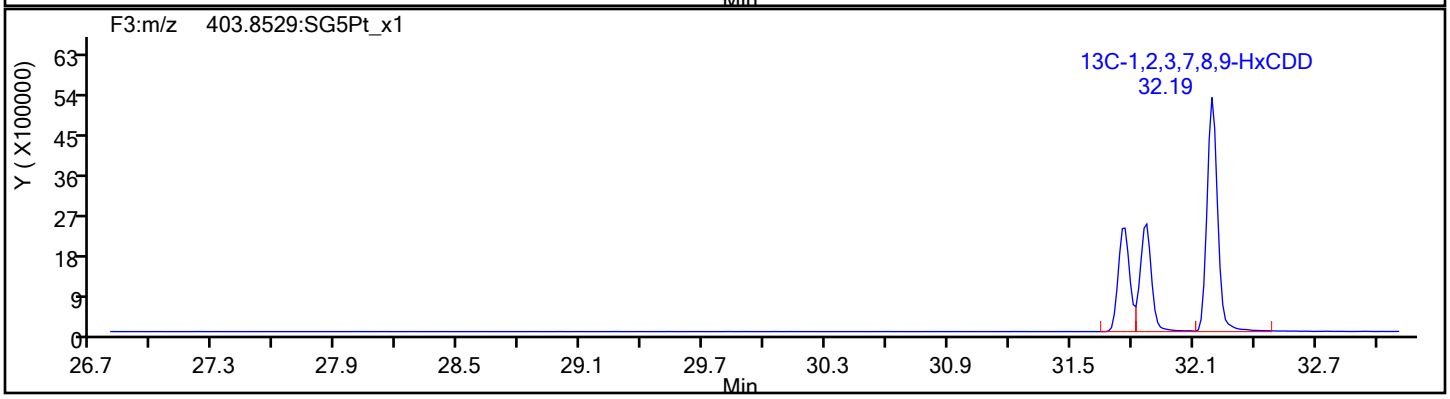
HxCDD





HxCDD Standards



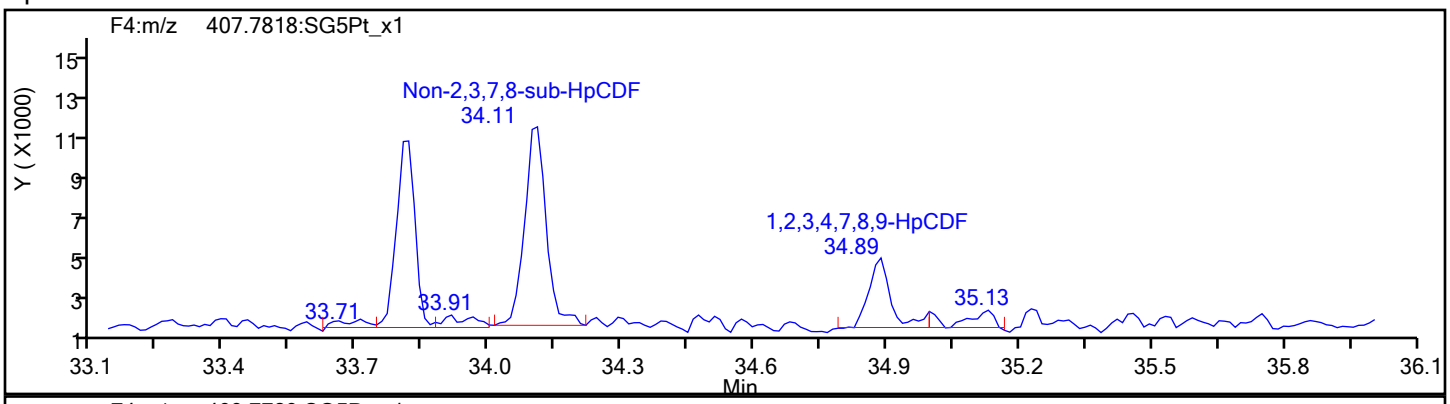


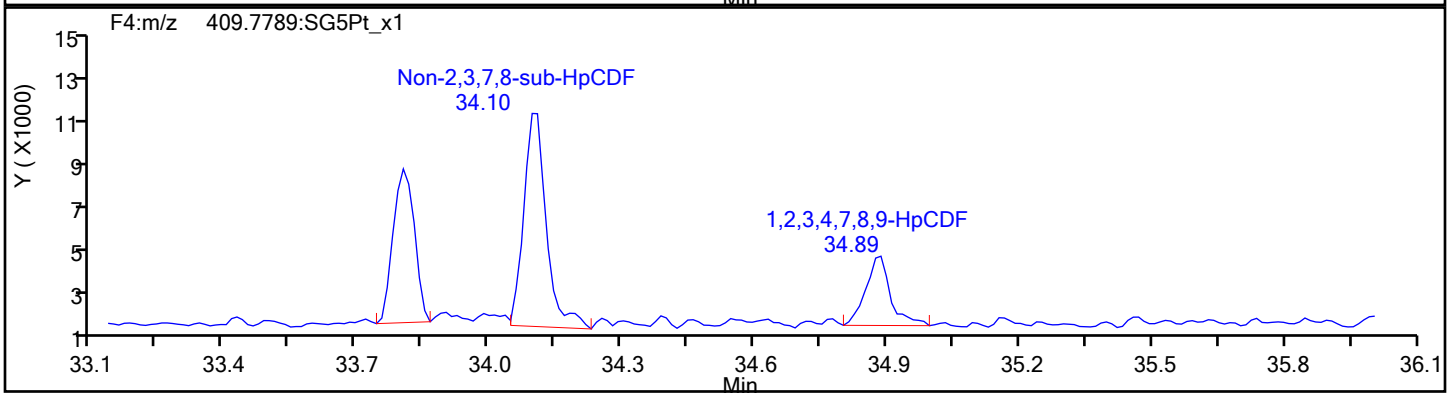
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

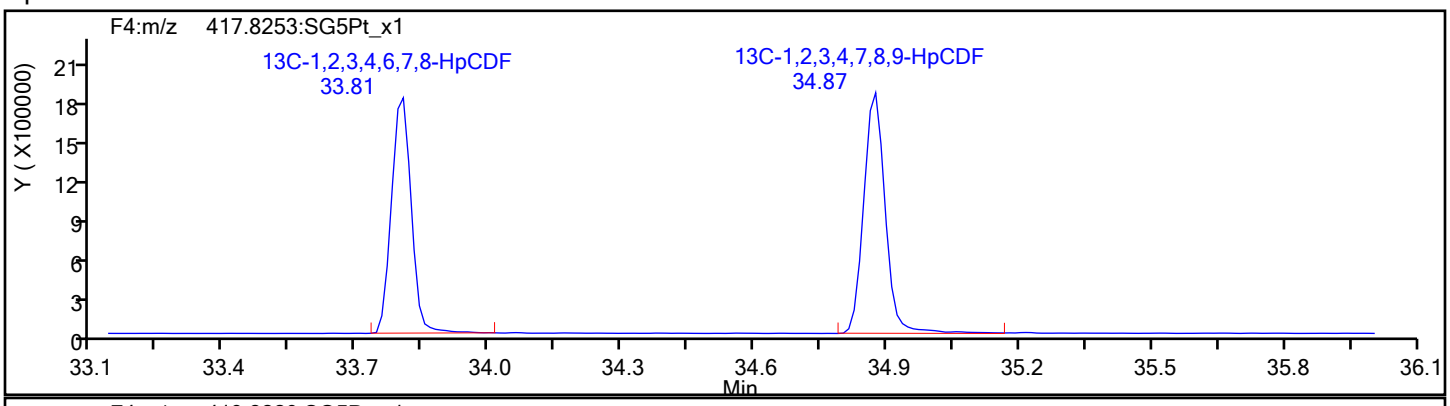
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

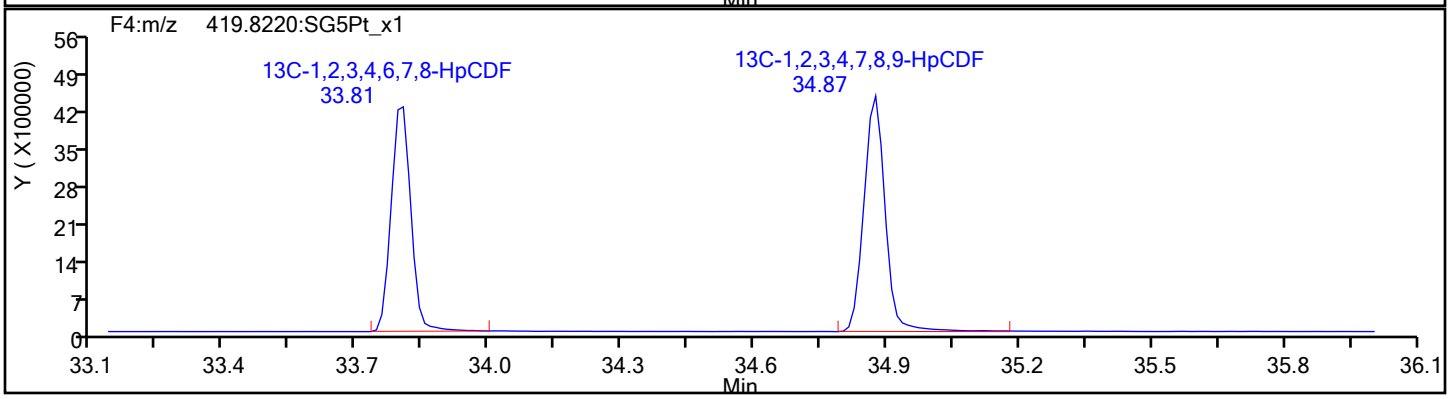
HpCDF





HpCDF Standards



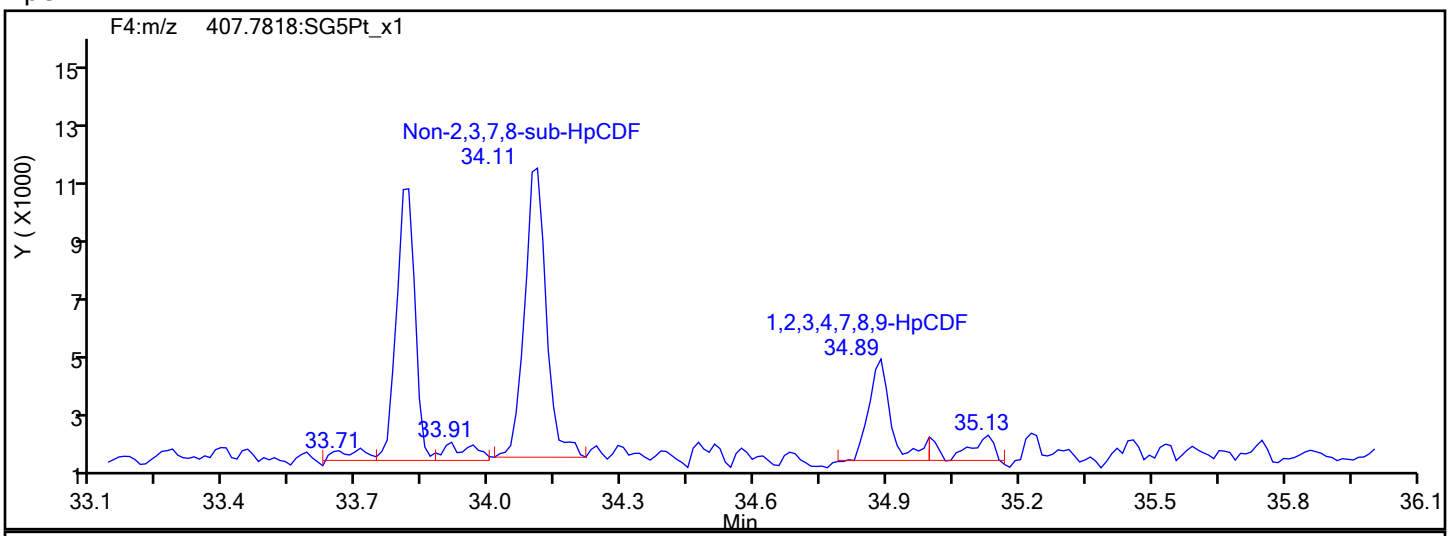


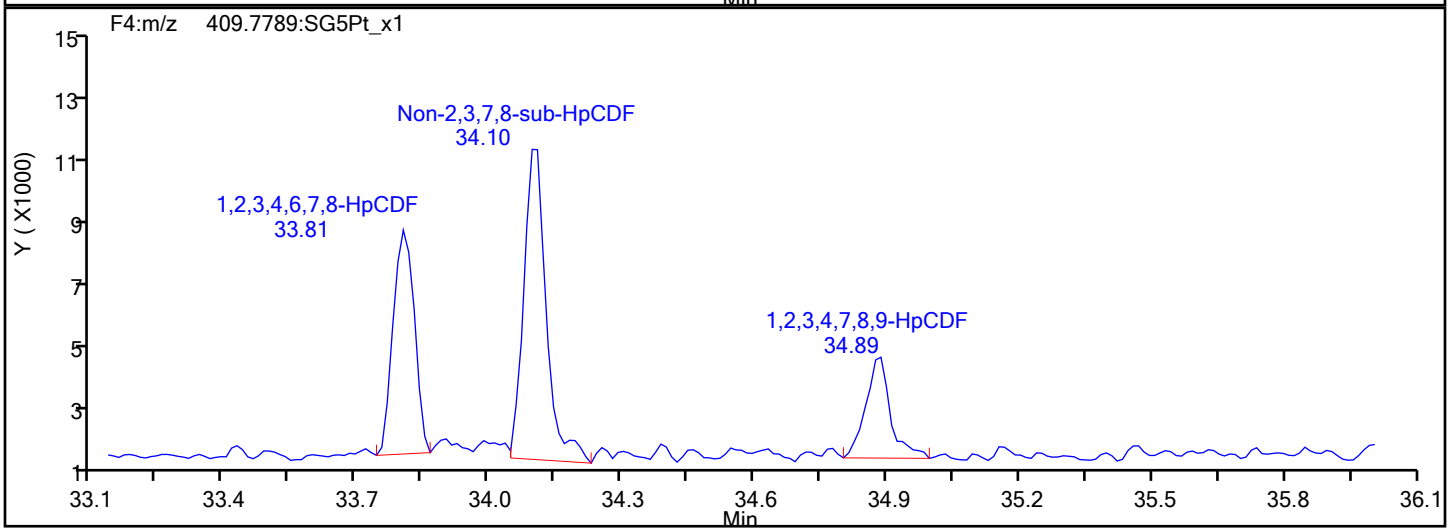
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

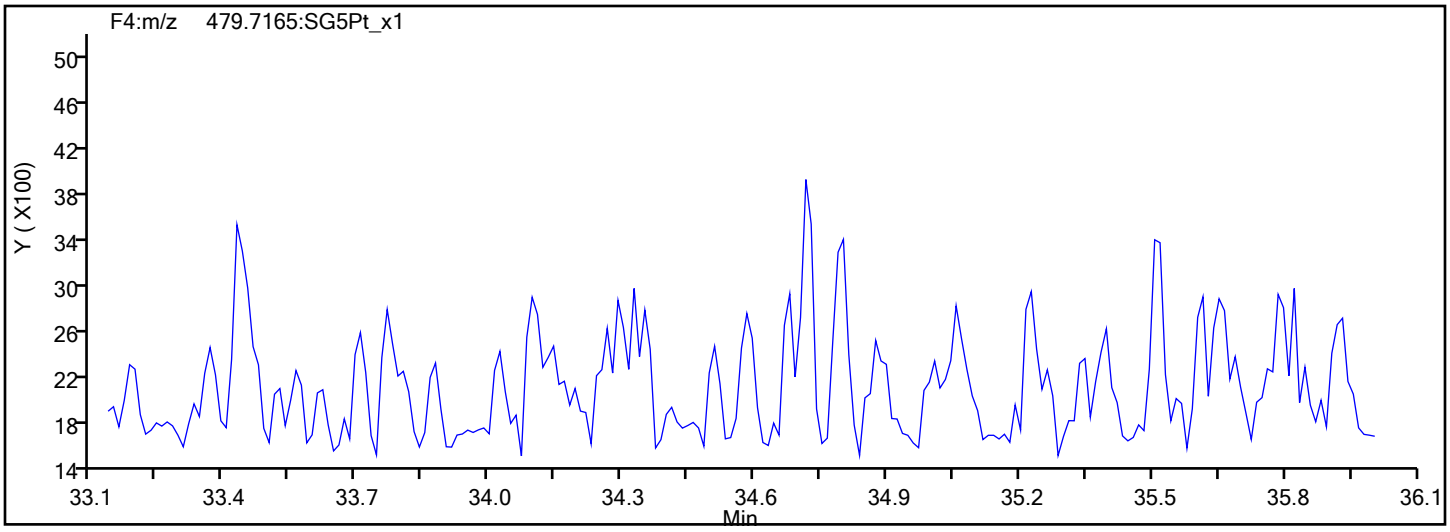
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

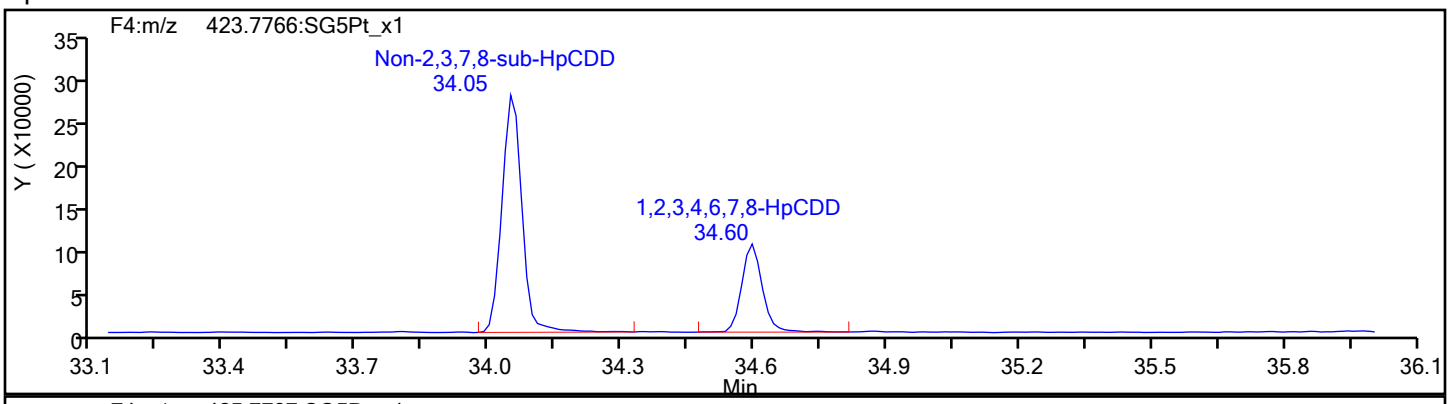


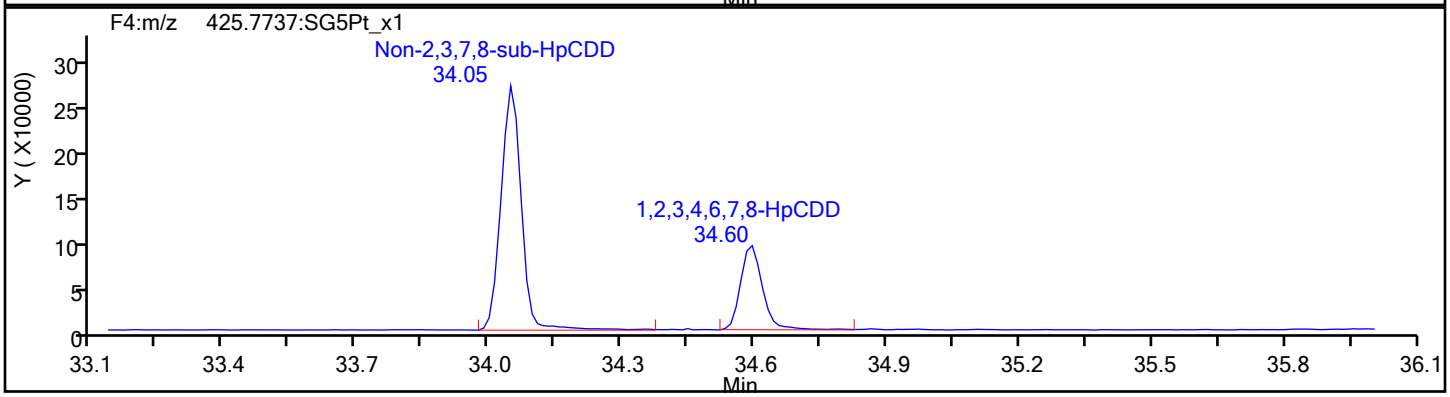
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

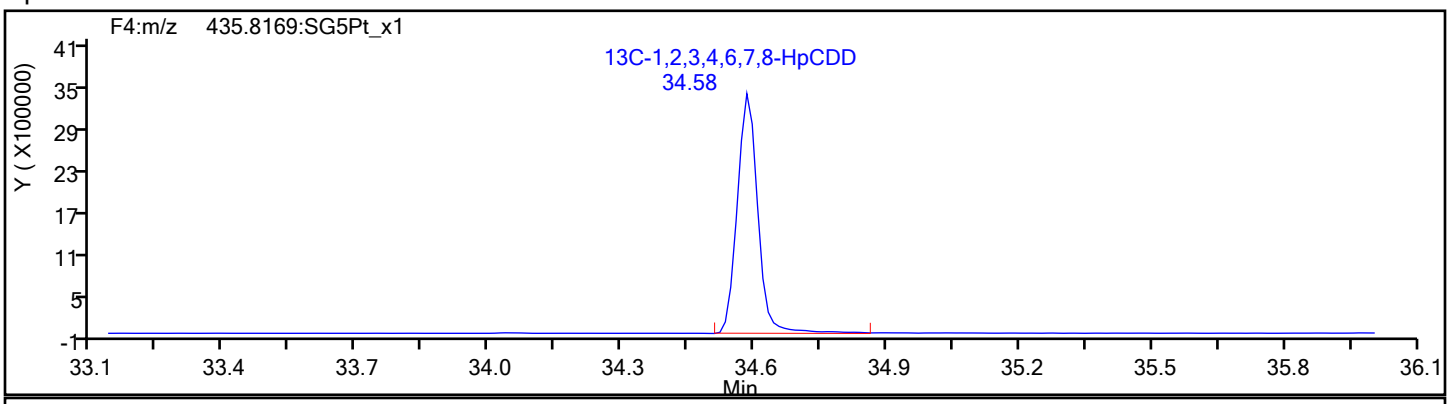
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

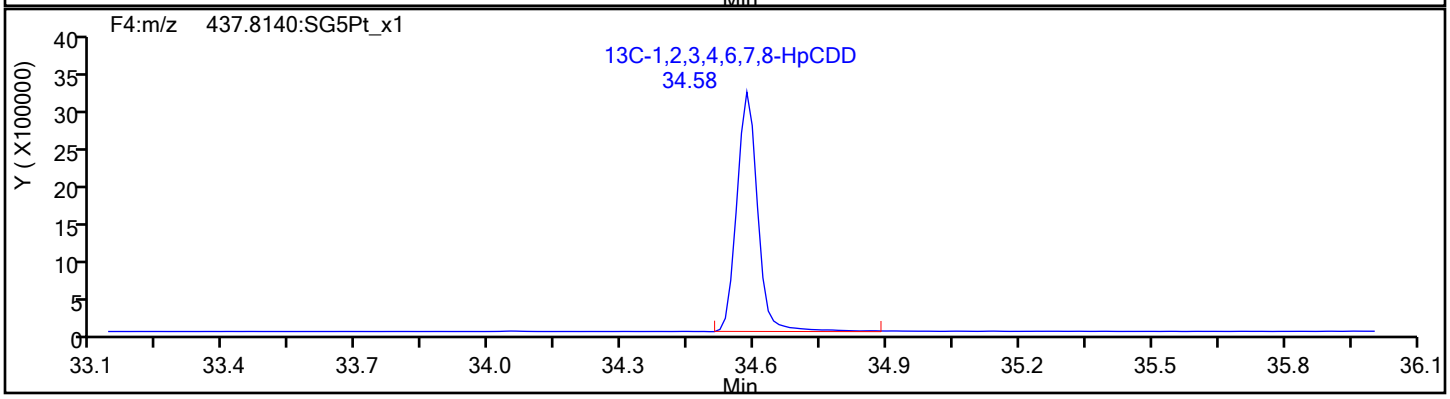
HpCDD





HpCDD Standards



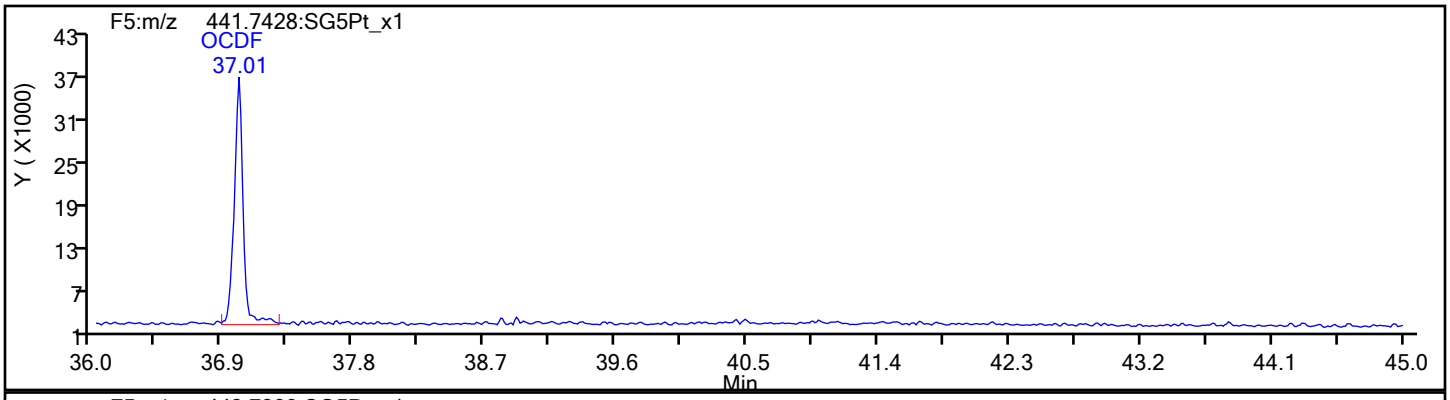


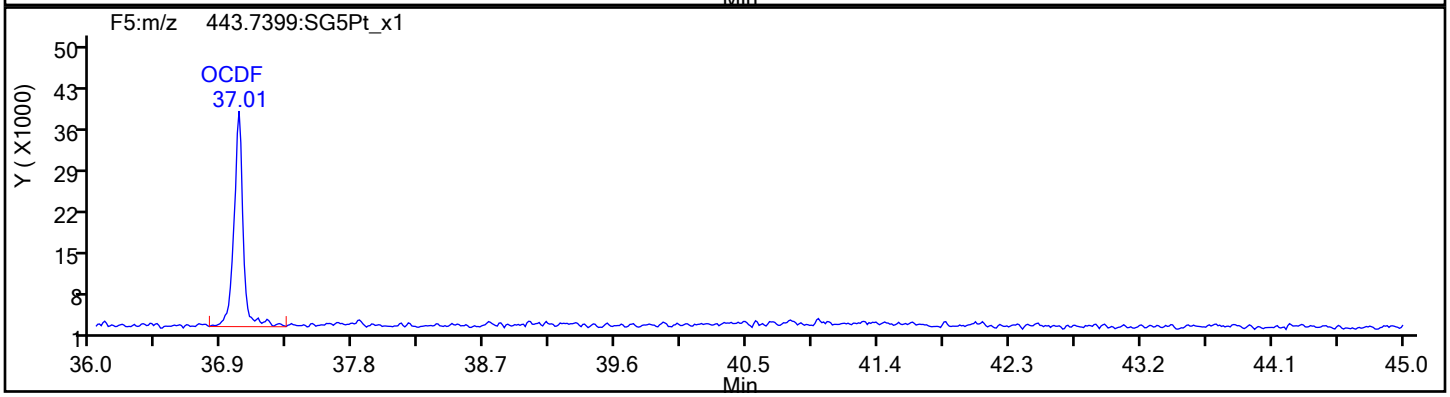
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

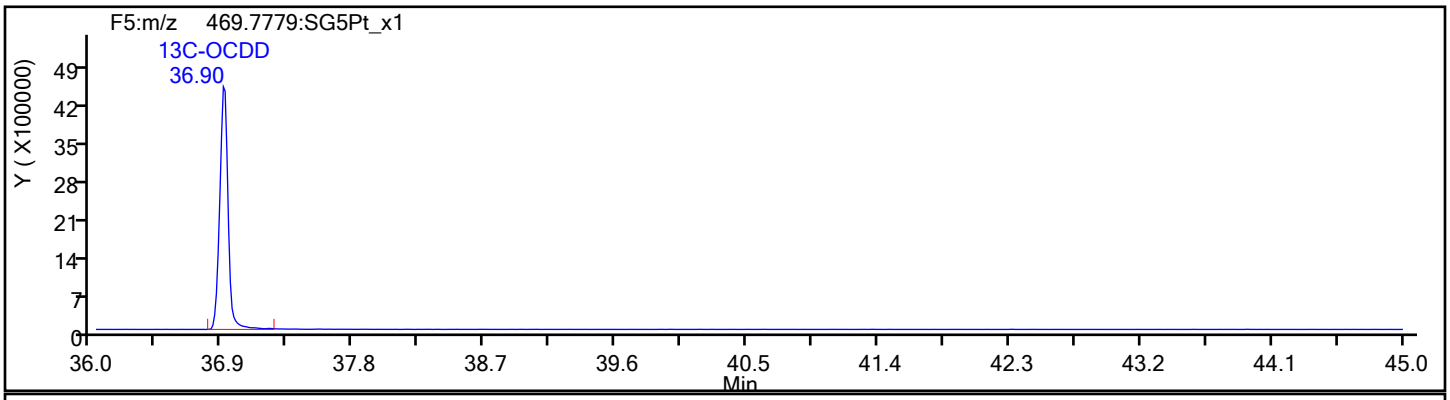
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

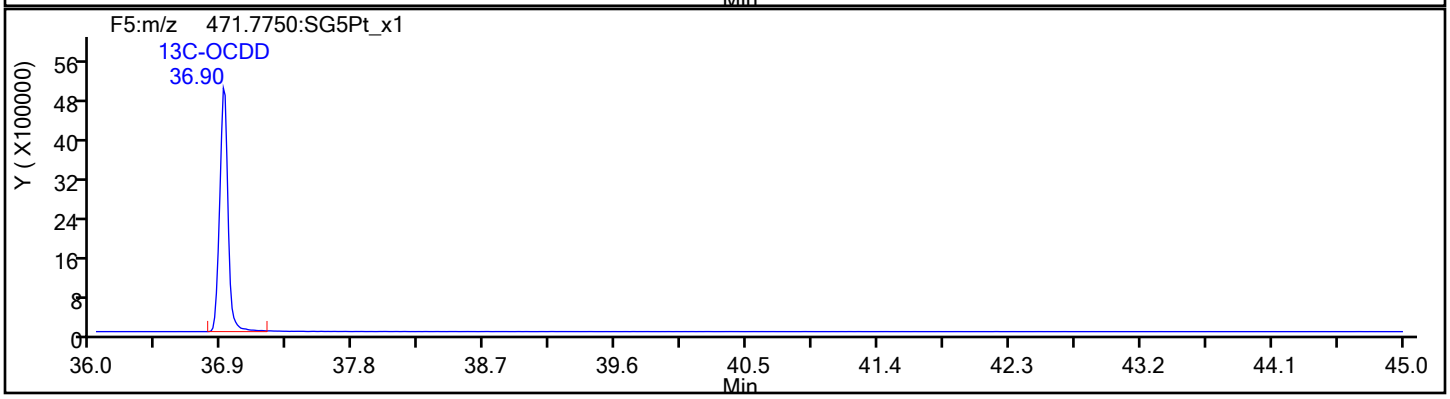
OCDF





OCDF Standards



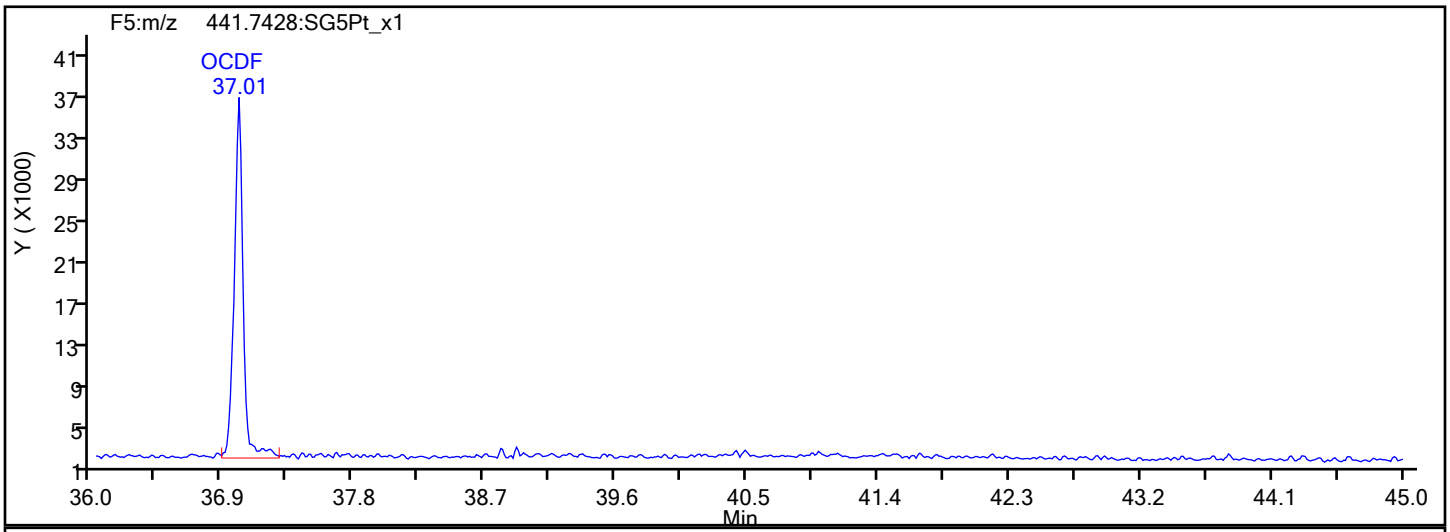


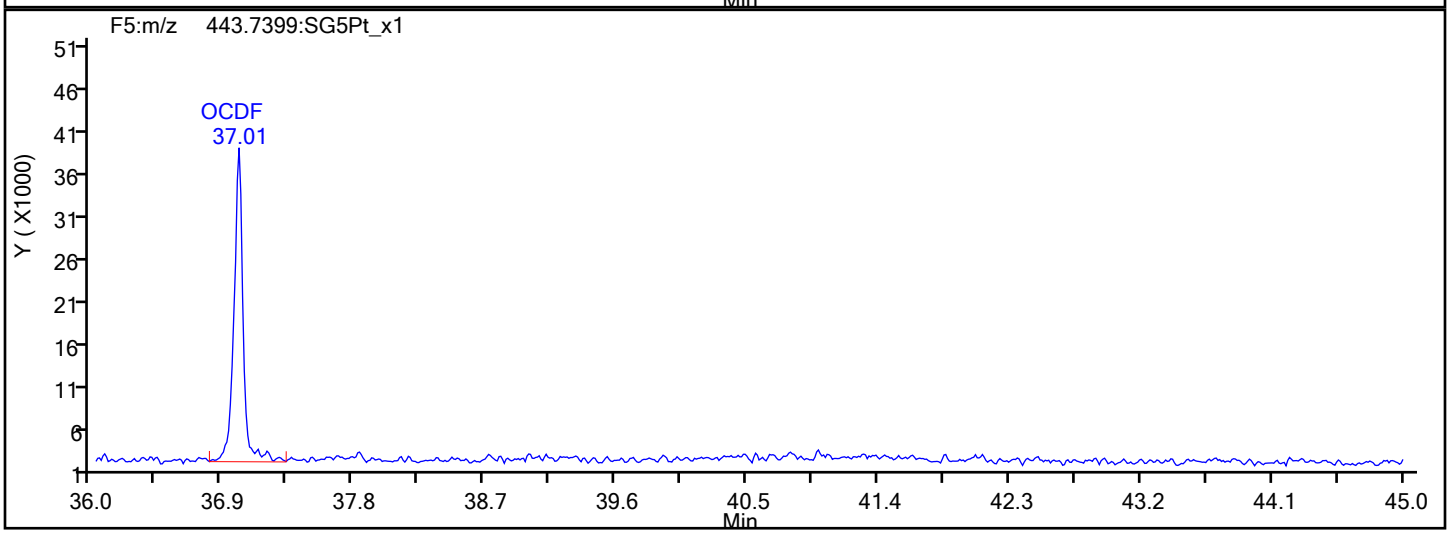
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

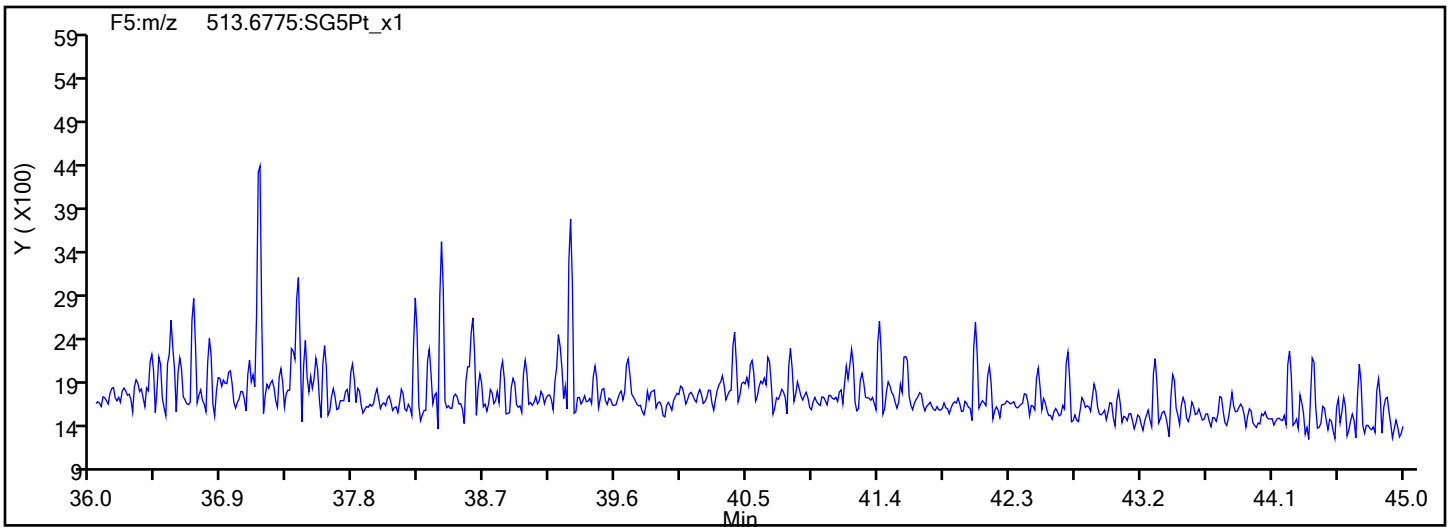
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

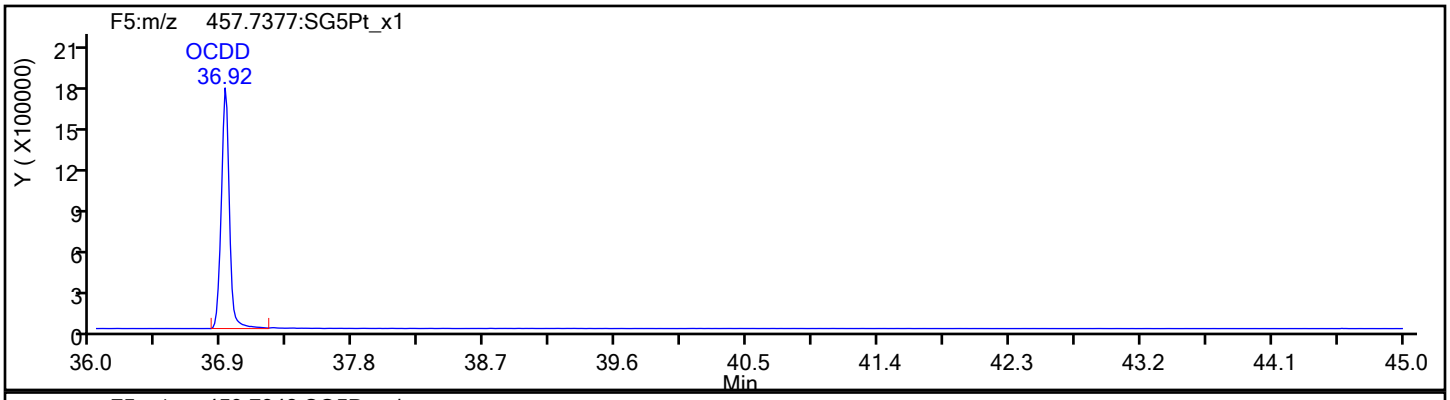


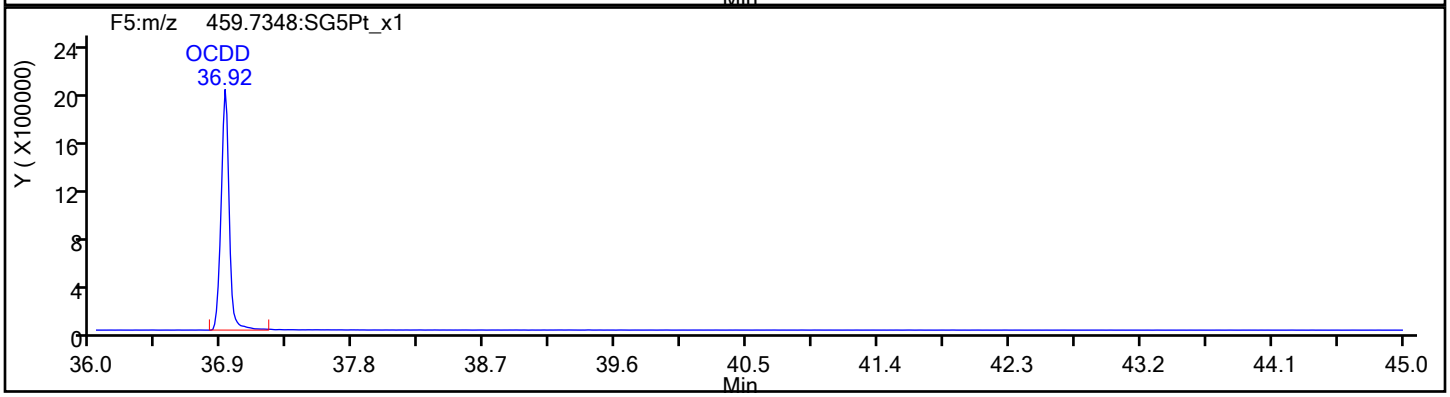
Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

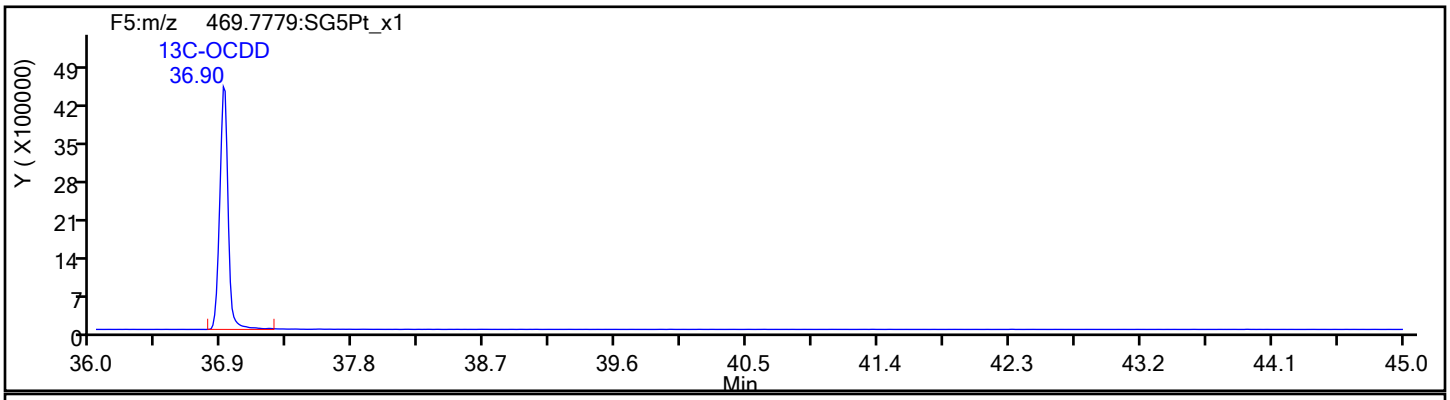
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

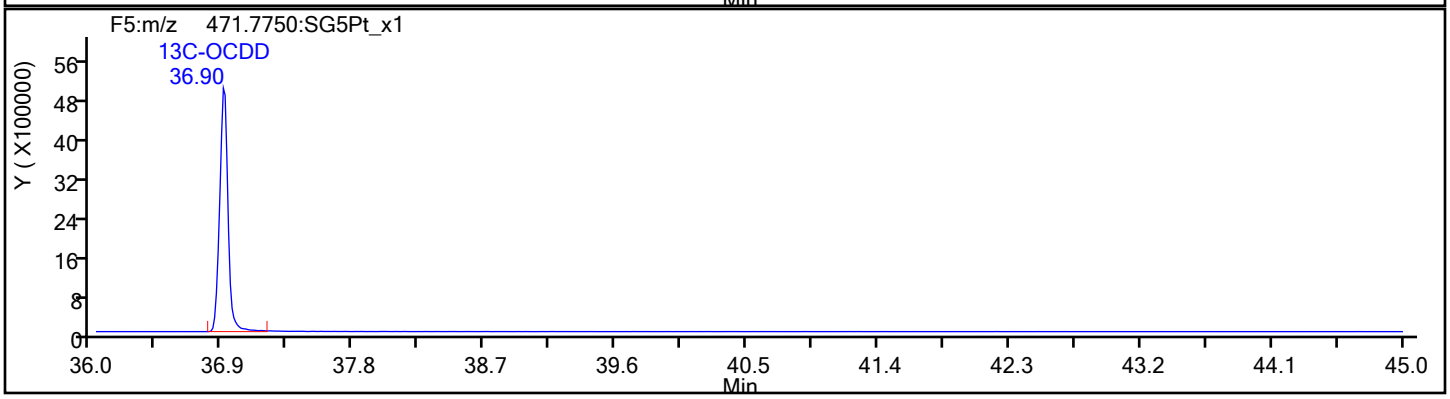
OCDD





OCDD Standards

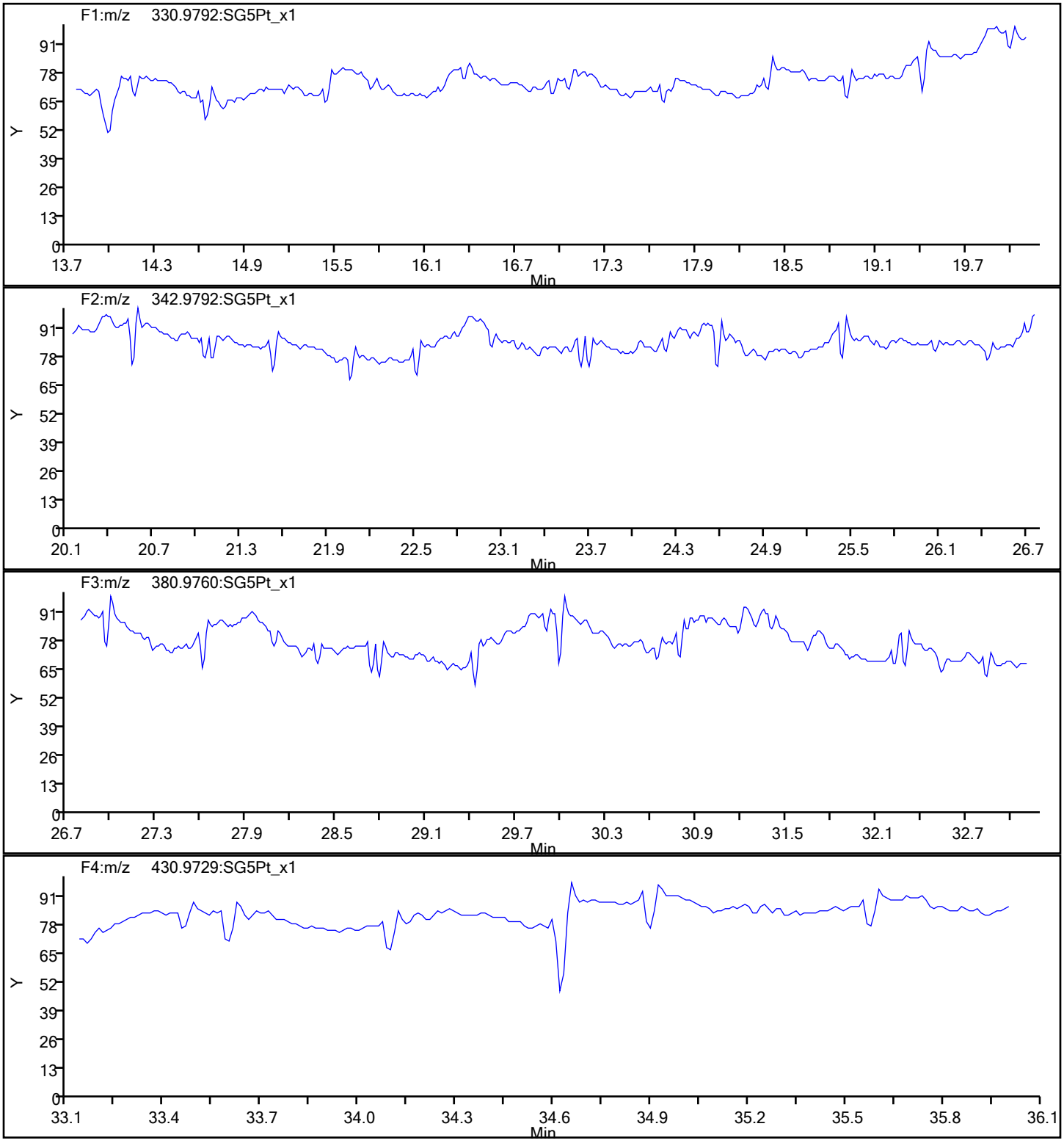




Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

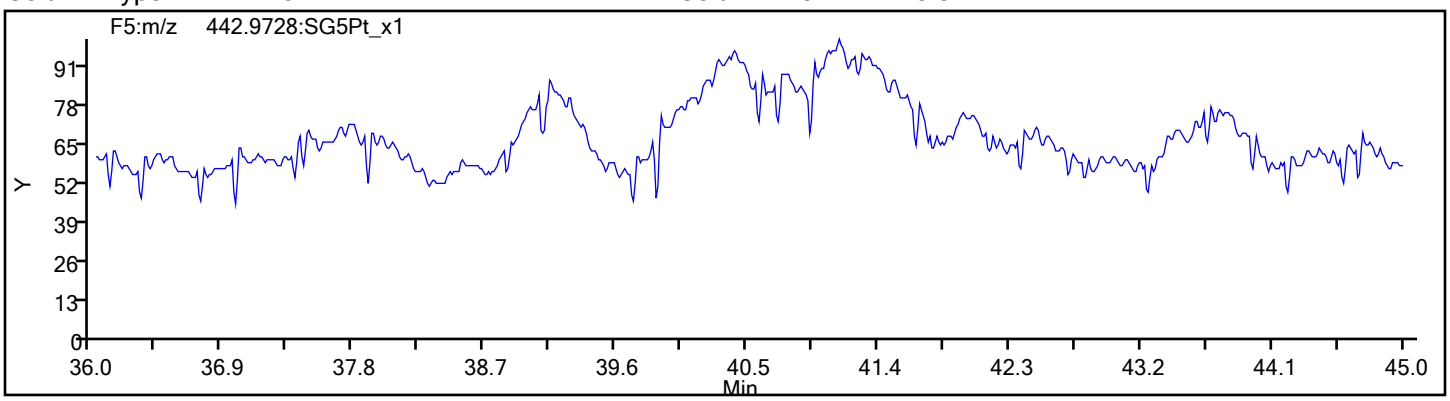
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 08:49:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_10.d		
Injection Date:	13-Dec-2019 18:39:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345335	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (1-2) RA Lab Sample ID: 320-56911-10 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_011.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:15

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.32(g) Date Analyzed: 12/17/2019 01:46

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 28.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	6.0		1.4	0.21

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	56		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	102		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 01:46:33 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-10-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:35:02

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.378	94022226	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.571	69913936	0.79	1.3379	55.6	55.6	0.2401	0.2401	55.58	
2,3,7,8-TCDF	16.585	1294532	0.79	0.8389	2.207	2.207	0.0762	0.0762		
D 13C-2,3,7,8-TCDD	15.117	47916644	0.74	0.9388	54.3	54.3	0.3453	0.3453	54.28	
2,3,7,8-TCDD	15.145	324921	0.65	1.1538	0.5877	0.5877	0.0953	0.0953		
$ 37Cl4-2,3,7,8-TCDD	15.145	45408291		1.1816	40.9	40.9	0.0536	0.0536	102	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d
Lims ID: 320-56911-A-10-A
Client ID: 11187072-120819-BN-SJSSA05 (1-2)
Sample Type: Client
Inject. Date: 17-Dec-2019 01:46:33 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-10-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:35:02

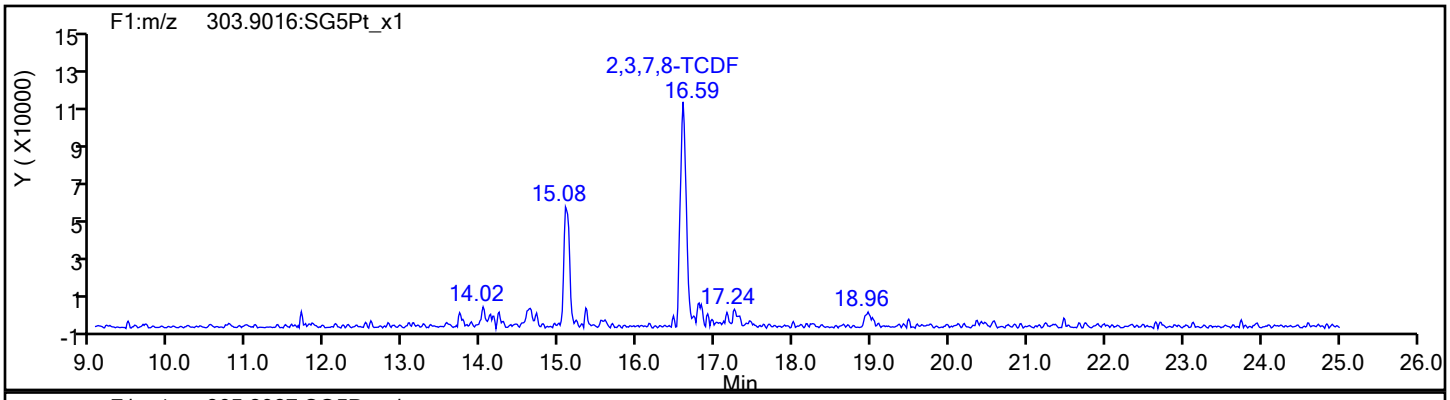
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.378	15.383	0		41178414	9093575	17156	42890	530		
333.9339	15.378	15.383	0		52843812	11510340	9560	23900	1204	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.571	16.576	0	1.078	30890548	5953726	15928	39820	374		
317.9389	16.571	16.576	0	1.078	39023388	7126622	10552	26380	675	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.585	16.590	0	1.001	571856	108179	1442	3605	75		
305.8987	16.585	16.590	0	1.001	722676	133993	1902	4755	70	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.117	15.122	0	0.983	20419096	4524604	17156	42890	264		
333.9339	15.117	15.122	0	0.983	27497548	5932461	9560	23900	621	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.145	15.149	0	1.002	128575	24624	2807	7017	9		
321.8936	15.145	15.149	0	1.002	196346	43731	1794	4485	24	0.65(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.145	15.149	0	0.985	45408291	9428142	5220	13050	1806		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

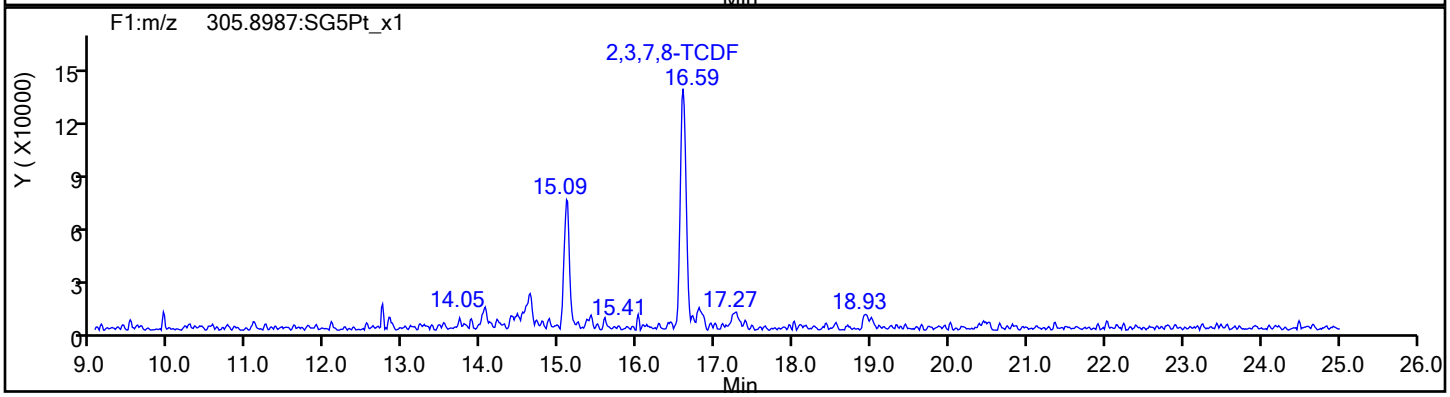
Report Date: 17-Dec-2019 09:38:33 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

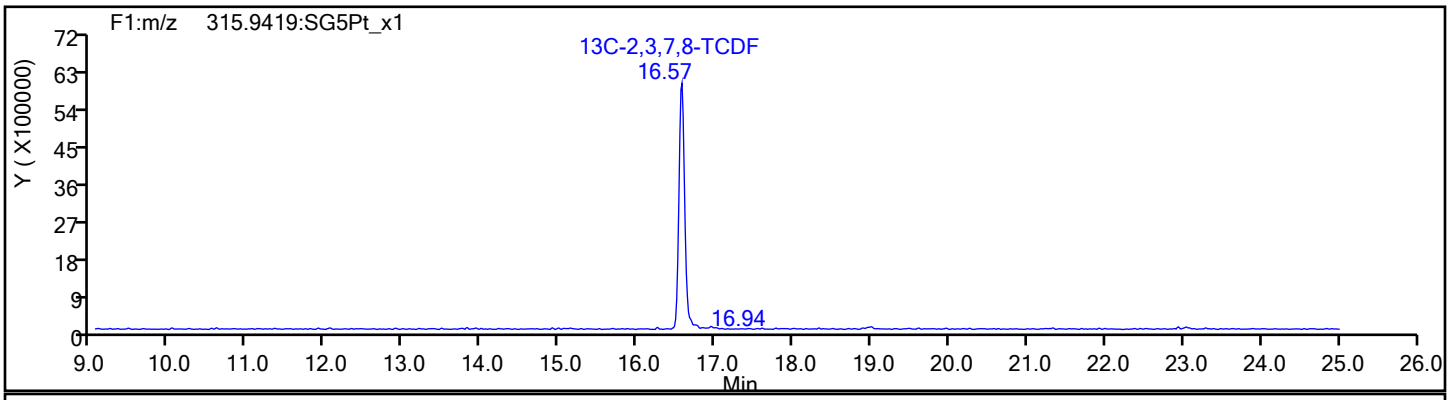
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d		
Injection Date:	17-Dec-2019 01:46:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345960	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

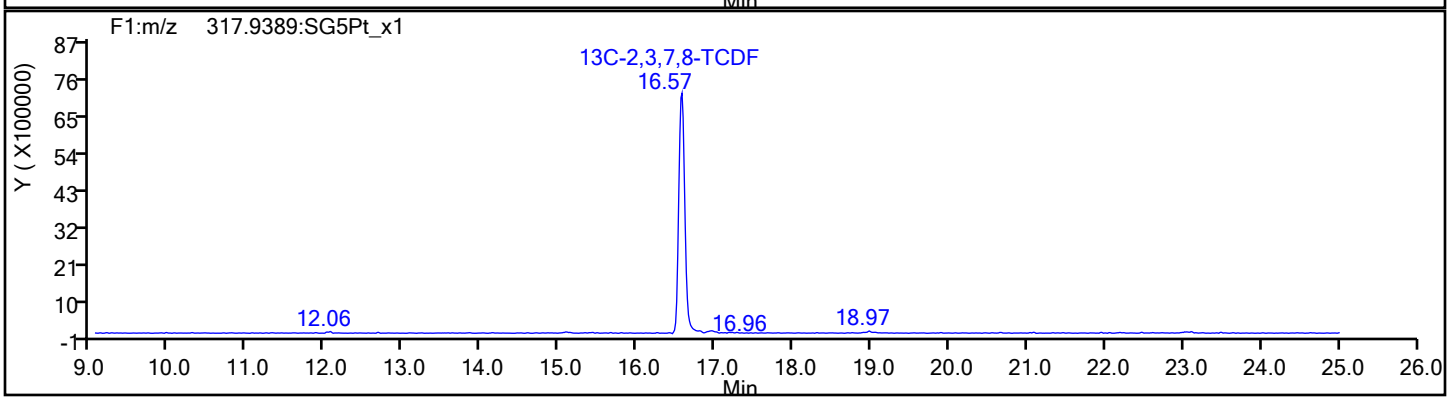
TCDF





TCDF Standards



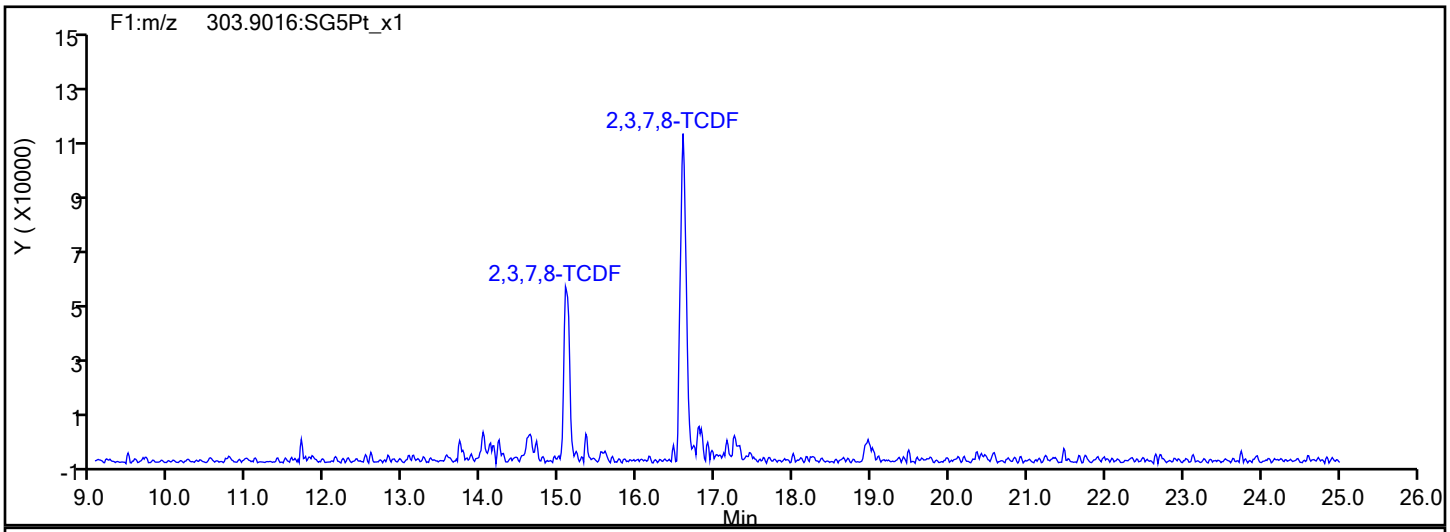


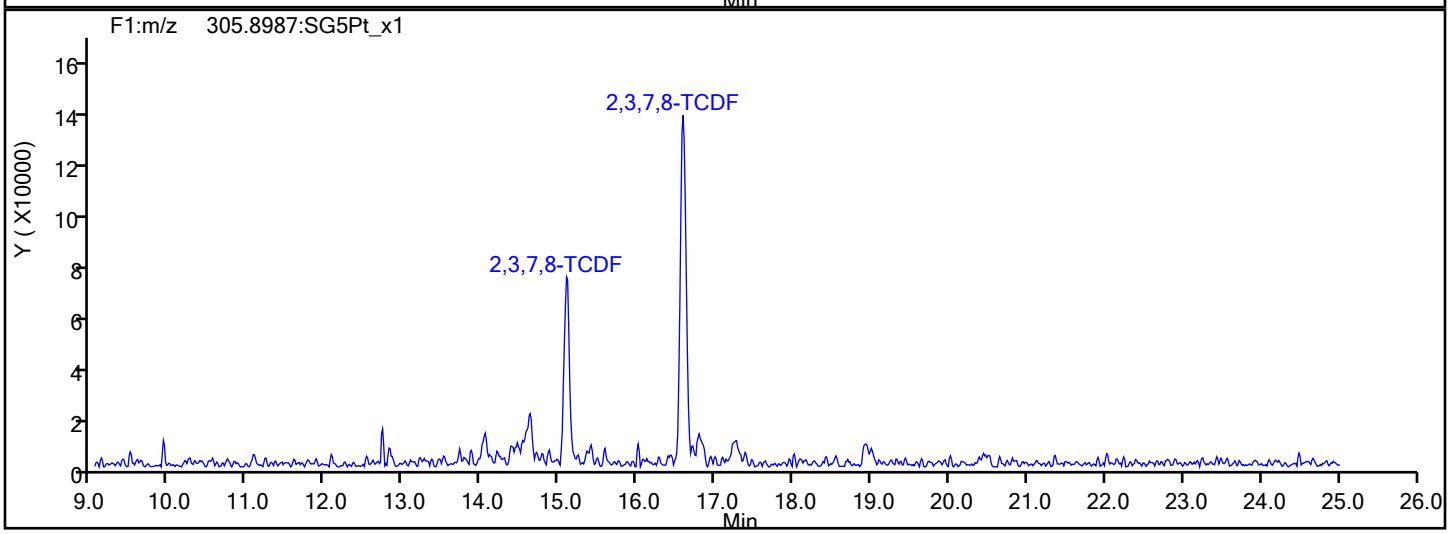
Report Date: 17-Dec-2019 09:38:33 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

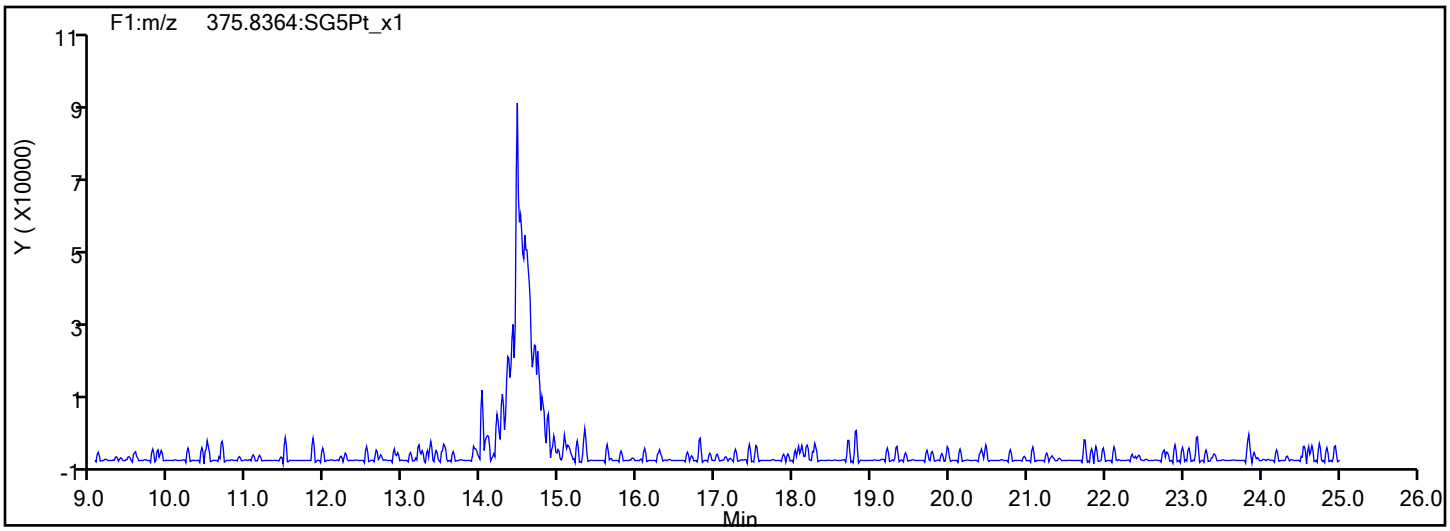
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d		
Injection Date:	17-Dec-2019 01:46:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345960	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

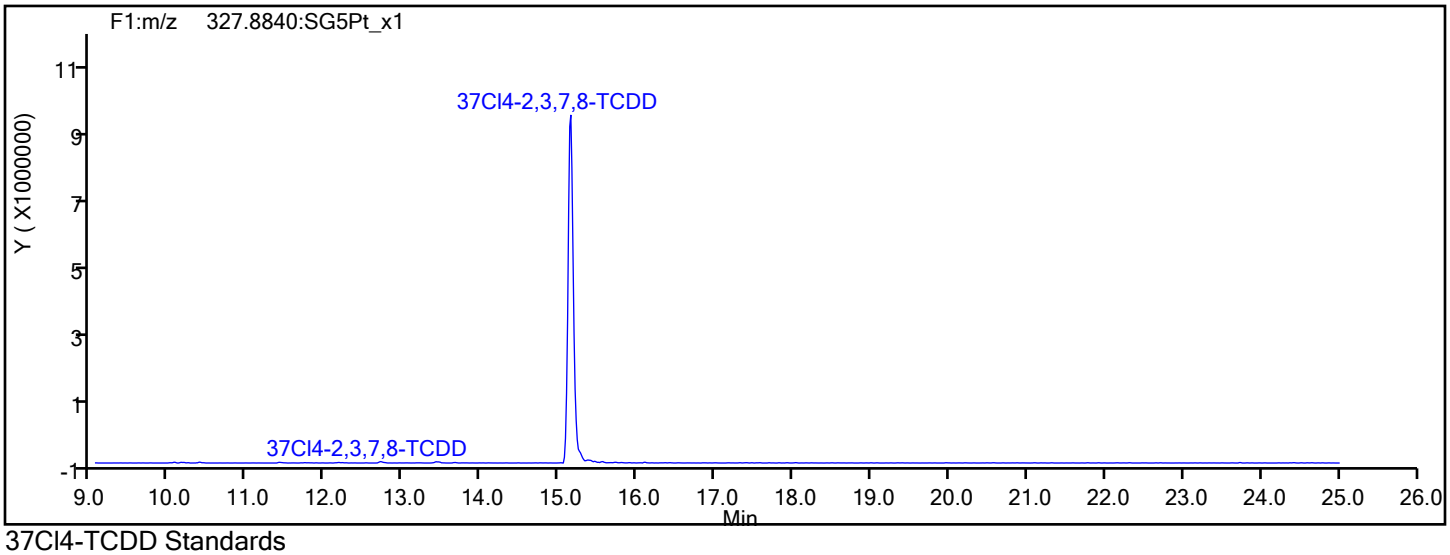


Report Date: 17-Dec-2019 09:38:33 Chrom Revision: 2.3 15-Dec-2019 06:20:02

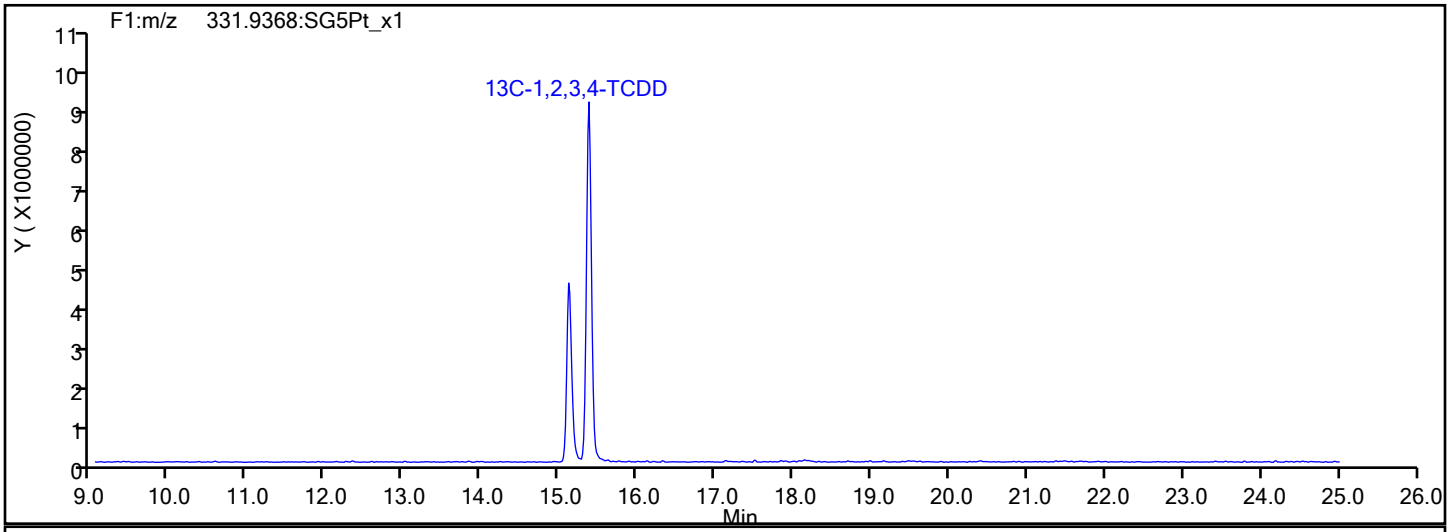
Eurofins TestAmerica, Sacramento

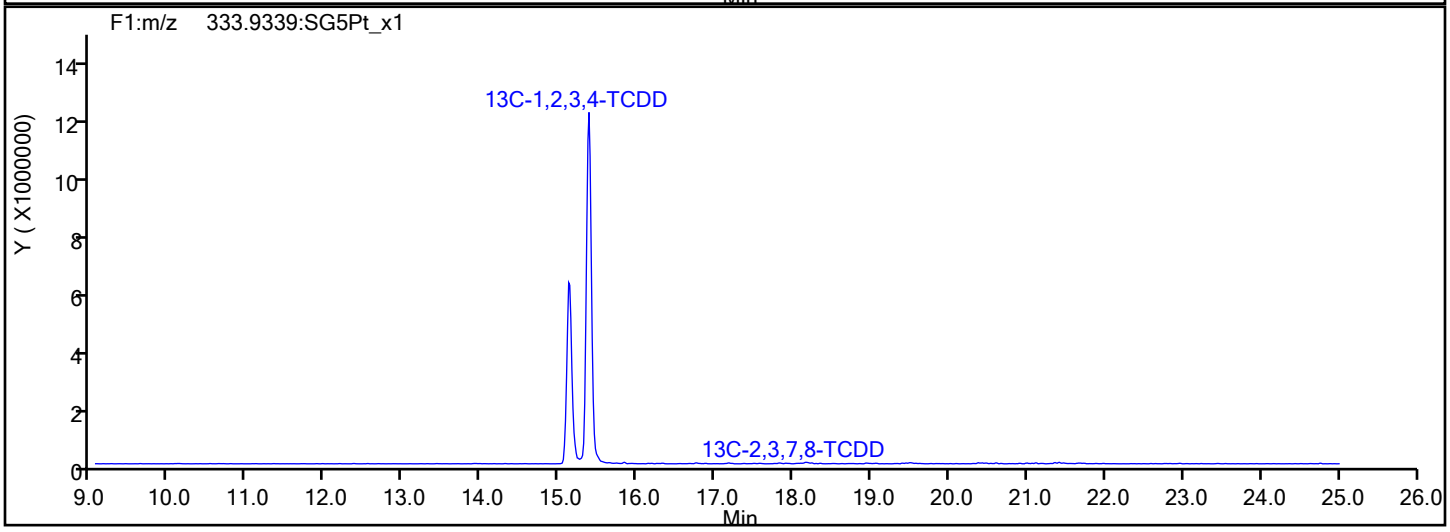
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d		
Injection Date:	17-Dec-2019 01:46:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345960	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

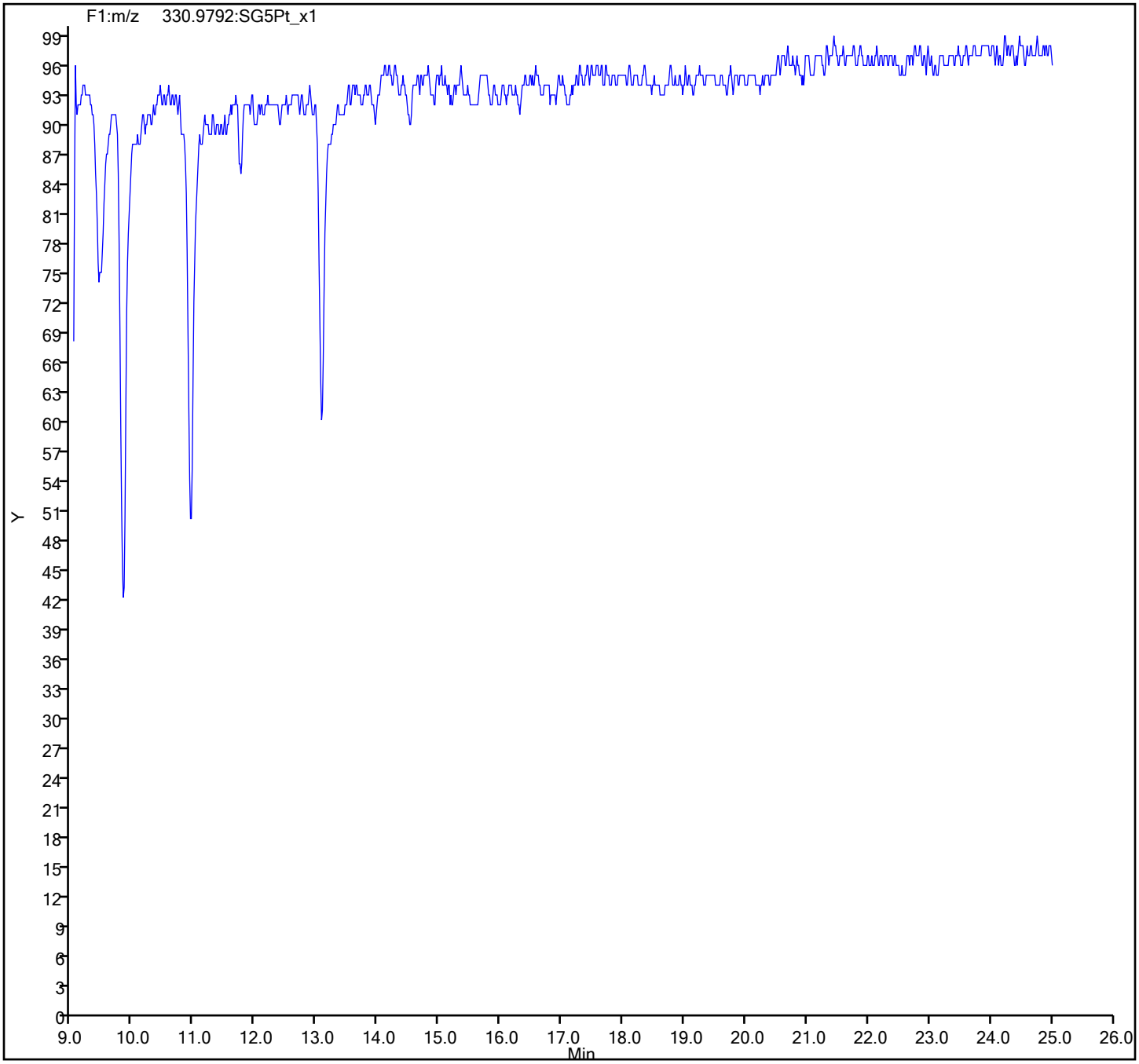




Report Date: 17-Dec-2019 09:38:33 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_011.d		
Injection Date:	17-Dec-2019 01:46:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (1-2)		
Worklist#:	345960	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Matrix: Sediment Lab File ID: 13DE1910D5_11.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/13/2019 19:25

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	0.76	J q	1.3	0.15
40321-76-4	1,2,3,7,8-PeCDD	ND		6.5	0.13
57117-41-6	1,2,3,7,8-PeCDF	0.24	J	6.5	0.10
57117-31-4	2,3,4,7,8-PeCDF	ND		6.5	0.10
39227-28-6	1,2,3,4,7,8-HxCDD	0.31	J q	6.5	0.11
57653-85-7	1,2,3,6,7,8-HxCDD	0.41	J B	6.5	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	0.76	J	6.5	0.10
70648-26-9	1,2,3,4,7,8-HxCDF	0.21	J q	6.5	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	ND		6.5	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	0.20	J q	6.5	0.089
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.5	0.094
35822-46-9	1,2,3,4,6,7,8-HpCDD	7.2	B	6.5	0.14
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.63	J	6.5	0.055
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.39	J	6.5	0.061
3268-87-9	OCDD	140	B	13	0.19
39001-02-0	OCDF	4.3	J B	13	0.10
41903-57-5	Total TCDD	4.1	q	1.3	0.15
30402-14-3	Total TCDF	4.1		1.3	0.087
36088-22-9	Total PeCDD	3.3	J q	6.5	0.13
30402-15-4	Total PeCDF	0.24	J	6.5	0.10
34465-46-8	Total HxCDD	12	B q	6.5	0.11
55684-94-1	Total HxCDF	0.41	J q	6.5	0.11
37871-00-4	Total HpCDD	25	B	6.5	0.14
38998-75-3	Total HpCDF	1.9	J B	6.5	0.058

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) Lab Sample ID: 320-56911-11

Matrix: Sediment Lab File ID: 13DE1910D5_11.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/13/2019 19:25

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	53		25-164
89059-46-1	13C-2,3,7,8-TCDF	50		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	57		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	51		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	56		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	61		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	52		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	54		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	47		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	52		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	50		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	63		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	52		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	64		26-138
114423-97-1	13C-OCDD	73		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	101		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 19:25:56 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-11-A 320-56911-A-11-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 10:55:18 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: dadunj Date: 16-Dec-2019 10:55:18

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	48116664	0.78	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.372	32095879	0.77	1.3318	50.1	50.1	0.1360	0.1360	50.08	
2,3,7,8-TCDF	17.387	290775	0.75	0.9005	1.006	1.006	0.0333	0.0333		
A Non-2,3,7,8-sub-TCDF	17.062	164752	0.76	0.9005	0.5700	0.5700	0.0333	0.4192		M
S Total TCDF					1.576	1.576	0.0333	0.0333		
D 13C-2,3,7,8-TCDD	18.083	24375512	0.77	0.9647	52.5	52.5	0.1192	0.1192	52.51	
2,3,7,8-TCDD	18.098	75889	0.77	1.0698	0.3532	0.2910	0.0575	0.0575		RQ
$ 37Cl4-2,3,7,8-TCDD	18.098	25342595		1.3082	40.3	40.3	0.0692	0.0692	101	
A Non-2,3,7,8-sub-TCDD	17.516	336044	0.77	1.0698	1.289	1.289	0.0575	1.016		
S Total TCDD					1.642	1.580	0.0575	0.0575		RQ
D 13C-1,2,3,7,8-PeCDF	22.399	25899232	1.58	1.0537	51.1	51.1	0.1106	0.1106	51.08	
1,2,3,7,8-PeCDF	22.441	23445	1.45	0.9704	0.0933	0.0933	0.0384	0.0384		M
D 13C-2,3,4,7,8-PeCDF	23.750	27267256	1.57	1.0173	55.7	55.7	0.1146	0.1146	55.71	
2,3,4,7,8-PeCDF	23.750						0.0385	0.0385		
A F1 PeCDFs	19.776						0.0345	0.0345		
A Non-2,3,7,8-sub-PeCDF	22.933						0.0385	0.0385		
S Total PeCDF					0.0933	0.0933	0.0385	0.0385		
D 13C-1,2,3,7,8-PeCDD	24.472	20138129	1.56	0.7281	57.5	57.5	0.0738	0.0738	57.48	
1,2,3,7,8-PeCDD	24.472						0.0504	0.0504		
A Non-2,3,7,8-sub-PeCDD	23.368	257735	1.55	1.0023	1.313	1.277	0.0504	0.7154		RQMa
S Total PeCDD					1.313	1.277	0.0504	0.0504		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.557	20609029	0.51	0.9632	54.3	54.3	0.1482	0.1482	54.33	
1,2,3,4,7,8-HxCDF	30.583	16859	1.24	1.0315	0.0885	0.0793	0.0450	0.0450		RQM
D 13C-1,2,3,6,7,8-HxCDF	30.743	19644280	0.50	1.0646	46.9	46.9	0.1341	0.1341	46.86	
1,2,3,6,7,8-HxCDF	30.743						0.0471	0.0471		
D 13C-2,3,4,6,7,8-HxCDF	31.568	19160197	0.50	0.9696	50.2	50.2	0.1472	0.1472	50.18	
2,3,4,6,7,8-HxCDF	31.568						0.0361	0.0361		
D 13C-1,2,3,7,8,9-HxCDF	32.380	18445527	0.50	0.8955	52.3	52.3	0.1594	0.1594	52.30	
1,2,3,7,8,9-HxCDF	32.394	14989	1.24	1.0664	0.0972	0.0762	0.0342	0.0342		RQM
A Non-2,3,7,8-sub-HxCDF	30.237						0.0399	0.0399		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.1857	0.1555	0.0406	0.0406		RQ
* 13C-1,2,3,7,8,9-HxCDD	32.194	39382311	1.26	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.755	18085086	1.26	0.7590	60.5	60.5	0.1574	0.1574	60.50	
1,2,3,4,7,8-HxCDD	31.781	21866	1.24	1.0054	0.1446	0.1203	0.0425	0.0425		RQMa
D 13C-1,2,3,6,7,8-HxCDD	31.861	19013496	1.27	0.9247	52.2	52.2	0.1292	0.1292	52.21	
1,2,3,6,7,8-HxCDD	31.888	29321	1.11	0.9833	0.1568	0.1568	0.0433	0.0433		Ma
1,2,3,7,8,9-HxCDD	32.207	59730	1.35	1.1036	0.2918	0.2918	0.0387	0.0387		
A Non-2,3,7,8-sub-HxCDD	30.870	792233	1.25	1.0308	4.144	4.144	0.0414	3.343		
S Total HxCDD					4.737	4.712	0.0415	0.0415		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.793	16352971	0.43	0.7930	52.4	52.4	0.2444	0.2444	52.36	
1,2,3,4,6,7,8-HpCDF	33.805	55753	0.98	1.4240	0.2394	0.2394	0.0210	0.0210		
D 13C-1,2,3,4,7,8,9-HpCDF	34.862	18465107	0.44	0.7296	64.3	64.3	0.2656	0.2656	64.27	
1,2,3,4,7,8,9-HpCDF	34.874	35346	1.18	1.2834	0.1492	0.1492	0.0234	0.0234		
A Non-2,3,7,8-sub-HpCDF	34.340	78010	1.18	1.3537	0.3310	0.3310	0.0221	0.3310		M
S Total HpCDF					0.7196	0.7196	0.0222	0.0222		
D 13C-1,2,3,4,6,7,8-HpCDD	34.583	18830507	1.05	0.7532	63.5	63.5	0.2200	0.2200	63.49	
1,2,3,4,6,7,8-HpCDD	34.595	525772	1.09	1.0174	2.744	2.744	0.0521	0.0521		
A Non-2,3,7,8-sub-HpCDD	34.309	1298021	1.03	1.0174	6.775	6.775	0.0521	6.775		
S Total HpCDD					9.520	9.520	0.0521	0.0521		
D 13C-OCDD	36.903	32100862	0.90	0.5621	145.0	145.0	0.1108	0.1108	72.51	
OCDF	37.011	342952	0.86	1.3047	1.638	1.638	0.0396	0.0396		
OCDD	36.915	9169270	0.89	1.0997	51.9	51.9	0.0727	0.0727		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Sample Type: Client
Inject. Date: 13-Dec-2019 19:25:56 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-11-A 320-56911-A-11-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 10:55:18 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: dadunj Date: 16-Dec-2019 10:55:18

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.886	17.856	2		21093421	5266018	3519	8797	1496		
333.9339	17.886	17.856	2		27023243	6721701	1993	4982	3373	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.372	17.357	1	0.971	13985617	3500635	5601	14002	625		
317.9389	17.372	17.357	1	0.971	18110262	4490909	3082	7705	1457	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.387	17.372	1	1.001	124972	31780	420	1050	76		
305.8987	17.387	17.372	1	1.001	165803	38888	538	1345	72	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											M
303.9016	16.253	17.062	-48	0.936	7936	1648	420	1050	4		
305.8987	16.253	17.062	-48	0.936	9686	2364	538	1345	4	0.82(0.65-0.89)	
303.9016	17.009	17.062	-3	0.979	52745	11919	420	1050	28		
305.8987	17.009	17.062	-3	0.979	68418	15440	538	1345	29	0.77(0.65-0.89)	
303.9016	17.826	17.062	46	1.026	10197	2018	420	1050	5		M
305.8987	17.826	17.062	46	1.026	15770	2894	538	1345	5	0.65(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	10630842	2509808	3519	8797	713		
333.9339	18.083	18.052	2	1.011	13744670	3255094	1993	4982	1633	0.77(0.65-0.89)	
2,3,7,8-TCDD											RQ
319.8965	18.098	18.068	2	1.001	33014	8859	940	2350	9		
321.8936	18.098	18.068	2	1.001	59090	14203	479	1197	30	0.56(0.65-0.89)	
	Empc Correction				42875	11505	479	1197	24		
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	25342595	6056243	4338	10845	1396		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-TCDD											
319.8965	16.964	17.516	-33	0.938	117536	31099	940	2350	33		
321.8936	16.964	17.516	-33	0.938	147423	38367	479	1197	80	0.80(0.65-0.89)	
319.8965	17.856	17.516	20	0.987	28539	7550	940	2350	8		
321.8936	17.856	17.516	20	0.987	42546	10542	479	1197	22	0.67(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.399	22.372	2	1.252	15867326	2796347	3304	8260	846		
353.8970	22.399	22.372	2	1.252	10031906	1817413	2287	5717	795	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.441	22.400	2	1.002	13883	2445	291	727	8		
341.8567	22.427	22.400	2	1.001	9562	2037	397	992	5	1.45(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	16654027	2727253	3304	8260	825		
353.8970	23.750	23.722	2	1.328	10613229	1744084	2287	5717	763	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750						291	727			
341.8567	23.750						397	992			
A F1 PeCDFs											
339.8597	19.776						173	432			
341.8567	19.776						445	1112			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.933						291	727			
341.8567	22.933						397	992			
13C-1,2,3,7,8-PeCDD											
367.8949	24.472	24.445	2	1.368	12268149	1987961	1444	3610	1377		
369.8919	24.472	24.445	2	1.368	7869980	1251668	1132	2830	1106	1.56(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						436	1090			
357.8516	24.472						219	547			
A Non-2,3,7,8-sub-PeCDD											RQMa
355.8546	21.268	23.368	-126	0.869	26834	5348	436	1090	12		a
357.8516	21.268	23.368	-126	0.869	18154	3266	219	547	15	1.48(1.32-1.78)	
355.8546	22.018	23.368	-81	0.900	86758	15988	436	1090	37		a
357.8516	22.018	23.368	-81	0.900	57651	9811	219	547	45	1.50(1.32-1.78)	
355.8546	23.518	23.368	9	0.961	41539	5070	436	1090	12		M
357.8516	23.504	23.368	8	0.960	34032	3637	219	547	17	1.22(1.32-1.78)	
	Empc Correction				26799	3270	219	547	15		
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.557	30.543	1	0.949	6922692	1318454	2172	5430	607		
385.8610	30.557	30.543	1	0.949	13686337	2580347	3877	9692	666	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											RQM
373.8208	30.583	30.557	2	1.001	9333	1907	383	957	5		M
375.8178	30.597	30.557	2	1.001	9486	1794	341	852	5	0.98(1.05-1.43)	
	Empc Correction				7526	1537	341	852	5		
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.743	30.716	2	0.955	6560932	1286233	2172	5430	592		
385.8610	30.743	30.716	2	0.955	13083348	2466056	3877	9692	636	0.50(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDF											
373.8208	30.743						383	957			
375.8178	30.743						341	852			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.568	31.555	1	0.981	6382641	1578420	2172	5430	727		
385.8610	31.568	31.555	1	0.981	12777556	3136825	3877	9692	809	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						383	957			
375.8178	31.568						341	852			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.380	32.367	1	1.006	6153925	1661237	2172	5430	765		
385.8610	32.380	32.367	1	1.006	12291602	3301476	3877	9692	852	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQM
373.8208	32.394	32.380	1	1.000	8298	2315	383	957	6		M
375.8178	32.394	32.380	1	1.000	10815	2987	341	852	9	0.77(1.05-1.43)	M
	Empc Correction				6691	1866	341	852	5		
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						383	957			
375.8178	30.237						341	852			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.194	32.181	1		21963002	5924554	2771	6927	2138		
403.8529	32.194	32.181	1		17419309	4667330	2289	5722	2039	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.755	31.741	1	0.986	10074800	2722873	2771	6927	983		
403.8529	31.755	31.741	1	0.986	8010286	2138581	2289	5722	934	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQMa
389.8157	31.781	31.755	2	1.001	16529	4344	448	1120	10		M
	Empc Correction				12104	2698	448	1120	6		
391.8127	31.755	31.755	0	1.000	9762	2176	383	957	6	1.69(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.861	31.848	1	0.990	10628075	2744835	2771	6927	991		
403.8529	31.861	31.848	1	0.990	8385421	2128737	2289	5722	930	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.888	31.861	2	1.001	15448	4213	448	1120	9		M
391.8127	31.875	31.861	1	1.000	13873	4346	383	957	11	1.11(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.207	32.194	1	1.014	34356	6628	448	1120	15		
391.8127	32.194	32.194	0	1.014	25374	5315	383	957	14	1.35(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	29.612	30.870	-75	0.929	354871	38137	448	1120	85		
391.8127	29.612	30.870	-75	0.929	284364	35424	383	957	92	1.25(1.05-1.43)	
389.8157	31.022	30.870	9	0.974	71940	13650	448	1120	30		
391.8127	31.022	30.870	9	0.974	58886	11506	383	957	30	1.22(1.05-1.43)	
389.8157	31.222	30.870	21	0.980	12552	3053	448	1120	7		
391.8127	31.222	30.870	21	0.980	9620	2257	383	957	6	1.30(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.793	33.780	1	1.050	4881316	1658017	2800	7000	592		
419.8220	33.793	33.780	1	1.050	11471655	3814759	5411	13527	705	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.805	33.793	1	1.000	27635	8717	375	937	23		
409.7789	33.805	33.793	1	1.000	28118	9281	280	700	33	0.98(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.862	34.862	0	1.083	5626188	1685112	2800	7000	602		
419.8220	34.862	34.862	0	1.083	12838919	3763589	5411	13527	696	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.874	34.862	1	1.000	19105	5468	375	937	15		
409.7789	34.874	34.862	1	1.000	16241	4395	280	700	16	1.18(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											M
407.7818	34.109	34.340	-14	1.009	42243	12598	375	937	34		
409.7789	34.097	34.340	-15	1.009	35767	10196	280	700	36	1.18(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.583	34.570	1	1.074	9654212	2913182	4381	10952	665		
437.8140	34.583	34.570	1	1.074	9176295	2739614	2638	6595	1039	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	274048	82352	678	1695	121		
425.7737	34.583	34.583	0	1.000	251724	74395	520	1300	143	1.09(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.048	34.309	-16	0.985	658071	207479	678	1695	306		
425.7737	34.048	34.309	-16	0.985	639950	192554	520	1300	370	1.03(0.88-1.20)	
13C-OCDD											
469.7779	36.903	36.891	1	1.146	15201602	3981095	1225	3062	3250		
471.7750	36.903	36.891	1	1.146	16899260	4413045	1413	3532	3123	0.90(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	158430	36503	345	862	106		
443.7399	36.999	36.999	0	1.003	184522	43258	523	1307	83	0.86(0.76-1.02)	
OCDD											
457.7377	36.915	36.903	1	1.000	4315493	1104958	645	1612	1713		
459.7348	36.915	36.903	1	1.000	4853777	1241576	697	1742	1781	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	32095879	7991544

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	32095879	7991544

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.253	7936	1648	9686	2364	0.0610	0.82	
17.009	52745	11919	68418	15440	0.4192	0.77	
17.826	10197	2018	15770	2894	0.0898	0.65	M
Signal Totals:							
	70878	15585	93874	20698			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	164752	36283				0.76	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5700 = (164752 * 100.000) / (32095879 * 0.901)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	24375512	5764902

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	24375512	5764902

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.964	117536	31099	147423	38367	1.02	0.80	
17.856	28539	7550	42546	10542	0.2726	0.67	
Signal Totals:							
	146075	38649	189969	48909			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	336044	87558				0.77	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.289 = (336044 * 100.000) / (24375512 * 1.070)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	20138129	3239629

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	20138129	3239629

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.268	26834	5348	18154	3266	0.2229	1.48	a
22.018	86758	15988	57651	9811	0.7154	1.50	a
23.518	41539	5070	34032	3637	0.3744	1.22	RQMa
23.518	41539	5070	26799	3270	0.3386		Empc Correction
Signal Totals:							
	155131	26406	102604	16347			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	264968	43120				1.41	RQMa
	257735	42753					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.313 = (264968 * 100.000) / (20138129 * 1.002)
Empc Amount: 1.277 = (257735 * 100.000) / (20138129 * 1.002)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	18085086	4861454
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	19013496	4873572
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	18549291	4867513

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.612	354871	38137	284364	35424	3.34	1.25	
31.022	71940	13650	58886	11506	0.6842	1.22	
31.222	12552	3053	9620	2257	0.1160	1.30	
Signal Totals:							
	439363	54840	352870	49187			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	792233	104027				1.25	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.144 = (792233 * 100.000) / (18549291 * 1.031)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	16352971	5472776
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	18465107	5448701

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	17409039	5460738

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	42243	12598	35767	10196	0.3310	1.18	M
Signal Totals:							
	42243	12598	35767	10196			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	78010	22794				1.18	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3310 = (78010 * 100.000) / (17409039 * 1.354)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Inject. Date: 13-Dec-2019 19:25:56 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	18830507	5652796

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	18830507	5652796

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.048	658071	207479	639950	192554	6.78	1.03	
Signal Totals:							
	658071	207479	639950	192554			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1298021	400033				1.03	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.775 = (1298021 * 100.000) / (18830507 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

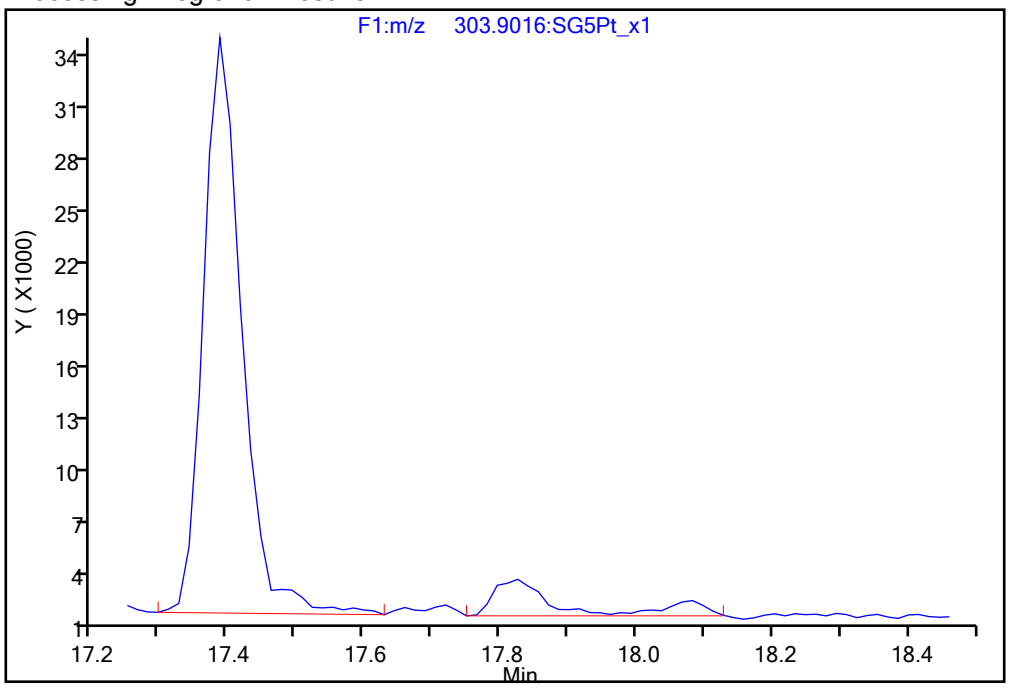
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (14.89- 19.23)

Signal: 1

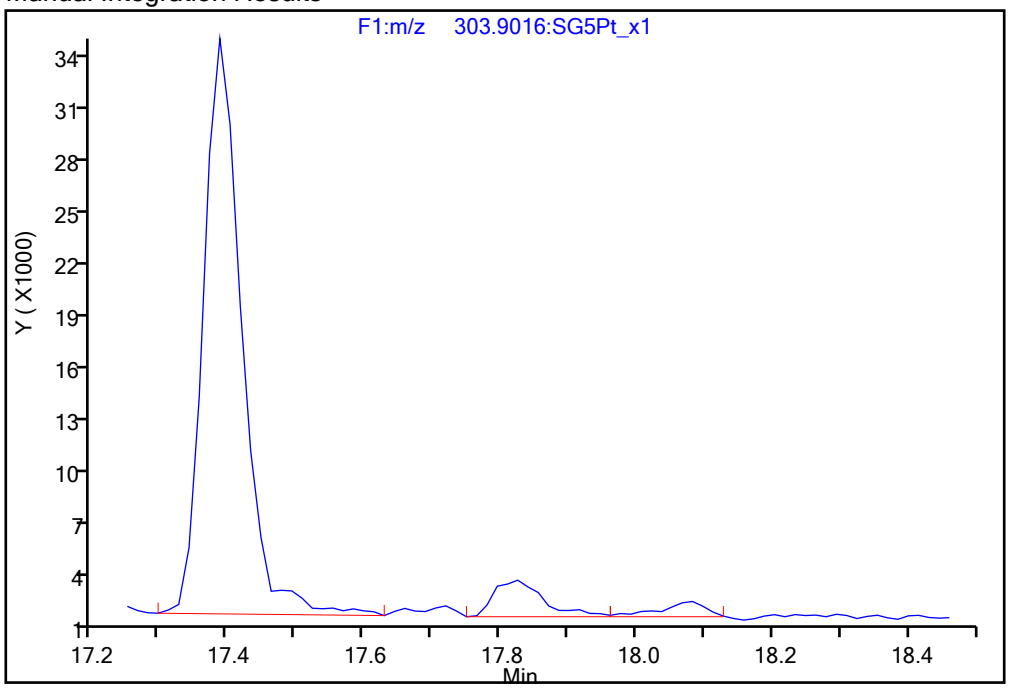
Processing Integration Results

RT = 17.826 Area = 14042



Manual Integration Results

RT = 17.826 Area = 10197 M



Reviewer: dadunj, 16-Dec-2019 10:51:38

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

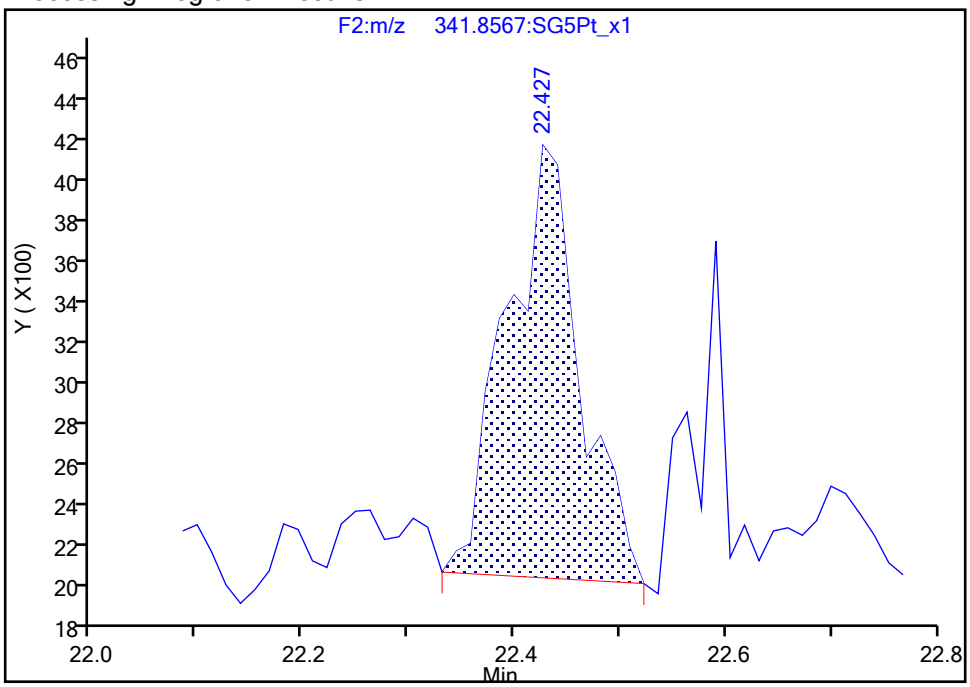
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

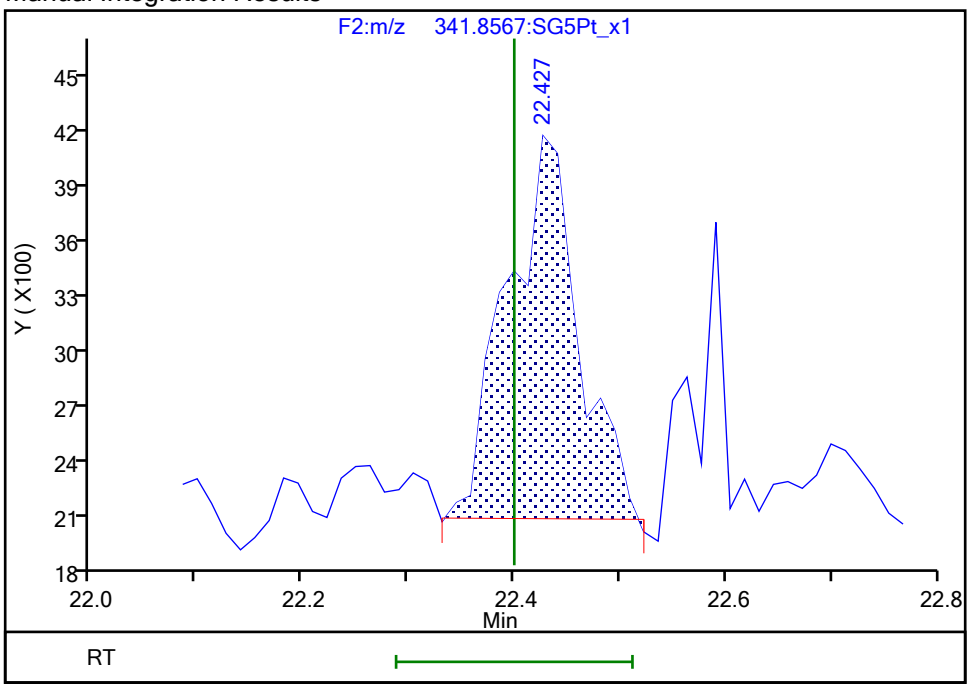
Processing Integration Results

RT: 22.43
Area: 10055
Amount: 0.095247
Amount Units: pg/ul



Manual Integration Results

RT: 22.43
Area: 9562
Amount: 0.093286
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:52:01

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

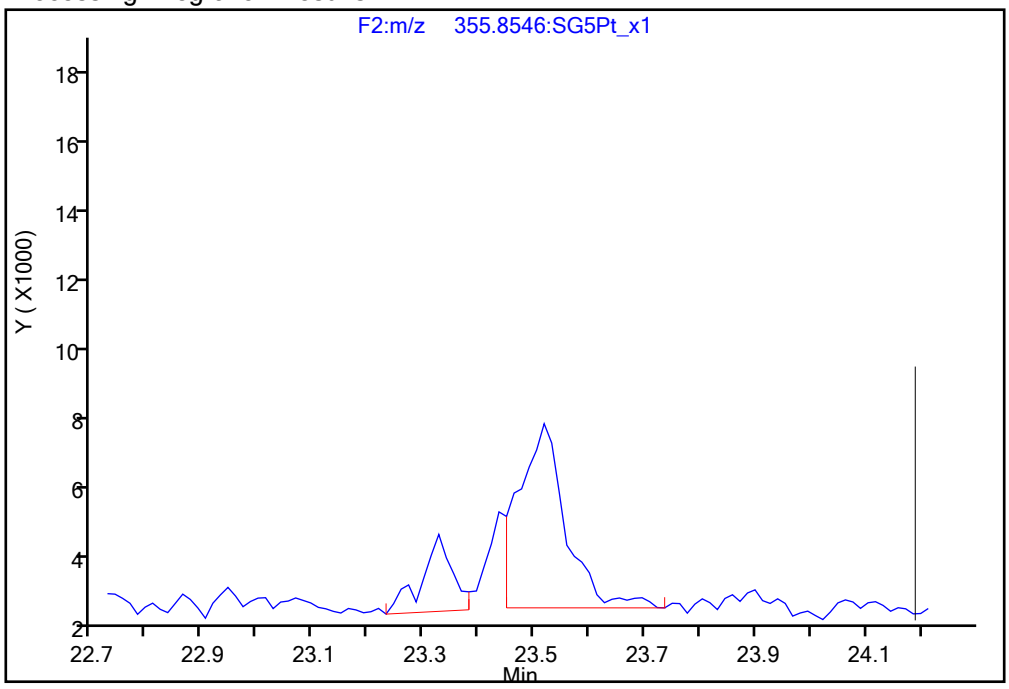
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

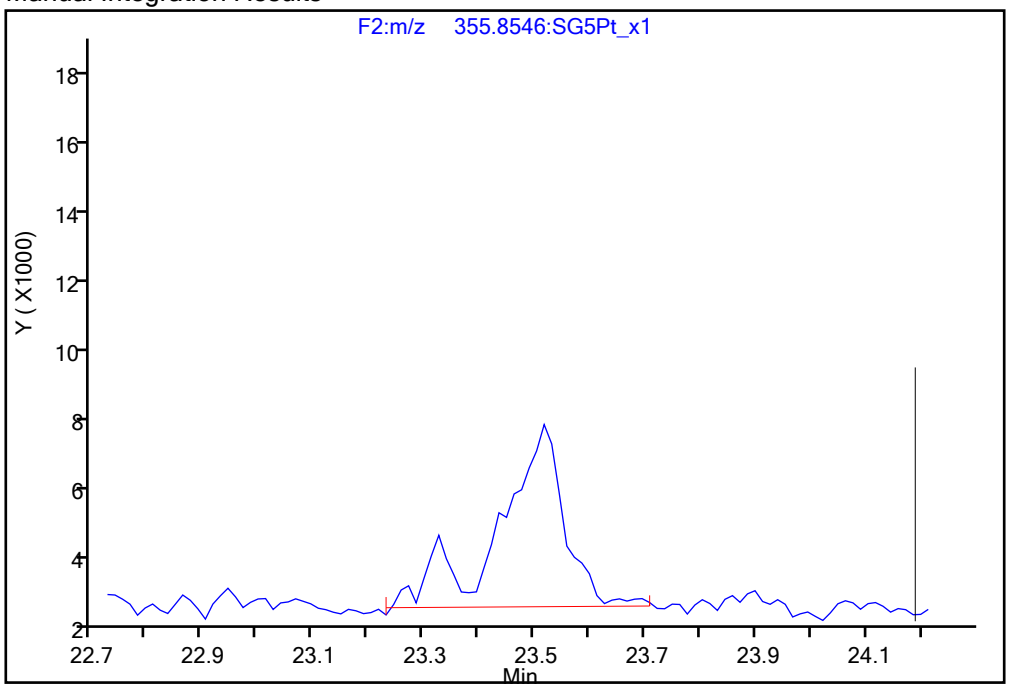
Processing Integration Results

RT = 23.518 Area = 29794



Manual Integration Results

RT = 23.518 Area = 41539 M



Reviewer: dadunj, 16-Dec-2019 10:52:48

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

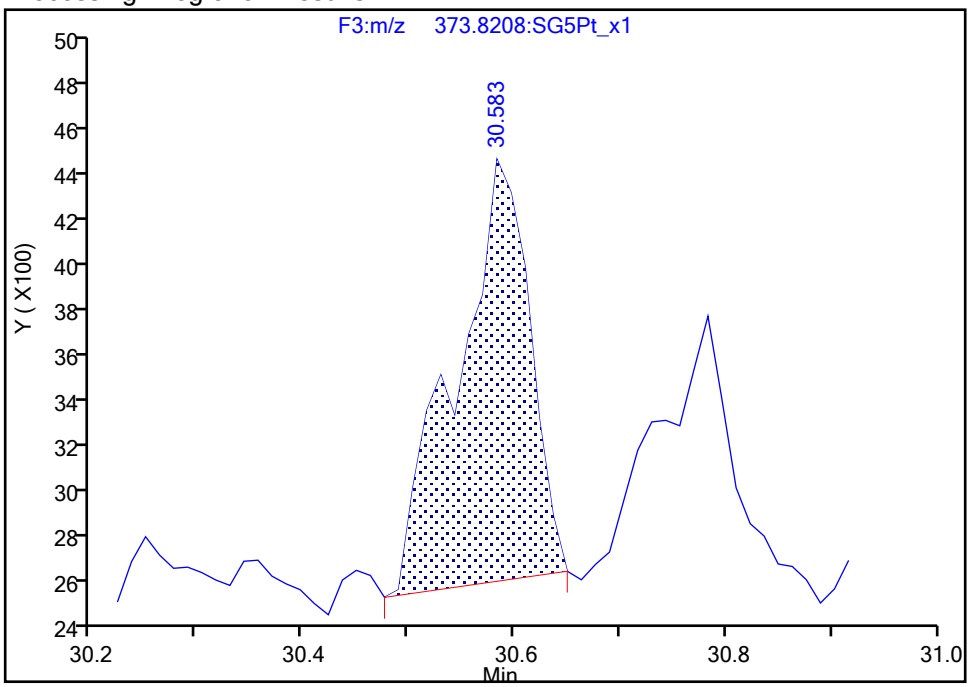
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

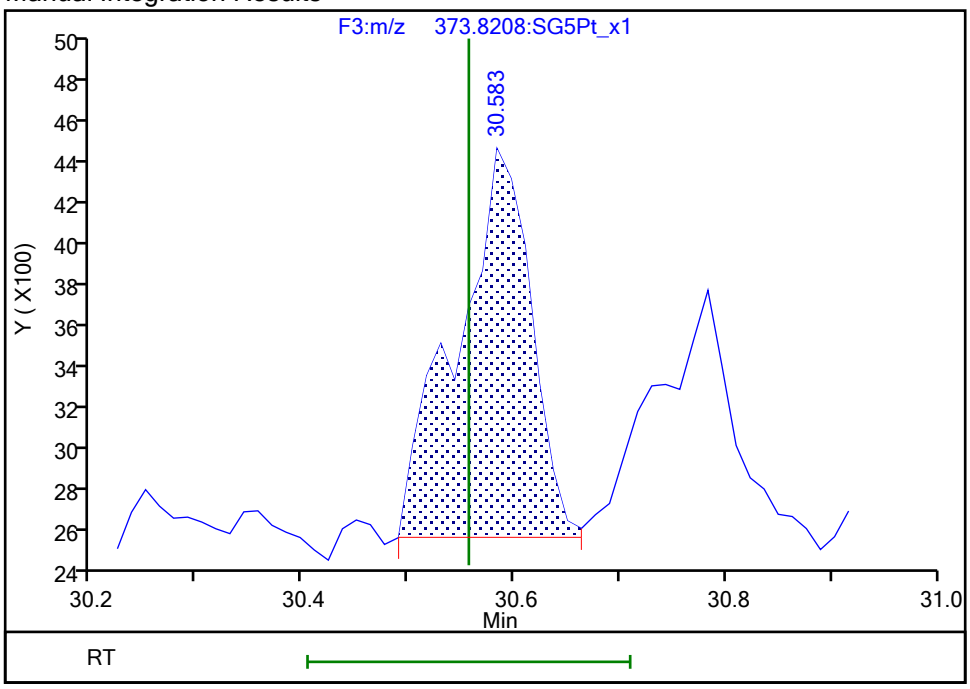
Processing Integration Results

RT: 30.58
Area: 9030
Amount: 0.087104
Amount Units: pg/ul



Manual Integration Results

RT: 30.58
Area: 9333
Amount: 0.088529
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:52:59

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

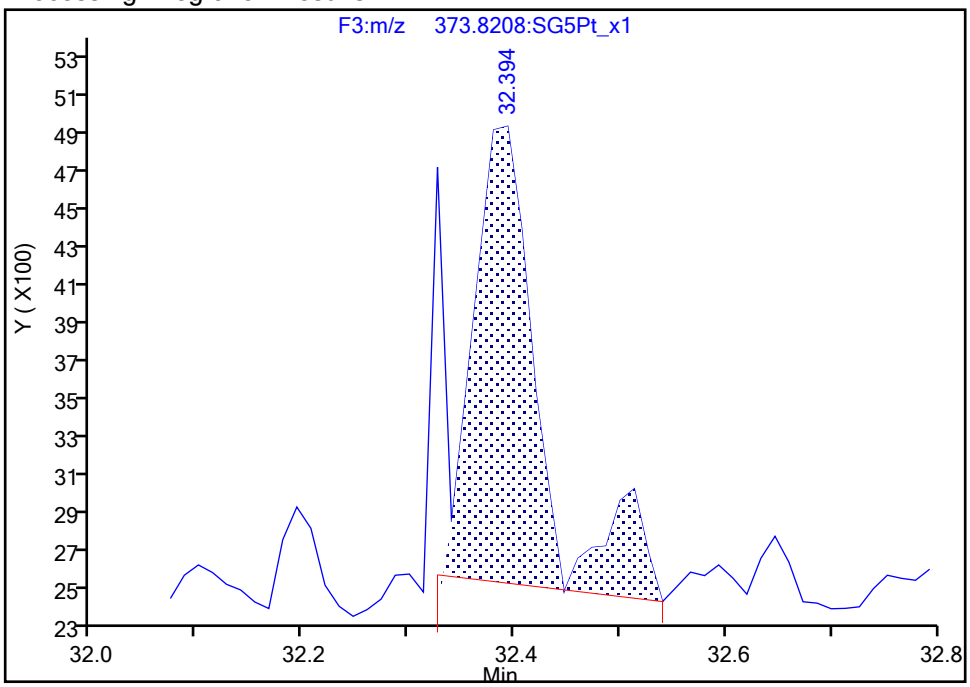
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

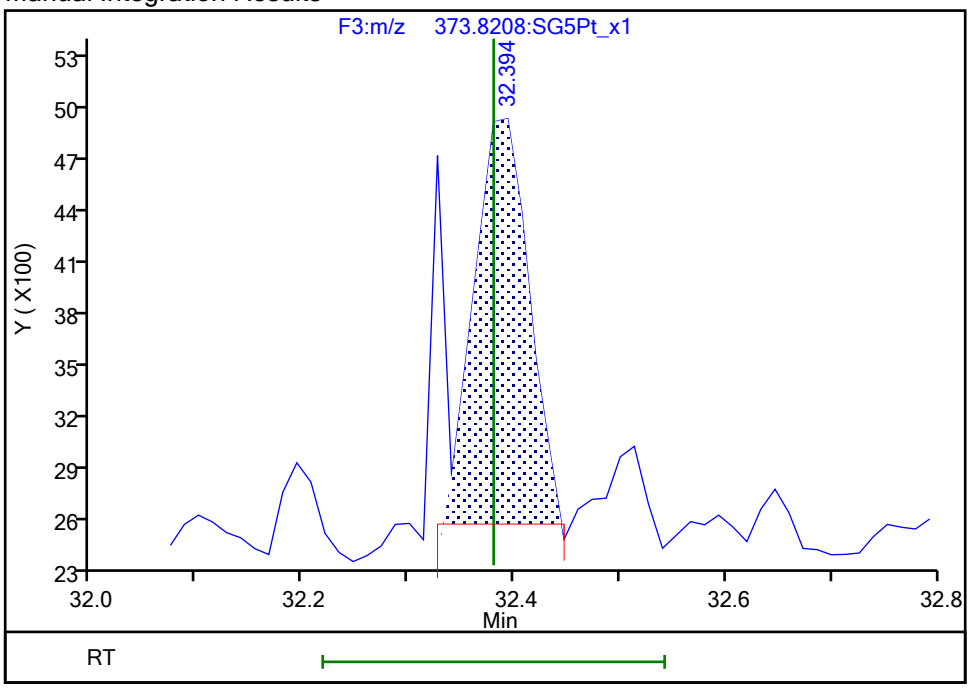
Processing Integration Results

RT: 32.39
Area: 10143
Amount: 0.119714
Amount Units: pg/ul



Manual Integration Results

RT: 32.39
Area: 8298
Amount: 0.097167
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:11
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

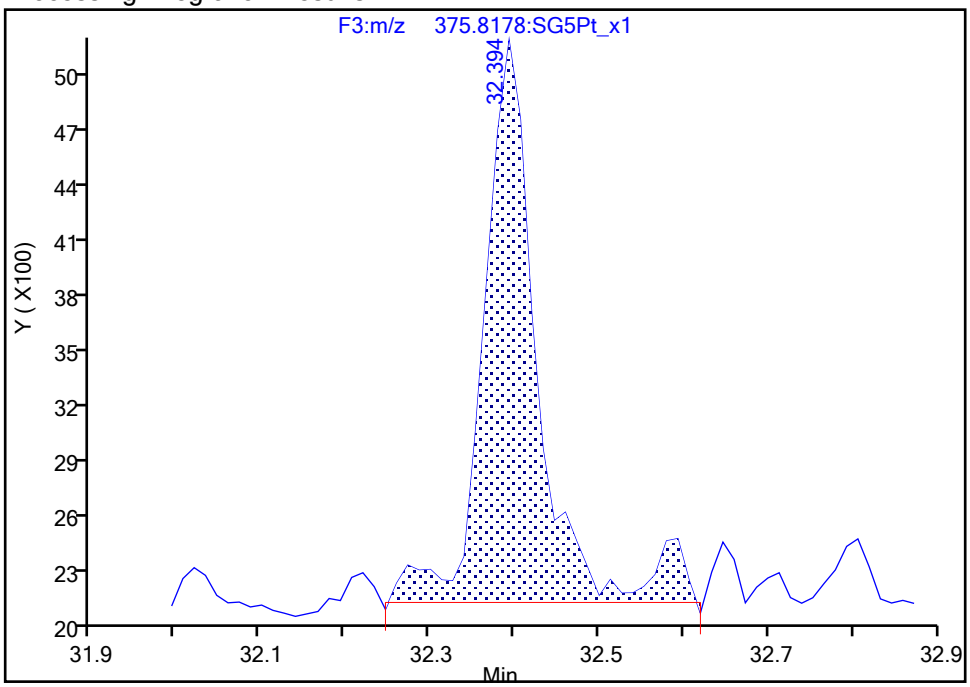
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

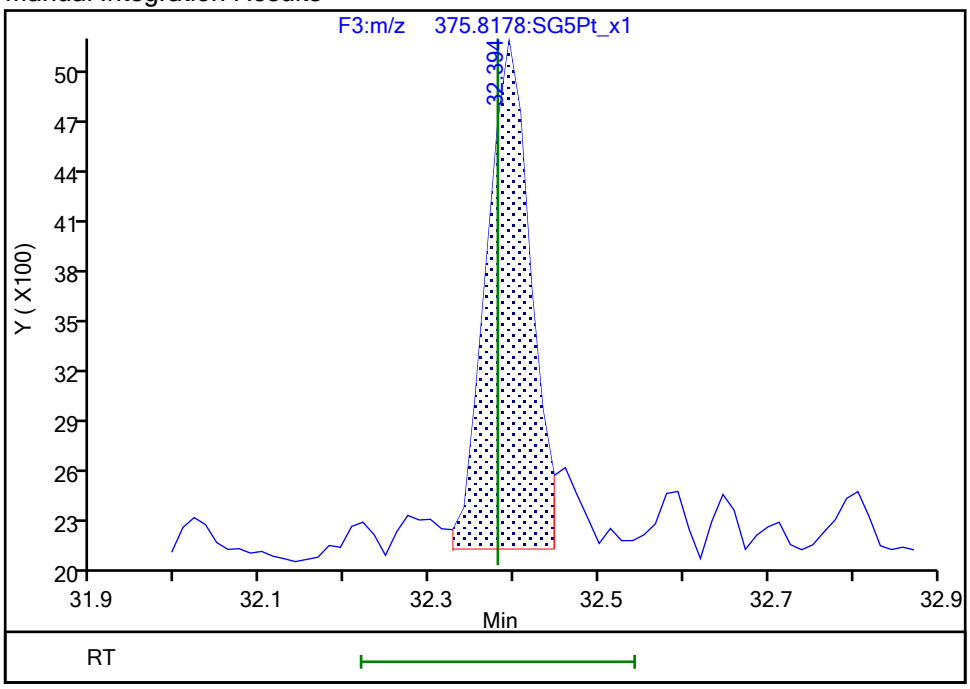
Processing Integration Results

RT: 32.39
Area: 13405
Amount: 0.119714
Amount Units: pg/ul



Manual Integration Results

RT: 32.39
Area: 10815
Amount: 0.097167
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:22

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

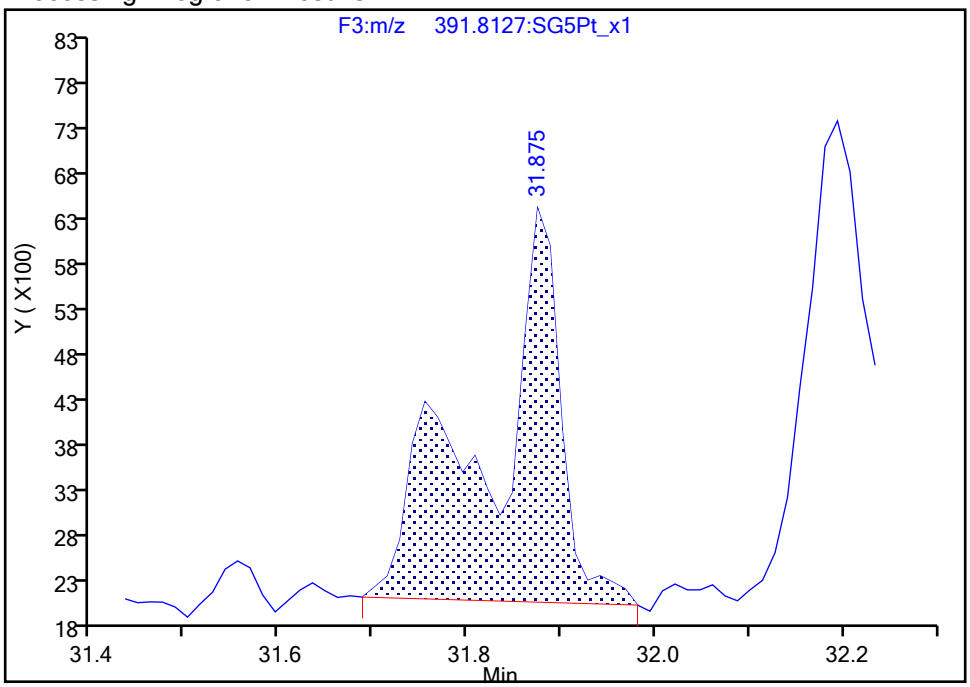
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

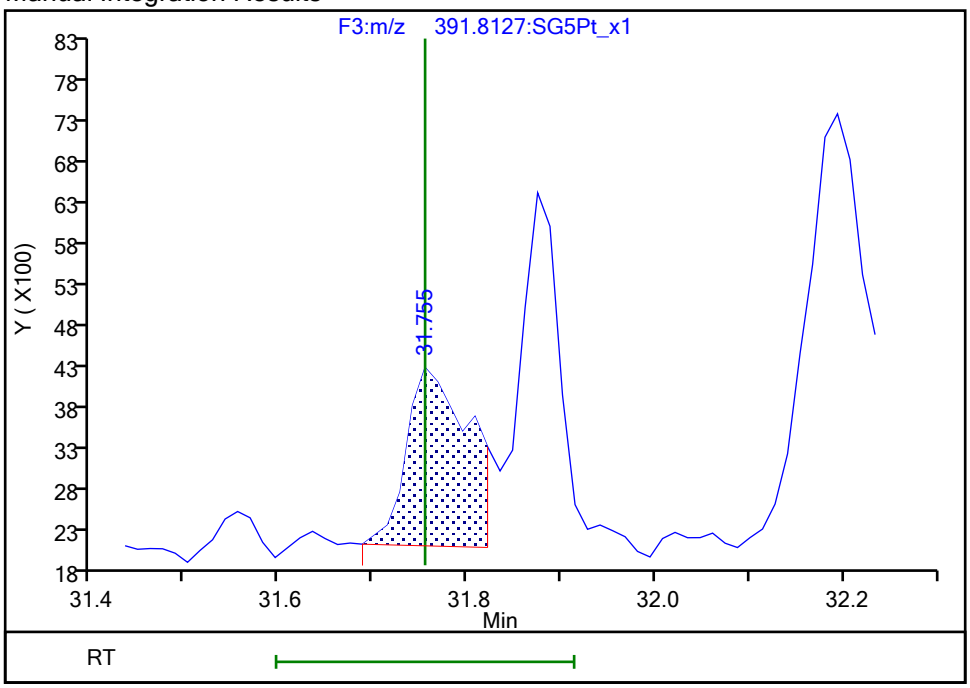
Processing Integration Results

RT: 31.87
Area: 23635
Amount: 0.305801
Amount Units: pg/ul



Manual Integration Results

RT: 31.75
Area: 9762
Amount: 0.144596
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:40

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

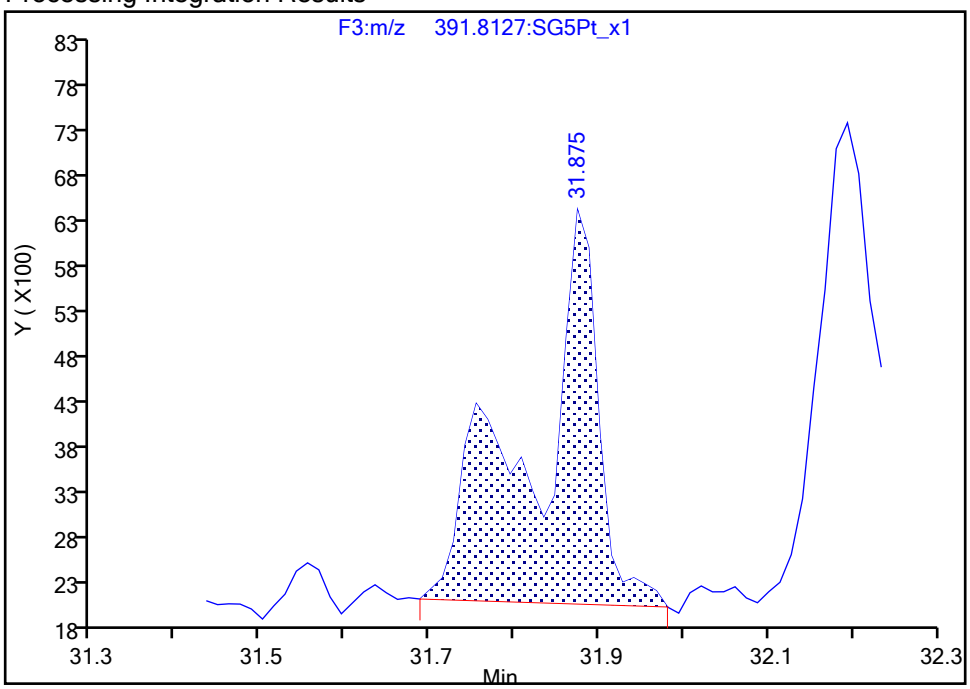
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 3

Processing Integration Results

RT: 31.78
Area: 55602
Amount: 0.305801
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 26291
Amount: 0.144596
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 10:53:40
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

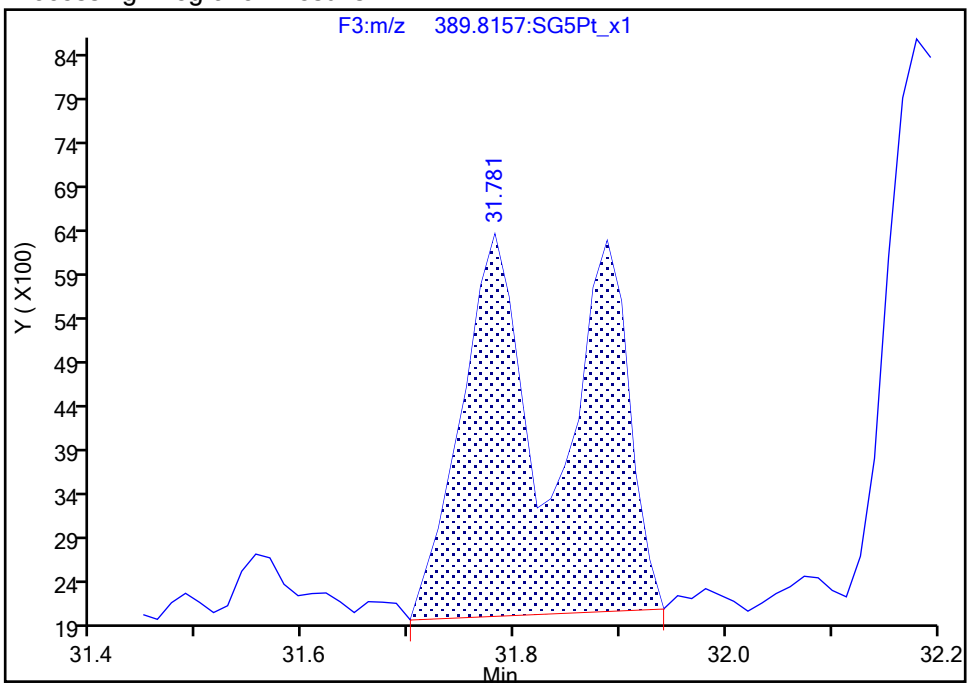
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

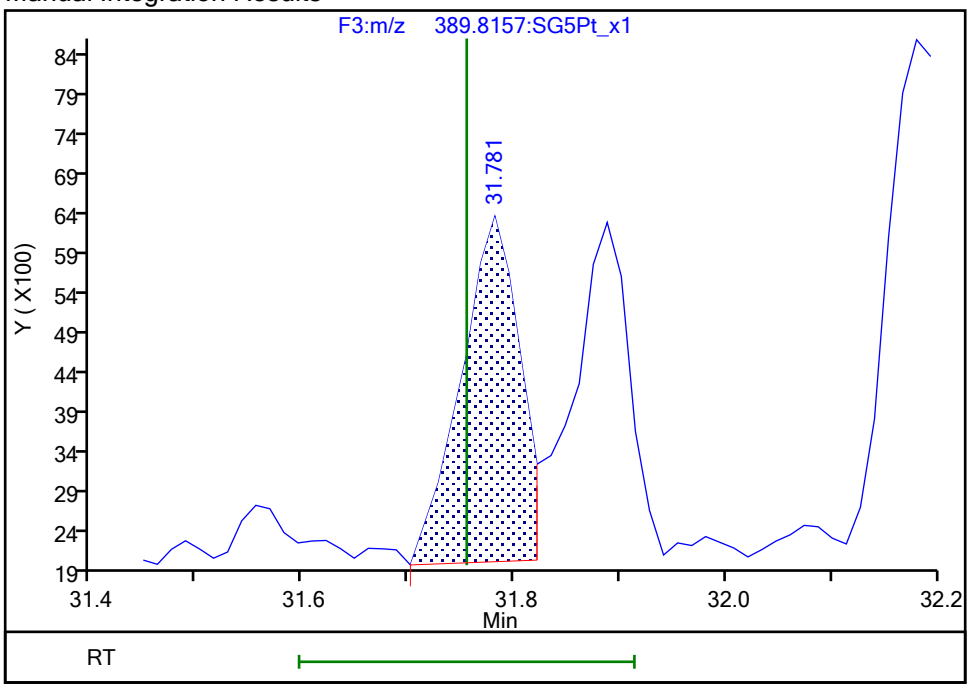
Processing Integration Results

RT: 31.78
Area: 31967
Amount: 0.305801
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 16529
Amount: 0.144596
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:41
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

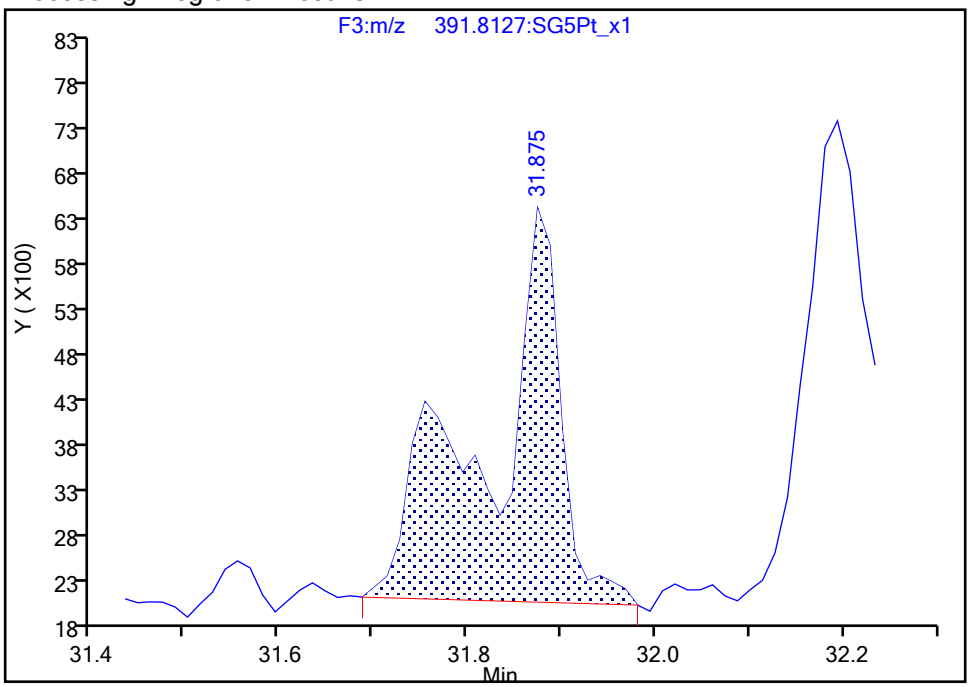
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

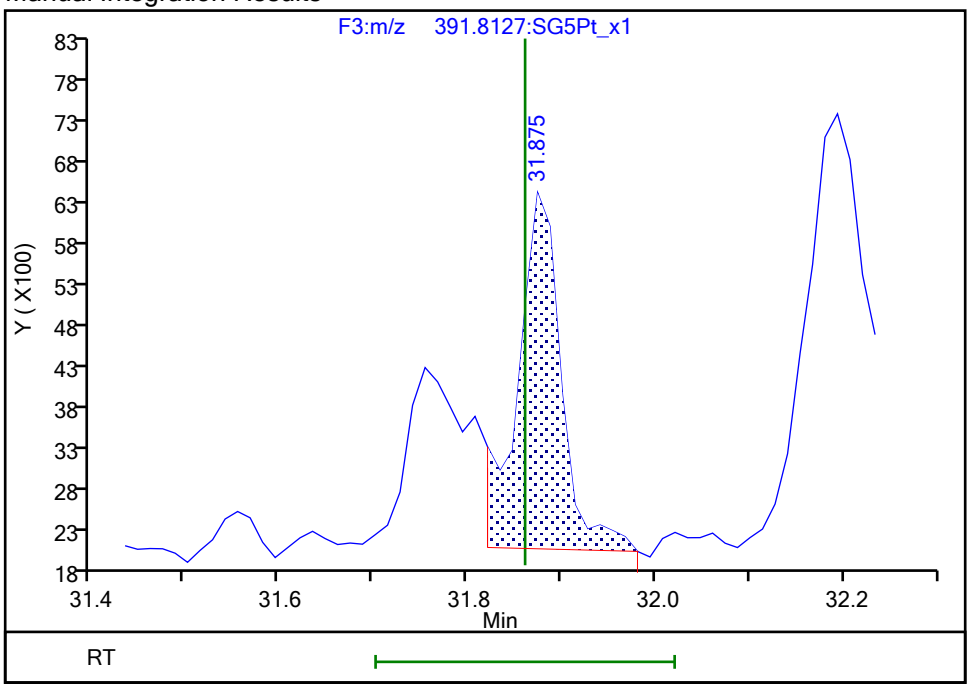
Processing Integration Results

RT: 31.87
Area: 23635
Amount: 0.297399
Amount Units: pg/ul



Manual Integration Results

RT: 31.87
Area: 13873
Amount: 0.156829
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:44
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

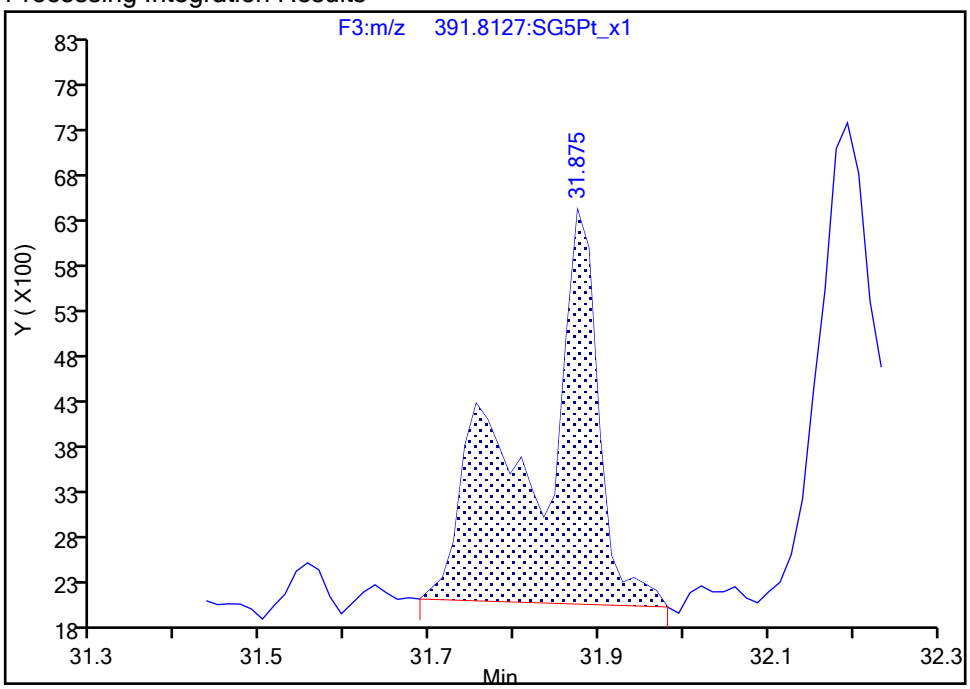
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.78
Area: 55602
Amount: 0.297399
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 29321
Amount: 0.156829
Amount Units: pg/ul

Reviewer: dadunj, 16-Dec-2019 10:53:44

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

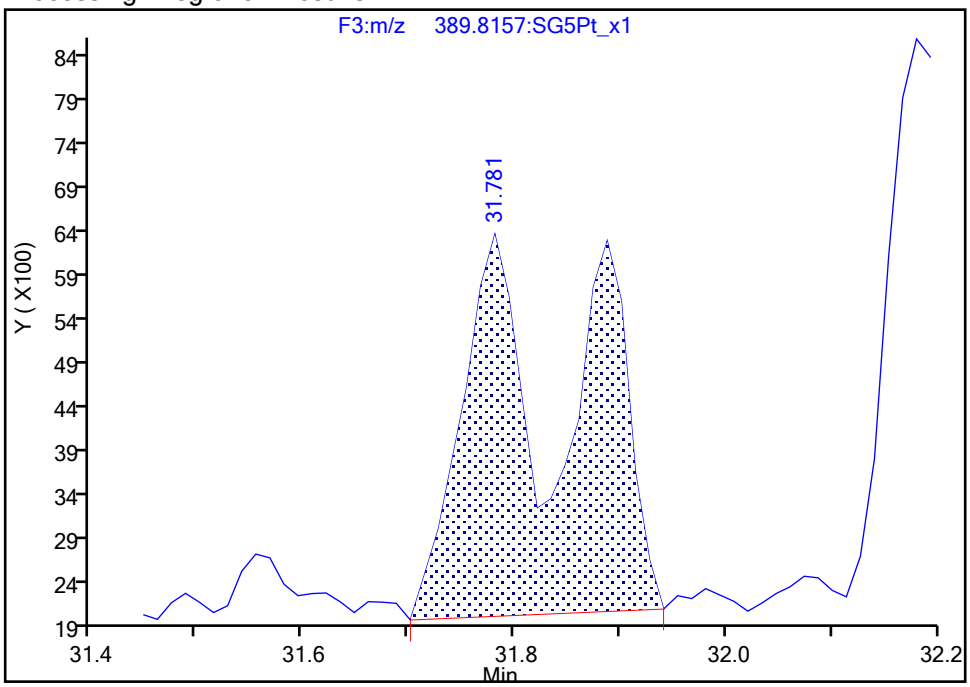
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

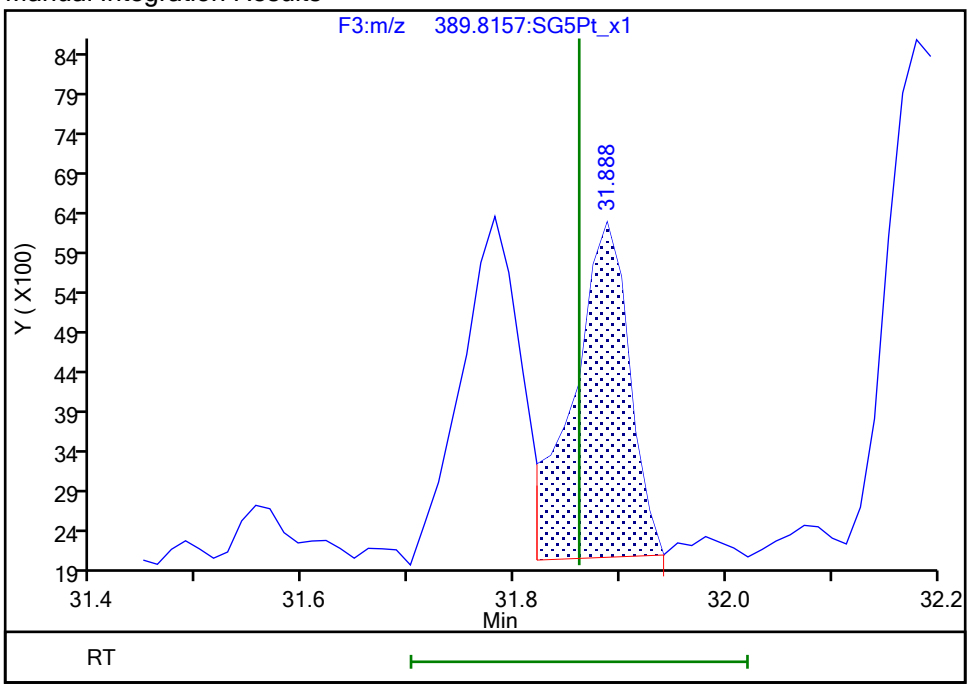
Processing Integration Results

RT: 31.78
Area: 31967
Amount: 0.297399
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 15448
Amount: 0.156829
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:53:46
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

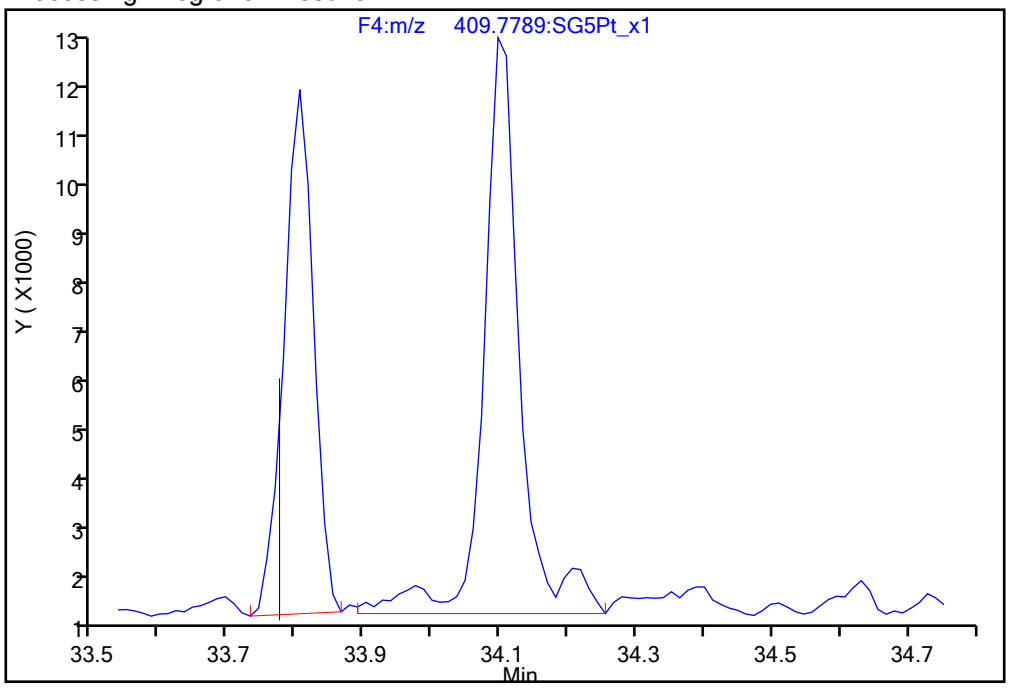
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d				
Injection Date:	13-Dec-2019 19:25:56	Instrument ID:	10D5		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.78- 34.90)

Signal: 2

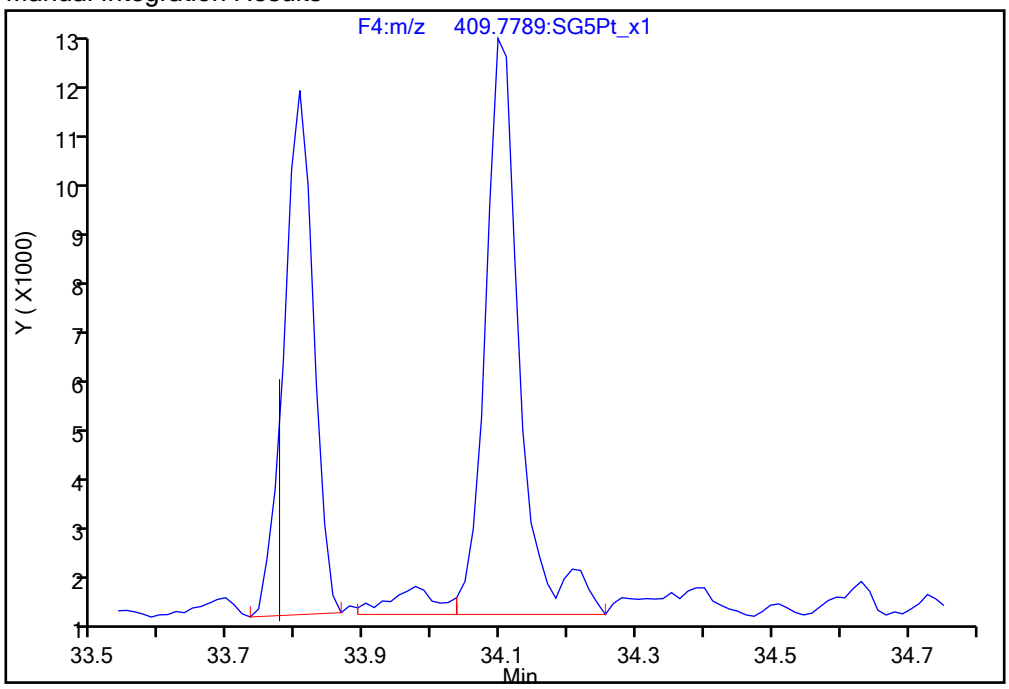
Processing Integration Results

RT = 34.097 Area = 38184



Manual Integration Results

RT = 34.097 Area = 35767 M



Reviewer: dadunj, 16-Dec-2019 10:53:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 16-Dec-2019 10:55:21 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d

Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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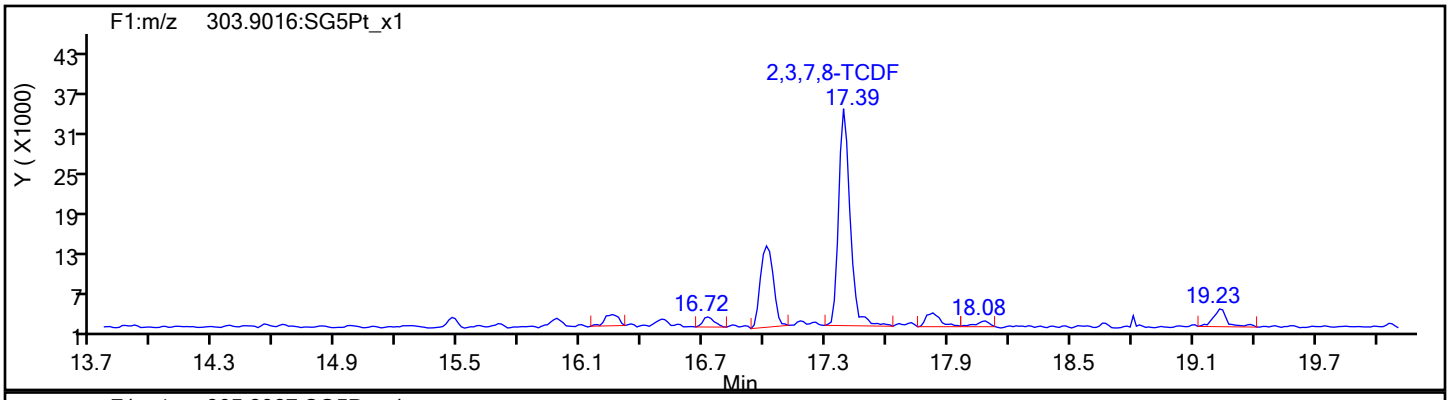
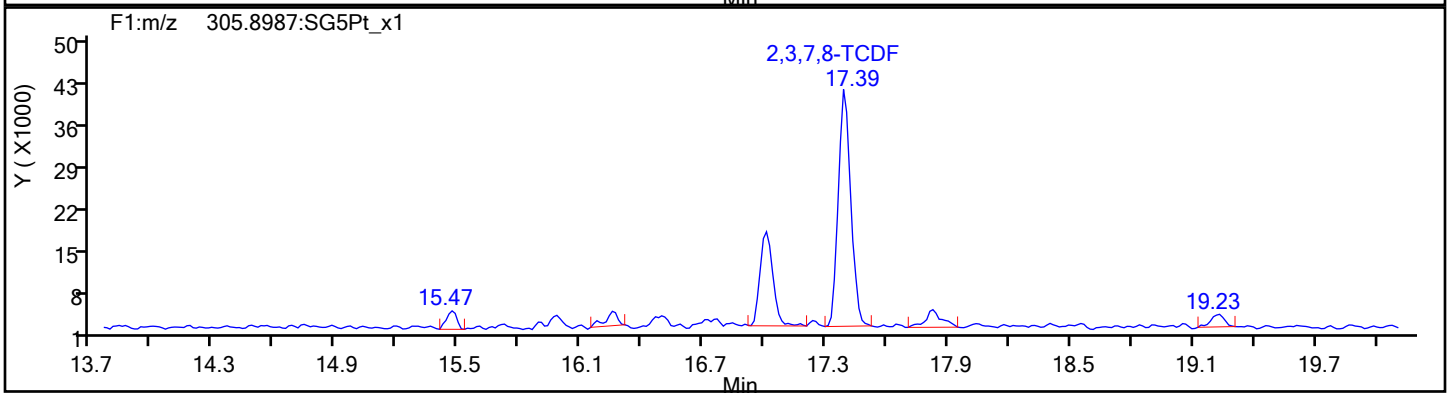
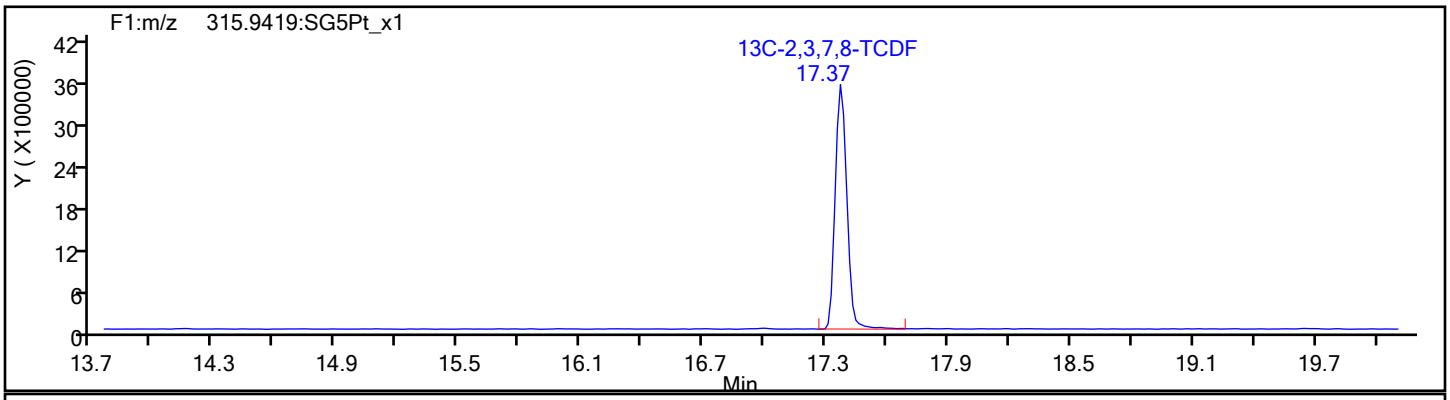
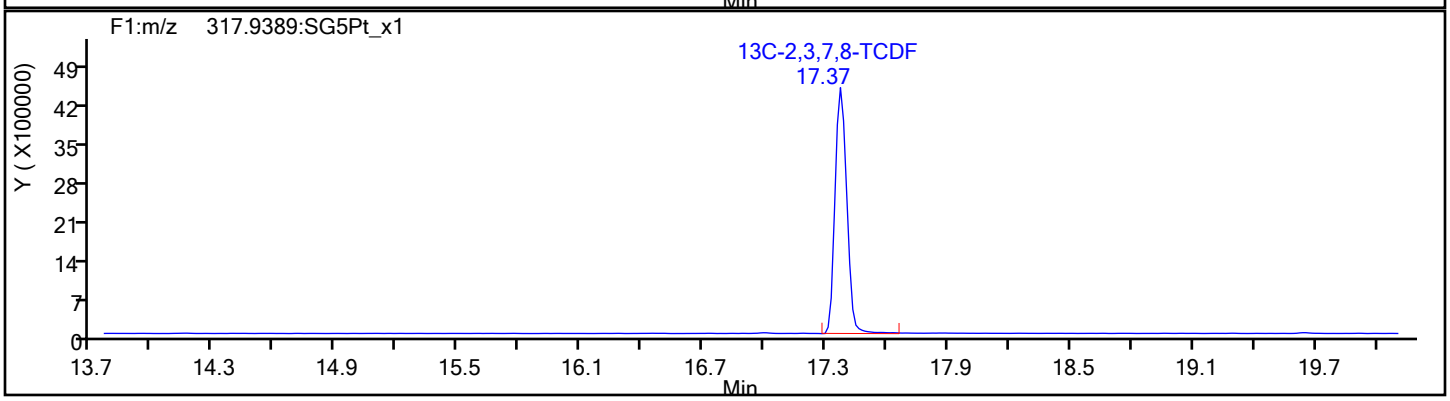
TCDF





TCDF Standards





Report Date: 16-Dec-2019 10:55:21 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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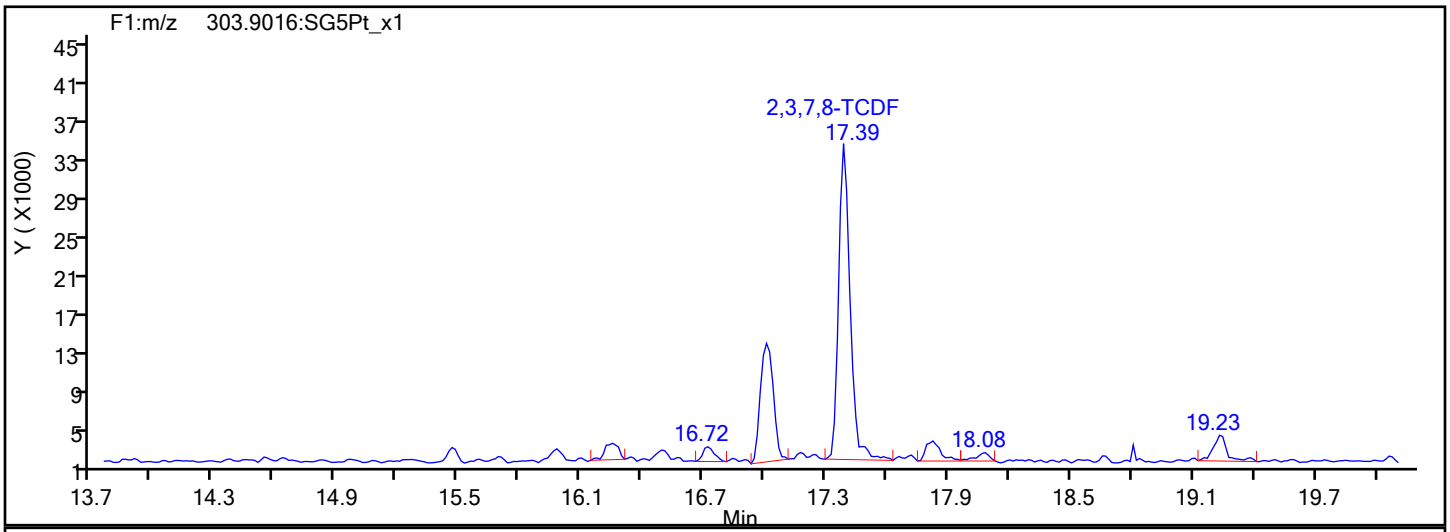
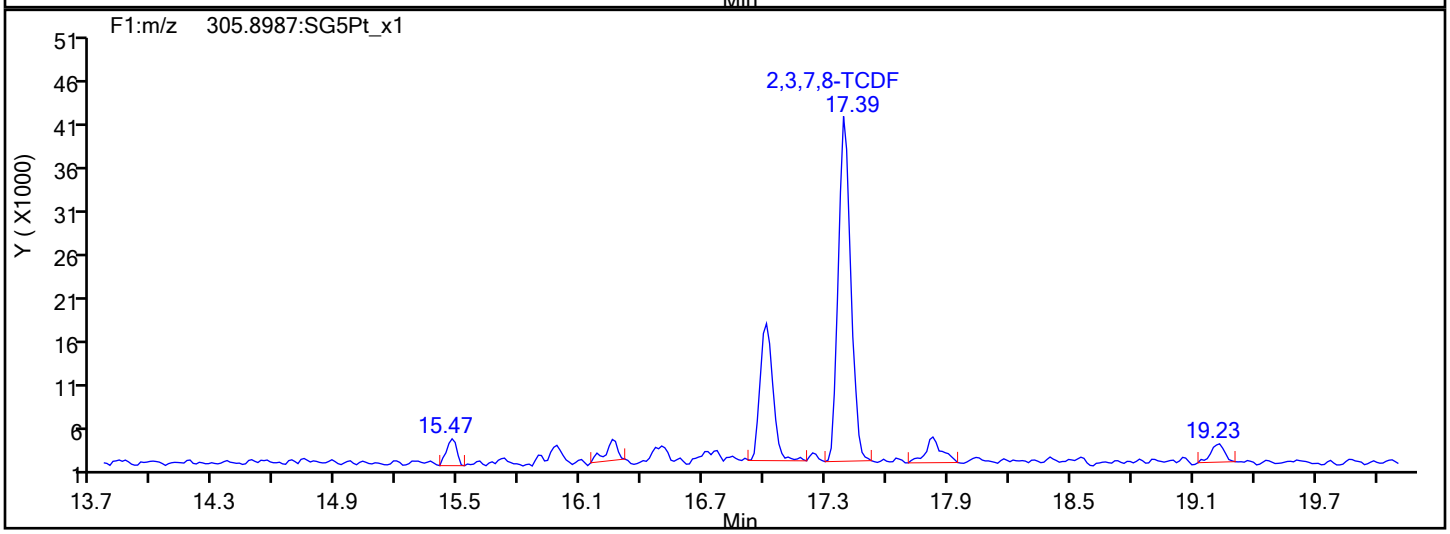
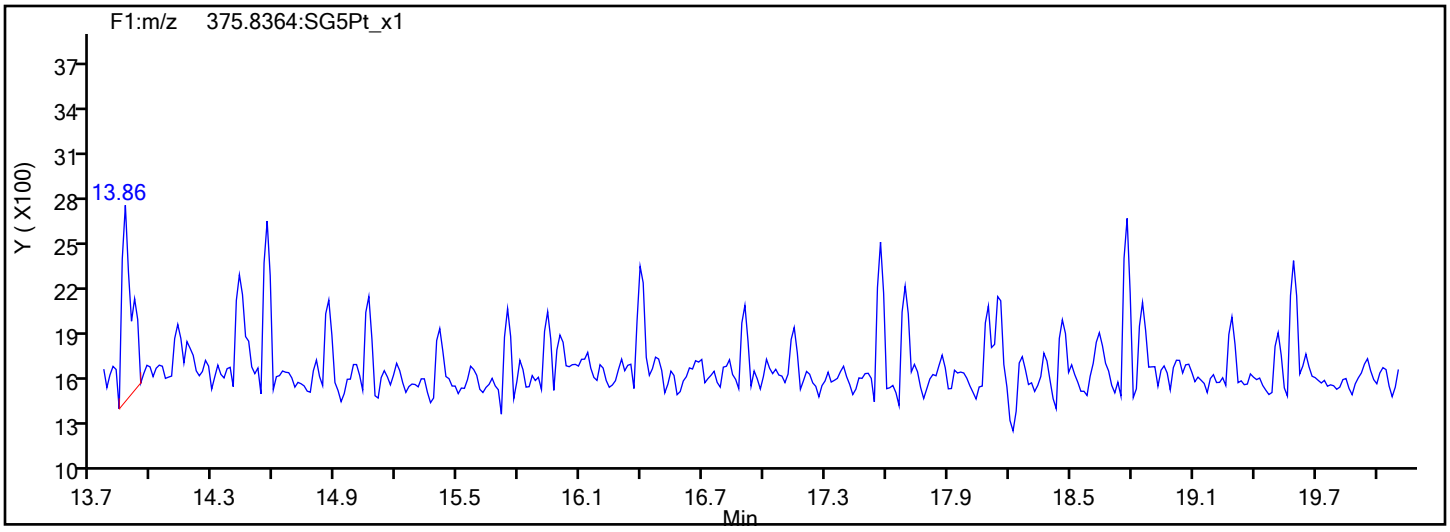
TCDF





TCDF Interference Mass



Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
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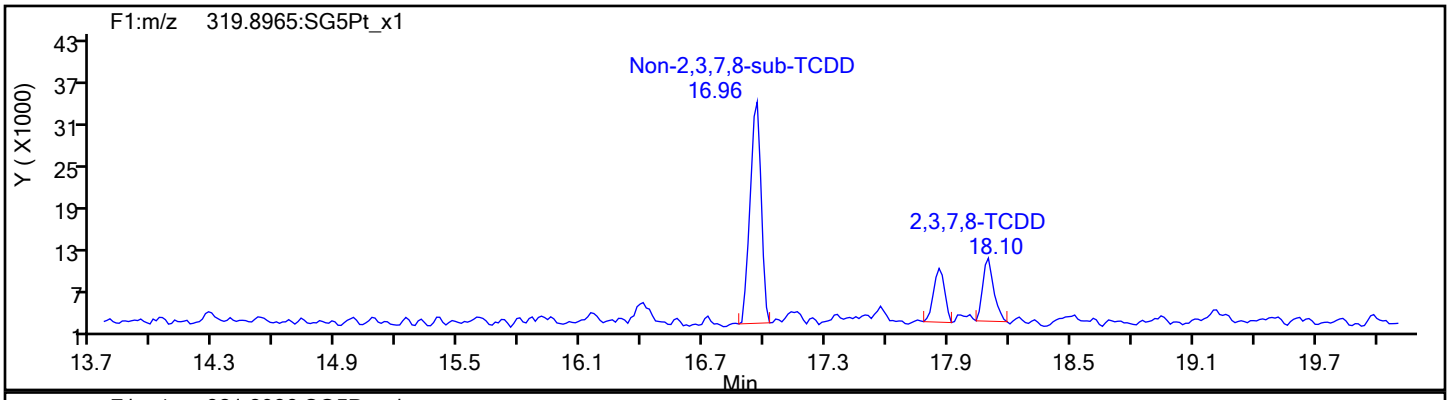
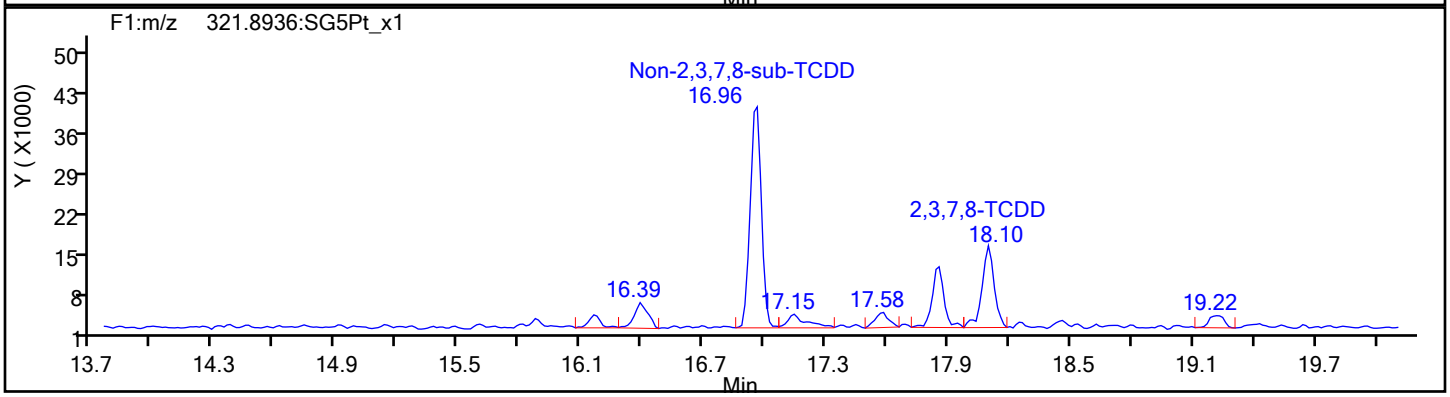
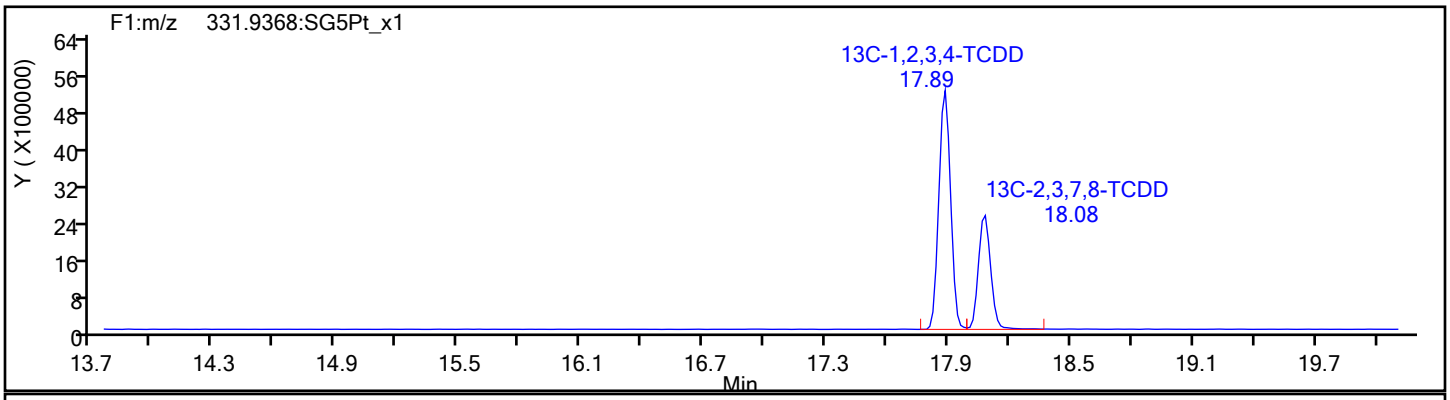
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

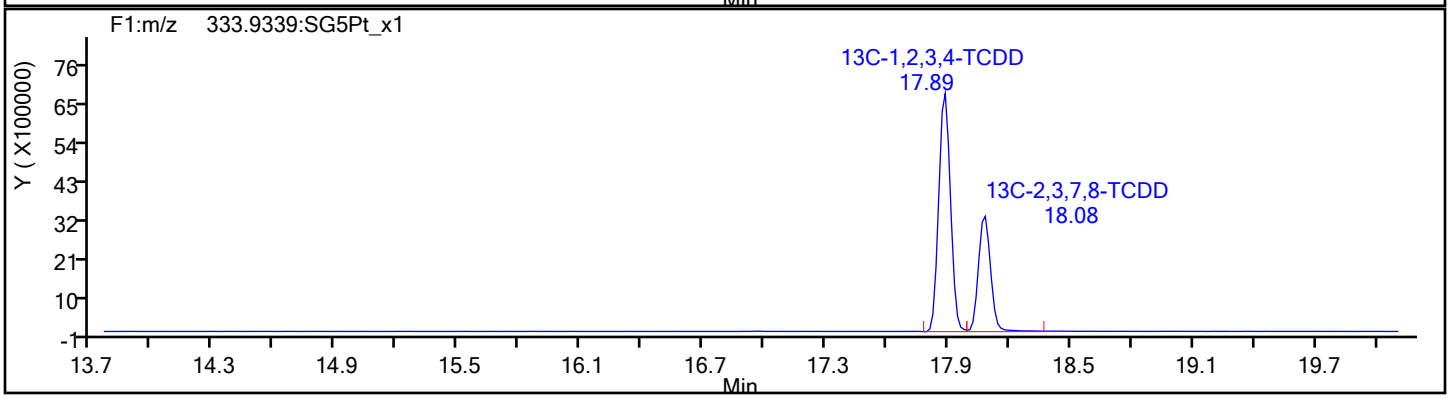
TCDD





TCDD Standards





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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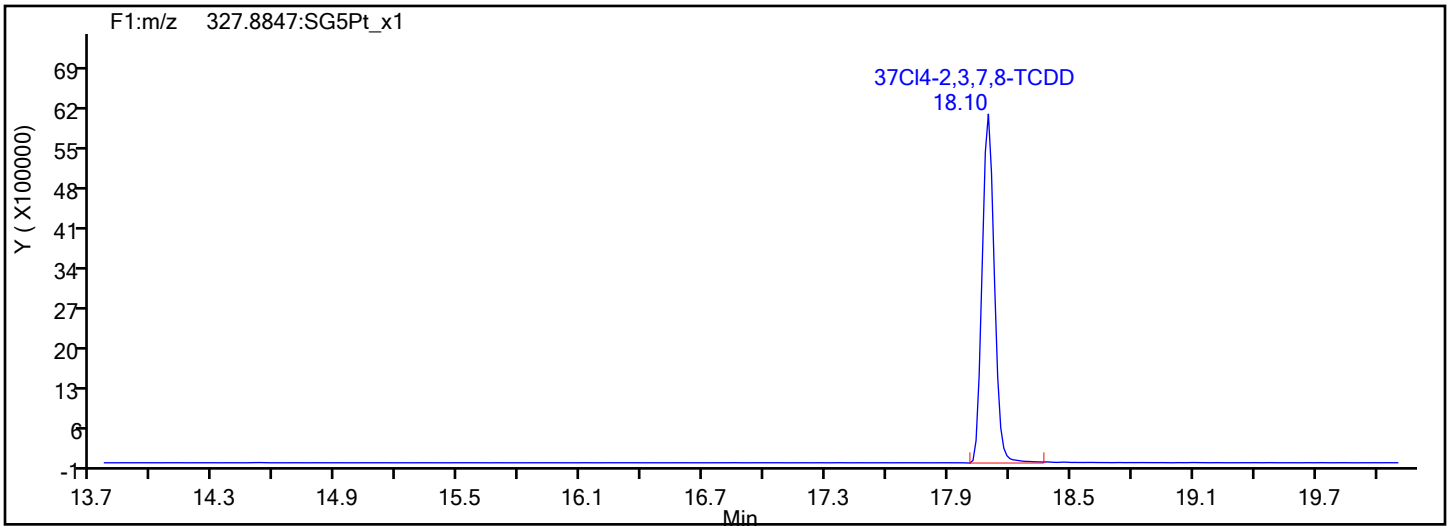
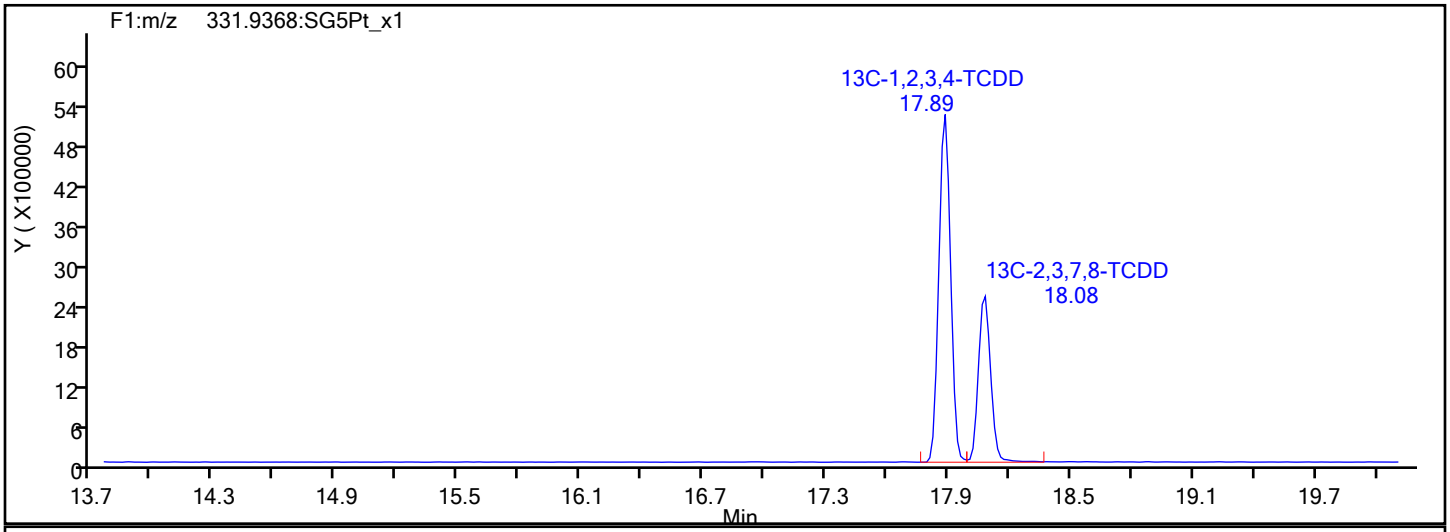
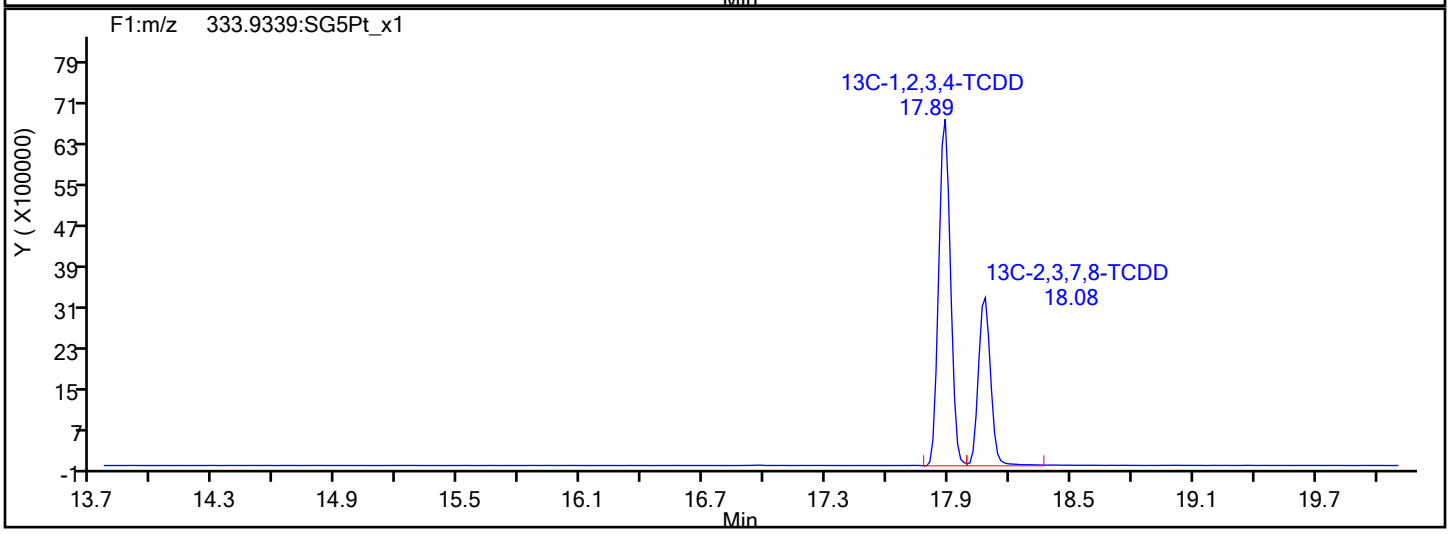
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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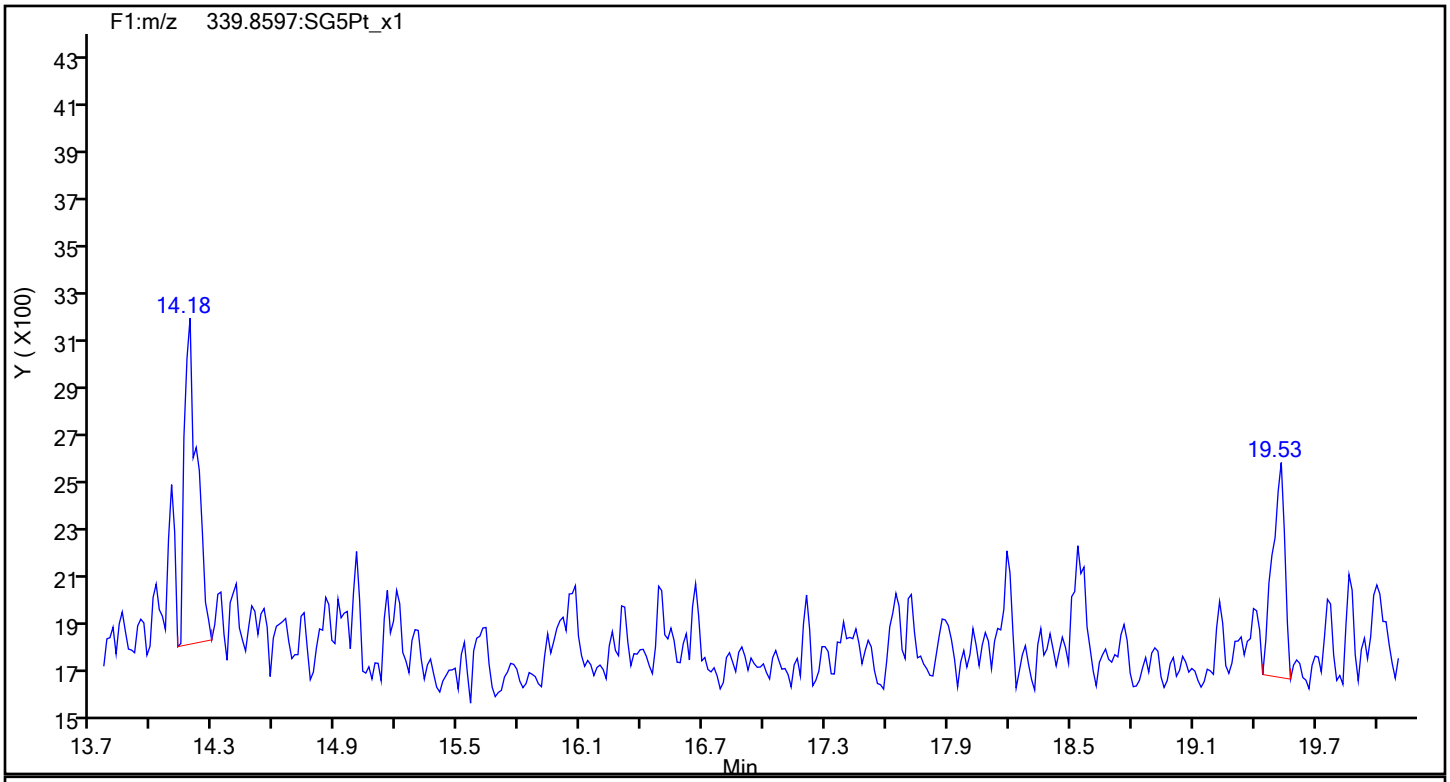
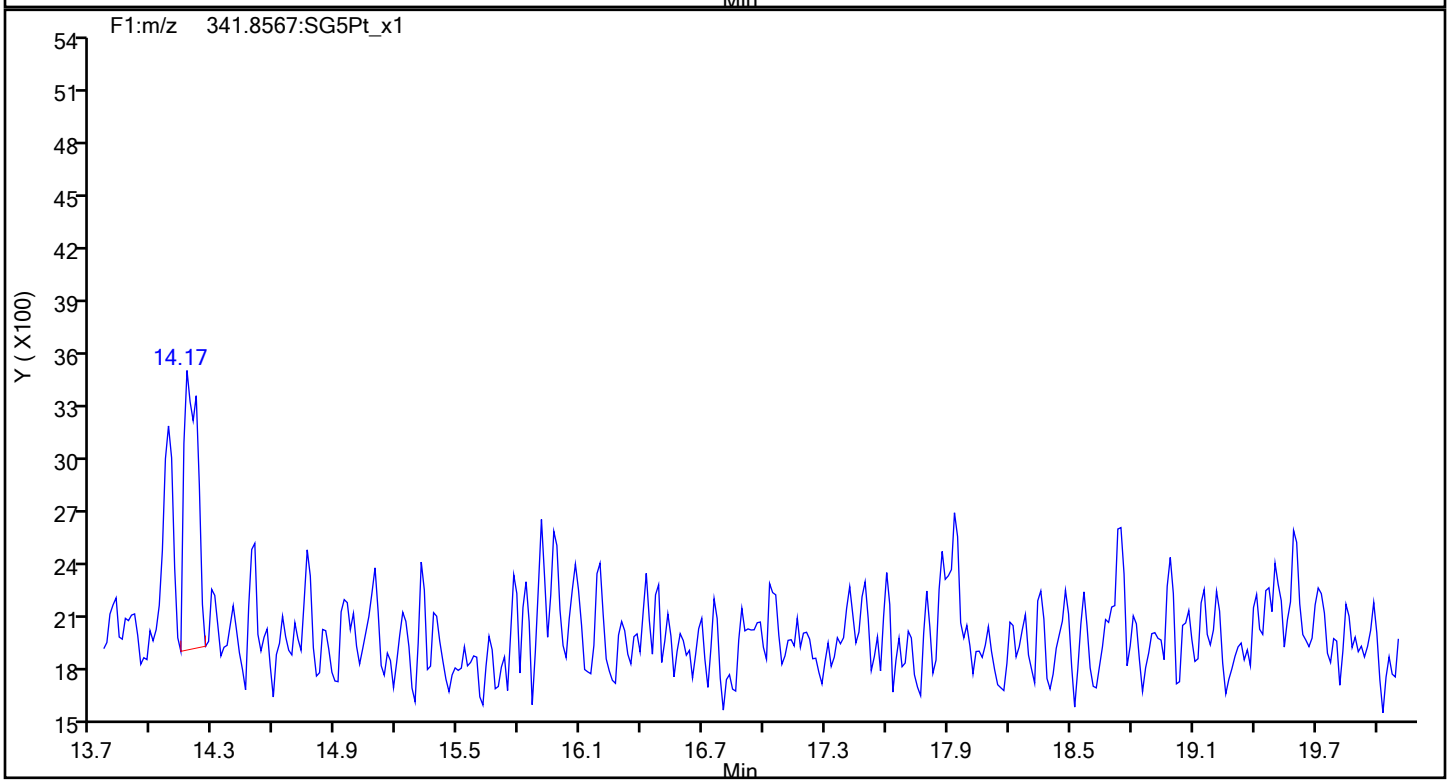
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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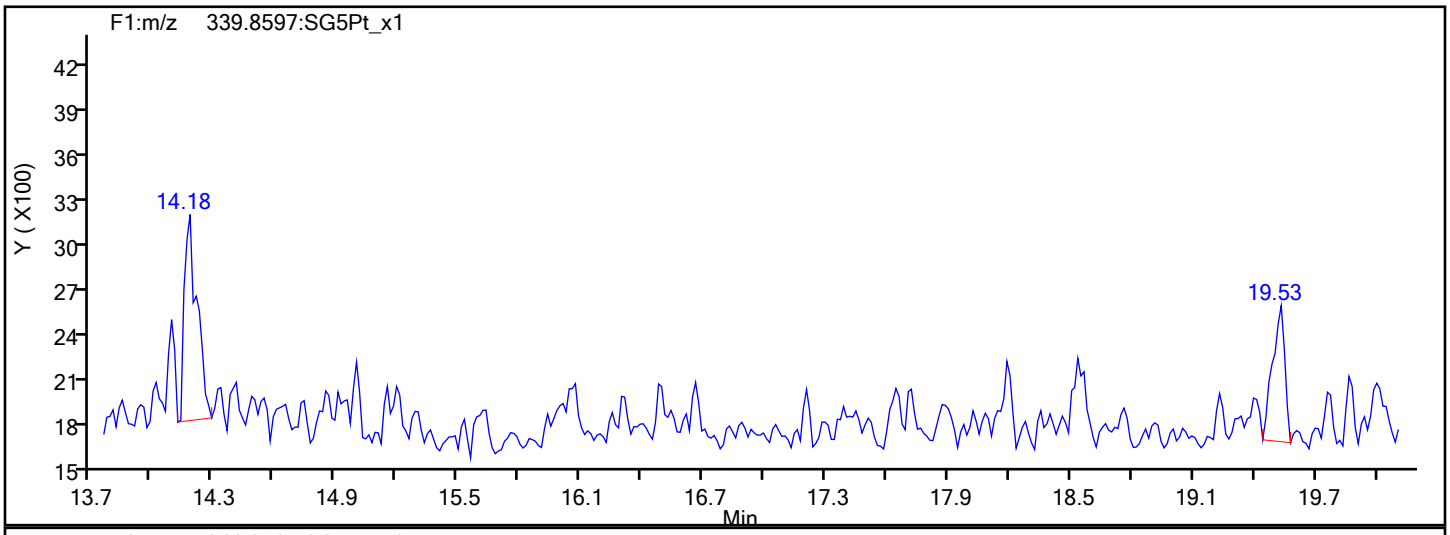
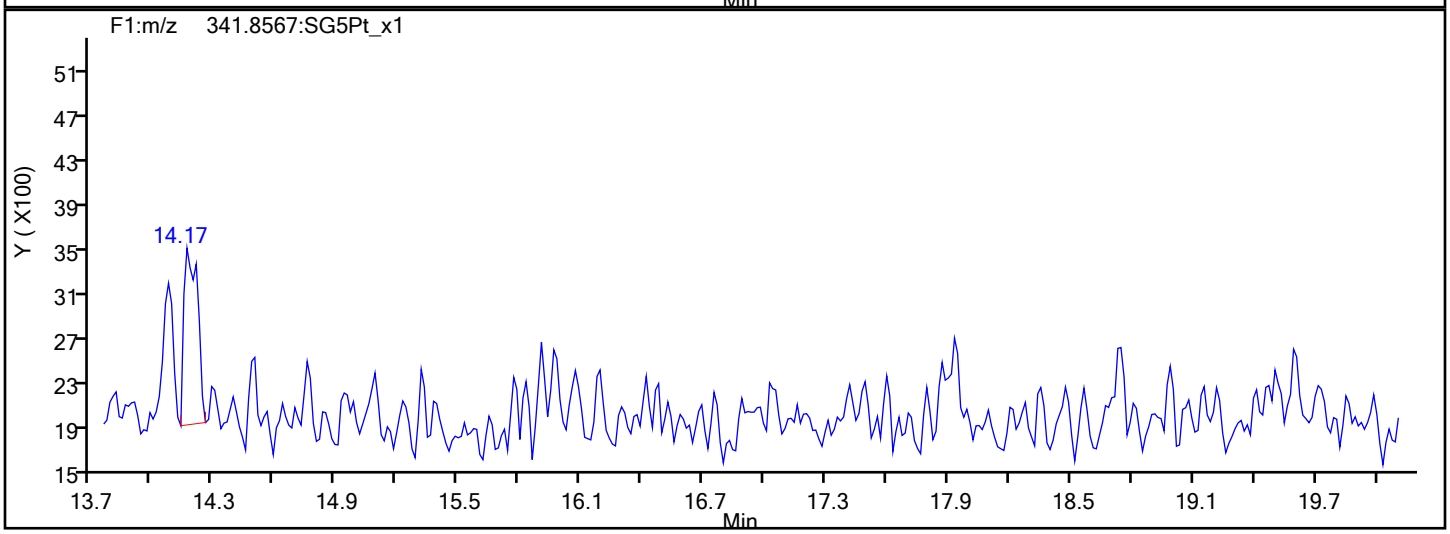
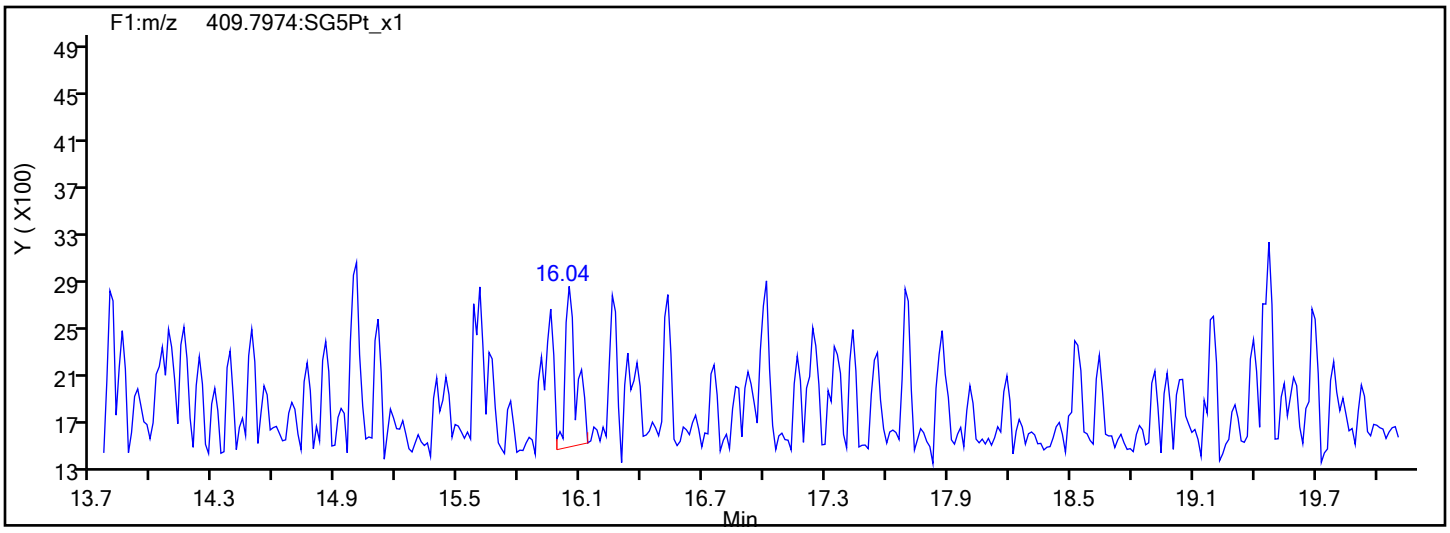
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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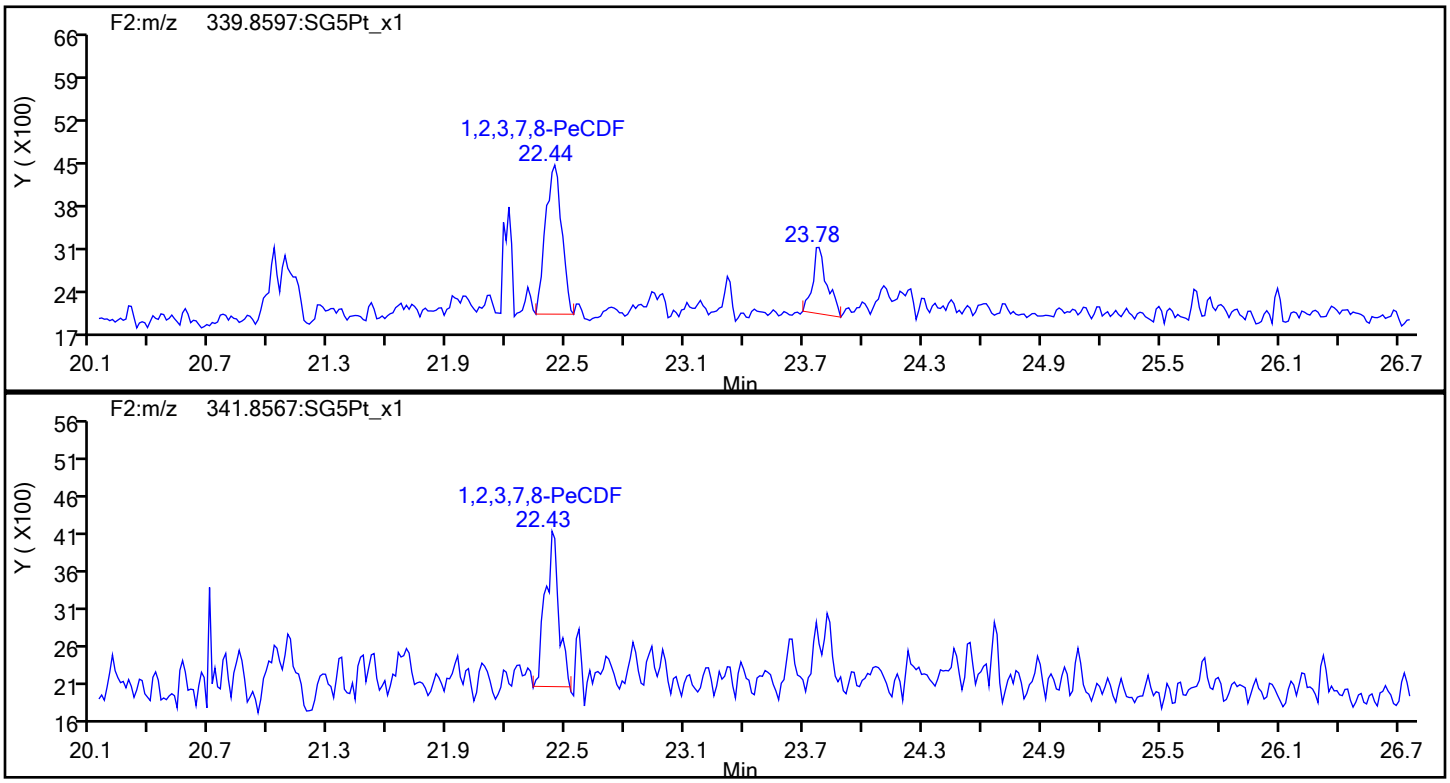
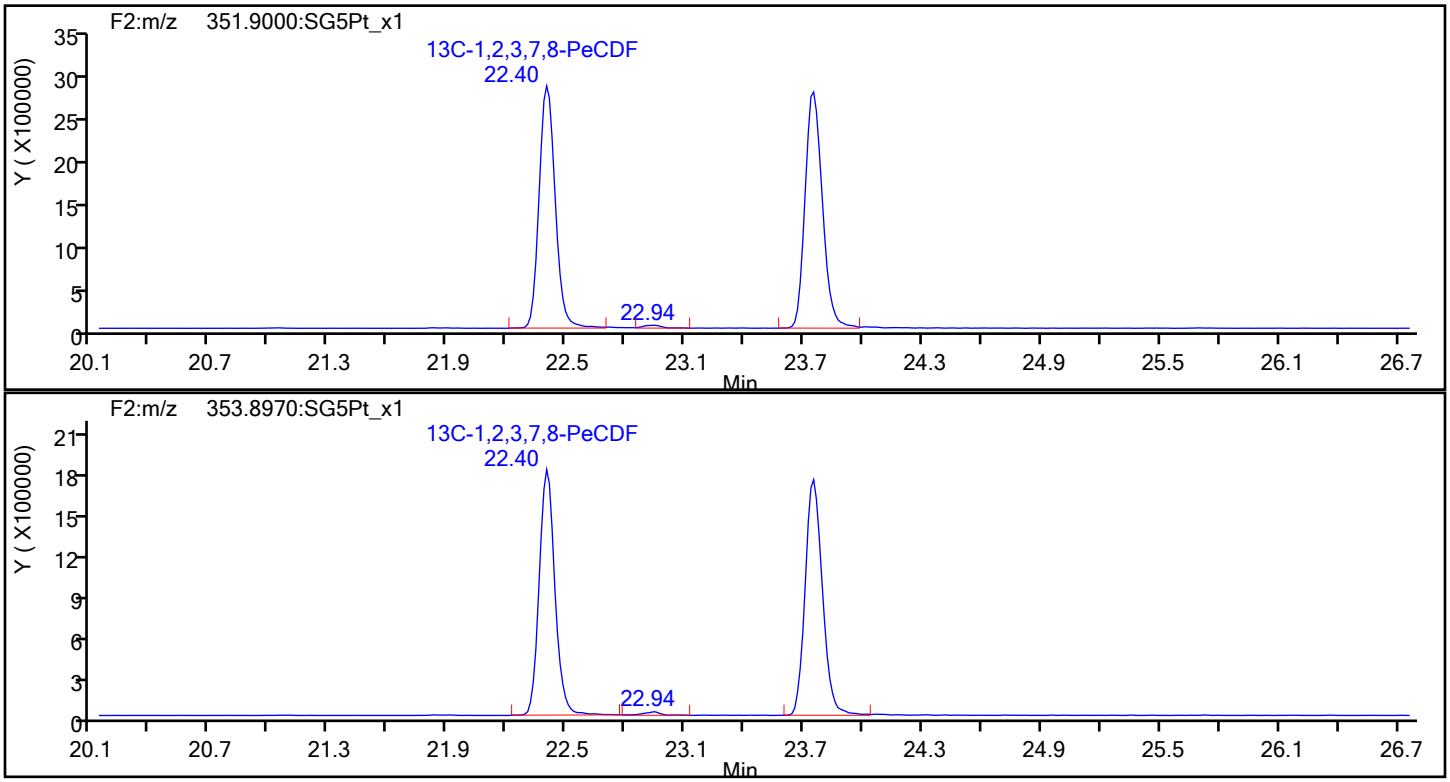
PeCDF



PeCDF Standards



Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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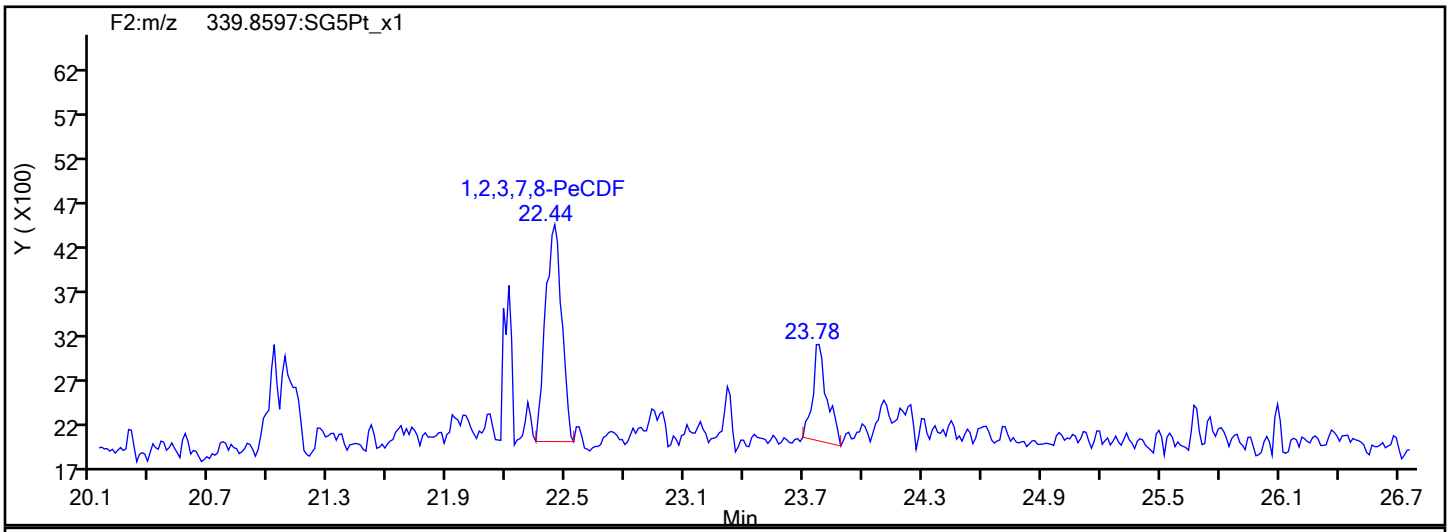
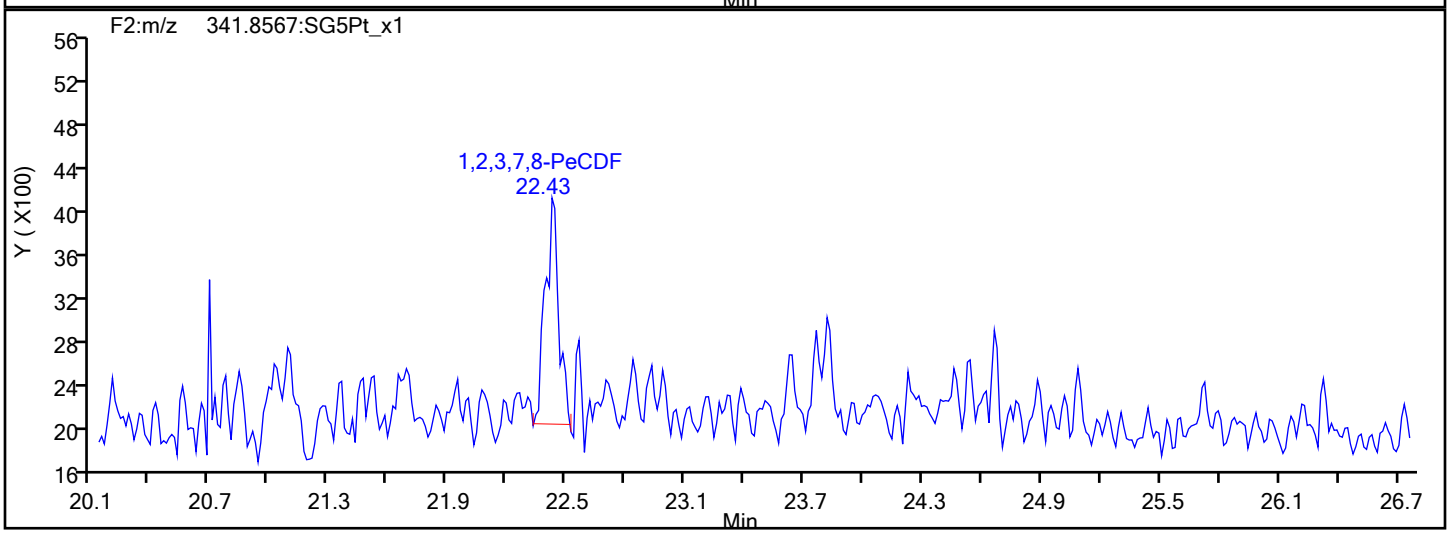
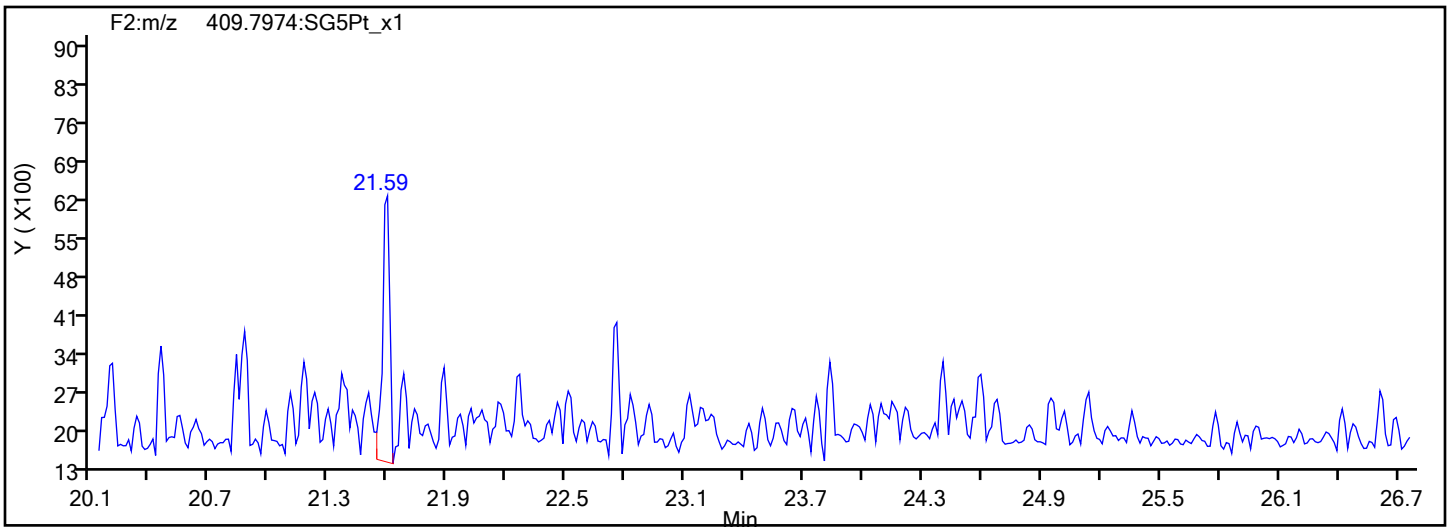
PeCDF





PeCDF Interference Mass



Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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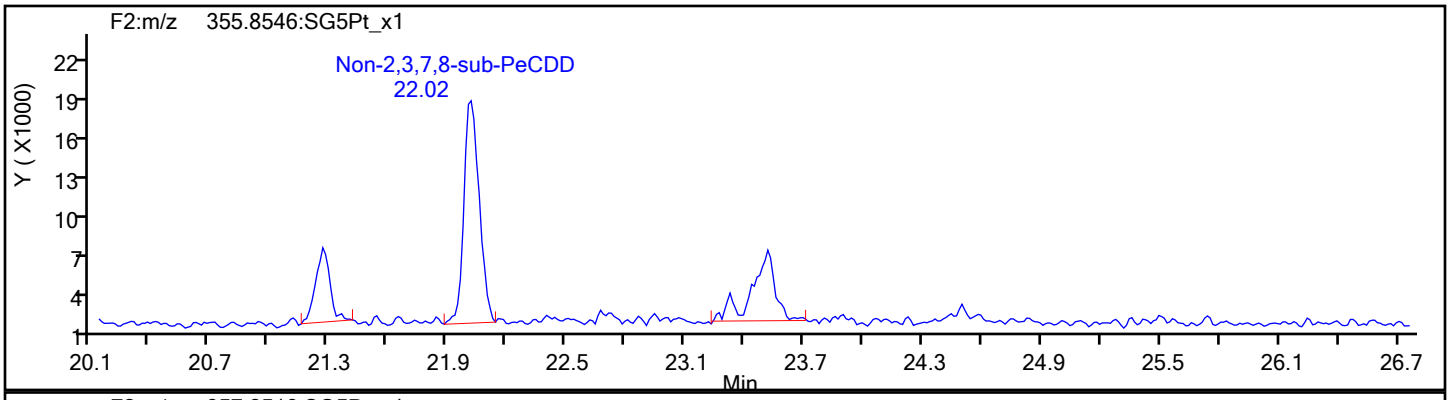
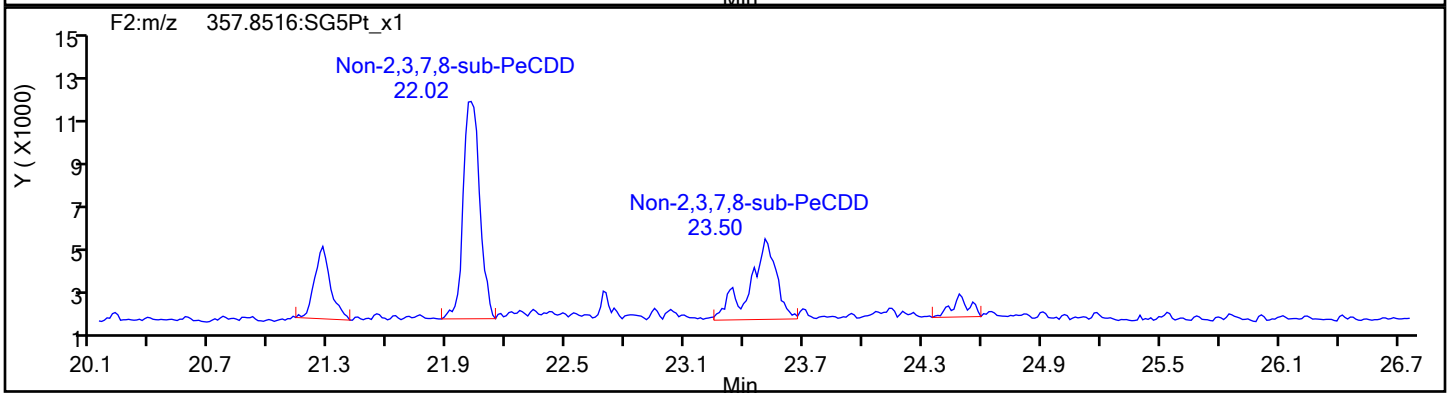
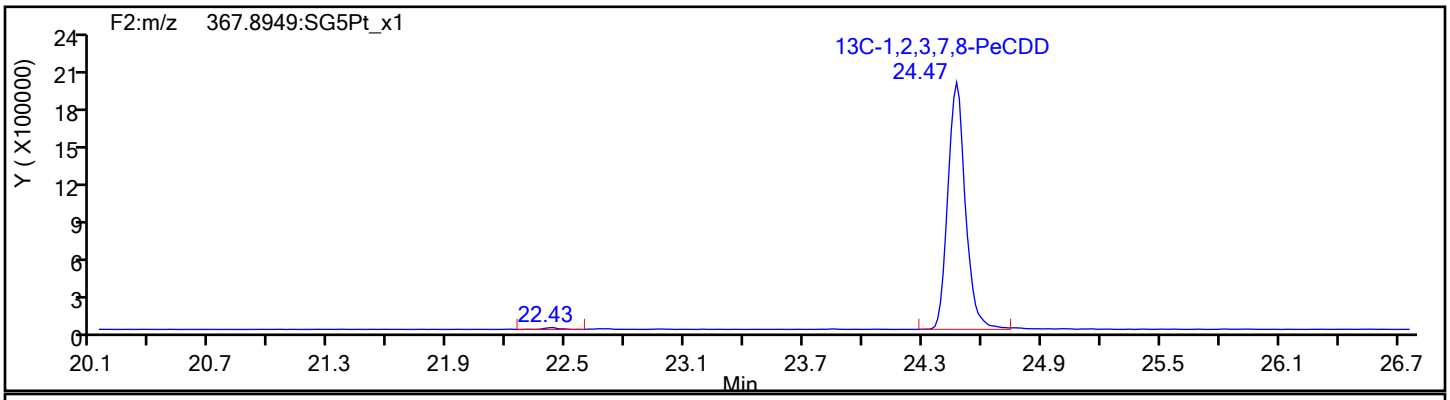
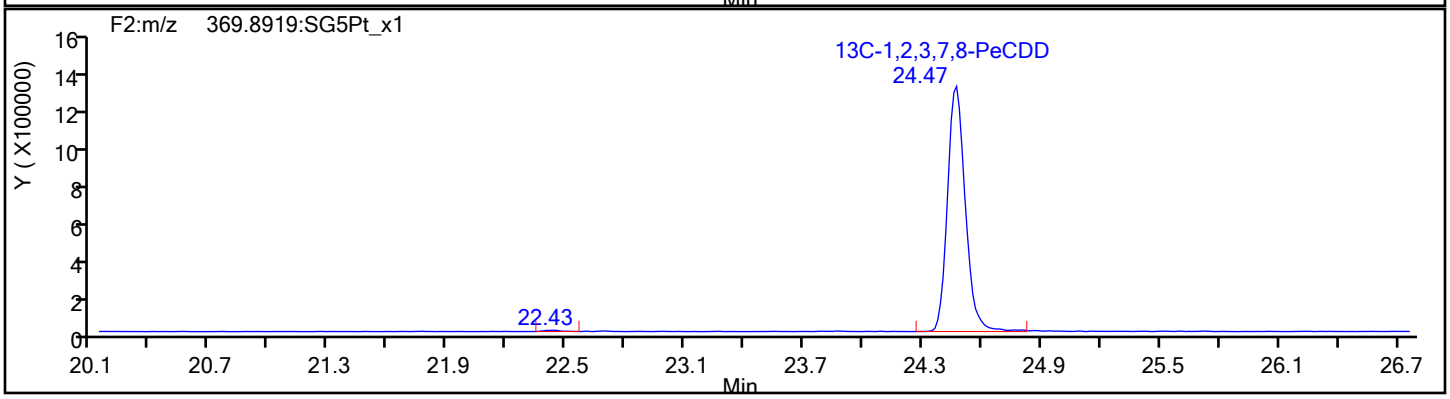
PeCDD





PeCDD Standards





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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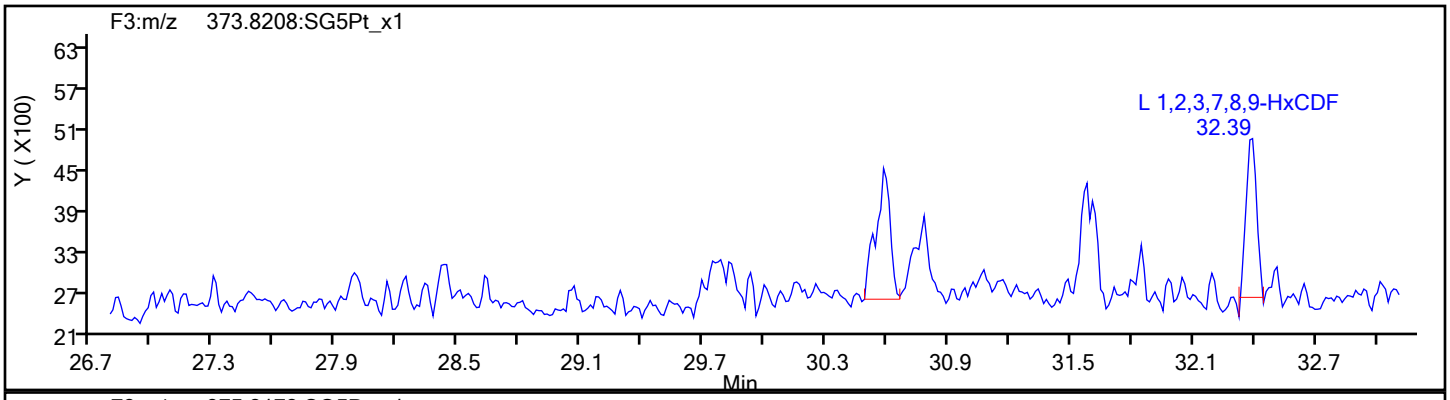
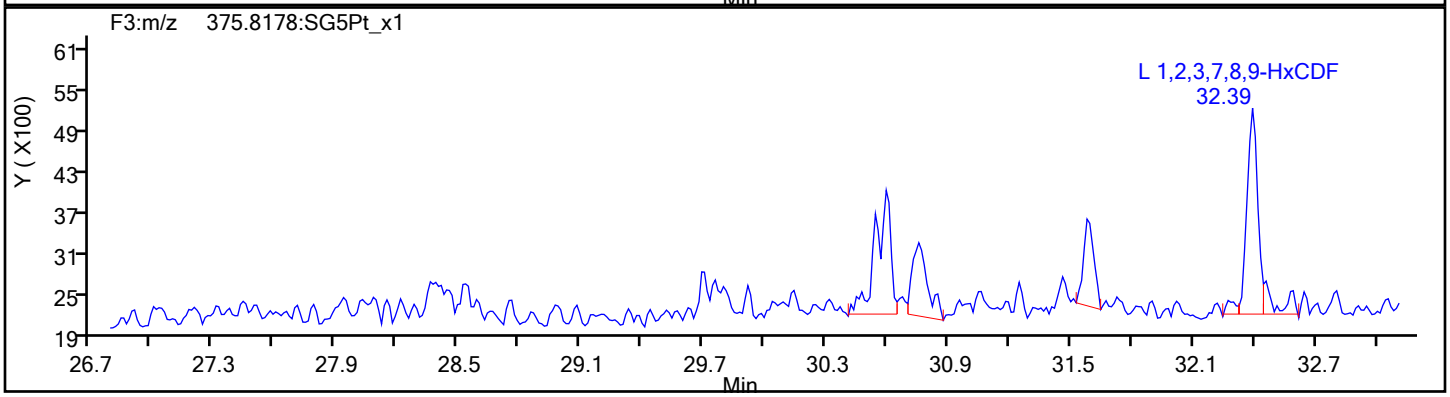
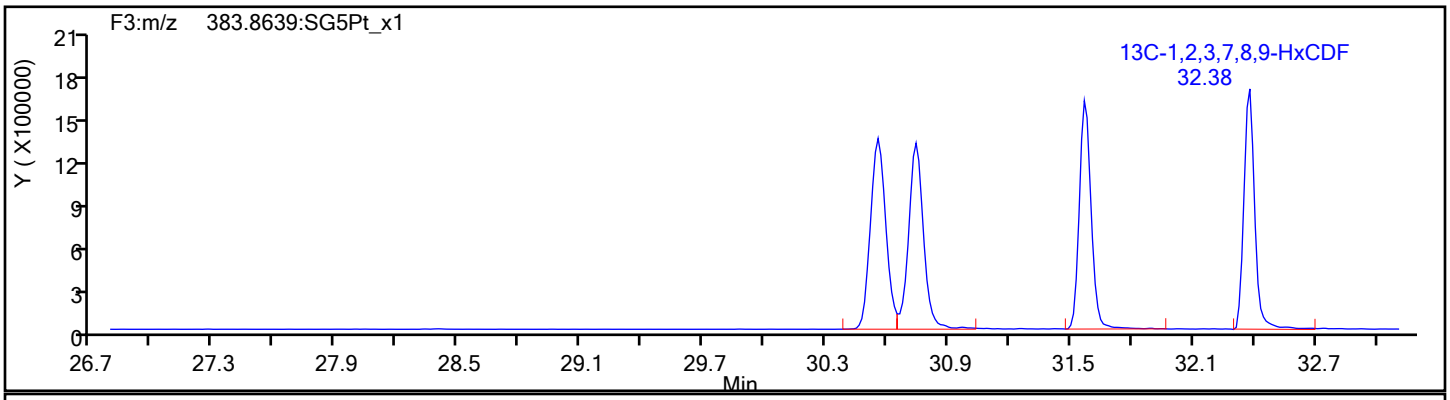
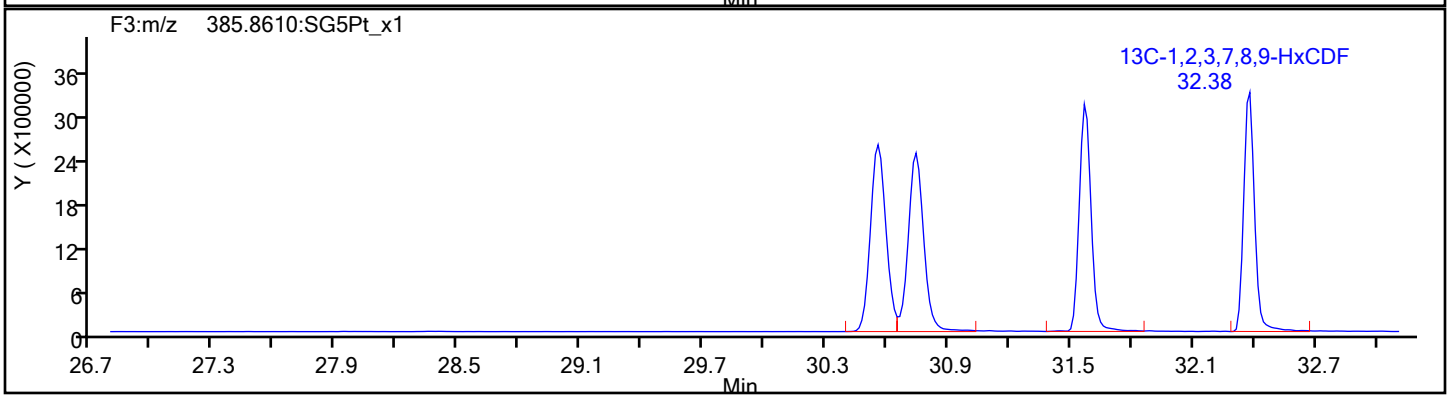
HxCDF





HxCDF Standards





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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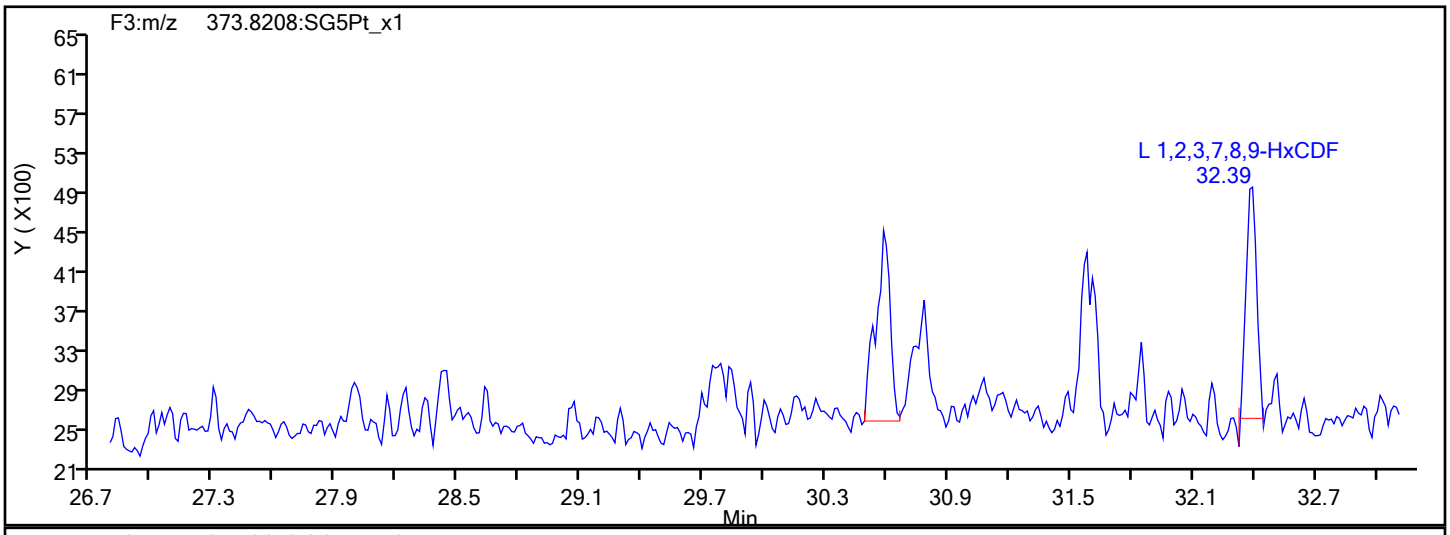
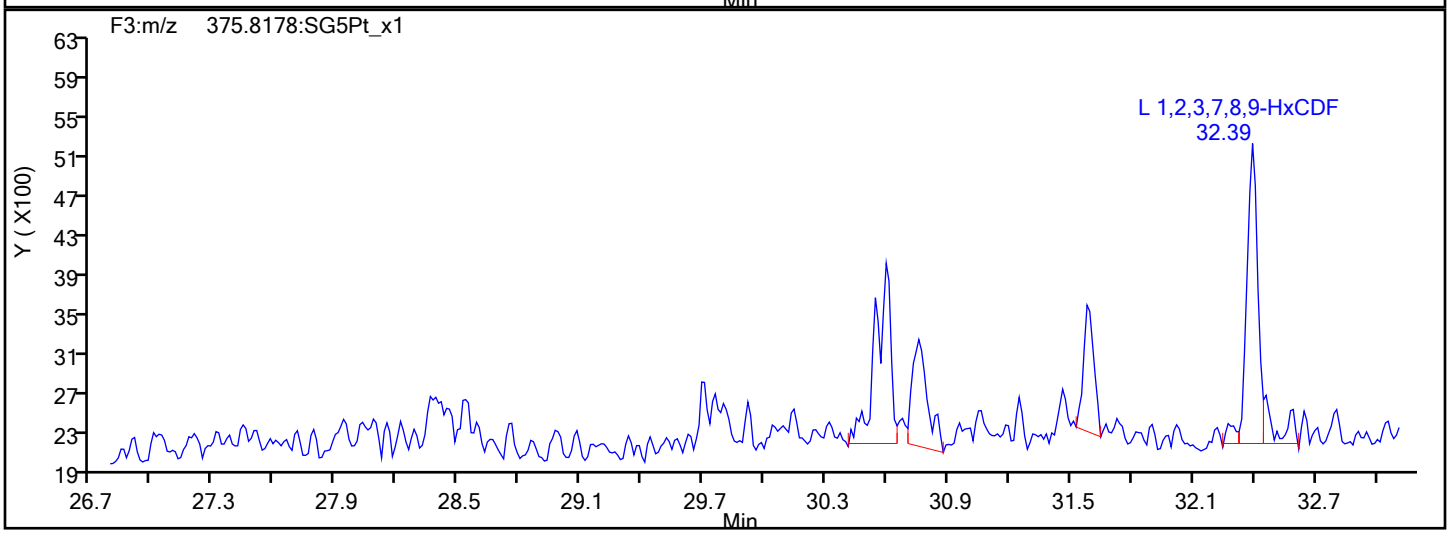
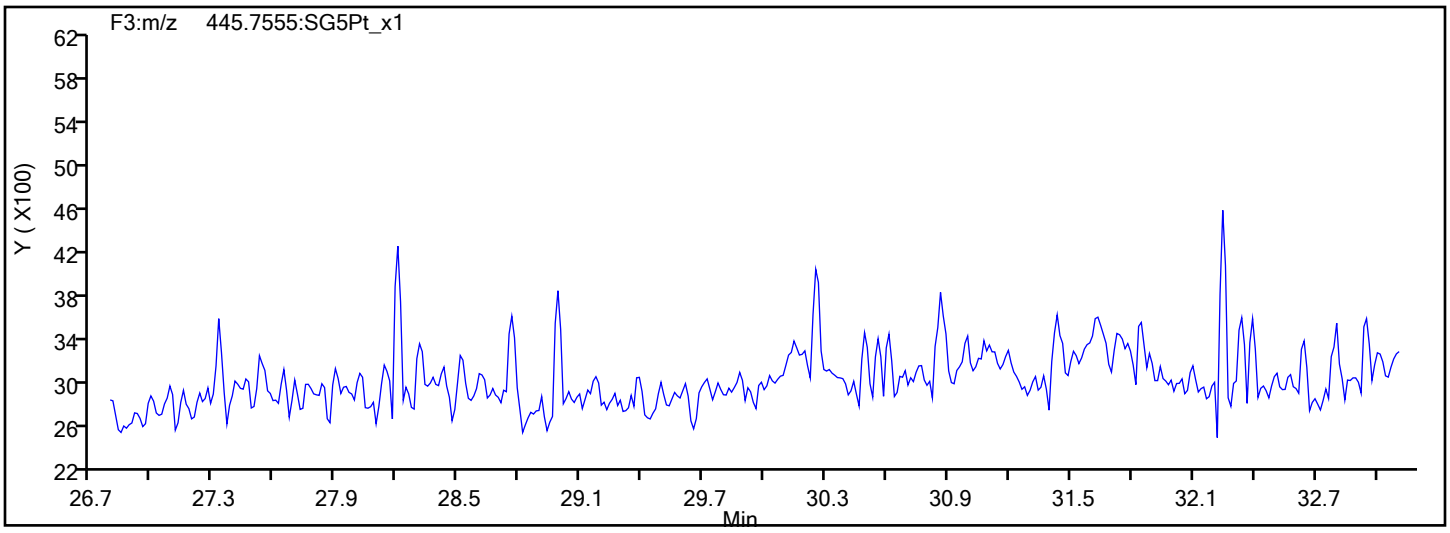
HxCDF





HxCDF Interference Mass



Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
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Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
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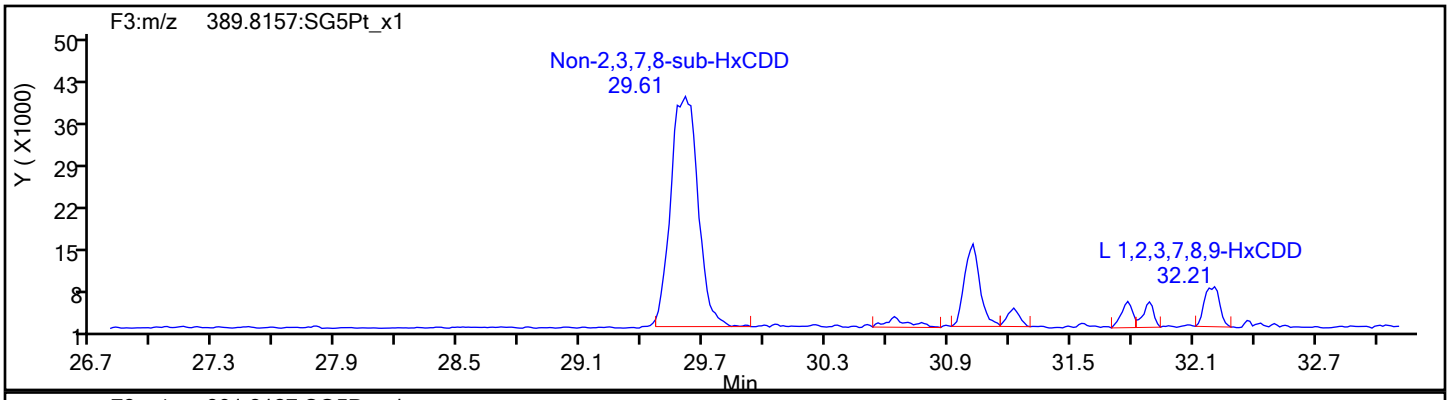
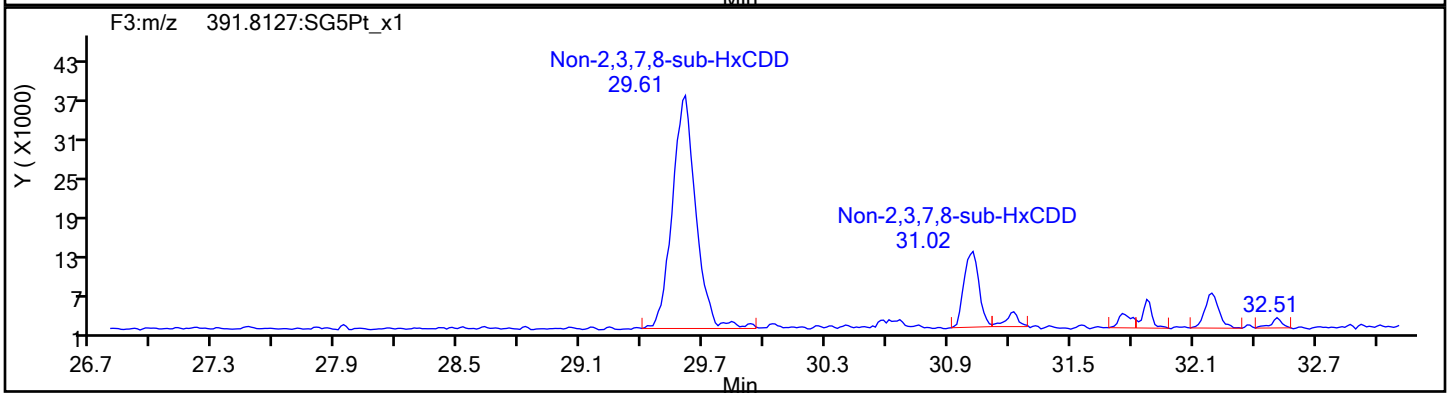
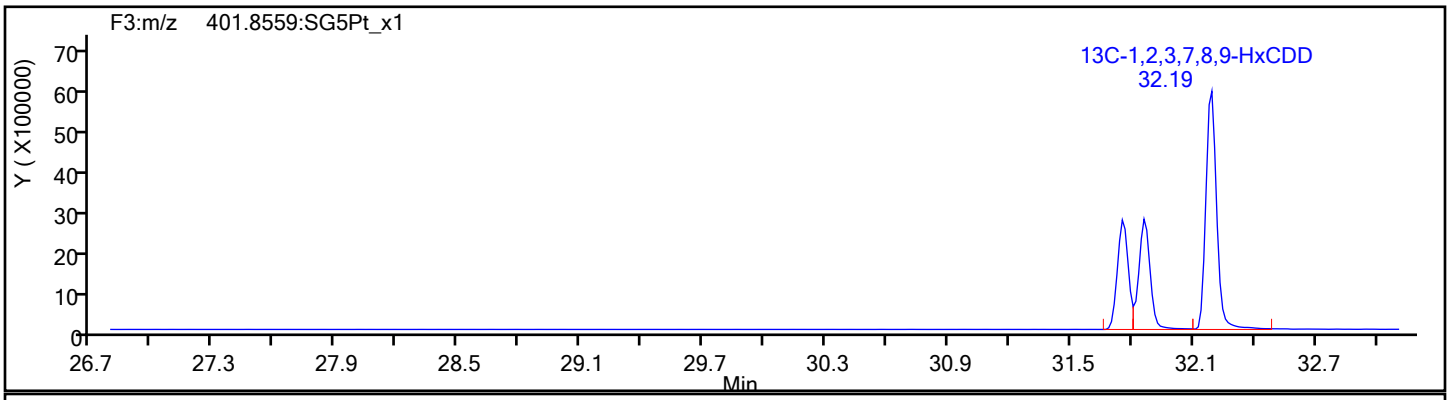
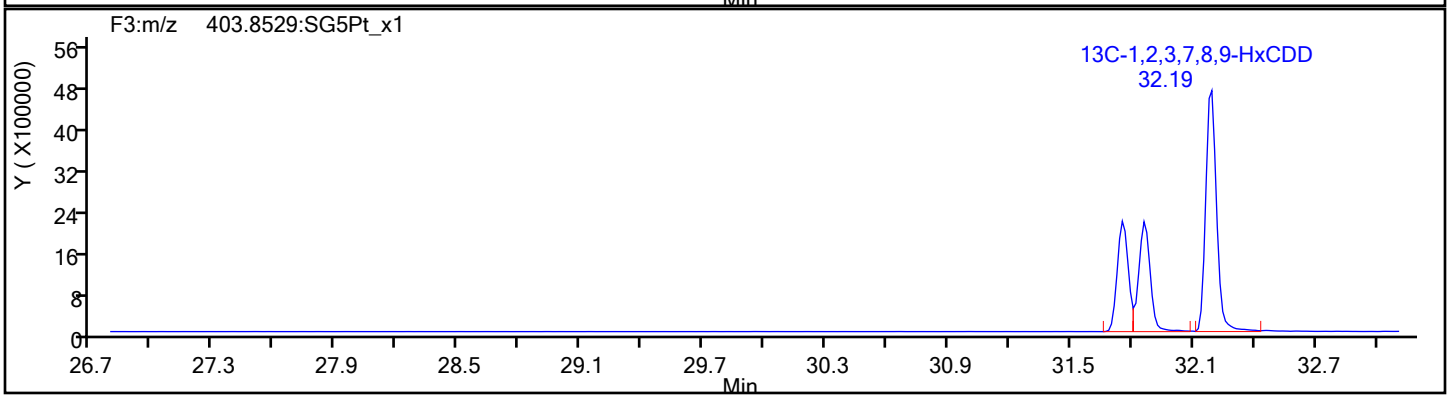
HxCDD





HxCDD Standards





Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
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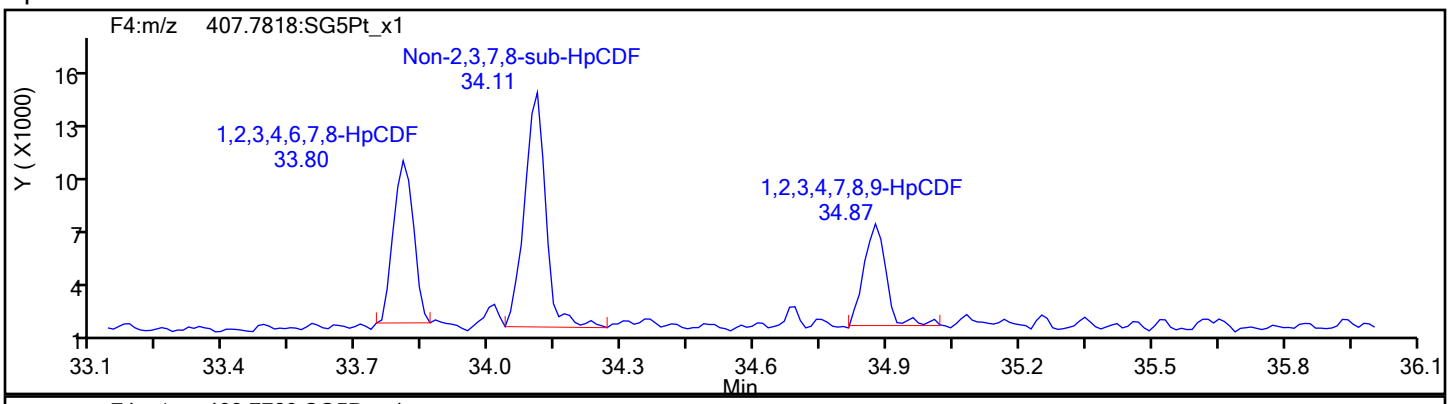
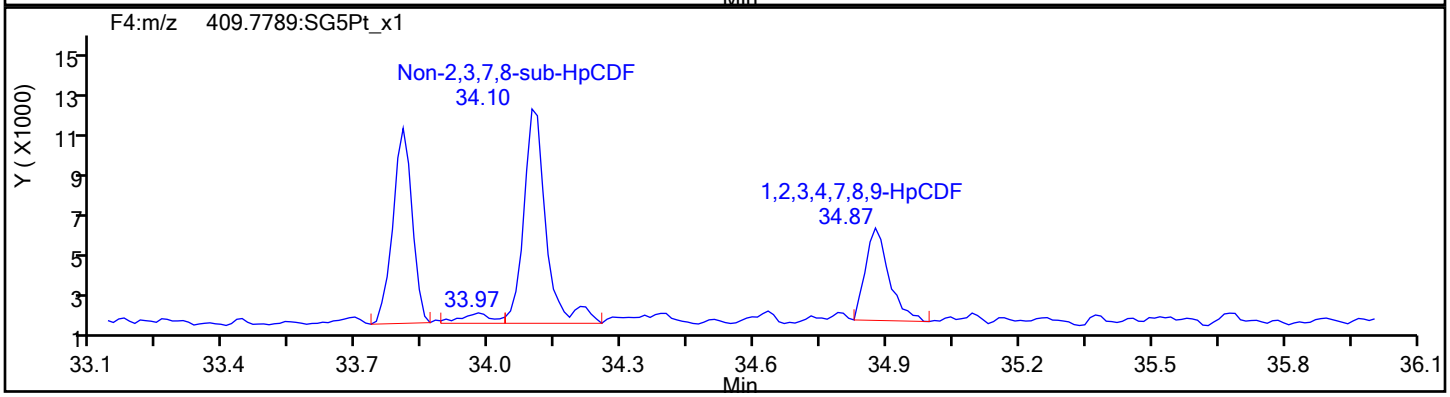
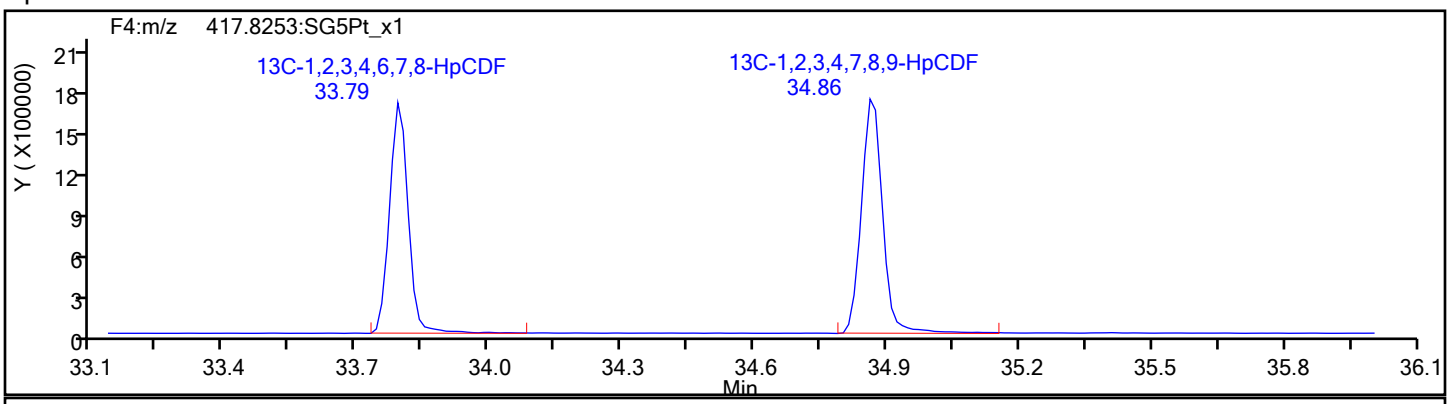
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

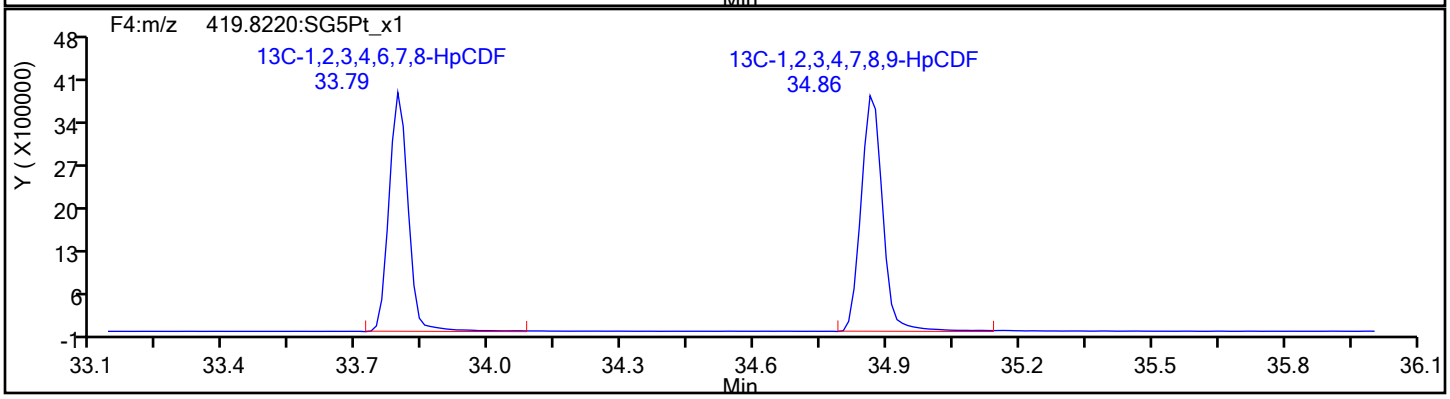
HpCDF





HpCDF Standards



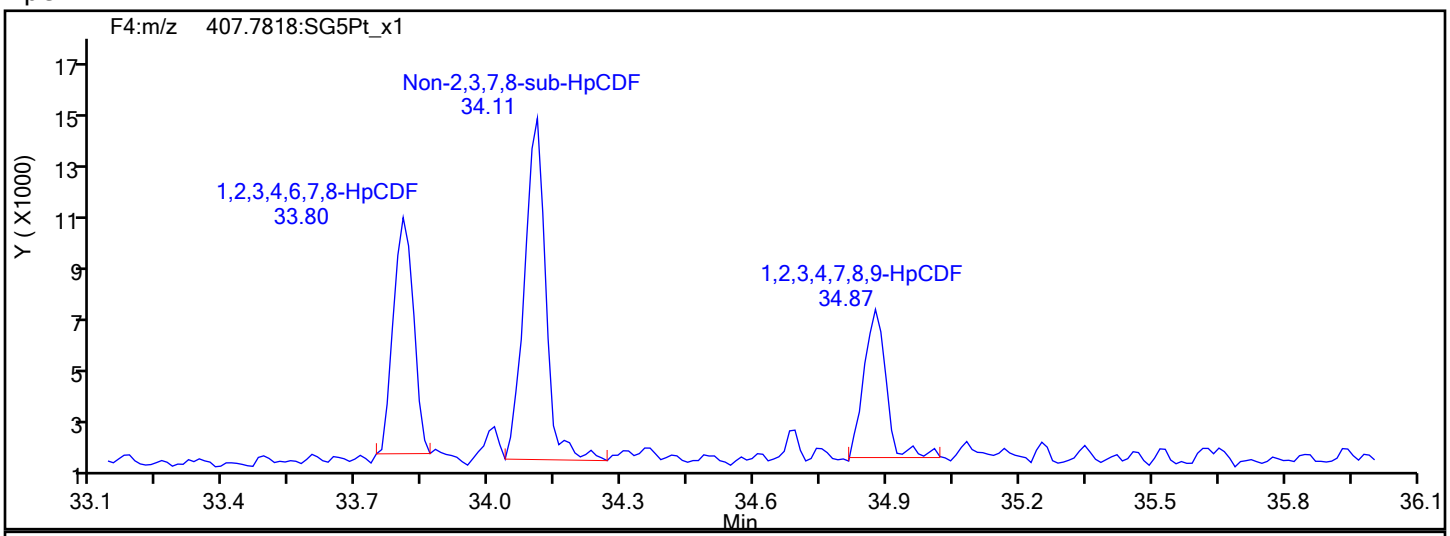


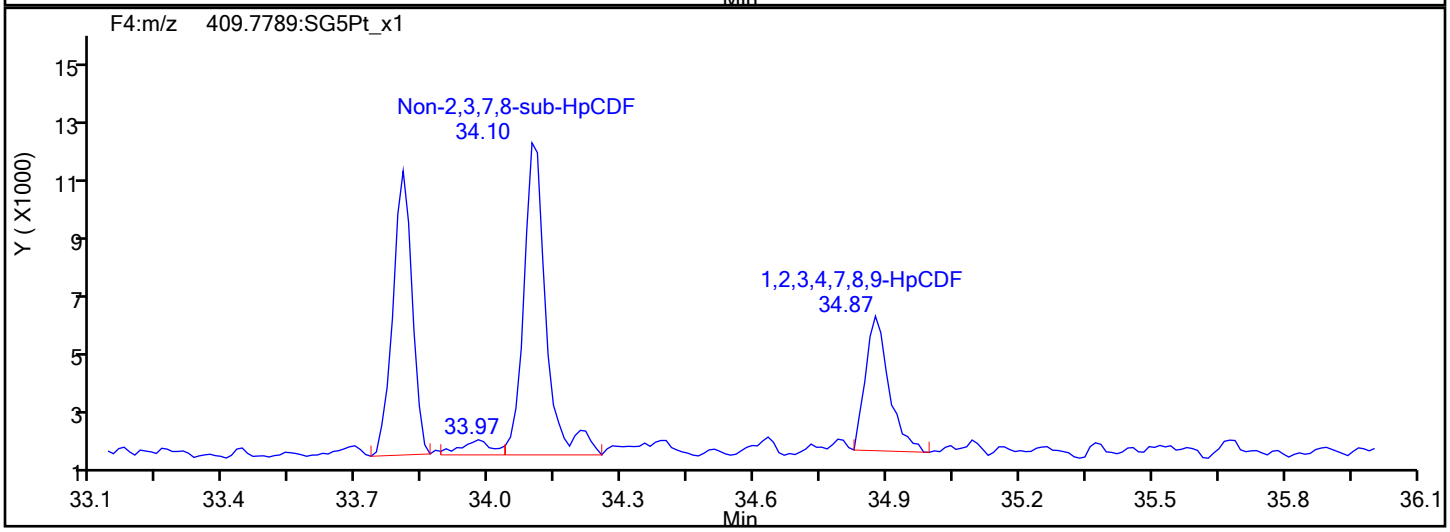
Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

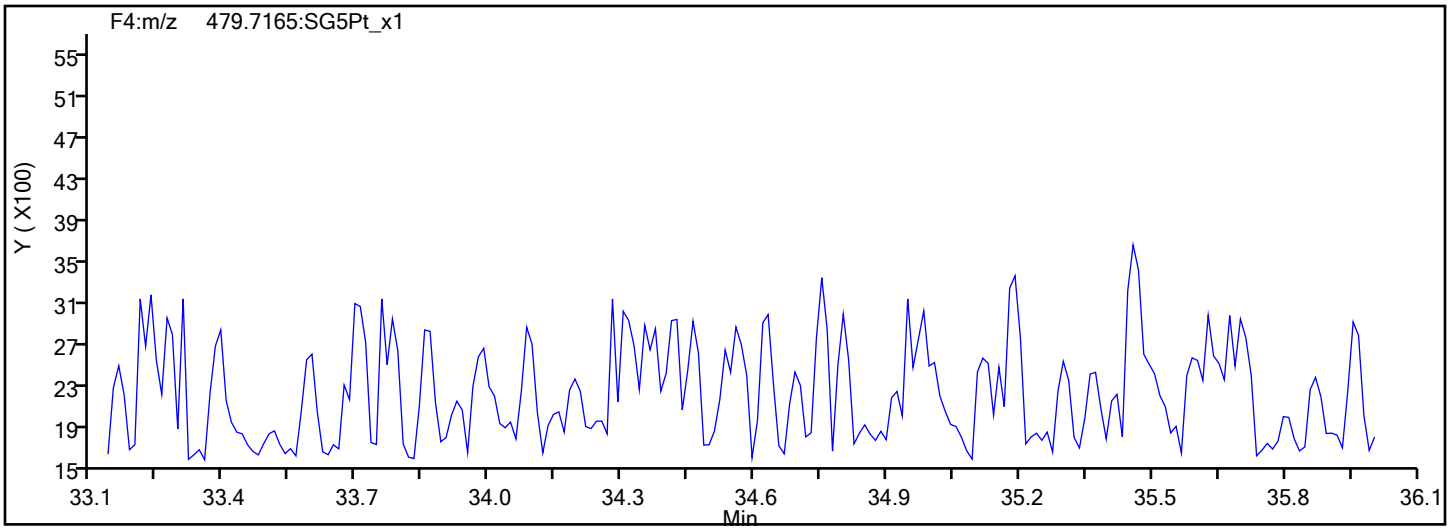
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

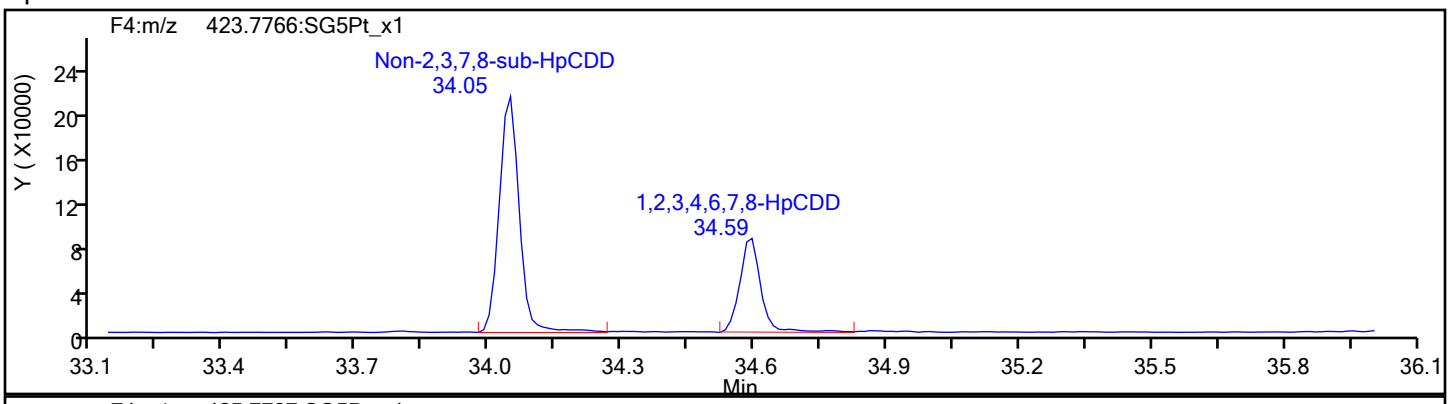


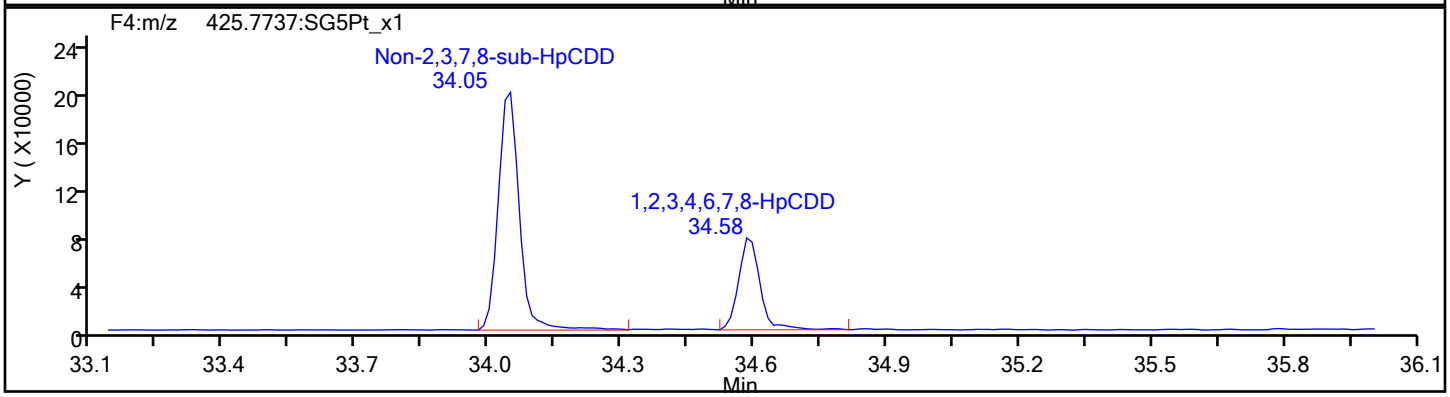
Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

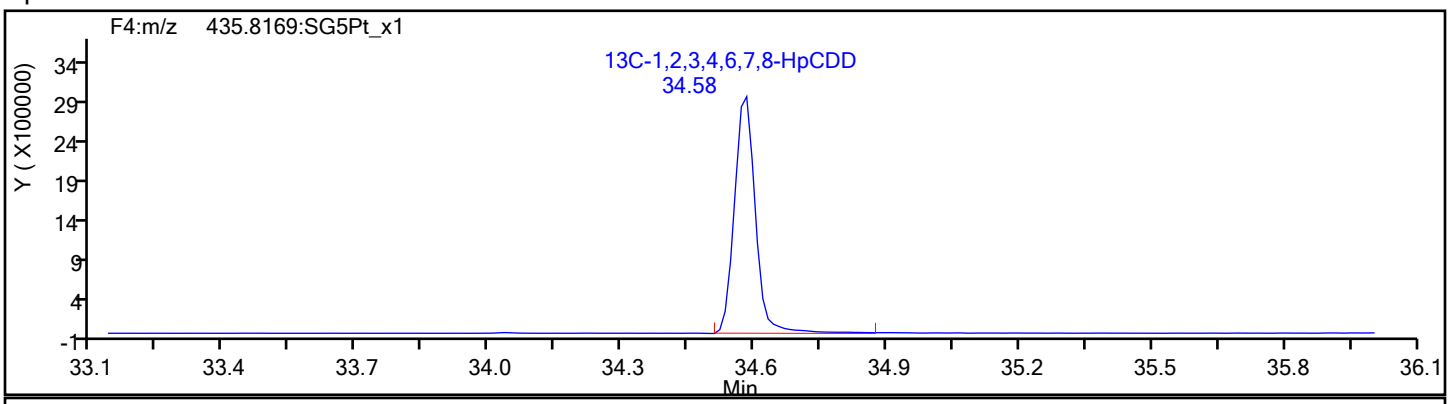
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

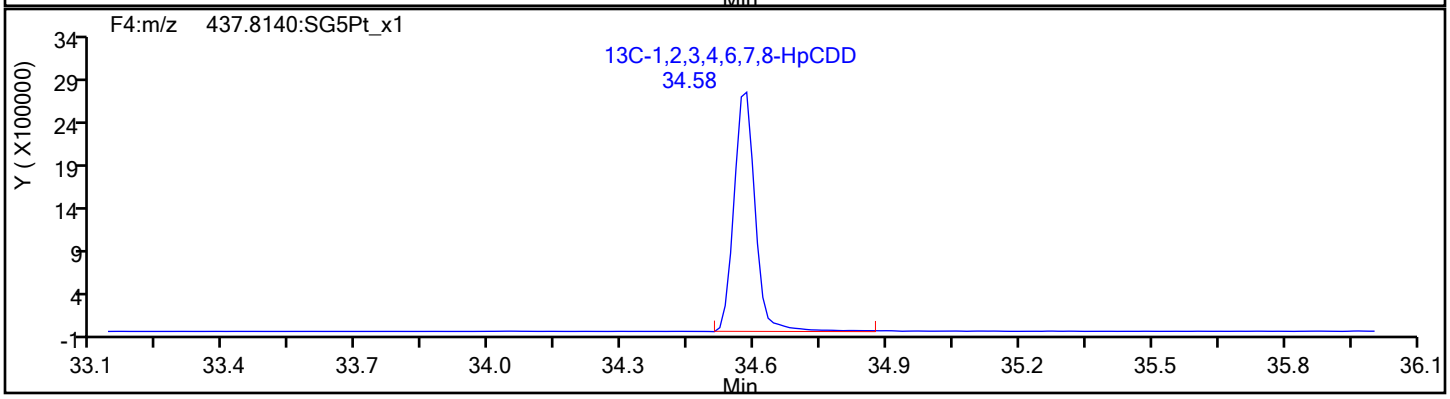
HpCDD





HpCDD Standards



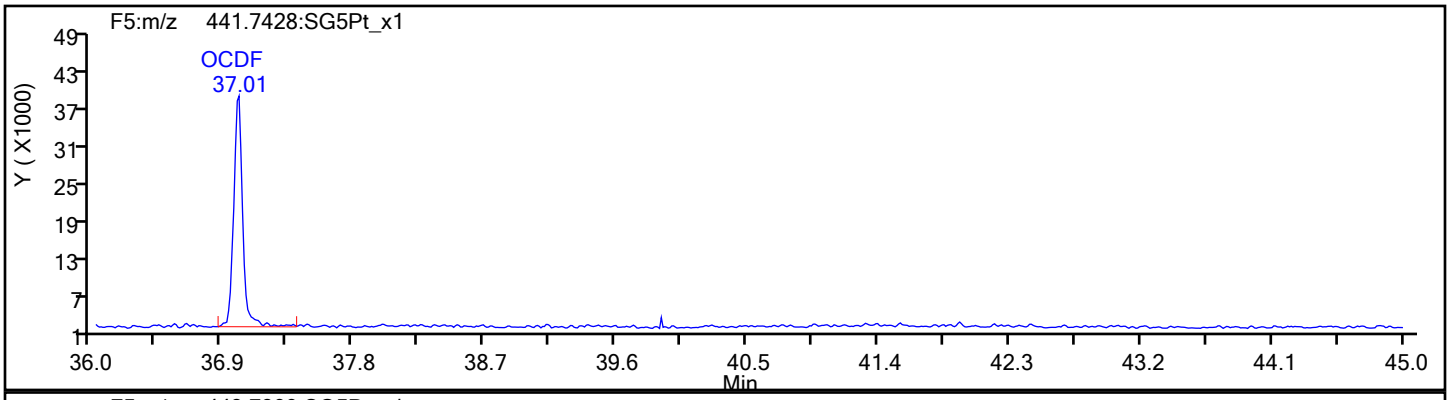


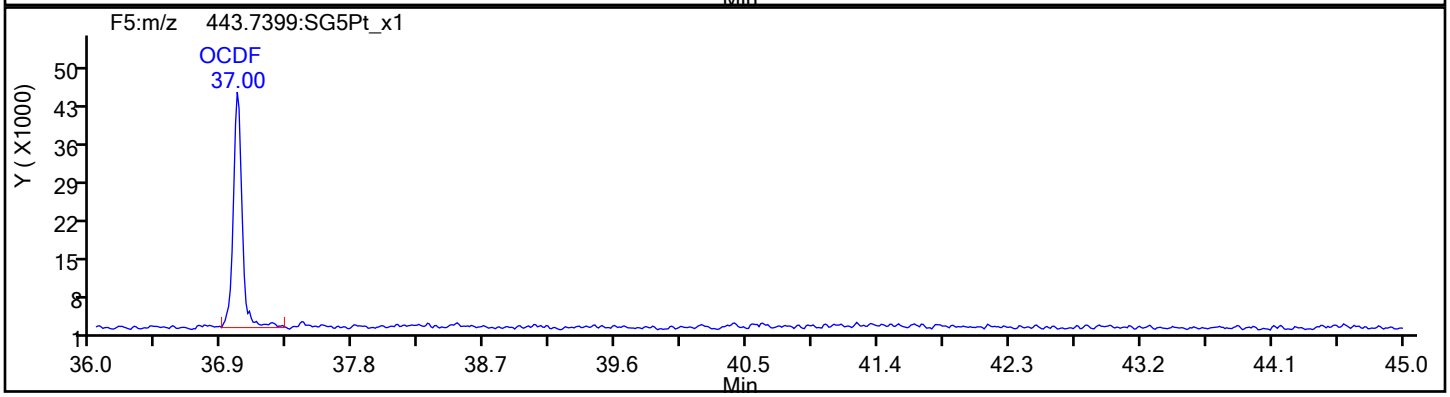
Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

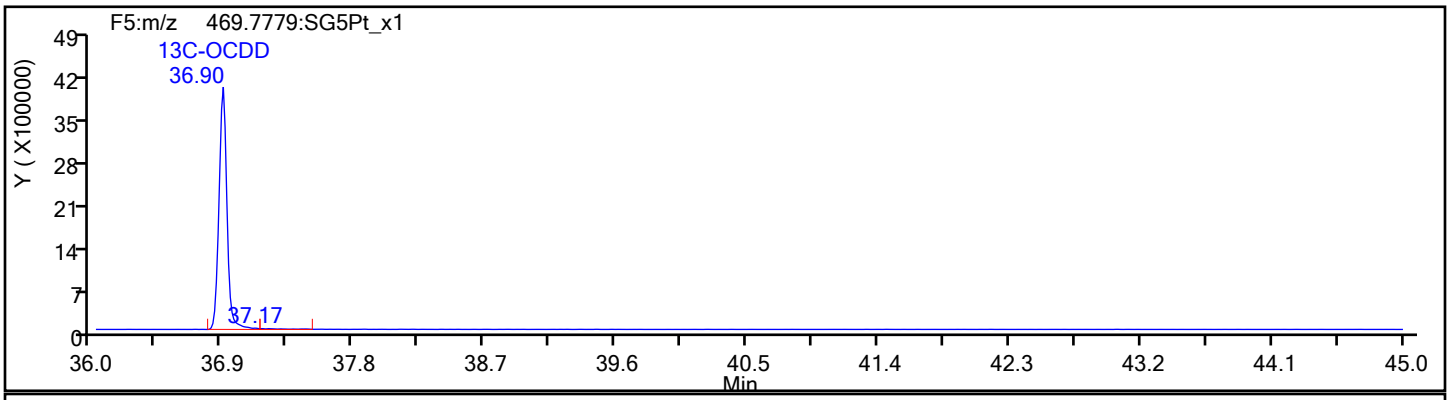
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

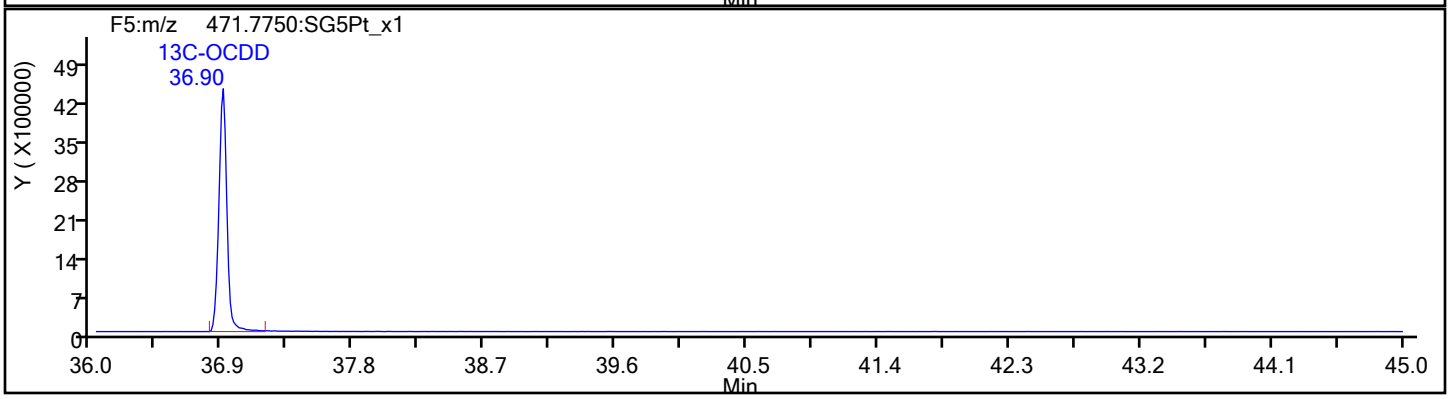
OCDF





OCDF Standards



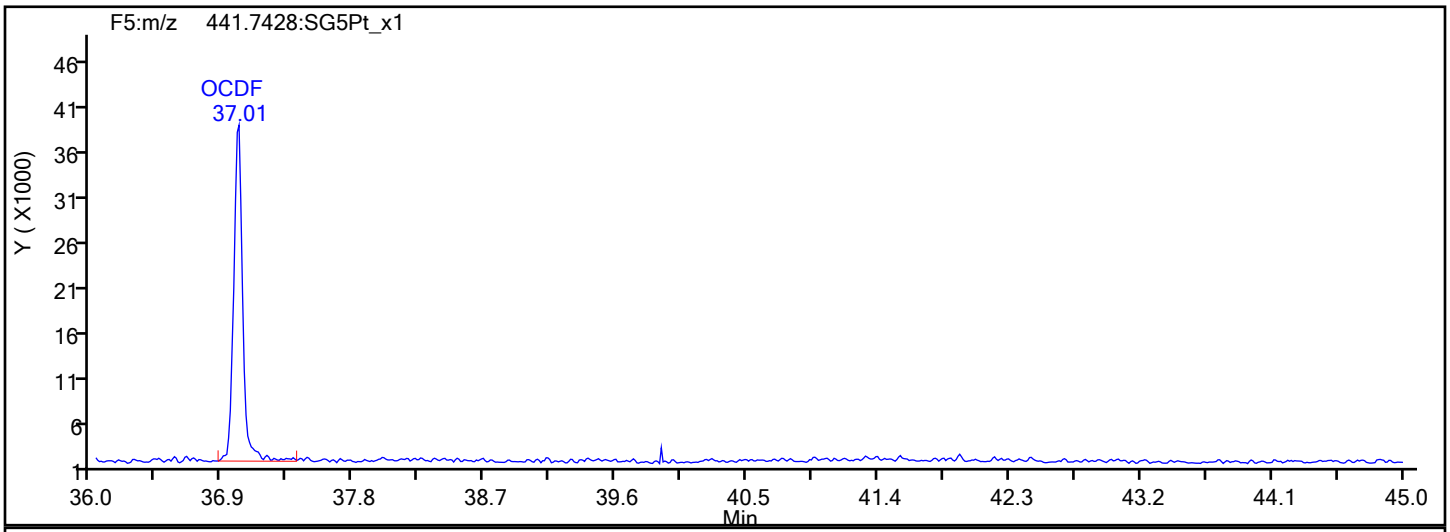


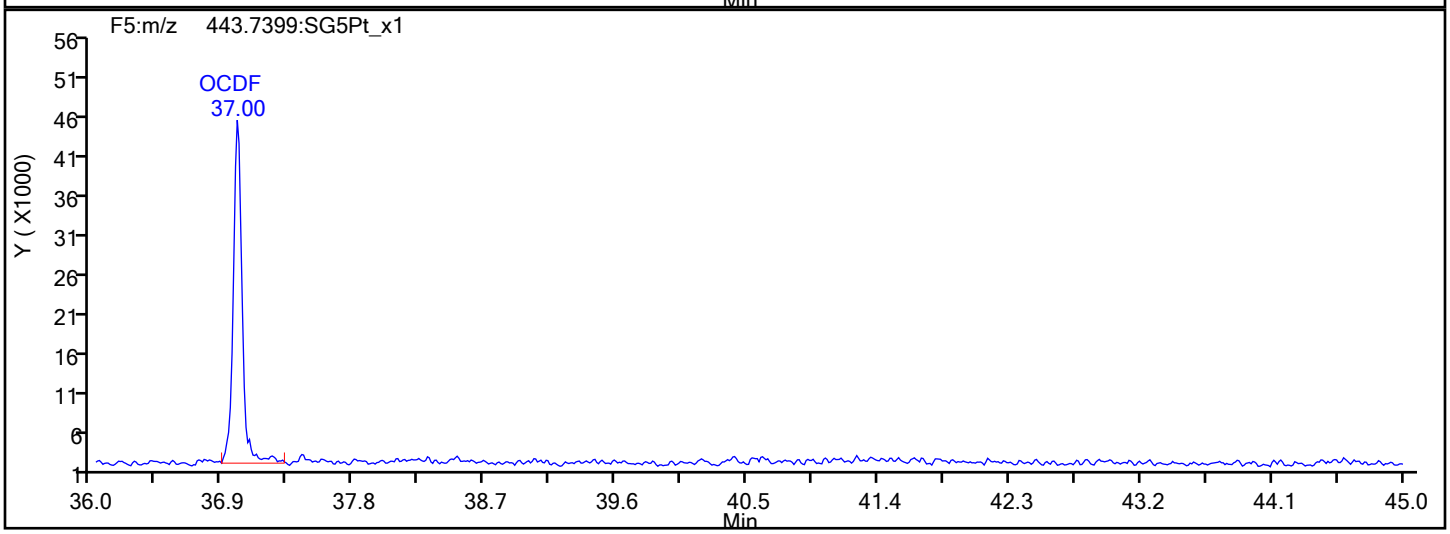
Report Date: 16-Dec-2019 10:55:22 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

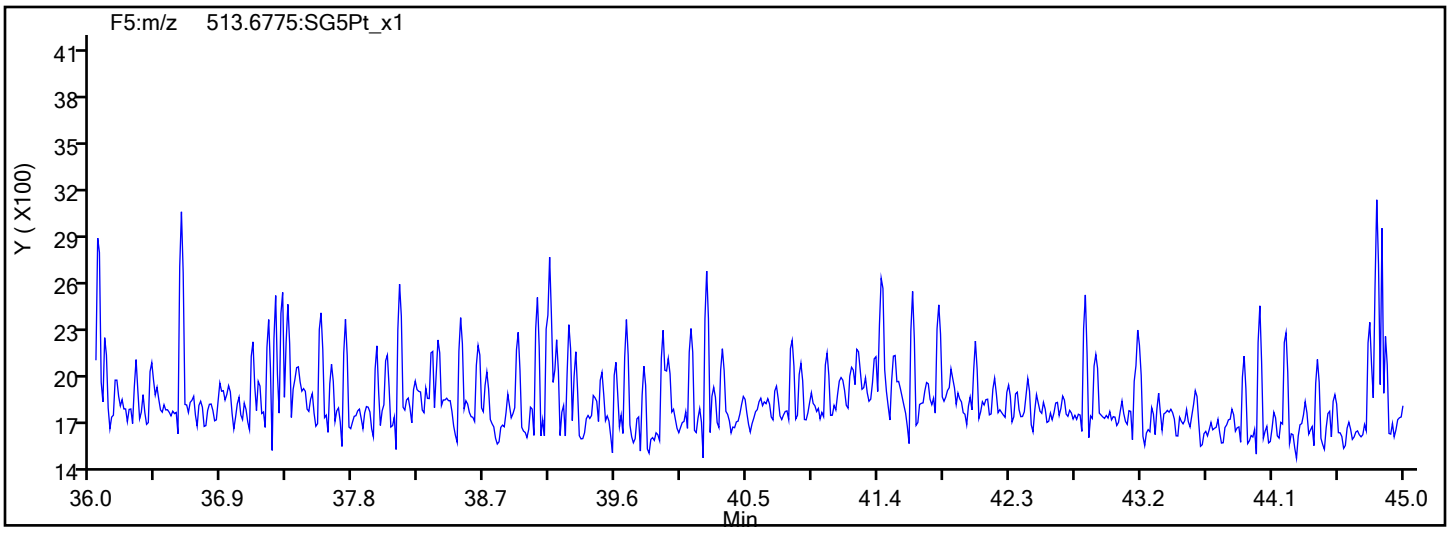
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

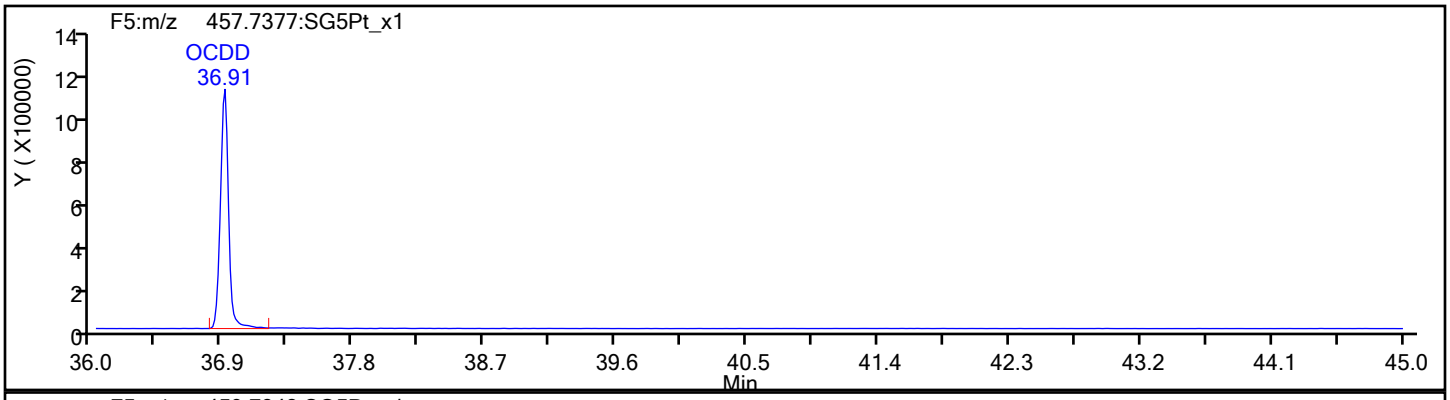


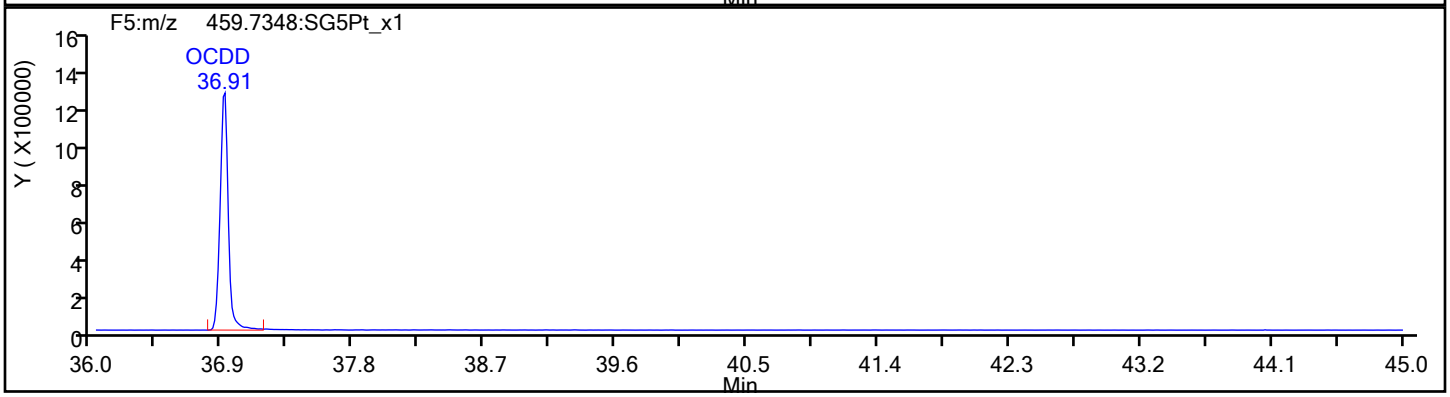
Report Date: 16-Dec-2019 10:55:23 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

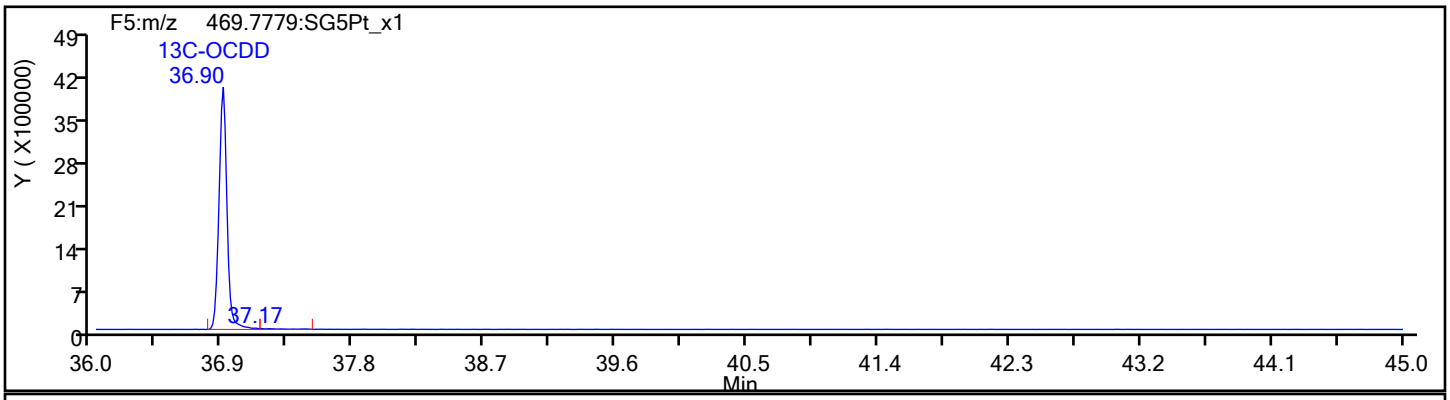
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

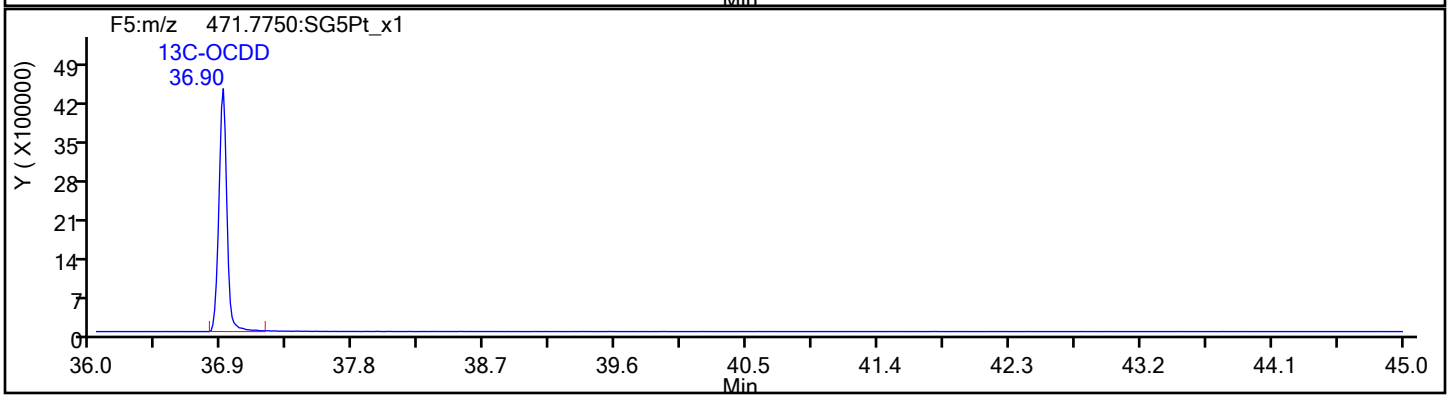
OCDD





OCDD Standards

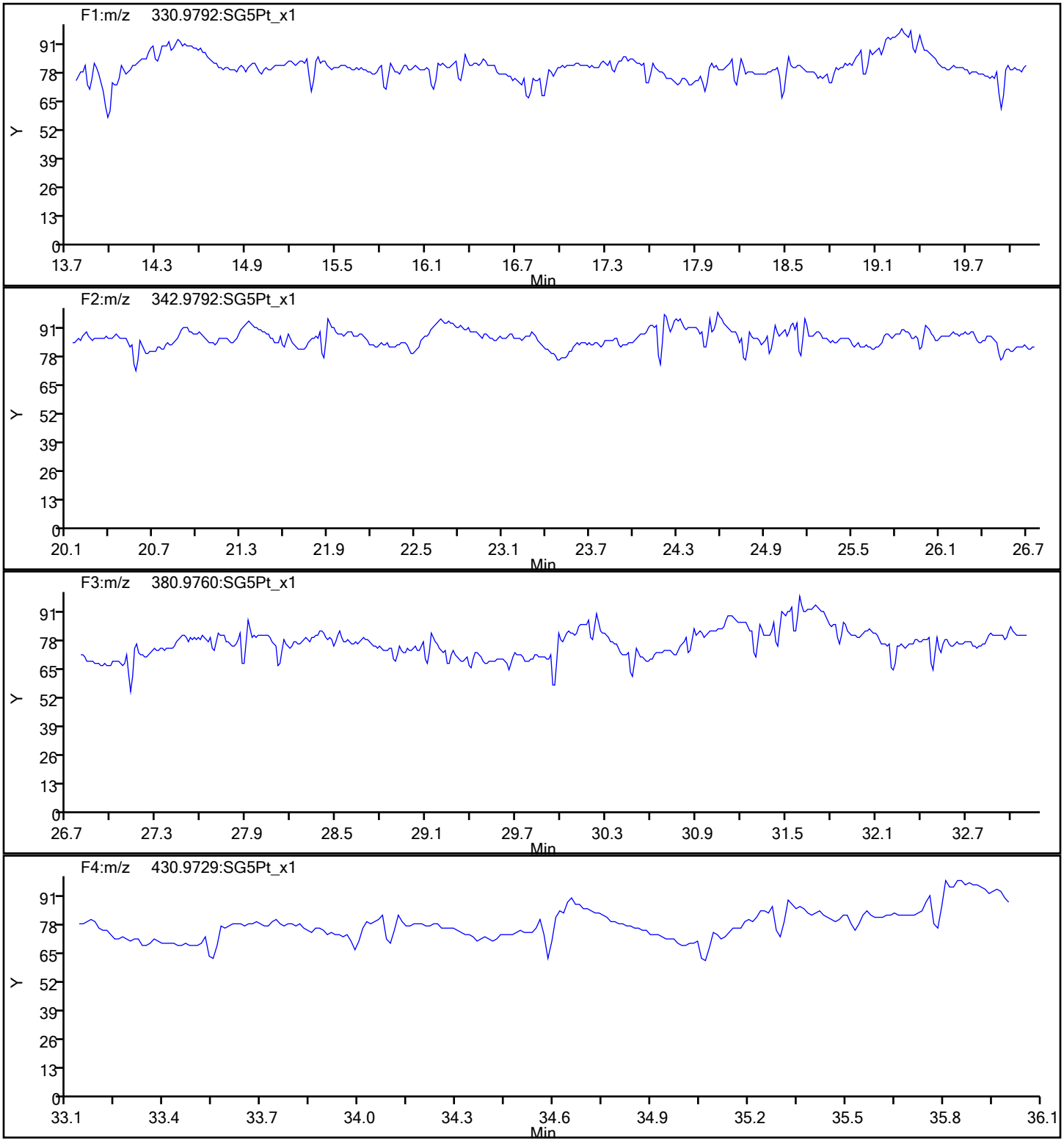




Report Date: 16-Dec-2019 10:55:23 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

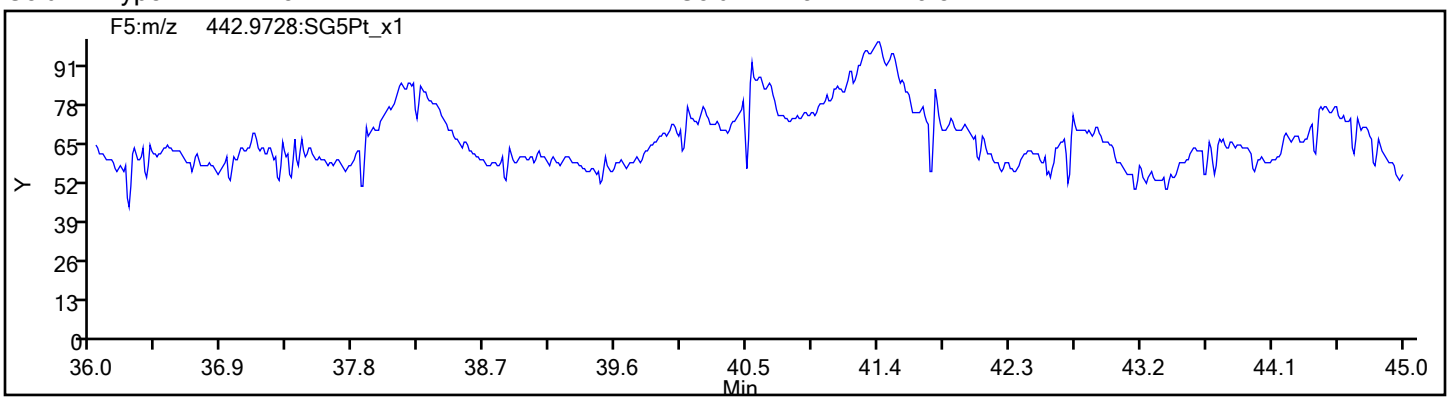
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 10:55:23 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_11.d		
Injection Date:	13-Dec-2019 19:25:56	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345335	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (2-4) RA Lab Sample ID: 320-56911-11 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_012.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:20

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.09(g) Date Analyzed: 12/17/2019 02:24

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 24.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	2.9		1.3	0.20

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	53		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	104		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 02:24:51 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-11-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:36:29

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.381	81369635	0.75	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.575	57306595	0.76	1.3379	52.6	52.6	0.2724	0.2724	52.64	
2,3,7,8-TCDF	16.588	539396	0.83	0.8389	1.122	1.122	0.0764	0.0764		M
D 13C-2,3,7,8-TCDD	15.134	41075400	0.77	0.9388	53.8	53.8	0.3862	0.3862	53.77	
2,3,7,8-TCDD	15.148	157028	0.77	1.1538	0.3715	0.3313	0.1126	0.1126		RQ
$ 37Cl4-2,3,7,8-TCDD	15.148	39844783		1.1816	41.4	41.4	0.0578	0.0578	104	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.
Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d
Lims ID: 320-56911-A-11-A
Client ID: 11187072-120819-BN-SJSSA05 (2-4)
Sample Type: Client
Inject. Date: 17-Dec-2019 02:24:51 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-11-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:36:29

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.381	15.383	0		34944952	7338146	13326	33315	551		
333.9339	15.381	15.383	0		46424683	9746105	11452	28630	851	0.75(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.575	16.576	0	1.078	24788120	4674097	14078	35195	332		
317.9389	16.575	16.576	0	1.078	32518475	6022960	10825	27062	556	0.76(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	16.588	16.590	0	1.001	244155	45719	892	2230	51		
305.8987	16.588	16.590	0	1.001	295241	49842	1849	4622	27	0.83(0.65-0.89)	M
13C-2,3,7,8-TCDD											
331.9368	15.134	15.122	1	0.984	17926189	3973459	13326	33315	298		
333.9339	15.134	15.122	1	0.984	23149211	5199260	11452	28630	454	0.77(0.65-0.89)	
2,3,7,8-TCDD											RQ
319.8965	15.148	15.149	0	1.001	68312	12974	3270	8175	4		
321.8936	15.148	15.149	0	1.001	107763	25514	1499	3747	17	0.63(0.65-0.89)	
	Empc Correction				88716	16849	1499	3747	11		
37Cl4-2,3,7,8-TCDD											
327.8840	15.148	15.149	0	0.985	39844783	8617234	4664	11660	1848		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

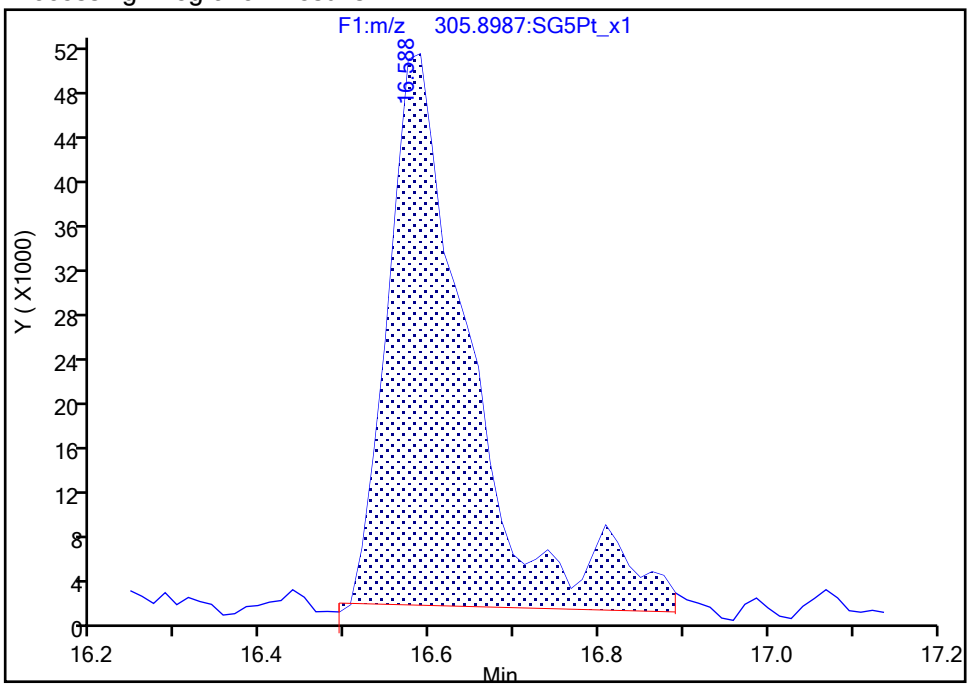
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d				
Injection Date:	17-Dec-2019 02:24:51	Instrument ID:	11D2		
Lims ID:	320-56911-A-11-A	Lab Sample ID:	320-56911-11		
Client ID:	11187072-120819-BN-SJSSA05 (2-4)				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		
Column:	DB-225 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

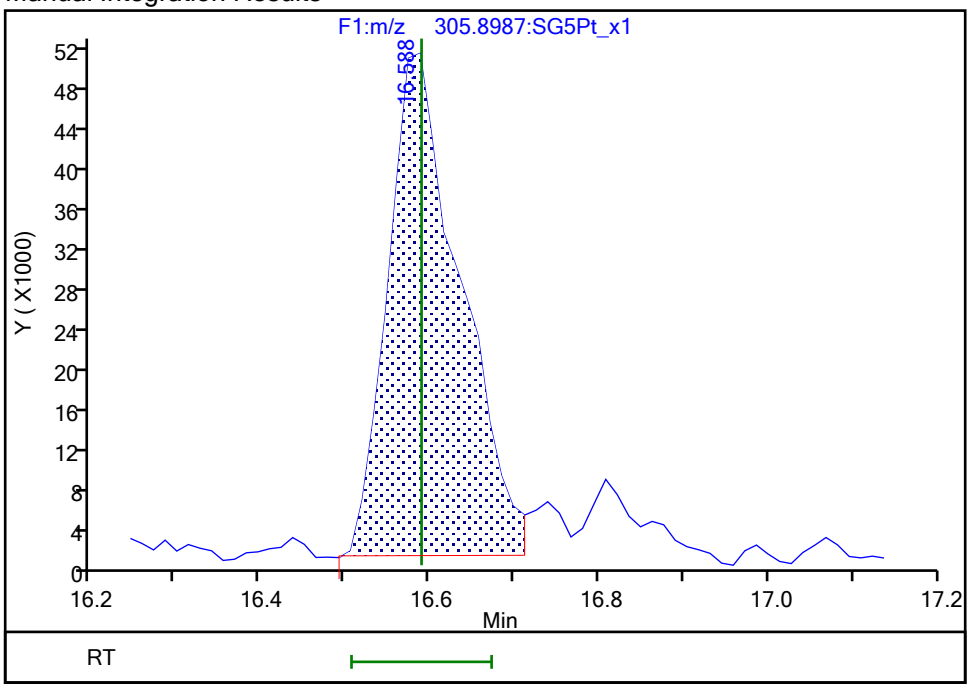
Processing Integration Results

RT: 16.59
Area: 334483
Amount: 1.203648
Amount Units: pg/ul



Manual Integration Results

RT: 16.59
Area: 295241
Amount: 1.122019
Amount Units: pg/ul



Reviewer: arghestanis, 17-Dec-2019 09:36:16

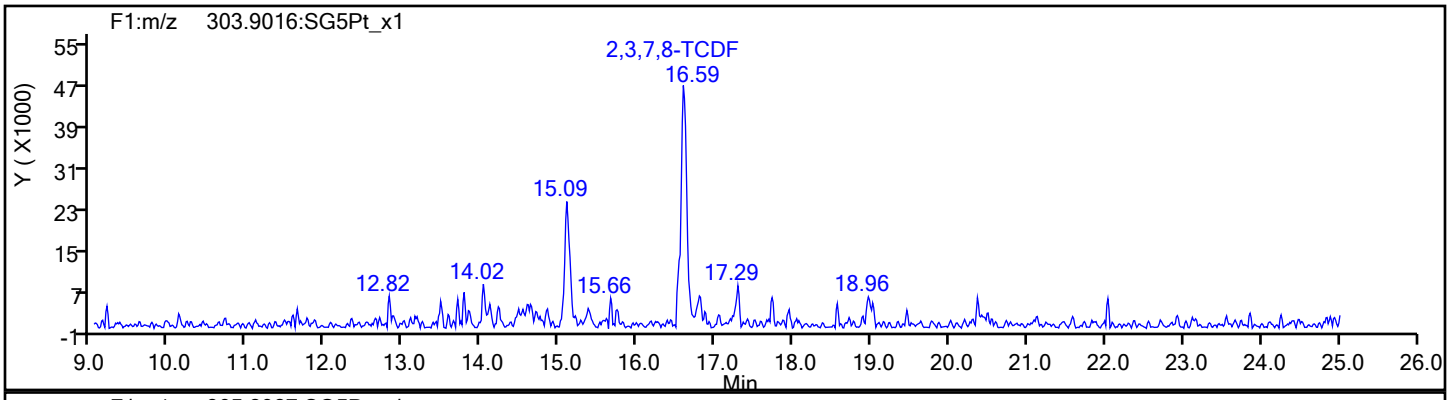
Audit Action: Manually Integrated Audit Reason: Baseline

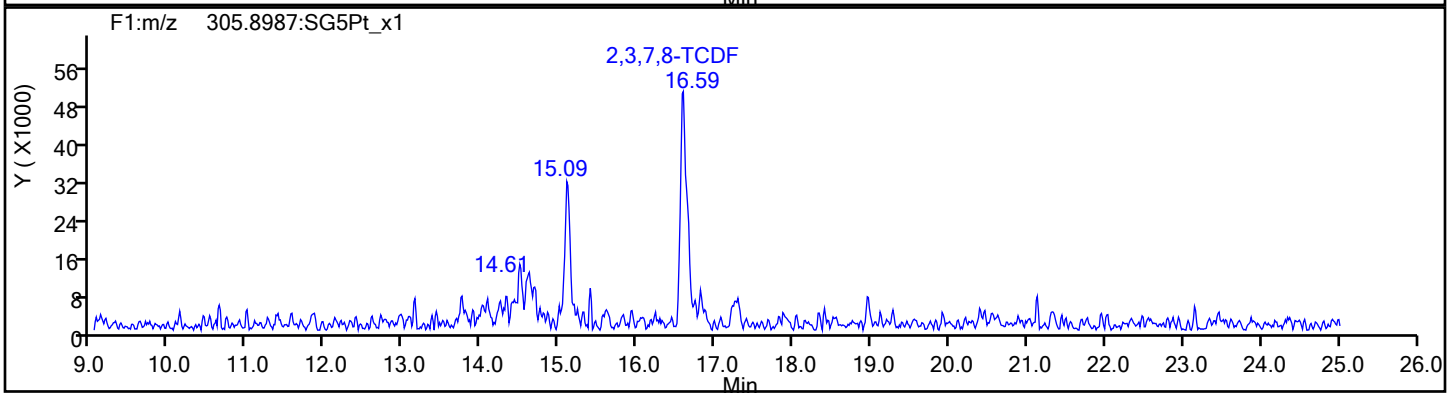
Report Date: 17-Dec-2019 09:38:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

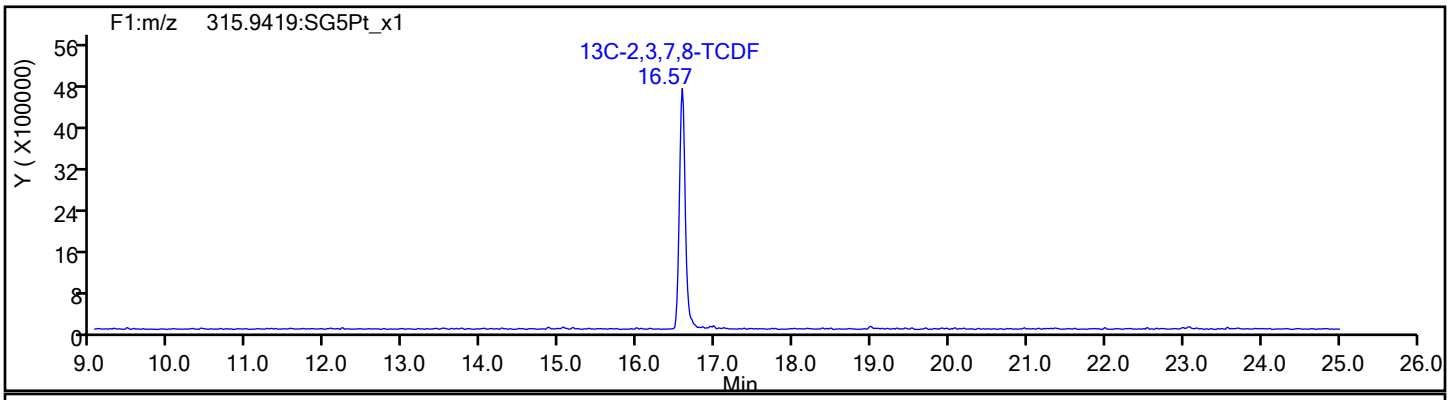
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d		
Injection Date:	17-Dec-2019 02:24:51	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345960	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

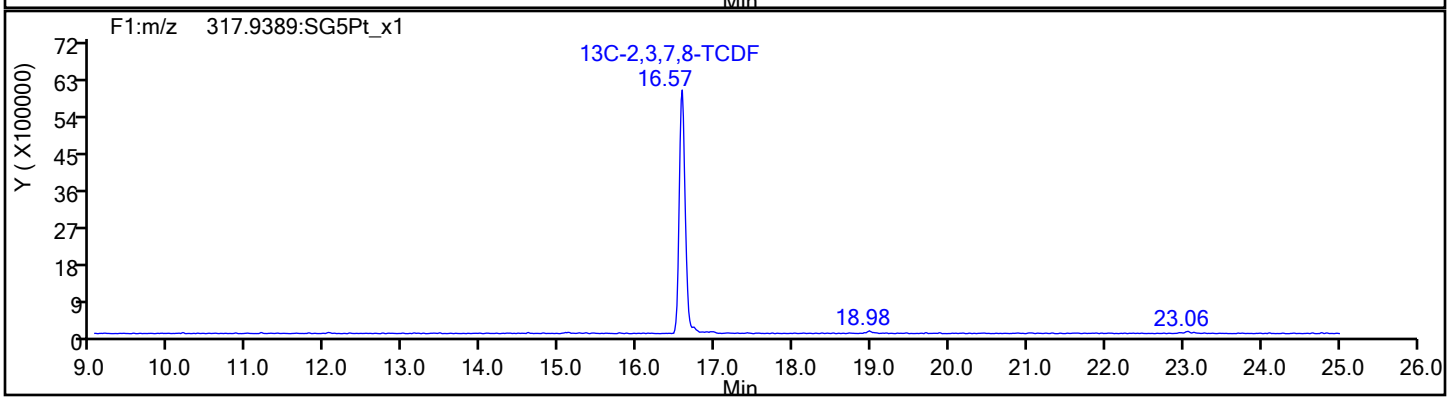
TCDF





TCDF Standards



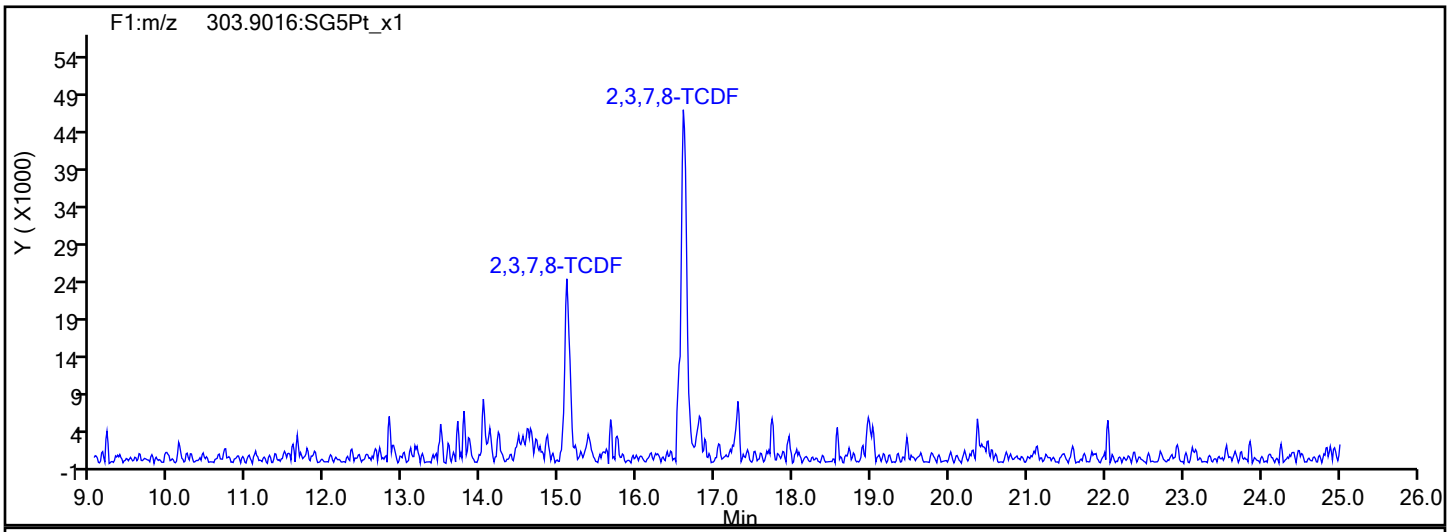


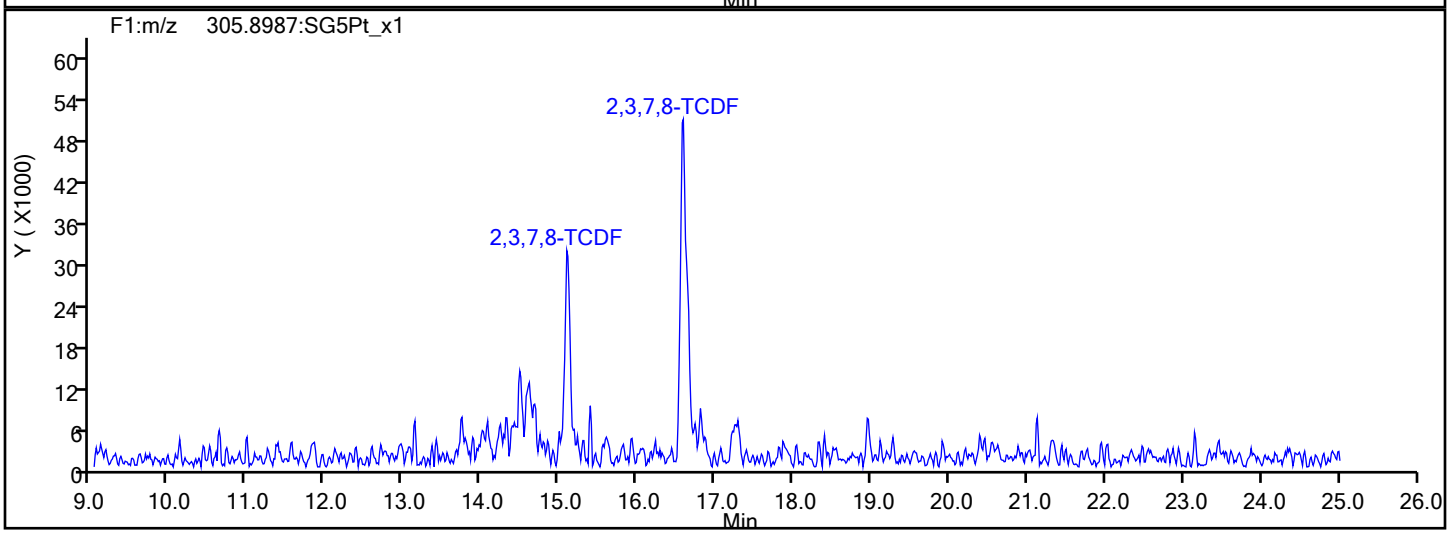
Report Date: 17-Dec-2019 09:38:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

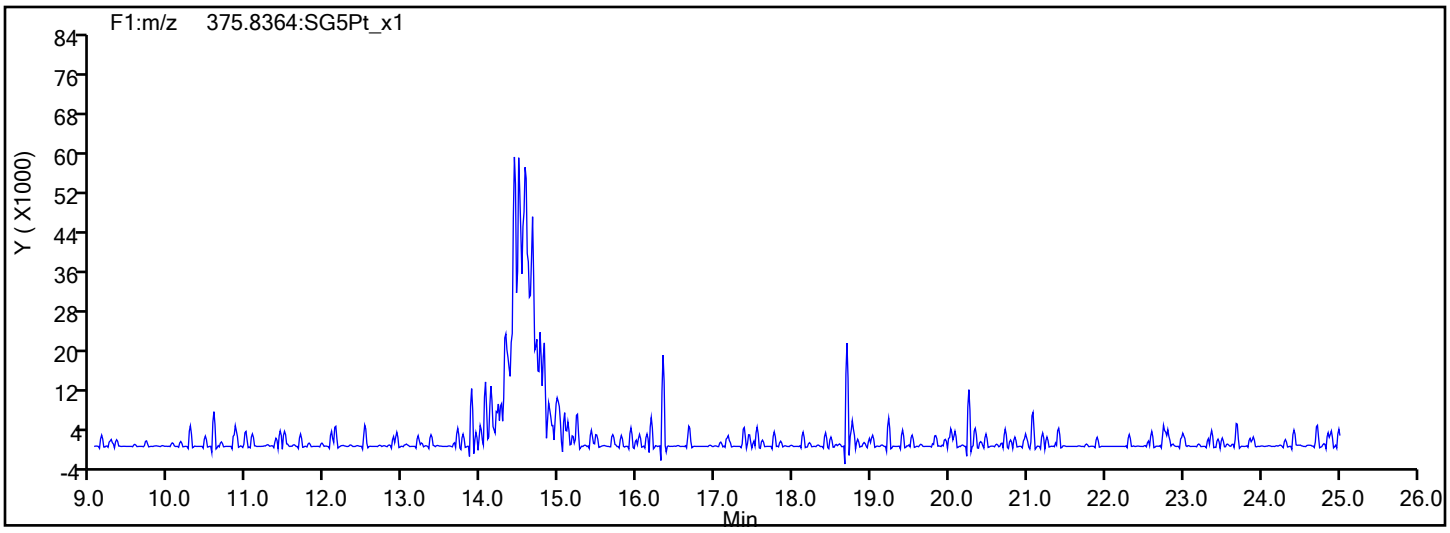
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d		
Injection Date:	17-Dec-2019 02:24:51	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345960	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

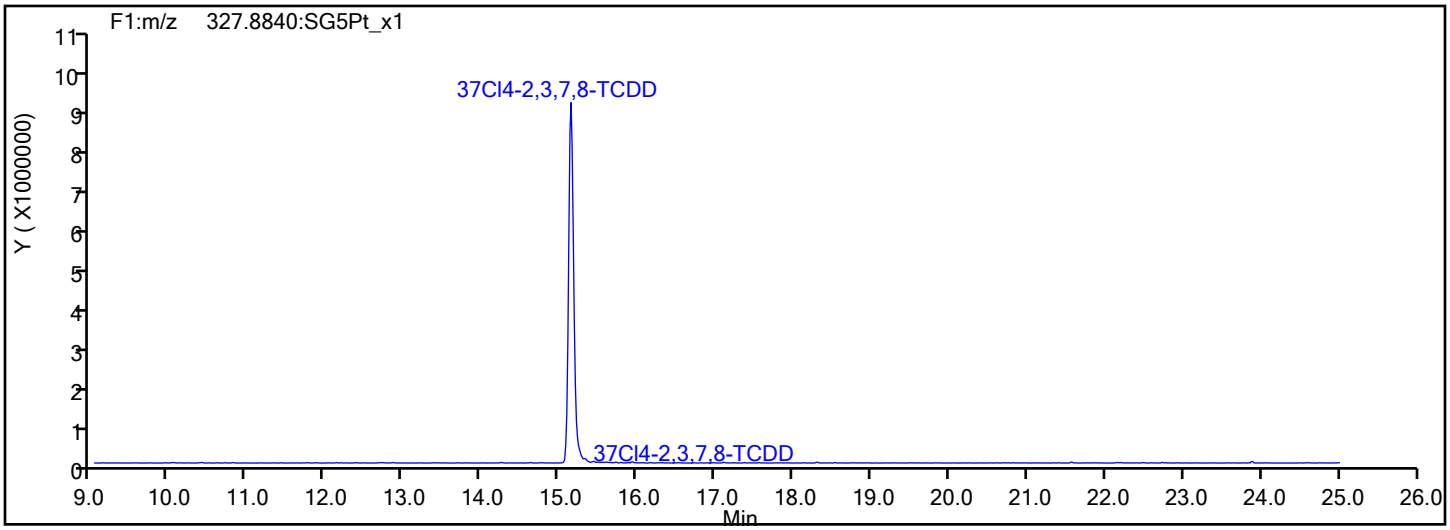


Report Date: 17-Dec-2019 09:38:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

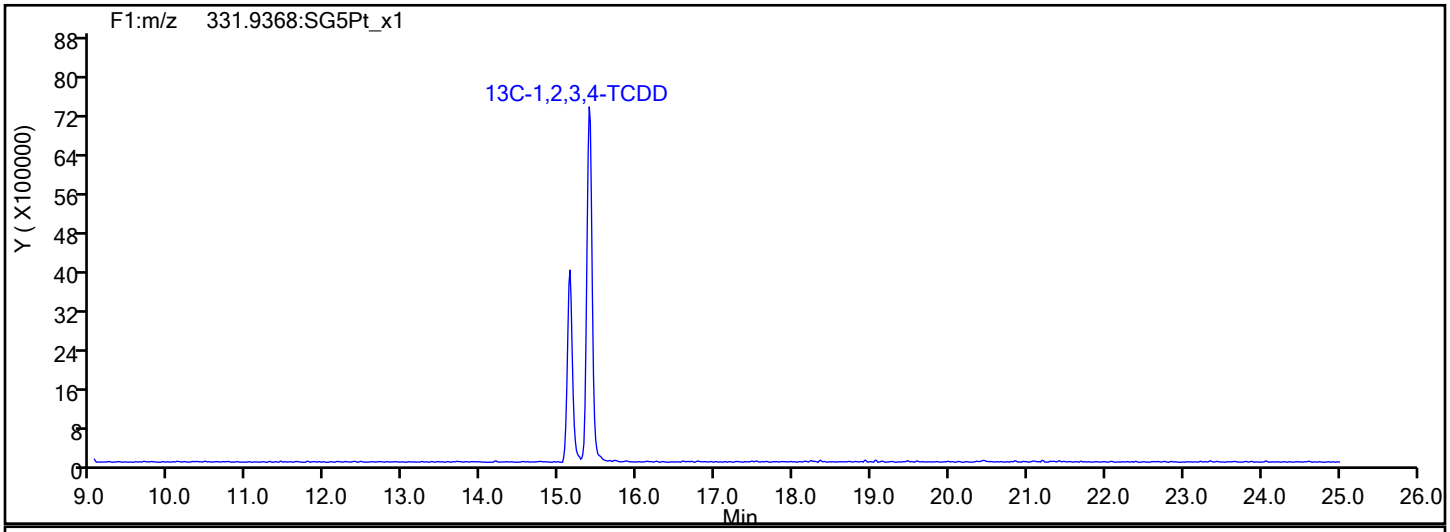
Eurofins TestAmerica, Sacramento

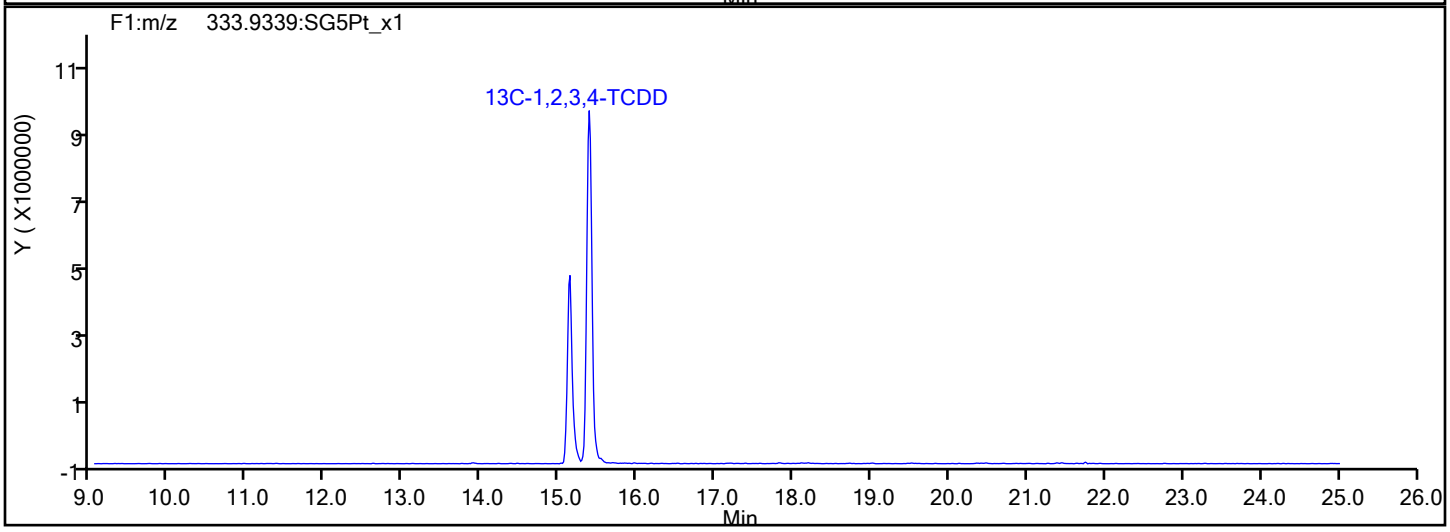
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d		
Injection Date:	17-Dec-2019 02:24:51	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345960	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

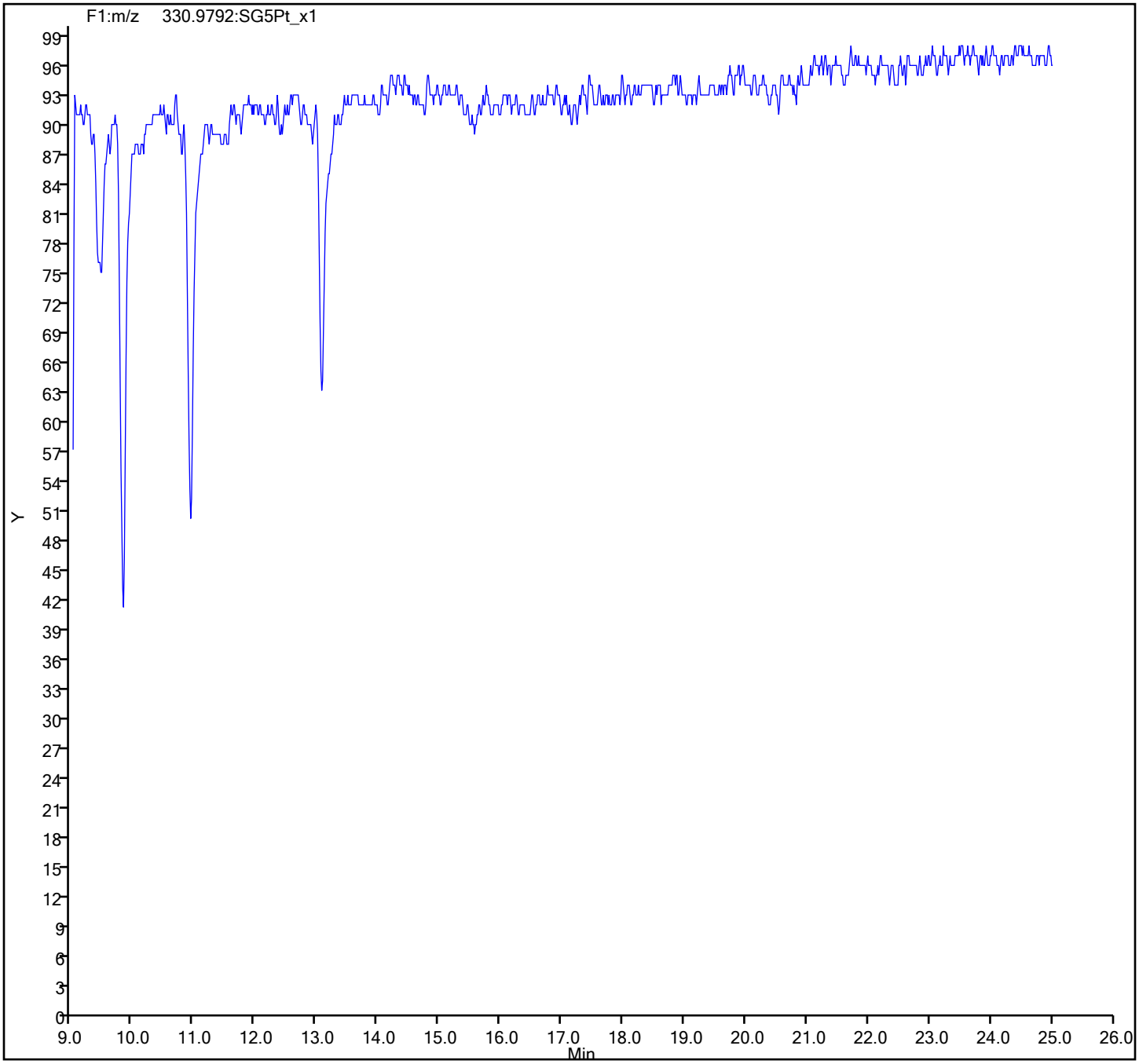




Report Date: 17-Dec-2019 09:38:34 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_012.d		
Injection Date:	17-Dec-2019 02:24:51	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (2-4)		
Worklist#:	345960	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) Lab Sample ID: 320-56911-12

Matrix: Sediment Lab File ID: 13DE1910D5_12.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.23(g) Date Analyzed: 12/13/2019 20:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 31.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1.3	J q	1.4	0.16
40321-76-4	1,2,3,7,8-PeCDD	ND		7.1	0.20
57117-41-6	1,2,3,7,8-PeCDF	0.27	J	7.1	0.13
57117-31-4	2,3,4,7,8-PeCDF	ND		7.1	0.13
39227-28-6	1,2,3,4,7,8-HxCDD	0.29	J q	7.1	0.10
57653-85-7	1,2,3,6,7,8-HxCDD	0.31	J B	7.1	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	0.54	J	7.1	0.098
70648-26-9	1,2,3,4,7,8-HxCDF	ND		7.1	0.13
57117-44-9	1,2,3,6,7,8-HxCDF	ND		7.1	0.14
72918-21-9	1,2,3,7,8,9-HxCDF	0.18	J q	7.1	0.096
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.1	0.11
35822-46-9	1,2,3,4,6,7,8-HpCDD	6.6	J B	7.1	0.17
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.43	J	7.1	0.065
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		7.1	0.071
3268-87-9	OCDD	160	B	14	0.20
39001-02-0	OCDF	2.4	J B	14	0.13
41903-57-5	Total TCDD	4.5	q	1.4	0.16
30402-14-3	Total TCDF	6.4		1.4	0.13
36088-22-9	Total PeCDD	3.0	J	7.1	0.20
30402-15-4	Total PeCDF	0.27	J	7.1	0.13
34465-46-8	Total HxCDD	10	B q	7.1	0.10
55684-94-1	Total HxCDF	0.18	J q	7.1	0.12
37871-00-4	Total HpCDD	24	B	7.1	0.17
38998-75-3	Total HpCDF	1.0	J B	7.1	0.068

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) Lab Sample ID: 320-56911-12

Matrix: Sediment Lab File ID: 13DE1910D5_12.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.23(g) Date Analyzed: 12/13/2019 20:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 31.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	58		25-164
89059-46-1	13C-2,3,7,8-TCDF	52		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	60		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	55		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	58		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	64		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	56		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	58		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	50		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	56		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	53		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	66		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	55		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	68		26-138
114423-97-1	13C-OCDD	74		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	107		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 20:11:54 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-12-A 320-56911-A-12-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 10:58:25 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: messecara Date: 13-Dec-2019 23:49:09

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.886	43493133	0.78	1.2E+06	100.0	100.0				a
D 13C-2,3,7,8-TCDF	17.372	29909755	0.79	1.3318	51.6	51.6	0.1636	0.1636	51.63	
2,3,7,8-TCDF	17.387	392744	0.78	0.9005	1.458	1.458	0.0461	0.0461		M
A Non-2,3,7,8-sub-TCDF	17.062	207585	0.78	0.9005	0.7707	0.7707	0.0461	0.6393		
S Total TCDF					2.229	2.229	0.0461	0.0461		
D 13C-2,3,7,8-TCDD	18.083	24496009	0.78	0.9647	58.4	58.4	0.1289	0.1289	58.38	
2,3,7,8-TCDD	18.098	117891	0.77	1.0698	0.5015	0.4499	0.0550	0.0550		RQM
$ 37Cl4-2,3,7,8-TCDD	18.098	24251633		1.3082	42.6	42.6	0.0393	0.0393	107	
A Non-2,3,7,8-sub-TCDD	17.516	296073	0.77	1.0698	1.155	1.130	0.0550	0.9865		RQ
S Total TCDD					1.656	1.580	0.0550	0.0550		RQ
D 13C-1,2,3,7,8-PeCDF	22.400	25086985	1.60	1.0537	54.7	54.7	0.1130	0.1130	54.74	
1,2,3,7,8-PeCDF	22.400	23018	1.68	0.9704	0.0946	0.0946	0.0441	0.0441		M
D 13C-2,3,4,7,8-PeCDF	23.750	25461805	1.61	1.0173	57.5	57.5	0.1170	0.1170	57.55	
2,3,4,7,8-PeCDF	23.750						0.0458	0.0458		
A F1 PeCDFs	19.776						0.0478	0.0478		
A Non-2,3,7,8-sub-PeCDF	22.933						0.0449	0.0449		
S Total PeCDF					0.0946	0.0946	0.0449	0.0449		
D 13C-1,2,3,7,8-PeCDD	24.472	19041353	1.56	0.7281	60.1	60.1	0.0944	0.0944	60.13	
1,2,3,7,8-PeCDD	24.472						0.0702	0.0702		
A Non-2,3,7,8-sub-PeCDD	23.368	198398	1.61	1.0023	1.039	1.039	0.0702	0.6457		M
S Total PeCDD					1.039	1.039	0.0702	0.0702		
D 13C-1,2,3,4,7,8-HxCDF	30.557	19599270	0.50	0.9632	57.7	57.7	0.1530	0.1530	57.68	
1,2,3,4,7,8-HxCDF	30.557						0.0461	0.0461		
D 13C-1,2,3,6,7,8-HxCDF	30.743	18923593	0.50	1.0646	50.4	50.4	0.1385	0.1385	50.39	
1,2,3,6,7,8-HxCDF	30.743						0.0481	0.0481		
D 13C-2,3,4,6,7,8-HxCDF	31.569	18045502	0.50	0.9696	52.8	52.8	0.1520	0.1520	52.75	
2,3,4,6,7,8-HxCDF	31.568						0.0379	0.0379		
D 13C-1,2,3,7,8,9-HxCDF	32.380	17716764	0.50	0.8955	56.1	56.1	0.1646	0.1646	56.08	
1,2,3,7,8,9-HxCDF	32.394	11637	1.24	1.0664	0.0758	0.0616	0.0336	0.0336		RQ
A Non-2,3,7,8-sub-HxCDF	30.237						0.0407	0.0407		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.0758	0.0616	0.0414	0.0414		RQ
* 13C-1,2,3,7,8,9-HxCDD	32.194	35279518	1.26	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.755	17118330	1.28	0.7590	63.9	63.9	0.1519	0.1519	63.93	
1,2,3,4,7,8-HxCDD	31.768	17562	1.24	1.0054	0.1150	0.1020	0.0366	0.0366		RQM
D 13C-1,2,3,6,7,8-HxCDD	31.861	18177235	1.26	0.9247	55.7	55.7	0.1247	0.1247	55.72	
1,2,3,6,7,8-HxCDD	31.888	19477	1.42	0.9833	0.1090	0.1090	0.0393	0.0393		Ma
1,2,3,7,8,9-HxCDD	32.207	37034	1.32	1.1036	0.1902	0.1902	0.0342	0.0342		M
A Non-2,3,7,8-sub-HxCDD	30.870	561621	1.24	1.0308	3.145	3.087	0.0366	2.603		RQ
S Total HxCDD					3.559	3.489	0.0367	0.0367		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.793	15294975	0.44	0.7930	54.7	54.7	0.3497	0.3497	54.67	
1,2,3,4,6,7,8-HpCDF	33.805	32440	1.08	1.4240	0.1489	0.1489	0.0226	0.0226		
D 13C-1,2,3,4,7,8,9-HpCDF	34.874	17431967	0.43	0.7296	67.7	67.7	0.3801	0.3801	67.73	
1,2,3,4,7,8,9-HpCDF	34.862						0.0250	0.0250		
A Non-2,3,7,8-sub-HpCDF	34.340	47646	1.08	1.3537	0.2151	0.2151	0.0237	0.2151		M
S Total HpCDF					0.3640	0.3640	0.0238	0.0238		
D 13C-1,2,3,4,6,7,8-HpCDD	34.583	17452129	1.04	0.7532	65.7	65.7	0.2119	0.2119	65.68	
1,2,3,4,6,7,8-HpCDD	34.595	409043	1.01	1.0174	2.304	2.304	0.0603	0.0603		
A Non-2,3,7,8-sub-HpCDD	34.309	1113982	0.99	1.0174	6.274	6.274	0.0603	6.274		
S Total HpCDD					8.578	8.578	0.0603	0.0603		
D 13C-OCDD	36.903	29440567	0.90	0.5621	148.5	148.5	0.1036	0.1036	74.24	
OCDF	37.011	159039	0.92	1.3047	0.8281	0.8281	0.0445	0.0445		
OCDD	36.915	9033743	0.90	1.0997	55.8	55.8	0.0708	0.0708		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Sample Type: Client
Inject. Date: 13-Dec-2019 20:11:54 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-12-A 320-56911-A-12-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 10:58:25 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: messecara Date: 13-Dec-2019 23:49:09

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	17.886	17.856	2		18992628	4793583	3393	8482	1413		a
333.9339	17.886	17.856	2		24500505	6109147	2029	5072	3011	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.372	17.357	1	0.971	13160201	3332442	5345	13362	623		
317.9389	17.372	17.357	1	0.971	16749554	4232964	4157	10392	1018	0.79(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	17.387	17.372	1	1.001	172100	38440	533	1332	72		M
305.8987	17.387	17.372	1	1.001	220644	54234	724	1810	75	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	17.009	17.062	-3	0.979	74600	17047	533	1332	32		
305.8987	17.009	17.062	-3	0.979	97592	22541	724	1810	31	0.76(0.65-0.89)	
303.9016	17.826	17.062	46	1.026	16198	3523	533	1332	7		
305.8987	17.826	17.062	46	1.026	19195	3710	724	1810	5	0.84(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.083	18.052	2	1.011	10761917	2521164	3393	8482	743		
333.9339	18.083	18.052	2	1.011	13734092	3217664	2029	5072	1586	0.78(0.65-0.89)	
2,3,7,8-TCDD											RQM
319.8965	18.098	18.068	2	1.001	51286	11581	862	2155	13		M
321.8936	18.098	18.068	2	1.001	80136	18301	488	1220	38	0.64(0.65-0.89)	
	Empc Correction				66605	15040	488	1220	31		
37Cl4-2,3,7,8-TCDD											
327.8847	18.098	18.068	2	1.012	24251633	5652696	2244	5610	2519		
A Non-2,3,7,8-sub-TCDD											RQ

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	16.964	17.516	-33	0.938	117330	28534	862	2155	33		
321.8936	16.949	17.516	-34	0.937	141191	36546	488	1220	75	0.83(0.65-0.89)	
319.8965	17.856	17.516	20	0.987	22931	5233	862	2155	6		
	Empc Correction				16336	3552	862	2155	4		
321.8936	17.856	17.516	20	0.987	21216	4614	488	1220	9	1.08(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.400	22.372	2	1.252	15446090	2688687	3016	7540	891		
353.8970	22.400	22.372	2	1.252	9640895	1735569	2175	5437	798	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.400	22.400	0	1.000	14434	2524	306	765	8		
341.8567	22.413	22.400	1	1.001	8584	1872	451	1127	4	1.68(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.750	23.722	2	1.328	15706642	2553530	3016	7540	847		
353.8970	23.750	23.722	2	1.328	9755163	1581296	2175	5437	727	1.61(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750						306	765			
341.8567	23.750						451	1127			
A F1 PeCDFs											
339.8597	19.776						219	547			
341.8567	19.776						586	1465			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.933						306	765			
341.8567	22.933						451	1127			
13C-1,2,3,7,8-PeCDD											
367.8949	24.472	24.445	2	1.368	11592243	1832962	1612	4030	1137		
369.8919	24.472	24.445	2	1.368	7449110	1162188	1384	3460	840	1.56(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						540	1350			
357.8516	24.472						303	757			
A Non-2,3,7,8-sub-PeCDD											M
355.8546	21.281	23.368	-125	0.870	25849	4019	540	1350	7		M
357.8516	21.295	23.368	-124	0.870	16998	2380	303	757	8	1.52(1.32-1.78)	
355.8546	22.031	23.368	-80	0.900	77049	12902	540	1350	24		M
357.8516	22.031	23.368	-80	0.900	46183	8316	303	757	27	1.67(1.32-1.78)	
355.8546	23.504	23.368	8	0.960	19499	3234	540	1350	6		M
357.8516	23.504	23.368	8	0.960	12820	2736	303	757	9	1.52(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.557	30.543	1	0.949	6537000	1246271	2012	5030	619		
385.8610	30.557	30.543	1	0.949	13062270	2515202	3794	9485	663	0.50(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.557						342	855			
375.8178	30.557						374	935			
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.743	30.716	2	0.955	6332447	1215400	2012	5030	604		
385.8610	30.743	30.716	2	0.955	12591146	2416706	3794	9485	637	0.50(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDF											
373.8208	30.743						342	855			
375.8178	30.743						374	935			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.569	31.555	1	0.981	6020036	1472519	2012	5030	732		
385.8610	31.569	31.555	1	0.981	12025466	2959512	3794	9485	780	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						342	855			
375.8178	31.568						374	935			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.380	32.367	1	1.006	5943954	1691161	2012	5030	841		
385.8610	32.380	32.367	1	1.006	11772810	3309783	3794	9485	872	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQ
373.8208	32.394	32.380	1	1.000	6442	2063	342	855	6		
375.8178	32.394	32.380	1	1.000	7871	1715	374	935	5	0.82(1.05-1.43)	
	Empc Correction				5195	1663	374	935	4		
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						342	855			
375.8178	30.237						374	935			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.194	32.181	1		19703474	5485164	2473	6182	2218		
403.8529	32.194	32.181	1		15576044	4362144	2068	5170	2109	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.755	31.741	1	0.986	9626278	2648964	2473	6182	1071		
403.8529	31.755	31.741	1	0.986	7492052	2082634	2068	5170	1007	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQM
389.8157	31.768	31.755	1	1.000	9722	2506	331	827	8		M
391.8127	31.781	31.755	2	1.001	10067	2611	366	915	7	0.97(1.05-1.43)	M
	Empc Correction				7840	2020	366	915	6		
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.861	31.848	1	0.990	10131015	2508241	2473	6182	1014		
403.8529	31.861	31.848	1	0.990	8046220	2004284	2068	5170	969	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.888	31.861	2	1.001	11414	2394	331	827	7		M
391.8127	31.861	31.861	0	1.000	8063	1856	366	915	5	1.42(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	32.207	32.194	1	1.014	21100	3890	331	827	12		M
391.8127	32.207	32.194	1	1.014	15934	3844	366	915	11	1.32(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.625	30.870	-75	0.930	261310	32802	331	827	99		
391.8127	29.612	30.870	-75	0.929	212275	26949	366	915	74	1.23(1.05-1.43)	
389.8157	31.023	30.870	9	0.974	41759	7541	331	827	23		
391.8127	31.023	30.870	9	0.974	41725	8484	366	915	23	1.00(1.05-1.43)	
	Empc Correction				33676	6081	366	915	17		
389.8157	31.222	30.870	21	0.980	6976	1849	331	827	6		
391.8127	31.249	30.870	23	0.981	8019	1534	366	915	4	0.87(1.05-1.43)	
	Empc Correction				5625	1491	366	915	4		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.793	33.780	1	1.050	4643289	1582533	2808	7020	564		
419.8220	33.793	33.780	1	1.050	10651686	3604174	8115	20287	444	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.805	33.793	1	1.000	16868	5504	452	1130	12		
409.7789	33.805	33.793	1	1.000	15572	5590	217	542	26	1.08(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.874	34.862	1	1.083	5254587	1581269	2808	7020	563		
419.8220	34.874	34.862	1	1.083	12177380	3636153	8115	20287	448	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.862						452	1130			
409.7789	34.862						217	542			
A Non-2,3,7,8-sub-HpCDF											M
407.7818	34.109	34.340	-14	1.009	24756	7562	452	1130	17		M
409.7789	34.109	34.340	-14	1.009	22890	7173	217	542	33	1.08(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.583	34.570	1	1.074	8899322	2863167	4136	10340	692		
437.8140	34.583	34.570	1	1.074	8552807	2721877	2150	5375	1266	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	205052	60366	856	2140	71		
425.7737	34.595	34.583	1	1.000	203991	59201	514	1285	115	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.048	34.309	-16	0.985	554670	174005	856	2140	203		
425.7737	34.048	34.309	-16	0.985	559312	180611	514	1285	351	0.99(0.88-1.20)	
13C-OCDD											
469.7779	36.903	36.891	1	1.146	13930319	3791857	1242	3105	3053		
471.7750	36.903	36.891	1	1.146	15510248	4184605	1051	2627	3982	0.90(0.76-1.02)	
OCDF											
441.7428	37.011	36.999	1	1.003	76146	16758	345	862	49		
443.7399	36.999	36.999	0	1.003	82893	18553	582	1455	32	0.92(0.76-1.02)	
OCDD											
457.7377	36.915	36.903	1	1.000	4287042	1141237	634	1585	1800		
459.7348	36.915	36.903	1	1.000	4746701	1249327	608	1520	2055	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	29909755	7565406

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	29909755	7565406

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
17.009	74600	17047	97592	22541	0.6393	0.76	
17.826	16198	3523	19195	3710	0.1314	0.84	
Signal Totals:							
	90798	20570	116787	26251			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	207585	46821				0.78	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7707 = (207585 * 100.000) / (29909755 * 0.901)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	24496009	5738828

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	24496009	5738828

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.964	117330	28534	141191	36546	0.9865	0.83	
17.856	22931	5233	21216	4614	0.1685	1.08	RQ
17.856	16336	3552	21216	4614	0.1433		Empc Correction
Signal Totals:							
	133666	32086	162407	41160			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	302668	74927				0.86	RQ
	296073	73246					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.155 = (302668 * 100.000) / (24496009 * 1.070)
Empc Amount: 1.130 = (296073 * 100.000) / (24496009 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	19041353	2995150

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	19041353	2995150

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.281	25849	4019	16998	2380	0.2245	1.52	M
22.031	77049	12902	46183	8316	0.6457	1.67	M
23.504	19499	3234	12820	2736	0.1693	1.52	M
Signal Totals:							
	122397	20155	76001	13432			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	198398	33587				1.61	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.039 = (198398 * 100.000) / (19041353 * 1.002)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	17118330	4731598
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	18177235	4512525
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	17647782	4622061

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.625	261310	32802	212275	26949	2.60	1.23	
31.023	41759	7541	41725	8484	0.4589	1.00	RQ
31.023	41759	7541	33676	6081	0.4147		Empc Correction
31.222	6976	1849	8019	1534	0.0824	0.87	RQ
31.222	6976	1849	5625	1491	0.0693		Empc Correction
Signal Totals:							
	310045	42192	251576	34521			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	572064	79159				1.18	RQ
	561621	76713					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.145 = (572064 * 100.000) / (17647782 * 1.031)
Empc Amount: 3.087 = (561621 * 100.000) / (17647782 * 1.031)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	15294975	5186707
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	17431967	5217422

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	16363471	5202064

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	24756	7562	22890	7173	0.2151	1.08	M
Signal Totals:							
	24756	7562	22890	7173			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	47646	14735				1.08	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2151 = (47646 * 100.000) / (16363471 * 1.354)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Inject. Date: 13-Dec-2019 20:11:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	17452129	5585044

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	17452129	5585044

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.048	554670	174005	559312	180611	6.27	0.99	
Signal Totals:							
	554670	174005	559312	180611			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1113982	354616				0.99	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 6.274 = (1113982 * 100.000) / (17452129 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

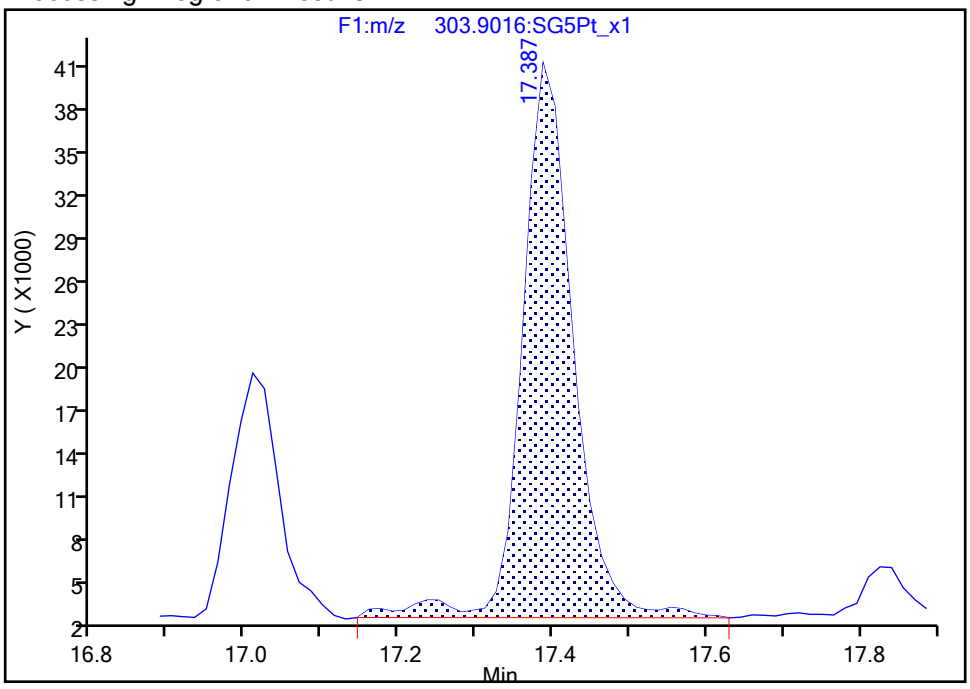
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

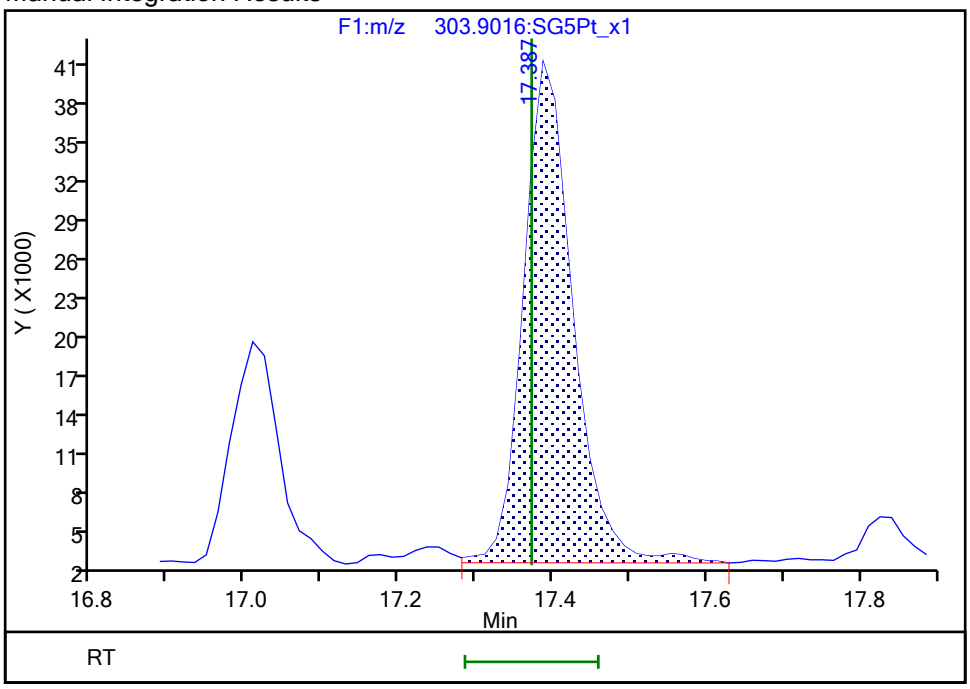
Processing Integration Results

RT: 17.39
Area: 177852
Amount: 1.479517
Amount Units: pg/ul



Manual Integration Results

RT: 17.39
Area: 172100
Amount: 1.458161
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:55:52

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

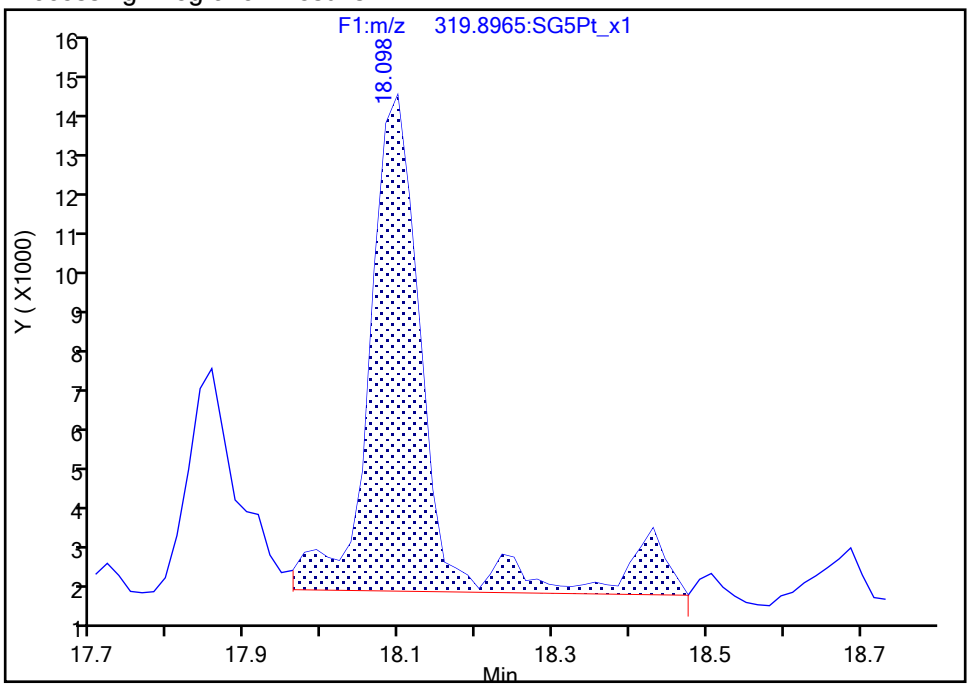
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

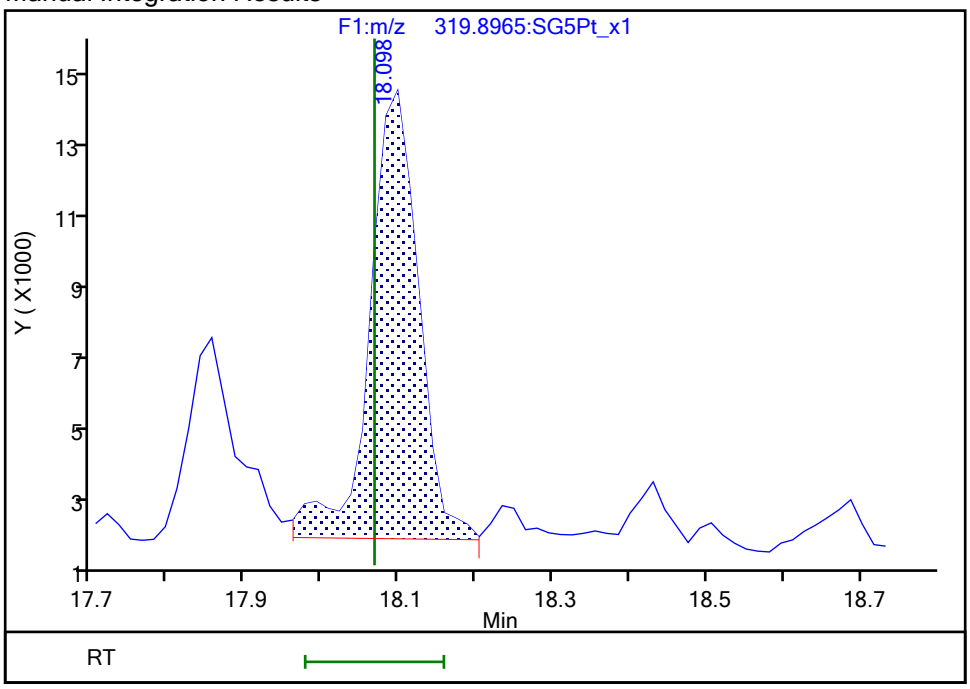
Processing Integration Results

RT: 18.10
Area: 59330
Amount: 0.532200
Amount Units: pg/ul



Manual Integration Results

RT: 18.10
Area: 51286
Amount: 0.501504
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:56:08

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

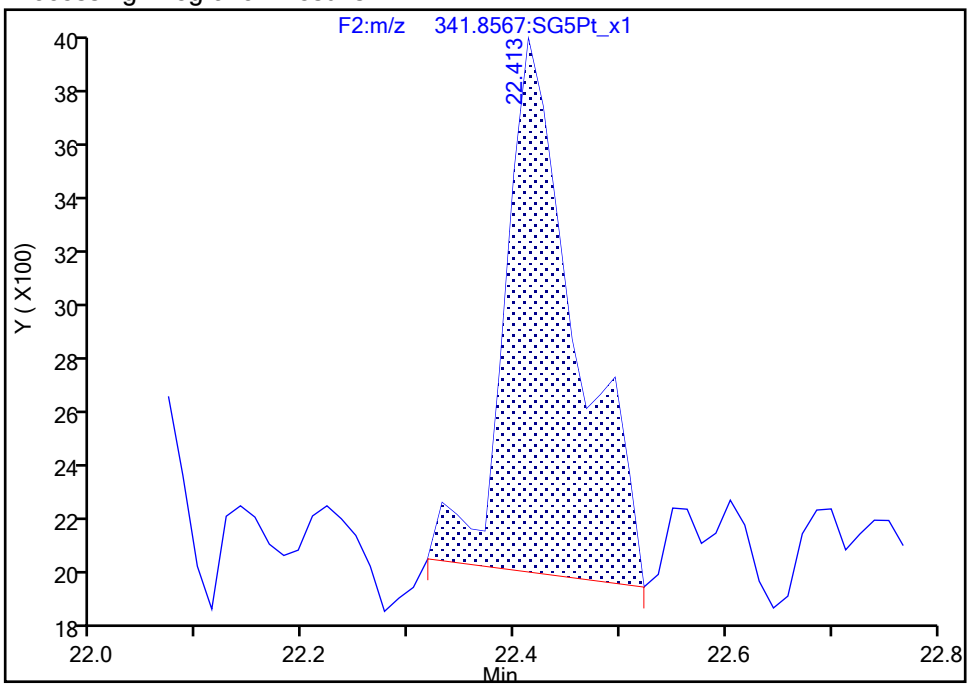
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

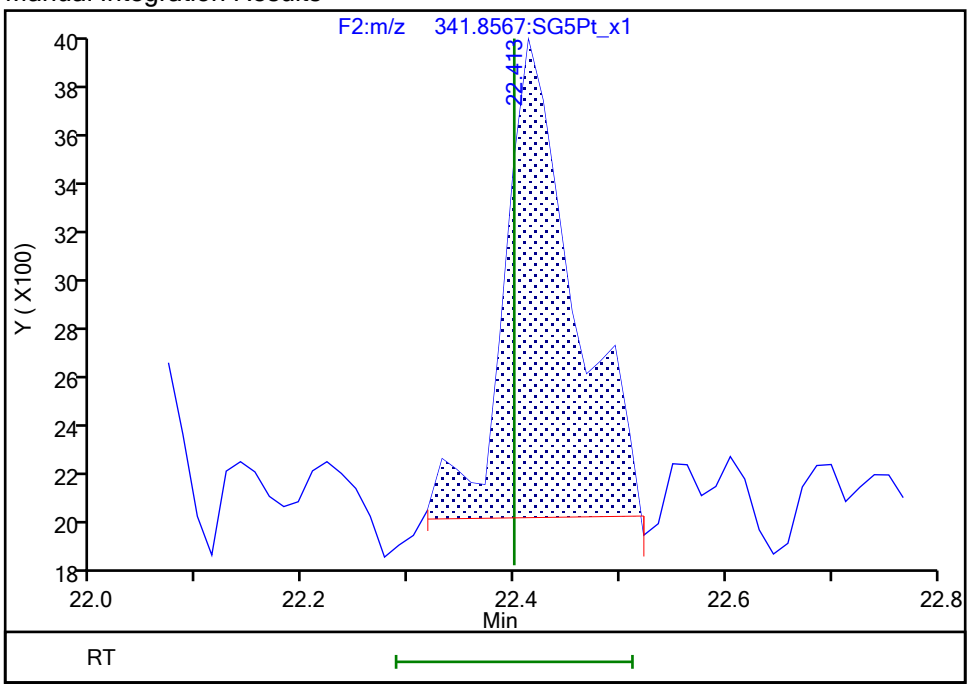
Processing Integration Results

RT: 22.41
Area: 8817
Amount: 0.095509
Amount Units: pg/ul



Manual Integration Results

RT: 22.41
Area: 8584
Amount: 0.094552
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:56:26

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

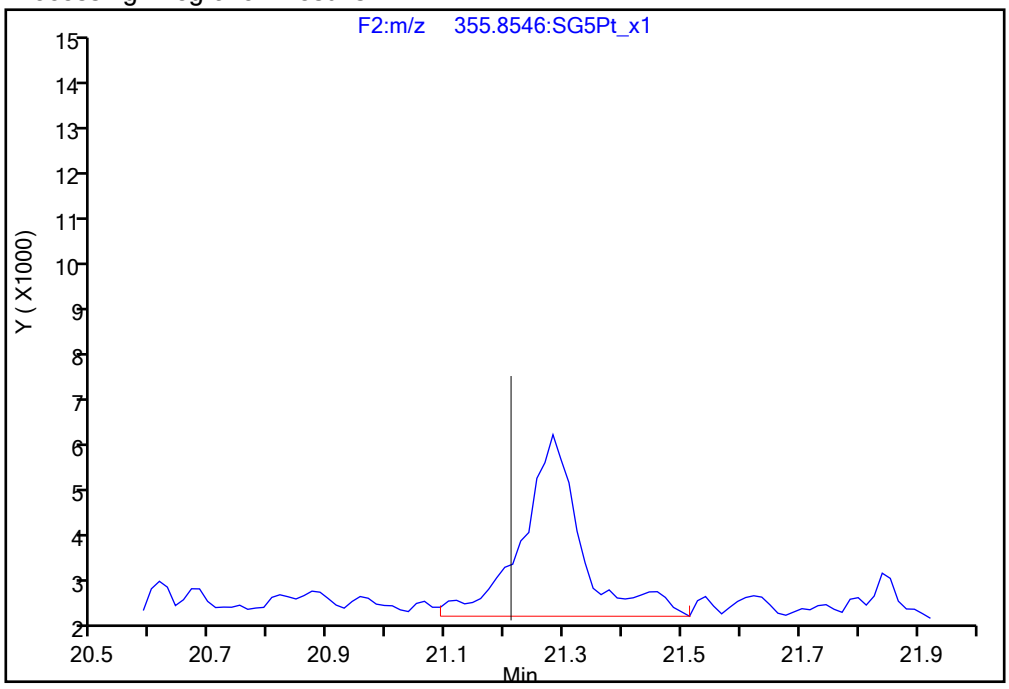
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

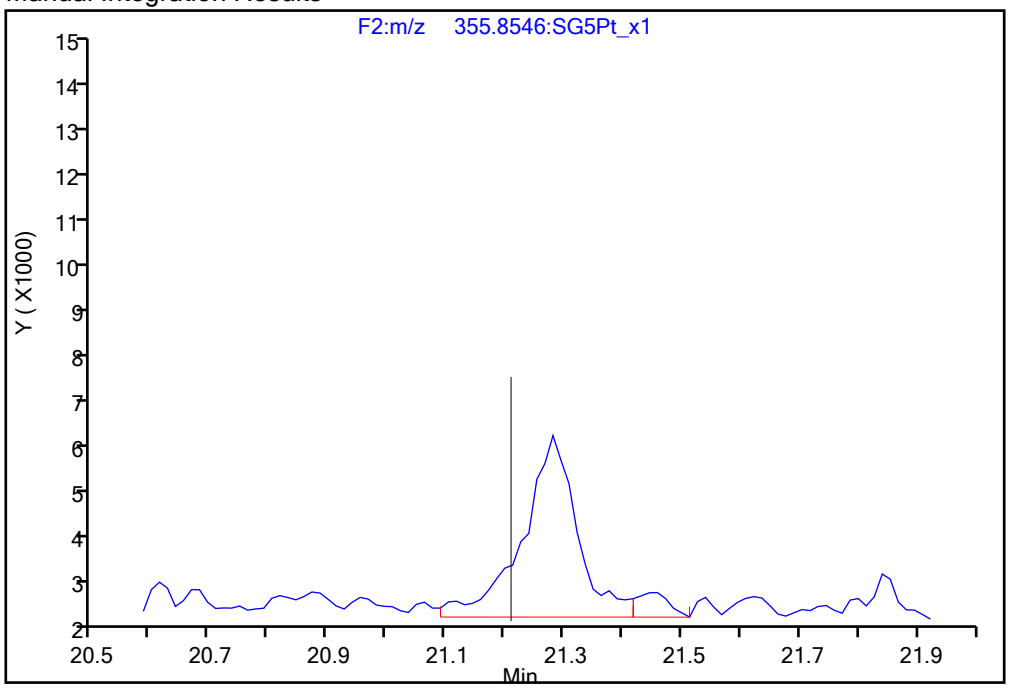
Processing Integration Results

RT = 21.281 Area = 27876



Manual Integration Results

RT = 21.281 Area = 25849 M



Reviewer: dadunj, 16-Dec-2019 10:56:56

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

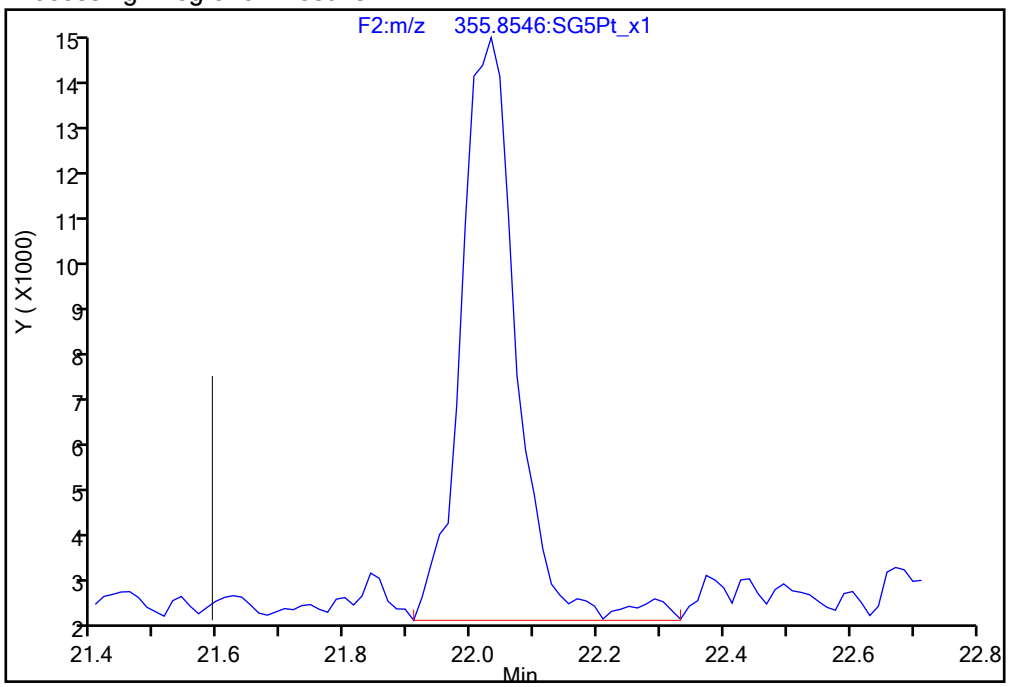
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

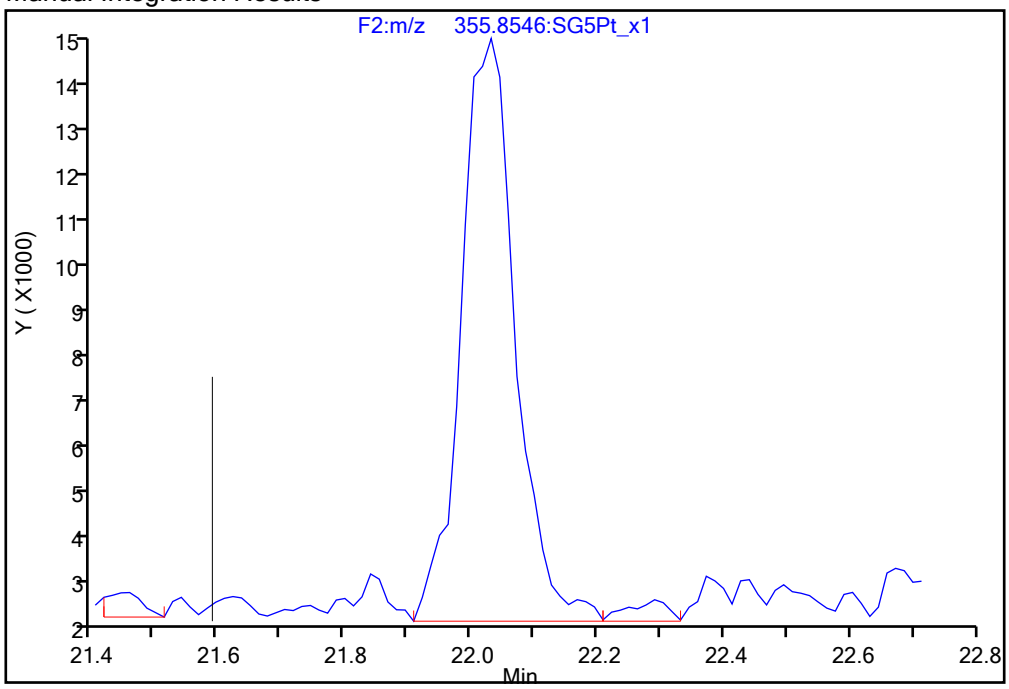
Processing Integration Results

RT = 22.031 Area = 79102



Manual Integration Results

RT = 22.031 Area = 77049 M



Reviewer: dadunj, 16-Dec-2019 10:56:56

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

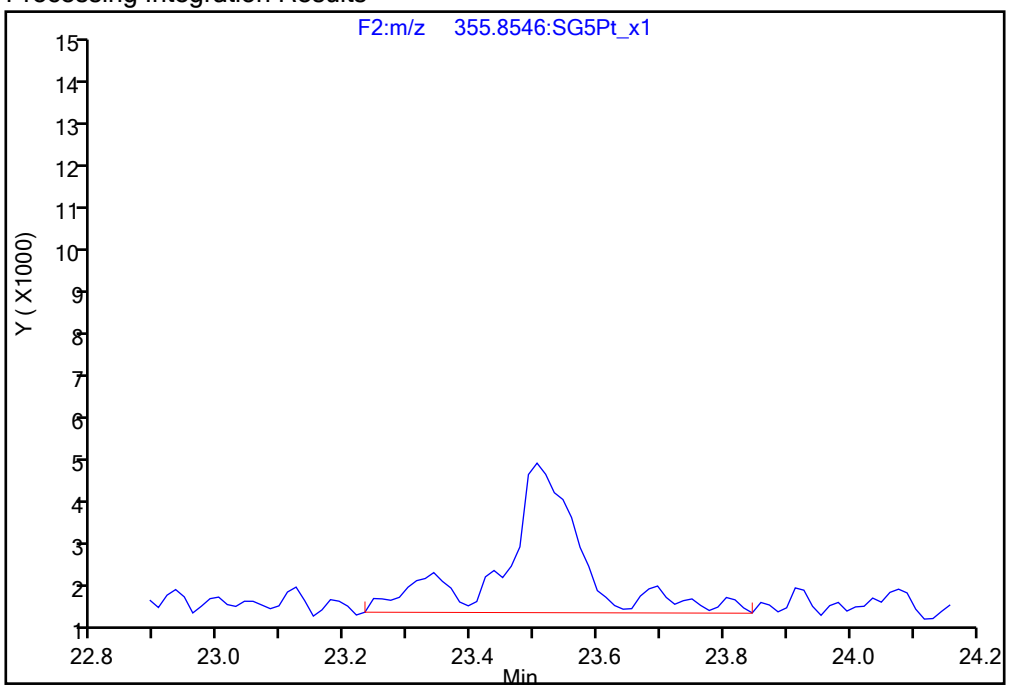
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (21.21- 25.53)

Signal: 1

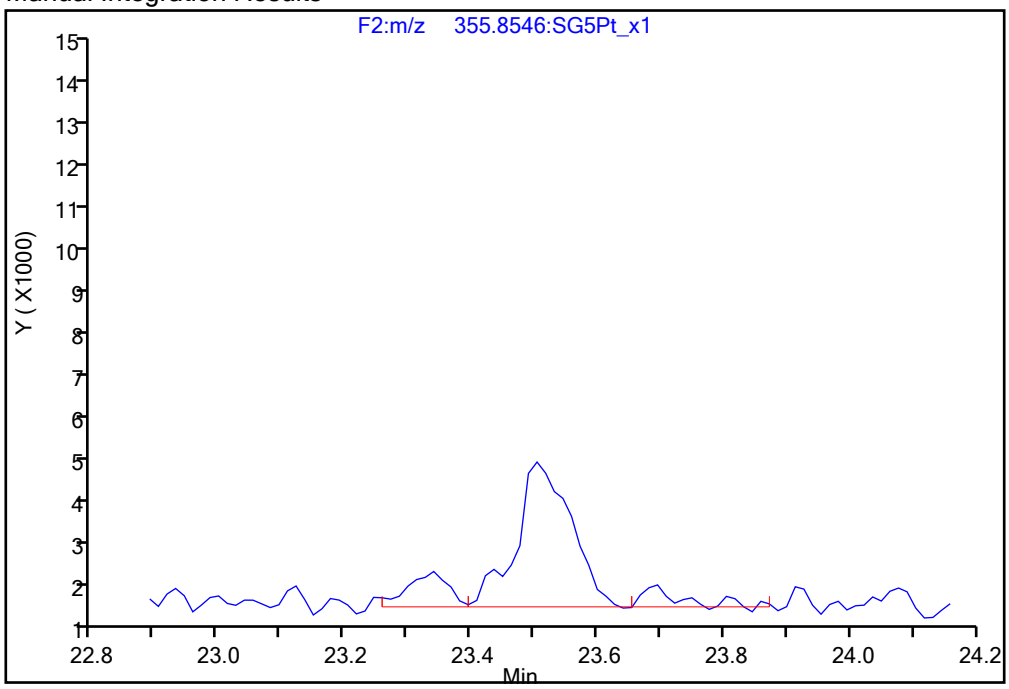
Processing Integration Results

RT = 23.504 Area = 28897



Manual Integration Results

RT = 23.504 Area = 19499 M



Reviewer: dadunj, 16-Dec-2019 10:56:56

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

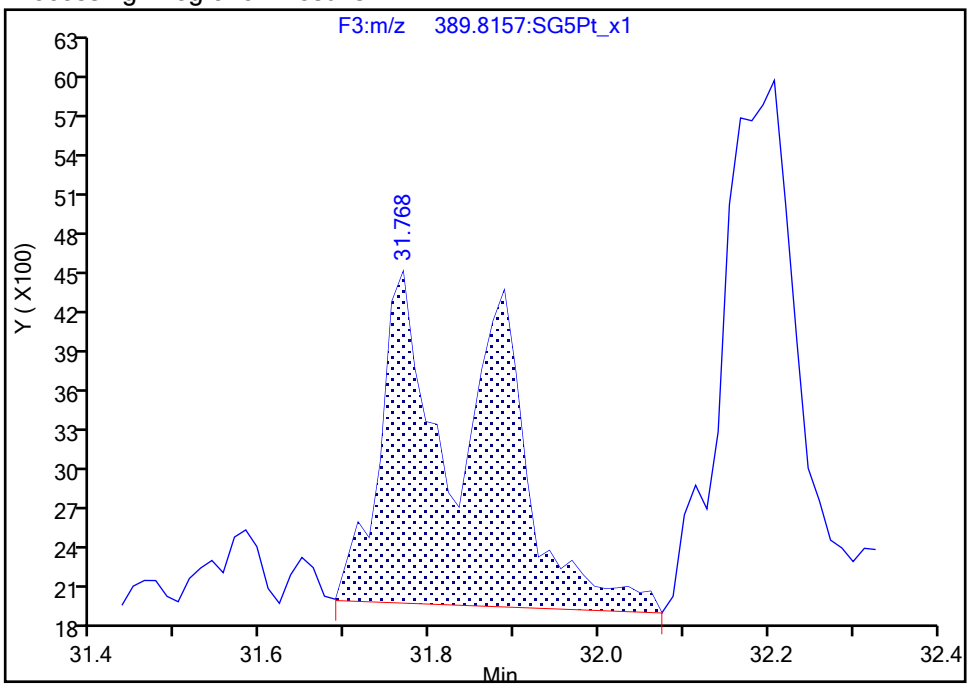
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

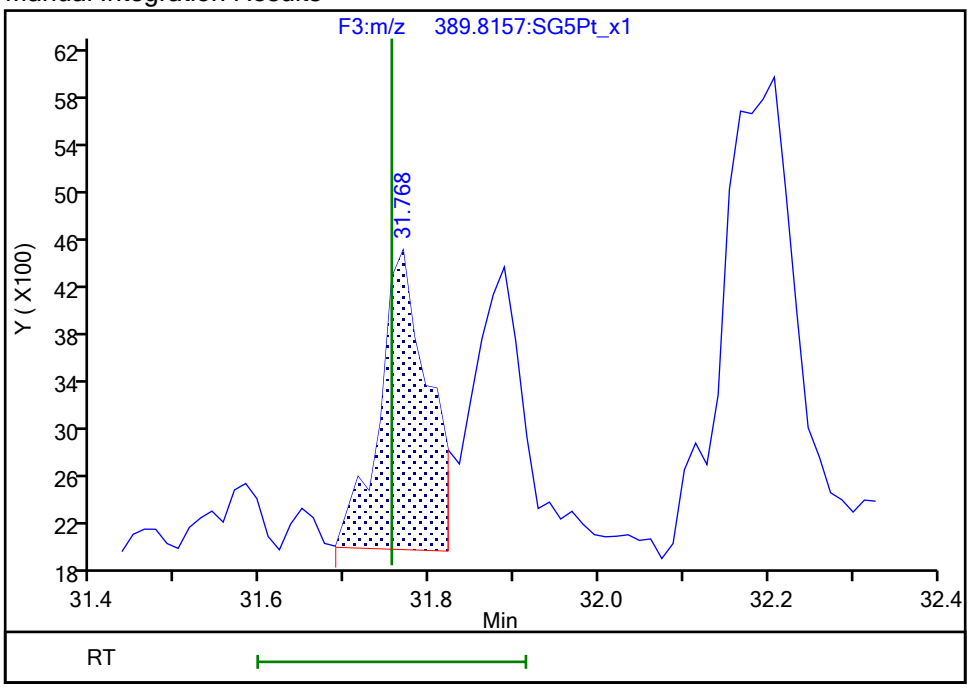
Processing Integration Results

RT: 31.77
Area: 21141
Amount: 0.228181
Amount Units: pg/ul



Manual Integration Results

RT: 31.77
Area: 9722
Amount: 0.114982
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:57:13
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

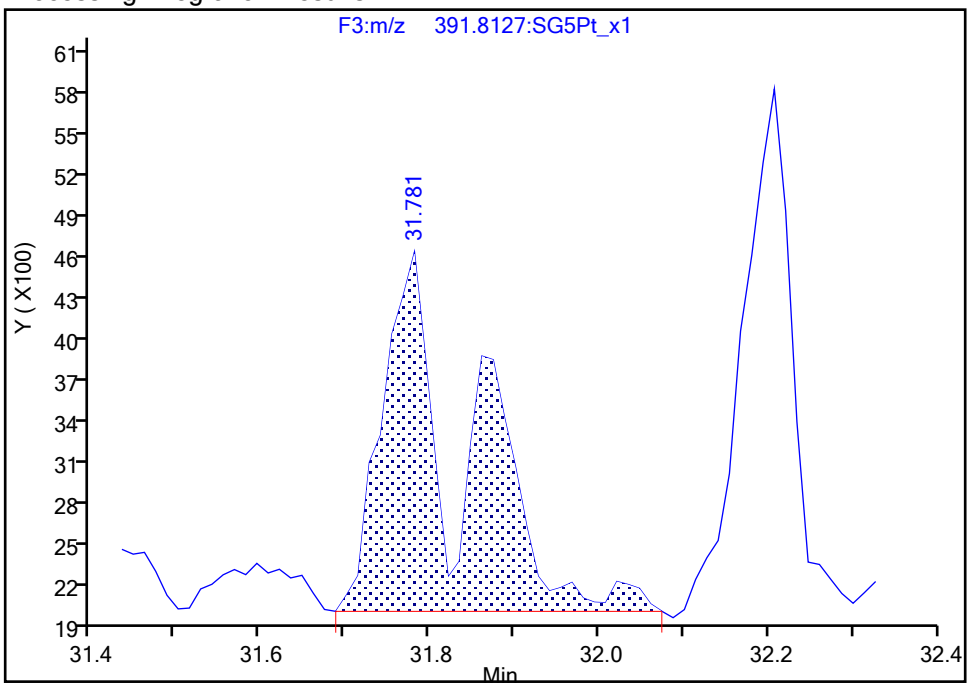
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

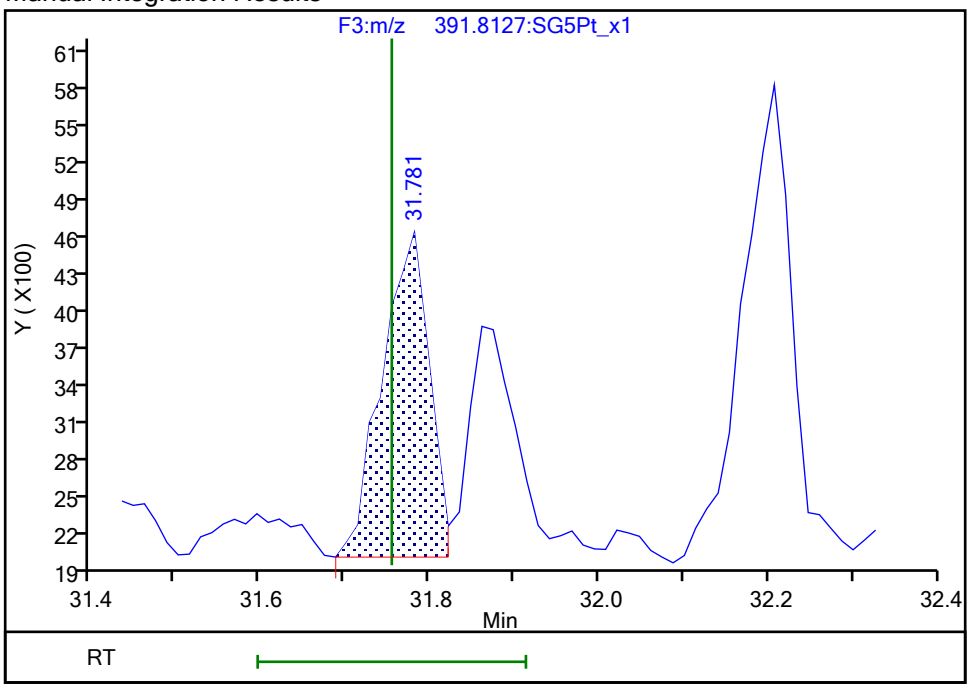
Processing Integration Results

RT: 31.78
Area: 18130
Amount: 0.228181
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 10067
Amount: 0.114982
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:57:15
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

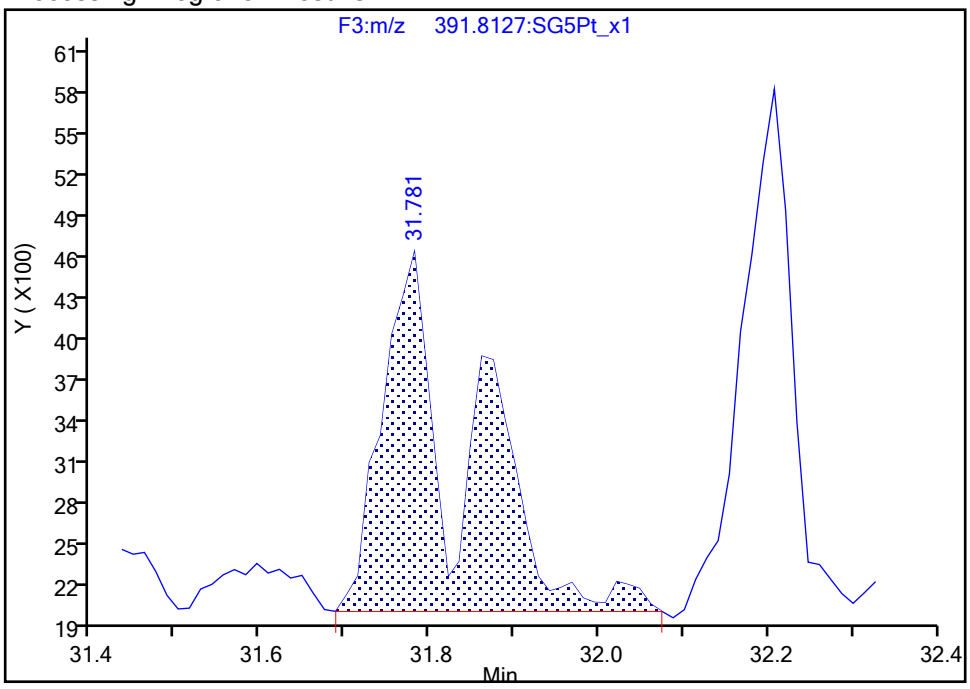
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

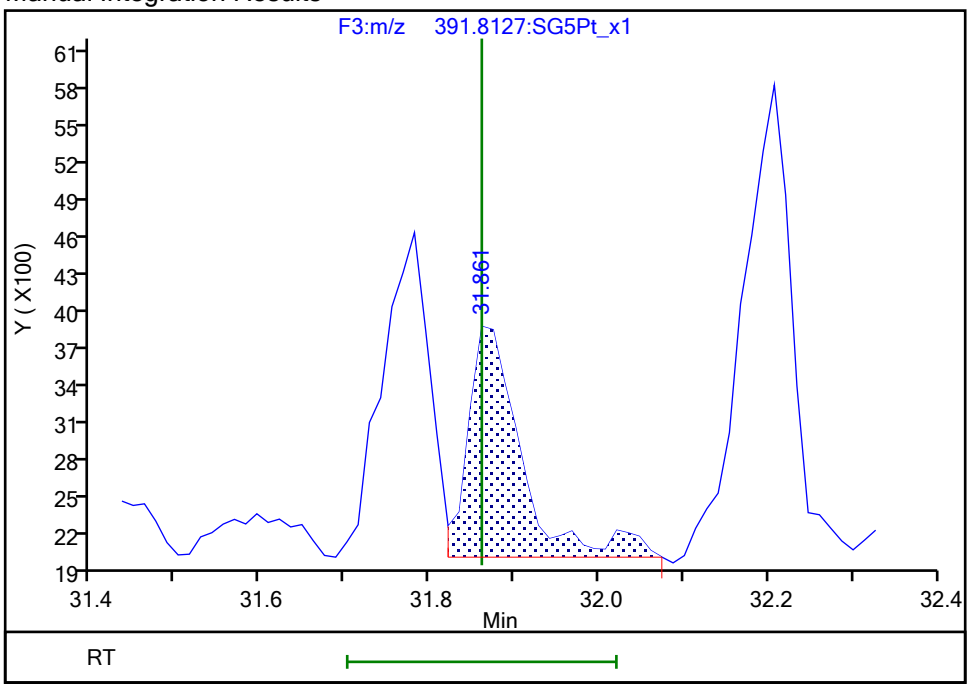
Processing Integration Results

RT: 31.78
Area: 18130
Amount: 0.219712
Amount Units: pg/ul



Manual Integration Results

RT: 31.86
Area: 8063
Amount: 0.108969
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:57:21
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

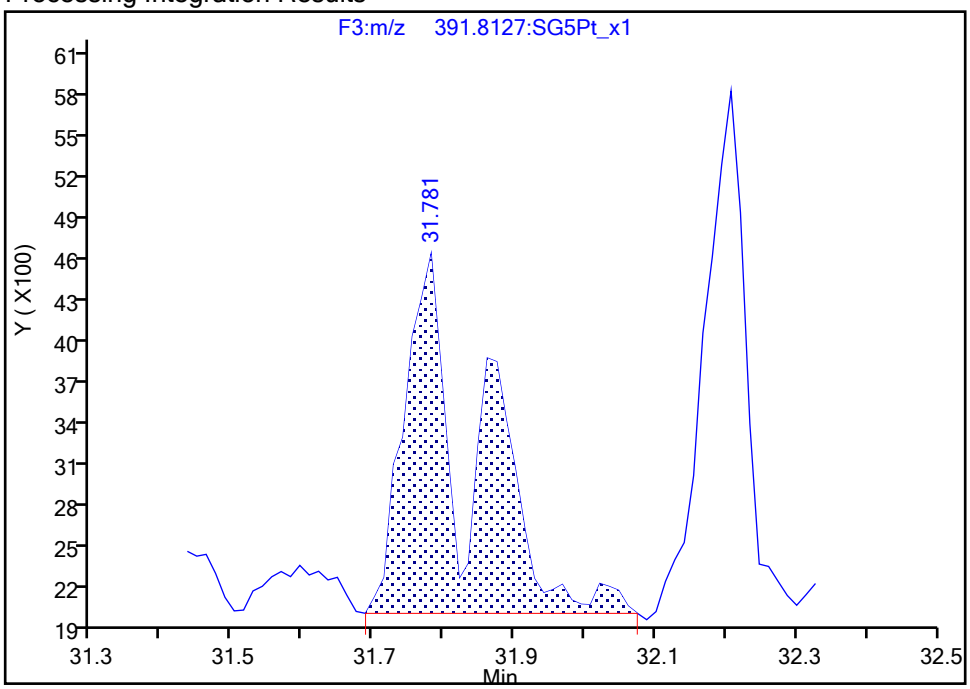
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.77
Area: 39271
Amount: 0.219712
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 19477
Amount: 0.108969
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 10:57:21
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

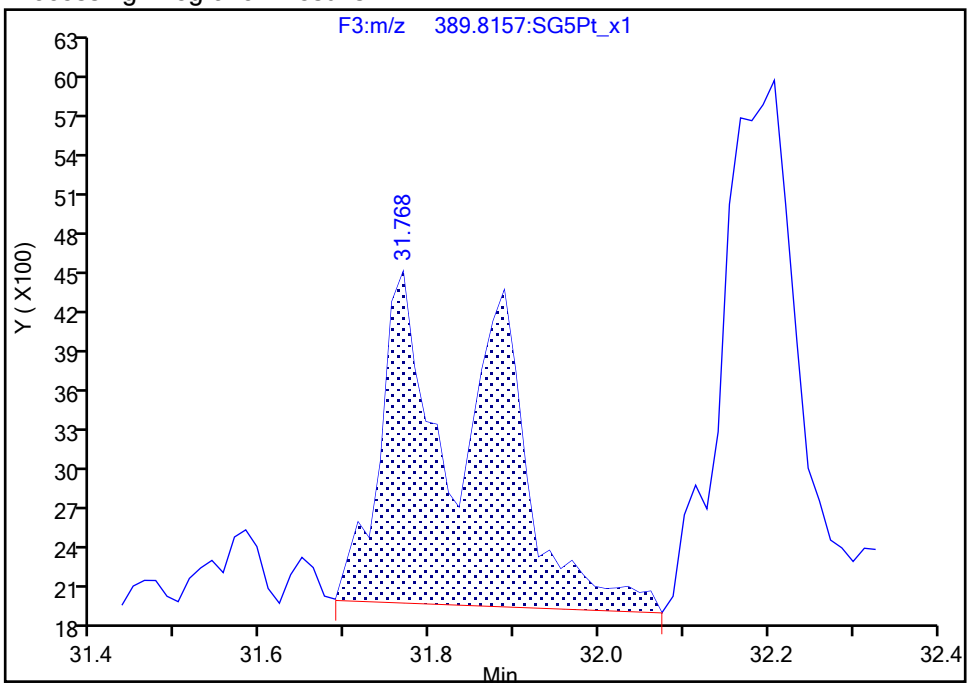
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

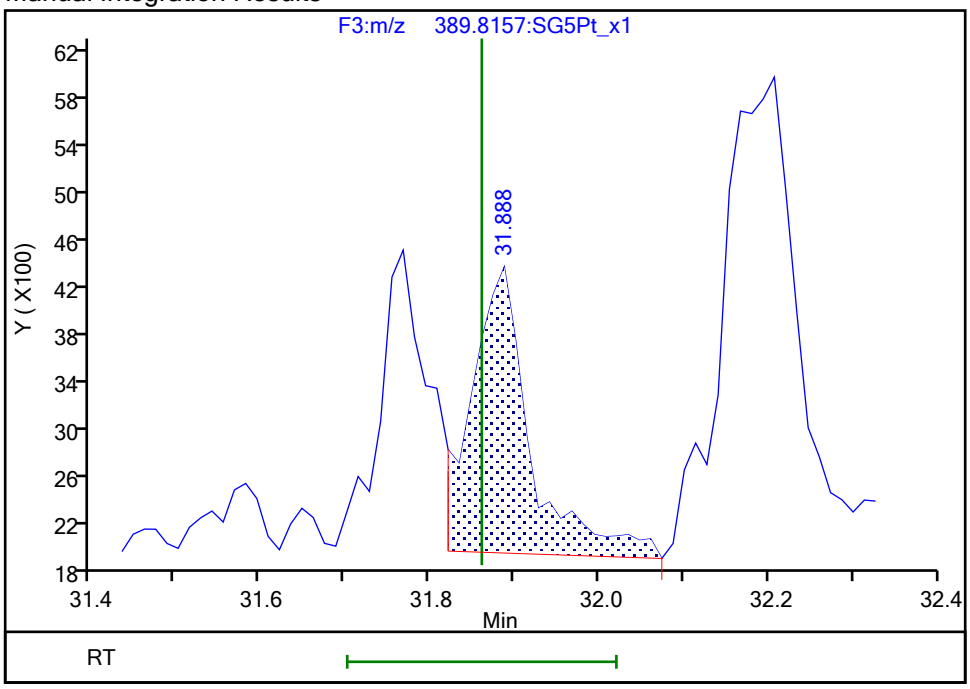
Processing Integration Results

RT: 31.77
Area: 21141
Amount: 0.219712
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 11414
Amount: 0.108969
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:57:23
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

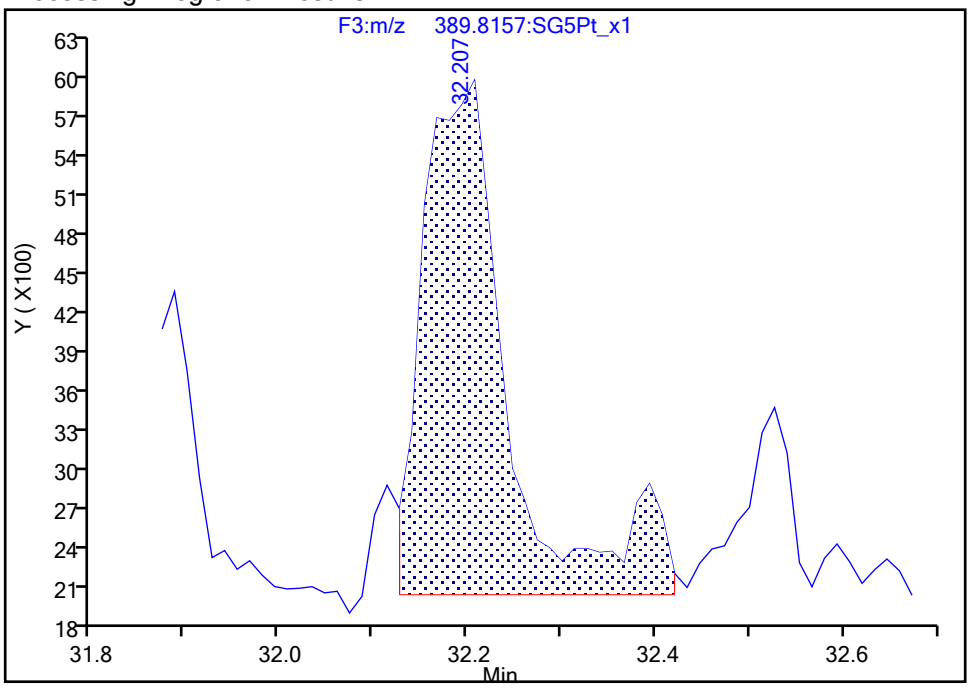
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

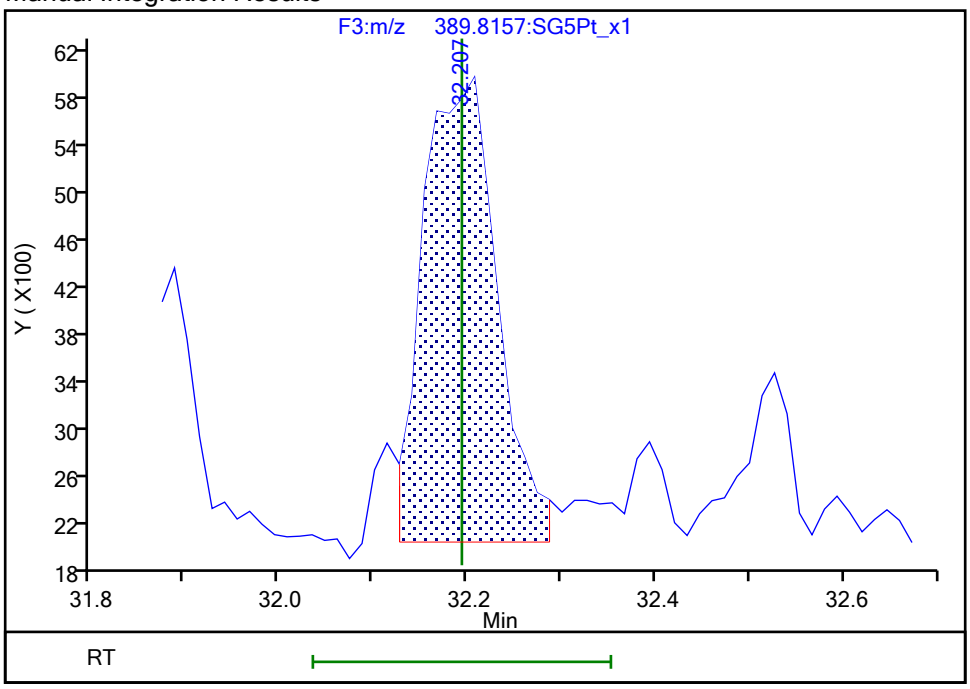
Processing Integration Results

RT: 32.21
Area: 24483
Amount: 0.207524
Amount Units: pg/ul



Manual Integration Results

RT: 32.21
Area: 21100
Amount: 0.190154
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:57:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

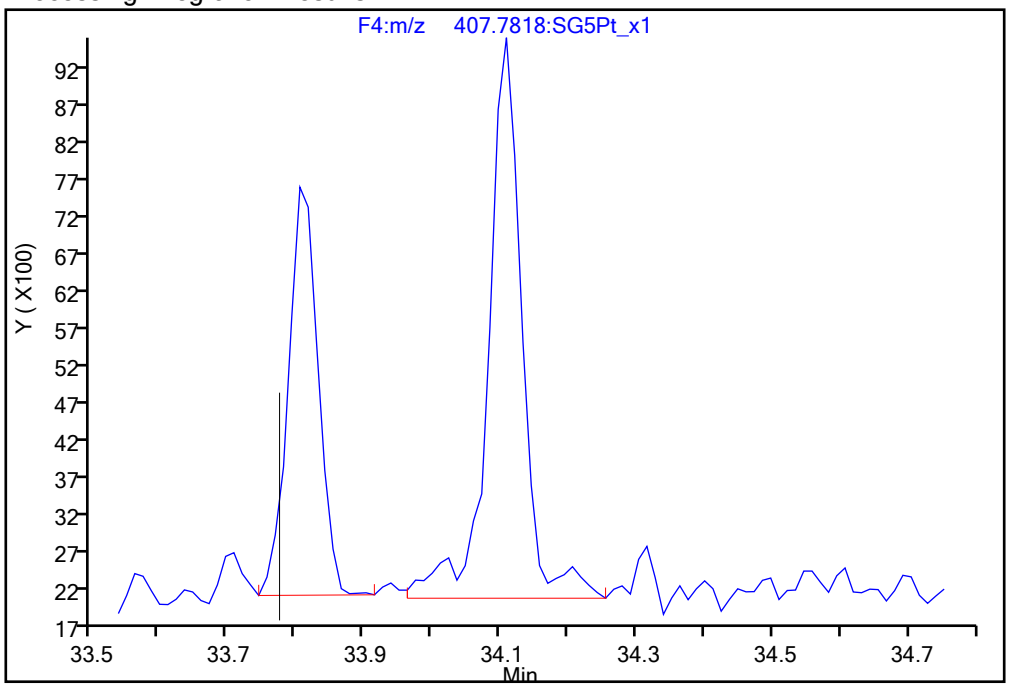
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d				
Injection Date:	13-Dec-2019 20:11:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-12-A	Lab Sample ID:	320-56911-12		
Client ID:	11187072-120819-BN-SJSSA05 (4-6)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7818, RT: (33.78- 34.90)

Signal: 1

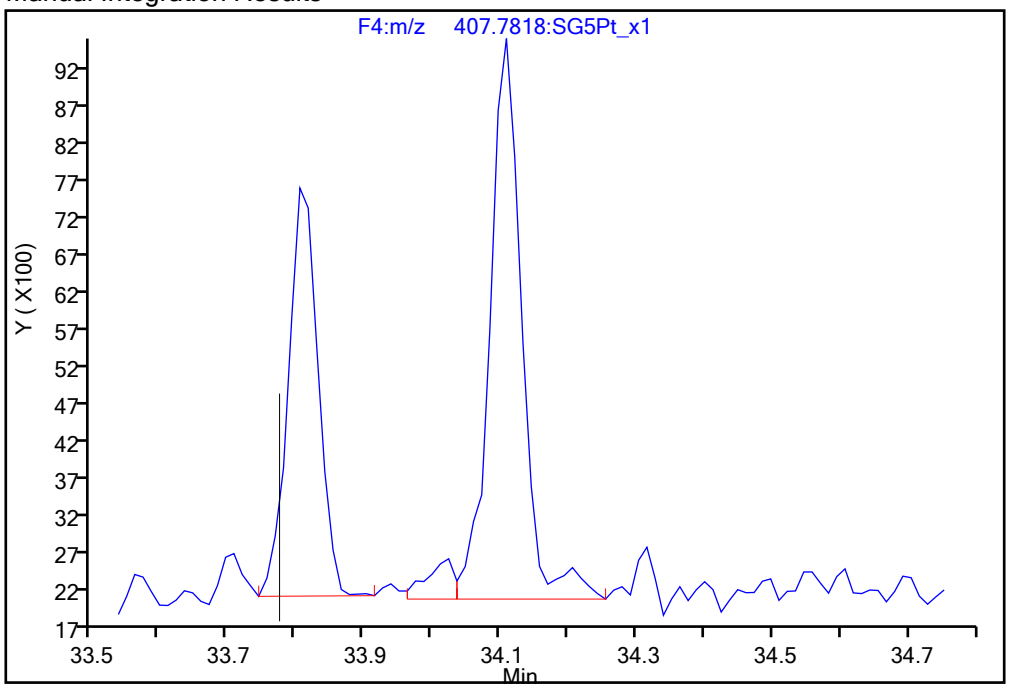
Processing Integration Results

RT = 34.109 Area = 26225



Manual Integration Results

RT = 34.109 Area = 24756 M



Reviewer: dadunj, 16-Dec-2019 10:57:36

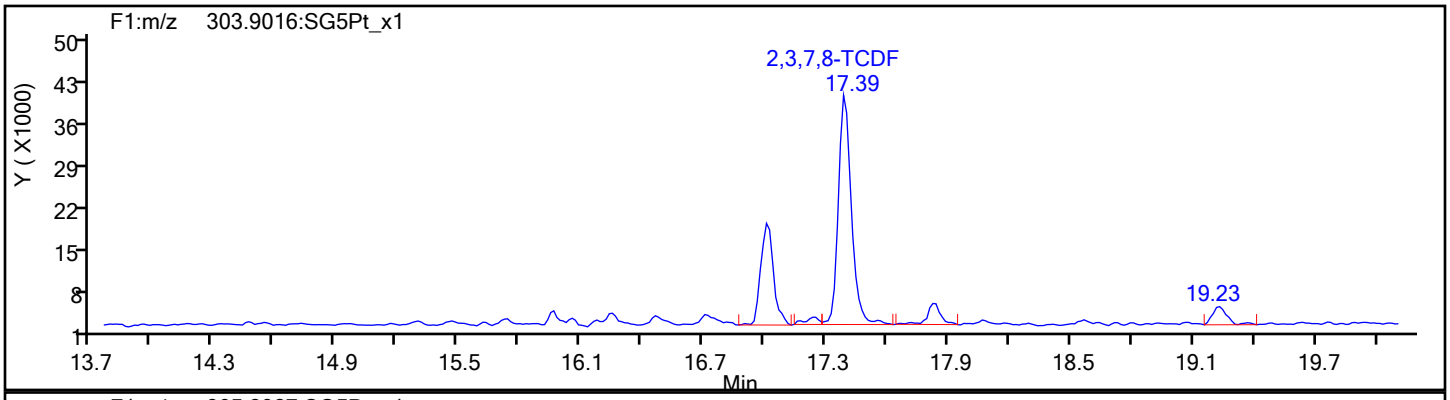
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

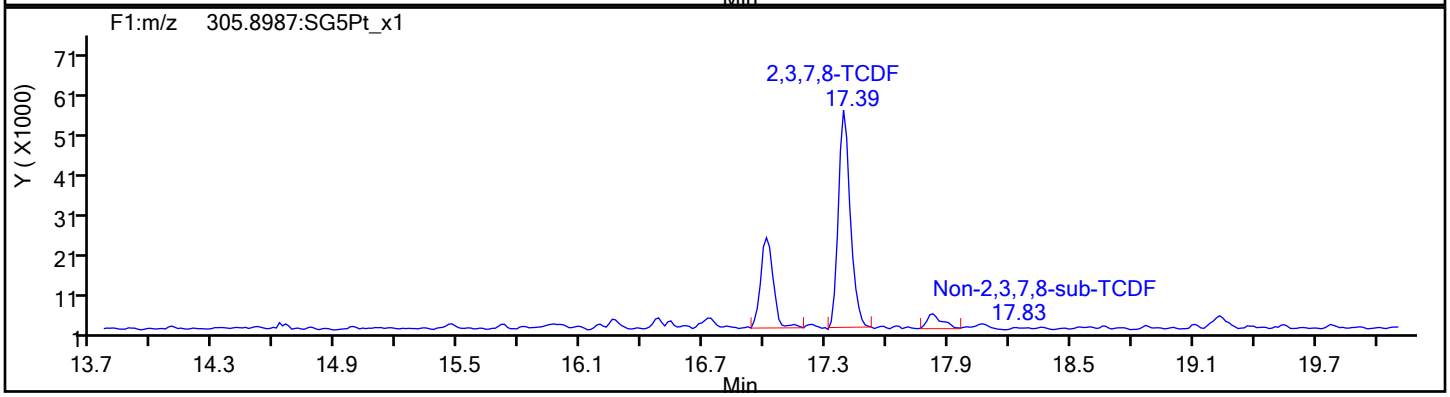
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

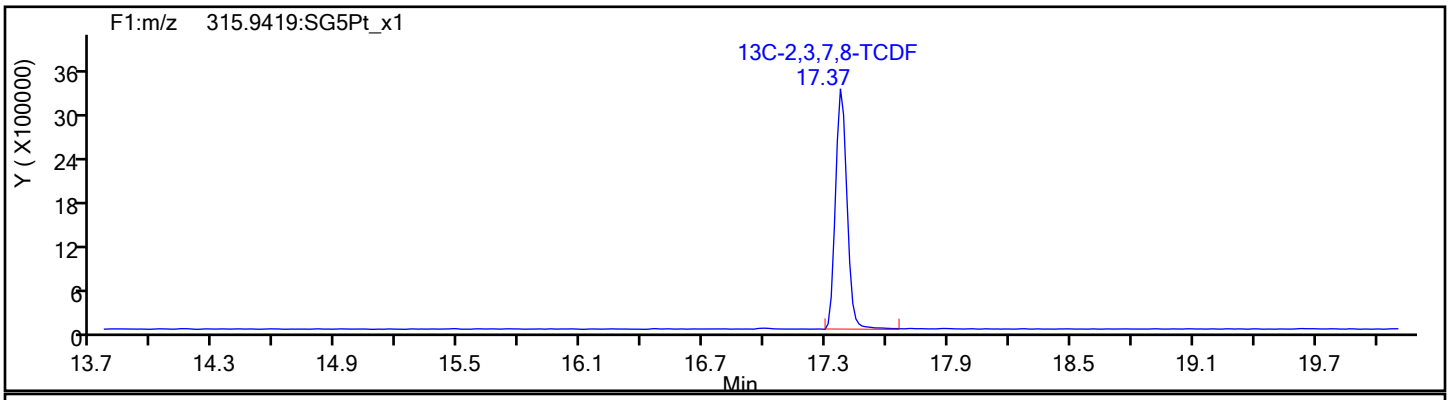
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

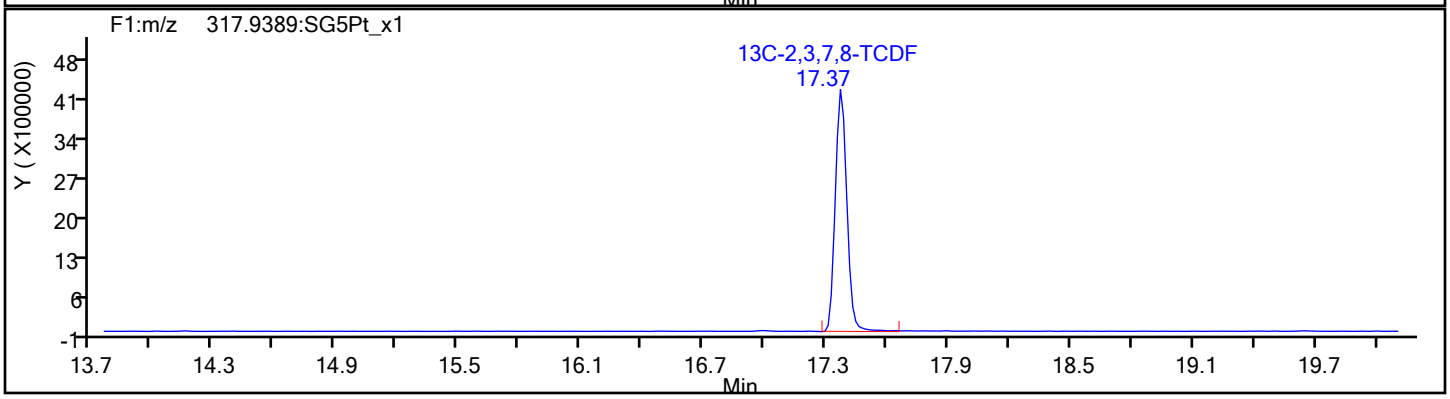
TCDF





TCDF Standards





Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
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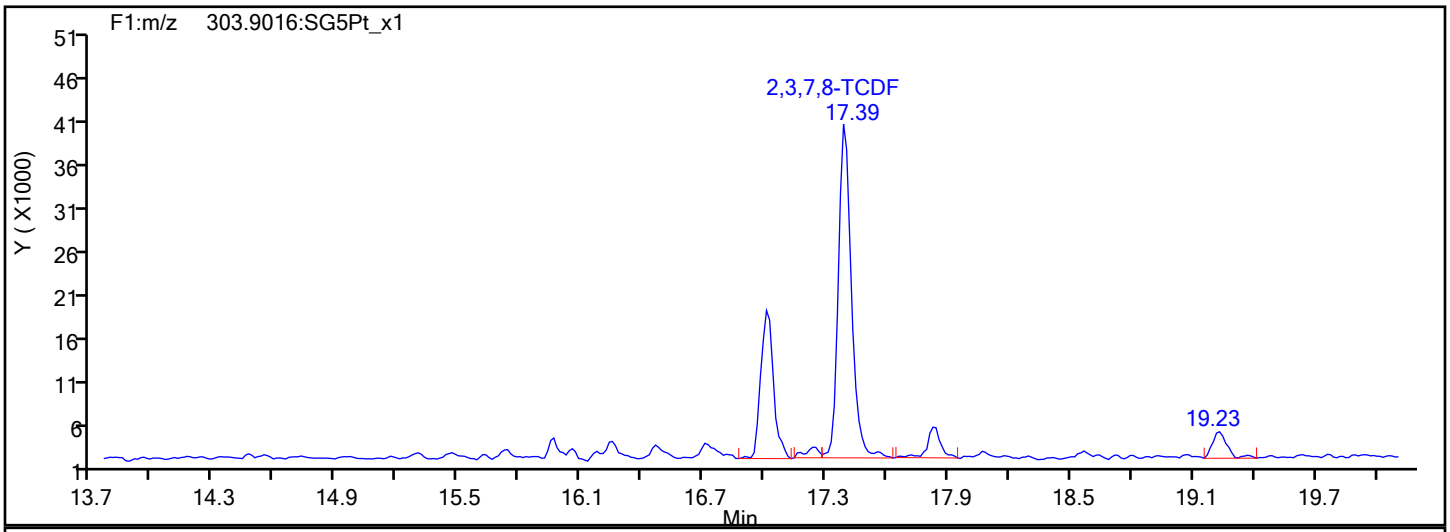
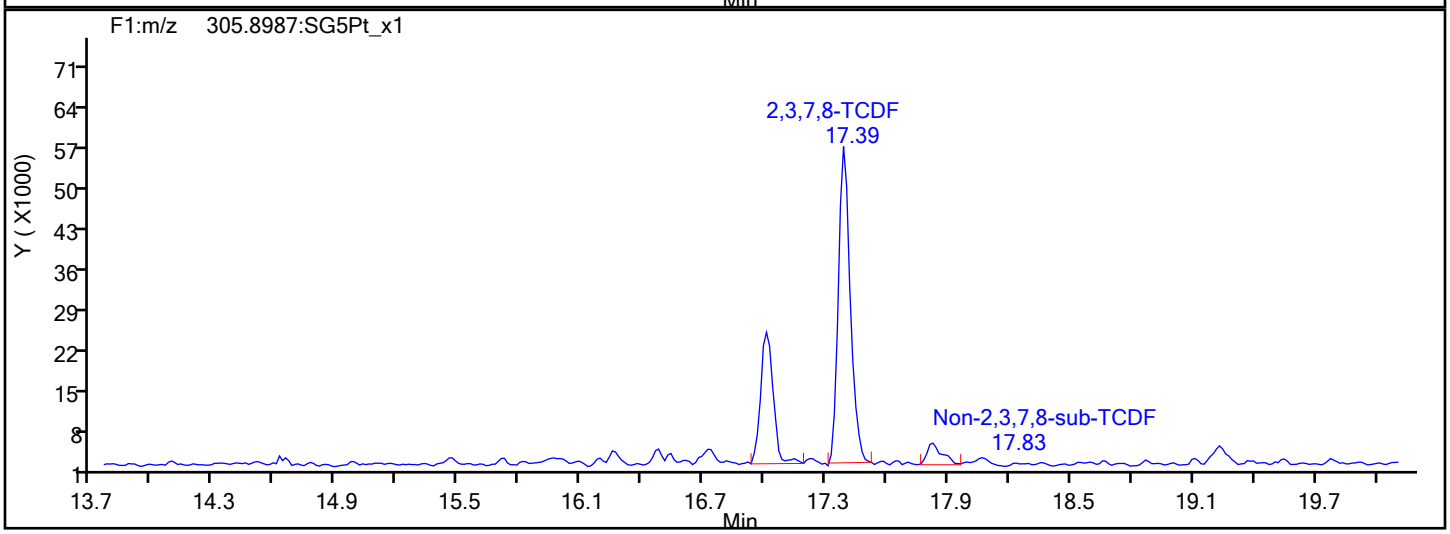
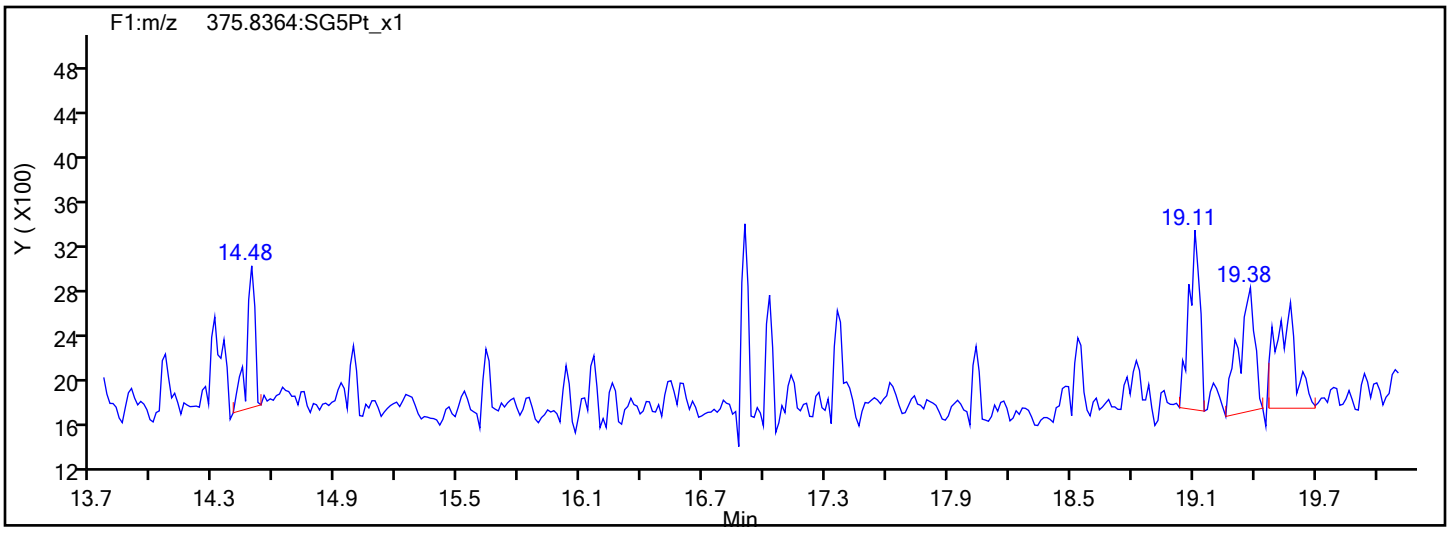
TCDF





TCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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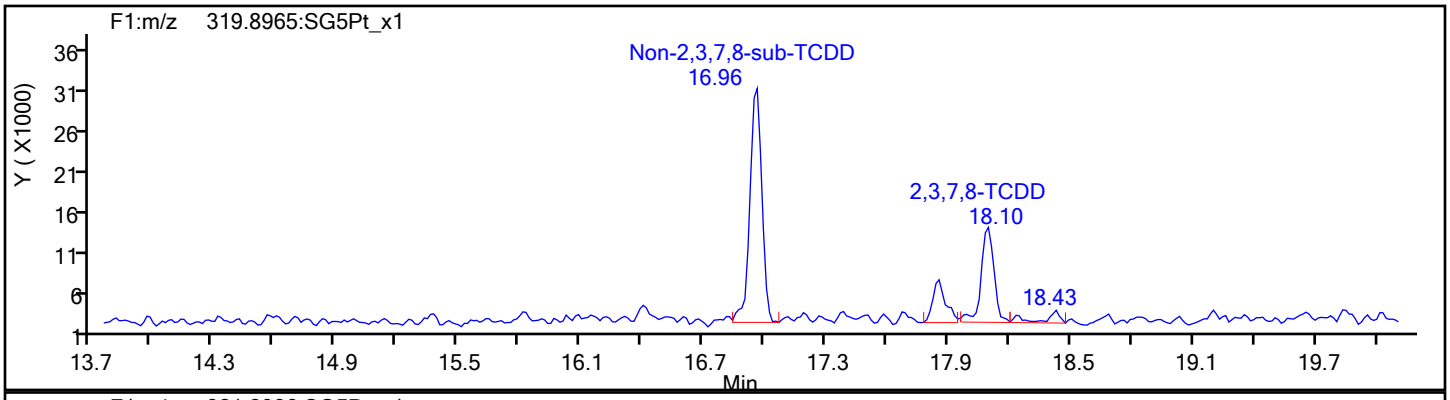
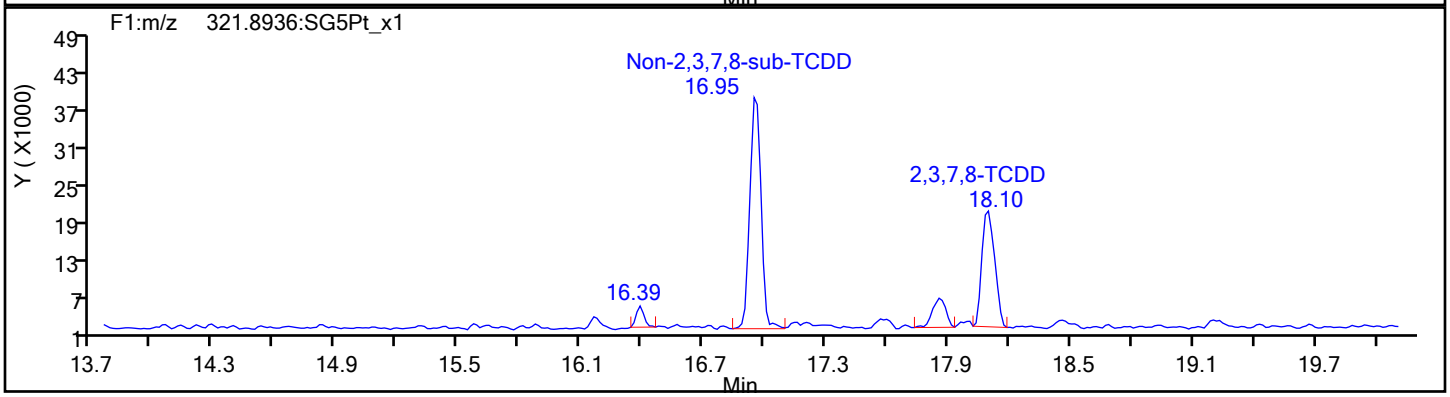
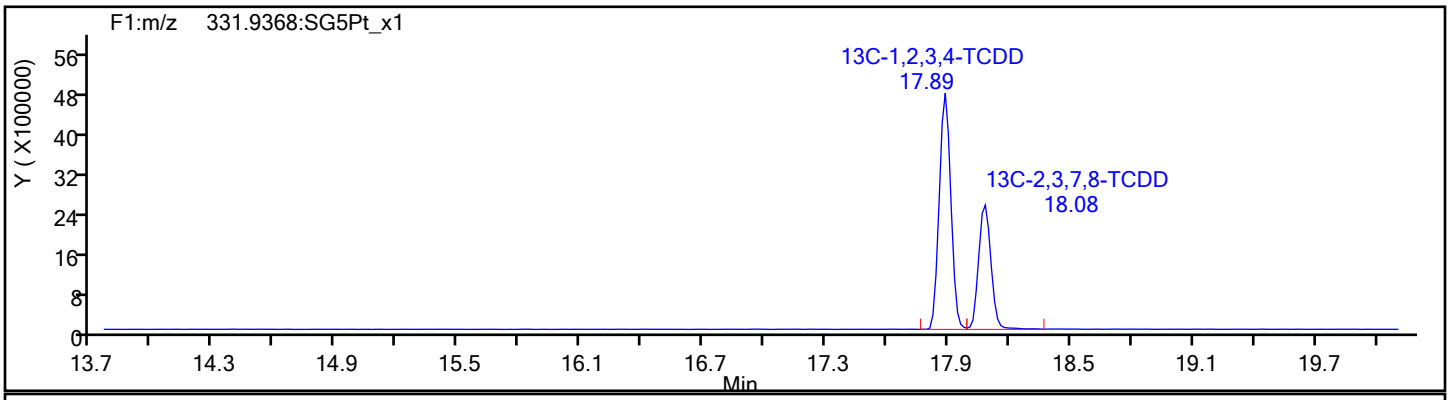
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

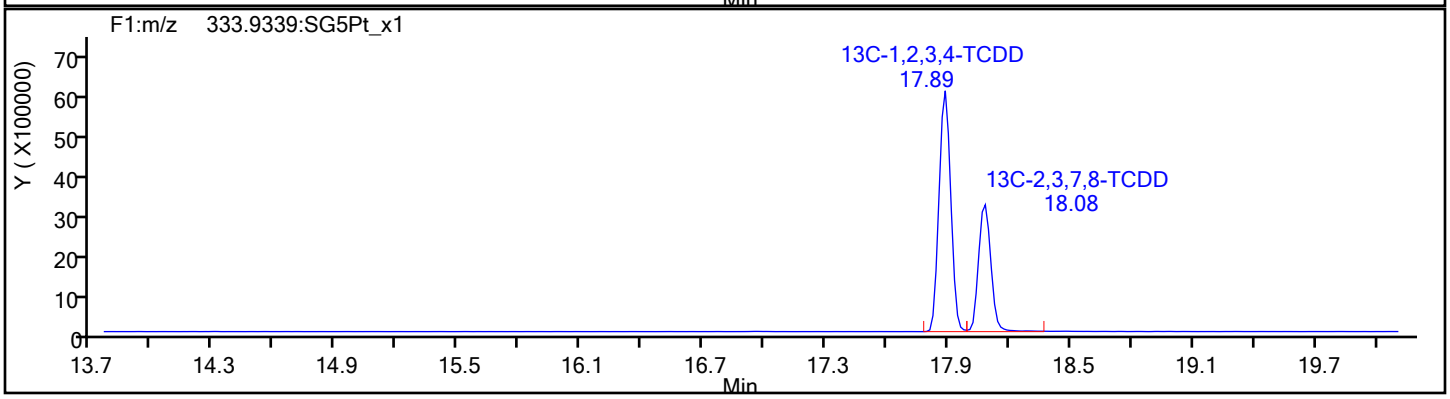
TCDD





TCDD Standards





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Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
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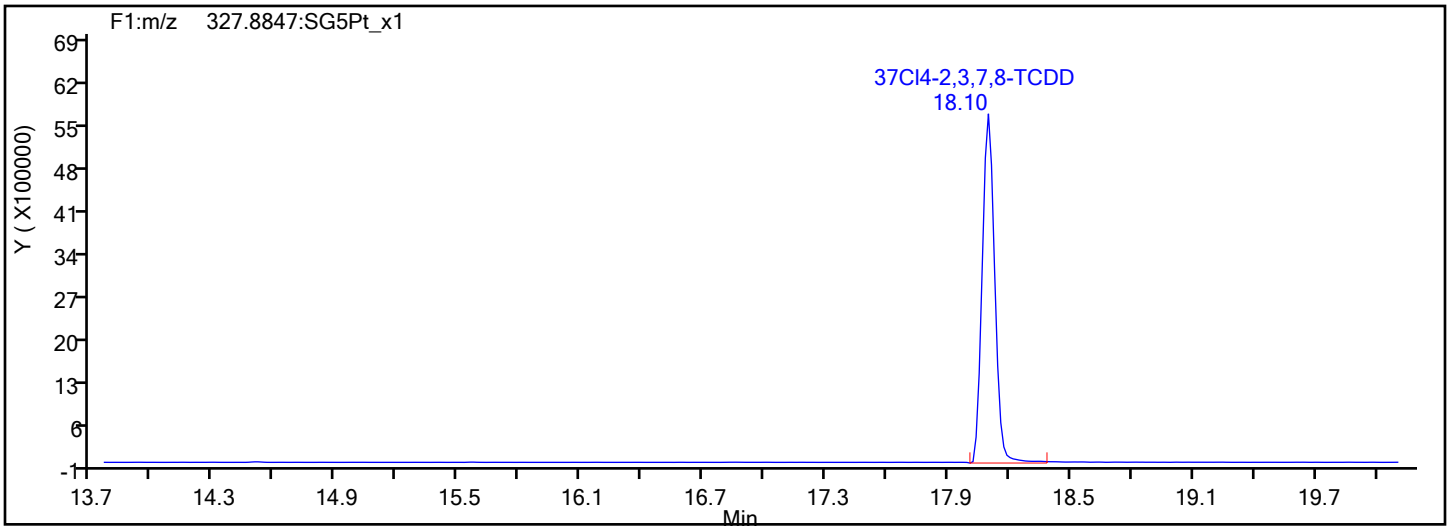
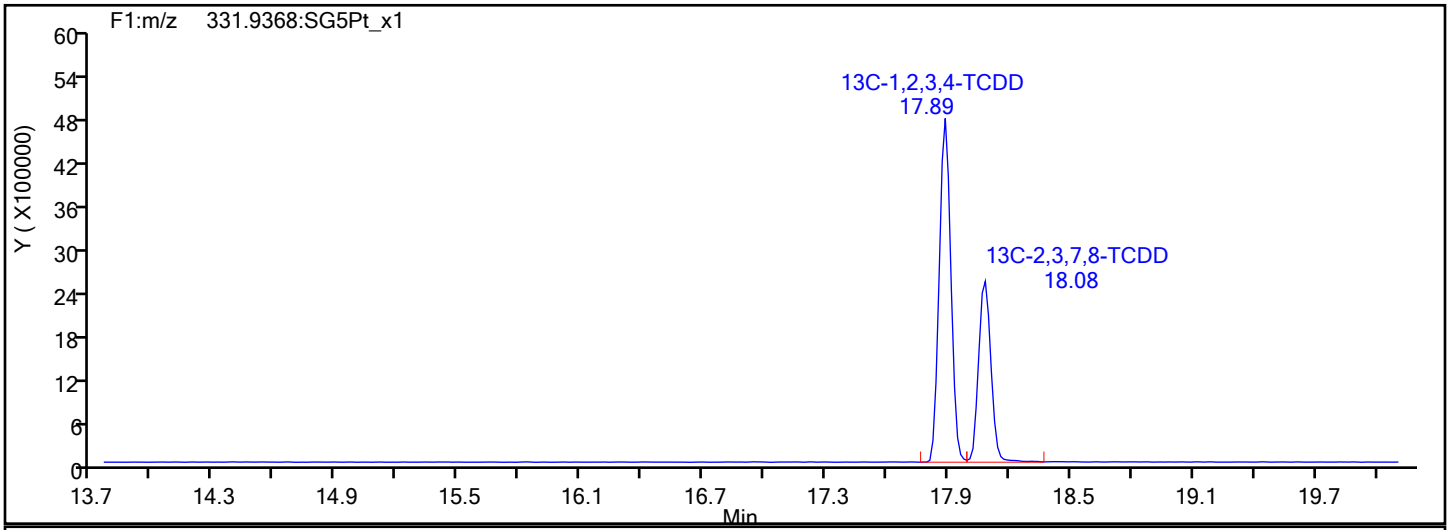
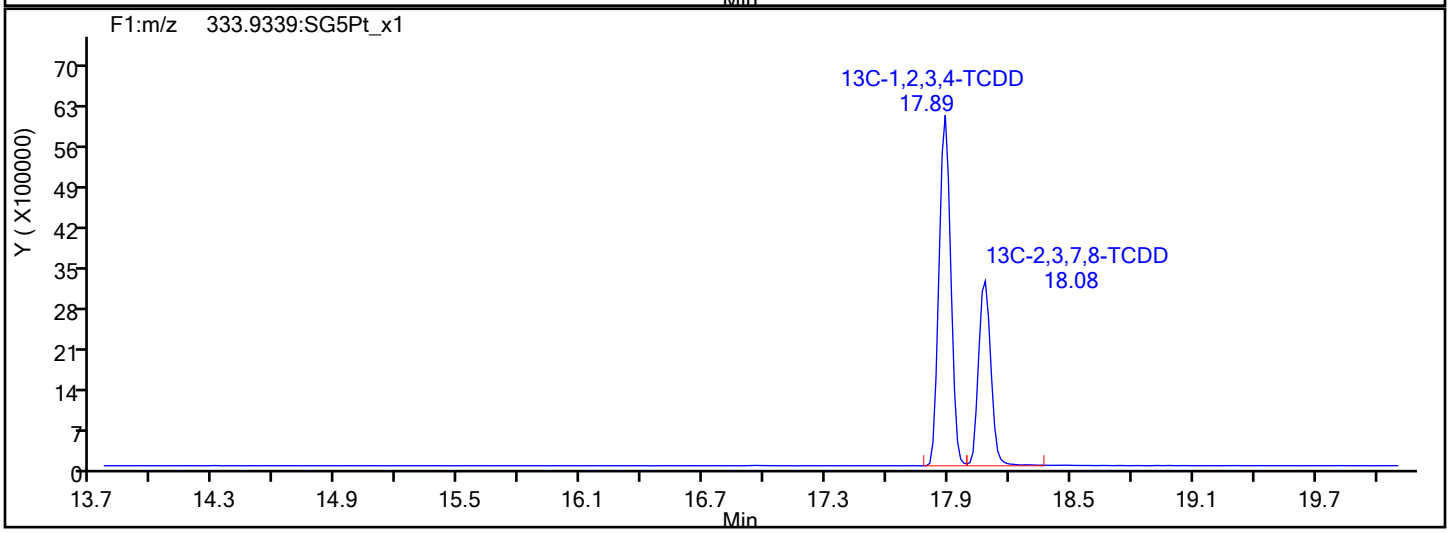
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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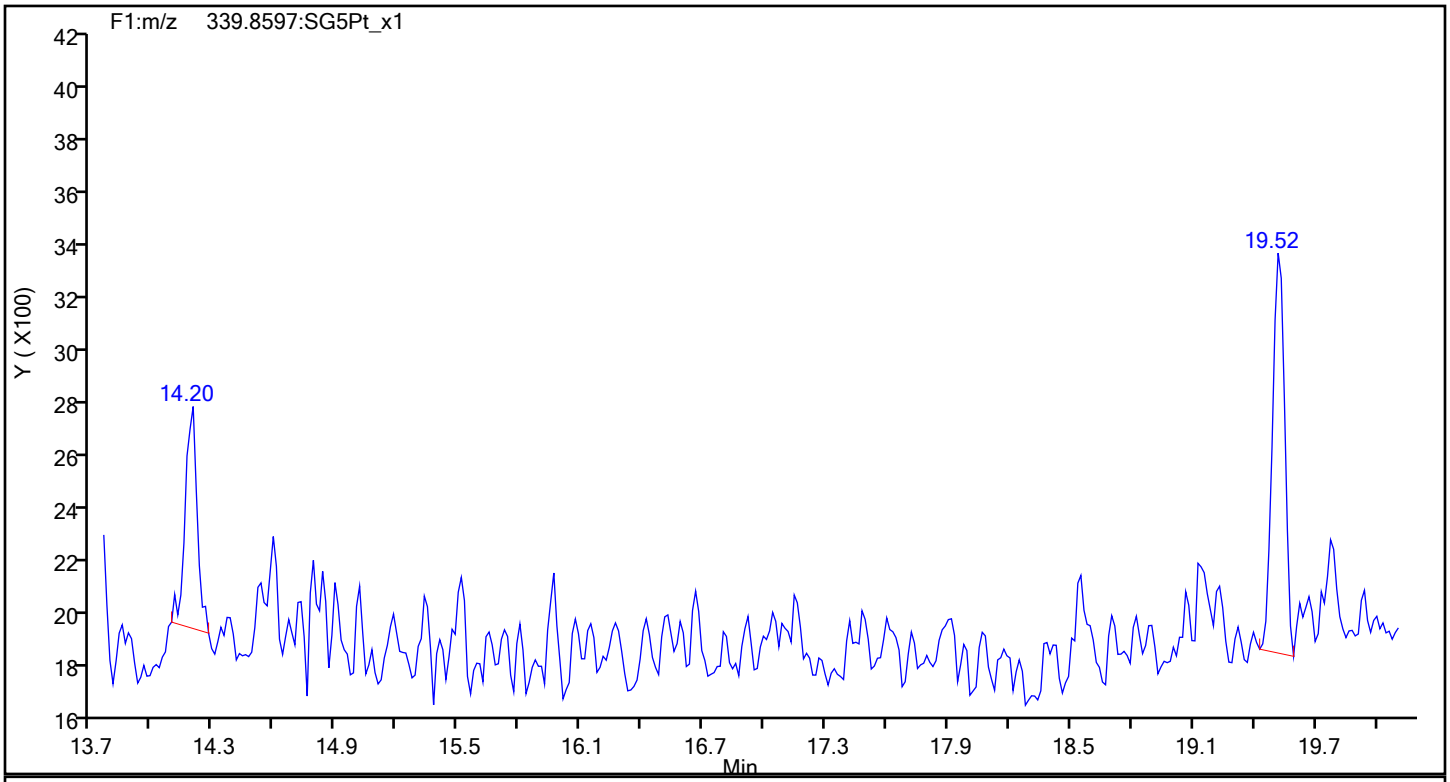
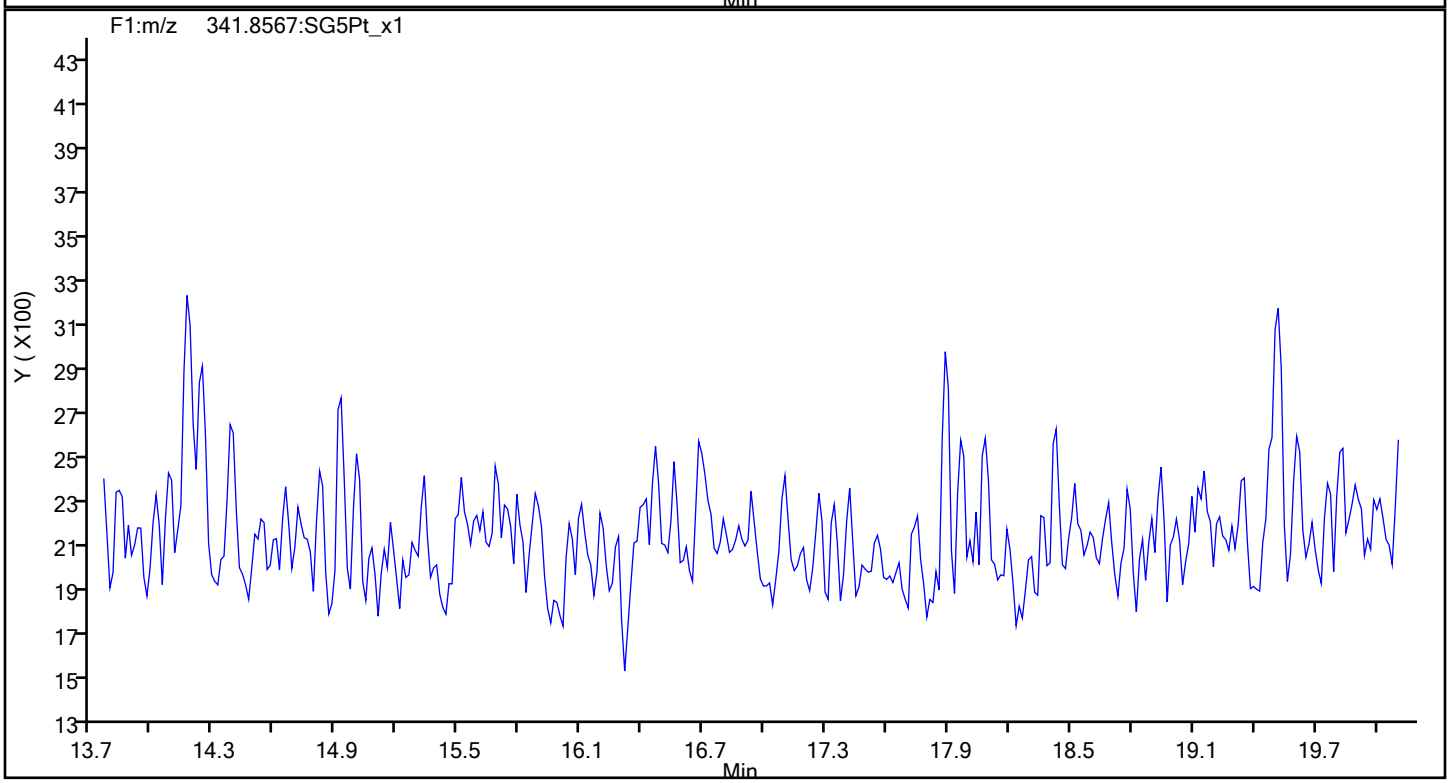
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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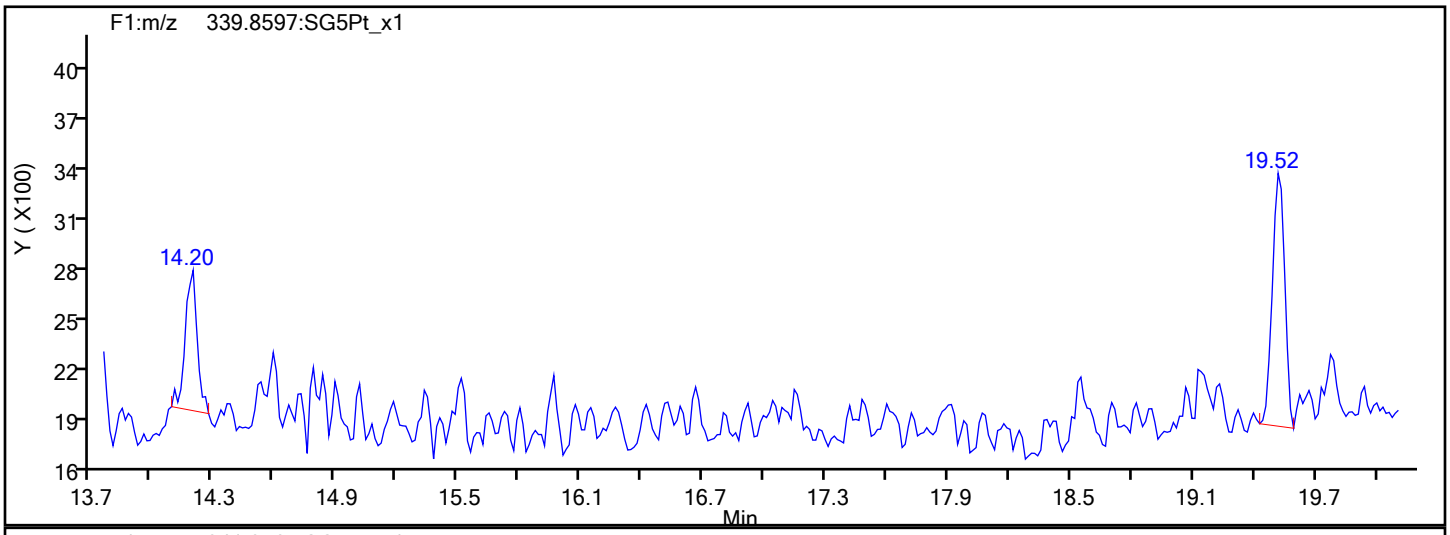
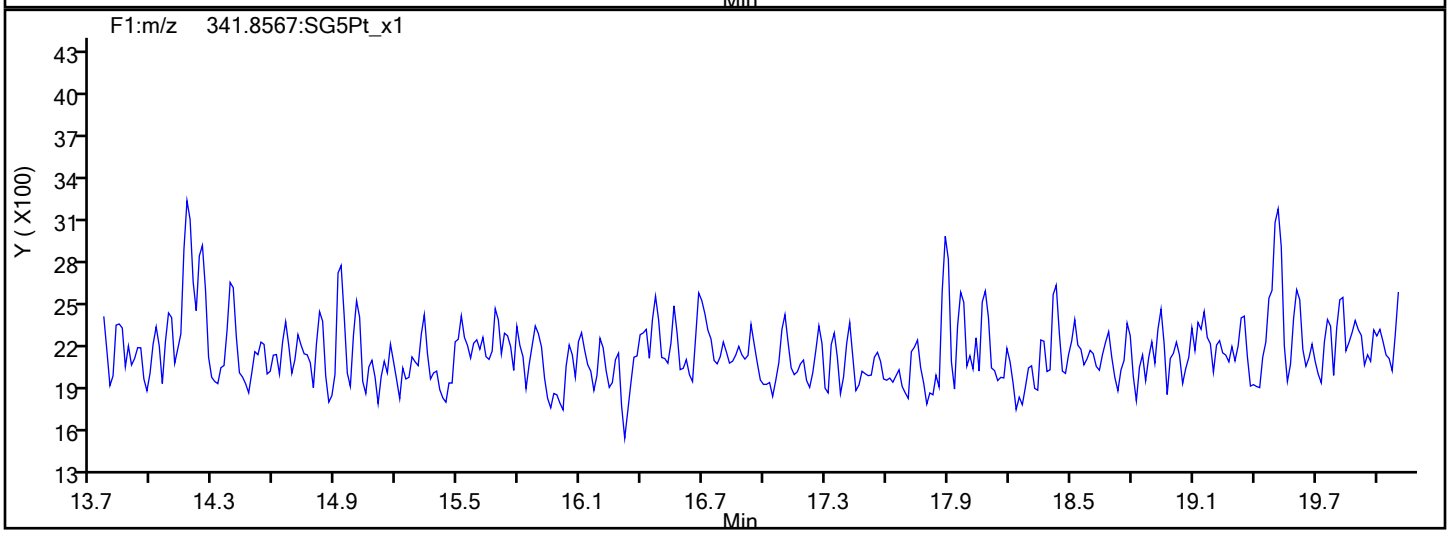
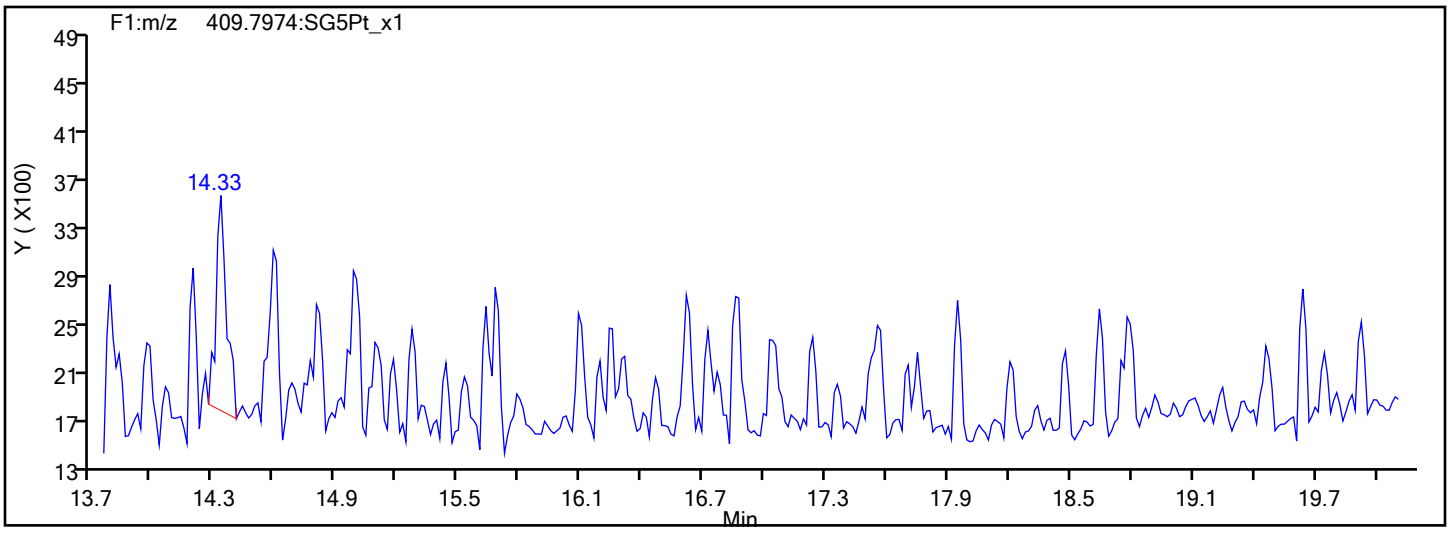
F1 PeCDFs





F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
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Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
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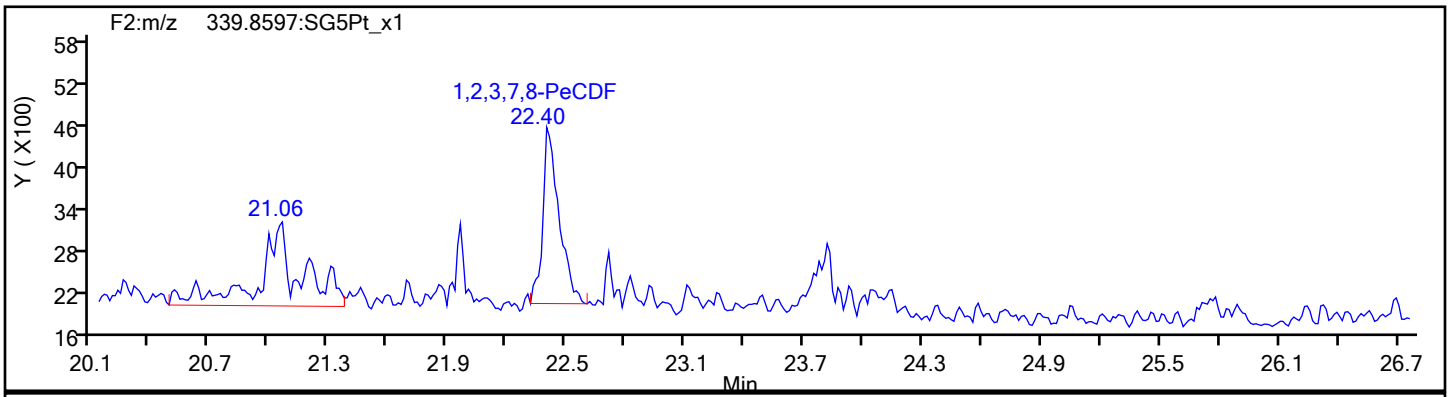
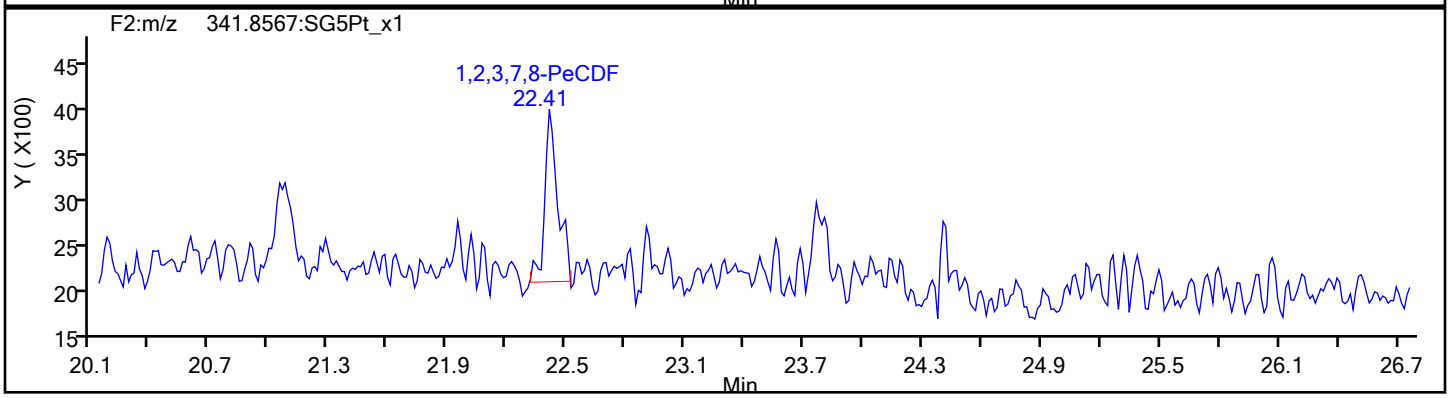
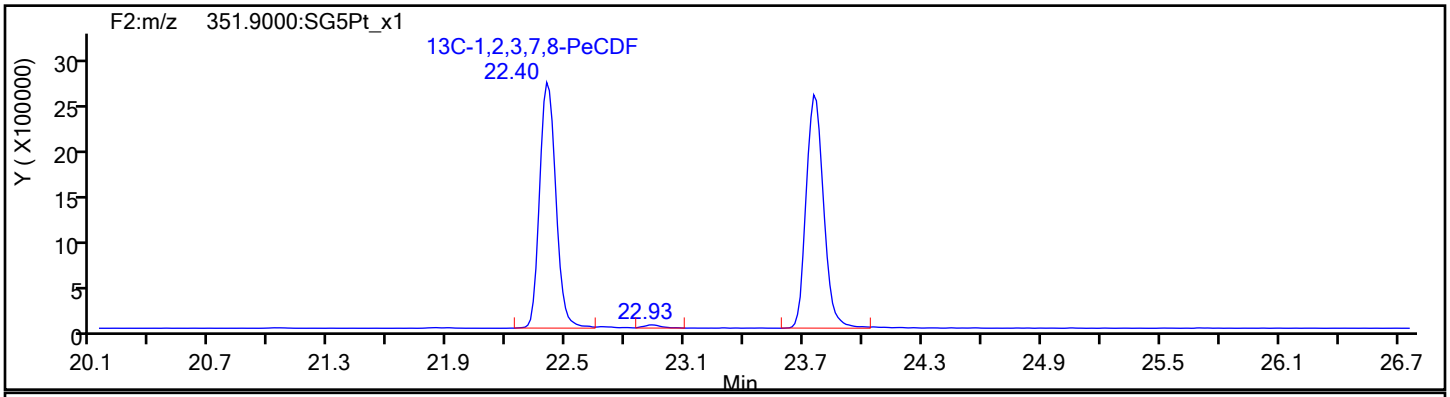
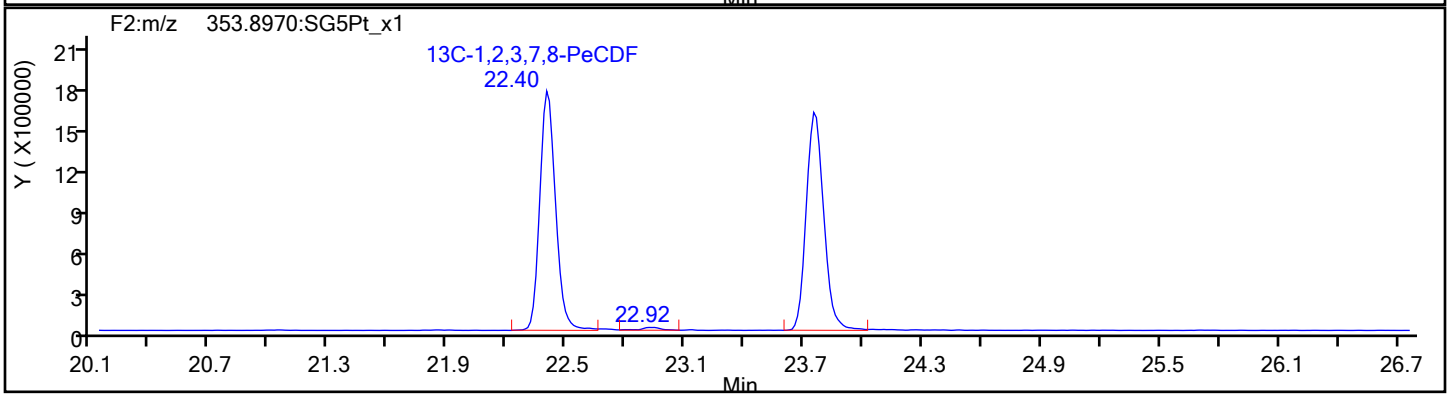
PeCDF





PeCDF Standards





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Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
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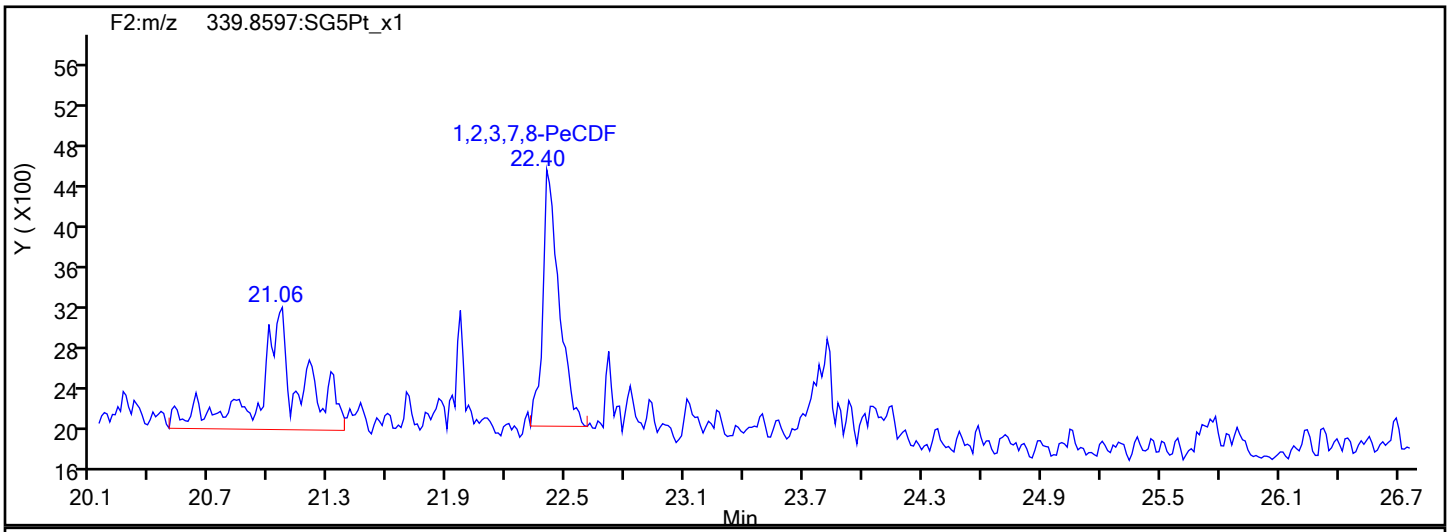
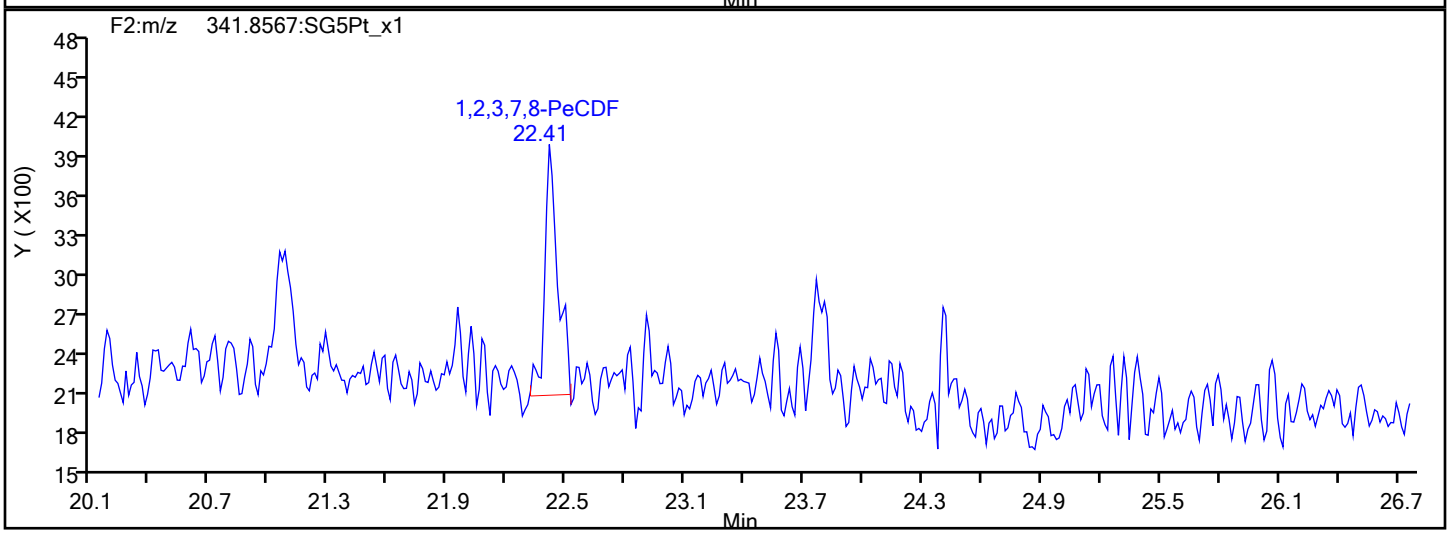
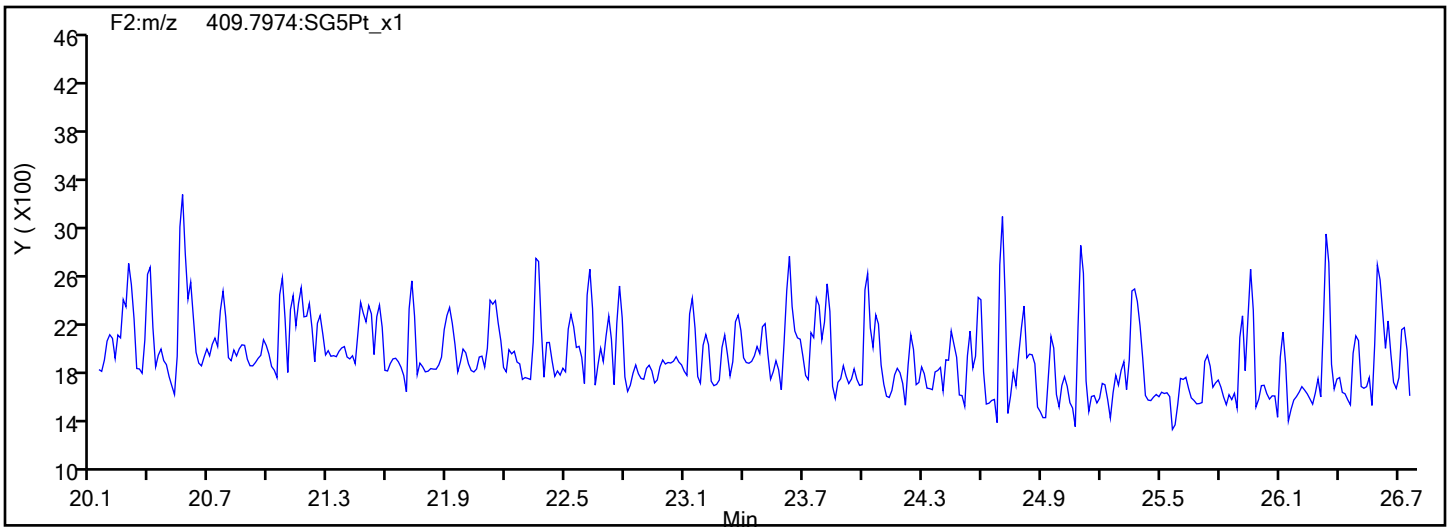




PeCDF Interference Mass



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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
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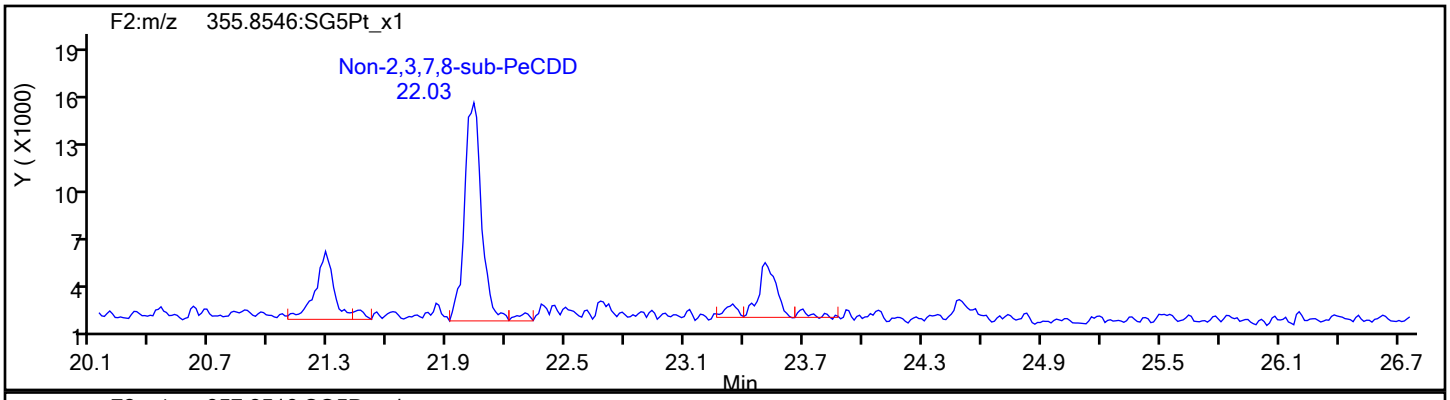
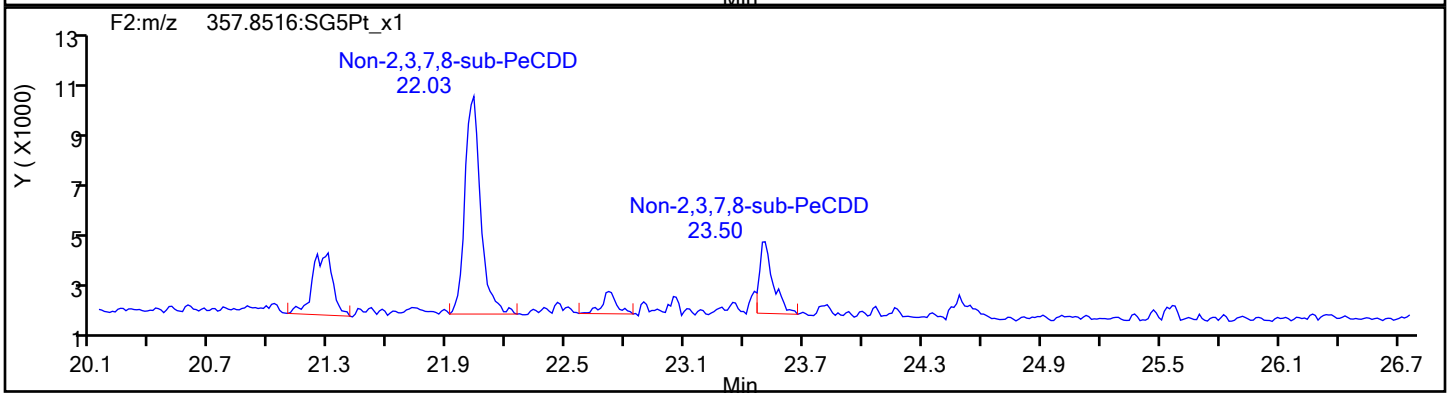
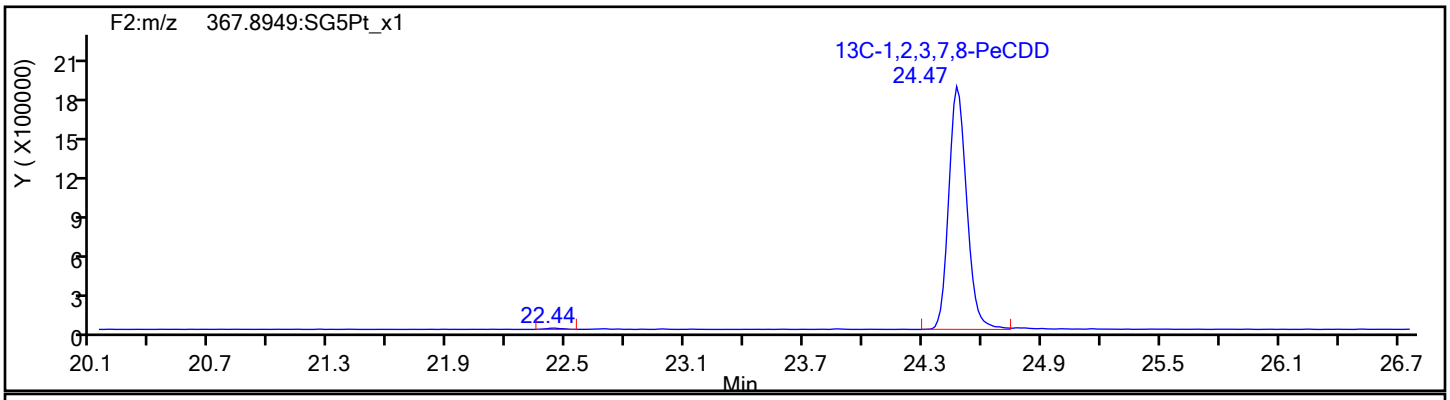
Column Type:	DB-5	Column Dia:	0.32 mm

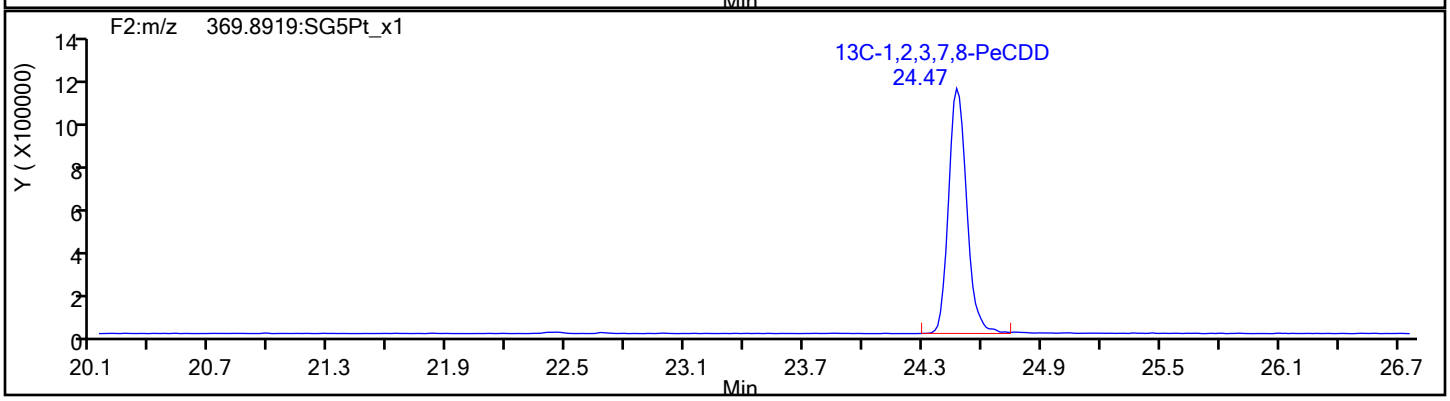
PeCDD





PeCDD Standards





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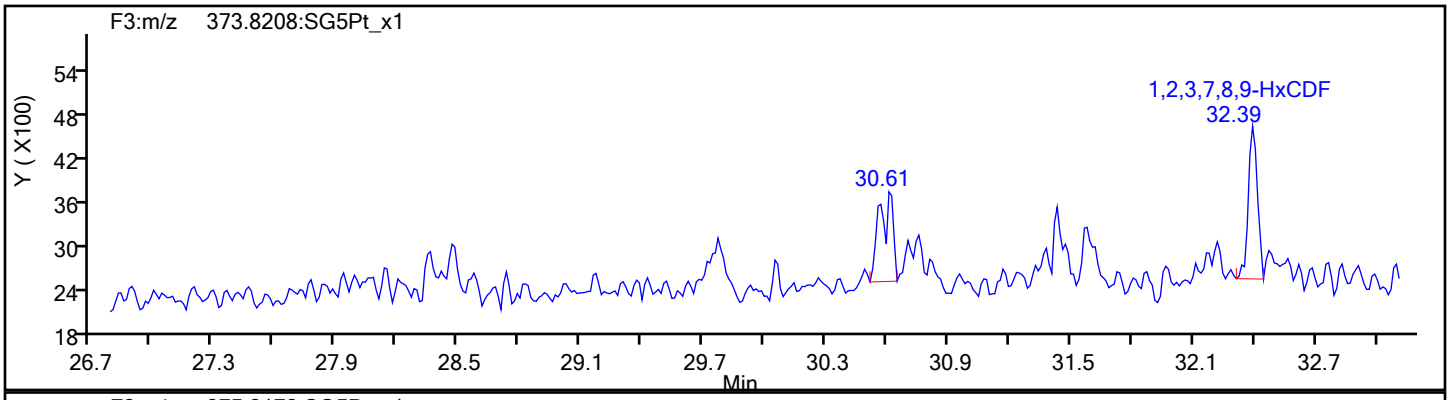
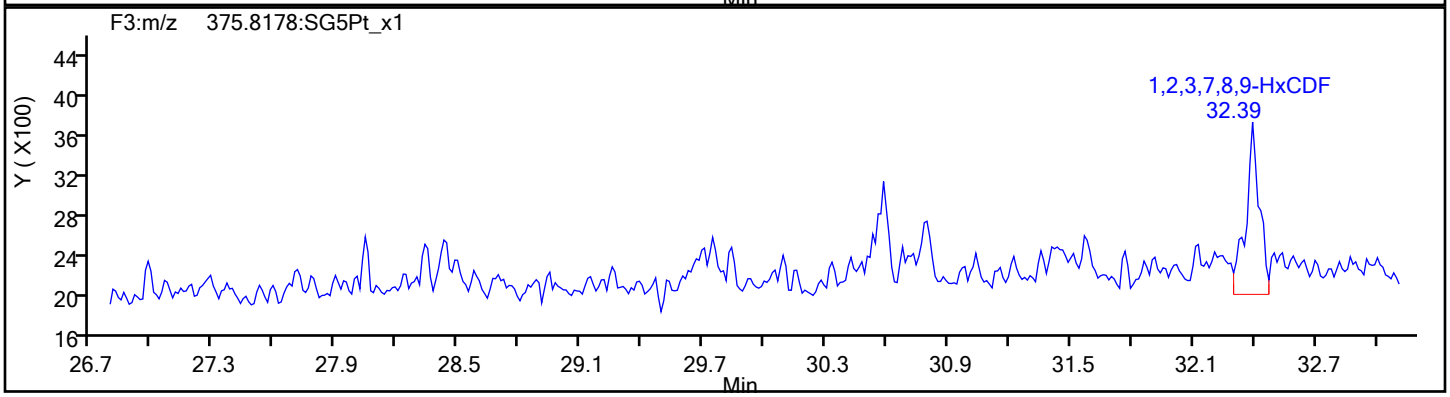
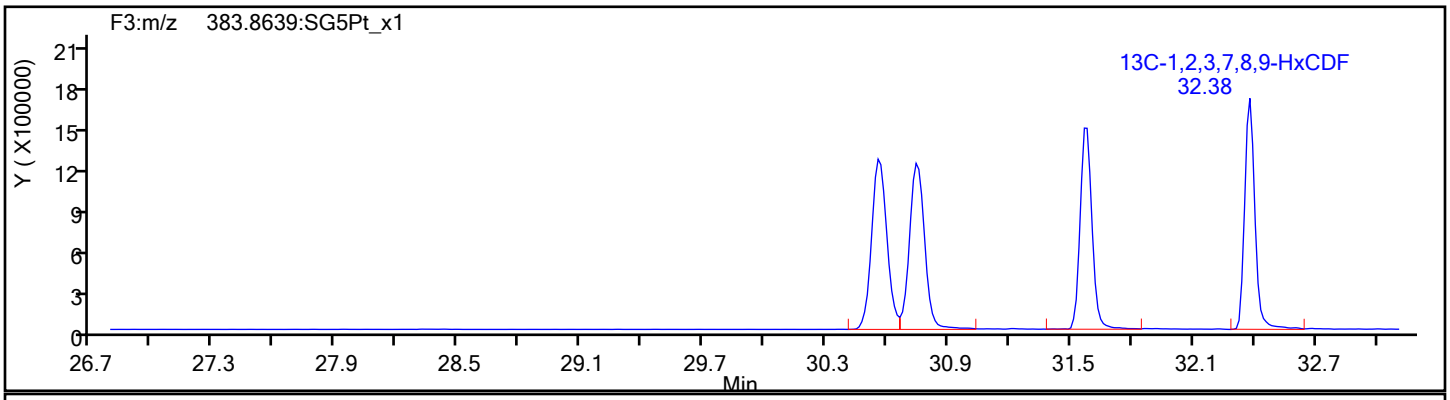
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

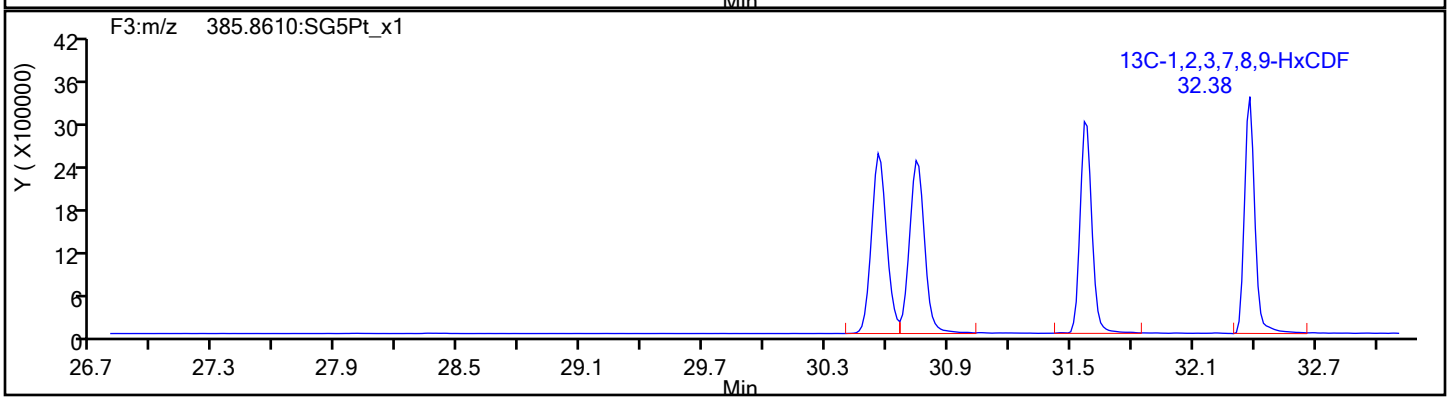
HxCDF





HxCDF Standards





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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
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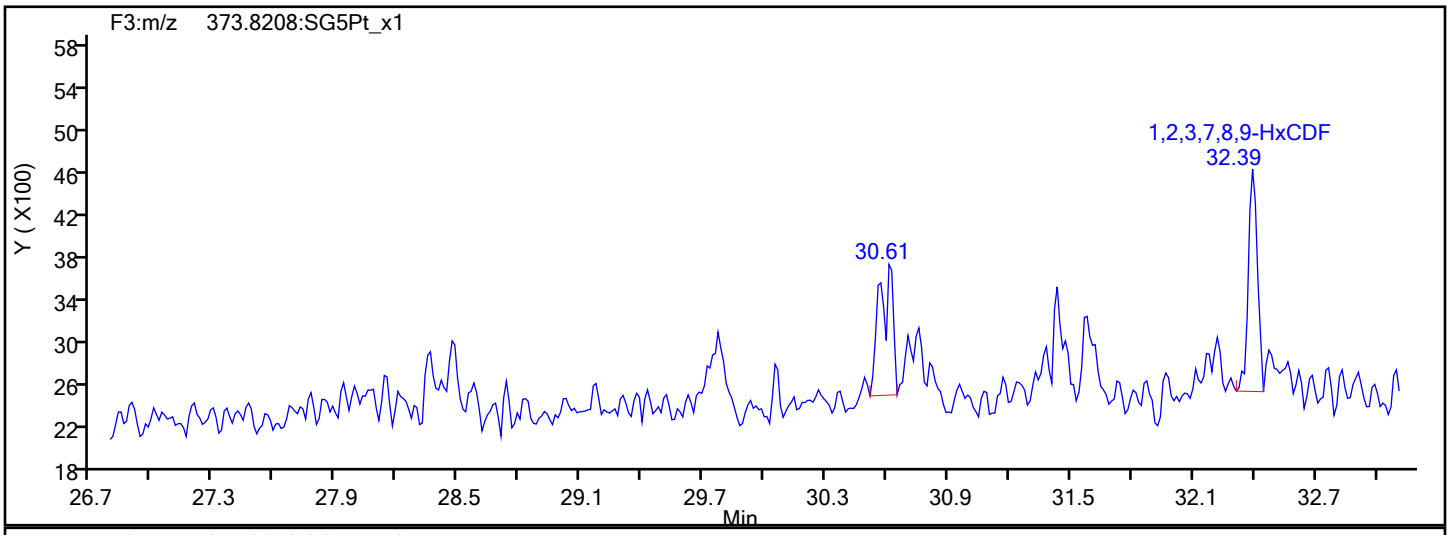
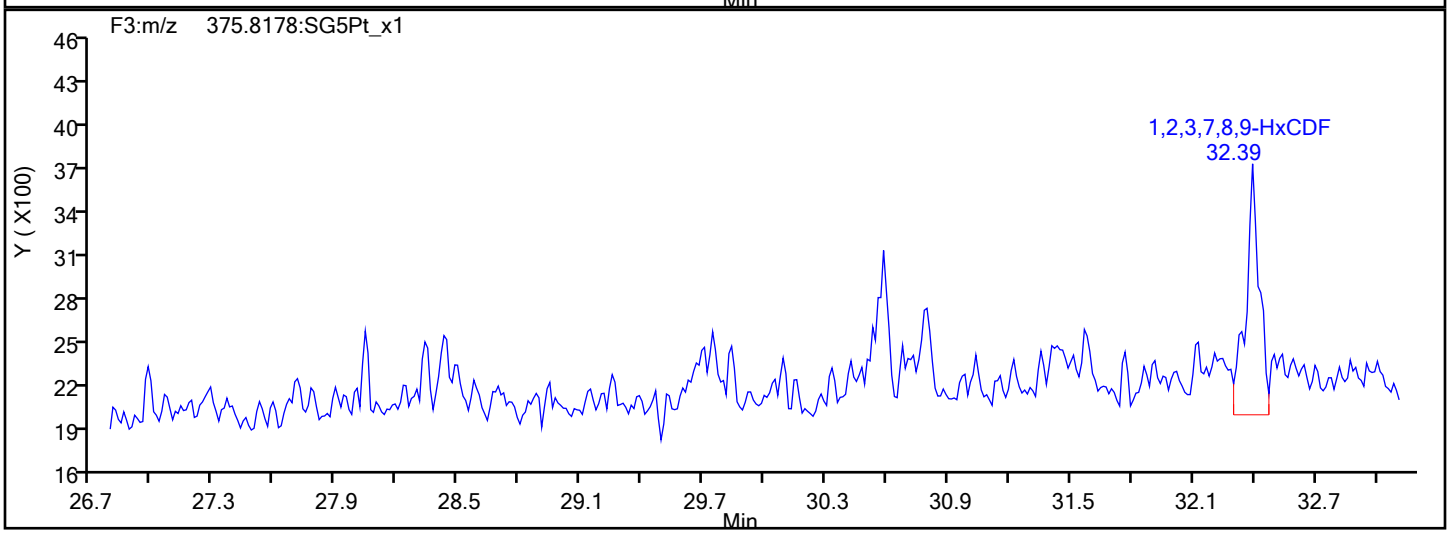
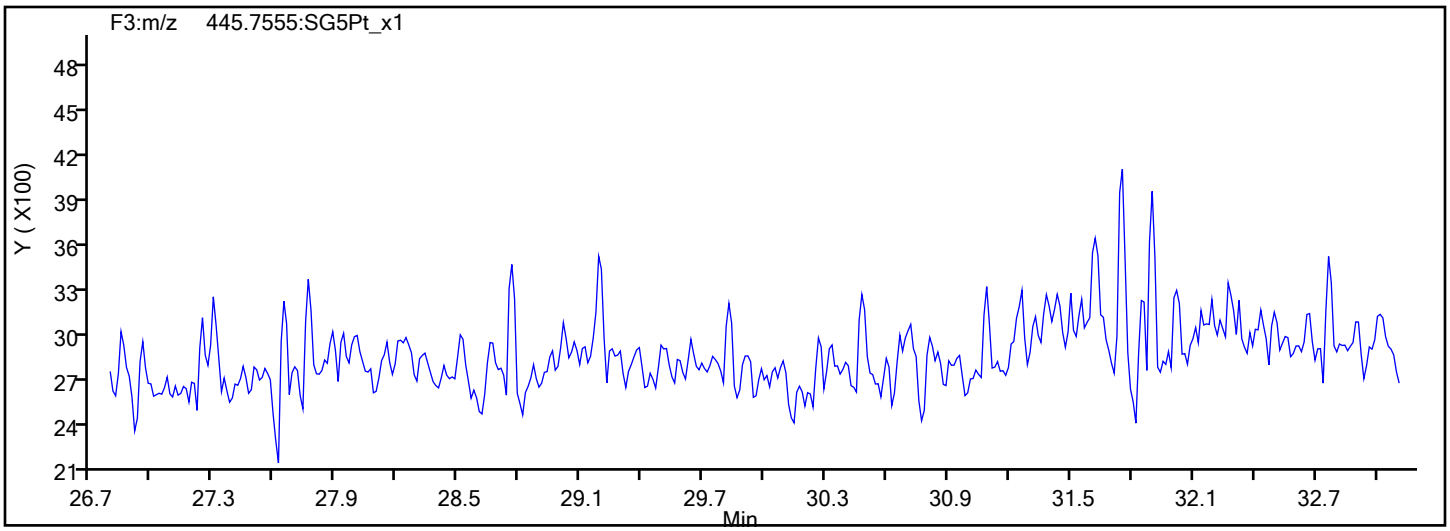
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
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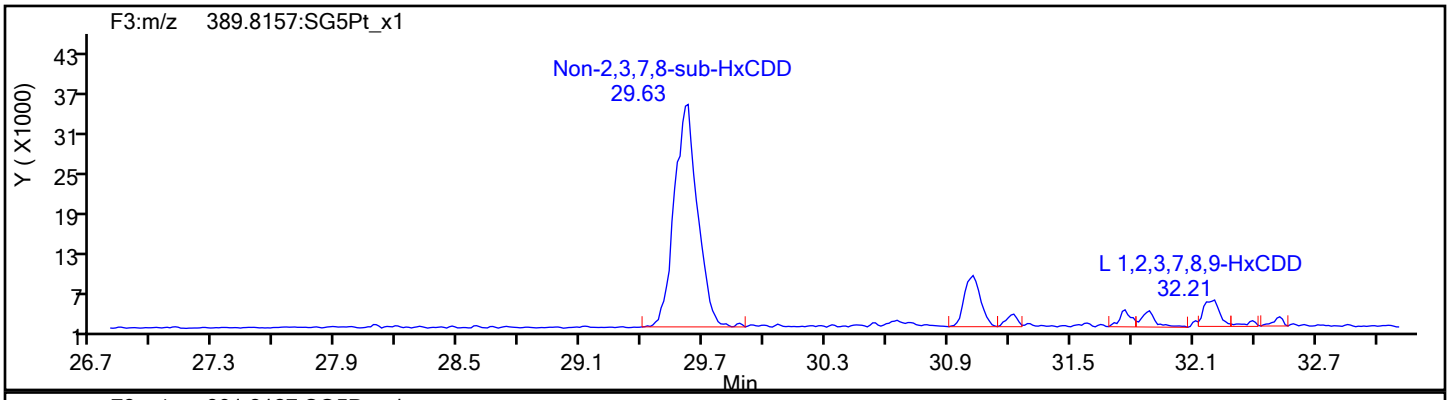
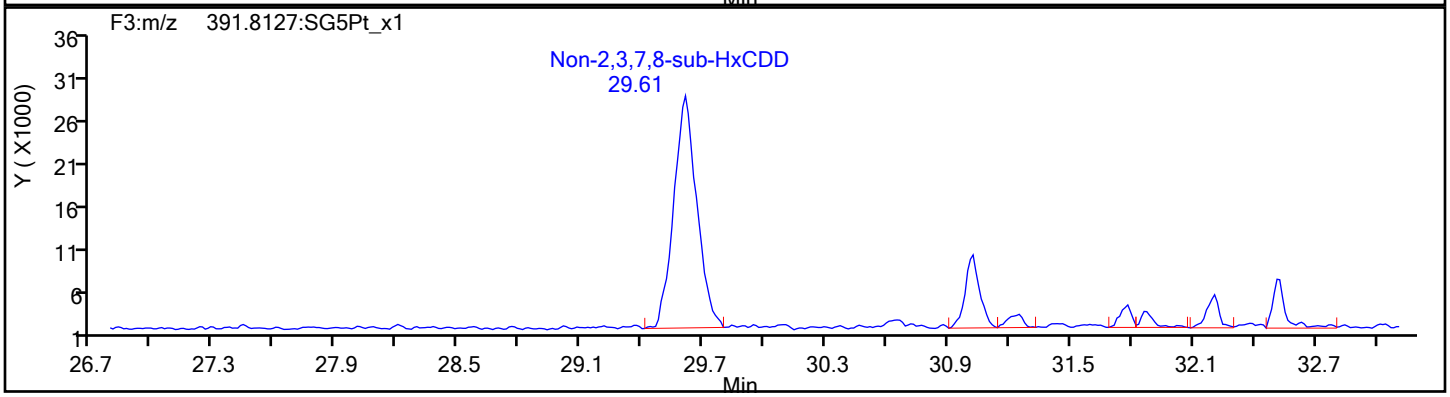
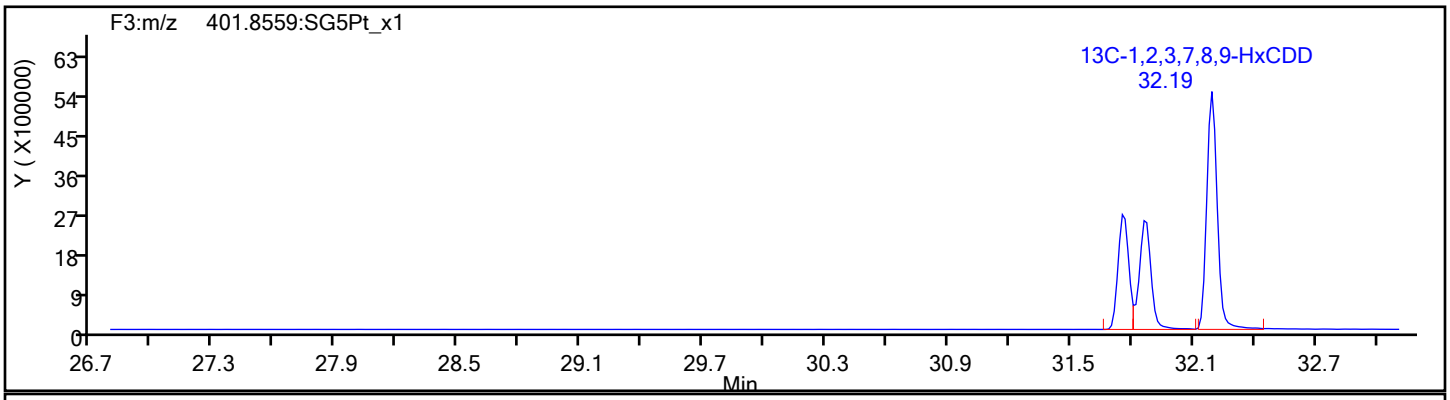
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

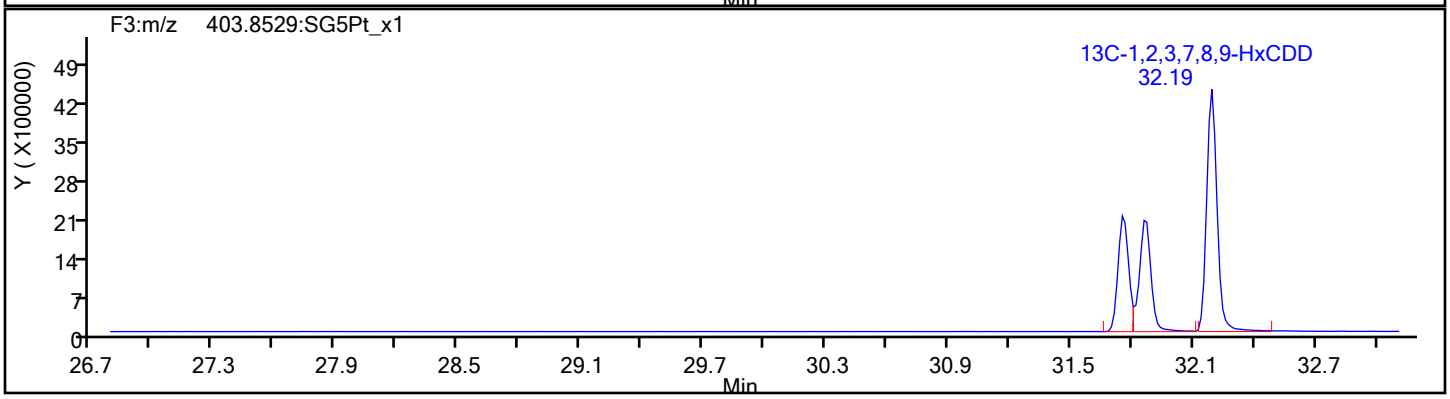
HxCDD





HxCDD Standards



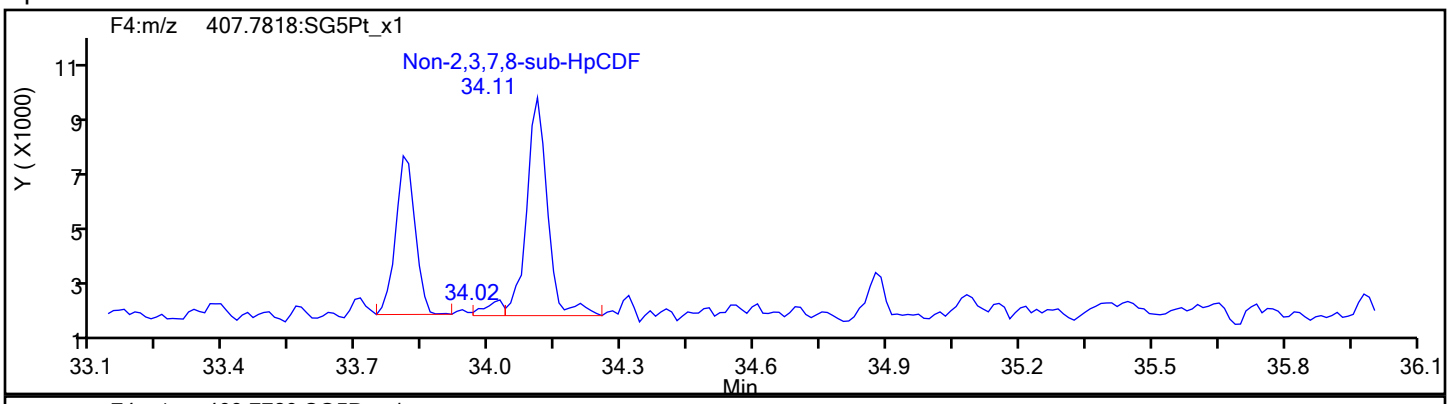


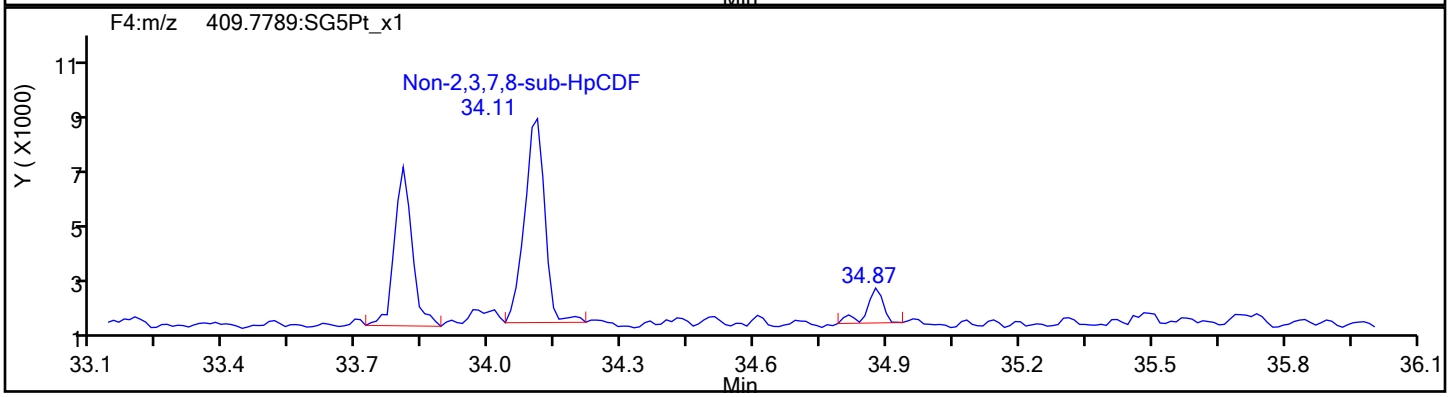
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

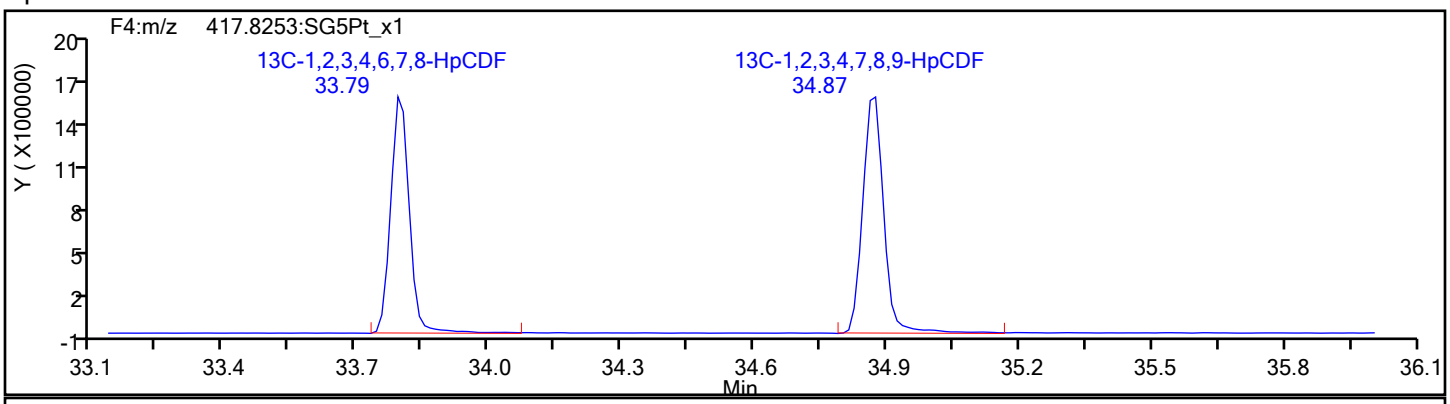
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

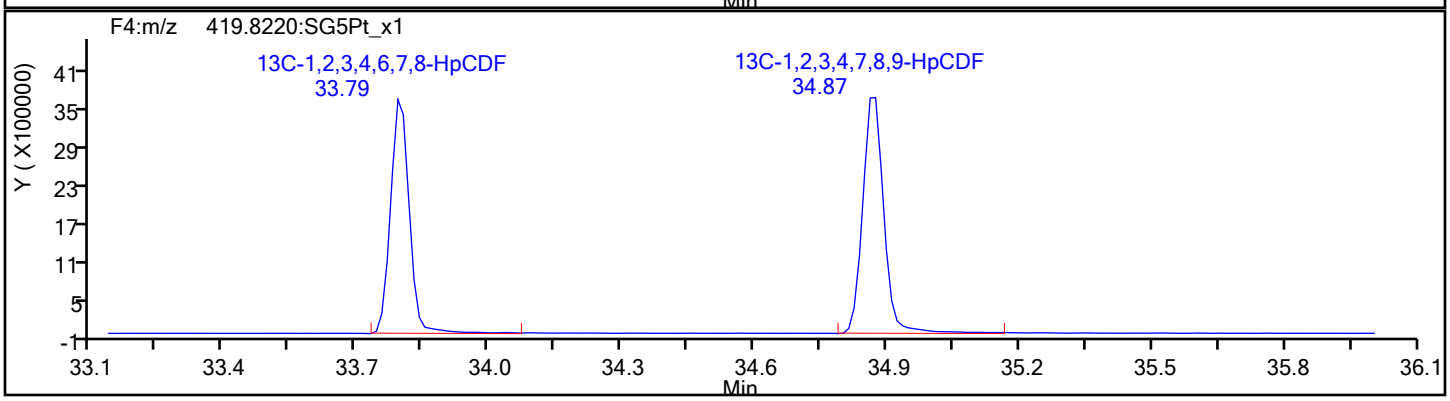
HpCDF





HpCDF Standards



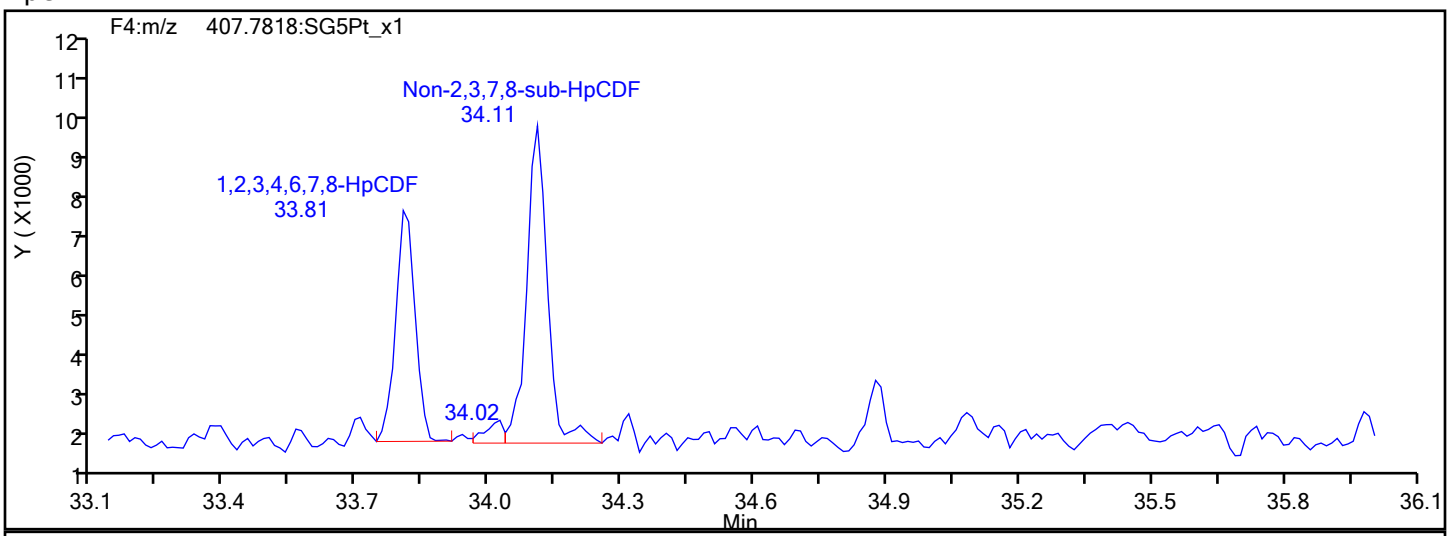


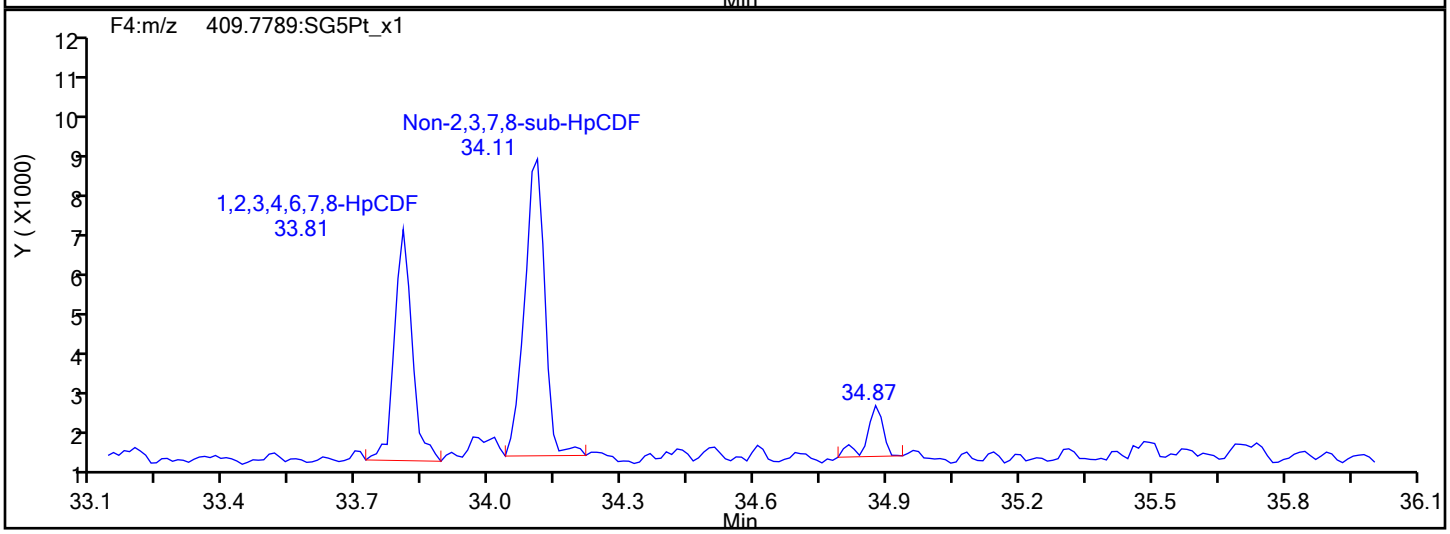
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

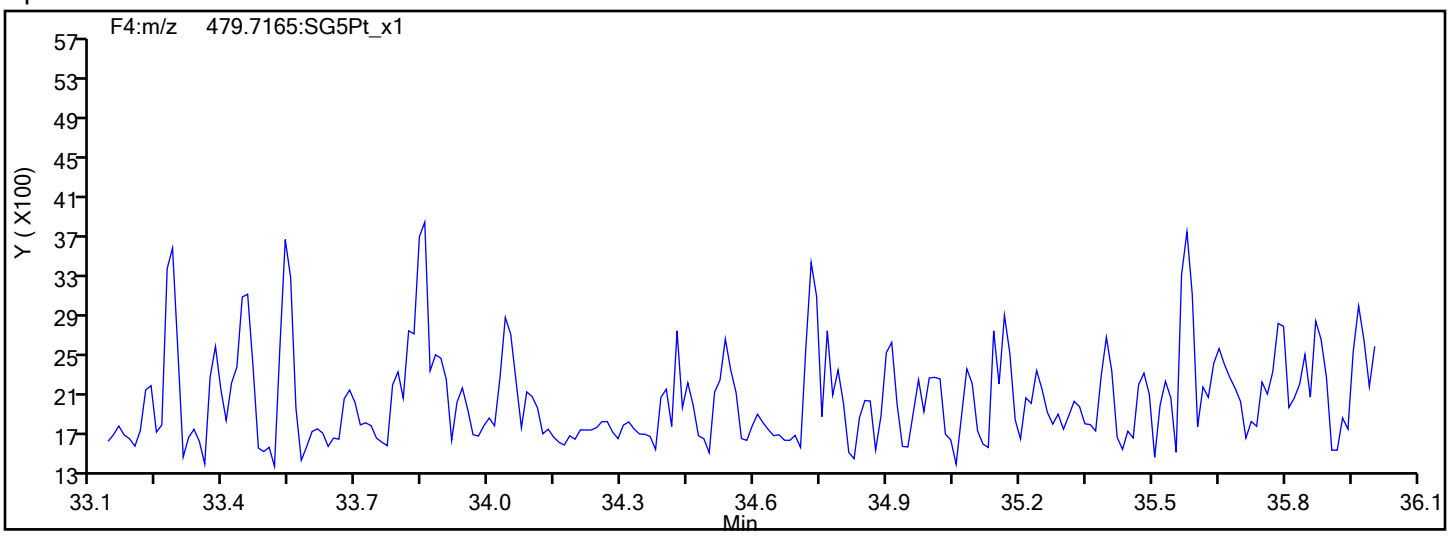
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

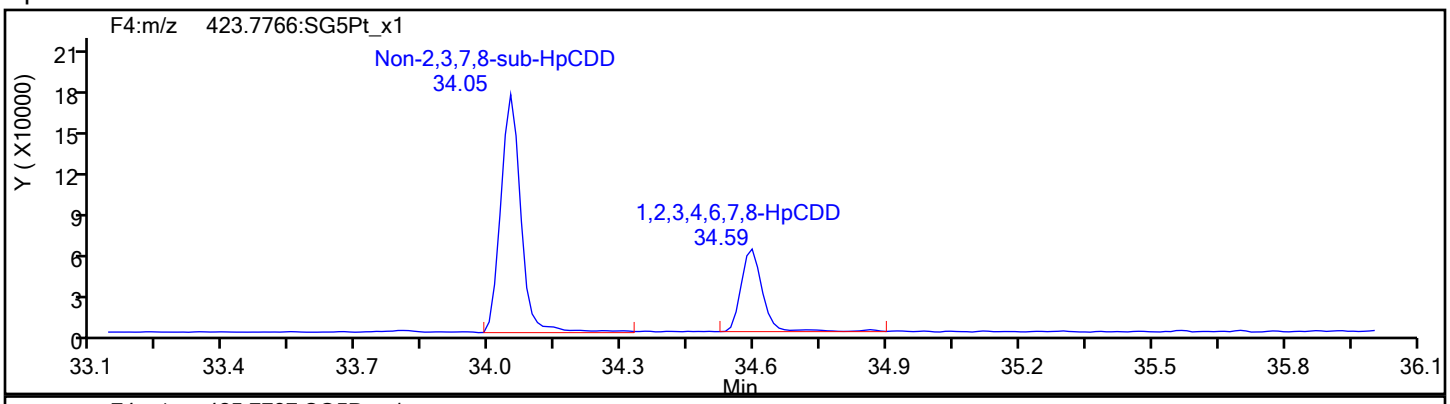


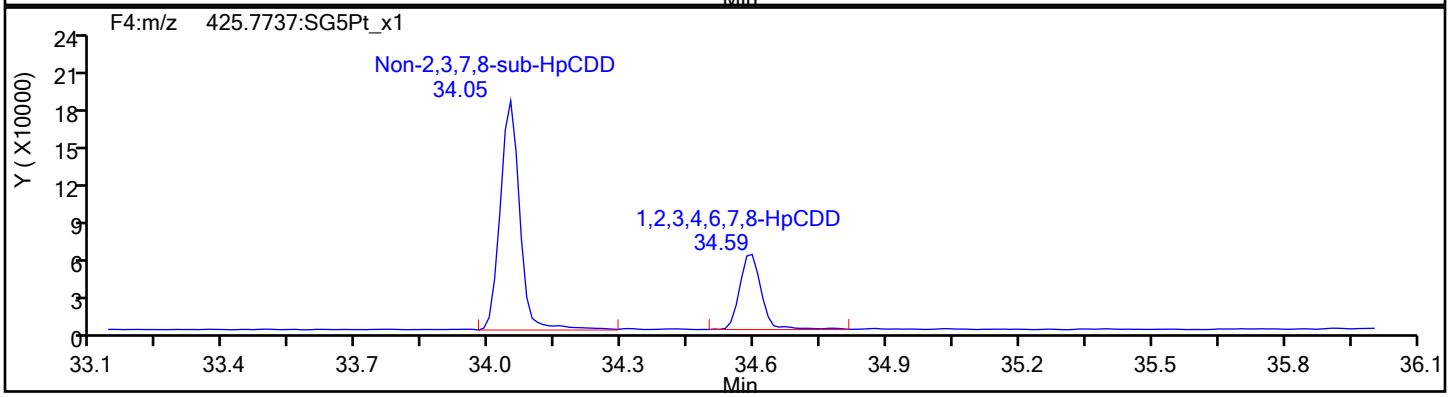
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

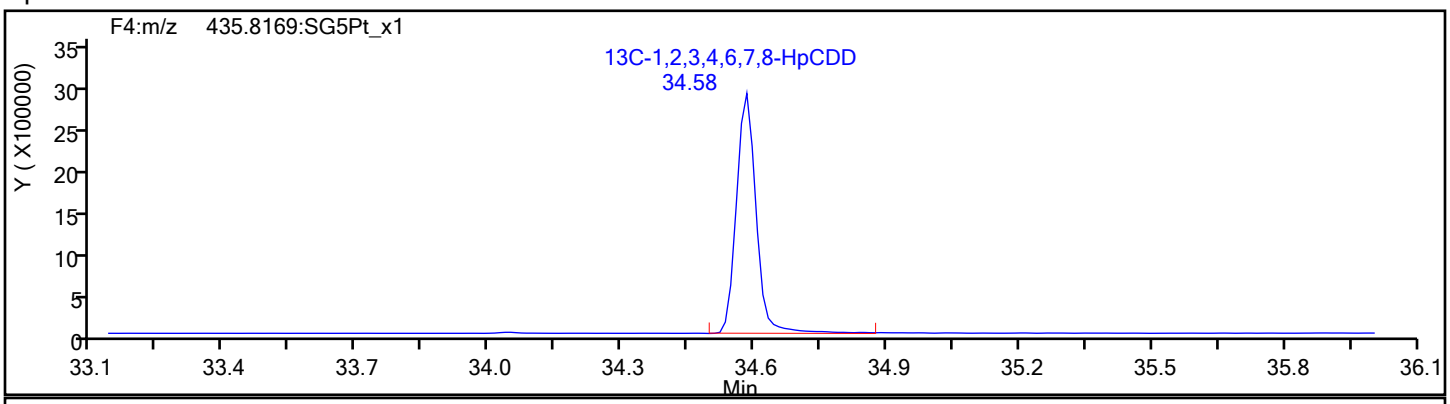
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

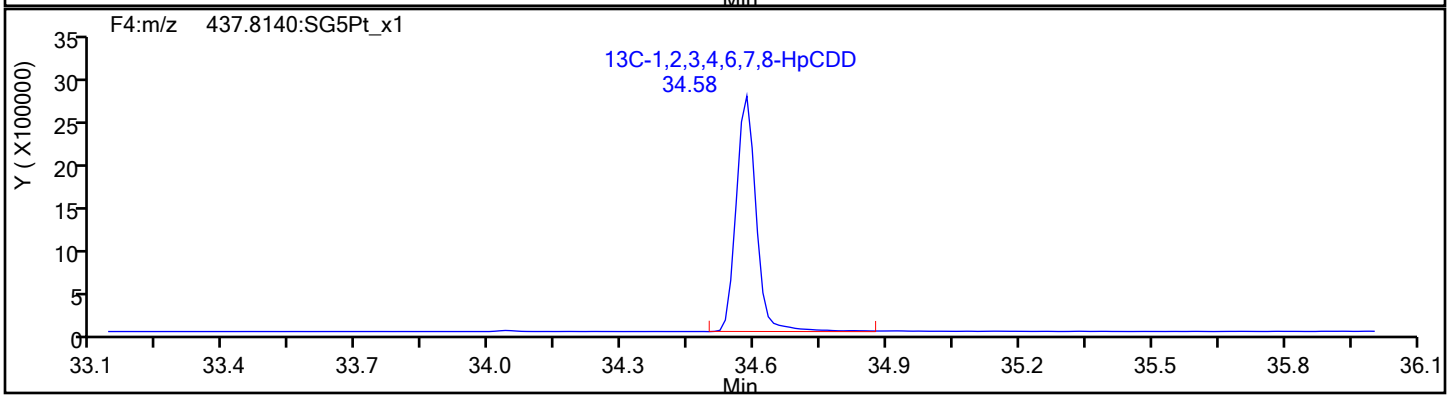
HpCDD





HpCDD Standards



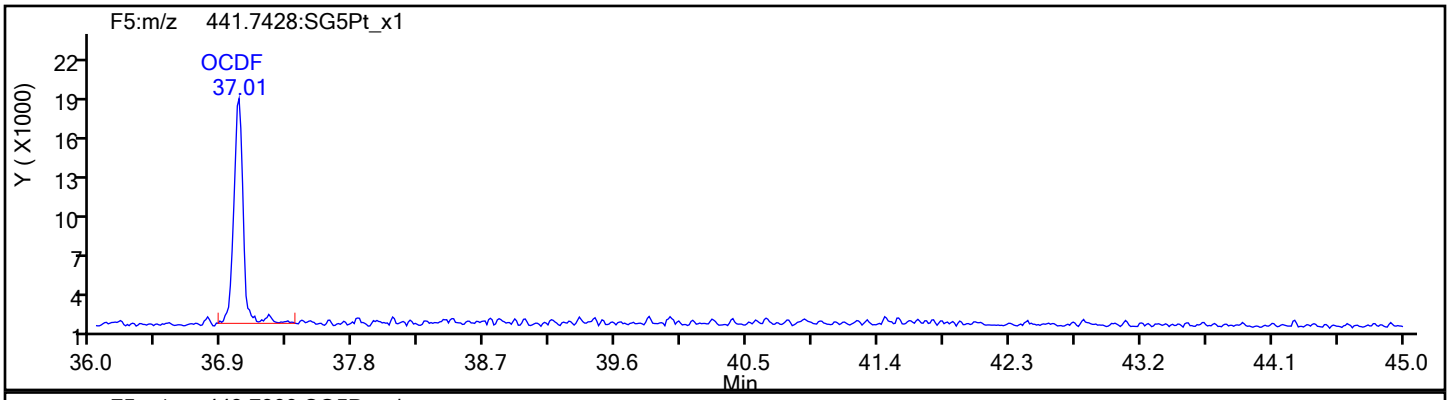


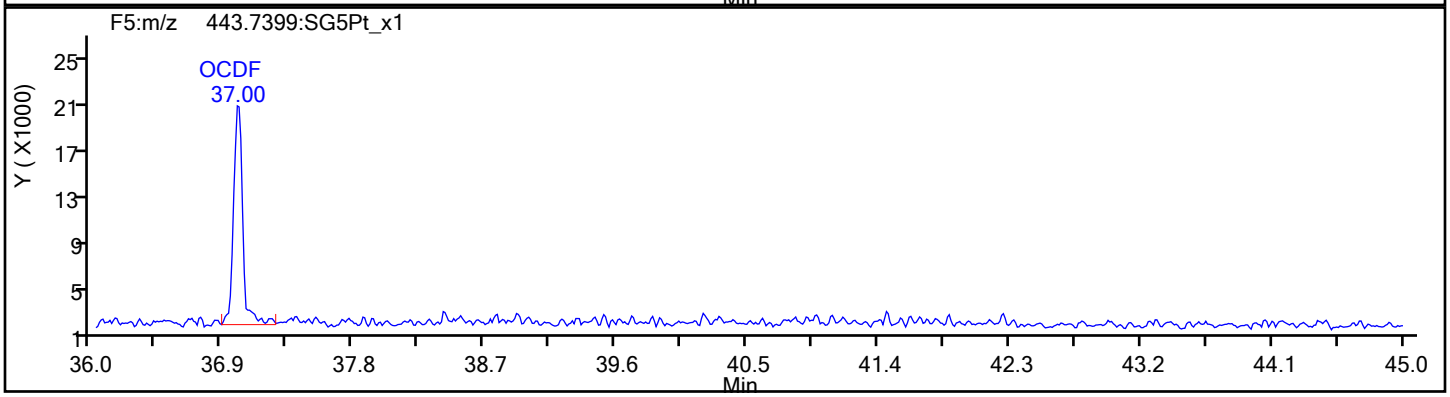
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

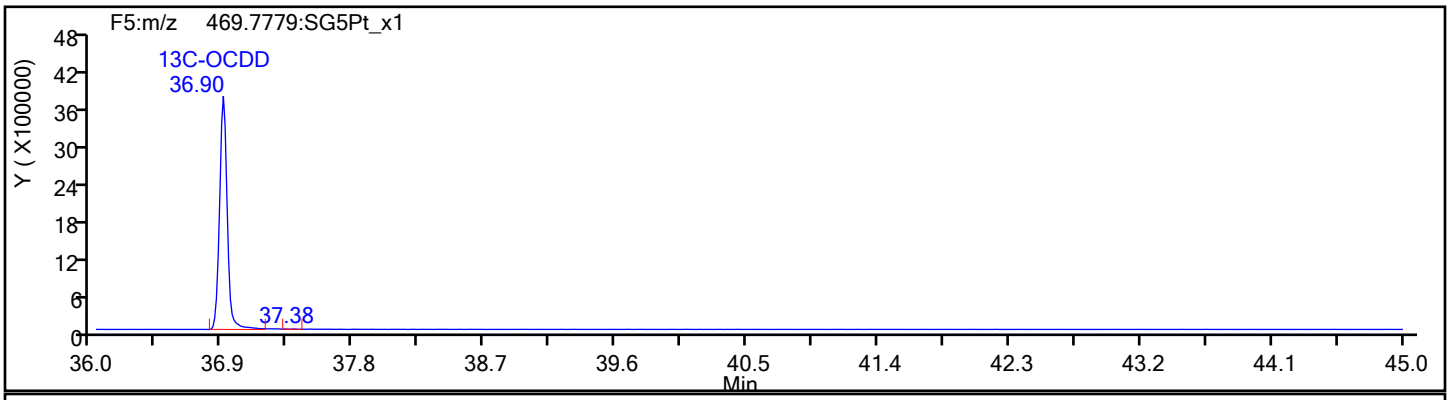
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

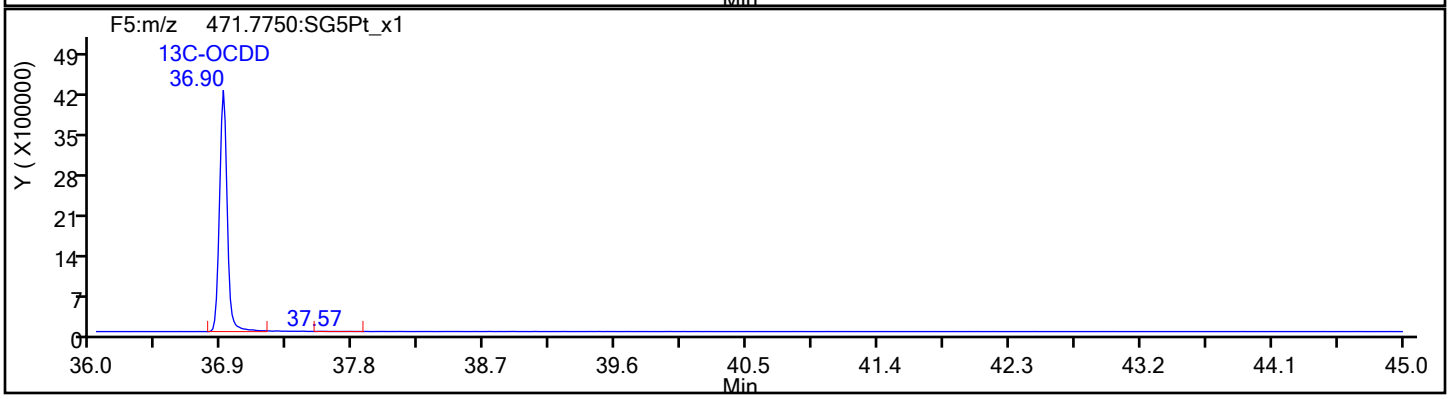
OCDF





OCDF Standards



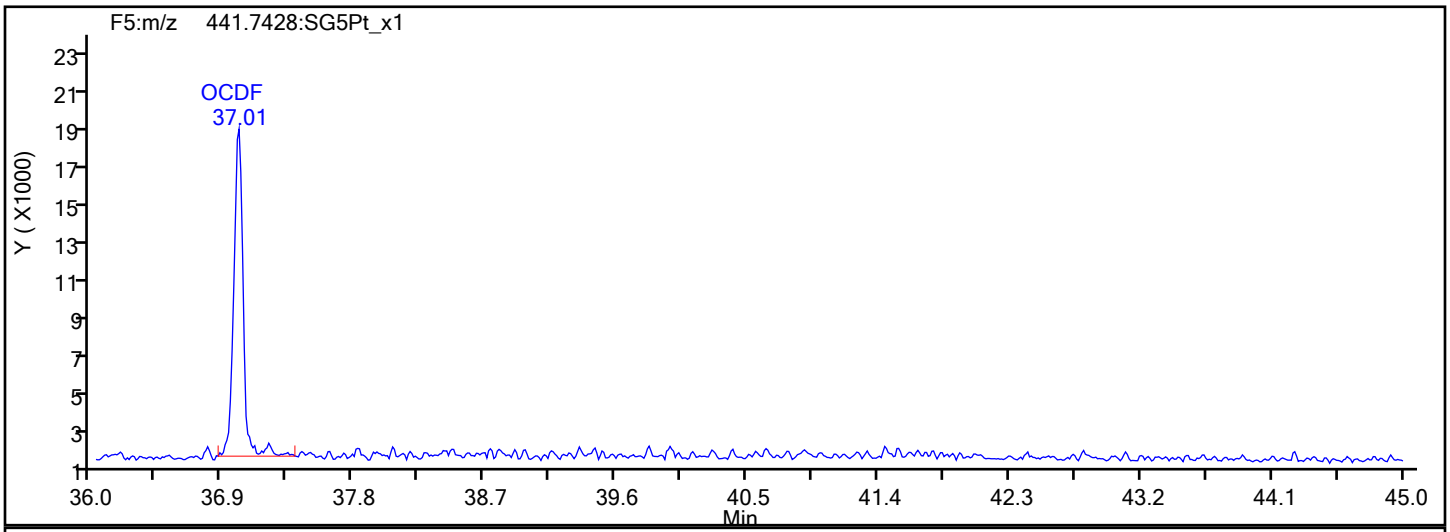


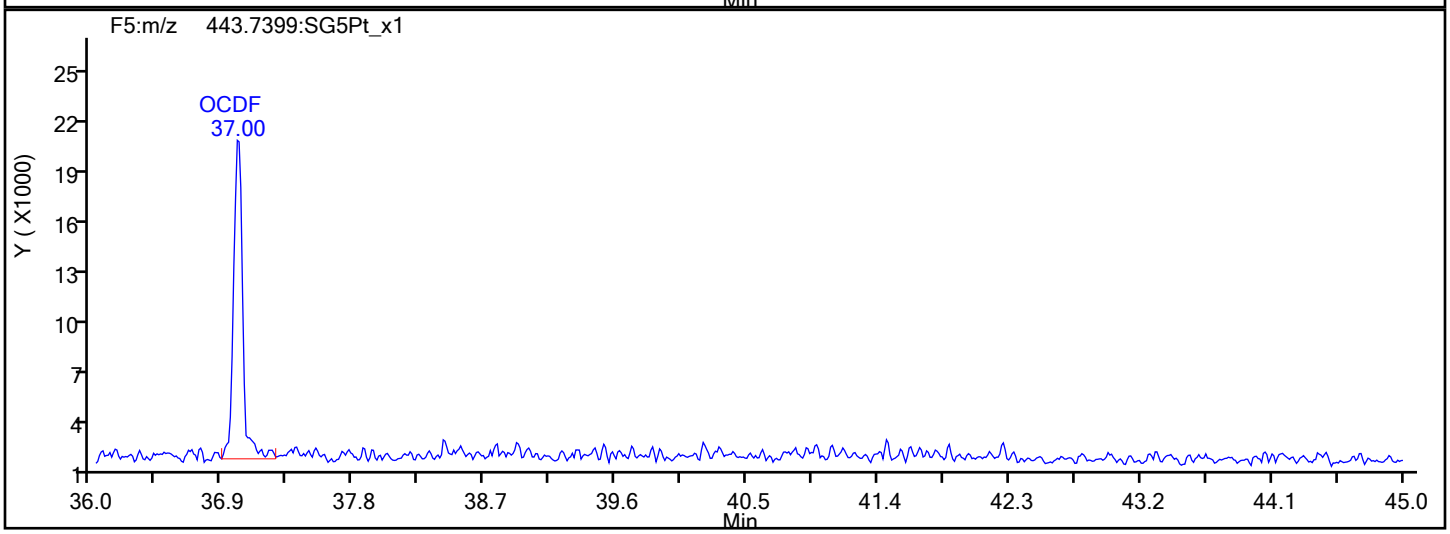
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

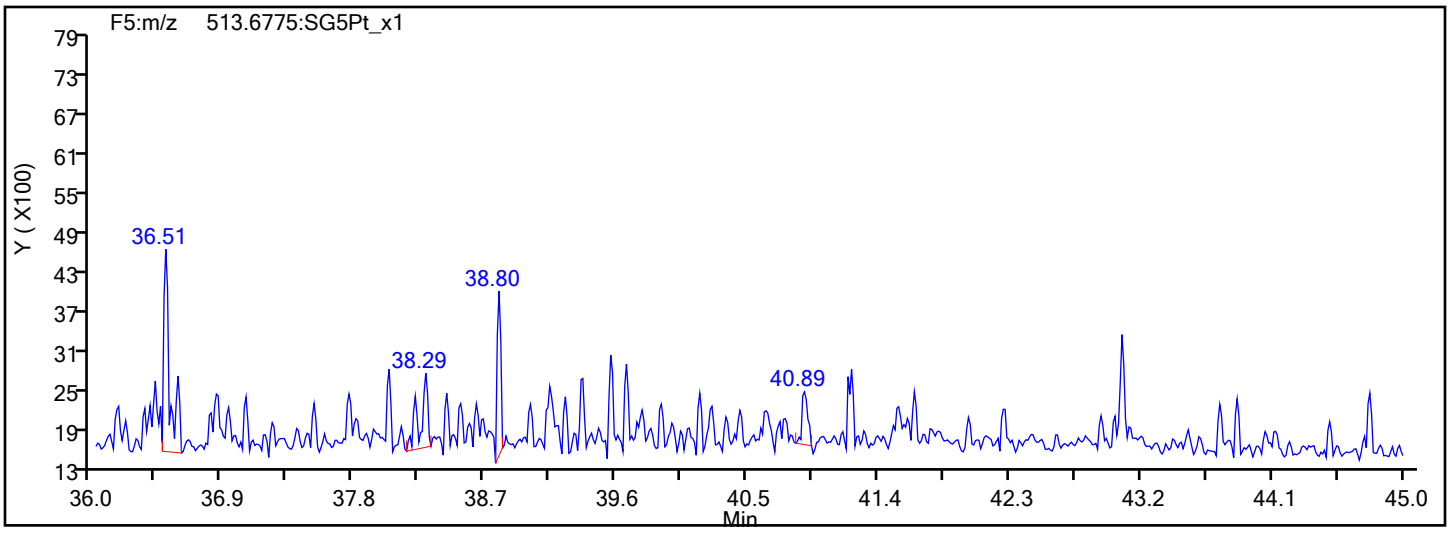
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

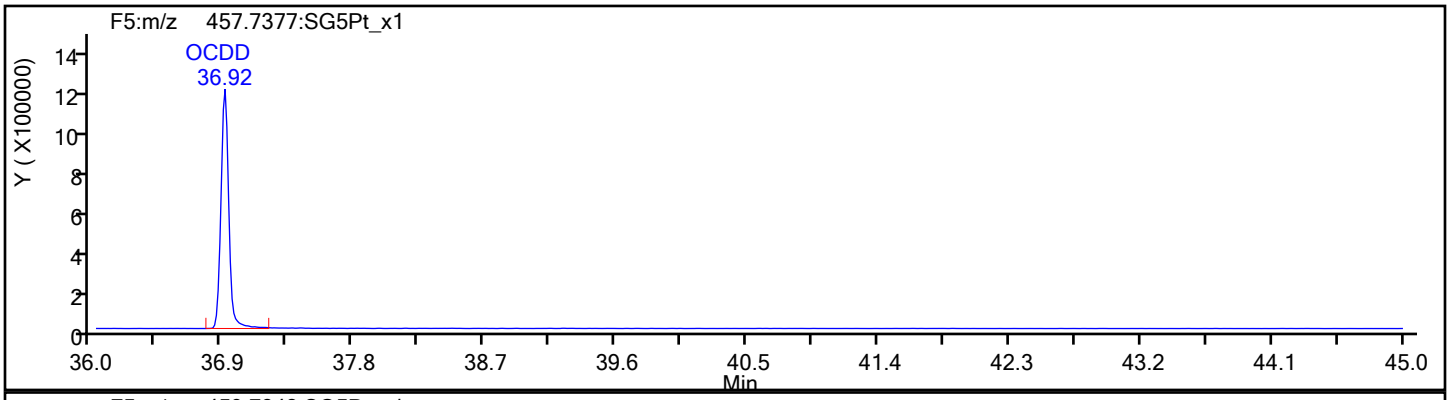


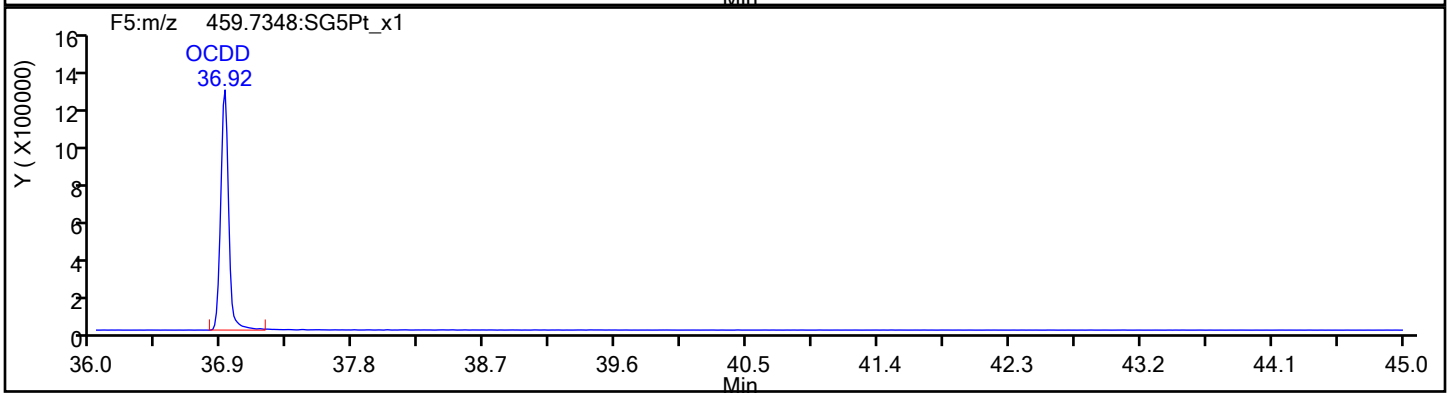
Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

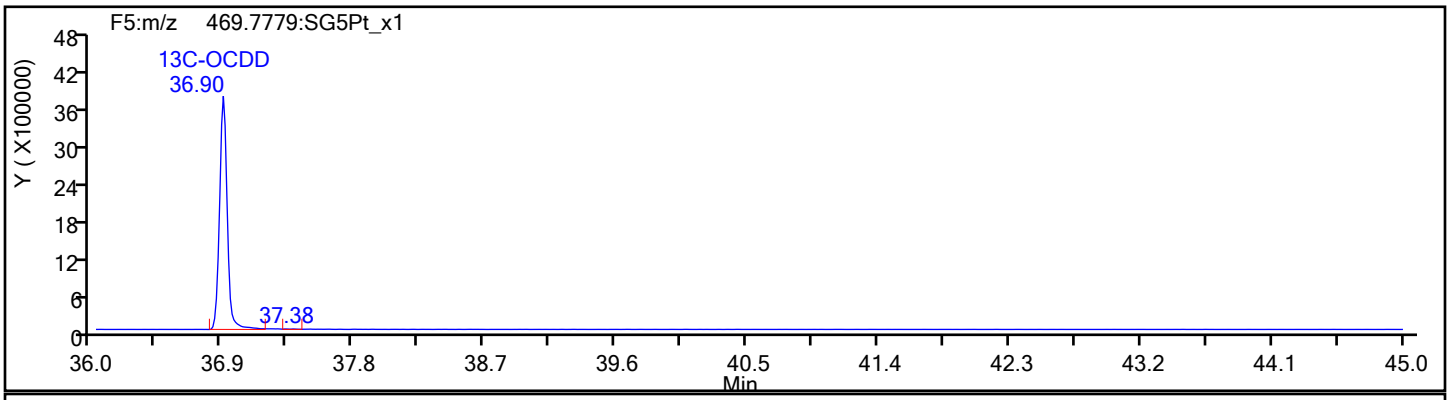
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

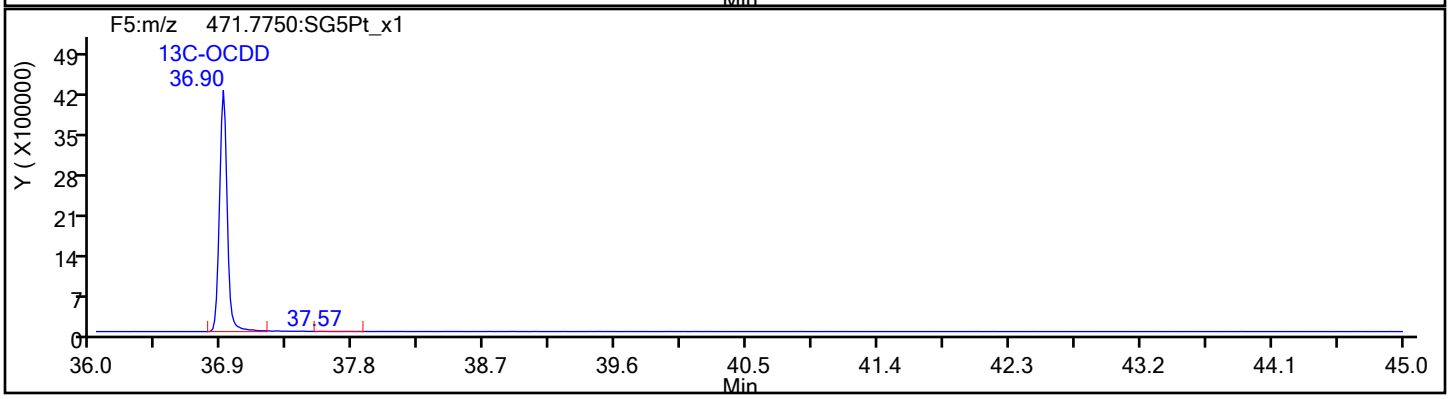
OCDD





OCDD Standards

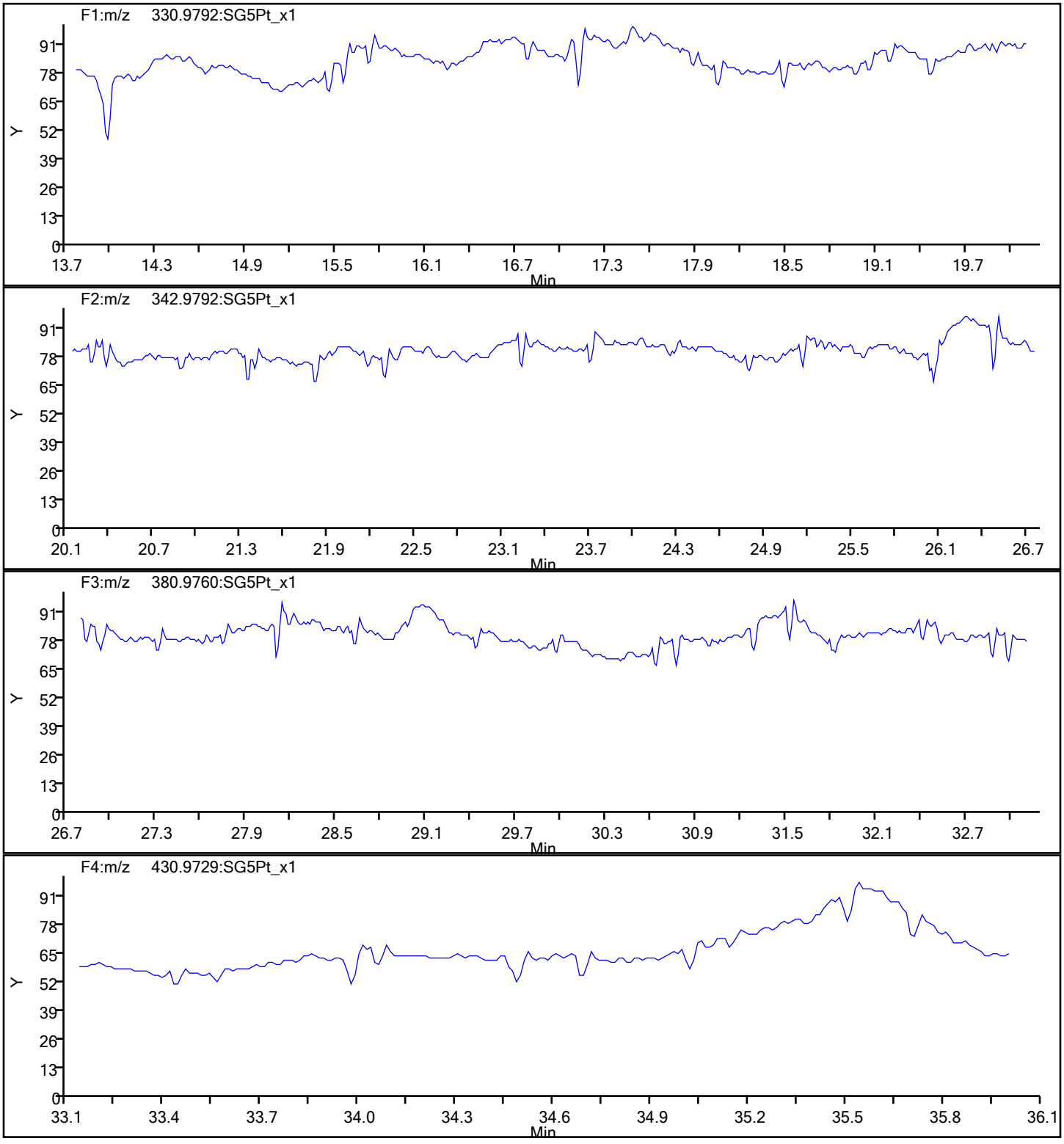




Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

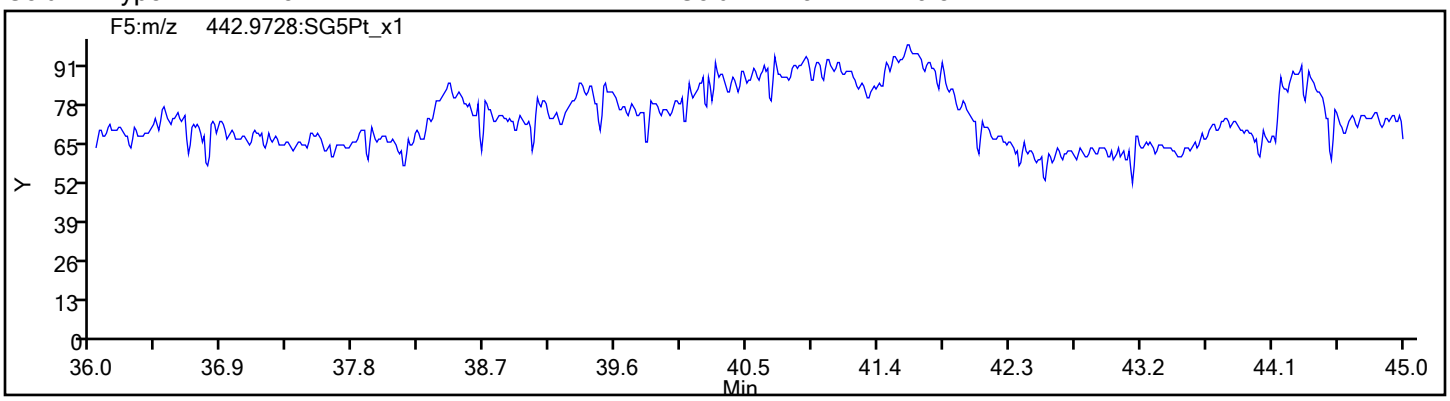
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 10:58:27 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_12.d		
Injection Date:	13-Dec-2019 20:11:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345335	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-SJSSA05 (4-6) RA Lab Sample ID: 320-56911-12 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_013.d

Analysis Method: 1613B Date Collected: 12/08/2019 15:25

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.23(g) Date Analyzed: 12/17/2019 03:03

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 31.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	4.5		1.4	0.21

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	58		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	107		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 03:03:09 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-12-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:36:47

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.380	78873103	0.76	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.573	61487848	0.78	1.3379	58.3	58.3	0.3005	0.3005	58.27	
2,3,7,8-TCDF	16.601	807273	0.88	0.8389	1.565	1.565	0.0732	0.0732		
D 13C-2,3,7,8-TCDD	15.133	40974539	0.75	0.9388	55.3	55.3	0.3348	0.3348	55.34	
2,3,7,8-TCDD	15.160	264409	0.82	1.1538	0.5593	0.5593	0.1174	0.1174		
$ 37Cl4-2,3,7,8-TCDD	15.146	39743013		1.1816	42.6	42.6	0.0868	0.0868	107	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d
Lims ID: 320-56911-A-12-A
Client ID: 11187072-120819-BN-SJSSA05 (4-6)
Sample Type: Client
Inject. Date: 17-Dec-2019 03:03:09 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-12-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:36:47

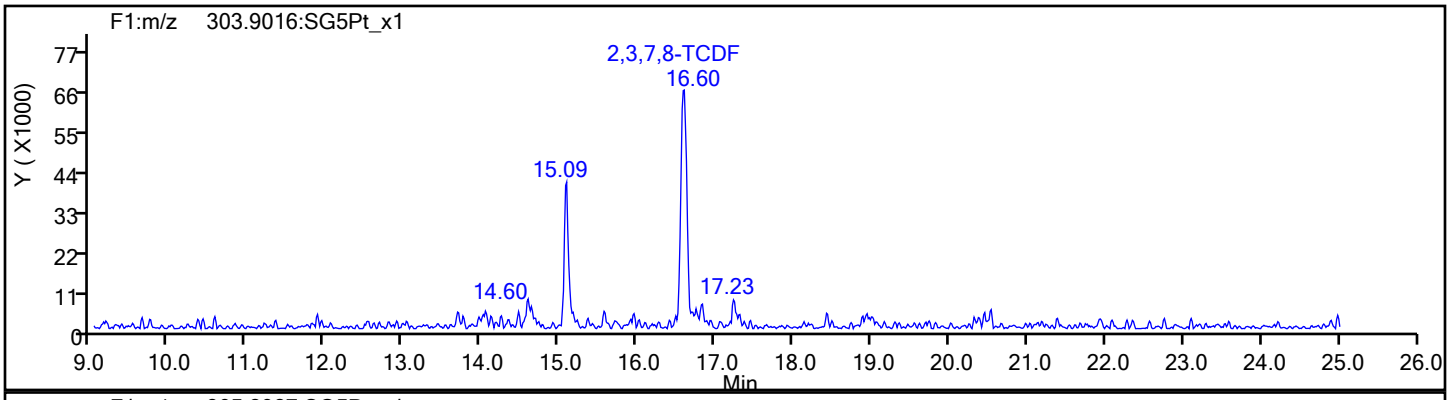
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.380	15.383	0		34118255	7259615	13456	33640	540		
333.9339	15.380	15.383	0		44754848	9564385	7699	19247	1242	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.573	16.576	0	1.078	26871774	5408836	16196	40490	334		
317.9389	16.573	16.576	0	1.078	34616074	6793199	10861	27152	625	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.601	16.590	1	1.002	377482	65446	1189	2972	55		
305.8987	16.587	16.590	0	1.001	429791	82807	1807	4517	46	0.88(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.133	15.122	1	0.984	17542705	3641243	13456	33640	271		
333.9339	15.133	15.122	1	0.984	23431834	4892812	7699	19247	636	0.75(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.160	15.149	1	1.002	119359	24824	3112	7780	8		
321.8936	15.146	15.149	0	1.001	145050	31890	1513	3782	21	0.82(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.146	15.149	0	0.985	39743013	8431487	6900	17250	1222		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

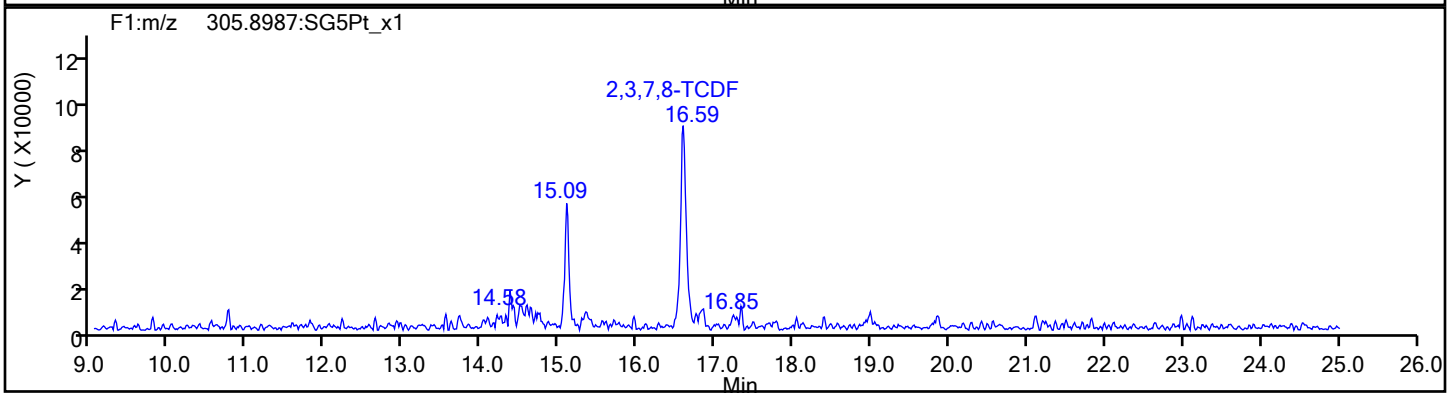
Report Date: 17-Dec-2019 09:38:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

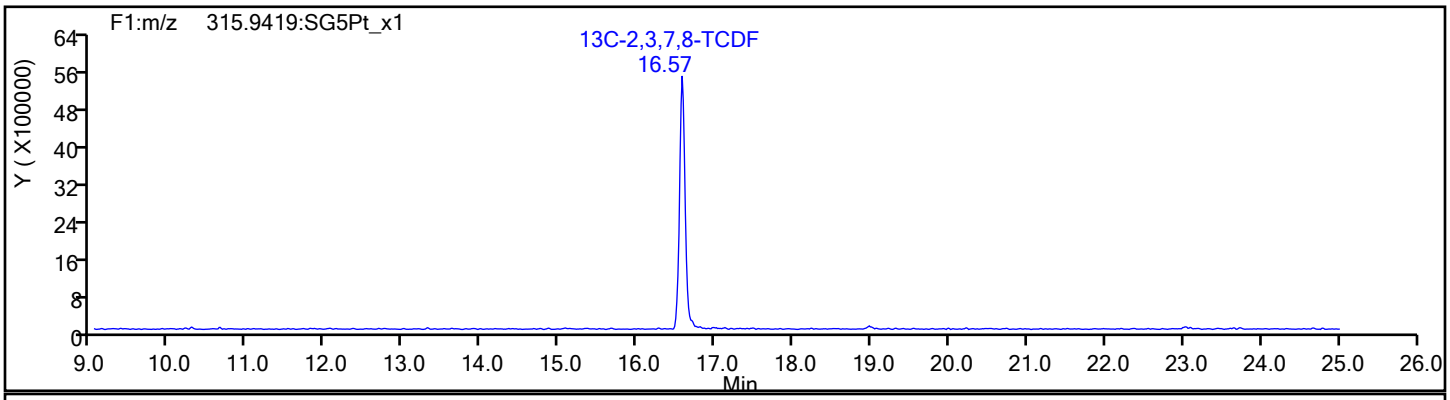
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d		
Injection Date:	17-Dec-2019 03:03:09	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345960	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

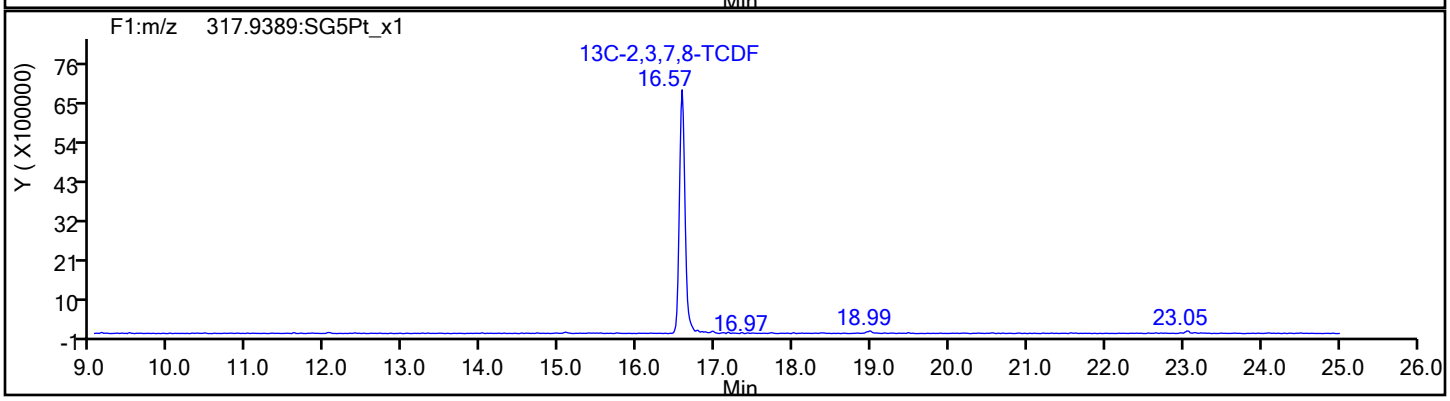
TCDF





TCDF Standards



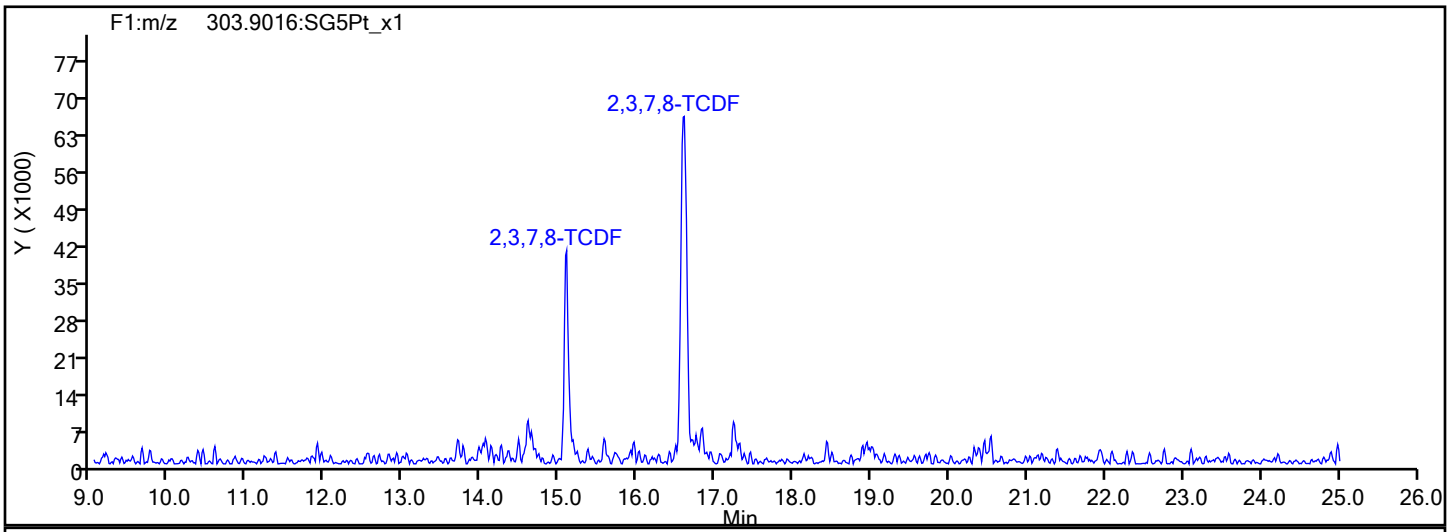


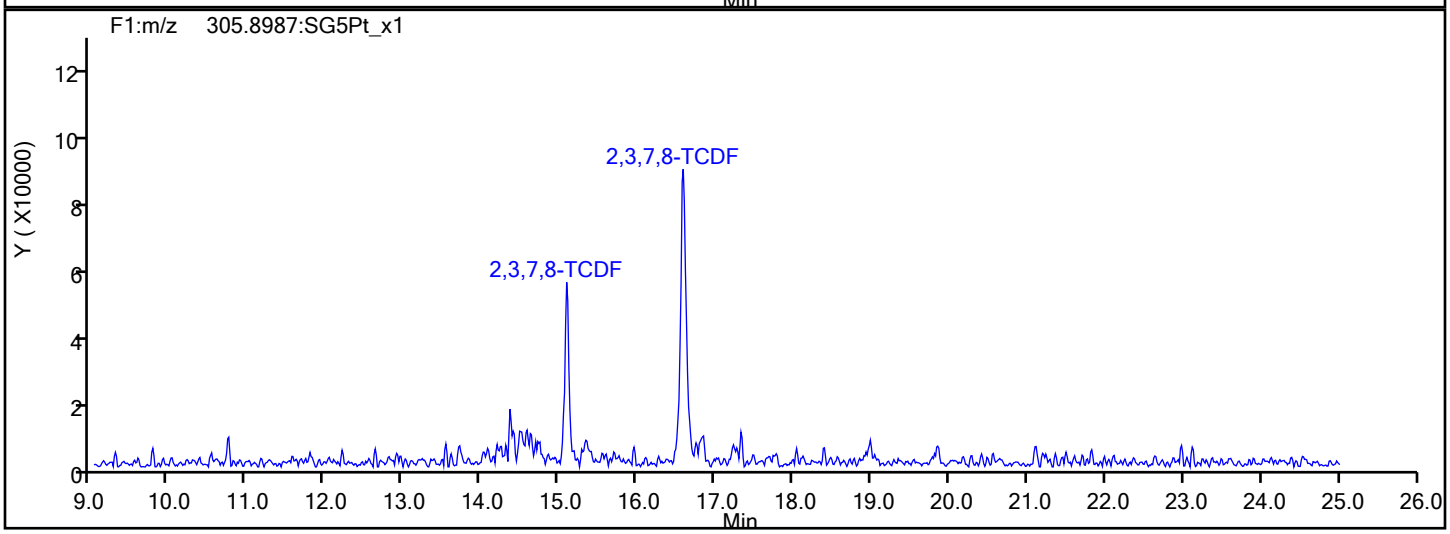
Report Date: 17-Dec-2019 09:38:35 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

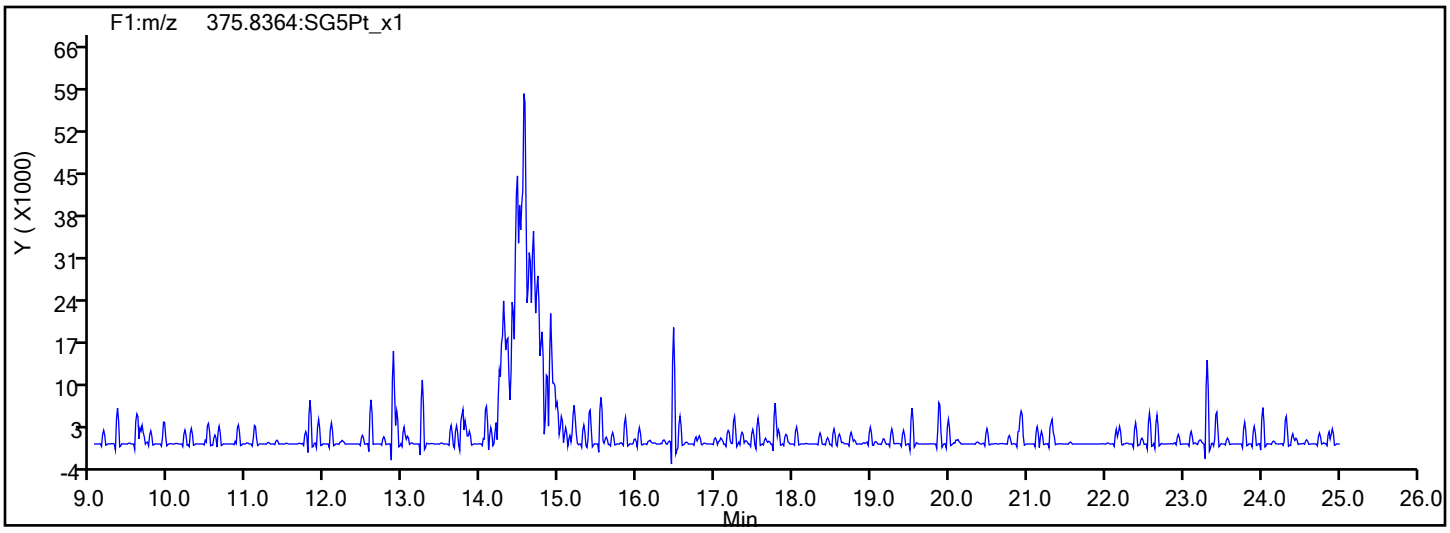
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d		
Injection Date:	17-Dec-2019 03:03:09	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345960	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

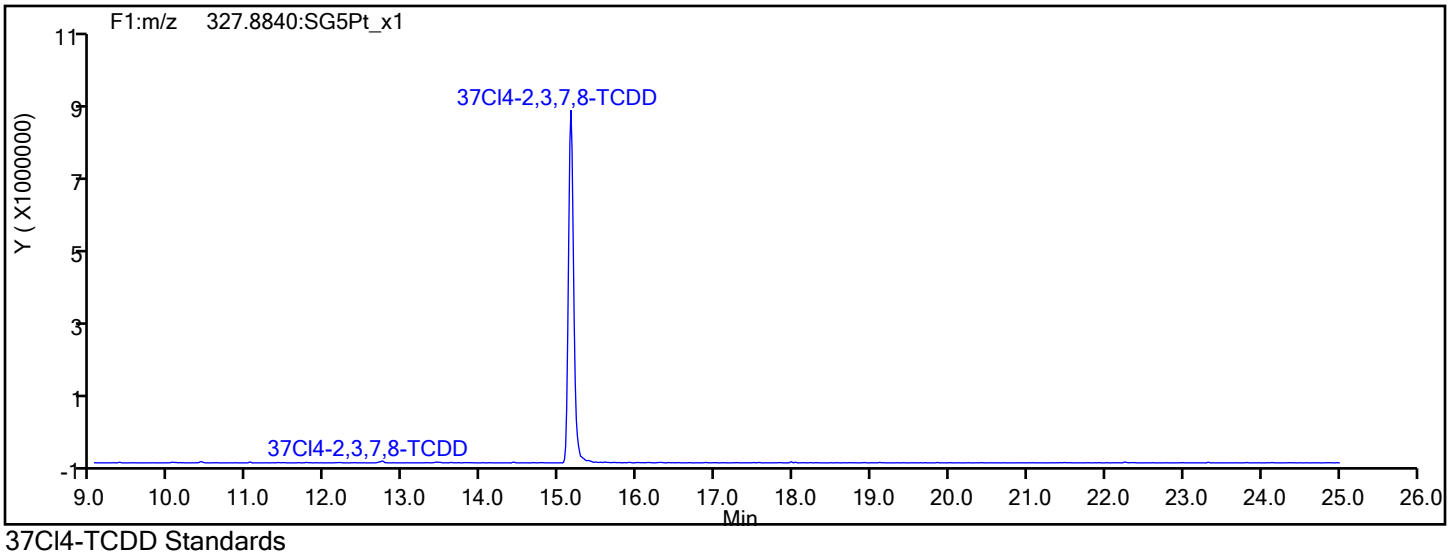


Report Date: 17-Dec-2019 09:38:36 Chrom Revision: 2.3 15-Dec-2019 06:20:02

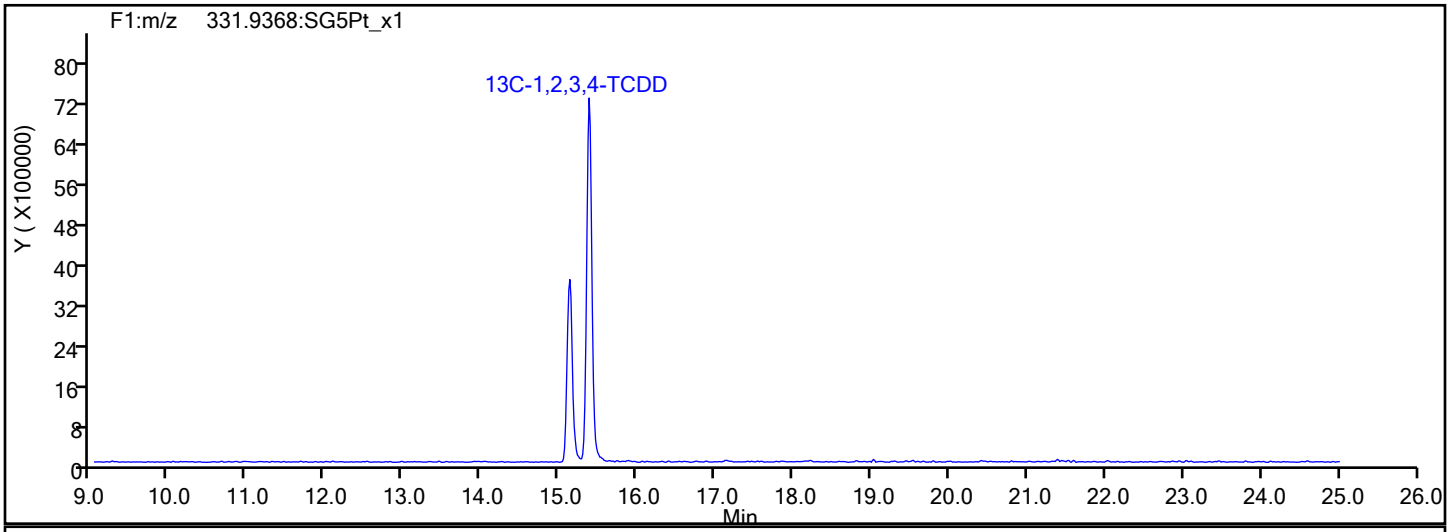
Eurofins TestAmerica, Sacramento

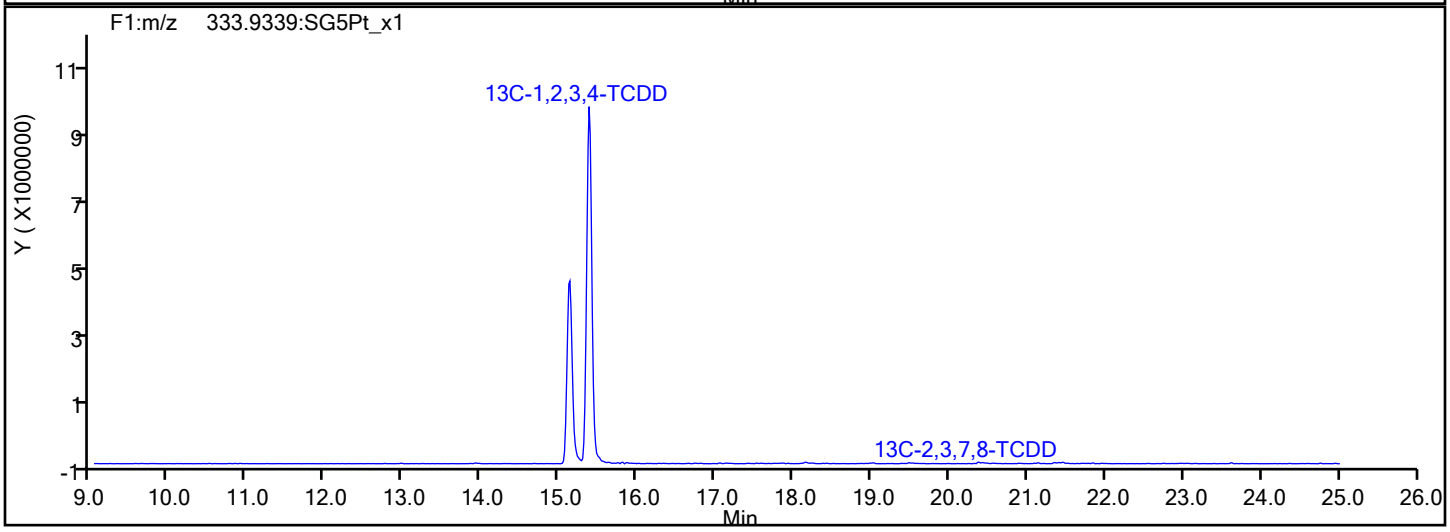
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d		
Injection Date:	17-Dec-2019 03:03:09	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345960	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

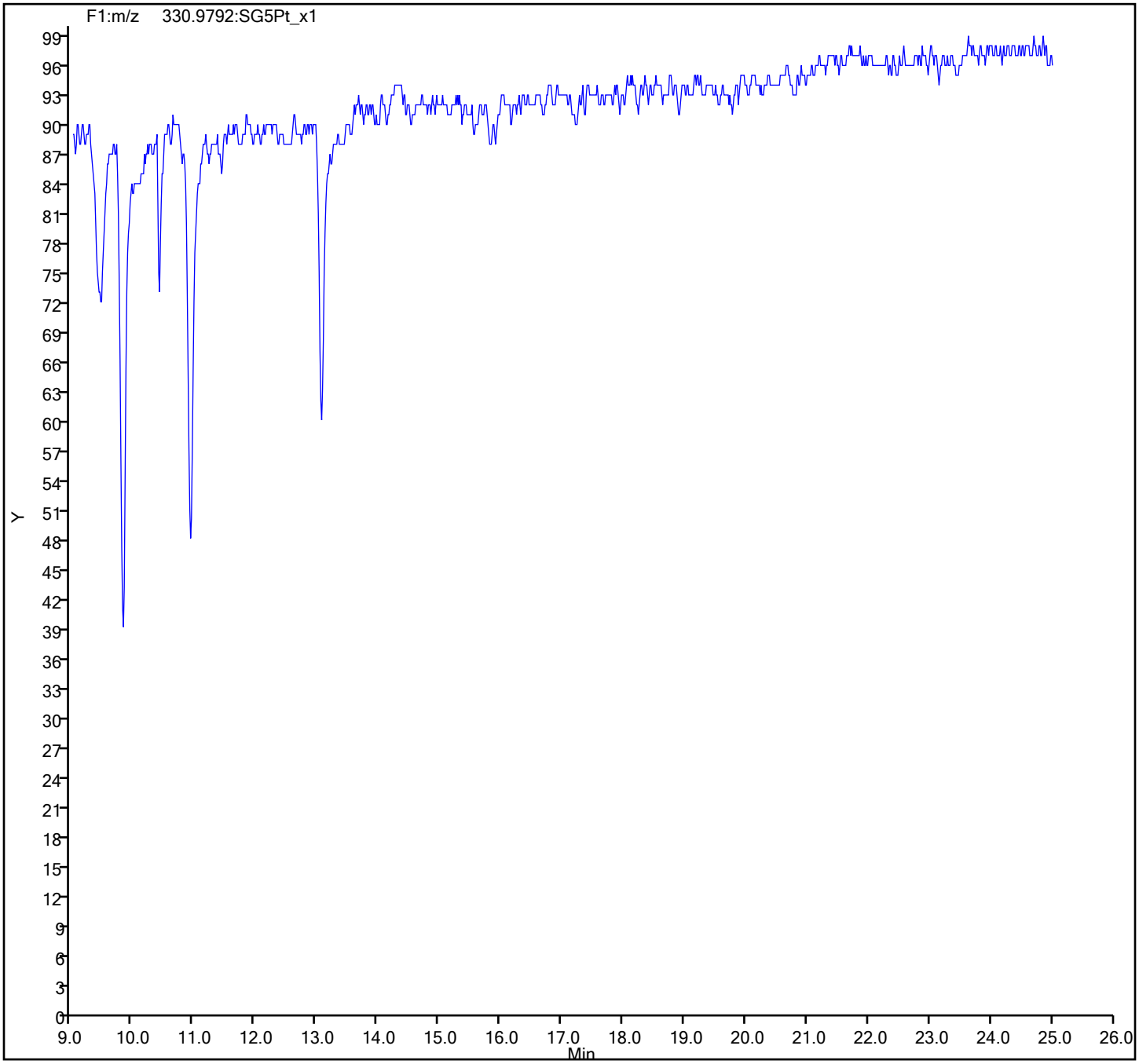




Report Date: 17-Dec-2019 09:38:36 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_013.d		
Injection Date:	17-Dec-2019 03:03:09	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-SJSSA05 (4-6)		
Worklist#:	345960	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Matrix: Sediment Lab File ID: 13DE1910D5_13.d

Analysis Method: 1613B Date Collected: 12/08/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 20:57

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 23.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	2.7		1.3	0.18
40321-76-4	1,2,3,7,8-PeCDD	ND		6.5	0.16
57117-41-6	1,2,3,7,8-PeCDF	0.38	J	6.5	0.090
57117-31-4	2,3,4,7,8-PeCDF	ND		6.5	0.086
39227-28-6	1,2,3,4,7,8-HxCDD	0.45	J	6.5	0.098
57653-85-7	1,2,3,6,7,8-HxCDD	0.38	J B	6.5	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	1.1	J	6.5	0.091
70648-26-9	1,2,3,4,7,8-HxCDF	0.28	J	6.5	0.11
57117-44-9	1,2,3,6,7,8-HxCDF	ND		6.5	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	0.17	J q	6.5	0.081
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.5	0.088
35822-46-9	1,2,3,4,6,7,8-HpCDD	15	B	6.5	0.25
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.77	J	6.5	0.065
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		6.5	0.066
3268-87-9	OCDD	380	B	13	0.34
39001-02-0	OCDF	4.4	J B	13	0.12
41903-57-5	Total TCDD	14	q	1.3	0.18
30402-14-3	Total TCDF	16	q	1.3	0.12
36088-22-9	Total PeCDD	7.6	q	6.5	0.16
30402-15-4	Total PeCDF	0.85	J	6.5	0.088
34465-46-8	Total HxCDD	28	B q	6.5	0.098
55684-94-1	Total HxCDF	0.45	J q	6.5	0.099
37871-00-4	Total HpCDD	65	B	6.5	0.25
38998-75-3	Total HpCDF	1.8	J B	6.5	0.066

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-DUP2 Lab Sample ID: 320-56911-13

Matrix: Sediment Lab File ID: 13DE1910D5_13.d

Analysis Method: 1613B Date Collected: 12/08/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/13/2019 20:57

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 23.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345335 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	54		25-164
89059-46-1	13C-2,3,7,8-TCDF	56		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	62		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	55		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	61		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	60		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	48		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	51		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	44		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	52		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	47		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	55		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	44		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	59		26-138
114423-97-1	13C-OCDD	60		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	104		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Sample Type: Client
Inject. Date: 13-Dec-2019 20:57:54 ALS Bottle#: 15 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-13-A 320-56911-A-13-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 11:03:39 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: messecara Date: 13-Dec-2019 23:50:33

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.901	49067459	0.77	1.2E+06	100.0	100.0				a
D 13C-2,3,7,8-TCDF	17.387	36291079	0.77	1.3318	55.5	55.5	0.1307	0.1307	55.53	
2,3,7,8-TCDF	17.402	1153209	0.73	0.9005	3.529	3.529	0.0475	0.0475		
A Non-2,3,7,8-sub-TCDF	17.062	824562	0.77	0.9005	2.575	2.523	0.0475	1.501		RQM
S Total TCDF					6.104	6.052	0.0475	0.0475		RQ
D 13C-2,3,7,8-TCDD	18.098	25795512	0.78	0.9647	54.5	54.5	0.1217	0.1217	54.50	
2,3,7,8-TCDD	18.113	288143	0.68	1.0698	1.044	1.044	0.0695	0.0695		M
$ 37Cl4-2,3,7,8-TCDD	18.113	26605646		1.3082	41.4	41.4	0.0713	0.0713	104	
A Non-2,3,7,8-sub-TCDD	17.516	1218890	0.77	1.0698	4.427	4.417	0.0695	3.724		RQMa
S Total TCDD					5.471	5.461	0.0695	0.0695		RQ
D 13C-1,2,3,7,8-PeCDF	22.413	28199301	1.59	1.0537	54.5	54.5	0.1102	0.1102	54.54	
1,2,3,7,8-PeCDF	22.441	40566	1.34	0.9704	0.1482	0.1482	0.0349	0.0349		M
D 13C-2,3,4,7,8-PeCDF	23.763	30239718	1.60	1.0173	60.6	60.6	0.1142	0.1142	60.58	
2,3,4,7,8-PeCDF	23.750						0.0333	0.0333		
A F1 PeCDFs	19.776	24629	1.76	0.9845	0.0856	0.0856	0.0304	0.0856		M
A Non-2,3,7,8-sub-PeCDF	22.933	27722	1.44	0.9845	0.0964	0.0964	0.0341	0.0964		
S Total PeCDF					0.3302	0.3302	0.0341	0.0341		
D 13C-1,2,3,7,8-PeCDD	24.486	22108653	1.57	0.7281	61.9	61.9	0.0788	0.0788	61.88	
1,2,3,7,8-PeCDD	24.472						0.0611	0.0611		
A Non-2,3,7,8-sub-PeCDD	23.368	648200	1.55	1.0023	3.004	2.925	0.0611	1.951		RQ
S Total PeCDD					3.004	2.925	0.0611	0.0611		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.570	20897033	0.51	0.9632	51.2	51.2	0.1477	0.1477	51.15	
1,2,3,4,7,8-HxCDF	30.583	23334	1.11	1.0315	0.1083	0.1083	0.0428	0.0428		M
D 13C-1,2,3,6,7,8-HxCDF	30.757	19965066	0.51	1.0646	44.2	44.2	0.1337	0.1337	44.22	
1,2,3,6,7,8-HxCDF	30.743						0.0451	0.0451		
D 13C-2,3,4,6,7,8-HxCDF	31.582	19468824	0.51	0.9696	47.3	47.3	0.1468	0.1468	47.34	
2,3,4,6,7,8-HxCDF	31.568						0.0338	0.0338		
D 13C-1,2,3,7,8,9-HxCDF	32.380	19723207	0.49	0.8955	51.9	51.9	0.1589	0.1589	51.93	
1,2,3,7,8,9-HxCDF	32.394	14122	1.24	1.0664	0.0741	0.0671	0.0312	0.0312		RQM
A Non-2,3,7,8-sub-HxCDF	30.237						0.0375	0.0375		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.1824	0.1754	0.0383	0.0383		RQ
* 13C-1,2,3,7,8,9-HxCDD	32.207	42413689	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.768	19159641	1.28	0.7590	59.5	59.5	0.1516	0.1516	59.52	
1,2,3,4,7,8-HxCDD	31.781	33177	1.31	1.0054	0.1722	0.1722	0.0378	0.0378		M
D 13C-1,2,3,6,7,8-HxCDD	31.875	18975671	1.25	0.9247	48.4	48.4	0.1244	0.1244	48.38	
1,2,3,6,7,8-HxCDD	31.888	27140	1.31	0.9833	0.1455	0.1455	0.0406	0.0406		Ma
1,2,3,7,8,9-HxCDD	32.207	87918	1.11	1.1036	0.4178	0.4178	0.0353	0.0353		
A Non-2,3,7,8-sub-HxCDD	30.870	1985230	1.24	1.0308	10.1	10.1	0.0378	8.607		RQ
S Total HxCDD					10.9	10.8	0.0379	0.0379		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.805	14954969	0.42	0.7930	44.5	44.5	0.2626	0.2626	44.46	
1,2,3,4,6,7,8-HpCDF	33.817	63073	1.03	1.4240	0.2962	0.2962	0.0253	0.0253		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.874	18240568	0.43	0.7296	58.9	58.9	0.2854	0.2854	58.95	
1,2,3,4,7,8,9-HpCDF	34.862						0.0256	0.0256		
A Non-2,3,7,8-sub-HpCDF	34.340	92739	1.03	1.3537	0.4128	0.4128	0.0254	0.4128		M
S Total HpCDF					0.7089	0.7089	0.0254	0.0254		
D 13C-1,2,3,4,6,7,8-HpCDD	34.595	17596275	1.04	0.7532	55.1	55.1	0.1849	0.1849	55.08	
1,2,3,4,6,7,8-HpCDD	34.595	1045582	1.06	1.0174	5.840	5.840	0.0975	0.0975		
A Non-2,3,7,8-sub-HpCDD	34.309	3420498	1.02	1.0174	19.1	19.1	0.0975	19.1		
S Total HpCDD					24.9	24.9	0.0975	0.0975		
D 13C-OCDD	36.915	28438617	0.91	0.5621	119.3	119.3	0.0916	0.0916	59.65	
OCDF	37.011	316328	0.90	1.3047	1.705	1.705	0.0482	0.0482		
OCDD	36.927	22814860	0.89	1.0997	145.9	145.9	0.1320	0.1320		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Sample Type: Client
Inject. Date: 13-Dec-2019 20:57:54 ALS Bottle#: 15 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-13-A 320-56911-A-13-A
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 16-Dec-2019 11:03:39 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: messecara Date: 13-Dec-2019 23:50:33

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	17.901	17.856	3		21368383	5441595	3215	8037	1693		a
333.9339	17.901	17.856	3		27699076	6940099	2600	6500	2669	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.387	17.357	2	0.971	15833064	4037222	5287	13217	764		
317.9389	17.387	17.357	2	0.971	20458015	5235648	3334	8335	1570	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.402	17.372	2	1.001	486850	115677	660	1650	175		
305.8987	17.402	17.372	2	1.001	666359	161291	928	2320	174	0.73(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQM
303.9016	15.482	17.062	-95	0.890	14706	4388	660	1650	7		
305.8987	15.482	17.062	-95	0.890	17433	5436	928	2320	6	0.84(0.65-0.89)	
303.9016	15.996	17.062	-64	0.920	23817	5695	660	1650	9		
305.8987	15.996	17.062	-64	0.920	35972	8957	928	2320	10	0.66(0.65-0.89)	
303.9016	16.268	17.062	-48	0.936	17298	3901	660	1650	6		
305.8987	16.268	17.062	-48	0.936	28164	6284	928	2320	7	0.61(0.65-0.89)	
	Empc Correction				22464	5066	928	2320	5		
303.9016	16.495	17.062	-34	0.949	20144	4397	660	1650	7		
305.8987	16.495	17.062	-34	0.949	26034	6759	928	2320	7	0.77(0.65-0.89)	
303.9016	16.737	17.062	-19	0.963	26904	4716	660	1650	7		
	Empc Correction				15689	4459	660	1650	7		
305.8987	16.737	17.062	-19	0.963	20376	5791	928	2320	6	1.32(0.65-0.89)	
303.9016	17.024	17.062	-2	0.979	206879	51329	660	1650	78		M
305.8987	17.024	17.062	-2	0.979	283728	72474	928	2320	78	0.73(0.65-0.89)	
303.9016	17.841	17.062	47	1.026	38262	7492	660	1650	11		
305.8987	17.841	17.062	47	1.026	46877	9997	928	2320	11	0.82(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	18.581	17.062	91	1.069	14357	3253	660	1650	5		
305.8987	18.581	17.062	91	1.069	20526	5016	928	2320	5	0.70(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.098	18.052	3	1.011	11306765	2648742	3215	8037	824		
333.9339	18.098	18.052	3	1.011	14488747	3473315	2600	6500	1336	0.78(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	18.113	18.068	3	1.001	116620	27139	1058	2645	26		
321.8936	18.113	18.068	3	1.001	171523	44068	762	1905	58	0.68(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	18.113	18.068	3	1.012	26605646	6284803	4618	11545	1361		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.420	17.516	-66	0.907	22359	4999	1058	2645	5		
321.8936	16.420	17.516	-66	0.907	27271	7269	762	1905	10	0.82(0.65-0.89)	
319.8965	16.964	17.516	-33	0.937	452563	116313	1058	2645	110		
321.8936	16.964	17.516	-33	0.937	574979	151028	762	1905	198	0.79(0.65-0.89)	
319.8965	17.871	17.516	21	0.987	52929	12413	1058	2645	12		M
321.8936	17.871	17.516	21	0.987	71659	16453	762	1905	22	0.74(0.65-0.89)	
319.8965	18.007	17.516	29	0.995	10227	3199	1058	2645	3		M
	Empc Correction				7452	2325	1058	2645	2		
321.8936	18.007	17.516	29	0.995	9678	3020	762	1905	4	1.06(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.413	22.372	2	1.252	17310642	3075415	3513	8782	875		
353.8970	22.413	22.372	2	1.252	10888659	1902843	2239	5597	850	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.441	22.400	2	1.001	23238	4520	326	815	14		M
341.8567	22.413	22.400	1	1.000	17328	2523	348	870	7	1.34(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.763	23.722	2	1.327	18614071	3111939	3513	8782	886		
353.8970	23.763	23.722	2	1.327	11625647	1958680	2239	5597	875	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750						326	815			
341.8567	23.750						348	870			
A F1 PeCDFs											M
339.8597	19.504	19.776	-16	0.870	15714	2650	221	552	12		M
341.8567	19.519	19.776	-15	0.871	8915	1901	381	952	5	1.76(1.32-1.78)	M
A Non-2,3,7,8-sub-PeCDF											
339.8597	21.063	22.933	-112	0.940	16364	2905	326	815	9		
341.8567	21.090	22.933	-110	0.941	11358	2417	348	870	7	1.44(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.486	24.445	2	1.368	13491918	2169153	1764	4410	1230		
369.8919	24.486	24.445	2	1.368	8616735	1373138	1077	2692	1275	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472						553	1382			
357.8516	24.472						315	787			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	21.281	23.368	-125	0.869	56766	10890	553	1382	20		
357.8516	21.281	23.368	-125	0.869	54098	8984	315	787	29	1.05(1.32-1.78)	
	Empc Correction				36623	7025	315	787	22		
355.8546	22.031	23.368	-80	0.900	261263	47719	553	1382	86		
357.8516	22.031	23.368	-80	0.900	170987	30640	315	787	97	1.53(1.32-1.78)	
355.8546	23.518	23.368	9	0.960	74855	9139	553	1382	17		
357.8516	23.531	23.368	10	0.961	47706	5467	315	787	17	1.57(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.570	30.543	2	0.949	7035535	1339213	2595	6487	516		
385.8610	30.570	30.543	2	0.949	13861498	2649284	3697	9242	717	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	30.583	30.557	2	1.000	12280	2121	390	975	5		M
375.8178	30.597	30.557	2	1.001	11054	2045	315	787	6	1.11(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.757	30.716	2	0.955	6700078	1271731	2595	6487	490		
385.8610	30.757	30.716	2	0.955	13264988	2542014	3697	9242	688	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.743						390	975			
375.8178	30.743						315	787			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.582	31.555	2	0.981	6567814	1671728	2595	6487	644		
385.8610	31.582	31.555	2	0.981	12901010	3219479	3697	9242	871	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568						390	975			
375.8178	31.568						315	787			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.380	32.367	1	1.005	6520694	1739765	2595	6487	670		
385.8610	32.380	32.367	1	1.005	13202513	3549520	3697	9242	960	0.49(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQM
373.8208	32.394	32.380	1	1.000	7818	2411	390	975	6		M
375.8178	32.394	32.380	1	1.000	7767	2038	315	787	6	1.01(1.05-1.43)	
	Empc Correction				6304	1944	315	787	6		
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						390	975			
375.8178	30.237						315	787			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.207	32.181	2		23565440	6121665	2868	7170	2134		
403.8529	32.207	32.181	2		18848249	4932279	2219	5547	2223	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.768	31.741	2	0.986	10746984	2898568	2868	7170	1011		
403.8529	31.768	31.741	2	0.986	8412657	2263581	2219	5547	1020	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											M
389.8157	31.781	31.755	2	1.000	18793	4358	360	900	12		
391.8127	31.781	31.755	2	1.000	14384	3201	425	1062	8	1.31(1.05-1.43)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.875	31.848	2	0.990	10546167	2715104	2868	7170	947		
403.8529	31.875	31.848	2	0.990	8429504	2195129	2219	5547	989	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.888	31.861	2	1.000	15413	3840	360	900	11		M
391.8127	31.888	31.861	2	1.000	11727	2873	425	1062	7	1.31(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.207	32.194	1	1.014	46207	9229	360	900	26		
391.8127	32.207	32.194	1	1.014	41711	8569	425	1062	20	1.11(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.612	30.870	-75	0.929	926272	110731	360	900	308		
391.8127	29.625	30.870	-75	0.929	765430	93621	425	1062	220	1.21(1.05-1.43)	
389.8157	31.023	30.870	9	0.973	143133	27199	360	900	76		
391.8127	31.023	30.870	9	0.973	108770	19754	425	1062	46	1.32(1.05-1.43)	
389.8157	31.222	30.870	21	0.980	27227	5433	360	900	15		
	Empc Correction				23042	5159	360	900	14		
391.8127	31.222	30.870	21	0.980	18583	4161	425	1062	10	1.47(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.805	33.780	1	1.050	4440807	1494474	2862	7155	522		
419.8220	33.805	33.780	1	1.050	10514162	3460233	6346	15865	545	0.42(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.817	33.793	1	1.000	32014	9531	366	915	26		M
409.7789	33.817	33.793	1	1.000	31059	10252	347	867	30	1.03(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.874	34.862	1	1.083	5481556	1620697	2862	7155	566		
419.8220	34.874	34.862	1	1.083	12759012	3804917	6346	15865	600	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.862						366	915			
409.7789	34.862						347	867			
A Non-2,3,7,8-sub-HpCDF											M
407.7818	34.109	34.340	-14	1.009	47106	14539	366	915	40		
409.7789	34.109	34.340	-14	1.009	45633	14527	347	867	42	1.03(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.595	34.570	1	1.074	8983366	2609234	3400	8500	767		
437.8140	34.583	34.570	1	1.074	8612909	2549099	2758	6895	924	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.595	34.583	1	1.000	537024	146481	1118	2795	131		
425.7737	34.595	34.583	1	1.000	508558	143750	928	2320	155	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.060	34.309	-15	0.985	1724082	540521	1118	2795	483		
425.7737	34.060	34.309	-15	0.985	1696416	517852	928	2320	558	1.02(0.88-1.20)	
13C-OCDD											
469.7779	36.915	36.891	1	1.146	13519247	3396941	1121	2802	3030		
471.7750	36.915	36.891	1	1.146	14919370	3788396	1155	2887	3280	0.91(0.76-1.02)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDF											
441.7428	37.011	36.999	1	1.003	149597	33973	324	810	105		
443.7399	37.011	36.999	1	1.003	166731	36698	580	1450	63	0.90(0.76-1.02)	
OCDD											
457.7377	36.927	36.903	1	1.000	10716470	2671591	1060	2650	2520		
459.7348	36.915	36.903	1	1.000	12098390	3046240	1026	2565	2969	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	36291079	9272870

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	36291079	9272870

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.482	14706	4388	17433	5436	0.0983	0.84	
15.996	23817	5695	35972	8957	0.1829	0.66	
16.268	17298	3901	28164	6284	0.1391	0.61	RQ
16.268	17298	3901	22464	5066	0.1217		Empc Correction
16.495	20144	4397	26034	6759	0.1413	0.77	
16.737	26904	4716	20376	5791	0.1447	1.32	RQ
16.737	15689	4459	20376	5791	0.1104		Empc Correction
17.024	206879	51329	283728	72474	1.50	0.73	M
17.841	38262	7492	46877	9997	0.2605	0.82	
18.581	14357	3253	20526	5016	0.1067	0.70	
Signal Totals:							
	351152	84914	473410	119496			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	841477	205885				0.76	RQM
	824562	204410					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.575 = (841477 * 100.000) / (36291079 * 0.901)
Empc Amount: 2.523 = (824562 * 100.000) / (36291079 * 0.901)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDD, RT: 17.516

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	25795512	6122057

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	25795512	6122057

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.420	22359	4999	27271	7269	0.1798	0.82	
16.964	452563	116313	574979	151028	3.72	0.79	
17.871	52929	12413	71659	16453	0.4515	0.74	M
18.007	10227	3199	9678	3020	0.0721	1.06	RQMa
18.007	7452	2325	9678	3020	0.0621		Empc Correction
Signal Totals:							
	535303	136050	683587	177770			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1221665	314694				0.79	RQMa
	1218890	313820					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.427 = (1221665 * 100.000) / (25795512 * 1.070)
Empc Amount: 4.417 = (1218890 * 100.000) / (25795512 * 1.070)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

F1 PeCDFs, RT: 19.776

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	28199301	4978258
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	30239718	5070619

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	29219509	5024438

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
19.504	15714	2650	8915	1901	0.0856	1.76	M
Signal Totals:							
	15714	2650	8915	1901			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	24629	4551				1.76	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0856 = (24629 * 100.000) / (29219509 * 0.984)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDF, RT: 22.933

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	28199301	4978258
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	30239718	5070619

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	29219509	5024438

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
21.063	16364	2905	11358	2417	0.0964	1.44	
Signal Totals:							
	16364	2905	11358	2417			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	27722	5322				1.44	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0964 = (27722 * 100.000) / (29219509 * 0.984)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDD, RT: 23.368

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.002	D 13C-1,2,3,7,8-PeCDD	100.000	22108653	3542291

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.002		100.000	22108653	3542291

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.281	56766	10890	54098	8984	0.5003	1.05	RQ
21.281	56766	10890	36623	7025	0.4214		Empc Correction
22.031	261263	47719	170987	30640	1.95	1.53	
23.518	74855	9139	47706	5467	0.5531	1.57	
Signal Totals:							
	392884	67748	255316	43132			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	665675	112839				1.44	RQ
	648200	110880					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.004 = (665675 * 100.000) / (22108653 * 1.002)
Empc Amount: 2.925 = (648200 * 100.000) / (22108653 * 1.002)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005	D 13C-1,2,3,4,7,8-HxCDD	100.000	19159641	5162149
1,2,3,6,7,8-HxCDD	0.983	D 13C-1,2,3,6,7,8-HxCDD	100.000	18975671	4910233
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.031		100.000	19067656	5036191

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.612	926272	110731	765430	93621	8.61	1.21	
31.023	143133	27199	108770	19754	1.28	1.32	
31.222	27227	5433	18583	4161	0.2331	1.47	RQ
31.222	23042	5159	18583	4161	0.2118		Empc Correction
Signal Totals:							
	1092447	143089	892783	117536			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1989415	260899				1.23	RQ
	1985230	260625					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 10.122 = (1989415 * 100.000) / (19067656 * 1.031)
Empc Amount: 10.101 = (1985230 * 100.000) / (19067656 * 1.031)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDF, RT: 34.340

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.424	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	14954969	4954707
1,2,3,4,7,8,9-HpCDF	1.283	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	18240568	5425614

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.354		100.000	16597768	5190160

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
34.109	47106	14539	45633	14527	0.4128	1.03	M
Signal Totals:							
	47106	14539	45633	14527			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	92739	29066				1.03	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4128 = (92739 * 100.000) / (16597768 * 1.354)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Inject. Date: 13-Dec-2019 20:57:54 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDD, RT: 34.309

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.017	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	17596275	5158333

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.017		100.000	17596275	5158333

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
34.060	1724082	540521	1696416	517852	19.1	1.02	
Signal Totals:							
	1724082	540521	1696416	517852			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3420498	1058373				1.02	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 19.106 = (3420498 * 100.000) / (17596275 * 1.017)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

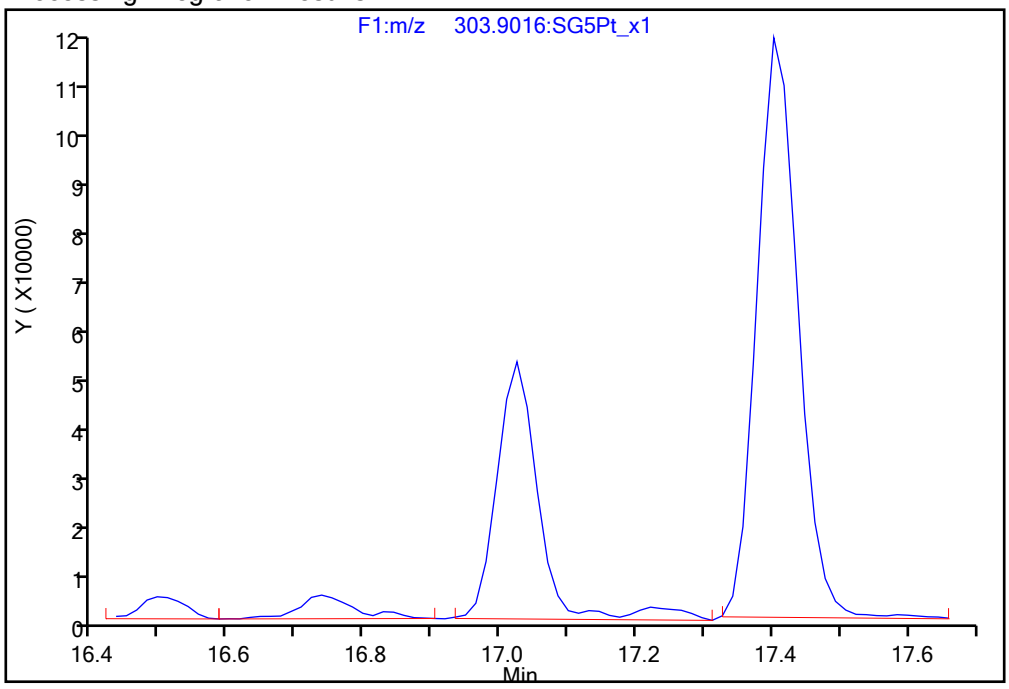
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (14.89- 19.23)

Signal: 1

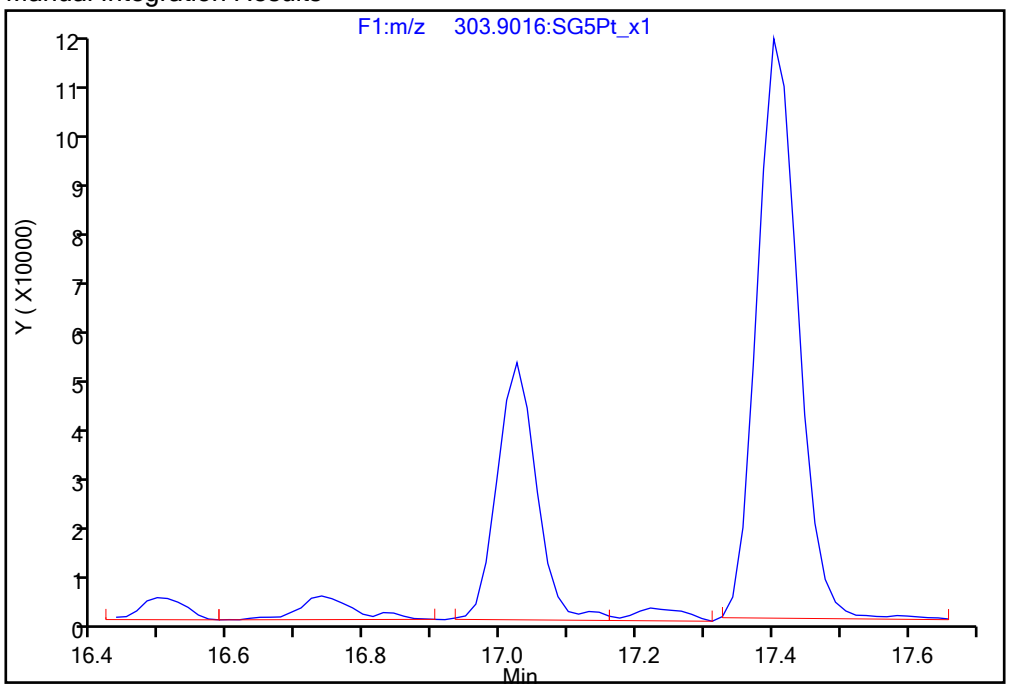
Processing Integration Results

RT = 17.024 Area = 220248



Manual Integration Results

RT = 17.024 Area = 206879 M



Reviewer: dadunj, 16-Dec-2019 10:58:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

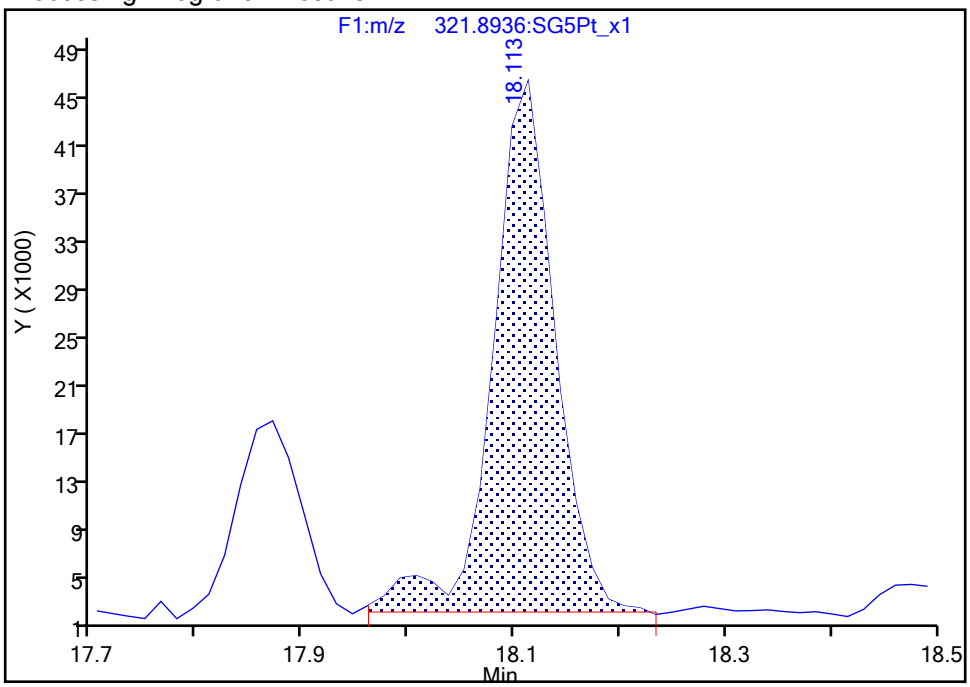
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

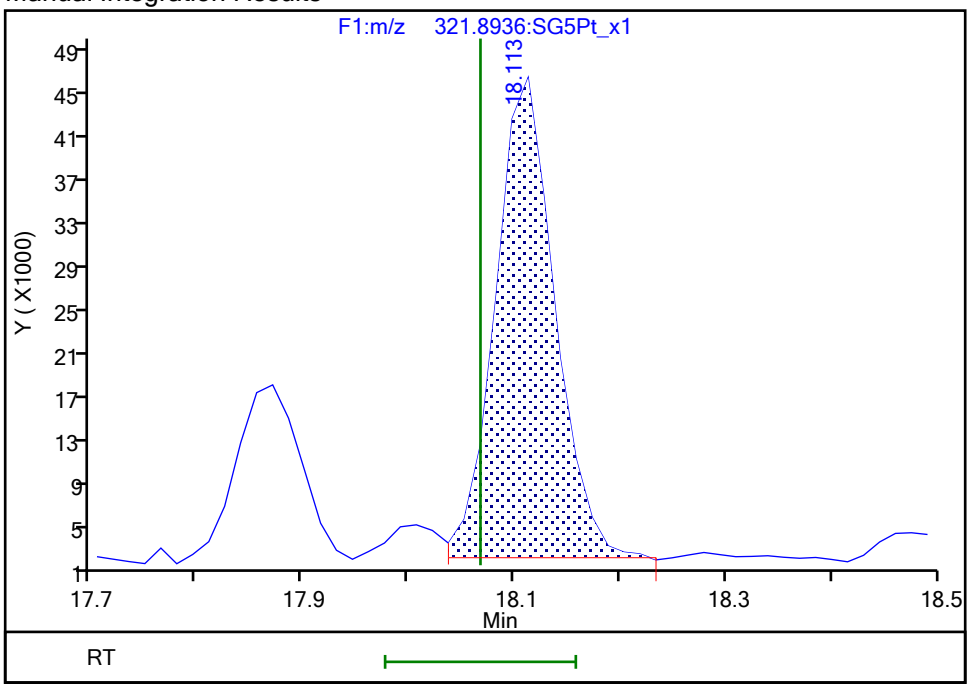
Processing Integration Results

RT: 18.11
Area: 181201
Amount: 1.079227
Amount Units: pg/ul



Manual Integration Results

RT: 18.11
Area: 171523
Amount: 1.044156
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:59:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

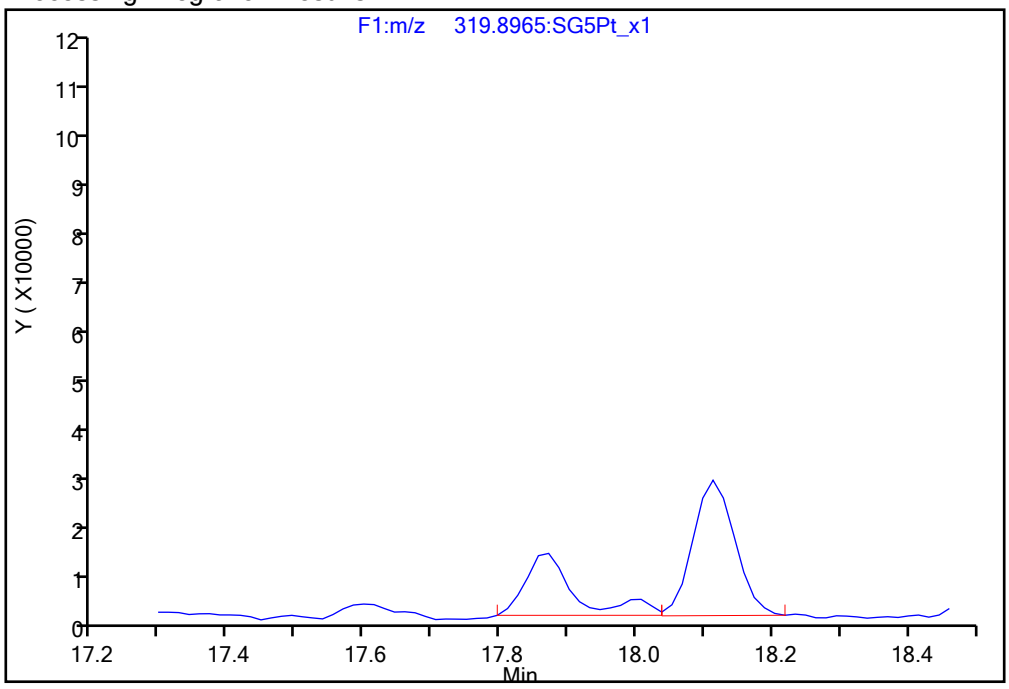
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.82- 19.22)

Signal: 1

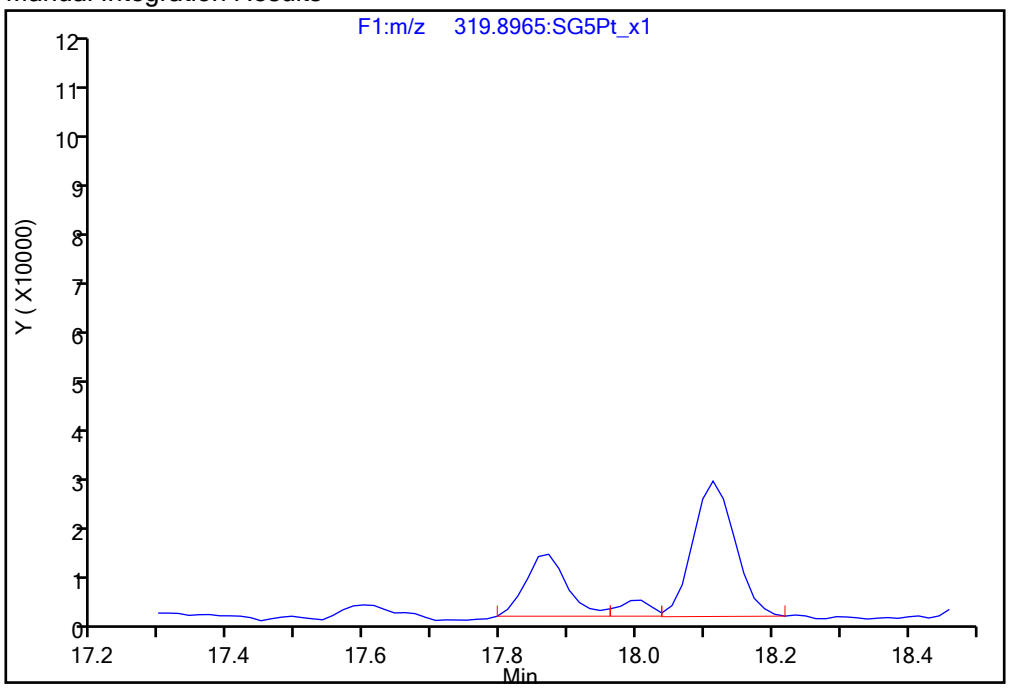
Processing Integration Results

RT = 17.871 Area = 63155



Manual Integration Results

RT = 17.871 Area = 52929 M



Reviewer: dadunj, 16-Dec-2019 10:59:15

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

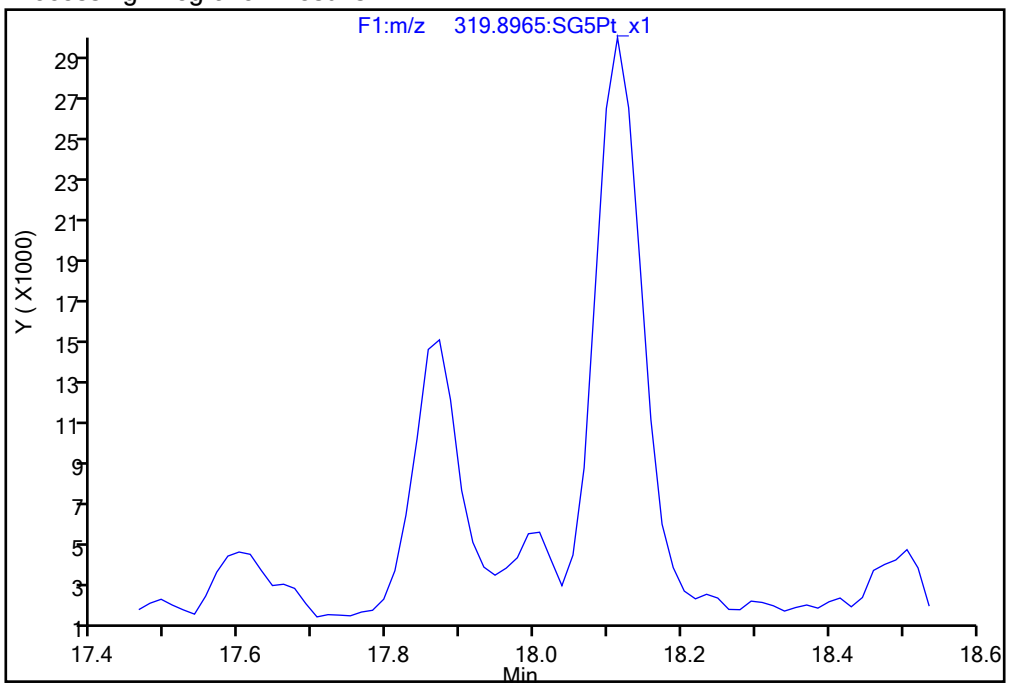
Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.82- 19.22)

Signal: 1

Not Detected

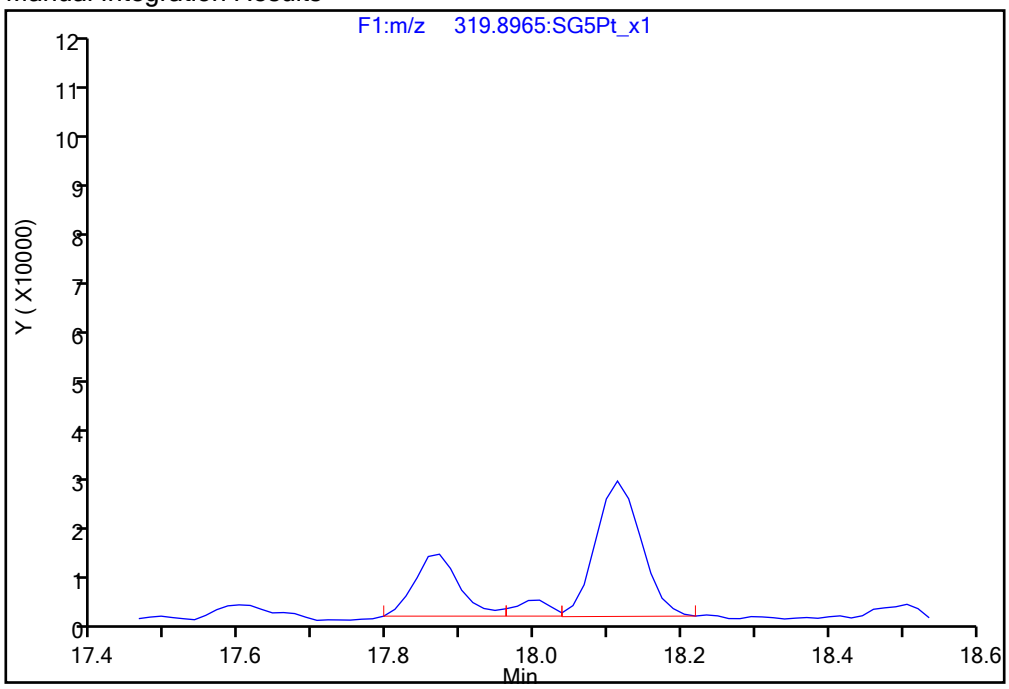
RT: 15.82- 19.22

Processing Integration Results



Manual Integration Results

RT = 18.007 Area = 10227 M



Reviewer: dadunj, 16-Dec-2019 10:59:15

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

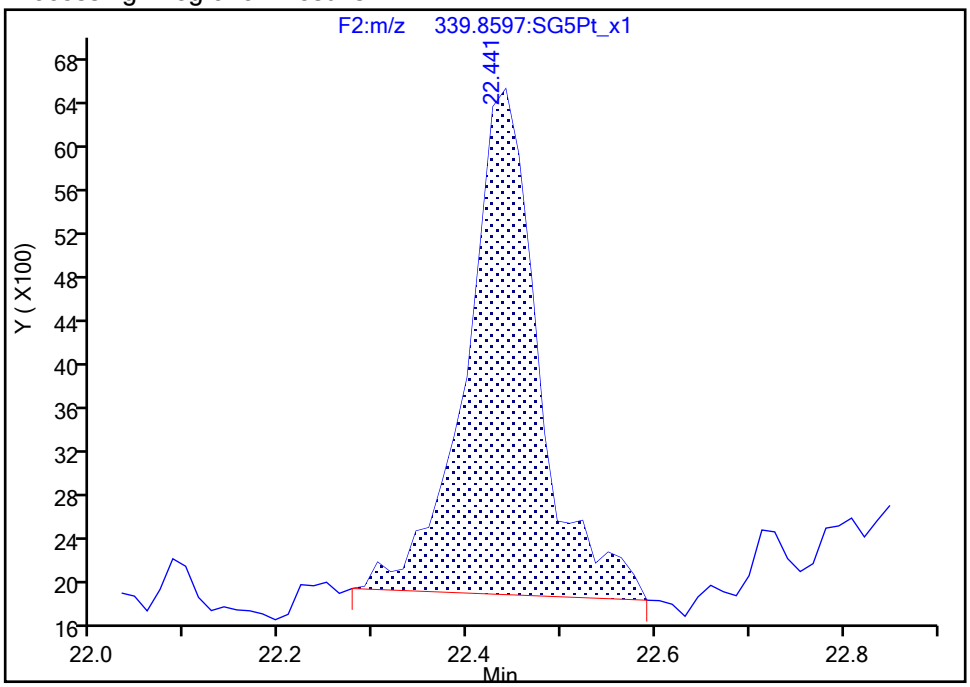
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 1

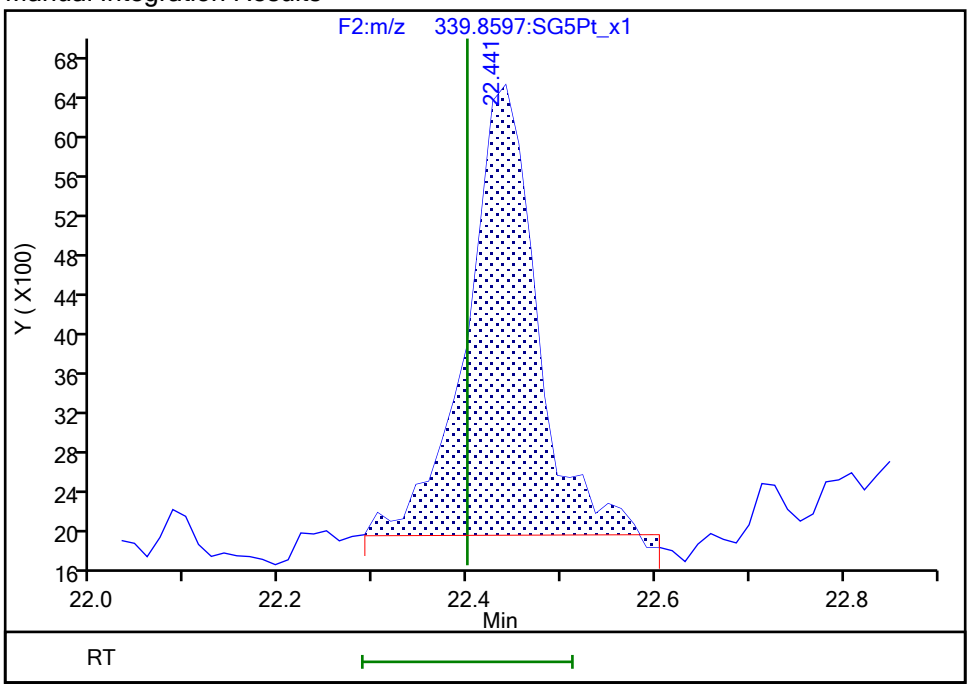
Processing Integration Results

RT: 22.44
Area: 24565
Amount: 0.153093
Amount Units: pg/ul



Manual Integration Results

RT: 22.44
Area: 23238
Amount: 0.148244
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 10:59:43

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

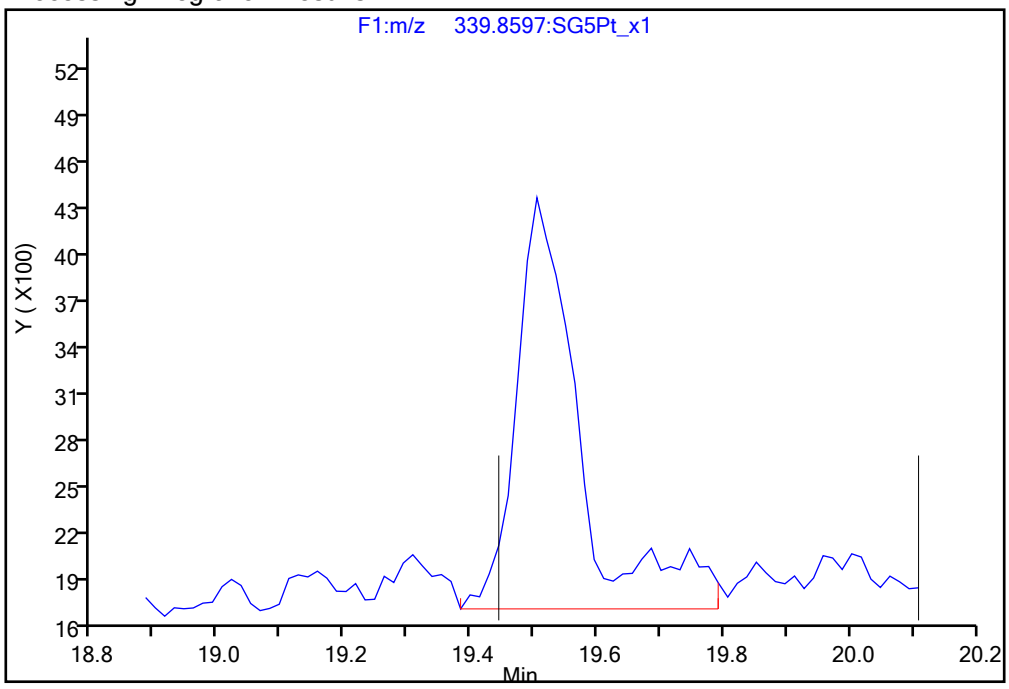
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

F1 PeCDFs, Signal: 1, m/z: 339.8597, RT: (19.44- 20.11)

Signal: 1

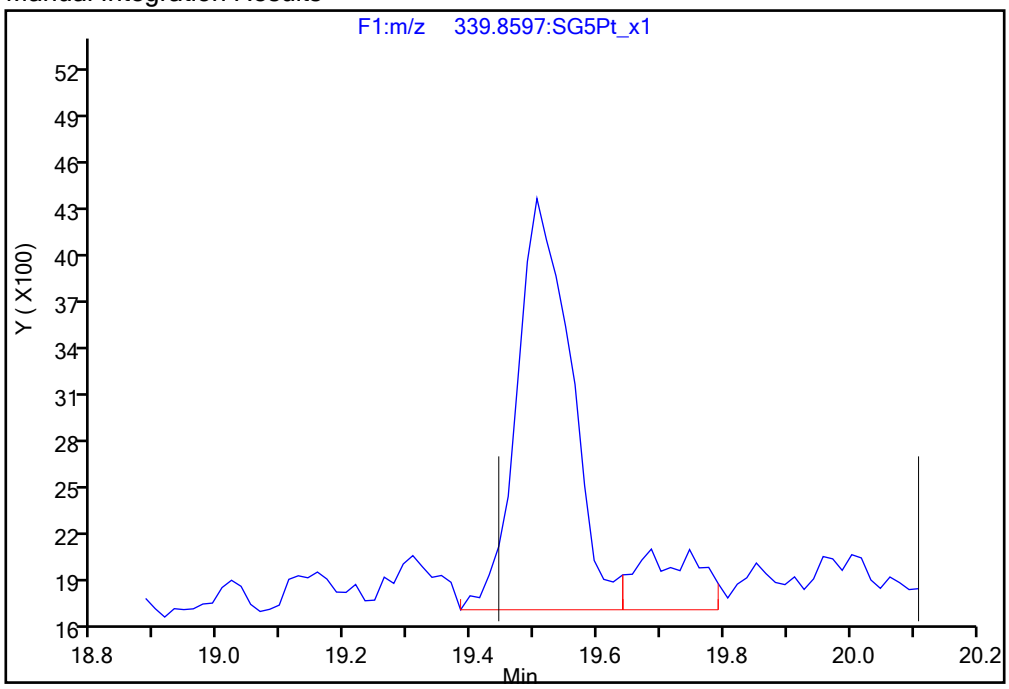
Processing Integration Results

RT = 19.504 Area = 18292



Manual Integration Results

RT = 19.504 Area = 15714 M



Reviewer: dadunj, 16-Dec-2019 10:59:59

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

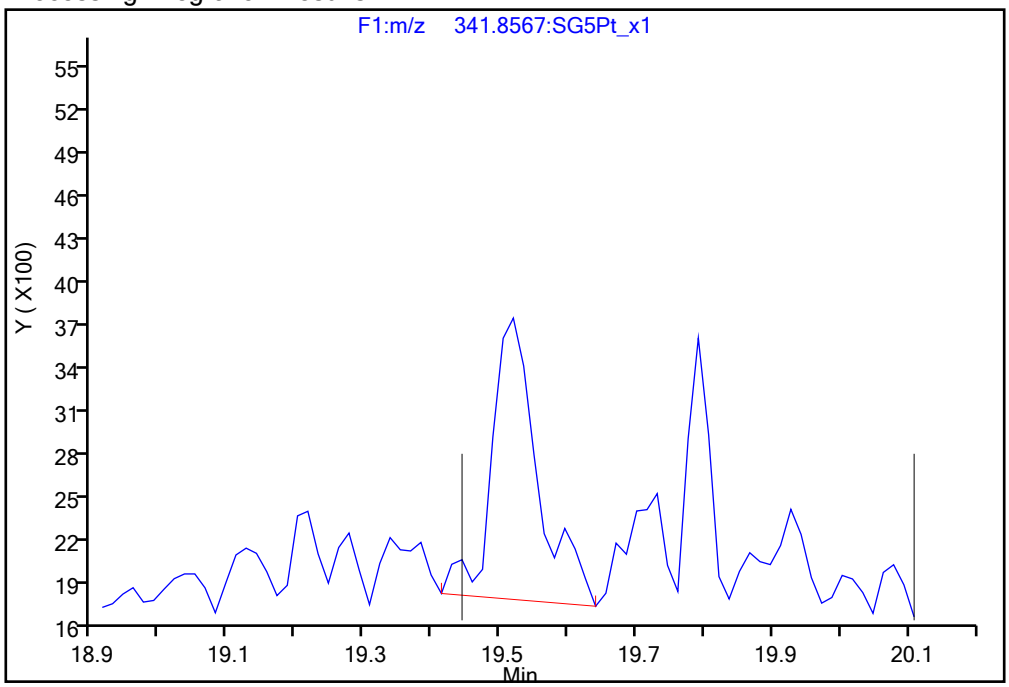
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

F1 PeCDFs, Signal: 2, m/z: 341.8567, RT: (19.44- 20.11)

Signal: 2

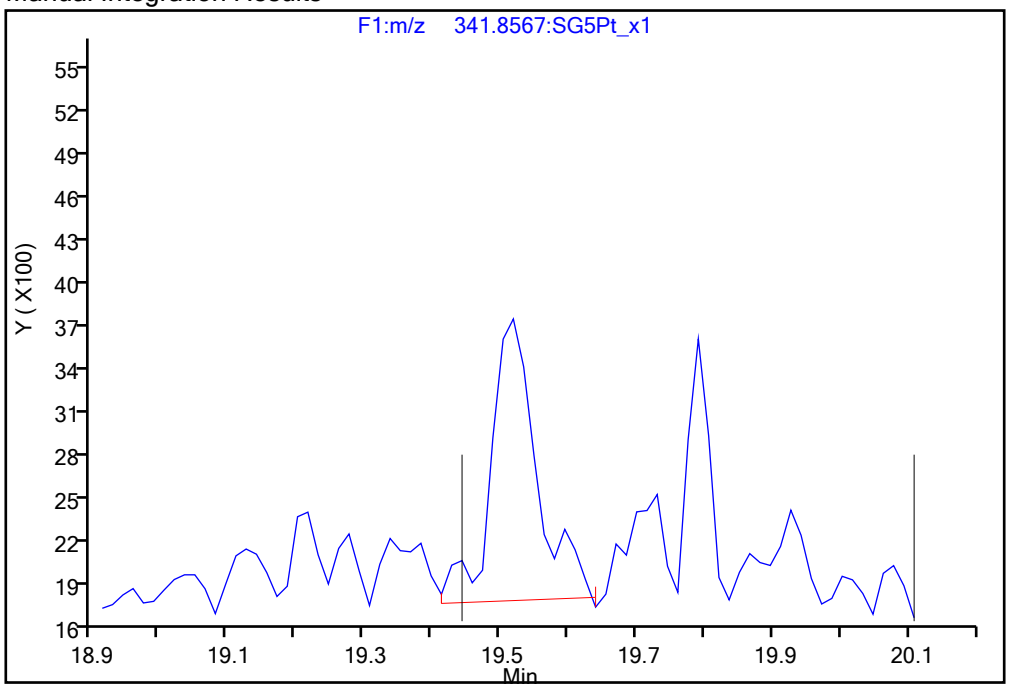
Processing Integration Results

RT = 19.519 Area = 8949



Manual Integration Results

RT = 19.519 Area = 8915 M



Reviewer: dadunj, 16-Dec-2019 10:59:57

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

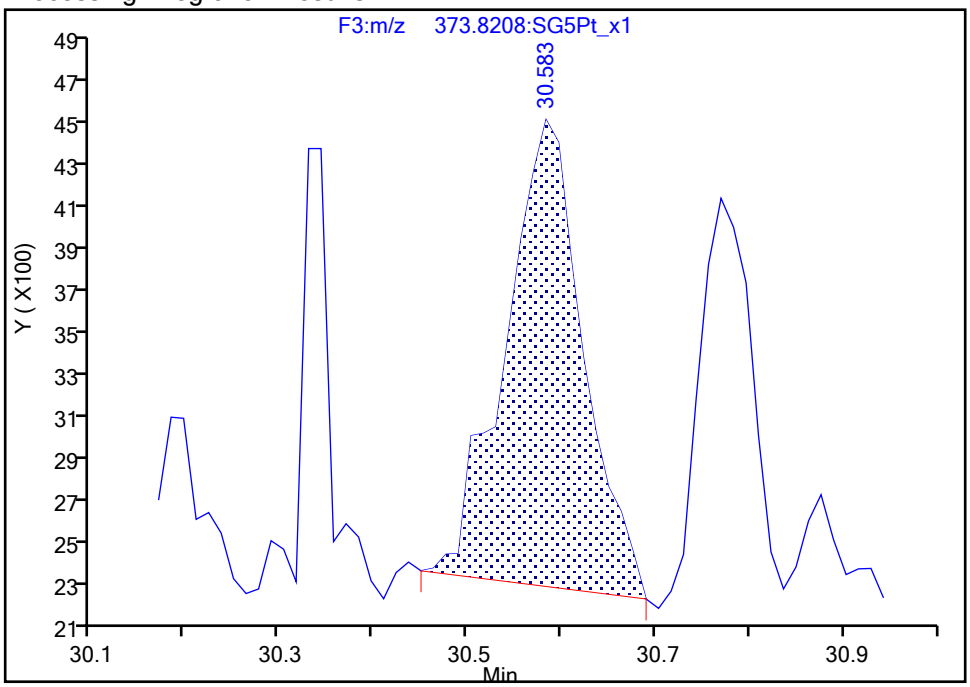
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

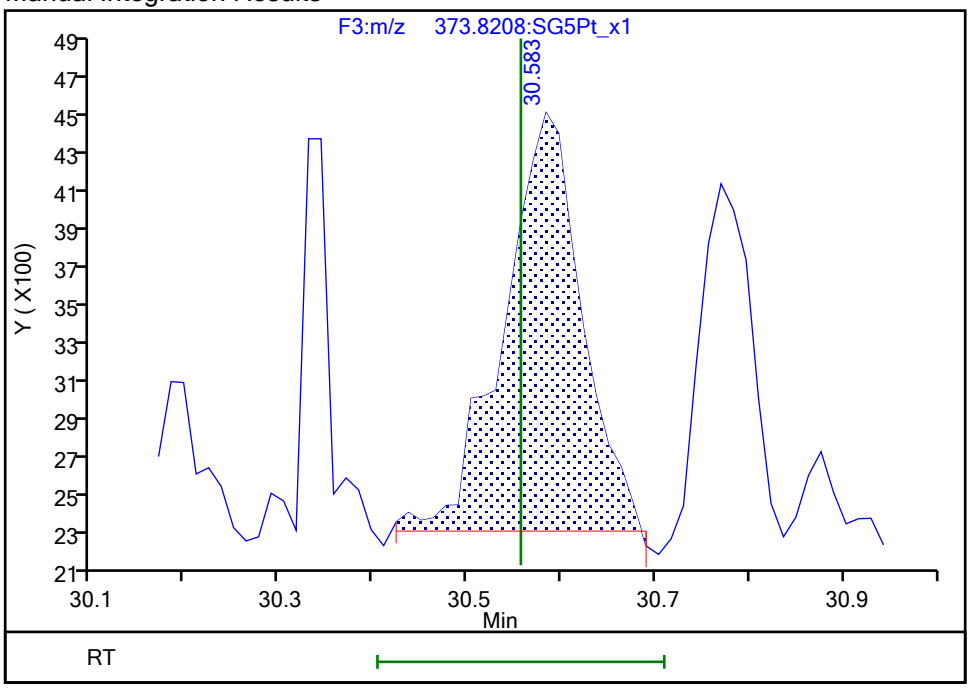
Processing Integration Results

RT: 30.58
Area: 12316
Amount: 0.109815
Amount Units: pg/ul



Manual Integration Results

RT: 30.58
Area: 12280
Amount: 0.108256
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:00:26

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

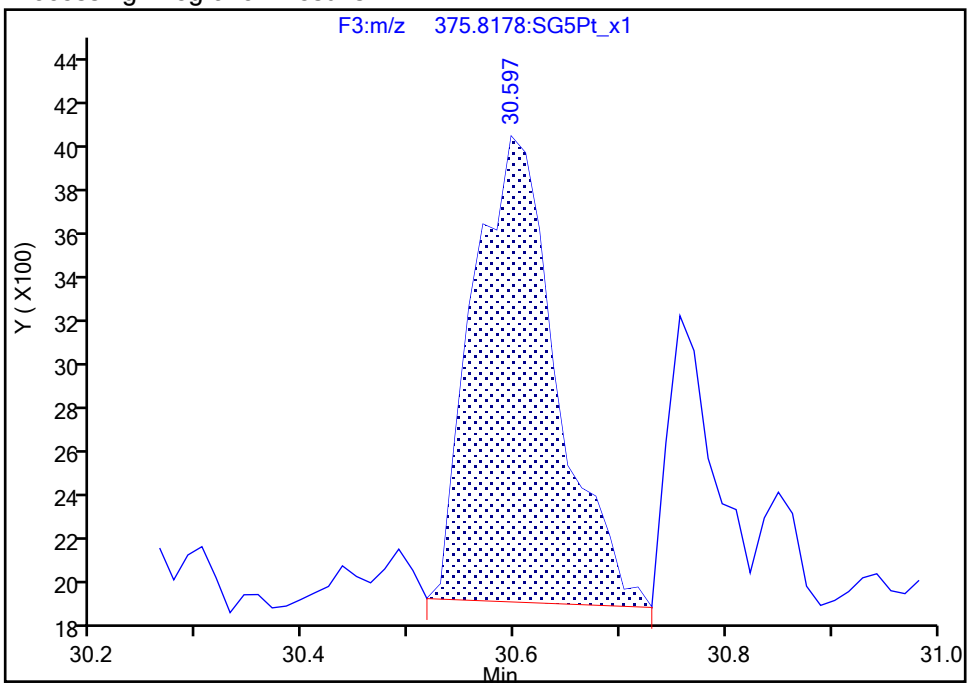
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

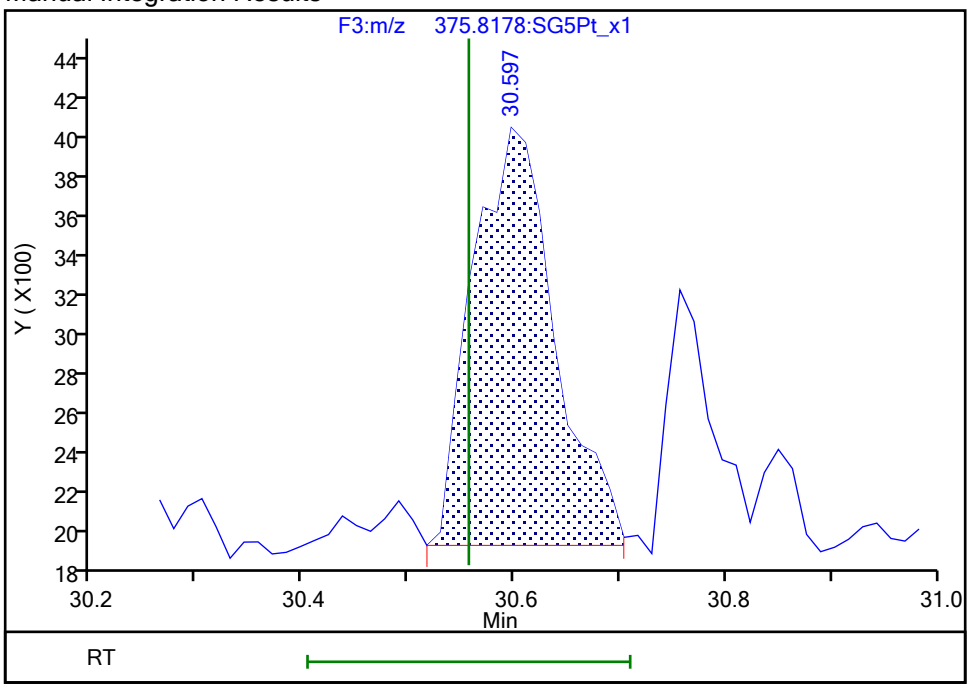
Processing Integration Results

RT: 30.60
Area: 11354
Amount: 0.109815
Amount Units: pg/ul



Manual Integration Results

RT: 30.60
Area: 11054
Amount: 0.108256
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:00:36

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

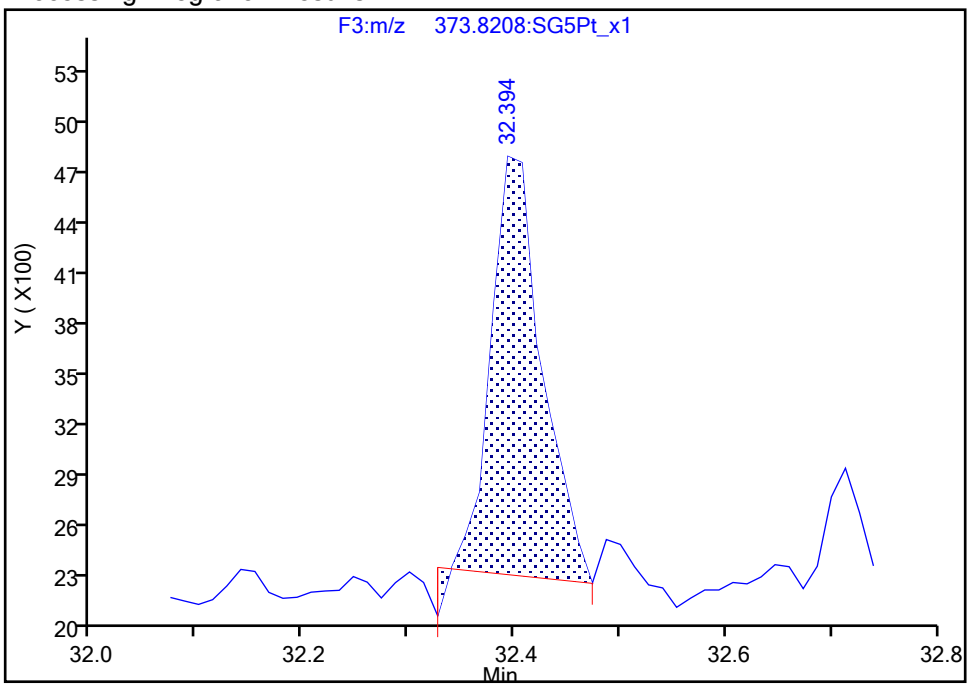
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

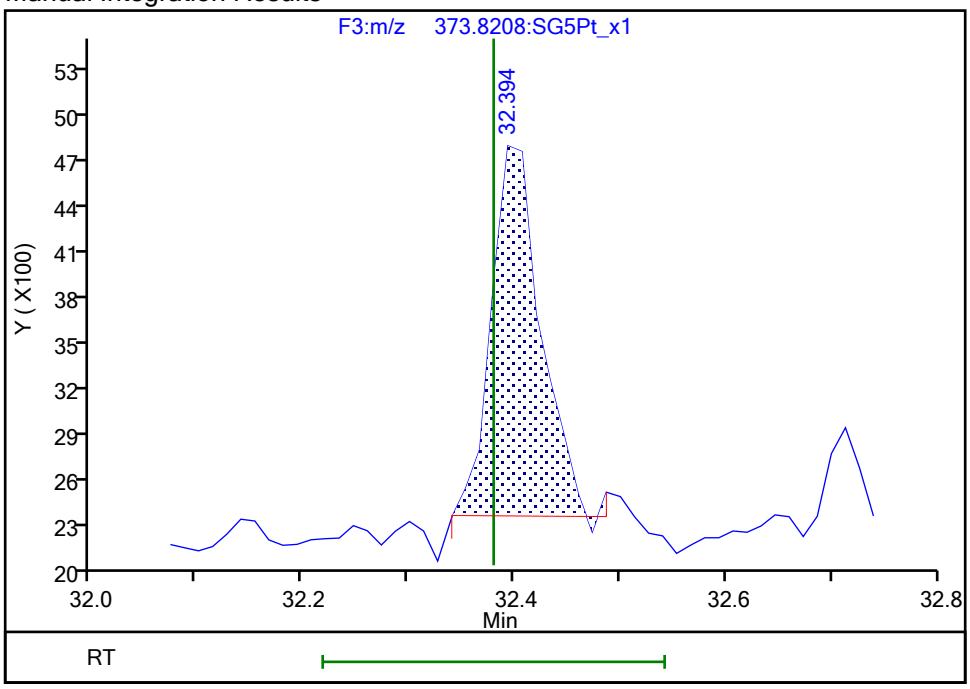
Processing Integration Results

RT: 32.39
Area: 8163
Amount: 0.075739
Amount Units: pg/ul



Manual Integration Results

RT: 32.39
Area: 7818
Amount: 0.074099
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:00:48

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

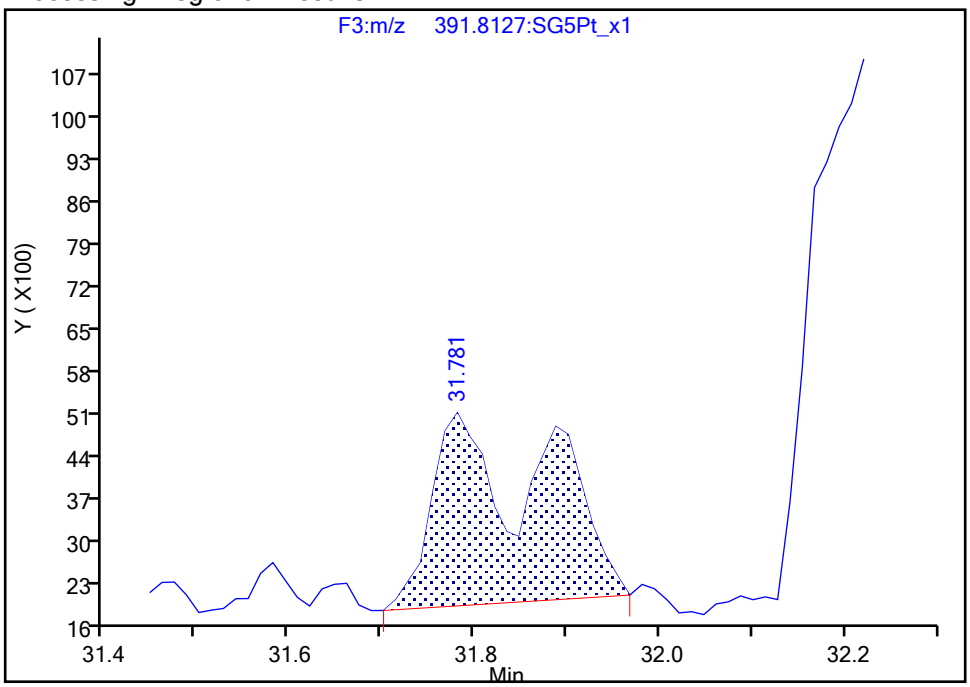
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

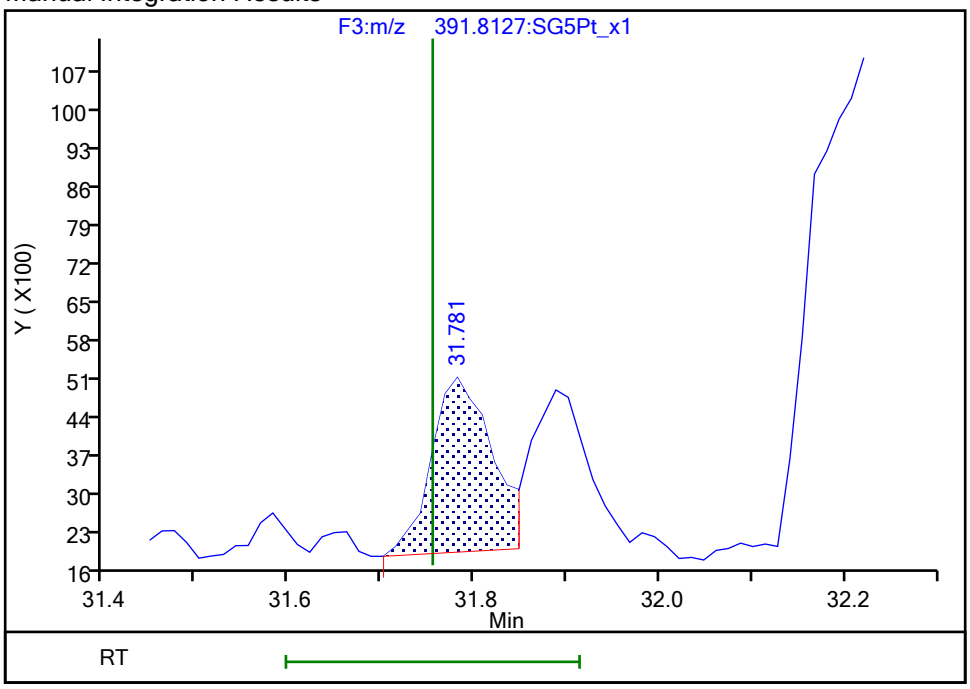
Processing Integration Results

RT: 31.78
Area: 26109
Amount: 0.233103
Amount Units: pg/ul



Manual Integration Results

RT: 31.78
Area: 14384
Amount: 0.172234
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:01:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

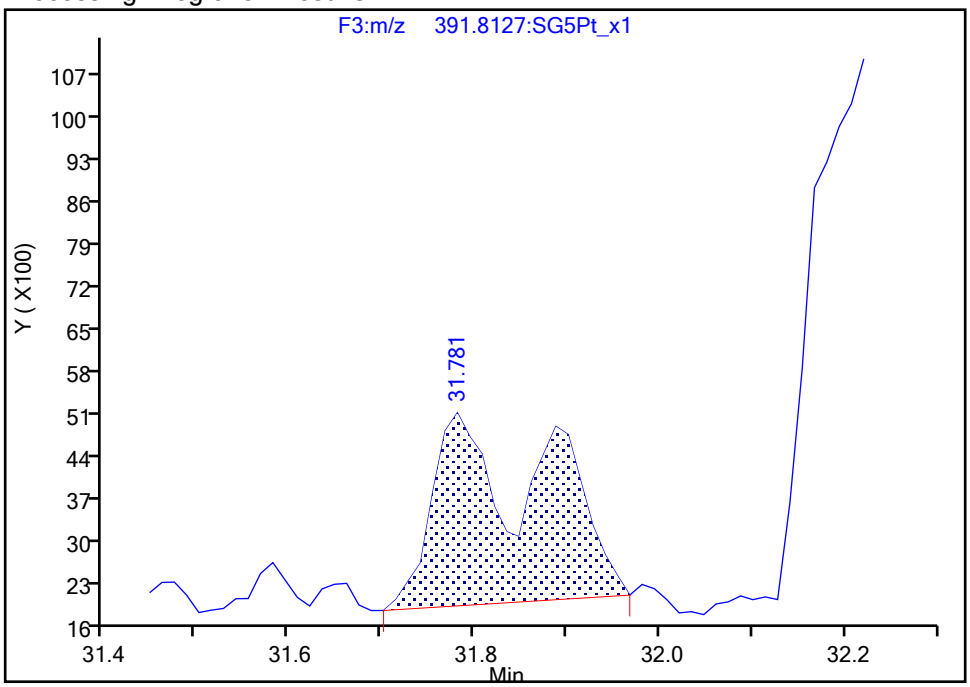
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

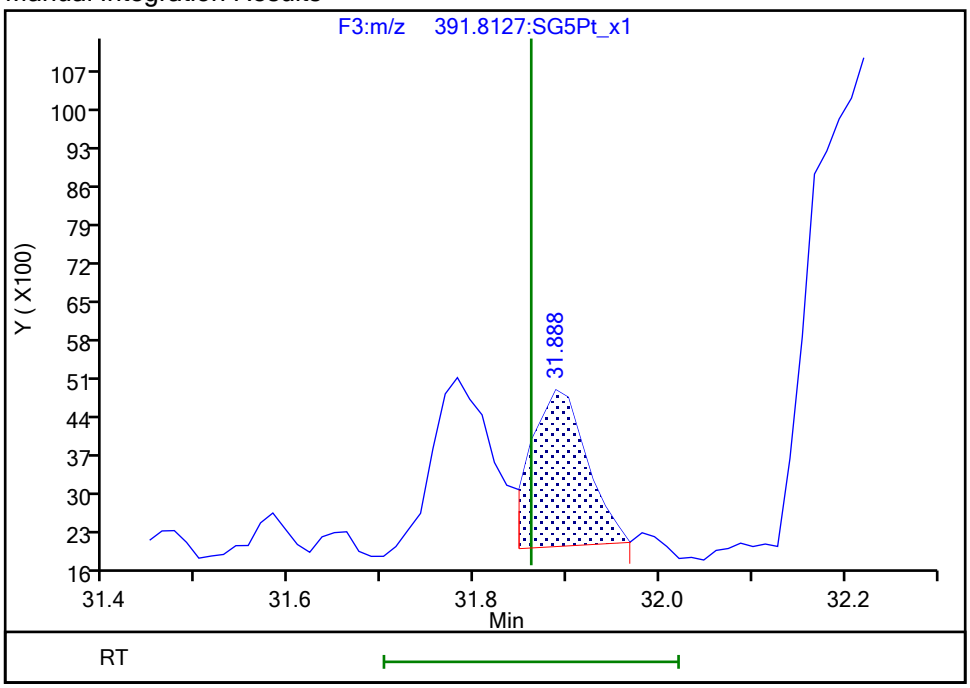
Processing Integration Results

RT: 31.78
Area: 26109
Amount: 0.240646
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 11727
Amount: 0.145453
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:01:19
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

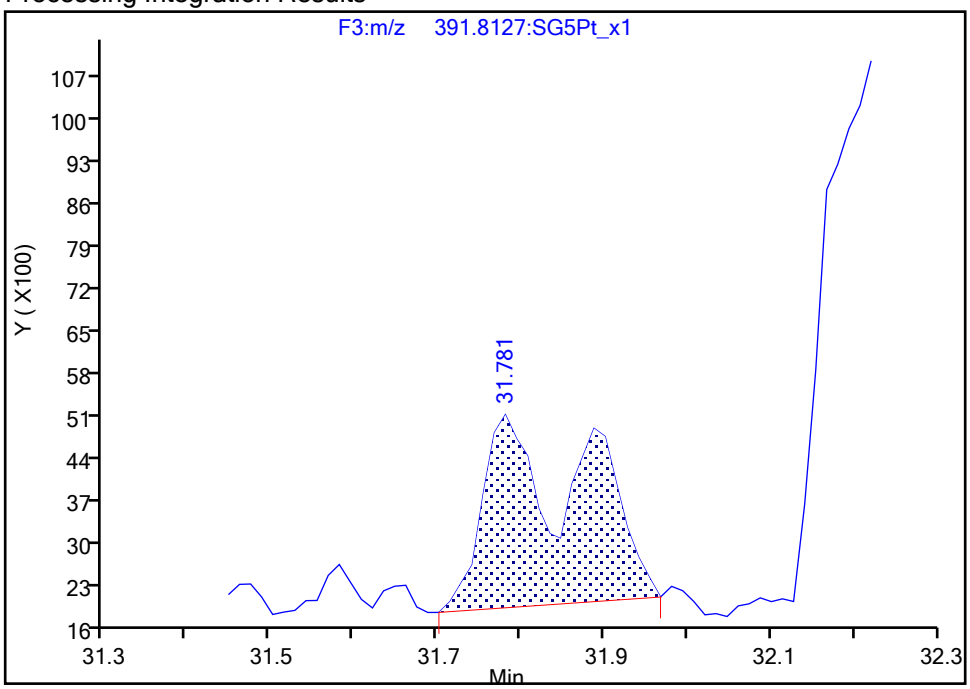
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.78
Area: 44902
Amount: 0.240646
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 27140
Amount: 0.145453
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 11:01:19
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

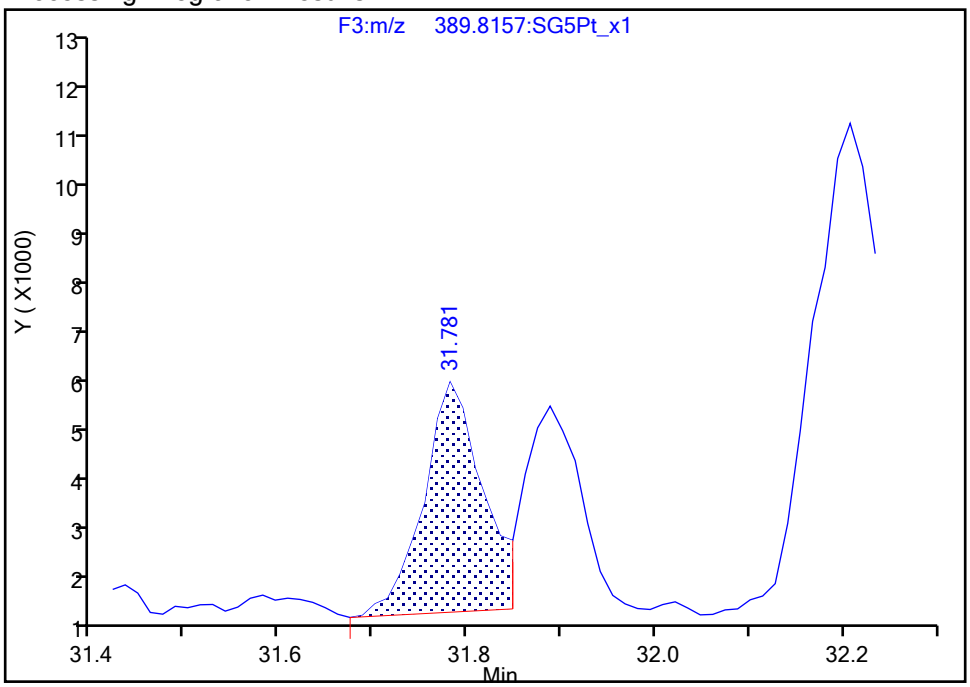
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

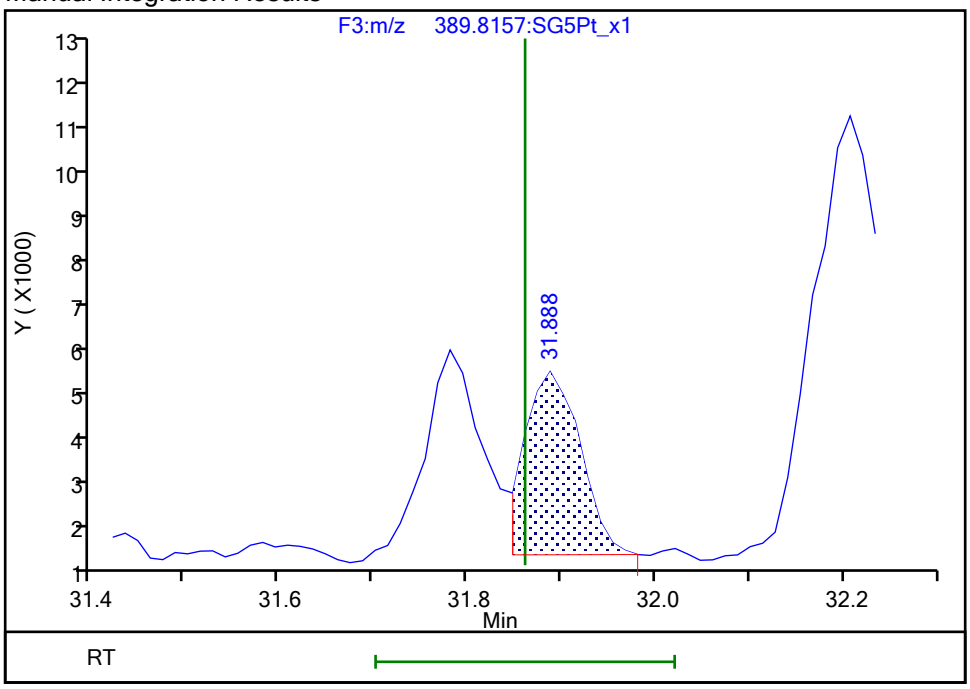
Processing Integration Results

RT: 31.78
Area: 18793
Amount: 0.240646
Amount Units: pg/ul



Manual Integration Results

RT: 31.89
Area: 15413
Amount: 0.145453
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:02:32

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

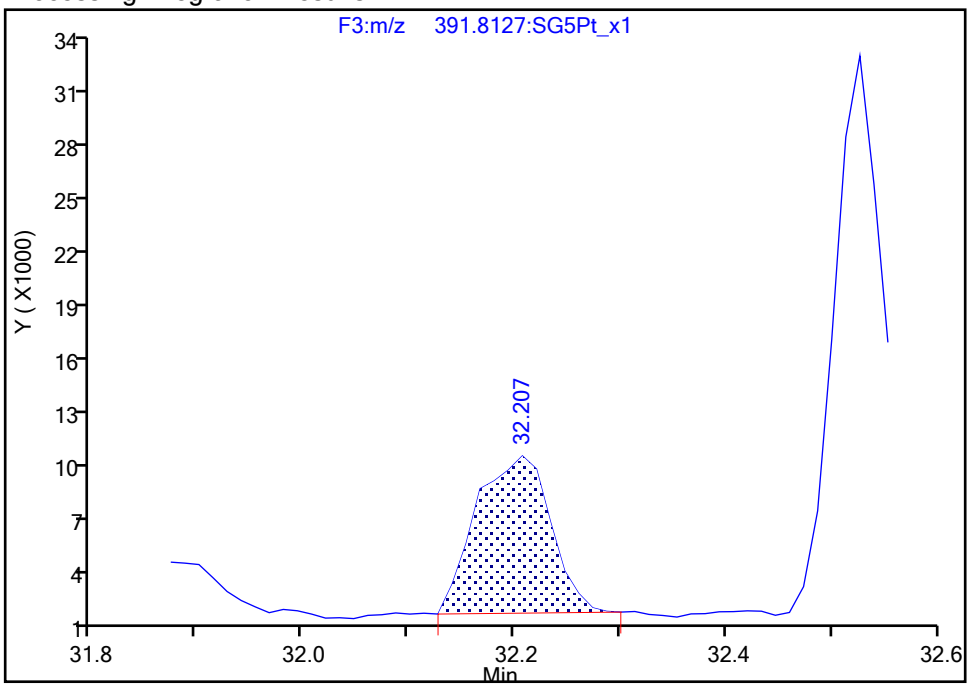
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

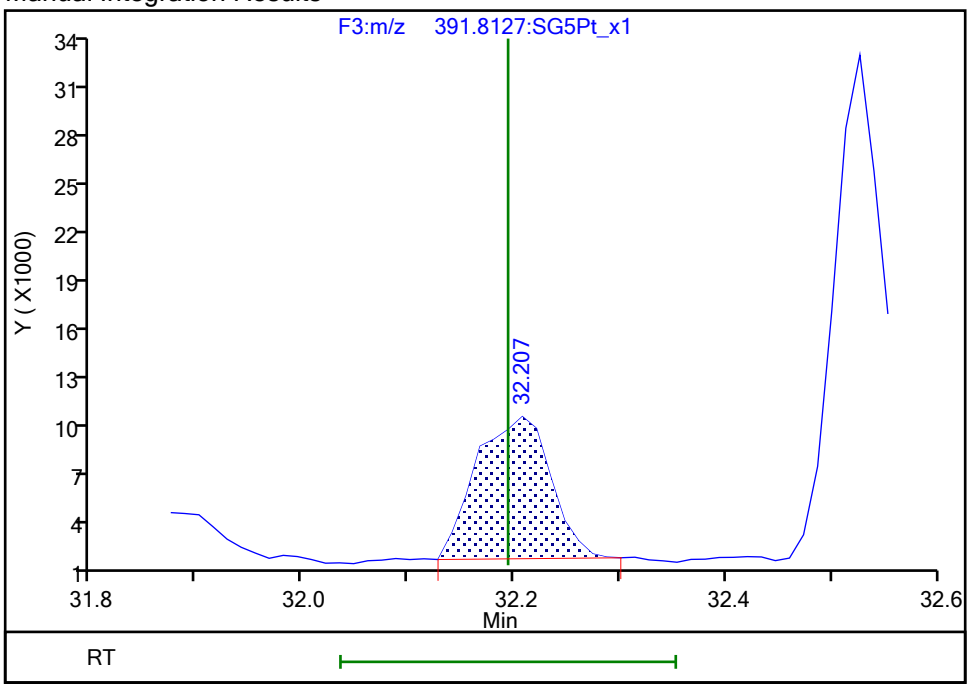
Processing Integration Results

RT: 32.21
Area: 41711
Amount: 0.417807
Amount Units: pg/ul



Manual Integration Results

RT: 32.21
Area: 41711
Amount: 0.417807
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:01:11
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

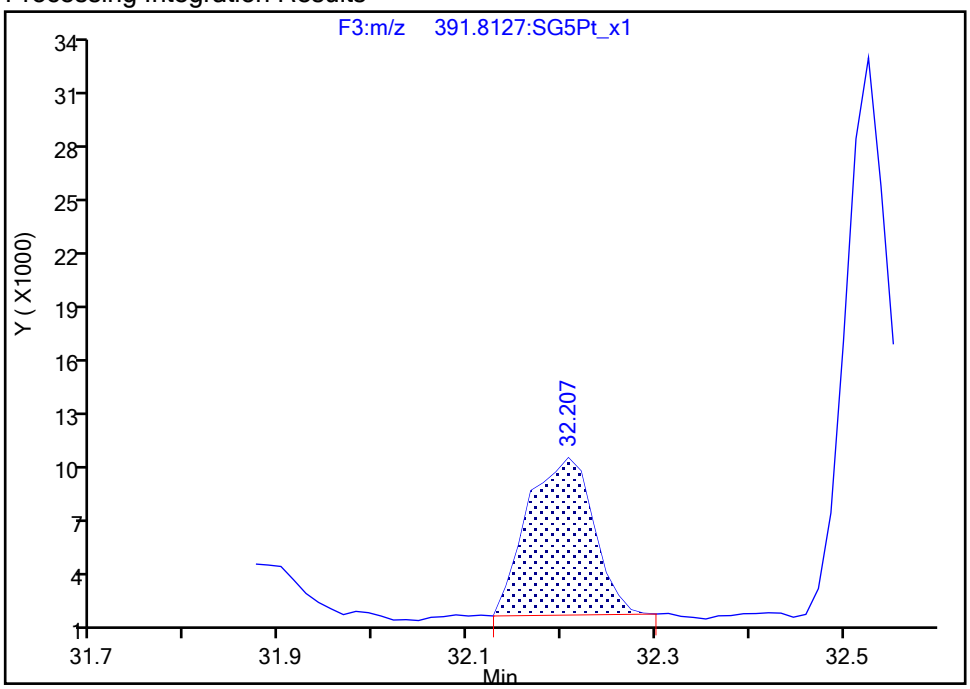
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 3

Processing Integration Results

RT: 32.21
Area: 87918
Amount: 0.417807
Amount Units: pg/ul



Manual Integration Results

RT: 32.21
Area: 87918
Amount: 0.417807
Amount Units: pg/ul
Reviewer: dadunj, 16-Dec-2019 11:01:11
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

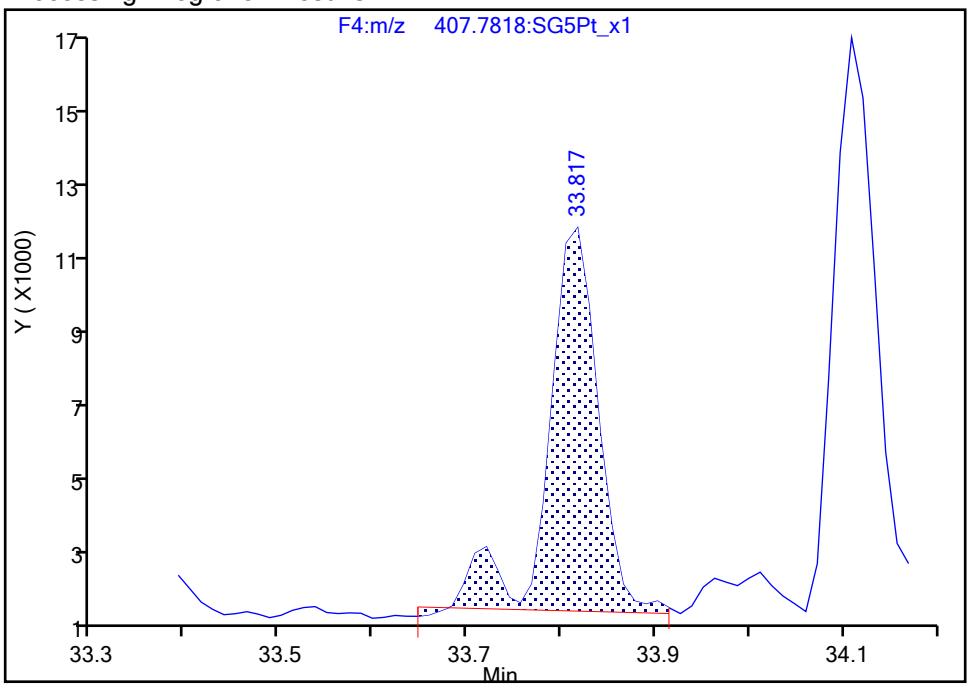
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

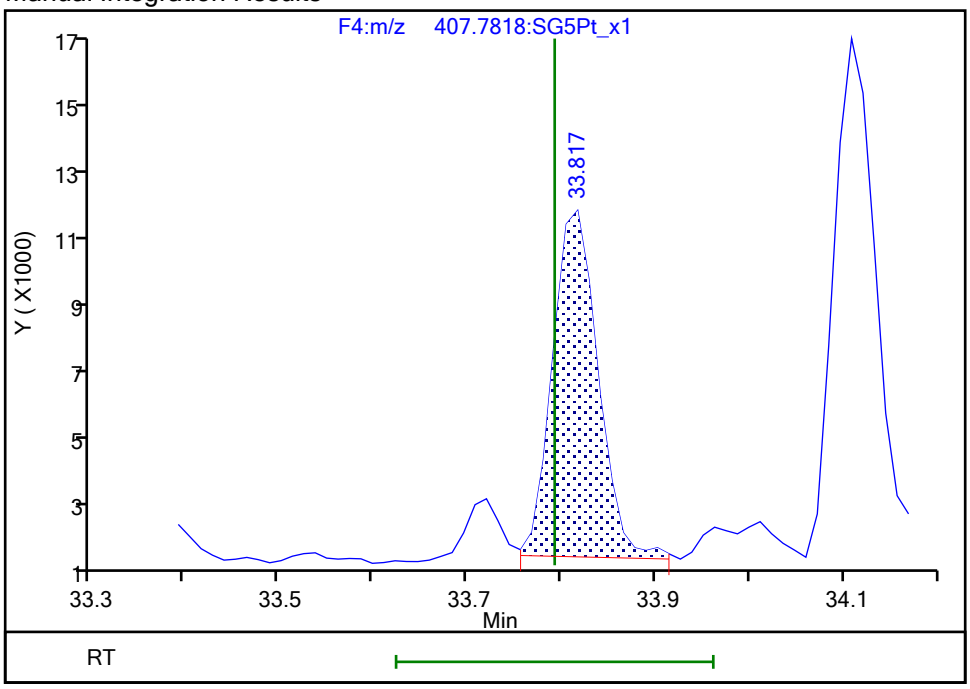
Processing Integration Results

RT: 33.82
Area: 35276
Amount: 0.330721
Amount Units: pg/ul



Manual Integration Results

RT: 33.82
Area: 32014
Amount: 0.296166
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:01:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

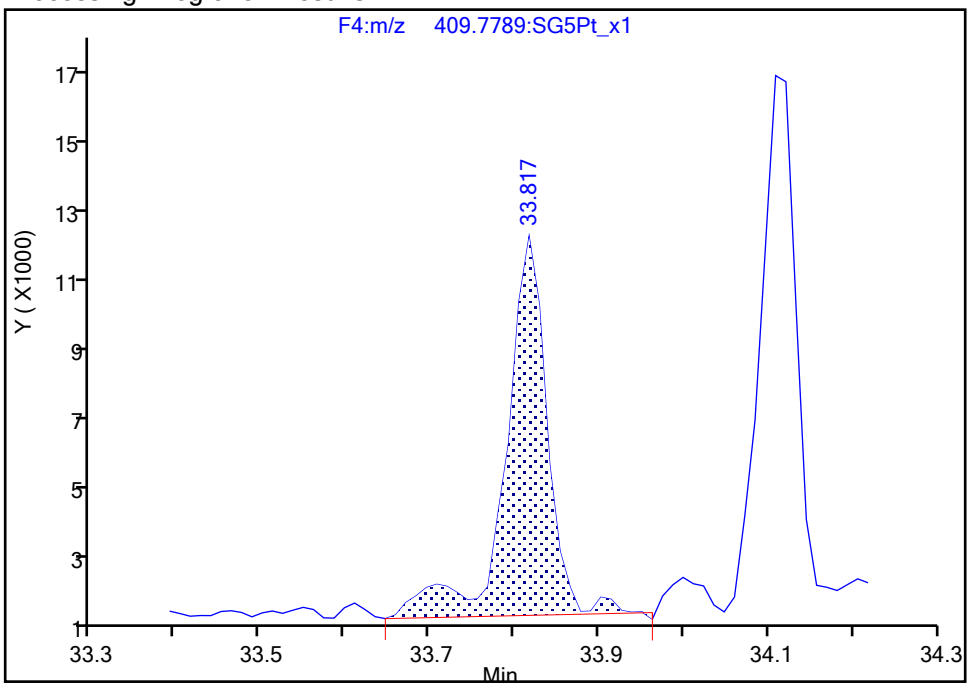
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

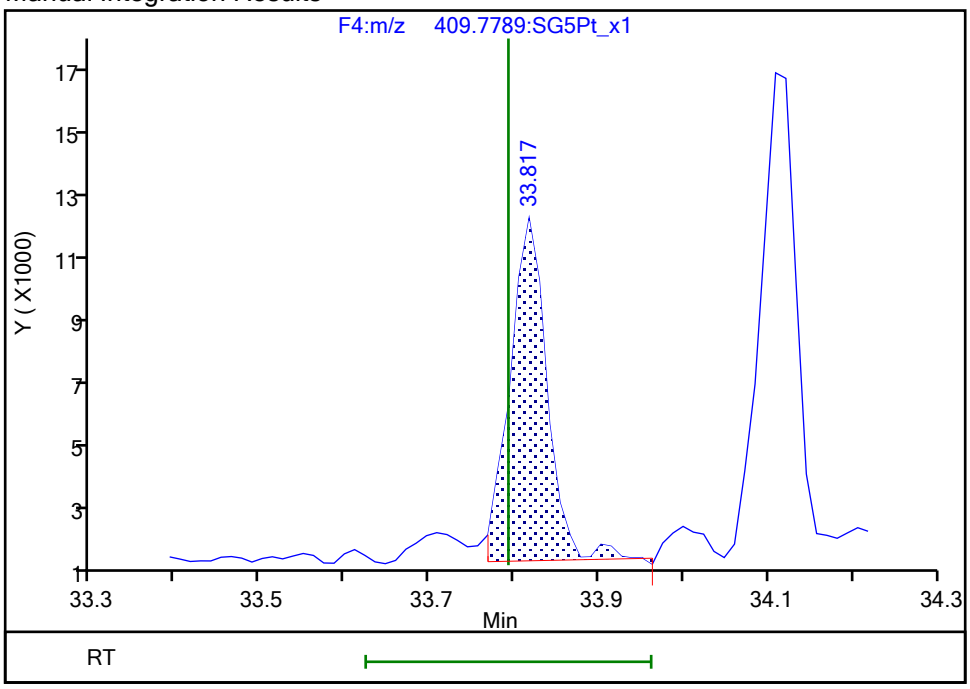
Processing Integration Results

RT: 33.82
Area: 35156
Amount: 0.330721
Amount Units: pg/ul



Manual Integration Results

RT: 33.82
Area: 31059
Amount: 0.296166
Amount Units: pg/ul



Reviewer: dadunj, 16-Dec-2019 11:01:36

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

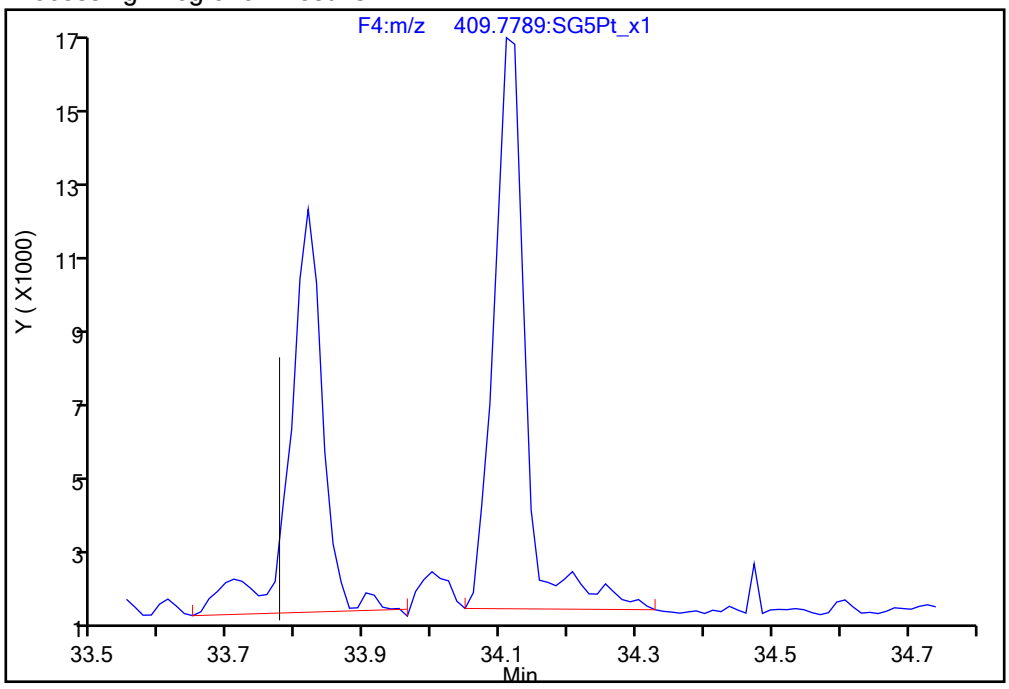
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d				
Injection Date:	13-Dec-2019 20:57:54	Instrument ID:	10D5		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:	AJS	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.78- 34.90)

Signal: 2

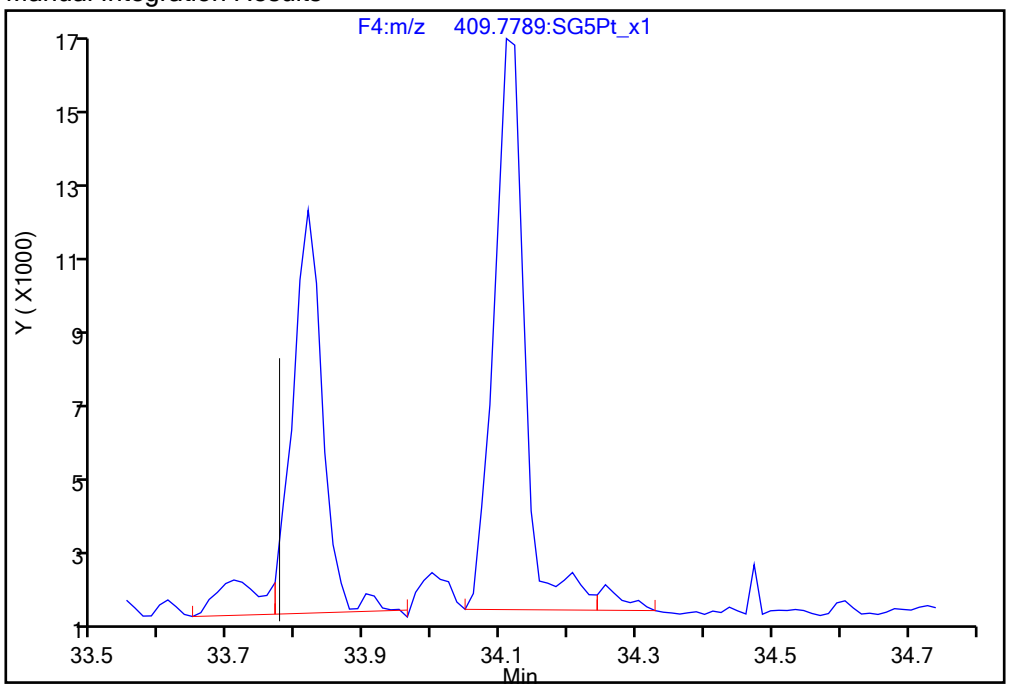
Processing Integration Results

RT = 34.109 Area = 47157



Manual Integration Results

RT = 34.109 Area = 45633 M



Reviewer: dadunj, 16-Dec-2019 11:01:42

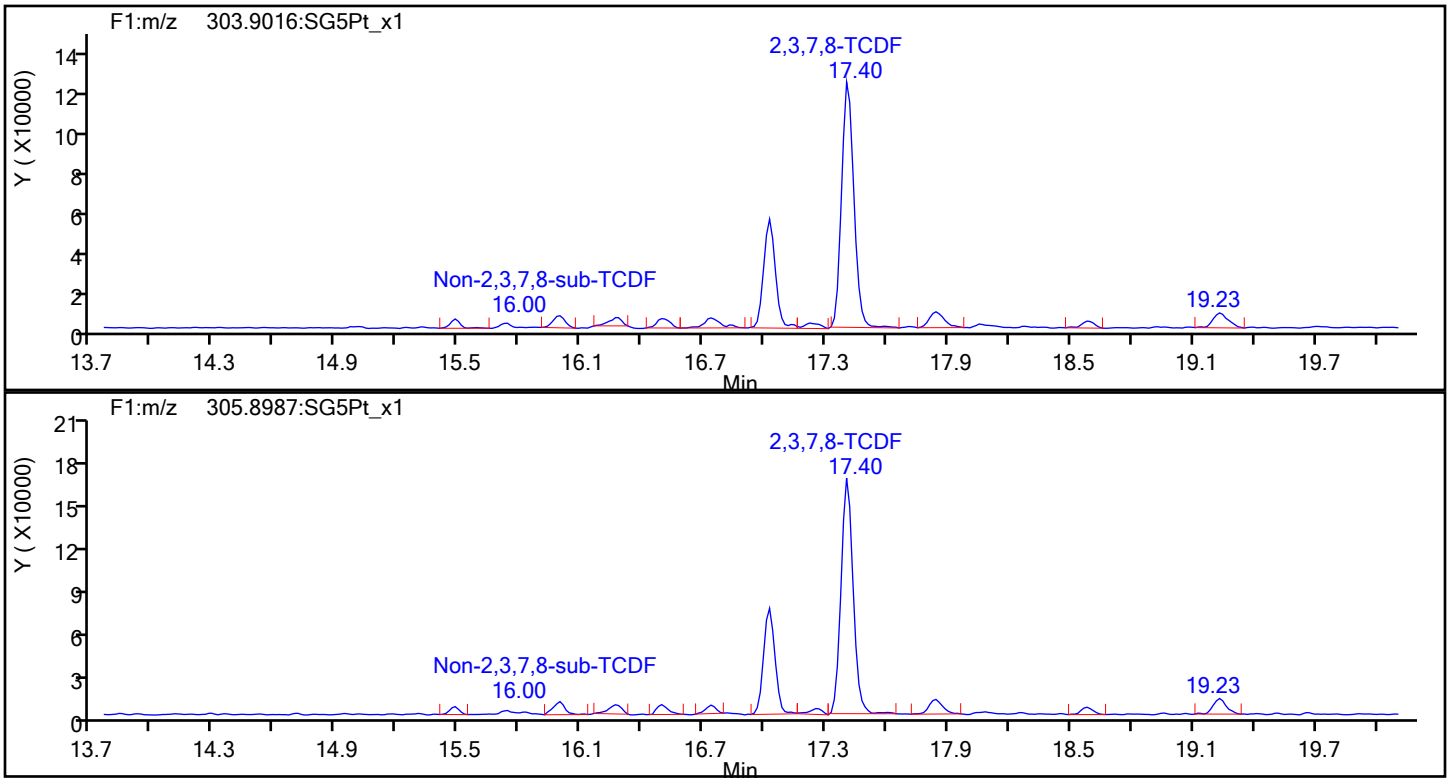
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

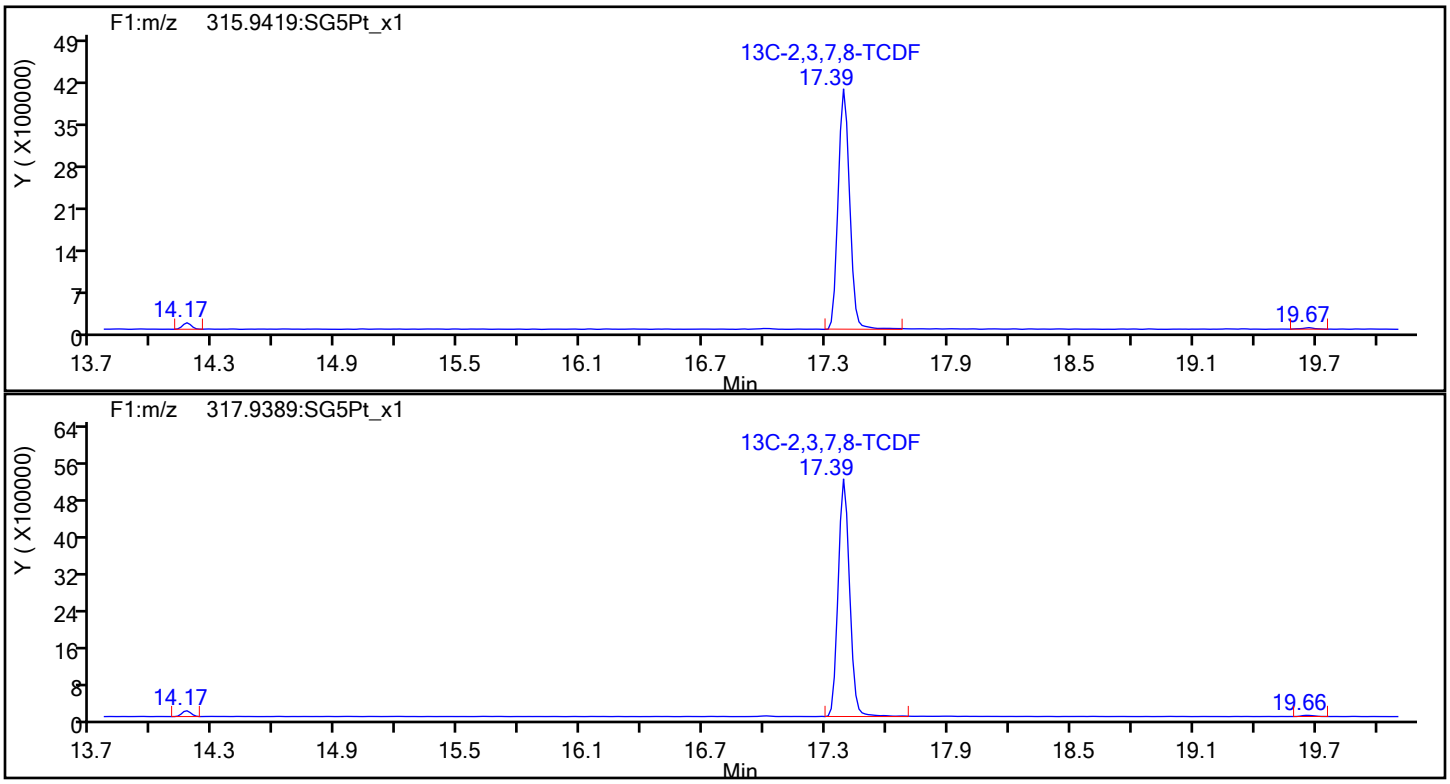
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF



TCDF Standards

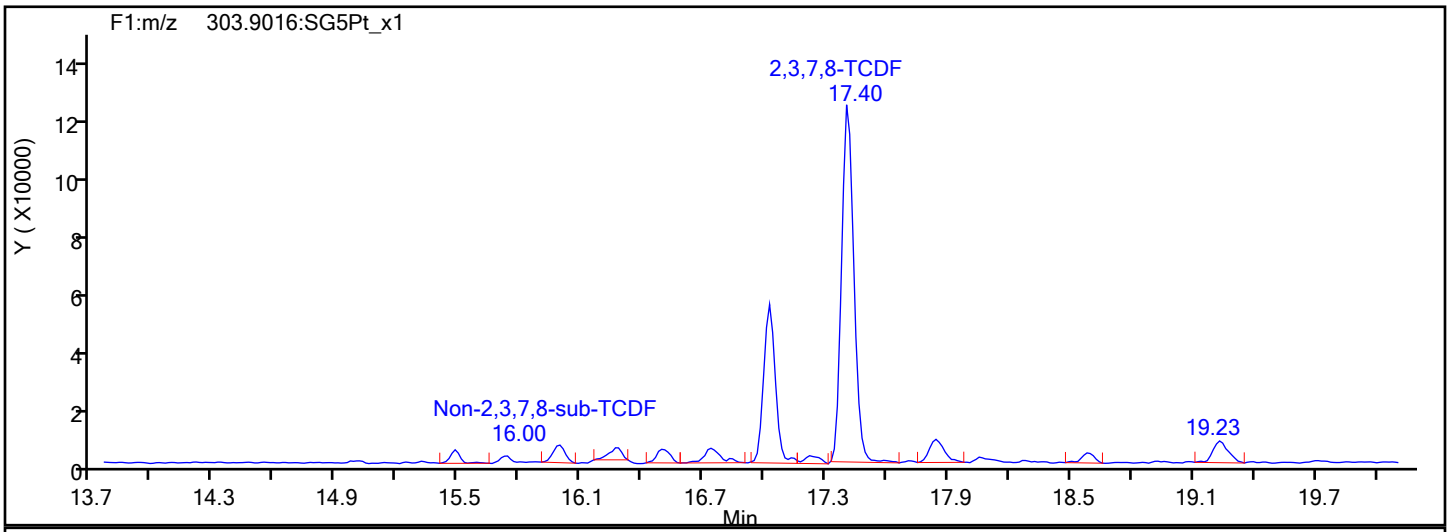


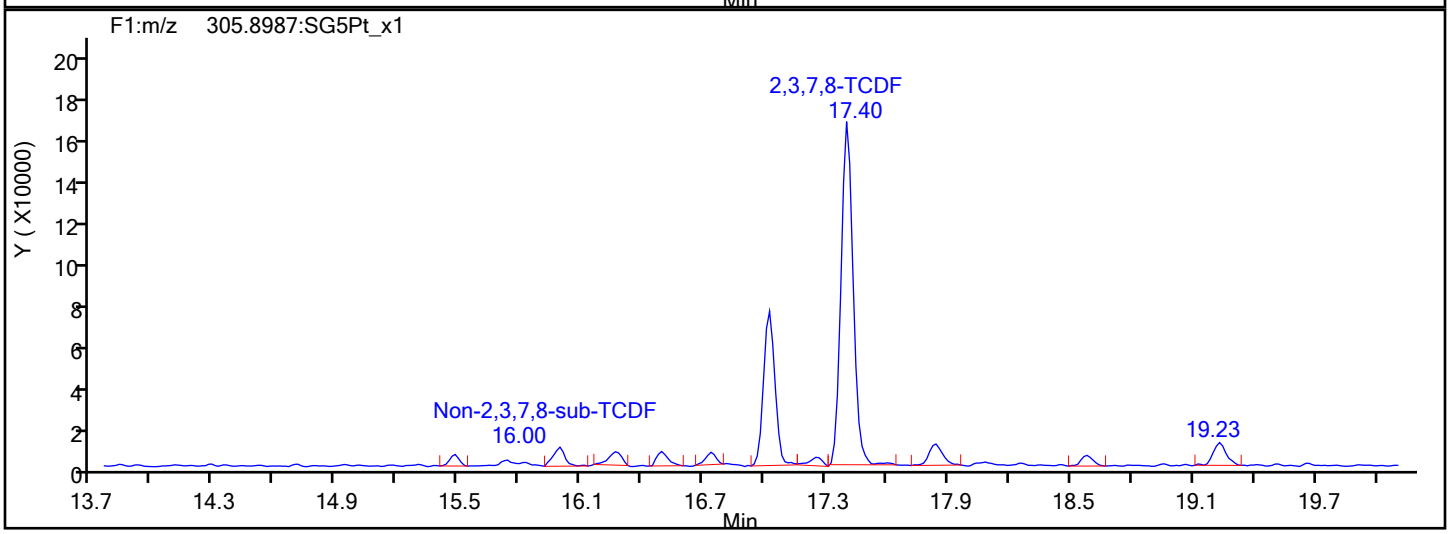
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

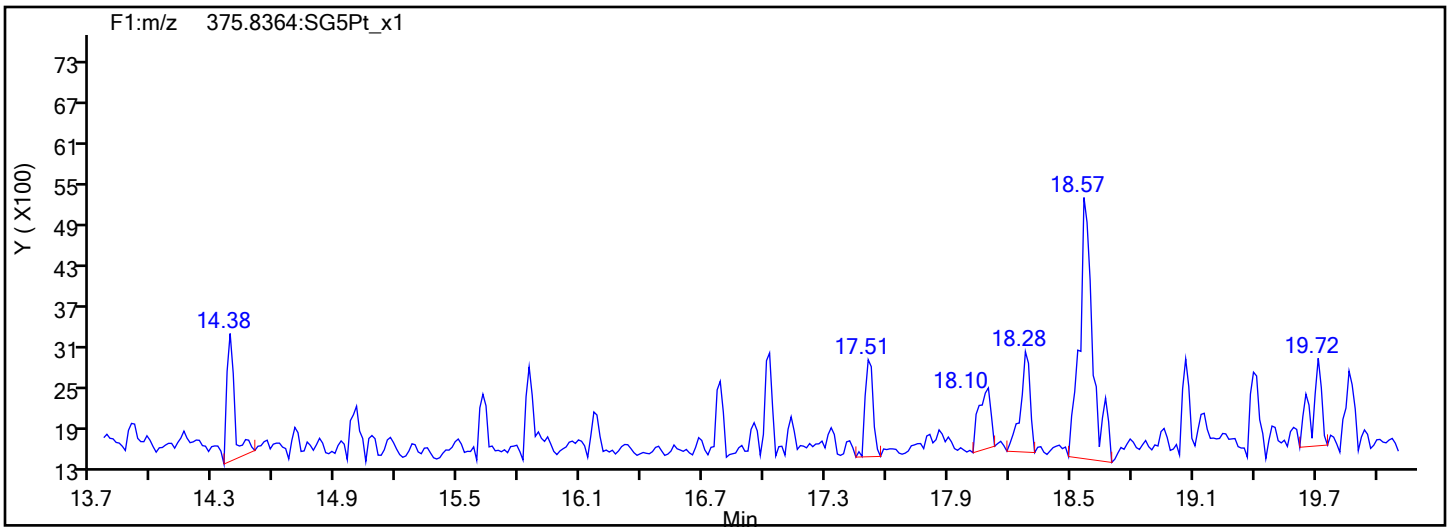
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

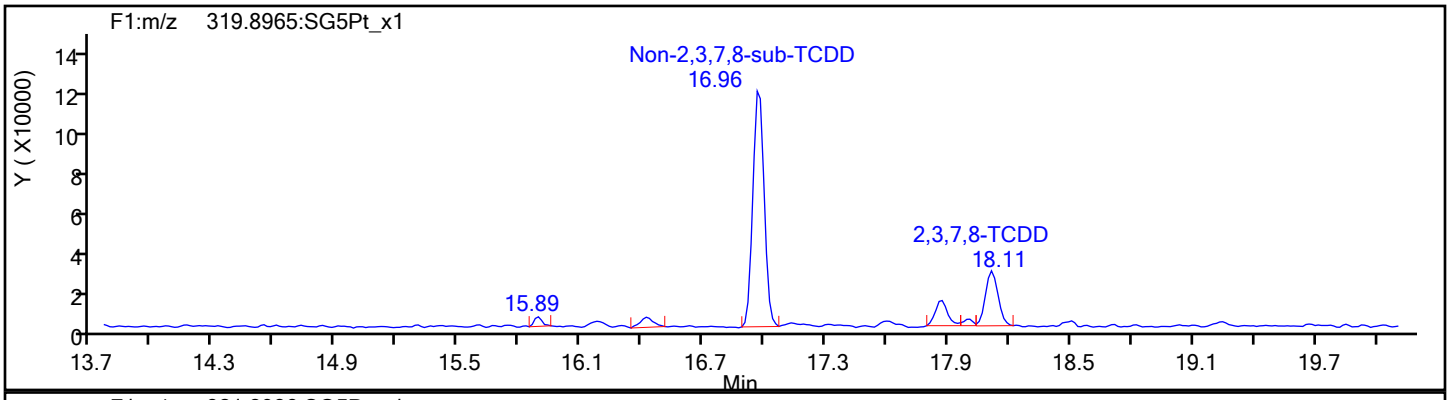


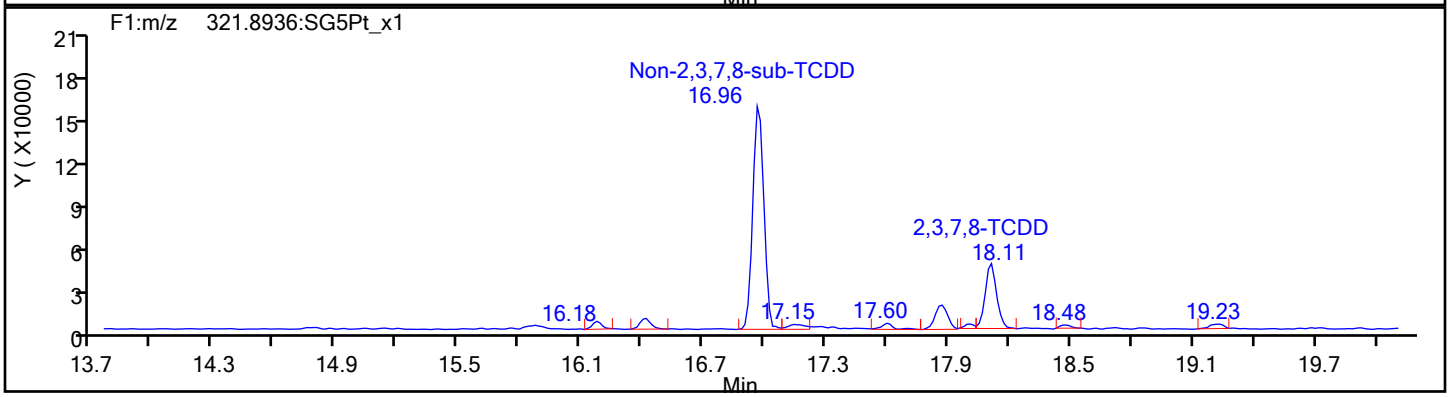
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

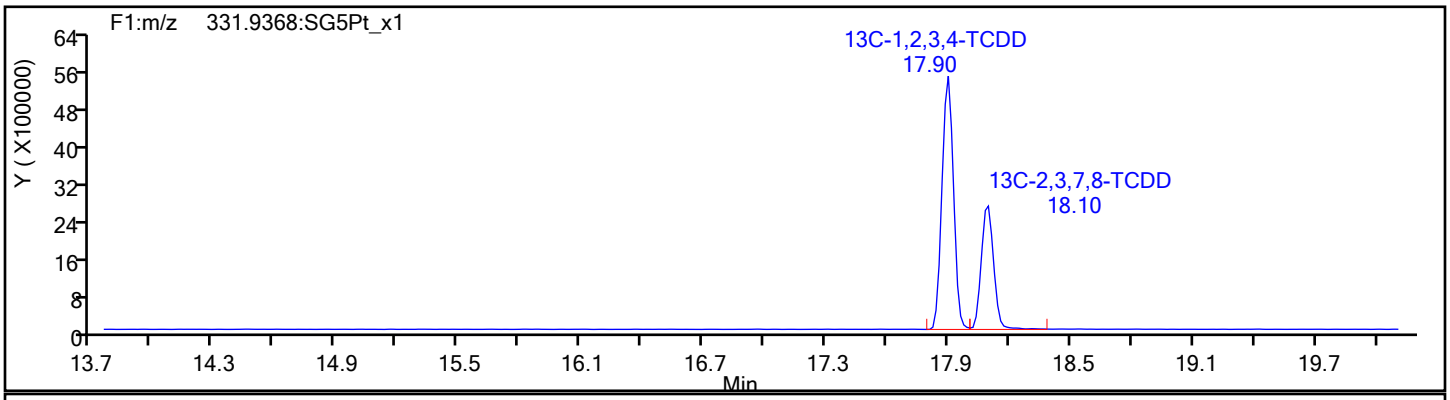
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

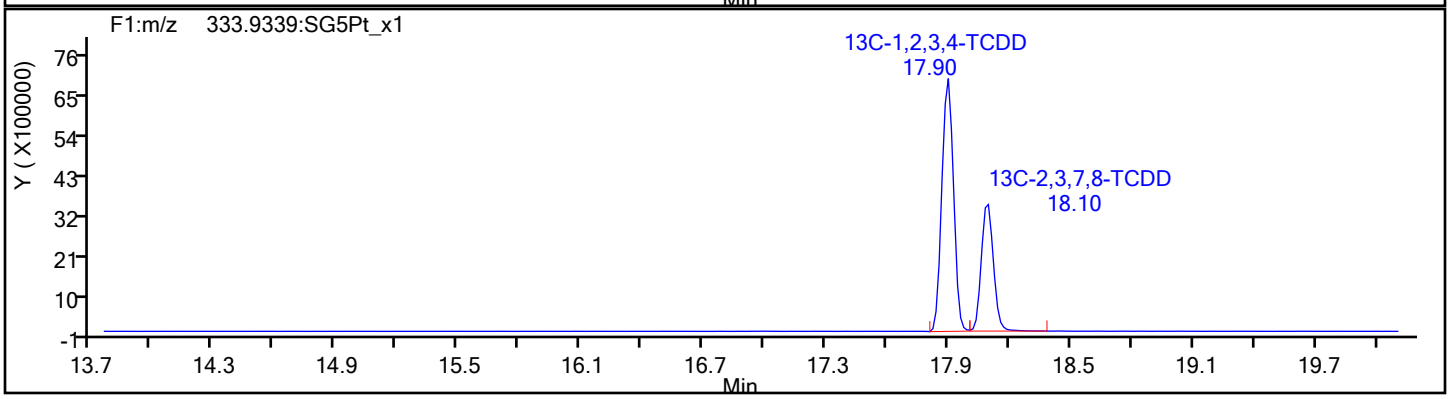
TCDD





TCDD Standards





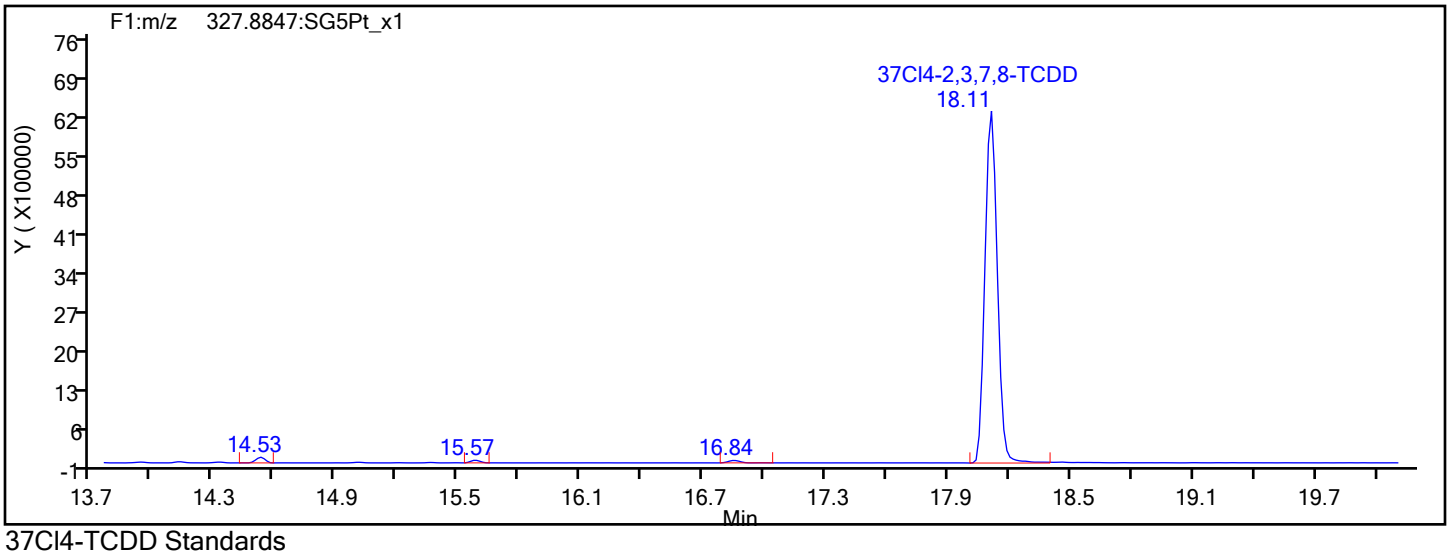
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

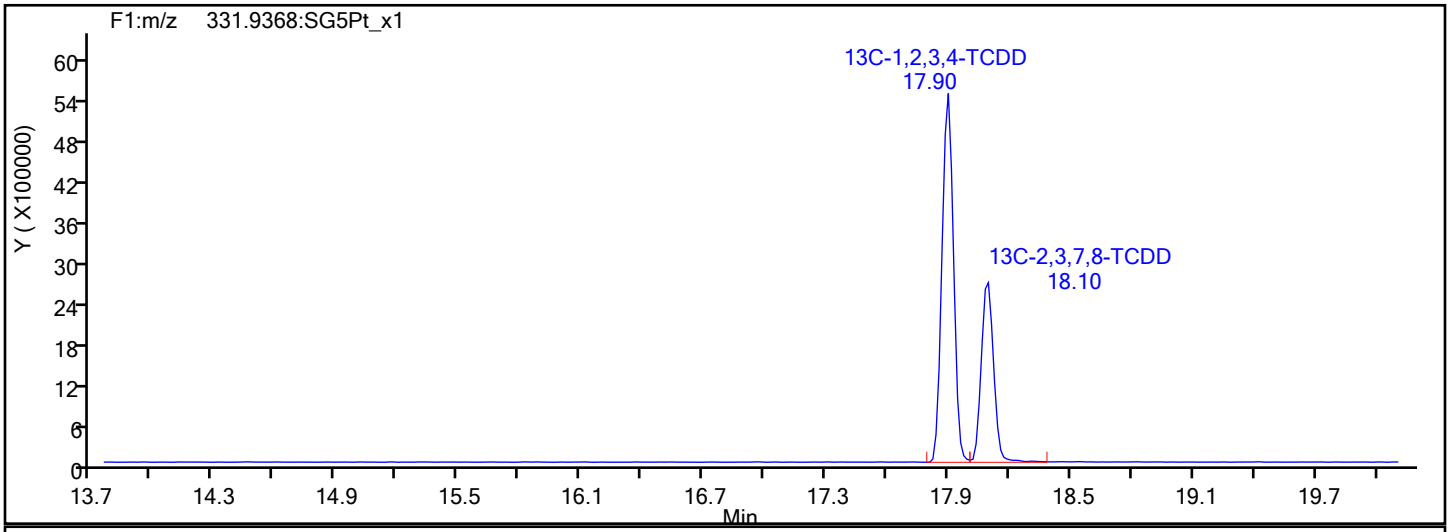
Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d

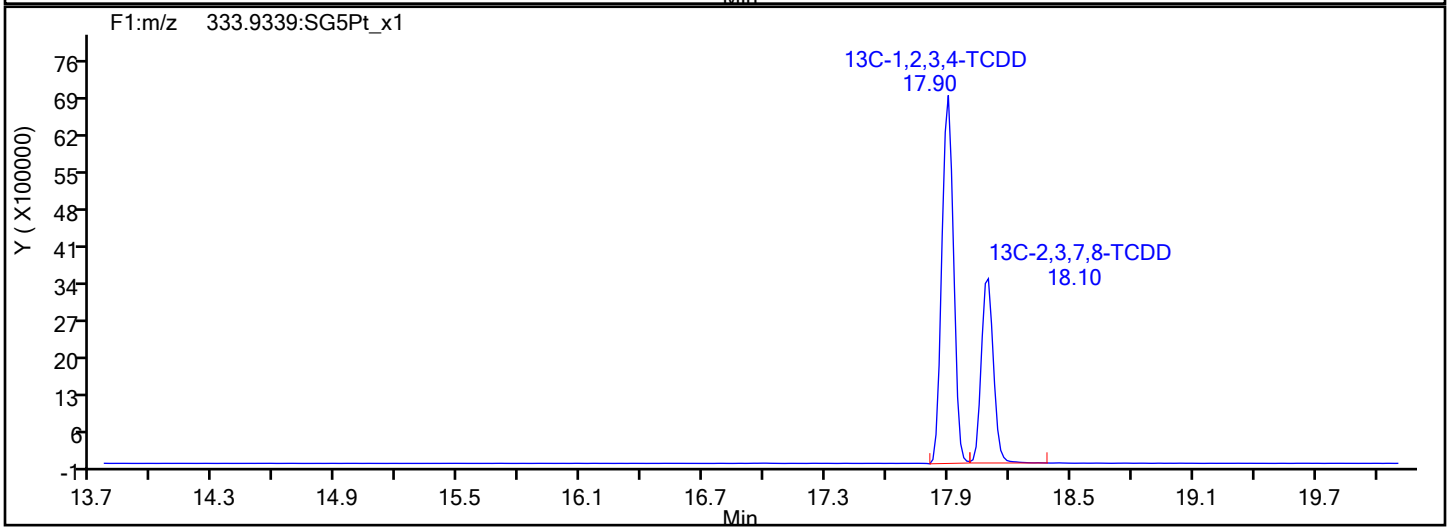
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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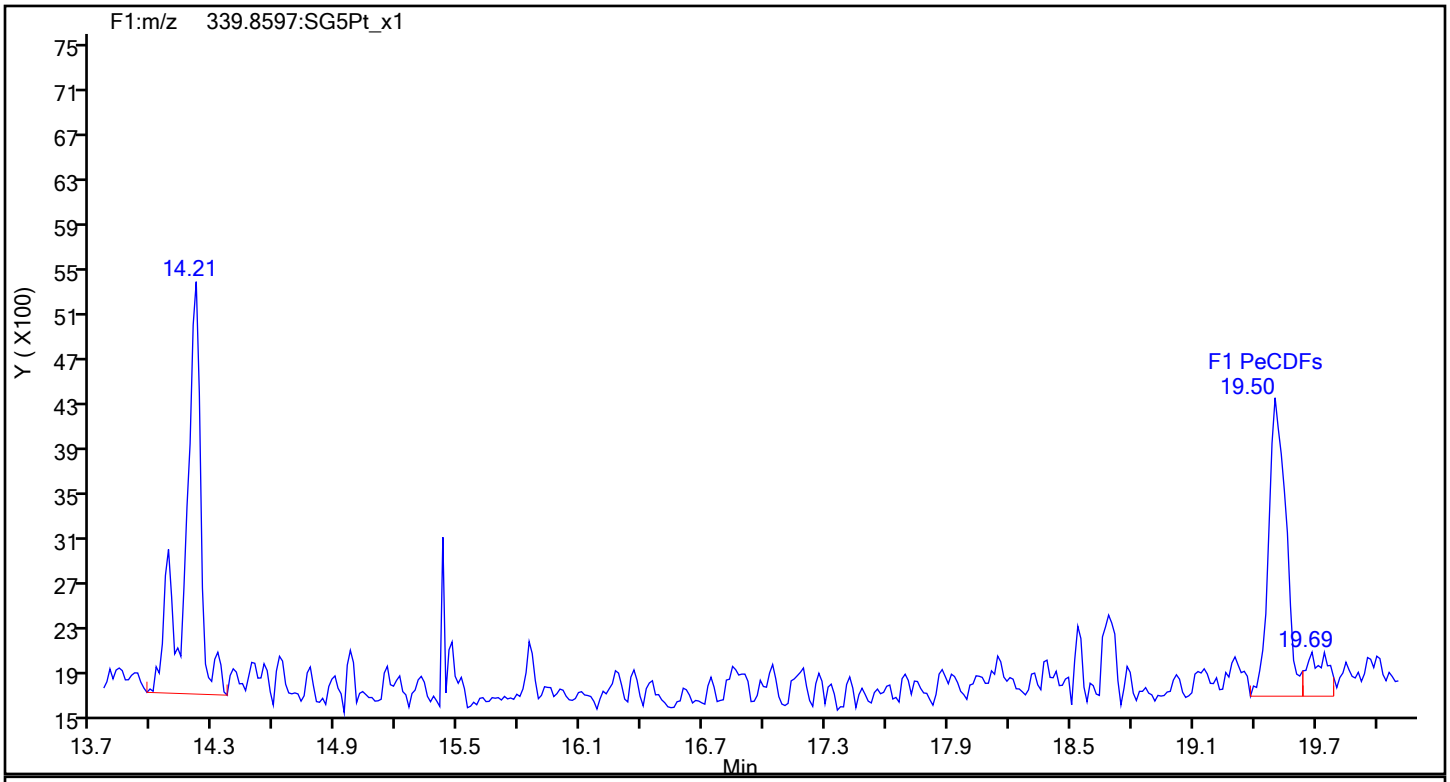
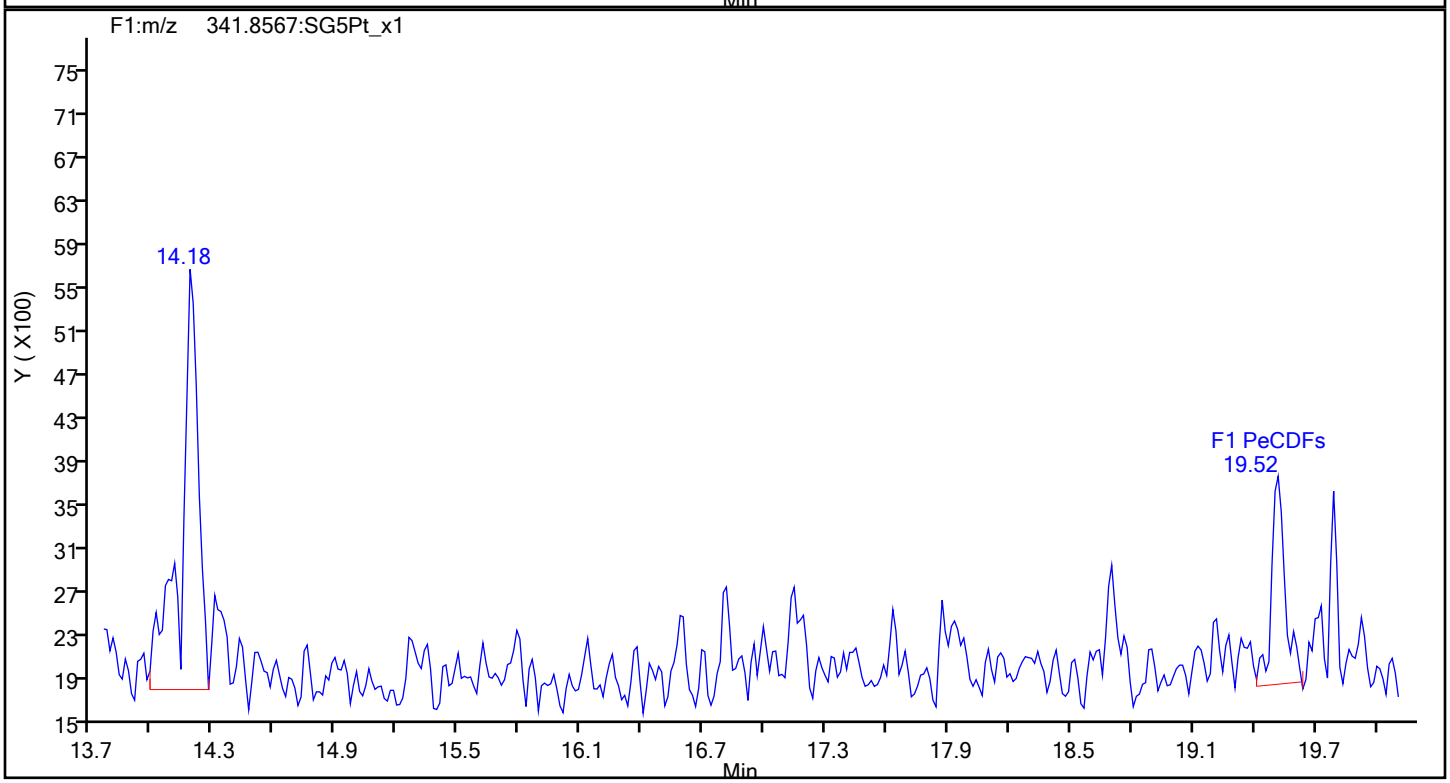
F1 PeCDFs





Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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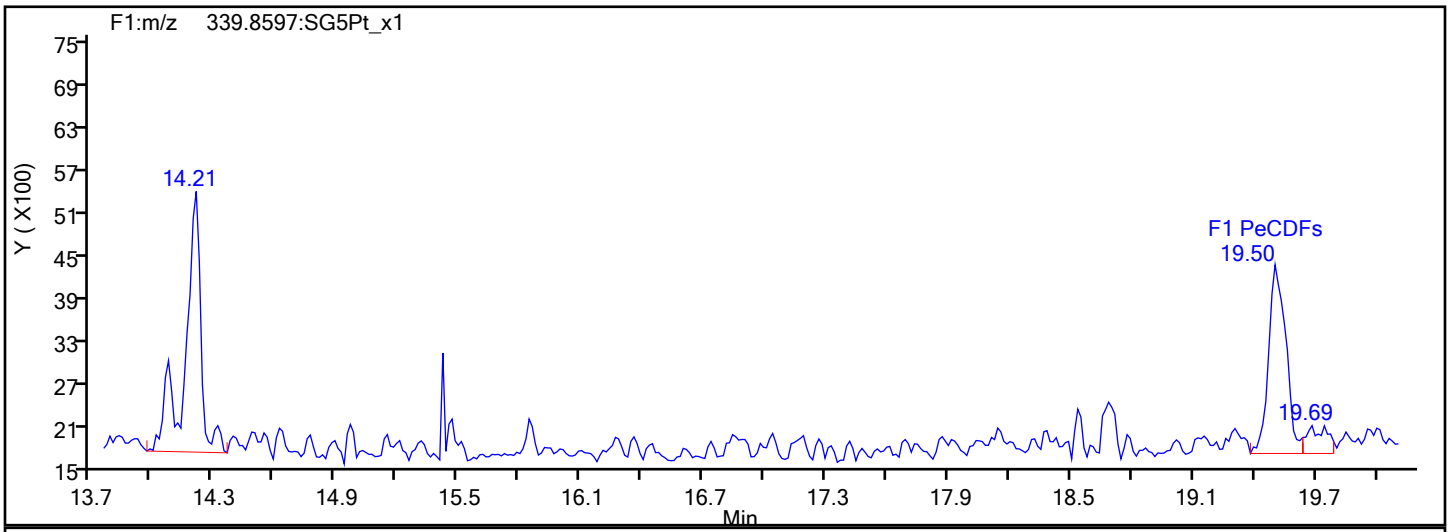
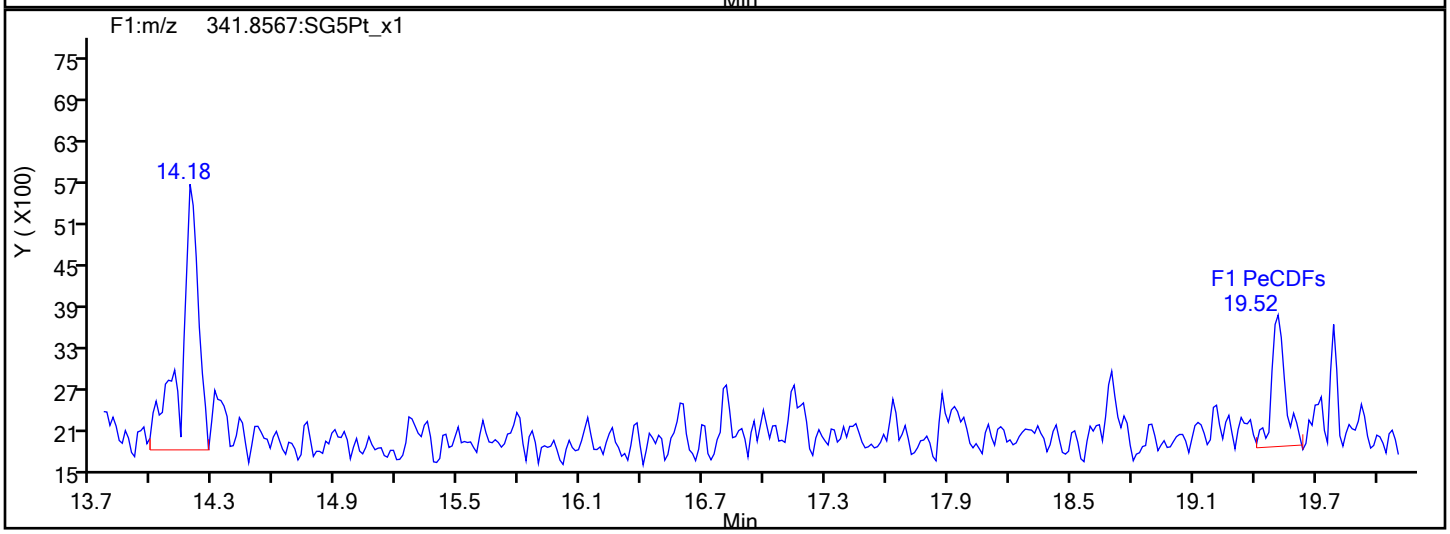
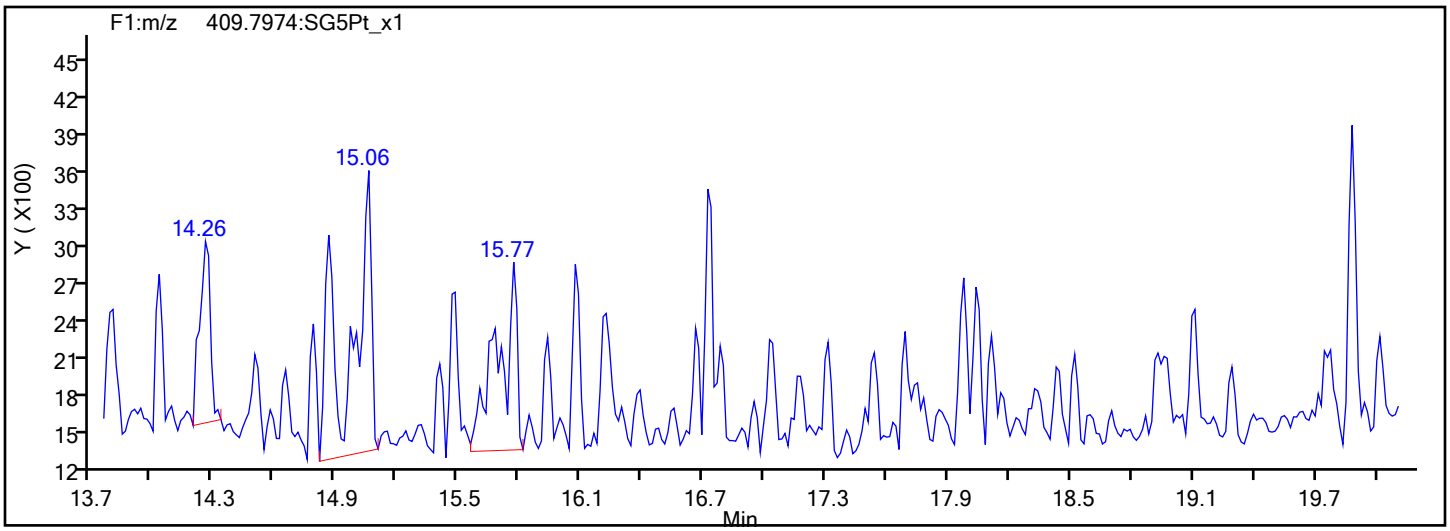
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
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Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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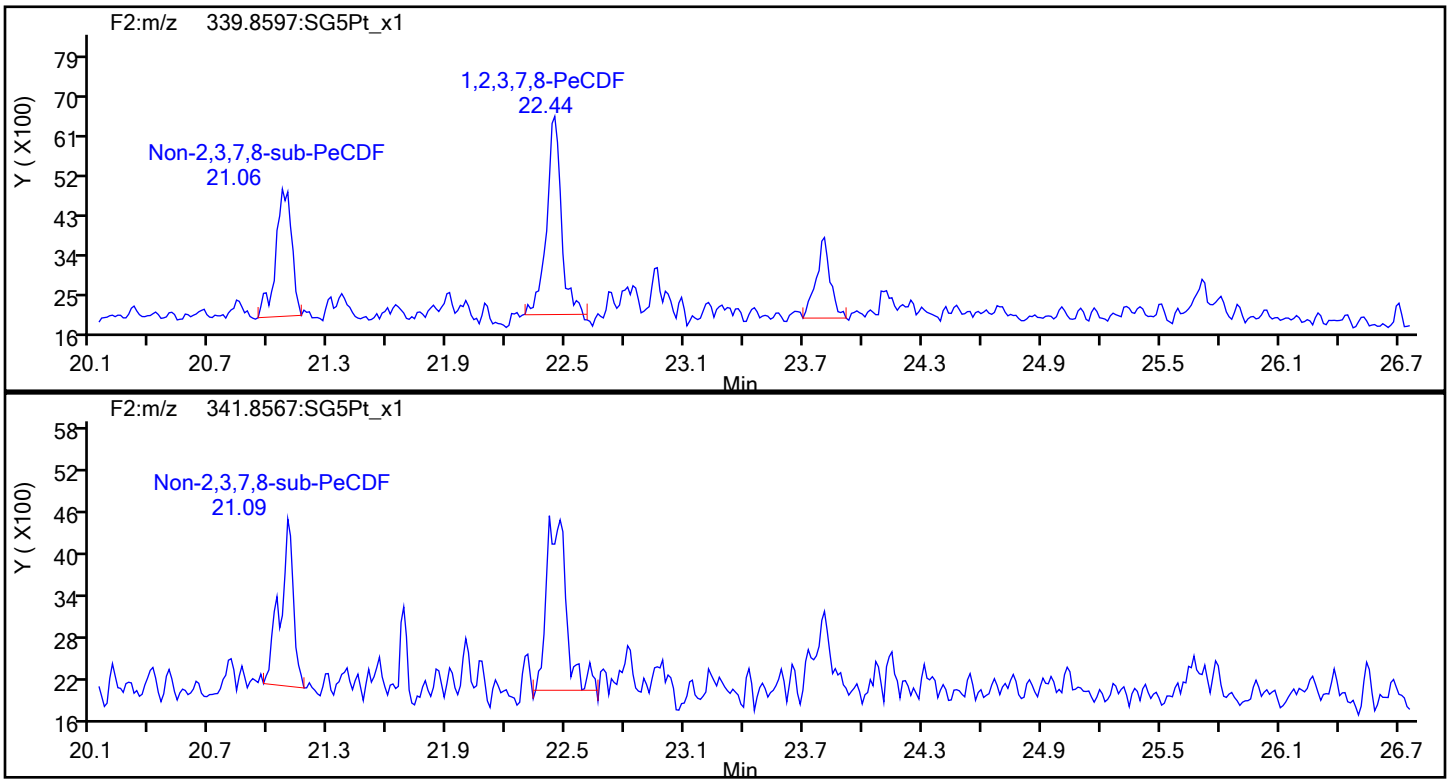
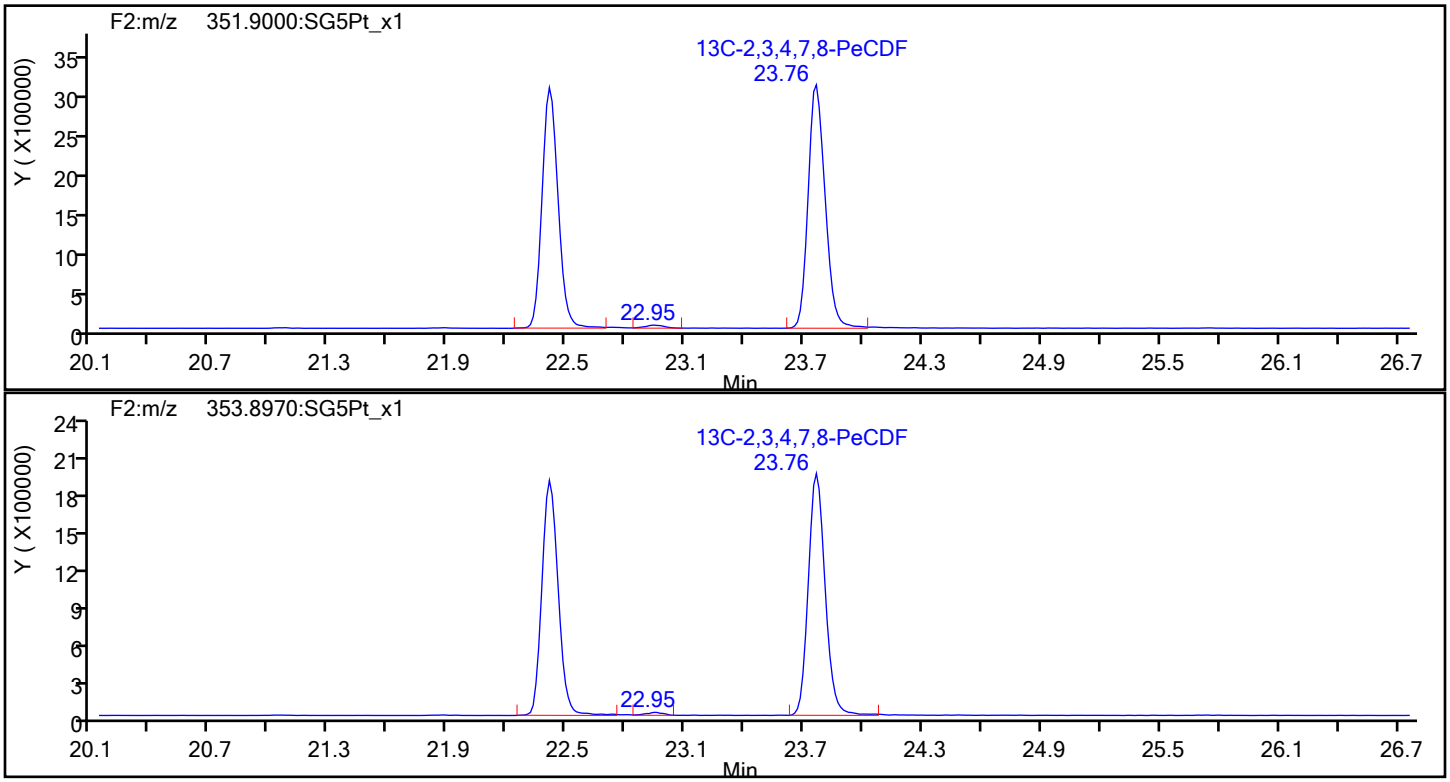
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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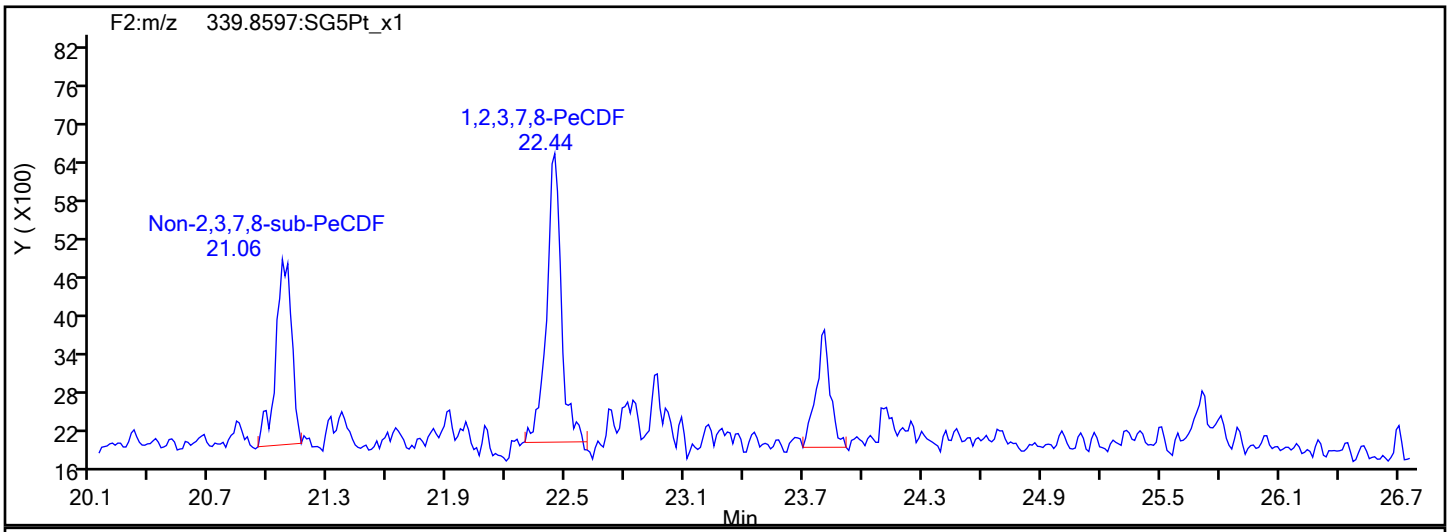
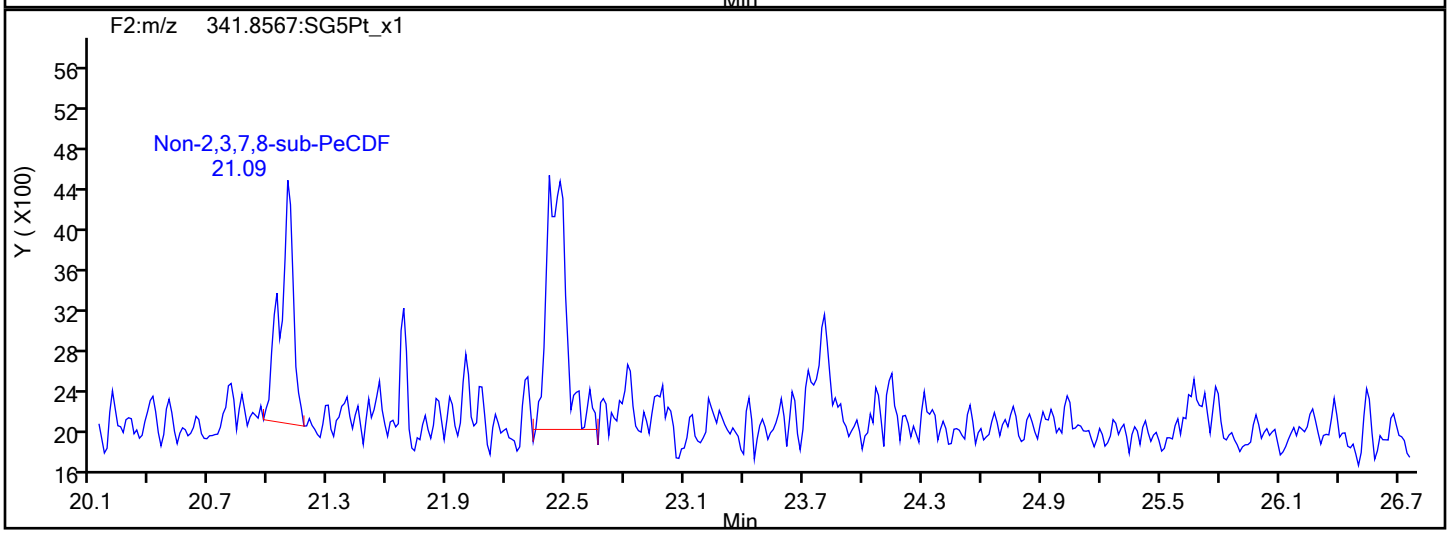
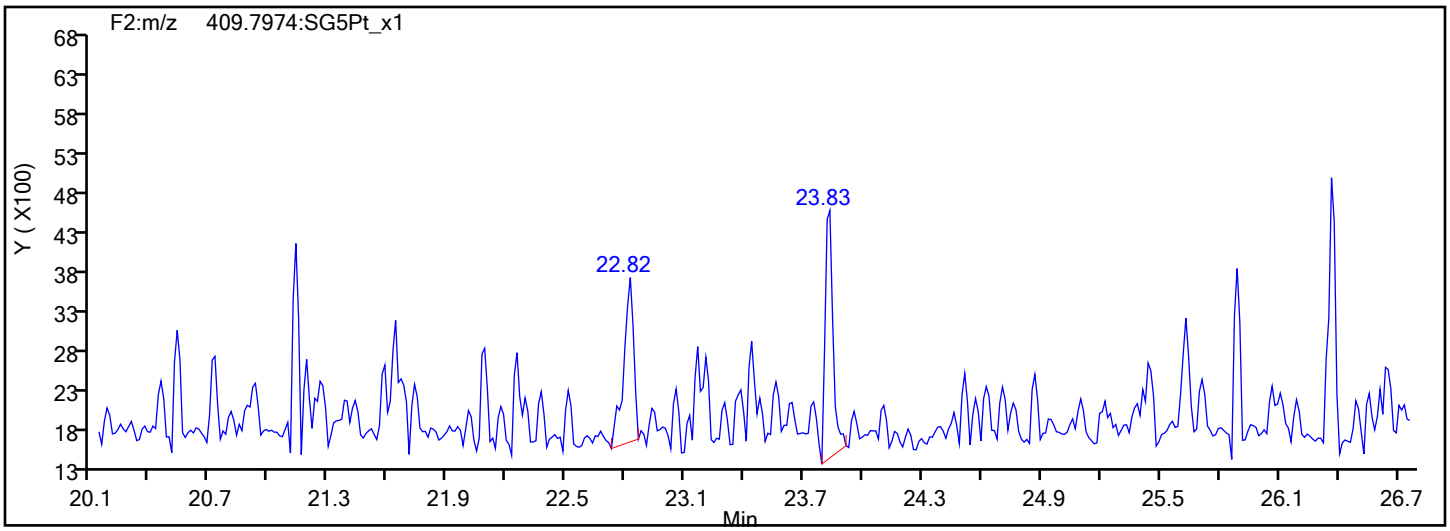
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
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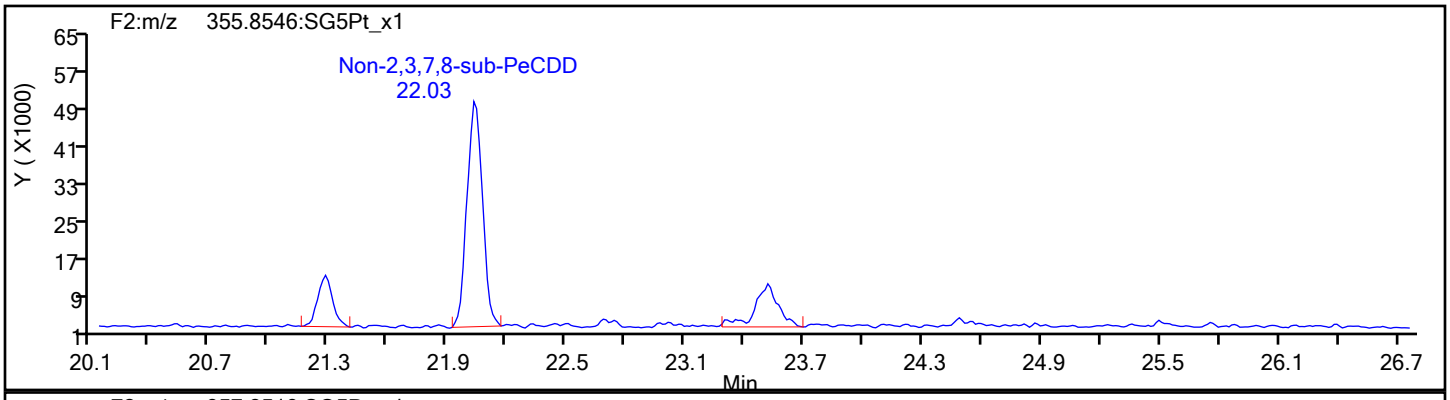
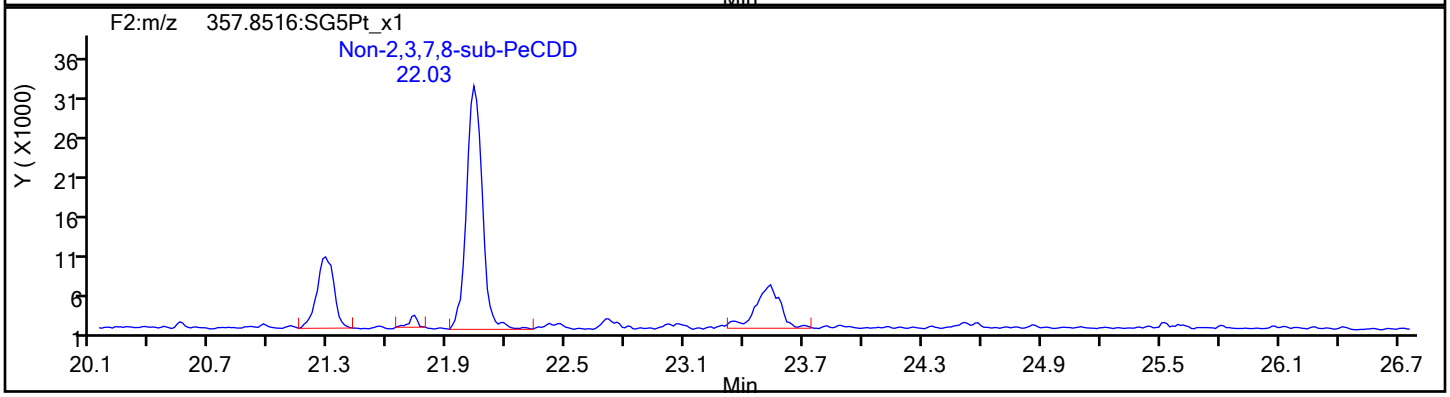
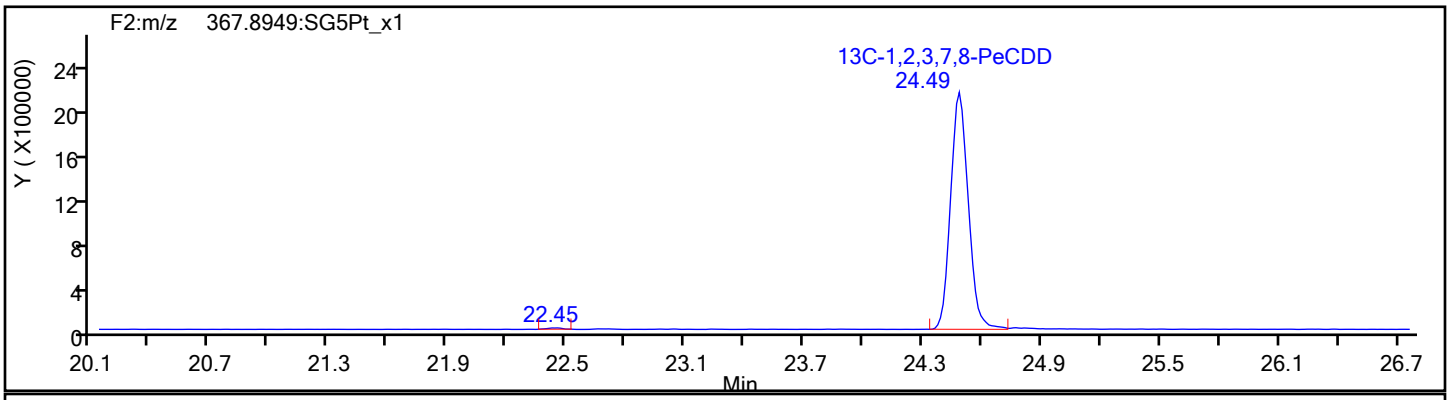
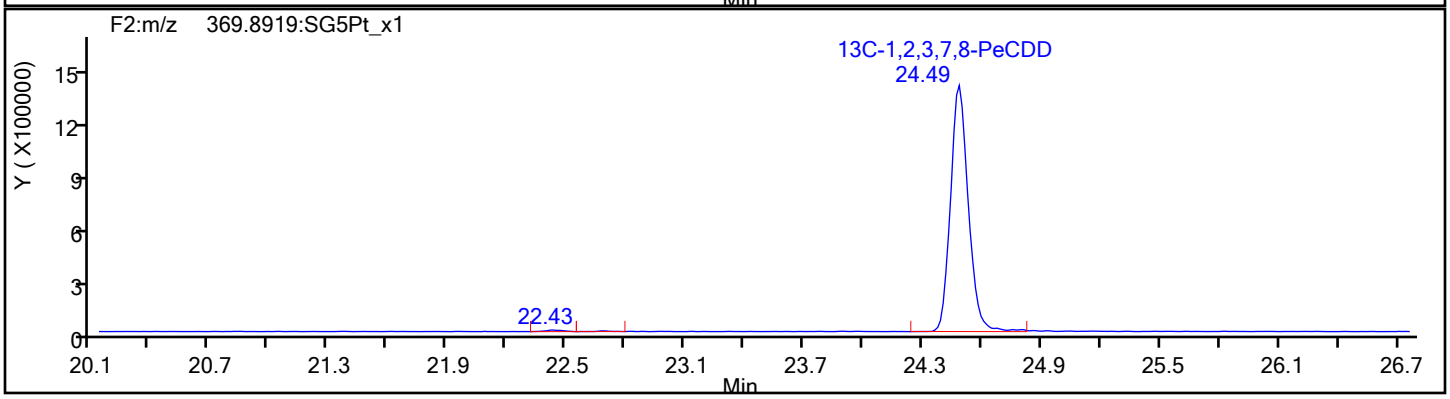
PeCDD





PeCDD Standards





Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d

Injection Date: 13-Dec-2019 20:57:54 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: AJS

Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120819-BN-DUP2

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Column Type: DB-5 Column Dia: 0.32 mm

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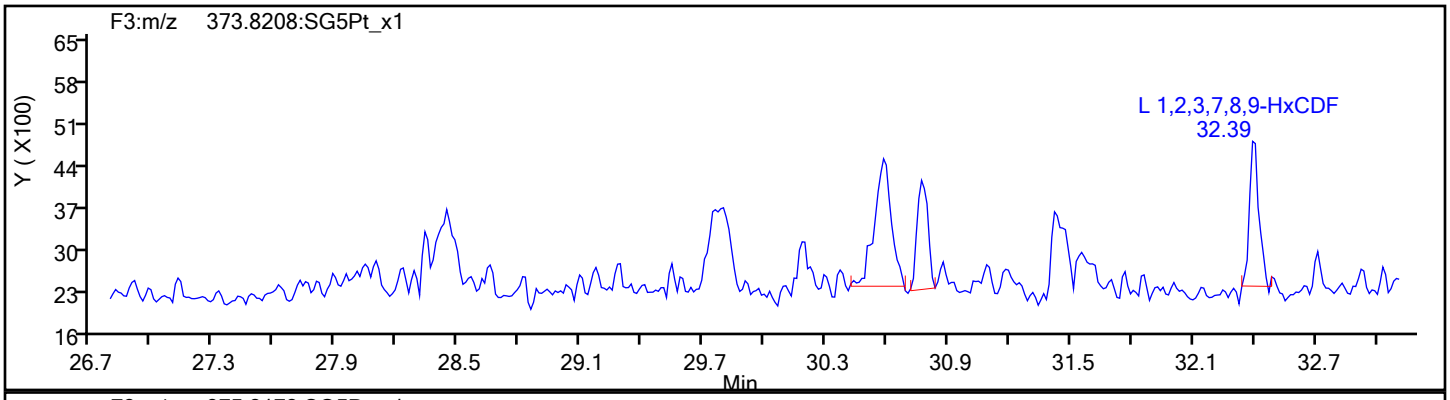

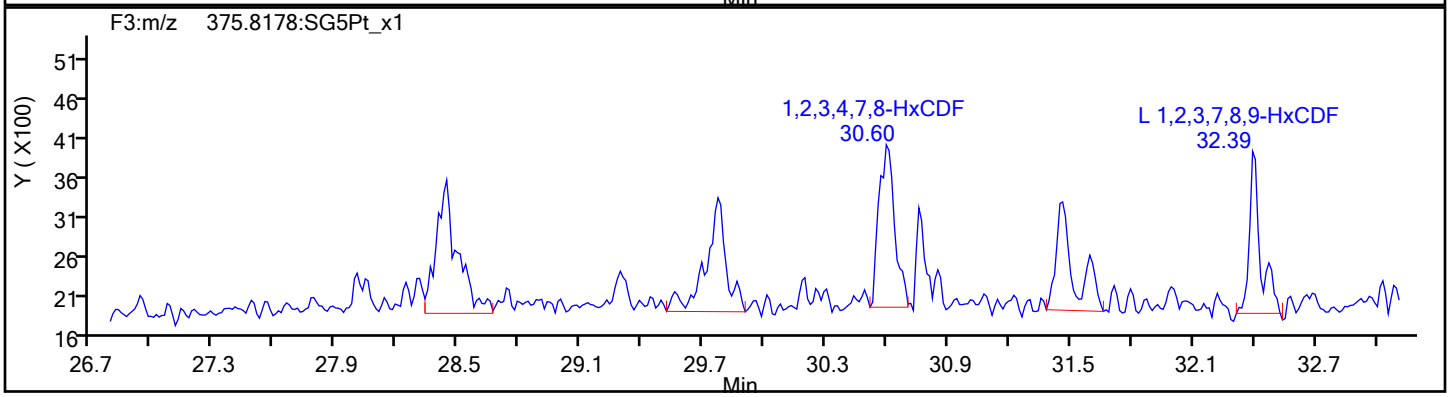

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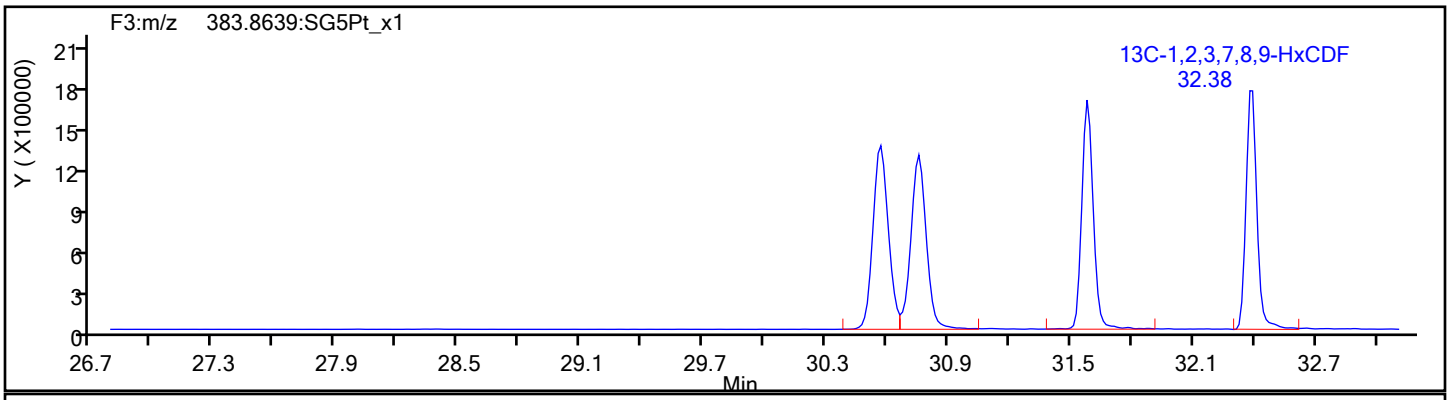

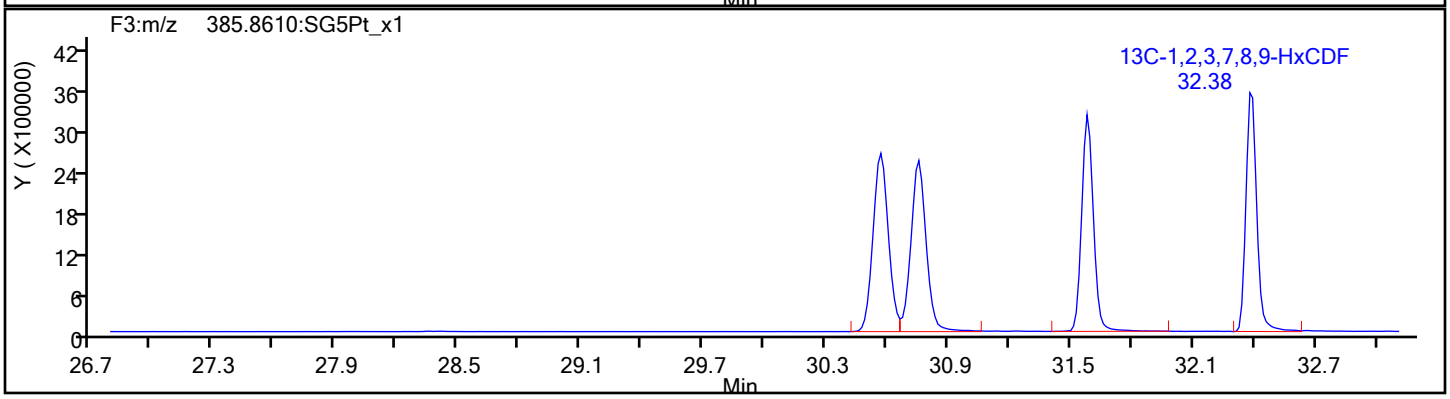

Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
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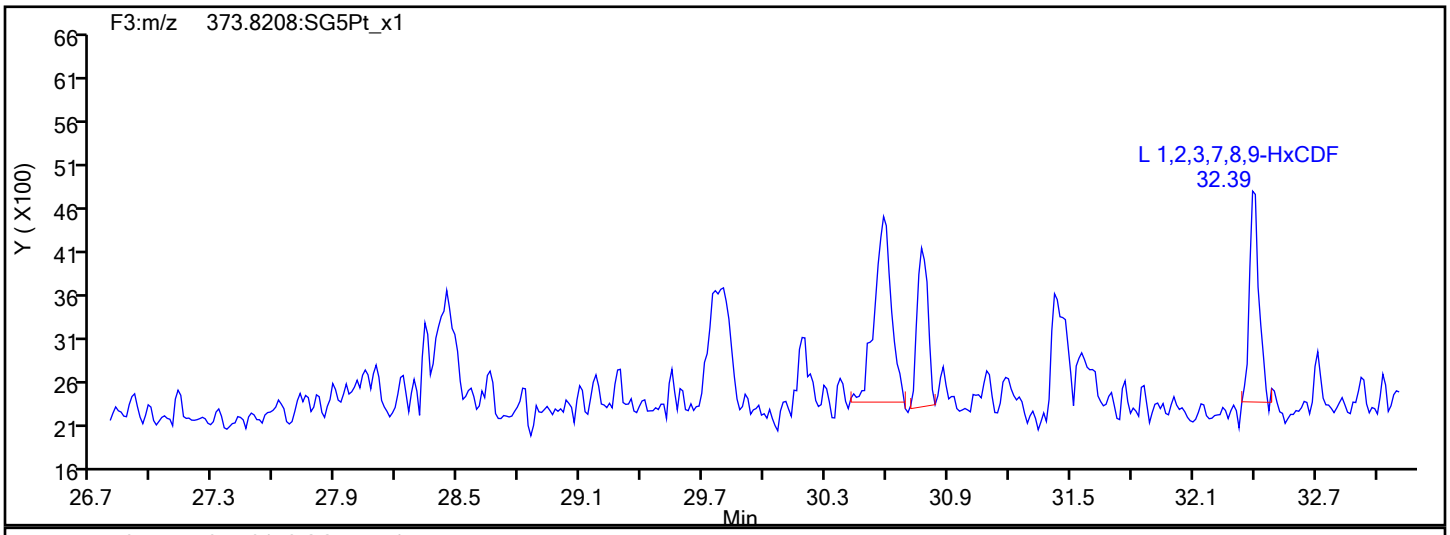
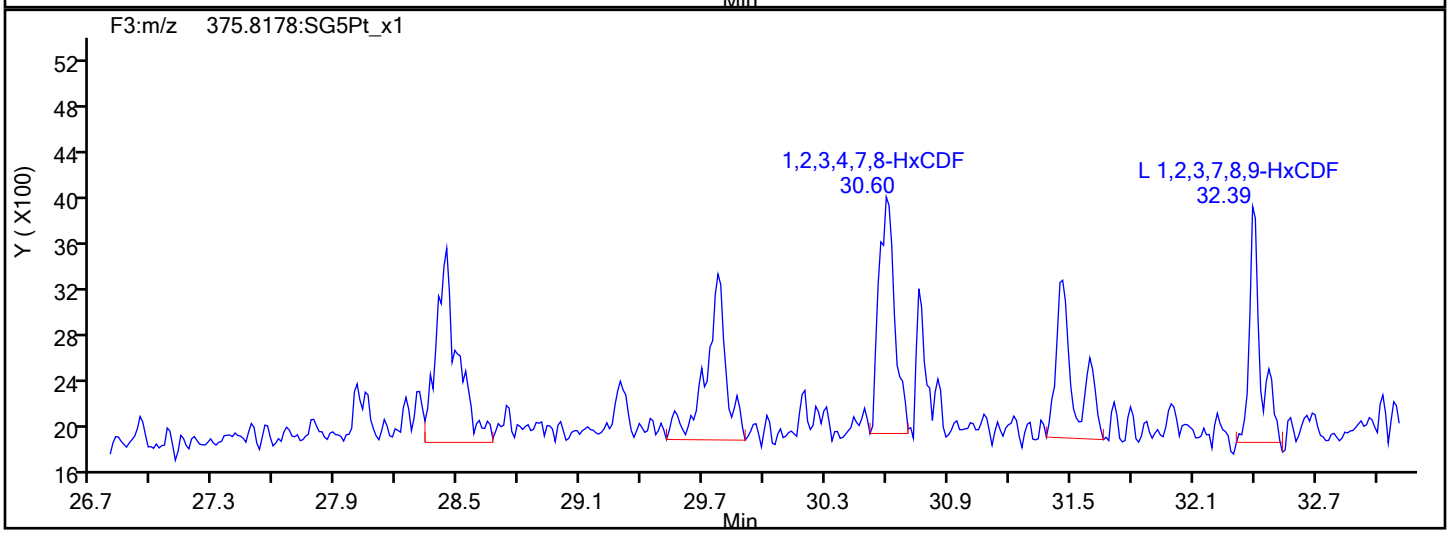
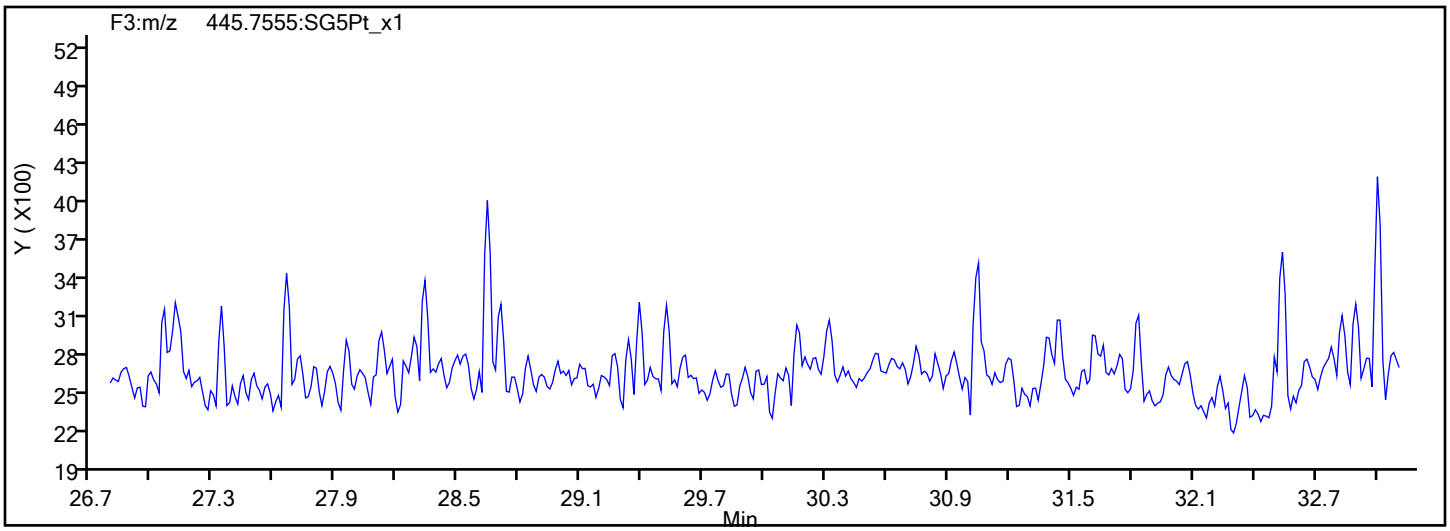




HxCDF Interference Mass



Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d

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Instrument ID:	10D5	Operator ID:	AJS
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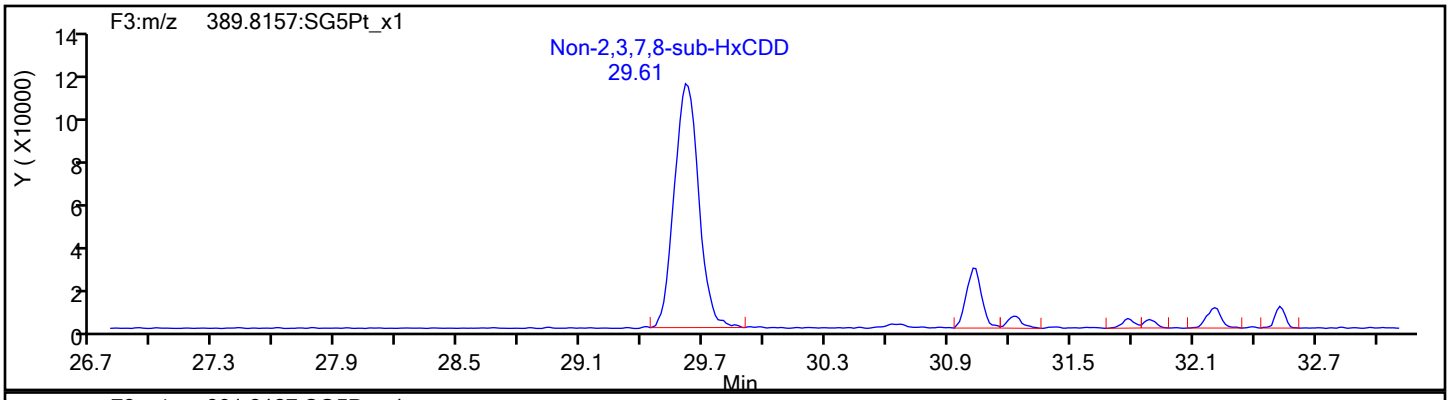
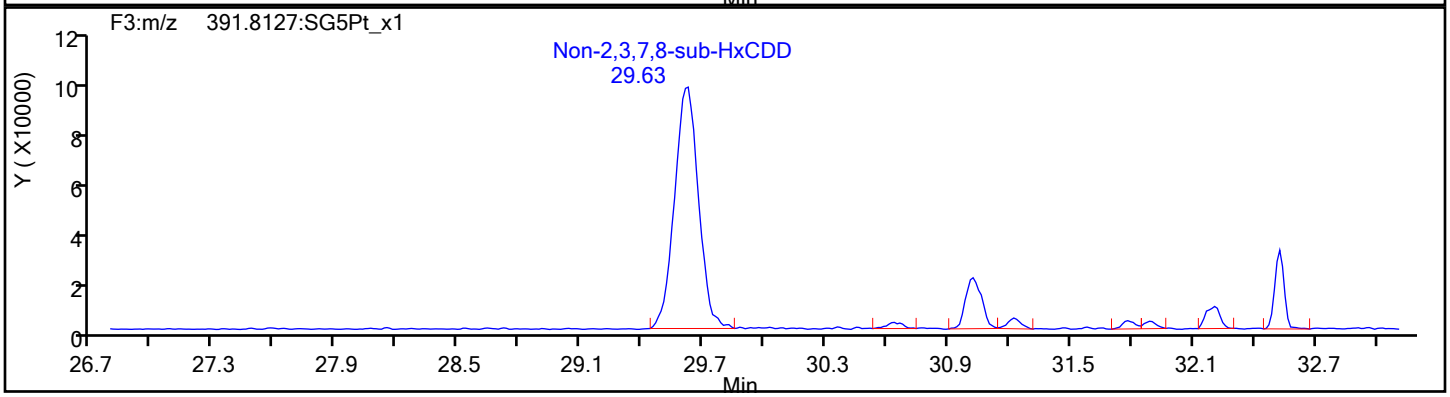
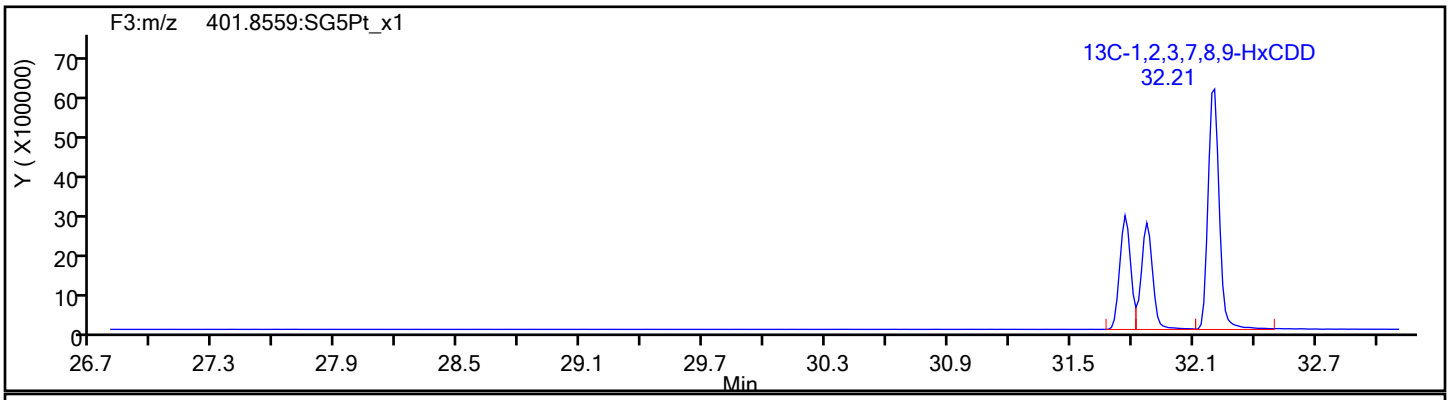
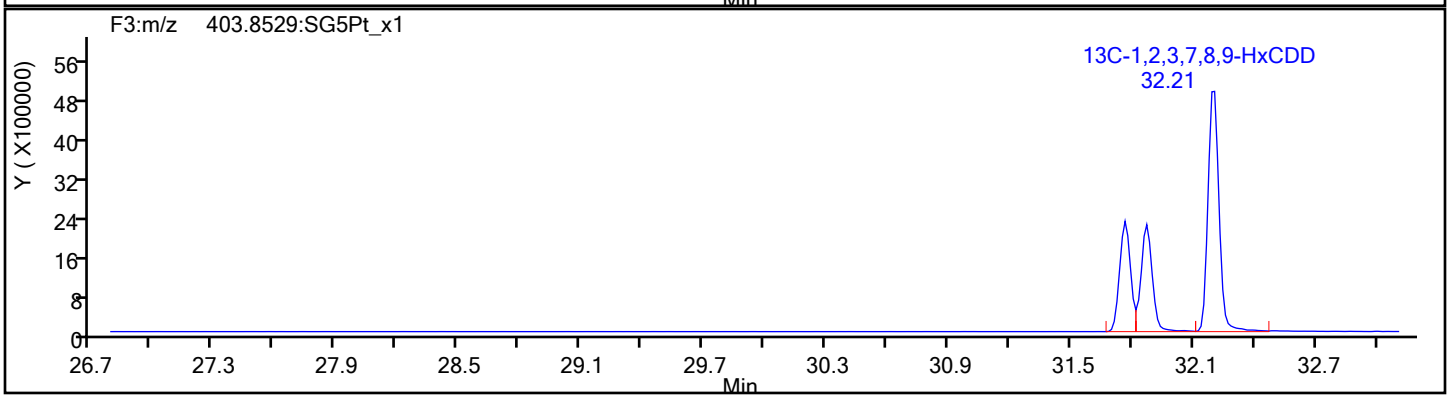
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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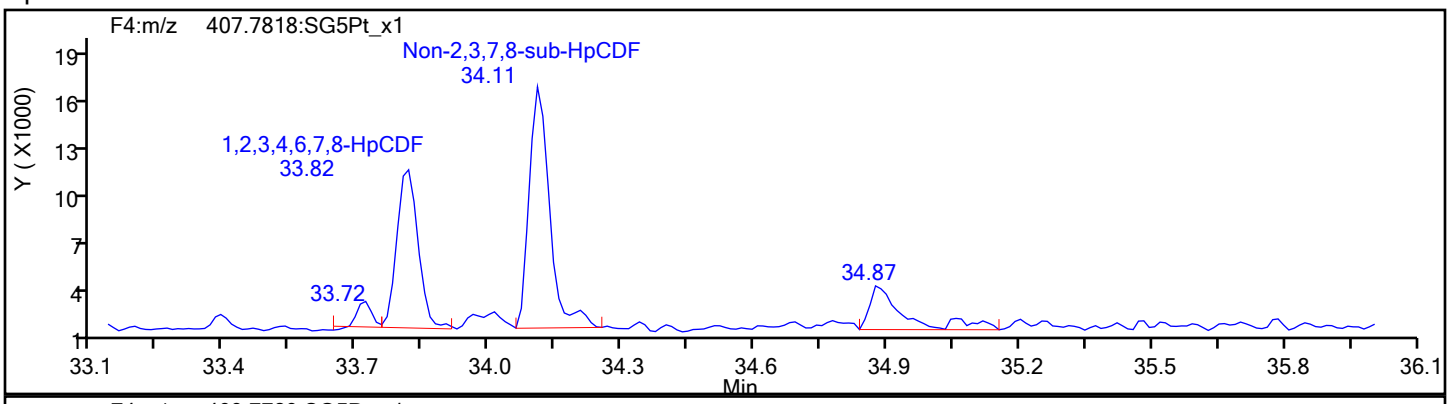

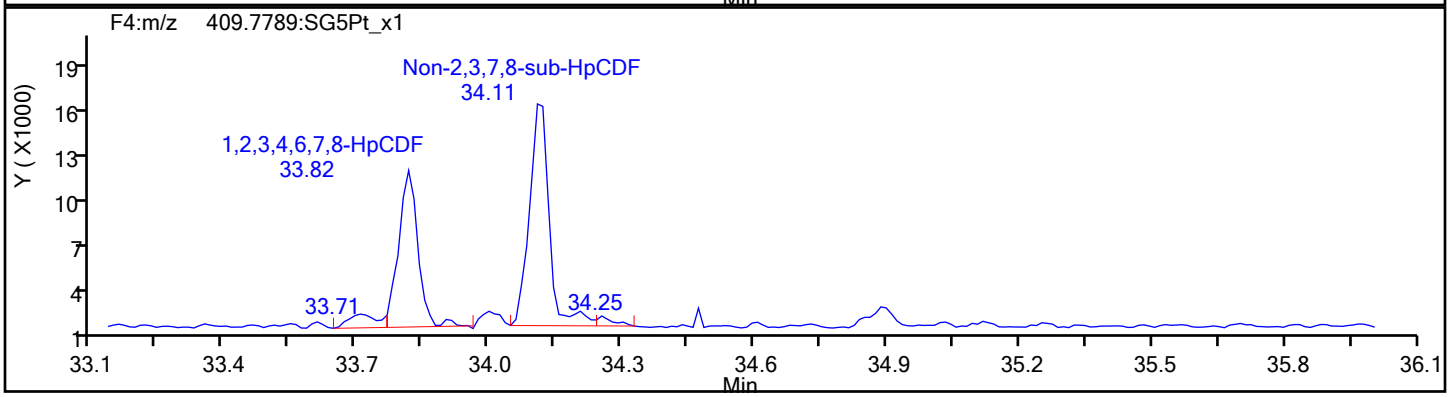

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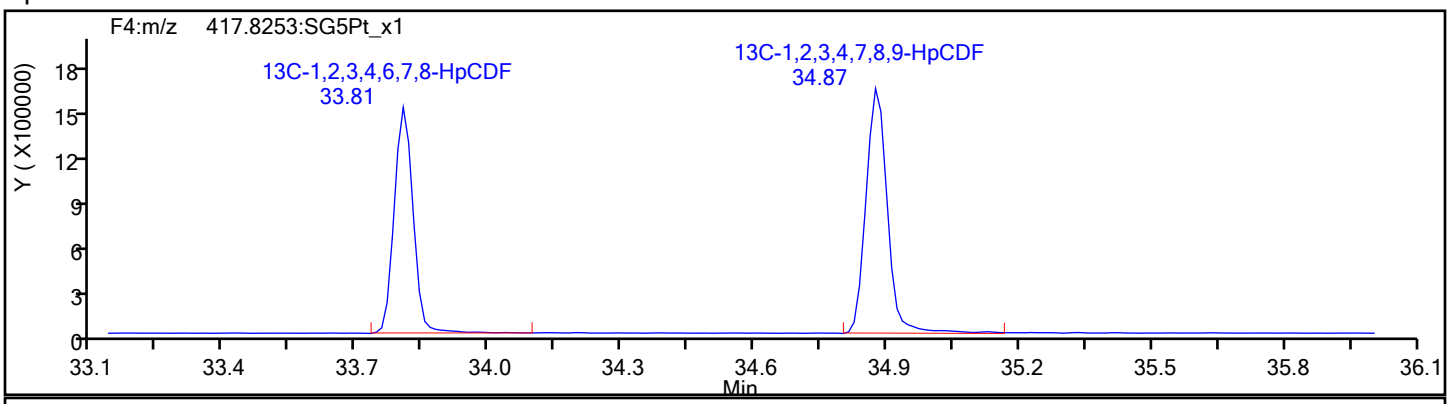

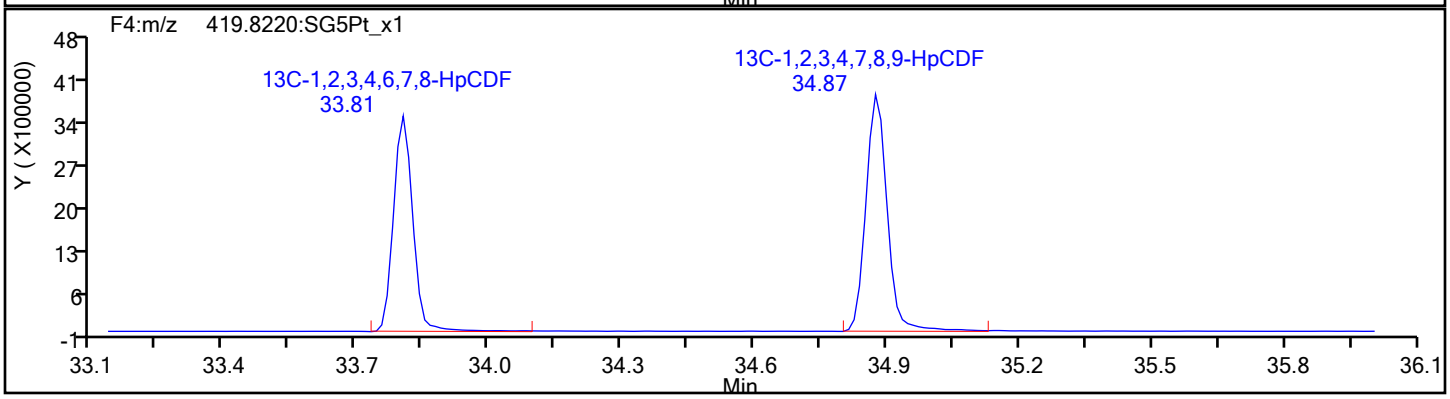

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Eurofins TestAmerica, Sacramento

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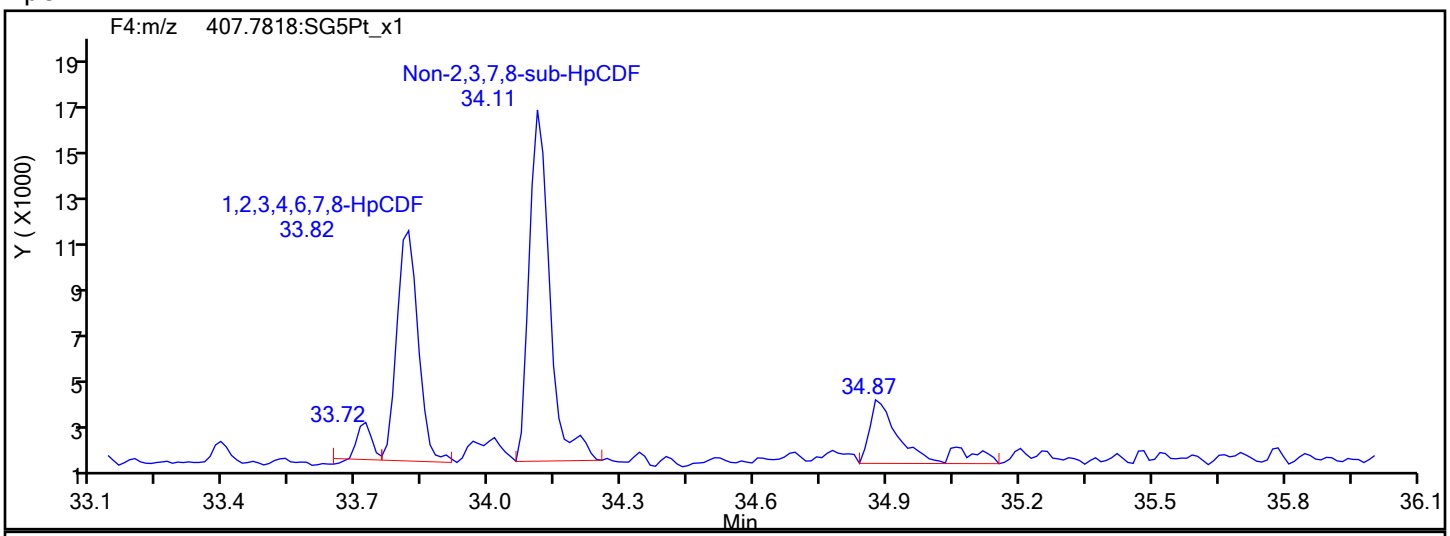
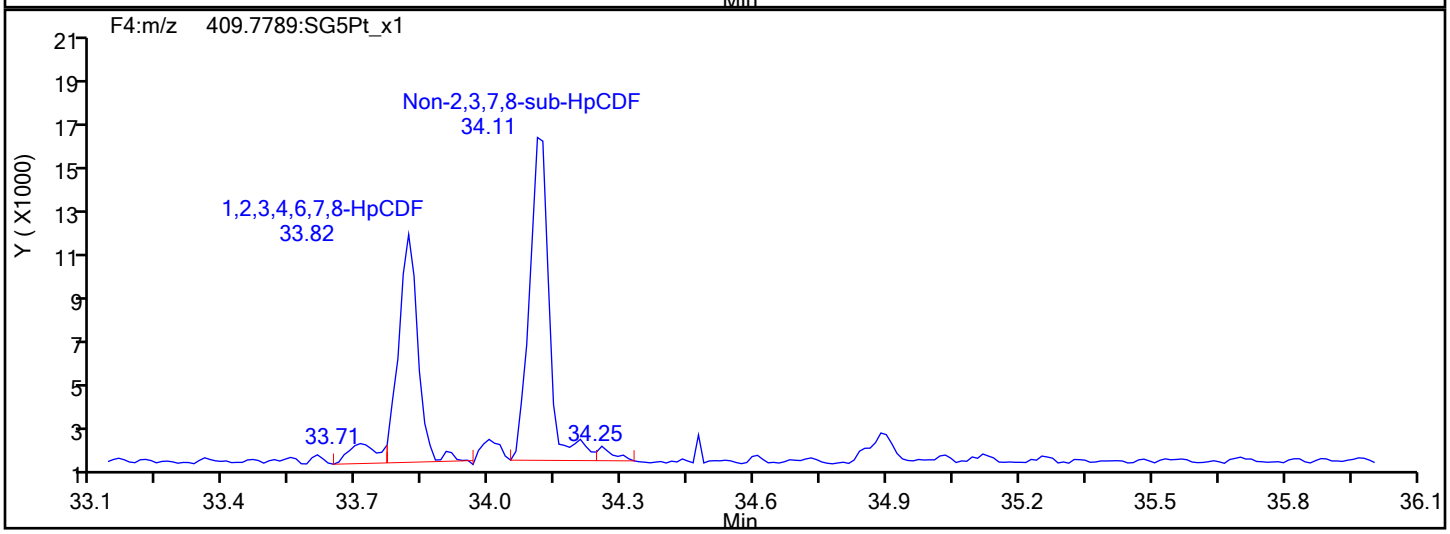
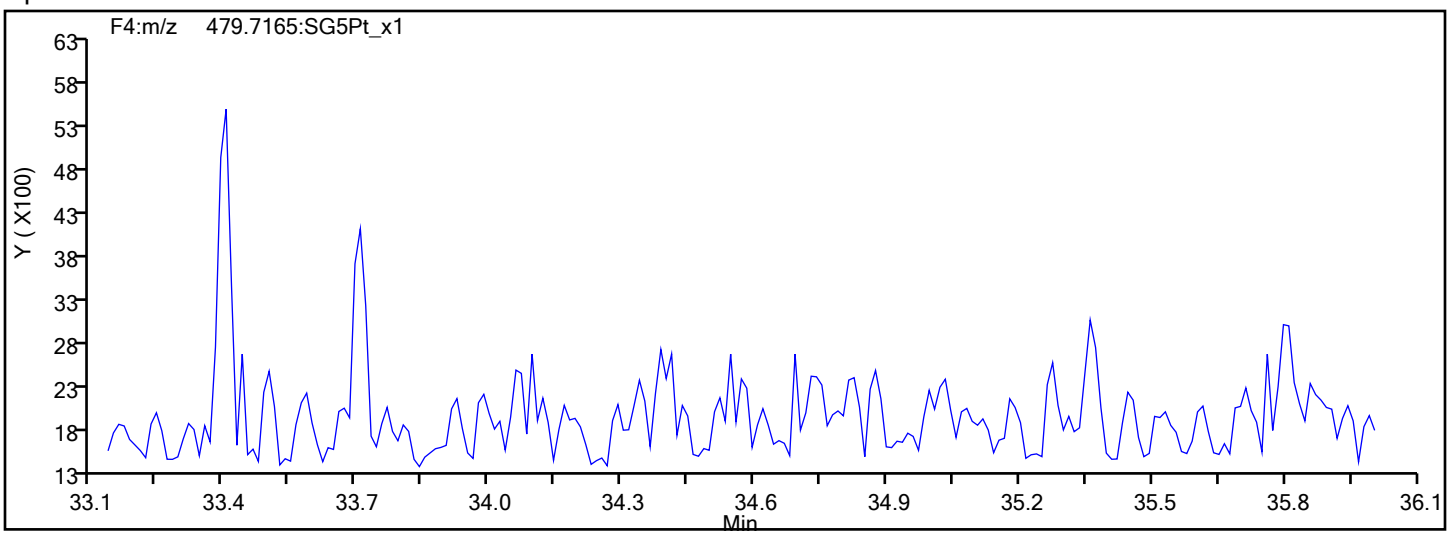




HpCDF Interference Mass



Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d

Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
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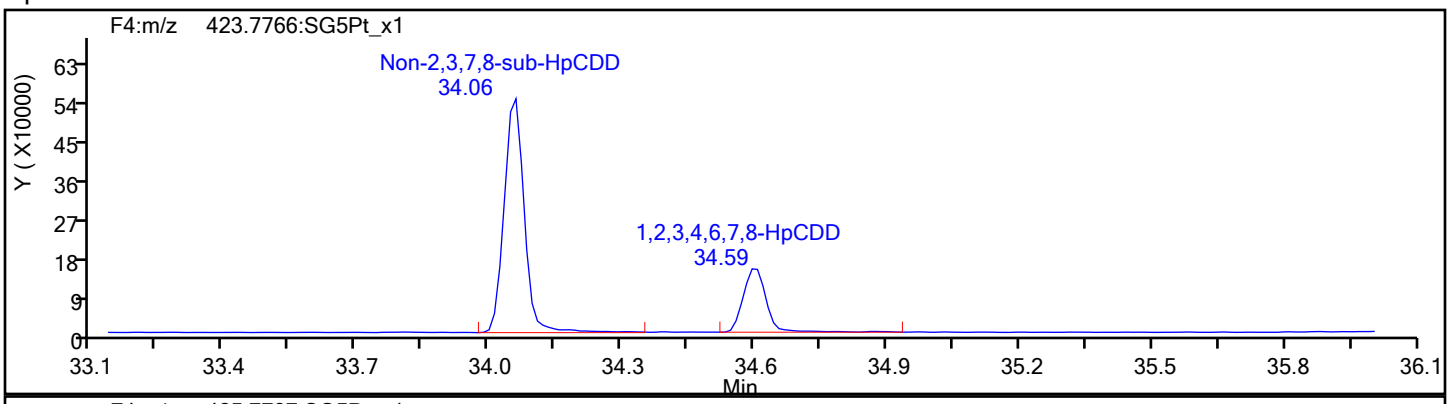
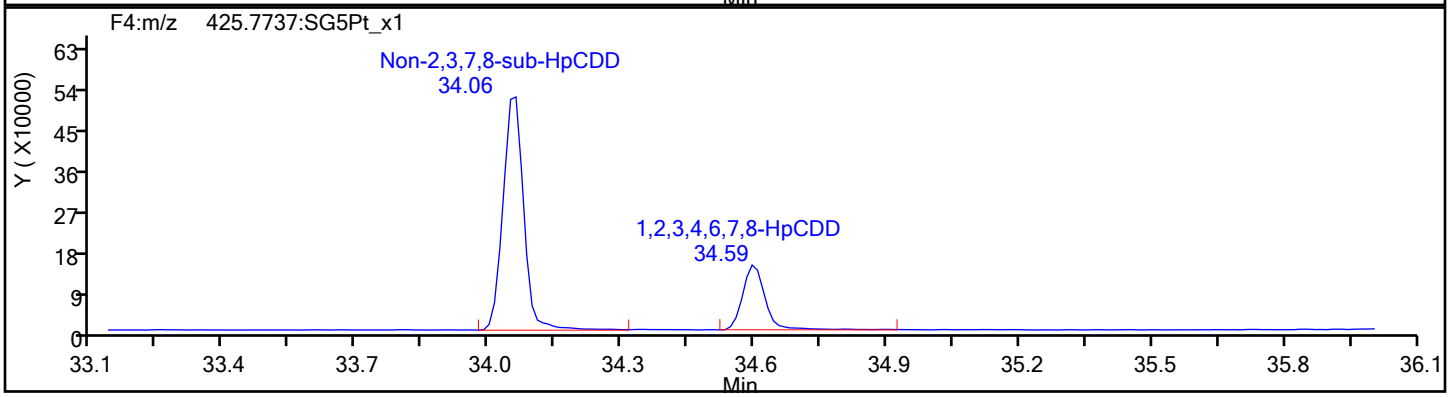
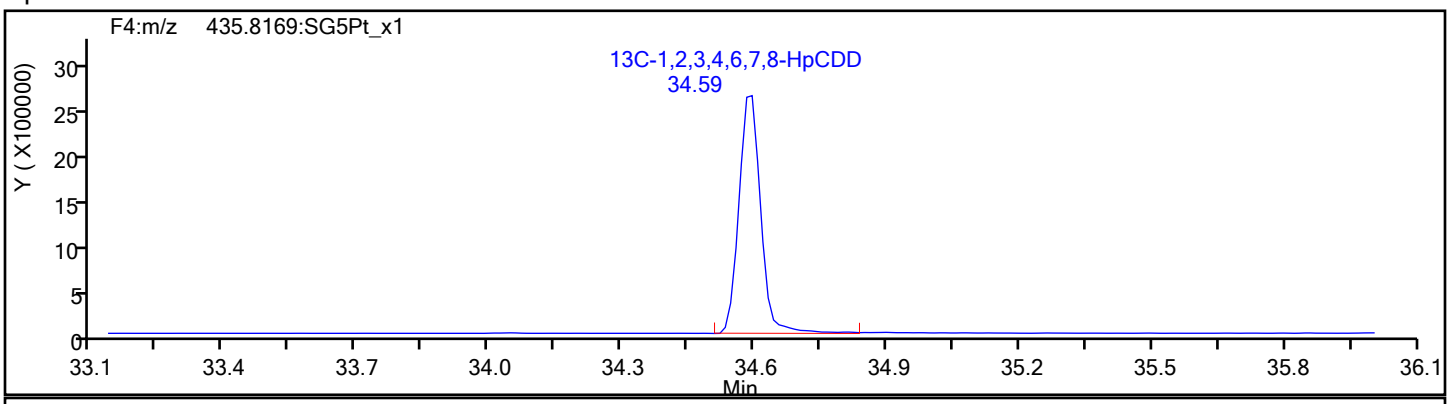
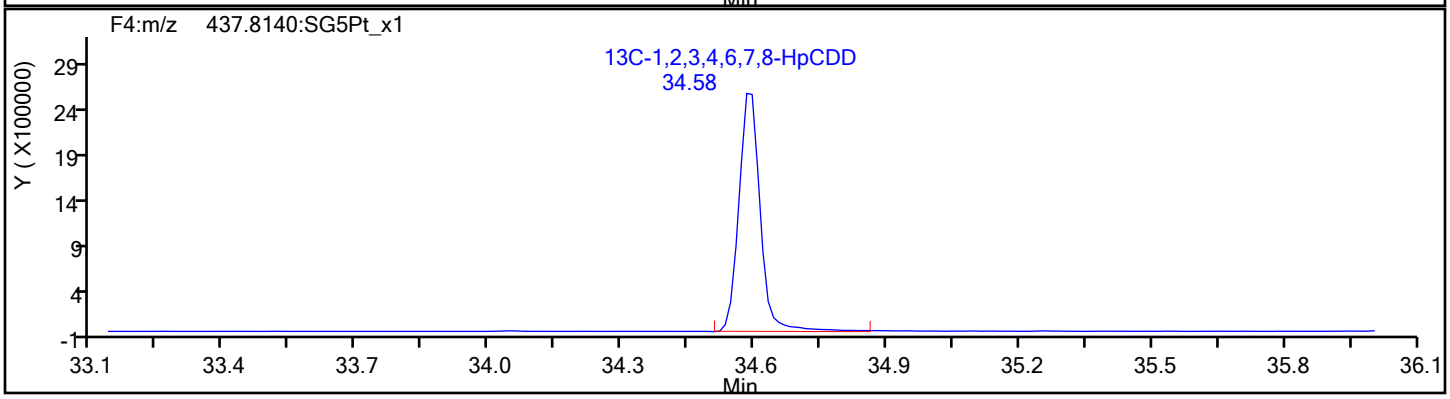
HpCDD





HpCDD Standards



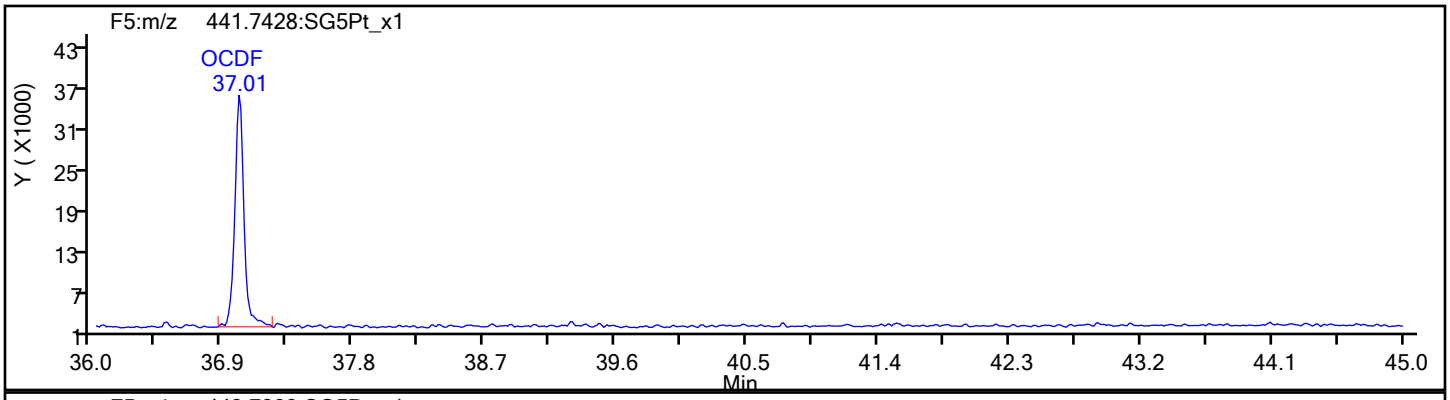


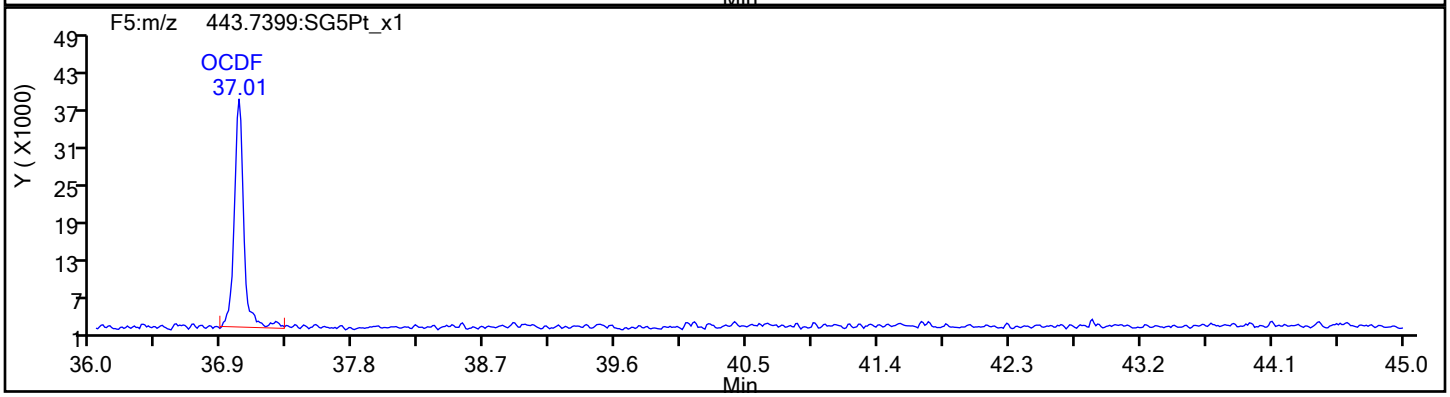
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

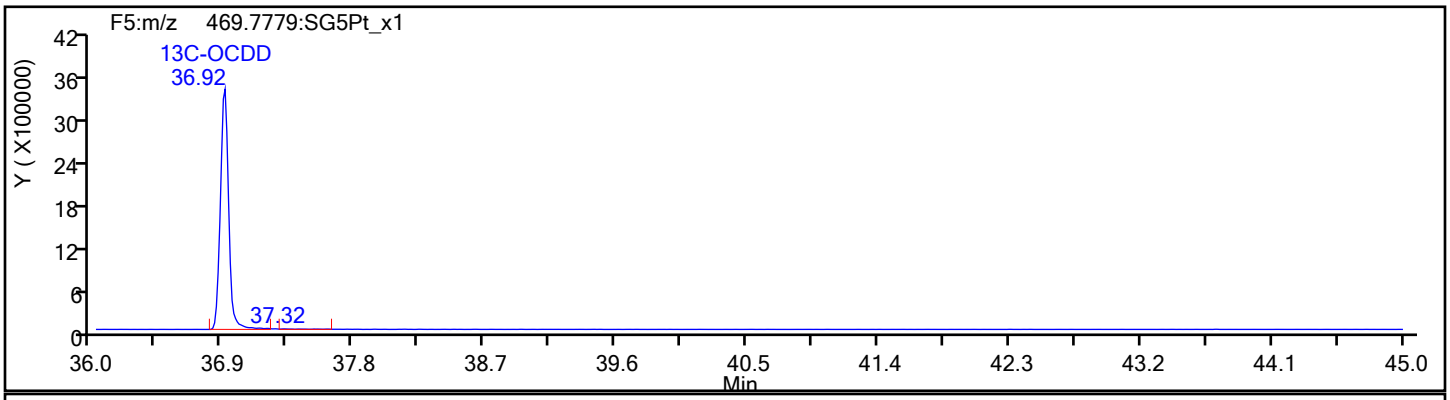
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

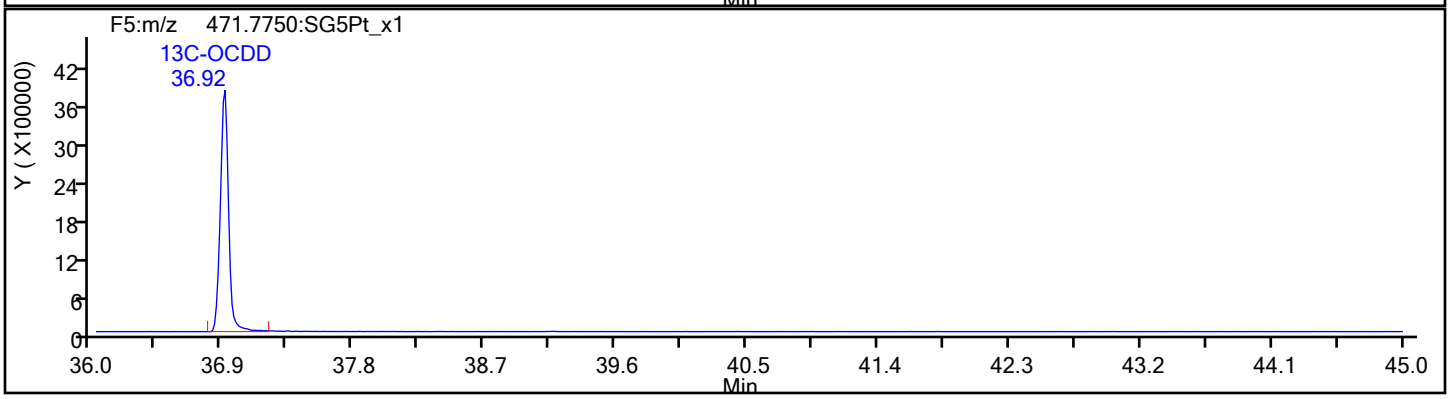
OCDF





OCDF Standards



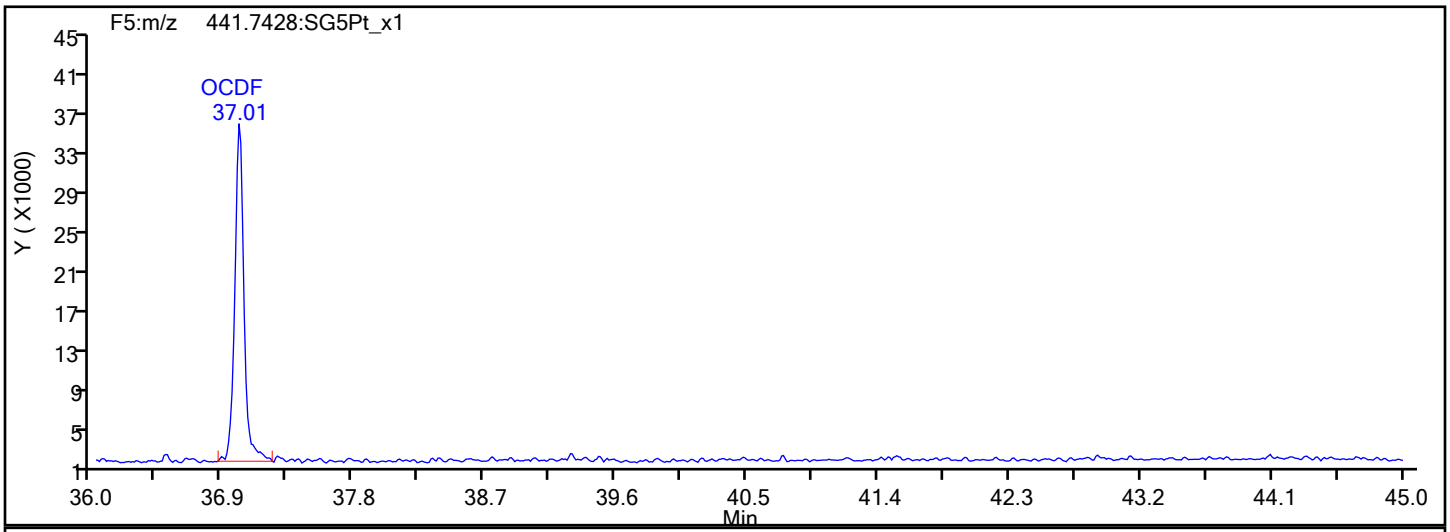


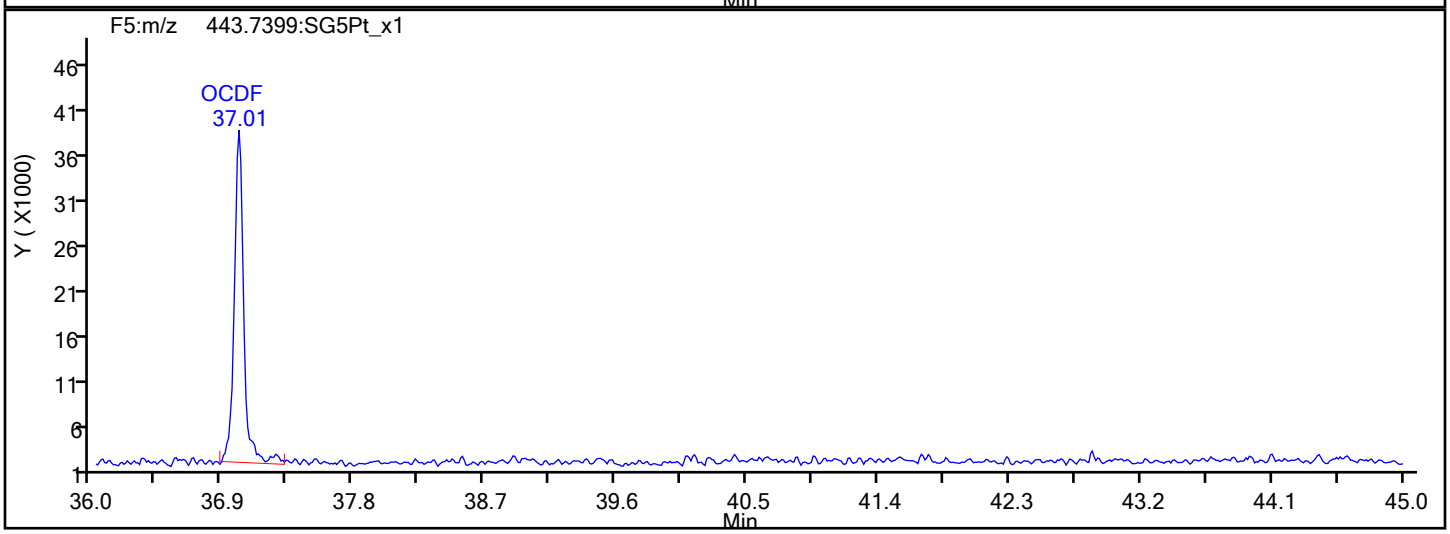
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

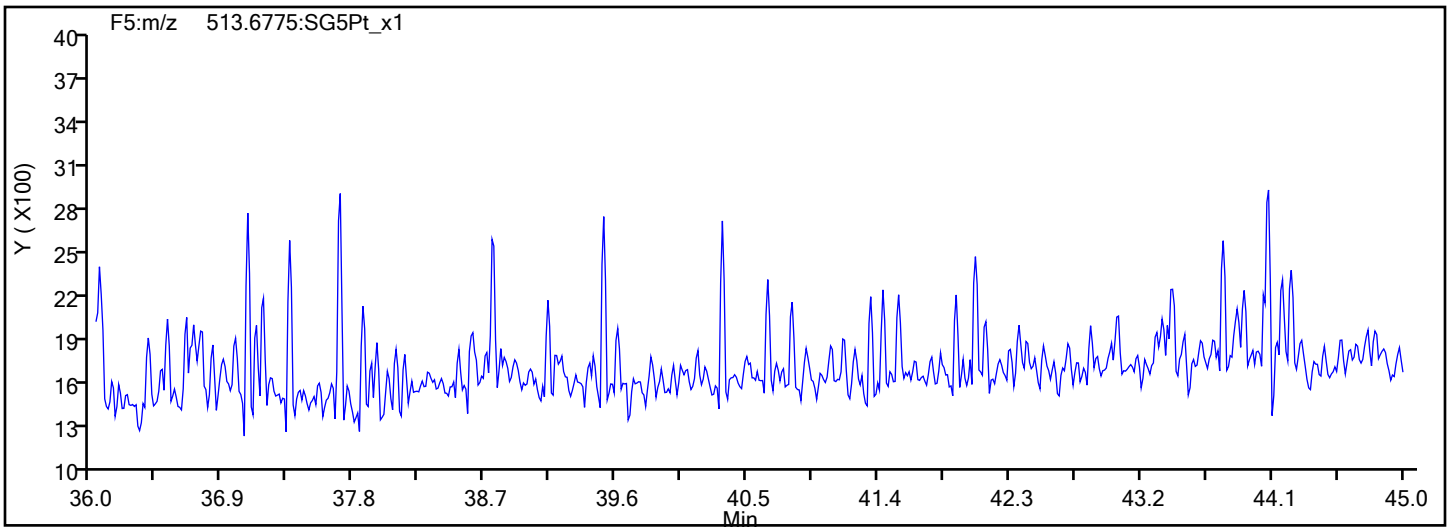
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

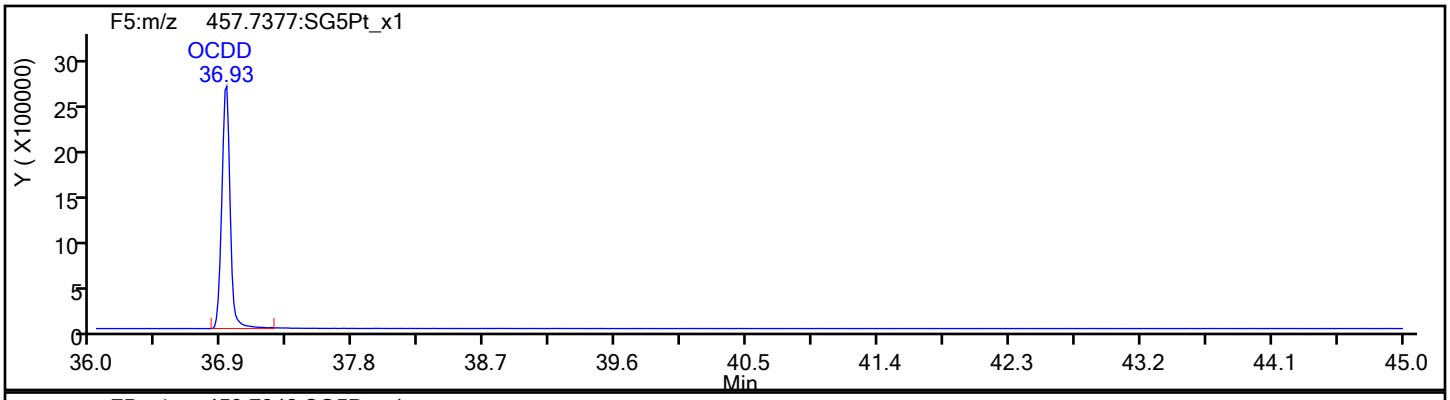


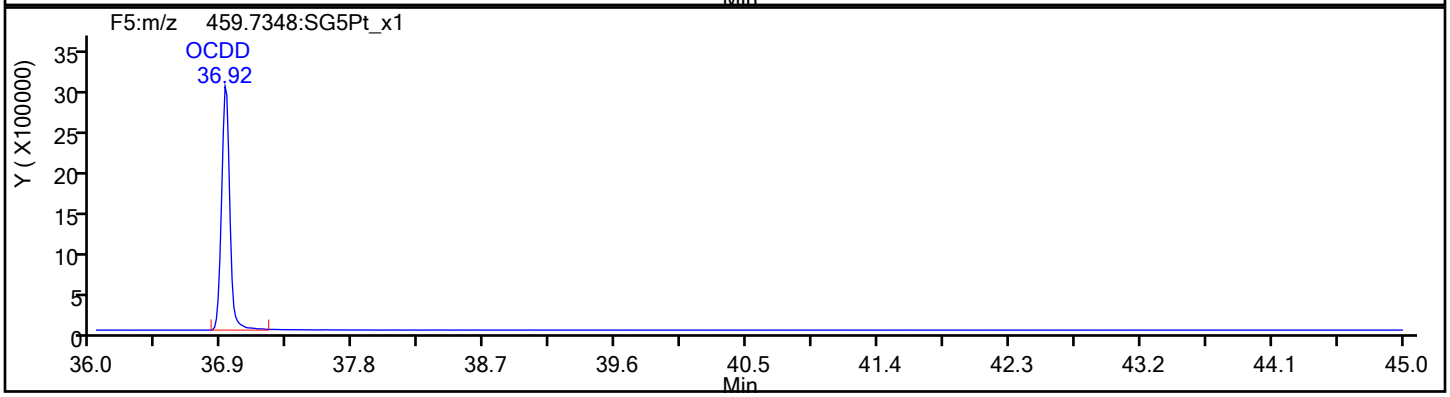
Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

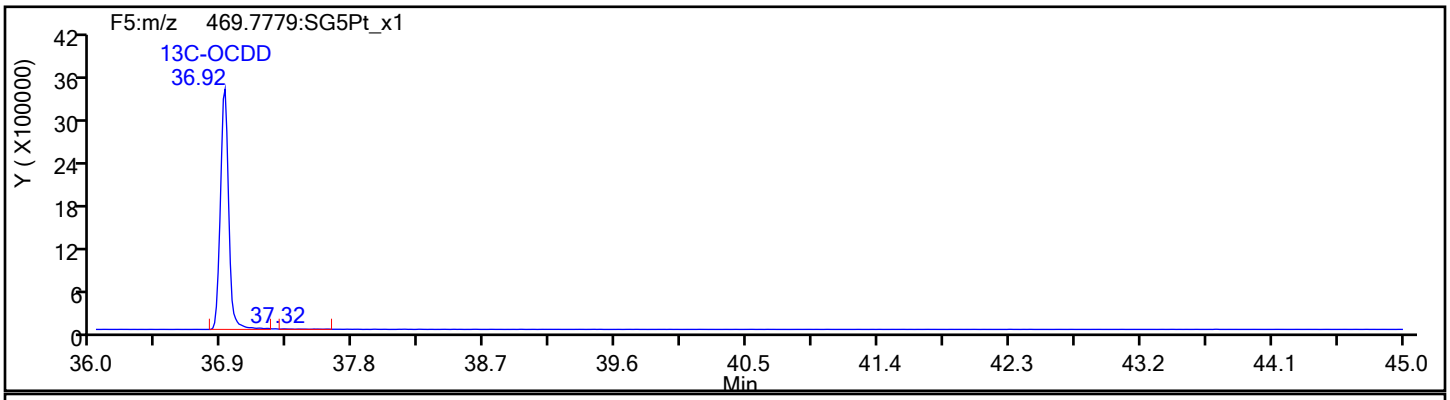
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

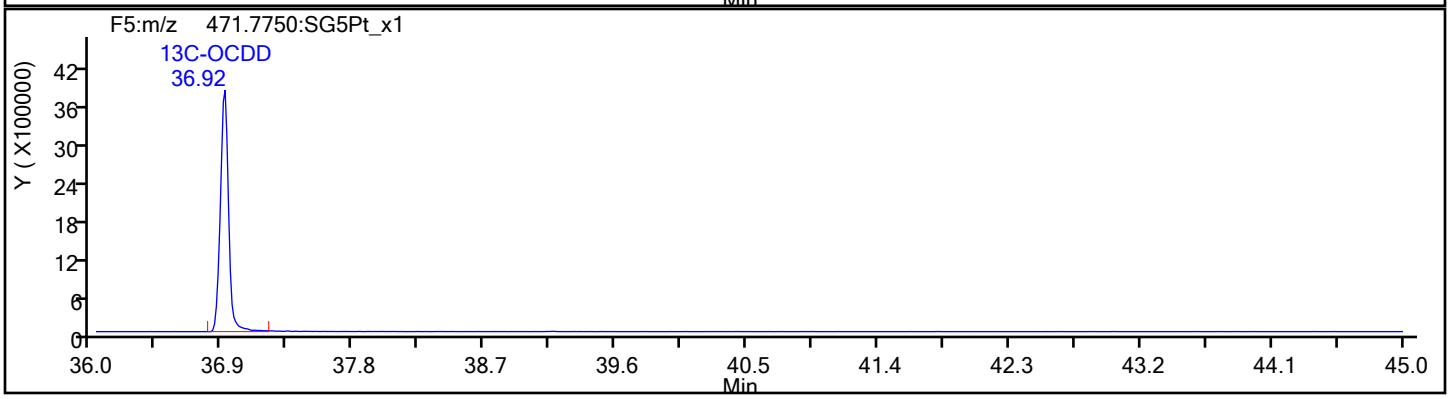
OCDD





OCDD Standards

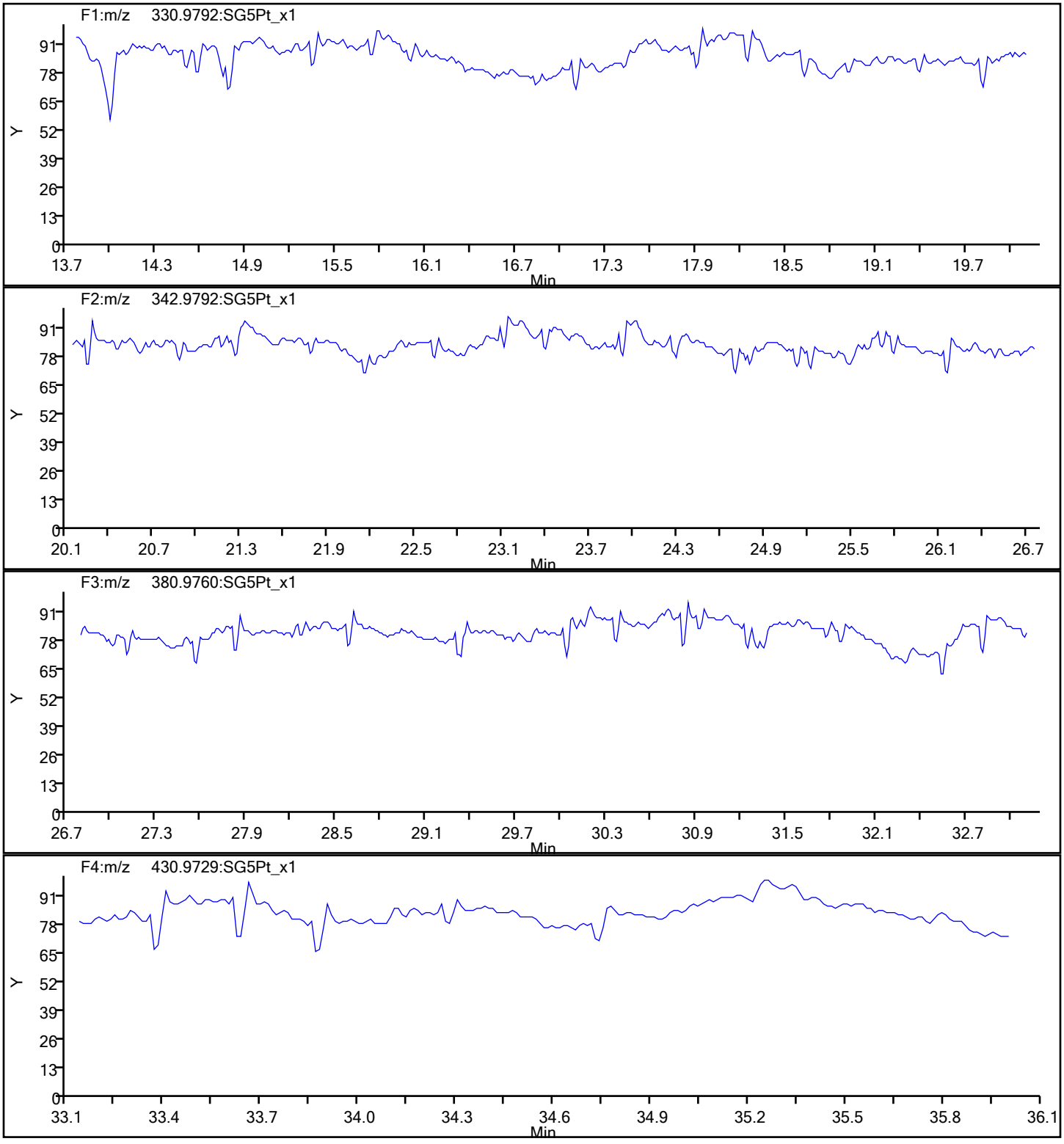




Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

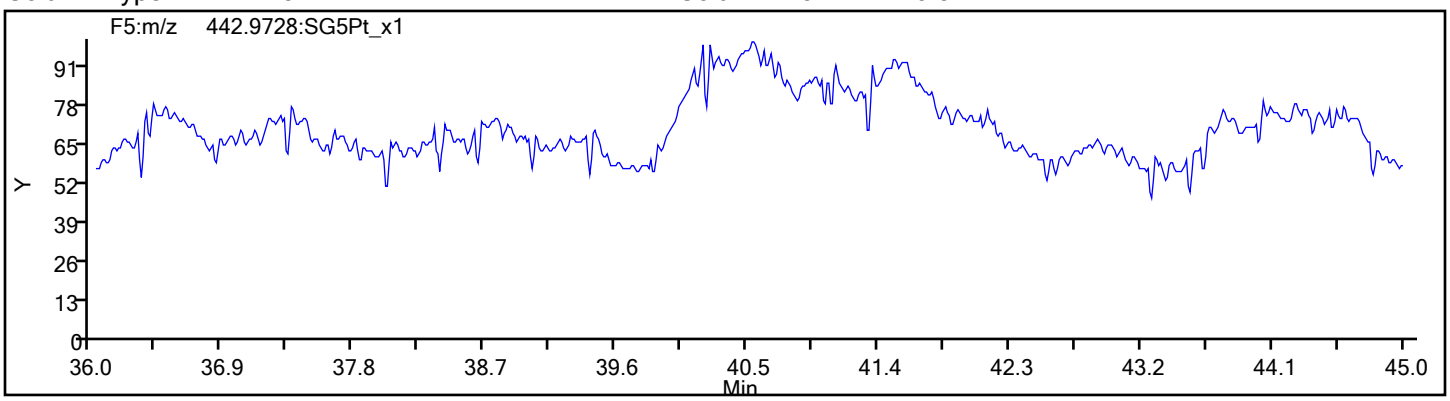
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 16-Dec-2019 11:03:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_13.d		
Injection Date:	13-Dec-2019 20:57:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345335	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: 11187072-120819-BN-DUP2 RA Lab Sample ID: 320-56911-13 RA

Matrix: Sediment Lab File ID: 16DE19A11D2_014.d

Analysis Method: 1613B Date Collected: 12/08/2019 00:00

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10.11(g) Date Analyzed: 12/17/2019 03:41

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 23.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 345960 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	9.9		1.3	0.19

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	62		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	112		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Sample Type: Client
Inject. Date: 17-Dec-2019 03:41:27 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-13-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:37:52

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.379	90479404	0.80	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.573	74653272	0.79	1.3379	61.7	61.7	0.2373	0.2373	61.67	
2,3,7,8-TCDF	16.600	2386312	0.83	0.8389	3.810	3.810	0.0728	0.0728		M
D 13C-2,3,7,8-TCDD	15.132	48802216	0.78	0.9388	57.5	57.5	0.4128	0.4128	57.45	
2,3,7,8-TCDD	15.119	770294	0.84	1.1538	1.368	1.368	0.1009	0.1009		
$ 37Cl4-2,3,7,8-TCDD	15.132	47820184		1.1816	44.7	44.7	0.0625	0.0625	112	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d
Lims ID: 320-56911-A-13-A
Client ID: 11187072-120819-BN-DUP2
Sample Type: Client
Inject. Date: 17-Dec-2019 03:41:27 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56911-A-13-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:37:52

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.379	15.383	0		40138509	9008001	16108	40270	559		
333.9339	15.379	15.383	0		50340895	10846520	14671	36677	739	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.573	16.576	0	1.078	32871023	6309655	13973	34932	452		
317.9389	16.573	16.576	0	1.078	41782249	7735039	11238	28095	688	0.79(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	16.600	16.590	1	1.002	1085604	201285	1483	3707	136		M
305.8987	16.587	16.590	0	1.001	1300708	261819	1949	4872	134	0.83(0.65-0.89)	M
13C-2,3,7,8-TCDD											
331.9368	15.132	15.122	1	0.984	21378210	4456899	16108	40270	277		
333.9339	15.119	15.122	0	0.983	27424006	5921157	14671	36677	404	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.119	15.149	-2	0.999	352501	44872	3088	7720	15		
321.8936	15.146	15.149	0	1.001	417793	72894	1744	4360	42	0.84(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.132	15.149	-1	0.984	47820184	9773158	5866	14665	1666		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

QC Flag Legend

Review Flags
M - Manually Integrated

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

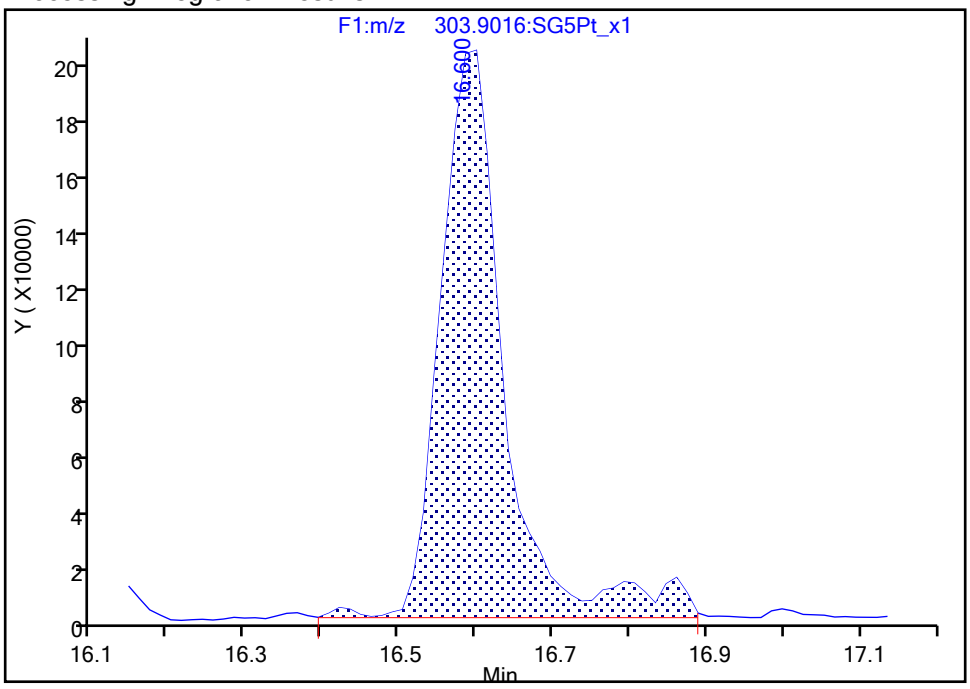
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d				
Injection Date:	17-Dec-2019 03:41:27	Instrument ID:	11D2		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		
Column:	DB-225 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

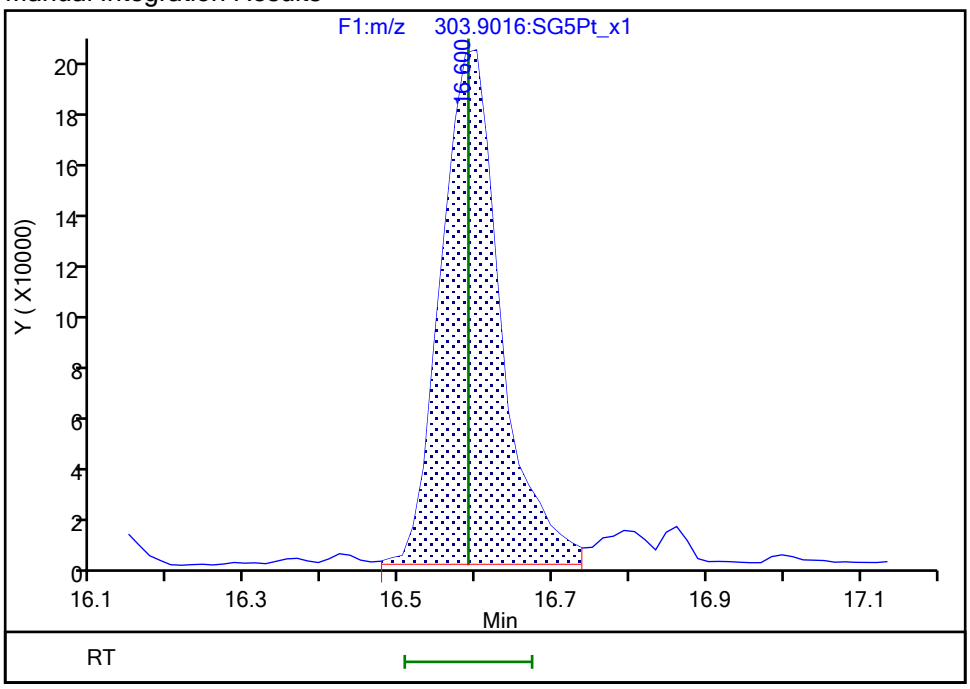
Processing Integration Results

RT: 16.60
Area: 1170067
Amount: 3.989478
Amount Units: pg/ul



Manual Integration Results

RT: 16.60
Area: 1085604
Amount: 3.810442
Amount Units: pg/ul



Reviewer: arghestanis, 17-Dec-2019 09:37:17

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

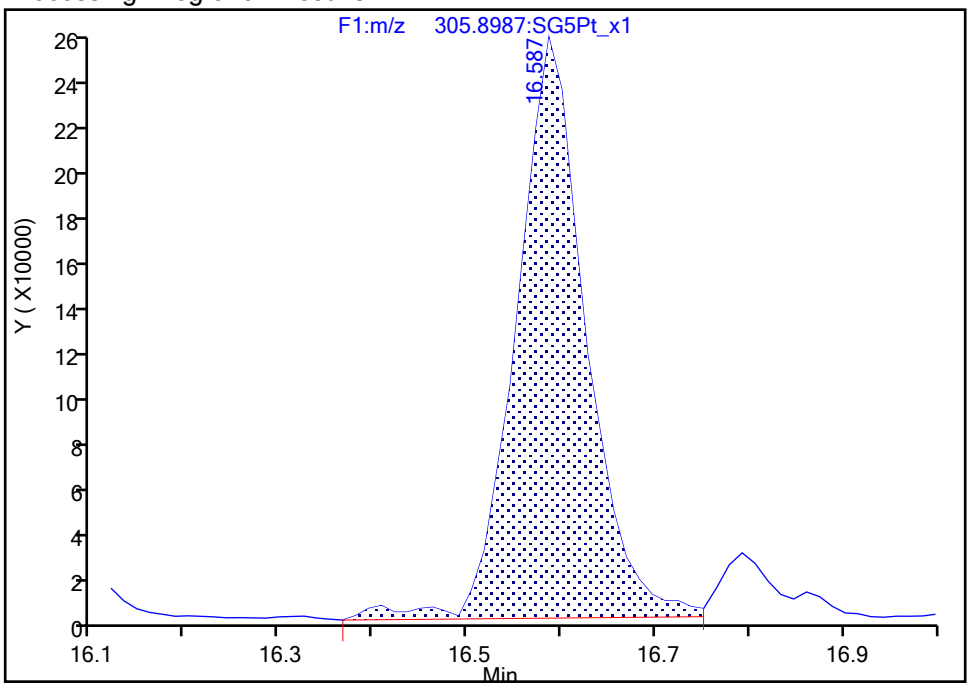
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d				
Injection Date:	17-Dec-2019 03:41:27	Instrument ID:	11D2		
Lims ID:	320-56911-A-13-A	Lab Sample ID:	320-56911-13		
Client ID:	11187072-120819-BN-DUP2				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		
Column:	DB-225 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

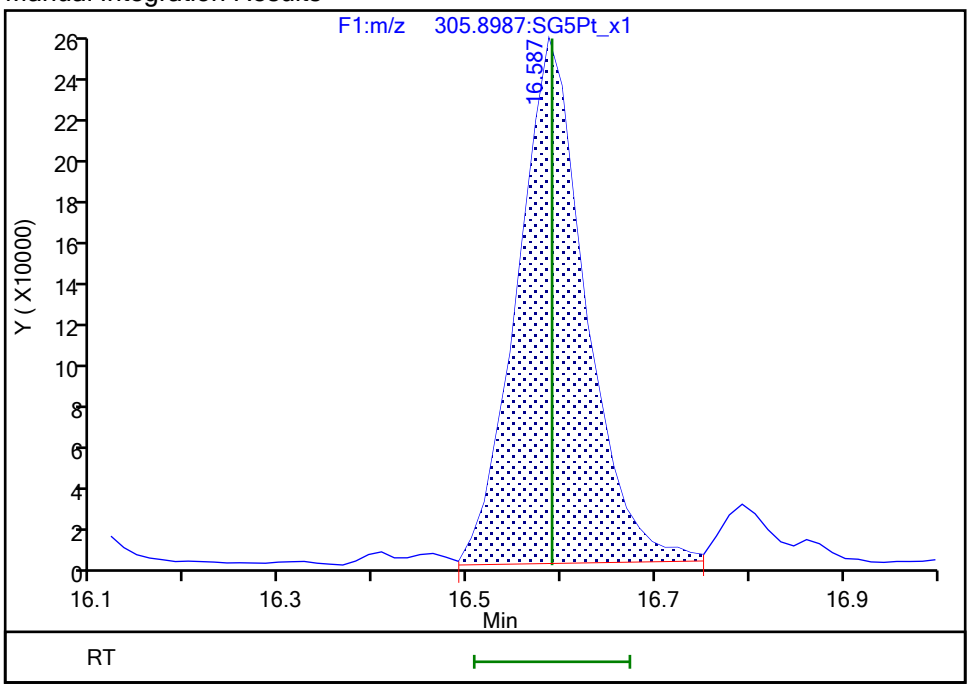
Processing Integration Results

RT: 16.59
Area: 1328367
Amount: 3.989478
Amount Units: pg/ul



Manual Integration Results

RT: 16.59
Area: 1300708
Amount: 3.810442
Amount Units: pg/ul



Reviewer: arghestanis, 17-Dec-2019 09:37:39

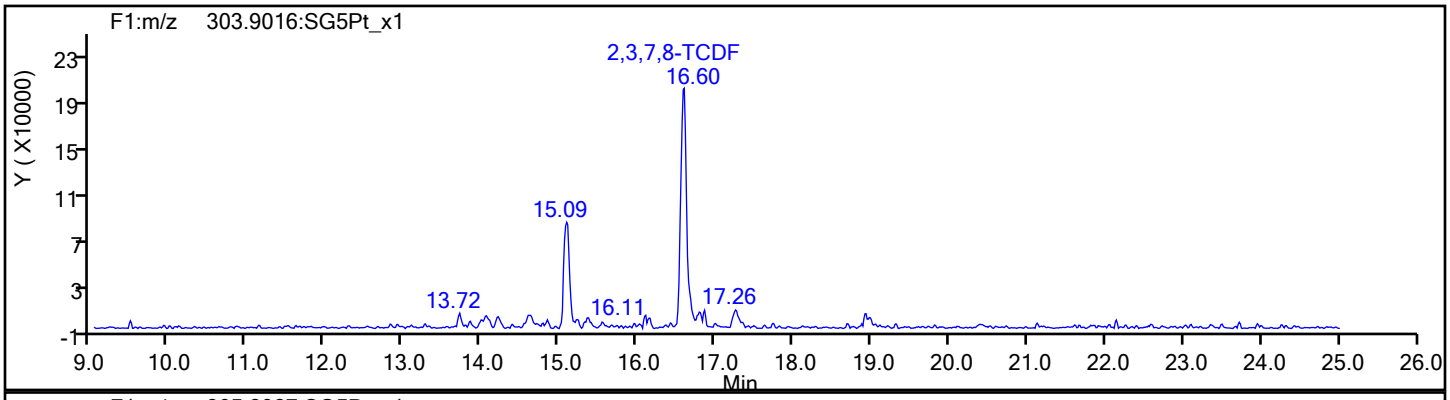
Audit Action: Manually Integrated Audit Reason: Baseline

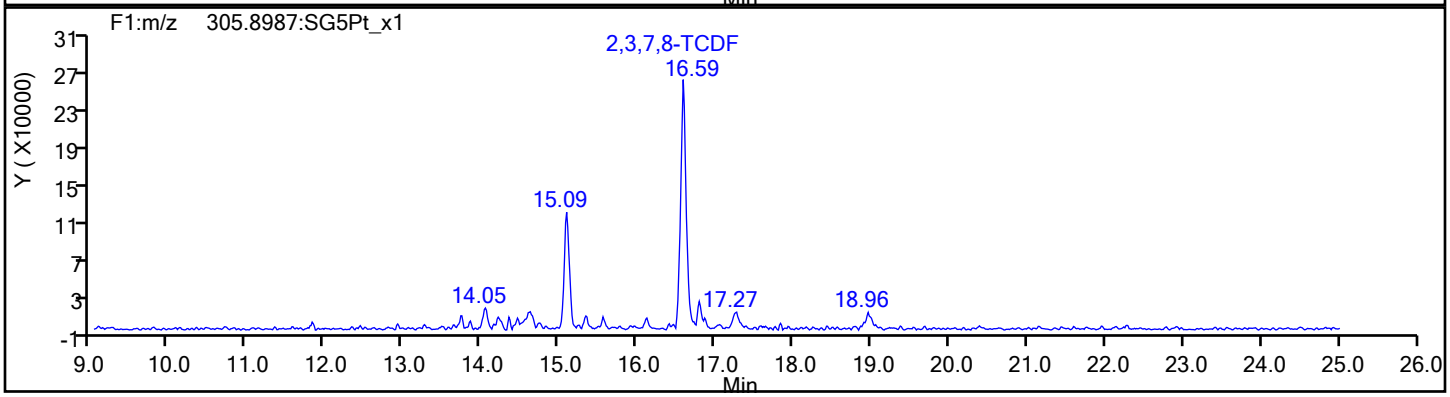
Report Date: 17-Dec-2019 09:38:37 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

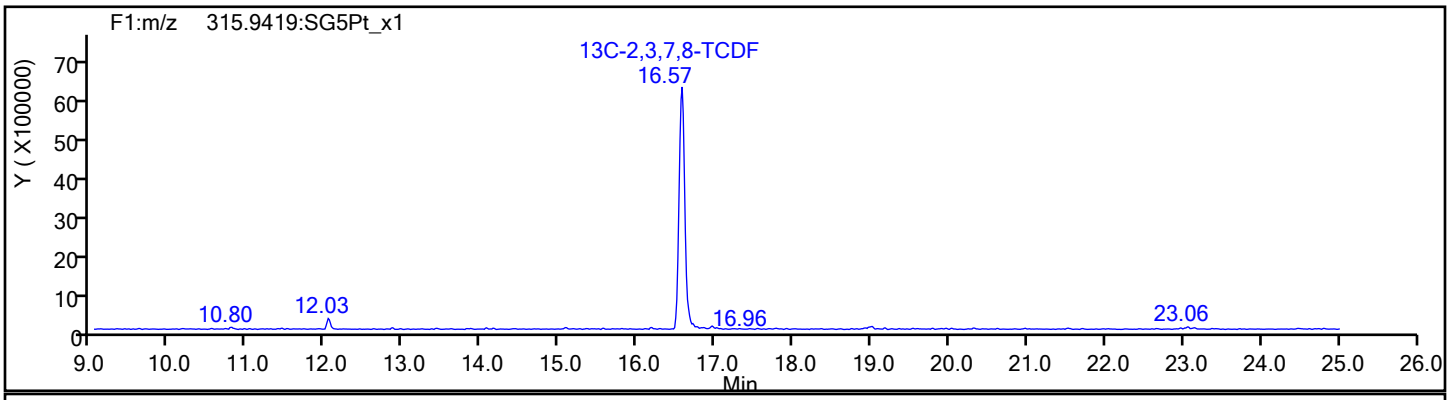
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d		
Injection Date:	17-Dec-2019 03:41:27	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345960	Sample Line#:	14
Column Type:	DB-225	Column Dia:	0.32 mm

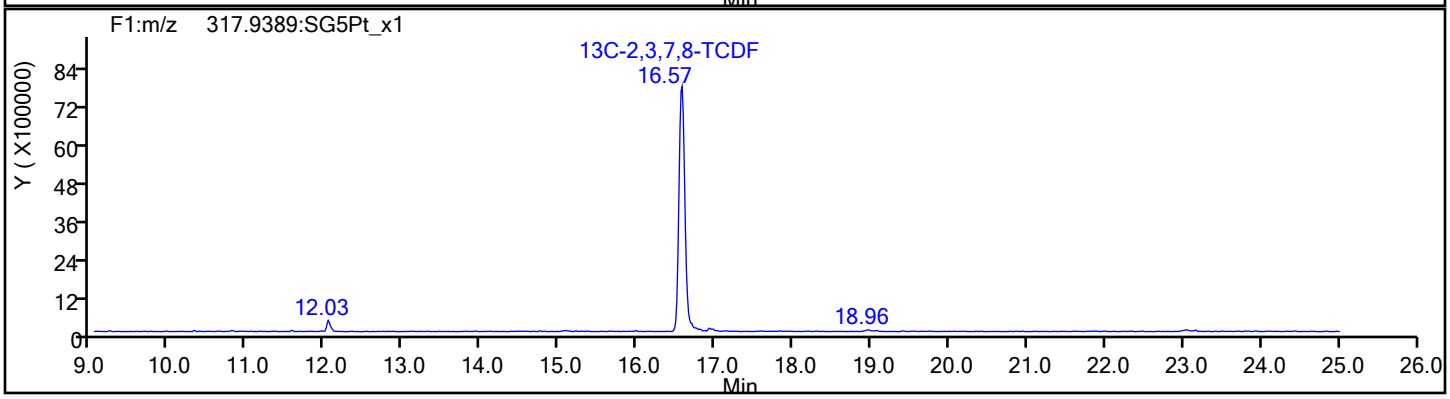
TCDF





TCDF Standards



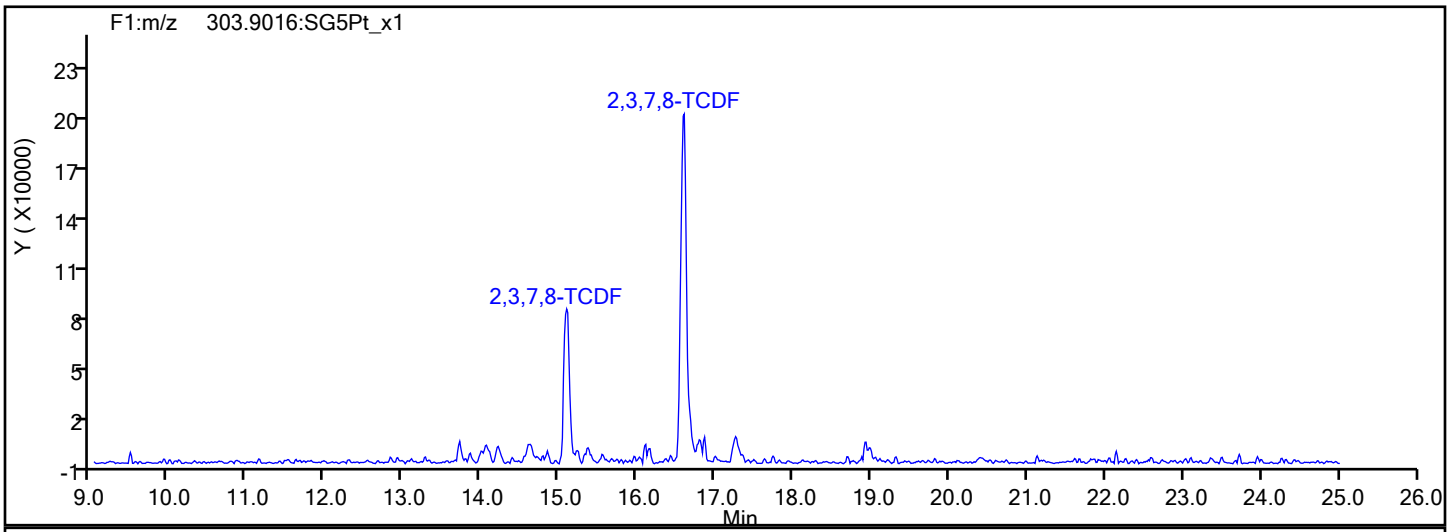


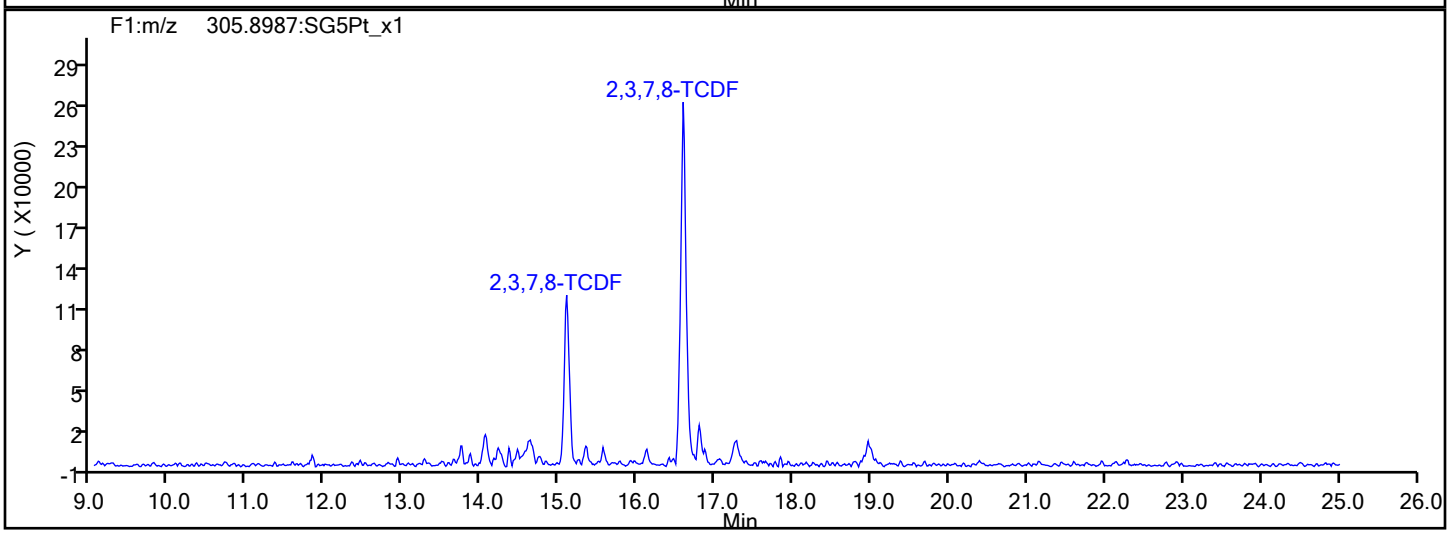
Report Date: 17-Dec-2019 09:38:37 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

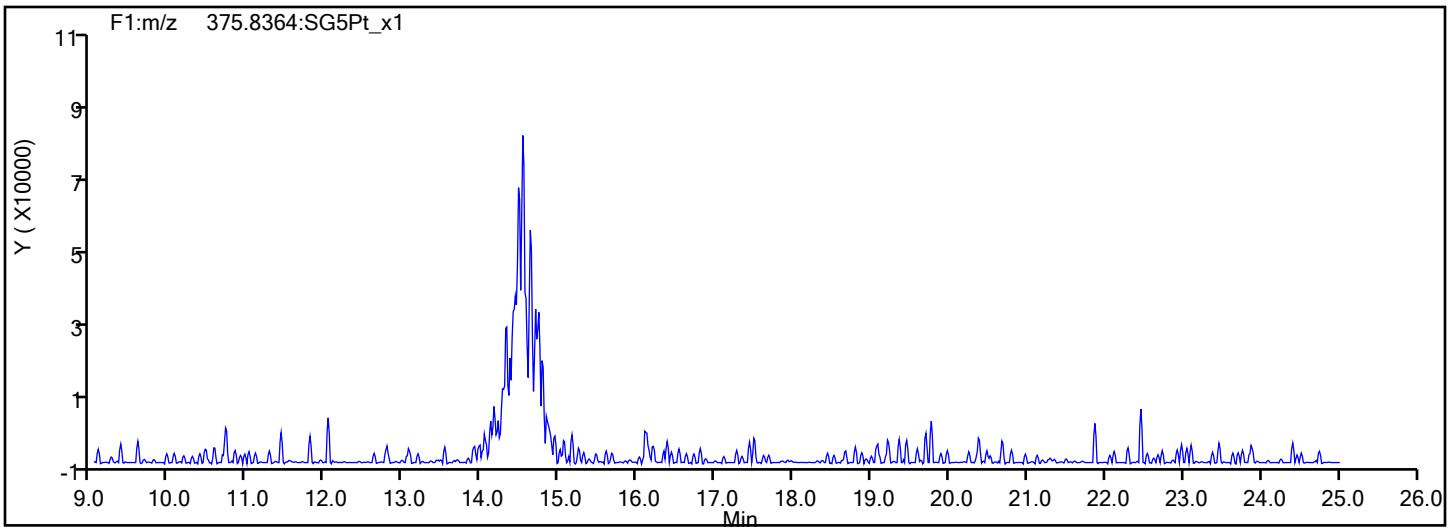
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d		
Injection Date:	17-Dec-2019 03:41:27	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345960	Sample Line#:	14
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

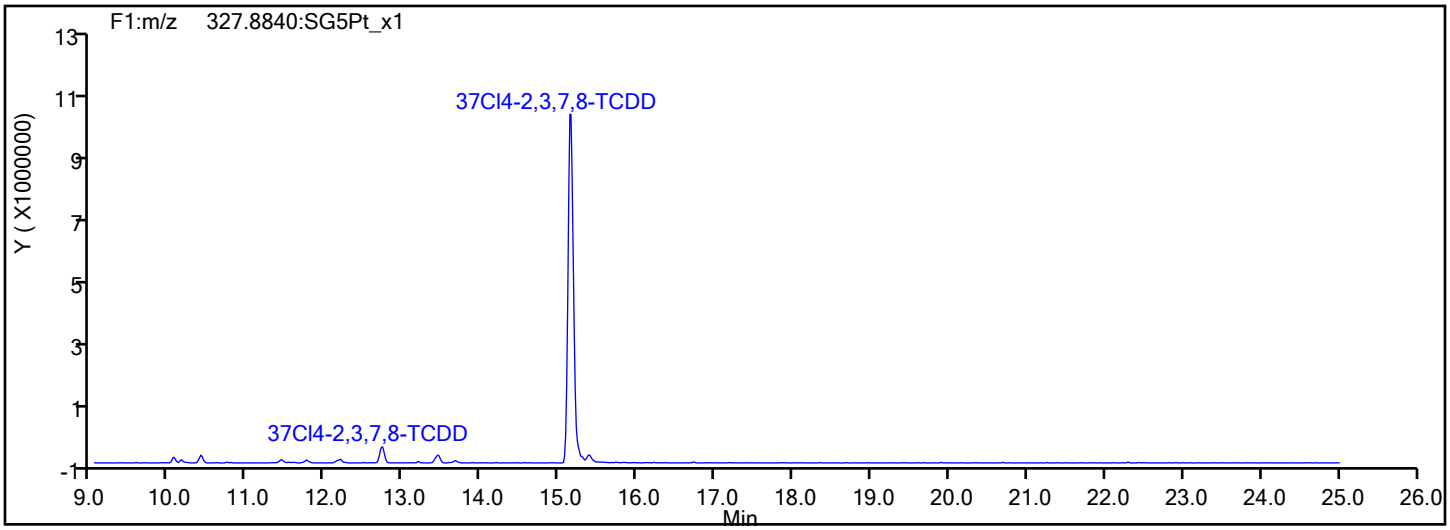


Report Date: 17-Dec-2019 09:38:37 Chrom Revision: 2.3 15-Dec-2019 06:20:02

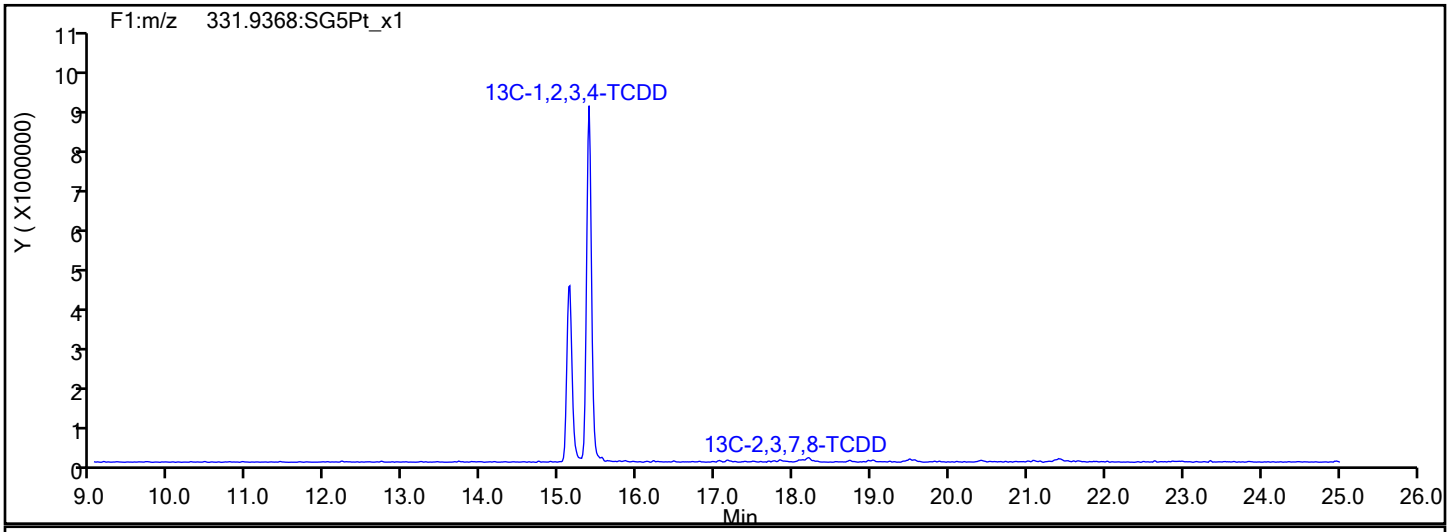
Eurofins TestAmerica, Sacramento

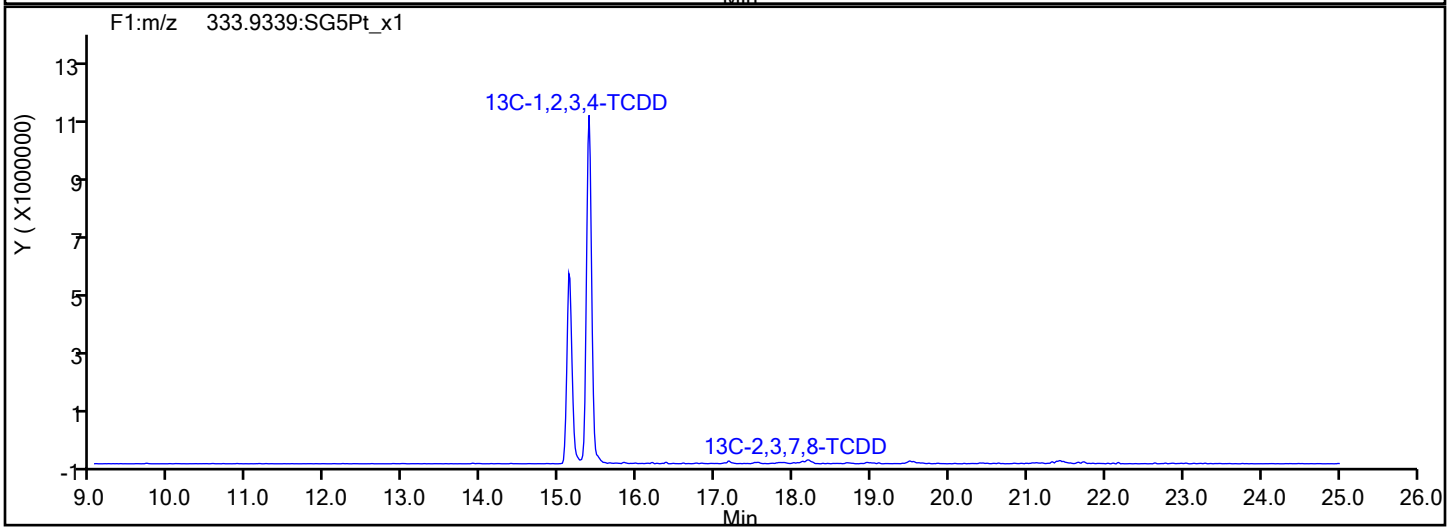
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d		
Injection Date:	17-Dec-2019 03:41:27	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345960	Sample Line#:	14
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

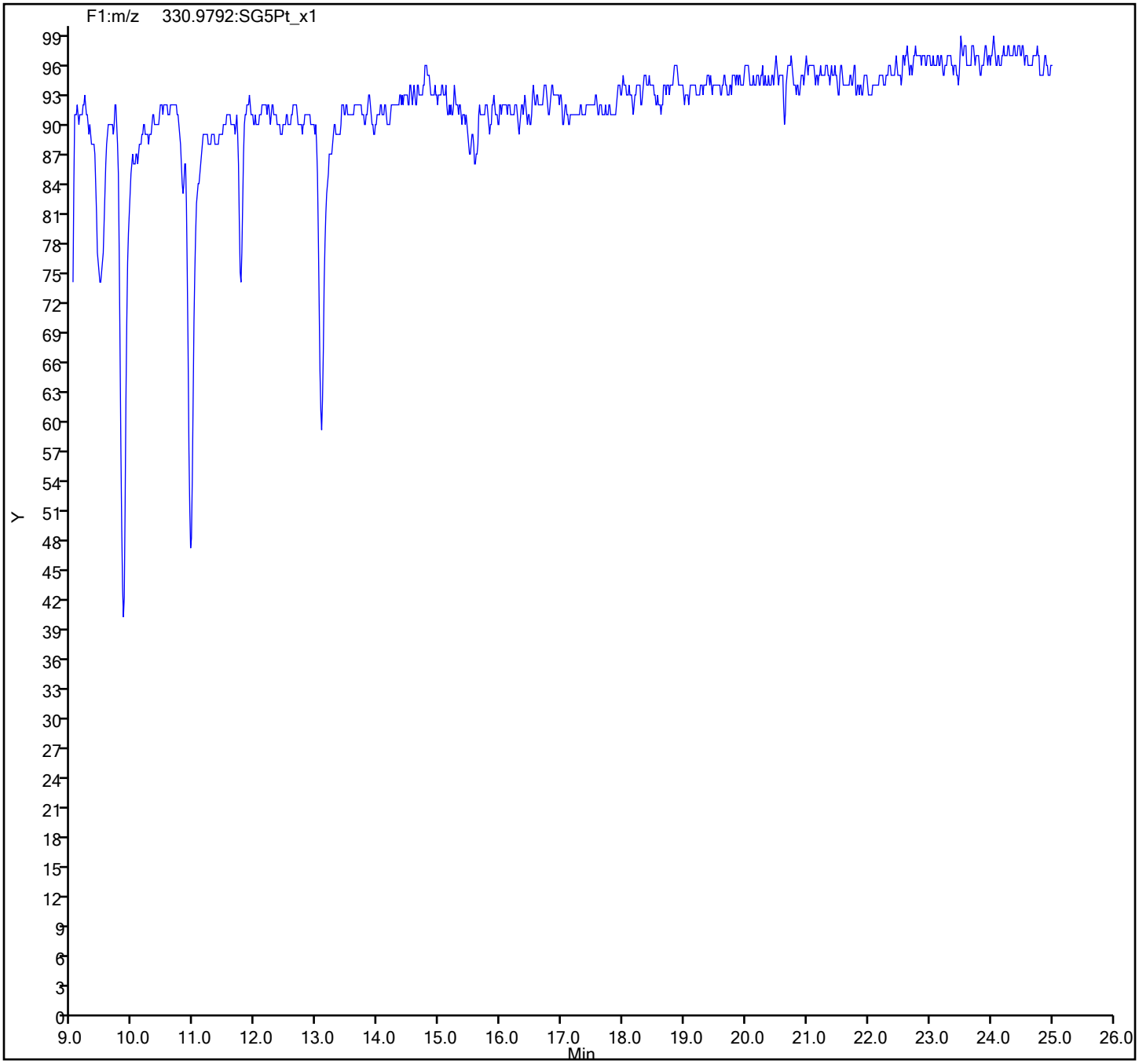




Report Date: 17-Dec-2019 09:38:37 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_014.d		
Injection Date:	17-Dec-2019 03:41:27	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120819-BN-DUP2		
Worklist#:	345960	Sample Line#:	14
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 338471

SDG No.:

Instrument ID: 10D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2019 09:46 Calibration End Date: 11/14/2019 12:50 Calibration ID: 48152

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-338471/3	14NO1910D5_3.d
Level 2	IC 320-338471/4	14NO1910D5_4.d
Level 3	IC 320-338471/5	14NO1910D5_5.d
Level 4	IC 320-338471/6	14NO1910D5_6.d
Level 5	IC 320-338471/7	14NO1910D5_7.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDF	0.8239	0.9530	0.8917	0.9295	0.9044	AveID		0.9005				5.4		20.0			
2,3,7,8-TCDD	1.0054	1.1290	1.0297	1.1138	1.0711	AveID		1.0698				4.9		20.0			
1,2,3,7,8-PeCDF	0.8588	1.0403	0.9574	1.0182	0.9772	AveID		0.9704				7.3		20.0			
2,3,4,7,8-PeCDF	0.9016	1.0617	0.9721	1.0572	1.0001	AveID		0.9986				6.6		20.0			
1,2,3,7,8-PeCDD	0.9002	1.0593	0.9957	1.0472	1.0094	AveID		1.0023				6.3		20.0			
1,2,3,4,7,8-HxCDF	0.9021	1.0898	1.0116	1.1011	1.0528	AveID		1.0315				7.8		20.0			
1,2,3,6,7,8-HxCDF	0.8966	1.1172	1.0155	1.0677	1.0208	AveID		1.0235				8.0		20.0			
2,3,4,6,7,8-HxCDF	0.9718	1.1361	1.0543	1.1069	1.0534	AveID		1.0645				5.9		20.0			
1,2,3,4,7,8-HxCDD	0.9068	1.0458	0.9688	1.0590	1.0465	AveID		1.0054				6.5		20.0			
1,2,3,6,7,8-HxCDD	0.8876	1.0552	0.9761	1.0343	0.9632	AveID		0.9833				6.7		20.0			
1,2,3,7,8,9-HxCDD	0.9997	1.1768	1.1007	1.1567	1.0840	AveID		1.1036				6.3		20.0			
1,2,3,7,8,9-HxCDF	0.9489	1.1517	1.0496	1.1119	1.0698	AveID		1.0664				7.2		20.0			
1,2,3,4,6,7,8-HpCDF	1.2963	1.5367	1.4160	1.4714	1.3998	AveID		1.4240				6.3		20.0			
1,2,3,4,6,7,8-HpCDD	0.9169	1.0954	1.0055	1.0559	1.0133	AveID		1.0174				6.6		20.0			
1,2,3,4,7,8,9-HpCDF	1.1512	1.3772	1.2519	1.3530	1.2835	AveID		1.2834				7.0		20.0			
OCDD	1.0213	1.1865	1.0829	1.1290	1.0786	AveID		1.0997				5.6		20.0			
OCDF	1.1917	1.3740	1.3011	1.3578	1.2990	AveID		1.3047				5.5		20.0			
13C-2,3,7,8-TCDF	1.3425	1.2942	1.3293	1.3554	1.3378	Ave		1.3318				1.7		35.0			
13C-2,3,7,8-TCDD	0.9528	0.9458	0.9716	0.9692	0.9840	Ave		0.9647				1.6		35.0			
13C-1,2,3,7,8-PeCDF	1.0427	1.0020	1.0457	1.0739	1.1044	Ave		1.0537				3.6		35.0			
13C-2,3,4,7,8-PeCDF	1.0036	0.9789	1.0294	1.0169	1.0574	Ave		1.0173				2.9		35.0			
13C-1,2,3,7,8-PeCDD	0.7102	0.6969	0.7175	0.7522	0.7638	Ave		0.7281				3.9		35.0			
13C-1,2,3,4,7,8-HxCDF	0.9646	0.9287	0.9525	0.9844	0.9855	Ave		0.9632				2.5		35.0			
13C-1,2,3,6,7,8-HxCDF	1.0853	1.0325	1.0260	1.0876	1.0914	Ave		1.0646				3.0		35.0			
13C-2,3,4,6,7,8-HxCDF	0.9689	0.9578	0.9421	0.9892	0.9901	Ave		0.9696				2.1		35.0			
13C-1,2,3,4,7,8-HxCDD	0.7308	0.7633	0.7491	0.7751	0.7766	Ave		0.7590				2.5		35.0			
13C-1,2,3,6,7,8-HxCDD	0.9316	0.9051	0.8879	0.9305	0.9685	Ave		0.9247				3.3		35.0			
13C-1,2,3,7,8,9-HxCDF	0.8857	0.8690	0.8836	0.9211	0.9180	Ave		0.8955				2.6		35.0			
13C-1,2,3,4,6,7,8-HpCDF	0.7833	0.7817	0.7591	0.8224	0.8185	Ave		0.7930				3.4		35.0			
13C-1,2,3,4,6,7,8-HpCDD	0.7372	0.7358	0.7256	0.7776	0.7896	Ave		0.7532				3.8		35.0			
13C-1,2,3,4,7,8,9-HpCDF	0.7068	0.7100	0.7153	0.7429	0.7729	Ave		0.7296				3.9		35.0			
13C-OCDD	0.5284	0.5274	0.5411	0.5843	0.6291	Ave		0.5621				7.8		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 338471

SDG No.:

Instrument ID: 10D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2019 09:46 Calibration End Date: 11/14/2019 12:50 Calibration ID: 48152

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
37Cl4-2,3,7,8-TCDD	1.1483	1.1874	1.5186	1.3435	1.3432	Ave		1.3082				11.3					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 338471

SDG No.:

Instrument ID: 10D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2019 09:46 Calibration End Date: 11/14/2019 12:50 Calibration ID: 48152

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-338471/3	14NO1910D5_3.d
Level 2	IC 320-338471/4	14NO1910D5_4.d
Level 3	IC 320-338471/5	14NO1910D5_5.d
Level 4	IC 320-338471/6	14NO1910D5_6.d
Level 5	IC 320-338471/7	14NO1910D5_7.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDF		AveID	642077	2974733	14438463	59808417	252127694	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDD		AveID	556018	2575271	12186908	51246180	219628955	0.500	2.00	10.0	40.0	200
1,2,3,7,8-PeCDF		AveID	2598728	12569686	60982032	259554068	1124414192	2.50	10.0	50.0	200	1000
2,3,4,7,8-PeCDF		AveID	2626241	12532612	60953518	255176989	1101823445	2.50	10.0	50.0	200	1000
1,2,3,7,8-PeCDD		AveID	1855324	8901872	43513844	186964565	803296921	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF		AveID	1849054	9042597	45826476	194792330	844095405	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF		AveID	2067919	10306095	49548801	208690260	906309496	2.50	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF		AveID	2000921	9723529	47237432	196787993	848438372	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD		AveID	1408236	7132423	34514378	147524233	661180887	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD		AveID	1757293	8533516	41219178	172956675	758968703	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD		AveID	1765822	8771399	42847509	177277735	769482602	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF		AveID	1786006	8942226	44109482	184050734	798982446	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF		AveID	2157779	10733813	51117337	217460089	932005937	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD		AveID	1436378	7201830	34696372	147557790	650929056	2.50	10.0	50.0	200	1000
1,2,3,4,7,8,9-HpCDF		AveID	1729011	8737178	42585703	180625829	807051823	2.50	10.0	50.0	200	1000
OCDD		AveID	2293549	11182534	55739047	237100919	1103964033	5.00	20.0	100	400	2000
OCDF		AveID	2676042	12949120	66966196	285155825	1329507408	5.00	20.0	100	400	2000
13C-2,3,7,8-TCDF	13CTC	Ave	155856912	156065046	161928326	160860723	139383549	100	100	100	100	100
13C-2,3,7,8-TCDD	13CTC	Ave	110606857	114053402	118357002	115029444	102520996	100	100	100	100	100
13C-1,2,3,7,8-PeCDF	13CTC	Ave	121045773	120823246	127384973	127455889	115062874	100	100	100	100	100
13C-2,3,4,7,8-PeCDF	13CTC	Ave	116513735	118044282	125399433	120686165	110168728	100	100	100	100	100
13C-1,2,3,7,8-PeCDD	13CTC	Ave	82444355	84035570	87404800	89271526	79581792	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDF	13CHx	Ave	81993266	82977803	90601161	88457179	80175121	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDF	13CHx	Ave	92255496	92252784	97586689	97731144	88786422	100	100	100	100	100
13C-2,3,4,6,7,8-HxCDF	13CHx	Ave	82356882	85583439	89609086	88889402	80545635	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDD	13CHx	Ave	62120842	68199301	71254969	69650431	63178776	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDD	13CHx	Ave	79191499	80868571	84454503	83609273	78792852	100	100	100	100	100
13C-1,2,3,7,8,9-HxCDF	13CHx	Ave	75284516	77641252	84048823	82765963	74684364	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDF	13CHx	Ave	66584092	69849087	72198948	73893576	66583432	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDD	13CHx	Ave	62661164	65748052	69012021	69874428	64235657	100	100	100	100	100
13C-1,2,3,4,7,8,9-HpCDF	13CHx	Ave	60078913	63441185	68033057	66749921	62876654	100	100	100	100	100
13C-OCDD	13CHx	Ave	89825341	94246168	102939677	105005841	102351522	200	200	200	200	200
37Cl4-2,3,7,8-TCDD	13CTC	Ave	666561	2863654	18499321	63777935	279889579	0.500	2.00	10.0	40.0	200

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 338471

SDG No.:

Instrument ID: 10D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2019 09:46 Calibration End Date: 11/14/2019 12:50 Calibration ID: 48152

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

	File Name	File Text	Sample ID	Bottle	Method/Matrix	Box #	User	Sample Size
1	14NO1910D5_1	WDM HRDXNCP_00040	WDM 111419	Tray01:1	Dioxin		SMA	1.000000
2	14NO1910D5_2	Solvent Blank C-14	SB 111419	Tray01:3	---		SMA	1.000000
3	14NO1910D5_3	CS-2 HRDXNL2_00027	IC111419	Tray01:4	Dioxin		SMA	1.000000
4	14NO1910D5_4	CS-3 HRDXNL3_00025	IC111419A	Tray01:5	Dioxin		SMA	1.000000
5	14NO1910D5_5	CS-4 HRDXNL4_00085	IC111419B	Tray01:2	Dioxin		SMA	1.000000
6	14NO1910D5_6	CS-5 HRDXNL5_00028	IC111419C	Tray01:6	Dioxin	---	SMA	1.000000
7	14NO1910D5_7	CS-6 HRDXNL6_00024	IC111419D	Tray01:7	Dioxin		SMA	1.000000
8	14NO1910D5_8	Solvent Blank C-14	SB 111419A	Tray01:3	---		SMA	1.000000
9	14NO1910D5_9	ICV HRDXNIC_00042	ICV111419	Tray01:8	Dioxin		SMA	1.000000
10	14NO1910D5_10	Solvent Blank C-14	SB 111419B	Tray01:3	---		SMA	1.000000

Log file reviewed
|
AJS
11-14-19

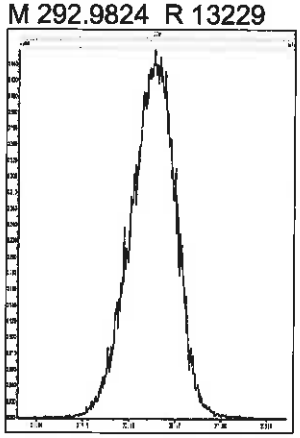
Units	MS File	Inlet File	Inject Volume	Process
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
---	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
---	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
---	DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck
	DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck

Process Options	Action On Error	s5
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---

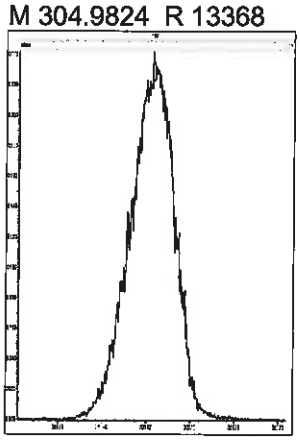
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Thursday, November 14, 2019 08:08:44 Pacific Standard Time

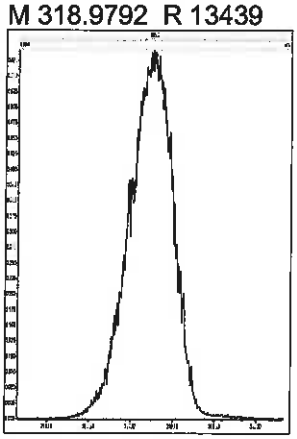
M 292.9824 R 13229



M 304.9824 R 13368



M 318.9792 R 13439



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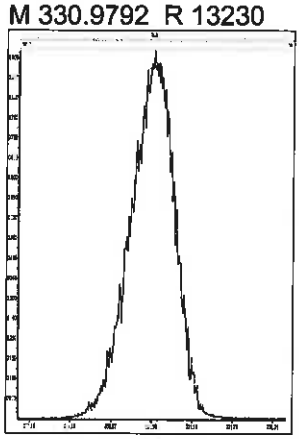
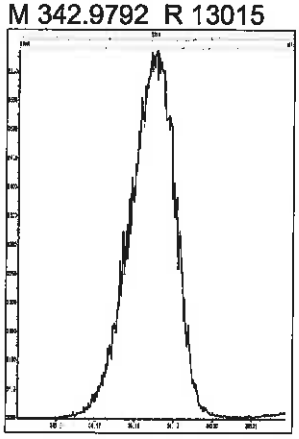
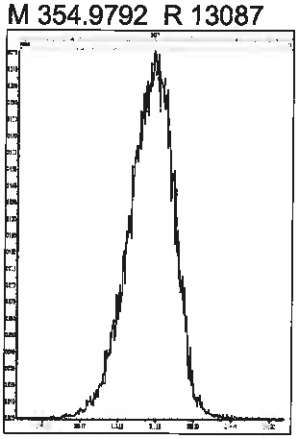


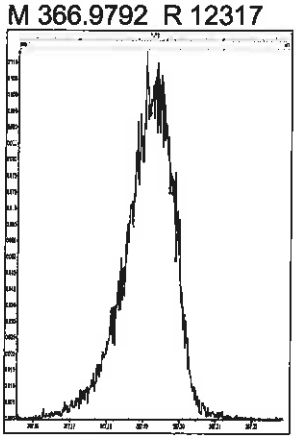
M 342.9792 R 13015



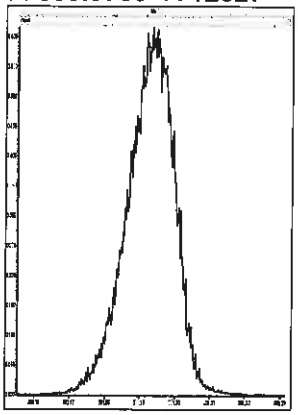
M 354.9792 R 13087



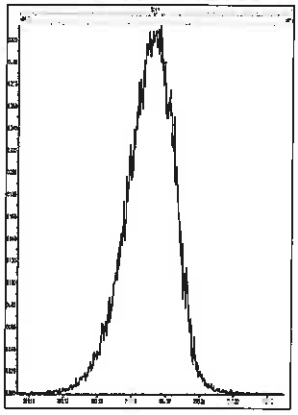
M 366.9792 R 12317



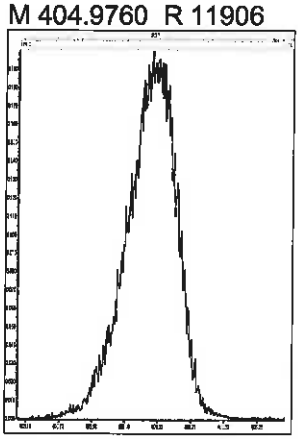
M 380.9760 R 12627



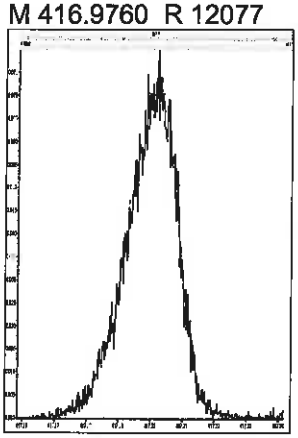
M 392.9760 R 12139



M 404.9760 R 11906



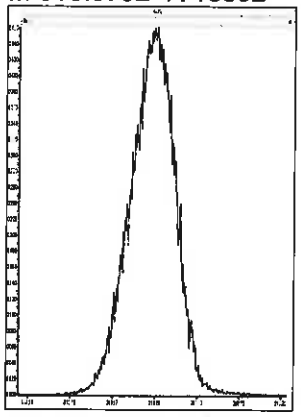
M 416.9760 R 12077



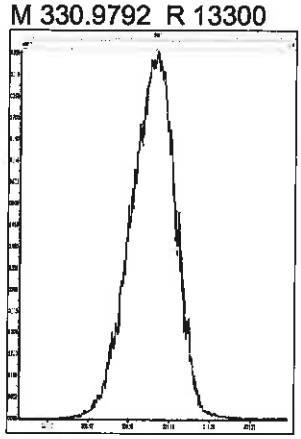
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Thursday, November 14, 2019 08:09:27 Pacific Standard Time

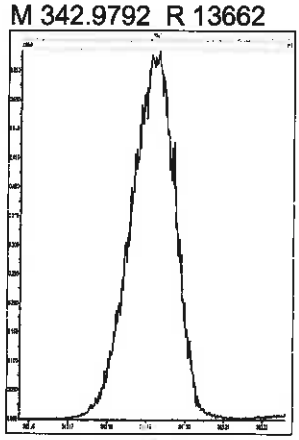
M 318.9792 R 13302



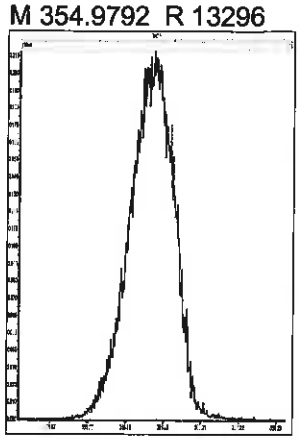
M 330.9792 R 13300



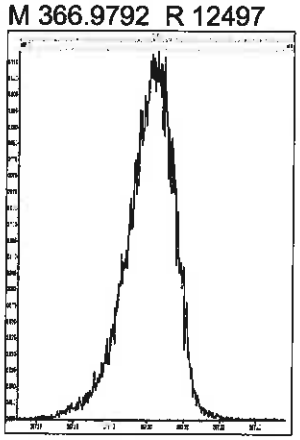
M 342.9792 R 13662



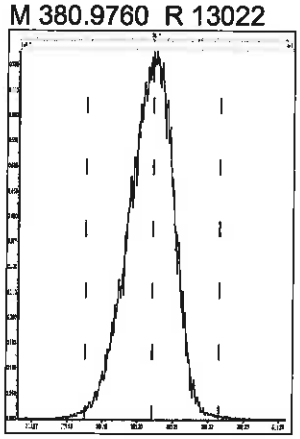
M 354.9792 R 13296



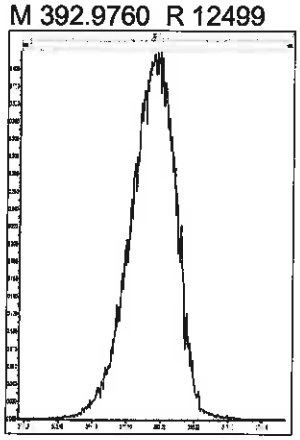
M 366.9792 R 12497



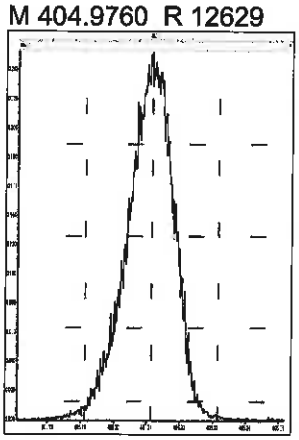
M 380.9760 R 13022



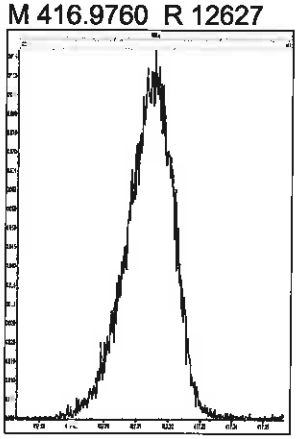
M 392.9760 R 12499



M 404.9760 R 12629



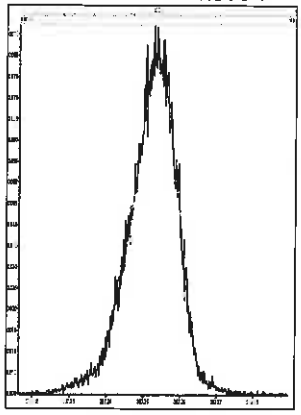
M 416.9760 R 12627



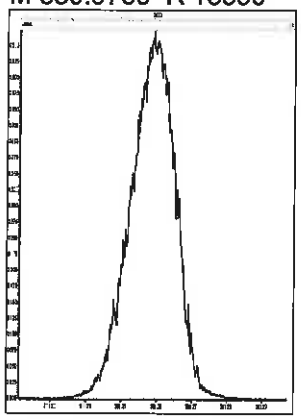
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Thursday, November 14, 2019 08:10:25 Pacific Standard Time

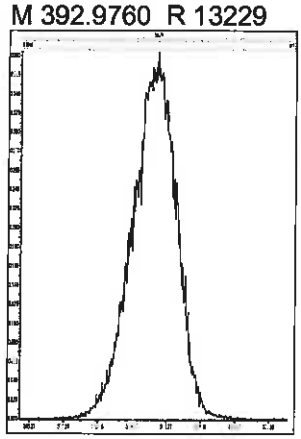
M 366.9792 R 12194



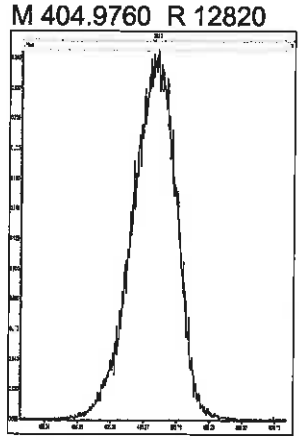
M 380.9760 R 13590



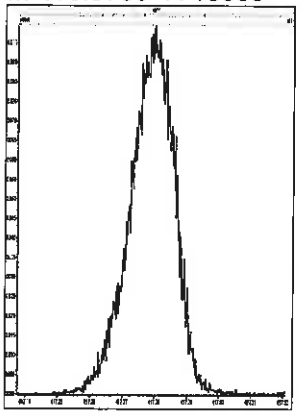
M 392.9760 R 13229



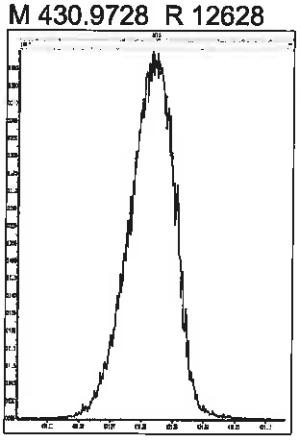
M 404.9760 R 12820



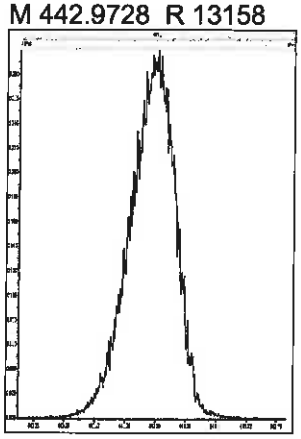
M 416.9760 R 13659



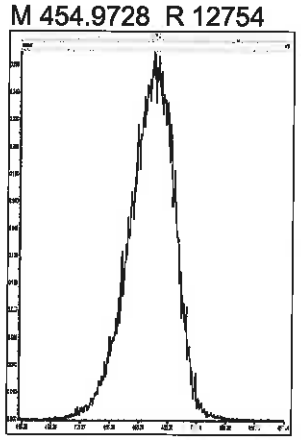
M 430.9728 R 12628



M 442.9728 R 13158



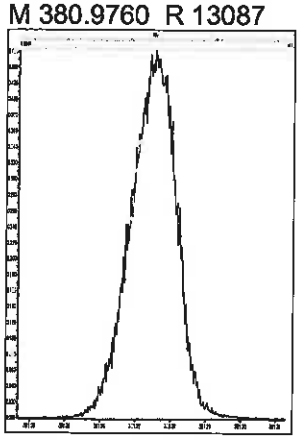
M 454.9728 R 12754



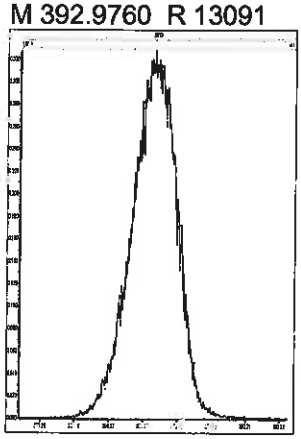
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Thursday, November 14, 2019 08:11:15 Pacific Standard Time

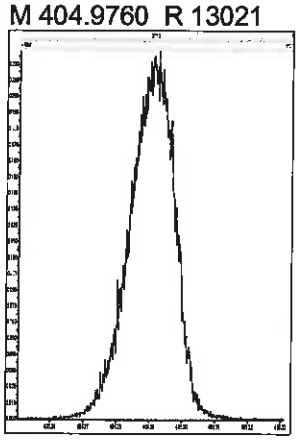
M 380.9760 R 13087



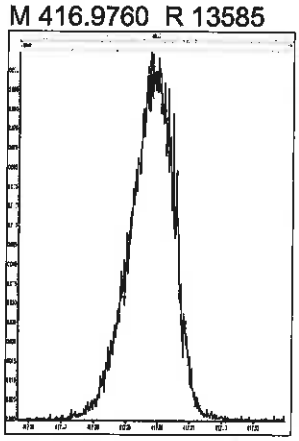
M 392.9760 R 13091



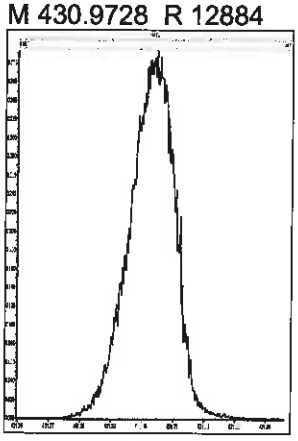
M 404.9760 R 13021



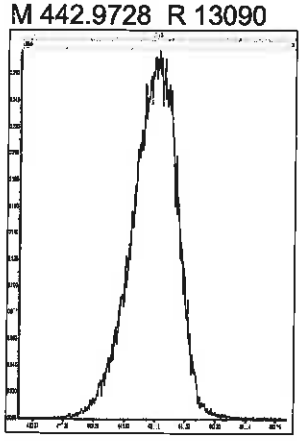
M 416.9760 R 13585



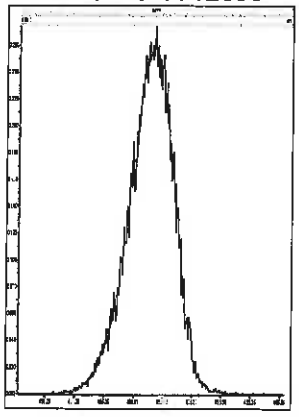
M 430.9728 R 12884



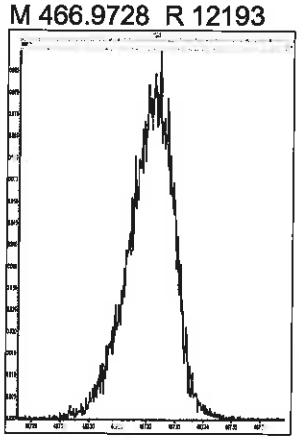
M 442.9728 R 13090



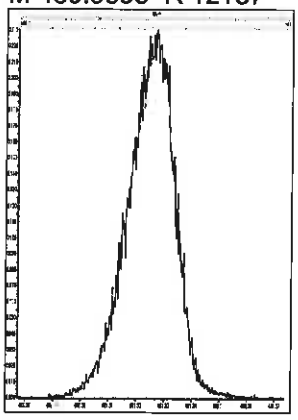
M 454.9728 R 12690



M 466.9728 R 12193



M 480.9696 R 12137



File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

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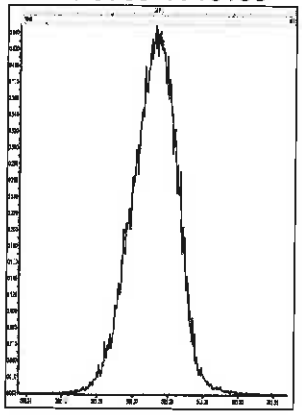
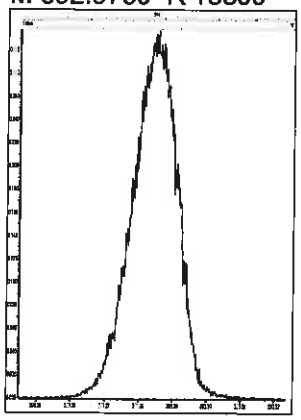
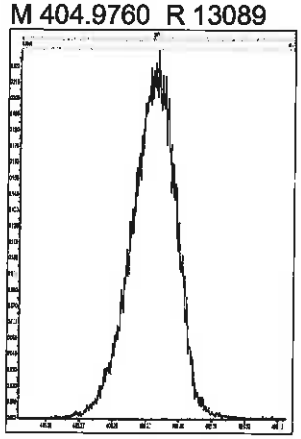
M 380.9760 R 13156



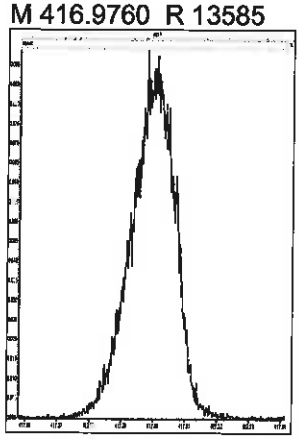
M 392.9760 R 13300



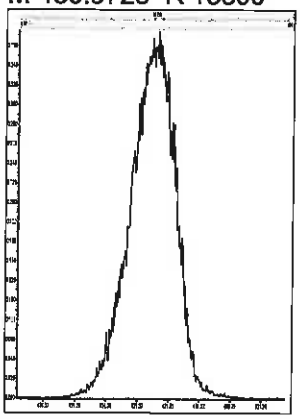
M 404.9760 R 13089



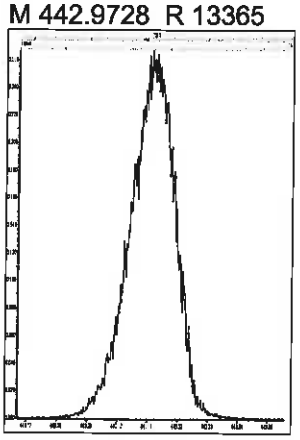
M 416.9760 R 13585



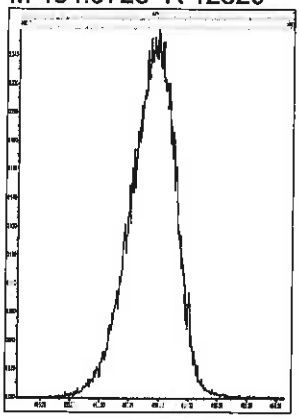
M 430.9728 R 13300



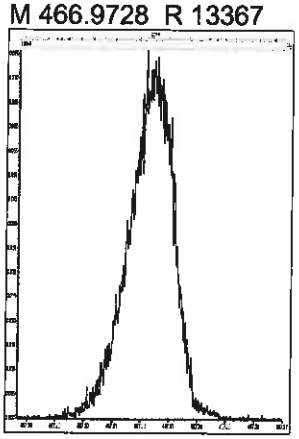
M 442.9728 R 13365



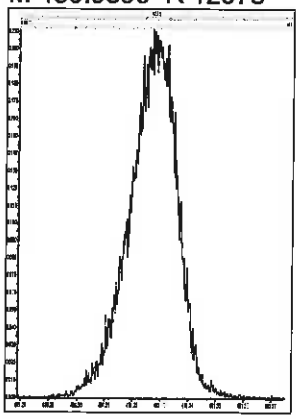
M 454.9728 R 12820



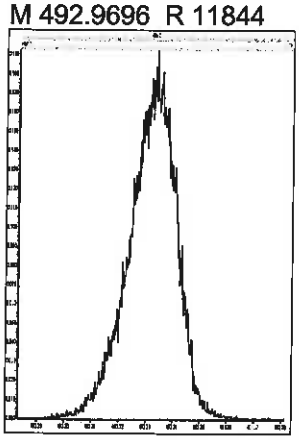
M 466.9728 R 13367



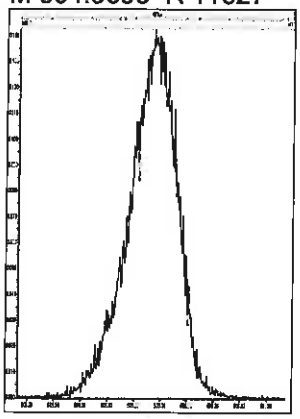
M 480.9696 R 12078



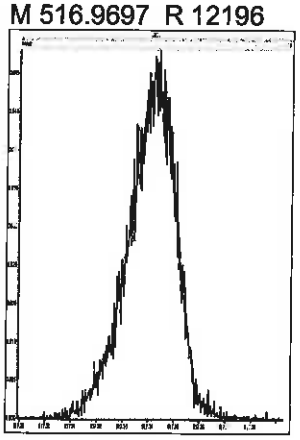
M 492.9696 R 11844



M 504.9696 R 11627



M 516.9697 R 12196



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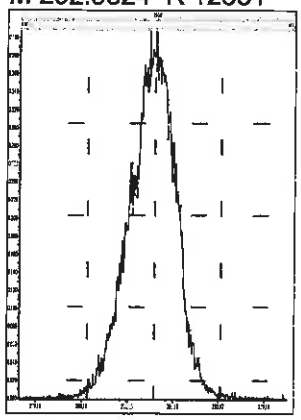
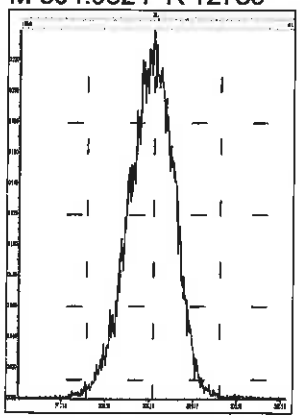
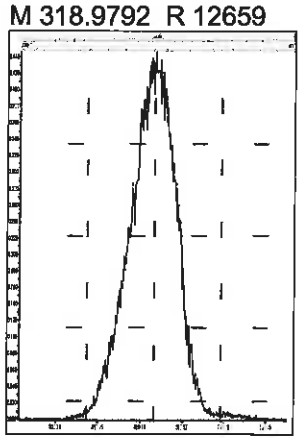
M 292.9824 R 12531



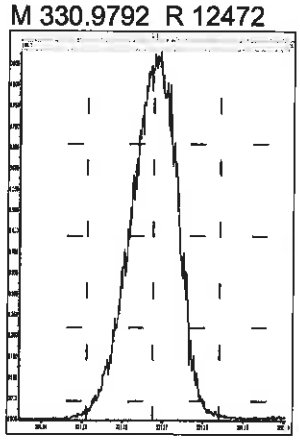
M 304.9824 R 12789



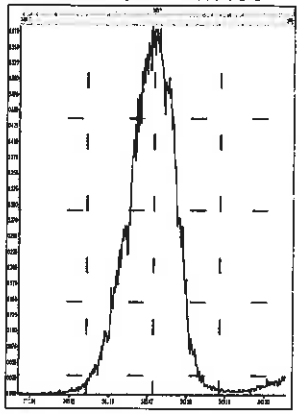
M 318.9792 R 12659



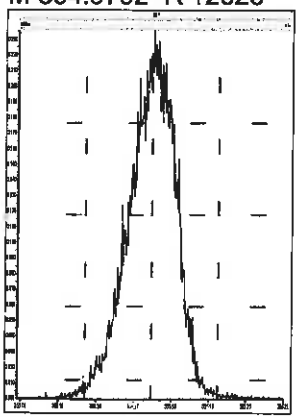
M 330.9792 R 12472



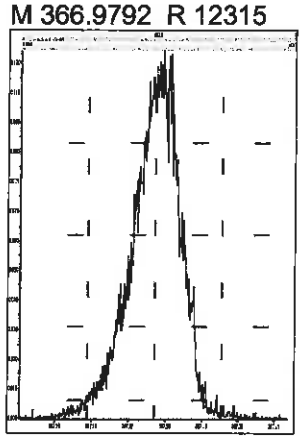
M 342.9792 R 12408



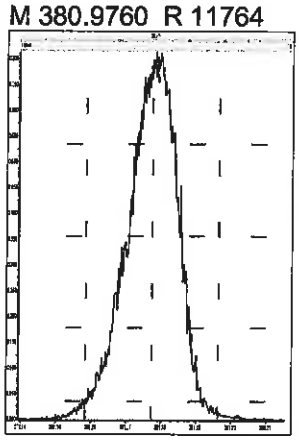
M 354.9792 R 12626



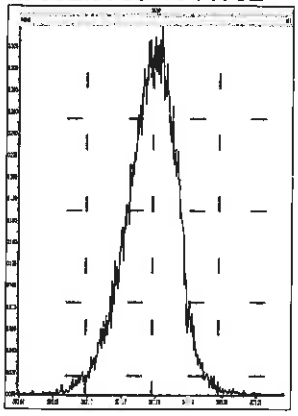
M 366.9792 R 12315



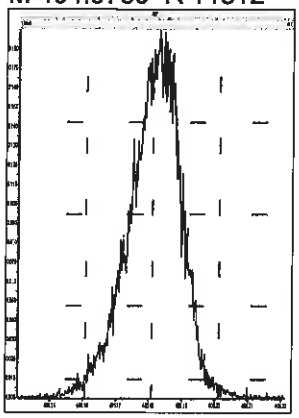
M 380.9760 R 11764



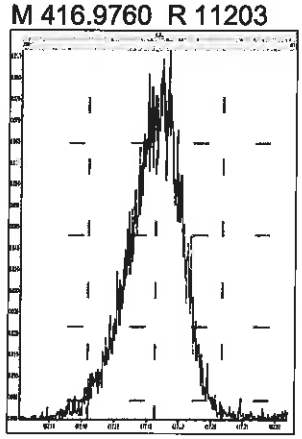
M 392.9760 R 11792



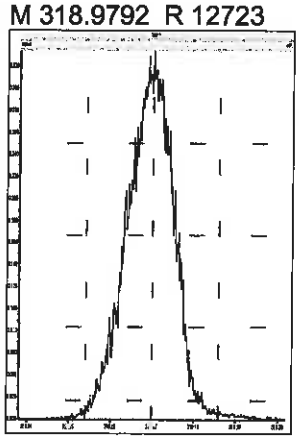
M 404.9760 R 11312



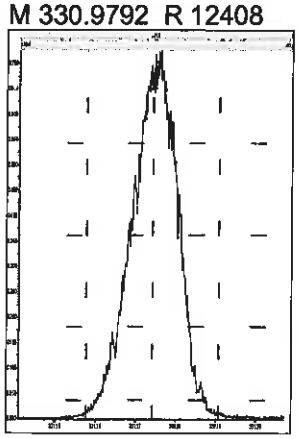
M 416.9760 R 11203



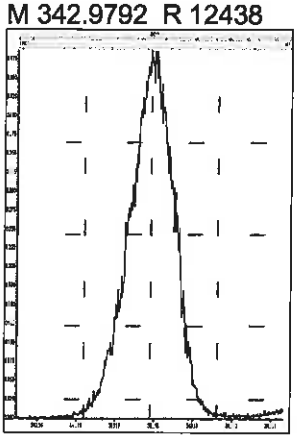
M 318.9792 R 12723



M 330.9792 R 12408



M 342.9792 R 12438



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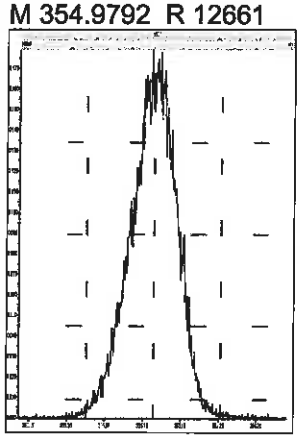

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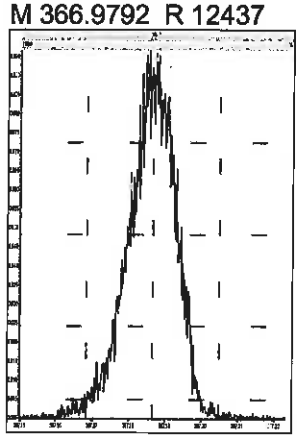

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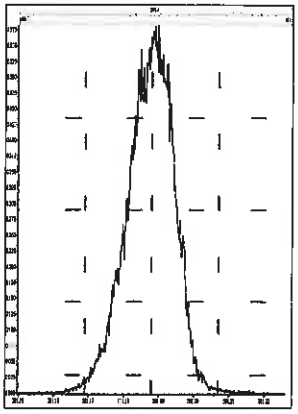
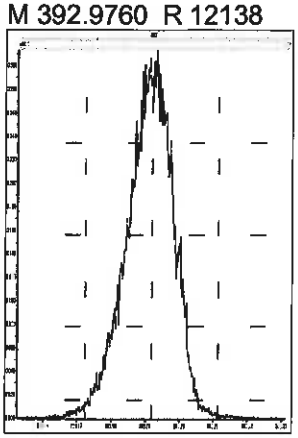


M 392.9760 R 12138



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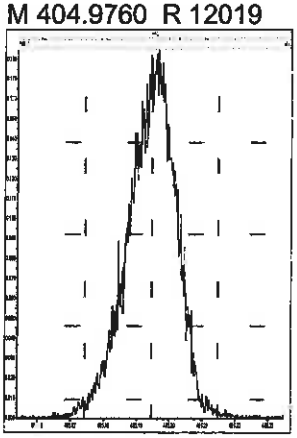

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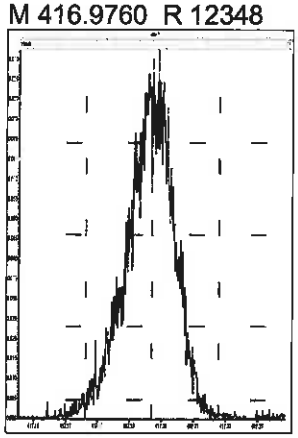

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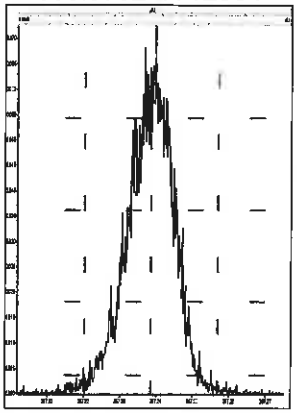

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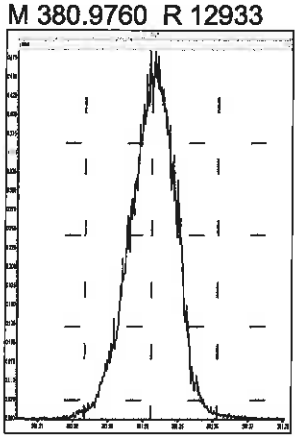

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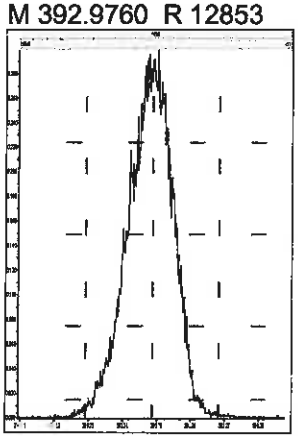

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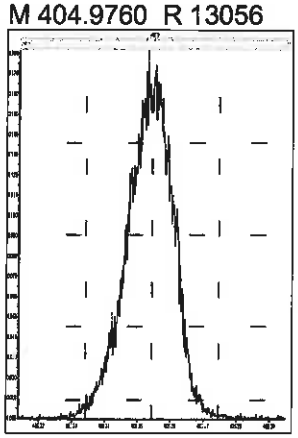
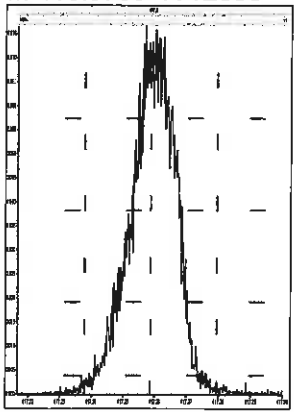
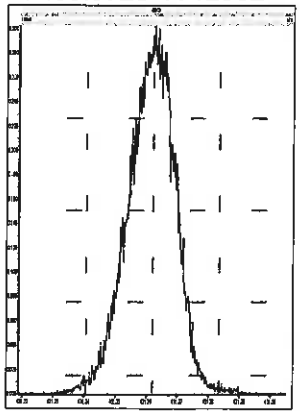


M 416.9760 R 12853



M 430.9728 R 12562



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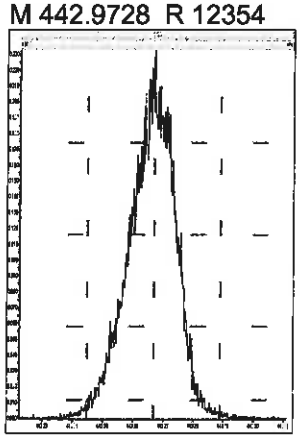
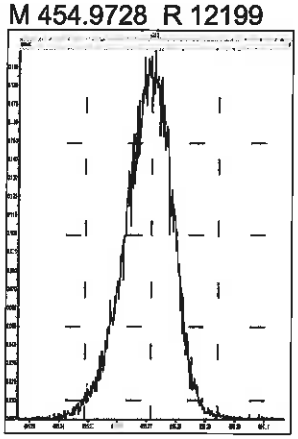
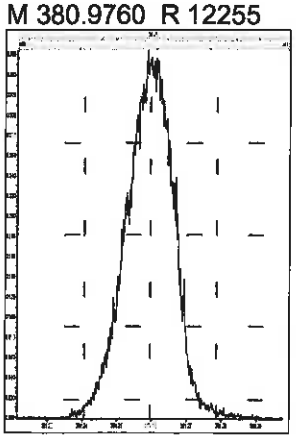


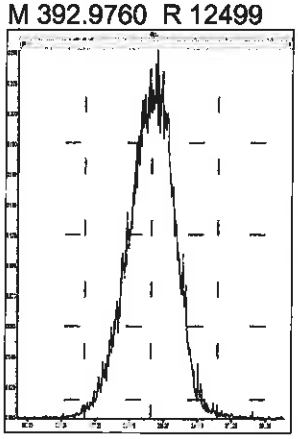
M 454.9728 R 12199



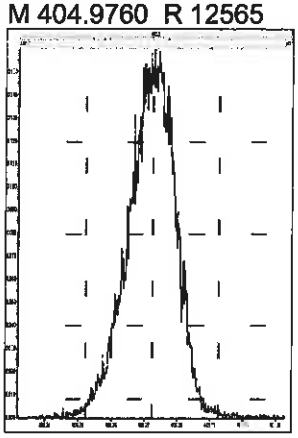
M 380.9760 R 12255



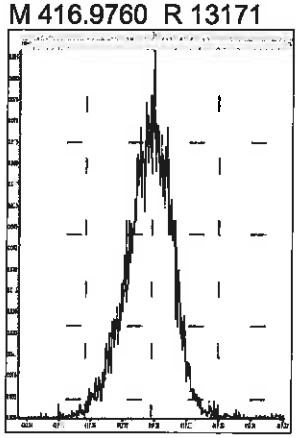
M 392.9760 R 12499



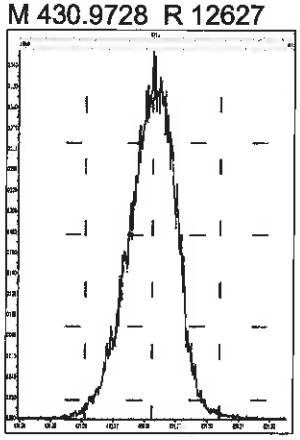
M 404.9760 R 12565



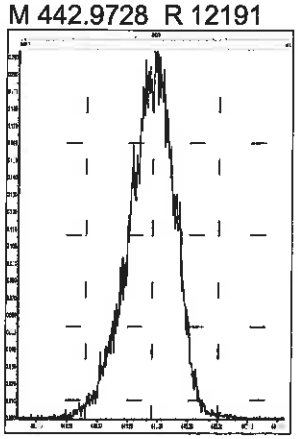
M 416.9760 R 13171



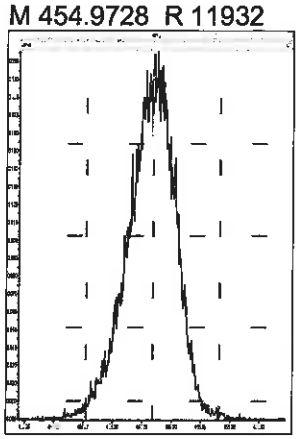
M 430.9728 R 12627



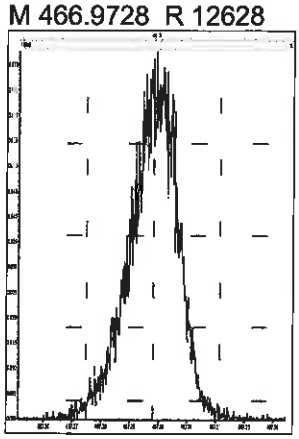
M 442.9728 R 12191



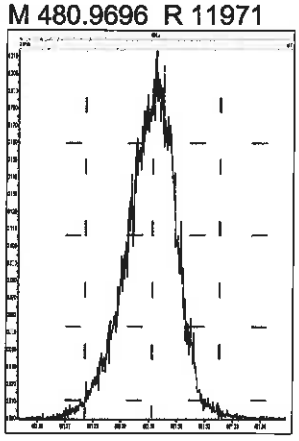
M 454.9728 R 11932



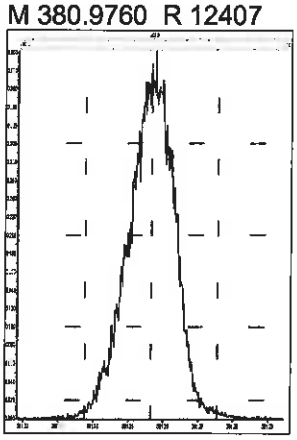
M 466.9728 R 12628



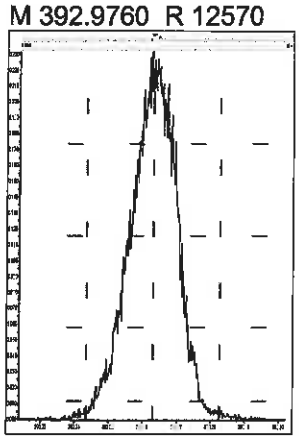
M 480.9696 R 11971



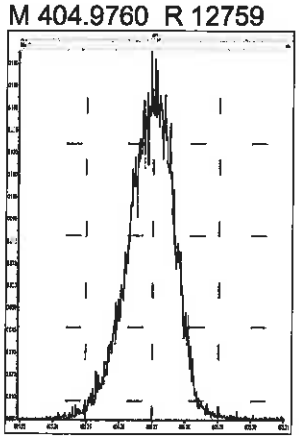
M 380.9760 R 12407



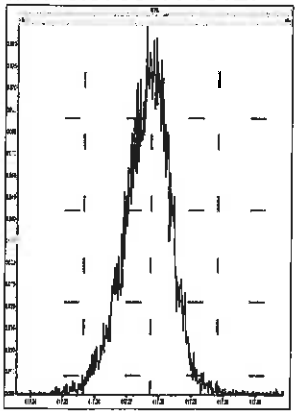
M 392.9760 R 12570



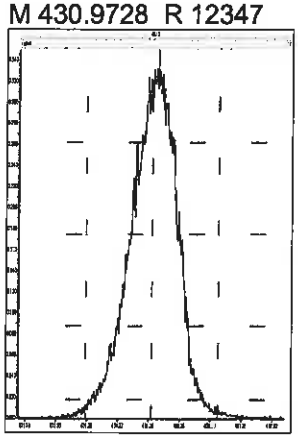
M 404.9760 R 12759



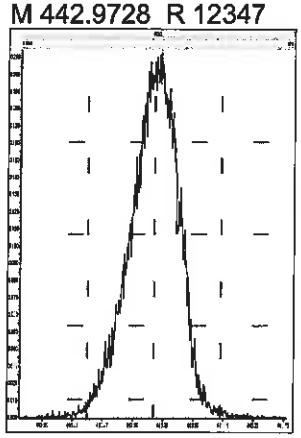
M 416.9760 R 13127



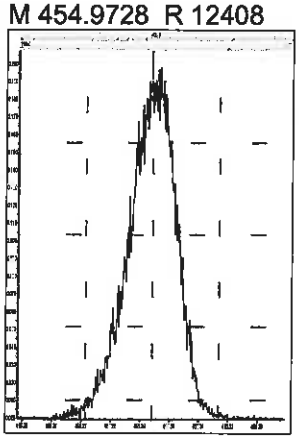
M 430.9728 R 12347



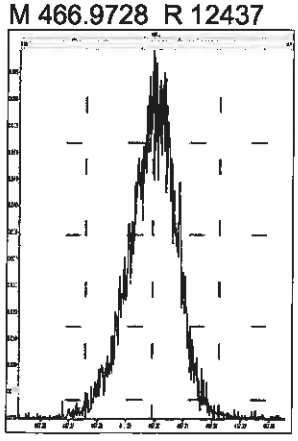
M 442.9728 R 12347



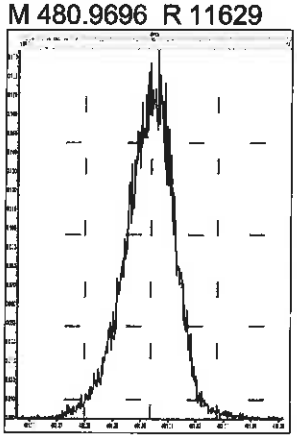
M 454.9728 R 12408



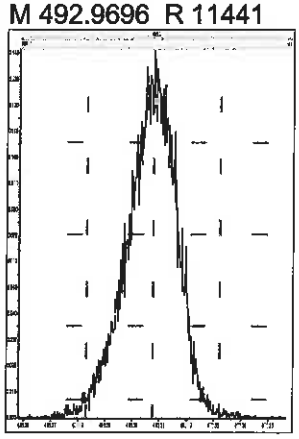
M 466.9728 R 12437



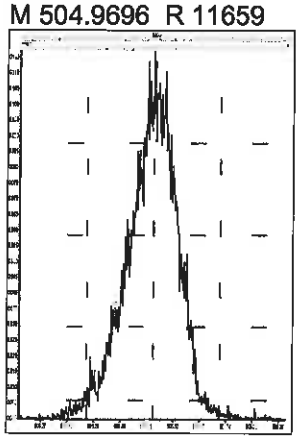
M 480.9696 R 11629



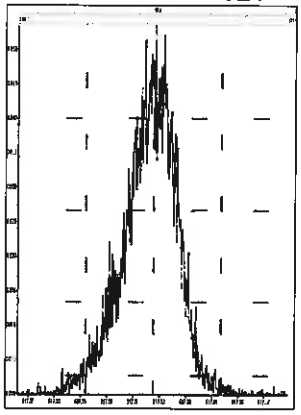
M 492.9696 R 11441



M 504.9696 R 11659



M 516.9697 R 11821



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Nov-2019 09:46:53 ALS Bottle#: 4 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419 CS-2 HRDXNL2_00027
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:14 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:40:00

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.548	116091898	0.79	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	155856912	0.77	1.3318	100.8	100.8	0.1903	0.1903	101	
2,3,7,8-TCDF	17.049	642077	0.77	0.9005	0.4575	0.4575	0.0105	0.0105	91.50	
S Total TCDF					0.4575	0.4575	0.0105	0.0105		
D 13C-2,3,7,8-TCDD	17.729	110606857	0.78	0.9647	98.8	98.8	0.2967	0.2967	98.76	
2,3,7,8-TCDD	17.744	556018	0.76	1.0698	0.4699	0.4699	0.0143	0.0143	93.98	
$ 37Cl4-2,3,7,8-TCDD	17.744	666561		1.3082	0.4389	0.4389	0.005415	0.005415	87.78	
S Total TCDD					0.4699	0.4699	0.0143	0.0143		
D 13C-1,2,3,7,8-PeCDF	21.949	121045773	1.55	1.0537	99.0	99.0	0.2880	0.2880	98.95	
1,2,3,7,8-PeCDF	21.977	2598728	1.59	0.9704	2.212	2.212	0.0204	0.0204	88.50	
D 13C-2,3,4,7,8-PeCDF	23.258	116513735	1.58	1.0173			0.4233	0.4233	99.68	
2,3,4,7,8-PeCDF	23.286	2626241	1.60	0.9986	2.257	2.257	0.0224	0.0224	90.29	
S Total PeCDF					4.470	4.470	0.0214	0.0214		
D 13C-1,2,3,7,8-PeCDD	23.968	82444355	1.59	0.7281	97.5	97.5	0.1502	0.1502	97.53	
1,2,3,7,8-PeCDD	23.995	1855324	1.52	1.0023	2.245	2.245	0.0188	0.0188	89.81	
S Total PeCDD					2.245	2.245	0.0188	0.0188		
D 13C-1,2,3,4,7,8-HxCDF	30.099	81993266	0.51	0.9632			0.8897	0.8897	98.21	
1,2,3,4,7,8-HxCDF	30.139	1849054	1.20	1.0315	2.186	2.186	0.0390	0.0390	87.45	
D 13C-1,2,3,6,7,8-HxCDF	30.326	92255496	0.50	1.0646	102.0	102.0	0.5989	0.5989	102	
1,2,3,6,7,8-HxCDF	30.352	2067919	1.27	1.0235	2.190	2.190	0.0344	0.0344	87.60	
D 13C-2,3,4,6,7,8-HxCDF	31.244	82356882	0.51	0.9696	99.9	99.9	0.6575	0.6575	99.92	
2,3,4,6,7,8-HxCDF	31.271	2000921	1.25	1.0645	2.282	2.282	0.0274	0.0274	91.29	
D 13C-1,2,3,7,8,9-HxCDF	32.096	75284516	0.50	0.8955	98.9	98.9	0.7120	0.7120	98.91	
1,2,3,7,8,9-HxCDF	32.122	1786006	1.22	1.0664	2.225	2.225	0.0281	0.0281	88.99	
S Total HxCDF					8.883	8.883	0.0322	0.0322		
* 13C-1,2,3,7,8,9-HxCDD	31.909	85001978	1.23	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.457	62120842	1.25	0.7590			0.4483	0.4483	95.51	
1,2,3,4,7,8-HxCDD	31.470	1408236	1.21	1.0054	2.255	2.255	0.0229	0.0229	90.19	
D 13C-1,2,3,6,7,8-HxCDD	31.563	79191499	1.25	0.9247	100.7	100.7	0.3646	0.3646	101	

Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30
Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.590	1757293	1.22	0.9833	2.257	2.257	0.0219	0.0219	90.27	
1,2,3,7,8,9-HxCDD	31.923	1765822	1.24	1.1036	2.021	2.021	0.0195	0.0195	80.82	
S Total HxCDD					6.532	6.532	0.0214	0.0214		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	66584092	0.44	0.7930	98.8	98.8	1.923	1.923	98.78	
1,2,3,4,6,7,8-HpCDF	33.579	2157779	1.07	1.4240	2.276	2.276	0.0391	0.0391	91.03	
D 13C-1,2,3,4,7,8,9-HpCDF	34.624	60078913	0.44	0.7296			1.568	1.568	98.07	
1,2,3,4,7,8,9-HpCDF	34.636	1729011	1.02	1.2834	2.242	2.242	0.0551	0.0551	89.70	
S Total HpCDF					4.518	4.518	0.0471	0.0471		
D 13C-1,2,3,4,6,7,8-HpCDD	34.344	62661164	1.05	0.7532	97.9	97.9	1.030	1.030	97.88	
1,2,3,4,6,7,8-HpCDD	34.356	1436378	0.98	1.0174	2.253	2.253	0.0341	0.0341	90.12	
S Total HpCDD					2.253	2.253	0.0341	0.0341		
D 13C-OCDD	36.621	89825341	0.89	0.5621	188.0	188.0	0.3233	0.3233	94.01	
OCDF	36.717	2676042	0.86	1.3047	4.567	4.567	0.0281	0.0281	91.34	
OCDD	36.633	2293549	0.87	1.0997	4.644	4.644	0.0249	0.0249	92.88	

Reagents:

HRDXNL2_00027 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Nov-2019 09:46:53 ALS Bottle#: 4 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419 CS-2 HRDXNL2_00027
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:14 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:40:00

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.548	17.539	1		51361597	13072151	15191	37977	861		
333.9339	17.548	17.539	1		64730301	16317580	18452	46130	884	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.971	68015551	17208347	18796	46990	916		
317.9389	17.034	17.034	0	0.971	87841361	22231811	10998	27495	2021	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	278676	69657	508	1270	137		
305.8987	17.049	17.049	0	1.001	363401	93599	984	2460	95	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.010	48474168	11660215	15191	37977	768		
333.9339	17.729	17.729	0	1.010	62132689	14941494	18452	46130	810	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	240017	57024	1061	2652	54		
321.8936	17.744	17.744	0	1.001	316001	76738	568	1420	135	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.011	666561	162685	833	2082	195		
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.251	73621332	13136719	21632	54080	607		
353.8970	21.949	21.949	0	1.251	47424441	8679341	14041	35102	618	1.55(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.977	21.971	0	1.001	1594566	281046	721	1802	390		
341.8567	21.977	21.971	0	1.001	1004162	181344	1007	2517	180	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.325	71293013	11820915	21632	54080	546		
353.8970	23.258	23.258	0	1.325	45220722	7479139	14041	35102	533	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	1614713	263641	721	1802	366		
341.8567	23.286	23.286	0	1.001	1011528	170804	1007	2517	170	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.366	50588329	7999296	7849	19622	1019		
369.8919	23.968	23.968	0	1.366	31856026	5056401	5010	12525	1009	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	1118464	174785	660	1650	265		
357.8516	23.995	23.995	0	1.001	736860	108404	323	807	336	1.52(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.099	30.102	0	0.943	27577553	4438288	17083	42707	260		
385.8610	30.112	30.102	1	0.944	54415713	8621631	31019	77547	278	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.139	30.131	0	1.001	1010197	157126	1188	2970	132		
375.8178	30.126	30.131	0	1.001	838857	132669	915	2287	145	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.326	30.323	0	0.950	30939327	5047890	17083	42707	295		
385.8610	30.326	30.323	0	0.950	61316169	9888900	31019	77547	319	0.50(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.352	30.344	0	1.001	1157086	187441	1188	2970	158		
375.8178	30.339	30.344	0	1.000	910833	151716	915	2287	166	1.27(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.244	31.247	0	0.979	27899632	6120933	17083	42707	358		
385.8610	31.244	31.247	0	0.979	54457250	11882252	31019	77547	383	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.271	31.265	0	1.001	1112415	250623	1188	2970	211		
375.8178	31.271	31.265	0	1.001	888506	205954	915	2287	225	1.25(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.096	32.099	0	1.006	25145887	5915866	17083	42707	346		
385.8610	32.096	32.099	0	1.006	50138629	11652420	31019	77547	376	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.122	32.115	0	1.001	982842	231202	1188	2970	195		
375.8178	32.109	32.115	0	1.000	803164	192621	915	2287	211	1.22(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.909	31.912	0		46898932	10402676	14704	36760	707		
403.8529	31.909	31.912	0		38103046	8459550	10735	26837	788	1.23(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.457	31.452	0	0.986	34487478	8990967	14704	36760	611		
403.8529	31.457	31.452	0	0.986	27633364	7170693	10735	26837	668	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.470	31.470	0	1.000	771145	200063	786	1965	255		
391.8127	31.470	31.470	0	1.000	637091	167874	700	1750	240	1.21(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.563	31.566	0	0.989	44028149	9521617	14704	36760	648		
403.8529	31.563	31.566	0	0.989	35163350	7753574	10735	26837	722	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.590	31.582	0	1.001	965243	211787	786	1965	269		
391.8127	31.577	31.582	0	1.000	792050	167195	700	1750	239	1.22(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.923	31.926	0	1.015	976927	210377	786	1965	268		
391.8127	31.923	31.926	0	1.015	788895	174357	700	1750	249	1.24(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.052	20462368	6124305	34923	87307	175		
419.8220	33.567	33.567	0	1.052	46121724	13815143	80142	200355	172	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	1114557	333797	2256	5640	148		
409.7789	33.579	33.579	0	1.000	1043222	316844	2183	5457	145	1.07(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.624	34.619	0	1.085	18377583	4877242	34923	87307	140		
419.8220	34.624	34.619	0	1.085	41701330	10806318	80142	200355	135	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.636	34.629	0	1.000	872210	225760	2256	5640	100		
409.7789	34.624	34.629	0	1.000	856801	224595	2183	5457	103	1.02(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.344	34.340	0	1.076	32138288	8444972	29725	74312	284		
437.8140	34.344	34.340	0	1.076	30522876	7980759	28819	72047	277	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.356	34.349	0	1.000	709527	185411	1281	3202	145		
425.7737	34.344	34.349	0	1.000	726851	181597	997	2492	182	0.98(0.88-1.20)	
13C-OCDD											
469.7779	36.621	36.624	0	1.148	42251922	9128876	6365	15912	1434		
471.7750	36.621	36.624	0	1.148	47573419	10216254	7346	18365	1391	0.89(0.76-1.02)	
OCDF											
441.7428	36.717	36.720	0	1.003	1236581	274865	514	1285	535		
443.7399	36.717	36.720	0	1.003	1439461	325889	905	2262	360	0.86(0.76-1.02)	
OCDD											
457.7377	36.633	36.636	0	1.000	1070269	229444	462	1155	497		
459.7348	36.633	36.636	0	1.000	1223280	261284	599	1497	436	0.87(0.76-1.02)	

Reagents:

HRDXNL2_00027 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
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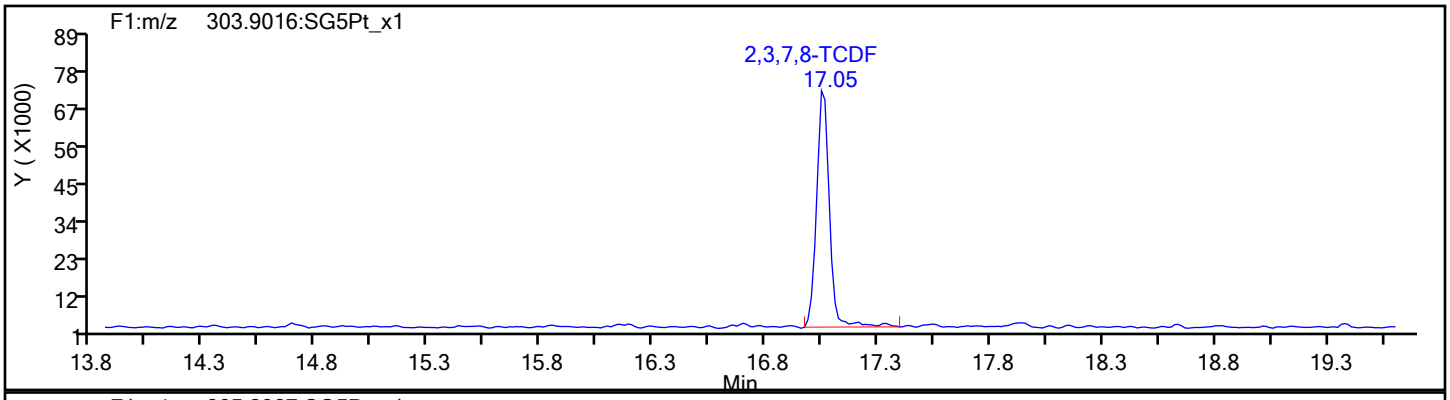
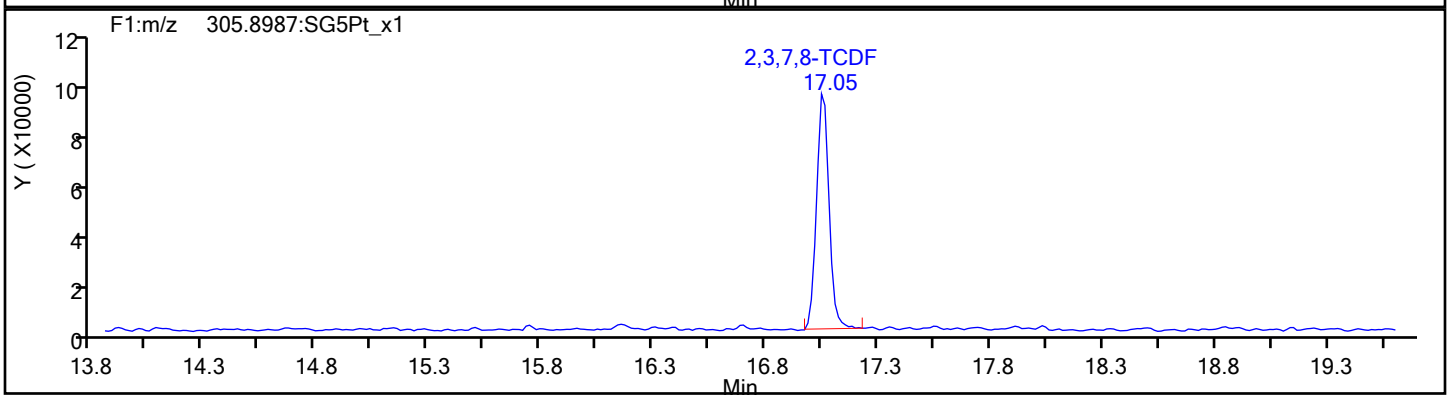
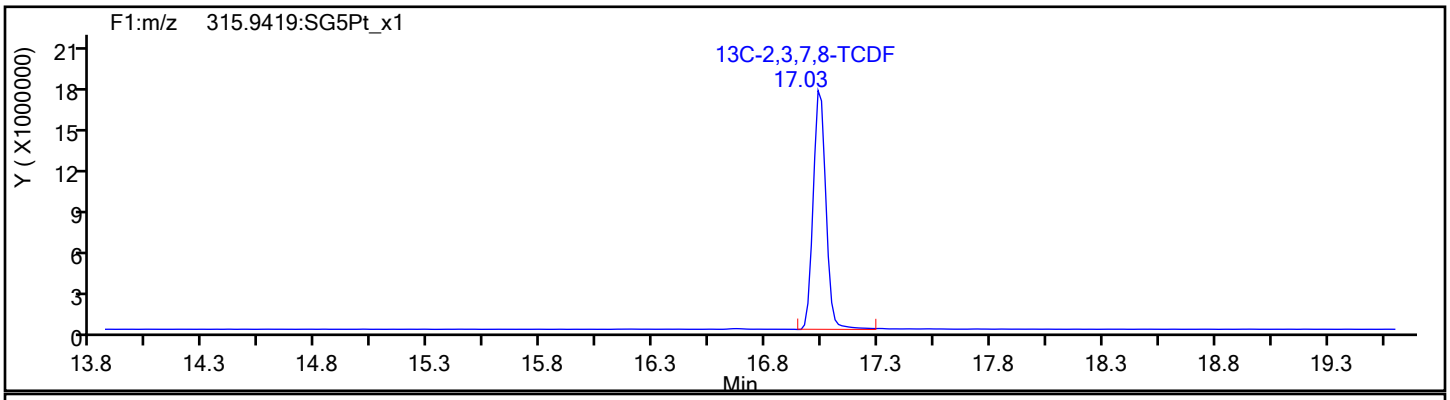
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

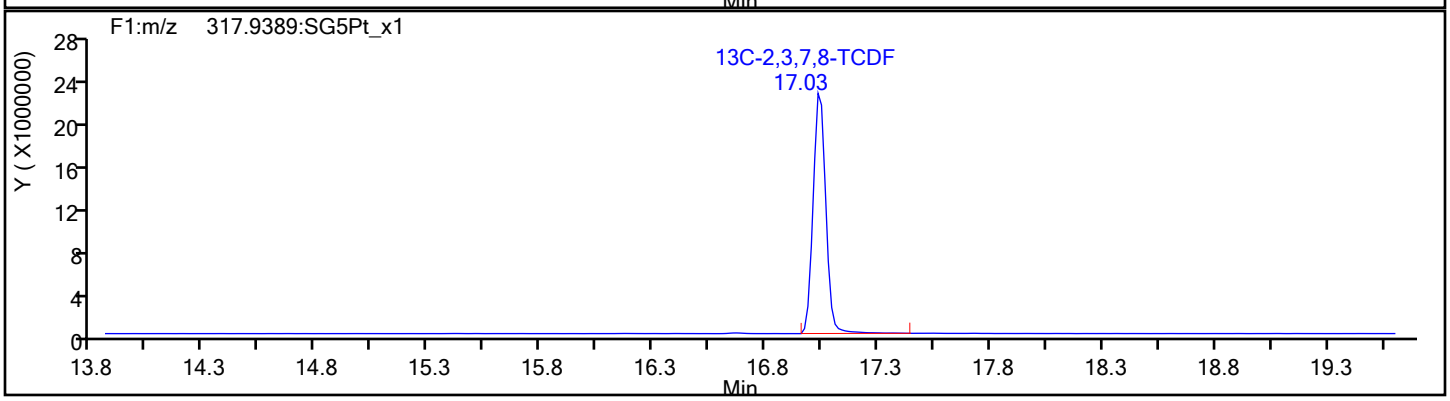
TCDF





TCDF Standards





Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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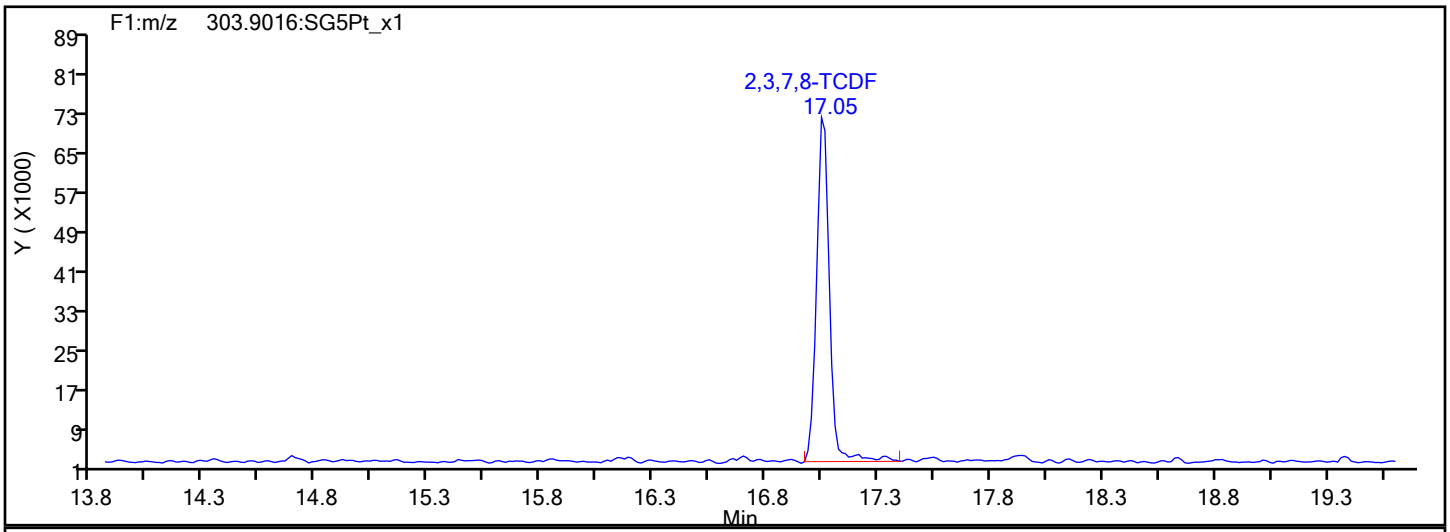
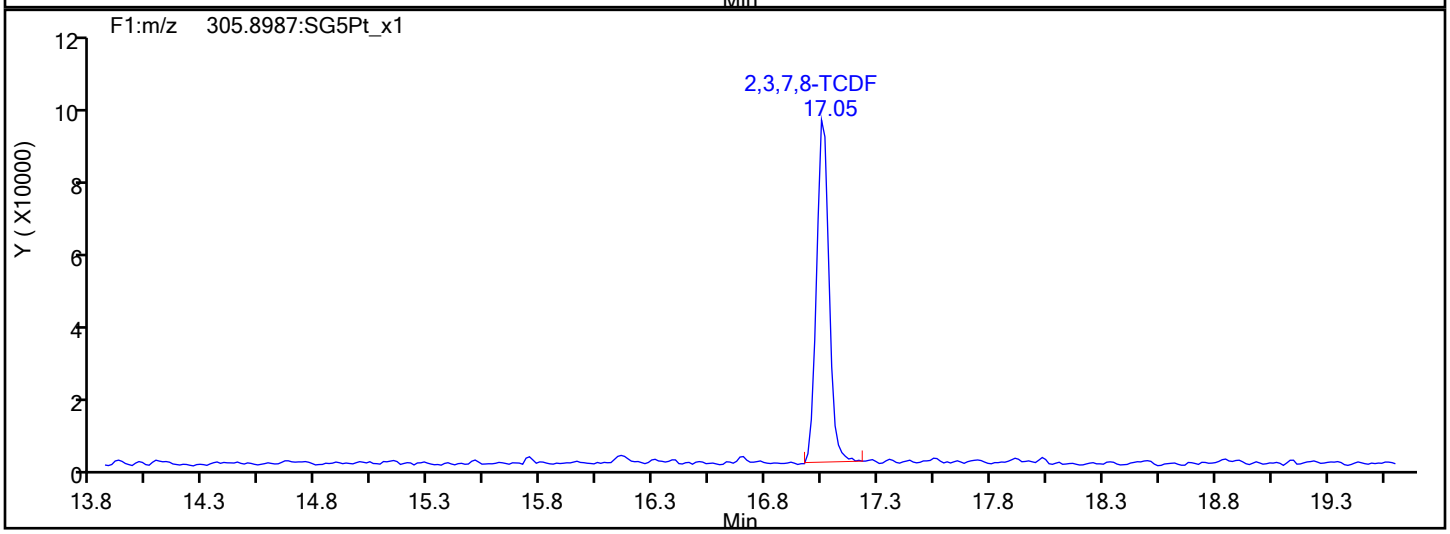
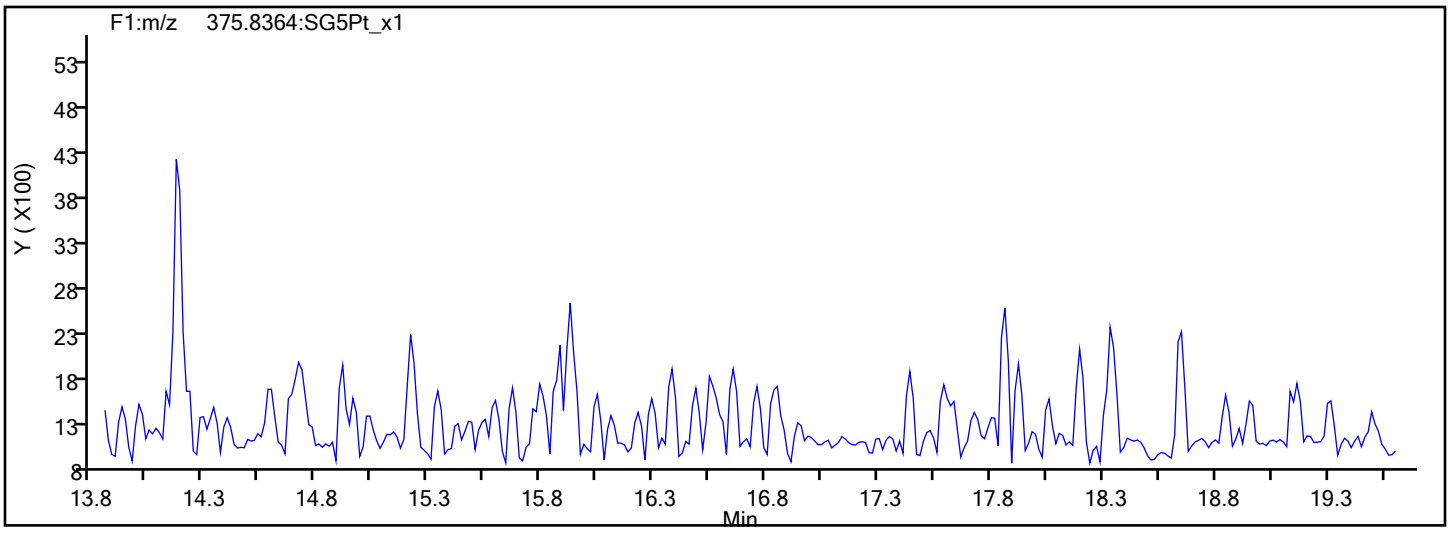
Injection Date:	14-Nov-2019 09:46:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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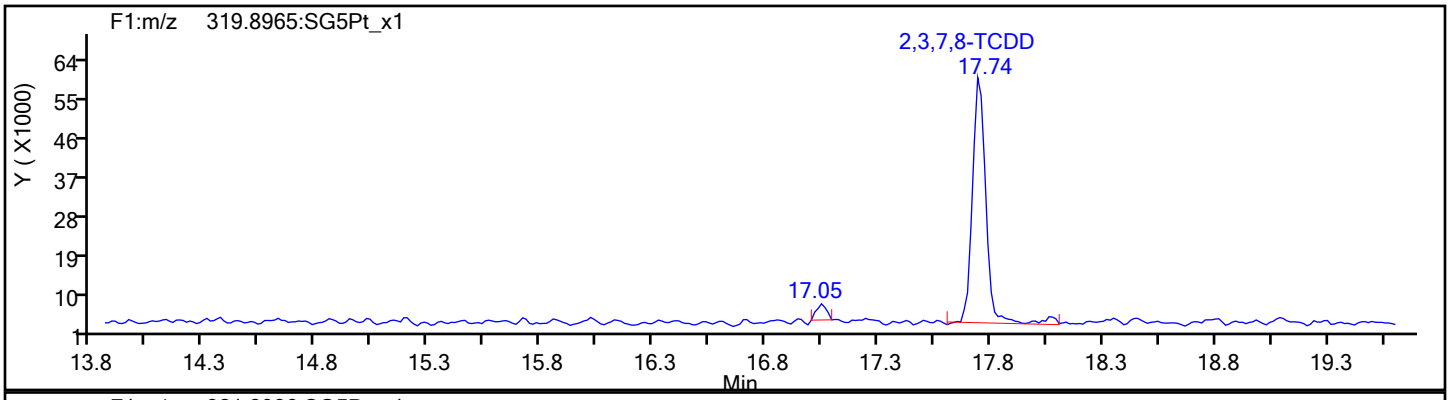
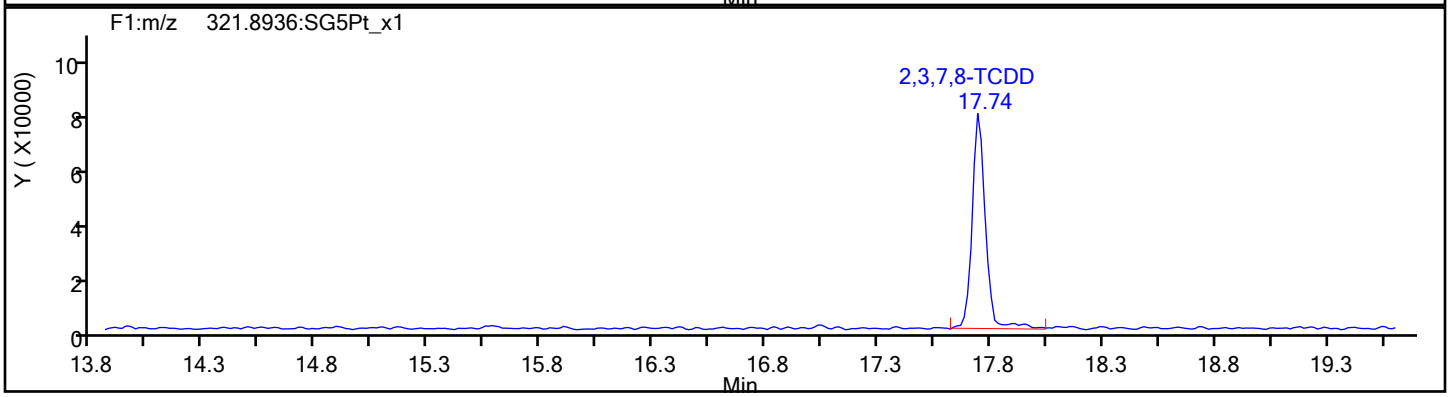
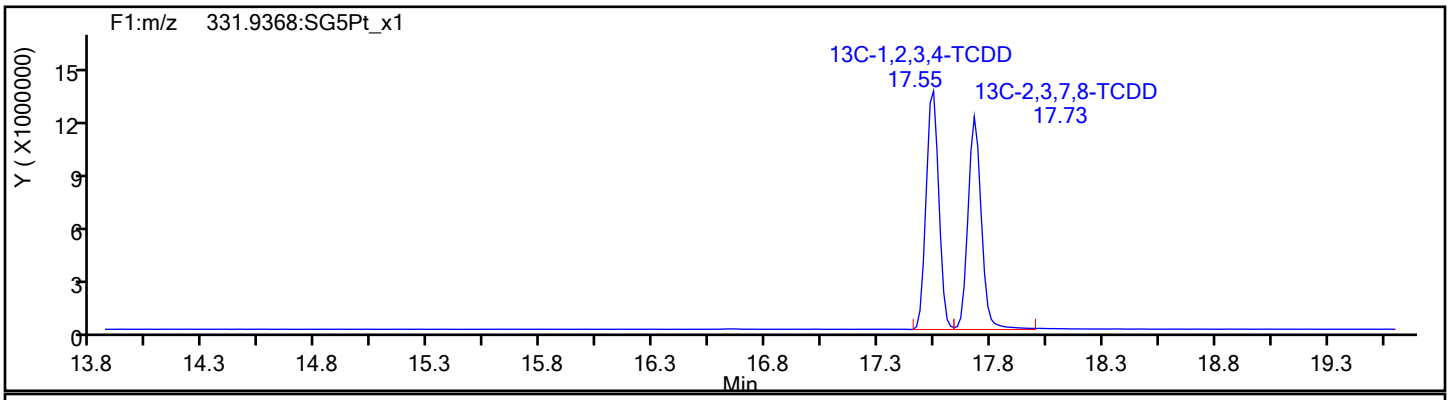
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

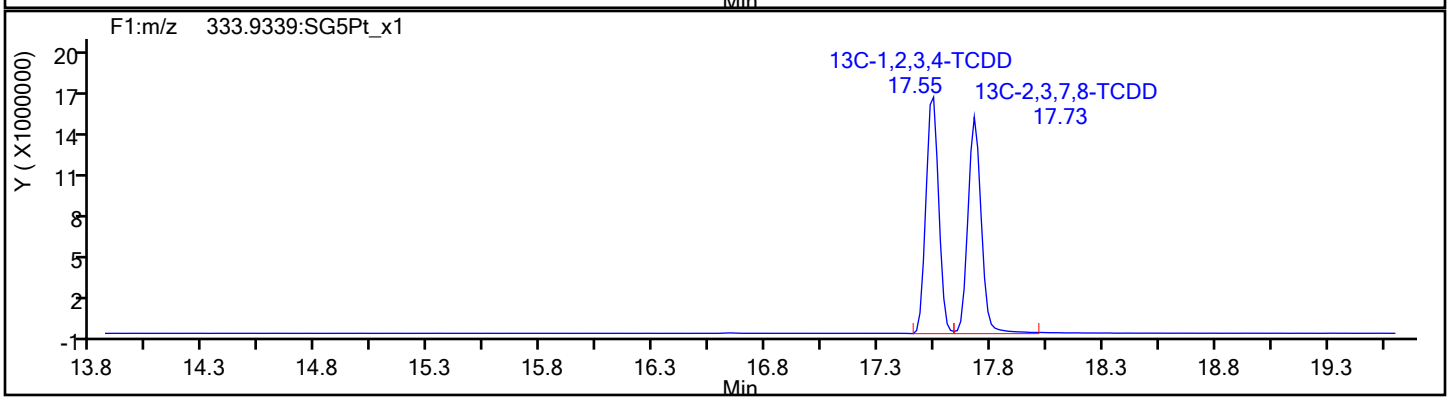
TCDD





TCDD Standards





Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
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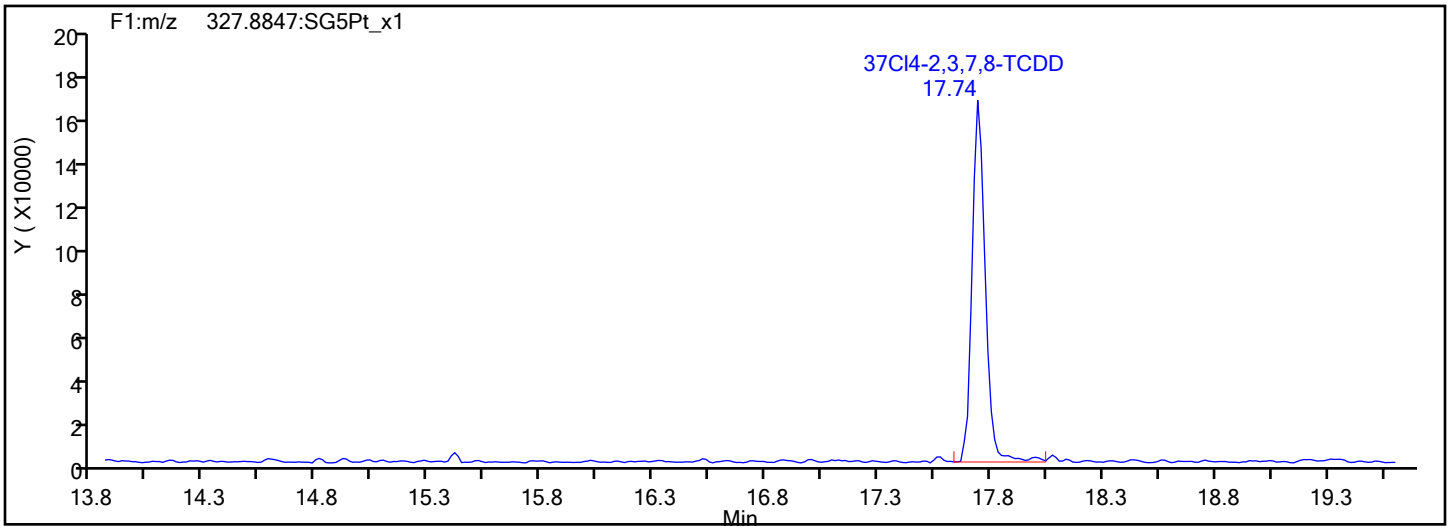
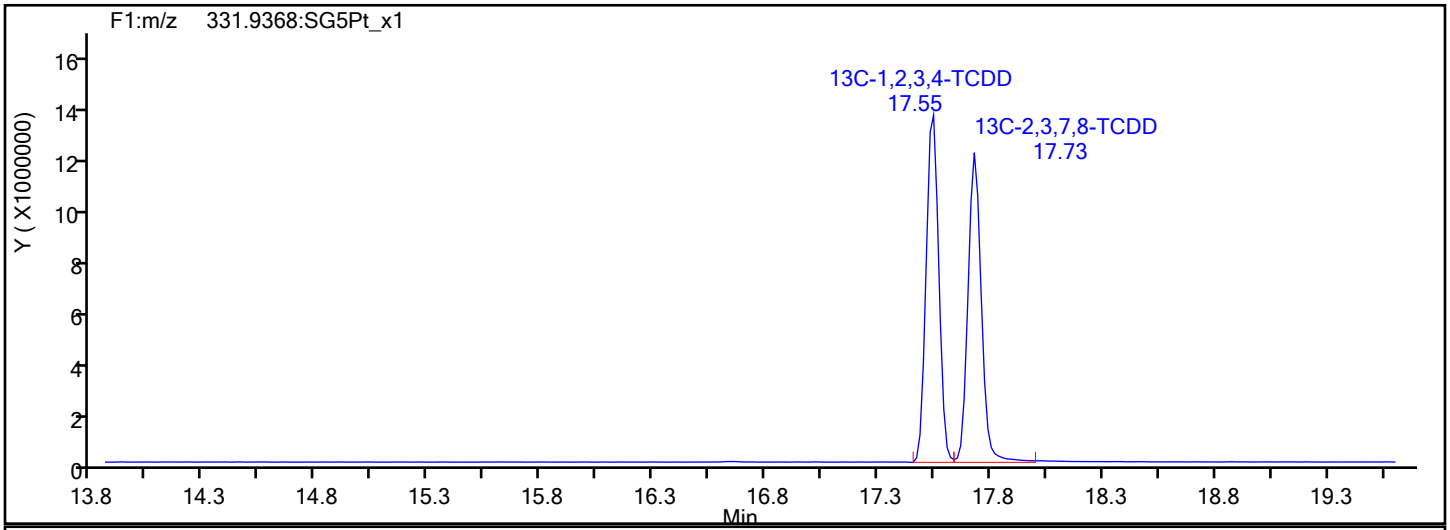
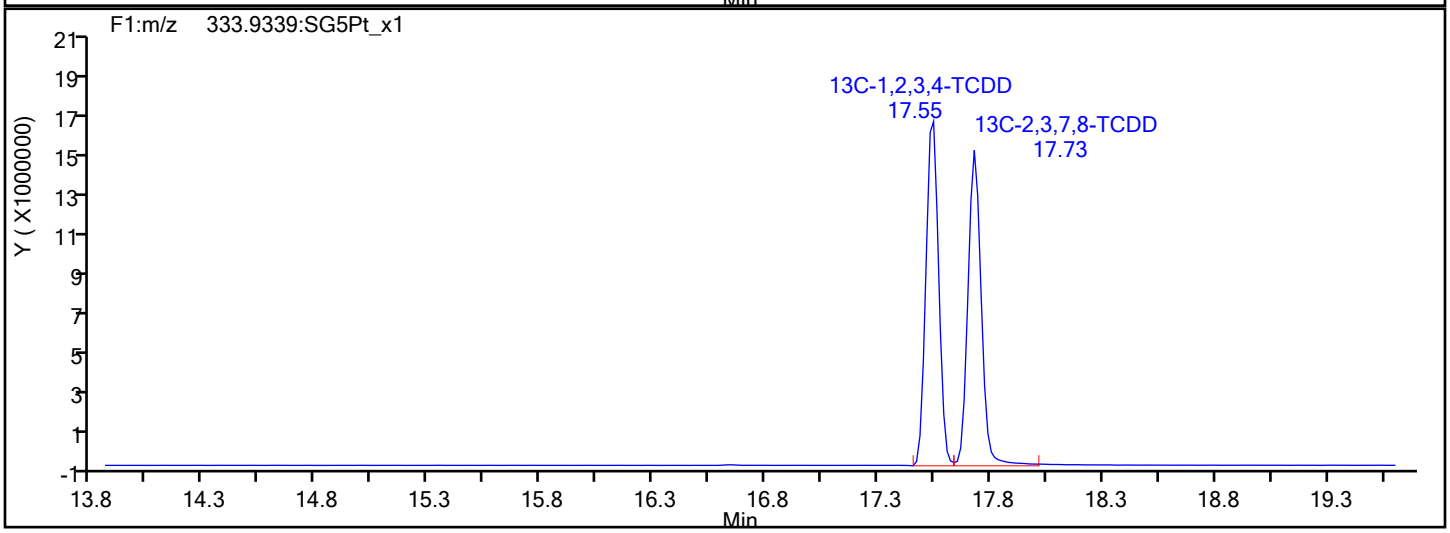
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



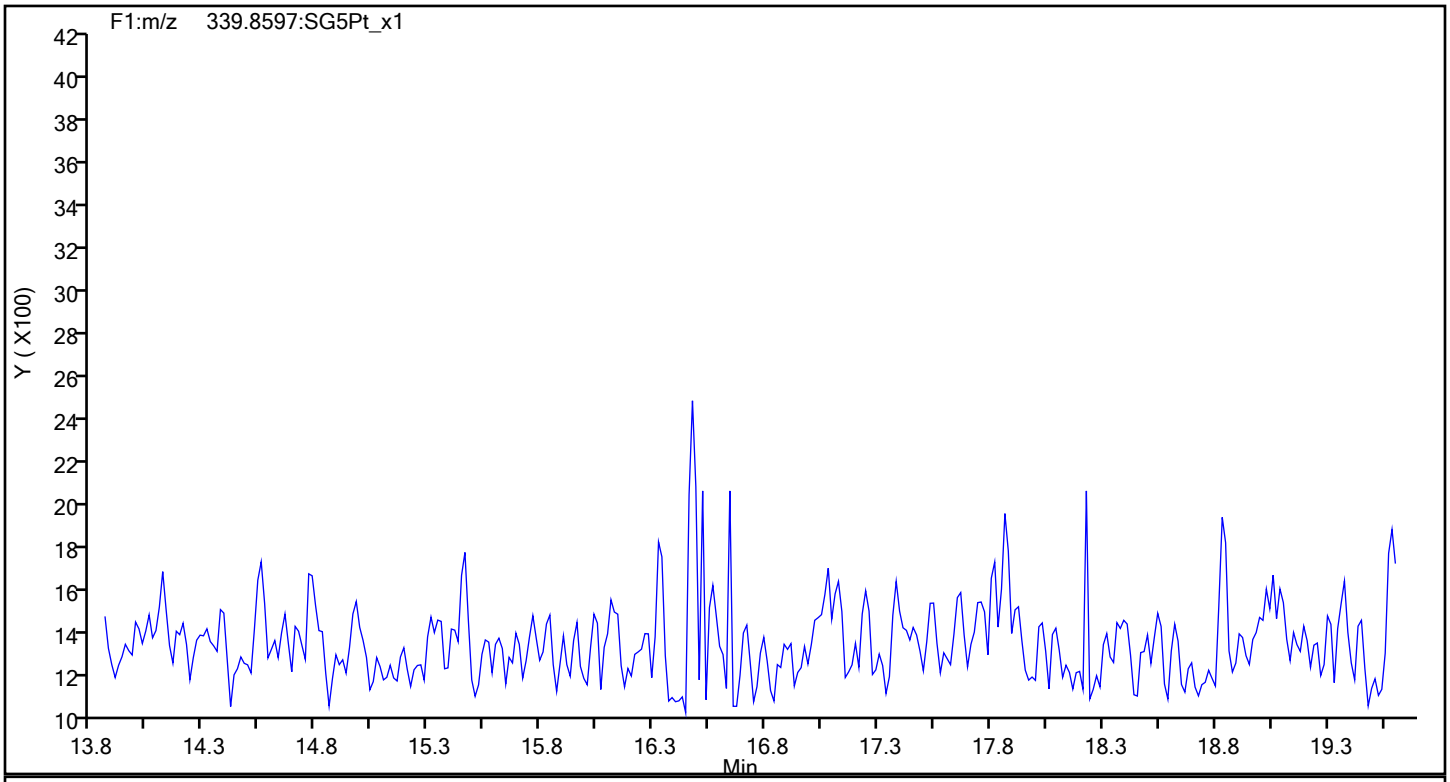


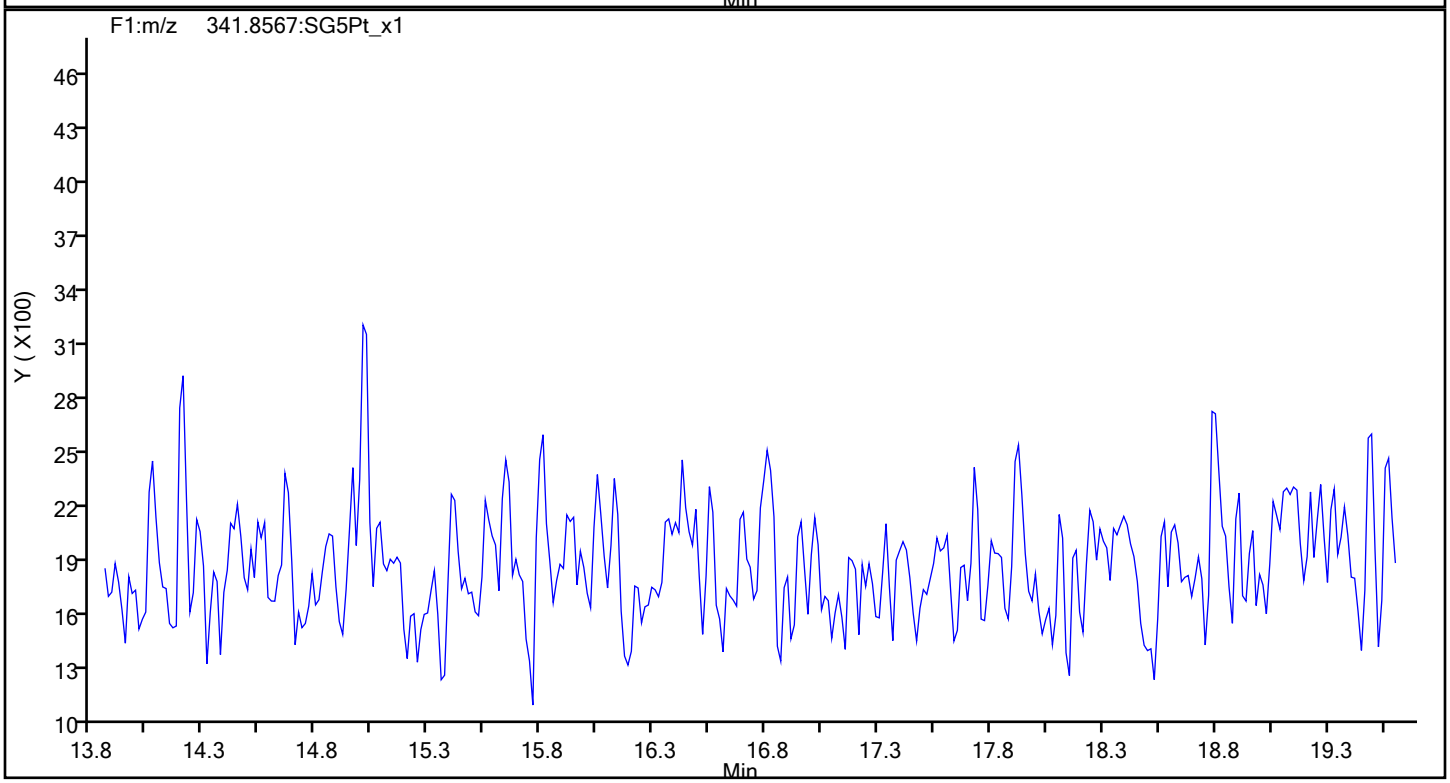
Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
Injection Date:	14-Nov-2019 09:46:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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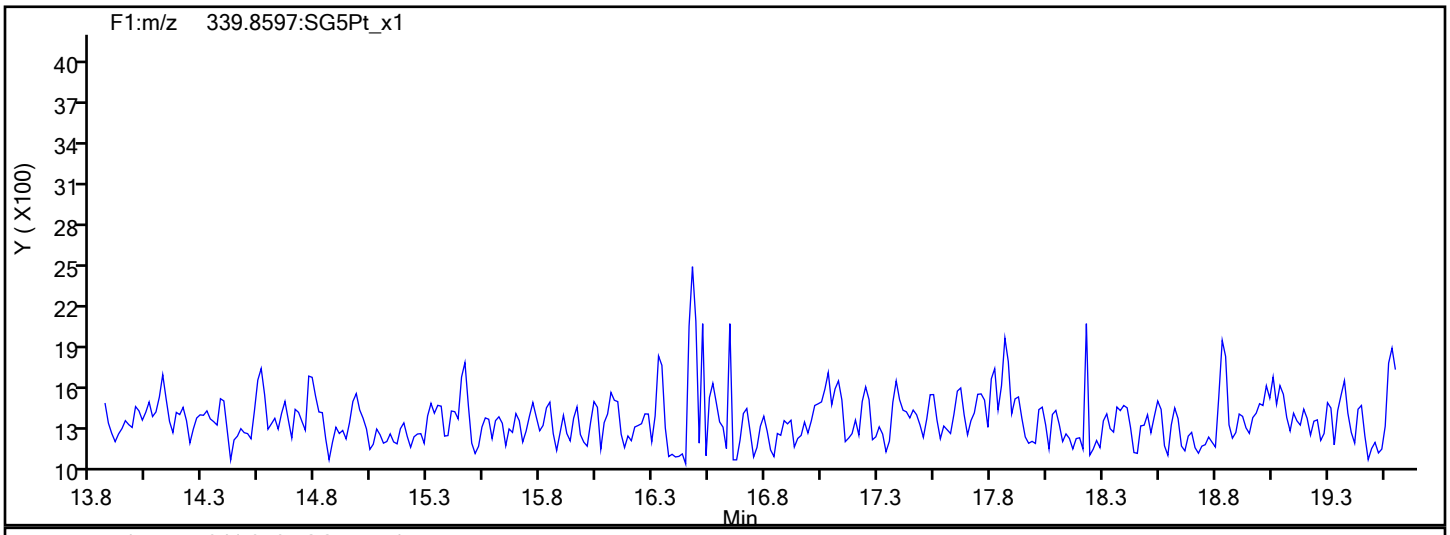
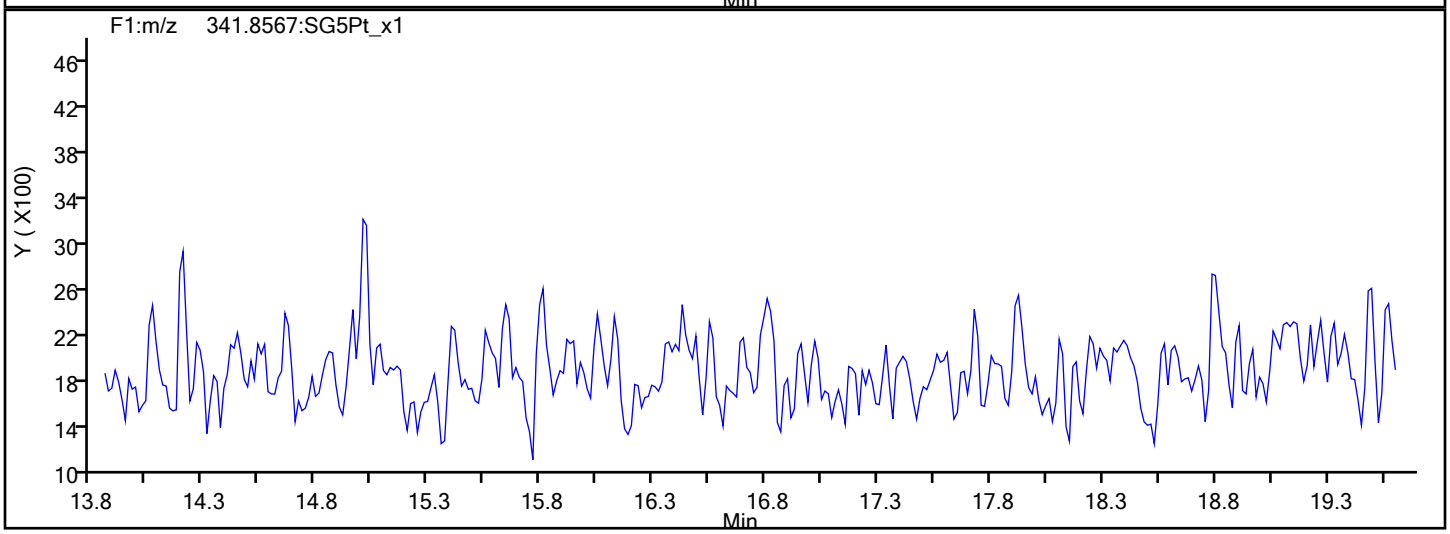
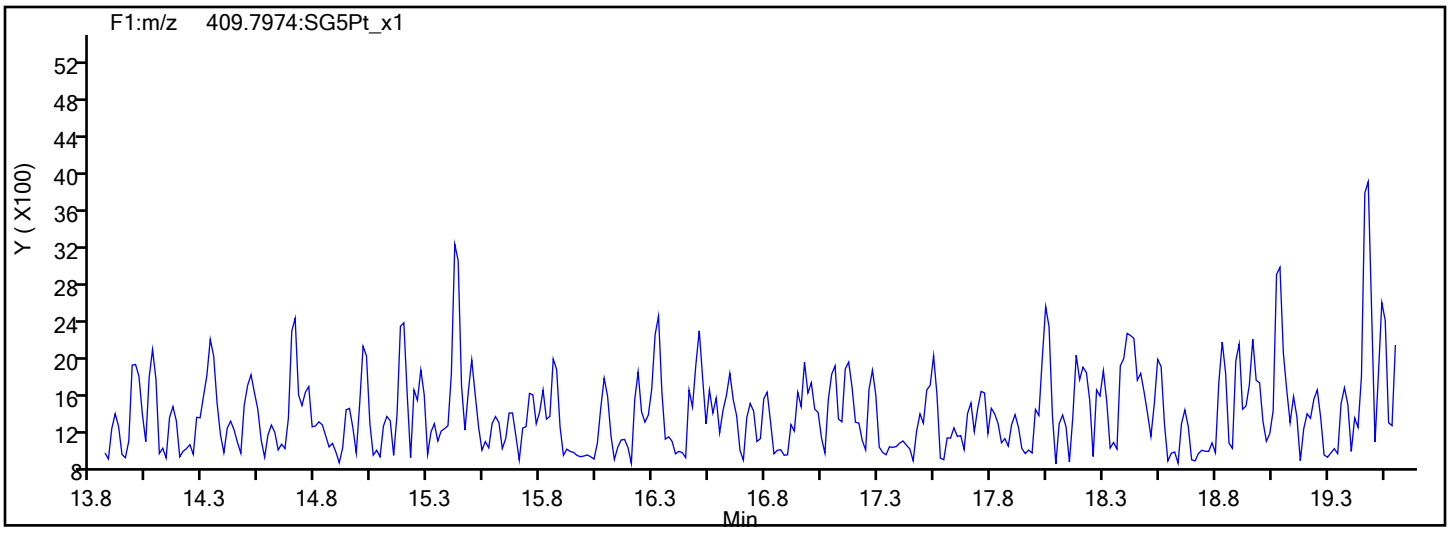
F1 PeCDFs





F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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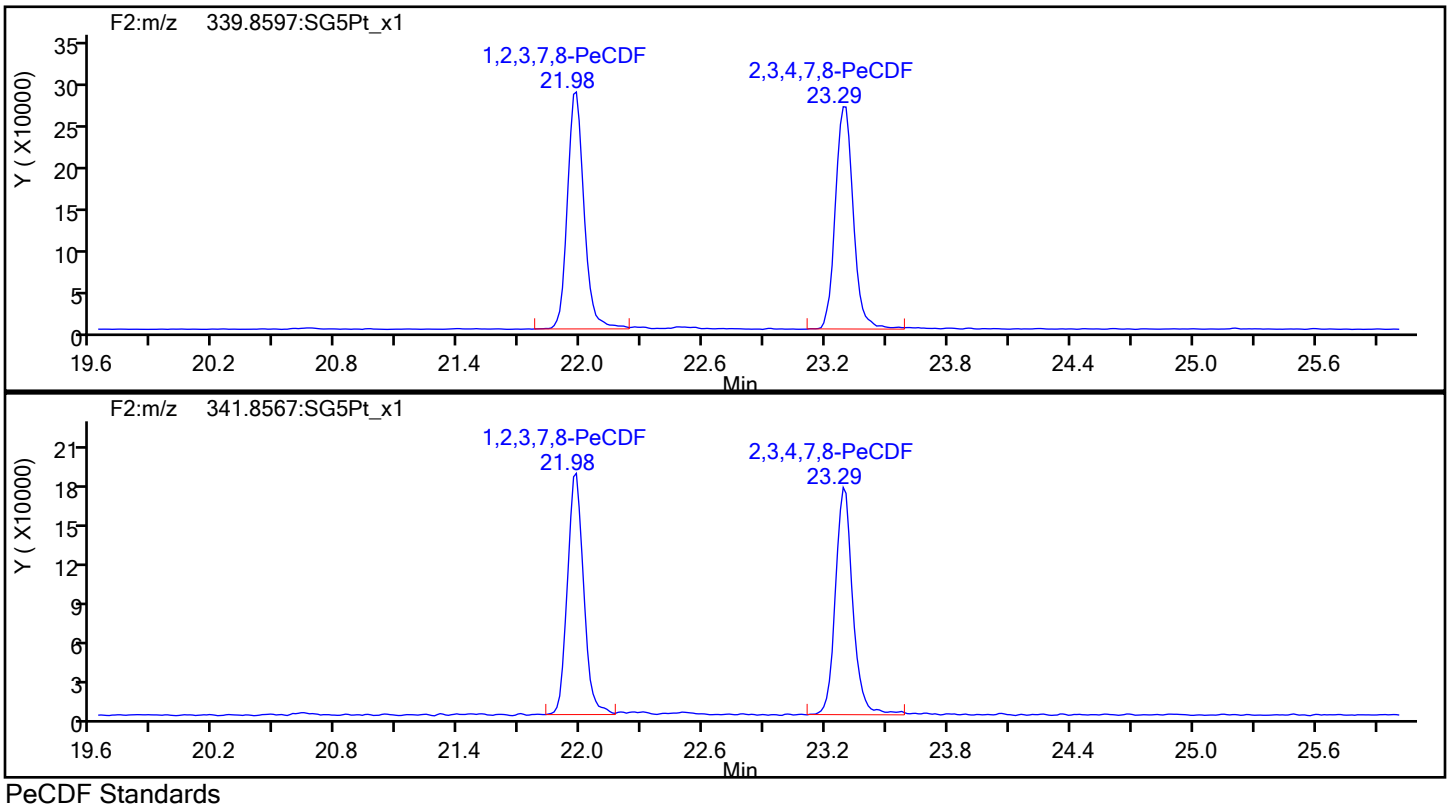
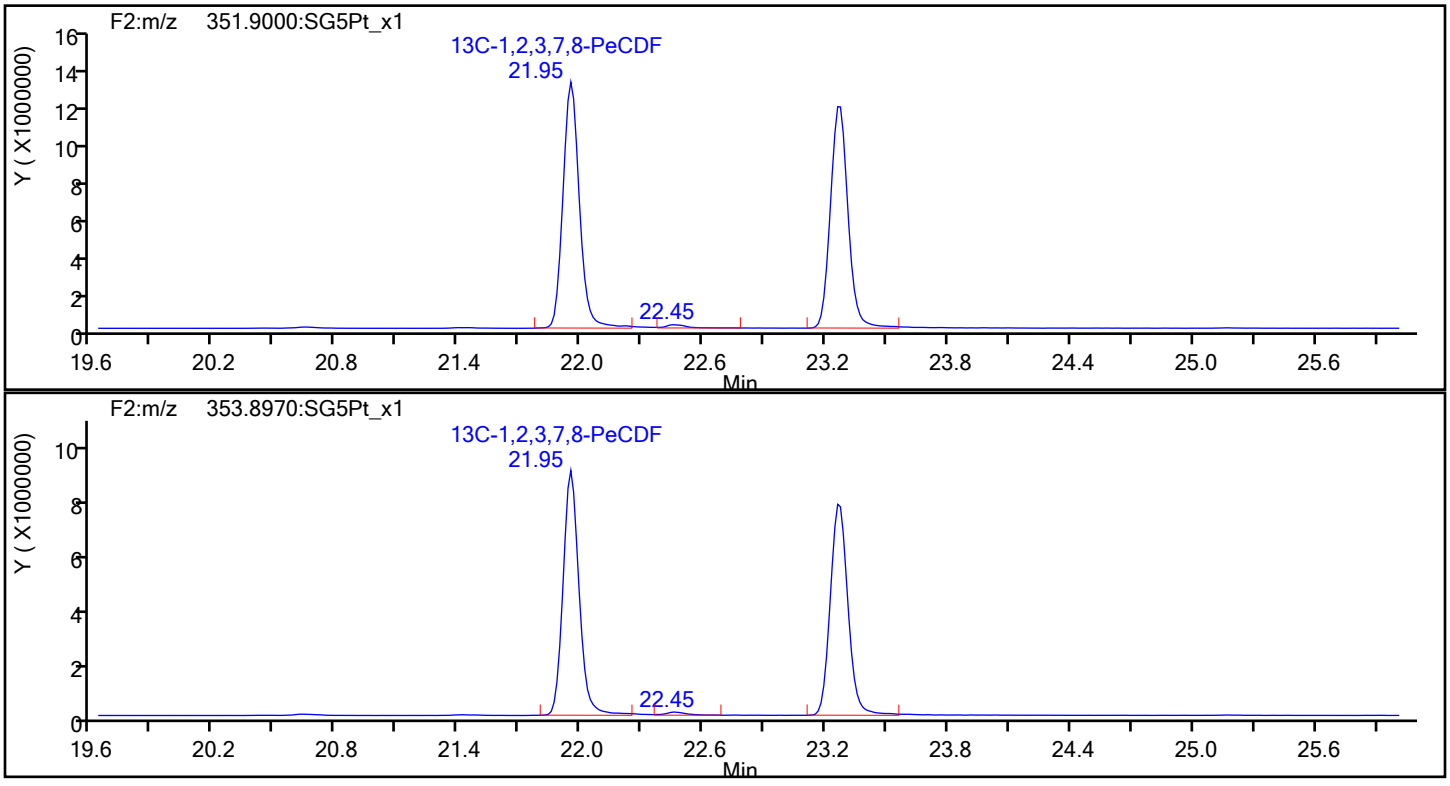


PeCDF Standards



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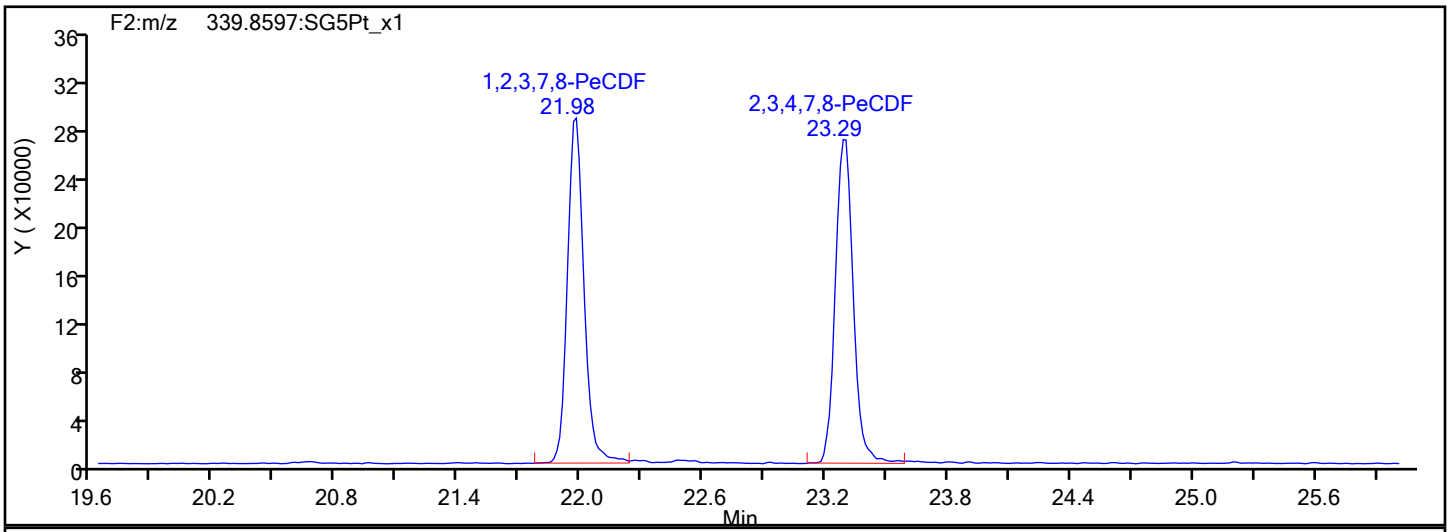
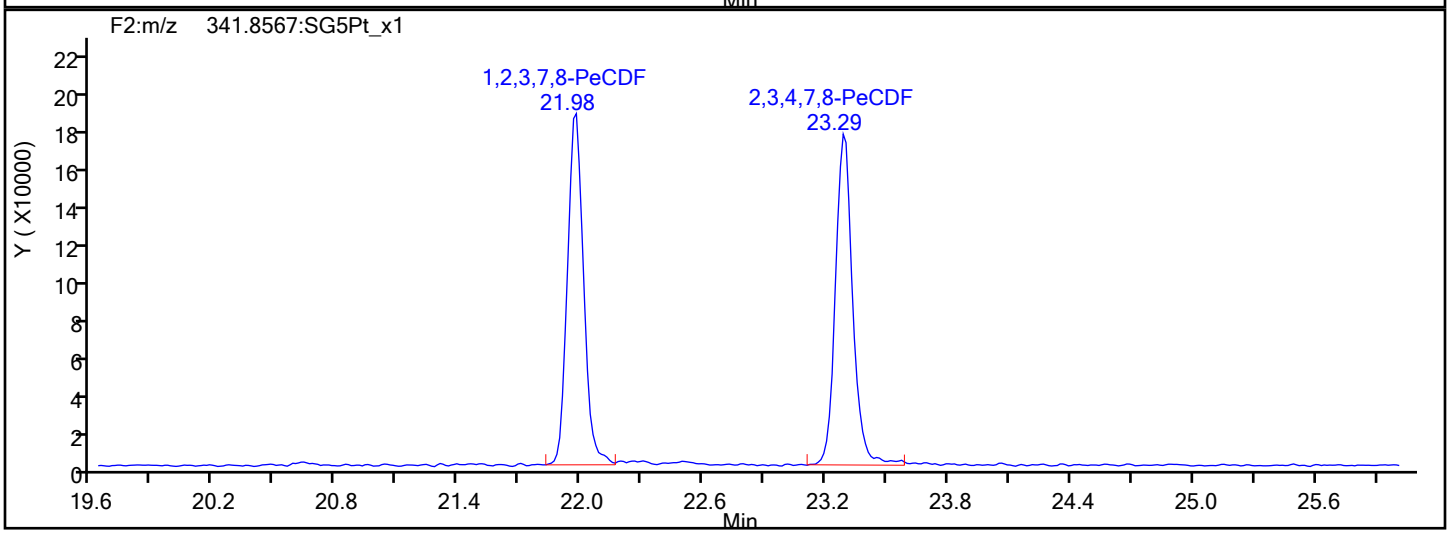
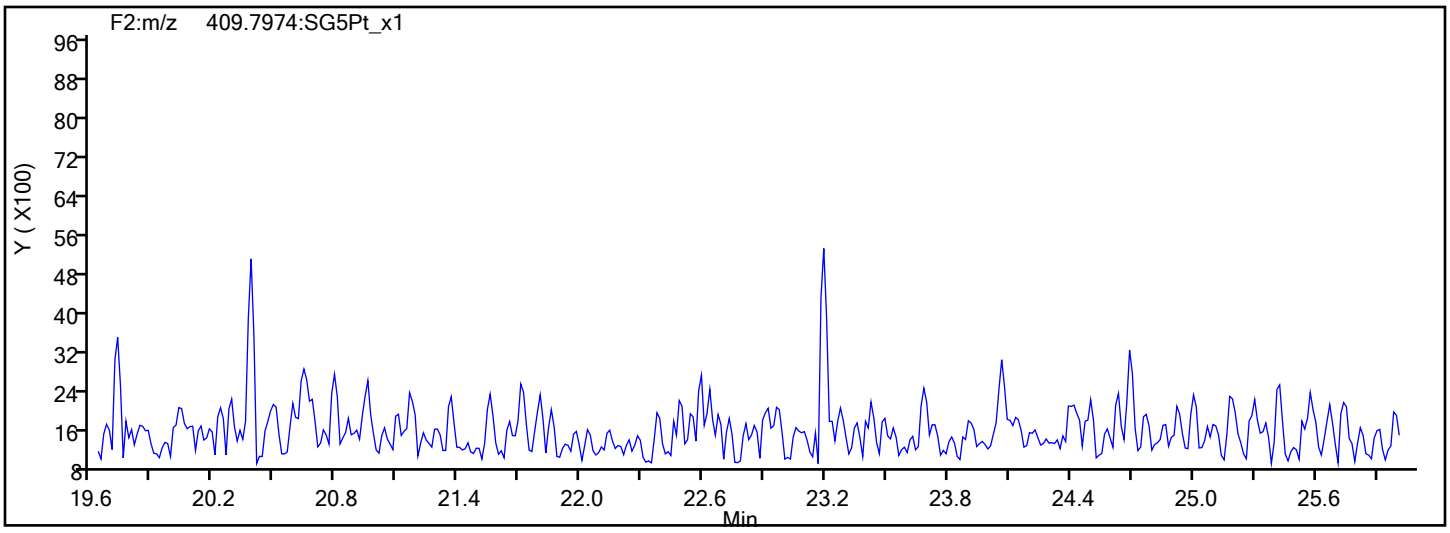




PeCDF Interference Mass



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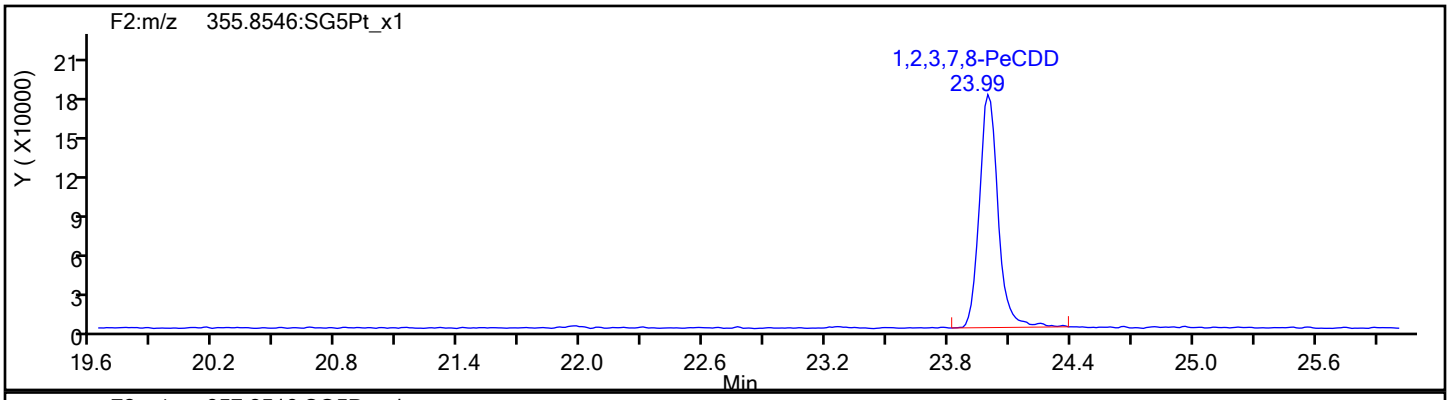

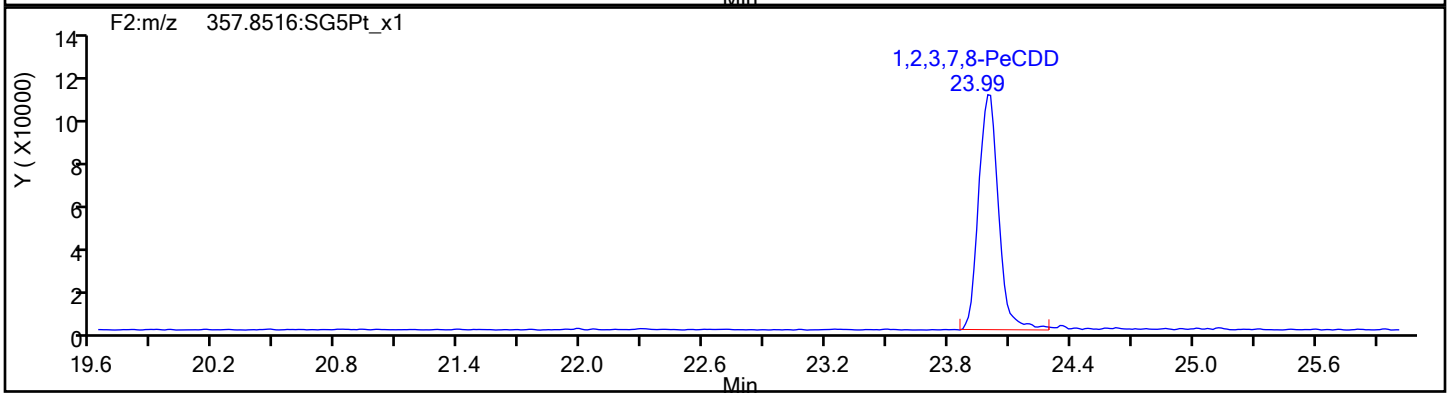

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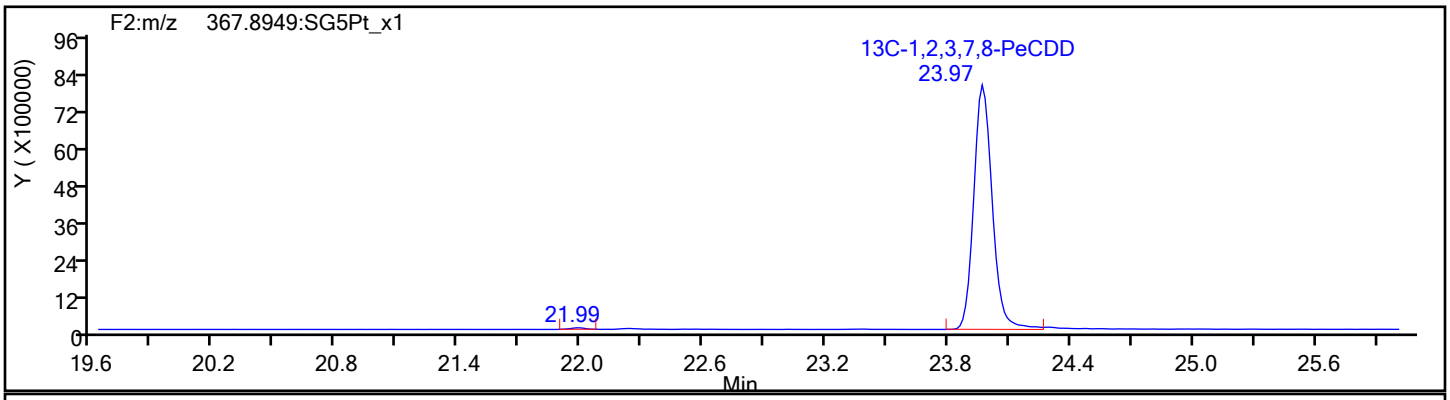

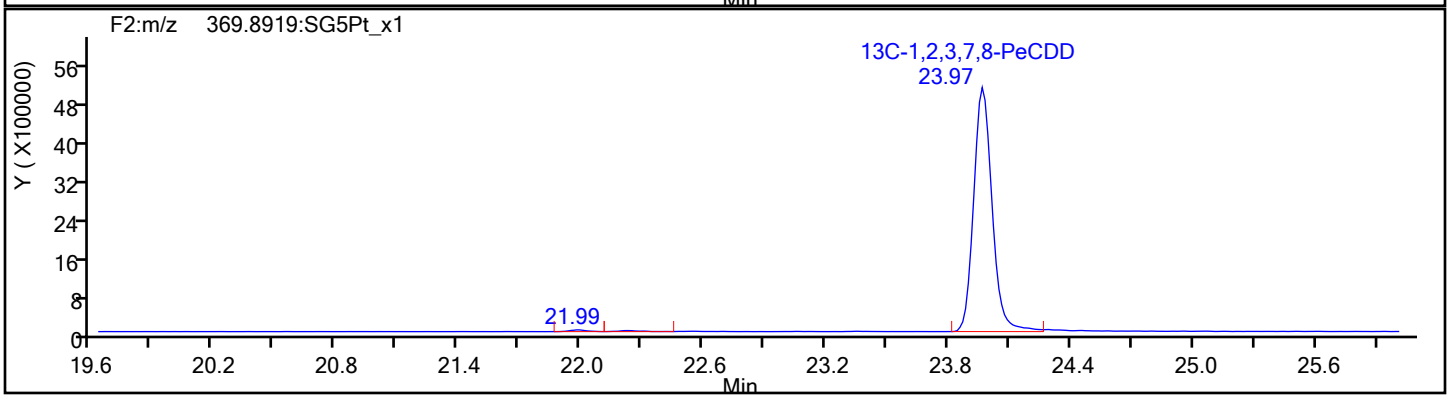

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Eurofins TestAmerica, Sacramento

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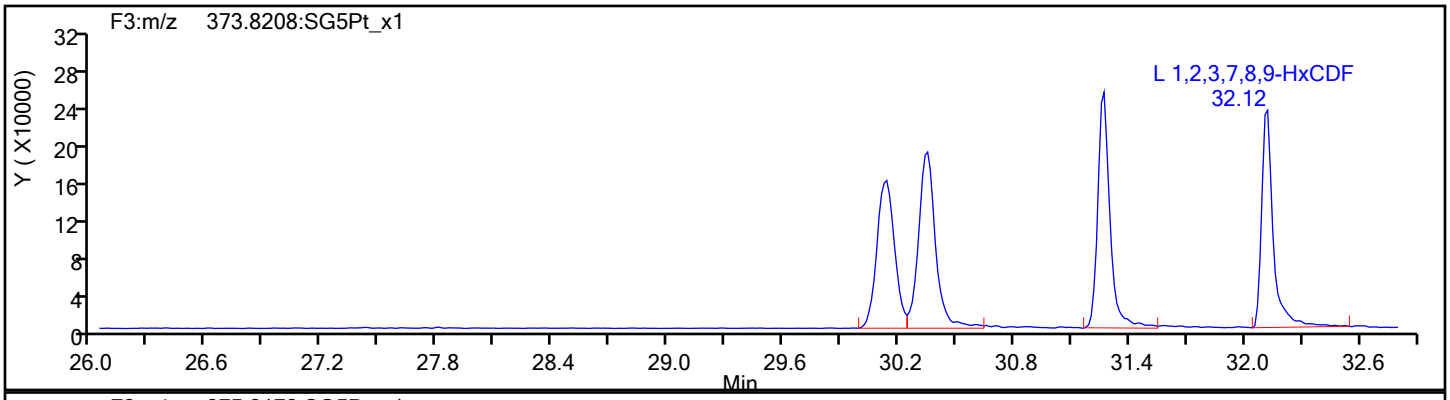
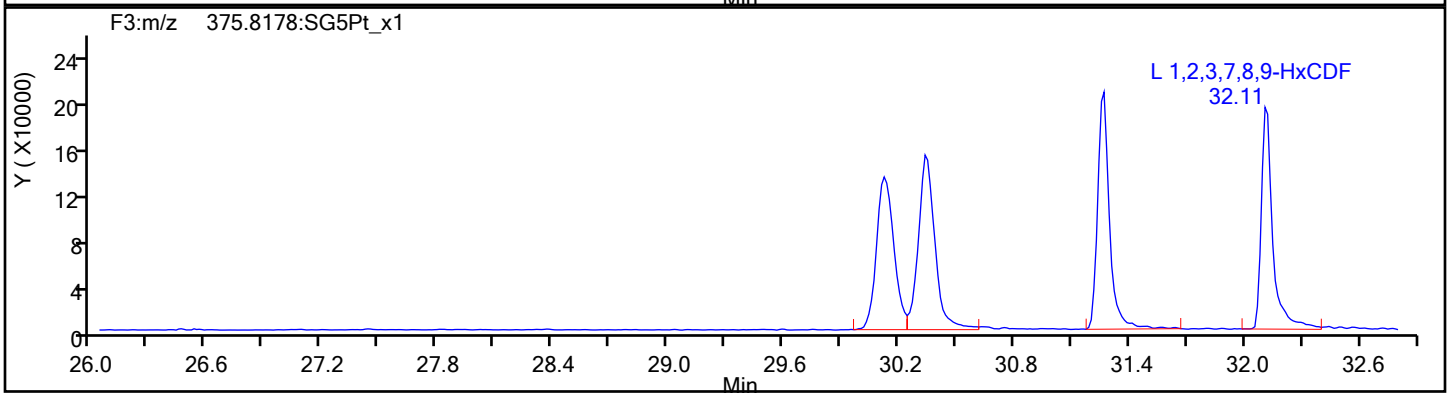
HxCDF





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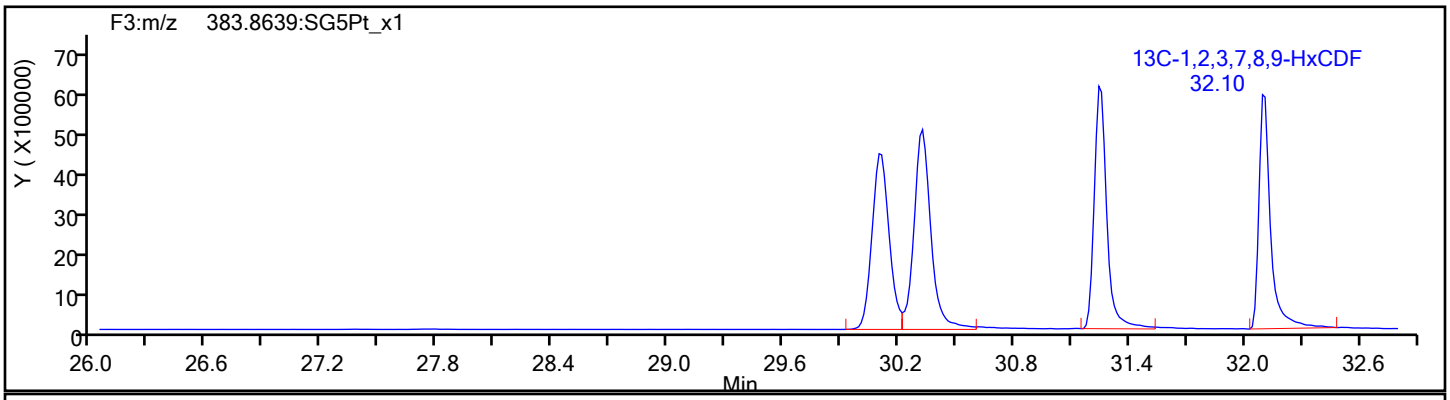

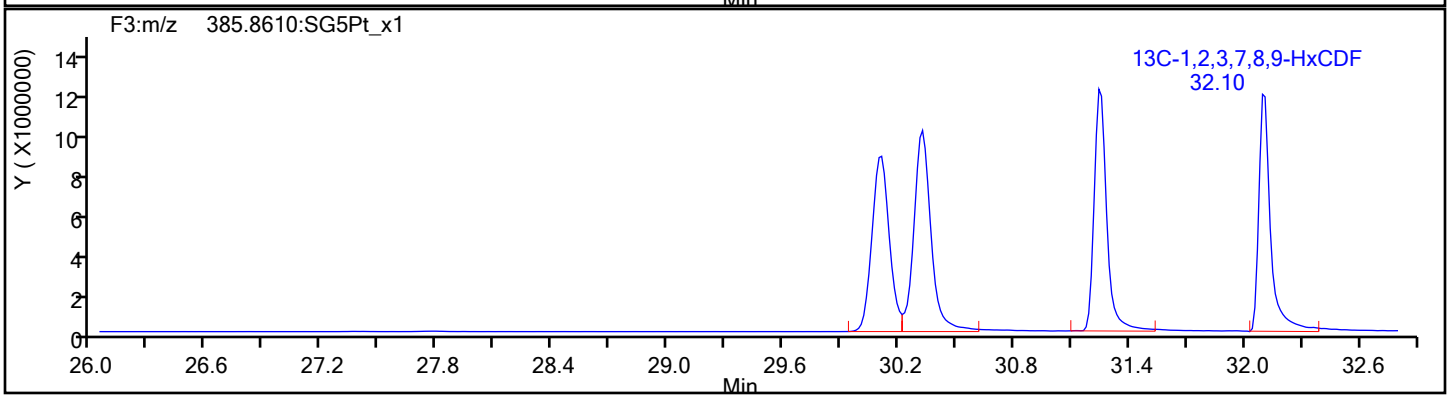

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Eurofins TestAmerica, Sacramento

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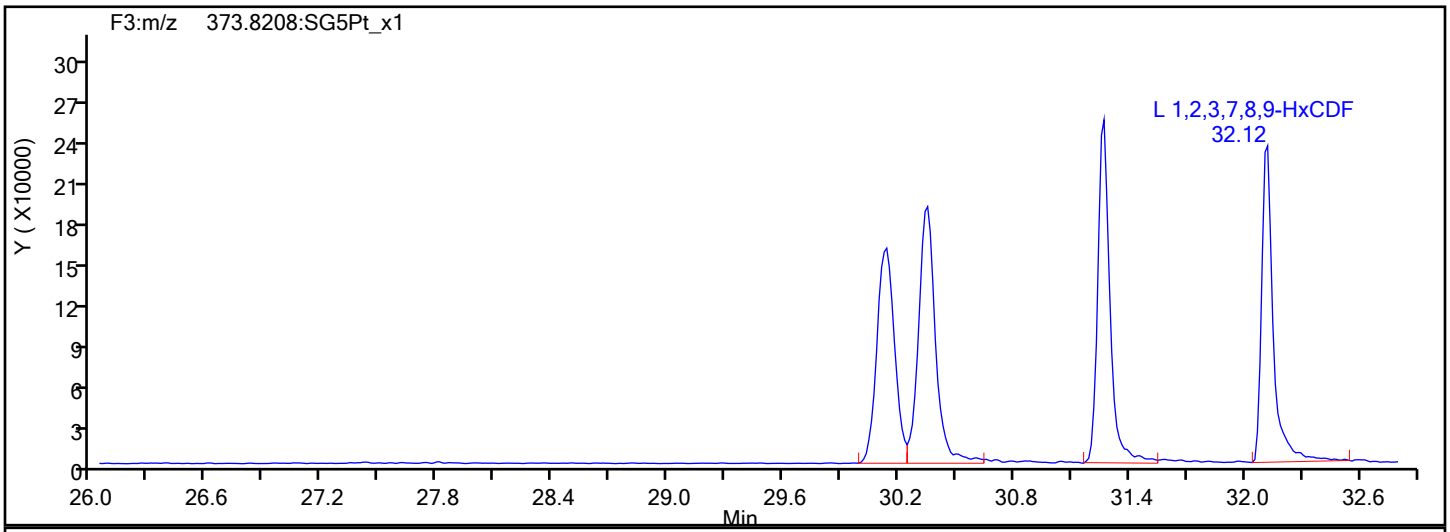
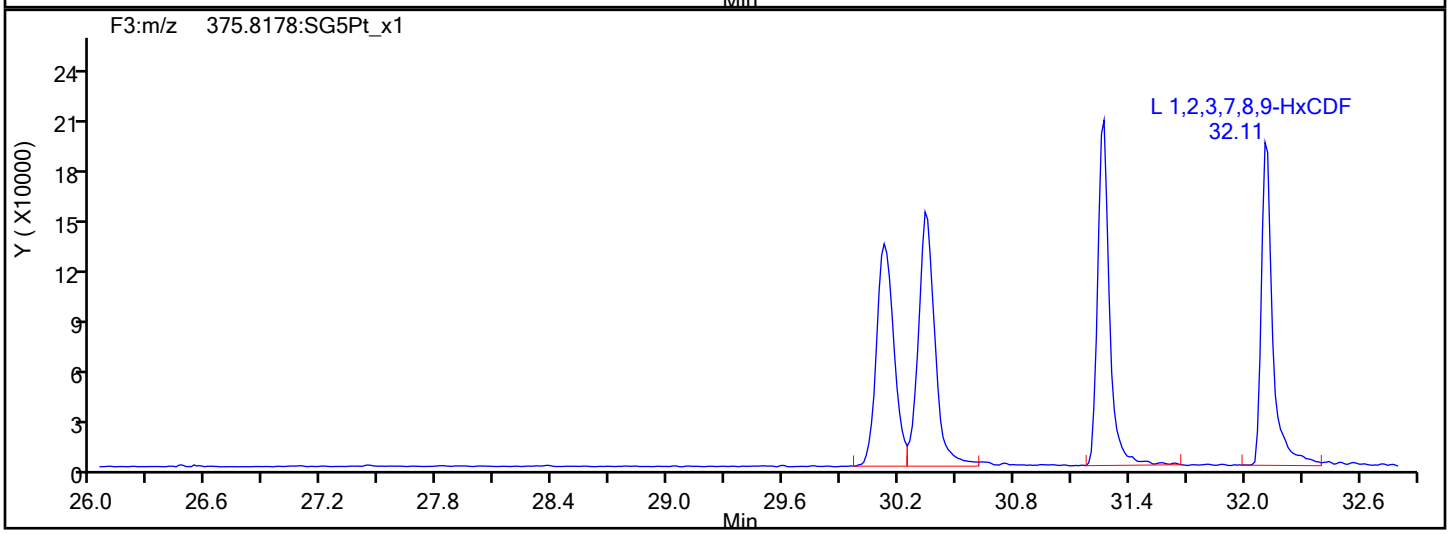
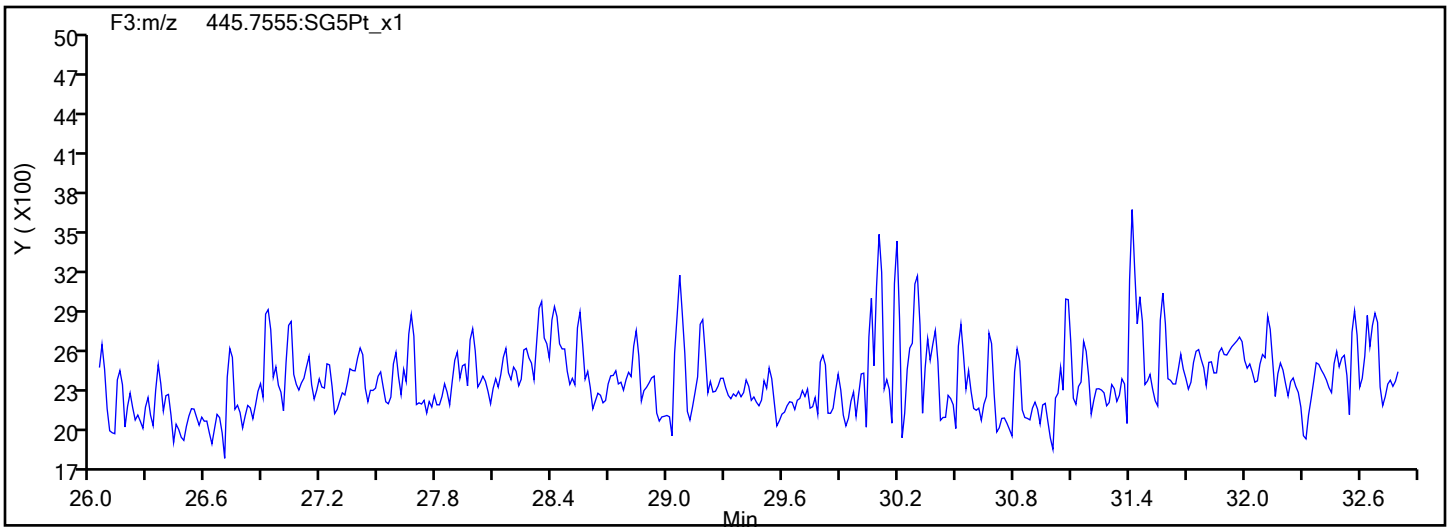




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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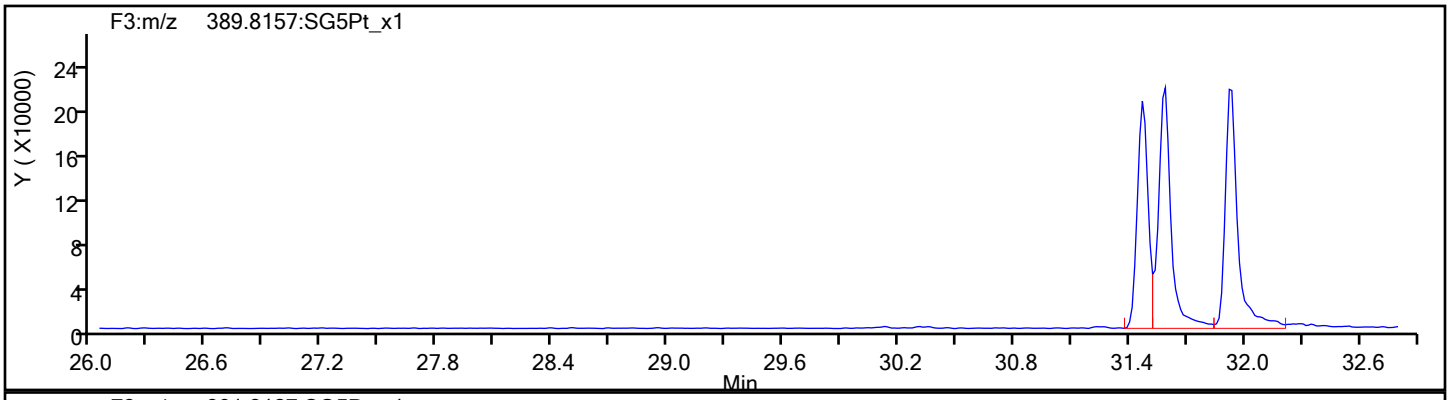
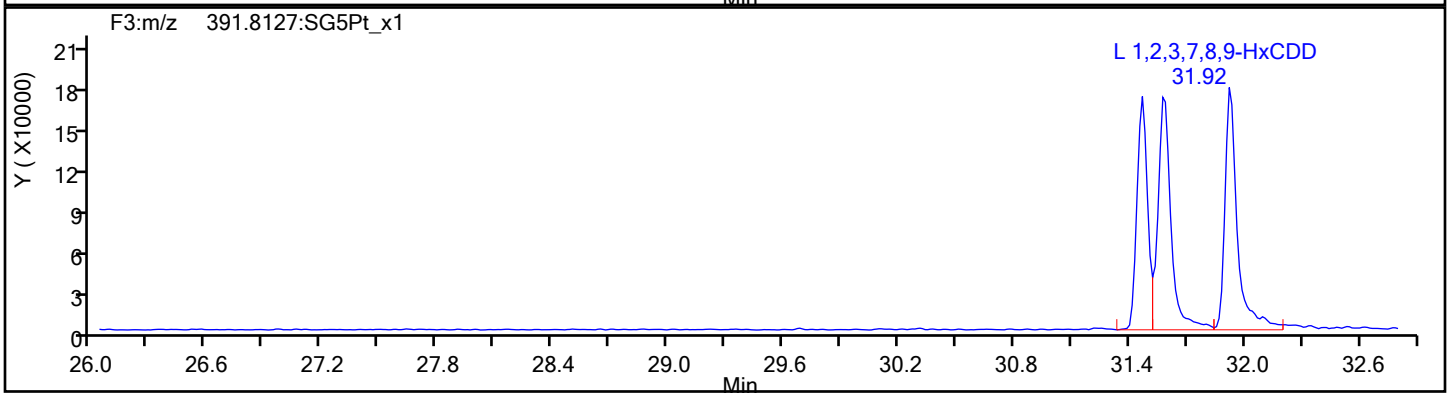
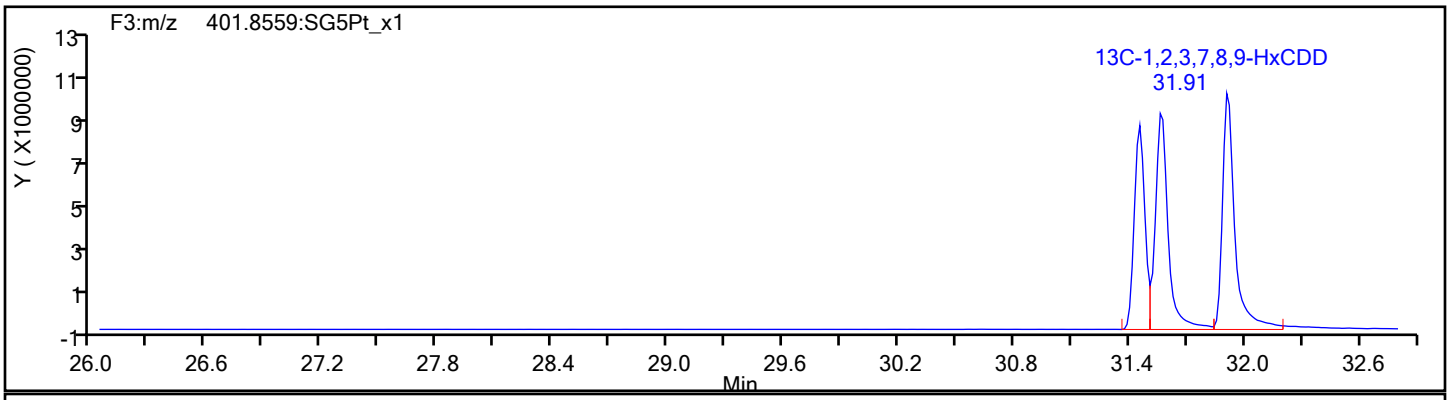
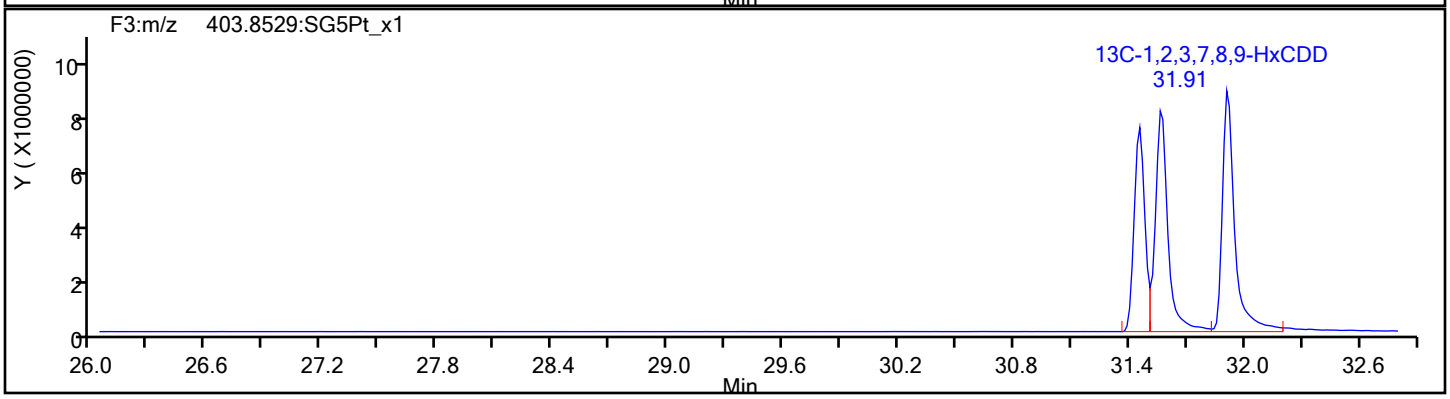




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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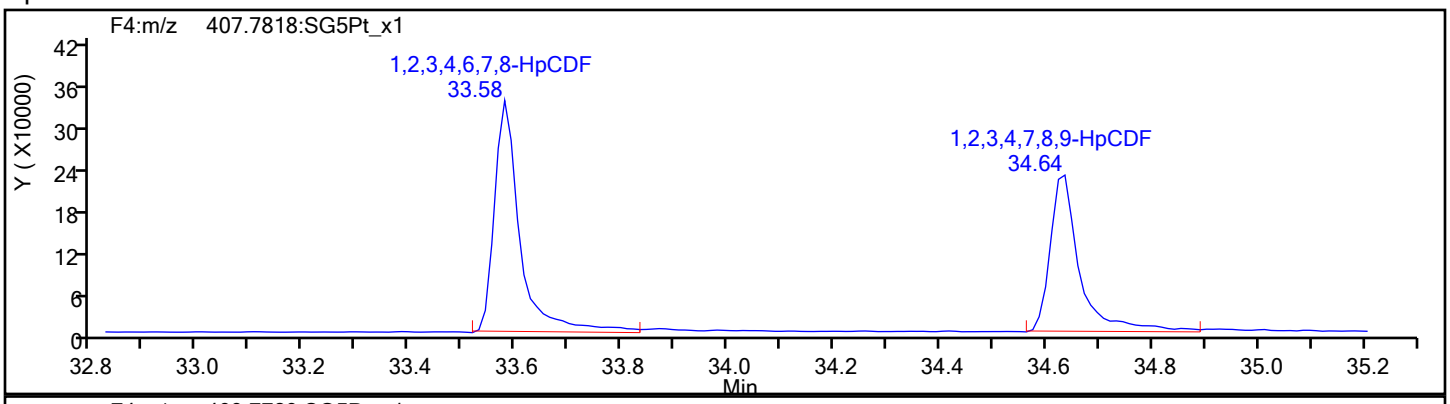

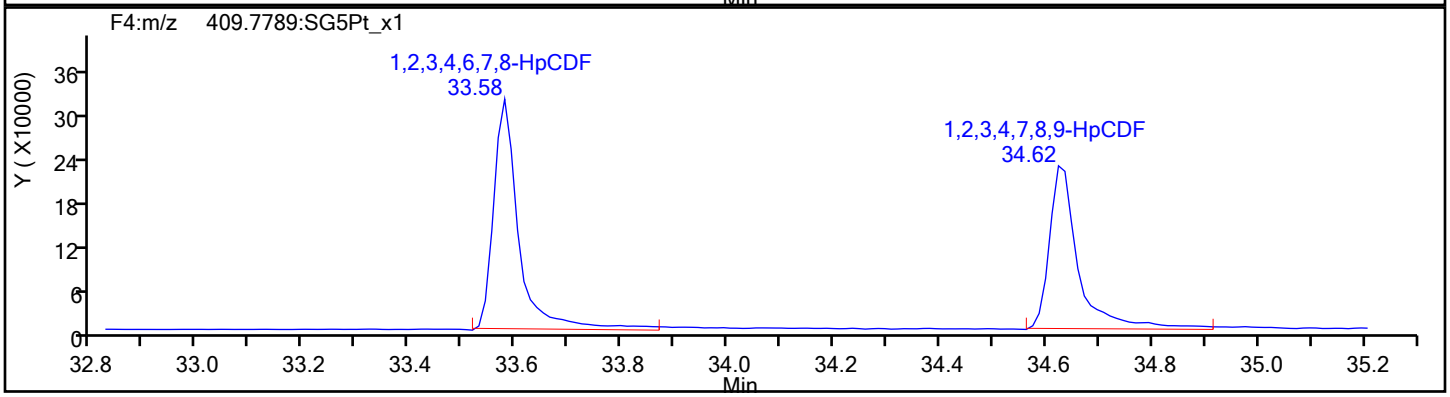

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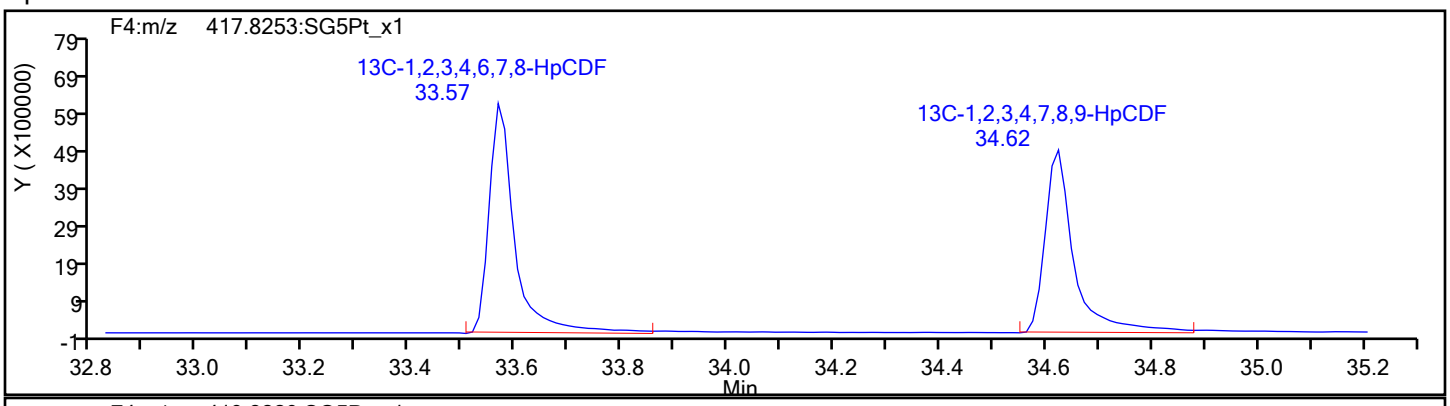

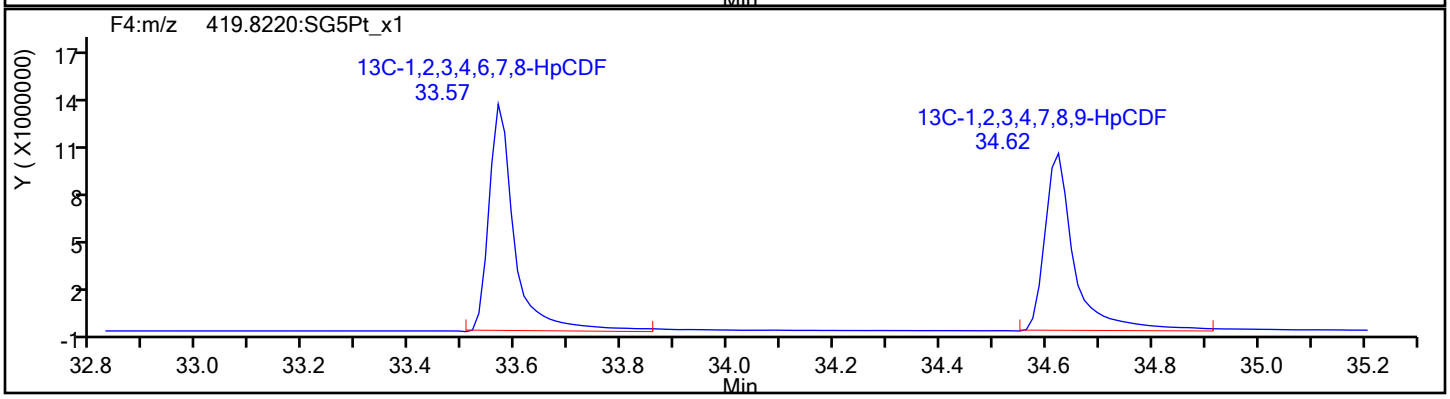

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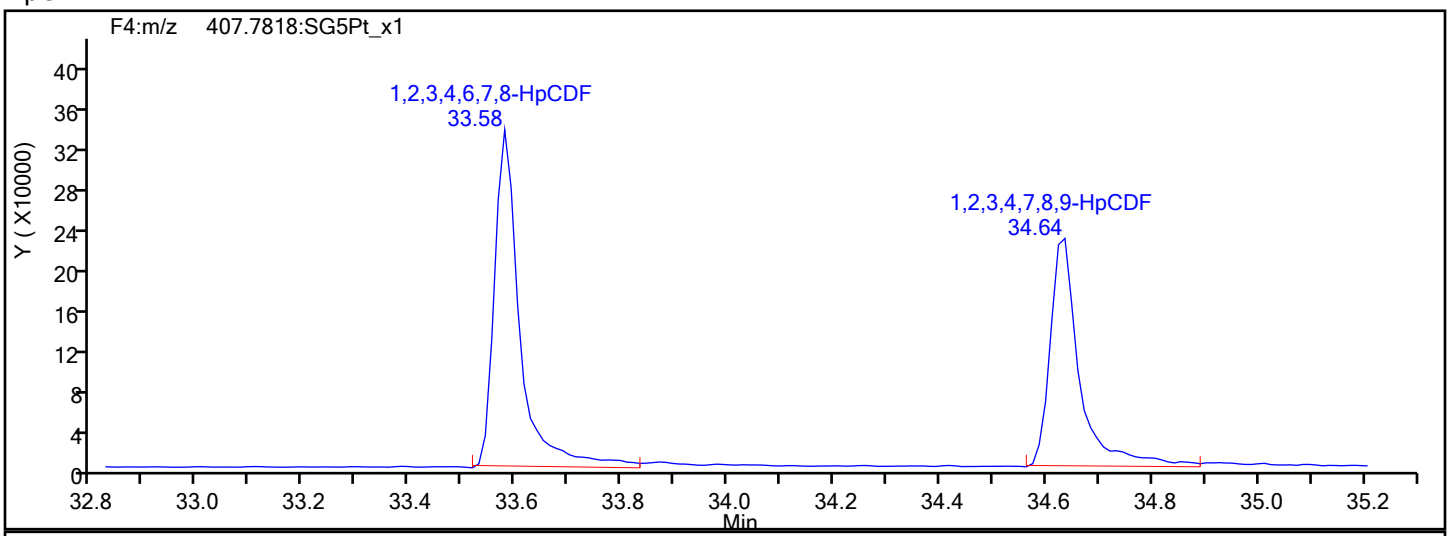
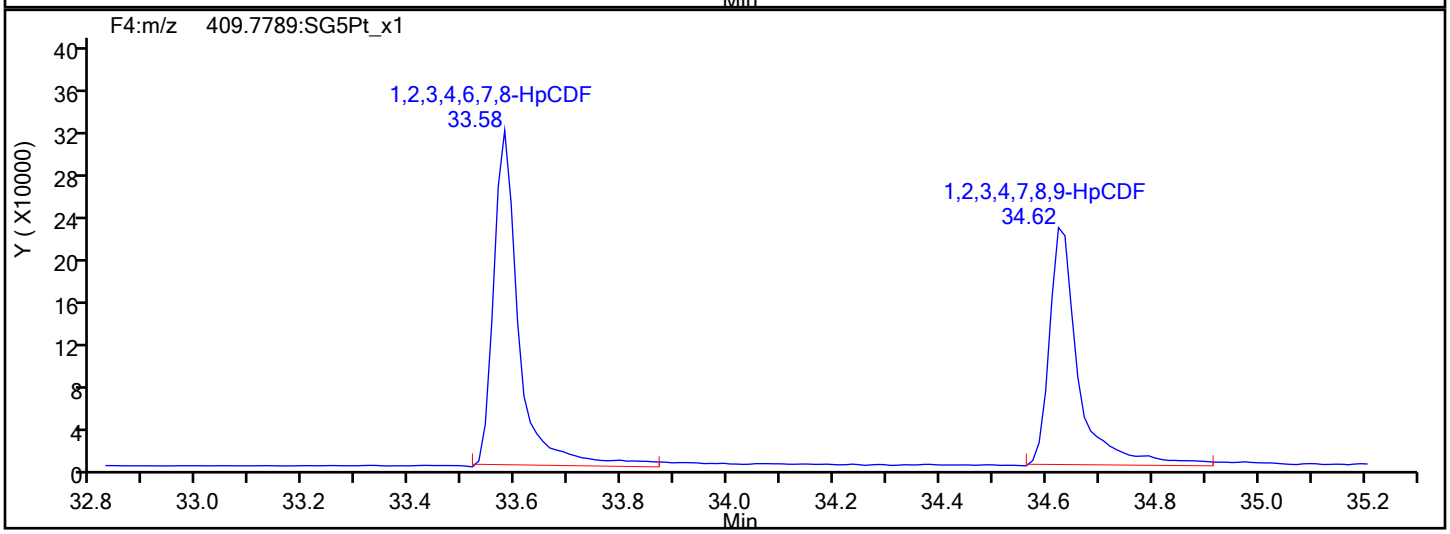
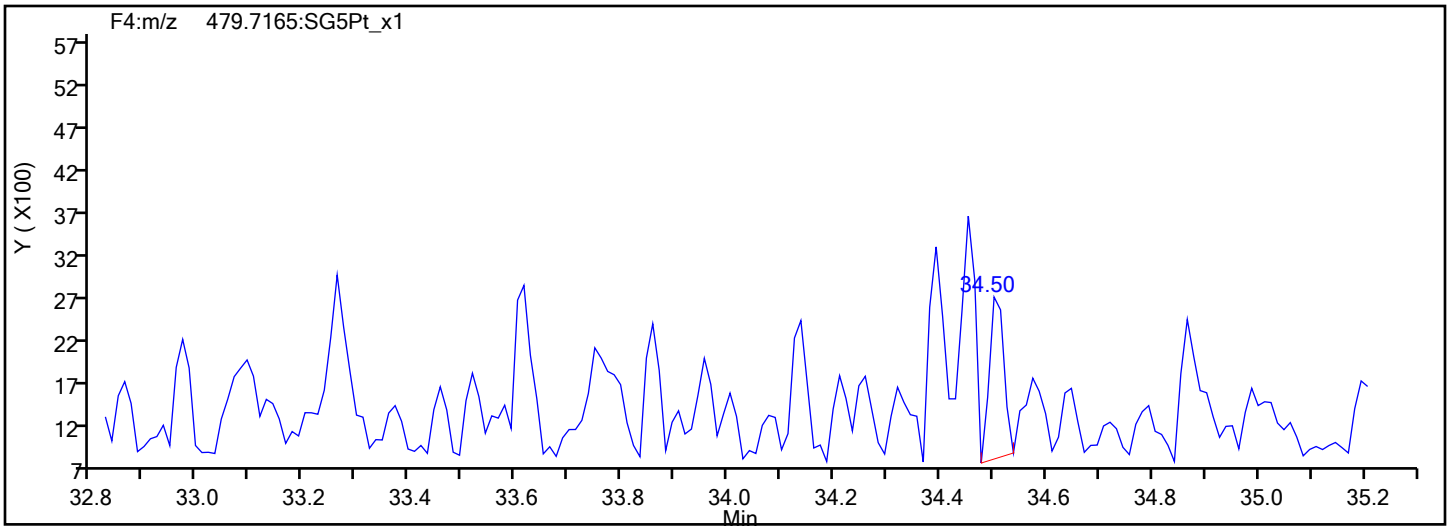




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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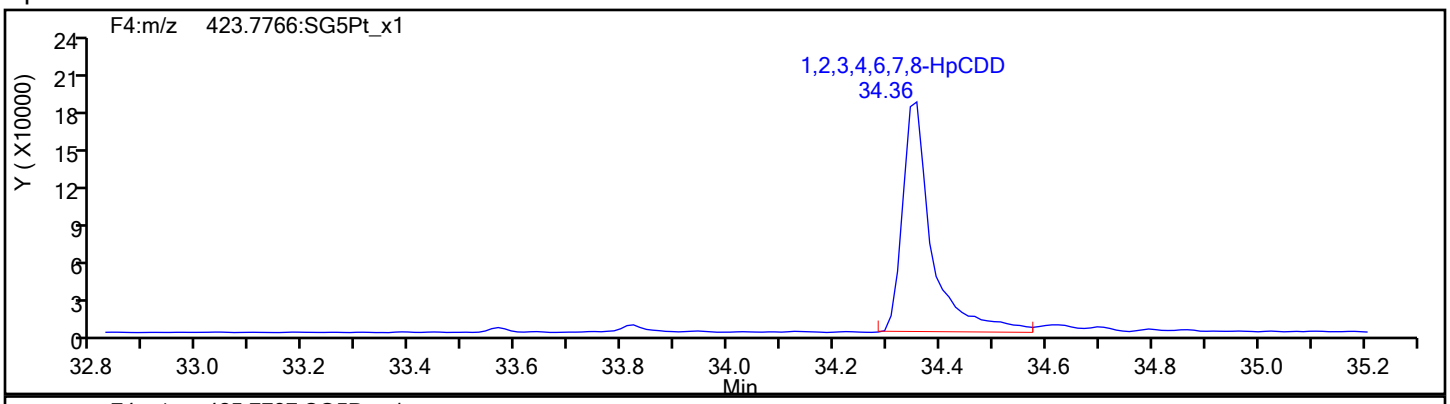
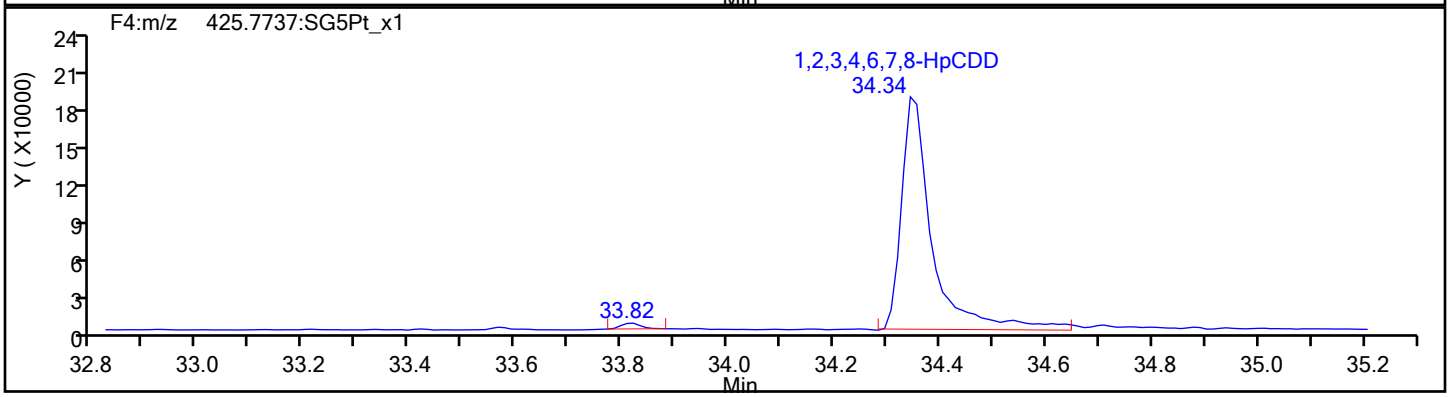
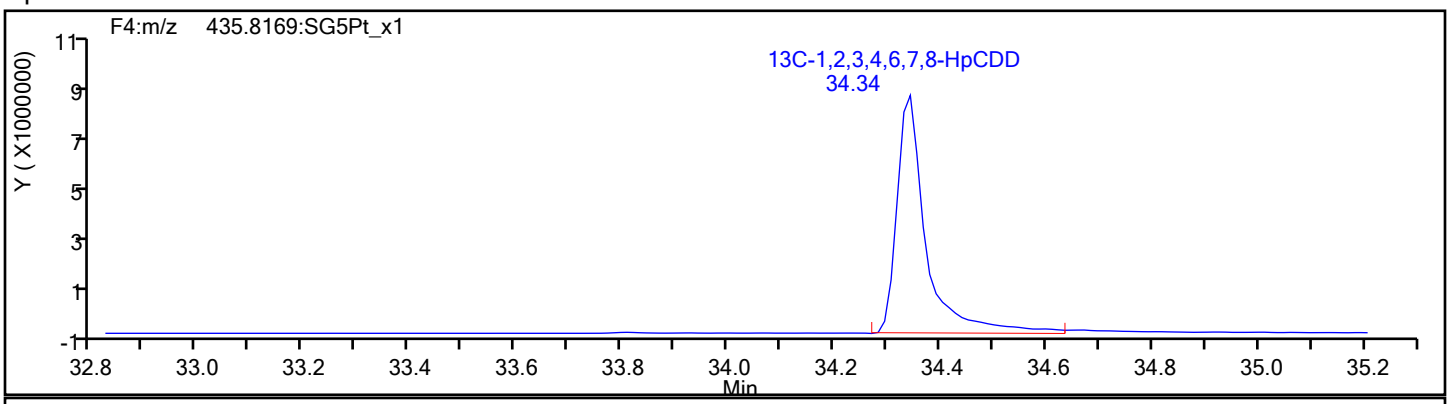
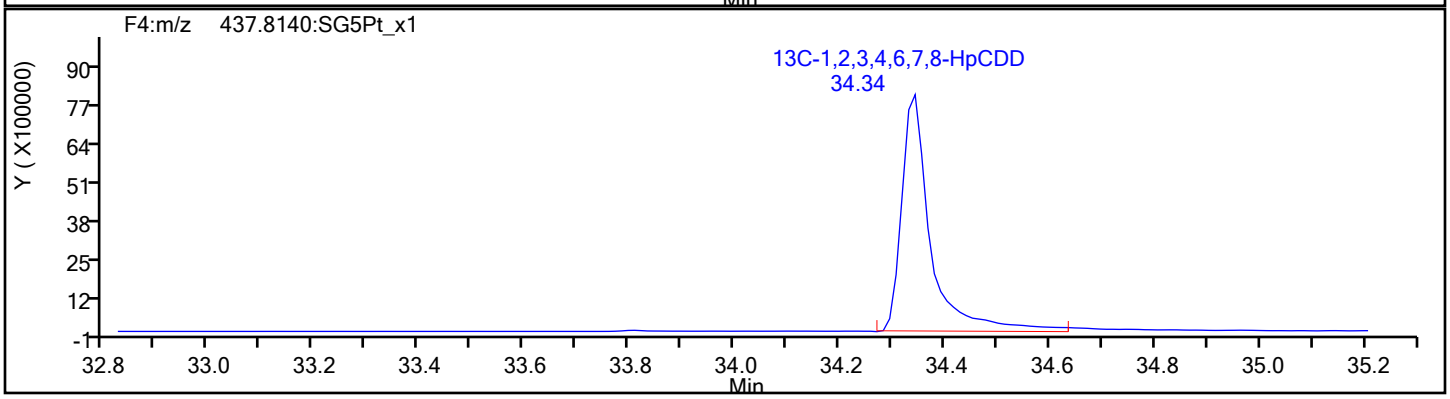




HpCDD Standards





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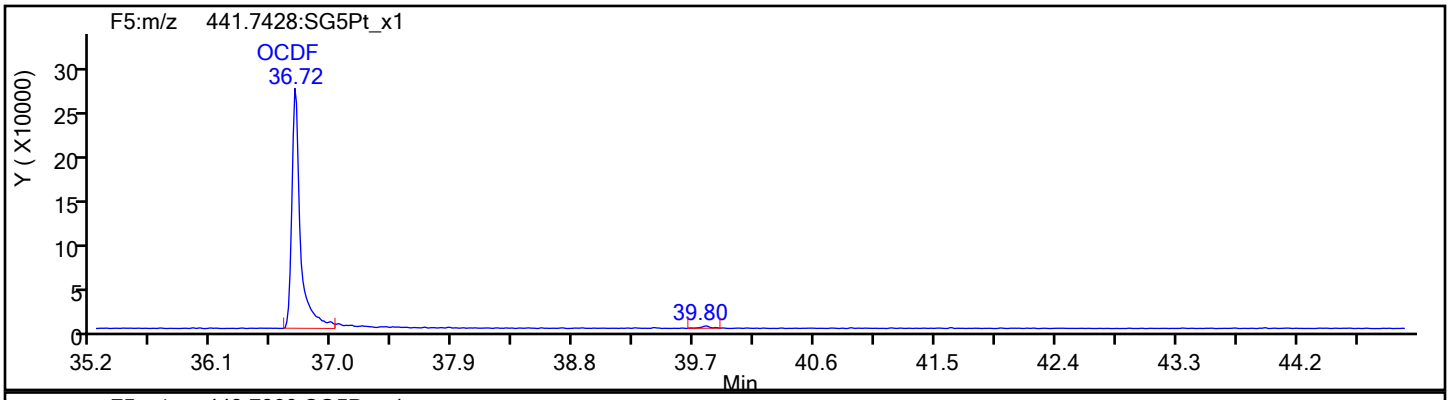
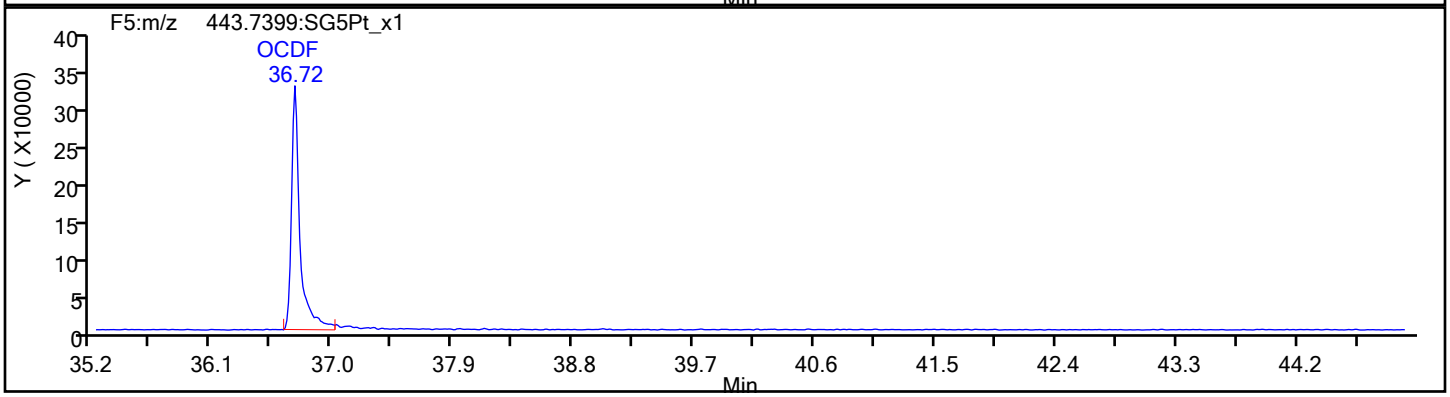
OCDF





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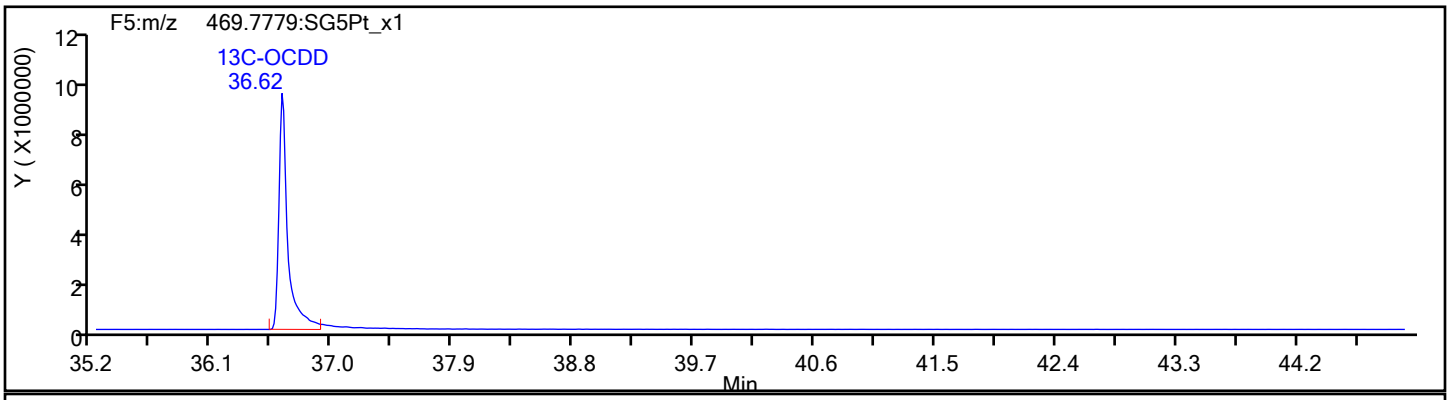

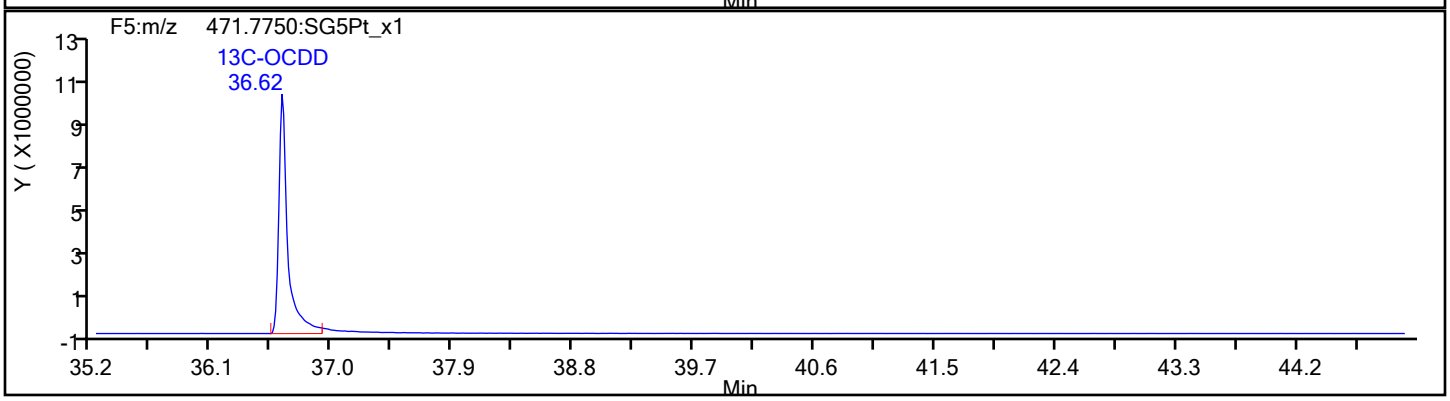

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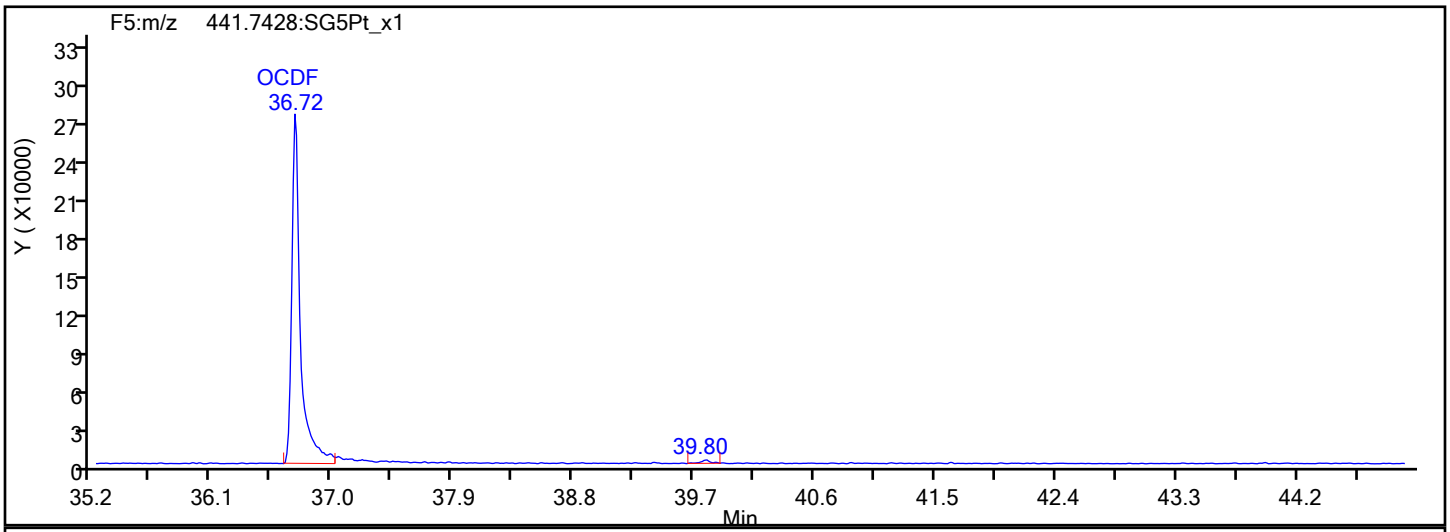
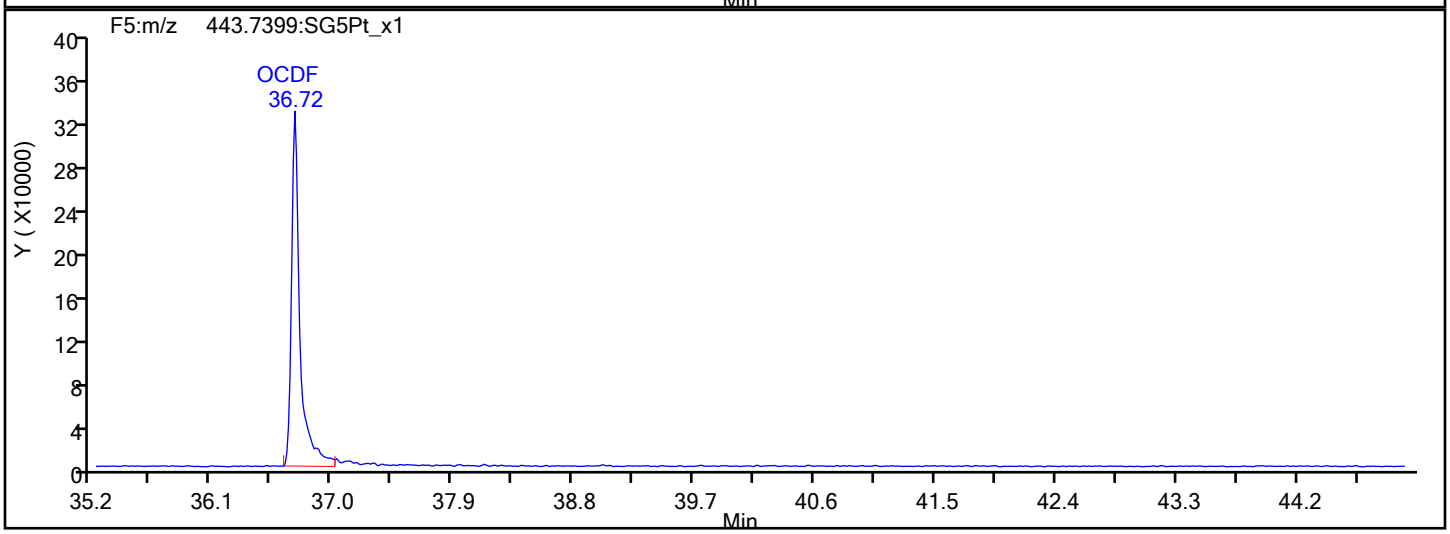
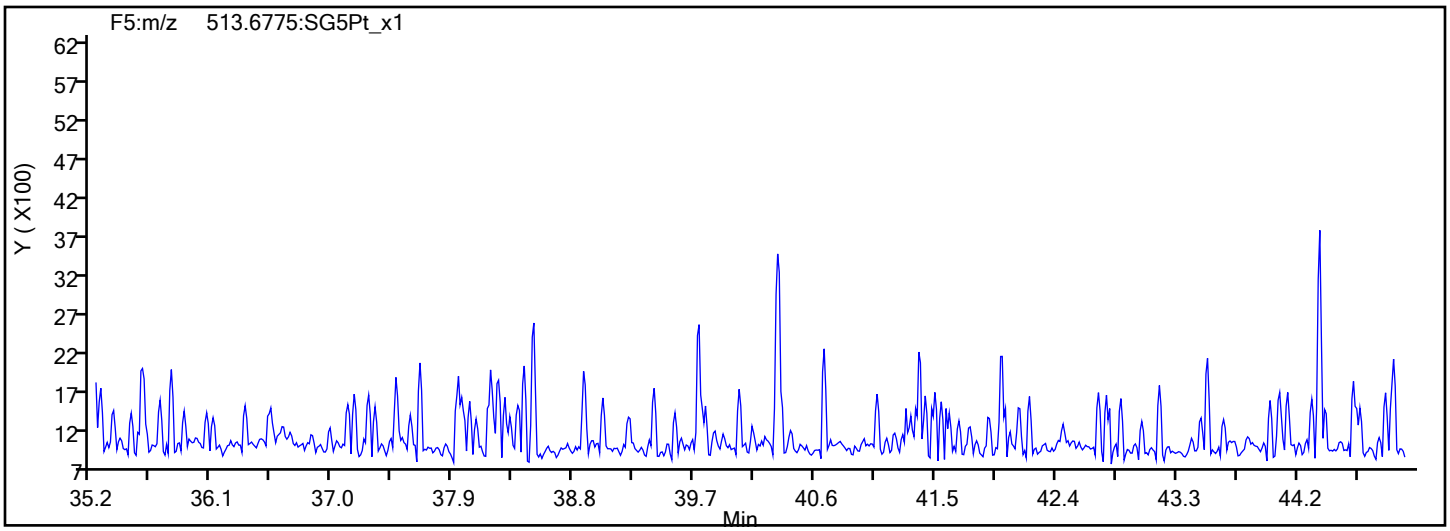




OCDF Interference Mass

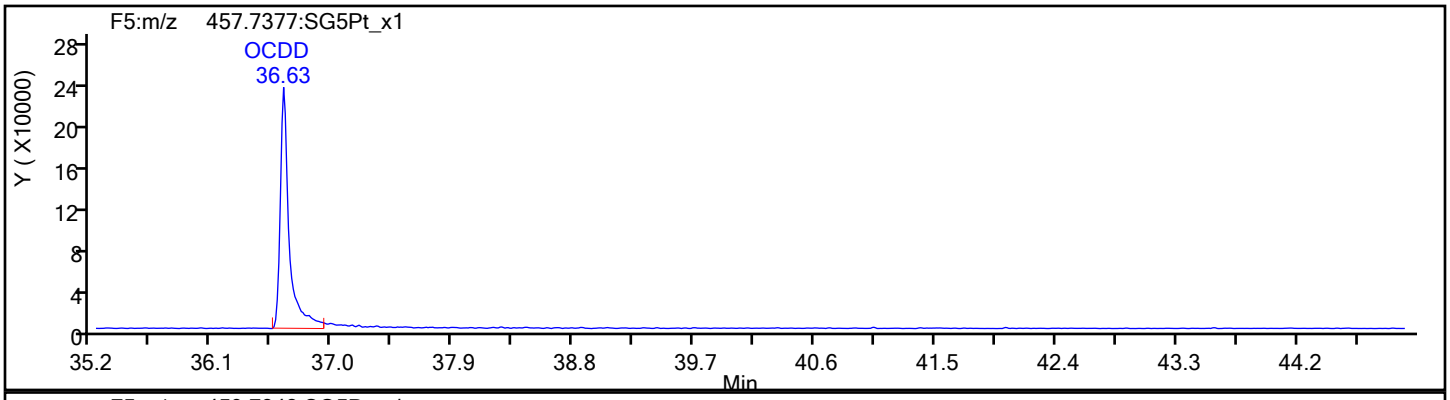


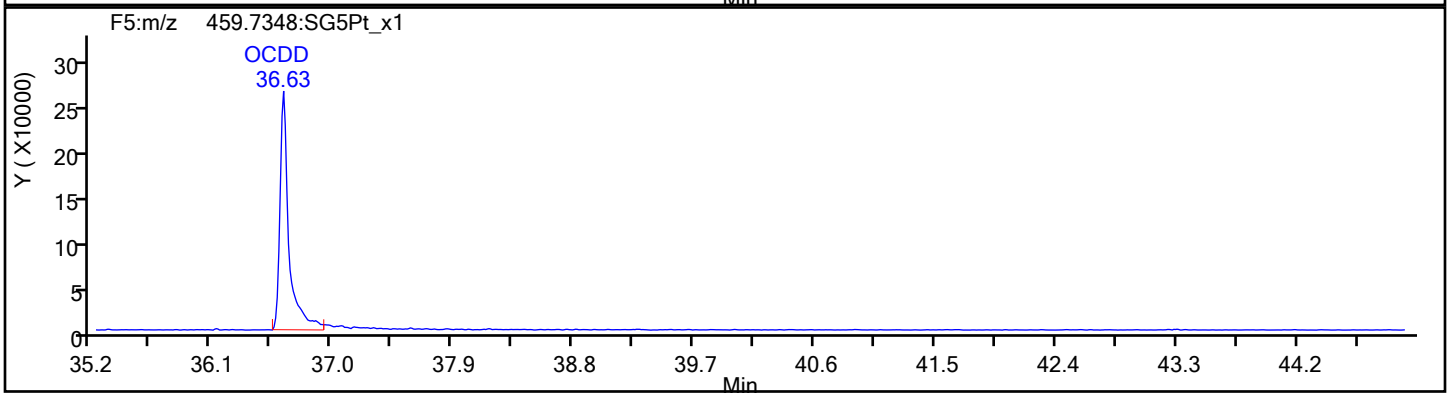
Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

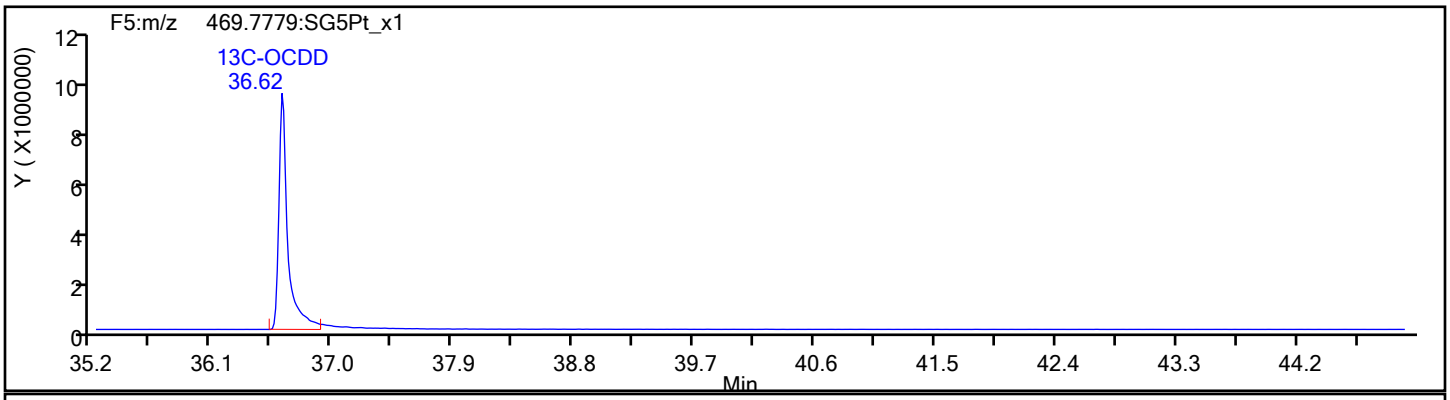
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
Injection Date:	14-Nov-2019 09:46:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

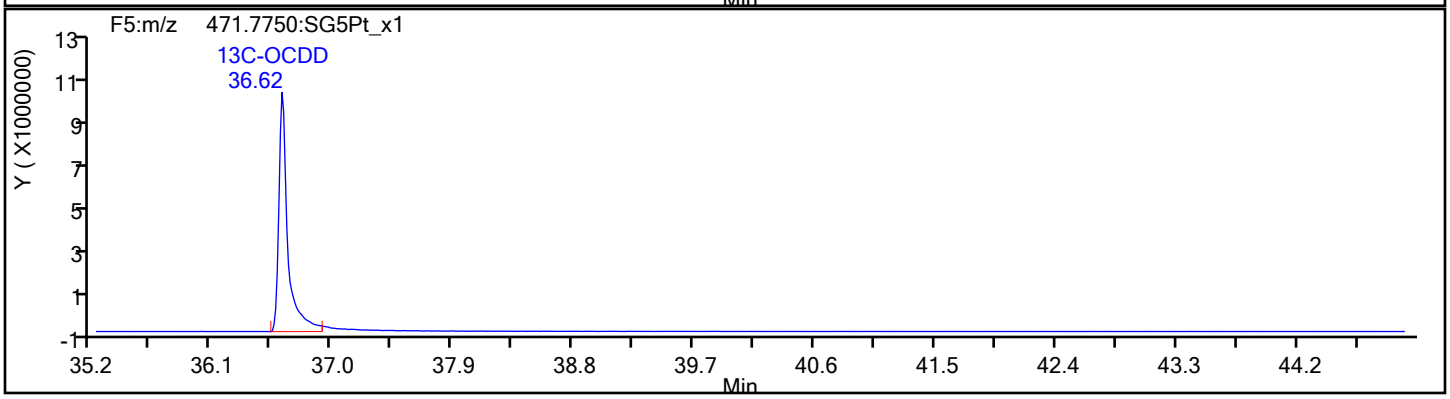
OCDD





OCDD Standards

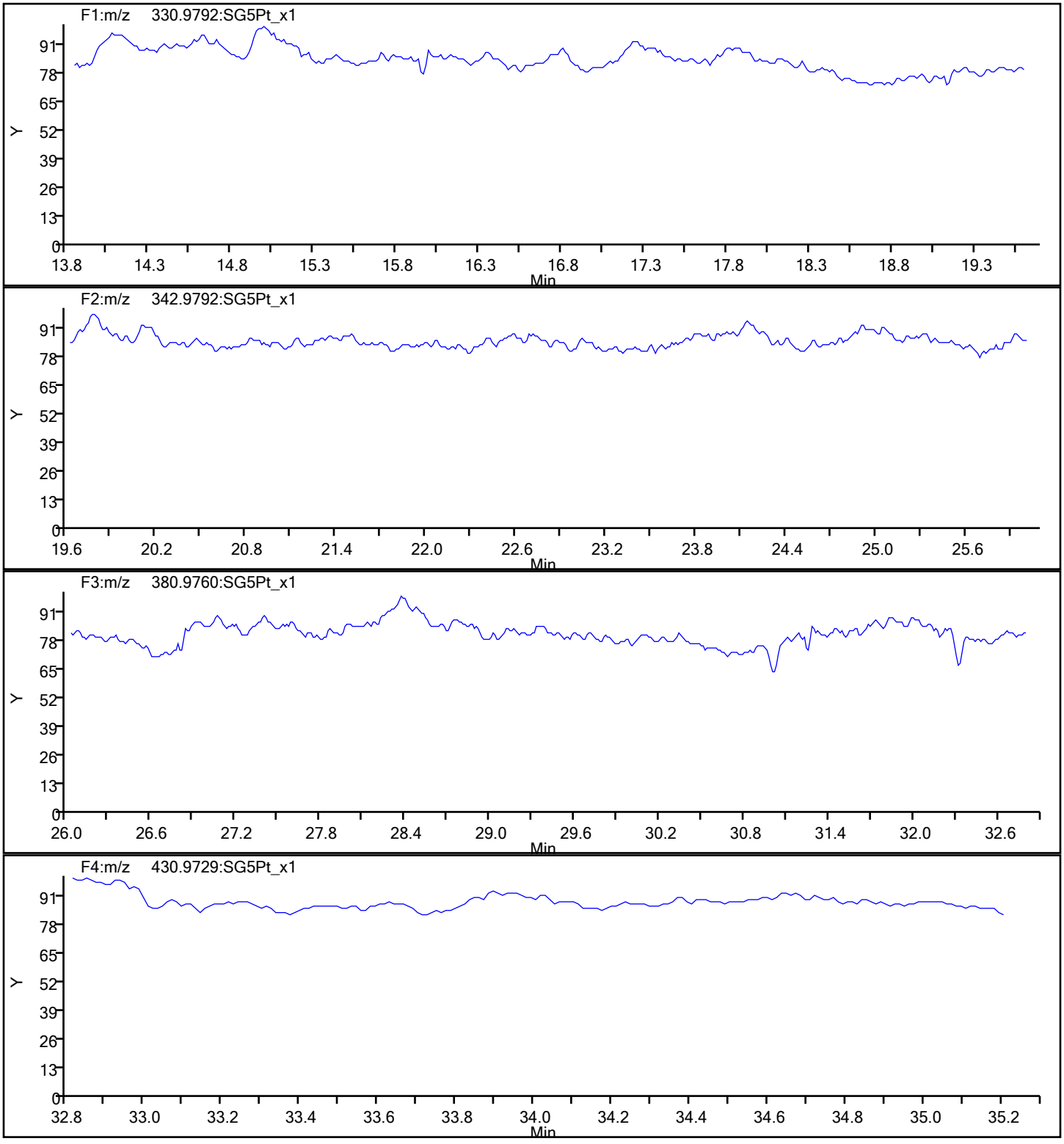




Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

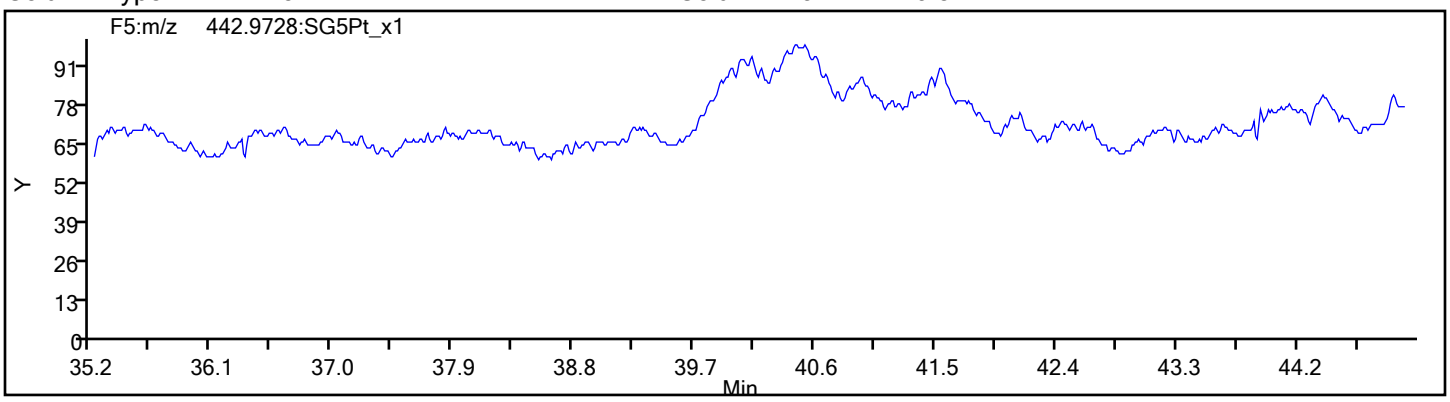
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
Injection Date:	14-Nov-2019 09:46:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 14-Nov-2019 16:54:20 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_3.d		
Injection Date:	14-Nov-2019 09:46:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_4.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Nov-2019 10:32:55 ALS Bottle#: 5 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419A CS-3 HRDXNL3_00025
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:02 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:47:34

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.532	120587468	0.79	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	156065046	0.78	1.3318	97.2	97.2	0.1526	0.1526	97.17	
2,3,7,8-TCDF	17.049	2974733	0.77	0.9005	2.117	2.117	0.0130	0.0130	106	
S Total TCDF					2.117	2.117	0.0130	0.0130		
D 13C-2,3,7,8-TCDD	17.729	114053402	0.79	0.9647	98.0	98.0	0.1739	0.1739	98.04	
2,3,7,8-TCDD	17.744	2575271	0.80	1.0698	2.111	2.111	0.0156	0.0156	106	
$ 37Cl4-2,3,7,8-TCDD	17.744	2863654		1.3082	1.815	1.815	0.006162	0.006162	90.76	
S Total TCDD					2.111	2.111	0.0156	0.0156		
D 13C-1,2,3,7,8-PeCDF	21.949	120823246	1.56	1.0537	95.1	95.1	0.2820	0.2820	95.09	
1,2,3,7,8-PeCDF	21.963	12569686	1.59	0.9704	10.7	10.7	0.0560	0.0560	107	
D 13C-2,3,4,7,8-PeCDF	23.258	118044282	1.57	1.0173	96.2	96.2	0.2921	0.2921	96.23	
2,3,4,7,8-PeCDF	23.286	12532612	1.56	0.9986	10.6	10.6	0.0582	0.0582	106	
S Total PeCDF					21.4	21.4	0.0571	0.0571		
D 13C-1,2,3,7,8-PeCDD	23.968	84035570	1.57	0.7281	95.7	95.7	0.1426	0.1426	95.71	
1,2,3,7,8-PeCDD	23.995	8901872	1.60	1.0023	10.6	10.6	0.0357	0.0357	106	
S Total PeCDD					10.6	10.6	0.0357	0.0357		
D 13C-1,2,3,4,7,8-HxCDF	30.100	82977803	0.51	0.9632	96.4	96.4	0.5982	0.5982	96.42	
1,2,3,4,7,8-HxCDF	30.126	9042597	1.23	1.0315	10.6	10.6	0.1196	0.1196	106	
D 13C-1,2,3,6,7,8-HxCDF	30.312	92252784	0.51	1.0646	97.0	97.0	0.5412	0.5412	96.99	
1,2,3,6,7,8-HxCDF	30.339	10306095	1.24	1.0235	10.9	10.9	0.1066	0.1066	109	
D 13C-2,3,4,6,7,8-HxCDF	31.244	85583439	0.52	0.9696	98.8	98.8	0.5942	0.5942	98.78	
2,3,4,6,7,8-HxCDF	31.258	9723529	1.23	1.0645	10.7	10.7	0.0813	0.0813	107	
D 13C-1,2,3,7,8,9-HxCDF	32.096	77641252	0.51	0.8955	97.0	97.0	0.6434	0.6434	97.04	
1,2,3,7,8,9-HxCDF	32.110	8942226	1.23	1.0664	10.8	10.8	0.0831	0.0831	108	
S Total HxCDF					43.0	43.0	0.0976	0.0976		
* 13C-1,2,3,7,8,9-HxCDD	31.910	89350313	1.24	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.444	68199301	1.27	0.7590	100.6	100.6	0.4483	0.4483	101	
1,2,3,4,7,8-HxCDD	31.471	7132423	1.24	1.0054	10.4	10.4	0.0549	0.0549	104	
D 13C-1,2,3,6,7,8-HxCDD	31.564	80868571	1.24	0.9247	97.9	97.9	0.3679	0.3679	97.87	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.577	8533516	1.25	0.9833	10.7	10.7	0.0511	0.0511	107	
1,2,3,7,8,9-HxCDD	31.923	8771399	1.22	1.1036	10.7	10.7	0.0477	0.0477	107	
S Total HxCDD					31.8	31.8	0.0512	0.0512		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	69849087	0.45	0.7930	98.6	98.6	2.060	2.060	98.58	
1,2,3,4,6,7,8-HpCDF	33.579	10733813	1.04	1.4240	10.8	10.8	0.1940	0.1940	108	
D 13C-1,2,3,4,7,8,9-HpCDF	34.612	63441185	0.44	0.7296	97.3	97.3	2.239	2.239	97.32	
1,2,3,4,7,8,9-HpCDF	34.624	8737178	1.04	1.2834	10.7	10.7	0.2605	0.2605	107	
S Total HpCDF					21.5	21.5	0.2273	0.2273		
D 13C-1,2,3,4,6,7,8-HpCDD	34.333	65748052	1.05	0.7532	97.7	97.7	0.8290	0.8290	97.70	
1,2,3,4,6,7,8-HpCDD	34.345	7201830	1.06	1.0174	10.8	10.8	0.1030	0.1030	108	
S Total HpCDD					10.8	10.8	0.1030	0.1030		
D 13C-OCDD	36.621	94246168	0.89	0.5621	187.7	187.7	0.3020	0.3020	93.83	
OCDF	36.717	12949120	0.90	1.3047	21.1	21.1	0.0471	0.0471	105	
OCDD	36.633	11182534	0.89	1.0997	21.6	21.6	0.0452	0.0452	108	

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_4.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Nov-2019 10:32:55 ALS Bottle#: 5 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419A CS-3 HRDXNL3_00025
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:02 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:47:34

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.532	17.539	0		53299923	13586228	9879	24697	1375		
333.9339	17.532	17.539	0		67287545	17265010	10821	27052	1596	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.972	68173593	17388881	11766	29415	1478		
317.9389	17.034	17.034	0	0.972	87891453	22580056	13311	33277	1696	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	1297161	333740	742	1855	450		
305.8987	17.049	17.049	0	1.001	1677572	421948	1132	2830	373	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.011	50329650	11913389	9879	24697	1206		
333.9339	17.729	17.729	0	1.011	63723752	14987971	10821	27052	1385	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	1147364	273431	1082	2705	253		
321.8936	17.744	17.744	0	1.001	1427907	354903	716	1790	496	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.012	2863654	705946	995	2487	709		
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.252	73679296	13004409	22060	55150	590		
353.8970	21.949	21.949	0	1.252	47143950	8319890	14612	36530	569	1.56(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.963	21.971	0	1.001	7724885	1382375	2624	6560	527		
341.8567	21.963	21.971	0	1.001	4844801	897690	2009	5022	447	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.327	72039556	12158566	22060	55150	551		
353.8970	23.258	23.258	0	1.327	46004726	7782970	14612	36530	533	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	7639301	1316285	2624	6560	502		
341.8567	23.286	23.286	0	1.001	4893311	835364	2009	5022	416	1.56(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.367	51305149	8033321	8094	20235	993		
369.8919	23.968	23.968	0	1.367	32730421	5088409	4721	11802	1078	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	5472297	866787	1189	2972	729		
357.8516	23.995	23.995	0	1.001	3429575	542178	687	1717	789	1.60(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.100	30.102	0	0.943	27947367	4590066	15865	39662	289		
385.8610	30.100	30.102	0	0.943	55030436	8781311	31202	78005	281	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.126	30.131	0	1.001	4978598	827046	3830	9575	216		
375.8178	30.126	30.131	0	1.001	4063999	652671	2767	6917	236	1.23(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.312	30.323	-1	0.950	31087012	5124500	15865	39662	323		
385.8610	30.312	30.323	-1	0.950	61165772	9991761	31202	78005	320	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.339	30.344	0	1.001	5708199	952062	3830	9575	249		
375.8178	30.339	30.344	0	1.001	4597896	769523	2767	6917	278	1.24(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.244	31.247	0	0.979	29219359	6532009	15865	39662	412		
385.8610	31.244	31.247	0	0.979	56364080	12528435	31202	78005	402	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.258	31.265	0	1.000	5364335	1211892	3830	9575	316		
375.8178	31.258	31.265	0	1.000	4359194	1000741	2767	6917	362	1.23(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.096	32.099	0	1.006	26210079	6318628	15865	39662	398		
385.8610	32.096	32.099	0	1.006	51431173	12284438	31202	78005	394	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.110	32.115	0	1.000	4929196	1198638	3830	9575	313		
375.8178	32.110	32.115	0	1.000	4013030	982057	2767	6917	355	1.23(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.910	31.912	0		49429439	11283756	15576	38940	724		
403.8529	31.910	31.912	0		39920874	9140122	12220	30550	748	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.444	31.452	0	0.985	38192156	9532992	15576	38940	612		
403.8529	31.444	31.452	0	0.985	30007145	7401844	12220	30550	606	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.471	31.470	0	1.001	3948736	990056	2070	5175	478		
391.8127	31.457	31.470	-1	1.000	3183687	804241	1668	4170	482	1.24(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.564	31.566	0	0.989	44835466	10309034	15576	38940	662		
403.8529	31.564	31.566	0	0.989	36033105	8285823	12220	30550	678	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.577	31.582	0	1.000	4736930	1108179	2070	5175	535		
391.8127	31.577	31.582	0	1.000	3796586	880699	1668	4170	528	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.923	31.926	0	1.015	4817128	1137262	2070	5175	549		
391.8127	31.923	31.926	0	1.015	3954271	927526	1668	4170	556	1.22(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.052	21576921	6310512	39561	98902	160		
419.8220	33.567	33.567	0	1.052	48272166	14111506	93878	234695	150	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	5469657	1592348	10862	27155	147		
409.7789	33.567	33.579	-1	1.000	5264156	1540634	11711	29277	132	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.612	34.619	0	1.085	19385153	5195647	39561	98902	131		
419.8220	34.612	34.619	0	1.085	44056032	11685953	93878	234695	124	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.624	34.629	0	1.000	4452113	1217487	10862	27155	112		
409.7789	34.624	34.629	0	1.000	4285065	1177996	11711	29277	101	1.04(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.333	34.340	0	1.076	33704084	8962414	25538	63845	351		
437.8140	34.333	34.340	0	1.076	32043968	8525454	25472	63680	335	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.345	34.349	0	1.000	3697894	999578	3443	8607	290		
425.7737	34.345	34.349	0	1.000	3503936	946852	3889	9722	243	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.621	36.624	0	1.148	44353956	9629235	6907	17267	1394		
471.7750	36.621	36.624	0	1.148	49892212	10772097	6961	17402	1547	0.89(0.76-1.02)	
OCDF											
441.7428	36.717	36.720	0	1.003	6127584	1409043	1263	3157	1116		
443.7399	36.717	36.720	0	1.003	6821536	1519193	1242	3105	1223	0.90(0.76-1.02)	
OCDD											
457.7377	36.633	36.636	0	1.000	5277968	1149602	884	2210	1300		
459.7348	36.621	36.636	-1	1.000	5904566	1283491	1144	2860	1122	0.89(0.76-1.02)	

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

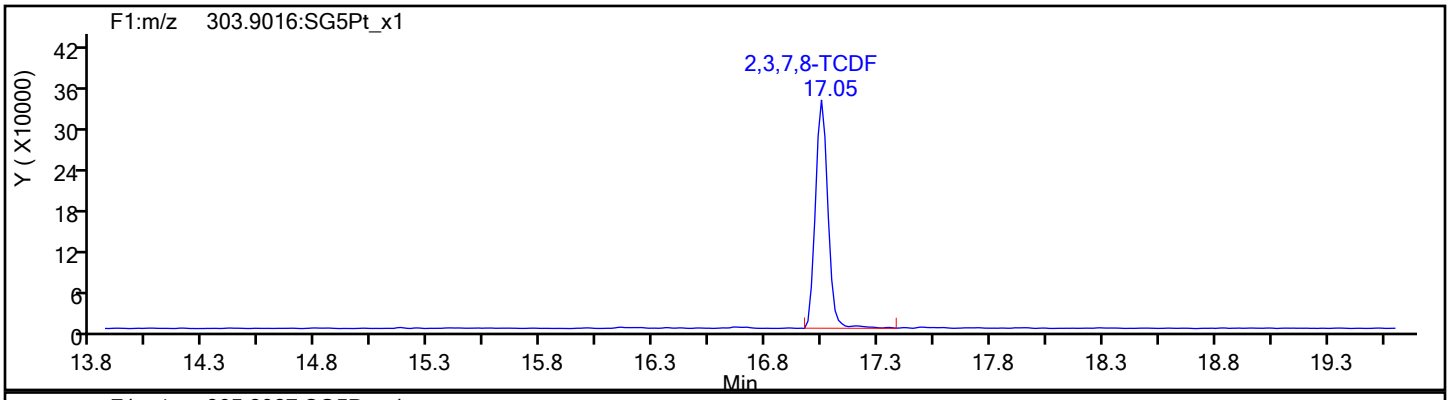
Report Date: 14-Nov-2019 16:54:09 Chrom Revision: 2.3 31-Oct-2019 20:21:30

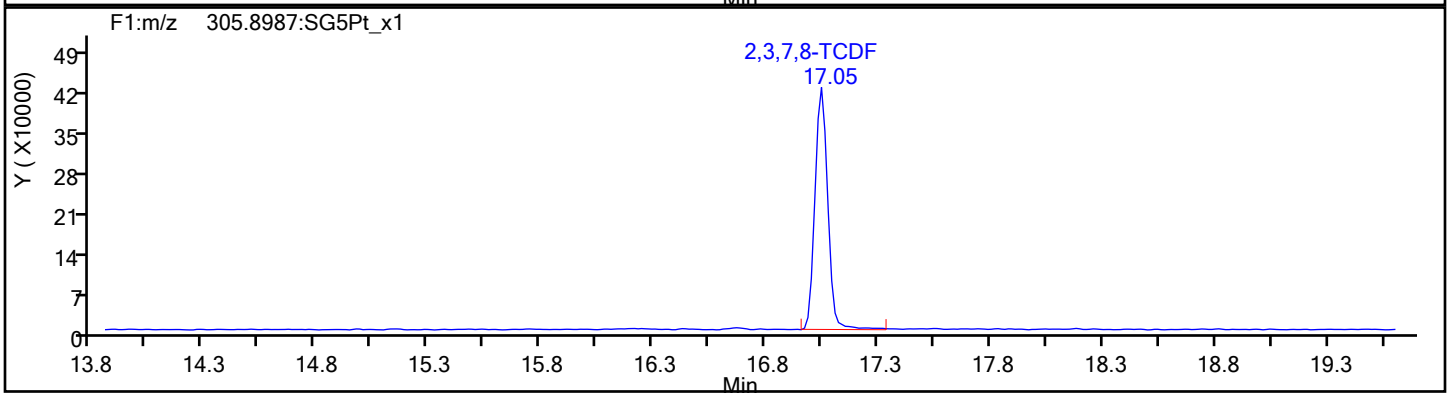
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_4.d

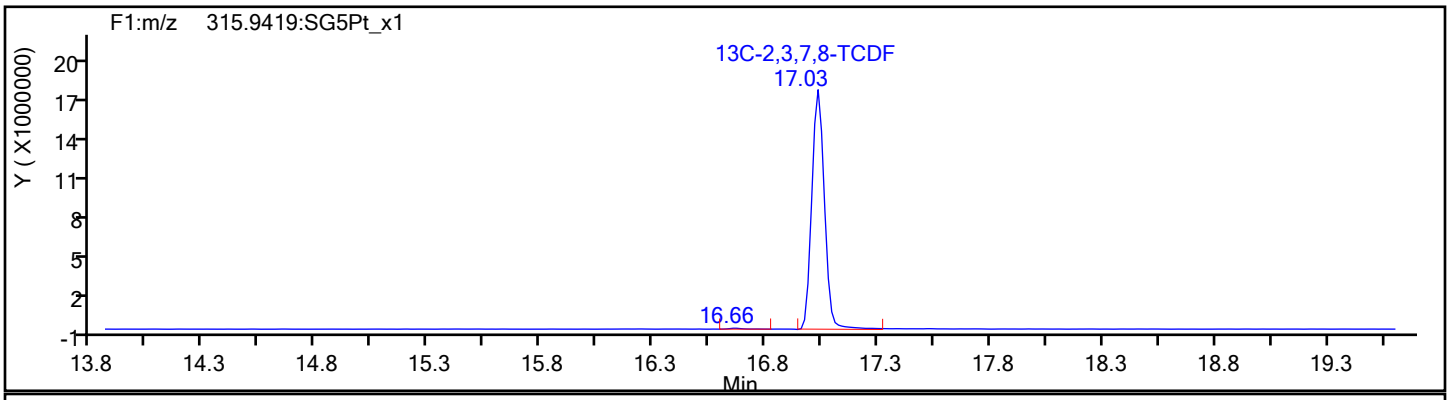
Injection Date:	14-Nov-2019 10:32:55	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

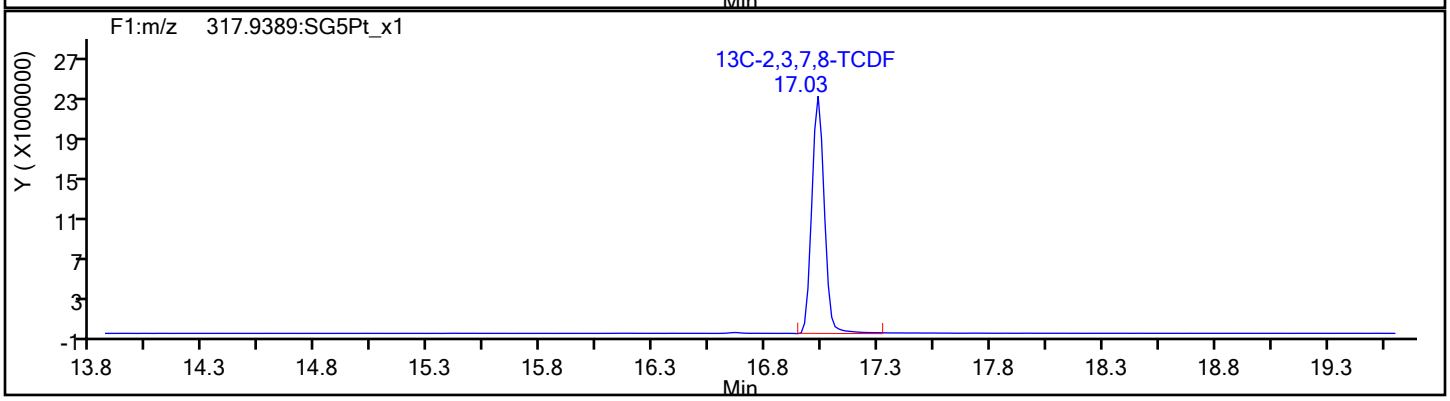
TCDF





TCDF Standards





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Eurofins TestAmerica, Sacramento

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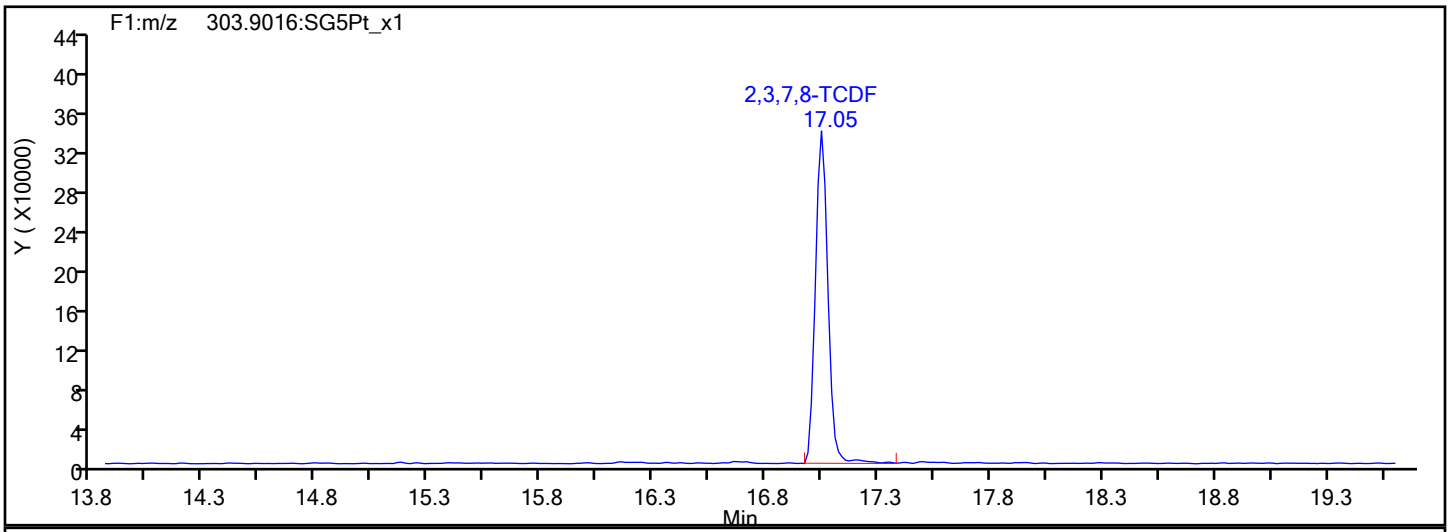
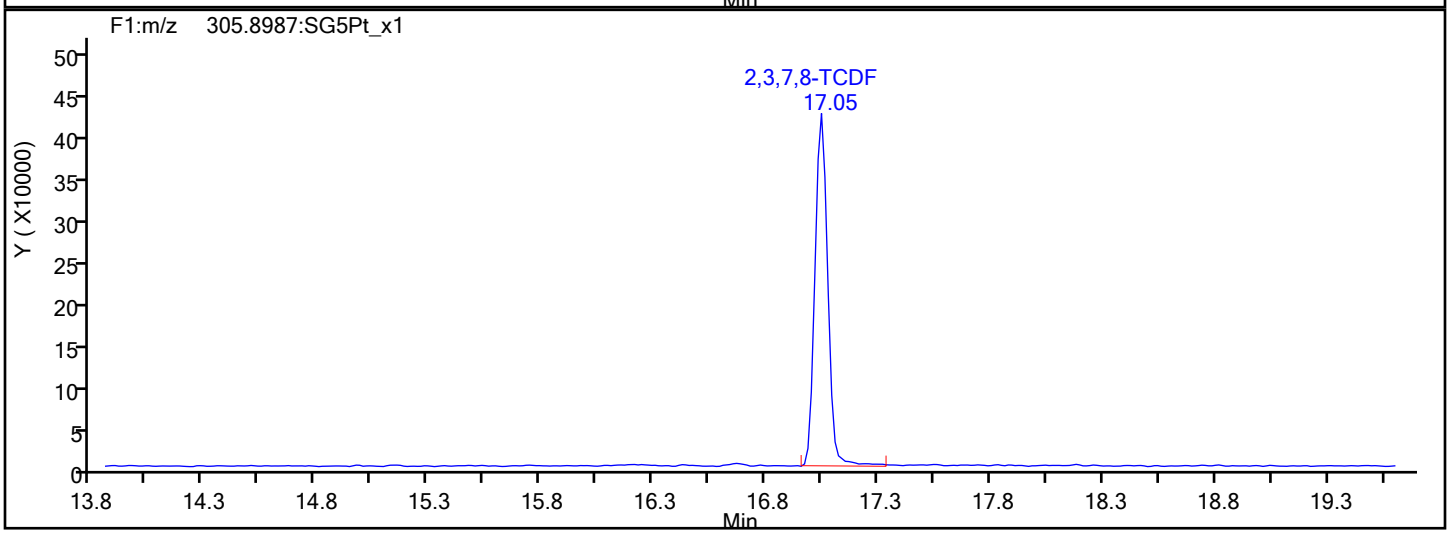
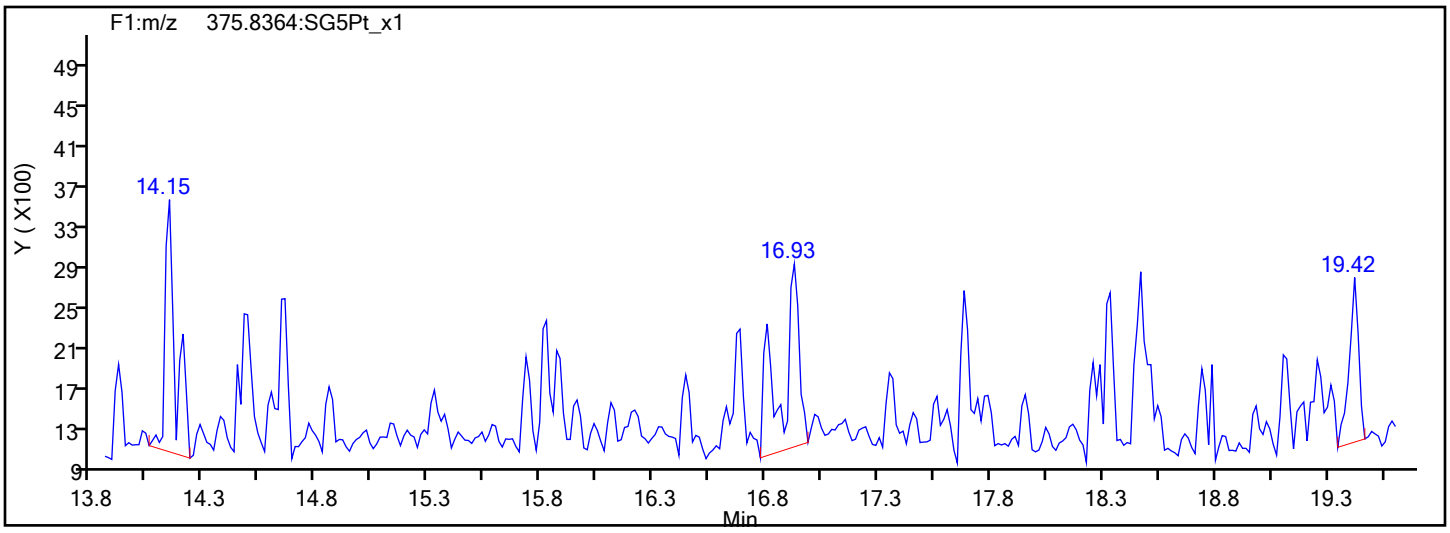
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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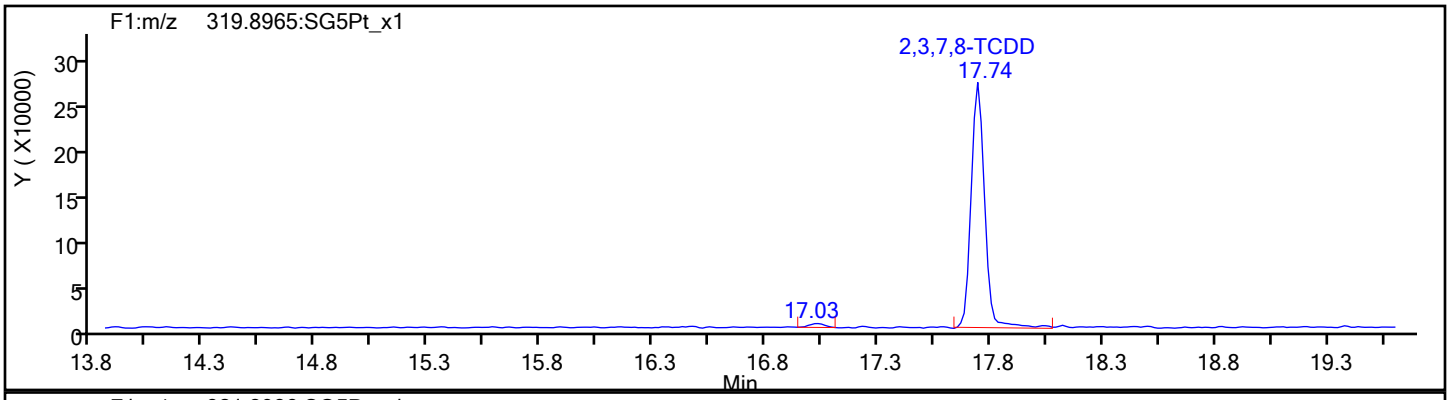
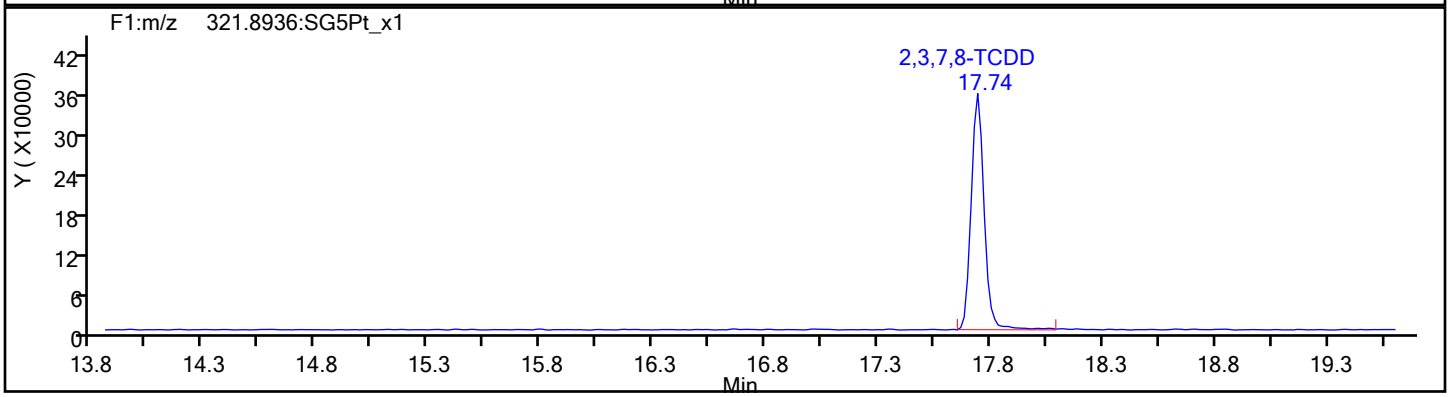
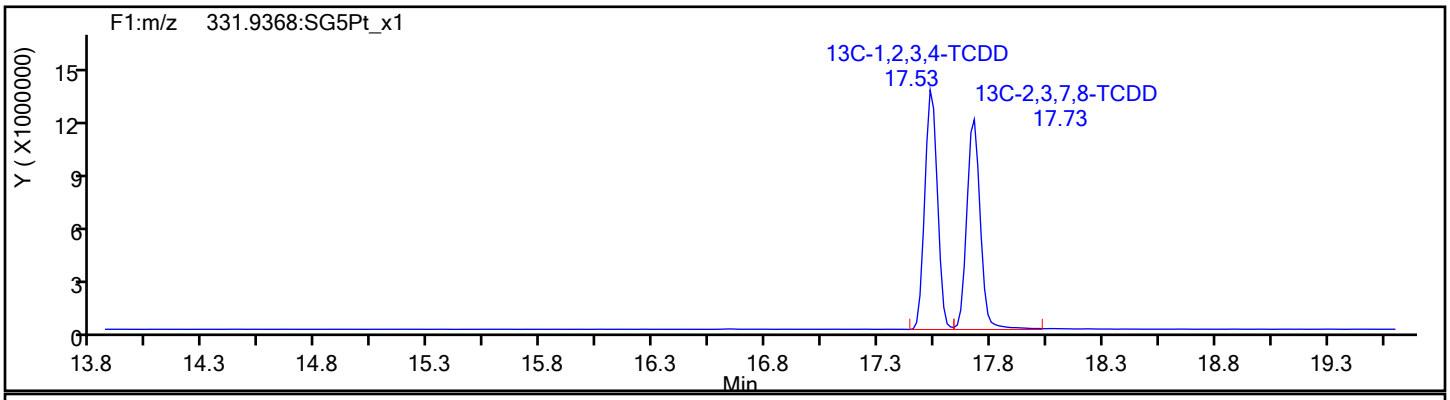
Client ID:			
Worklist#:	338471	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

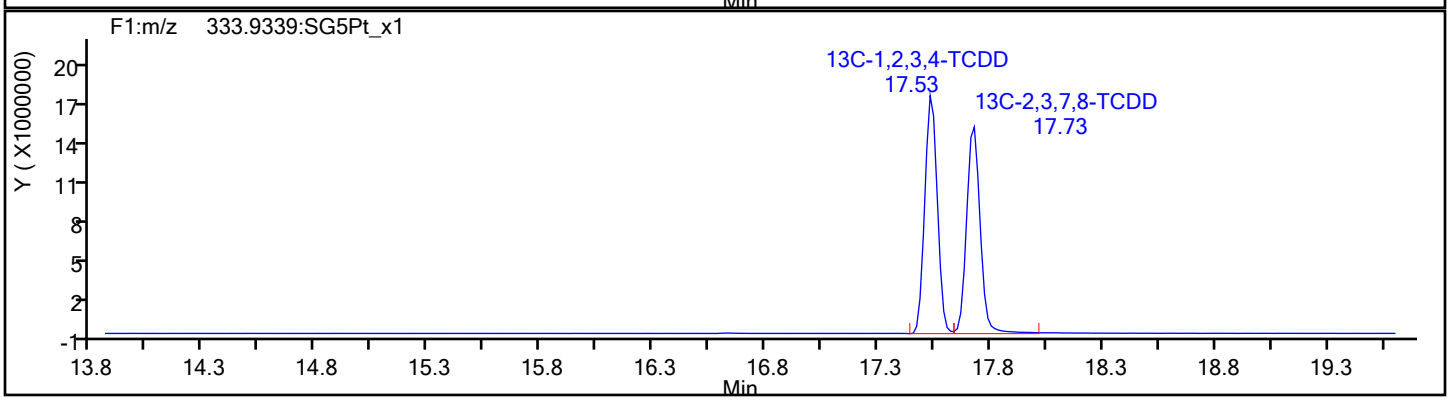
TCDD





TCDD Standards





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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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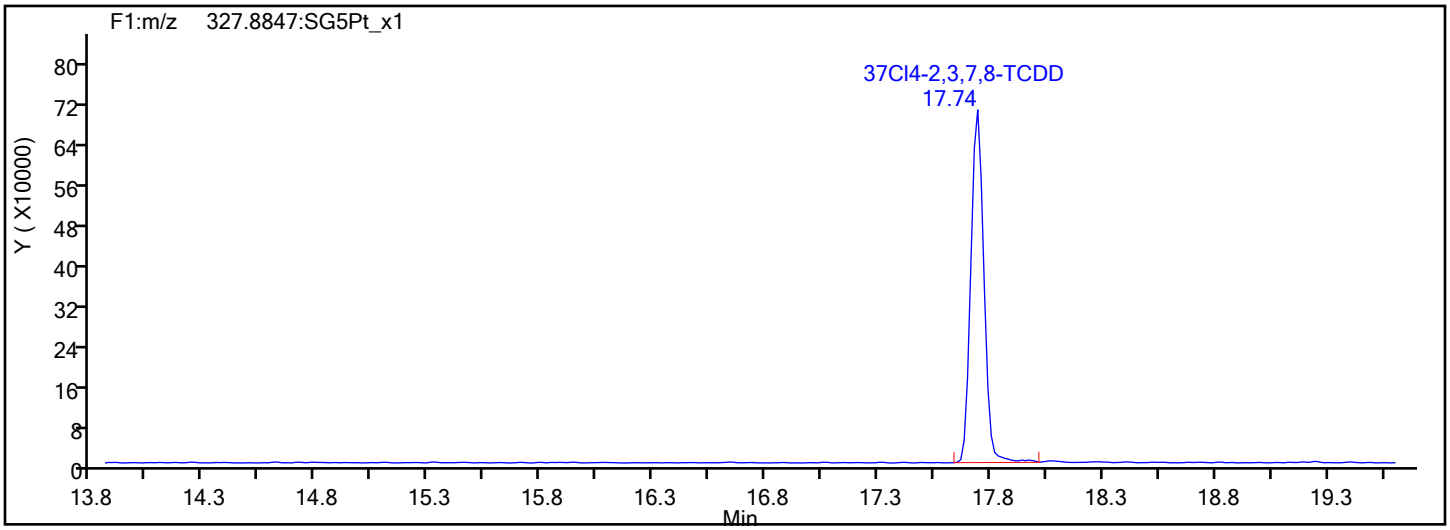
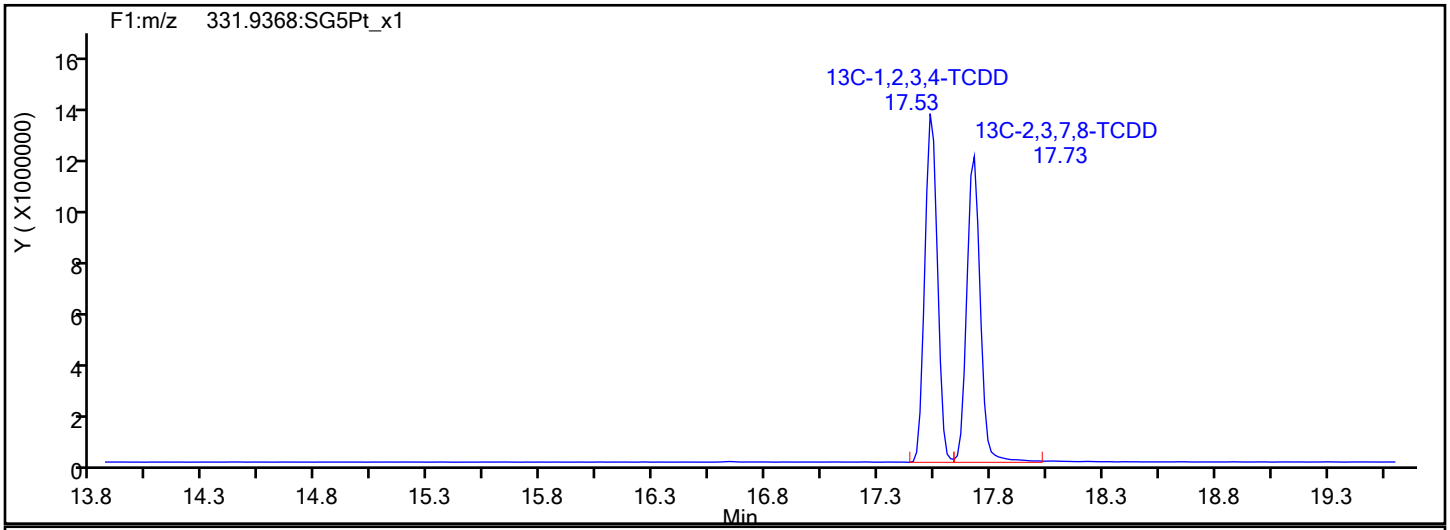
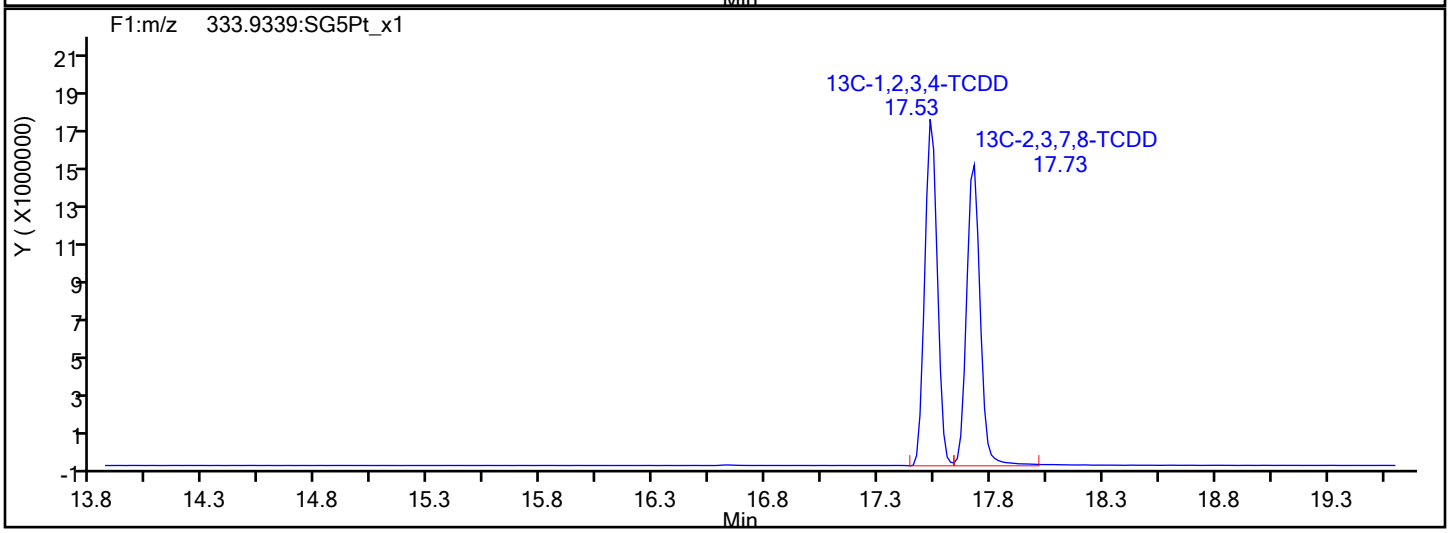
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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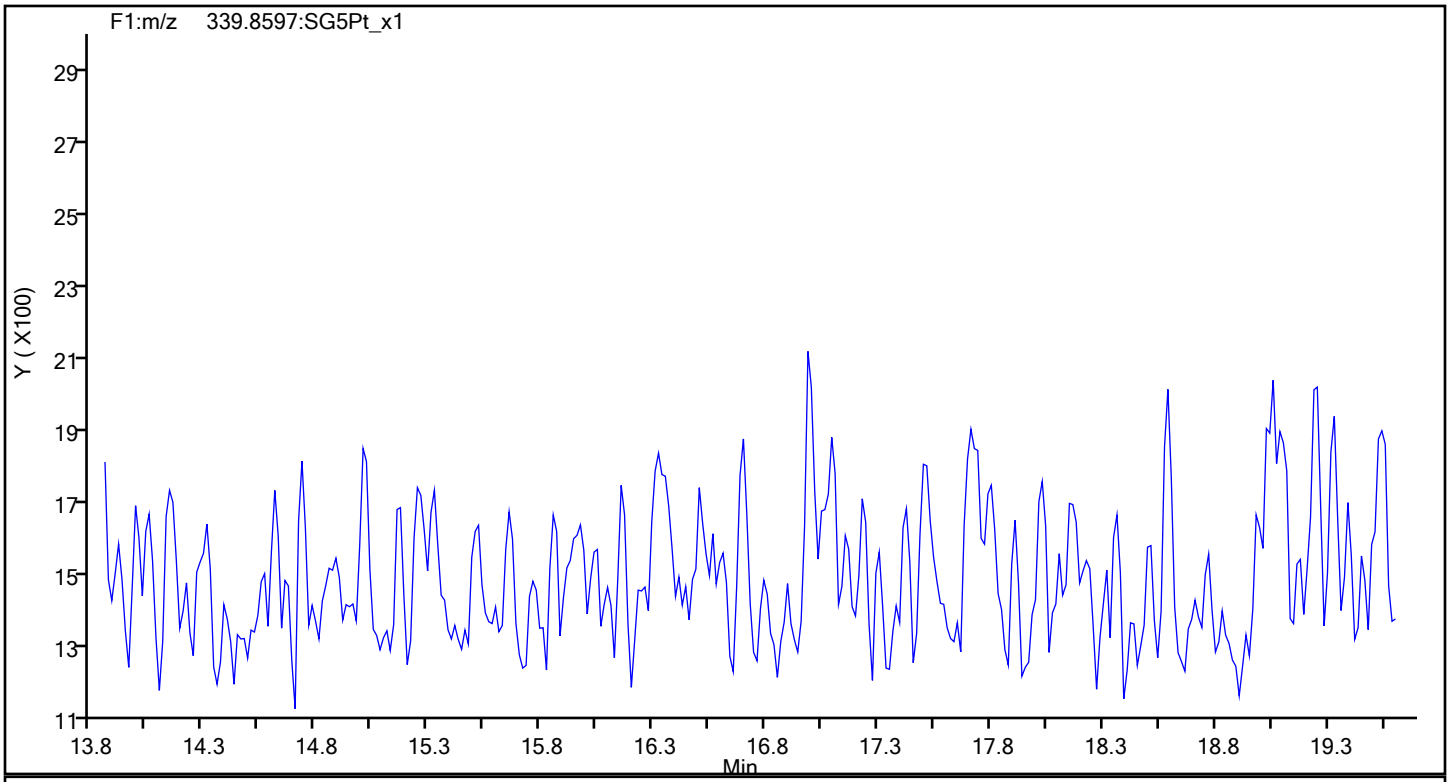
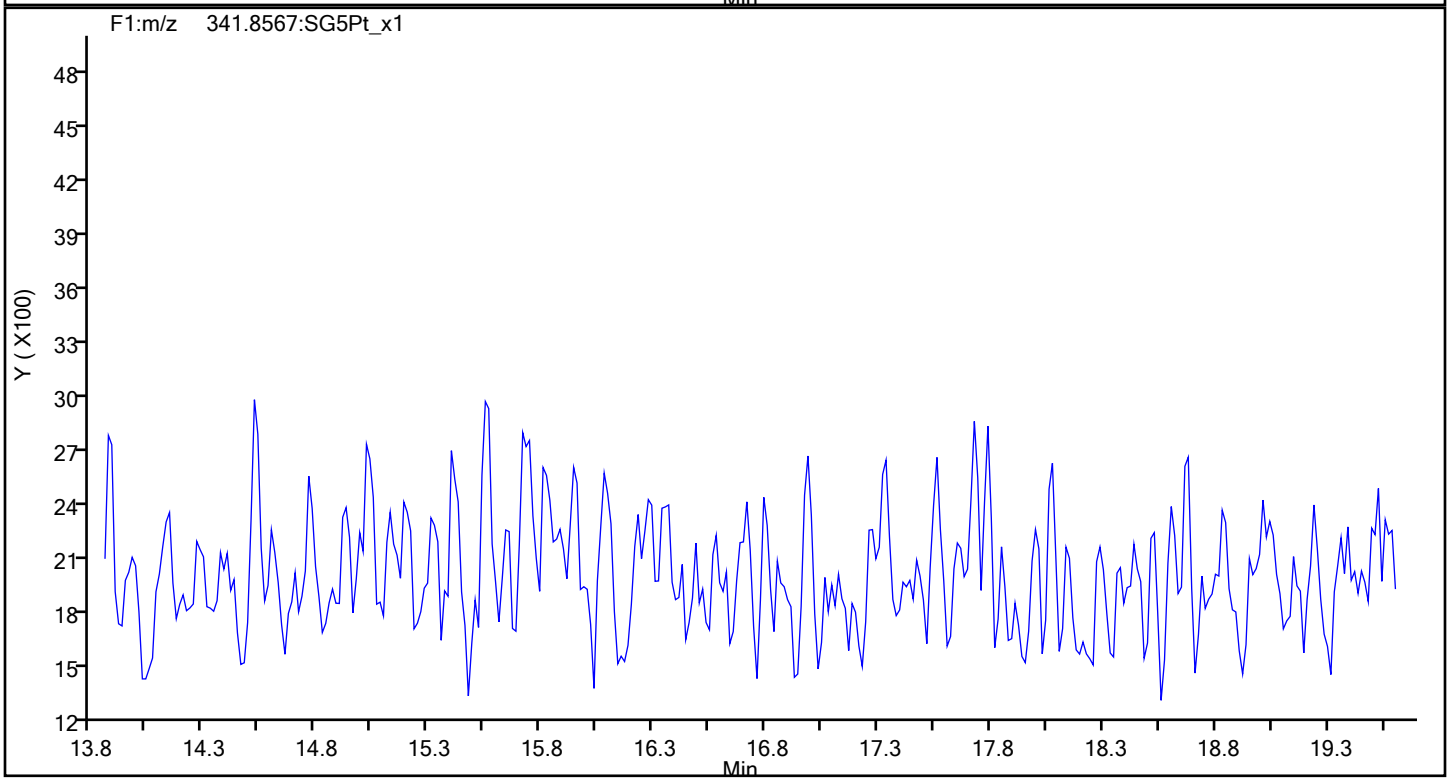
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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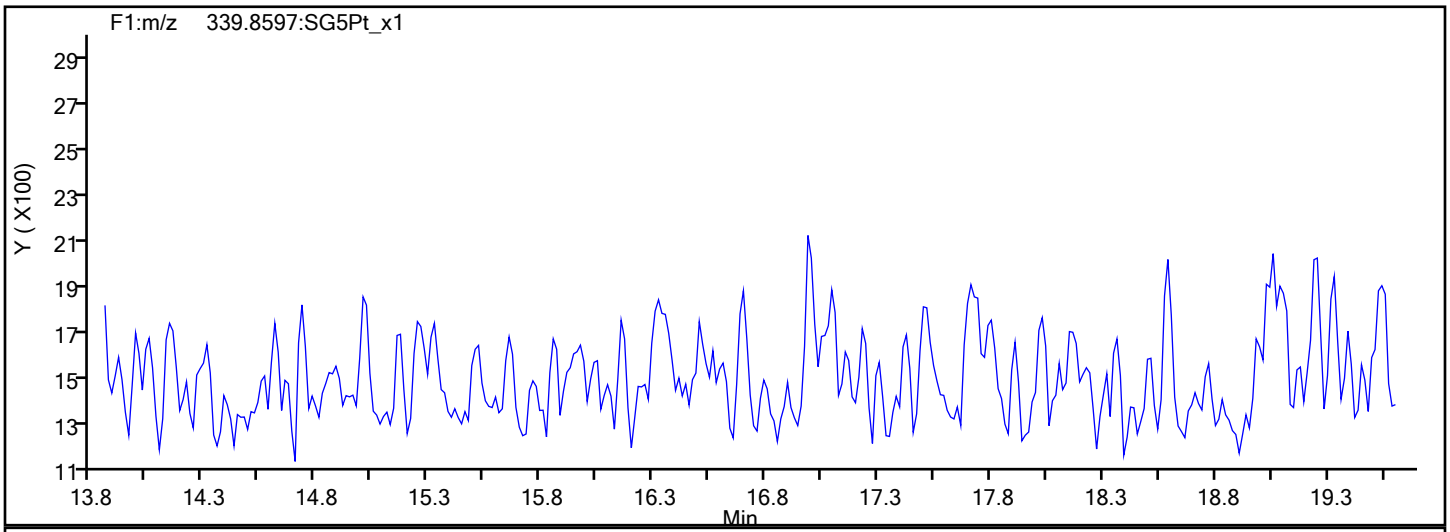
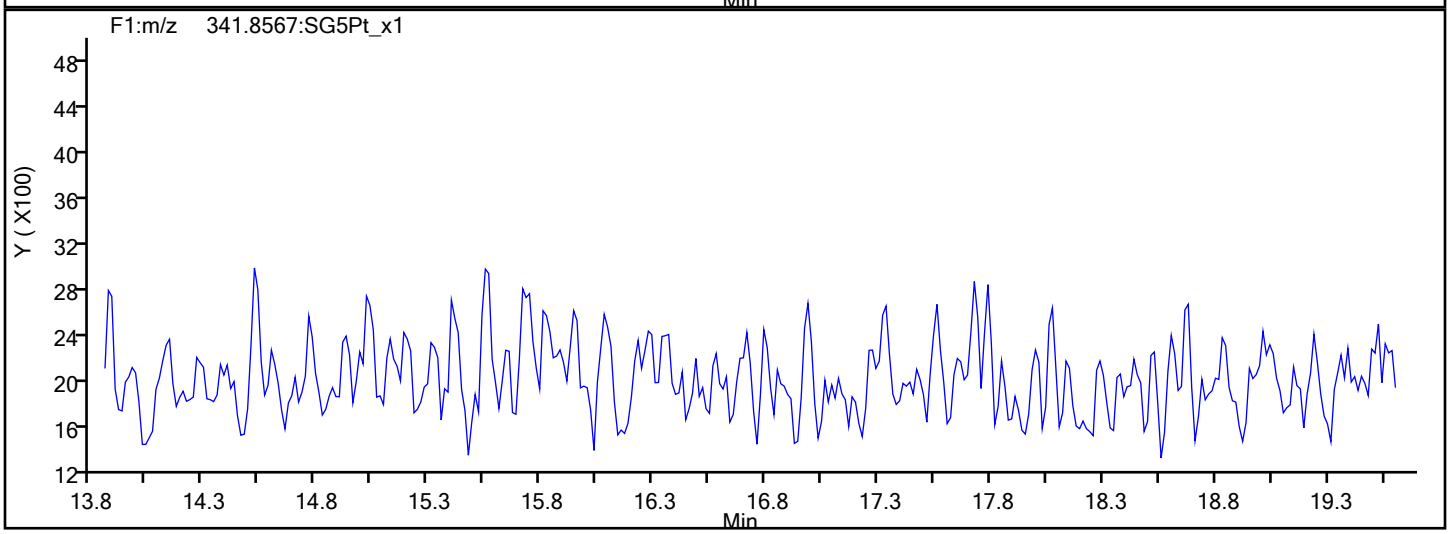
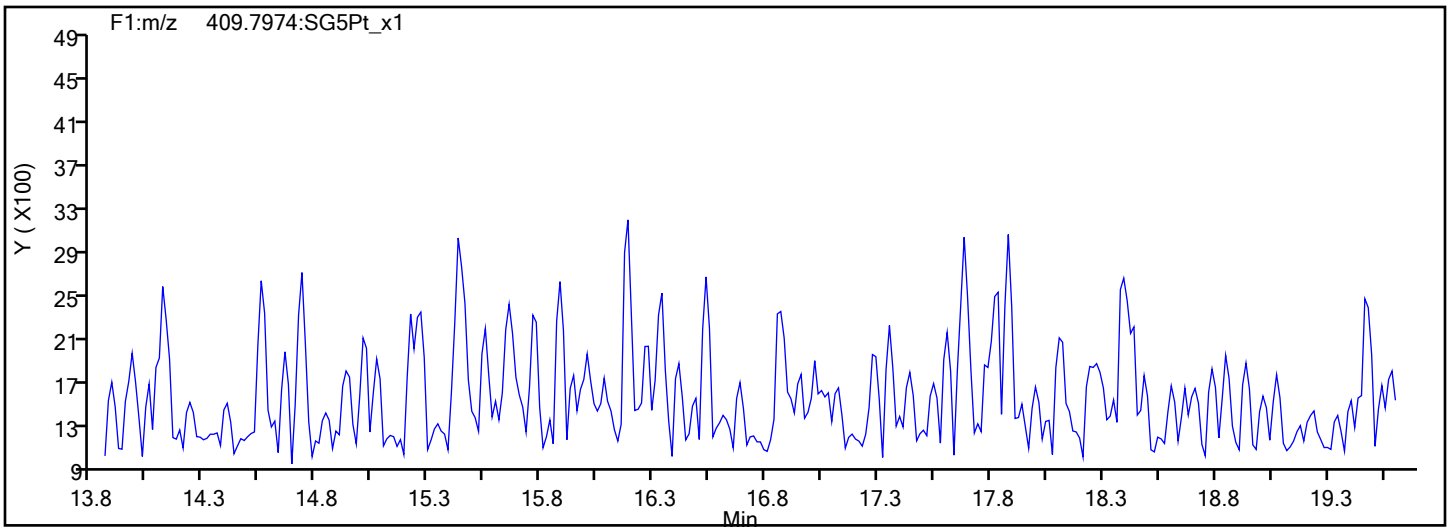
F1 PeCDFs





F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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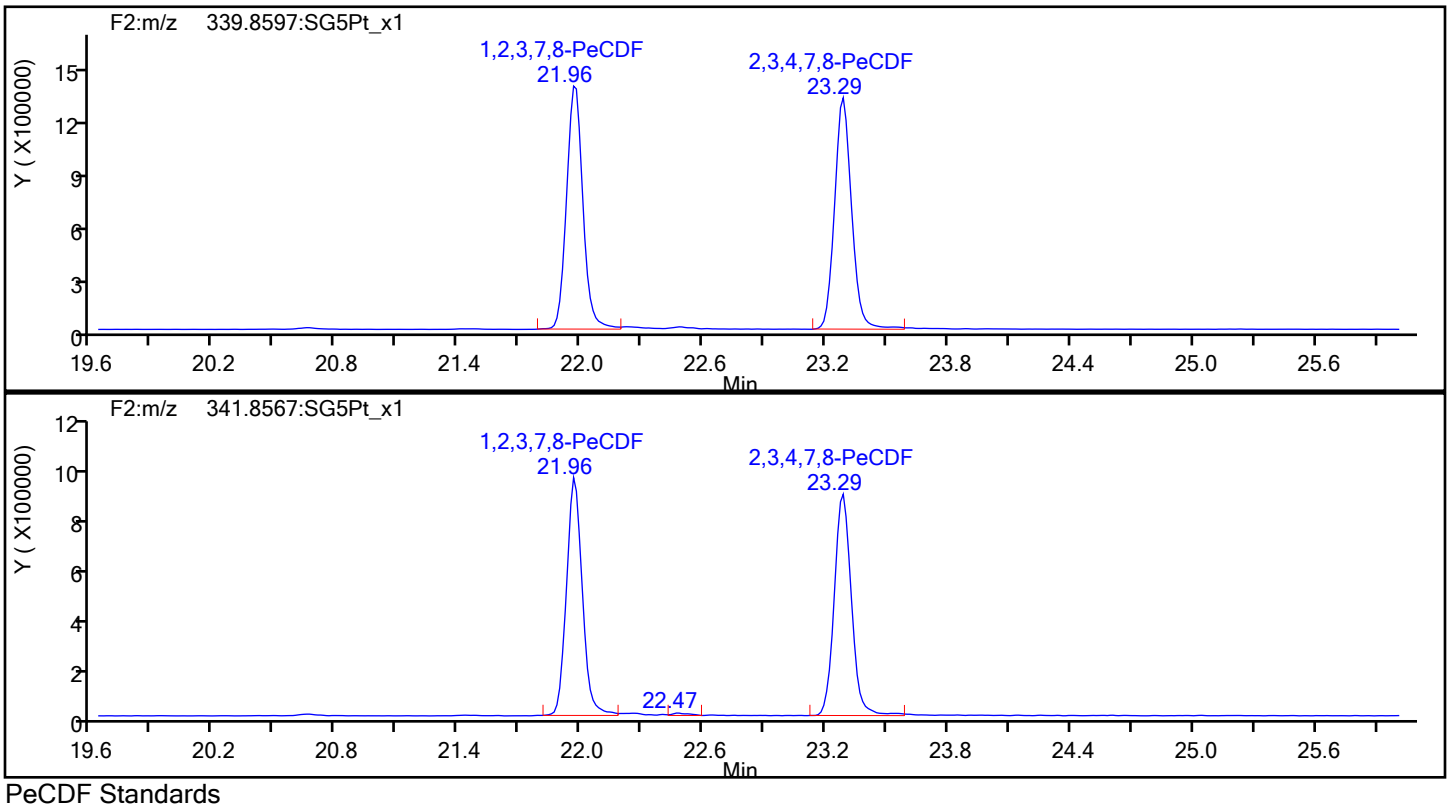
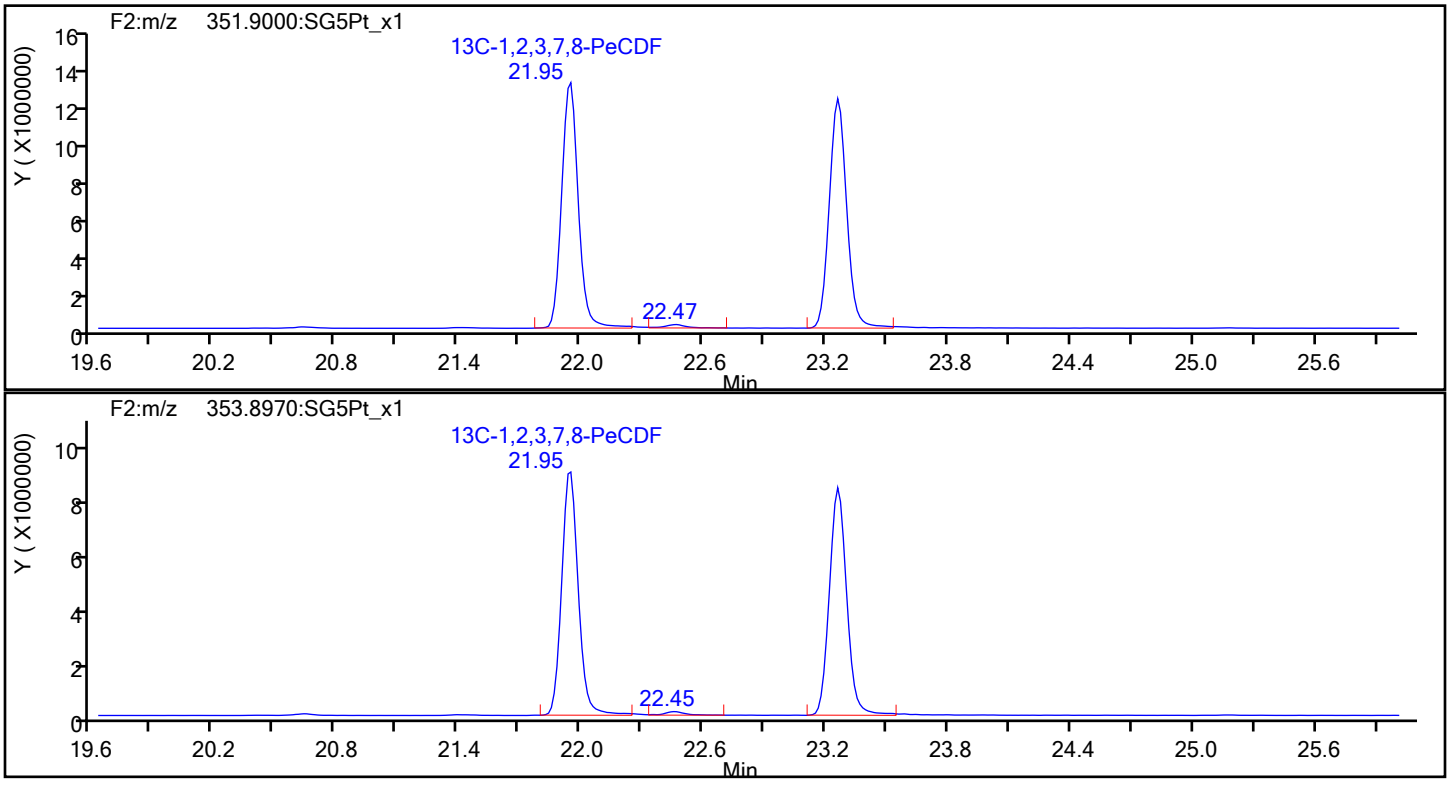


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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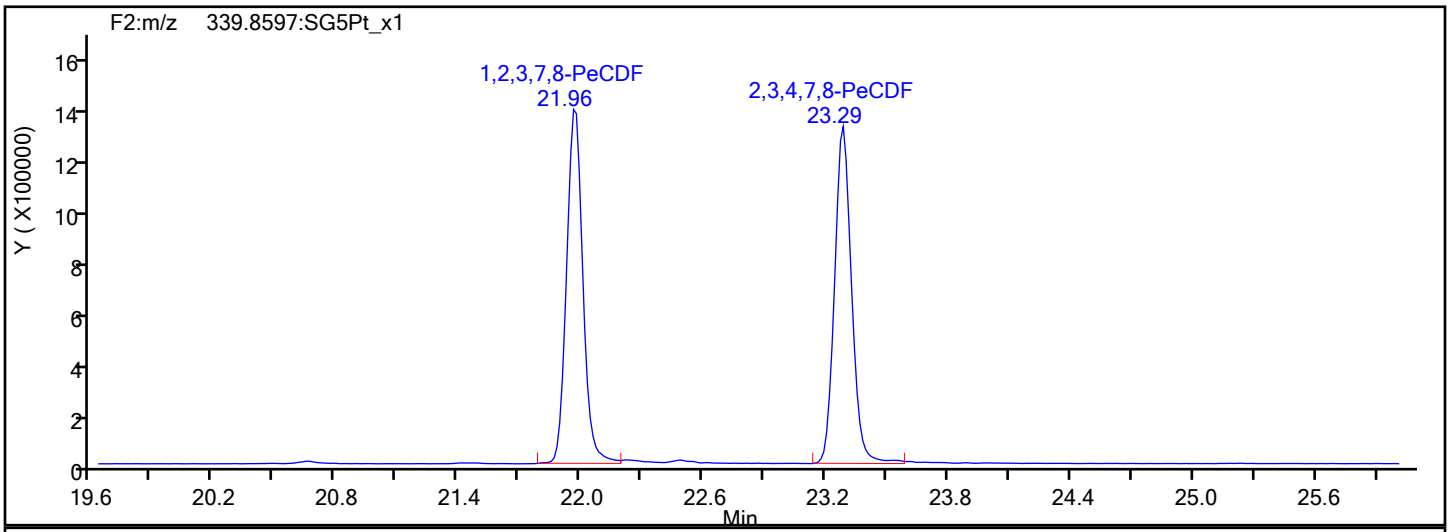
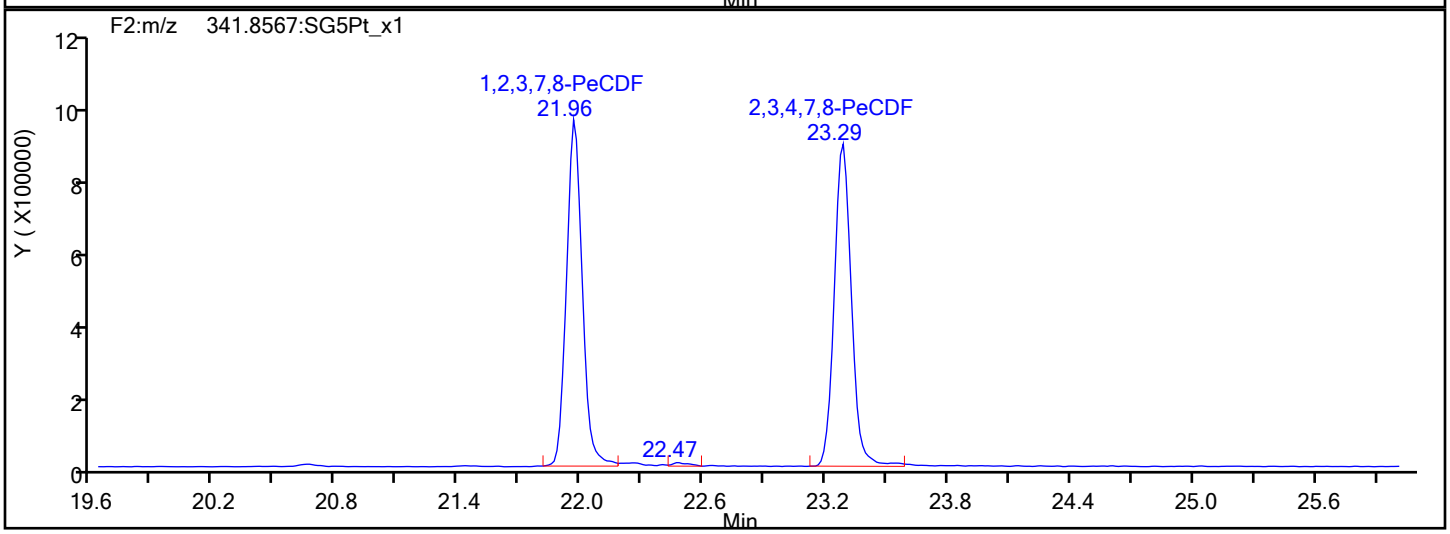
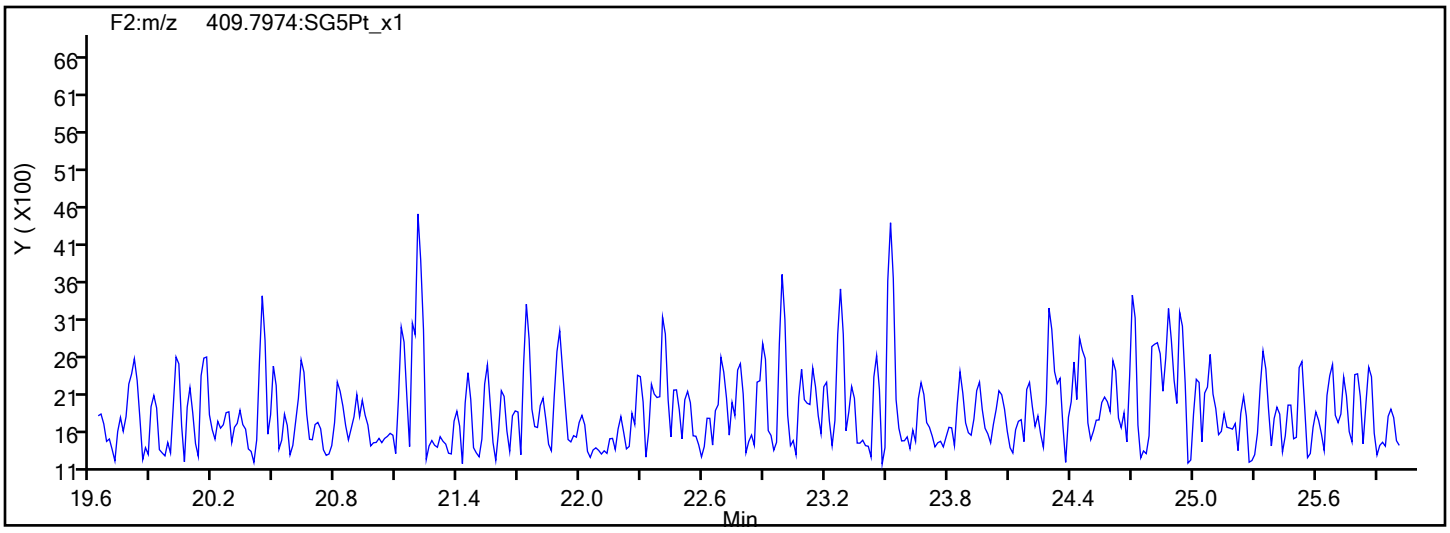
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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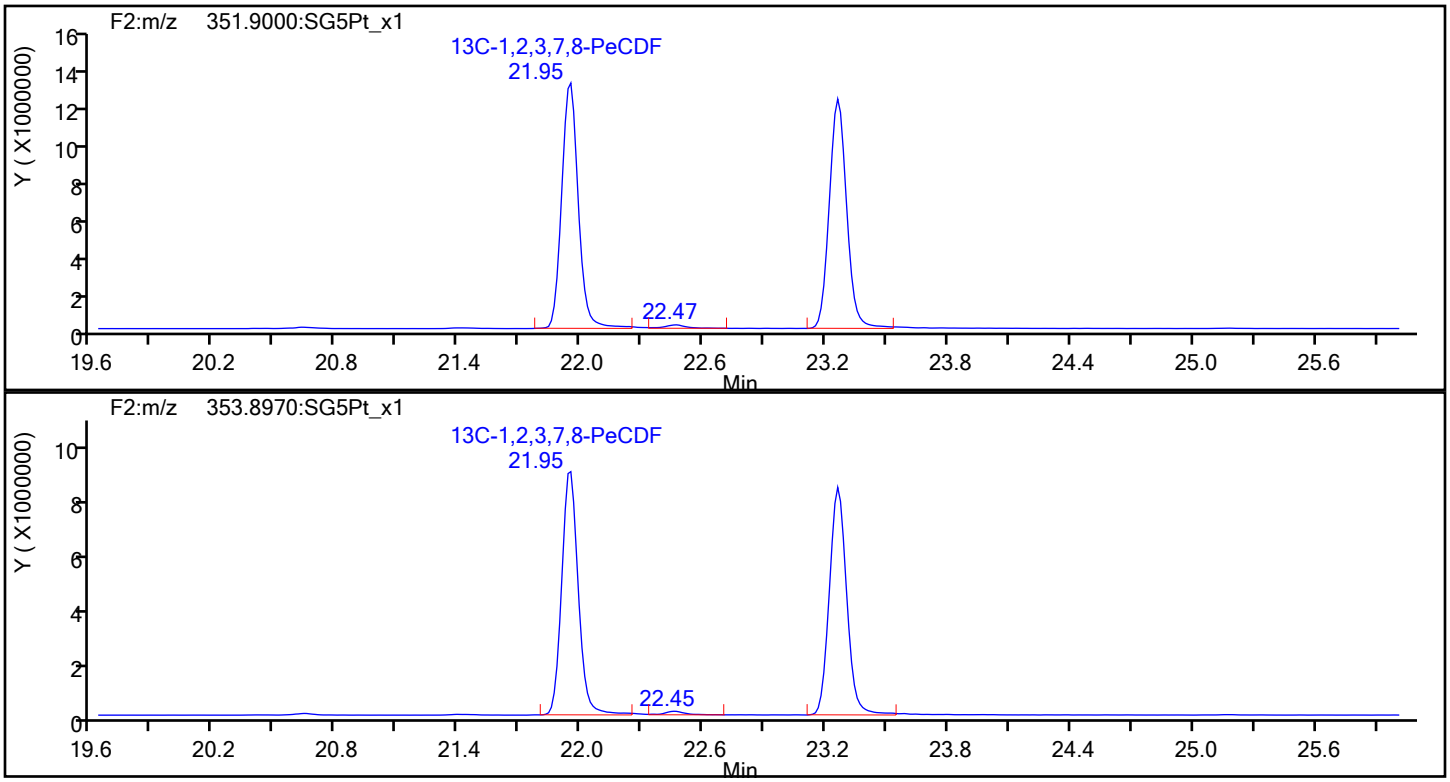
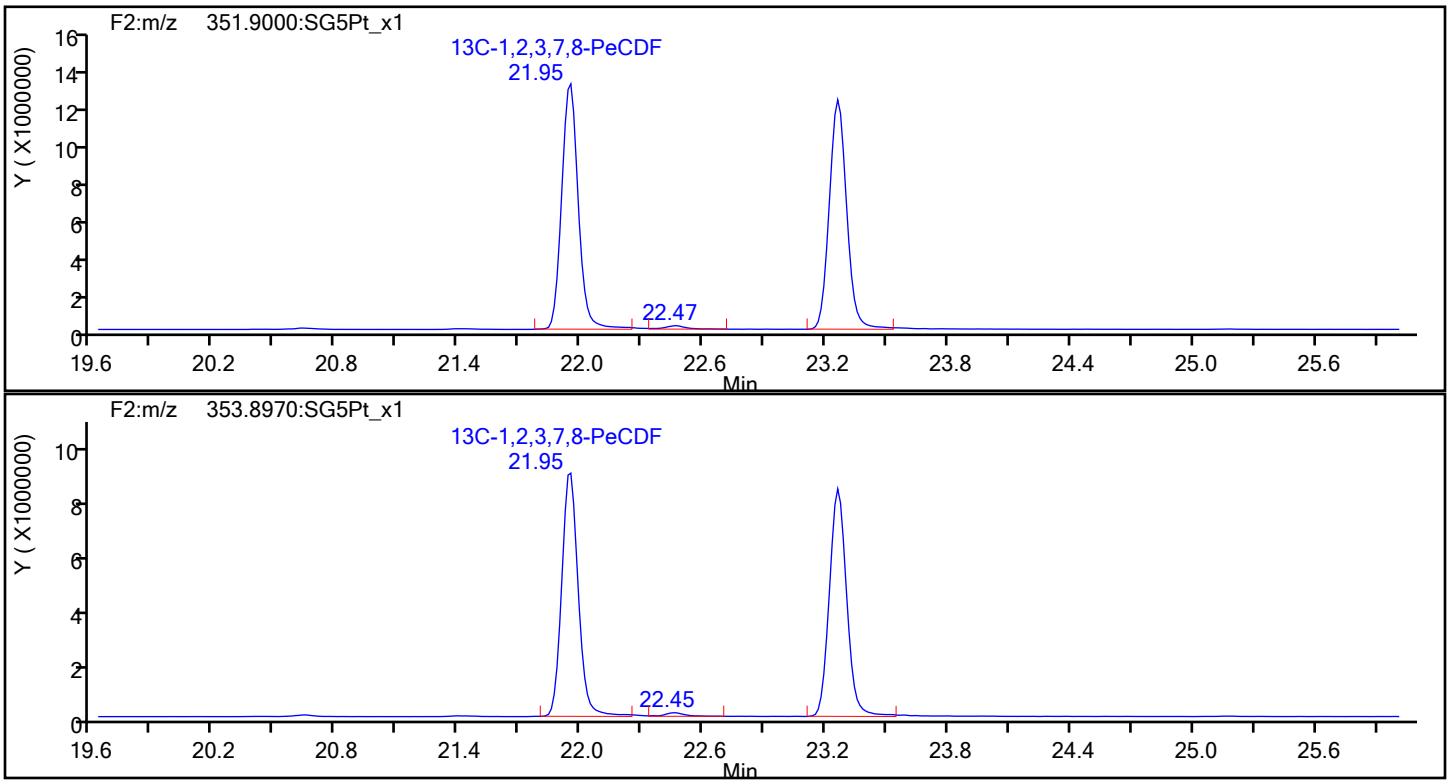
13C-PeCDF



13C-PeCDF Standards



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Eurofins TestAmerica, Sacramento

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Injection Date: 14-Nov-2019 10:32:55 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

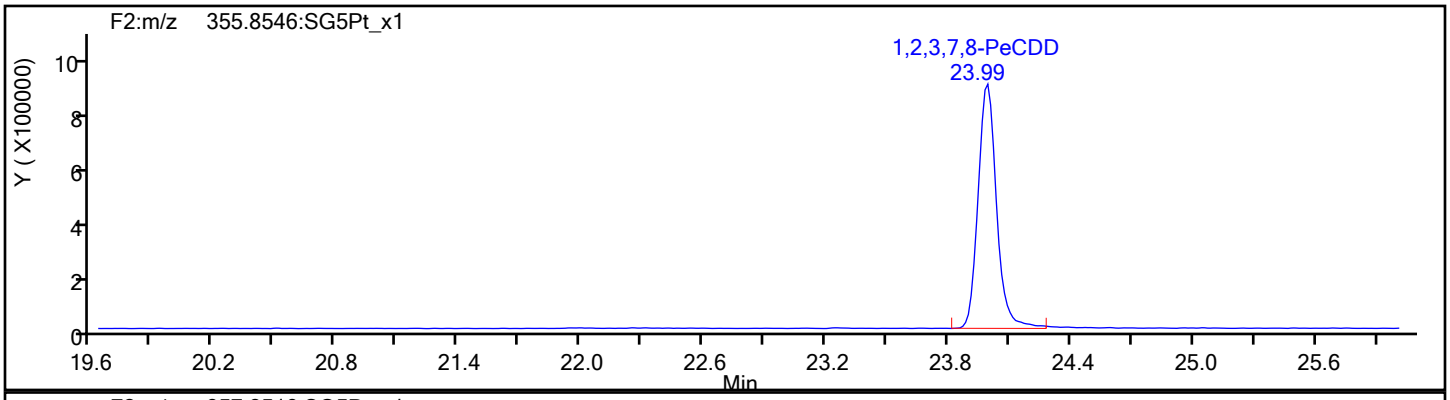
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

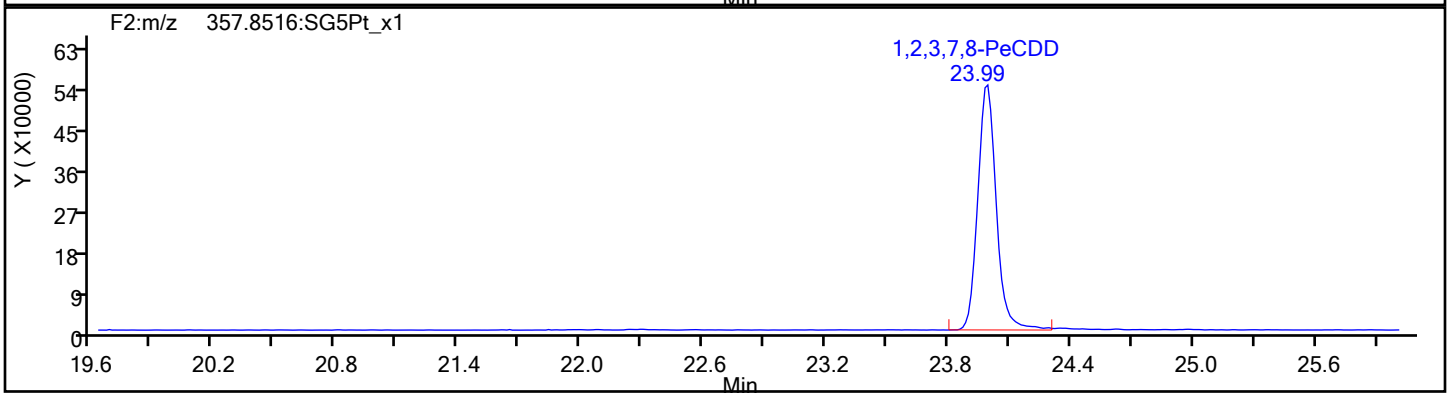
Client ID:

Worklist#: 338471 Sample Line#: 4

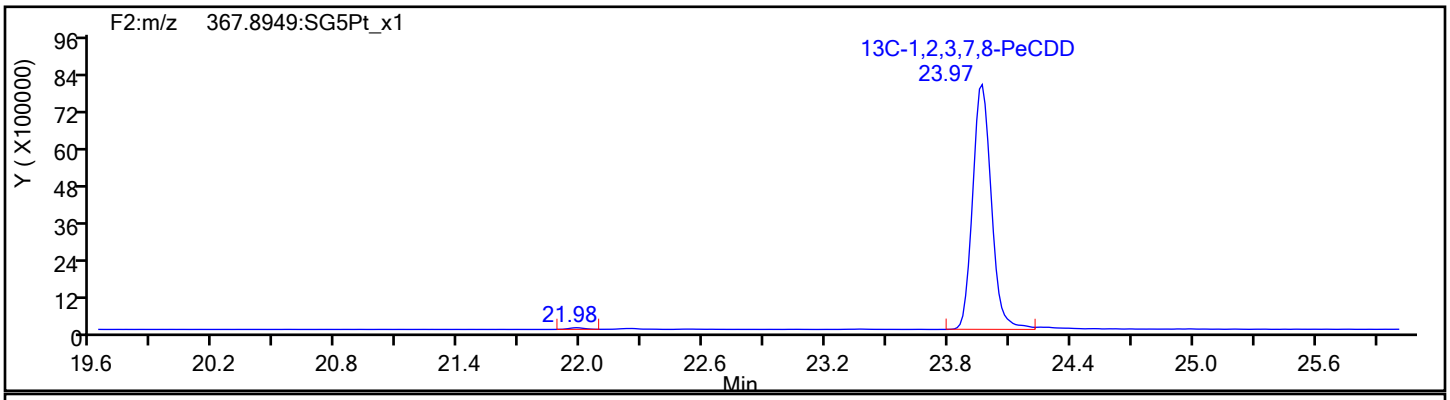
Column Type: DB-5 Column Dia: 0.32 mm

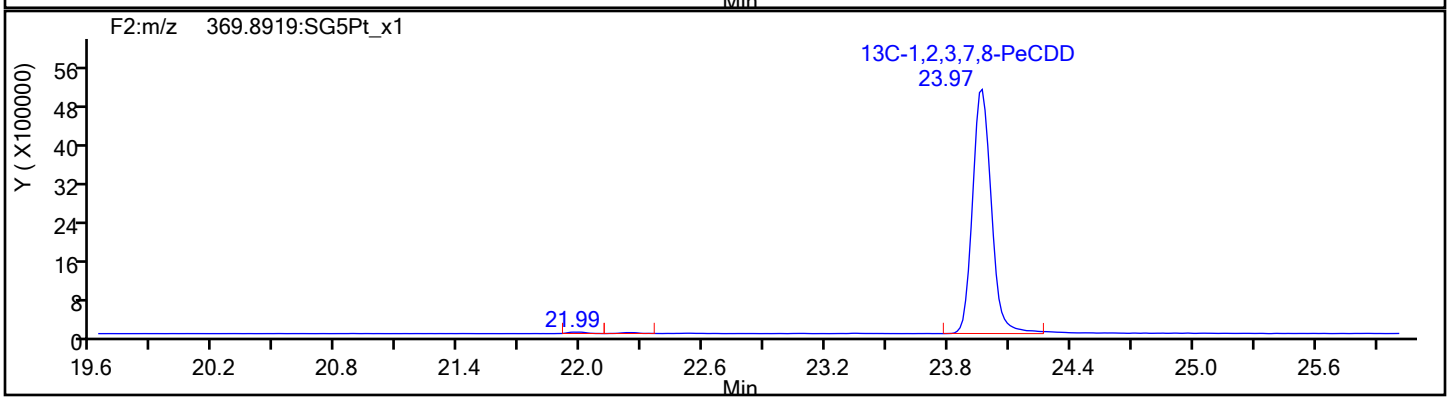
PeCDD





PeCDD Standards





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Eurofins TestAmerica, Sacramento

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Injection Date: 14-Nov-2019 10:32:55 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

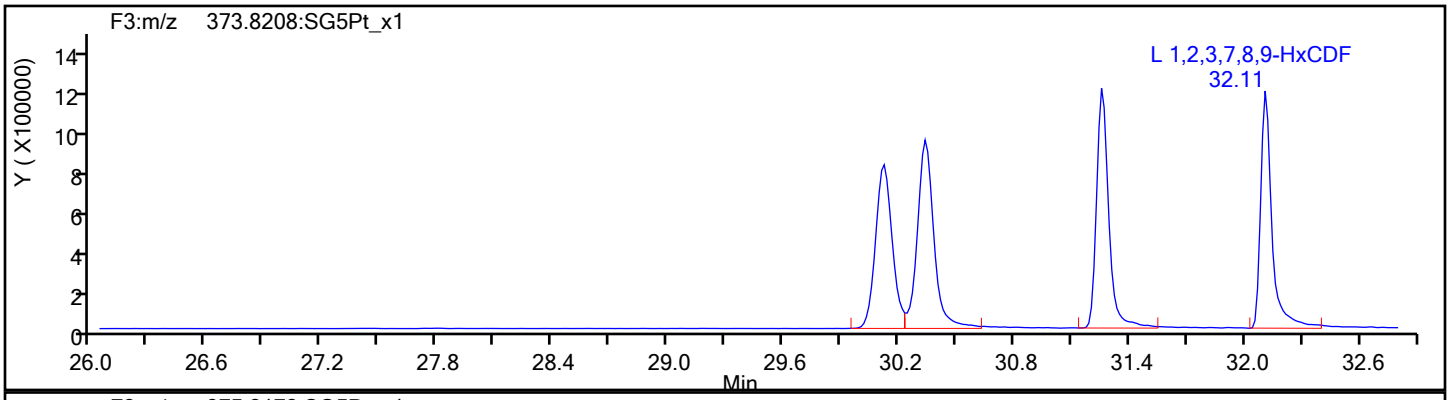
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

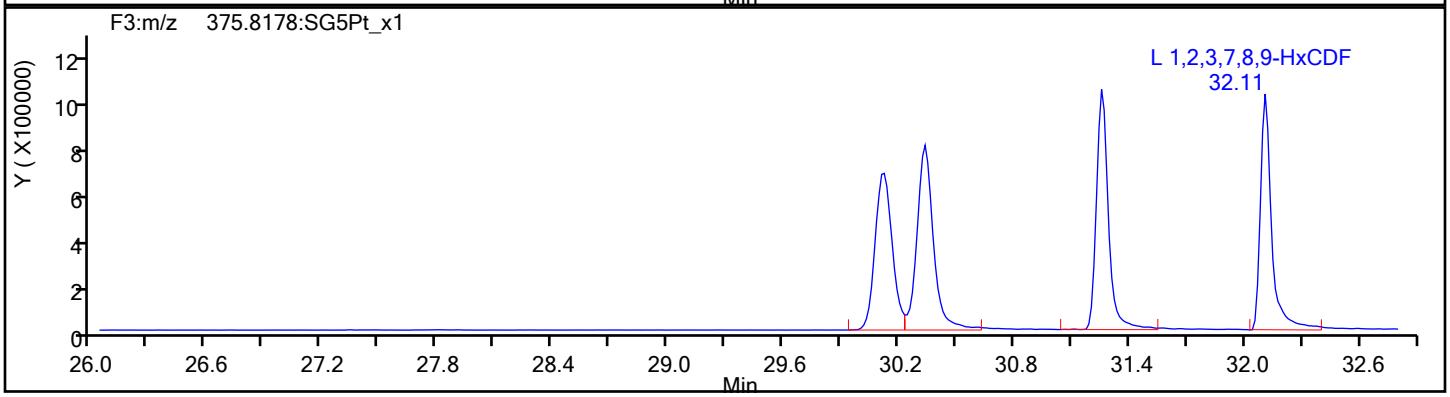
Client ID:

Worklist#: 338471 Sample Line#: 4

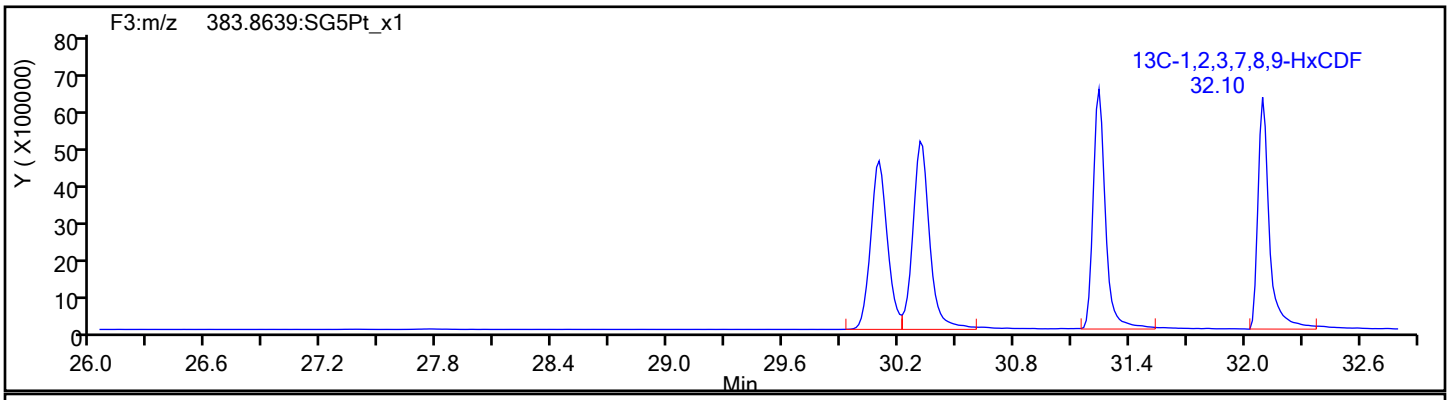
Column Type: DB-5 Column Dia: 0.32 mm

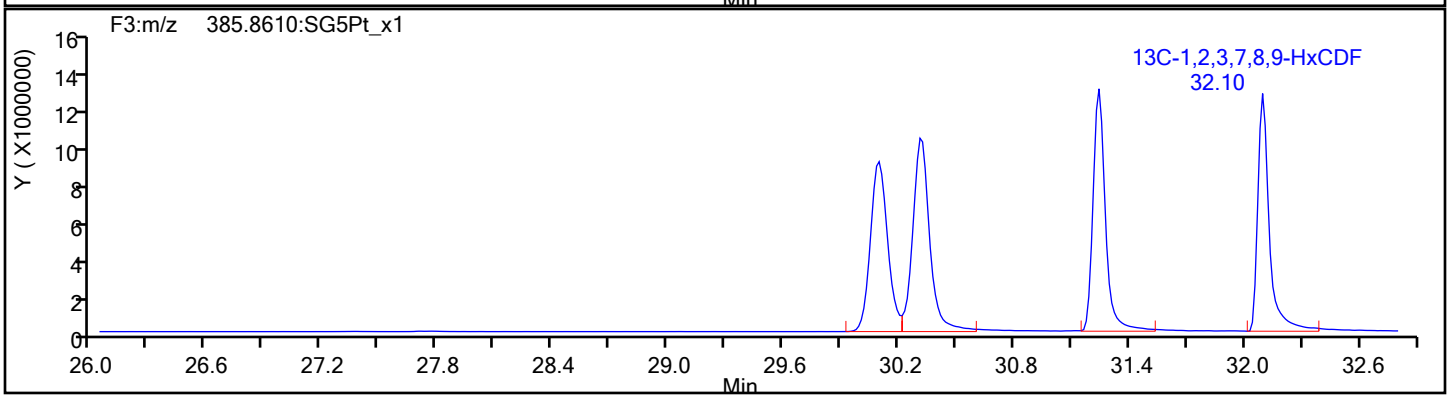
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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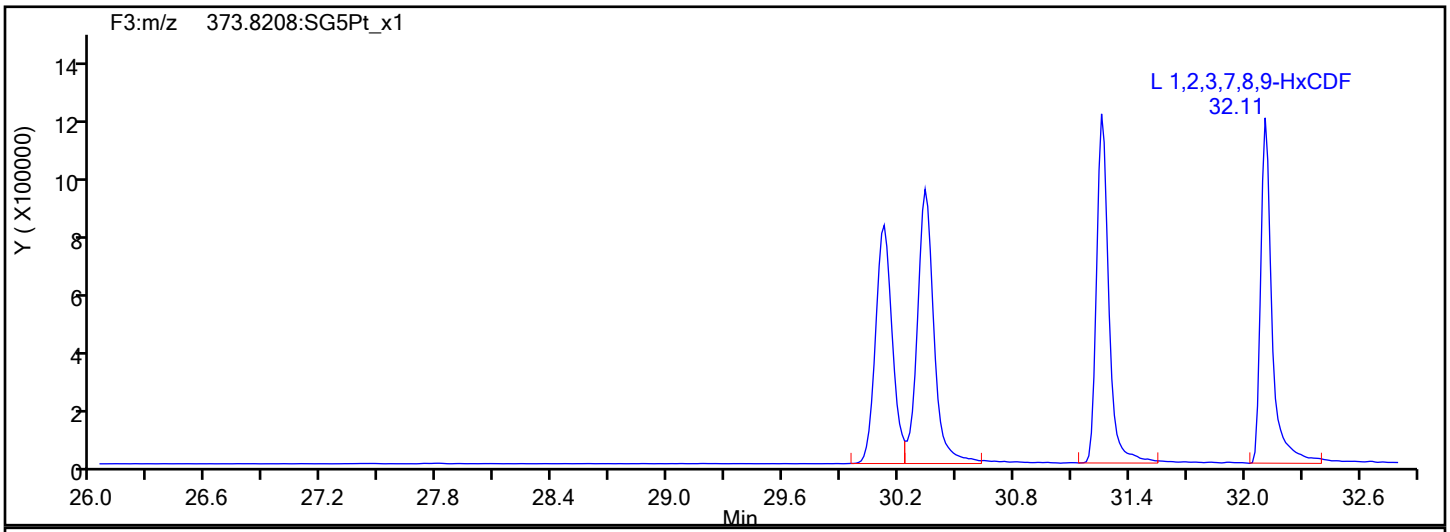
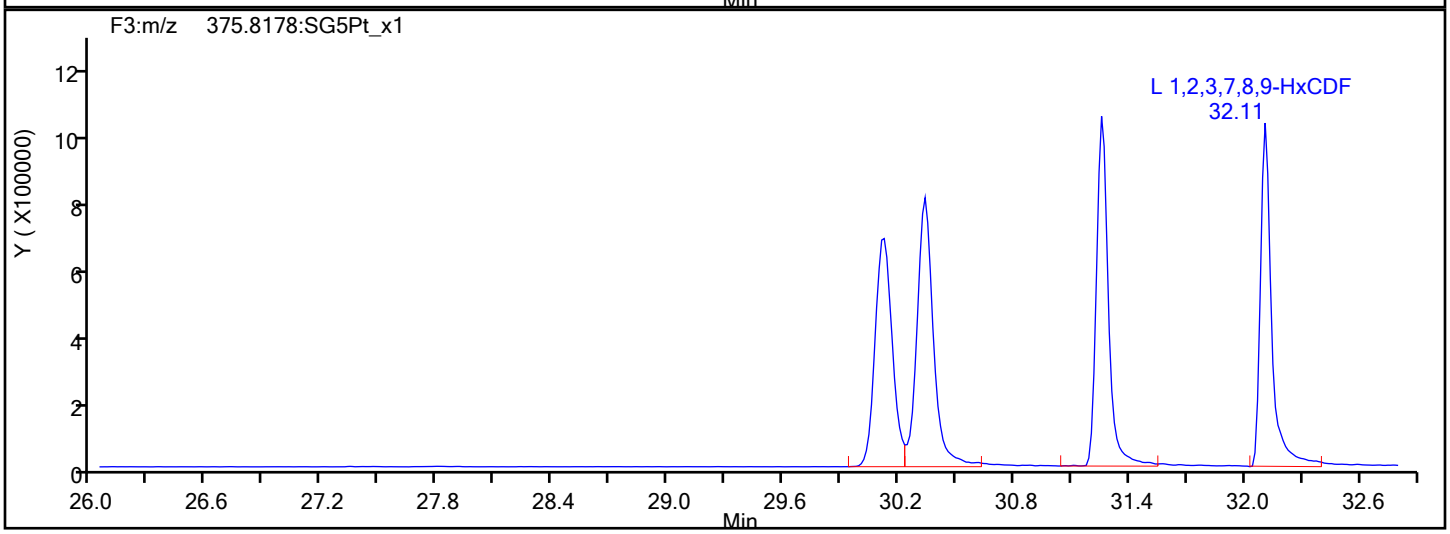
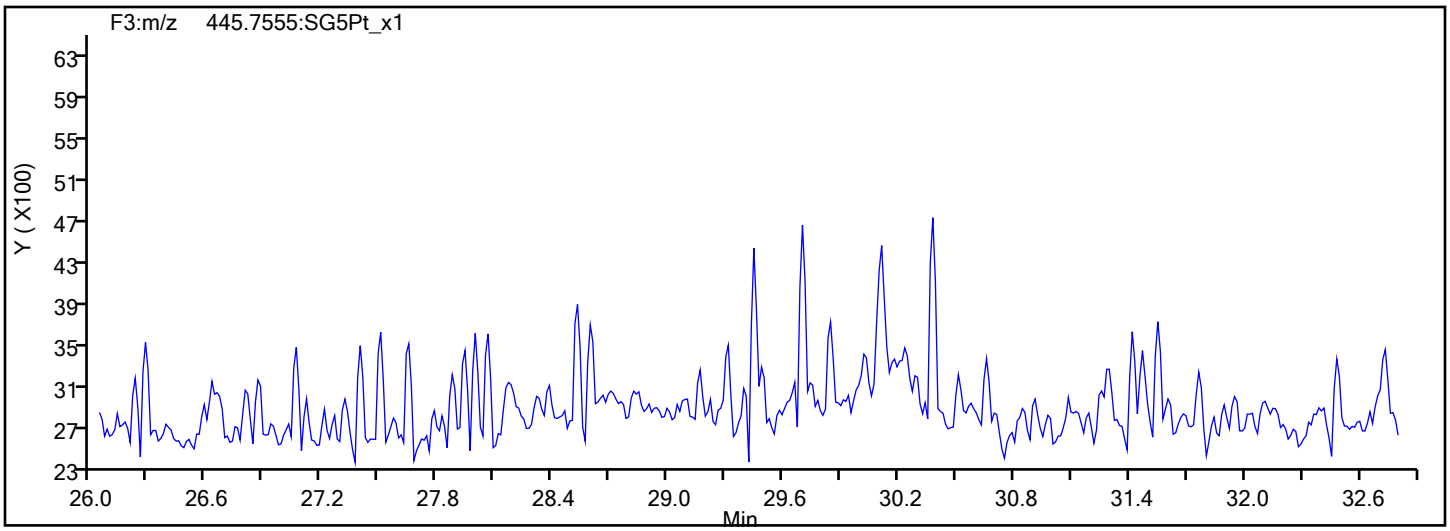
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 14-Nov-2019 16:54:09 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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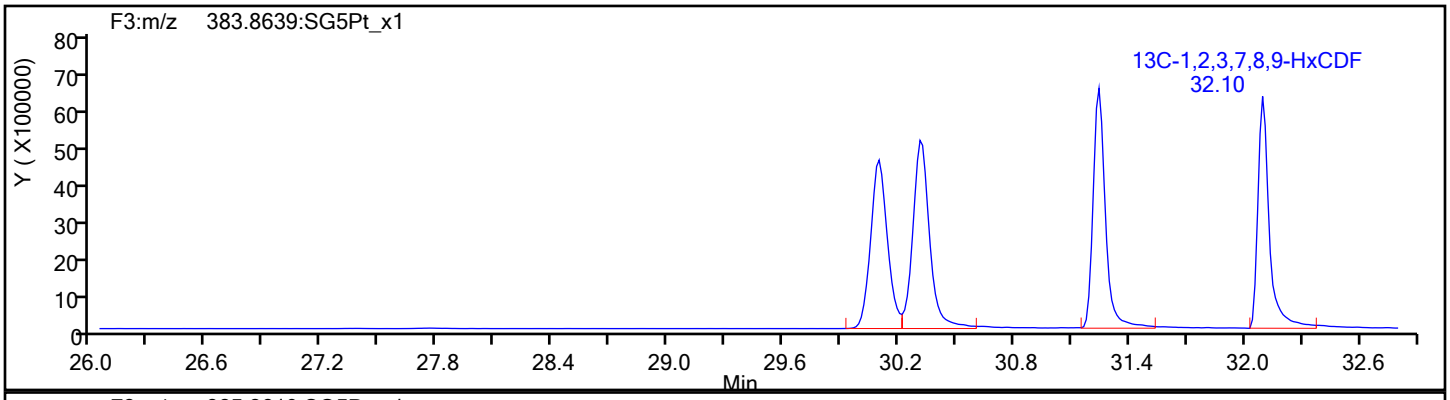
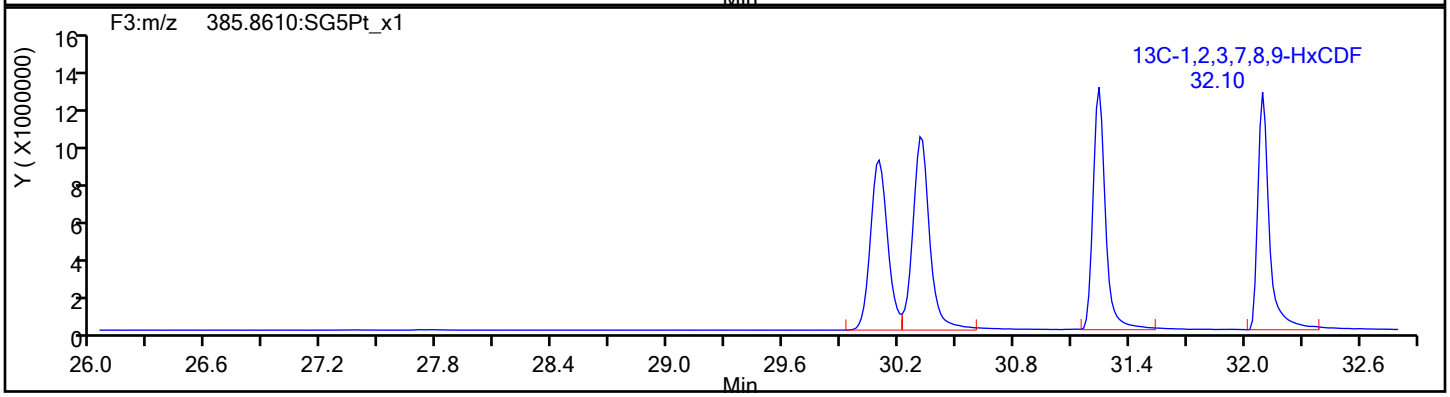
13C-HxCDF





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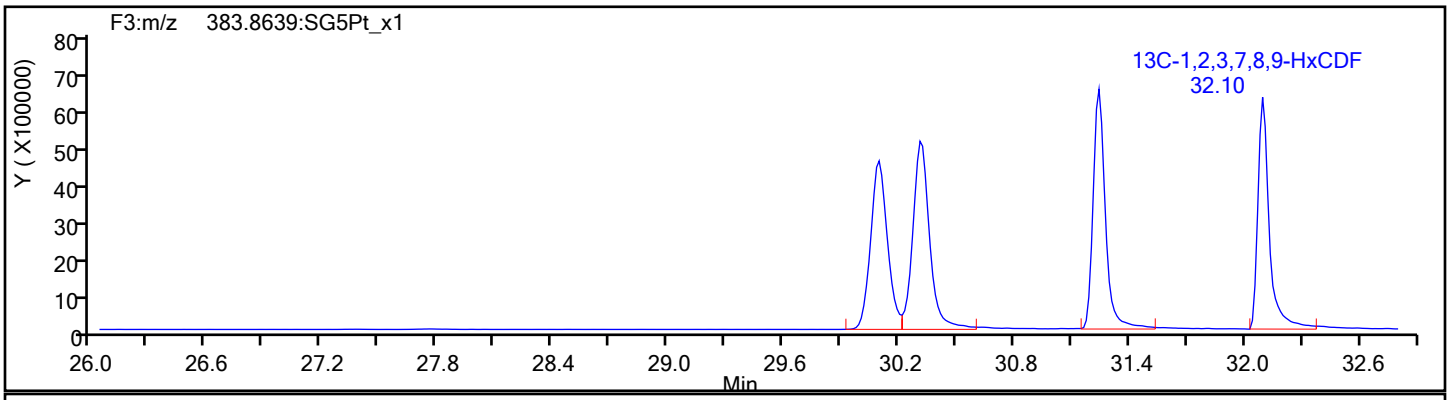

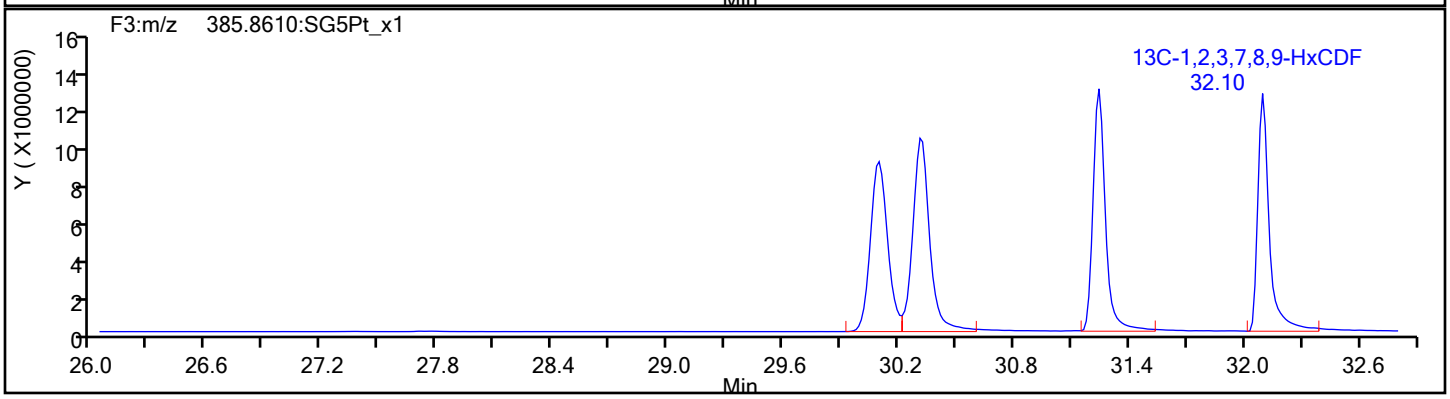

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Eurofins TestAmerica, Sacramento

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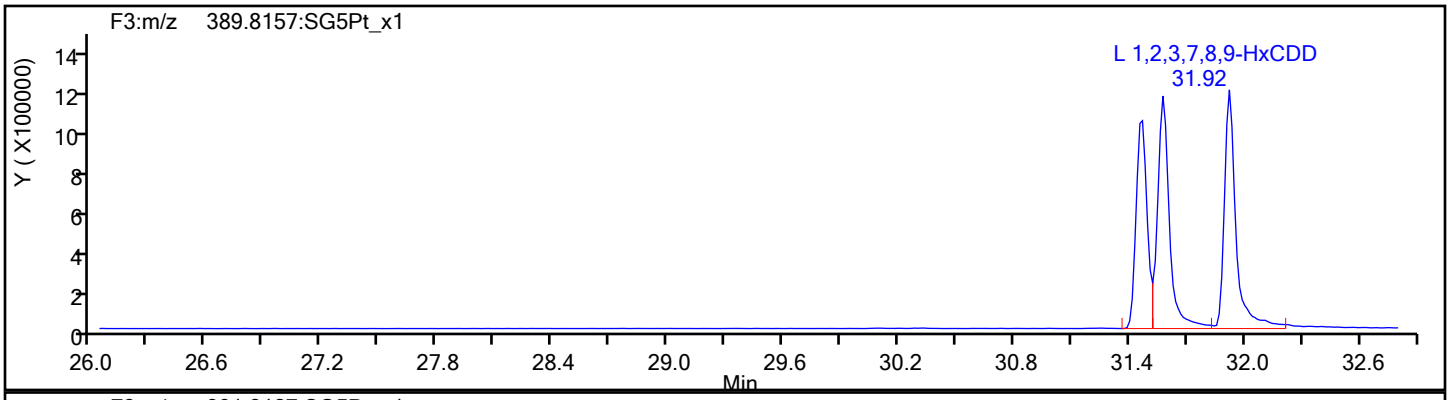
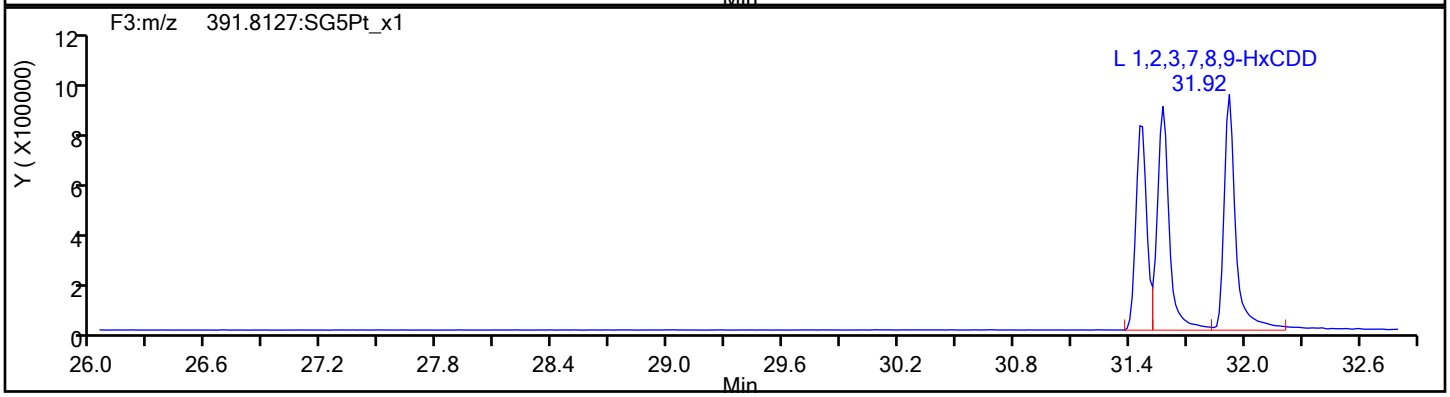
HxCDD





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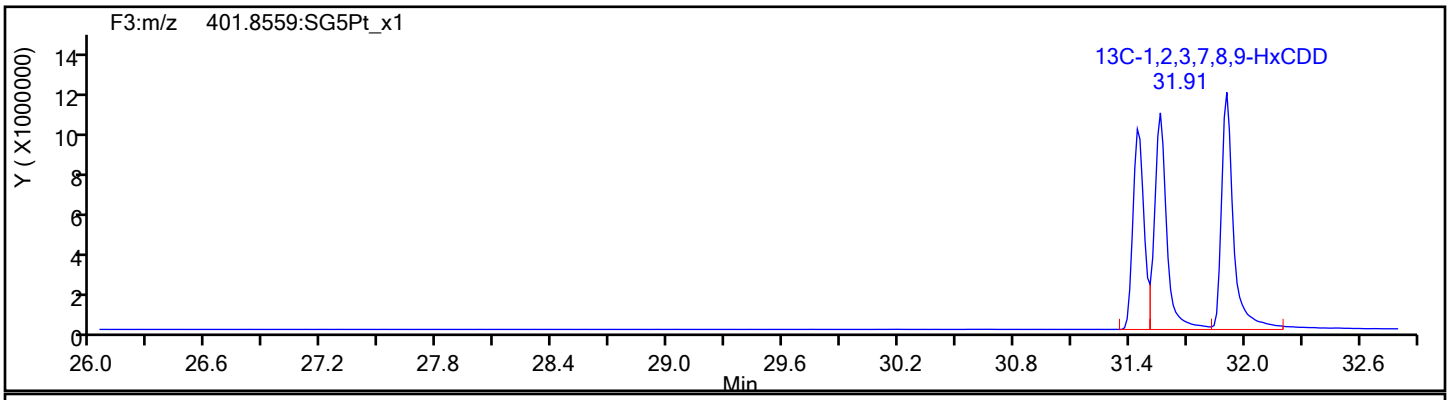

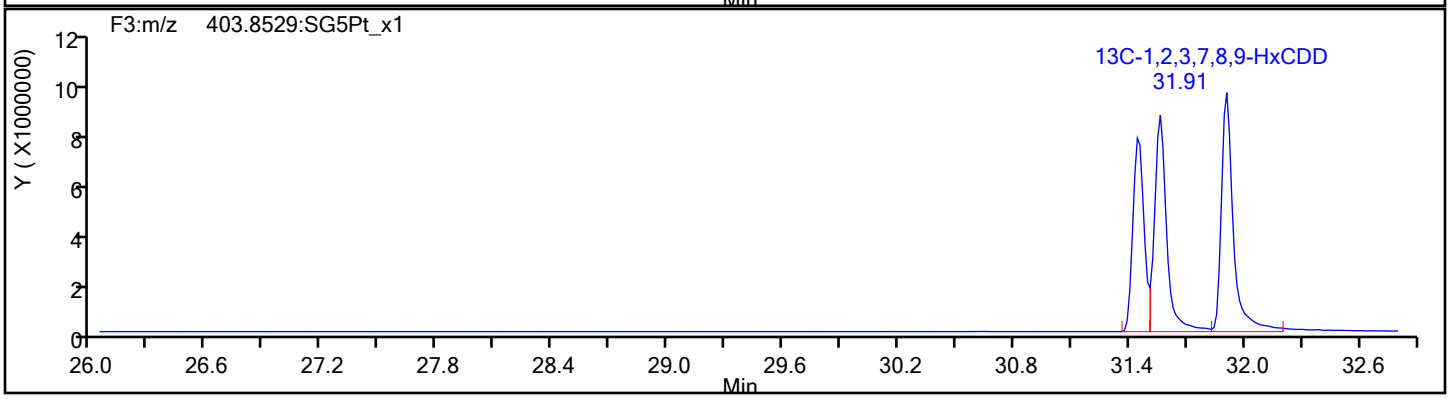

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Eurofins TestAmerica, Sacramento

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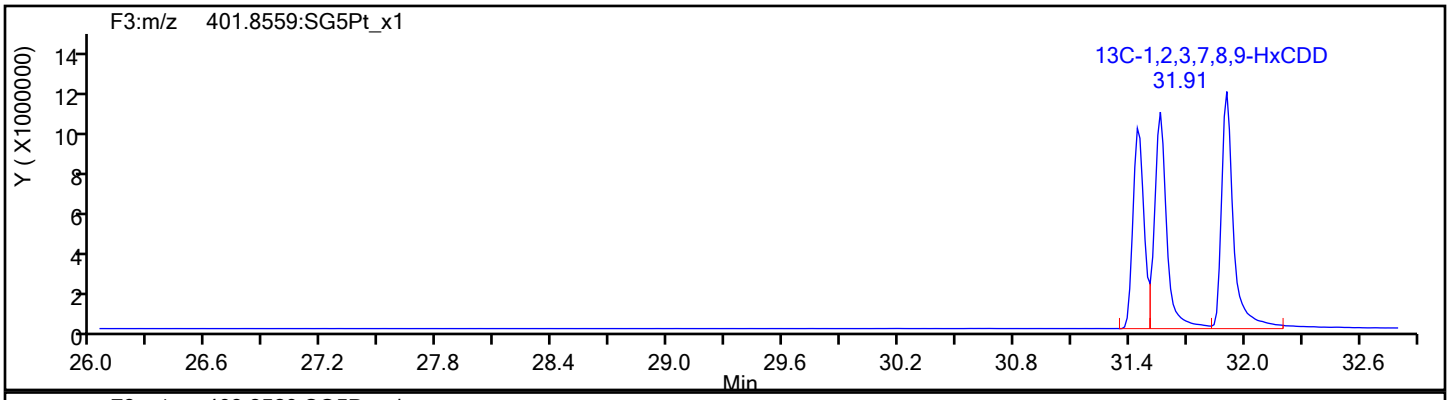
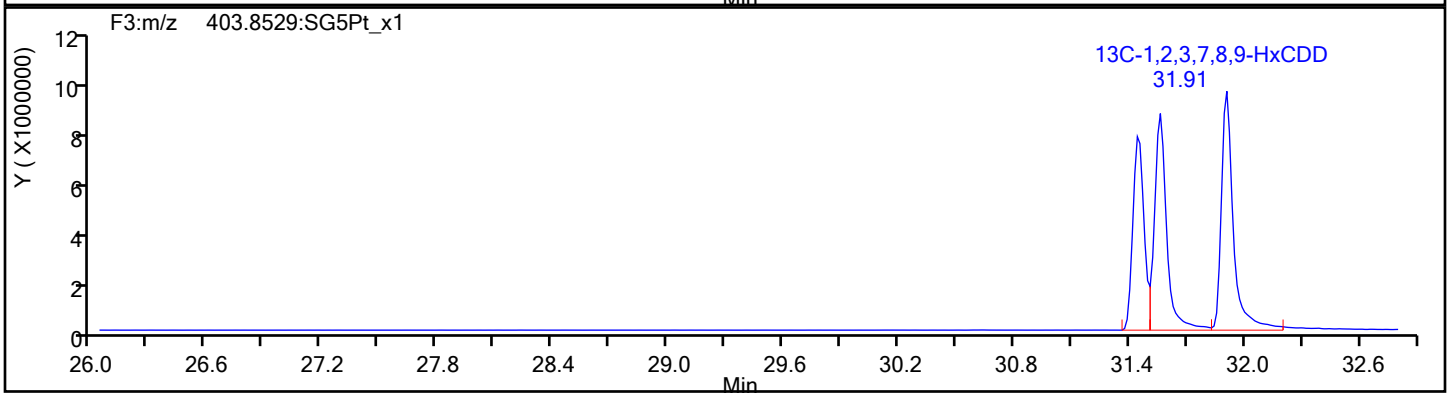
13C-HxCDD





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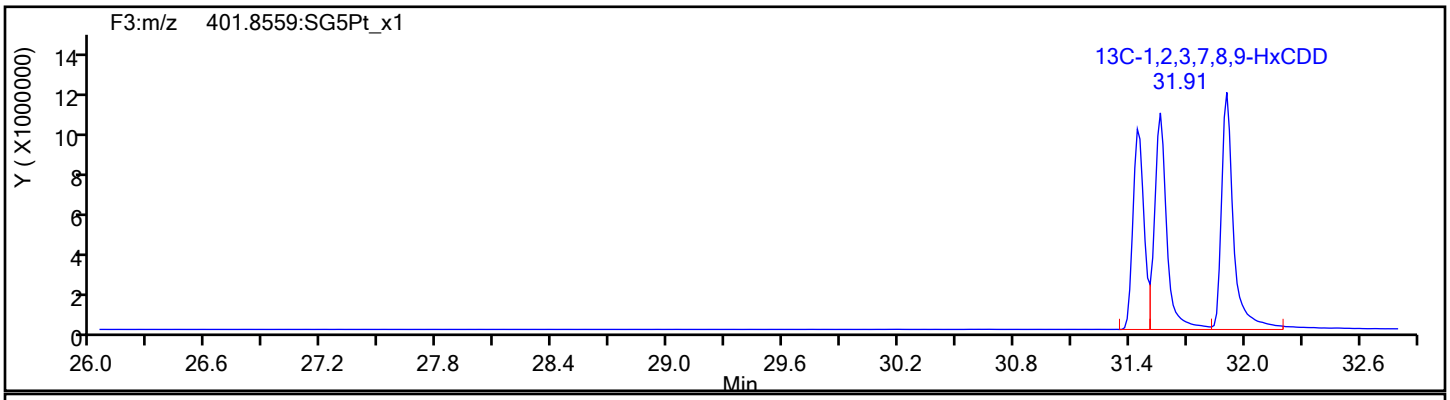

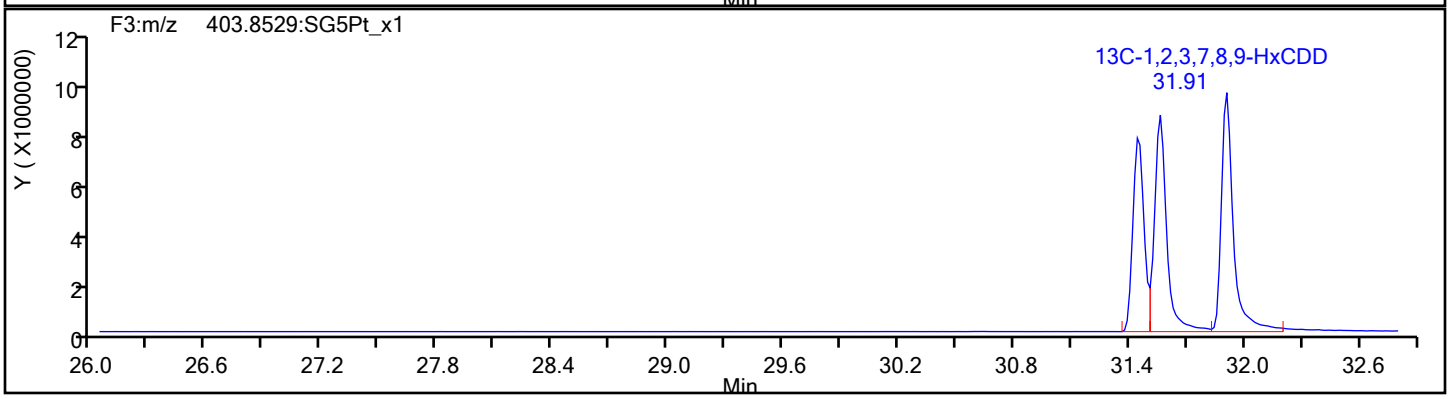

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Eurofins TestAmerica, Sacramento

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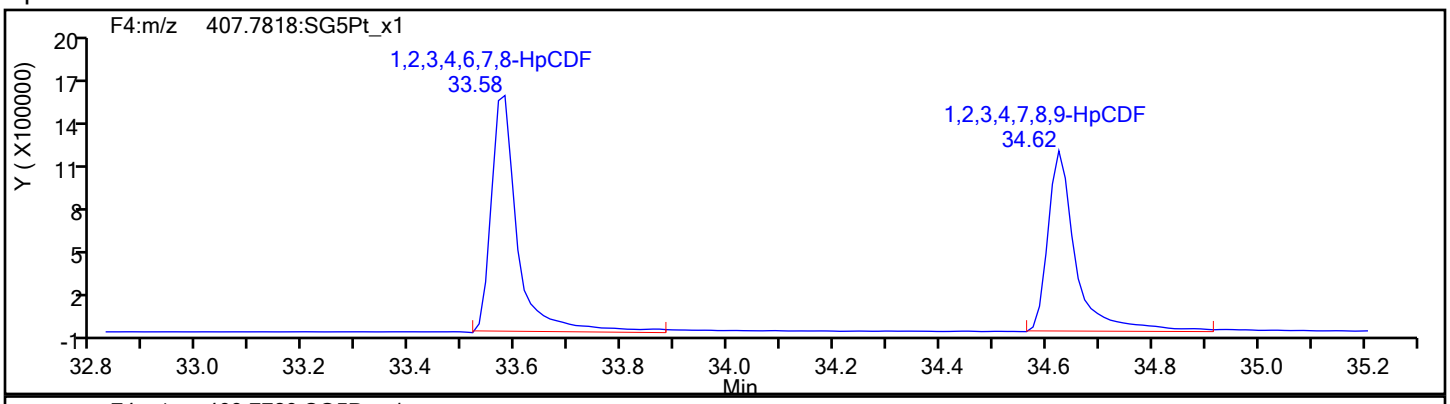
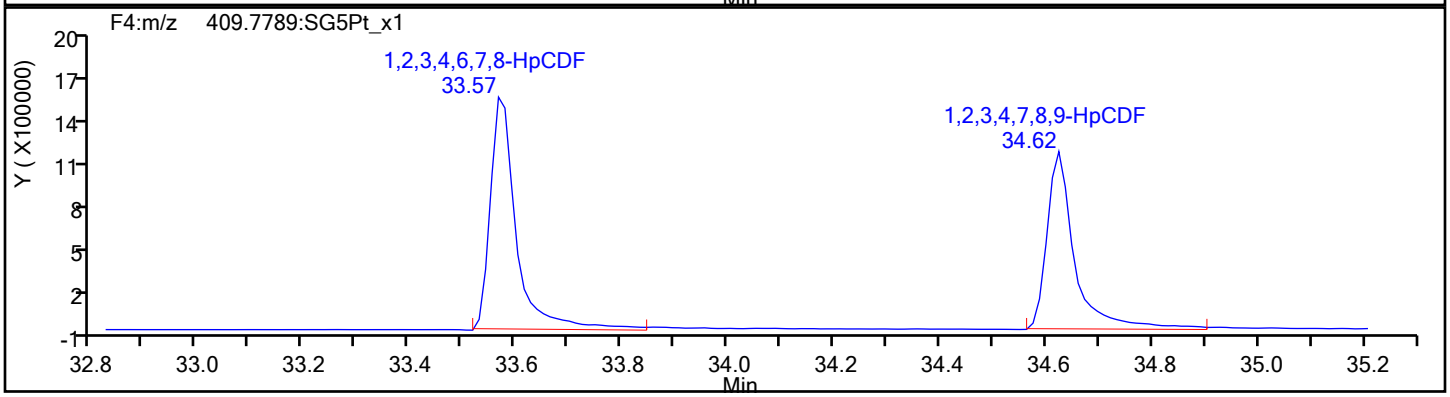
HpCDF





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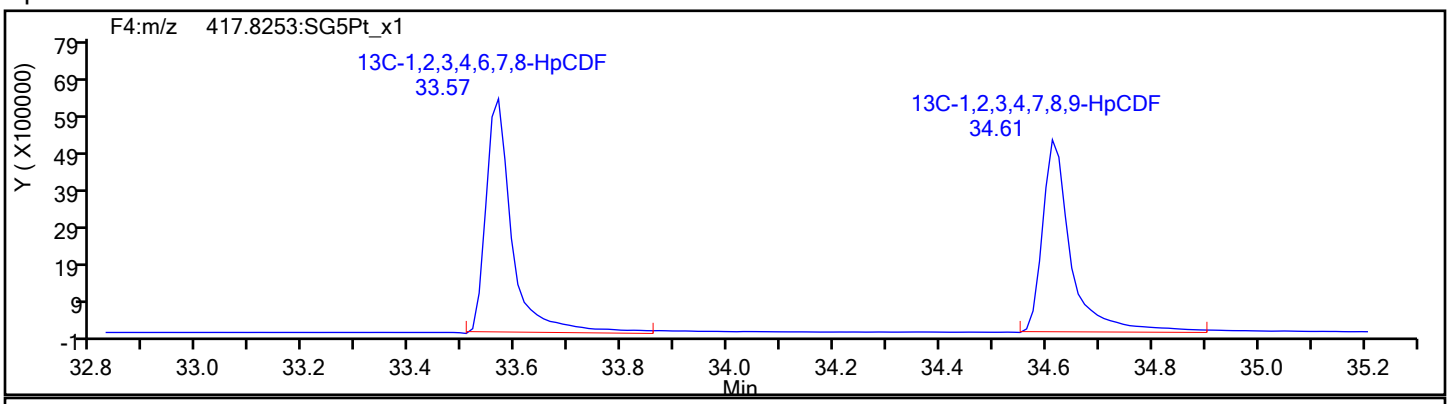

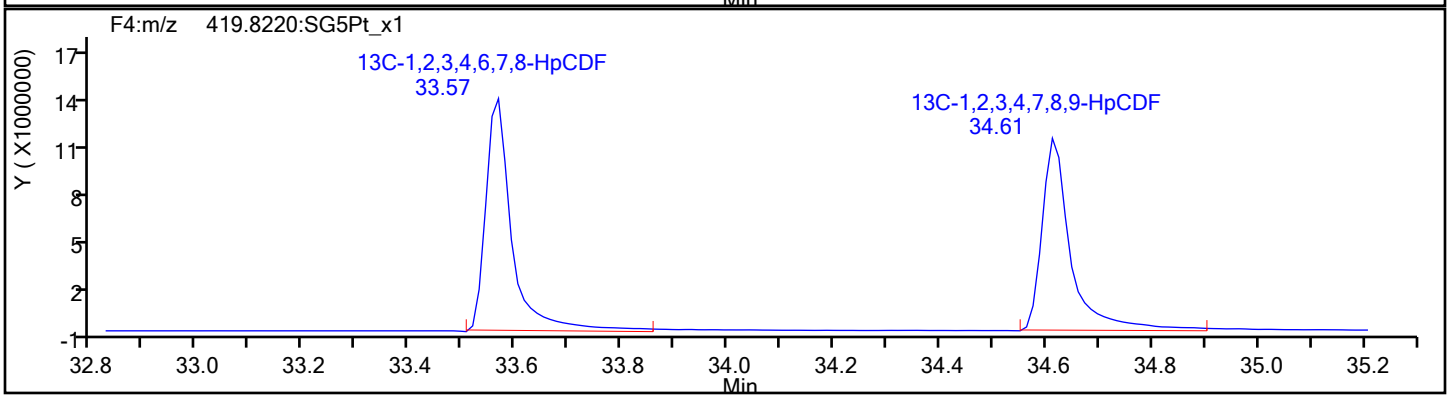

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Eurofins TestAmerica, Sacramento

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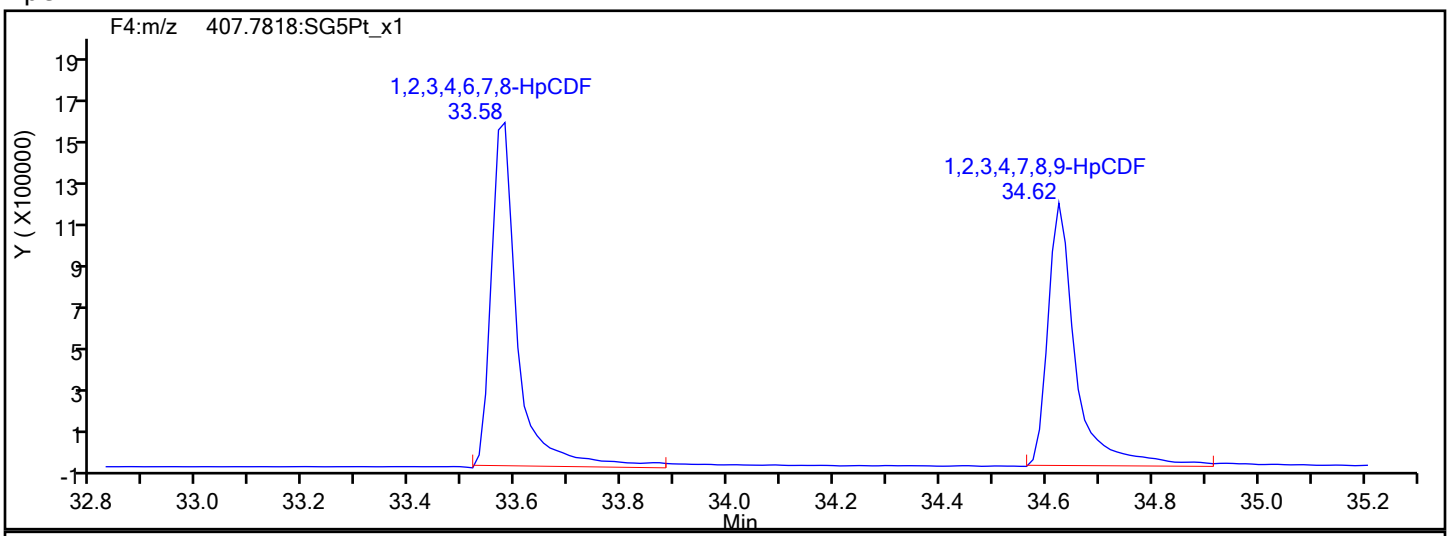
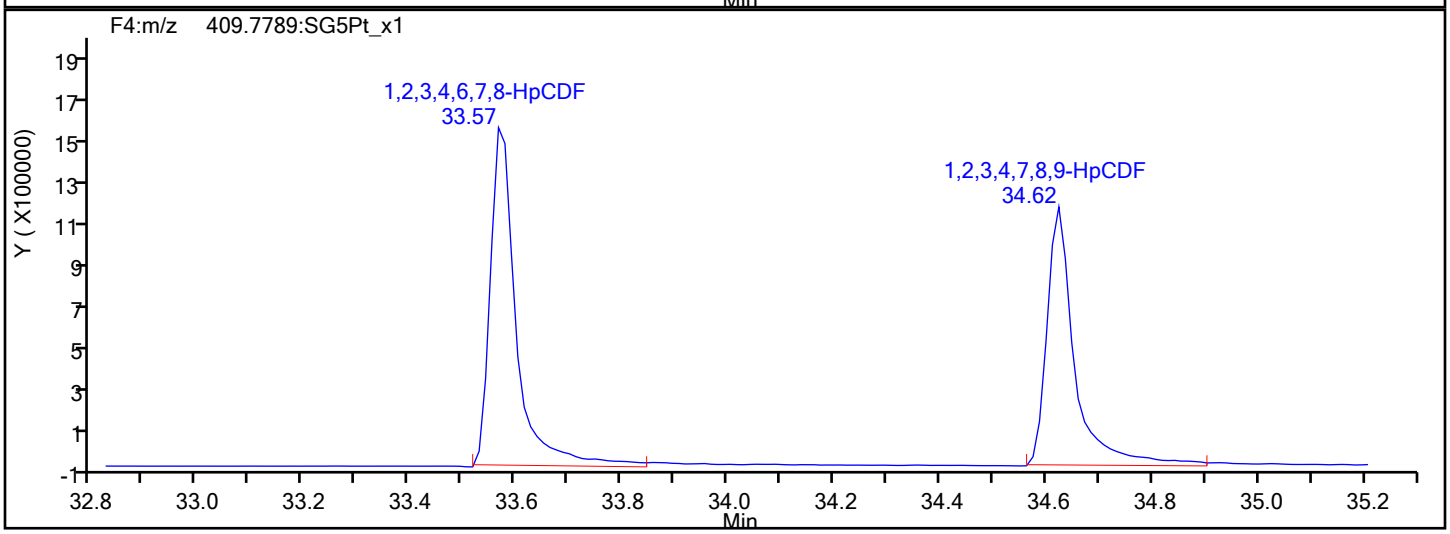
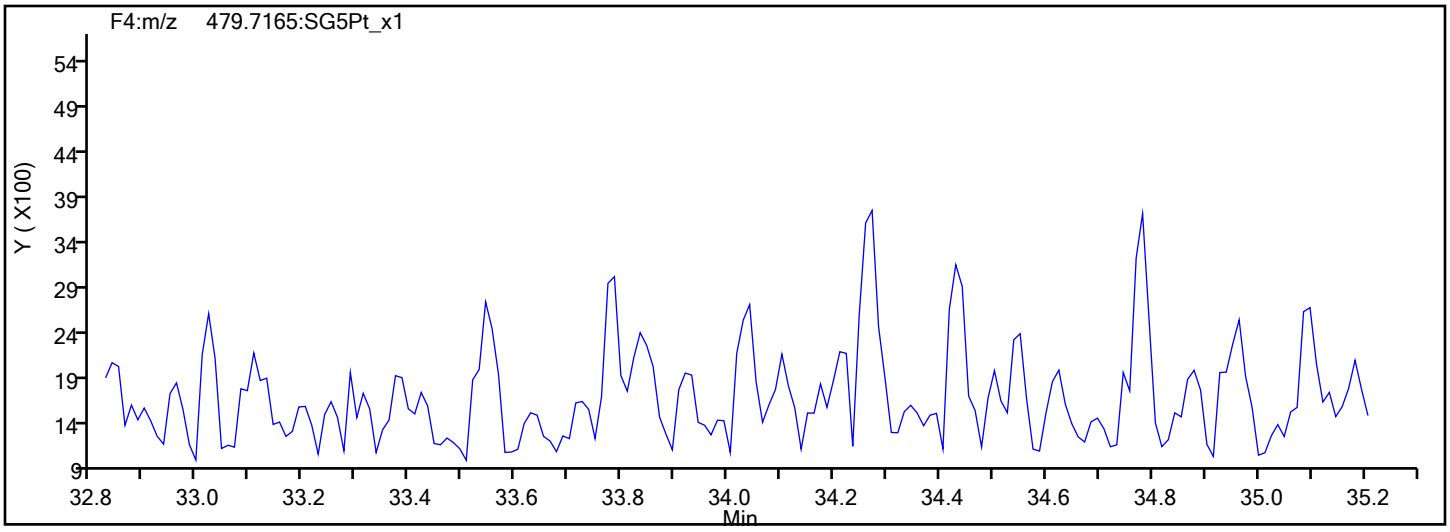
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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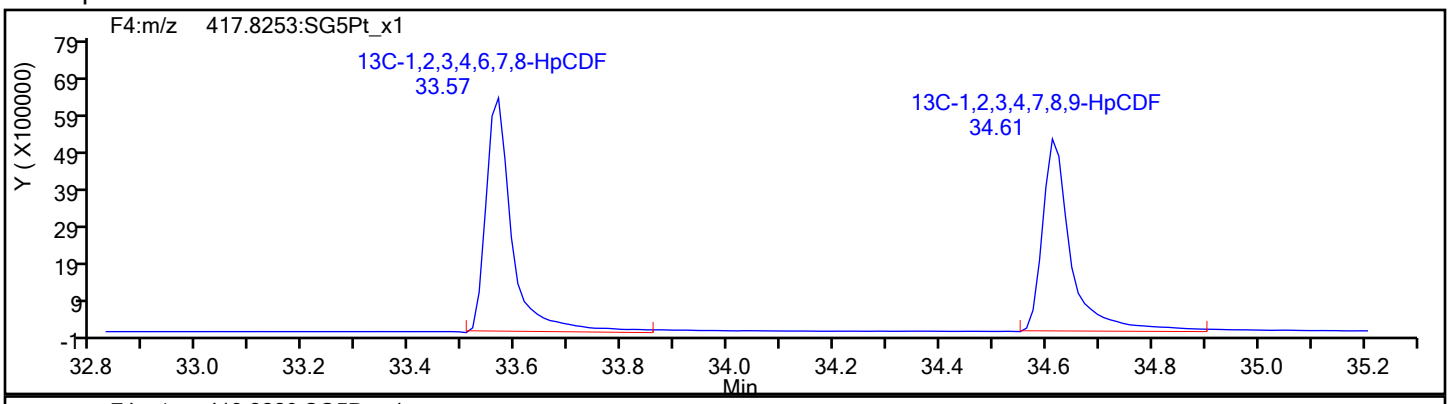
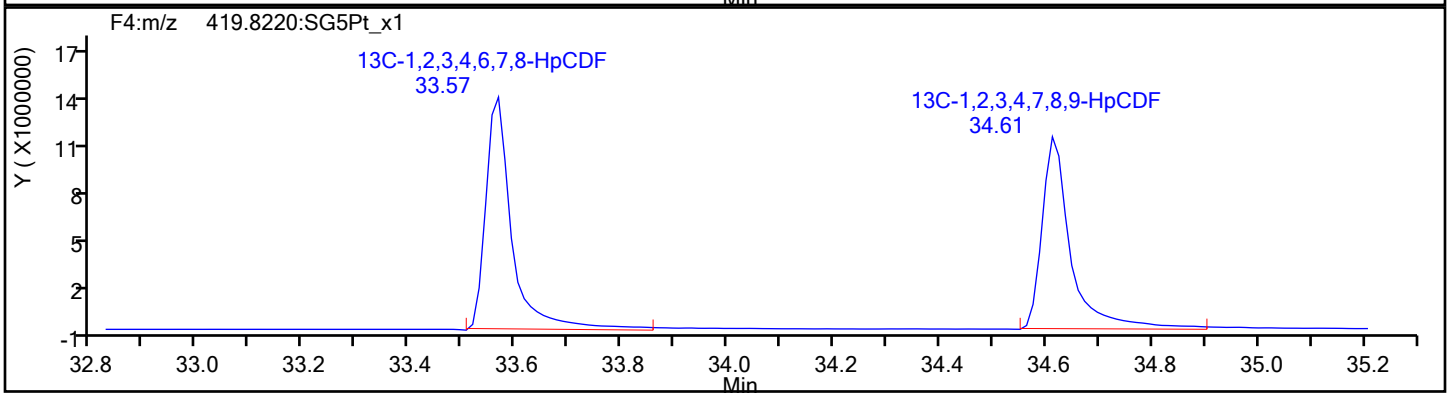
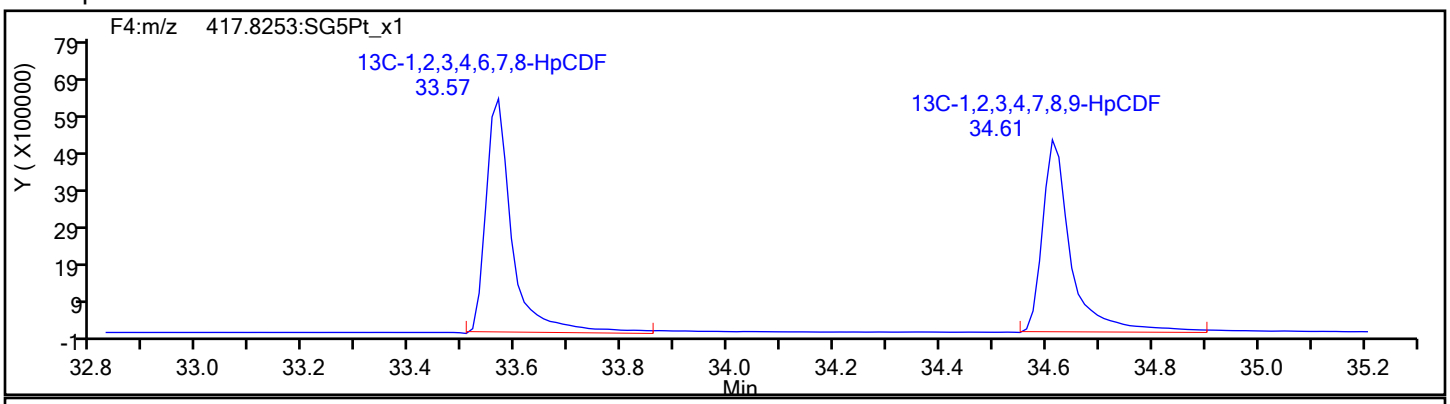
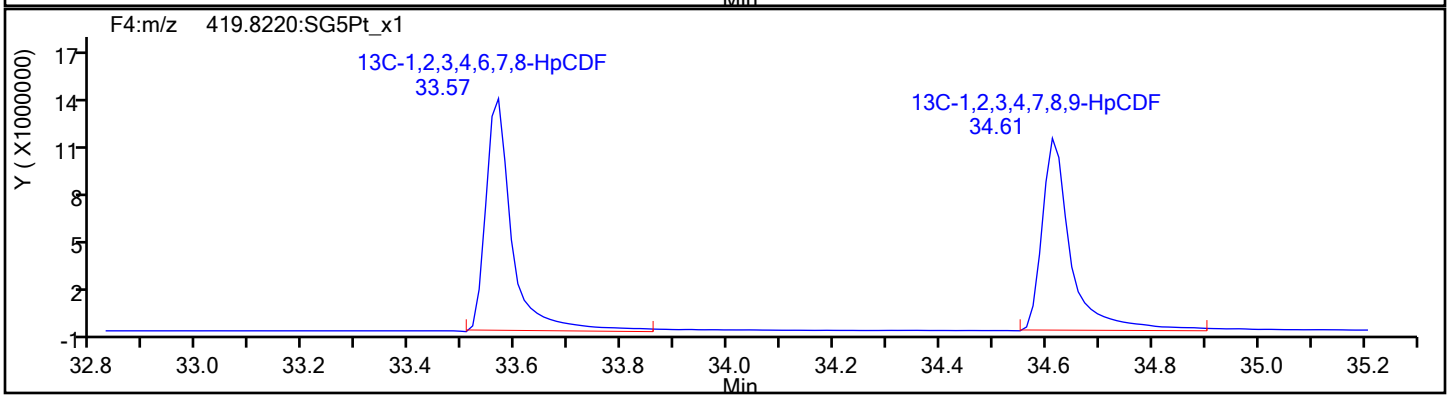
13C-HpCDF





13C-HpCDF Standards





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Eurofins TestAmerica, Sacramento

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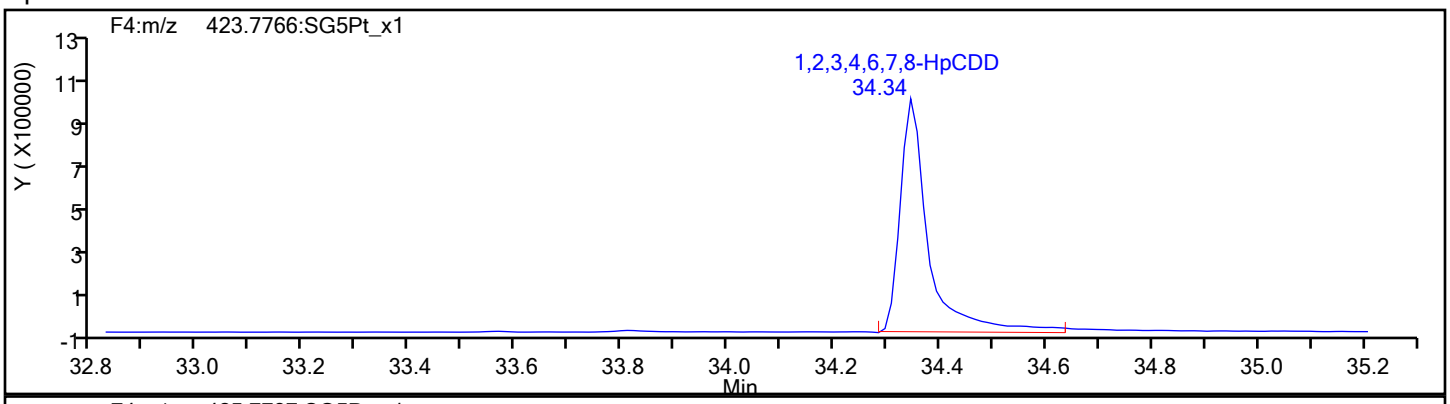
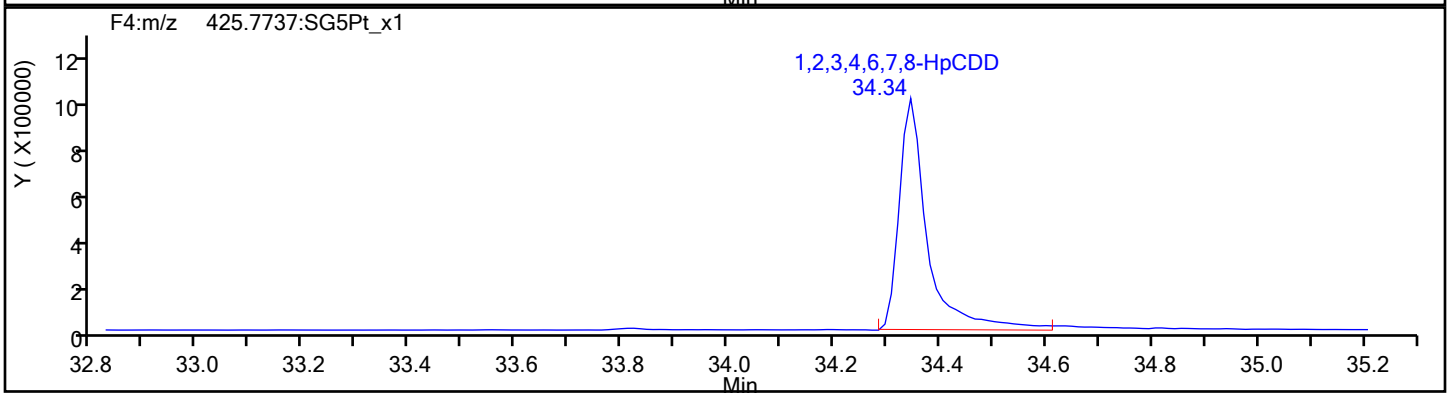
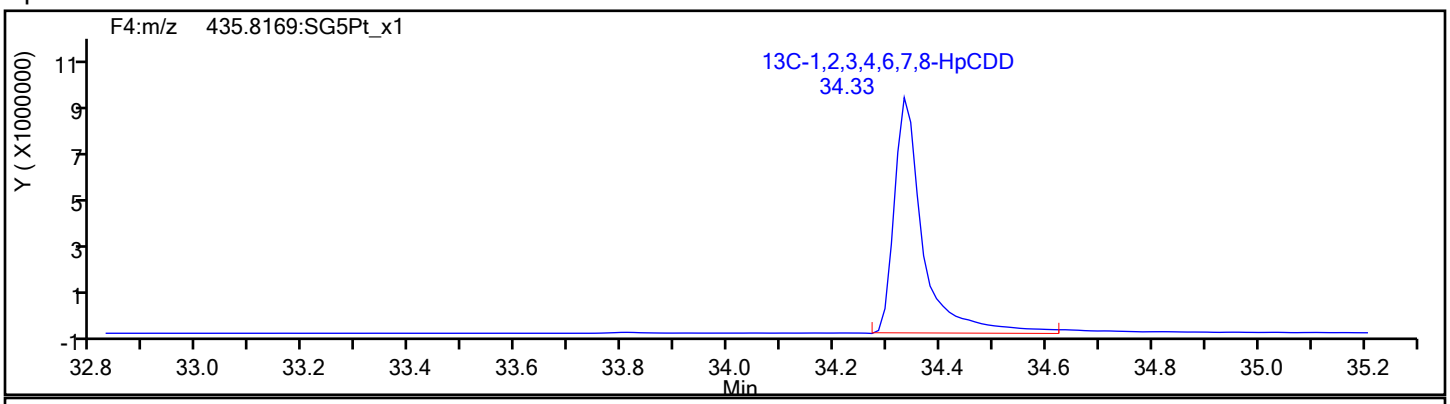
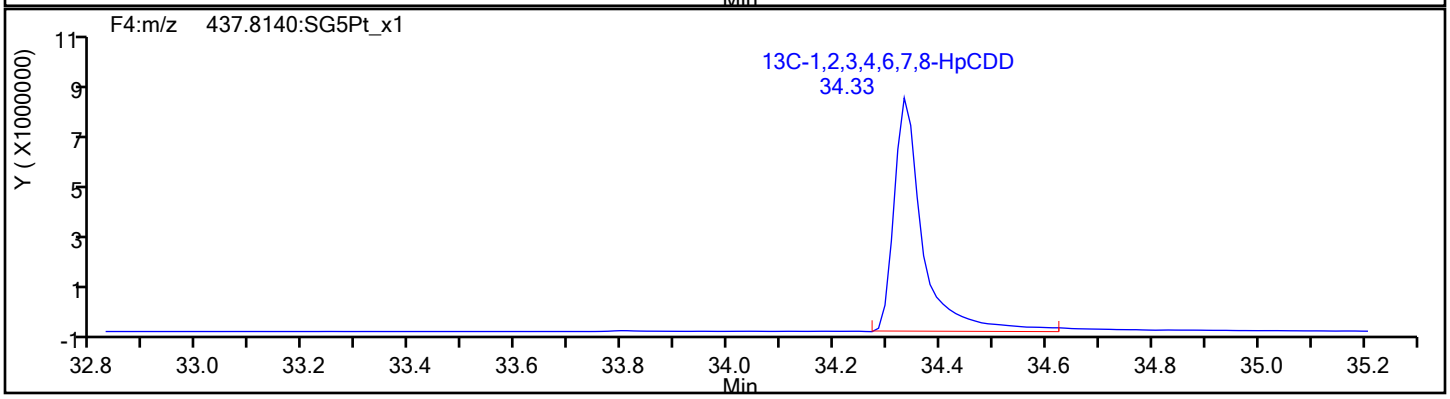
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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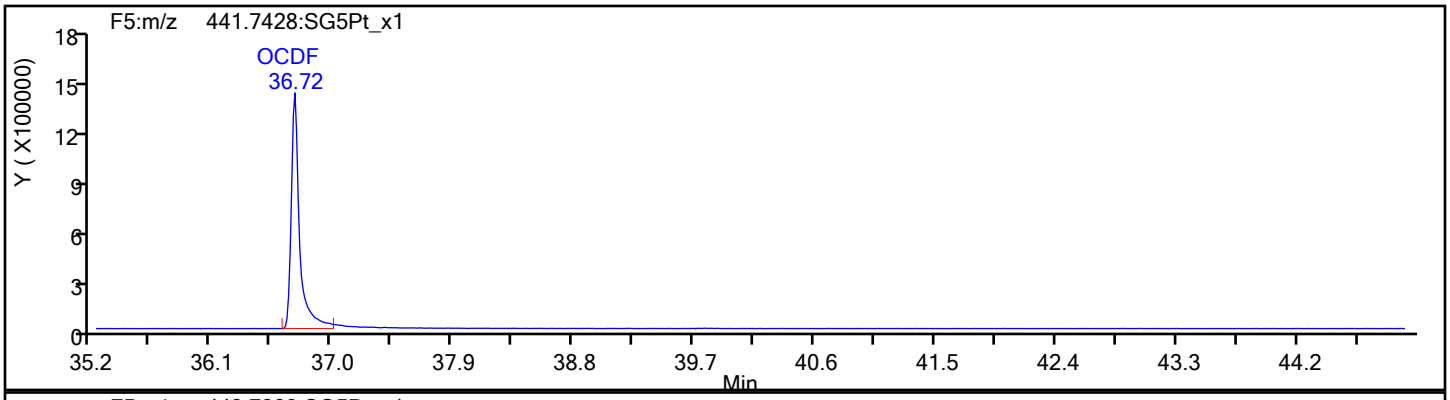
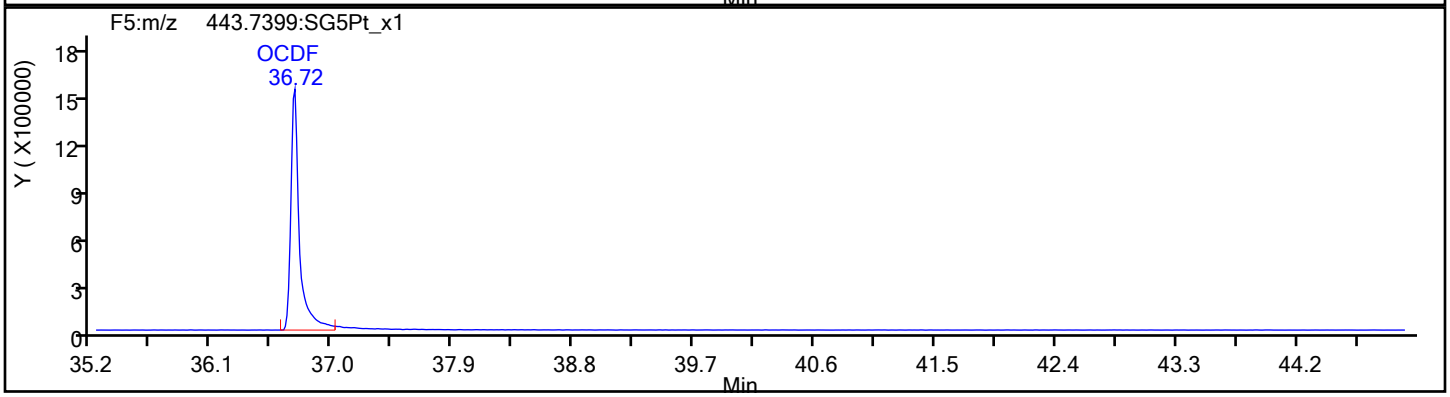
OCDF





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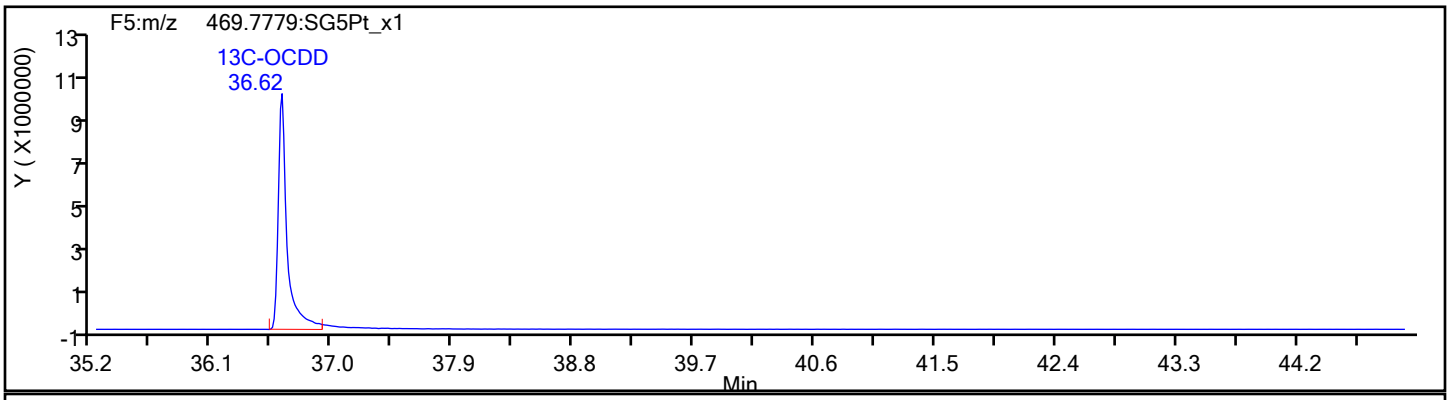

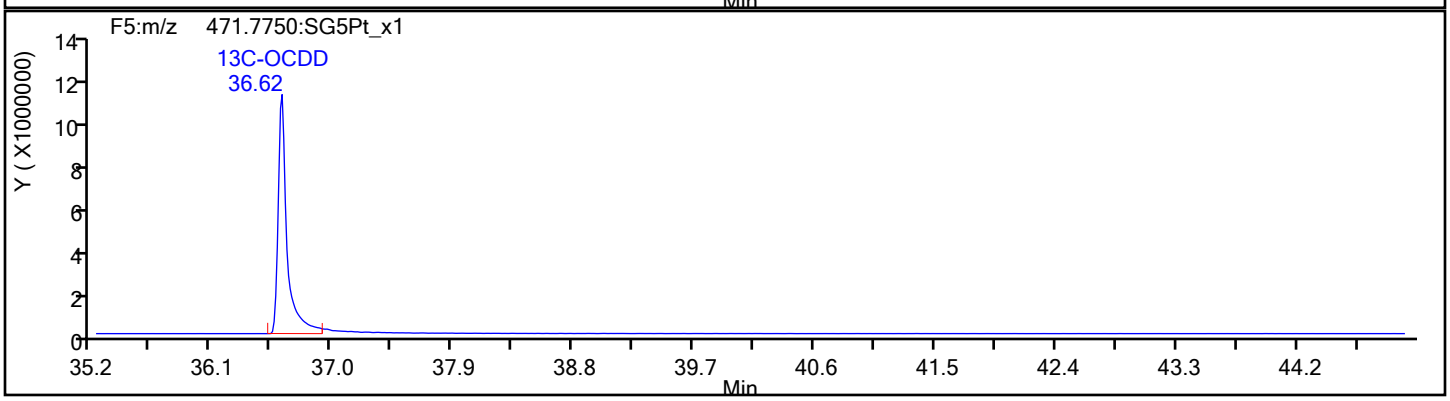

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Eurofins TestAmerica, Sacramento

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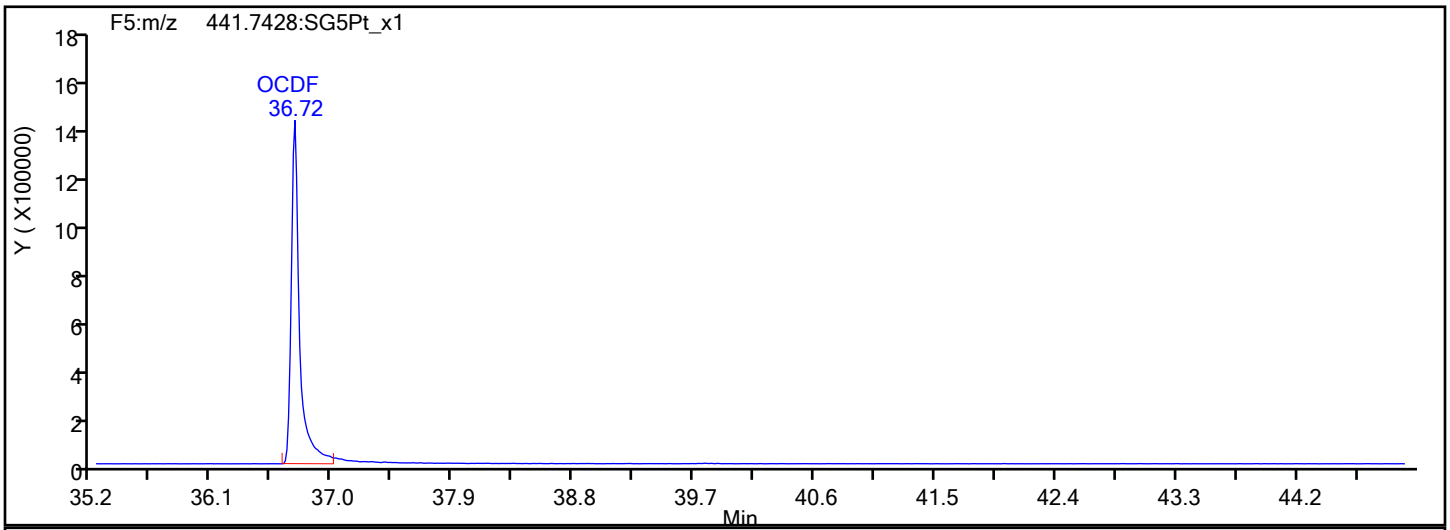
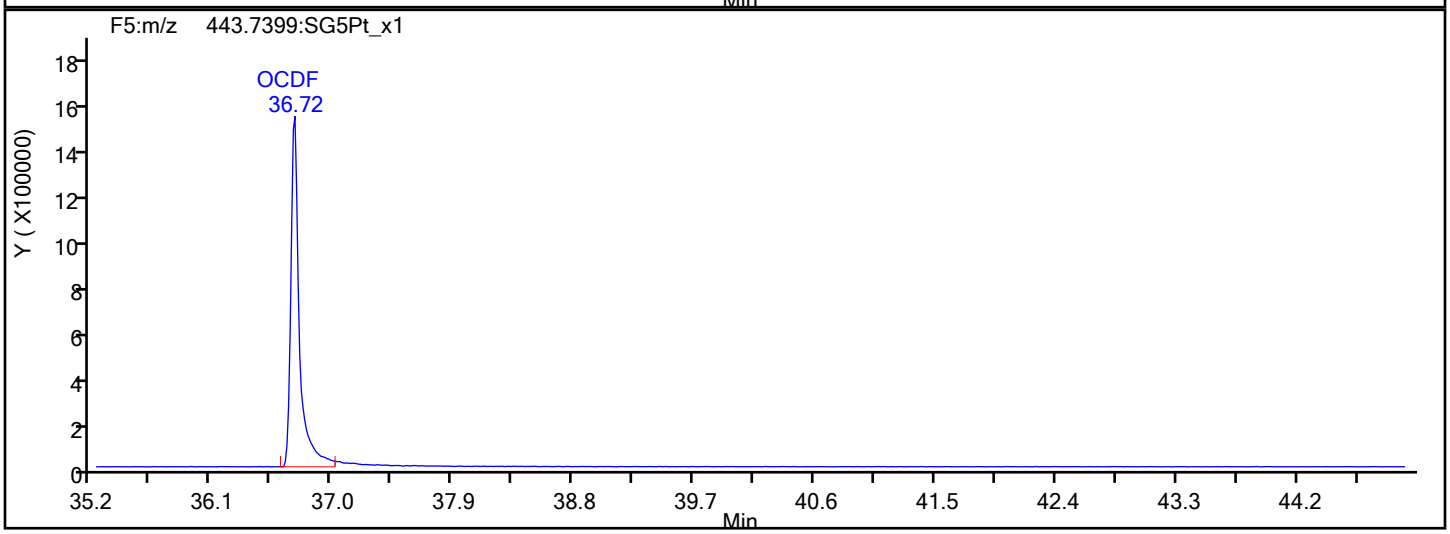
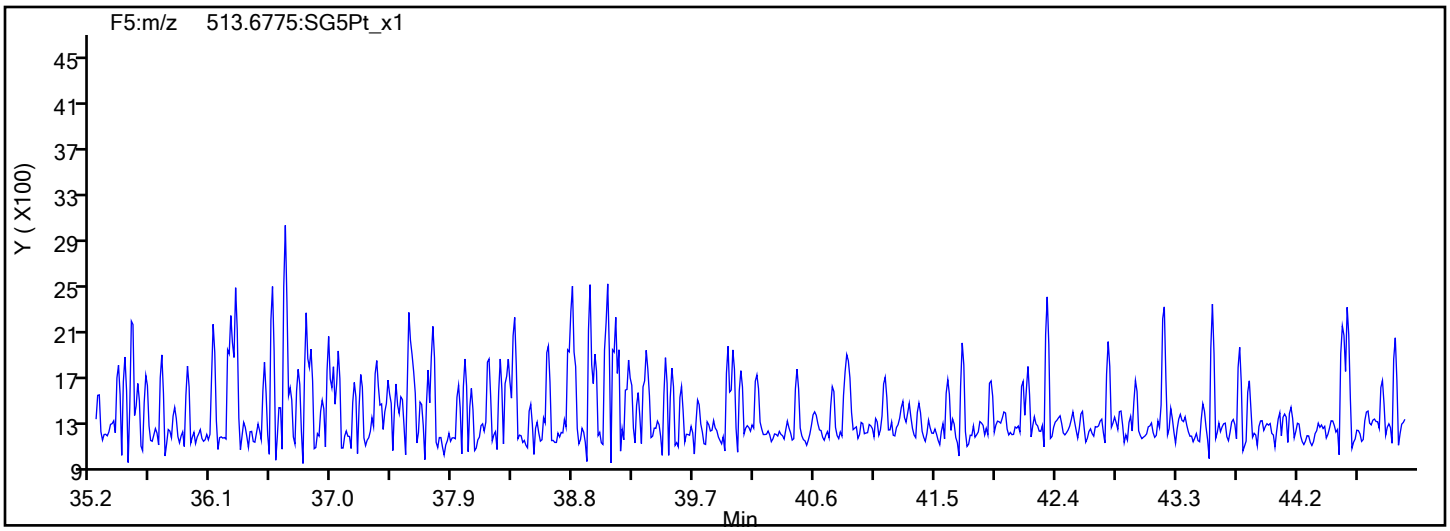
OCDF





OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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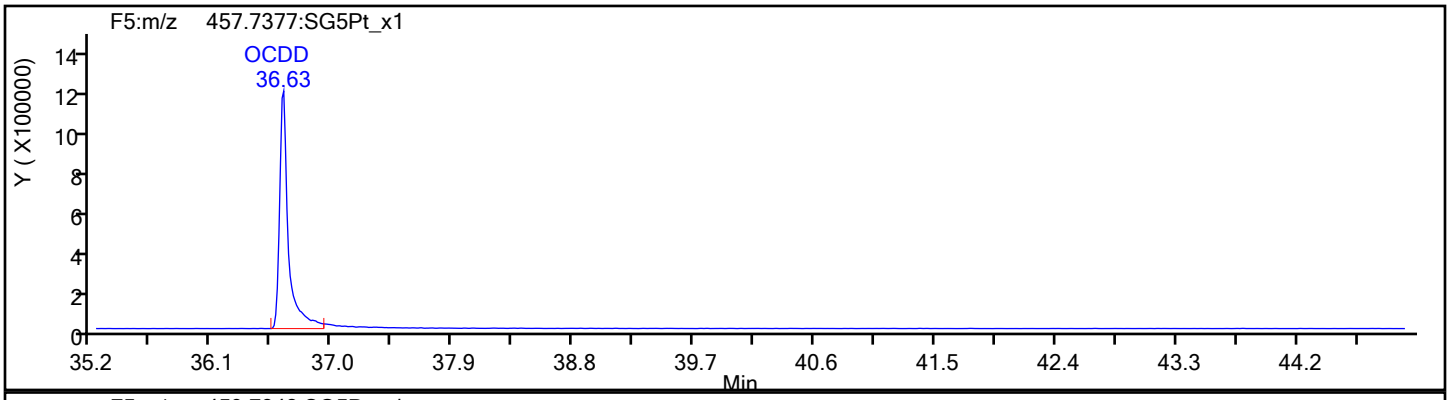
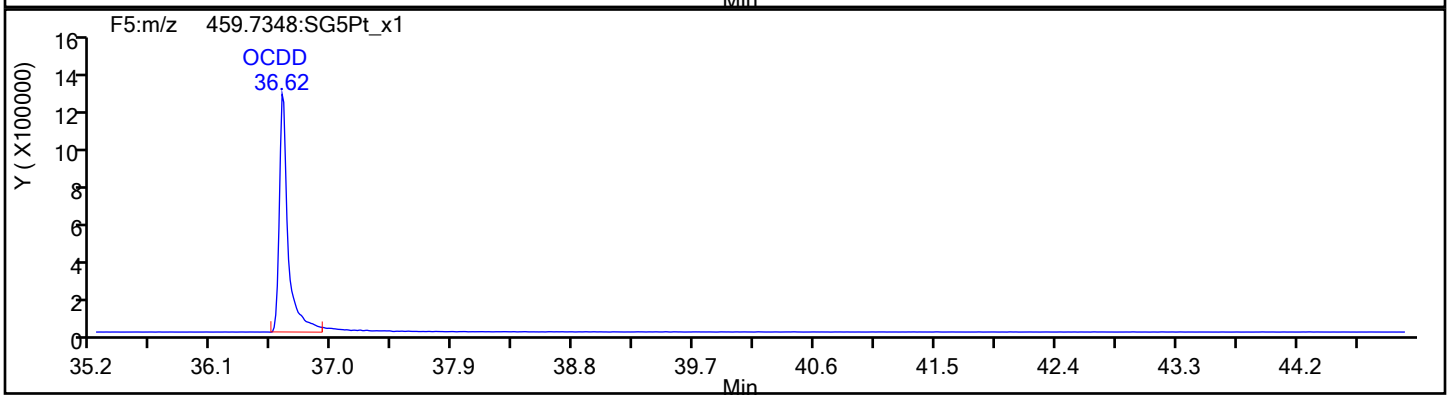
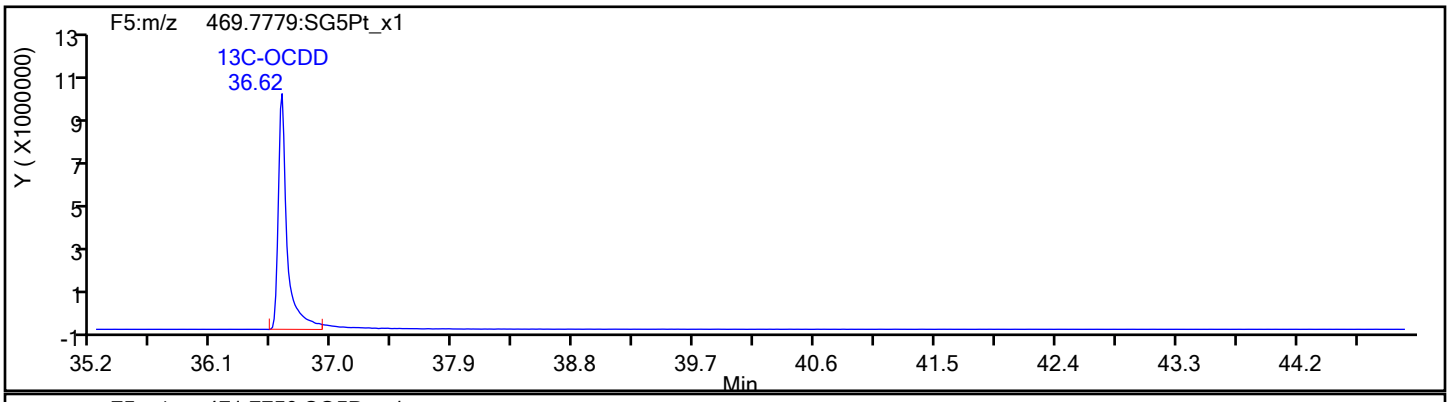
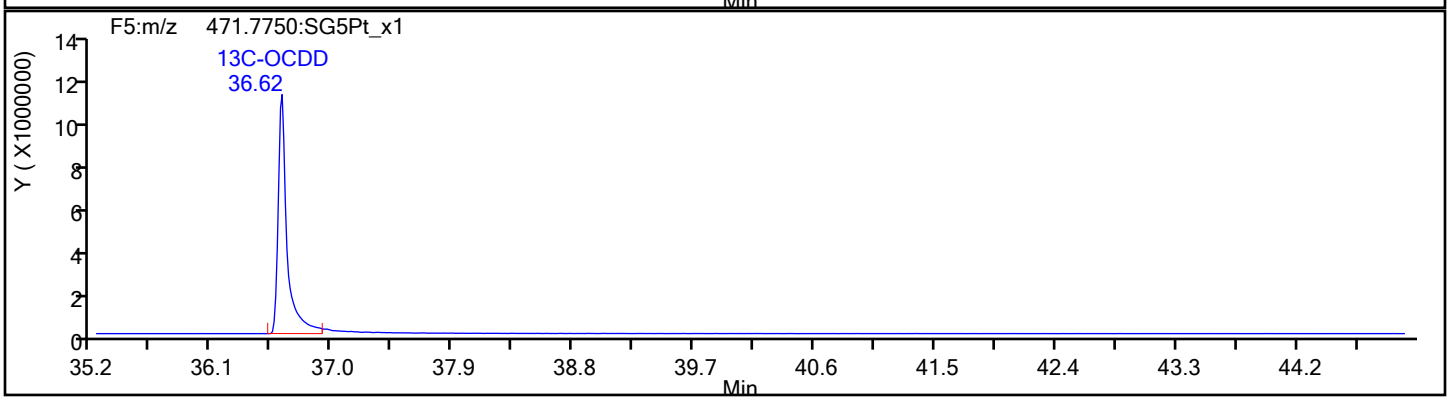
OCDD





OCDD Standards





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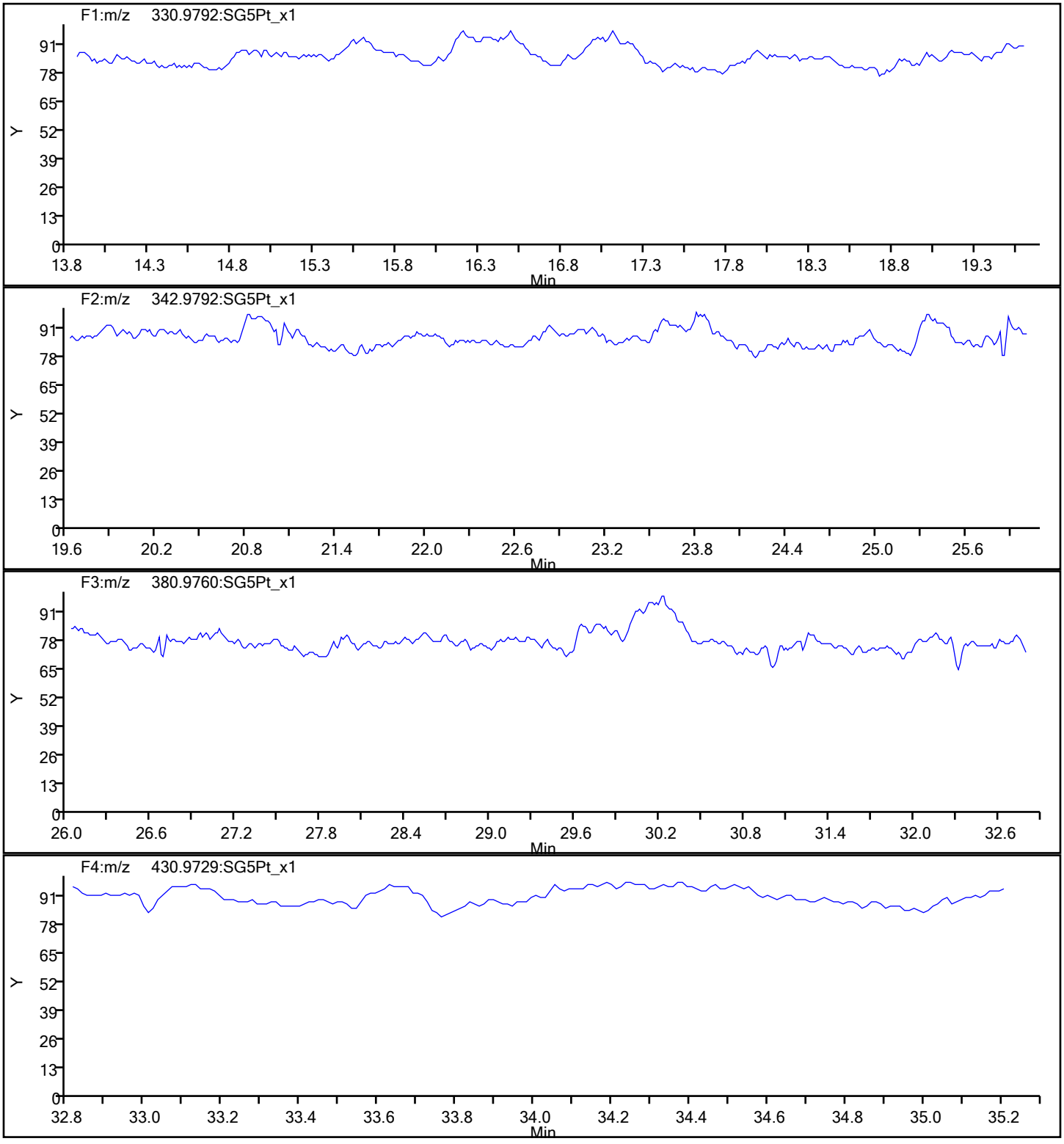

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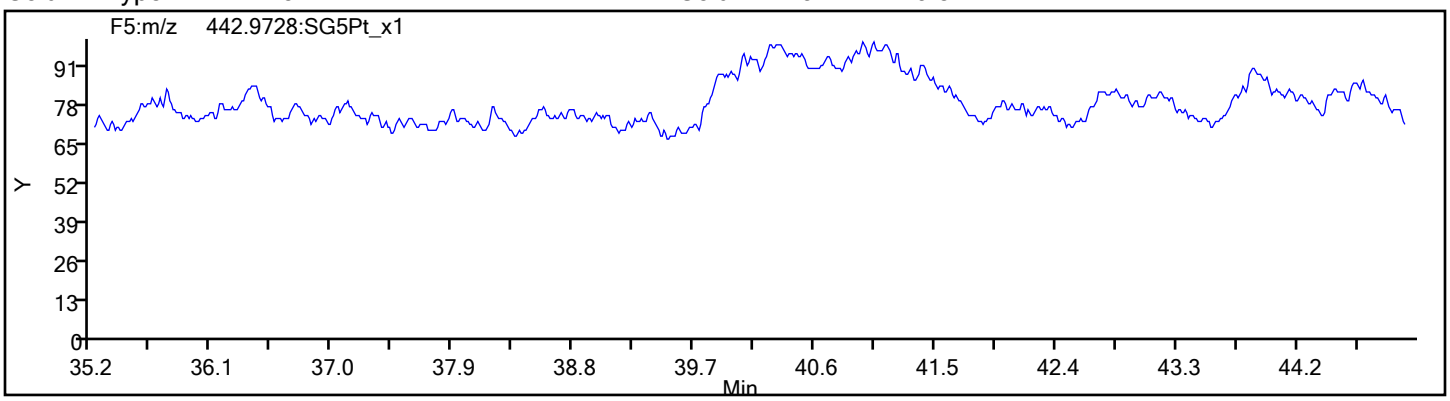
Worklist#:	338471	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Nov-2019 11:18:54 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419B CS-4 HRDXNL4_00085
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:23 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:00:48

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.548	121815021	0.80	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	161928326	0.77	1.3318	99.8	99.8	0.2580	0.2580	99.81	
2,3,7,8-TCDF	17.049	14438463	0.77	0.9005	9.902	9.902	0.0298	0.0298	99.02	
S Total TCDF					9.902	9.902	0.0298	0.0298		
D 13C-2,3,7,8-TCDD	17.729	118357002	0.79	0.9647	100.7	100.7	0.2065	0.2065	101	
2,3,7,8-TCDD	17.744	12186908	0.77	1.0698	9.625	9.625	0.0231	0.0231	96.25	
$ 37Cl4-2,3,7,8-TCDD	17.744	18499321		1.3082	11.6	11.6	0.0169	0.0169	116	
S Total TCDD					9.625	9.625	0.0231	0.0231		
D 13C-1,2,3,7,8-PeCDF	21.949	127384973	1.55	1.0537	99.2	99.2	0.2893	0.2893	99.24	
1,2,3,7,8-PeCDF	21.977	60982032	1.53	0.9704	49.3	49.3	0.2023	0.2023	98.67	
D 13C-2,3,4,7,8-PeCDF	23.258	125399433	1.56	1.0173	101.2	101.2	0.2997	0.2997	101	
2,3,4,7,8-PeCDF	23.286	60953518	1.55	0.9986	48.7	48.7	0.2139	0.2139	97.36	
S Total PeCDF					98.0	98.0	0.2081	0.2081		
D 13C-1,2,3,7,8-PeCDD	23.968	87404800	1.57	0.7281	98.5	98.5	0.1425	0.1425	98.54	
1,2,3,7,8-PeCDD	23.995	43513844	1.58	1.0023	49.7	49.7	0.0866	0.0866	99.34	
S Total PeCDD					49.7	49.7	0.0866	0.0866		
D 13C-1,2,3,4,7,8-HxCDF	30.100	90601161	0.52	0.9632	98.9	98.9	0.5568	0.5568	98.90	
1,2,3,4,7,8-HxCDF	30.126	45826476	1.23	1.0315	49.0	49.0	0.4019	0.4019	98.08	
D 13C-1,2,3,6,7,8-HxCDF	30.326	97586689	0.51	1.0646	96.4	96.4	0.5038	0.5038	96.38	
1,2,3,6,7,8-HxCDF	30.339	49548801	1.23	1.0235	49.6	49.6	0.3741	0.3741	99.21	
D 13C-2,3,4,6,7,8-HxCDF	31.244	89609086	0.51	0.9696	97.2	97.2	0.5531	0.5531	97.16	
2,3,4,6,7,8-HxCDF	31.257	47237432	1.22	1.0645	49.5	49.5	0.2798	0.2798	99.04	
D 13C-1,2,3,7,8,9-HxCDF	32.096	84048823	0.51	0.8955	98.7	98.7	0.5989	0.5989	98.68	
1,2,3,7,8,9-HxCDF	32.109	44109482	1.21	1.0664	49.2	49.2	0.2793	0.2793	98.43	
S Total HxCDF					197.4	197.4	0.3338	0.3338		
* 13C-1,2,3,7,8,9-HxCDD	31.910	95115852	1.24	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.444	71254969	1.26	0.7590	98.7	98.7	0.4033	0.4033	98.70	
1,2,3,4,7,8-HxCDD	31.471	34514378	1.24	1.0054	48.2	48.2	0.1947	0.1947	96.36	
D 13C-1,2,3,6,7,8-HxCDD	31.564	84454503	1.24	0.9247	96.0	96.0	0.3311	0.3311	96.02	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.577	41219178	1.25	0.9833	49.6	49.6	0.1814	0.1814	99.27	
1,2,3,7,8,9-HxCDD	31.923	42847509	1.24	1.1036	49.9	49.9	0.1691	0.1691	99.74	
S Total HxCDD					147.7	147.7	0.1817	0.1817		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	72198948	0.45	0.7930	95.7	95.7	1.686	1.686	95.72	
1,2,3,4,6,7,8-HpCDF	33.579	51117337	1.03	1.4240	49.7	49.7	0.7449	0.7449	99.44	
D 13C-1,2,3,4,7,8,9-HpCDF	34.612	68033057	0.44	0.7296	98.0	98.0	1.833	1.833	98.04	
1,2,3,4,7,8,9-HpCDF	34.624	42585703	1.03	1.2834	48.8	48.8	1.017	1.017	97.55	
S Total HpCDF					98.5	98.5	0.8808	0.8808		
D 13C-1,2,3,4,6,7,8-HpCDD	34.333	69012021	1.05	0.7532	96.3	96.3	0.8221	0.8221	96.34	
1,2,3,4,6,7,8-HpCDD	34.345	34696372	1.05	1.0174	49.4	49.4	0.3761	0.3761	98.83	
S Total HpCDD					49.4	49.4	0.3761	0.3761		
D 13C-OCDD	36.621	102939677	0.90	0.5621	192.6	192.6	0.2221	0.2221	96.28	
OCDF	36.717	66966196	0.90	1.3047	99.7	99.7	0.1124	0.1124	99.72	
OCDD	36.633	55739047	0.88	1.0997	98.5	98.5	0.1406	0.1406	98.48	

Reagents:

HRDXNL4_00085 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Nov-2019 11:18:54 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419B CS-4 HRDXNL4_00085
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:23 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:00:48

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.548	17.539	1		54002056	13582139	12007	30017	1131		
333.9339	17.548	17.539	1		67812965	17036405	12394	30985	1375	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.971	70407835	17881227	13148	32870	1360		
317.9389	17.034	17.034	0	0.971	91520491	23282630	28936	72340	805	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	6264348	1600871	2315	5787	692		
305.8987	17.049	17.049	0	1.001	8174115	2080188	2111	5277	985	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.010	52195788	12580259	12007	30017	1048		
333.9339	17.729	17.729	0	1.010	66161214	15953868	12394	30985	1287	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	5314822	1296631	1467	3667	884		
321.8936	17.744	17.744	0	1.001	6872086	1670695	1355	3387	1233	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.011	18499321	4476979	2715	6787	1649		
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.251	77527228	14035181	22679	56697	619		
353.8970	21.949	21.949	0	1.251	49857745	9051978	14658	36645	618	1.55(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.977	21.971	0	1.001	36922633	6675391	10782	26955	619		
341.8567	21.963	21.971	0	1.001	24059399	4290604	7349	18372	584	1.53(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.325	76340044	12913305	22679	56697	569		
353.8970	23.258	23.258	0	1.325	49059389	8313064	14658	36645	567	1.56(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	37089816	6328557	10782	26955	587		
341.8567	23.286	23.286	0	1.001	23863702	4049618	7349	18372	551	1.55(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.366	53395935	8498225	7880	19700	1078		
369.8919	23.968	23.968	0	1.366	34008865	5446687	4825	12062	1129	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	26662200	4243637	3024	7560	1403		
357.8516	23.995	23.995	0	1.001	16851644	2681902	1819	4547	1474	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.100	30.102	0	0.943	30866650	5097555	16147	40367	316		
385.8610	30.100	30.102	0	0.943	59734511	9657318	31132	77830	310	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.126	30.131	0	1.001	25259600	4100959	13348	33370	307		
375.8178	30.126	30.131	0	1.001	20566876	3355902	11117	27792	302	1.23(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.326	30.323	0	0.950	33082900	5419500	16147	40367	336		
385.8610	30.326	30.323	0	0.950	64503789	10555675	31132	77830	339	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.339	30.344	0	1.000	27329421	4544896	13348	33370	340		
375.8178	30.339	30.344	0	1.000	22219380	3751171	11117	27792	337	1.23(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.244	31.247	0	0.979	30415948	6985625	16147	40367	433		
385.8610	31.244	31.247	0	0.979	59193138	13547114	31132	77830	435	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.257	31.265	0	1.000	25964728	5903158	13348	33370	442		
375.8178	31.257	31.265	0	1.000	21272704	4926918	11117	27792	443	1.22(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.096	32.099	0	1.006	28397023	6931491	16147	40367	429		
385.8610	32.096	32.099	0	1.006	55651800	13606643	31132	77830	437	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.109	32.115	0	1.000	24110557	5989271	13348	33370	449		
375.8178	32.109	32.115	0	1.000	19998925	4973720	11117	27792	447	1.21(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.910	31.912	0		52659556	12205361	14783	36957	826		
403.8529	31.910	31.912	0		42456296	9834248	12206	30515	806	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.444	31.452	0	0.985	39769871	9884694	14783	36957	669		
403.8529	31.457	31.452	0	0.986	31485098	7842504	12206	30515	643	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.471	31.470	0	1.001	19134734	5021391	7459	18647	673		
391.8127	31.471	31.470	0	1.001	15379644	3956252	6422	16055	616	1.24(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.564	31.566	0	0.989	46750317	10734244	14783	36957	726		
403.8529	31.564	31.566	0	0.989	37704186	8722569	12206	30515	715	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.577	31.582	0	1.000	22878211	5233445	7459	18647	702		
391.8127	31.577	31.582	0	1.000	18340967	4235342	6422	16055	660	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.923	31.926	0	1.015	23750479	5583880	7459	18647	749		
391.8127	31.923	31.926	0	1.015	19097030	4492354	6422	16055	700	1.24(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.052	22336285	6939747	34801	87002	199		
419.8220	33.567	33.567	0	1.052	49862663	15174928	83074	207685	183	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	25988743	7827093	47166	117915	166		
409.7789	33.579	33.579	0	1.000	25128594	7436827	46670	116675	159	1.03(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.612	34.619	0	1.085	20849318	5485349	34801	87002	158		
419.8220	34.612	34.619	0	1.085	47183739	12495639	83074	207685	150	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.624	34.629	0	1.000	21643792	5932555	47166	117915	126		
409.7789	34.624	34.629	0	1.000	20941911	5768738	46670	116675	124	1.03(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.333	34.340	0	1.076	35409022	9326056	28150	70375	331		
437.8140	34.333	34.340	0	1.076	33602999	8777343	26434	66085	332	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.345	34.349	0	1.000	17767248	4785774	14192	35480	337		
425.7737	34.345	34.349	0	1.000	16929124	4667973	13516	33790	345	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.621	36.624	0	1.148	48761834	10728267	5328	13320	2014		
471.7750	36.621	36.624	0	1.148	54177843	11803536	5677	14192	2079	0.90(0.76-1.02)	
OCDF											
441.7428	36.717	36.720	0	1.003	31734111	7332136	3050	7625	2404		
443.7399	36.717	36.720	0	1.003	35232085	8042592	3560	8900	2259	0.90(0.76-1.02)	
OCDD											
457.7377	36.633	36.636	0	1.000	26148565	5718372	3188	7970	1794		
459.7348	36.633	36.636	0	1.000	29590482	6427681	3779	9447	1701	0.88(0.76-1.02)	

Reagents:

HRDXNL4_00085 Amount Added: 1.00 Units: mL

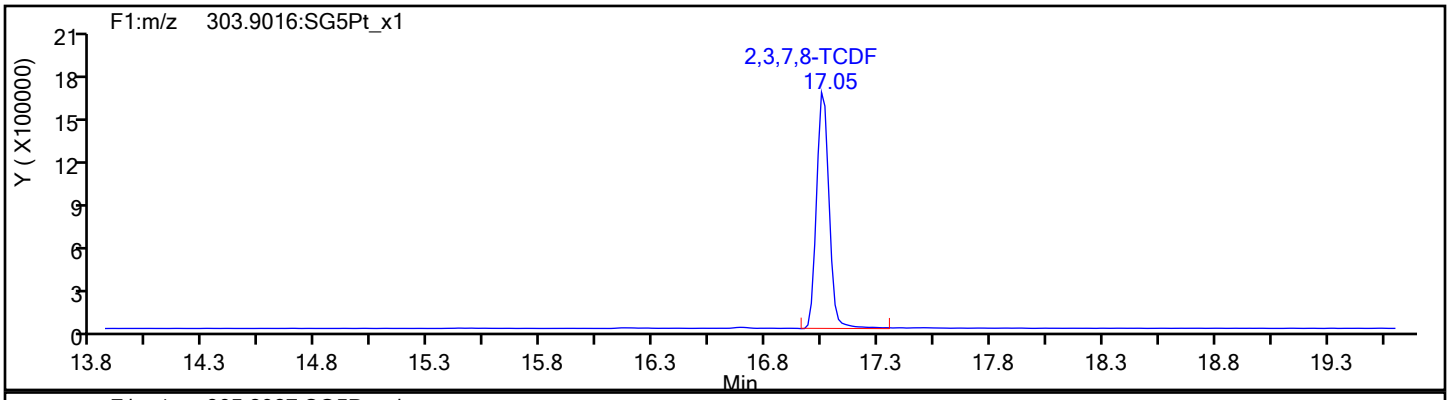
Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

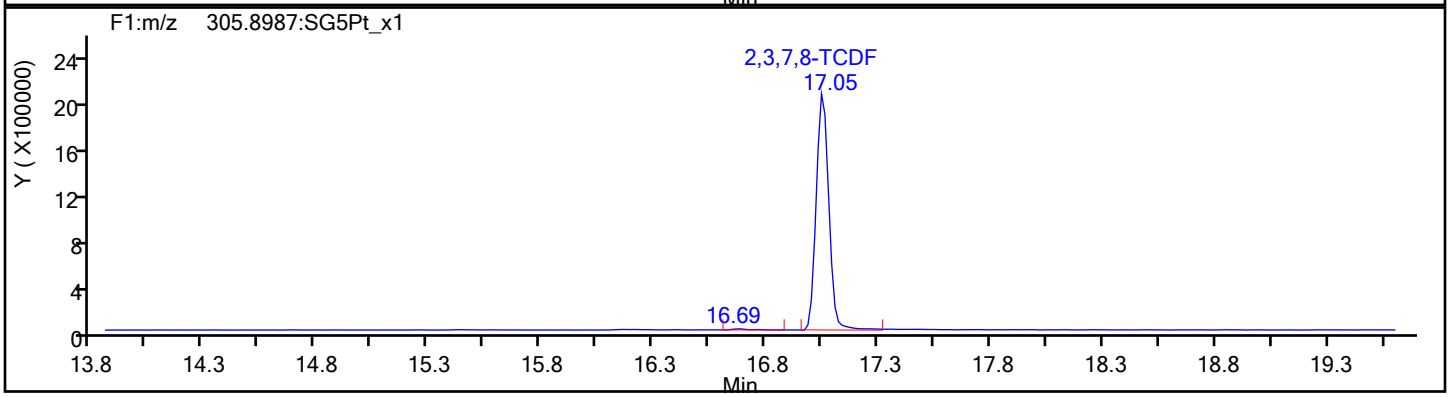
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d

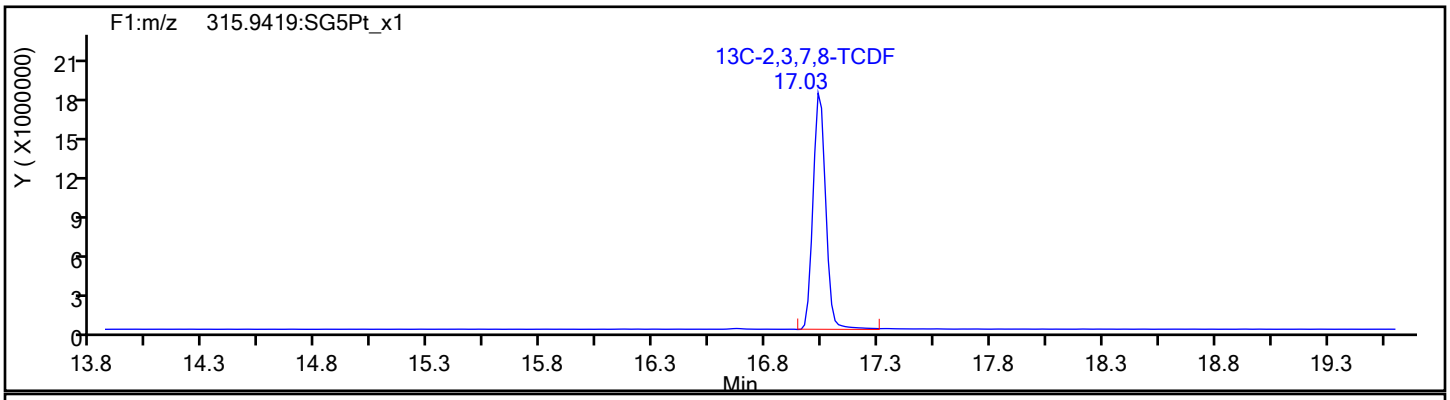
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

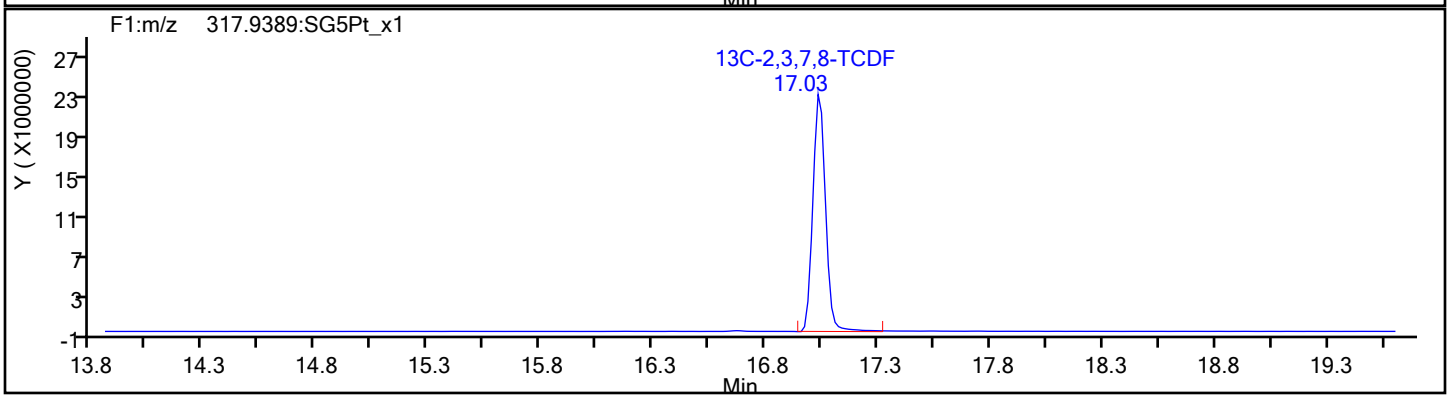
TCDF





TCDF Standards



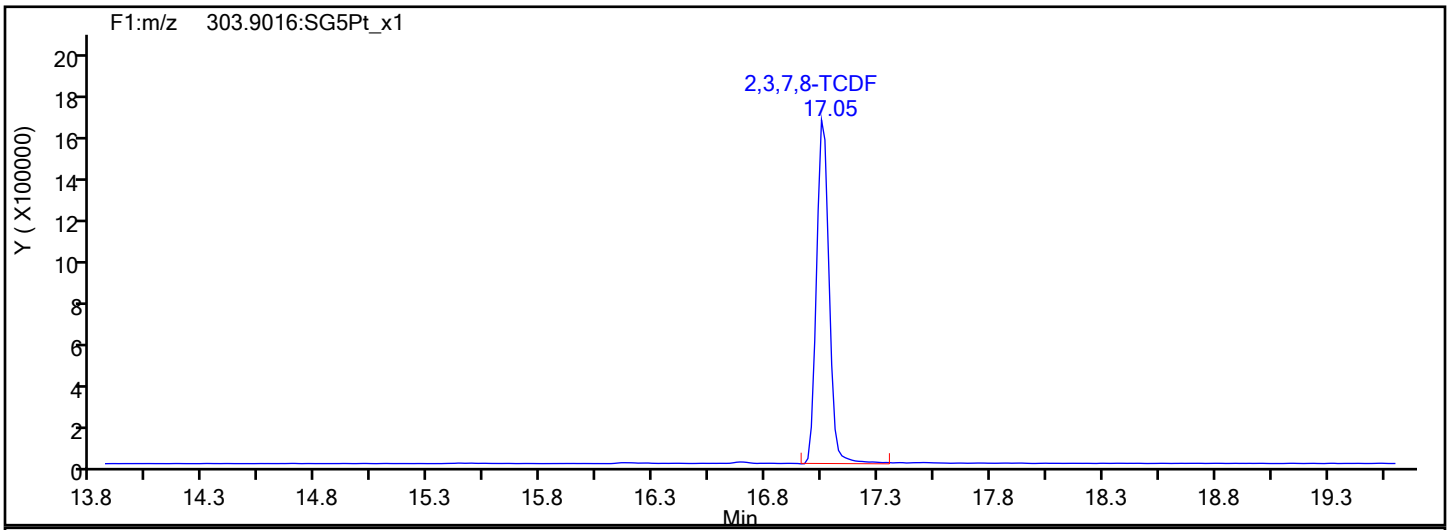


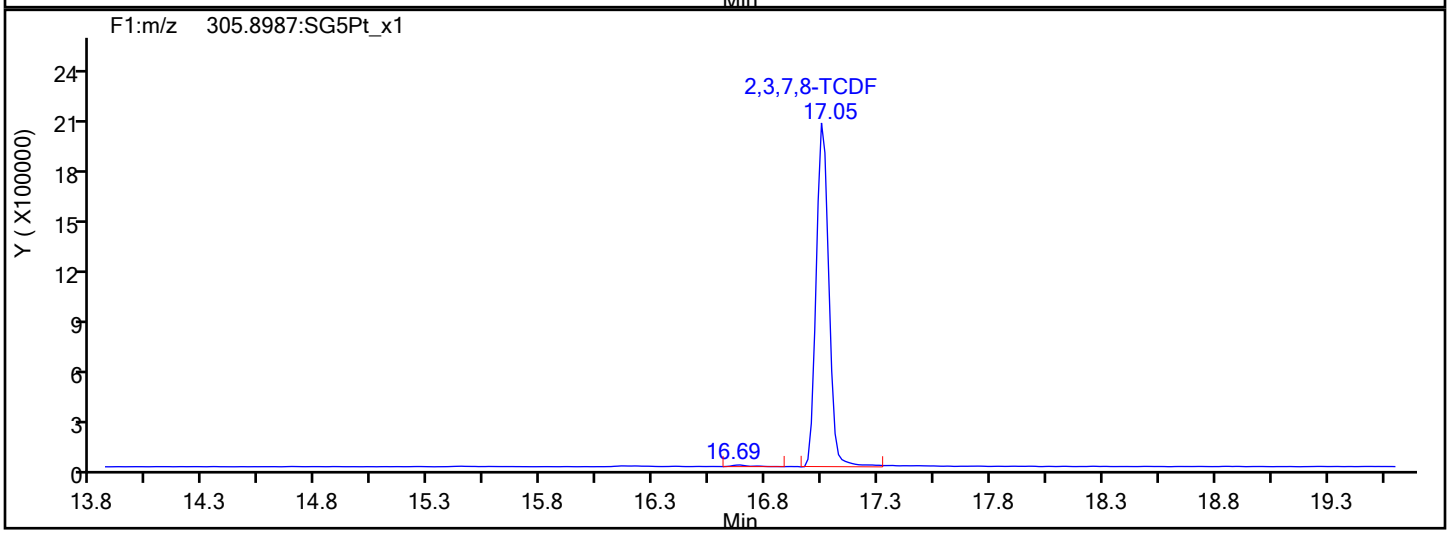
Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

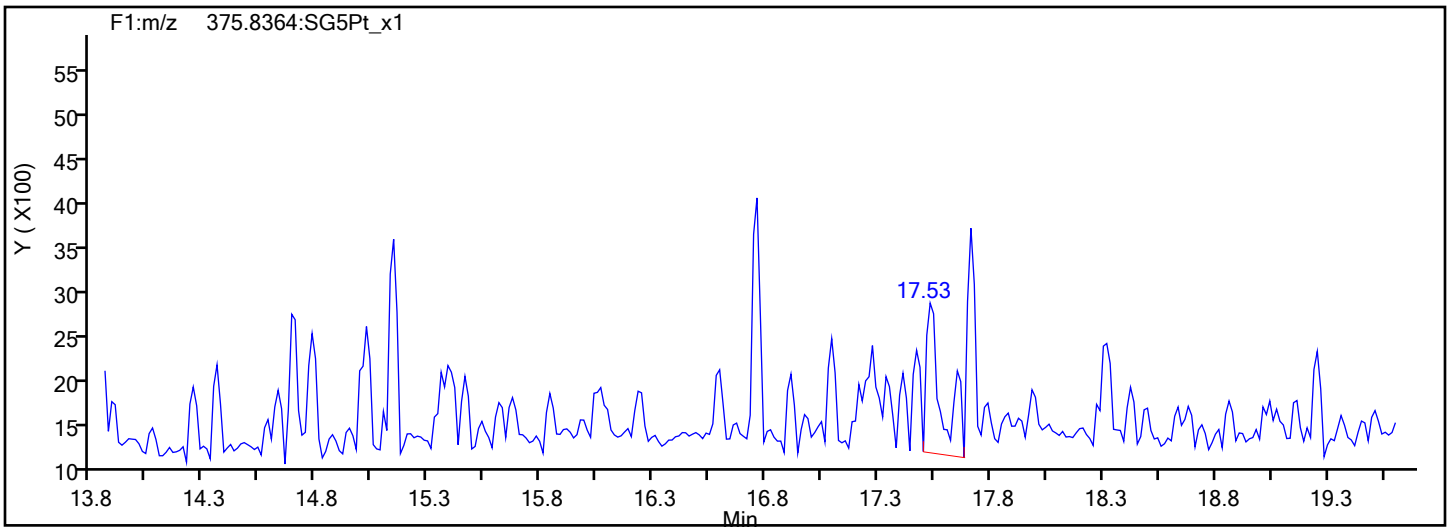
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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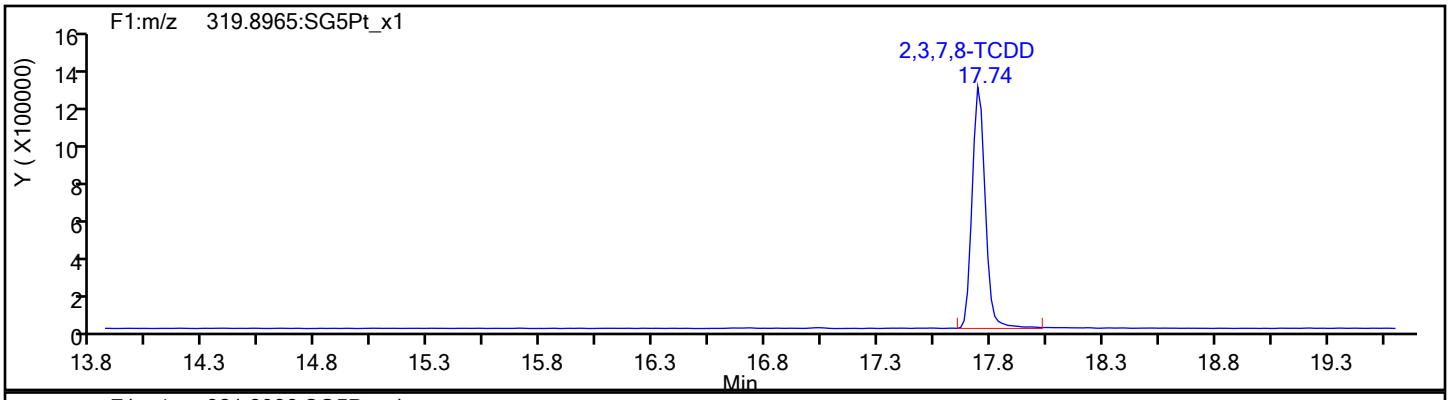
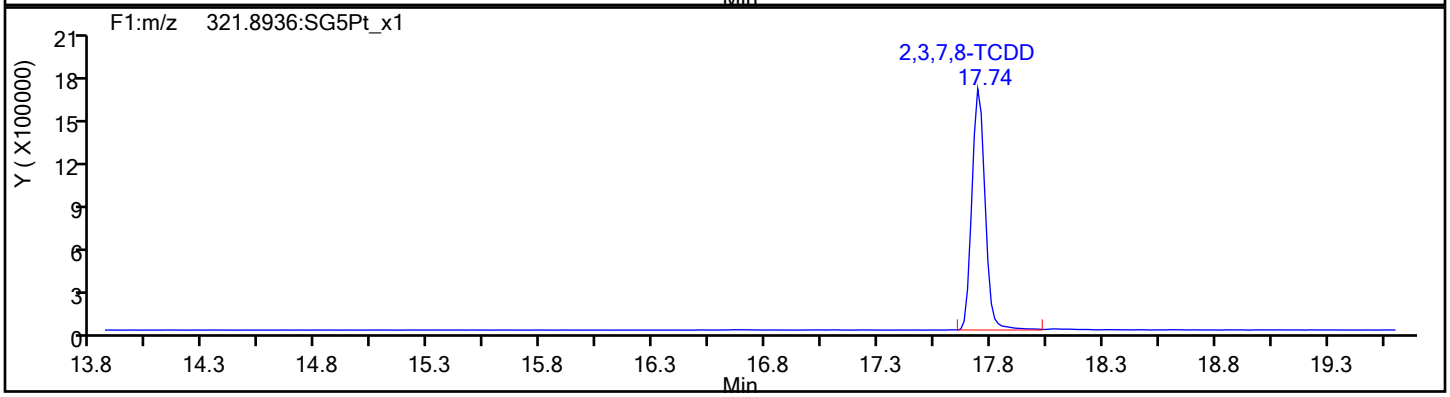
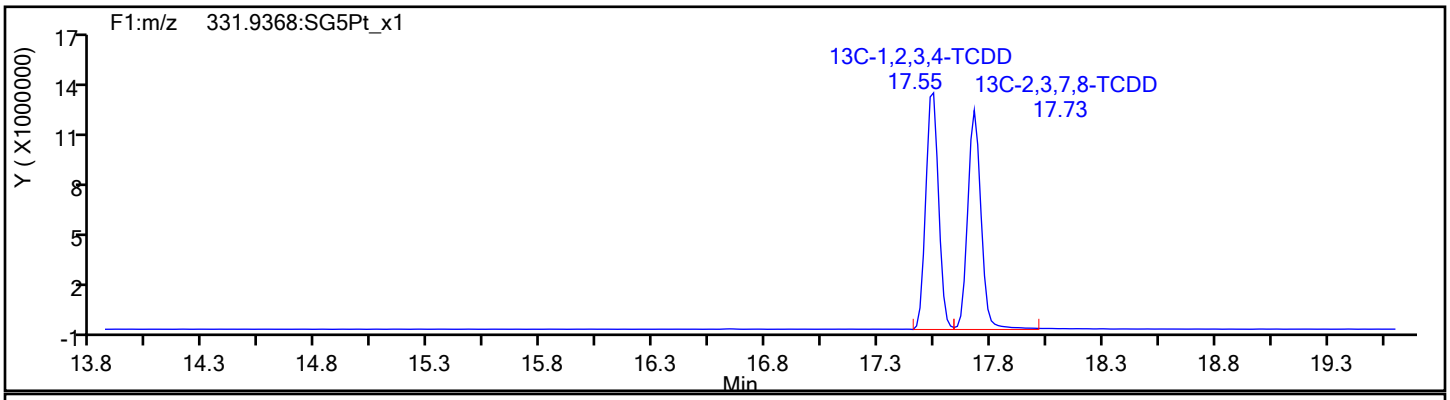
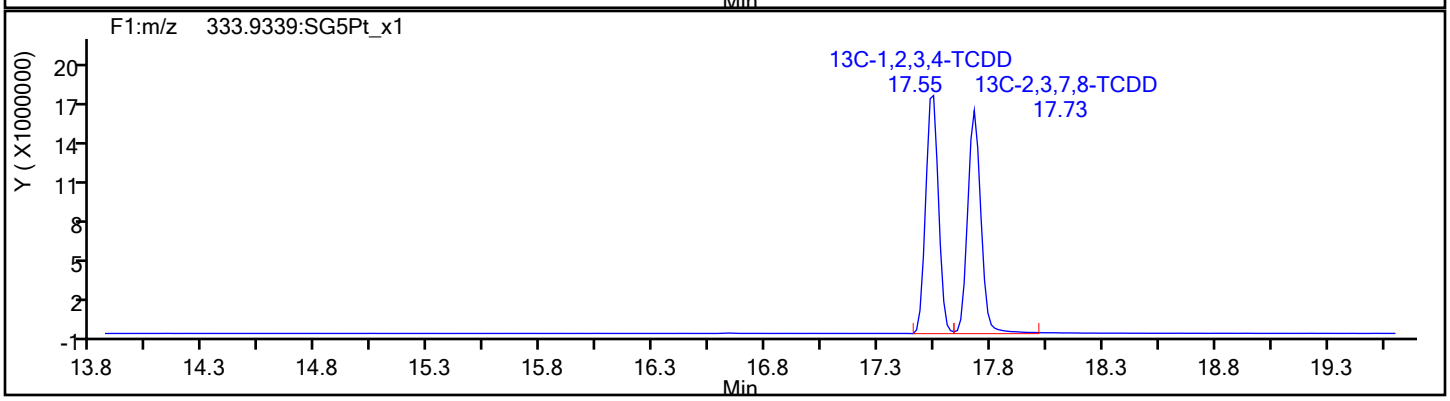
TCDD





TCDD Standards





Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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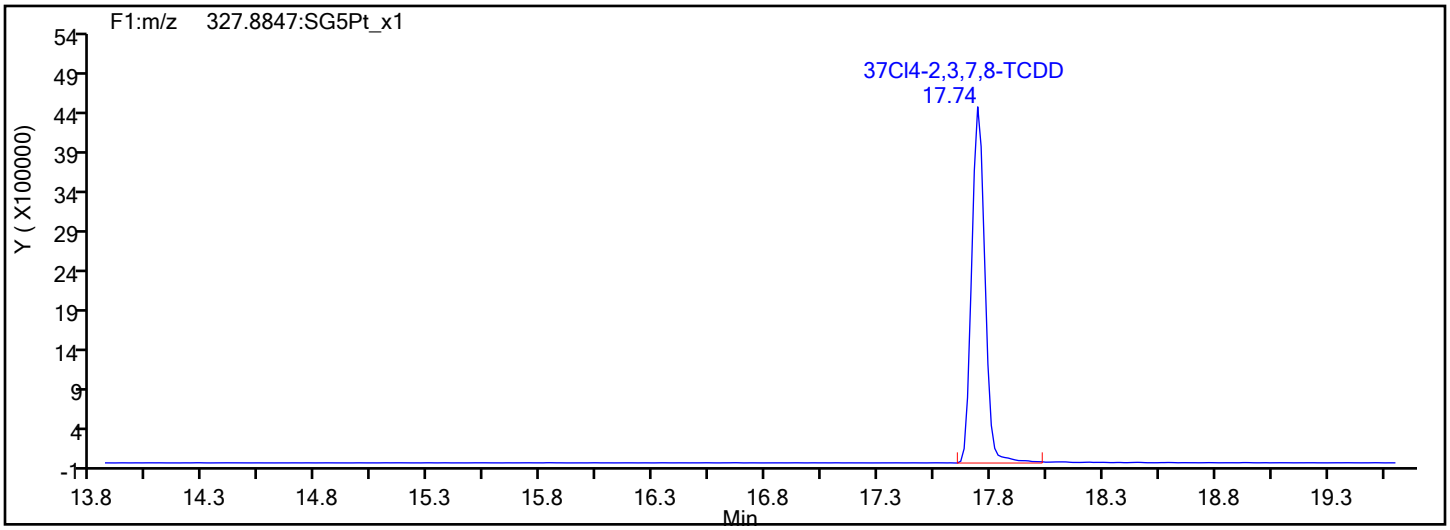
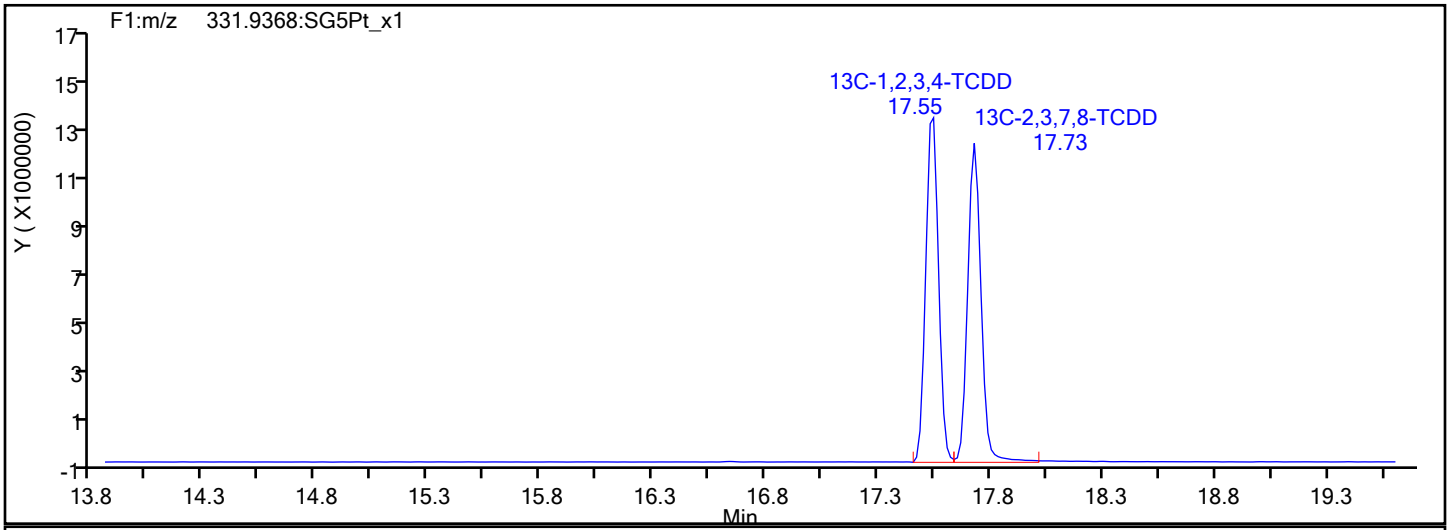
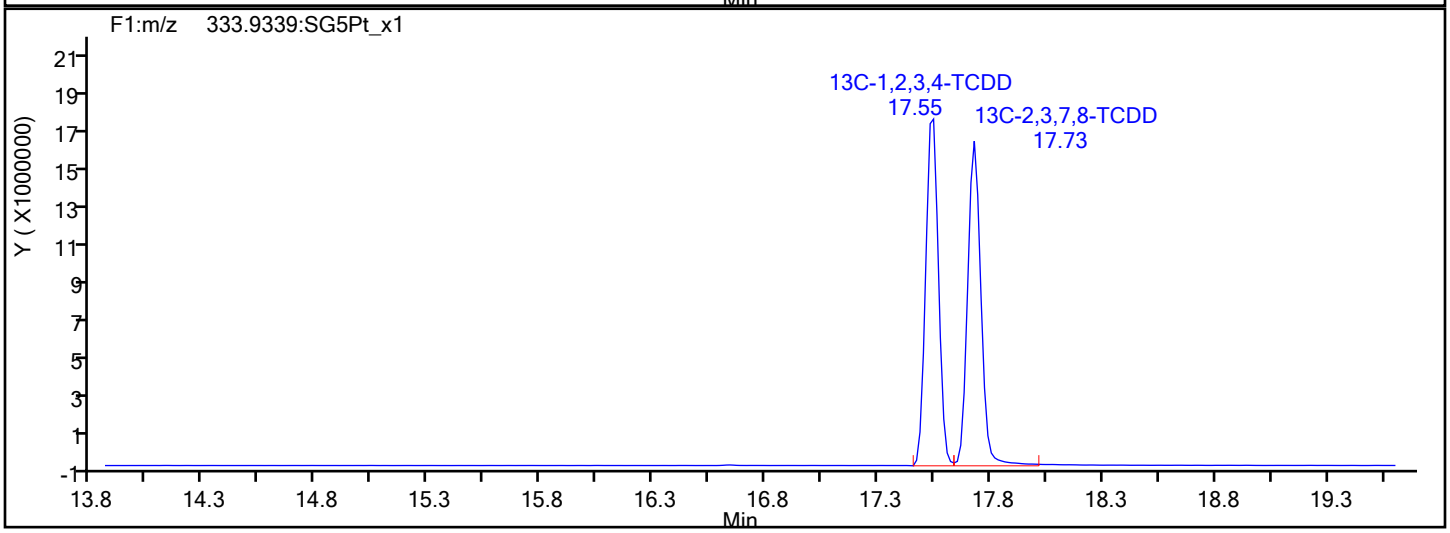
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d

Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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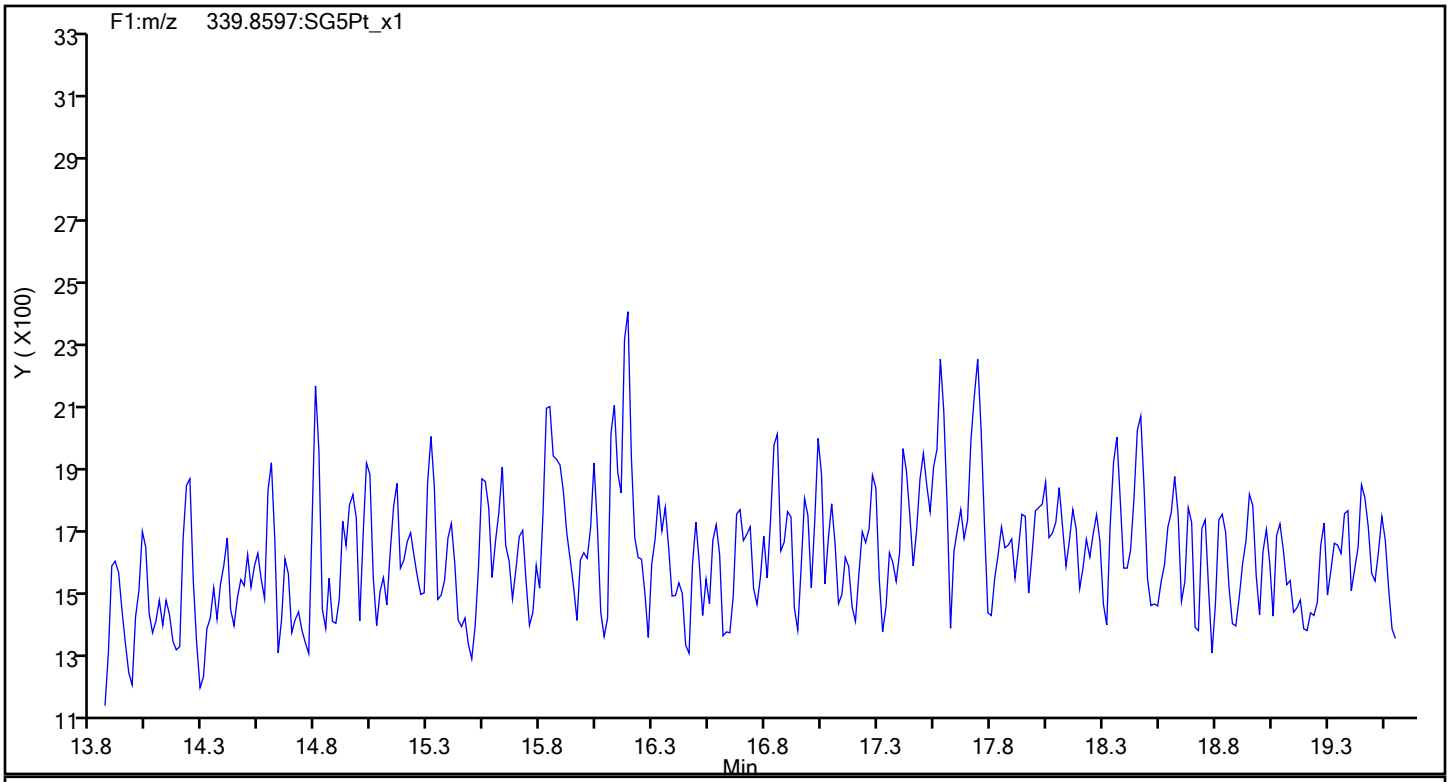
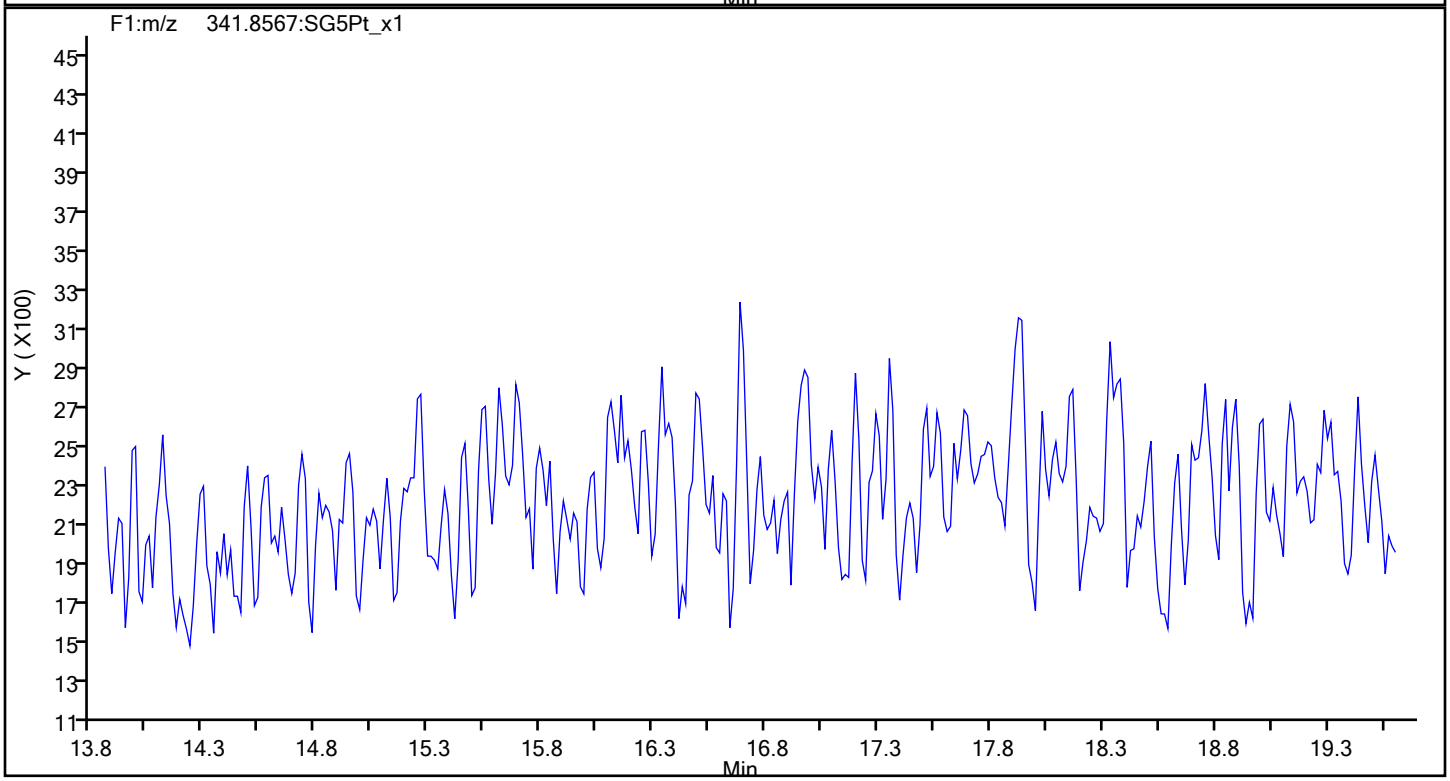
F1 PeCDFs





Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
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Client ID:			
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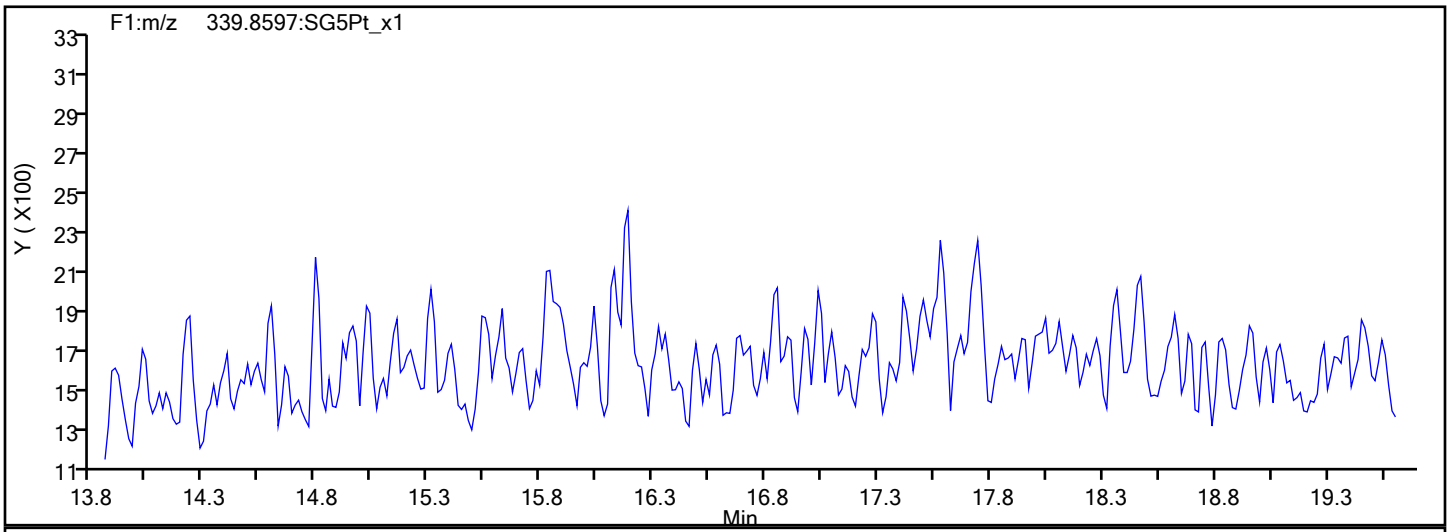
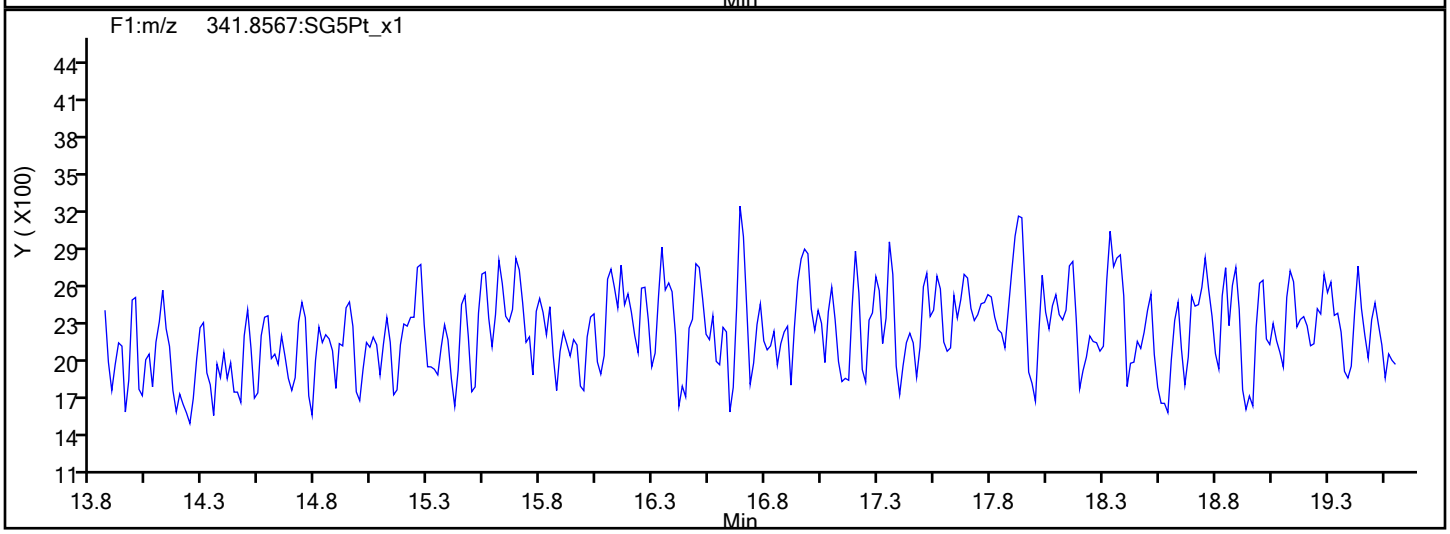
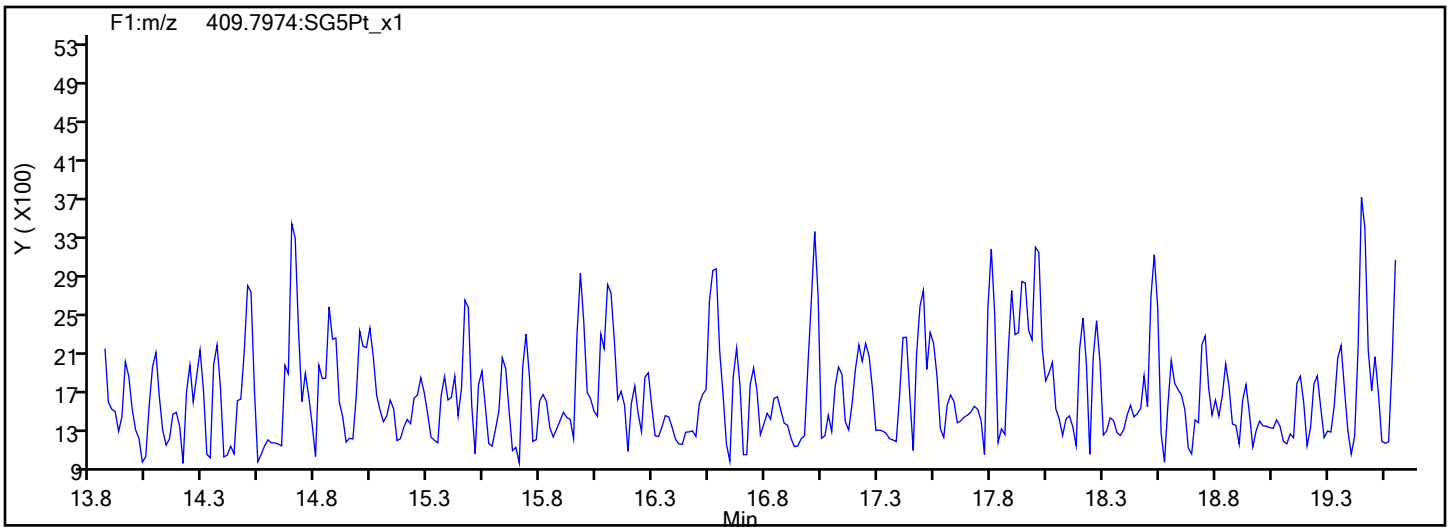
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 14-Nov-2019 16:54:29 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
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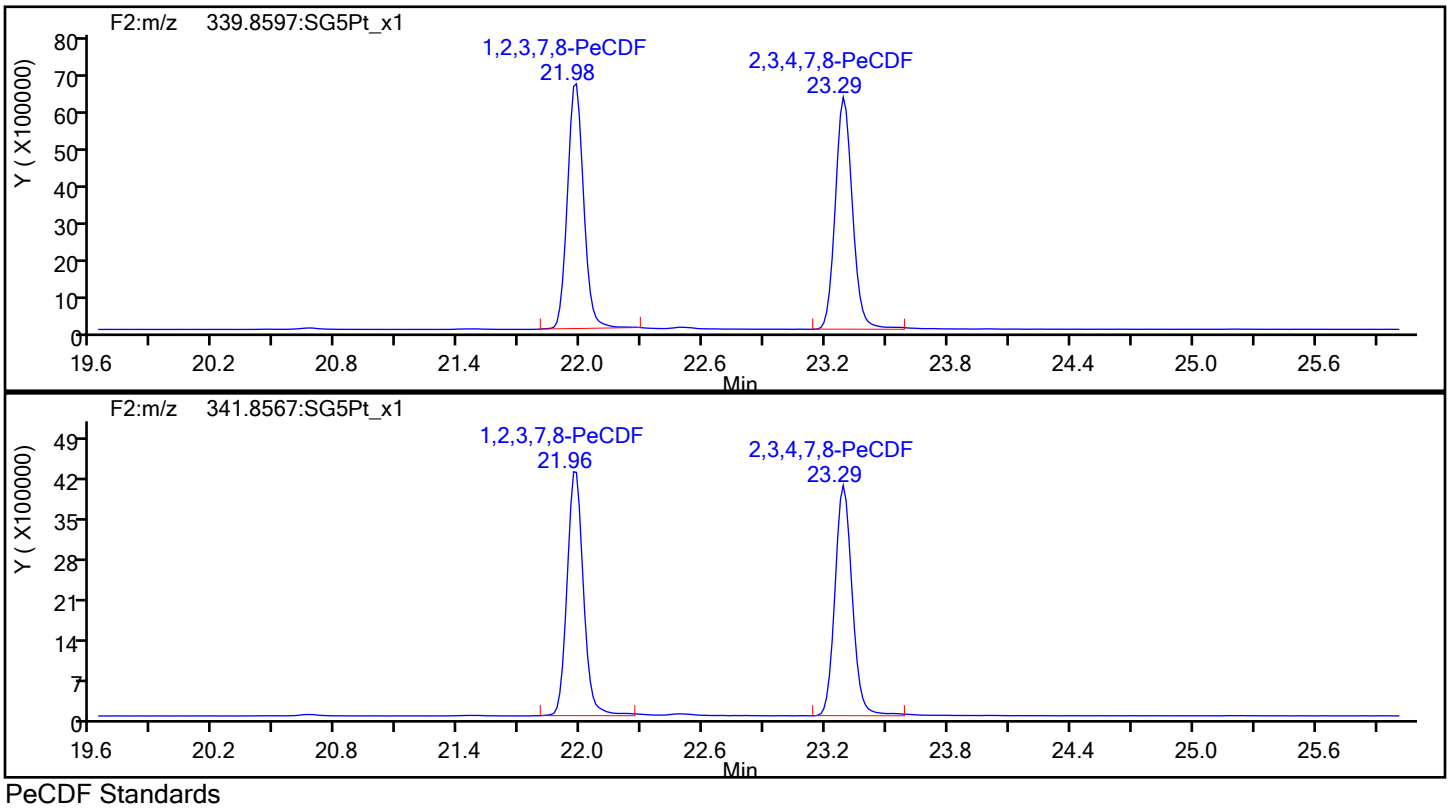
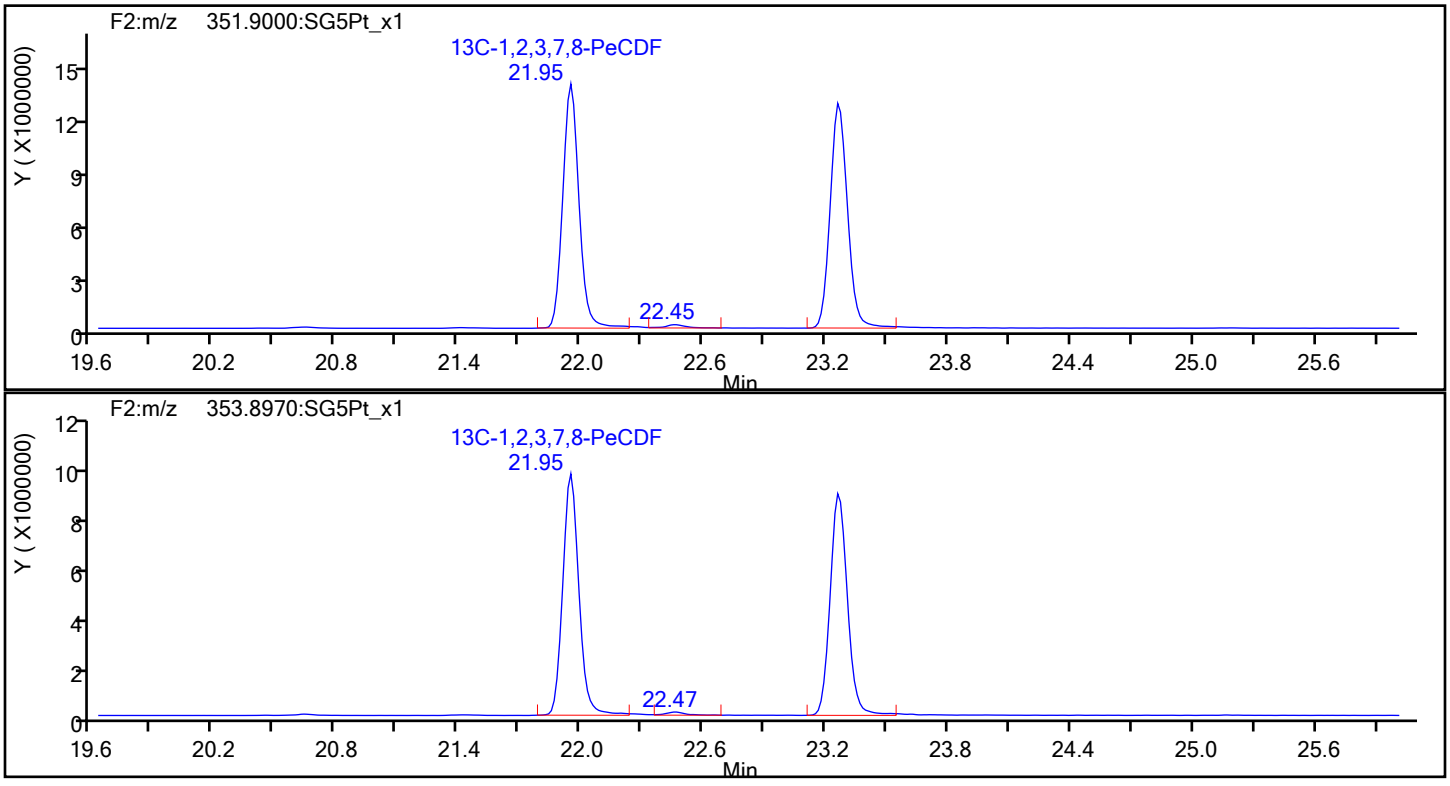
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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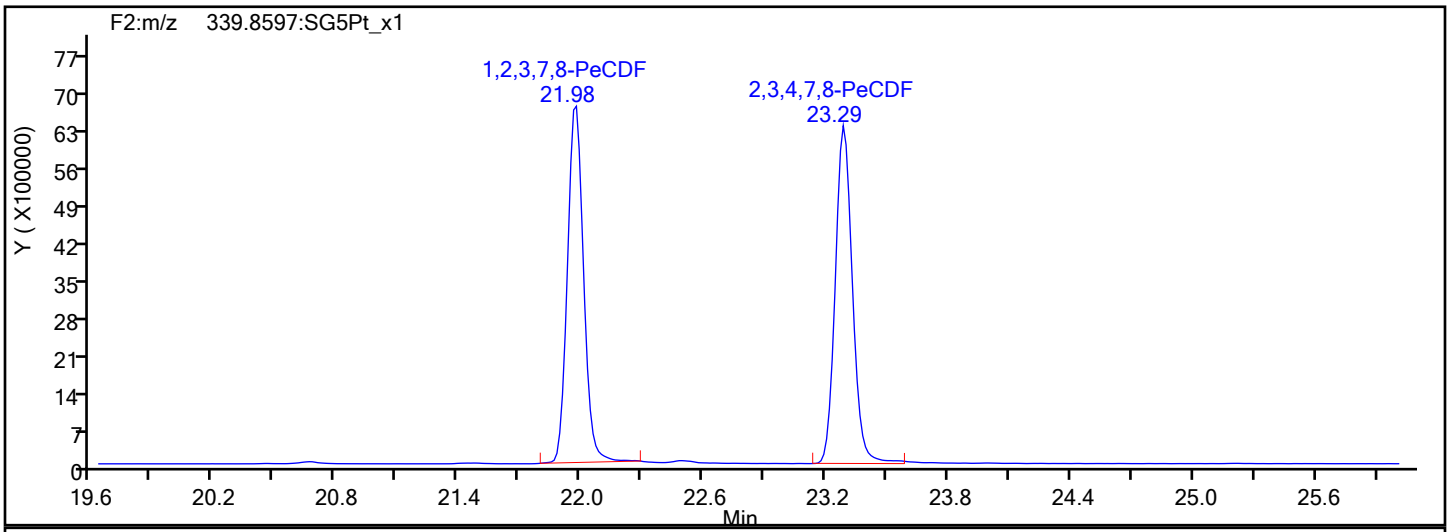
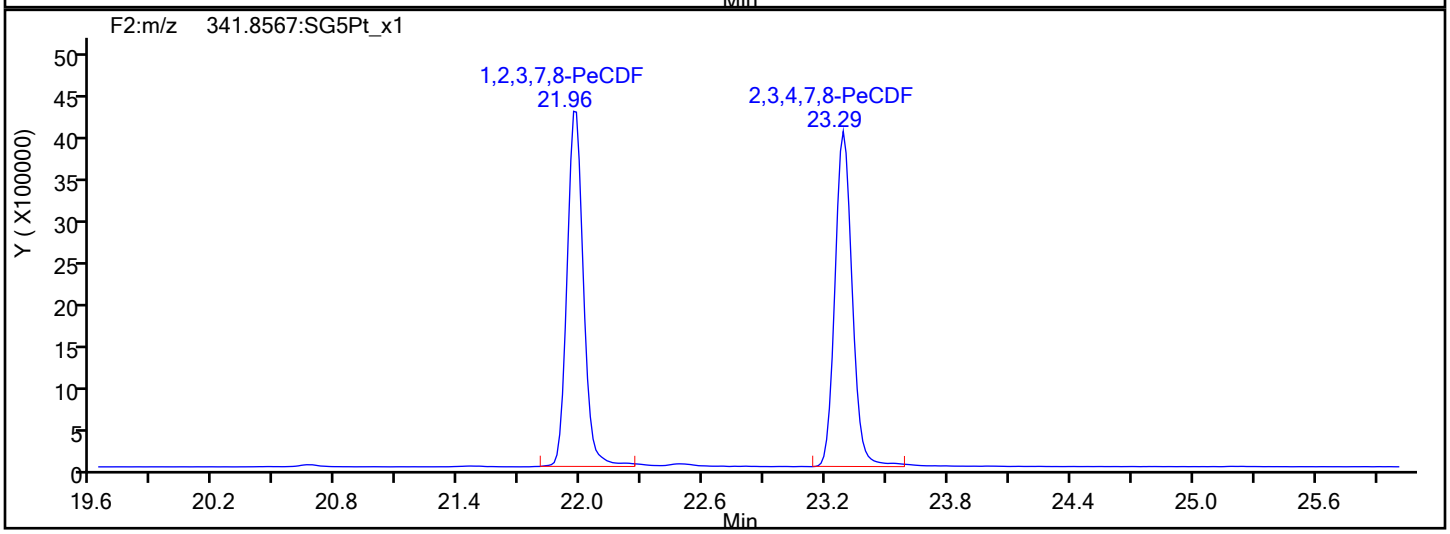
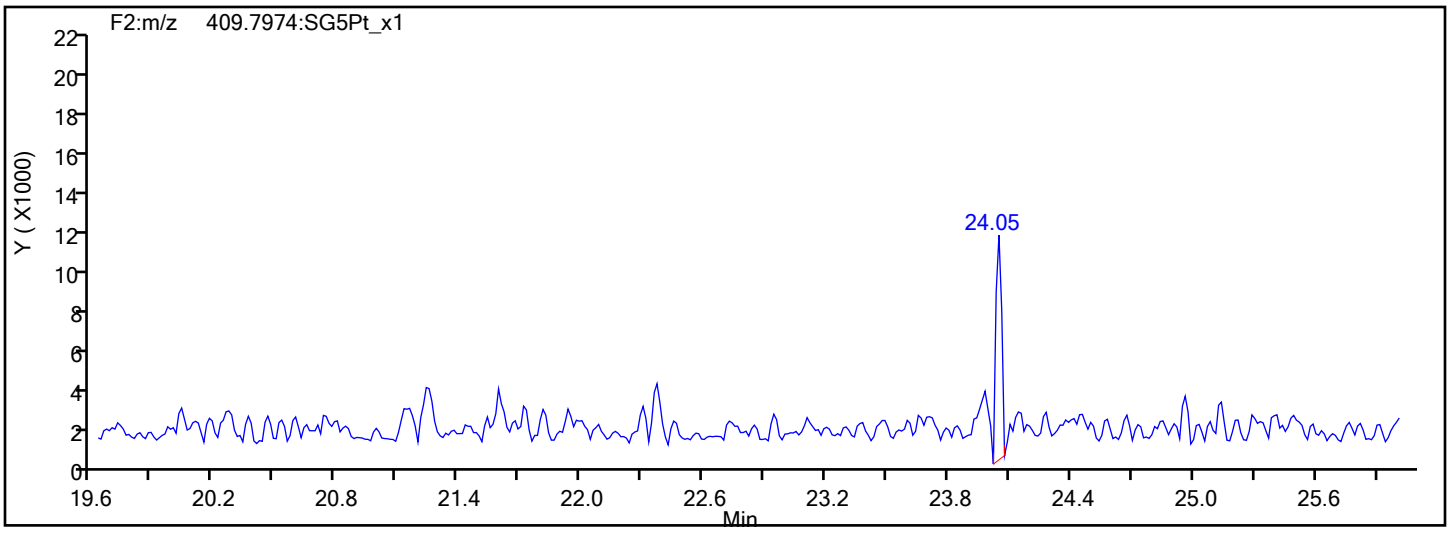
PeCDF





PeCDF Interference Mass



Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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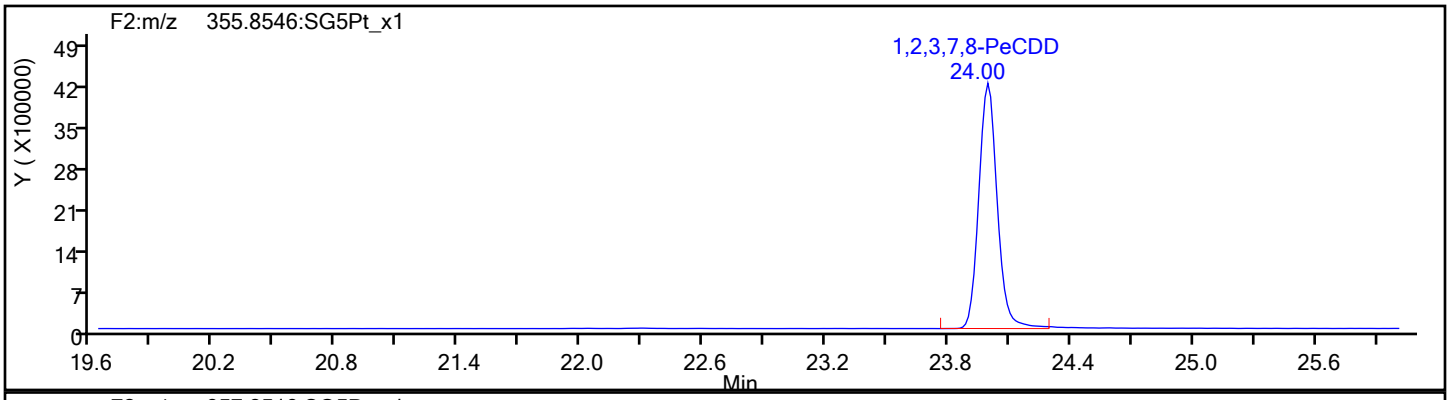
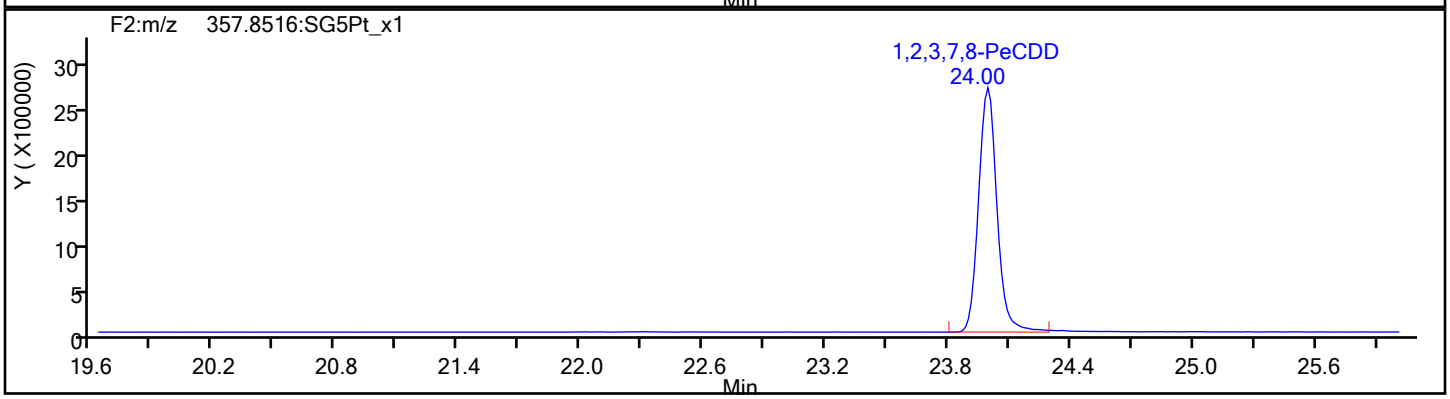
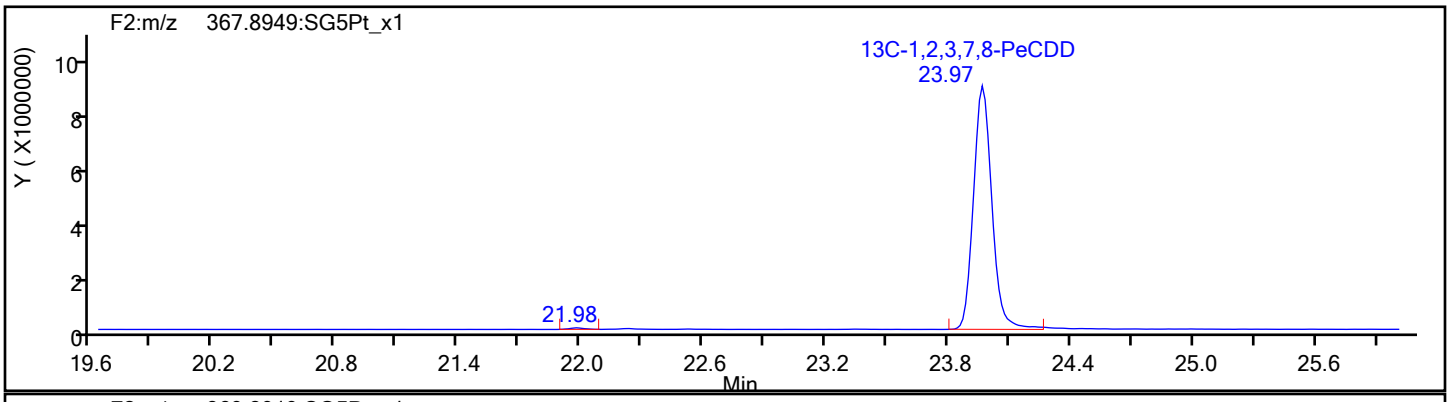
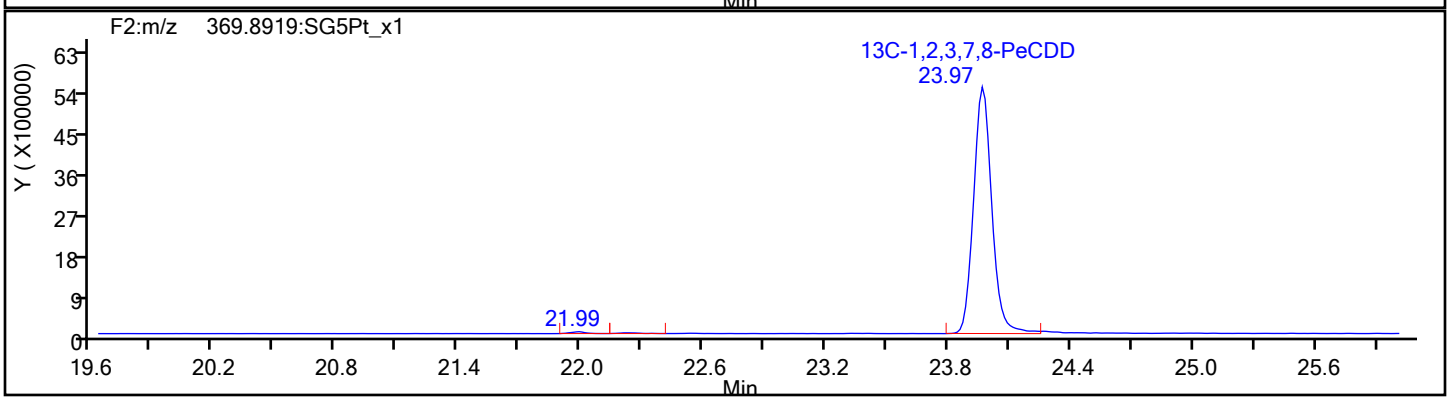
PeCDD





PeCDD Standards





Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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Injection Date: 14-Nov-2019 11:18:54 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

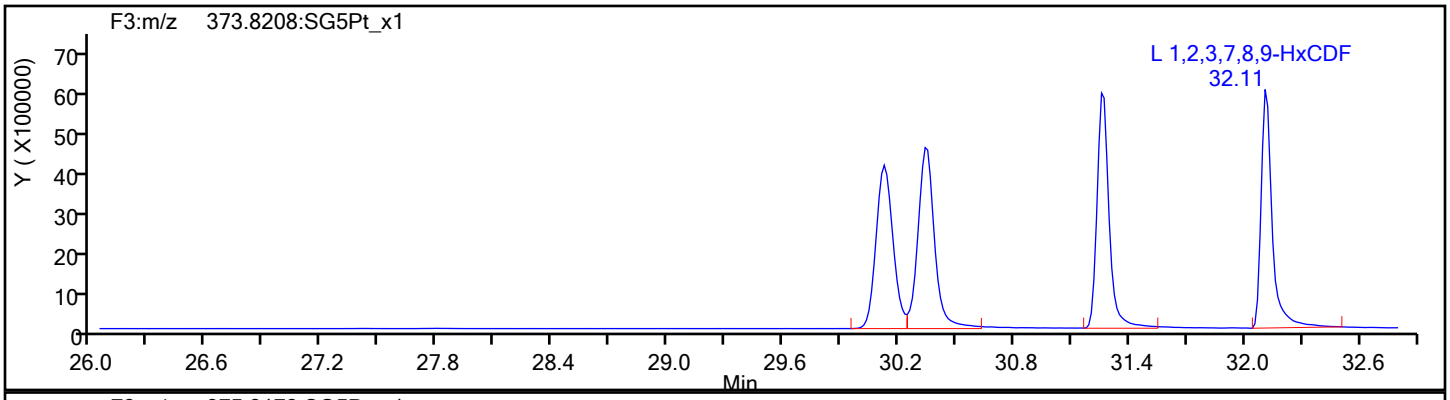
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

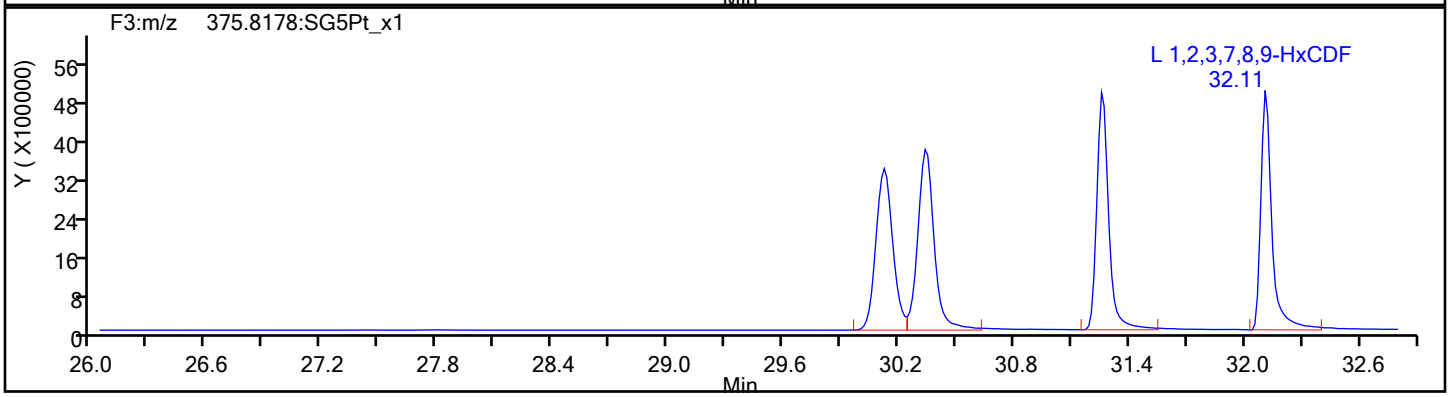
Client ID:

Worklist#: 338471 Sample Line#: 5

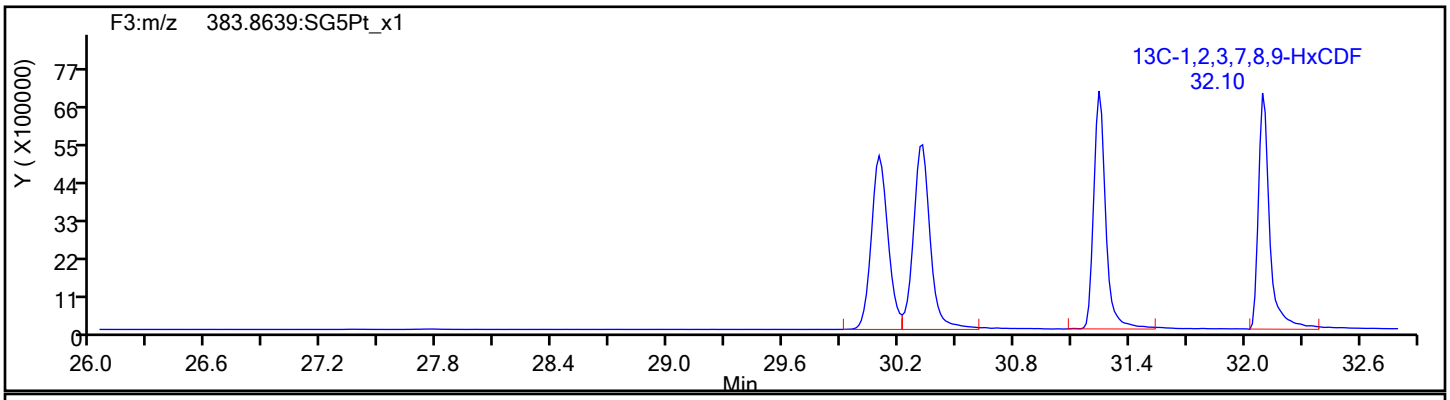
Column Type: DB-5 Column Dia: 0.32 mm

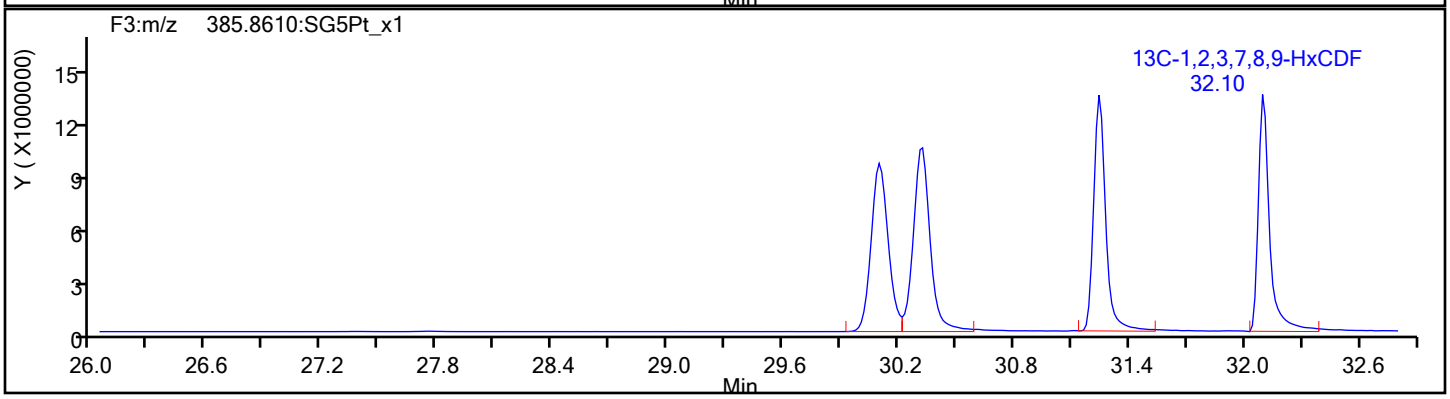
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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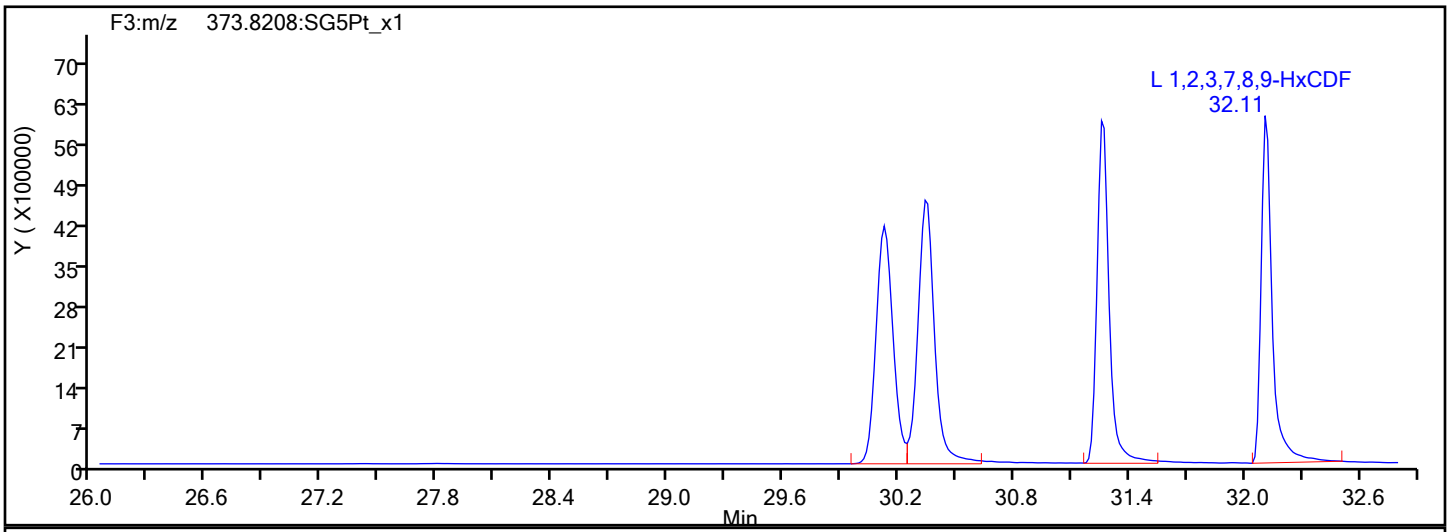
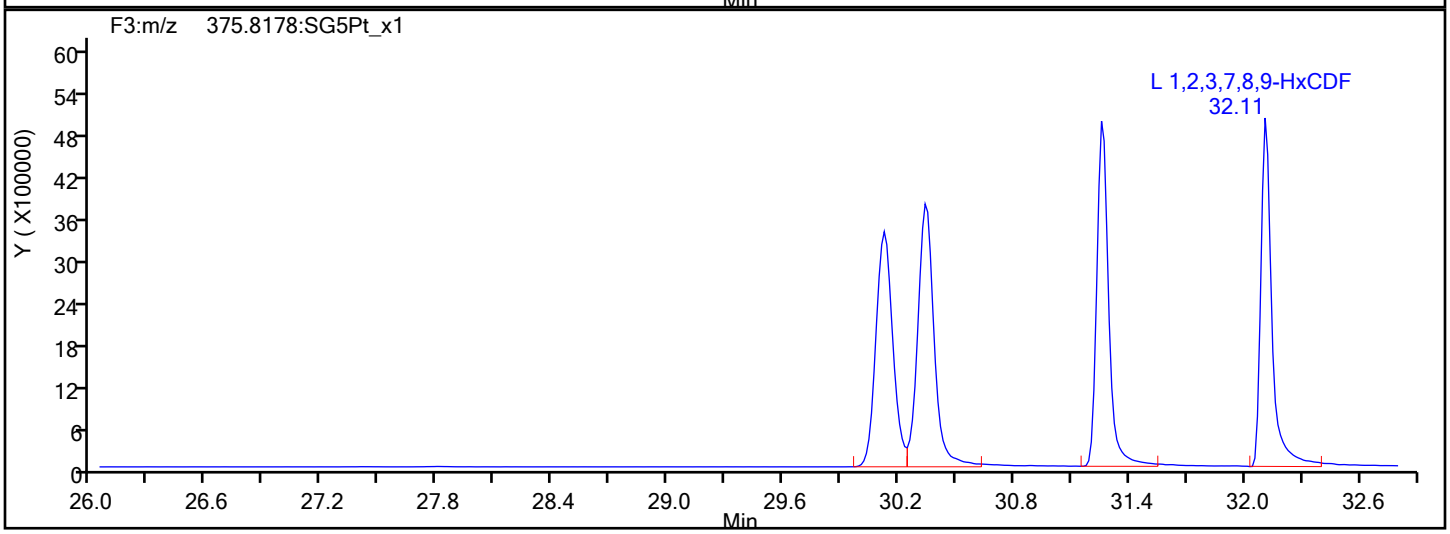
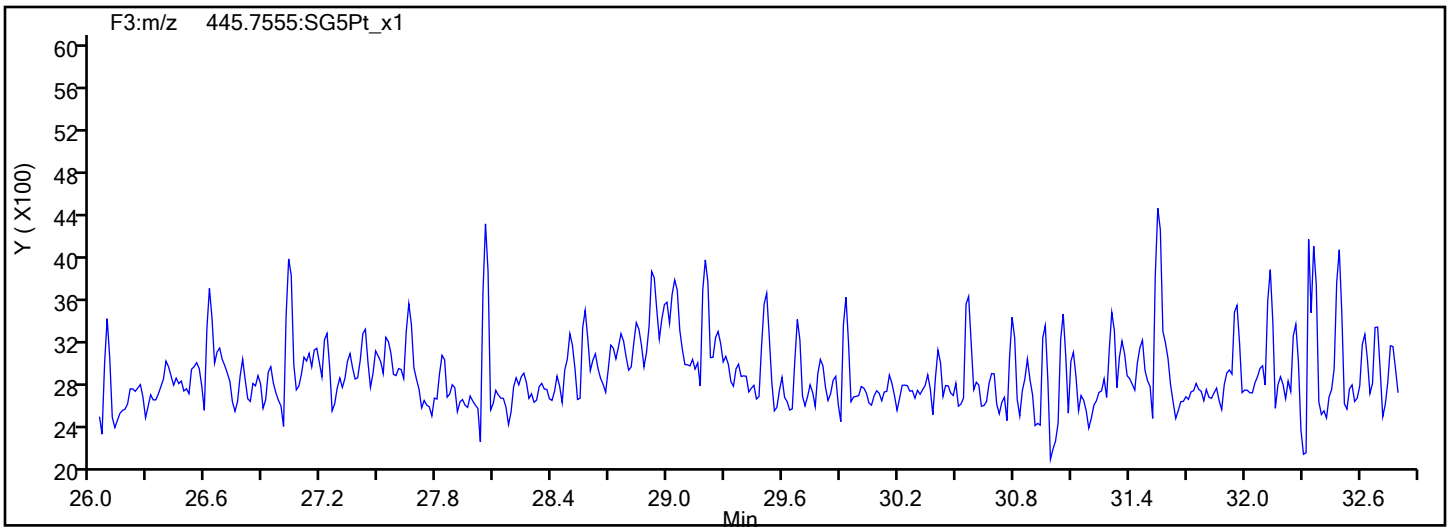
HxCDF





HxCDF Interference Mass



Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
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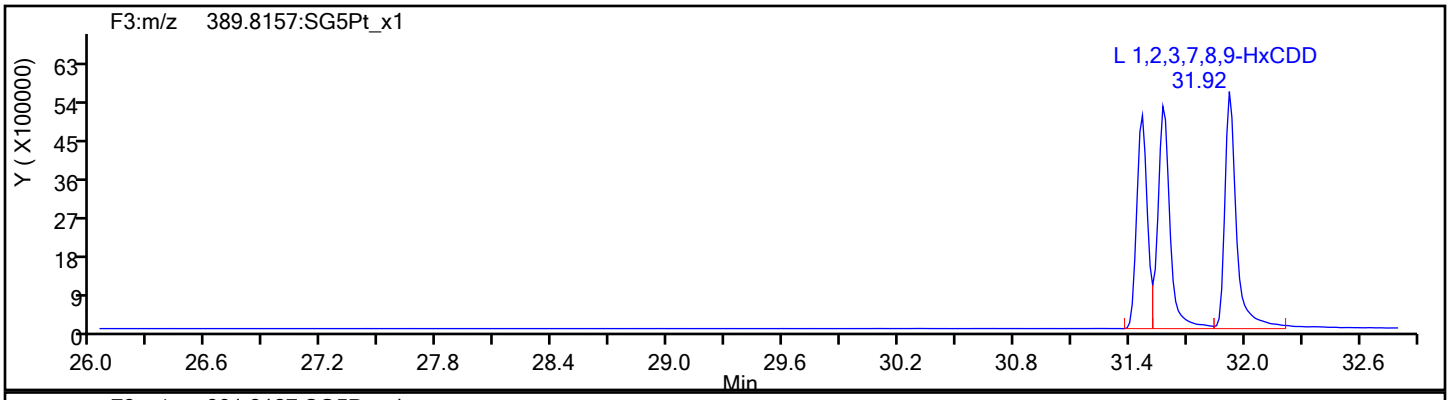
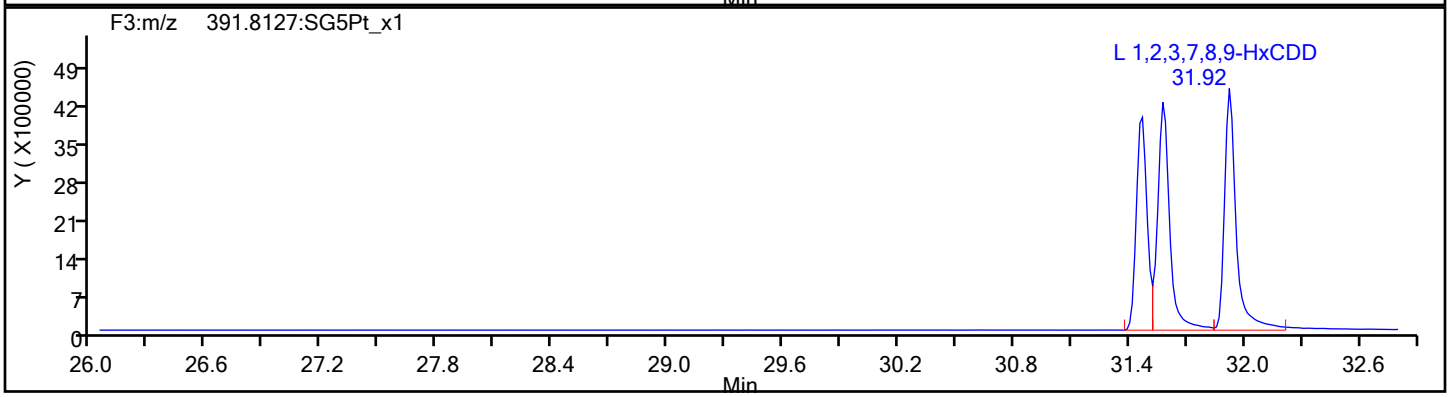
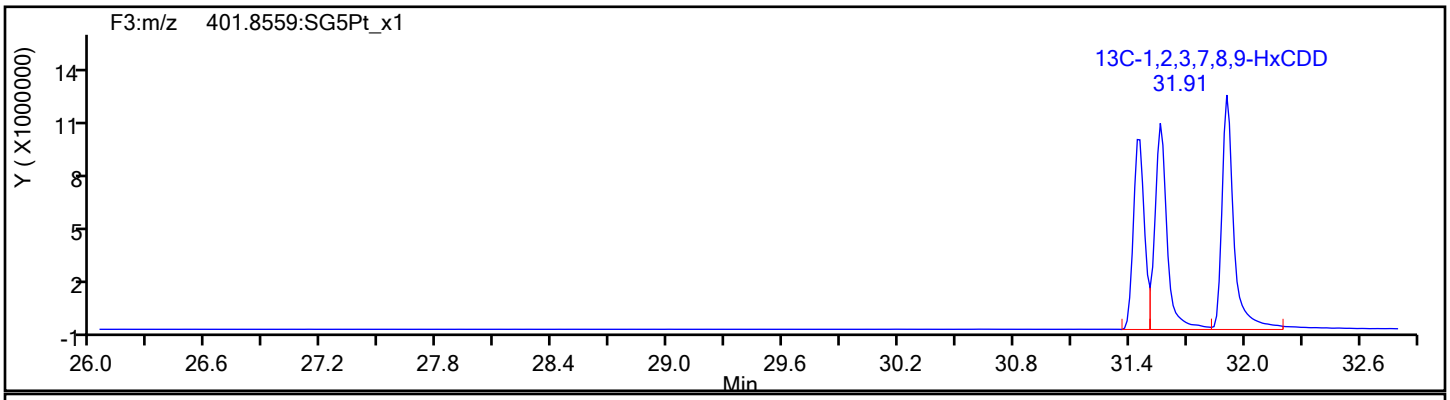
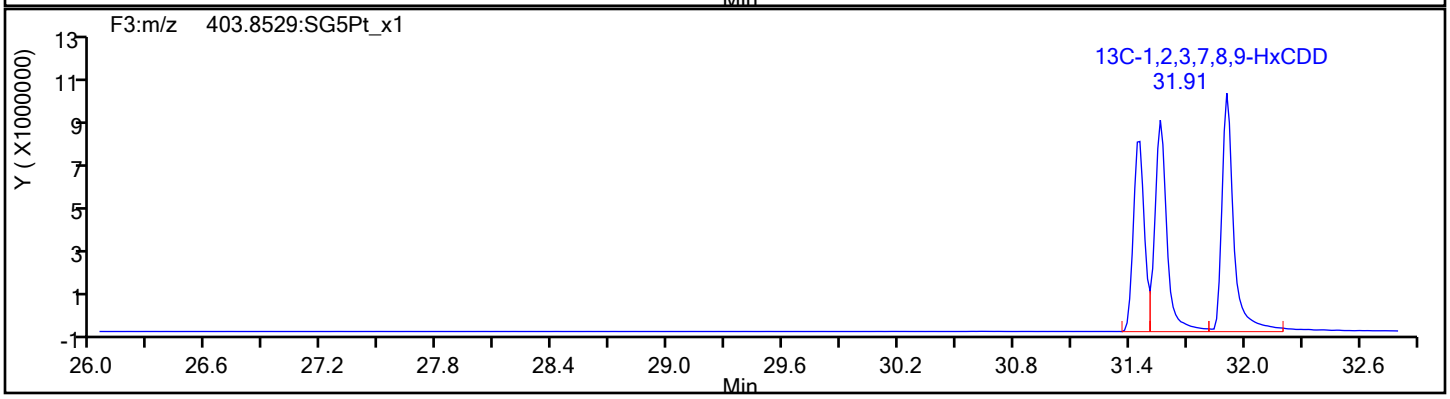
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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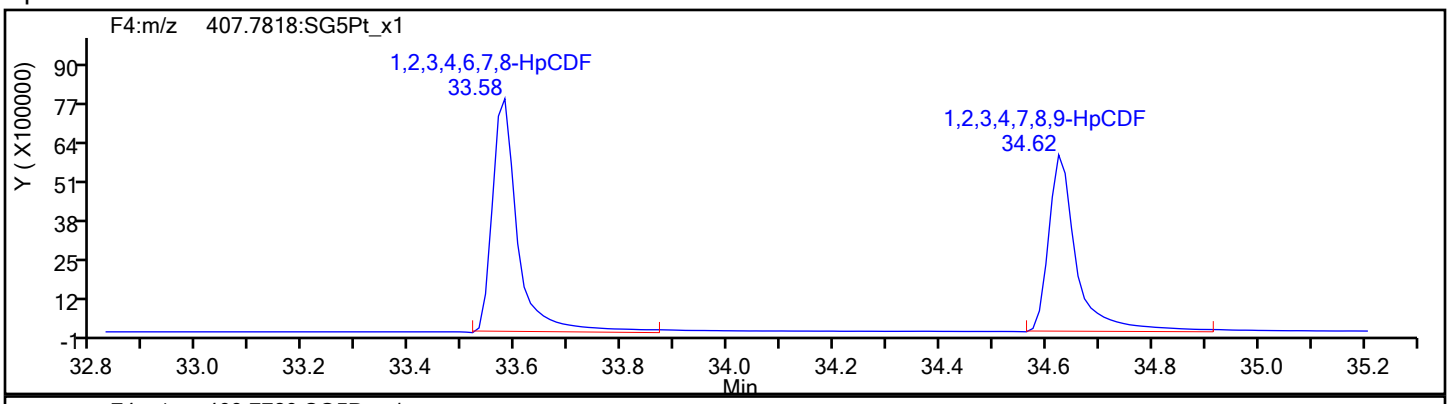
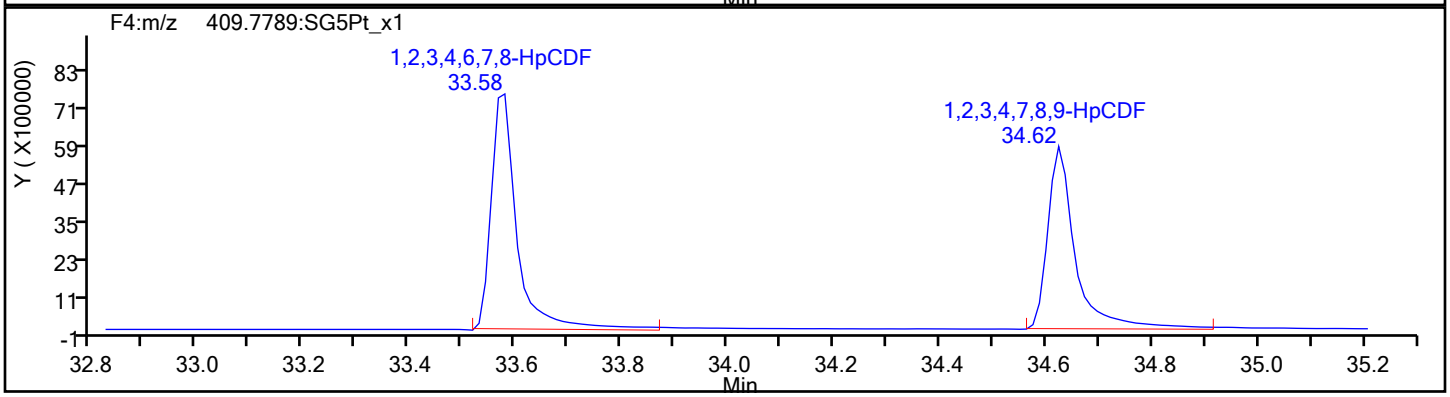
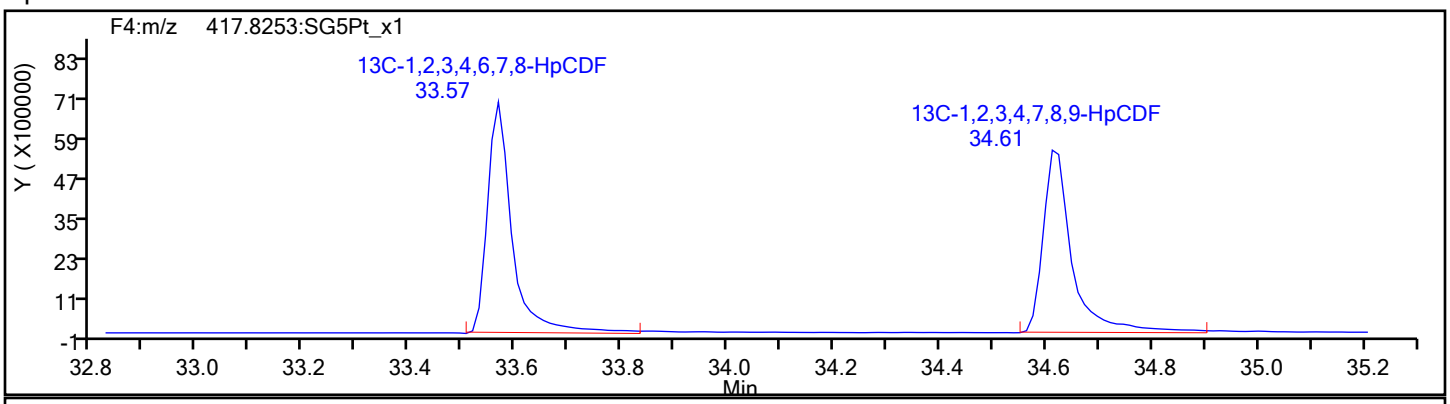
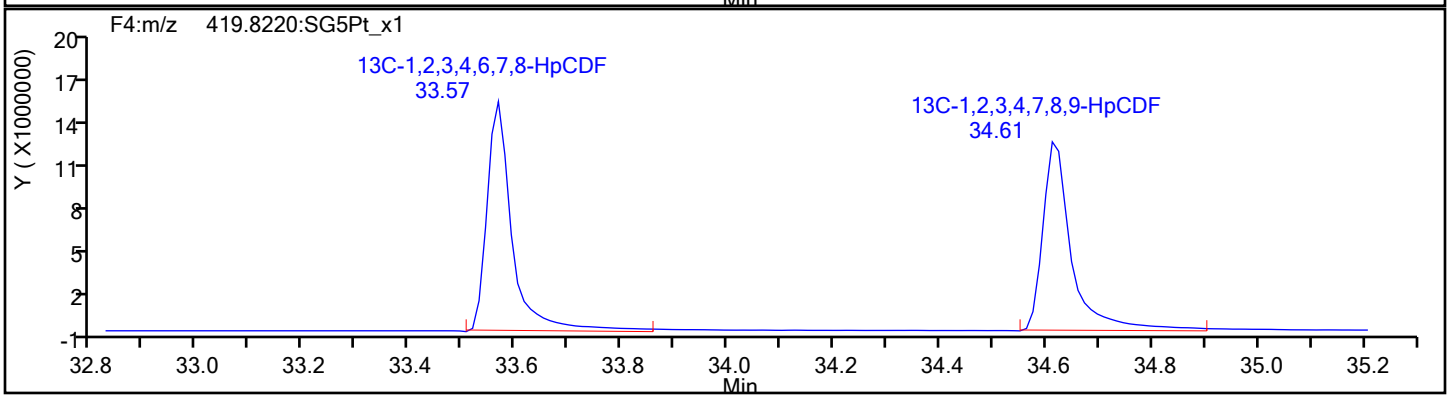
HpCDF





HpCDF Standards





Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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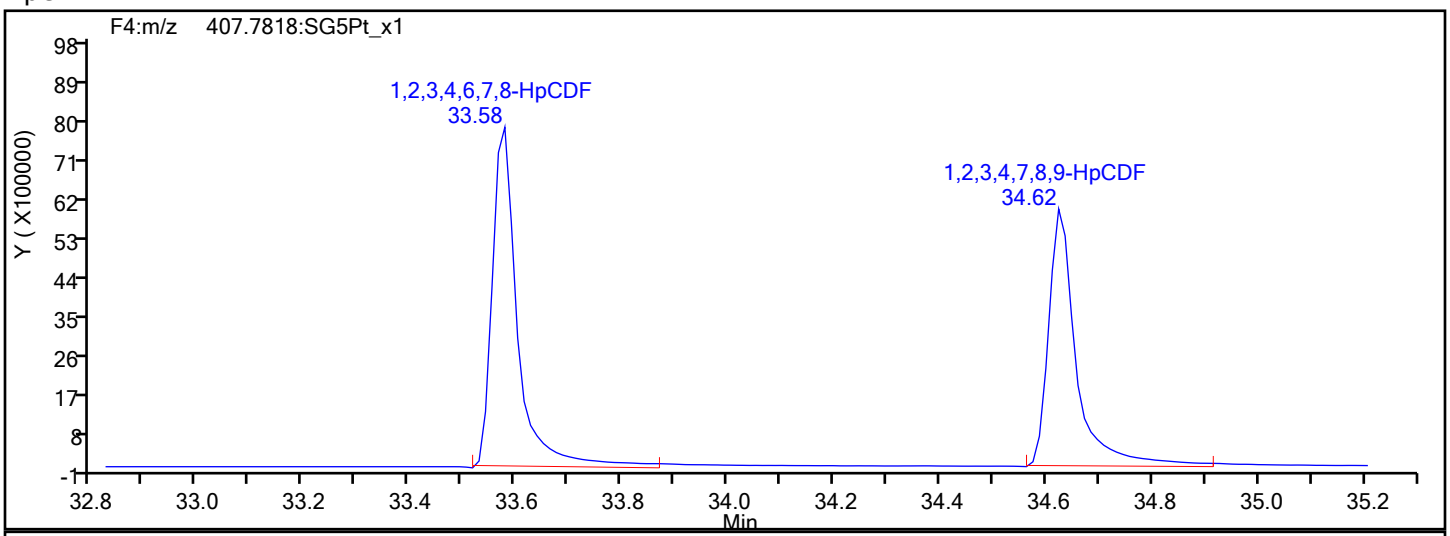
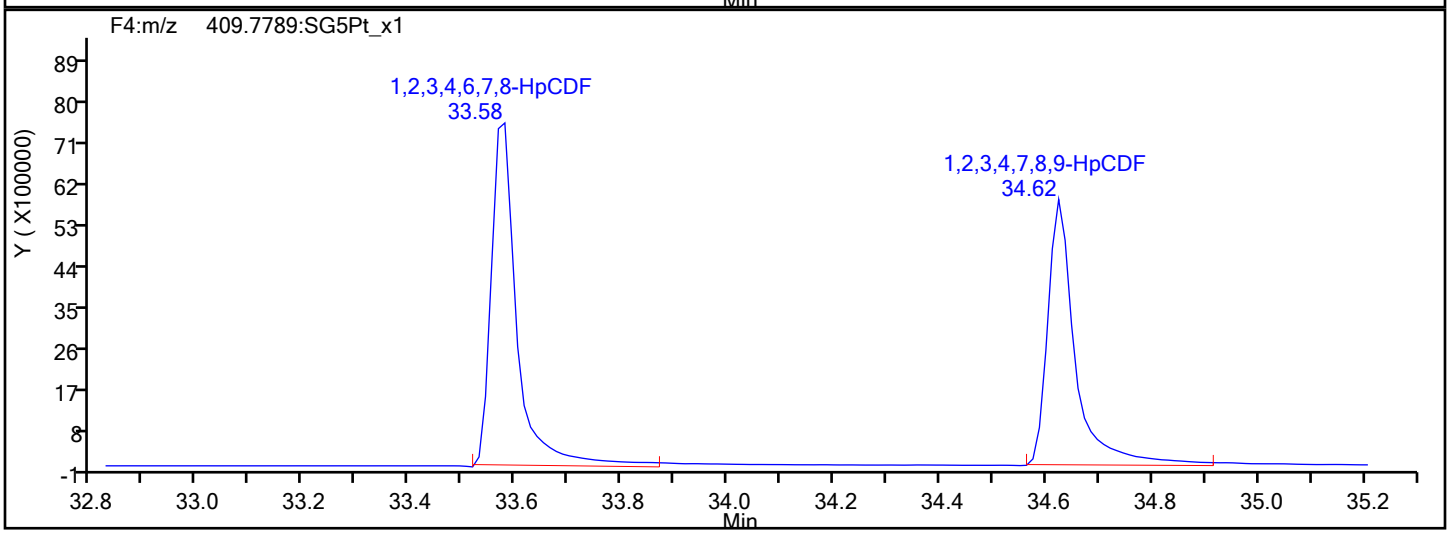
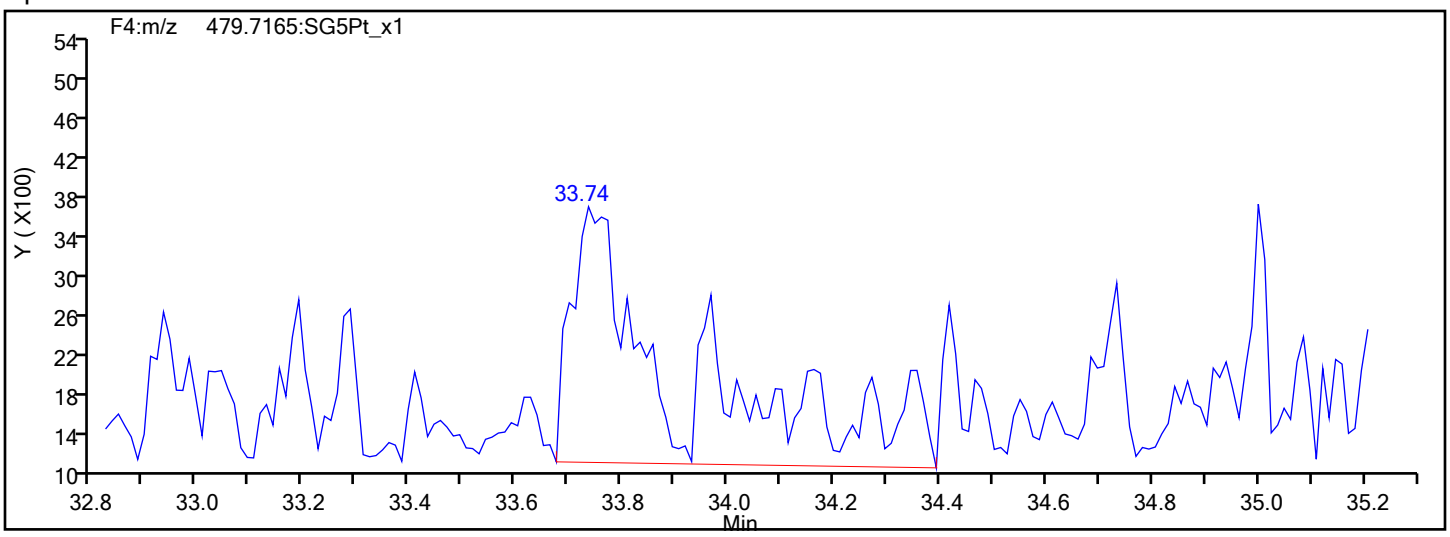
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

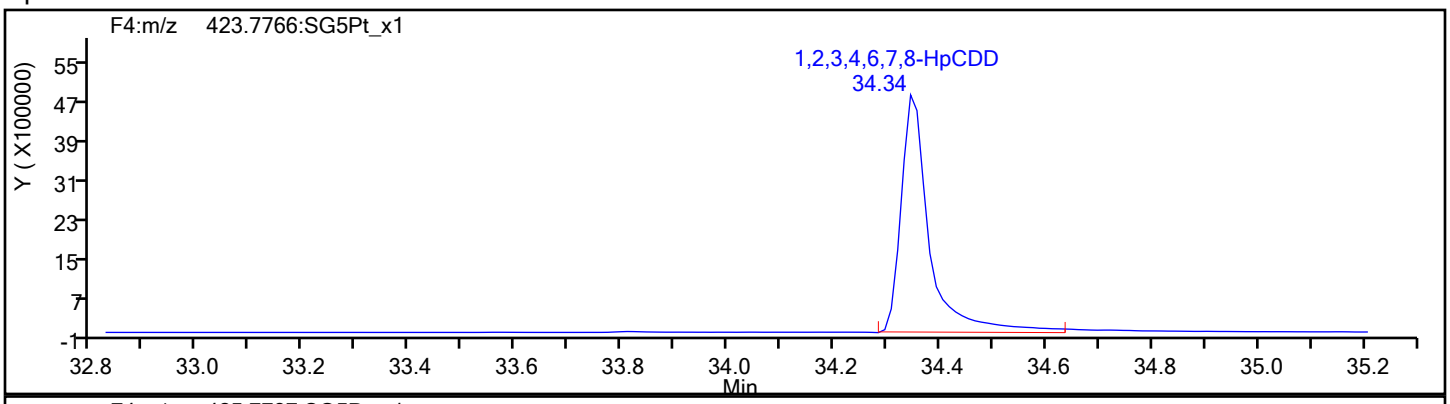


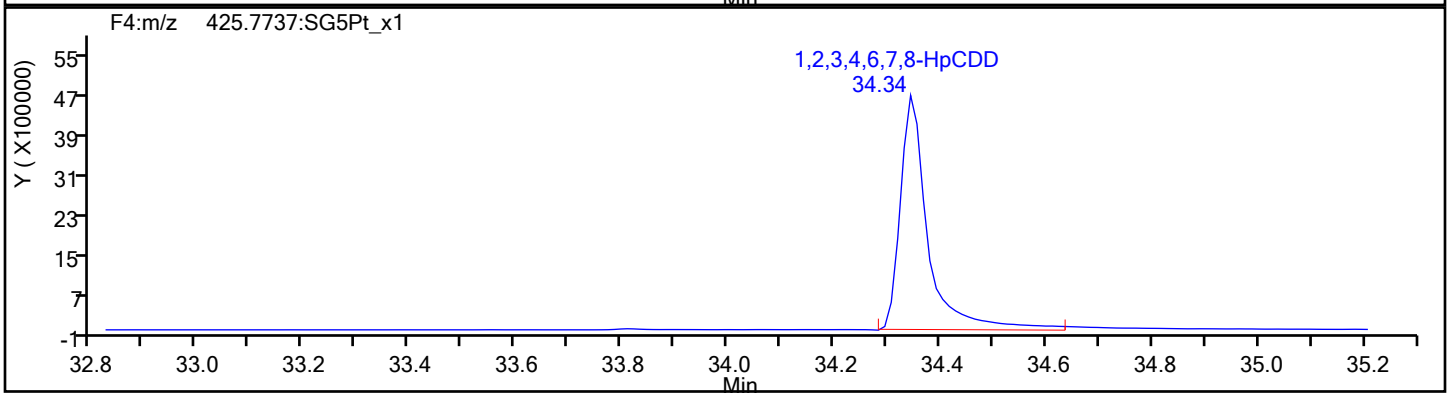
Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

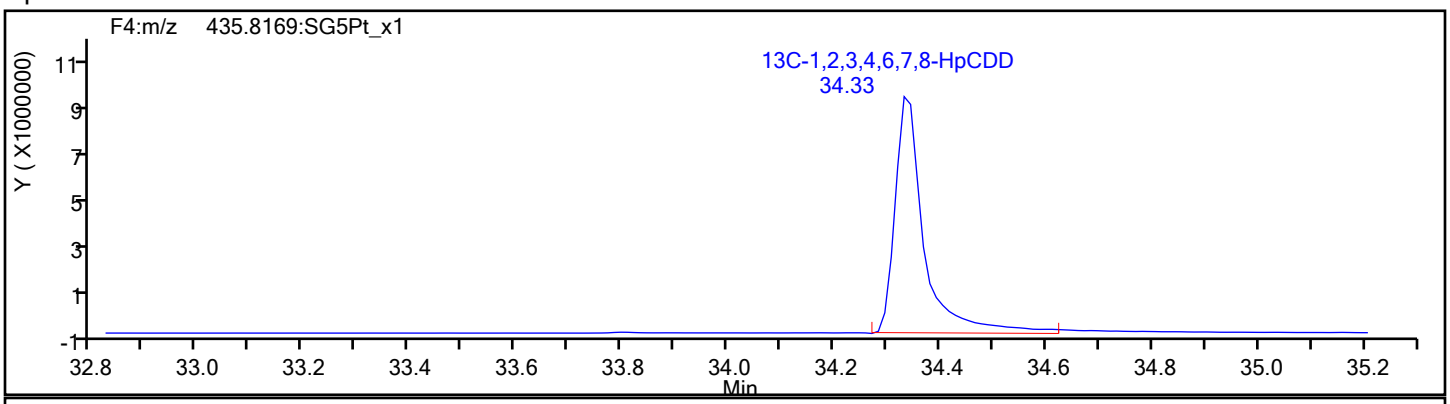
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

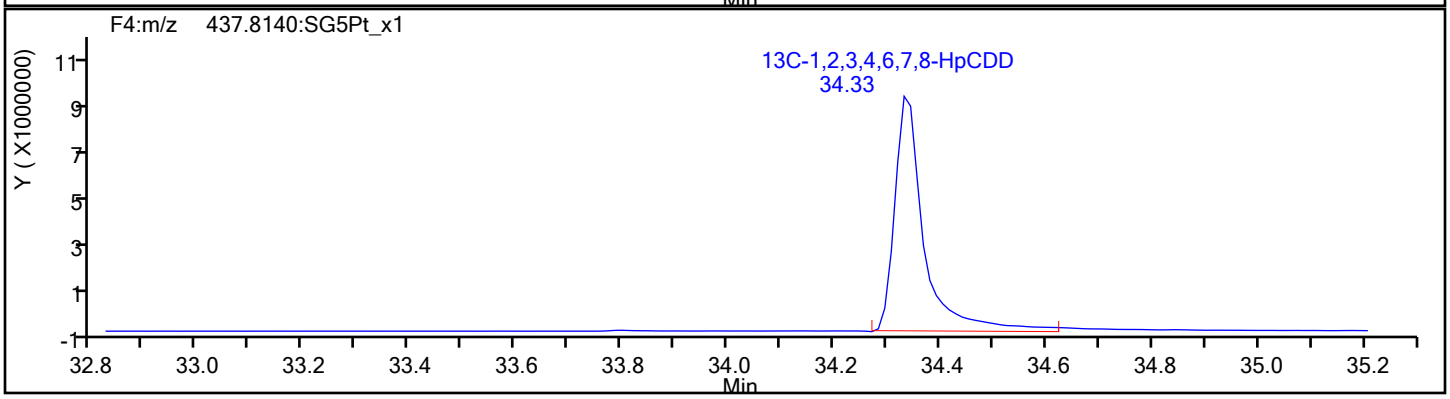
HpCDD





HpCDD Standards





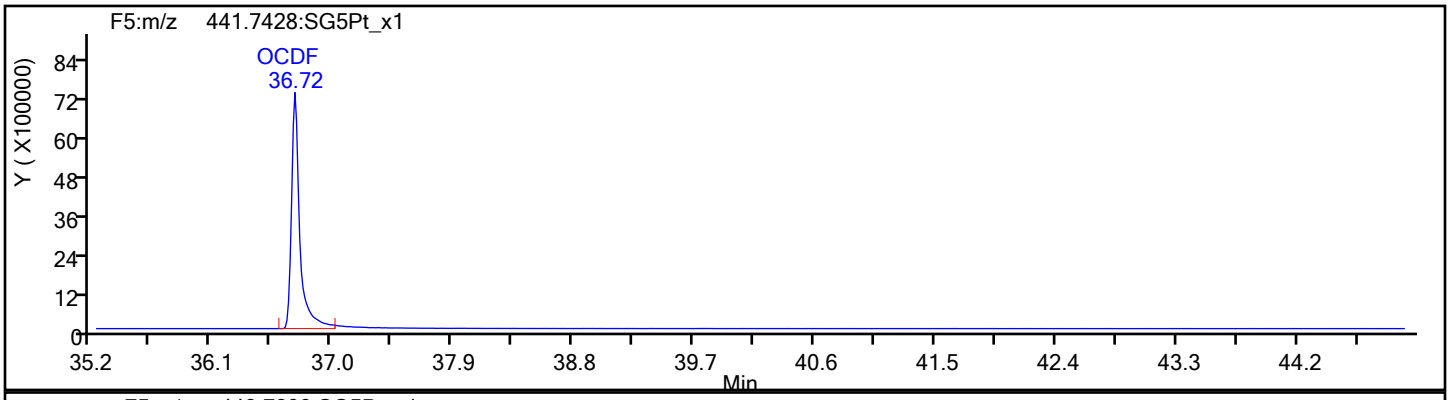
Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

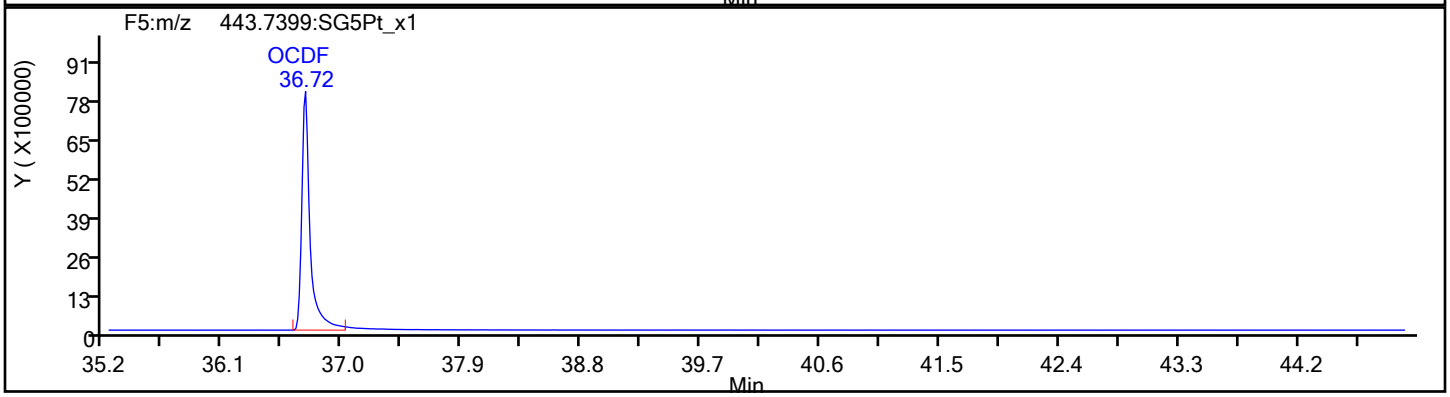
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d

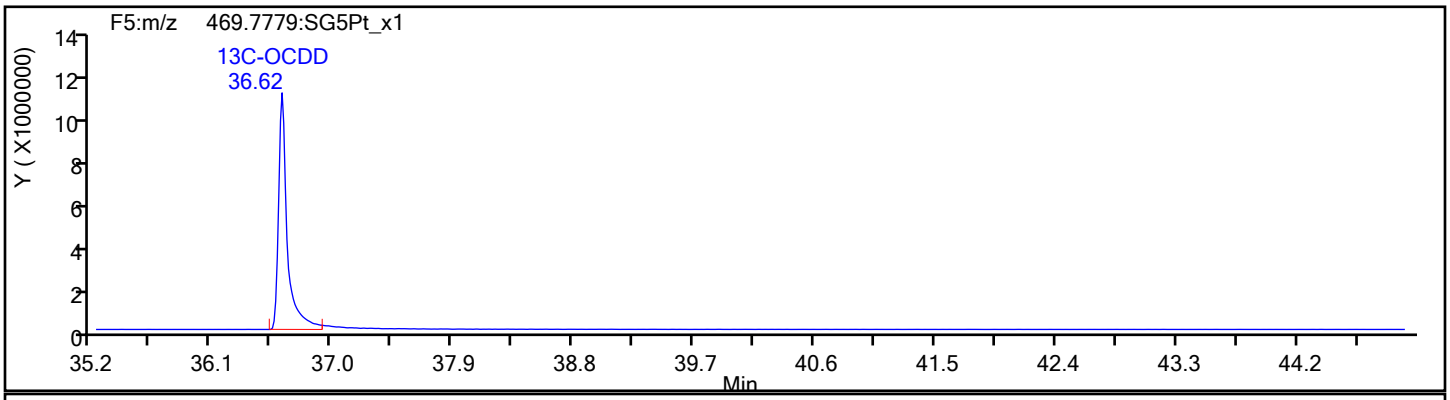
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

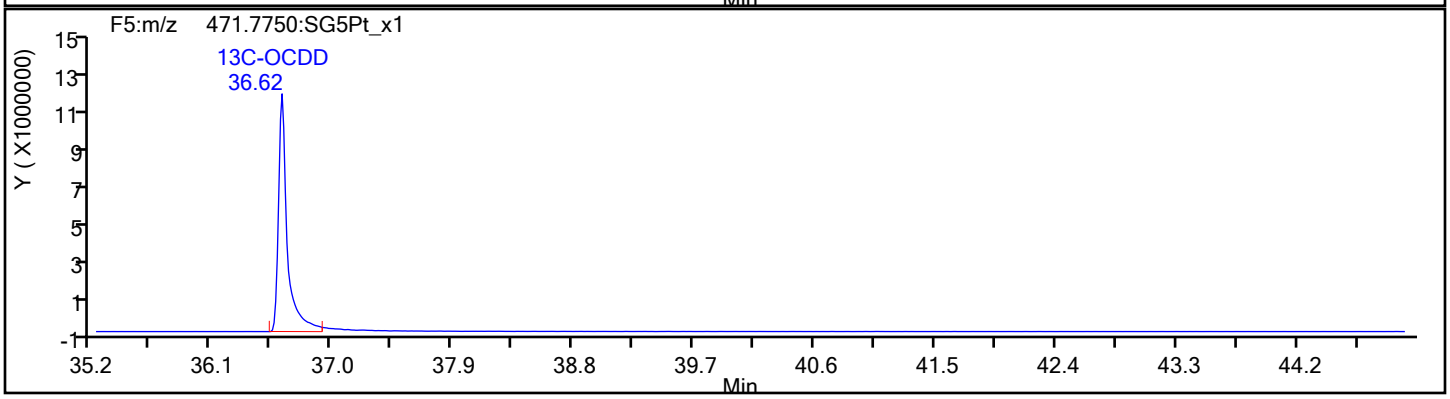
OCDF





OCDF Standards



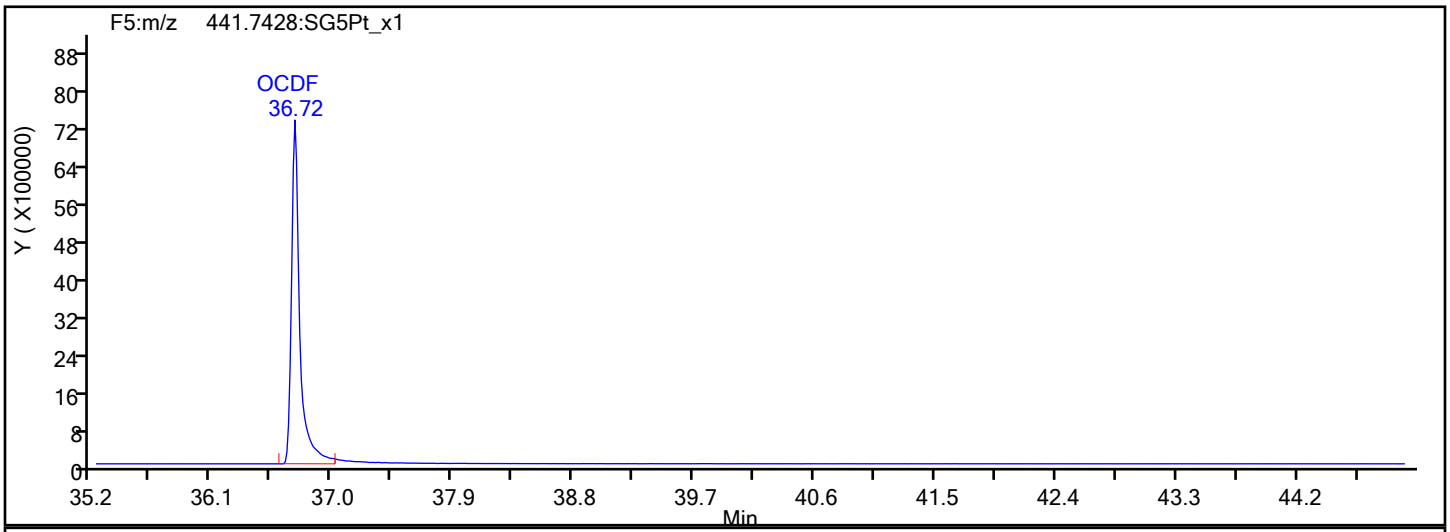


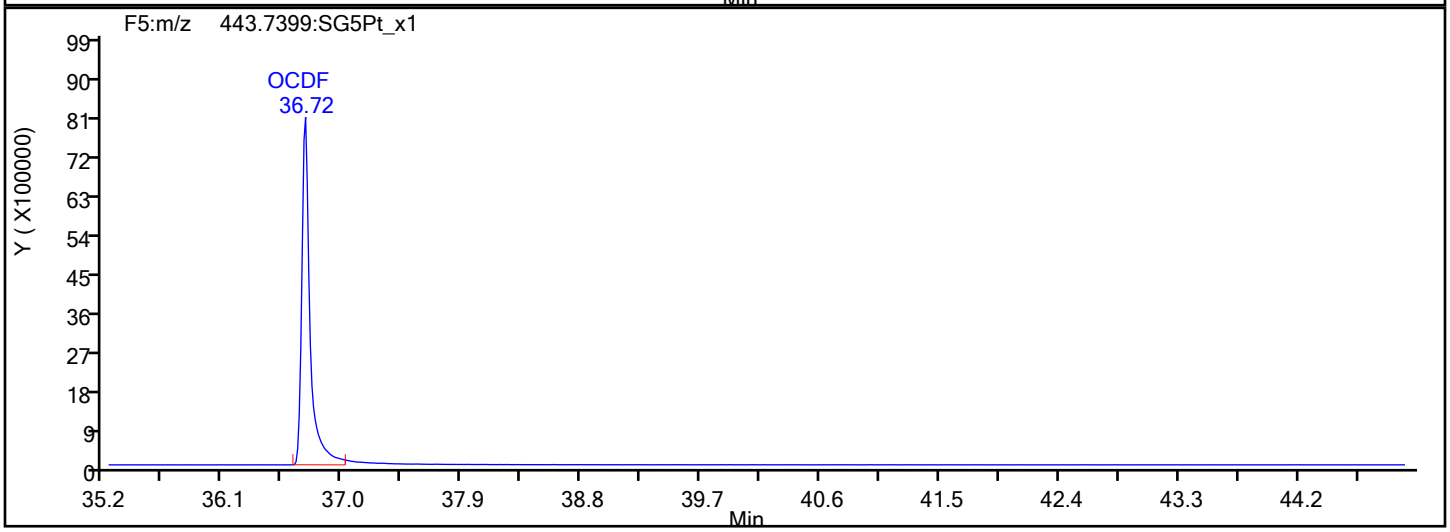
Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

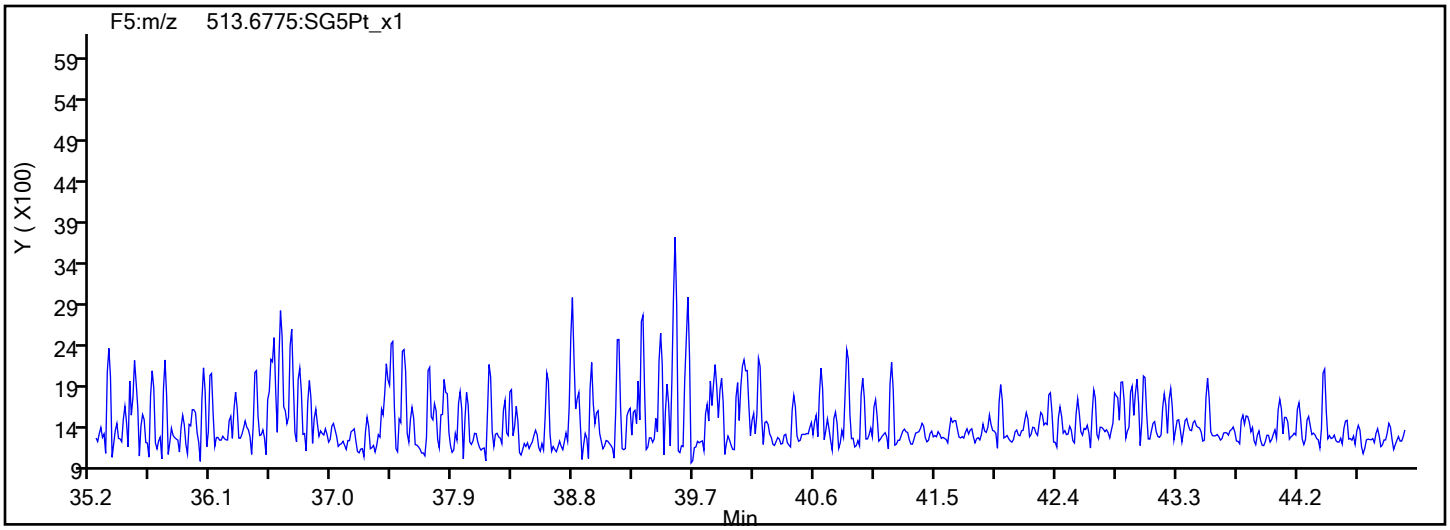
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

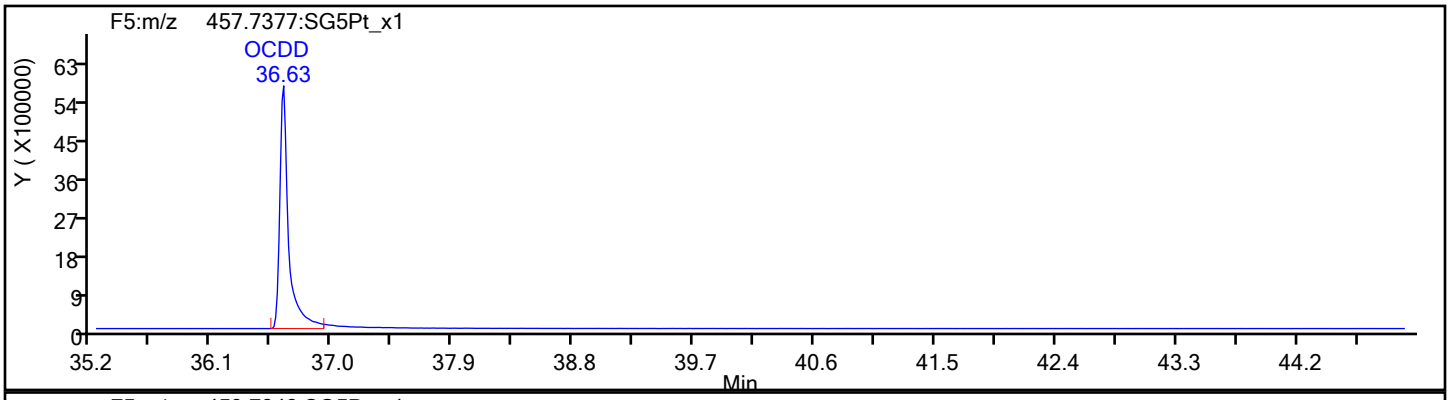


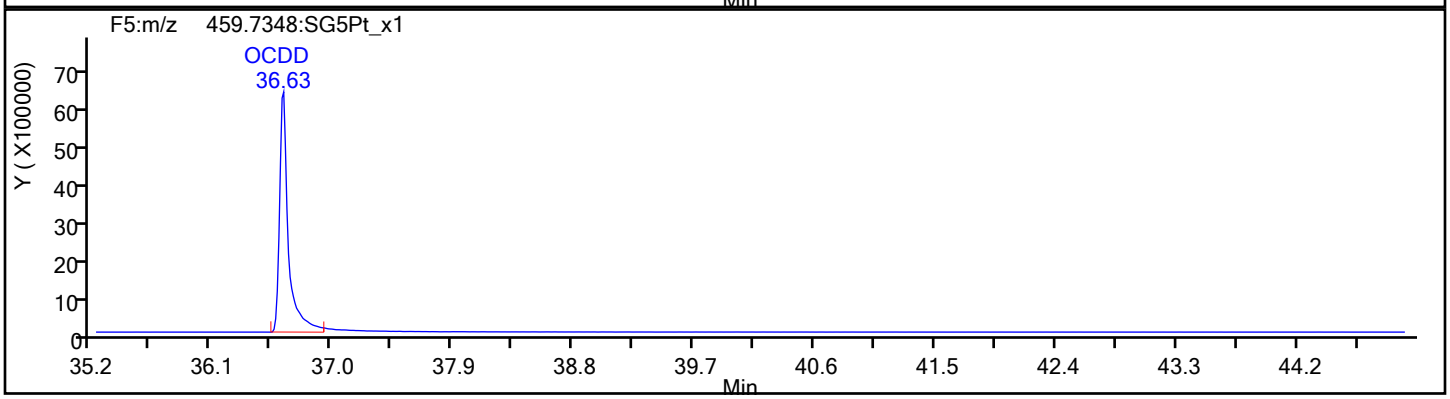
Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

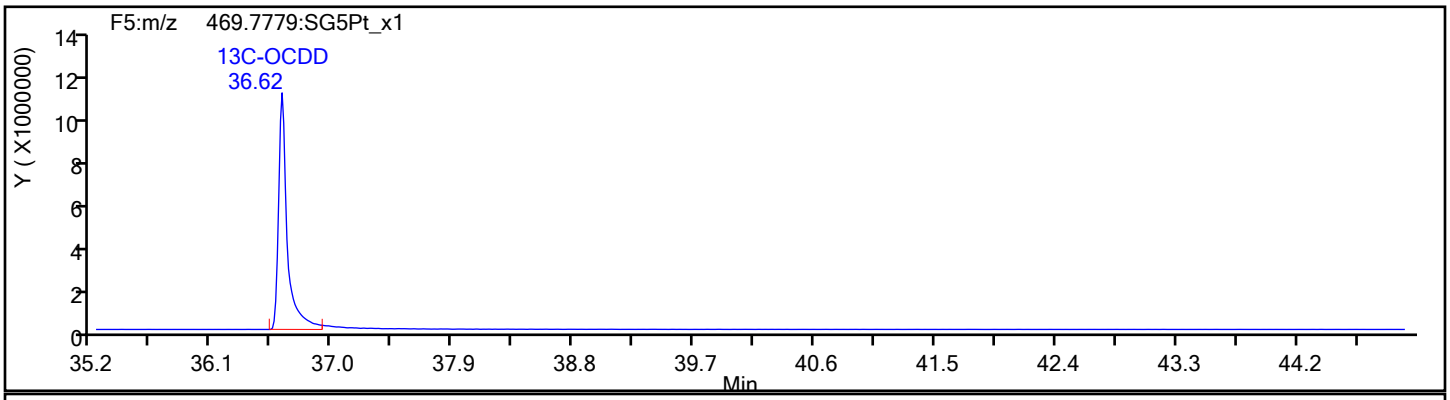
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

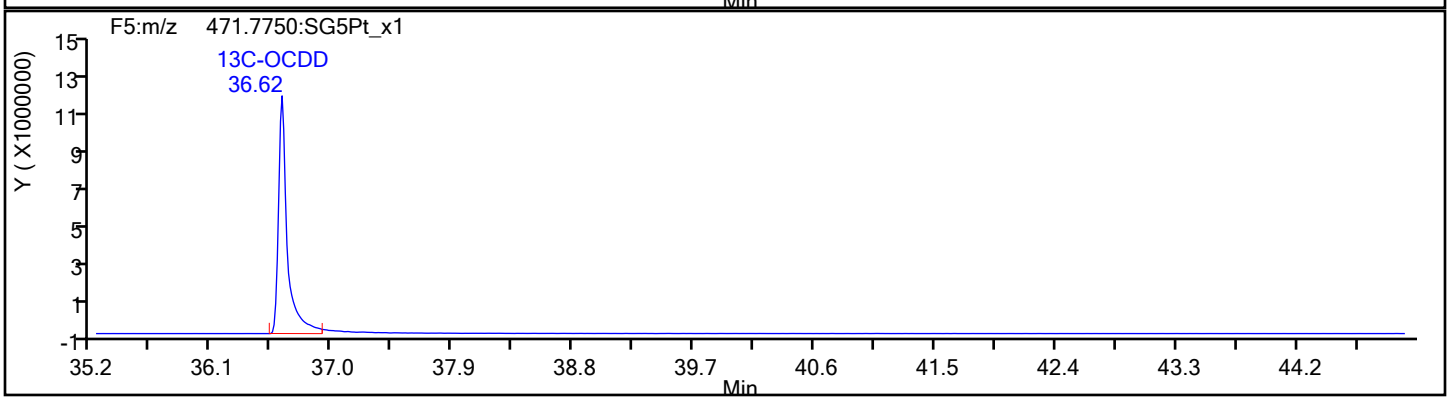
OCDD





OCDD Standards

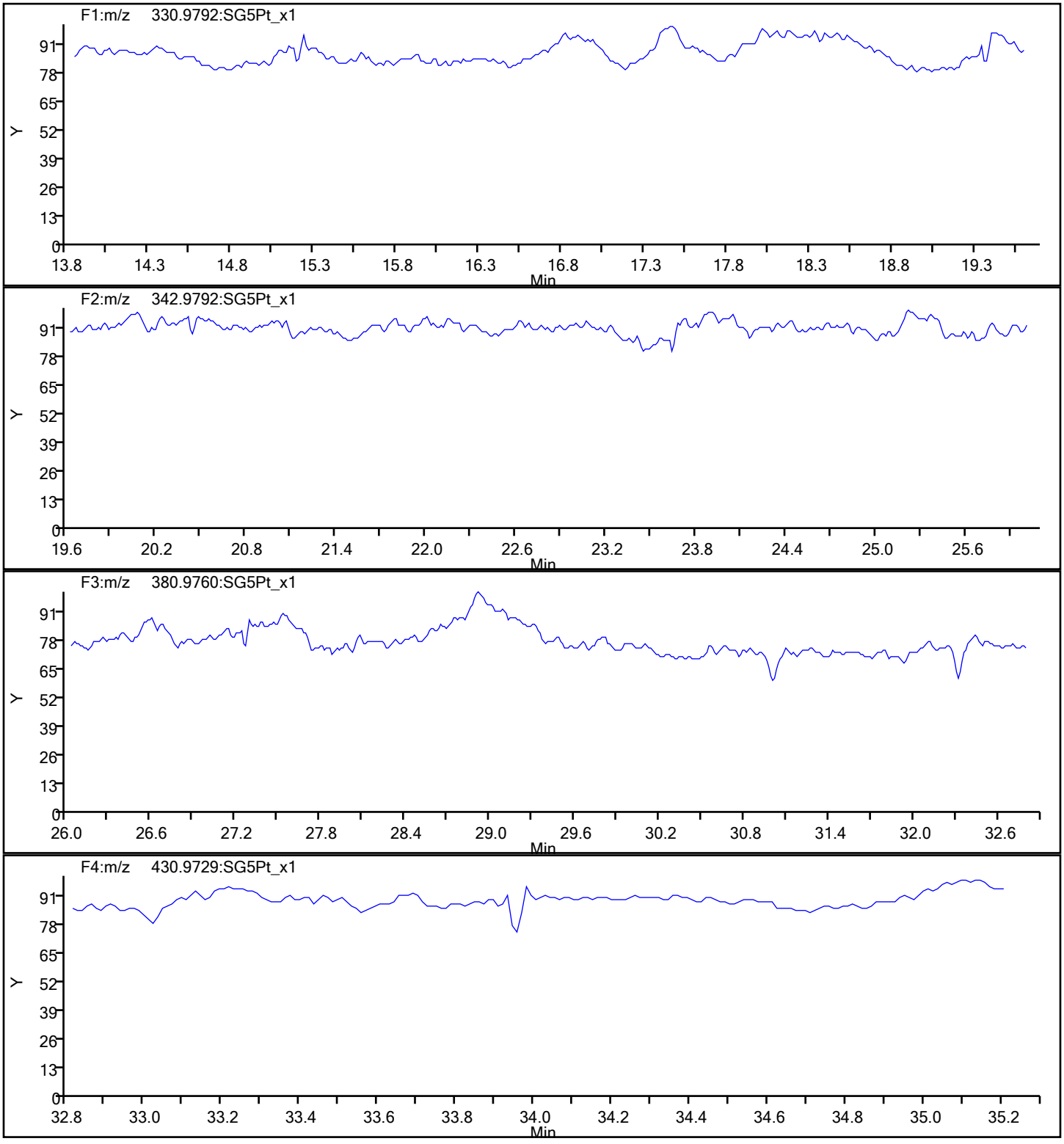




Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

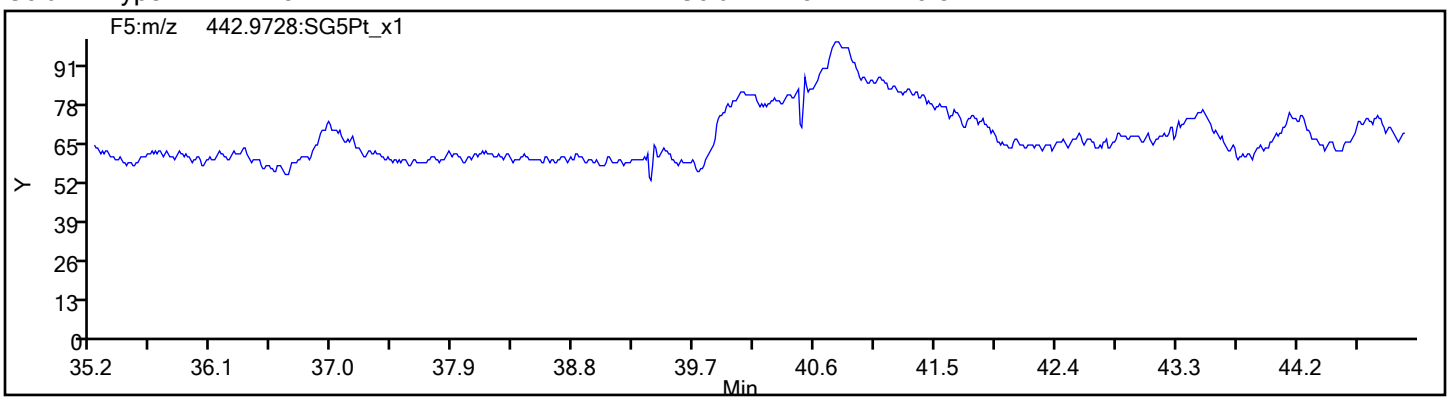
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 14-Nov-2019 16:54:30 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_5.d		
Injection Date:	14-Nov-2019 11:18:54	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Nov-2019 12:04:51 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419C CS-5 HRDXNL5_00028
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:33 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:49:38

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.532	118680858	0.79	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	160860723	0.77	1.3318	101.8	101.8	0.2072	0.2072	102	
2,3,7,8-TCDF	17.049	59808417	0.76	0.9005	41.3	41.3	0.0650	0.0650	103	
S Total TCDF					41.3	41.3	0.0650	0.0650		
D 13C-2,3,7,8-TCDD	17.729	115029444	0.79	0.9647	100.5	100.5	0.1570	0.1570	100	
2,3,7,8-TCDD	17.744	51246180	0.78	1.0698	41.6	41.6	0.0539	0.0539	104	
$ 37Cl4-2,3,7,8-TCDD	17.744	63777935		1.3082	41.1	41.1	0.0741	0.0741	103	
S Total TCDD					41.6	41.6	0.0539	0.0539		
D 13C-1,2,3,7,8-PeCDF	21.949	127455889	1.56	1.0537	101.9	101.9	0.2737	0.2737	102	
1,2,3,7,8-PeCDF	21.963	259554068	1.55	0.9704	209.9	209.9	0.7207	0.7207	105	
D 13C-2,3,4,7,8-PeCDF	23.258	120686165	1.57	1.0173	100.0	100.0	0.2836	0.2836	99.97	
2,3,4,7,8-PeCDF	23.286	255176989	1.55	0.9986	211.7	211.7	0.8040	0.8040	106	
S Total PeCDF					421.6	421.6	0.7624	0.7624		
D 13C-1,2,3,7,8-PeCDD	23.968	89271526	1.57	0.7281	103.3	103.3	0.1406	0.1406	103	
1,2,3,7,8-PeCDD	23.995	186964565	1.57	1.0023	208.9	208.9	0.3085	0.3085	104	
S Total PeCDD					208.9	208.9	0.3085	0.3085		
D 13C-1,2,3,4,7,8-HxCDF	30.099	88457179	0.51	0.9632	102.2	102.2	0.5148	0.5148	102	
1,2,3,4,7,8-HxCDF	30.126	194792330	1.22	1.0315	213.5	213.5	1.436	1.436	107	
D 13C-1,2,3,6,7,8-HxCDF	30.326	97731144	0.51	1.0646	102.2	102.2	0.4658	0.4658	102	
1,2,3,6,7,8-HxCDF	30.339	208690260	1.22	1.0235	208.6	208.6	1.288	1.288	104	
D 13C-2,3,4,6,7,8-HxCDF	31.244	88889402	0.51	0.9696	102.0	102.0	0.5114	0.5114	102	
2,3,4,6,7,8-HxCDF	31.271	196787993	1.21	1.0645	208.0	208.0	0.9769	0.9769	104	
D 13C-1,2,3,7,8,9-HxCDF	32.096	82765963	0.51	0.8955	102.9	102.9	0.5537	0.5537	103	
1,2,3,7,8,9-HxCDF	32.109	184050734	1.22	1.0664	208.5	208.5	0.9715	0.9715	104	
S Total HxCDF					838.6	838.6	1.168	1.168		
* 13C-1,2,3,7,8,9-HxCDD	31.910	89856346	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.457	69650431	1.24	0.7590	102.1	102.1	0.3627	0.3627	102	
1,2,3,4,7,8-HxCDD	31.470	147524233	1.23	1.0054	210.7	210.7	0.6771	0.6771	105	
D 13C-1,2,3,6,7,8-HxCDD	31.563	83609273	1.23	0.9247	100.6	100.6	0.2977	0.2977	101	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.577	172956675	1.24	0.9833	210.4	210.4	0.6236	0.6236	105	
1,2,3,7,8,9-HxCDD	31.923	177277735	1.24	1.1036	209.6	209.6	0.5846	0.5846	105	
S Total HxCDD					630.7	630.7	0.6284	0.6284		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	73893576	0.44	0.7930	103.7	103.7	1.482	1.482	104	
1,2,3,4,6,7,8-HpCDF	33.579	217460089	1.03	1.4240	206.7	206.7	2.632	2.632	103	
D 13C-1,2,3,4,7,8,9-HpCDF	34.624	66749921	0.44	0.7296	101.8	101.8	1.611	1.611	102	
1,2,3,4,7,8,9-HpCDF	34.624	180625829	1.03	1.2834	210.9	210.9	3.774	3.774	105	
S Total HpCDF					417.5	417.5	3.203	3.203		
D 13C-1,2,3,4,6,7,8-HpCDD	34.345	69874428	1.05	0.7532	103.2	103.2	0.6963	0.6963	103	
1,2,3,4,6,7,8-HpCDD	34.345	147557790	1.04	1.0174	207.6	207.6	1.192	1.192	104	
S Total HpCDD					207.6	207.6	1.192	1.192		
D 13C-OCDD	36.621	105005841	0.91	0.5621	207.9	207.9	0.2366	0.2366	104	
OCDF	36.717	285155825	0.90	1.3047	416.3	416.3	0.3438	0.3438	104	
OCDD	36.633	237100919	0.89	1.0997	410.7	410.7	0.4932	0.4932	103	

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Nov-2019 12:04:51 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419C CS-5 HRDXNL5_00028
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:33 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:49:38

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.532	17.539	0		52234395	13070586	9047	22617	1445		
333.9339	17.532	17.539	0		66446463	16665045	8971	22427	1858	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.972	70168230	18029128	22275	55687	809		
317.9389	17.034	17.034	0	0.972	90692493	23450218	10547	26367	2223	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	25768565	6586648	4013	10032	1641		
305.8987	17.049	17.049	0	1.001	34039852	8759042	5694	14235	1538	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.011	50629302	12280035	9047	22617	1357		
333.9339	17.729	17.729	0	1.011	64400142	15683484	8971	22427	1748	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	22433859	5464575	3227	8067	1693		
321.8936	17.744	17.744	0	1.001	28812321	7071235	3224	8060	2193	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.012	63777935	15463623	11528	28820	1341		
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.252	77742018	14329628	20741	51852	691		
353.8970	21.949	21.949	0	1.252	49713871	9134141	13567	33917	673	1.56(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.963	21.971	0	1.001	157652161	28580632	39533	98832	723		
341.8567	21.963	21.971	0	1.001	101901907	18458354	26110	65275	707	1.55(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.327	73724478	12475804	20741	51852	602		
353.8970	23.258	23.258	0	1.327	46961687	7965063	13567	33917	587	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	155044583	26514956	39533	98832	671		
341.8567	23.286	23.286	0	1.001	100132406	17110297	26110	65275	655	1.55(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.367	54487239	8826021	7327	18317	1205		
369.8919	23.968	23.968	0	1.367	34784287	5642662	4846	12115	1164	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	114244745	18730709	11134	27835	1682		
357.8516	23.995	23.995	0	1.001	72719820	11863469	6765	16912	1754	1.57(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.099	30.102	0	0.943	29987865	4924572	14459	36147	341		
385.8610	30.099	30.102	0	0.943	58469314	9557060	28952	72380	330	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.126	30.131	0	1.001	106916678	17515529	47659	119147	368		
375.8178	30.126	30.131	0	1.001	87875652	14458254	38159	95397	379	1.22(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.326	30.323	0	0.950	32931143	5475626	14459	36147	379		
385.8610	30.326	30.323	0	0.950	64800001	10797292	28952	72380	373	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.339	30.344	0	1.000	114869962	19308083	47659	119147	405		
375.8178	30.339	30.344	0	1.000	93820298	15888937	38159	95397	416	1.22(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.244	31.247	0	0.979	30018456	7012284	14459	36147	485		
385.8610	31.244	31.247	0	0.979	58870946	13619571	28952	72380	470	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.271	31.265	0	1.001	107932039	24542337	47659	119147	515		
375.8178	31.257	31.265	0	1.000	88855954	20331112	38159	95397	533	1.21(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.096	32.099	0	1.006	27998836	7013166	14459	36147	485		
385.8610	32.096	32.099	0	1.006	54767127	13696078	28952	72380	473	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.109	32.115	0	1.000	101144857	24921162	47659	119147	523		
375.8178	32.109	32.115	0	1.000	82905877	20842477	38159	95397	546	1.22(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.910	31.912	0		49877643	12166332	13366	33415	910		
403.8529	31.910	31.912	0		39978703	9721115	10736	26840	905	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.457	31.452	0	0.986	38531184	9899683	13366	33415	741		
403.8529	31.457	31.452	0	0.986	31119247	7903423	10736	26840	736	1.24(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.470	31.470	0	1.000	81310461	21577290	26813	67032	805		
391.8127	31.470	31.470	0	1.000	66213772	17450156	21663	54157	806	1.23(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.563	31.566	0	0.989	46199127	10954073	13366	33415	820		
403.8529	31.563	31.566	0	0.989	37410146	8809307	10736	26840	821	1.23(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.577	31.582	0	1.000	95658383	21871447	26813	67032	816		
391.8127	31.577	31.582	0	1.000	77298292	18171125	21663	54157	839	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.923	31.926	0	1.015	98058109	23704618	26813	67032	884		
391.8127	31.923	31.926	0	1.015	79219626	19390331	21663	54157	895	1.24(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.052	22694049	7200331	30809	77022	234		
419.8220	33.567	33.567	0	1.052	51199527	16096799	72104	180260	223	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	110552653	34534115	173980	434950	198		
409.7789	33.579	33.579	0	1.000	106907436	33026808	175309	438272	188	1.03(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.624	34.619	0	1.085	20485964	5561965	30809	77022	181		
419.8220	34.624	34.619	0	1.085	46263957	12466880	72104	180260	173	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.624	34.629	0	1.000	91754963	24820901	173980	434950	143		
409.7789	34.624	34.629	0	1.000	88870866	24456551	175309	438272	140	1.03(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.345	34.340	0	1.076	35805874	9838164	24742	61855	398		
437.8140	34.345	34.340	0	1.076	34068554	9368499	21174	52935	442	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.345	34.349	0	1.000	75295973	20352849	47315	118287	430		
425.7737	34.345	34.349	0	1.000	72261817	19971374	45878	114695	435	1.04(0.88-1.20)	
13C-OCDD											
469.7779	36.621	36.624	0	1.148	49916226	11141177	6096	15240	1828		
471.7750	36.621	36.624	0	1.148	55089615	12332581	5549	13872	2222	0.91(0.76-1.02)	
OCDF											
441.7428	36.717	36.720	0	1.003	135148972	31411063	10132	25330	3100		
443.7399	36.717	36.720	0	1.003	150006853	35123894	10929	27322	3214	0.90(0.76-1.02)	
OCDD											
457.7377	36.633	36.636	0	1.000	111747988	25346888	11674	29185	2171		
459.7348	36.633	36.636	0	1.000	125352931	28583246	13791	34477	2073	0.89(0.76-1.02)	

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d

Injection Date: 14-Nov-2019 12:04:51 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

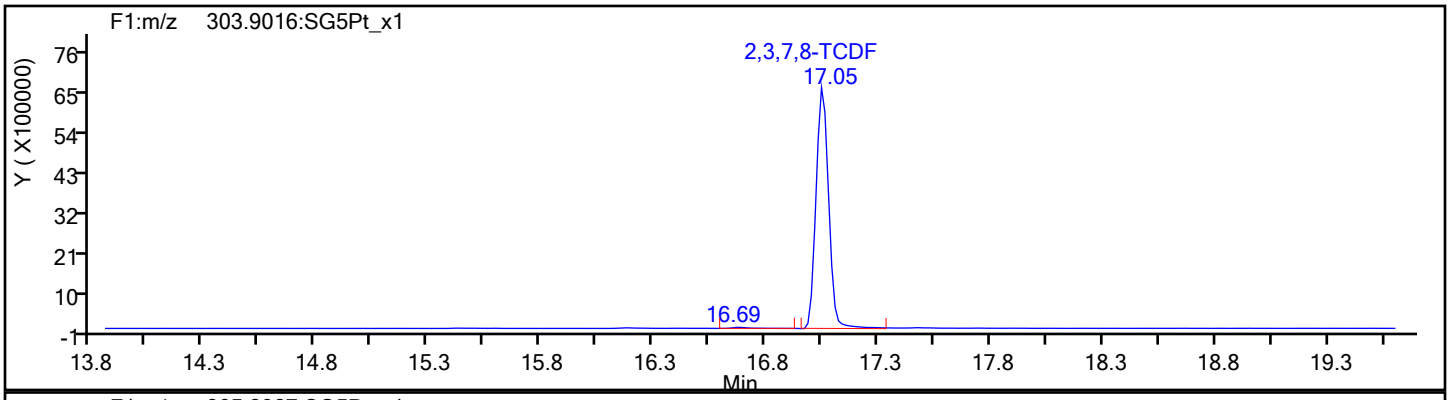
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

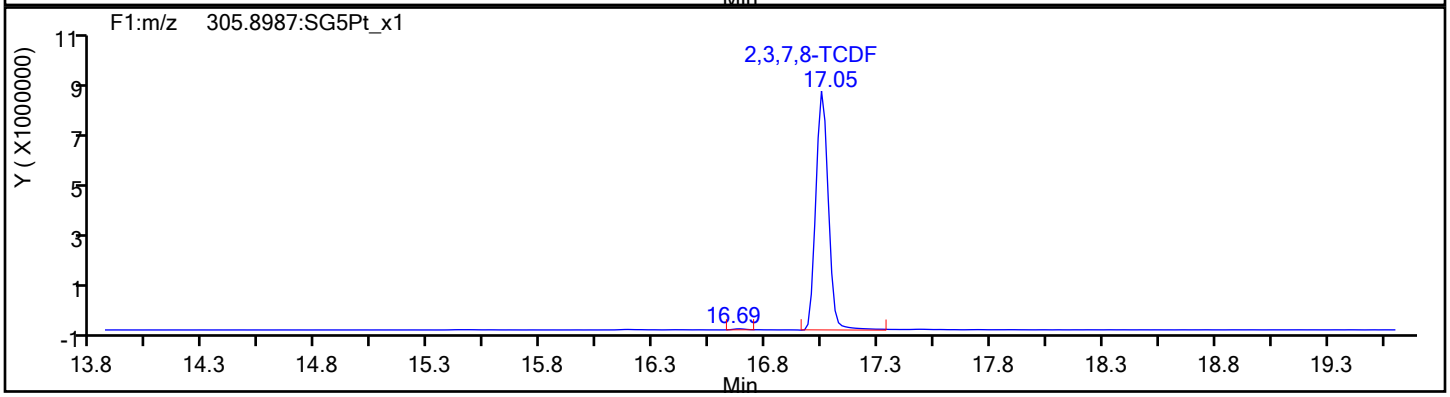
Client ID:

Worklist#: 338471 Sample Line#: 6

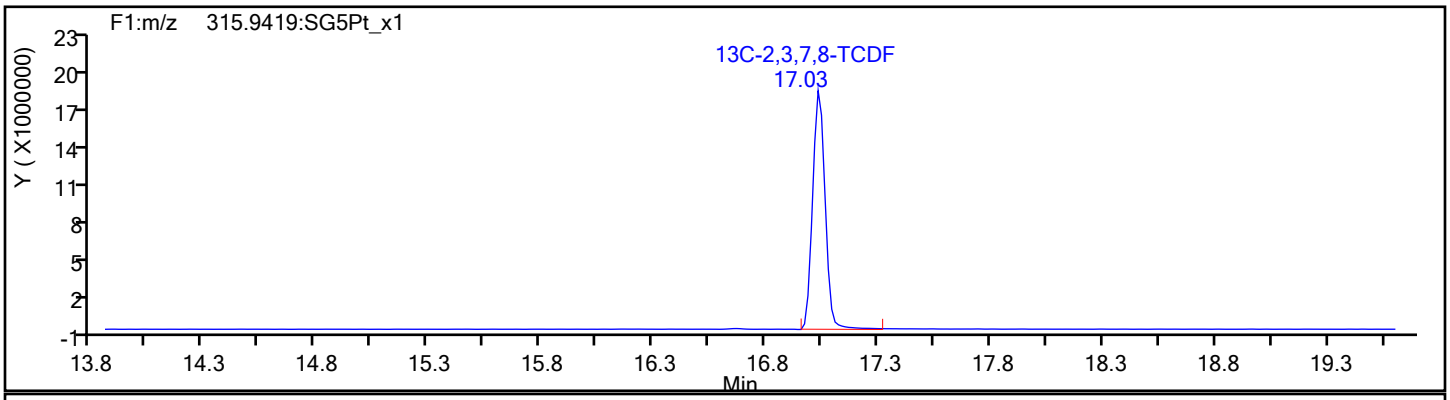
Column Type: DB-5 Column Dia: 0.32 mm

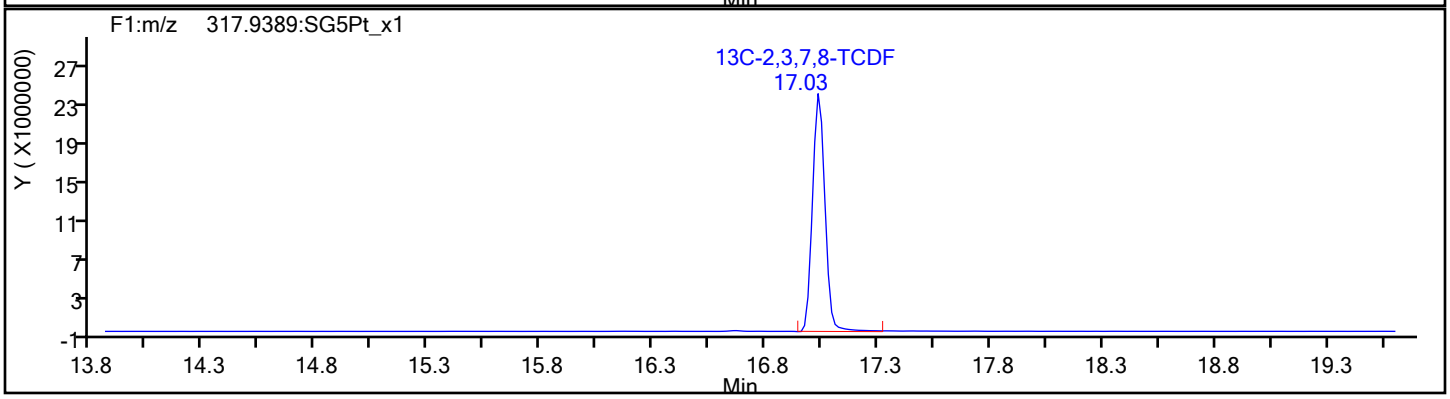
TCDF





TCDF Standards



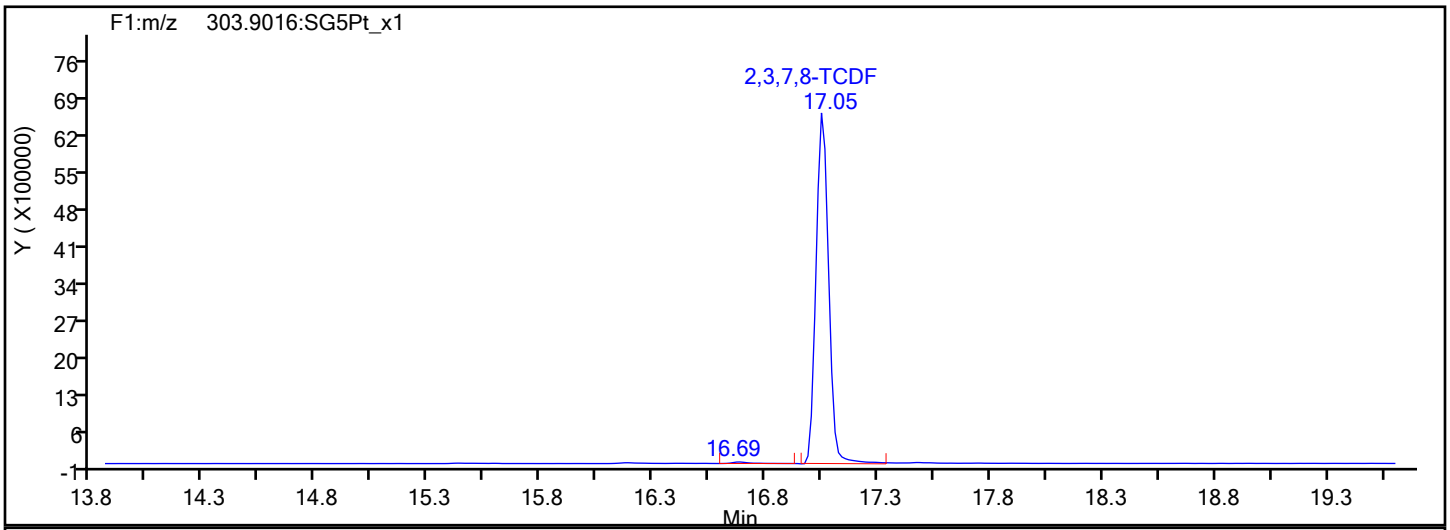


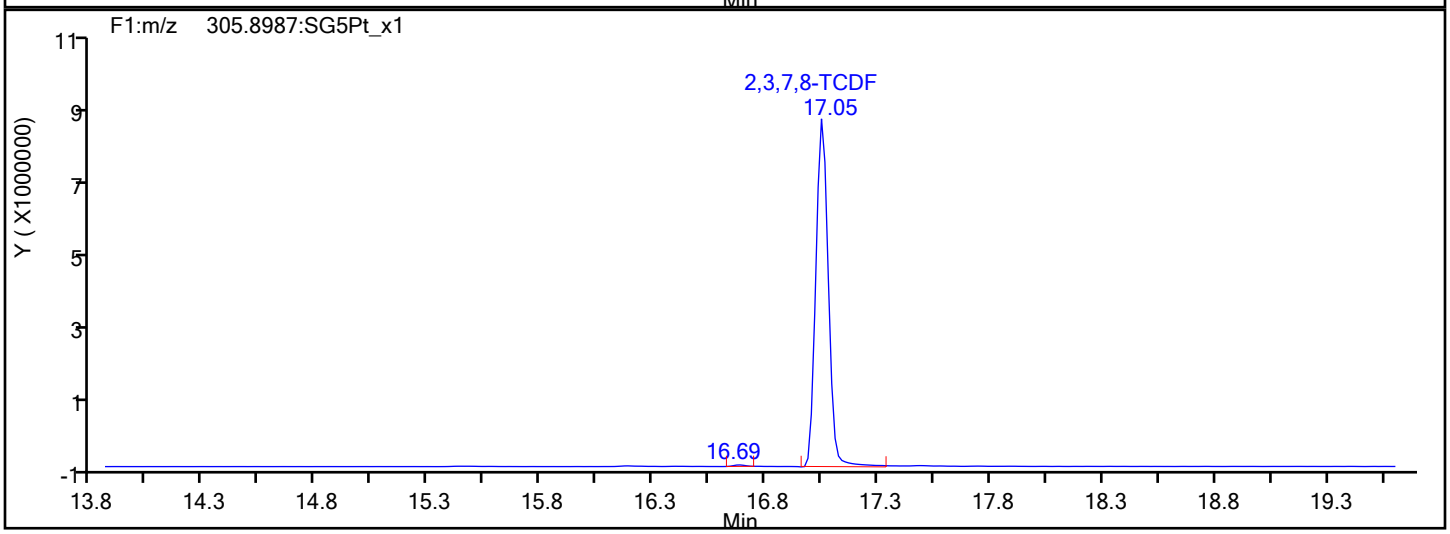
Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

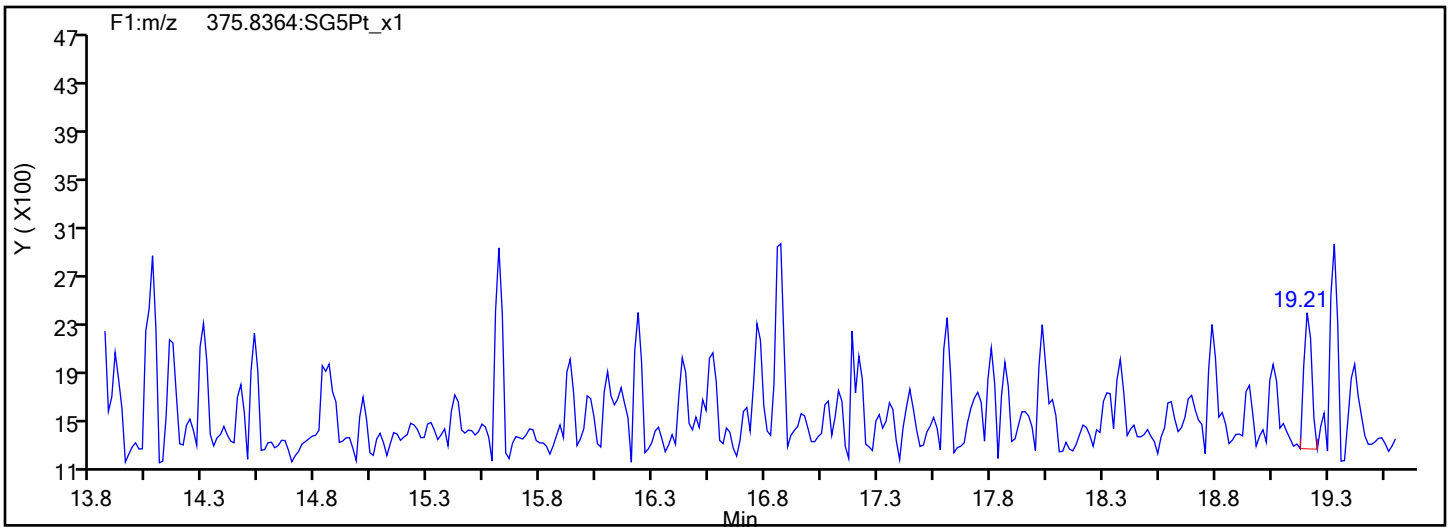
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
Injection Date:	14-Nov-2019 12:04:51	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

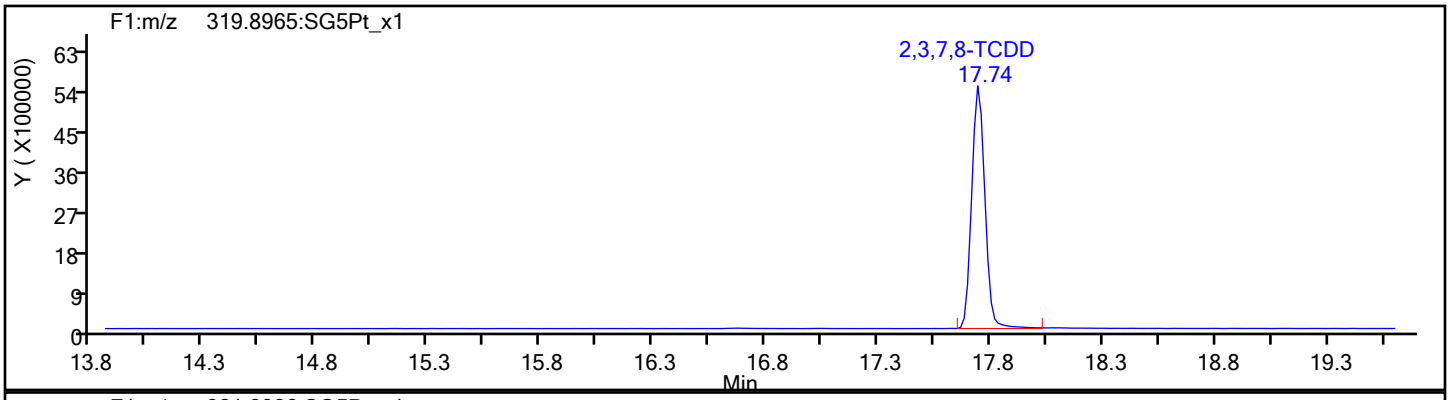


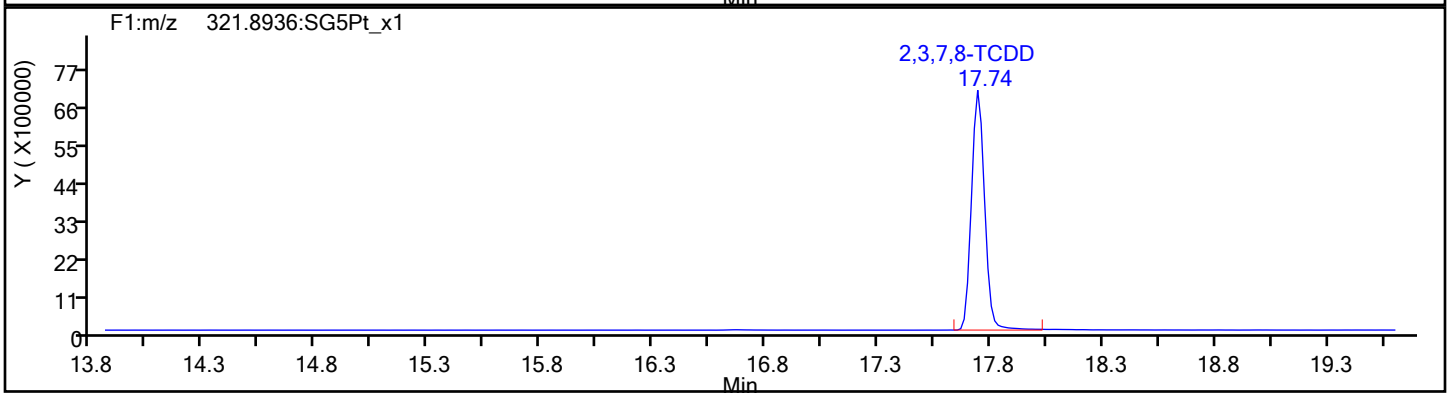
Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

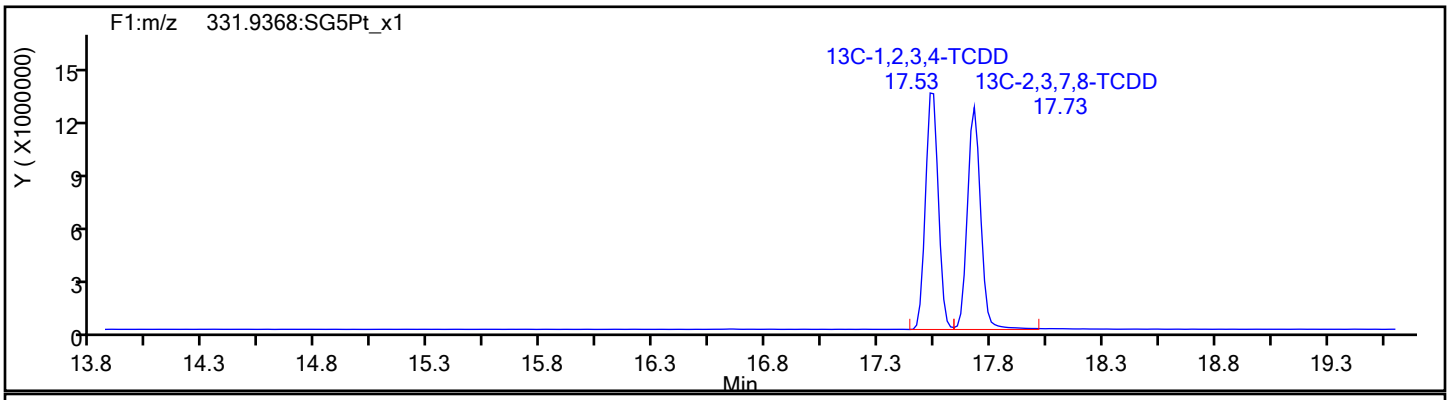
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
Injection Date:	14-Nov-2019 12:04:51	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

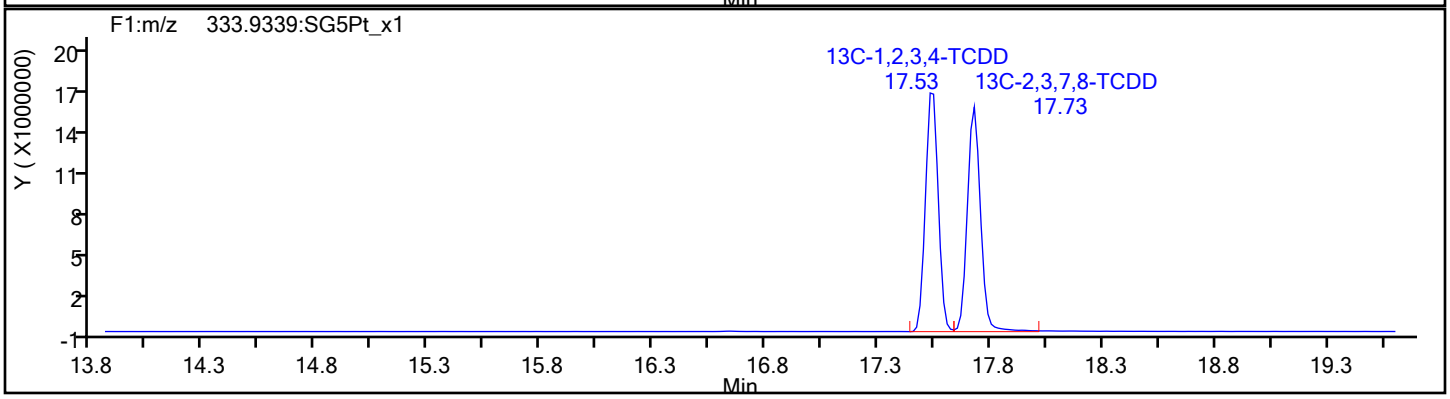
TCDD





TCDD Standards



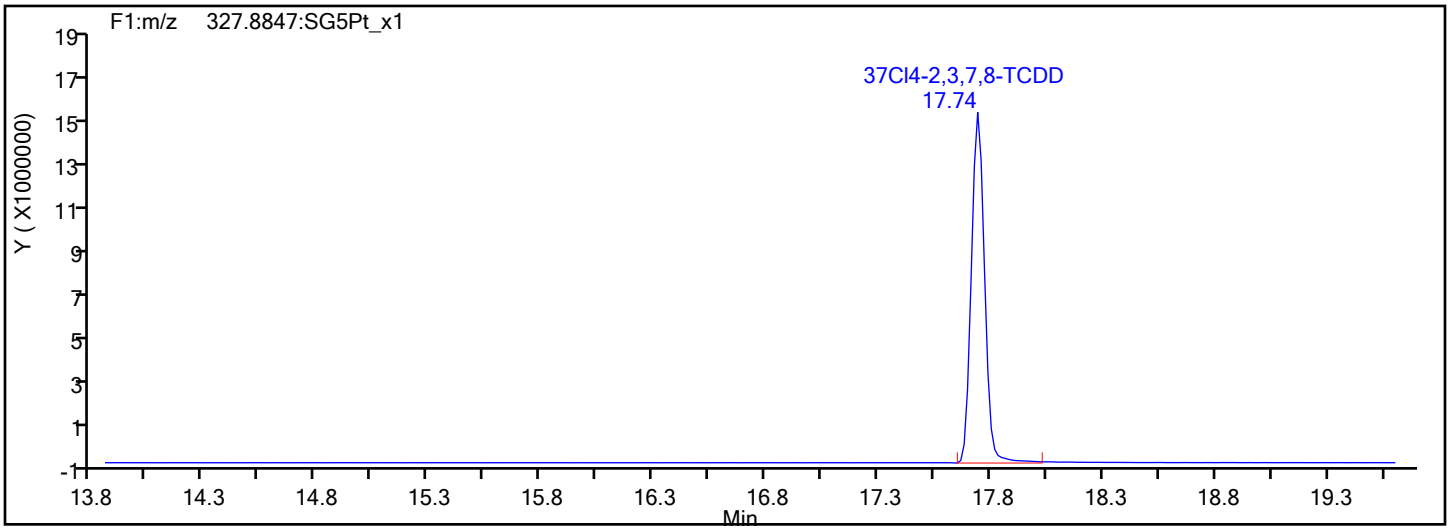


Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

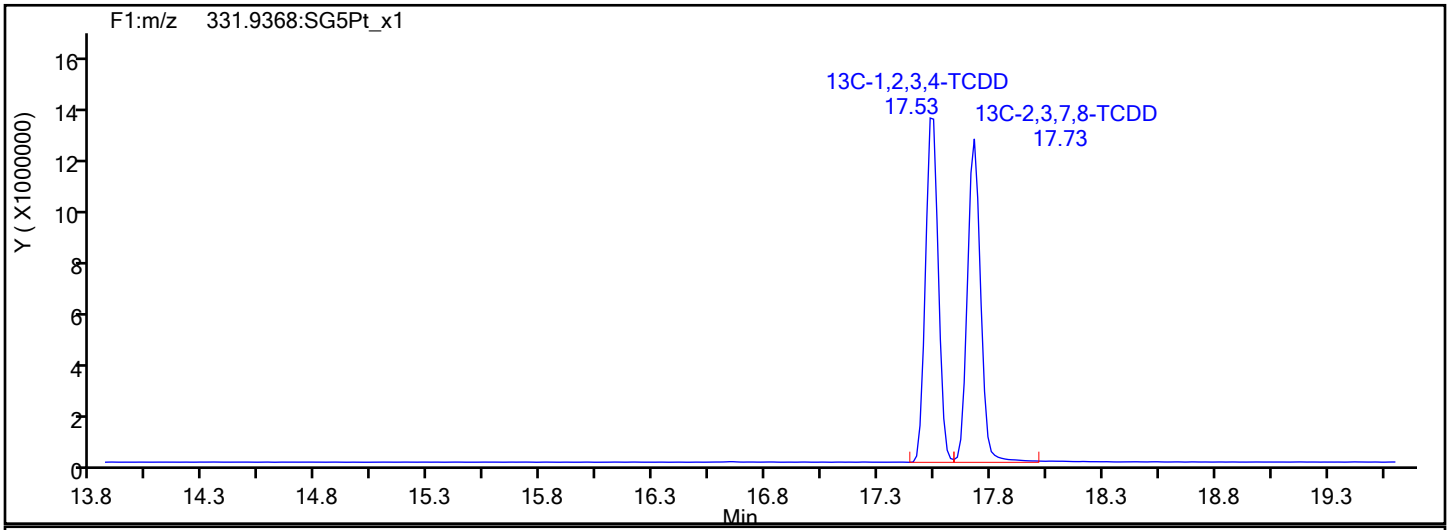
Eurofins TestAmerica, Sacramento

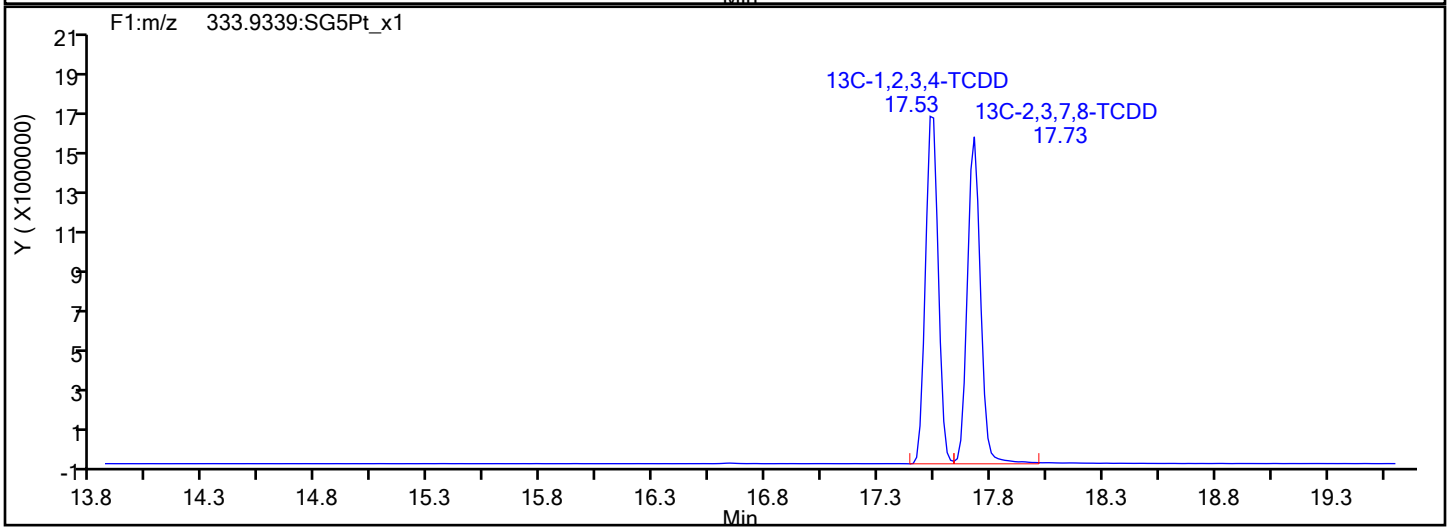
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
Injection Date:	14-Nov-2019 12:04:51	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



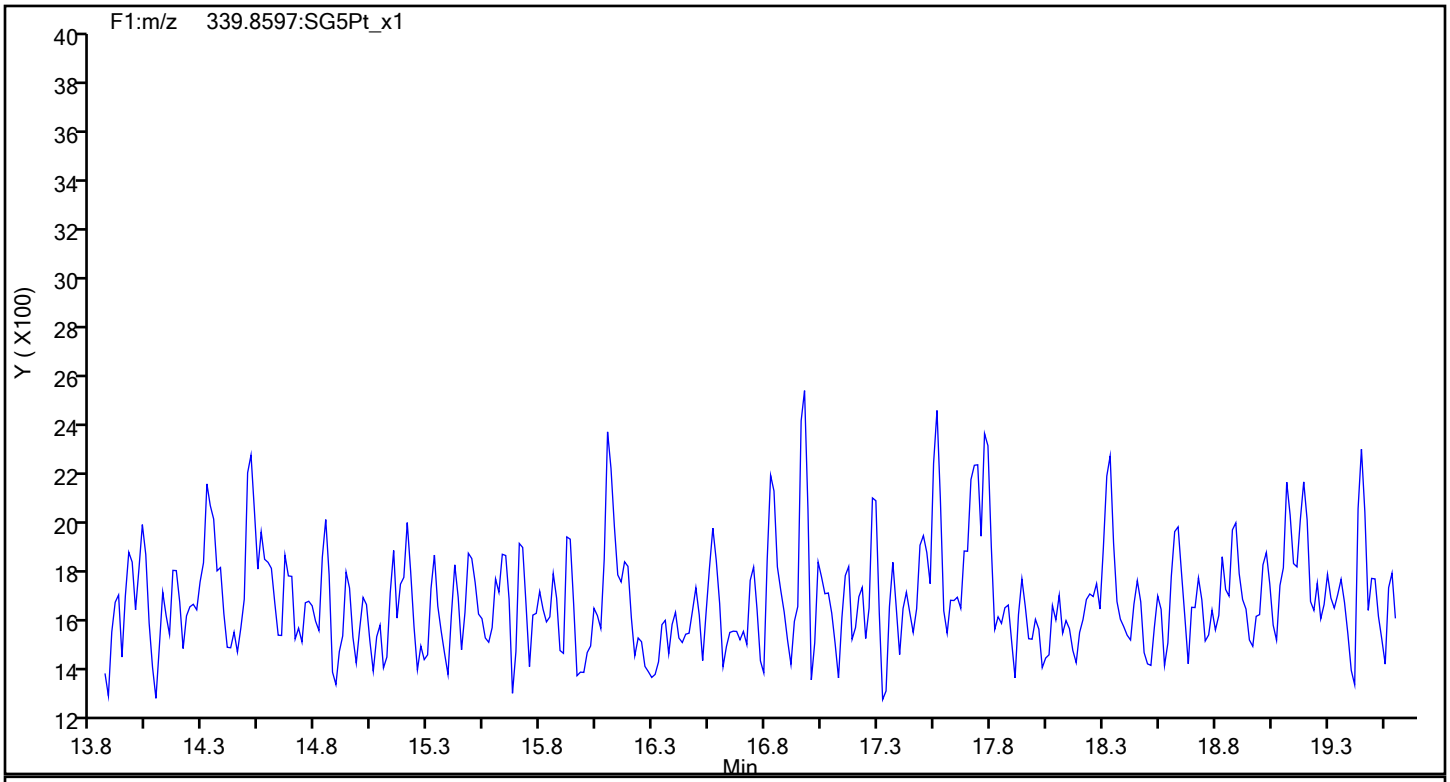


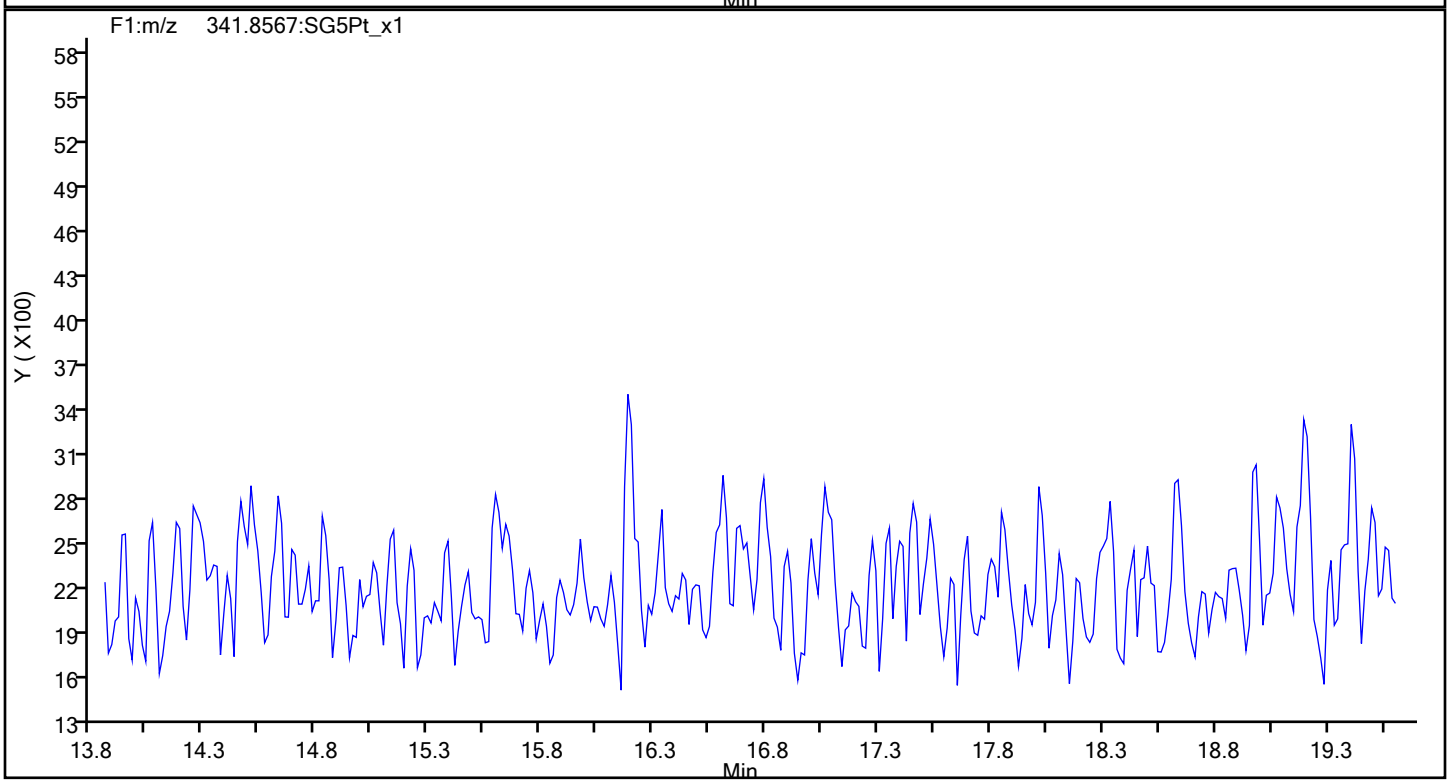
Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
Injection Date:	14-Nov-2019 12:04:51	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
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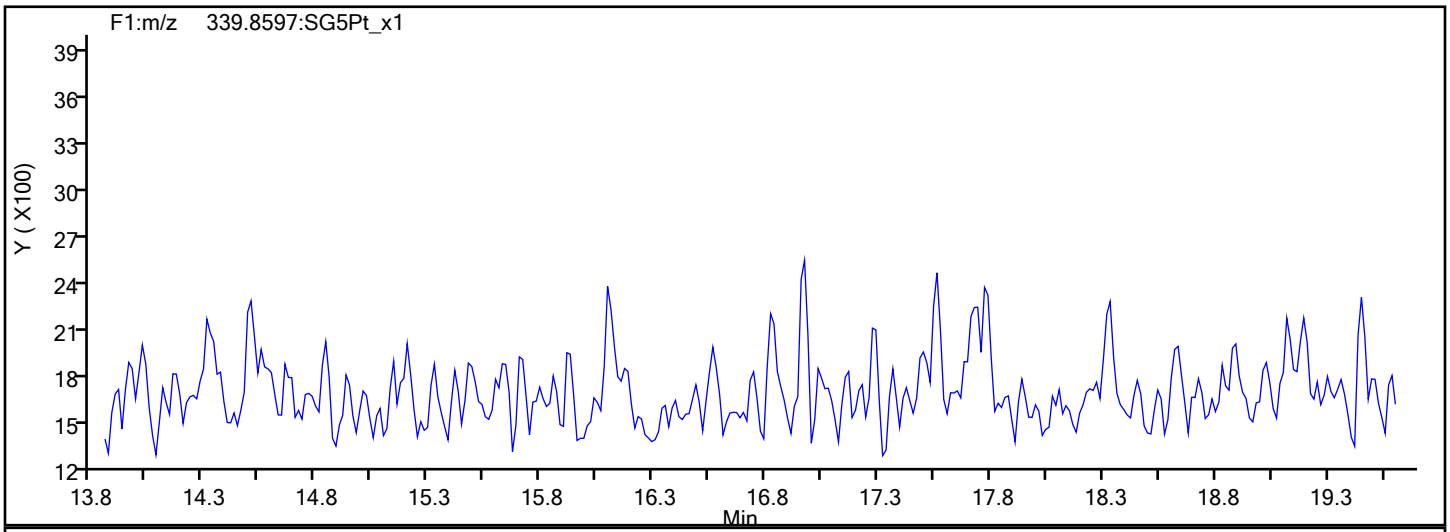
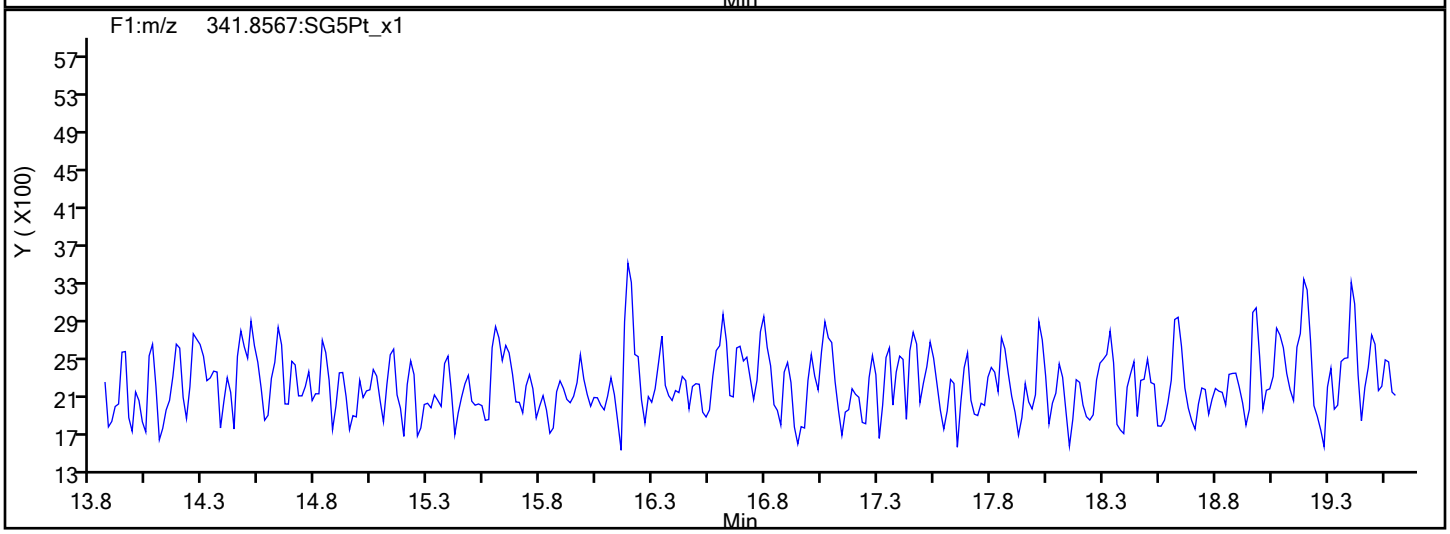
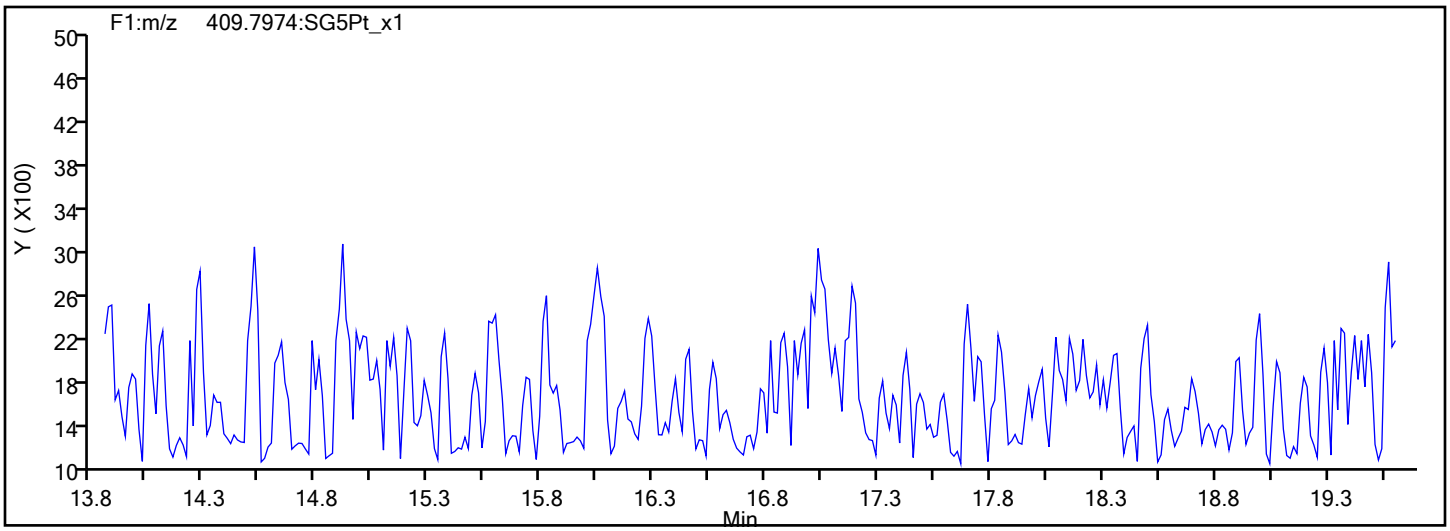
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
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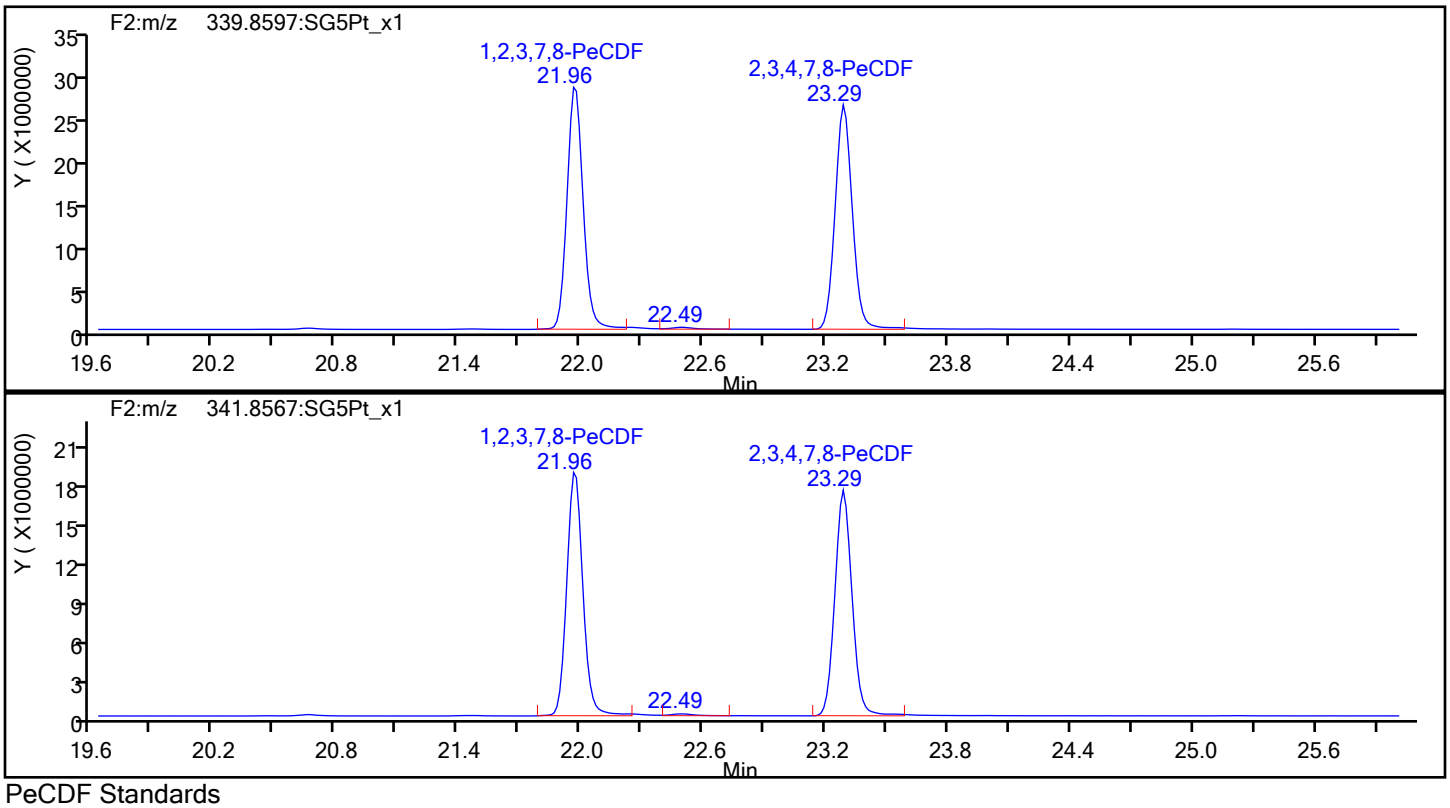
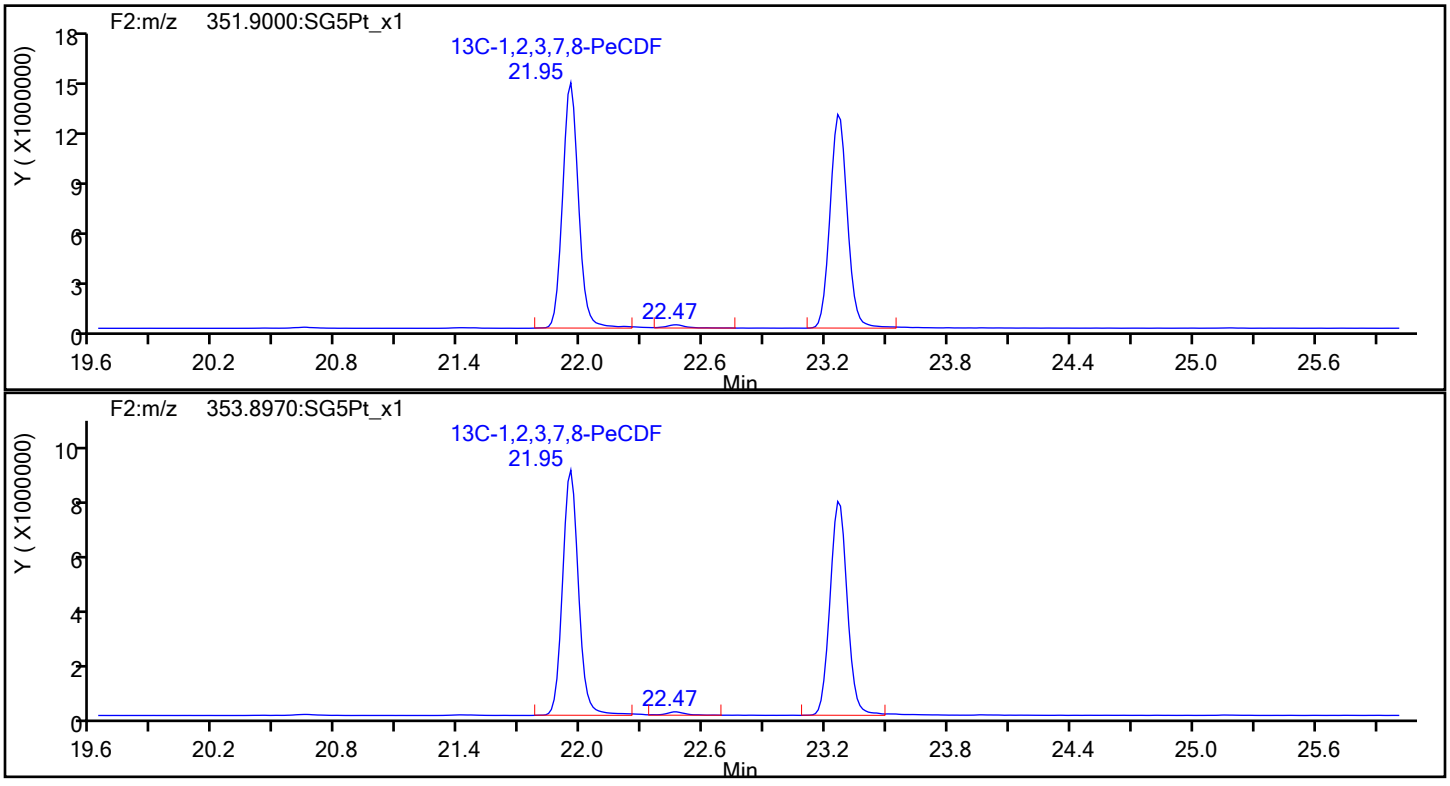
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
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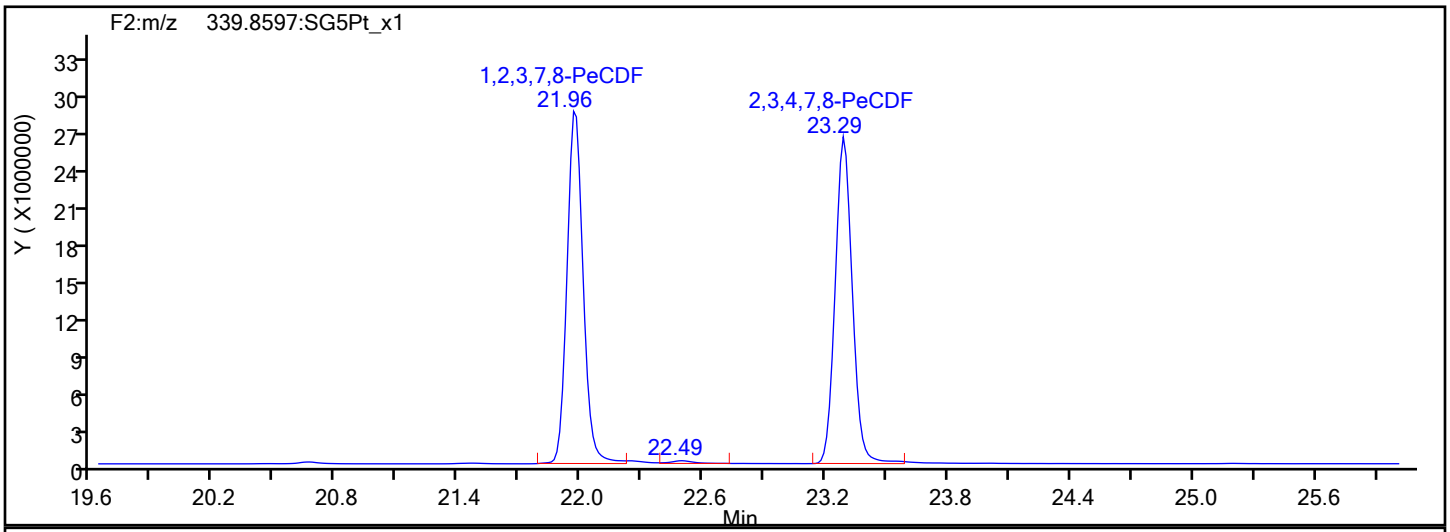
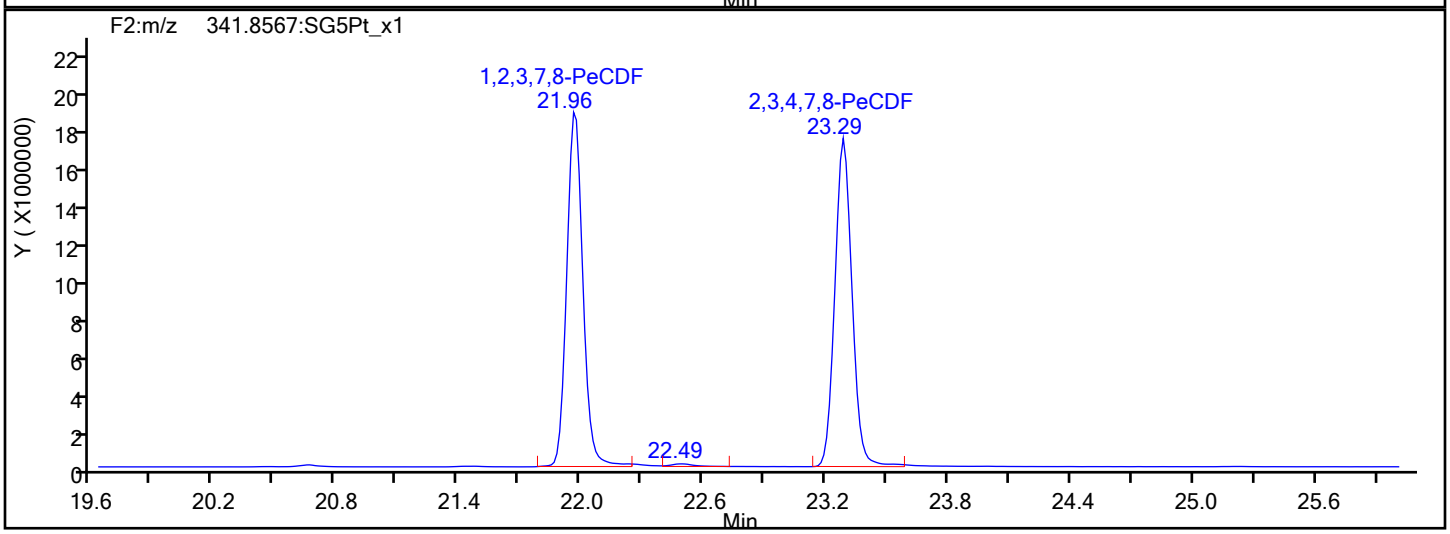
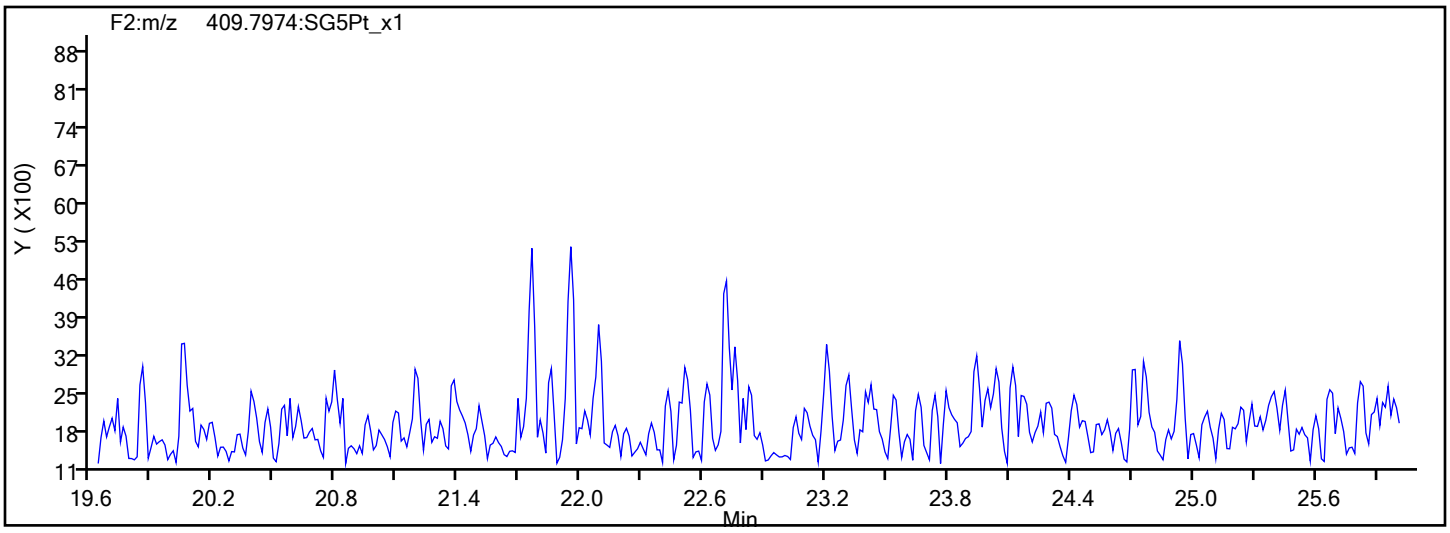
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



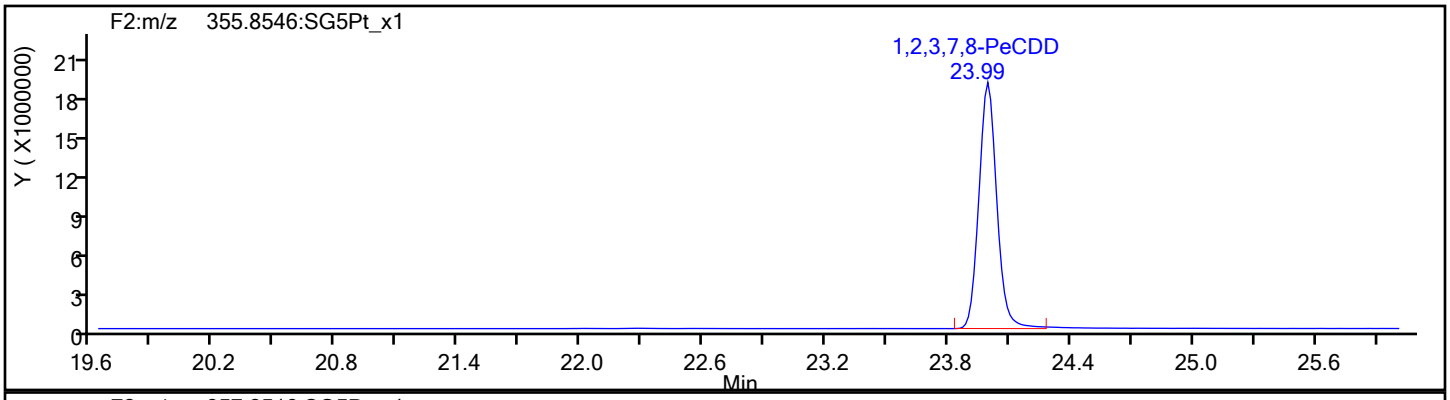
Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

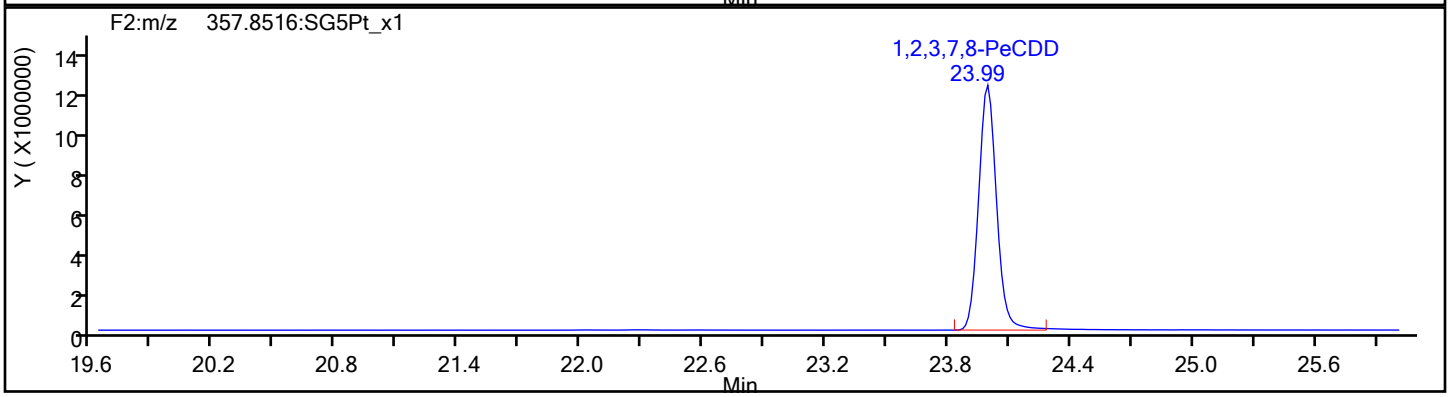
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d

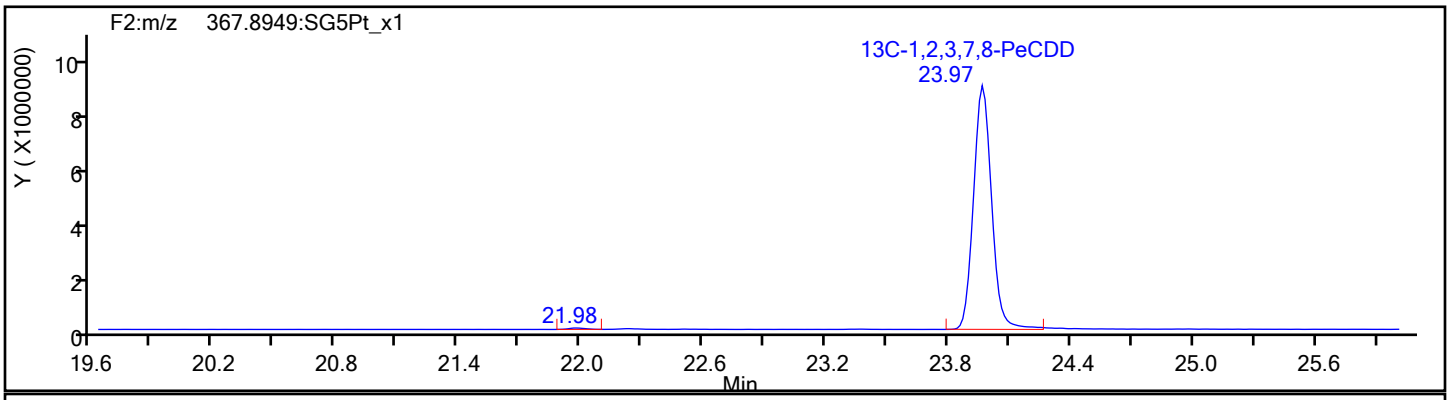
Injection Date:	14-Nov-2019 12:04:51	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

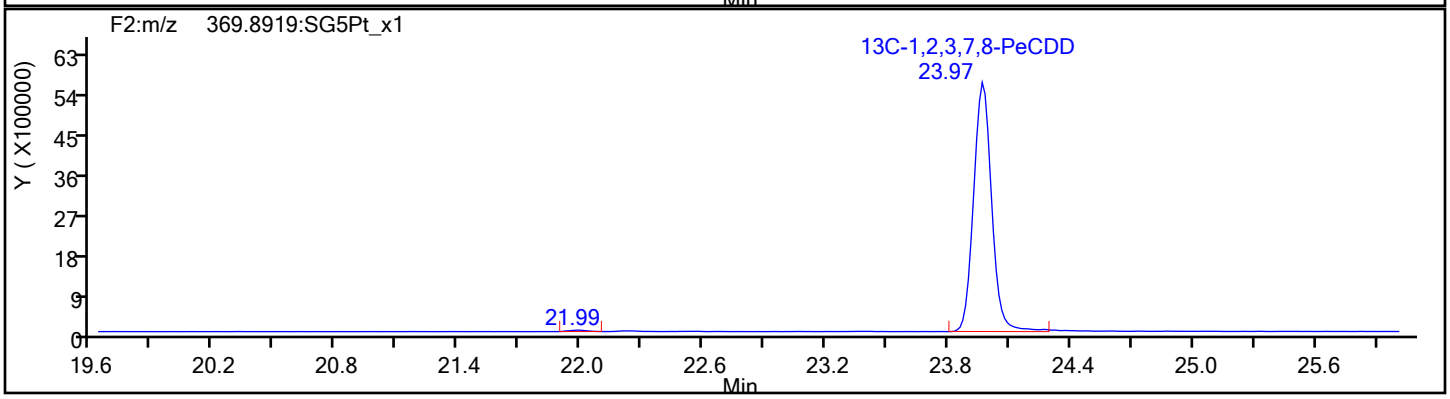
PeCDD





PeCDD Standards





Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d		
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Instrument ID:	10D5	Operator ID:	SMA
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Client ID:			
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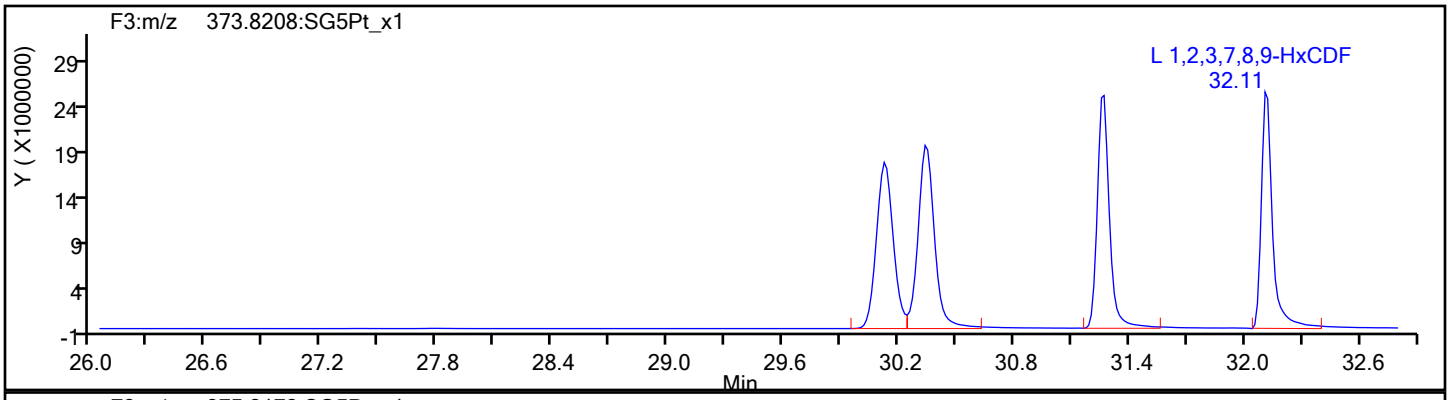
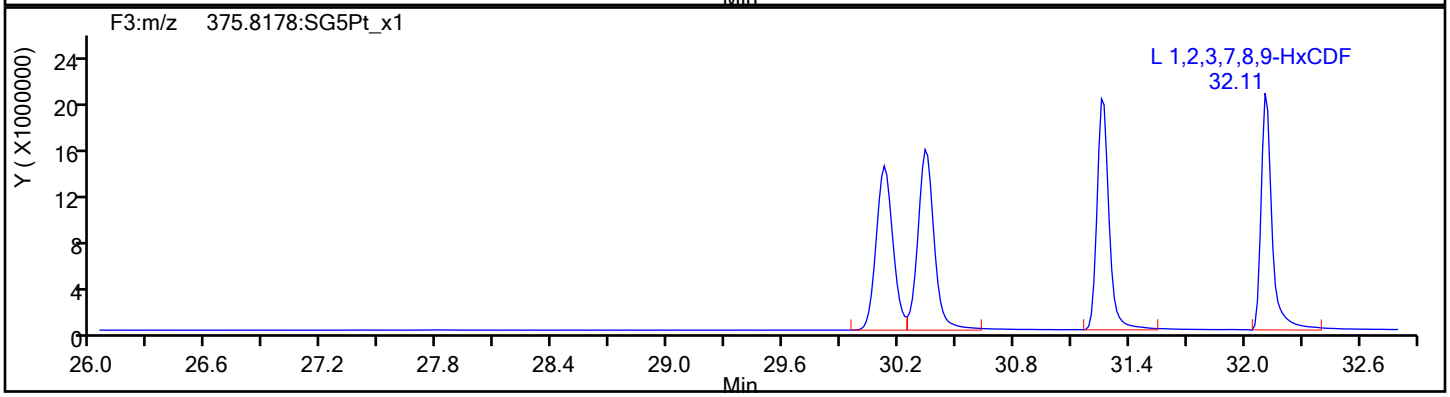
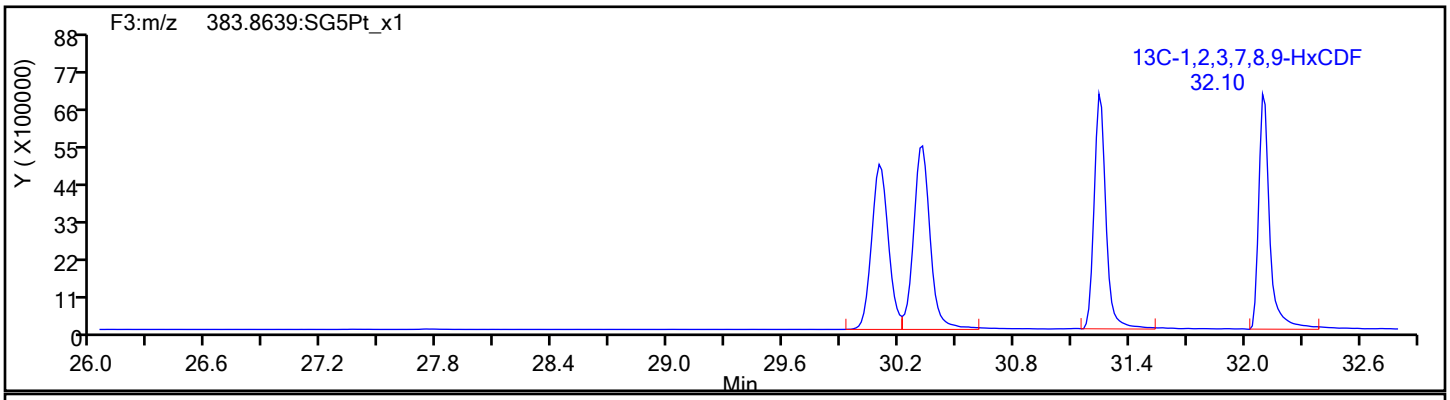
Column Type:	DB-5	Column Dia:	0.32 mm

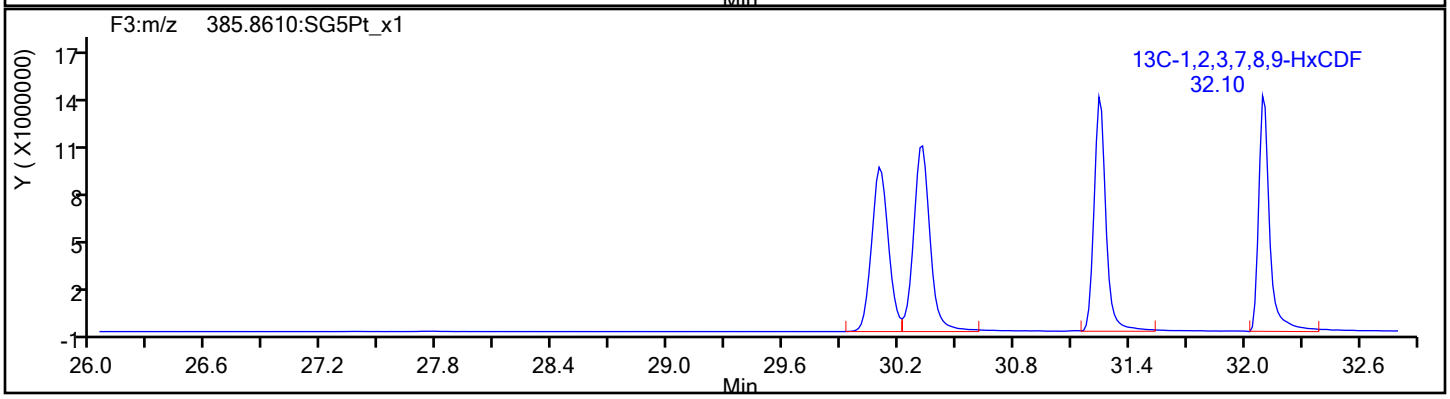
HxCDF





HxCDF Standards





Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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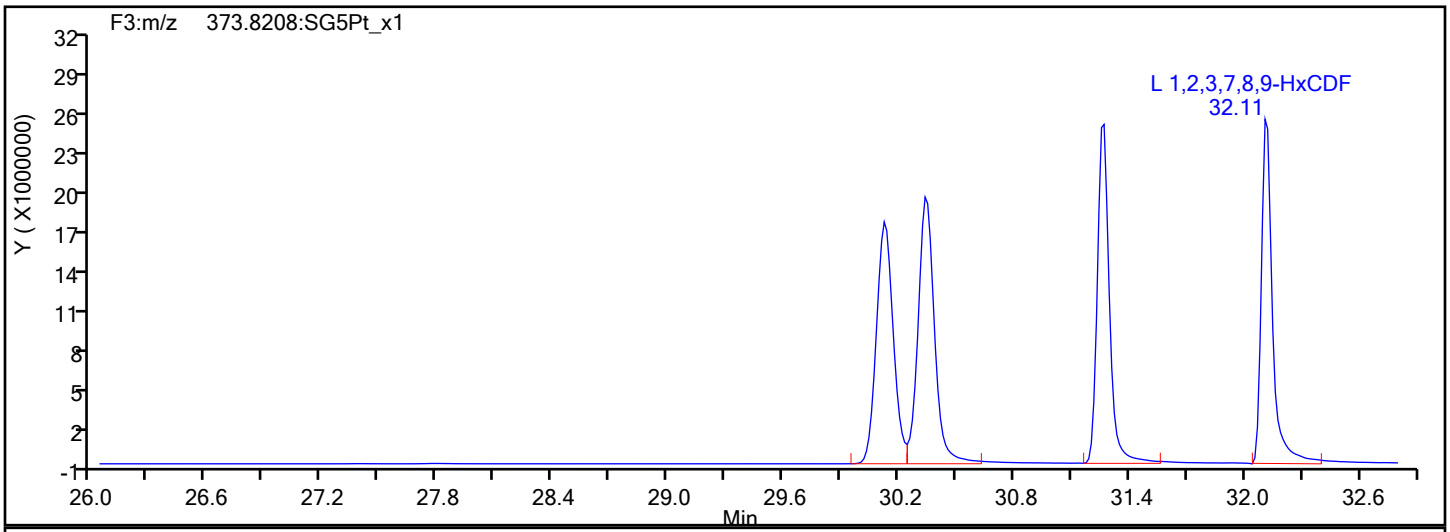
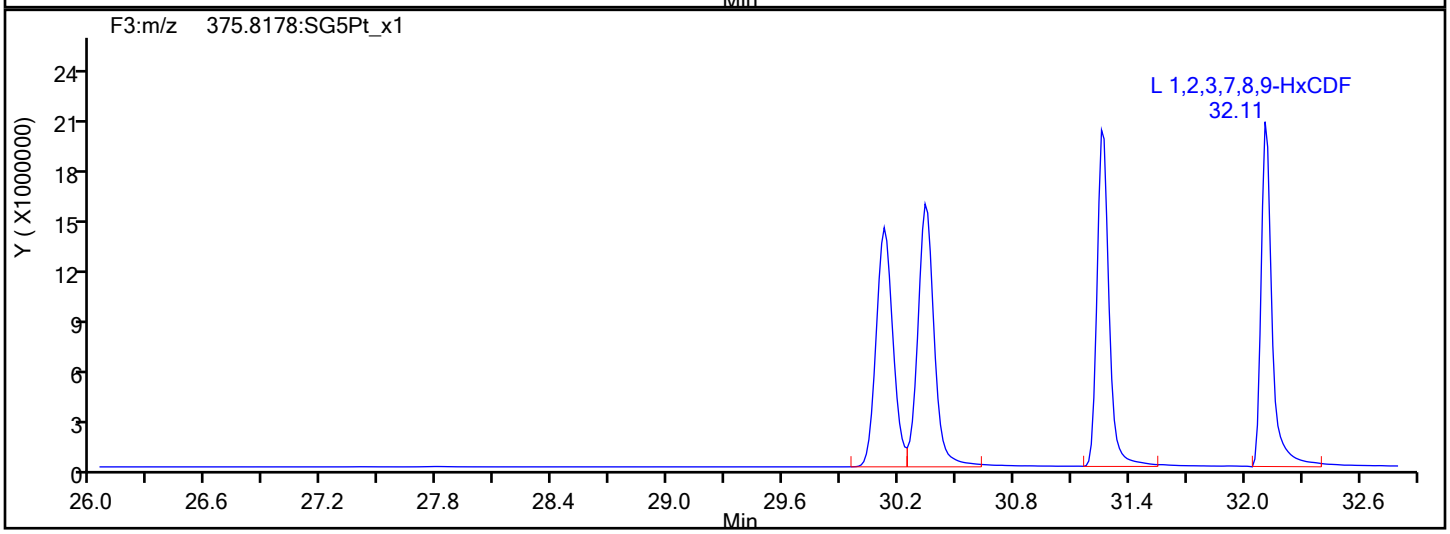
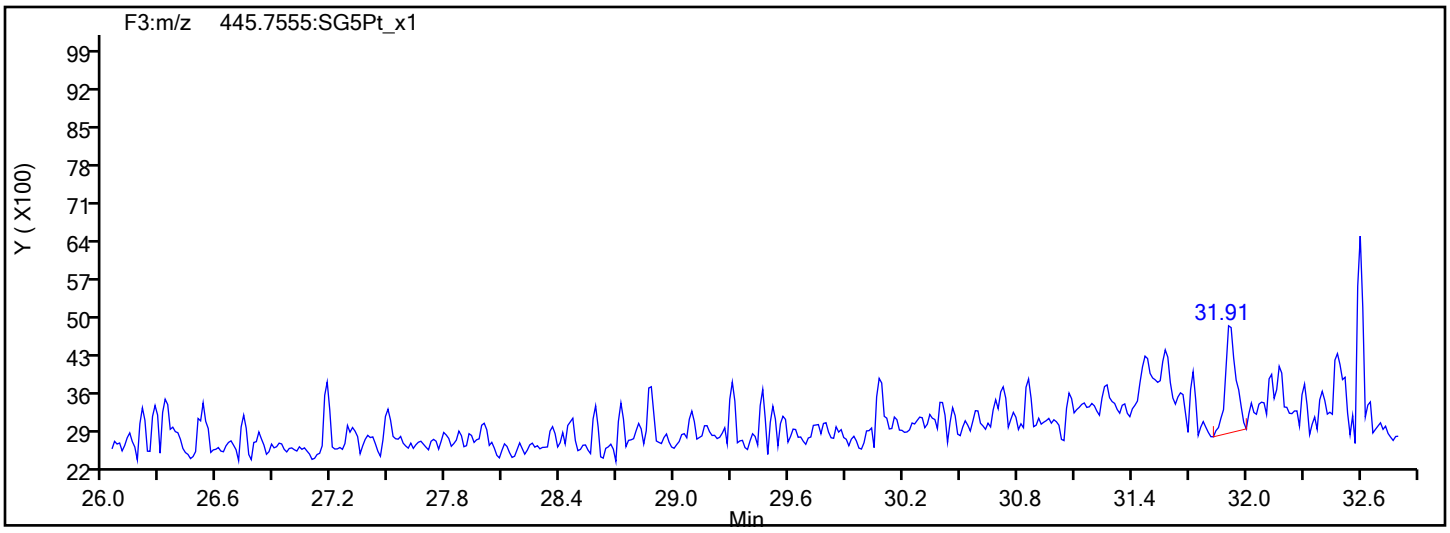
HxCDF





HxCDF Interference Mass



Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_6.d

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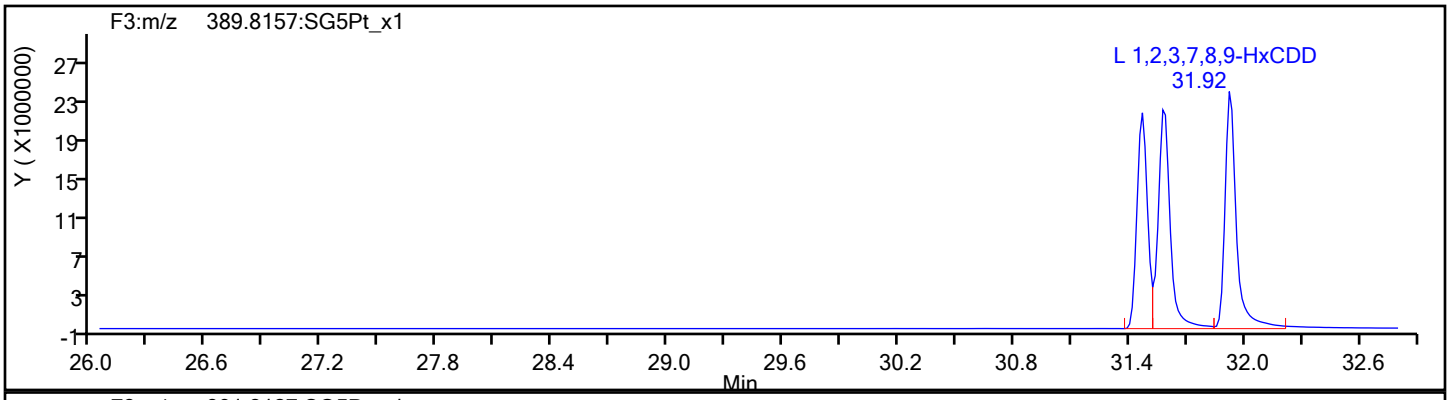
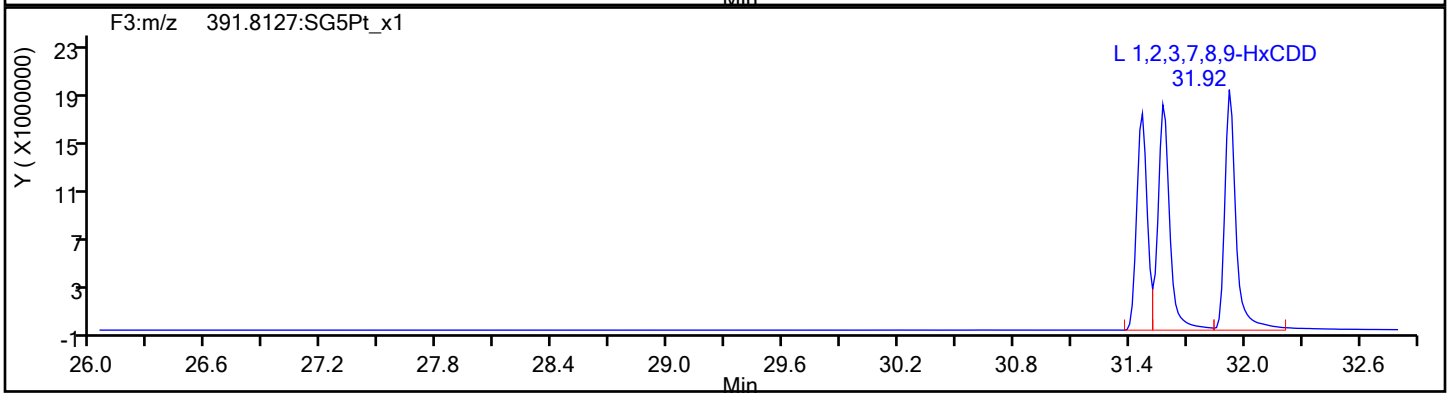
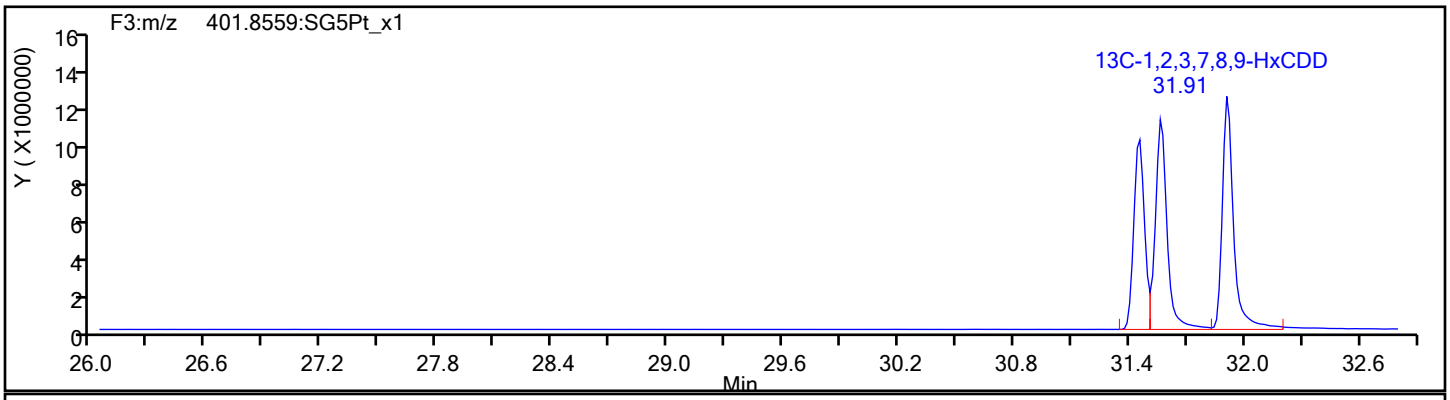
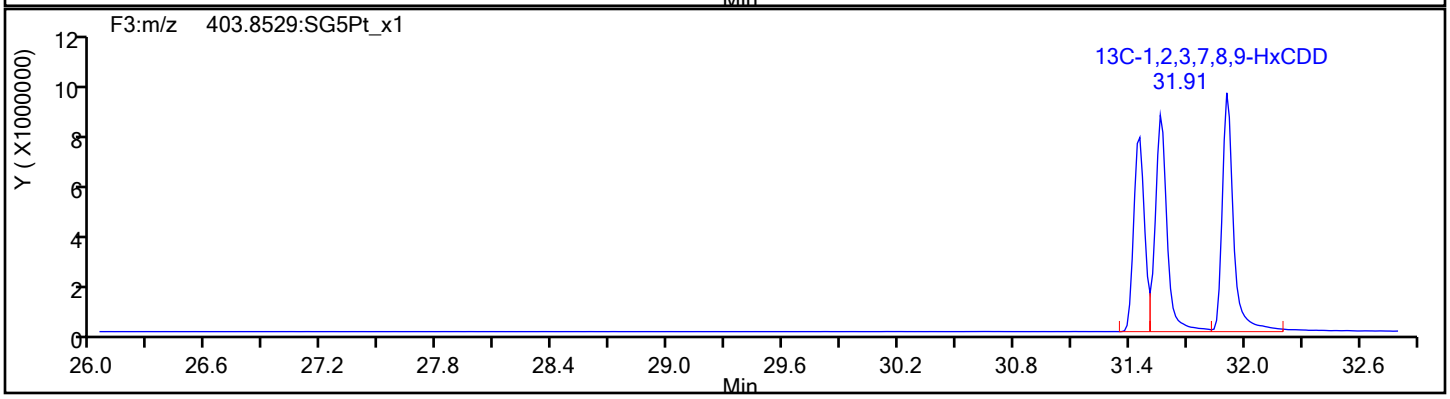
HxCDD





HxCDD Standards





Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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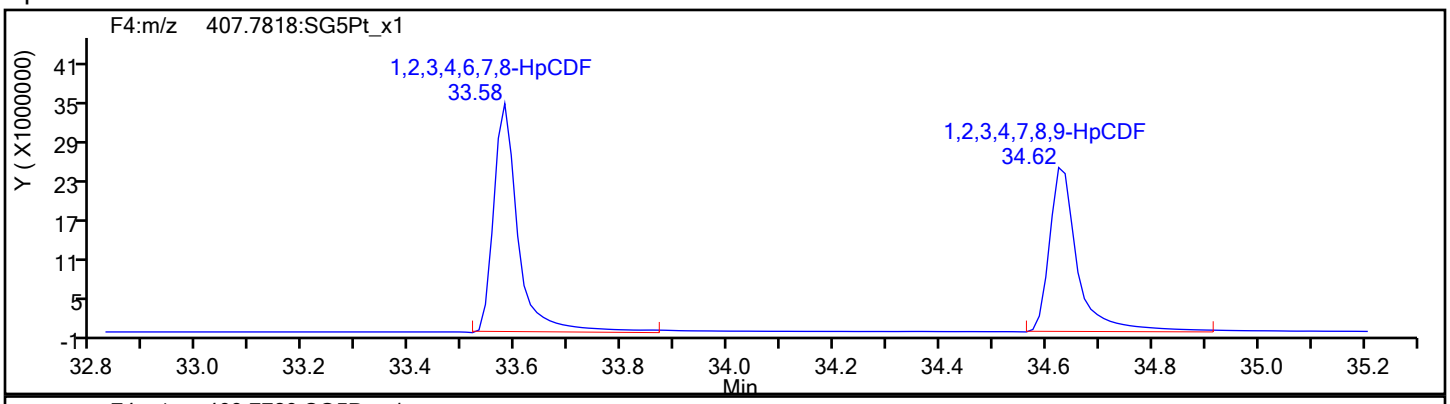
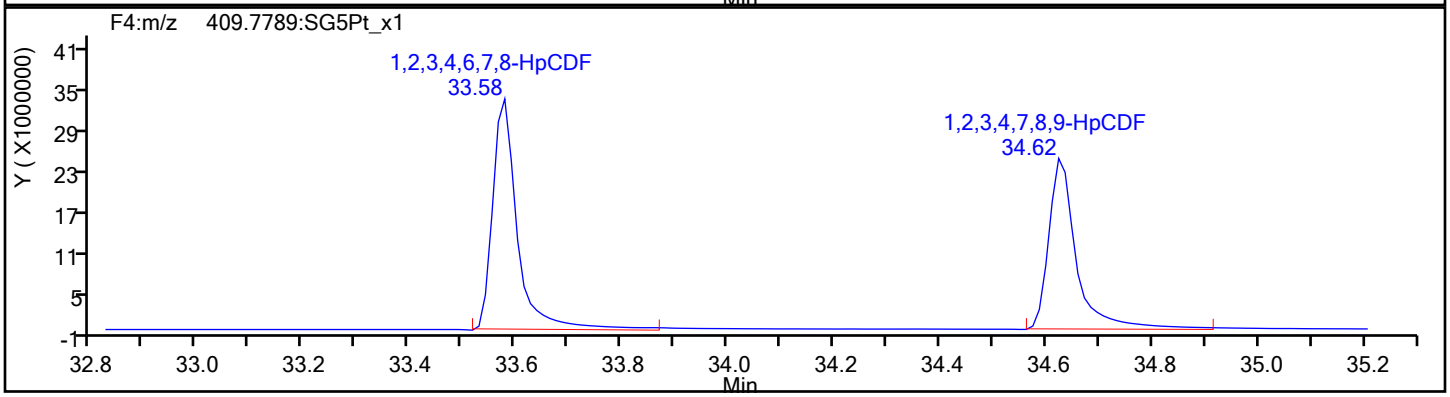
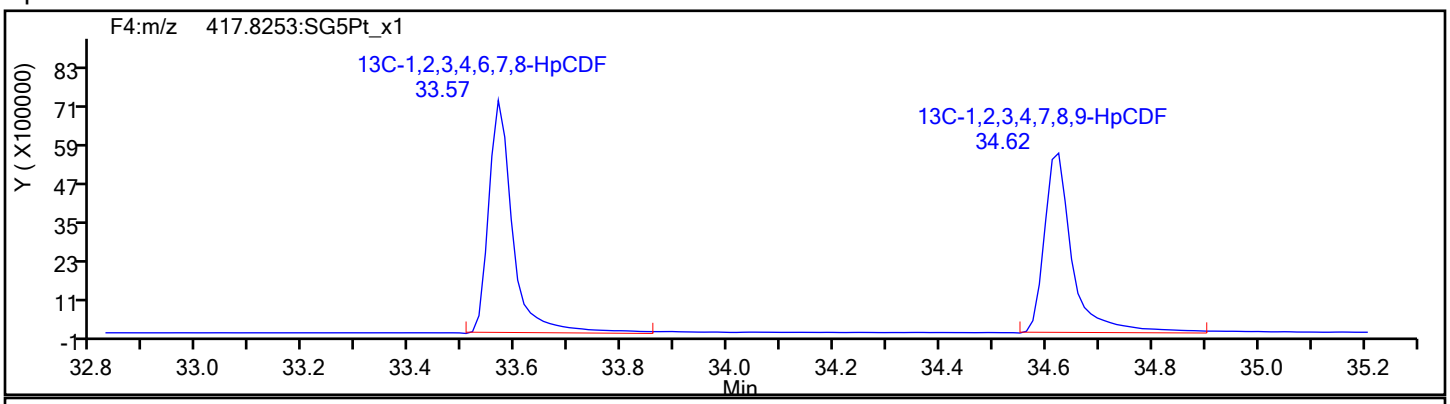
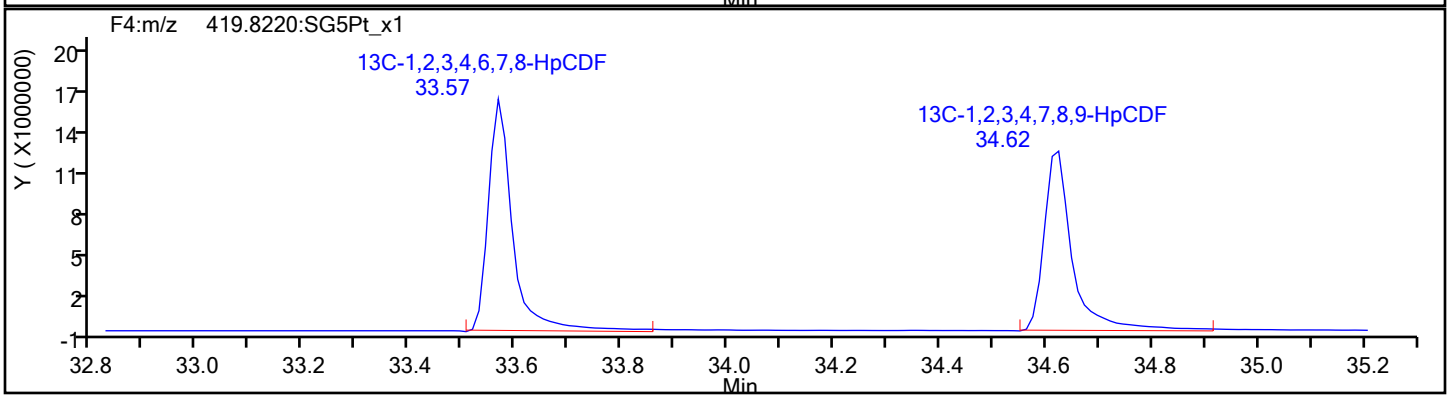
HpCDF





HpCDF Standards





Report Date: 14-Nov-2019 16:54:39 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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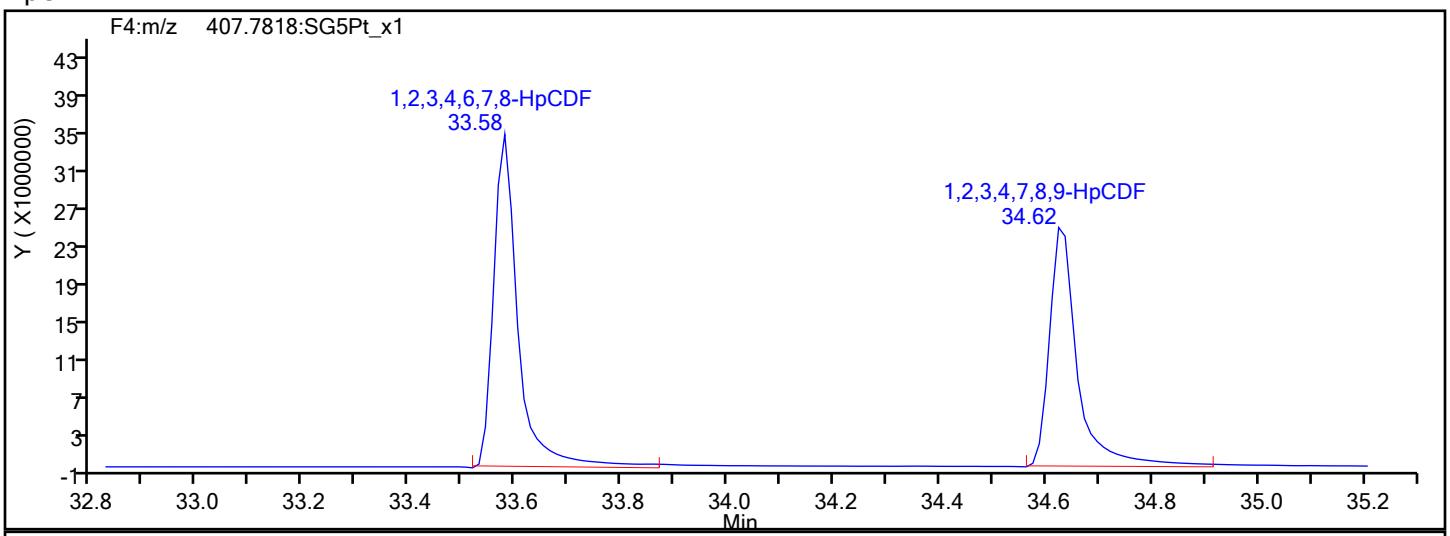
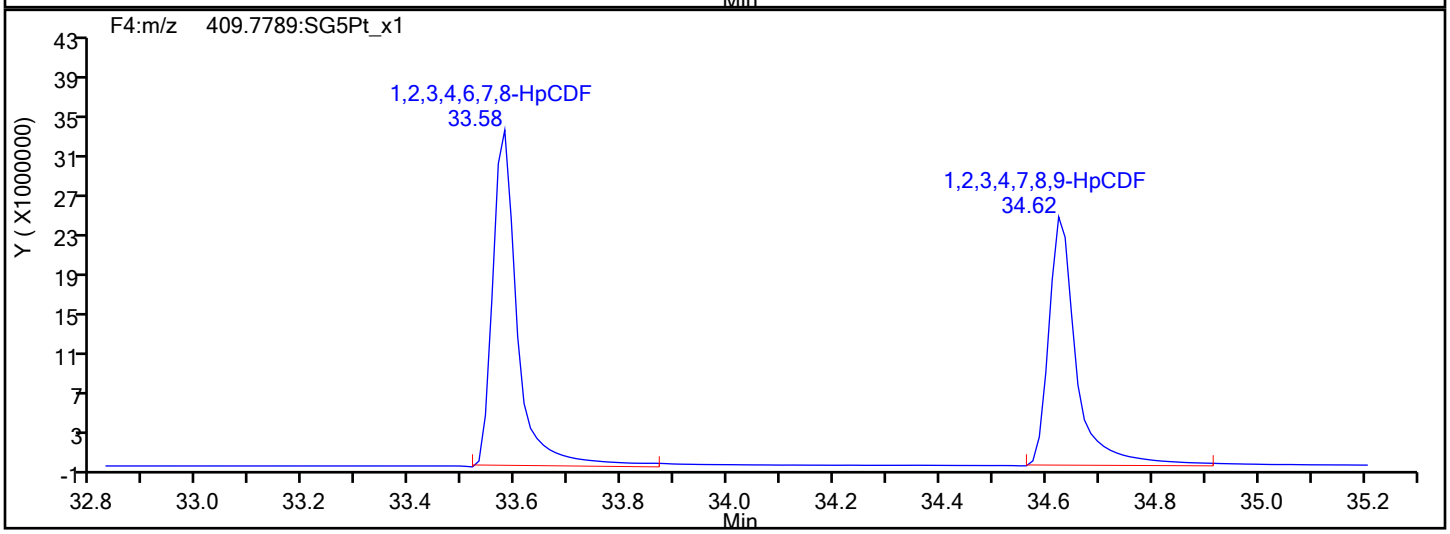
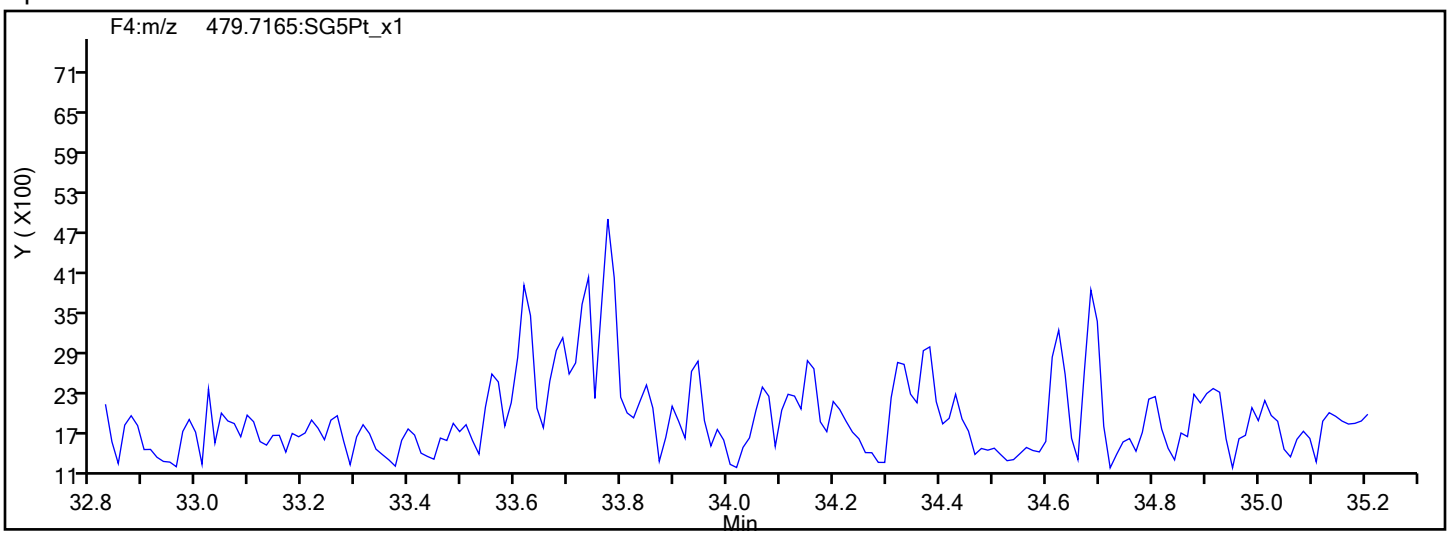
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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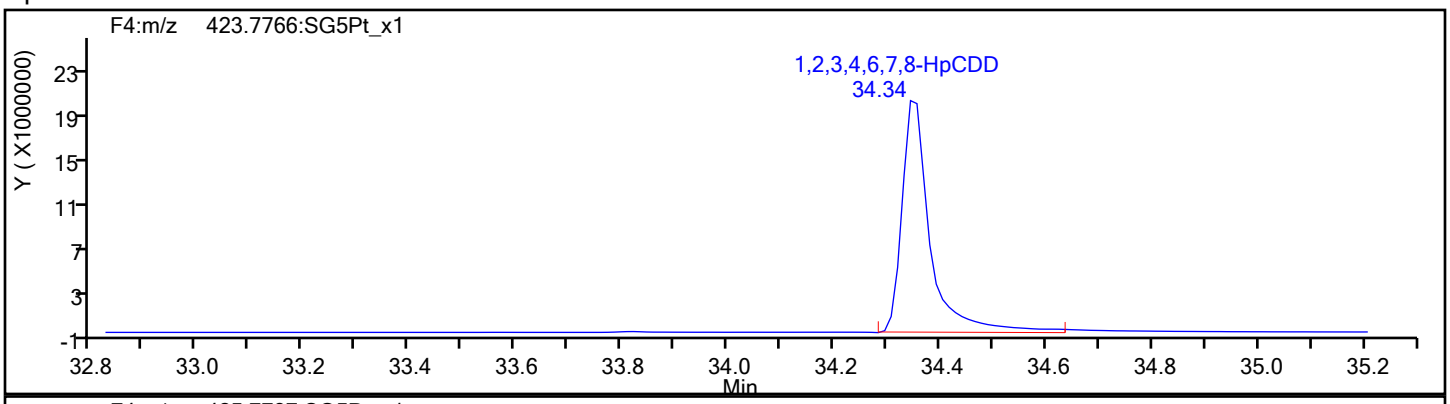
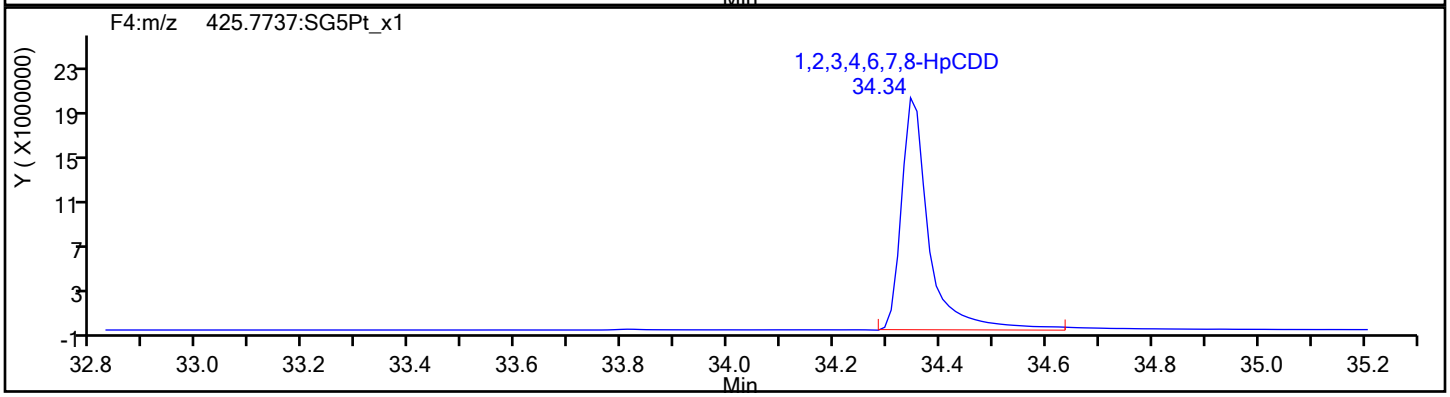
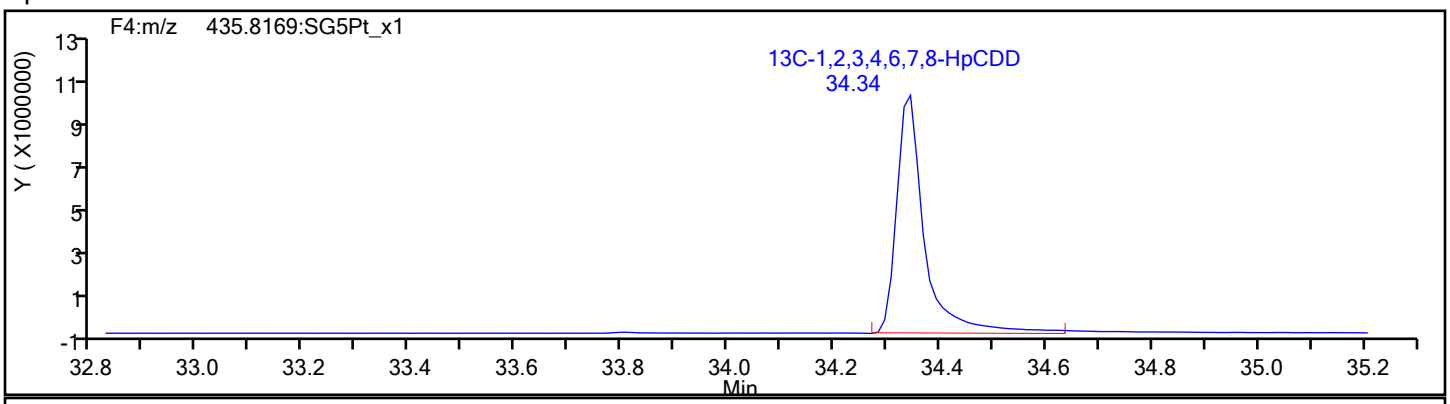
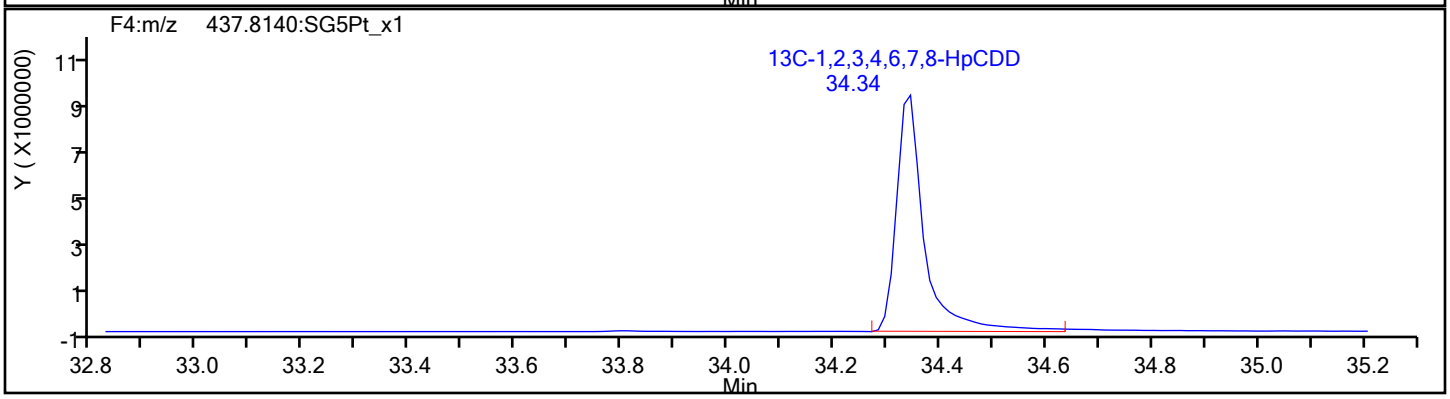
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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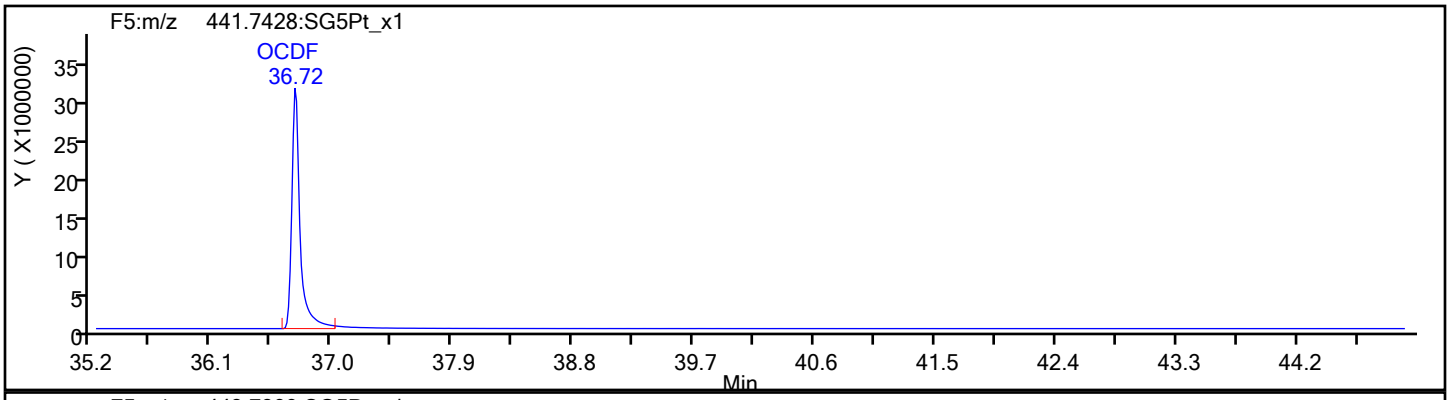
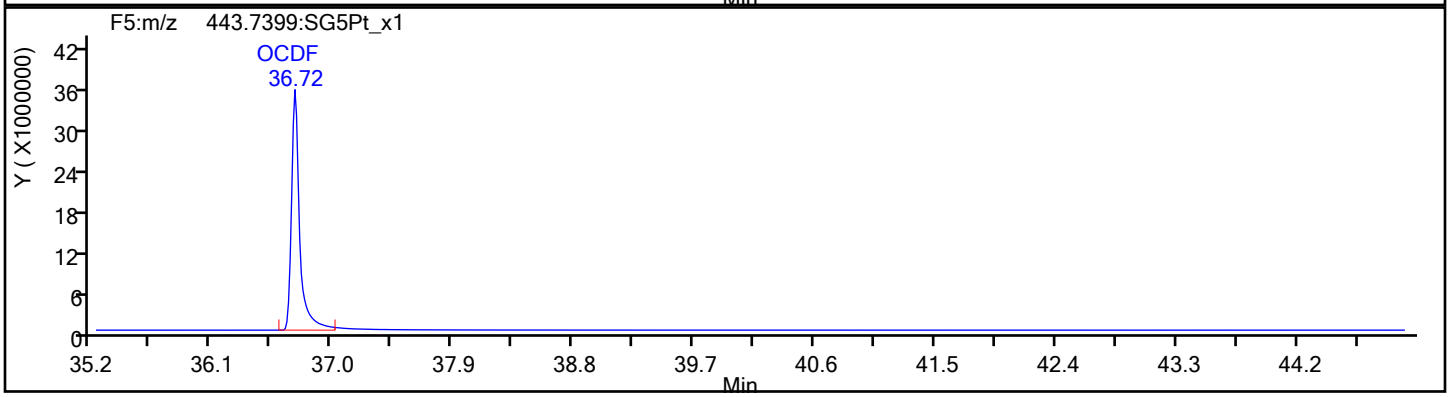
OCDF





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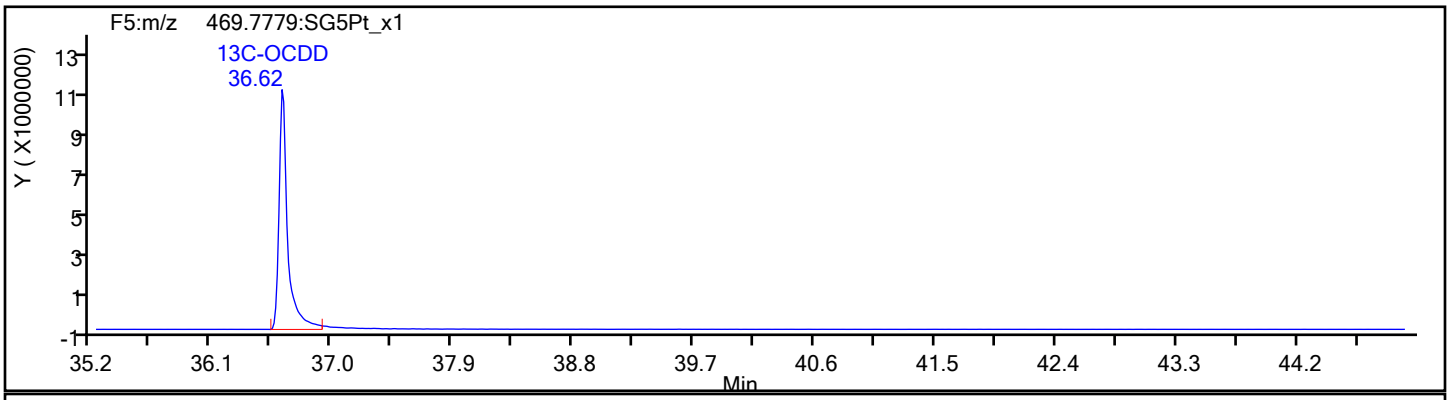

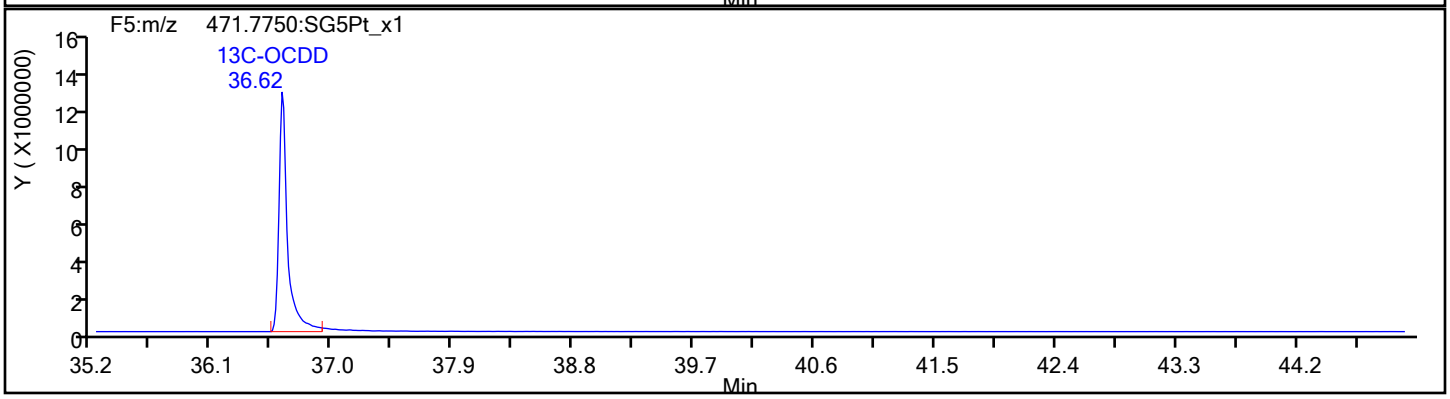

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Eurofins TestAmerica, Sacramento

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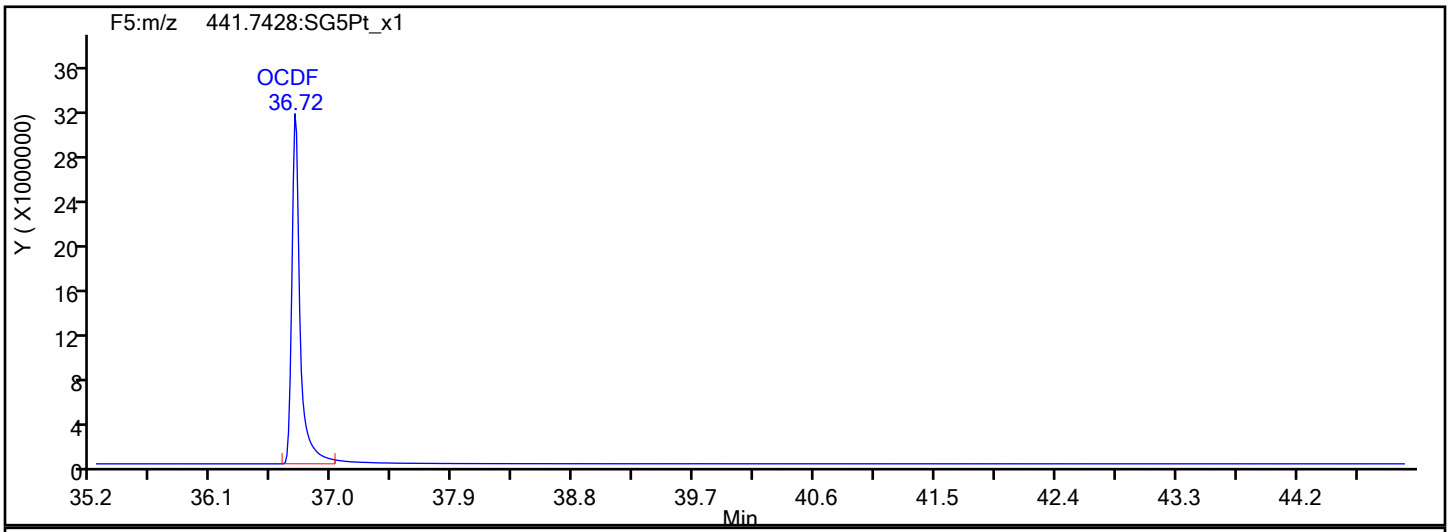
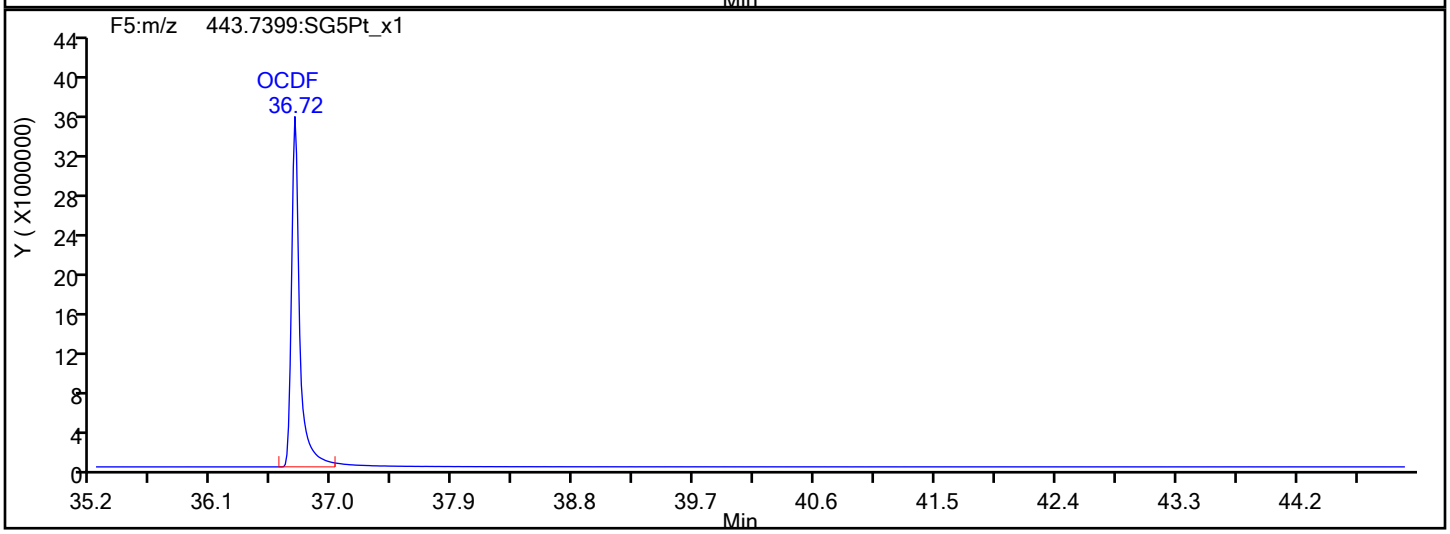
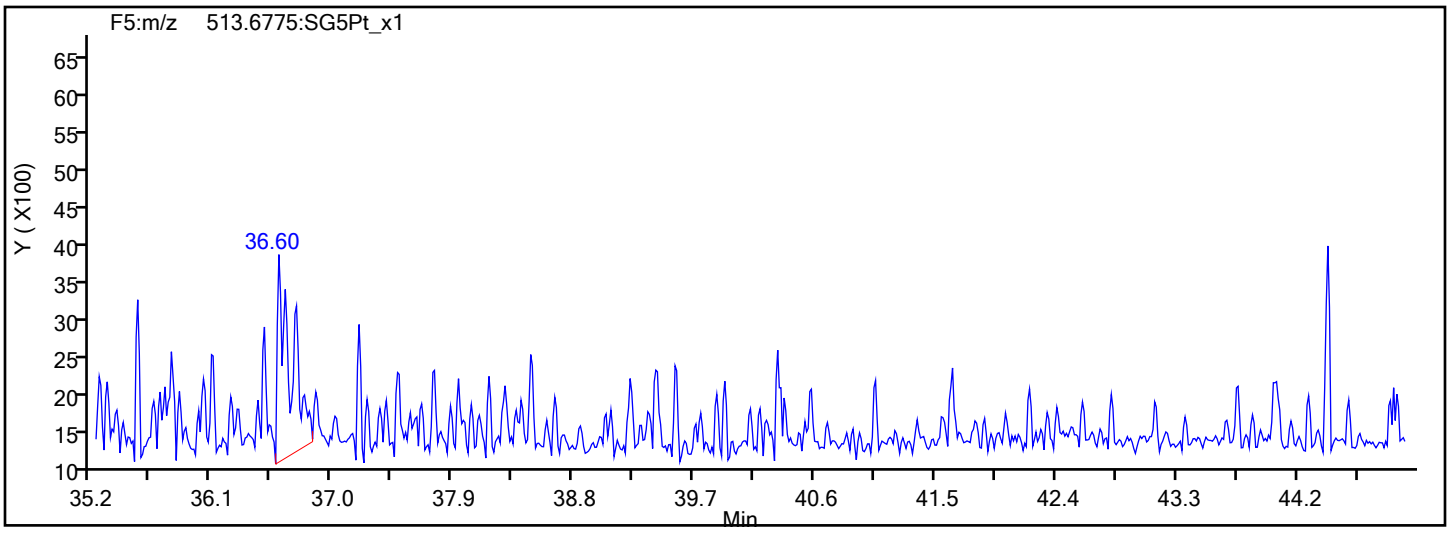
OCDF





OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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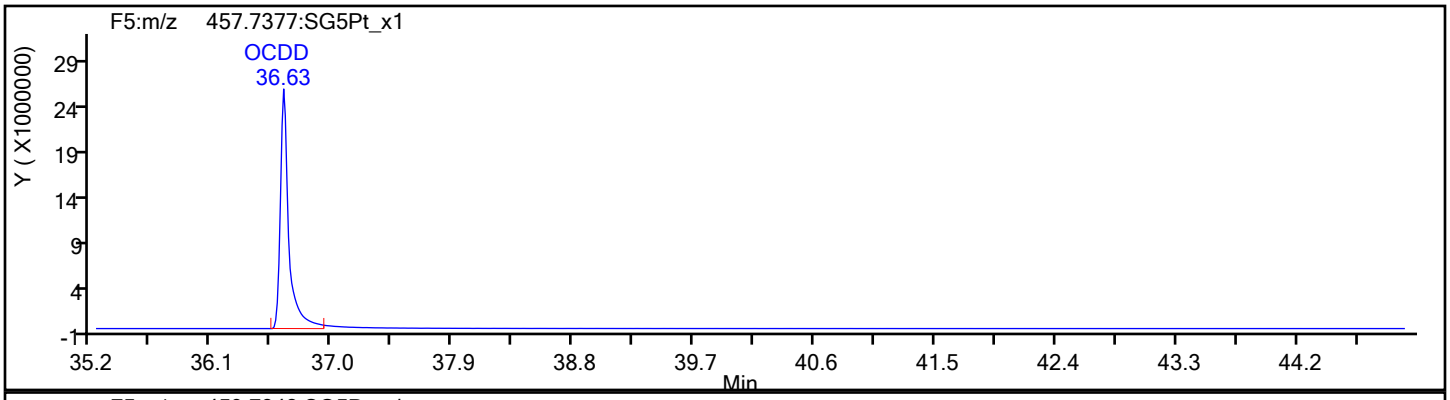
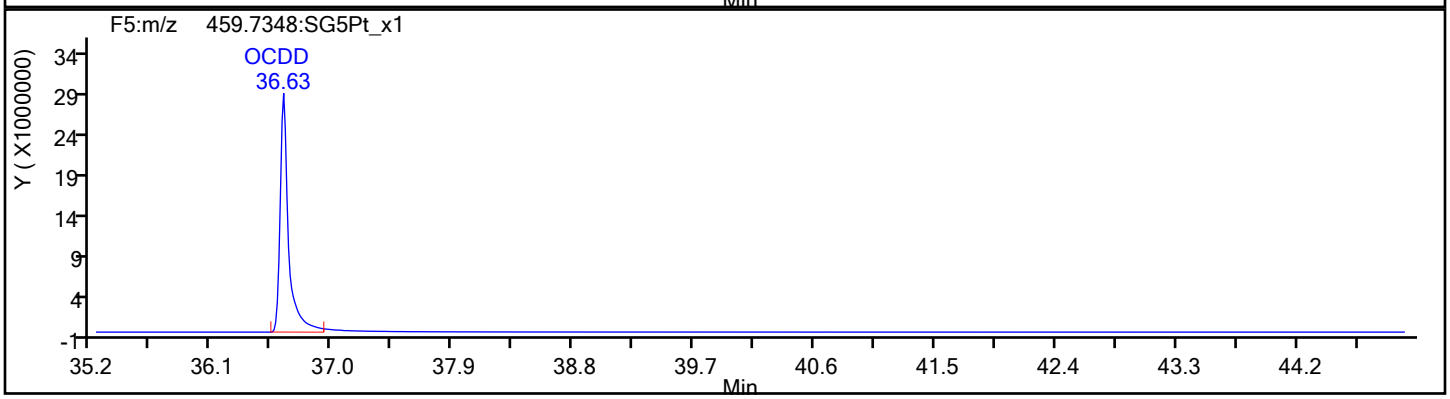
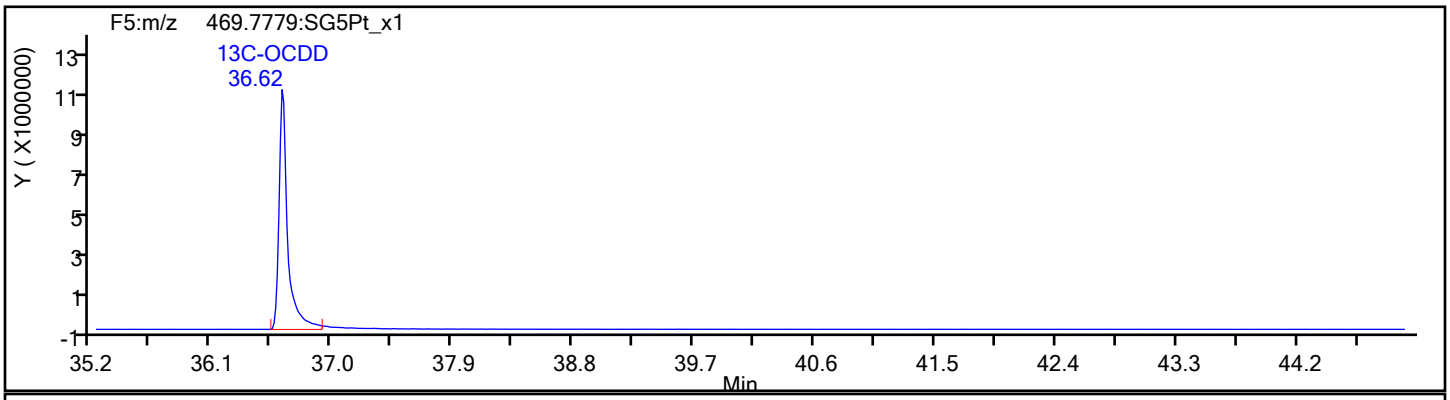
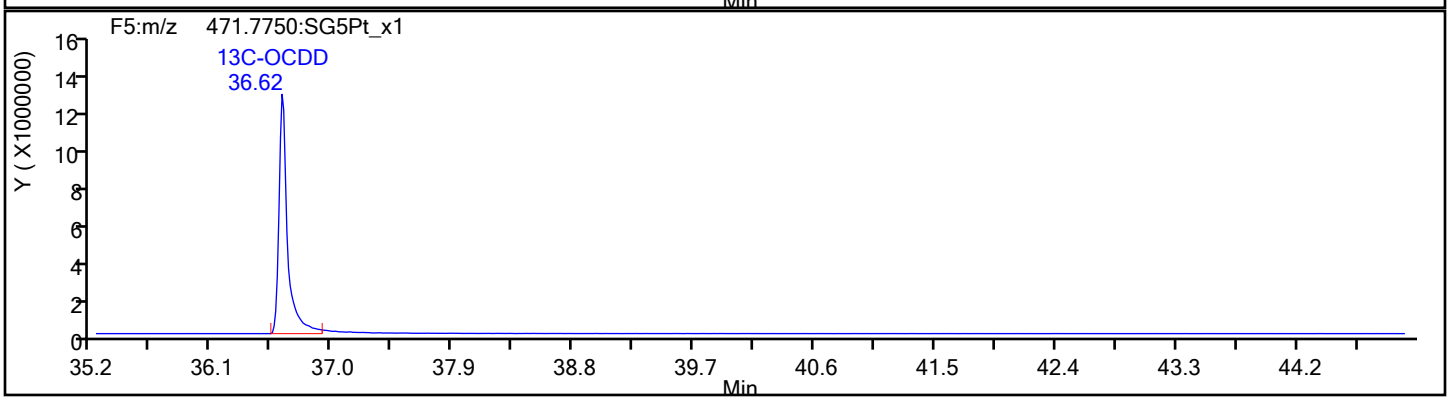
OCDD





OCDD Standards





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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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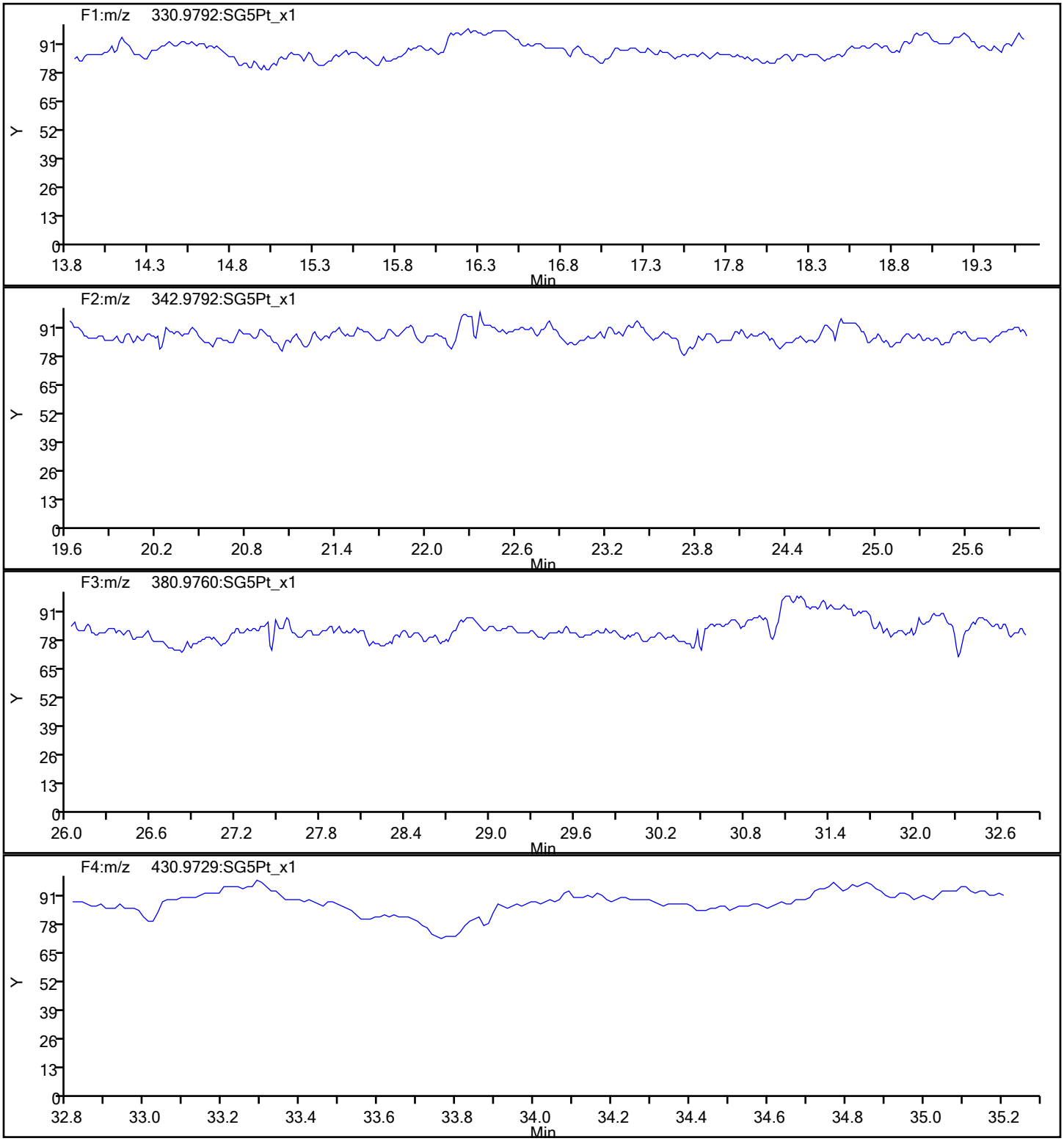

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Eurofins TestAmerica, Sacramento

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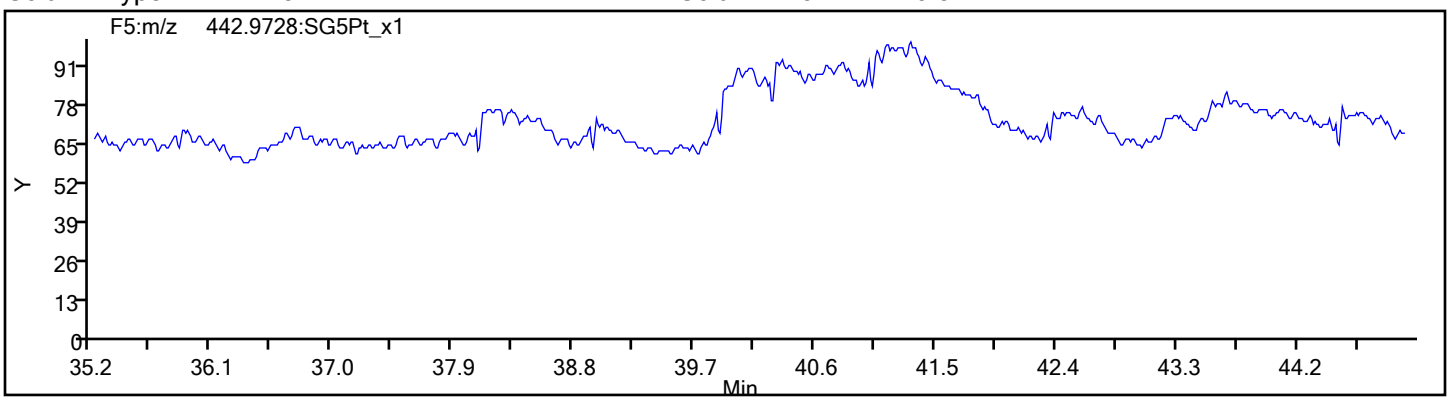


Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Nov-2019 12:50:49 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419D CS-6 HRDXNL6_00024
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:42 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:53:34

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.532	104189512	0.80	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	139383549	0.77	1.3318	100.4	100.4	0.1502	0.1502	100	
2,3,7,8-TCDF	17.049	252127694	0.76	0.9005	200.9	200.9	0.3290	0.3290	100	
S Total TCDF					200.9	200.9	0.3290	0.3290		
D 13C-2,3,7,8-TCDD	17.729	102520996	0.78	0.9647	102.0	102.0	0.2050	0.2050	102	
2,3,7,8-TCDD	17.744	219628955	0.78	1.0698	200.3	200.3	0.2049	0.2049	100	
$ 37Cl4-2,3,7,8-TCDD	17.744	279889579		1.3082	205.3	205.3	0.3239	0.3239	103	
S Total TCDD					200.3	200.3	0.2049	0.2049		
D 13C-1,2,3,7,8-PeCDF	21.949	115062874	1.58	1.0537	104.8	104.8	0.2725	0.2725	105	
1,2,3,7,8-PeCDF	21.977	1124414192	1.55	0.9704	1007.0	1007.0	3.488	3.488	101	
D 13C-2,3,4,7,8-PeCDF	23.258	110168728	1.57	1.0173	103.9	103.9	0.2822	0.2822	104	
2,3,4,7,8-PeCDF	23.286	1101823445	1.54	0.9986	1001.6	1001.6	3.845	3.845	100	
S Total PeCDF					2008.6	2008.6	3.667	3.667		
D 13C-1,2,3,7,8-PeCDD	23.968	79581792	1.57	0.7281	104.9	104.9	0.1464	0.1464	105	
1,2,3,7,8-PeCDD	23.995	803296921	1.58	1.0023	1007.0	1007.0	1.370	1.370	101	
S Total PeCDD					1007.0	1007.0	1.370	1.370		
D 13C-1,2,3,4,7,8-HxCDF	30.113	80175121	0.52	0.9632	102.3	102.3	0.5088	0.5088	102	
1,2,3,4,7,8-HxCDF	30.140	844095405	1.21	1.0315	1020.7	1020.7	7.301	7.301	102	
D 13C-1,2,3,6,7,8-HxCDF	30.326	88786422	0.51	1.0646	102.5	102.5	0.4603	0.4603	103	
1,2,3,6,7,8-HxCDF	30.353	906309496	1.21	1.0235	997.3	997.3	6.332	6.332	99.73	
D 13C-2,3,4,6,7,8-HxCDF	31.258	80545635	0.52	0.9696	102.1	102.1	0.5054	0.5054	102	
2,3,4,6,7,8-HxCDF	31.271	848438372	1.21	1.0645	989.5	989.5	5.015	5.015	98.95	
D 13C-1,2,3,7,8,9-HxCDF	32.110	74684364	0.50	0.8955	102.5	102.5	0.5472	0.5472	103	
1,2,3,7,8,9-HxCDF	32.123	798982446	1.22	1.0664	1003.2	1003.2	4.759	4.759	100	
S Total HxCDF					4010.7	4010.7	5.852	5.852		
* 13C-1,2,3,7,8,9-HxCDD	31.923	81352582	1.24	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.457	63178776	1.24	0.7590	102.3	102.3	0.4431	0.4431	102	
1,2,3,4,7,8-HxCDD	31.471	661180887	1.29	1.0054	1040.9	1040.9	3.393	3.393	104	
D 13C-1,2,3,6,7,8-HxCDD	31.577	78792852	1.25	0.9247	104.7	104.7	0.3637	0.3637	105	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.590	758968703	1.20	0.9833	979.6	979.6	3.245	3.245	97.96	
1,2,3,7,8,9-HxCDD	31.937	769482602	1.24	1.1036	982.3	982.3	2.988	2.988	98.23	
S Total HxCDD					3002.8	3002.8	3.209	3.209		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	66583432	0.44	0.7930	103.2	103.2	1.934	1.934	103	
1,2,3,4,6,7,8-HpCDF	33.579	932005937	1.03	1.4240	982.9	982.9	11.5	11.5	98.29	
D 13C-1,2,3,4,7,8,9-HpCDF	34.624	62876654	0.44	0.7296	105.9	105.9	2.102	2.102	106	
1,2,3,4,7,8,9-HpCDF	34.637	807051823	1.03	1.2834	1000.1	1000.1	14.9	14.9	100	
S Total HpCDF					1983.1	1983.1	13.2	13.2		
D 13C-1,2,3,4,6,7,8-HpCDD	34.345	64235657	1.05	0.7532	104.8	104.8	0.6524	0.6524	105	
1,2,3,4,6,7,8-HpCDD	34.357	650929056	1.04	1.0174	996.0	996.0	5.161	5.161	99.60	
S Total HpCDD					996.0	996.0	5.161	5.161		
D 13C-OCDD	36.633	102351522	0.90	0.5621	223.8	223.8	0.3041	0.3041	112	
OCDF	36.729	1329507408	0.90	1.3047	1991.2	1991.2	1.558	1.558	99.56	
OCDD	36.646	1103964033	0.89	1.0997	1961.7	1961.7	2.344	2.344	98.08	

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Nov-2019 12:50:49 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC111419D CS-6 HRDXNL6_00024
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 16:54:42 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 13:53:34

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.532	17.539	0		46236786	11633976	10501	26252	1108		
333.9339	17.532	17.539	0		57952726	14697189	10323	25807	1424	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.972	60749751	15566112	11308	28270	1377		
317.9389	17.034	17.034	0	0.972	78633798	20178356	9759	24397	2068	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	108470527	27601651	16205	40512	1703		
305.8987	17.049	17.049	0	1.001	143657167	36596012	26161	65402	1399	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.011	45055920	10702642	10501	26252	1019		
333.9339	17.729	17.729	0	1.011	57465076	13740013	10323	25807	1331	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	96256563	23442657	9921	24802	2363		
321.8936	17.744	17.744	0	1.001	123372392	30056521	11506	28765	2612	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.012	279889579	67879777	44630	111575	1521		
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.252	70506890	12697127	17938	44845	708		
353.8970	21.949	21.949	0	1.252	44555984	8164125	12301	30752	664	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.977	21.971	0	1.001	683340291	122373852	172447	431117	710		
341.8567	21.977	21.971	0	1.001	441073901	78452721	110023	275057	713	1.55(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.327	67305378	11214899	17938	44845	625		
353.8970	23.258	23.258	0	1.327	42863350	7177108	12301	30752	583	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	668637233	110708982	172447	431117	642		
341.8567	23.286	23.286	0	1.001	433186212	71905558	110023	275057	654	1.54(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.367	48675269	7913699	7044	17610	1123		
369.8919	23.968	23.968	0	1.367	30906523	4903004	4180	10450	1173	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	491370587	79336248	43449	108622	1826		
357.8516	23.995	23.995	0	1.001	311926334	50196955	26934	67335	1864	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.113	30.102	1	0.943	27265510	4429566	12759	31897	347		
385.8610	30.113	30.102	1	0.943	52909611	8501490	25021	62552	340	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.140	30.131	0	1.001	462785731	75757000	216451	541127	350		
375.8178	30.126	30.131	0	1.000	381309674	62240038	173055	432637	360	1.21(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.326	30.323	0	0.950	30123983	5116260	12759	31897	401		
385.8610	30.326	30.323	0	0.950	58662439	9907672	25021	62552	396	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.353	30.344	1	1.001	496803305	84486770	216451	541127	390		
375.8178	30.353	30.344	1	1.001	409506191	69401335	173055	432637	401	1.21(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.258	31.247	1	0.979	27474097	6215033	12759	31897	487		
385.8610	31.258	31.247	1	0.979	53071538	12026572	25021	62552	481	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.271	31.265	0	1.000	464804254	108030184	216451	541127	499		
375.8178	31.271	31.265	0	1.000	383634118	89204020	173055	432637	515	1.21(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.110	32.099	1	1.006	25028983	6529616	12759	31897	512		
385.8610	32.110	32.099	1	1.006	49655381	12656763	25021	62552	506	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.123	32.115	0	1.000	439437206	112405900	216451	541127	519		
375.8178	32.123	32.115	0	1.000	359545240	90470116	173055	432637	523	1.22(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.923	31.912	1		45103570	10643779	15645	39112	680		
403.8529	31.923	31.912	1		36249012	8630595	10282	25705	839	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.457	31.452	0	0.985	34999223	9418989	15645	39112	602		
403.8529	31.457	31.452	0	0.985	28179553	7492132	10282	25705	729	1.24(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.471	31.470	0	1.000	372698533	95892507	139281	348202	688		
391.8127	31.471	31.470	0	1.000	288482354	77812791	91500	228750	850	1.29(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.577	31.566	1	0.989	43709013	10063164	15645	39112	643		
403.8529	31.577	31.566	1	0.989	35083839	8020792	10282	25705	780	1.25(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.590	31.582	0	1.000	414124659	100785468	139281	348202	724		
391.8127	31.590	31.582	0	1.000	344844044	79840617	91500	228750	873	1.20(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.937	31.926	1	1.015	426173139	102823281	139281	348202	738		
391.8127	31.923	31.926	0	1.015	343309463	81988301	91500	228750	896	1.24(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.051	20493054	6426150	35648	89120	180		
419.8220	33.567	33.567	0	1.051	46090378	14404490	82592	206480	174	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	473831834	150013839	682505	1706262	220		
409.7789	33.579	33.579	0	1.000	458174103	145958814	676323	1690807	216	1.03(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.624	34.619	0	1.085	19348857	5517602	35648	89120	155		
419.8220	34.624	34.619	0	1.085	43527797	12252910	82592	206480	148	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.637	34.629	0	1.000	410072714	114733033	682505	1706262	168		
409.7789	34.637	34.629	0	1.000	396979109	109312714	676323	1690807	162	1.03(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.345	34.340	0	1.076	32905584	9299037	20228	50570	460		
437.8140	34.345	34.340	0	1.076	31330073	8943517	17654	44135	507	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.357	34.349	0	1.000	332533058	93655389	196798	491995	476		
425.7737	34.357	34.349	0	1.000	318395998	88289091	186329	465822	474	1.04(0.88-1.20)	
13C-OCDD											
469.7779	36.633	36.624	1	1.148	48539634	11019070	7123	17807	1547		
471.7750	36.633	36.624	1	1.148	53811888	12249401	6055	15137	2023	0.90(0.76-1.02)	
OCDF											
441.7428	36.729	36.720	1	1.003	630543815	150072403	42259	105647	3551		
443.7399	36.729	36.720	1	1.003	698963593	164553935	52356	130890	3143	0.90(0.76-1.02)	
OCDD											
457.7377	36.646	36.636	1	1.000	520204093	116760134	64002	160005	1824		
459.7348	36.633	36.636	0	1.000	583759940	129638160	55943	139857	2317	0.89(0.76-1.02)	

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

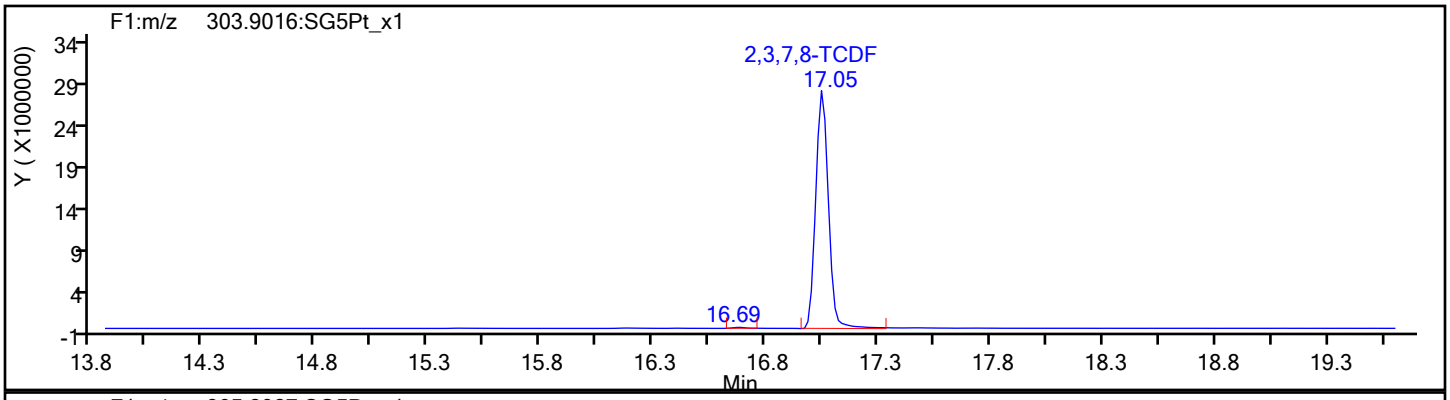
Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

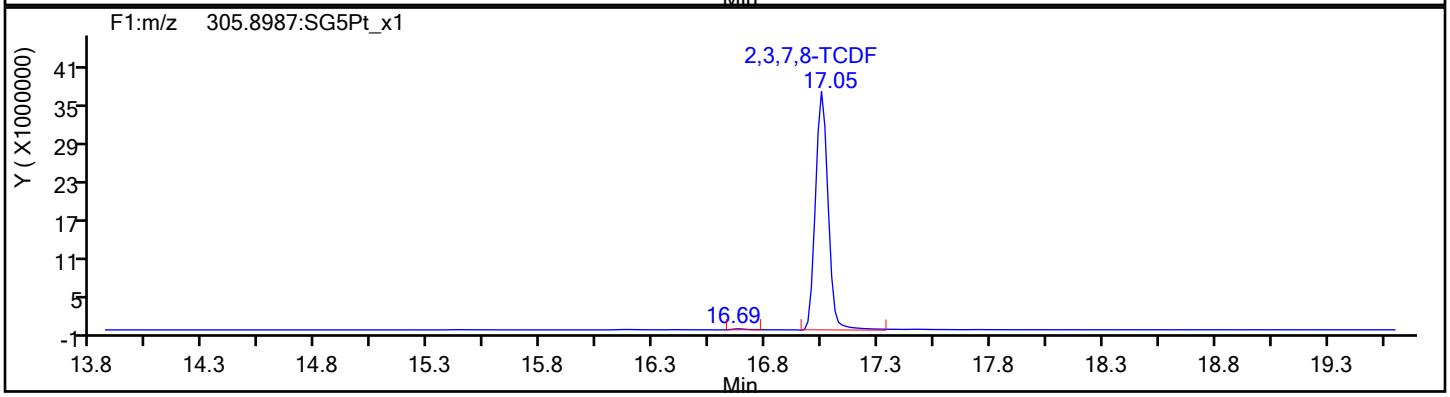
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

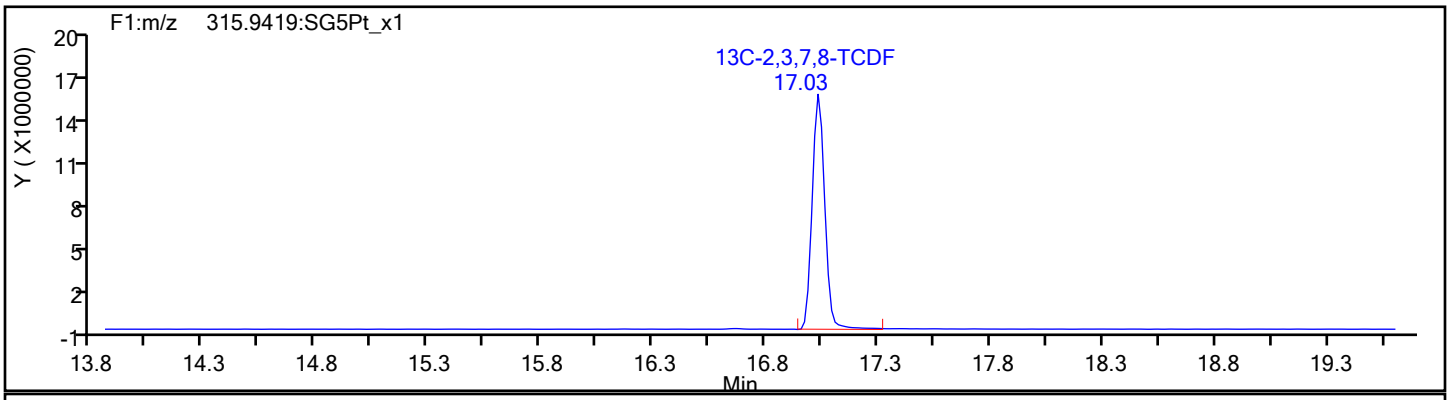
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

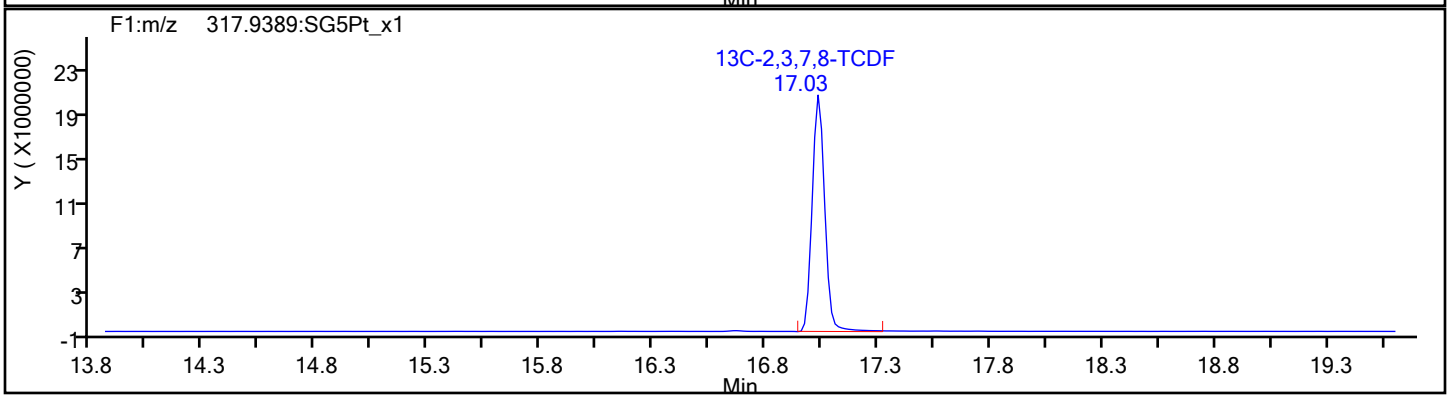
TCDF





TCDF Standards





Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
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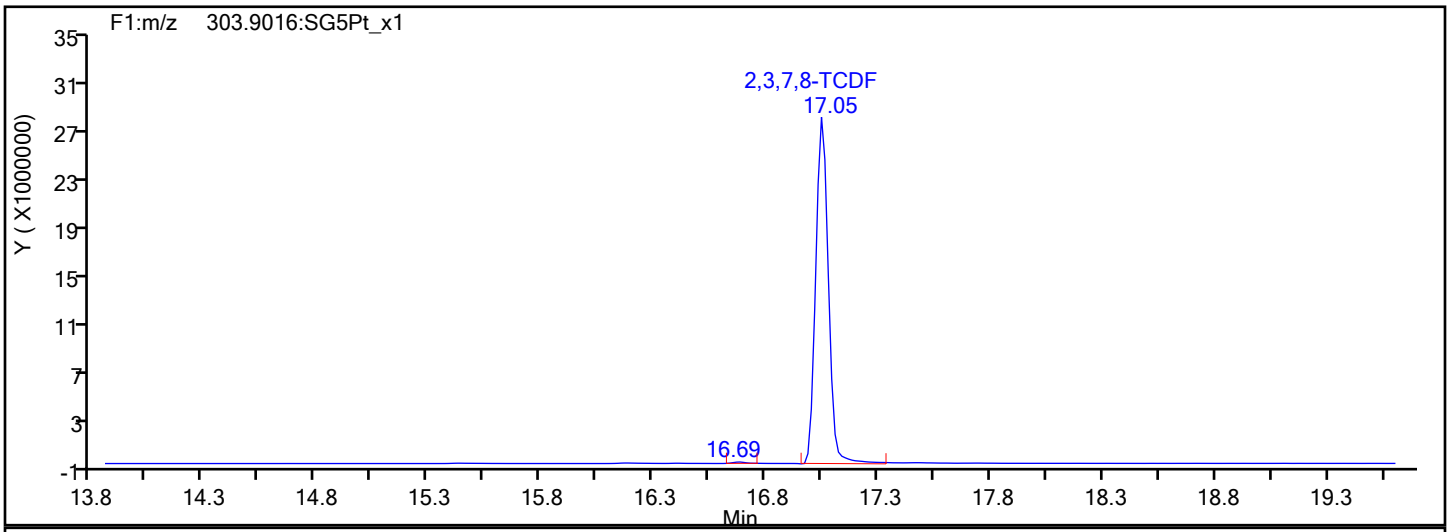
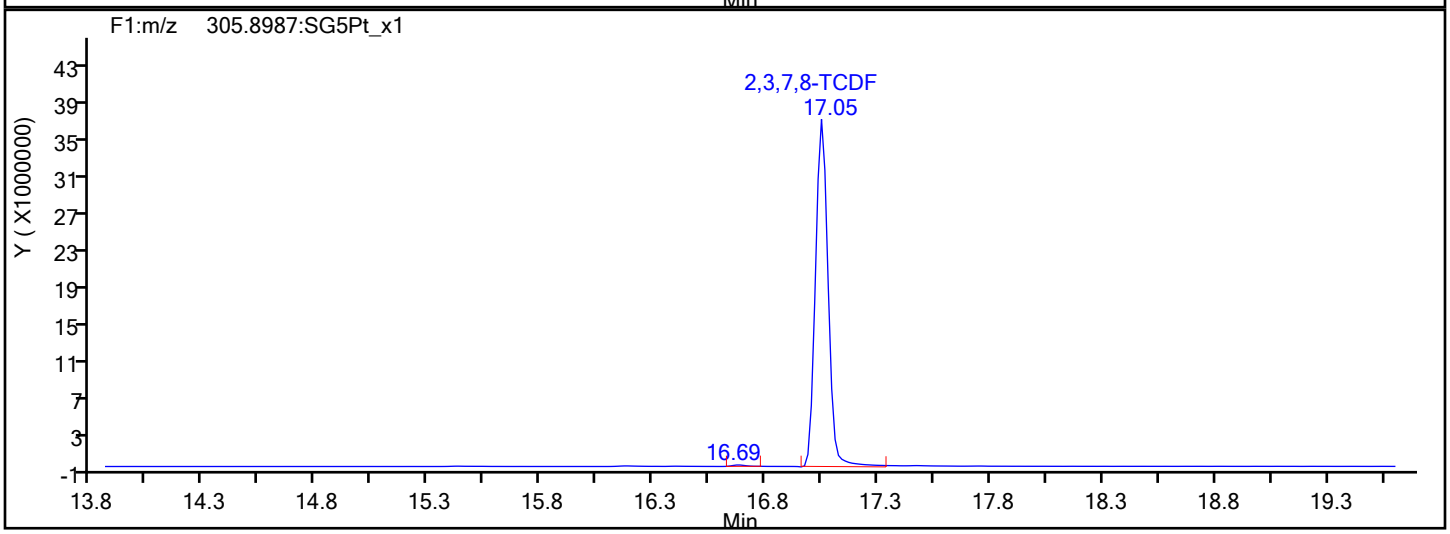
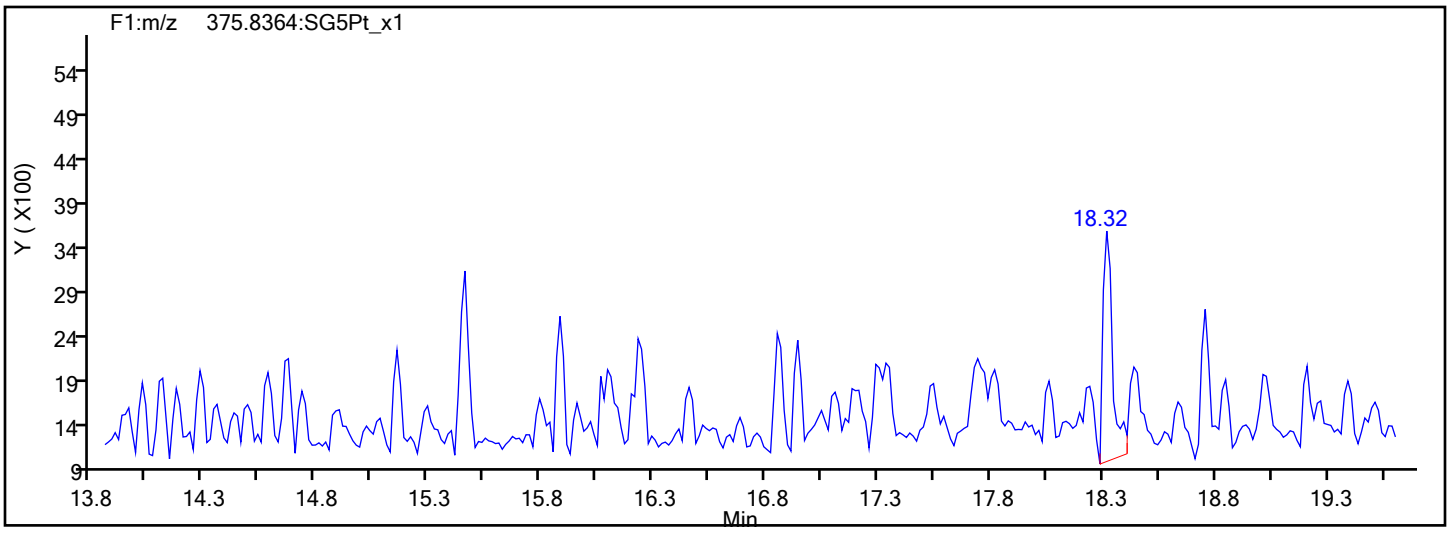
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

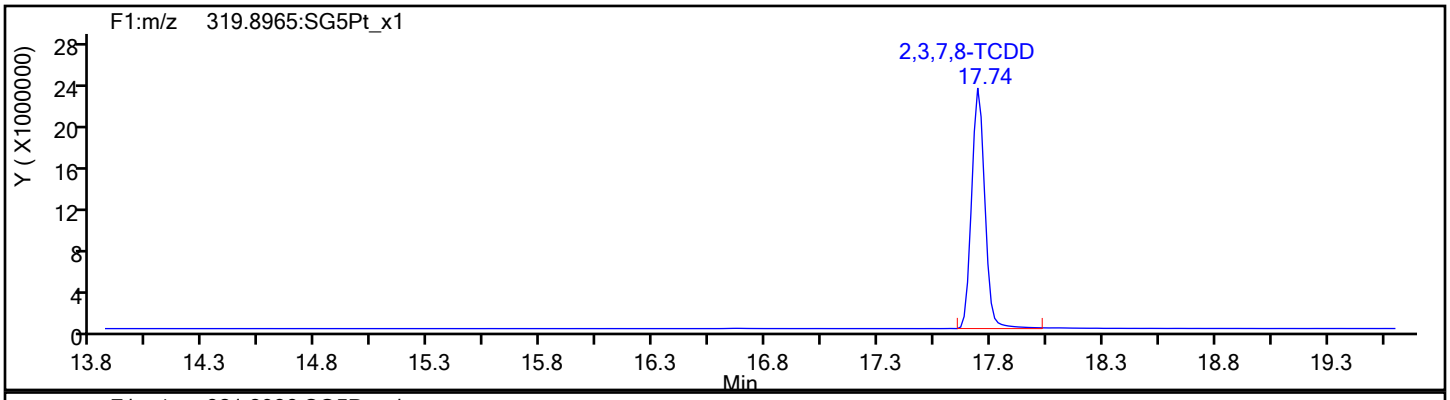


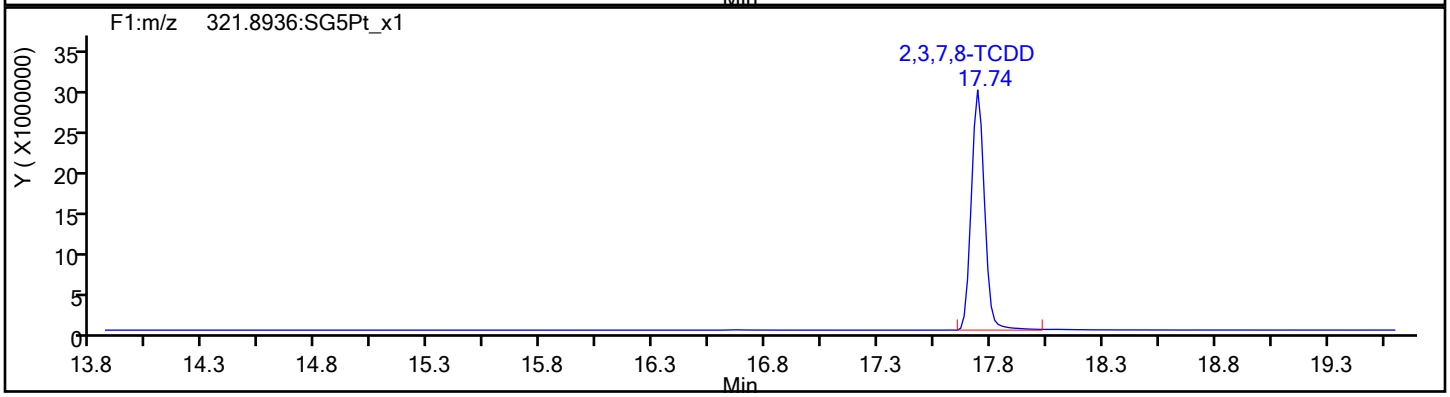
Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

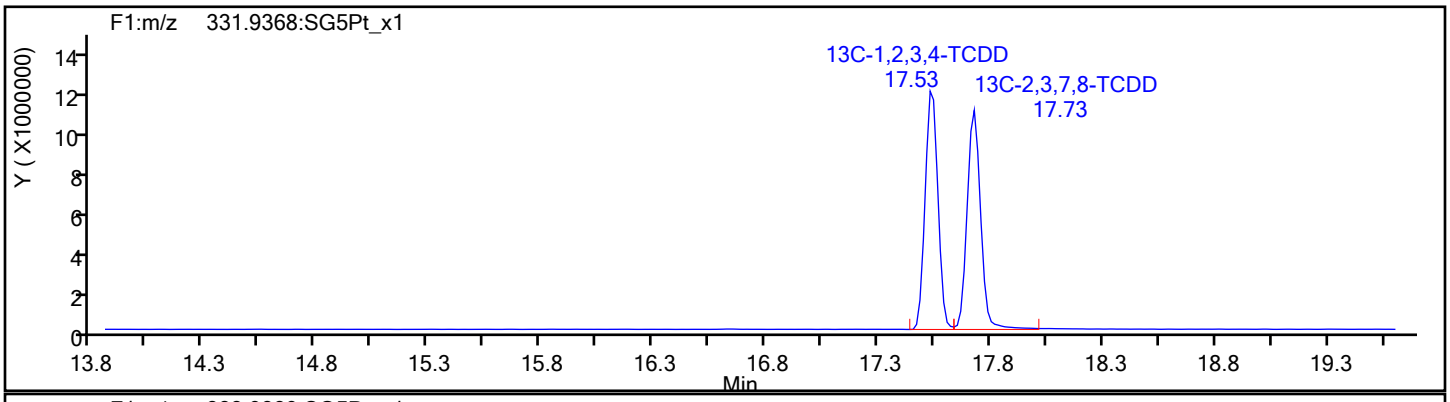
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

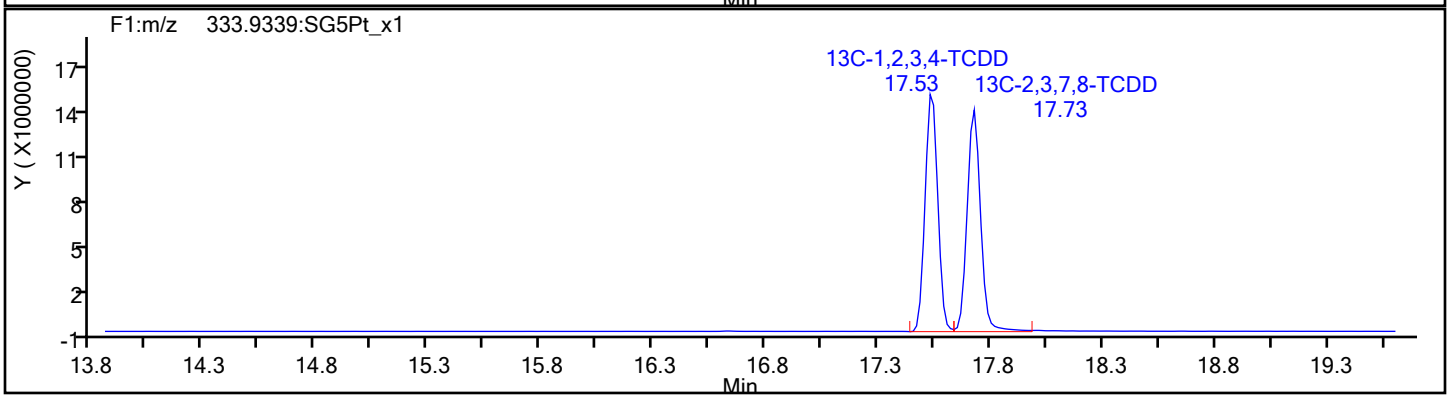
TCDD





TCDD Standards





Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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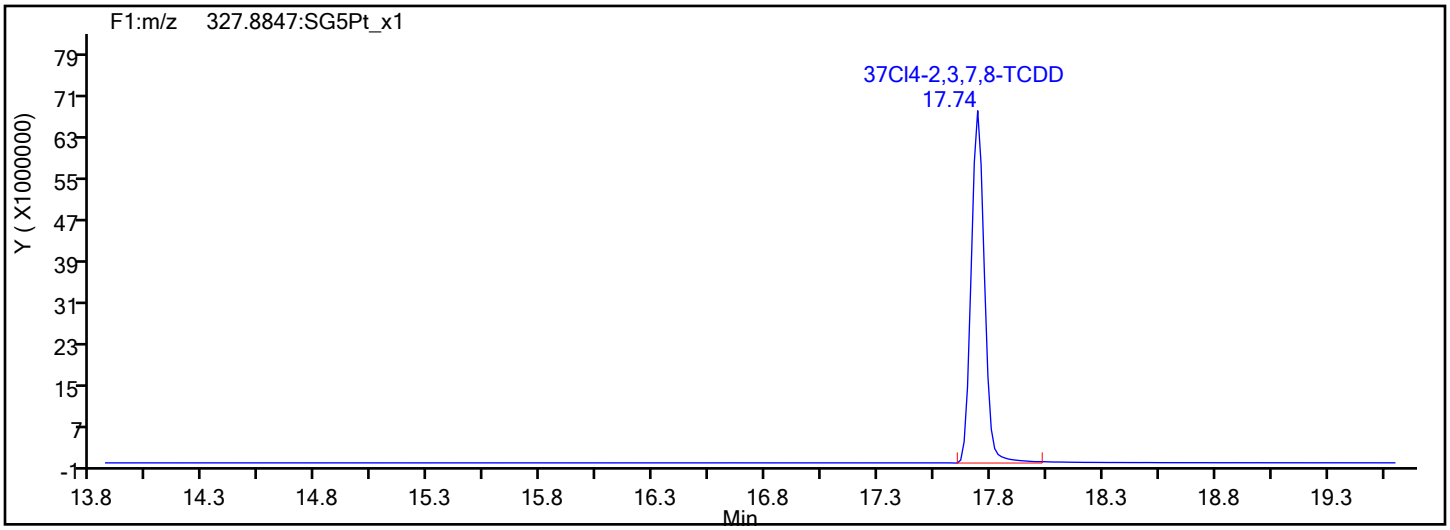
37Cl4-TCDD



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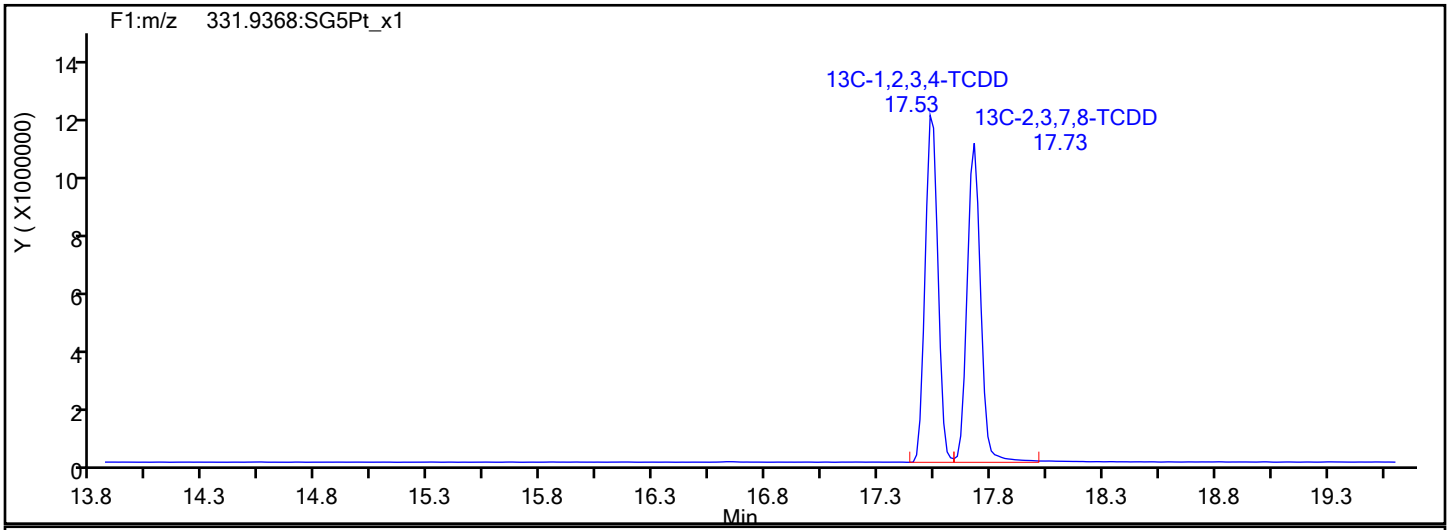

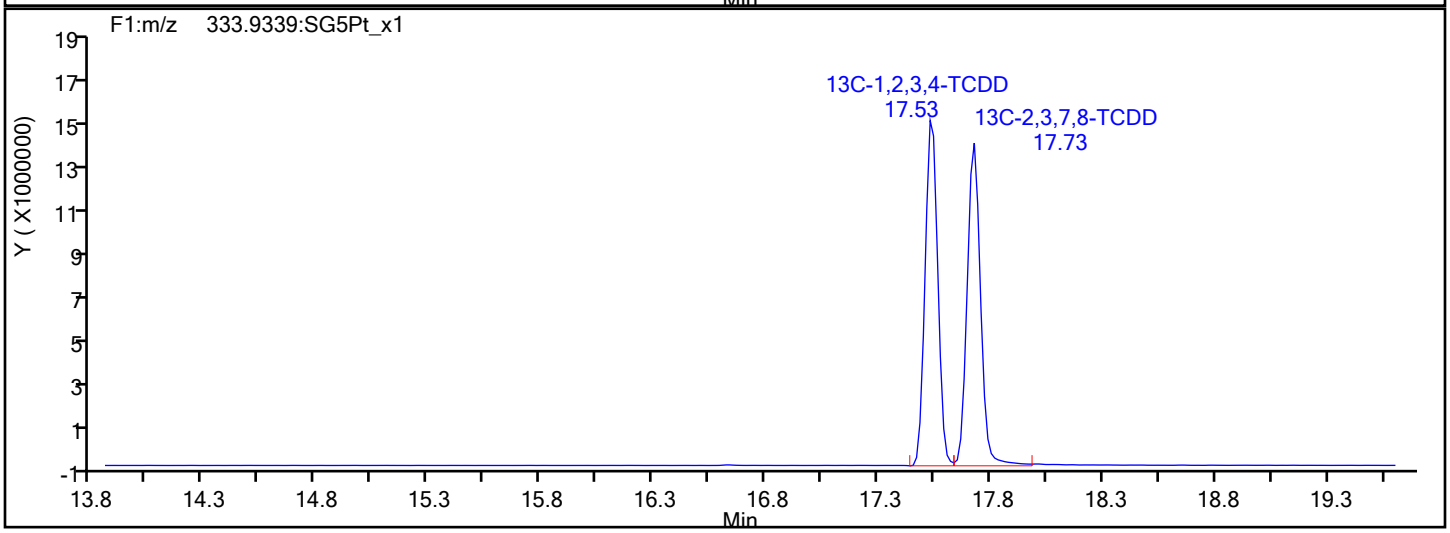

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Eurofins TestAmerica, Sacramento

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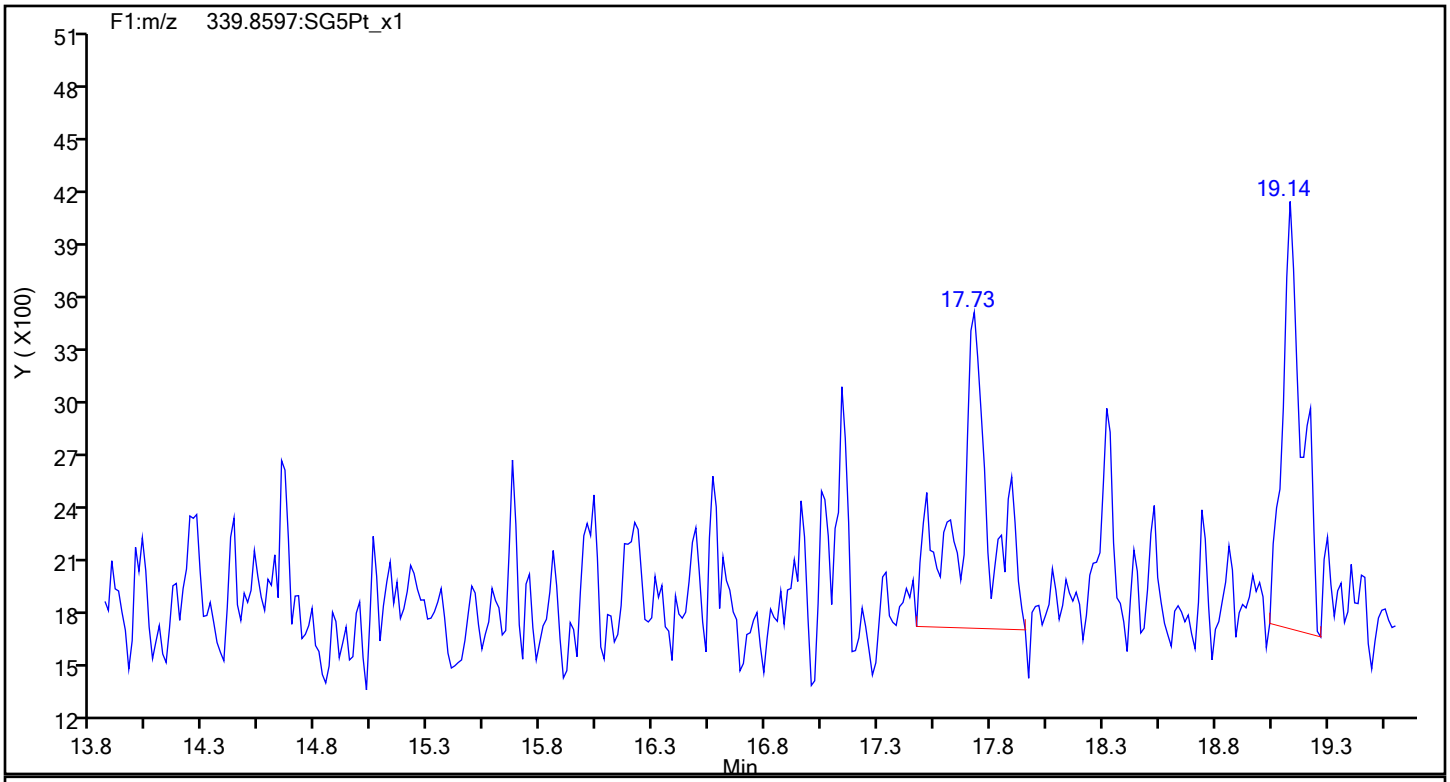
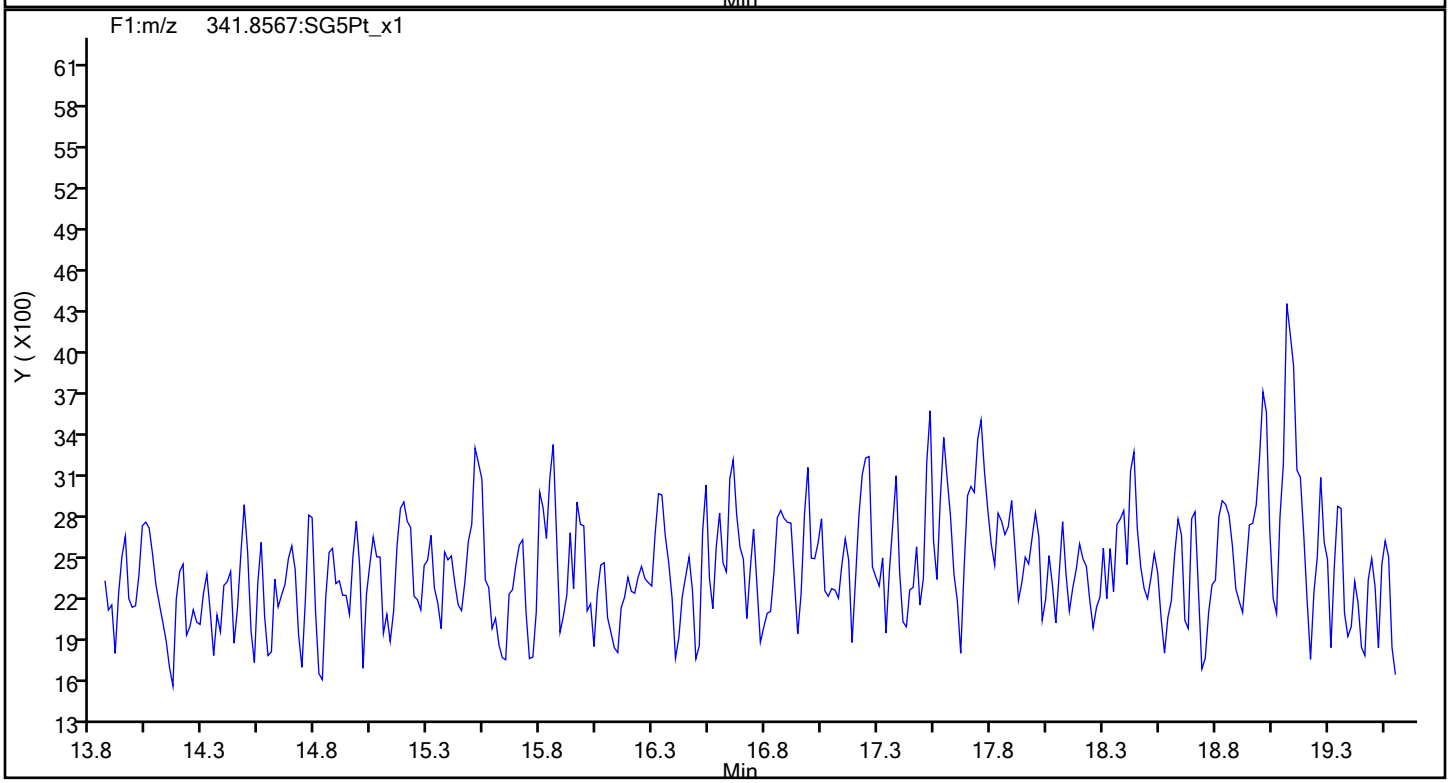
F1 PeCDFs





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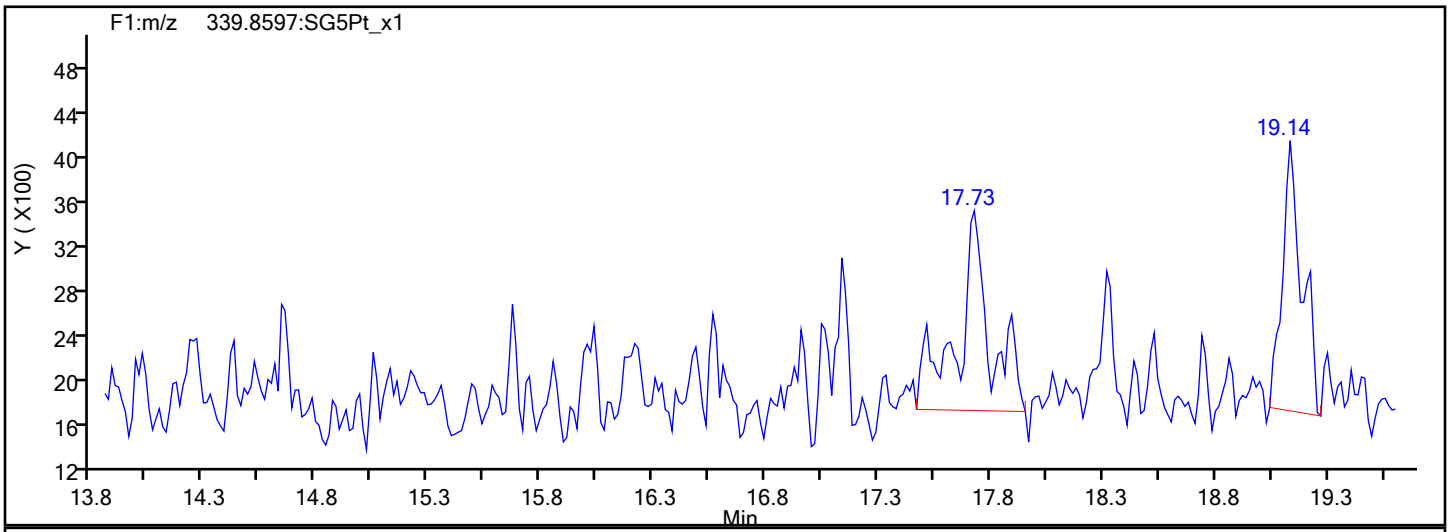
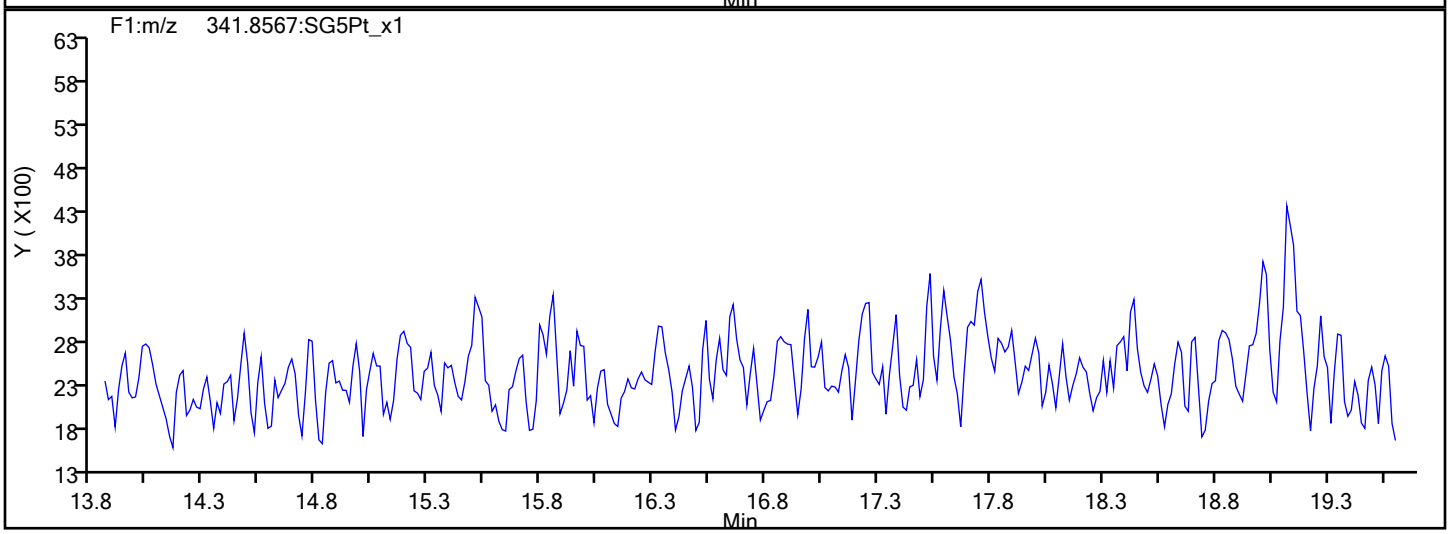
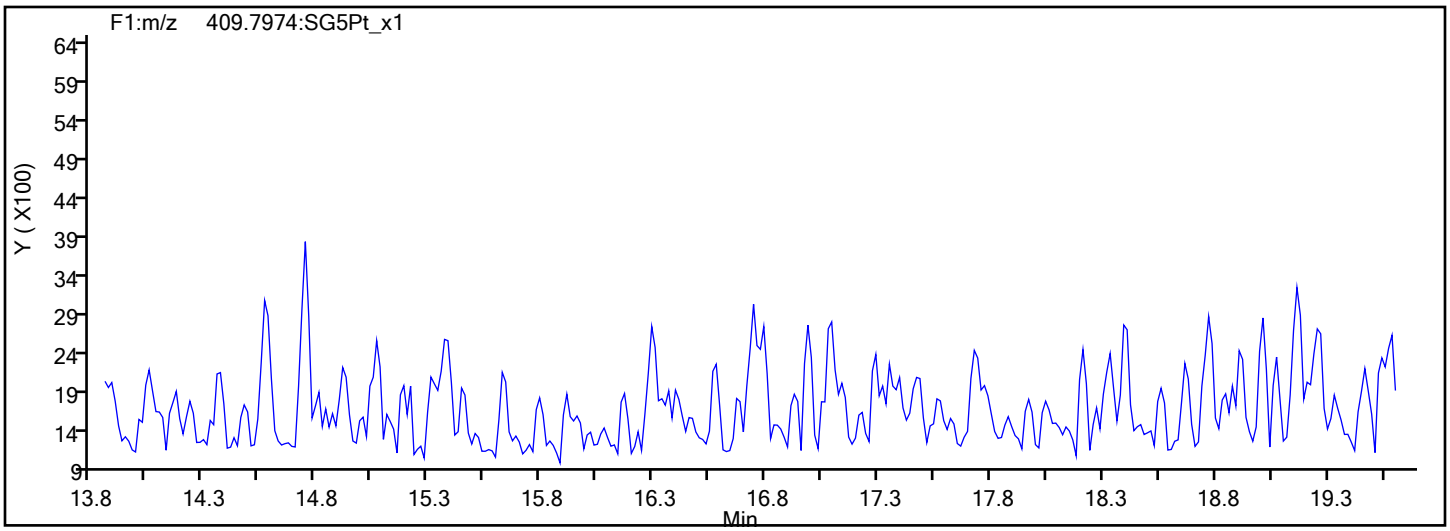




F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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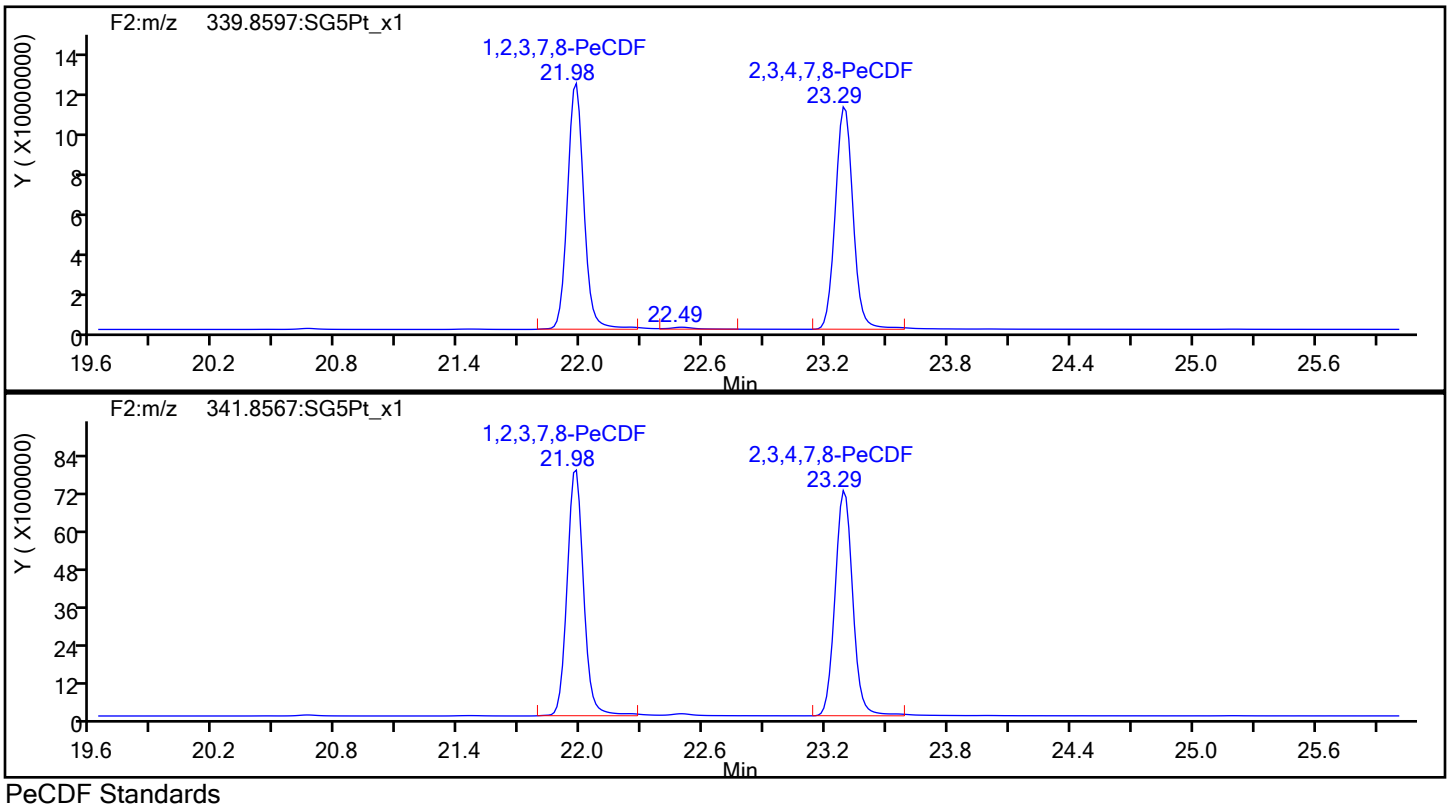
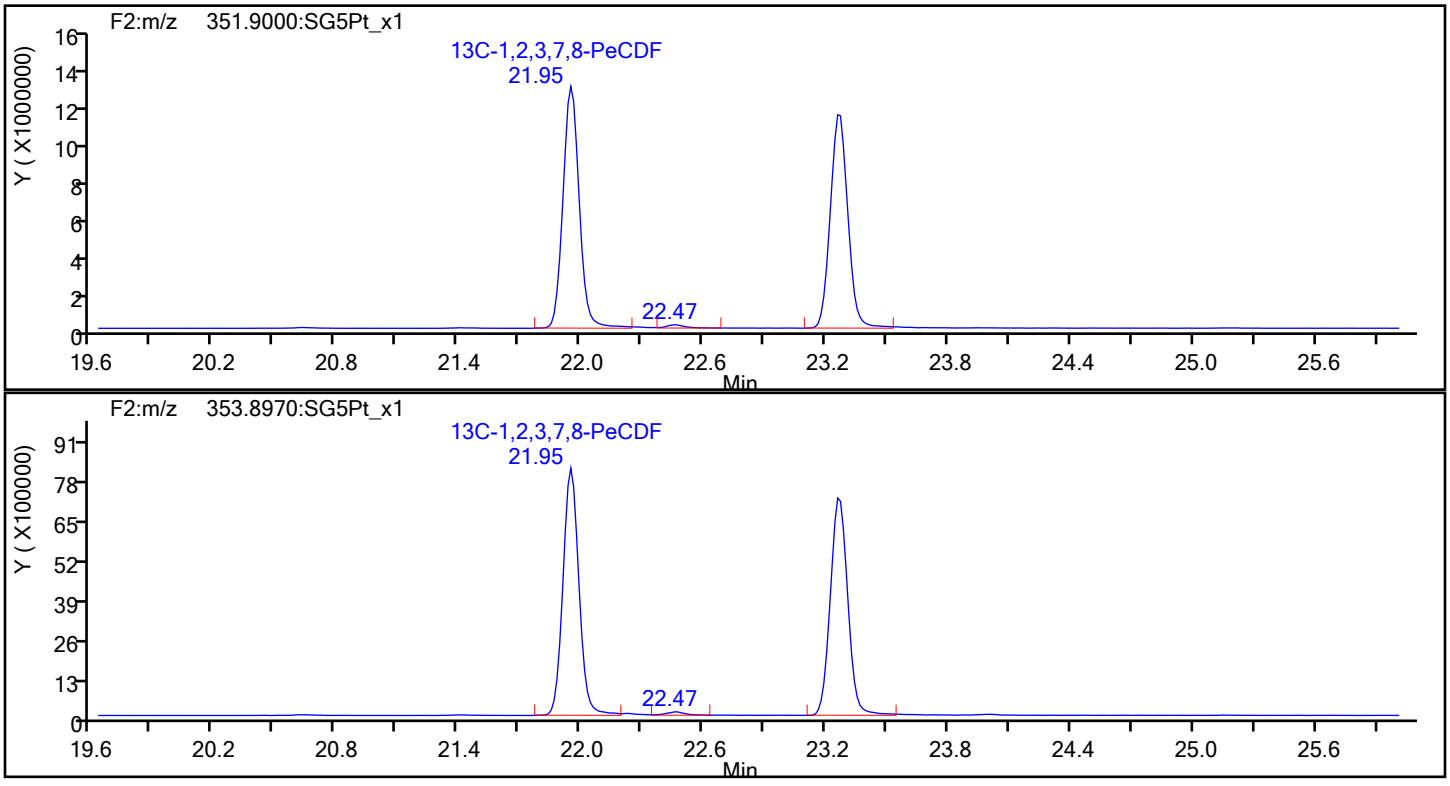
PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

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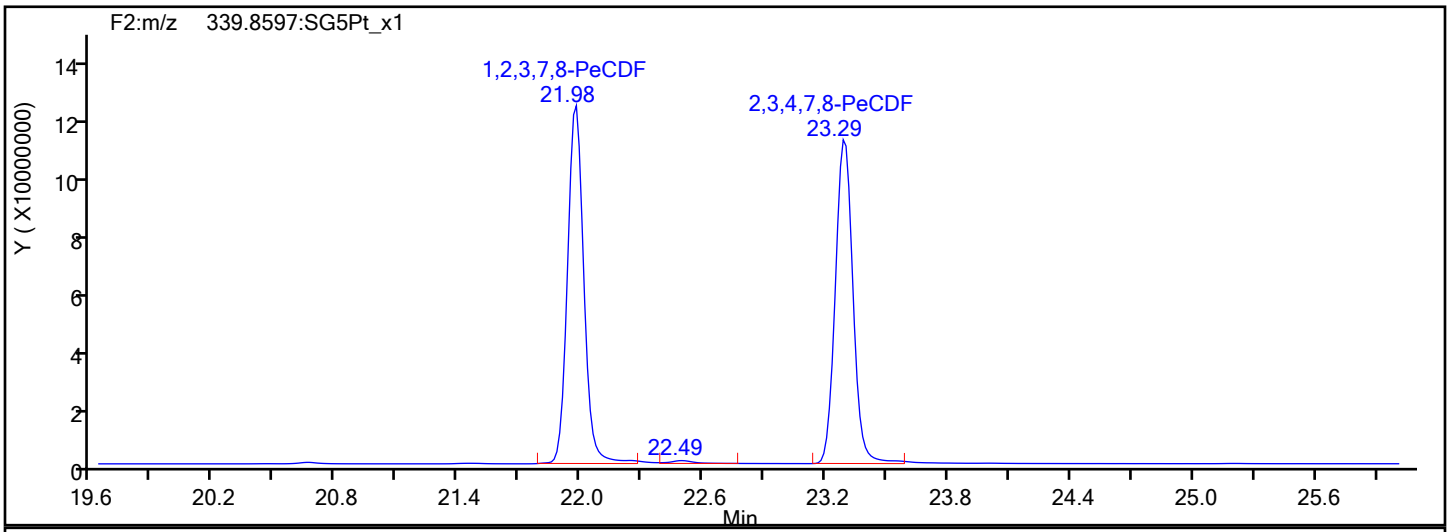
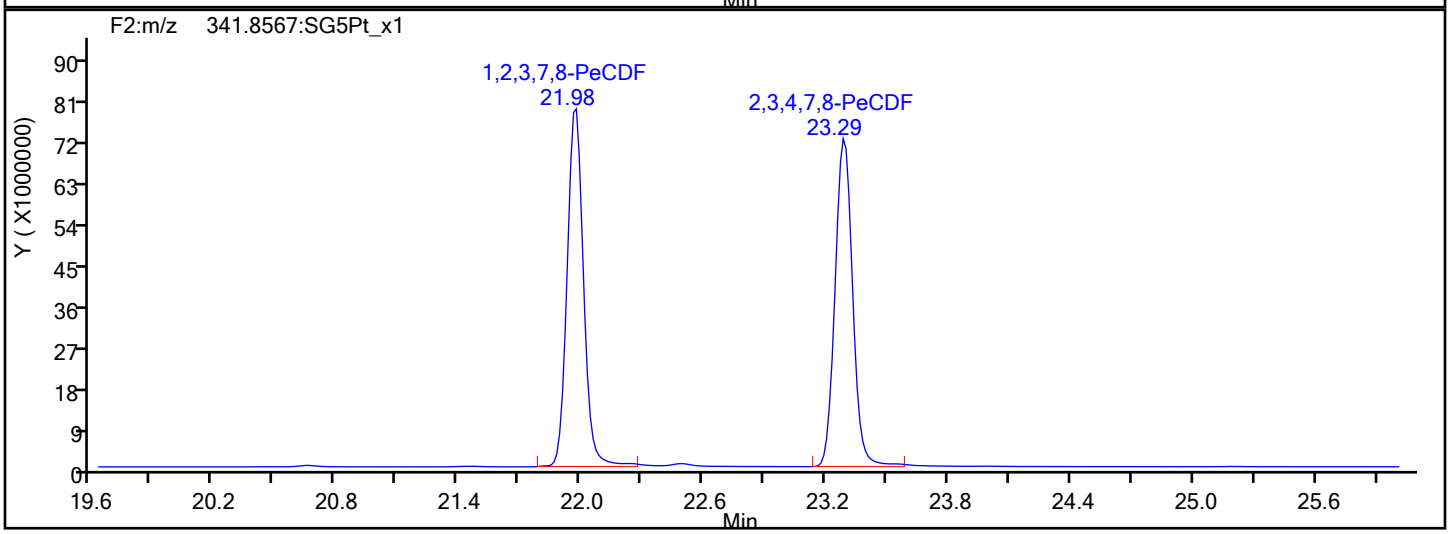
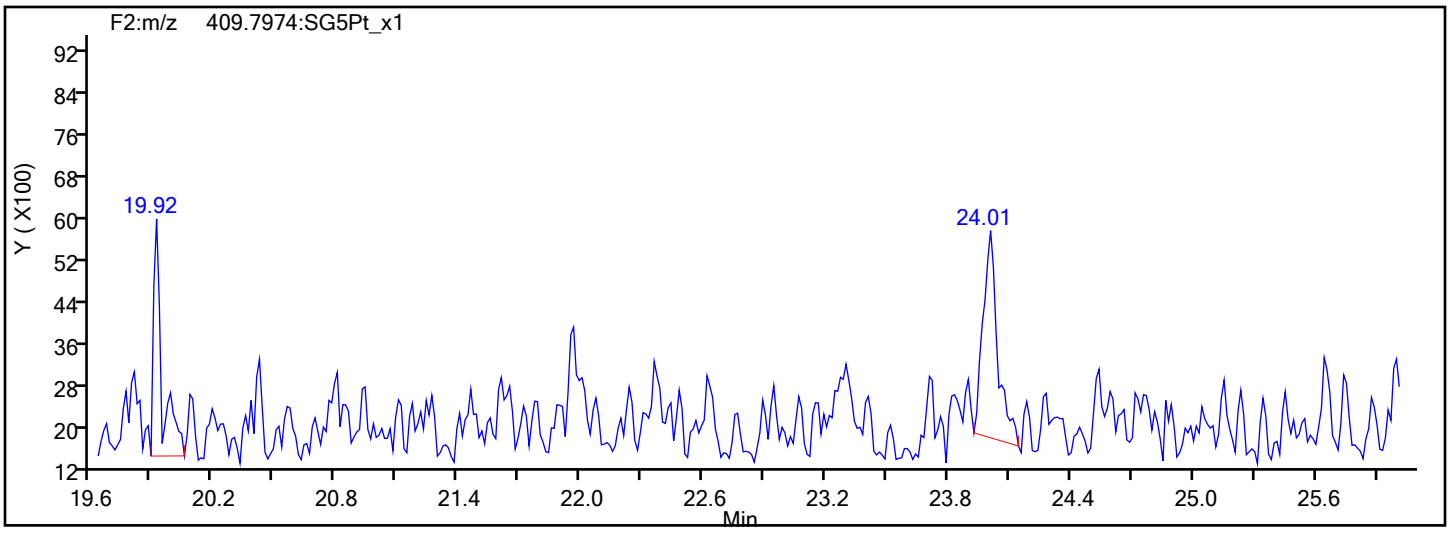




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Client ID:

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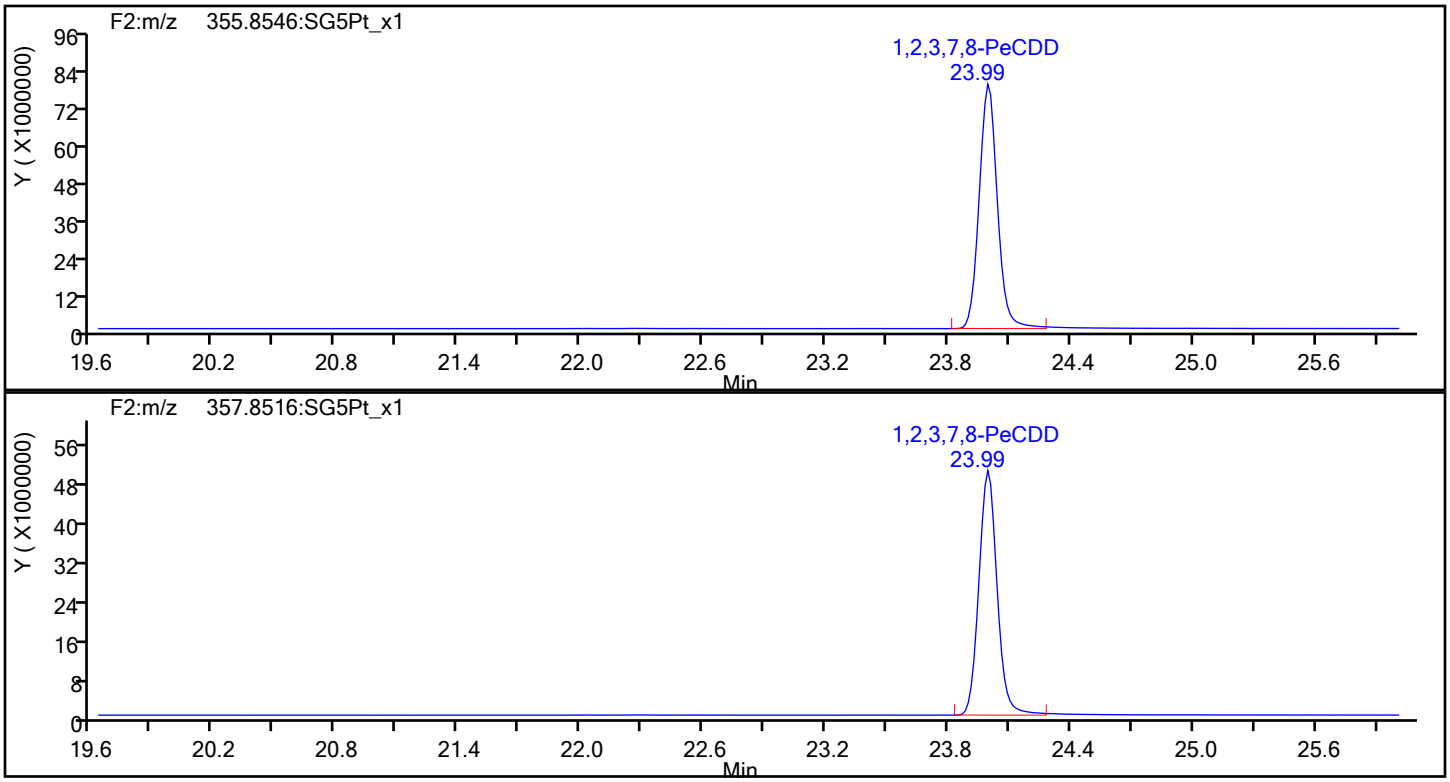
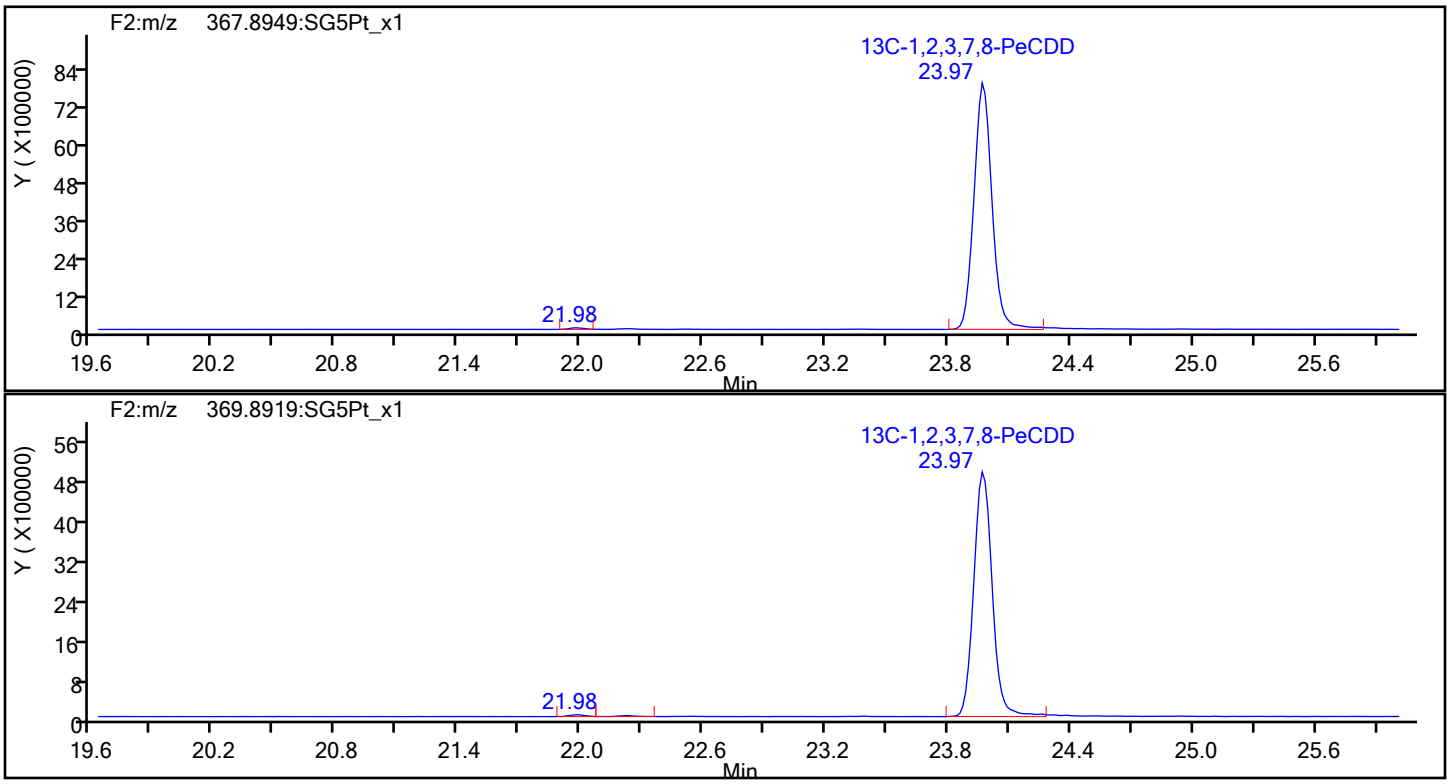
Column Type: DB-5 Column Dia: 0.32 mm

PeCDD



PeCDD Standards



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Eurofins TestAmerica, Sacramento

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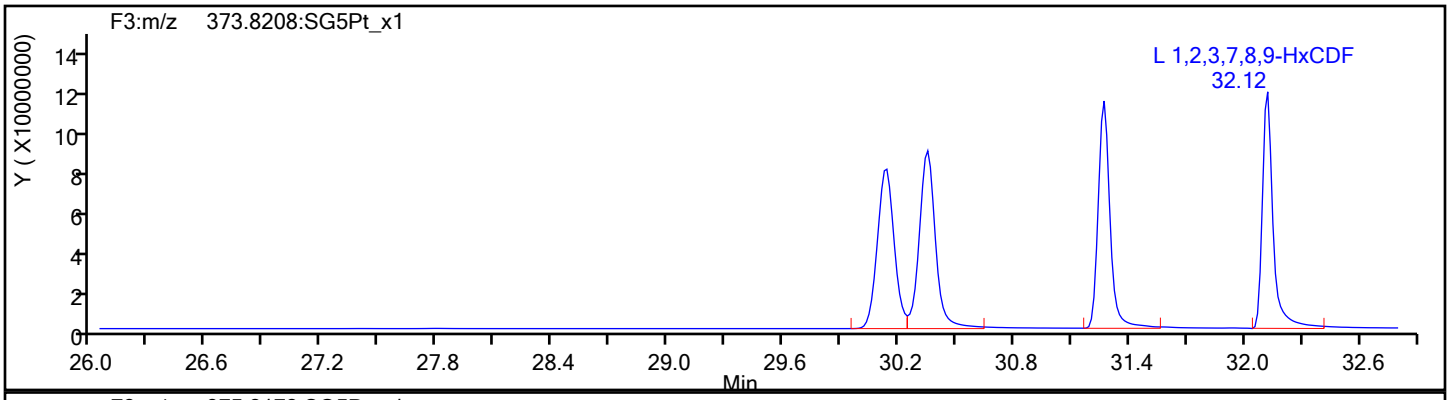
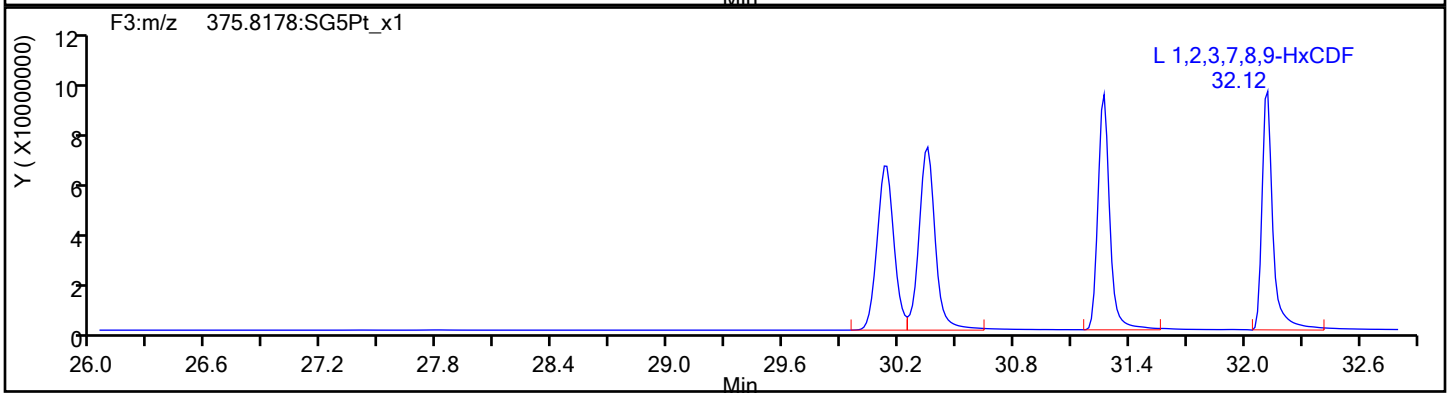
HxCDF





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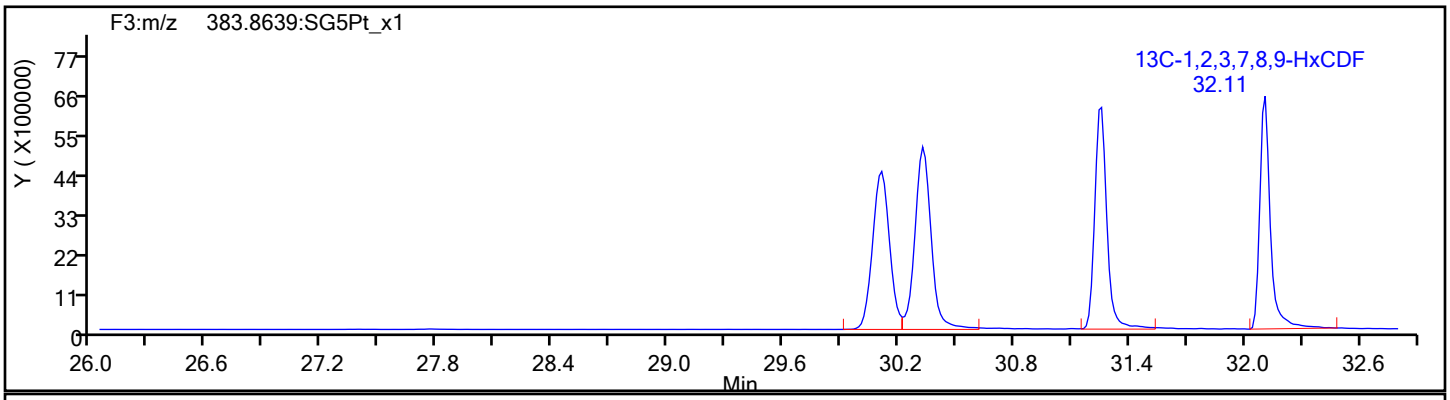

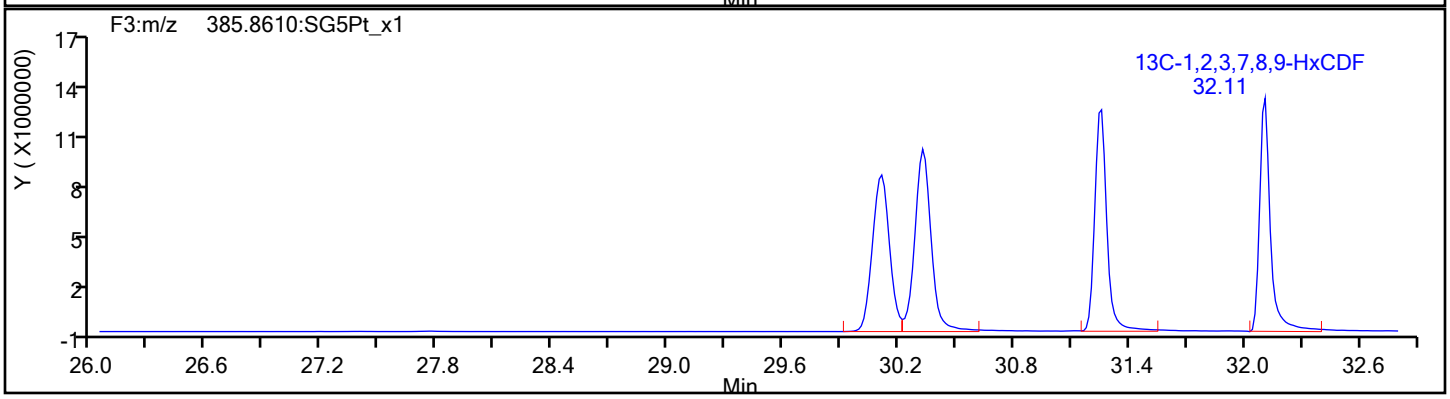

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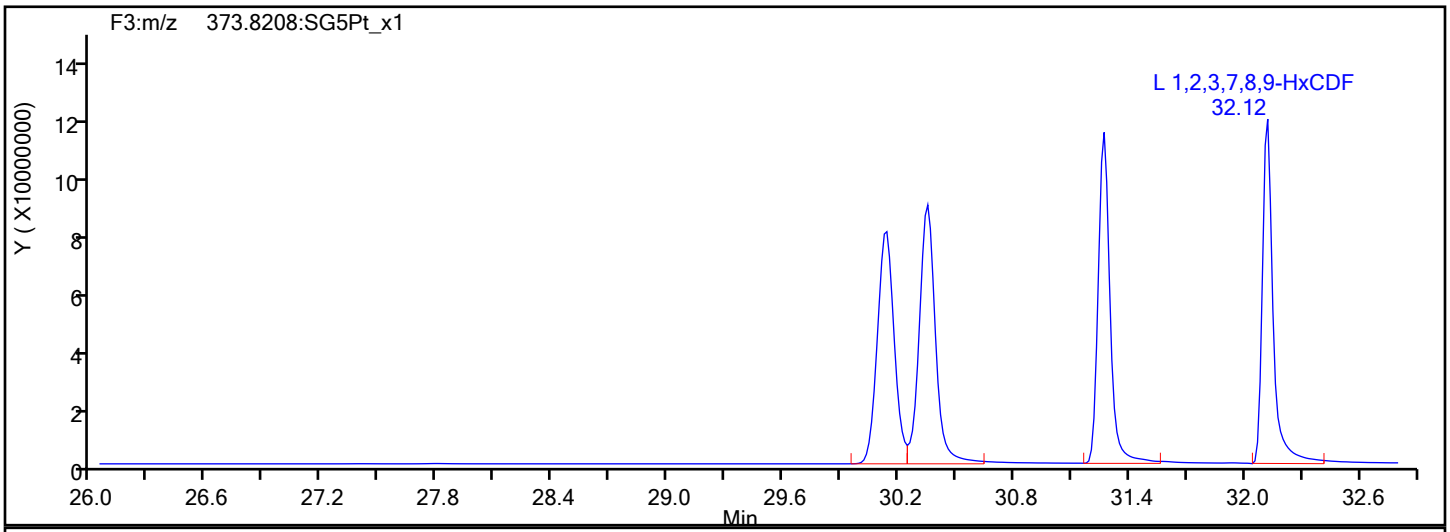
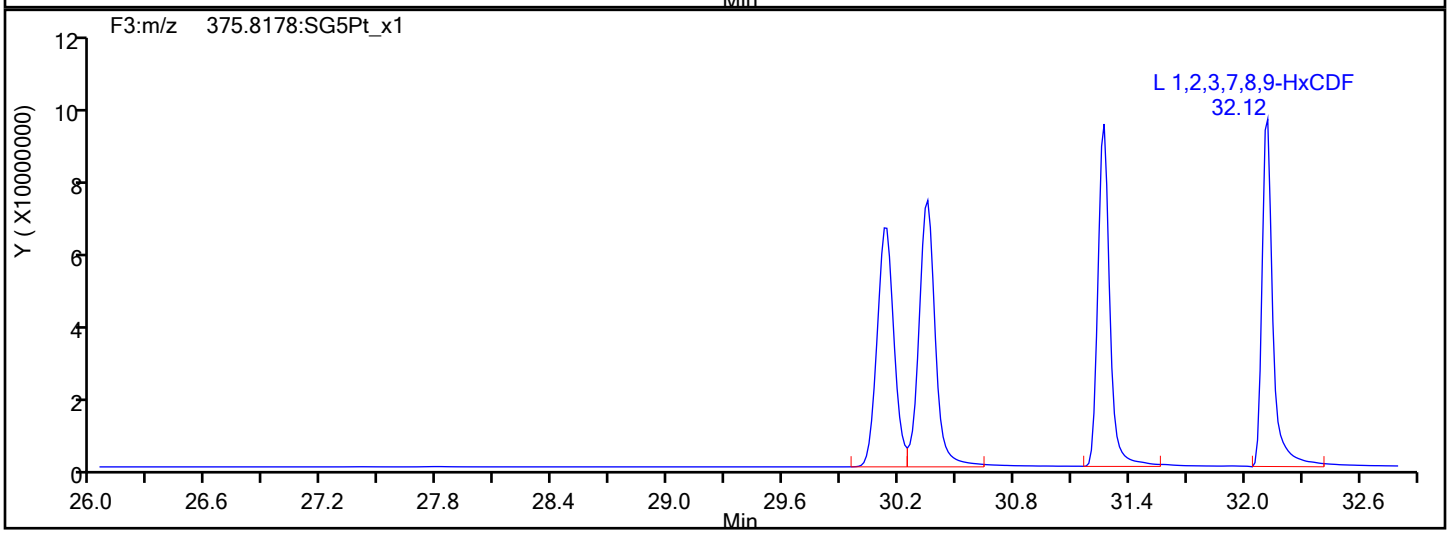
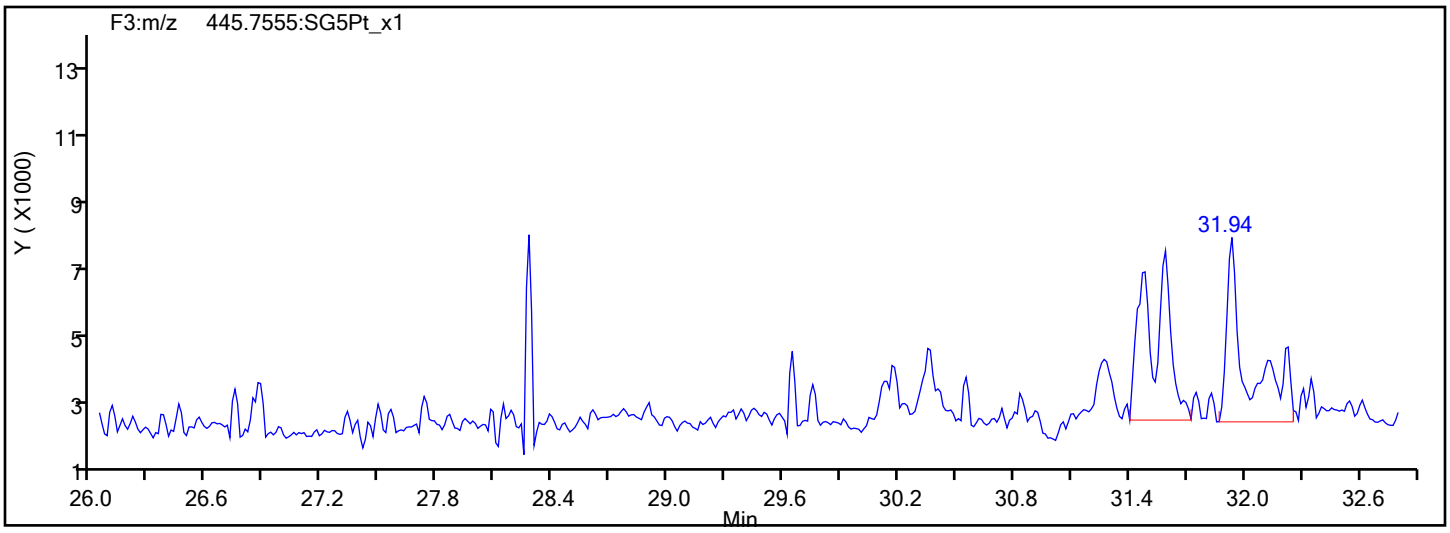




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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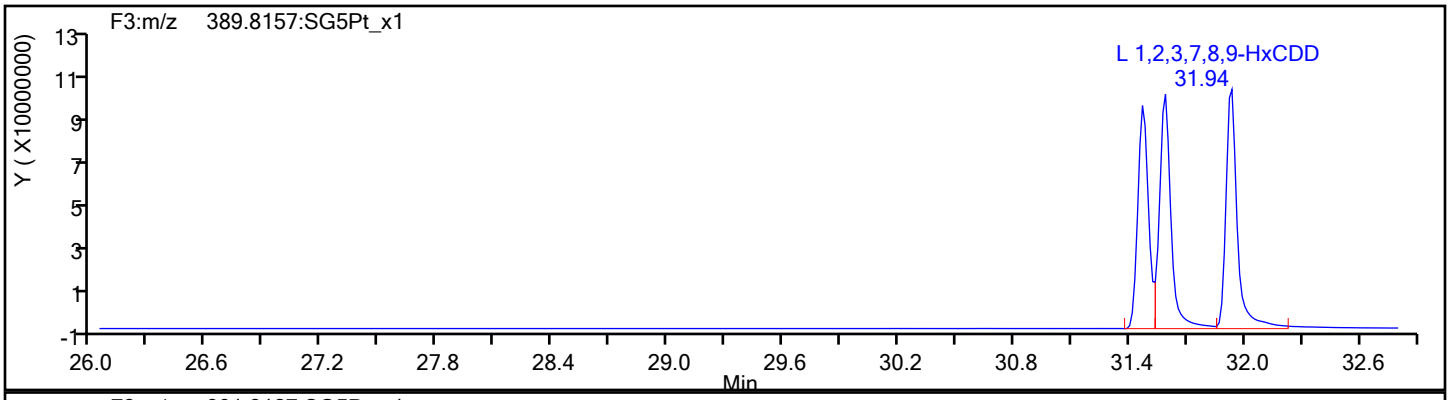
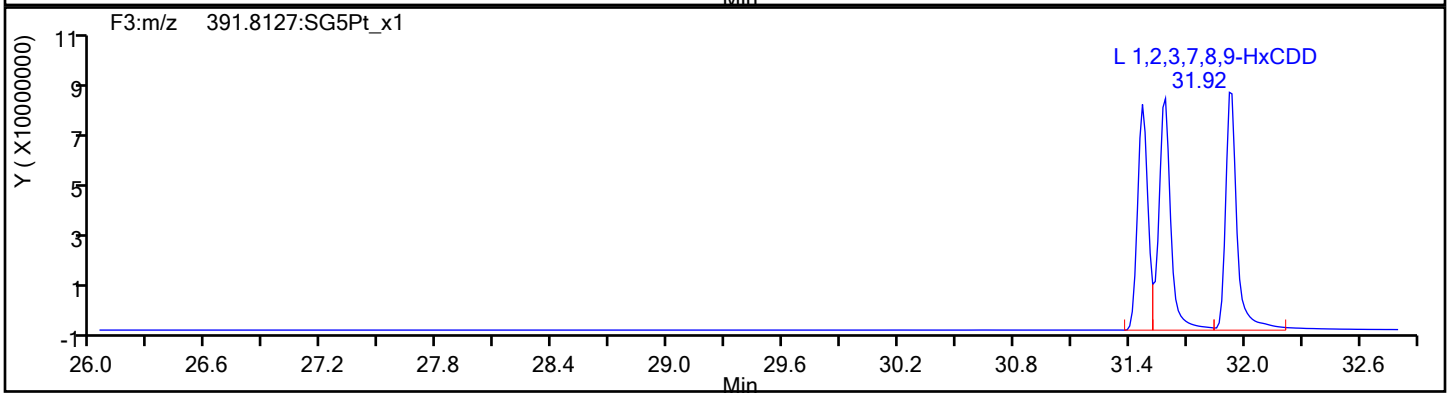
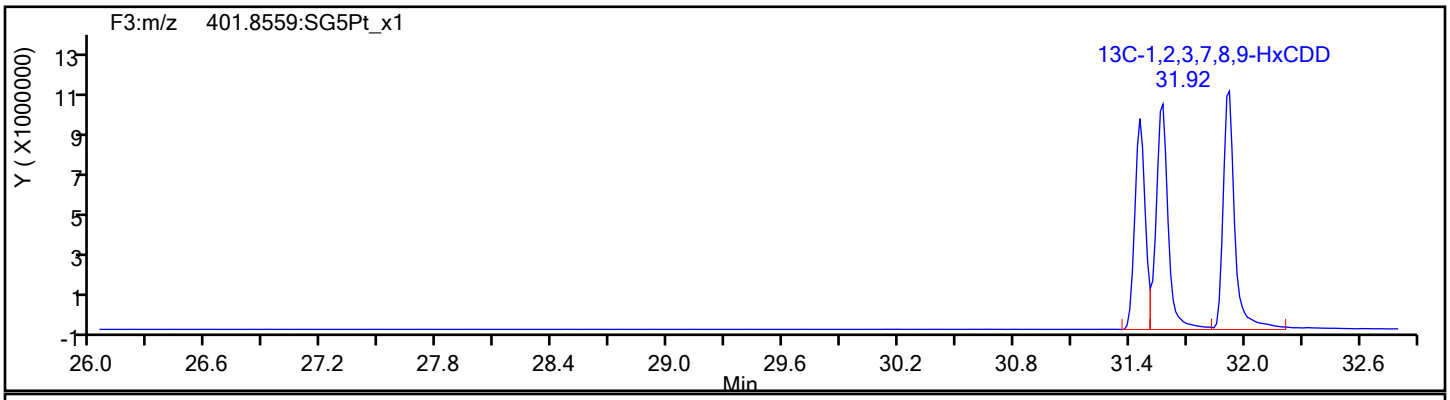
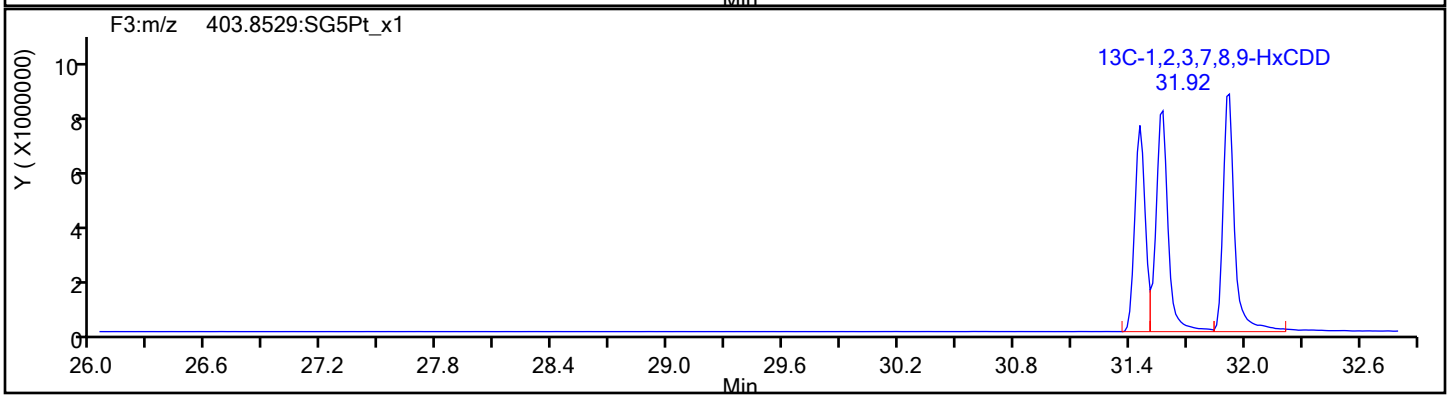




HxCDD Standards





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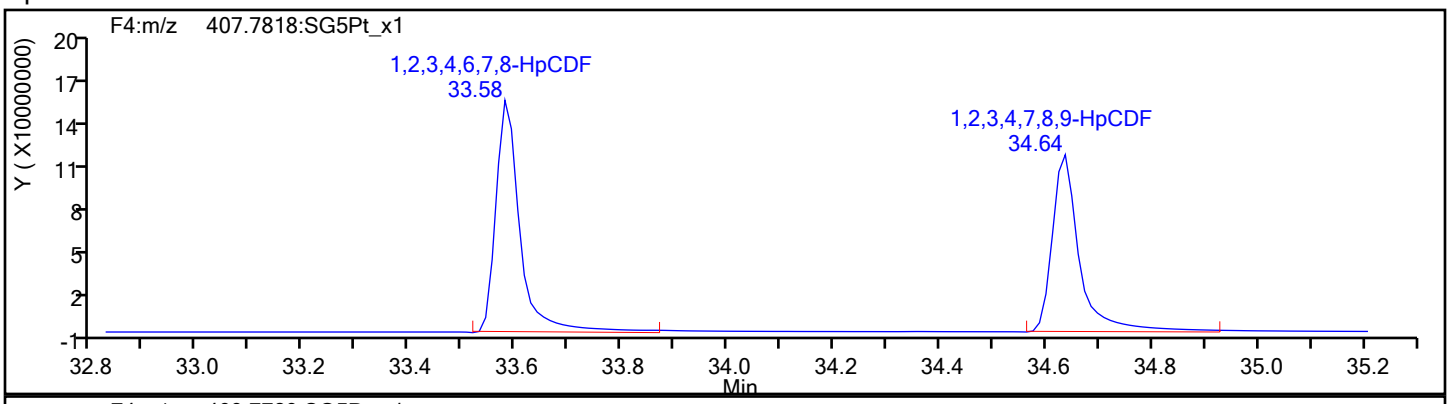
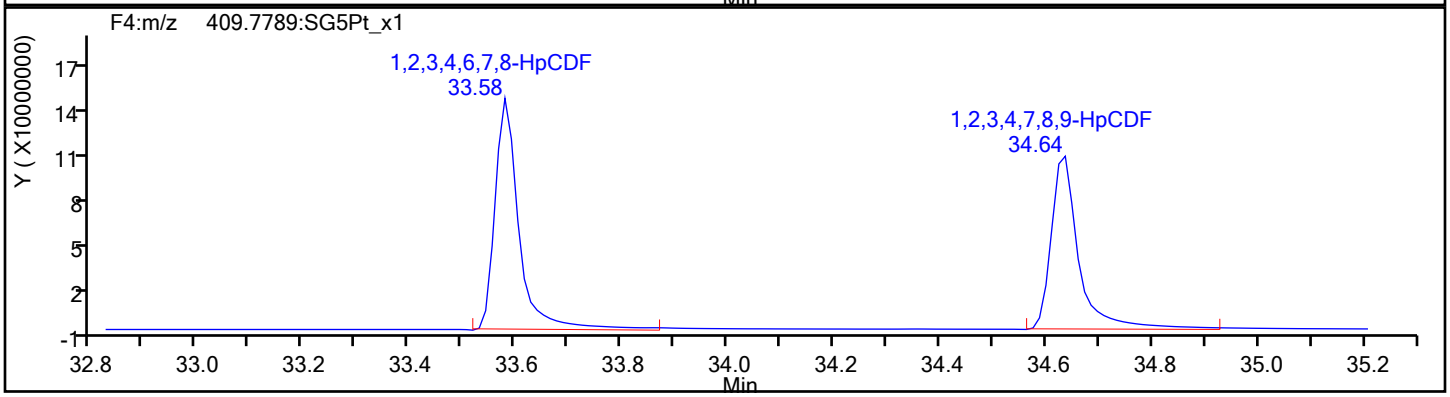
HpCDF





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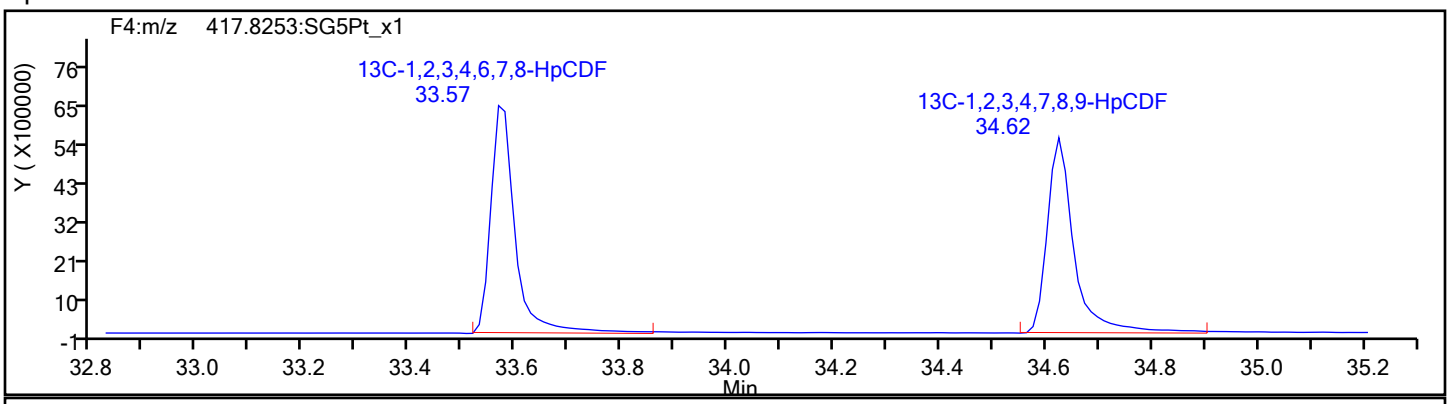

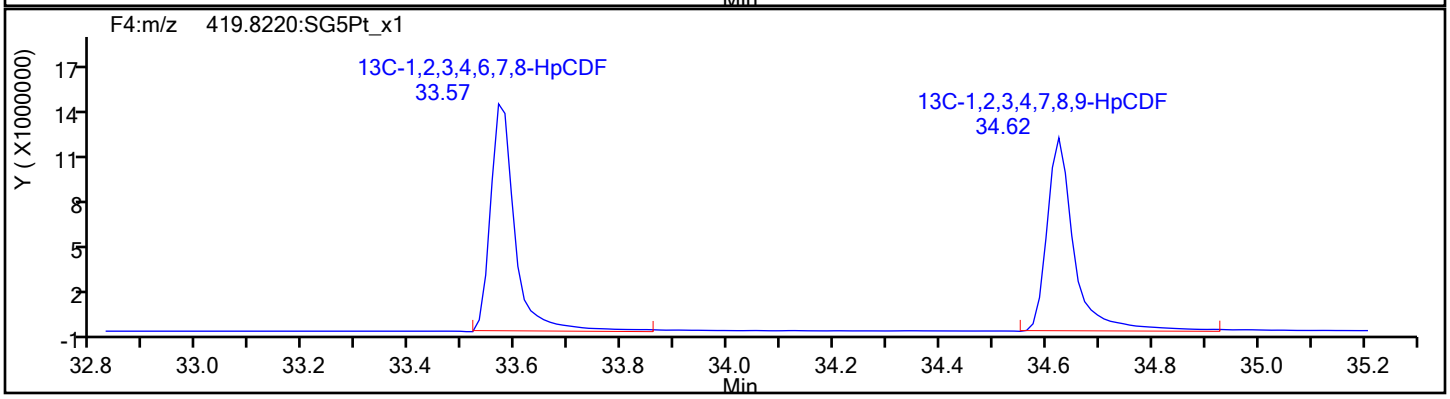

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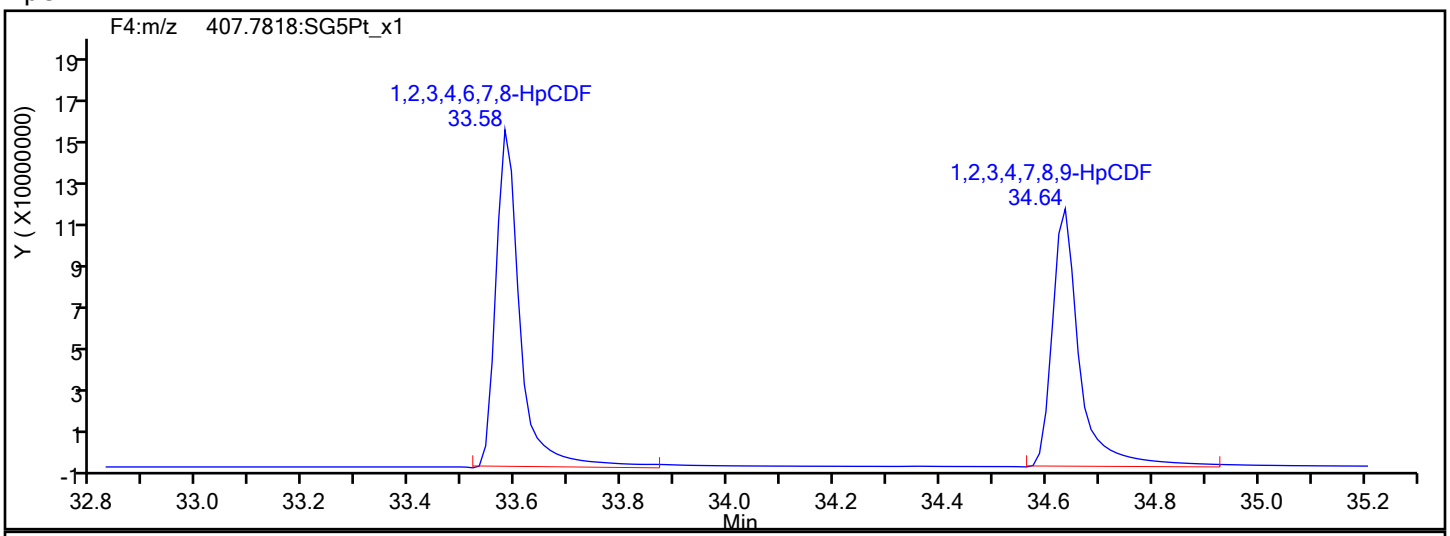
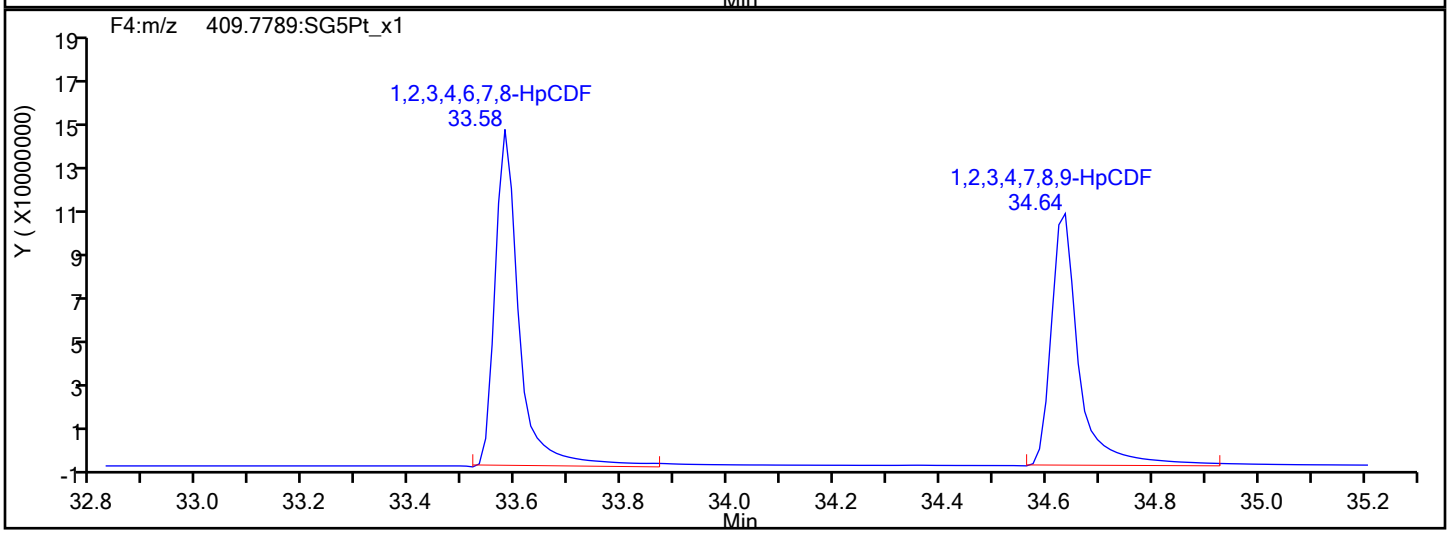
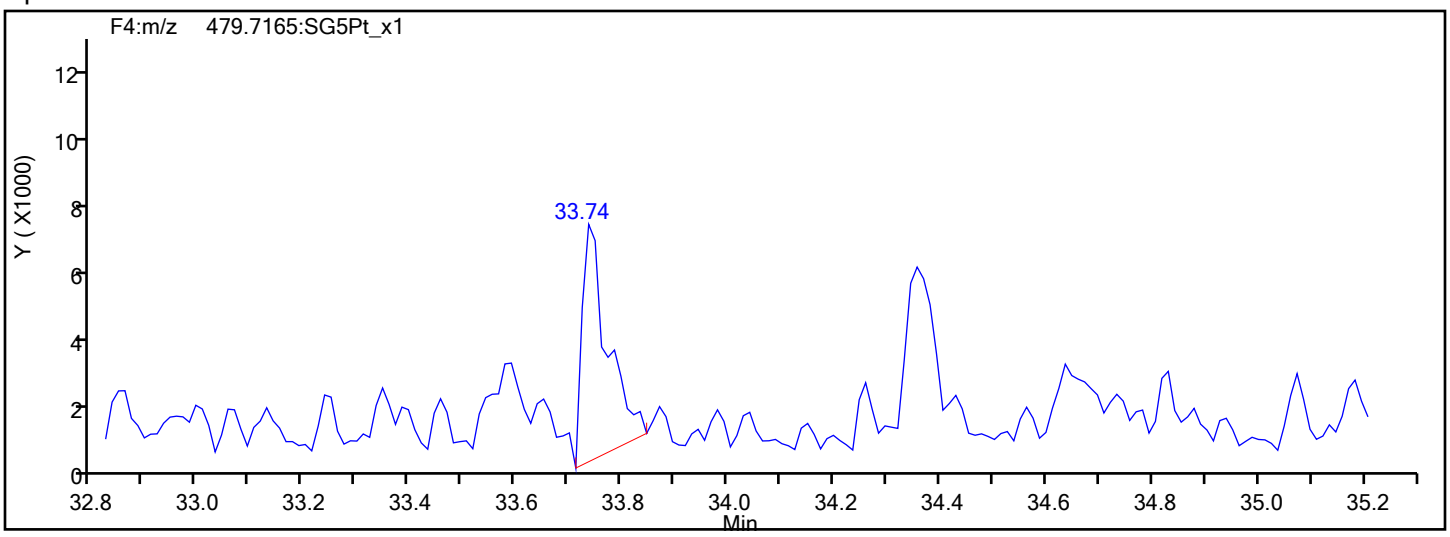




HpCDF Interference Mass



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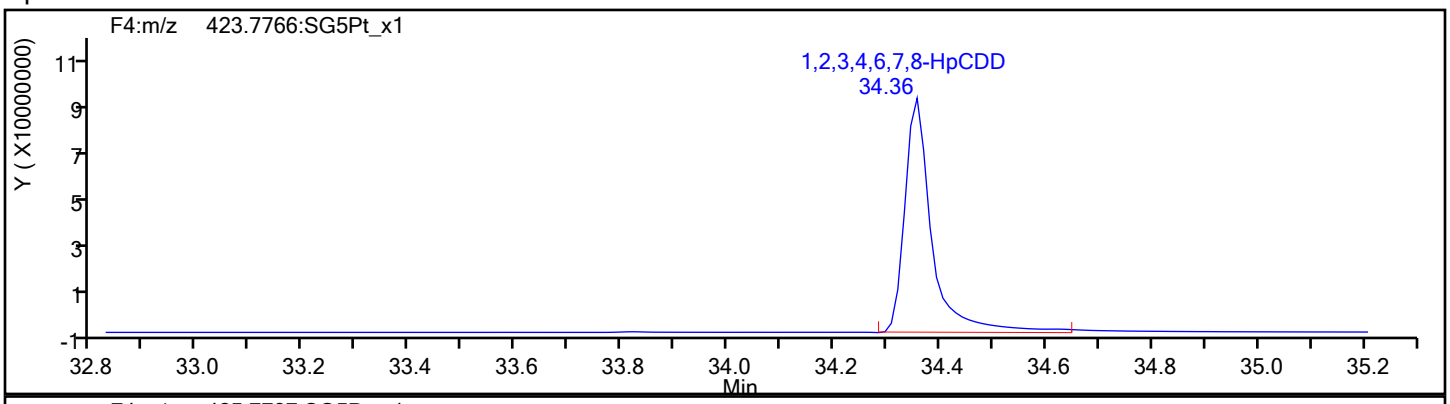
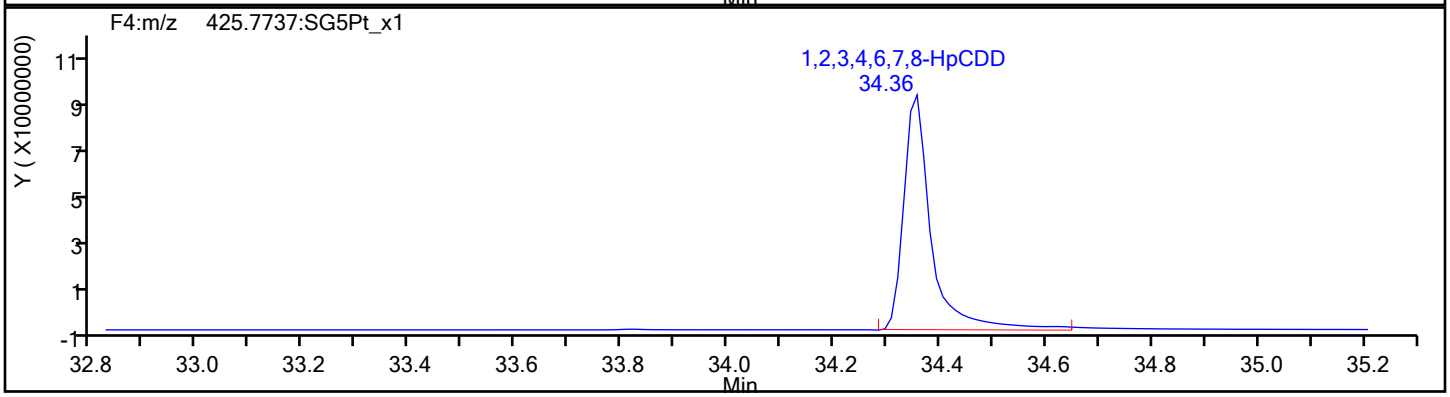
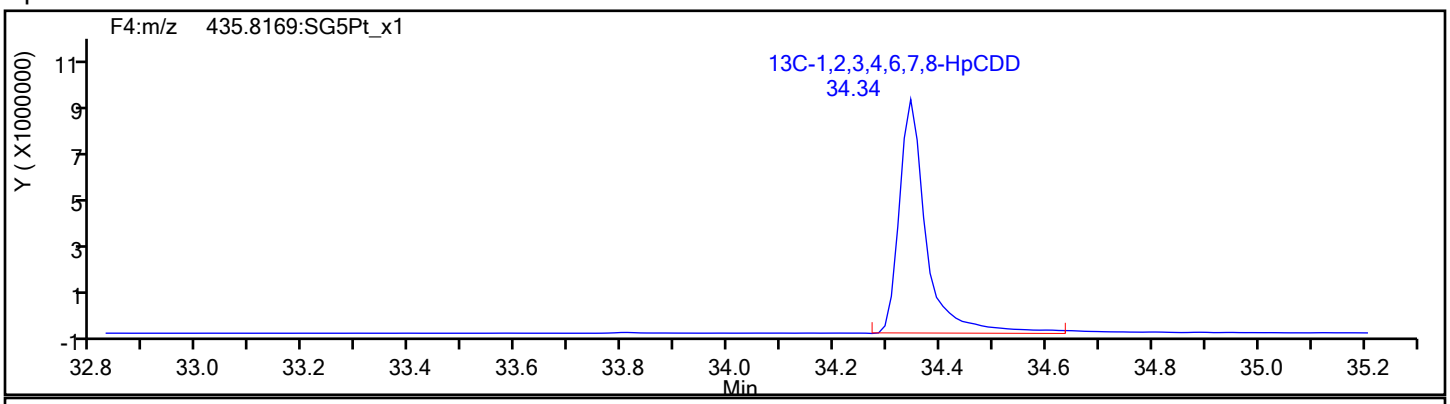
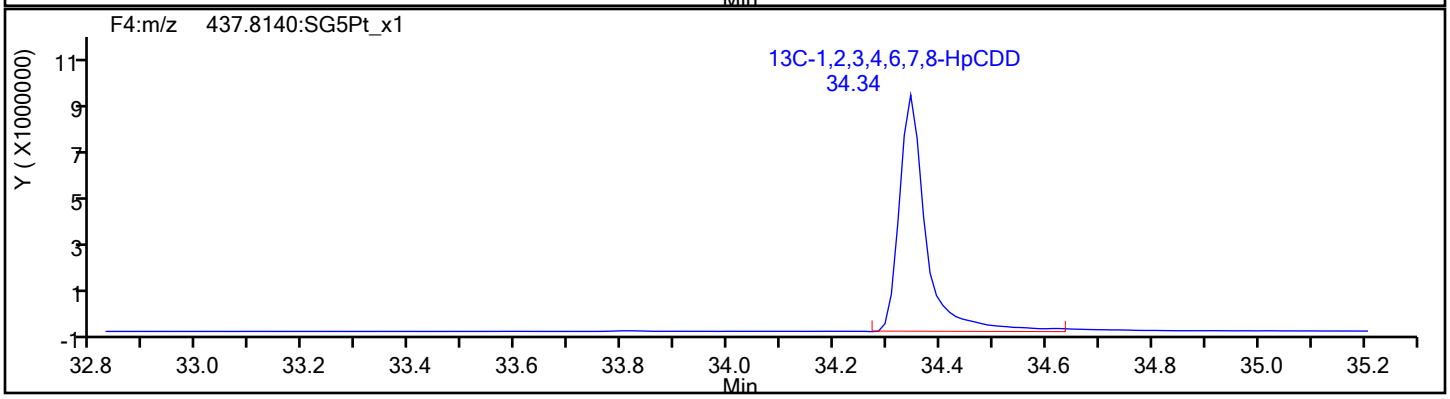
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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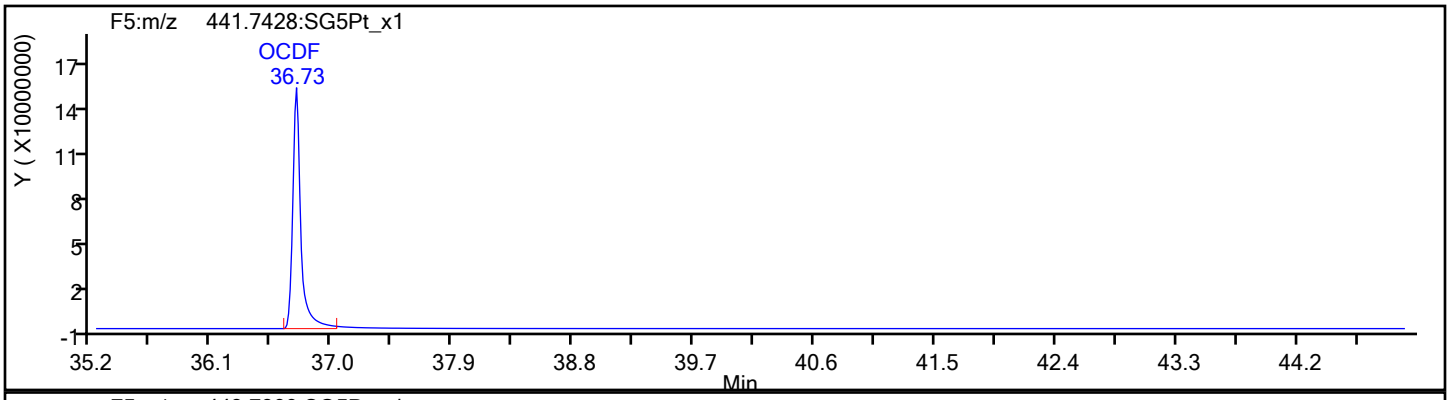
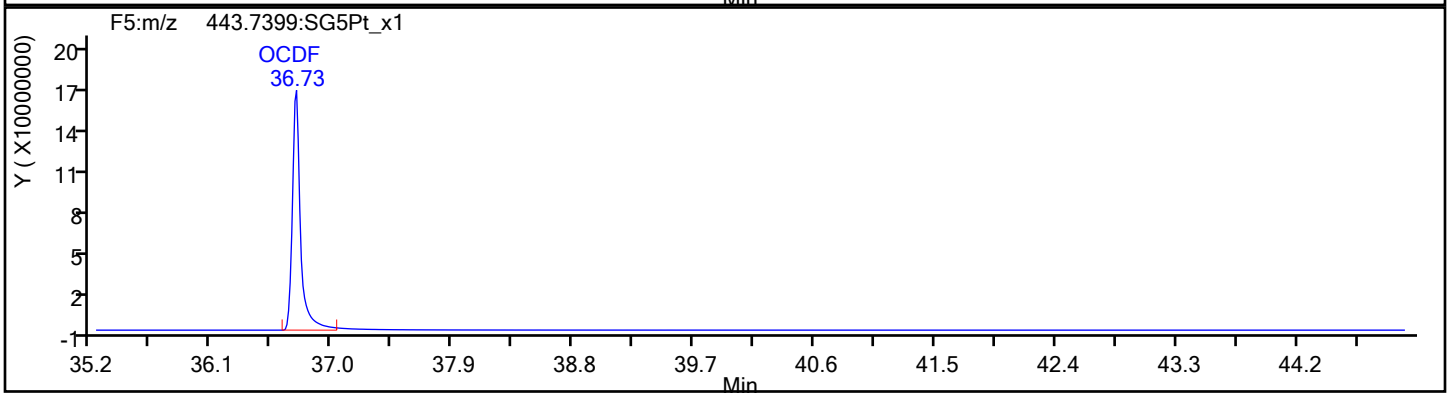
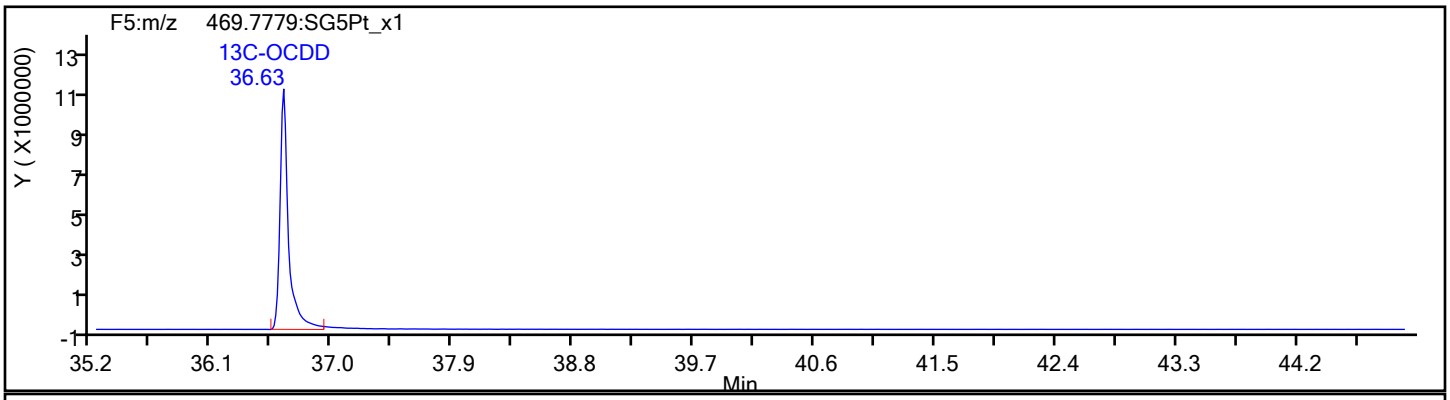
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

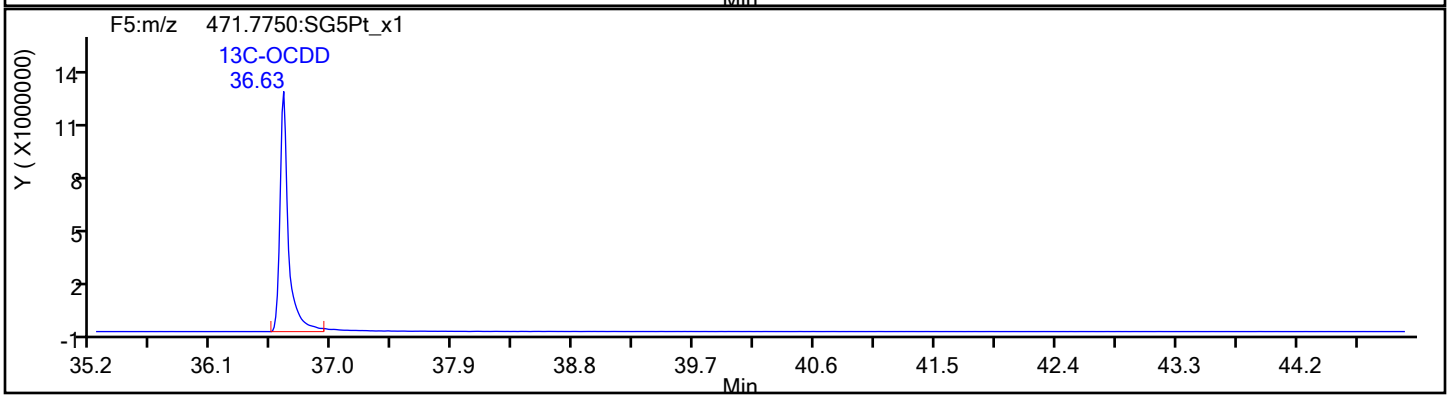
OCDF





OCDF Standards



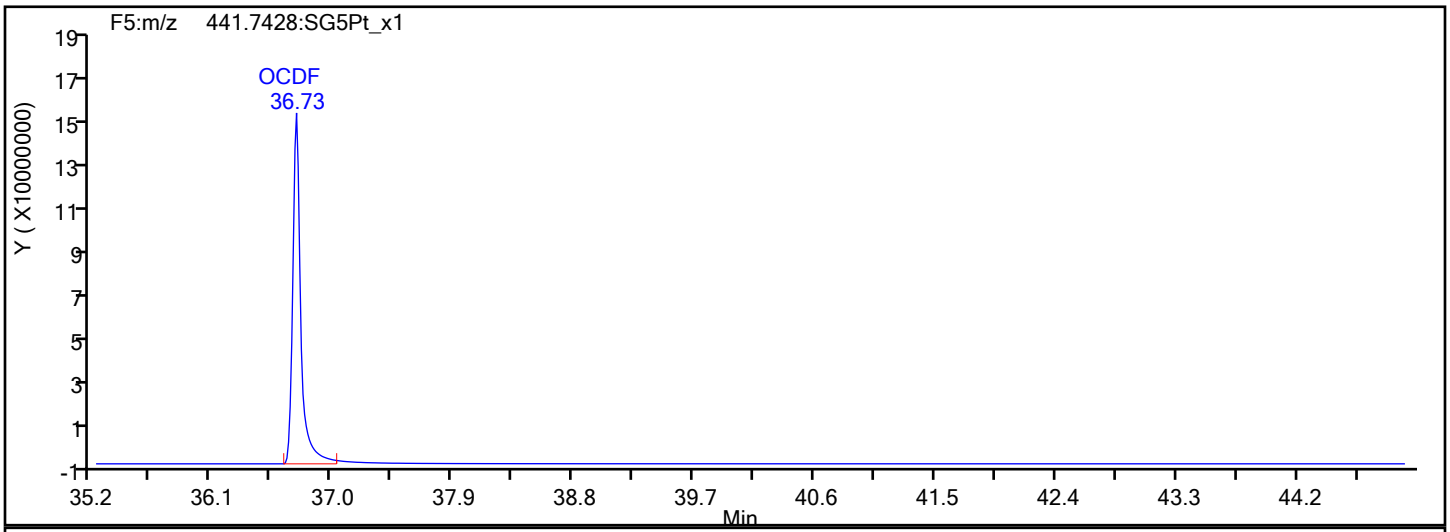


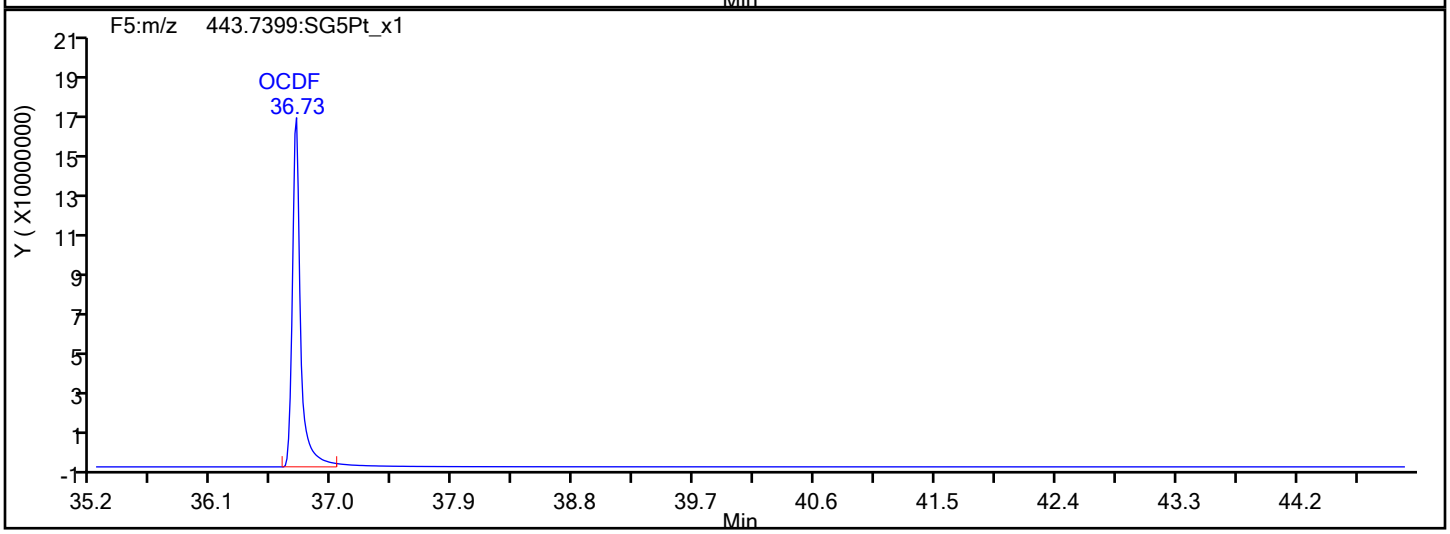
Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

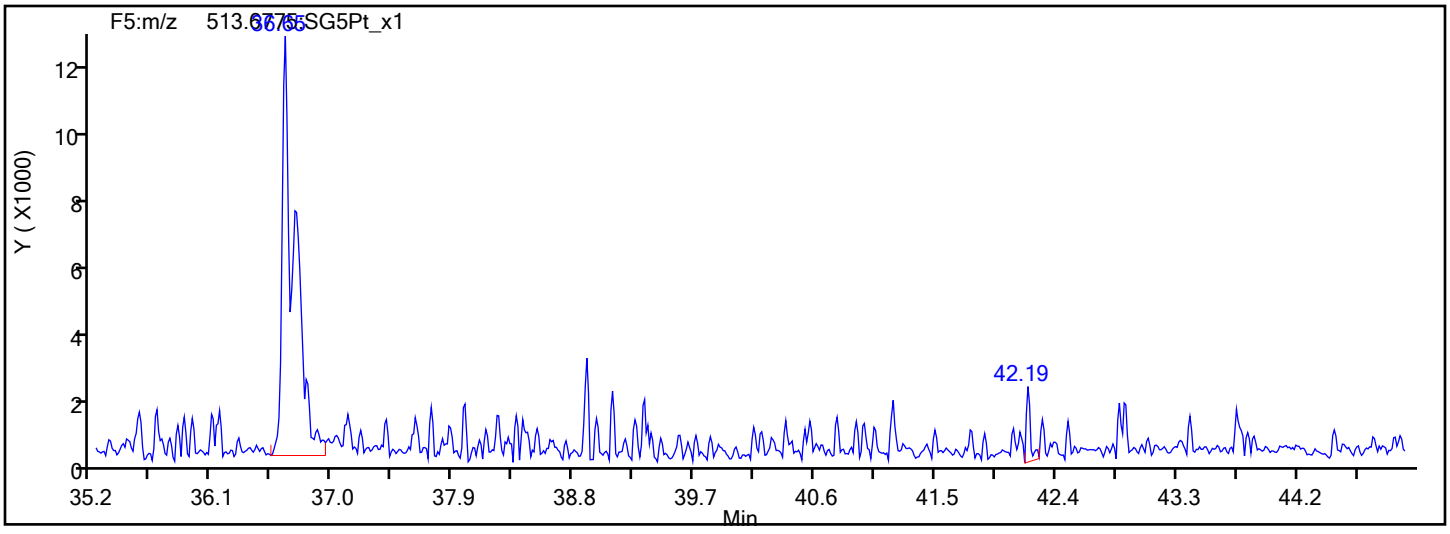
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

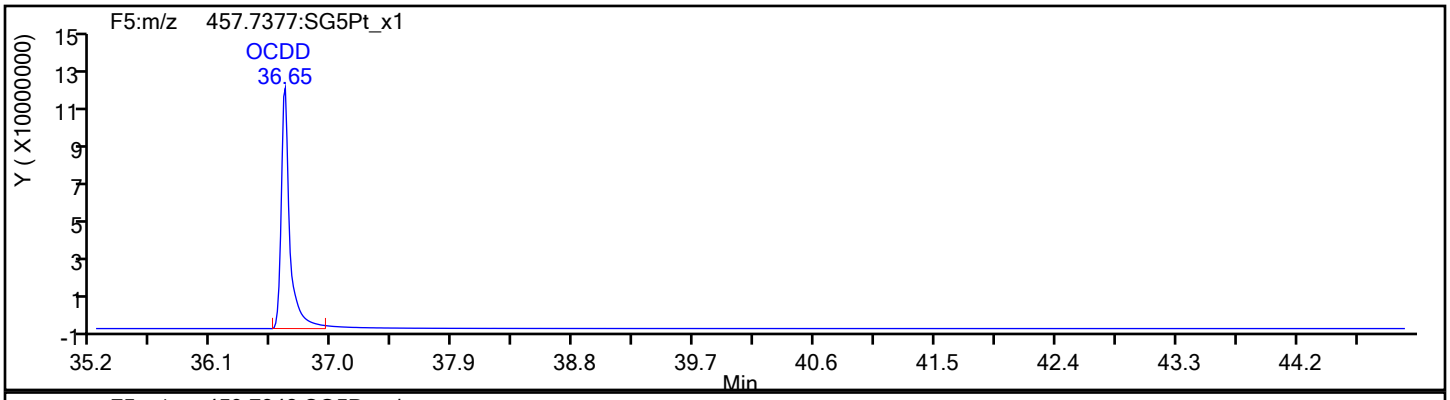


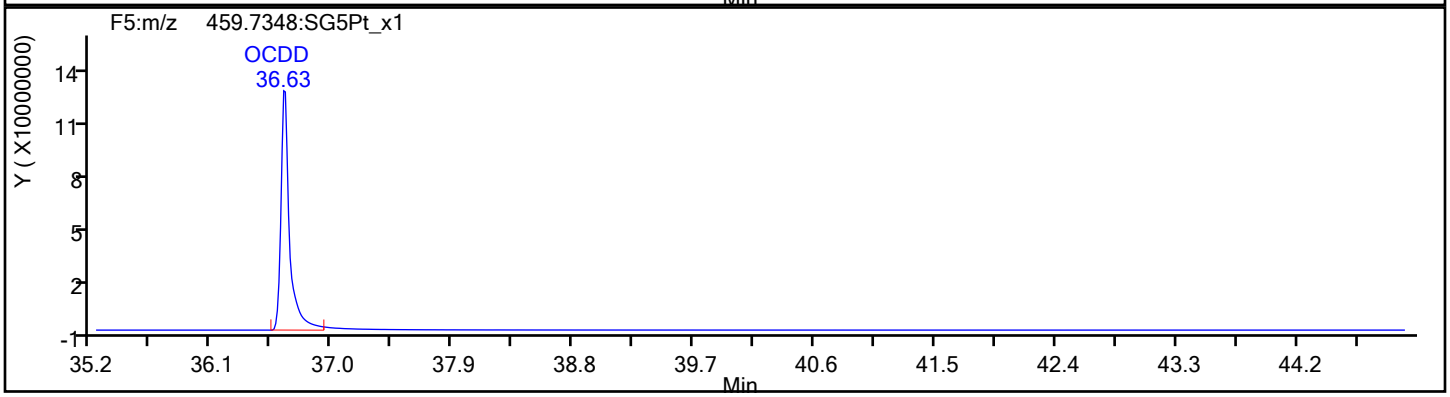
Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

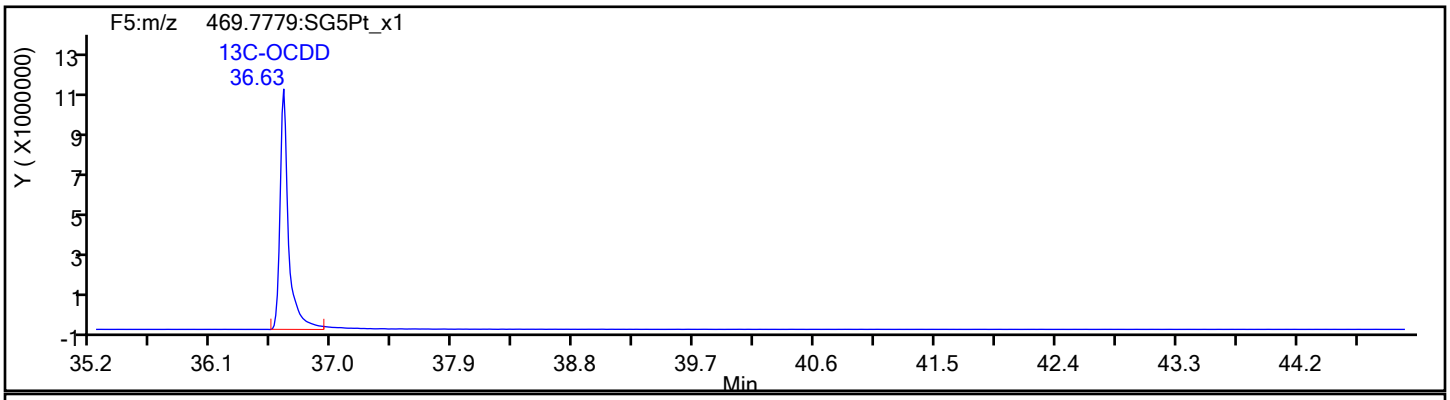
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

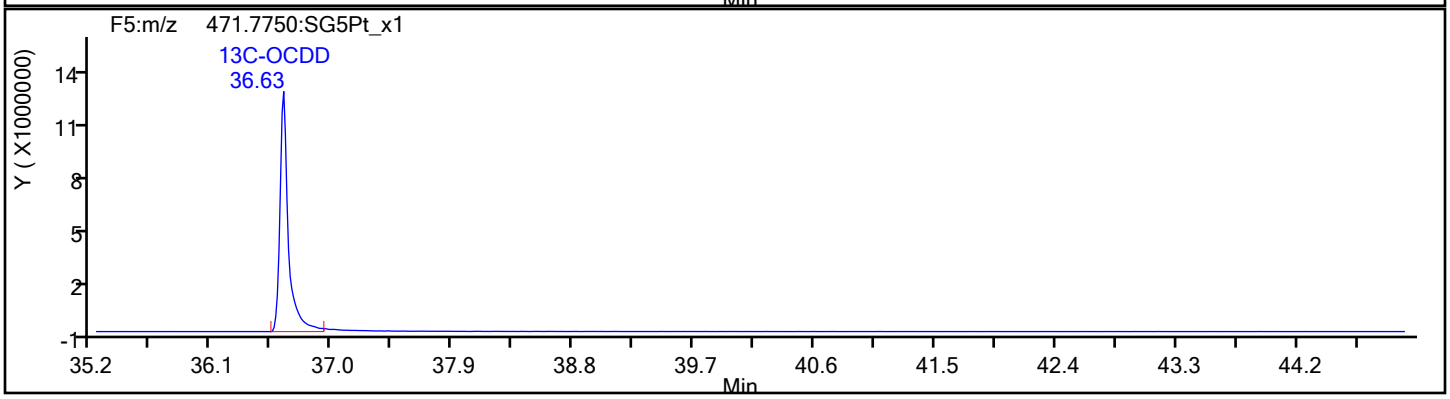
OCDD





OCDD Standards

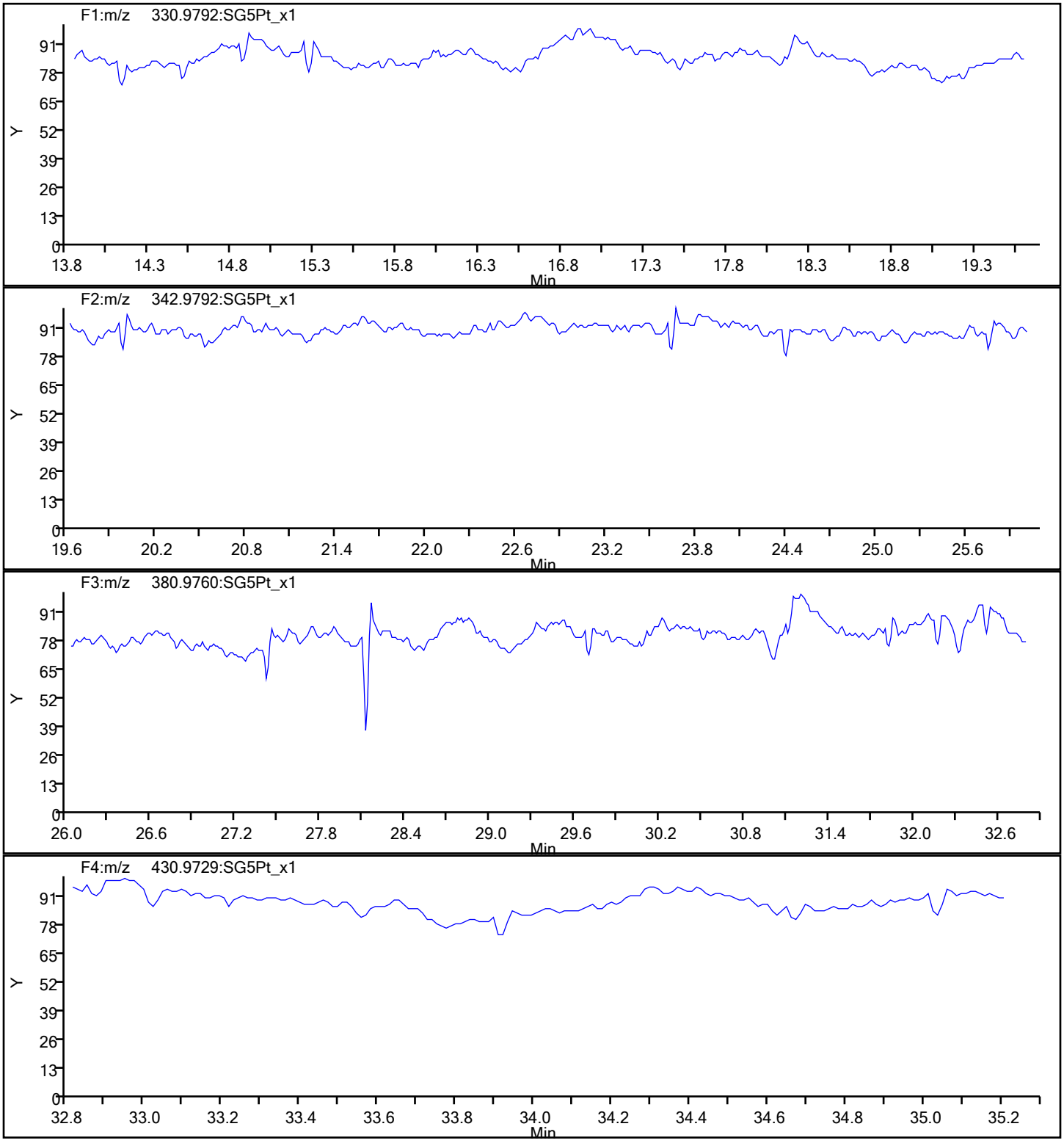




Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

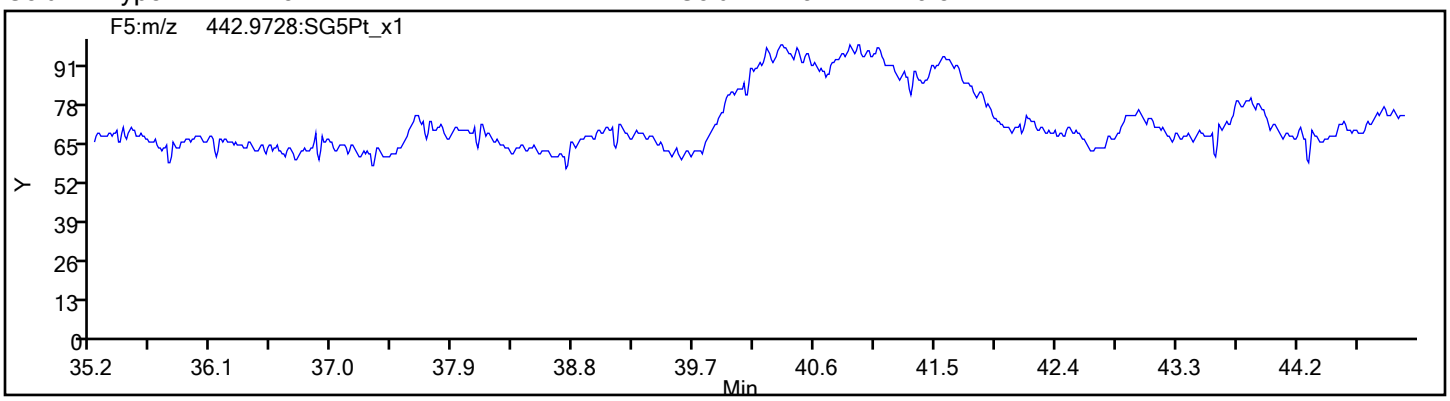
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 14-Nov-2019 16:54:48 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d		
Injection Date:	14-Nov-2019 12:50:49	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 312067

SDG No.:

Instrument ID: 11D2 GC Column: DB-225 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/02/2019 02:52 Calibration End Date: 08/02/2019 05:25 Calibration ID: 46494

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-312067/3	02AU1911D2_003.d
Level 2	IC 320-312067/4	02AU1911D2_004.d
Level 3	IC 320-312067/5	02AU1911D2_005.d
Level 4	IC 320-312067/6	02AU1911D2_006.d
Level 5	IC 320-312067/7	02AU1911D2_007.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDD	1.4072	1.1517	0.9928	1.1253	1.0921	AveID		1.1538				13.3		20.0			
2,3,7,8-TCDF	0.9508	0.8634	0.7802	0.8060	0.7939	AveID		0.8389				8.4		20.0			
13C-2,3,7,8-TCDD	0.9860	0.9016	0.9603	0.9300	0.9162	Ave		0.9388				3.6		35.0			
13C-2,3,7,8-TCDF	1.4126	1.2992	1.3548	1.2560	1.3671	Ave		1.3379				4.6		35.0			
37Cl4-2,3,7,8-TCDD	1.2464	1.0504	1.1674	1.2313	1.2128	Ave		1.1816				6.7					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 312067

SDG No.:

Instrument ID: 11D2 GC Column: DB-225 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/02/2019 02:52 Calibration End Date: 08/02/2019 05:25 Calibration ID: 46494

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-312067/3	02AU1911D2_003.d
Level 2	IC 320-312067/4	02AU1911D2_004.d
Level 3	IC 320-312067/5	02AU1911D2_005.d
Level 4	IC 320-312067/6	02AU1911D2_006.d
Level 5	IC 320-312067/7	02AU1911D2_007.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDD		AveID	766838	2408989	10136940	48146783	221171643	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDF		AveID	742351	2602621	11238394	46575552	239921851	0.500	2.00	10.0	40.0	200
13C-2,3,7,8-TCDD	13CTC	Ave	108987233	104587968	102100937	106968299	101263855	100	100	100	100	100
13C-2,3,7,8-TCDF	13CTC	Ave	156147949	150712836	144041178	144459393	151101344	100	100	100	100	100
37Cl4-2,3,7,8-TCDD	13CTC	Ave	688870	2436945	9929024	56650769	268090229	0.500	2.00	8.00	40.0	200

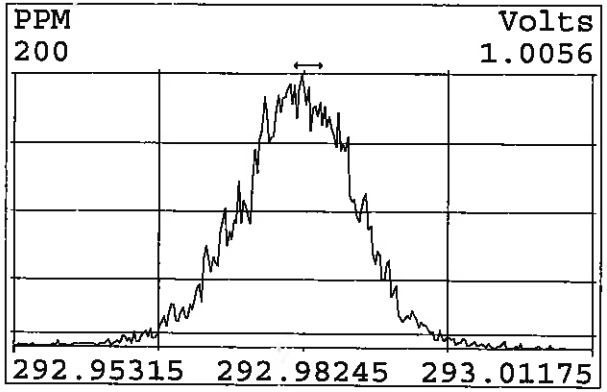
Curve Type Legend:

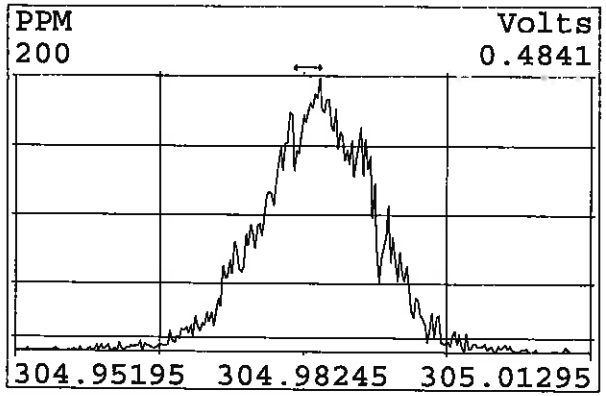
Ave = Average ISTD
AveID = Average isotope dilution

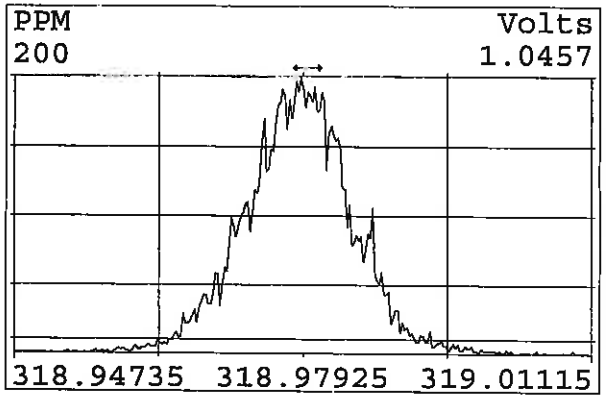
Data file	Smp	Work Order	Sample ID	FV-uL	Method/Matrix	Box	Size	U
02AU1911D2	1	CPS 080219	CPS HRDXNCP_00038		Dioxin		1.00000	
02AU1911D2	2	SB 080219	SB Solvent Blank C-14				1.00000	
02AU1911D2	3	IC 080219	CS-2 HRDXNL2_00027		Dioxin		1.00000	
02AU1911D2	4	IC 080219A	CS-3 HRDXNL3_00025		Dioxin		1.00000	
02AU1911D2	5	IC 080219B	CS-4 HRDXNL4_00084		Dioxin		1.00000	
02AU1911D2	6	IC 080219C	CS-5 HRDXNL5_00028		Dioxin		1.00000	
02AU1911D2	7	IC 080219D	CS-6 HRDXNL6_00024		Dioxin		1.00000	
02AU1911D2	8	ICV 080219	ICV HRDXNIC_00042		Dioxin		1.00000	
02AU1911D2	9						1.00000	
02AU1911D2	10						1.00000	
02AU1911D2	11						1.00000	
02AU1911D2	12						1.00000	
02AU1911D2	13						1.00000	
02AU1911D2	14						1.00000	
02AU1911D2	15						1.00000	
02AU1911D2	16						1.00000	
02AU1911D2	17		ALM 08-02-19				1.00000	
02AU1911D2	18						1.00000	

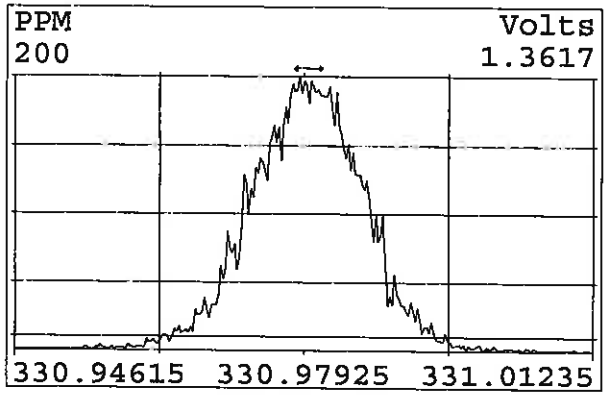
Logfile checked
08/02/19 SMA

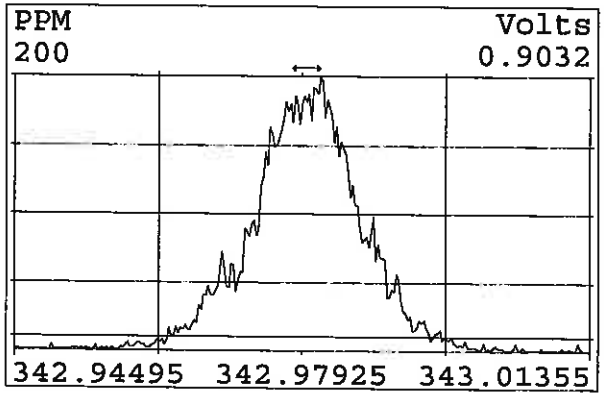
Peak Locate Examination: 2-AUG-2019:01:33 File:02AU1911D2
Experiment:DB225RES Function:1 Reference:PFK

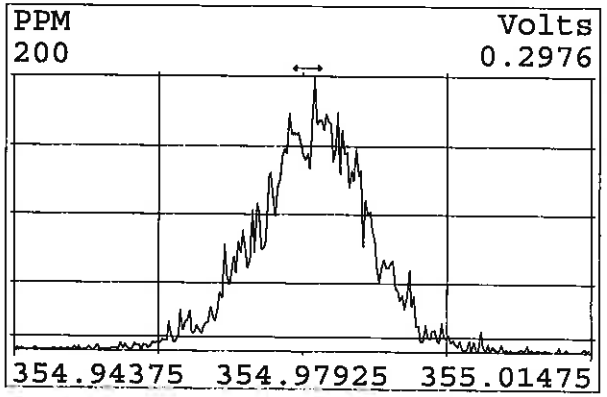


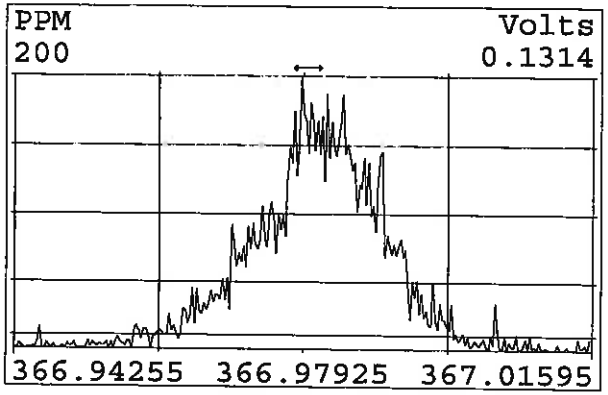


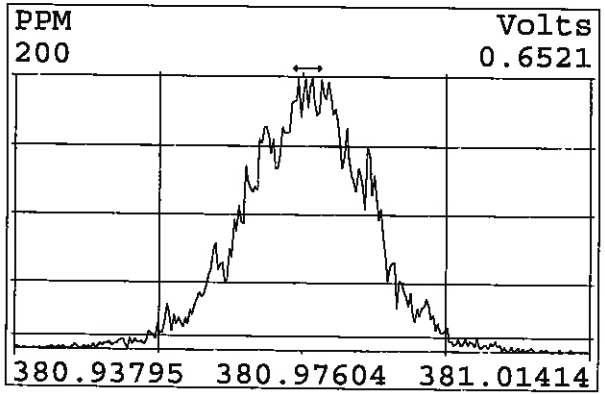




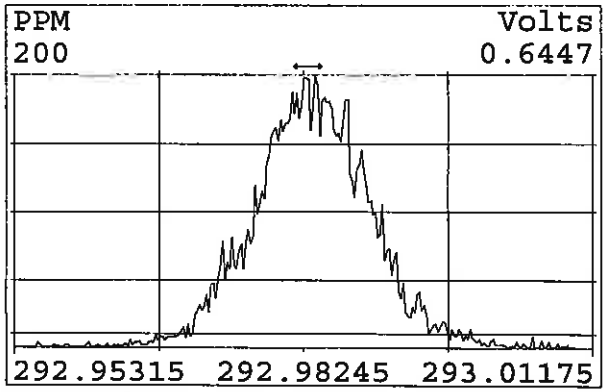


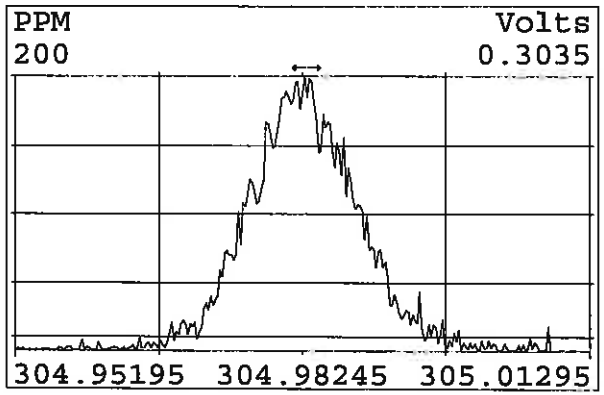


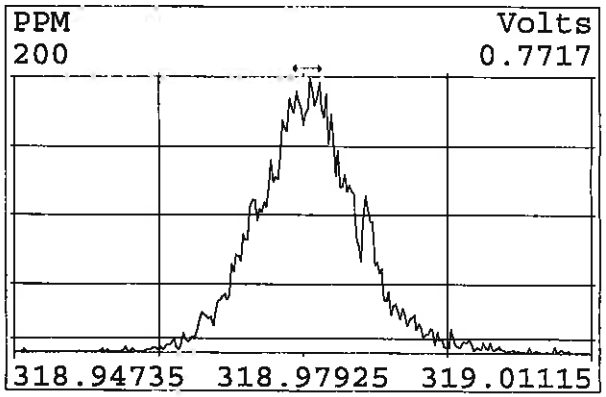


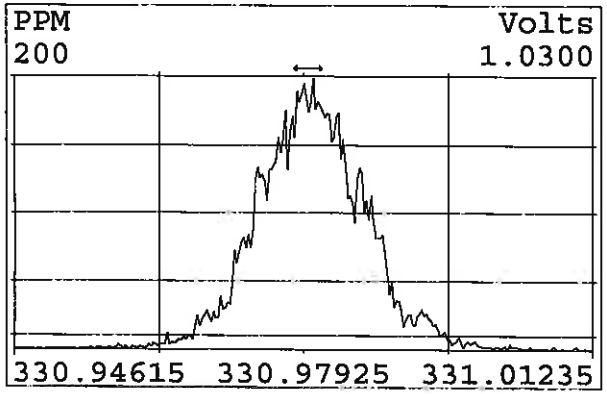


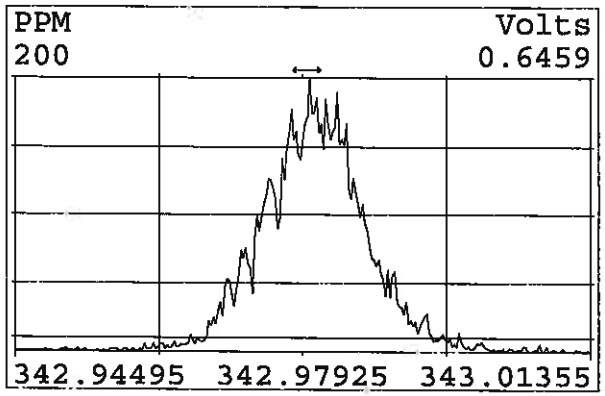
Peak Locate Examination: 2-AUG-2019:07:38 File:RESCHECK11D2
Experiment:DB225RES Function:1 Reference:PFK

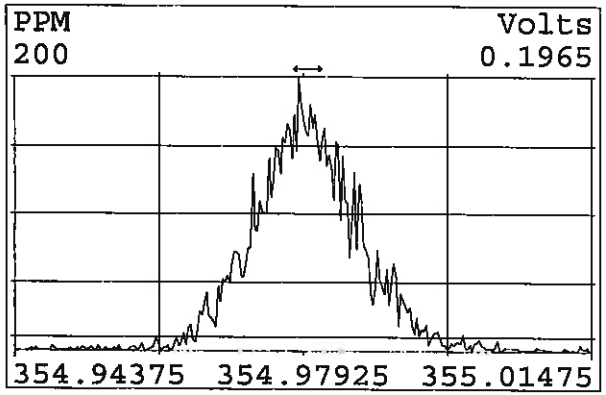


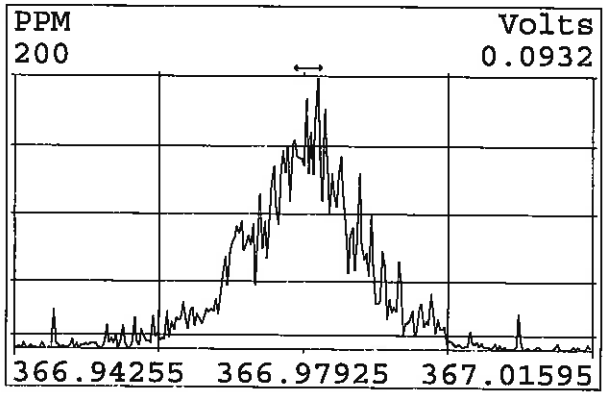


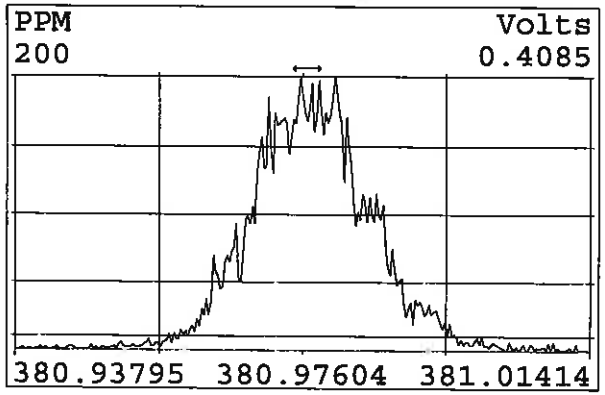












Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Aug-2019 02:52:03 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:46 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:34

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.424	110538697	0.80	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.591	156147949	0.76	1.3379	105.6	105.6	0.5565	0.5565	106	
2,3,7,8-TCDF	16.618	742351	0.68	0.8389	0.5667	0.5667	0.0601	0.0601	113	
D 13C-2,3,7,8-TCDD	15.150	108987233	0.78	0.9388	105.0	105.0	0.3029	0.3029	105	
2,3,7,8-TCDD	15.164	766838	0.66	1.1538	0.6098	0.6098	0.1272	0.1272	122	n
$ 37Cl4-2,3,7,8-TCDD	15.177	688870		1.1816	0.5274	0.5274	0.0799	0.0799	105	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

Reagents:

HRDXNL2_00027 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:50:56 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Aug-2019 02:52:03 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:46 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:34

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.424	15.416	0		49211451	11686880	18543	46357	630		
333.9339	15.424	15.416	0		61327246	14873725	11665	29162	1275	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.591	16.580	1	1.076	67180120	14400770	53937	134842	267		
317.9389	16.591	16.580	1	1.076	88967829	19171242	25172	62930	762	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.618	16.599	1	1.002	300768	58292	2710	6775	22		
305.8987	16.604	16.599	0	1.001	441583	80440	4062	10155	20	0.68(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.150	15.136	1	0.982	47916340	11905033	18543	46357	642		
333.9339	15.150	15.136	1	0.982	61070893	14985948	11665	29162	1285	0.78(0.65-0.89)	
2,3,7,8-TCDD											n
319.8965	15.164	15.156	0	1.001	304053	63475	6504	16260	10		
321.8936	15.177	15.156	1	1.002	462785	92174	9277	23192	10	0.66(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.177	15.158	1	0.984	688870	148959	10036	25090	15		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

Reagents:

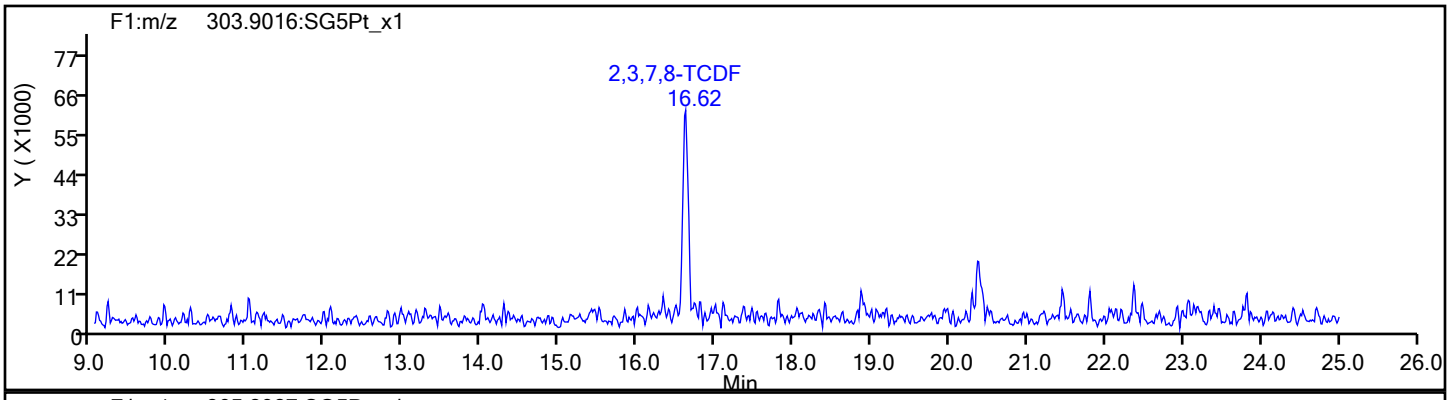
HRDXNL2_00027 Amount Added: 1.00 Units: mL

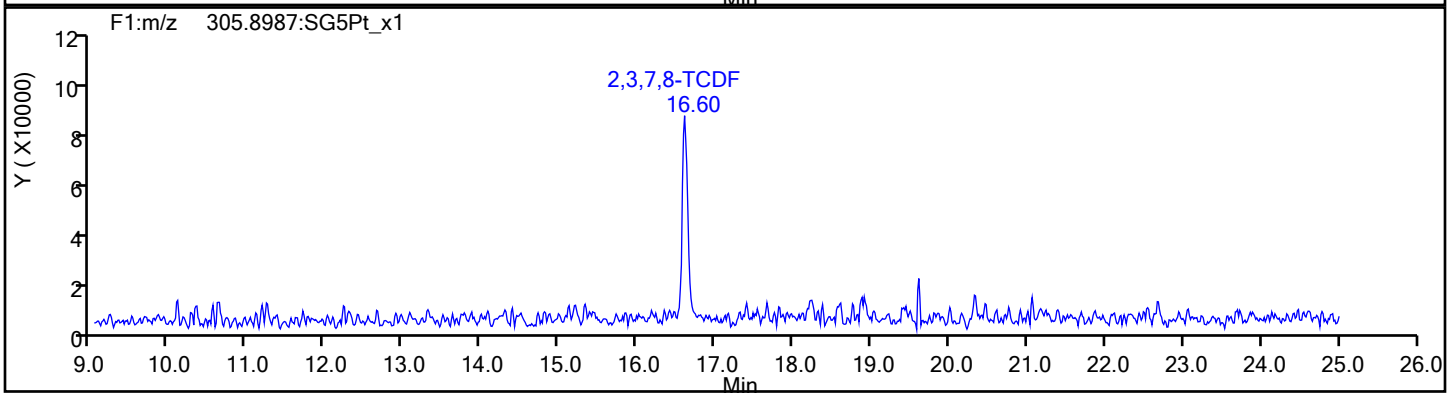
Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

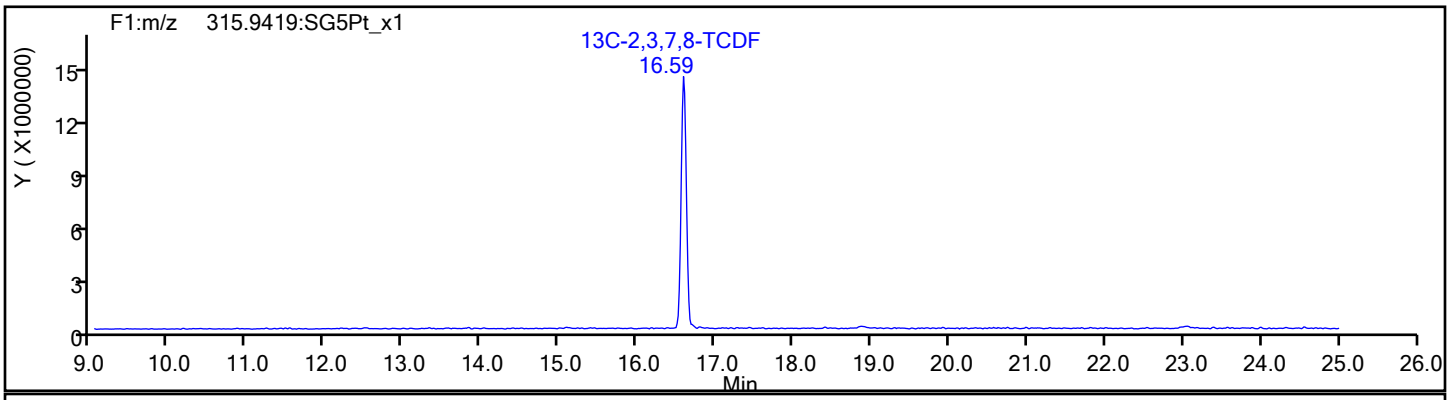
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

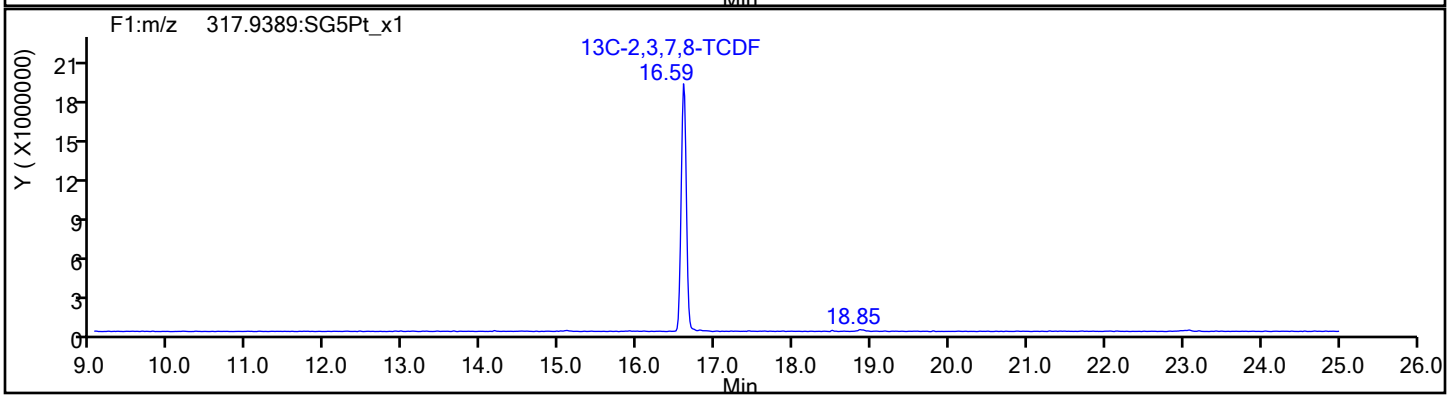
TCDF





TCDF Standards



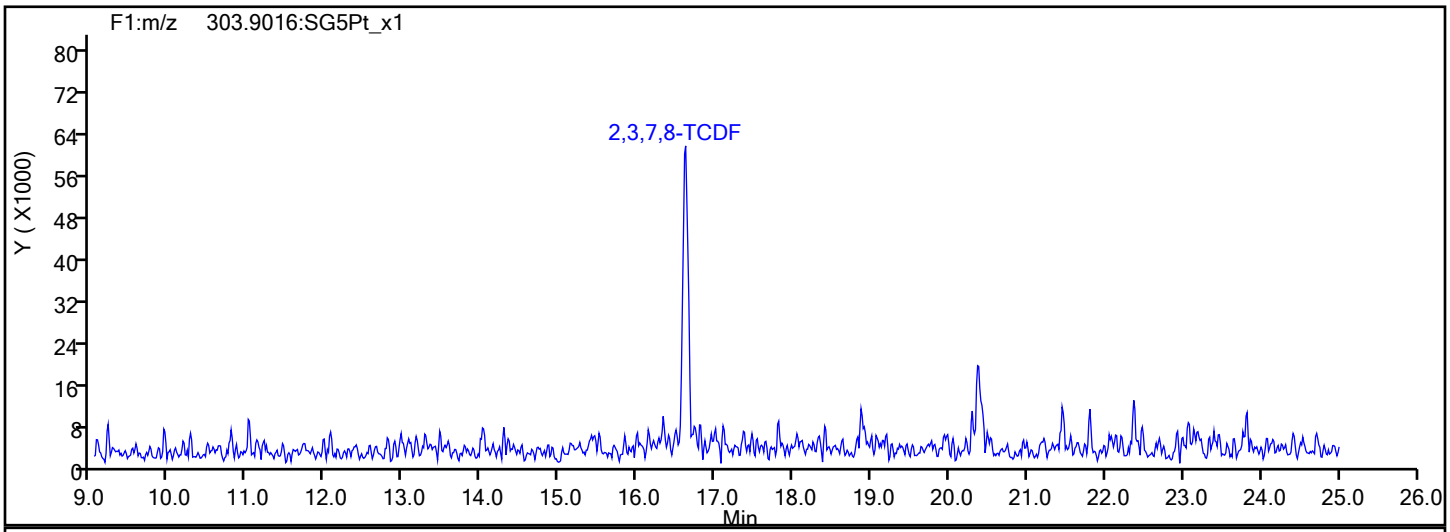


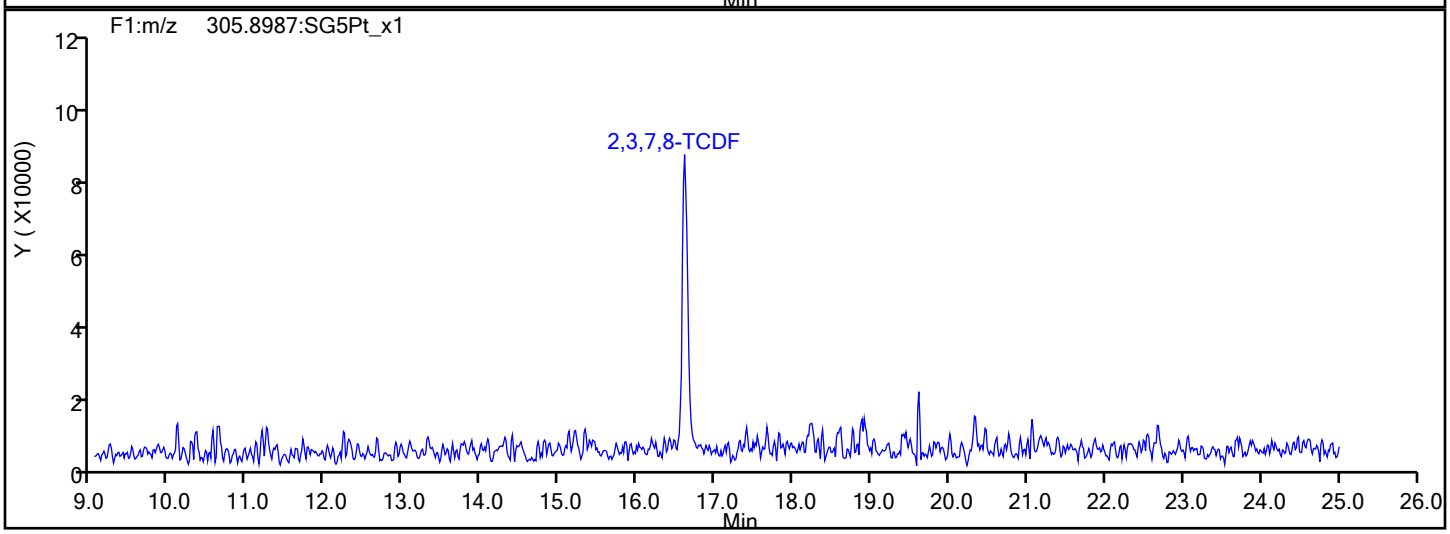
Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

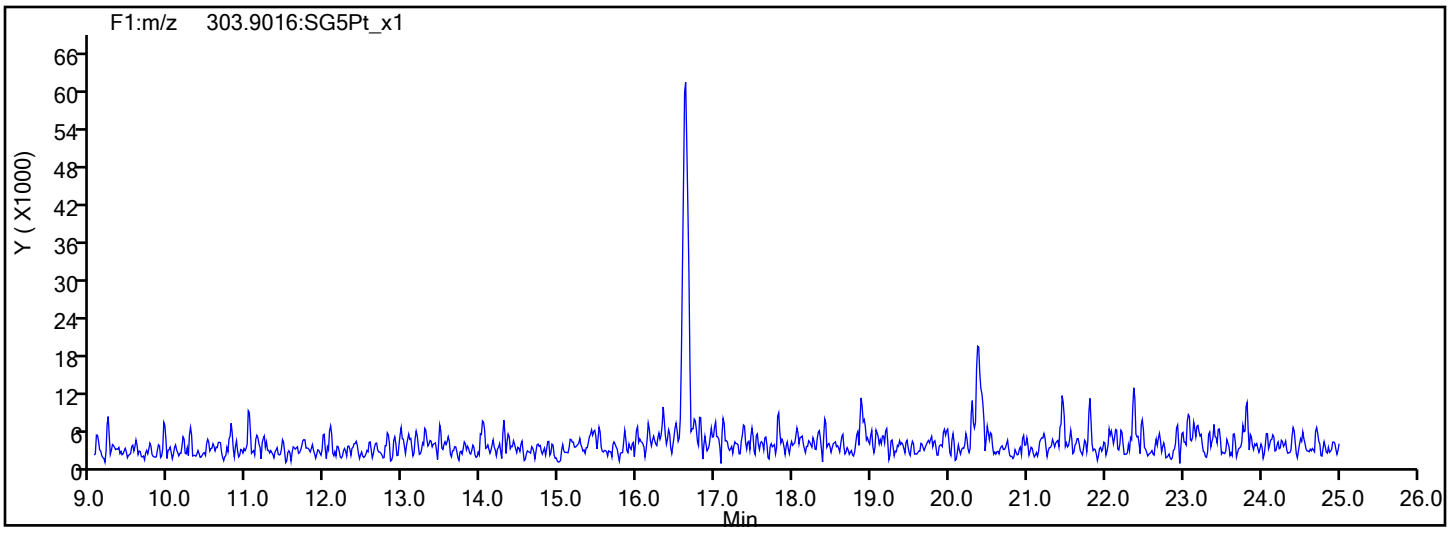
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

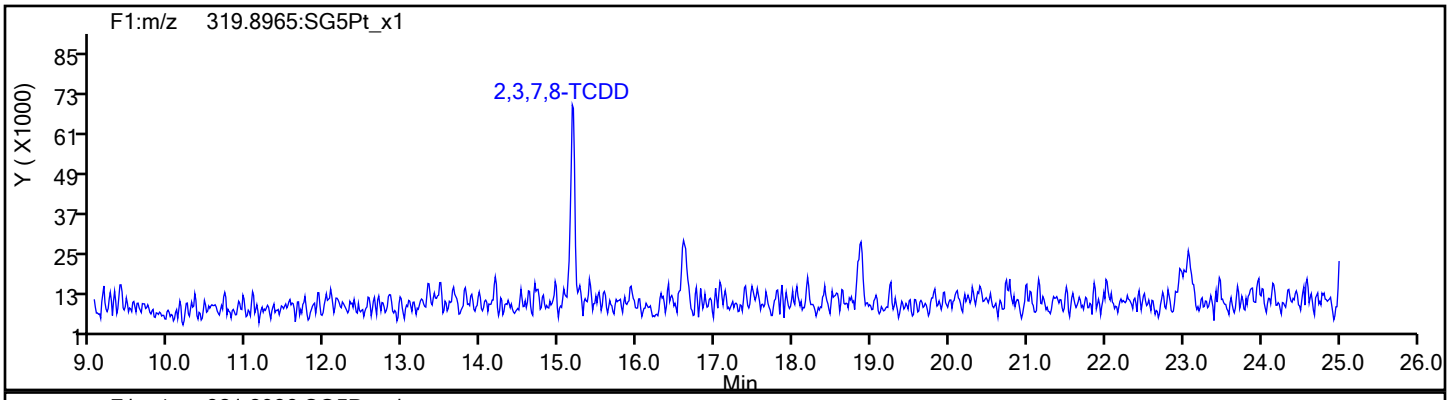


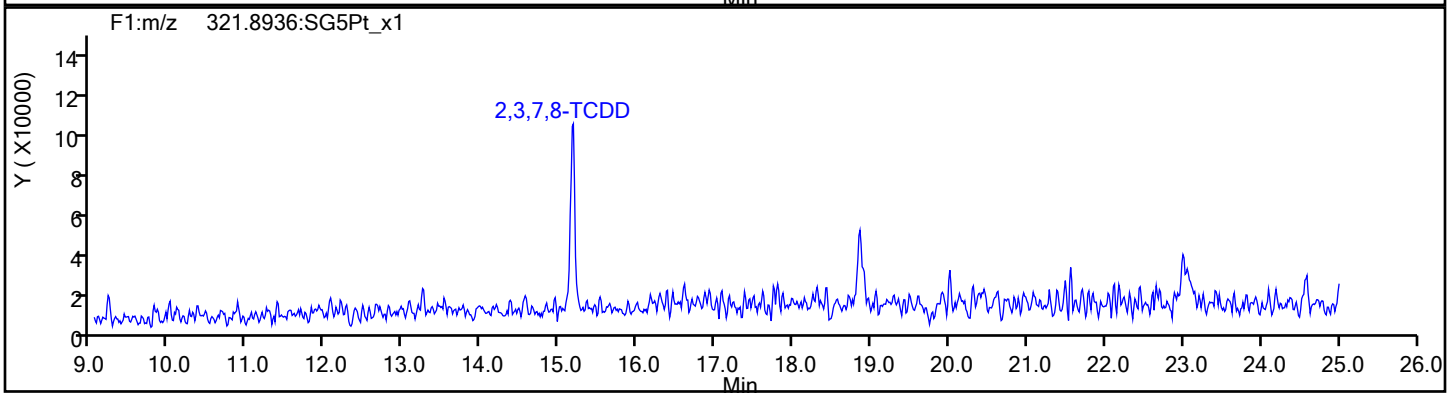
Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

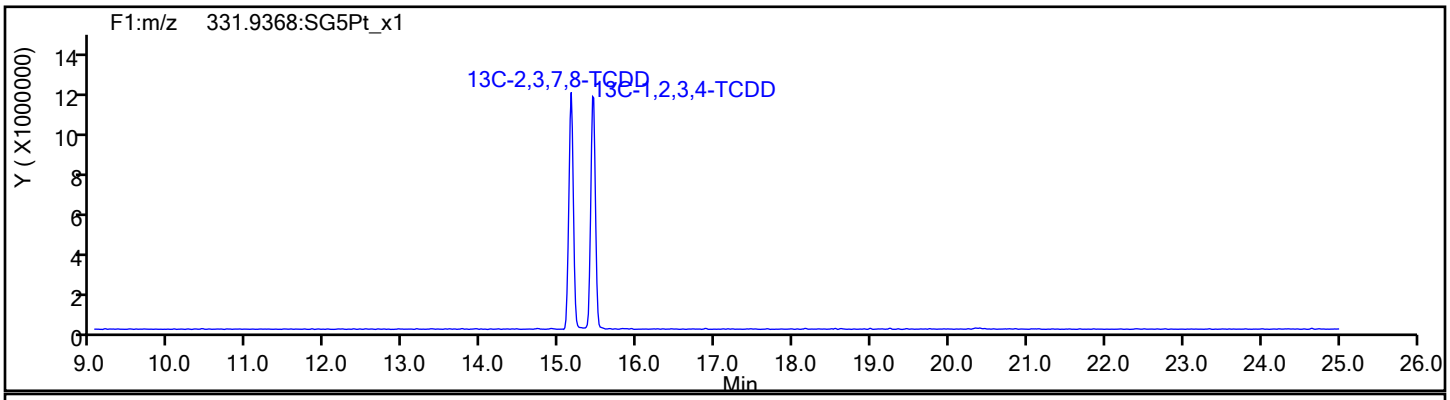
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

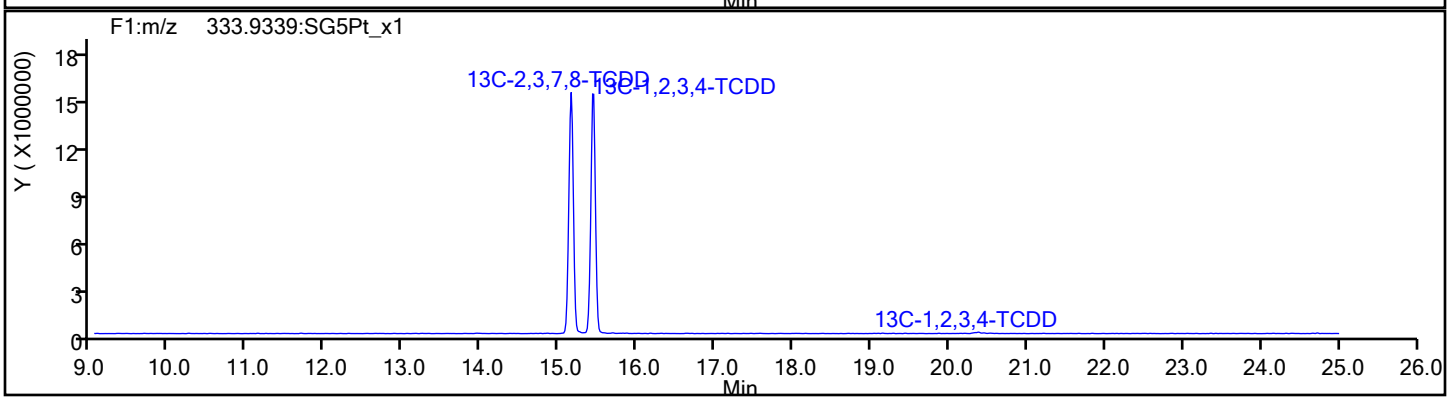
TCDD





TCDD Standards



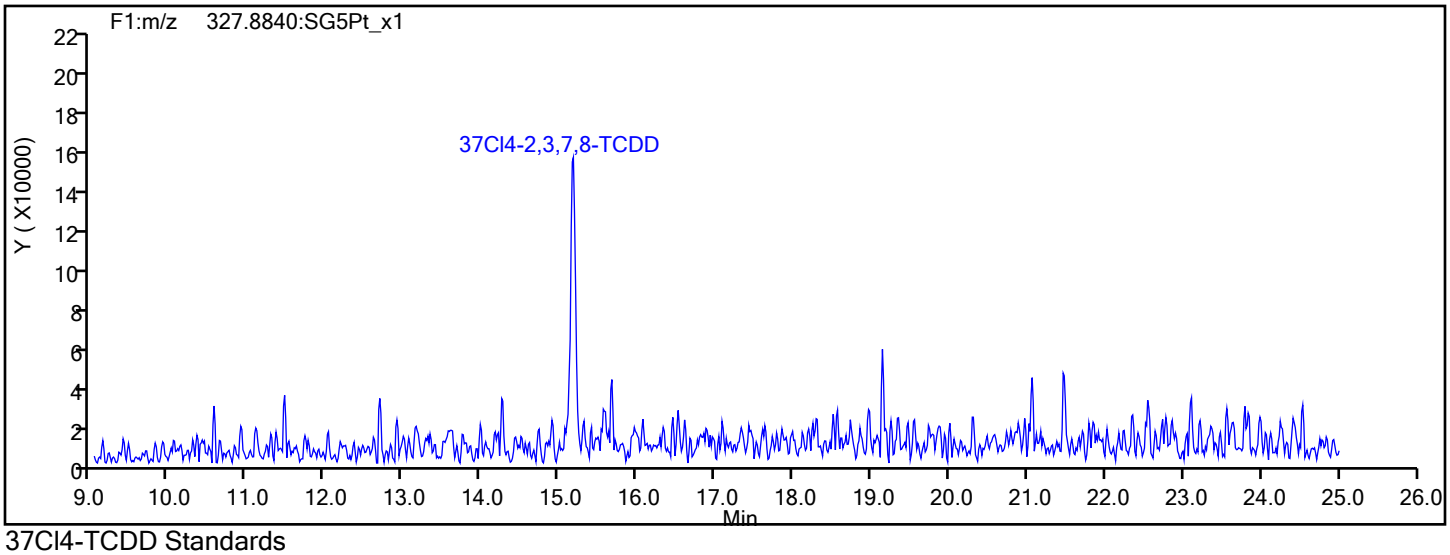


Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

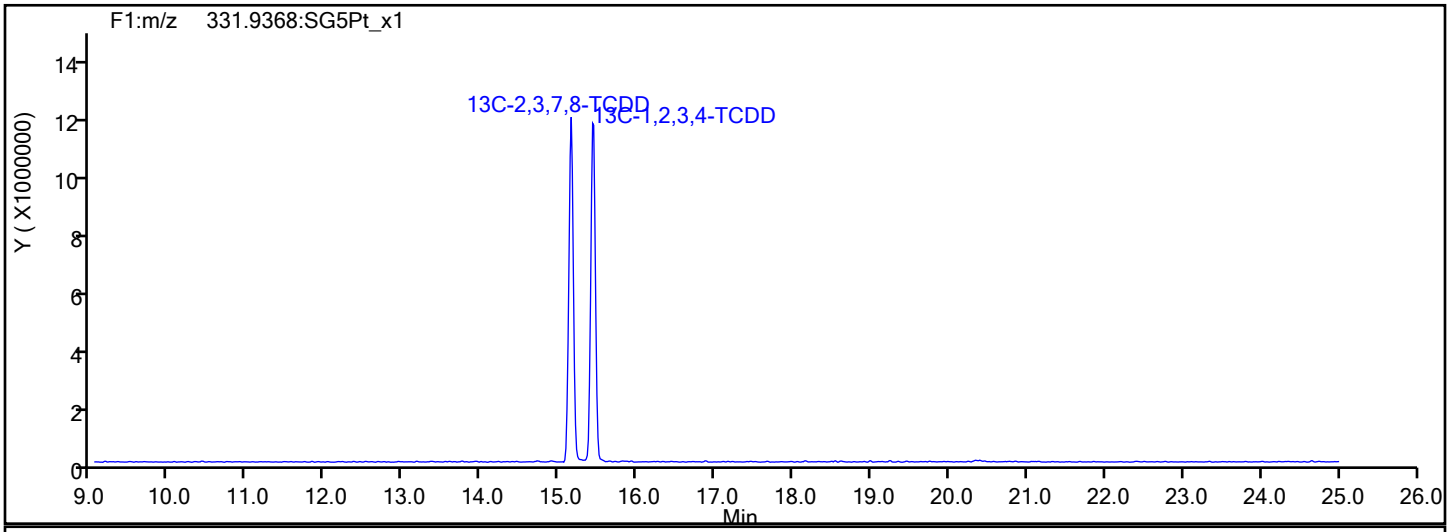
Eurofins TestAmerica, Sacramento

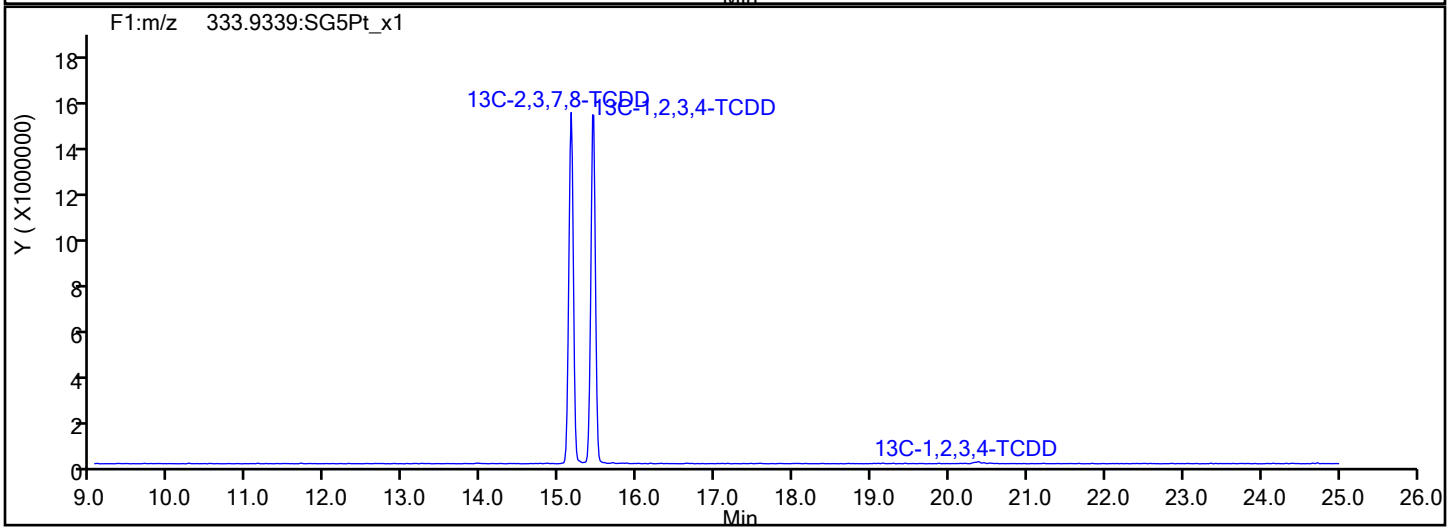
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

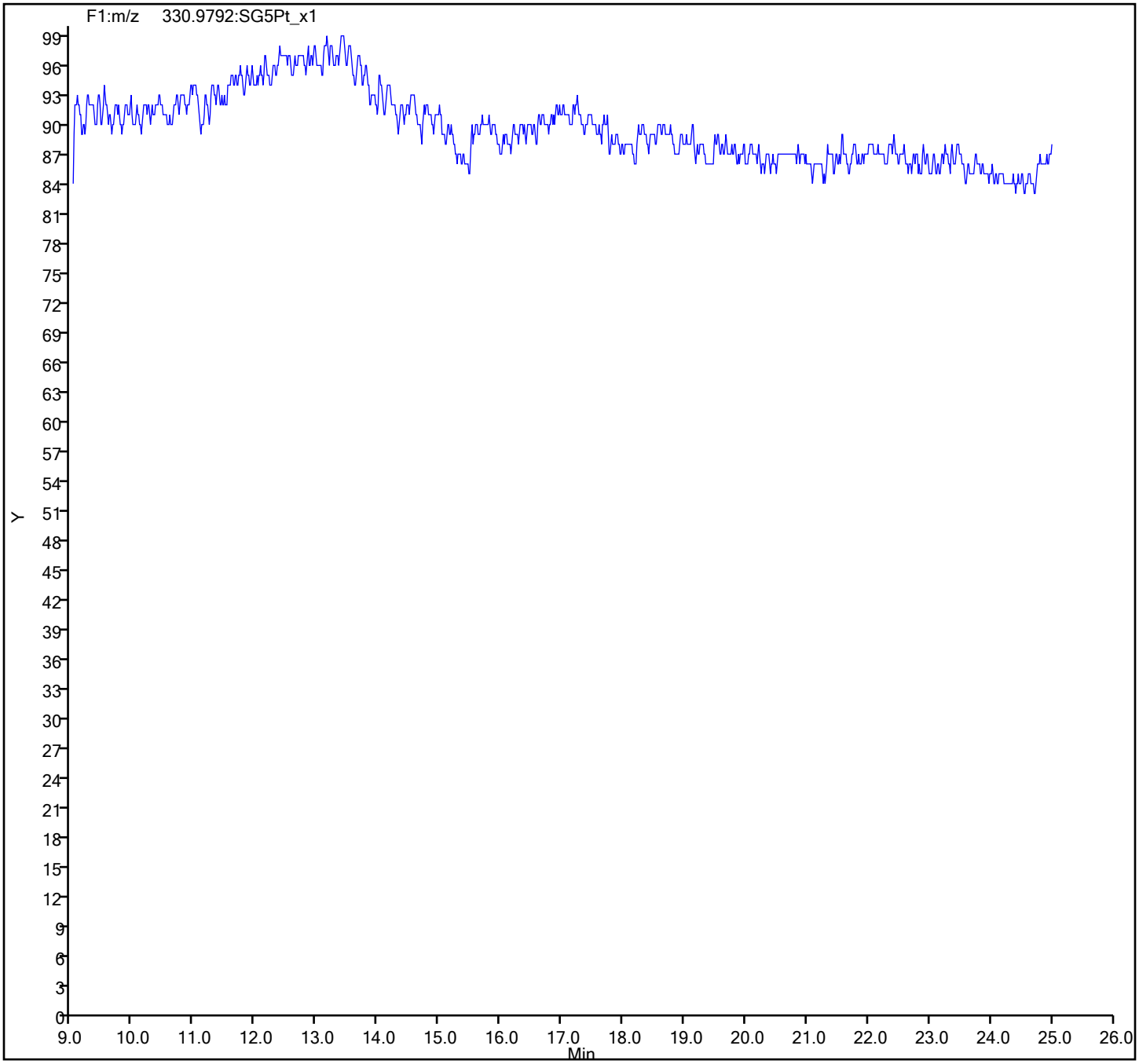




Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Aug-2019 03:30:21 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:51:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.422	116003371	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.588	150712836	0.76	1.3379	97.1	97.1	0.5017	0.5017	97.11	
2,3,7,8-TCDF	16.602	2602621	0.77	0.8389	2.059	2.059	0.0697	0.0697	103	
D 13C-2,3,7,8-TCDD	15.134	104587968	0.77	0.9388	96.0	96.0	0.2954	0.2954	96.04	
2,3,7,8-TCDD	15.161	2408989	0.76	1.1538	1.996	1.996	0.1402	0.1402	99.81	
$ 37Cl4-2,3,7,8-TCDD	15.161	2436945		1.1816	1.778	1.778	0.0697	0.0697	88.89	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Aug-2019 03:30:21 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:51:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:45

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.422	15.416	0		51108109	12518707	19618	49045	638		
333.9339	15.422	15.416	0		64895262	16017022	12040	30100	1330	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.588	16.580	0	1.076	65303459	13590544	55233	138082	246		
317.9389	16.588	16.580	0	1.076	85409377	18139250	21388	53470	848	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.602	16.599	0	1.001	1128784	210338	2933	7332	72		
305.8987	16.602	16.599	0	1.001	1473837	306111	4488	11220	68	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.134	15.136	0	0.981	45657518	11153304	19618	49045	569		
333.9339	15.134	15.136	0	0.981	58930450	14086226	12040	30100	1170	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.161	15.156	0	1.002	1042745	248740	6492	16230	38		
321.8936	15.161	15.156	0	1.002	1366244	315049	9844	24610	32	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.161	15.158	0	0.983	2436945	572005	9406	23515	61		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

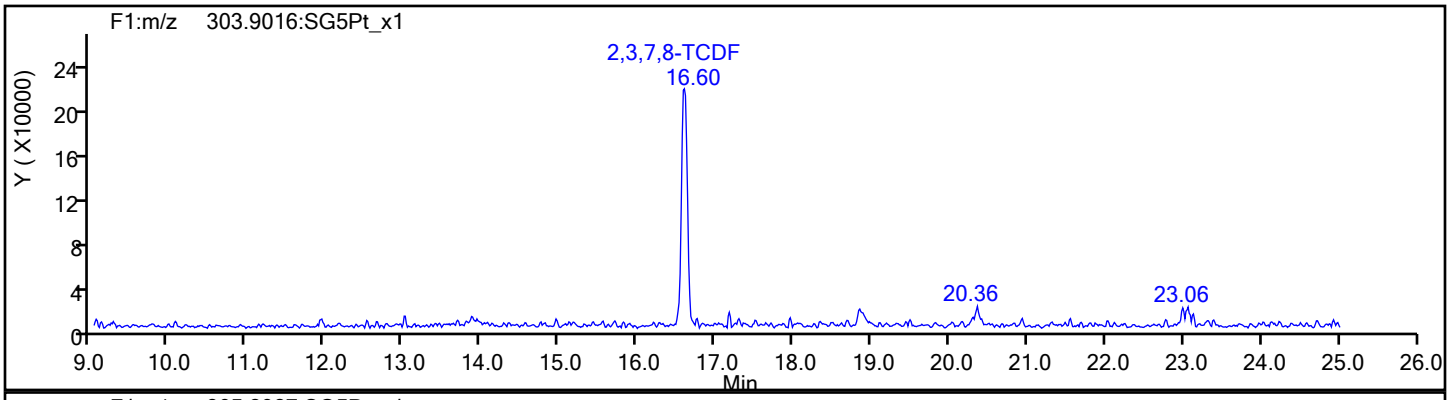
HRDXNL3_00025 Amount Added: 1.00 Units: mL

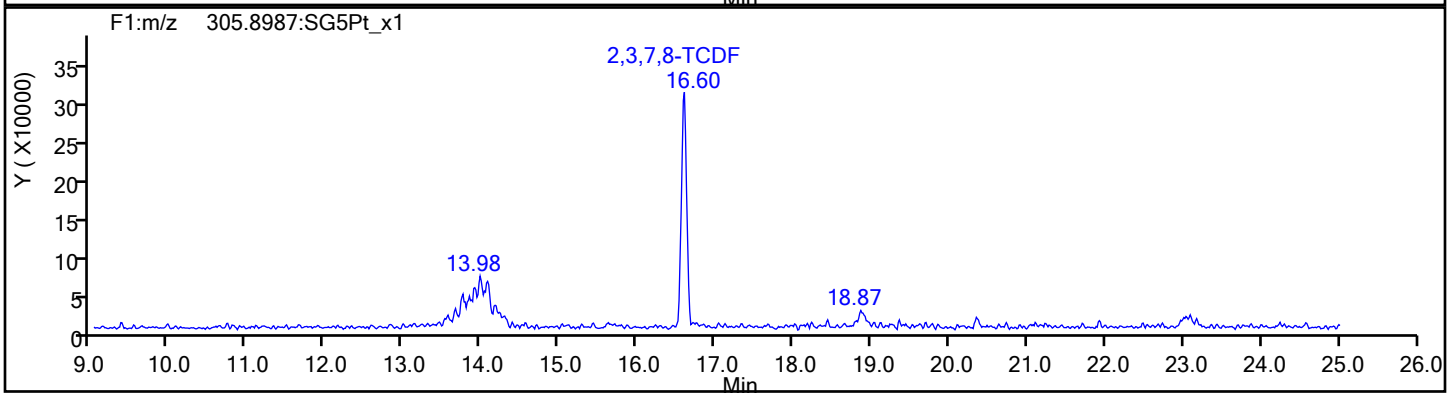
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

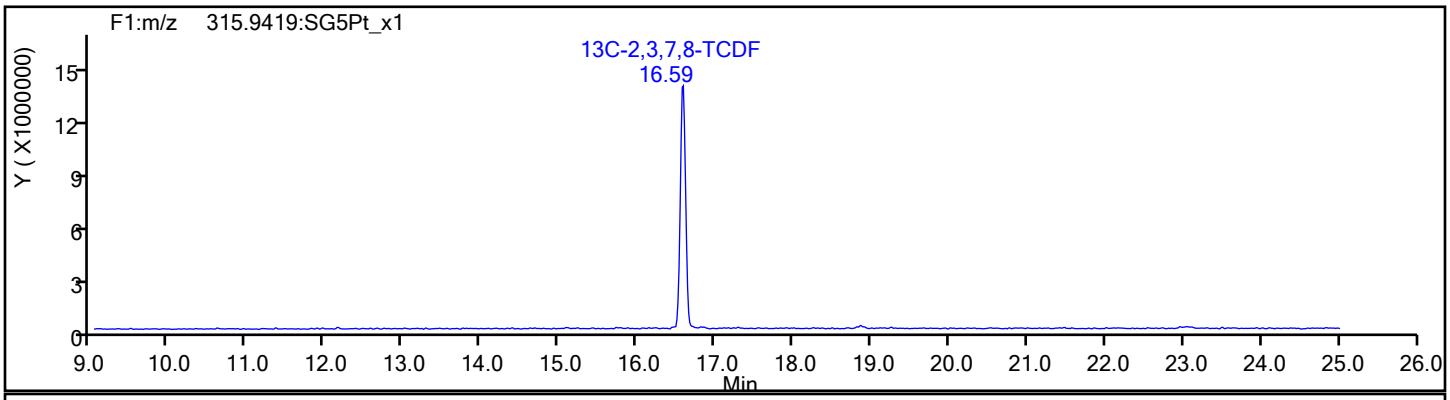
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

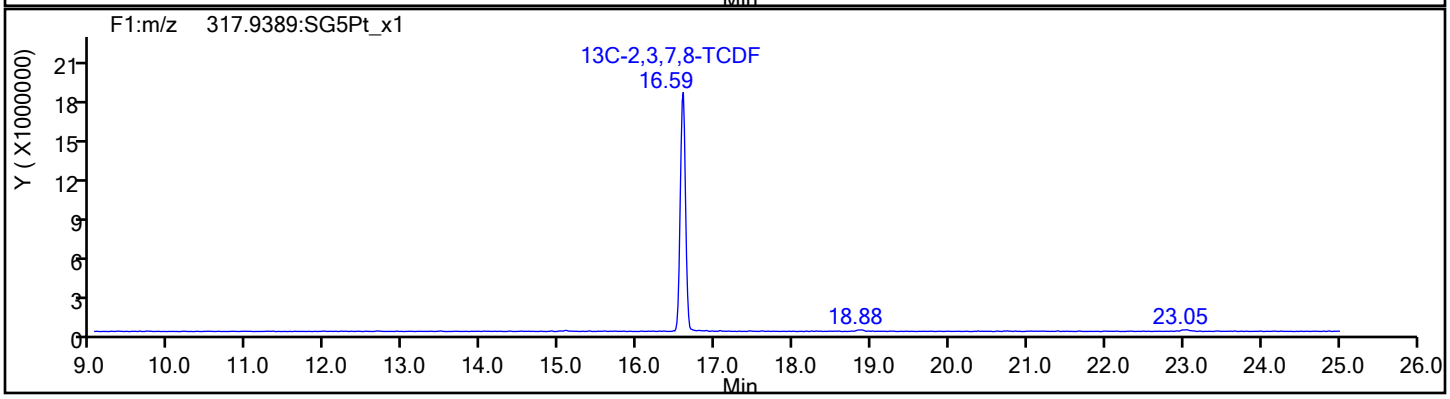
TCDF





TCDF Standards



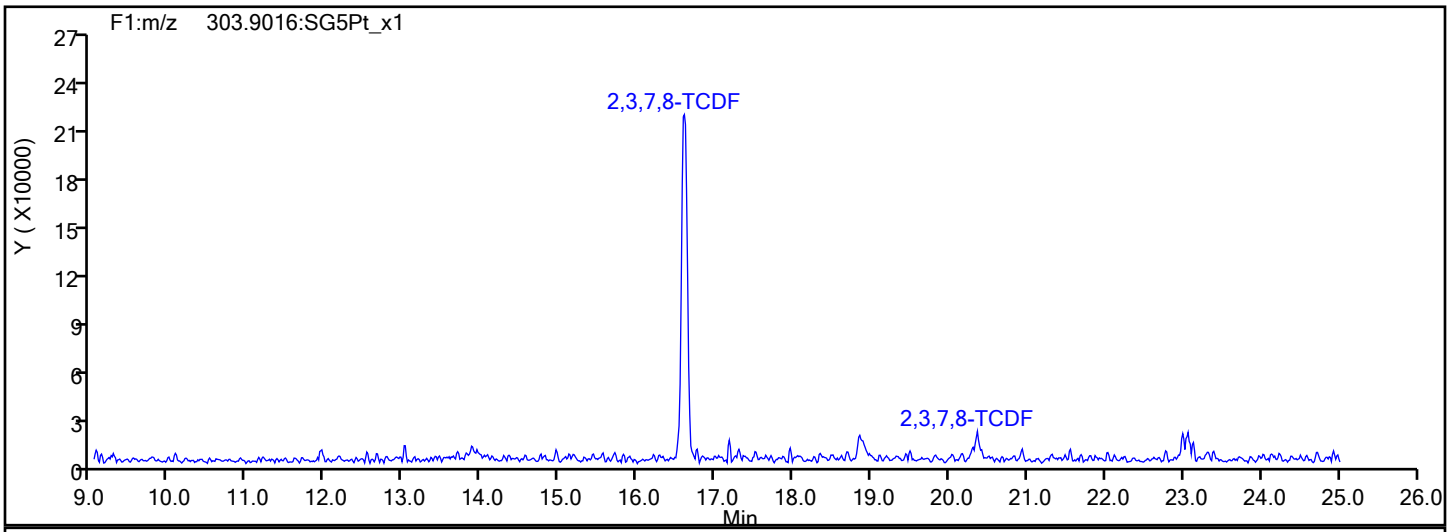


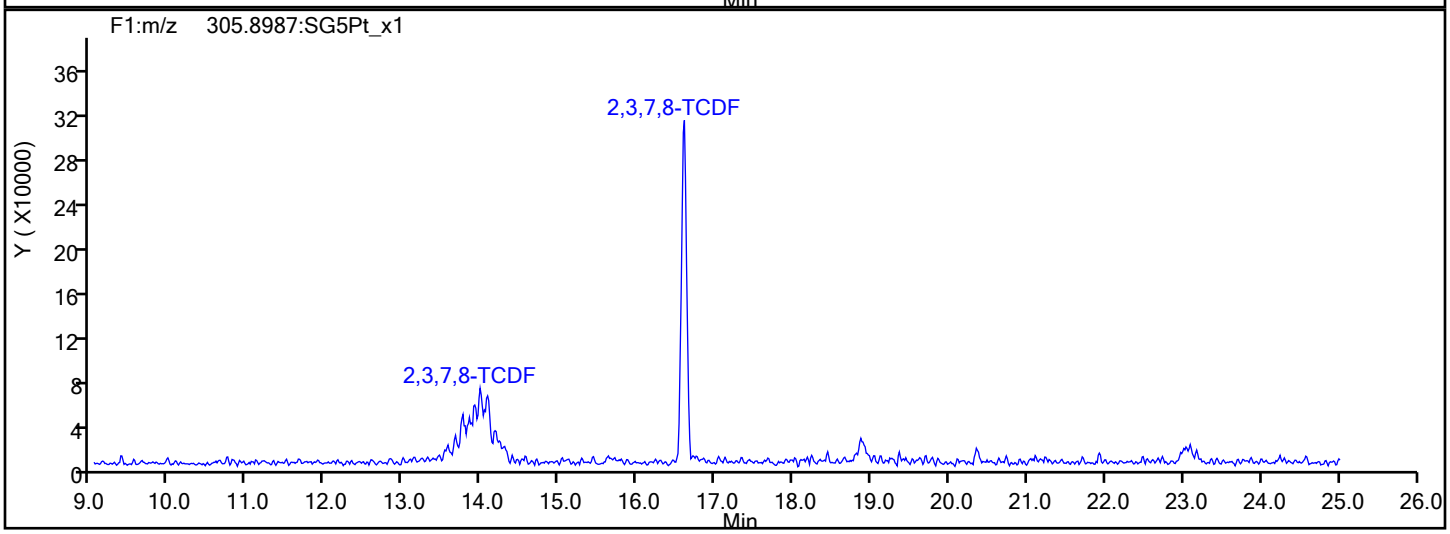
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

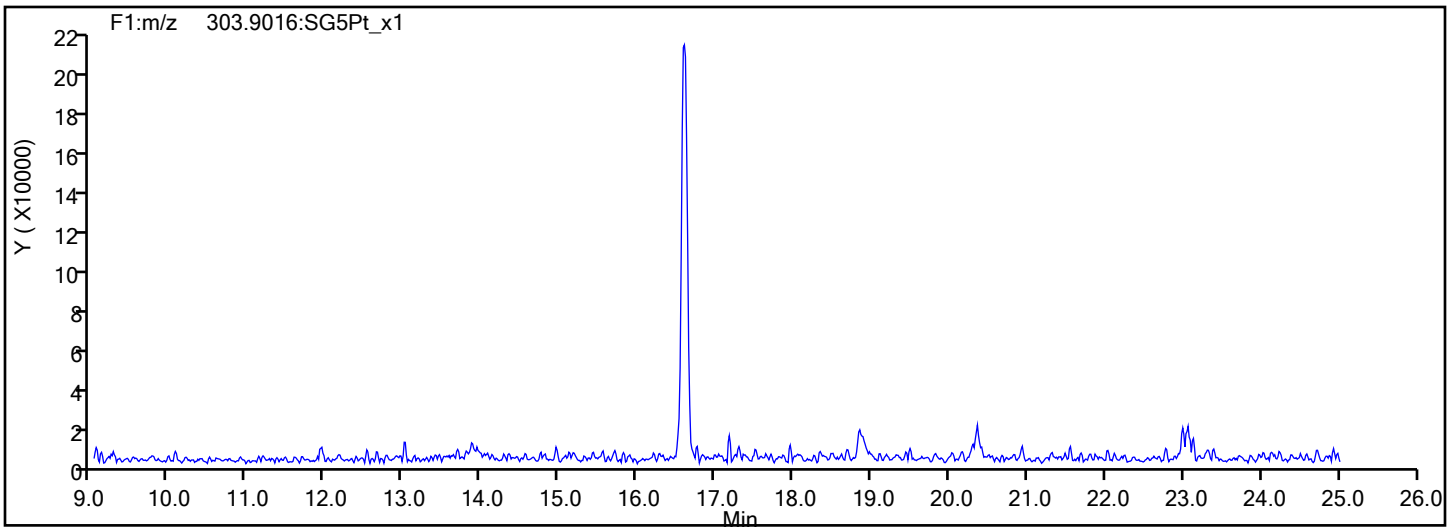
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

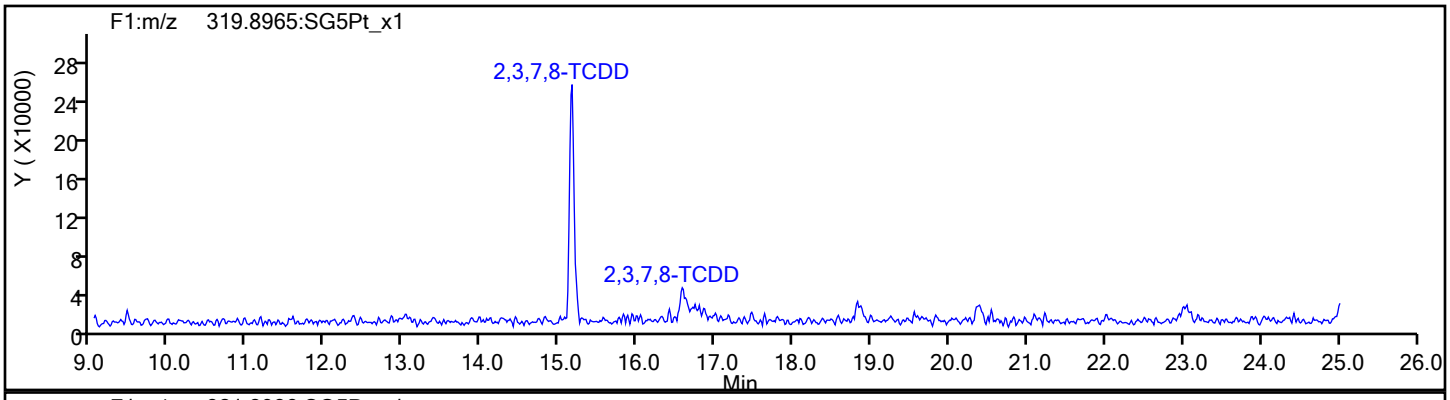


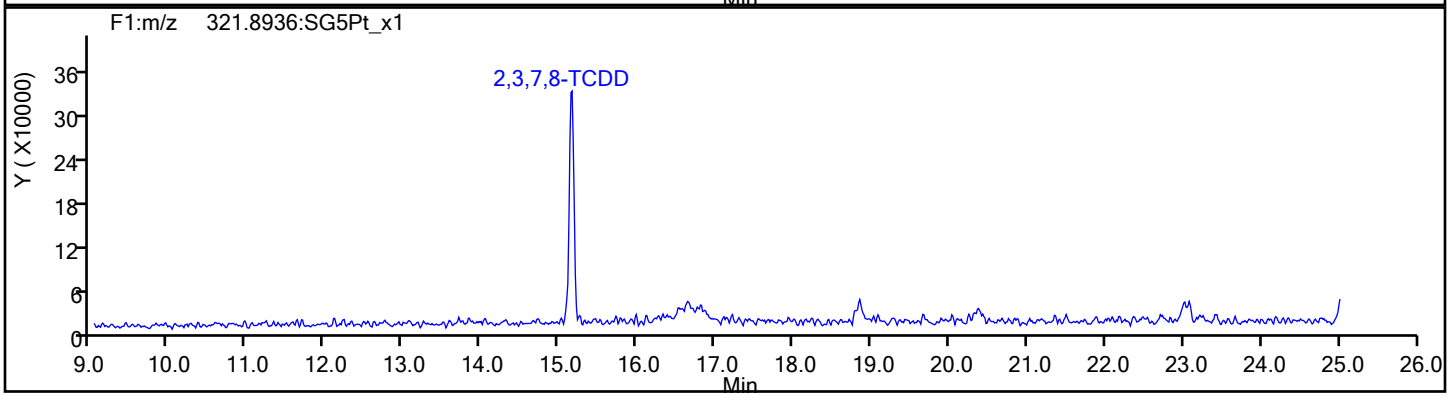
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

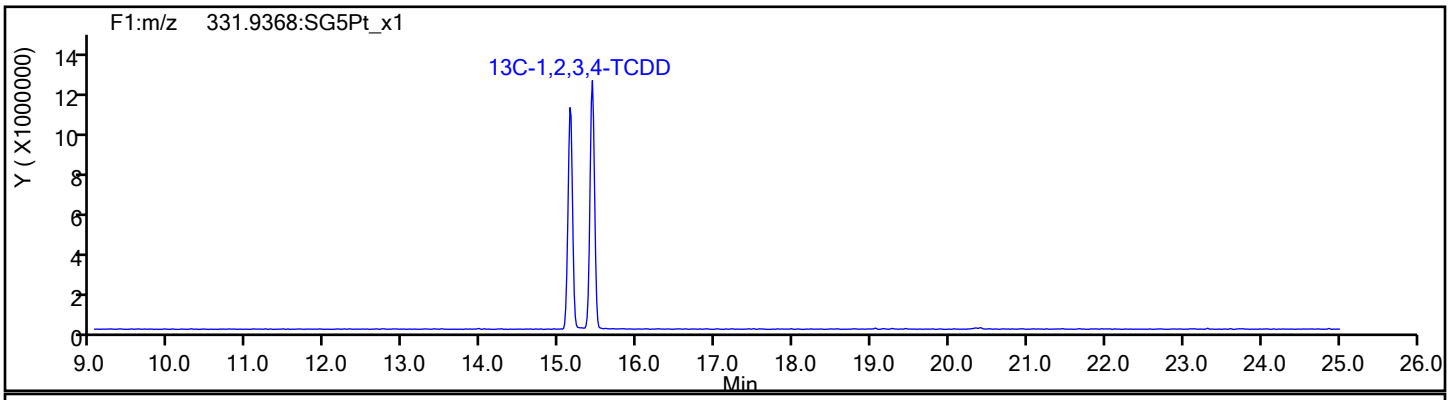
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

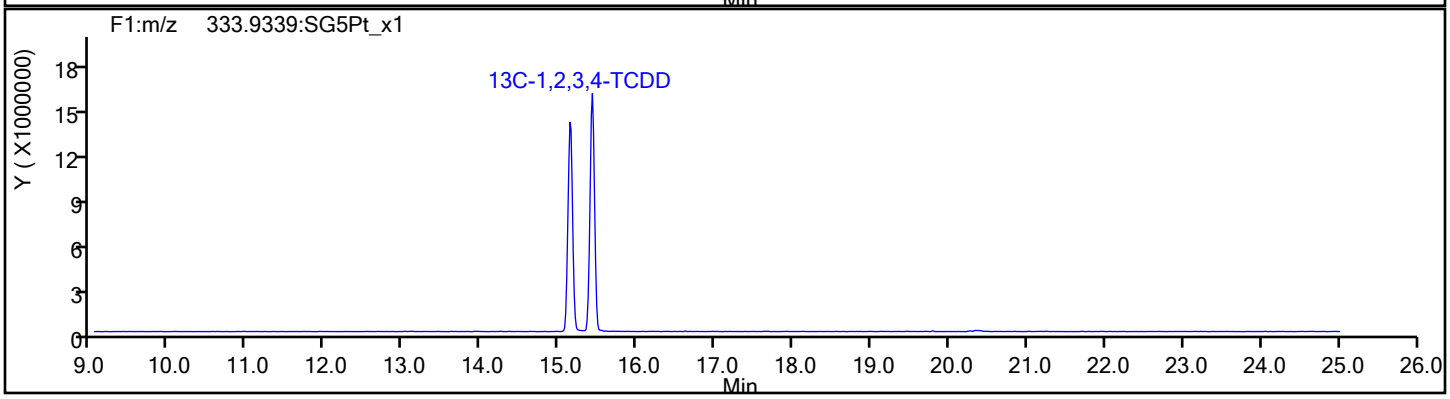
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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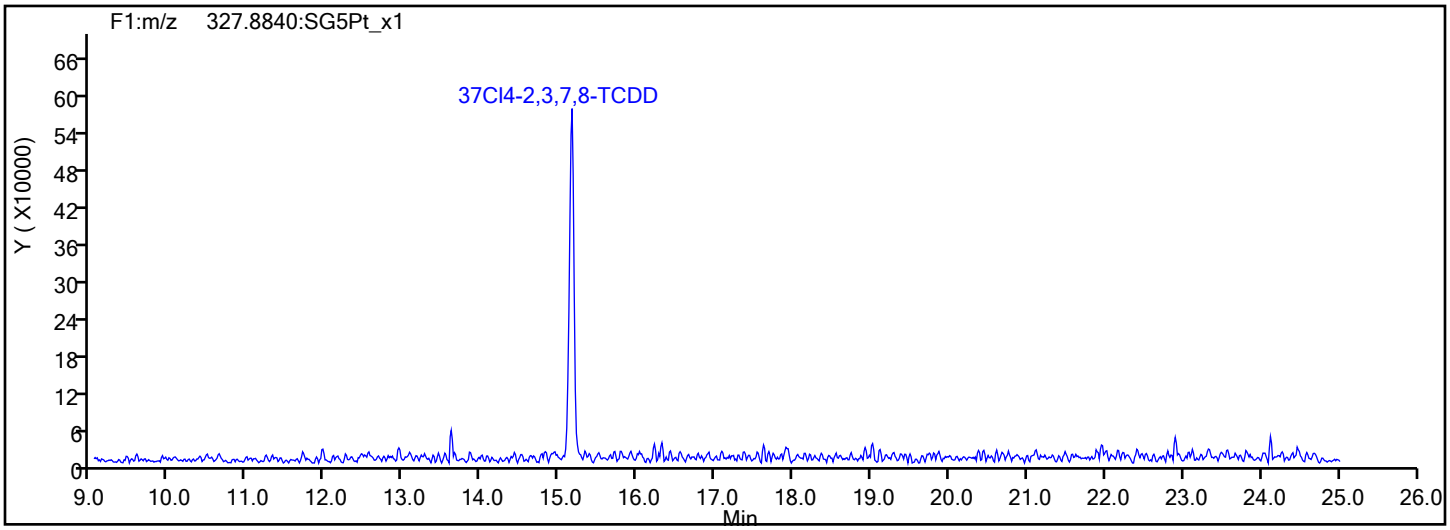
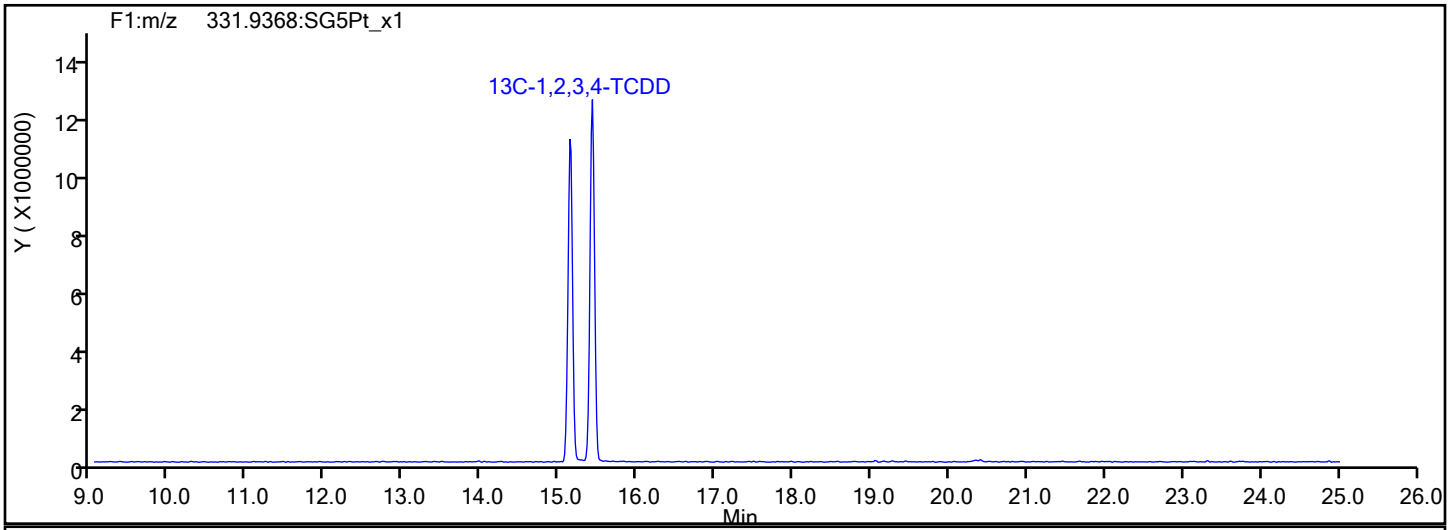
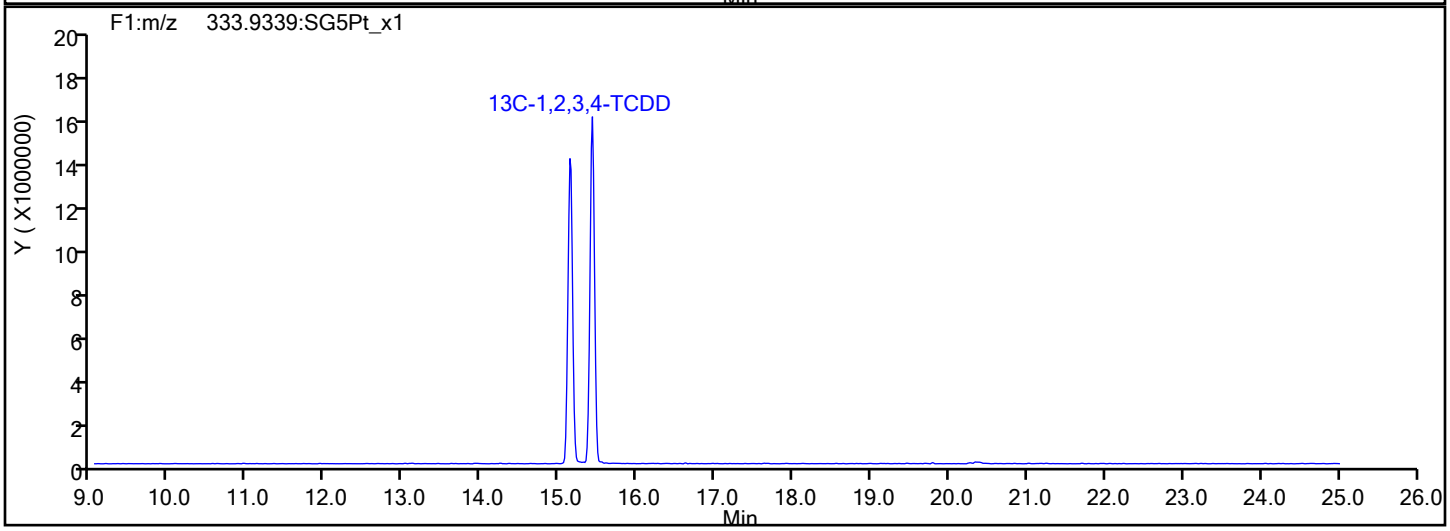
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

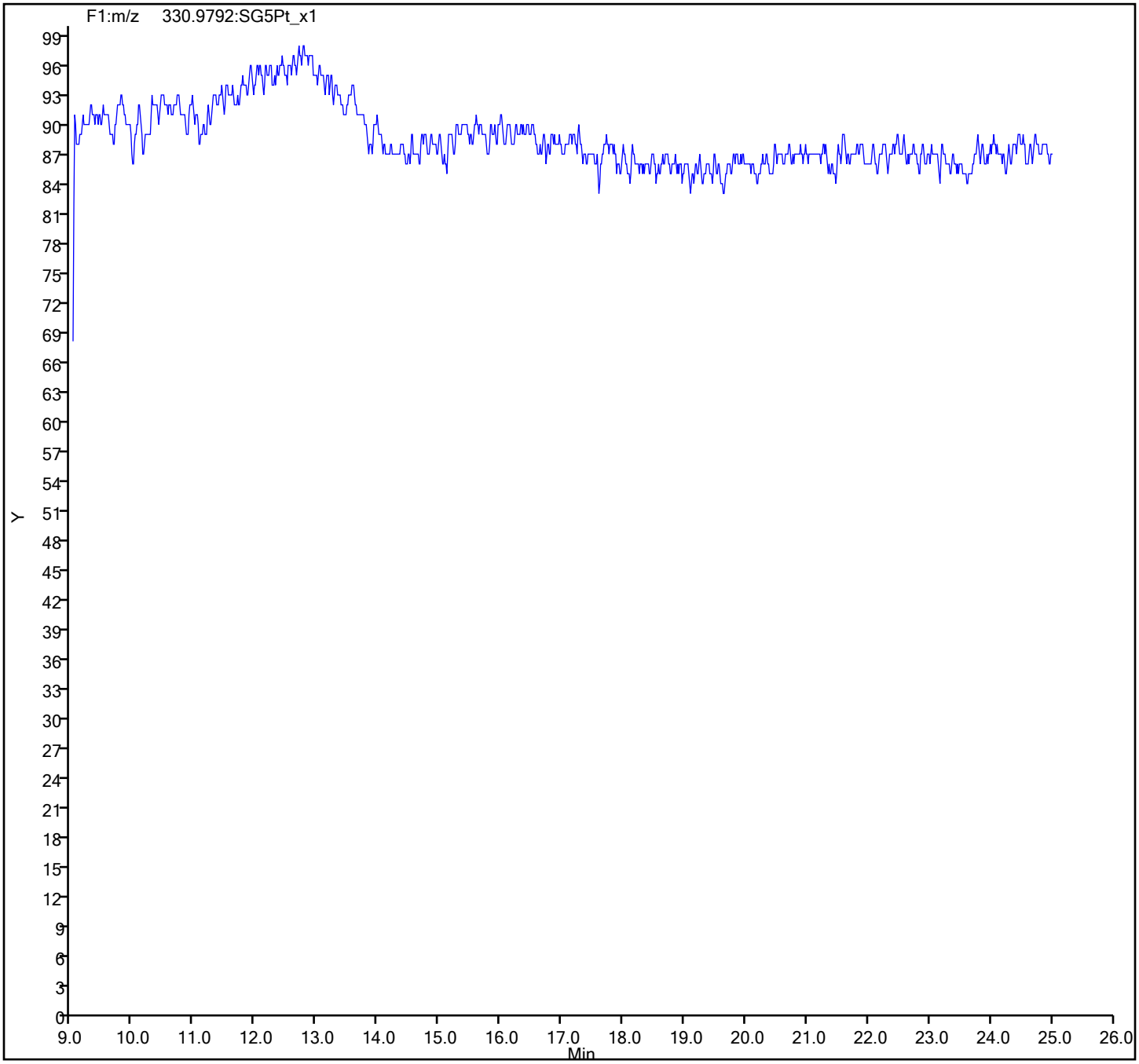




Report Date: 02-Aug-2019 11:51:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Aug-2019 04:08:39 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00084
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:13 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 11:50:13

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.424	106319859	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.591	144041178	0.79	1.3379	101.3	101.3	0.5534	0.5534	101	
2,3,7,8-TCDF	16.604	11238394	0.76	0.8389	9.301	9.301	0.0827	0.0827	93.01	
D 13C-2,3,7,8-TCDD	15.136	102100937	0.77	0.9388	102.3	102.3	0.2809	0.2809	102	
2,3,7,8-TCDD	15.164	10136940	0.76	1.1538	8.605	8.605	0.1498	0.1498	86.05	
$ 37Cl4-2,3,7,8-TCDD	15.164	9929024		1.1816	7.903	7.903	0.1068	0.1068	98.79	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL4_00084 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Aug-2019 04:08:39 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00084
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:13 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 11:50:13

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.424	15.416	0		46708197	10977681	16216	40540	677		
333.9339	15.424	15.416	0		59611662	14687691	10856	27140	1353	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.591	16.580	1	1.076	63548576	13720043	50935	127337	269		
317.9389	16.591	16.580	1	1.076	80492602	17728003	25076	62690	707	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.604	16.599	0	1.001	4865871	1034824	3394	8485	305		
305.8987	16.604	16.599	0	1.001	6372523	1366111	5328	13320	256	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.136	15.136	0	0.981	44311856	10806558	16216	40540	666		
333.9339	15.136	15.136	0	0.981	57789081	13912119	10856	27140	1282	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.164	15.156	0	1.002	4381105	1087501	6755	16887	161		
321.8936	15.164	15.156	0	1.002	5755835	1373692	10330	25825	133	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.164	15.158	0	0.983	9929024	2303011	12961	32402	178		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

HRDXNL4_00084 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d

Injection Date: 02-Aug-2019 04:08:39 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

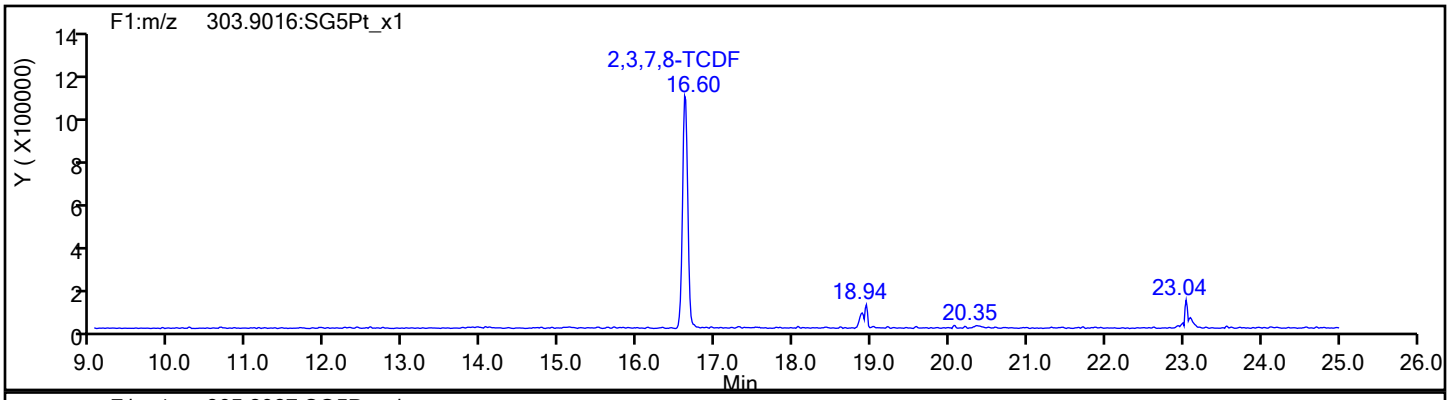
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

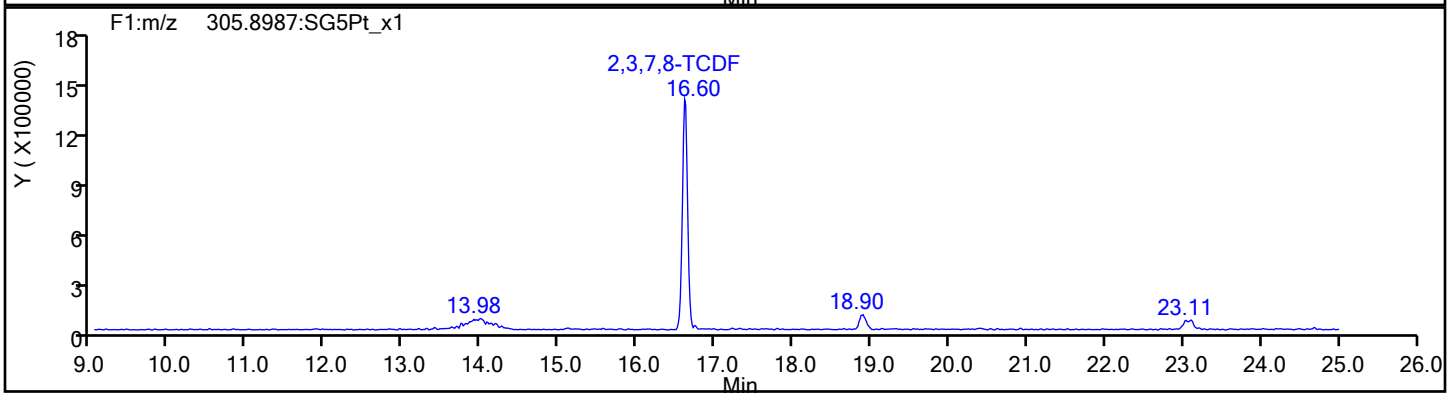
Client ID:

Worklist#: 312067 Sample Line#: 5

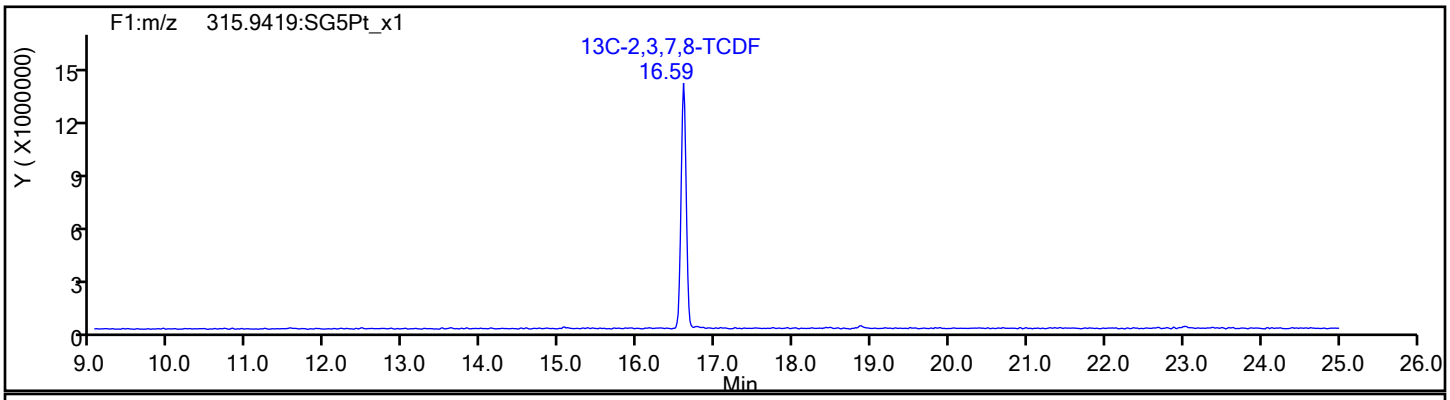
Column Type: DB-225 Column Dia: 0.32 mm

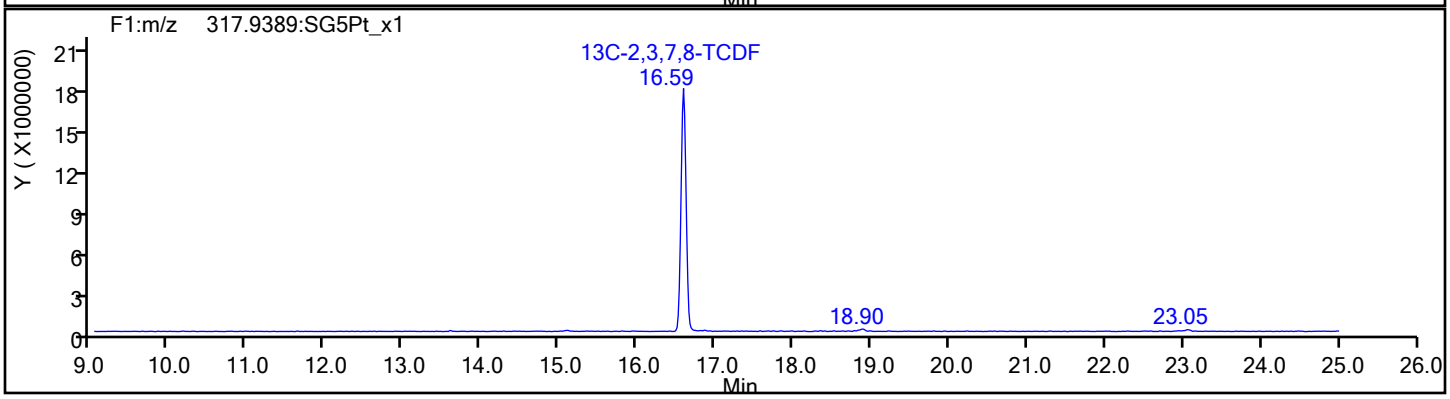
TCDF





TCDF Standards



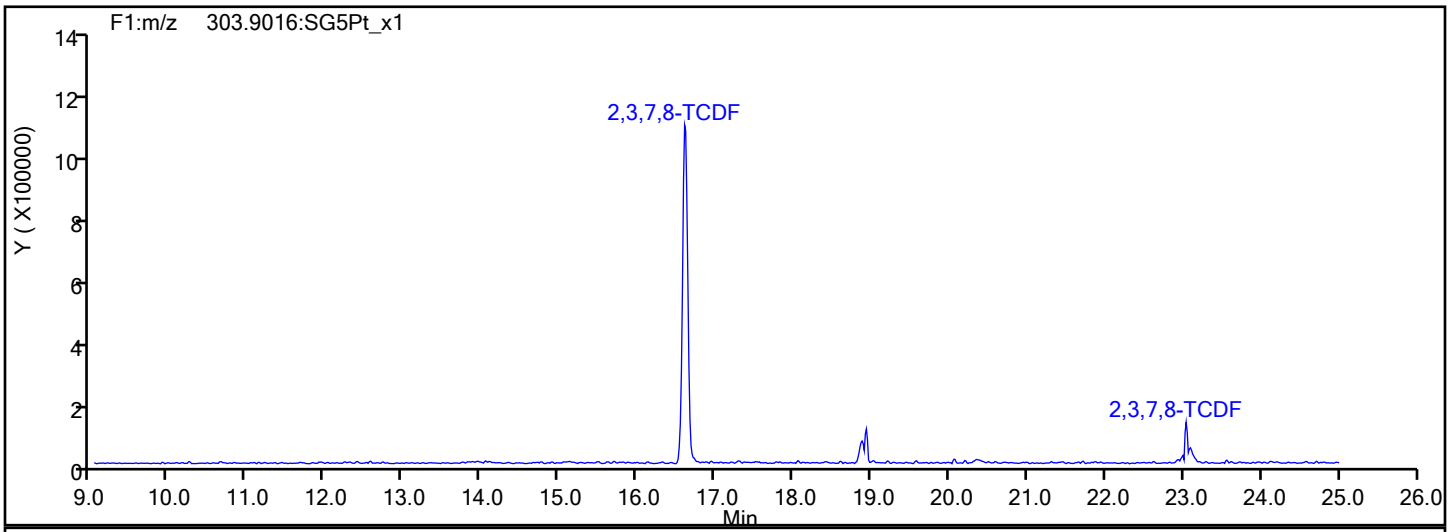


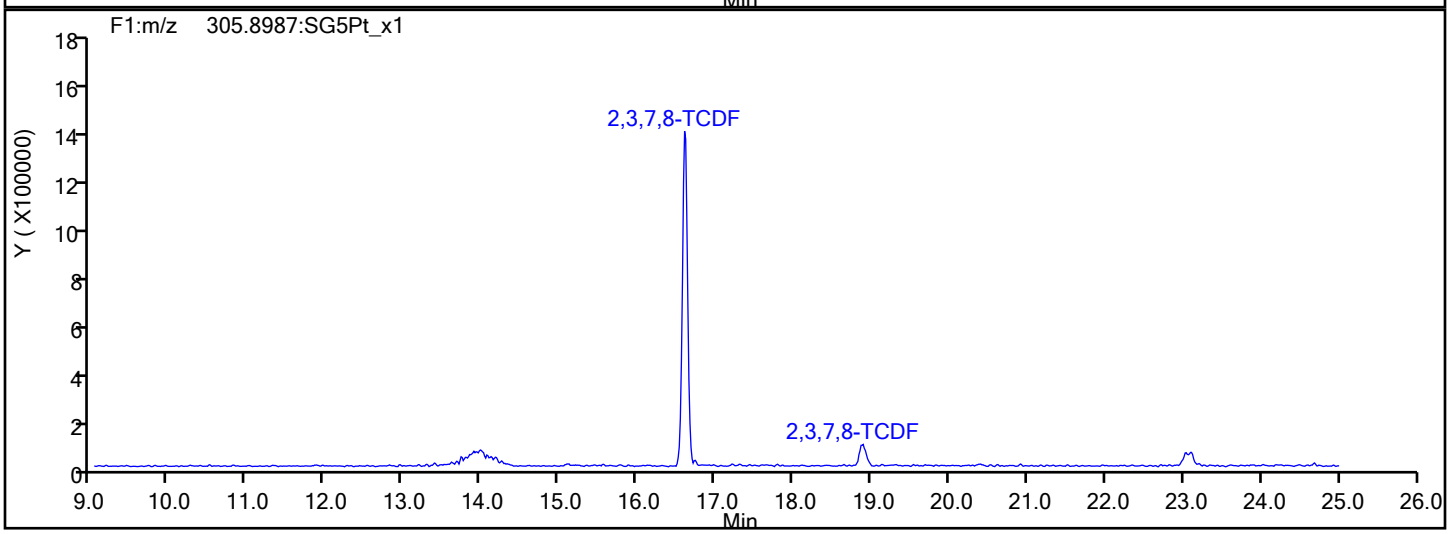
Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

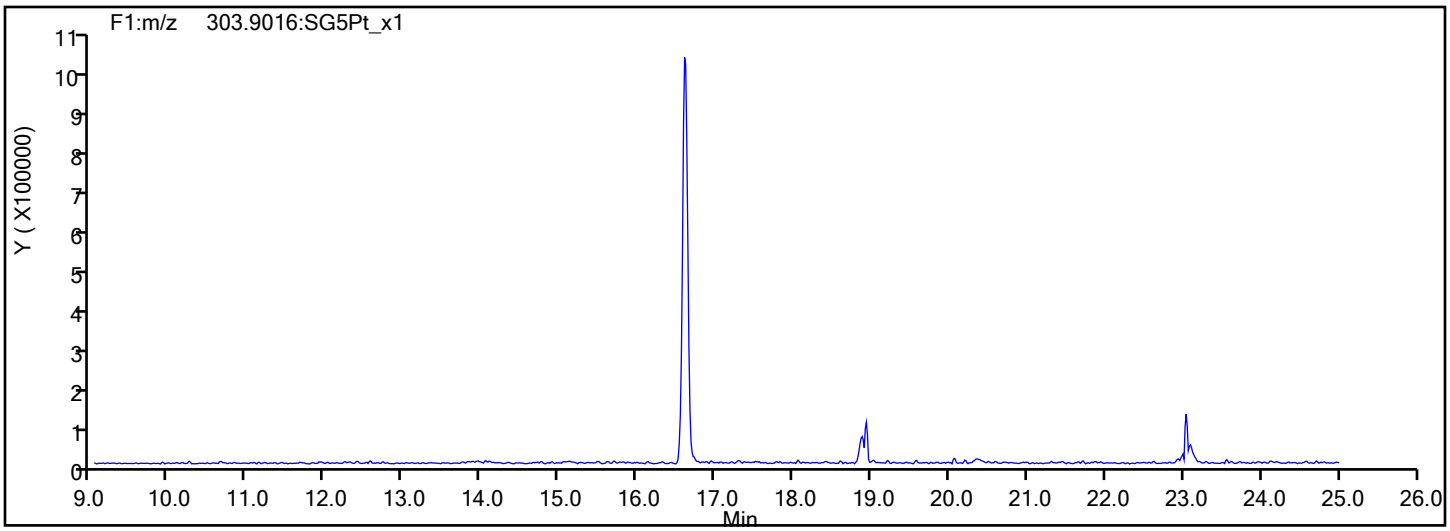
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

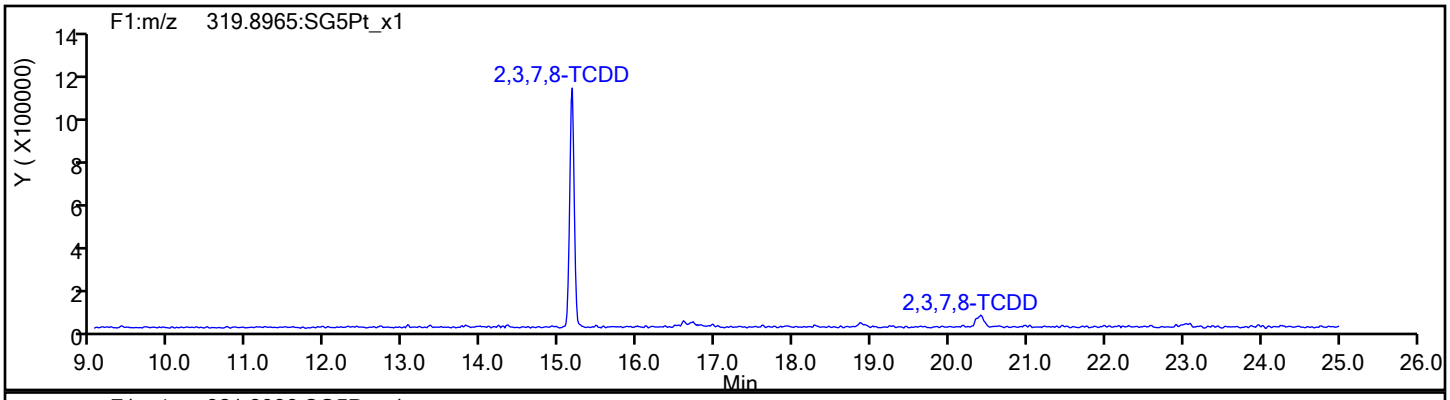


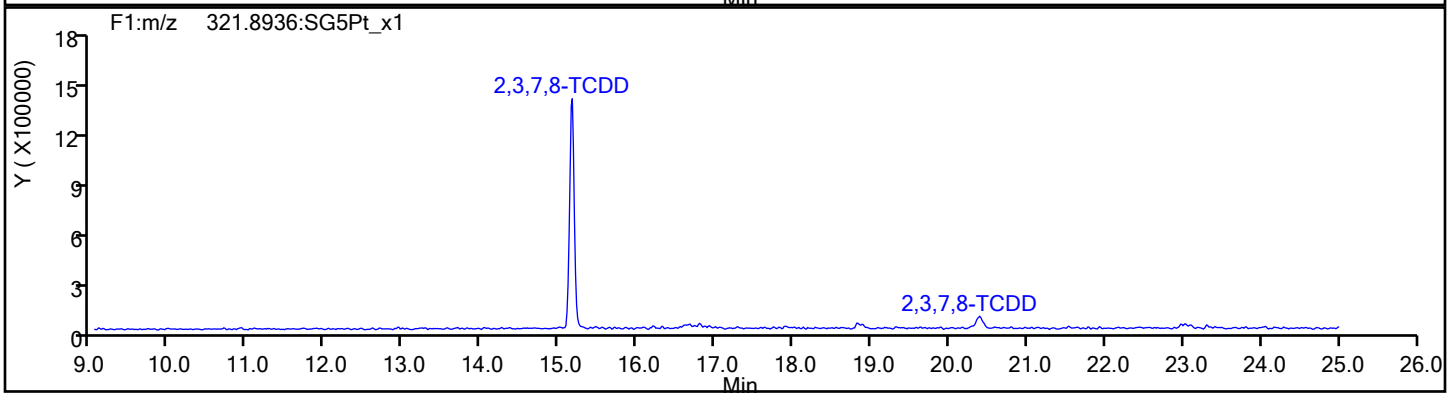
Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

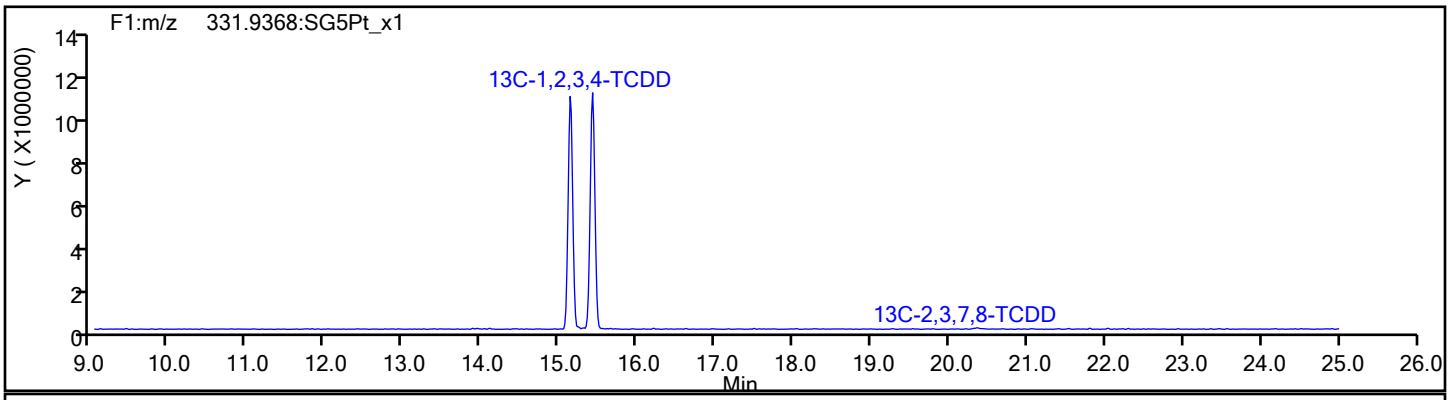
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

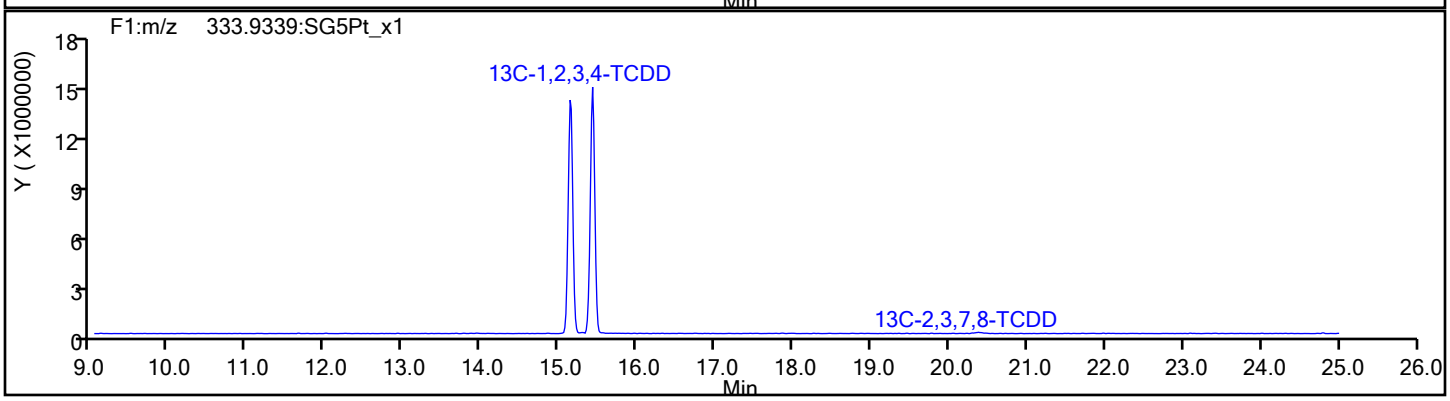
TCDD





TCDD Standards



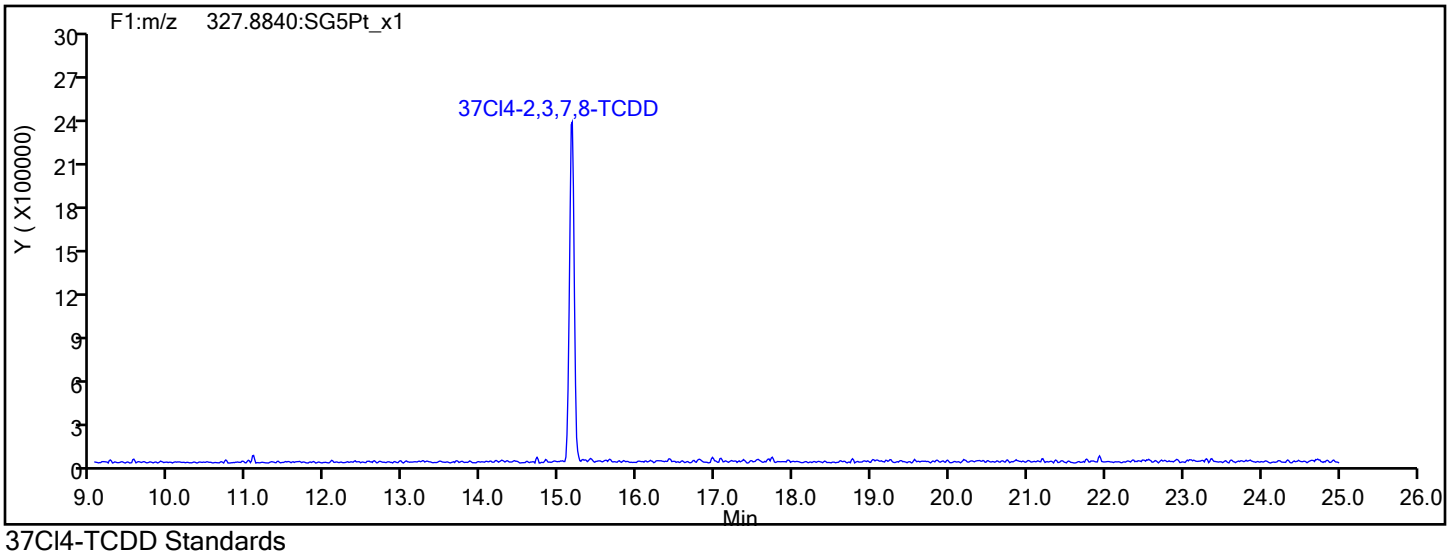


Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

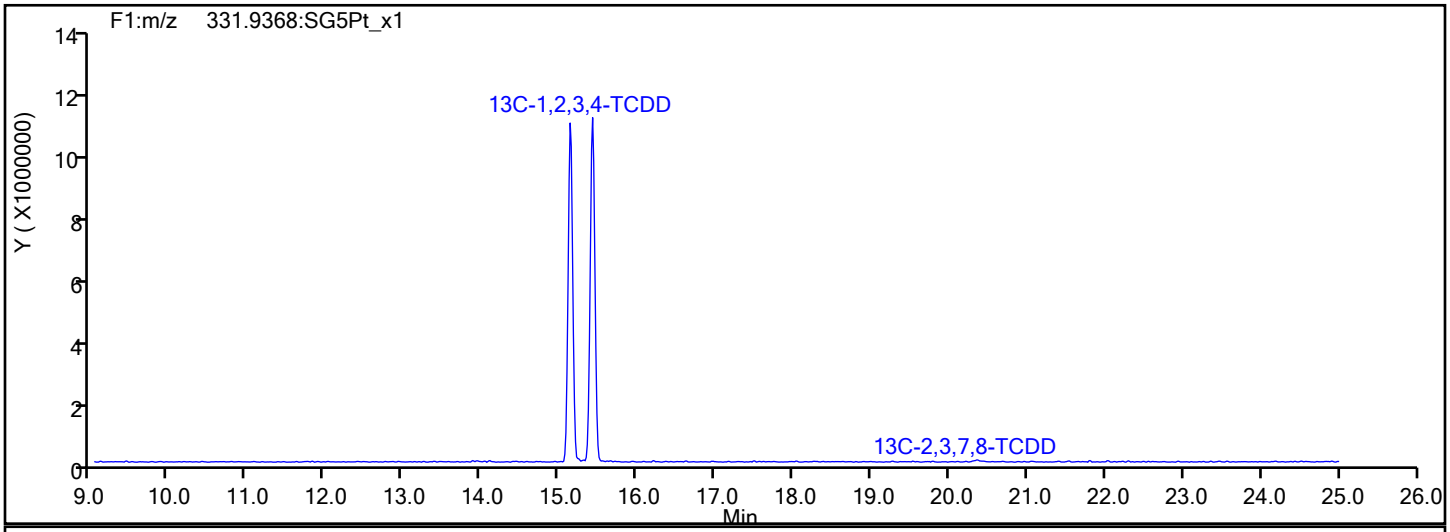
Eurofins TestAmerica, Sacramento

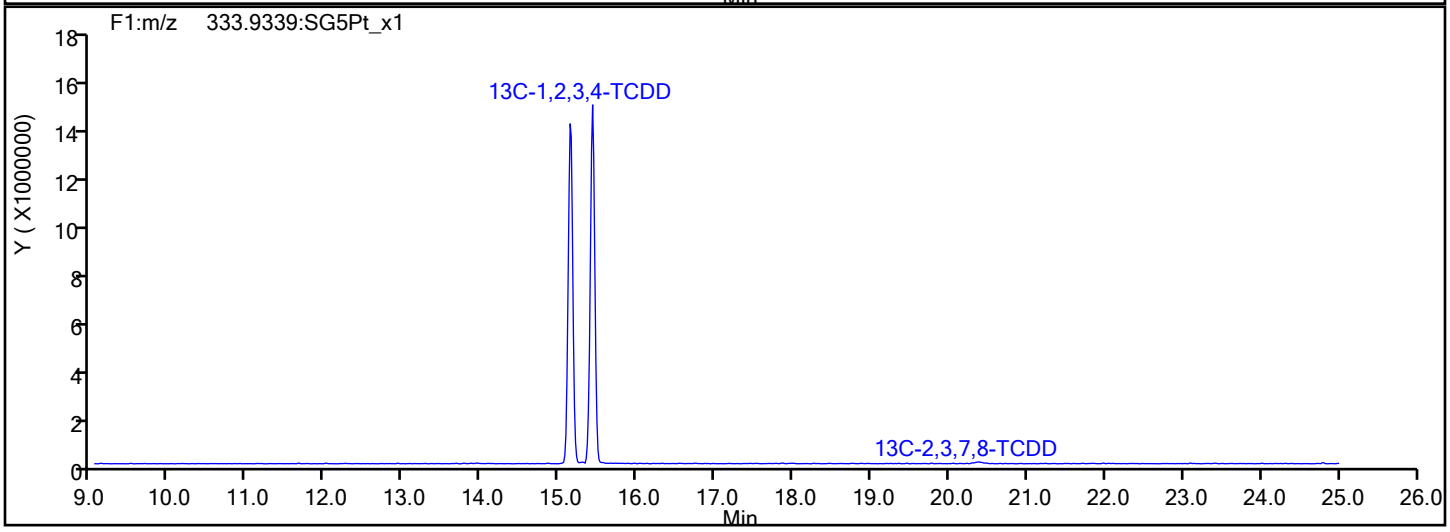
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

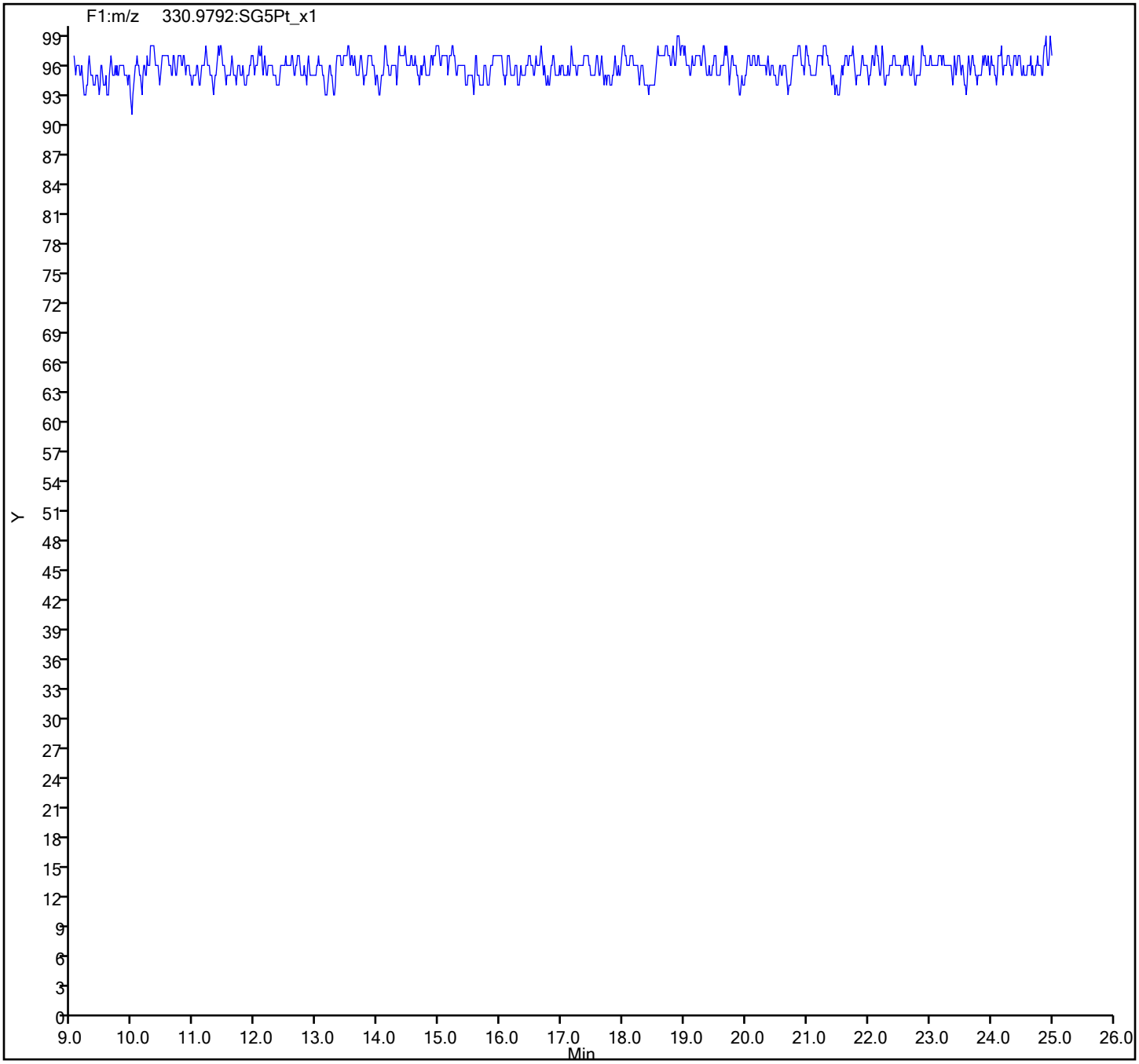




Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Aug-2019 04:46:57 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:00 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:08

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.407	115018689	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.573	144459393	0.77	1.3379	93.9	93.9	0.5274	0.5274	93.87	
2,3,7,8-TCDF	16.586	46575552	0.77	0.8389	38.4	38.4	0.1167	0.1167	96.08	
D 13C-2,3,7,8-TCDD	15.132	106968299	0.77	0.9388	99.1	99.1	0.2830	0.2830	99.06	
2,3,7,8-TCDD	15.146	48146783	0.76	1.1538	39.0	39.0	0.1640	0.1640	97.53	
$ 37Cl4-2,3,7,8-TCDD	15.146	56650769		1.1816	41.7	41.7	0.0894	0.0894	104	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Aug-2019 04:46:57 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:00 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:08

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.407	15.416	-1		50351038	12128425	19106	47765	635		
333.9339	15.407	15.416	-1		64667651	15935590	10721	26802	1486	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.573	16.580	0	1.076	62832695	14048507	53452	133630	263		
317.9389	16.573	16.580	0	1.076	81626698	17801662	25764	64410	691	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.586	16.599	-1	1.001	20335382	4486199	5024	12560	893		
305.8987	16.586	16.599	-1	1.001	26240170	5630982	7452	18630	756	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.132	15.136	0	0.982	46501097	11086056	19106	47765	580		
333.9339	15.118	15.136	-1	0.981	60467202	14396233	10721	26802	1343	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.146	15.156	-1	1.001	20863773	5196689	8344	20860	623		
321.8936	15.146	15.156	-1	1.001	27283010	6610856	10939	27347	604	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.146	15.158	-1	0.983	56650769	13763841	11857	29642	1161		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

Reagents:

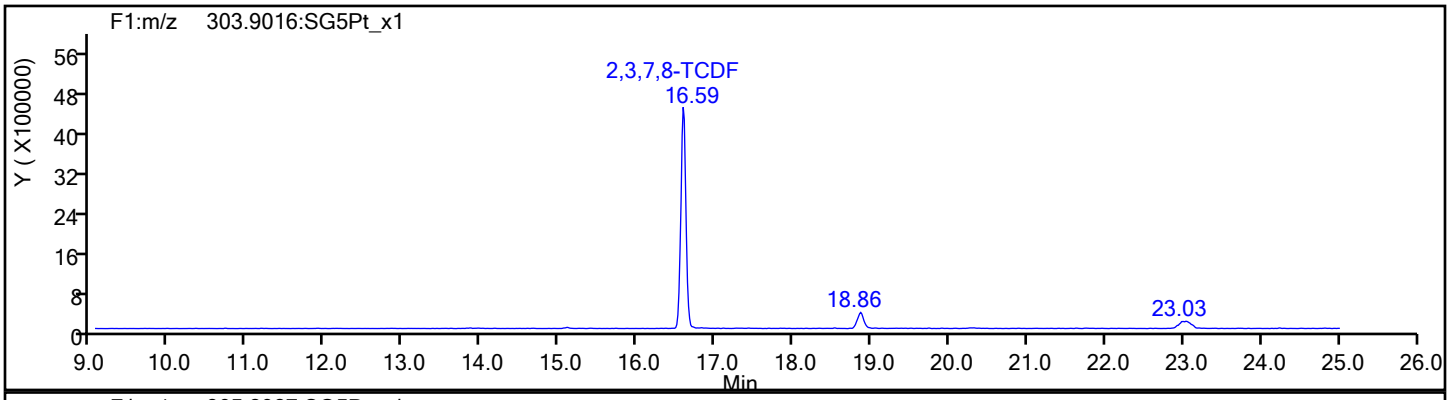
HRDXNL5_00028 Amount Added: 1.00 Units: mL

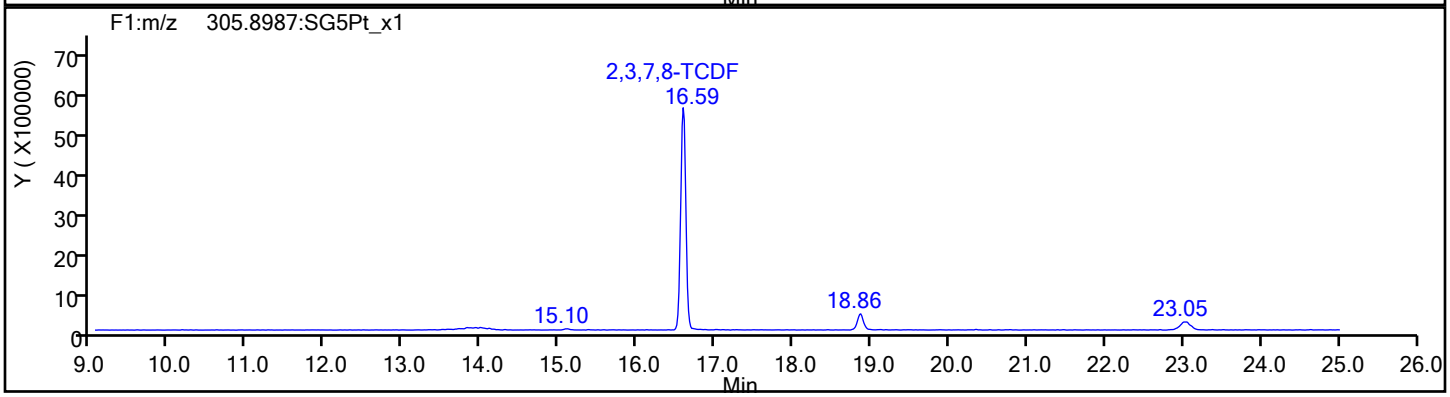
Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

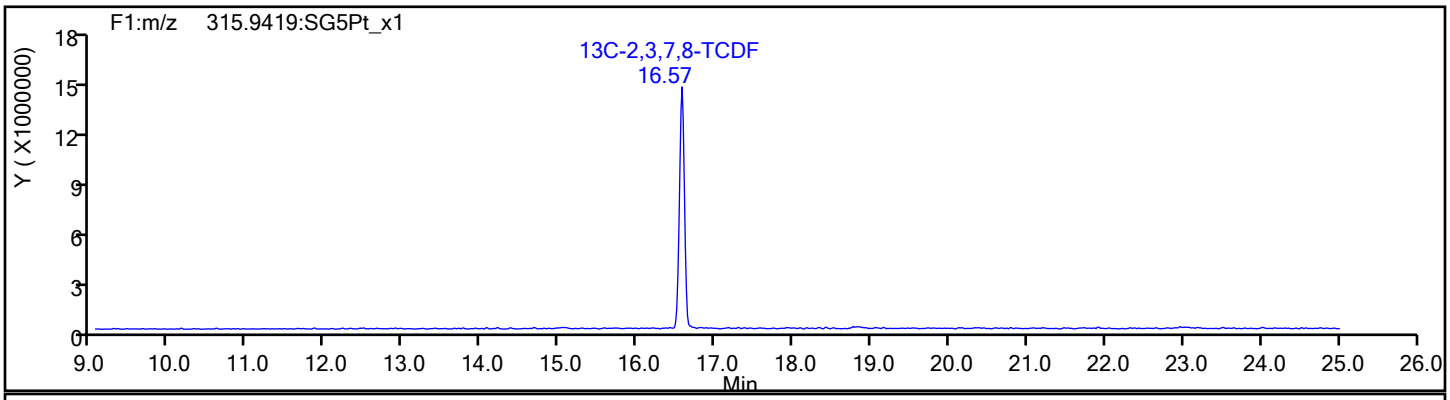
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

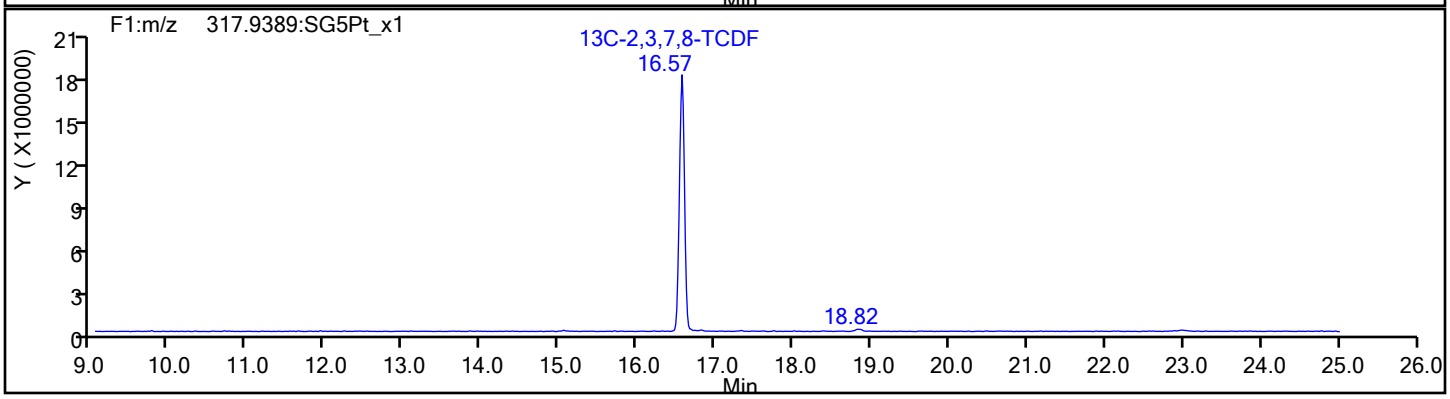
TCDF





TCDF Standards





Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
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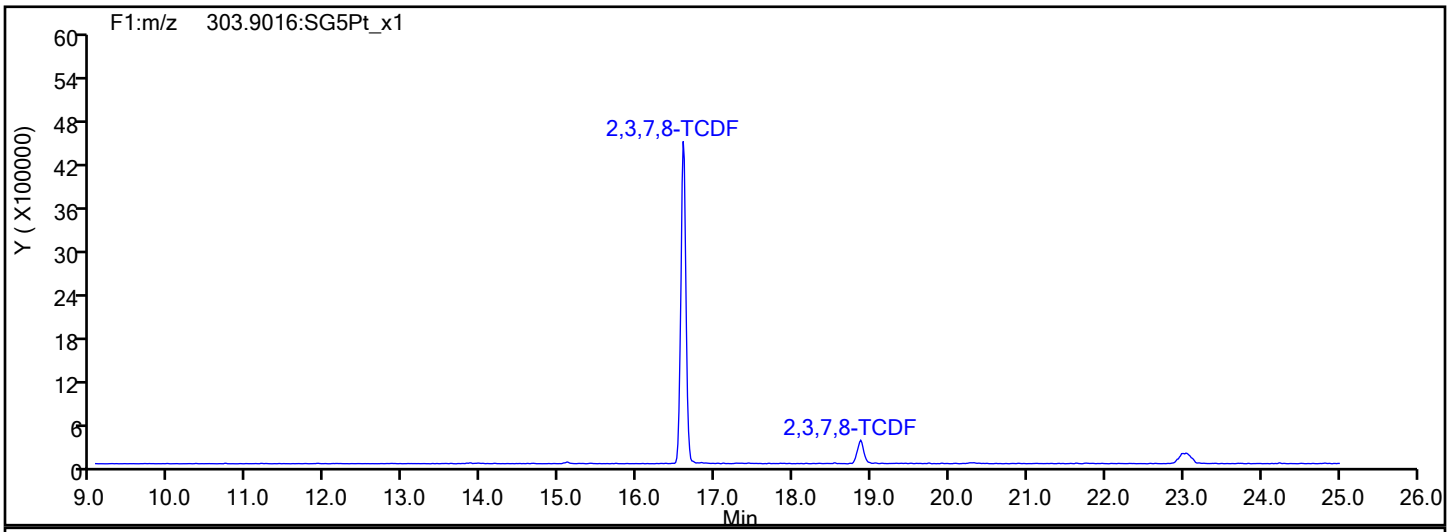
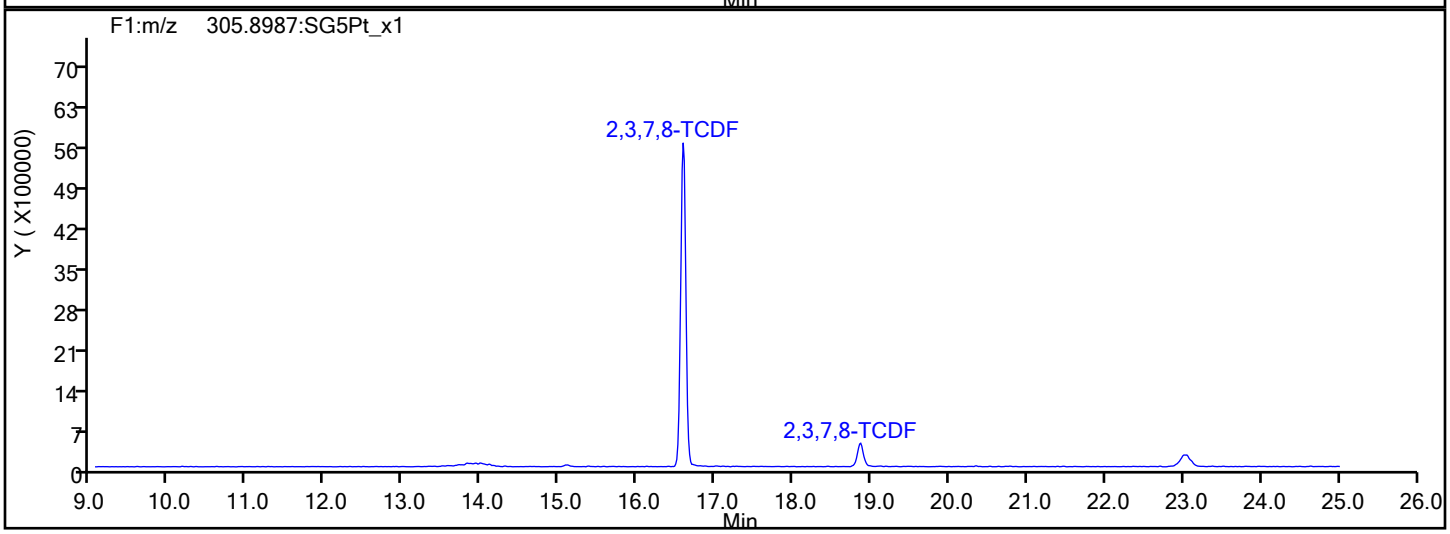
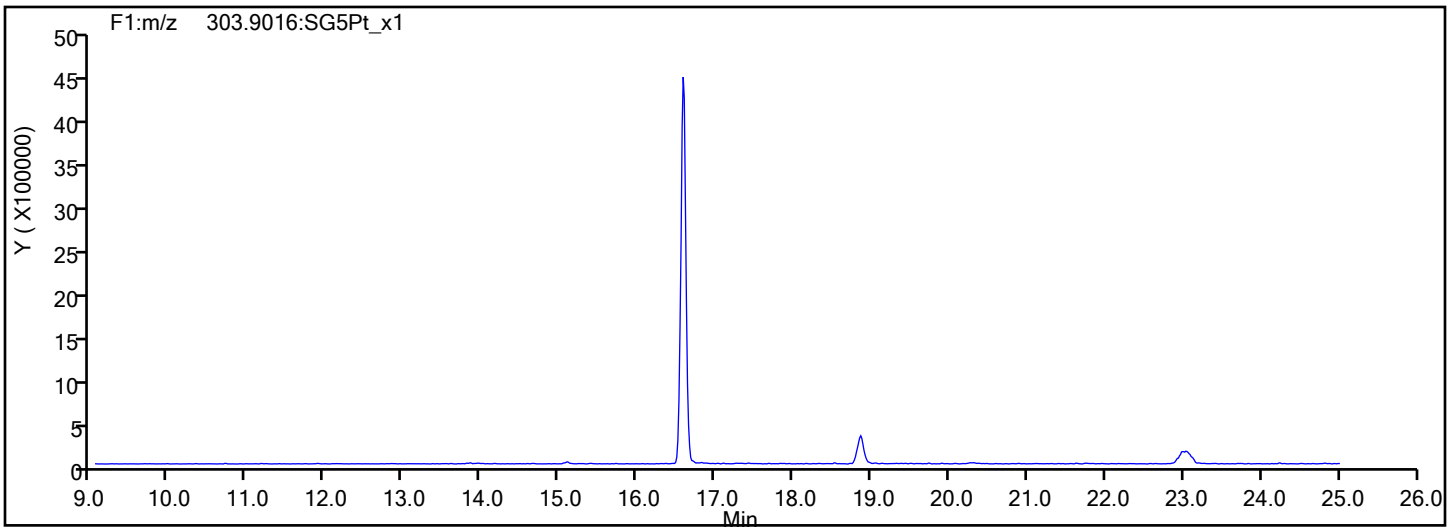
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

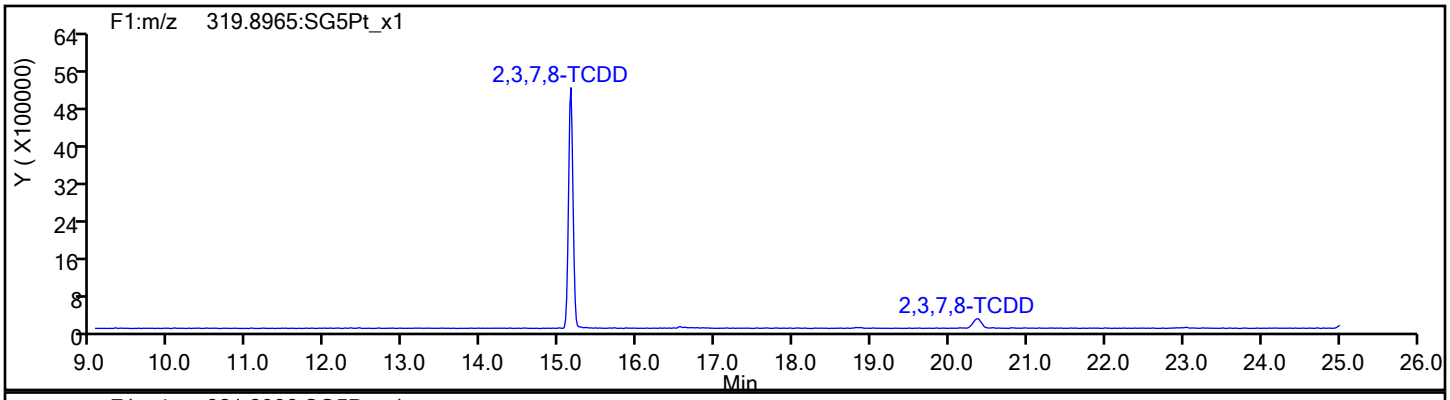


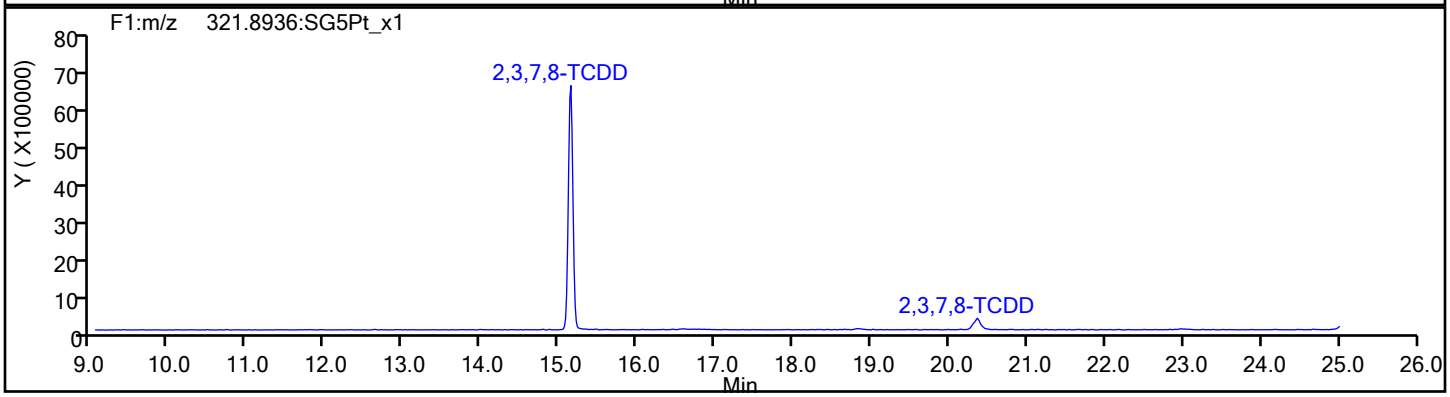
Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

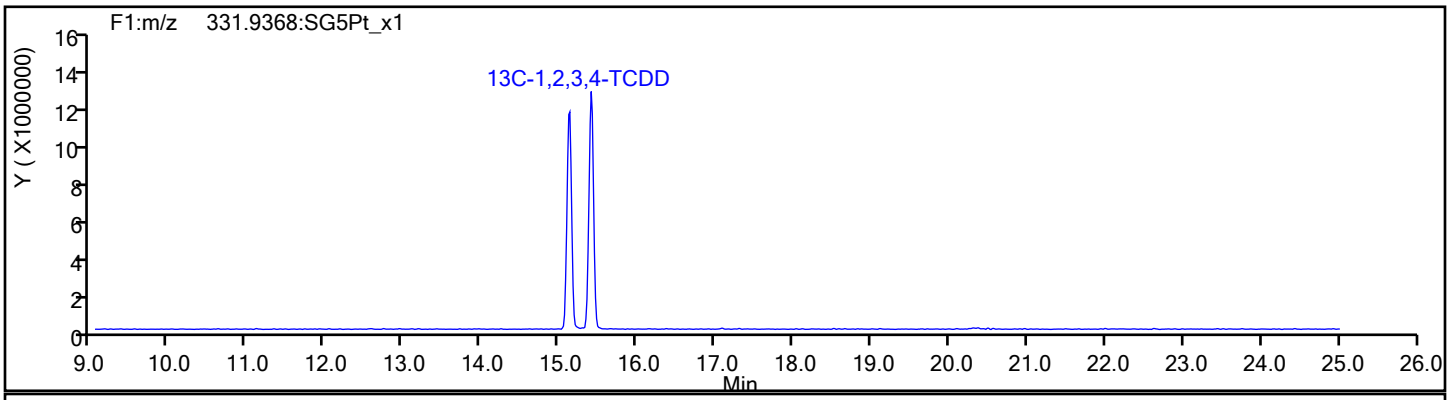
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

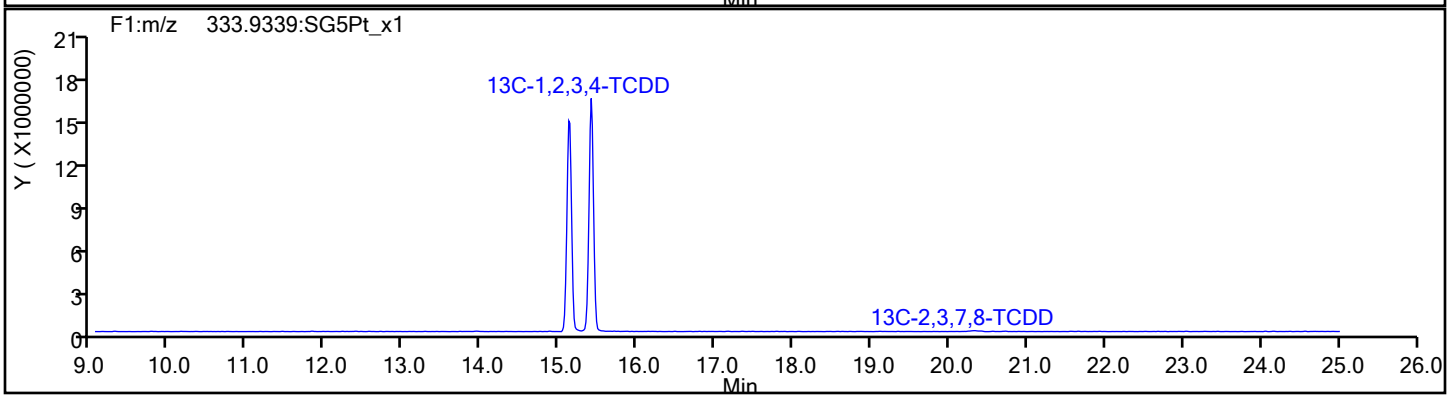
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d

Injection Date: 02-Aug-2019 04:46:57 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

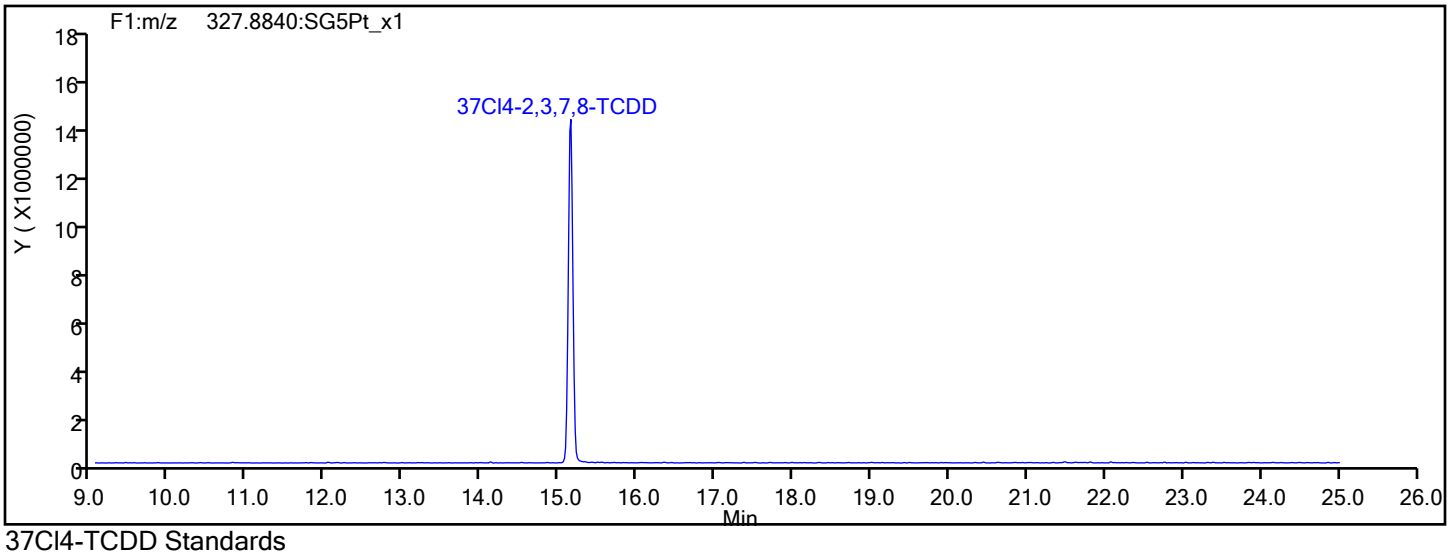
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

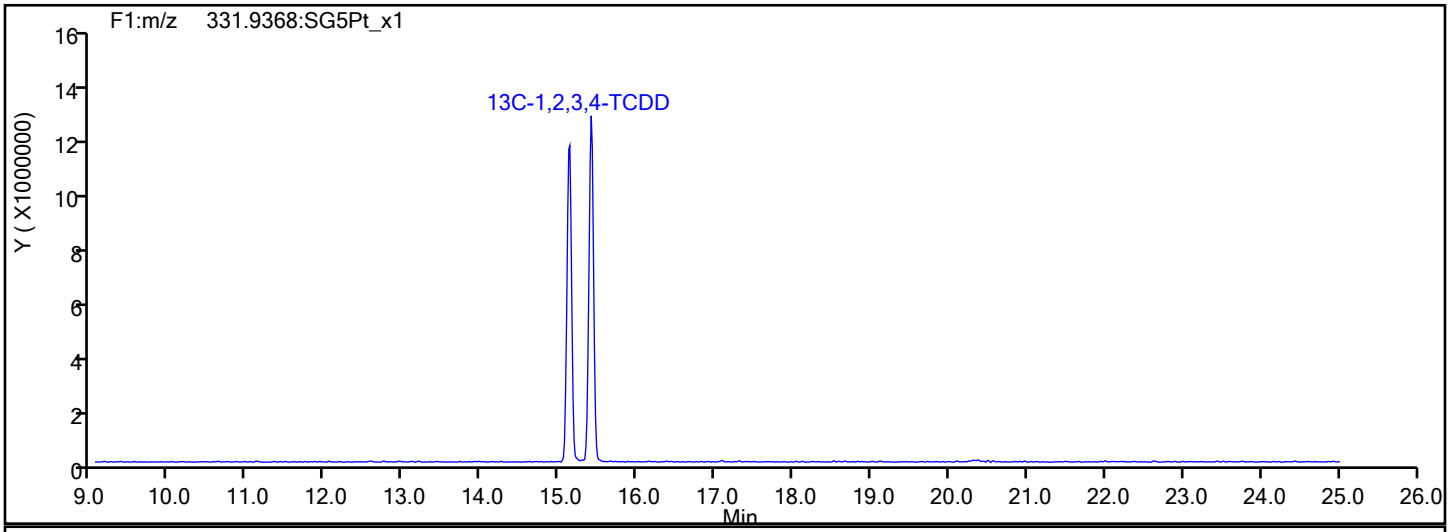
Worklist#: 312067 Sample Line#: 6

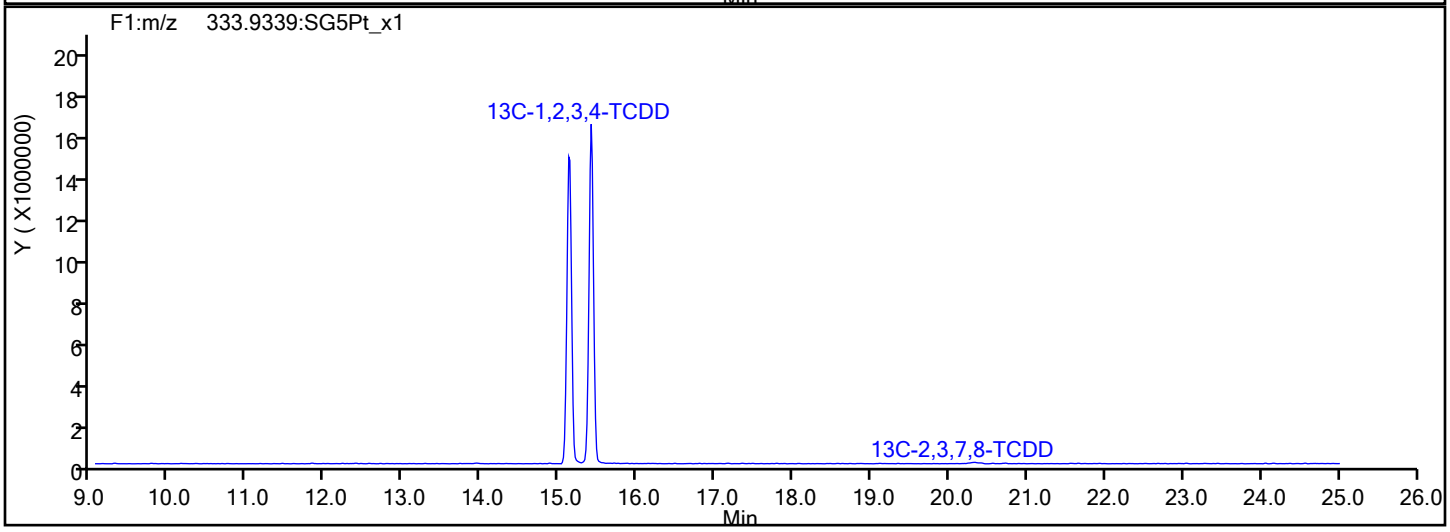
Column Type: DB-225 Column Dia: 0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 02-Aug-2019 11:52:19 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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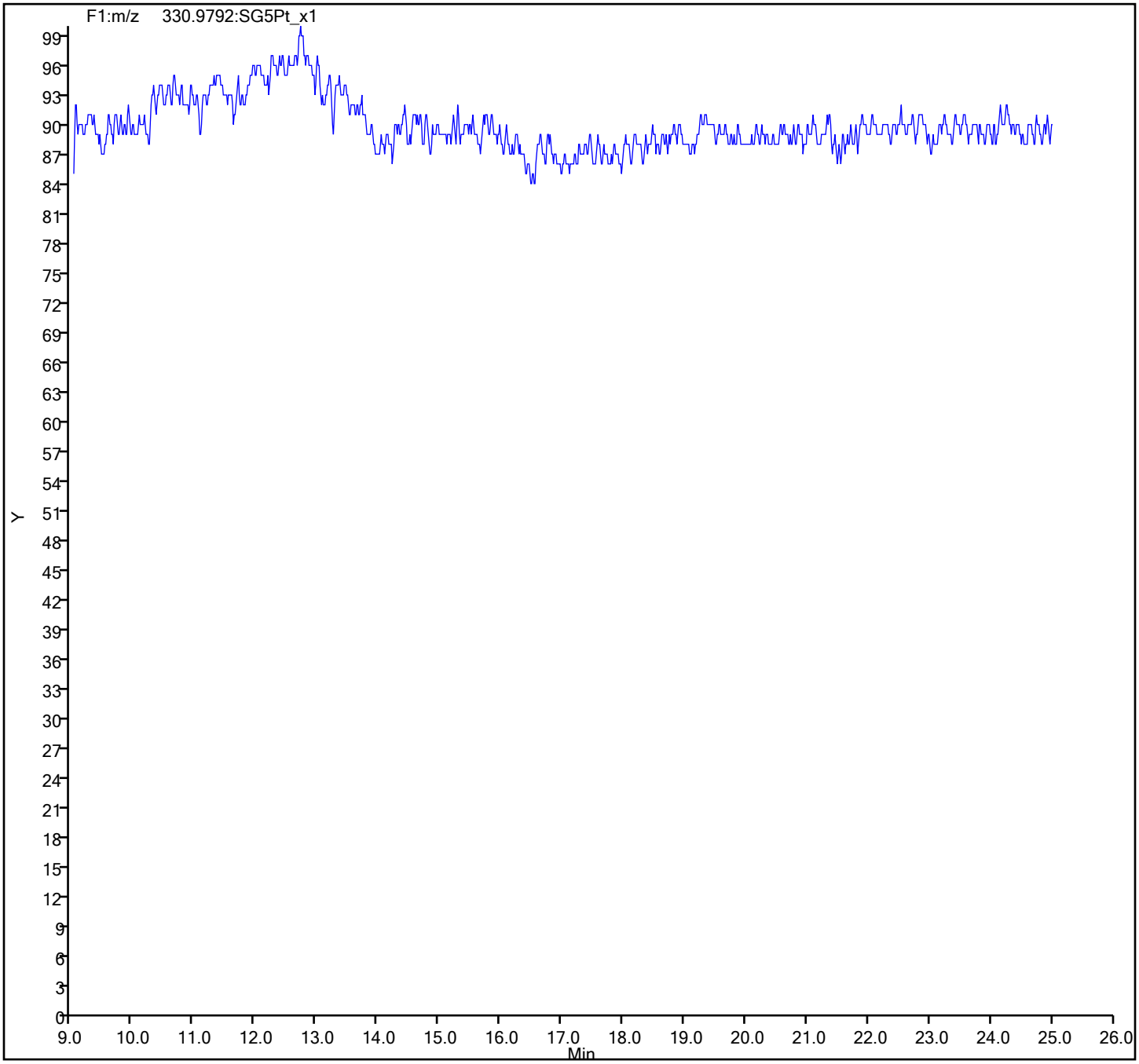
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Aug-2019 05:25:19 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:36 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:20

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.404	110526038	0.77	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.556	151101344	0.75	1.3379	102.2	102.2	0.5415	0.5415	102	
2,3,7,8-TCDF	16.584	239921851	0.78	0.8389	189.3	189.3	0.1707	0.1707	94.64	
D 13C-2,3,7,8-TCDD	15.130	101263855	0.79	0.9388	97.6	97.6	0.2909	0.2909	97.59	
2,3,7,8-TCDD	15.143	221171643	0.78	1.1538	189.3	189.3	0.2031	0.2031	94.65	
$ 37Cl4-2,3,7,8-TCDD	15.143	268090229		1.1816	205.3	205.3	0.1091	0.1091	103	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Aug-2019 05:25:19 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:36 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:20

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.404	15.416	-1		48112289	11729044	18185	45462	645		
333.9339	15.404	15.416	-1		62413749	15576756	11642	29105	1338	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.556	16.580	-1	1.075	64986610	14150118	57009	142522	248		
317.9389	16.556	16.580	-1	1.075	86114734	18279234	22119	55297	826	0.75(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.584	16.599	-1	1.002	104966823	22470376	8972	22430	2505		
305.8987	16.584	16.599	-1	1.002	134955028	28495262	9607	24017	2966	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.130	15.136	0	0.982	44673635	10986883	18185	45462	604		
333.9339	15.130	15.136	0	0.982	56590220	13637893	11642	29105	1171	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.143	15.156	-1	1.001	96586623	23829881	9066	22665	2628		
321.8936	15.143	15.156	-1	1.001	124585020	30700236	14012	35030	2191	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.143	15.158	-1	0.983	268090229	64785114	14075	35187	4603		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

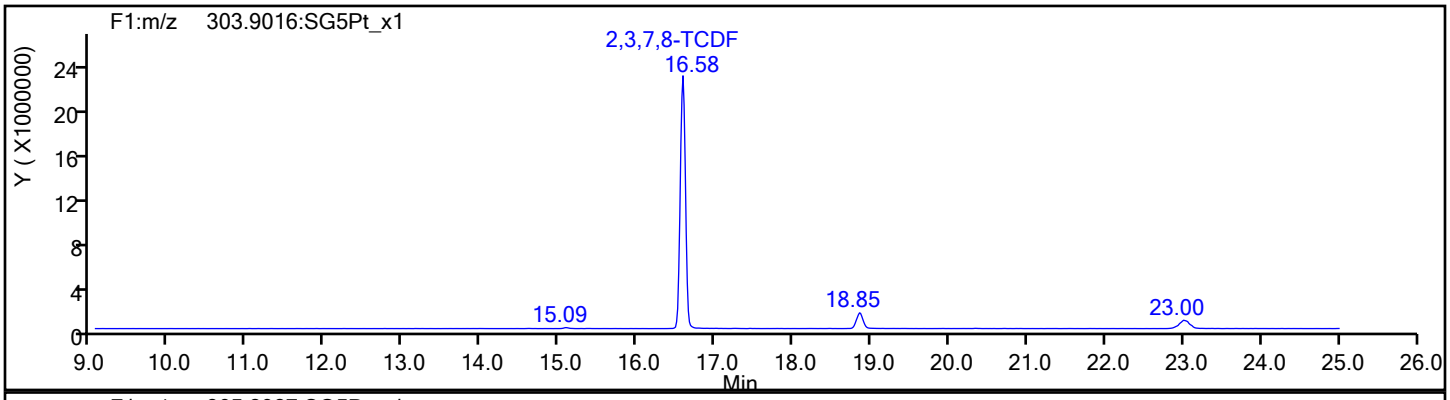
HRDXNL6_00024 Amount Added: 1.00 Units: mL

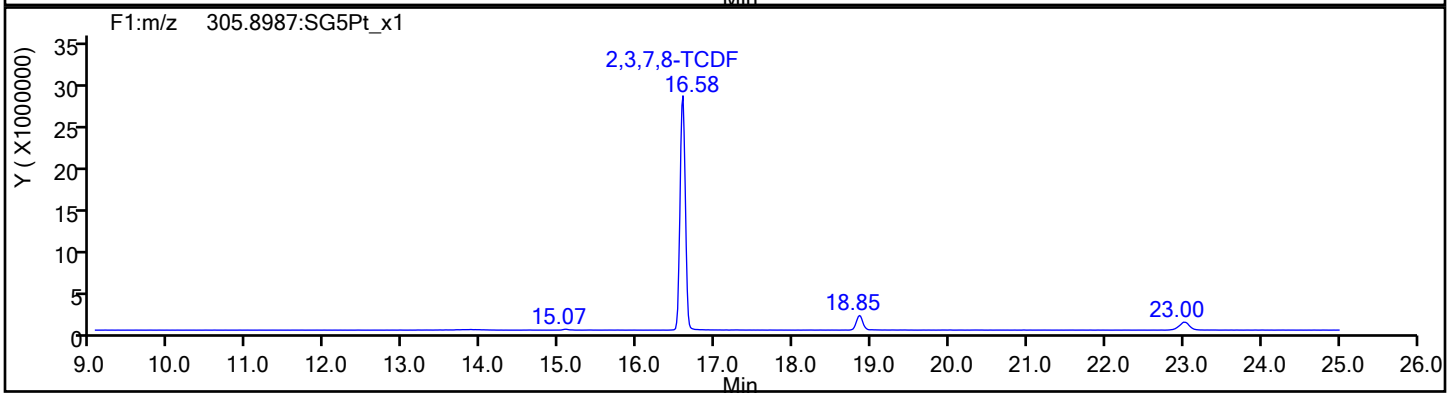
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

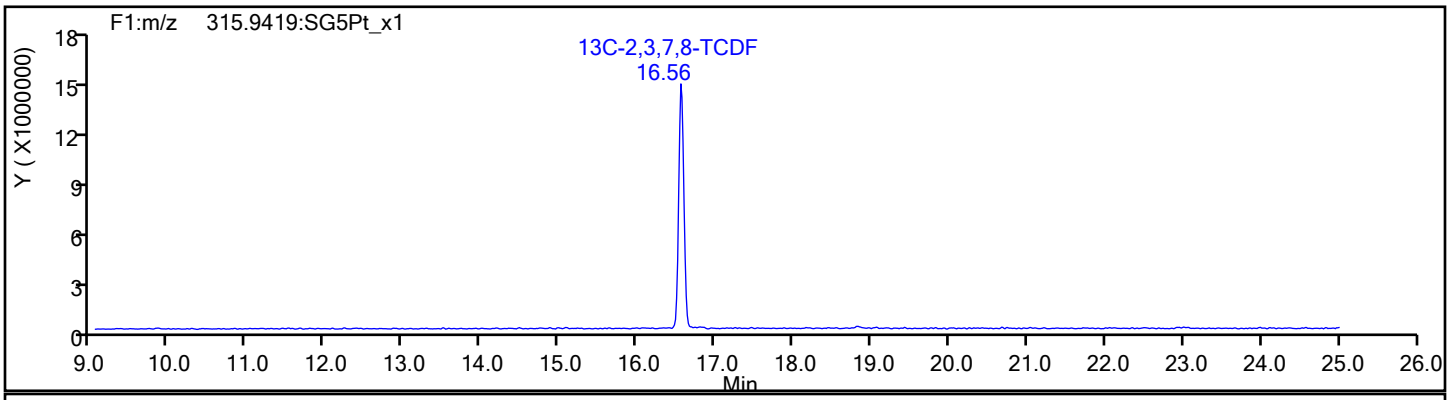
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

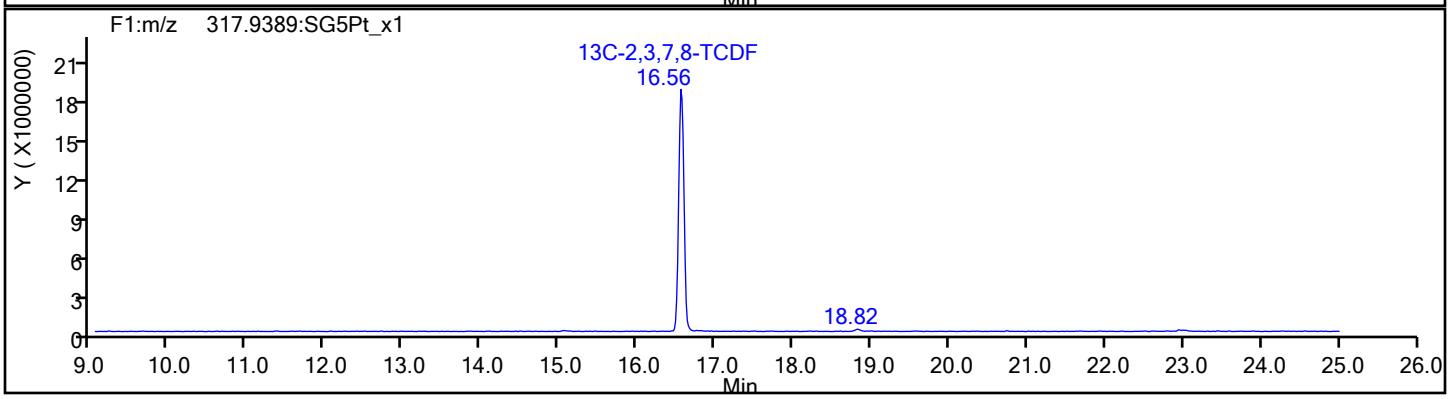
TCDF





TCDF Standards



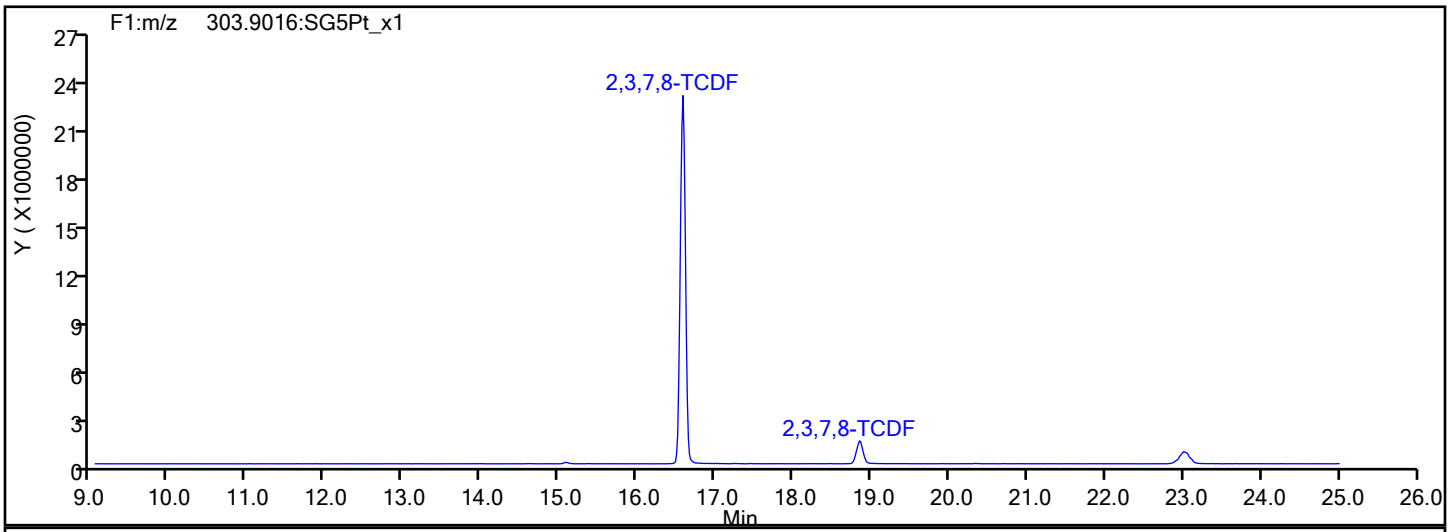


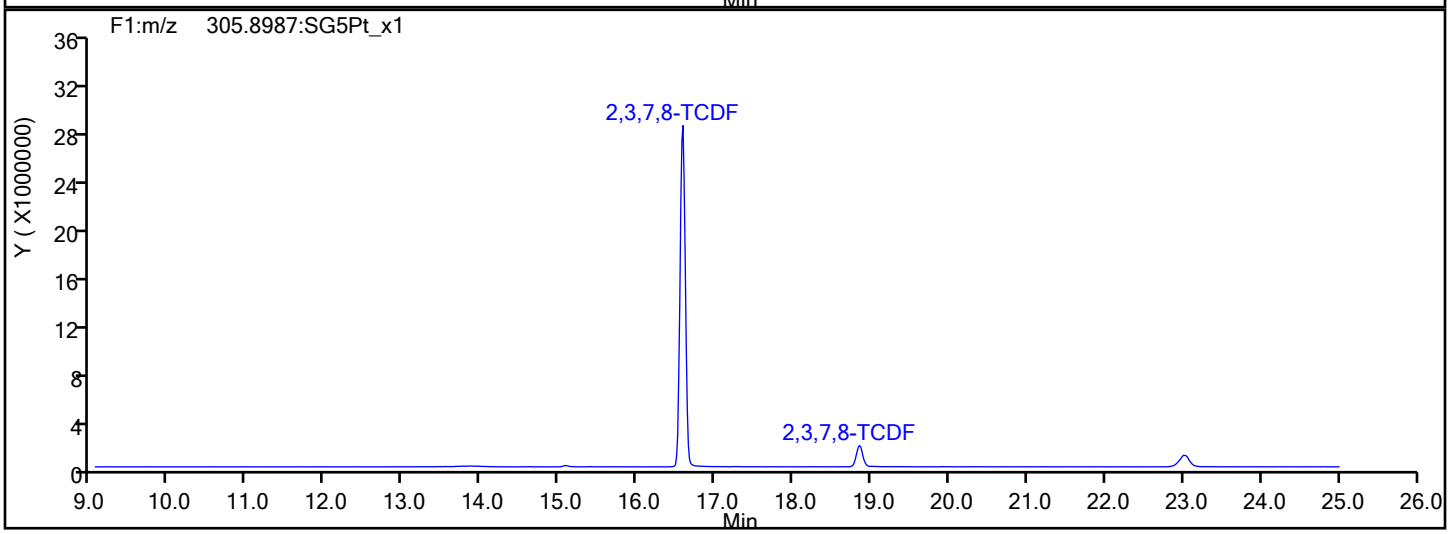
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

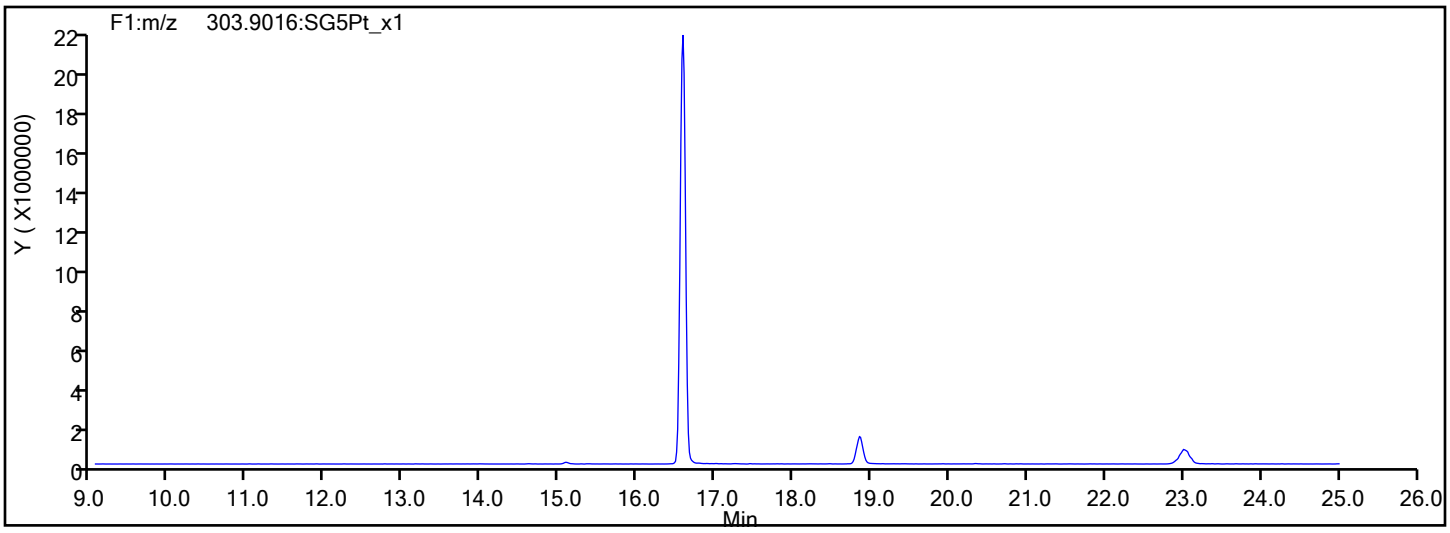
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

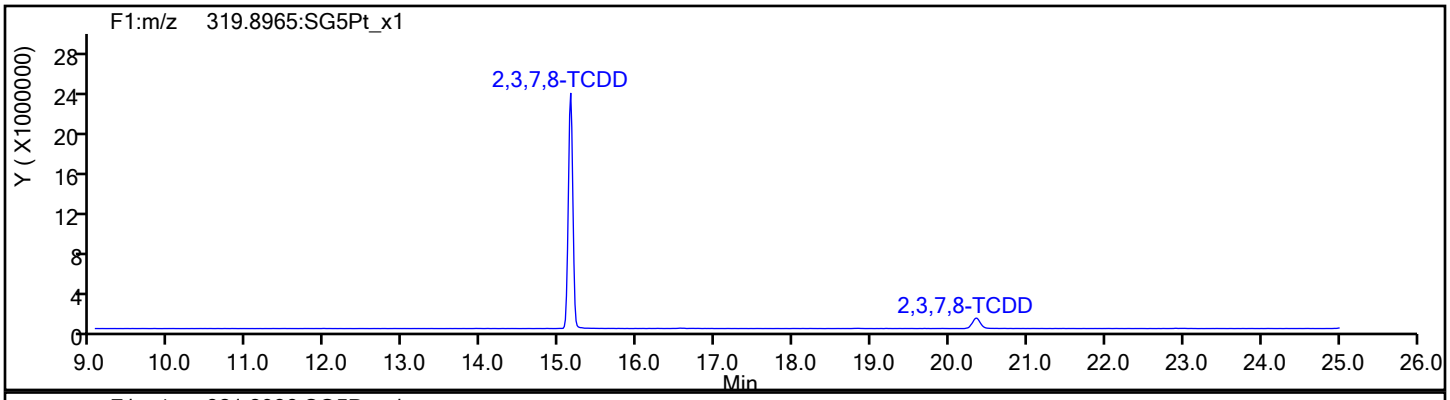


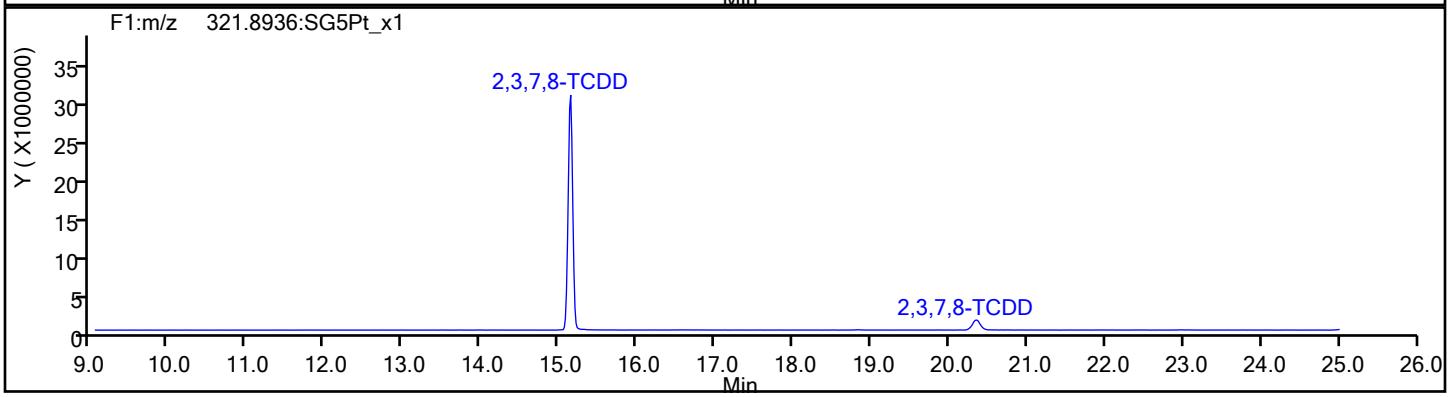
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

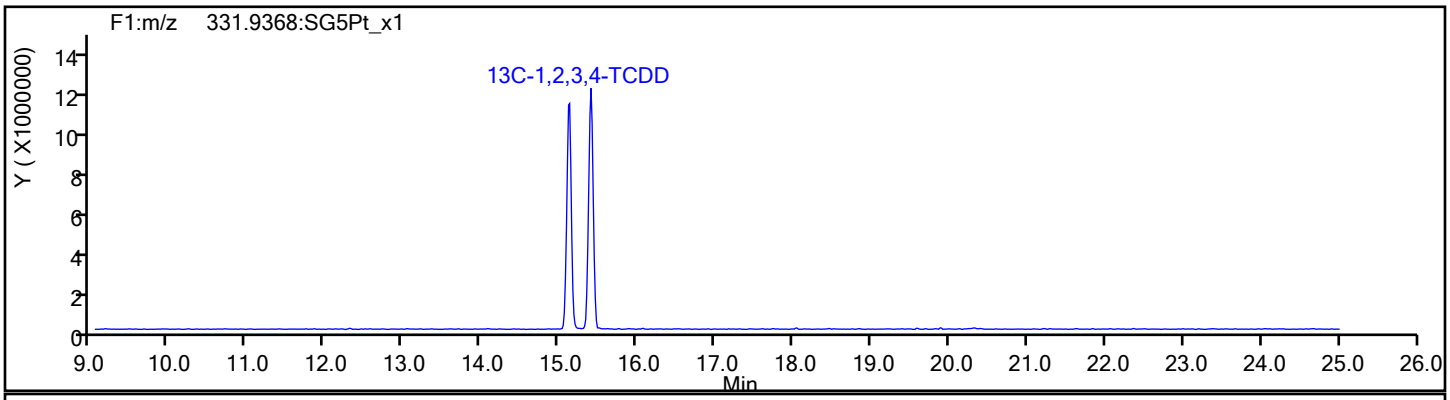
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

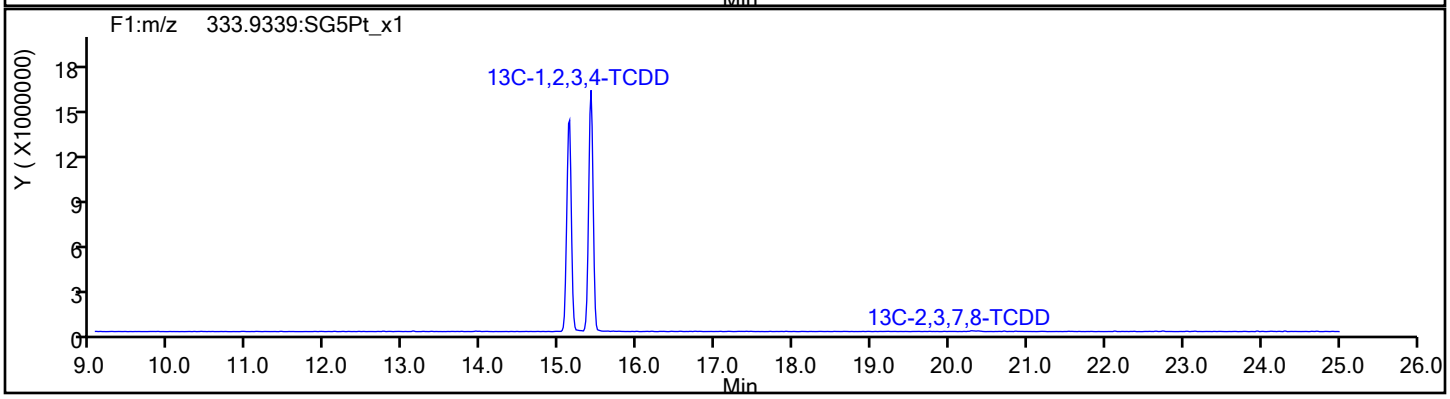
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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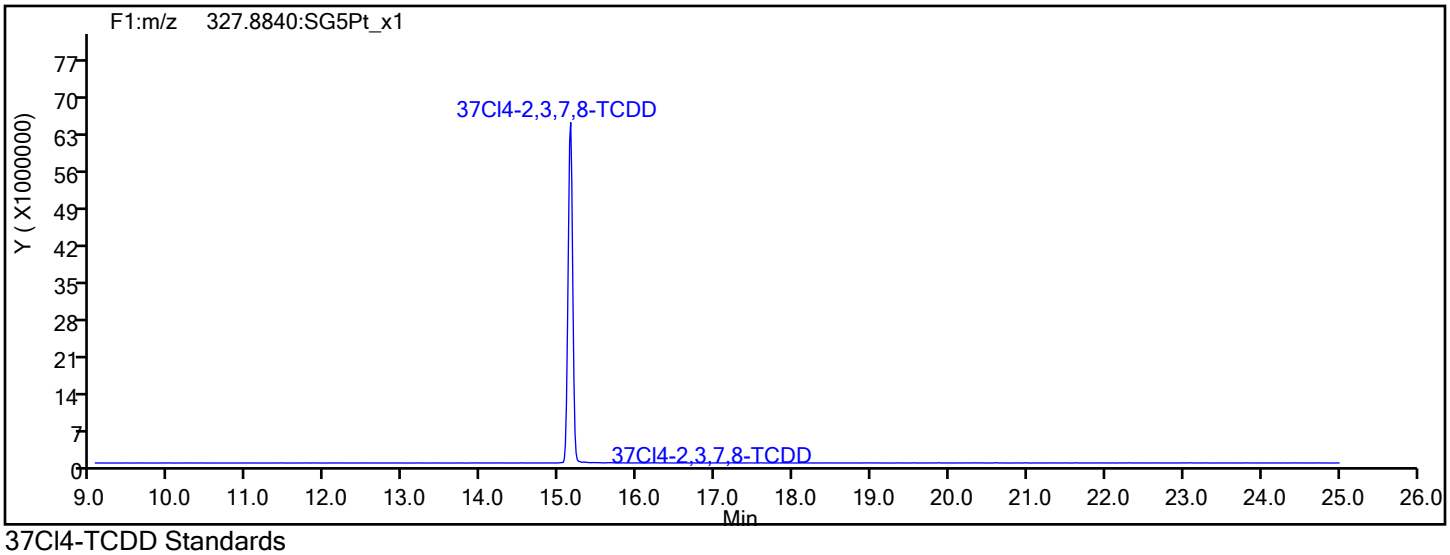
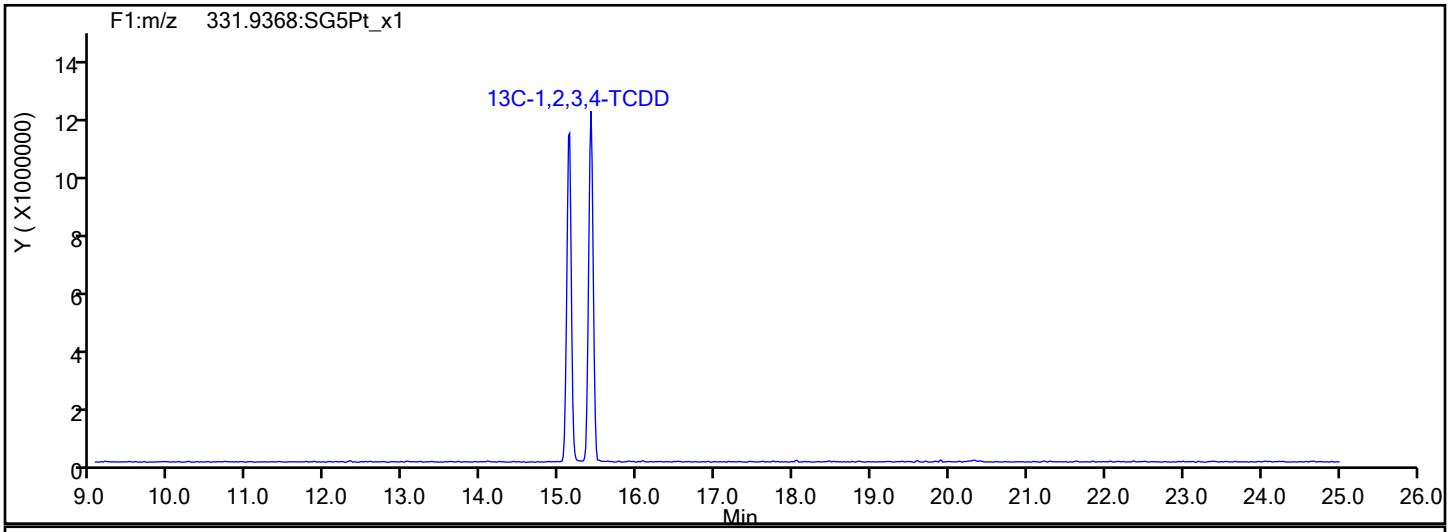
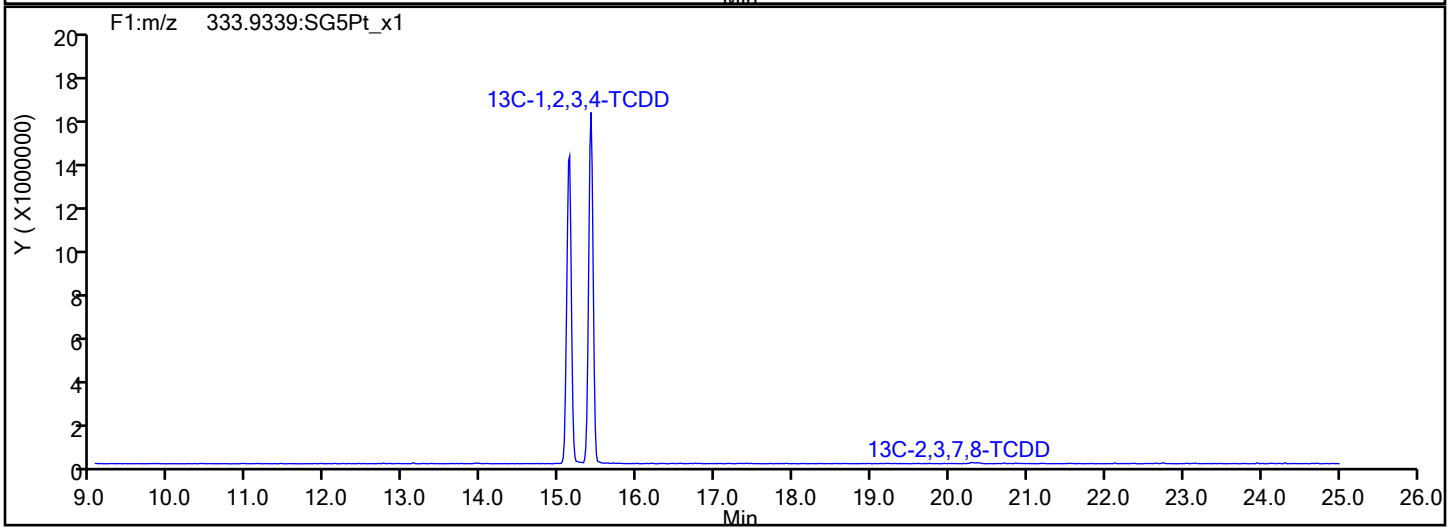
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

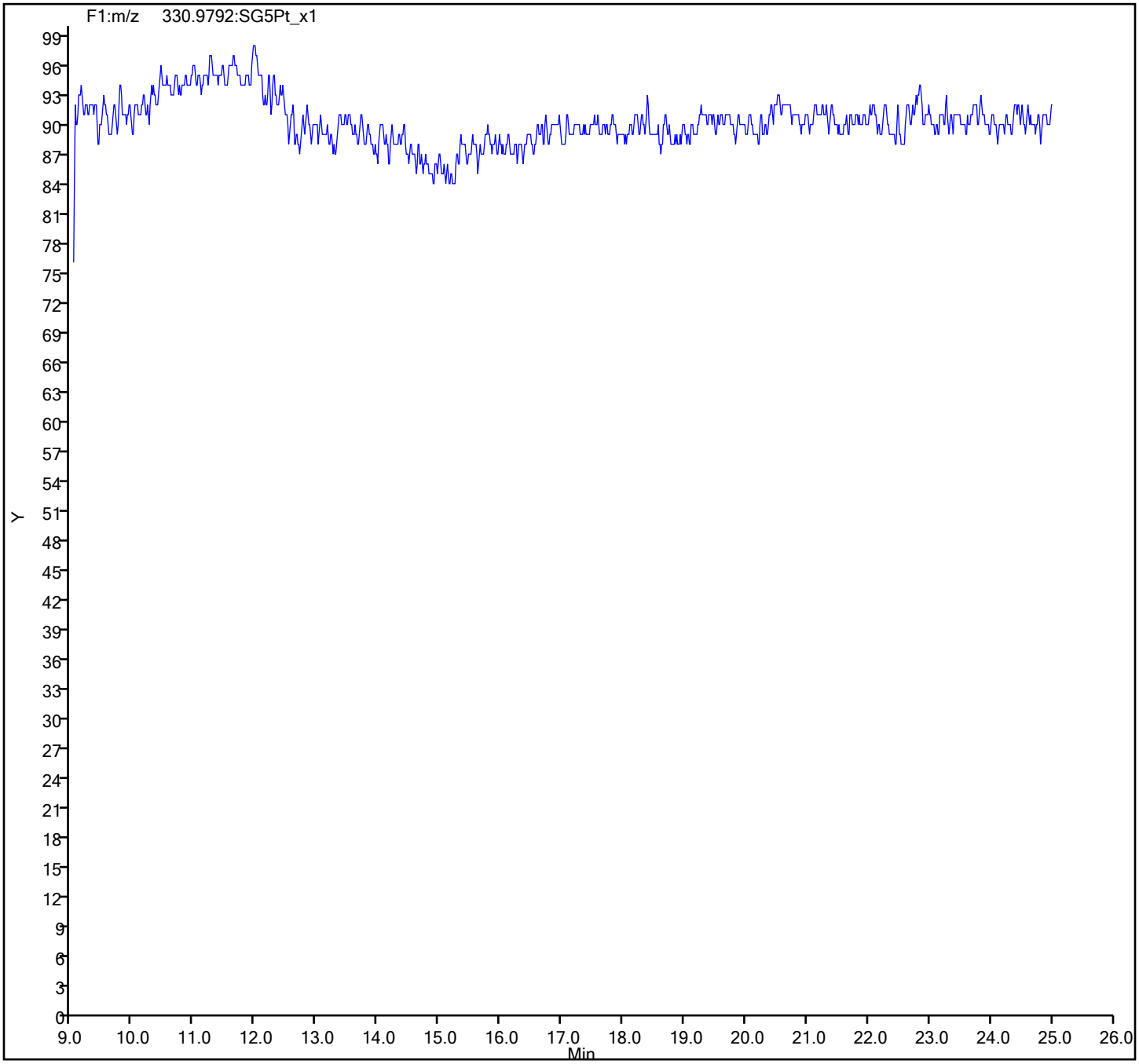




Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 332505

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/18/2019 20:50 Calibration End Date: 10/19/2019 00:02 Calibration ID: 47888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-332505/3	18oc19adfs1_4.d
Level 2	IC 320-332505/4	18oc19adfs1_5.d
Level 3	IC 320-332505/5	18oc19adfs1_6.d
Level 4	IC 320-332505/6	18oc19adfs1_7.d
Level 5	IC 320-332505/7	18oc19adfs1_8.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDF	1.2589	1.3384	1.2032	1.2283	1.1373	AveID		1.2332				6.0		20.0			
2,3,7,8-TCDD	1.1760	1.3057	1.1662	1.1970	1.1492	AveID		1.1988				5.2		20.0			
1,2,3,7,8-PeCDF	1.1178	1.3071	1.1707	1.1550	1.0939	AveID		1.1689				7.1		20.0			
2,3,4,7,8-PeCDF	1.2006	1.2963	1.1247	1.1885	1.1205	AveID		1.1861				6.0		20.0			
1,2,3,7,8-PeCDD	1.1084	1.2399	1.1031	1.1039	1.0446	AveID		1.1200				6.4		20.0			
1,2,3,4,7,8-HxCDF	1.2990	1.4177	1.2381	1.2893	1.2664	AveID		1.3021				5.3		20.0			
1,2,3,6,7,8-HxCDF	1.2839	1.4085	1.2593	1.2487	1.2533	AveID		1.2907				5.2		20.0			
2,3,4,6,7,8-HxCDF	1.2831	1.4314	1.2844	1.2674	1.2534	AveID		1.3039				5.5		20.0			
1,2,3,4,7,8-HxCDD	1.2048	1.2874	1.1208	1.1546	1.0949	AveID		1.1725				6.5		20.0			
1,2,3,6,7,8-HxCDD	1.1309	1.2345	1.1036	1.1082	1.0507	AveID		1.1256				6.0		20.0			
1,2,3,7,8,9-HxCDD	1.2275	1.3957	1.2171	1.2242	1.0990	AveID		1.2327				8.6		20.0			
1,2,3,7,8,9-HxCDF	1.3422	1.4574	1.3097	1.2854	1.2696	AveID		1.3329				5.6		20.0			
1,2,3,4,6,7,8-HpCDF	1.5962	1.7676	1.5937	1.5632	1.5675	AveID		1.6176				5.3		20.0			
1,2,3,4,6,7,8-HpCDD	1.1161	1.2549	1.1042	1.0907	1.0526	AveID		1.1237				6.9		20.0			
1,2,3,4,7,8,9-HpCDF	1.4599	1.6109	1.3928	1.4429	1.4296	AveID		1.4672				5.7		20.0			
OCDD	1.1883	1.3024	1.1550	1.1498	1.1320	AveID		1.1855				5.8		20.0			
OCDF	1.4786	1.6343	1.4919	1.5204	1.5829	AveID		1.5416				4.3		20.0			
13C-2,3,7,8-TCDF	1.5993	1.6198	1.5661	1.5967	1.6662	Ave		1.6096				2.3		35.0			
13C-2,3,7,8-TCDD	0.9974	0.9684	0.9798	1.0009	1.0455	Ave		0.9984				2.9		35.0			
13C-1,2,3,7,8-PeCDF	1.3432	1.3364	1.3172	1.3627	1.4794	Ave		1.3678				4.7		35.0			
13C-2,3,4,7,8-PeCDF	1.2499	1.2708	1.3091	1.2878	1.4049	Ave		1.3045				4.6		35.0			
13C-1,2,3,7,8-PeCDD	0.8039	0.7984	0.7968	0.8385	0.9085	Ave		0.8292				5.7		35.0			
13C-1,2,3,4,7,8-HxCDF	1.1731	1.1495	1.1680	1.1937	1.1657	Ave		1.1700				1.4		35.0			
13C-1,2,3,6,7,8-HxCDF	1.3236	1.2903	1.2864	1.3473	1.3362	Ave		1.3168				2.1		35.0			
13C-2,3,4,6,7,8-HxCDF	1.2819	1.2628	1.2344	1.2885	1.3691	Ave		1.2873				3.9		35.0			
13C-1,2,3,4,7,8-HxCDD	0.8084	0.8132	0.8195	0.8364	0.9044	Ave		0.8364				4.7		35.0			
13C-1,2,3,6,7,8-HxCDD	0.8918	0.8846	0.8732	0.9110	0.9594	Ave		0.9040				3.7		35.0			
13C-1,2,3,7,8,9-HxCDF	1.1868	1.1798	1.1694	1.1866	1.2711	Ave		1.1987				3.4		35.0			
13C-1,2,3,4,6,7,8-HpCDF	0.9566	0.9631	0.9102	0.9756	1.0390	Ave		0.9689				4.8		35.0			
13C-1,2,3,4,6,7,8-HpCDD	0.9004	0.9065	0.8615	0.9187	0.9699	Ave		0.9114				4.3		35.0			
13C-1,2,3,4,7,8,9-HpCDF	0.9065	0.9179	0.8790	0.9189	0.9931	Ave		0.9231				4.6		35.0			
13C-OCDD	0.6111	0.6194	0.5741	0.6291	0.7025	Ave		0.6272				7.5		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 332505

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/18/2019 20:50 Calibration End Date: 10/19/2019 00:02 Calibration ID: 47888

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
37Cl4-2,3,7,8-TCDD	1.3865	1.4341	1.5873	1.4156	1.4314	Ave		1.4510				5.4					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 332505

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/18/2019 20:50 Calibration End Date: 10/19/2019 00:02 Calibration ID: 47888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-332505/3	18oc19adfs1_4.d
Level 2	IC 320-332505/4	18oc19adfs1_5.d
Level 3	IC 320-332505/5	18oc19adfs1_6.d
Level 4	IC 320-332505/6	18oc19adfs1_7.d
Level 5	IC 320-332505/7	18oc19adfs1_8.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDF		AveID	52500	227226	1022791	4117287	19267770	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDD		AveID	30582	132527	620273	2515247	12215535	0.500	2.00	10.0	40.0	200
1,2,3,7,8-PeCDF		AveID	195742	915403	4185351	16520730	82272798	2.50	10.0	50.0	200	1000
2,3,4,7,8-PeCDF		AveID	195625	863257	3995881	16066504	80029996	2.50	10.0	50.0	200	1000
1,2,3,7,8-PeCDD		AveID	116165	518729	2385593	9715829	48247060	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF		AveID	215195	931117	4354560	17777367	84101340	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF		AveID	239982	1038354	4878178	19431932	95400318	2.50	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF		AveID	232263	1032686	4774247	18862486	97753005	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD		AveID	137541	598181	2765708	11153969	56405618	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD		AveID	142433	623939	2902121	11661873	57425910	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD		AveID	147369	676949	3101840	12354108	58343908	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF		AveID	224956	982394	4611955	17616763	91937678	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF		AveID	215620	972638	4368003	17615721	92770691	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD		AveID	141914	649996	2864412	11573871	58157652	2.50	10.0	50.0	200	1000
1,2,3,4,7,8,9-HpCDF		AveID	186889	844812	3686922	15315395	80874831	2.50	10.0	50.0	200	1000
OCDD		AveID	205114	921901	3993320	16709340	90601717	5.00	20.0	100	400	2000
OCDF		AveID	255207	1156799	5158047	22094312	126690658	5.00	20.0	100	400	2000
13C-2,3,7,8-TCDF	13CTC	Ave	8340309	8488555	8500696	8380142	8470716	100	100	100	100	100
13C-2,3,7,8-TCDD	13CTC	Ave	5201084	5074828	5318631	5253288	5315007	100	100	100	100	100
13C-1,2,3,7,8-PeCDF	13CTC	Ave	7004333	7003224	7149905	7152089	7521267	100	100	100	100	100
13C-2,3,4,7,8-PeCDF	13CTC	Ave	6517835	6659419	7105616	6759066	7142216	100	100	100	100	100
13C-1,2,3,7,8-PeCDD	13CTC	Ave	4192143	4183753	4325328	4400759	4618561	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDF	13CHx	Ave	6626281	6567672	7034054	6894093	6640749	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDF	13CHx	Ave	7476700	7372206	7747256	7780881	7611761	100	100	100	100	100
13C-2,3,4,6,7,8-HxCDF	13CHx	Ave	7240856	7214754	7434381	7441472	7799209	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDD	13CHx	Ave	4566579	4646412	4935207	4830229	5151852	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDD	13CHx	Ave	5037671	5054298	5259136	5261618	5465550	100	100	100	100	100
13C-1,2,3,7,8,9-HxCDF	13CHx	Ave	6704113	6740692	7042762	6852734	7241212	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDF	13CHx	Ave	5403412	5502512	5481639	5634533	5918544	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDD	13CHx	Ave	5085943	5179512	5188334	5305866	5525128	100	100	100	100	100
13C-1,2,3,4,7,8,9-HpCDF	13CHx	Ave	5120644	5244417	5294096	5307044	5657300	100	100	100	100	100
13C-OCDD	13CHx	Ave	6904214	7078418	6914737	7266166	8003485	200	200	200	200	200
37Cl4-2,3,7,8-TCDD	13CTC	Ave	36152	150303	861567	2971886	14554194	0.500	2.00	10.0	40.0	200

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1 Analy Batch No.: 332505

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/18/2019 20:50 Calibration End Date: 10/19/2019 00:02 Calibration ID: 47888

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

TestAmerica Laboratories
Worklist Report

Worklist Name: 18OC19ADFS1_ICAL_DXN Worklist Number: 85289
Instrument Name: DFS 1 Chrom Method: Dioxin_DFS1
Injection Volume: 1.000 Units: ul
Analysis Type: Semi VOA
Batch Directory: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b
Upload Directory: \\Corptalsapp12\320-WS-RawData\Organics\MS\DFS 1

Smp #	Lims ID	Smp Type	Ical Lvl	Dil Fact	Fract	Initial Vol/Wt	Vol/Wt Units	Sample Reagents	pH	Comment
1	#1 WDM	WDM		1.000	sv	1.000	mL	HRDXNCP_00040		
2	#2 SB	SB		1.000	sv	1.000	mL			
3	#3 IC 2	IC	2	1.000	sv	1.000	mL	HRDXNL2_00027		
4	#4 IC 3	IC	3	1.000	sv	1.000	mL	HRDXNL3_00025		
5	#5 IC 4	IC	4	1.000	sv	1.000	mL	HRDXNL4_00086		
6	#6 IC 5	IC	5	1.000	sv	1.000	mL	HRDXNL5_00028		
7	#7 IC 6	IC	6	1.000	sv	1.000	mL	HRDXNL6_00024		
8	#8 SB	SB		1.000	sv	1.000	mL			
9	#9 ICV	ICV		1.000	sv	1.000	mL	HRDXNIC_00042		

Log file checked
AJS
10-23-19

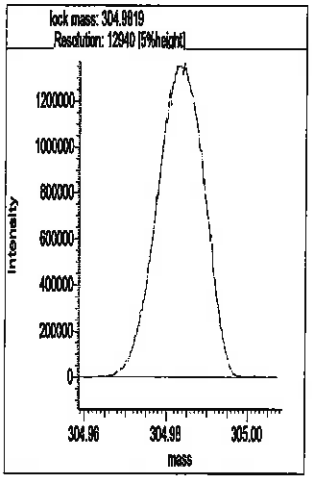
Resolution Check Report (DFS SN: 3441)

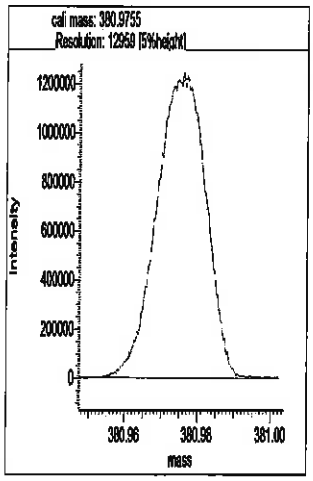
eurofins | Environment Testing TestAmerica

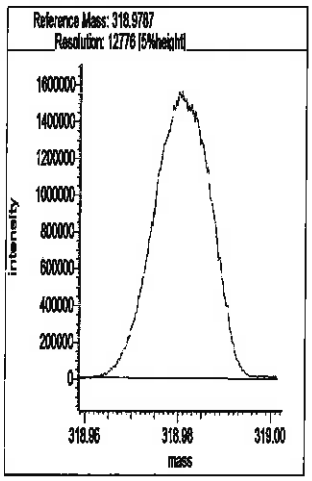
Date:	18 Oct 2019 18:56
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	8000
Reference:	pfk
Status:	RESOLUTION PASSED

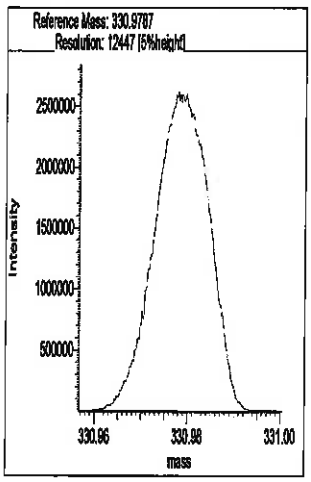
Segment 1

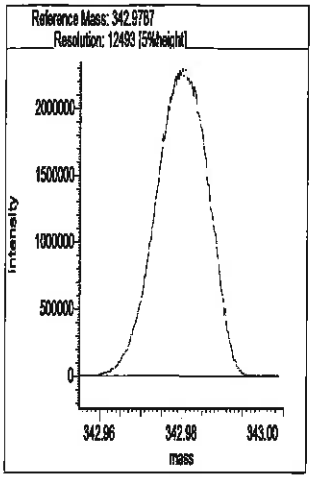
Lock mass 304.9819 [m/z] Resolution: 12940 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 12959 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 12776 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 12447 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 12493 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 12737 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 12533 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 13093 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 13390 [5%height]

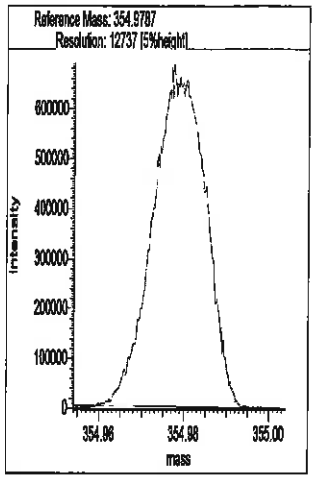


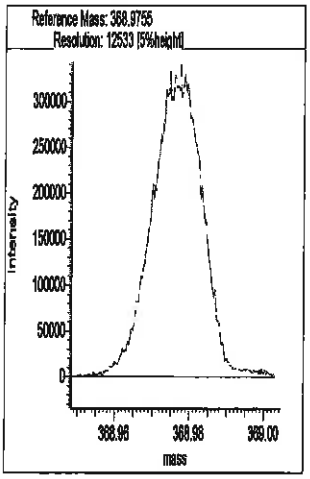


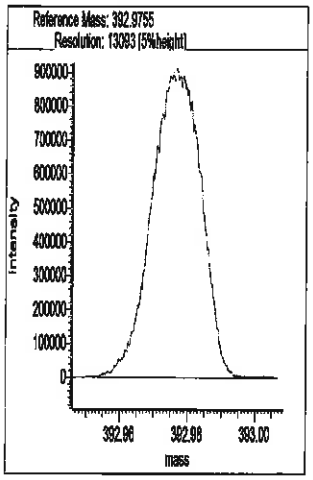


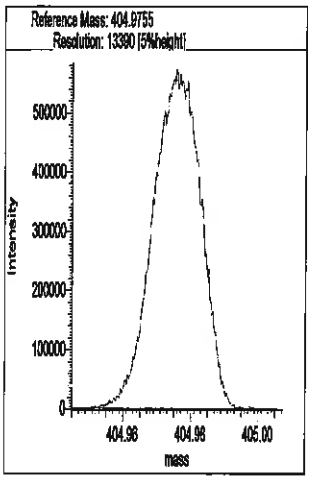












Segment 2

Lock mass 330.9787 [m/z] Resolution: 12758 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 12546 [5%height]

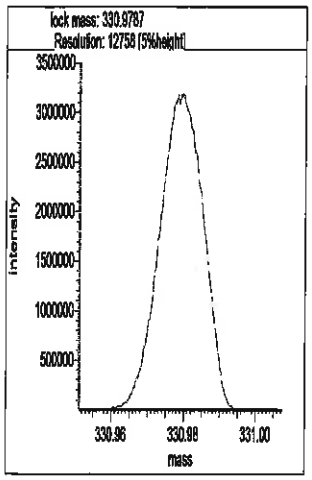
Ref. mass 342.9787 [m/z] Resolution: 12669 [5%height]

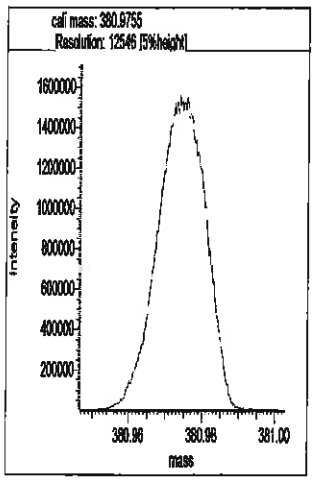
Ref. mass 354.9787 [m/z] Resolution: 12601 [5%height]

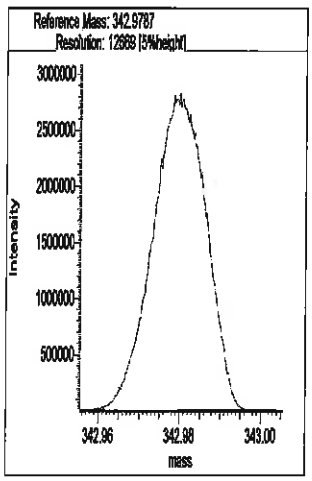
Ref. mass 368.9755 [m/z] Resolution: 12354 [5%height]

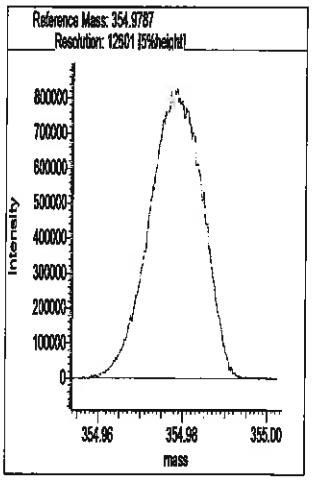
Ref. mass 392.9755 [m/z] Resolution: 12686 [5%height]

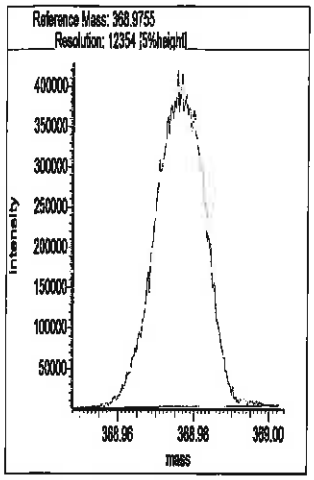
Ref. mass 404.9755 [m/z] Resolution: 12980 [5%height]

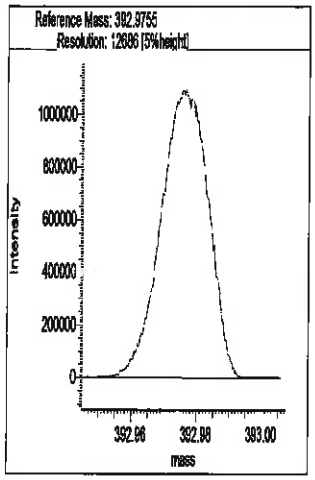


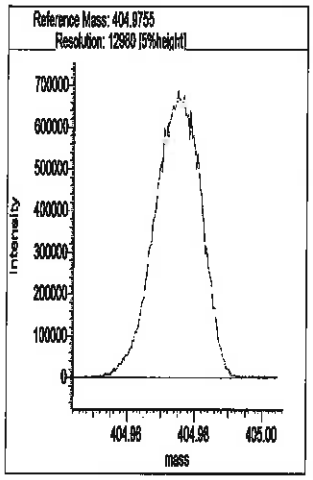












Segment 3

Lock mass 380.9755 [m/z] Resolution: 12901 [5%height]

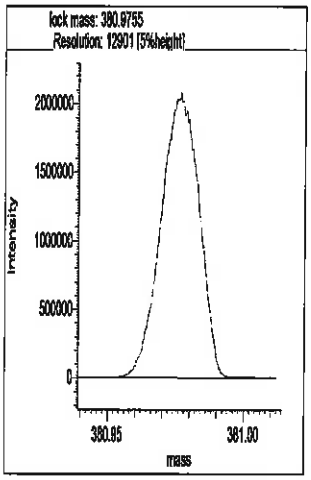
Cali. mass 430.9723 [m/z] Resolution: 12674 [5%height]

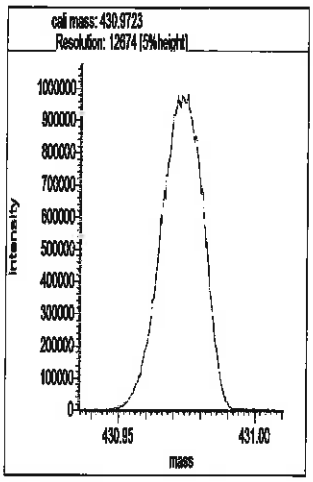
Ref. mass 392.9755 [m/z] Resolution: 12606 [5%height]

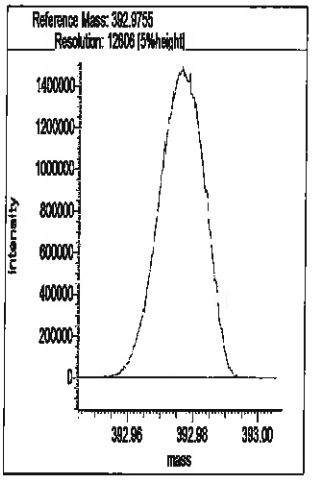
Ref. mass 404.9755 [m/z] Resolution: 12535 [5%height]

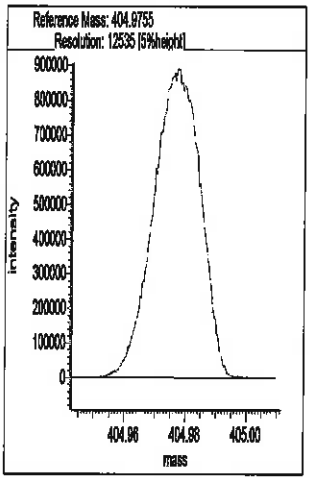
Ref. mass 416.9755 [m/z] Resolution: 12398 [5%height]

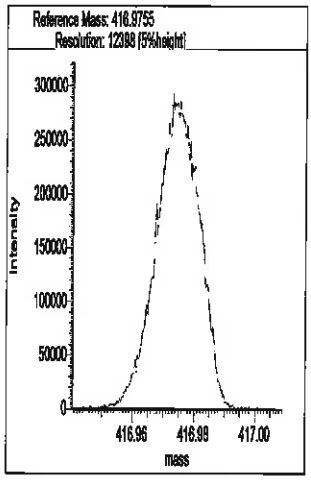
Ref. mass 442.9723 [m/z] Resolution: 12847 [5%height]

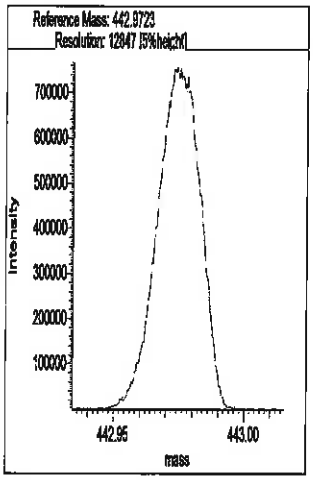












Segment 4

Lock mass 430.9723 [m/z] Resolution: 12674 [5%height]

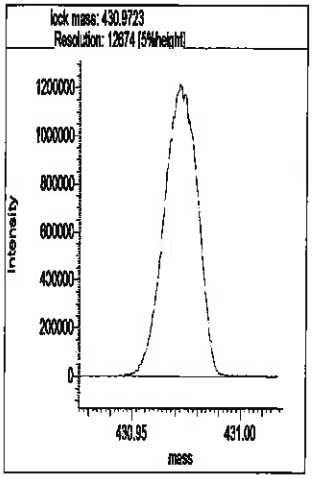
Cali. mass 480.9691 [m/z] Resolution: 12723 [5%height]

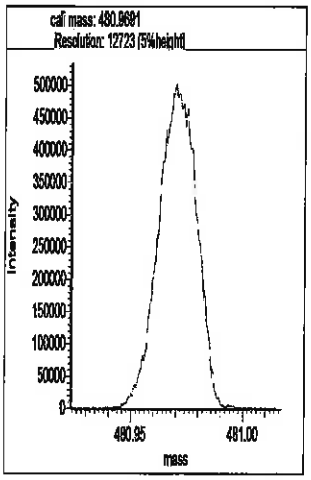
Ref. mass 416.9755 [m/z] Resolution: 12701 [5%height]

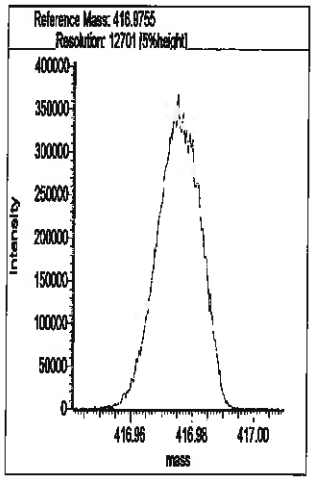
Ref. mass 442.9723 [m/z] Resolution: 12811 [5%height]

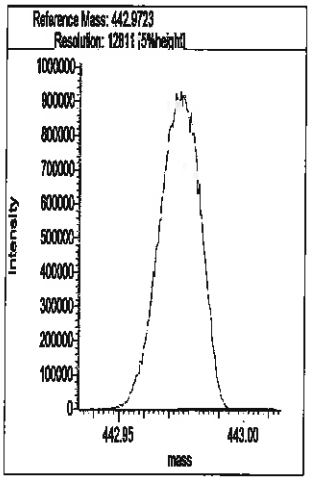
Ref. mass 454.9723 [m/z] Resolution: 12858 [5%height]

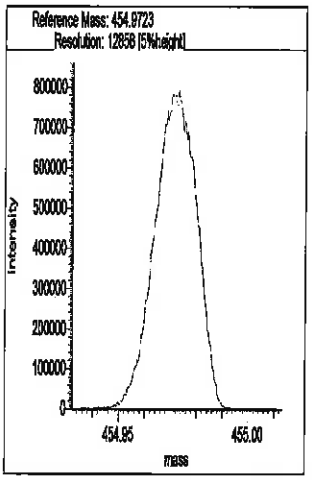
Ref. mass 466.9723 [m/z] Resolution: 13088 [5%height]

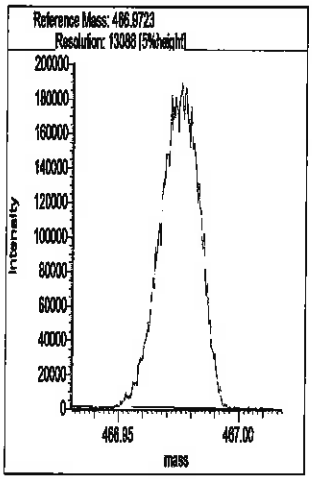












Segment 5

Lock mass 442.9723 [m/z] Resolution: 13123 [5%height]

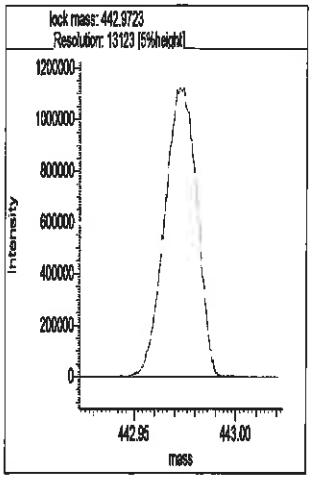
Cali. mass 504.9691 [m/z] Resolution: 12784 [5%height]

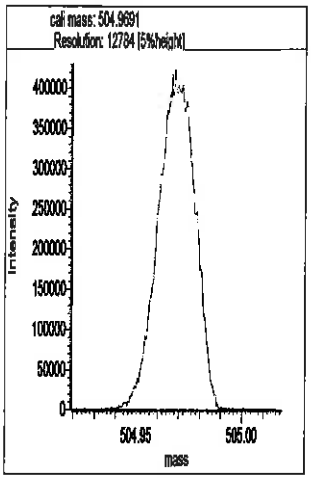
Ref. mass 454.9723 [m/z] Resolution: 12949 [5%height]

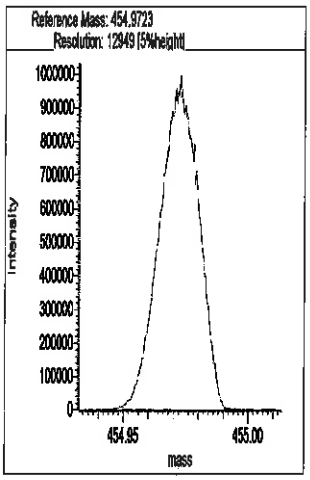
Ref. mass 466.9723 [m/z] Resolution: 12839 [5%height]

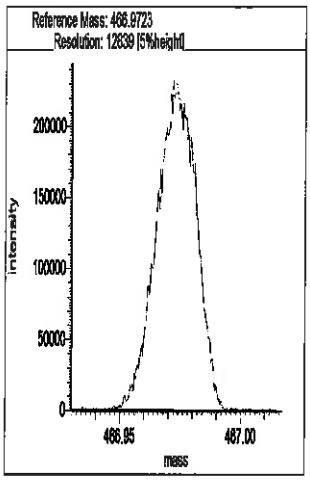
Ref. mass 480.9691 [m/z] Resolution: 12646 [5%height]

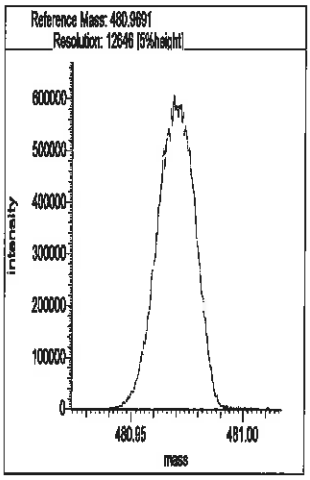
Ref. mass 492.9691 [m/z] Resolution: 12869 [5%height]

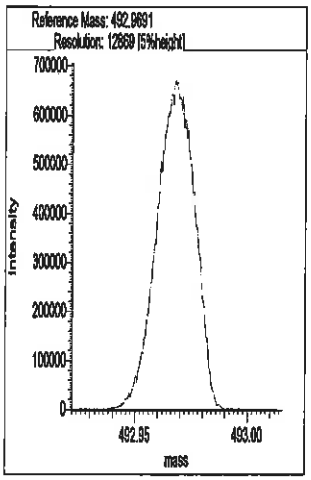

lock mass: 442.9723
Resolution: 13123 [5%height]
Intensity
mass


cal mass: 504.9691
Resolution: 12784 [5%height]
Intensity
mass


Reference Mass: 454.9723
Resolution: 12949 [5%height]
Intensity
mass


Reference Mass: 466.9723
Resolution: 12839 [5%height]
Intensity
mass


Reference Mass: 480.9691
Resolution: 12646 [5%height]
Intensity
mass


Reference Mass: 492.9691
Resolution: 12669 [5%height]
Intensity
mass

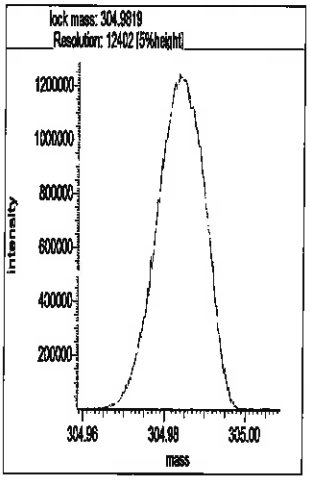
Resolution Check Report (DFS SN: 3441)

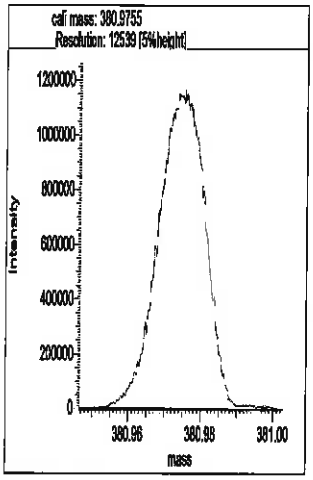
eurofins | Environment Testing TestAmerica

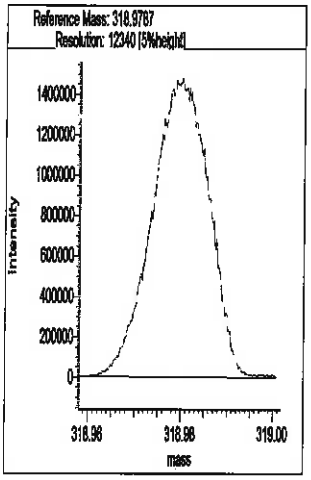
Date:	19 Oct 2019 02:25
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	8000
Reference:	pfk
Status:	RESOLUTION PASSED

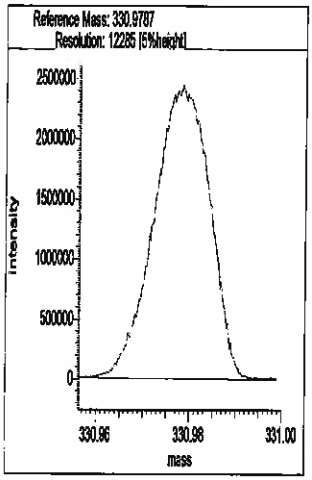
Segment 1

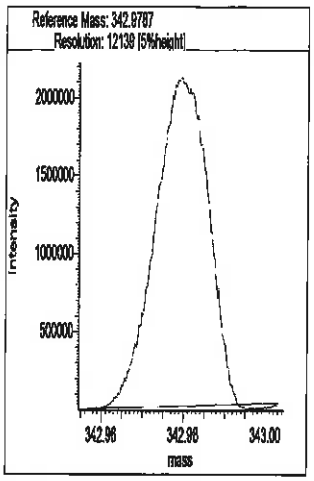
Lock mass 304.9819 [m/z] Resolution: 12402 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 12539 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 12340 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 12285 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 12139 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 12406 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 12079 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 12750 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 12802 [5%height]

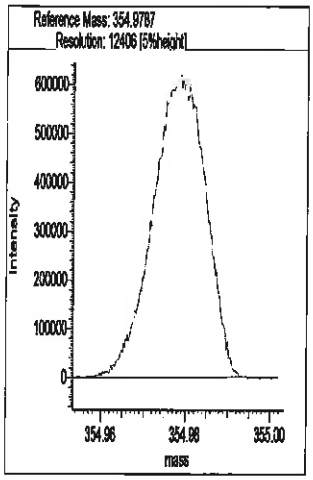


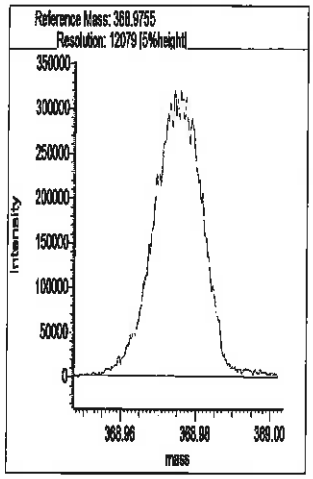


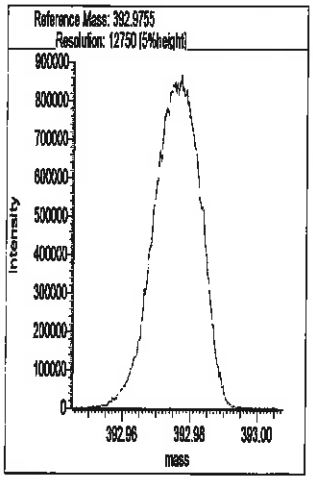


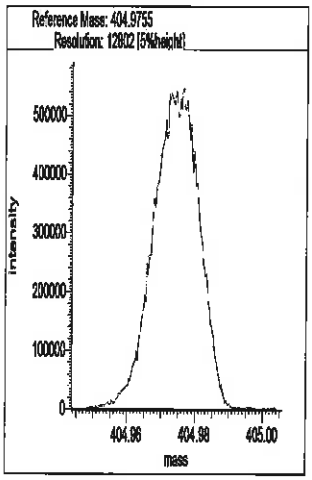












Segment 2

Lock mass 330.9787 [m/z] Resolution: 12539 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 12409 [5%height]

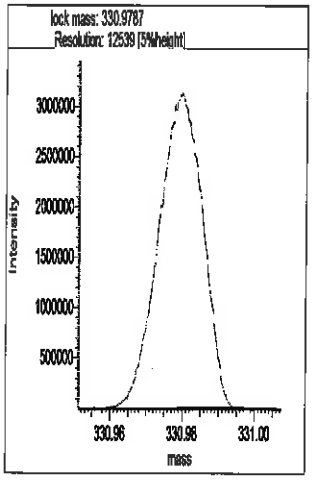
Ref. mass 342.9787 [m/z] Resolution: 12330 [5%height]

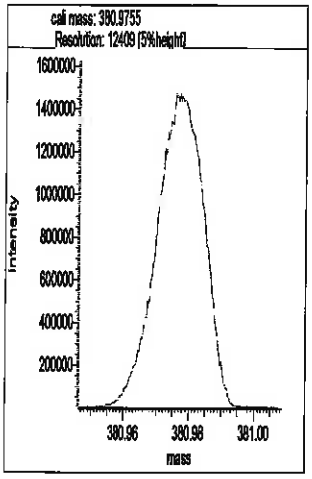
Ref. mass 354.9787 [m/z] Resolution: 12149 [5%height]

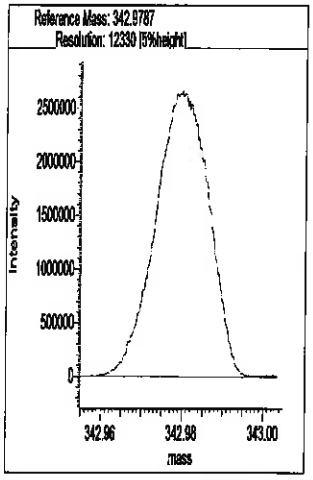
Ref. mass 368.9755 [m/z] Resolution: 12334 [5%height]

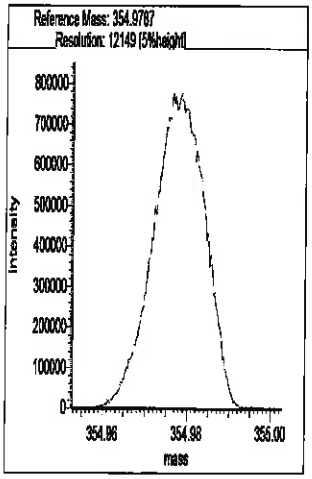
Ref. mass 392.9755 [m/z] Resolution: 12622 [5%height]

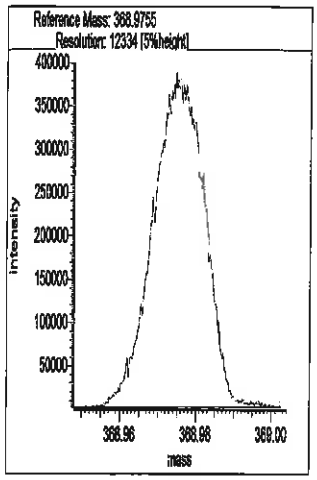
Ref. mass 404.9755 [m/z] Resolution: 12689 [5%height]

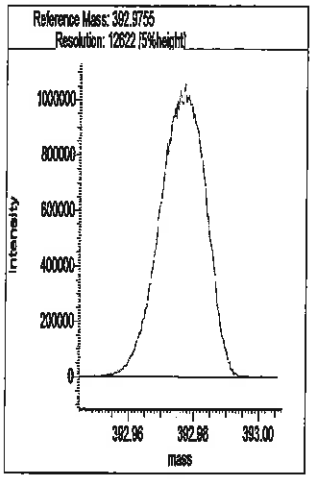


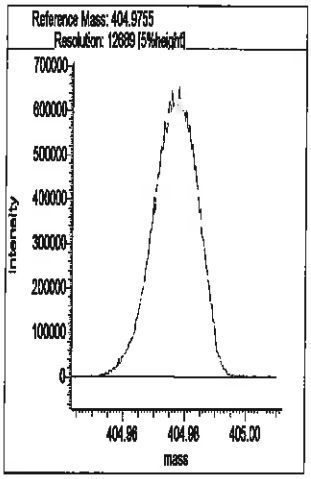












Segment 3

Lock mass 380.9755 [m/z] Resolution: 12540 [5%height]

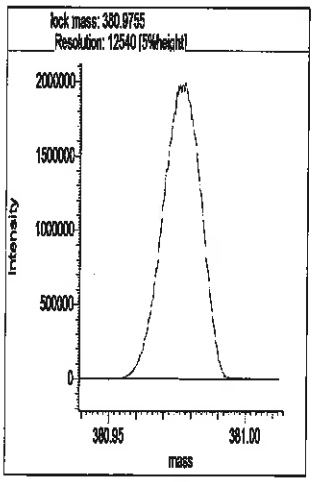
Cali. mass 430.9723 [m/z] Resolution: 12663 [5%height]

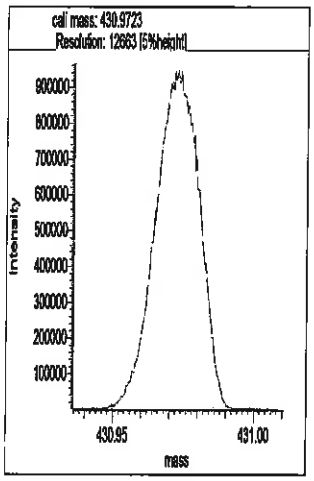
Ref. mass 392.9755 [m/z] Resolution: 12589 [5%height]

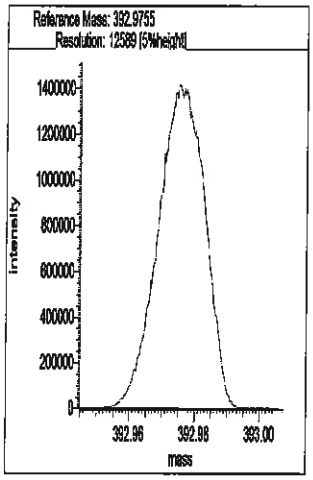
Ref. mass 404.9755 [m/z] Resolution: 12351 [5%height]

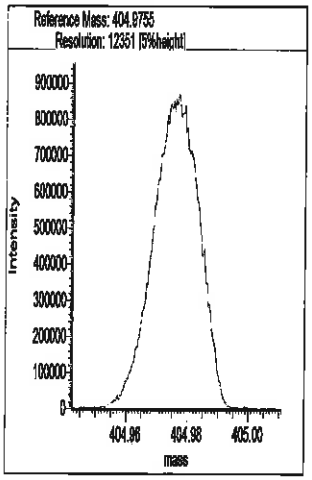
Ref. mass 416.9755 [m/z] Resolution: 12676 [5%height]

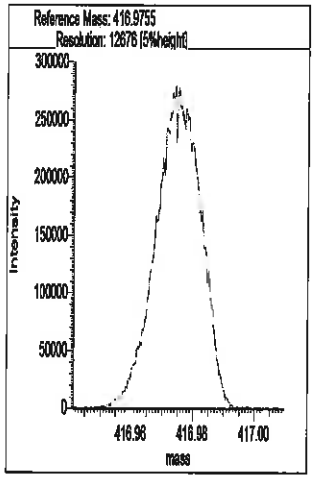
Ref. mass 442.9723 [m/z] Resolution: 12713 [5%height]

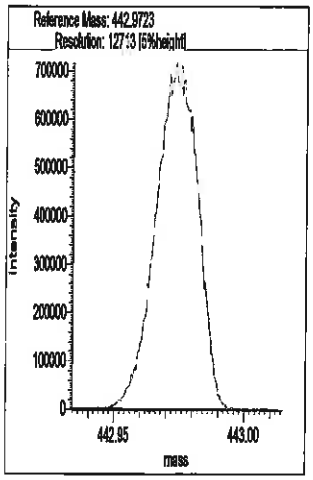












Segment 4

Lock mass 430.9723 [m/z] Resolution: 12770 [5%height]

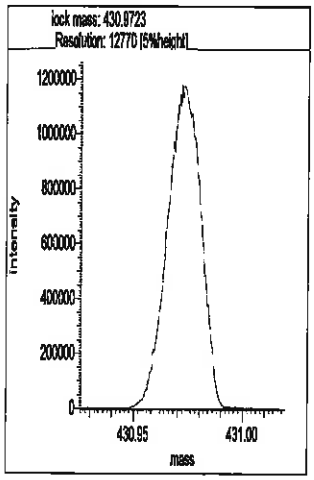
Cali. mass 480.9691 [m/z] Resolution: 12692 [5%height]

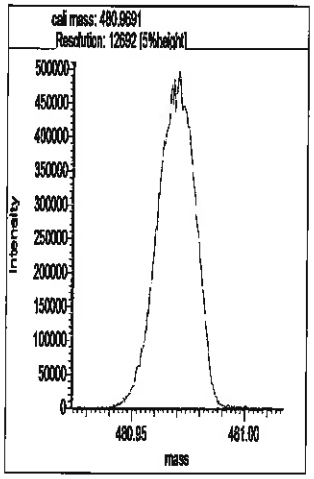
Ref. mass 416.9755 [m/z] Resolution: 12917 [5%height]

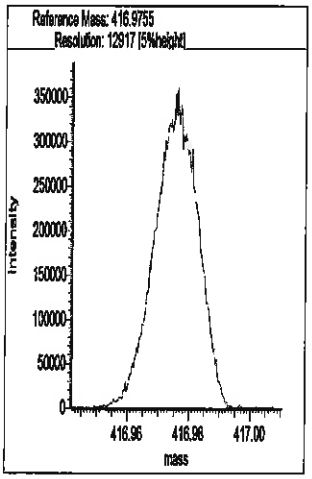
Ref. mass 442.9723 [m/z] Resolution: 12640 [5%height]

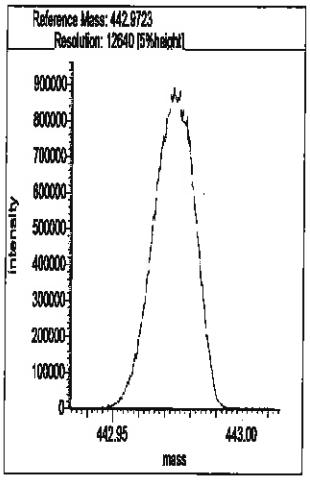
Ref. mass 454.9723 [m/z] Resolution: 12808 [5%height]

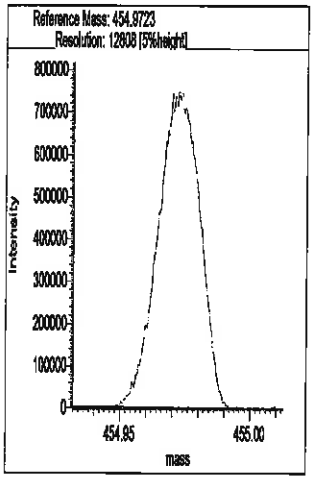
Ref. mass 466.9723 [m/z] Resolution: 12858 [5%height]

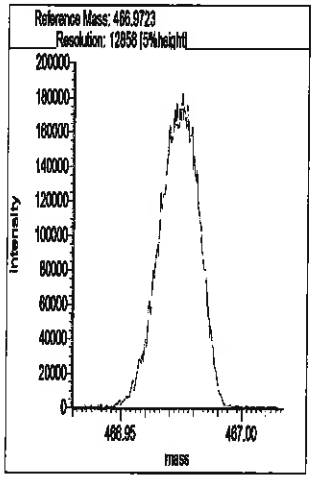












Segment 5

Lock mass 442.9723 [m/z] Resolution: 12860 [5%height]

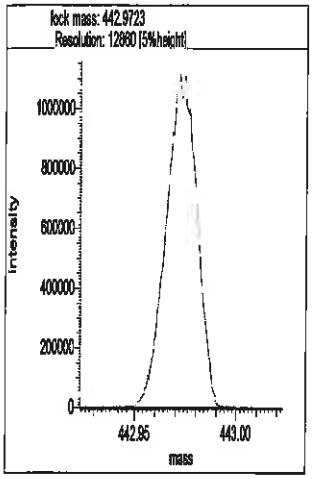
Cali. mass 504.9691 [m/z] Resolution: 12681 [5%height]

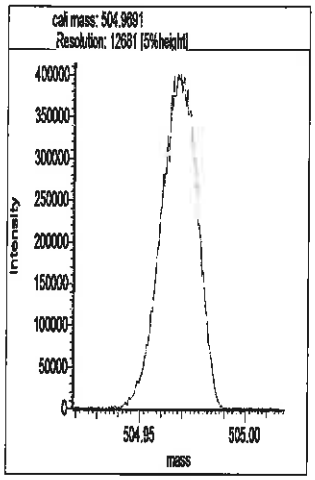
Ref. mass 454.9723 [m/z] Resolution: 12863 [5%height]

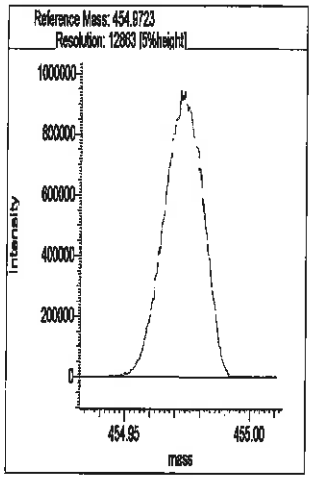
Ref. mass 466.9723 [m/z] Resolution: 12611 [5%height]

Ref. mass 480.9691 [m/z] Resolution: 12550 [5%height]

Ref. mass 492.9691 [m/z] Resolution: 12584 [5%height]


lock mass: 442.9723
Resolution: 12880 [5%height]
Intensity
1000000
800000
600000
400000
200000
0
442.95
443.00
mass


cal mass: 504.9691
Resolution: 12681 [5%height]
Intensity
400000
350000
300000
250000
200000
150000
100000
50000
0
504.95
505.00
mass


Reference Mass: 454.9723
Resolution: 12883 [5%height]
Intensity
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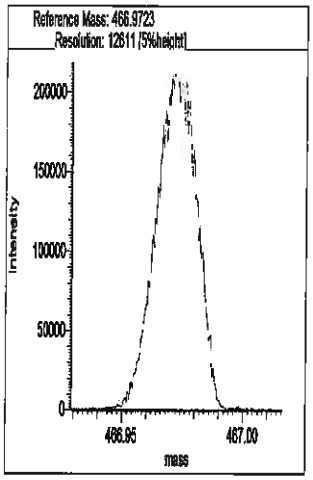
600000
400000
200000
0
454.95
455.00
mass


Reference Mass: 466.9723
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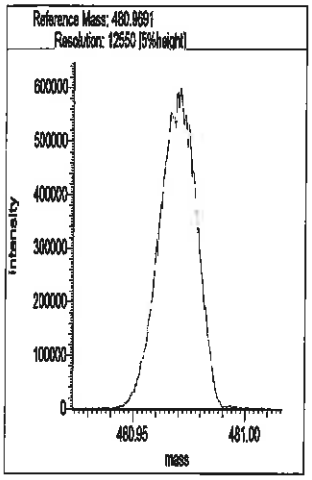
467.00
mass


Reference Mass: 480.9691
Resolution: 12550 [5%height]
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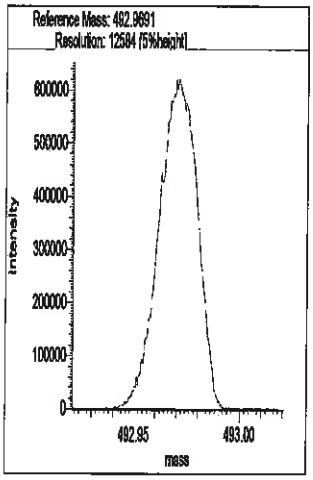
mass


Reference Mass: 492.9691
Resolution: 12584 [5%height]
Intensity
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500000
400000
300000
200000
100000
0
492.95
493.00
mass

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 18-Oct-2019 20:50:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:52:49 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:56:00

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.721	5214833	0.81	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.761	8340309	0.83	1.6096	99.4	99.4	0.2199	0.2199	99.36	
2,3,7,8-TCDF	19.787	52500	0.88	1.2332	0.5104	0.5104	0.0102	0.0102	102	
S Total TCDF					0.5104	0.5104	0.0102	0.0102		
D 13C-2,3,7,8-TCDD	21.084	5201084	0.78	0.9984	99.9	99.9	0.1868	0.1868	99.90	
$ 37Cl4-2,3,7,8-TCDD	21.102	36152		1.4510	0.4778	0.4778	0.005715	0.005715	95.56	
2,3,7,8-TCDD	21.119	30582	0.71	1.1988	0.4905	0.4905	0.0265	0.0265	98.10	
S Total TCDD					0.4905	0.4905	0.0265	0.0265		
D 13C-1,2,3,7,8-PeCDF	26.789	7004333	1.58	1.3678	98.2	98.2	0.4757	0.4757	98.20	
1,2,3,7,8-PeCDF	26.814	195742	1.60	1.1689	2.391	2.391	0.0241	0.0241	95.63	
D 13C-2,3,4,7,8-PeCDF	28.290	6517835	1.60	1.3045			0.4403	0.4403	97.54	
2,3,4,7,8-PeCDF	28.324	195625	1.59	1.1861	2.530	2.530	0.0268	0.0268	101	
S Total PeCDF					4.921	4.921	0.0255	0.0255		
D 13C-1,2,3,7,8-PeCDD	29.087	4192143	1.62	0.8292	96.9	96.9	0.1985	0.1985	96.95	
1,2,3,7,8-PeCDD	29.112	116165	1.56	1.1200	2.474	2.474	0.0359	0.0359	98.97	
S Total PeCDD					2.474	2.474	0.0359	0.0359		
D 13C-1,2,3,4,7,8-HxCDF	34.576	6626281	0.54	1.1700	100.3	100.3	0.4879	0.4879	100	
1,2,3,4,7,8-HxCDF	34.602	215195	1.25	1.3021	2.494	2.494	0.0238	0.0238	99.76	
D 13C-1,2,3,6,7,8-HxCDF	34.753	7476700	0.54	1.3168	100.5	100.5	0.4335	0.4335	101	
1,2,3,6,7,8-HxCDF	34.769	239982	1.24	1.2907	2.487	2.487	0.0209	0.0209	99.47	
D 13C-2,3,4,6,7,8-HxCDF	35.608	7240856	0.54	1.2873	99.6	99.6	0.4434	0.4434	99.58	
2,3,4,6,7,8-HxCDF	35.625	232263	1.31	1.3039	2.460	2.460	0.0187	0.0187	98.40	
D 13C-1,2,3,7,8,9-HxCDF	36.522	6704113	0.53	1.1987	99.0	99.0	0.4762	0.4762	99.01	
1,2,3,7,8,9-HxCDF	36.530	224956	1.31	1.3329	2.518	2.518	0.0187	0.0187	101	
S Total HxCDF					9.958	9.958	0.0205	0.0205		
* 13C-1,2,3,7,8,9-HxCDD	36.321	5648672	1.25	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.826	4566579	1.27	0.8364			0.2753	0.2753	98.00	
1,2,3,4,7,8-HxCDD	35.834	137541	1.26	1.1725	2.569	2.569	0.0222	0.0222	103	
D 13C-1,2,3,6,7,8-HxCDD	35.943	5037671	1.28	0.9040	98.7	98.7	0.2397	0.2397	98.65	
1,2,3,6,7,8-HxCDD	35.960	142433	1.21	1.1256	2.512	2.512	0.0223	0.0223	100	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,7,8,9-HxCDD	36.337	147369	1.26	1.2327	2.373	2.373	0.0203	0.0203	94.93	
S Total HxCDD					7.454	7.454	0.0216	0.0216		
D 13C-1,2,3,4,6,7,8-HpCDF	38.353	5403412	0.46	0.9689	98.7	98.7	0.4307	0.4307	98.73	
1,2,3,4,6,7,8-HpCDF	38.370	215620	1.01	1.6176	2.467	2.467	0.0324	0.0324	98.67	
D 13C-1,2,3,4,7,8,9-HpCDF	39.620	5120644	0.46	0.9231			0.3722	0.3722	99.46	
1,2,3,4,7,8,9-HpCDF	39.628	186889	1.01	1.4672	2.488	2.488	0.0352	0.0352	99.50	
S Total HpCDF					4.954	4.954	0.0338	0.0338		
D 13C-1,2,3,4,6,7,8-HpCDD	39.309	5085943	1.06	0.9114	98.8	98.8	0.5282	0.5282	98.79	
1,2,3,4,6,7,8-HpCDD	39.326	141914	1.08	1.1237	2.483	2.483	0.0215	0.0215	99.33	
S Total HpCDD					2.483	2.483	0.0215	0.0215		
D 13C-OCDD	41.748	6904214	0.89	0.6272	194.9	194.9	0.3497	0.3497	97.43	
OCDF	41.849	255207	0.94	1.5416	4.796	4.796	0.0305	0.0305	95.91	
OCDD	41.756	205114	0.88	1.1855	5.012	5.012	0.0269	0.0269	100	

Reagents:

HRDXNL2_00027 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 18-Oct-2019 20:50:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:52:49 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:56:00

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.721	20.729	0		2332430	341583	408	1020	837		
333.9338	20.721	20.729	0		2882403	442256	177	442	2499	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.761	19.762	0	0.954	3773732	577143	761	1902	758		
317.9389	19.761	19.762	0	0.954	4566577	691228	349	872	1981	0.83(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.787	19.792	0	1.001	24533	3942	16	40	246		
305.8987	19.779	19.792	-1	1.001	27967	4235	48	120	88	0.88(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.084	21.094	-1	1.018	2276809	334683	408	1020	820		
333.9338	21.093	21.094	0	1.018	2924275	420624	177	442	2376	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.102	21.121	-1	1.018	36152	5329	26	65	205		
2,3,7,8-TCDD											
319.8965	21.119	21.127	0	1.002	12729	2735	85	212	32		
321.8936	21.119	21.127	0	1.002	17853	2744	11	27	249	0.71(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.789	26.797	-1	1.293	4287343	744278	1278	3195	582		
353.8970	26.789	26.797	-1	1.293	2716990	469830	762	1905	617	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	26.814	26.821	0	1.001	120338	21488	46	115	467		
341.8567	26.805	26.821	-1	1.001	75404	13244	91	227	146	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.290	28.297	0	1.365	4006334	658492	1278	3195	515		
353.8970	28.290	28.297	0	1.365	2511501	416084	762	1905	546	1.60(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	28.324	28.322	0	1.001	119956	20023	46	115	435		
341.8567	28.315	28.322	0	1.001	75669	11760	91	227	129	1.59(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.087	29.095	0	1.404	2591133	399747	292	730	1369		
369.8919	29.087	29.095	0	1.404	1601010	247490	224	560	1105	1.62(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.112	29.120	0	1.001	70716	10901	74	185	147		
357.8516	29.104	29.120	-1	1.001	45449	6815	30	75	227	1.56(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.576	34.589	-1	0.952	2310882	510770	1240	3100	412		
385.8610	34.585	34.589	0	0.952	4315399	933183	2208	5520	423	0.54(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.602	34.608	0	1.001	119354	27646	106	265	261		
375.8178	34.593	34.608	-1	1.000	95841	21007	73	182	288	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.753	34.759	0	0.957	2610690	575733	1240	3100	464		
385.8610	34.753	34.759	0	0.957	4866010	1085181	2208	5520	491	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.769	34.777	0	1.000	132711	29089	106	265	274		
375.8178	34.769	34.777	0	1.000	107271	22924	73	182	314	1.24(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.608	35.616	0	0.980	2527686	635424	1240	3100	512		
385.8610	35.608	35.616	0	0.980	4713170	1193040	2208	5520	540	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.625	35.633	0	1.000	131571	32979	106	265	311		
375.8178	35.625	35.633	0	1.000	100692	25013	73	182	343	1.31(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.522	36.530	0	1.006	2328325	629156	1240	3100	507		
385.8610	36.522	36.530	0	1.006	4375788	1164414	2208	5520	527	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	36.530	36.544	-1	1.000	127416	35550	106	265	335		
375.8178	36.530	36.544	-1	1.000	97540	26248	73	182	360	1.31(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.321	36.330	-1		3141731	834721	754	1885	1107		
403.8529	36.321	36.330	-1		2506941	675393	555	1387	1217	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.826	35.836	-1	0.986	2557805	692789	754	1885	919		
403.8529	35.826	35.836	-1	0.986	2008774	542841	555	1387	978	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.834	35.849	-1	1.000	76782	19814	71	177	279		
391.8127	35.843	35.849	0	1.000	60759	16429	58	145	283	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.943	35.958	-1	0.990	2827451	720540	754	1885	956		
403.8529	35.952	35.958	0	0.990	2210220	564498	555	1387	1017	1.28(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8158	35.960	35.973	-1	1.000	77990	20007	71	177	282		
391.8127	35.960	35.973	-1	1.000	64443	16265	58	145	280	1.21(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.337	36.346	0	1.014	82206	22268	71	177	314		
391.8127	36.337	36.346	0	1.014	65163	17463	58	145	301	1.26(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.353	38.366	-1	1.056	1710651	565452	843	2107	671		
419.8220	38.353	38.366	-1	1.056	3692761	1211303	1678	4195	722	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.370	38.378	0	1.000	108579	36995	246	615	150		
409.7788	38.370	38.378	0	1.000	107041	34760	127	317	274	1.01(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.620	39.629	-1	1.091	1621959	572337	843	2107	679		
419.8220	39.620	39.629	-1	1.091	3498685	1234587	1678	4195	736	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.628	39.641	-1	1.000	93901	31909	246	615	130		
409.7788	39.628	39.641	-1	1.000	92988	32754	127	317	258	1.01(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.309	39.324	-1	1.082	2619075	901093	1530	3825	589		
437.8140	39.309	39.324	-1	1.082	2466868	839094	1378	3445	609	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	39.326	39.334	0	1.000	73750	24788	105	262	236		
425.7737	39.326	39.334	0	1.000	68164	22857	63	157	363	1.08(0.88-1.20)	
13C-OCDD											
469.7780	41.748	41.764	-1	1.149	3249296	1049079	643	1607	1632		
471.7750	41.748	41.764	-1	1.149	3654918	1160595	682	1705	1702	0.89(0.76-1.02)	
OCDF											
441.7428	41.849	41.858	-1	1.002	123705	41103	63	157	652		
443.7399	41.849	41.858	-1	1.002	131502	42274	145	362	292	0.94(0.76-1.02)	
OCDD											
457.7377	41.756	41.772	-1	1.000	96117	29826	67	167	445		
459.7348	41.756	41.772	-1	1.000	108997	35058	74	185	474	0.88(0.76-1.02)	

Reagents:

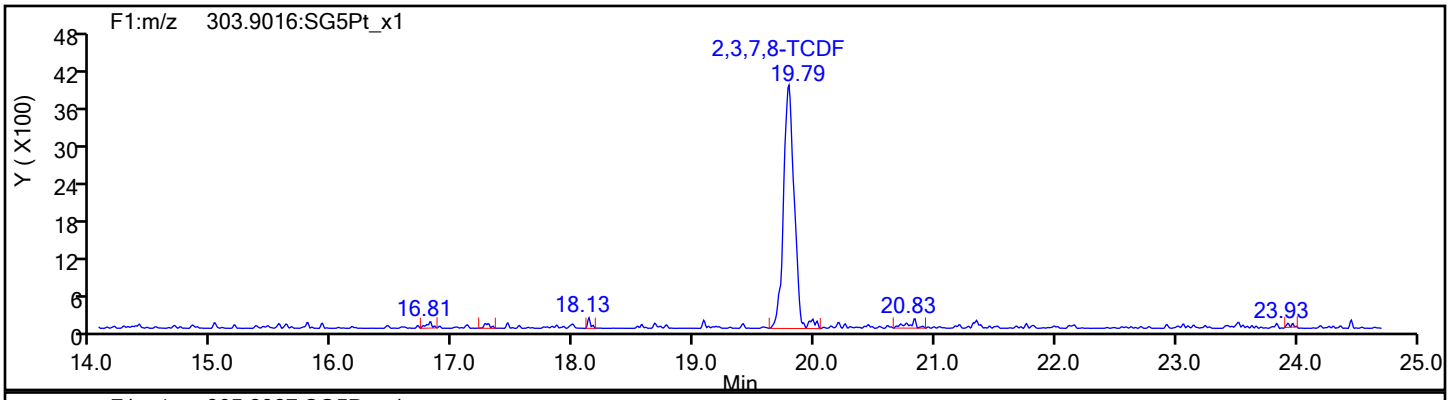
HRDXNL2_00027 Amount Added: 1.00 Units: mL

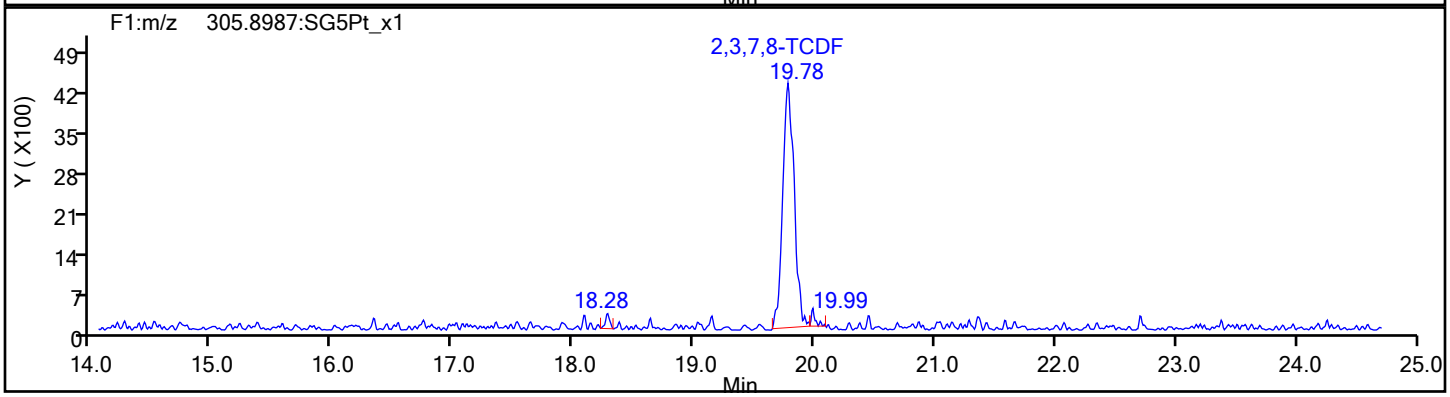
Report Date: 23-Oct-2019 11:52:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

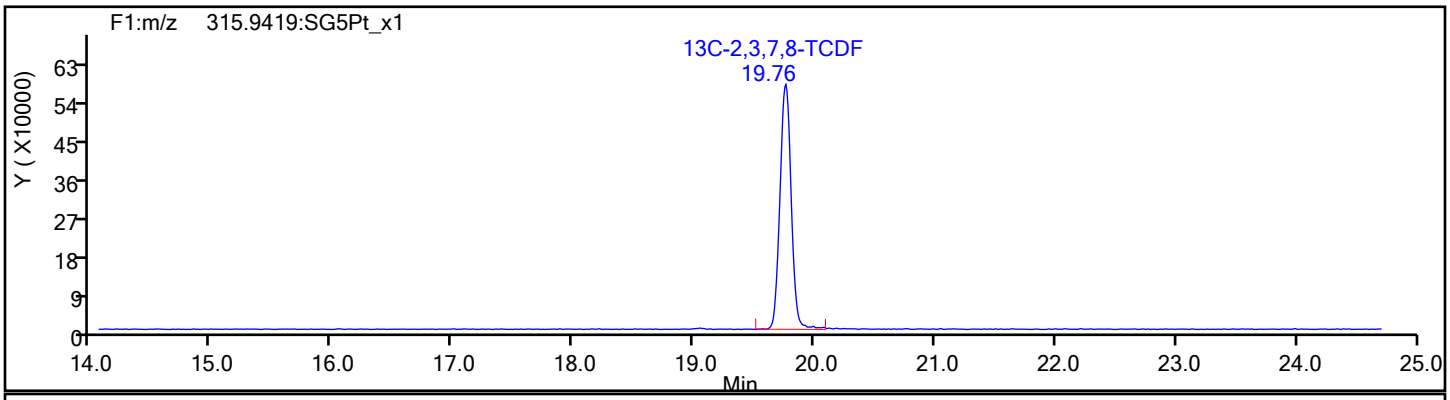
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

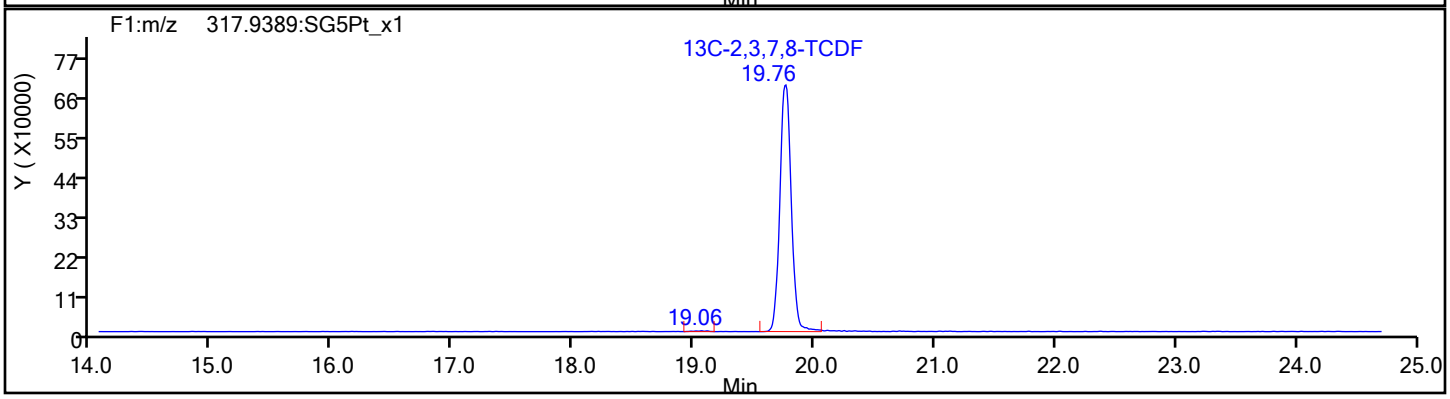
TCDF





TCDF Standards





Report Date: 23-Oct-2019 11:52:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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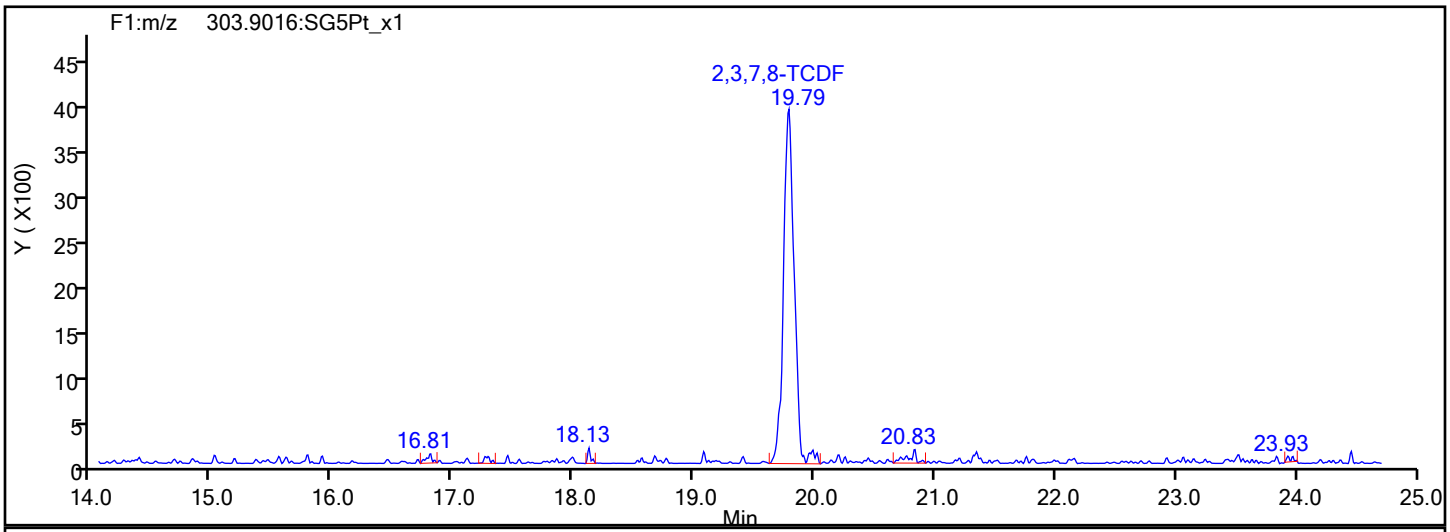
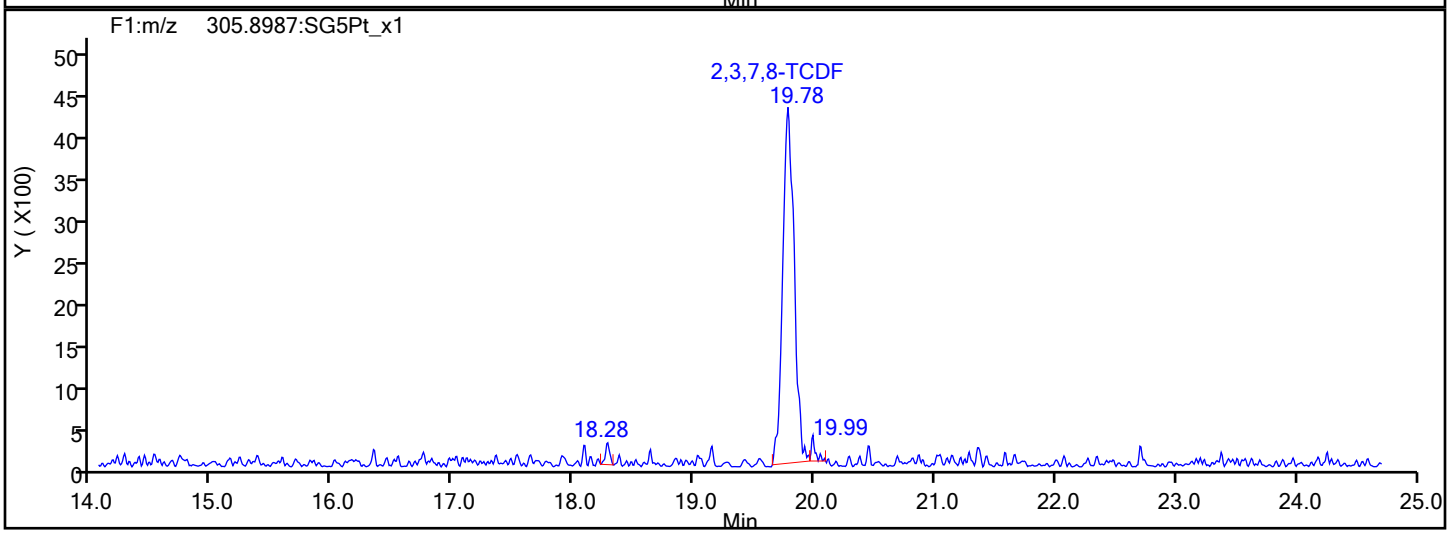
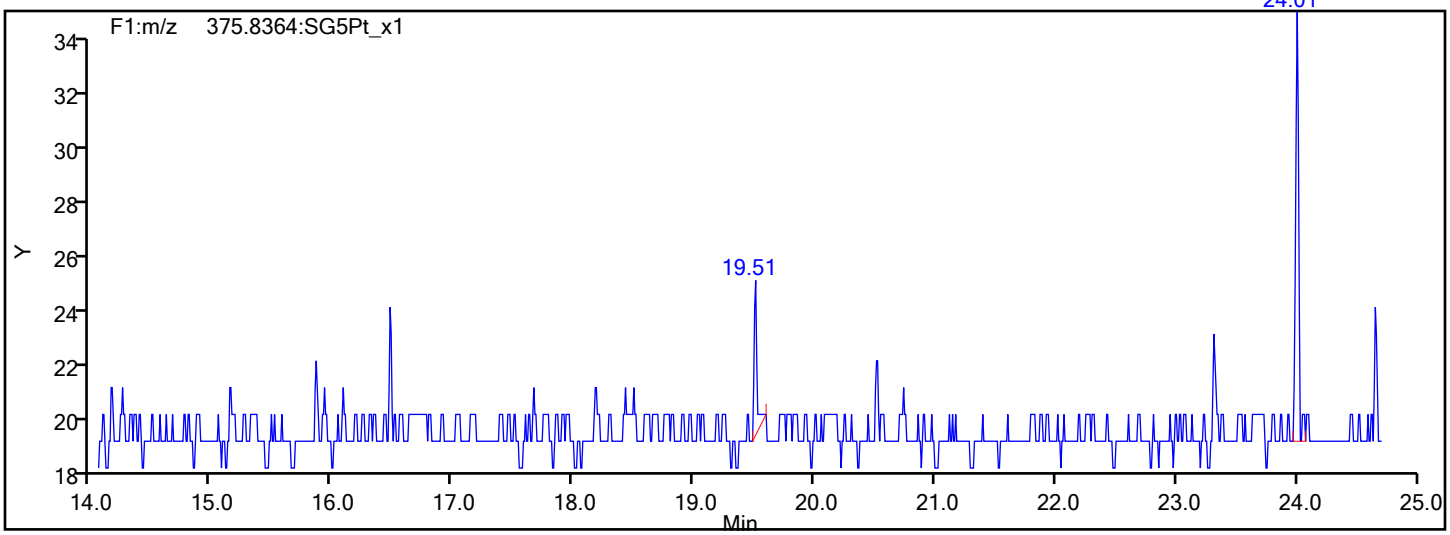
TCDF





TCDF Interference Mass



Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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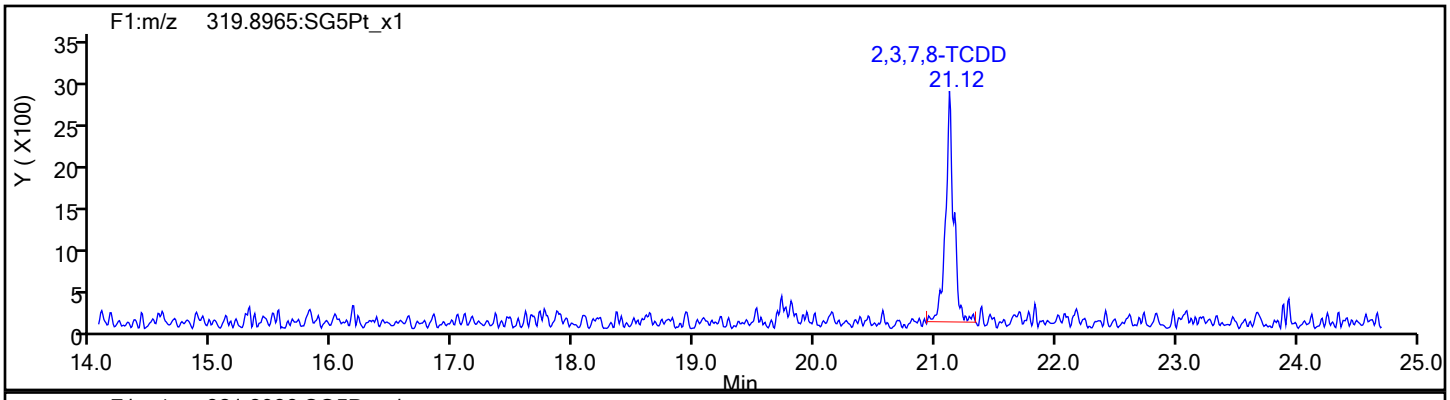
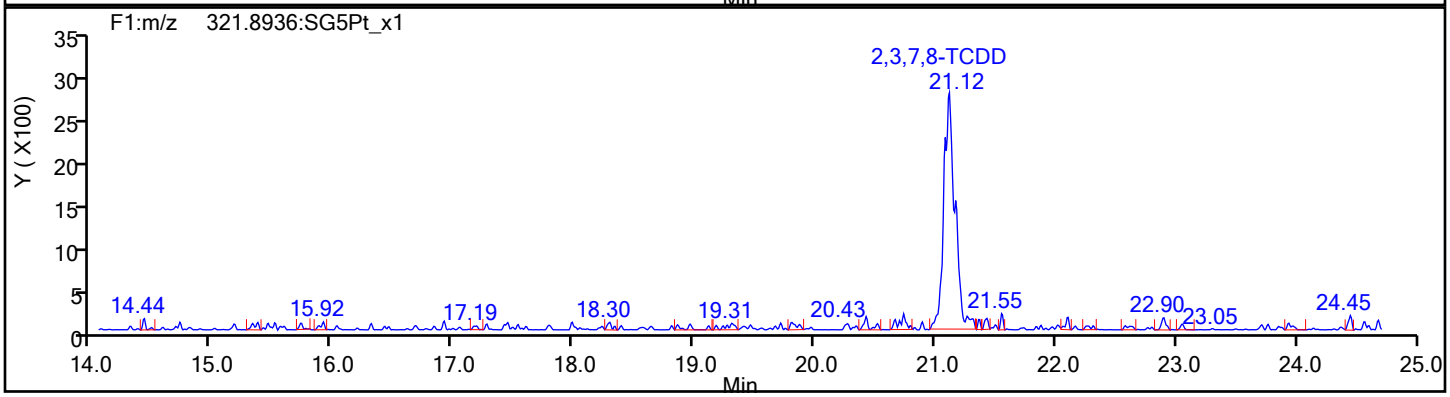
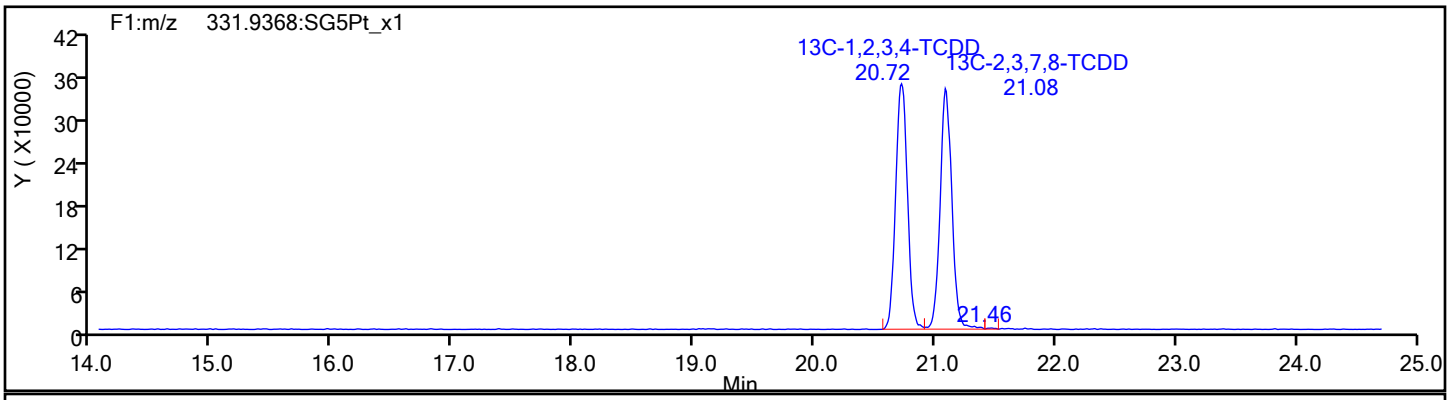
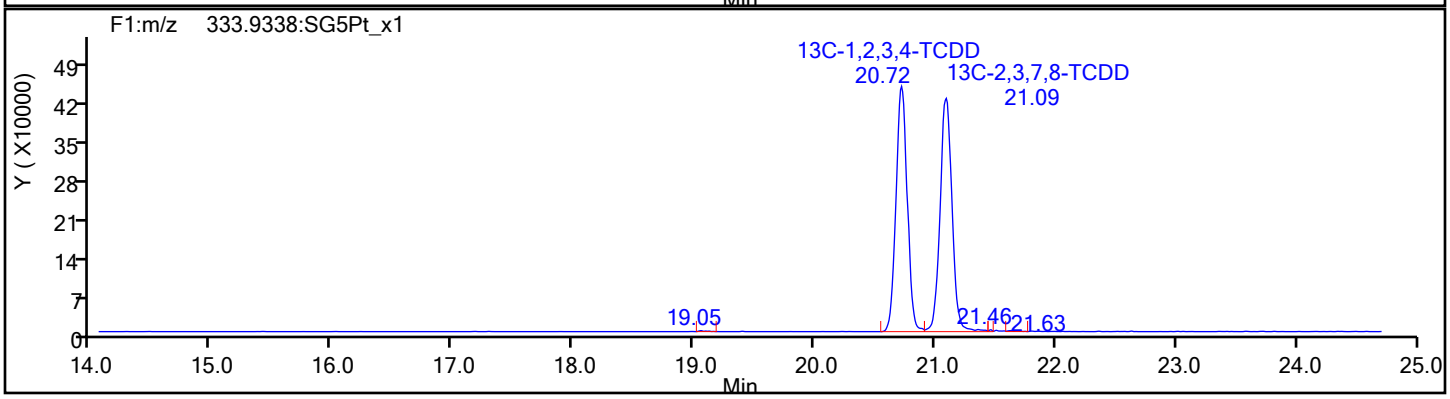




TCDD Standards





Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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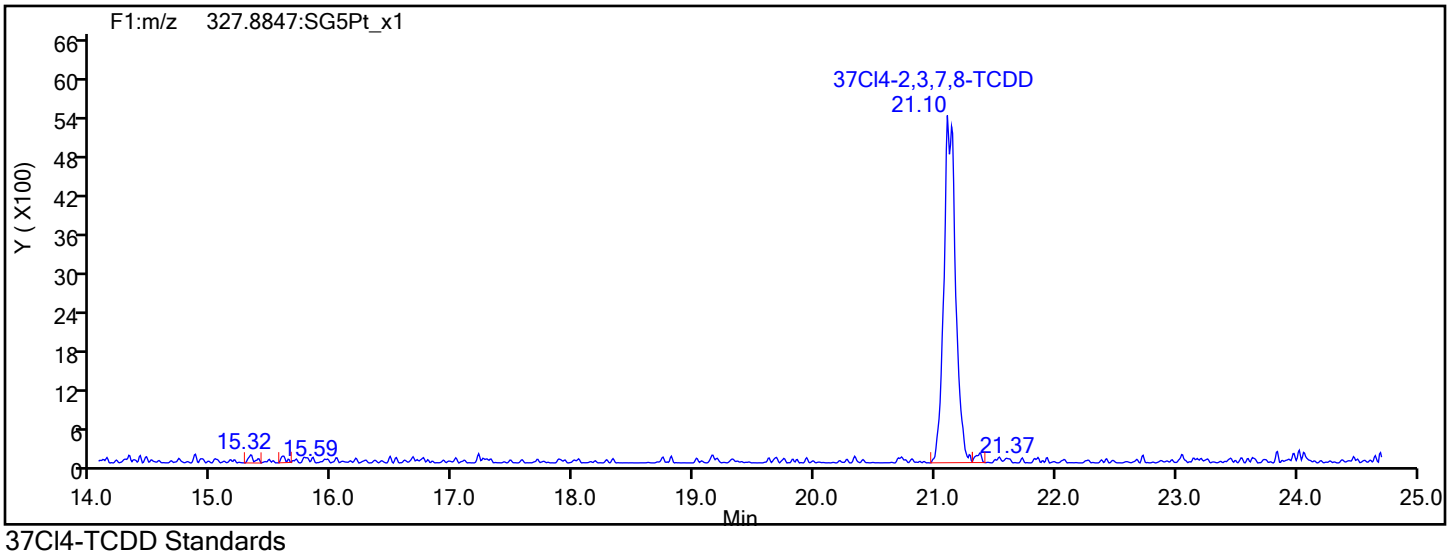
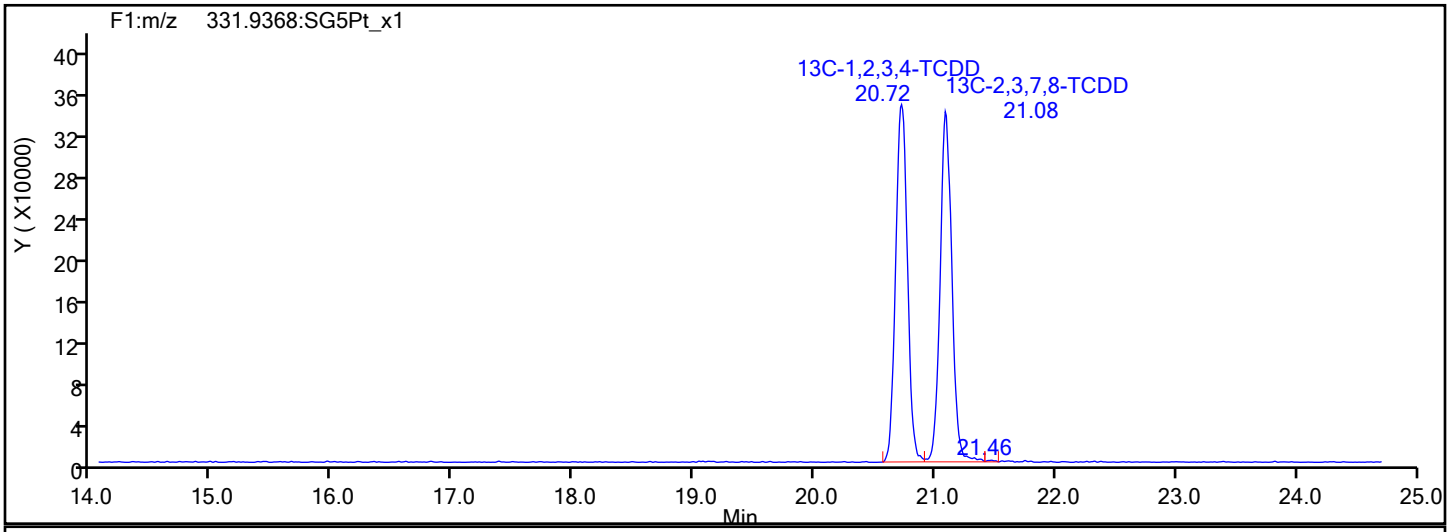
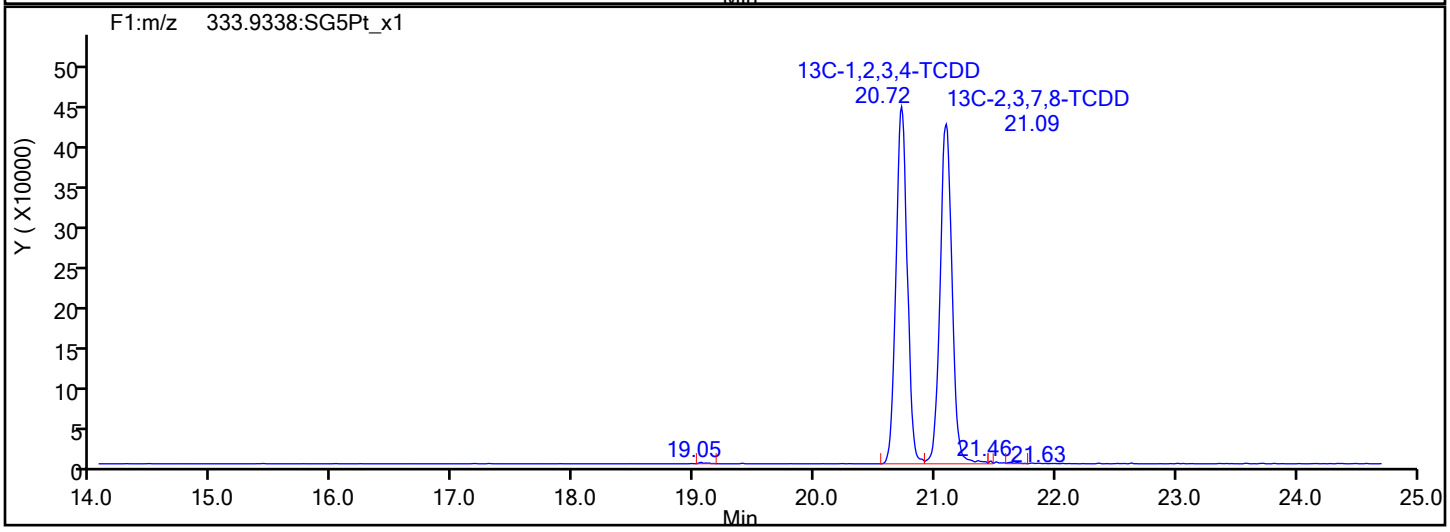
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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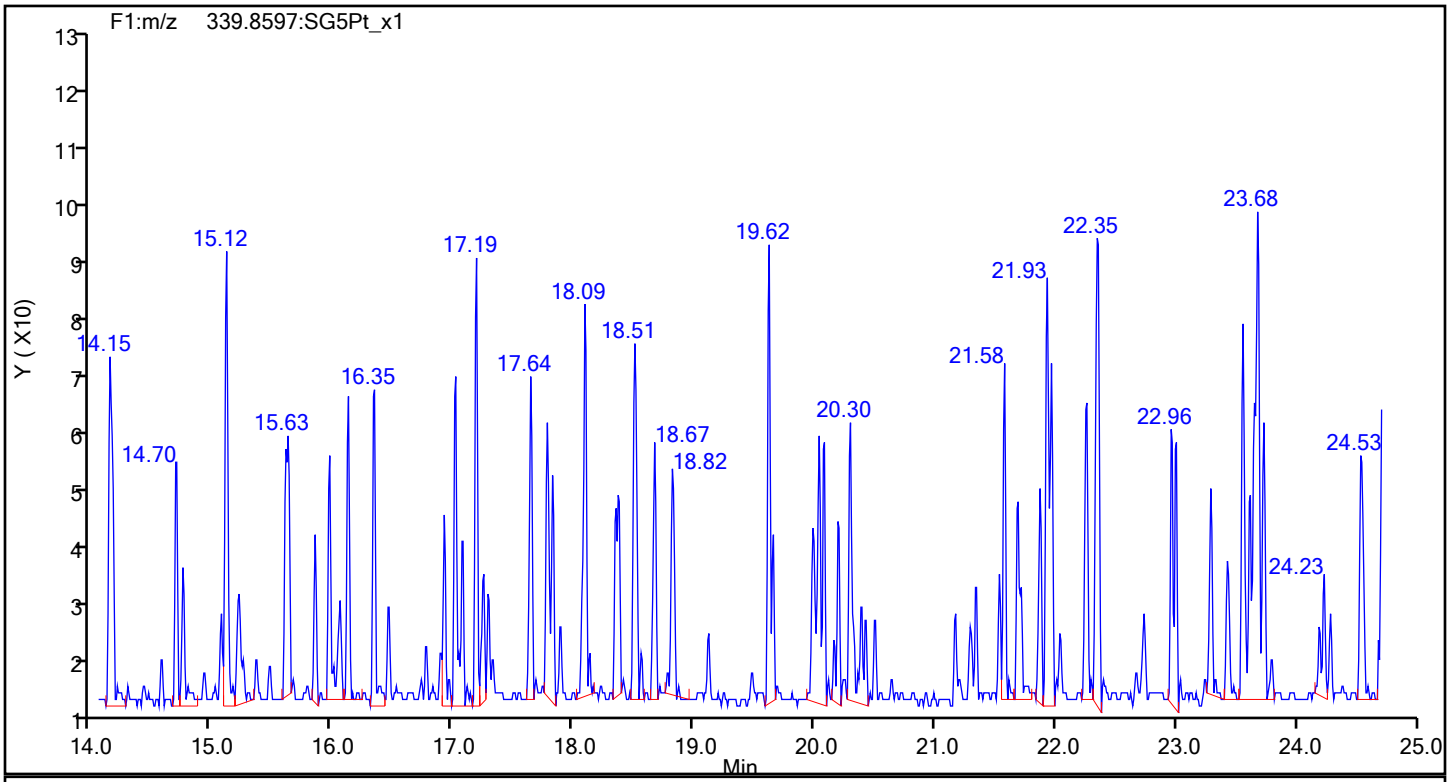
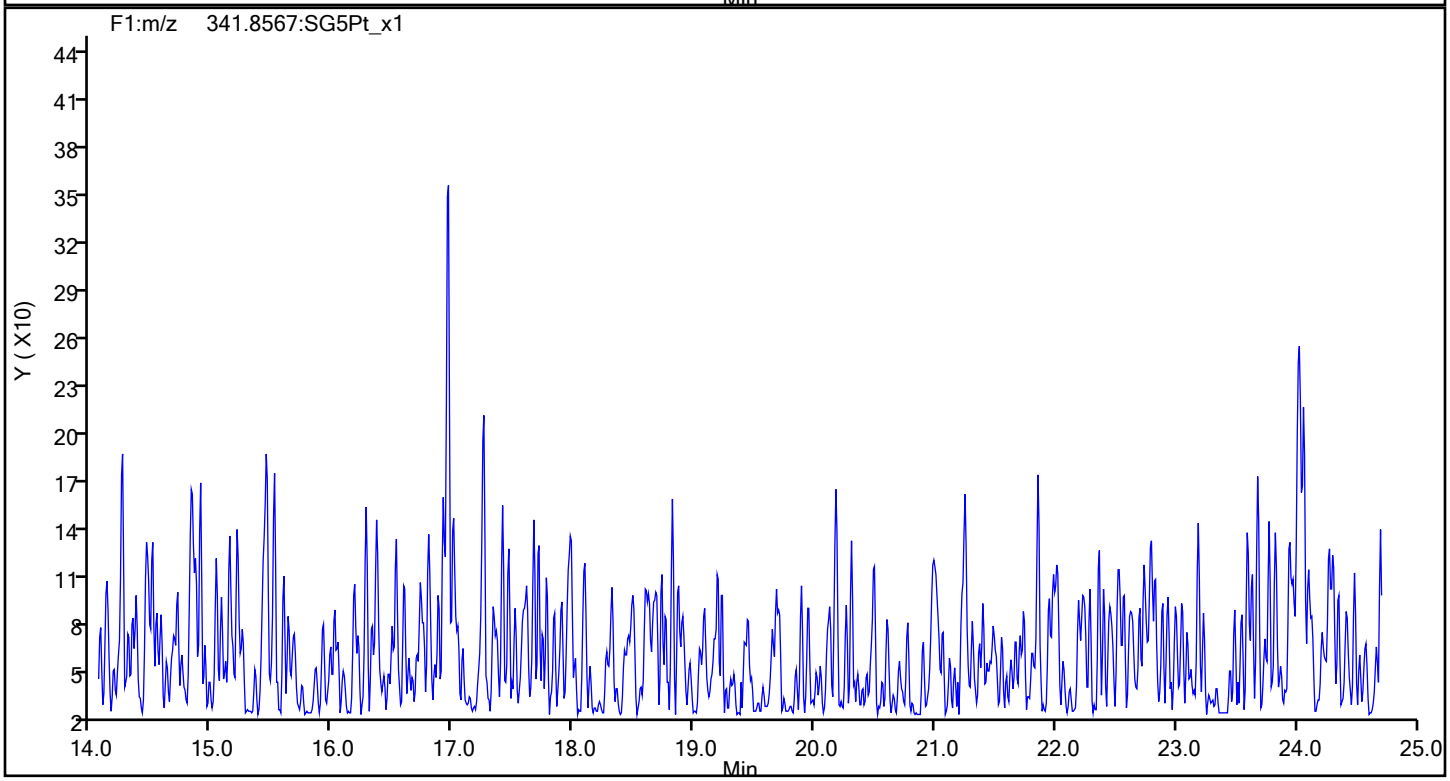
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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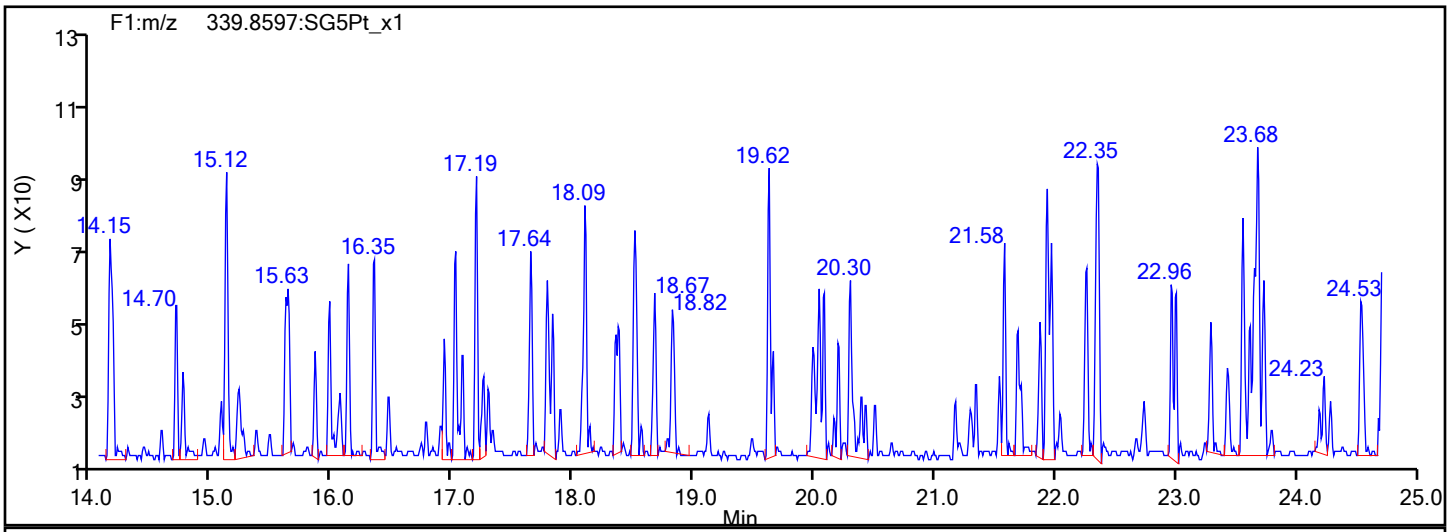
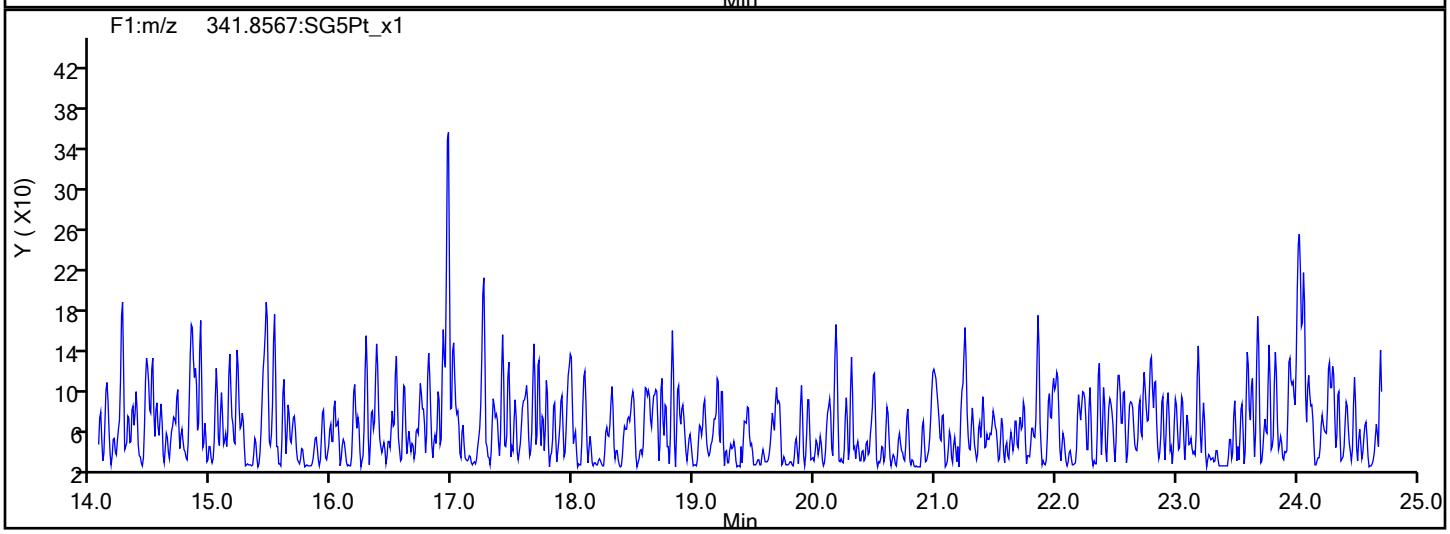
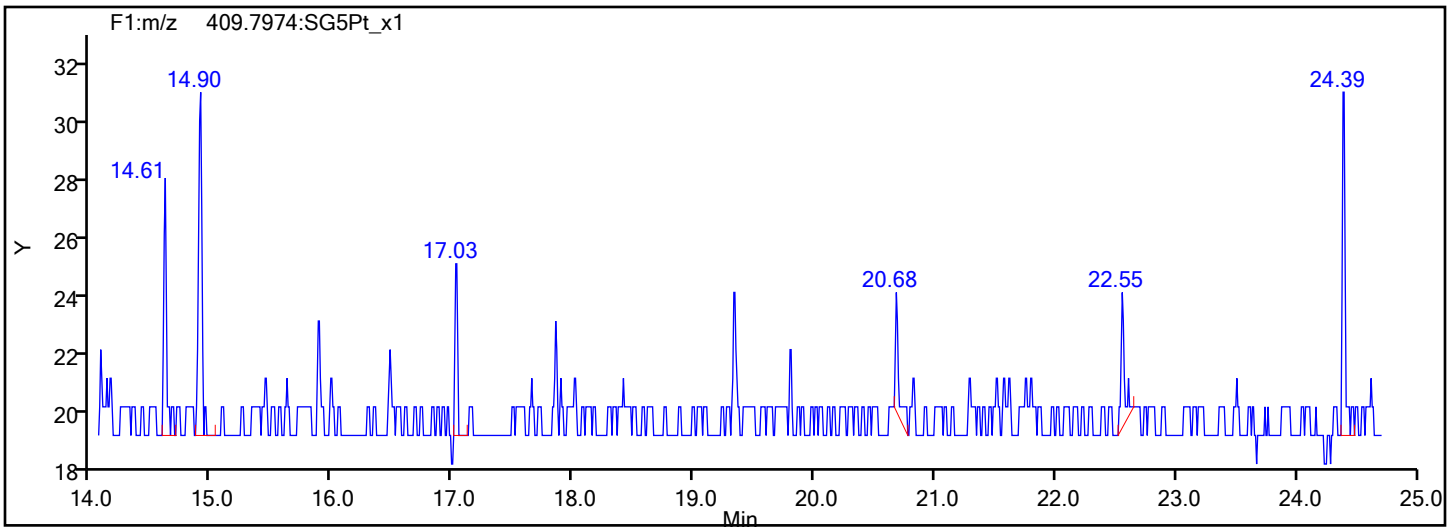
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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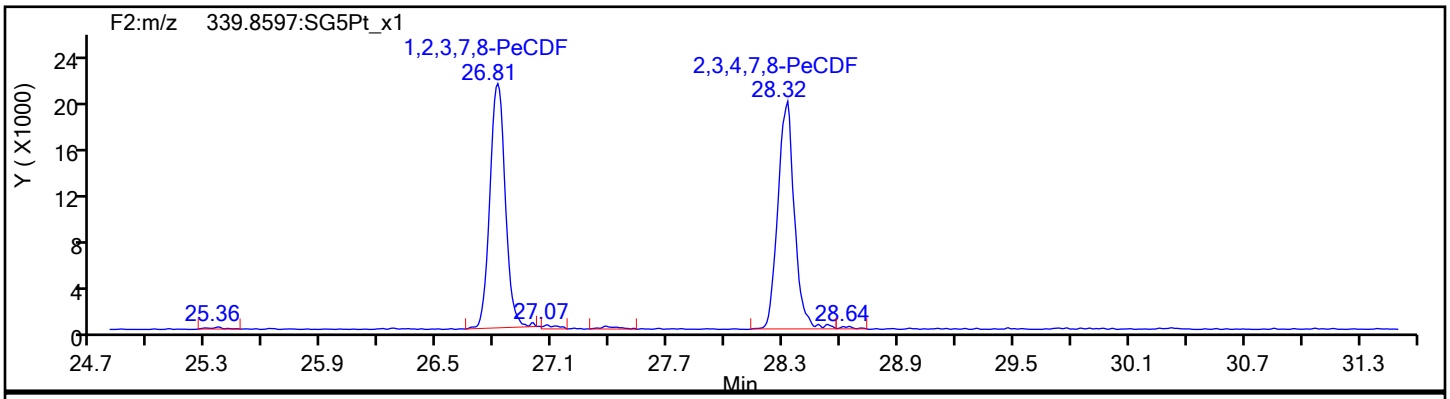
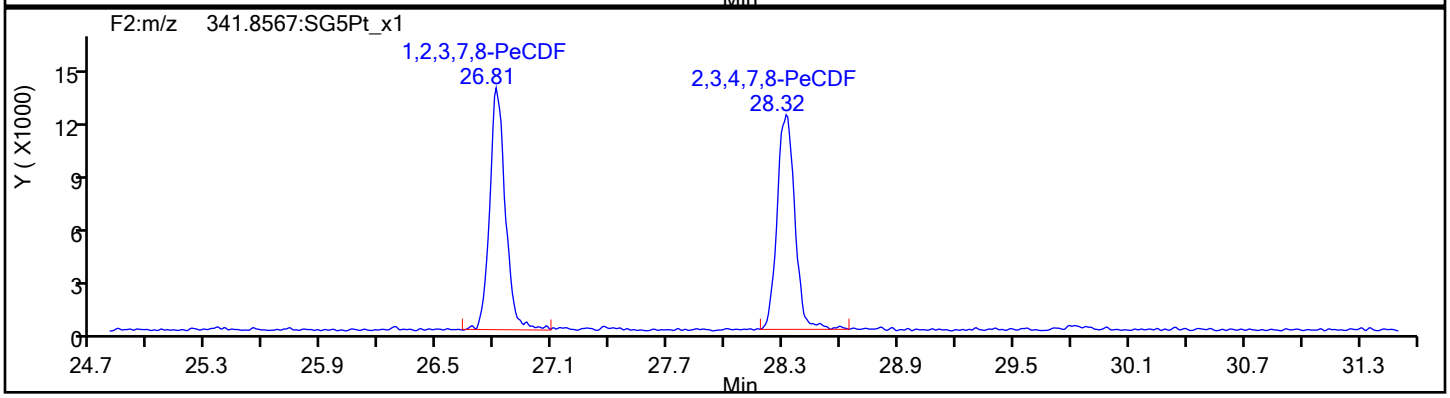
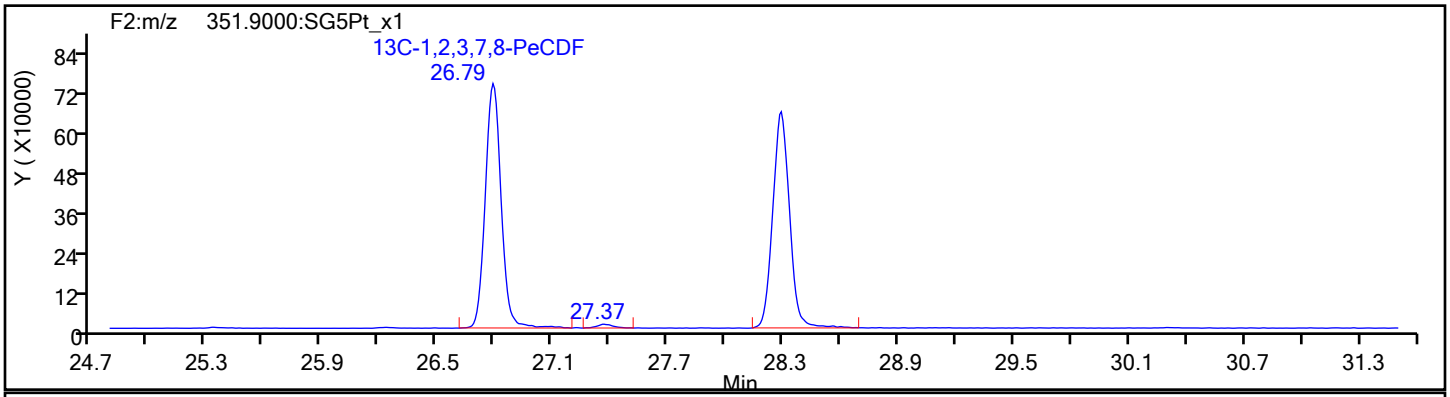
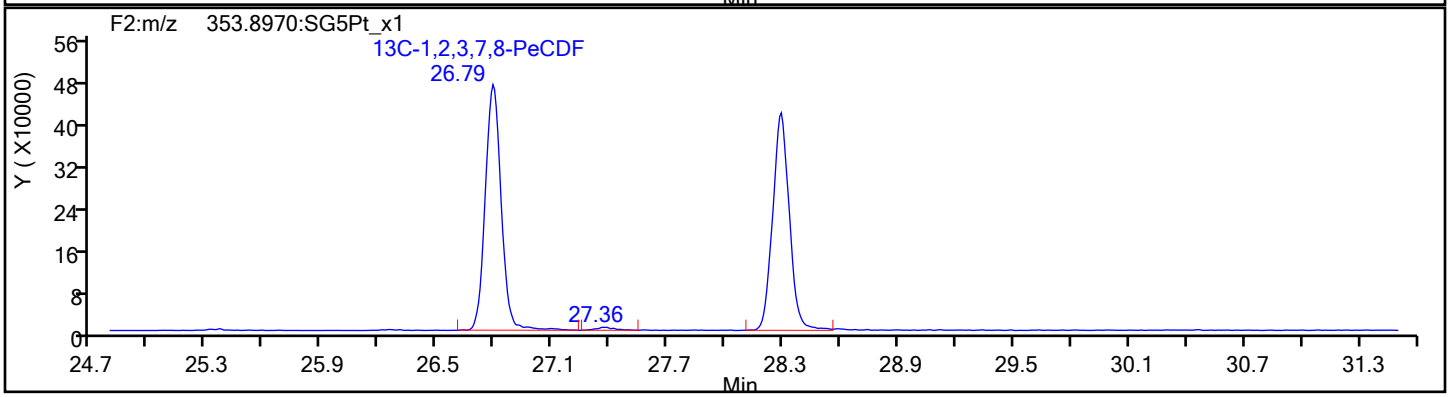
PeCDF





PeCDF Standards





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Eurofins TestAmerica, Sacramento

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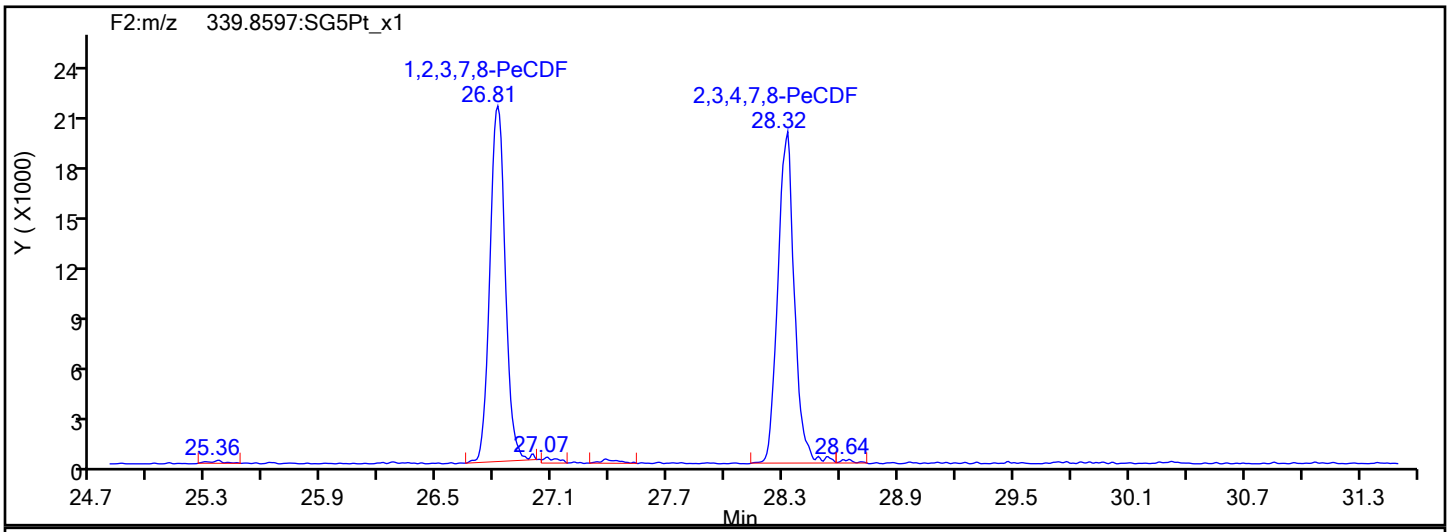
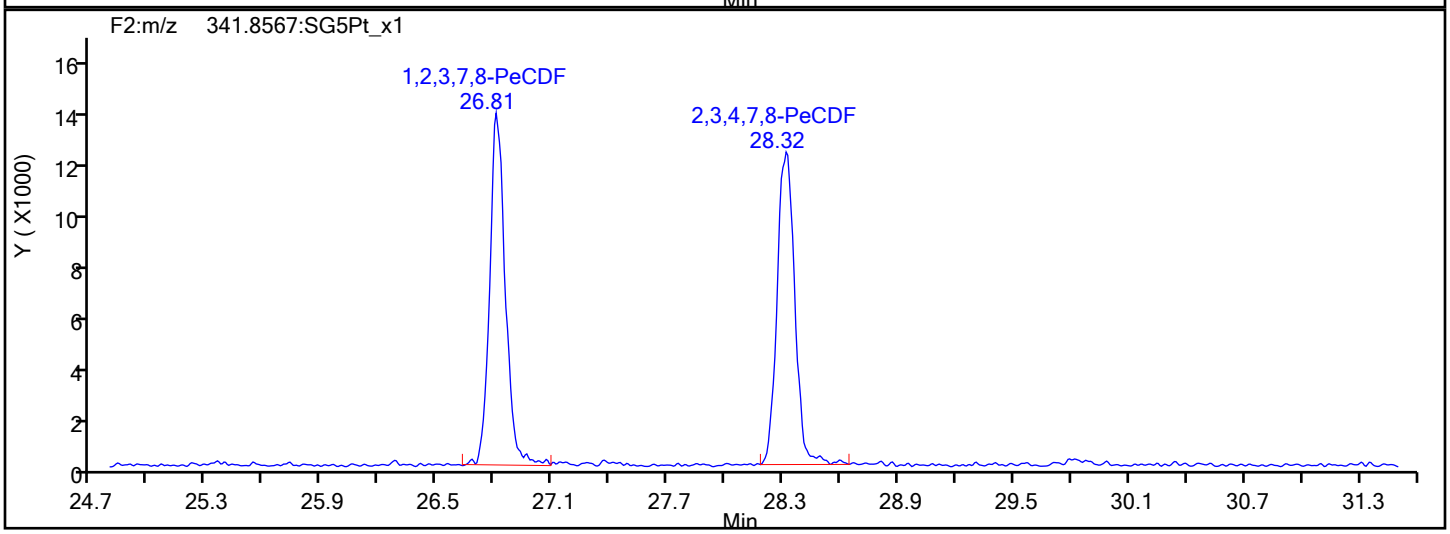
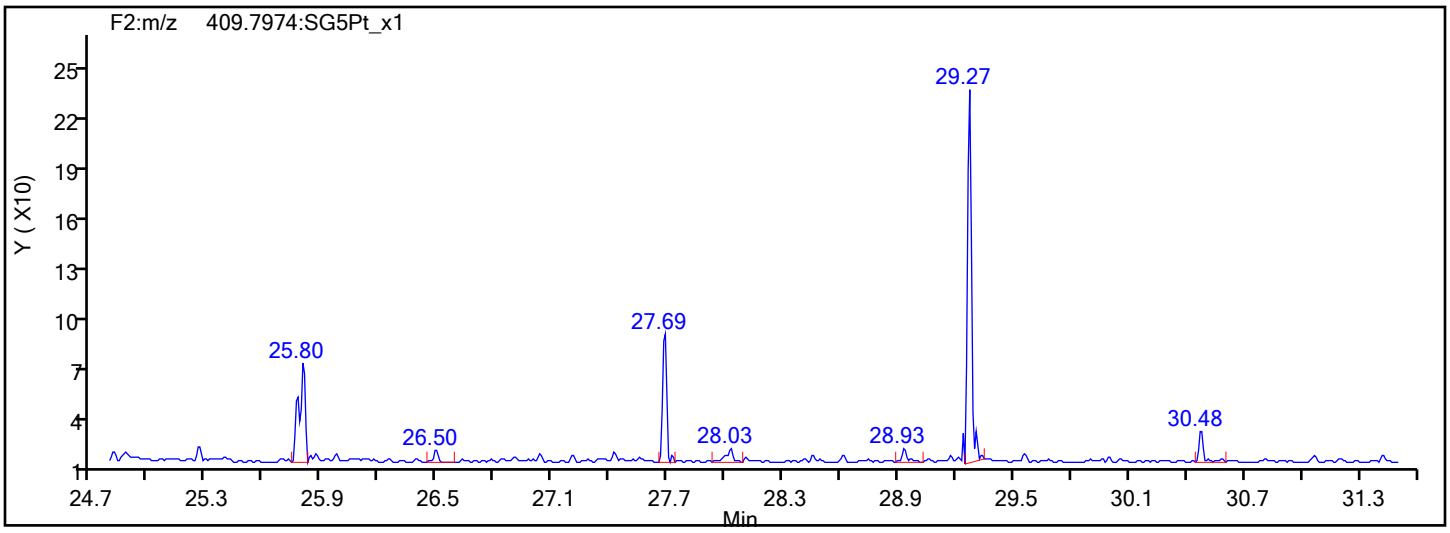




PeCDF Interference Mass



Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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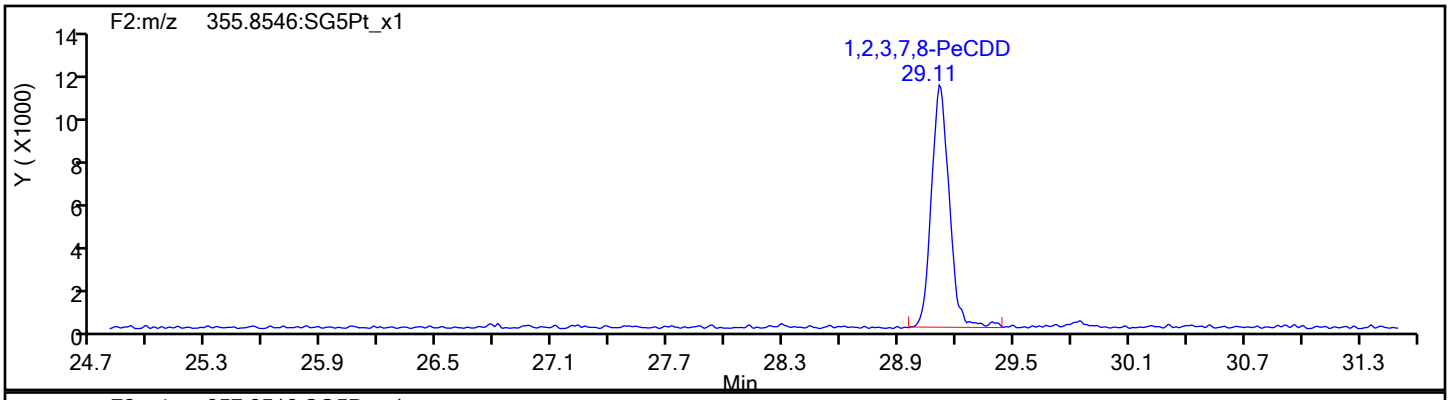
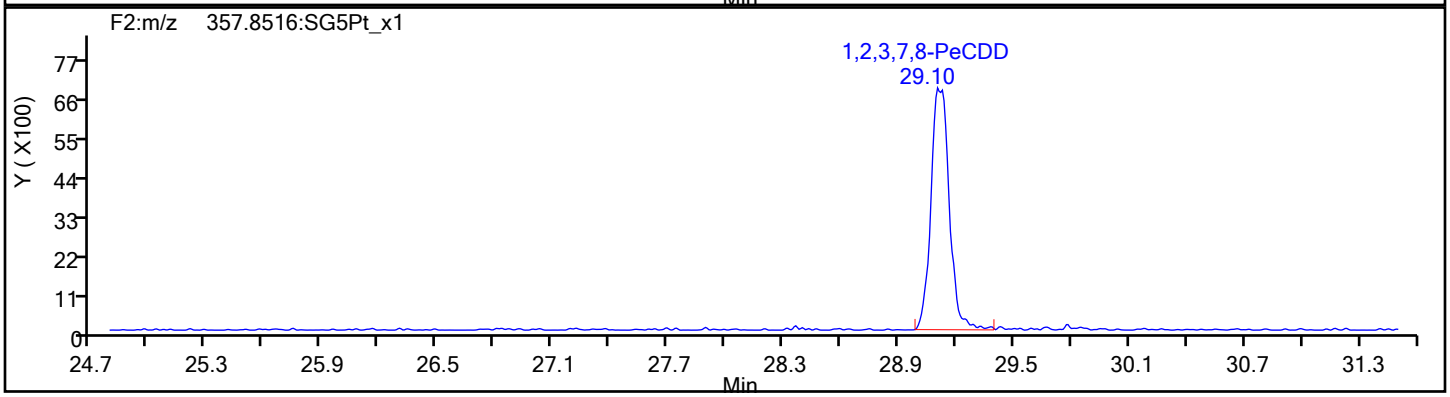
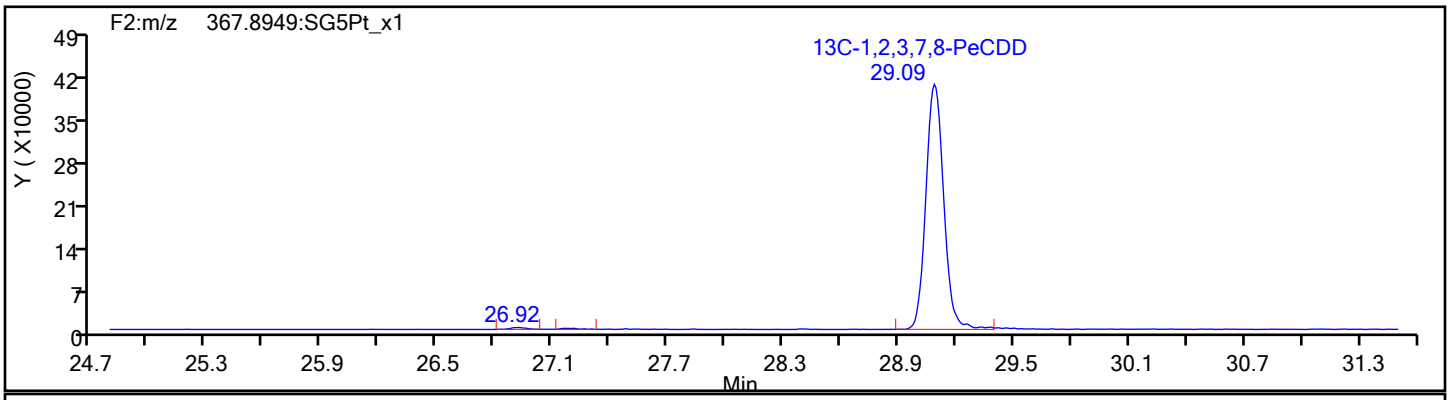
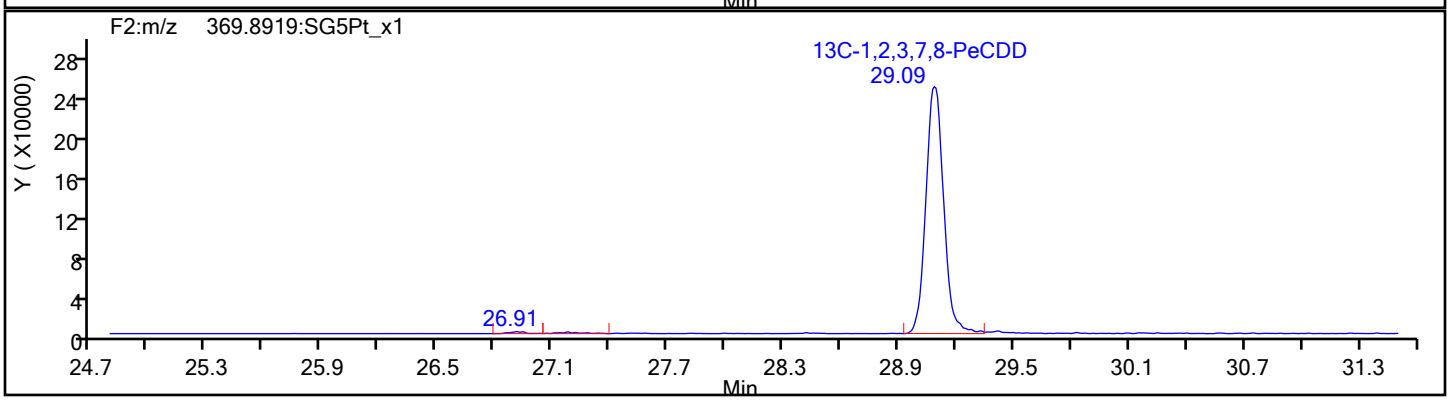
PeCDD





PeCDD Standards





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Eurofins TestAmerica, Sacramento

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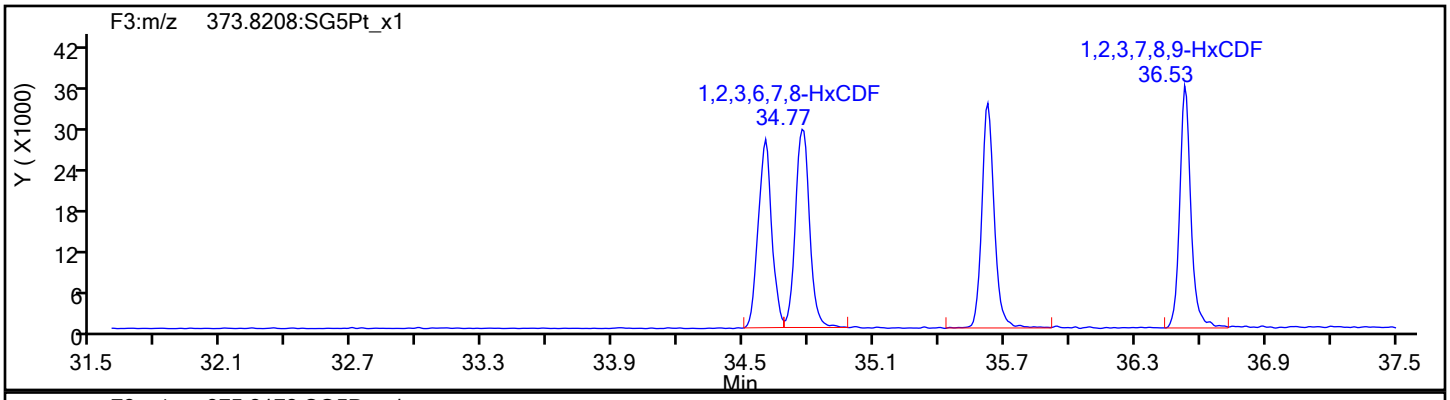
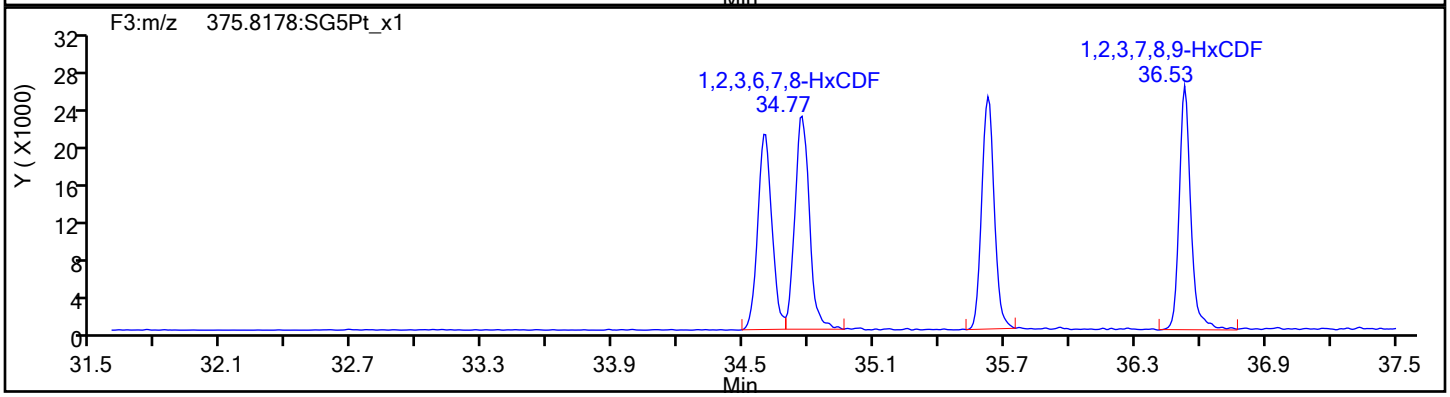
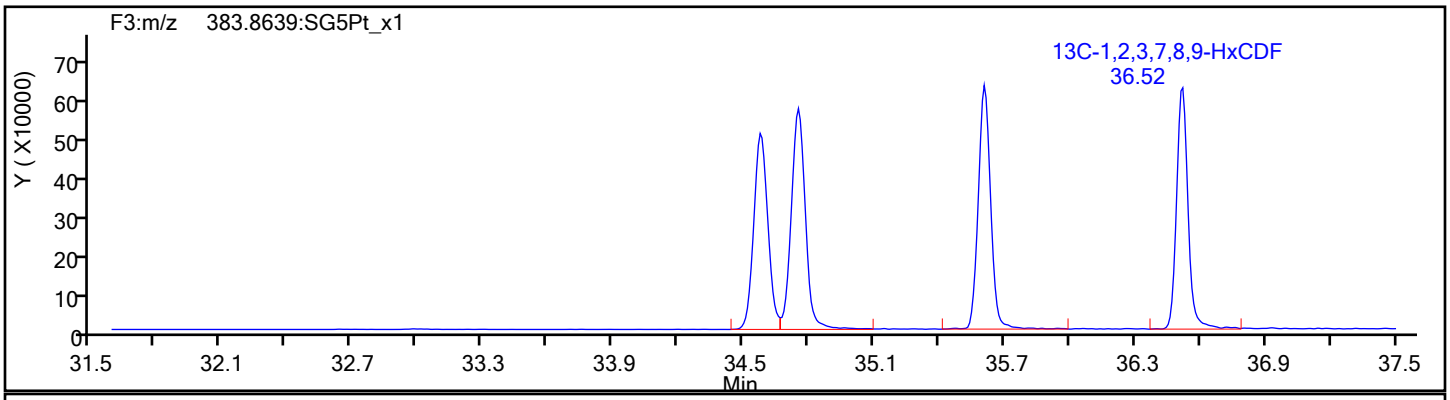
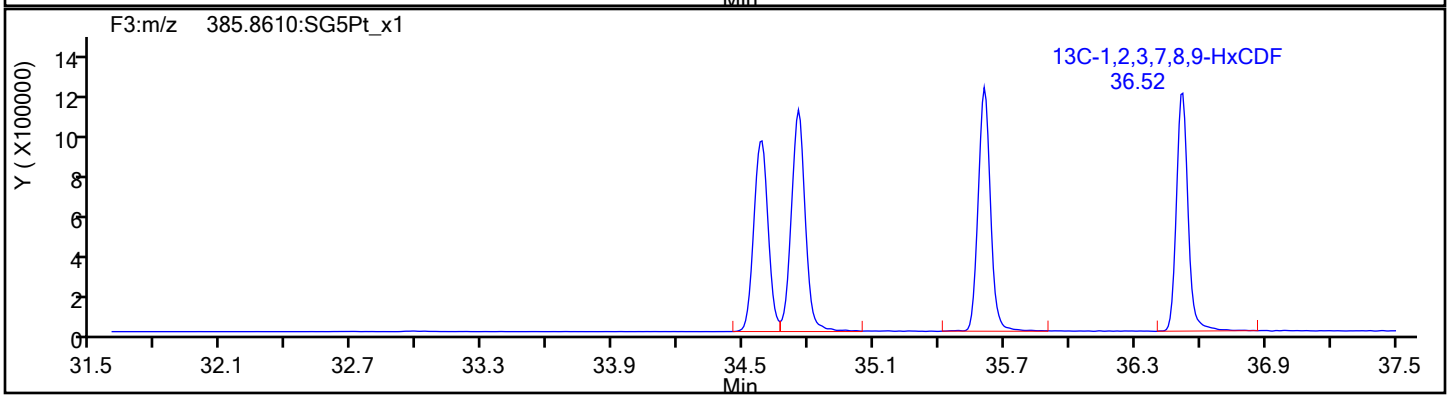




HxCDF Standards





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Eurofins TestAmerica, Sacramento

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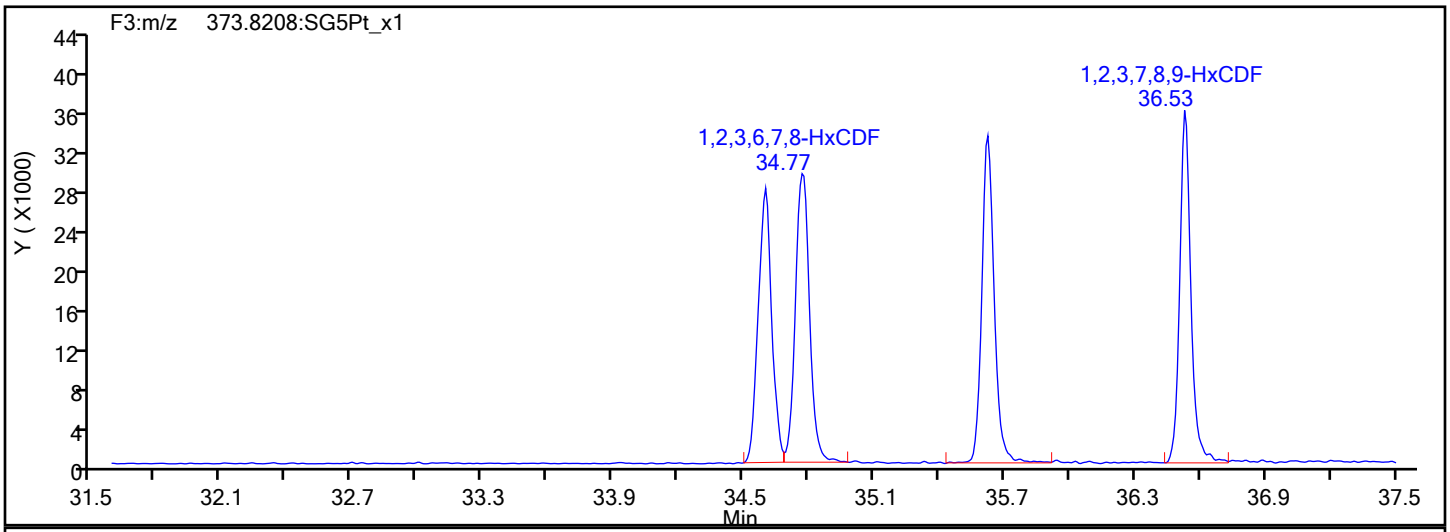
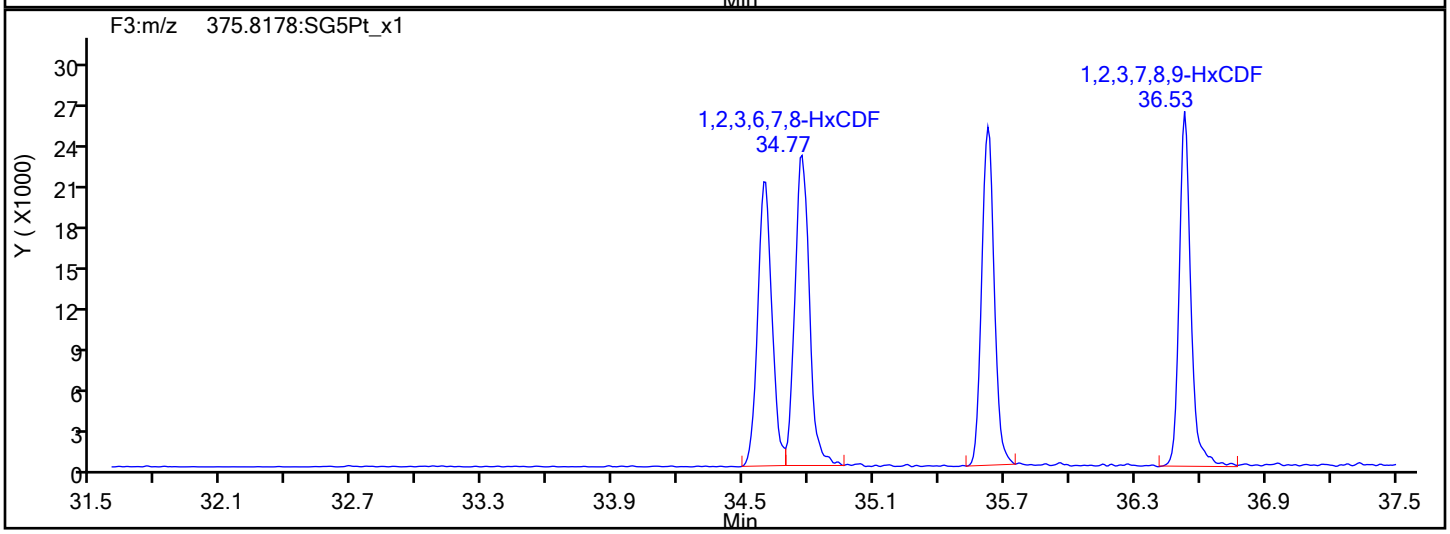
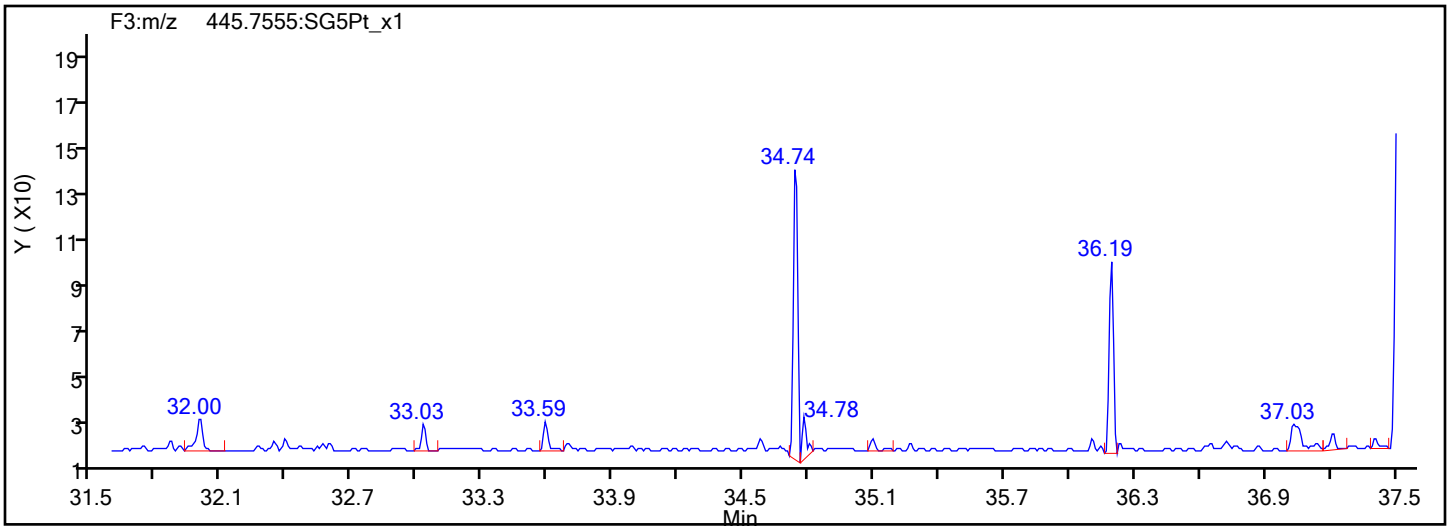




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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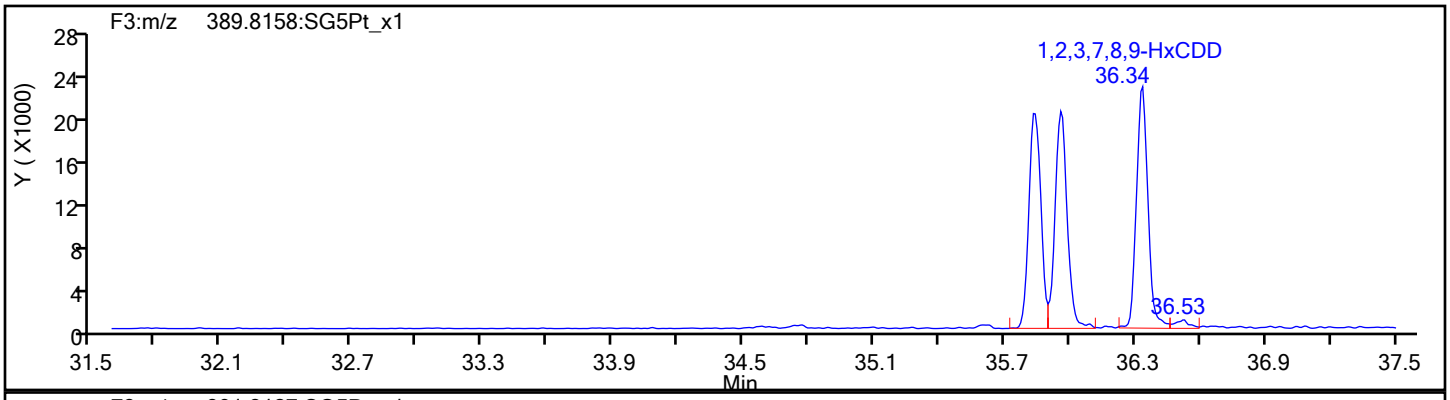
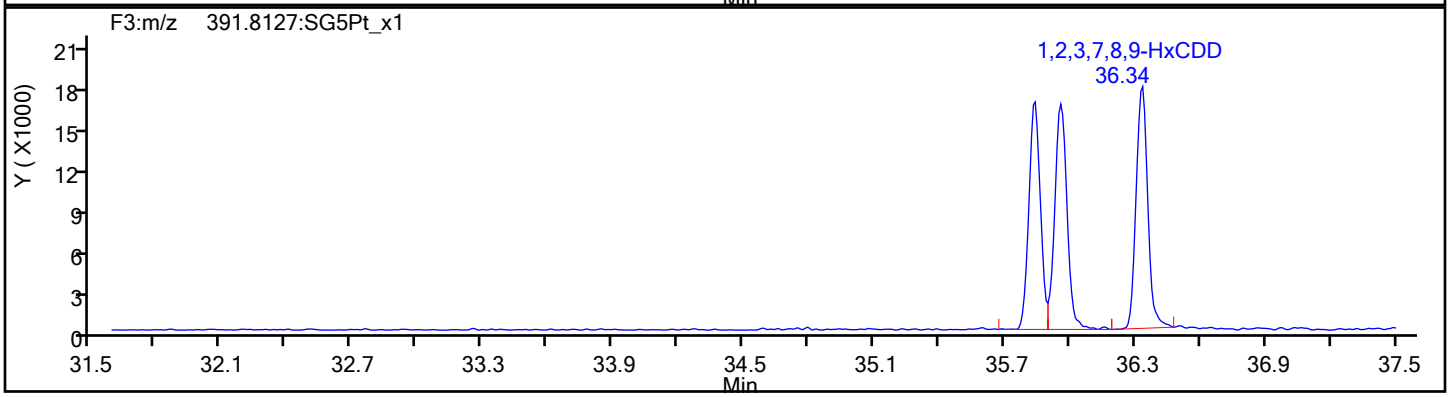
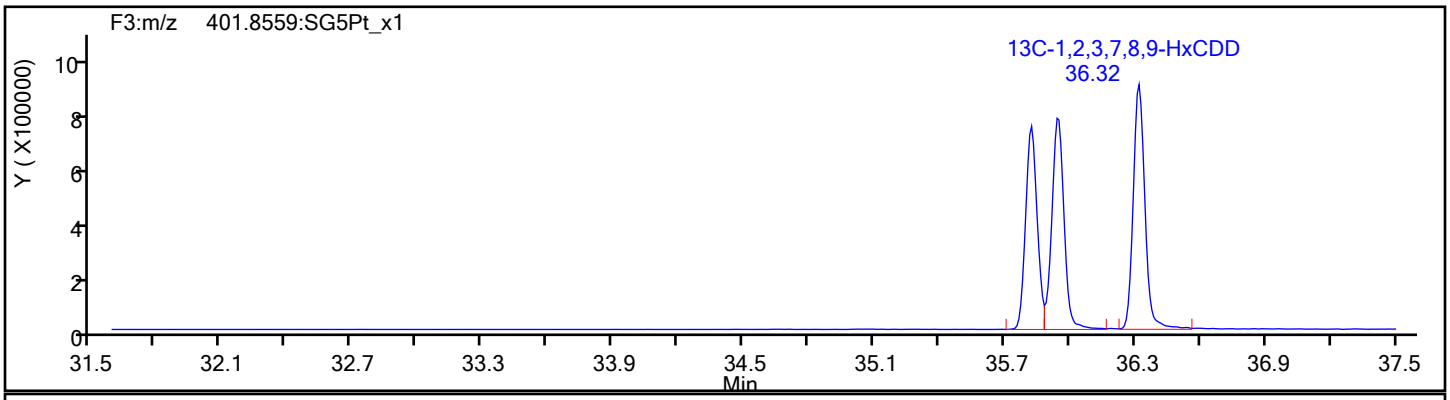
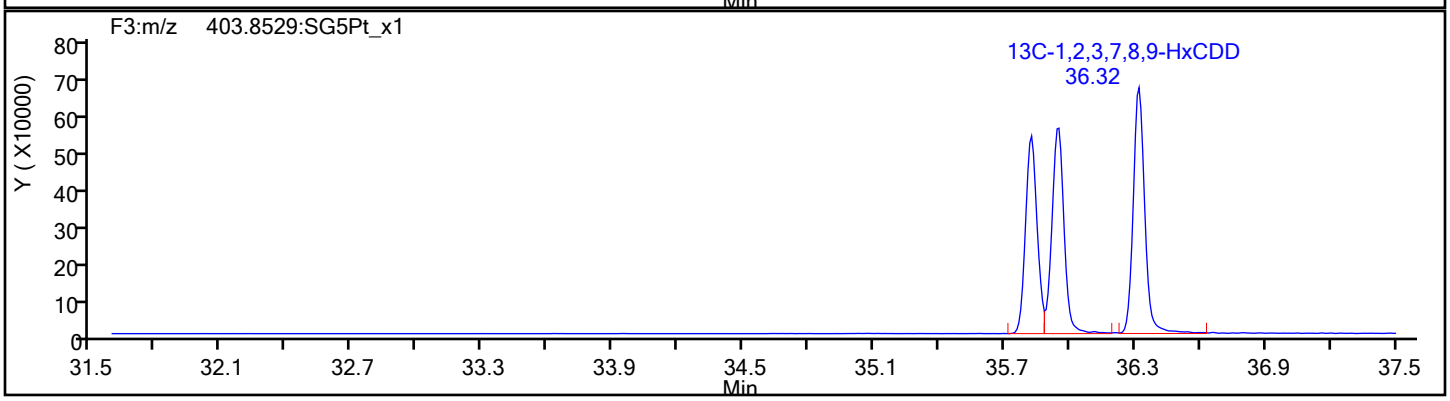
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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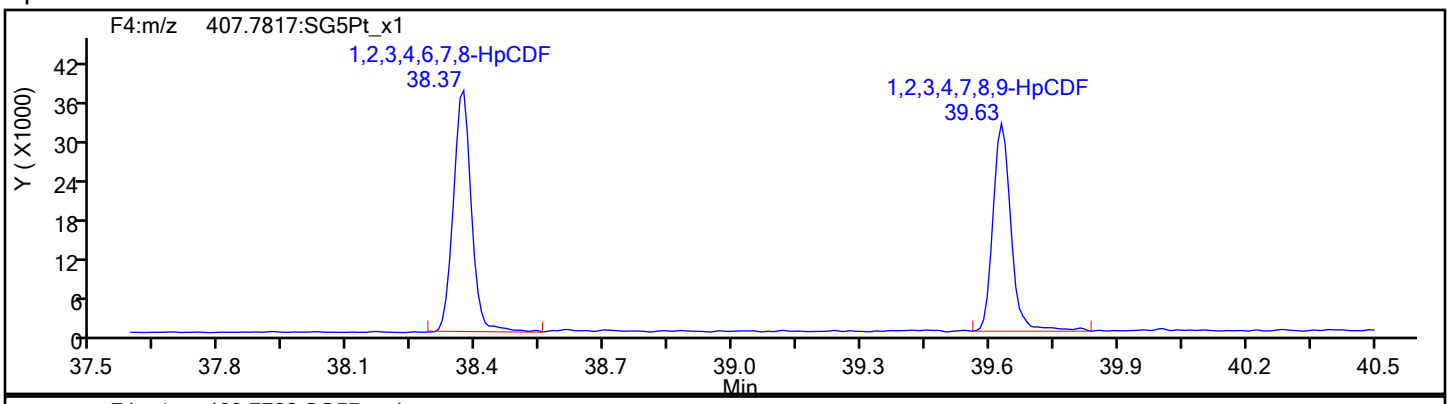
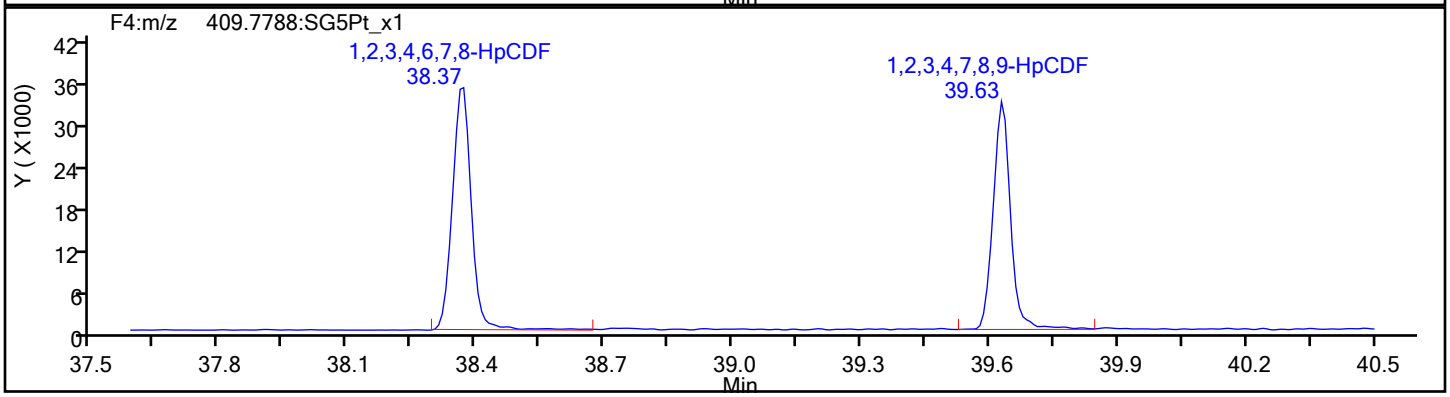
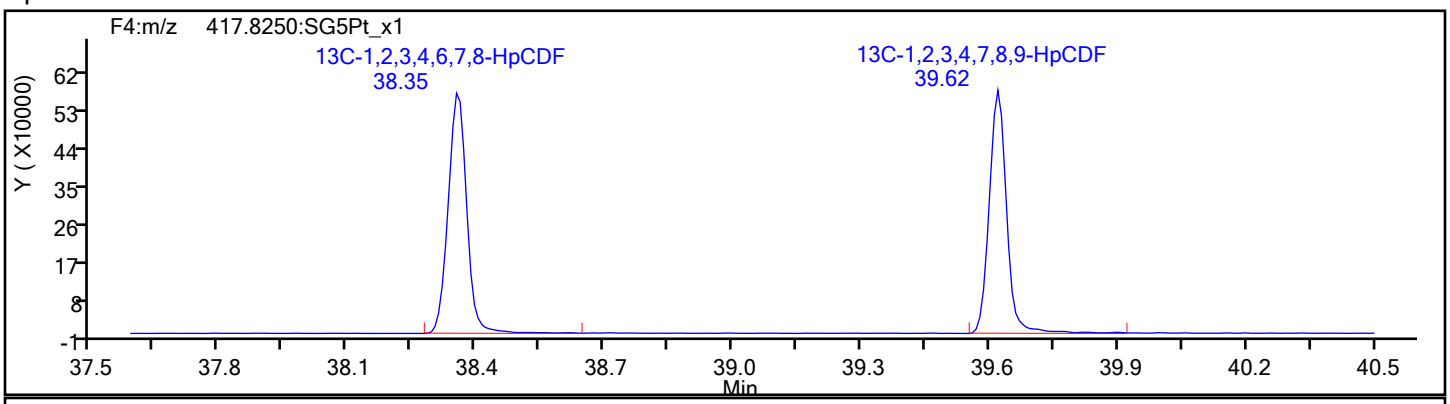
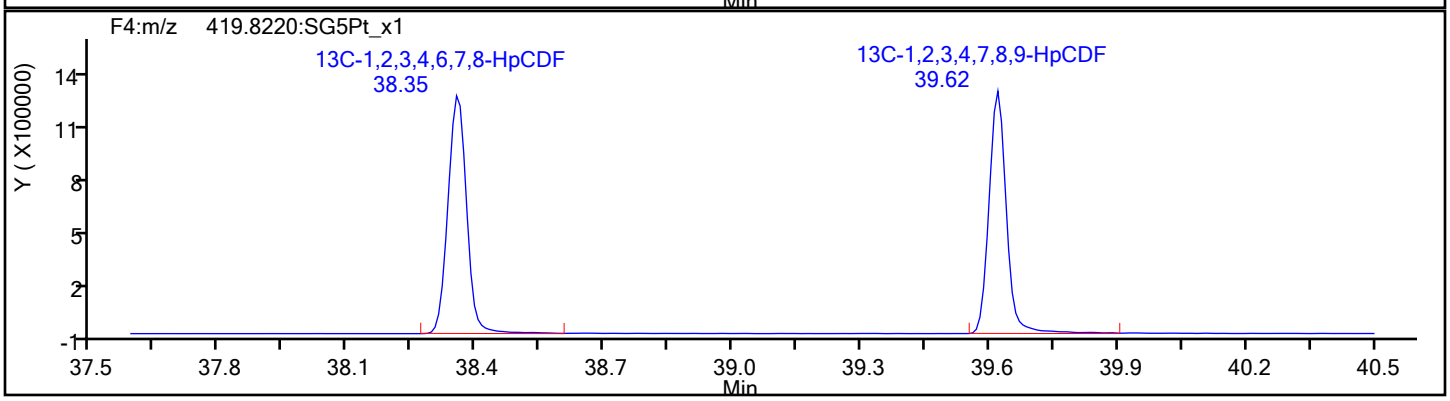
HpCDF





HpCDF Standards



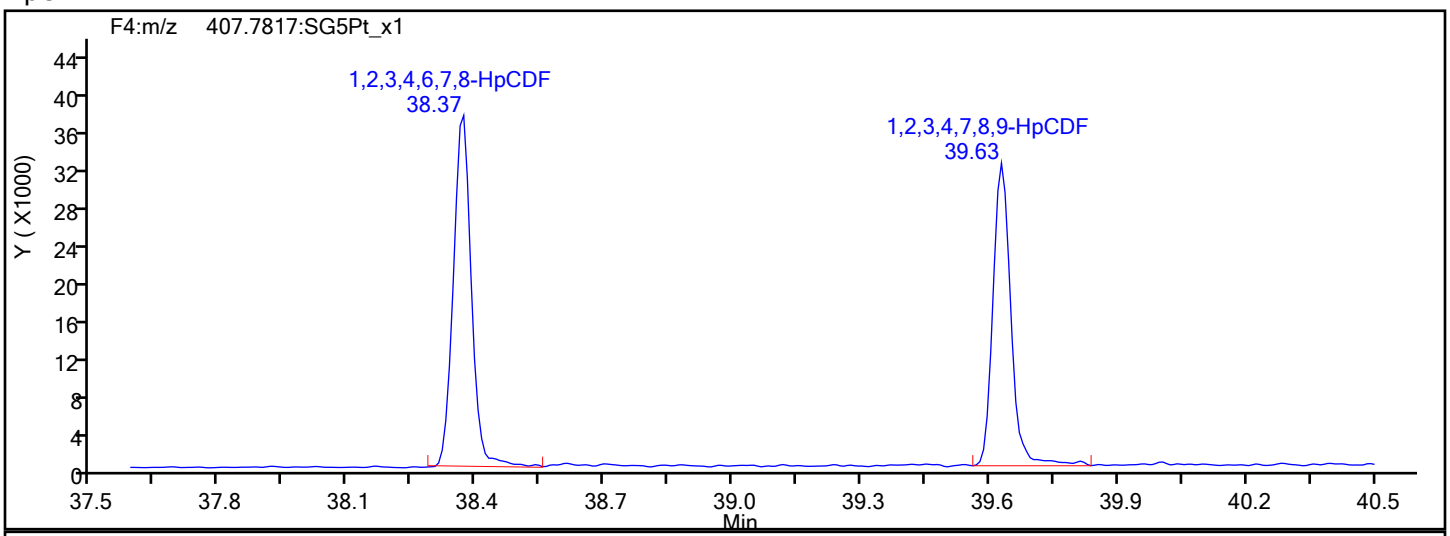


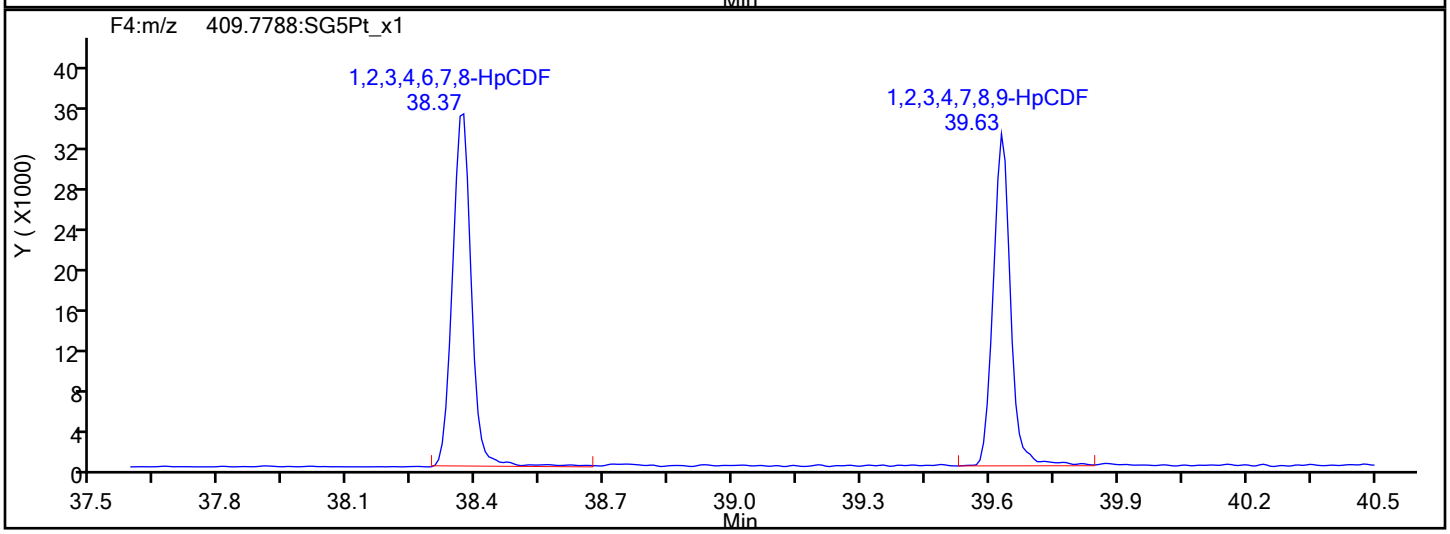
Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

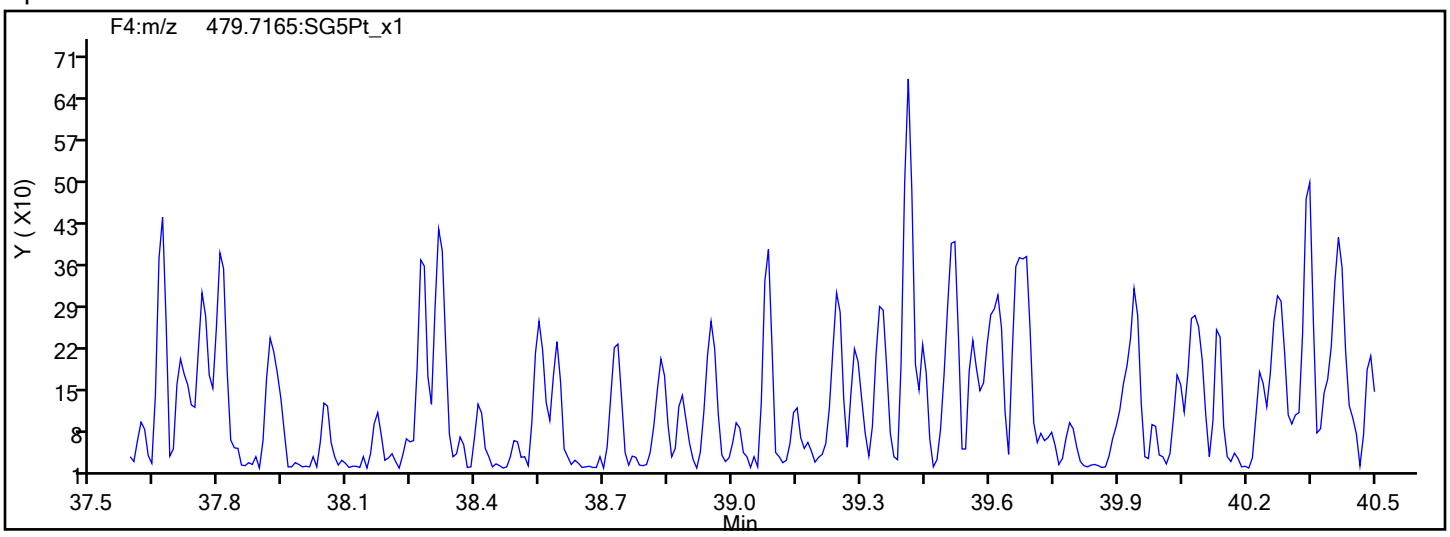
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

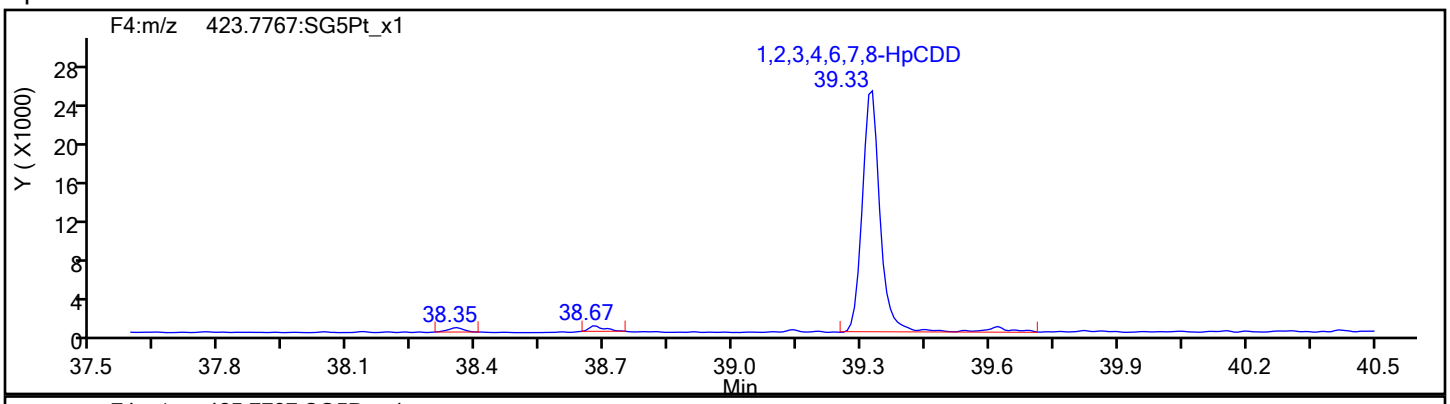


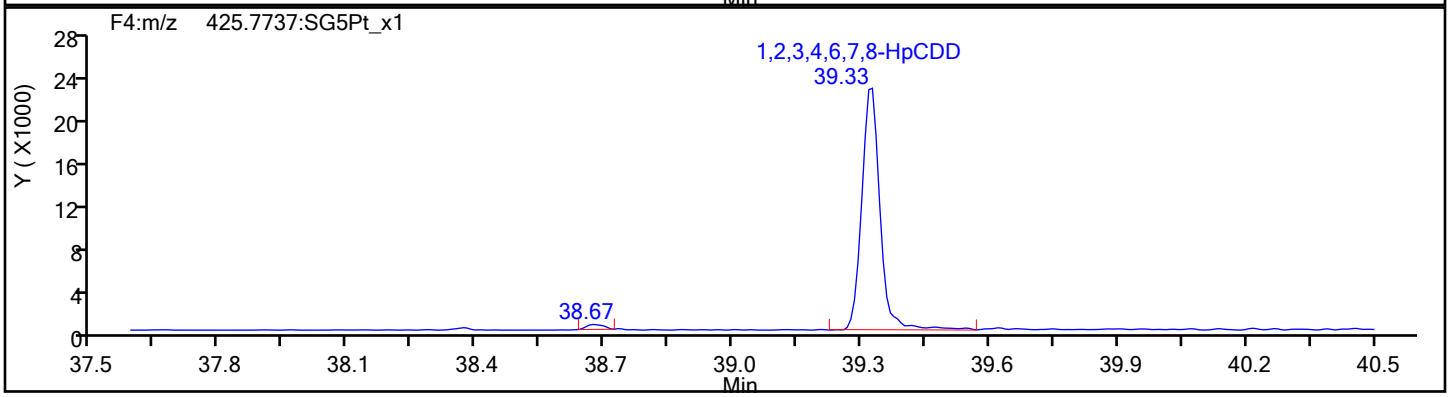
Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

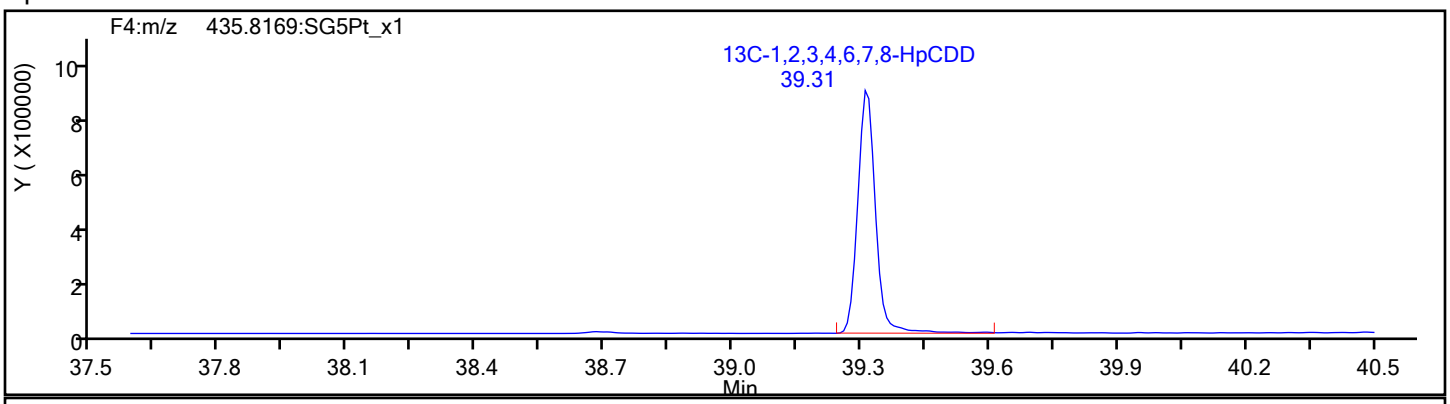
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

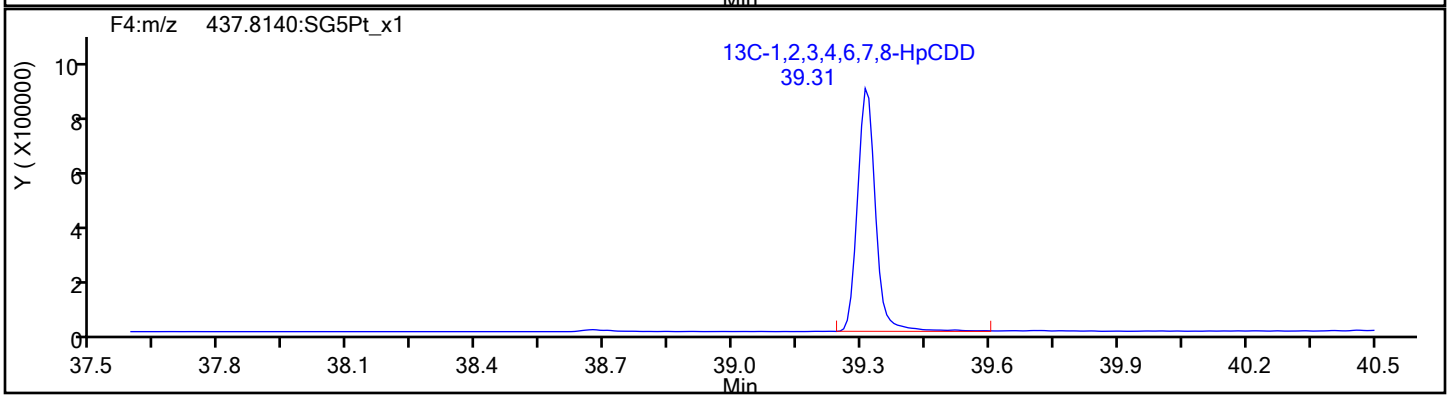
HpCDD





HpCDD Standards



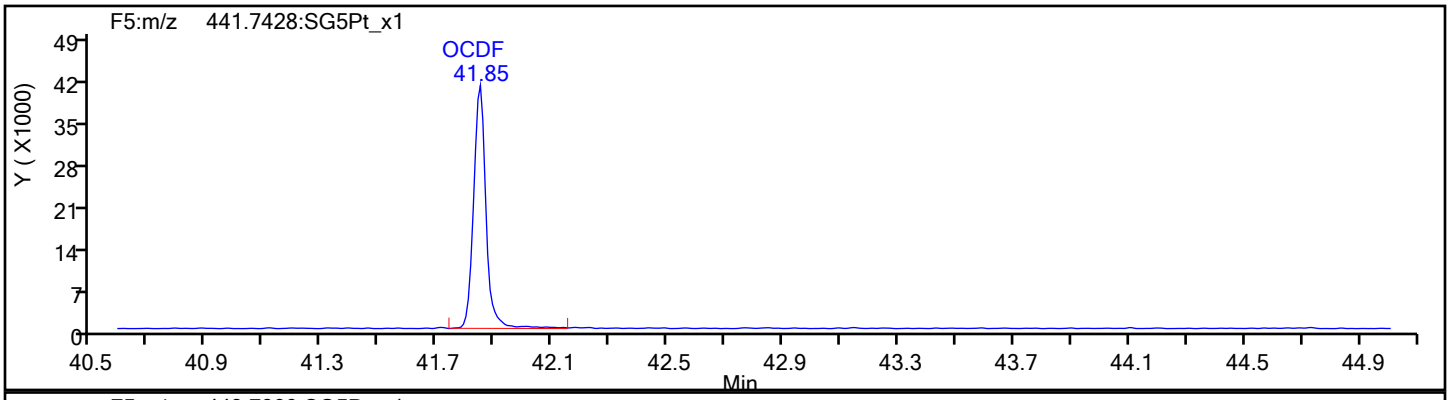


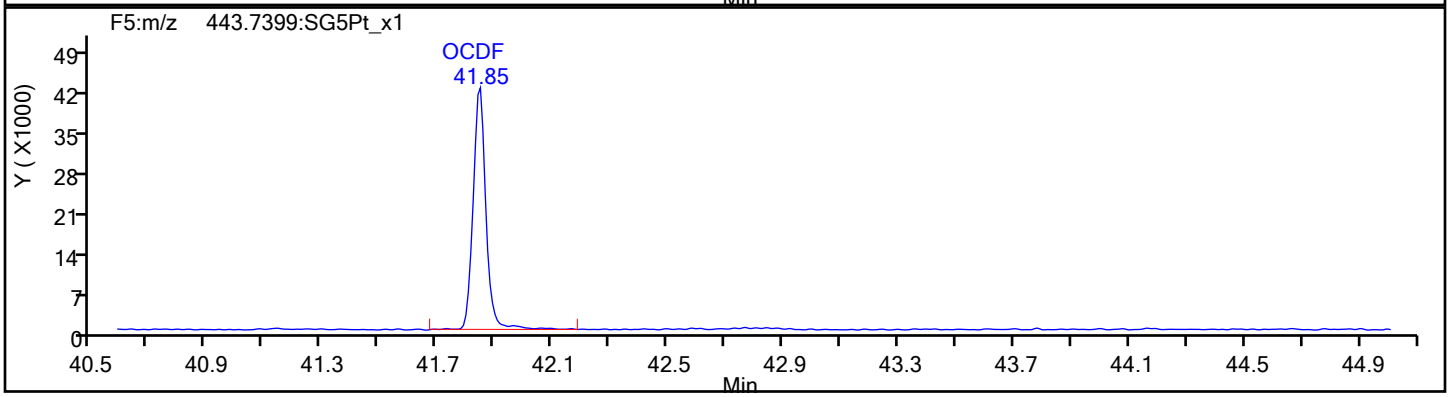
Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

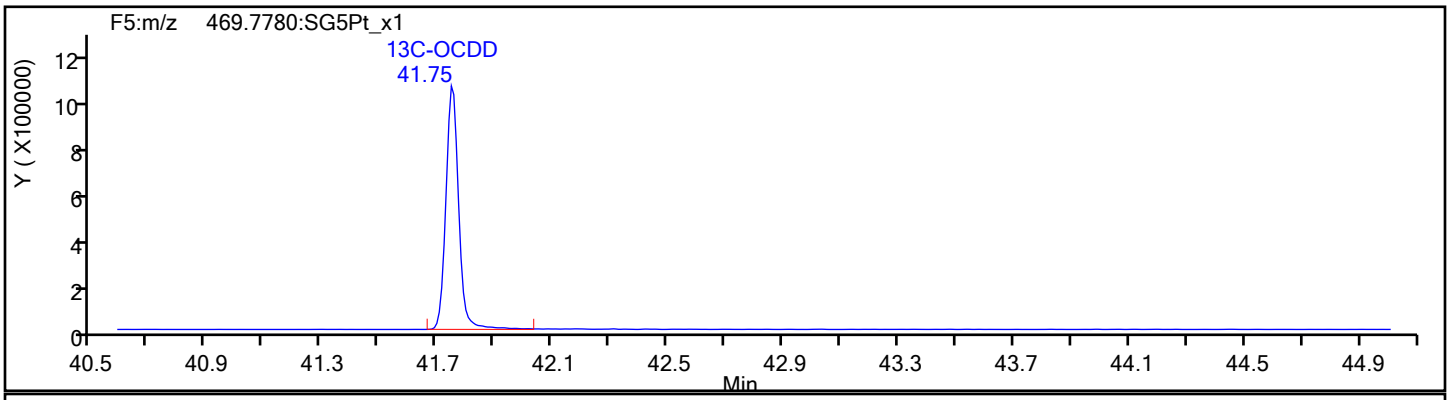
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

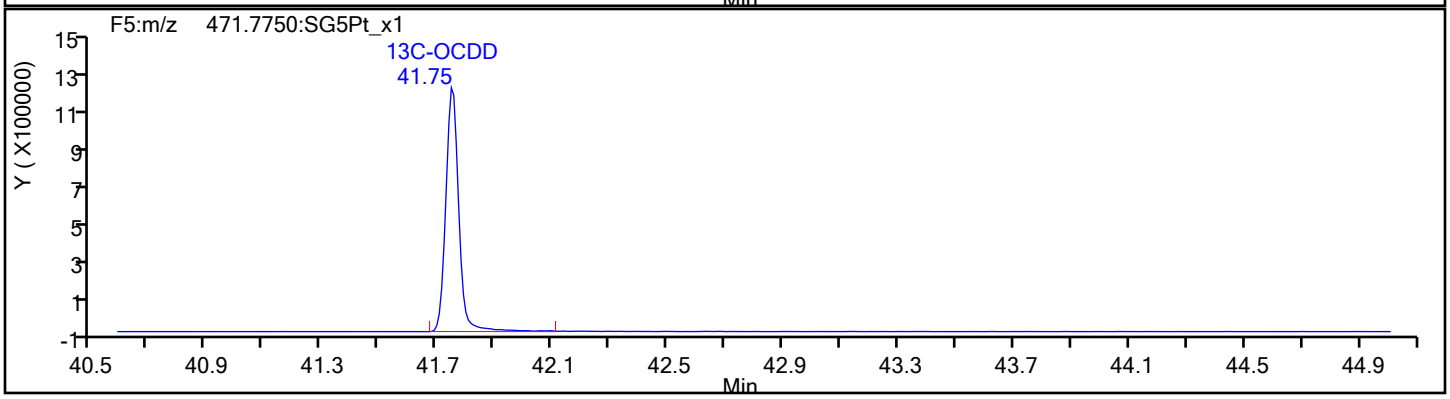
OCDF





OCDF Standards



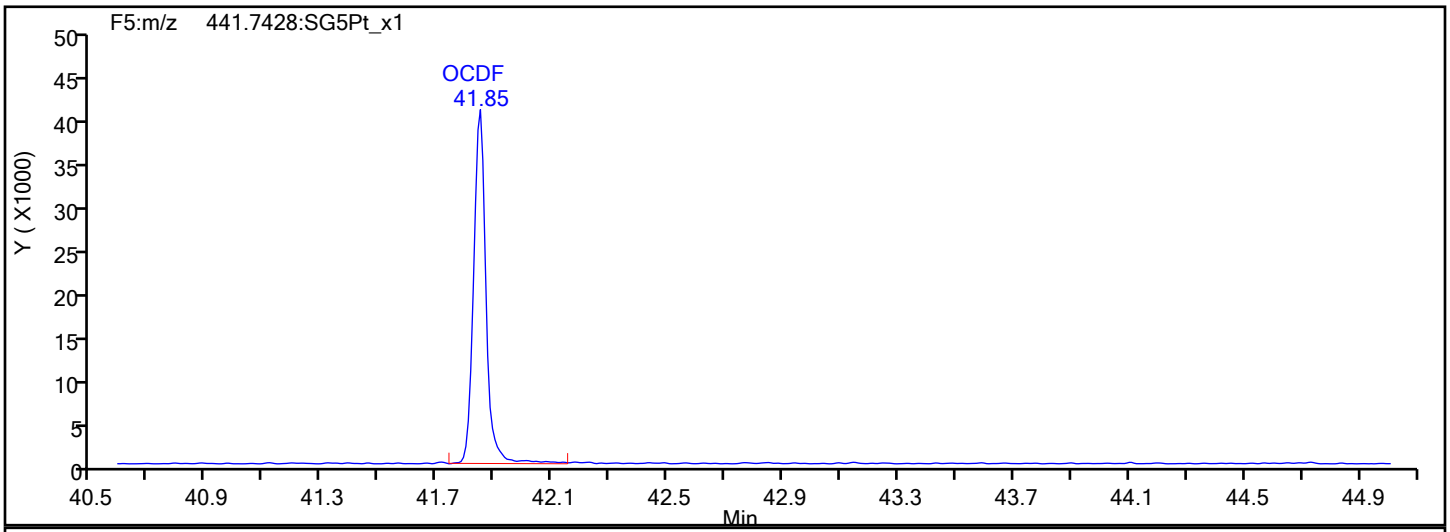


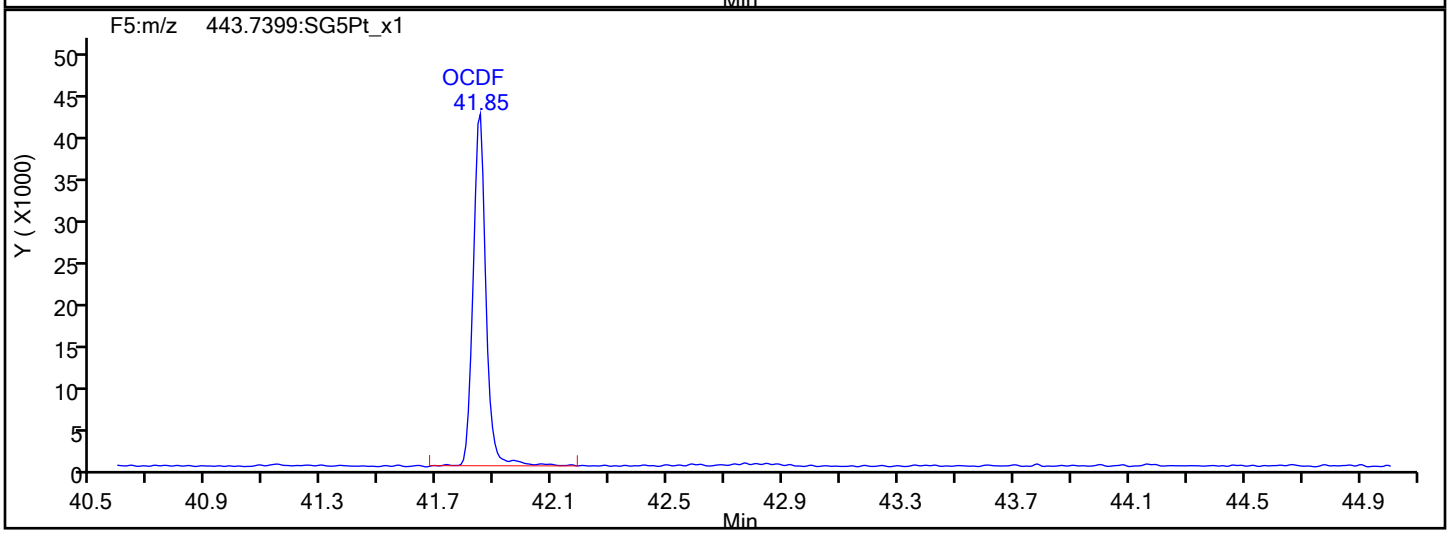
Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

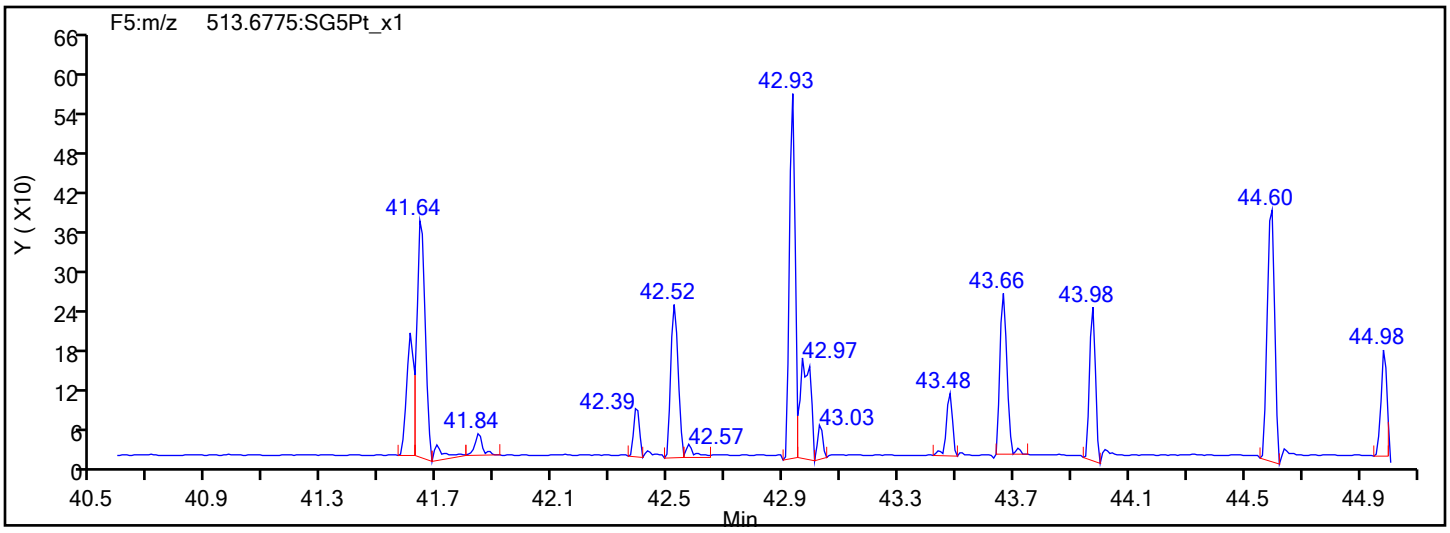
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

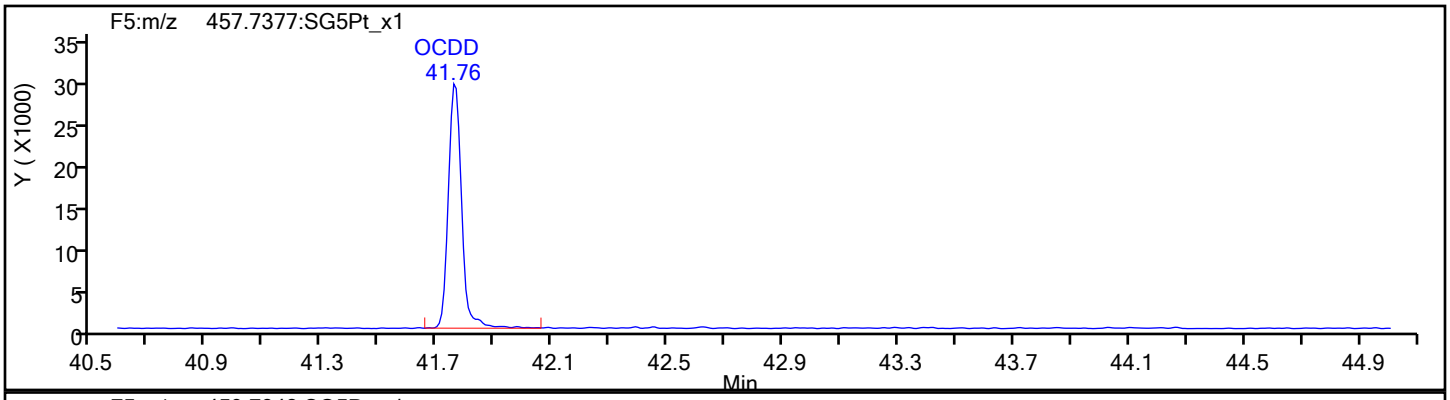


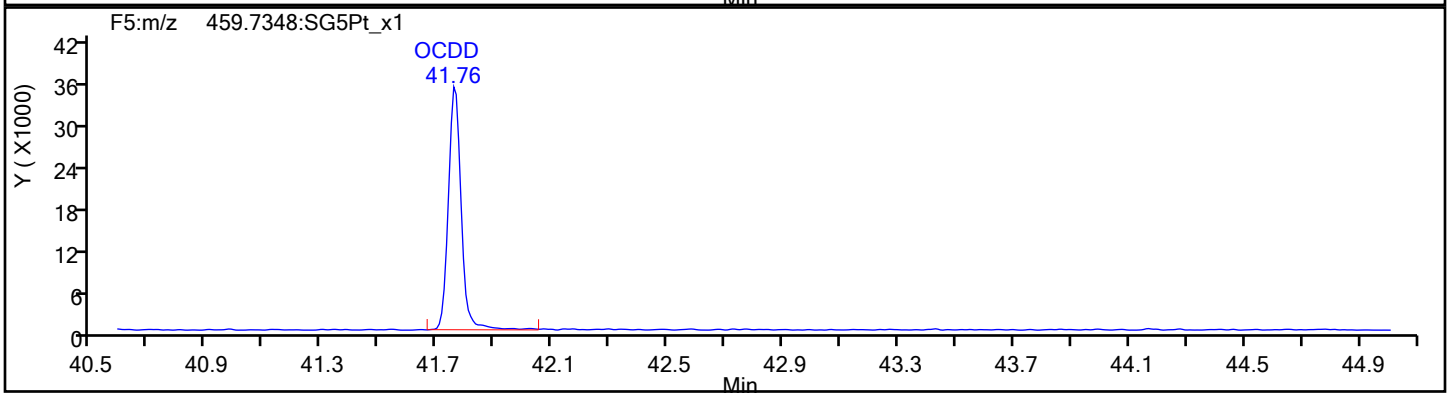
Report Date: 23-Oct-2019 11:52:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

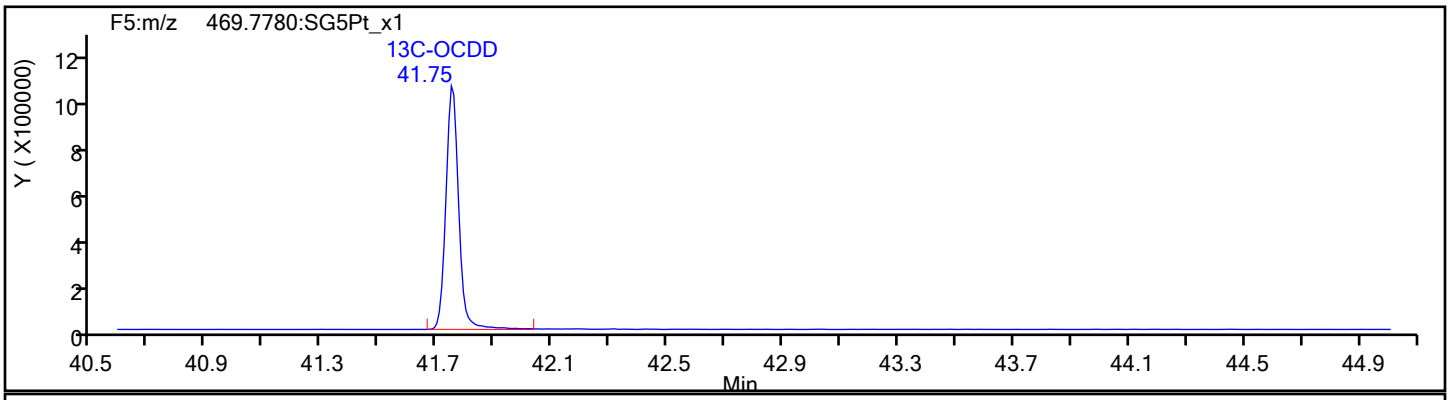
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

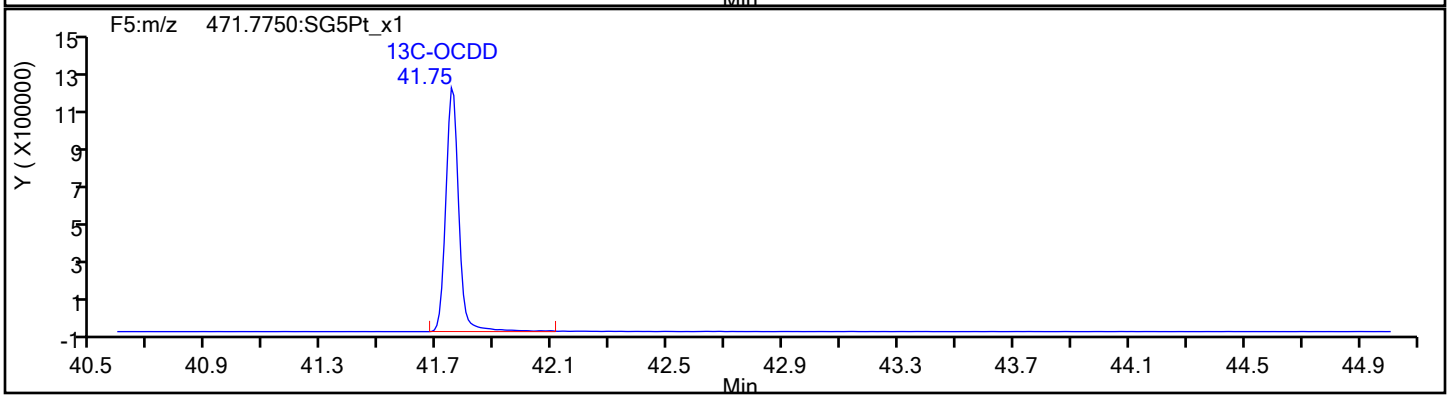
OCDD





OCDD Standards

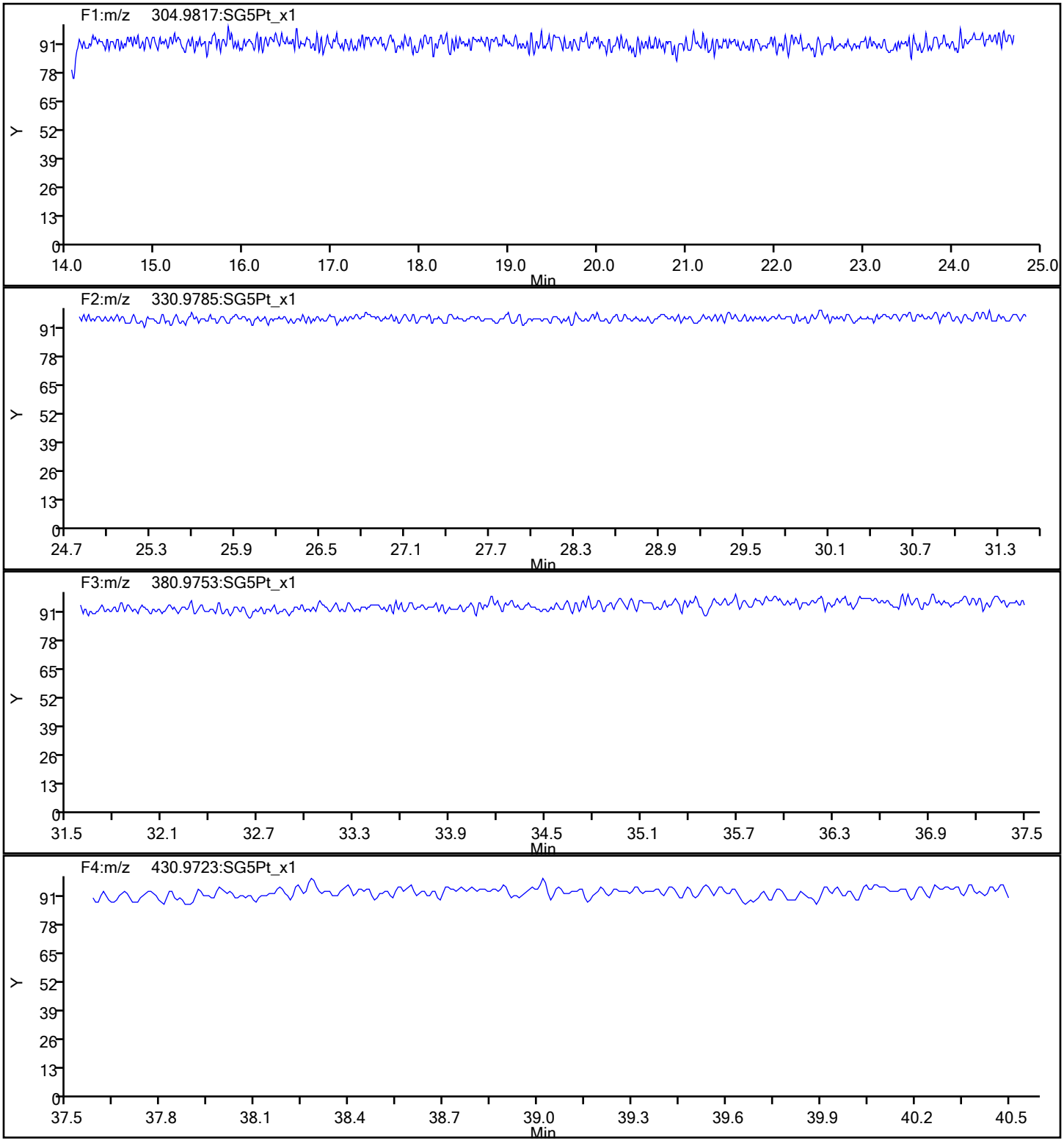




Report Date: 23-Oct-2019 11:53:00 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

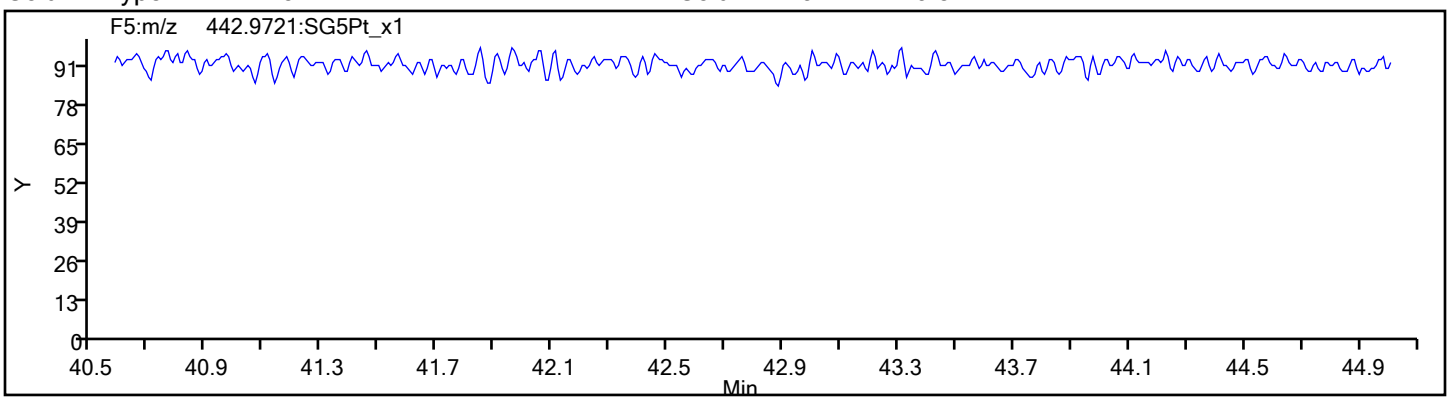
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 23-Oct-2019 11:53:00 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_4.d		
Injection Date:	18-Oct-2019 20:50:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 18-Oct-2019 21:38:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:06 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:55:21

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.738	5240455	0.81	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.769	8488555	0.81	1.6096	100.6	100.6	0.2243	0.2243	101	
2,3,7,8-TCDF	19.795	227226	0.83	1.2332	2.171	2.171	0.0166	0.0166	109	
S Total TCDF					2.171	2.171	0.0166	0.0166		
D 13C-2,3,7,8-TCDD	21.101	5074828	0.79	0.9984	97.0	97.0	0.1653	0.1653	97.00	
$ 37Cl4-2,3,7,8-TCDD	21.127	150303		1.4510	1.977	1.977	0.008723	0.008723	98.84	
2,3,7,8-TCDD	21.144	132527	0.80	1.1988	2.178	2.178	0.0341	0.0341	109	
S Total TCDD					2.178	2.178	0.0341	0.0341		
D 13C-1,2,3,7,8-PeCDF	26.806	7003224	1.60	1.3678	97.7	97.7	0.4755	0.4755	97.70	
1,2,3,7,8-PeCDF	26.831	915403	1.62	1.1689	11.2	11.2	0.0604	0.0604	112	
D 13C-2,3,4,7,8-PeCDF	28.307	6659419	1.60	1.3045	97.4	97.4	0.4986	0.4986	97.42	
2,3,4,7,8-PeCDF	28.324	863257	1.59	1.1861	10.9	10.9	0.0667	0.0667	109	
S Total PeCDF					22.1	22.1	0.0636	0.0636		
D 13C-1,2,3,7,8-PeCDD	29.104	4183753	1.57	0.8292	96.3	96.3	0.1818	0.1818	96.28	
1,2,3,7,8-PeCDD	29.137	518729	1.59	1.1200	11.1	11.1	0.0431	0.0431	111	
S Total PeCDD					11.1	11.1	0.0431	0.0431		
D 13C-1,2,3,4,7,8-HxCDF	34.602	6567672	0.53	1.1700	98.2	98.2	0.4830	0.4830	98.25	
1,2,3,4,7,8-HxCDF	34.618	931117	1.29	1.3021	10.9	10.9	0.0737	0.0737	109	
D 13C-1,2,3,6,7,8-HxCDF	34.769	7372206	0.53	1.3168	98.0	98.0	0.4292	0.4292	97.99	
1,2,3,6,7,8-HxCDF	34.786	1038354	1.28	1.2907	10.9	10.9	0.0679	0.0679	109	
D 13C-2,3,4,6,7,8-HxCDF	35.625	7214754	0.54	1.2873	98.1	98.1	0.4390	0.4390	98.09	
2,3,4,6,7,8-HxCDF	35.642	1032686	1.28	1.3039	11.0	11.0	0.0597	0.0597	110	
D 13C-1,2,3,7,8,9-HxCDF	36.539	6740692	0.55	1.1987	98.4	98.4	0.4715	0.4715	98.42	
1,2,3,7,8,9-HxCDF	36.556	982394	1.25	1.3329	10.9	10.9	0.0571	0.0571	109	
S Total HxCDF					43.7	43.7	0.0646	0.0646		
* 13C-1,2,3,7,8,9-HxCDD	36.338	5713496	1.27	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.843	4646412	1.29	0.8364	97.2	97.2	0.2392	0.2392	97.23	
1,2,3,4,7,8-HxCDD	35.860	598181	1.24	1.1725	11.0	11.0	0.0390	0.0390	110	
D 13C-1,2,3,6,7,8-HxCDD	35.969	5054298	1.27	0.9040	97.9	97.9	0.2213	0.2213	97.85	
1,2,3,6,7,8-HxCDD	35.985	623939	1.26	1.1256	11.0	11.0	0.0398	0.0398	110	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,7,8,9-HxCDD	36.354	676949	1.27	1.2327	11.3	11.3	0.0367	0.0367	113	
S Total HxCDD					33.3	33.3	0.0385	0.0385		
D 13C-1,2,3,4,6,7,8-HpCDF	38.378	5502512	0.46	0.9689	99.4	99.4	0.4246	0.4246	99.40	
1,2,3,4,6,7,8-HpCDF	38.386	972638	1.09	1.6176	10.9	10.9	0.0991	0.0991	109	
D 13C-1,2,3,4,7,8,9-HpCDF	39.636	5244417	0.47	0.9231	99.4	99.4	0.4457	0.4457	99.44	
1,2,3,4,7,8,9-HpCDF	39.652	844812	1.07	1.4672	11.0	11.0	0.1079	0.1079	110	
S Total HpCDF					21.9	21.9	0.1035	0.1035		
D 13C-1,2,3,4,6,7,8-HpCDD	39.334	5179512	1.08	0.9114	99.5	99.5	0.5640	0.5640	99.47	
1,2,3,4,6,7,8-HpCDD	39.342	649996	1.06	1.1237	11.2	11.2	0.0551	0.0551	112	
S Total HpCDD					11.2	11.2	0.0551	0.0551		
D 13C-OCDD	41.771	7078418	0.90	0.6272	197.5	197.5	0.3496	0.3496	98.76	
OCDF	41.864	1156799	0.93	1.5416	21.2	21.2	0.0455	0.0455	106	
OCDD	41.780	921901	0.89	1.1855	22.0	22.0	0.0426	0.0426	110	

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 18-Oct-2019 21:38:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:06 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:55:21

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.738	20.729	1		2342233	362687	364	910	996		
333.9338	20.738	20.729	1		2898222	443250	168	420	2638	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.769	19.762	0	0.953	3787153	607770	801	2002	759		
317.9389	19.778	19.762	1	0.954	4701402	733356	363	907	2020	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.795	19.792	0	1.001	103271	16479	34	85	485		
305.8987	19.795	19.792	0	1.001	123955	20292	76	190	267	0.83(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.101	21.094	0	1.018	2232936	335174	364	910	921		
333.9338	21.101	21.094	0	1.018	2841892	427050	168	420	2542	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.127	21.121	0	1.019	150303	22097	41	102	539		
2,3,7,8-TCDD											
319.8965	21.144	21.127	1	1.002	59101	8539	86	215	99		
321.8936	21.153	21.127	2	1.002	73426	10241	39	97	263	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.806	26.797	1	1.293	4307650	745786	1259	3147	592		
353.8970	26.806	26.797	1	1.293	2695574	474180	838	2095	566	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	26.831	26.821	1	1.001	565972	100623	181	452	556		
341.8567	26.831	26.821	1	1.001	349431	61275	164	410	374	1.62(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.307	28.297	1	1.365	4095602	669096	1259	3147	531		
353.8970	28.307	28.297	1	1.365	2563817	419821	838	2095	501	1.60(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	28.324	28.322	0	1.001	529360	86387	181	452	477		
341.8567	28.324	28.322	0	1.001	333897	54765	164	410	334	1.59(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.104	29.095	1	1.403	2557984	401357	316	790	1270		
369.8919	29.104	29.095	1	1.403	1625769	250804	170	425	1475	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.137	29.120	1	1.001	318576	48749	94	235	519		
357.8516	29.120	29.120	0	1.001	200153	31500	32	80	984	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.602	34.589	1	0.952	2287293	499296	1159	2897	431		
385.8610	34.602	34.589	1	0.952	4280379	936053	2315	5787	404	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.618	34.608	1	1.000	525226	116203	307	767	379		
375.8178	34.610	34.608	0	1.000	405891	90084	244	610	369	1.29(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.769	34.759	1	0.957	2564514	547763	1159	2897	473		
385.8610	34.769	34.759	1	0.957	4807692	1024049	2315	5787	442	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.786	34.777	1	1.000	582299	129815	307	767	423		
375.8178	34.786	34.777	1	1.000	456055	102662	244	610	421	1.28(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.625	35.616	1	0.980	2522803	625176	1159	2897	539		
385.8610	35.625	35.616	1	0.980	4691951	1143970	2315	5787	494	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.642	35.633	1	1.000	578907	148873	307	767	485		
375.8178	35.642	35.633	1	1.000	453779	115008	244	610	471	1.28(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.539	36.530	1	1.006	2381000	637870	1159	2897	550		
385.8610	36.539	36.530	1	1.006	4359692	1170833	2315	5787	506	0.55(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	36.556	36.544	1	1.000	545566	144614	307	767	471		
375.8178	36.547	36.544	0	1.000	436828	114679	244	610	470	1.25(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.338	36.330	0		3191648	859582	667	1667	1289		
403.8529	36.338	36.330	0		2521848	677155	563	1407	1203	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.843	35.836	0	0.986	2614293	711756	667	1667	1067		
403.8529	35.843	35.836	0	0.986	2032119	562142	563	1407	998	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.860	35.849	1	1.000	330545	91303	134	335	681		
391.8127	35.860	35.849	1	1.000	267636	73381	99	247	741	1.24(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.969	35.958	1	0.990	2828060	731191	667	1667	1096		
403.8529	35.969	35.958	1	0.990	2226238	566607	563	1407	1006	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8158	35.985	35.973	1	1.000	348034	89707	134	335	669		
391.8127	35.985	35.973	1	1.000	275905	70079	99	247	708	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.354	36.346	1	1.014	378082	98544	134	335	735		
391.8127	36.346	36.346	0	1.014	298867	75311	99	247	761	1.27(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.378	38.366	1	1.056	1725859	571937	931	2327	614		
419.8220	38.378	38.366	1	1.056	3776653	1228221	1598	3995	769	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.386	38.378	0	1.000	507380	167564	651	1627	257		
409.7788	38.386	38.378	0	1.000	465258	157978	503	1257	314	1.09(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.636	39.629	0	1.091	1667143	568059	931	2327	610		
419.8220	39.636	39.629	0	1.091	3577274	1254583	1598	3995	785	0.47(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.652	39.641	1	1.000	435881	150364	651	1627	231		
409.7788	39.644	39.641	0	1.000	408931	140488	503	1257	279	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.334	39.324	1	1.082	2689280	944815	1466	3665	644		
437.8140	39.334	39.324	1	1.082	2490232	875238	1694	4235	517	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	39.342	39.334	0	1.000	334118	115856	240	600	483		
425.7737	39.342	39.334	0	1.000	315878	109980	211	527	521	1.06(0.88-1.20)	
13C-OCDD											
469.7780	41.771	41.764	0	1.150	3343185	1050754	655	1637	1604		
471.7750	41.771	41.764	0	1.150	3735233	1195319	693	1732	1725	0.90(0.76-1.02)	
OCDF											
441.7428	41.864	41.858	0	1.002	558541	180476	107	267	1687		
443.7399	41.864	41.858	0	1.002	598258	196793	208	520	946	0.93(0.76-1.02)	
OCDD											
457.7377	41.780	41.772	0	1.000	434640	137224	127	317	1081		
459.7348	41.780	41.772	0	1.000	487261	155348	100	250	1553	0.89(0.76-1.02)	

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

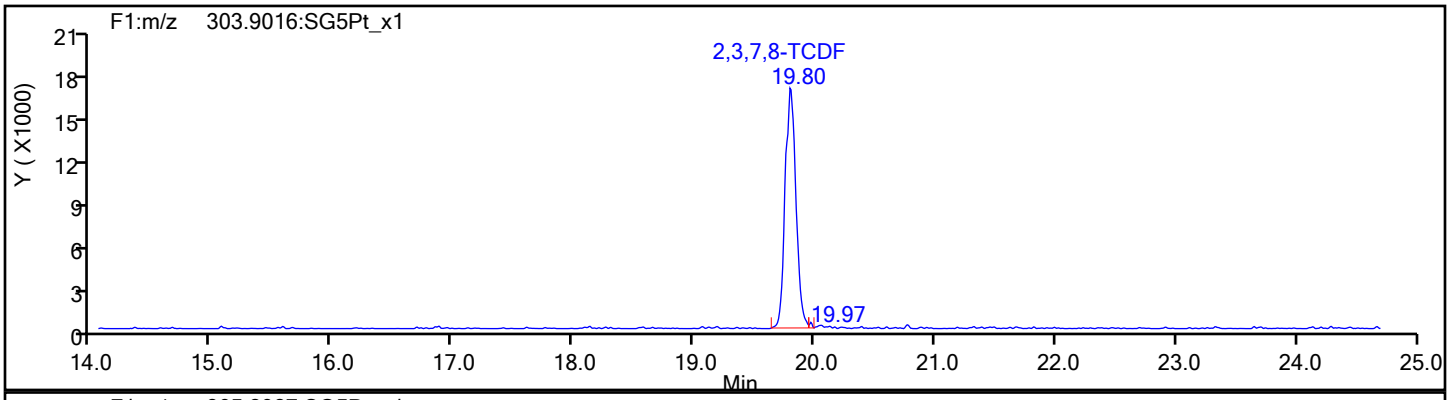
Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

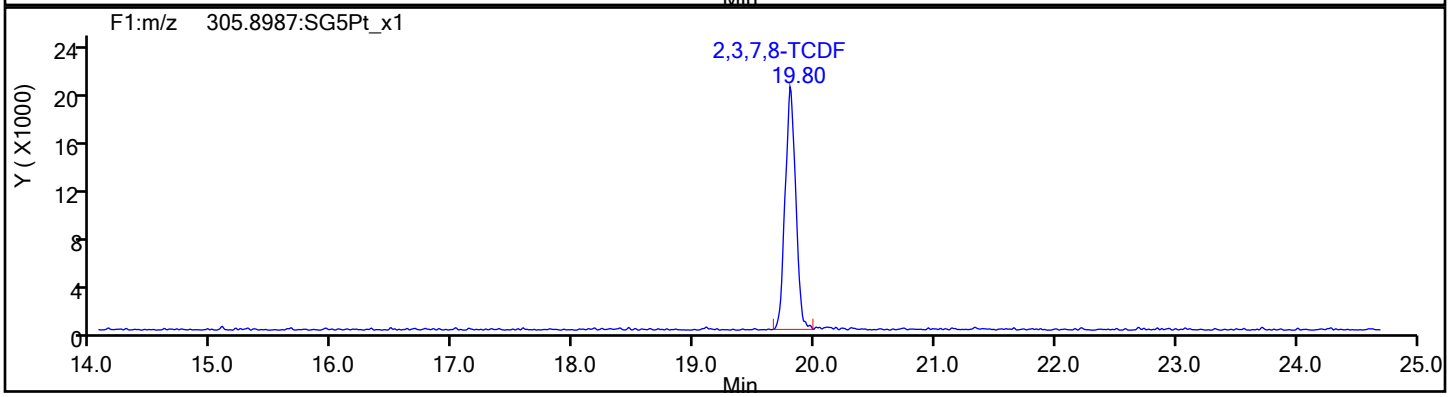
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d

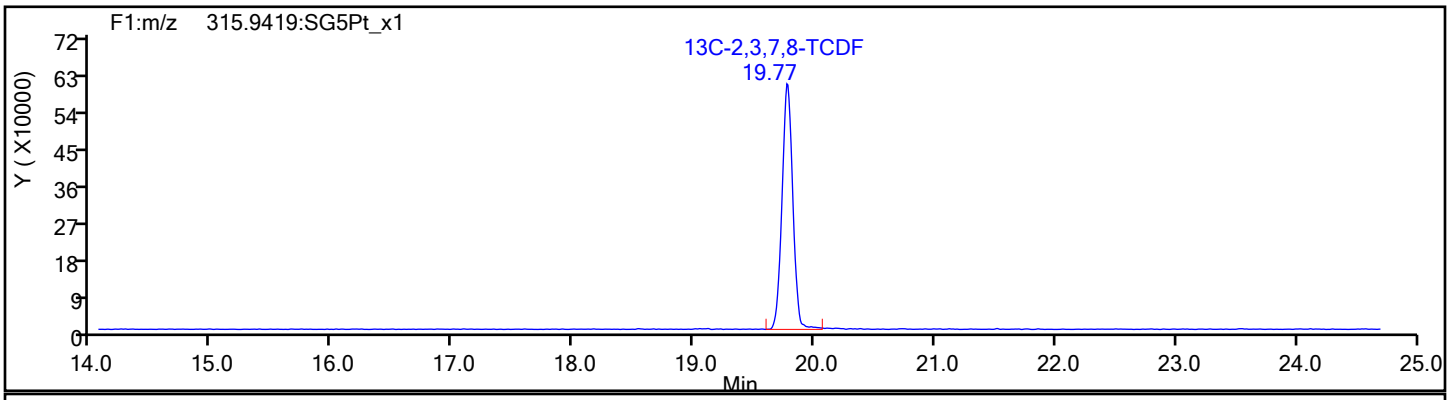
Injection Date:	18-Oct-2019 21:38:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

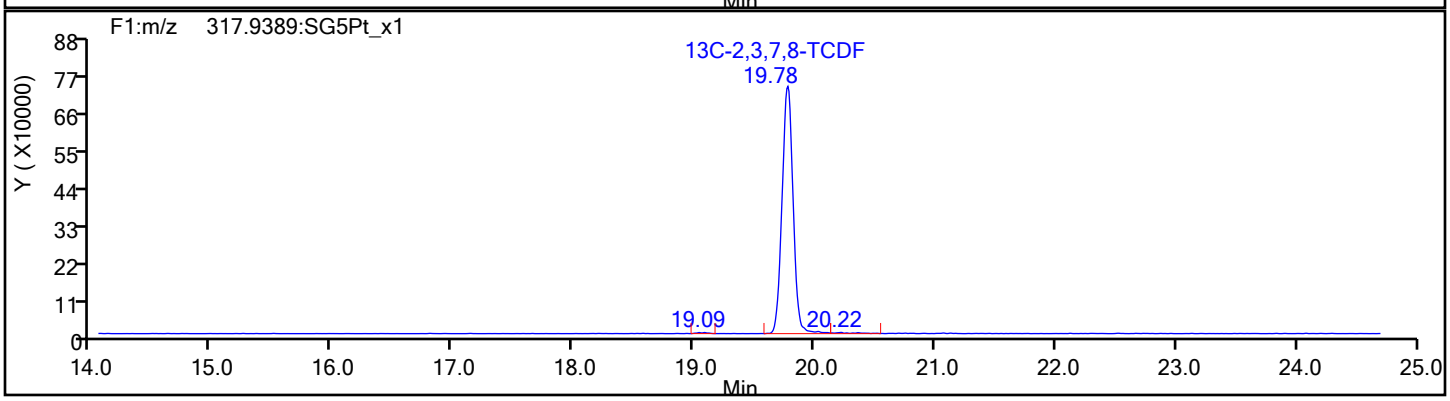
TCDF





TCDF Standards





Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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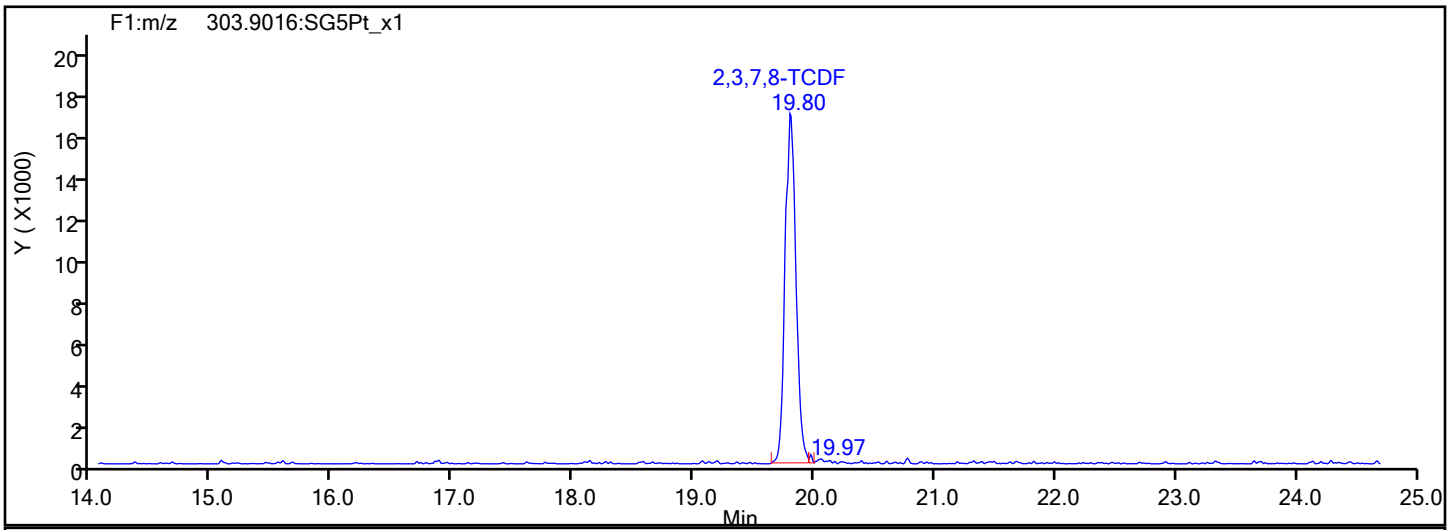
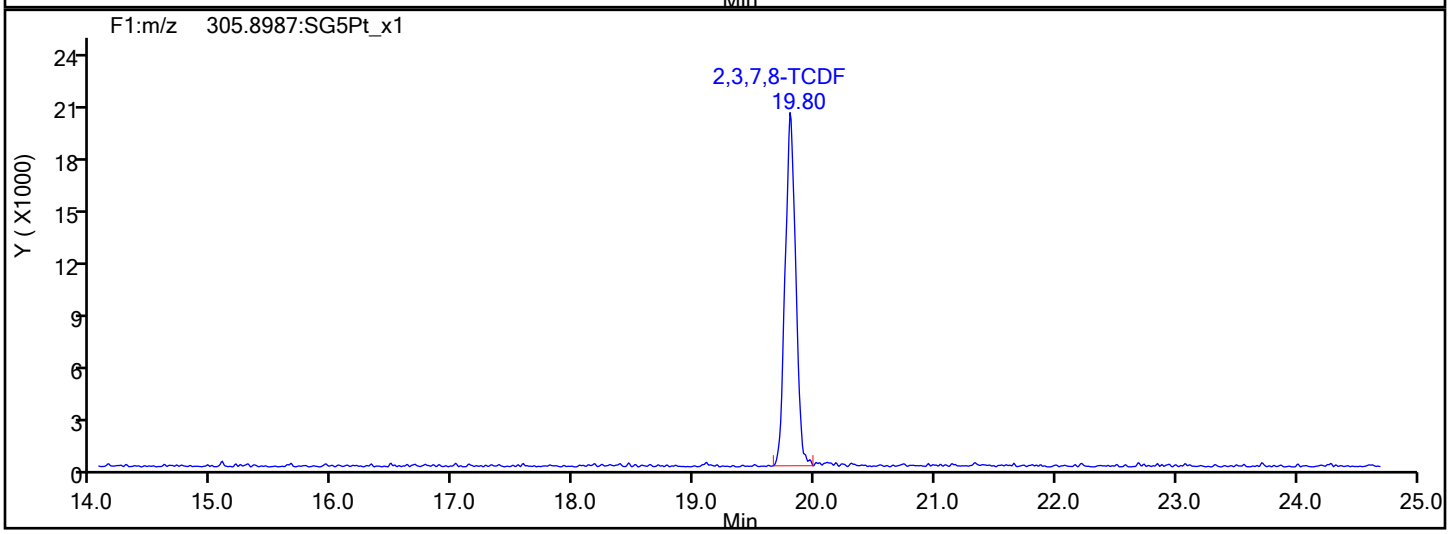
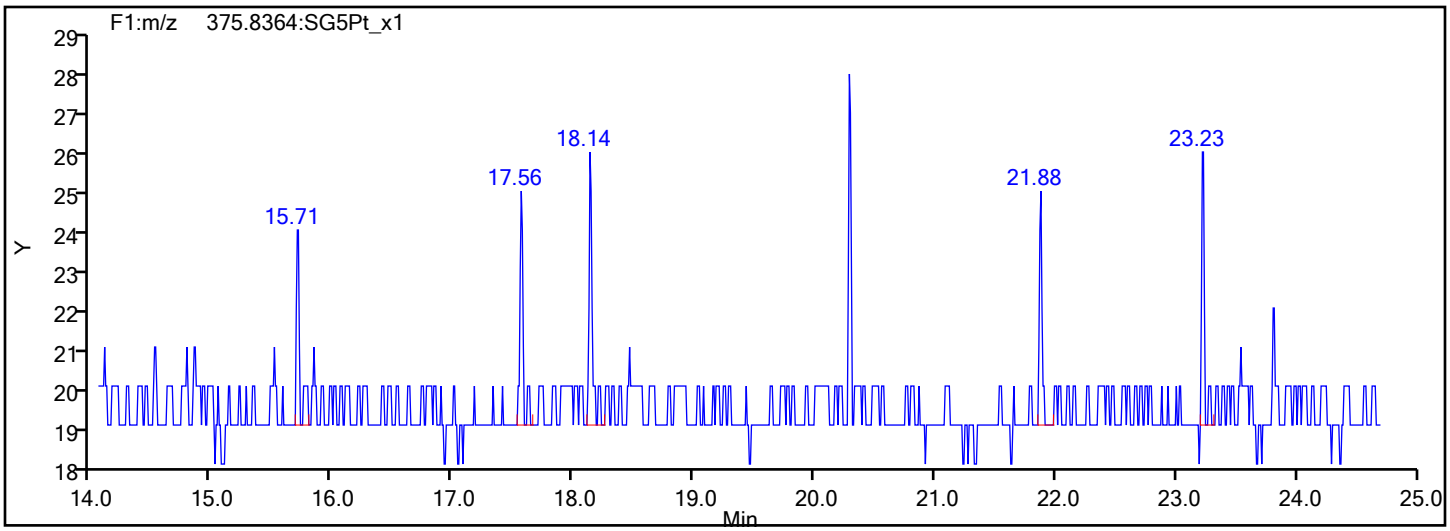
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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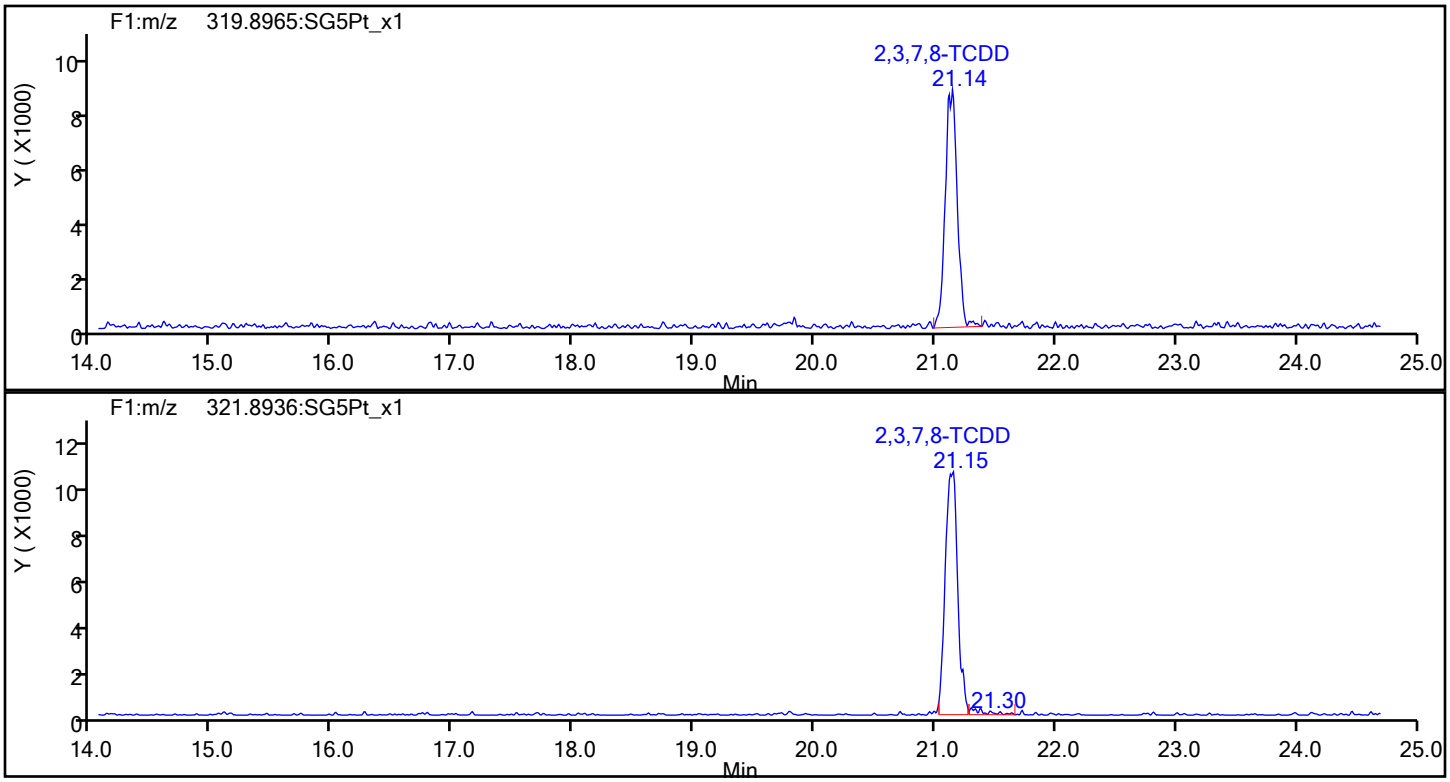
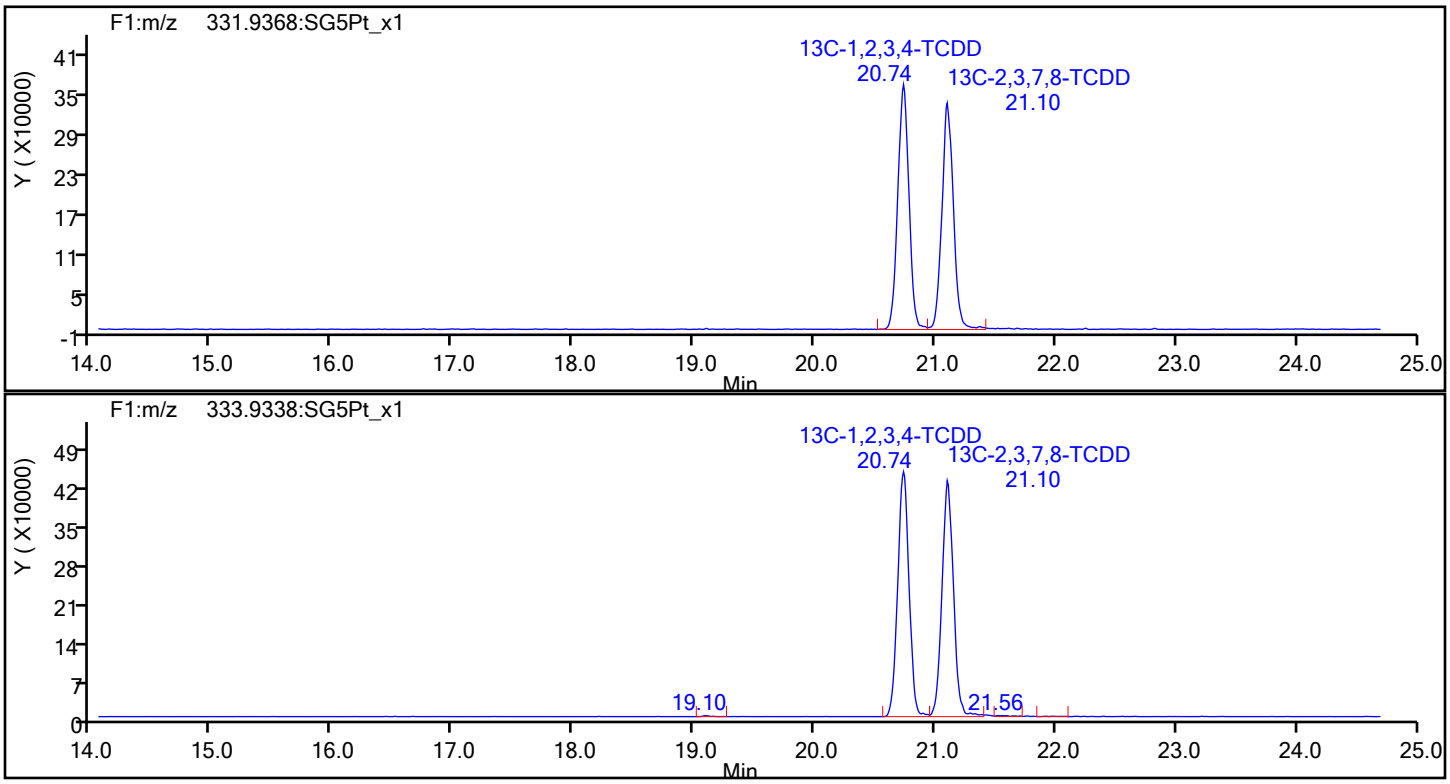
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

TCDD



TCDD Standards



Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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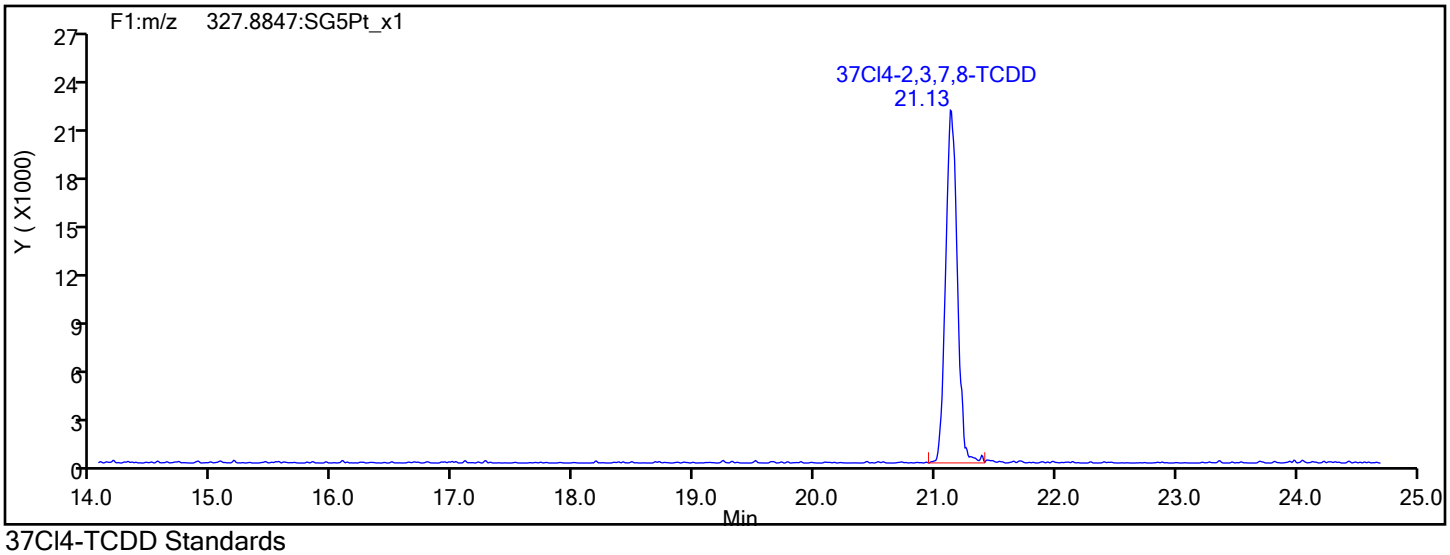
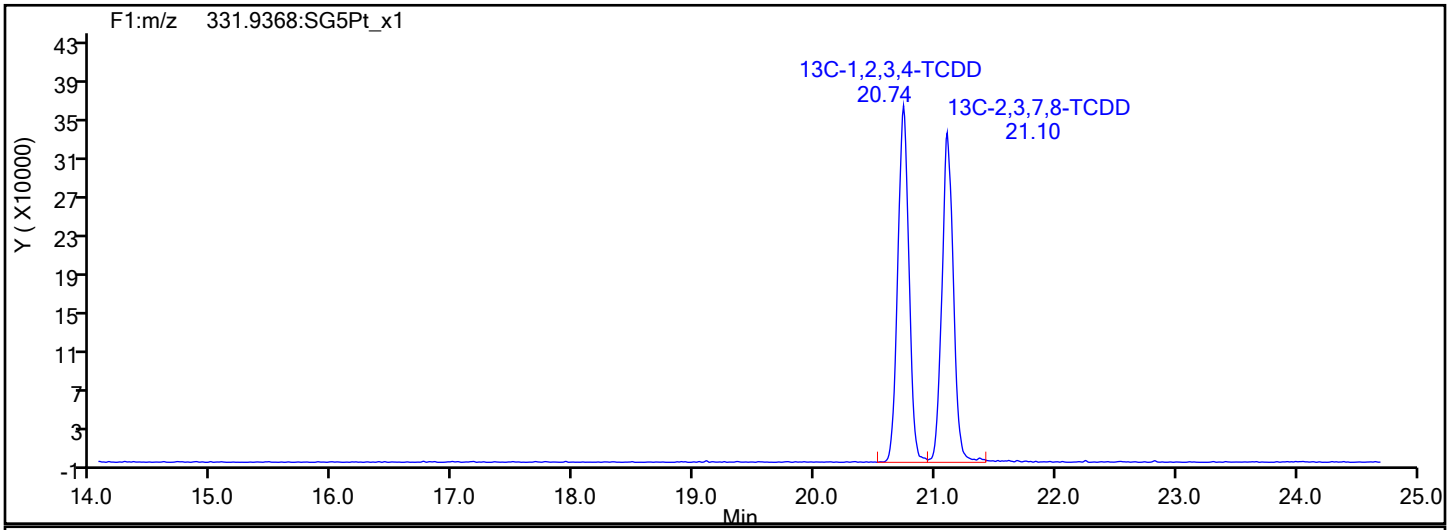
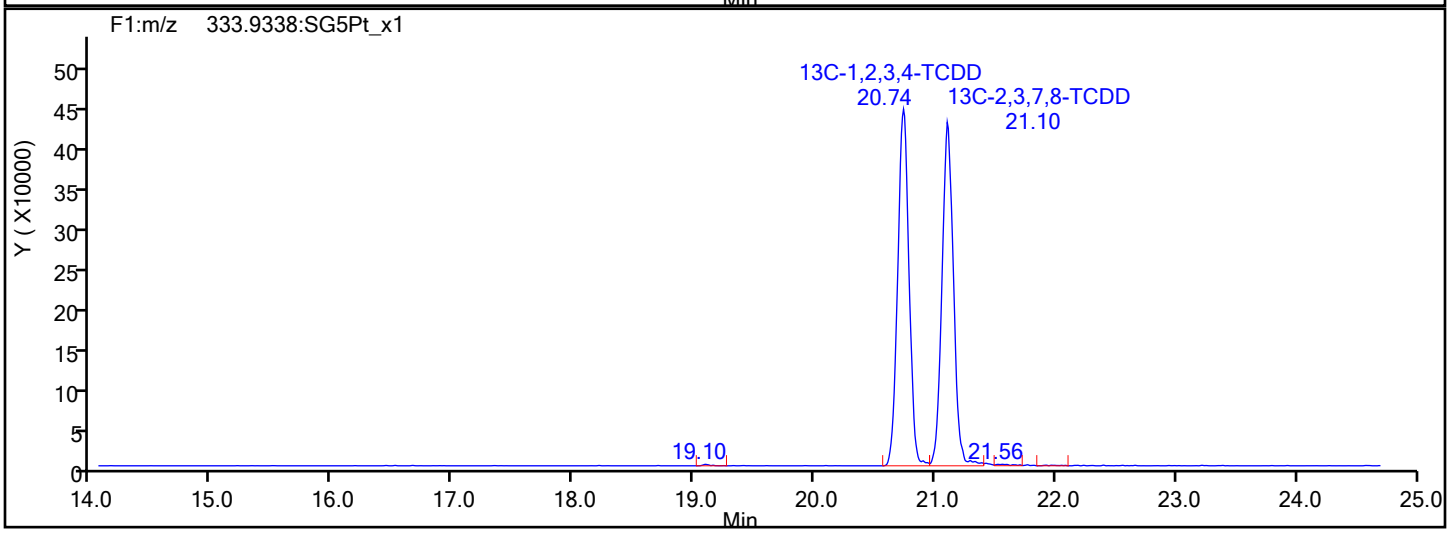
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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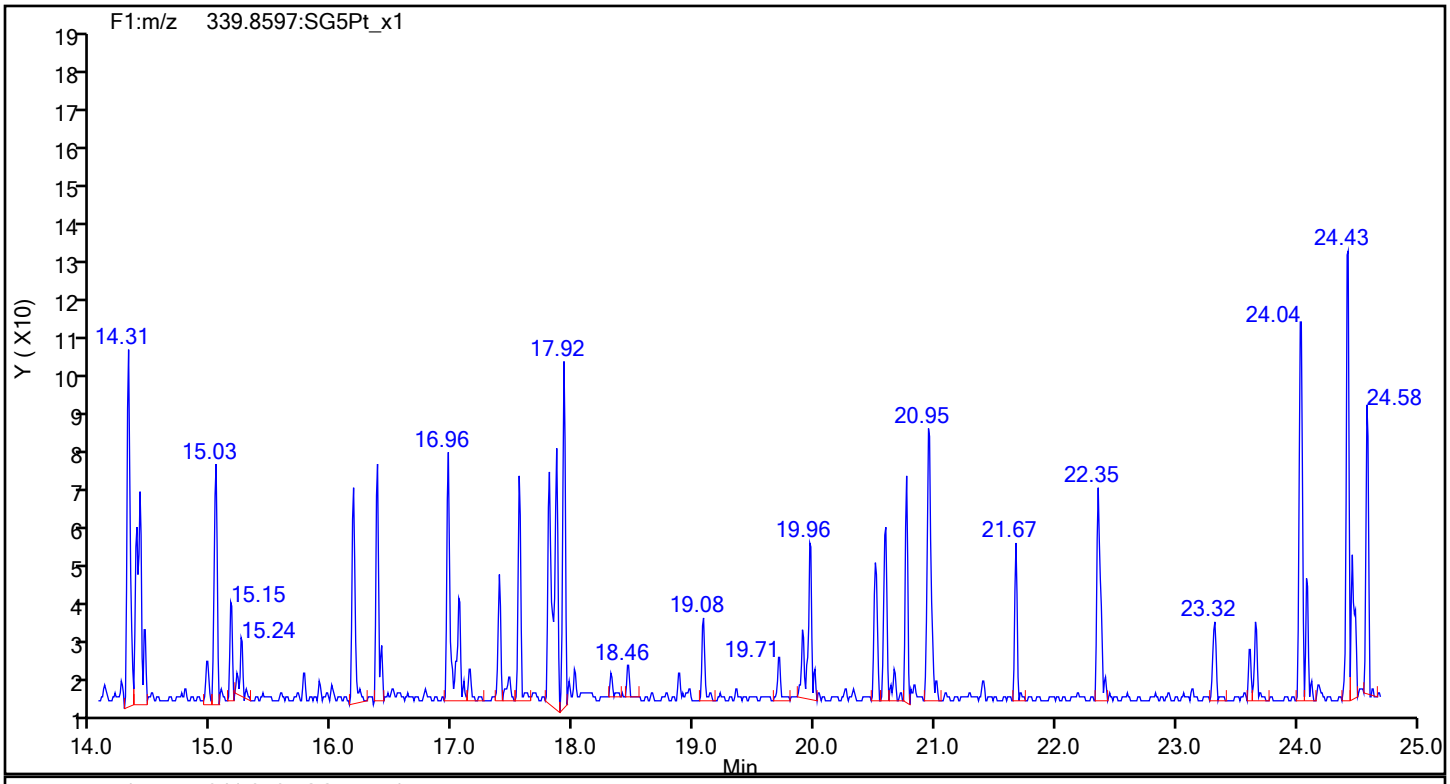
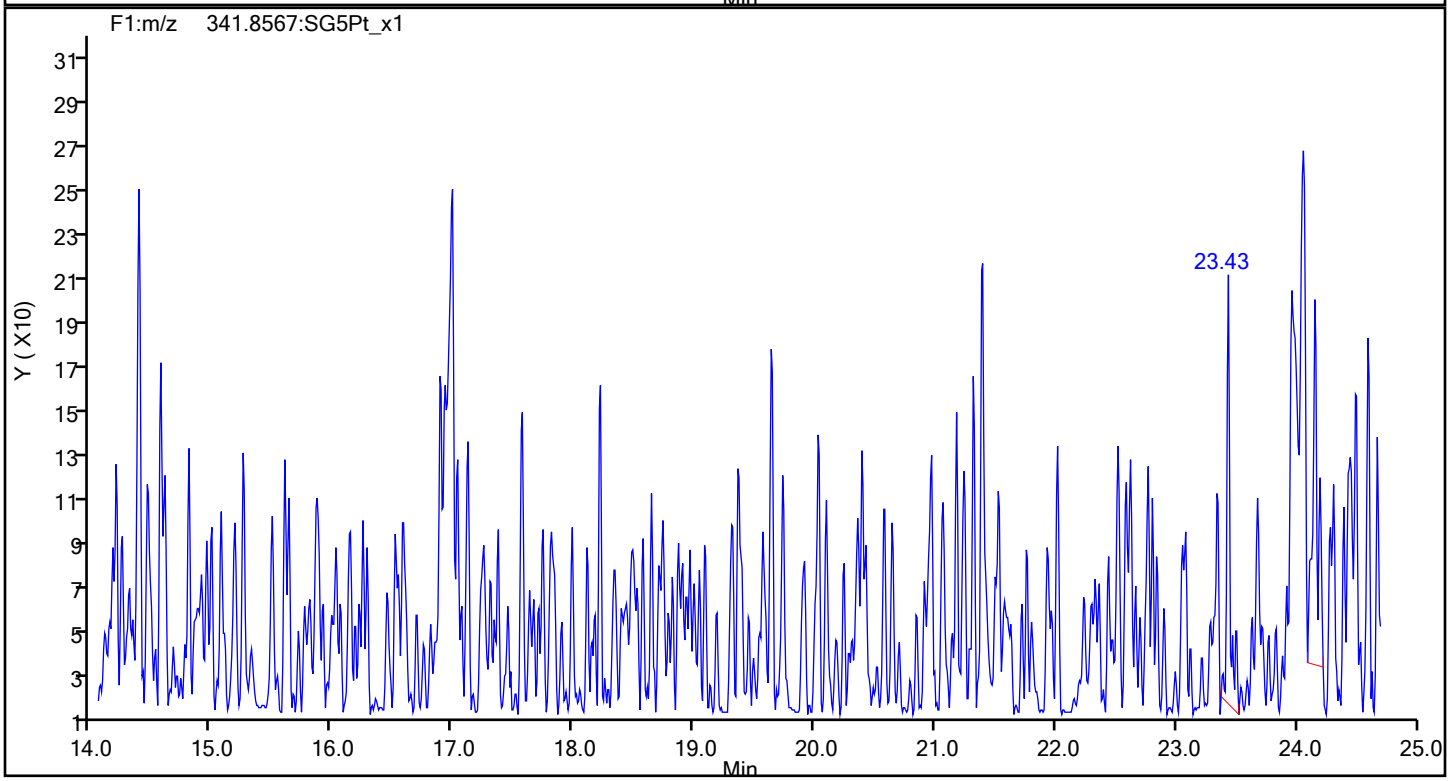
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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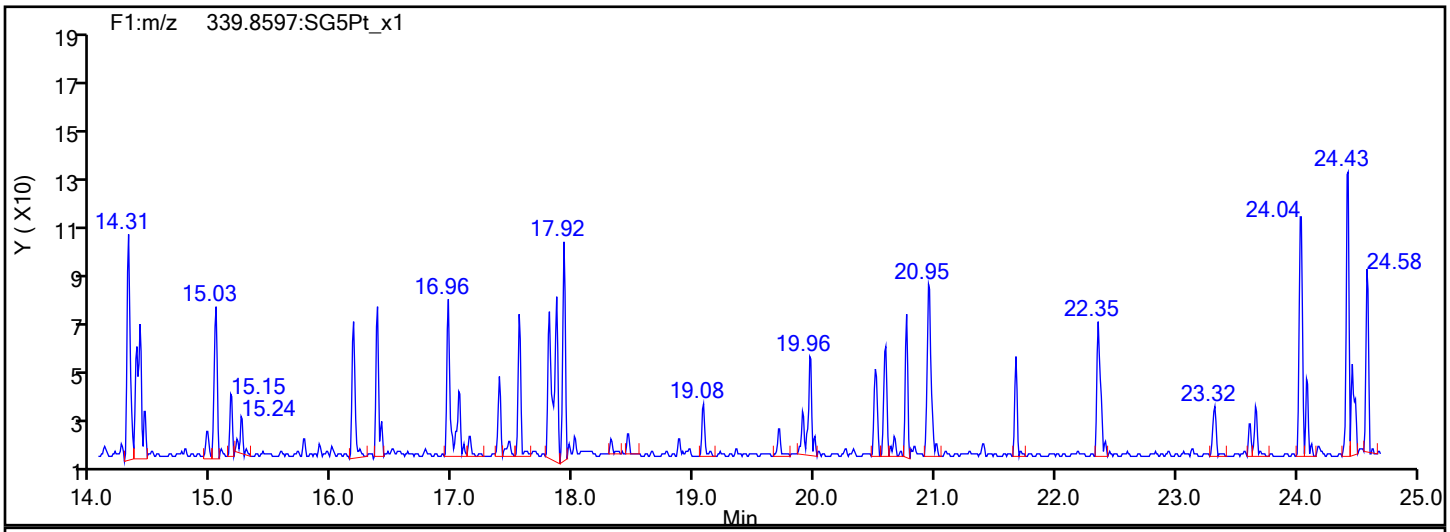
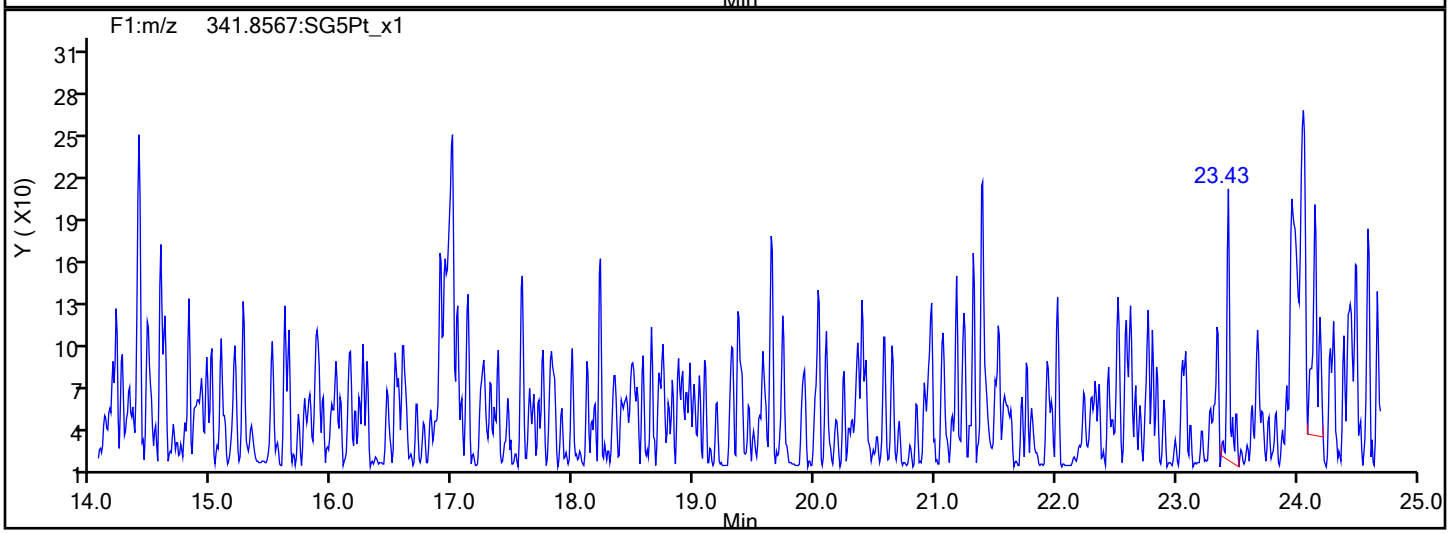
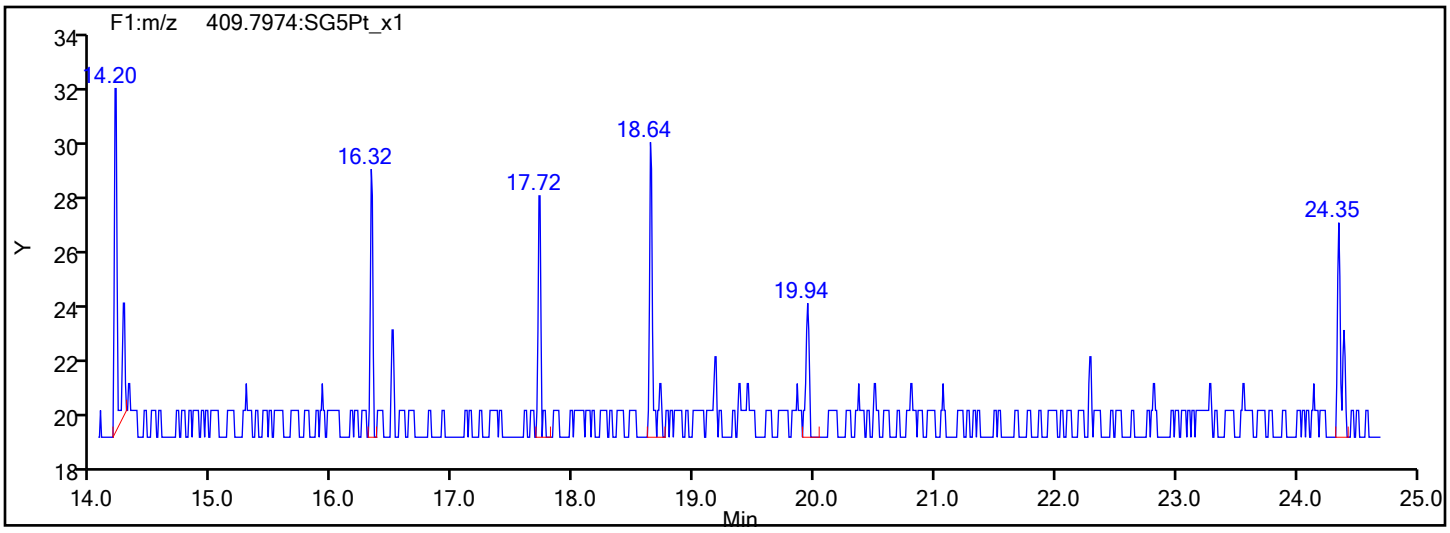
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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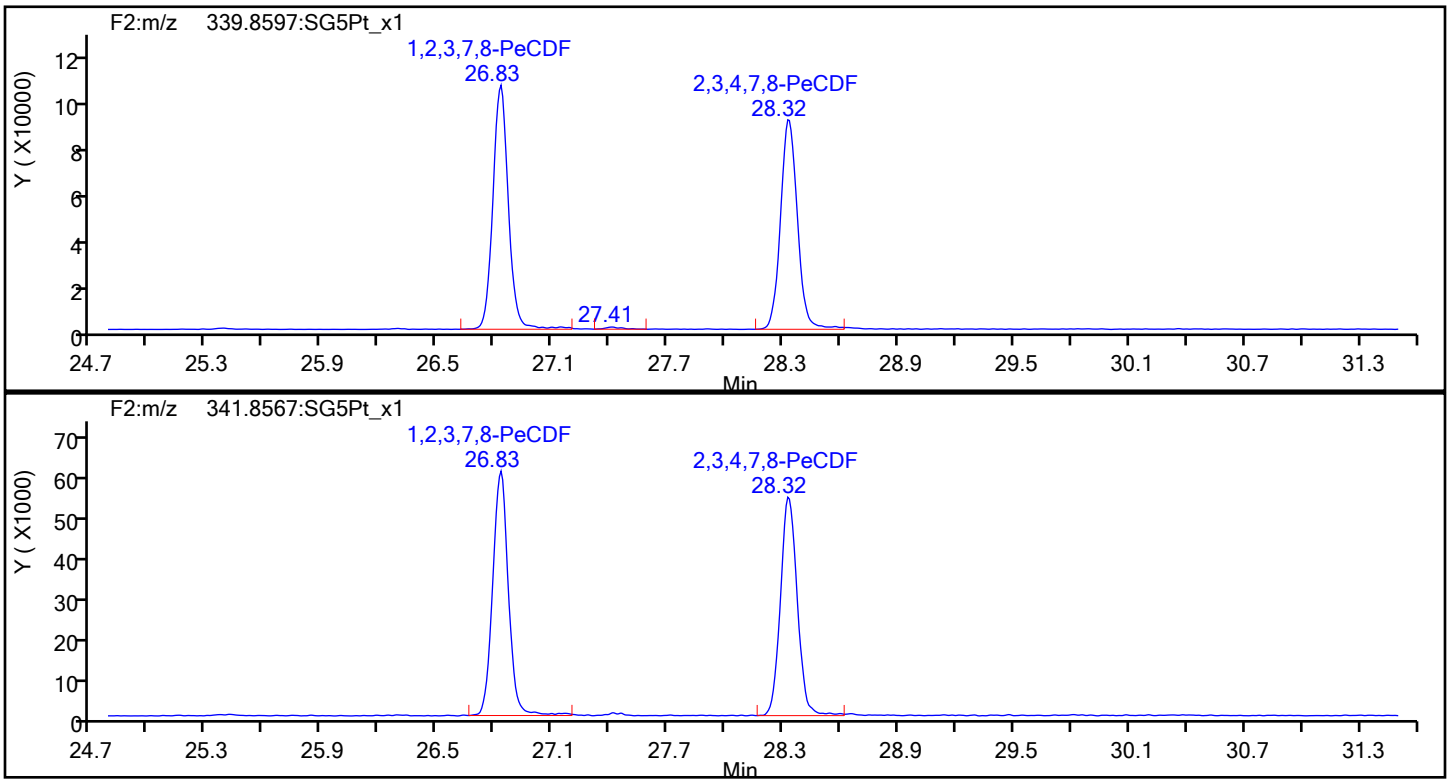
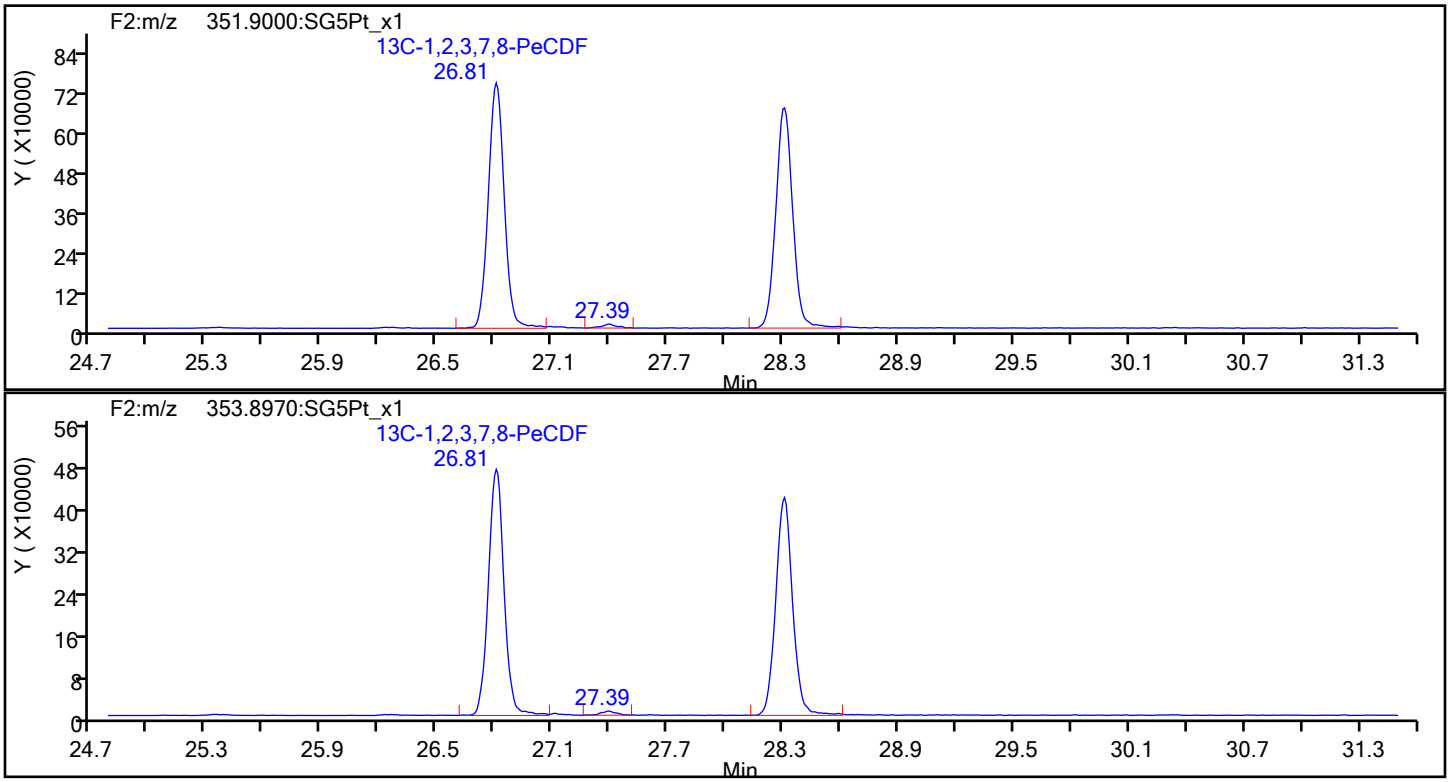
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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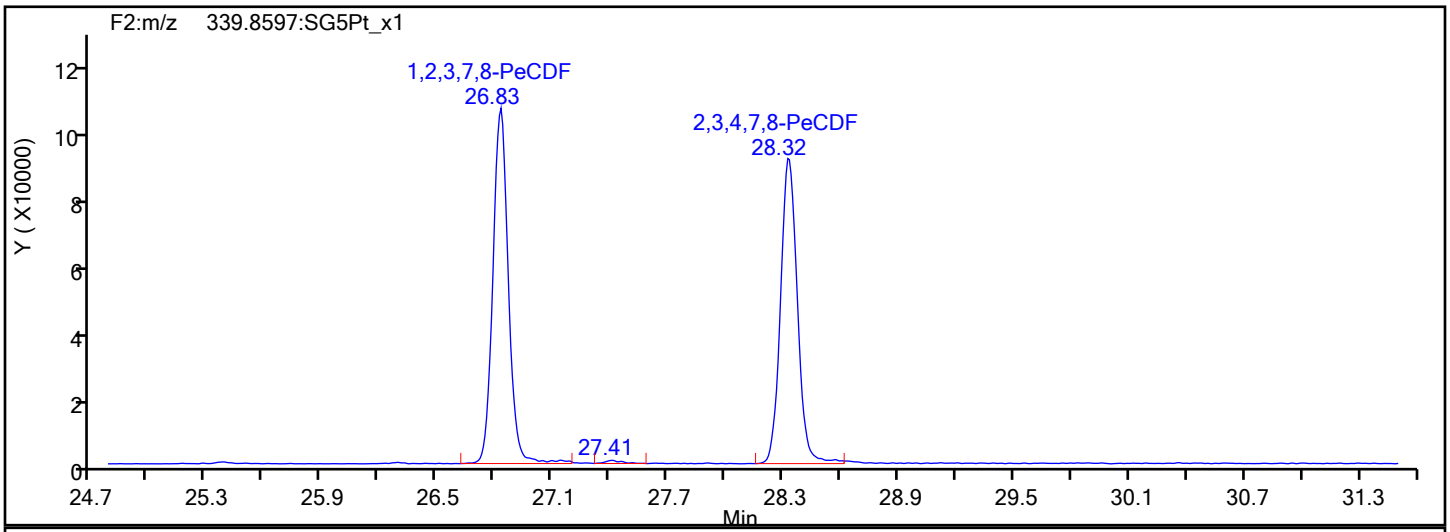
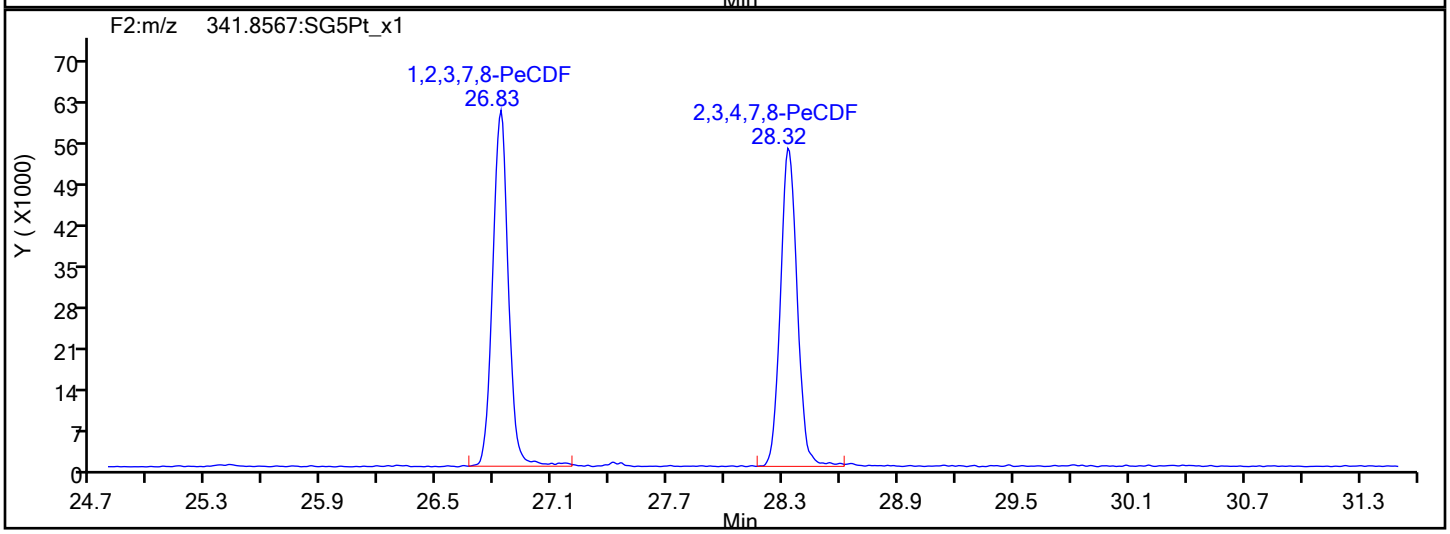
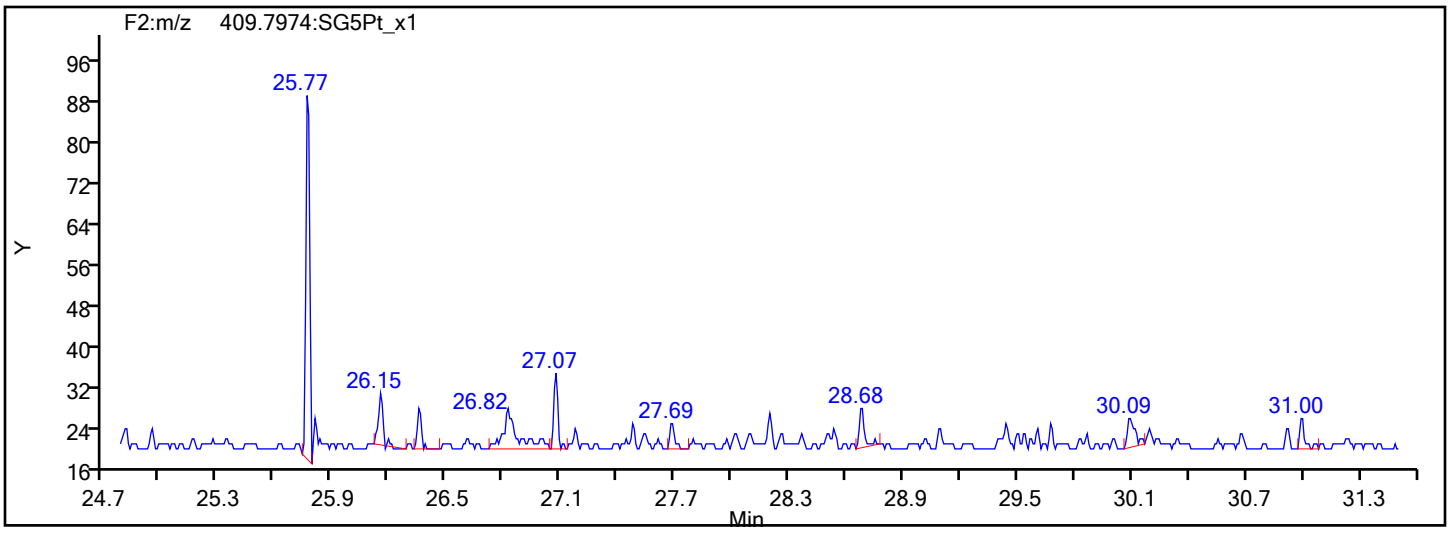
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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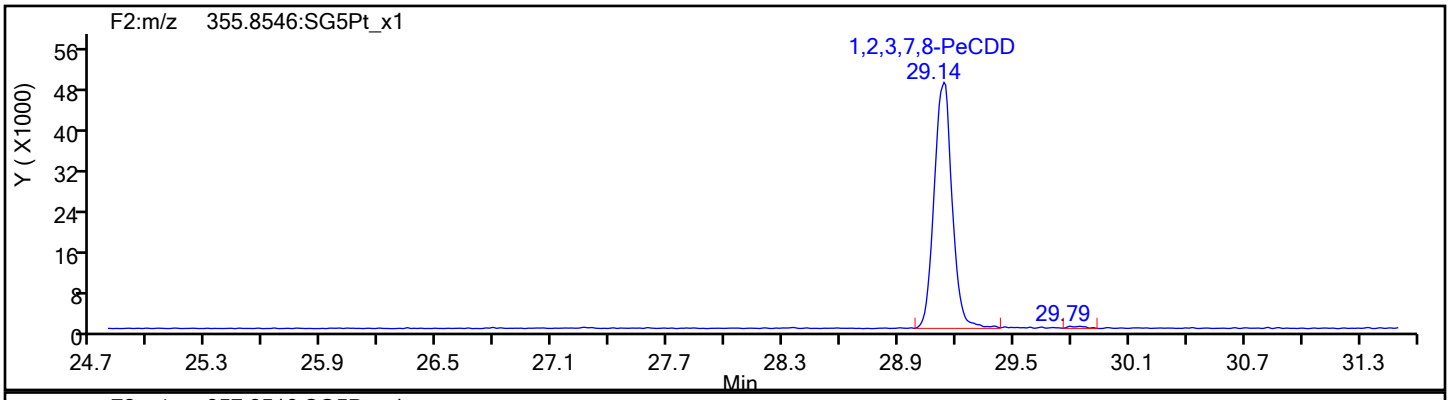
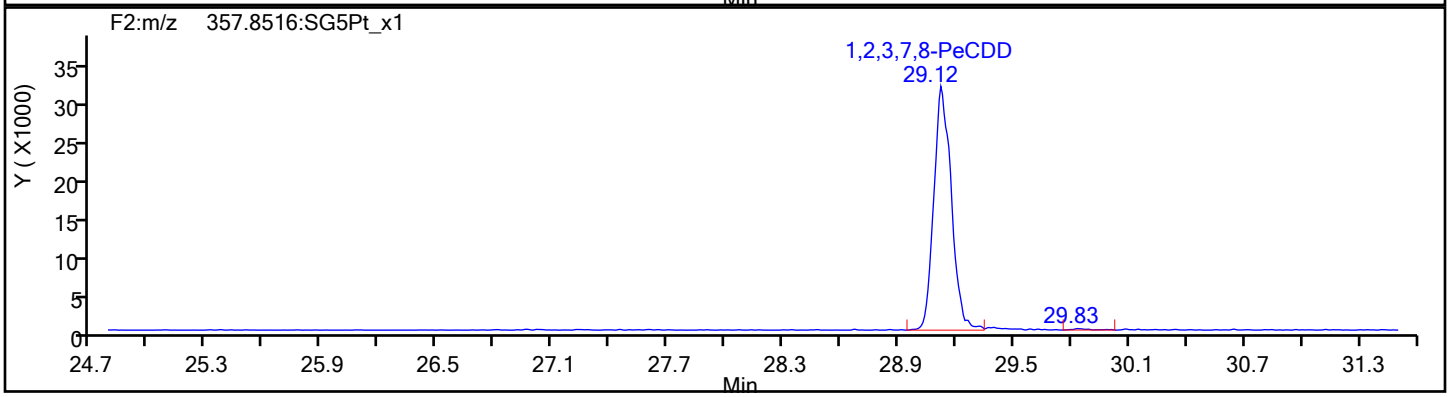
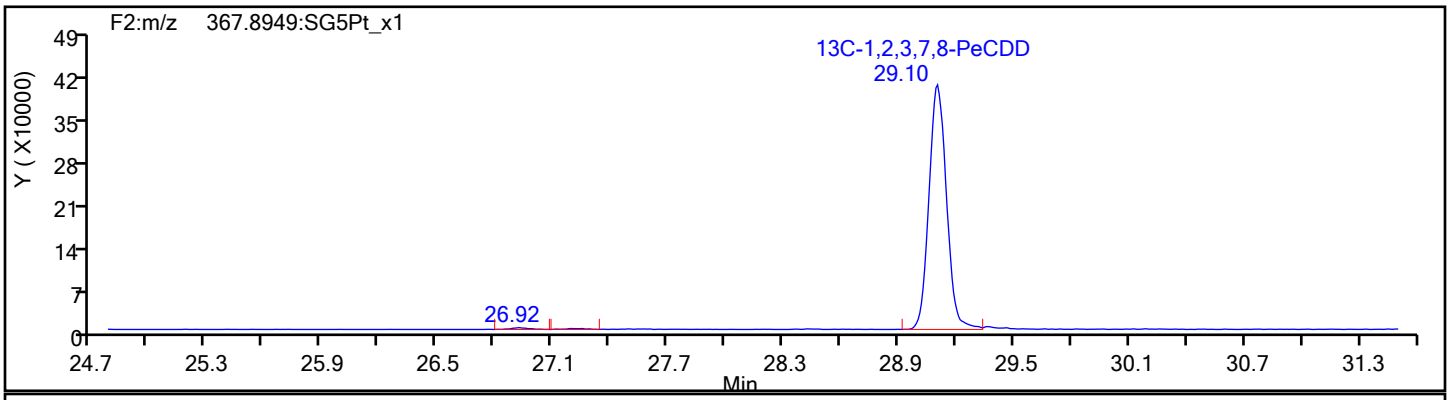
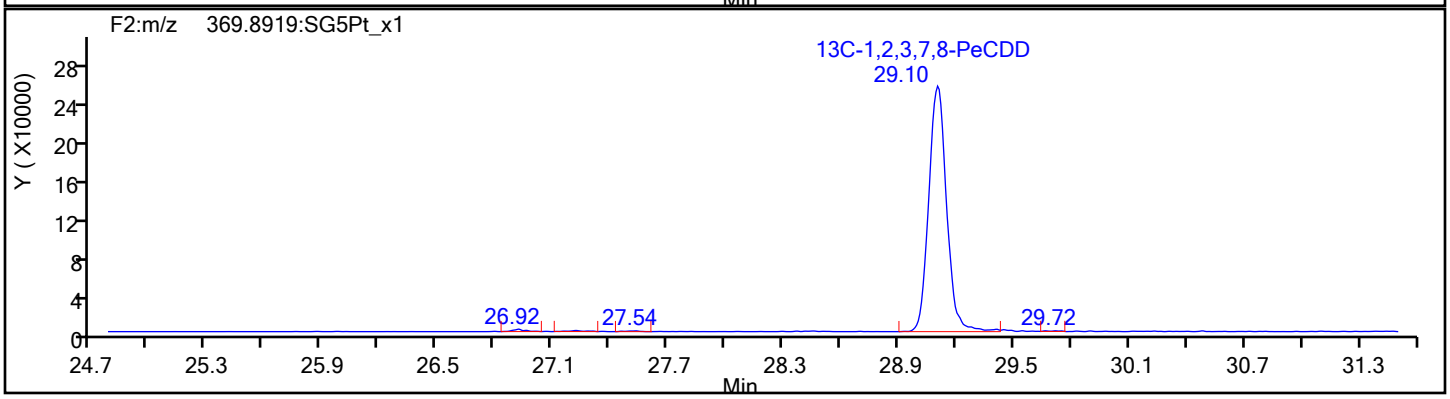




PeCDD Standards





Report Date: 23-Oct-2019 11:53:15 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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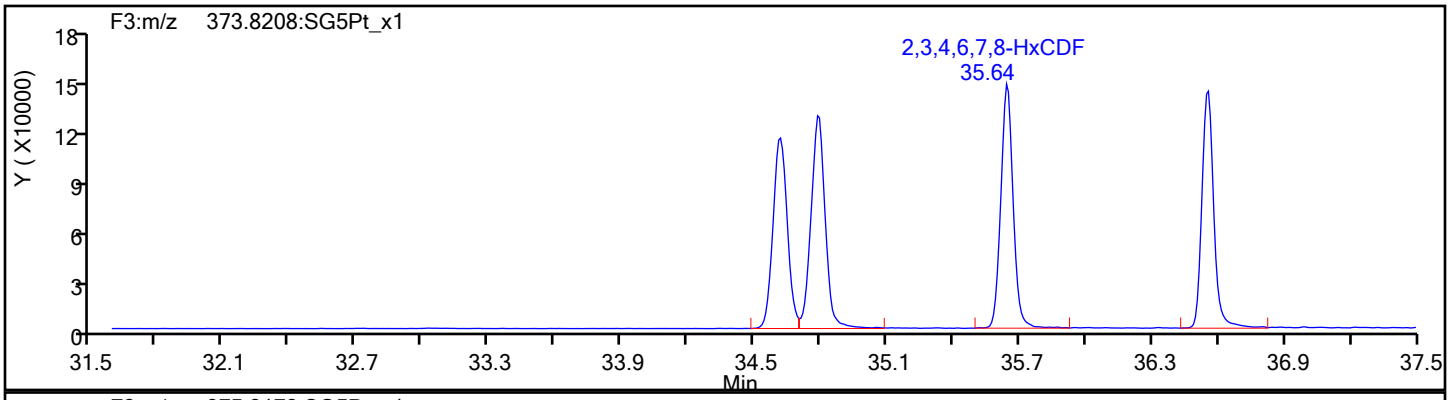

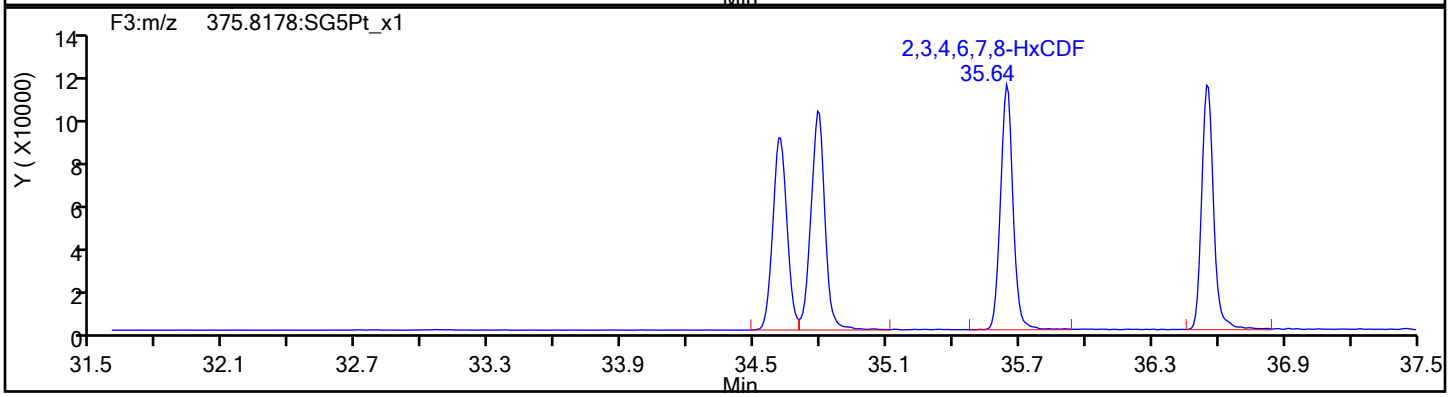

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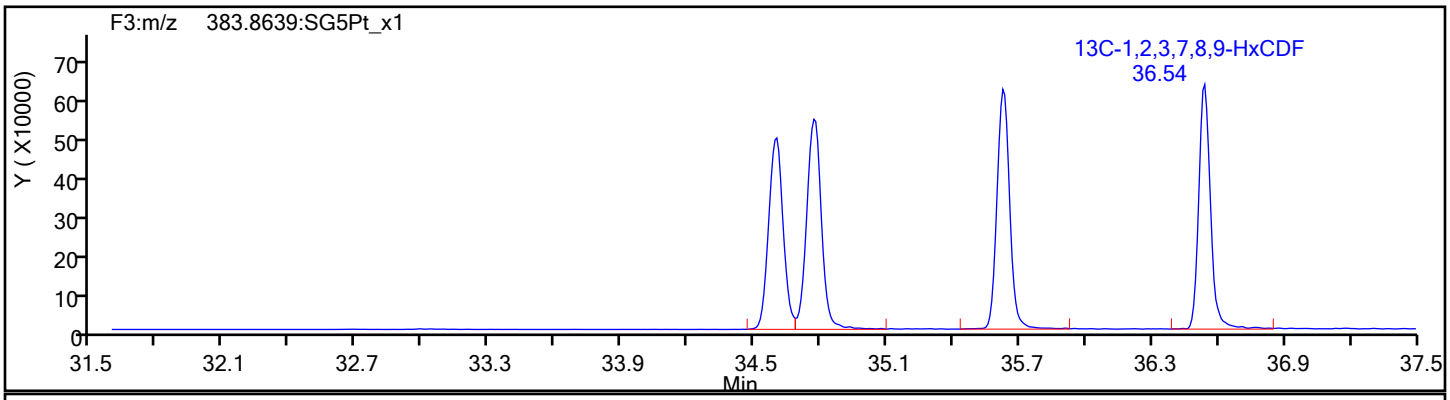

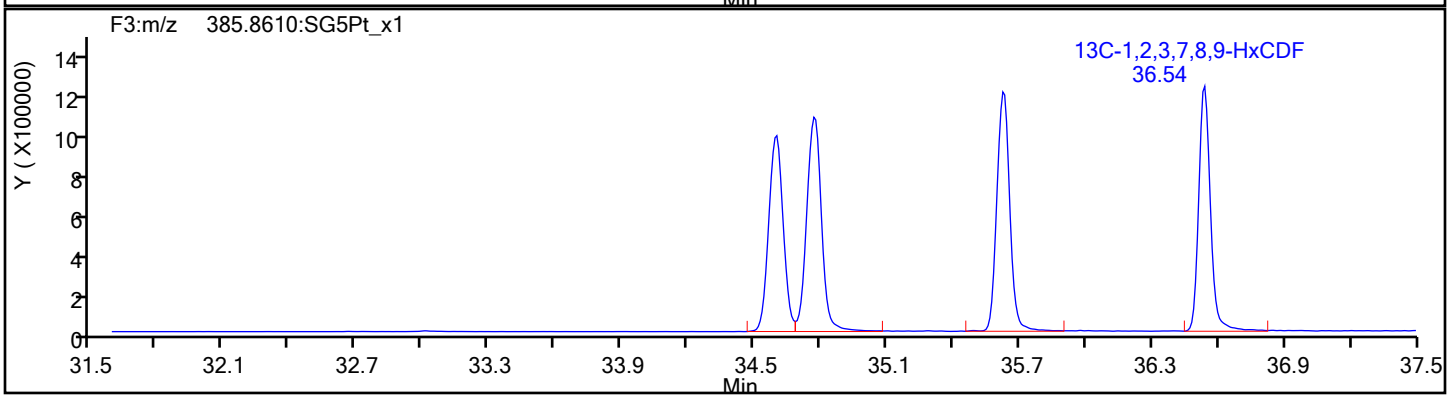

Report Date: 23-Oct-2019 11:53:16 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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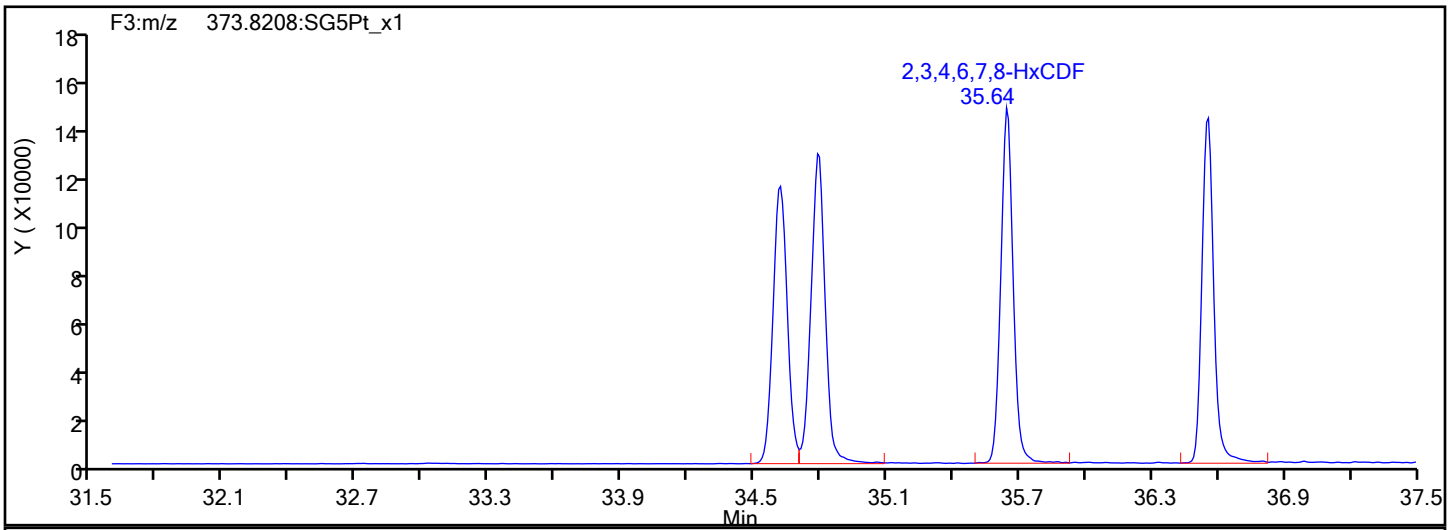
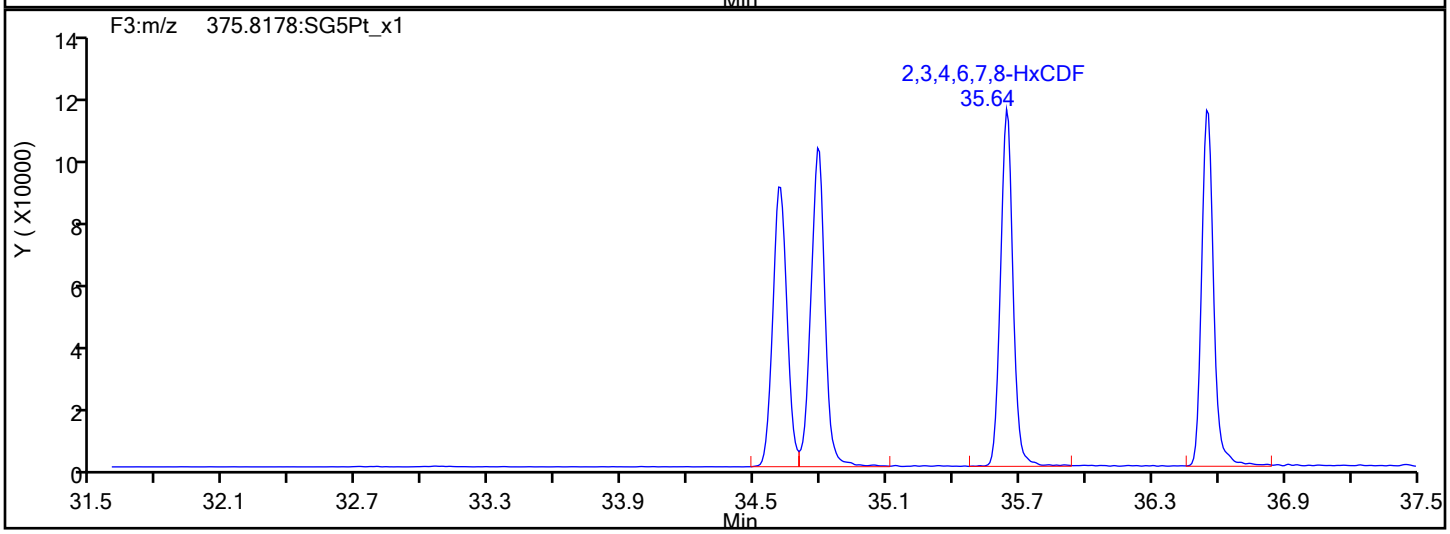
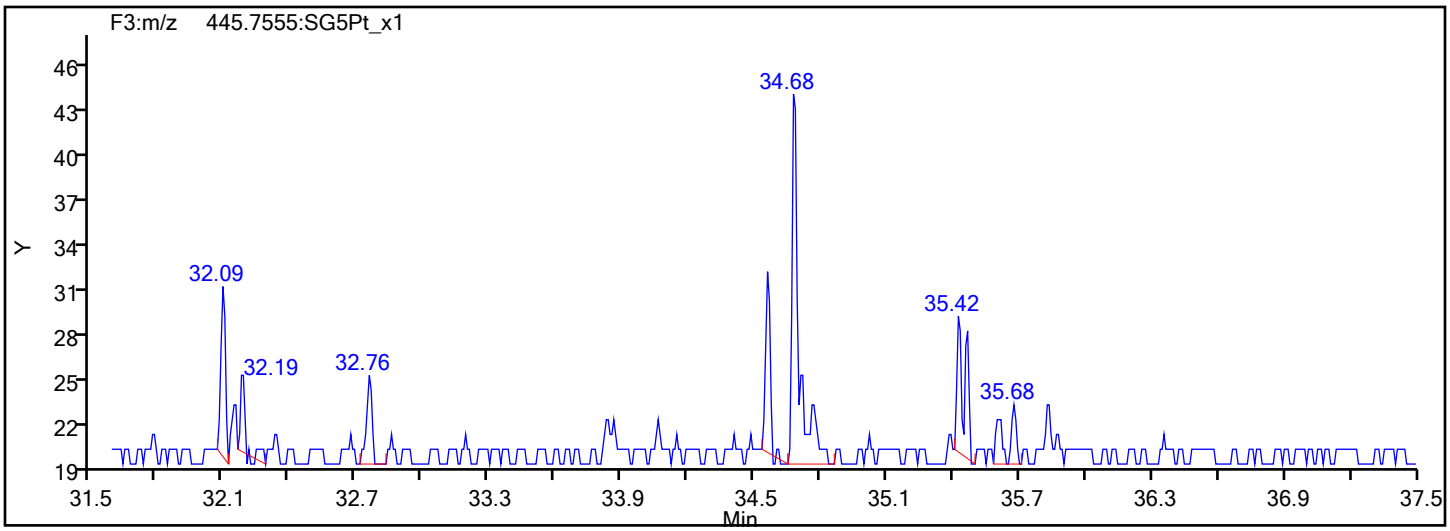




HxCDF Interference Mass



Report Date: 23-Oct-2019 11:53:16 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d

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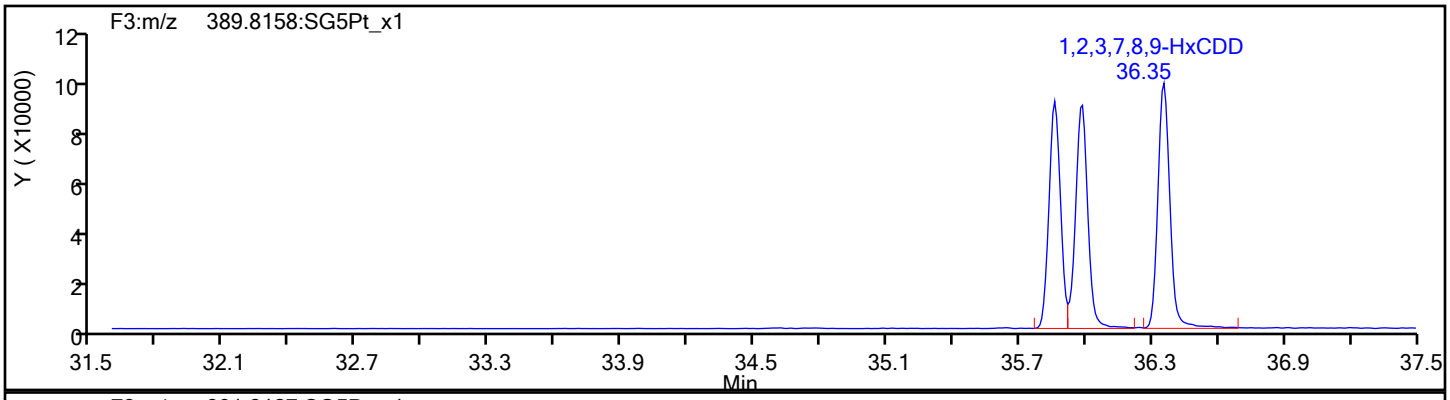
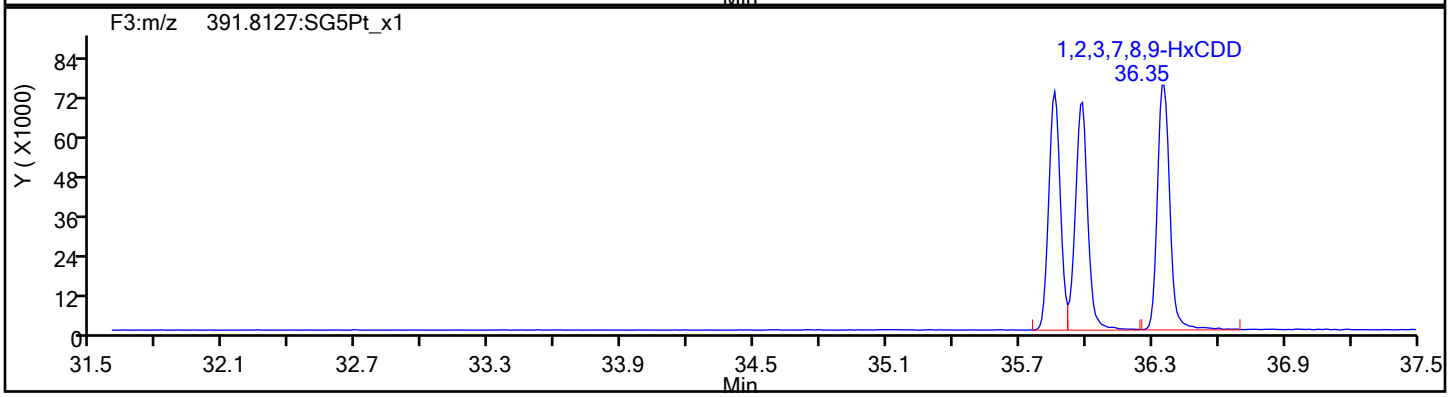
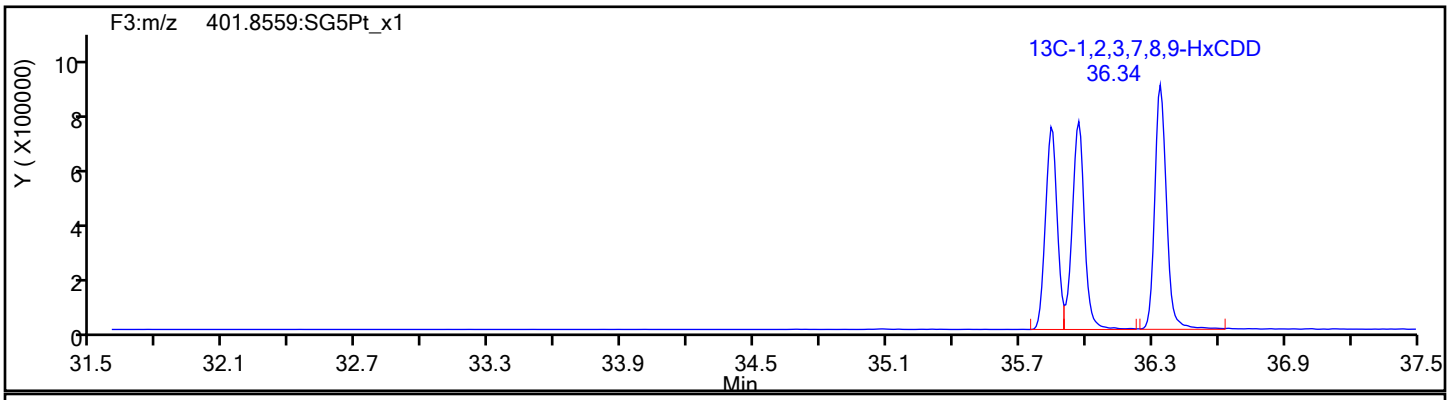
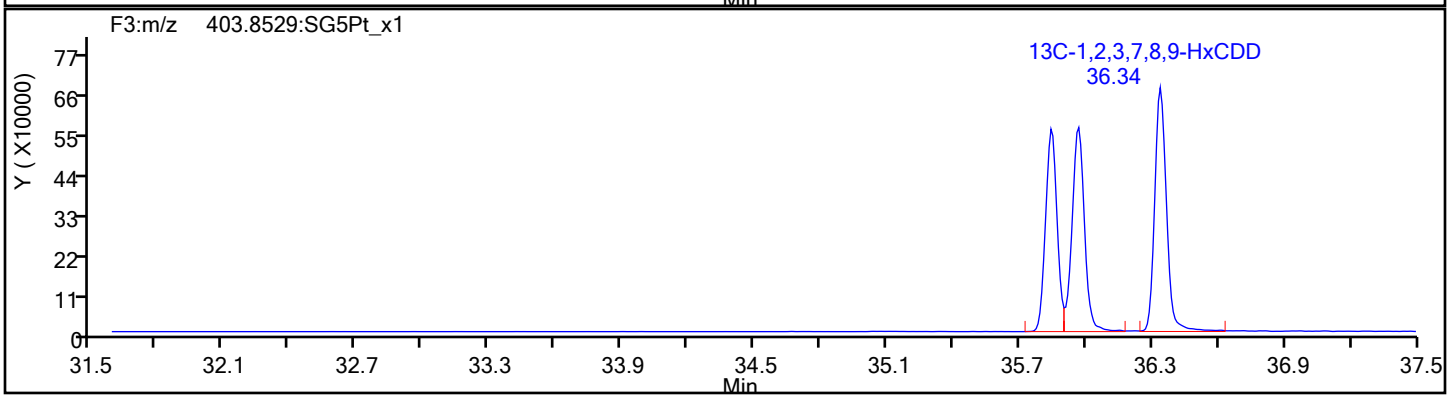
HxCDD





HxCDD Standards





Report Date: 23-Oct-2019 11:53:16 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_5.d

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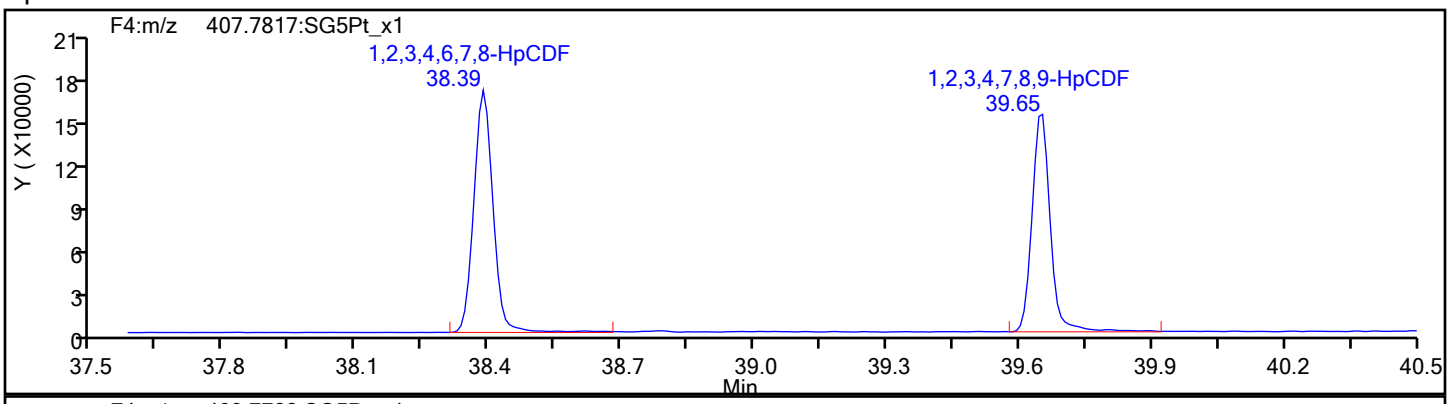
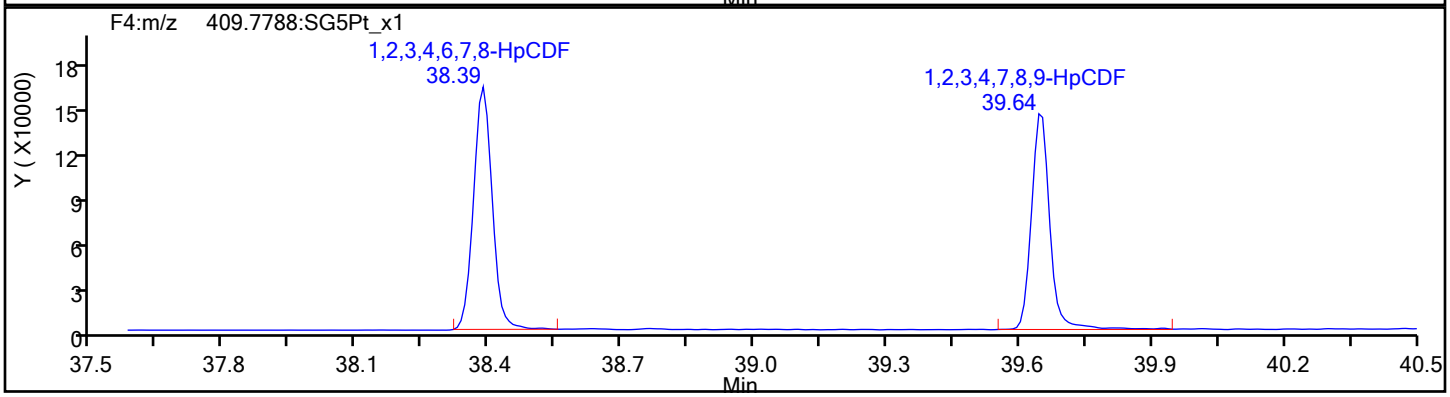
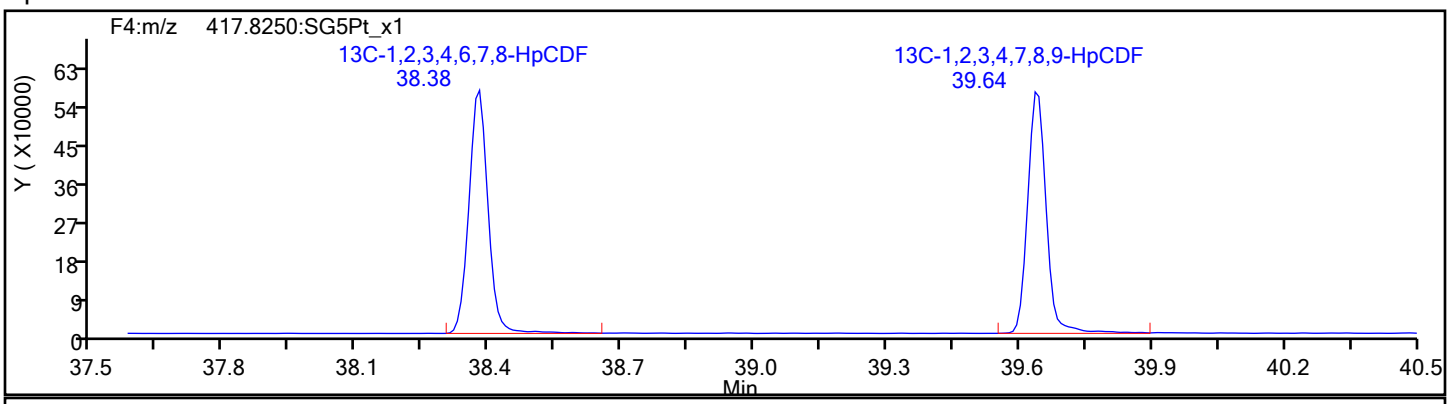
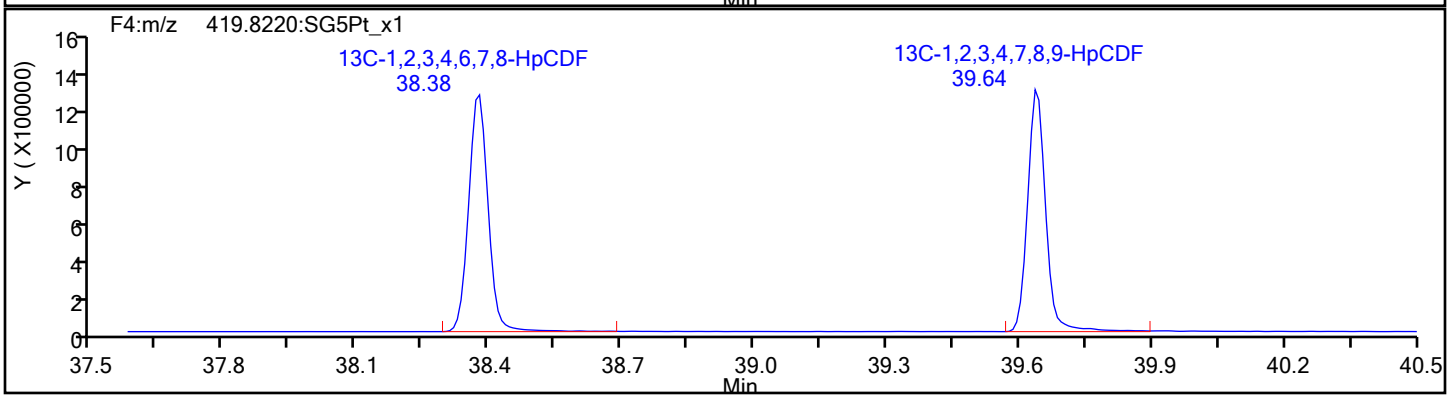
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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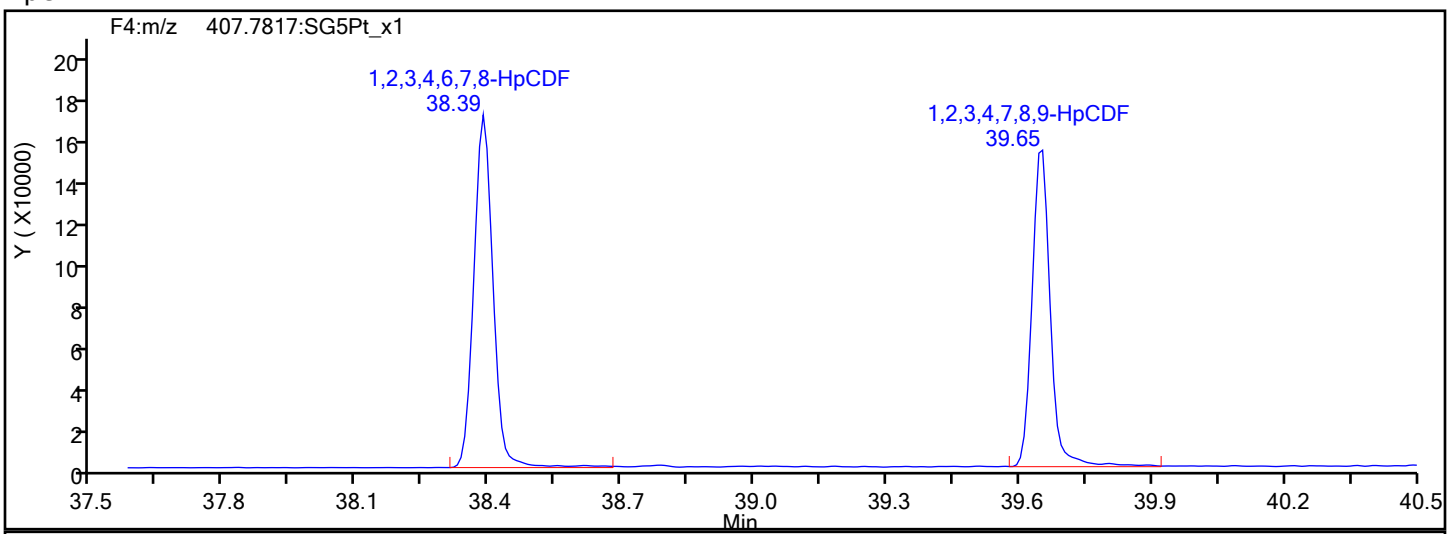
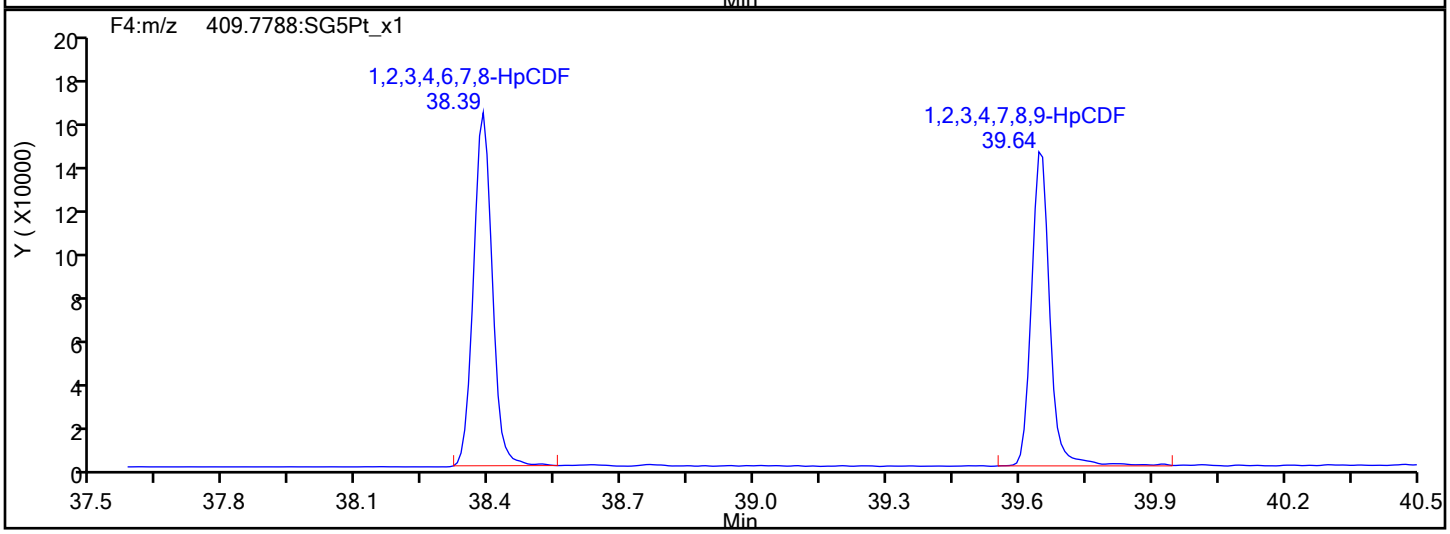
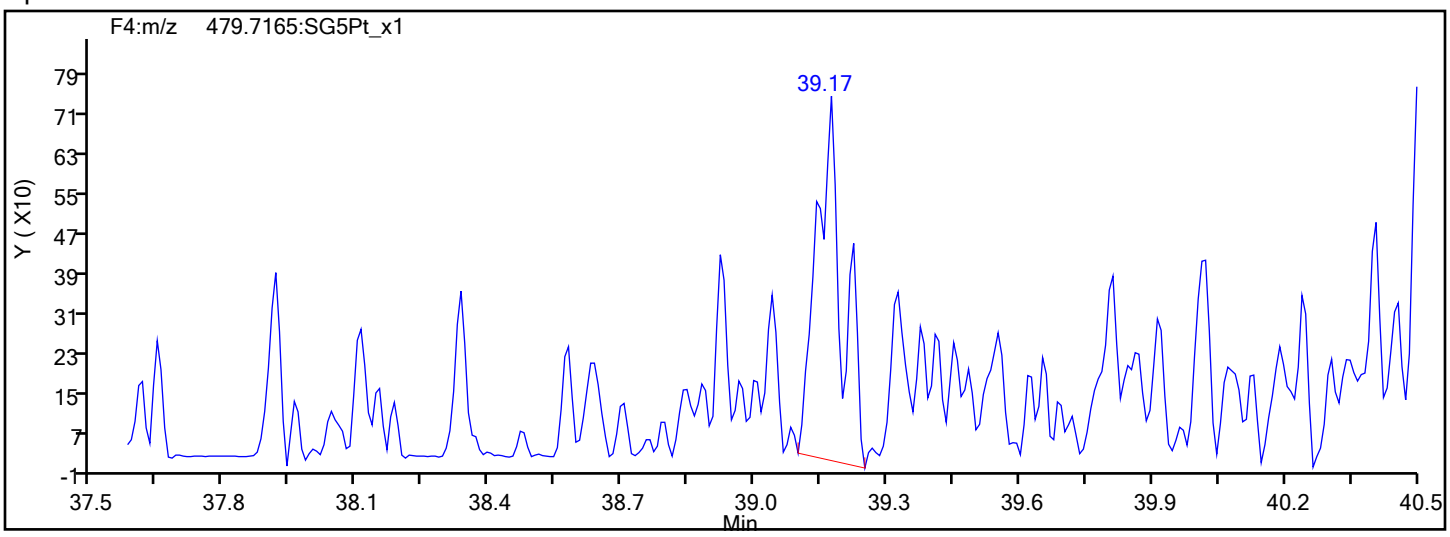
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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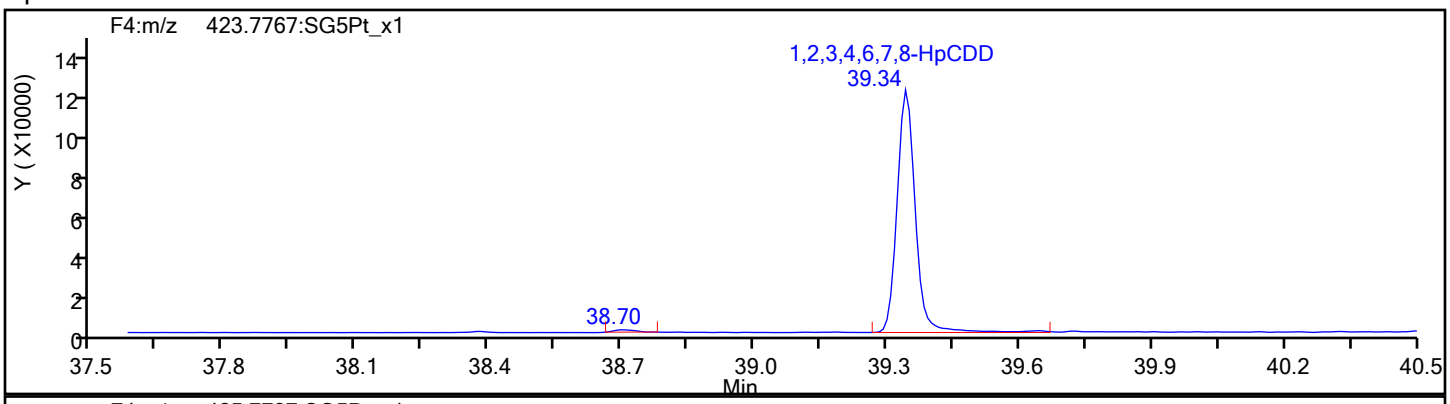
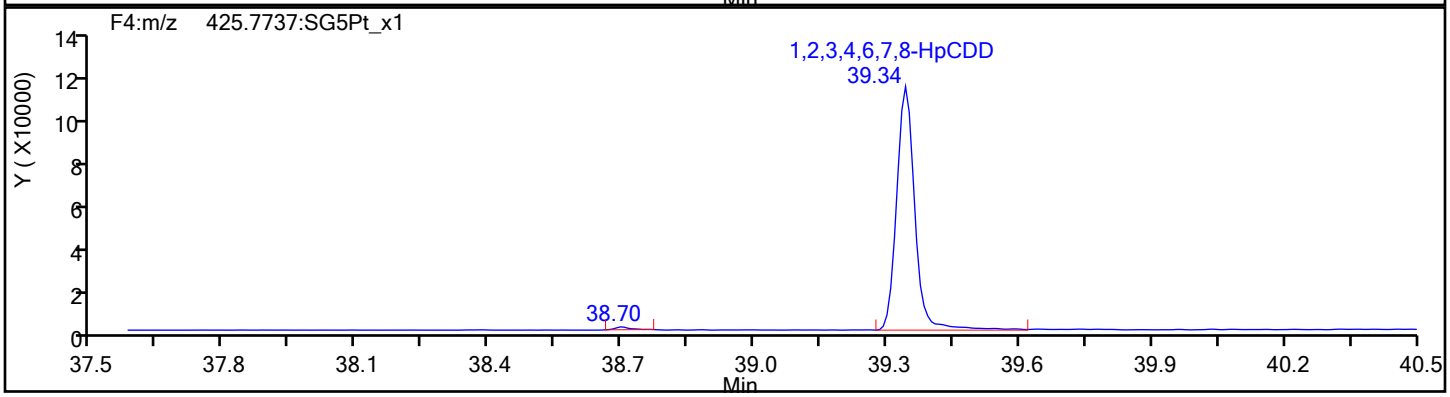
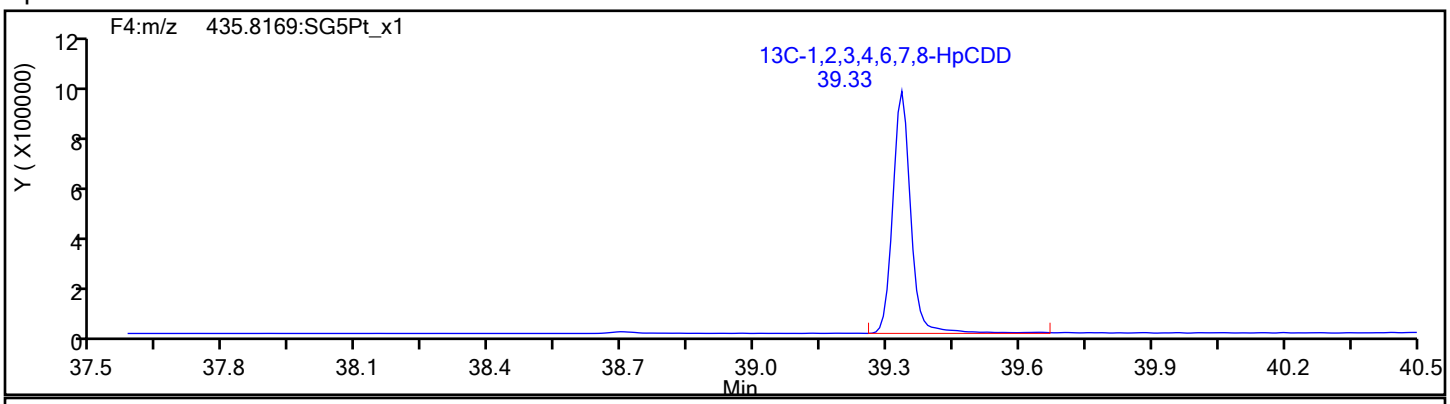
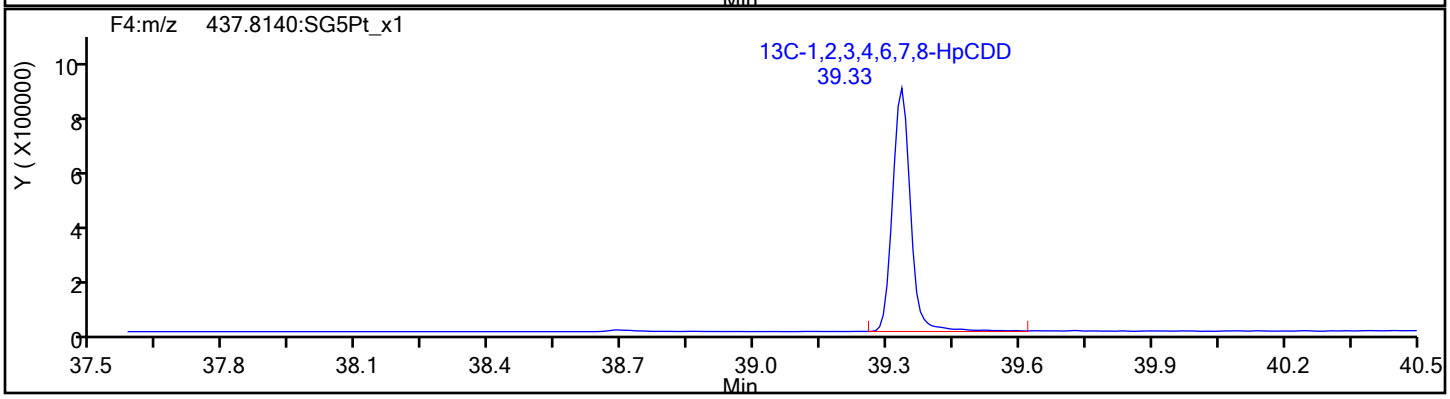




HpCDD Standards





Report Date: 23-Oct-2019 11:53:16 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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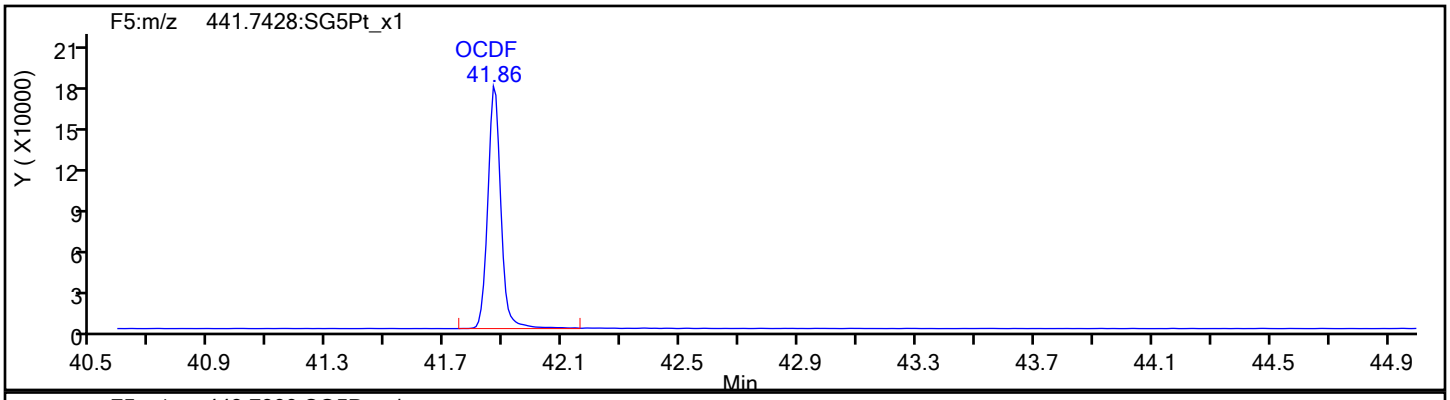

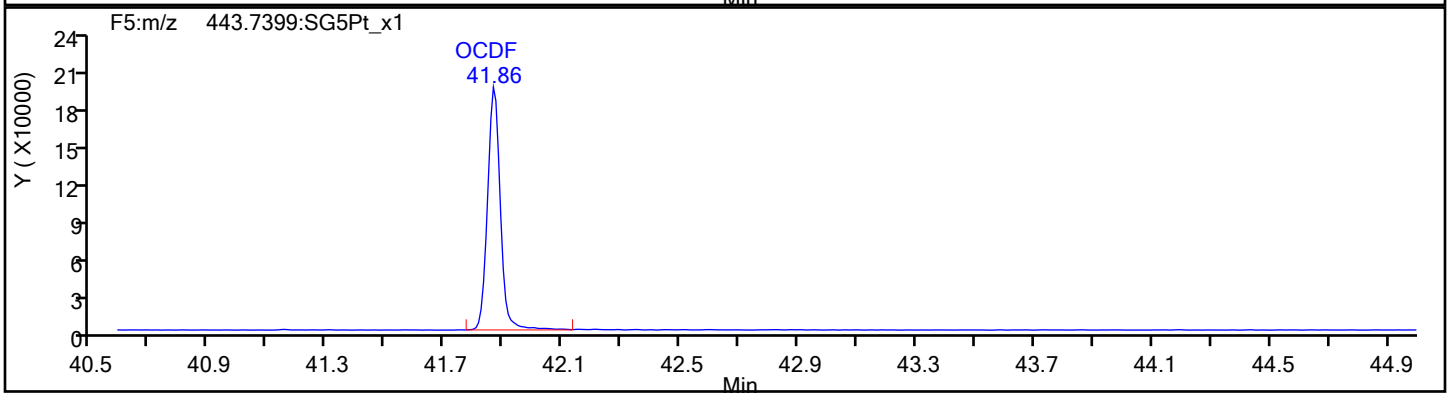

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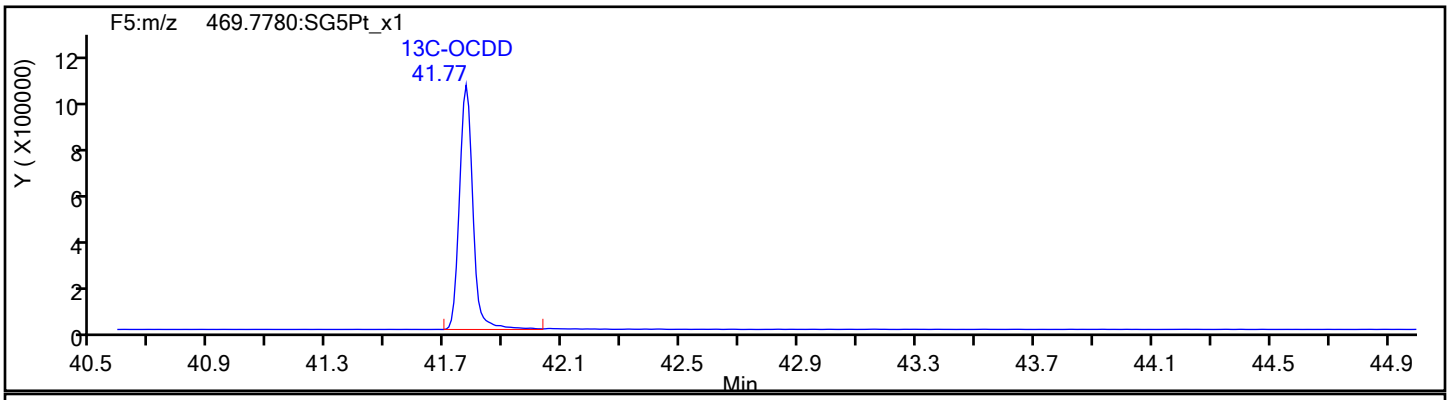

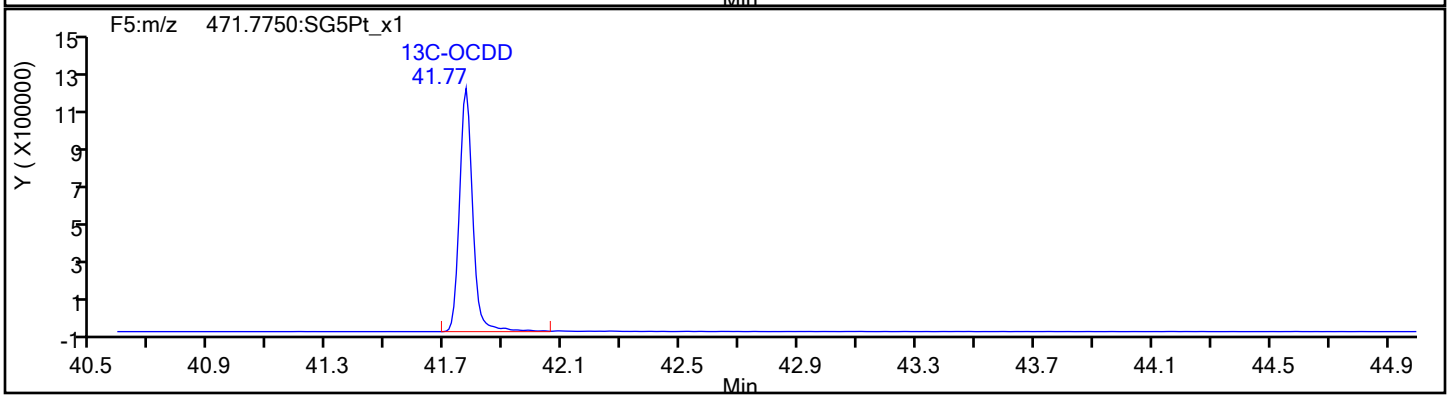

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Eurofins TestAmerica, Sacramento

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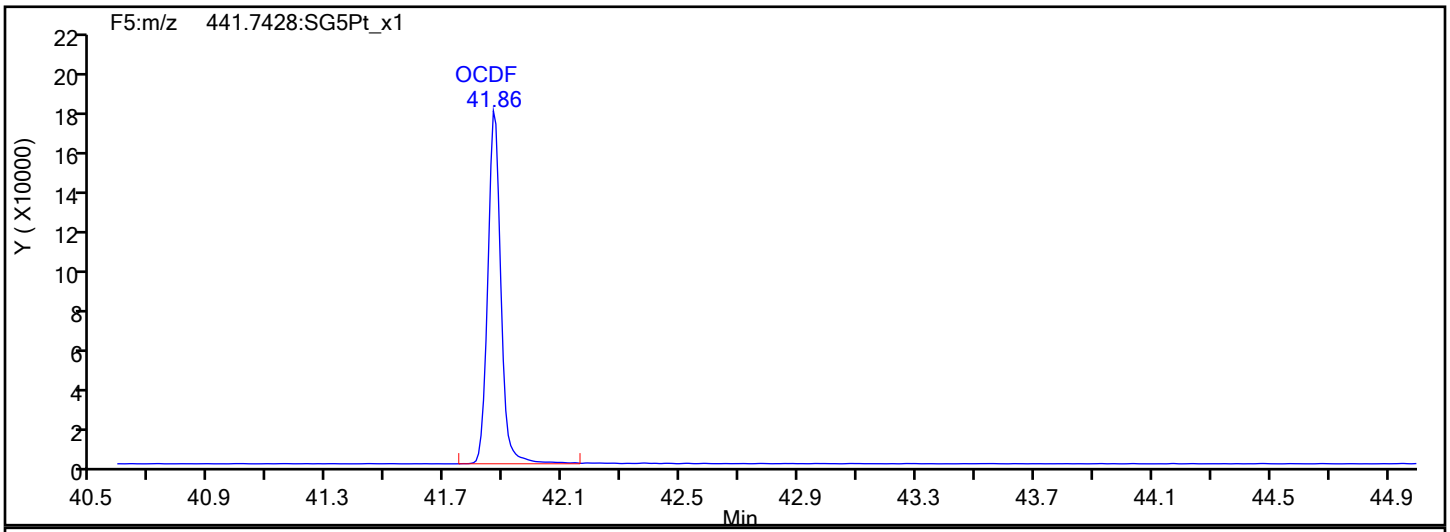
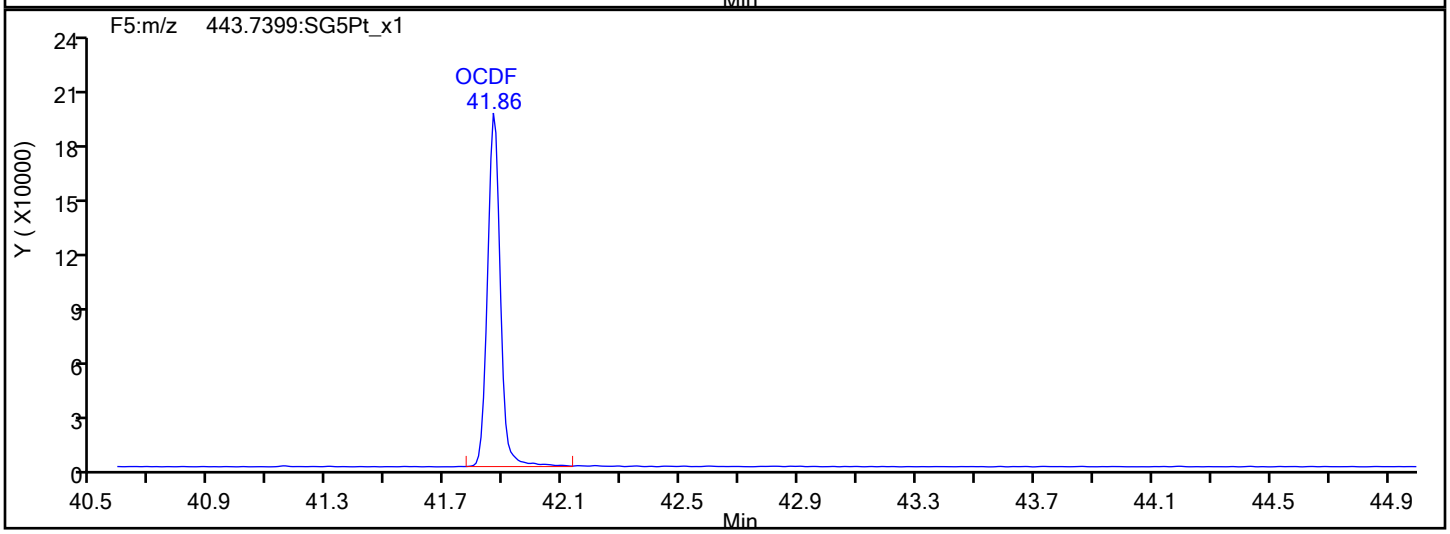
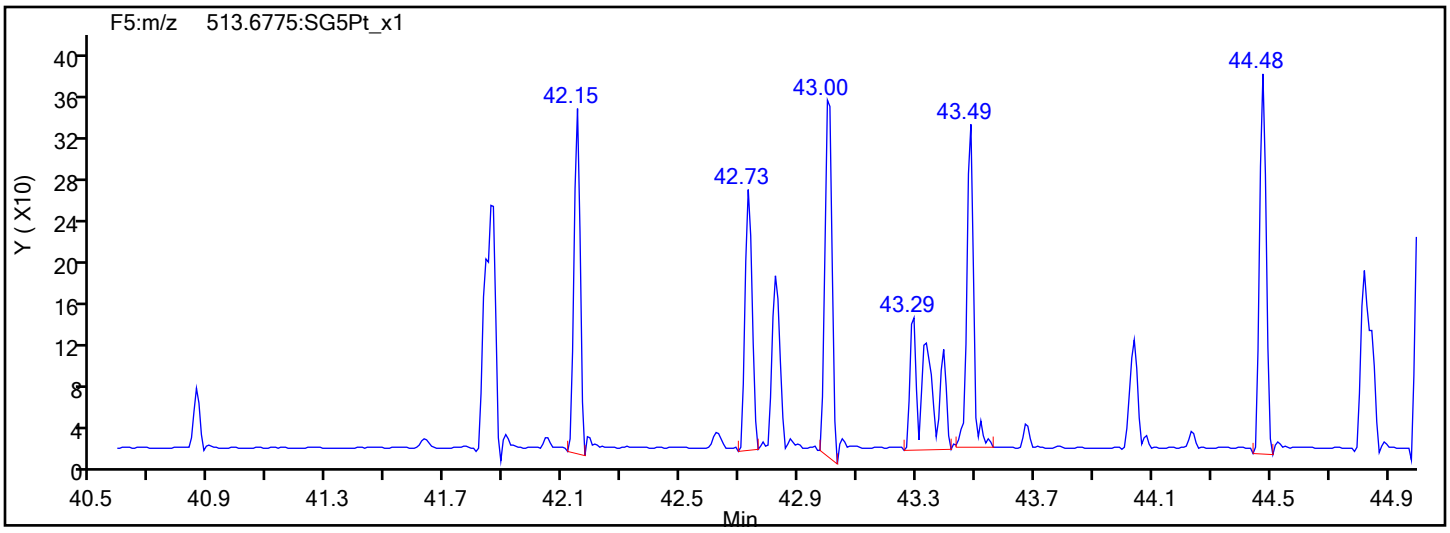
OCDF





OCDF Interference Mass



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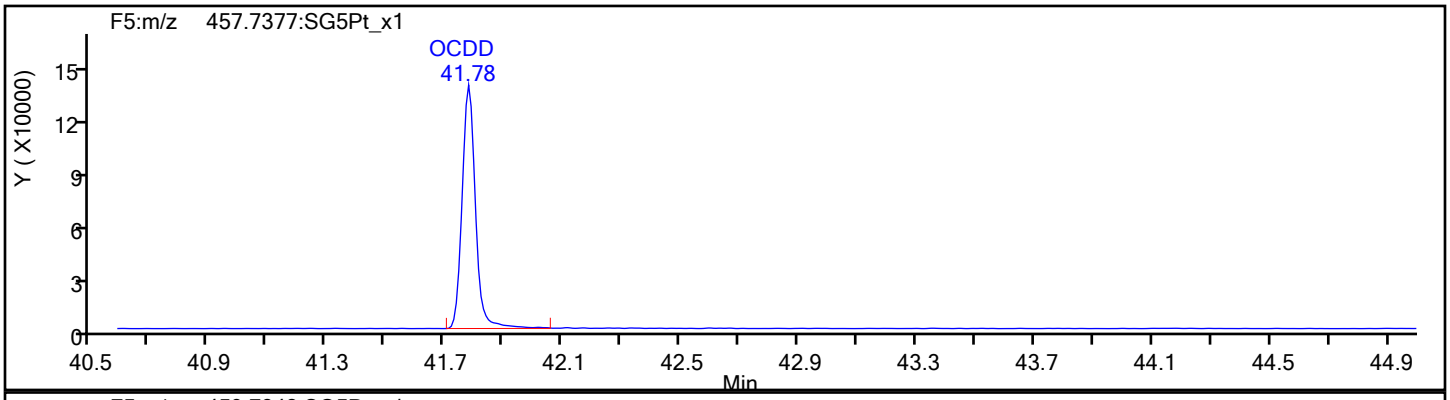
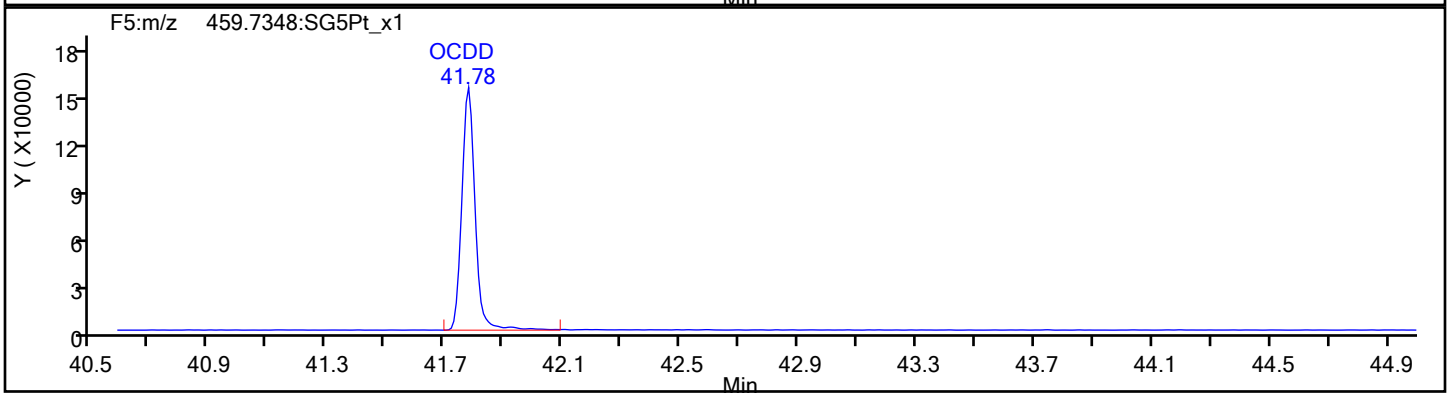
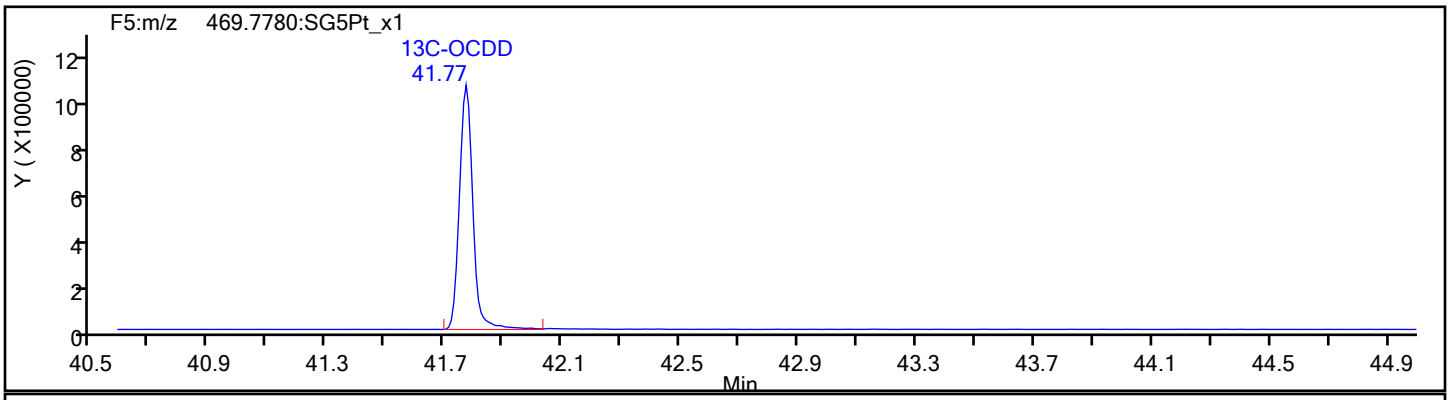
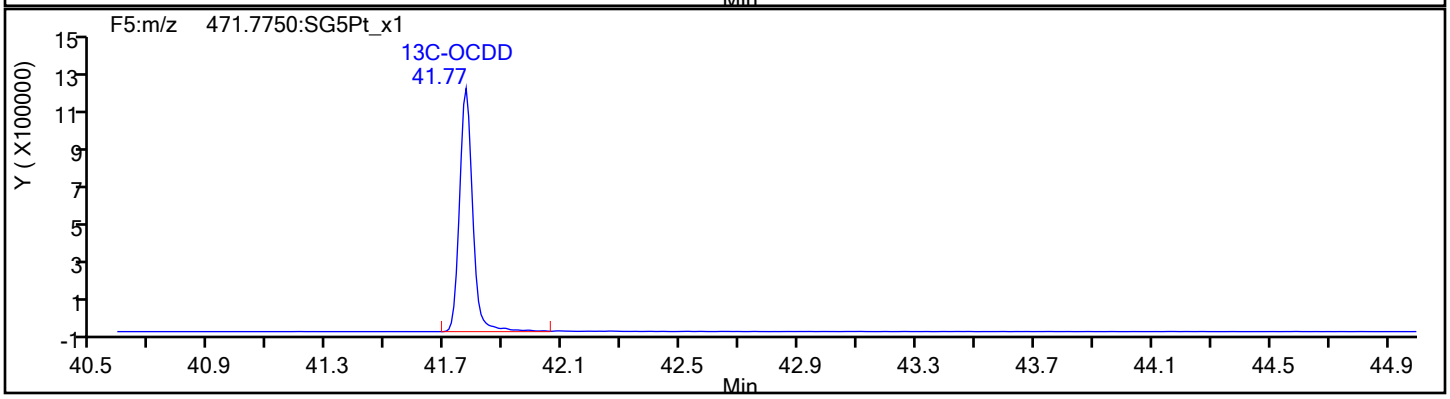
OCDD





OCDD Standards





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Eurofins TestAmerica, Sacramento

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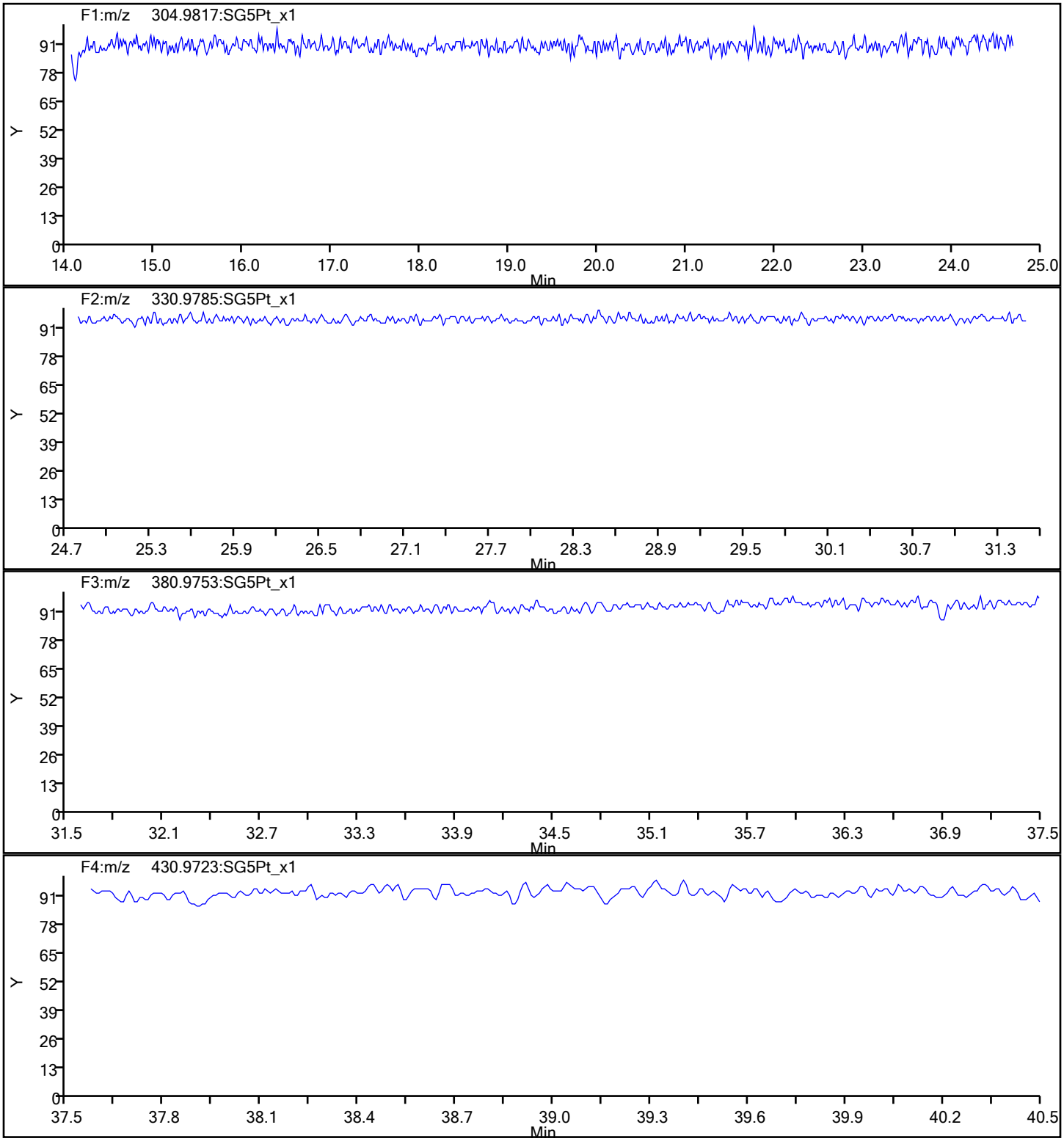

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Eurofins TestAmerica, Sacramento

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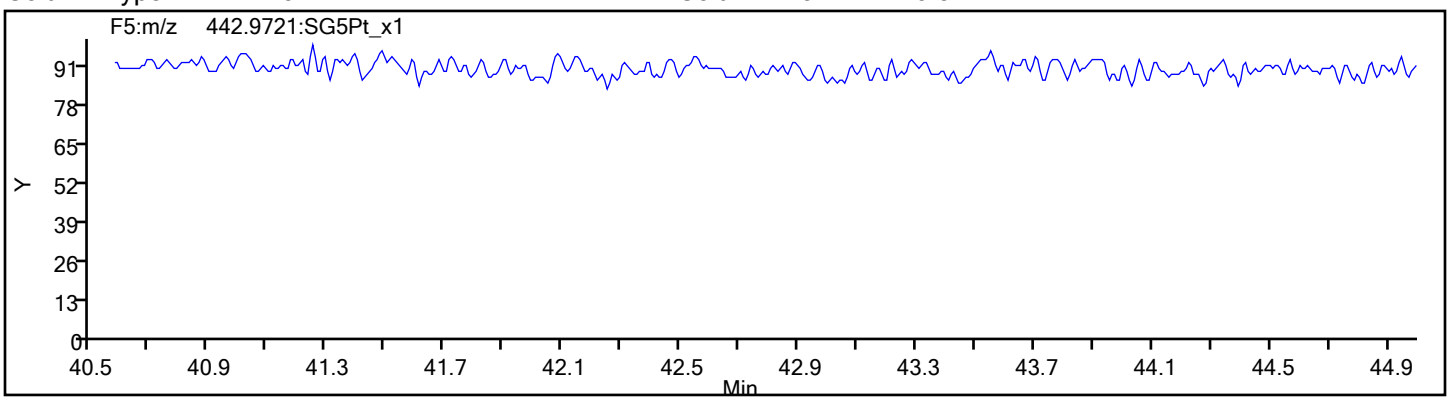

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

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Client ID:
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Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00086
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:20 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:53:05

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.720	5428040	0.83	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.752	8500696	0.80	1.6096	97.3	97.3	0.2298	0.2298	97.29	
2,3,7,8-TCDF	19.787	1022791	0.82	1.2332	9.756	9.756	0.0332	0.0332	97.56	
S Total TCDF					9.756	9.756	0.0332	0.0332		
D 13C-2,3,7,8-TCDD	21.084	5318631	0.79	0.9984	98.1	98.1	0.1830	0.1830	98.14	
$ 37Cl4-2,3,7,8-TCDD	21.118	861567		1.4510	10.9	10.9	0.0119	0.0119	109	
2,3,7,8-TCDD	21.109	620273	0.83	1.1988	9.728	9.728	0.0401	0.0401	97.28	
S Total TCDD					9.728	9.728	0.0401	0.0401		
D 13C-1,2,3,7,8-PeCDF	26.780	7149905	1.60	1.3678	96.3	96.3	0.4948	0.4948	96.30	
1,2,3,7,8-PeCDF	26.805	4185351	1.60	1.1689	50.1	50.1	0.2162	0.2162	100	
D 13C-2,3,4,7,8-PeCDF	28.281	7105616	1.59	1.3045	100.4	100.4	0.5188	0.5188	100	
2,3,4,7,8-PeCDF	28.306	3995881	1.60	1.1861	47.4	47.4	0.2284	0.2284	94.82	
S Total PeCDF					97.5	97.5	0.2223	0.2223		
D 13C-1,2,3,7,8-PeCDD	29.078	4325328	1.60	0.8292	96.1	96.1	0.2022	0.2022	96.10	
1,2,3,7,8-PeCDD	29.103	2385593	1.59	1.1200	49.2	49.2	0.0934	0.0934	98.49	
S Total PeCDD					49.2	49.2	0.0934	0.0934		
D 13C-1,2,3,4,7,8-HxCDF	34.575	7034054	0.54	1.1700	99.8	99.8	0.4752	0.4752	99.83	
1,2,3,4,7,8-HxCDF	34.591	4354560	1.26	1.3021	47.5	47.5	0.2762	0.2762	95.09	
D 13C-1,2,3,6,7,8-HxCDF	34.743	7747256	0.54	1.3168	97.7	97.7	0.4222	0.4222	97.69	
1,2,3,6,7,8-HxCDF	34.768	4878178	1.28	1.2907	48.8	48.8	0.2625	0.2625	97.57	
D 13C-2,3,4,6,7,8-HxCDF	35.607	7434381	0.54	1.2873	95.9	95.9	0.4319	0.4319	95.89	
2,3,4,6,7,8-HxCDF	35.623	4774247	1.26	1.3039	49.3	49.3	0.2327	0.2327	98.50	
D 13C-1,2,3,7,8,9-HxCDF	36.521	7042762	0.54	1.1987	97.6	97.6	0.4638	0.4638	97.55	
1,2,3,7,8,9-HxCDF	36.529	4611955	1.27	1.3329	49.1	49.1	0.2243	0.2243	98.26	
S Total HxCDF					194.7	194.7	0.2489	0.2489		
* 13C-1,2,3,7,8,9-HxCDD	36.320	6022520	1.27	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.825	4935207	1.31	0.8364	98.0	98.0	0.2671	0.2671	97.98	
1,2,3,4,7,8-HxCDD	35.842	2765708	1.26	1.1725	47.8	47.8	0.1219	0.1219	95.59	
D 13C-1,2,3,6,7,8-HxCDD	35.951	5259136	1.27	0.9040	96.6	96.6	0.2471	0.2471	96.59	
1,2,3,6,7,8-HxCDD	35.959	2902121	1.26	1.1256	49.0	49.0	0.1220	0.1220	98.05	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,7,8,9-HxCDD	36.336	3101840	1.26	1.2327	49.4	49.4	0.1136	0.1136	98.73	
S Total HxCDD					146.2	146.2	0.1192	0.1192		
D 13C-1,2,3,4,6,7,8-HpCDF	38.352	5481639	0.46	0.9689	93.9	93.9	0.4422	0.4422	93.94	
1,2,3,4,6,7,8-HpCDF	38.369	4368003	1.05	1.6176	49.3	49.3	0.4091	0.4091	98.52	
D 13C-1,2,3,4,7,8,9-HpCDF	39.619	5294096	0.47	0.9231	95.2	95.2	0.4641	0.4641	95.23	
1,2,3,4,7,8,9-HpCDF	39.627	3686922	1.06	1.4672	47.5	47.5	0.4264	0.4264	94.93	
S Total HpCDF					96.7	96.7	0.4178	0.4178		
D 13C-1,2,3,4,6,7,8-HpCDD	39.317	5188334	1.06	0.9114	94.5	94.5	0.5111	0.5111	94.52	
1,2,3,4,6,7,8-HpCDD	39.325	2864412	1.06	1.1237	49.1	49.1	0.2232	0.2232	98.26	
S Total HpCDD					49.1	49.1	0.2232	0.2232		
D 13C-OCDD	41.756	6914737	0.90	0.6272	183.0	183.0	0.2991	0.2991	91.52	
OCDF	41.848	5158047	0.93	1.5416	96.8	96.8	0.1080	0.1080	96.78	
OCDD	41.764	3993320	0.91	1.1855	97.4	97.4	0.1176	0.1176	97.43	

Reagents:

HRDXNL4_00086 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 18-Oct-2019 22:26:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00086
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:20 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:53:05

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.720	20.729	-1		2458672	368680	404	1010	913		
333.9338	20.720	20.729	-1		2969368	452415	196	490	2308	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.752	19.762	-1	0.953	3787513	587843	820	2050	717		
317.9389	19.752	19.762	-1	0.953	4713183	732837	395	987	1855	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.787	19.792	0	1.002	462094	72096	73	182	988		
305.8987	19.787	19.792	0	1.002	560697	87256	143	357	610	0.82(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.084	21.094	-1	1.018	2347013	330490	404	1010	818		
333.9338	21.084	21.094	-1	1.018	2971618	439082	196	490	2240	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.118	21.121	0	1.019	861567	123683	57	142	2170		
2,3,7,8-TCDD											
319.8965	21.109	21.127	-1	1.001	280694	40047	101	252	397		
321.8936	21.127	21.127	0	1.002	339579	50685	47	117	1078	0.83(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.780	26.797	-1	1.292	4400350	762689	1355	3387	563		
353.8970	26.780	26.797	-1	1.292	2749555	488239	868	2170	562	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	26.805	26.821	-1	1.001	2576390	446942	754	1885	593		
341.8567	26.805	26.821	-1	1.001	1608961	281082	511	1277	550	1.60(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.281	28.297	-1	1.365	4365821	712333	1355	3387	526		
353.8970	28.281	28.297	-1	1.365	2739795	454965	868	2170	524	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	28.306	28.322	-1	1.001	2458823	406314	754	1885	539		
341.8567	28.306	28.322	-1	1.001	1537058	255298	511	1277	500	1.60(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.078	29.095	-1	1.403	2660670	425935	328	820	1299		
369.8919	29.078	29.095	-1	1.403	1664658	252791	223	557	1134	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.103	29.120	-1	1.001	1464007	229244	179	447	1281		
357.8516	29.103	29.120	-1	1.001	921586	144444	105	262	1376	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.575	34.589	-1	0.952	2476129	546232	1291	3227	423		
385.8610	34.575	34.589	-1	0.952	4557925	1020709	2260	5650	452	0.54(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.591	34.608	-1	1.000	2431109	542218	1277	3192	425		
375.8178	34.591	34.608	-1	1.000	1923451	430097	977	2442	440	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.743	34.759	-1	0.957	2705460	584406	1291	3227	453		
385.8610	34.743	34.759	-1	0.957	5041796	1078938	2260	5650	477	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.768	34.777	-1	1.001	2735241	605217	1277	3192	474		
375.8178	34.759	34.777	-1	1.000	2142937	468159	977	2442	479	1.28(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.607	35.616	-1	0.980	2607490	650614	1291	3227	504		
385.8610	35.607	35.616	-1	0.980	4826891	1206432	2260	5650	534	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.623	35.633	-1	1.000	2660756	652561	1277	3192	511		
375.8178	35.623	35.633	-1	1.000	2113491	519164	977	2442	531	1.26(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.521	36.530	-1	1.006	2478424	661077	1291	3227	512		
385.8610	36.521	36.530	-1	1.006	4564338	1223564	2260	5650	541	0.54(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	36.529	36.544	-1	1.000	2581703	688459	1277	3192	539		
375.8178	36.529	36.544	-1	1.000	2030252	541659	977	2442	554	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.320	36.330	-1		3370320	895035	813	2032	1101		
403.8529	36.320	36.330	-1		2652200	701590	614	1535	1143	1.27(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.825	35.836	-1	0.986	2794515	726737	813	2032	894		
403.8529	35.825	35.836	-1	0.986	2140692	568124	614	1535	925	1.31(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.842	35.849	0	1.000	1541718	408408	412	1030	991		
391.8127	35.842	35.849	0	1.000	1223990	318932	328	820	972	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.951	35.958	0	0.990	2941554	750282	813	2032	923		
403.8529	35.951	35.958	0	0.990	2317582	596940	614	1535	972	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8158	35.959	35.973	-1	1.000	1620295	423829	412	1030	1029		
391.8127	35.959	35.973	-1	1.000	1281826	336735	328	820	1027	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.336	36.346	-1	1.014	1730466	445331	412	1030	1081		
391.8127	36.336	36.346	-1	1.014	1371374	354452	328	820	1081	1.26(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.352	38.366	-1	1.056	1719339	561797	1020	2550	551		
419.8220	38.352	38.366	-1	1.056	3762300	1186751	1716	4290	692	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.369	38.378	-1	1.000	2241970	724412	2430	6075	298		
409.7788	38.369	38.378	-1	1.000	2126033	681123	2199	5497	310	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.619	39.629	-1	1.091	1680393	587565	1020	2550	576		
419.8220	39.619	39.629	-1	1.091	3613703	1262068	1716	4290	735	0.47(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.627	39.641	-1	1.000	1898737	655953	2430	6075	270		
409.7788	39.627	39.641	-1	1.000	1788185	627860	2199	5497	286	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.317	39.324	0	1.083	2670315	929805	1509	3772	616		
437.8140	39.317	39.324	0	1.083	2518019	863340	1466	3665	589	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	39.325	39.334	-1	1.000	1476881	513311	898	2245	572		
425.7737	39.325	39.334	-1	1.000	1387531	476679	901	2252	529	1.06(0.88-1.20)	
13C-OCDD											
469.7780	41.756	41.764	0	1.150	3274788	1054863	606	1515	1741		
471.7750	41.756	41.764	0	1.150	3639949	1172435	592	1480	1980	0.90(0.76-1.02)	
OCDF											
441.7428	41.848	41.858	-1	1.002	2480266	807257	351	877	2300		
443.7399	41.848	41.858	-1	1.002	2677781	865145	391	977	2213	0.93(0.76-1.02)	
OCDD											
457.7377	41.764	41.772	0	1.000	1898284	607657	292	730	2081		
459.7348	41.764	41.772	0	1.000	2095036	672472	329	822	2044	0.91(0.76-1.02)	

Reagents:

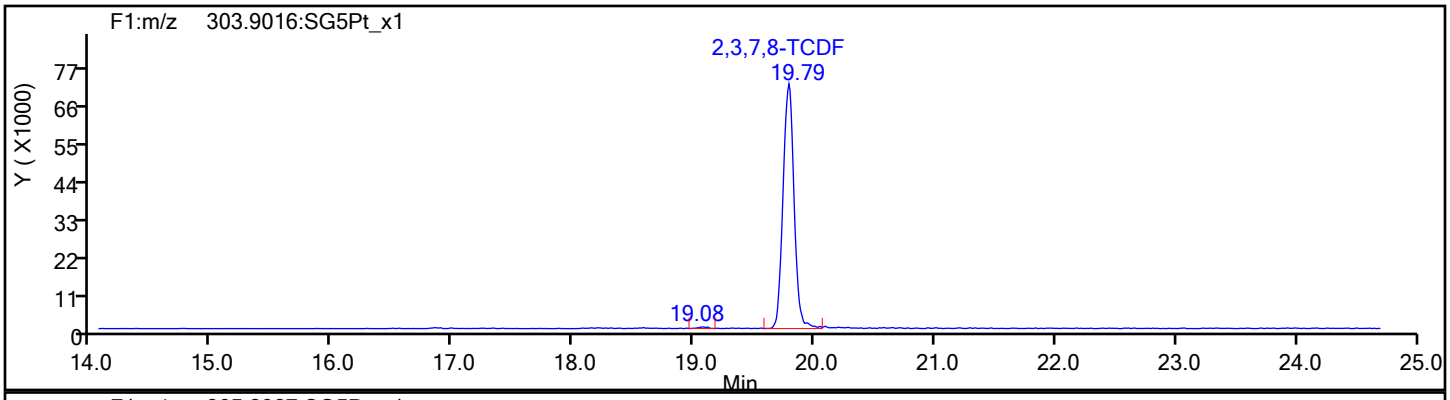
HRDXNL4_00086 Amount Added: 1.00 Units: mL

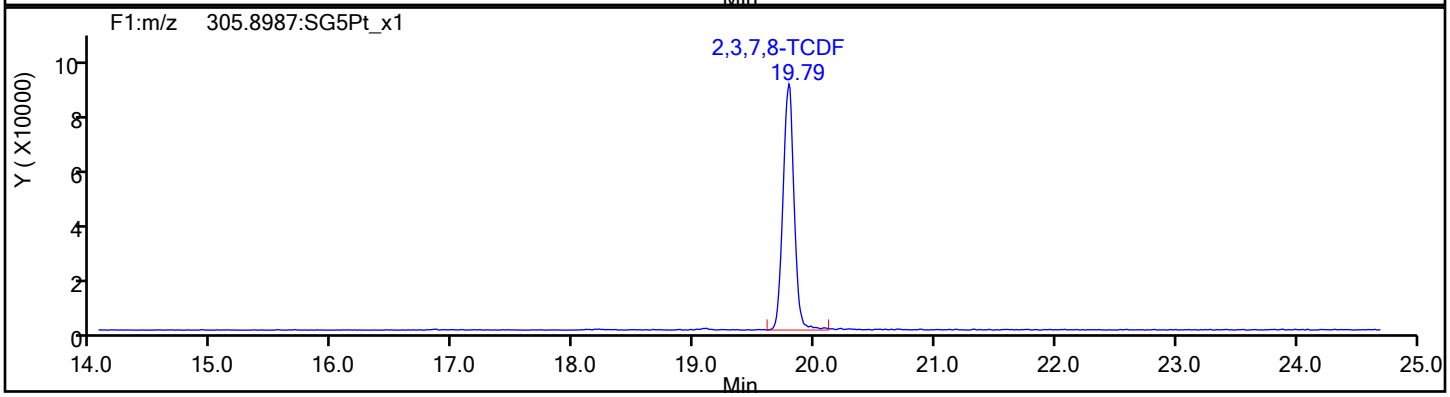
Report Date: 23-Oct-2019 11:53:29 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

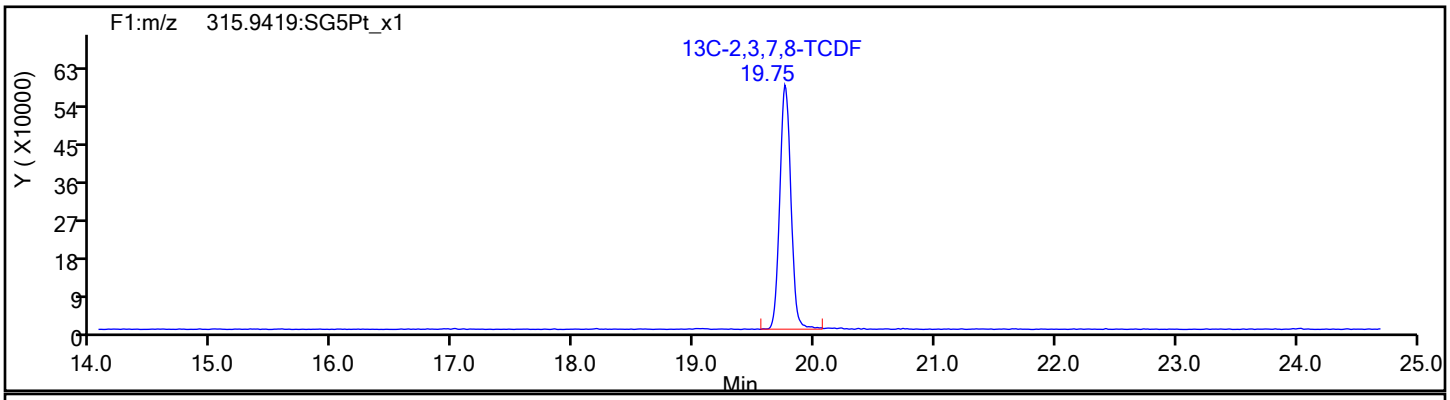
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

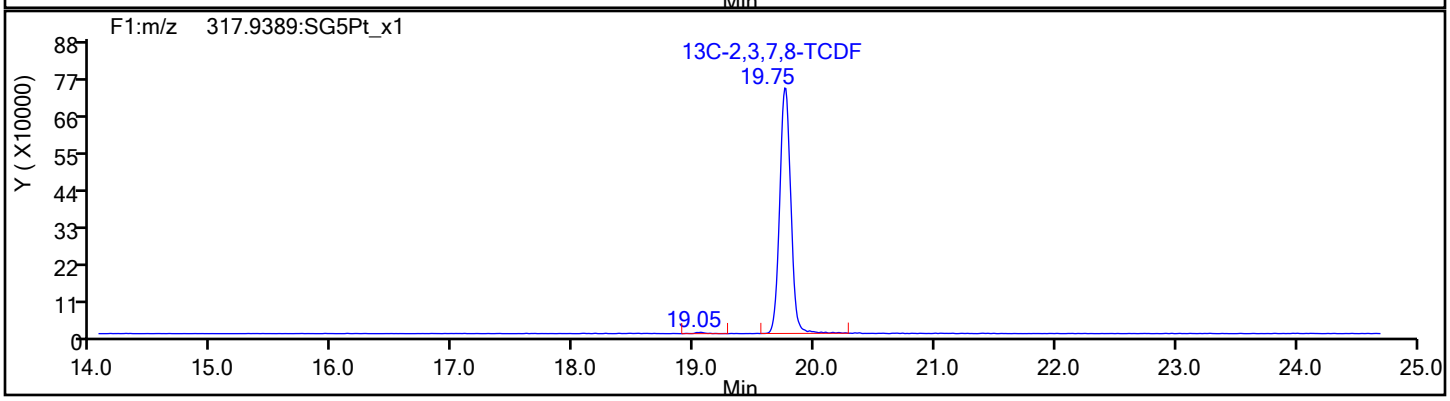
TCDF





TCDF Standards





Report Date: 23-Oct-2019 11:53:29 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
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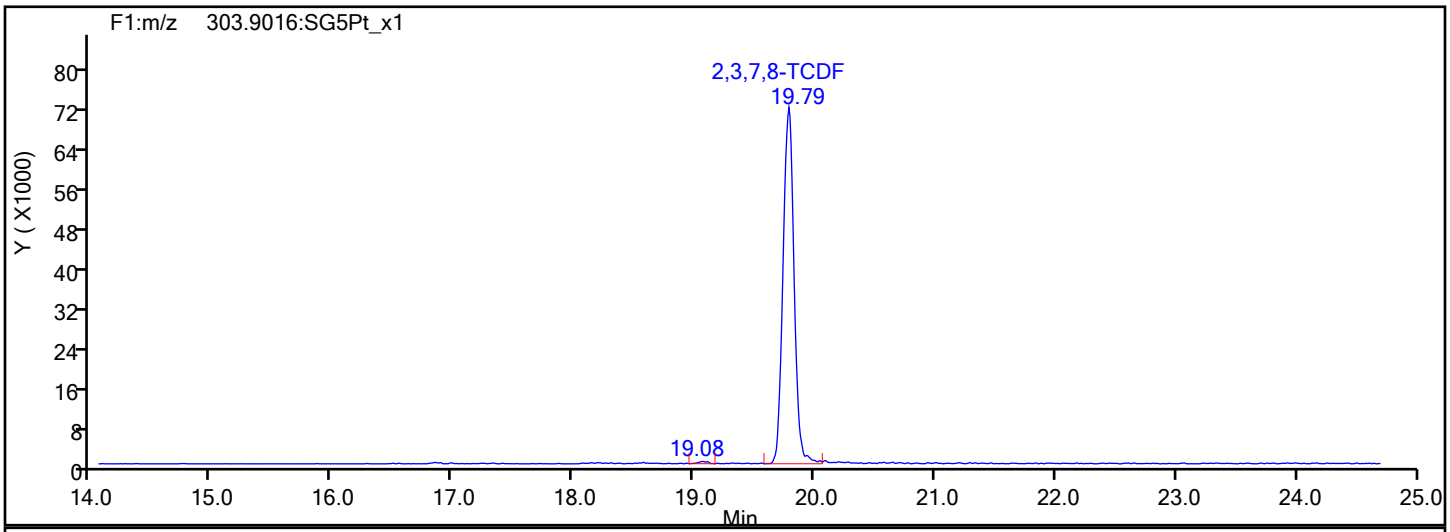
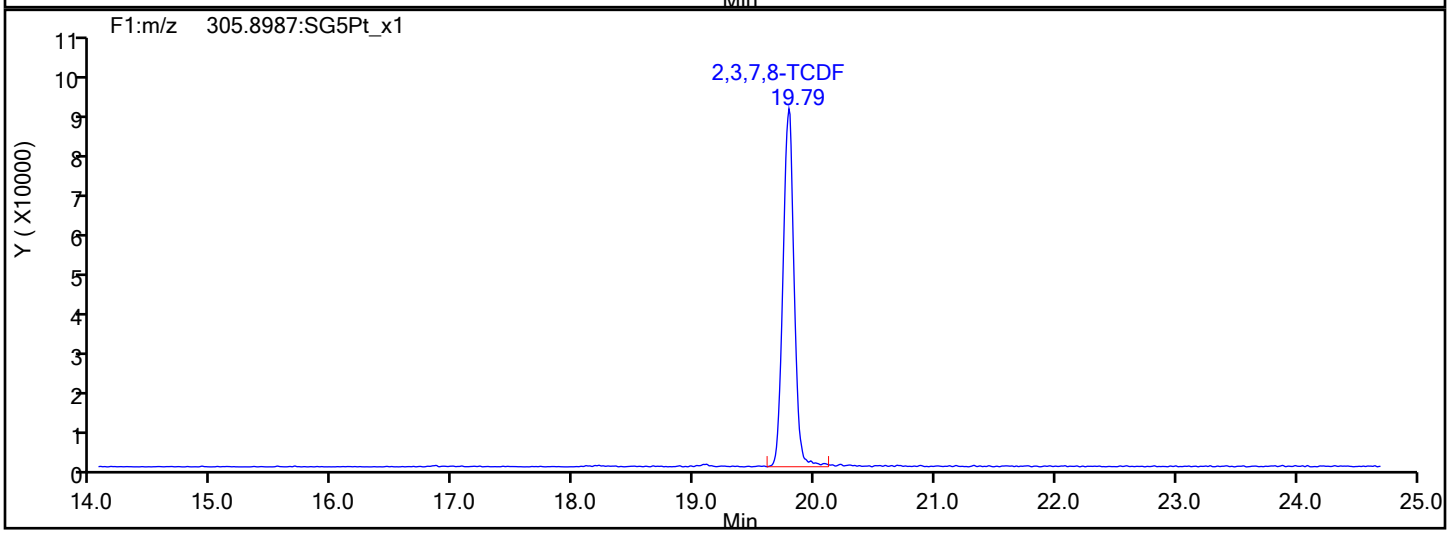
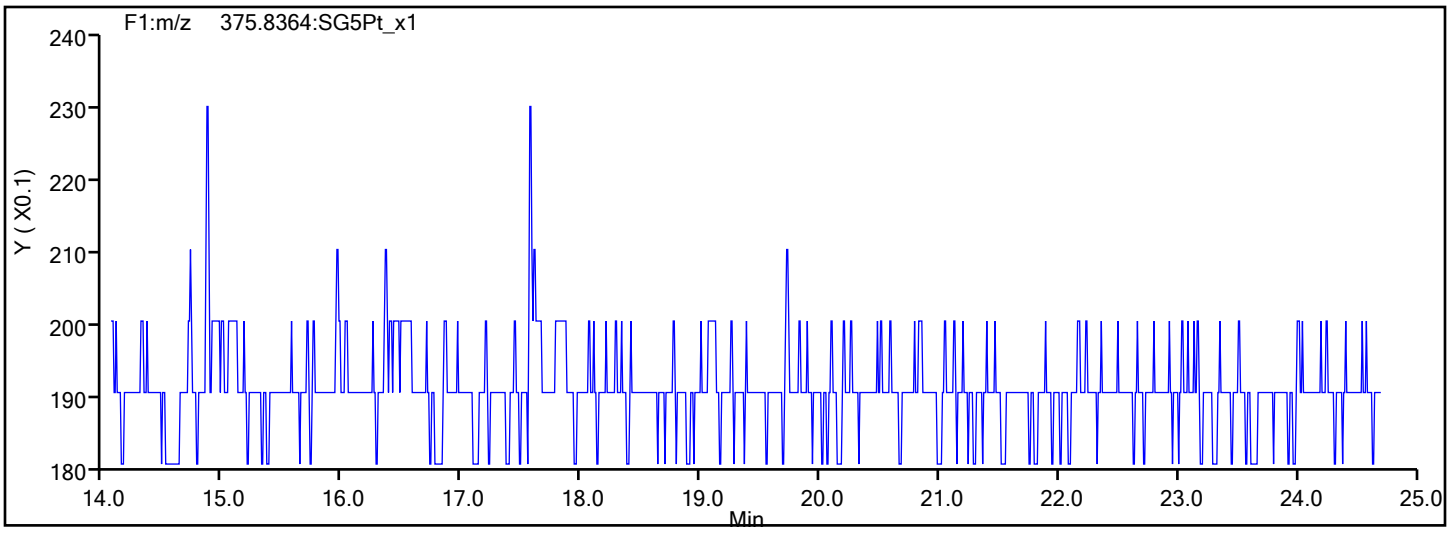
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 23-Oct-2019 11:53:29 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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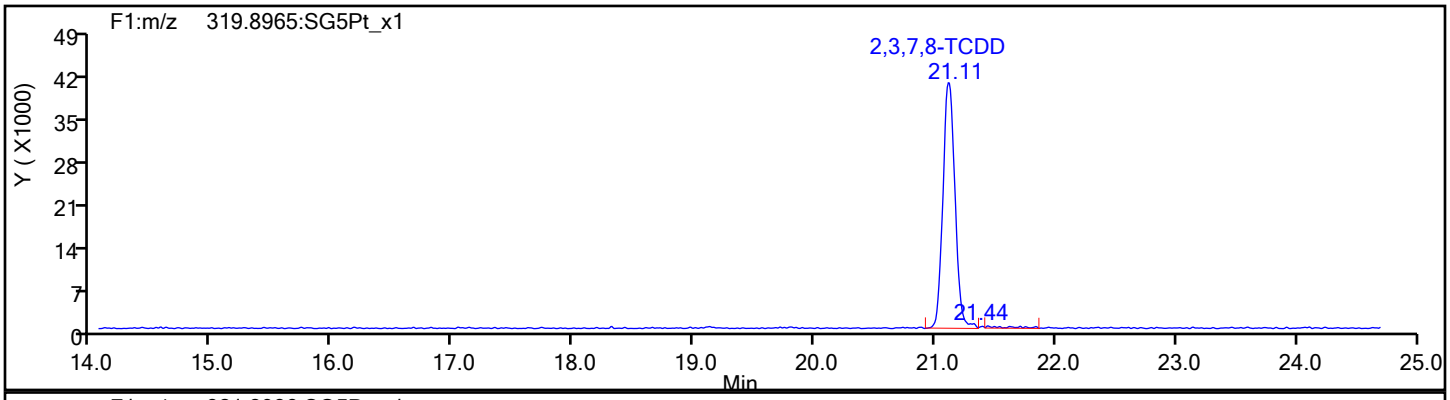
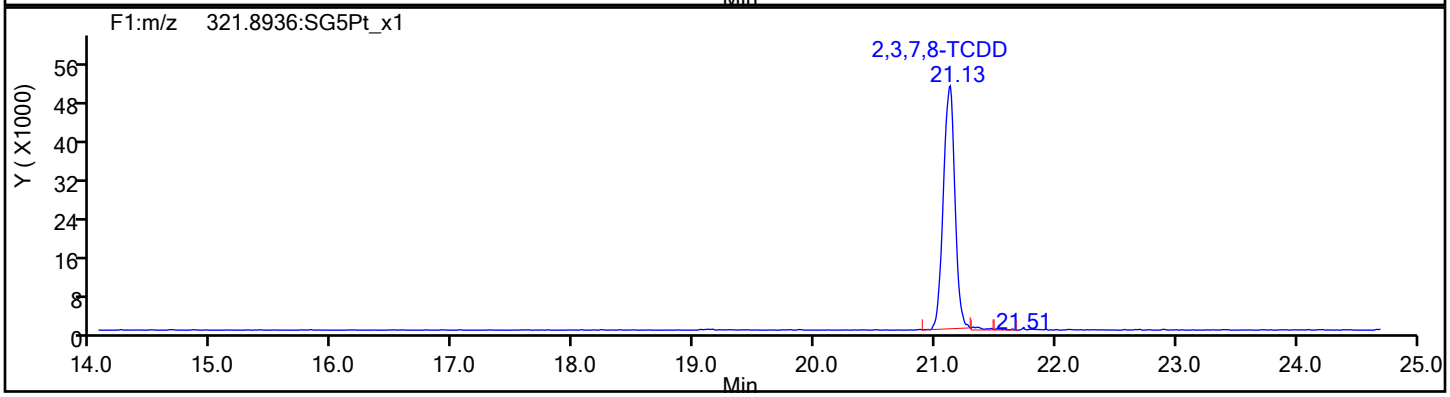
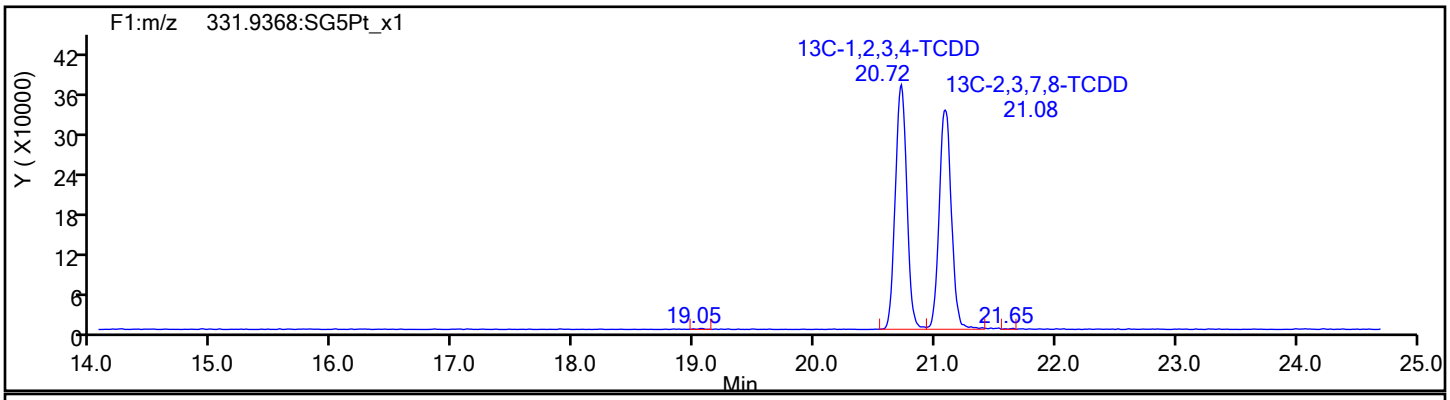
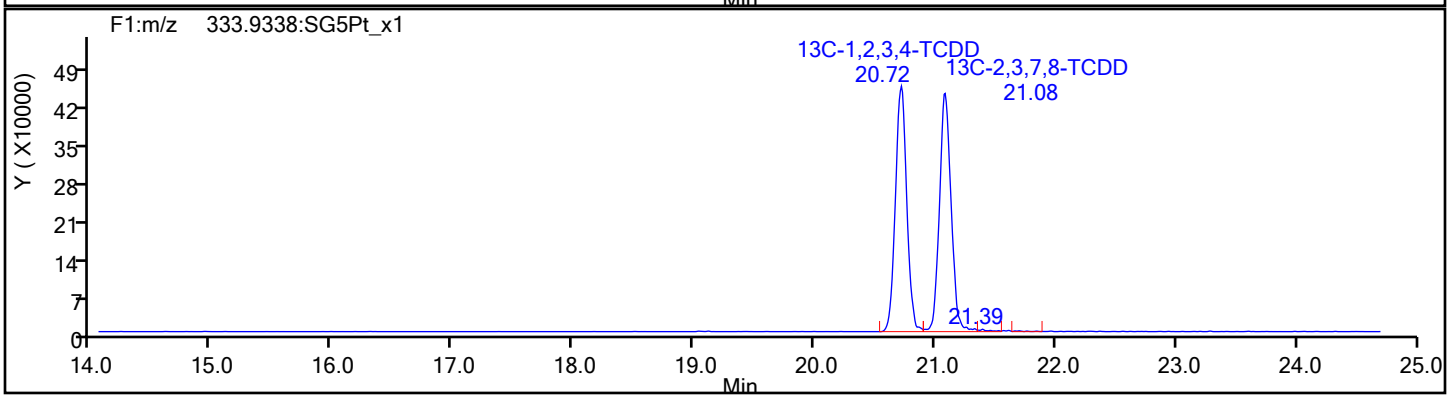
TCDD





TCDD Standards





Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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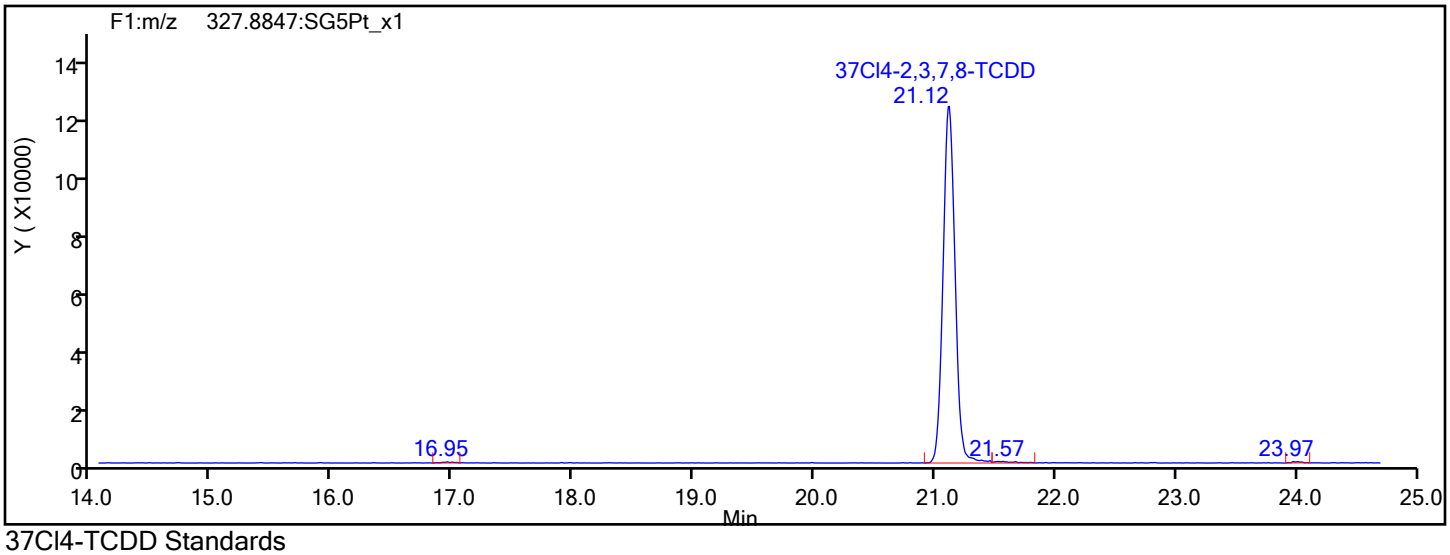
37Cl4-TCDD



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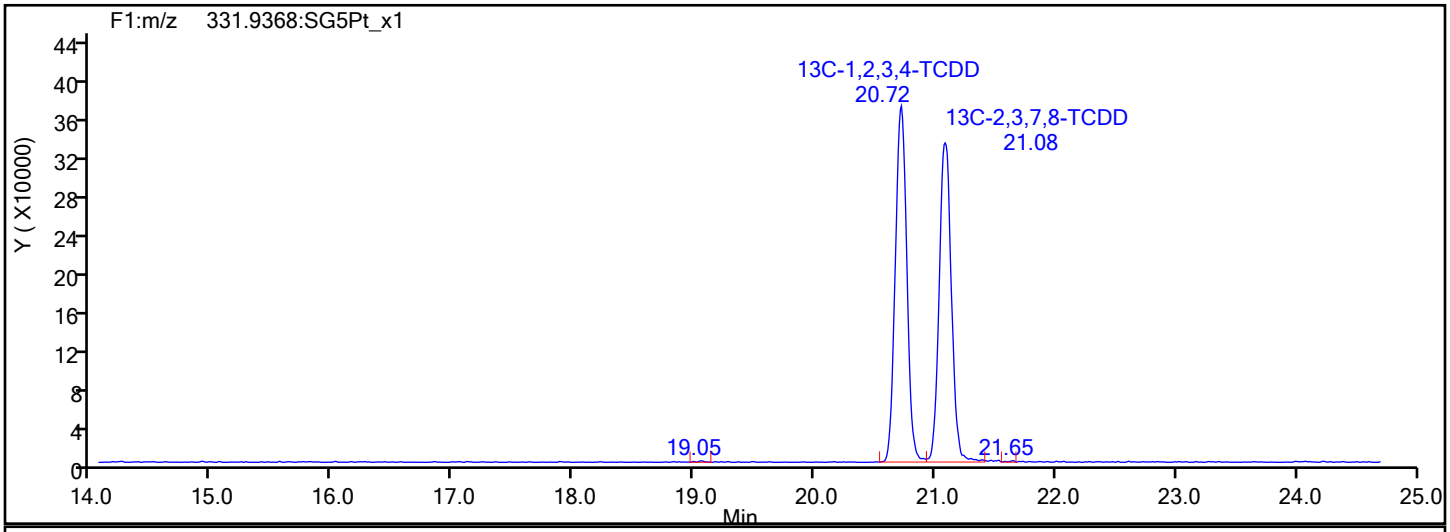

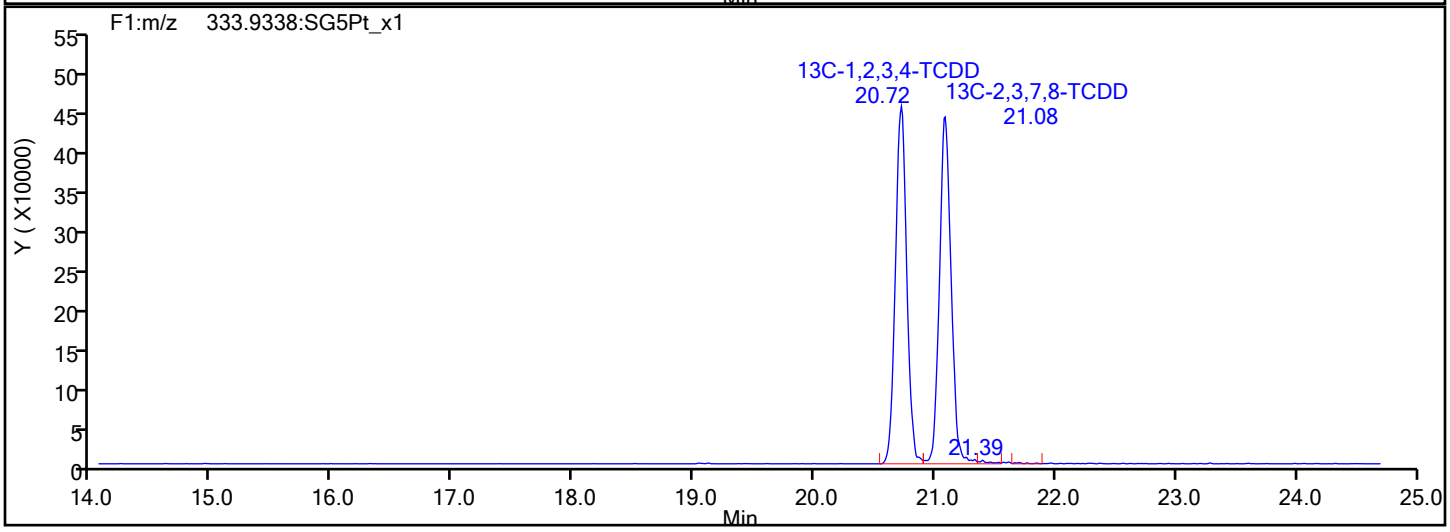

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Eurofins TestAmerica, Sacramento

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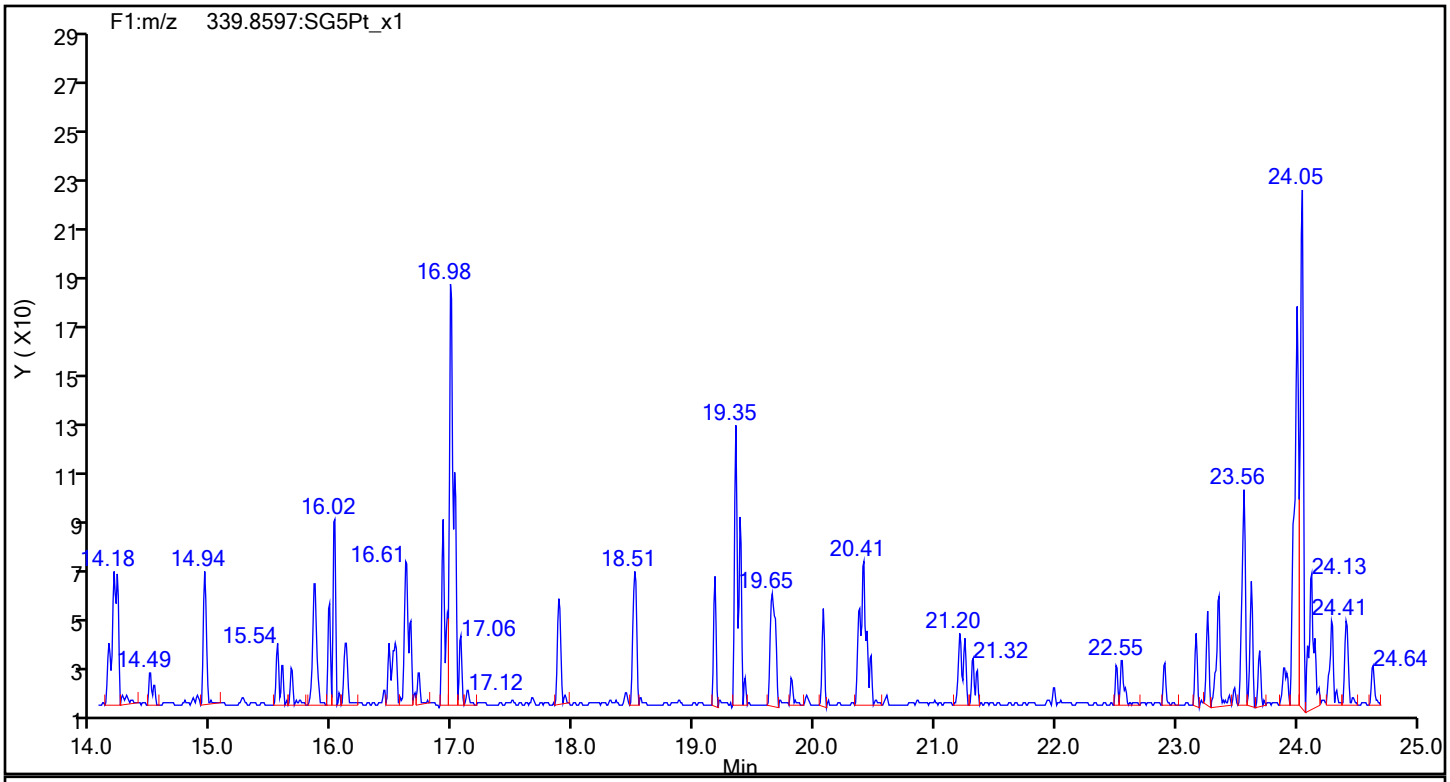
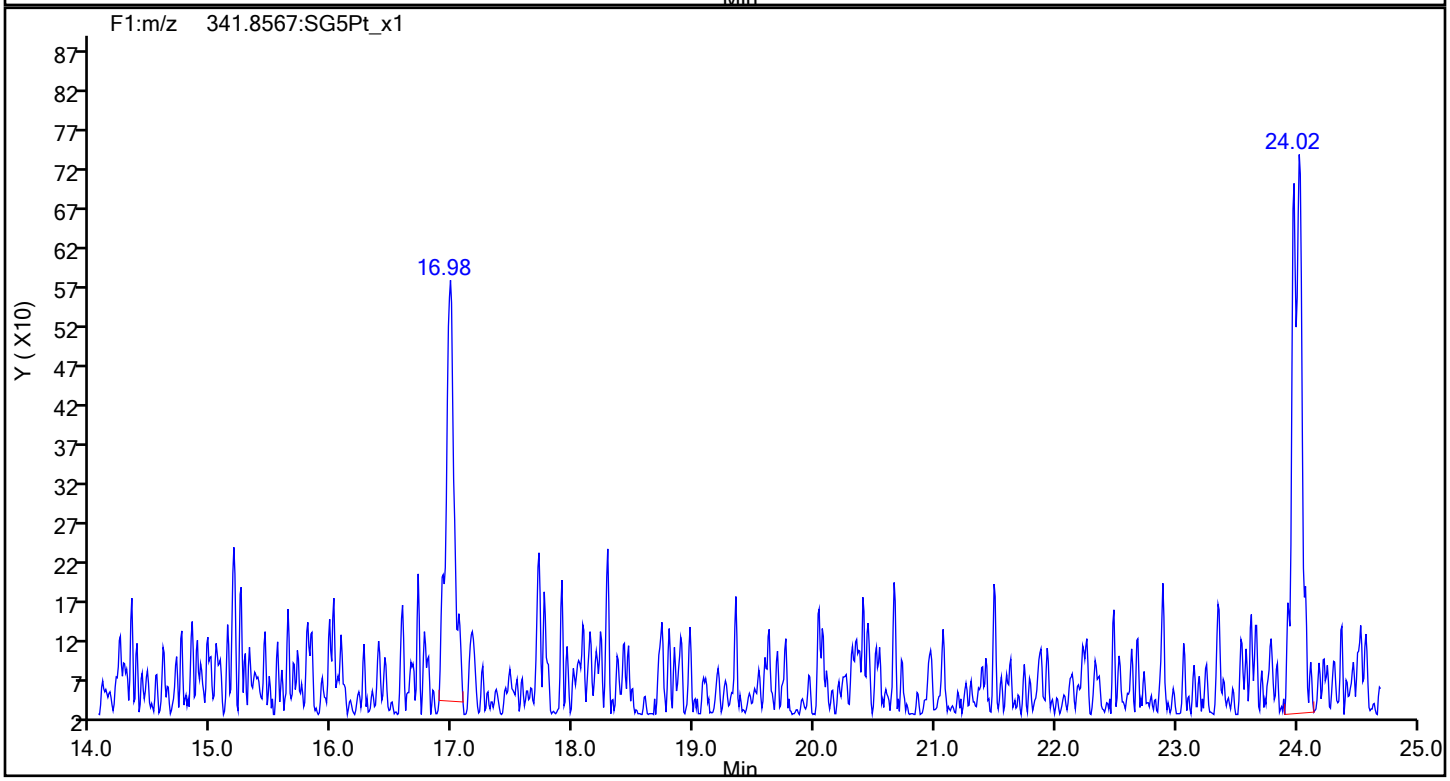
F1 PeCDFs





Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
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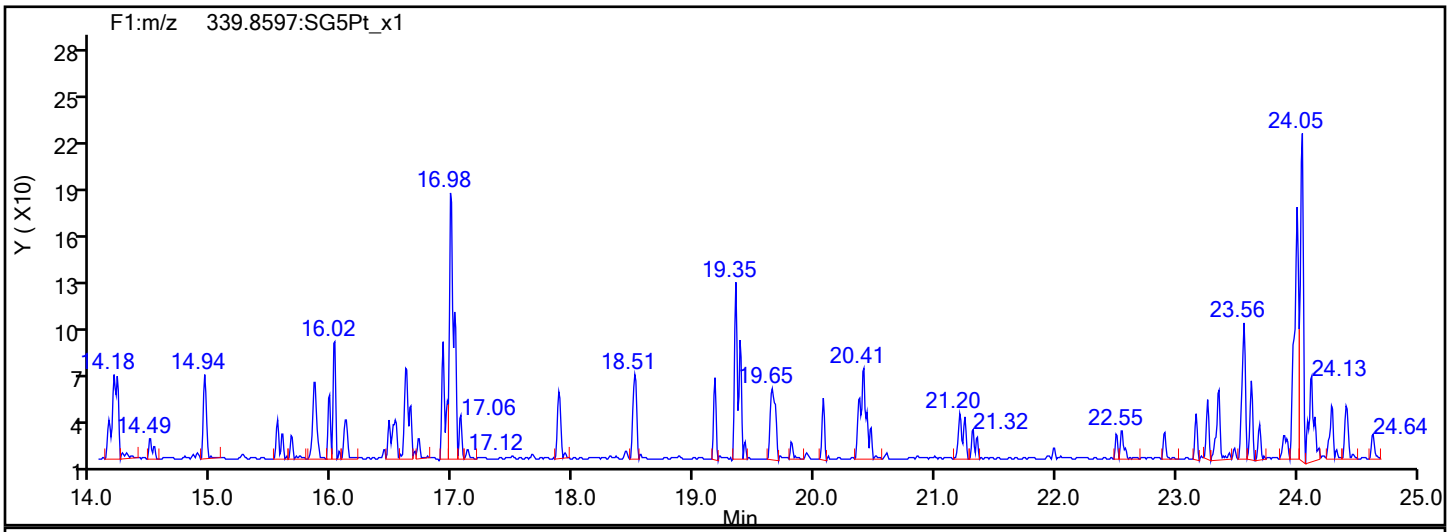
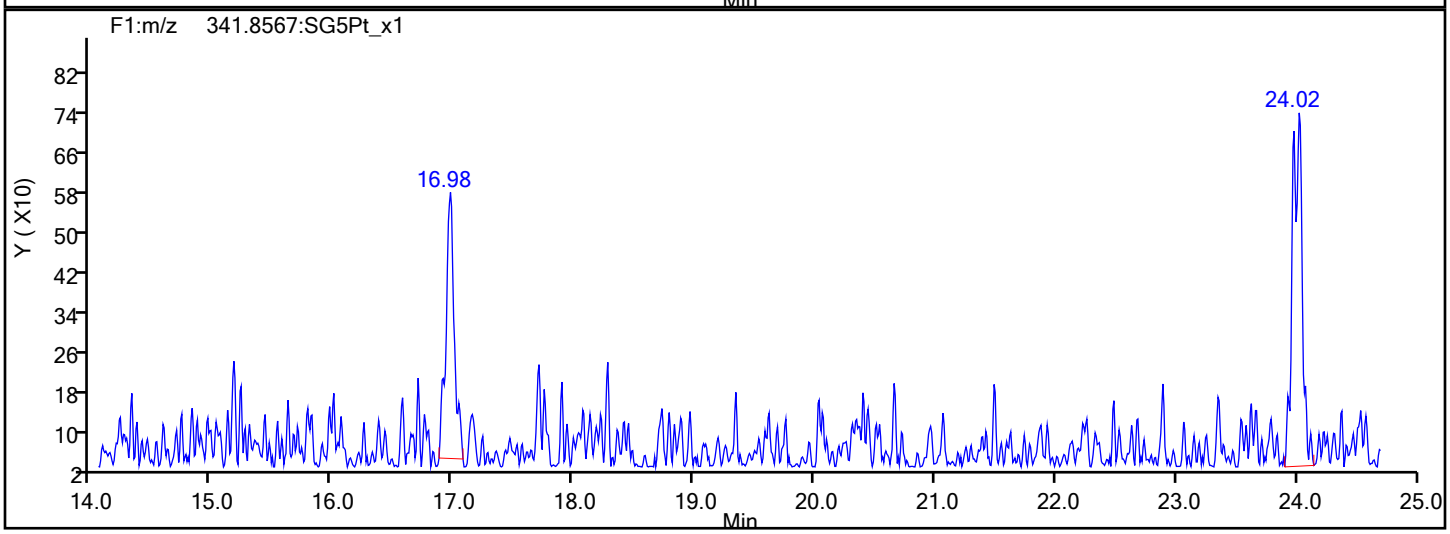
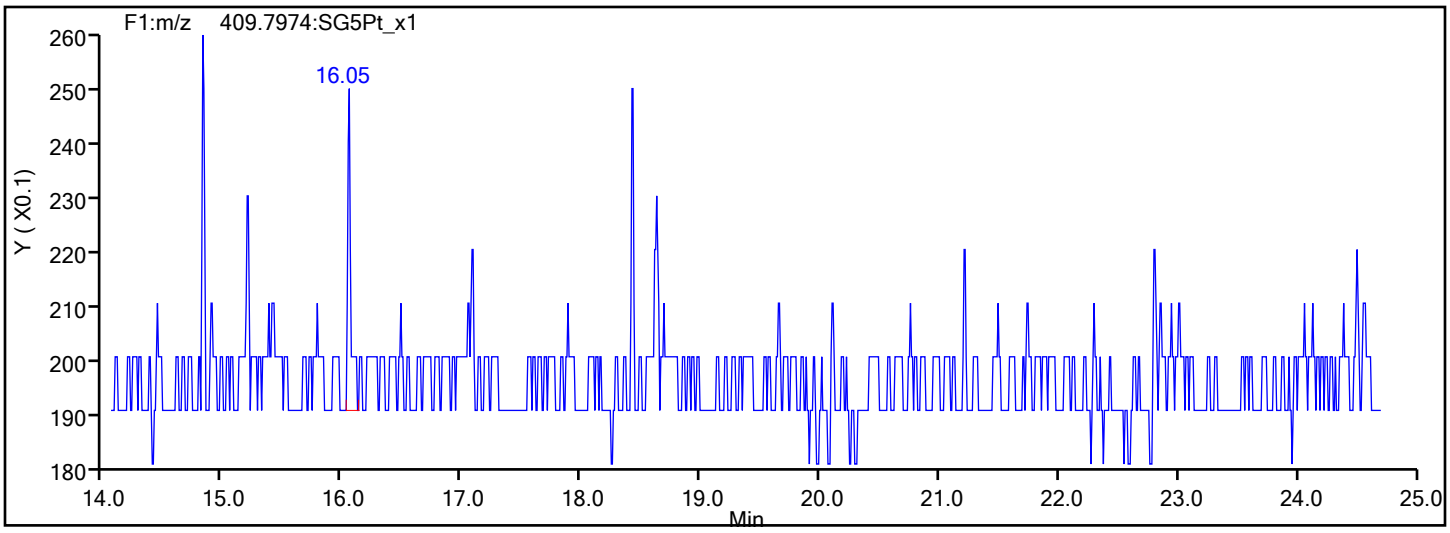
F1 PeCDFs





F1 PeCDFs Interference Mass



Eurofins TestAmerica, Sacramento

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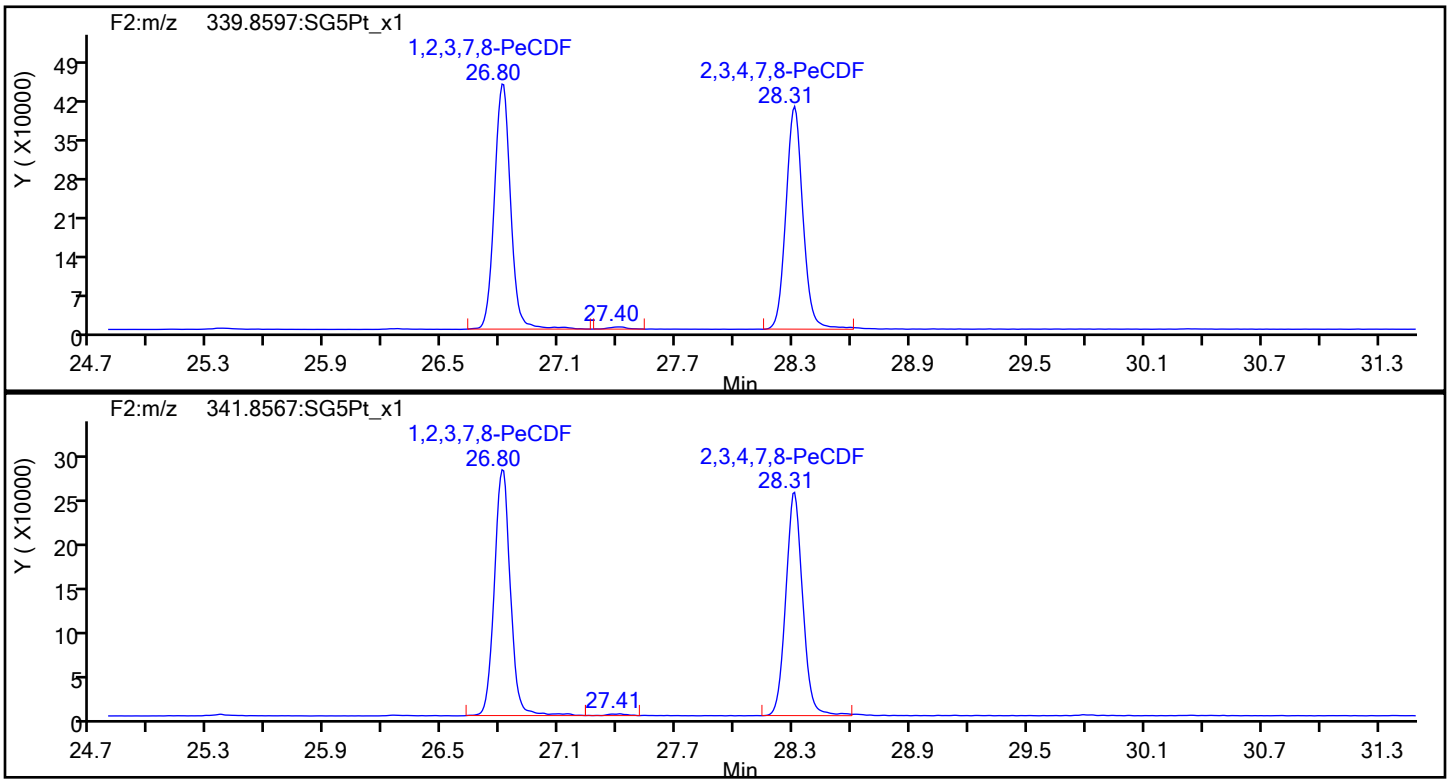
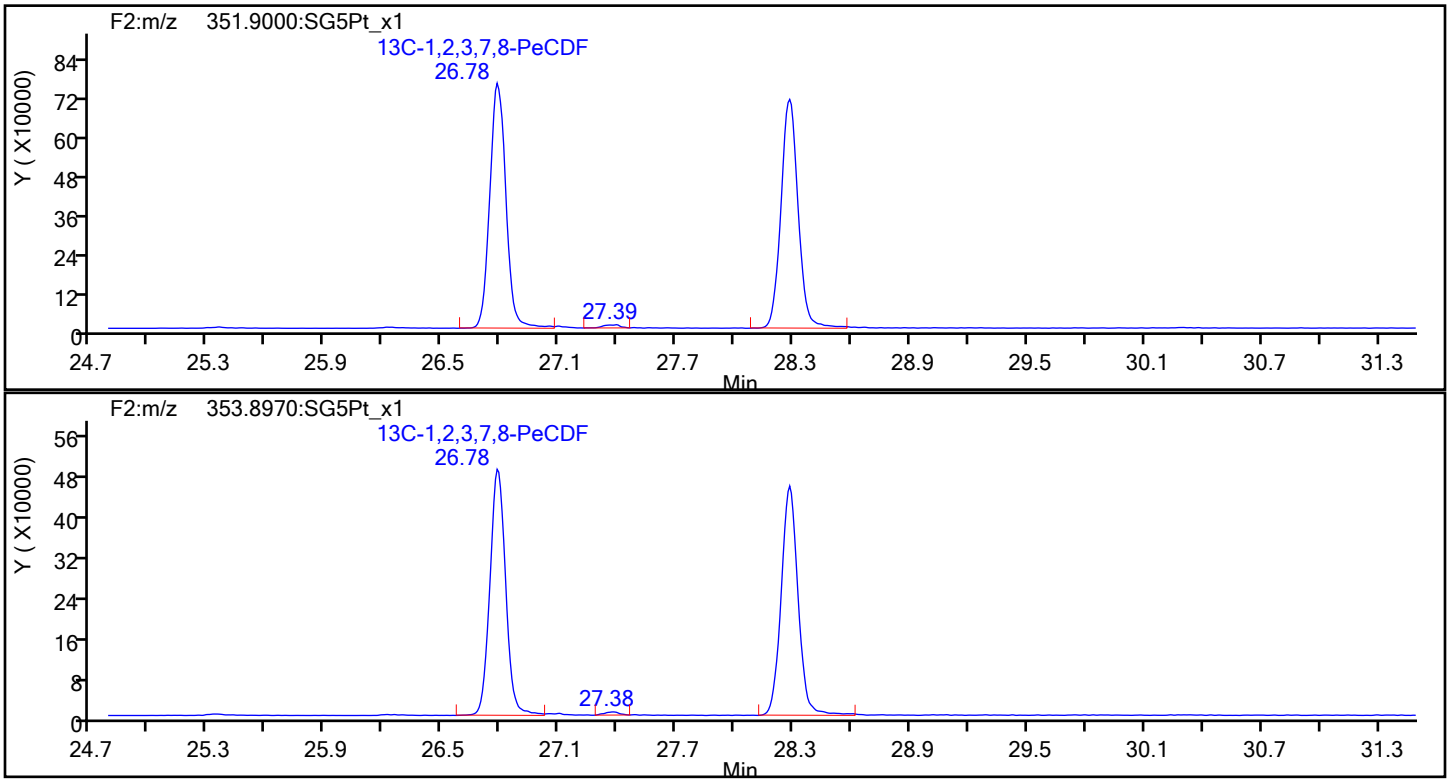
PeCDF



PeCDF Standards



Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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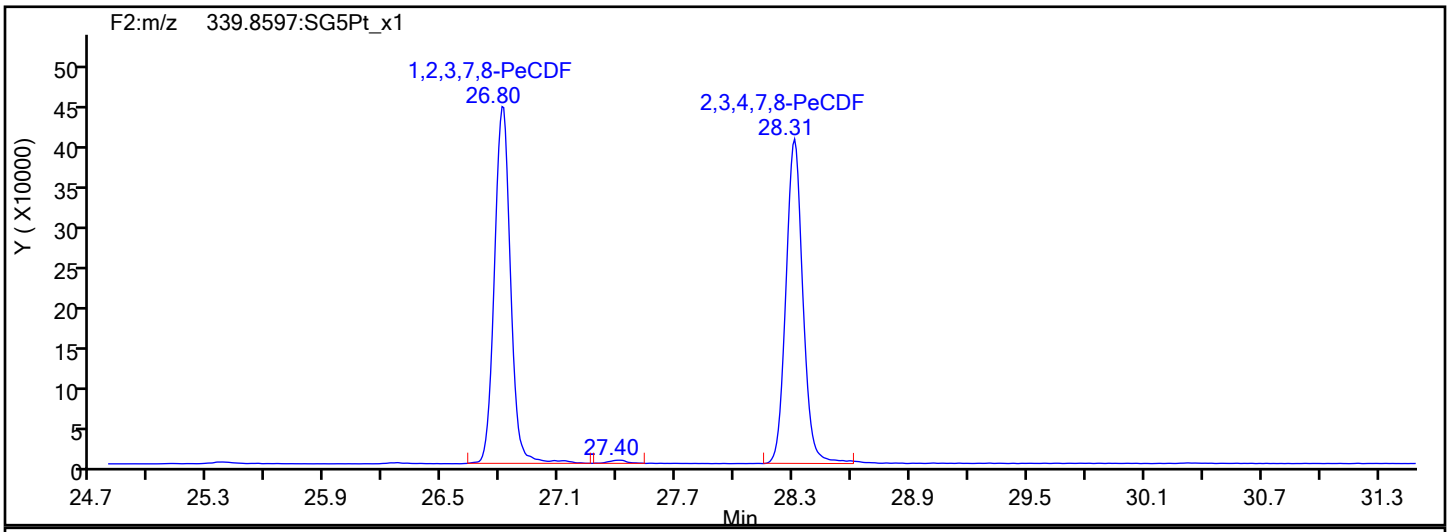
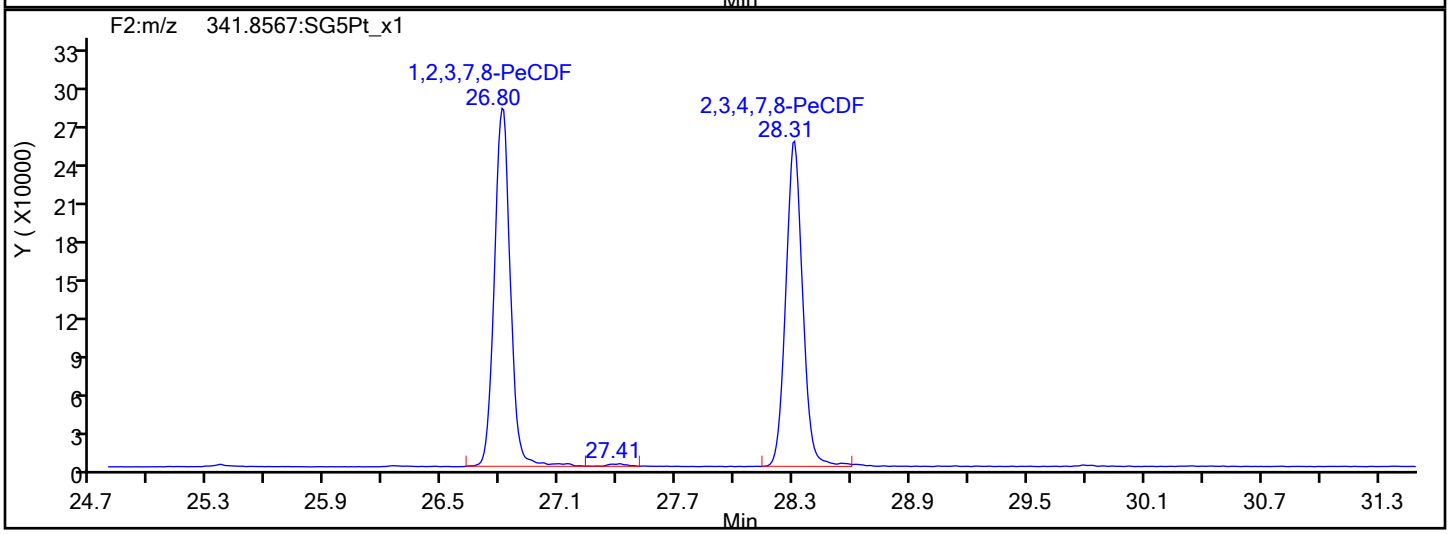
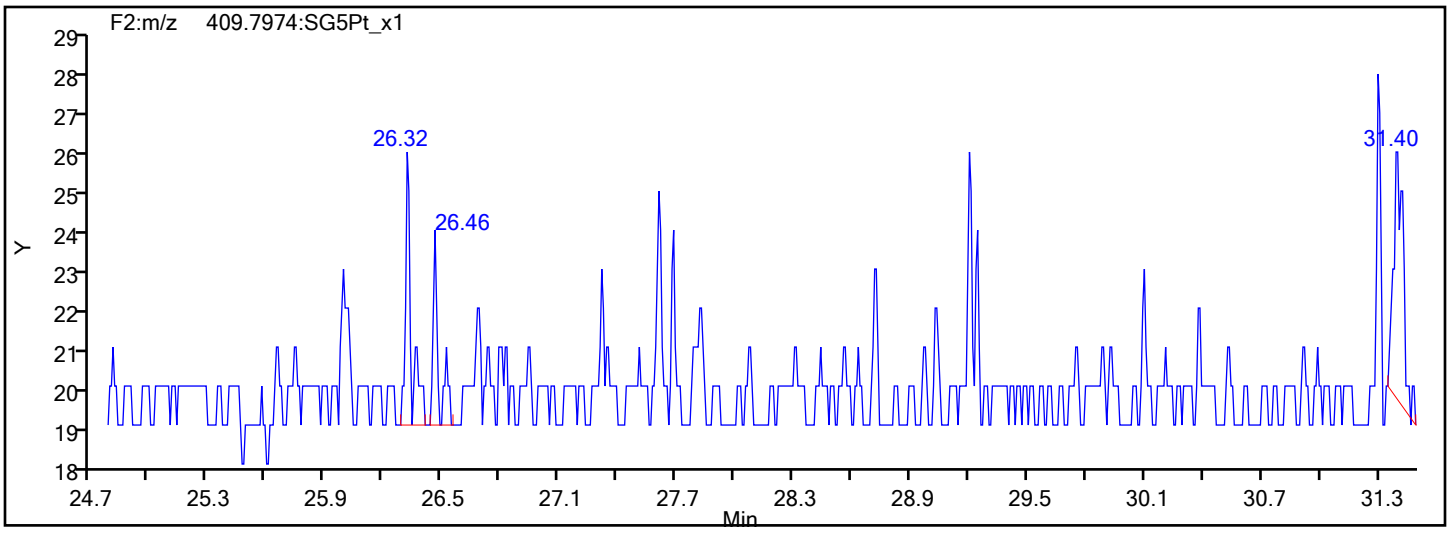




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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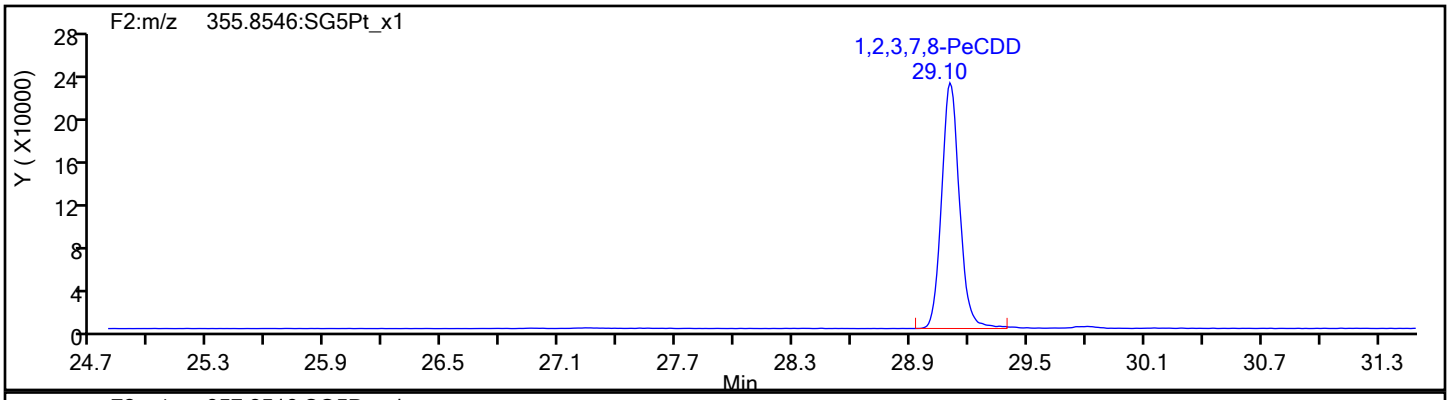
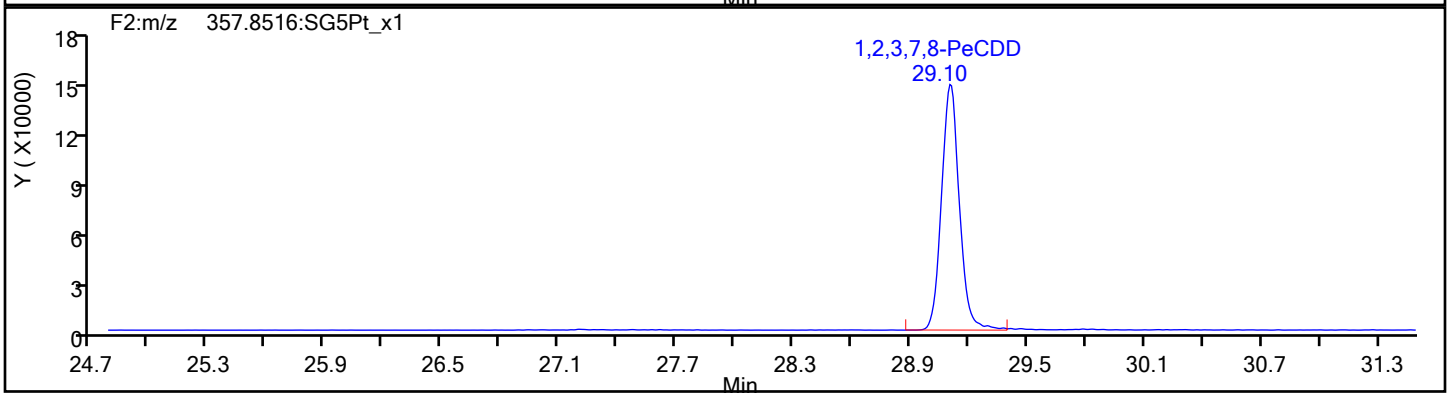
PeCDD





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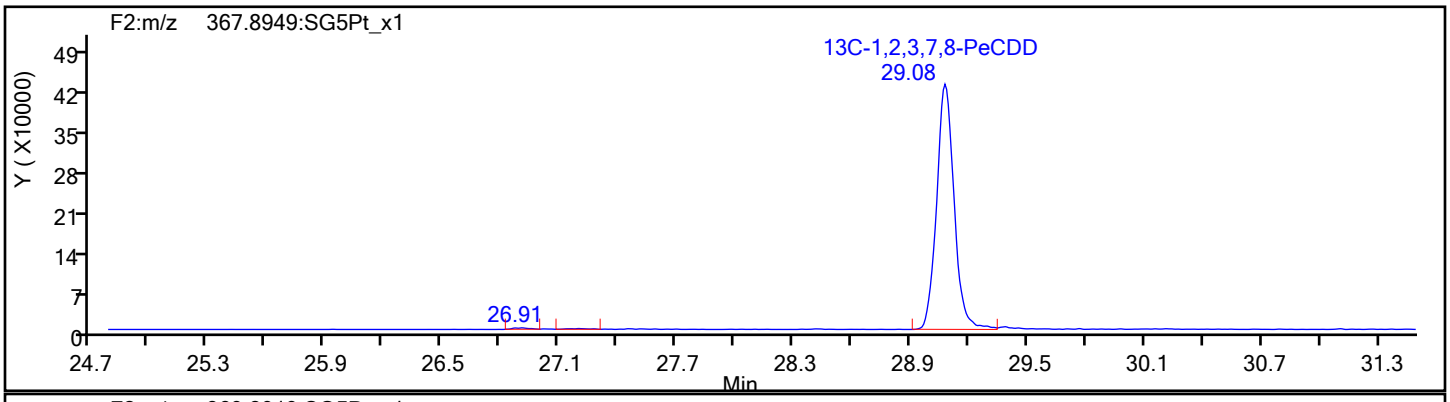

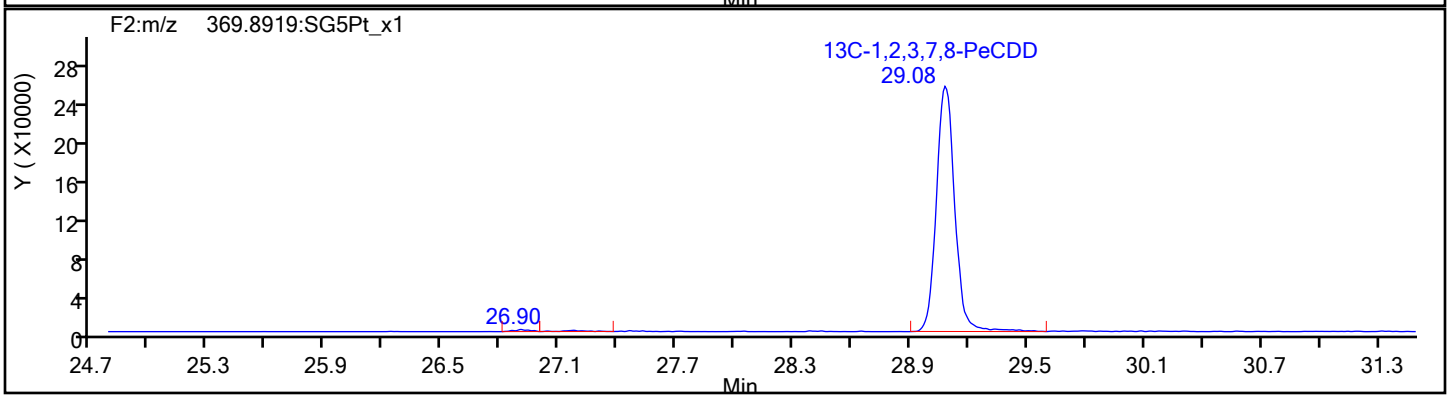

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Eurofins TestAmerica, Sacramento

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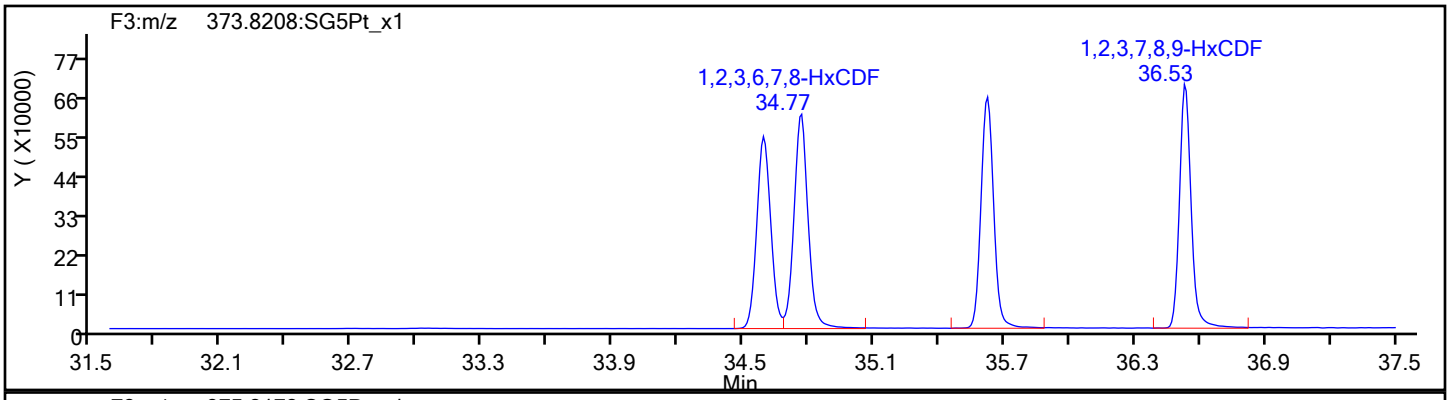
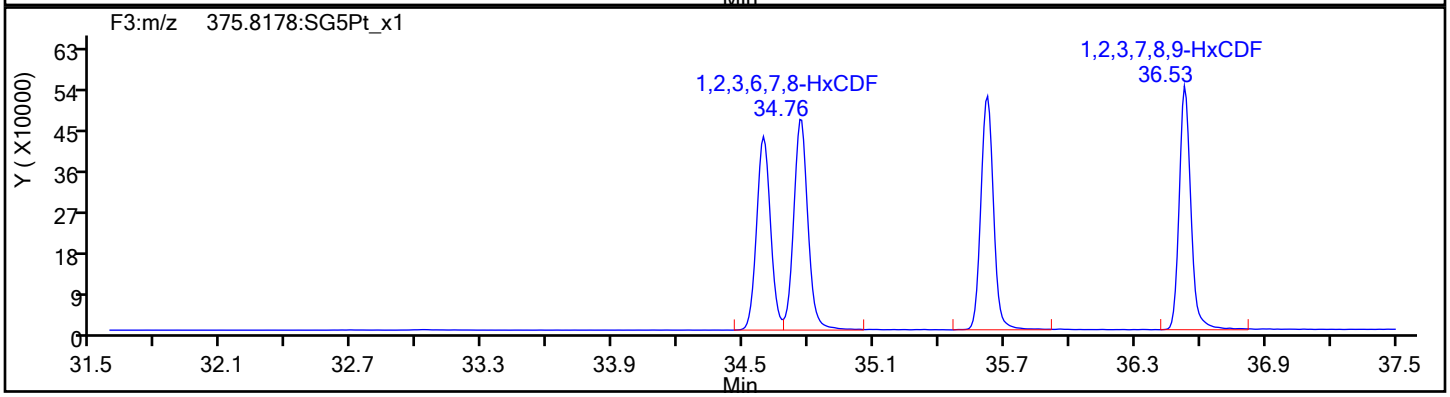
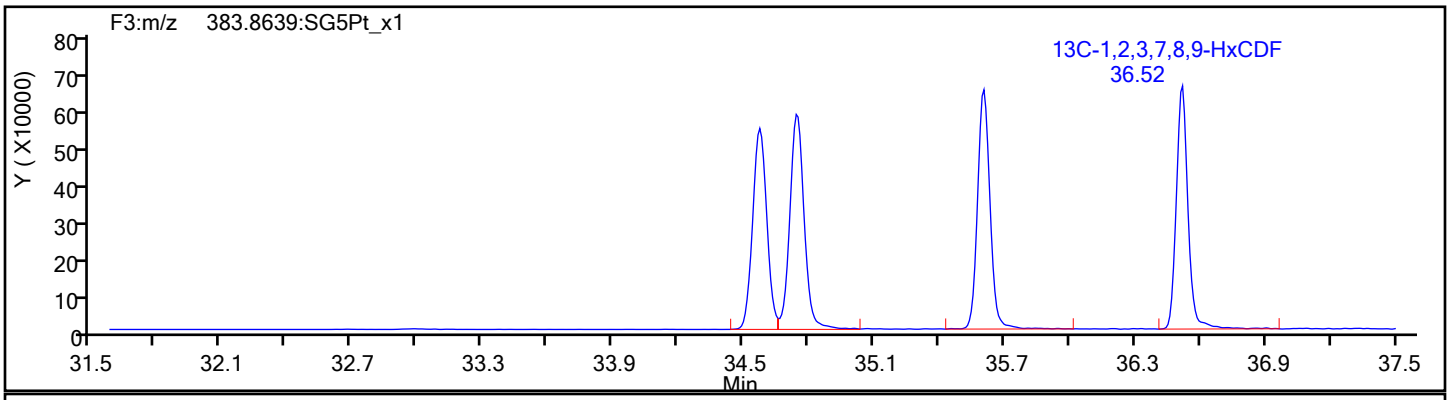
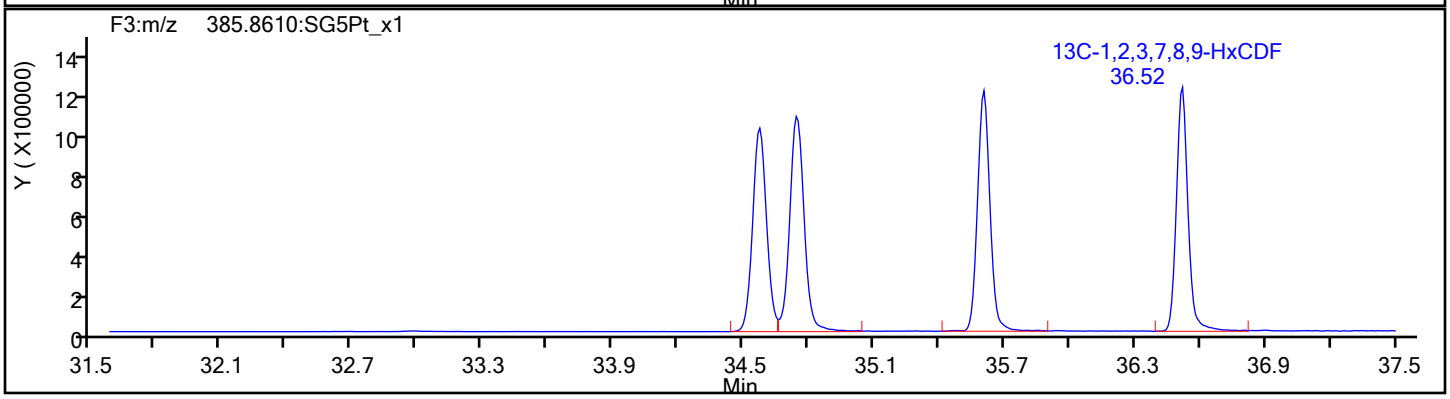
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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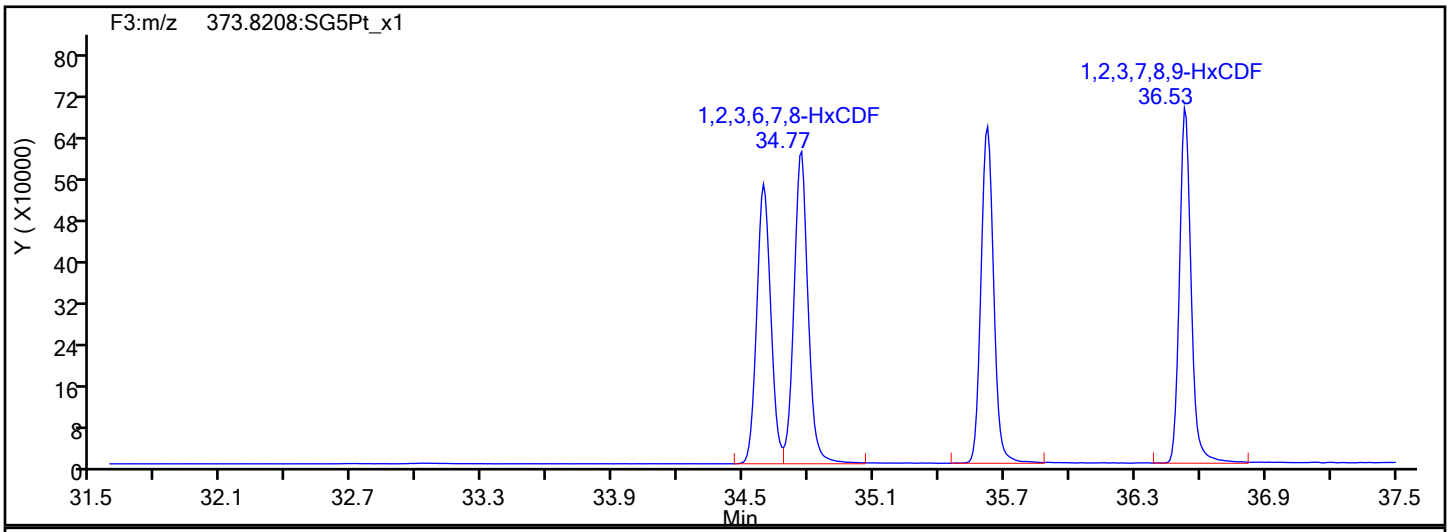
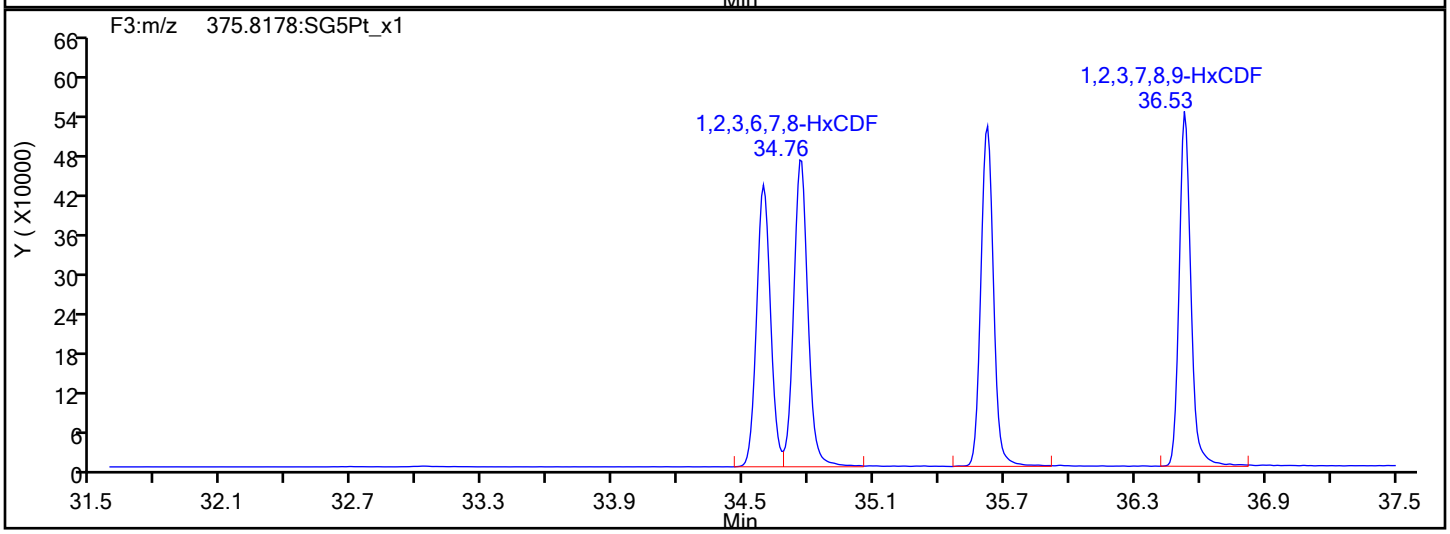
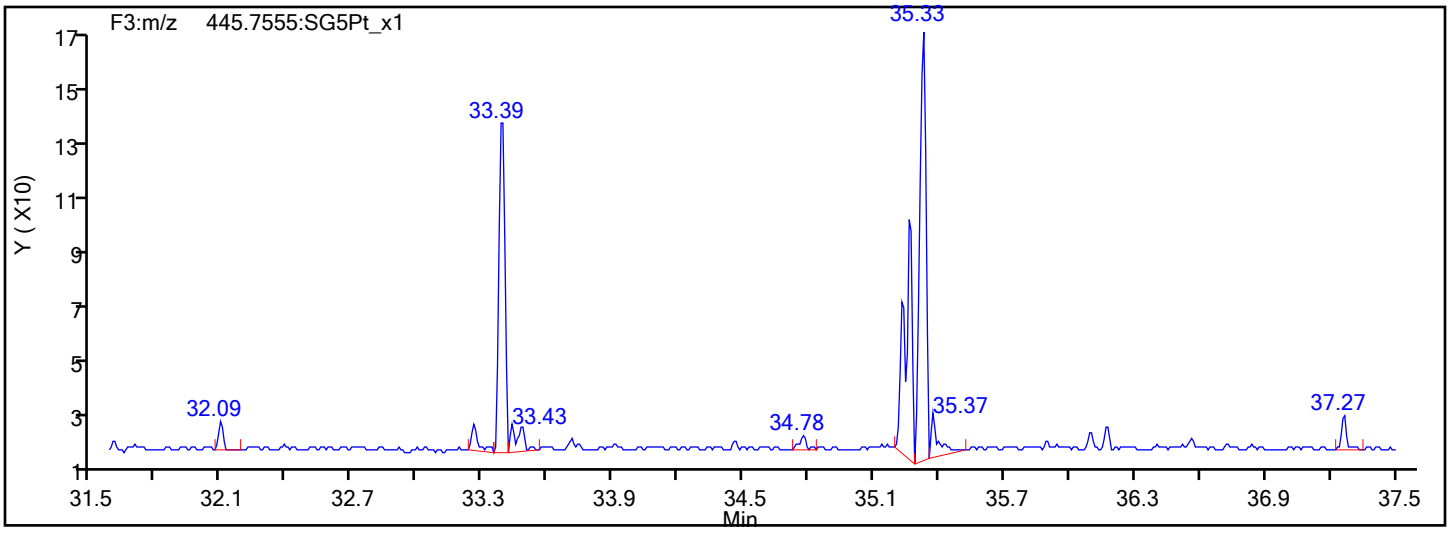




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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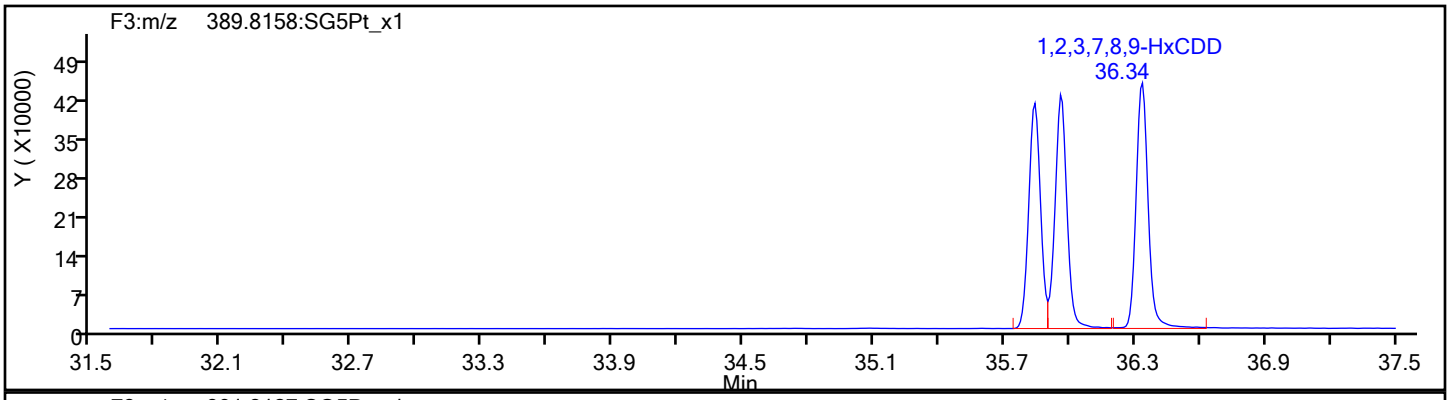
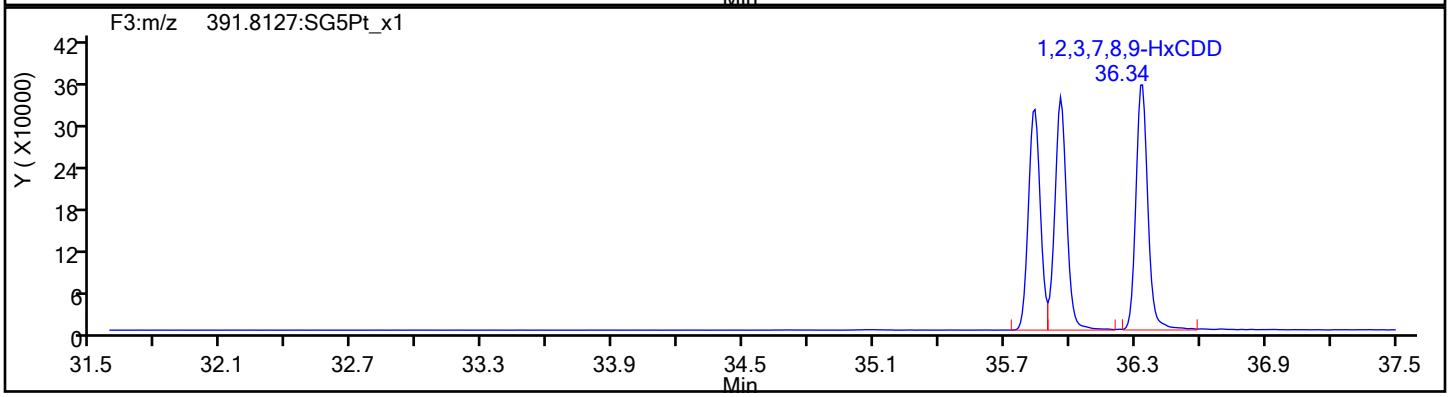
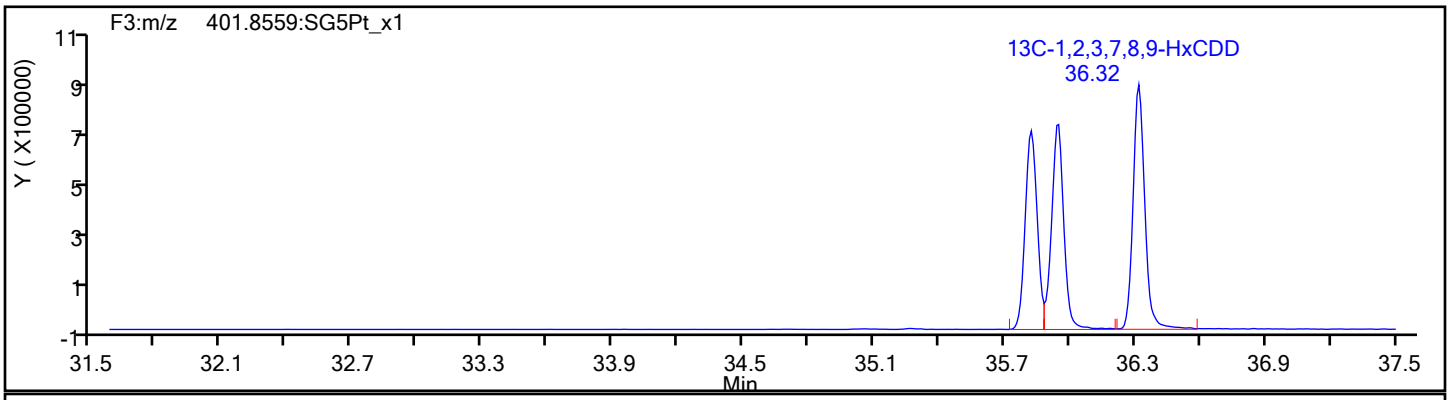
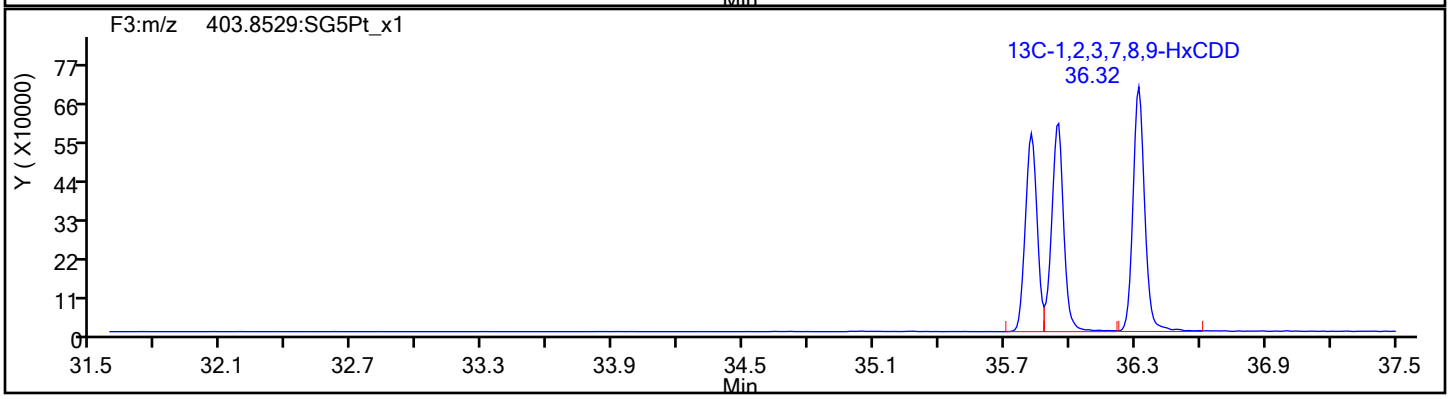
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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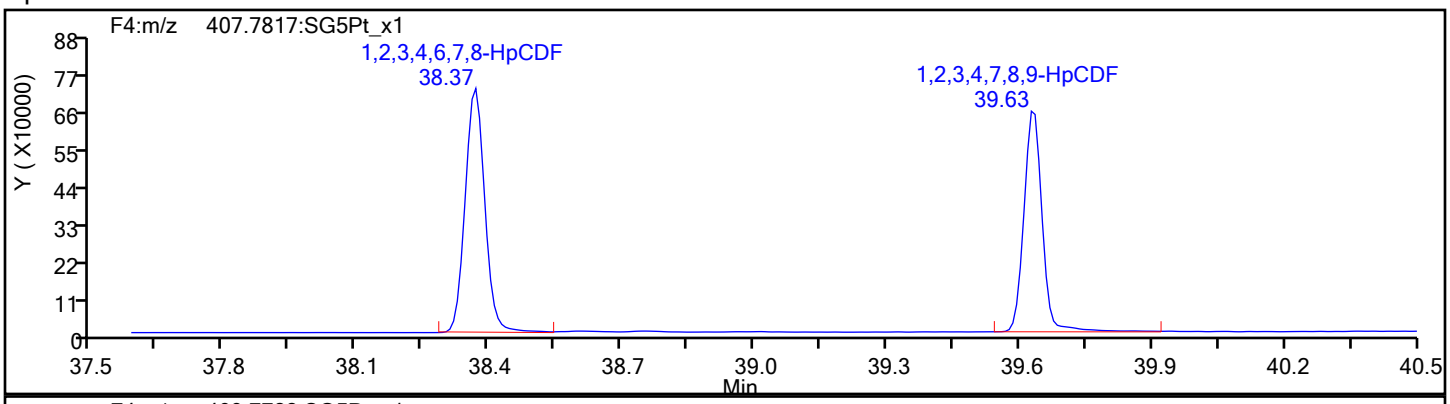
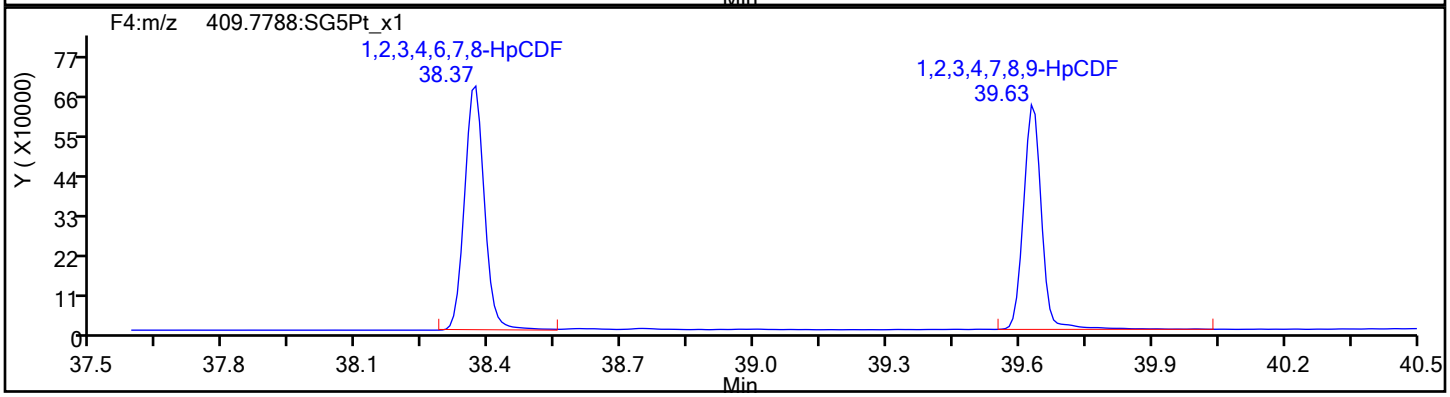
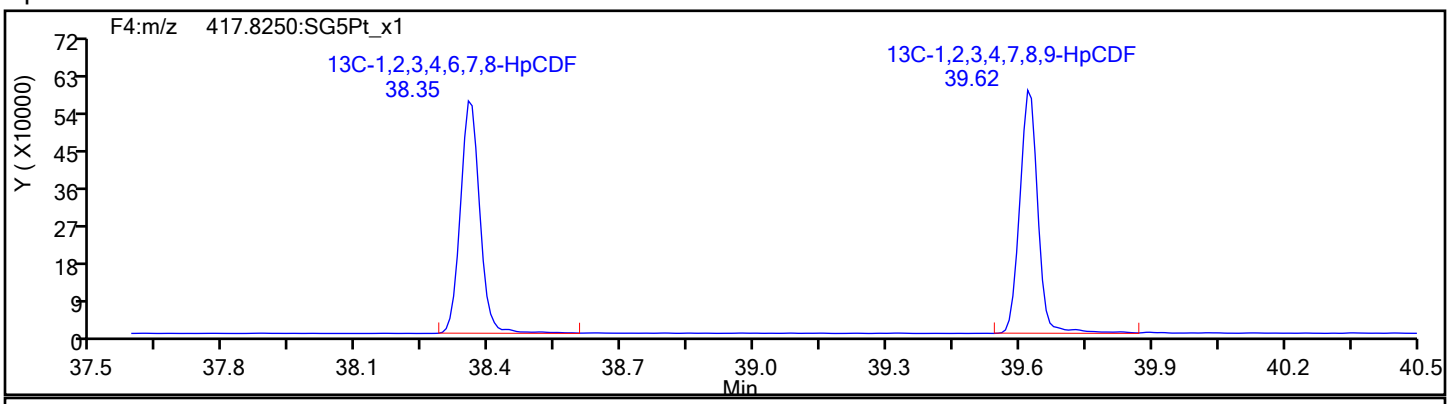
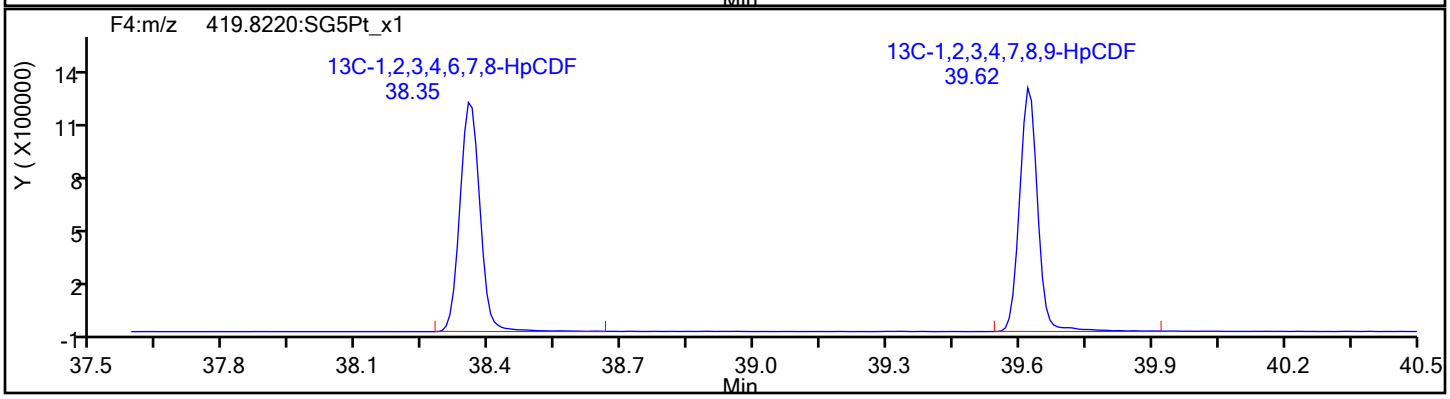
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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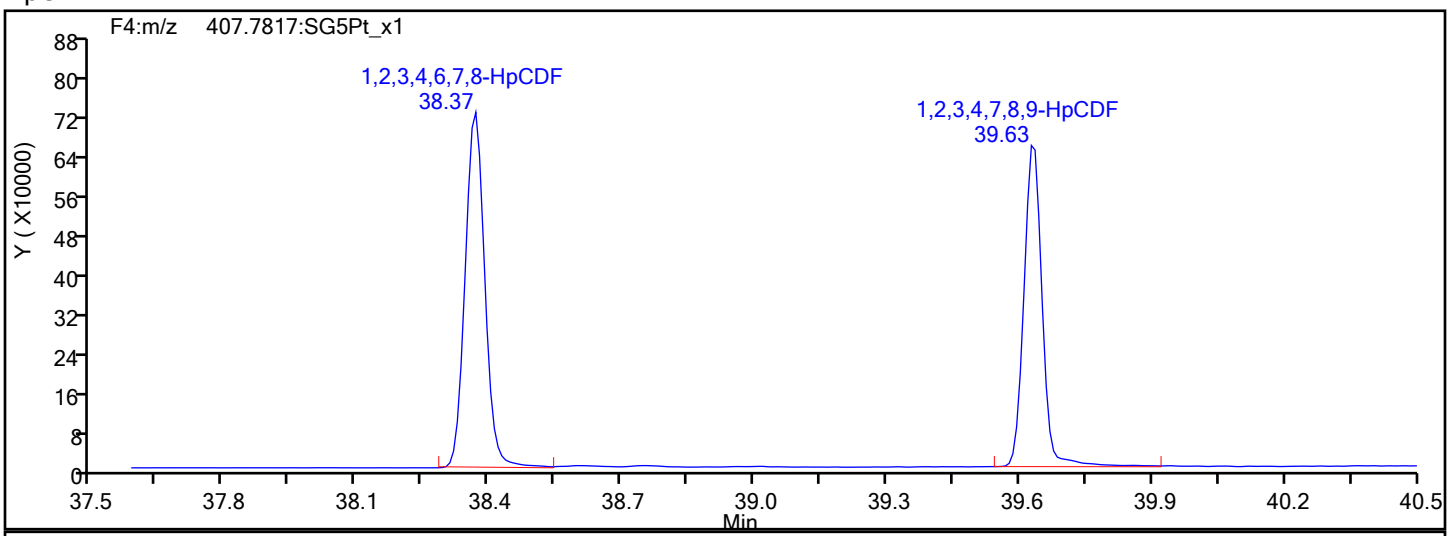
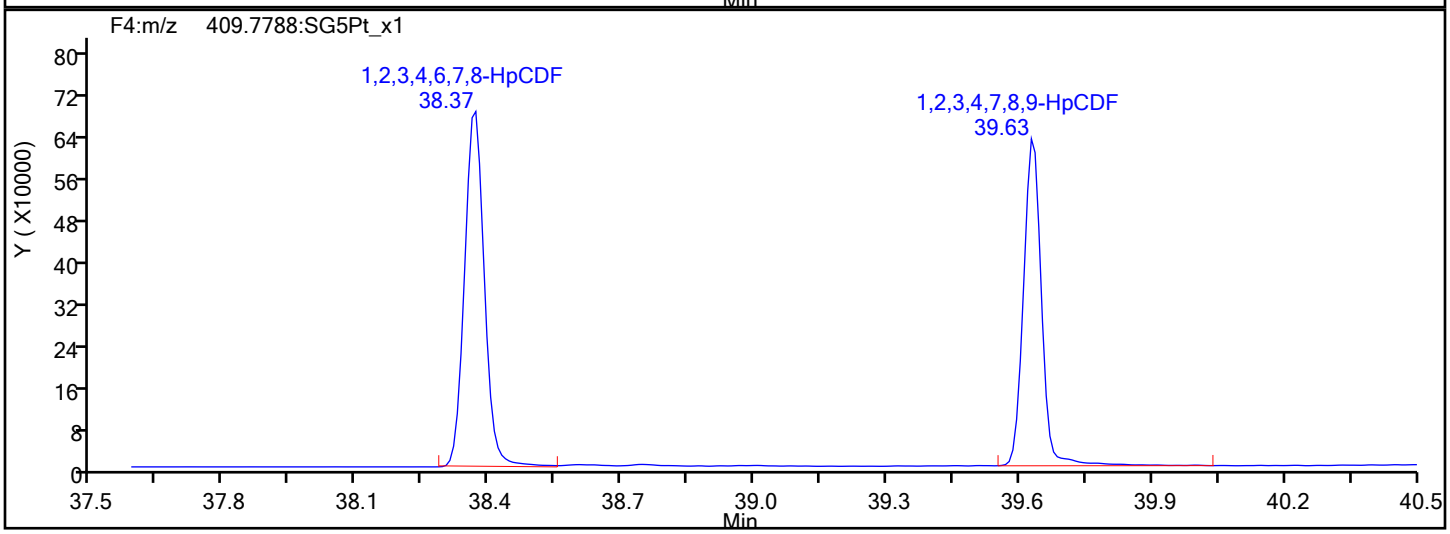
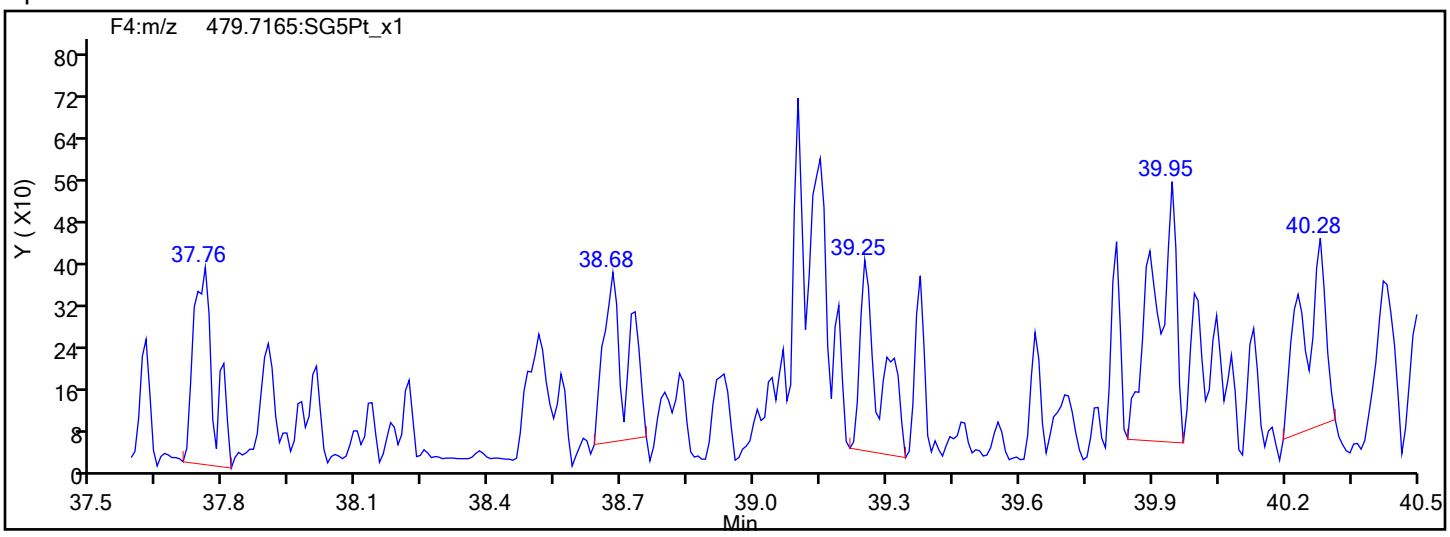
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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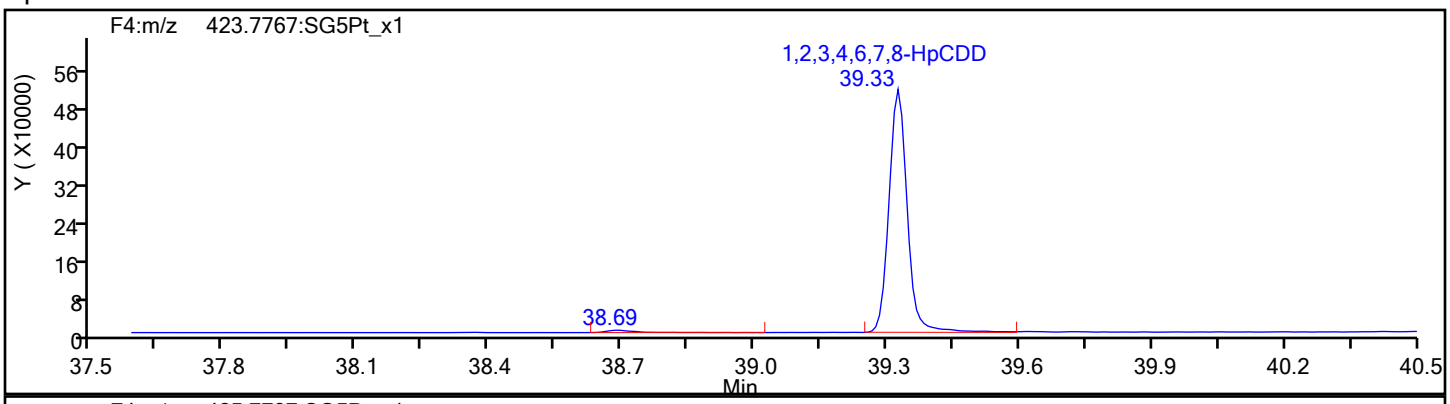
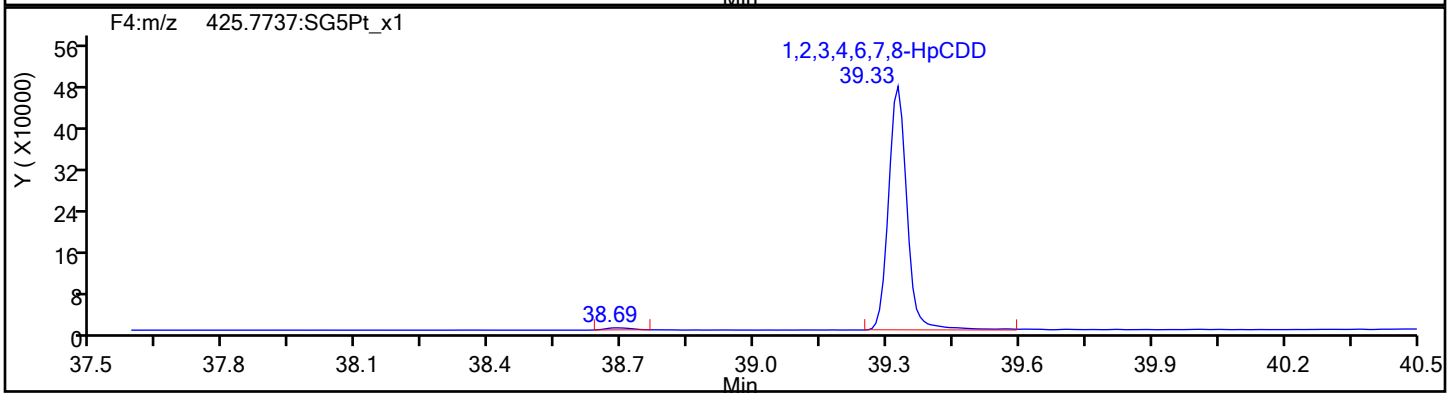
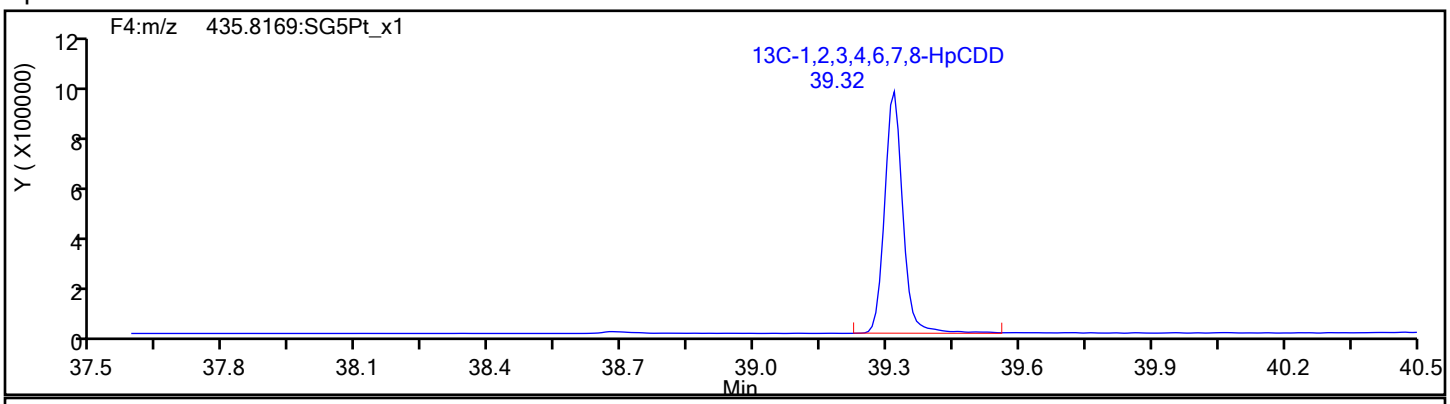
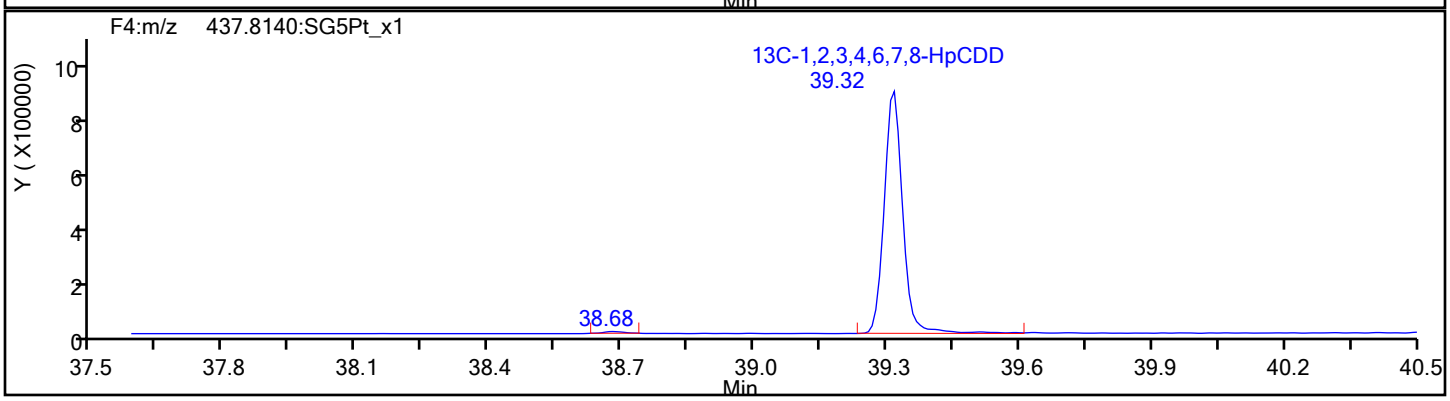
HpCDD





HpCDD Standards



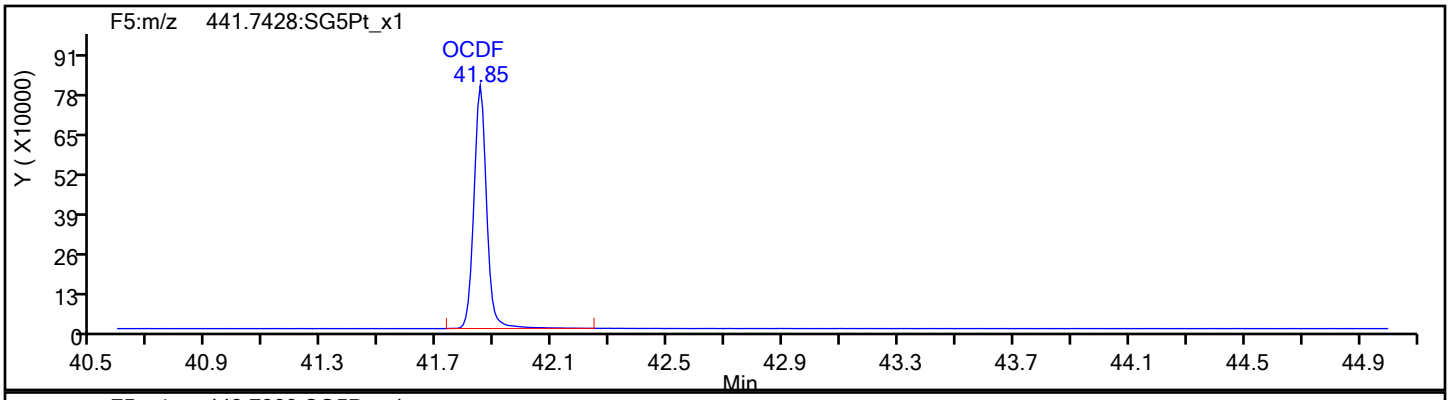


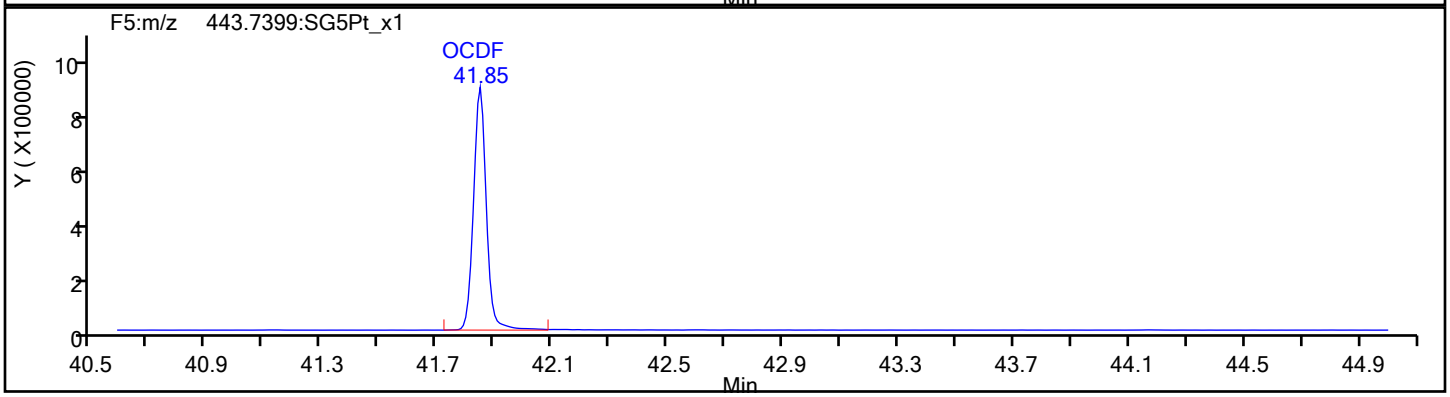
Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

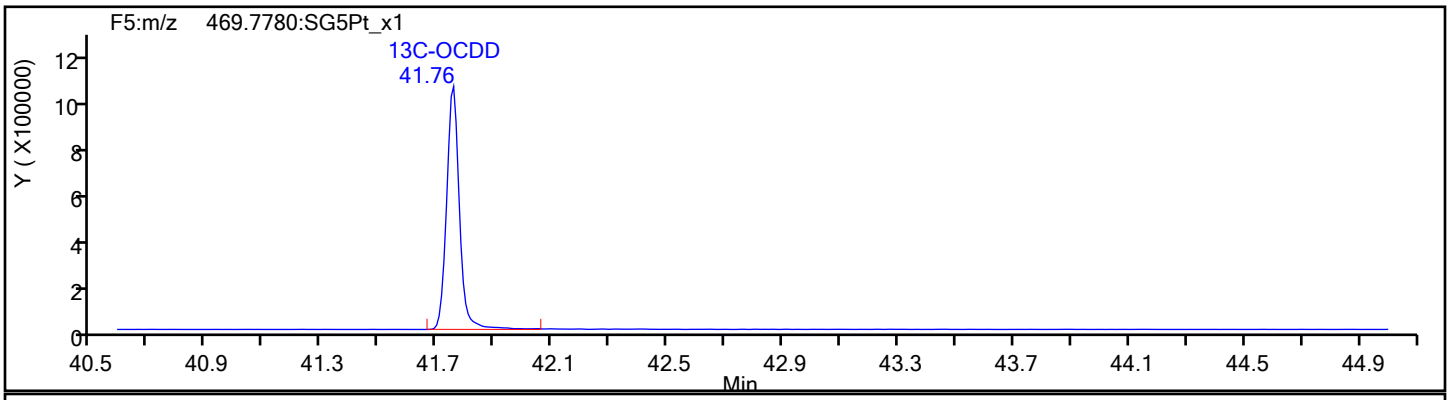
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

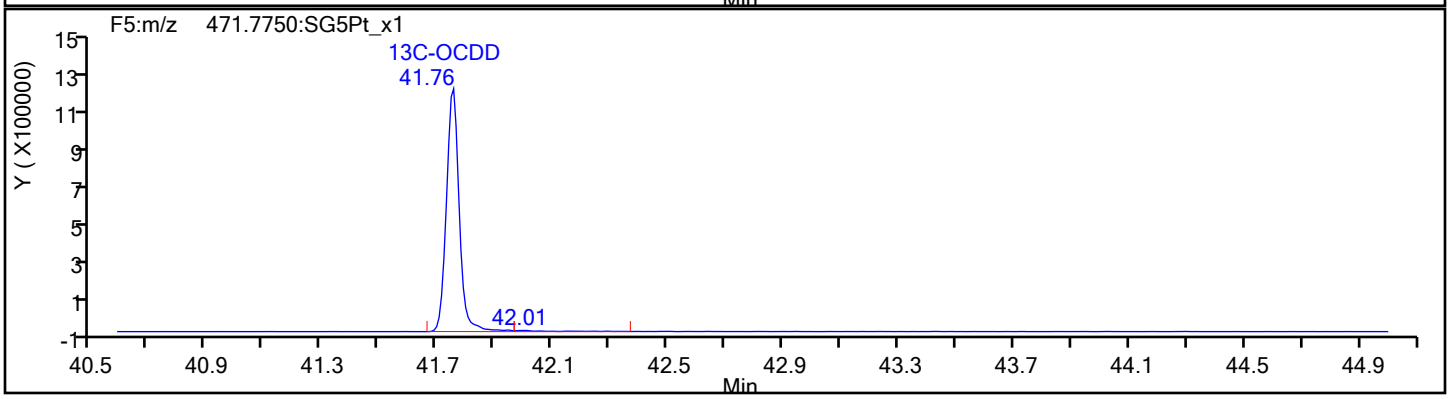
OCDF





OCDF Standards



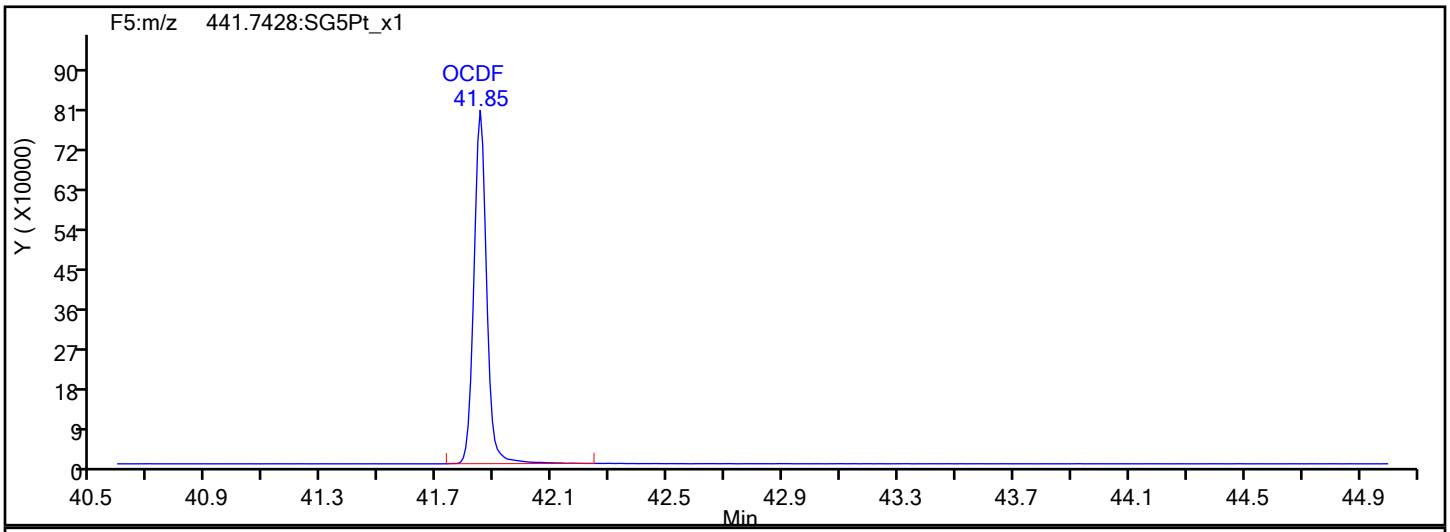


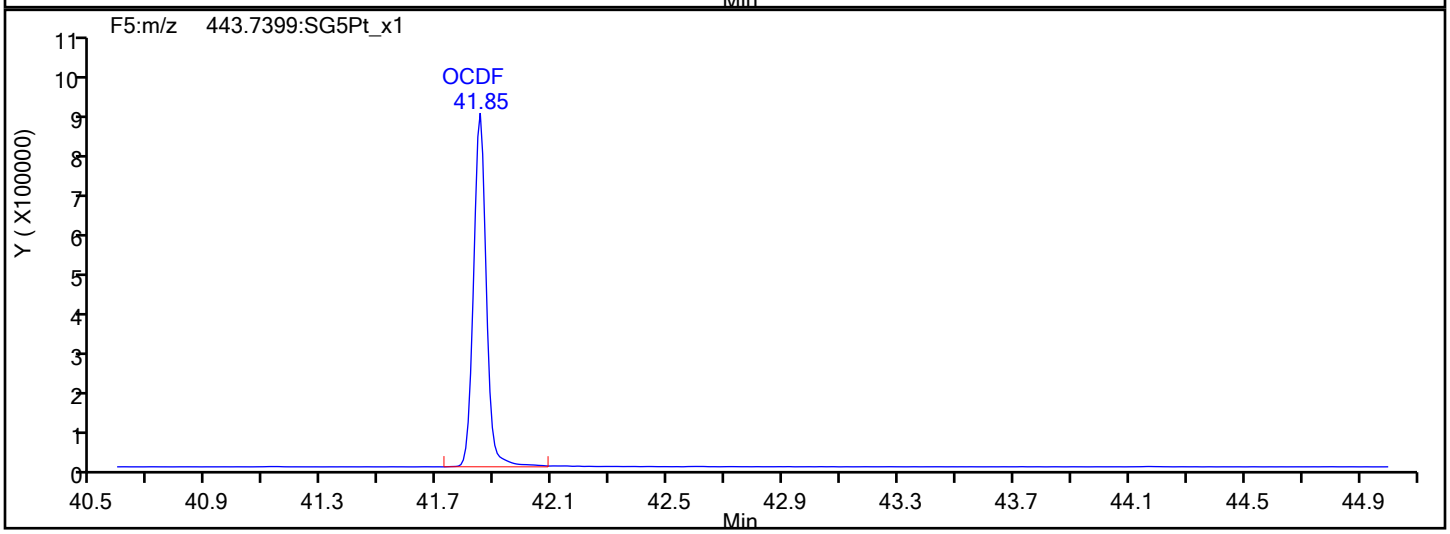
Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

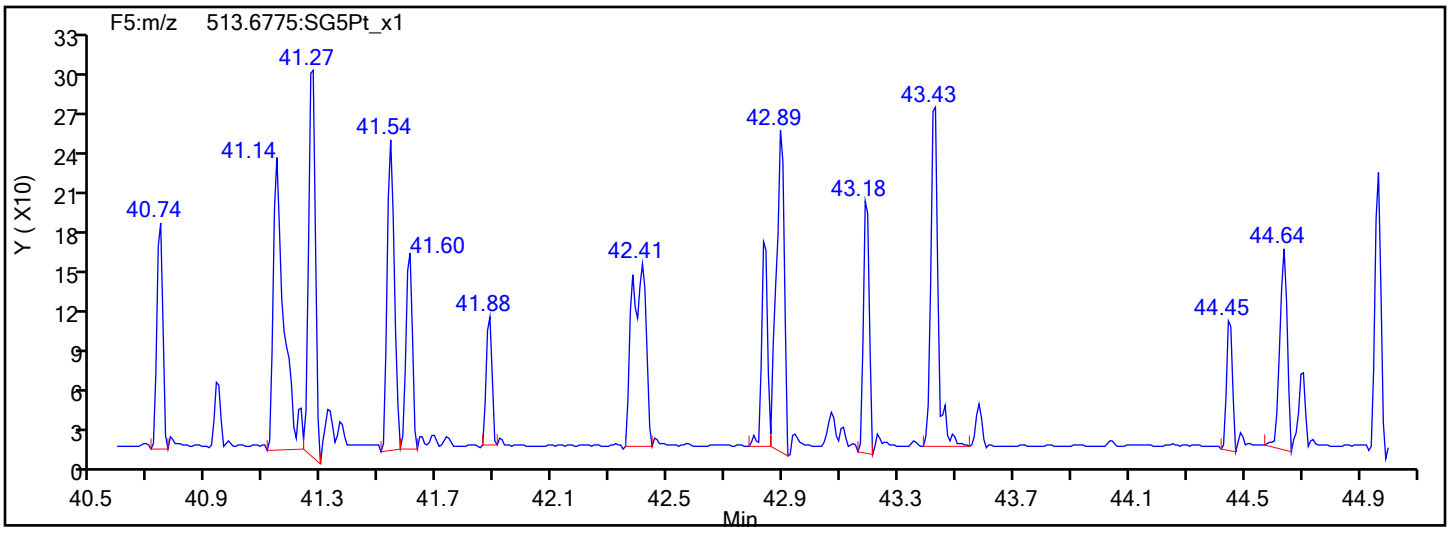
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

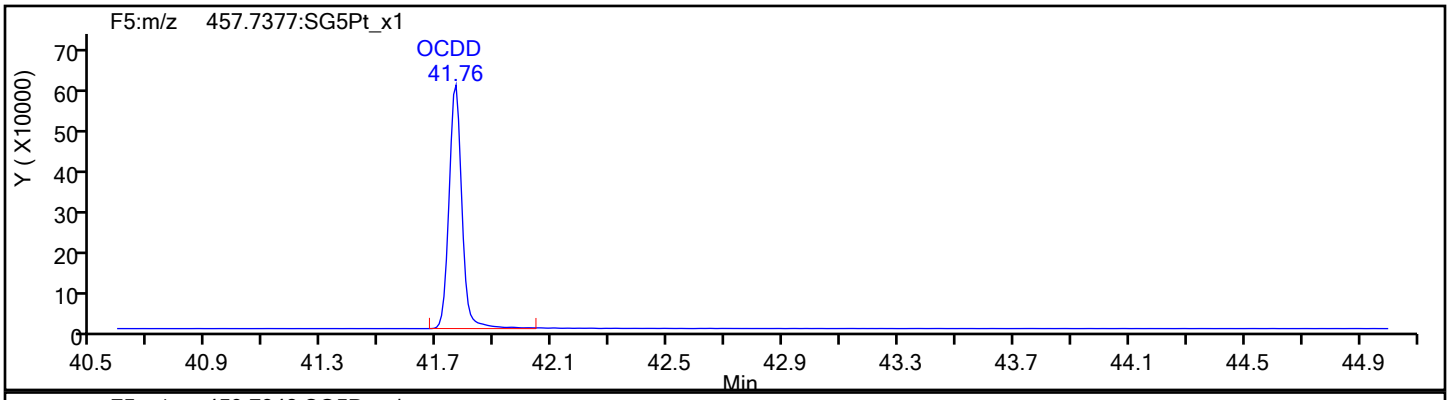


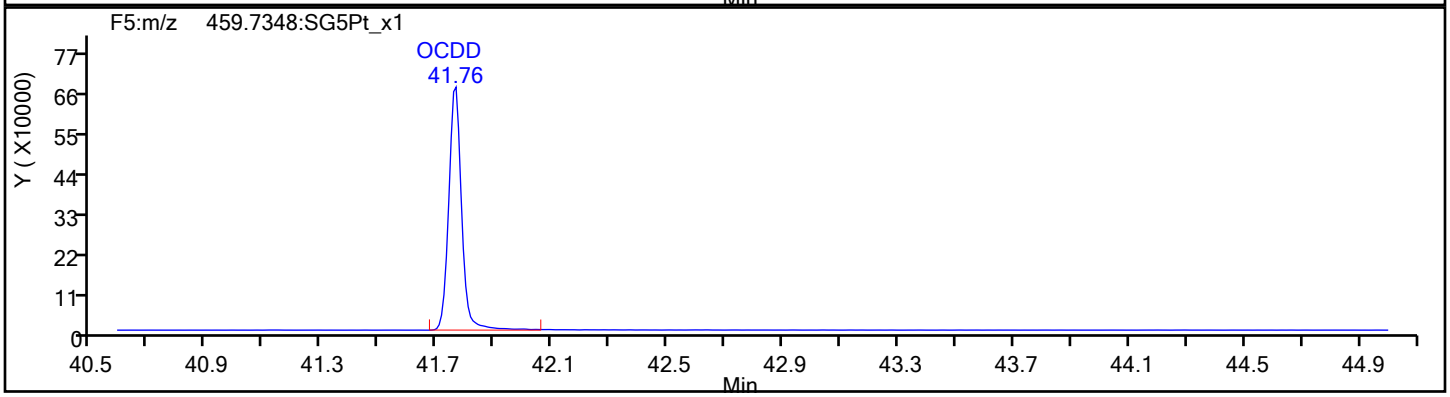
Report Date: 23-Oct-2019 11:53:30 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

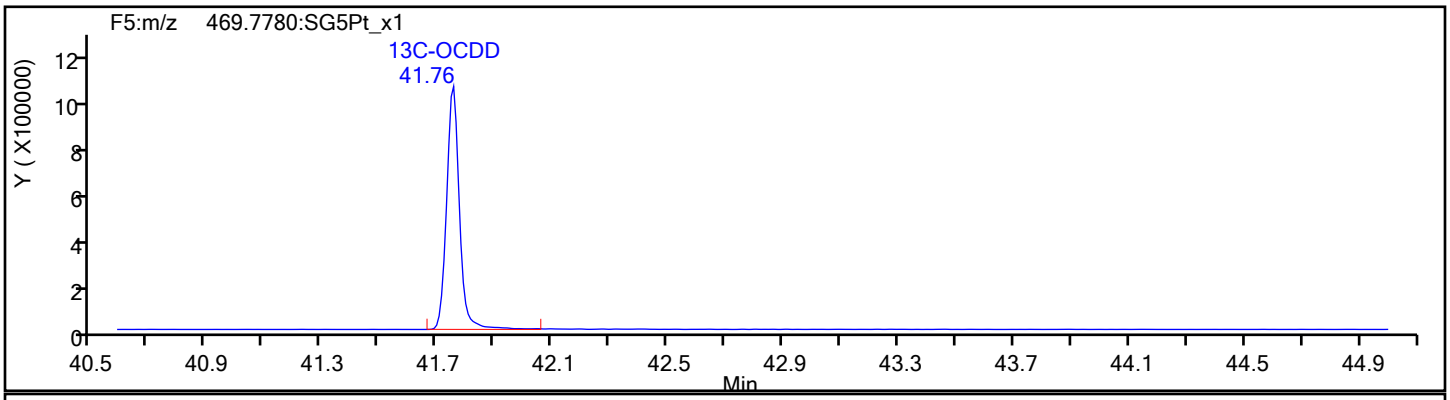
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

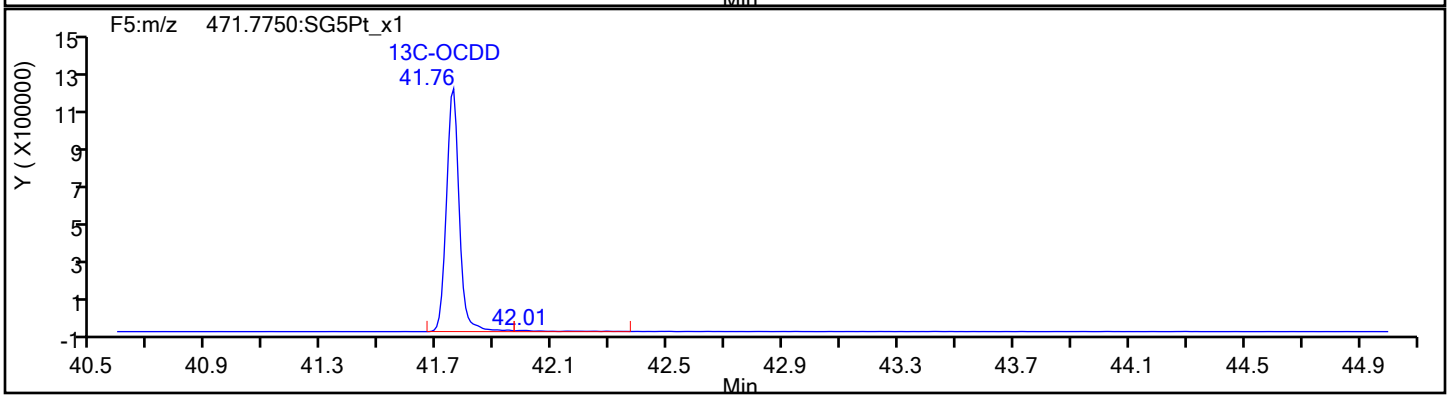
OCDD





OCDD Standards

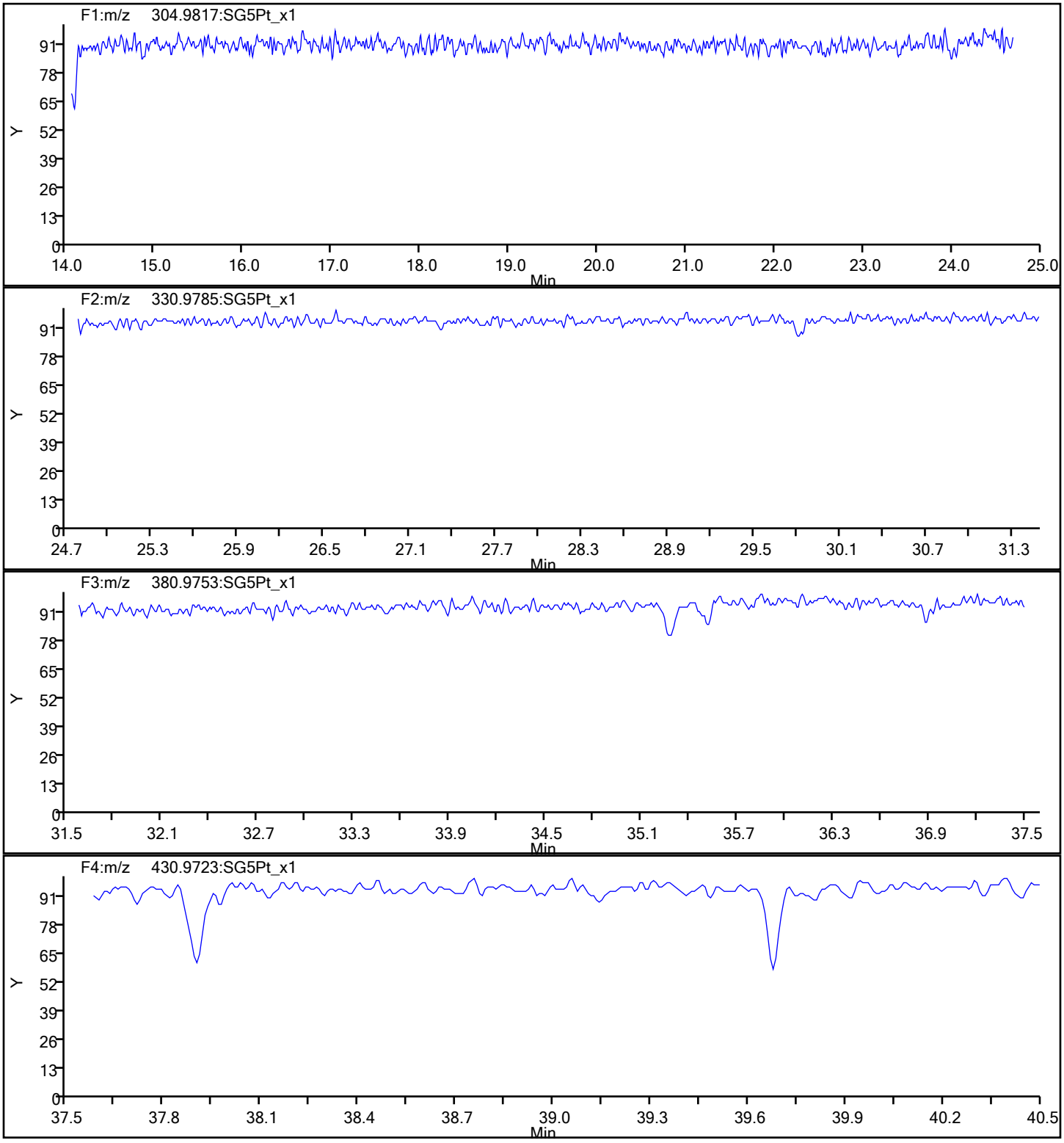




Report Date: 23-Oct-2019 11:53:31 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

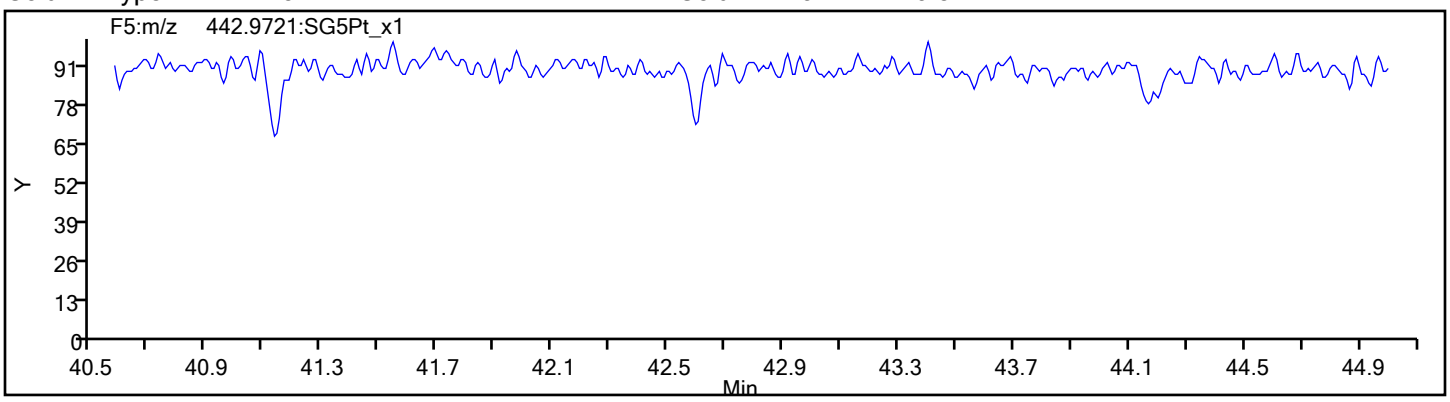
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 23-Oct-2019 11:53:31 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_6.d		
Injection Date:	18-Oct-2019 22:26:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 18-Oct-2019 23:14:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:36 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:56:59

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.725	5248442	0.79	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.757	8380142	0.81	1.6096	99.2	99.2	0.2162	0.2162	99.20	
2,3,7,8-TCDF	19.791	4117287	0.81	1.2332	39.8	39.8	0.0903	0.0903	99.60	
S Total TCDF					39.8	39.8	0.0903	0.0903		
D 13C-2,3,7,8-TCDD	21.097	5253288	0.79	0.9984	100.3	100.3	0.2001	0.2001	100	
$ 37Cl4-2,3,7,8-TCDD	21.123	2971886		1.4510	39.0	39.0	0.0219	0.0219	97.56	
2,3,7,8-TCDD	21.123	2515247	0.79	1.1988	39.9	39.9	0.0668	0.0668	99.85	
S Total TCDD					39.9	39.9	0.0668	0.0668		
D 13C-1,2,3,7,8-PeCDF	26.804	7152089	1.59	1.3678	99.6	99.6	0.4826	0.4826	99.63	
1,2,3,7,8-PeCDF	26.820	16520730	1.59	1.1689	197.6	197.6	0.8104	0.8104	98.81	
D 13C-2,3,4,7,8-PeCDF	28.297	6759066	1.60	1.3045	98.7	98.7	0.5060	0.5060	98.72	
2,3,4,7,8-PeCDF	28.322	16066504	1.57	1.1861	200.4	200.4	0.9189	0.9189	100	
S Total PeCDF					398.0	398.0	0.8646	0.8646		
D 13C-1,2,3,7,8-PeCDD	29.093	4400759	1.59	0.8292	101.1	101.1	0.2154	0.2154	101	
1,2,3,7,8-PeCDD	29.118	9715829	1.59	1.1200	197.1	197.1	0.2824	0.2824	98.56	
S Total PeCDD					197.1	197.1	0.2824	0.2824		
D 13C-1,2,3,4,7,8-HxCDF	34.592	6894093	0.55	1.1700	102.0	102.0	0.4538	0.4538	102	
1,2,3,4,7,8-HxCDF	34.608	17777367	1.26	1.3021	198.0	198.0	1.034	1.034	99.02	
D 13C-1,2,3,6,7,8-HxCDF	34.759	7780881	0.54	1.3168	102.3	102.3	0.4032	0.4032	102	
1,2,3,6,7,8-HxCDF	34.776	19431932	1.26	1.2907	193.5	193.5	0.9419	0.9419	96.74	
D 13C-2,3,4,6,7,8-HxCDF	35.615	7441472	0.55	1.2873	100.1	100.1	0.4124	0.4124	100	
2,3,4,6,7,8-HxCDF	35.632	18862486	1.25	1.3039	194.4	194.4	0.8487	0.8487	97.20	
D 13C-1,2,3,7,8,9-HxCDF	36.529	6852734	0.54	1.1987	99.0	99.0	0.4429	0.4429	98.98	
1,2,3,7,8,9-HxCDF	36.546	17616763	1.27	1.3329	192.9	192.9	0.8385	0.8385	96.44	
S Total HxCDF					778.8	778.8	0.9159	0.9159		
* 13C-1,2,3,7,8,9-HxCDD	36.328	5775334	1.26	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.833	4830229	1.29	0.8364	100.0	100.0	0.2380	0.2380	100	
1,2,3,4,7,8-HxCDD	35.850	11153969	1.28	1.1725	196.9	196.9	0.3981	0.3981	98.47	
D 13C-1,2,3,6,7,8-HxCDD	35.959	5261618	1.27	0.9040	100.8	100.8	0.2202	0.2202	101	
1,2,3,6,7,8-HxCDD	35.976	11661873	1.24	1.1256	196.9	196.9	0.3909	0.3909	98.46	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,7,8,9-HxCDD	36.345	12354108	1.24	1.2327	198.6	198.6	0.3675	0.3675	99.31	
S Total HxCDD					592.5	592.5	0.3855	0.3855		
D 13C-1,2,3,4,6,7,8-HpCDF	38.370	5634533	0.47	0.9689	100.7	100.7	0.3941	0.3941	101	
1,2,3,4,6,7,8-HpCDF	38.378	17615721	1.05	1.6176	193.3	193.3	1.306	1.306	96.63	
D 13C-1,2,3,4,7,8,9-HpCDF	39.628	5307044	0.46	0.9231	99.5	99.5	0.4136	0.4136	99.55	
1,2,3,4,7,8,9-HpCDF	39.645	15315395	1.06	1.4672	196.7	196.7	1.454	1.454	98.34	
S Total HpCDF					390.0	390.0	1.380	1.380		
D 13C-1,2,3,4,6,7,8-HpCDD	39.326	5305866	1.07	0.9114	100.8	100.8	0.4728	0.4728	101	
1,2,3,4,6,7,8-HpCDD	39.334	11573871	1.05	1.1237	194.1	194.1	0.6793	0.6793	97.06	
S Total HpCDD					194.1	194.1	0.6793	0.6793		
D 13C-OCDD	41.764	7266166	0.90	0.6272	200.6	200.6	0.3194	0.3194	100	
OCDF	41.856	22094312	0.93	1.5416	394.5	394.5	0.3354	0.3354	98.62	
OCDD	41.772	16709340	0.91	1.1855	387.9	387.9	0.3808	0.3808	96.99	

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 18-Oct-2019 23:14:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:36 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 10:56:59

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.725	20.729	0		2316670	353709	439	1097	806		
333.9338	20.725	20.729	0		2931772	446998	201	502	2224	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.757	19.762	0	0.953	3745076	587911	714	1785	823		
317.9389	19.765	19.762	0	0.954	4635066	734626	401	1002	1832	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.791	19.792	0	1.002	1840943	291124	269	672	1082		
305.8987	19.791	19.792	0	1.002	2276344	362083	320	800	1132	0.81(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.097	21.094	0	1.018	2311637	330579	439	1097	753		
333.9338	21.106	21.094	1	1.018	2941651	437232	201	502	2175	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.123	21.121	0	1.019	2971886	444835	102	255	4361		
2,3,7,8-TCDD											
319.8965	21.123	21.127	0	1.001	1113687	167487	144	360	1163		
321.8936	21.123	21.127	0	1.001	1401560	208185	102	255	2041	0.79(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.804	26.797	0	1.293	4392854	766867	1303	3257	589		
353.8970	26.795	26.797	0	1.293	2759235	489050	811	2027	603	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	26.820	26.821	0	1.001	10134033	1796270	2875	7187	625		
341.8567	26.820	26.821	0	1.001	6386697	1136638	1884	4710	603	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.297	28.297	0	1.365	4164180	676470	1303	3257	519		
353.8970	28.297	28.297	0	1.365	2594886	415098	811	2027	512	1.60(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	28.322	28.322	0	1.001	9823641	1587031	2875	7187	552		
341.8567	28.322	28.322	0	1.001	6242863	1003358	1884	4710	533	1.57(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.093	29.095	0	1.404	2700395	421157	337	842	1250		
369.8919	29.093	29.095	0	1.404	1700364	271361	235	587	1155	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.118	29.120	0	1.001	5958663	906049	559	1397	1621		
357.8516	29.118	29.120	0	1.001	3757166	572804	317	792	1807	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.592	34.589	0	0.952	2435943	544796	1143	2857	477		
385.8610	34.592	34.589	0	0.952	4458150	1008259	2108	5270	478	0.55(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.608	34.608	0	1.000	9920121	2235944	4718	11795	474		
375.8178	34.608	34.608	0	1.000	7857246	1772003	3649	9122	486	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.759	34.759	0	0.957	2726527	603175	1143	2857	528		
385.8610	34.759	34.759	0	0.957	5054354	1117304	2108	5270	530	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.776	34.777	0	1.000	10845030	2353526	4718	11795	499		
375.8178	34.776	34.777	0	1.000	8586902	1879458	3649	9122	515	1.26(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.615	35.616	0	0.980	2626917	670839	1143	2857	587		
385.8610	35.615	35.616	0	0.980	4814555	1219387	2108	5270	578	0.55(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.632	35.633	0	1.000	10493146	2616048	4718	11795	554		
375.8178	35.632	35.633	0	1.000	8369340	2104551	3649	9122	577	1.25(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.529	36.530	0	1.006	2390744	654091	1143	2857	572		
385.8610	36.529	36.530	0	1.006	4461990	1217472	2108	5270	578	0.54(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	36.546	36.544	0	1.000	9864009	2685632	4718	11795	569		
375.8178	36.546	36.544	0	1.000	7752754	2112230	3649	9122	579	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.328	36.330	0		3225063	862156	671	1677	1285		
403.8529	36.328	36.330	0		2550271	668641	548	1370	1220	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.833	35.836	0	0.986	2718376	722822	671	1677	1077		
403.8529	35.842	35.836	0	0.987	2111853	576022	548	1370	1051	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.850	35.849	0	1.000	6262073	1686648	1342	3355	1257		
391.8127	35.850	35.849	0	1.000	4891896	1341253	1083	2707	1238	1.28(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.959	35.958	0	0.990	2940570	765608	671	1677	1141		
403.8529	35.959	35.958	0	0.990	2321048	611989	548	1370	1117	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8158	35.976	35.973	0	1.000	6444182	1712991	1342	3355	1276		
391.8127	35.976	35.973	0	1.000	5217691	1365104	1083	2707	1260	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.345	36.346	0	1.014	6836983	1856188	1342	3355	1383		
391.8127	36.345	36.346	0	1.014	5517125	1487212	1083	2707	1373	1.24(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.370	38.366	0	1.056	1789695	589686	826	2065	714		
419.8220	38.370	38.366	0	1.056	3844838	1265314	1512	3780	837	0.47(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.378	38.378	0	1.000	9042336	2975184	8174	20435	364		
409.7788	38.378	38.378	0	1.000	8573385	2837625	7503	18757	378	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.628	39.629	0	1.091	1677965	582370	826	2065	705		
419.8220	39.628	39.629	0	1.091	3629079	1254142	1512	3780	829	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.645	39.641	0	1.000	7866409	2737221	8174	20435	335		
409.7788	39.645	39.641	0	1.000	7448986	2556500	7503	18757	341	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.326	39.324	0	1.083	2737465	961359	1371	3427	701		
437.8140	39.326	39.324	0	1.083	2568401	890692	1268	3170	702	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	39.334	39.334	0	1.000	5934661	2047492	2881	7202	711		
425.7737	39.334	39.334	0	1.000	5639210	1963631	2774	6935	708	1.05(0.88-1.20)	
13C-OCDD											
469.7780	41.764	41.764	0	1.150	3443965	1117893	628	1570	1780		
471.7750	41.764	41.764	0	1.150	3822201	1244463	599	1497	2078	0.90(0.76-1.02)	
OCDF											
441.7428	41.856	41.858	0	1.002	10620560	3404289	1142	2855	2981		
443.7399	41.856	41.858	0	1.002	11473752	3696493	1301	3252	2841	0.93(0.76-1.02)	
OCDD											
457.7377	41.772	41.772	0	1.000	7940615	2583043	989	2472	2612		
459.7348	41.772	41.772	0	1.000	8768725	2848645	1144	2860	2490	0.91(0.76-1.02)	

Reagents:

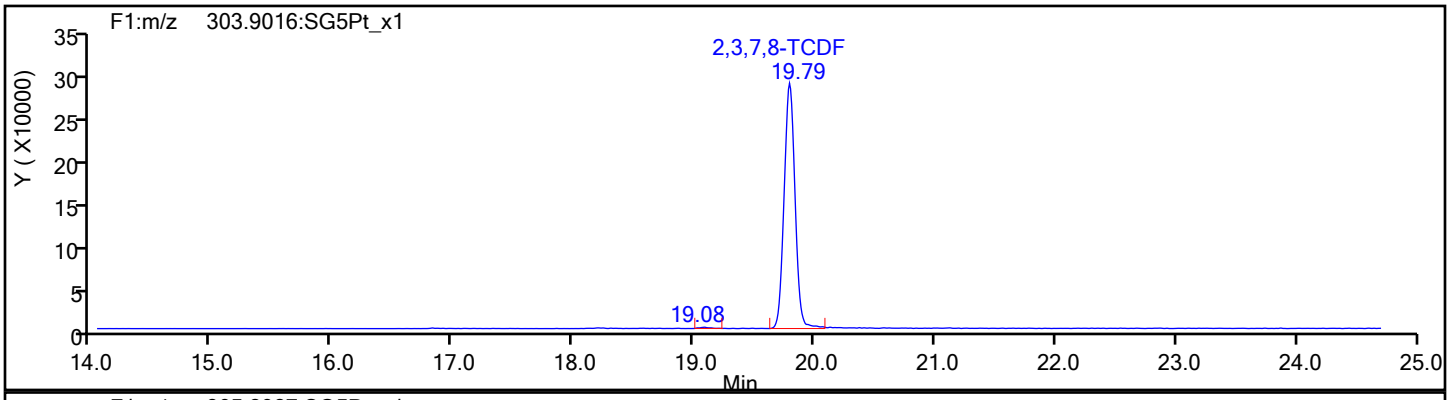
HRDXNL5_00028 Amount Added: 1.00 Units: mL

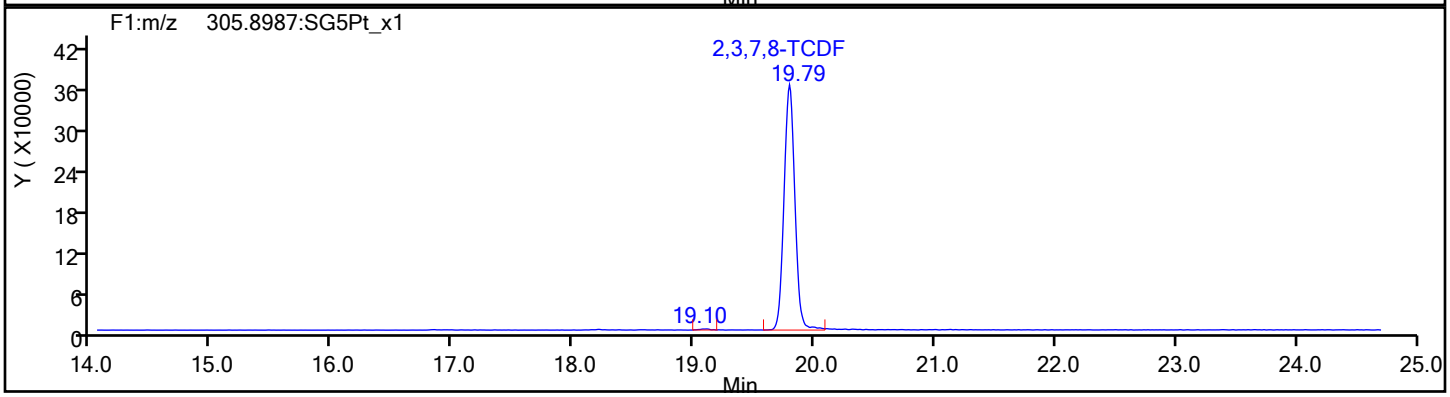
Report Date: 23-Oct-2019 11:53:44 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

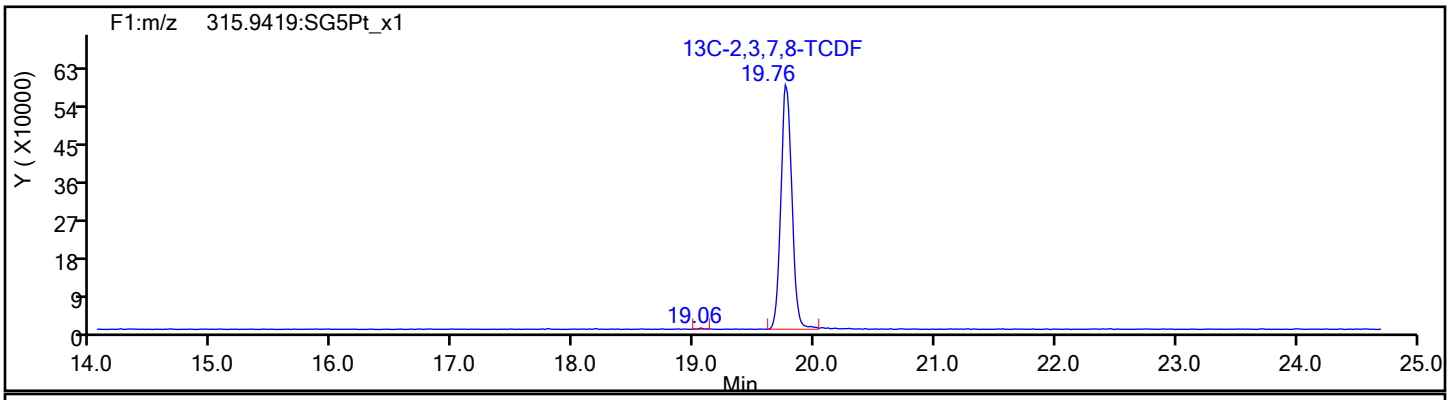
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

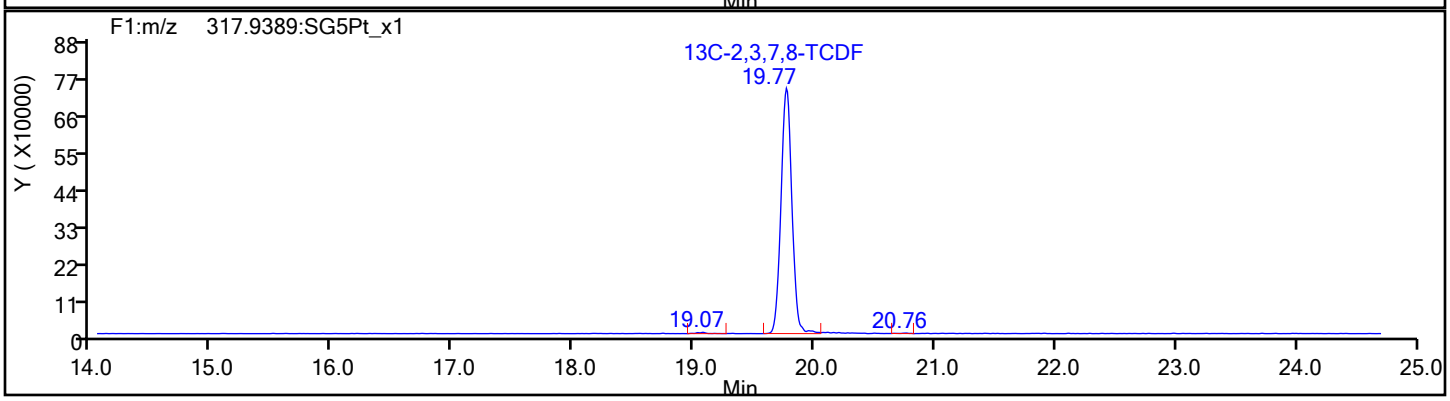
TCDF





TCDF Standards





Report Date: 23-Oct-2019 11:53:44 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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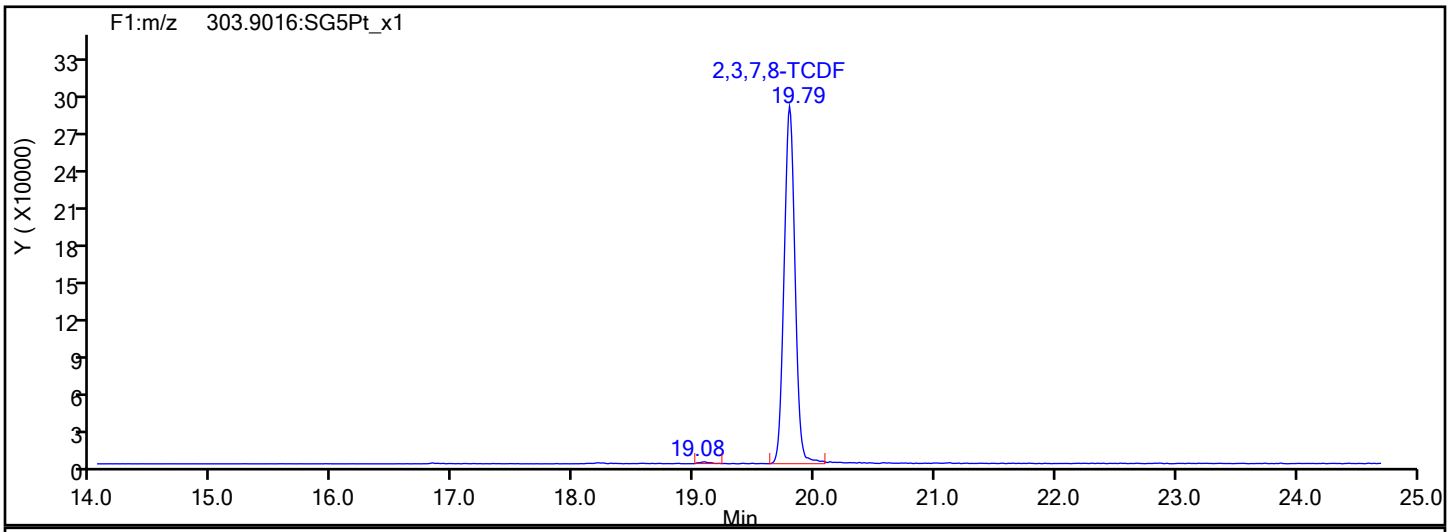
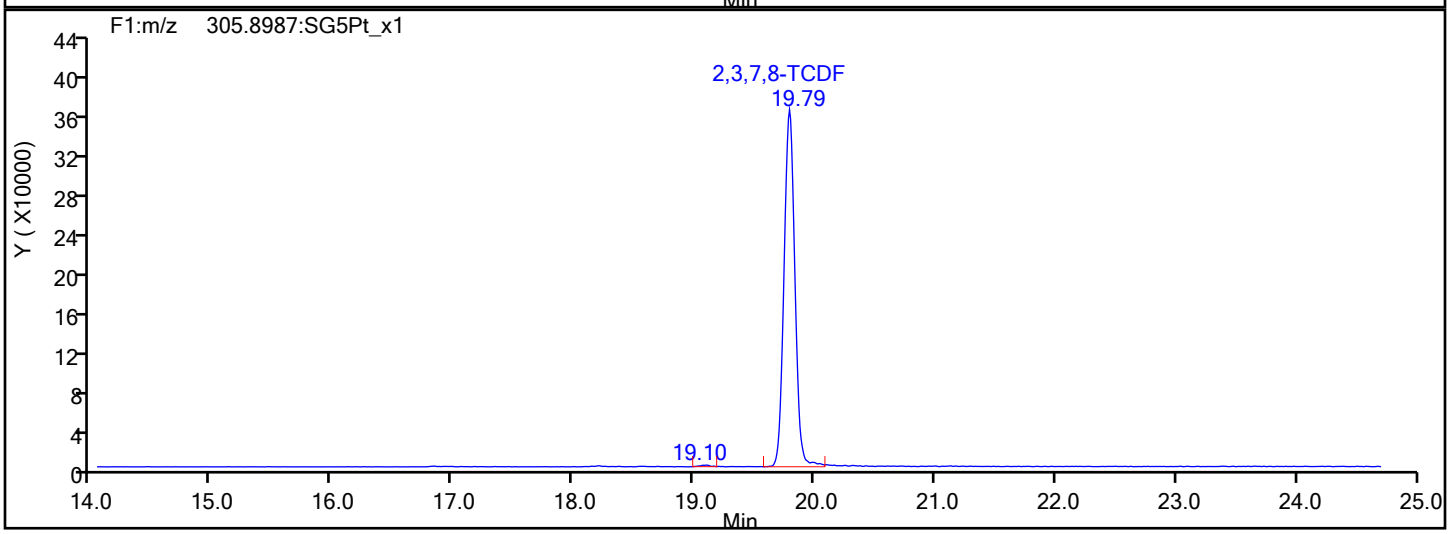
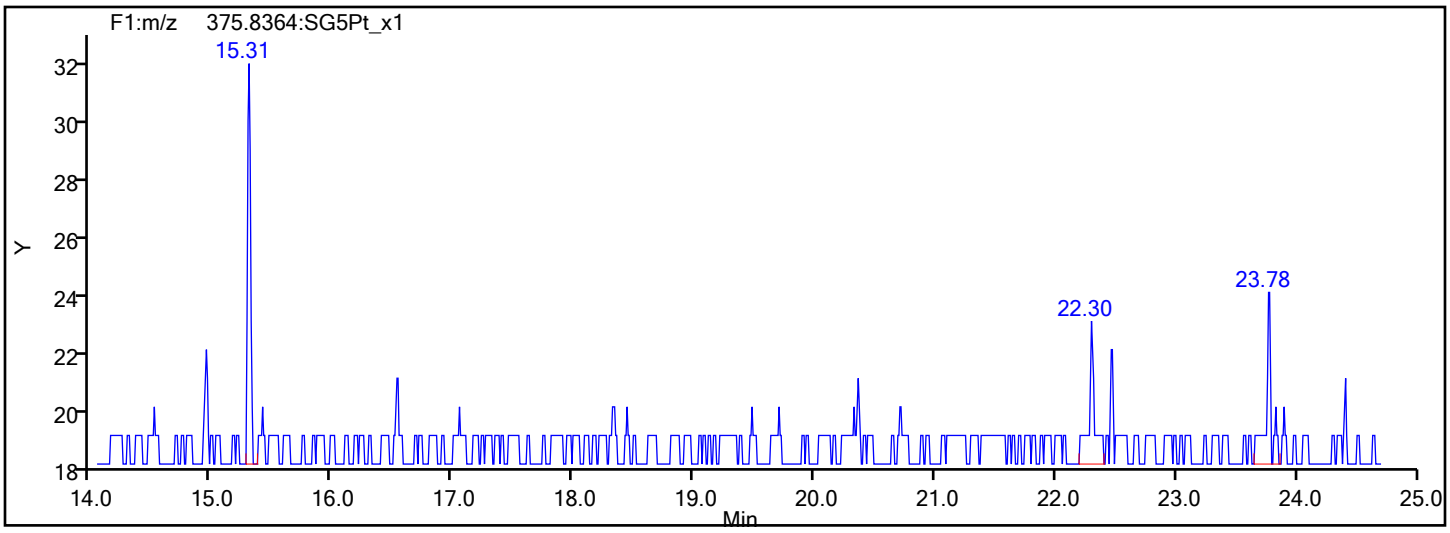
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 23-Oct-2019 11:53:44 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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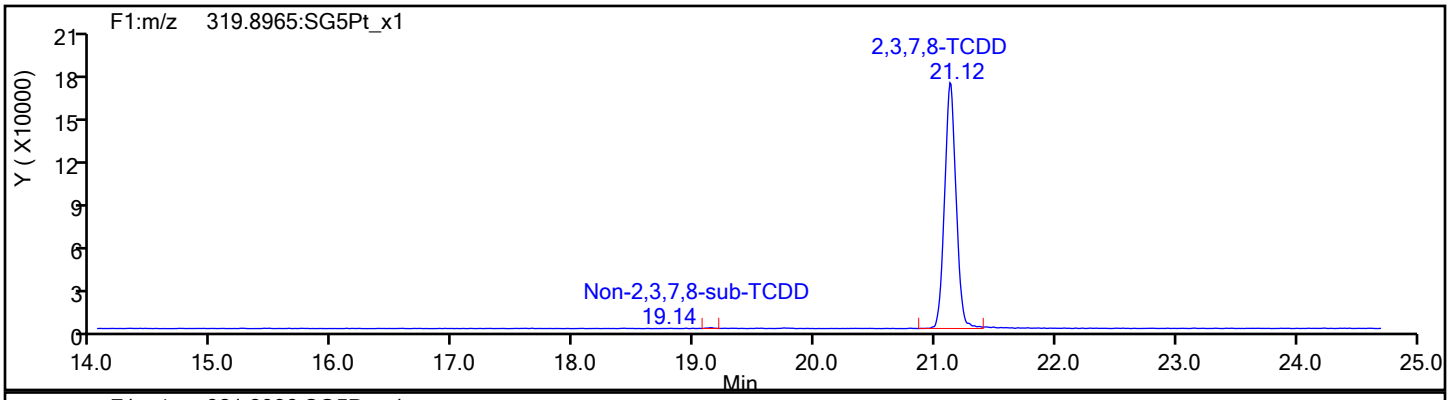
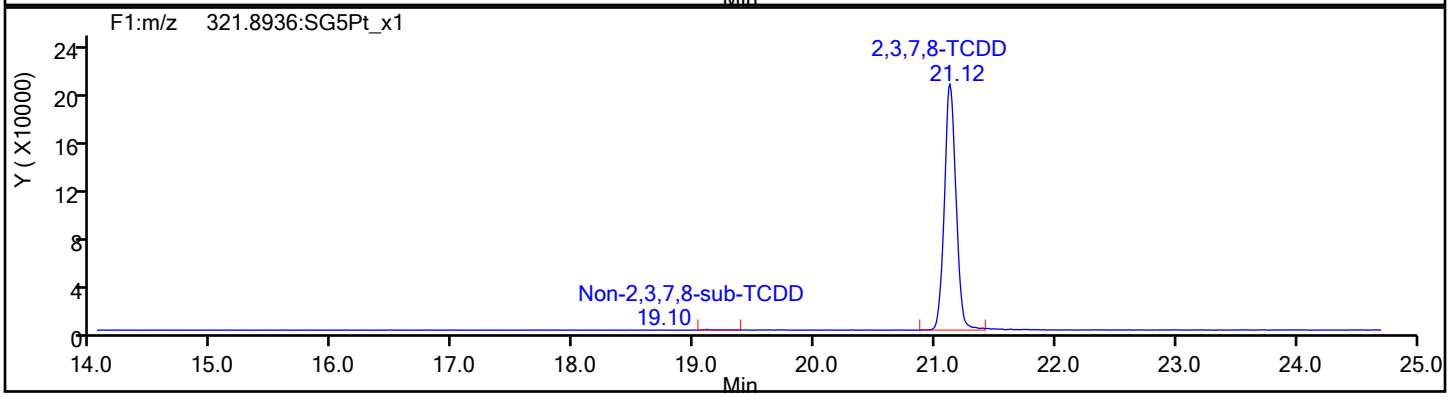
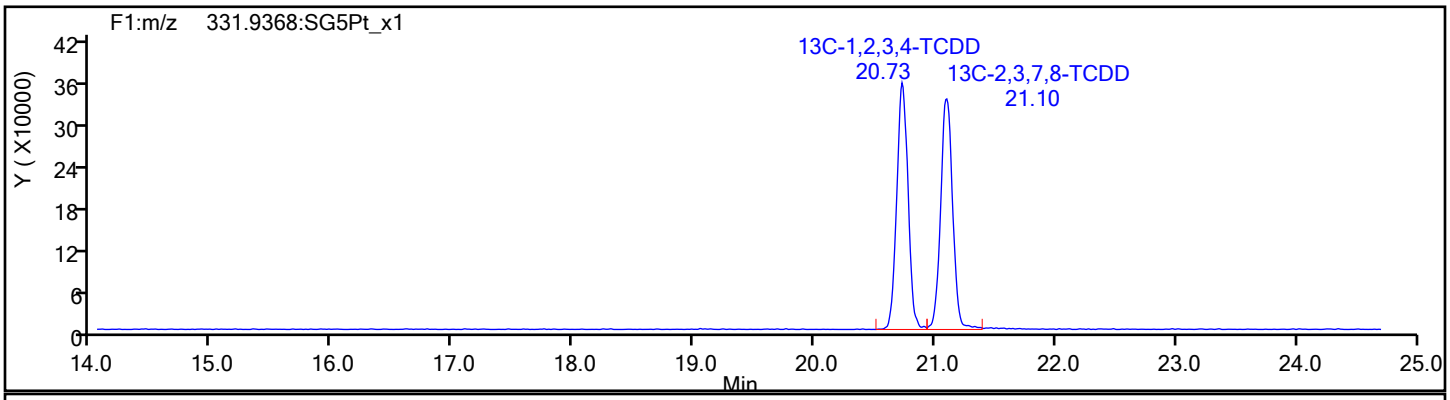
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

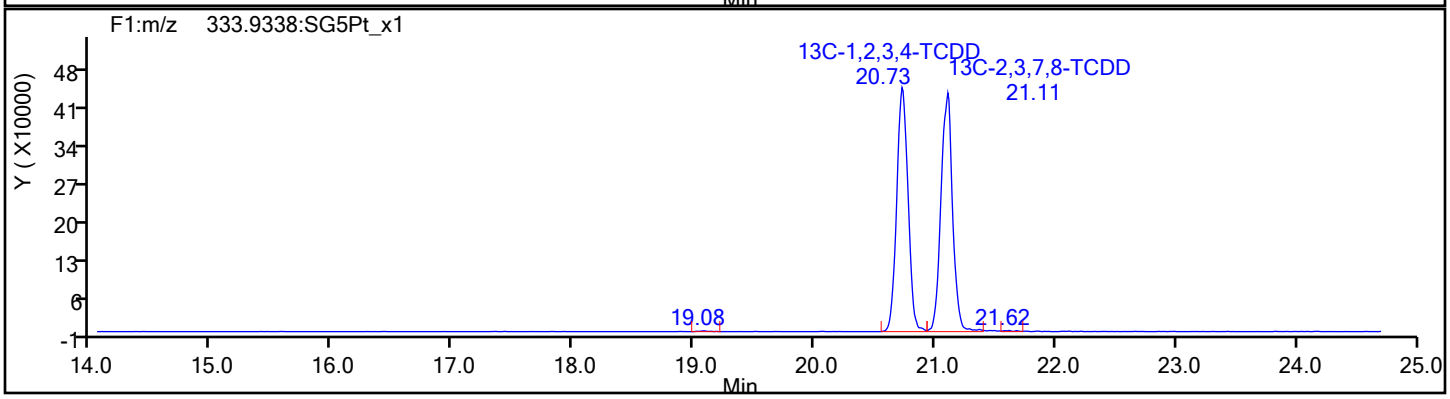
TCDD





TCDD Standards





Report Date: 23-Oct-2019 11:53:44 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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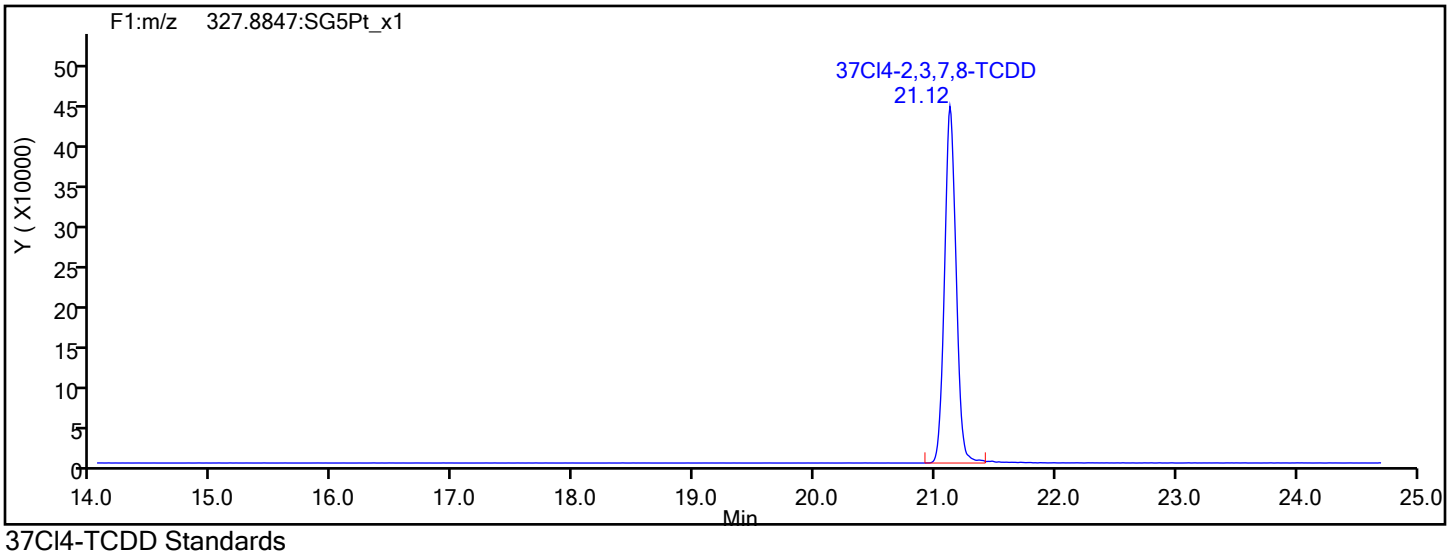
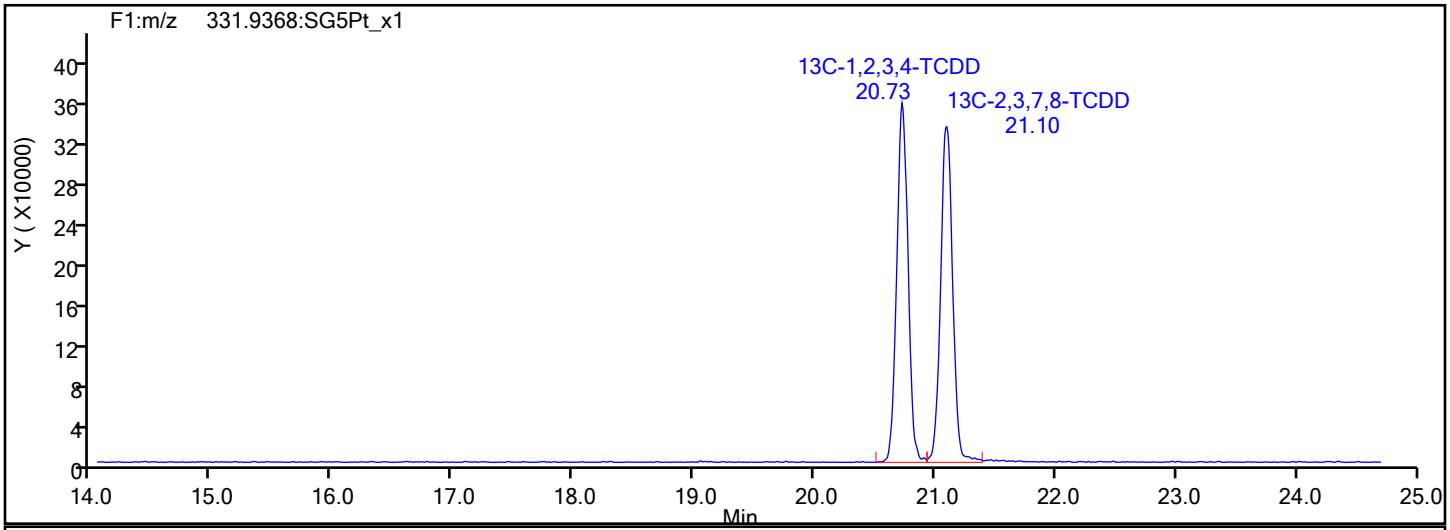
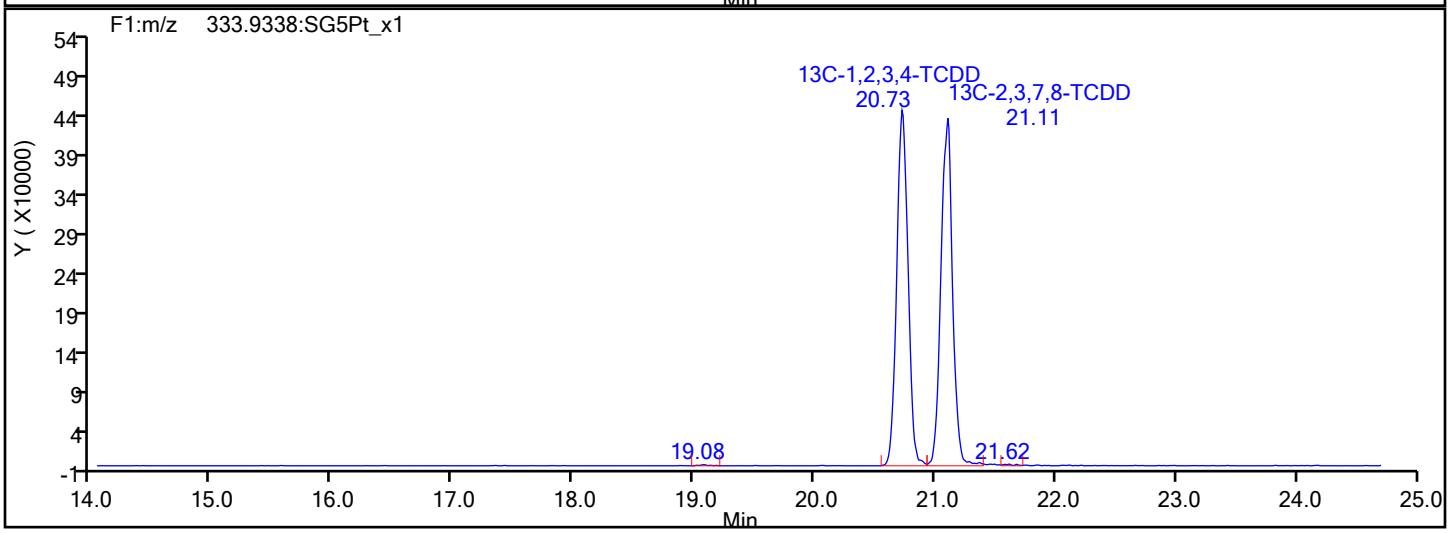
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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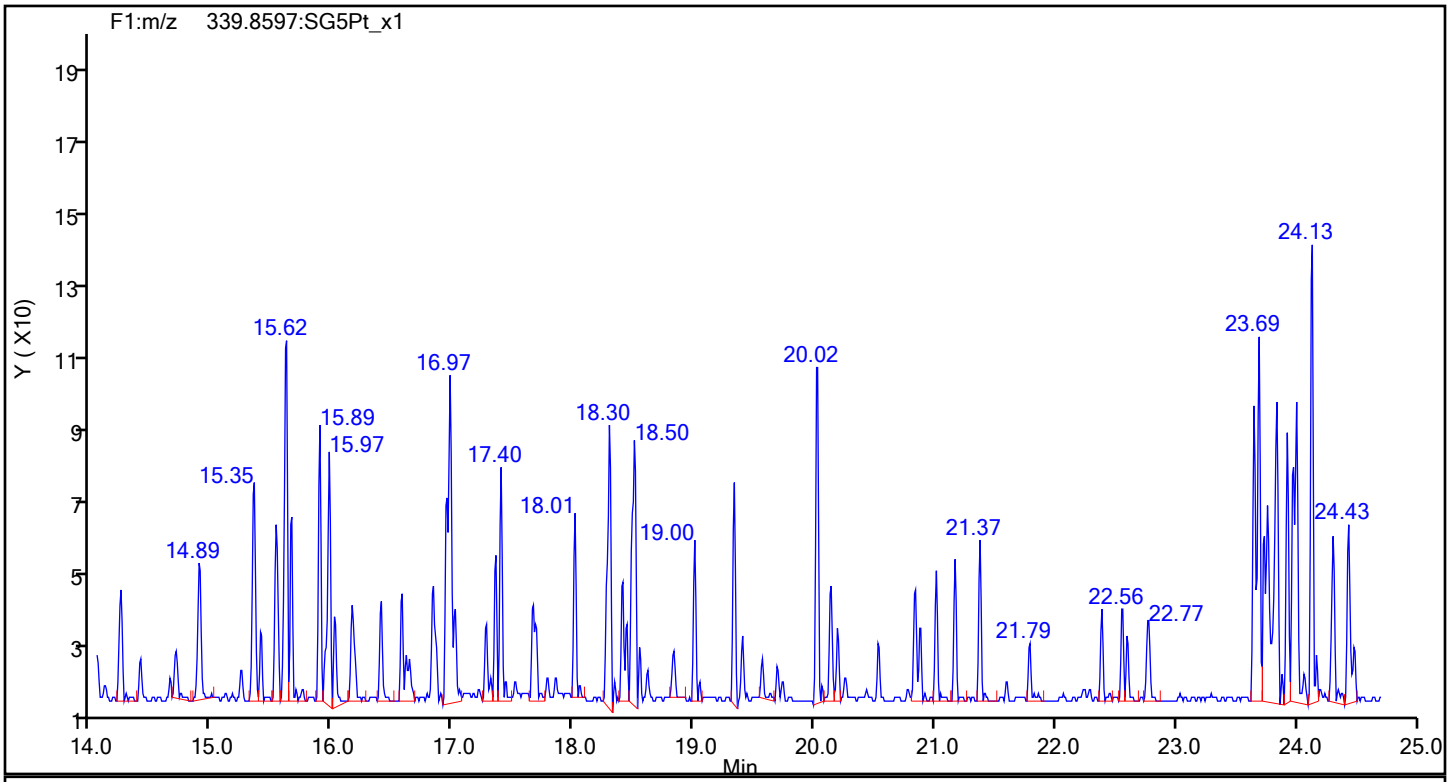
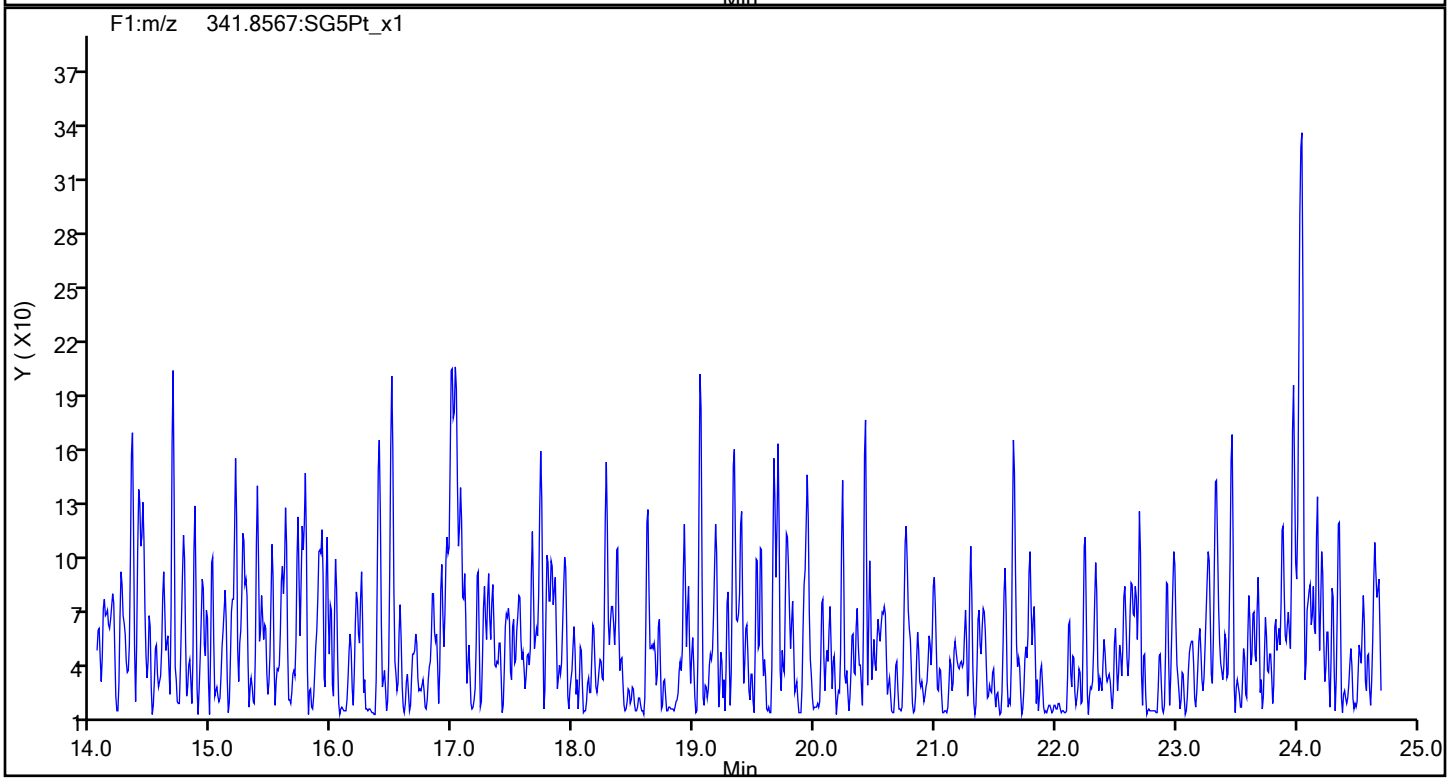
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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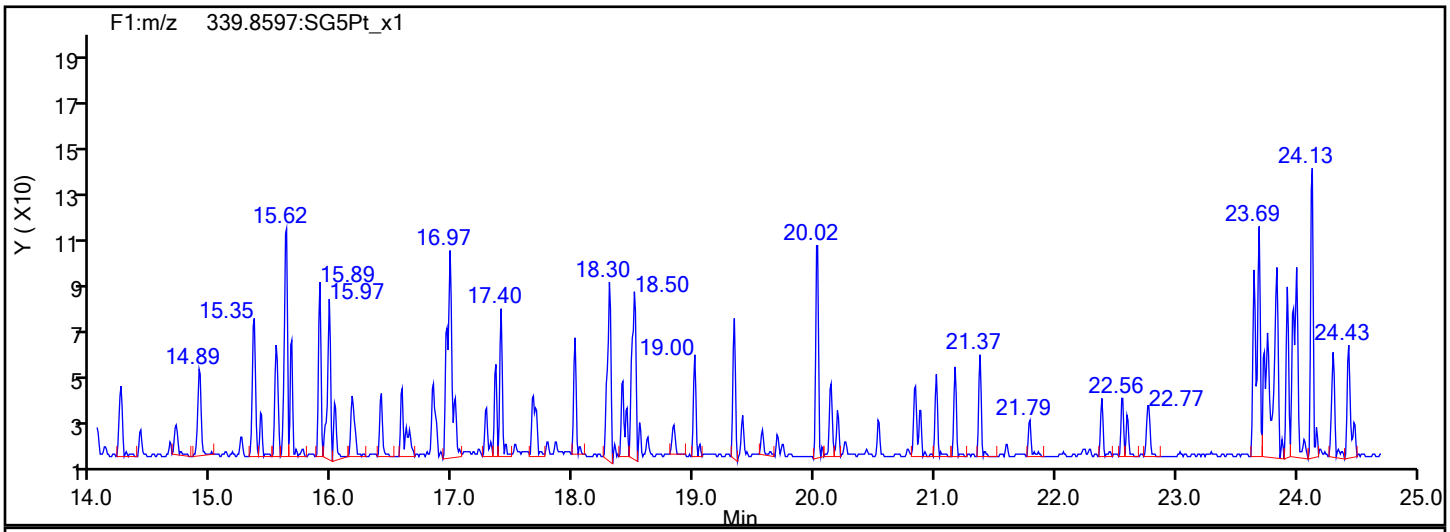
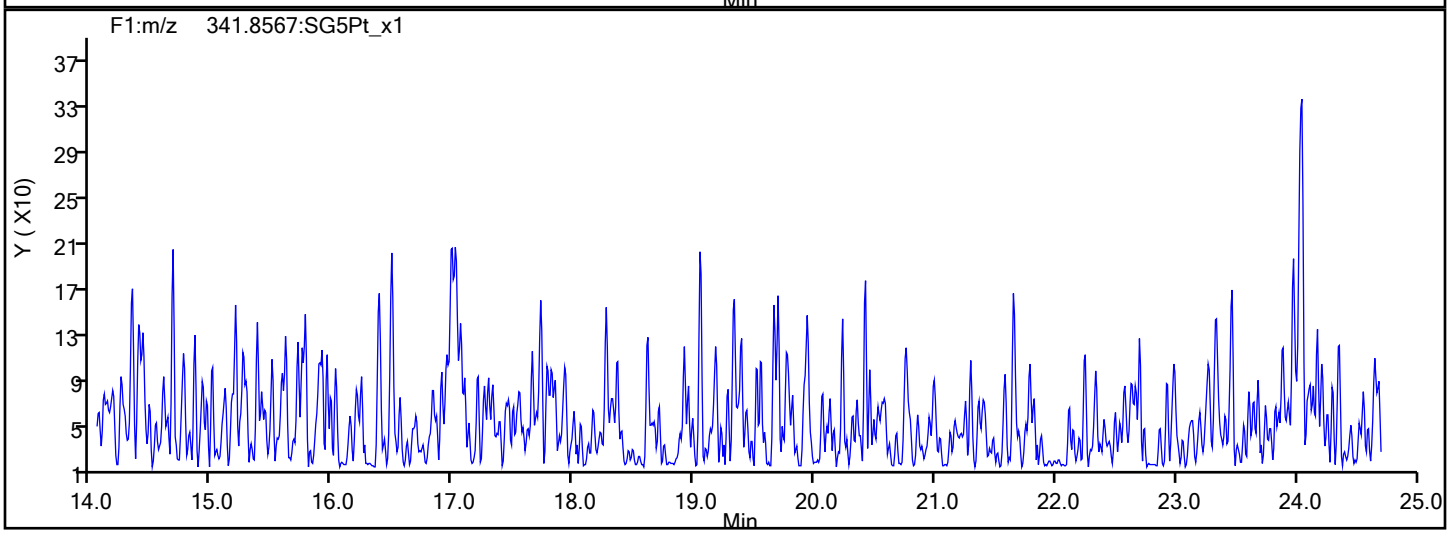
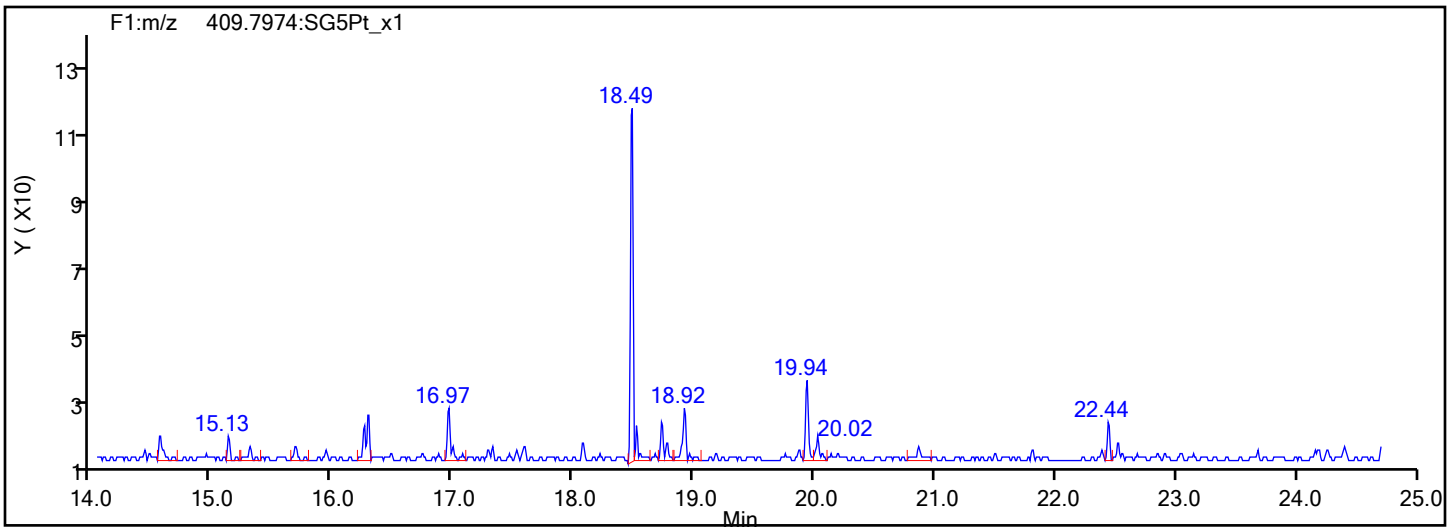
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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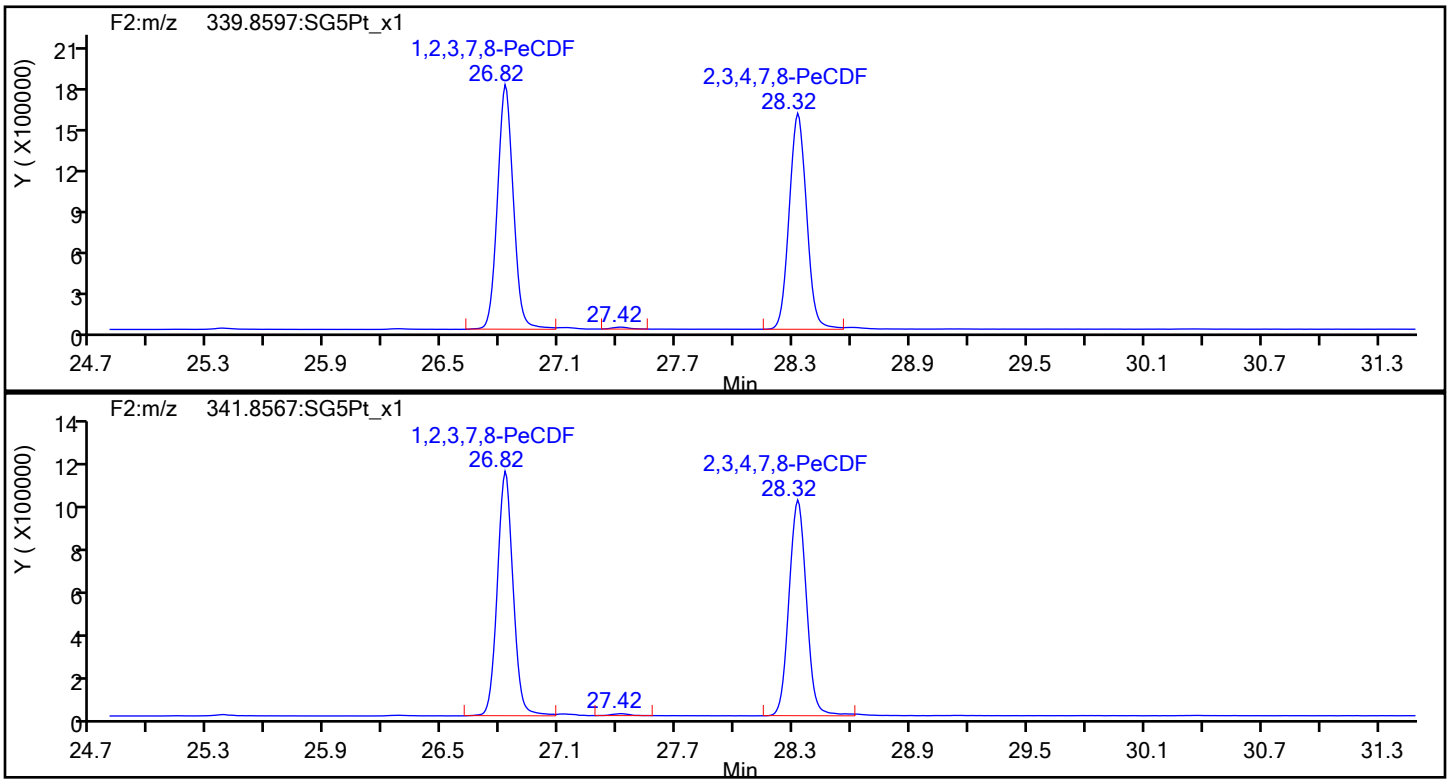
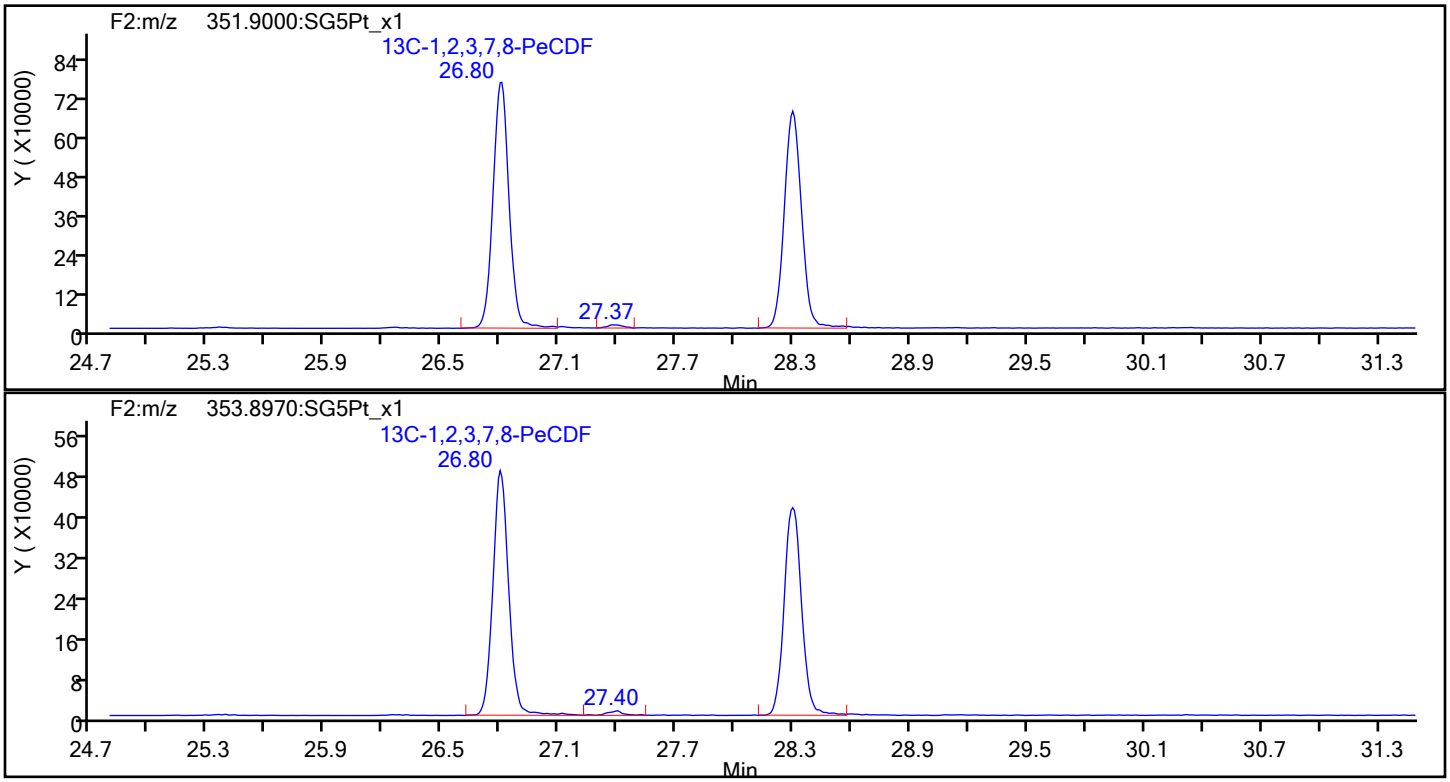
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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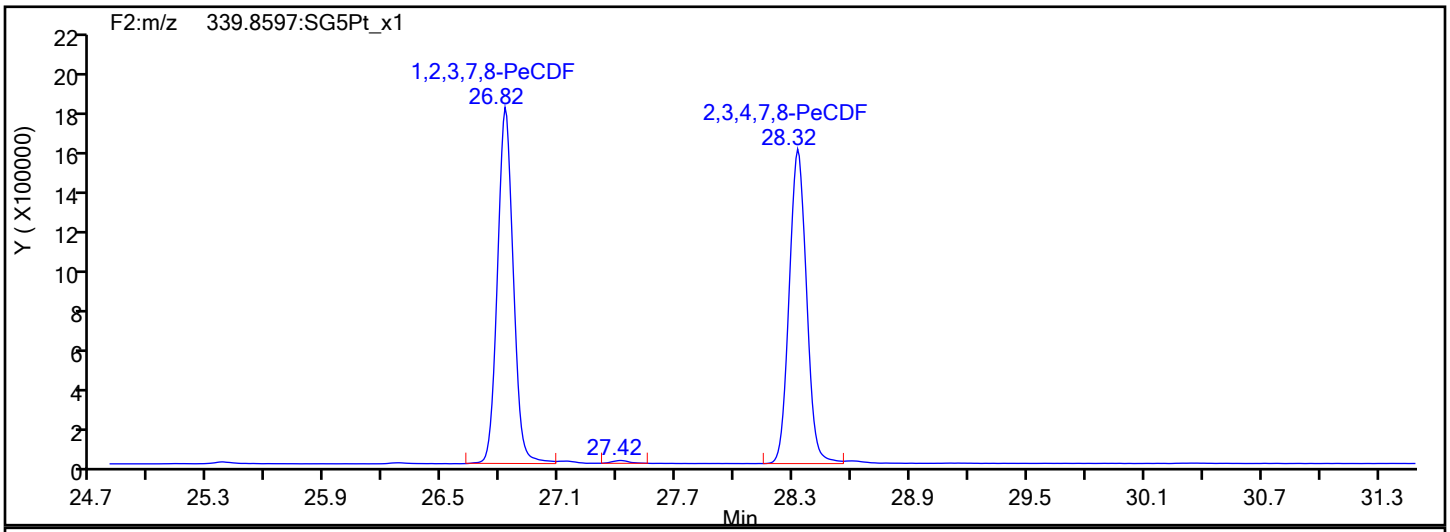
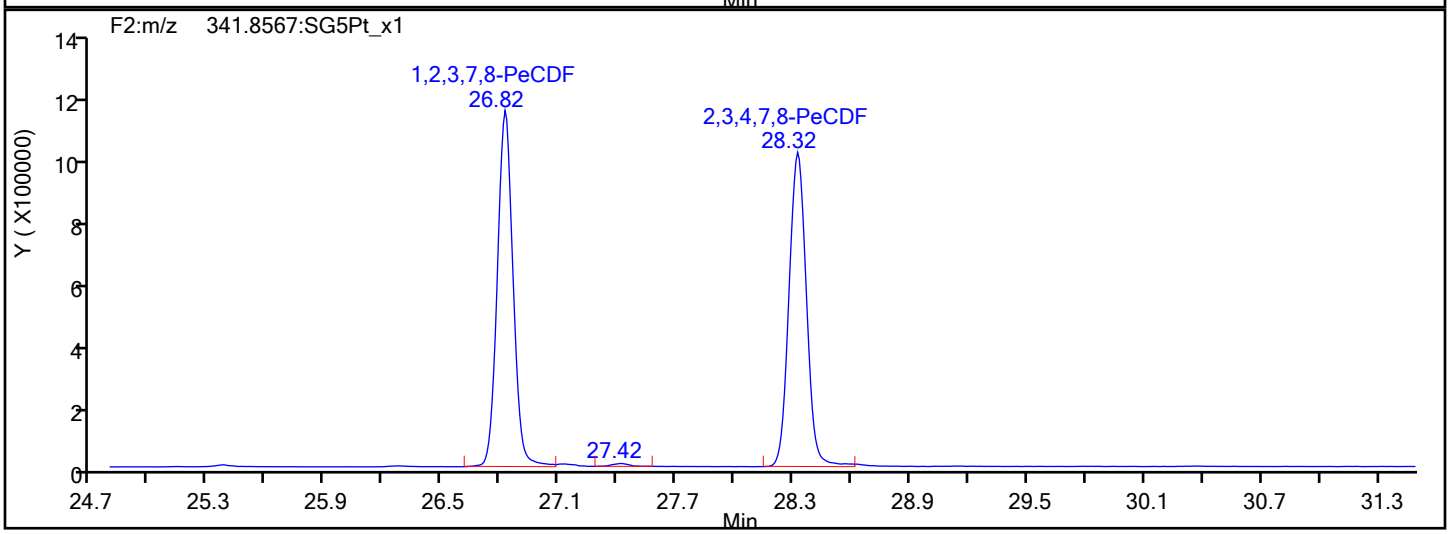
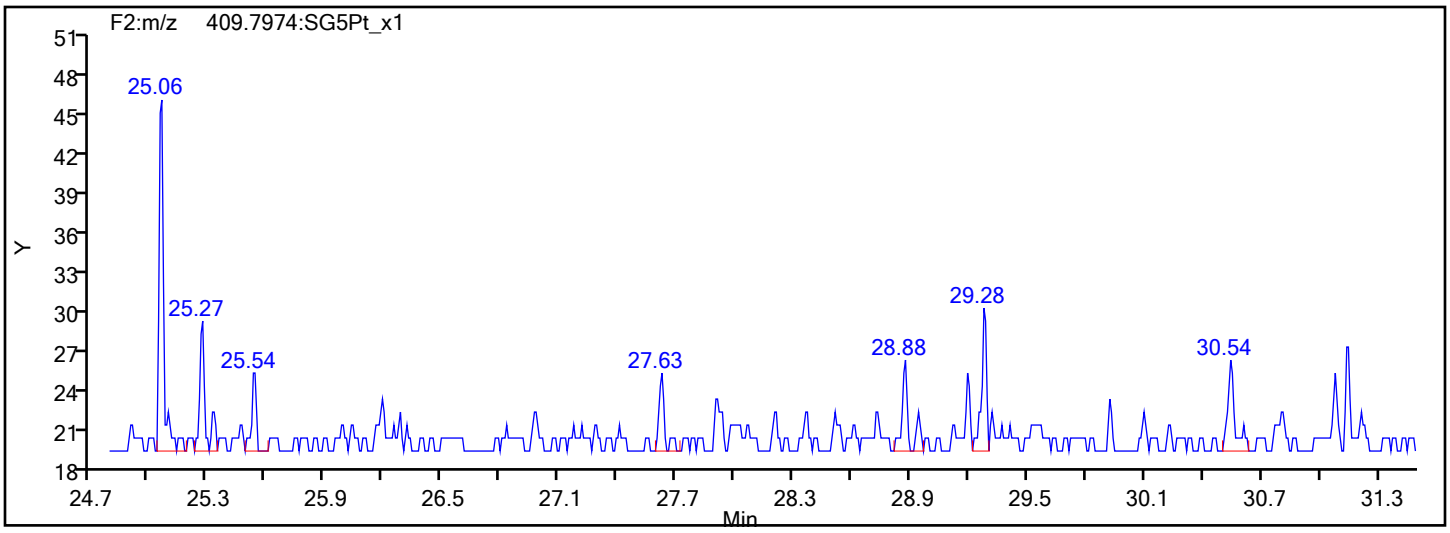
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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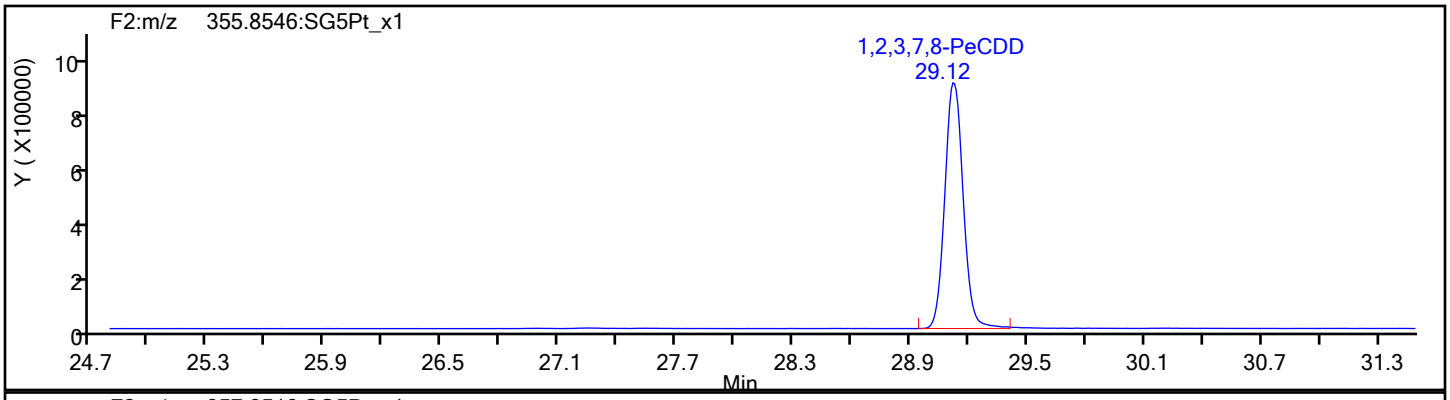
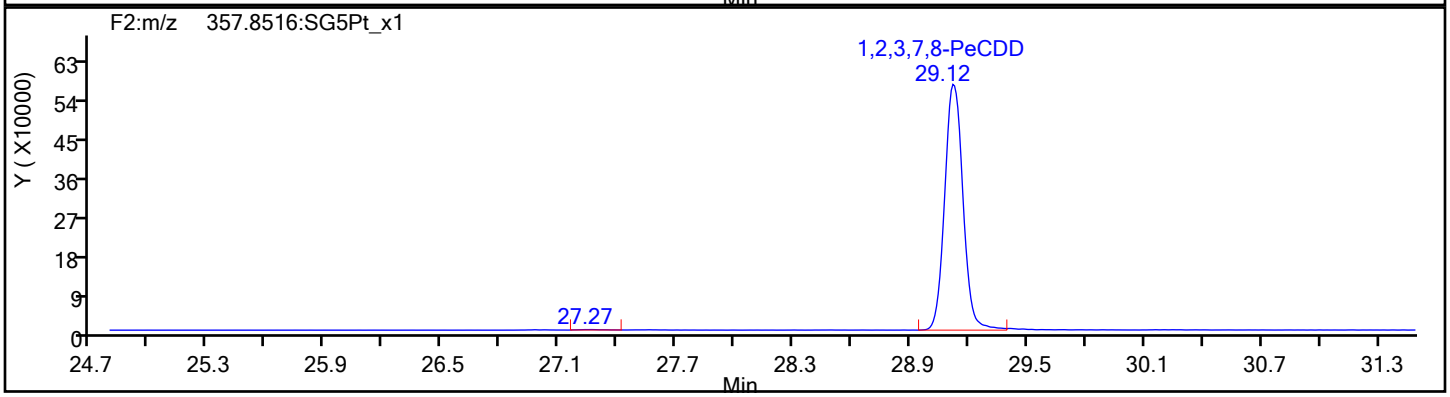
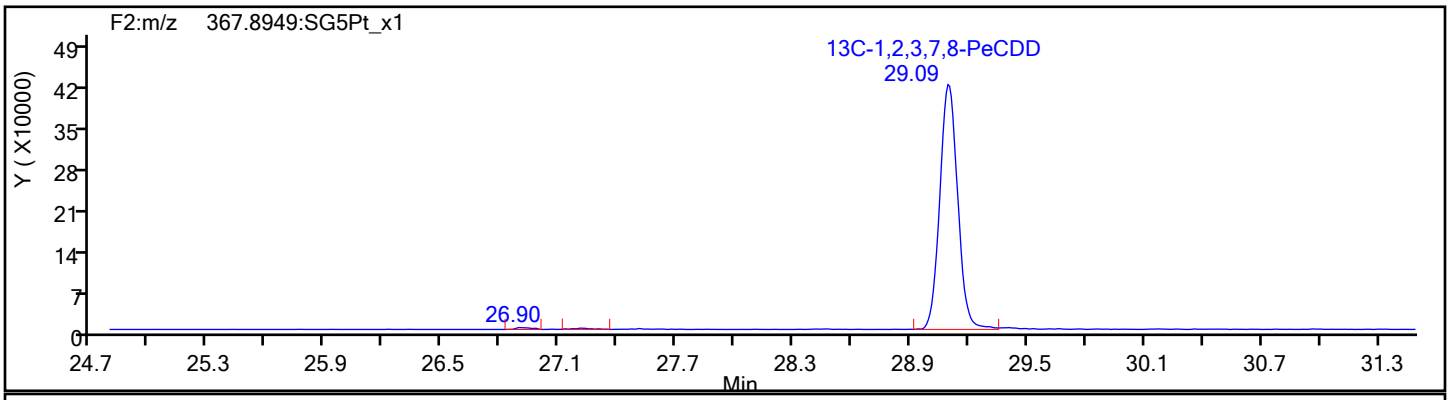
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

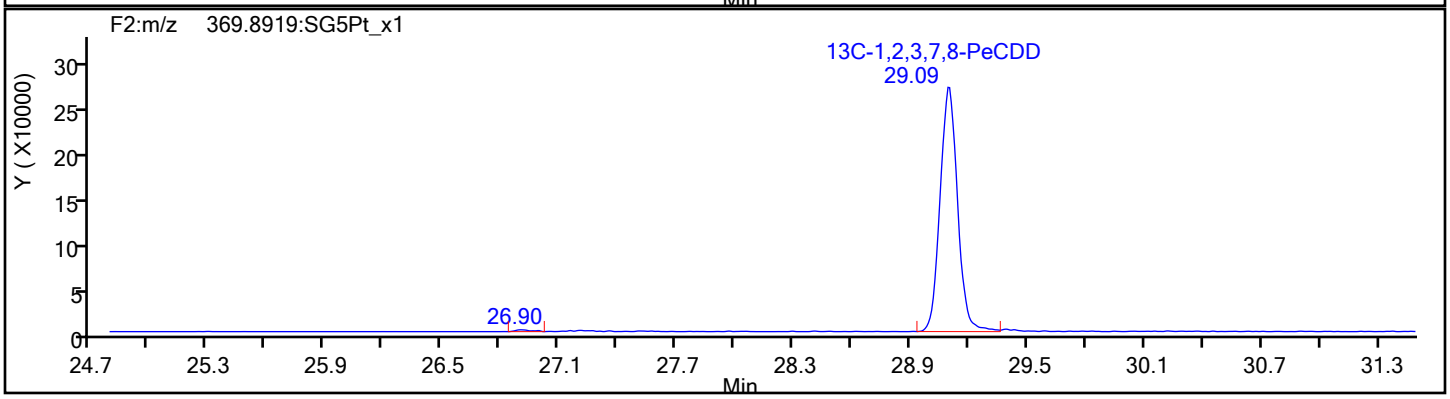
PeCDD





PeCDD Standards





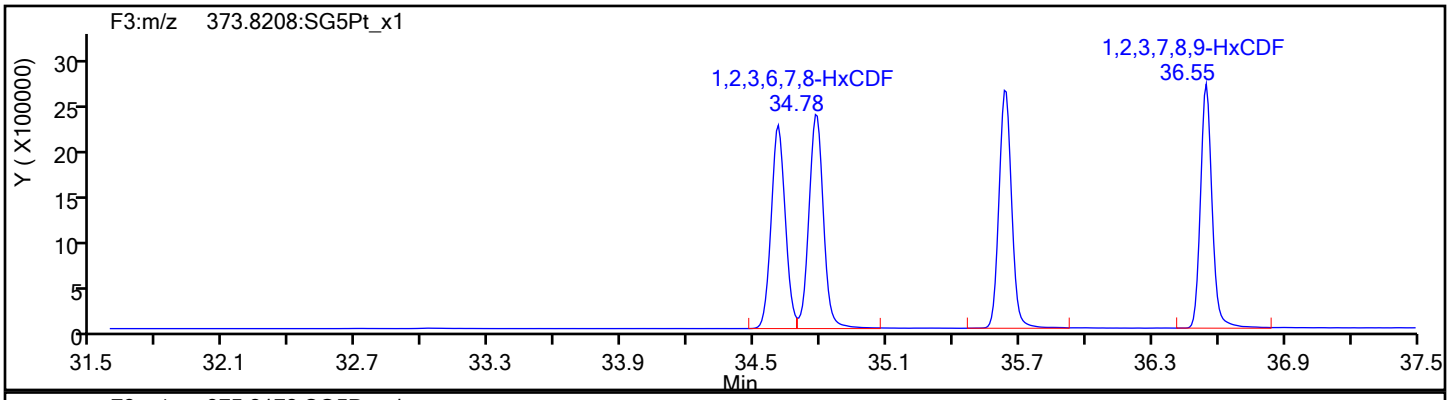
Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

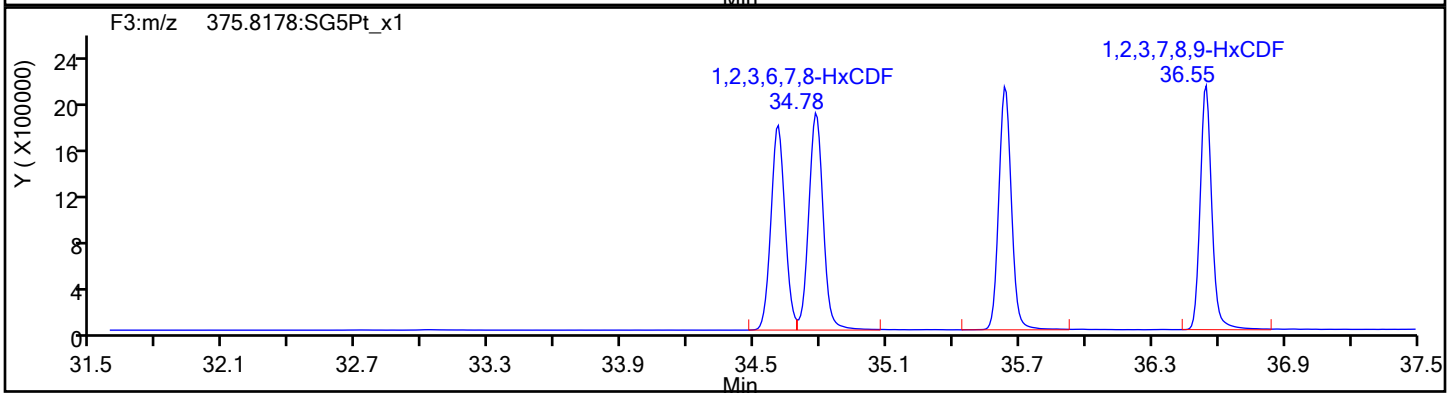
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d

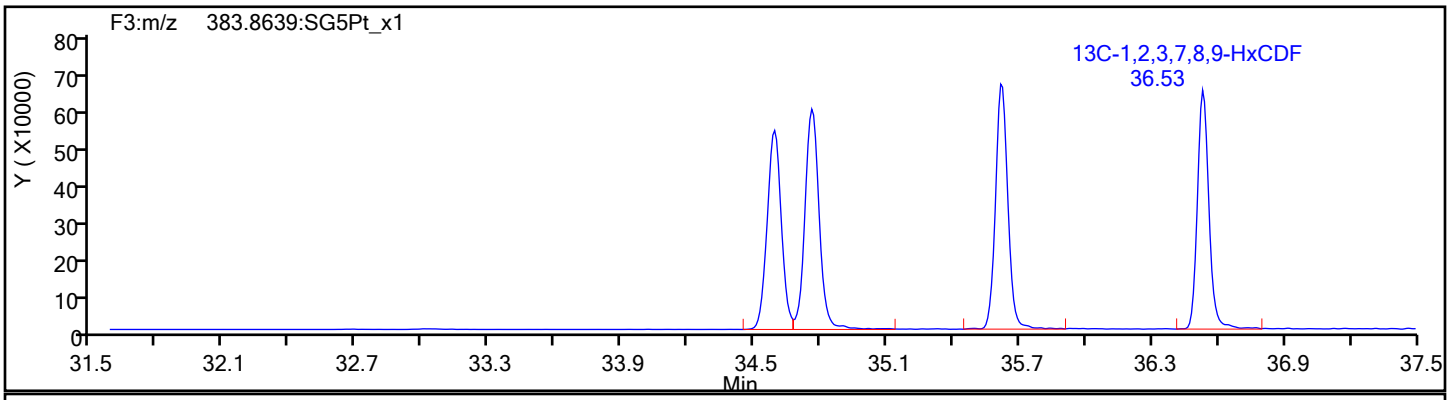
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

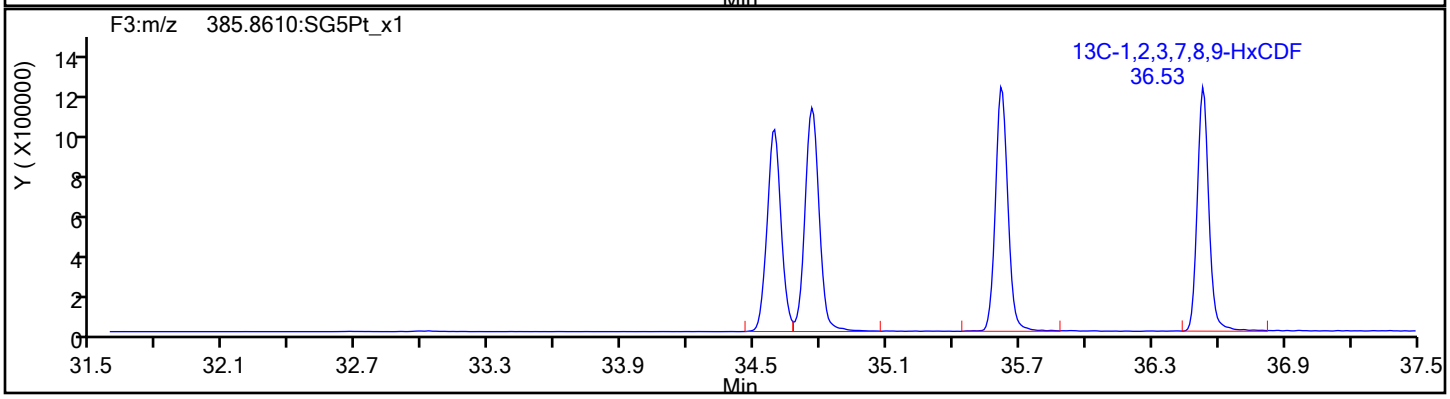
HxCDF





HxCDF Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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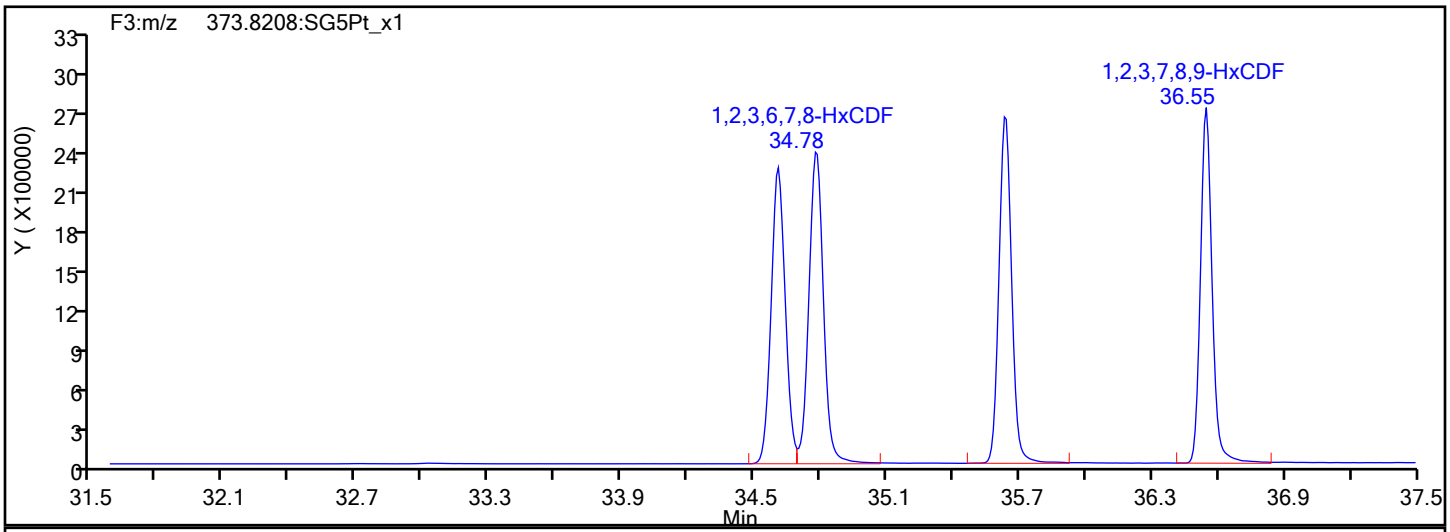
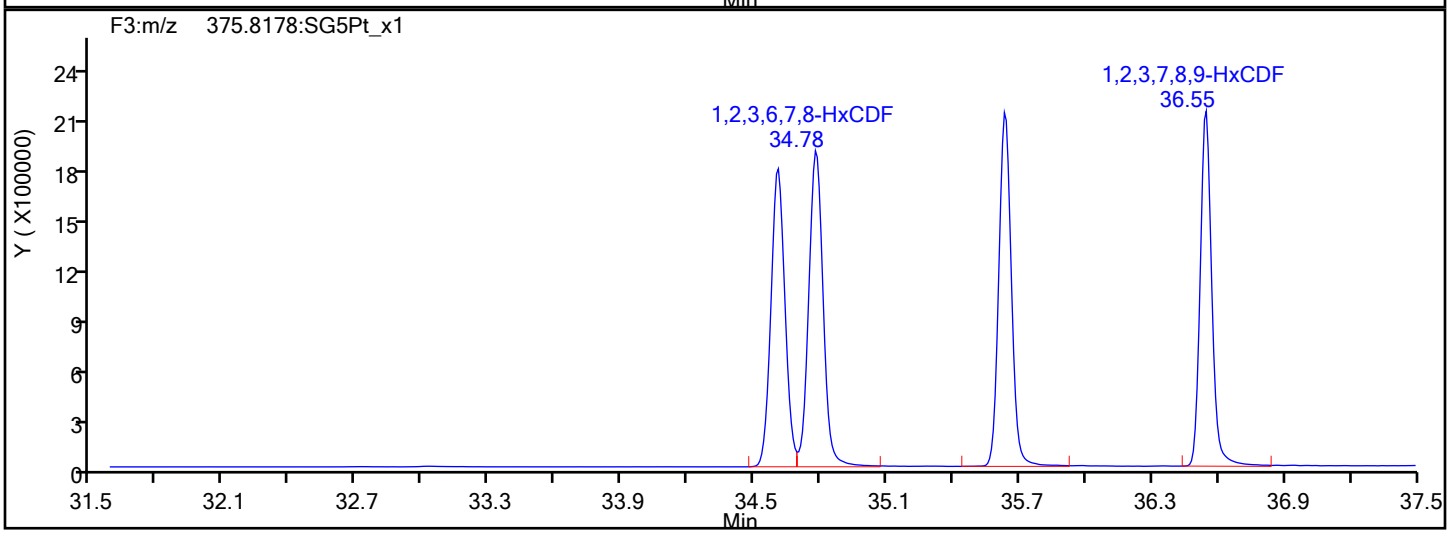
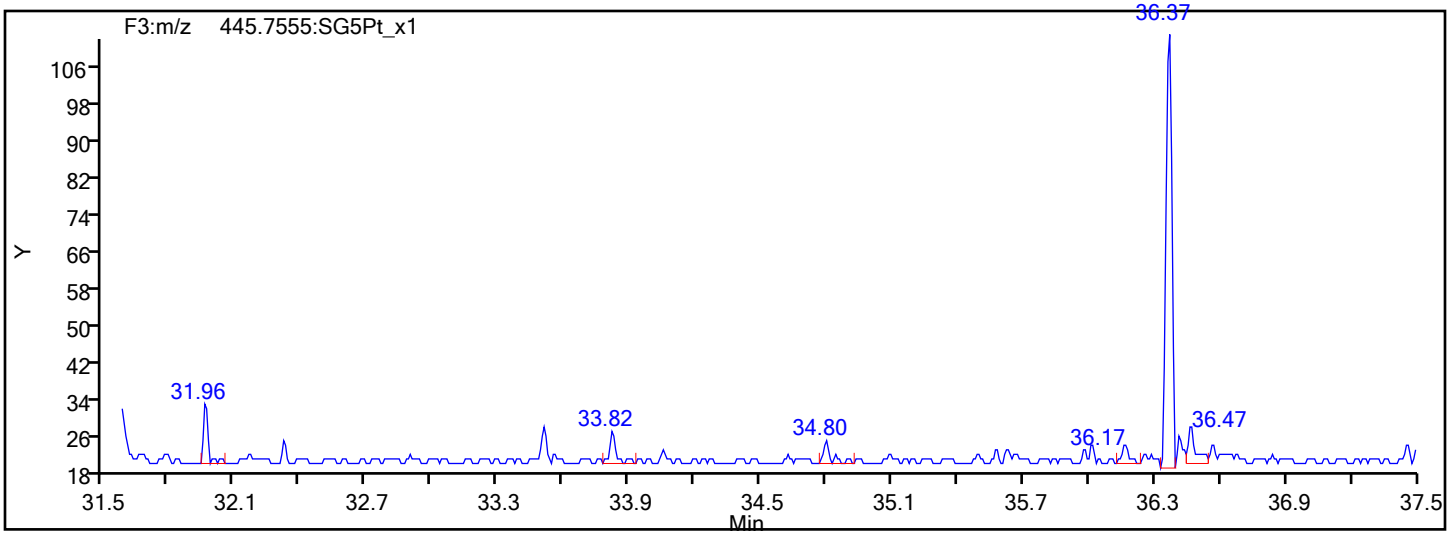
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



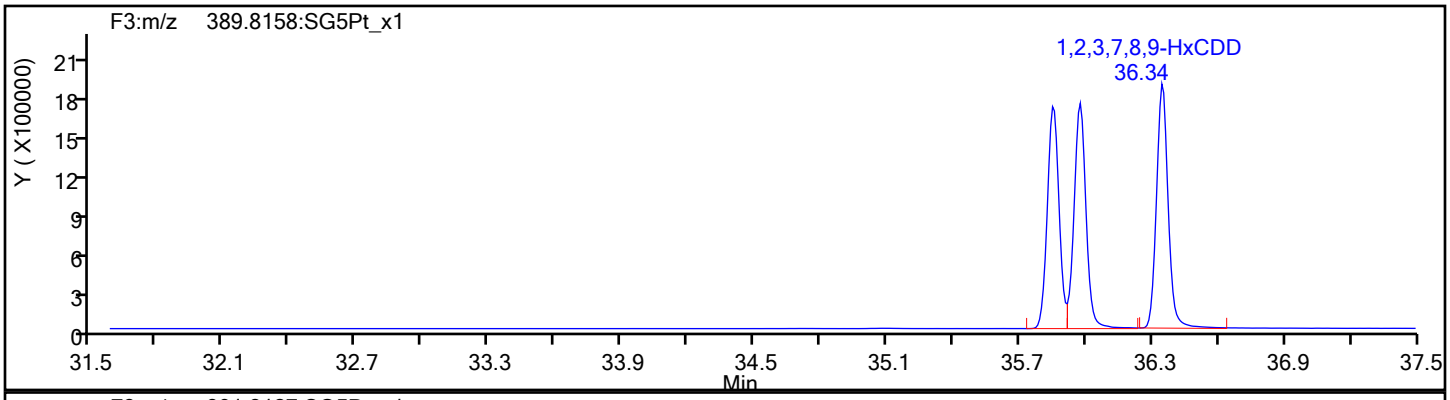
Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

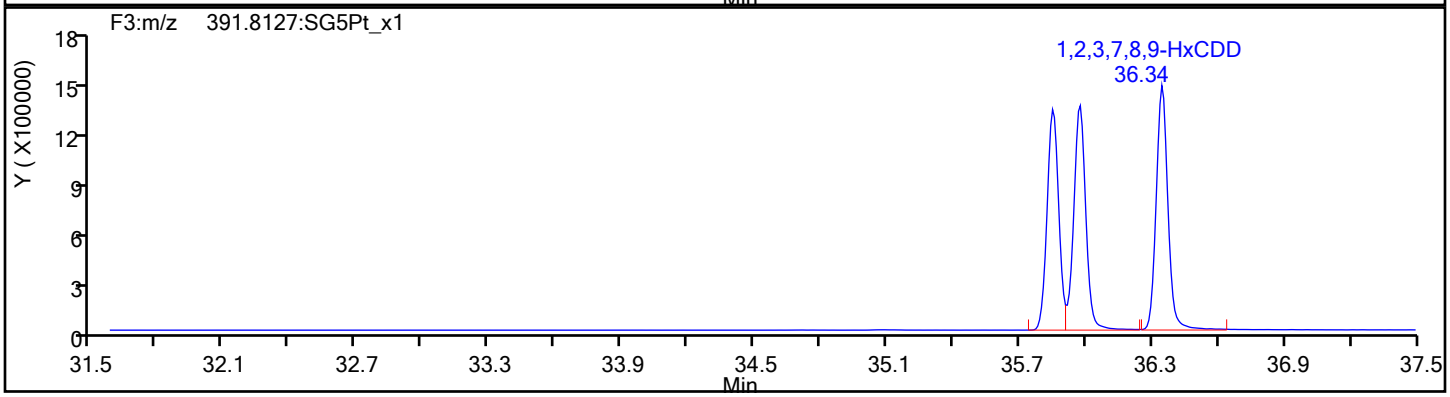
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d

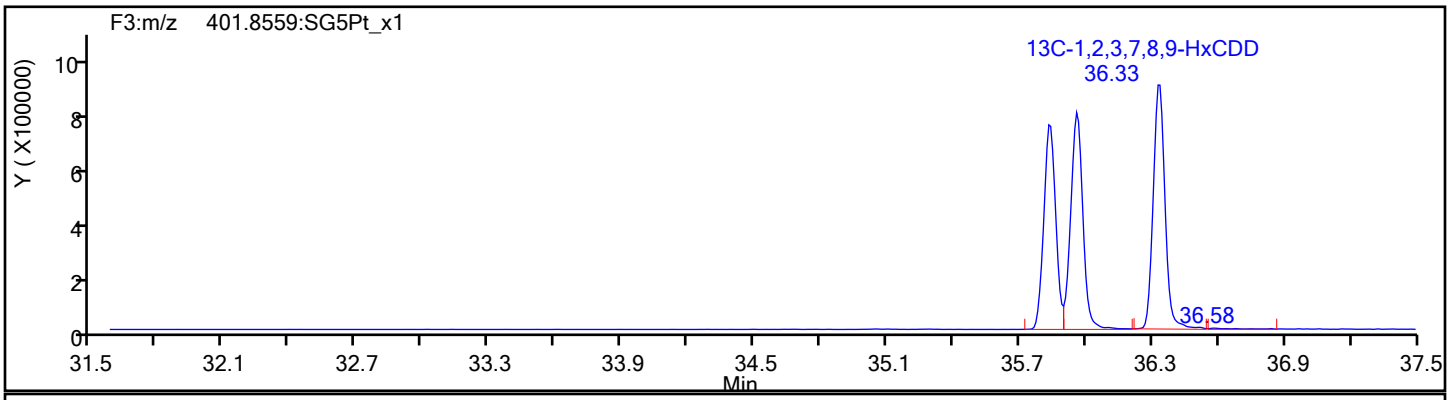
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

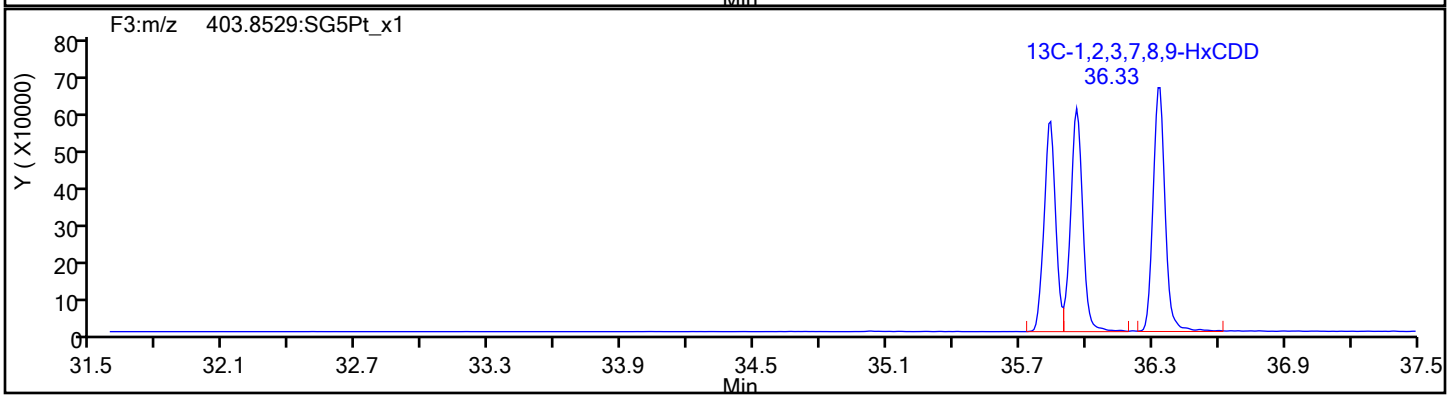
HxCDD





HxCDD Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d

Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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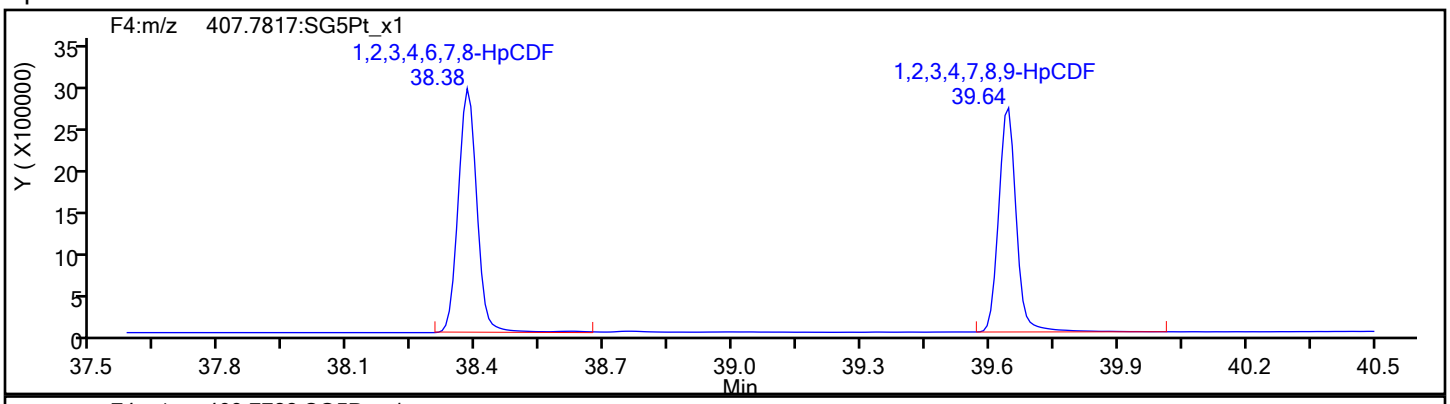
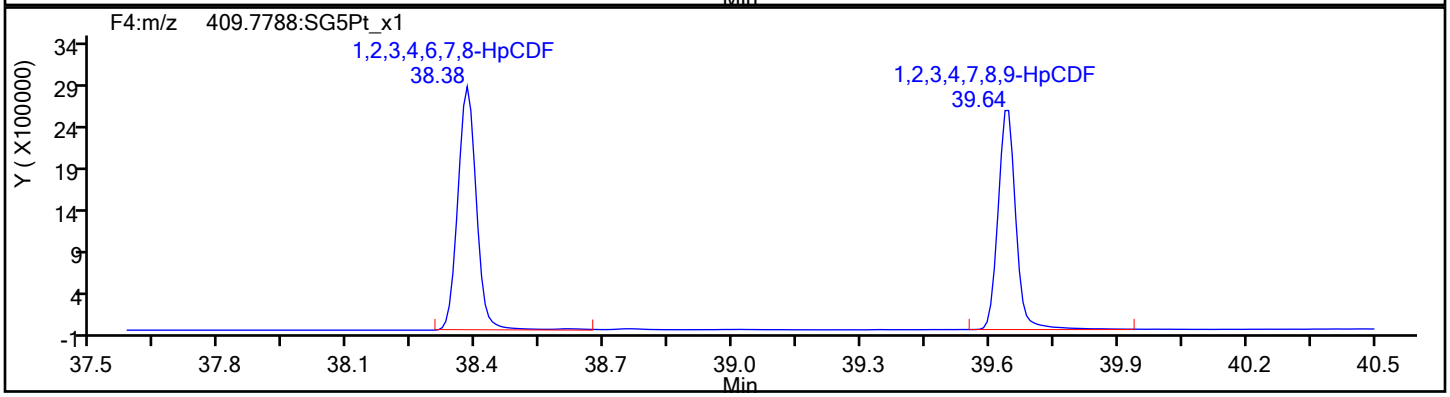
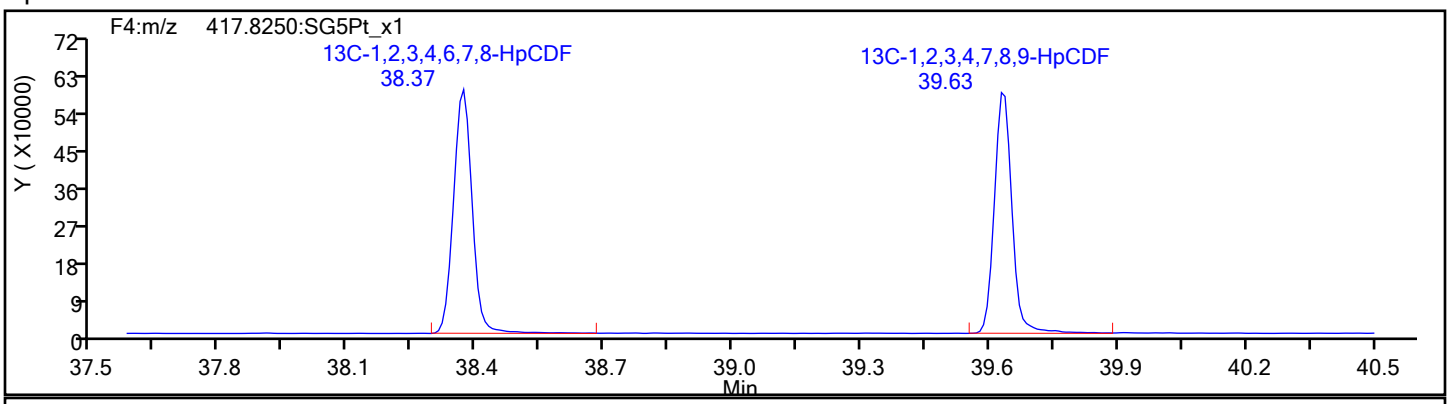
Column Type:	DB-5	Column Dia:	0.32 mm

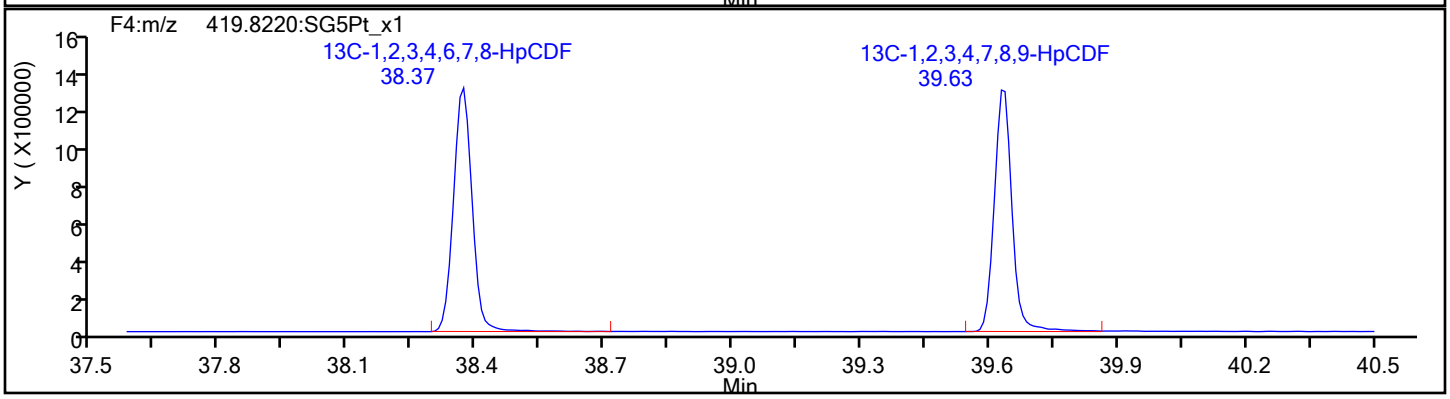
HpCDF





HpCDF Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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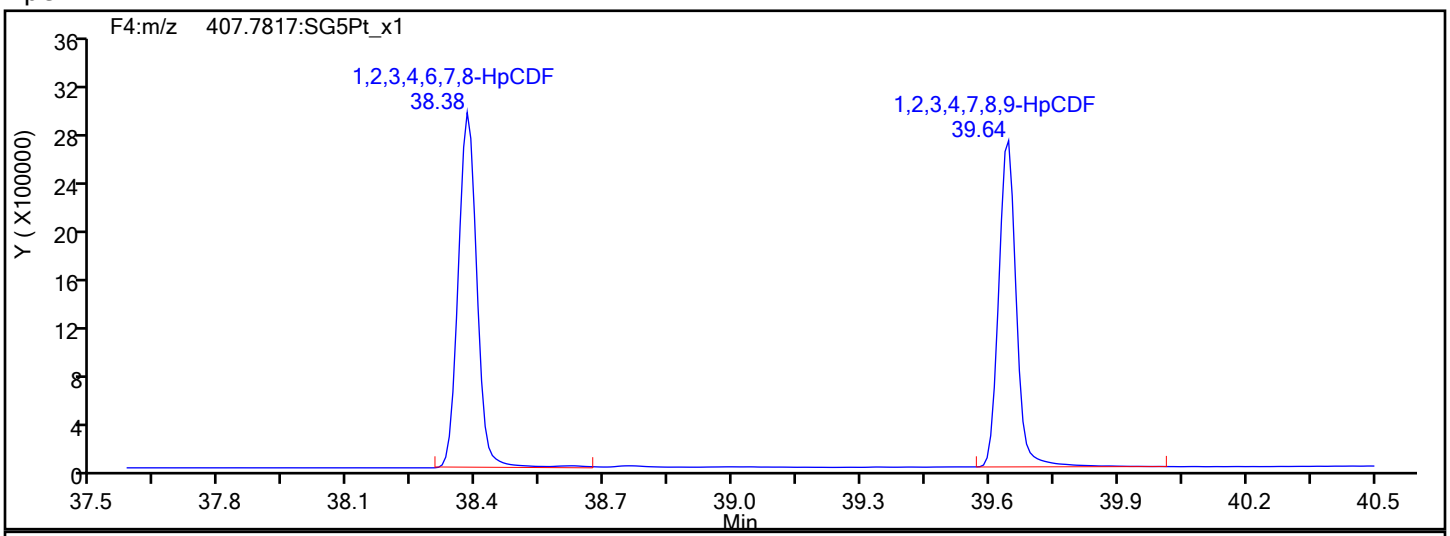
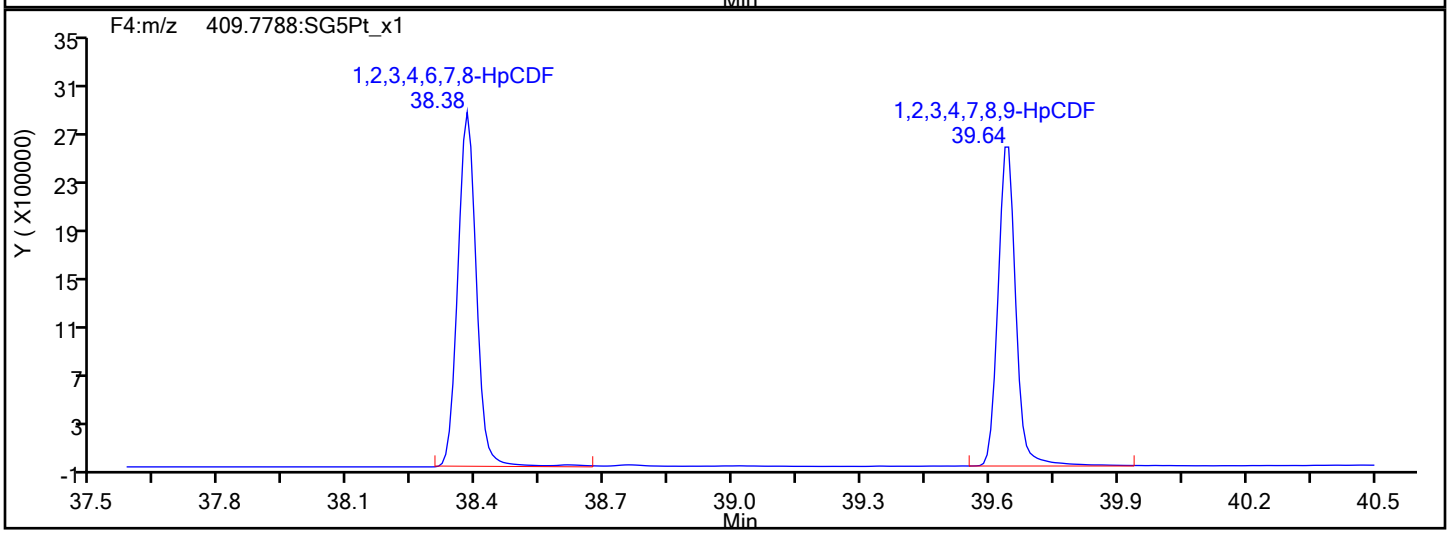
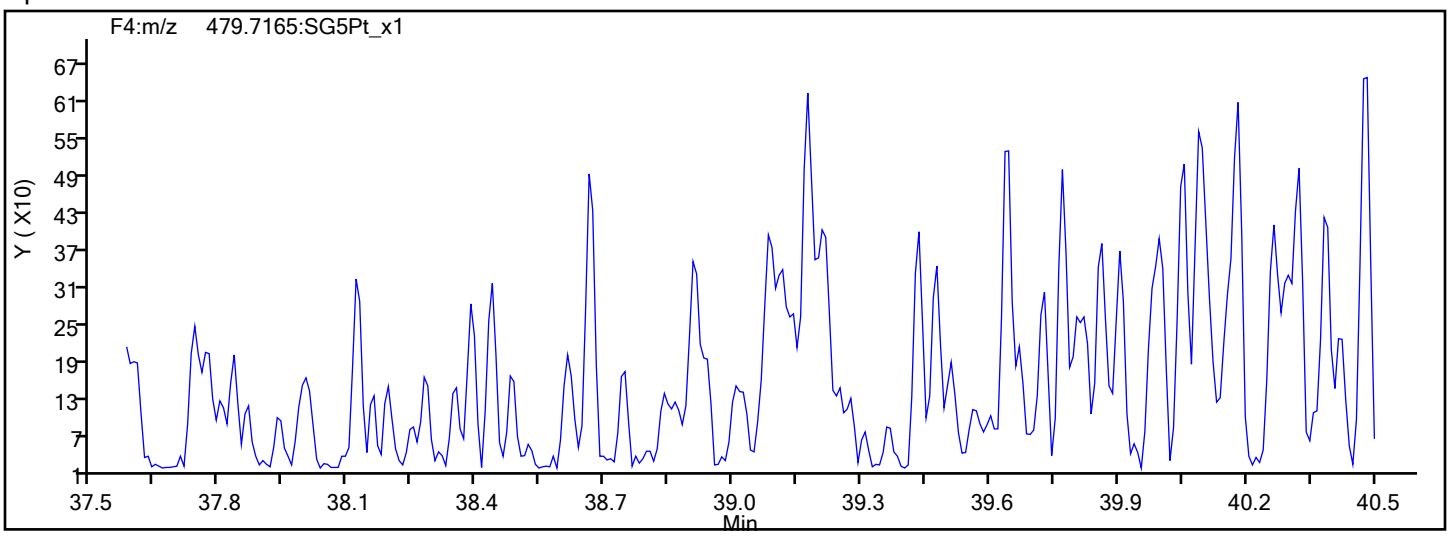
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d

Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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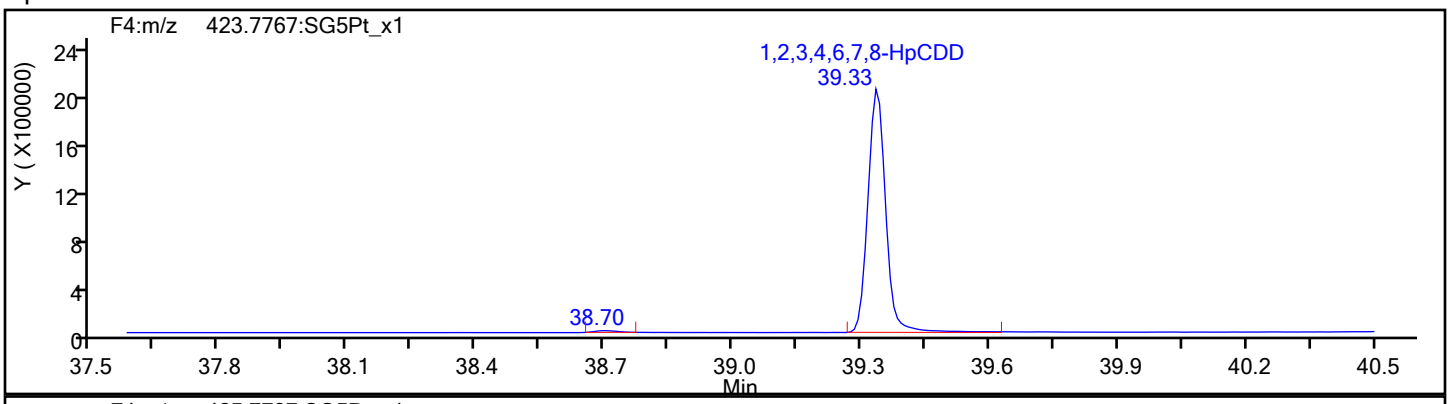
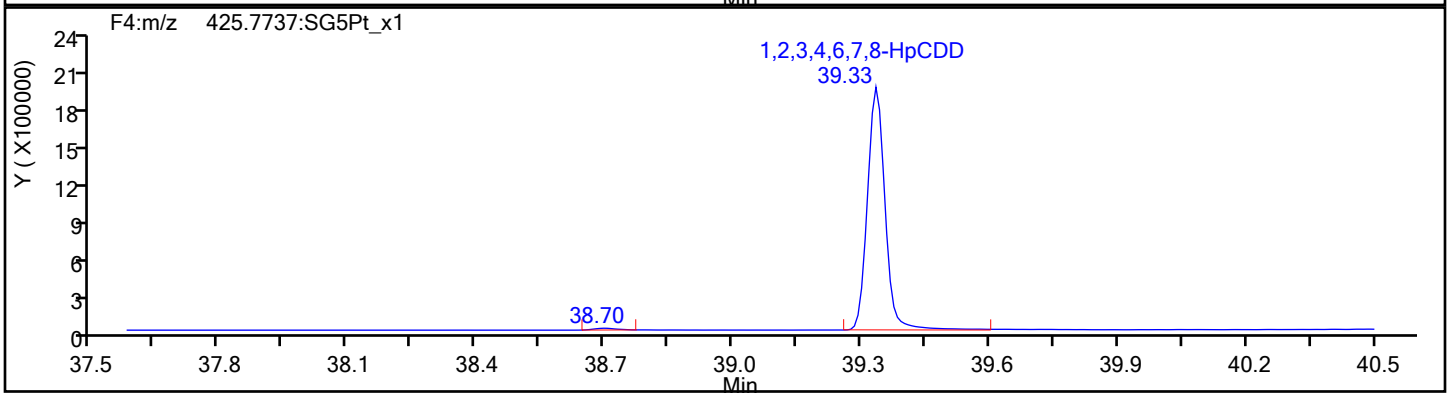
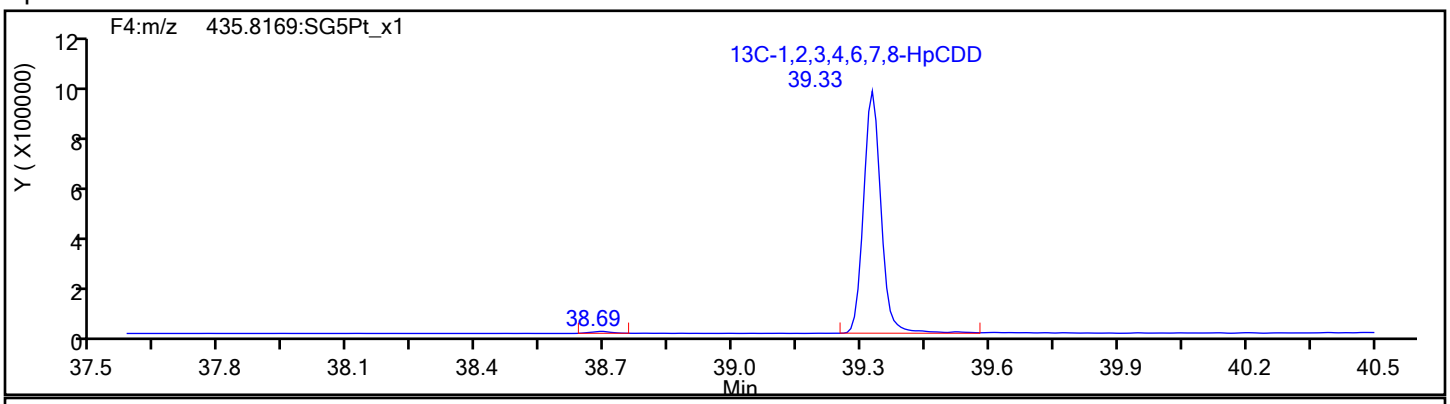
Column Type:	DB-5	Column Dia:	0.32 mm

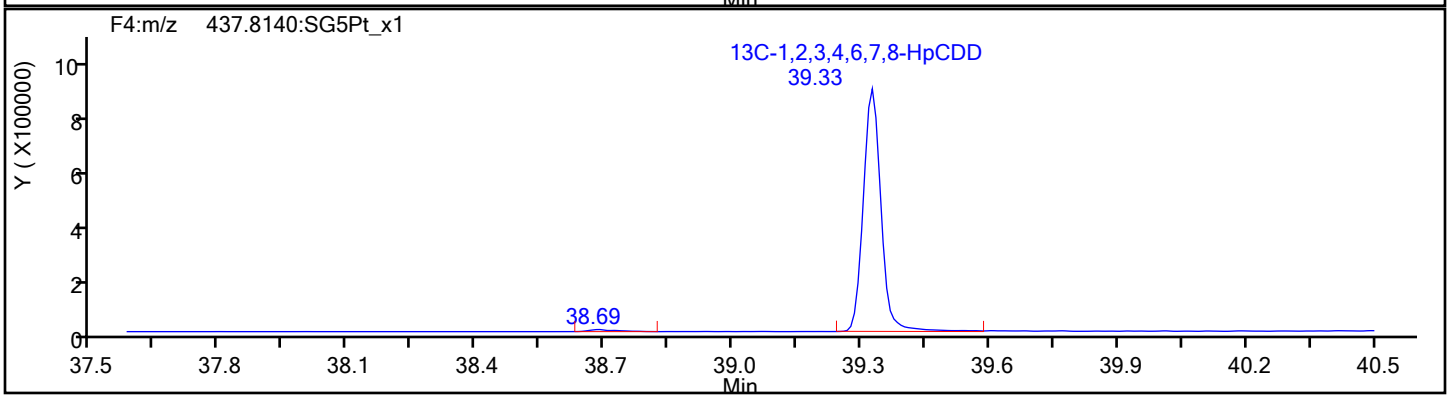
HpCDD





HpCDD Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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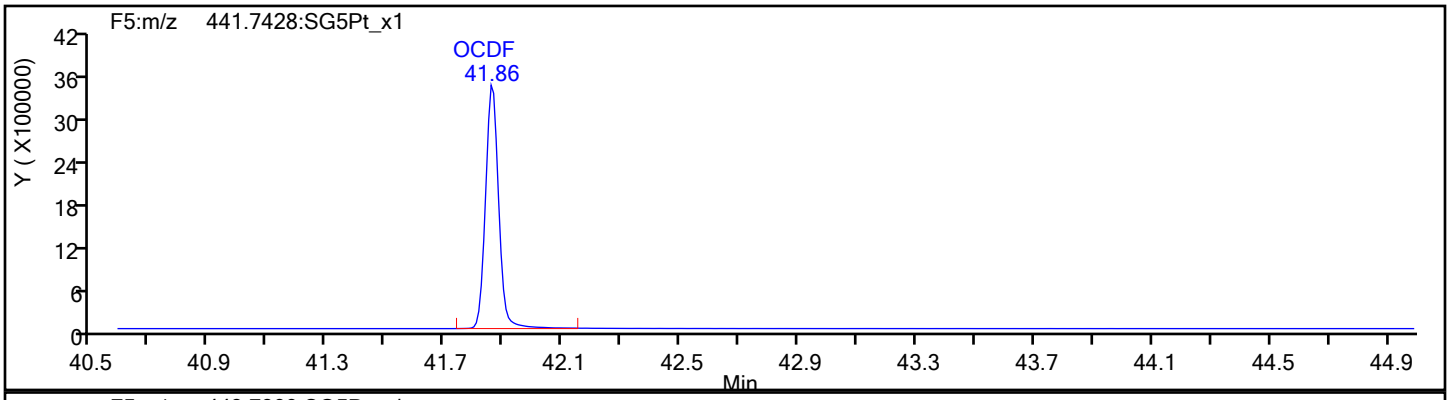
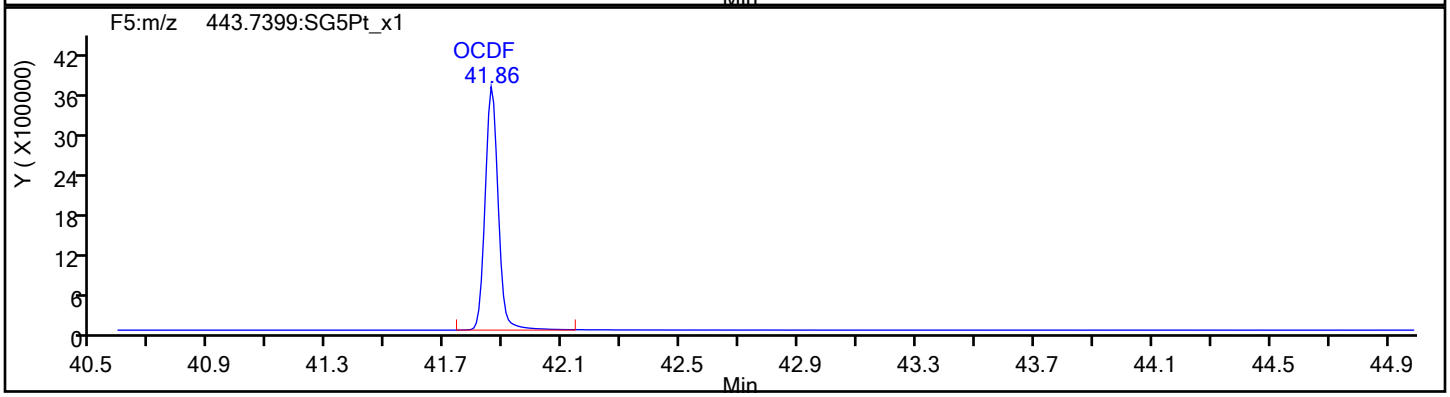
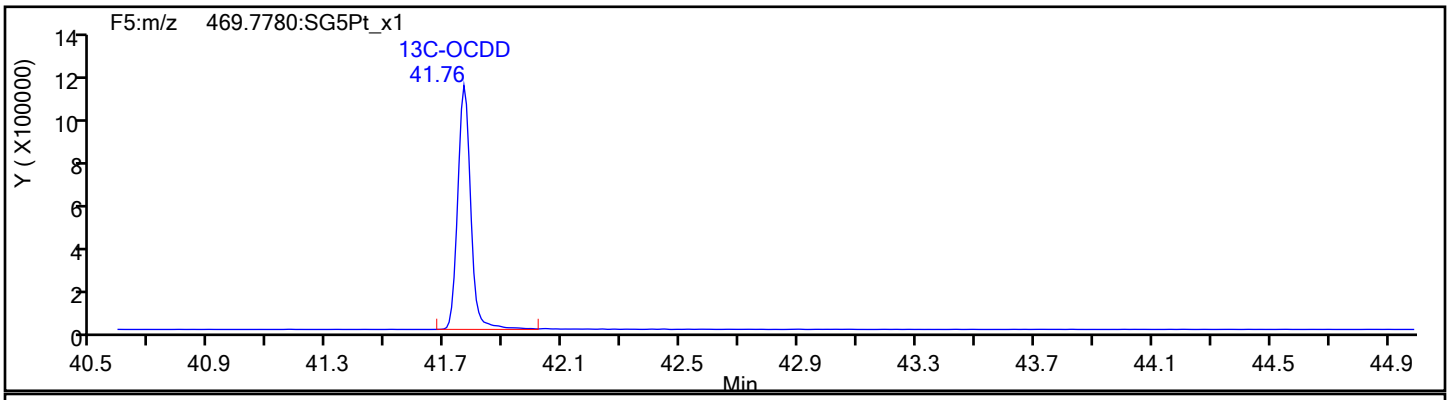
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

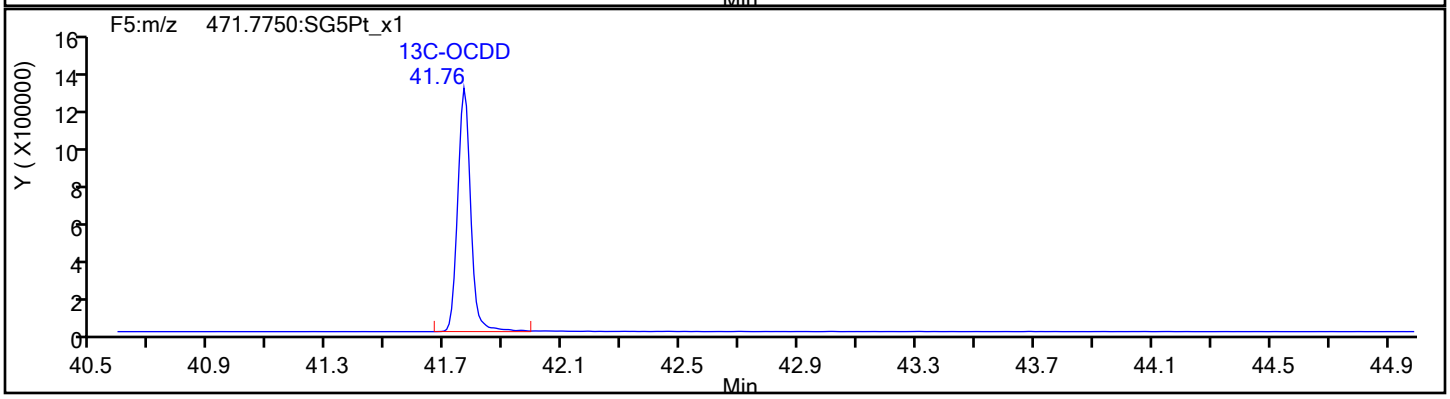
OCDF





OCDF Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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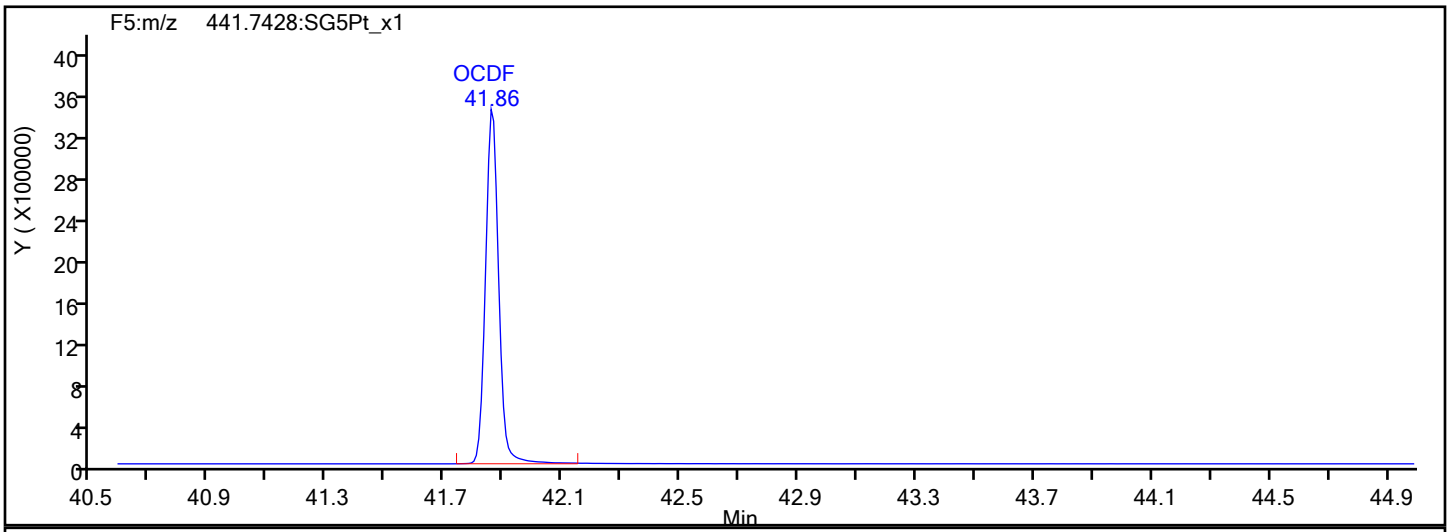
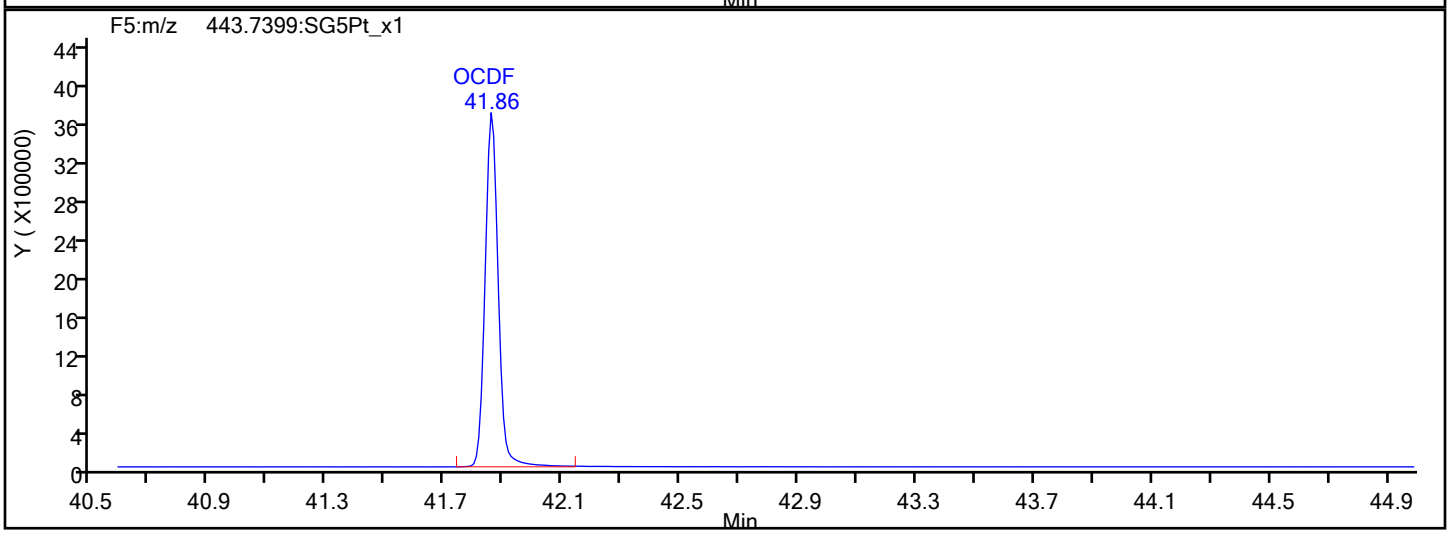
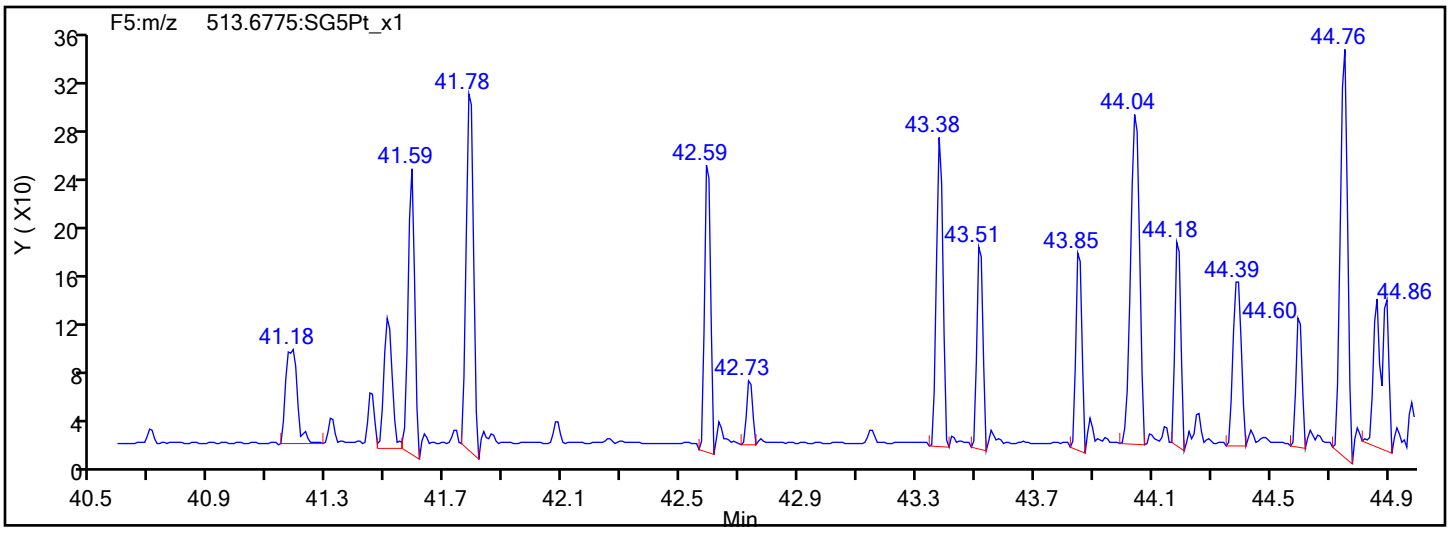
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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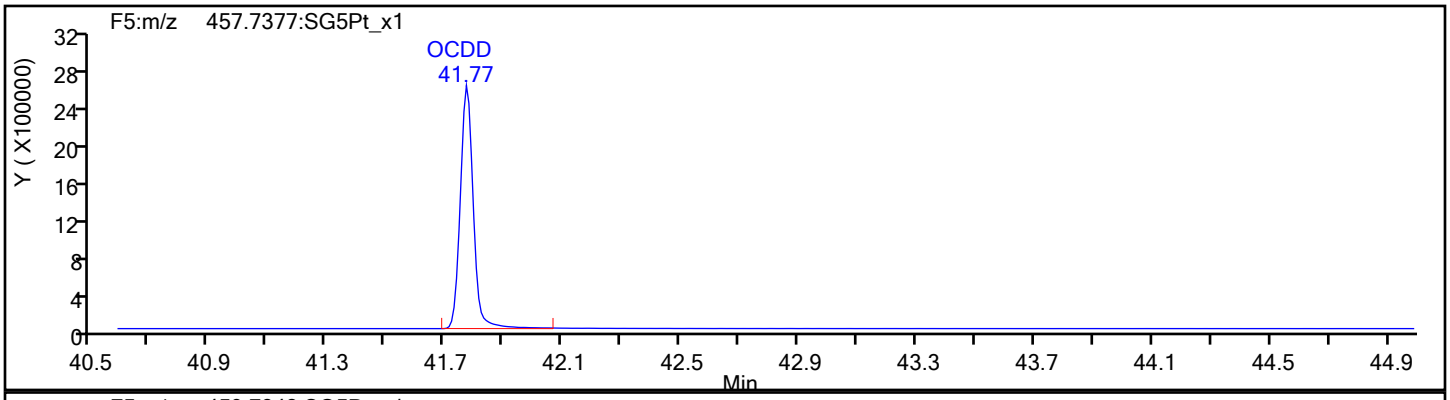
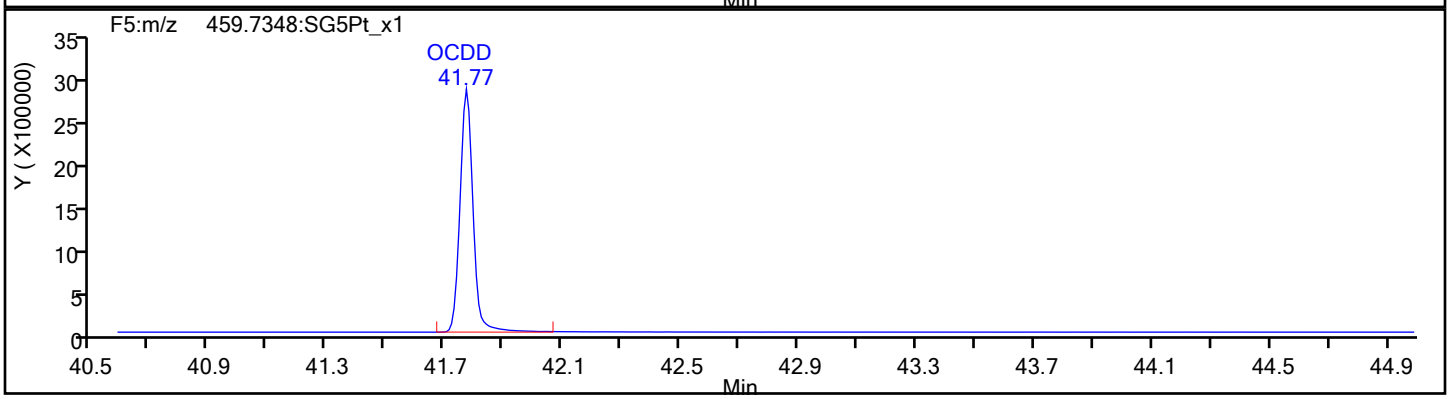
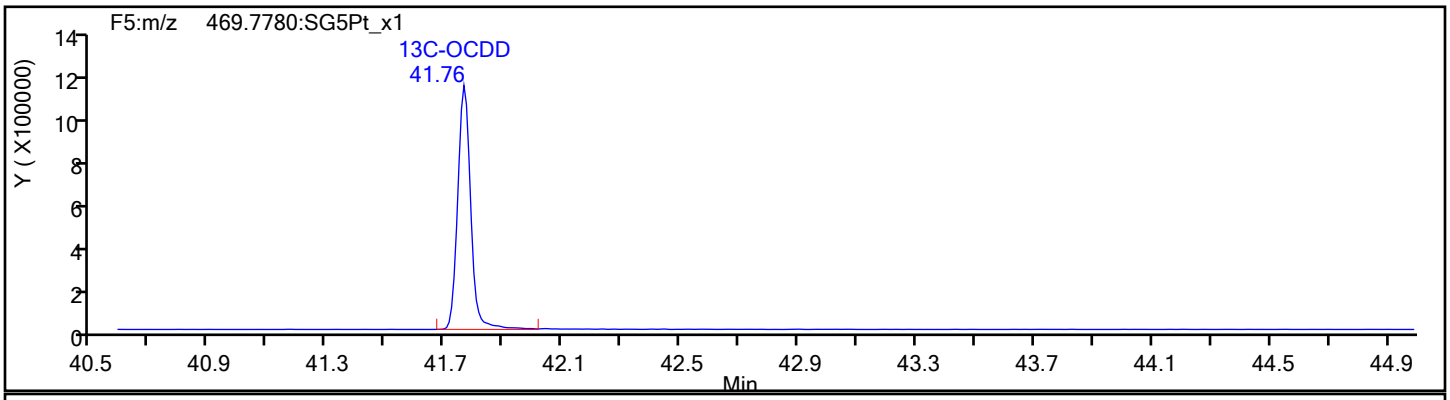
Column Type:	DB-5	Column Dia:	0.32 mm

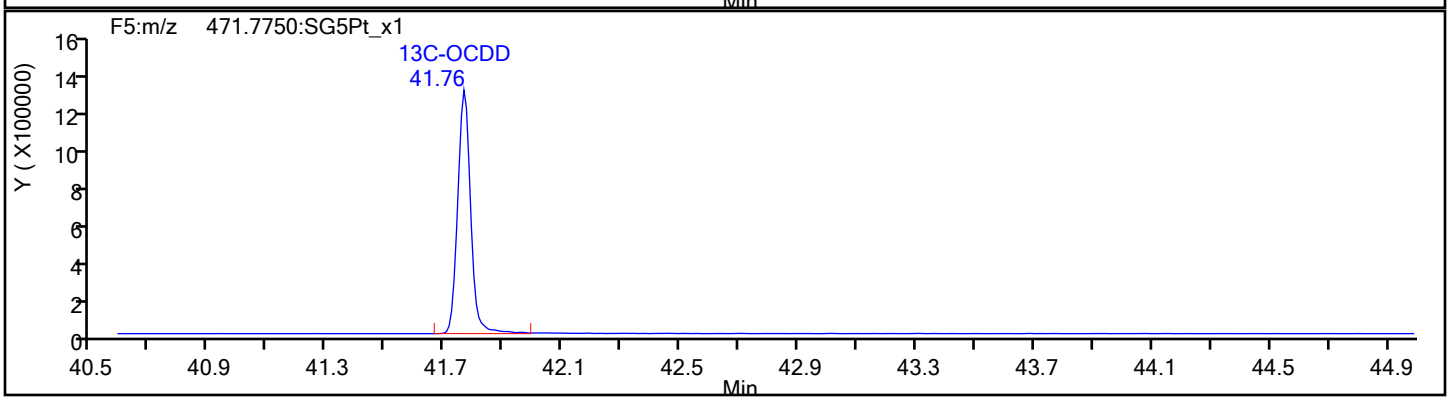
OCDD





OCDD Standards





Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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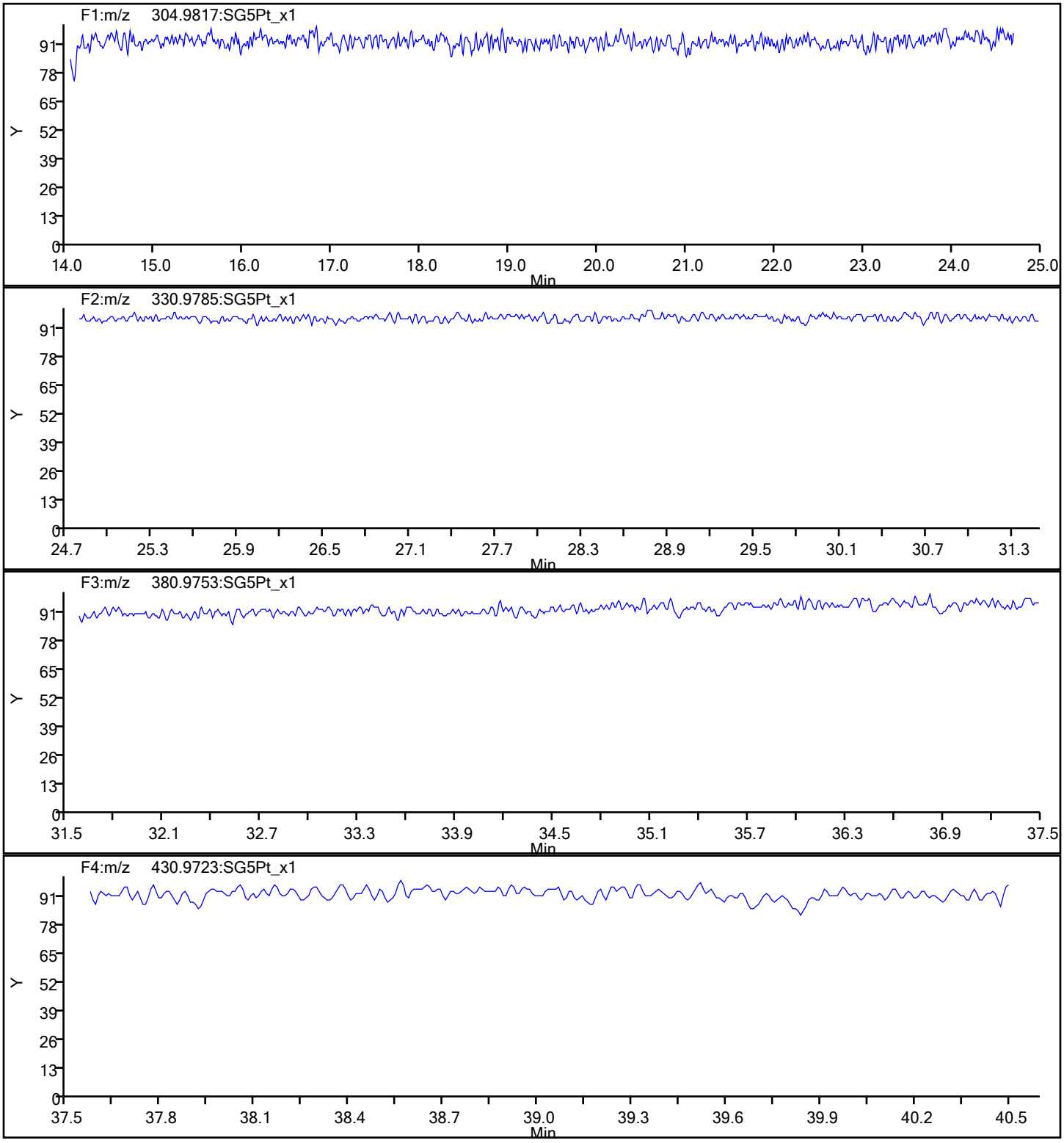
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 23-Oct-2019 11:53:45 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_7.d		
Injection Date:	18-Oct-2019 23:14:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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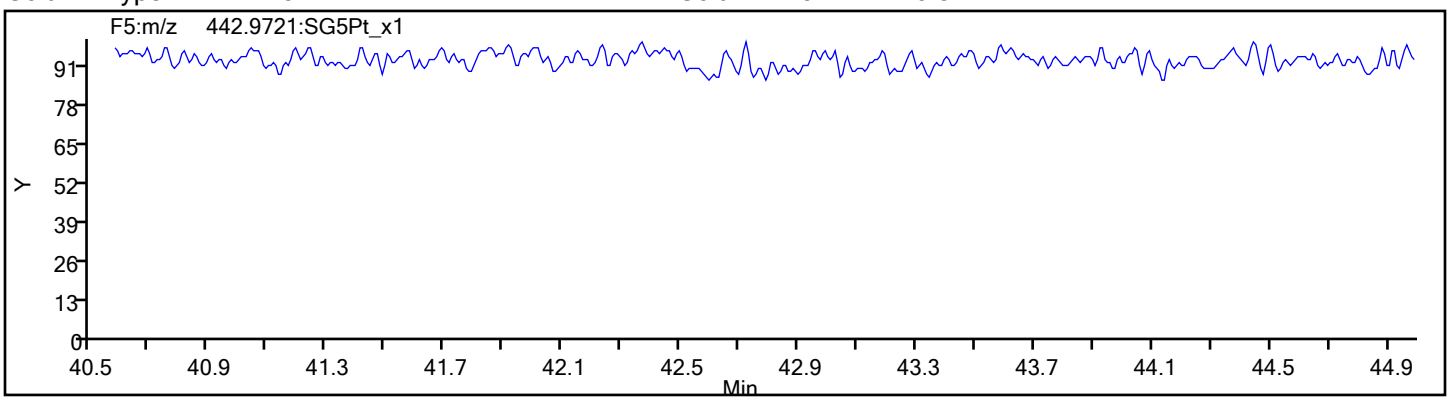


Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 19-Oct-2019 00:02:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:50 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 17:40:49

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.740	5083915	0.80	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.772	8470716	0.81	1.6096	103.5	103.5	0.2149	0.2149	104	
2,3,7,8-TCDF	19.798	19267770	0.82	1.2332	184.4	184.4	0.3446	0.3446	92.22	
S Total TCDF					184.4	184.4	0.3446	0.3446		
D 13C-2,3,7,8-TCDD	21.103	5315007	0.80	0.9984	104.7	104.7	0.1824	0.1824	105	
$ 37Cl4-2,3,7,8-TCDD	21.137	14554194		1.4510	197.3	197.3	0.0648	0.0648	98.65	
2,3,7,8-TCDD	21.137	12215535	0.80	1.1988	191.7	191.7	0.2108	0.2108	95.86	
S Total TCDD					191.7	191.7	0.2108	0.2108		
D 13C-1,2,3,7,8-PeCDF	26.808	7521267	1.58	1.3678	108.2	108.2	0.4401	0.4401	108	
1,2,3,7,8-PeCDF	26.833	82272798	1.62	1.1689	935.8	935.8	3.041	3.041	93.58	
D 13C-2,3,4,7,8-PeCDF	28.309	7142216	1.57	1.3045	107.7	107.7	0.4615	0.4615	108	
2,3,4,7,8-PeCDF	28.334	80029996	1.61	1.1861	944.7	944.7	3.489	3.489	94.47	
S Total PeCDF					1880.5	1880.5	3.265	3.265		
D 13C-1,2,3,7,8-PeCDD	29.114	4618561	1.59	0.8292	109.6	109.6	0.1796	0.1796	110	
1,2,3,7,8-PeCDD	29.131	48247060	1.58	1.1200	932.7	932.7	1.017	1.017	93.27	
S Total PeCDD					932.7	932.7	1.017	1.017		
D 13C-1,2,3,4,7,8-HxCDF	34.602	6640749	0.53	1.1700	99.6	99.6	0.4076	0.4076	99.64	
1,2,3,4,7,8-HxCDF	34.619	84101340	1.30	1.3021	972.6	972.6	4.368	4.368	97.26	
D 13C-1,2,3,6,7,8-HxCDF	34.770	7611761	0.54	1.3168	101.5	101.5	0.3621	0.3621	101	
1,2,3,6,7,8-HxCDF	34.787	95400318	1.29	1.2907	971.0	971.0	3.790	3.790	97.10	
D 13C-2,3,4,6,7,8-HxCDF	35.625	7799209	0.54	1.2873	106.4	106.4	0.3704	0.3704	106	
2,3,4,6,7,8-HxCDF	35.642	97753005	1.28	1.3039	961.2	961.2	3.272	3.272	96.12	
D 13C-1,2,3,7,8,9-HxCDF	36.540	7241212	0.53	1.1987	106.0	106.0	0.3978	0.3978	106	
1,2,3,7,8,9-HxCDF	36.556	91937678	1.29	1.3329	952.6	952.6	3.130	3.130	95.26	
S Total HxCDF					3857.4	3857.4	3.640	3.640		
* 13C-1,2,3,7,8,9-HxCDD	36.347	5696648	1.25	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.852	5151852	1.28	0.8364	108.1	108.1	0.2195	0.2195	108	
1,2,3,4,7,8-HxCDD	35.860	56405618	1.29	1.1725	933.8	933.8	1.542	1.542	93.38	
D 13C-1,2,3,6,7,8-HxCDD	35.969	5465550	1.27	0.9040	106.1	106.1	0.2031	0.2031	106	
1,2,3,6,7,8-HxCDD	35.986	57425910	1.25	1.1256	933.5	933.5	1.493	1.493	93.35	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,7,8,9-HxCDD	36.355	58343908	1.26	1.2327	891.6	891.6	1.413	1.413	89.16	
S Total HxCDD					2758.8	2758.8	1.483	1.483		
D 13C-1,2,3,4,6,7,8-HpCDF	38.379	5918544	0.45	0.9689	107.2	107.2	0.4047	0.4047	107	
1,2,3,4,6,7,8-HpCDF	38.387	92770691	1.06	1.6176	969.0	969.0	4.225	4.225	96.90	
D 13C-1,2,3,4,7,8,9-HpCDF	39.645	5657300	0.46	0.9231	107.6	107.6	0.4248	0.4248	108	
1,2,3,4,7,8,9-HpCDF	39.654	80874831	1.06	1.4672	974.3	974.3	4.553	4.553	97.43	
S Total HpCDF					1943.3	1943.3	4.389	4.389		
D 13C-1,2,3,4,6,7,8-HpCDD	39.335	5525128	1.08	0.9114	106.4	106.4	0.3629	0.3629	106	
1,2,3,4,6,7,8-HpCDD	39.343	58157652	1.05	1.1237	936.7	936.7	2.300	2.300	93.67	
S Total HpCDD					936.7	936.7	2.300	2.300		
D 13C-OCDD	41.781	8003485	0.92	0.6272	224.0	224.0	0.3136	0.3136	112	
OCDF	41.873	126690658	0.92	1.5416	2053.6	2053.6	1.198	1.198	103	
OCDD	41.789	90601717	0.89	1.1855	1909.8	1909.8	1.347	1.347	95.49	

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 19-Oct-2019 00:02:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 11:53:50 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 21-Oct-2019 17:40:49

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.740	20.729	1		2259385	344493	403	1007	855		
333.9338	20.740	20.729	1		2824530	432419	163	407	2653	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.772	19.762	1	0.953	3796860	611004	675	1687	905		
317.9389	19.772	19.762	1	0.953	4673856	746729	400	1000	1867	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.798	19.792	0	1.001	8696684	1379157	973	2432	1417		
305.8987	19.798	19.792	0	1.001	10571086	1676527	1335	3337	1256	0.82(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.103	21.094	1	1.017	2365706	335856	403	1007	833		
333.9338	21.103	21.094	1	1.017	2949301	420695	163	407	2581	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.137	21.121	1	1.019	14554194	2104385	292	730	7207		
2,3,7,8-TCDD											
319.8965	21.137	21.127	1	1.002	5420413	792143	389	972	2036		
321.8936	21.137	21.127	1	1.002	6795122	979848	376	940	2606	0.80(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.808	26.797	1	1.293	4607592	838368	1112	2780	754		
353.8970	26.808	26.797	1	1.293	2913675	514881	759	1897	678	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	26.833	26.821	1	1.001	50872924	9200648	11848	29620	777		
341.8567	26.825	26.821	0	1.001	31399874	5635533	7392	18480	762	1.62(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.309	28.297	1	1.365	4366405	708744	1112	2780	637		
353.8970	28.309	28.297	1	1.365	2775811	453627	759	1897	598	1.57(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,7,8-PeCDF											
339.8597	28.334	28.322	1	1.001	49389396	8471953	11848	29620	715		
341.8567	28.326	28.322	0	1.001	30640600	5229032	7392	18480	707	1.61(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.114	29.095	1	1.404	2838334	437000	285	712	1533		
369.8919	29.106	29.095	1	1.403	1780227	276864	178	445	1555	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.131	29.120	1	1.001	29534522	4700195	2012	5030	2336		
357.8516	29.131	29.120	1	1.001	18712538	2944261	1240	3100	2374	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.602	34.589	1	0.952	2307051	500514	988	2470	507		
385.8610	34.602	34.589	1	0.952	4333698	940488	1819	4547	517	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.619	34.608	1	1.000	47510485	11145070	18256	45640	610		
375.8178	34.619	34.608	1	1.000	36590855	8510188	14529	36322	586	1.30(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.770	34.759	1	0.957	2664707	591644	988	2470	599		
385.8610	34.770	34.759	1	0.957	4947054	1083875	1819	4547	596	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.787	34.777	1	1.000	53720953	12443285	18256	45640	682		
375.8178	34.787	34.777	1	1.000	41679365	9671468	14529	36322	666	1.29(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.625	35.616	1	0.980	2738742	671842	988	2470	680		
385.8610	35.625	35.616	1	0.980	5060467	1249481	1819	4547	687	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.642	35.633	1	1.000	54967446	14288389	18256	45640	783		
375.8178	35.642	35.633	1	1.000	42785559	11036493	14529	36322	760	1.28(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.540	36.530	1	1.005	2514599	684333	988	2470	693		
385.8610	36.540	36.530	1	1.005	4726613	1280172	1819	4547	704	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	36.556	36.544	1	1.000	51850955	14775669	18256	45640	809		
375.8178	36.556	36.544	1	1.000	40086723	11367890	14529	36322	782	1.29(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.347	36.330	1		3170282	825976	595	1487	1388		
403.8529	36.347	36.330	1		2526366	645573	486	1215	1328	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.852	35.836	1	0.986	2890580	754197	595	1487	1268		
403.8529	35.852	35.836	1	0.986	2261272	588543	486	1215	1211	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.860	35.849	1	1.000	31767693	8515381	5443	13607	1564		
391.8127	35.860	35.849	1	1.000	24637925	6691585	4267	10667	1568	1.29(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.969	35.958	1	0.990	3062543	814940	595	1487	1370		
403.8529	35.969	35.958	1	0.990	2403007	629220	486	1215	1295	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8158	35.986	35.973	1	1.000	31924801	8685100	5443	13607	1596		
391.8127	35.986	35.973	1	1.000	25501109	6772489	4267	10667	1587	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.355	36.346	1	1.014	32579963	8915051	5443	13607	1638		
391.8127	36.355	36.346	1	1.014	25763945	7046610	4267	10667	1651	1.26(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.379	38.366	1	1.056	1846459	613799	843	2107	728		
419.8220	38.379	38.366	1	1.056	4072085	1364869	1465	3662	932	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.387	38.378	1	1.000	47691011	16392170	27674	69185	592		
409.7788	38.387	38.378	1	1.000	45079680	15569973	26421	66052	589	1.06(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.645	39.629	1	1.091	1781832	639797	843	2107	759		
419.8220	39.645	39.629	1	1.091	3875468	1384800	1465	3662	945	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.654	39.641	1	1.000	41678777	15630703	27674	69185	565		
409.7788	39.654	39.641	1	1.000	39196054	14512252	26421	66052	549	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.335	39.324	1	1.082	2867480	992530	960	2400	1034		
437.8140	39.335	39.324	1	1.082	2657648	927944	987	2467	940	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7767	39.343	39.334	1	1.000	29774353	10648349	10212	25530	1043		
425.7737	39.343	39.334	1	1.000	28383299	10247559	9644	24110	1063	1.05(0.88-1.20)	
13C-OCDD											
469.7780	41.781	41.764	1	1.150	3838450	1238504	568	1420	2180		
471.7750	41.781	41.764	1	1.150	4165035	1358033	590	1475	2302	0.92(0.76-1.02)	
OCDF											
441.7428	41.873	41.858	1	1.002	60560128	20848165	4554	11385	4578		
443.7399	41.873	41.858	1	1.002	66130530	22794365	5038	12595	4524	0.92(0.76-1.02)	
OCDD											
457.7377	41.789	41.772	1	1.000	42637598	14478599	3986	9965	3632		
459.7348	41.789	41.772	1	1.000	47964119	16303594	4308	10770	3784	0.89(0.76-1.02)	

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

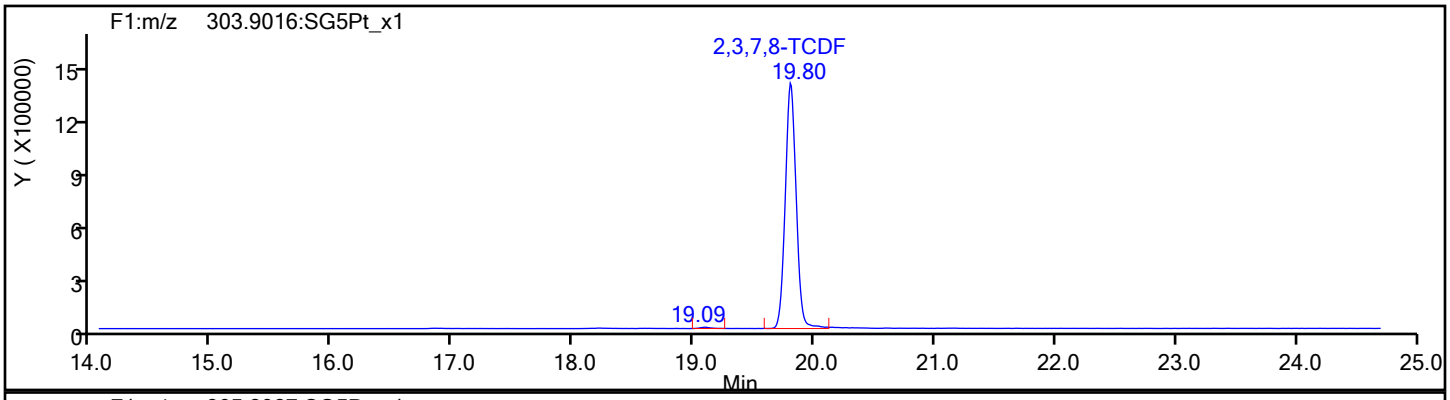
Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

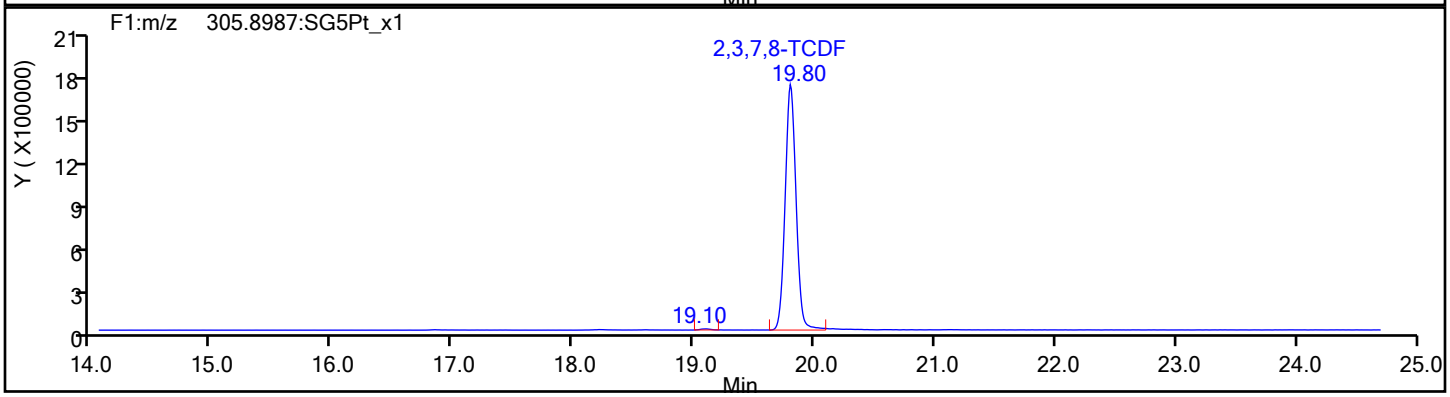
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

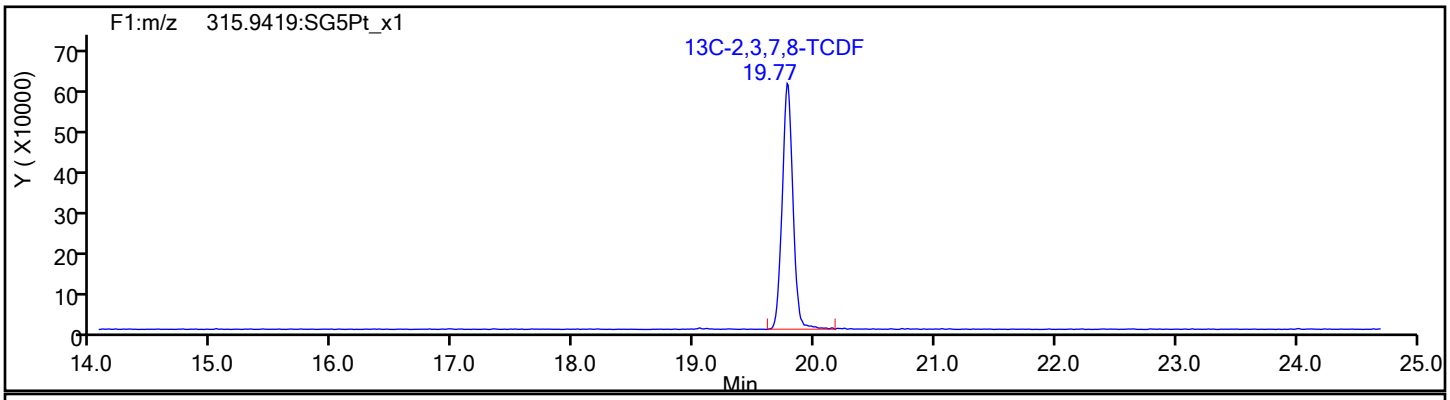
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

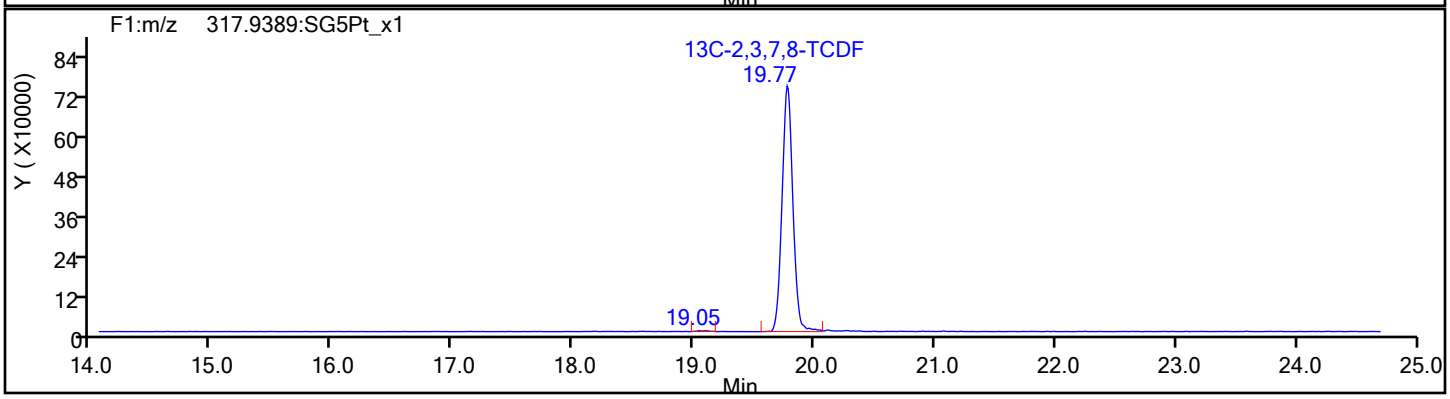
TCDF





TCDF Standards



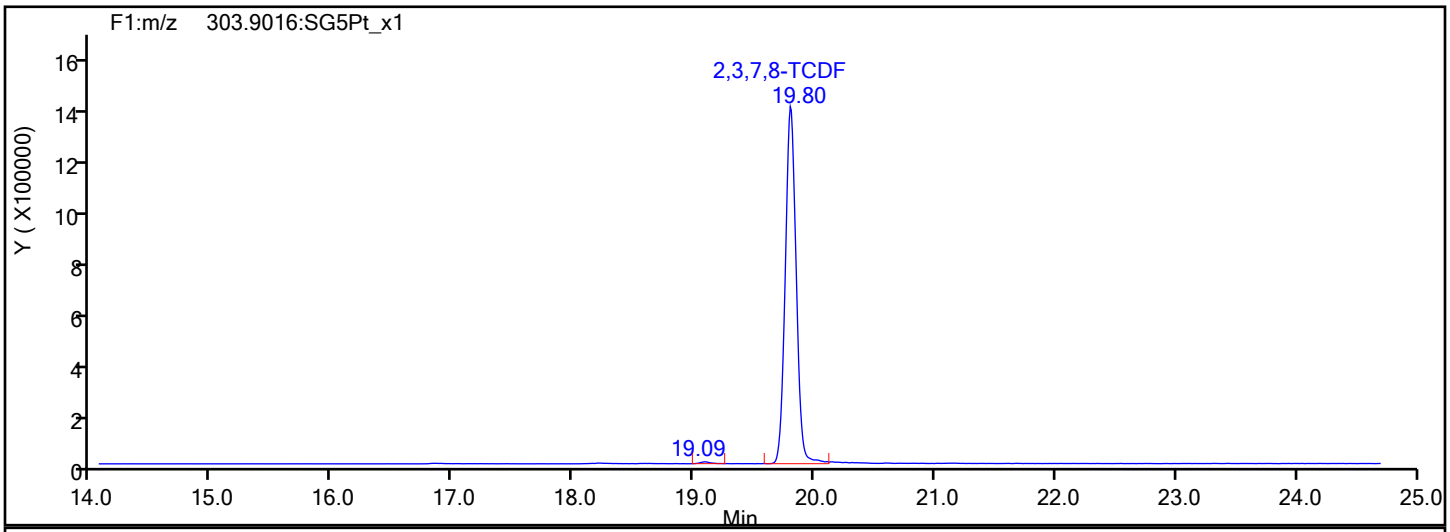


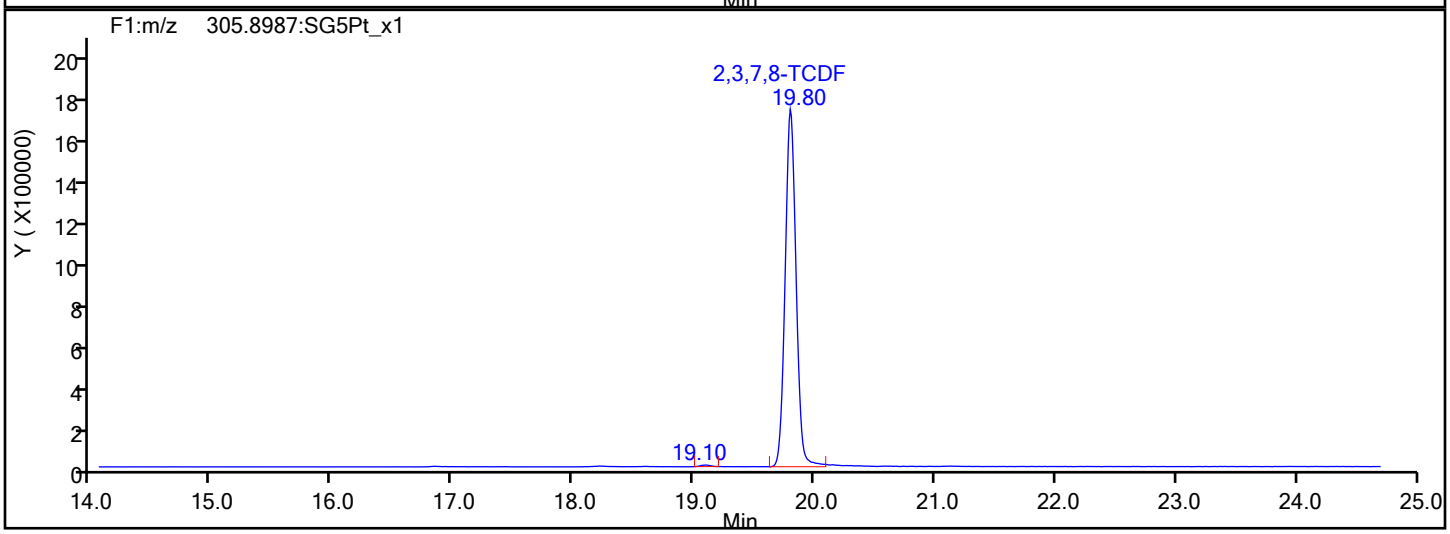
Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

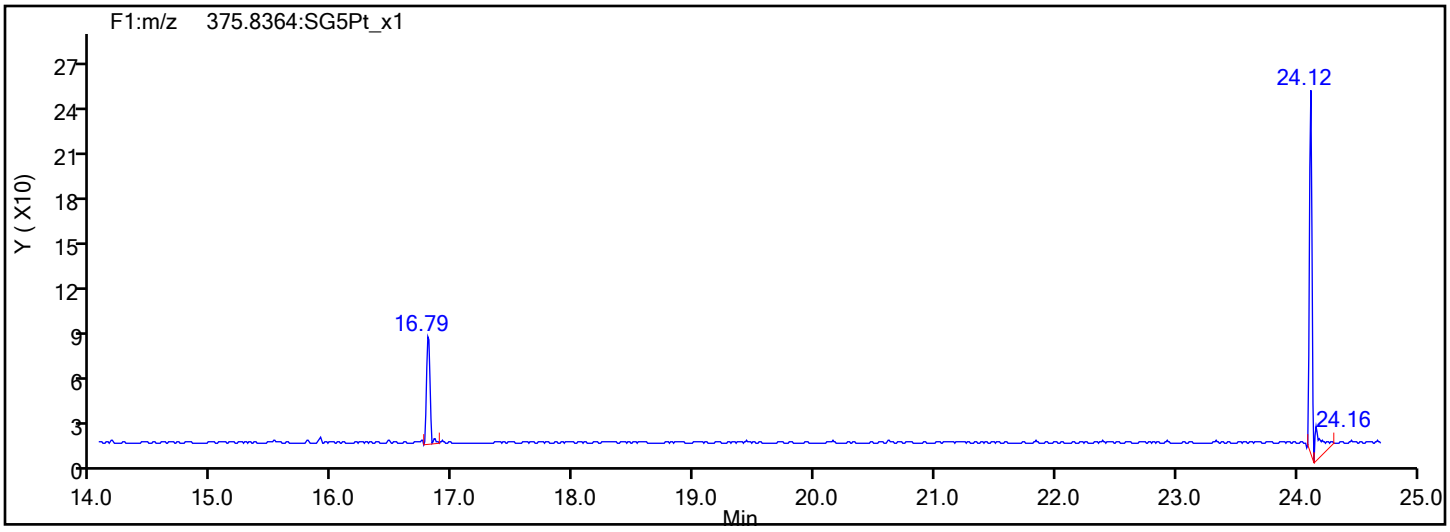
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

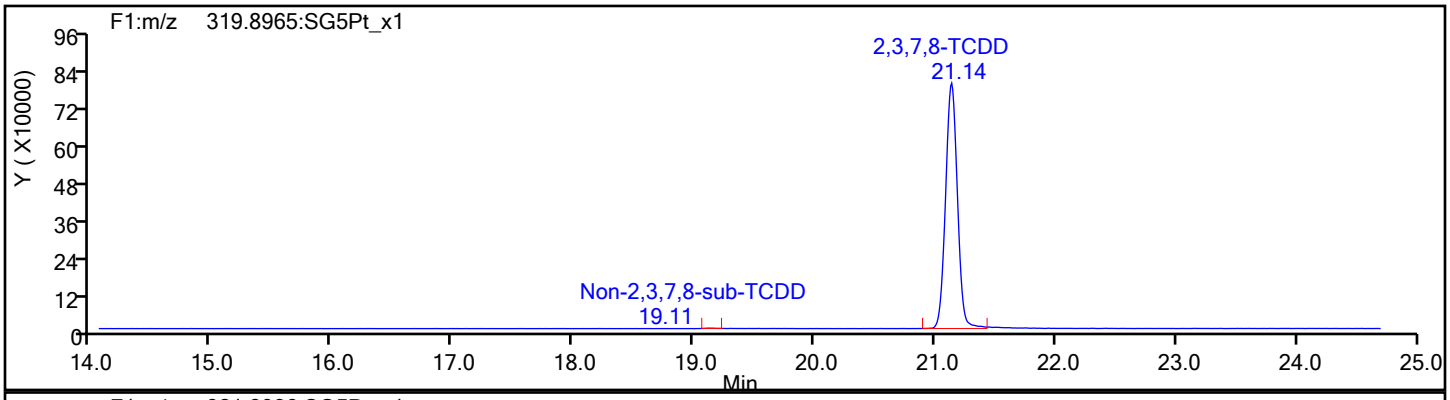


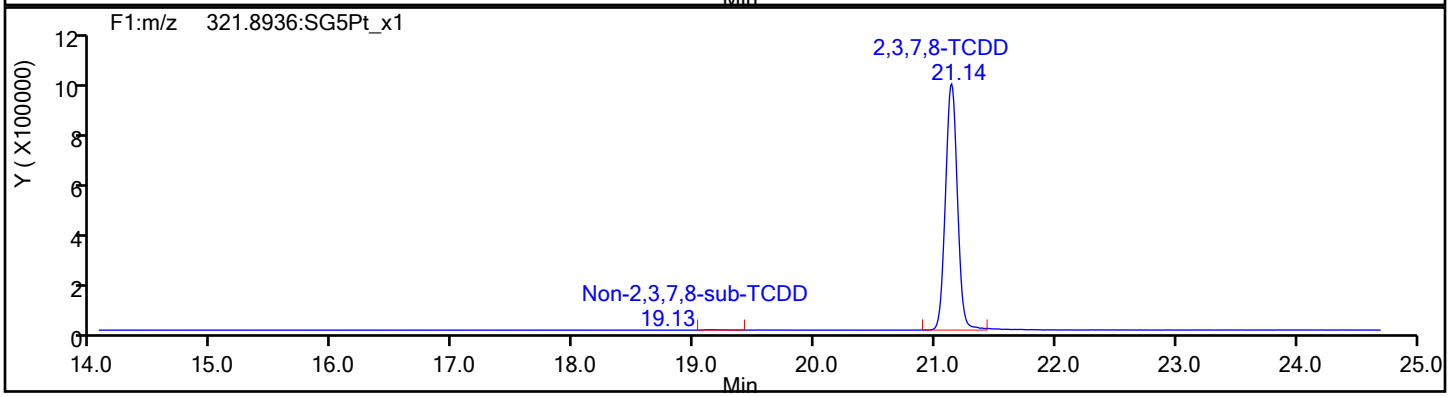
Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

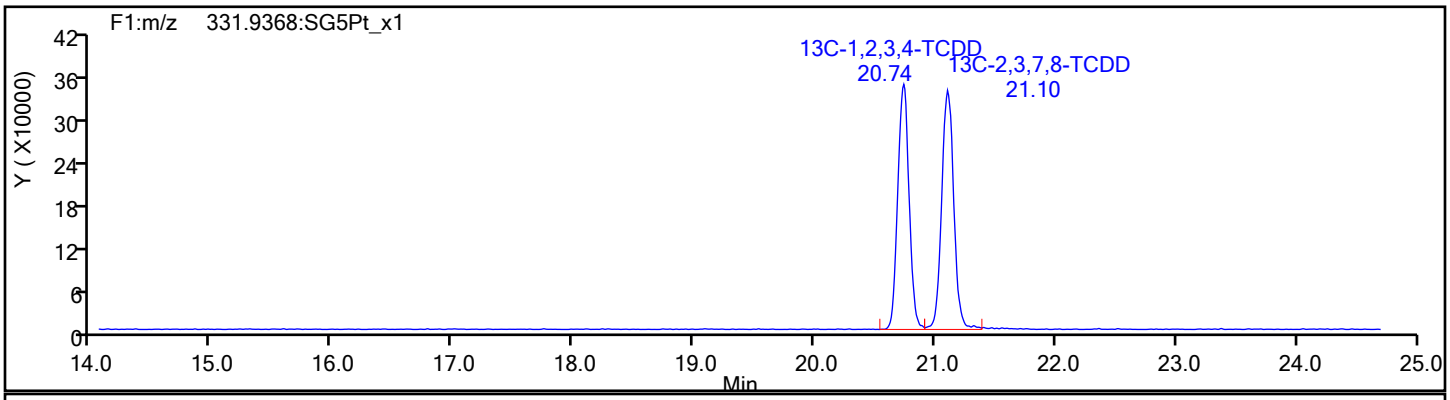
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

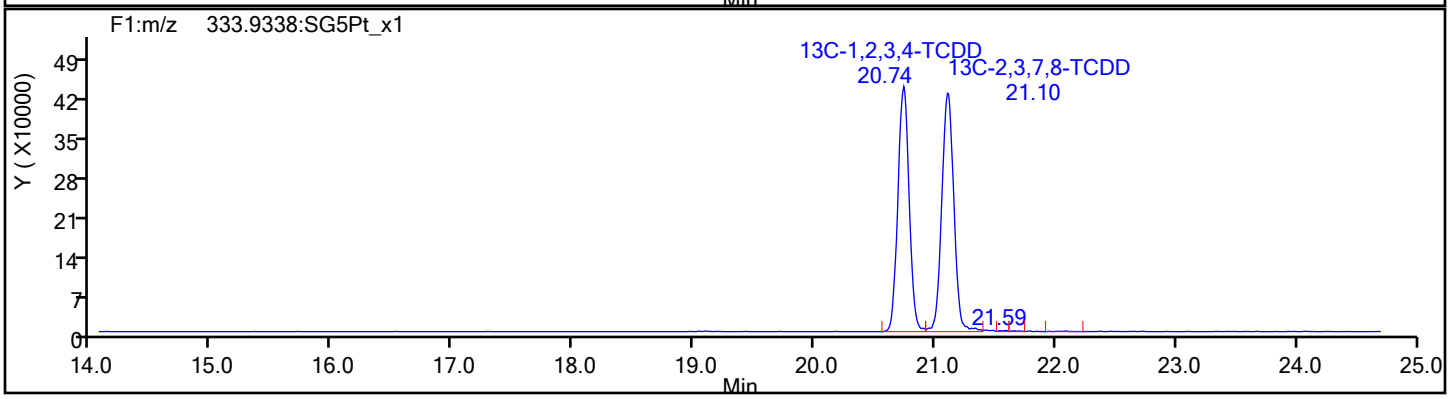
TCDD





TCDD Standards



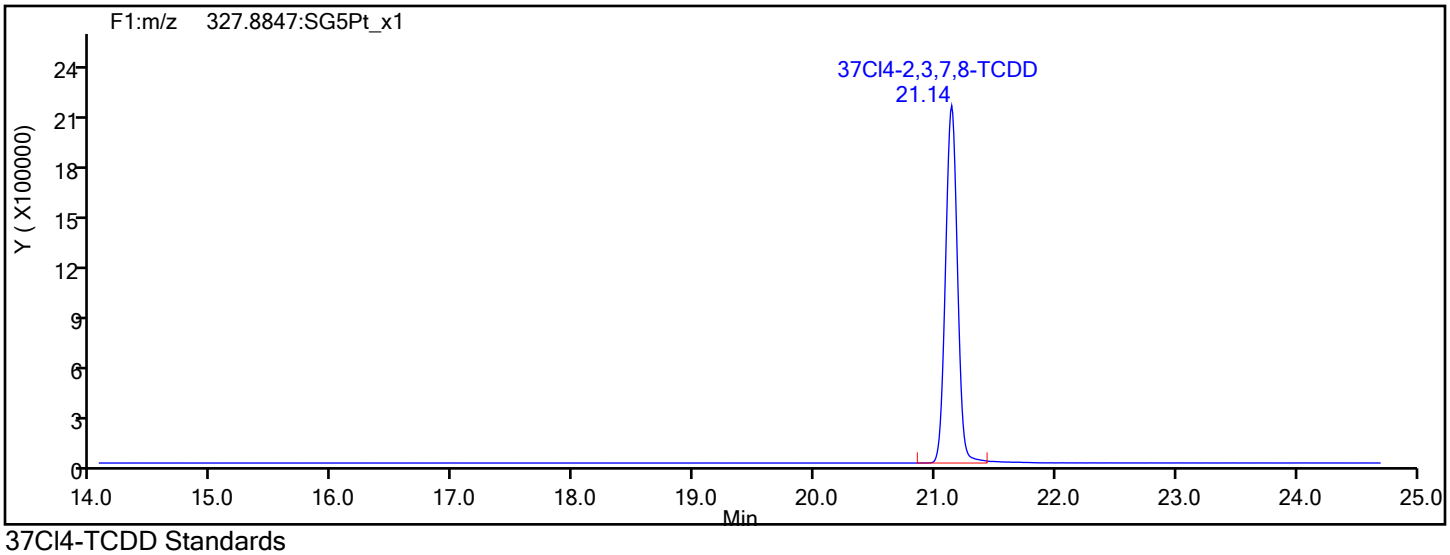


Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

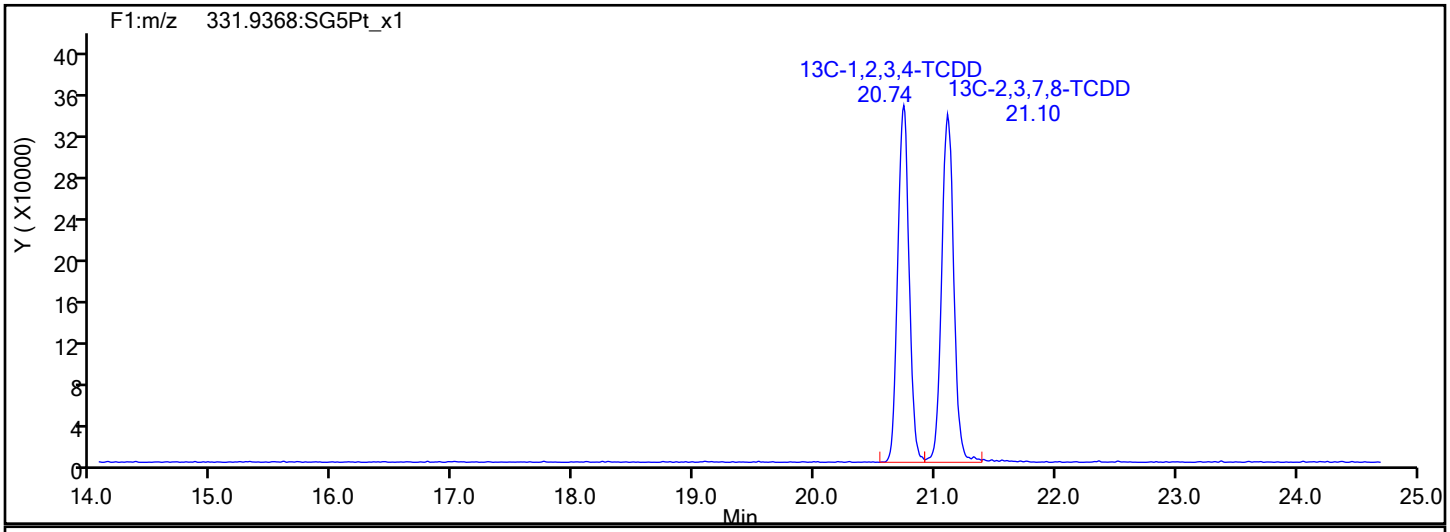
Eurofins TestAmerica, Sacramento

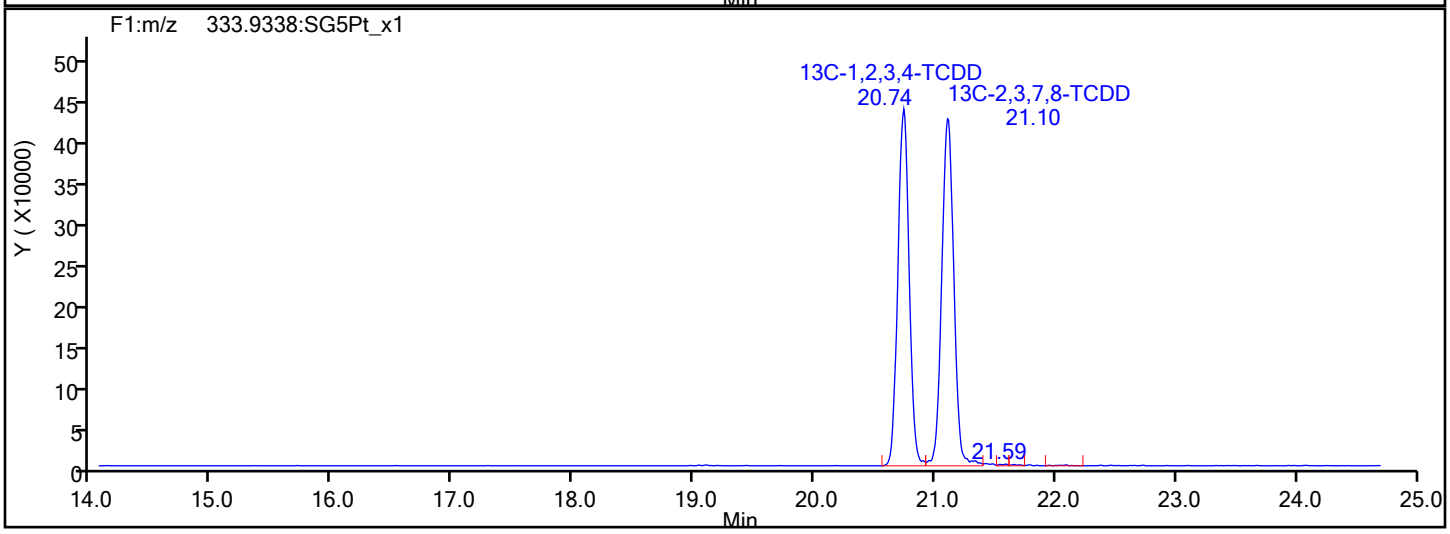
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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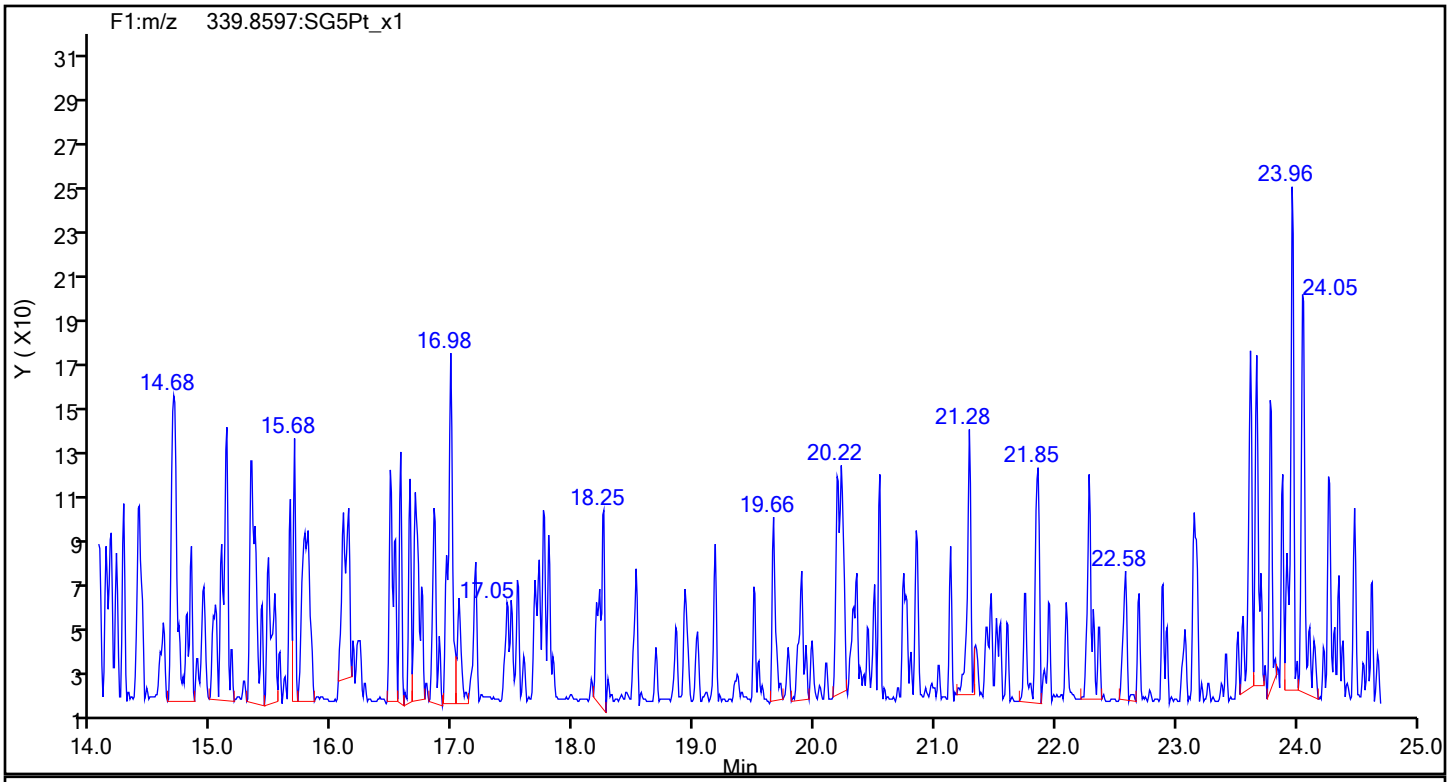
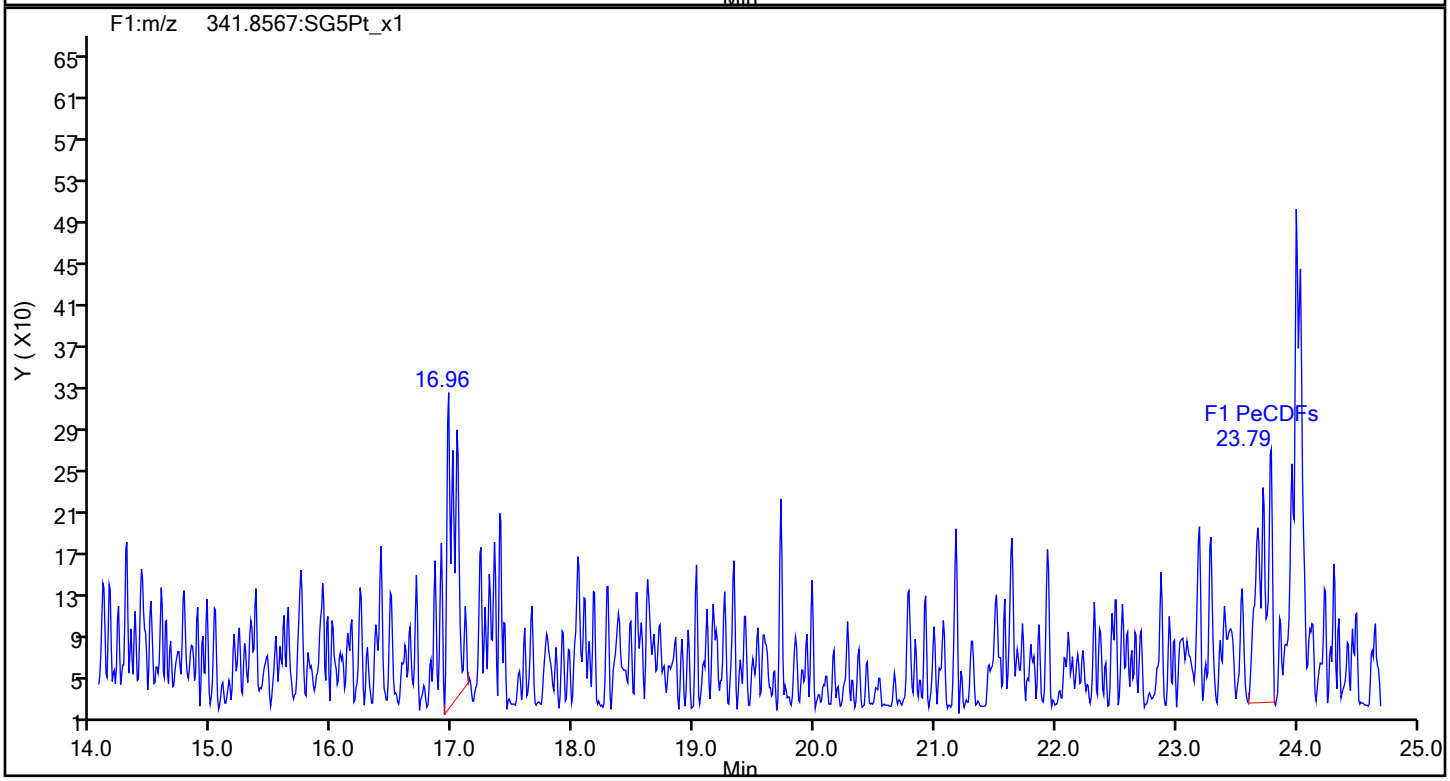
F1 PeCDFs





Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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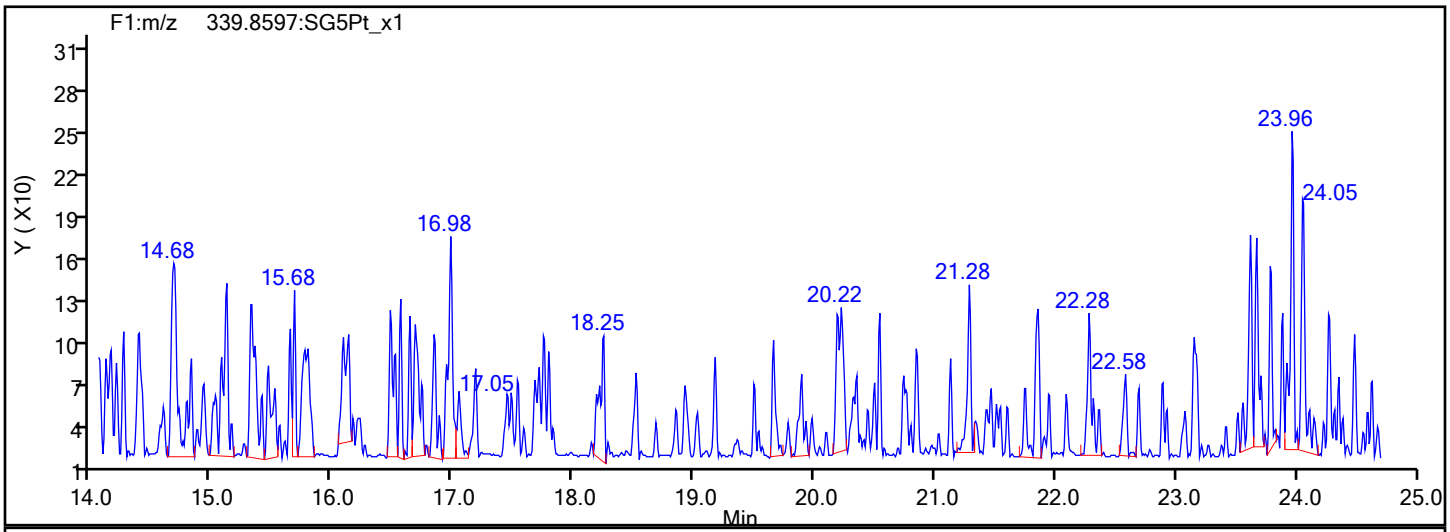
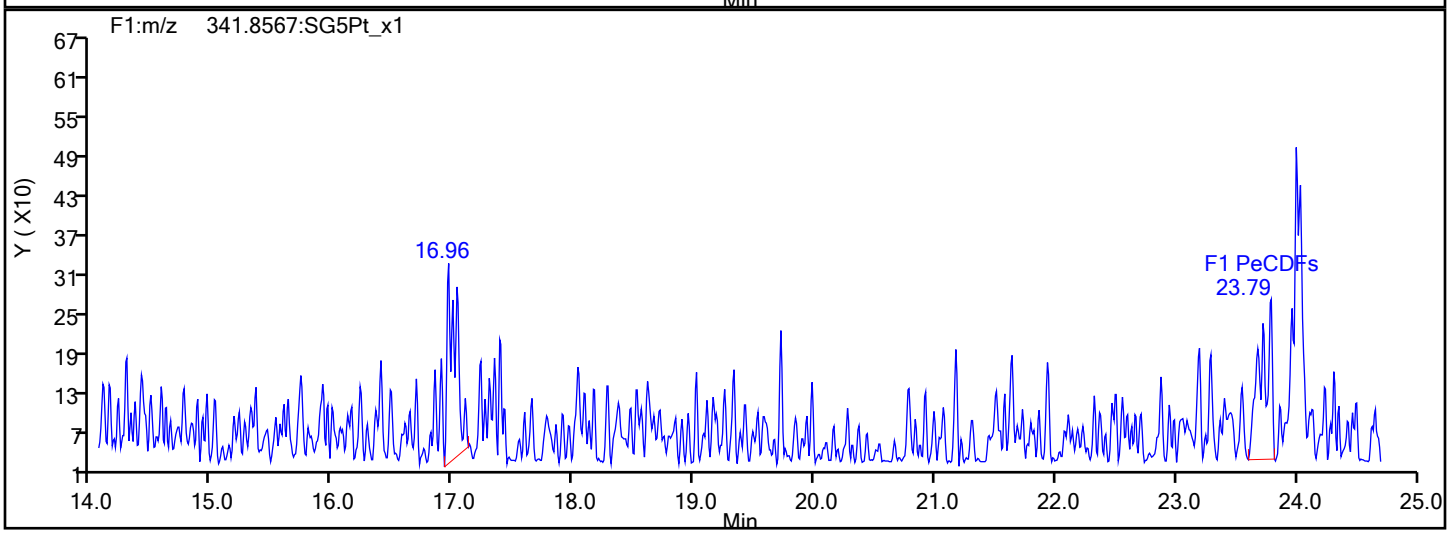
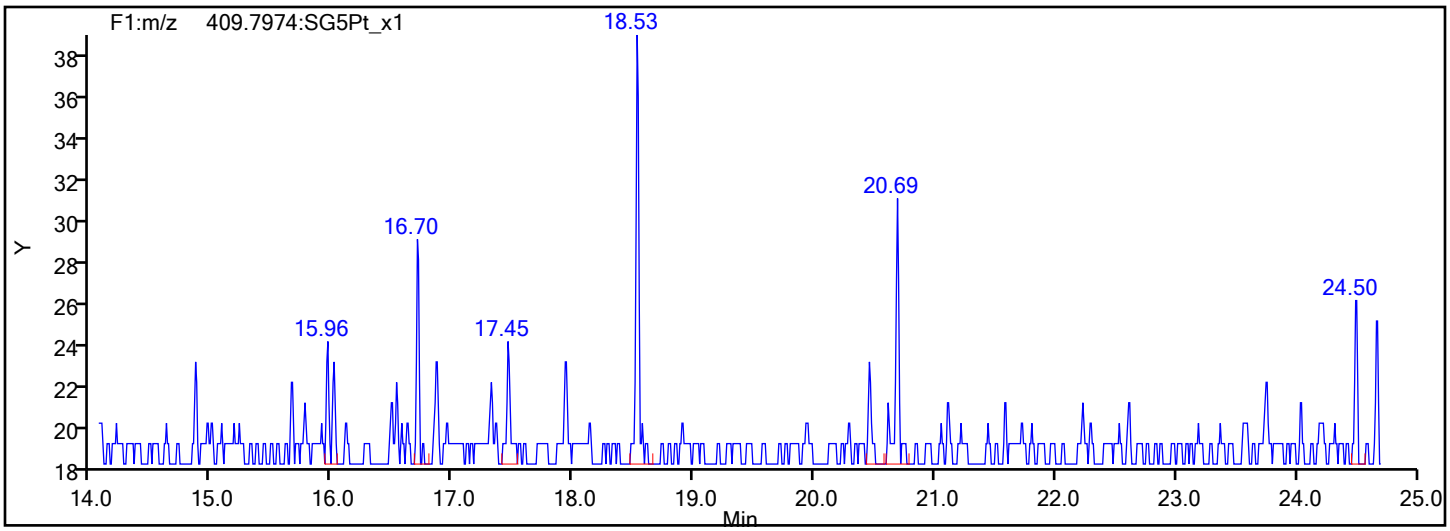




F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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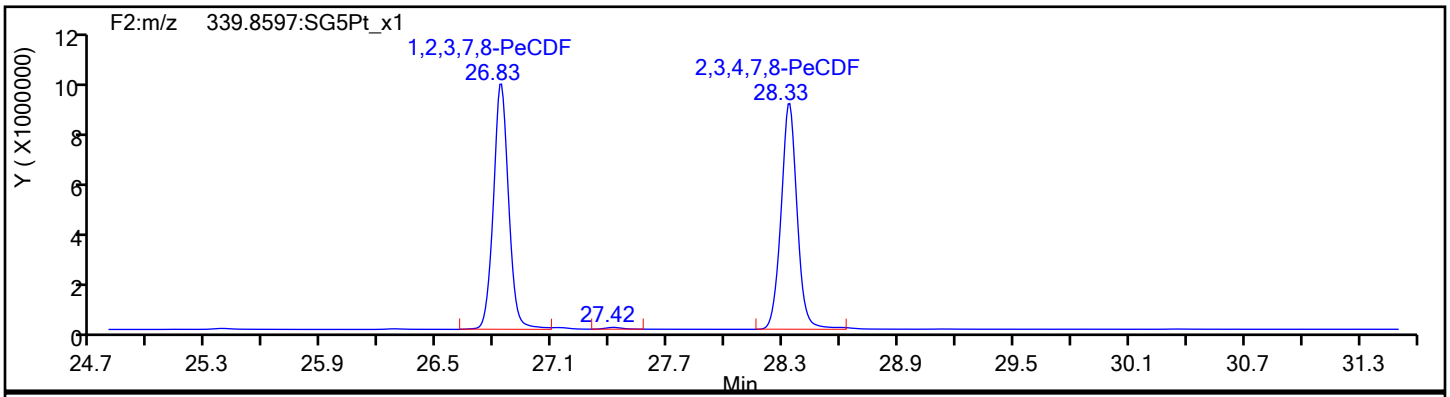
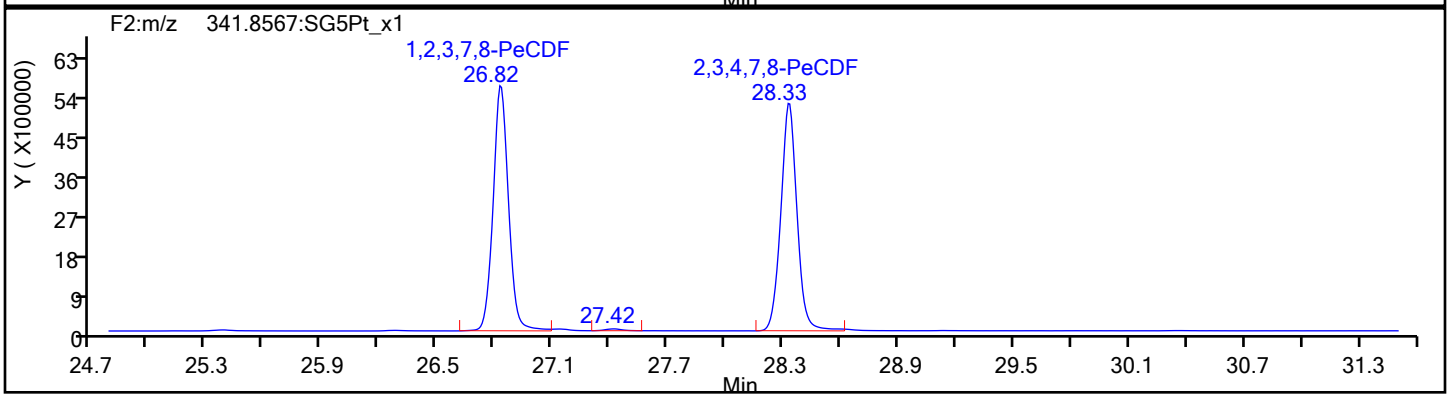
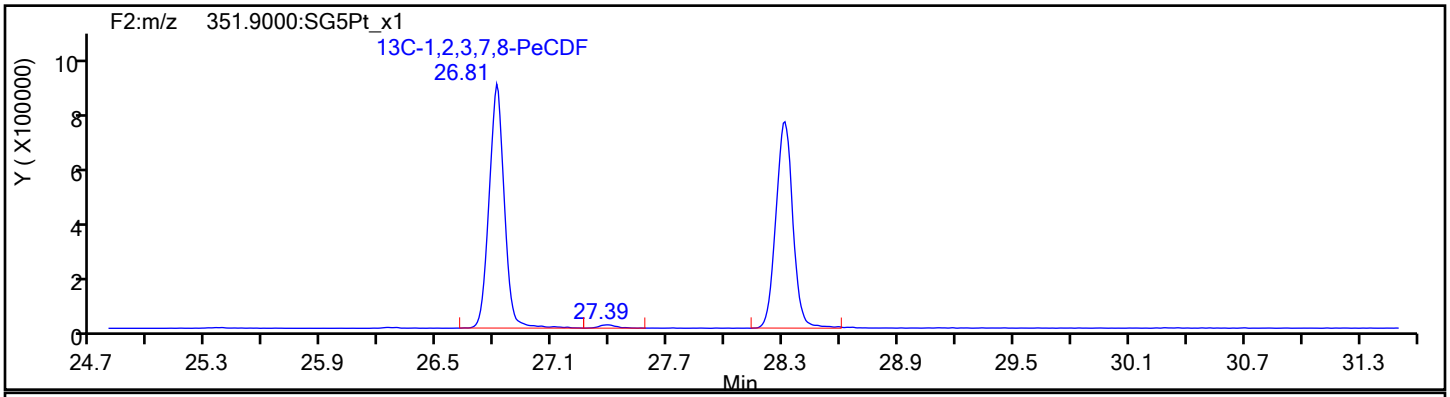
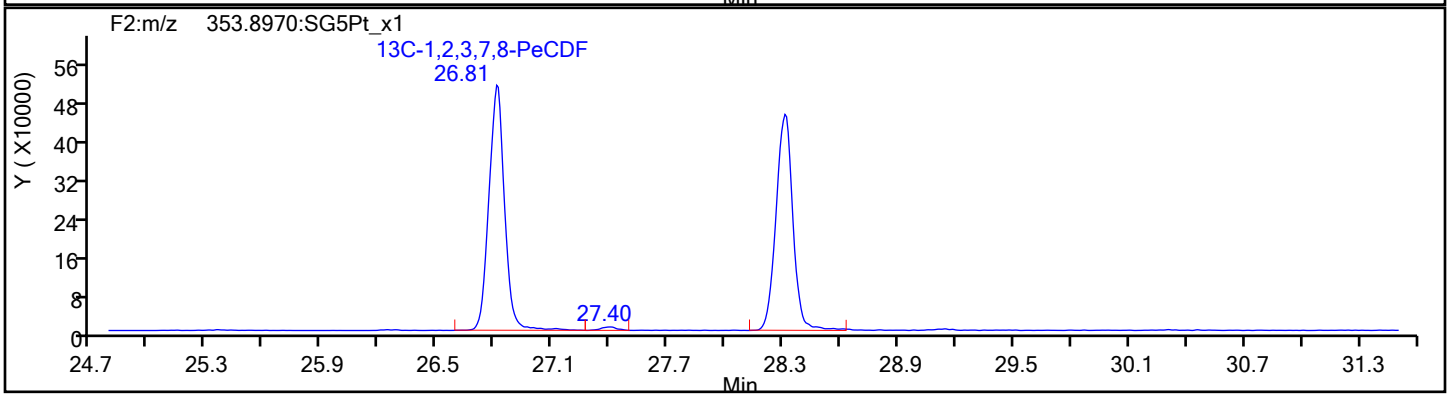




PeCDF Standards





Report Date: 23-Oct-2019 11:53:58 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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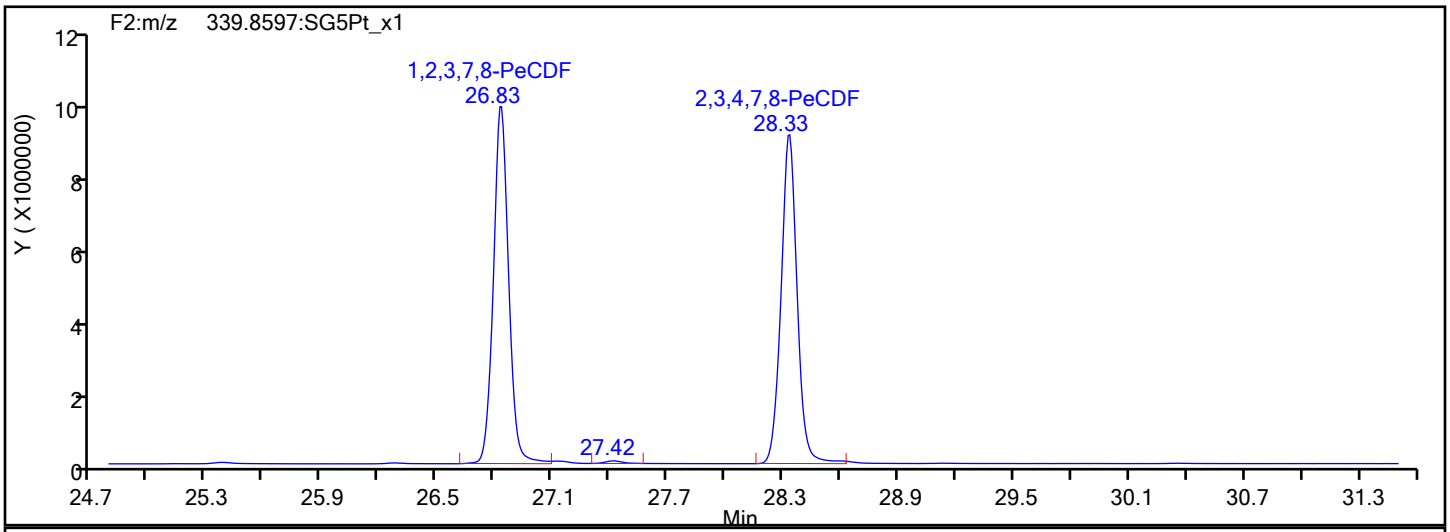
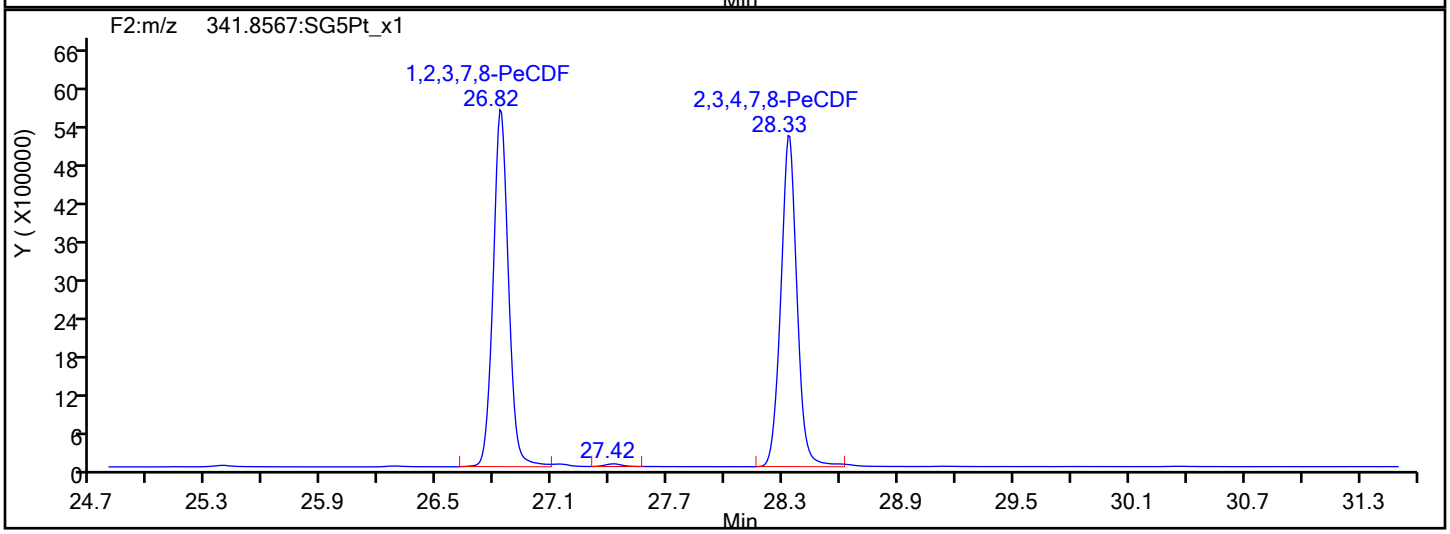
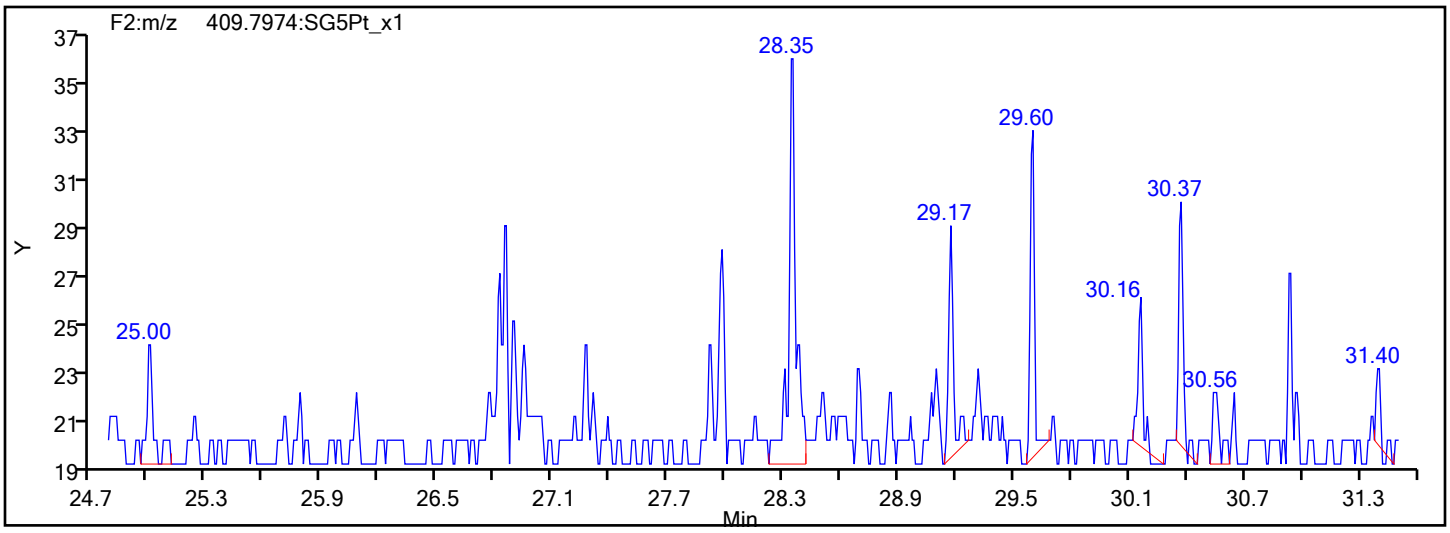




PeCDF Interference Mass



Report Date: 23-Oct-2019 11:53:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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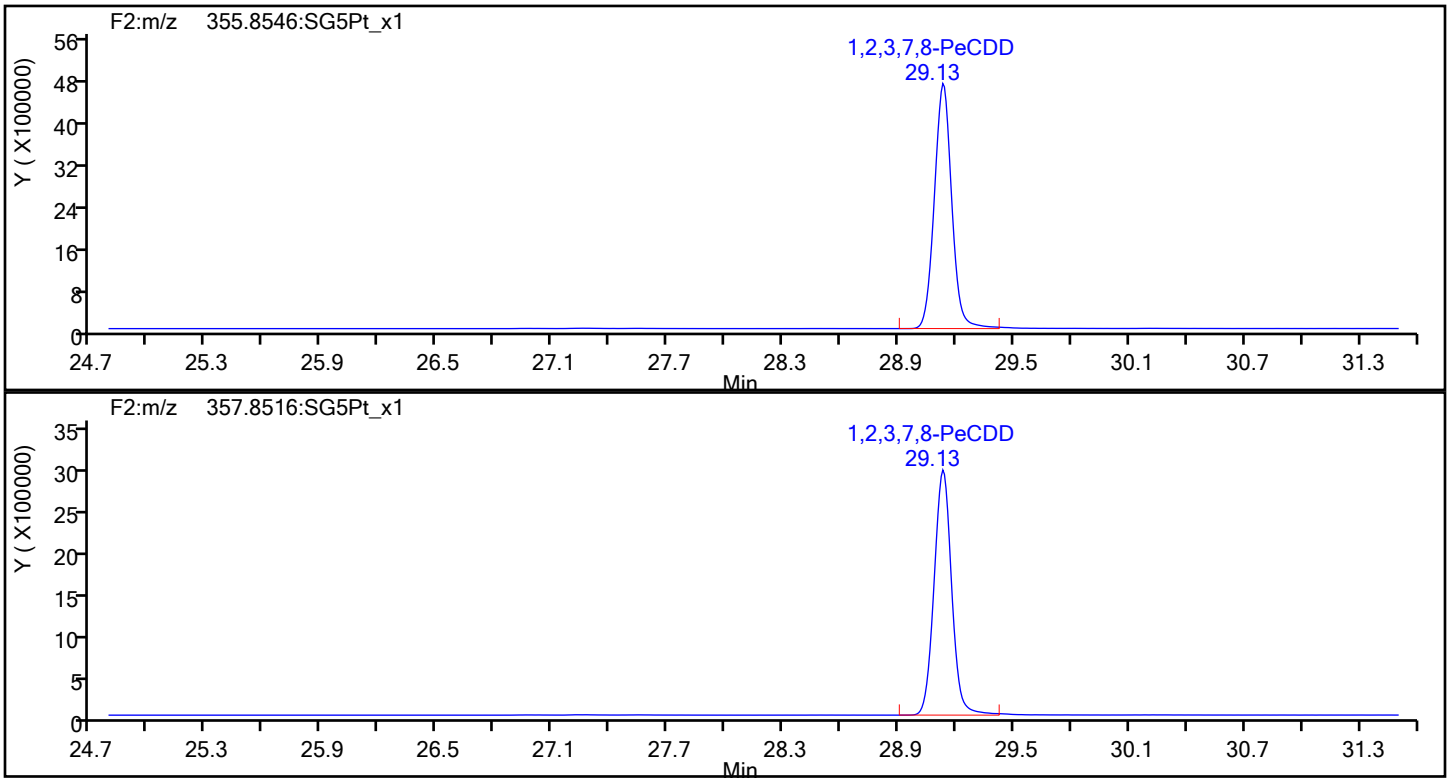
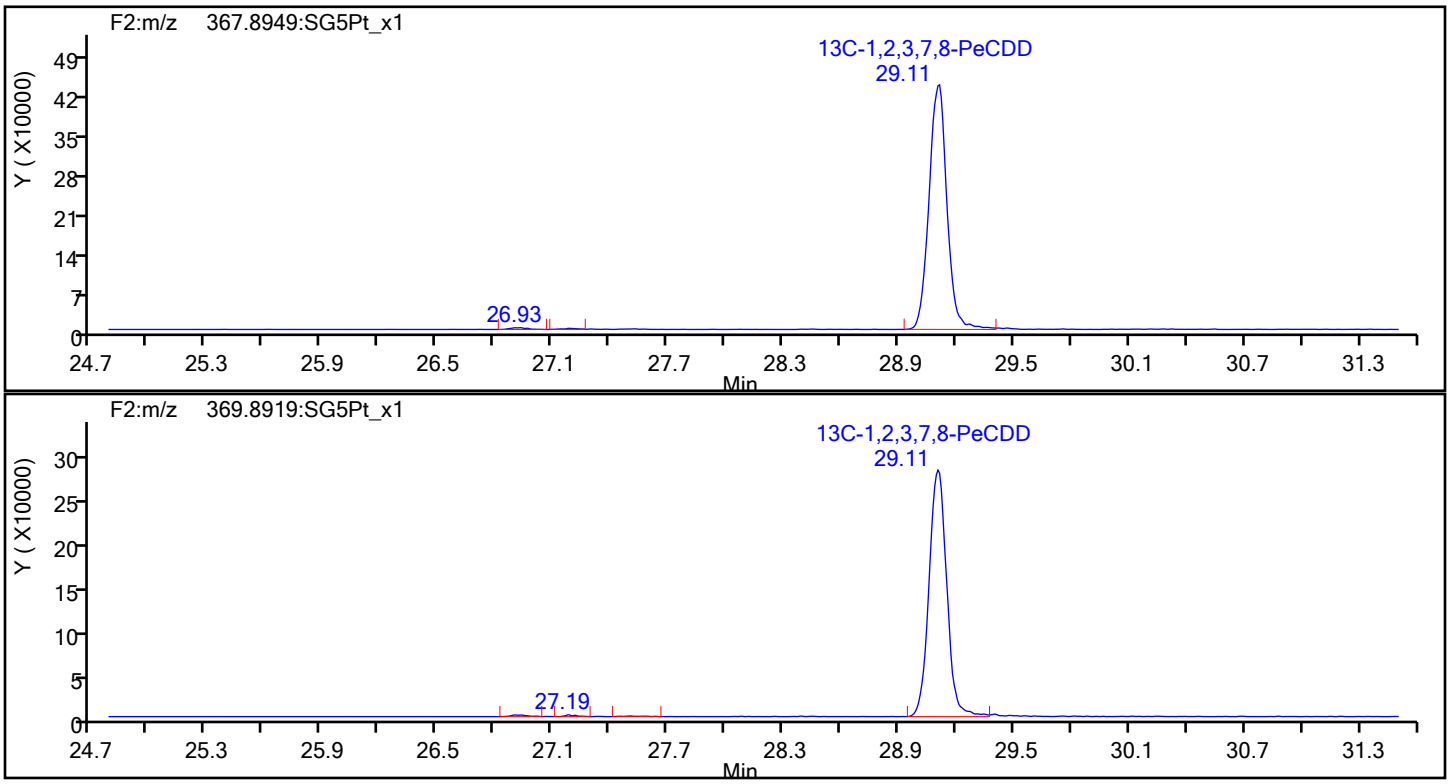
PeCDD



PeCDD Standards



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Eurofins TestAmerica, Sacramento

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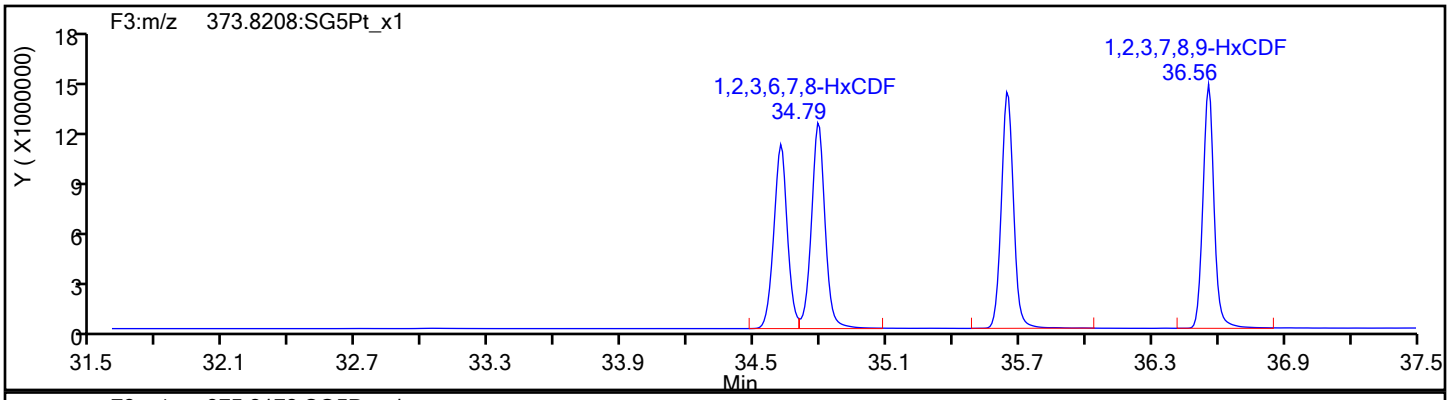
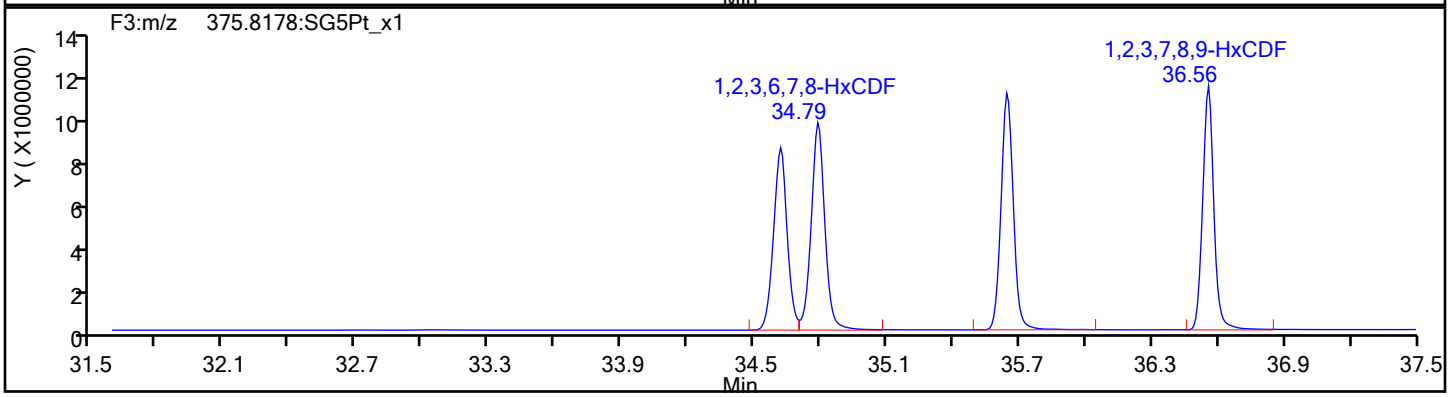
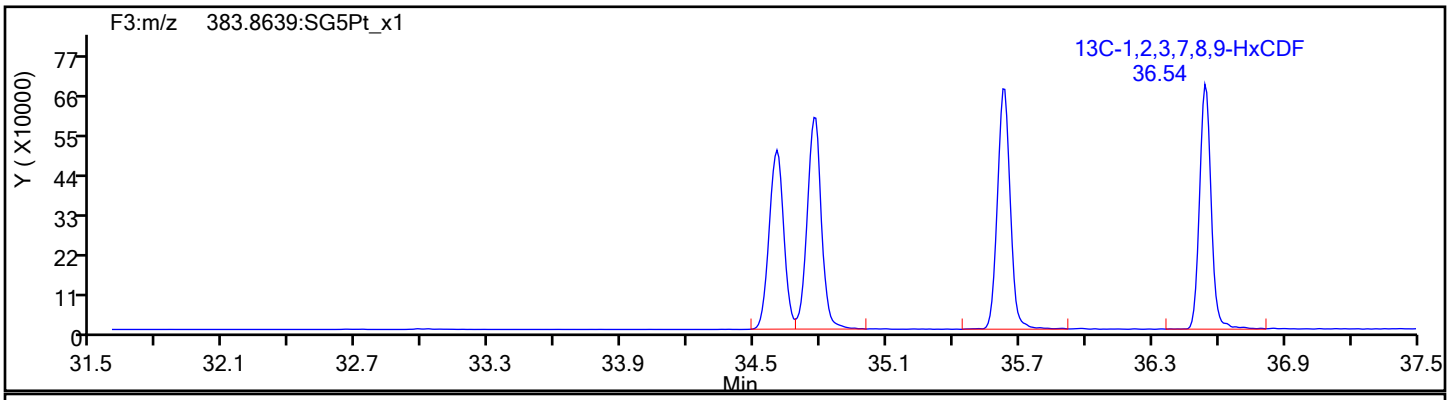
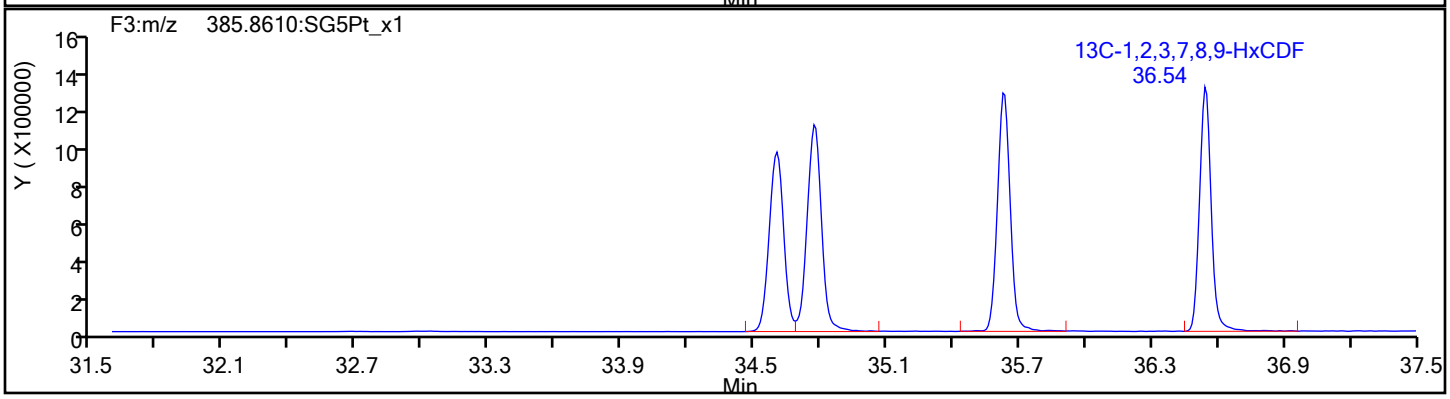
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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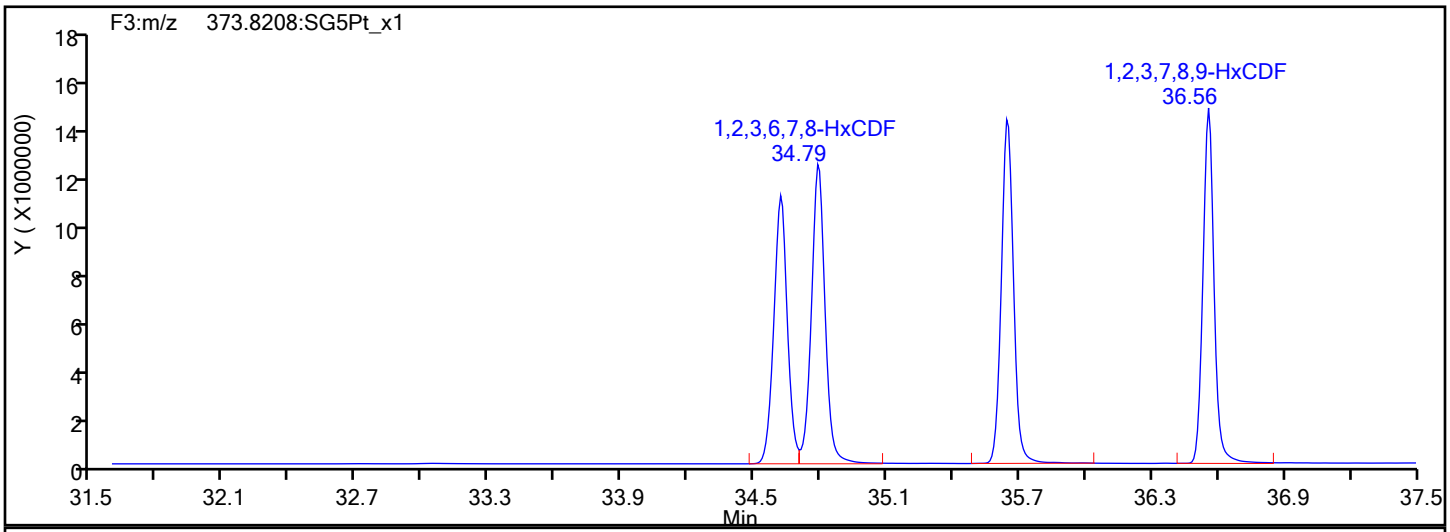
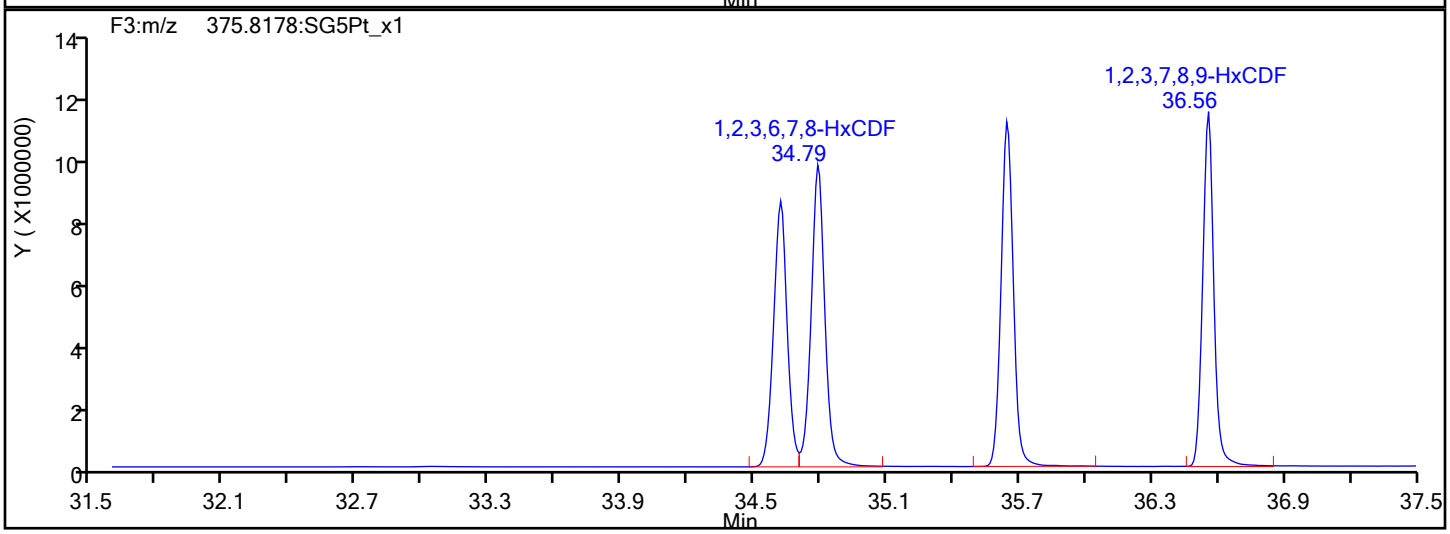
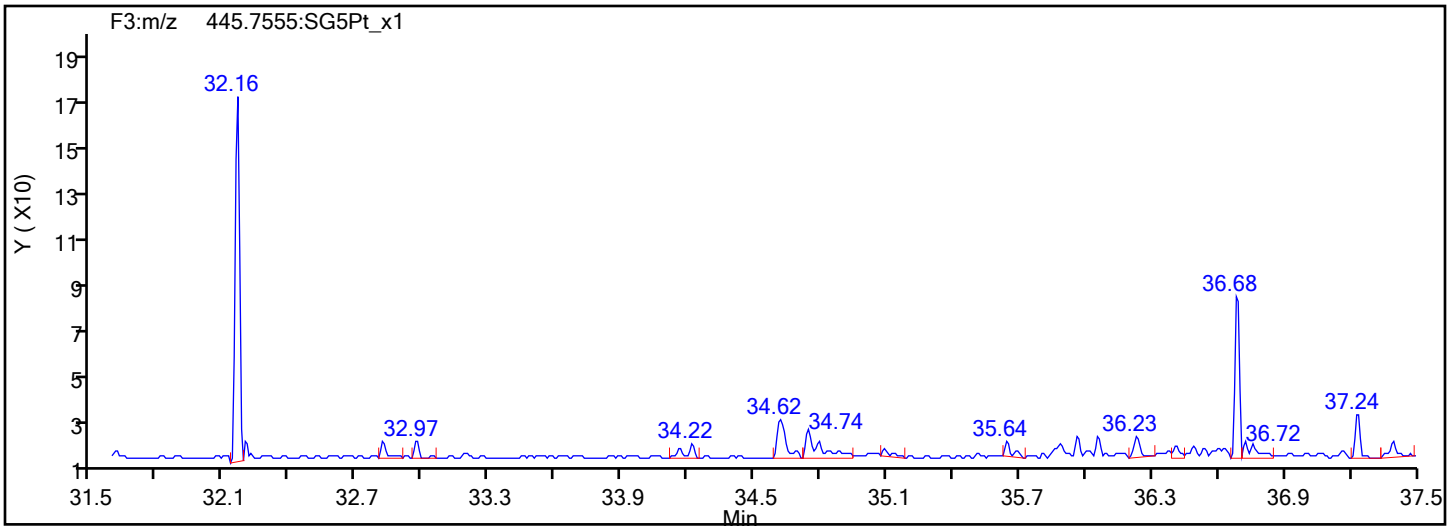




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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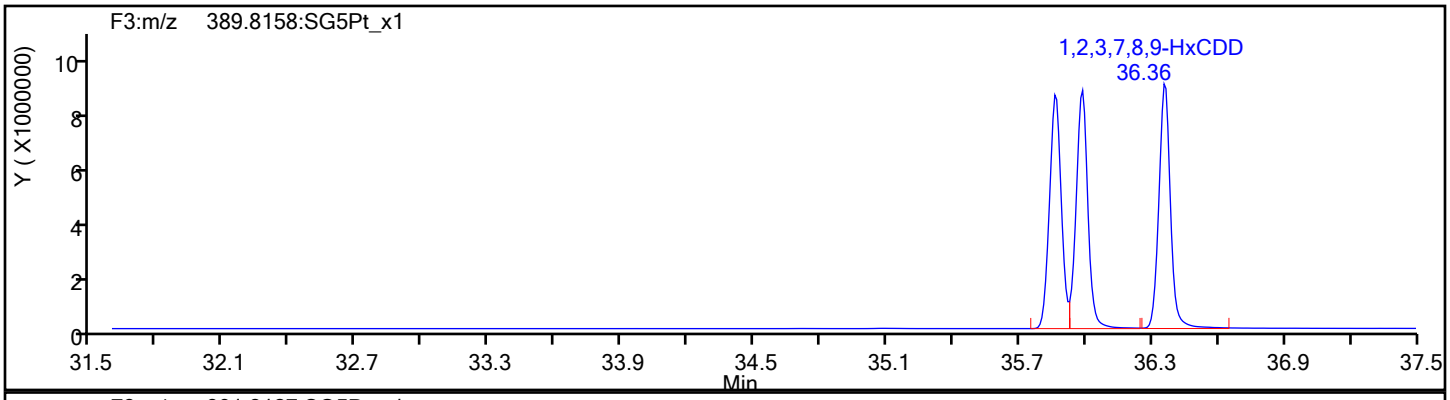
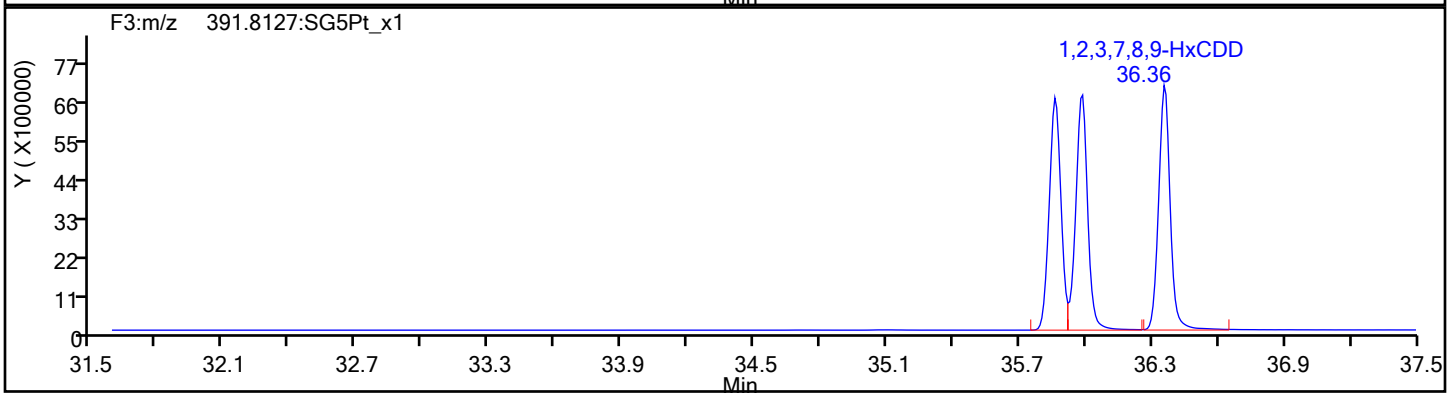
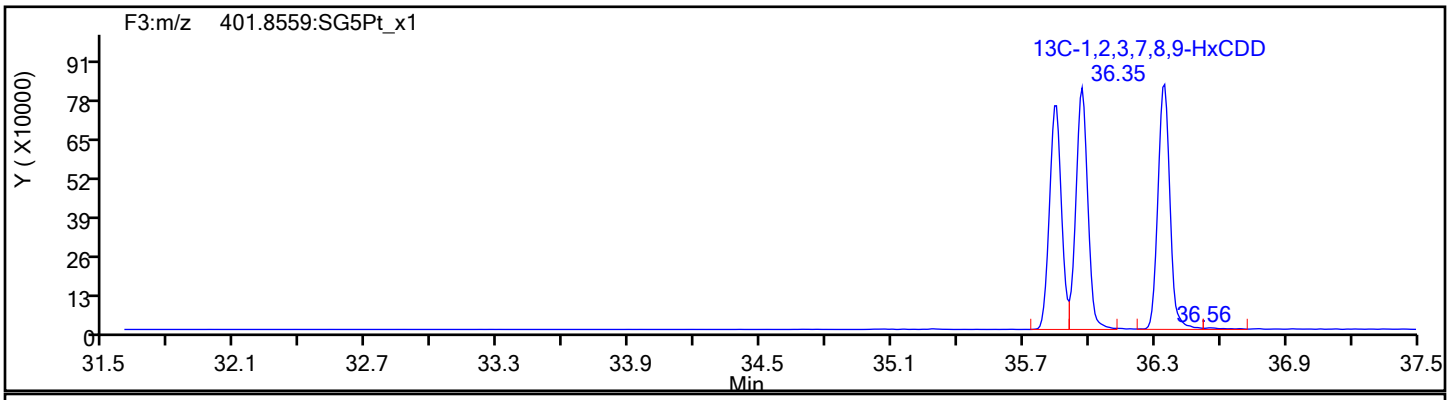
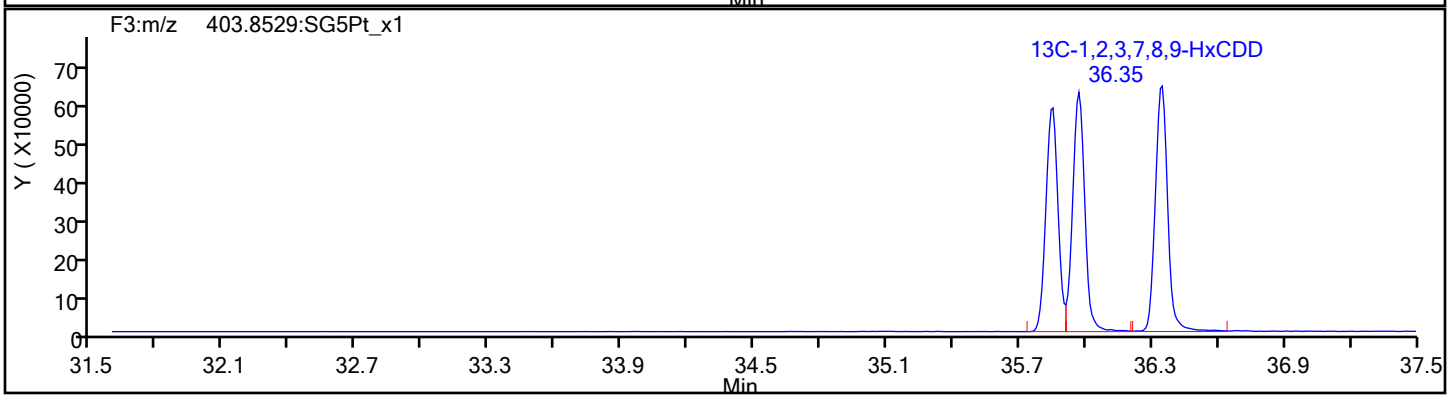
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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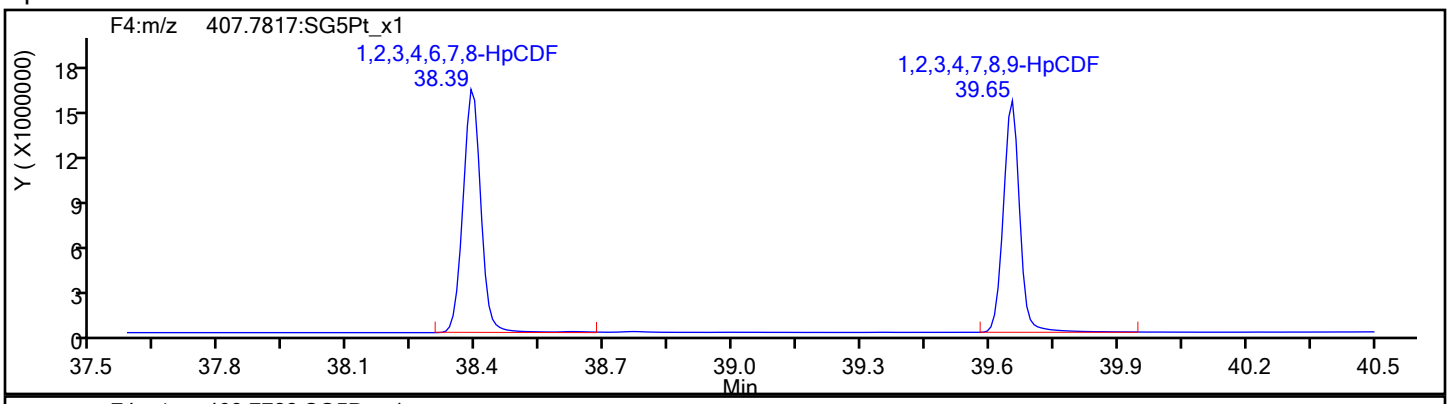
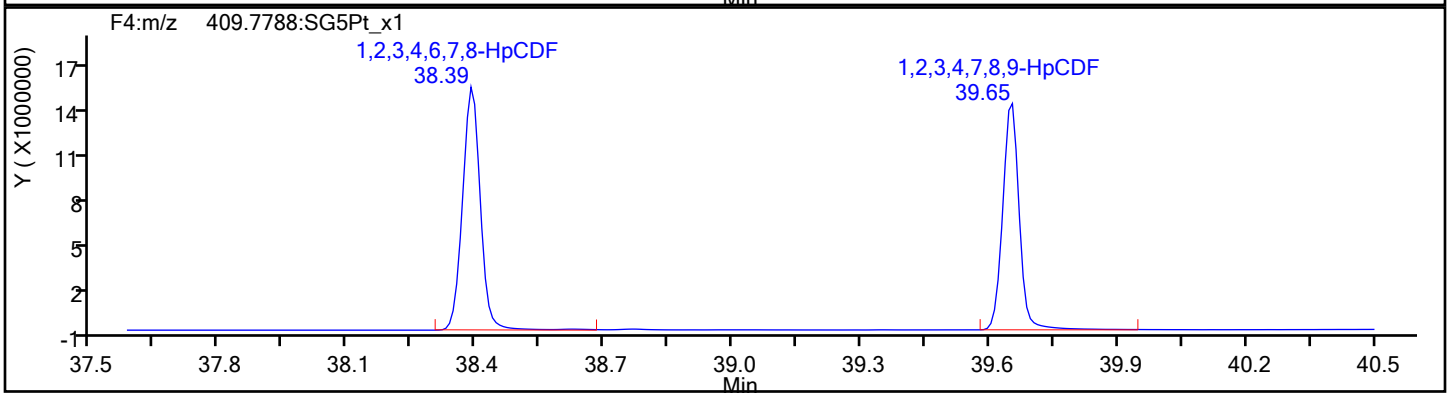
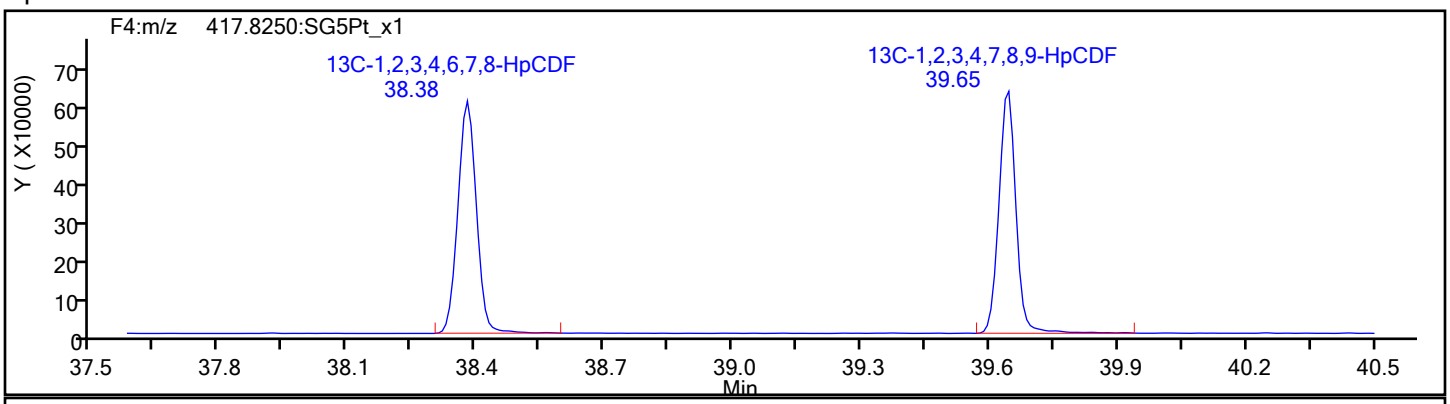
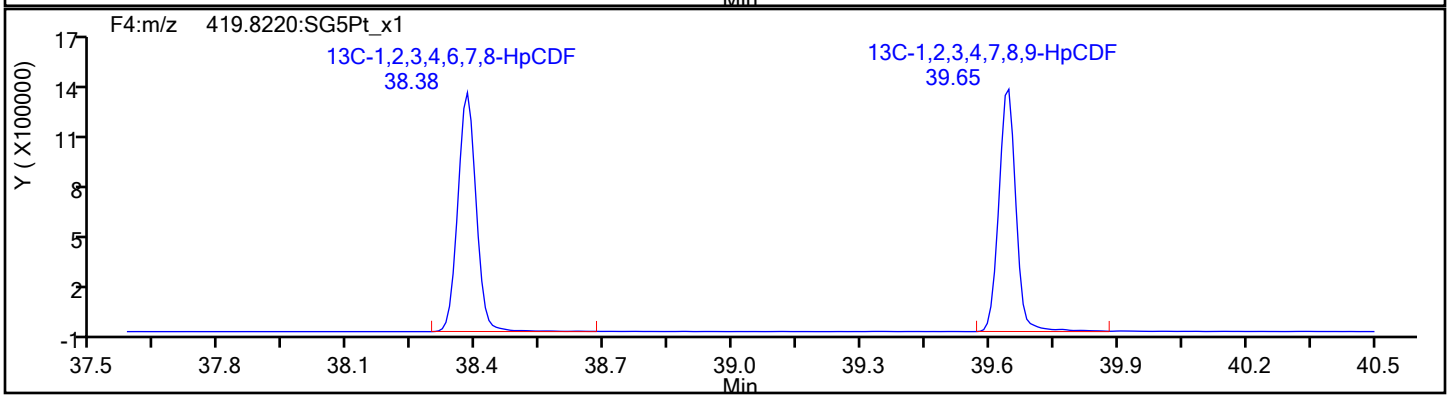
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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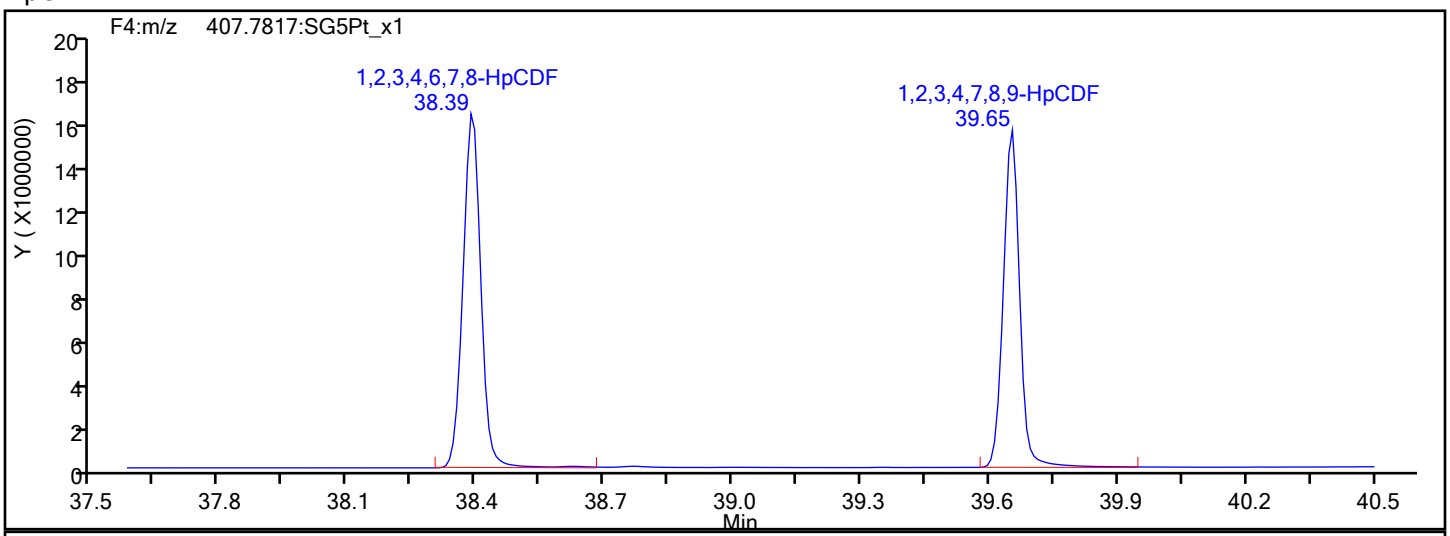
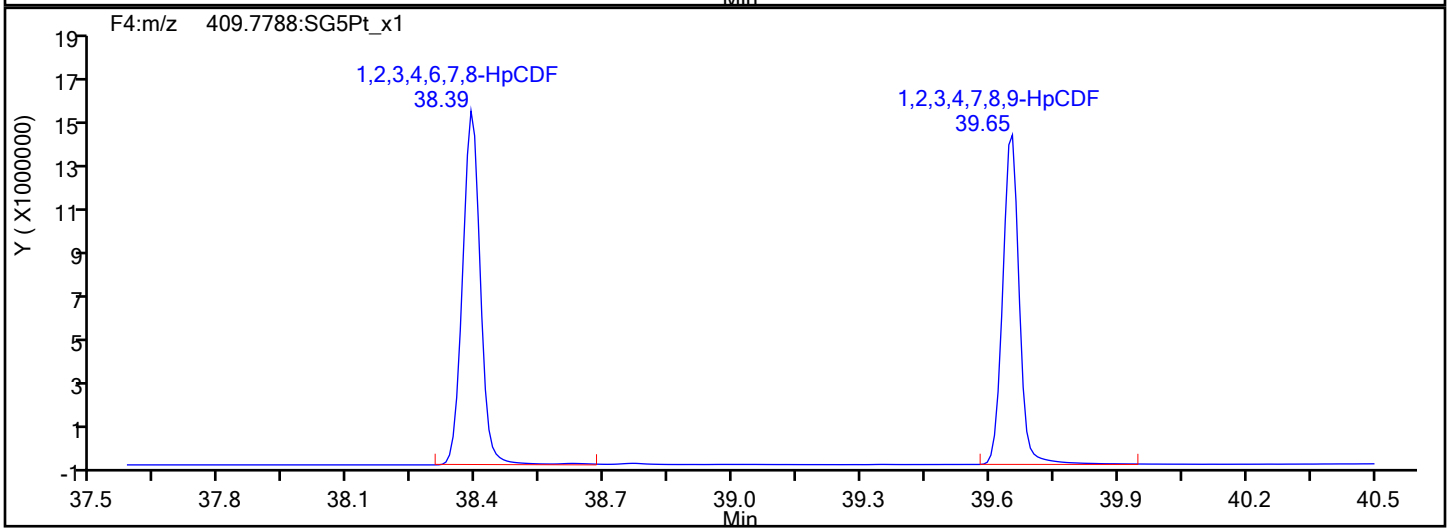
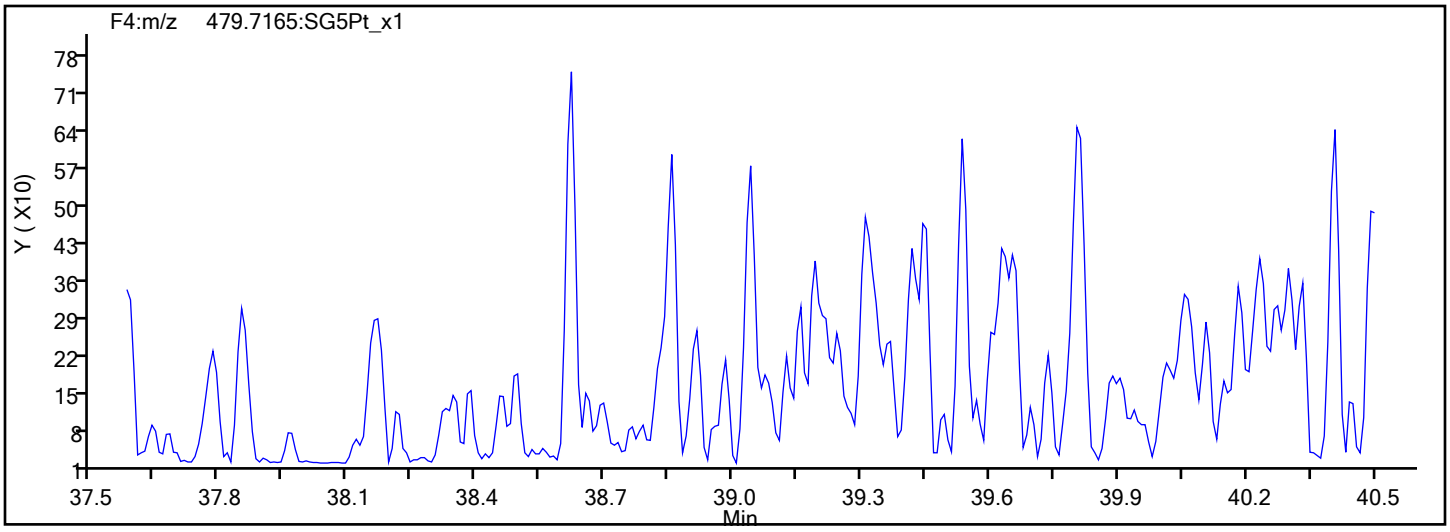
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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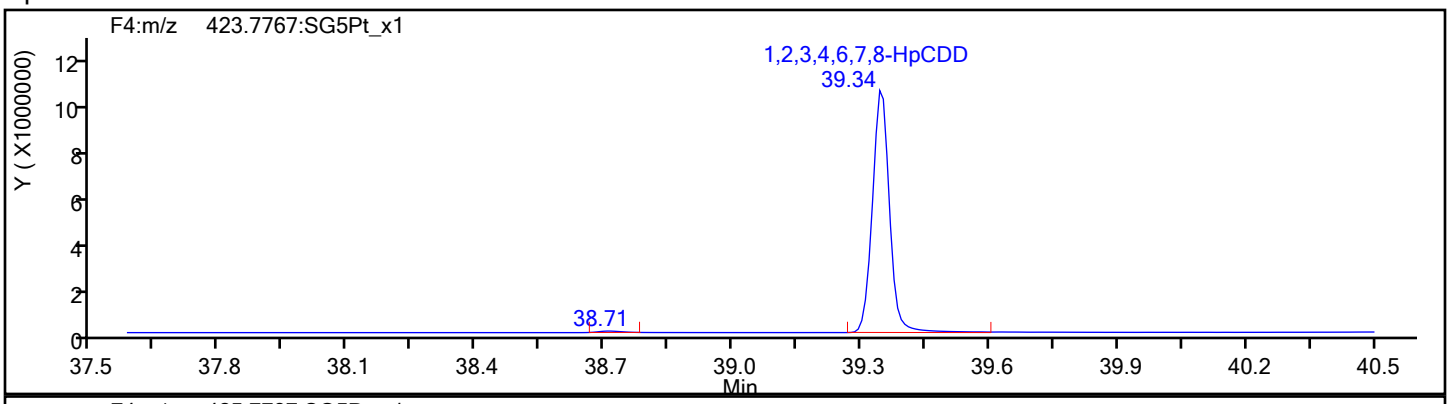
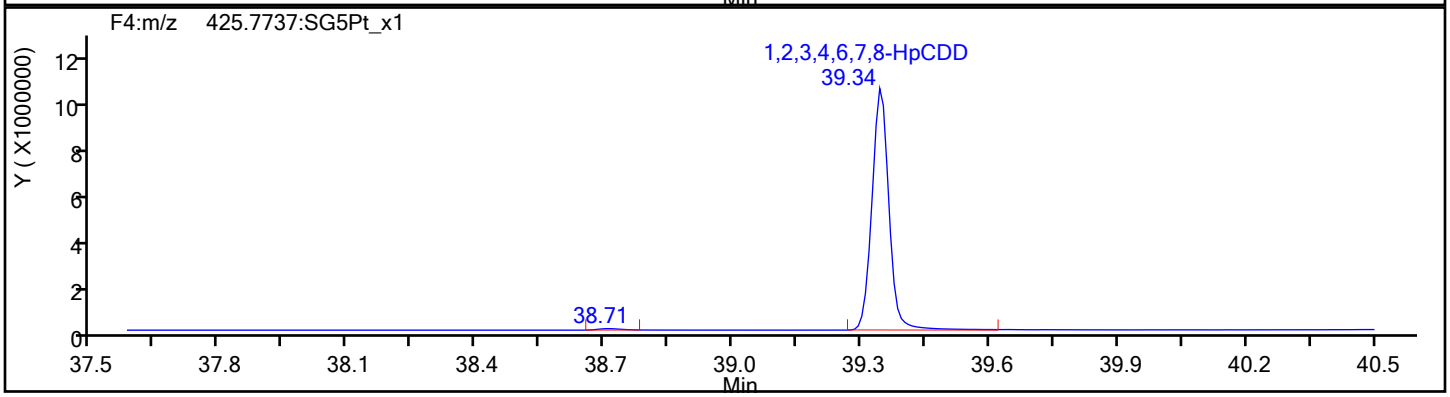
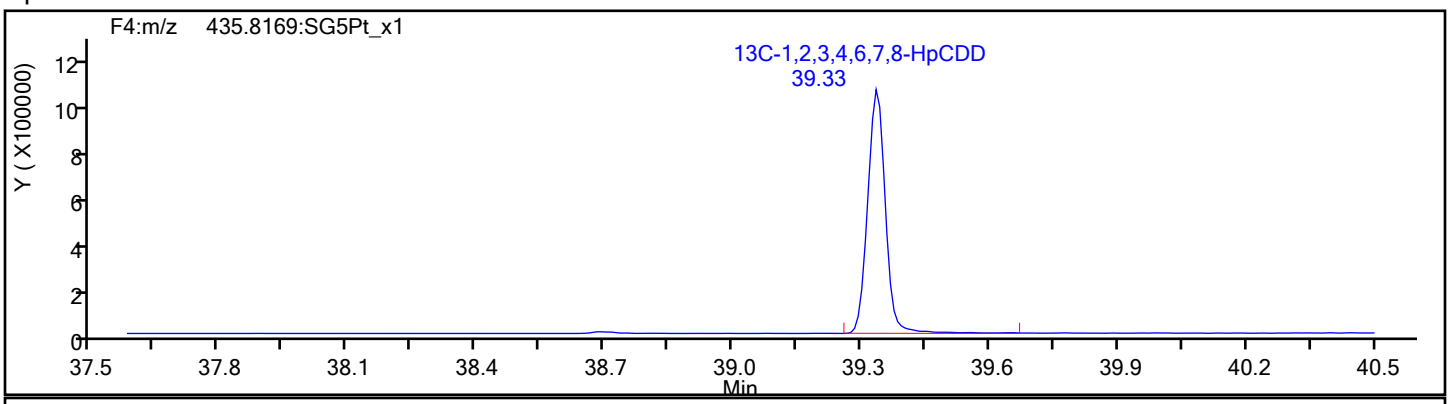
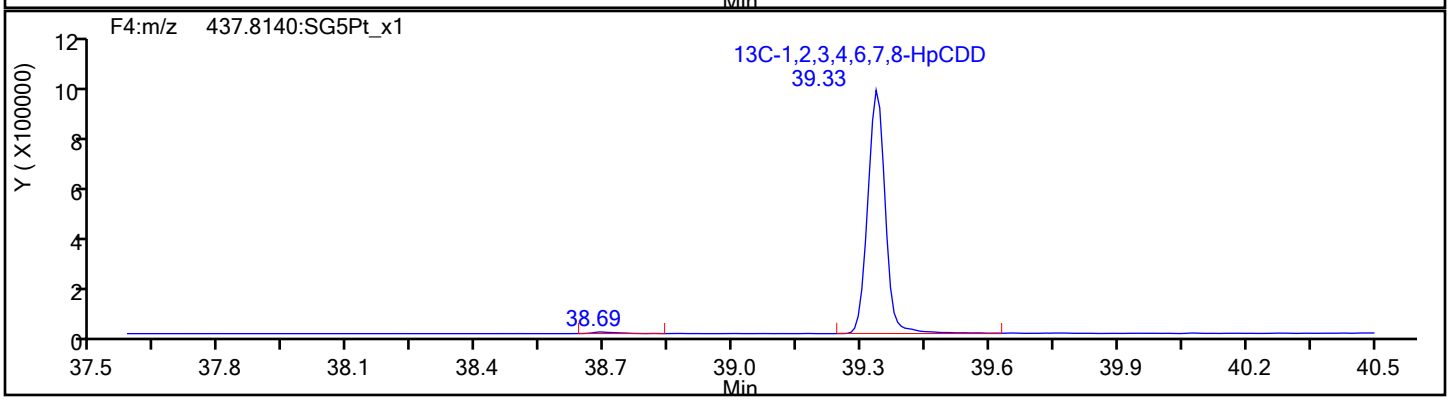
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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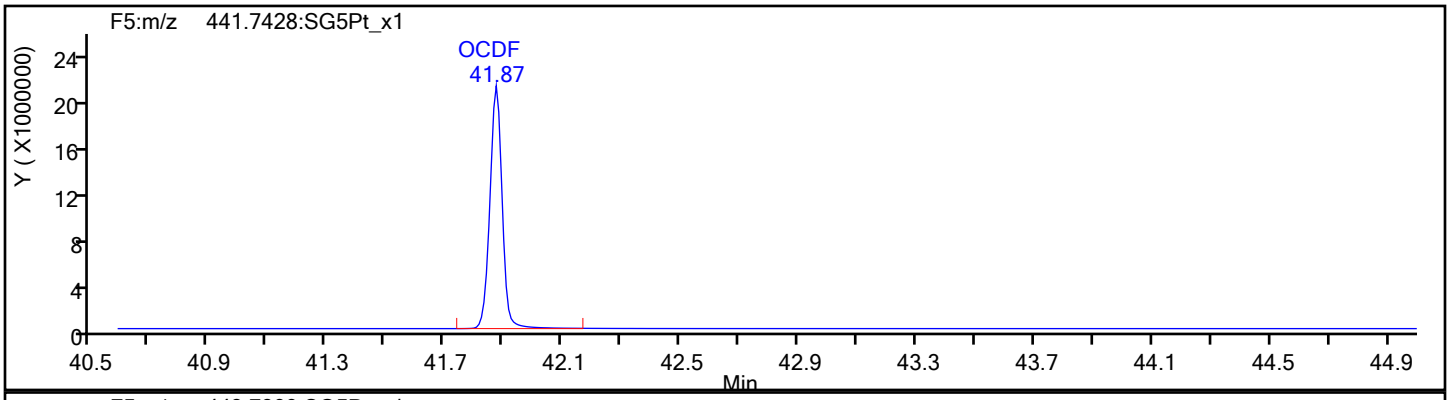
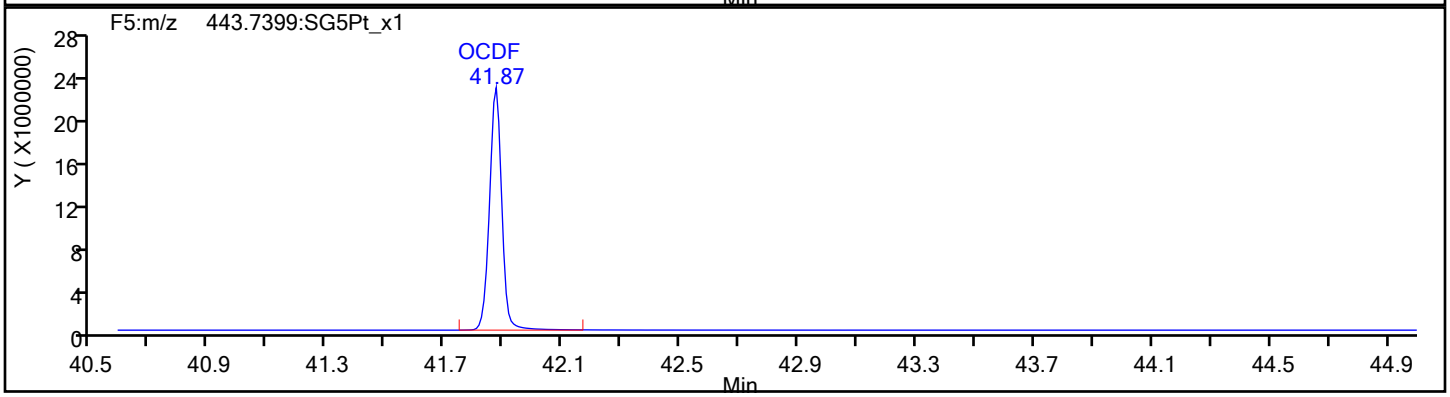
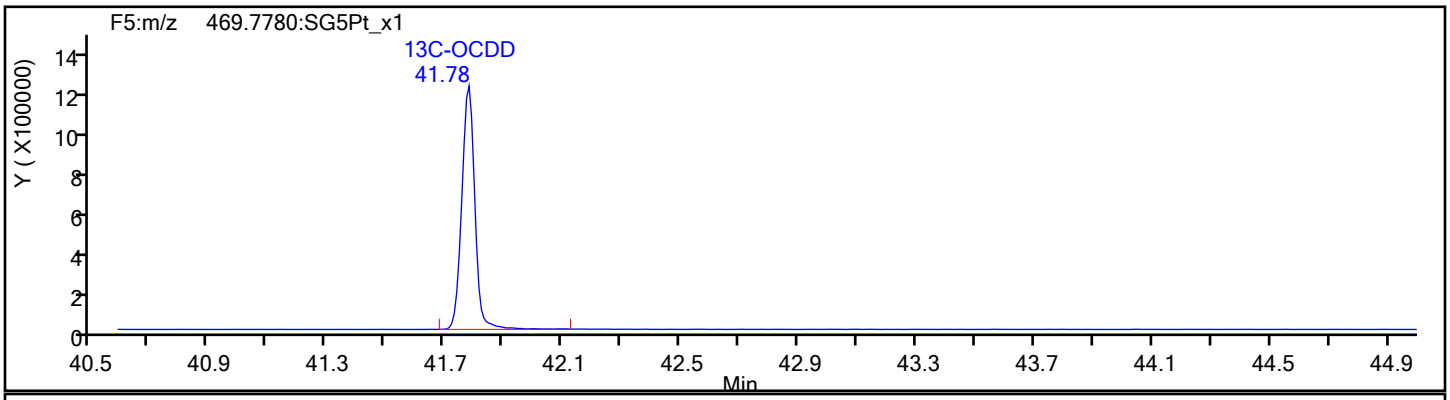
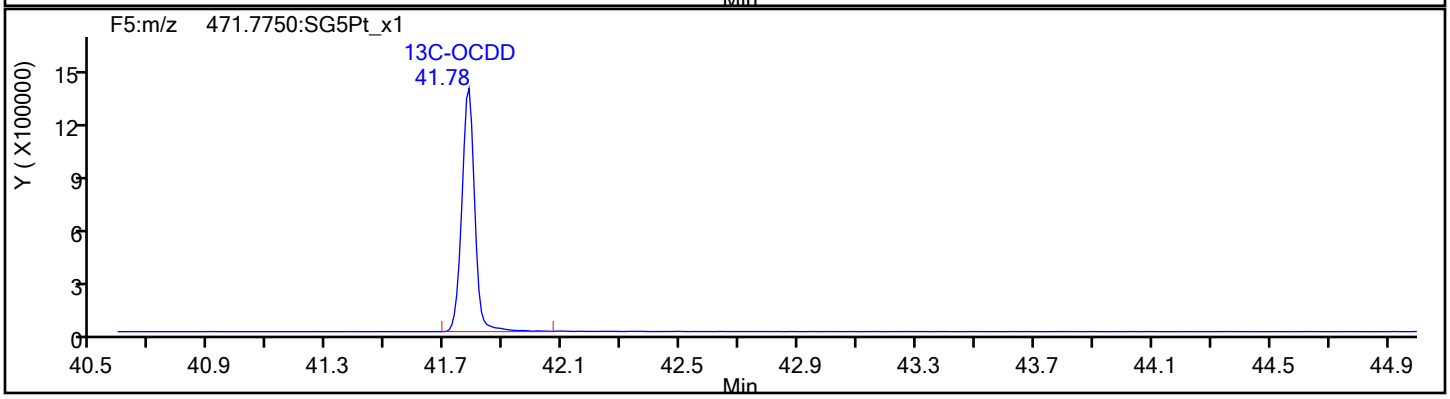
OCDF





OCDF Standards



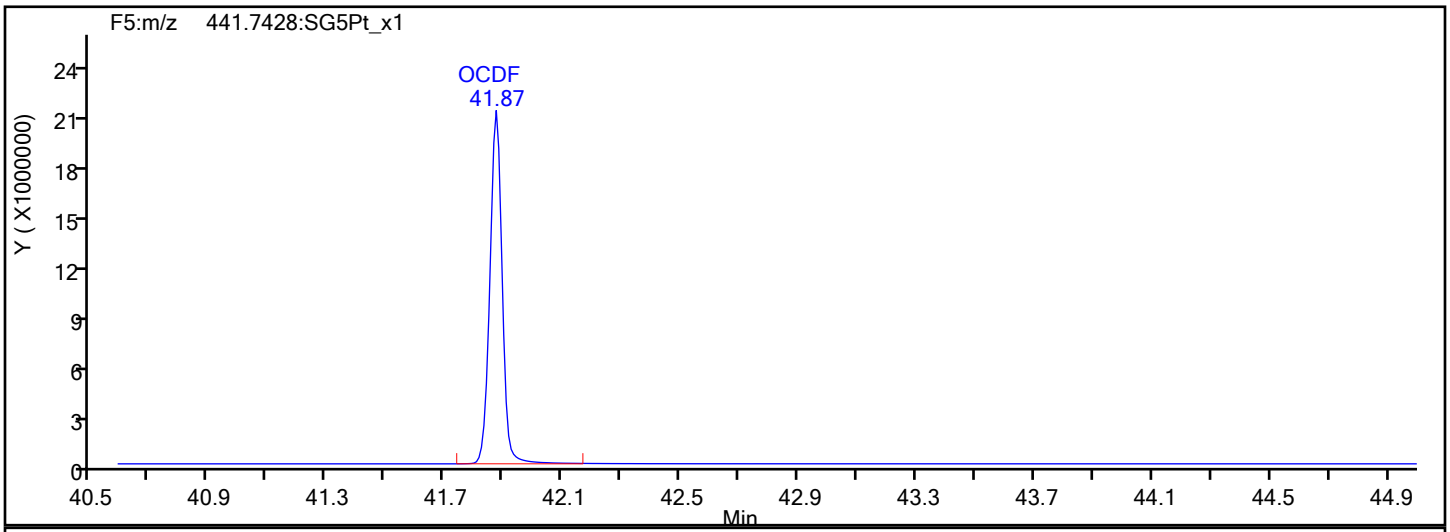


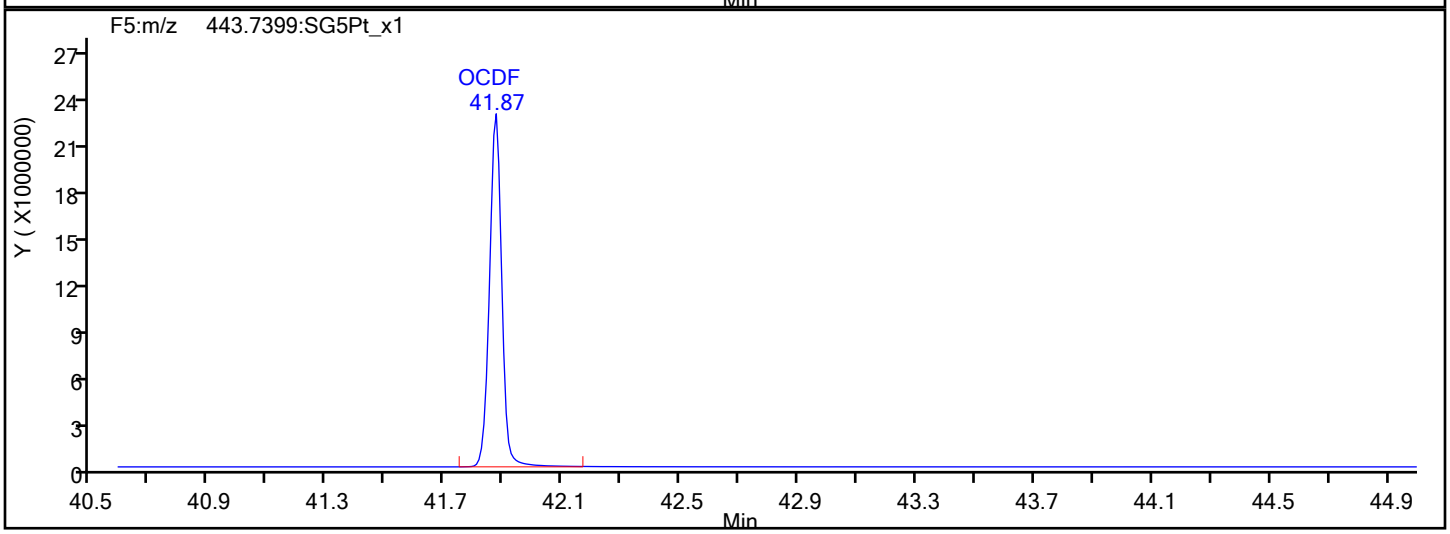
Report Date: 23-Oct-2019 11:53:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

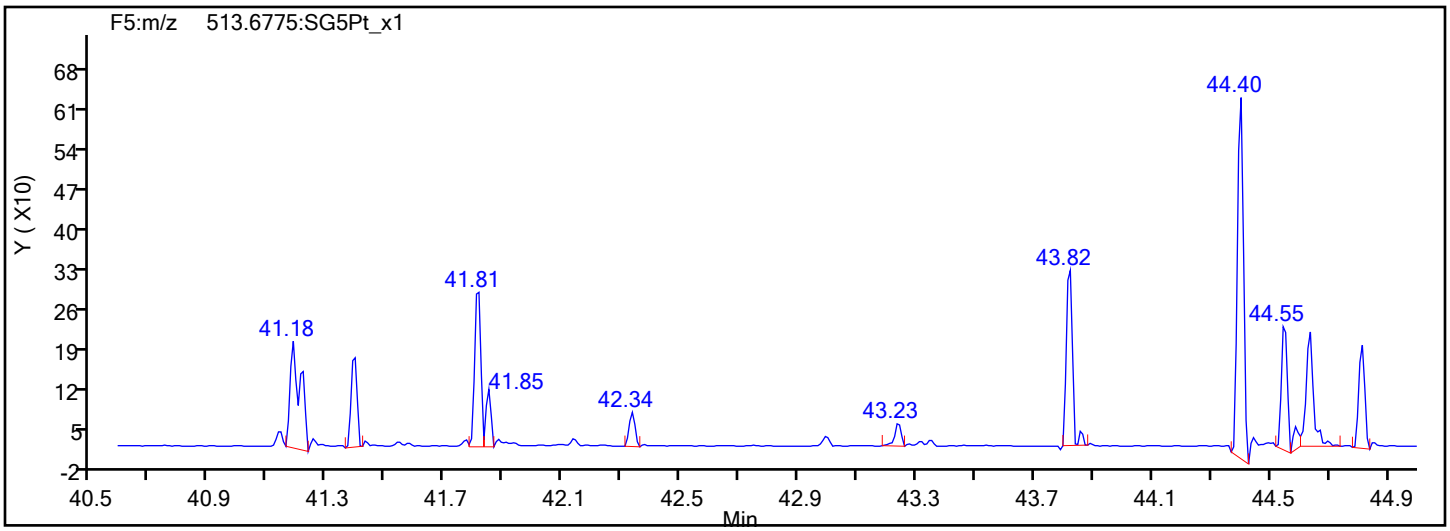
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

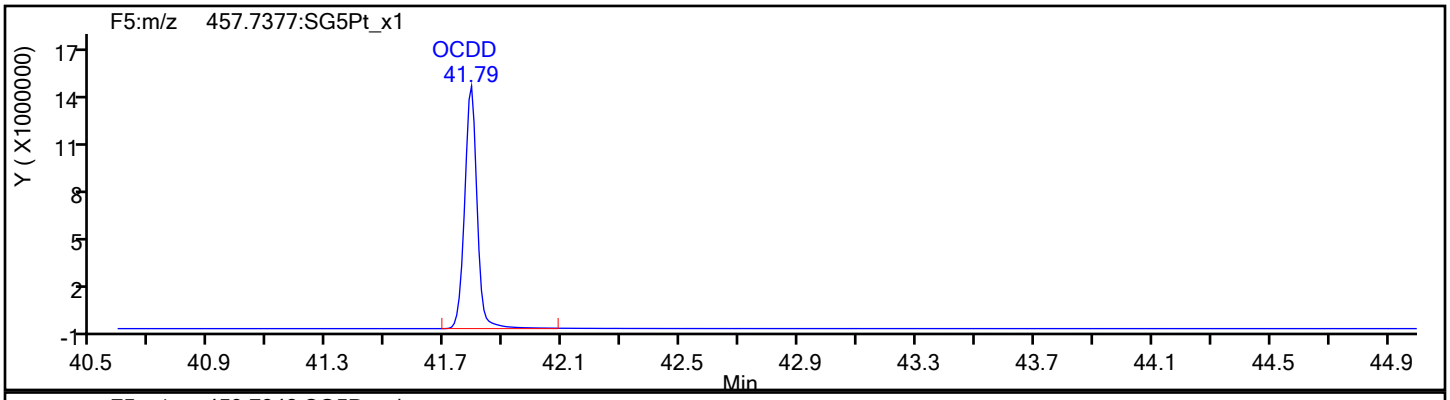


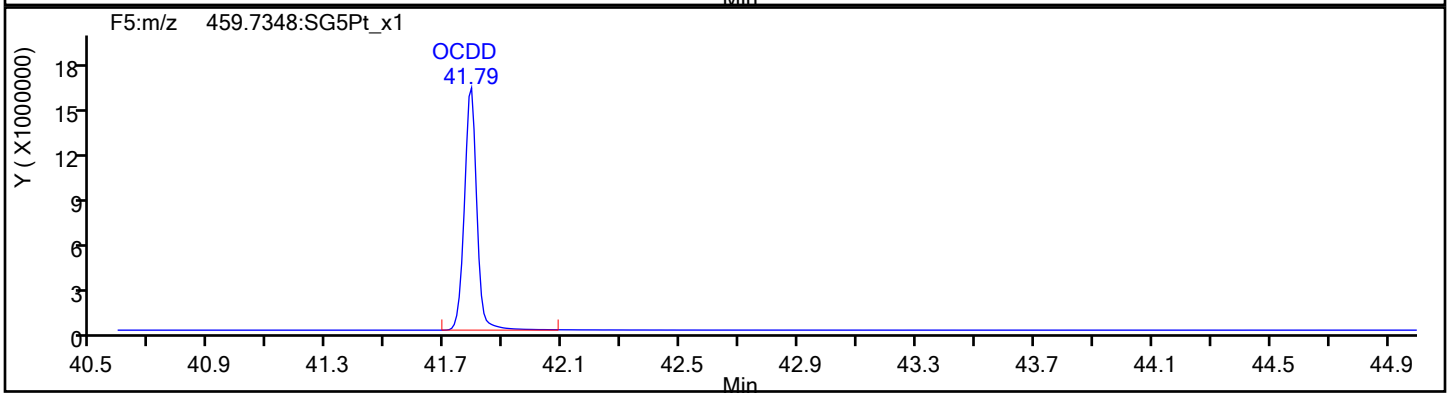
Report Date: 23-Oct-2019 11:53:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

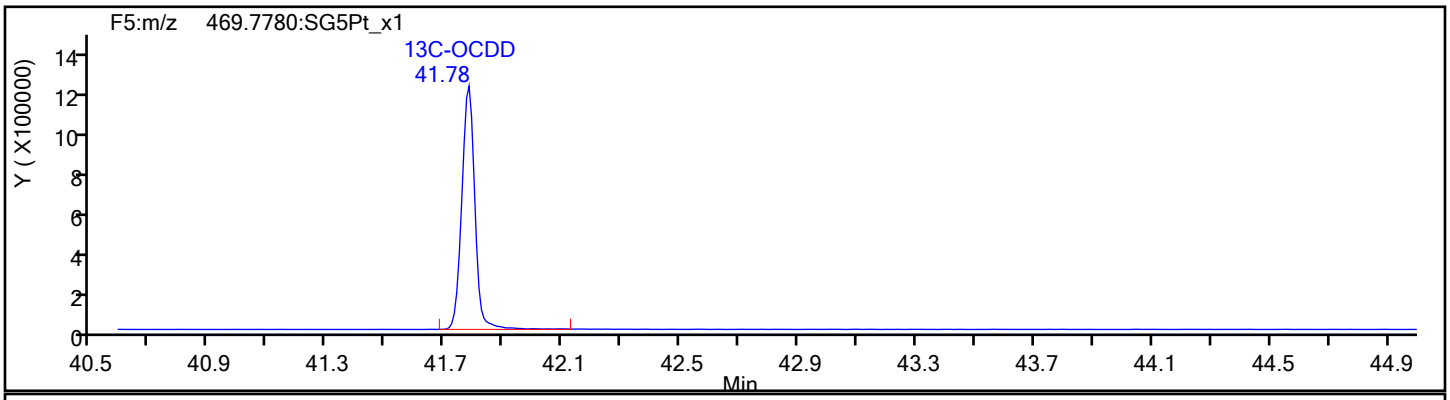
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

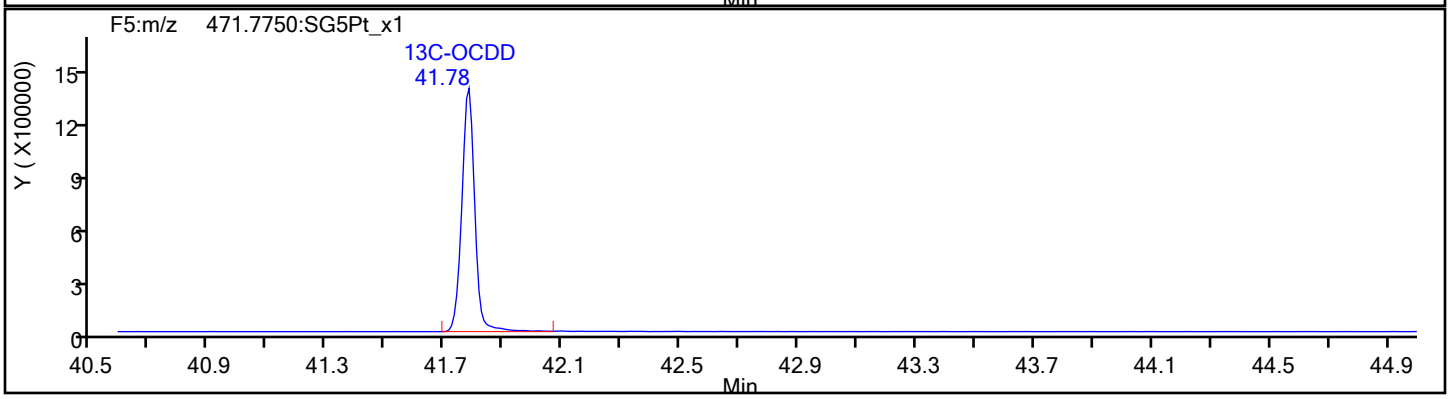
OCDD





OCDD Standards

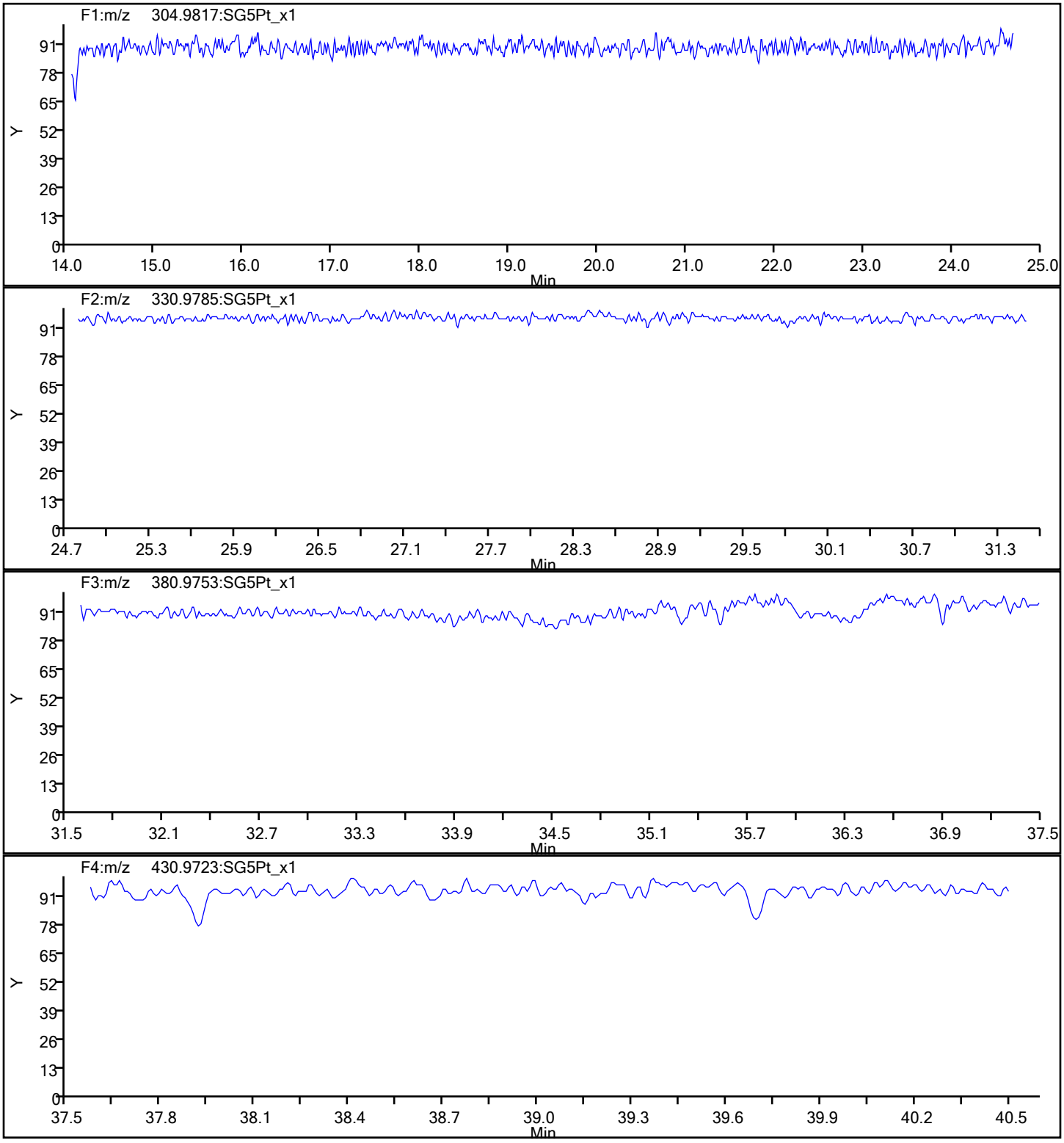




Report Date: 23-Oct-2019 11:53:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

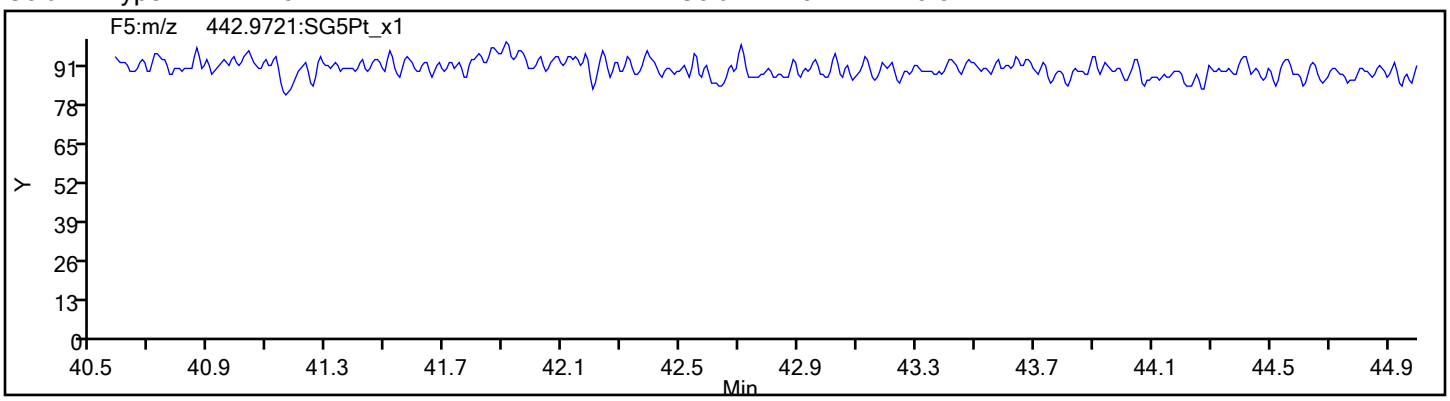
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 23-Oct-2019 11:53:59 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d		
Injection Date:	19-Oct-2019 00:02:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): CPS 320-312067/1 Instrument ID (1): 11D2

GC Column (1): DB-225 ID: 0.32(mm) Date Analyzed (1): 08/02/2019 01:35

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	16.64	13

Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Instrument ID:	11D2
Lims ID:	CPS		
Client ID:			
Operator ID:		ALS Bottle#:	0 Worklist Smp#: 1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL

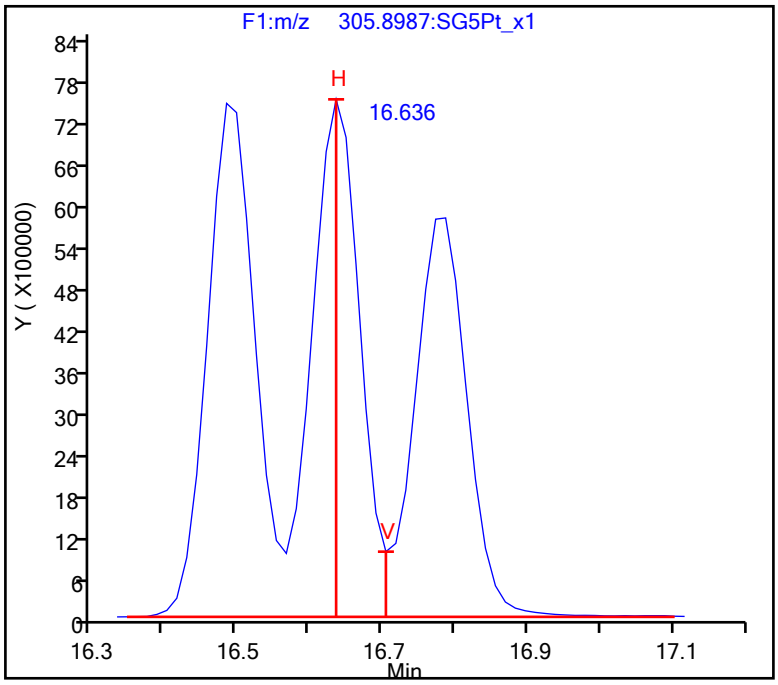
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 944750
H (Peak Height) = 7515097

%R = 13 <= 25
Passed



Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d				
Injection Date:	02-Aug-2019 01:35:28	Instrument ID:	11D2		
Lims ID:	CPS				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		

FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): WDM 320-332505/1 Instrument ID (1): DFS 1

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 10/18/2019 19:15

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	21.22	17

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Injection Date: 18-Oct-2019 19:15:00 Instrument ID: DFS 1
Lims ID: WDM
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Column: DB-5 (0.32 mm)
Method: Dioxin_DFS1 Limit Group: HR - 1613B - ICAL

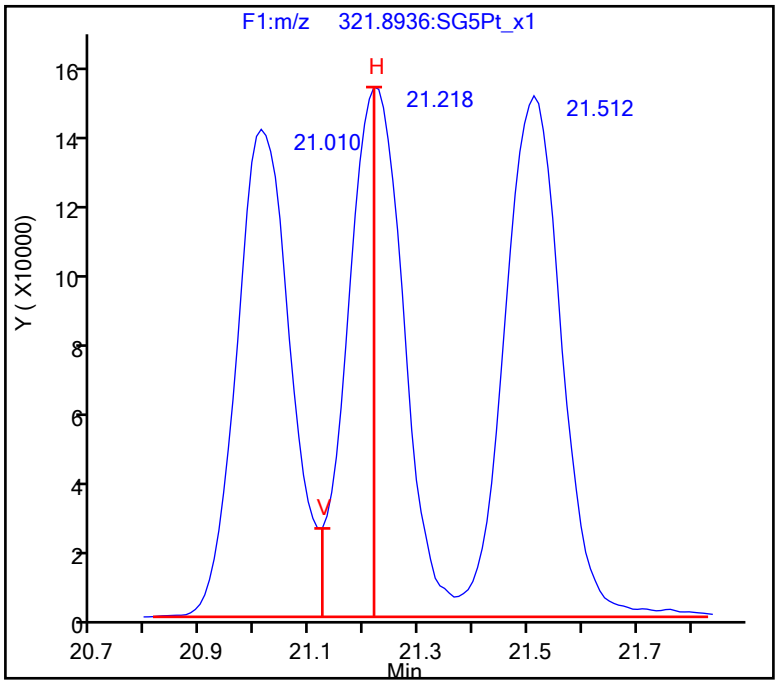
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 25043
H (Peak Height) = 149721

%R = 17 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): WDM 320-338471/1 Instrument ID (1): 10D5

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 11/14/2019 08:14

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	17.74	22

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d
Injection Date: 14-Nov-2019 08:14:53 Instrument ID: 10D5
Lims ID: WDM
Client ID:
Operator ID: SMA ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-5 (0.32 mm)
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

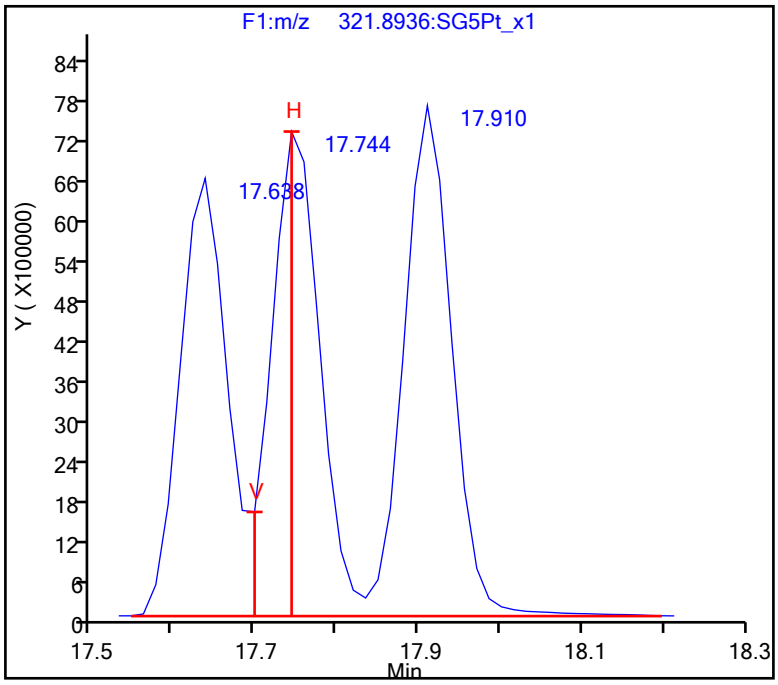
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 1593707
H (Peak Height) = 7323313

%R = 22 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): WDM 320-345335/1 Instrument ID (1): 10D5

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 12/13/2019 11:08

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	18.07	22

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Injection Date: 13-Dec-2019 11:08:40 Instrument ID: 10D5
Lims ID: WDM
Client ID:
Operator ID: AJS ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-5 (0.32 mm)
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

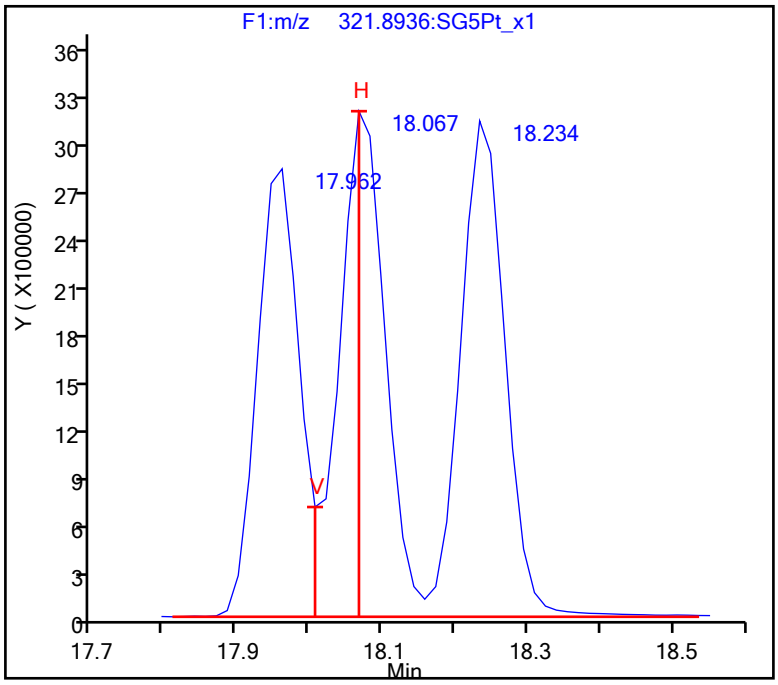
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 686604
H (Peak Height) = 3162927

%R = 22 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): WDM 320-345338/1 Instrument ID (1): DFS 1

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 12/13/2019 12:37

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	19.94	18

Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d				
Injection Date:	13-Dec-2019 12:37:00	Instrument ID:	DFS 1		
Lims ID:	WDM				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Column:	DB-5 (0.32 mm)		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		

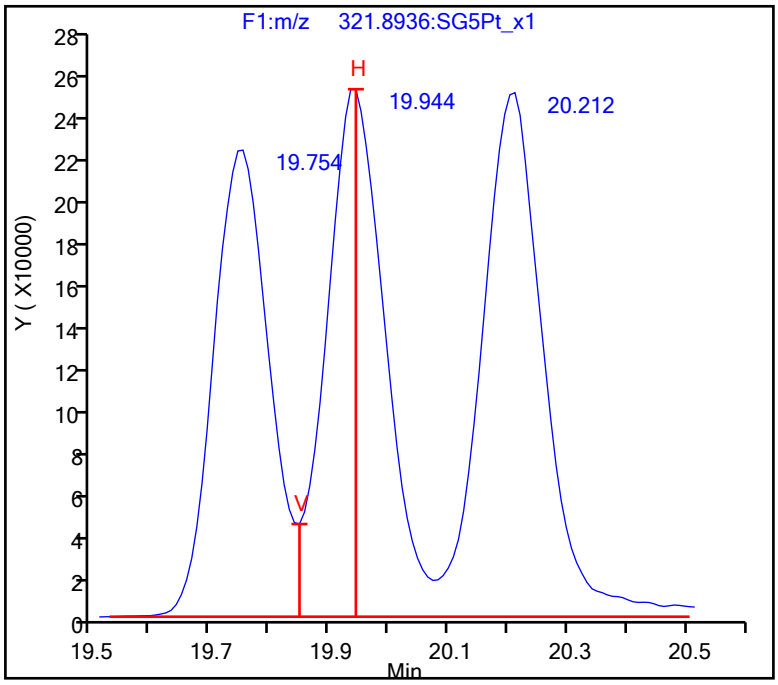
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 43932
H (Peak Height) = 250131

%R = 18 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): CPS 320-345960/1 Instrument ID (1): 11D2

GC Column (1): DB-225 ID: 0.32(mm) Date Analyzed (1): 12/16/2019 19:16

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	16.58	20

Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d
Injection Date: 16-Dec-2019 19:16:59 Instrument ID: 11D2
Lims ID: CPS
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-225 (0.32 mm)
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

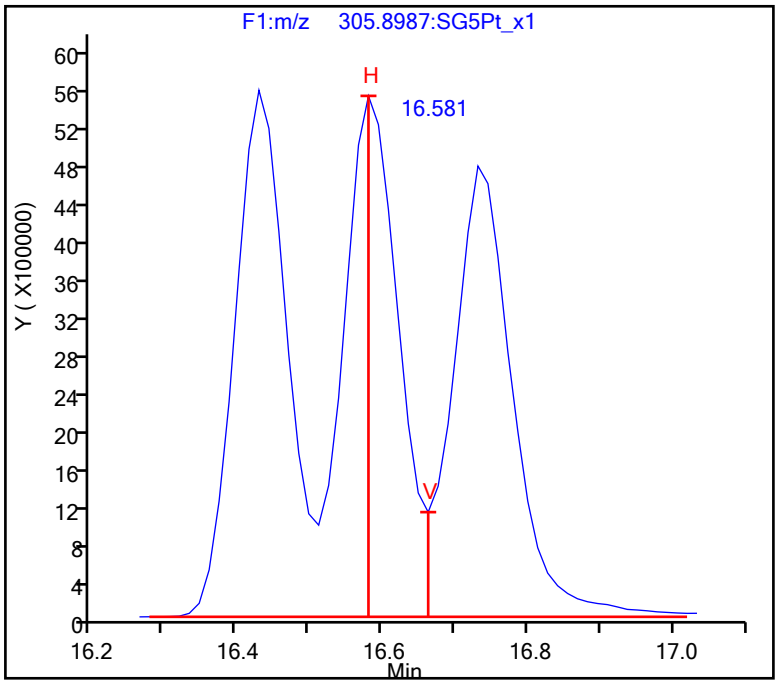
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 1106581
H (Peak Height) = 5516218

%R = 20 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID (1): CPS 320-346137/1 Instrument ID (1): 11D2

GC Column (1): DB-225 ID: 0.32(mm) Date Analyzed (1): 12/17/2019 14:11

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	16.59	22

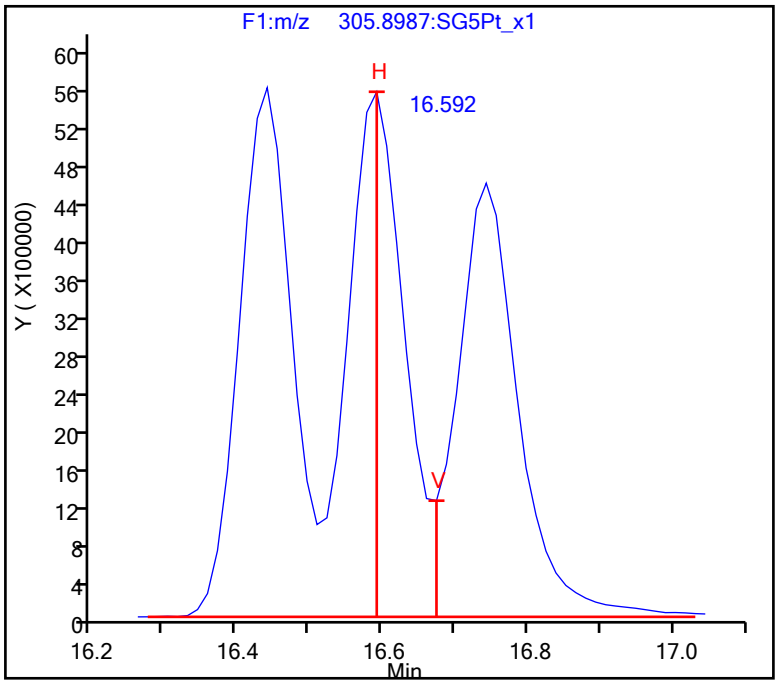
Report Date: 18-Dec-2019 01:04:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d
Injection Date: 17-Dec-2019 14:11:19 Instrument ID: 11D2
Lims ID: CPS
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-225 (0.32 mm)
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

2,3,7,8-TCDF



Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 1215326
H (Peak Height) = 5503345

%R = 22 <= 25
Passed

Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d				
Injection Date:	17-Dec-2019 14:11:19	Instrument ID:	11D2		
Lims ID:	CPS				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		

FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: ICV 320-338471/9 Calibration Date: 11/14/2019 14:22

Instrument ID: 10D5 Calib Start Date: 11/14/2019 09:46

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 11/14/2019 12:50

Lab File ID: 14NO1910D5_9.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	0.9005	0.9429		41.9	40.0	105	70-130
2,3,7,8-TCDD	AveID	1.070	1.149		43.0	40.0	107	70-130
1,2,3,7,8-PeCDF	AveID	0.9704	0.9907		204	200	102	70-130
2,3,4,7,8-PeCDF	AveID	0.999	1.114		223	200	112	70-130
1,2,3,7,8-PeCDD	AveID	1.002	0.998		199	200	100	70-130
1,2,3,4,7,8-HxCDF	AveID	1.031	1.084		210	200	105	70-130
1,2,3,6,7,8-HxCDF	AveID	1.024	1.088		213	200	106	70-130
2,3,4,6,7,8-HxCDF	AveID	1.065	1.145		215	200	108	70-130
1,2,3,4,7,8-HxCDD	AveID	1.005	1.061		211	200	106	70-130
1,2,3,6,7,8-HxCDD	AveID	0.9833	1.095		223	200	111	70-130
1,2,3,7,8,9-HxCDD	AveID	1.104	1.123		204	200	102	70-130
1,2,3,7,8,9-HxCDF	AveID	1.066	1.091		205	200	102	70-130
1,2,3,4,6,7,8-HpCDF	AveID	1.424	1.525		214	200	107	70-130
1,2,3,4,6,7,8-HpCDD	AveID	1.017	1.082		213	200	106	70-130
1,2,3,4,7,8,9-HpCDF	AveID	1.283	1.321		206	200	103	70-130
OCDD	AveID	1.100	1.165		424	400	106	70-130
OCDF	AveID	1.305	1.365		418	400	105	70-130
13C-2,3,7,8-TCDF	Ave	1.332	1.319		99.1	100	99	71-140
13C-2,3,7,8-TCDD	Ave	0.9647	0.9598		99.5	100	99	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.054	1.026		97.3	100	97	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.017	1.025		101	100	101	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7281	0.7145		98.1	100	98	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	0.9632	0.995		103	100	103	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.065	1.057		99.3	100	99	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	0.9696	0.9830		101	100	101	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.7590	0.7881		104	100	104	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9247	0.9087		98.3	100	98	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	0.8955	0.8949		99.9	100	100	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.7930	0.7978		101	100	101	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.7532	0.7616		101	100	101	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.7296	0.7514		103	100	103	77-129
13C-OCDD	Ave	0.5621	0.5875		209	200	105	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.308	1.352		41.3	40.0	103	79-127

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 14-Nov-2019 14:22:45 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV111419 ICV HRDXNIC_00042
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 15:38:29 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 15:30:58

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.532	127753507	0.80	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.034	168537488	0.77	1.3318	99.1	99.1	0.2208	0.2208	99.05	
2,3,7,8-TCDF	17.049	63565277	0.75	0.9005	41.9	41.9	0.0807	0.0807	105	
A Non-2,3,7,8-sub-TCDF	16.769	503480	0.69	0.9005	0.3317	0.3317	0.0807	0.3317		
S Total TCDF					42.2	42.2	0.0807	0.0807		
D 13C-2,3,7,8-TCDD	17.729	122616706	0.79	0.9647	99.5	99.5	0.1990	0.1990	99.49	
2,3,7,8-TCDD	17.744	56356642	0.78	1.0698	43.0	43.0	0.0519	0.0519	107	
$ 37Cl4-2,3,7,8-TCDD	17.744	69105326		1.3082	41.3	41.3	0.0474	0.0474	103	
A Non-2,3,7,8-sub-TCDD	17.207	1045993	0.75	1.0698	0.7974	0.7974	0.0519	0.7974		
S Total TCDD					43.8	43.8	0.0519	0.0519		
D 13C-1,2,3,7,8-PeCDF	21.949	131024591	1.57	1.0537	97.3	97.3	0.2628	0.2628	97.33	
1,2,3,7,8-PeCDF	21.963	259623009	1.55	0.9704	204.2	204.2	0.9424	0.9424	102	
D 13C-2,3,4,7,8-PeCDF	23.258	130947062	1.55	1.0173	100.8	100.8	0.2723	0.2723	101	
2,3,4,7,8-PeCDF	23.286	291632166	1.54	0.9986	223.0	223.0	0.9647	0.9647	112	
A F1 PeCDFs	19.339						0.0139	0.0139		
A Non-2,3,7,8-sub-PeCDF	22.421	6765802	1.59	0.9845	5.247	5.247	0.9531	5.247		
S Total PeCDF					432.5	432.5	0.9535	0.9535		
D 13C-1,2,3,7,8-PeCDD	23.968	91275613	1.59	0.7281	98.1	98.1	0.1363	0.1363	98.13	
1,2,3,7,8-PeCDD	23.995	182196069	1.58	1.0023	199.1	199.1	0.3182	0.3182	99.57	
A Non-2,3,7,8-sub-PeCDD	22.911						0.3182	0.3182		
S Total PeCDD					199.1	199.1	0.3182	0.3182		
D 13C-1,2,3,4,7,8-HxCDF	30.099	94290378	0.51	0.9632	103.3	103.3	0.4979	0.4979	103	
1,2,3,4,7,8-HxCDF	30.126	204334683	1.23	1.0315	210.1	210.1	1.399	1.399	105	
D 13C-1,2,3,6,7,8-HxCDF	30.312	100156979	0.51	1.0646	99.3	99.3	0.4505	0.4505	99.31	
1,2,3,6,7,8-HxCDF	30.339	217981711	1.21	1.0235	212.6	212.6	1.258	1.258	106	
D 13C-2,3,4,6,7,8-HxCDF	31.244	93118959	0.51	0.9696	101.4	101.4	0.4946	0.4946	101	
2,3,4,6,7,8-HxCDF	31.257	213270521	1.23	1.0645	215.2	215.2	0.9471	0.9471	108	
D 13C-1,2,3,7,8,9-HxCDF	32.096	84774861	0.51	0.8955	99.9	99.9	0.5355	0.5355	99.93	
1,2,3,7,8,9-HxCDF	32.110	184937881	1.23	1.0664	204.6	204.6	0.9613	0.9613	102	

Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30
Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
A Non-2,3,7,8-sub-HxCDF	29.813						1.112	1.112		
S Total HxCDF					842.5	842.5	1.141	1.141		
* 13C-1,2,3,7,8,9-HxCDD	31.910	94732617	1.24	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.457	74661625	1.25	0.7590	103.8	103.8	0.3625	0.3625	104	
1,2,3,4,7,8-HxCDD	31.470	158412571	1.24	1.0054	211.0	211.0	0.6473	0.6473	106	
D 13C-1,2,3,6,7,8-HxCDD	31.563	86079261	1.24	0.9247	98.3	98.3	0.2976	0.2976	98.26	
1,2,3,6,7,8-HxCDD	31.577	188438557	1.24	0.9833	222.6	222.6	0.6210	0.6210	111	
1,2,3,7,8,9-HxCDD	31.923	180574133	1.24	1.1036	203.6	203.6	0.5709	0.5709	102	
A Non-2,3,7,8-sub-HxCDD	30.412						0.6112	0.6112		
S Total HxCDD					637.3	637.3	0.6131	0.6131		
D 13C-1,2,3,4,6,7,8-HpCDF	33.567	75573628	0.44	0.7930	100.6	100.6	1.442	1.442	101	
1,2,3,4,6,7,8-HpCDF	33.579	230450592	1.04	1.4240	214.1	214.1	2.684	2.684	107	
D 13C-1,2,3,4,7,8,9-HpCDF	34.624	71184611	0.44	0.7296	103.0	103.0	1.567	1.567	103	
1,2,3,4,7,8,9-HpCDF	34.624	188084404	1.04	1.2834	205.9	205.9	3.747	3.747	103	
A Non-2,3,7,8-sub-HpCDF	34.107						3.146	3.146		
S Total HpCDF					420.0	420.0	3.215	3.215		
D 13C-1,2,3,4,6,7,8-HpCDD	34.333	72144979	1.05	0.7532	101.1	101.1	0.6400	0.6400	101	
1,2,3,4,6,7,8-HpCDD	34.345	156189527	1.05	1.0174	212.8	212.8	1.241	1.241	106	
A Non-2,3,7,8-sub-HpCDD	34.745						1.241	1.241		
S Total HpCDD					212.8	212.8	1.241	1.241		
D 13C-OCDD	36.621	111309290	0.91	0.5621	209.1	209.1	0.3127	0.3127	105	
OCDF	36.717	303775810	0.89	1.3047	418.4	418.4	0.3454	0.3454	105	
OCDD	36.633	259273206	0.89	1.0997	423.6	423.6	0.5138	0.5138	106	

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 14-Nov-2019 14:22:45 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV111419 ICV HRDXNIC_00042
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Nov-2019 15:38:29 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: arghestanis Date: 14-Nov-2019 15:30:58

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.532	17.539	0		56748212	14295274	11666	29165	1225		
333.9339	17.532	17.539	0		71005295	17876659	13033	32582	1372	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	0.972	73519539	18880730	26215	65537	720		
317.9389	17.034	17.034	0	0.972	95017949	24476277	11636	29090	2103	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.049	17.049	0	1.001	27341233	6988990	5216	13040	1340		
305.8987	17.049	17.049	0	1.001	36224044	9308338	7391	18477	1259	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.414	16.769	-21	0.964	206397	52842	5216	13040	10		
305.8987	16.399	16.769	-22	0.963	297083	81682	7391	18477	11	0.69(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.011	54287694	13185379	11666	29165	1130		
333.9339	17.729	17.729	0	1.011	68329012	16599634	13033	32582	1274	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	24640234	6032361	3034	7585	1988		
321.8936	17.744	17.744	0	1.001	31716408	7764793	3587	8967	2165	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.744	17.744	0	1.012	69105326	16899338	7980	19950	2118		
A Non-2,3,7,8-sub-TCDD											
319.8965	17.638	17.207	26	0.995	447986	123608	3034	7585	41		
321.8936	17.638	17.207	26	0.995	598007	164265	3587	8967	46	0.75(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	21.949	21.949	0	1.252	80074999	14441130	21701	54252	665		
353.8970	21.949	21.949	0	1.252	50949592	9172063	13941	34852	658	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	21.963	21.971	0	1.001	157758948	28571111	51917	129792	550		
341.8567	21.963	21.971	0	1.001	101864061	18672781	34457	86142	542	1.55(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.258	23.258	0	1.327	79688867	13633117	21701	54252	628		
353.8970	23.258	23.258	0	1.327	51258195	8782710	13941	34852	630	1.55(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.286	23.286	0	1.001	176904202	30084309	51917	129792	579		
341.8567	23.286	23.286	0	1.001	114727964	19617785	34457	86142	569	1.54(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.339						547	1367			
341.8567	19.339						709	1772			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.481	22.421	4	1.024	4152473	701023	51917	129792	14		
341.8567	22.481	22.421	4	1.024	2613329	453840	34457	86142	13	1.59(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	23.968	23.968	0	1.367	56091702	8956077	7762	19405	1154		
369.8919	23.968	23.968	0	1.367	35183911	5701880	5007	12517	1139	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	23.995	23.995	0	1.001	111532802	18081800	11476	28690	1576		
357.8516	23.995	23.995	0	1.001	70663267	11358794	7223	18057	1573	1.58(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.911						11476	28690			
357.8516	22.911						7223	18057			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.099	30.102	0	0.943	31927571	5116694	15279	38197	335		
385.8610	30.099	30.102	0	0.943	62362807	10049266	28842	72105	348	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.126	30.131	0	1.001	112815761	18463364	48873	122182	378		
375.8178	30.126	30.131	0	1.001	91518922	15221715	38672	96680	394	1.23(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.312	30.323	-1	0.950	33944233	5776371	15279	38197	378		
385.8610	30.312	30.323	-1	0.950	66212746	11214448	28842	72105	389	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.339	30.344	0	1.001	119258588	20543798	48873	122182	420		
375.8178	30.339	30.344	0	1.001	98723123	16999042	38672	96680	440	1.21(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.244	31.247	0	0.979	31519259	7453180	15279	38197	488		
385.8610	31.244	31.247	0	0.979	61599700	14255685	28842	72105	494	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.257	31.265	0	1.000	117461840	26806991	48873	122182	549		
375.8178	31.257	31.265	0	1.000	95808681	22209989	38672	96680	574	1.23(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.096	32.099	0	1.006	28814125	7319080	15279	38197	479		
385.8610	32.096	32.099	0	1.006	55960736	14030795	28842	72105	486	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.110	32.115	0	1.000	101890299	25413541	48873	122182	520		
375.8178	32.110	32.115	0	1.000	83047582	21122013	38672	96680	546	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.813						48873	122182			
375.8178	29.813						38672	96680			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.910	31.912	0		52511910	12805184	13768	34420	930		
403.8529	31.910	31.912	0		42220707	10195168	11548	28870	883	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.457	31.452	0	0.986	41450414	10641684	13768	34420	773		
403.8529	31.457	31.452	0	0.986	33211211	8510160	11548	28870	737	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.470	31.470	0	1.000	87537626	23038723	27942	69855	825		
391.8127	31.470	31.470	0	1.000	70874945	18191910	21910	54775	830	1.24(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.563	31.566	0	0.989	47669476	11301600	13768	34420	821		
403.8529	31.563	31.566	0	0.989	38409785	9108712	11548	28870	789	1.24(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.577	31.582	0	1.000	104264488	24258359	27942	69855	868		
391.8127	31.577	31.582	0	1.000	84174069	19892753	21910	54775	908	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.923	31.926	0	1.015	99797219	24421387	27942	69855	874		
391.8127	31.923	31.926	0	1.015	80776914	19846531	21910	54775	906	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.412						27942	69855			
391.8127	30.412						21910	54775			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.567	33.567	0	1.052	23171360	7345725	31014	77535	237		
419.8220	33.567	33.567	0	1.052	52402268	16516100	74183	185457	223	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	117307635	37090120	180273	450682	206		
409.7789	33.579	33.579	0	1.000	113142957	35287943	184483	461207	191	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.624	34.619	0	1.085	21886650	5883467	31014	77535	190		
419.8220	34.612	34.619	0	1.085	49297961	13077653	74183	185457	176	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.624	34.629	0	1.000	95696618	26139394	180273	450682	145		
409.7789	34.624	34.629	0	1.000	92387786	25556834	184483	461207	139	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.107						180273	450682			
409.7789	34.107						184483	461207			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.333	34.340	0	1.076	37011862	10041441	22198	55495	452		
437.8140	34.333	34.340	0	1.076	35133117	9629280	22148	55370	435	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.345	34.349	0	1.000	79879106	22019547	51333	128332	429		
425.7737	34.345	34.349	0	1.000	76310421	21337270	47994	119985	445	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.745						51333	128332			
425.7737	34.745						47994	119985			
13C-OCDD											
469.7779	36.621	36.624	0	1.148	52901559	11882037	5075	12687	2341		
471.7750	36.621	36.624	0	1.148	58407731	13125798	11094	27735	1183	0.91(0.76-1.02)	
OCDF											
441.7428	36.717	36.720	0	1.003	143317739	34056066	10453	26132	3258		
443.7399	36.717	36.720	0	1.003	160458071	38120299	12085	30212	3154	0.89(0.76-1.02)	
OCDD											
457.7377	36.633	36.636	0	1.000	121973324	27802079	12265	30662	2267		
459.7348	36.633	36.636	0	1.000	137299882	30917054	15993	39982	1933	0.89(0.76-1.02)	

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d
Lims ID: ICV
Client ID:
Inject. Date: 14-Nov-2019 14:22:45 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 10D5 Operator: SMA
Lims Batch ID: 338471 Lims Sample ID: 9
Sublist: chrom-Dioxin_10D5*sub1

Non-2,3,7,8-sub-TCDF, RT: 16.769

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	100.000	168537488	43357007

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		100.000	168537488	43357007

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.414	206397	52842	297083	81682	0.3317	0.69	
Signal Totals:							
	206397	52842	297083	81682			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	503480	134524				0.69	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3317 = (503480 * 100.000) / (168537488 * 0.901)

Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d
Lims ID: ICV
Client ID:
Inject. Date: 14-Nov-2019 14:22:45 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 10D5 Operator: SMA
Lims Batch ID: 338471 Lims Sample ID: 9
Sublist: chrom-Dioxin_10D5*sub1

Non-2,3,7,8-sub-TCDD, RT: 17.207

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.070	D 13C-2,3,7,8-TCDD	100.000	122616706	29785013

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.070		100.000	122616706	29785013

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.638	447986	123608	598007	164265	0.7974	0.75	
Signal Totals:							
	447986	123608	598007	164265			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1045993	287873				0.75	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7974 = (1045993 * 100.000) / (122616706 * 1.070)

Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d
Lims ID: ICV
Client ID:
Inject. Date: 14-Nov-2019 14:22:45 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 10D5 Operator: SMA
Lims Batch ID: 338471 Lims Sample ID: 9
Sublist: chrom-Dioxin_10D5*sub1

Non-2,3,7,8-sub-PeCDF, RT: 22.421

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970	D 13C-1,2,3,7,8-PeCDF	100.000	131024591	23613193
2,3,4,7,8-PeCDF	0.999	D 13C-2,3,4,7,8-PeCDF	100.000	130947062	22415827

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.984		100.000	130985826	23014510

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.481	4152473	701023	2613329	453840	5.25	1.59	
Signal Totals:							
	4152473	701023	2613329	453840			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6765802	1154863				1.59	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.247 = (6765802 * 100.000) / (130985826 * 0.984)

Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

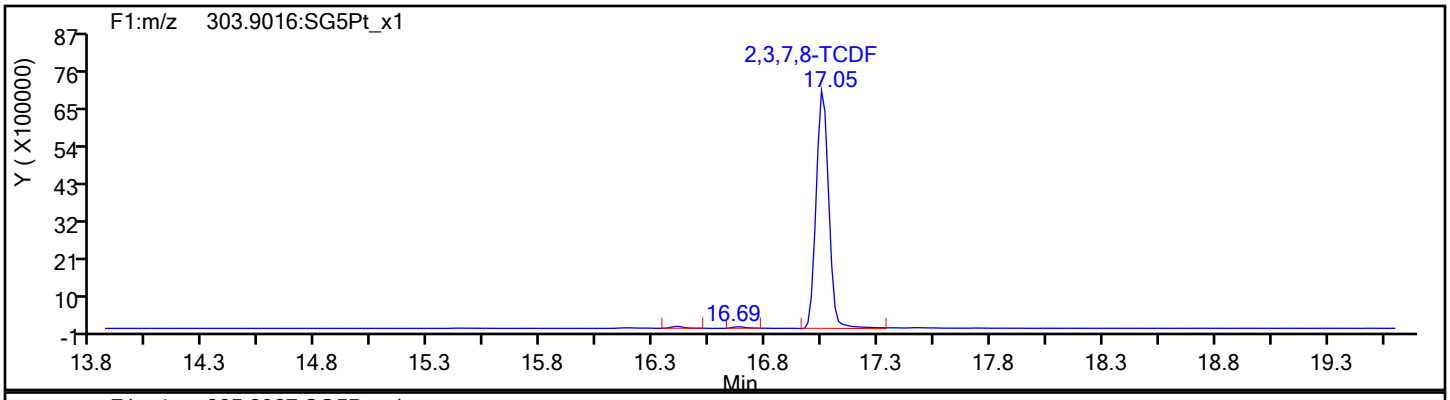
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

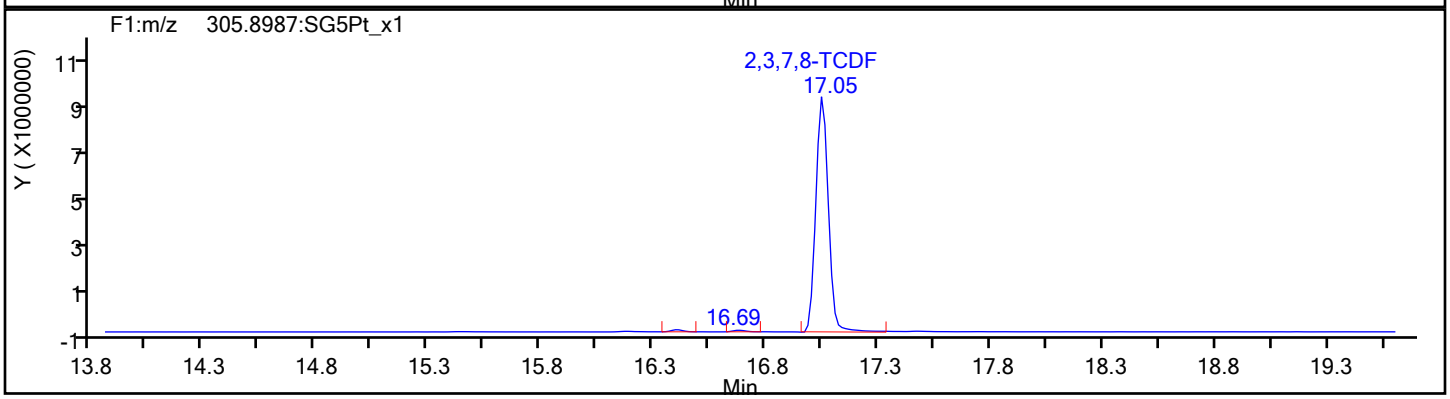
Client ID:

Worklist#: 338471 Sample Line#: 9

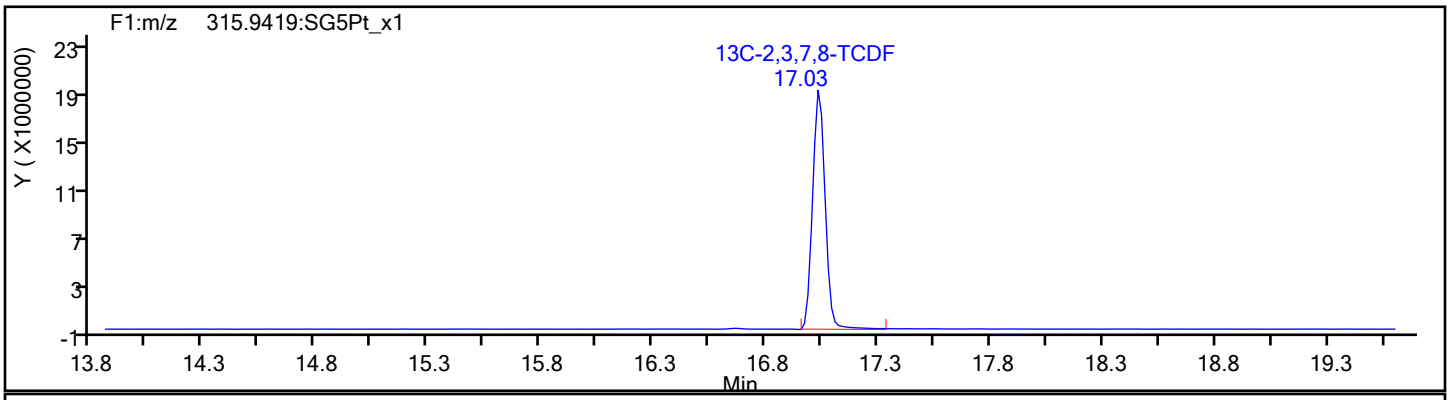
Column Type: DB-5 Column Dia: 0.32 mm

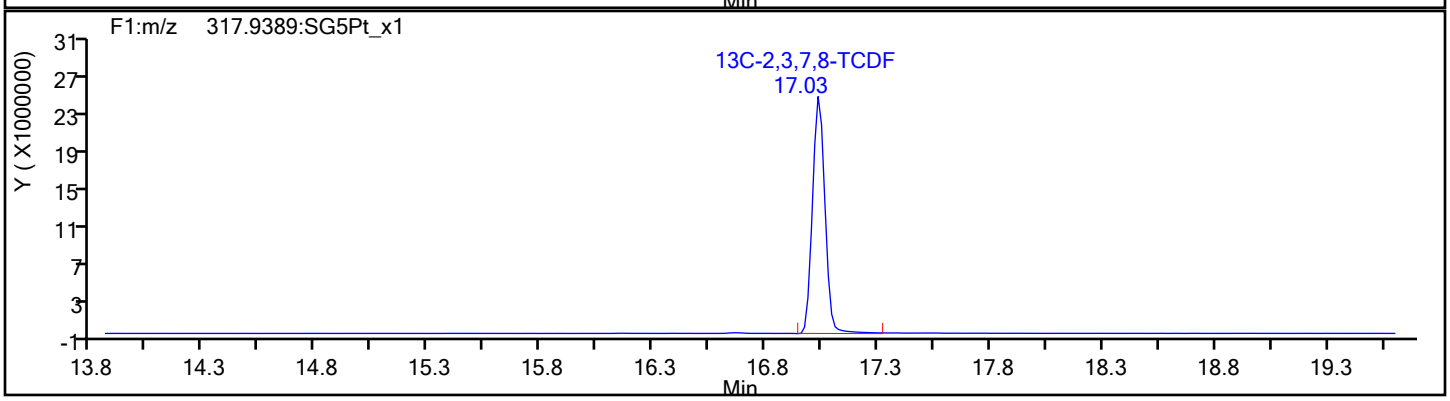
TCDF





TCDF Standards



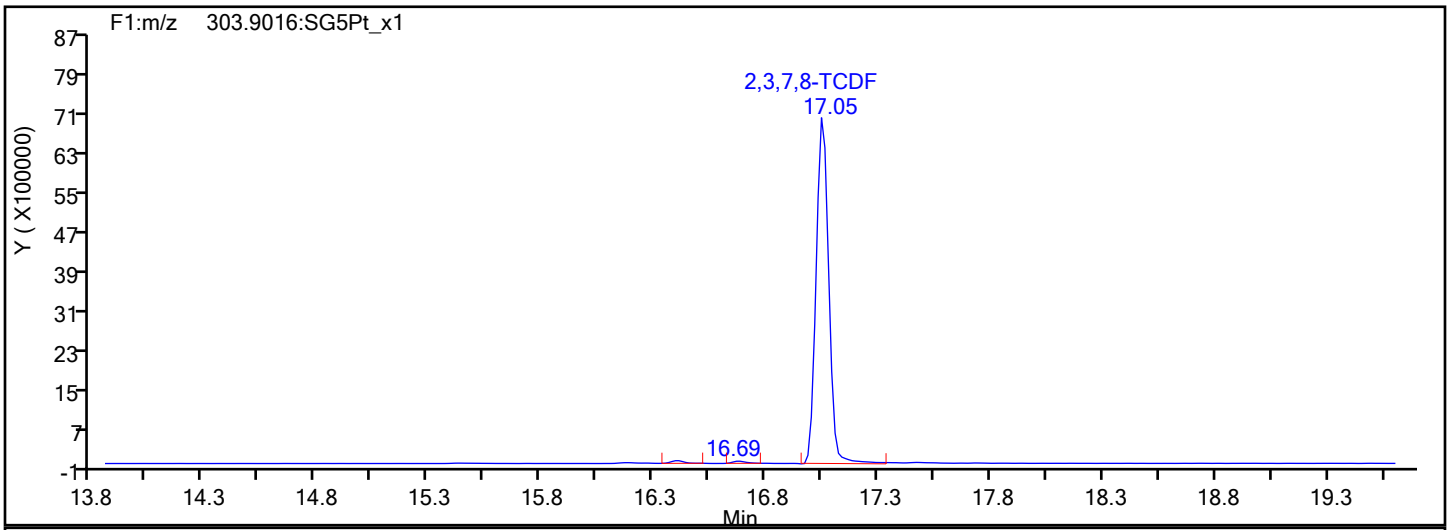


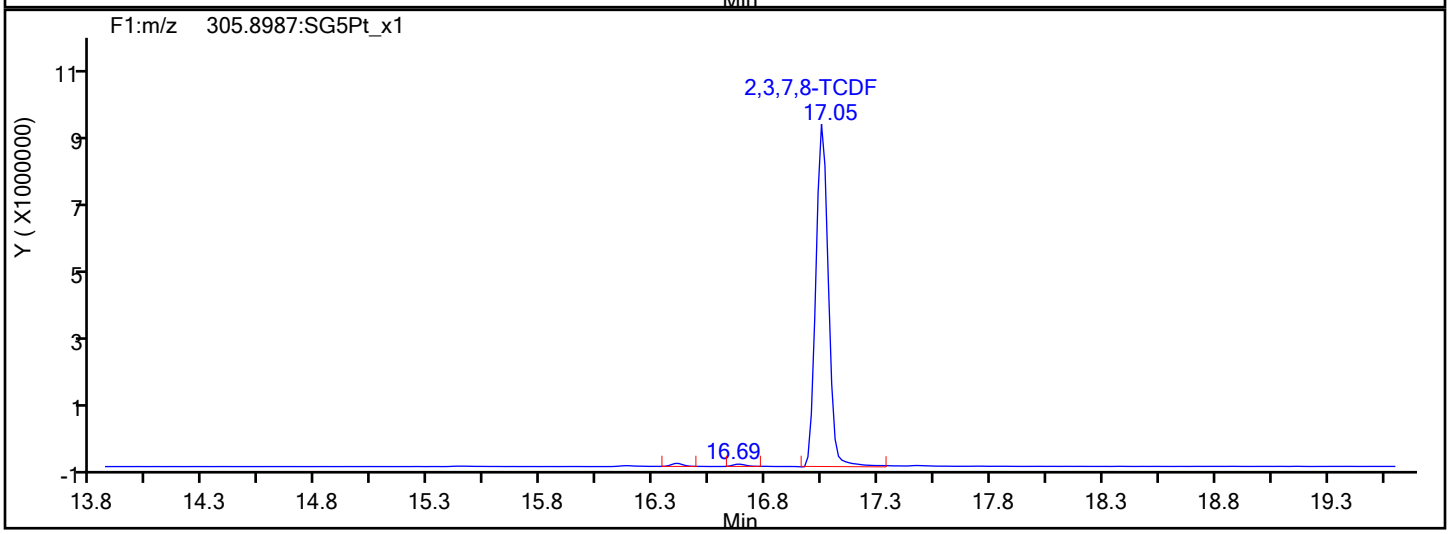
Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

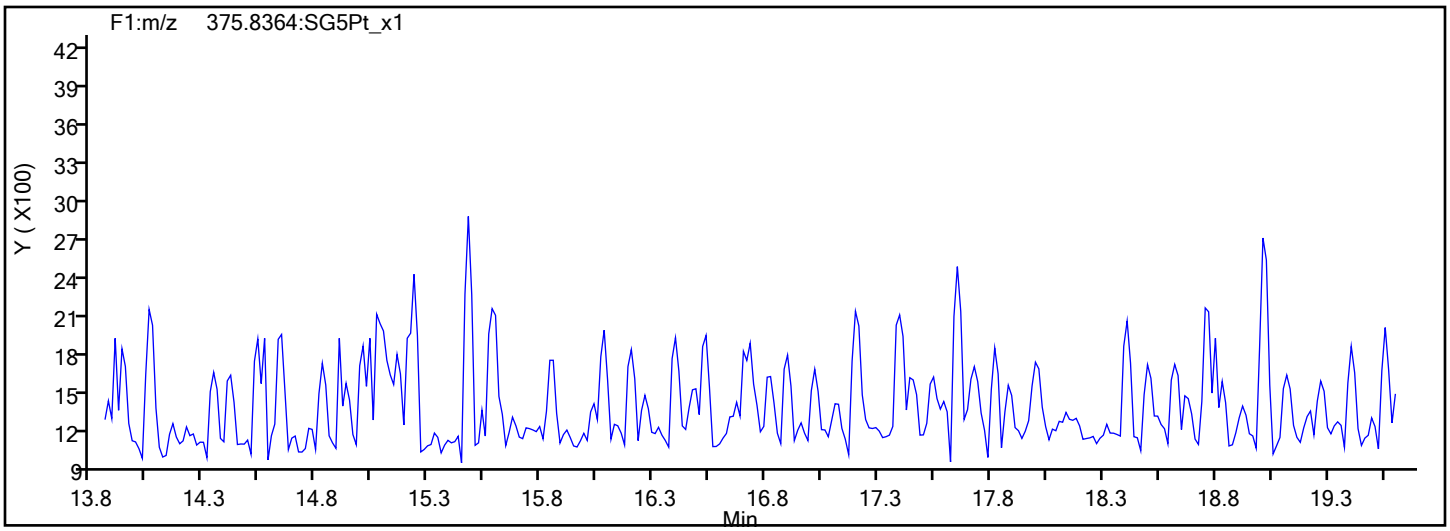
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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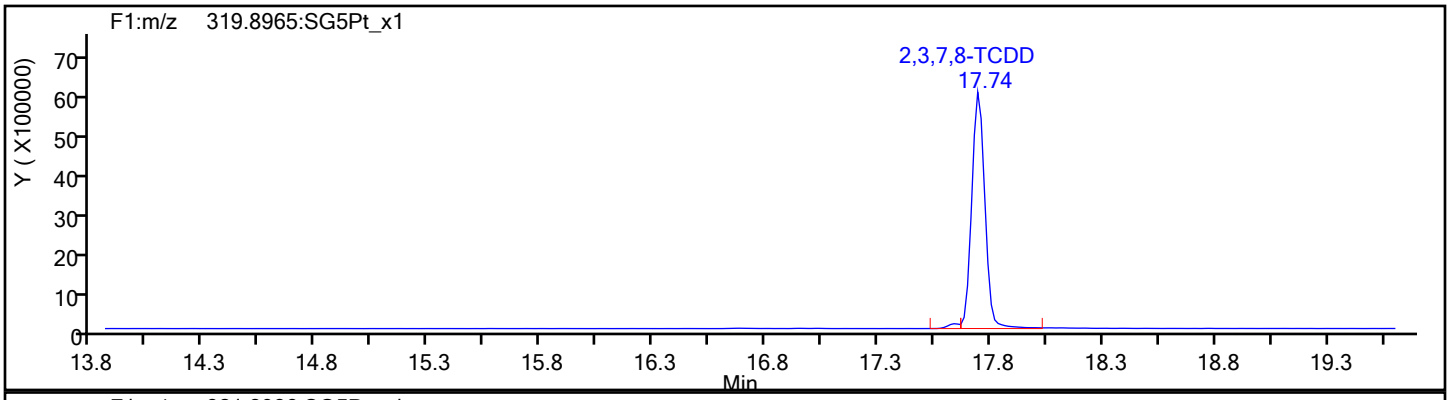
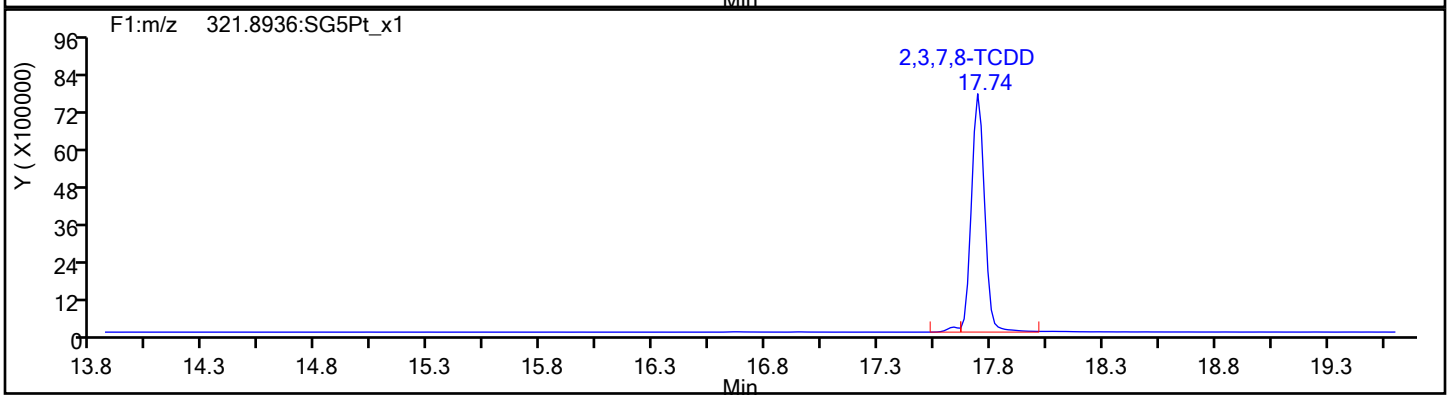
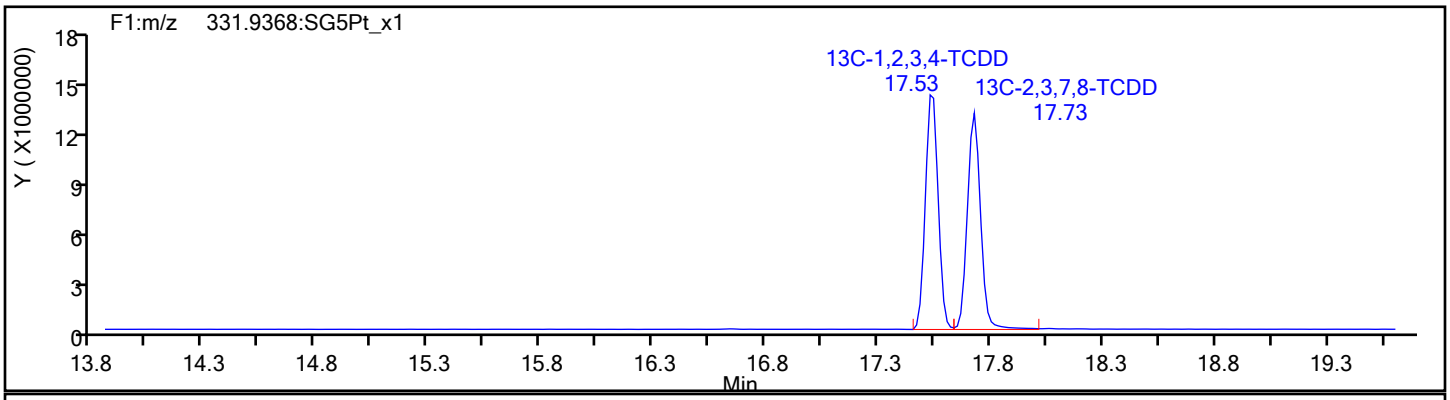
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

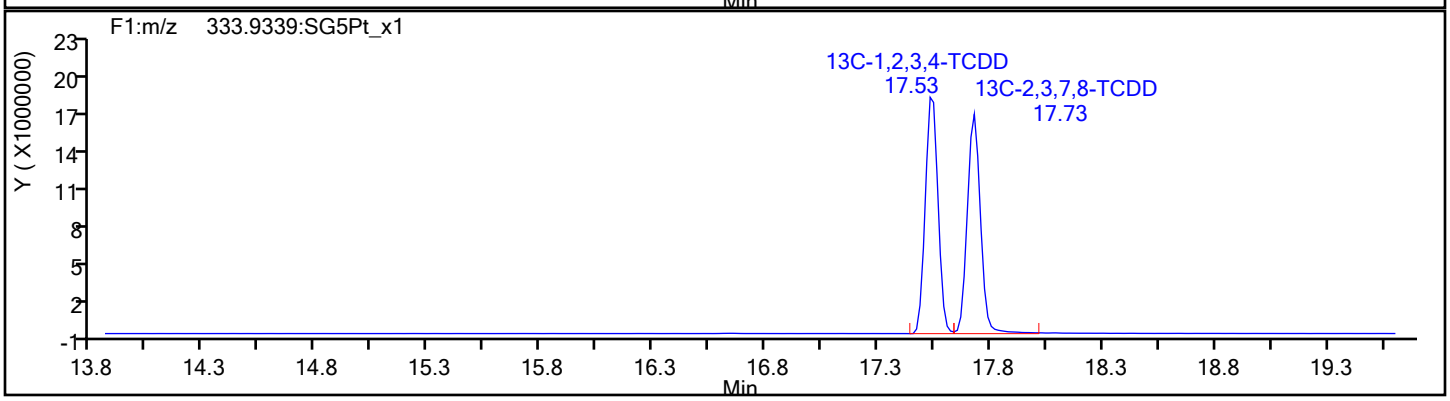
TCDD





TCDD Standards





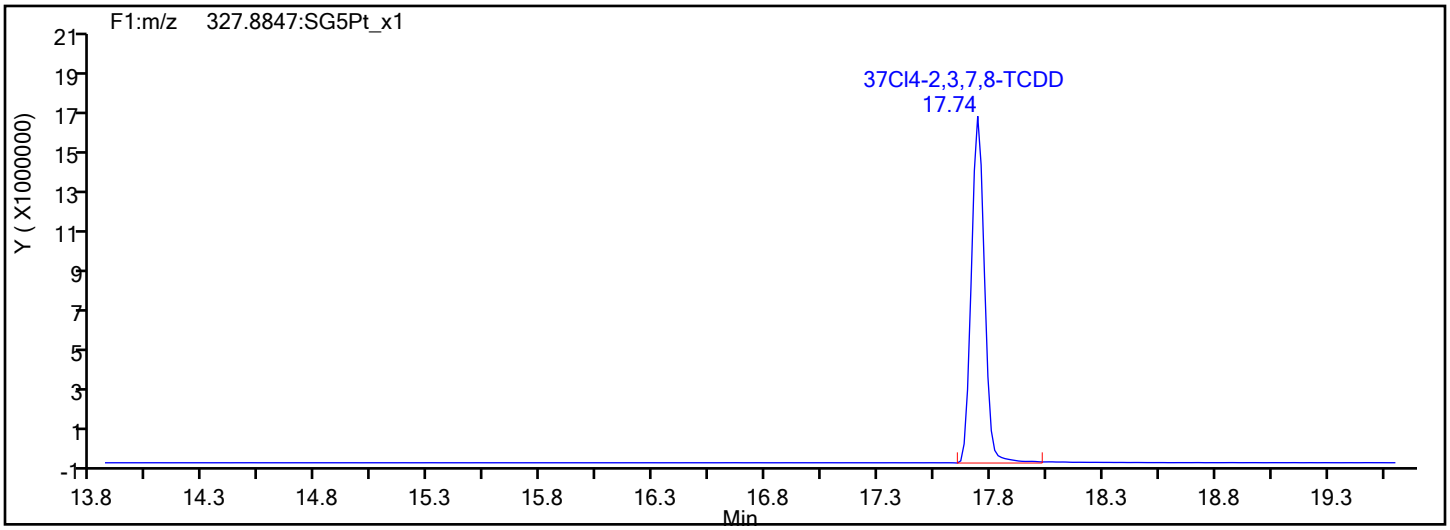
Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

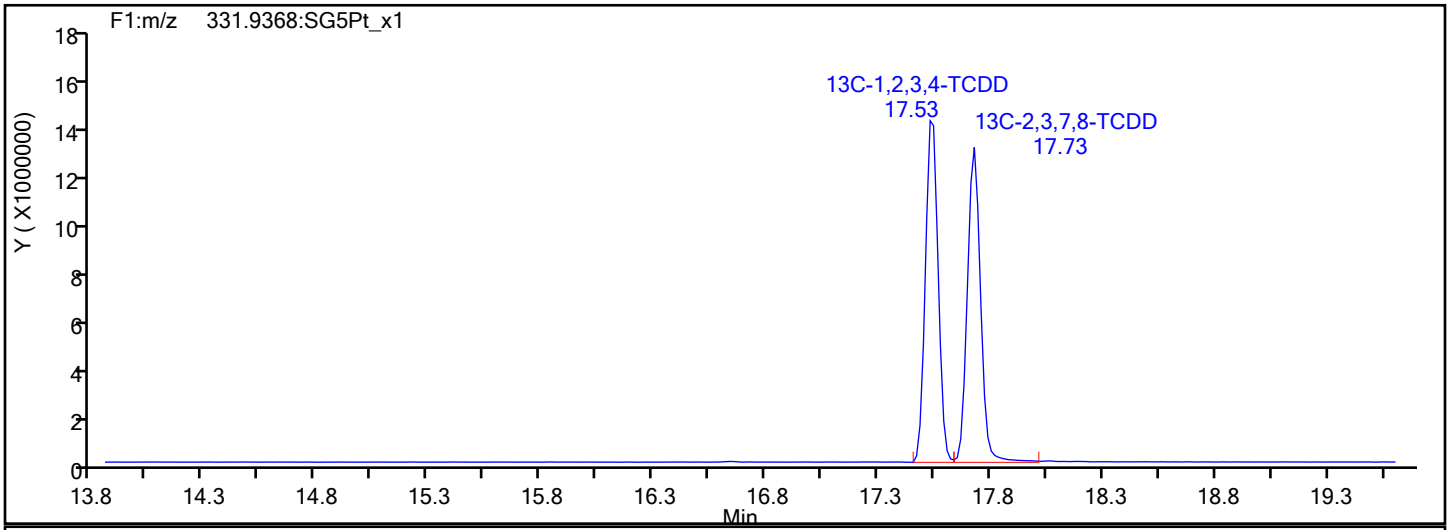
Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

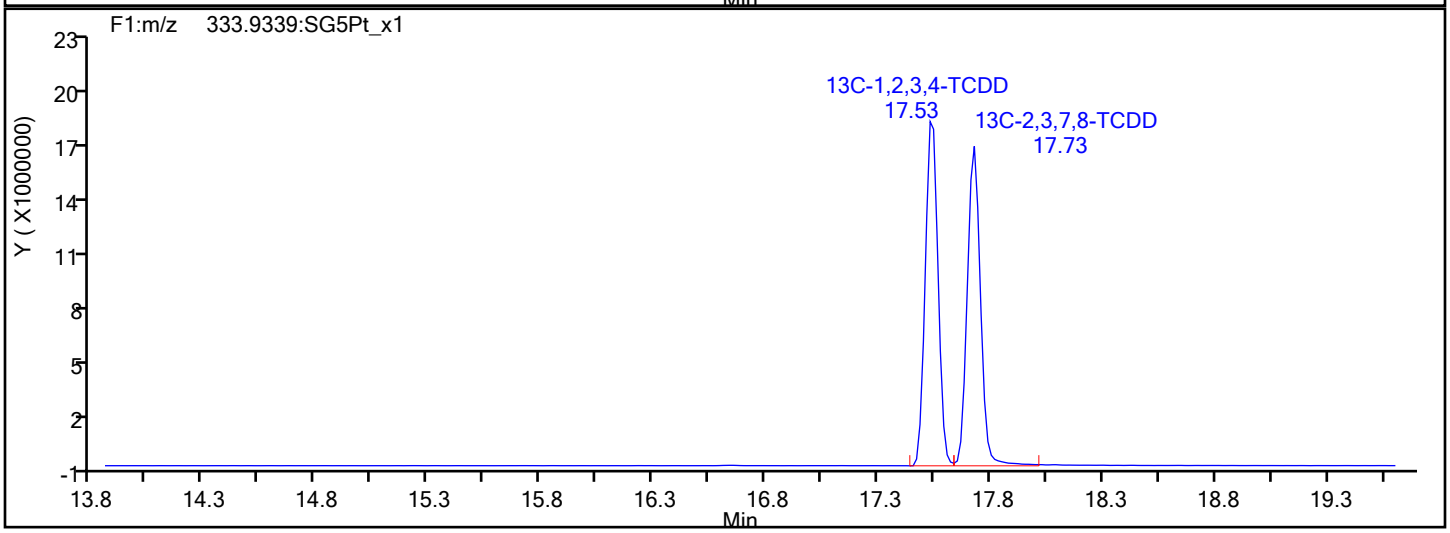
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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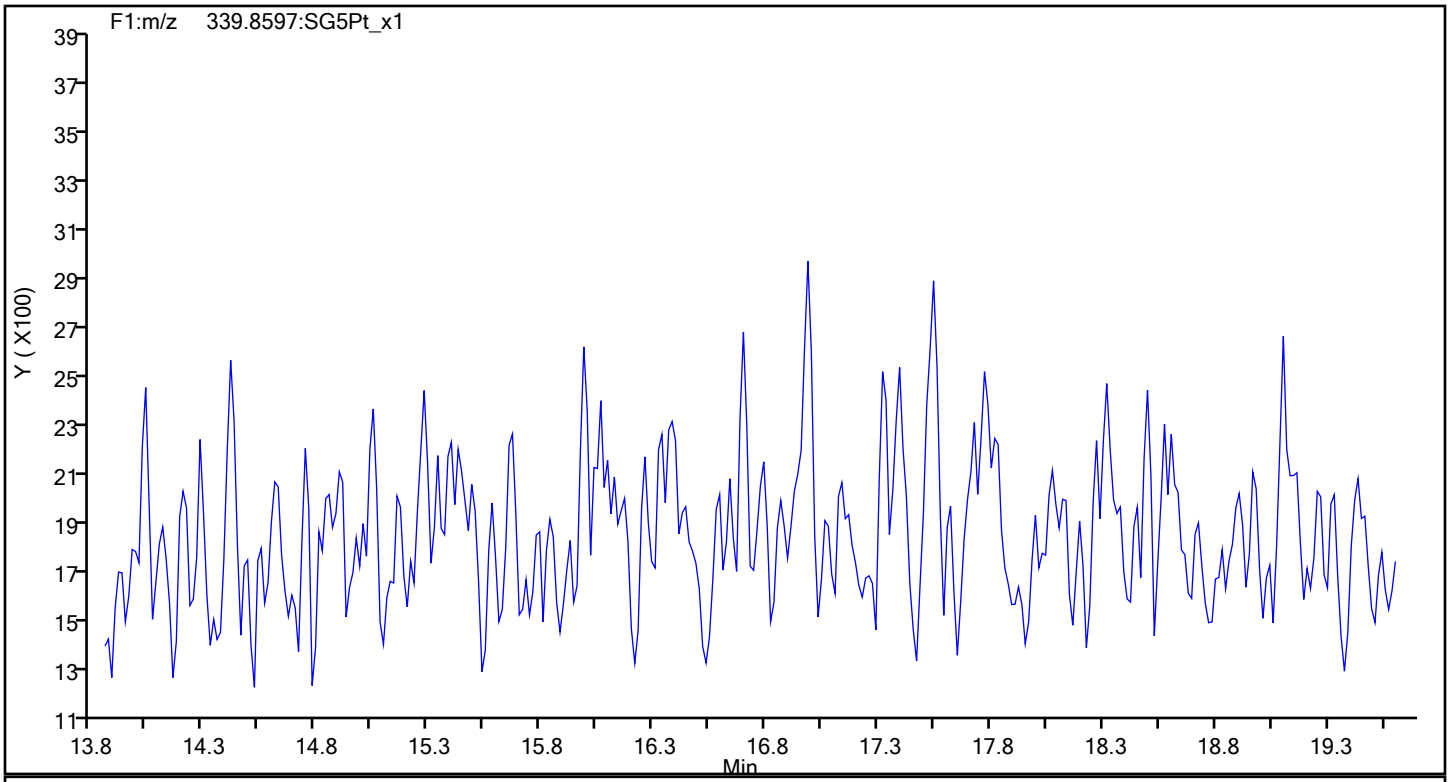
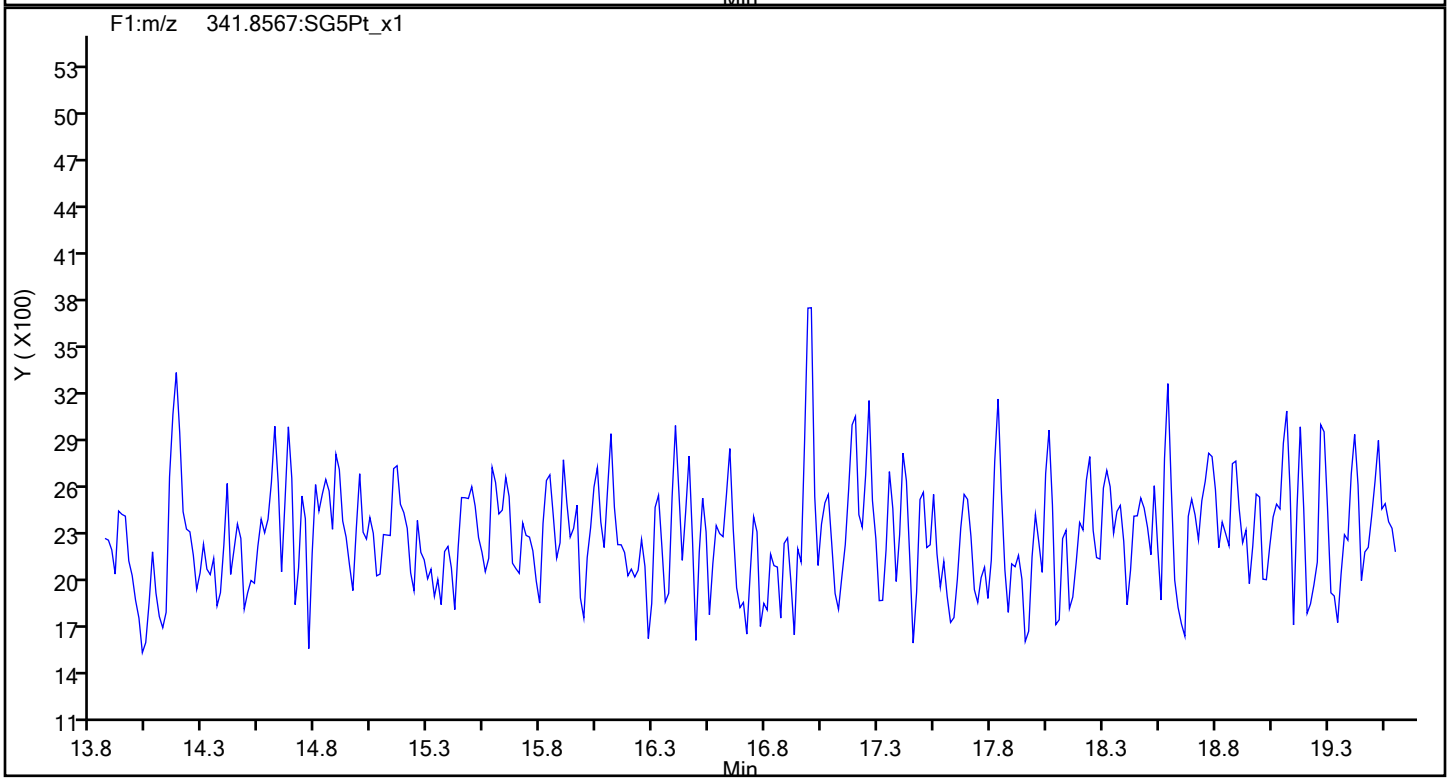
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



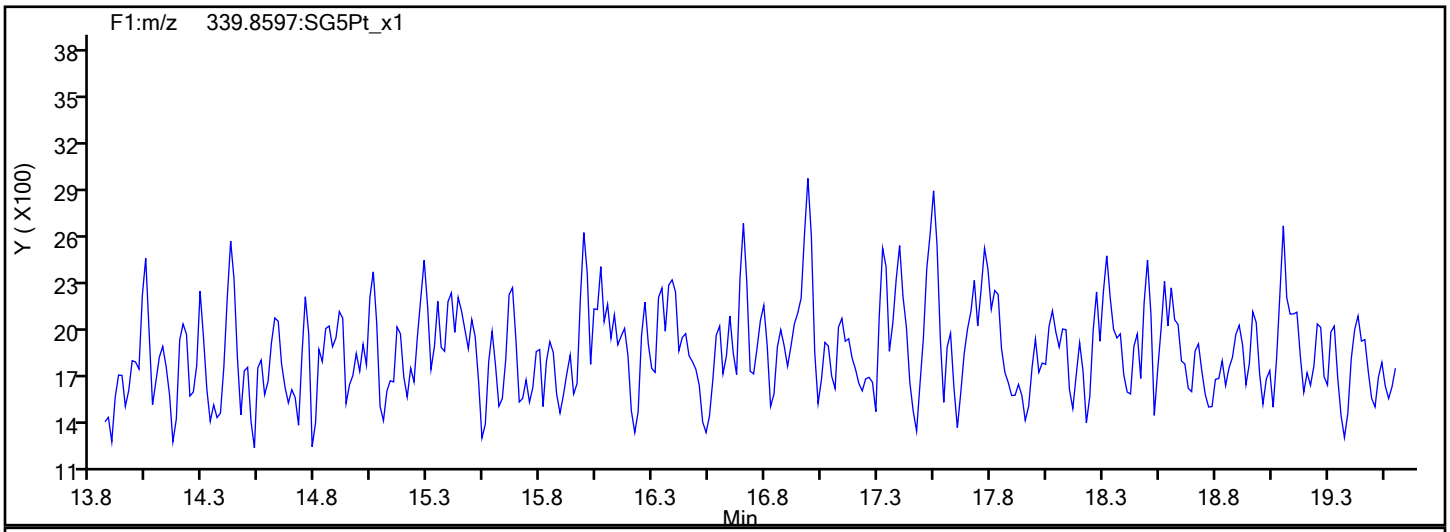


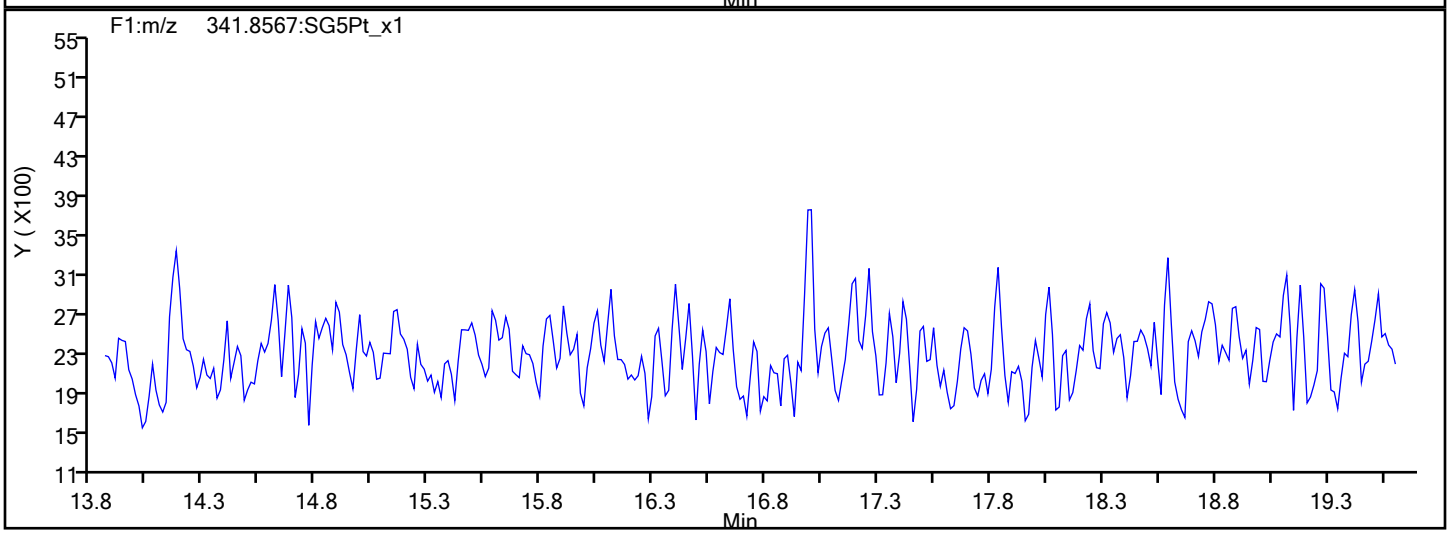
Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

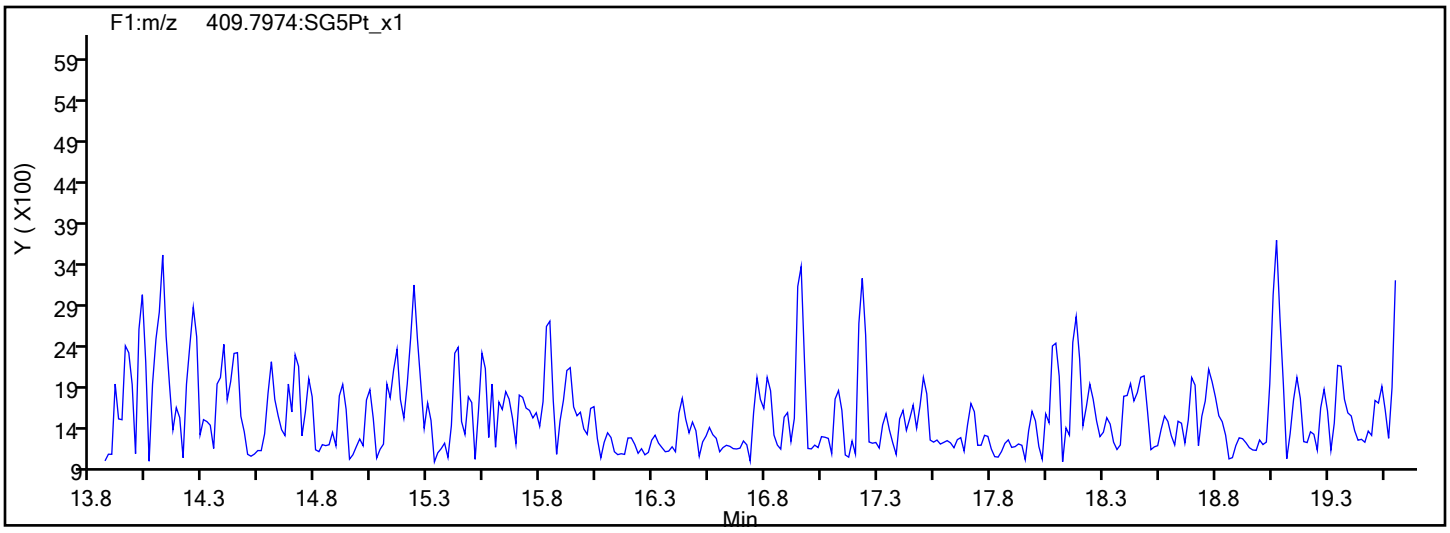
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

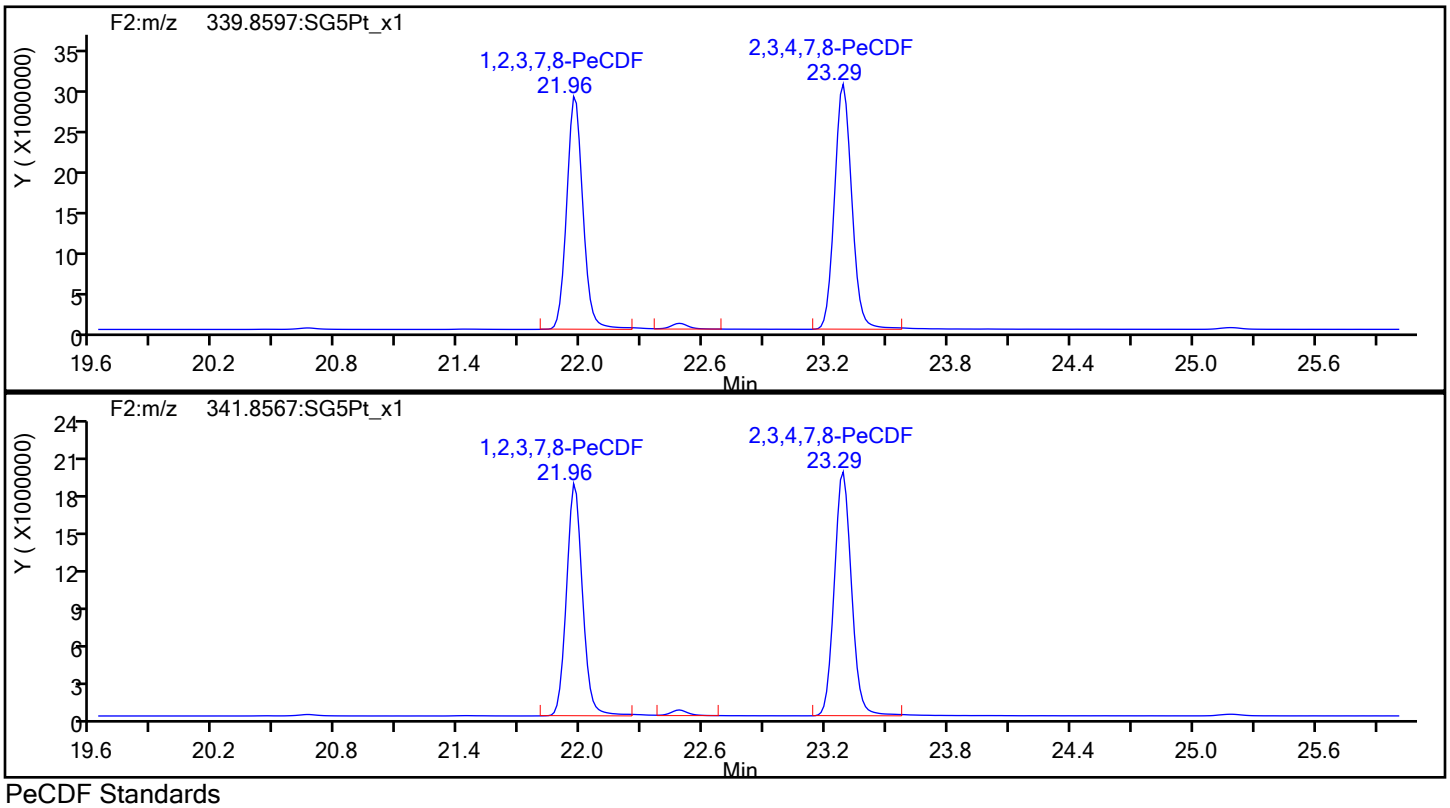


Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

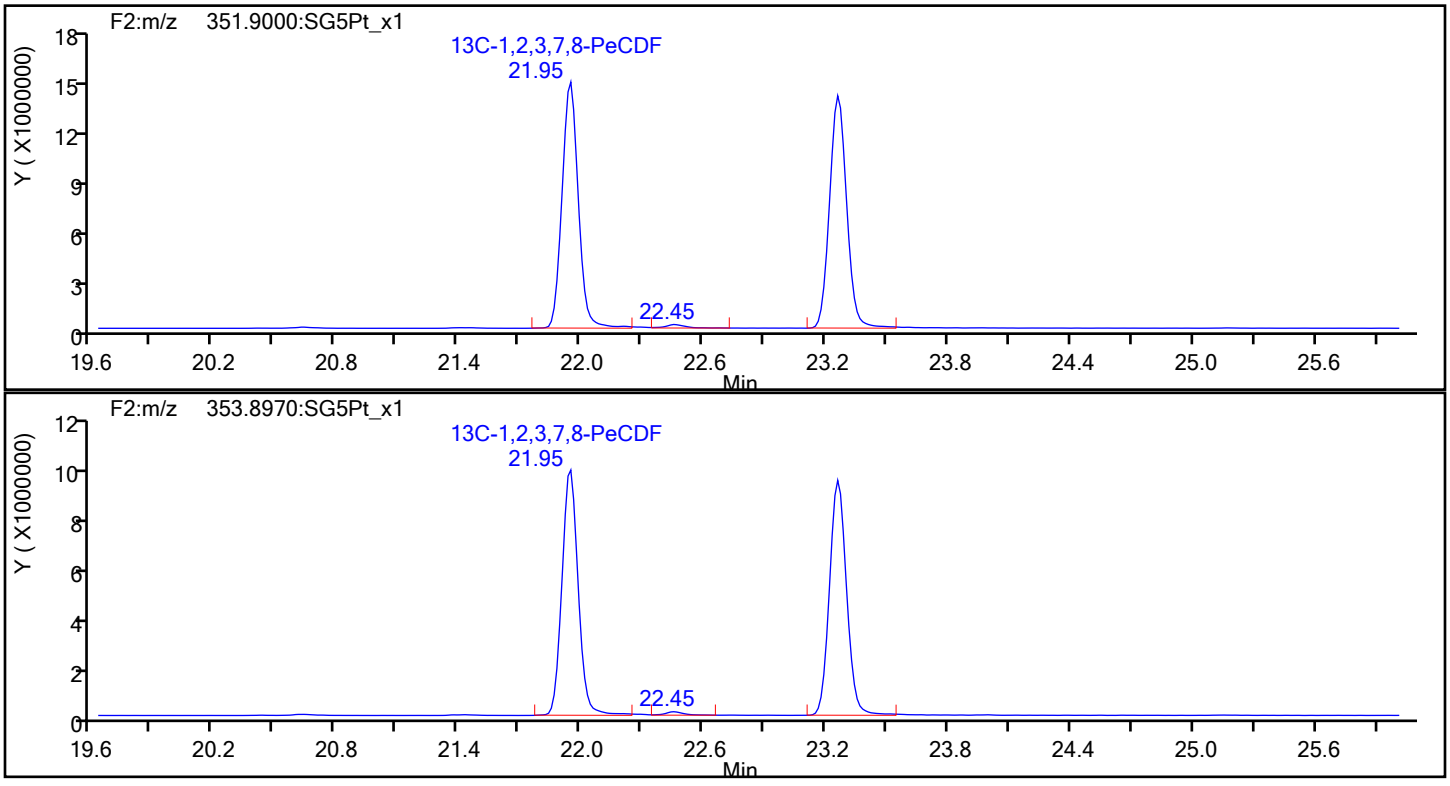
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

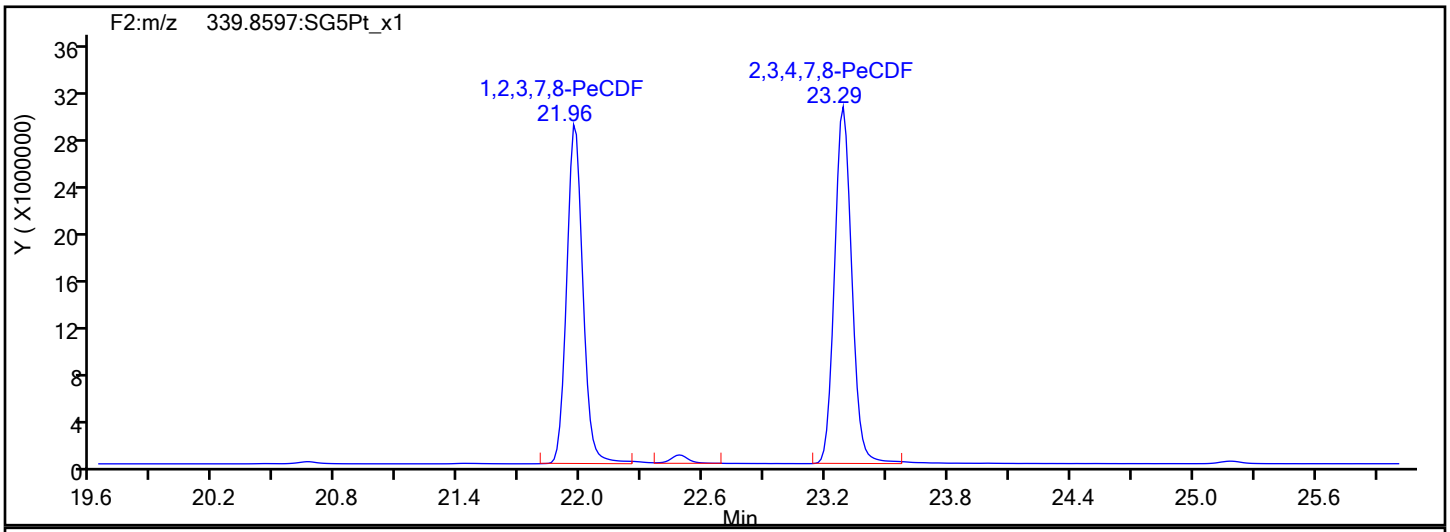


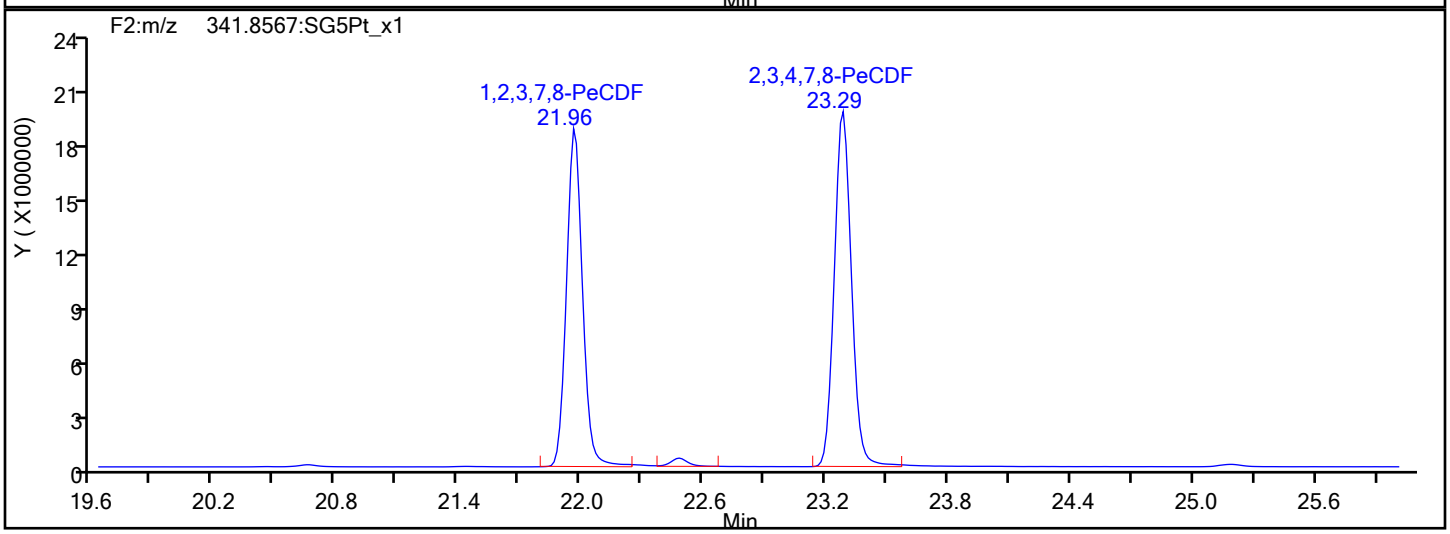
Report Date: 14-Nov-2019 15:38:34 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

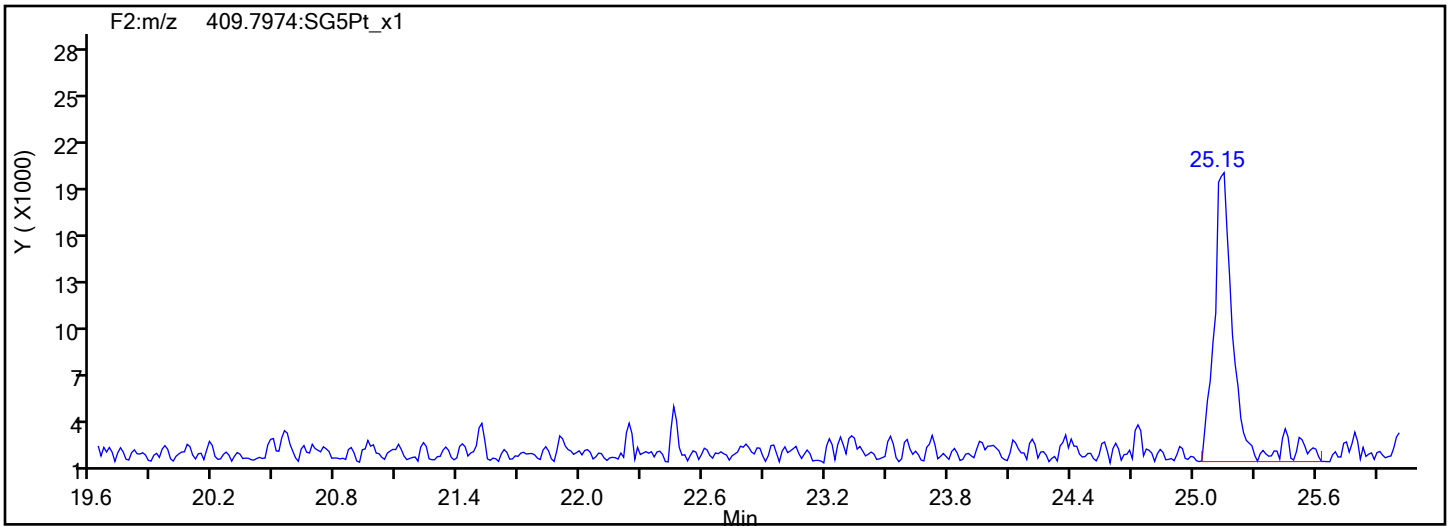
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

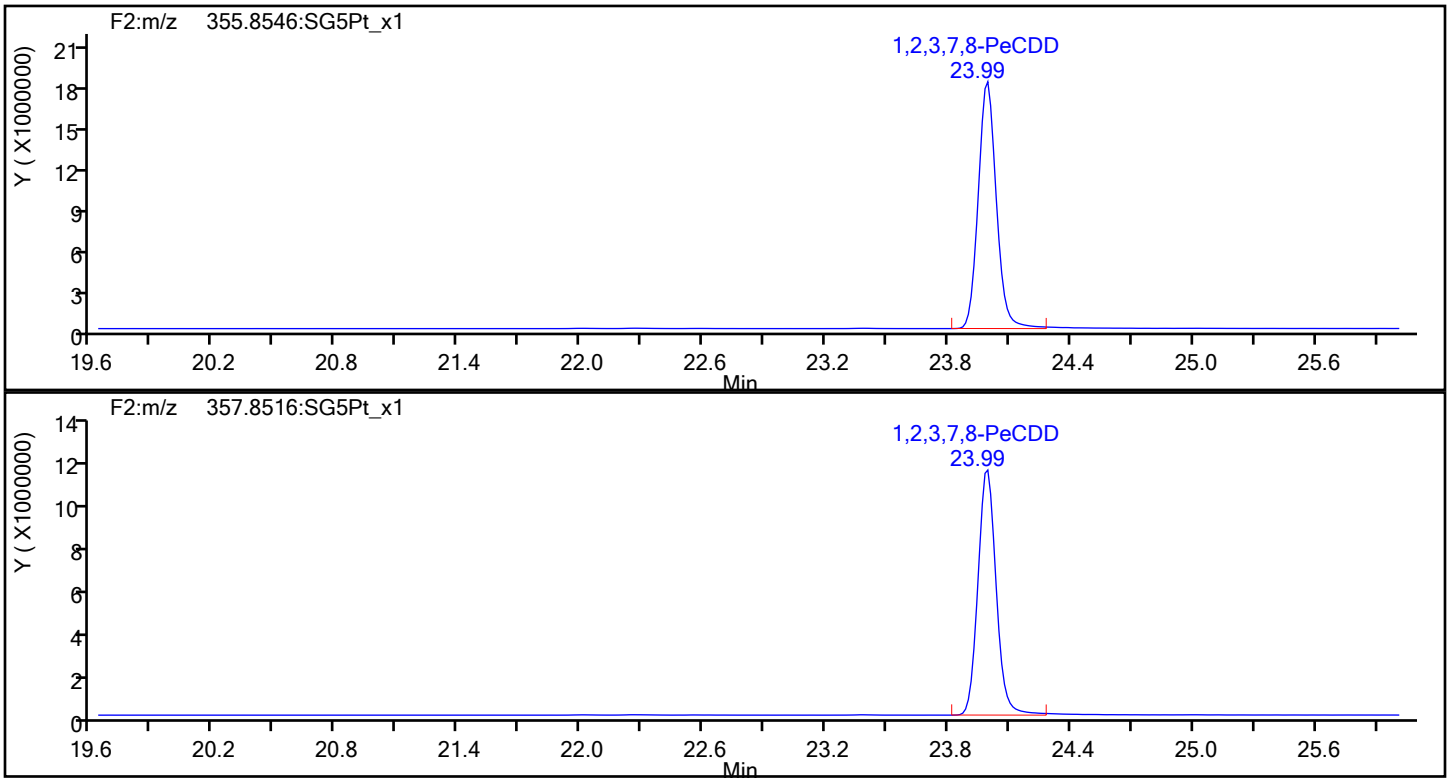
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

Client ID:

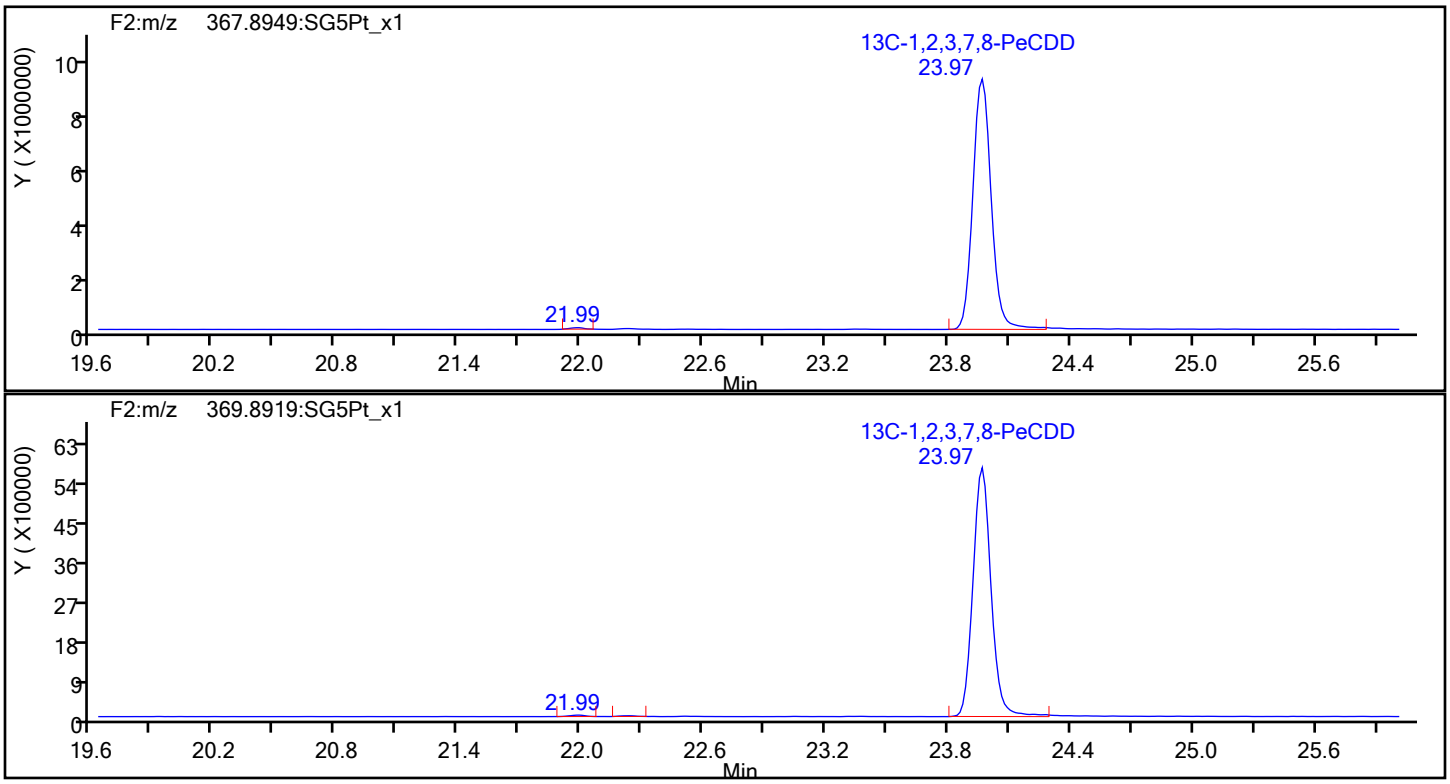
Worklist#: 338471 Sample Line#: 9

Column Type: DB-5 Column Dia: 0.32 mm

PeCDD



PeCDD Standards



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

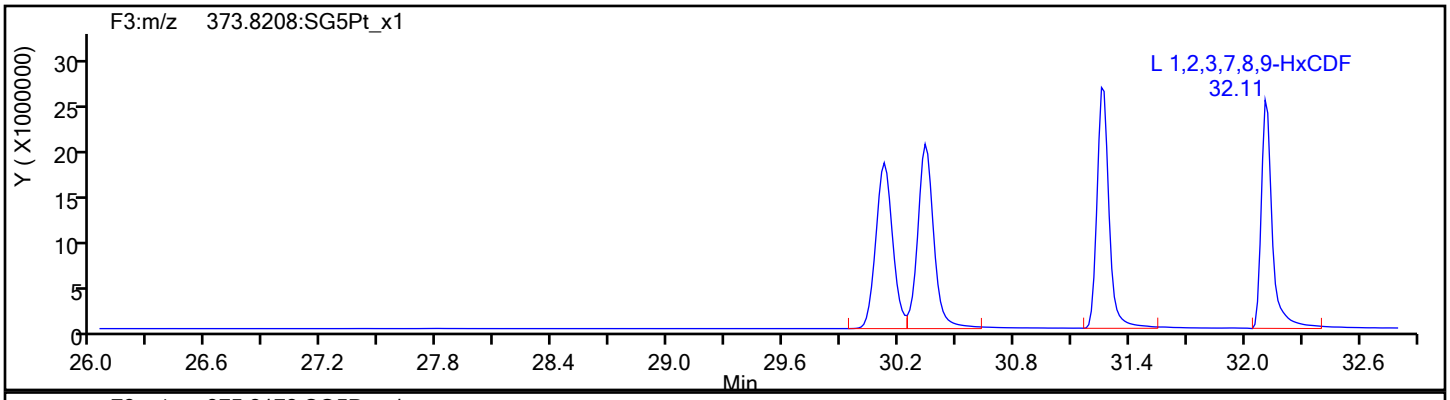
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

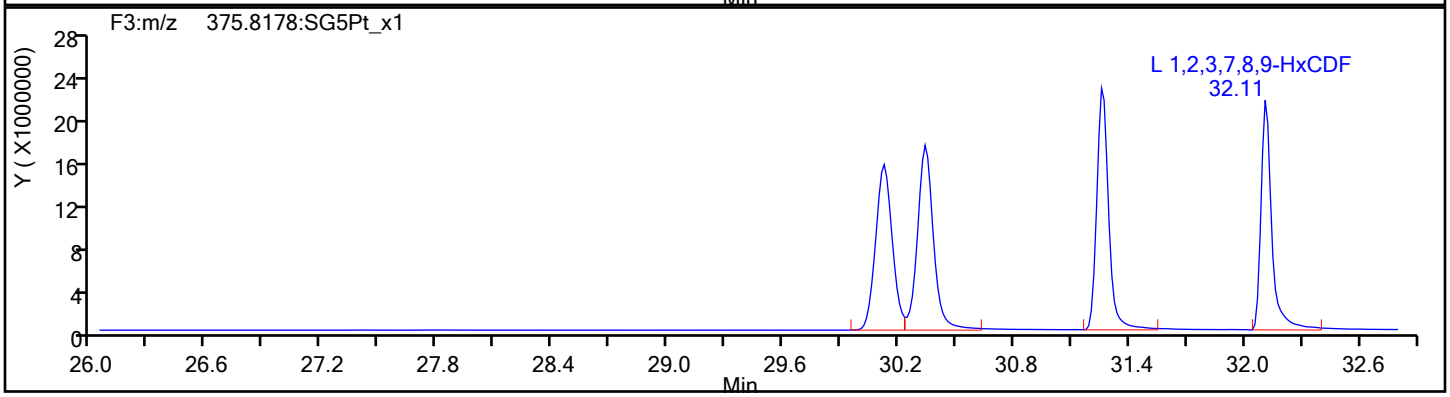
Client ID:

Worklist#: 338471 Sample Line#: 9

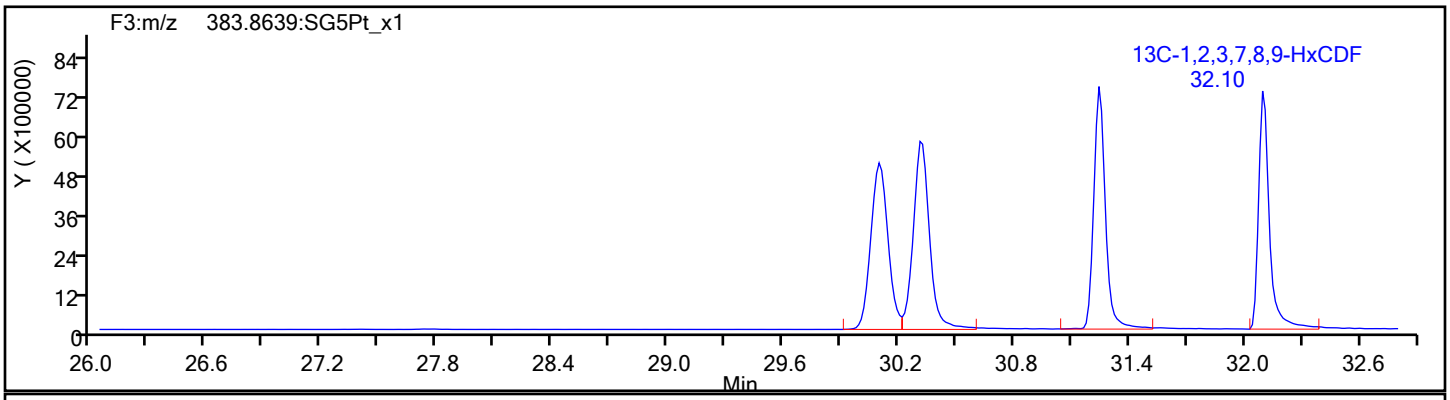
Column Type: DB-5 Column Dia: 0.32 mm

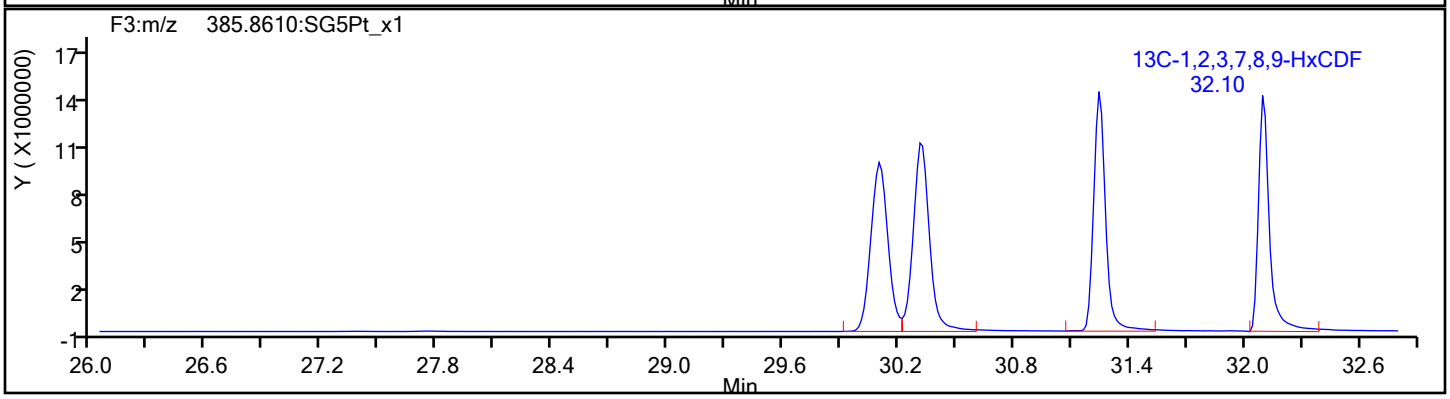
HxCDF





HxCDF Standards



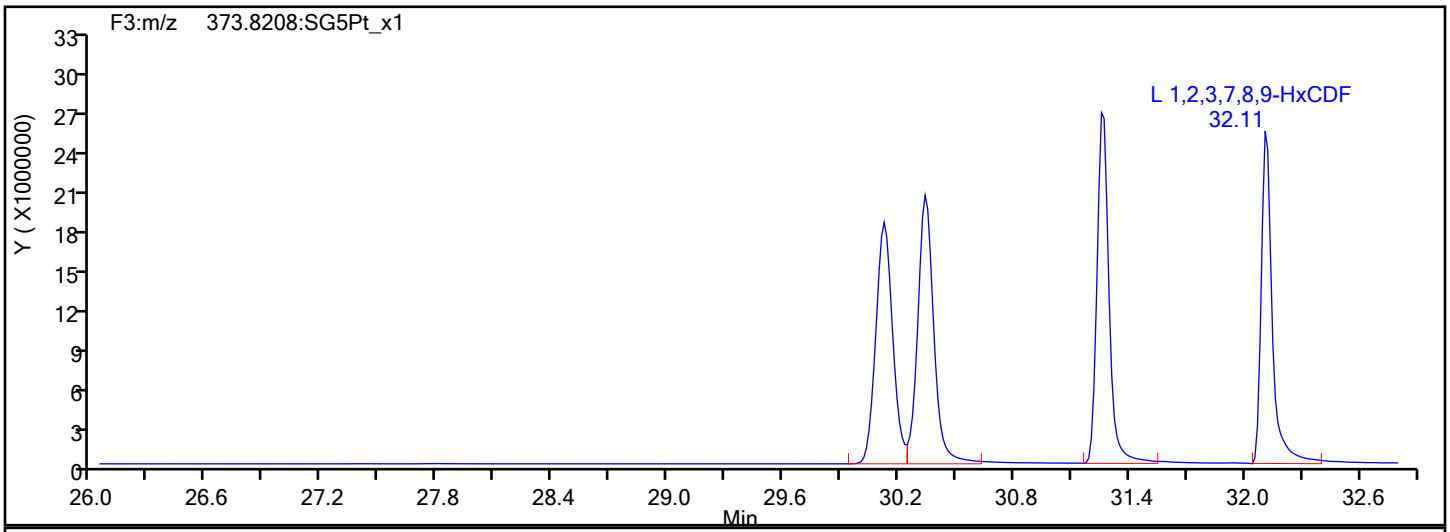


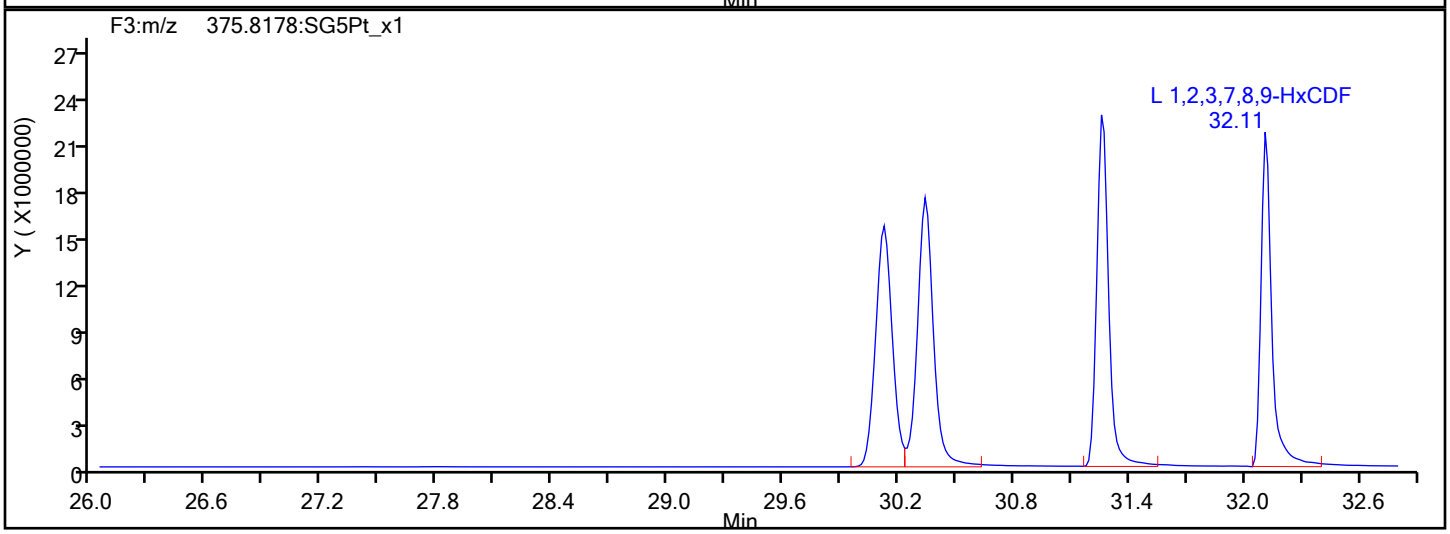
Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

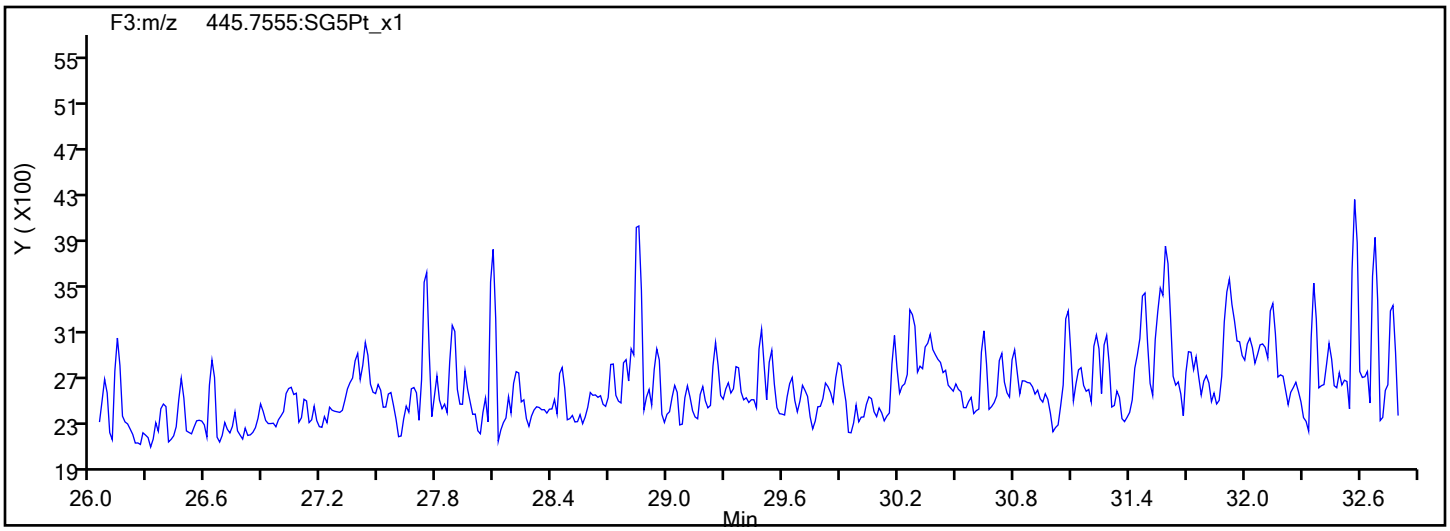
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

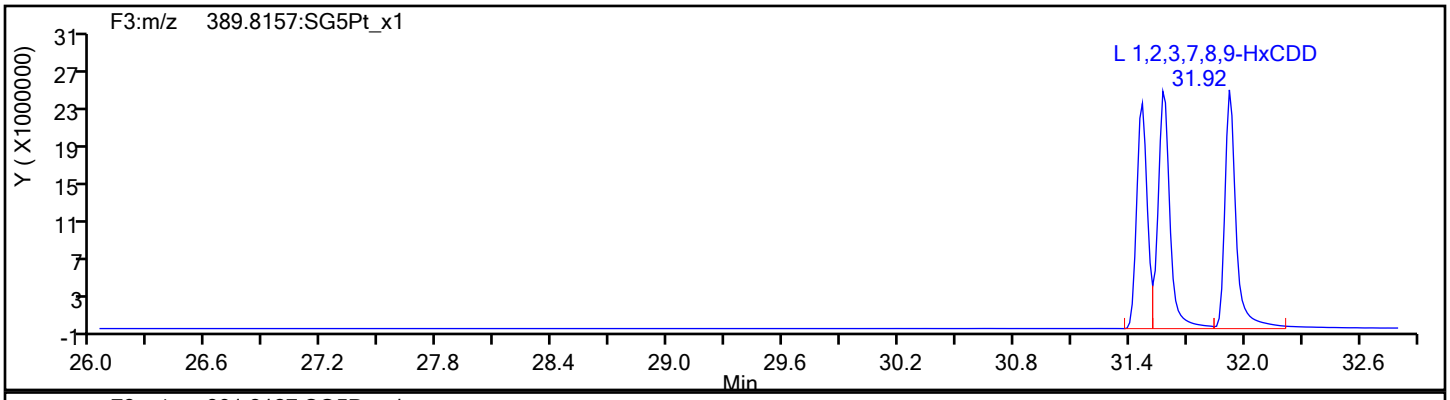
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

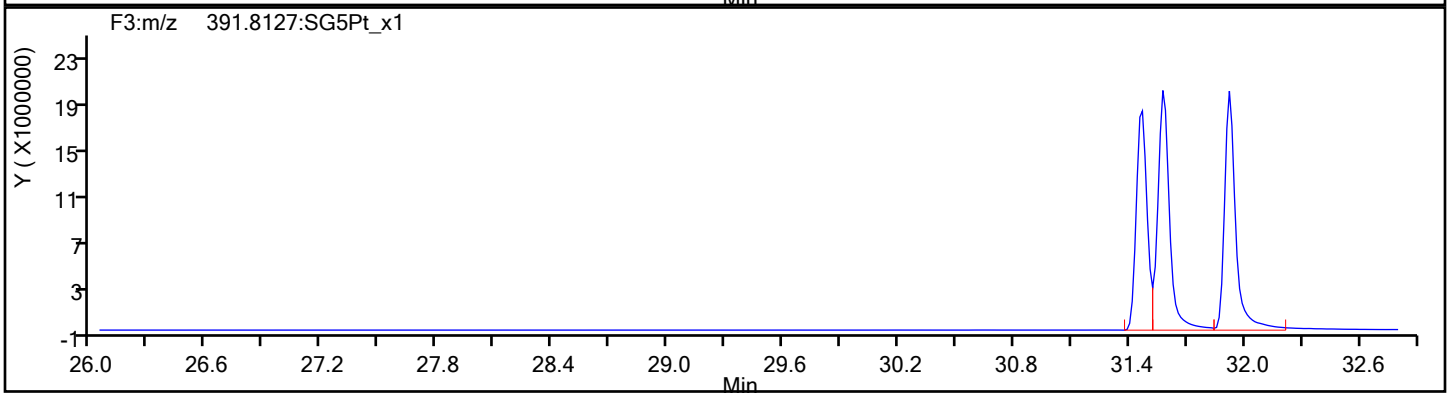
Client ID:

Worklist#: 338471 Sample Line#: 9

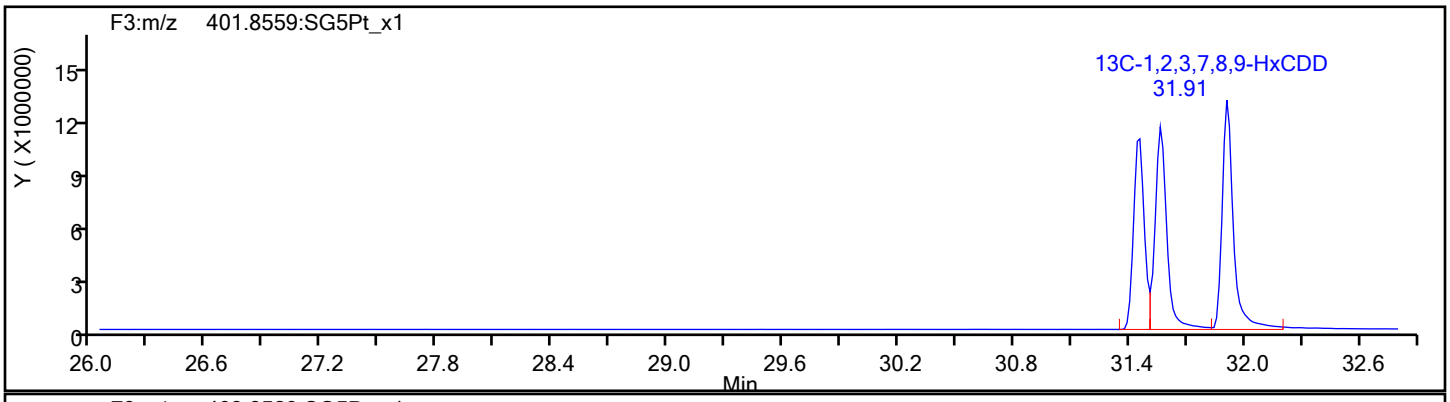
Column Type: DB-5 Column Dia: 0.32 mm

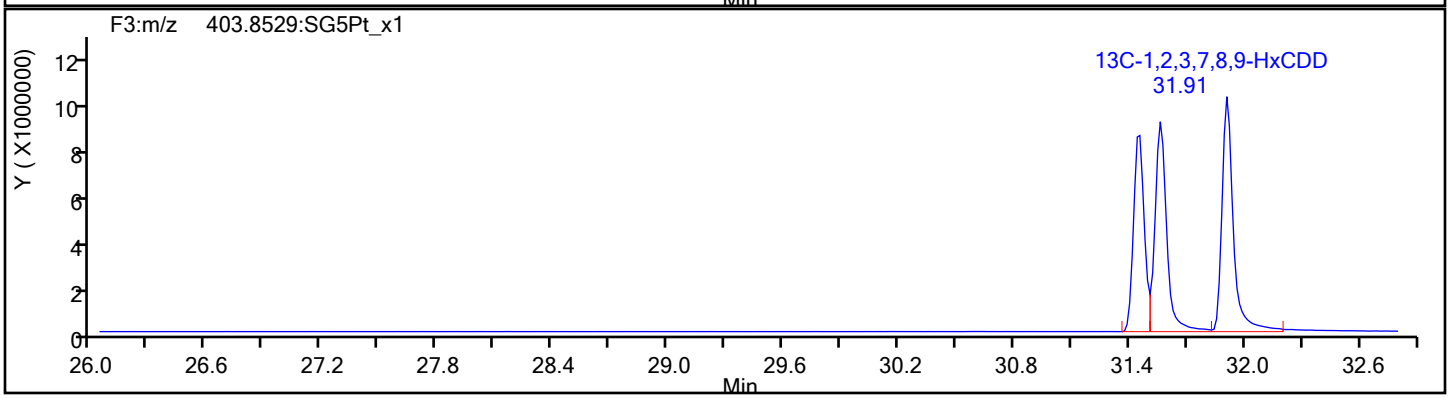
HxCDD





HxCDD Standards





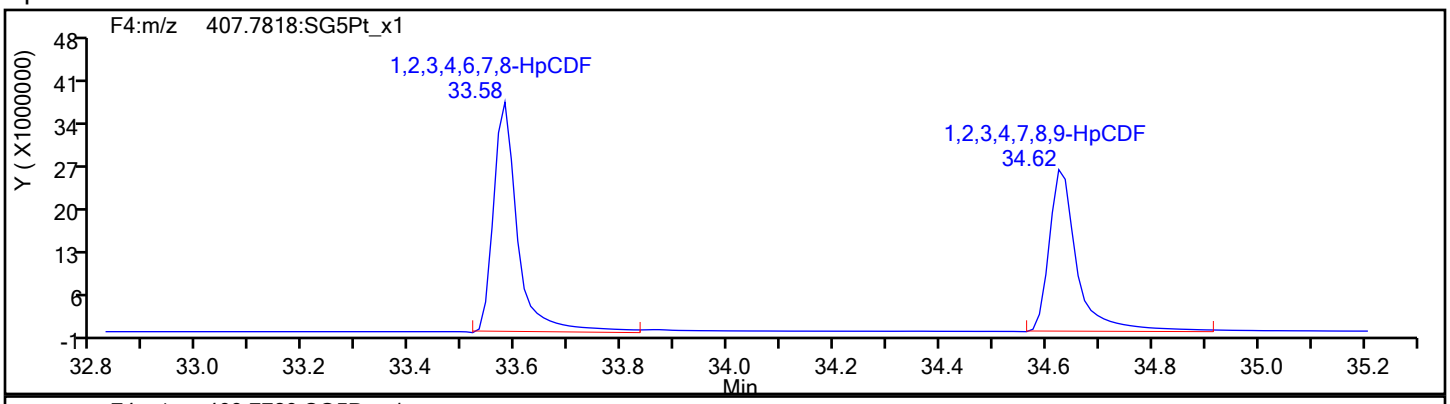
Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

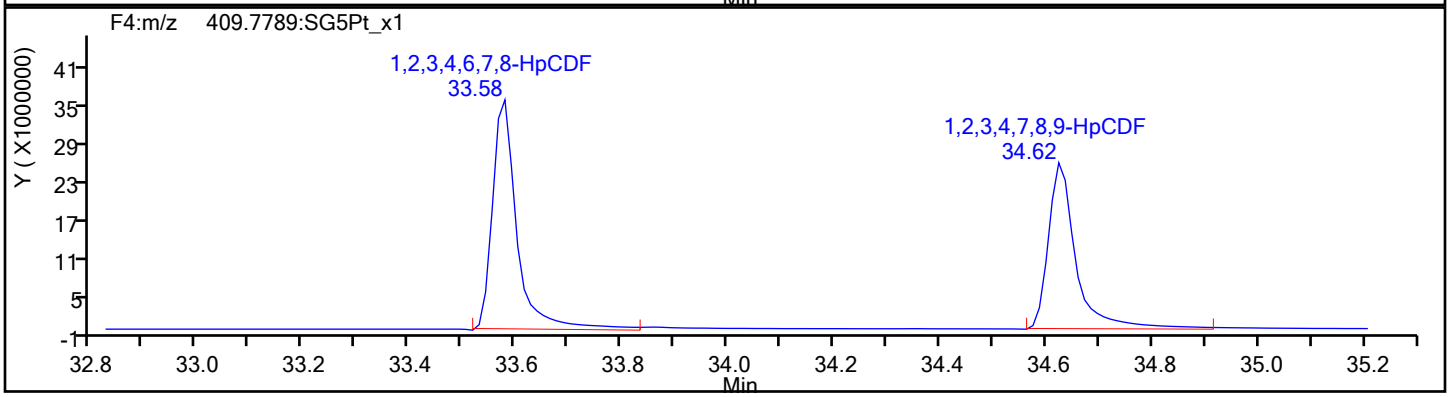
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

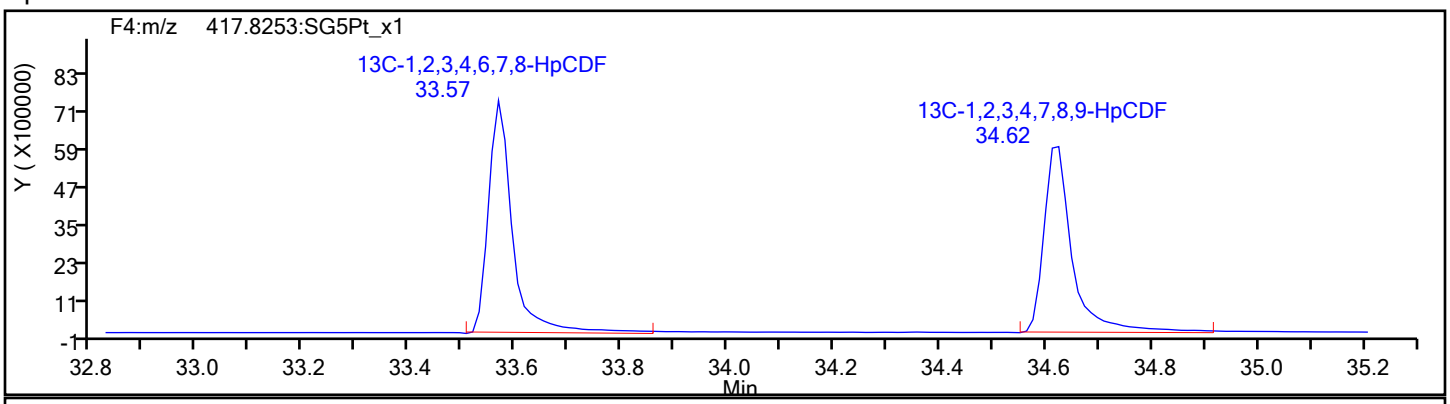
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

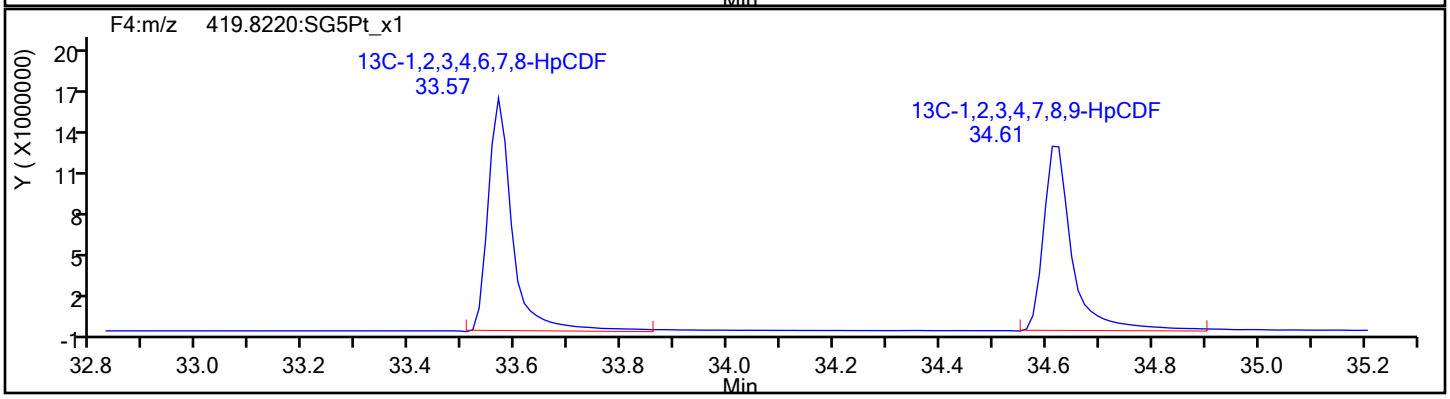
HpCDF





HpCDF Standards



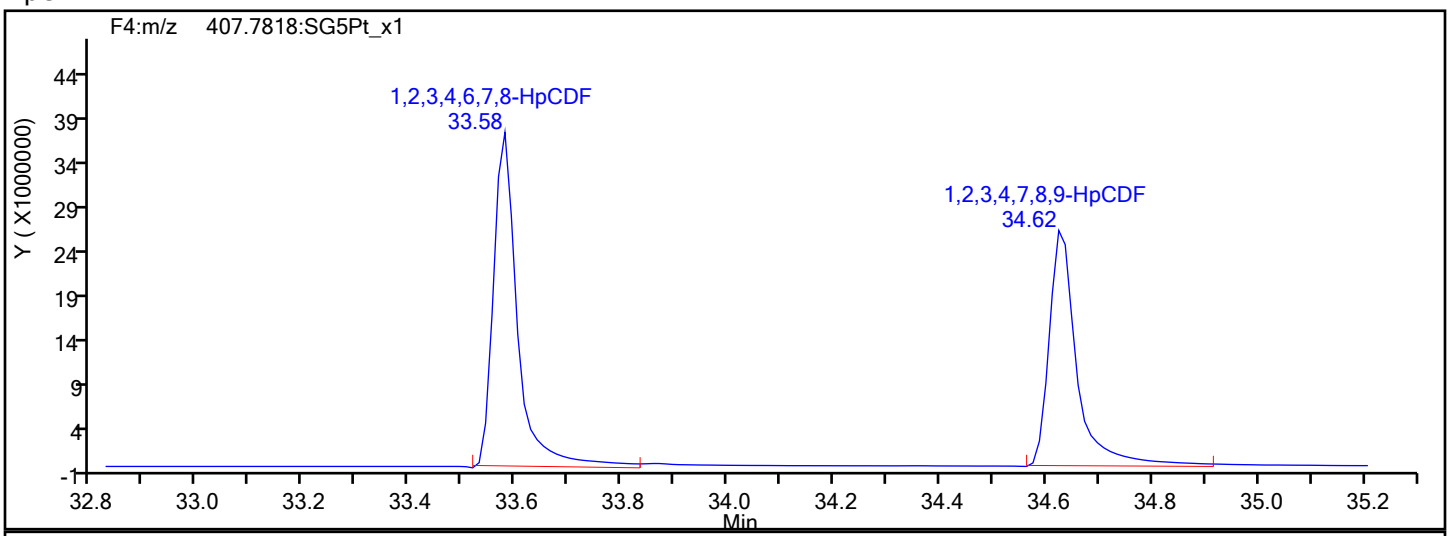


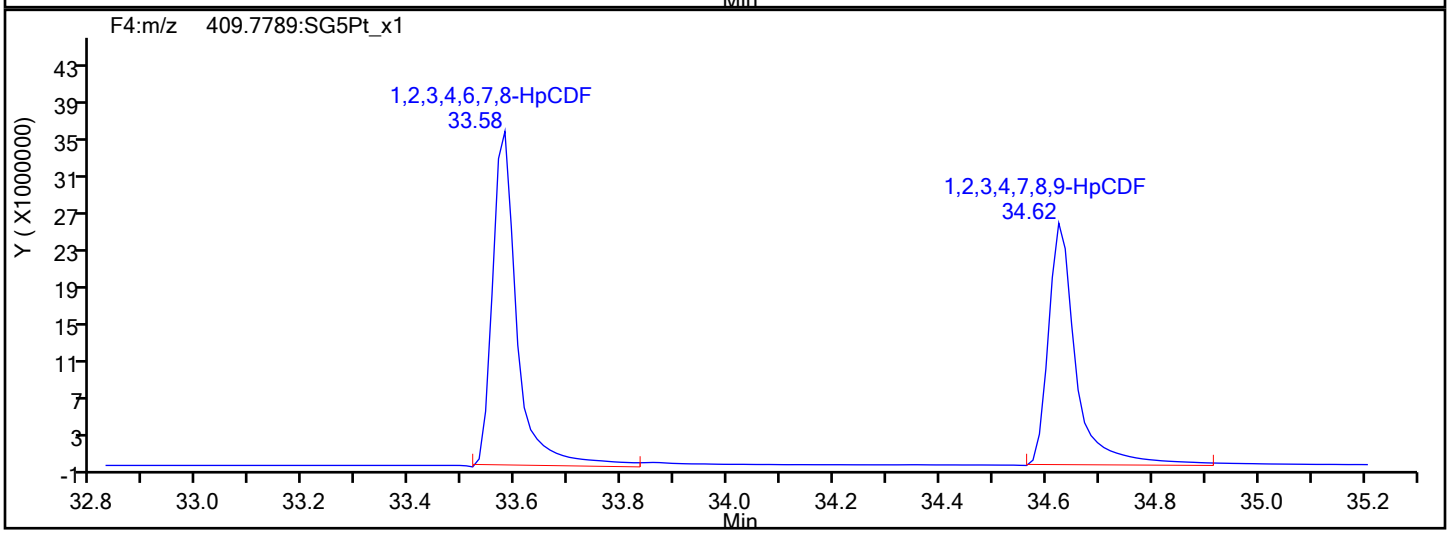
Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

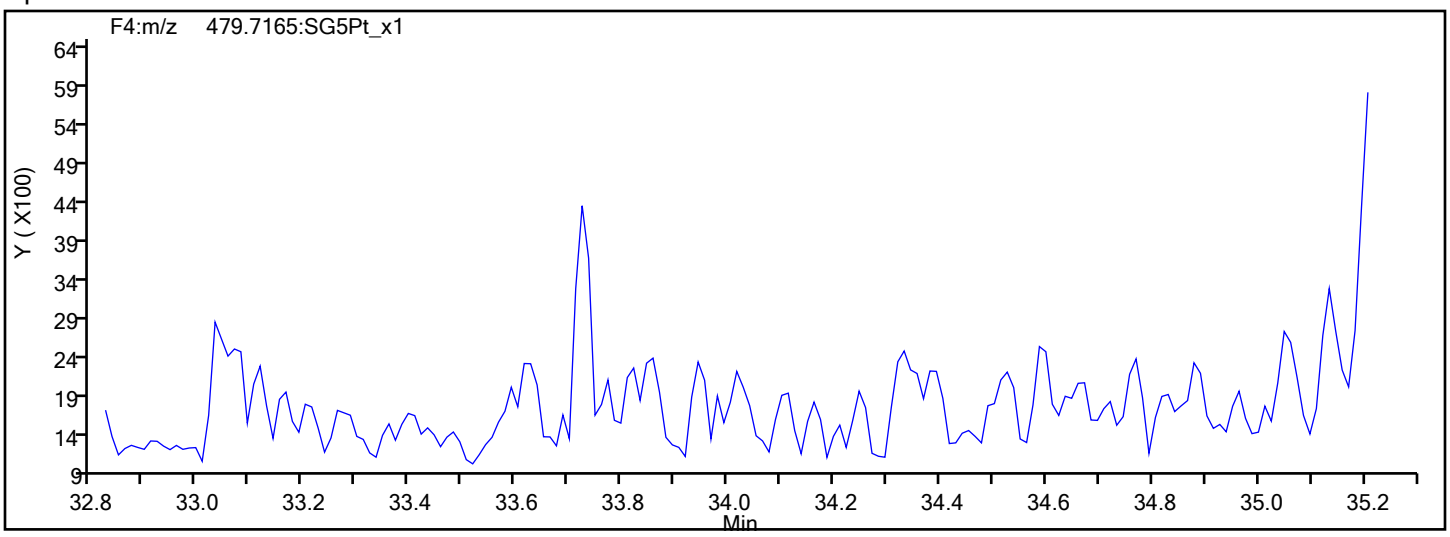
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

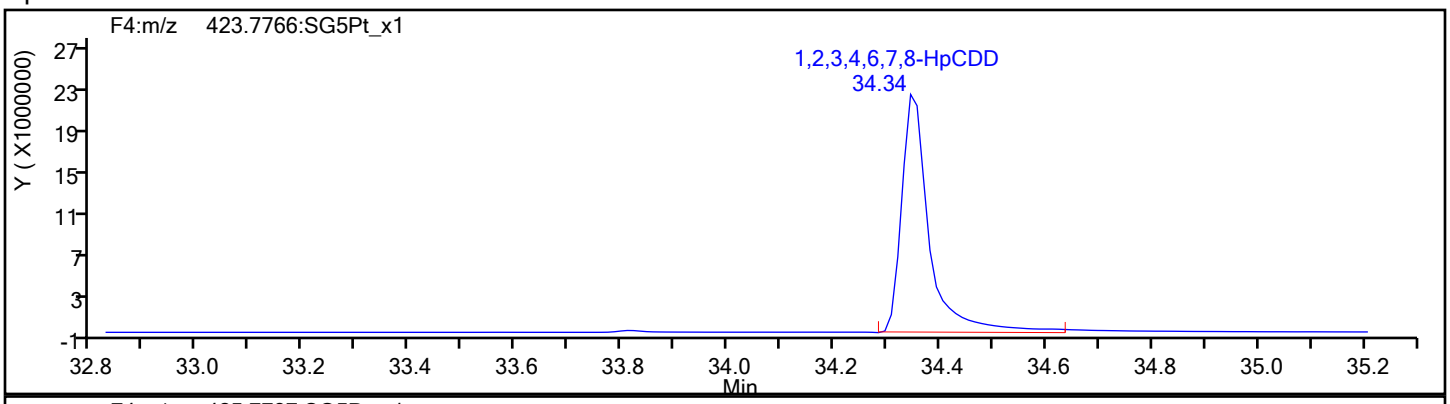
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

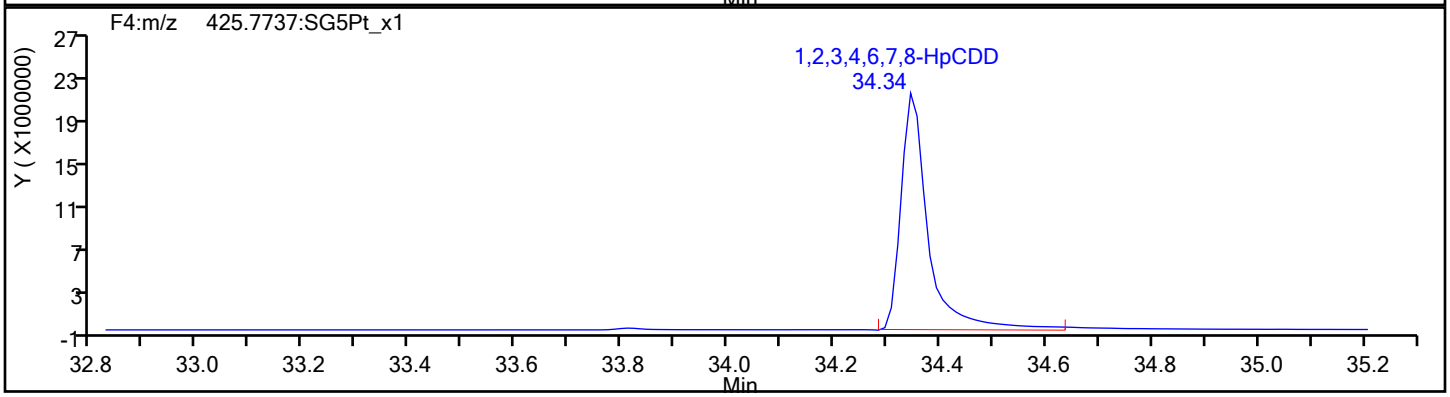
Client ID:

Worklist#: 338471 Sample Line#: 9

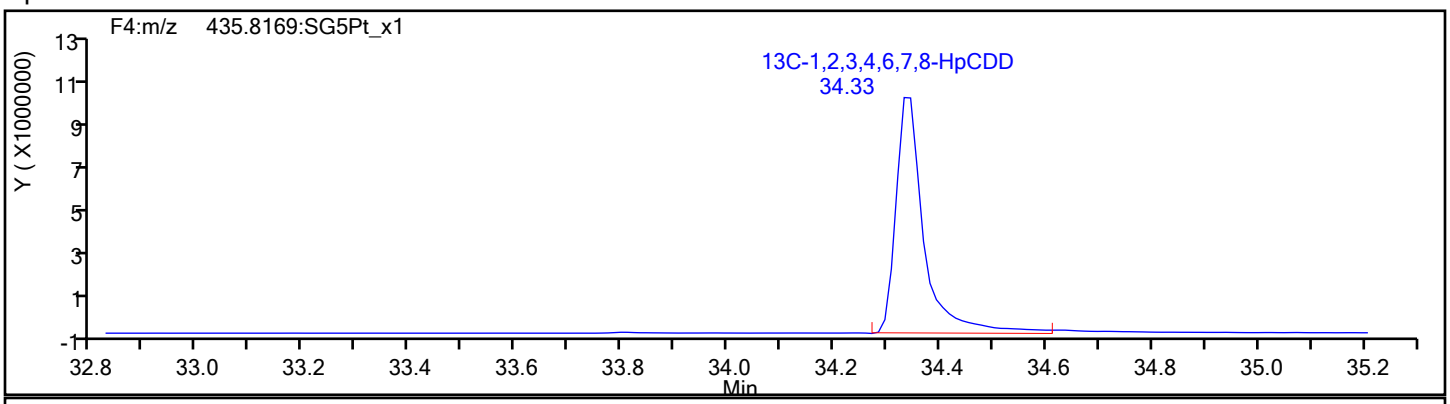
Column Type: DB-5 Column Dia: 0.32 mm

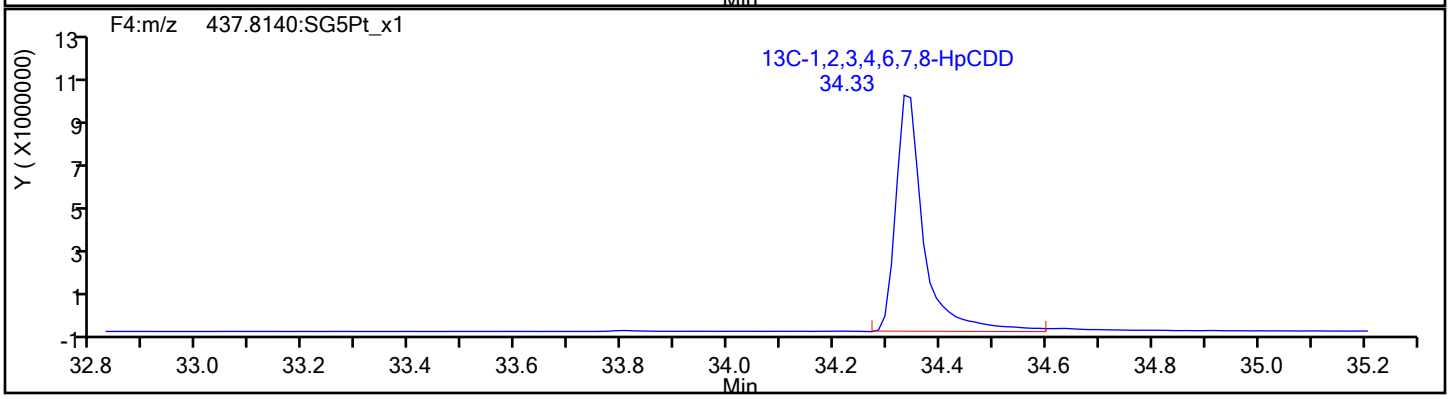
HpCDD





HpCDD Standards



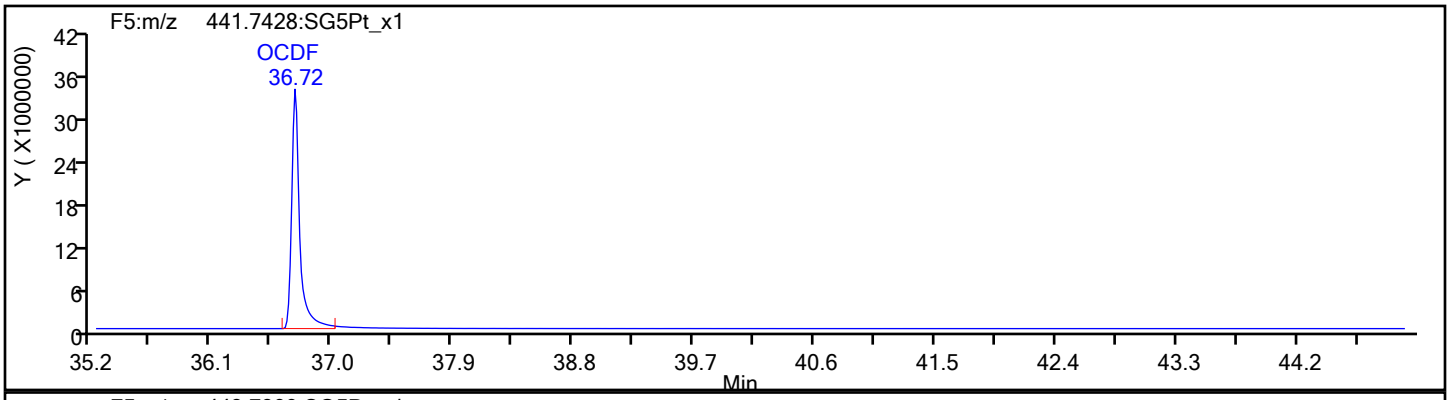


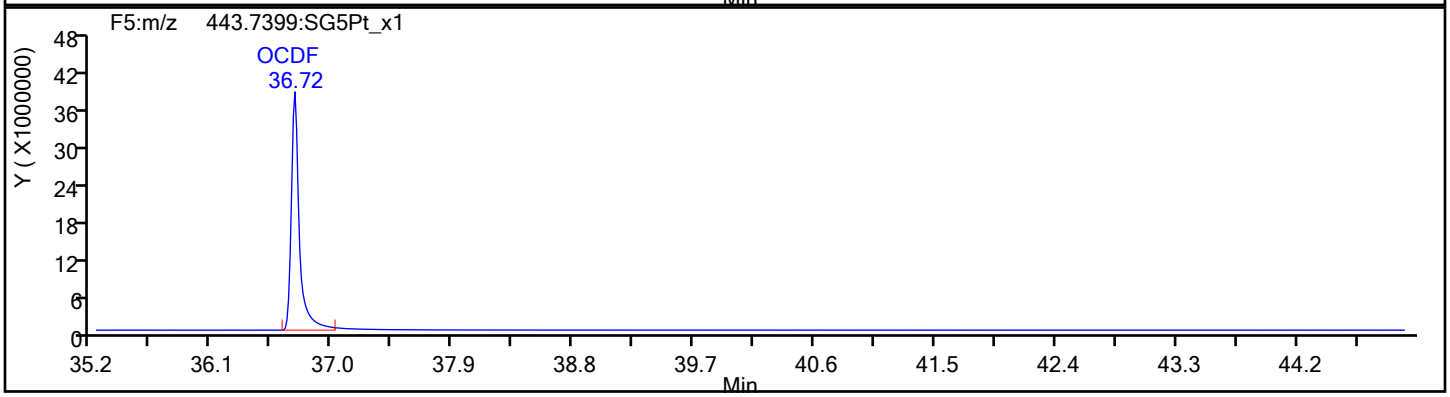
Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

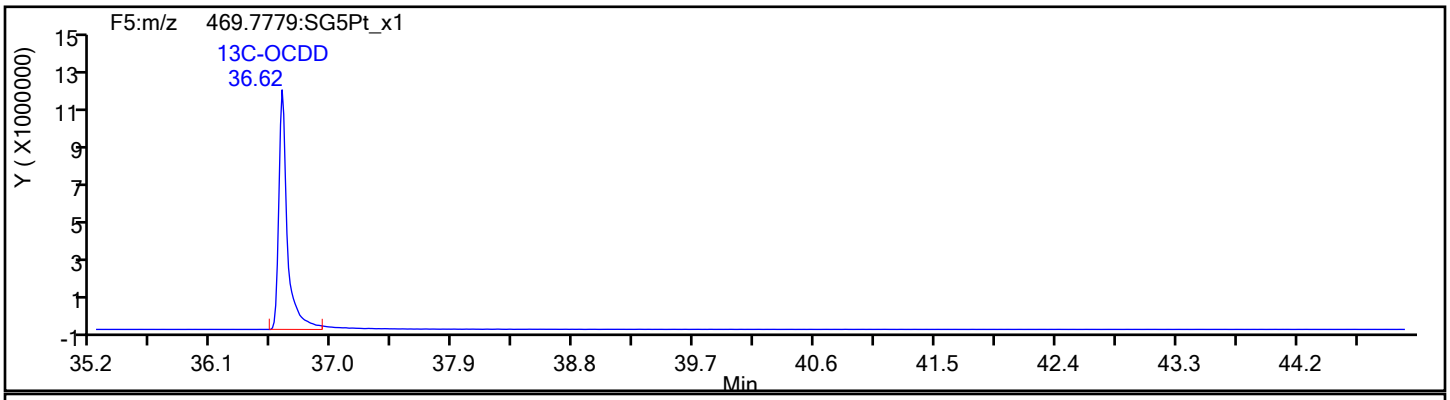
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

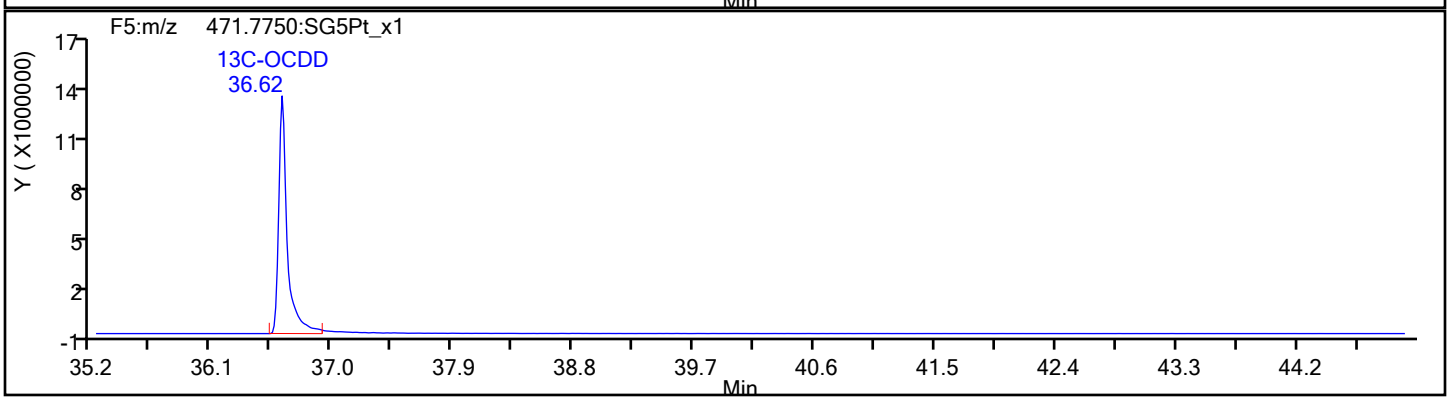
OCDF





OCDF Standards



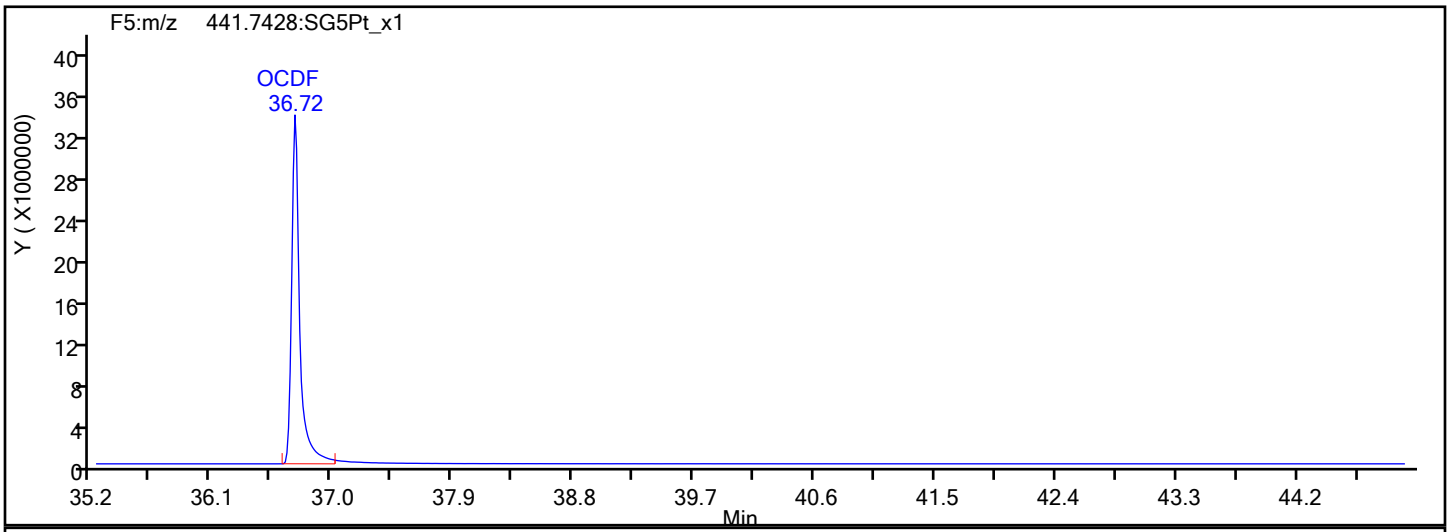


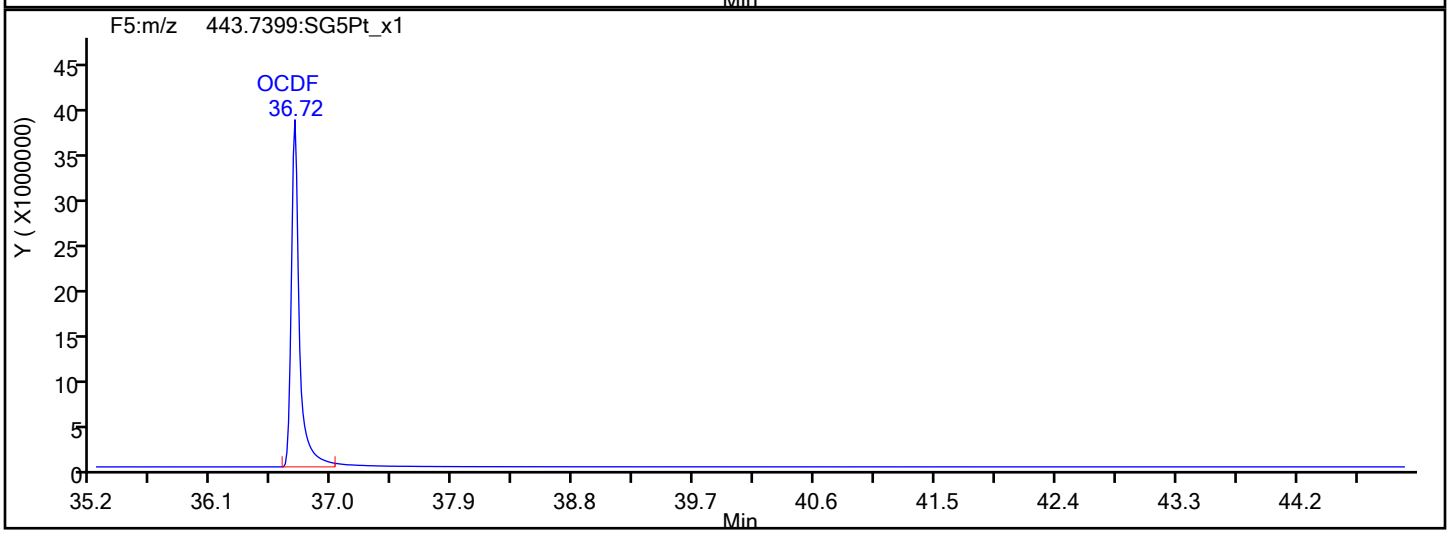
Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

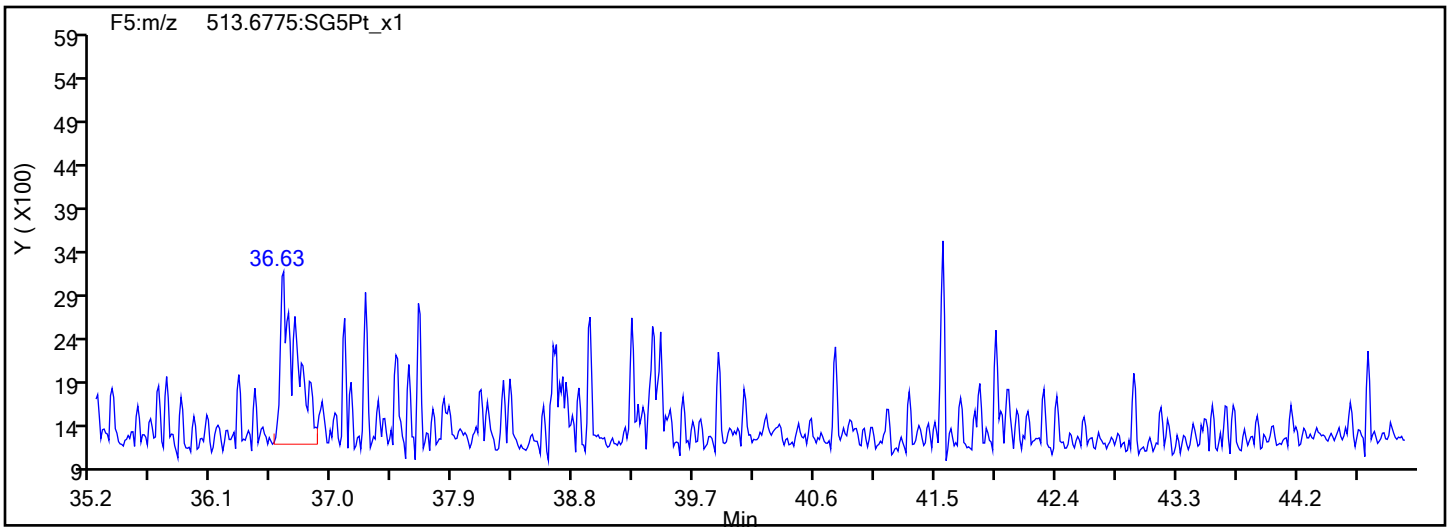
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d

Injection Date: 14-Nov-2019 14:22:45 Injection Vol: 2.0 ul

Instrument ID: 10D5 Operator ID: SMA

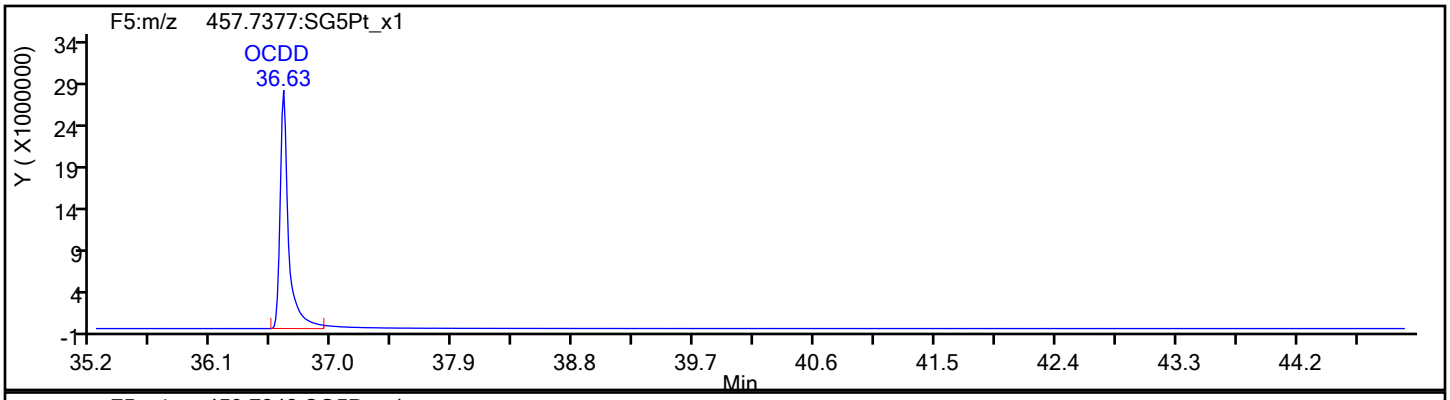
Method: Dioxin_10D5 Limit Group: HR - 1613B - ICAL

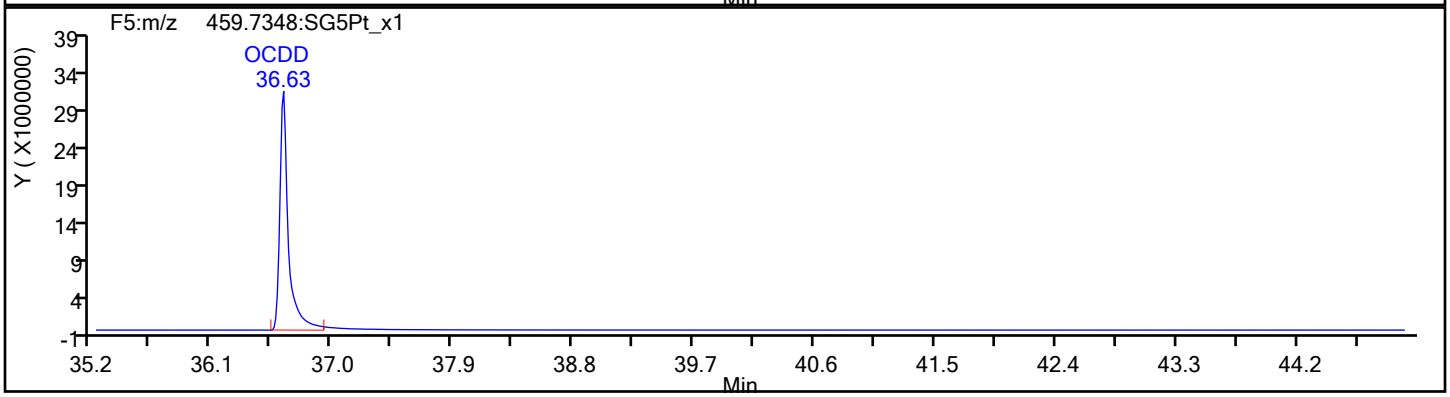
Client ID:

Worklist#: 338471 Sample Line#: 9

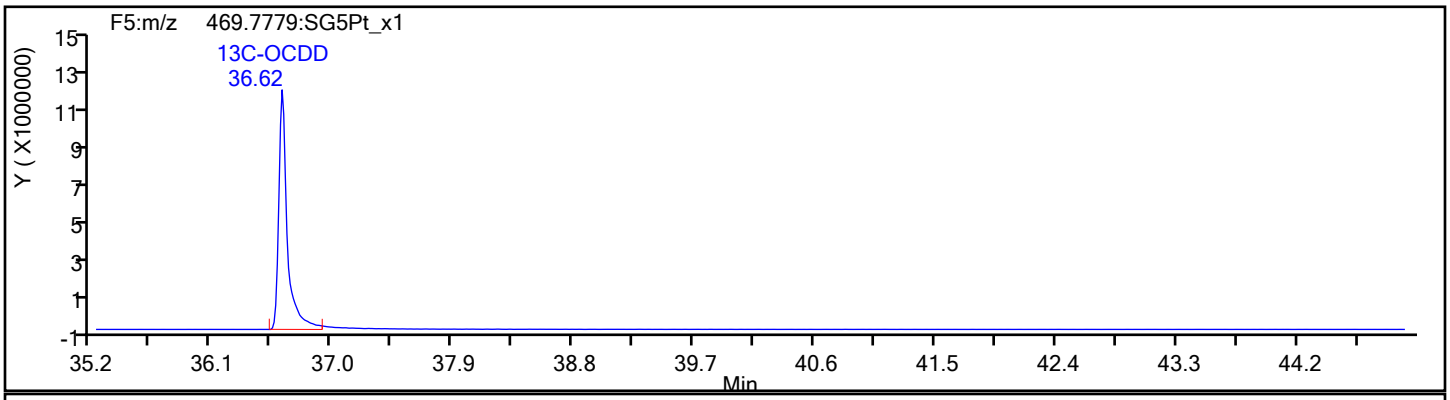
Column Type: DB-5 Column Dia: 0.32 mm

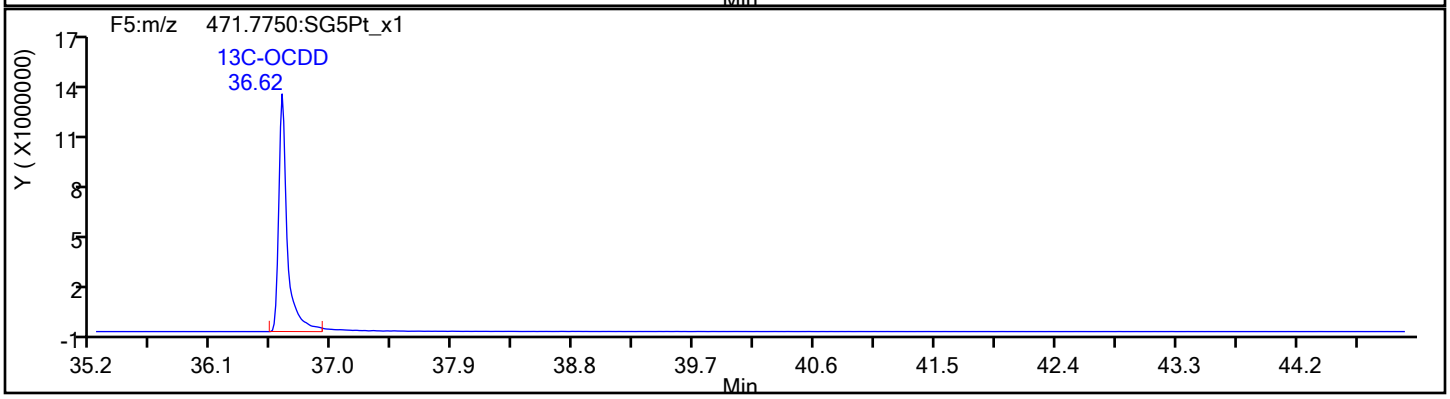
OCDD





OCDD Standards

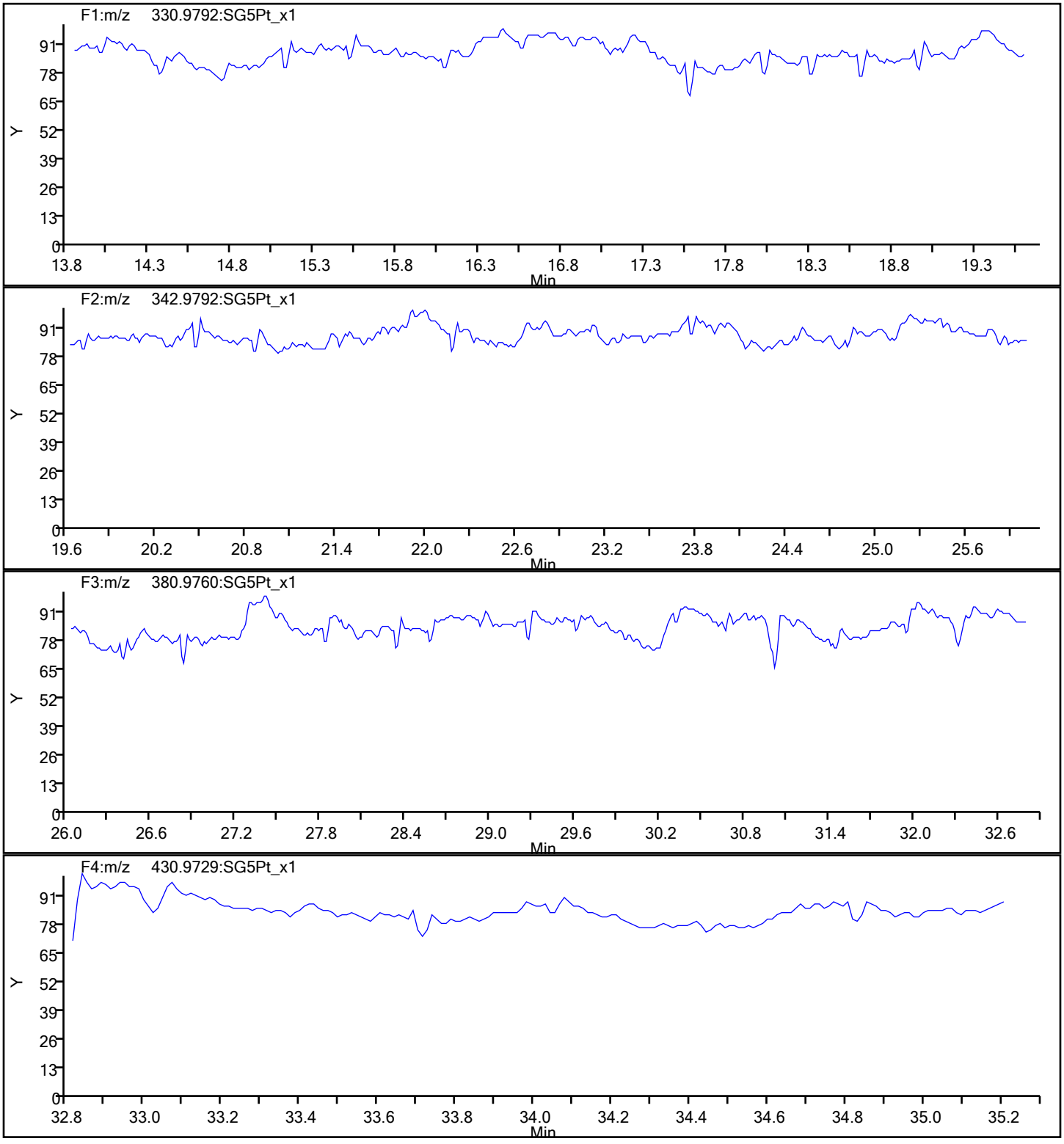




Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

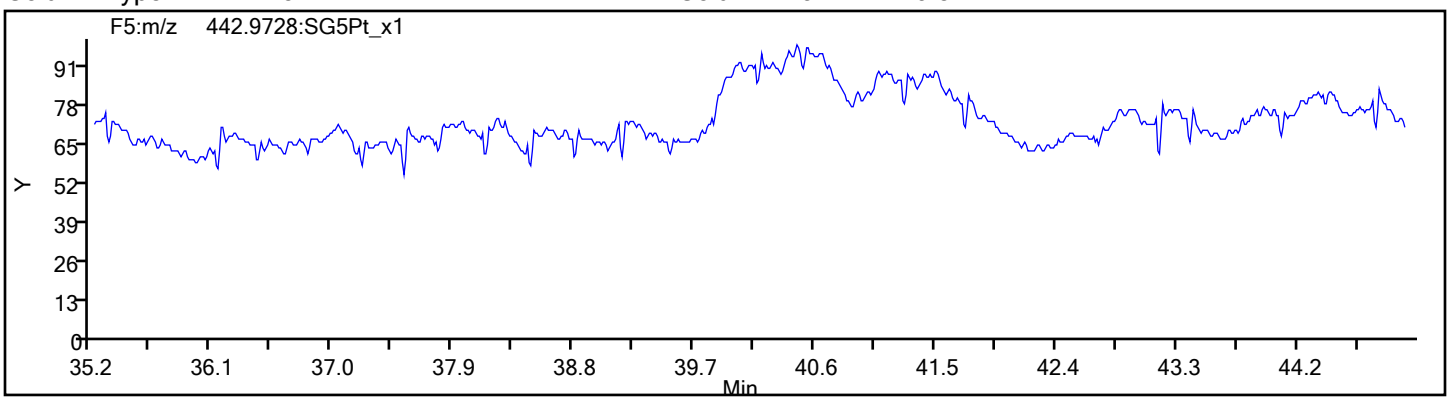
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 14-Nov-2019 15:38:35 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_9.d		
Injection Date:	14-Nov-2019 14:22:45	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: CCV 320-345335/2 Calibration Date: 12/13/2019 11:54

Instrument ID: 10D5 Calib Start Date: 11/14/2019 09:46

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 11/14/2019 12:50

Lab File ID: 13DE1910D5_2.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	0.9005	0.8070		8.96	10.0	90	84-120
2,3,7,8-TCDD	AveID	1.070	0.9271		8.67	10.0	87	78-129
1,2,3,7,8-PeCDF	AveID	0.9704	0.9152		47.2	50.0	94	82-120
2,3,4,7,8-PeCDF	AveID	0.999	0.9103		45.6	50.0	91	82-122
1,2,3,7,8-PeCDD	AveID	1.002	0.9166		45.7	50.0	91	78-130
1,2,3,4,7,8-HxCDF	AveID	1.031	0.9631		46.7	50.0	93	90-112
1,2,3,6,7,8-HxCDF	AveID	1.024	0.9683		47.3	50.0	95	88-114
2,3,4,6,7,8-HxCDF	AveID	1.065	1.000		47.0	50.0	94	88-114
1,2,3,4,7,8-HxCDD	AveID	1.005	0.9319		46.3	50.0	93	78-128
1,2,3,6,7,8-HxCDD	AveID	0.9833	0.9229		46.9	50.0	94	78-128
1,2,3,7,8,9-HxCDD	AveID	1.104	1.056		47.8	50.0	96	82-122
1,2,3,7,8,9-HxCDF	AveID	1.066	1.005		47.1	50.0	94	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.424	1.376		48.3	50.0	97	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.017	0.9385		46.1	50.0	92	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.283	1.211		47.2	50.0	94	86-116
OCDD	AveID	1.100	1.077		97.9	100	98	79-126
OCDF	AveID	1.305	1.198		91.8	100	92	63-159
13C-2,3,7,8-TCDF	Ave	1.332	1.222		91.7	100	92	71-140
13C-2,3,7,8-TCDD	Ave	0.9647	0.9628		99.8	100	100	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.054	0.998		94.7	100	95	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.017	0.995		97.8	100	98	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7281	0.7700		106	100	106	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	0.9632	0.8842		91.8	100	92	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.065	0.9065		85.1	100	85	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	0.9696	0.8687		89.6	100	90	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.7590	0.7804		103	100	103	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9247	0.8413		91.0	100	91	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	0.8955	0.8129		90.8	100	91	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.7930	0.7590		95.7	100	96	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.7532	0.8417		112	100	112	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.7296	0.7618		104	100	104	77-129
13C-OCDD	Ave	0.5621	0.7397		263	200	132	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.308	1.425		10.9	10.0	109	79-127

	File Name	File Text	Sample ID	Bottle	Method/Matrix	Box #	User
1	13DE1910D5_1	WDM HRDXNCP_00040	WDM 121319	Tray01:1	Dioxin		AJS
2	13DE1910D5_2	CS-4 HRDXNL4_00085	CCV 121319	Tray01:2	Dioxin		AJS
3	13DE1910D5_3	Solvent Blank C-14	SB 121319	Tray01:3	---		AJS
4	13DE1910D5_4	320-56905-A-7-A (20X)	320-56905-A-7-A	Tray01:4	1613B/Solid	D117	AJS
5	13DE1910D5_5	320-56905-A-9-A (40X)	320-56905-A-9-A	Tray01:5	1613B/Solid	---	AJS
6	13DE1910D5_6	320-56905-A-10-A (30X)	320-56905-A-10-A	Tray01:6	1613B/Solid	---	AJS
7	13DE1910D5_7	320-56911-A-7-A	320-56911-A-7-A	Tray01:7	1613B/Solid	D117	AJS
8	13DE1910D5_8	320-56911-A-8-A	320-56911-A-8-A	Tray01:8	1613B/Solid		AJS
9	13DE1910D5_9	320-56911-A-9-A	320-56911-A-9-A	Tray01:9	1613B/Solid	---	AJS
10	13DE1910D5_10	320-56911-A-10-A	320-56911-A-10-A	Tray01:10	1613B/Solid	---	AJS
11	13DE1910D5_11	320-56911-A-11-A	320-56911-A-11-A	Tray01:11	1613B/Solid	---	AJS
12	13DE1910D5_12	320-56911-A-12-A	320-56911-A-12-A	Tray01:12	1613B/Solid	---	AJS
13	13DE1910D5_13	320-56911-A-13-A	320-56911-A-13-A	Tray01:15	1613B/Solid	---	AJS
14	13DE1910D5_14	Solvent Blank C-14	SB 121319A	Tray01:3	---		AJS
15	13DE1910D5_15	CS-4 HRDXNL4_00085	CCV 121319A	Tray01:2	Dioxin		AJS
16	13DE1910D5_16	WDM HRDXNCP_00040	WDM 121319A	Tray01:1	Dioxin		AJS
17	13DE1910D5_17	Solvent Blank C-14	SB 121319B	Tray01:3	---		AJS

Logfile v'd
12/13/19
KSS

Sample Size	Units	MS File	Inlet File	Inject Volume	Process
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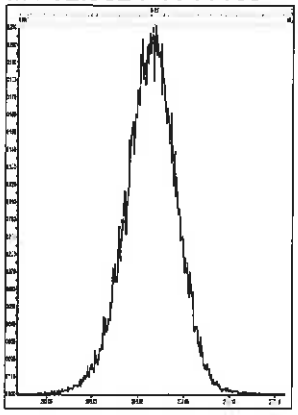
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
10.000000	g	DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	ResolutionCheck
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover
1.000000		DIOXIN10D5NEW	DIOXINNOGC	2.000000	FBAT_ML_FileMover

Process Options	Action On Error	s5
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
---	---	C:\CHROM
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---
C:\Masslynx\Autospec\dioxinrescheck.dat	Ignore Error	---
---	---	C:\CHROM
---	---	C:\CHROM

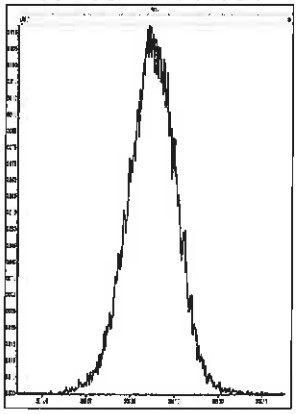
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, December 13, 2019 11:05:11 Pacific Standard Time

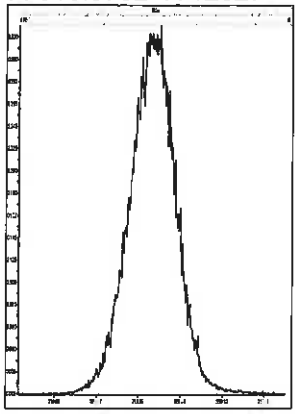
M 292.9824 R 11109



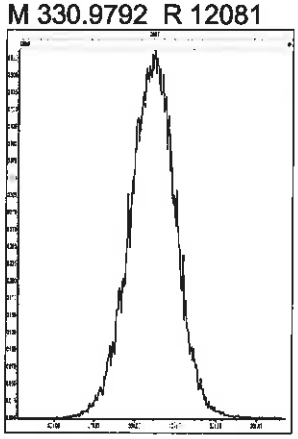
M 304.9824 R 11794



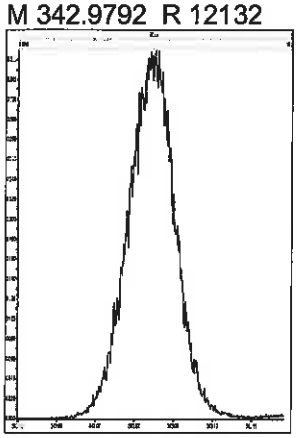
M 318.9792 R 12627



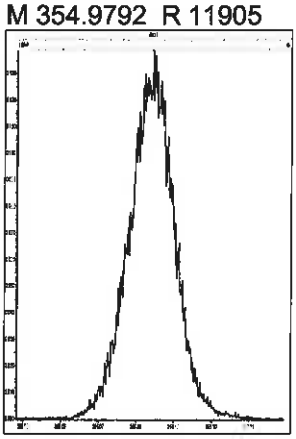
M 330.9792 R 12081



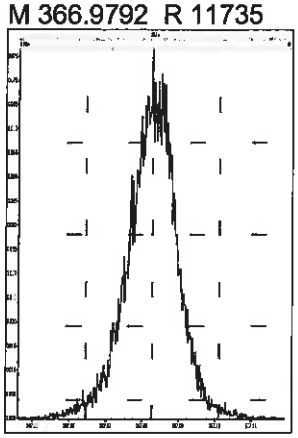
M 342.9792 R 12132



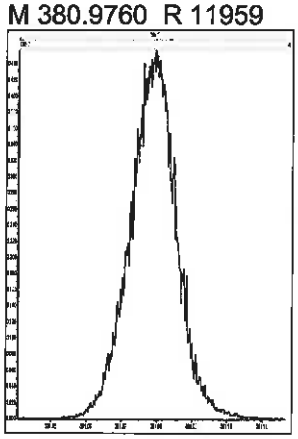
M 354.9792 R 11905



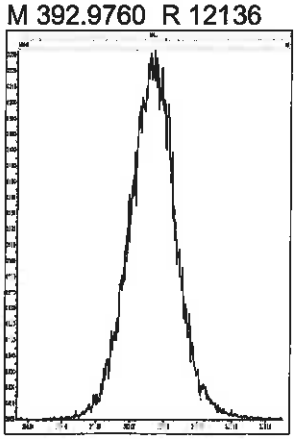
M 366.9792 R 11735



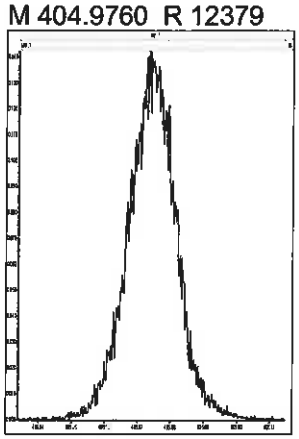
M 380.9760 R 11959



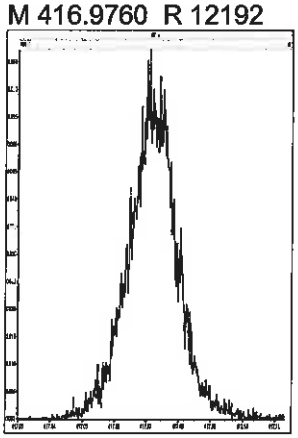
M 392.9760 R 12136



M 404.9760 R 12379



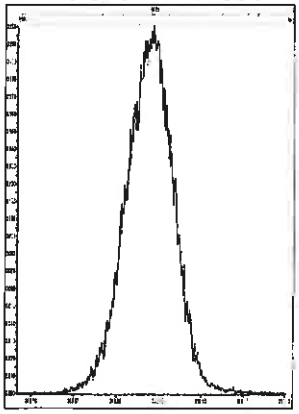
M 416.9760 R 12192



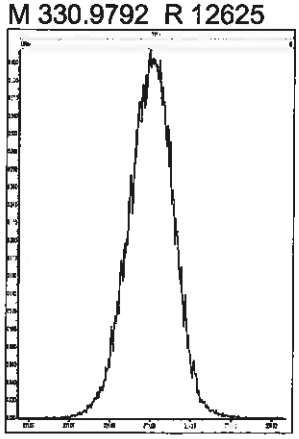
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, December 13, 2019 11:05:31 Pacific Standard Time

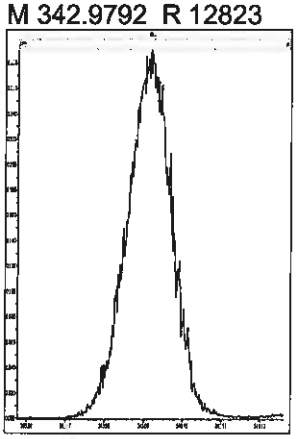
M 318.9792 R 12501



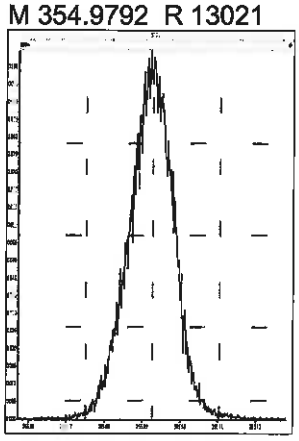
M 330.9792 R 12625



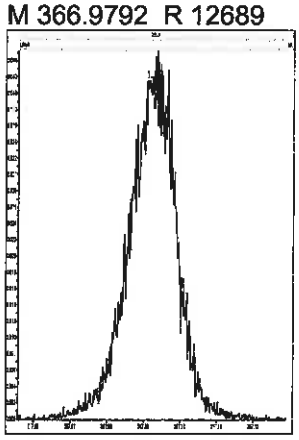
M 342.9792 R 12823



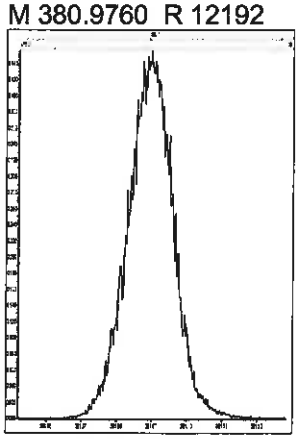
M 354.9792 R 13021



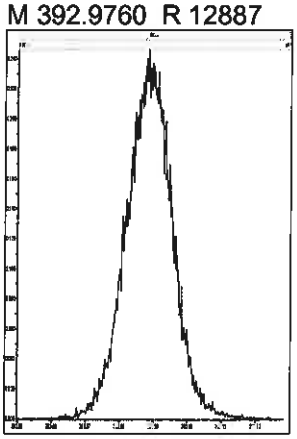
M 366.9792 R 12689



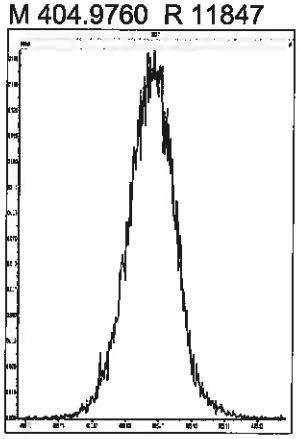
M 380.9760 R 12192



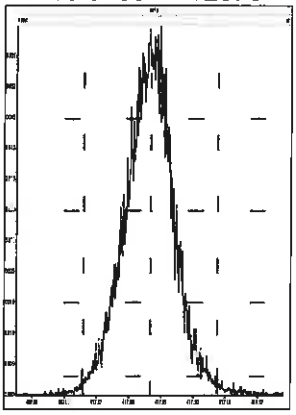
M 392.9760 R 12887



M 404.9760 R 11847



M 416.9760 R 12373



File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

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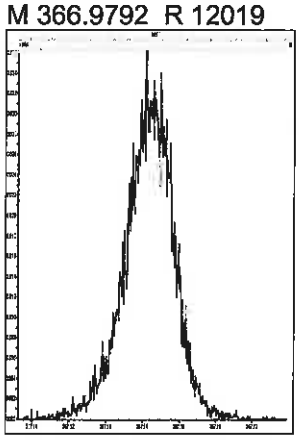
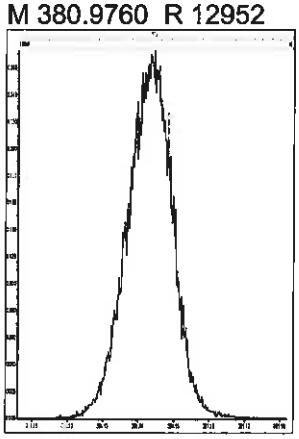
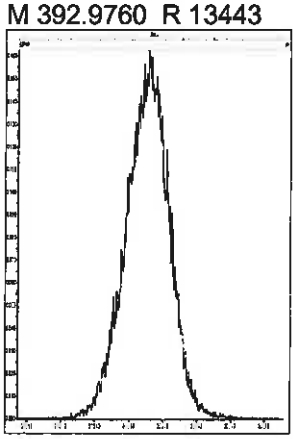
M 366.9792 R 12019



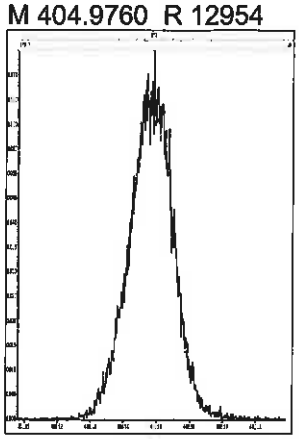
M 380.9760 R 12952



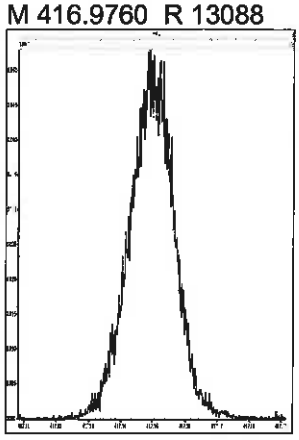
M 392.9760 R 13443



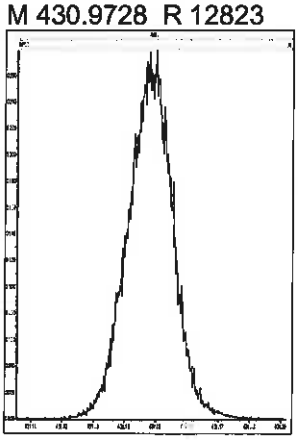
M 404.9760 R 12954



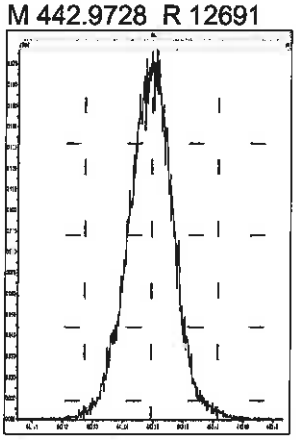
M 416.9760 R 13088



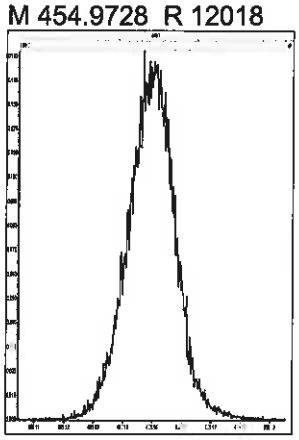
M 430.9728 R 12823



M 442.9728 R 12691



M 454.9728 R 12018



File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

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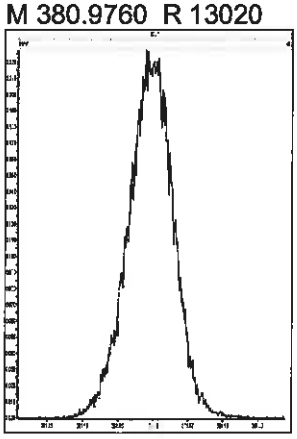
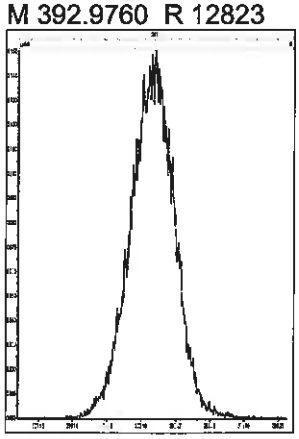
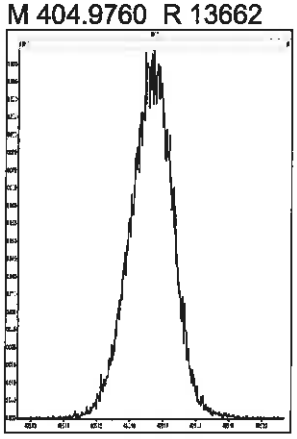
M 380.9760 R 13020



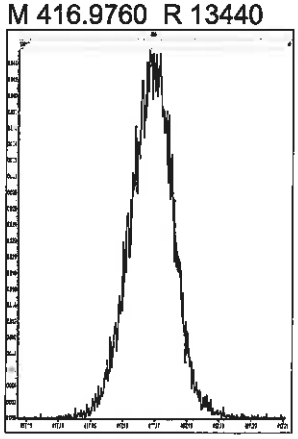
M 392.9760 R 12823



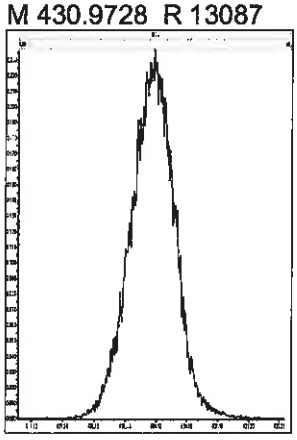
M 404.9760 R 13662



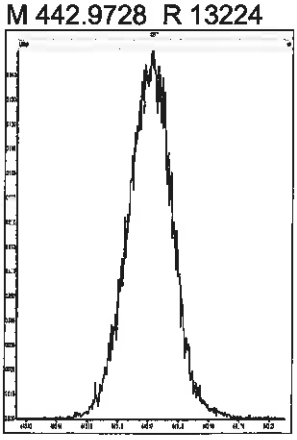
M 416.9760 R 13440



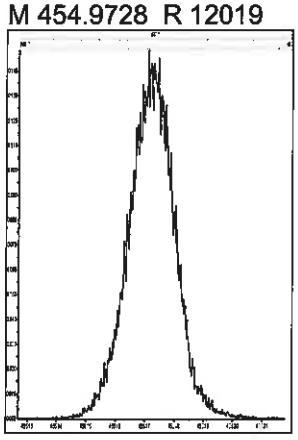
M 430.9728 R 13087



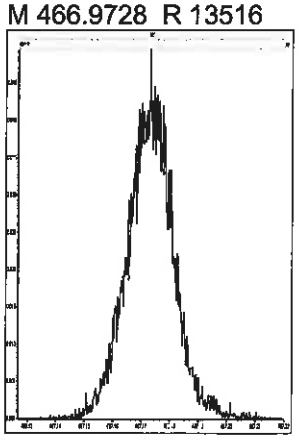
M 442.9728 R 13224



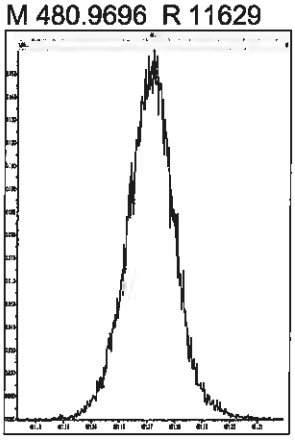
M 454.9728 R 12019



M 466.9728 R 13516



M 480.9696 R 11629



File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

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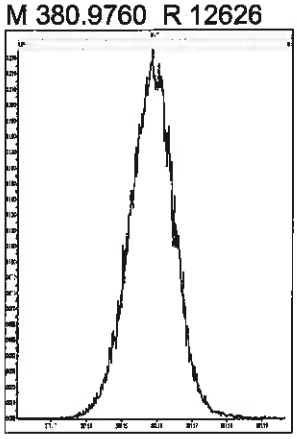
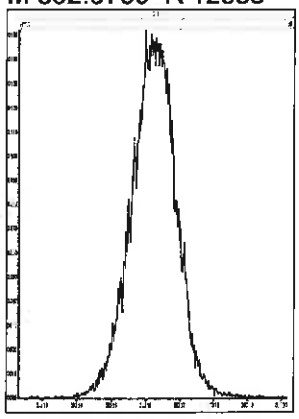
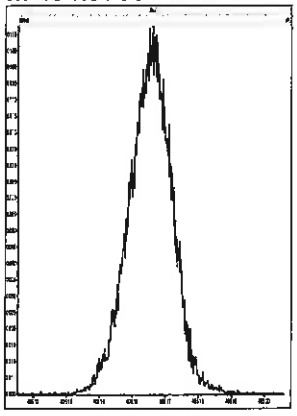
M 380.9760 R 12626



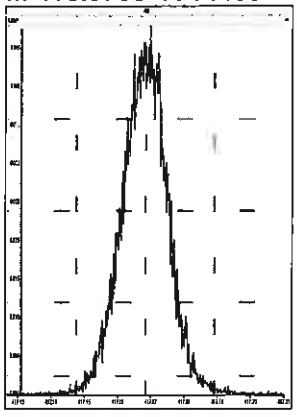
M 392.9760 R 12688



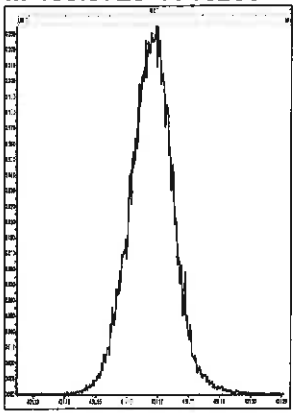
M 404.9760 R 13090



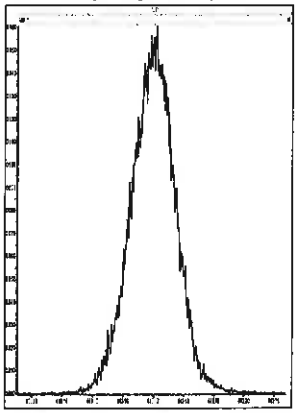
M 416.9760 R 14450



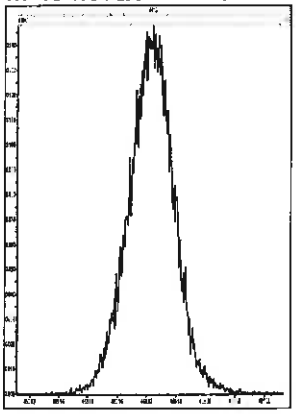
M 430.9728 R 13230



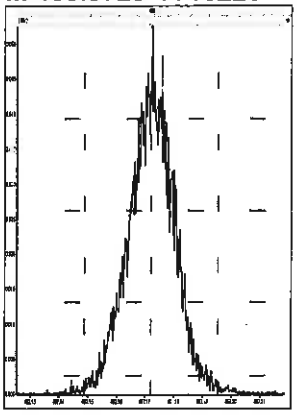
M 442.9728 R 13510



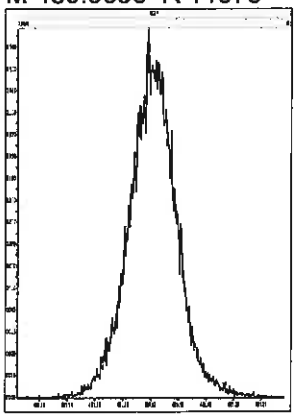
M 454.9728 R 12622



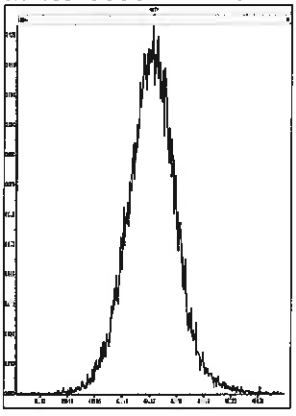
M 466.9728 R 13226



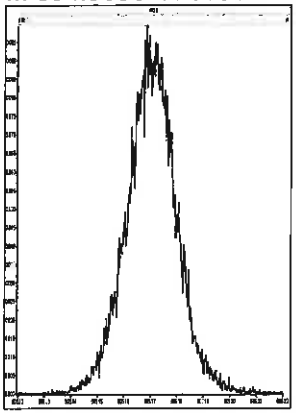
M 480.9696 R 11575



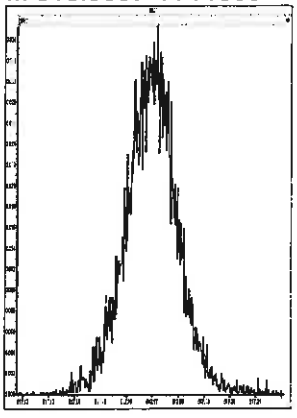
M 492.9696 R 11468



M 504.9696 R 11012



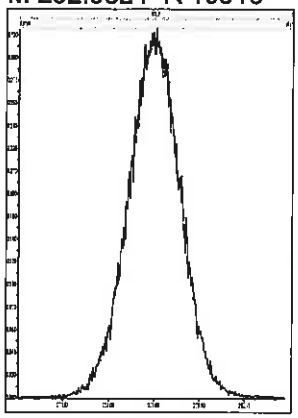
M 516.9697 R 11368



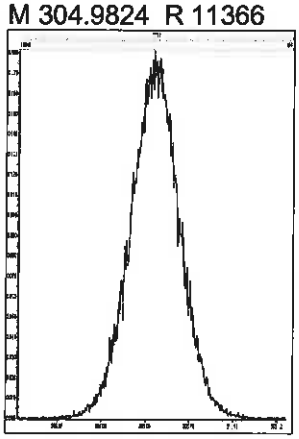
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, December 13, 2019 16:17:32 Pacific Standard Time

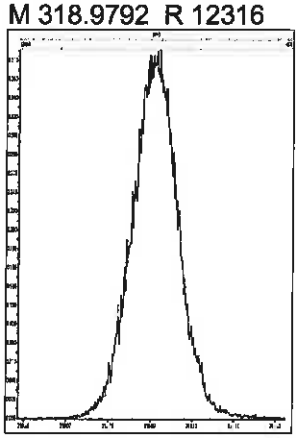
M 292.9824 R 10915



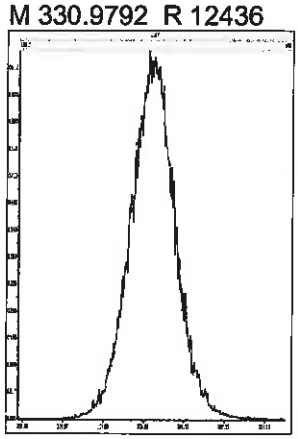
M 304.9824 R 11366



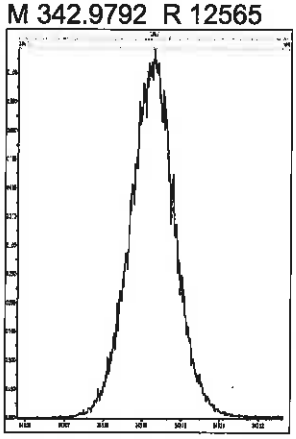
M 318.9792 R 12316



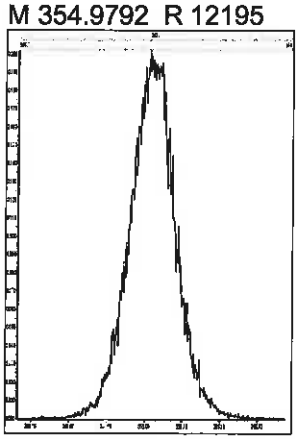
M 330.9792 R 12436



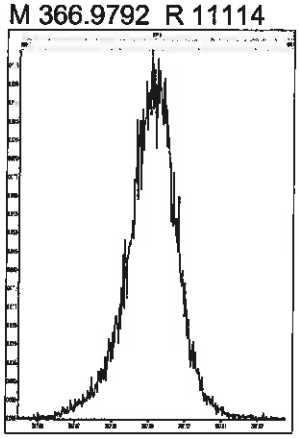
M 342.9792 R 12565



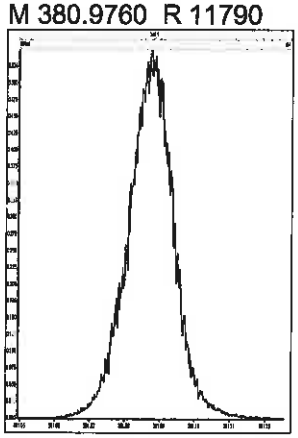
M 354.9792 R 12195



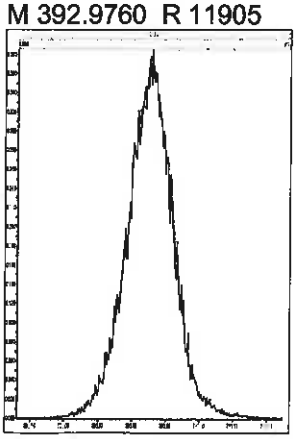
M 366.9792 R 11114



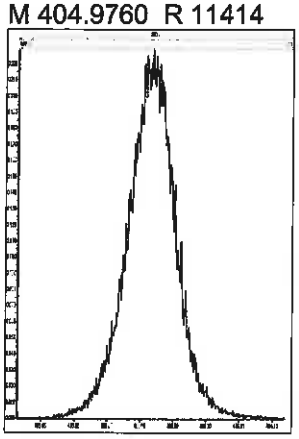
M 380.9760 R 11790



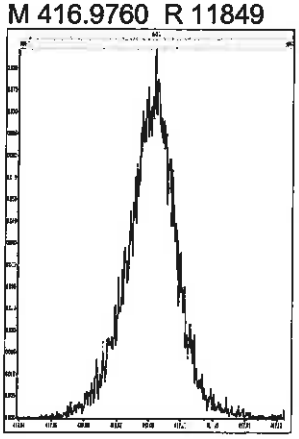
M 392.9760 R 11905



M 404.9760 R 11414



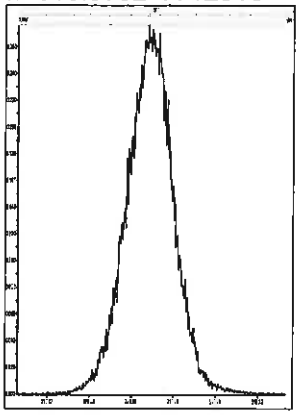
M 416.9760 R 11849



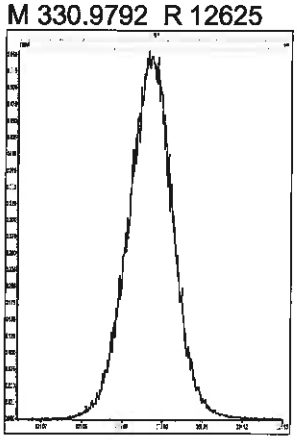
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, December 13, 2019 16:18:09 Pacific Standard Time

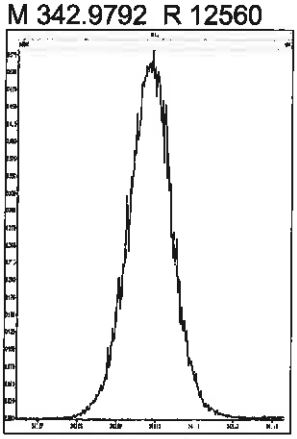
M 318.9792 R 12316



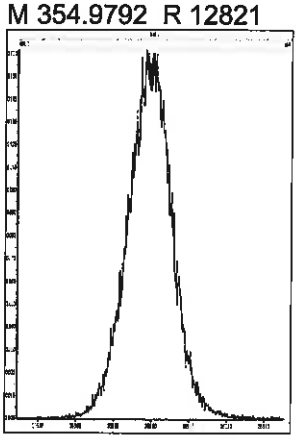
M 330.9792 R 12625



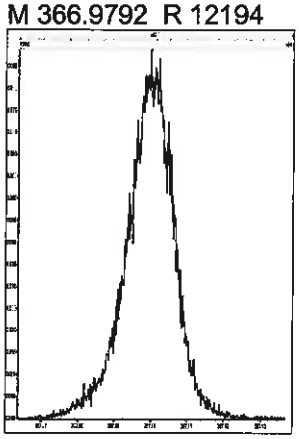
M 342.9792 R 12560



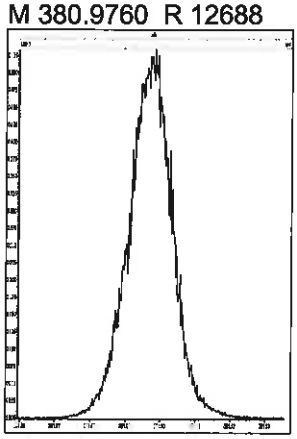
M 354.9792 R 12821



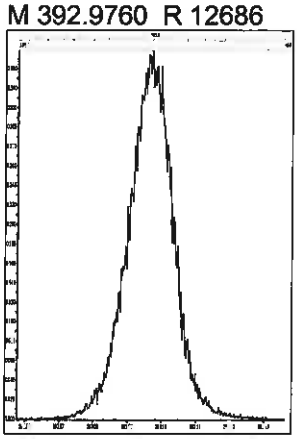
M 366.9792 R 12194



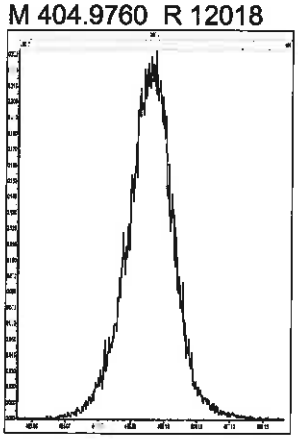
M 380.9760 R 12688



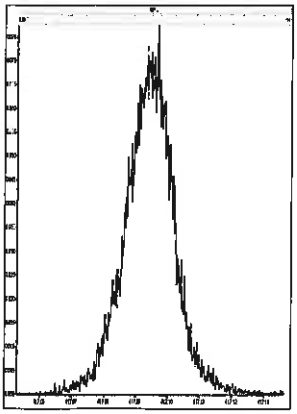
M 392.9760 R 12686



M 404.9760 R 12018



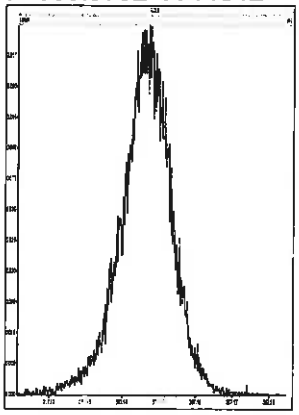
M 416.9760 R 12192



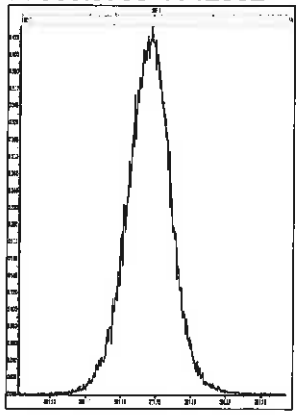
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Friday, December 13, 2019 16:18:40 Pacific Standard Time

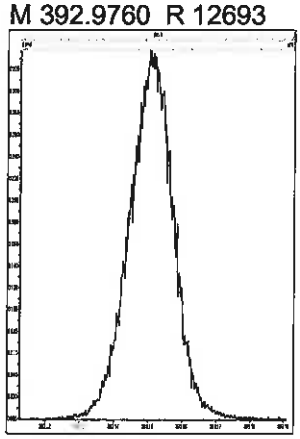
M 366.9792 R 11312



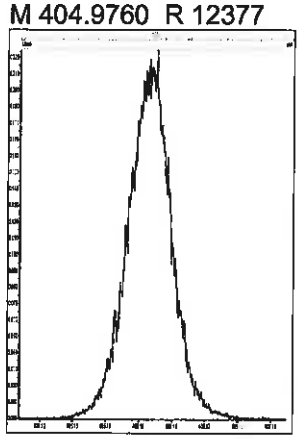
M 380.9760 R 12562



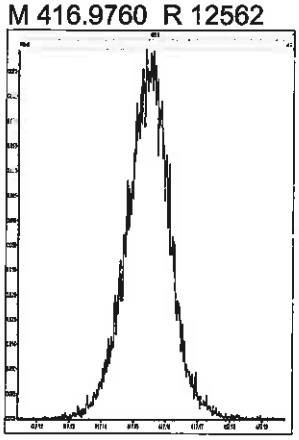
M 392.9760 R 12693



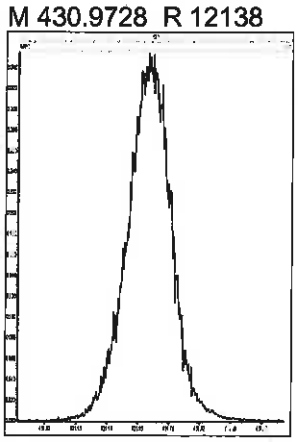
M 404.9760 R 12377



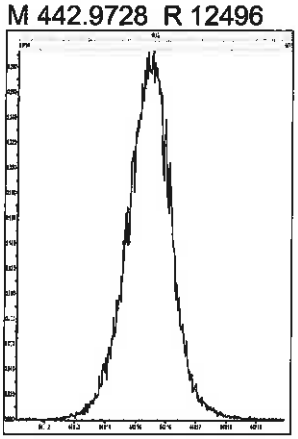
M 416.9760 R 12562



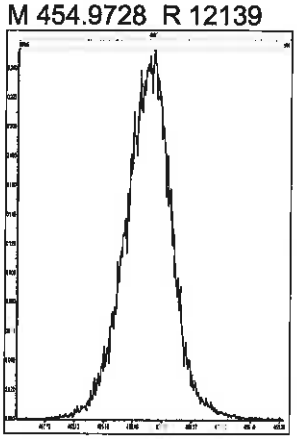
M 430.9728 R 12138



M 442.9728 R 12496



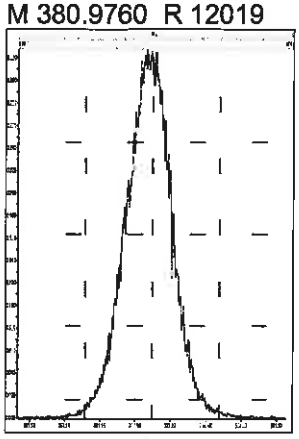
M 454.9728 R 12139



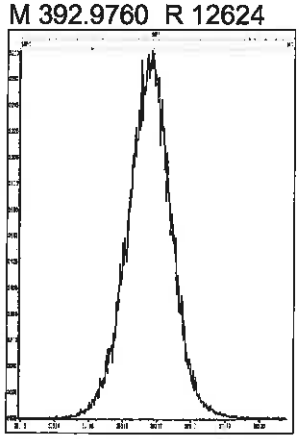
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Friday, December 13, 2019 16:19:07 Pacific Standard Time

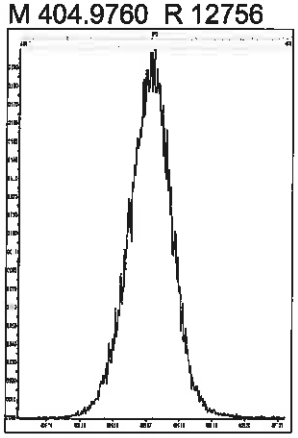
M 380.9760 R 12019



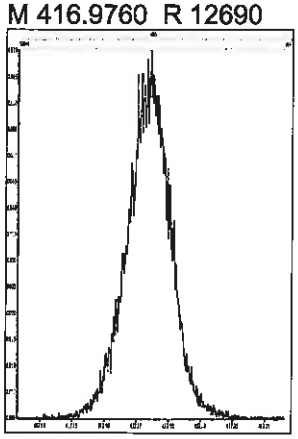
M 392.9760 R 12624



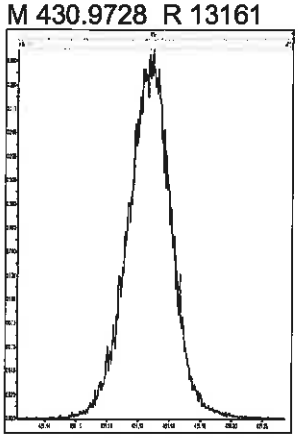
M 404.9760 R 12756



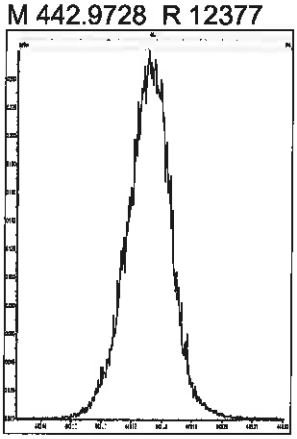
M 416.9760 R 12690



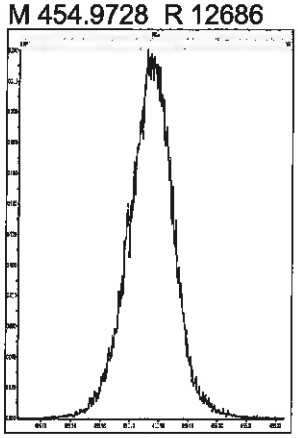
M 430.9728 R 13161



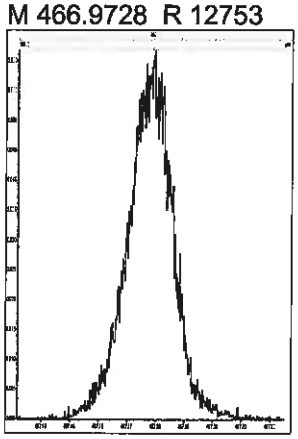
M 442.9728 R 12377



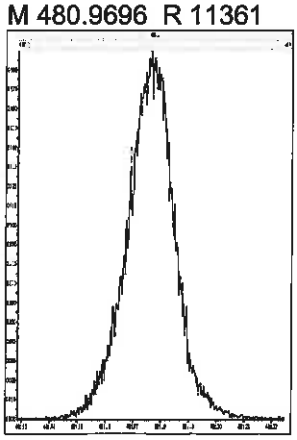
M 454.9728 R 12686



M 466.9728 R 12753



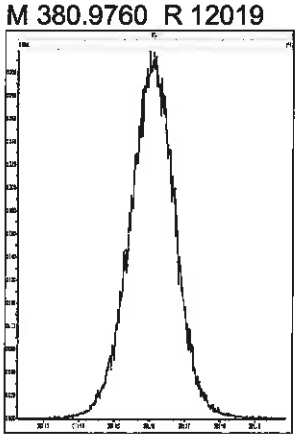
M 480.9696 R 11361



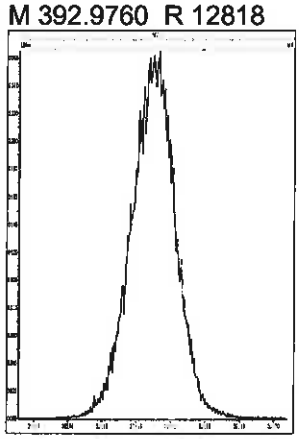
File: Experiment: DIOXIN10D5NEW.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, December 13, 2019 16:19:50 Pacific Standard Time

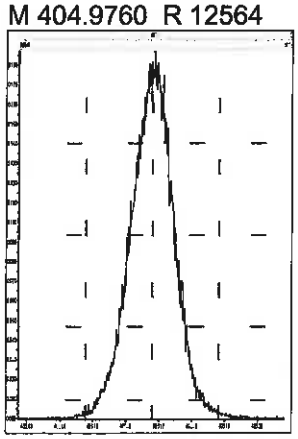
M 380.9760 R 12019



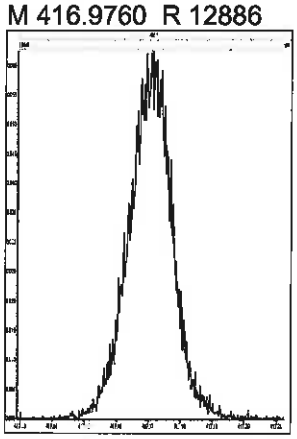
M 392.9760 R 12818



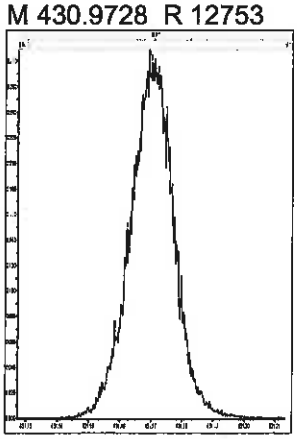
M 404.9760 R 12564



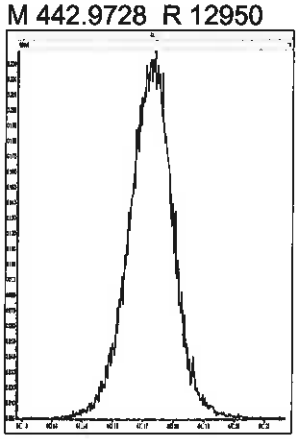
M 416.9760 R 12886



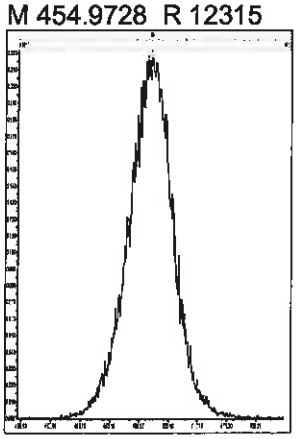
M 430.9728 R 12753



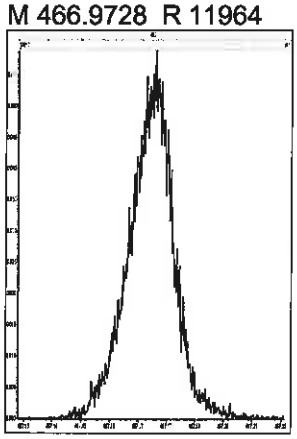
M 442.9728 R 12950



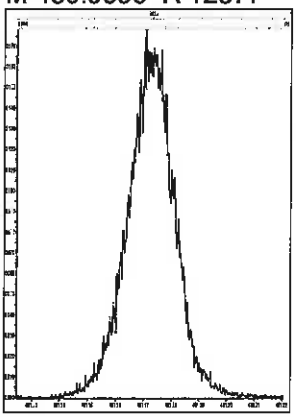
M 454.9728 R 12315



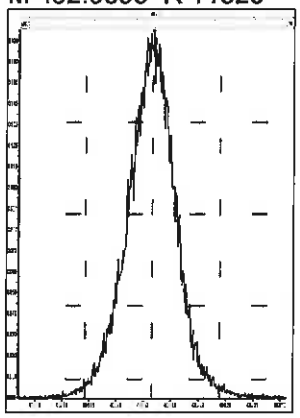
M 466.9728 R 11964



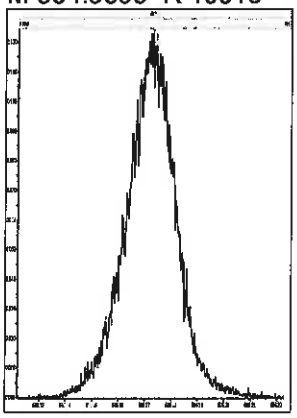
M 480.9696 R 12377



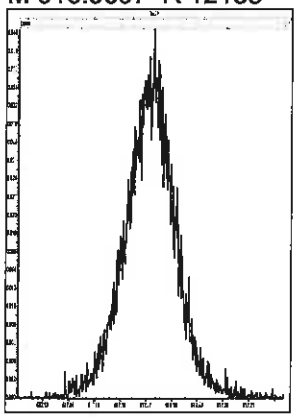
M 492.9696 R 11520



M 504.9696 R 10919



M 516.9697 R 12133



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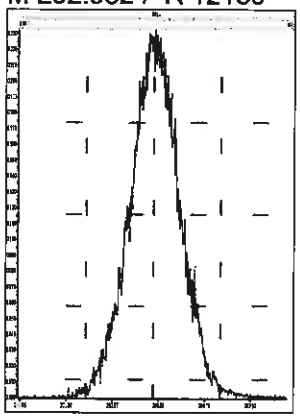
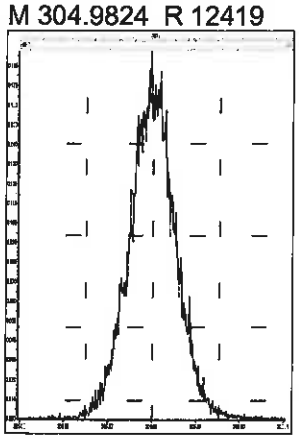
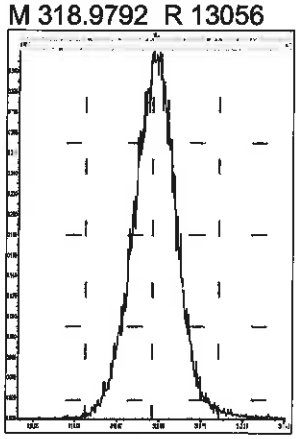
M 292.9824 R 12136



M 304.9824 R 12419



M 318.9792 R 13056



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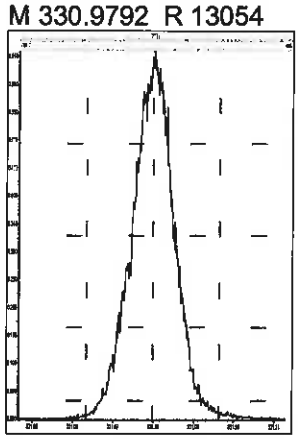
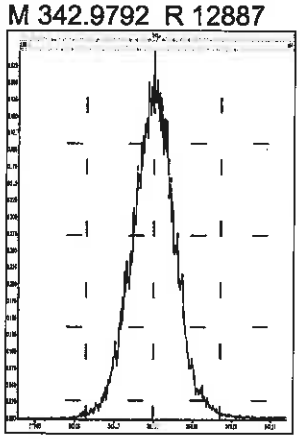


M 342.9792 R 12887



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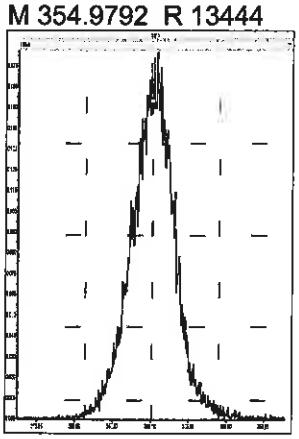
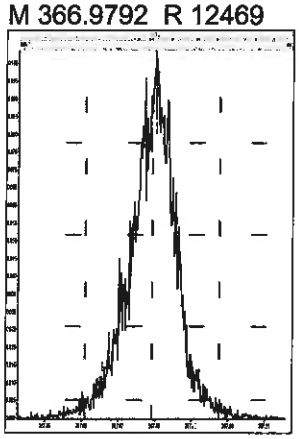
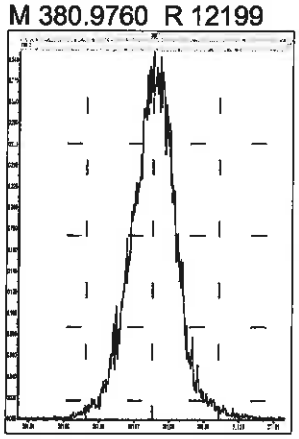


M 366.9792 R 12469



M 380.9760 R 12199



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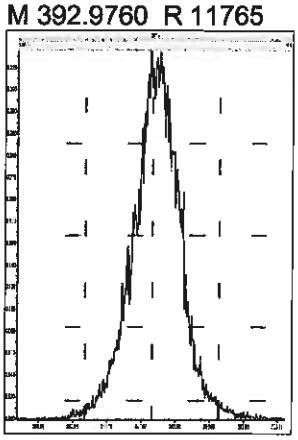

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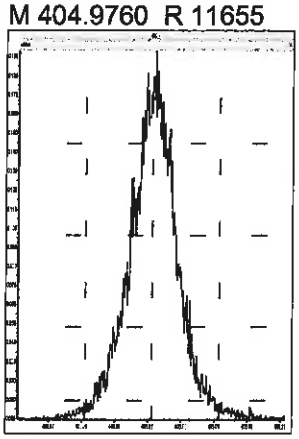

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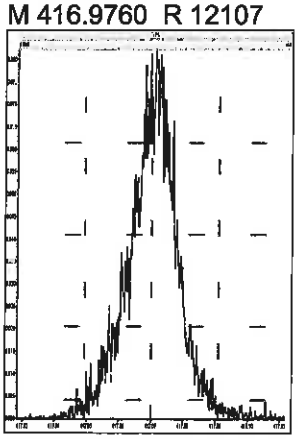
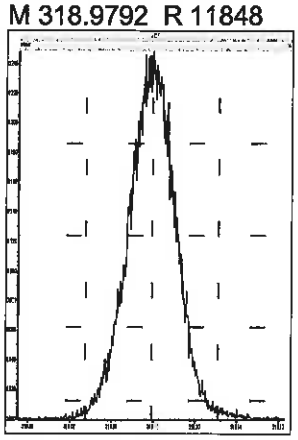
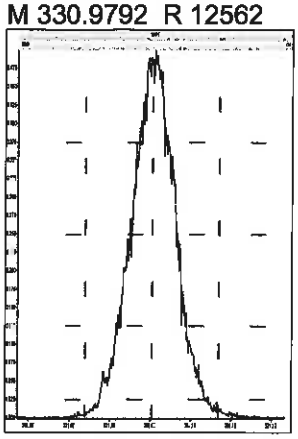


M 318.9792 R 11848



M 330.9792 R 12562



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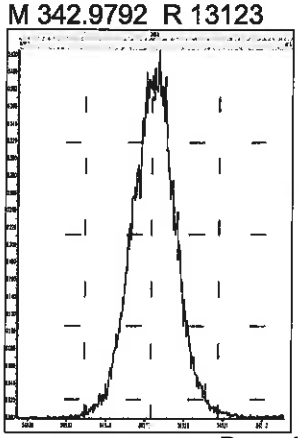
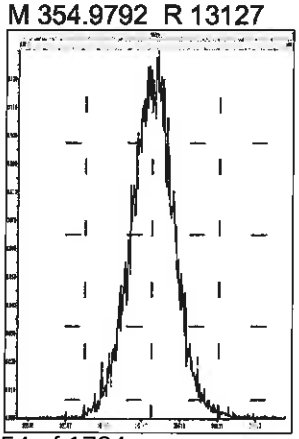


M 354.9792 R 13127



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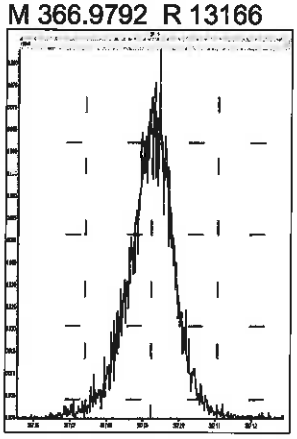
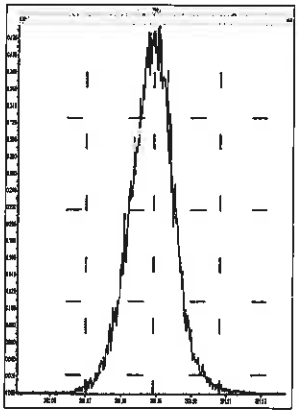
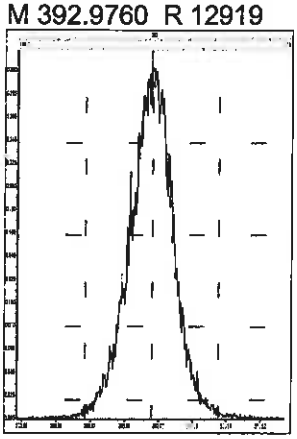


M 380.9760 R 12755



M 392.9760 R 12919



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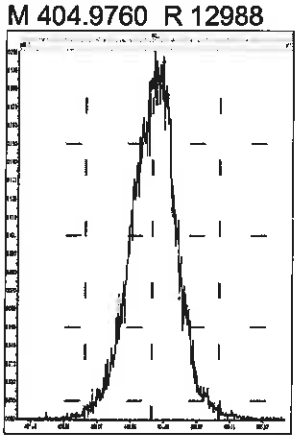

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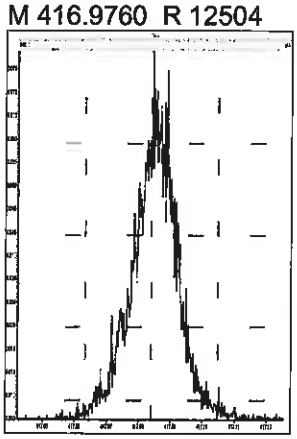

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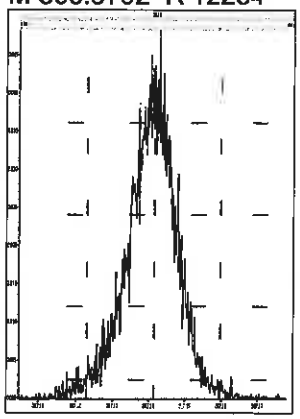

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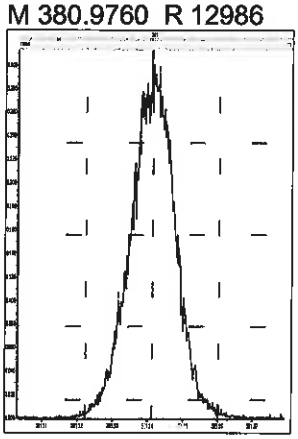

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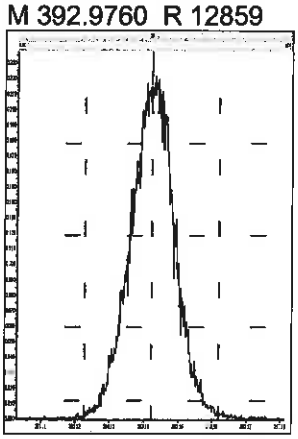

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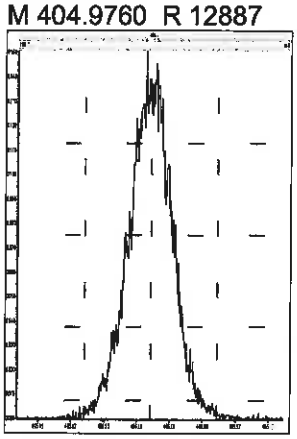

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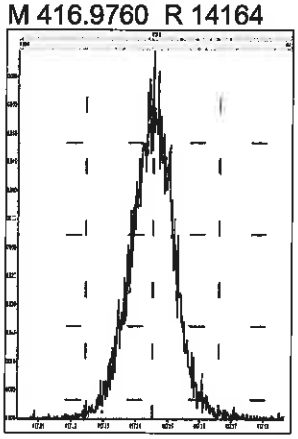
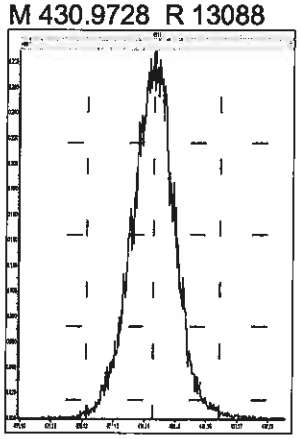
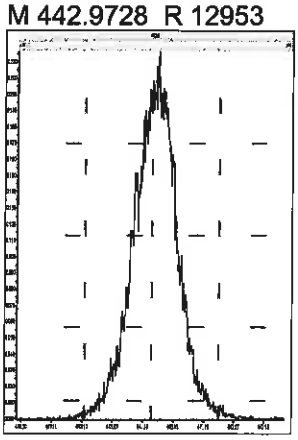


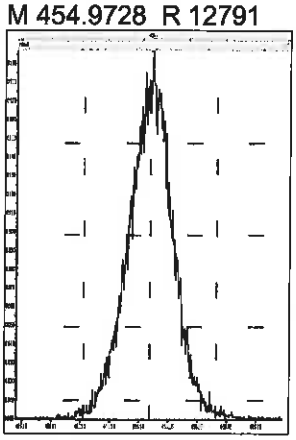
M 430.9728 R 13088



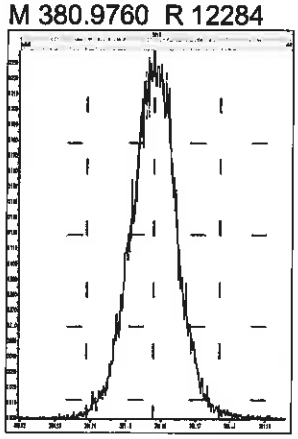
M 442.9728 R 12953



M 454.9728 R 12791



M 380.9760 R 12284



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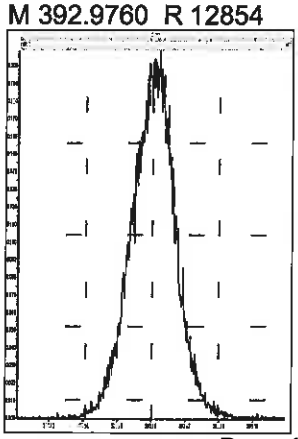
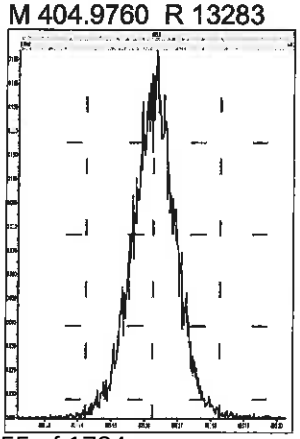
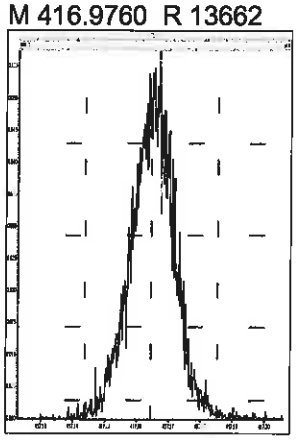


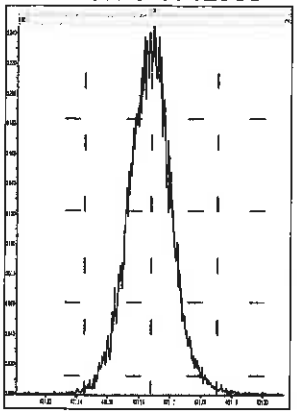
M 404.9760 R 13283



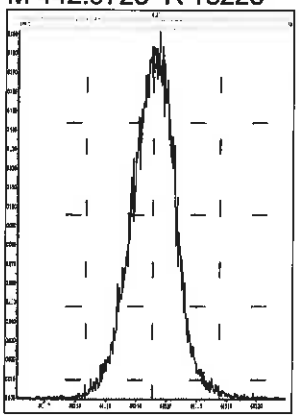
M 416.9760 R 13662



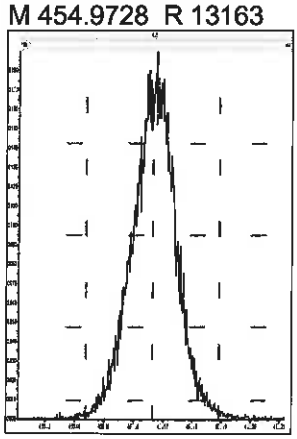
M 430.9728 R 12953



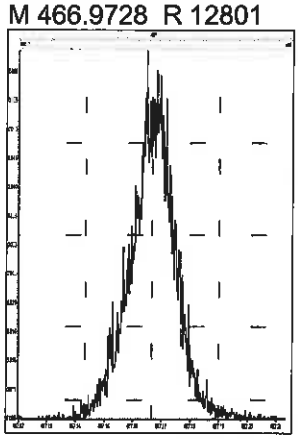
M 442.9728 R 13228



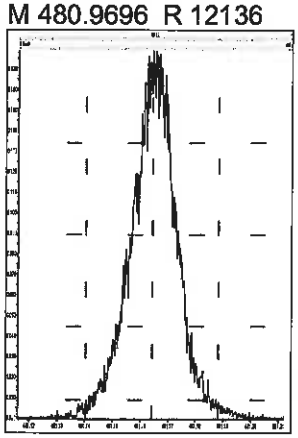
M 454.9728 R 13163



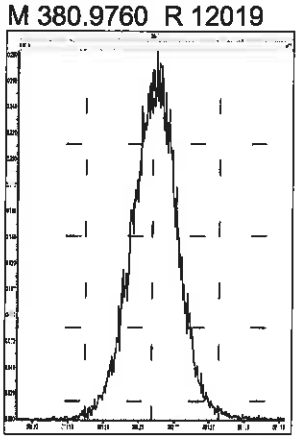
M 466.9728 R 12801



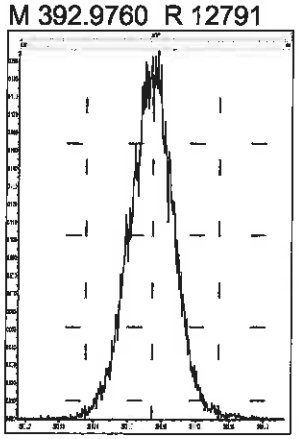
M 480.9696 R 12136



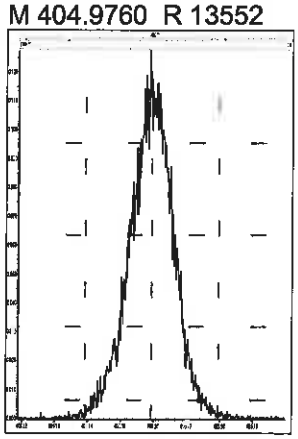
M 380.9760 R 12019



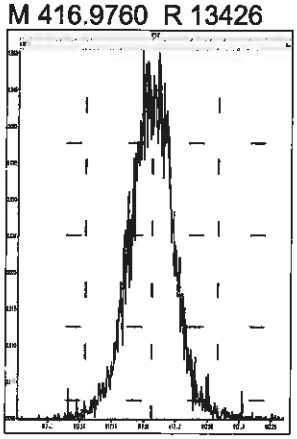
M 392.9760 R 12791



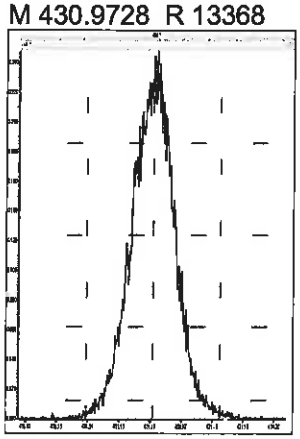
M 404.9760 R 13552



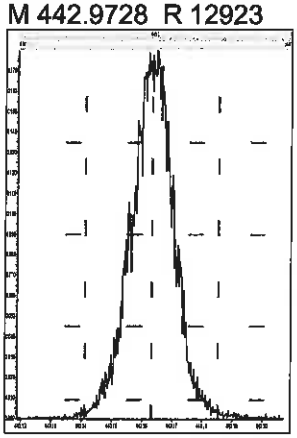
M 416.9760 R 13426



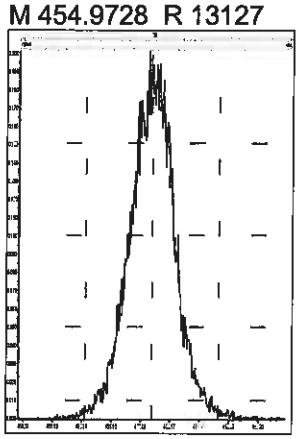
M 430.9728 R 13368



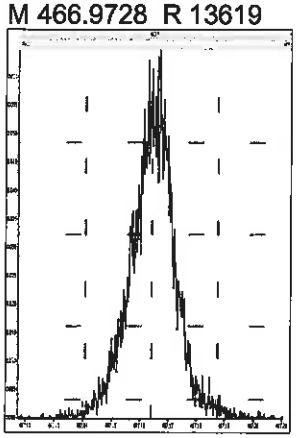
M 442.9728 R 12923



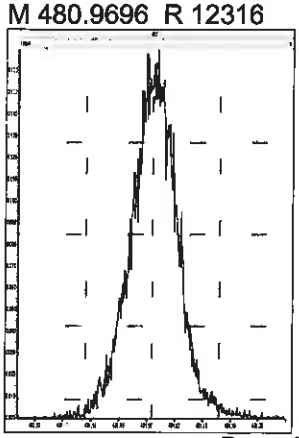
M 454.9728 R 13127



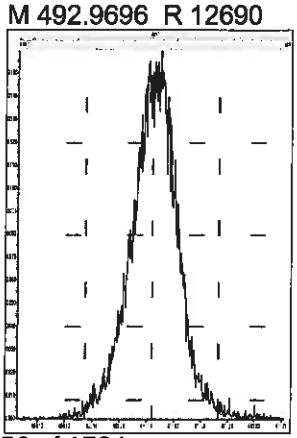
M 466.9728 R 13619



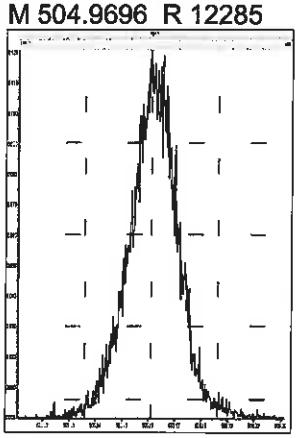
M 480.9696 R 12316



M 492.9696 R 12690



M 504.9696 R 12285



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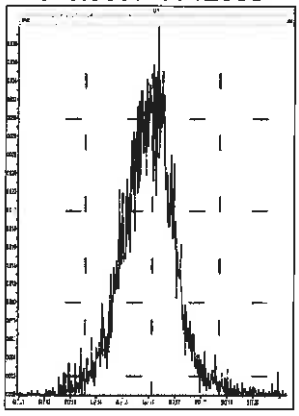

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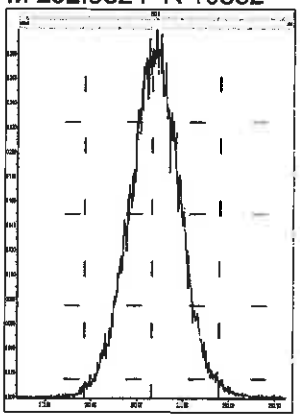
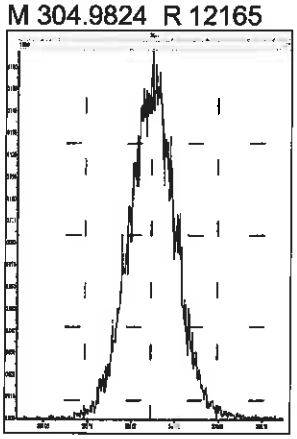
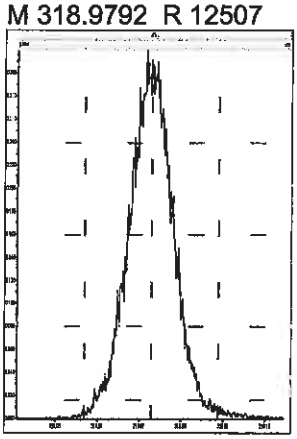
M 292.9824 R 10882



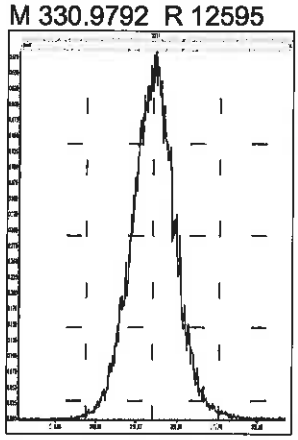
M 304.9824 R 12165



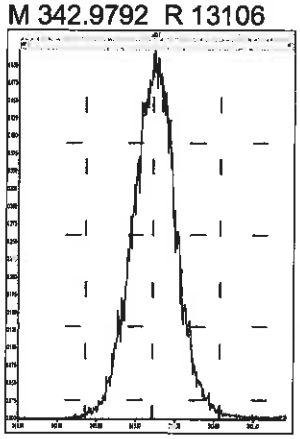
M 318.9792 R 12507



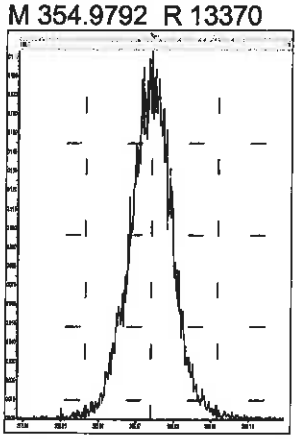
M 330.9792 R 12595



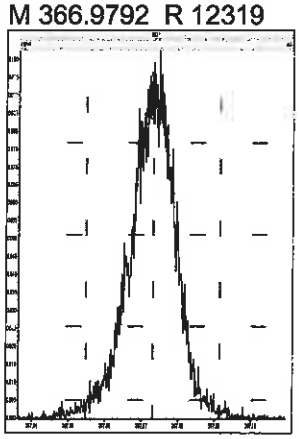
M 342.9792 R 13106



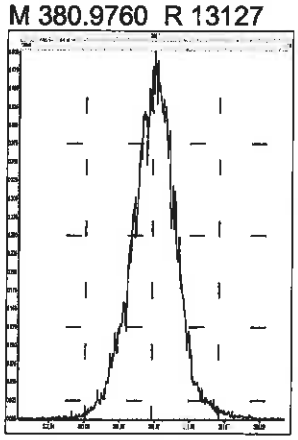
M 354.9792 R 13370



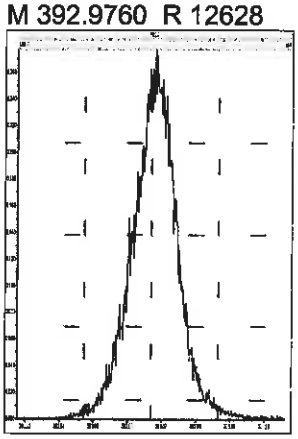
M 366.9792 R 12319



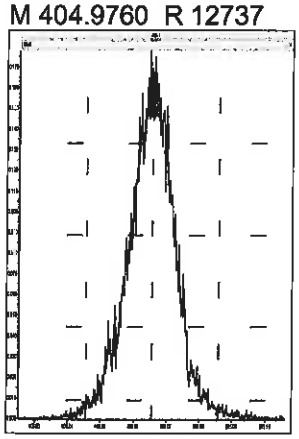
M 380.9760 R 13127



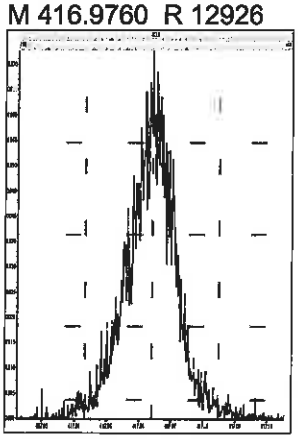
M 392.9760 R 12628



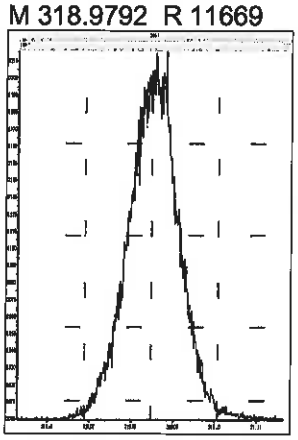
M 404.9760 R 12737



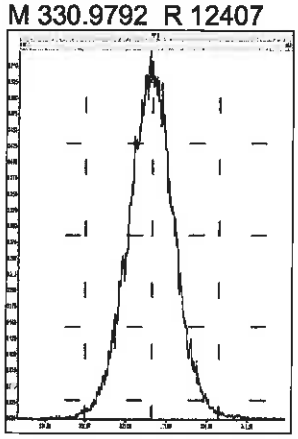
M 416.9760 R 12926



M 318.9792 R 11669



M 330.9792 R 12407



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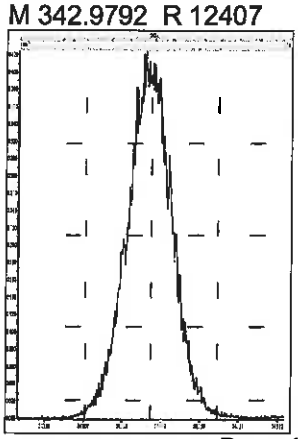
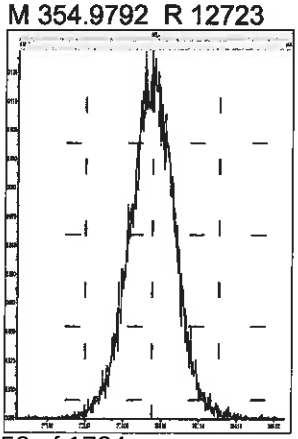
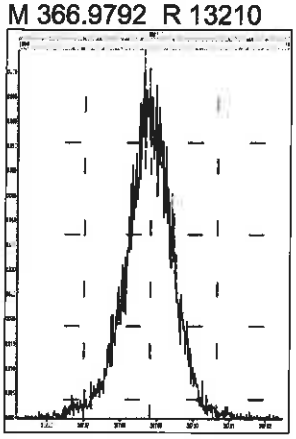


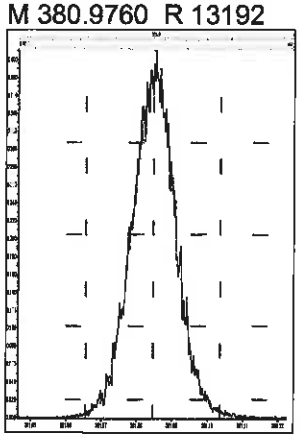
M 354.9792 R 12723



M 366.9792 R 13210



M 380.9760 R 13192



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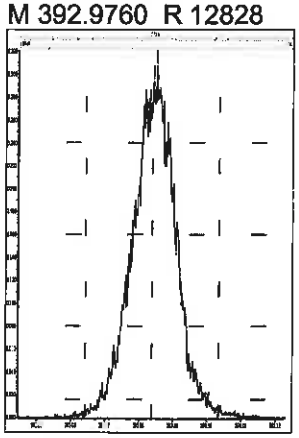

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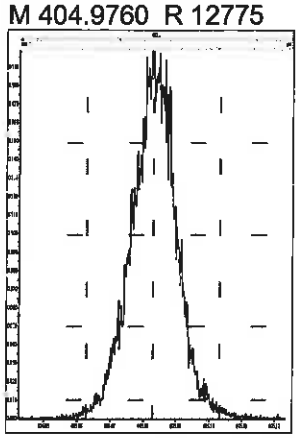

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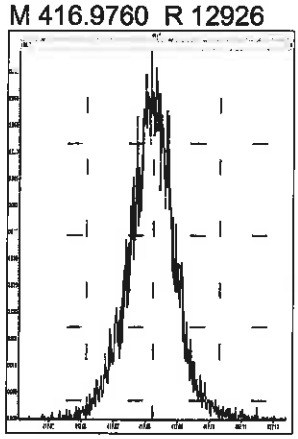

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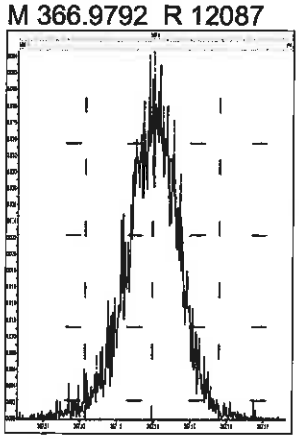

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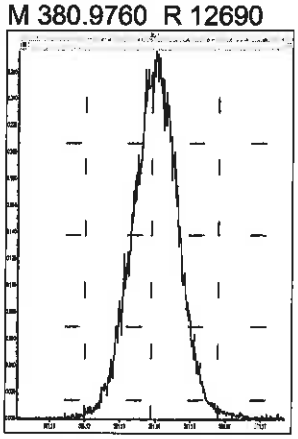
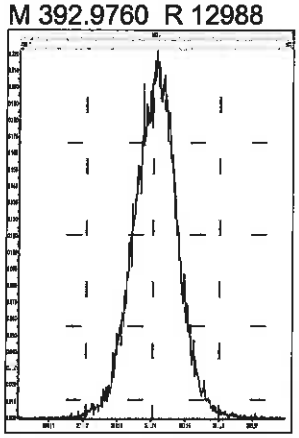


M 392.9760 R 12988



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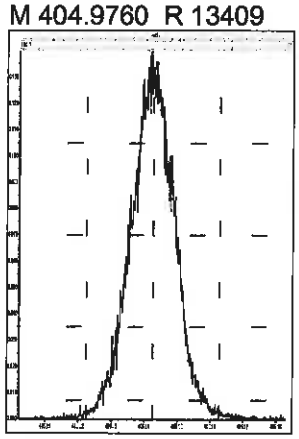
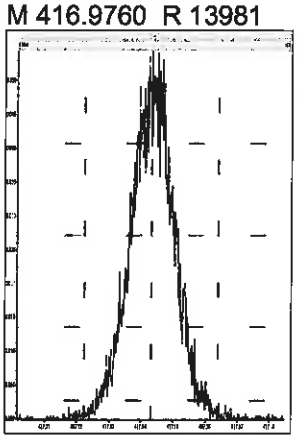
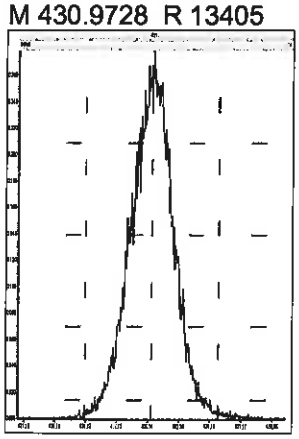


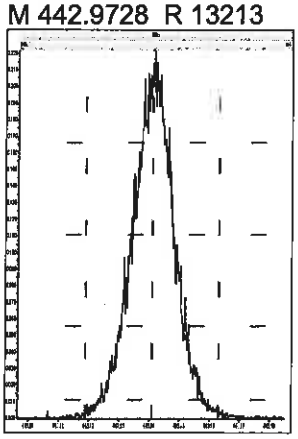
M 416.9760 R 13981



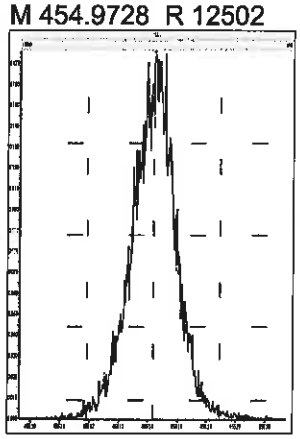
M 430.9728 R 13405



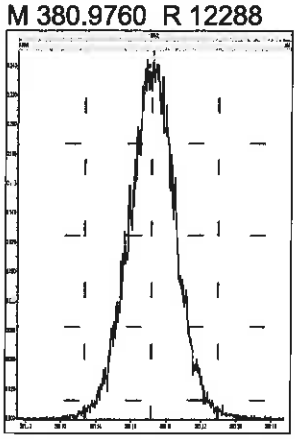
M 442.9728 R 13213



M 454.9728 R 12502



M 380.9760 R 12288



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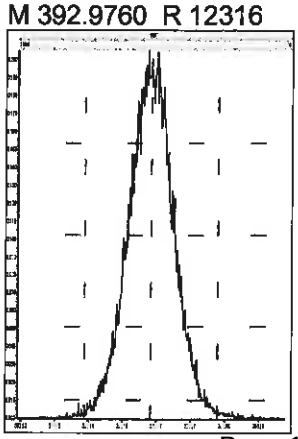
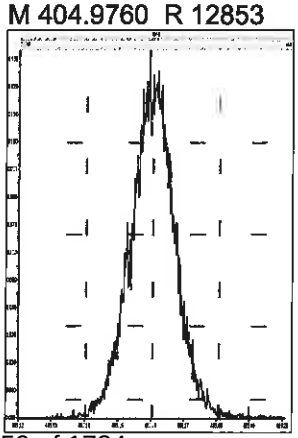


M 404.9760 R 12853



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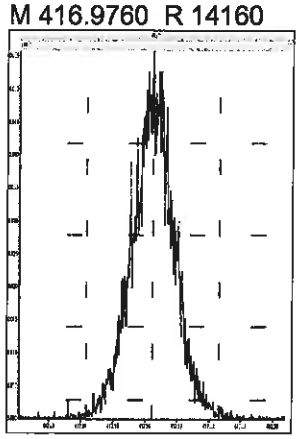
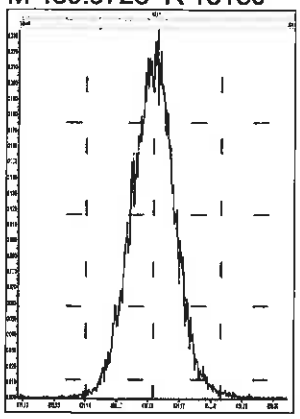
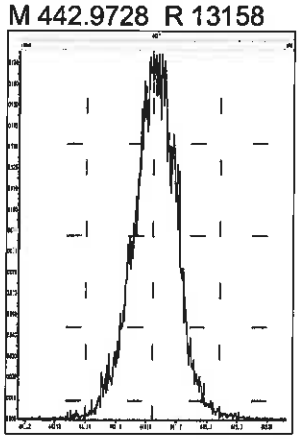


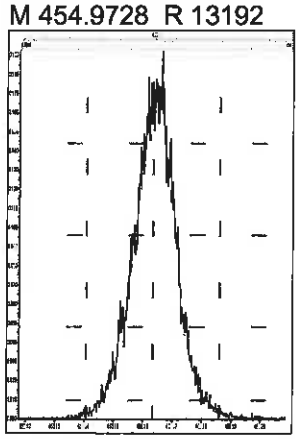
M 430.9728 R 13130



M 442.9728 R 13158



M 454.9728 R 13192



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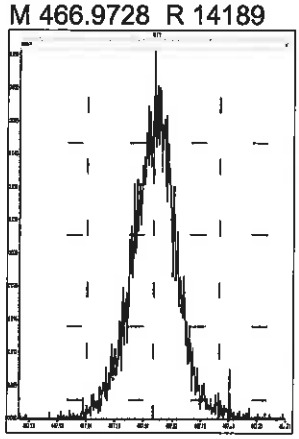

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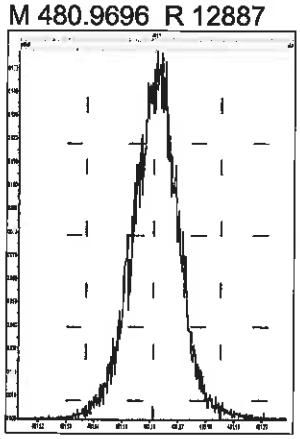
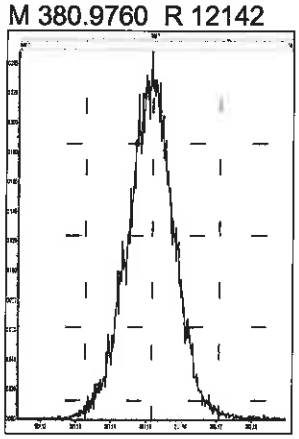
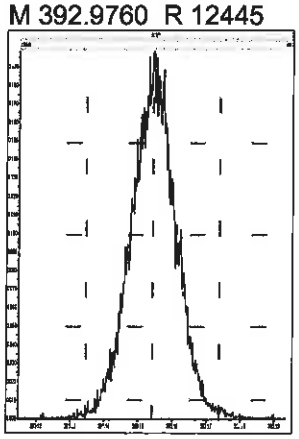


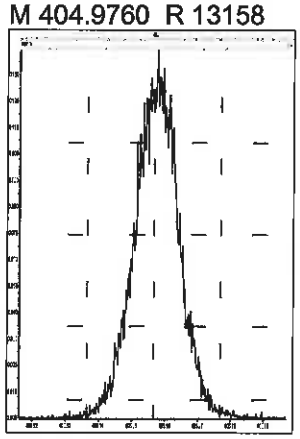
M 380.9760 R 12142



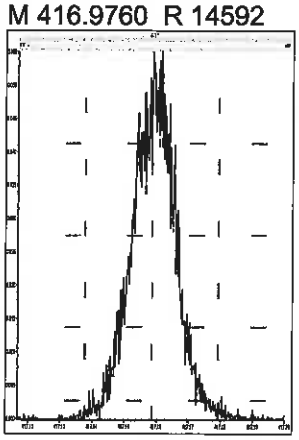
M 392.9760 R 12445



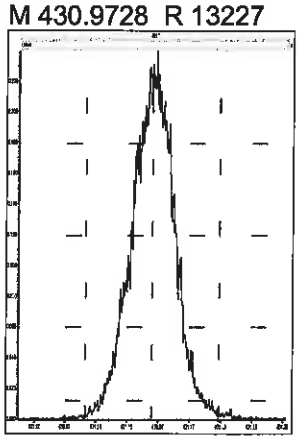
M 404.9760 R 13158



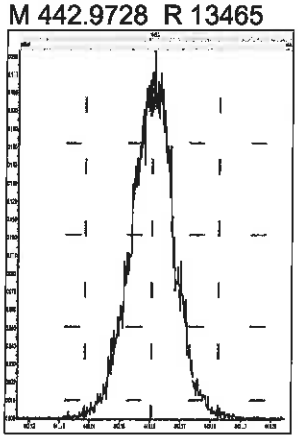
M 416.9760 R 14592



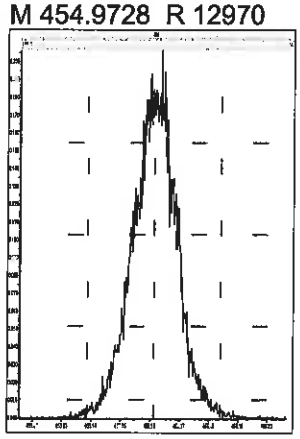
M 430.9728 R 13227



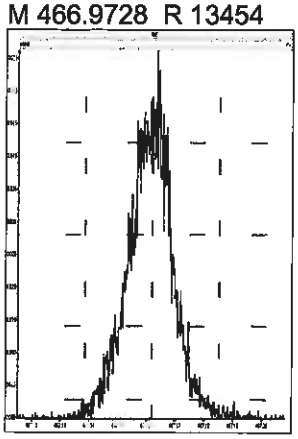
M 442.9728 R 13465



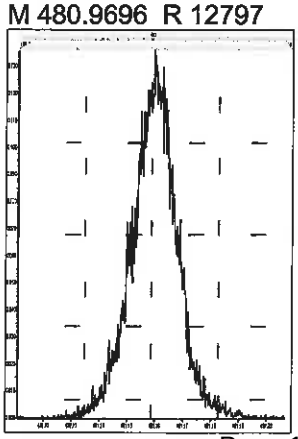
M 454.9728 R 12970



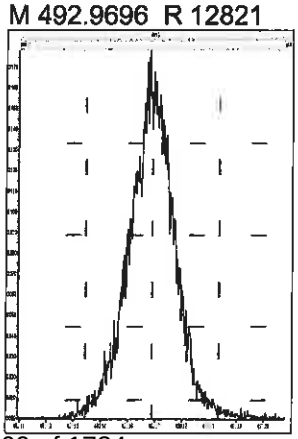
M 466.9728 R 13454



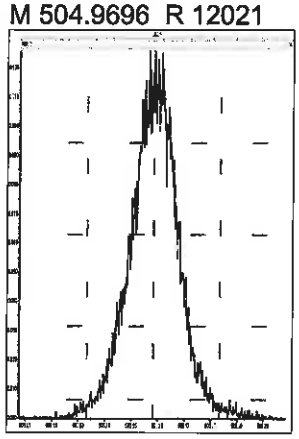
M 480.9696 R 12797



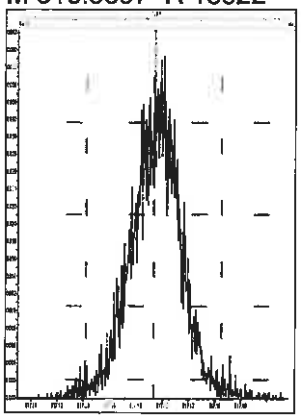
M 492.9696 R 12821



M 504.9696 R 12021



M 516.9697 R 13622



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 13-Dec-2019 11:54:42 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV 121319 CS-4 HRDXNL4_00085
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 23:51:35 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:34:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.856	58151359	0.78	1.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.357	71040290	0.78	1.3318	91.7	91.7	0.1490	0.1490	91.73	
2,3,7,8-TCDF	17.372	5732900	0.75	0.9005	8.961	8.961	0.0282	0.0282	89.61	
A Non-2,3,7,8-sub-TCDF	17.062						0.0282	0.0282		Rn
S Total TCDF					8.961	8.961	0.0282	0.0282		
D 13C-2,3,7,8-TCDD	18.052	55987350	0.77	0.9647	99.8	99.8	0.1323	0.1323	99.80	
2,3,7,8-TCDD	18.068	5190567	0.76	1.0698	8.666	8.666	0.0228	0.0228	86.66	
$ 37Cl4-2,3,7,8-TCDD	18.068	8284297		1.3082	10.9	10.9	0.0118	0.0118	109	
A Non-2,3,7,8-sub-TCDD	17.516						0.0228	0.0228		
S Total TCDD					8.666	8.666	0.0228	0.0228		
D 13C-1,2,3,7,8-PeCDF	22.372	58012775	1.58	1.0537	94.7	94.7	0.2014	0.2014	94.67	
1,2,3,7,8-PeCDF	22.400	26545597	1.57	0.9704	47.2	47.2	0.1420	0.1420	94.31	
D 13C-2,3,4,7,8-PeCDF	23.722	57869442	1.60	1.0173	97.8	97.8	0.2086	0.2086	97.83	
2,3,4,7,8-PeCDF	23.750	26339436	1.55	0.9986	45.6	45.6	0.1485	0.1485	91.16	
A F1 PeCDFs	19.776						0.0173	0.0173		
A Non-2,3,7,8-sub-PeCDF	22.933						0.1451	0.1451		
S Total PeCDF					92.7	92.7	0.1453	0.1453		
D 13C-1,2,3,7,8-PeCDD	24.445	44777573	1.57	0.7281	105.8	105.8	0.1285	0.1285	106	
1,2,3,7,8-PeCDD	24.472	20520592	1.57	1.0023	45.7	45.7	0.0680	0.0680	91.44	
A Non-2,3,7,8-sub-PeCDD	23.368						0.0680	0.0680		
S Total PeCDD					45.7	45.7	0.0680	0.0680		
D 13C-1,2,3,4,7,8-HxCDF	30.543	42482479	0.50	0.9632	91.8	91.8	0.2106	0.2106	91.80	
1,2,3,4,7,8-HxCDF	30.557	20456835	1.22	1.0315	46.7	46.7	0.1650	0.1650	93.37	
D 13C-1,2,3,6,7,8-HxCDF	30.716	43552971	0.50	1.0646	85.1	85.1	0.1905	0.1905	85.15	
1,2,3,6,7,8-HxCDF	30.743	21085635	1.23	1.0235	47.3	47.3	0.1592	0.1592	94.60	
D 13C-2,3,4,6,7,8-HxCDF	31.555	41738939	0.50	0.9696	89.6	89.6	0.2092	0.2092	89.59	
2,3,4,6,7,8-HxCDF	31.568	20873024	1.20	1.0645	47.0	47.0	0.1221	0.1221	93.96	
D 13C-1,2,3,7,8,9-HxCDF	32.367	39055451	0.50	0.8955	90.8	90.8	0.2265	0.2265	90.77	
1,2,3,7,8,9-HxCDF	32.380	19617811	1.22	1.0664	47.1	47.1	0.1182	0.1182	94.21	
A Non-2,3,7,8-sub-HxCDF	30.237						0.1383	0.1383		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					188.1	188.1	0.1411	0.1411		
* 13C-1,2,3,7,8,9-HxCDD	32.181	48047612	1.25	8.8E+05	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.741	37495151	1.27	0.7590	102.8	102.8	0.1624	0.1624	103	
1,2,3,4,7,8-HxCDD	31.755	17471675	1.22	1.0054	46.3	46.3	0.0812	0.0812	92.70	
D 13C-1,2,3,6,7,8-HxCDD	31.848	40421508	1.26	0.9247	91.0	91.0	0.1333	0.1333	90.98	
1,2,3,6,7,8-HxCDD	31.861	18651593	1.25	0.9833	46.9	46.9	0.0792	0.0792	93.85	
1,2,3,7,8,9-HxCDD	32.194	20563991	1.24	1.1036	47.8	47.8	0.0723	0.0723	95.66	
A Non-2,3,7,8-sub-HxCDD	30.870						0.0774	0.0774		
S Total HxCDD					141.1	141.1	0.0776	0.0776		
D 13C-1,2,3,4,6,7,8-HpCDF	33.780	36468538	0.44	0.7930	95.7	95.7	0.5095	0.5095	95.72	
1,2,3,4,6,7,8-HpCDF	33.793	25094092	1.00	1.4240	48.3	48.3	0.2168	0.2168	96.64	
D 13C-1,2,3,4,7,8,9-HpCDF	34.862	36600228	0.44	0.7296	104.4	104.4	0.5538	0.5538	104	
1,2,3,4,7,8,9-HpCDF	34.862	22157240	1.03	1.2834	47.2	47.2	0.2682	0.2682	94.34	
A Non-2,3,7,8-sub-HpCDF	34.340						0.2405	0.2405		
S Total HpCDF					95.5	95.5	0.2425	0.2425		
D 13C-1,2,3,4,6,7,8-HpCDD	34.570	40443837	1.05	0.7532	111.8	111.8	0.3436	0.3436	112	
1,2,3,4,6,7,8-HpCDD	34.583	18978694	1.04	1.0174	46.1	46.1	0.1245	0.1245	92.25	
A Non-2,3,7,8-sub-HpCDD	34.309						0.1245	0.1245		
S Total HpCDD					46.1	46.1	0.1245	0.1245		
D 13C-OCDD	36.891	71080841	0.91	0.5621	263.2	263.2	0.1605	0.1605	132	
OCDF	36.999	42574744	0.90	1.3047	91.8	91.8	0.0418	0.0418	91.82	
OCDD	36.903	38264782	0.89	1.0997	97.9	97.9	0.0770	0.0770	97.91	

Reagents:

HRDXNL4_00085 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 13-Dec-2019 11:54:42 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV 121319 CS-4 HRDXNL4_00085
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5
Sublist: chrom-Dioxin_10D5*sub1

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 23:51:35 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:34:39

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.856	17.856	0		25516220	6200852	3628	9070	1709		
333.9339	17.856	17.856	0		32635139	7969033	3605	9012	2211	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.357	17.357	0	0.972	31085904	7585307	5673	14182	1337		
317.9389	17.357	17.357	0	0.972	39954386	9744799	5575	13937	1748	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.372	17.372	0	1.001	2461651	596573	788	1970	757		
305.8987	17.372	17.372	0	1.001	3271249	787055	972	2430	810	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.994	17.062	-4	0.979	10822	3134	788	1970	4		
305.8987	16.979	17.062	-5	0.978	21337	4271	972	2430	4	0.51(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	18.052	18.052	0	1.011	24277237	5804524	3628	9070	1600		
333.9339	18.052	18.052	0	1.011	31710113	7686593	3605	9012	2132	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	18.068	18.068	0	1.001	2243474	525075	773	1932	679		
321.8936	18.068	18.068	0	1.001	2947093	704934	541	1352	1303	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	18.068	18.068	0	1.012	8284297	1961112	877	2192	2236		
A Non-2,3,7,8-sub-TCDD											
319.8965	17.516						773	1932			
321.8936	17.516						541	1352			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	22.372	22.372	0	1.253	35543090	6374712	7159	17897	890		
353.8970	22.372	22.372	0	1.253	22469685	4019009	4870	12175	825	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.400	22.400	0	1.001	16229982	2821546	3324	8310	849		
341.8567	22.400	22.400	0	1.001	10315615	1796994	2407	6017	747	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.722	23.722	0	1.329	35632053	5913139	7159	17897	826		
353.8970	23.722	23.722	0	1.329	22237389	3749441	4870	12175	770	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.750	23.750	0	1.001	16001898	2573430	3324	8310	774		
341.8567	23.750	23.750	0	1.001	10337538	1671465	2407	6017	694	1.55(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.776						261	652			
341.8567	19.776						423	1057			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.933						3324	8310			
341.8567	22.933						2407	6017			
13C-1,2,3,7,8-PeCDD											
367.8949	24.445	24.445	0	1.369	27337738	4325488	2805	7012	1542		
369.8919	24.445	24.445	0	1.369	17439835	2752755	2499	6247	1102	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.472	24.472	0	1.001	12536174	1949302	1214	3035	1606		
357.8516	24.472	24.472	0	1.001	7984418	1248192	717	1792	1741	1.57(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	23.368						1214	3035			
357.8516	23.368						717	1792			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.543	30.543	0	0.949	14150737	2726196	3821	9552	713		
385.8610	30.543	30.543	0	0.949	28331742	5328175	7057	17642	755	0.50(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.557	30.557	0	1.000	11242310	2165932	2969	7422	730		
375.8178	30.557	30.557	0	1.000	9214525	1785732	2515	6287	710	1.22(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.716	30.716	0	0.955	14588110	2844047	3821	9552	744		
385.8610	30.716	30.716	0	0.955	28964861	5571576	7057	17642	790	0.50(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.743	30.743	0	1.001	11612379	2239137	2969	7422	754		
375.8178	30.743	30.743	0	1.001	9473256	1802621	2515	6287	717	1.23(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.555	31.555	0	0.981	13972817	3486417	3821	9552	912		
385.8610	31.555	31.555	0	0.981	27766122	7064807	7057	17642	1001	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.568	31.568	0	1.000	11394863	2840040	2969	7422	957		
375.8178	31.568	31.568	0	1.000	9478161	2368887	2515	6287	942	1.20(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.367	32.367	0	1.006	13003000	3681632	3821	9552	964		
385.8610	32.367	32.367	0	1.006	26052451	7195748	7057	17642	1020	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.380	32.380	0	1.000	10767461	3002723	2969	7422	1011		
375.8178	32.380	32.380	0	1.000	8850350	2410399	2515	6287	958	1.22(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						2969	7422			
375.8178	30.237						2515	6287			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.181	32.181	0		26719529	7411302	3715	9287	1995		
403.8529	32.181	32.181	0		21328083	5998062	2897	7242	2070	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.741	31.741	0	0.986	20964570	5790833	3715	9287	1559		
403.8529	31.741	31.741	0	0.986	16530581	4480412	2897	7242	1547	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.755	31.755	0	1.000	9615382	2615307	1863	4657	1404		
391.8127	31.755	31.755	0	1.000	7856293	2140014	1493	3732	1433	1.22(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.848	31.848	0	0.990	22543678	6019623	3715	9287	1620		
403.8529	31.848	31.848	0	0.990	17877830	4752560	2897	7242	1641	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.861	31.861	0	1.000	10352620	2731590	1863	4657	1466		
391.8127	31.861	31.861	0	1.000	8298973	2184948	1493	3732	1463	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.194	32.194	0	1.014	11388834	3182243	1863	4657	1708		
391.8127	32.194	32.194	0	1.014	9175157	2514355	1493	3732	1684	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.870						1863	4657			
391.8127	30.870						1493	3732			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.780	33.780	0	1.050	11083401	3873054	6199	15497	625		
419.8220	33.780	33.780	0	1.050	25385137	8702797	15472	38680	562	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.793	33.793	0	1.000	12535951	4419467	6518	16295	678		
409.7789	33.793	33.793	0	1.000	12558141	4361106	9013	22532	484	1.00(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.862	34.862	0	1.083	11120061	3499230	6199	15497	564		
419.8220	34.862	34.862	0	1.083	25480167	7781110	15472	38680	503	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.862	34.862	0	1.000	11234733	3536550	6518	16295	543		
409.7789	34.862	34.862	0	1.000	10922507	3485969	9013	22532	387	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.340						6518	16295			
409.7789	34.340						9013	22532			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.570	34.570	0	1.074	20757885	6767621	6225	15562	1087		
437.8140	34.570	34.570	0	1.074	19685952	6421058	7655	19137	839	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.583	34.583	0	1.000	9681866	3184273	3518	8795	905		
425.7737	34.583	34.583	0	1.000	9296828	3023514	3167	7917	955	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.309						3518	8795			
425.7737	34.309						3167	7917			
13C-OCDD											
469.7779	36.891	36.891	0	1.146	33922913	9539126	2046	5115	4662		
471.7750	36.891	36.891	0	1.146	37157928	10432240	2793	6982	3735	0.91(0.76-1.02)	
OCDF											
441.7428	36.999	36.999	0	1.003	20132288	5531307	970	2425	5702		
443.7399	36.987	36.999	-1	1.003	22442456	6220606	1211	3027	5137	0.90(0.76-1.02)	
OCDD											
457.7377	36.903	36.903	0	1.000	18055509	5131841	1197	2992	4287		
459.7348	36.903	36.903	0	1.000	20209273	5652108	2183	5457	2589	0.89(0.76-1.02)	

Reagents:

HRDXNL4_00085 Amount Added: 2.00 Units: uL

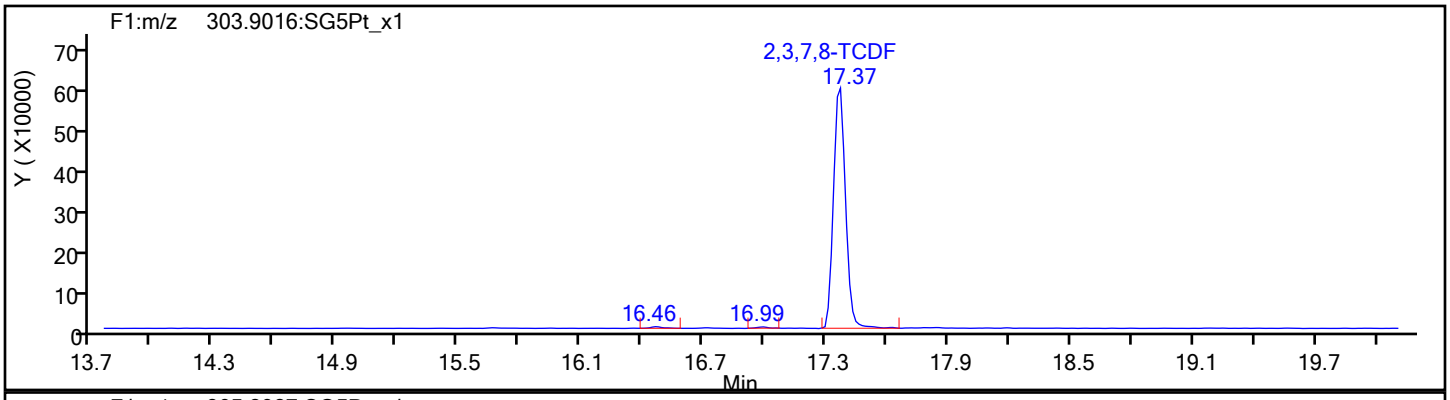
Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

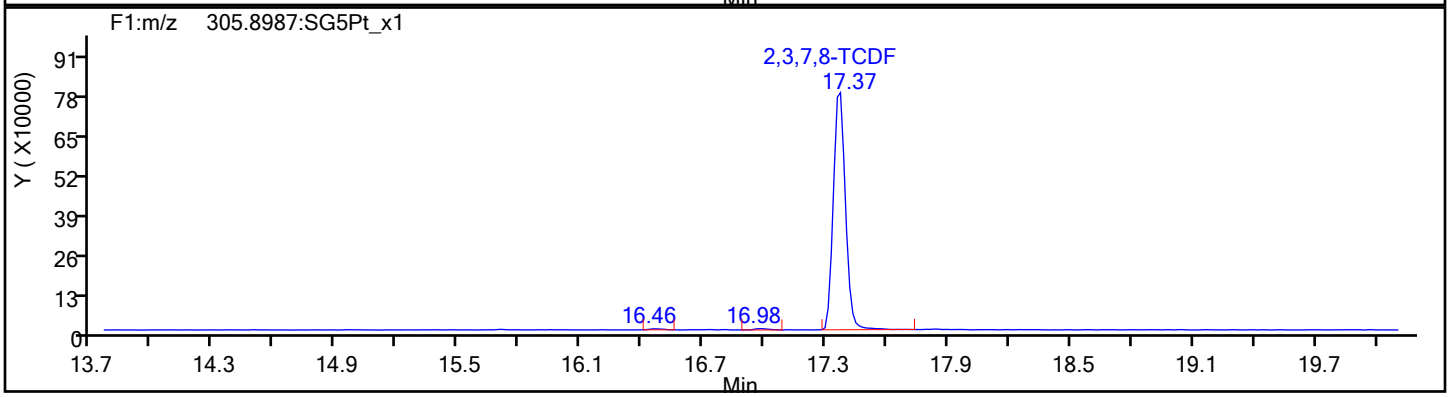
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d

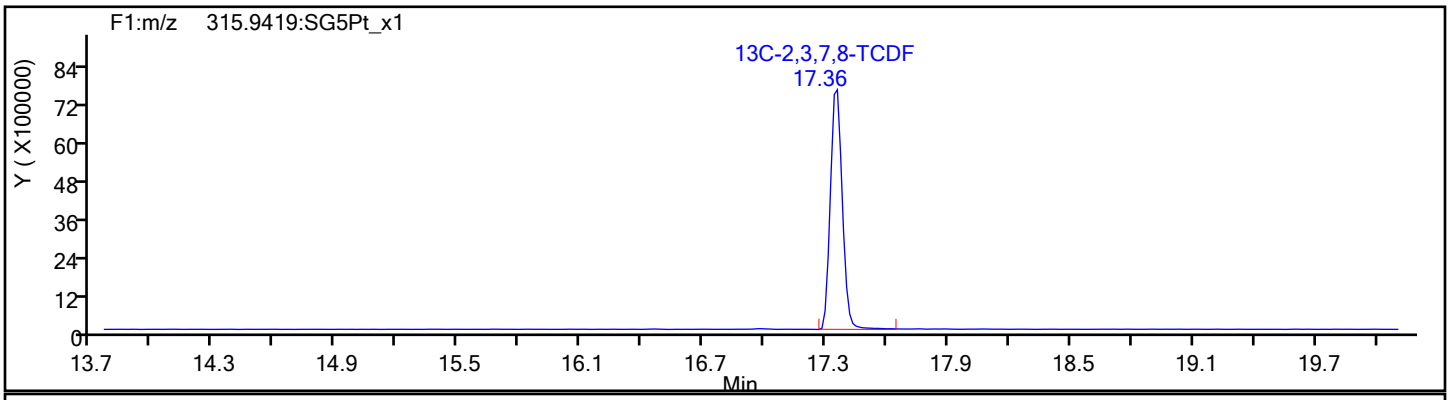
Injection Date:	13-Dec-2019 11:54:42	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

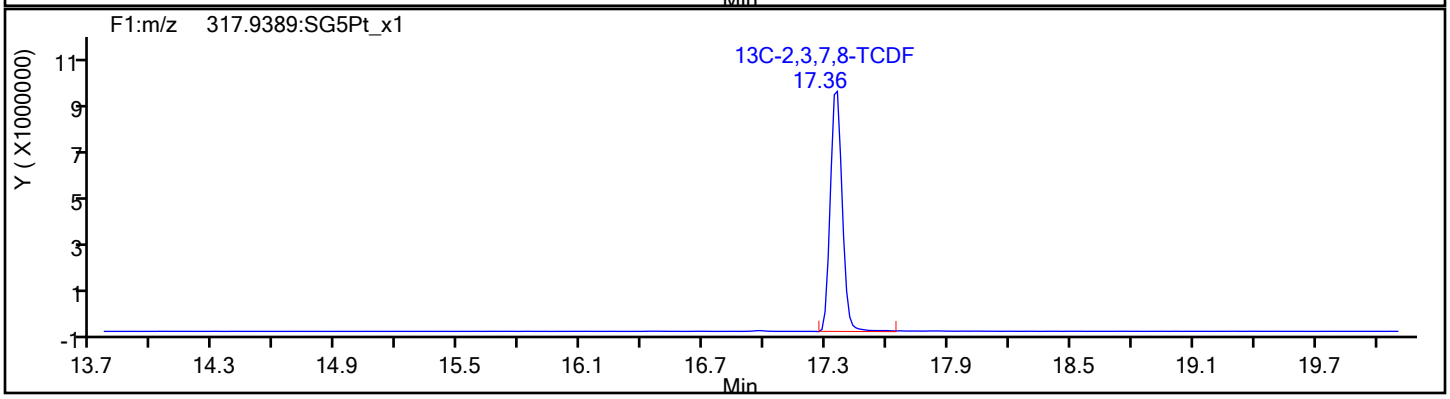
TCDF





TCDF Standards



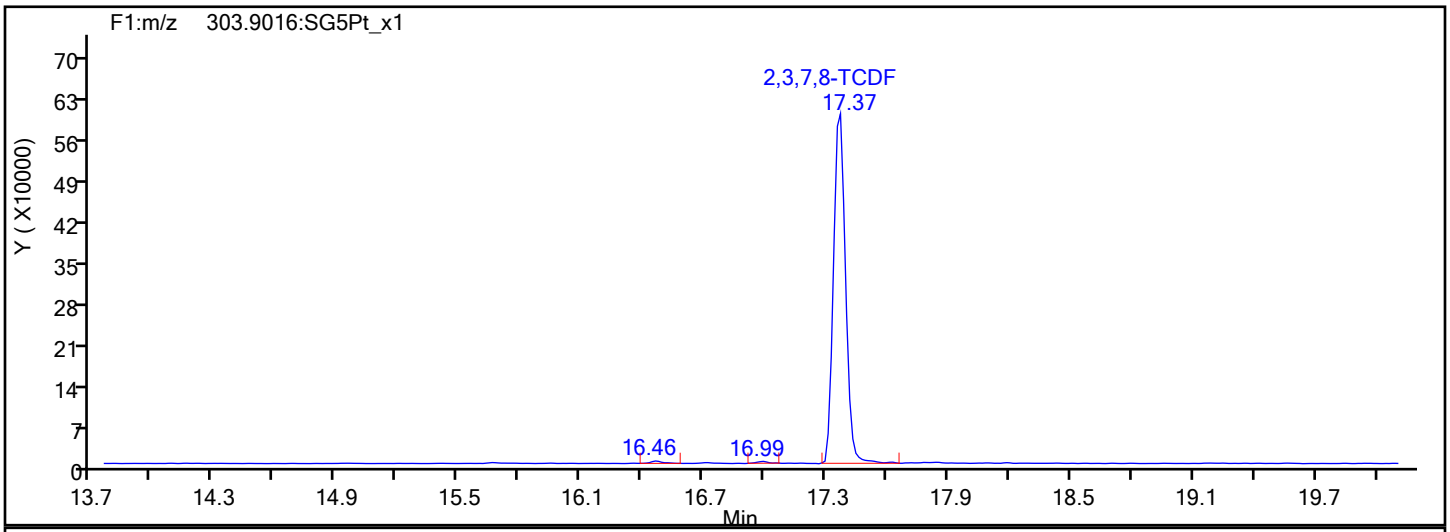


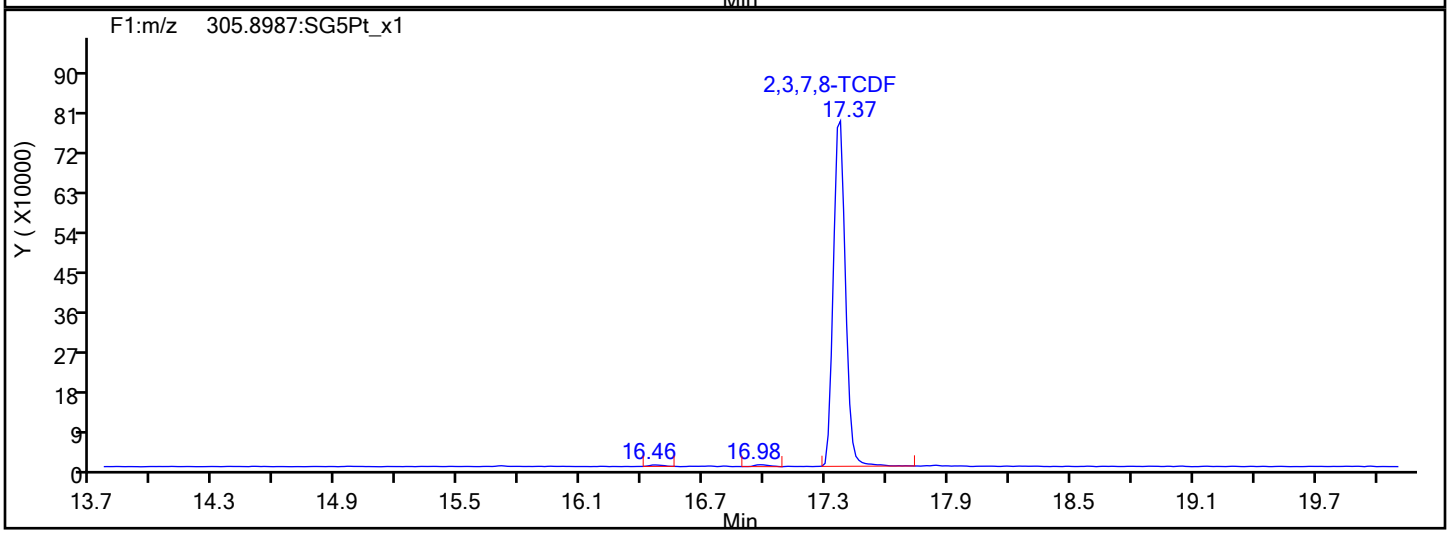
Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

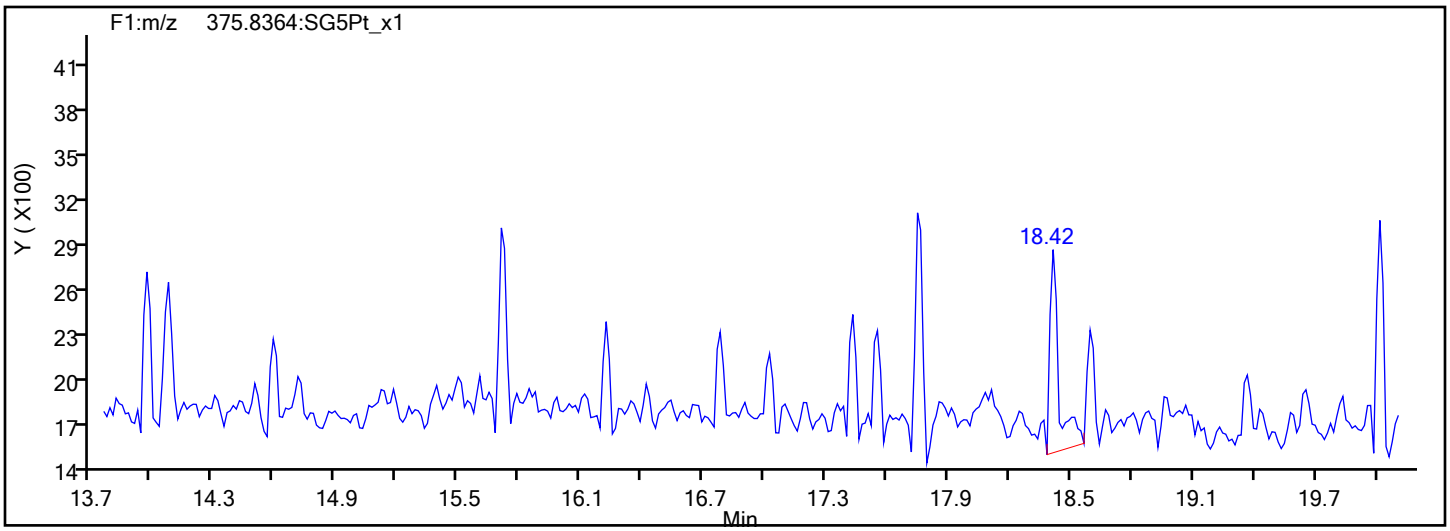
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d		
Injection Date:	13-Dec-2019 11:54:42	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

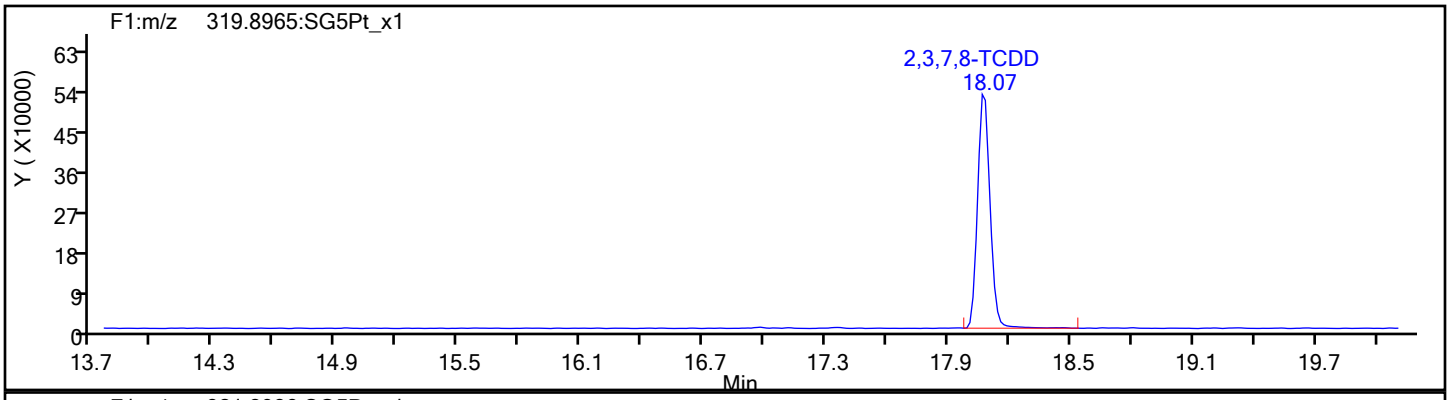


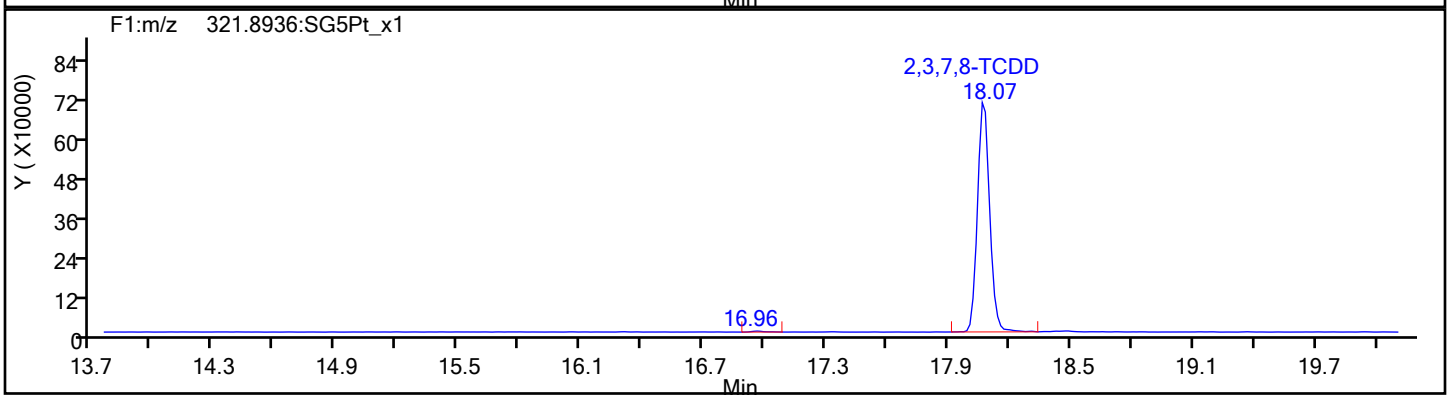
Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

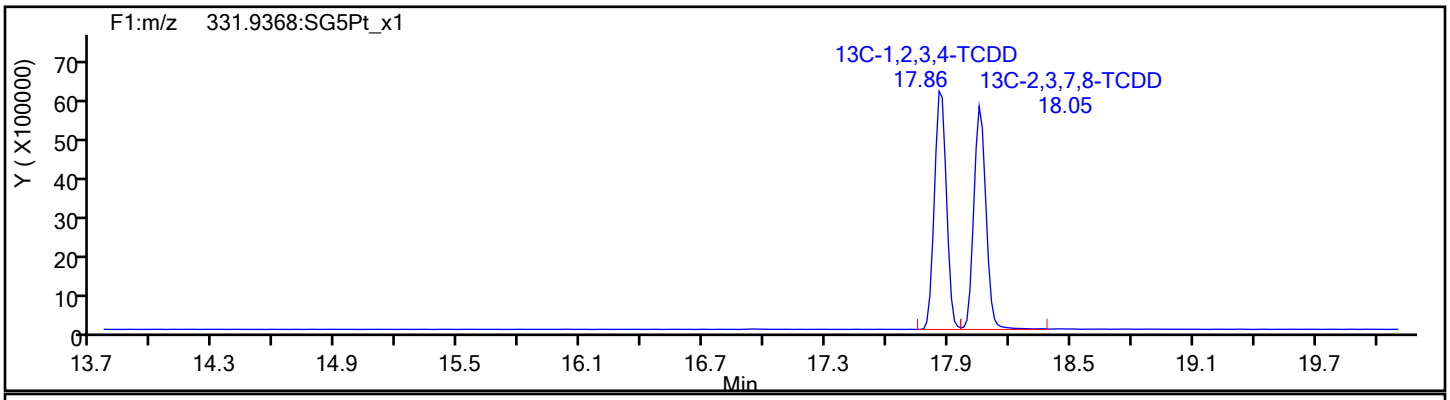
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d		
Injection Date:	13-Dec-2019 11:54:42	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

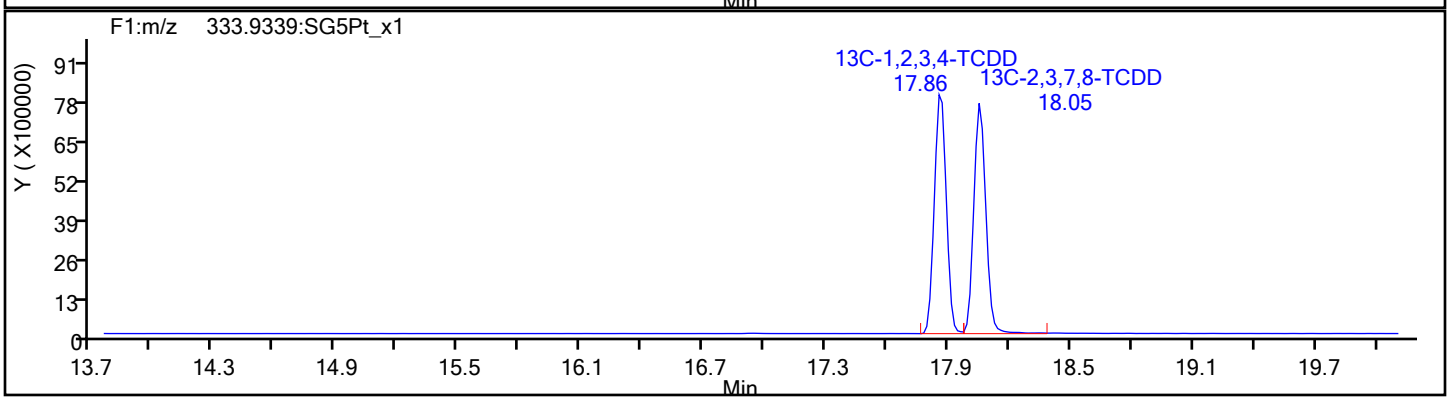
TCDD





TCDD Standards





Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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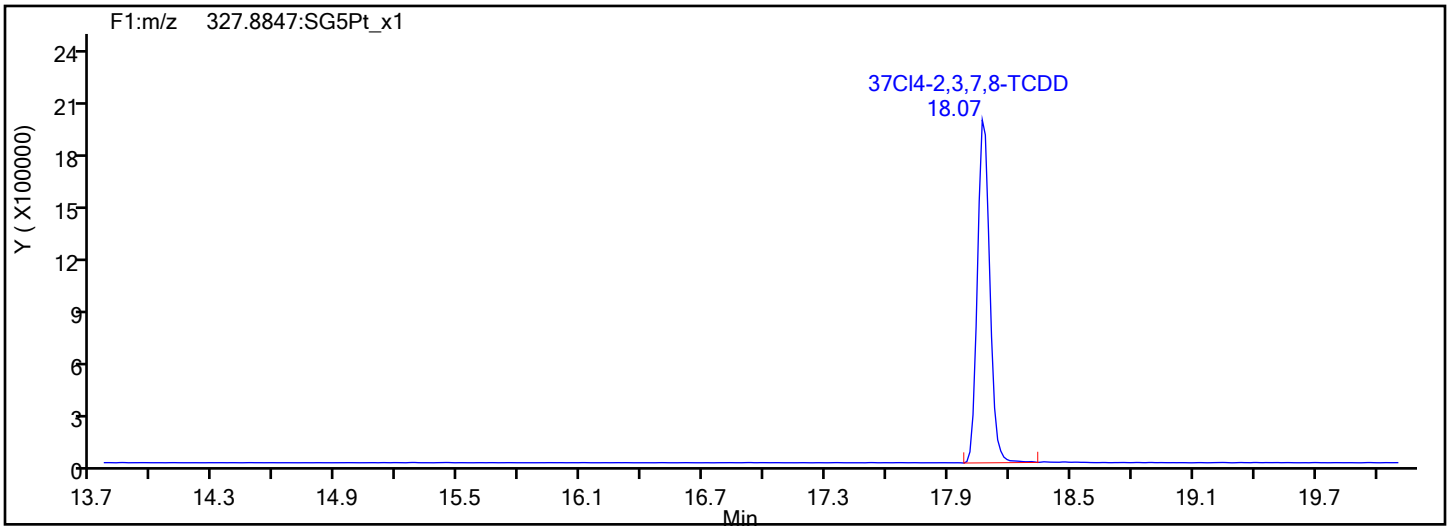
37Cl4-TCDD



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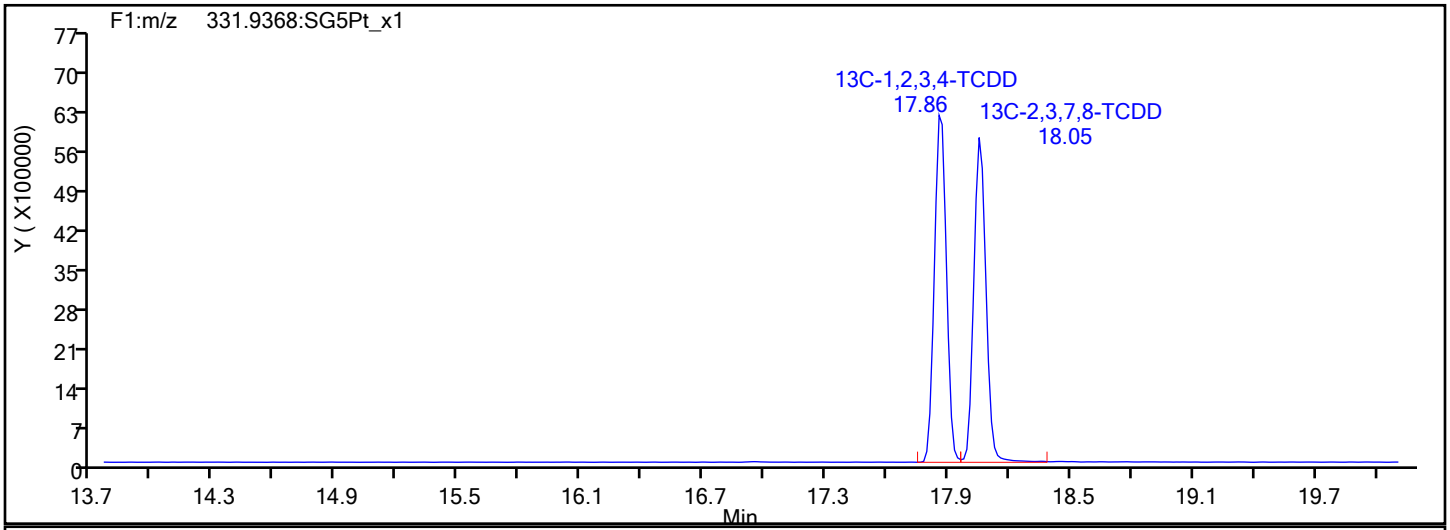

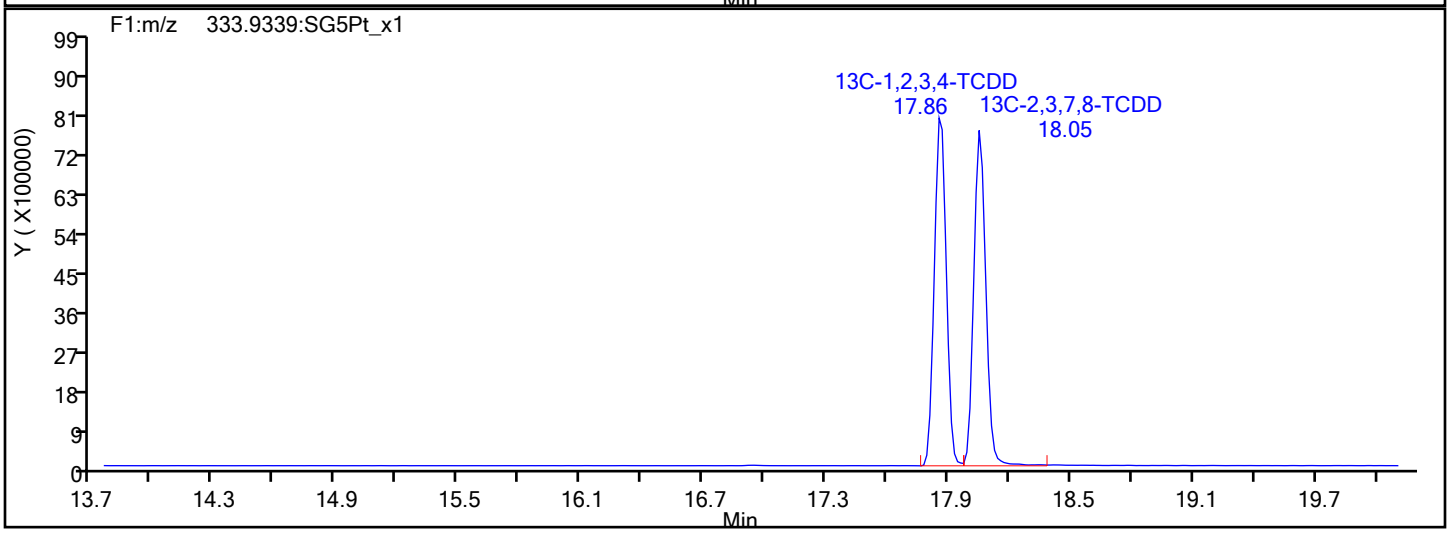

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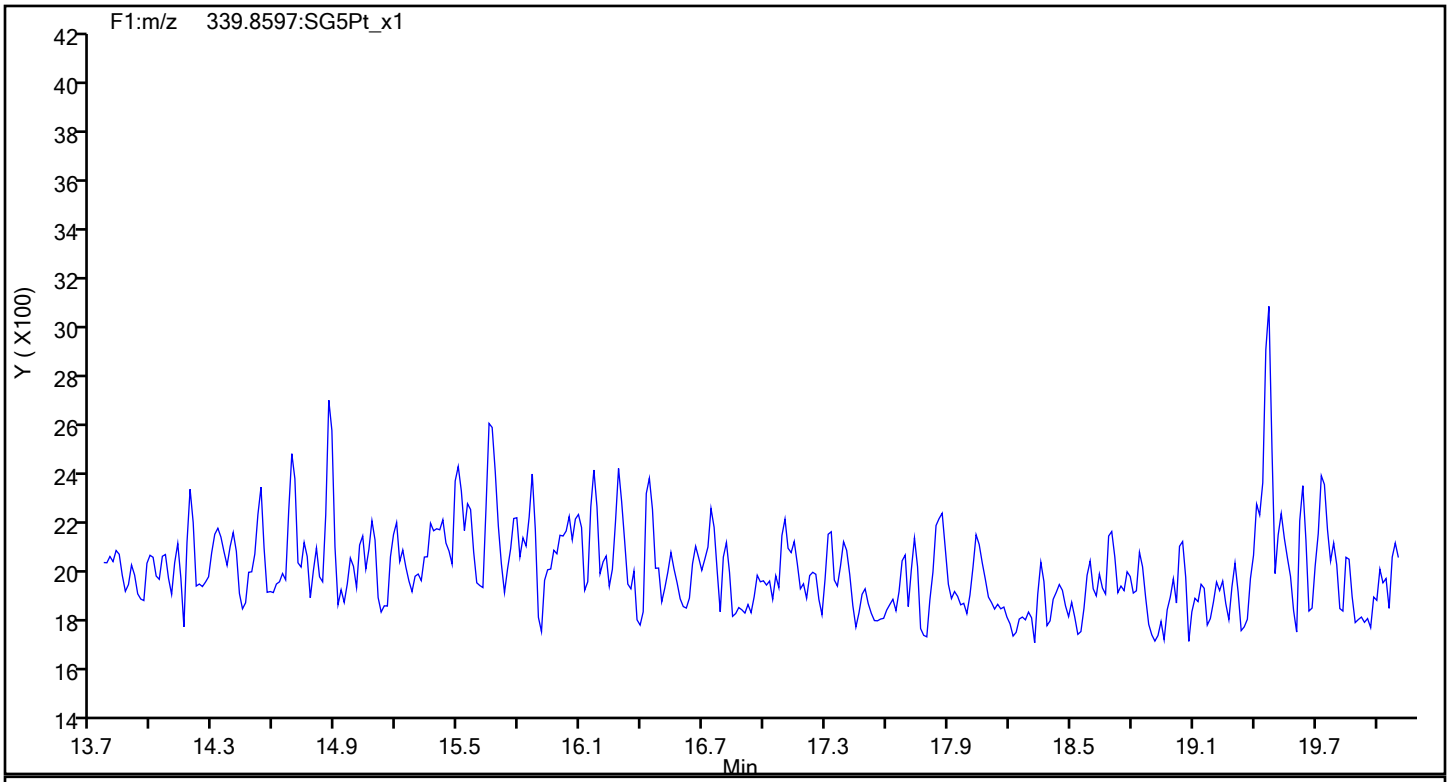
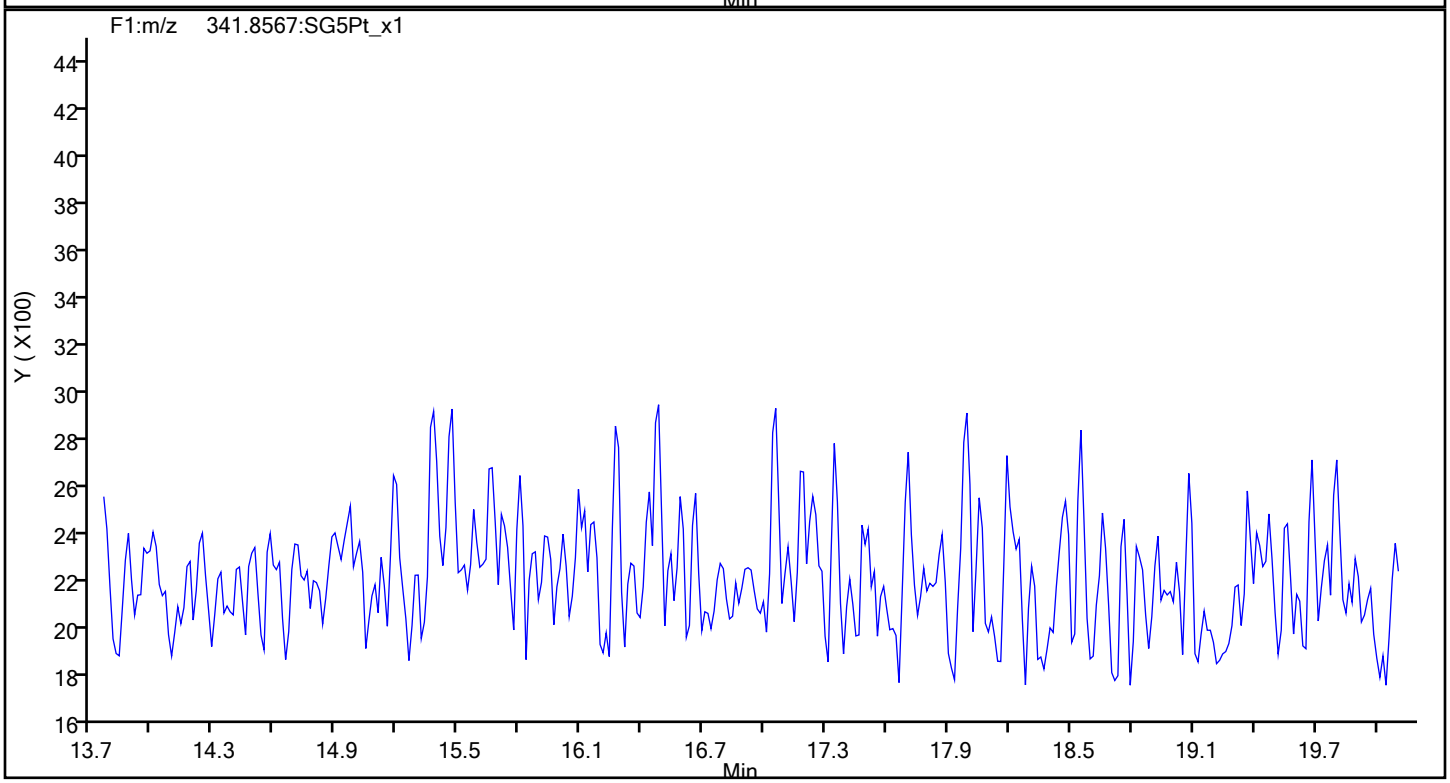
F1 PeCDFs





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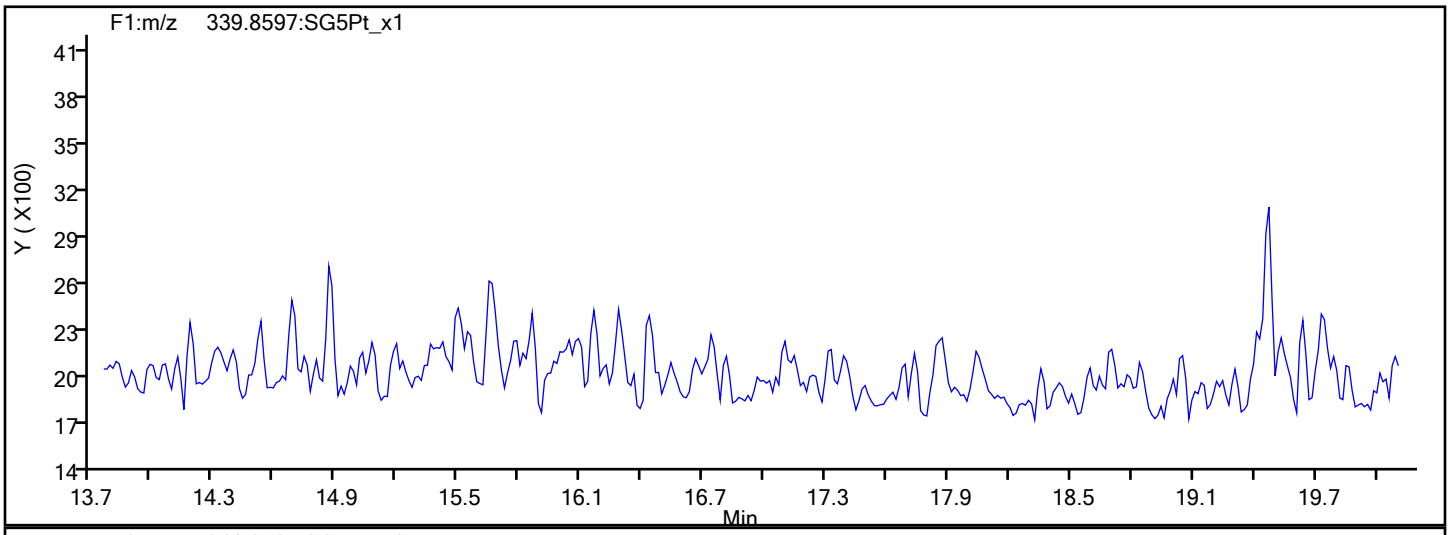

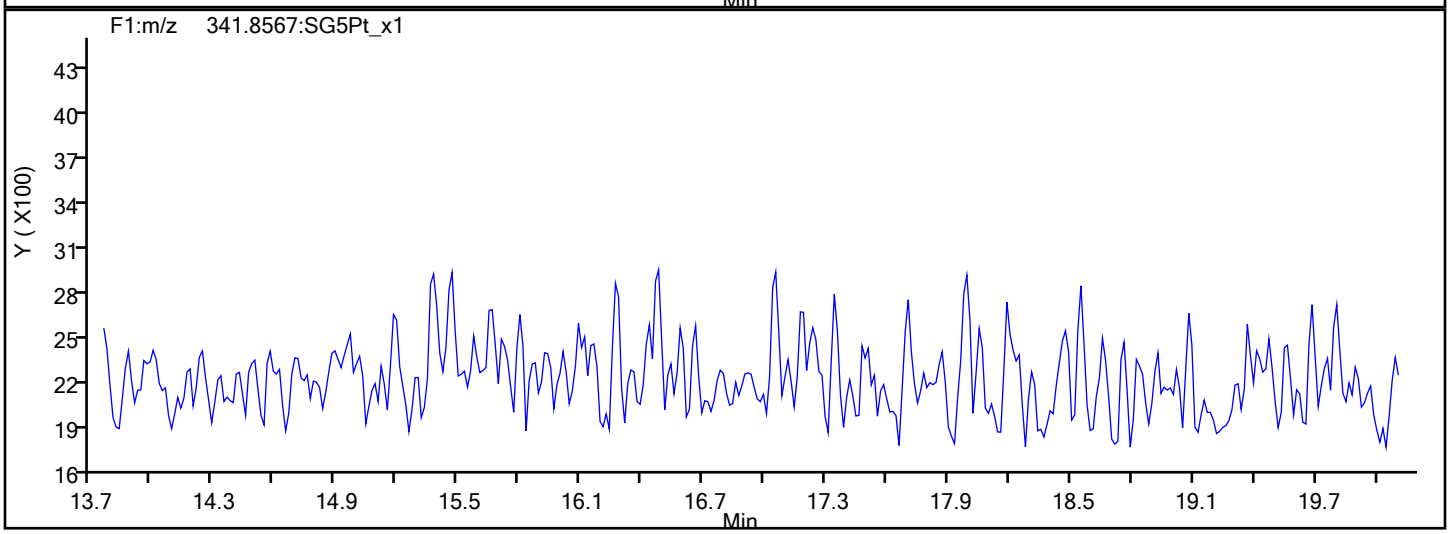

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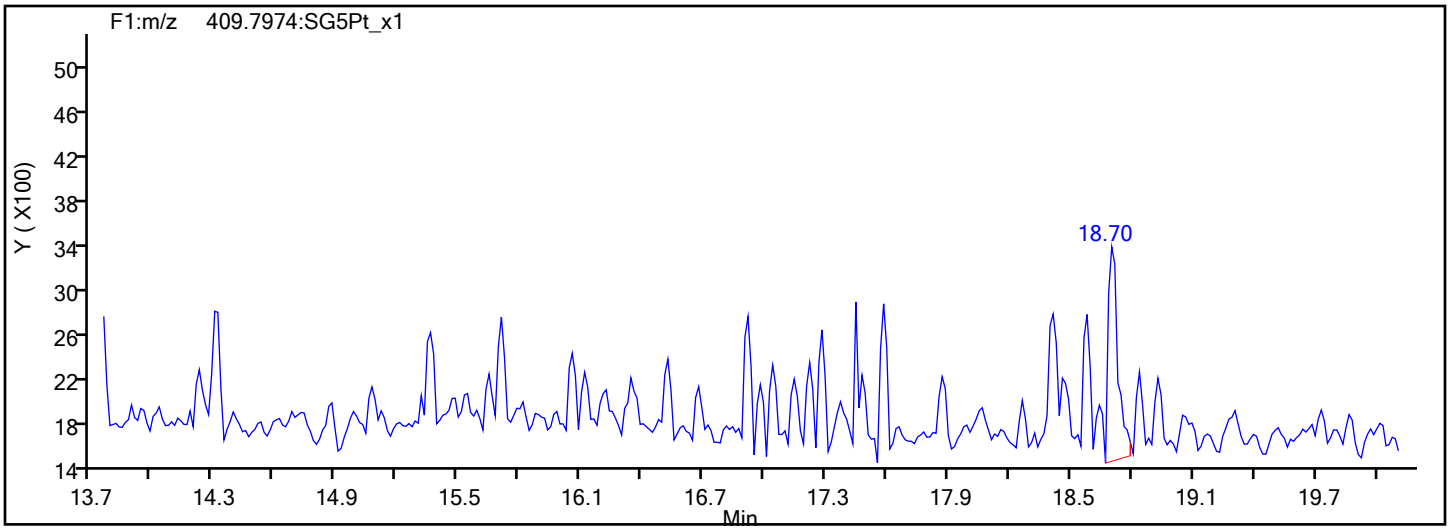

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Eurofins TestAmerica, Sacramento

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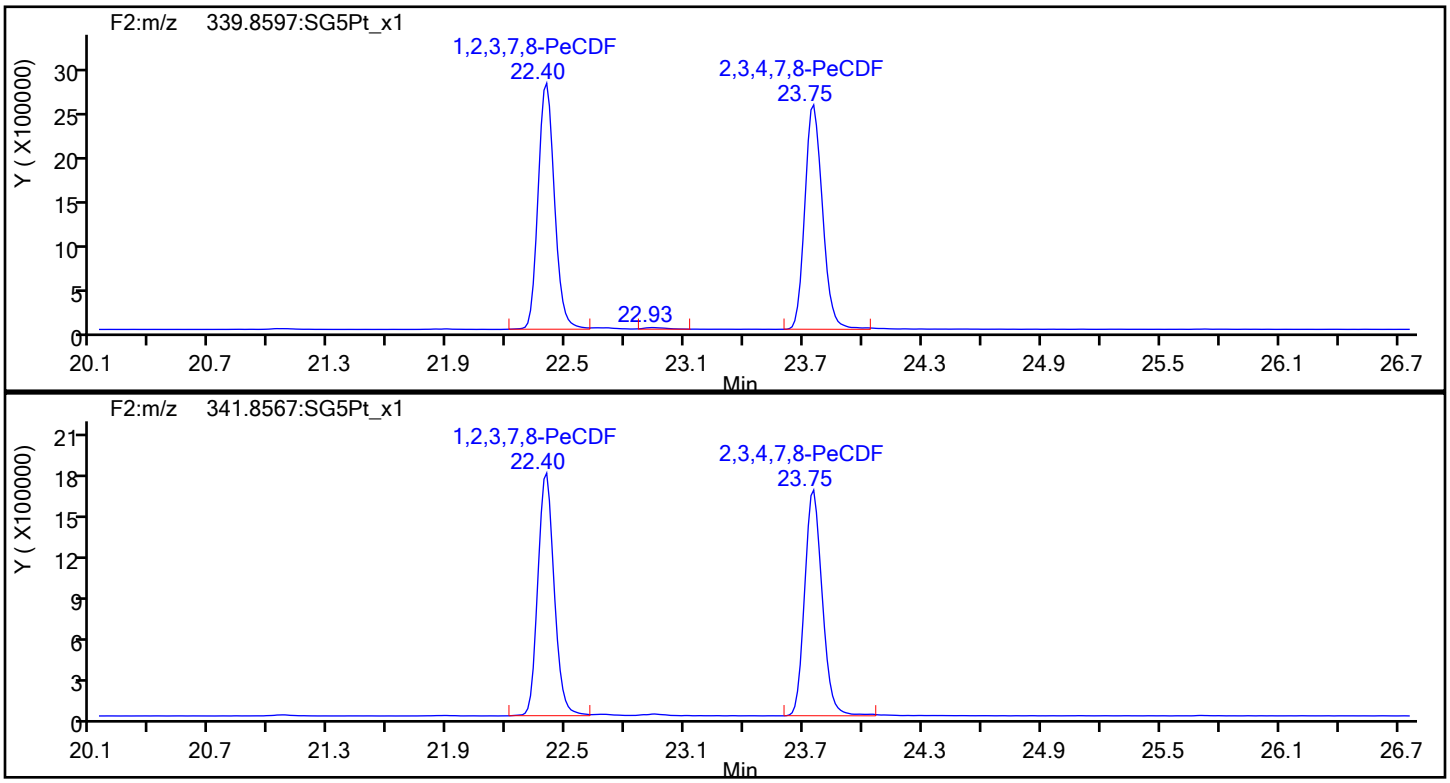
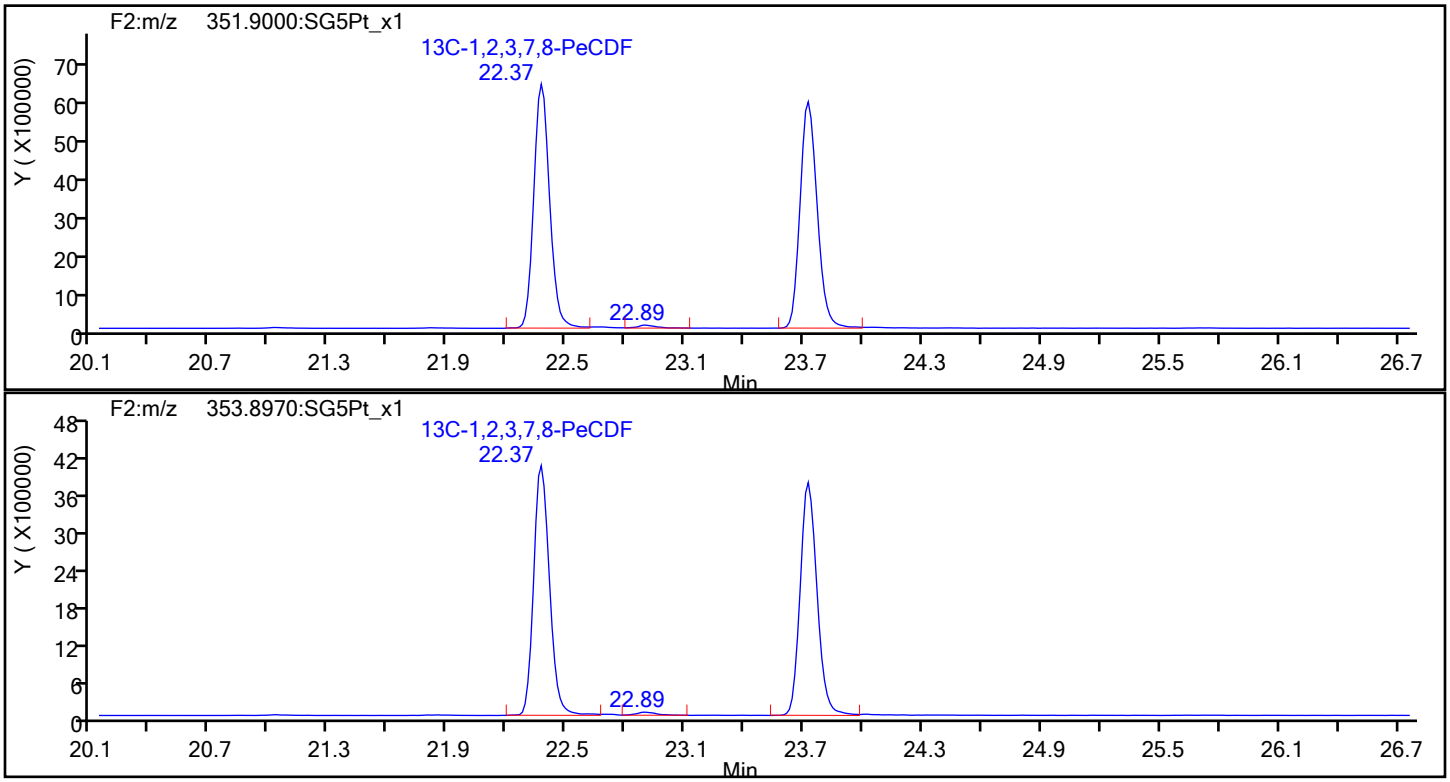


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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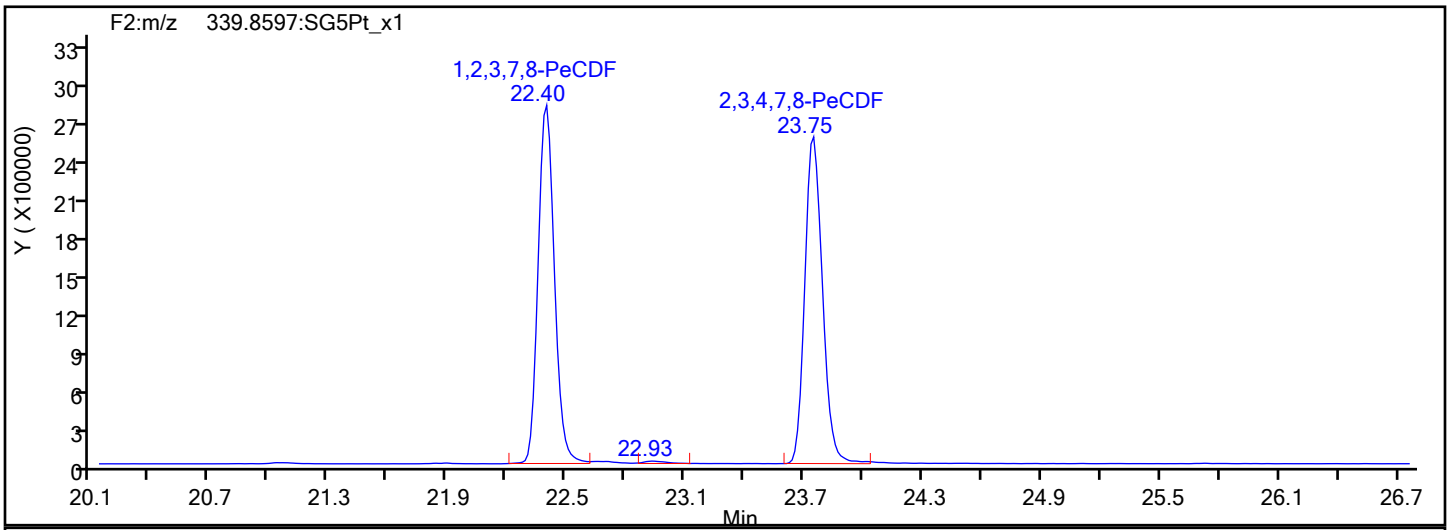
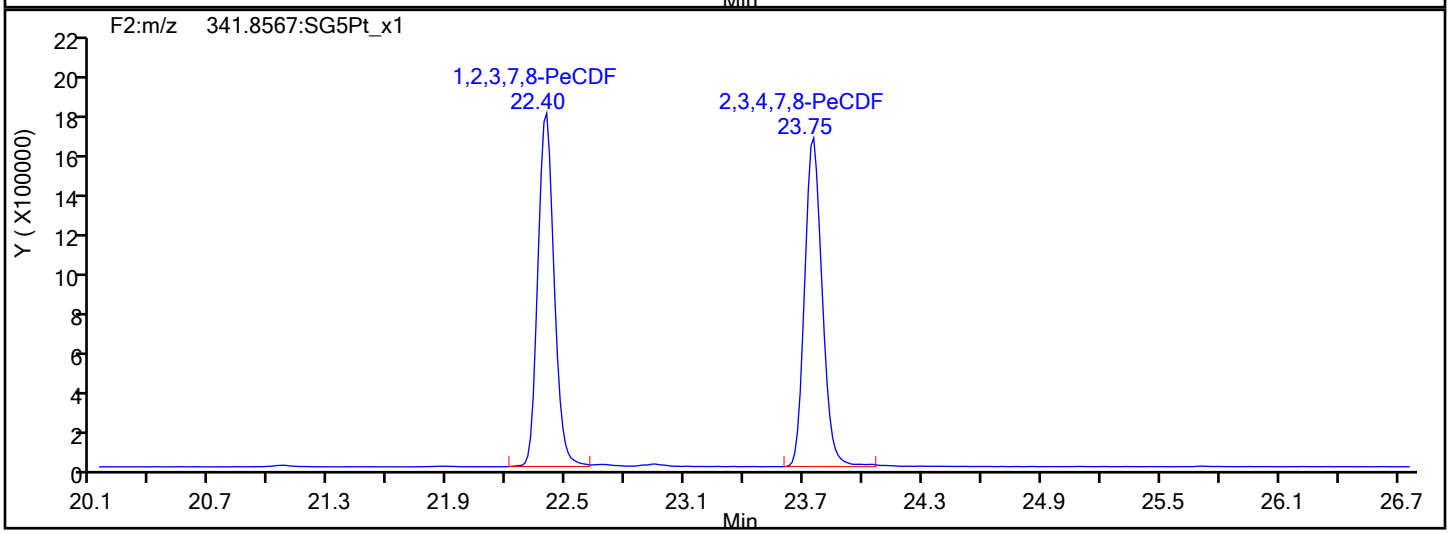
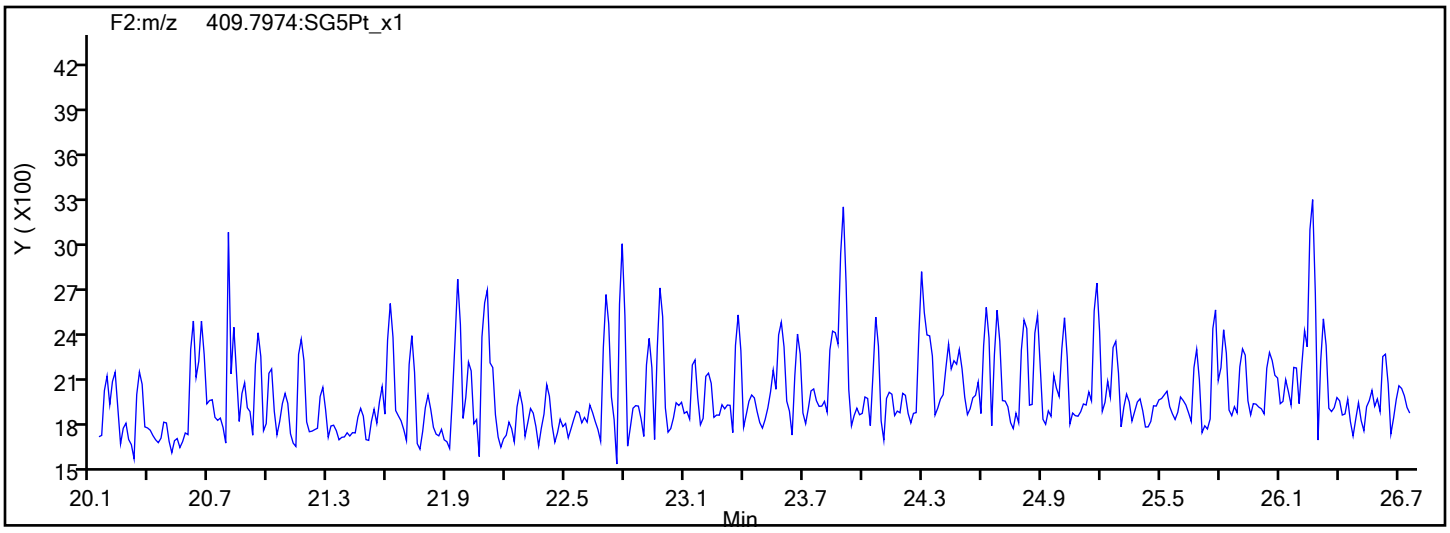




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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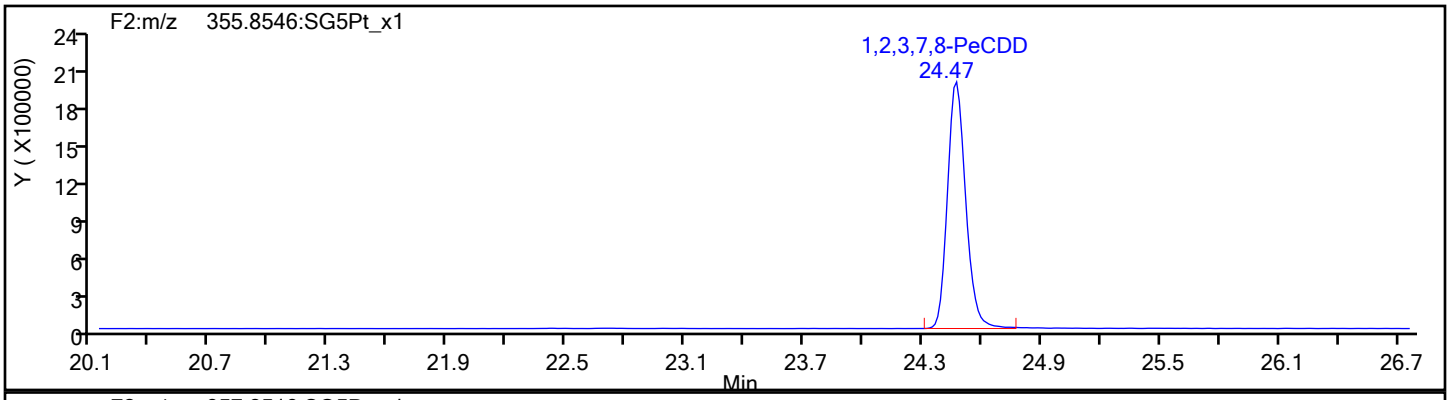
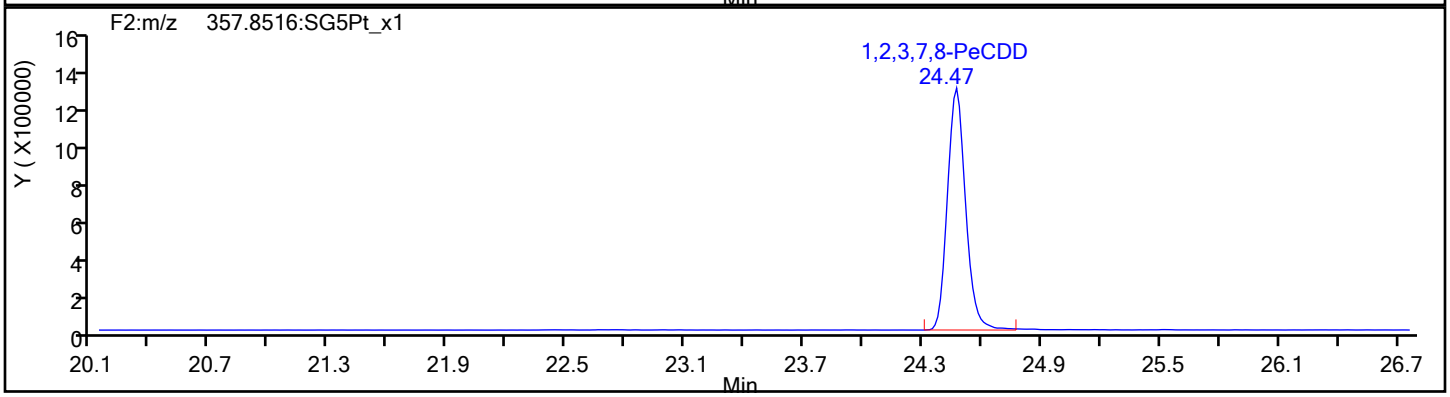
PeCDD





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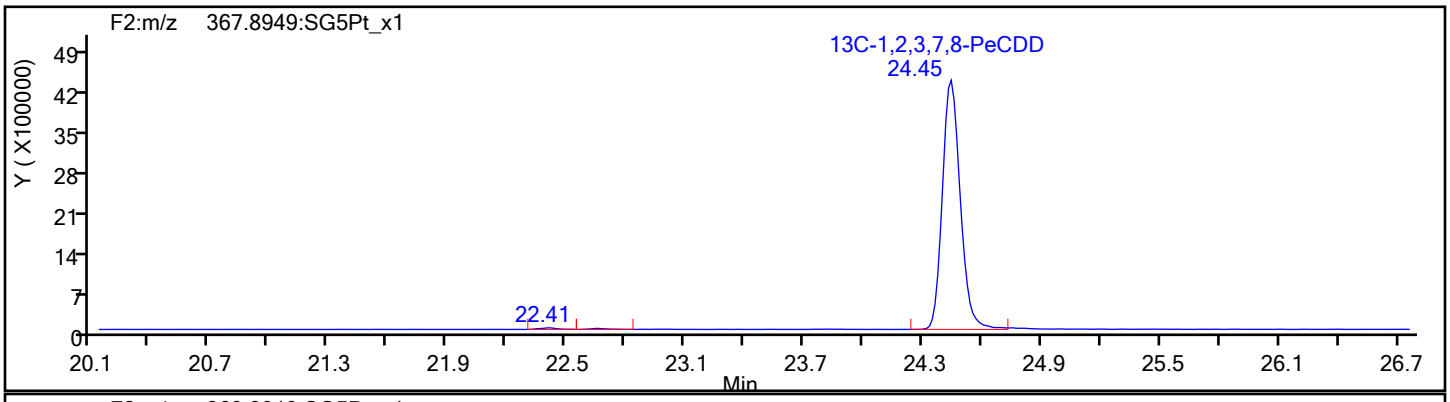

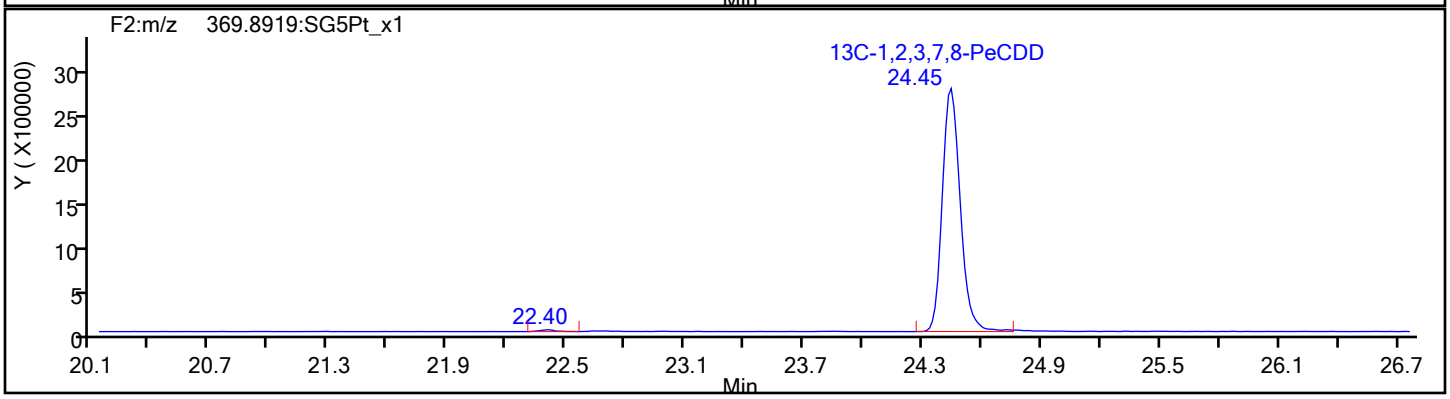

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Eurofins TestAmerica, Sacramento

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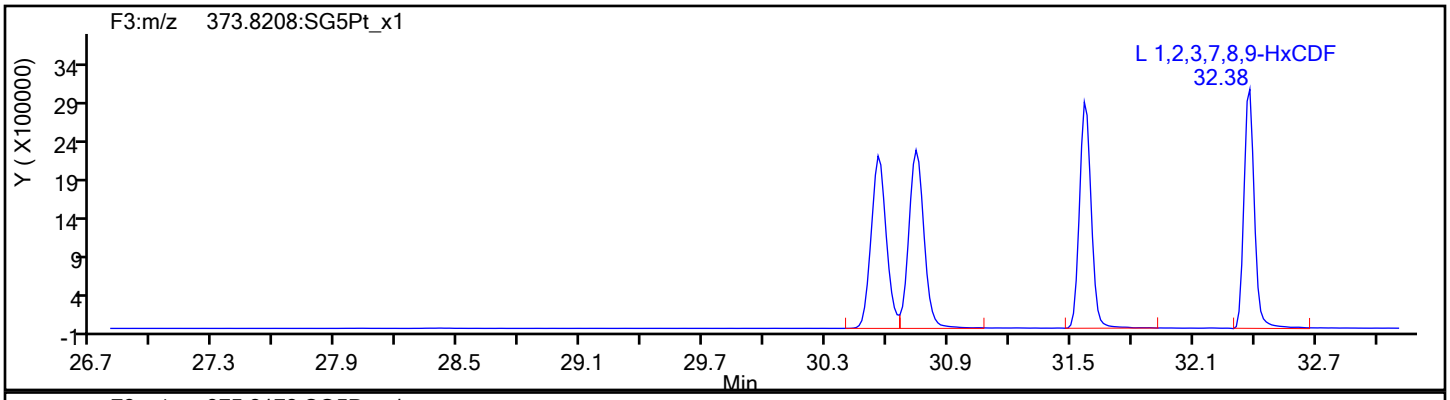
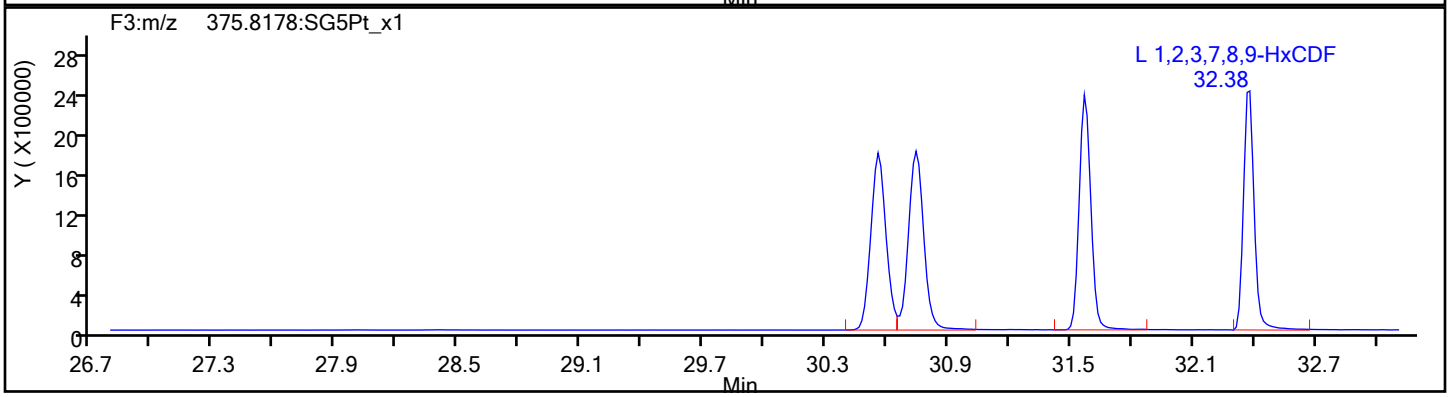
HxCDF





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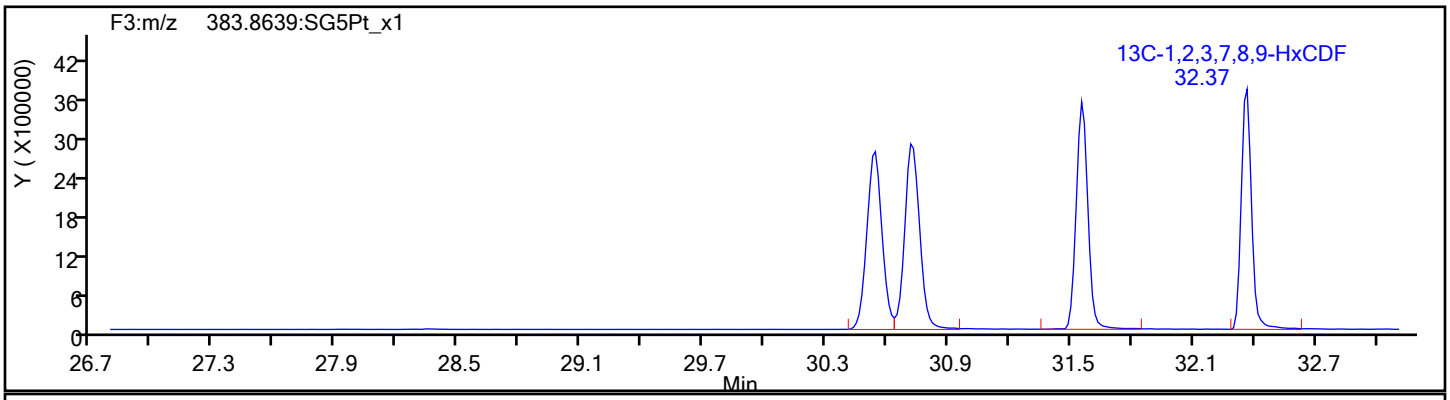

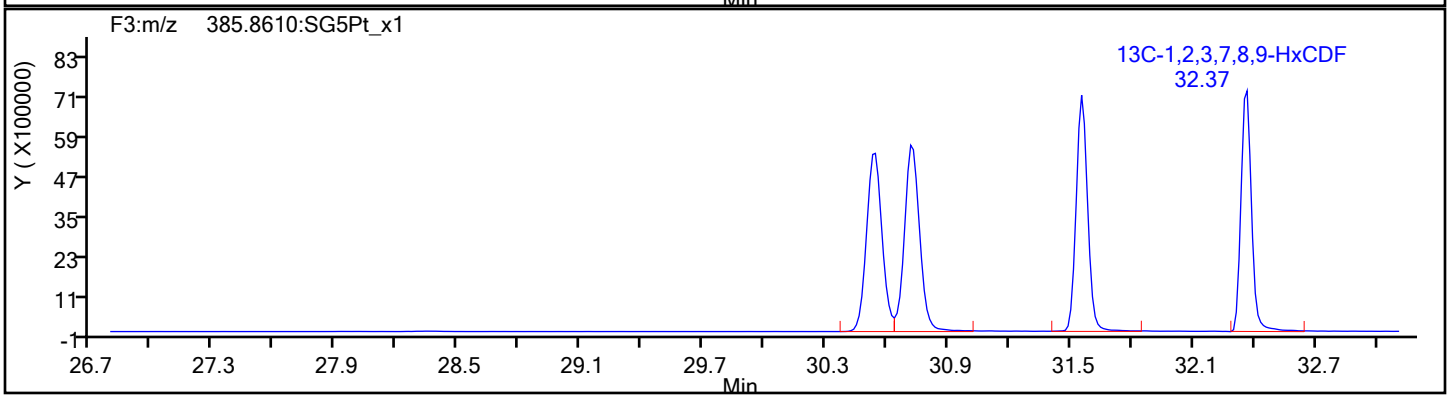

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Eurofins TestAmerica, Sacramento

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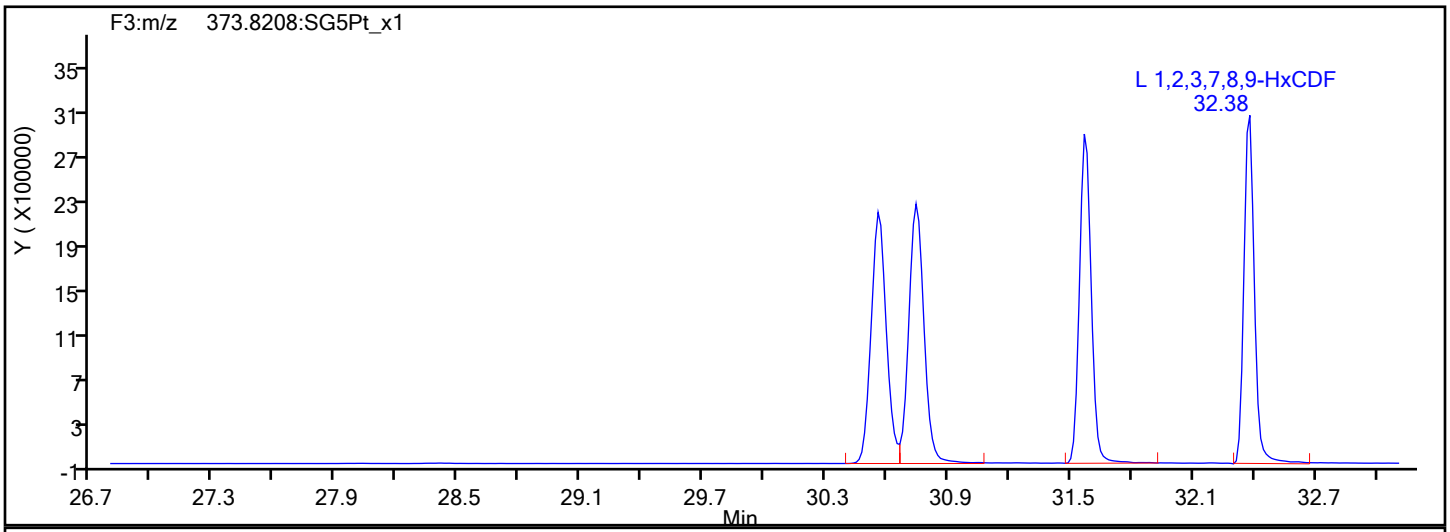
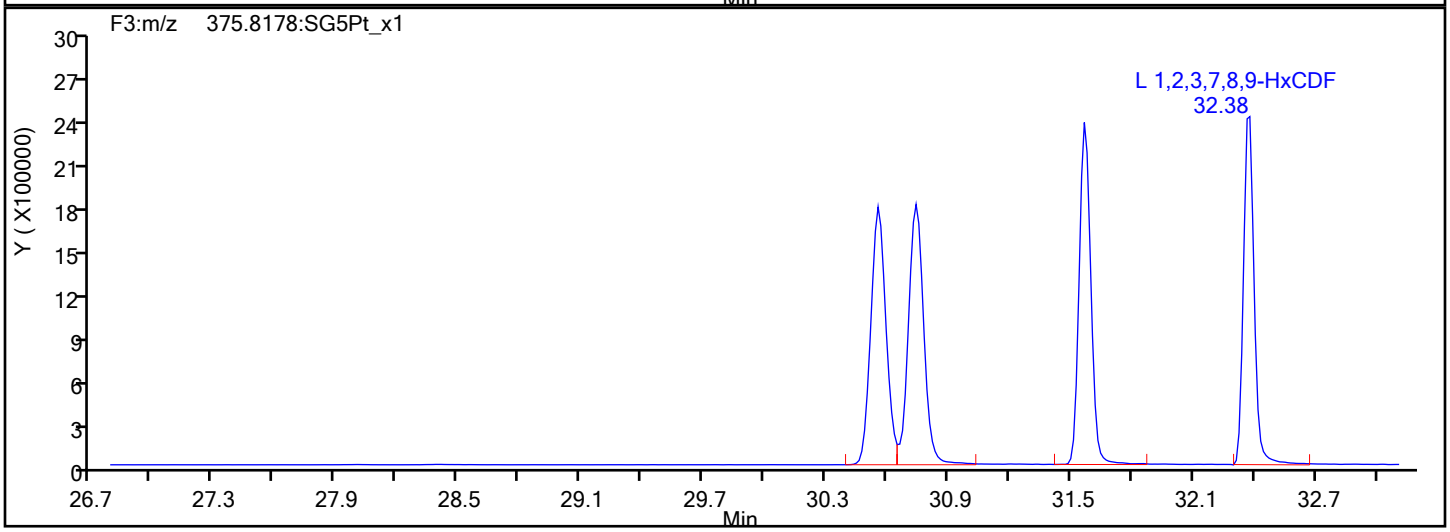
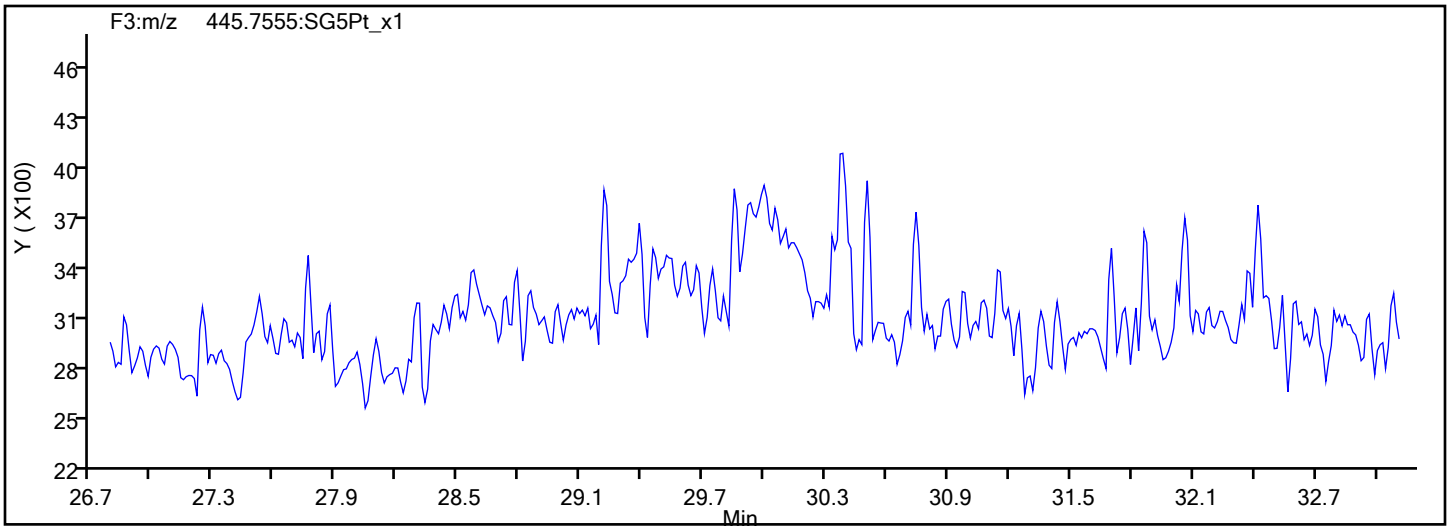




HxCDF Interference Mass



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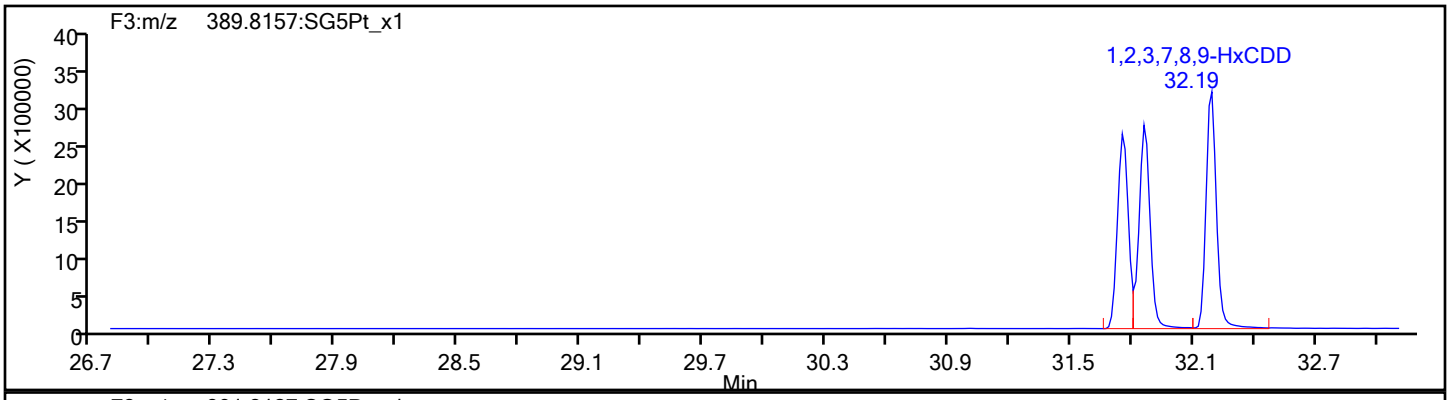
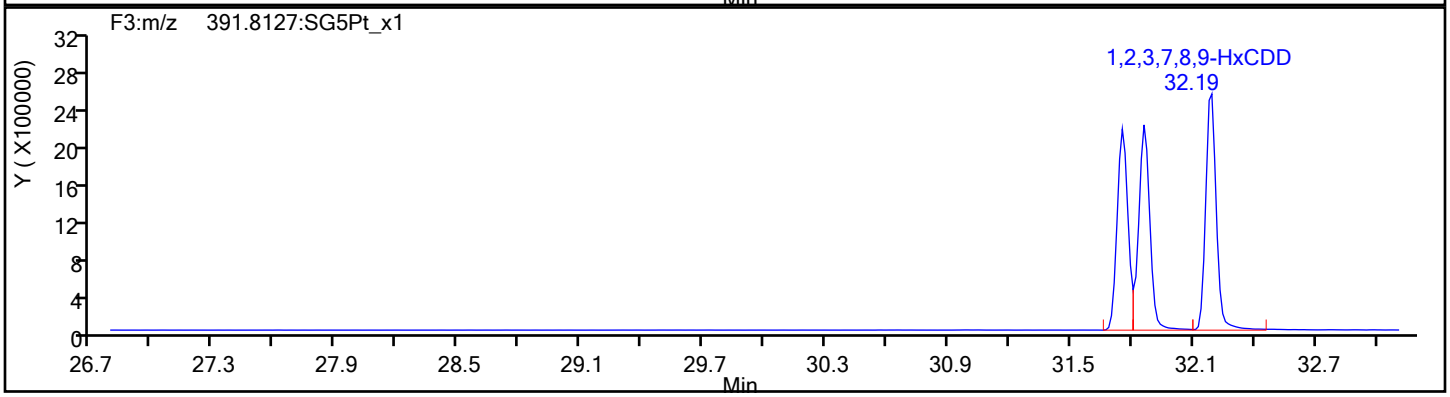
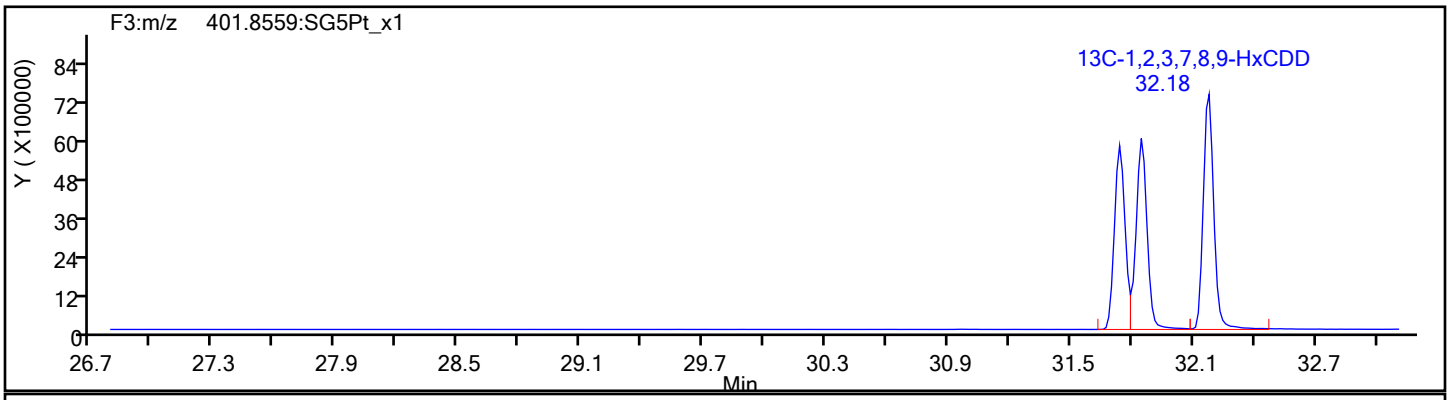
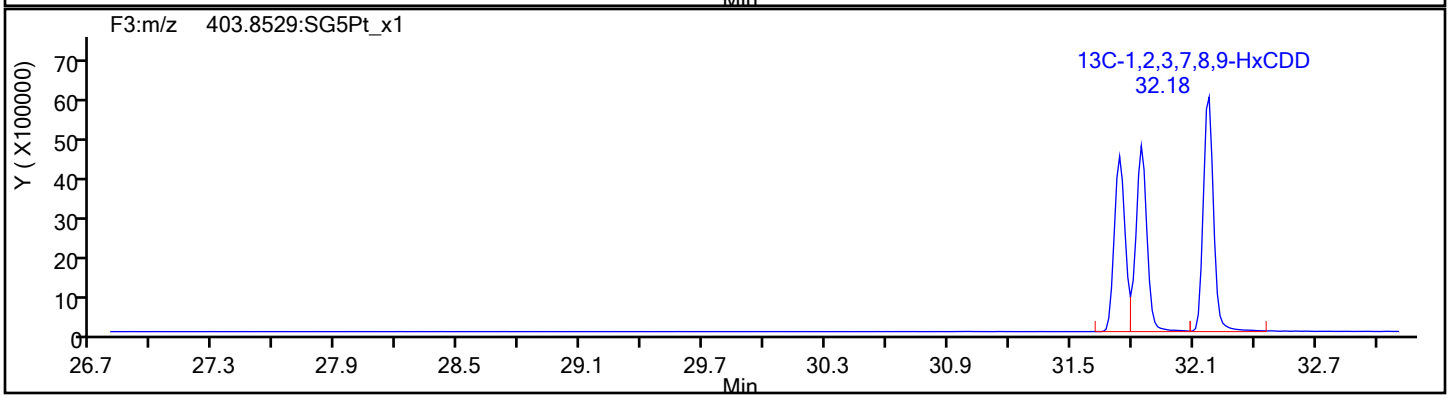




HxCDD Standards





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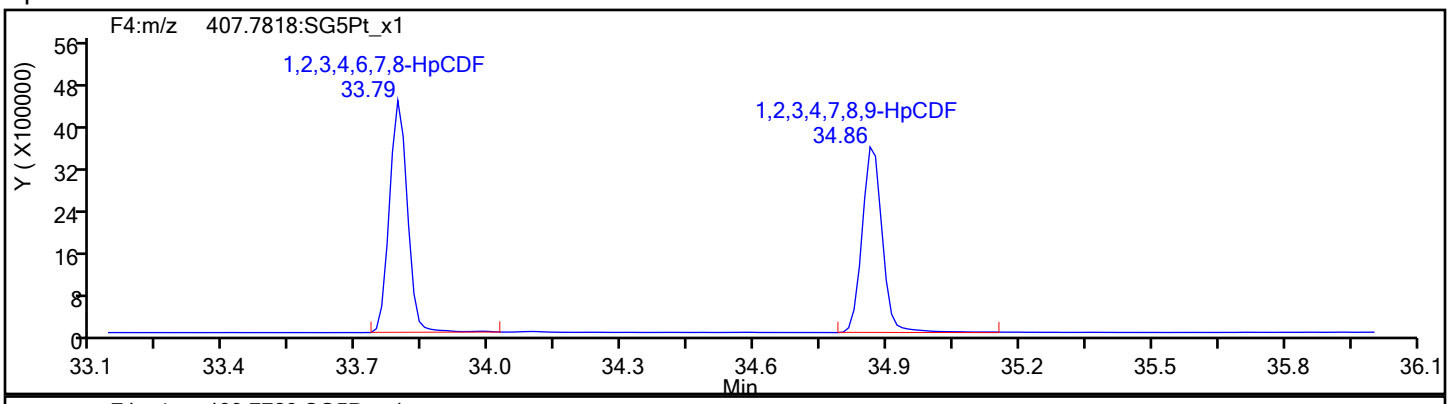
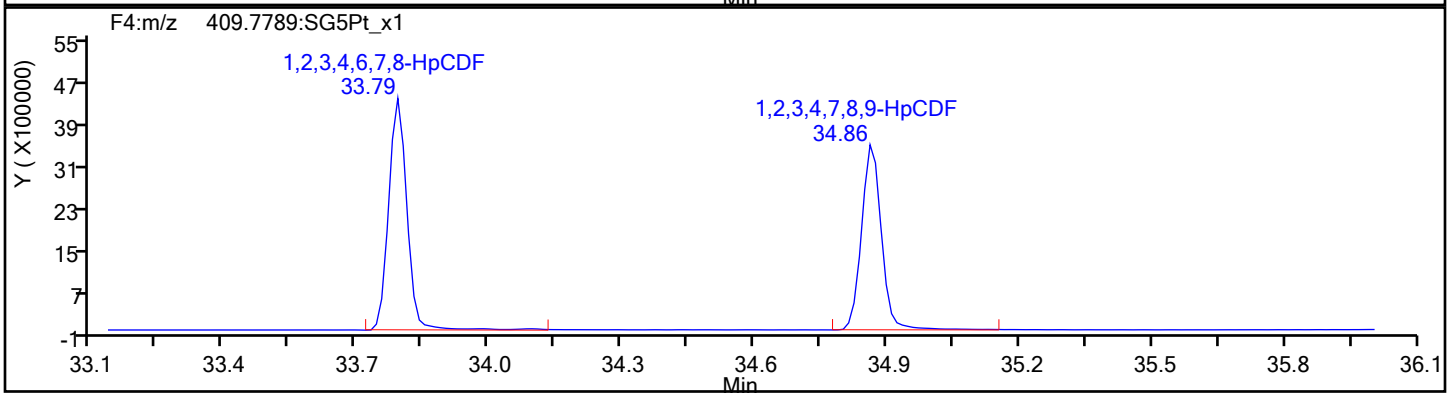
HpCDF





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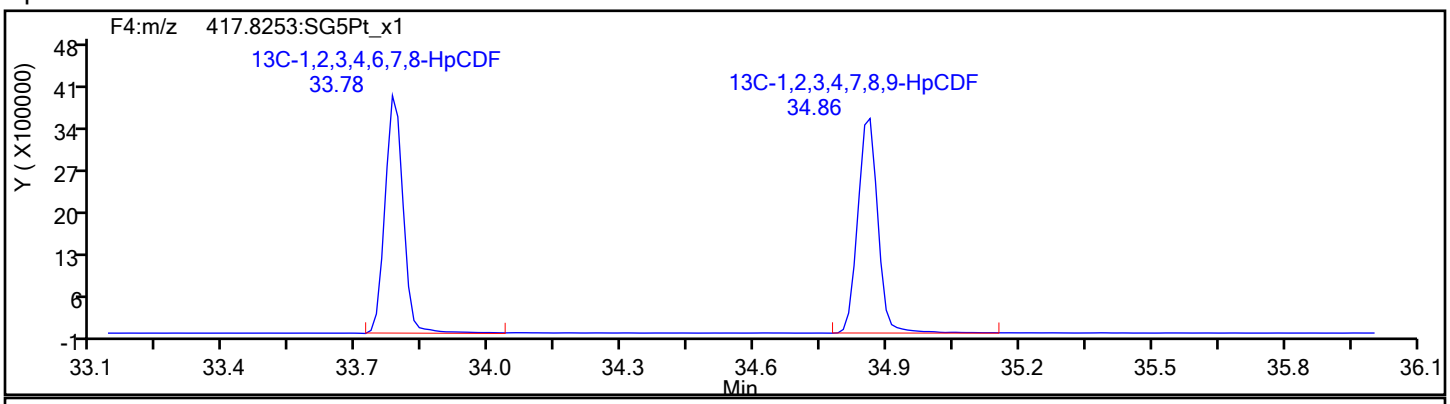

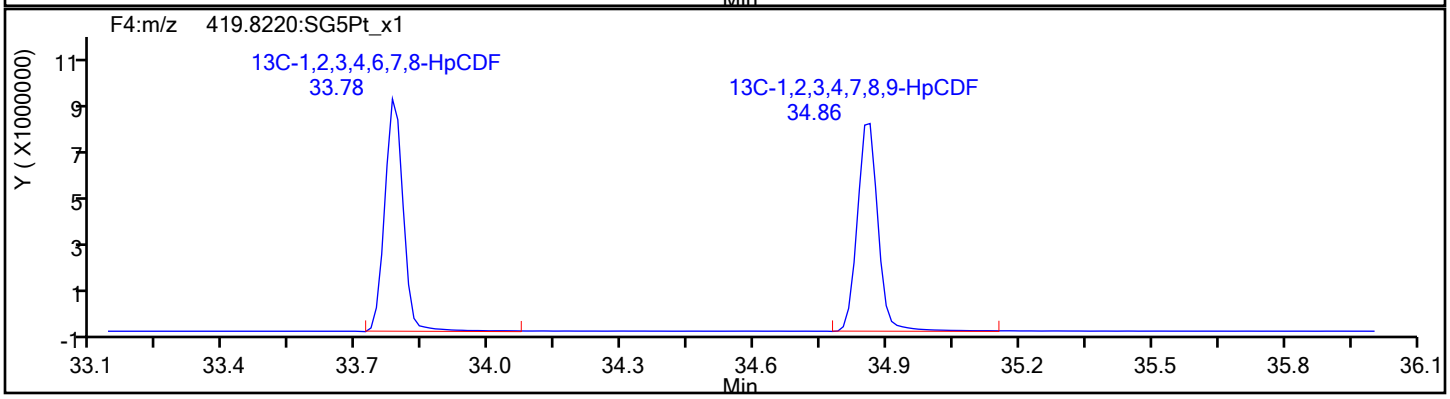

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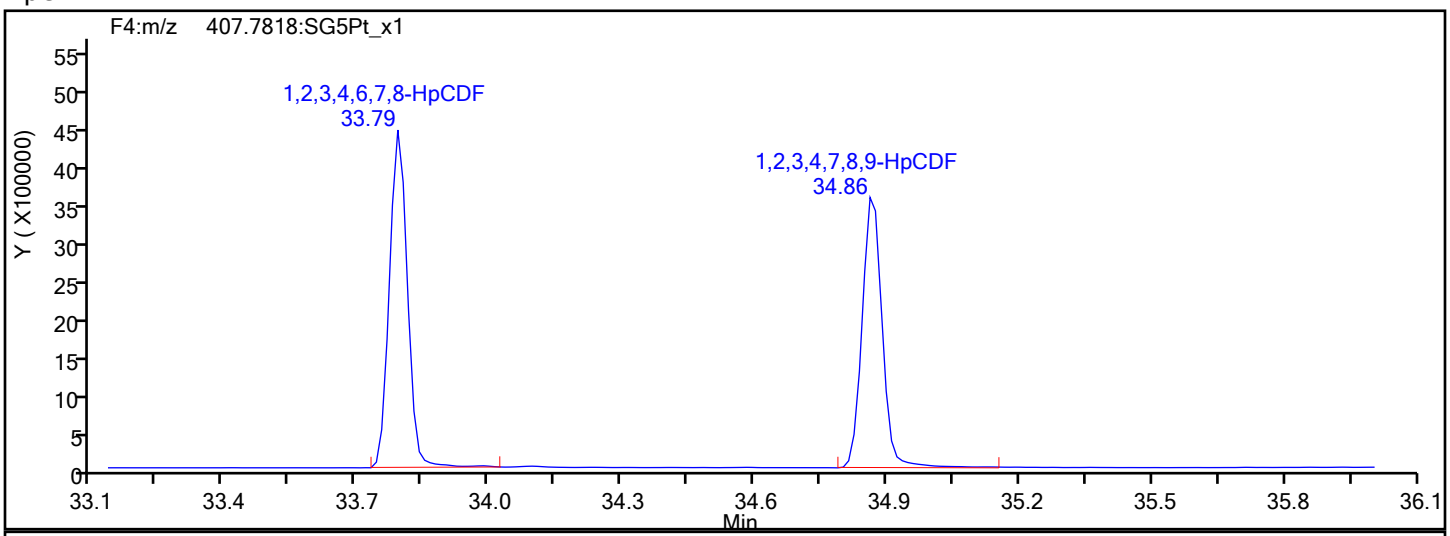
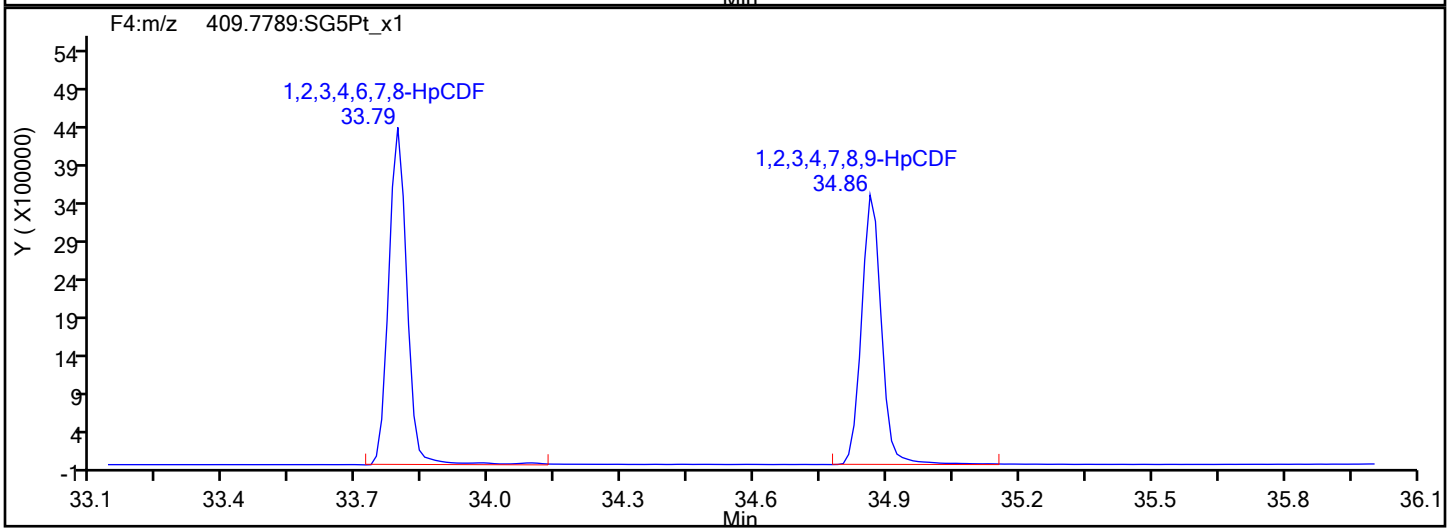
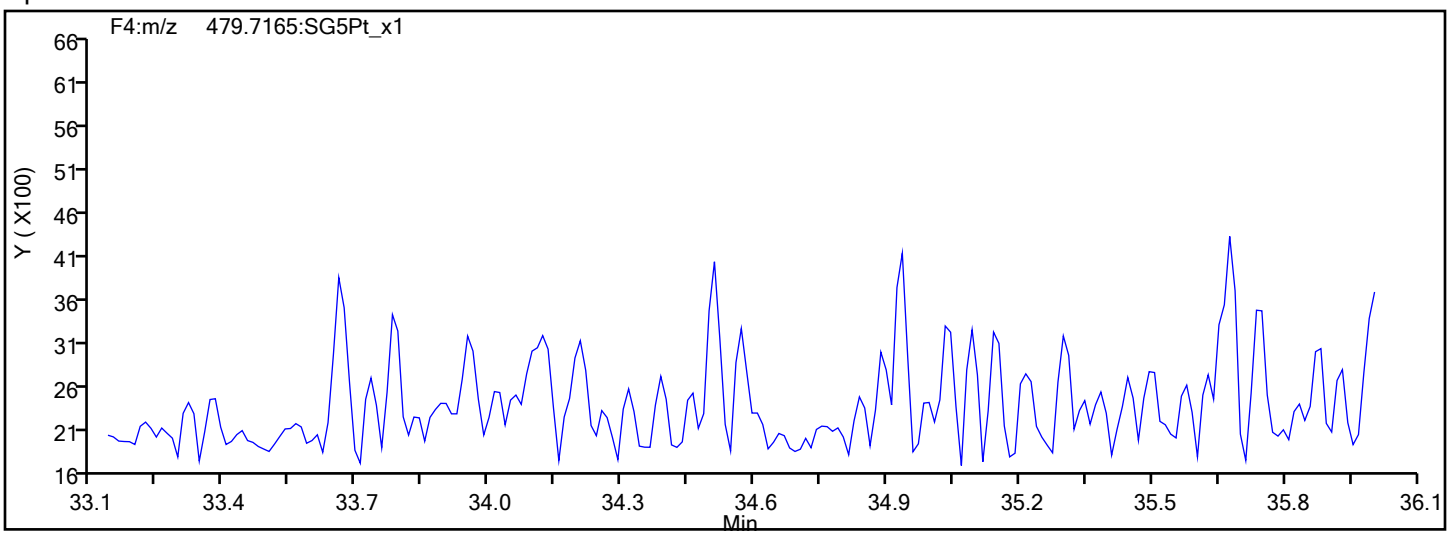




HpCDF Interference Mass



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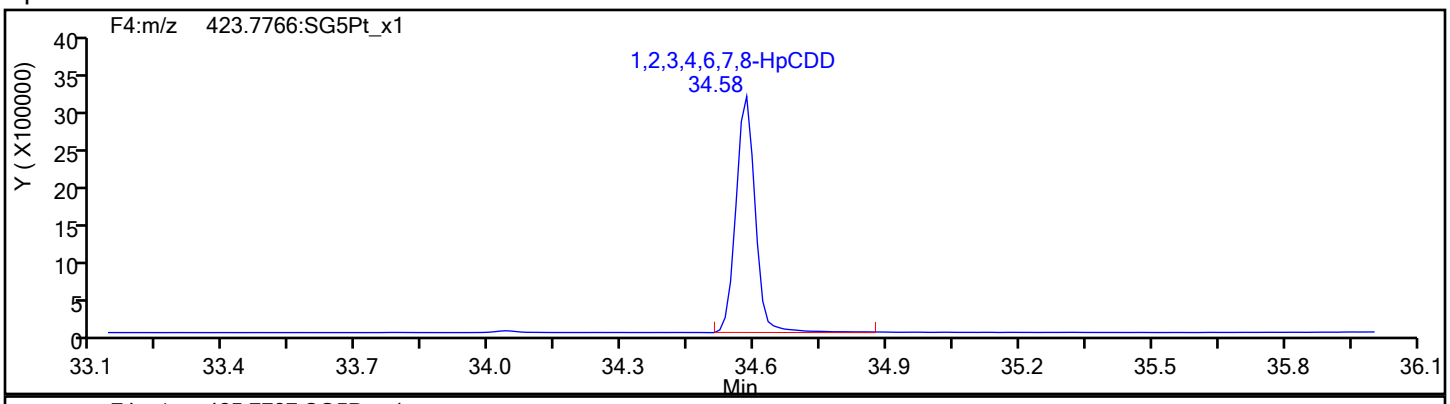
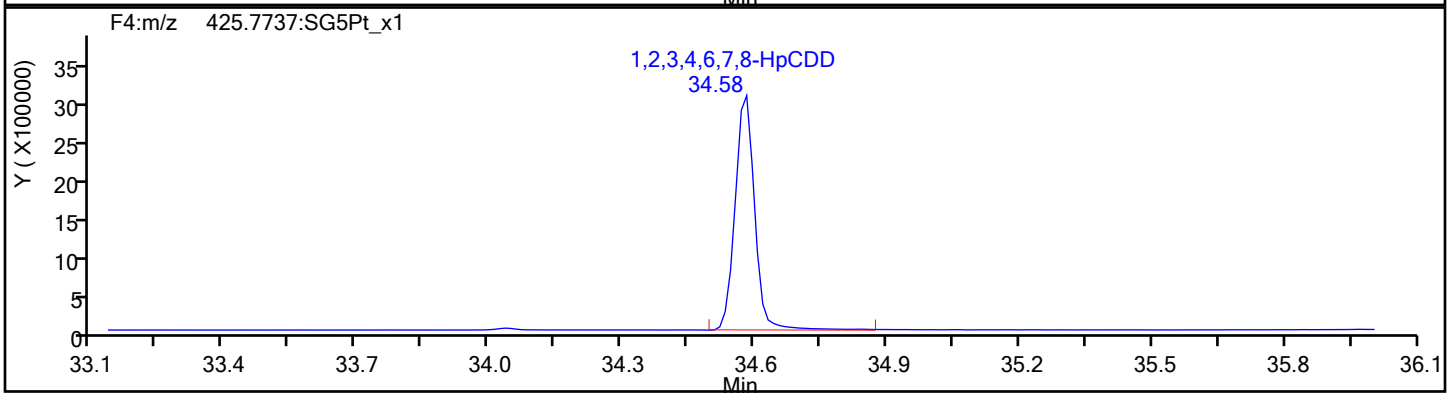
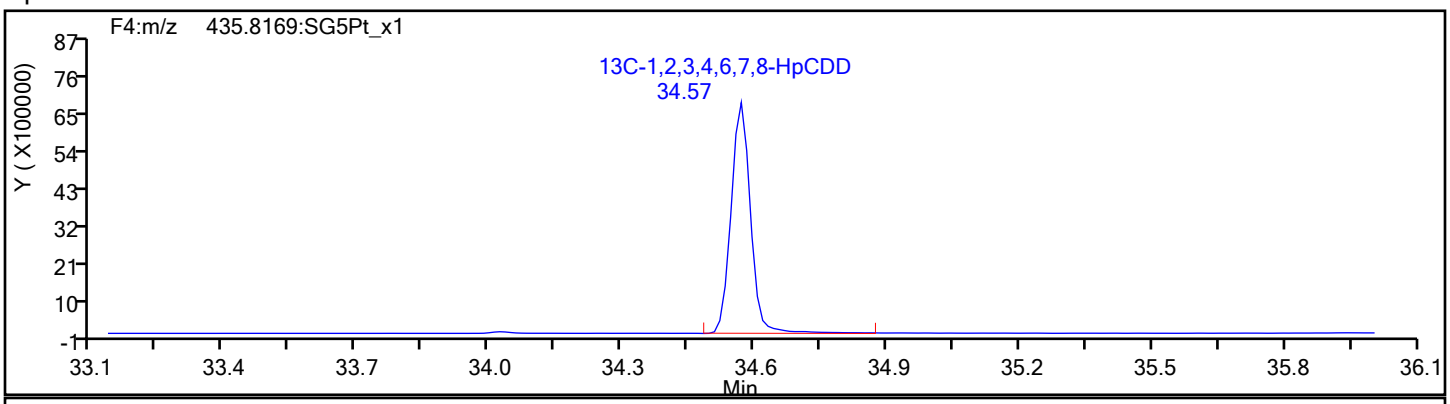
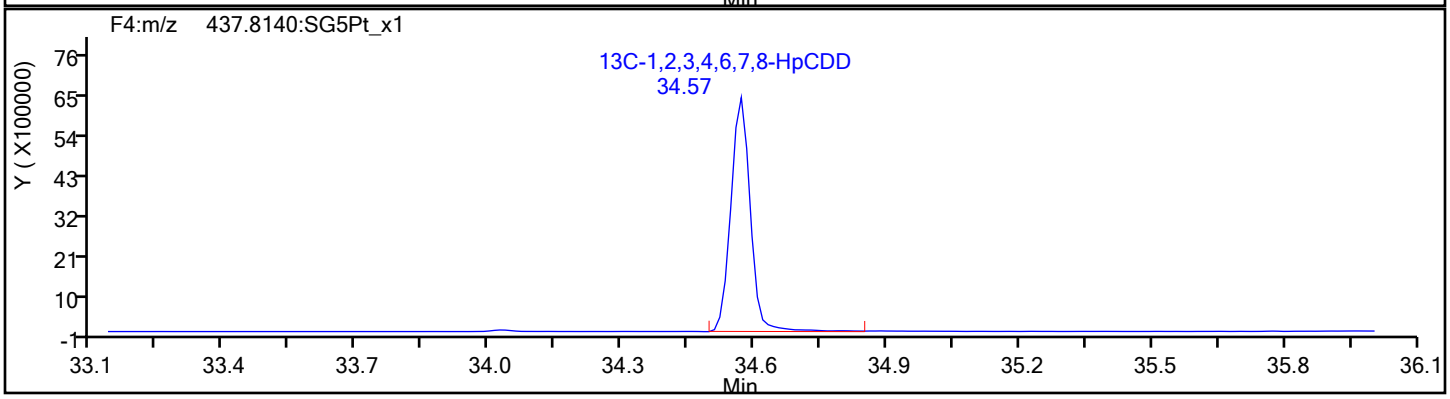
HpCDD





HpCDD Standards





Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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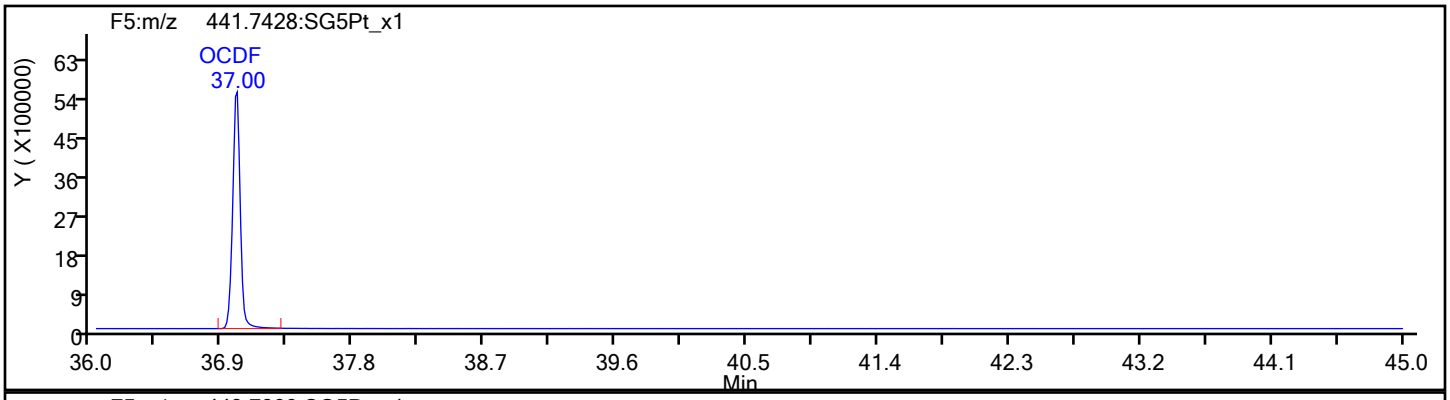
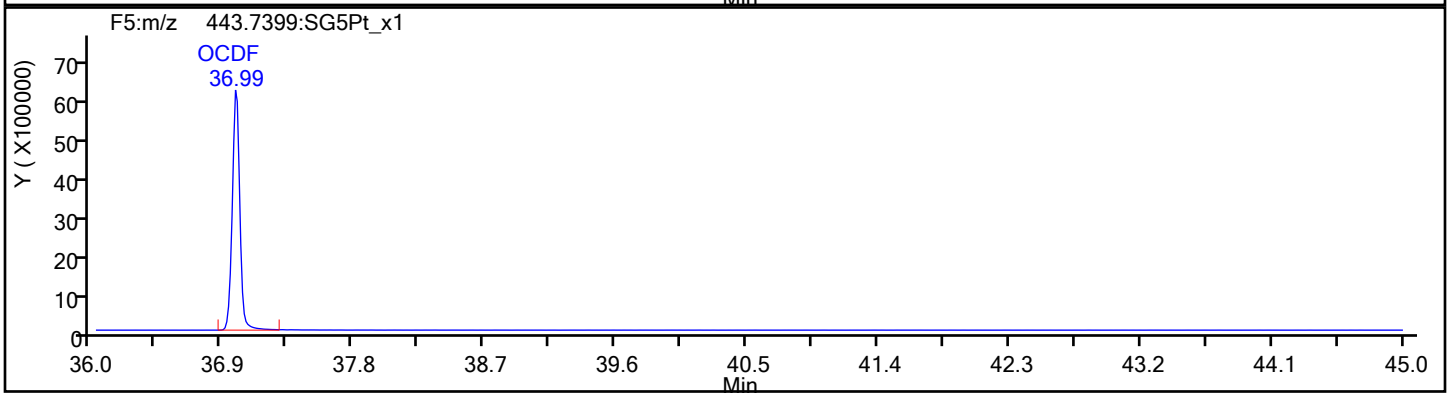
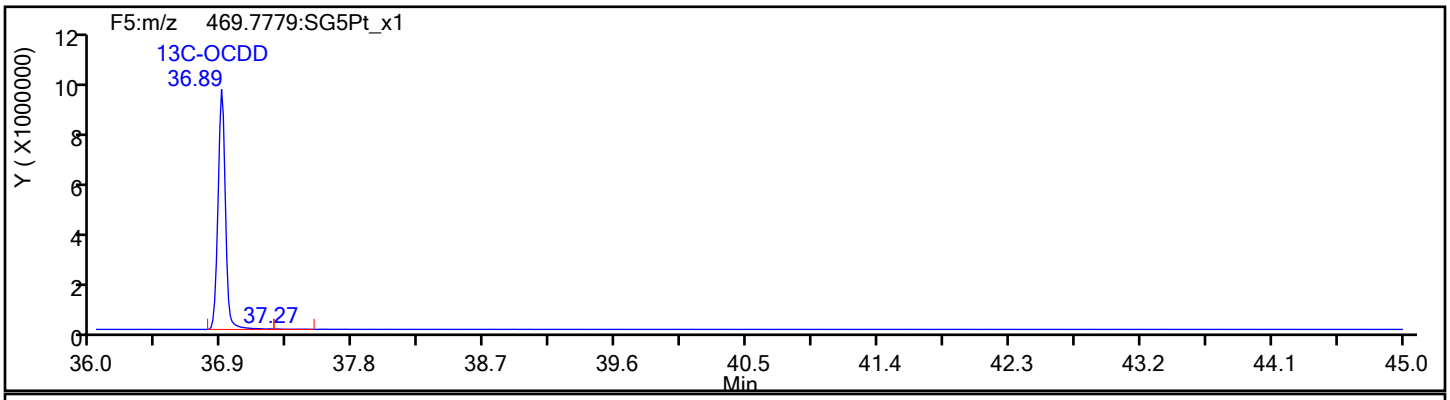
Column Type:	DB-5	Column Dia:	0.32 mm

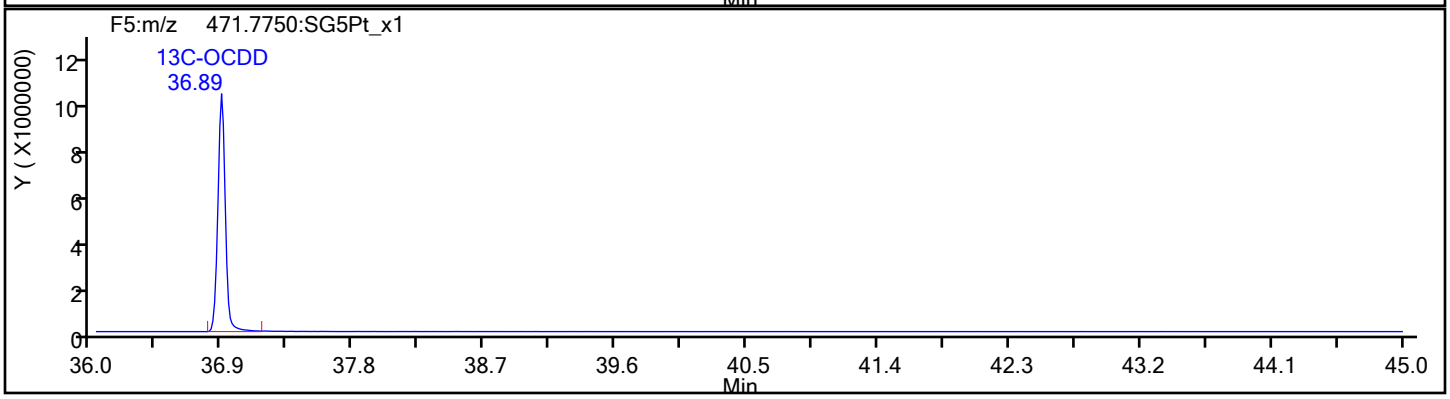
OCDF





OCDF Standards





Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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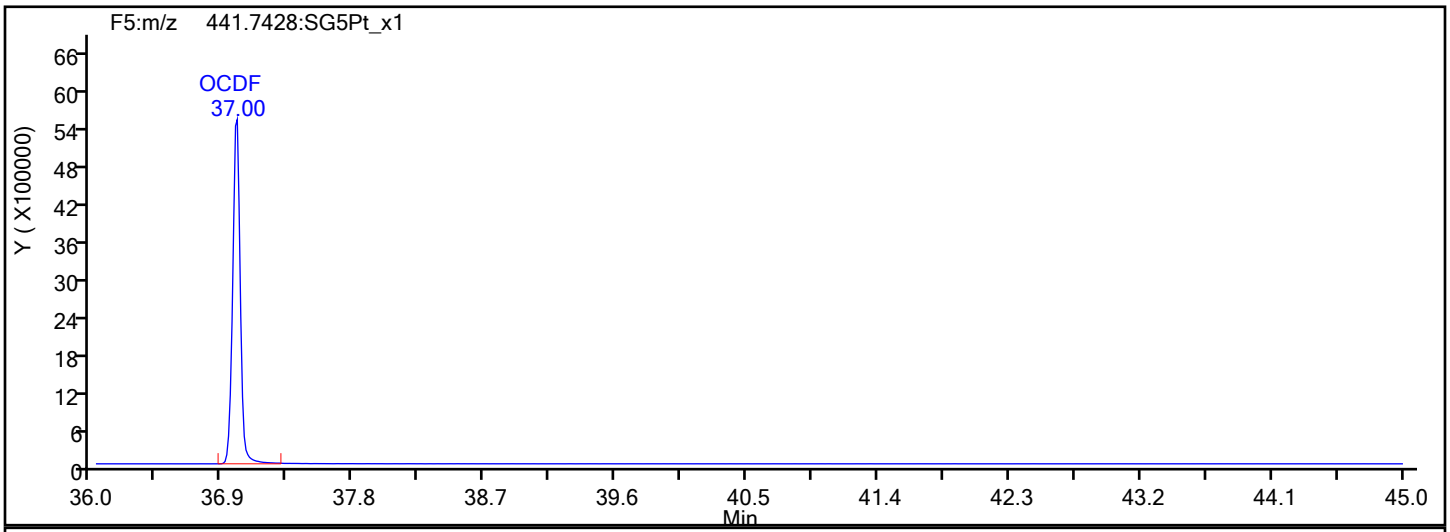
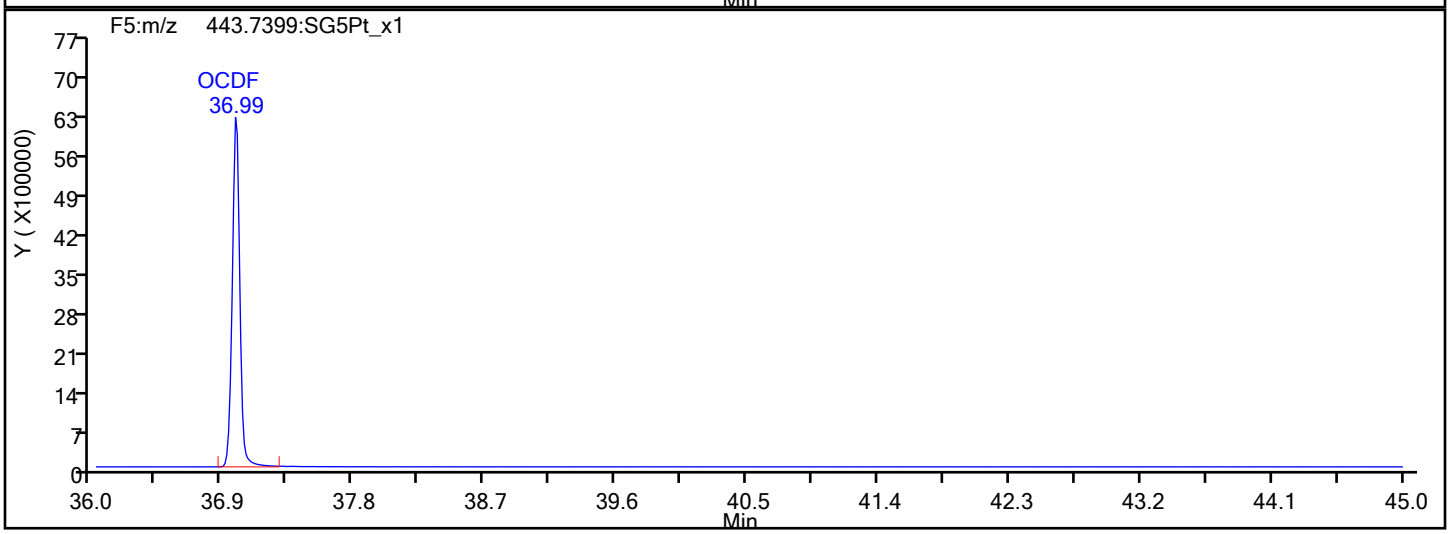
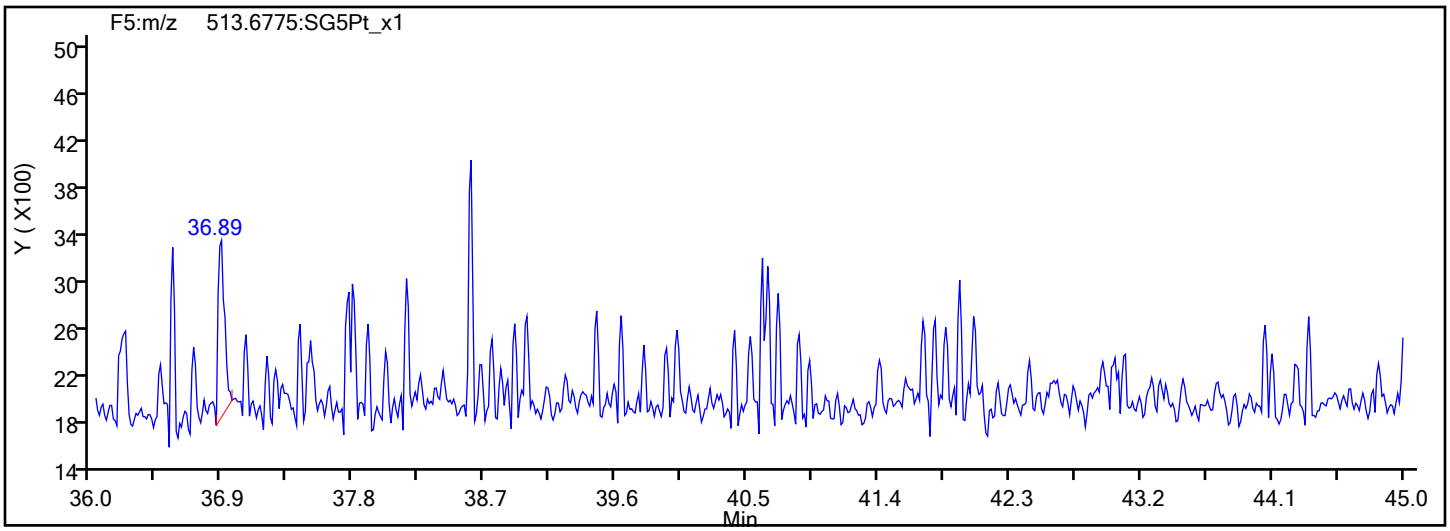
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass



Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_2.d		
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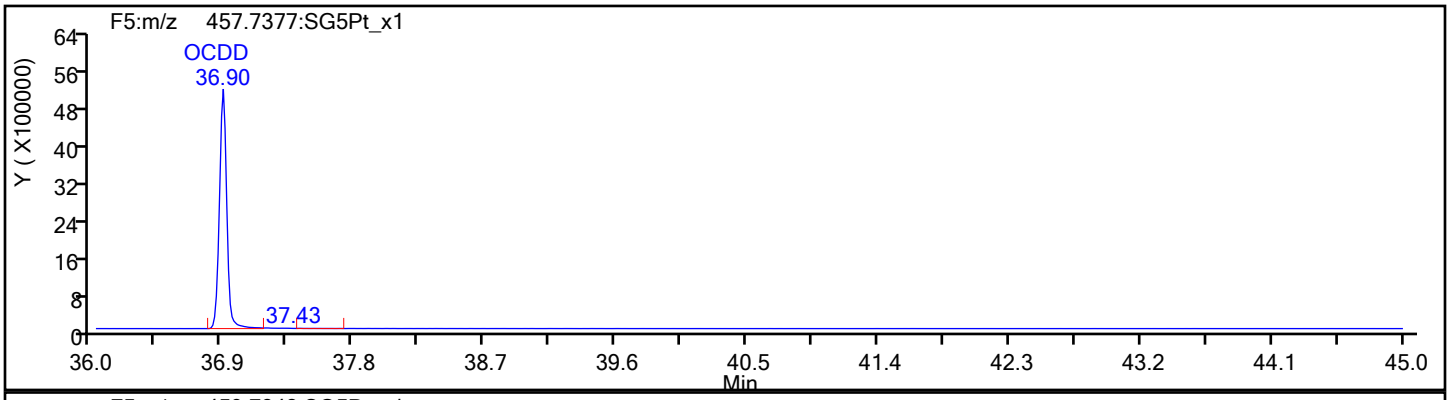
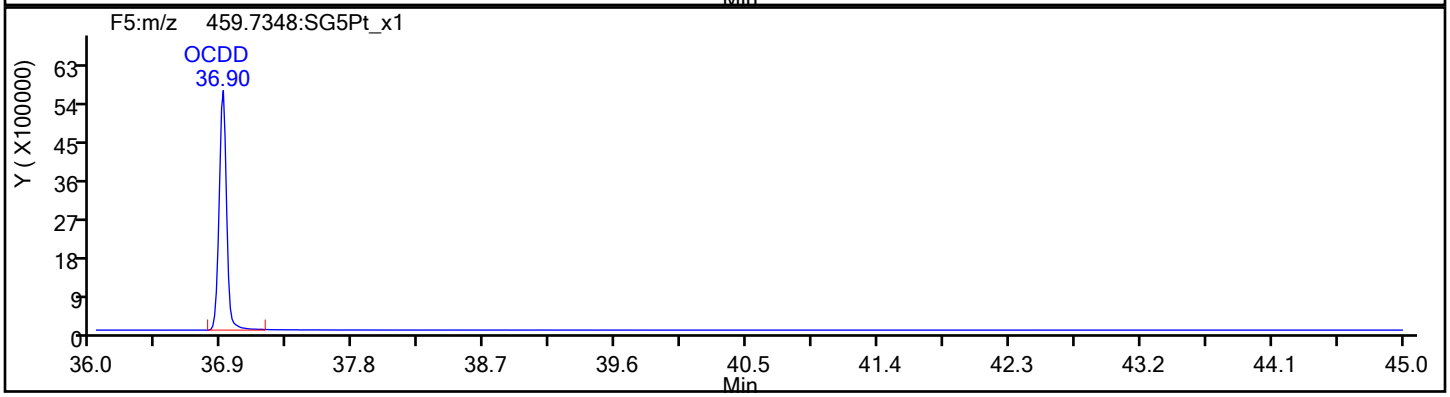
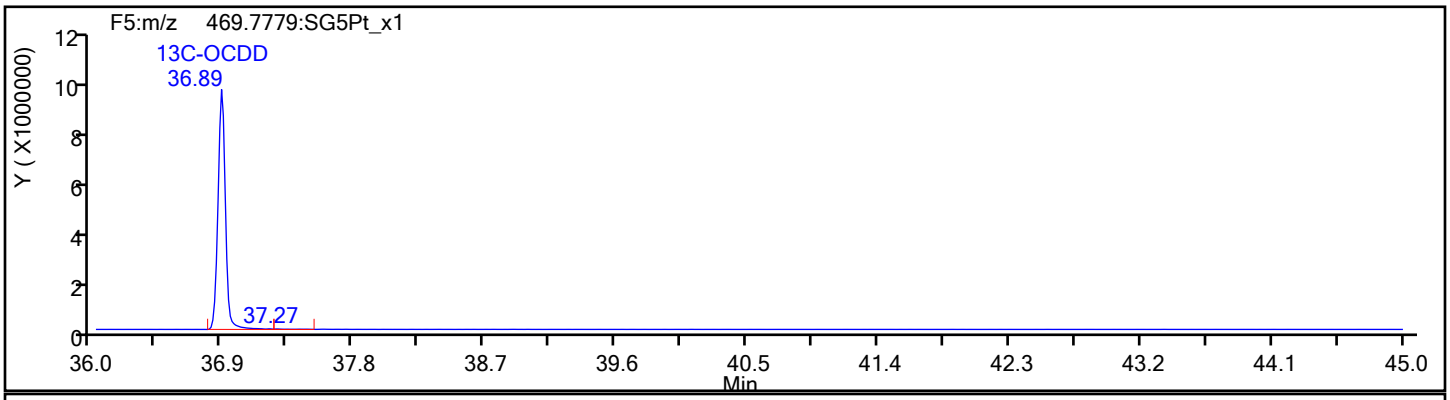
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

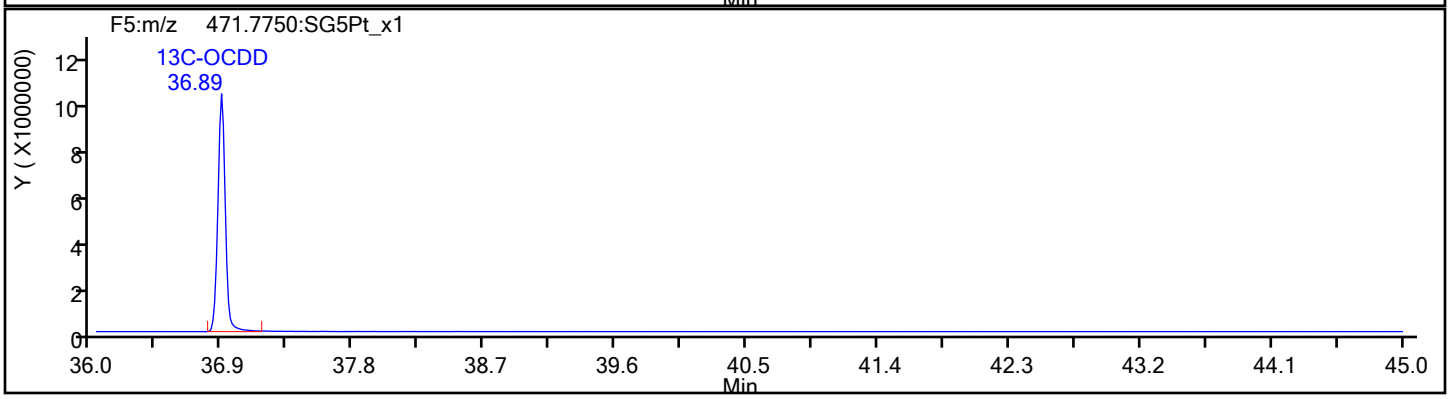
OCDD





OCDD Standards





Report Date: 13-Dec-2019 23:51:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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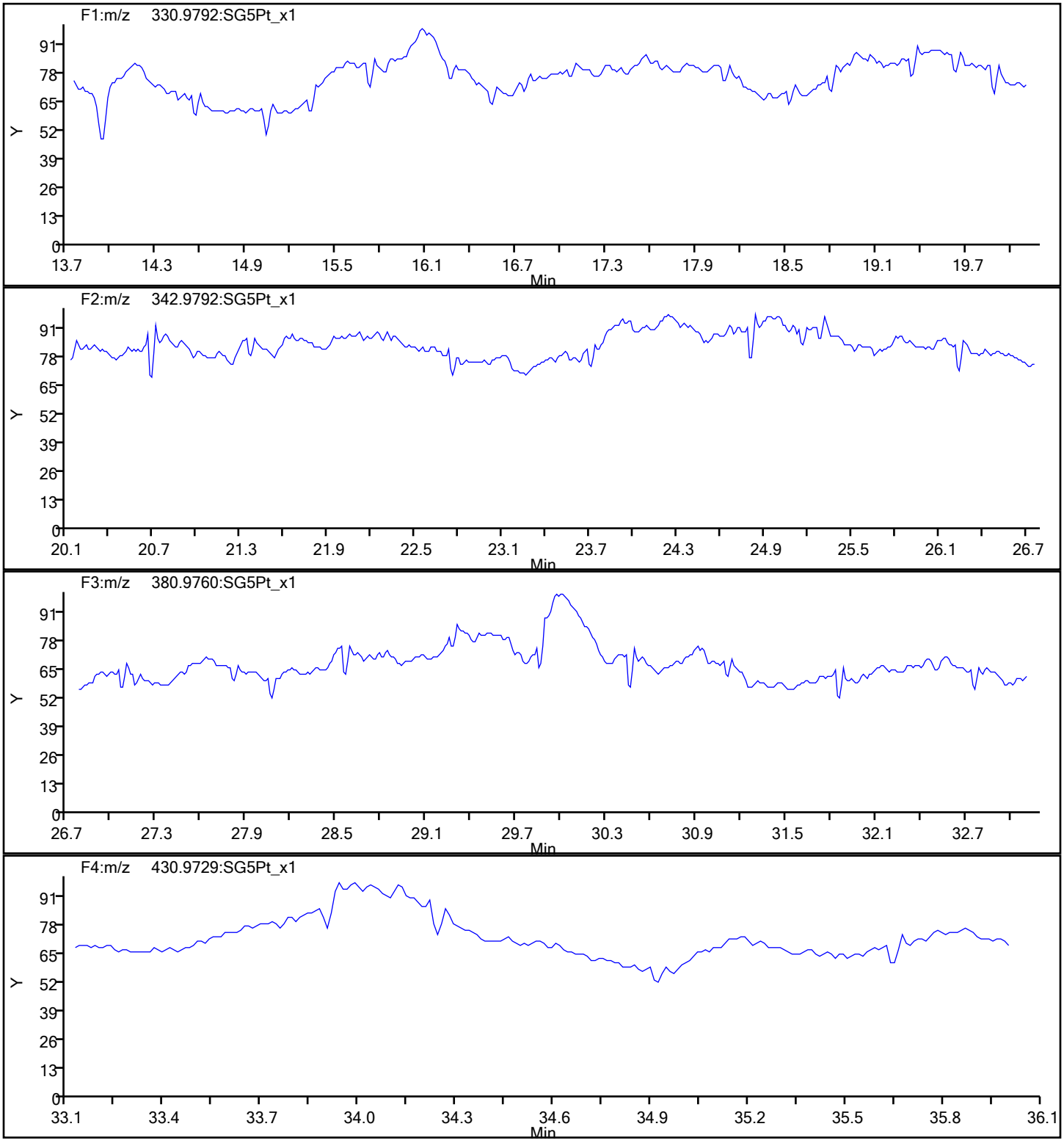
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



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Eurofins TestAmerica, Sacramento

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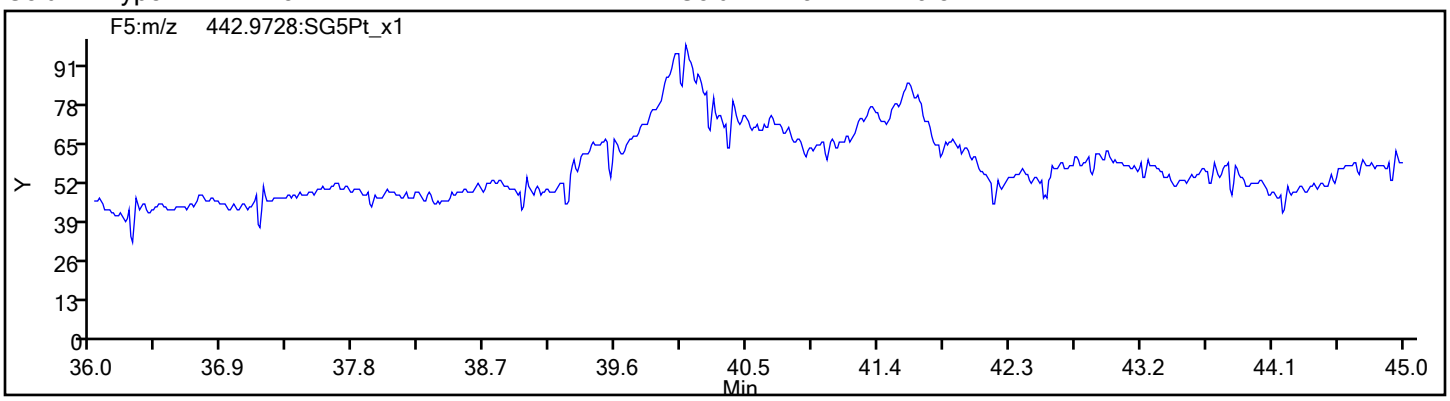
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: ICV 320-312067/8 Calibration Date: 08/02/2019 06:03

Instrument ID: 11D2 Calib Start Date: 08/02/2019 02:52

GC Column: DB-225 ID: 0.32(mm) Calib End Date: 08/02/2019 05:25

Lab File ID: 02AU1911D2_008.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.154	1.135		39.4	40.0	98	70-130
2,3,7,8-TCDF	AveID	0.8389	0.7719		36.8	40.0	92	70-130
13C-2,3,7,8-TCDD	Ave	0.9388	0.8798		93.7	100	94	82-121
13C-2,3,7,8-TCDF	Ave	1.338	1.270		94.9	100	95	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.182	1.222		41.4	40.0	103	79-127

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 02-Aug-2019 06:03:41 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist:

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:56:54 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:47:16

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.394	97001968	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.547	123207943	0.74	1.3379	94.9	94.9	0.6094	0.6094	94.93	
2,3,7,8-TCDF	16.574	38039883	0.78	0.8389	36.8	36.8	0.1052	0.1052	92.01	
D 13C-2,3,7,8-TCDD	15.106	85337698	0.79	0.9388	93.7	93.7	0.3453	0.3453	93.71	
2,3,7,8-TCDD	15.120	38758960	0.76	1.1538	39.4	39.4	0.1979	0.1979	98.41	
$ 37Cl4-2,3,7,8-TCDD	15.120	47417283		1.1816	41.4	41.4	0.1032	0.1032	103	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 02-Aug-2019 06:03:41 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist:

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:56:54 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:47:16

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.394	15.416	-1		42407295	9957761	17234	43085	578		
333.9339	15.394	15.416	-1		54594673	12831179	12314	30785	1042	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.547	16.580	-2	1.075	52595032	11688678	51826	129565	226		
317.9389	16.547	16.580	-2	1.075	70612911	15460441	22495	56237	687	0.74(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.574	16.599	-1	1.002	16681516	3535451	3682	9205	960		
305.8987	16.574	16.599	-1	1.002	21358367	4522824	5899	14747	767	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.106	15.136	-2	0.981	37657541	9362808	17234	43085	543		
333.9339	15.106	15.136	-2	0.981	47680157	11686095	12314	30785	949	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.120	15.156	-2	1.001	16757833	4095456	8475	21187	483		
321.8936	15.120	15.156	-2	1.001	22001127	5354648	10746	26865	498	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.120	15.158	-2	0.982	47417283	11432123	11111	27777	1029		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
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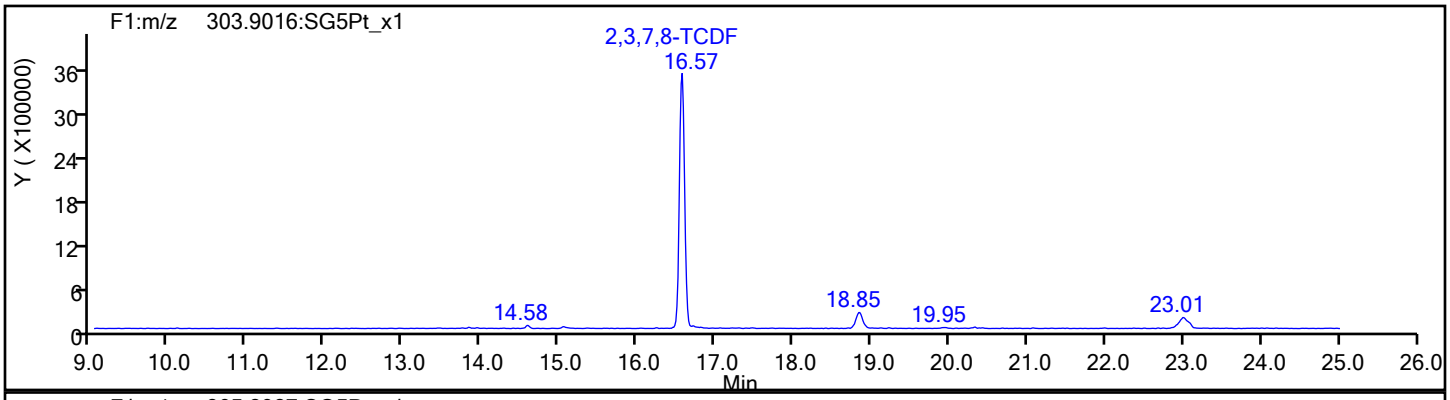
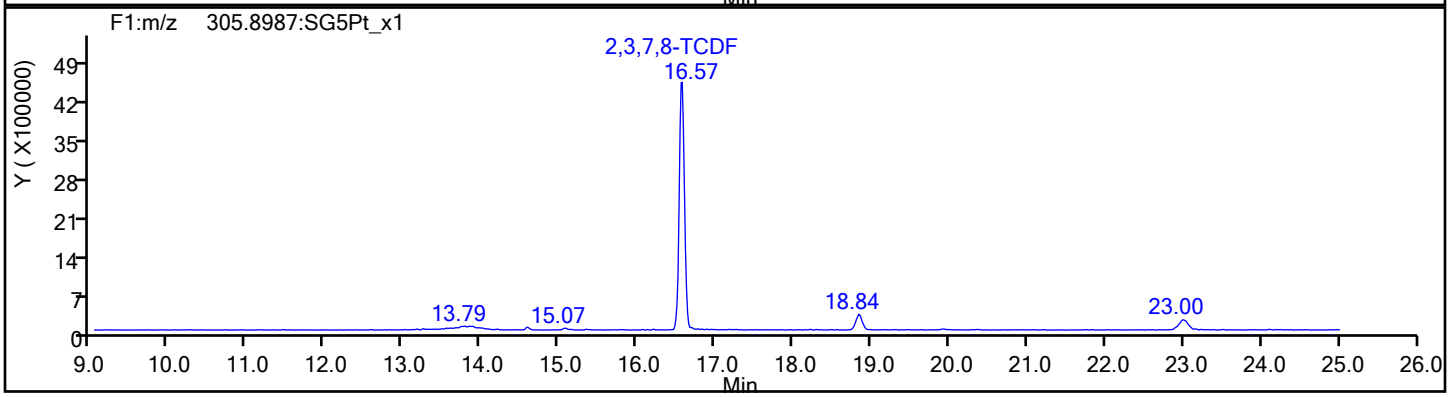
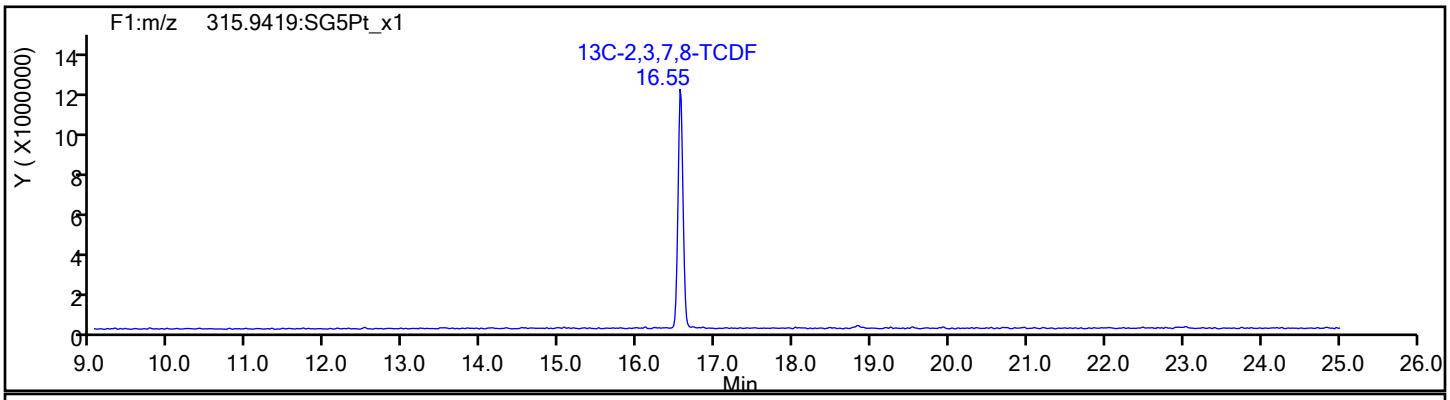
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

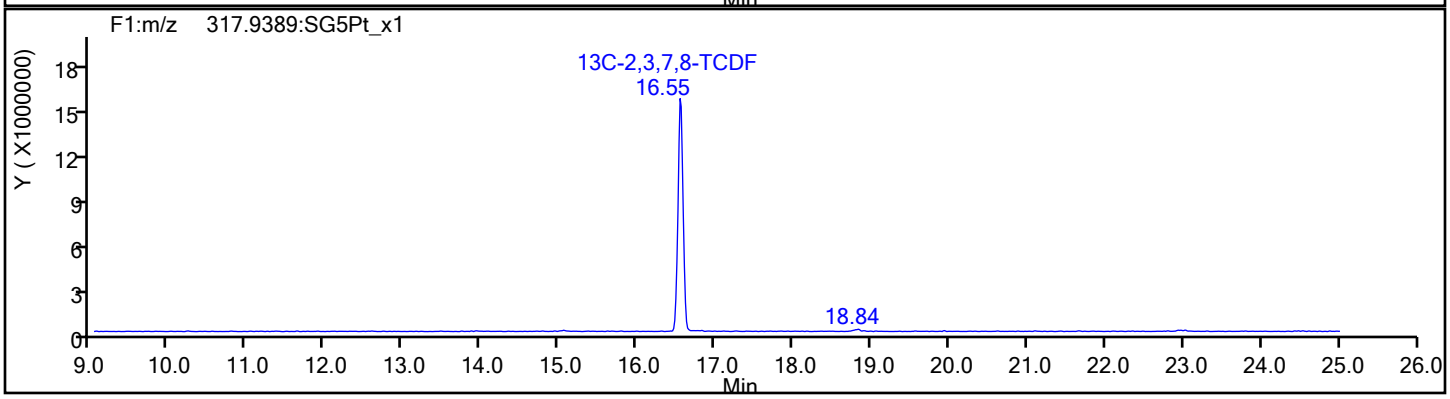
TCDF





TCDF Standards





Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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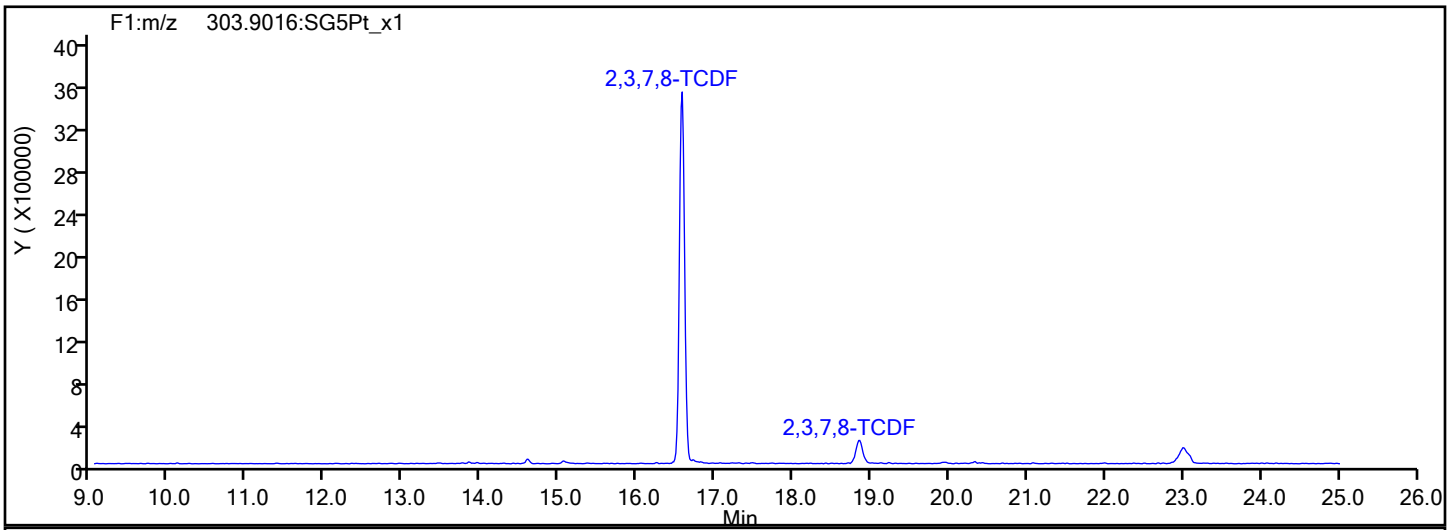
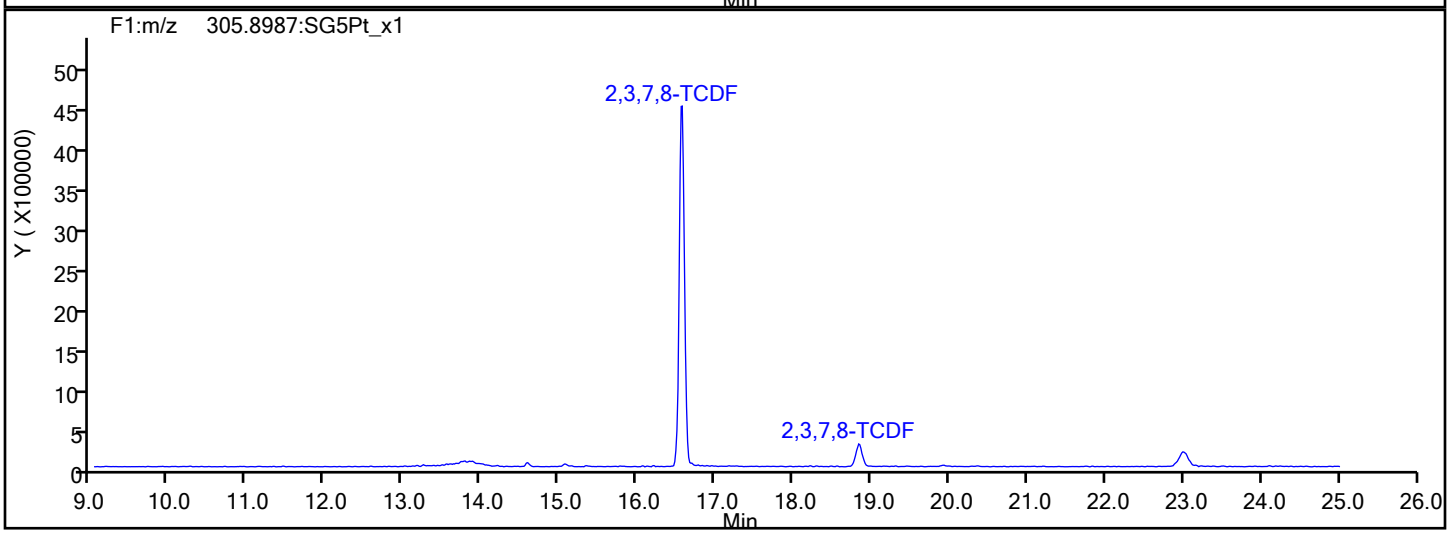
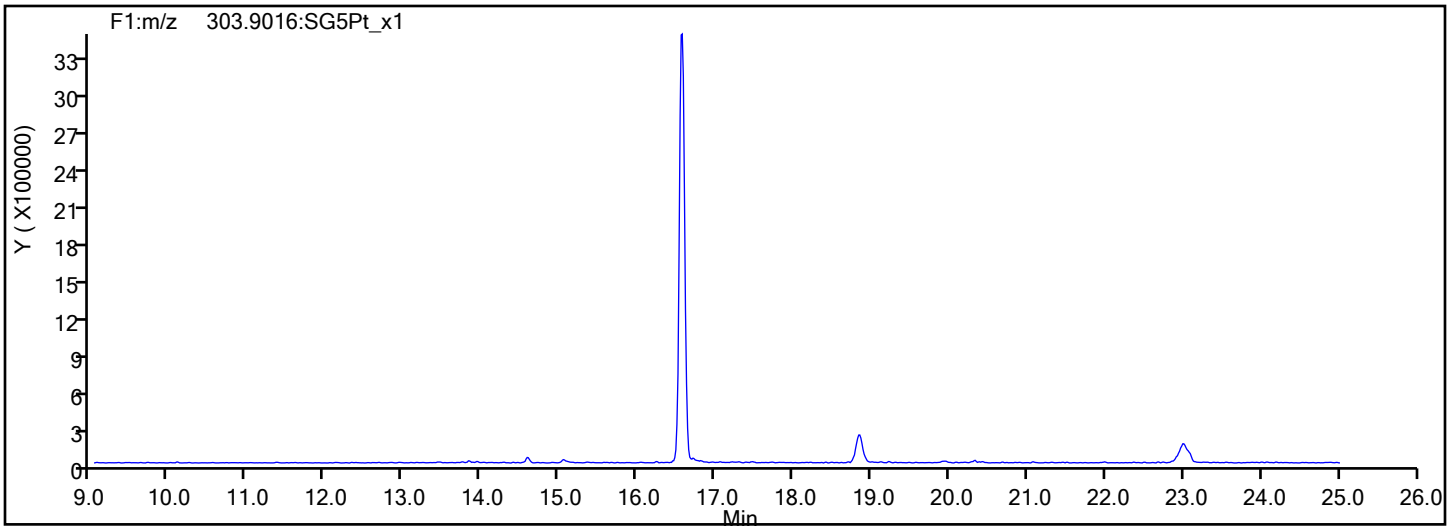
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

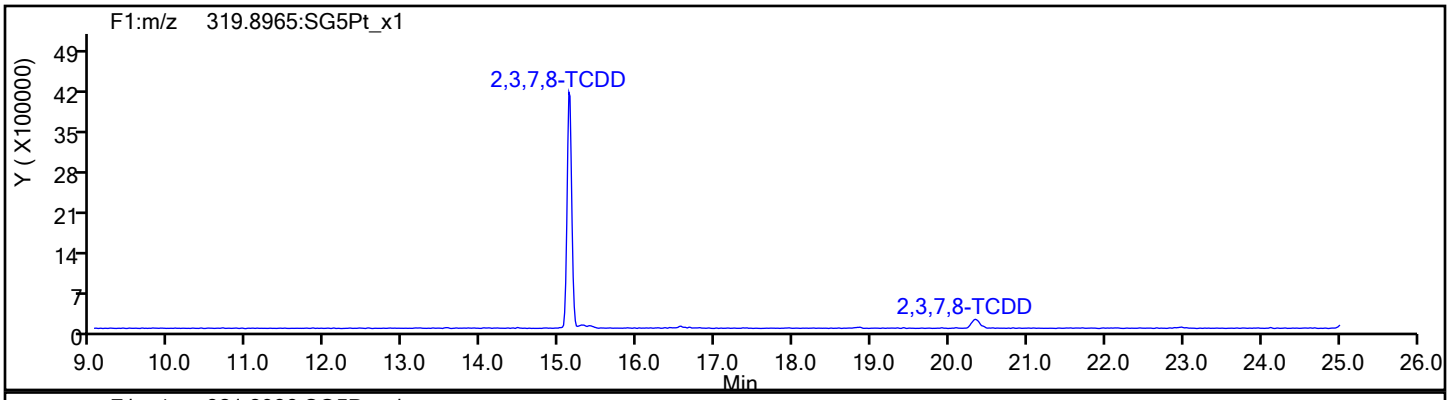


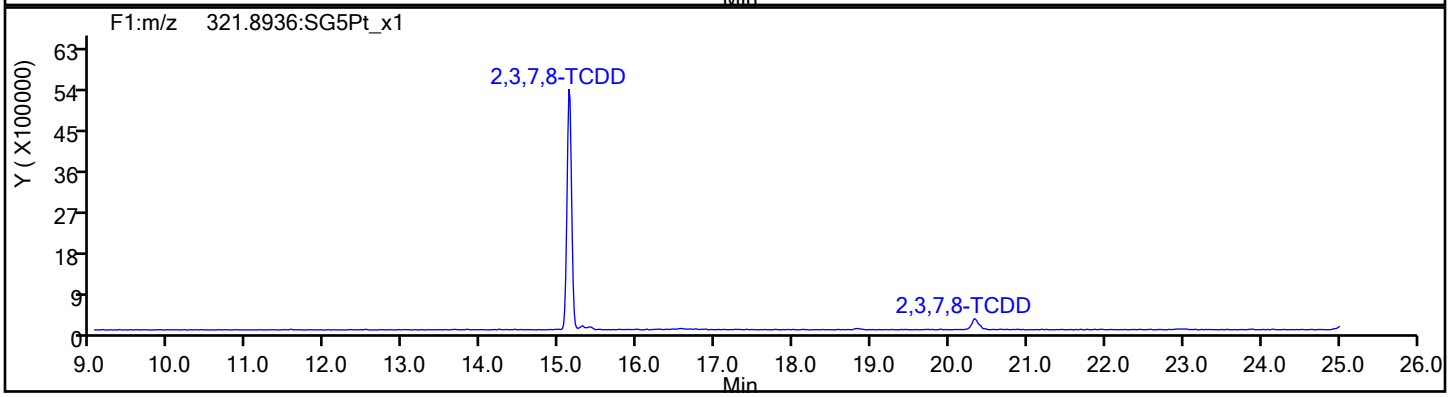
Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

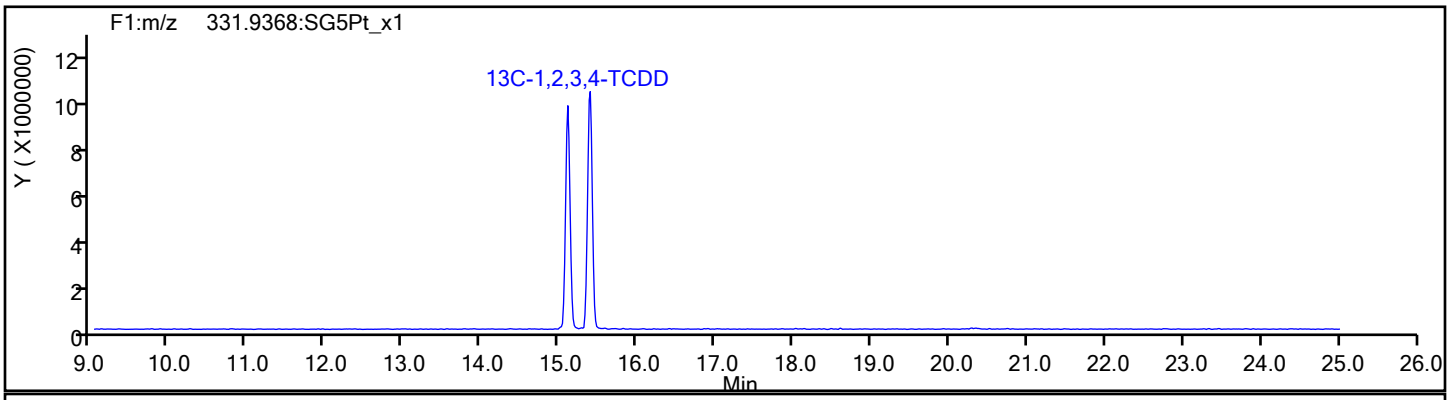
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

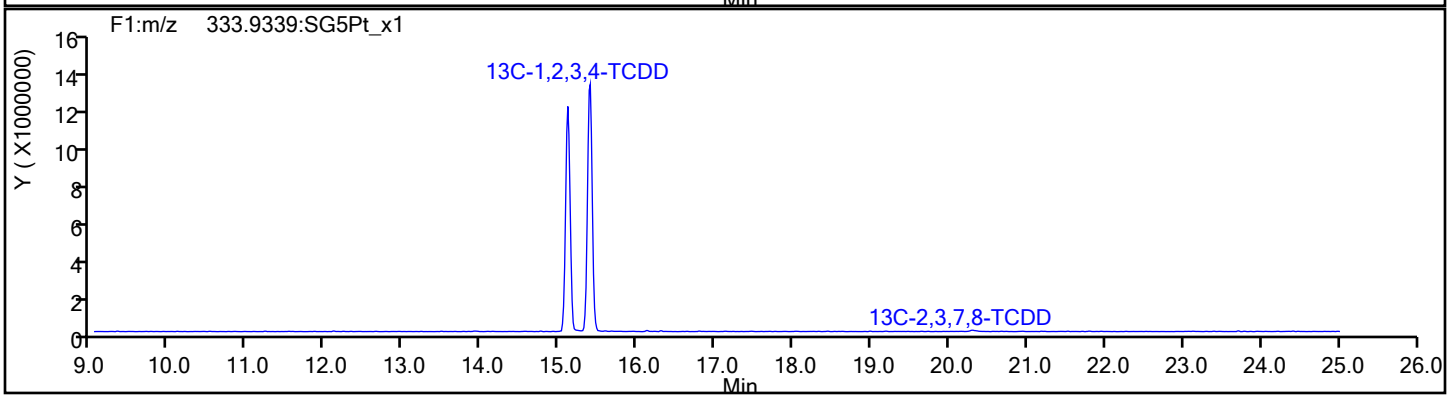
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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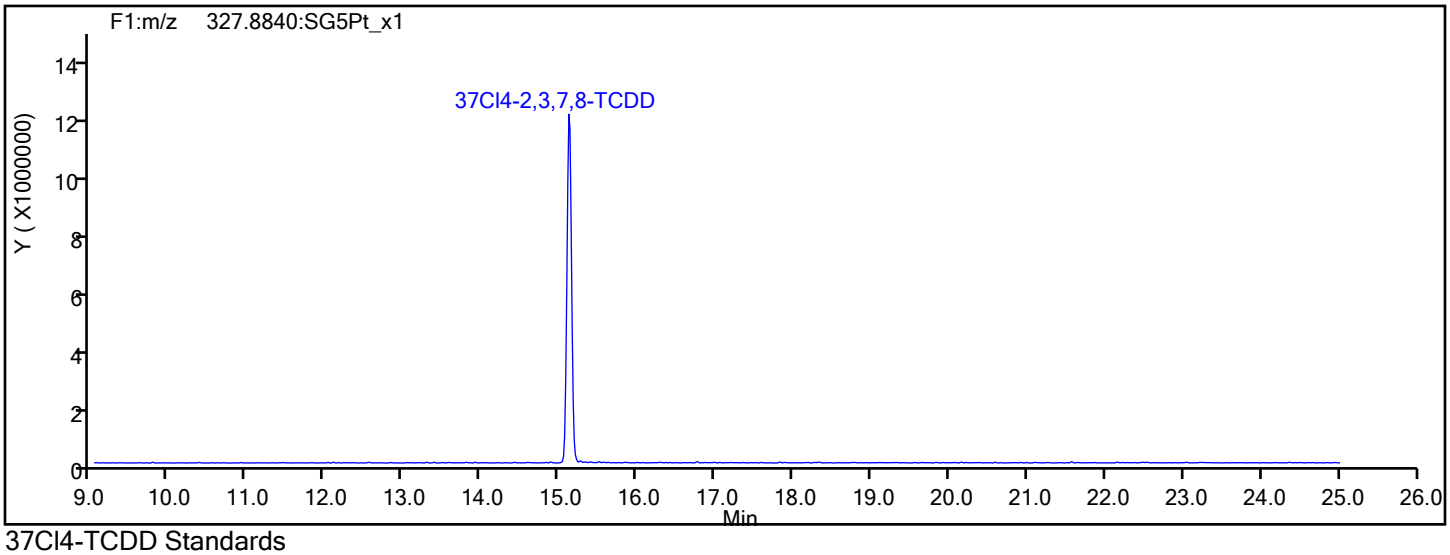
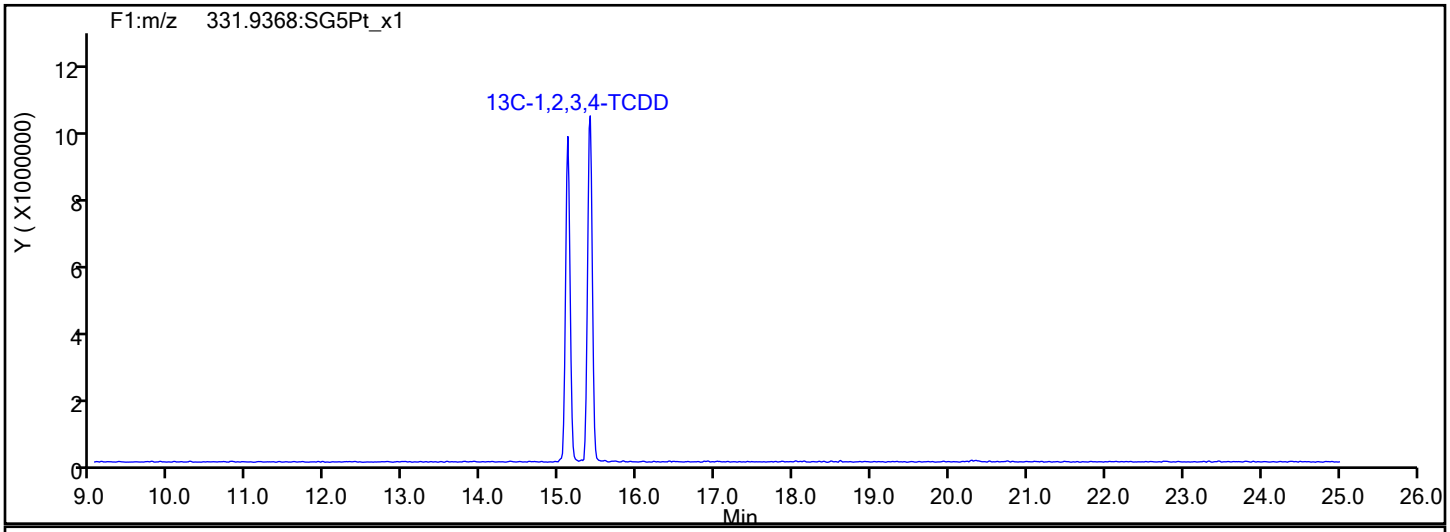
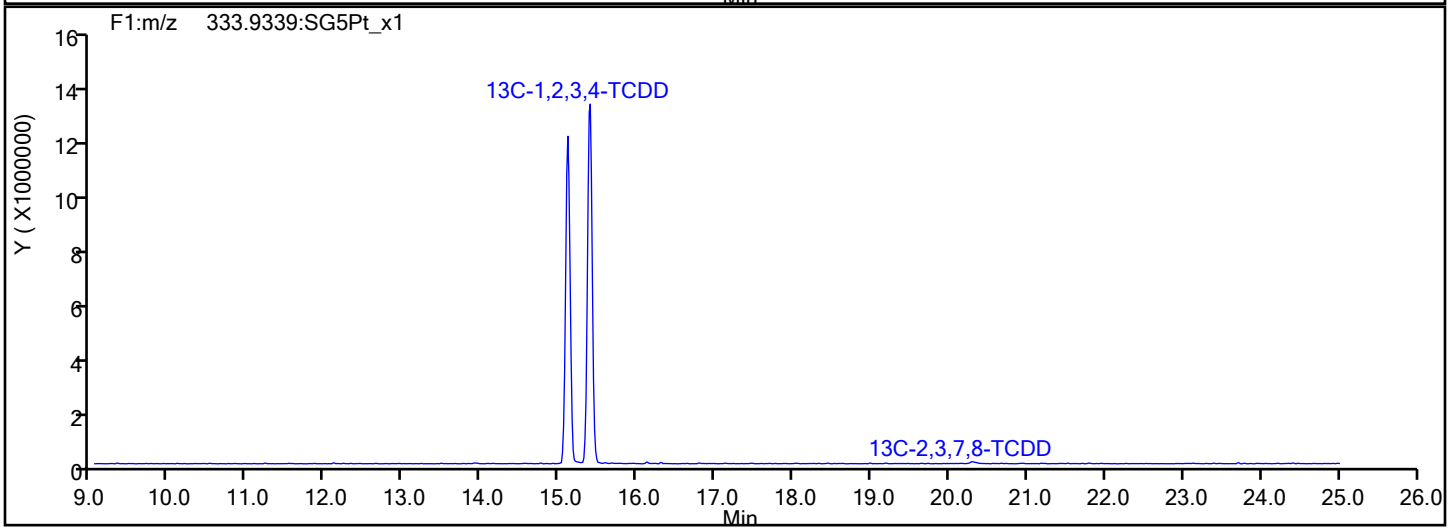
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

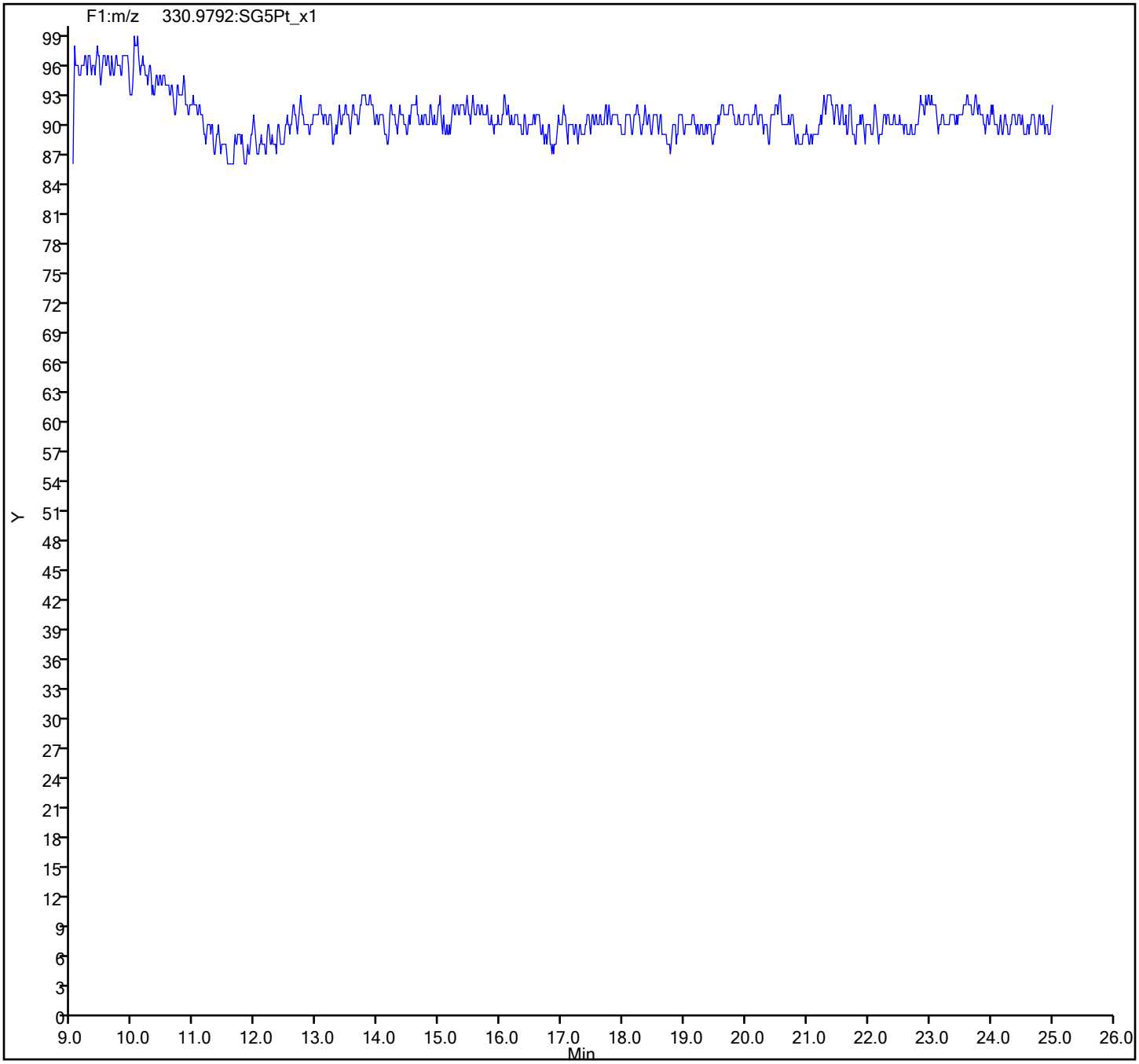




Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: CCV 320-345960/2 Calibration Date: 12/16/2019 19:55

Instrument ID: 11D2 Calib Start Date: 08/02/2019 02:52

GC Column: DB-225 ID: 0.32(mm) Calib End Date: 08/02/2019 05:25

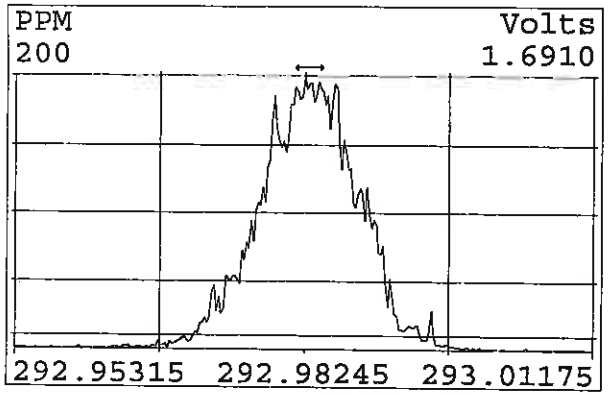
Lab File ID: 16DE19A11D2_002.d Conc. Units: pg/uL

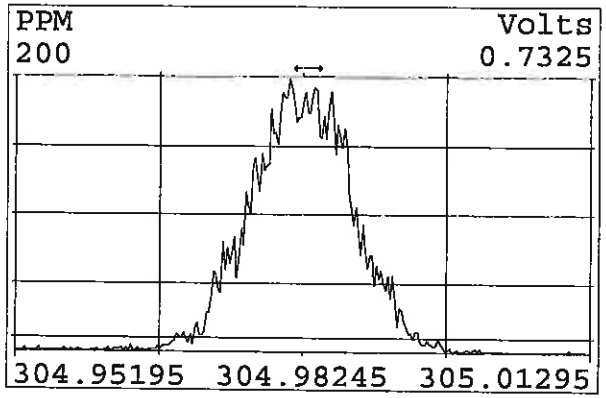
ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.154	1.056		9.15	10.0	91	78-129
2,3,7,8-TCDF	AveID	0.8389	0.9825		11.7	10.0	117	84-120
13C-2,3,7,8-TCDD	Ave	0.9388	0.8826		94.0	100	94	82-121
13C-2,3,7,8-TCDF	Ave	1.338	1.354		101	100	101	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.182	1.331		11.3	10.0	113	79-127

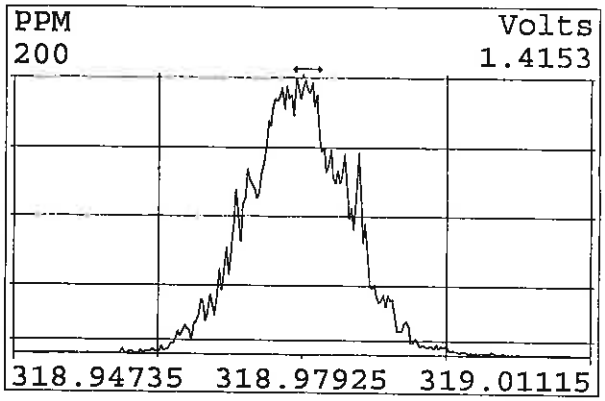
Data file	Smp	Work Order	Sample ID	FV-uL	Method/Matrix	Box	Size	U
16DE19A11D2	1	CPS 121619A	CPS HRDXNCP_00040				1.00000	
16DE19A11D2	2	CCV 121619	CCV CS-4 HRDXNL4_00086				1.00000	
16DE19A11D2	3	SB 121619	SB Solvent Blank C-14				1.00000	
16DE19A11D2	4	320-344634	320-56911-A-3-A	20	1613B/Solid	D117	10.00000	g
16DE19A11D2	5	320-344634	320-56911-A-4-A	20	1613B/Solid		10.00000	g
16DE19A11D2	6	320-344634	320-56911-A-5-A	20	1613B/Solid		10.00000	g
16DE19A11D2	7	320-344634	320-56911-A-6-A	20	1613B/Solid		10.00000	g
16DE19A11D2	8	320-344634	320-56911-A-7-A	20	1613B/Solid		10.00000	g
16DE19A11D2	9	320-344634	320-56911-A-8-A	20	1613B/Solid		10.00000	g
16DE19A11D2	10	320-344634	320-56911-A-9-A	20	1613B/Solid		10.00000	g
16DE19A11D2	11	320-344634	320-56911-A-10-A	20	1613B/Solid		10.00000	g
16DE19A11D2	12	320-344634	320-56911-A-11-A	20	1613B/Solid		10.00000	g
16DE19A11D2	13	320-344634	320-56911-A-12-A	20	1613B/Solid		10.00000	g
16DE19A11D2	14	320-344634	320-56911-A-13-A	20	1613B/Solid		10.00000	g
16DE19A11D2	15						1.00000	
16DE19A11D2	16						1.00000	
16DE19A11D2	17						1.00000	
16DE19A11D2	18						1.00000	
16DE19A11D2	19						1.00000	
16DE19A11D2	20						1.00000	
16DE19A11D2	21						1.00000	
16DE19A11D2	22		ALM 12-16-19				1.00000	
16DE19A11D2	23		SMA 12-17-19				1.00000	

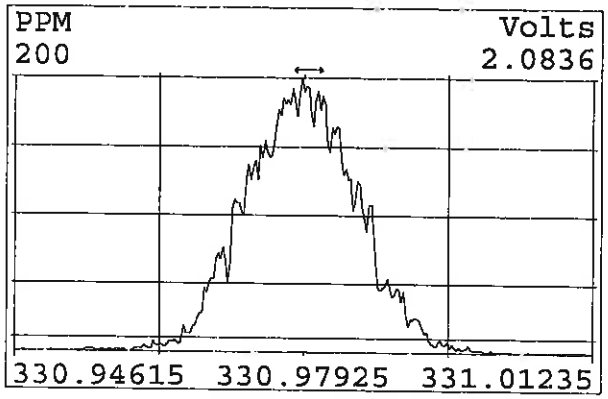
Logfile ✓'d
12/17/19
KSS

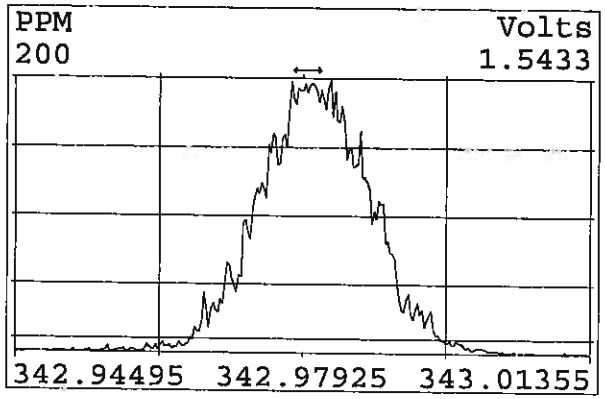
Peak Locate Examination:16-DEC-2019:19:14 File:16DE19A11D2
Experiment:DB225RES Function:1 Reference:PFK

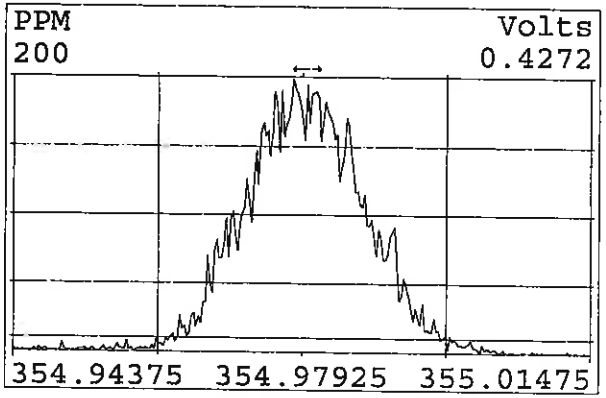


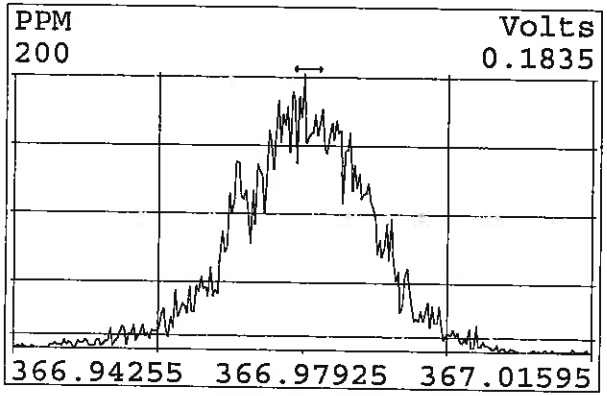


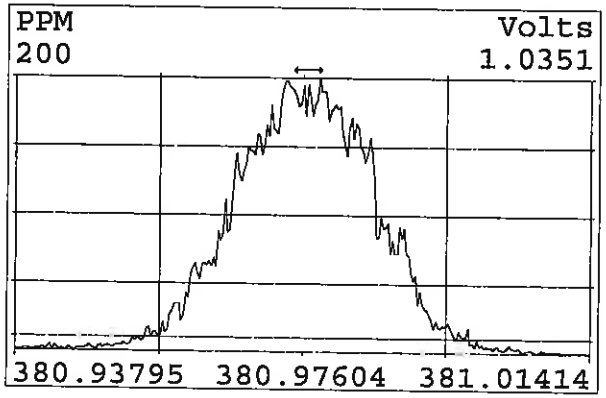




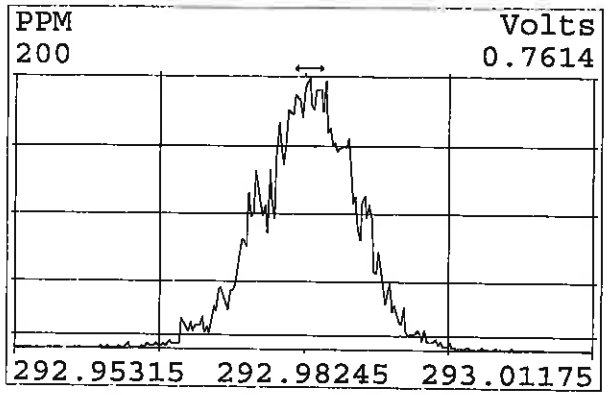


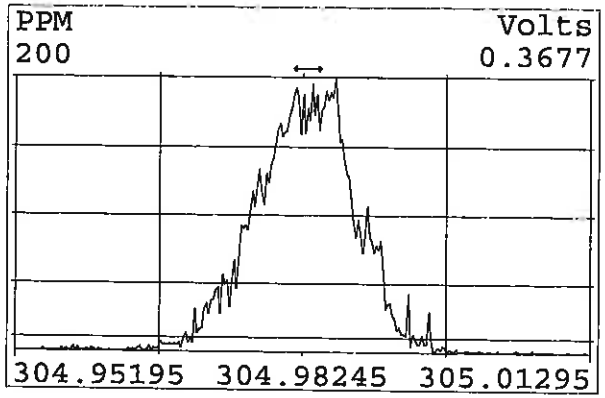


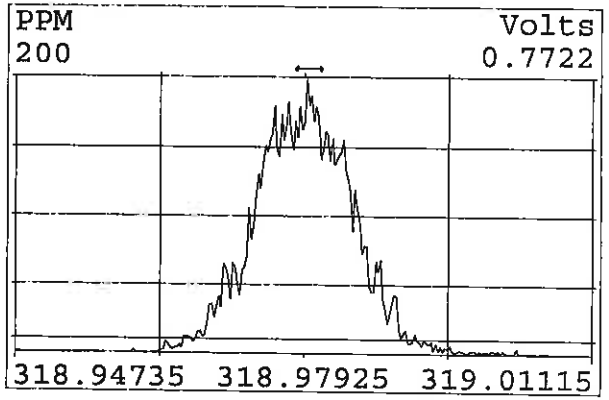


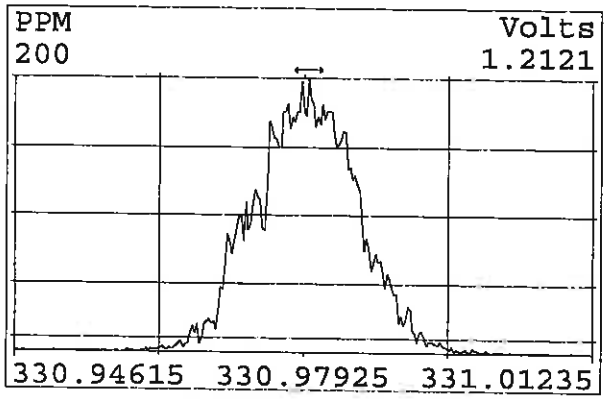


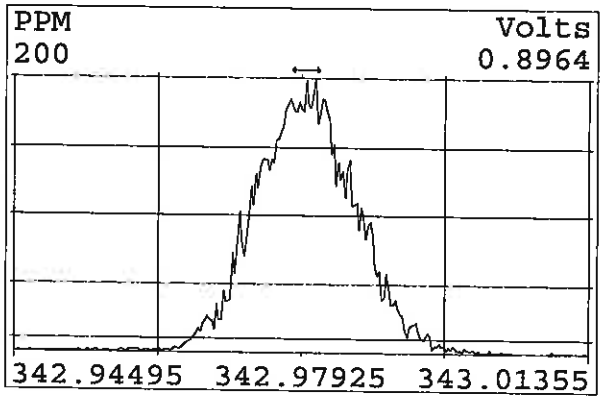
Peak Locate Examination:17-DEC-2019:06:52 File:RESCHECK11D2
Experiment:DB225RES Function:1 Reference:PFK

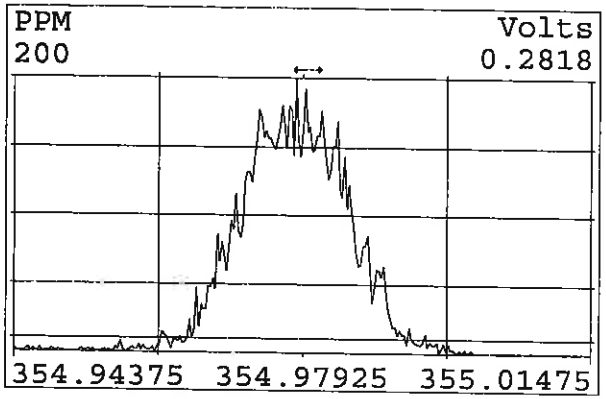


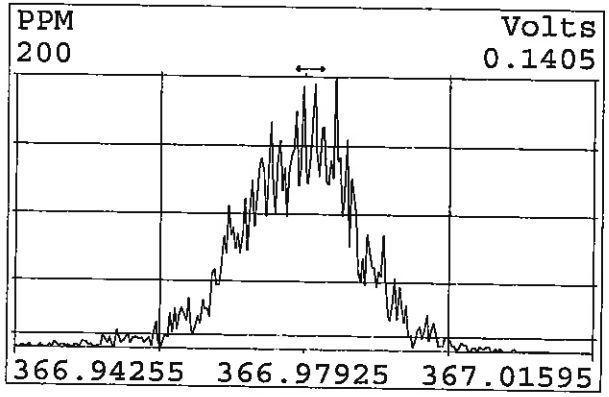


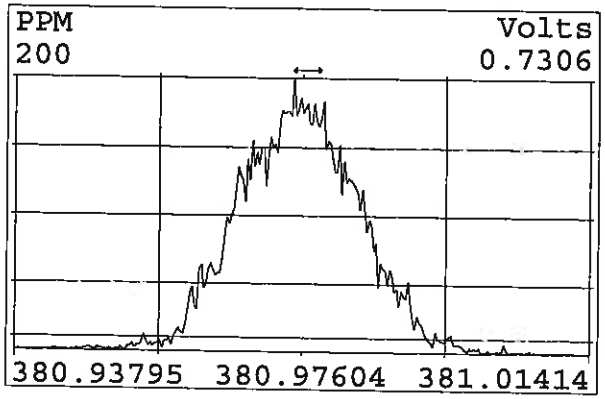












Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 16-Dec-2019 19:55:16 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:31:57

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.383	78197243	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.576	105917468	0.82	1.3379	101.2	101.2	0.4026	0.4026	101	
2,3,7,8-TCDF	16.590	10406639	0.76	0.8389	11.7	11.7	0.0847	0.0847	117	
D 13C-2,3,7,8-TCDD	15.122	69019348	0.75	0.9388	94.0	94.0	0.3279	0.3279	94.02	
2,3,7,8-TCDD	15.149	7286094	0.83	1.1538	9.149	9.149	0.0852	0.0852	91.49	
$ 37Cl4-2,3,7,8-TCDD	15.149	10411739		1.1816	11.3	11.3	0.0629	0.0629	113	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 16-Dec-2019 19:55:16 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:20 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:31:57

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.383	15.383	0		34442341	7462715	15476	38690	482		
333.9339	15.383	15.383	0		43754902	9377289	5258	13145	1783	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.576	16.576	0	1.078	47720279	8797317	22322	55805	394		
317.9389	16.576	16.576	0	1.078	58197189	10759234	13965	34912	770	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.590	16.590	0	1.001	4485013	814812	2010	5025	405		
305.8987	16.590	16.590	0	1.001	5921626	1107830	3548	8870	312	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.122	15.122	0	0.983	29646407	6091172	15476	38690	394		
333.9339	15.122	15.122	0	0.983	39372941	8330928	5258	13145	1584	0.75(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.149	15.149	0	1.002	3312907	667661	3552	8880	188		
321.8936	15.149	15.149	0	1.002	3973187	815487	2118	5295	385	0.83(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.149	15.149	0	0.985	10411739	2147387	5005	12512	429		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d

Injection Date: 16-Dec-2019 19:55:16 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

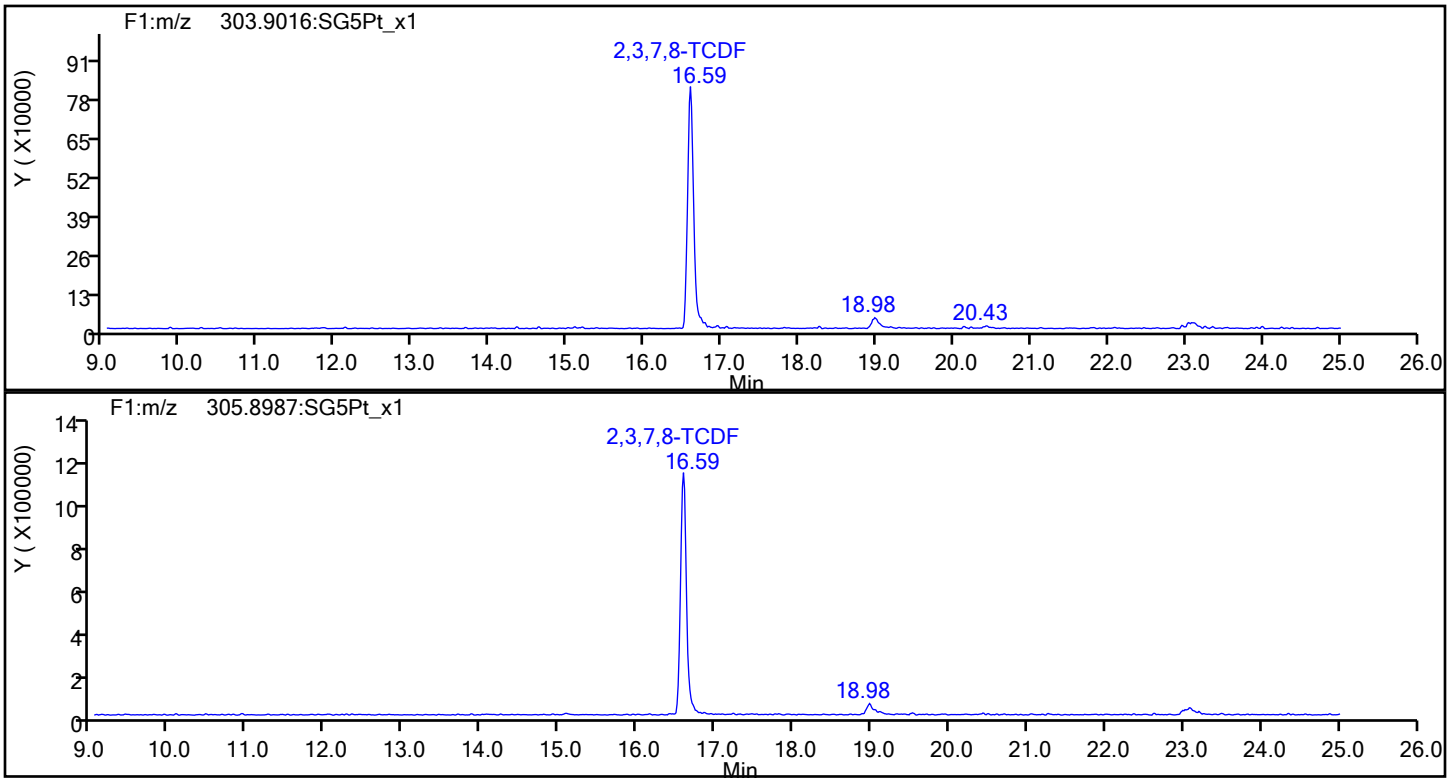
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

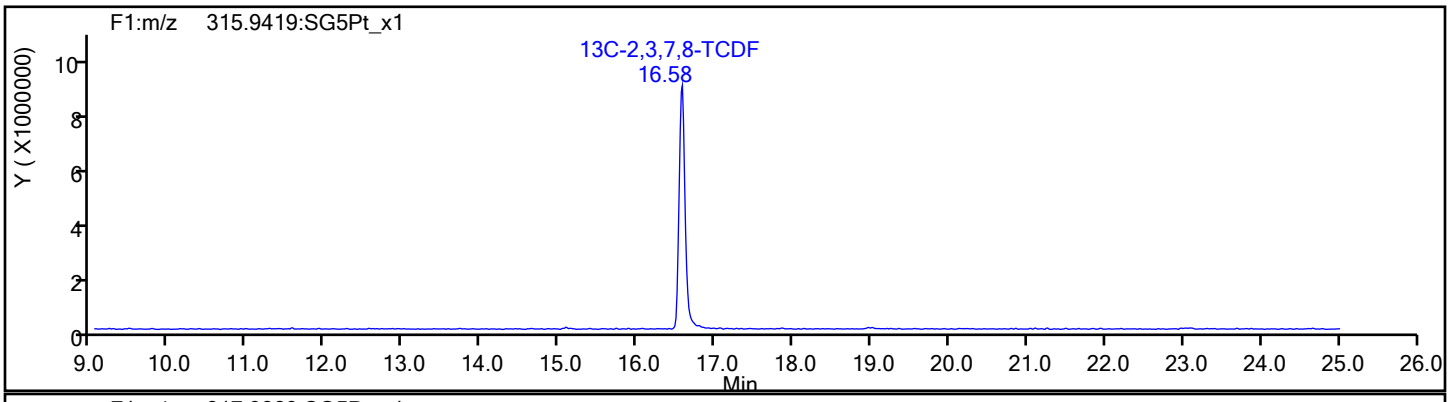
Worklist#: 345960 Sample Line#: 2

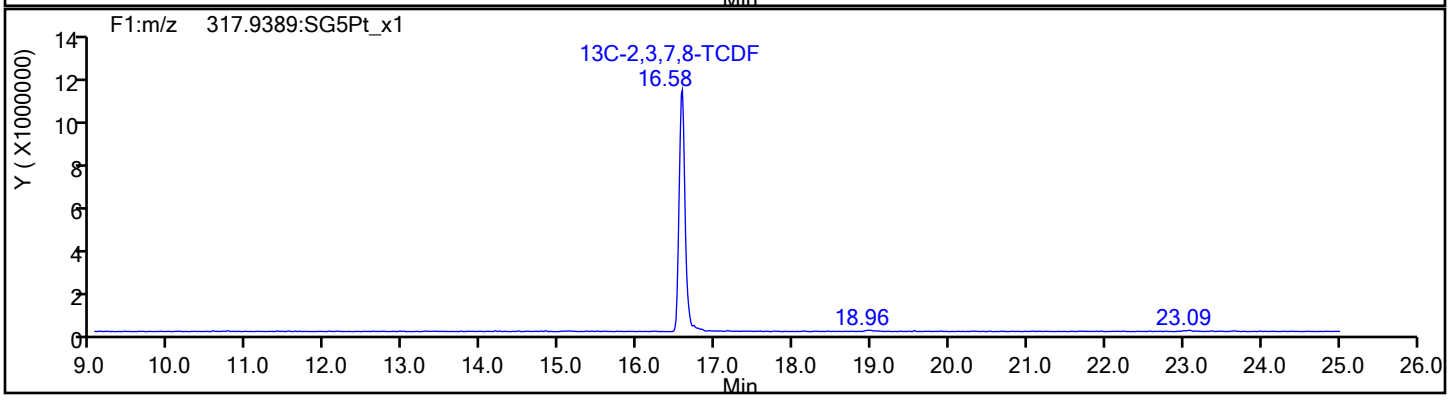
Column Type: DB-225 Column Dia: 0.32 mm

TCDF



TCDF Standards



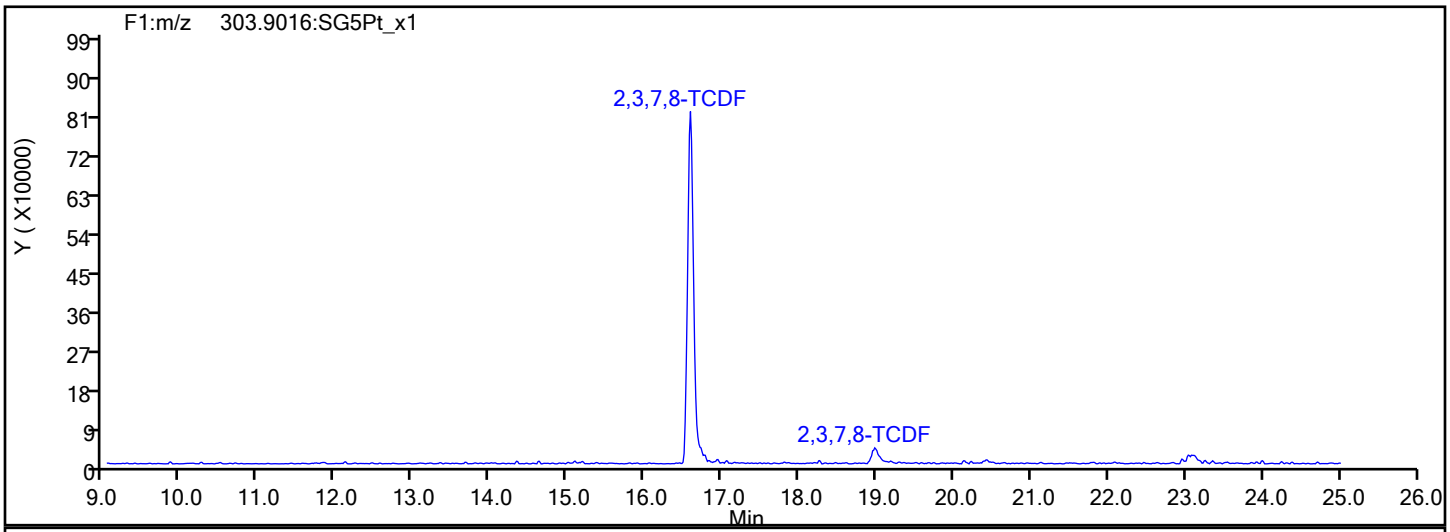


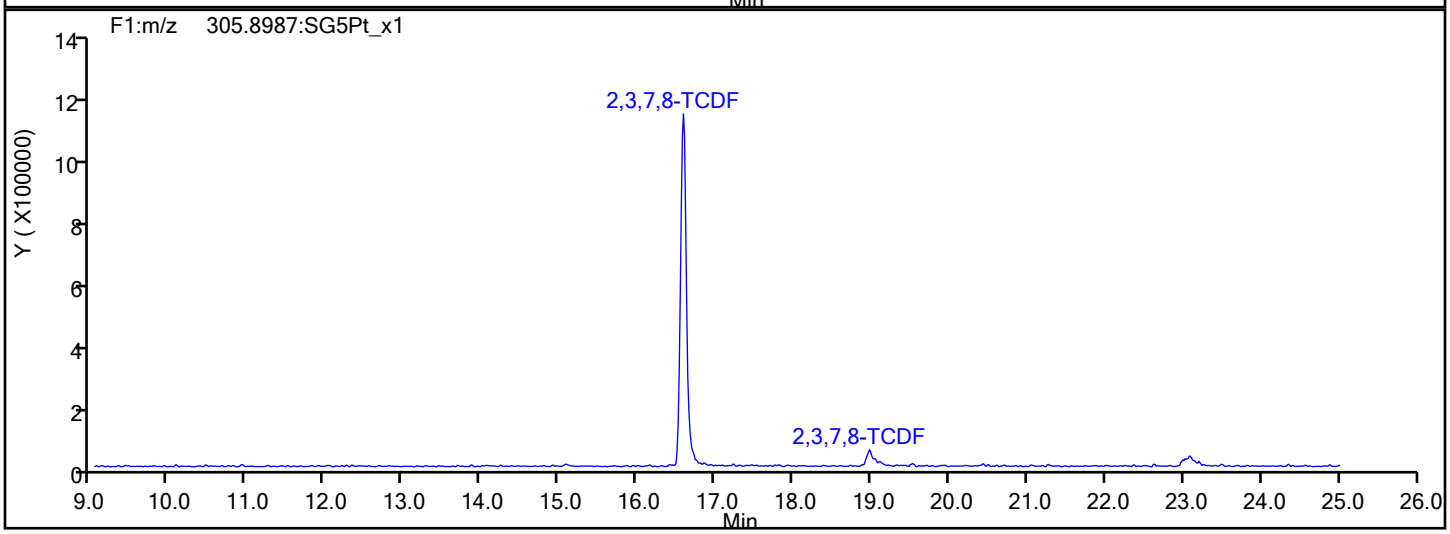
Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

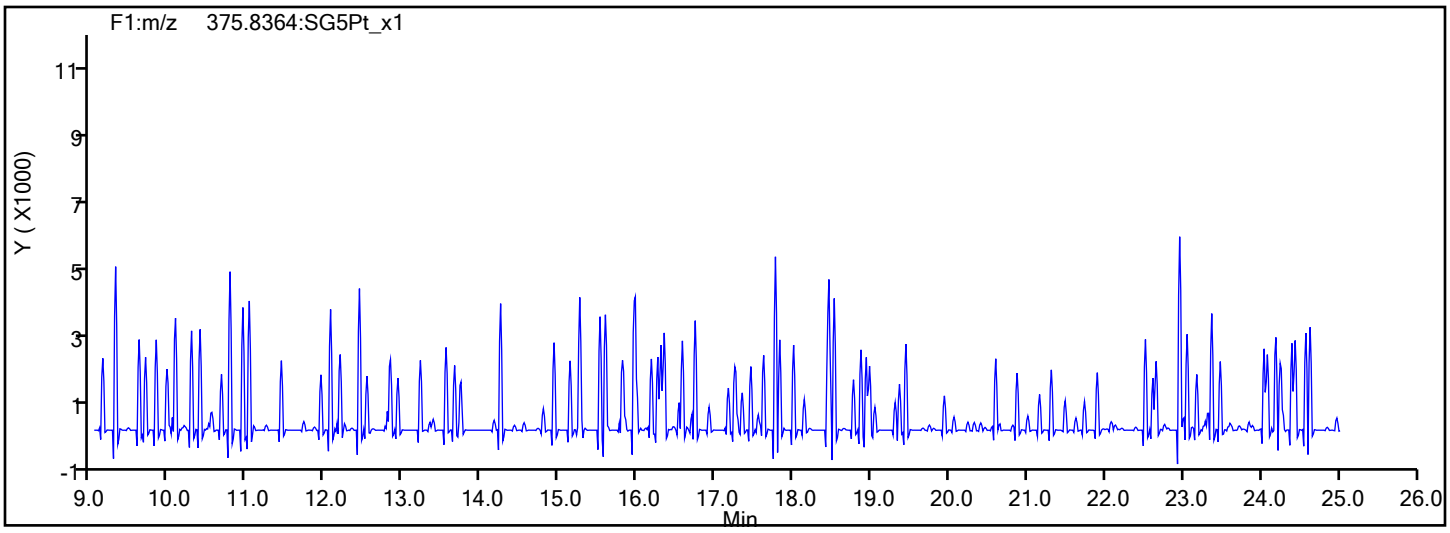
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d		
Injection Date:	16-Dec-2019 19:55:16	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

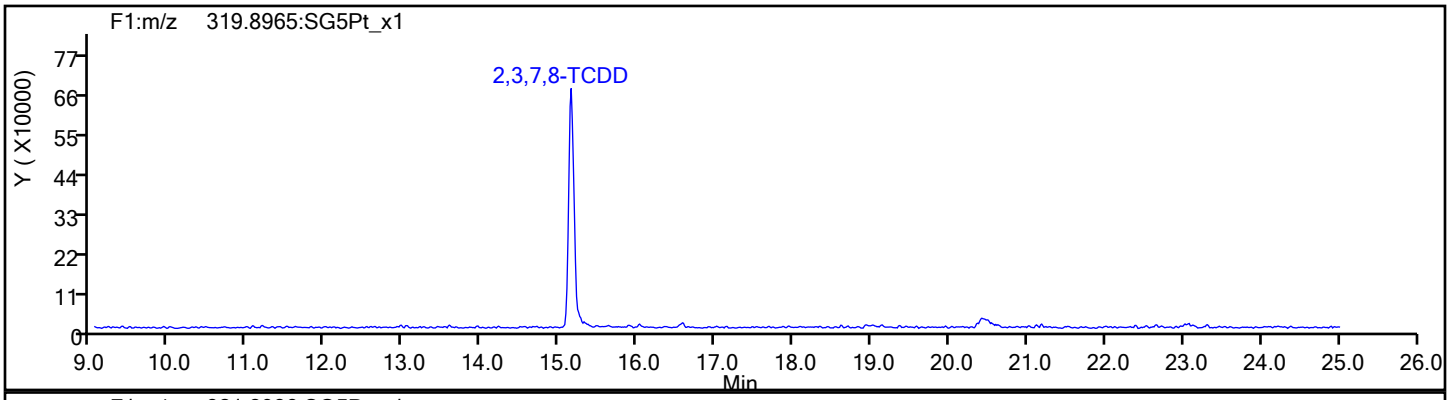


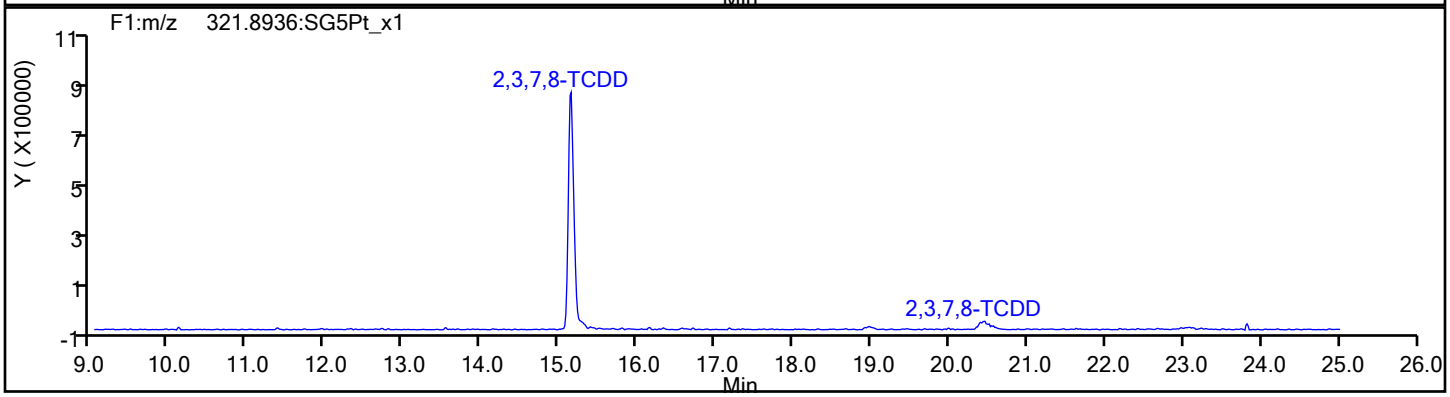
Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

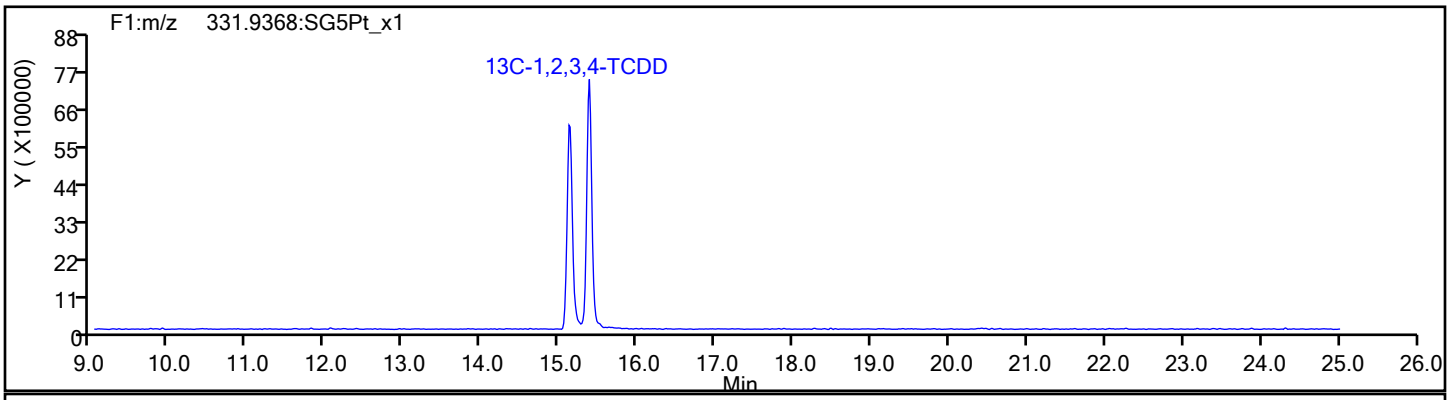
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d		
Injection Date:	16-Dec-2019 19:55:16	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

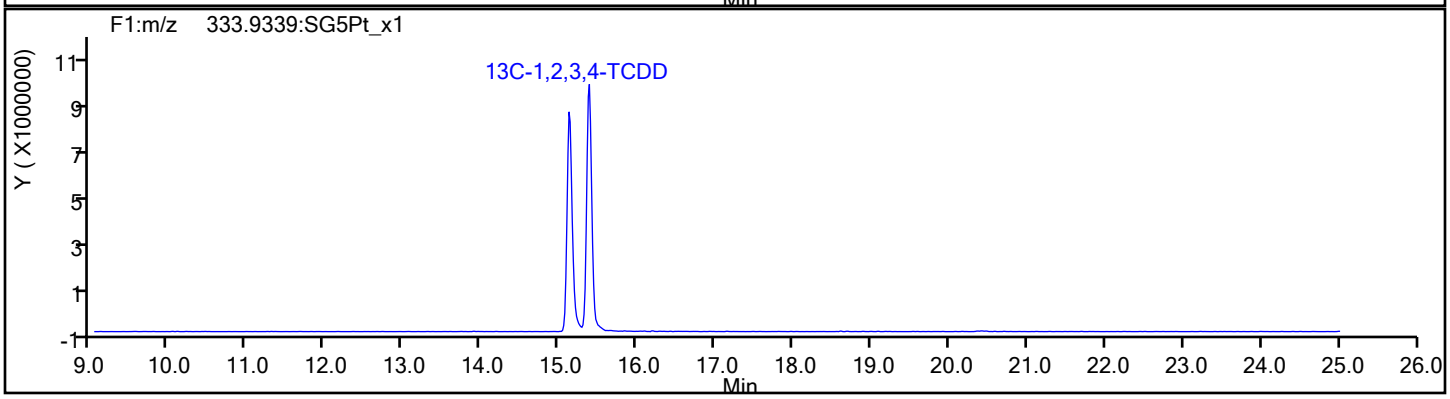
TCDD





TCDD Standards





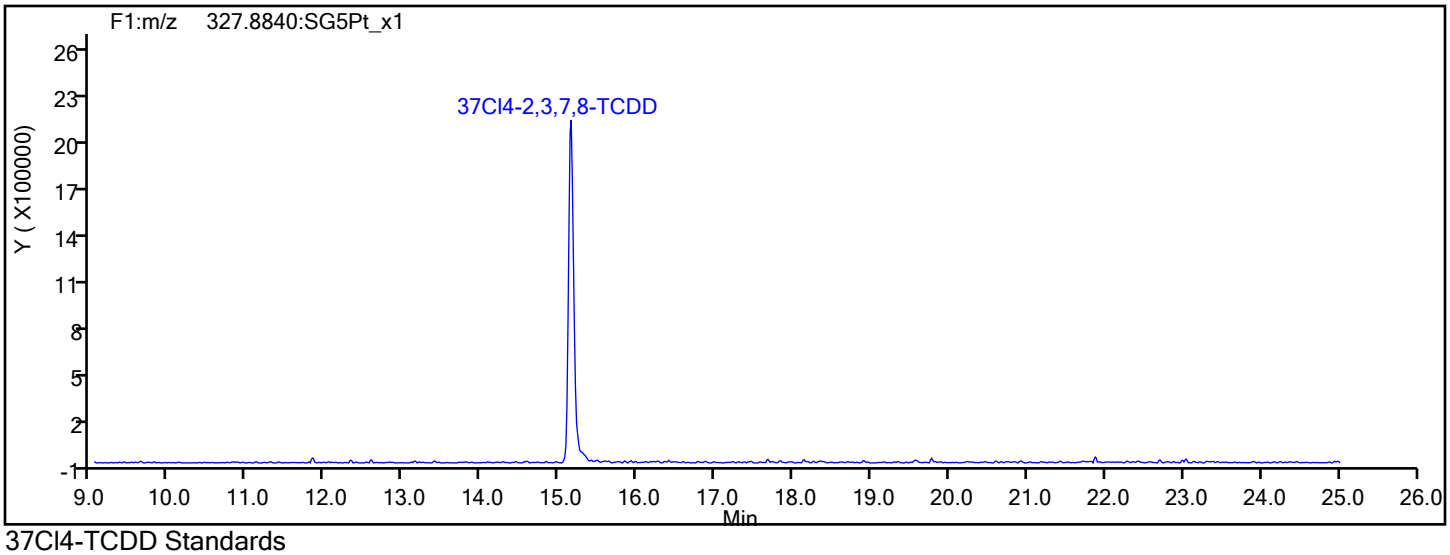
Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

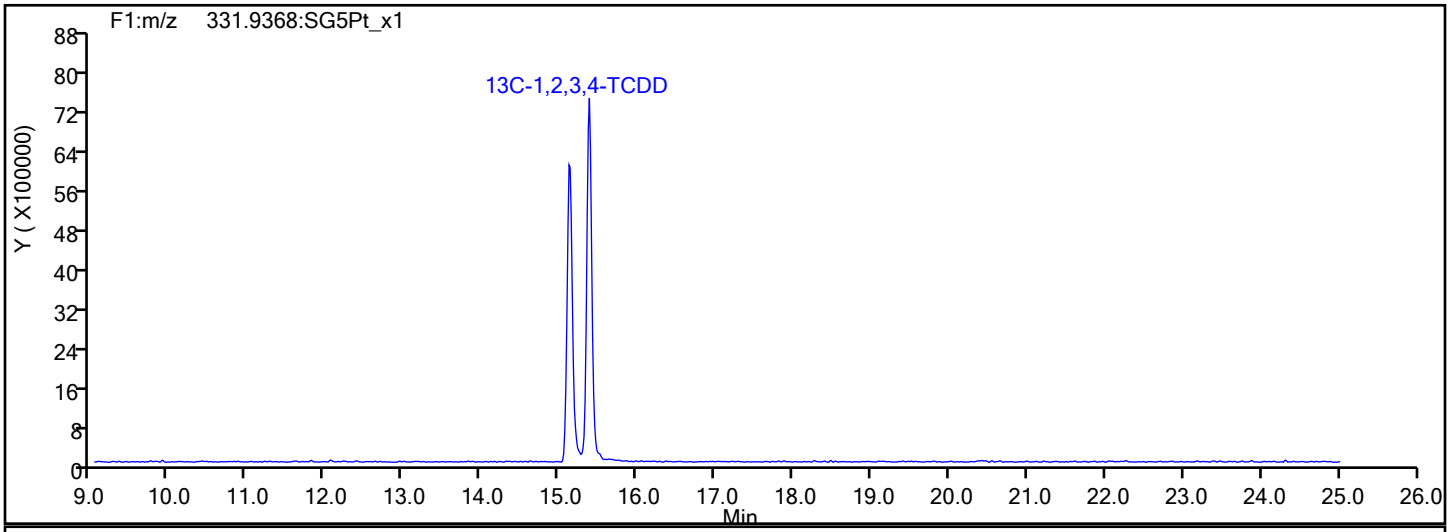
Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d

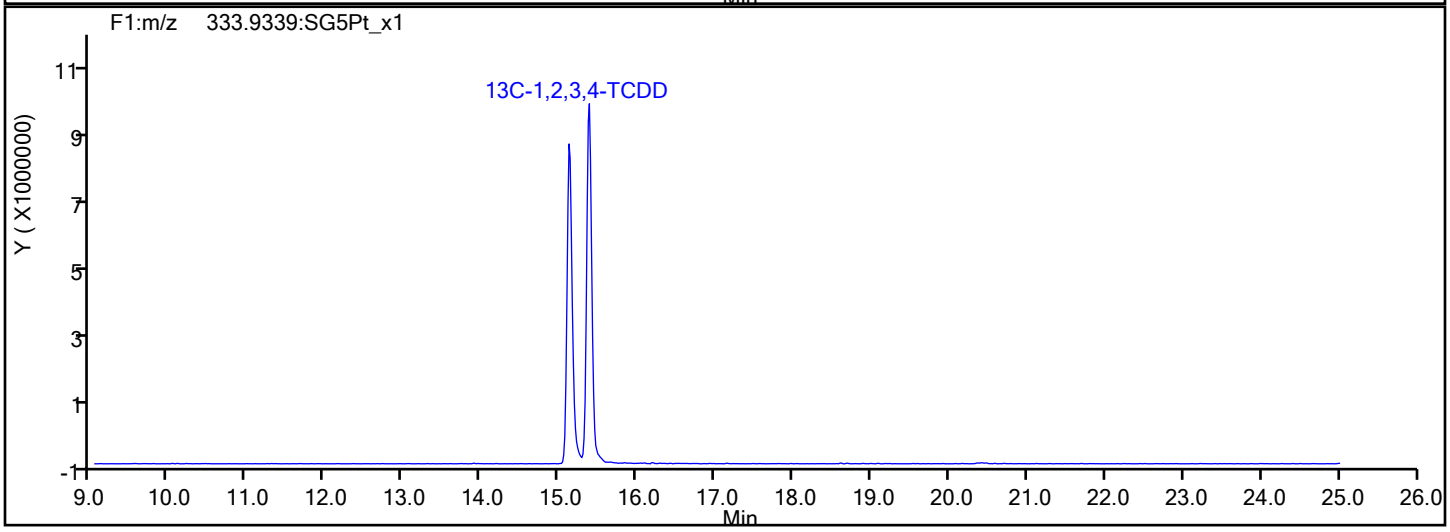
Injection Date:	16-Dec-2019 19:55:16	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:38:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_002.d		
Injection Date:	16-Dec-2019 19:55:16	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	2
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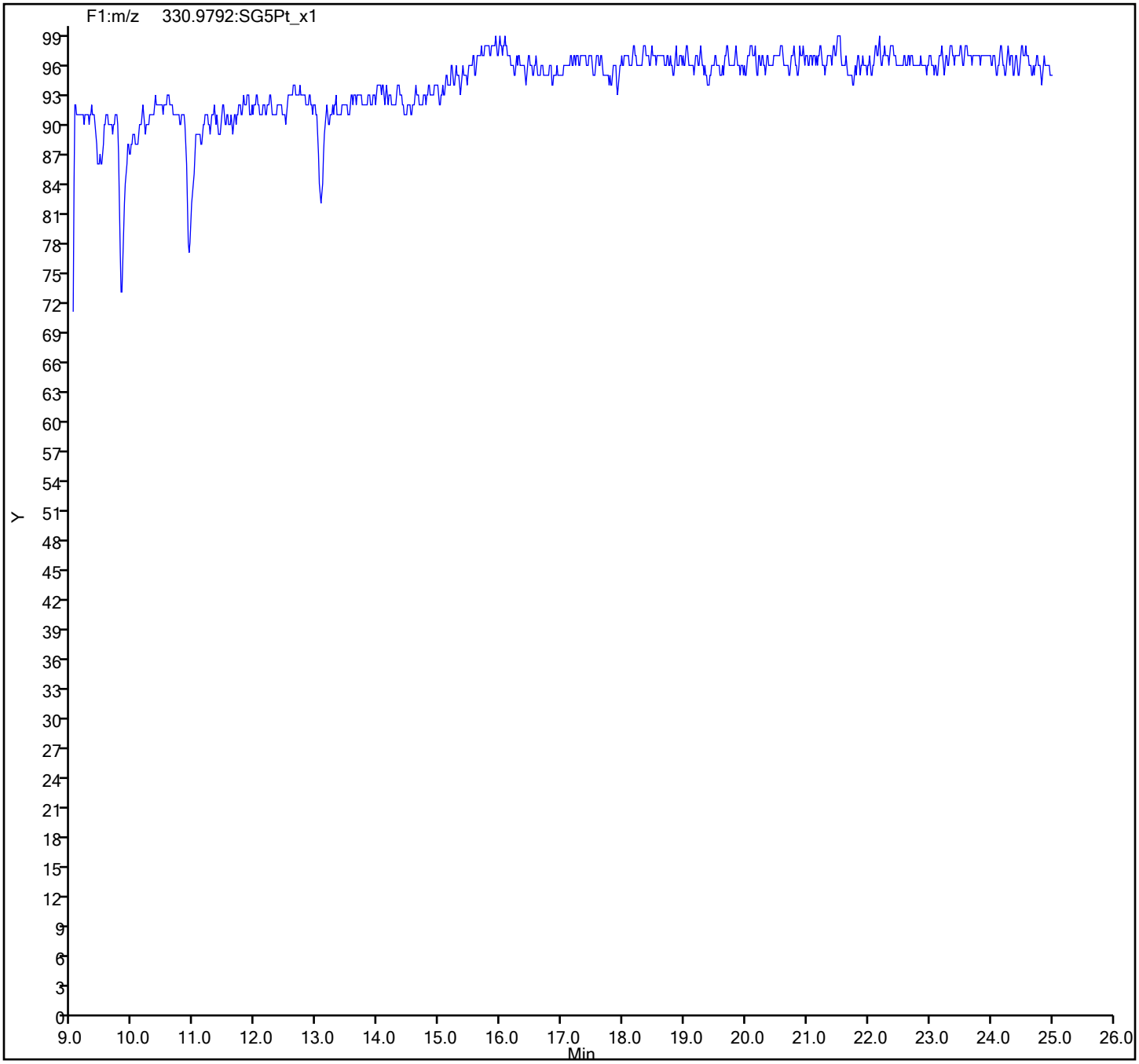


FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: CCV 320-346137/2 Calibration Date: 12/17/2019 14:49

Instrument ID: 11D2 Calib Start Date: 08/02/2019 02:52

GC Column: DB-225 ID: 0.32(mm) Calib End Date: 08/02/2019 05:25

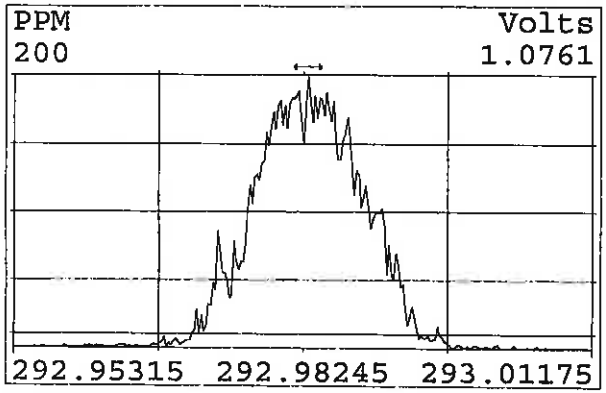
Lab File ID: 17DE1911D2_002.d Conc. Units: pg/uL

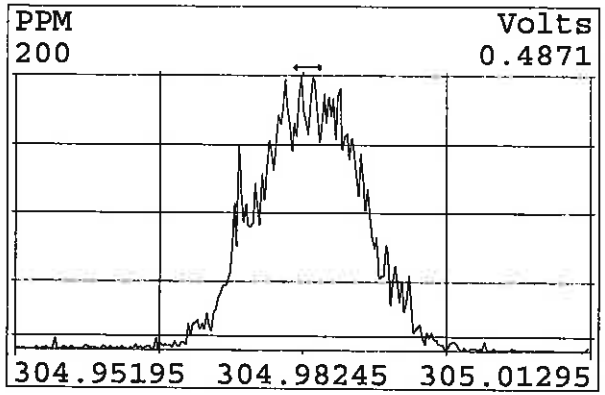
ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.154	1.063		9.21	10.0	92	78-129
2,3,7,8-TCDF	AveID	0.8389	0.8777		10.5	10.0	105	84-120
13C-2,3,7,8-TCDD	Ave	0.9388	0.9083		96.7	100	97	82-121
13C-2,3,7,8-TCDF	Ave	1.338	1.287		96.2	100	96	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.182	1.279		10.8	10.0	108	79-127

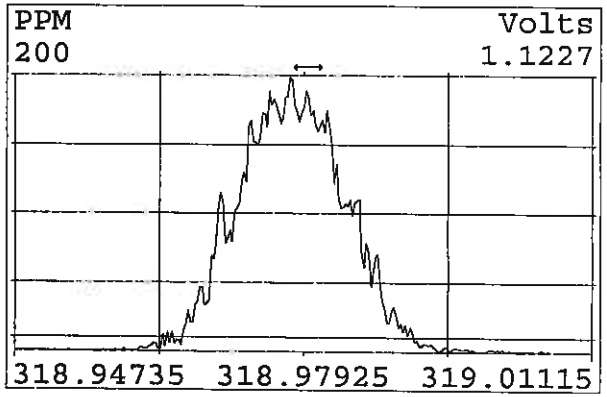
Data file	Smp	Work Order	Sample ID	FV-uL	Method/Matrix	Box	Size	U
17DE1911D2	1	CPS 121719	CPS HRDXNCP_00040				1.00000	
17DE1911D2	2	CCV 121719	CCV CS-4 HRDXNL4_00086				1.00000	
17DE1911D2	3	SB 121719	SB Solvent Blank C-14				1.00000	
17DE1911D2	4	320-344634	320-56911-A-1-A	20	1613B/Solid	D117	10.00000	g
17DE1911D2	5	320-344634	320-56911-A-2-A	20	1613B/Solid		10.00000	g
17DE1911D2	6	320-343931	160-36564-A-1-B	20	8290A_D5/Solid	D118	10.00000	g
17DE1911D2	7	320-343931	160-36564-A-2-B	20	8290A_D5/Solid		10.00000	g
17DE1911D2	8	320-343931	400-180533-B-6-A	20	8290A/Solid		10.00000	g
17DE1911D2	9	320-343931	160-36564-A-3-B	20	8290A_D5/Solid		10.00000	g
17DE1911D2	10	320-343931	160-36564-A-4-B	20	8290A_D5/Solid		10.00000	g
17DE1911D2	11	320-343931	160-36564-A-4-C MS	20	8290A_D5/Solid		10.00000	g
17DE1911D2	12	320-343931	160-36564-A-4-D MSD	20	8290A_D5/Solid		10.00000	g
17DE1911D2	13	320-343342	320-56685-A-1-A	10	EPA_23/Air	62	0.33330	Sa
17DE1911D2	14	SB 121719A	SB Solvent Blank C-14				1.00000	
17DE1911D2	15	CCV 121719A	CCV CS-4 HRDXNL4_00086				1.00000	
17DE1911D2	16						1.00000	
17DE1911D2	17						1.00000	
17DE1911D2	18						1.00000	
17DE1911D2	19						1.00000	
17DE1911D2	20						1.00000	
17DE1911D2	21						1.00000	
17DE1911D2	22		AJS 12-17-19				1.00000	
17DE1911D2	23						1.00000	

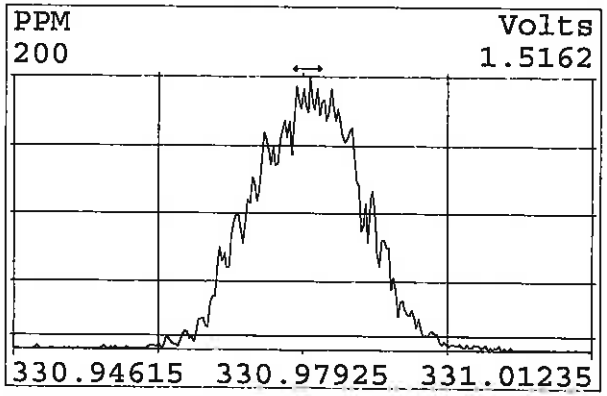
logfile checked
12-17-19 ALM

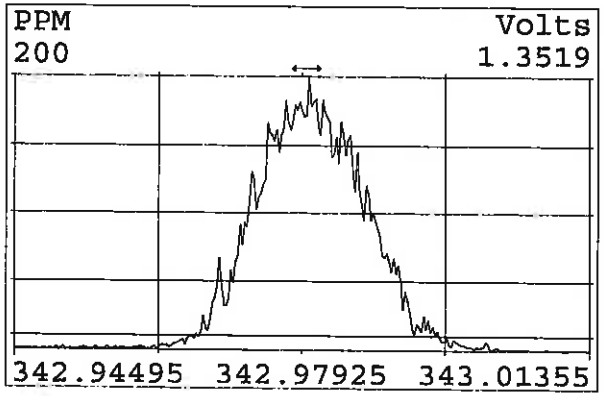
Peak Locate Examination:17-DEC-2019:14:10 File:17DE1911D2
Experiment:DB225RES Function:1 Reference:PFK

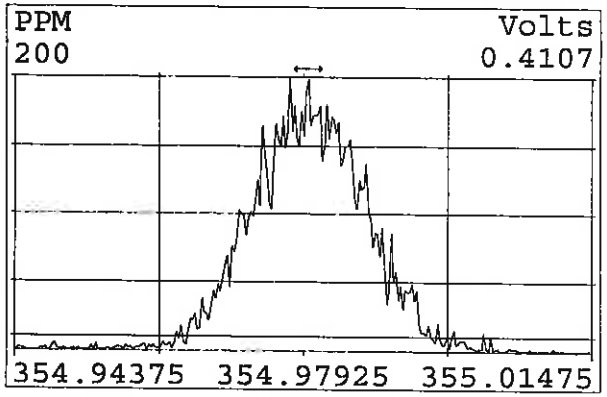


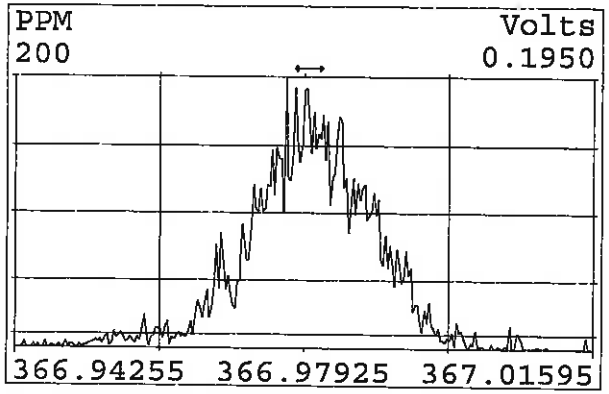


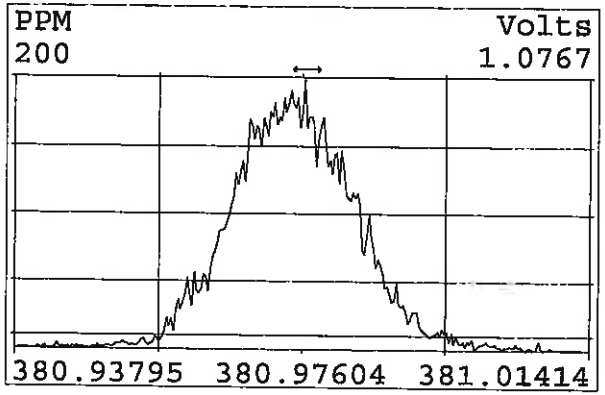




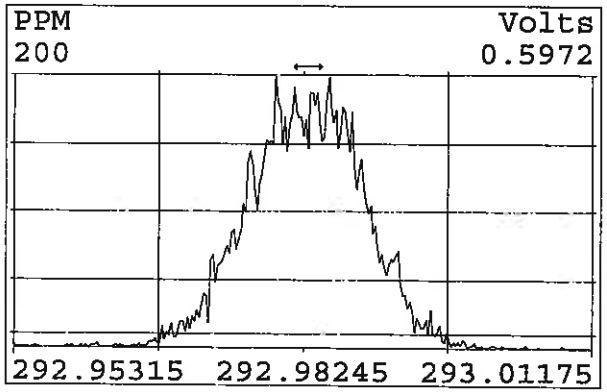


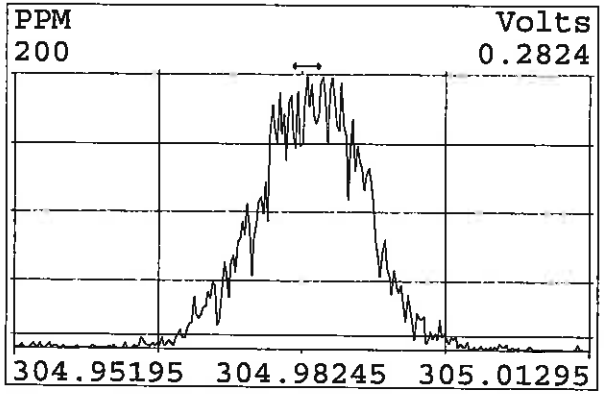


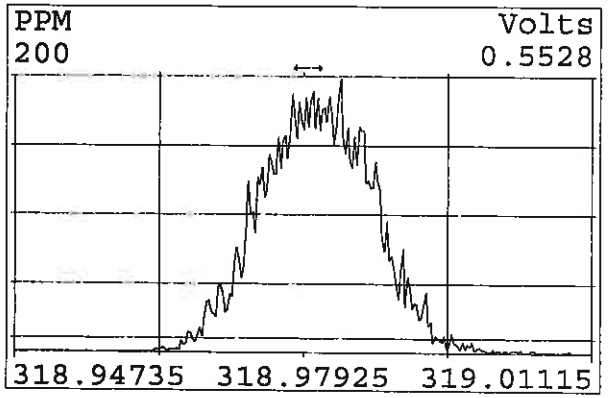


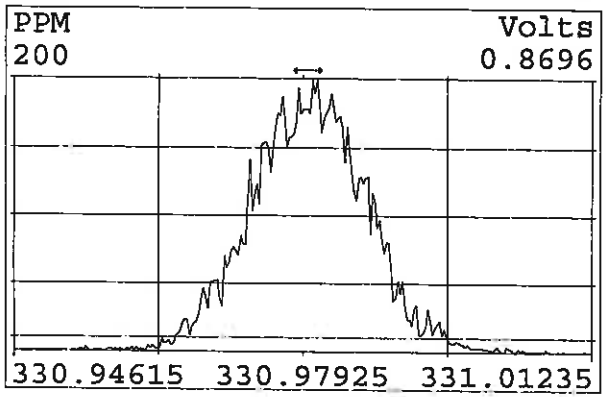


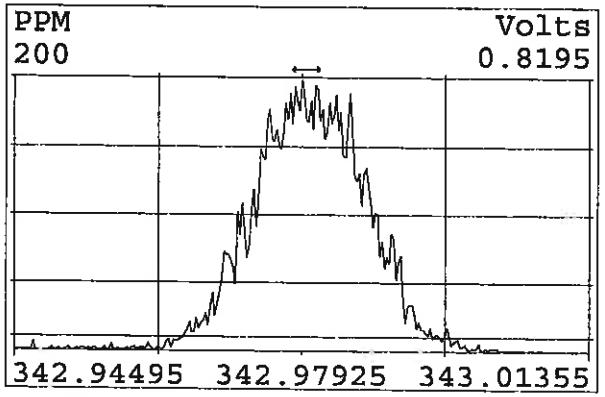
Peak Locate Examination:18-DEC-2019:00:02 File:RESCHK17DE1911D2
Experiment:DB225RES Function:1 Reference:PFK

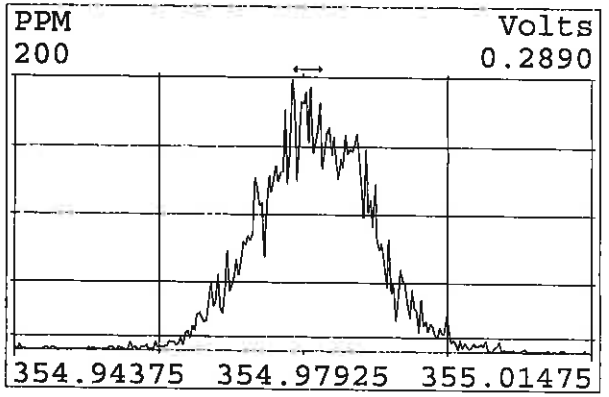


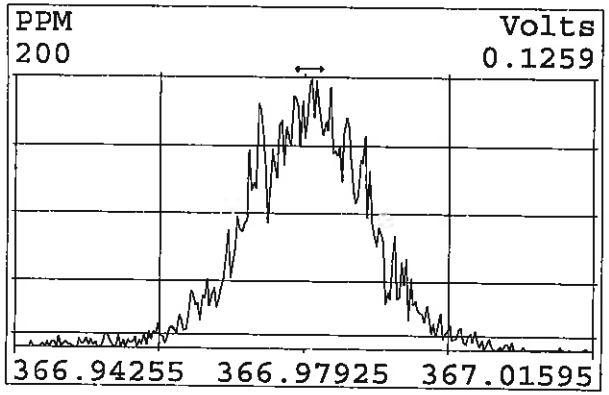


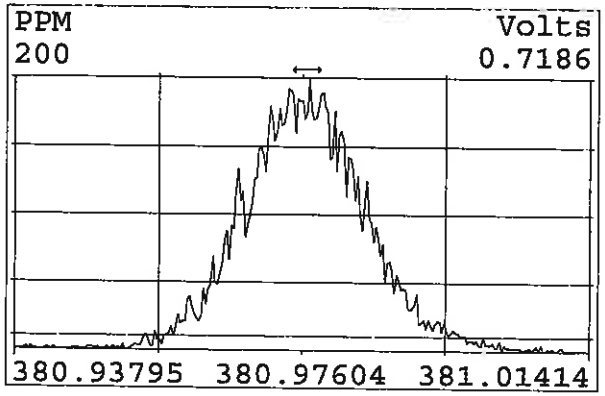












Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 17-Dec-2019 14:49:41 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:19 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.378	81909314	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.571	105411330	0.81	1.3379	96.2	96.2	0.3581	0.3581	96.19	
2,3,7,8-TCDF	16.585	9251501	0.74	0.8389	10.5	10.5	0.0715	0.0715	105	
D 13C-2,3,7,8-TCDD	15.131	74394656	0.78	0.9388	96.7	96.7	0.2807	0.2807	96.74	
2,3,7,8-TCDD	15.145	7908508	0.80	1.1538	9.213	9.213	0.0776	0.0776	92.13	
$ 37Cl4-2,3,7,8-TCDD	15.145	10476784		1.1816	10.8	10.8	0.0445	0.0445	108	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 17-Dec-2019 14:49:41 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:19 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.378	15.378	0		36002825	7289114	10672	26680	683		
333.9339	15.378	15.378	0		45906489	9533886	7064	17660	1350	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.571	16.571	0	1.078	47021127	8847058	19837	49592	446		
317.9389	16.571	16.571	0	1.078	58390203	10694042	12402	31005	862	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.585	16.585	0	1.001	3927449	705802	2095	5237	337		
305.8987	16.585	16.585	0	1.001	5324052	993694	2596	6490	383	0.74(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.131	15.131	0	0.984	32650439	6950495	10672	26680	651		
333.9339	15.131	15.131	0	0.984	41744217	8600799	7064	17660	1218	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.145	15.145	0	1.001	3511832	701203	3354	8385	209		
321.8936	15.145	15.145	0	1.001	4396676	875327	2217	5542	395	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.145	15.145	0	0.985	10476784	2194045	3535	8837	621		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Report Date: 18-Dec-2019 01:04:20 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_002.d		
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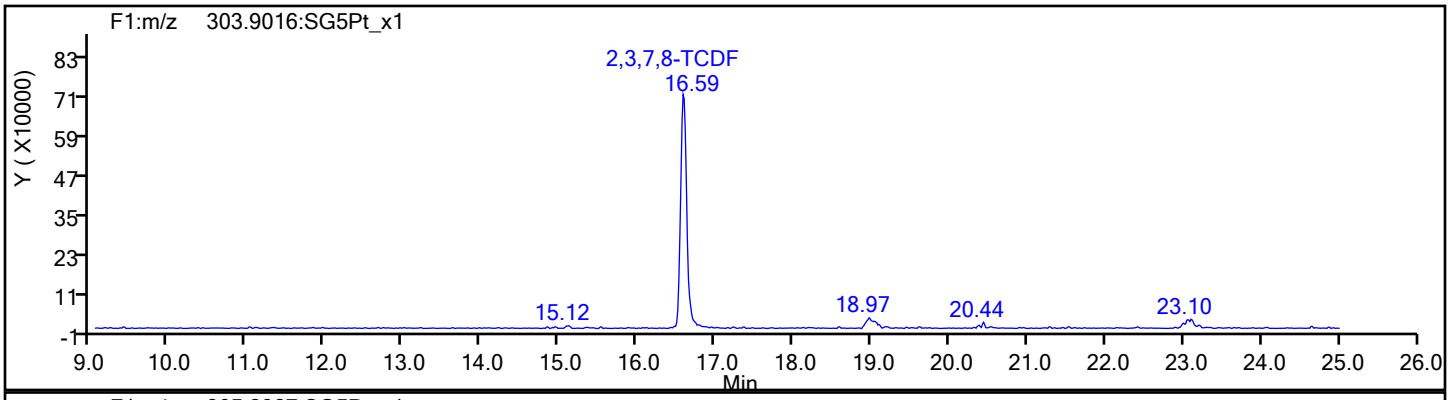
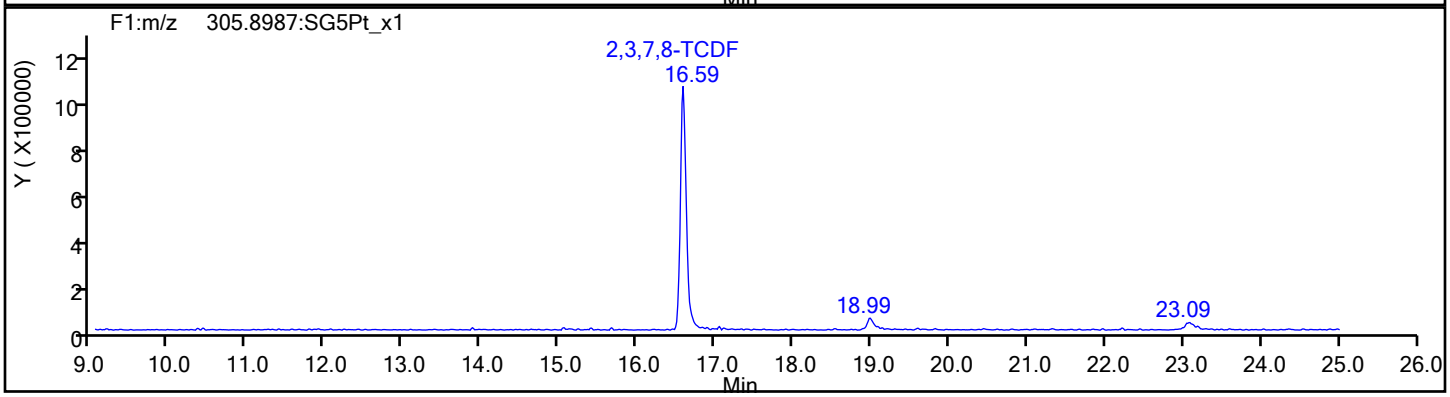
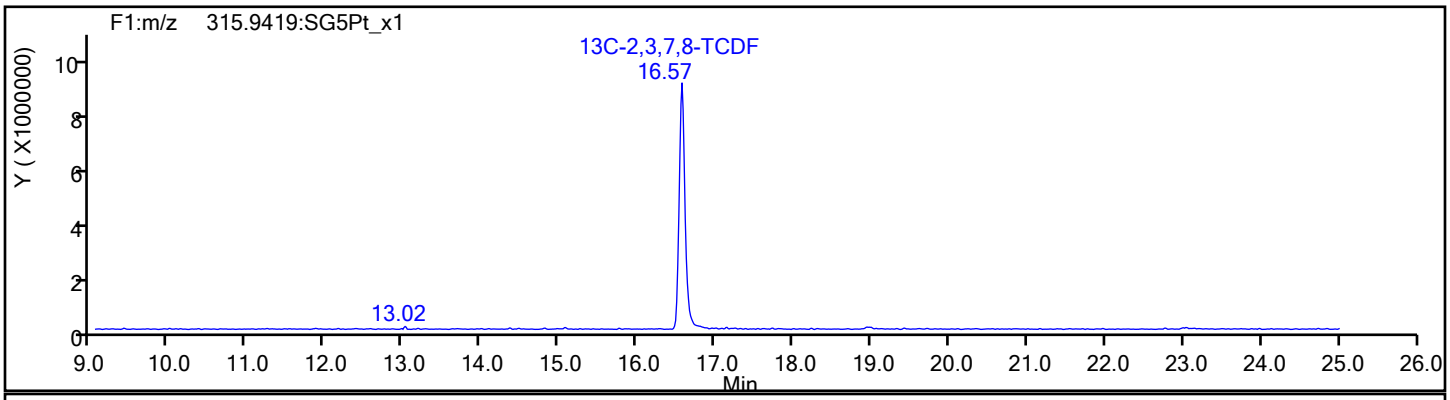
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

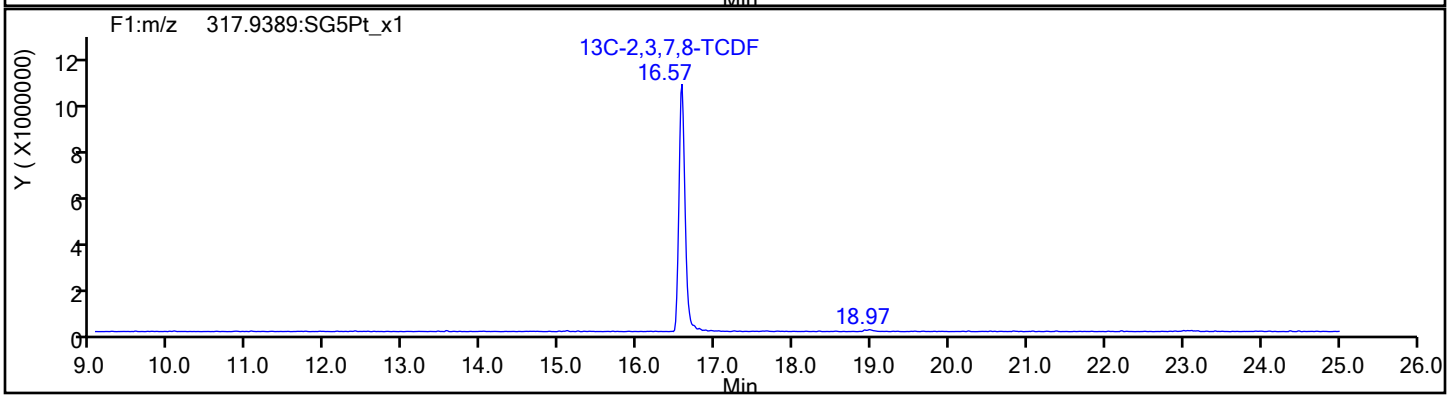
TCDF





TCDF Standards





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Eurofins TestAmerica, Sacramento

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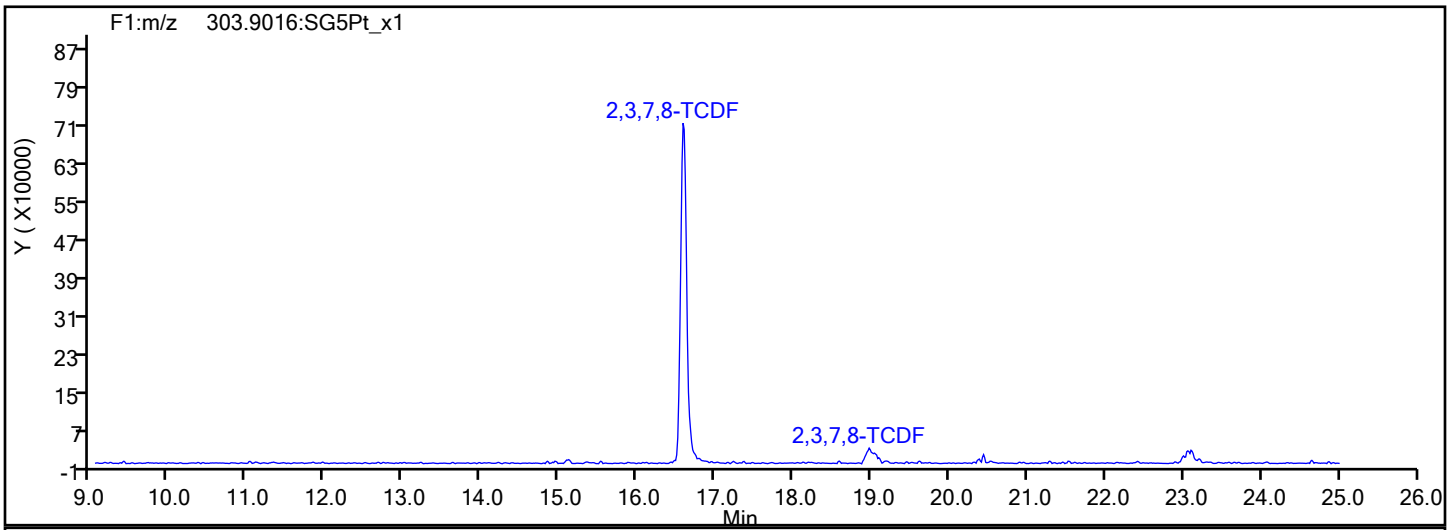
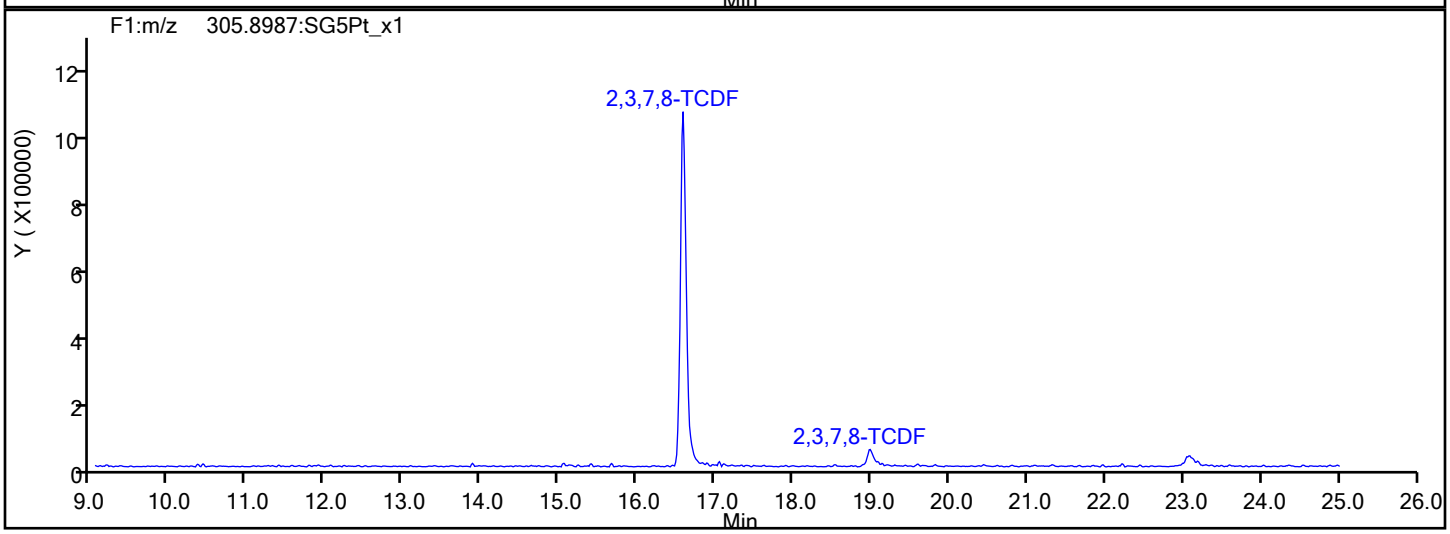
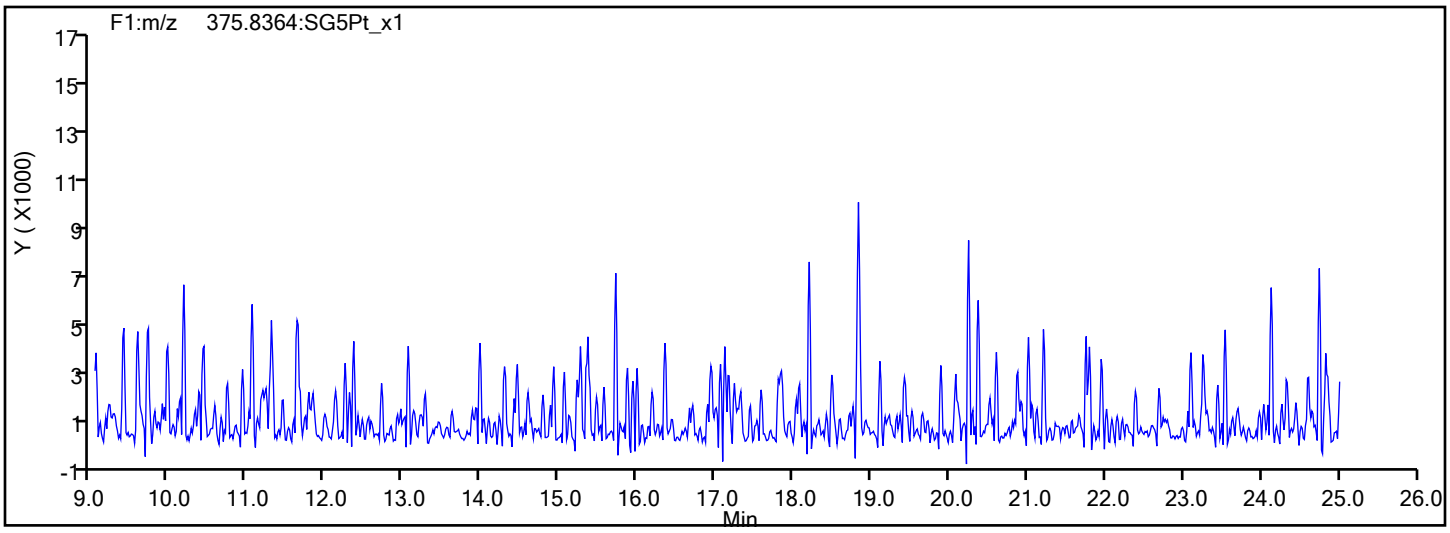
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 18-Dec-2019 01:04:20 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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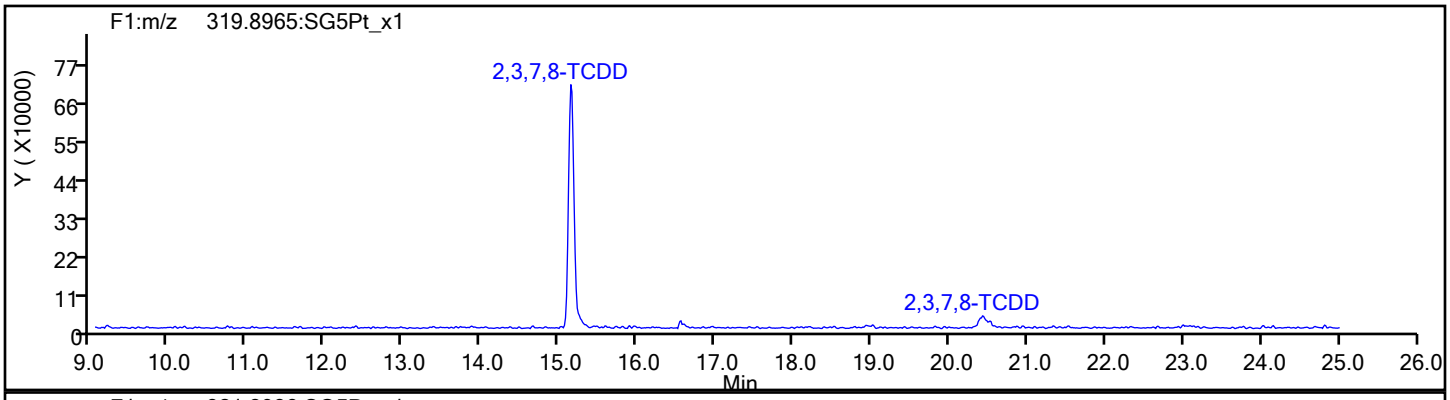
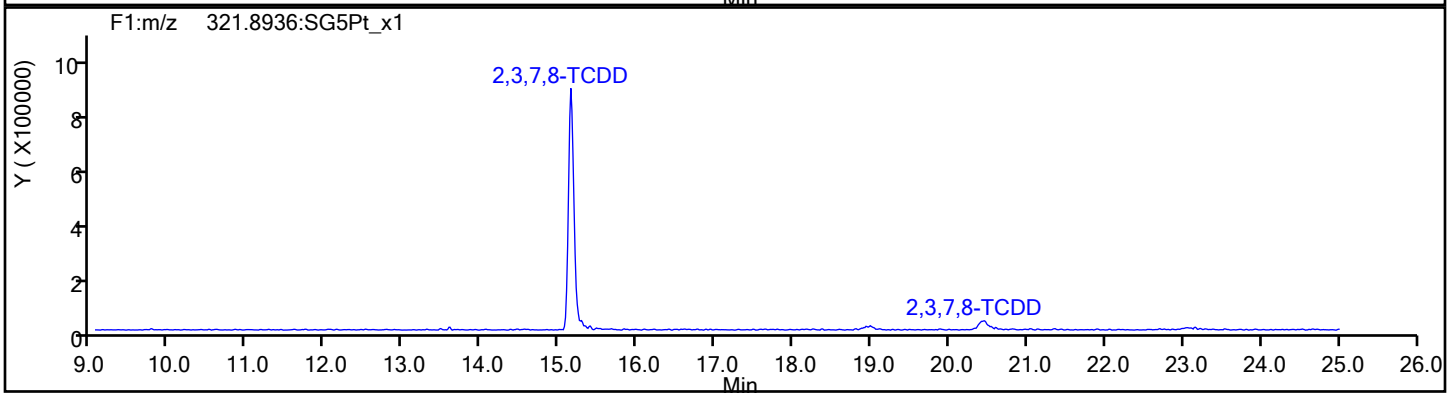
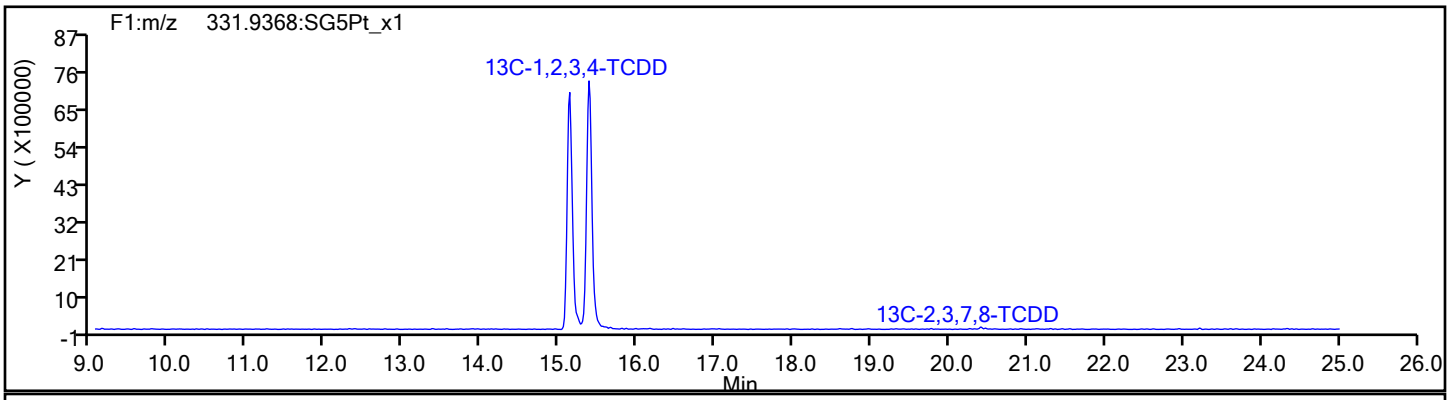
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

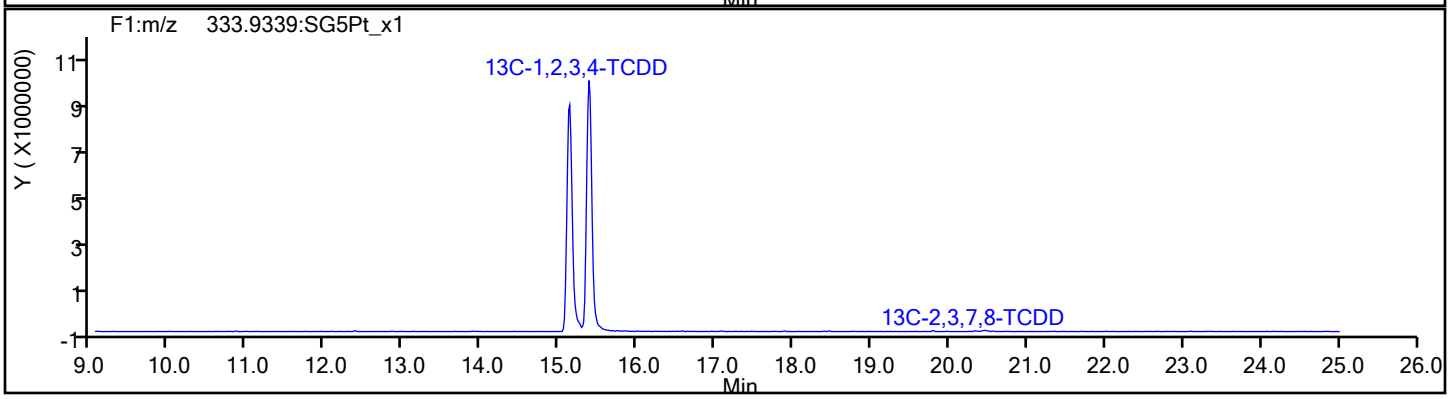
TCDD





TCDD Standards





Report Date: 18-Dec-2019 01:04:20 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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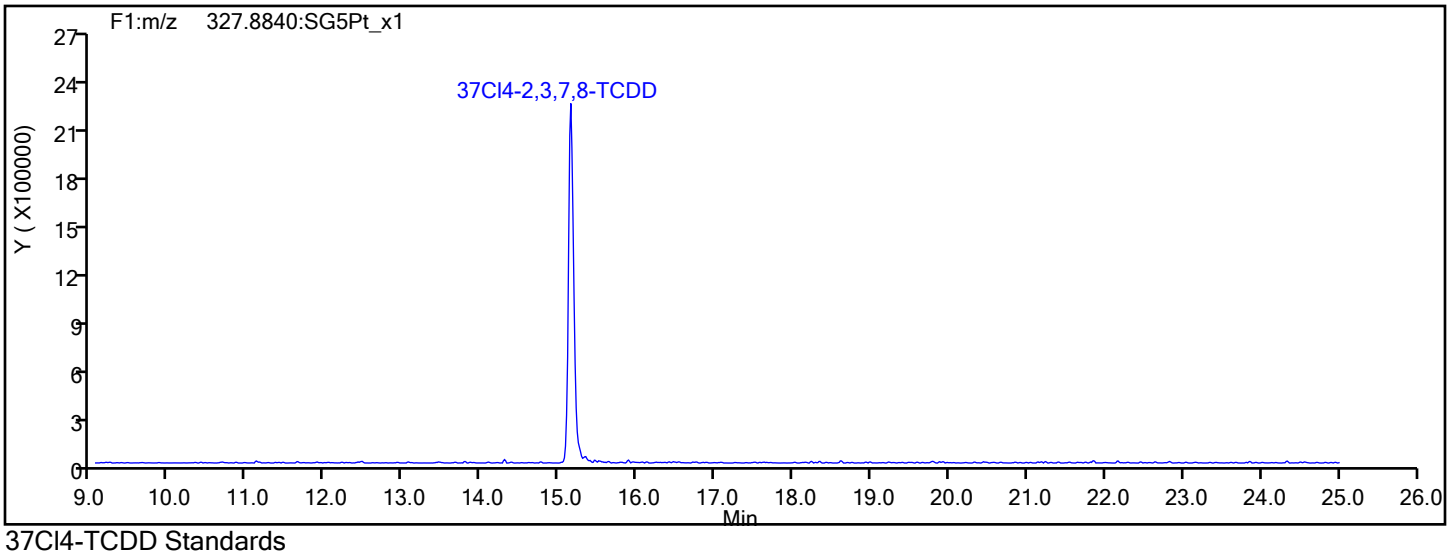
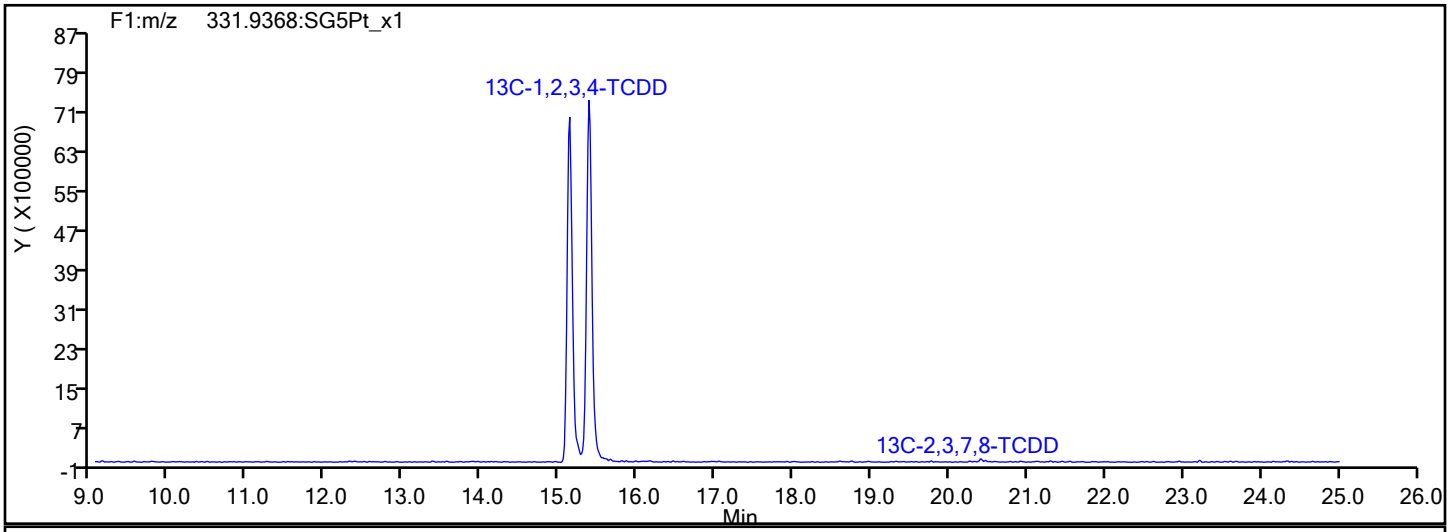
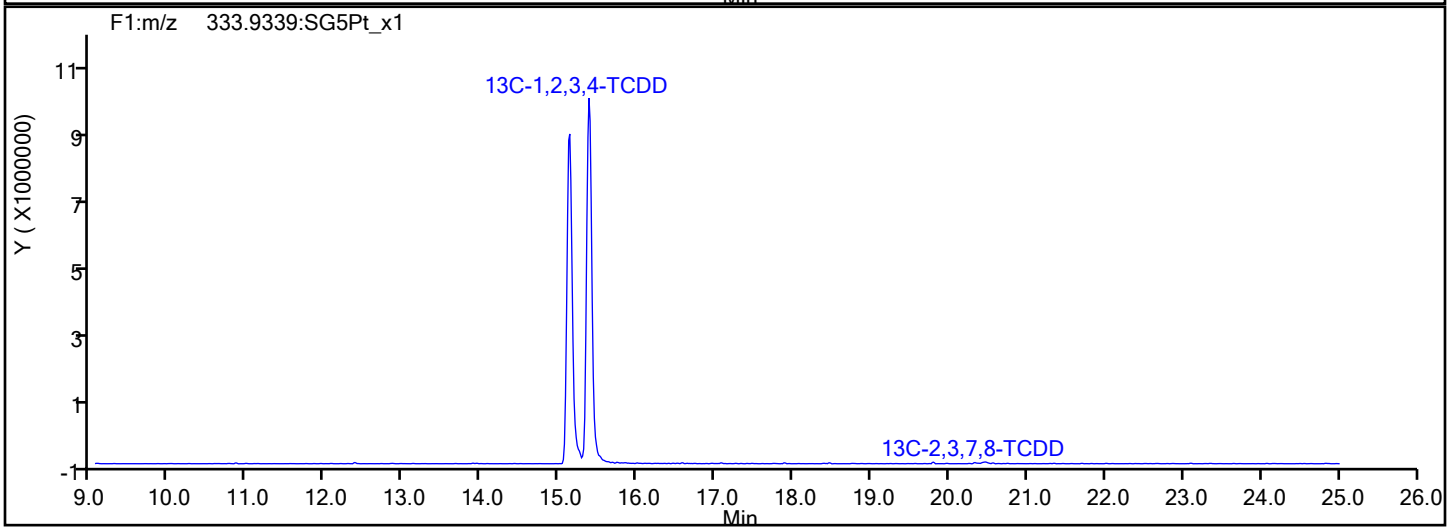
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

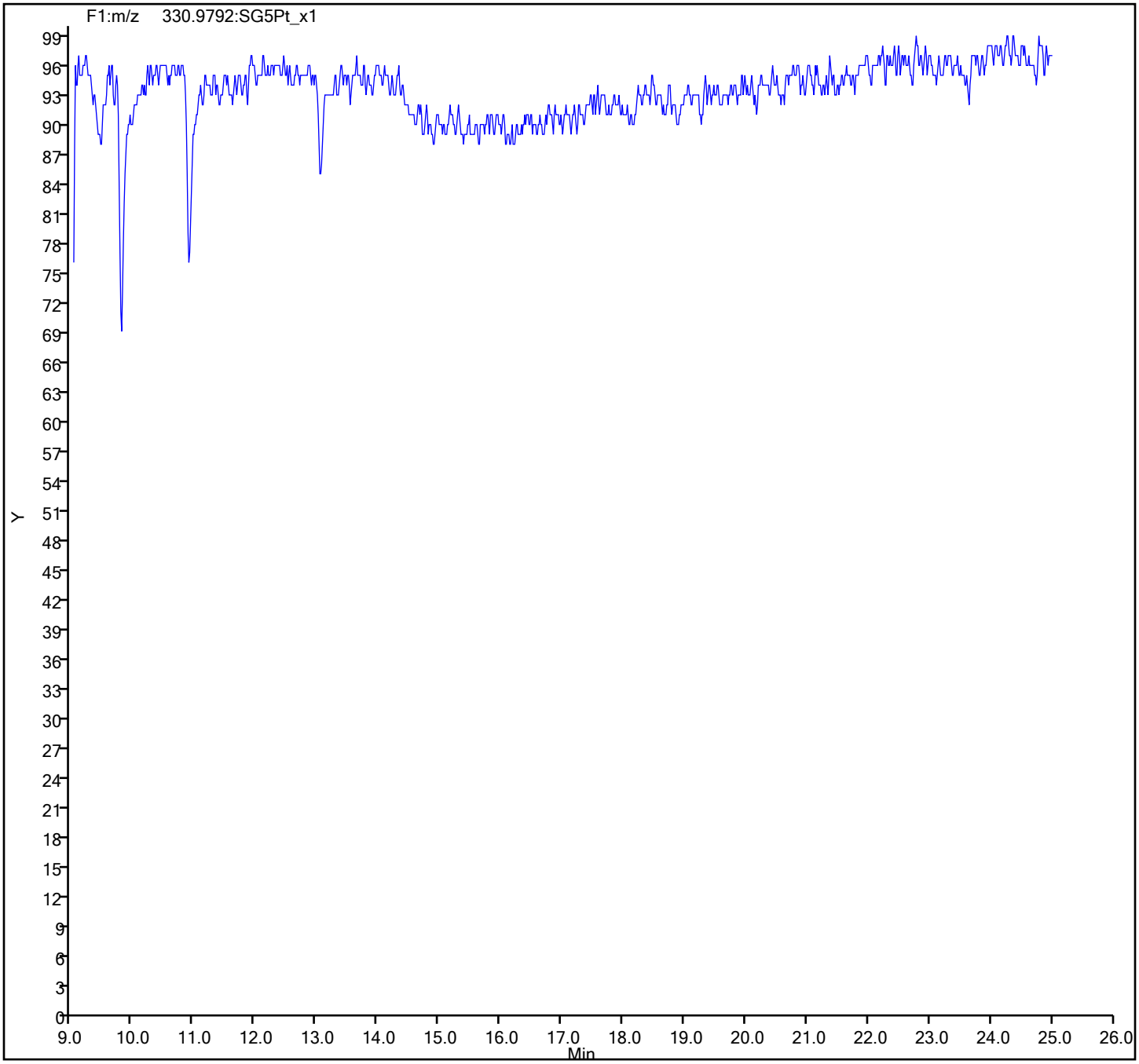




Report Date: 18-Dec-2019 01:04:20 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_002.d		
Injection Date:	17-Dec-2019 14:49:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: ICV 320-332505/9 Calibration Date: 10/19/2019 01:37

Instrument ID: DFS 1 Calib Start Date: 10/18/2019 20:50

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 10/19/2019 00:02

Lab File ID: 18oc19adfs1_10.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.233	1.203		39.0	40.0	98	70-130
2,3,7,8-TCDD	AveID	1.199	1.251		41.7	40.0	104	70-130
1,2,3,7,8-PeCDF	AveID	1.169	1.115		191	200	95	70-130
2,3,4,7,8-PeCDF	AveID	1.186	1.268		214	200	107	70-130
1,2,3,7,8-PeCDD	AveID	1.120	1.051		188	200	94	70-130
1,2,3,4,7,8-HxCDF	AveID	1.302	1.274		196	200	98	70-130
1,2,3,6,7,8-HxCDF	AveID	1.291	1.277		198	200	99	70-130
2,3,4,6,7,8-HxCDF	AveID	1.304	1.343		206	200	103	70-130
1,2,3,4,7,8-HxCDD	AveID	1.172	1.158		198	200	99	70-130
1,2,3,6,7,8-HxCDD	AveID	1.126	1.154		205	200	102	70-130
1,2,3,7,8,9-HxCDD	AveID	1.233	1.204		195	200	98	70-130
1,2,3,7,8,9-HxCDF	AveID	1.333	1.264		190	200	95	70-130
1,2,3,4,6,7,8-HpCDF	AveID	1.618	1.591		197	200	98	70-130
1,2,3,4,6,7,8-HpCDD	AveID	1.124	1.109		197	200	99	70-130
1,2,3,4,7,8,9-HpCDF	AveID	1.467	1.394		190	200	95	70-130
OCDD	AveID	1.186	1.188		401	400	100	70-130
OCDF	AveID	1.542	1.526		396	400	99	70-130
13C-2,3,7,8-TCDF	Ave	1.610	1.612		100	100	100	71-140
13C-2,3,7,8-TCDD	Ave	0.998	0.995		99.7	100	100	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.368	1.368		100	100	100	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.304	1.329		102	100	102	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.8292	0.8372		101	100	101	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.170	1.174		100	100	100	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.317	1.285		97.6	100	98	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.287	1.212		94.2	100	94	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8364	0.8098		96.8	100	97	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9040	0.8739		96.7	100	97	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.199	1.134		94.6	100	95	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.9689	0.9357		96.6	100	97	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.9114	0.8721		95.7	100	96	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.9231	0.9100		98.6	100	99	77-129
13C-OCDD	Ave	0.6272	0.6020		192	200	96	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.451	1.430		39.4	40.0	99	79-127

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 19-Oct-2019 01:37:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist:

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 12:13:03 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 23-Oct-2019 12:11:23

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	20.694	5155346	0.81	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	19.735	8312358	0.80	1.6096	100.2	100.2	0.2315	0.2315	100	
2,3,7,8-TCDF	19.752	4000606	0.82	1.2332	39.0	39.0	0.0969	0.0969	97.57	
A Non-2,3,7,8-sub-TCDF	19.420	38027	0.88	1.2332	0.3710	0.3710	0.0969	0.3710		
S Total TCDF					39.4	39.4	0.0969	0.0969		
D 13C-2,3,7,8-TCDD	21.057	5130157	0.79	0.9984	99.7	99.7	0.1663	0.1663	99.67	
2,3,7,8-TCDD	21.092	2566661	0.80	1.1988	41.7	41.7	0.0731	0.0731	104	
$ 37Cl4-2,3,7,8-TCDD	21.092	2949400		1.4510	39.4	39.4	0.0194	0.0194	98.57	
A Non-2,3,7,8-sub-TCDD	20.259	52362	0.89	1.1988	0.8514	0.8514	0.0731	0.8514		
S Total TCDD					42.6	42.6	0.0731	0.0731		
D 13C-1,2,3,7,8-PeCDF	26.771	7054937	1.60	1.3678	100.1	100.1	0.4869	0.4869	100	
1,2,3,7,8-PeCDF	26.788	15729997	1.59	1.1689	190.7	190.7	0.9799	0.9799	95.37	
D 13C-2,3,4,7,8-PeCDF	28.264	6853528	1.60	1.3045	101.9	101.9	0.5105	0.5105	102	
2,3,4,7,8-PeCDF	28.289	17383362	1.58	1.1861	213.8	213.8	1.063	1.063	107	
A F1 PeCDFs	24.168	768	1.55	1.1775	0.0249	0.009379	0.009348	0.009379		RQ
A Non-2,3,7,8-sub-PeCDF	27.601	376250	1.67	1.1775	4.595	4.595	1.019	4.595		
S Total PeCDF					409.2	409.2	1.021	1.021		RQ
D 13C-1,2,3,7,8-PeCDD	29.069	4316194	1.57	0.8292	101.0	101.0	0.2242	0.2242	101	
1,2,3,7,8-PeCDD	29.094	9075426	1.58	1.1200	187.7	187.7	0.2701	0.2701	93.87	
A Non-2,3,7,8-sub-PeCDD	27.971						0.2701	0.2701		Rn
S Total PeCDD					187.7	187.7	0.2701	0.2701		
D 13C-1,2,3,4,7,8-HxCDF	34.557	6958692	0.53	1.1700	100.4	100.4	0.4253	0.4253	100	
1,2,3,4,7,8-HxCDF	34.582	17736282	1.27	1.3021	195.7	195.7	1.023	1.023	97.87	
D 13C-1,2,3,6,7,8-HxCDF	34.725	7616008	0.54	1.3168	97.6	97.6	0.3779	0.3779	97.61	
1,2,3,6,7,8-HxCDF	34.750	19449922	1.27	1.2907	197.9	197.9	0.9457	0.9457	98.93	
D 13C-2,3,4,6,7,8-HxCDF	35.589	7183471	0.54	1.2873	94.2	94.2	0.3865	0.3865	94.17	
2,3,4,6,7,8-HxCDF	35.605	19297280	1.27	1.3039	206.0	206.0	0.8746	0.8746	103	
D 13C-1,2,3,7,8,9-HxCDF	36.503	6717434	0.53	1.1987	94.6	94.6	0.4151	0.4151	94.57	
1,2,3,7,8,9-HxCDF	36.511	16982235	1.27	1.3329	189.7	189.7	0.8510	0.8510	94.84	
A Non-2,3,7,8-sub-HxCDF	34.726						0.9191	0.9191		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					789.3	789.3	0.9235	0.9235		
* 13C-1,2,3,7,8,9-HxCDD	36.301	5925707	1.25	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.807	4798641	1.29	0.8364	96.8	96.8	0.2248	0.2248	96.82	
1,2,3,4,7,8-HxCDD	35.823	11115360	1.25	1.1725	197.6	197.6	0.3816	0.3816	98.78	
D 13C-1,2,3,6,7,8-HxCDD	35.932	5178383	1.28	0.9040	96.7	96.7	0.2080	0.2080	96.66	
1,2,3,6,7,8-HxCDD	35.941	11948127	1.24	1.1256	205.0	205.0	0.3851	0.3851	102	
1,2,3,7,8,9-HxCDD	36.318	12016721	1.24	1.2327	195.4	195.4	0.3572	0.3572	97.71	
A Non-2,3,7,8-sub-HxCDD	35.124						0.3742	0.3742		
S Total HxCDD					598.0	598.0	0.3747	0.3747		
D 13C-1,2,3,4,6,7,8-HpCDF	38.343	5544767	0.46	0.9689	96.6	96.6	0.3944	0.3944	96.58	
1,2,3,4,6,7,8-HpCDF	38.351	17648799	1.09	1.6176	196.8	196.8	1.246	1.246	98.38	
D 13C-1,2,3,4,7,8,9-HpCDF	39.601	5392462	0.46	0.9231	98.6	98.6	0.4139	0.4139	98.58	
1,2,3,4,7,8,9-HpCDF	39.618	15029154	1.07	1.4672	190.0	190.0	1.284	1.284	94.98	
A Non-2,3,7,8-sub-HpCDF	39.037						1.262	1.262		
S Total HpCDF					386.7	386.7	1.265	1.265		
D 13C-1,2,3,4,6,7,8-HpCDD	39.299	5167508	1.06	0.9114	95.7	95.7	0.4194	0.4194	95.68	
1,2,3,4,6,7,8-HpCDD	39.308	11457042	1.05	1.1237	197.3	197.3	0.7084	0.7084	98.65	
A Non-2,3,7,8-sub-HpCDD	39.134						0.7084	0.7084		n
S Total HpCDD					197.3	197.3	0.7084	0.7084		
D 13C-OCDD	41.739	7134480	0.91	0.6272	192.0	192.0	0.3045	0.3045	95.98	
OCDF	41.831	21776527	0.92	1.5416	396.0	396.0	0.3295	0.3295	99.00	
OCDD	41.747	16951341	0.90	1.1855	400.8	400.8	0.3651	0.3651	100	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 19-Oct-2019 01:37:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist:

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 12:13:03 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0320

First Level Reviewer: shardaa Date: 23-Oct-2019 12:11:23

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	20.694	20.694	0		2308384	350358	348	870	1007		
333.9338	20.694	20.694	0		2846962	438752	176	440	2493	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	19.735	19.735	0	0.954	3703589	562717	729	1822	772		
317.9389	19.735	19.735	0	0.954	4608769	719621	447	1117	1610	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.752	19.752	0	1.001	1804695	280525	271	677	1035		
305.8987	19.761	19.752	1	1.001	2195911	345206	342	855	1009	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	18.542	19.420	-53	0.940	17830	3126	271	677	12		
305.8987	18.559	19.420	-52	0.940	20197	3740	342	855	11	0.88(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.057	21.057	0	1.018	2270927	331538	348	870	953		
333.9338	21.066	21.057	1	1.018	2859230	416095	176	440	2364	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	21.092	21.092	0	1.002	1138503	163912	160	400	1024		
321.8936	21.092	21.092	0	1.002	1428158	204843	102	255	2008	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	21.092	21.092	0	1.019	2949400	429793	89	222	4829		
A Non-2,3,7,8-sub-TCDD											
319.8965	20.902	20.259	39	0.993	24681	4525	160	400	28		
321.8936	20.902	20.259	39	0.993	27681	5038	102	255	49	0.89(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	26.771	26.771	0	1.294	4338458	735393	1286	3215	572		
353.8970	26.763	26.771	-1	1.293	2716479	473572	816	2040	580	1.60(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	26.788	26.788	0	1.001	9651753	1678013	3365	8412	499		
341.8567	26.788	26.788	0	1.001	6078244	1073320	2174	5435	494	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	28.264	28.264	0	1.366	4214229	670872	1286	3215	522		
353.8970	28.264	28.264	0	1.366	2639299	427706	816	2040	524	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	28.289	28.289	0	1.001	10635849	1747334	3365	8412	519		
341.8567	28.289	28.289	0	1.001	6747513	1106562	2174	5435	509	1.58(1.32-1.78)	
A F1 PeCDFs											RQ
339.8597	23.979	24.168	-11	0.896	467	211	17	42	12		
341.8567	23.979	24.168	-11	0.896	1570	429	34	85	13	0.30(1.32-1.78)	
	Empc Correction				301	136	34	85	4		
A Non-2,3,7,8-sub-PeCDF											
339.8597	27.375	27.601	-14	1.023	235103	42006	3365	8412	12		
341.8567	27.375	27.601	-14	1.023	141147	24959	2174	5435	11	1.67(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	29.069	29.069	0	1.405	2637174	413083	321	802	1287		
369.8919	29.061	29.069	-1	1.404	1679020	264527	266	665	994	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	29.094	29.094	0	1.001	5556624	862403	508	1270	1698		
357.8516	29.094	29.094	0	1.001	3518802	548850	312	780	1759	1.58(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	27.199	27.971	-46	0.936	11542	1614	508	1270	3		
357.8516	27.199	27.971	-46	0.936	10370	1284	312	780	4	1.11(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	34.557	34.557	0	0.952	2409199	527292	1094	2735	482		
385.8610	34.557	34.557	0	0.952	4549493	1019881	2055	5137	496	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	34.582	34.582	0	1.001	9920458	2197328	4628	11570	475		
375.8178	34.574	34.582	-1	1.000	7815824	1732710	3612	9030	480	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	34.725	34.725	0	0.957	2663871	587760	1094	2735	537		
385.8610	34.733	34.725	1	0.957	4952137	1099827	2055	5137	535	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	34.750	34.750	0	1.001	10879090	2406117	4628	11570	520		
375.8178	34.750	34.750	0	1.001	8570832	1913378	3612	9030	530	1.27(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	35.589	35.589	0	0.980	2525730	632748	1094	2735	578		
385.8610	35.589	35.589	0	0.980	4657741	1173628	2055	5137	571	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	35.605	35.605	0	1.000	10781184	2705679	4628	11570	585		
375.8178	35.605	35.605	0	1.000	8516096	2140631	3612	9030	593	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	36.503	36.503	0	1.006	2338881	635770	1094	2735	581		
385.8610	36.503	36.503	0	1.006	4378553	1180333	2055	5137	574	0.53(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	36.511	36.511	0	1.000	9514071	2514047	4628	11570	543		
375.8178	36.511	36.511	0	1.000	7468164	1999417	3612	9030	554	1.27(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	34.726						4628	11570			
375.8178	34.726						3612	9030			
13C-1,2,3,7,8,9-HxCDD											
401.8559	36.301	36.301	0		3296027	874276	648	1620	1349		
403.8529	36.301	36.301	0		2629680	707766	542	1355	1306	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.807	35.807	0	0.986	2701873	733595	648	1620	1132		
403.8529	35.807	35.807	0	0.986	2096768	561937	542	1355	1037	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.823	35.823	0	1.000	6172939	1633953	1299	3247	1258		
391.8127	35.823	35.823	0	1.000	4942421	1311551	1020	2550	1286	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.932	35.932	0	0.990	2902492	755386	648	1620	1166		
403.8529	35.924	35.932	-1	0.990	2275891	581828	542	1355	1073	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.941	35.941	0	1.000	6624674	1717353	1299	3247	1322		
391.8127	35.941	35.941	0	1.000	5323453	1397977	1020	2550	1371	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	36.318	36.318	0	1.014	6658701	1783247	1299	3247	1373		
391.8127	36.318	36.318	0	1.014	5358020	1429582	1020	2550	1402	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	35.124						1299	3247			
391.8127	35.124						1020	2550			
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	38.343	38.343	0	1.056	1736836	563321	880	2200	640		
419.8220	38.343	38.343	0	1.056	3807931	1234459	1538	3845	803	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.351	38.351	0	1.000	9212511	3059348	7571	18927	404		
409.7788	38.351	38.351	0	1.000	8436288	2839436	6918	17295	410	1.09(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.601	39.601	0	1.091	1690475	605368	880	2200	688		
419.8220	39.601	39.601	0	1.091	3701987	1317619	1538	3845	857	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.618	39.618	0	1.000	7759818	2687687	7571	18927	355		
409.7788	39.610	39.618	-1	1.000	7269336	2566694	6918	17295	371	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	39.037						7571	18927			
409.7788	39.037						6918	17295			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	39.299	39.299	0	1.083	2661583	943294	1190	2975	793		
437.8140	39.299	39.299	0	1.083	2505925	886491	1229	3072	721	1.06(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	39.308	39.308	0	1.000	5858627	2065691	2983	7457	692		
425.7737	39.308	39.308	0	1.000	5598415	1975246	2843	7107	695	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.670	39.134	-28	0.984	71885	20893	2983	7457	7		
425.7737	38.670	39.134	-28	0.984	67326	20604	2843	7107	7	1.07(0.88-1.20)	
13C-OCDD											
469.7780	41.739	41.739	0	1.150	3390242	1134693	609	1522	1863		
471.7750	41.739	41.739	0	1.150	3744238	1231928	600	1500	2053	0.91(0.76-1.02)	
OCDF											
441.7428	41.831	41.831	0	1.002	10458810	3466419	1180	2950	2938		
443.7399	41.831	41.831	0	1.002	11317717	3764448	1224	3060	3076	0.92(0.76-1.02)	
OCDD											
457.7377	41.747	41.747	0	1.000	8035285	2639153	959	2397	2752		
459.7348	41.747	41.747	0	1.000	8916056	2927950	1090	2725	2686	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Inject. Date: 19-Oct-2019 01:37:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-TCDF, RT: 19.420

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	8312358	1282338

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	8312358	1282338

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
18.542	17830	3126	20197	3740	0.3710	0.88	
Signal Totals:							
	17830	3126	20197	3740			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	38027	6866				0.88	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3710 = (38027 * 100.000) / (8312358 * 1.233)

Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Inject. Date: 19-Oct-2019 01:37:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-TCDD, RT: 20.259

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	100.000	5130157	747633

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		100.000	5130157	747633

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
20.902	24681	4525	27681	5038	0.8514	0.89	
Signal Totals:							
	24681	4525	27681	5038			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	52362	9563				0.89	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.8514 = (52362 * 100.000) / (5130157 * 1.199)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Inject. Date: 19-Oct-2019 01:37:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 9
Sublist:

F1 PeCDFs, RT: 24.168

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	7054937	1208965
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	6853528	1098578

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	6954232	1153771

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
23.979	467	211	1570	429	0.0249	0.30	RQ
23.979	467	211	301	136	0.009379		Empc Correction
Signal Totals:							
	467	211	301	136			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2037	640				0.30	RQ
	768	347					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0249 = (2037 * 100.000) / (6954232 * 1.178)
Empc Amount: 0.009379 = (768 * 100.000) / (6954232 * 1.178)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d
Lims ID: ICV
Client ID:
Inject. Date: 19-Oct-2019 01:37:00 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-PeCDF, RT: 27.601

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	7054937	1208965
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	6853528	1098578

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	6954232	1153771

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
27.375	235103	42006	141147	24959	4.59	1.67	
Signal Totals:							
	235103	42006	141147	24959			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	376250	66965				1.67	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.595 = (376250 * 100.000) / (6954232 * 1.178)

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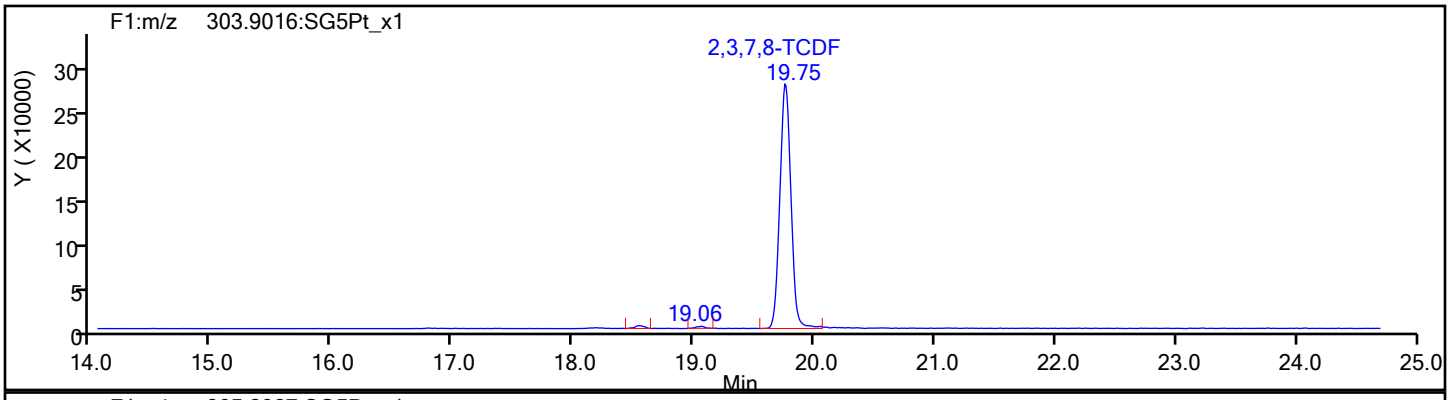
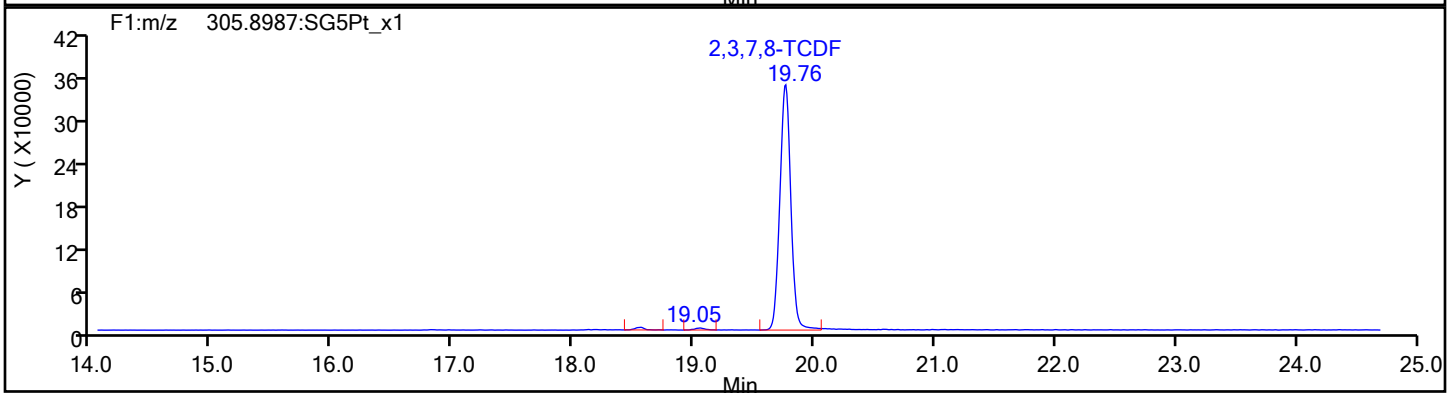
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d

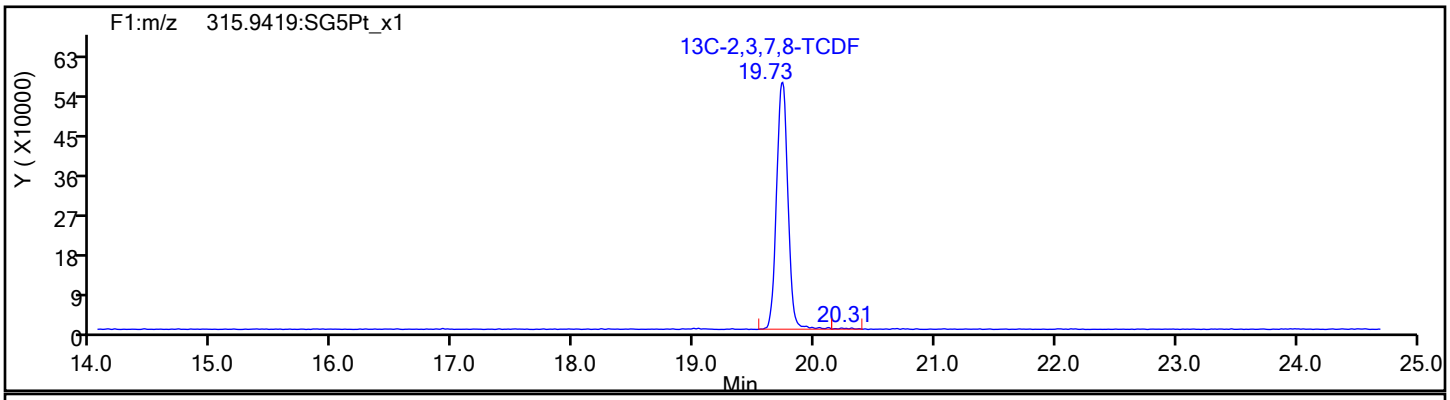
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

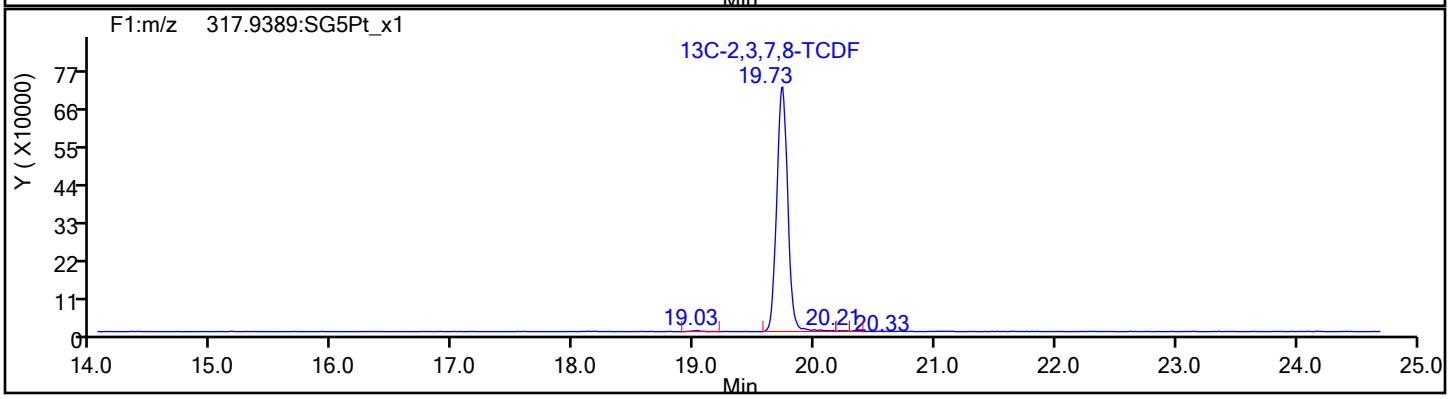
TCDF





TCDF Standards



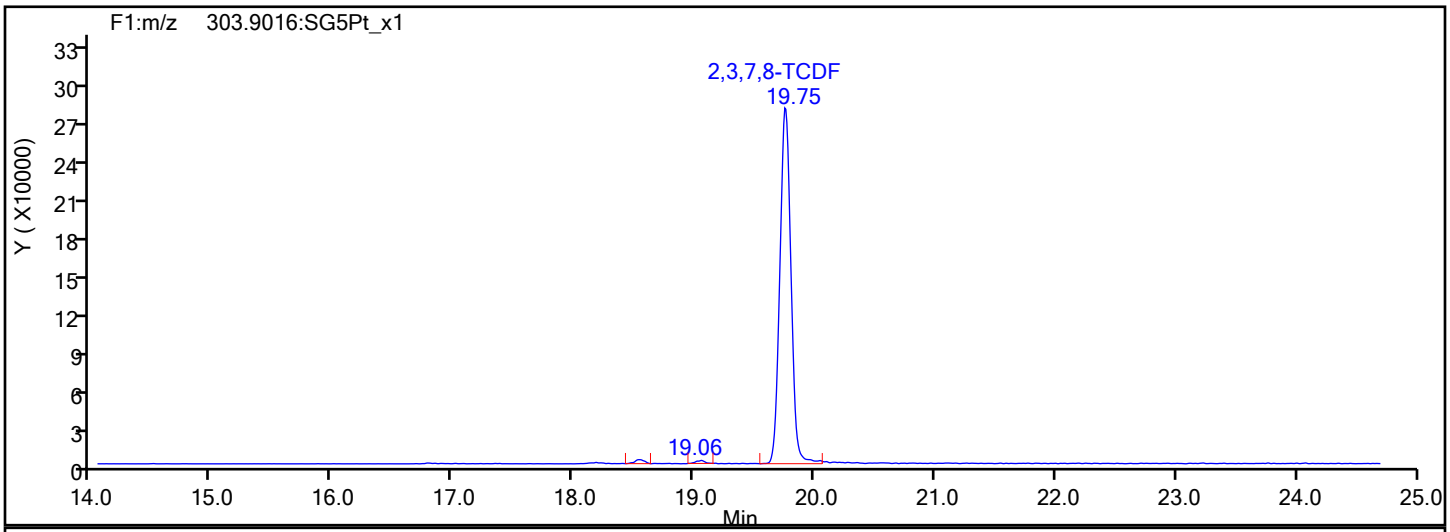


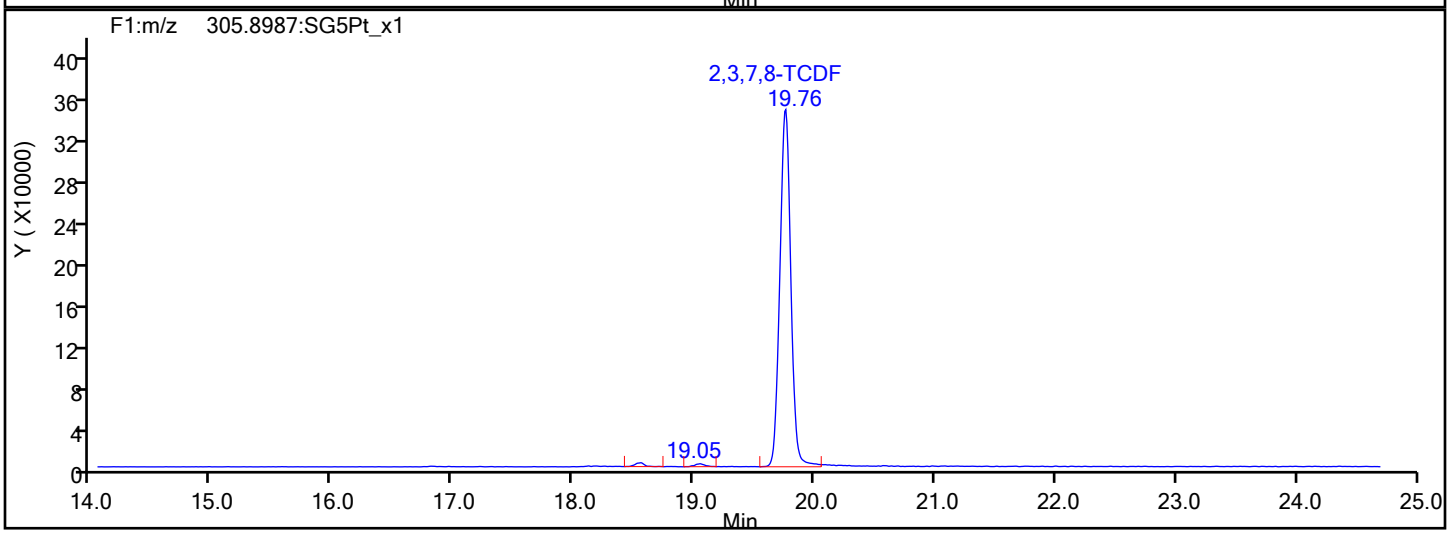
Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

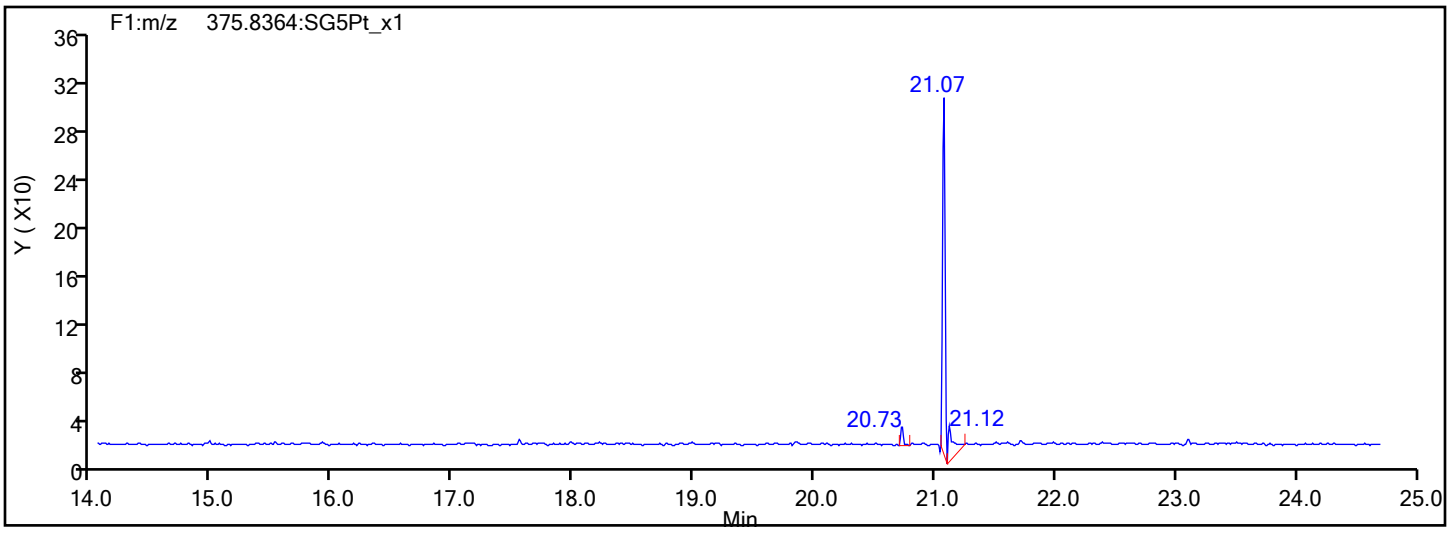
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

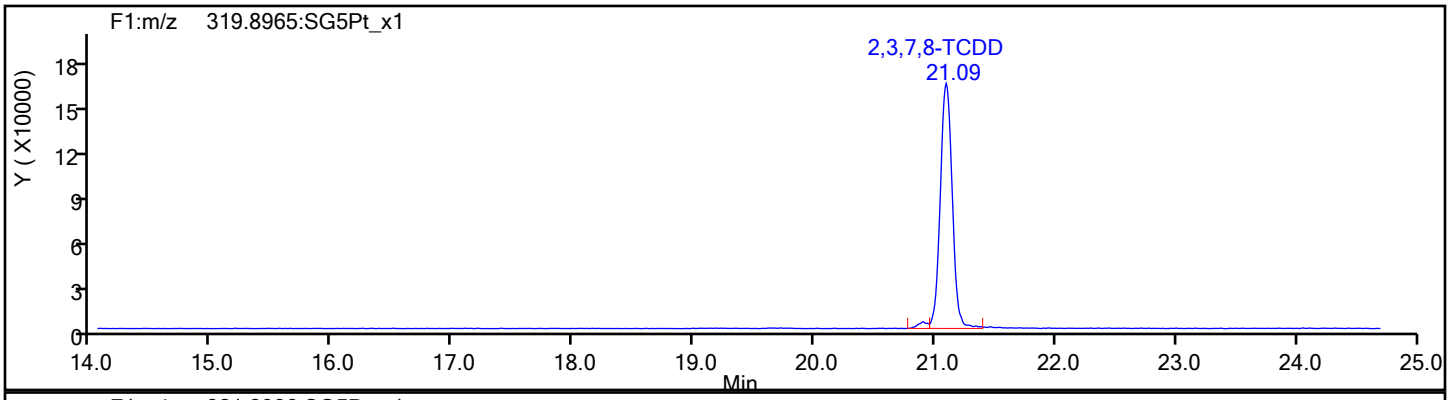


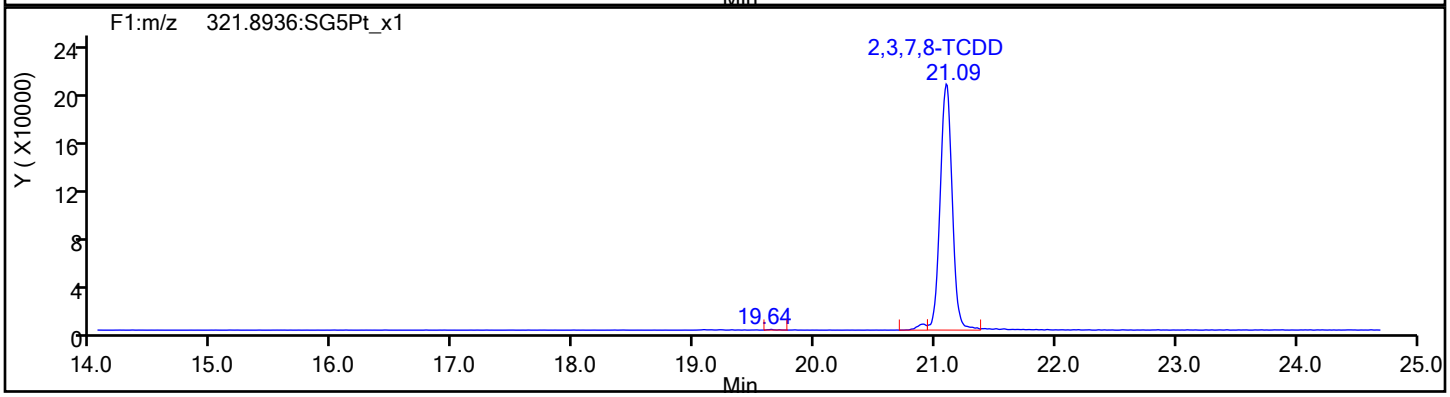
Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

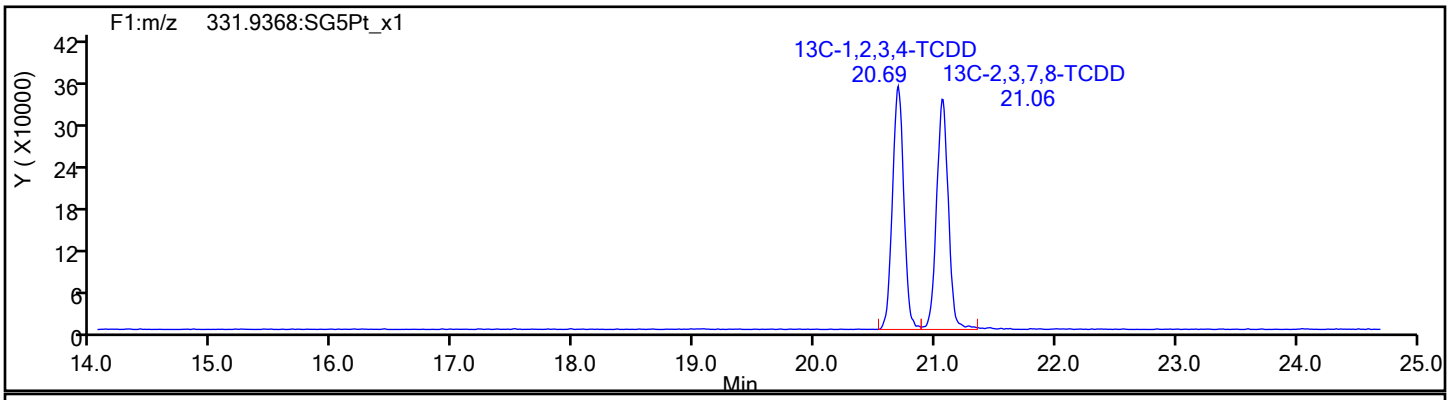
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

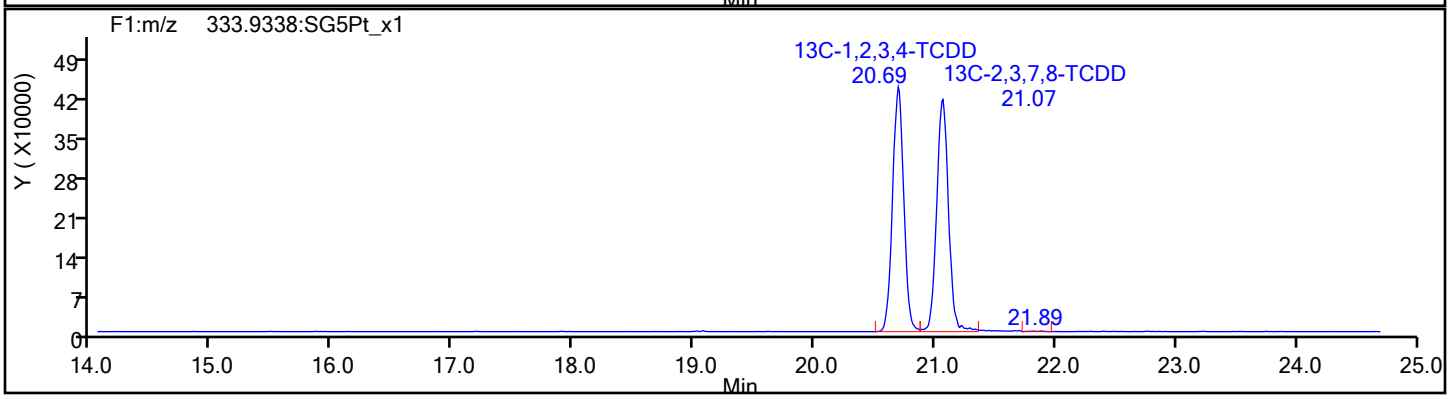
TCDD





TCDD Standards





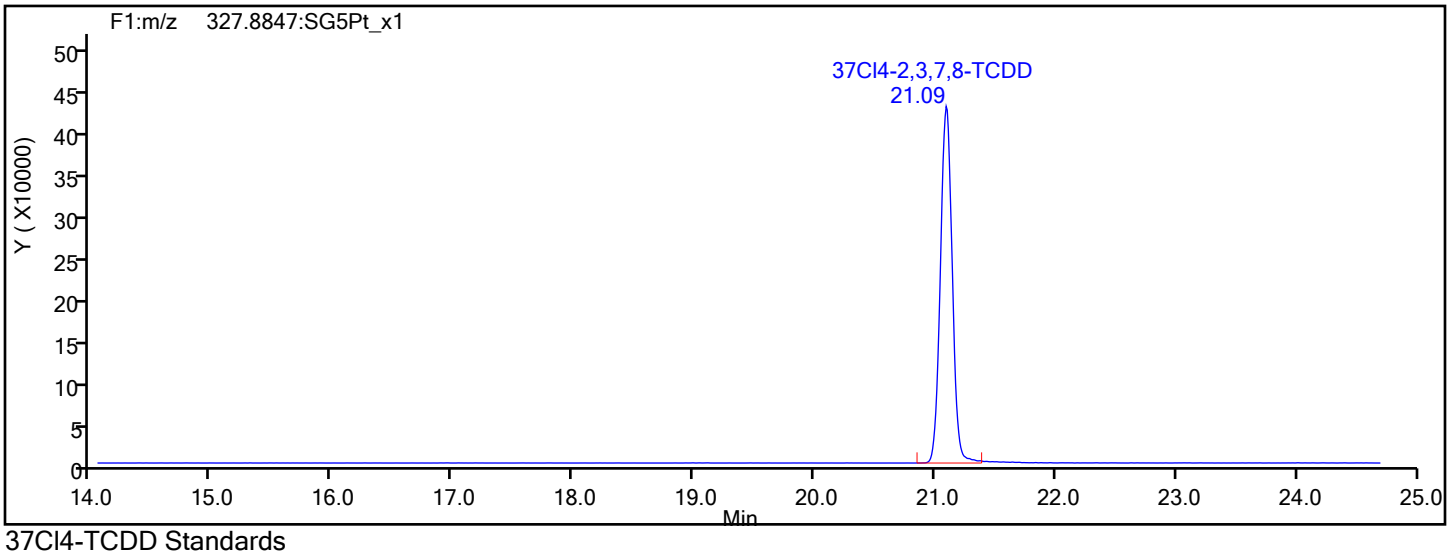
Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

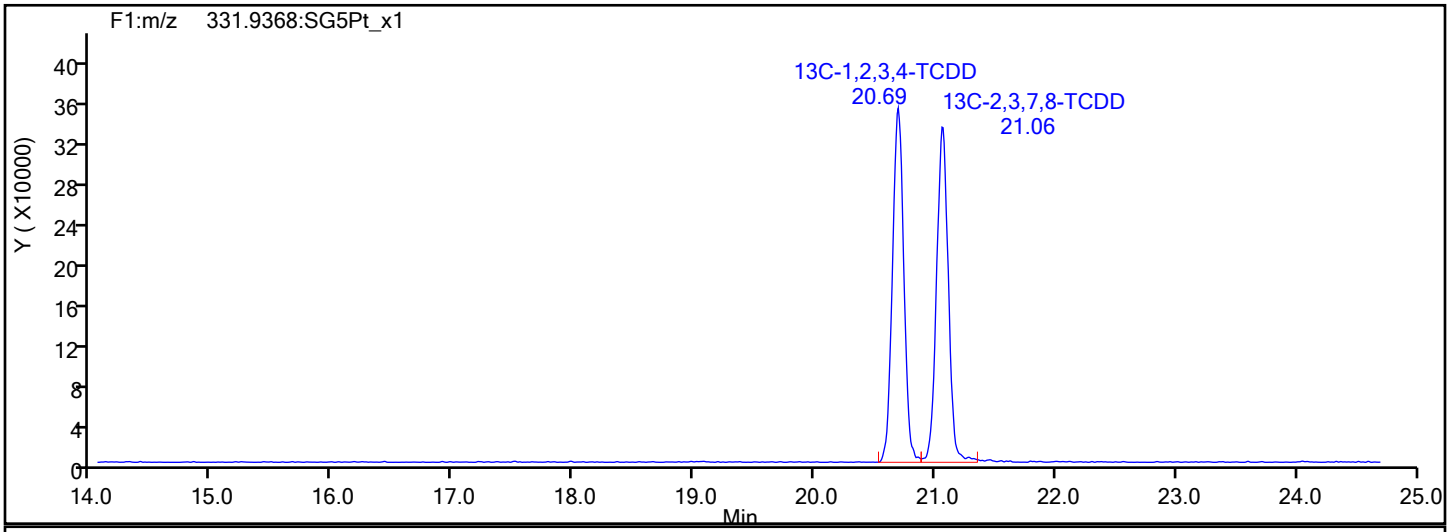
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d

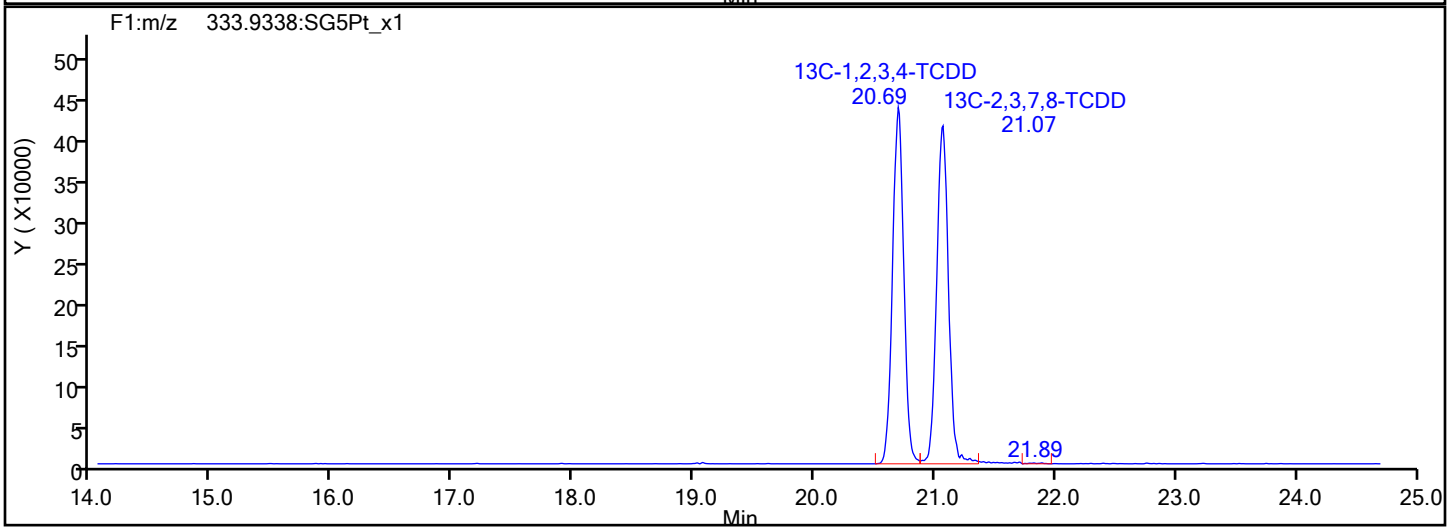
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



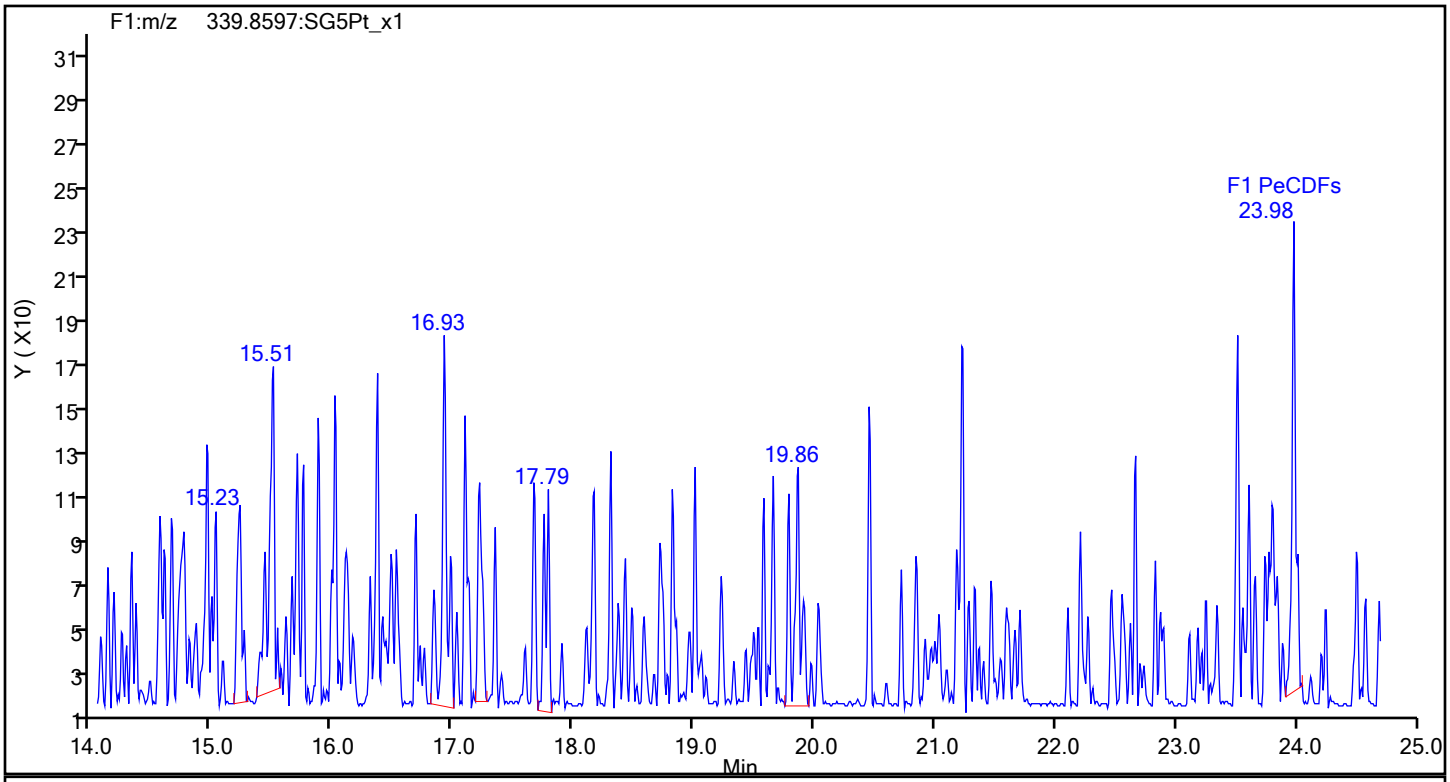


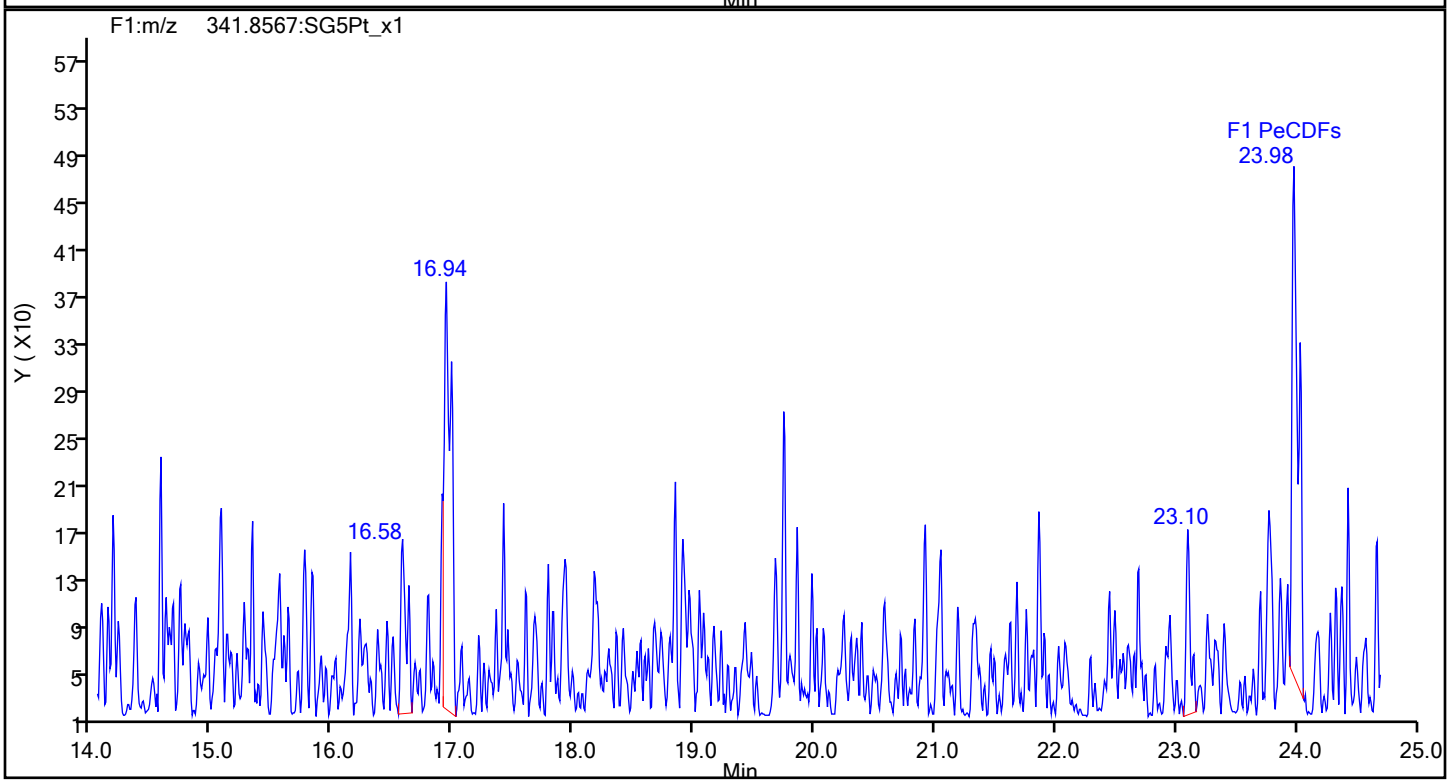
Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



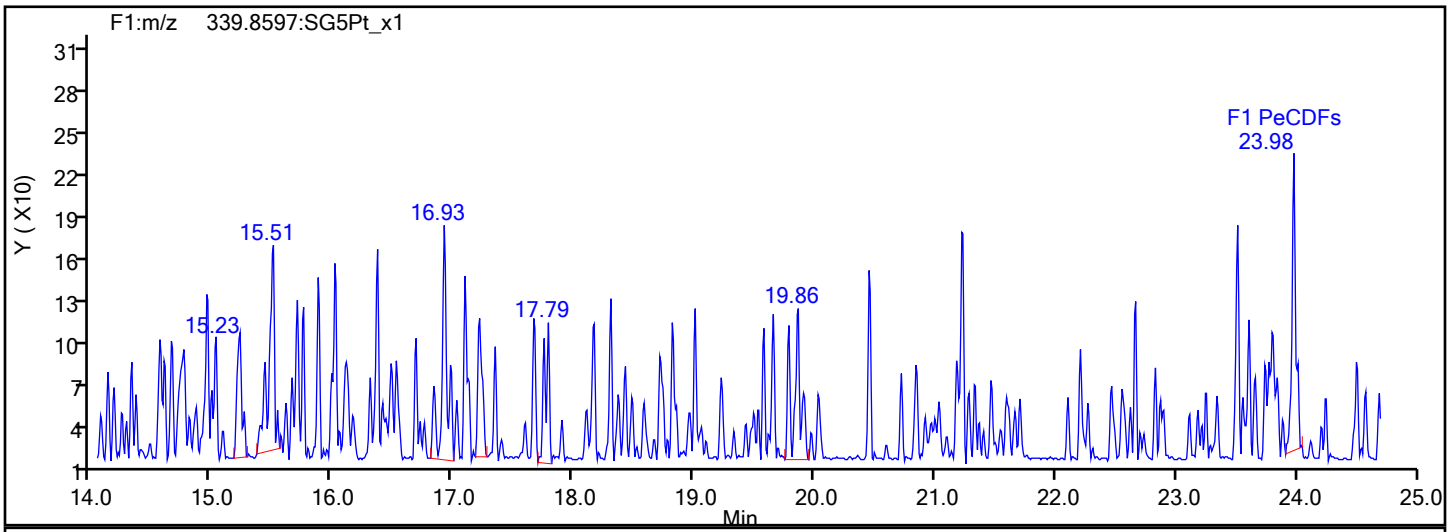


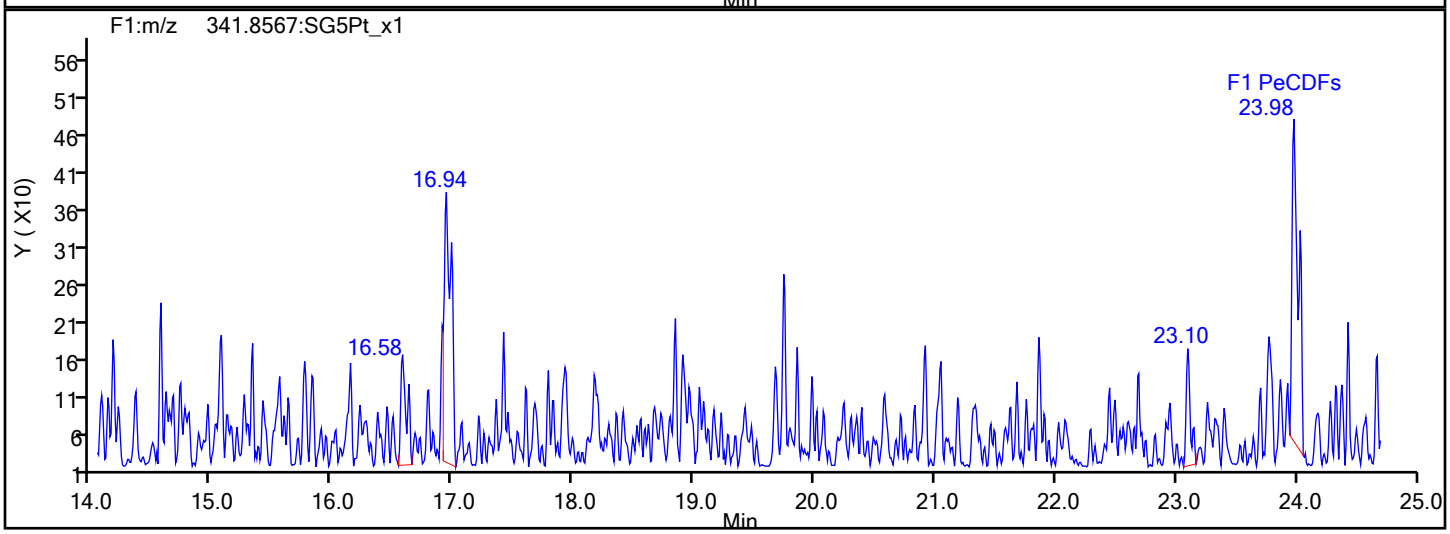
Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

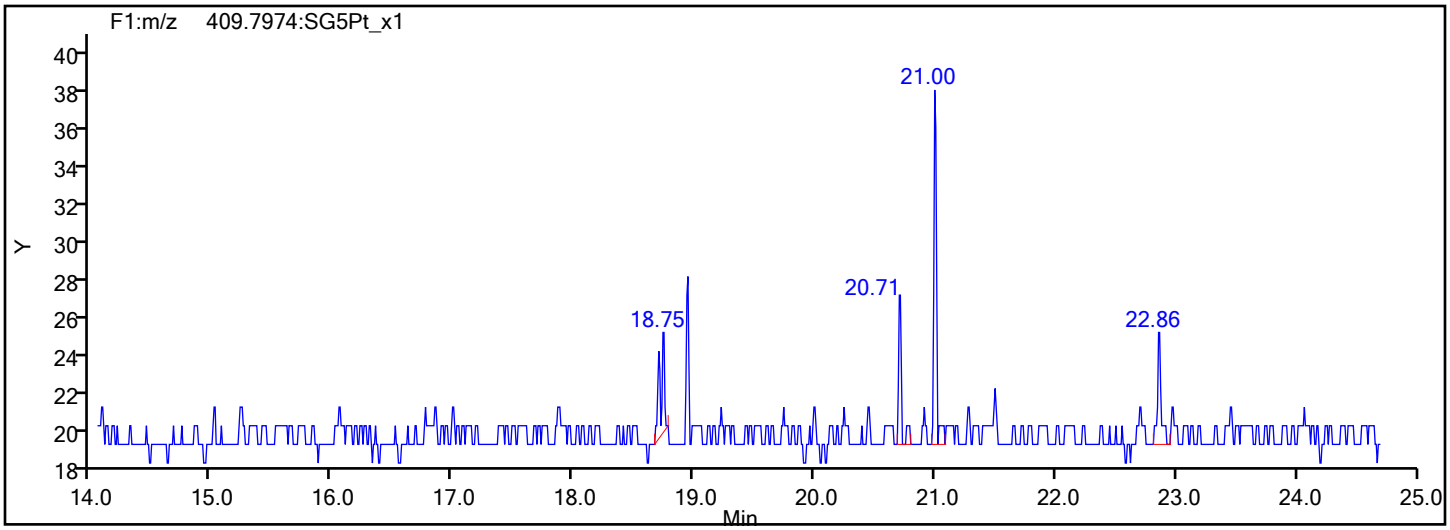
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 12:13:12 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

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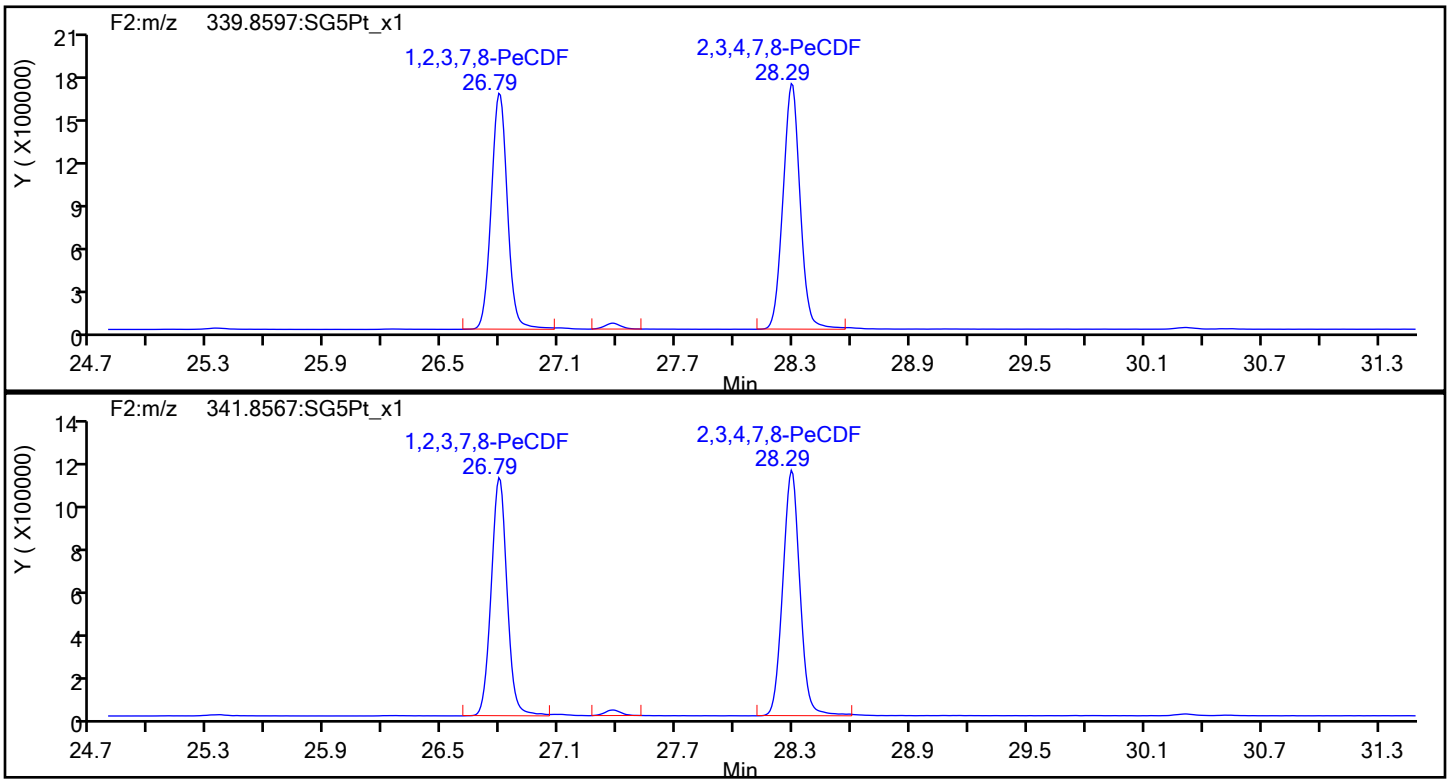
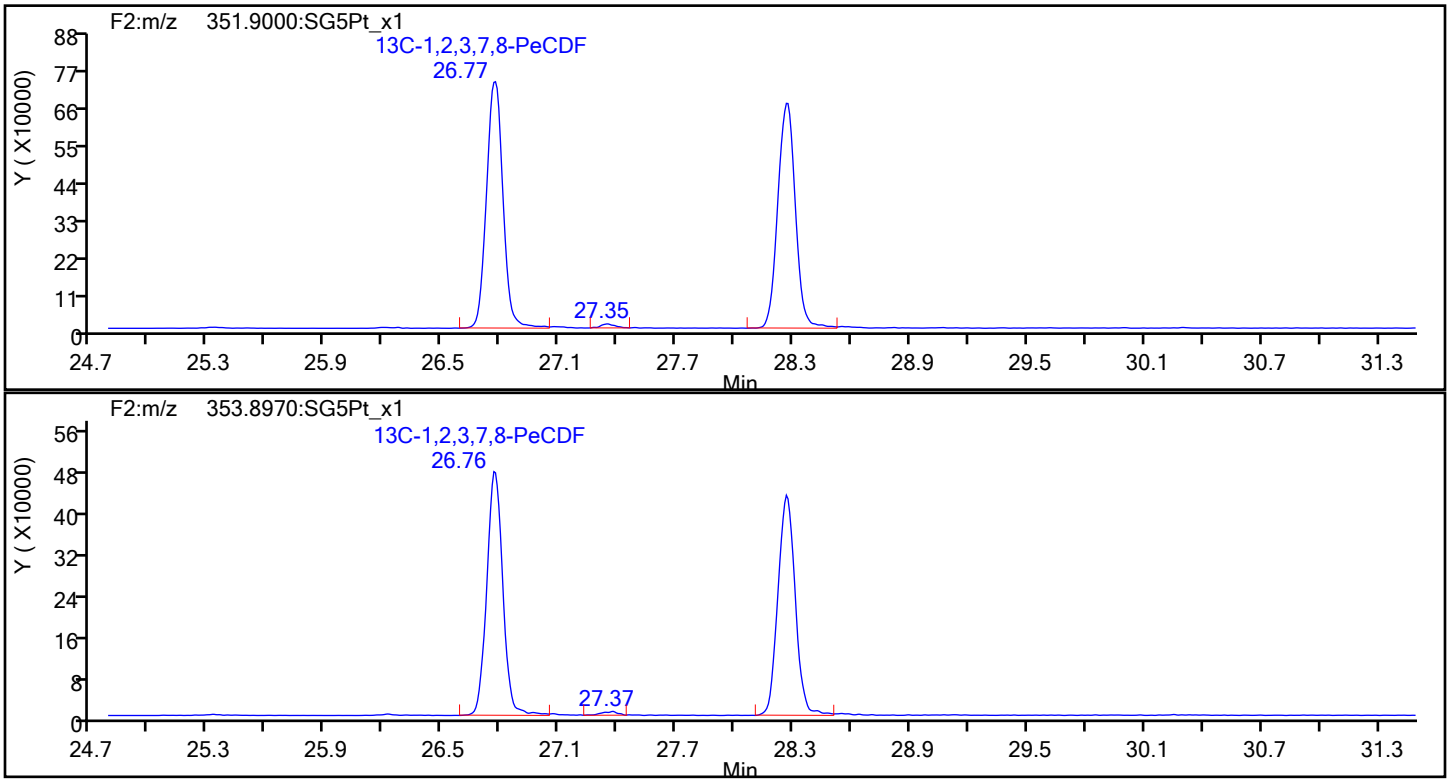


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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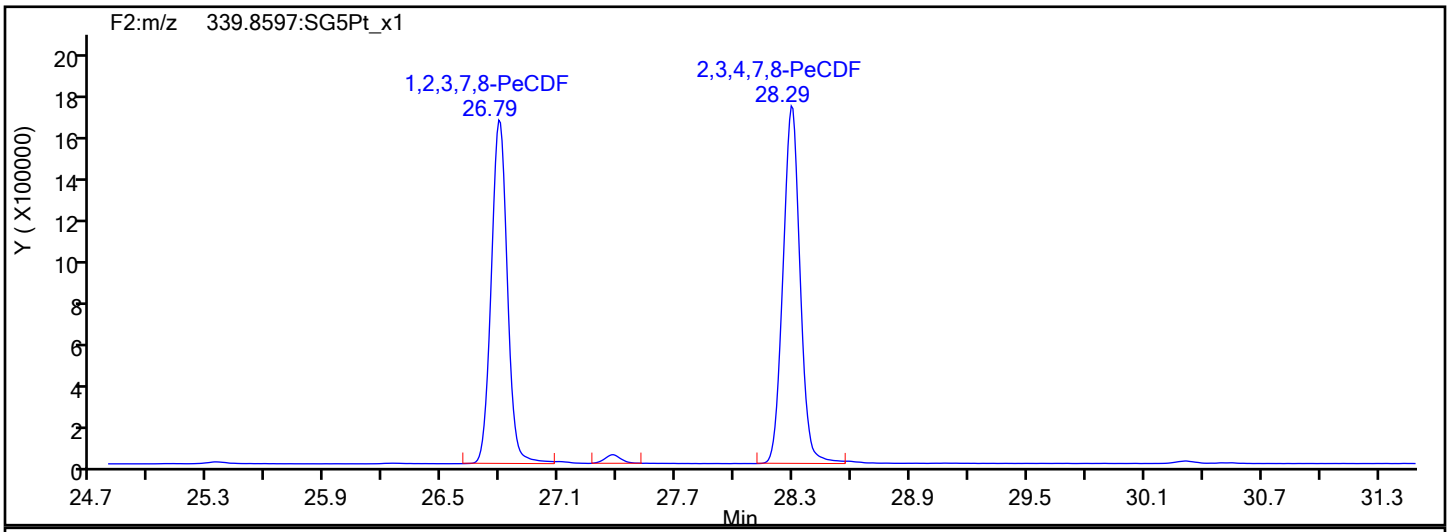
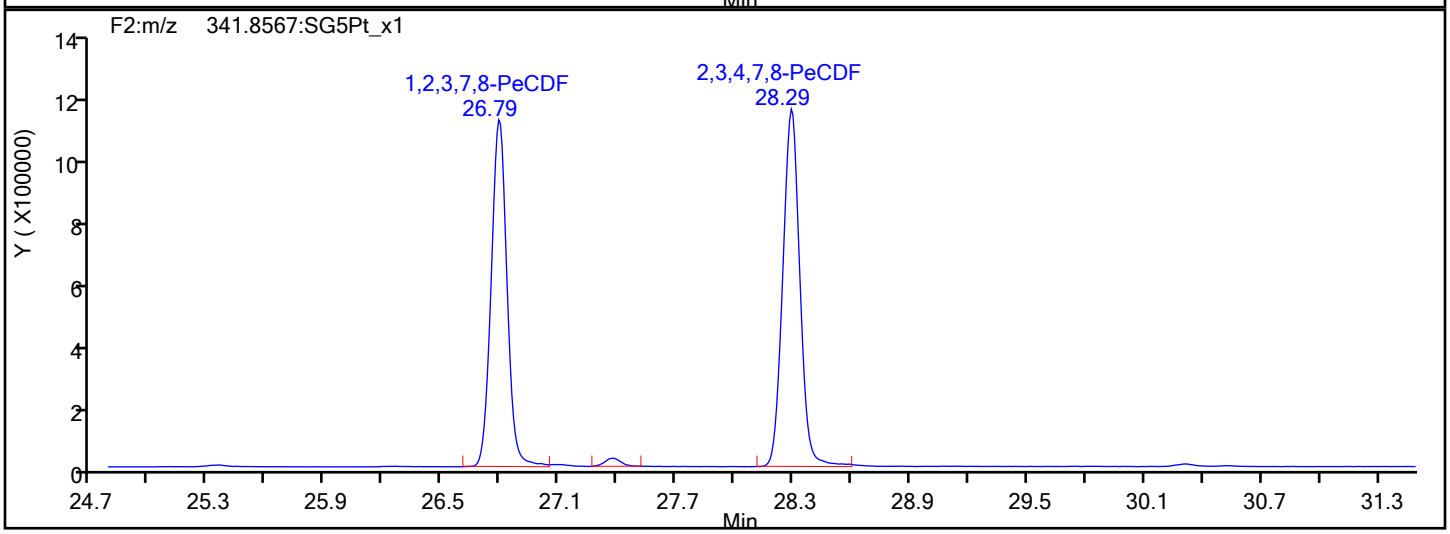
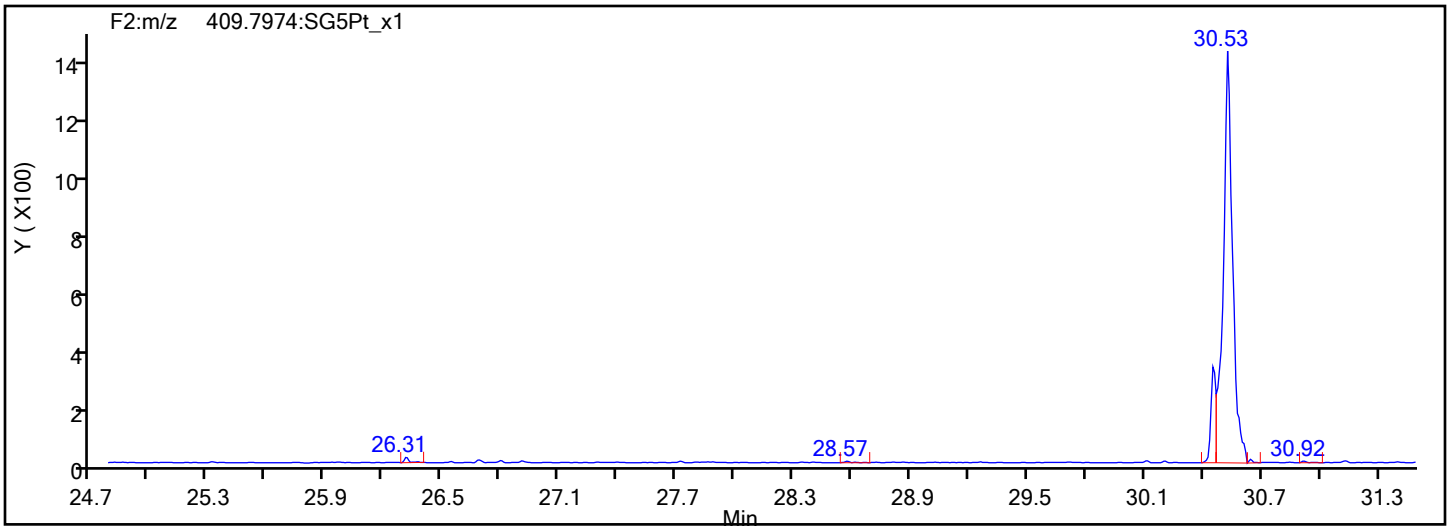




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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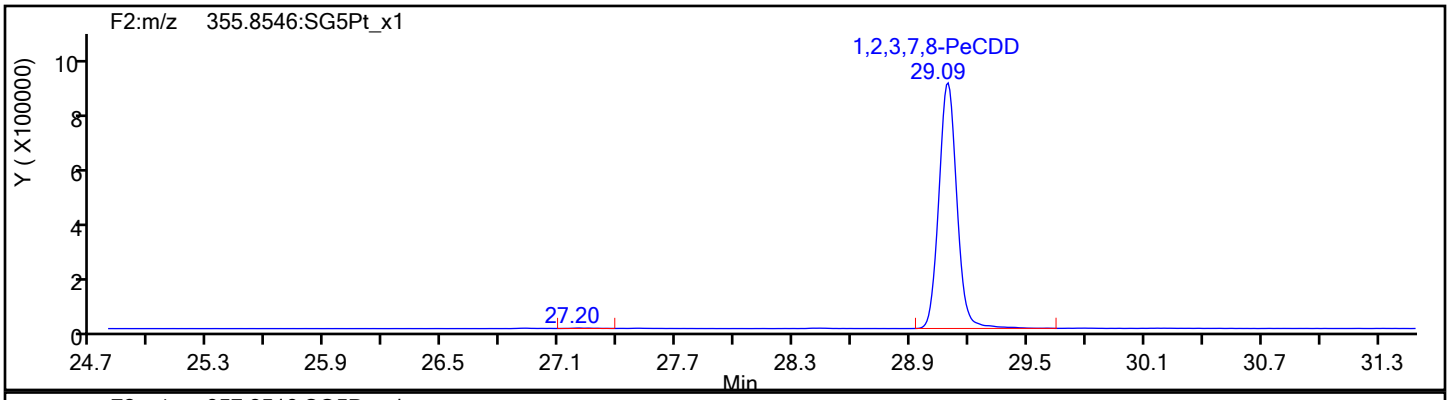

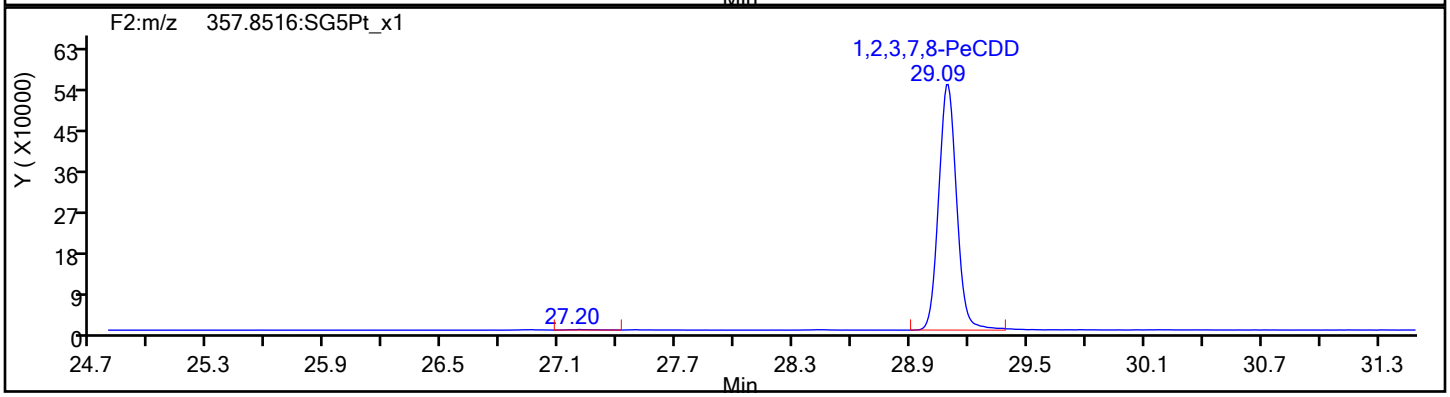

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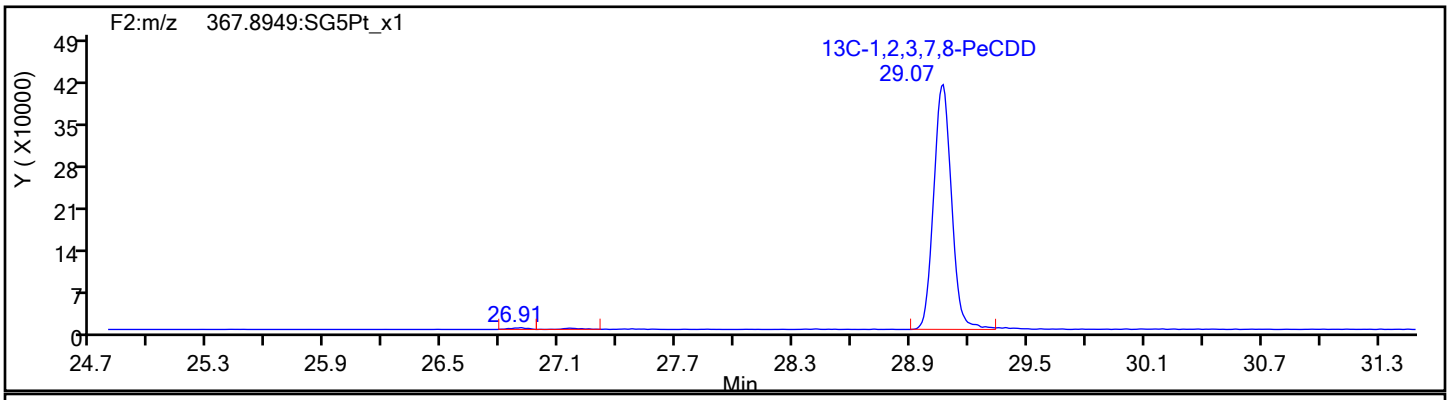

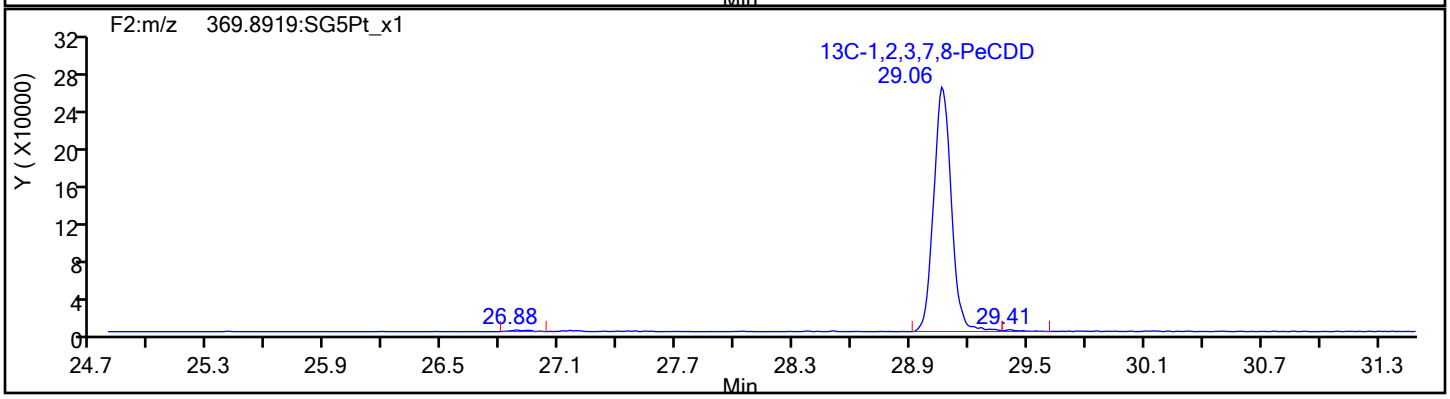

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Eurofins TestAmerica, Sacramento

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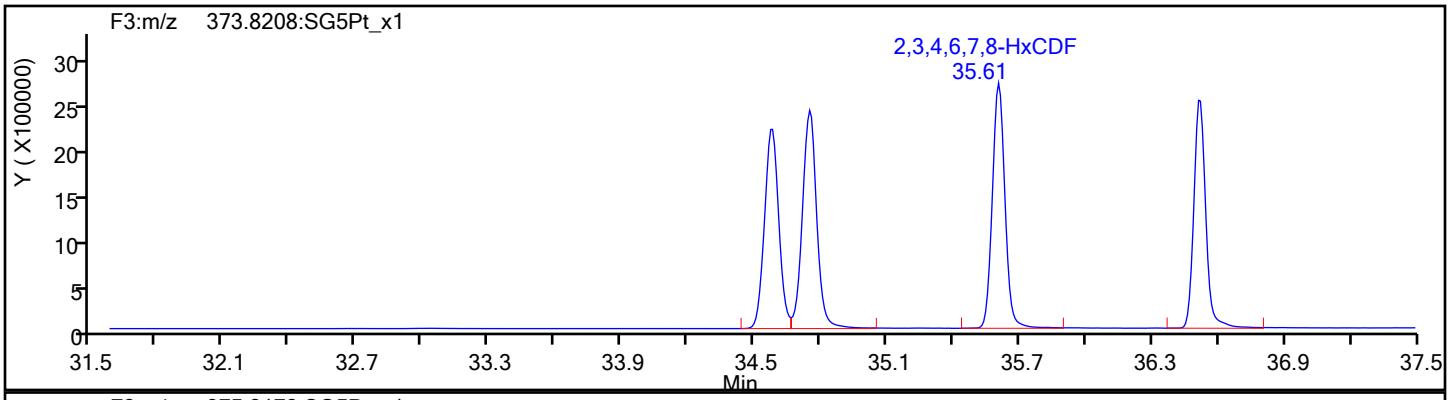

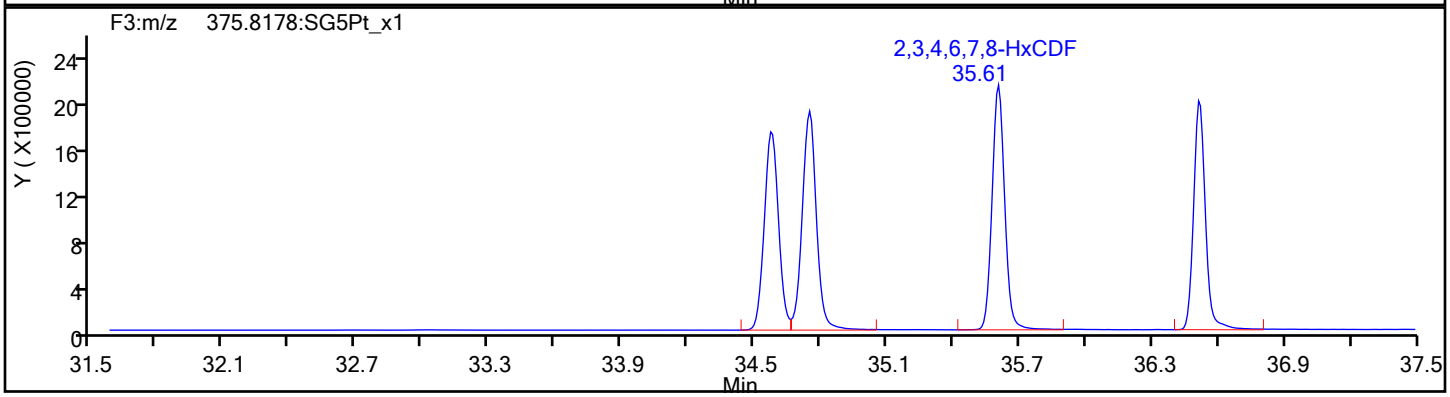

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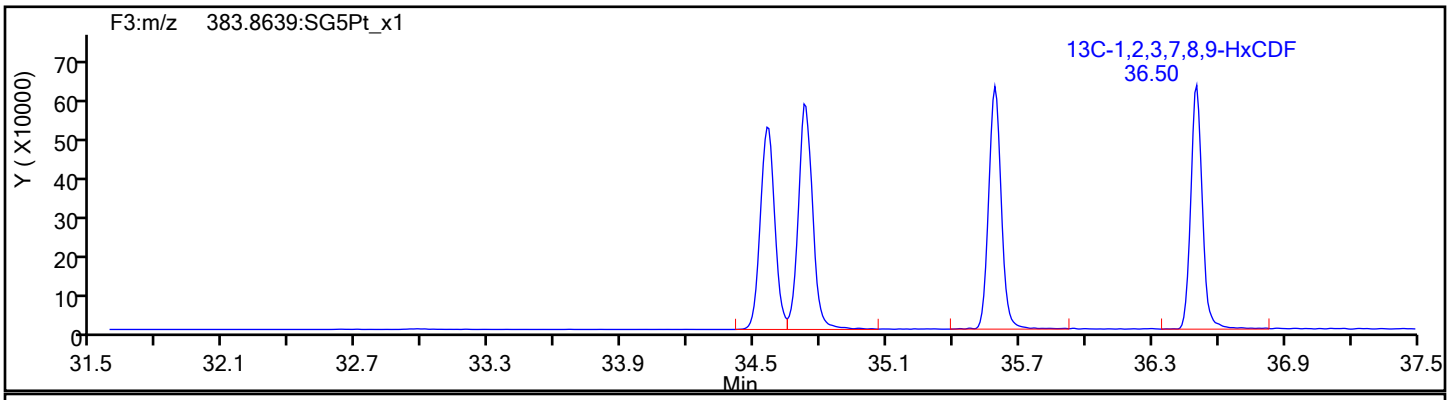

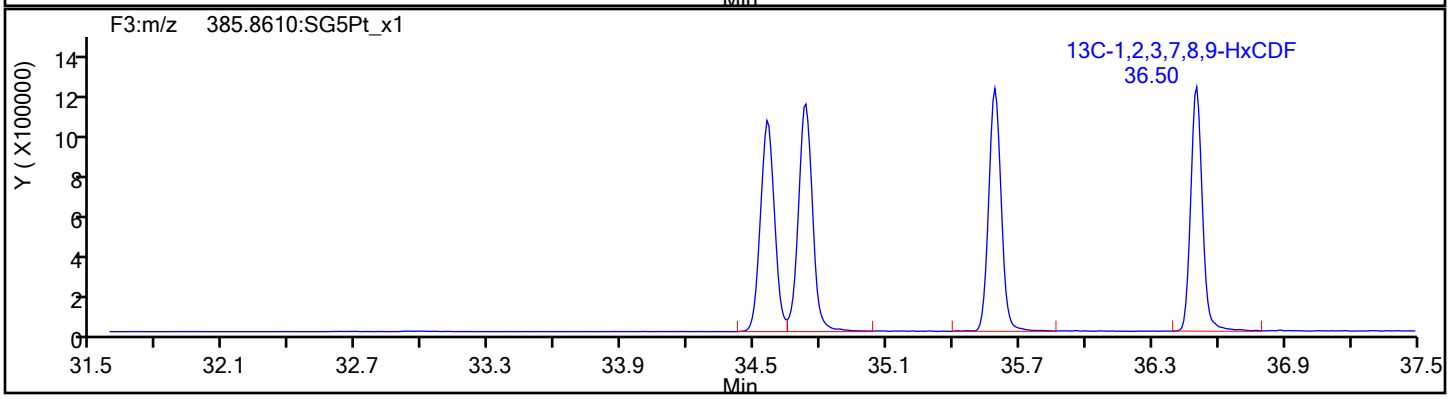

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Eurofins TestAmerica, Sacramento

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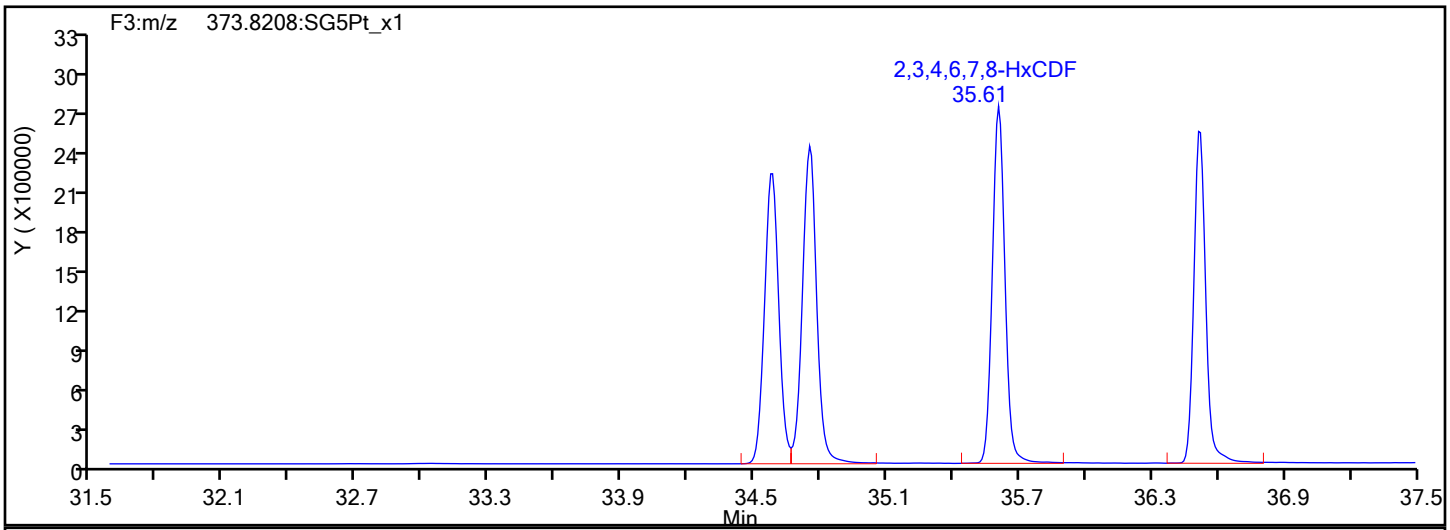
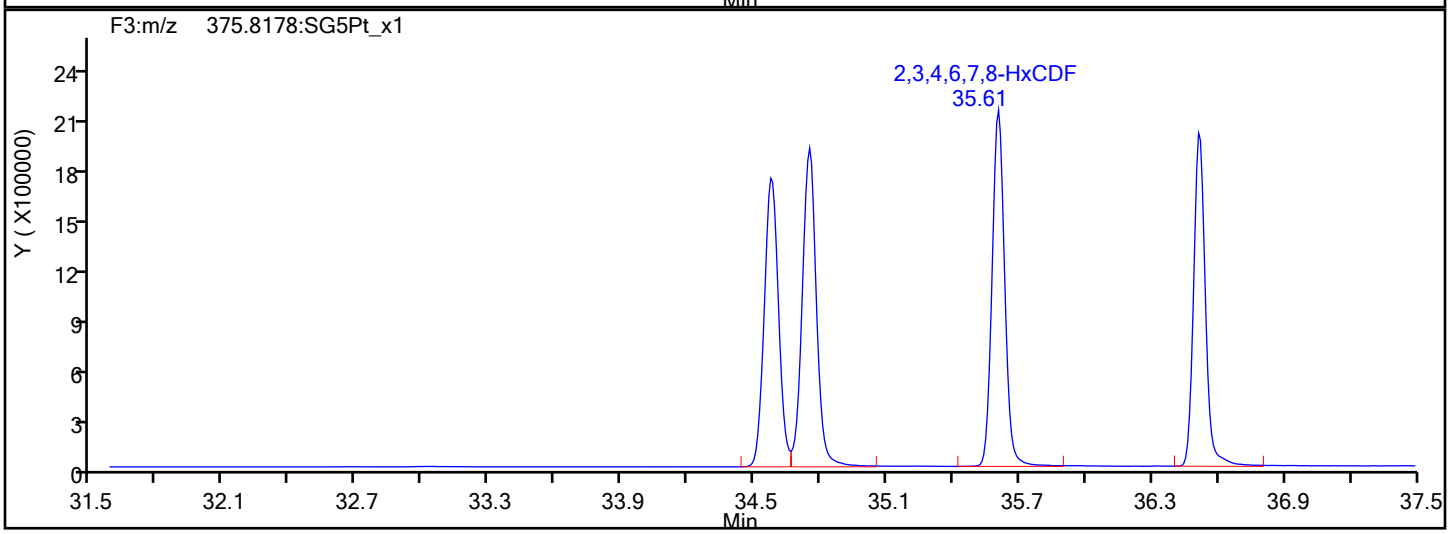
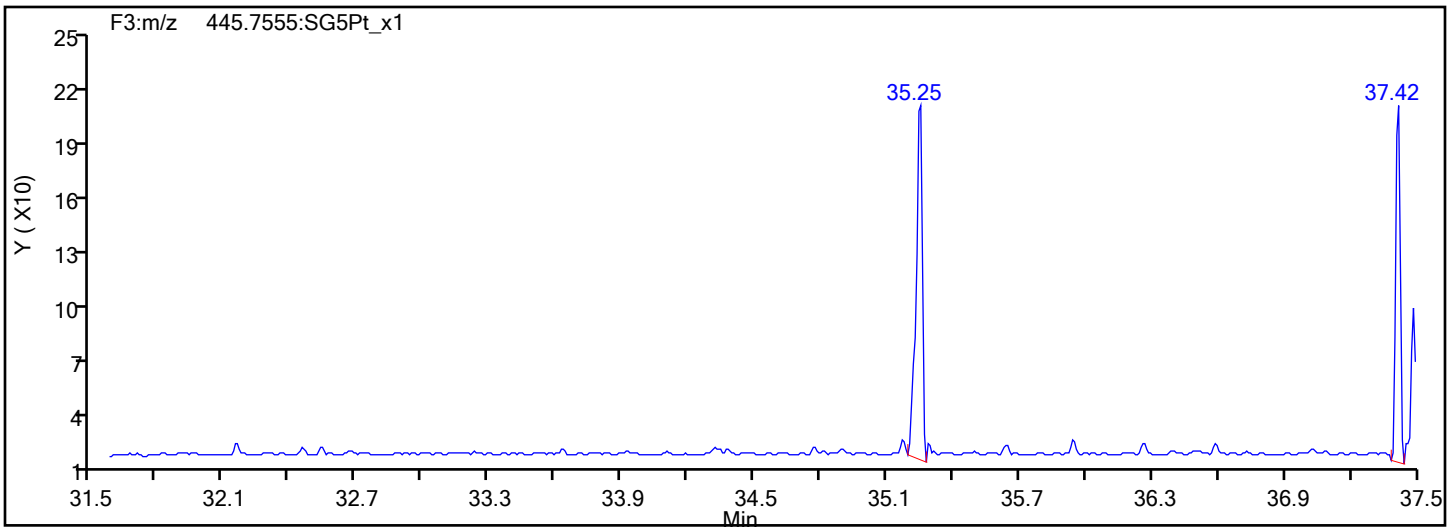




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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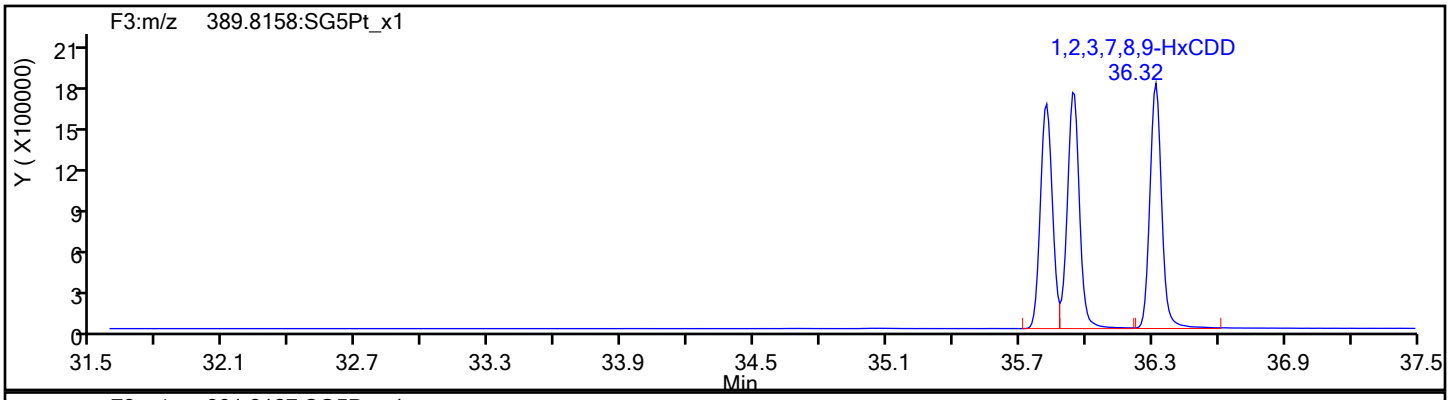
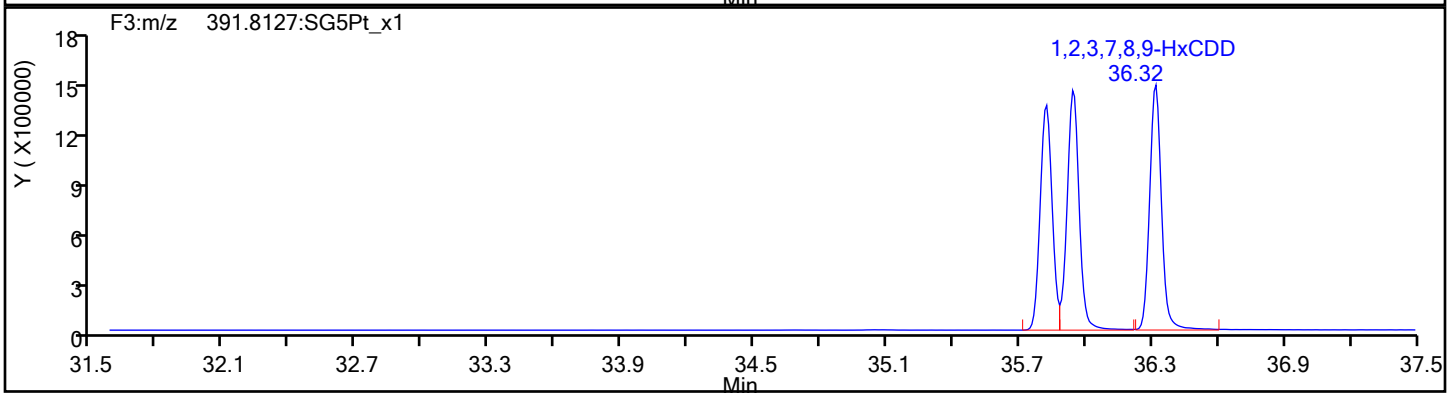
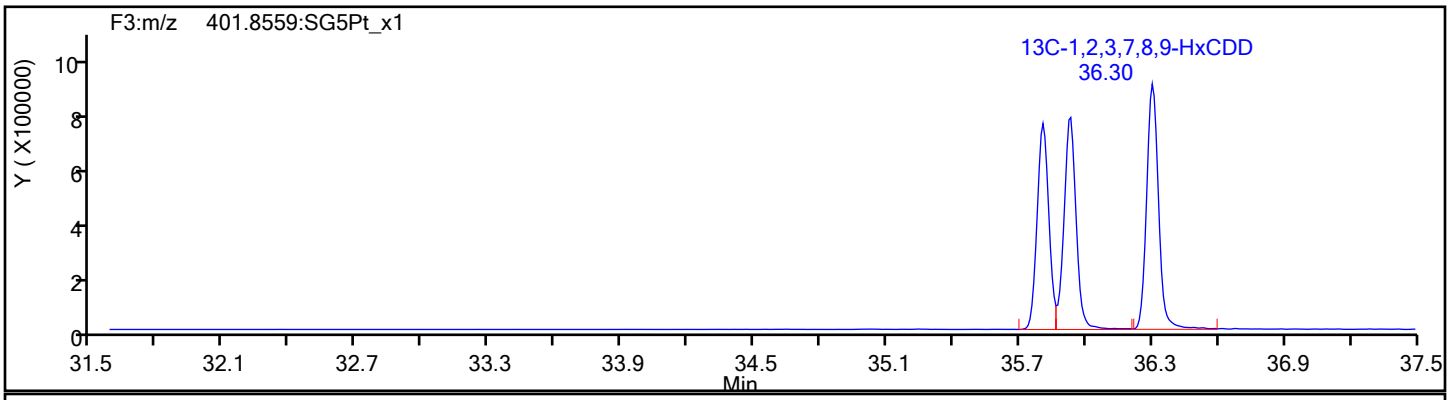
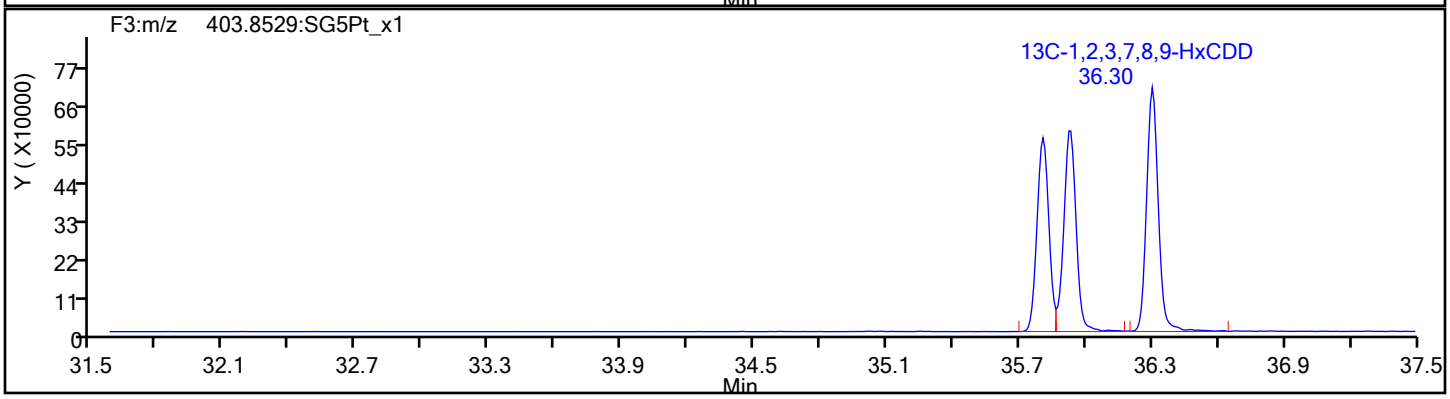




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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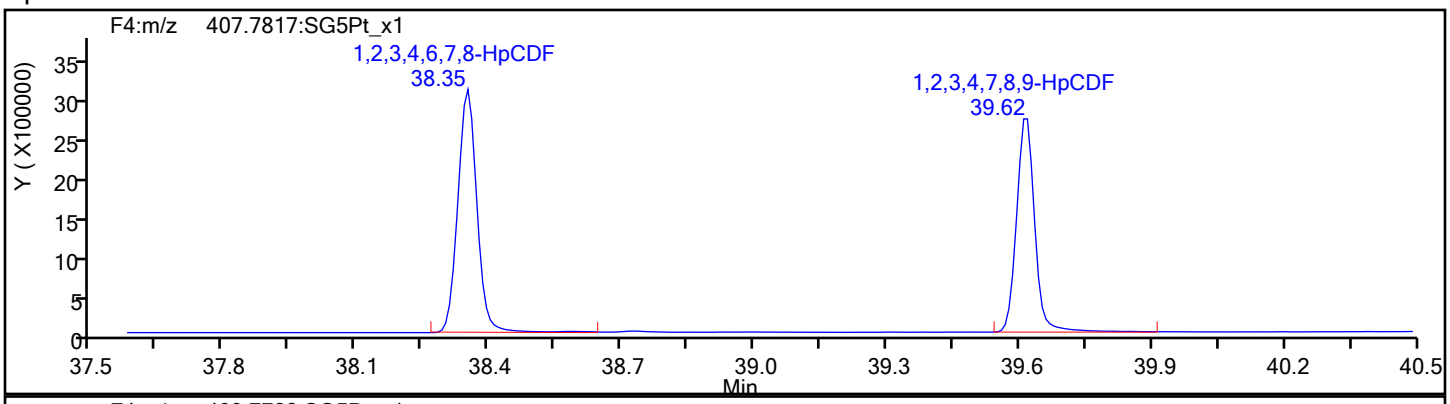

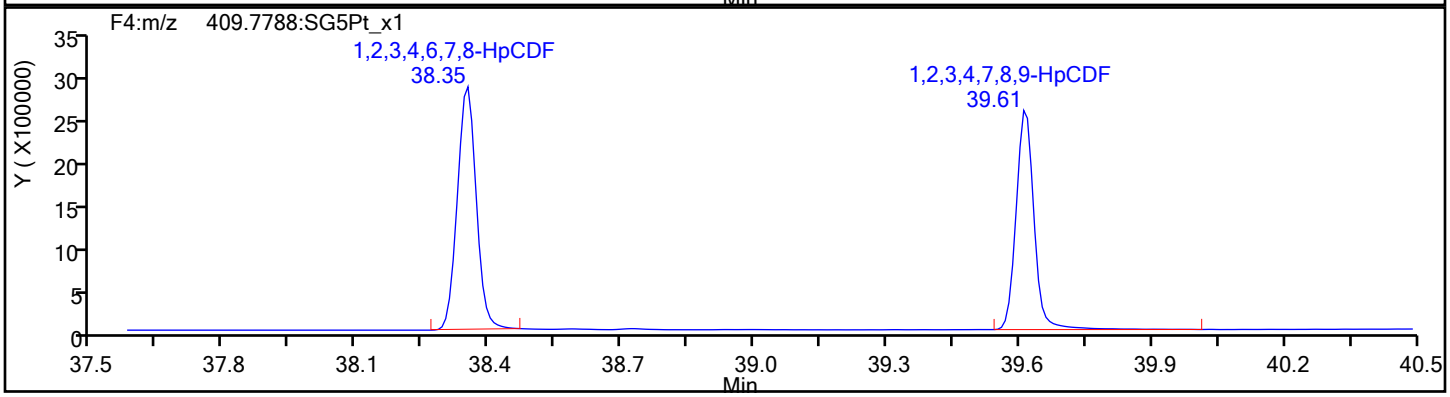

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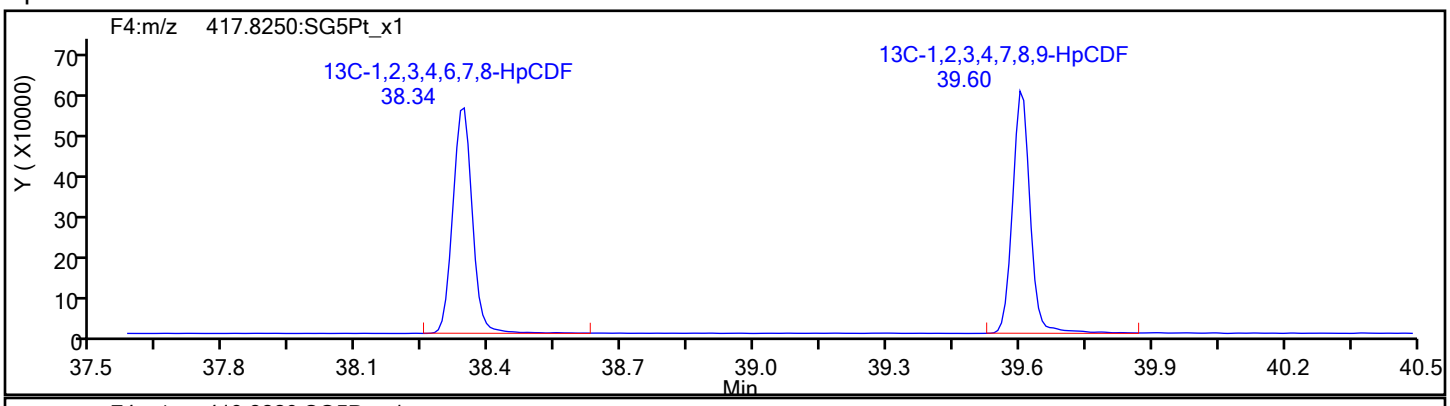

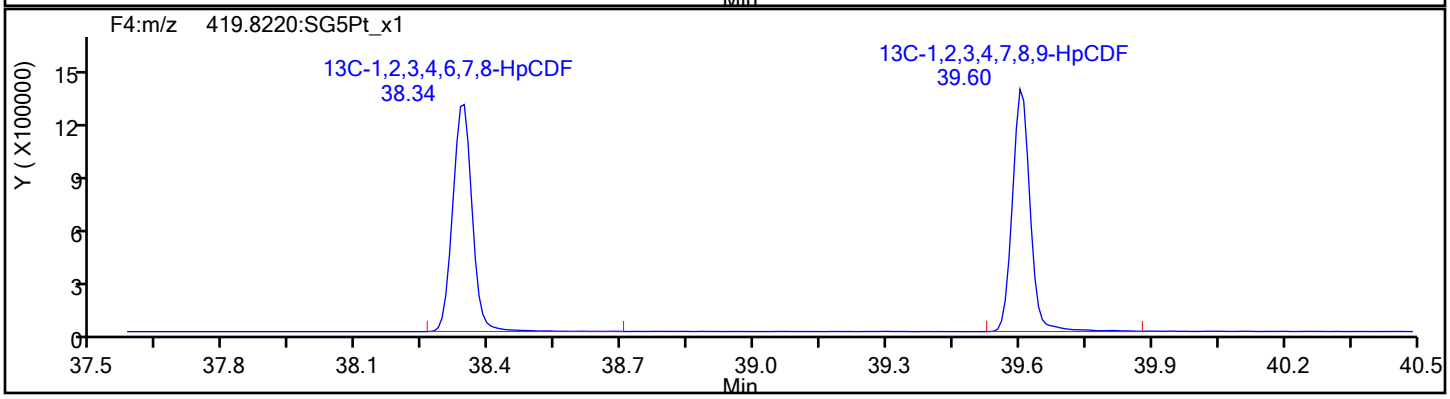

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Eurofins TestAmerica, Sacramento

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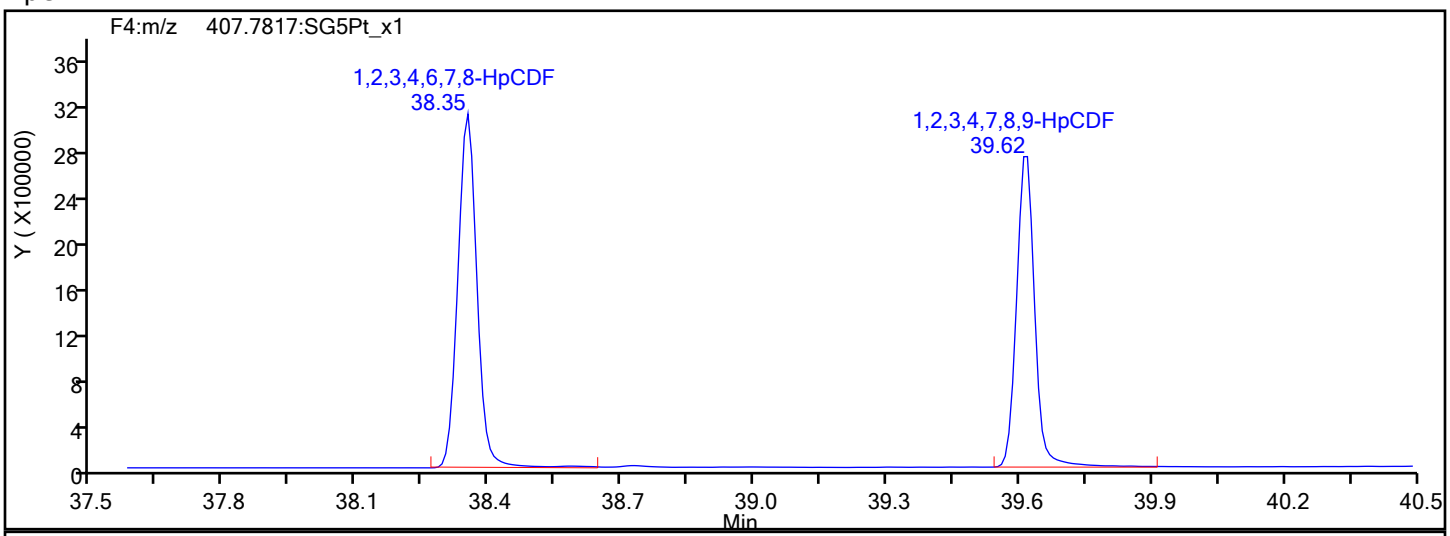
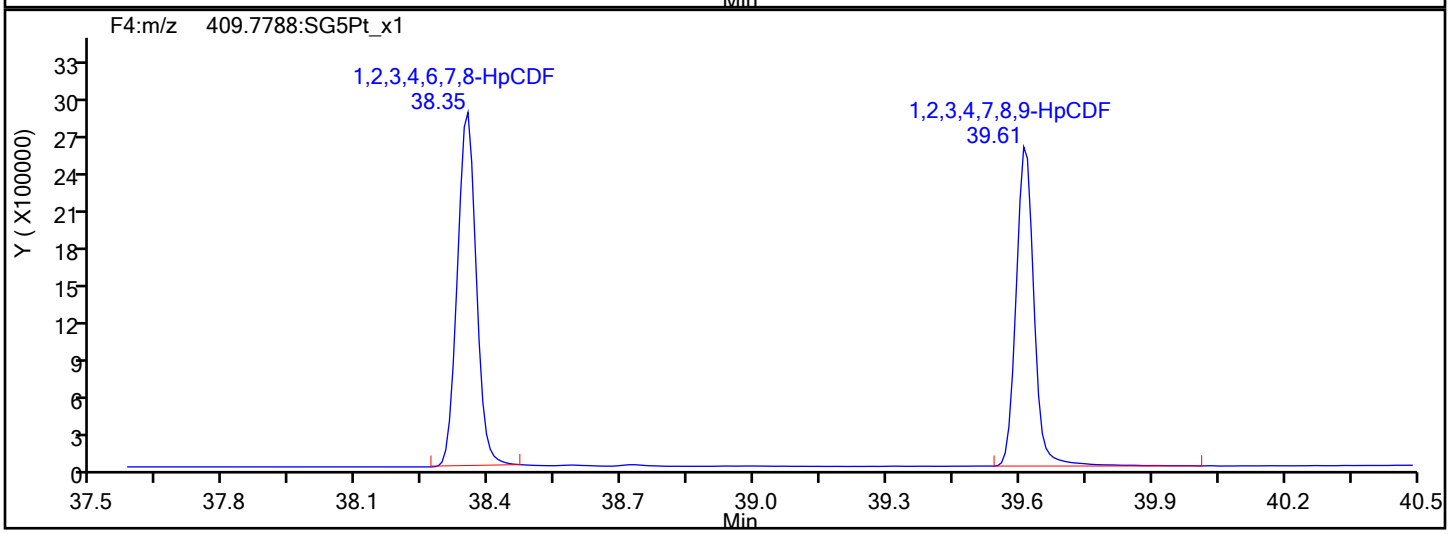
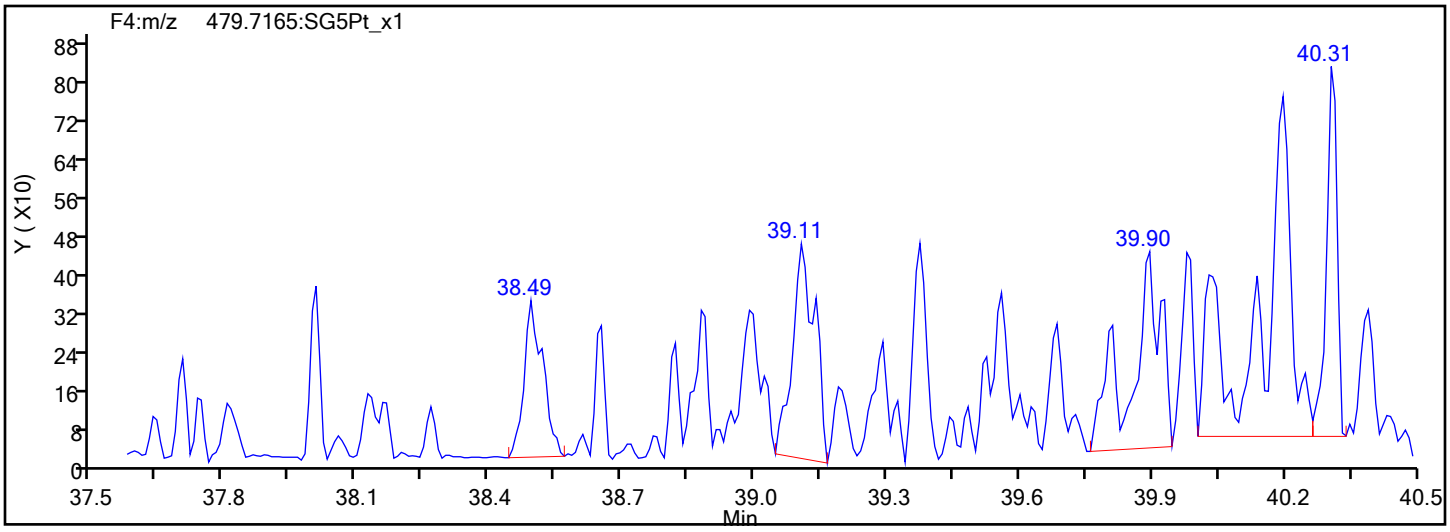




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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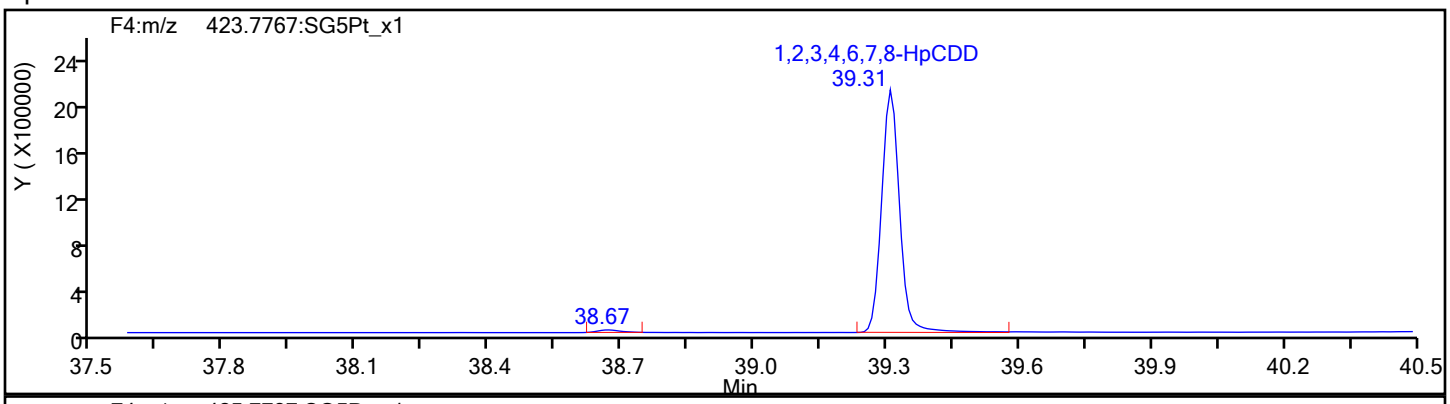
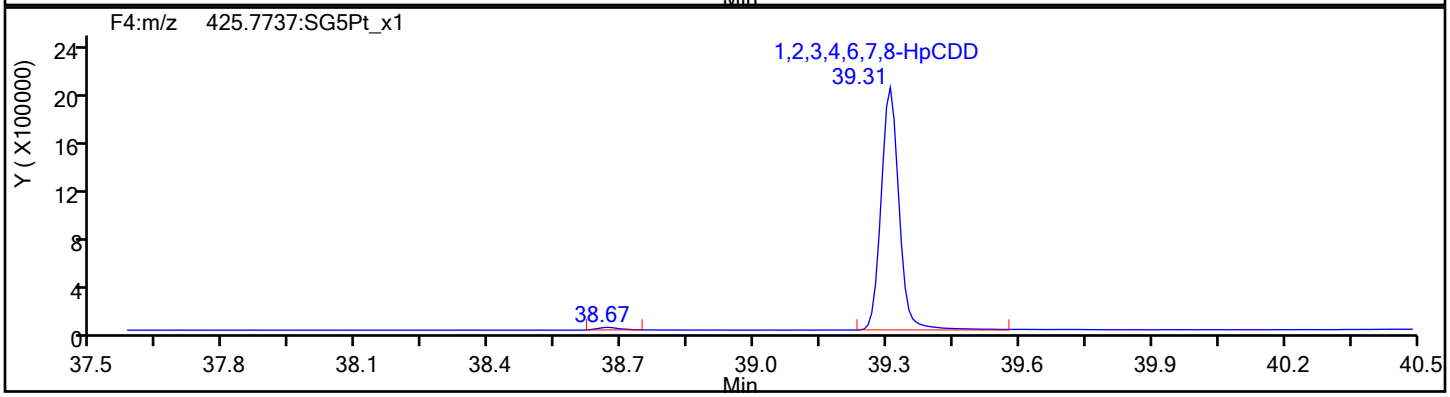
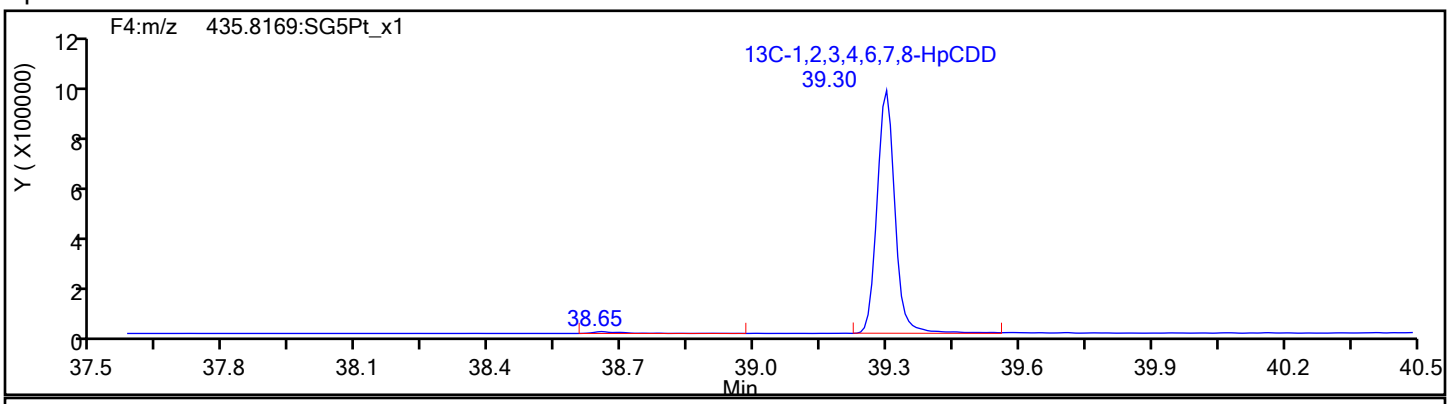
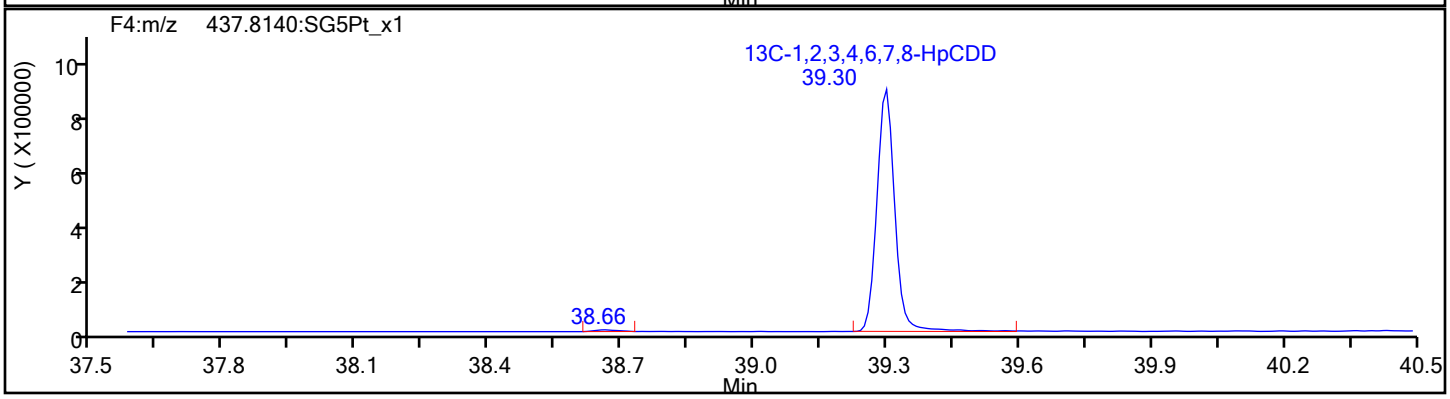
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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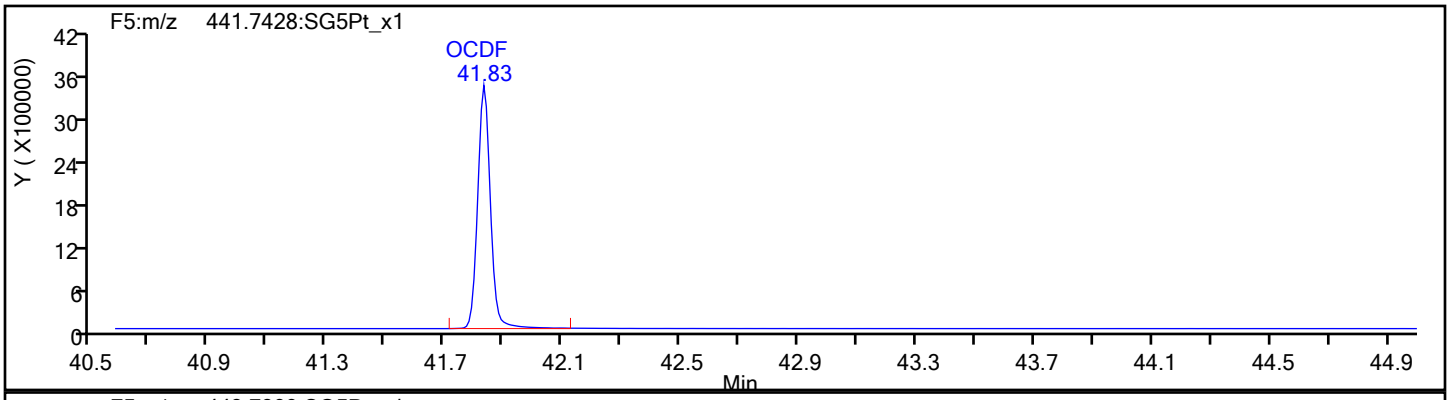
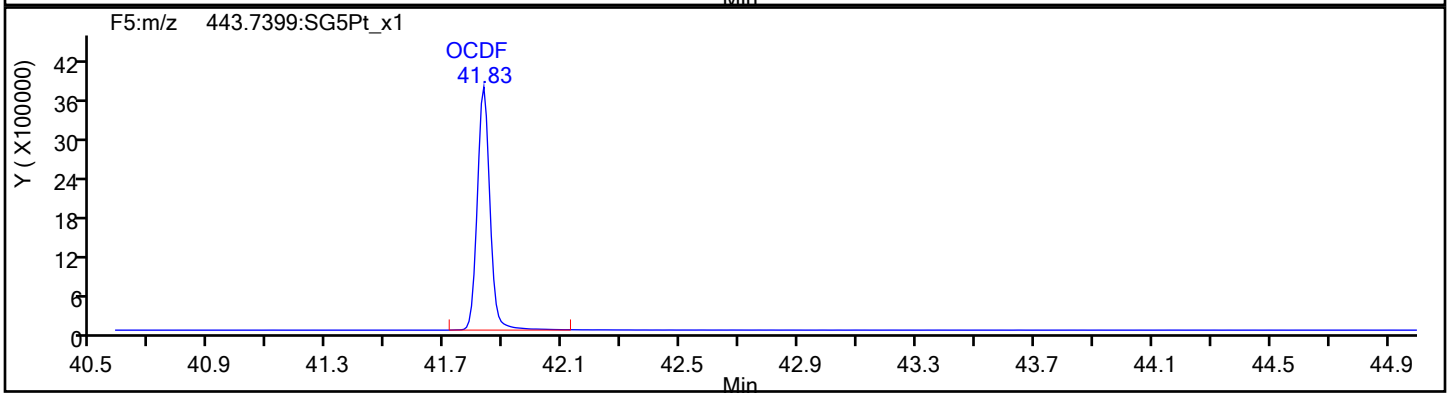
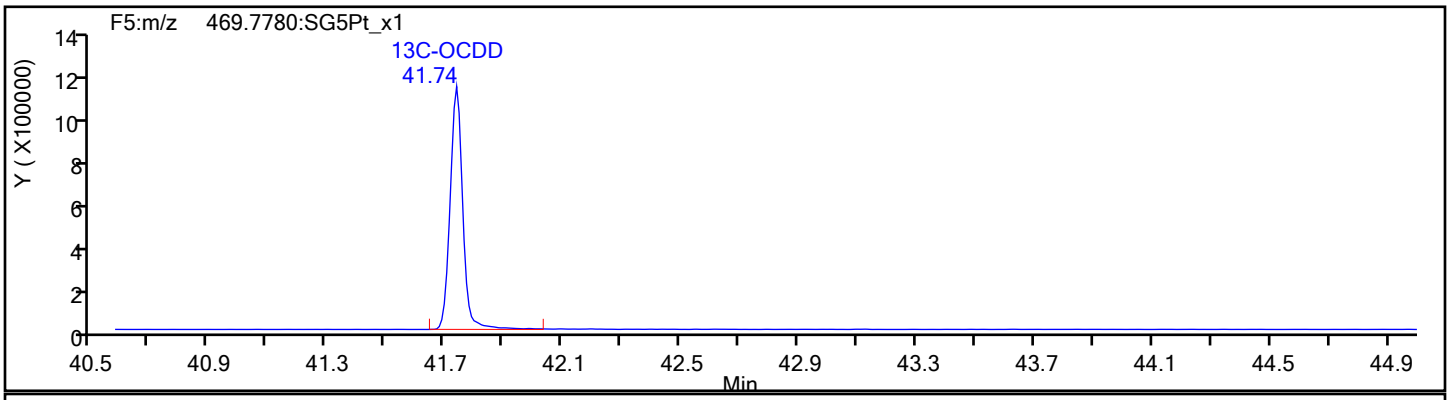
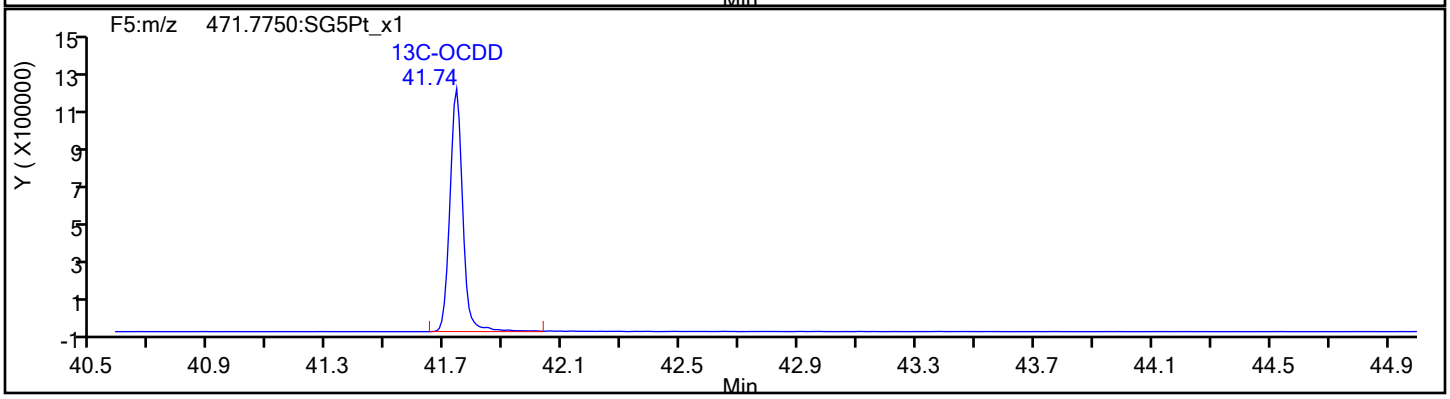
OCDF





OCDF Standards





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Eurofins TestAmerica, Sacramento

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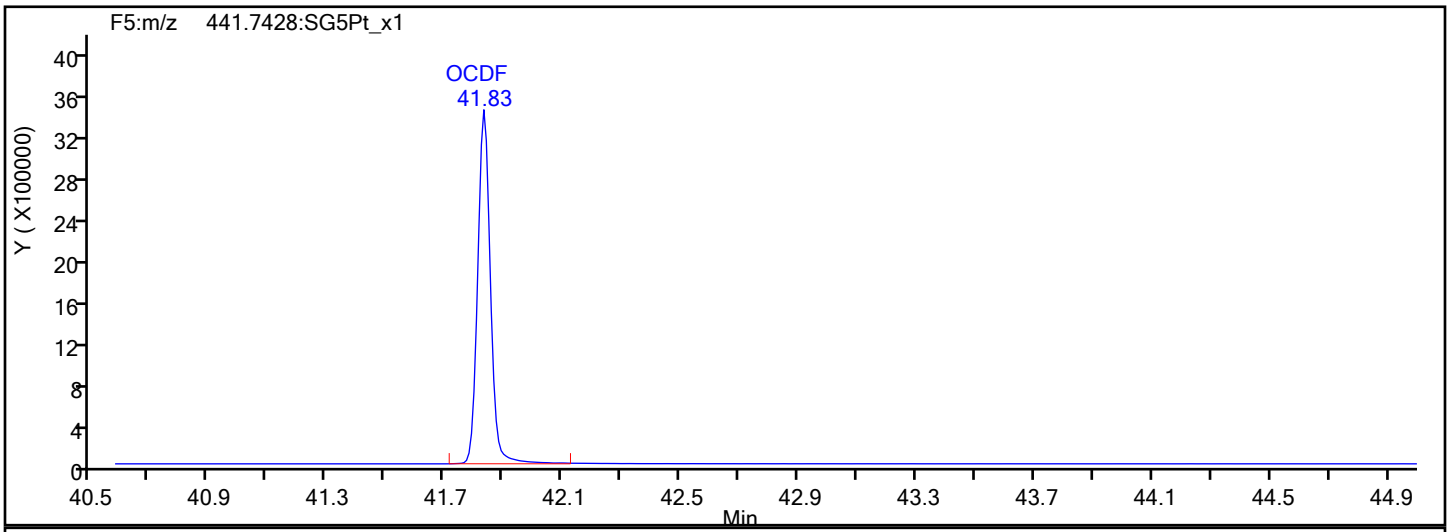
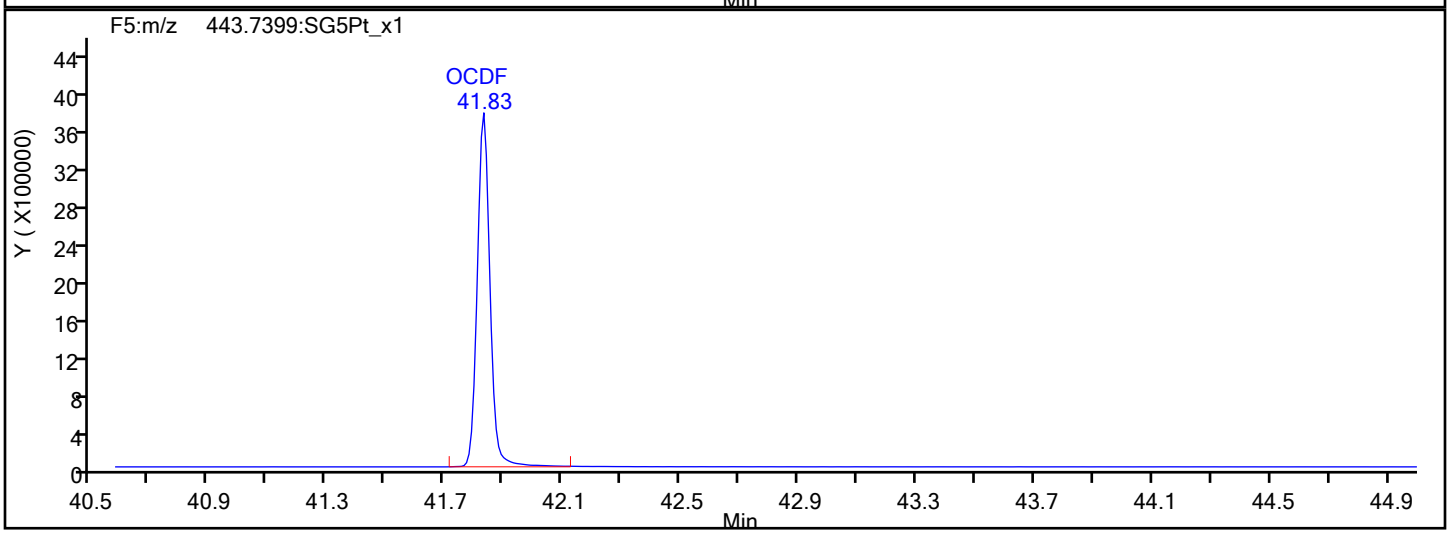
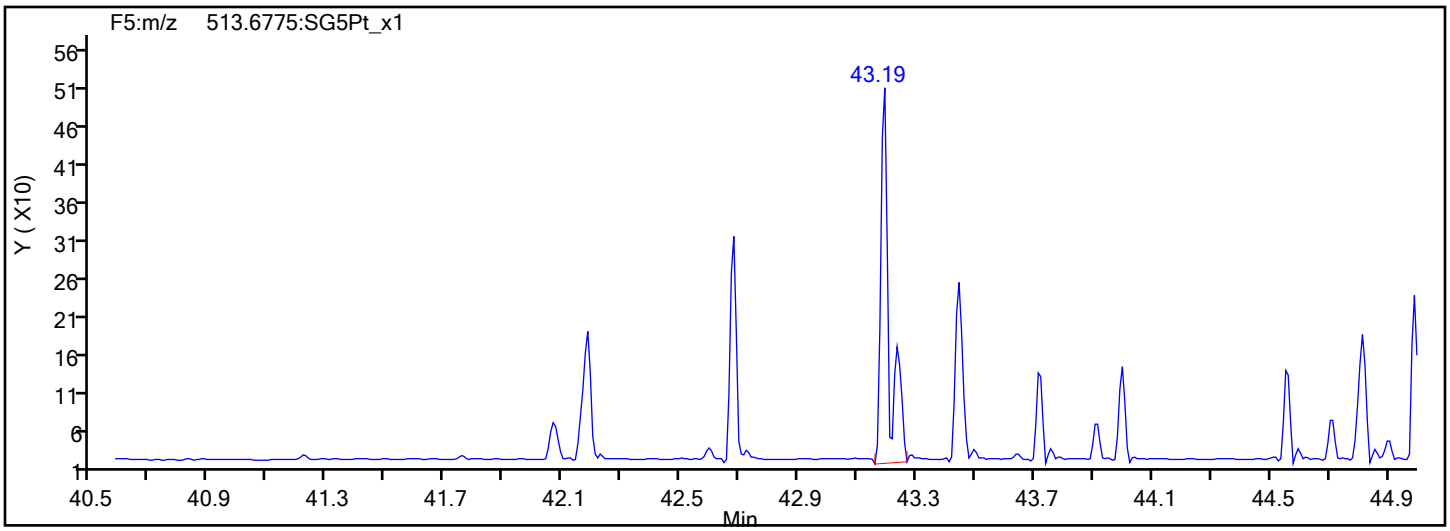




OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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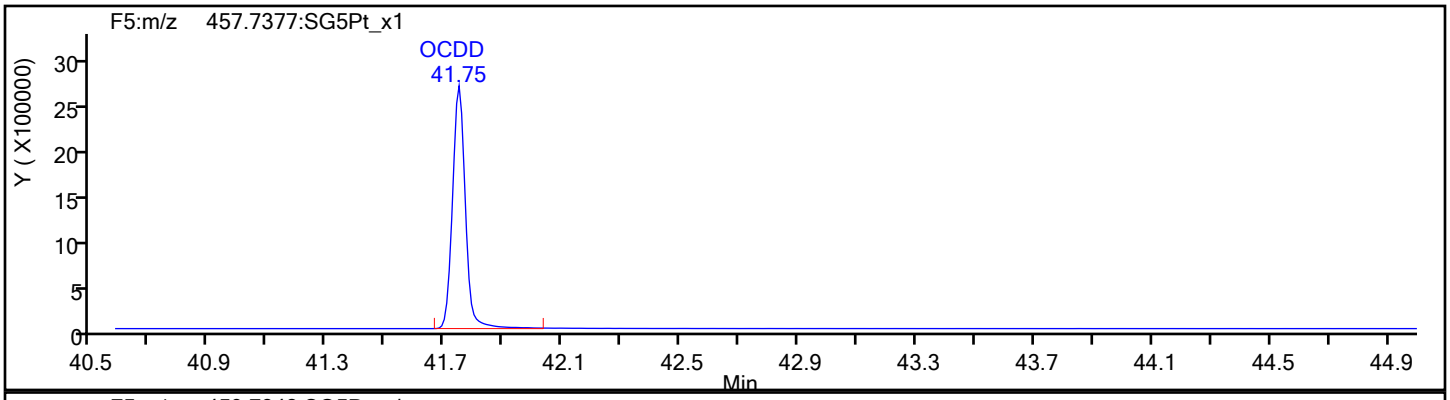
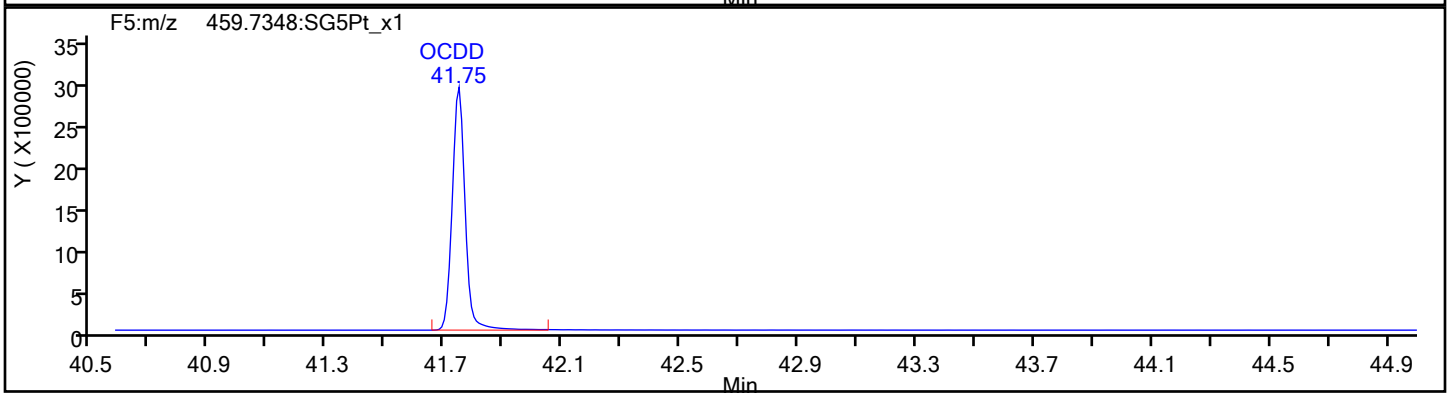
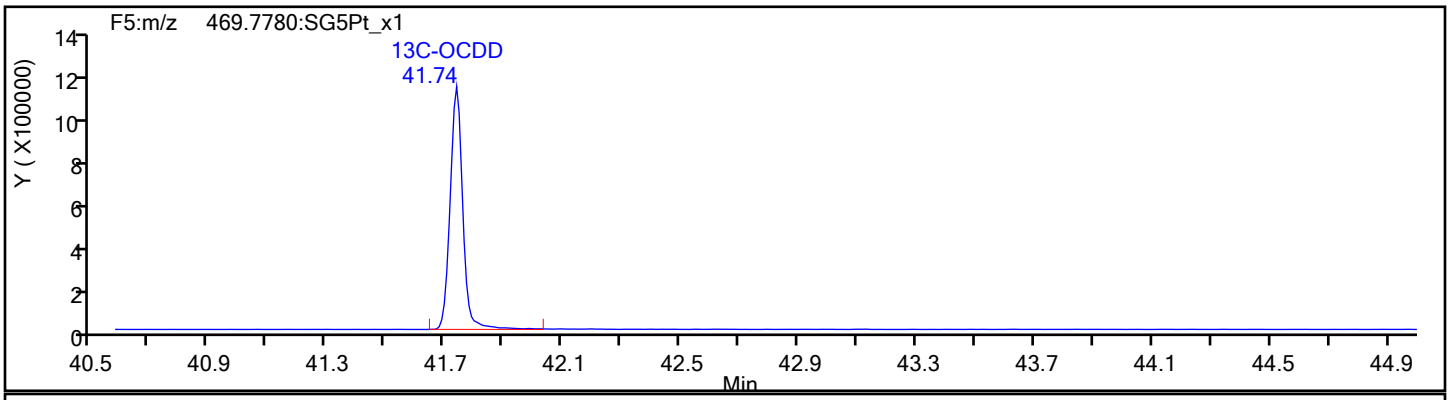
Column Type:	DB-5	Column Dia:	0.32 mm

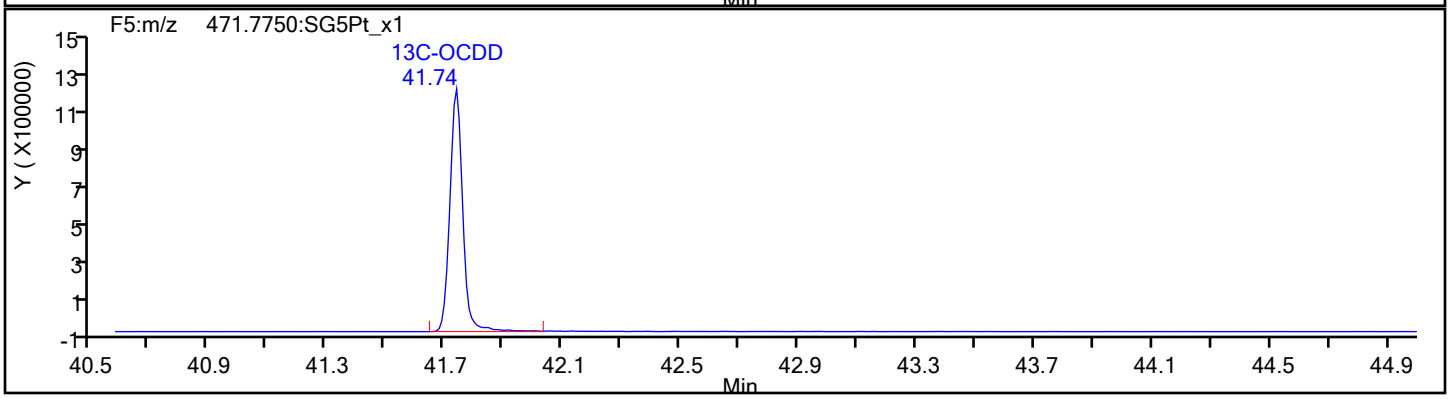
OCDD





OCDD Standards

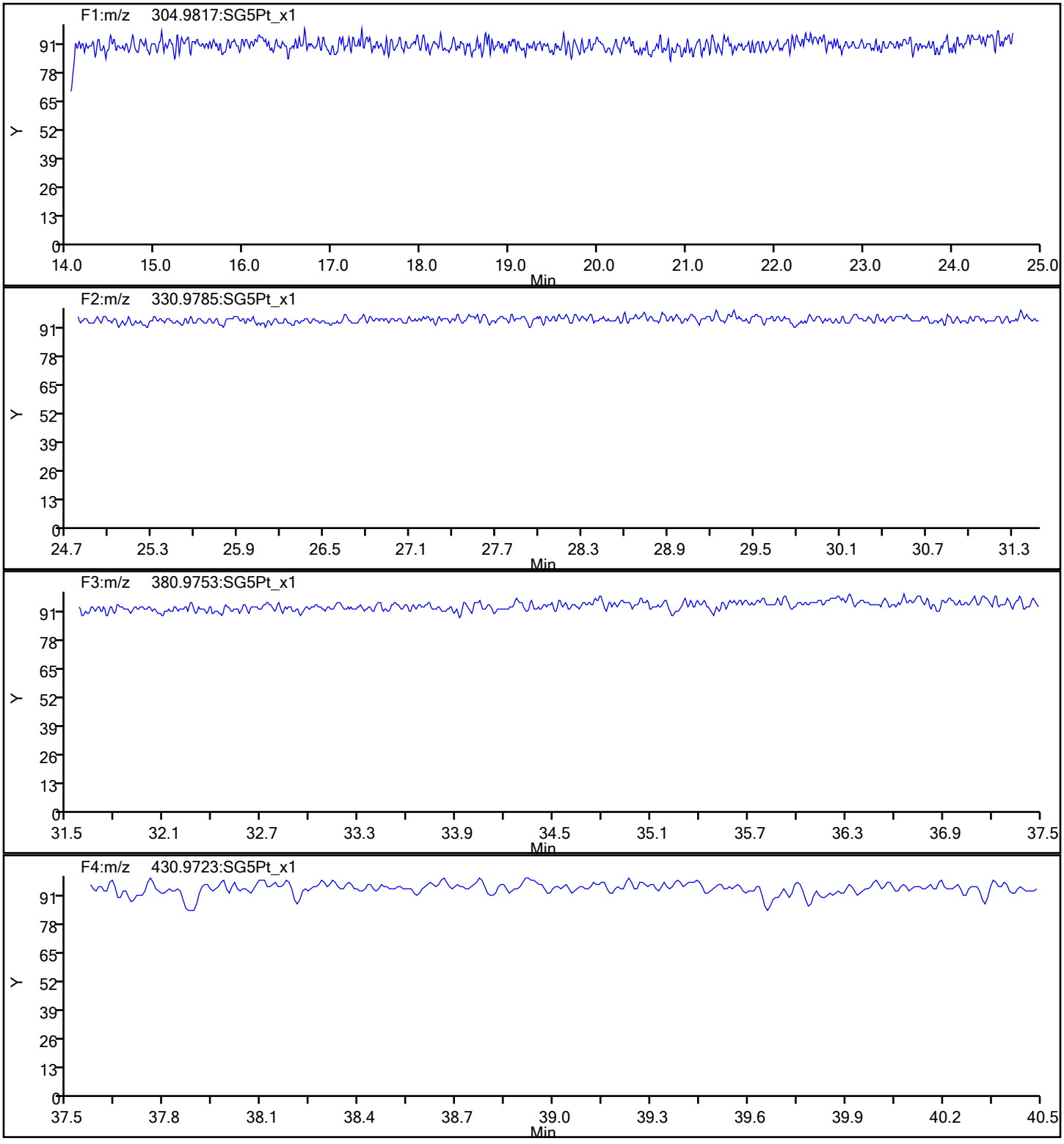




Report Date: 23-Oct-2019 12:13:13 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

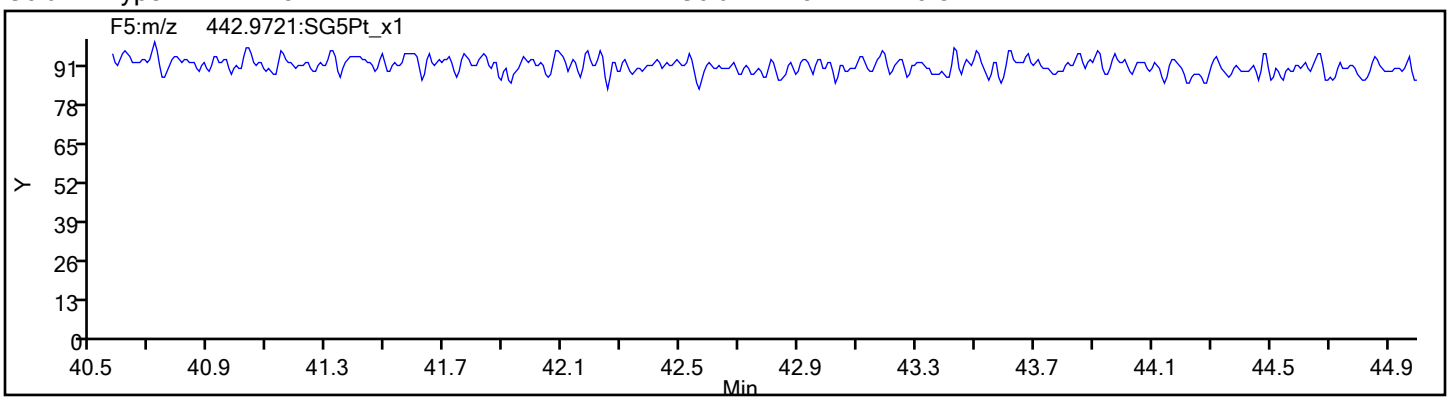
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 23-Oct-2019 12:13:13 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_10.d		
Injection Date:	19-Oct-2019 01:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Lab Sample ID: CCV 320-345338/2 Calibration Date: 12/13/2019 13:24

Instrument ID: DFS 1 Calib Start Date: 10/18/2019 20:50

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 10/19/2019 00:02

Lab File ID: 13de19dfs1_3.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.233	1.093		8.87	10.0	89	84-120
2,3,7,8-TCDD	AveID	1.199	1.105		9.22	10.0	92	78-129
1,2,3,7,8-PeCDF	AveID	1.169	1.036		44.3	50.0	89	82-120
2,3,4,7,8-PeCDF	AveID	1.186	1.012		42.7	50.0	85	82-122
1,2,3,7,8-PeCDD	AveID	1.120	1.090		48.7	50.0	97	78-130
1,2,3,4,7,8-HxCDF	AveID	1.302	1.178		45.2	50.0	90	90-112
1,2,3,6,7,8-HxCDF	AveID	1.291	1.215		47.0	50.0	94	88-114
2,3,4,6,7,8-HxCDF	AveID	1.304	1.244		47.7	50.0	95	88-114
1,2,3,4,7,8-HxCDD	AveID	1.172	1.032		44.0	50.0	88	78-128
1,2,3,6,7,8-HxCDD	AveID	1.126	1.040		46.2	50.0	92	78-128
1,2,3,7,8,9-HxCDD	AveID	1.233	1.099		44.6	50.0	89	82-122
1,2,3,7,8,9-HxCDF	AveID	1.333	1.242		46.6	50.0	93	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.618	1.517		46.9	50.0	94	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.124	1.027		45.7	50.0	91	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.467	1.308		44.6	50.0	89	86-116
OCDD	AveID	1.186	1.072		90.4	100	90	79-126
OCDF	AveID	1.542	1.360		88.2	100	88	63-159
13C-2,3,7,8-TCDF	Ave	1.610	1.398		86.9	100	87	71-140
13C-2,3,7,8-TCDD	Ave	0.998	0.9602		96.2	100	96	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.368	1.228		89.8	100	90	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.304	1.218		93.4	100	93	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.8292	0.7666		92.4	100	92	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.170	1.036		88.5	100	89	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.317	1.180		89.6	100	90	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.287	1.168		90.8	100	91	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8364	0.8241		98.5	100	99	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.9040	0.9219		102	100	102	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.199	0.9921		82.8	100	83	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.9689	0.8471		87.4	100	87	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.9114	0.8728		95.8	100	96	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.9231	0.8693		94.2	100	94	77-129
13C-OCDD	Ave	0.6272	0.6624		211	200	106	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.451	1.538		10.6	10.0	106	79-127

	File Name	SampleName	Sample ID	Position	Method/Matrix	Box	User	Sample Vol	Units
1	13DE19DFS1_1	Resolution Check	RC 121319	46			AJS	1.000	
2	13DE19DFS1_2	WDM HRDXNCP_00040	WDM 121319	1	Dioxin		AJS	1.000	
3	13DE19DFS1_3	CS-4 HRDXNL4_00086	CCV 121319	2	Dioxin		AJS	1.000	
4	13DE19DFS1_4	Solvent Blank C-14	SB 121319	3			AJS	1.000	
5	13DE19DFS1_5	MB 320-344634/1-A	MB 320-344634/1-A	4	1613B/Solid	D117	AJS	10.000	g
6	13DE19DFS1_6	LCS 320-344634/2-A	LCS 320-344634/2-A	5	1613B/Solid		AJS	10.000	g
7	13DE19DFS1_7	LCSD 320-344634/3-A	LCSD 320-344634/3-A	6	1613B/Solid		AJS	10.000	g
8	13DE19DFS1_8	320-56911-A-1-A	320-56911-A-1-A	7	1613B/Solid		AJS	10.000	g
9	13DE19DFS1_9	320-56911-A-2-A	320-56911-A-2-A	8	1613B/Solid		AJS	10.000	g
10	13DE19DFS1_10	320-56911-A-3-A	320-56911-A-3-A	9	1613B/Solid		AJS	10.000	g
11	13DE19DFS1_11	320-56911-A-4-A	320-56911-A-4-A	10	1613B/Solid		AJS	10.000	g
12	13DE19DFS1_12	320-56911-A-5-A	320-56911-A-5-A	11	1613B/Solid		AJS	10.000	g
13	13DE19DFS1_13	320-56911-A-6-A	320-56911-A-6-A	12	1613B/Solid		AJS	10.000	g
14	13DE19DFS1_14	Resolution Check	RC 121319A	46			AJS	1.000	
15	13DE19DFS1_15	Solvent Blank C-14	SB 121319A	3			AJS	1.000	
16	13DE19DFS1_16	Resolution Check	RC 121319B	46			AJS	1.000	
*								0.000	

logfile checked
12-14-19 ALM

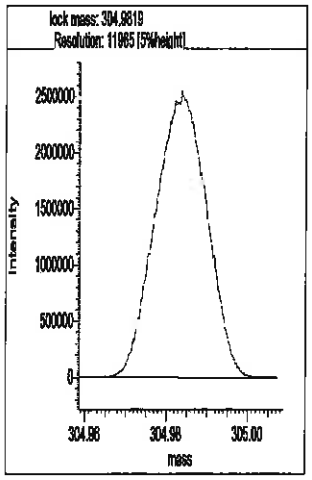
Resolution Check Report (DFS SN: 3441)

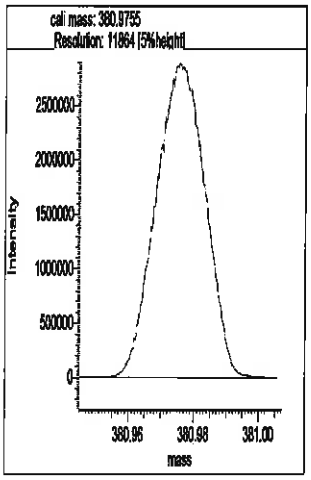
eurofins | Environment Testing TestAmerica

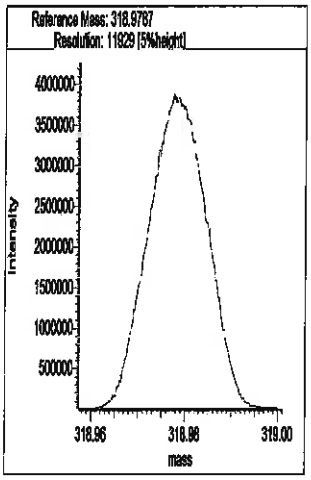
Date:	13 Dec 2019 12:18
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	8000
Reference:	pfk
Status:	RESOLUTION PASSED

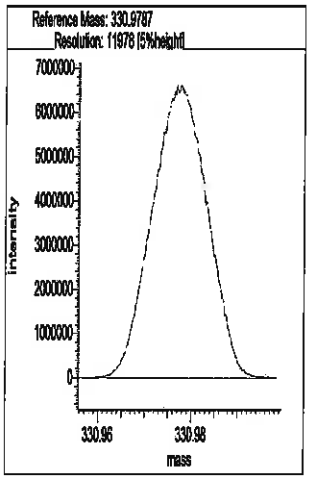
Segment 1

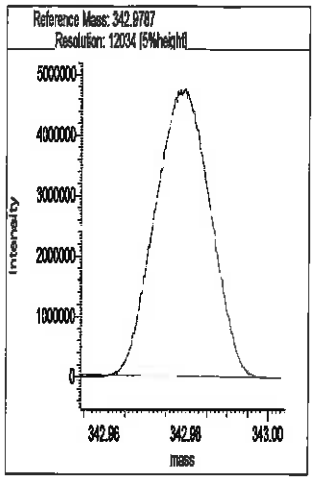
Lock mass 304.9819 [m/z] Resolution: 11965 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 11864 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 11929 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11978 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 12034 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11963 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 11545 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 11837 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 11955 [5%height]

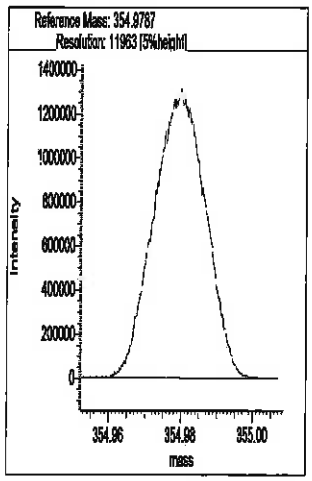


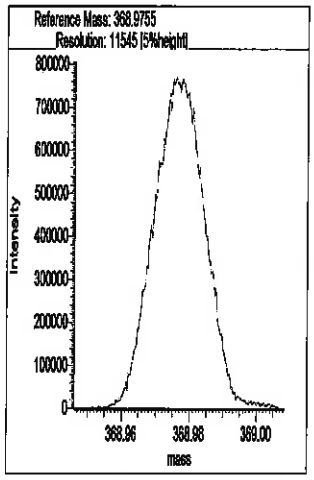


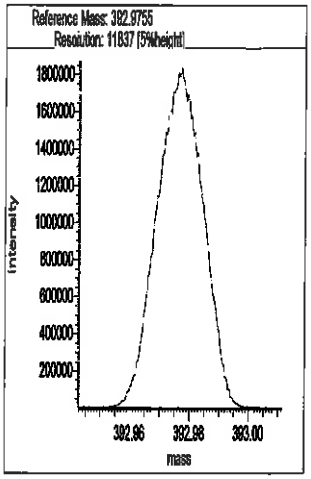


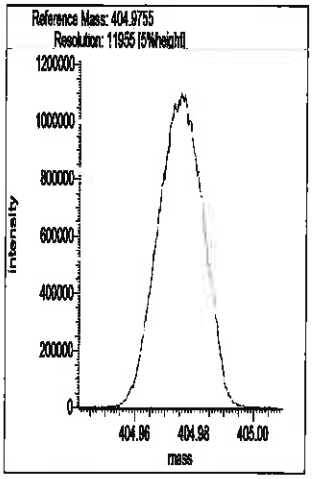












Segment 2

Lock mass 330.9787 [m/z] Resolution: 11891 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11922 [5%height]

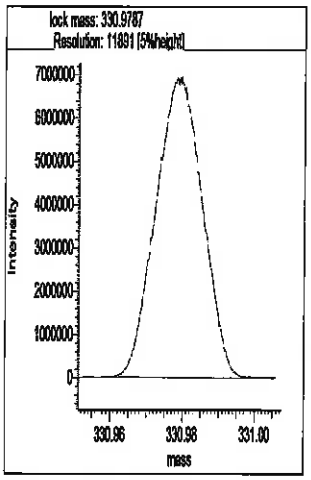
Ref. mass 342.9787 [m/z] Resolution: 11860 [5%height]

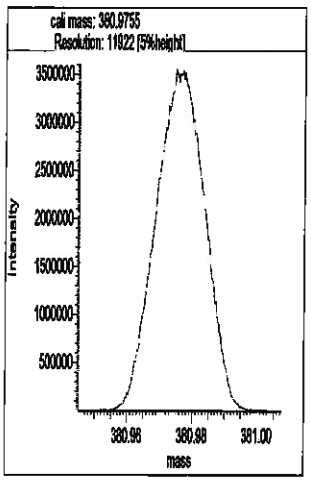
Ref. mass 354.9787 [m/z] Resolution: 12039 [5%height]

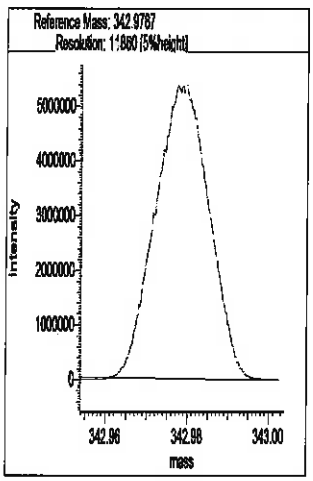
Ref. mass 368.9755 [m/z] Resolution: 11896 [5%height]

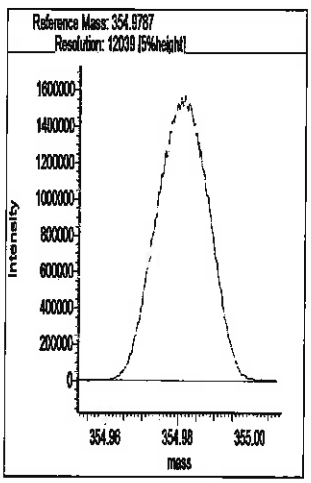
Ref. mass 392.9755 [m/z] Resolution: 11911 [5%height]

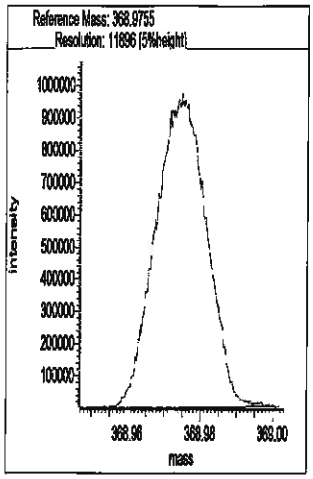
Ref. mass 404.9755 [m/z] Resolution: 11873 [5%height]

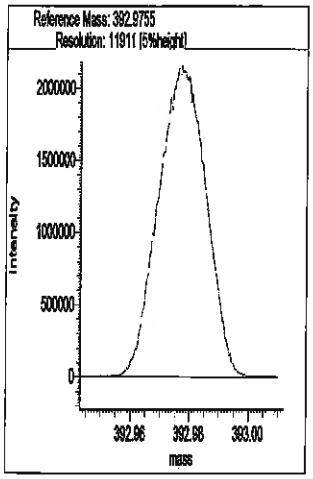


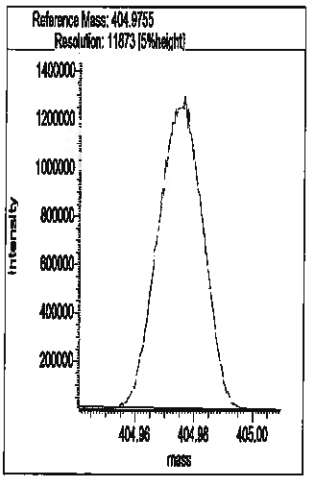












Segment 3

Lock mass 380.9755 [m/z] Resolution: 11803 [5%height]

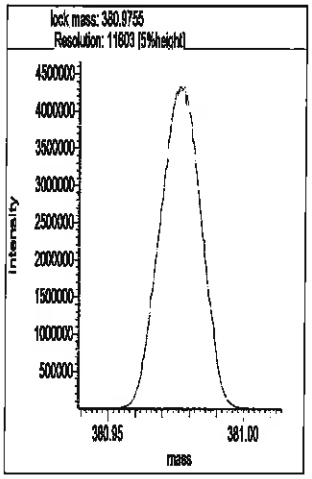
Cali. mass 430.9723 [m/z] Resolution: 11839 [5%height]

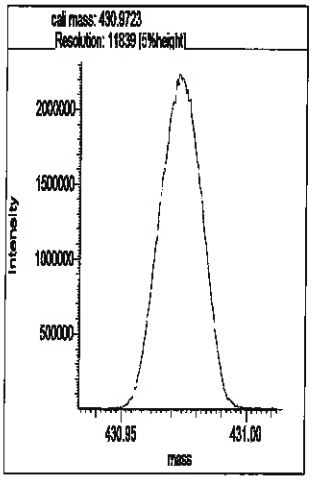
Ref. mass 392.9755 [m/z] Resolution: 11979 [5%height]

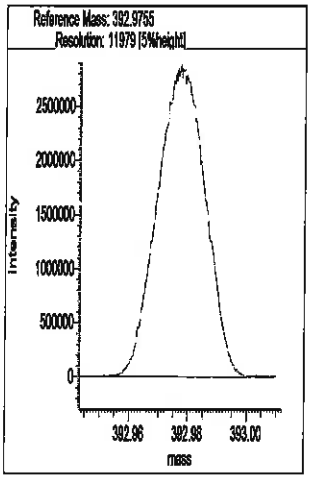
Ref. mass 404.9755 [m/z] Resolution: 11862 [5%height]

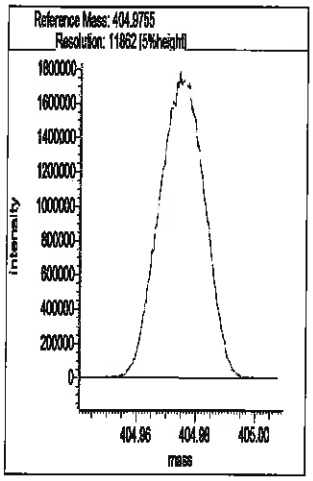
Ref. mass 416.9755 [m/z] Resolution: 11930 [5%height]

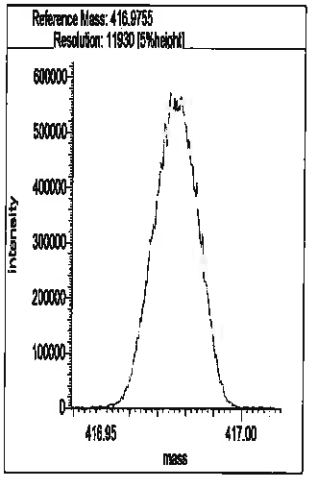
Ref. mass 442.9723 [m/z] Resolution: 11797 [5%height]

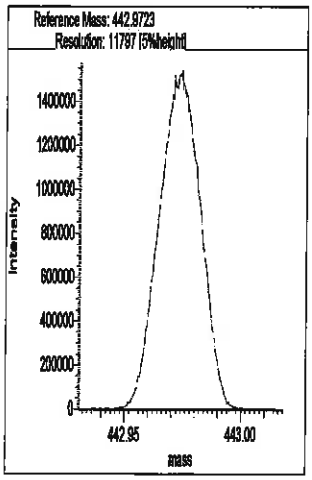












Segment 4

Lock mass 430.9723 [m/z] Resolution: 11787 [5%height]

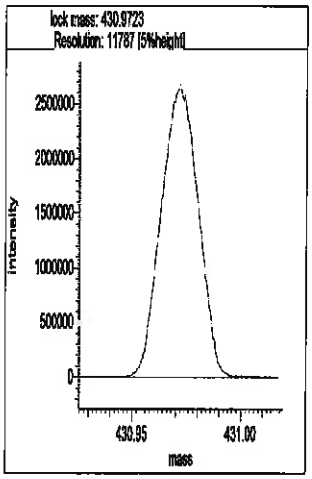
Cali. mass 480.9691 [m/z] Resolution: 11672 [5%height]

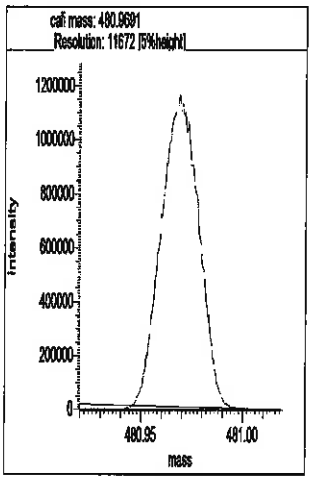
Ref. mass 416.9755 [m/z] Resolution: 11710 [5%height]

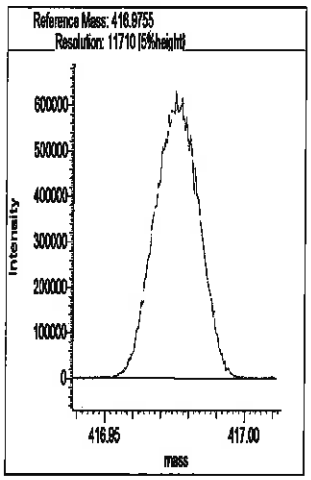
Ref. mass 442.9723 [m/z] Resolution: 11892 [5%height]

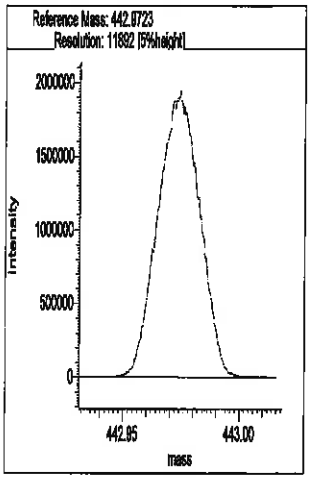
Ref. mass 454.9723 [m/z] Resolution: 11883 [5%height]

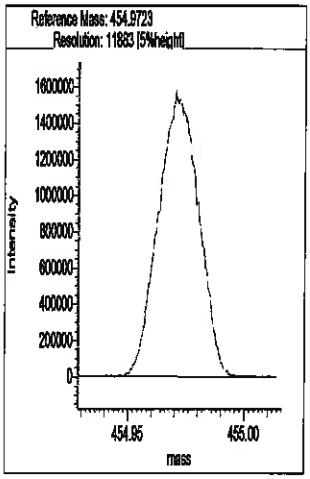
Ref. mass 466.9723 [m/z] Resolution: 11934 [5%height]

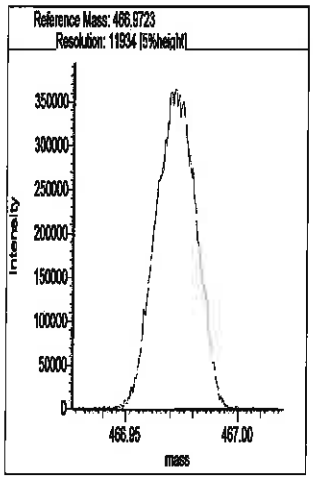












Segment 5

Lock mass 442.9723 [m/z] Resolution: 11734 [5%height]

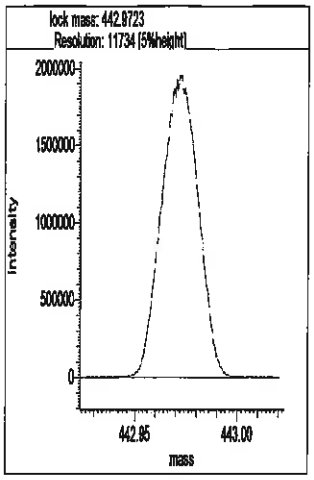
Cali. mass 504.9691 [m/z] Resolution: 11832 [5%height]

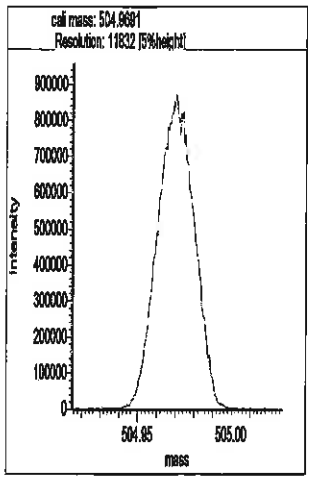
Ref. mass 454.9723 [m/z] Resolution: 11986 [5%height]

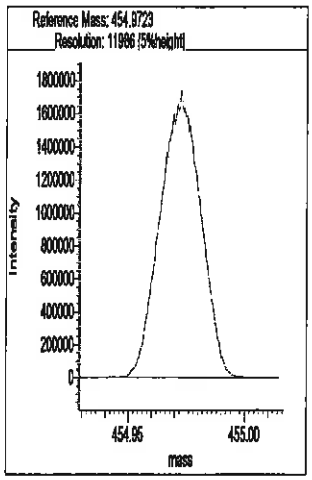
Ref. mass 466.9723 [m/z] Resolution: 11787 [5%height]

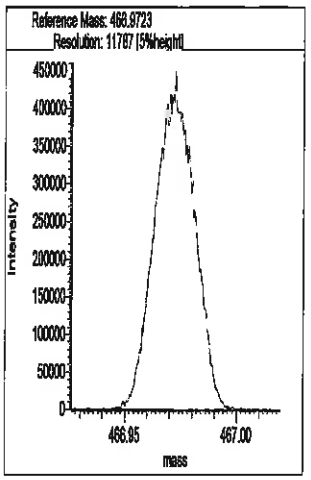
Ref. mass 480.9691 [m/z] Resolution: 11602 [5%height]

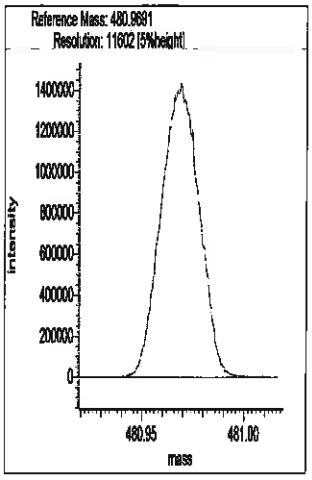
Ref. mass 492.9691 [m/z] Resolution: 11827 [5%height]

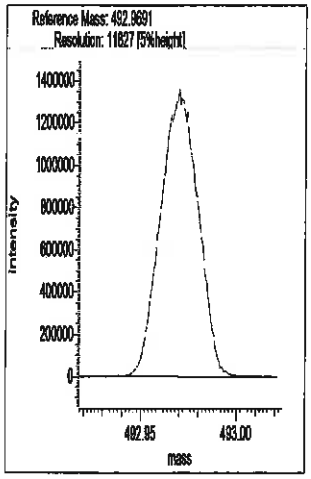

lock mass: 442.8723
Resolution: 11734 [5%height]
Intensity
mass
442.95
443.00


cal mass: 504.8691
Resolution: 11832 [5%height]
Intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 11996 [5%height]
Intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 11787 [5%height]
Intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 11602 [5%height]
Intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 11827 [5%height]
Intensity
mass
492.95
493.00

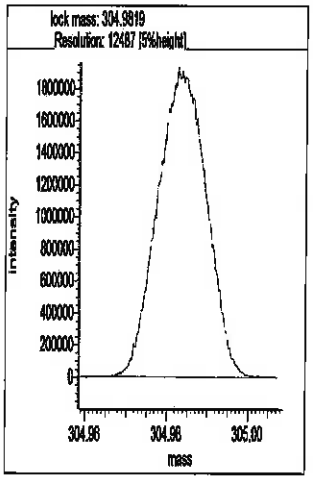
Resolution Check Report (DFS SN: 3441)

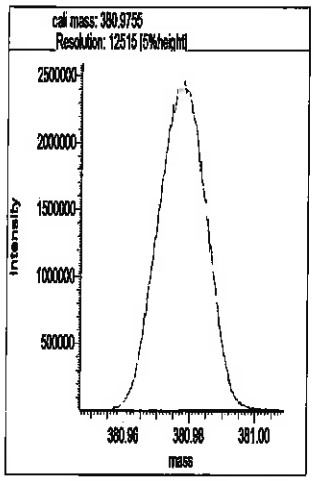
eurofins | Environment Testing TestAmerica

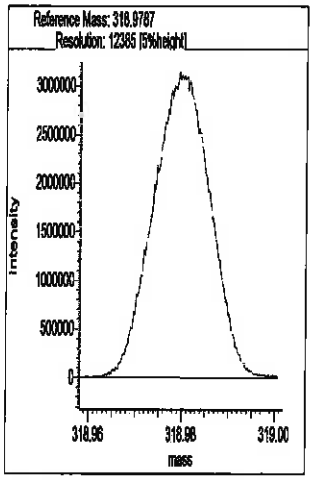
Date:	13 Dec 2019 22:11
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	8000
Reference:	pfk
Status:	RESOLUTION PASSED

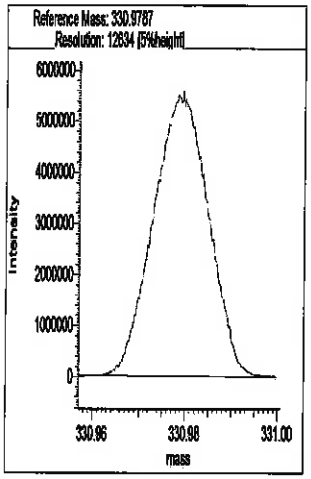
Segment 1

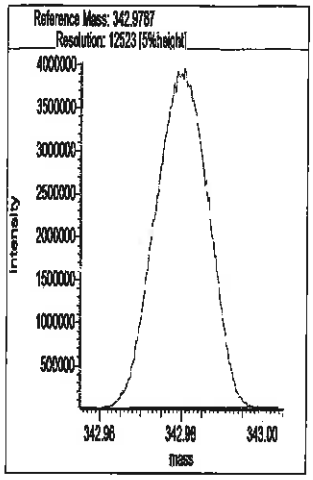
Lock mass 304.9819 [m/z] Resolution: 12487 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 12515 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 12385 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 12634 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 12523 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 12631 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 11893 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 12482 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 12606 [5%height]

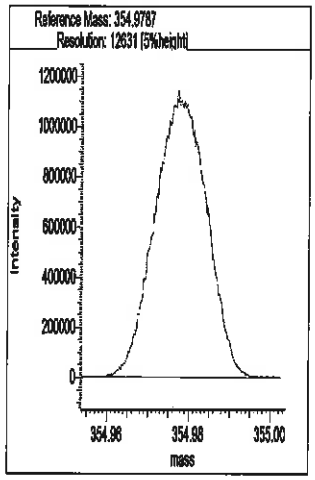


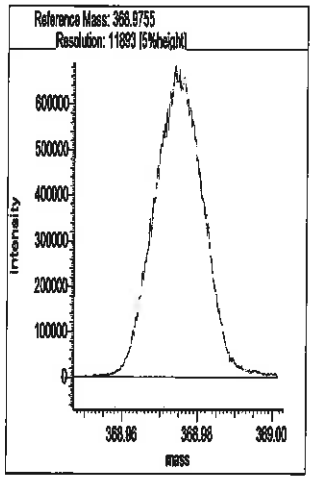


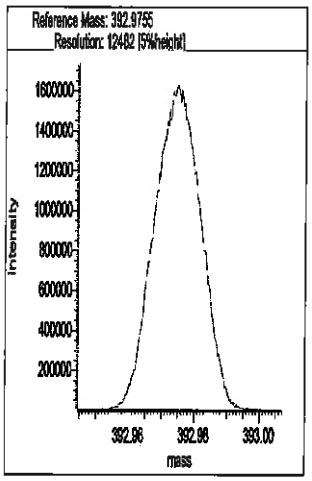


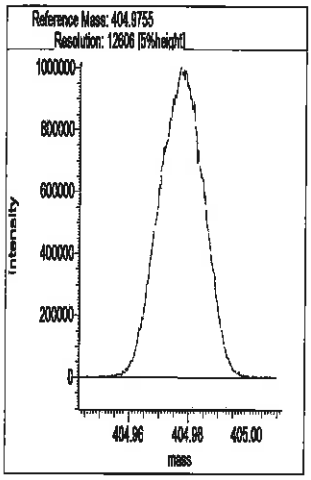












Segment 2

Lock mass 330.9787 [m/z] Resolution: 12458 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 12478 [5%height]

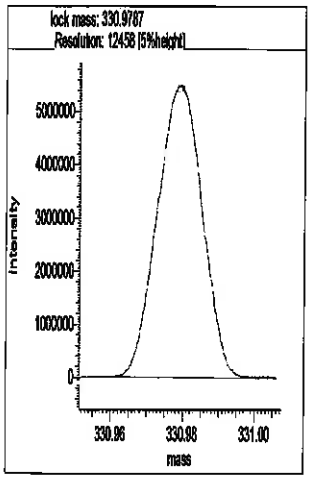
Ref. mass 342.9787 [m/z] Resolution: 12440 [5%height]

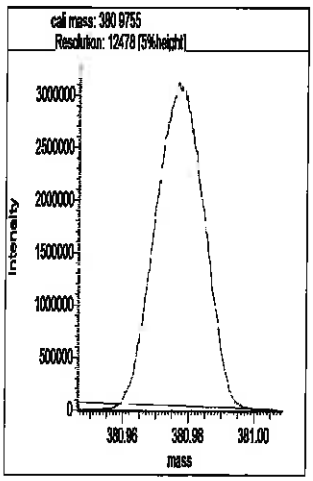
Ref. mass 354.9787 [m/z] Resolution: 12566 [5%height]

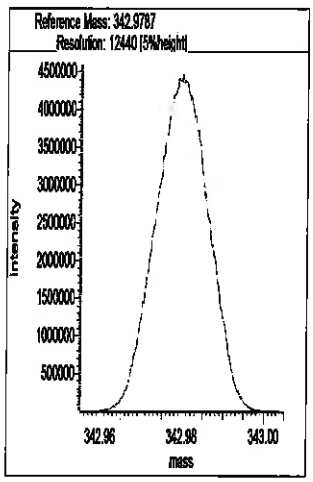
Ref. mass 368.9755 [m/z] Resolution: 12262 [5%height]

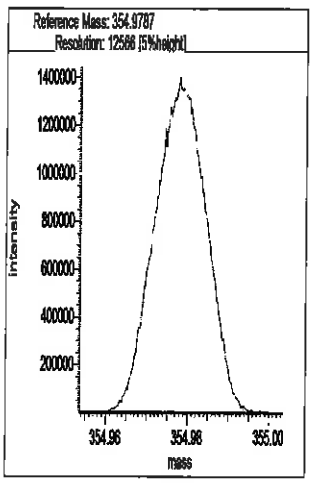
Ref. mass 392.9755 [m/z] Resolution: 12612 [5%height]

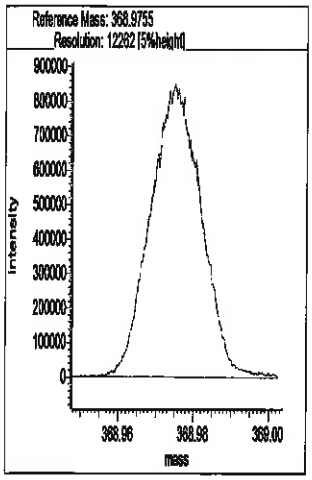
Ref. mass 404.9755 [m/z] Resolution: 12485 [5%height]

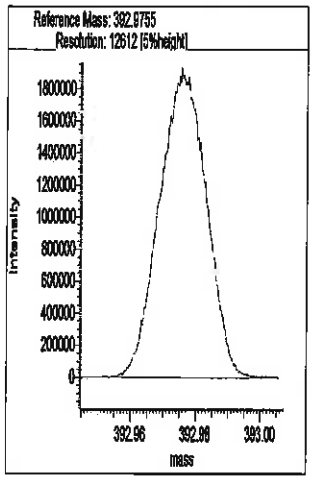


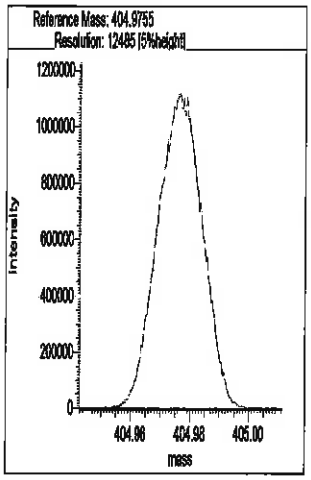












Segment 3

Lock mass 380.9755 [m/z] Resolution: 12271 [5%height]

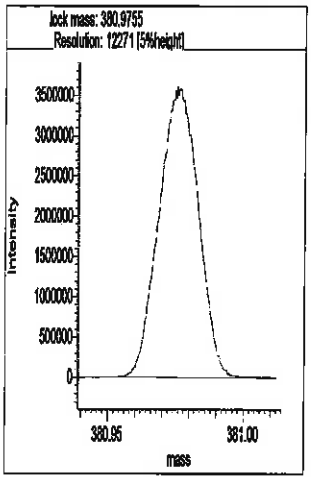
Cali. mass 430.9723 [m/z] Resolution: 12457 [5%height]

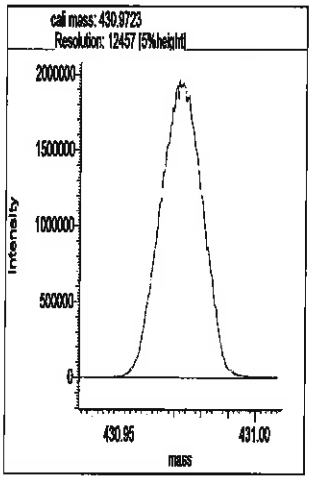
Ref. mass 392.9755 [m/z] Resolution: 12525 [5%height]

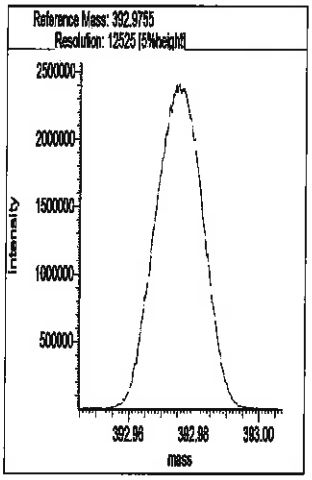
Ref. mass 404.9755 [m/z] Resolution: 12462 [5%height]

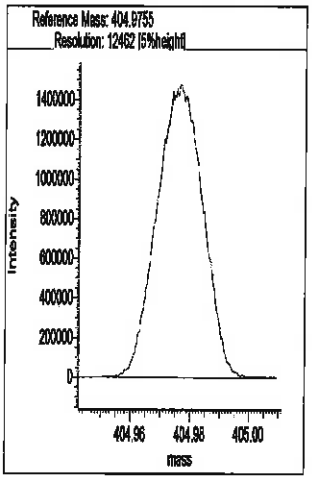
Ref. mass 416.9755 [m/z] Resolution: 12633 [5%height]

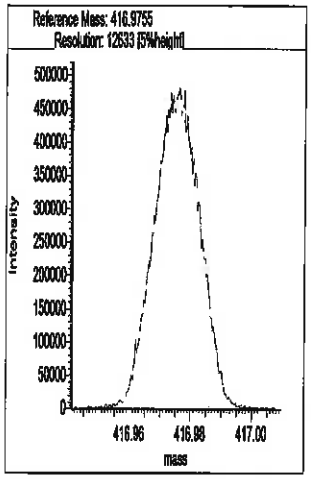
Ref. mass 442.9723 [m/z] Resolution: 12539 [5%height]

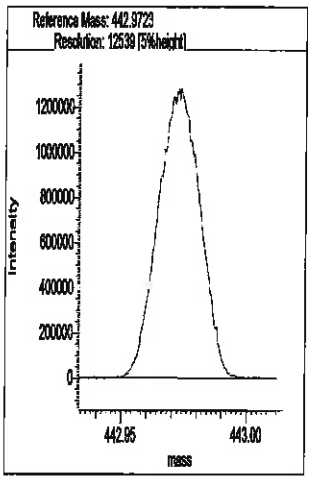












Segment 4

Lock mass 430.9723 [m/z] Resolution: 12080 [5%height]

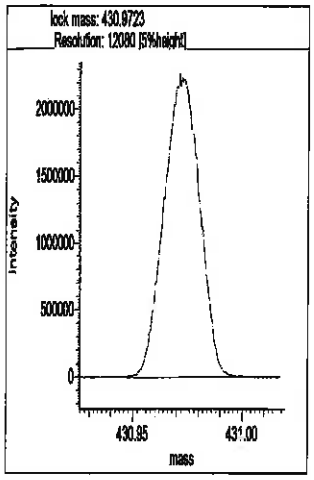
Cali. mass 480.9691 [m/z] Resolution: 12256 [5%height]

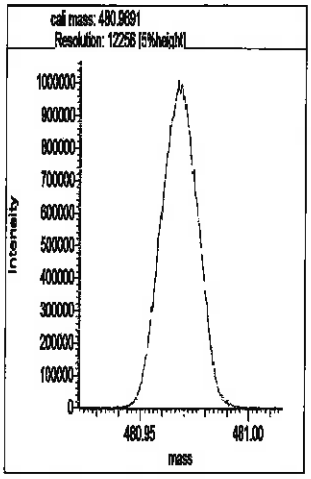
Ref. mass 416.9755 [m/z] Resolution: 12271 [5%height]

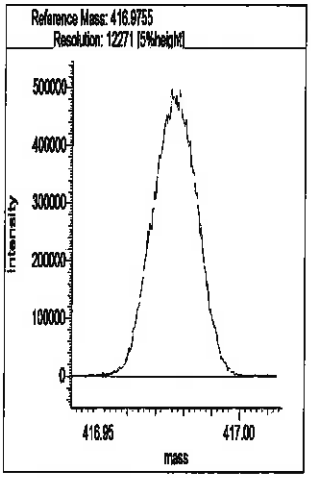
Ref. mass 442.9723 [m/z] Resolution: 12431 [5%height]

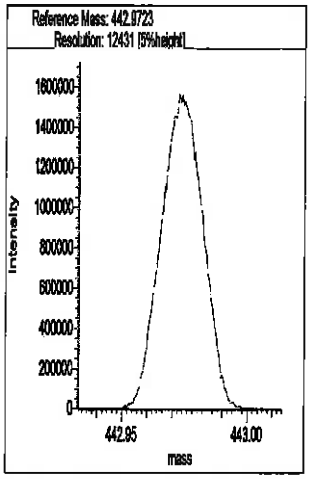
Ref. mass 454.9723 [m/z] Resolution: 12419 [5%height]

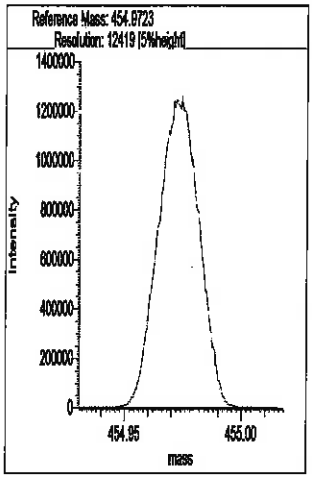
Ref. mass 466.9723 [m/z] Resolution: 12333 [5%height]

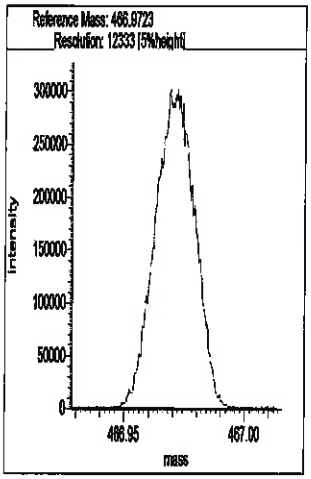












Segment 5

Lock mass 442.9723 [m/z] Resolution: 12198 [5%height]

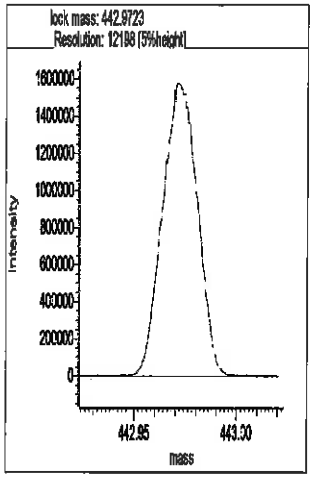
Cali. mass 504.9691 [m/z] Resolution: 12486 [5%height]

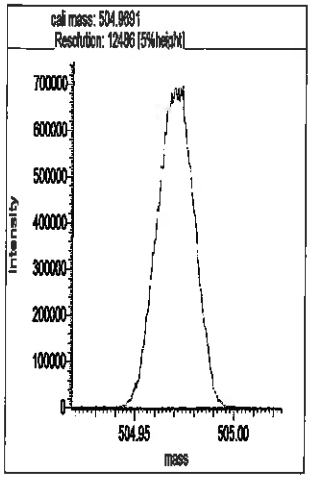
Ref. mass 454.9723 [m/z] Resolution: 12319 [5%height]

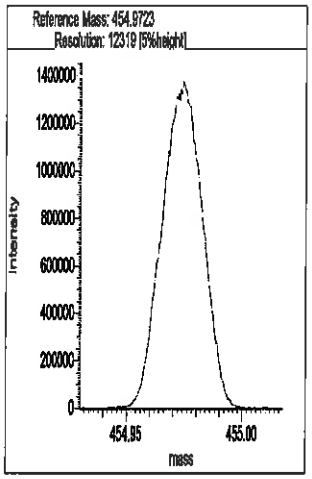
Ref. mass 466.9723 [m/z] Resolution: 12258 [5%height]

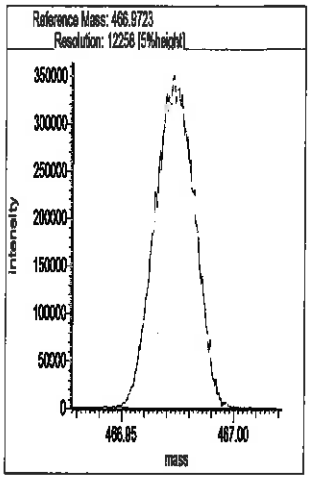
Ref. mass 480.9691 [m/z] Resolution: 12216 [5%height]

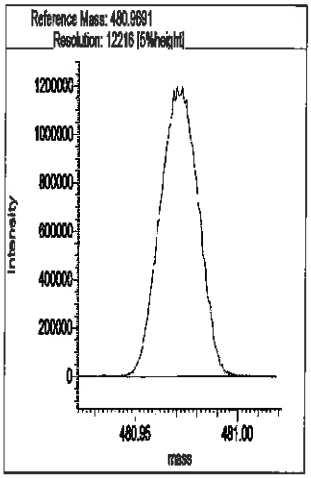
Ref. mass 492.9691 [m/z] Resolution: 12324 [5%height]

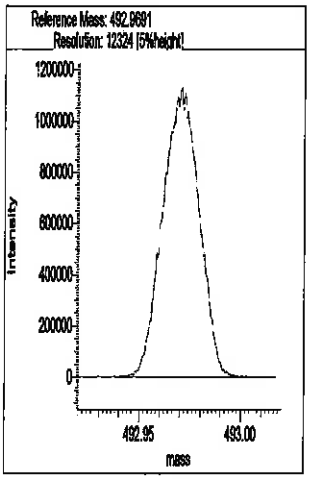

lock mass: 442.9723
Resolution: 12198 [5%height]
Intensity
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
442.95
443.00
mass


cal mass: 504.9691
Resolution: 12496 [5%height]
Intensity
700000
600000
500000
400000
300000
200000
100000
0
504.95
505.00
mass


Reference Mass: 454.9723
Resolution: 12319 [5%height]
Intensity
1400000
1200000
1000000
800000
600000
400000
200000
0
454.95
455.00
mass


Reference Mass: 466.9723
Resolution: 12256 [5%height]
Intensity
350000
300000
250000
200000
150000
100000
50000
0
466.95
467.00
mass


Reference Mass: 480.9691
Resolution: 12216 [5%height]
Intensity
1200000
1000000
800000
600000
400000
200000
0
480.95
481.00
mass


Reference Mass: 492.9691
Resolution: 12324 [5%height]
Intensity
1200000
1000000
800000
600000
400000
200000
0
492.95
493.00
mass

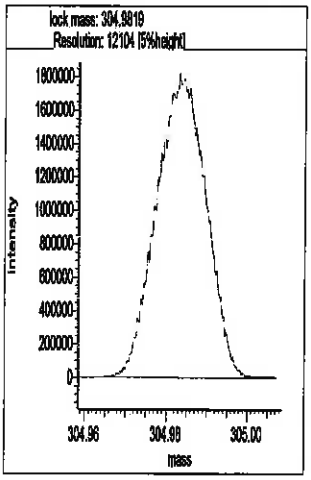
Resolution Check Report (DFS SN: 3441)

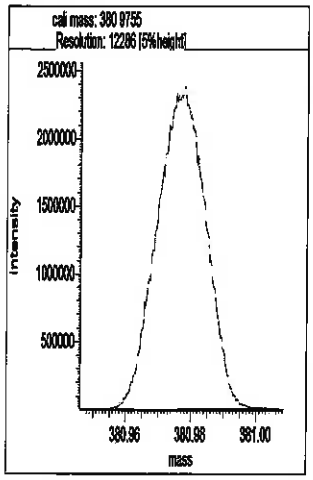
eurofins | Environment Testing TestAmerica

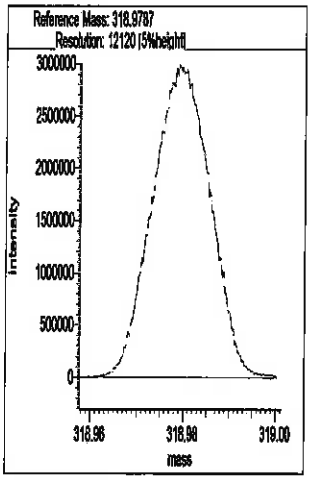
Date:	13 Dec 2019 23:17
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9500
Resolution Error :	8000
Reference:	pfk
Status:	RESOLUTION PASSED

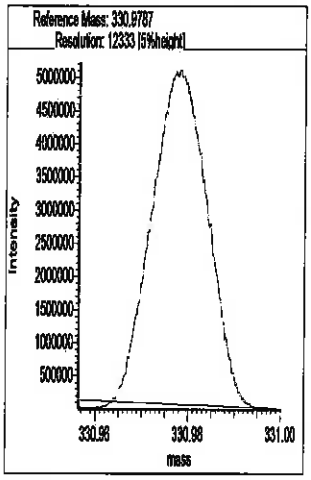
Segment 1

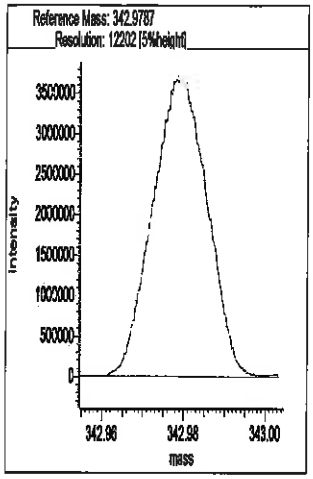
Lock mass 304.9819 [m/z] Resolution: 12104 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 12286 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 12120 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 12333 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 12202 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 12223 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 11697 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 12128 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 12111 [5%height]

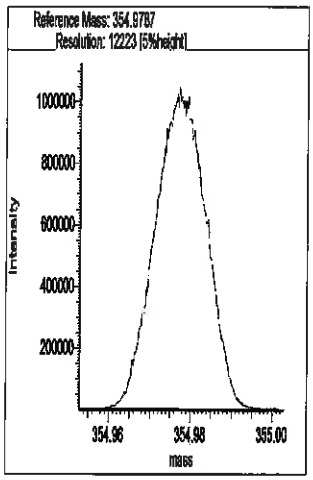


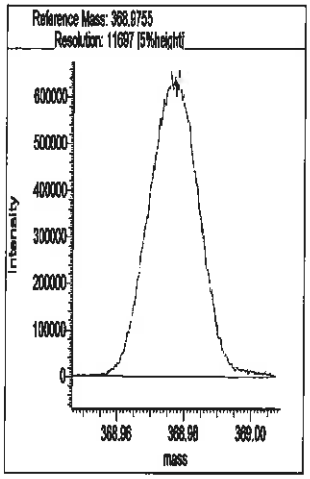


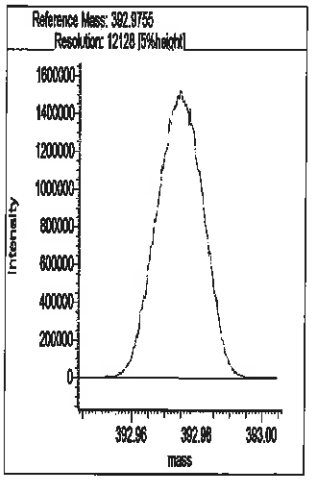


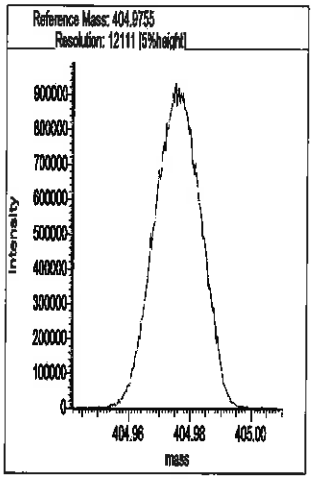












Segment 2

Lock mass 330.9787 [m/z] Resolution: 12030 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 12029 [5%height]

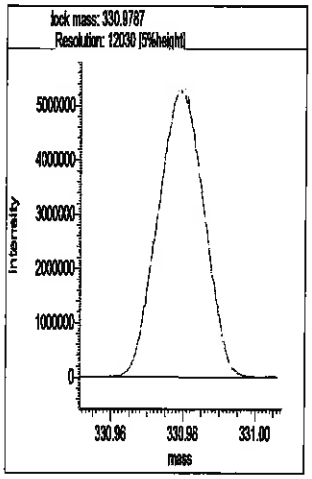
Ref. mass 342.9787 [m/z] Resolution: 12097 [5%height]

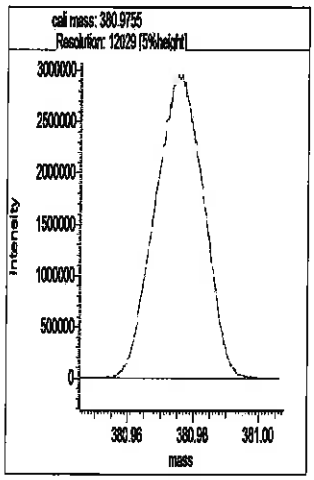
Ref. mass 354.9787 [m/z] Resolution: 12290 [5%height]

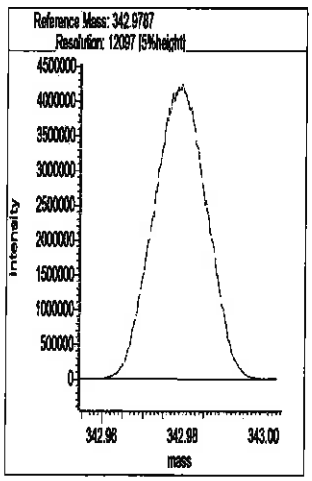
Ref. mass 368.9755 [m/z] Resolution: 12068 [5%height]

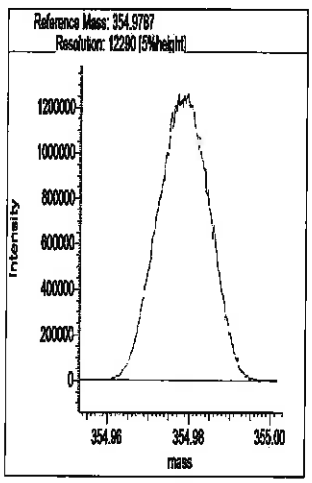
Ref. mass 392.9755 [m/z] Resolution: 12163 [5%height]

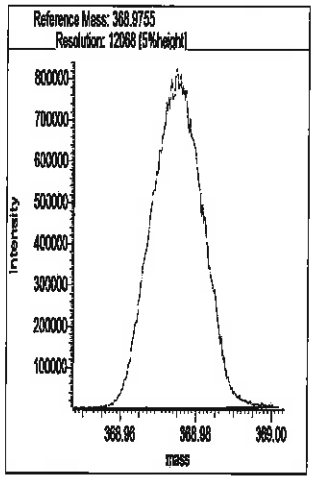
Ref. mass 404.9755 [m/z] Resolution: 12017 [5%height]

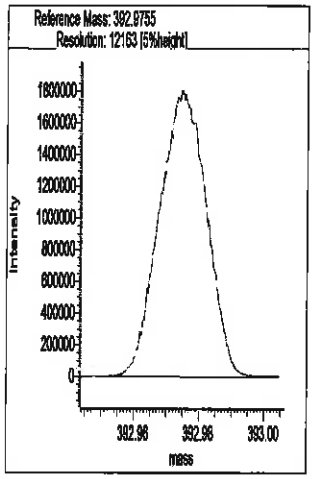


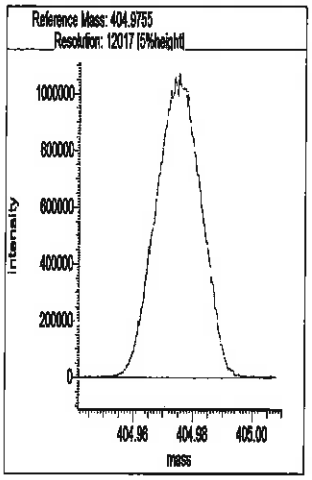












Segment 3

Lock mass 380.9755 [m/z] Resolution: 12148 [5%height]

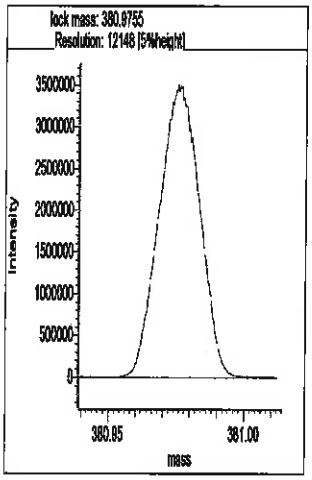
Cali. mass 430.9723 [m/z] Resolution: 11948 [5%height]

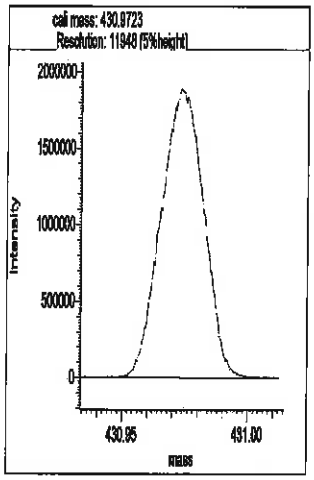
Ref. mass 392.9755 [m/z] Resolution: 12188 [5%height]

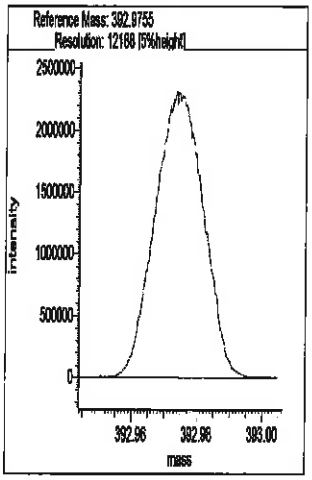
Ref. mass 404.9755 [m/z] Resolution: 12077 [5%height]

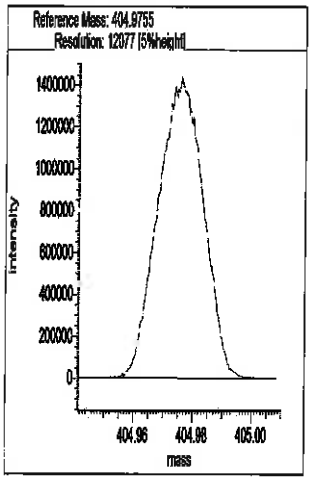
Ref. mass 416.9755 [m/z] Resolution: 12411 [5%height]

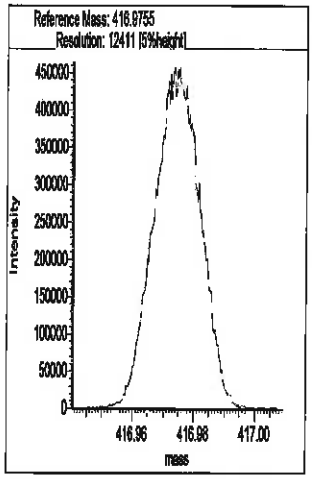
Ref. mass 442.9723 [m/z] Resolution: 12153 [5%height]

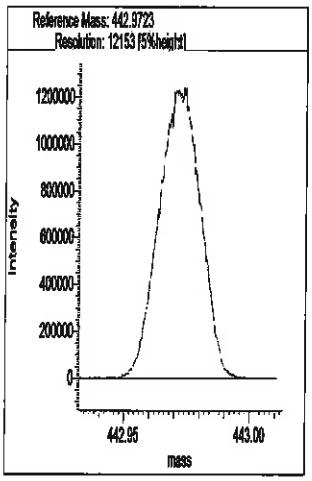












Segment 4

Lock mass 430.9723 [m/z] Resolution: 12025 [5%height]

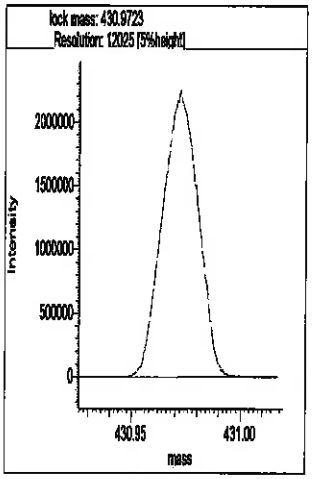
Cali. mass 480.9691 [m/z] Resolution: 11941 [5%height]

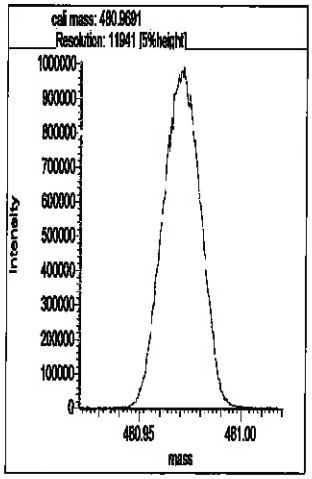
Ref. mass 416.9755 [m/z] Resolution: 11991 [5%height]

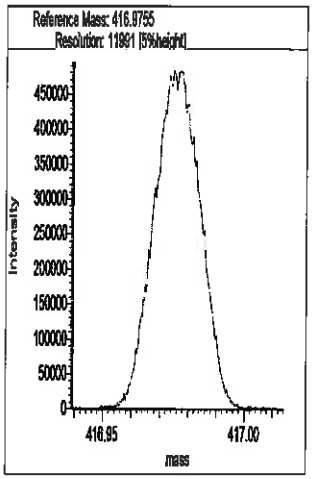
Ref. mass 442.9723 [m/z] Resolution: 12138 [5%height]

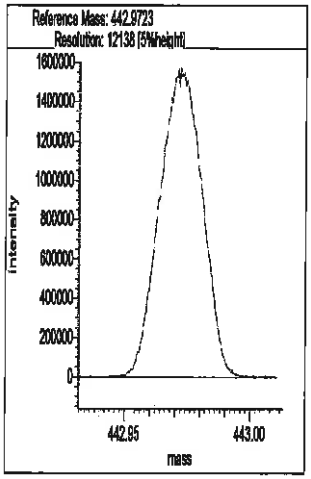
Ref. mass 454.9723 [m/z] Resolution: 12067 [5%height]

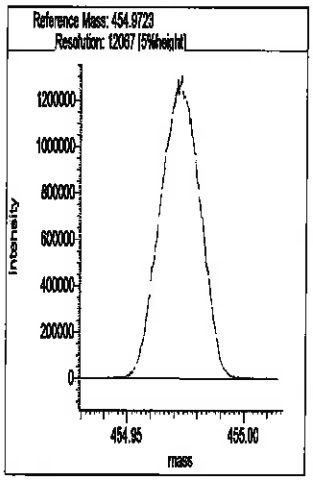
Ref. mass 466.9723 [m/z] Resolution: 12405 [5%height]

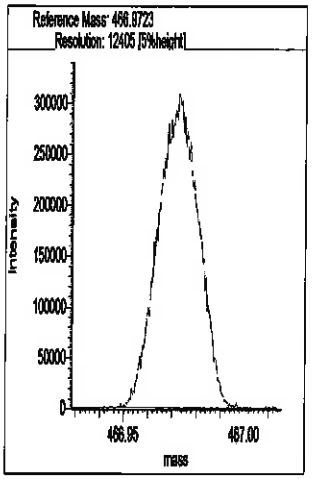












Segment 5

Lock mass 442.9723 [m/z] Resolution: 12036 [5%height]

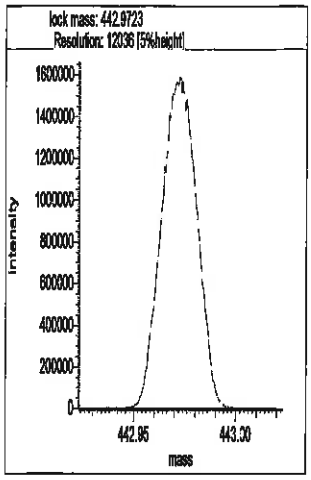
Cali. mass 504.9691 [m/z] Resolution: 12311 [5%height]

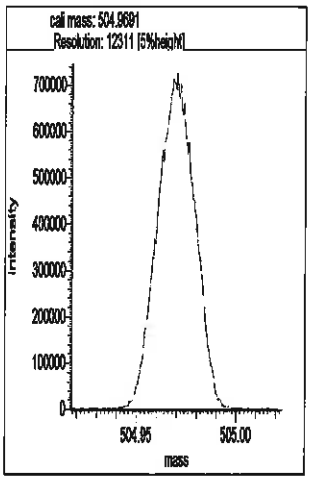
Ref. mass 454.9723 [m/z] Resolution: 12165 [5%height]

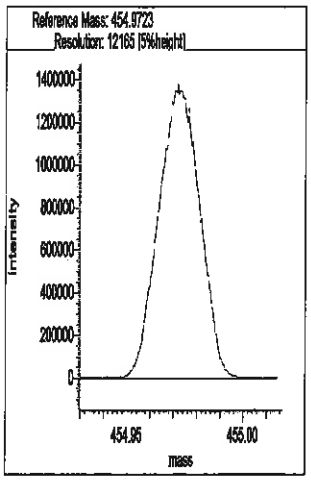
Ref. mass 466.9723 [m/z] Resolution: 11884 [5%height]

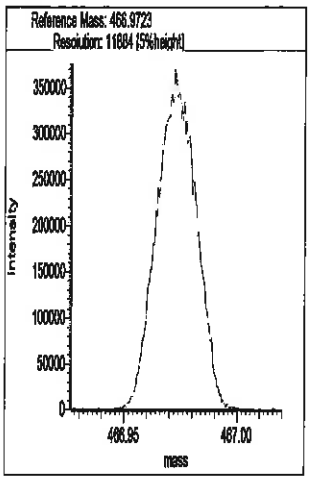
Ref. mass 480.9691 [m/z] Resolution: 12075 [5%height]

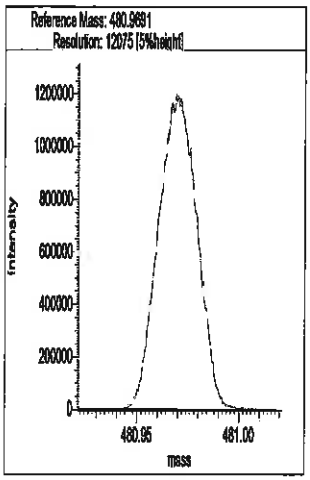
Ref. mass 492.9691 [m/z] Resolution: 12277 [5%height]

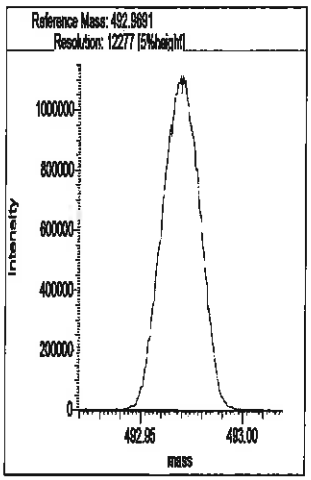

lock mass: 442.9723
Resolution: 12036 [5%height]
Intensity
mass


cal mass: 504.9691
Resolution: 12311 [5%height]
Intensity
mass


Reference Mass: 454.9723
Resolution: 12165 [5%height]
Intensity
mass


Reference Mass: 466.9723
Resolution: 11884 [5%height]
Intensity
mass


Reference Mass: 480.9691
Resolution: 12075 [5%height]
Intensity
mass


Reference Mass: 492.9691
Resolution: 12277 [5%height]
Intensity
mass

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 13-Dec-2019 13:24:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00086
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Dec-2019 01:10:36 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:46:21

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.505	5917039	0.80	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	18.614	8272006	0.82	1.6096	86.9	86.9	0.3361	0.3361	86.85	
2,3,7,8-TCDF	18.632	904432	0.79	1.2332	8.866	8.866	0.0383	0.0383	88.66	
A Non-2,3,7,8-sub-TCDF	18.262						0.0383	0.0383		
S Total TCDF					8.866	8.866	0.0383	0.0383		
D 13C-2,3,7,8-TCDD	19.851	5681711	0.84	0.9984	96.2	96.2	0.2945	0.2945	96.18	
2,3,7,8-TCDD	19.877	628080	0.80	1.1988	9.221	9.221	0.0707	0.0707	92.21	
$ 37Cl4-2,3,7,8-TCDD	19.877	910166		1.4510	10.6	10.6	0.0185	0.0185	106	
A Non-2,3,7,8-sub-TCDD	19.054						0.0707	0.0707		
S Total TCDD					9.221	9.221	0.0707	0.0707		
D 13C-1,2,3,7,8-PeCDF	25.763	7265567	1.56	1.3678	89.8	89.8	0.4312	0.4312	89.77	
1,2,3,7,8-PeCDF	25.788	3761740	1.57	1.1689	44.3	44.3	0.2017	0.2017	88.59	
D 13C-2,3,4,7,8-PeCDF	27.172	7207825	1.58	1.3045	93.4	93.4	0.4522	0.4522	93.38	
2,3,4,7,8-PeCDF	27.205	3648152	1.57	1.1861	42.7	42.7	0.2193	0.2193	85.34	
A F1 PeCDFs	23.271	1261	1.55	1.1775	0.0701	0.0148	0.0135	0.0148	0.00	RQ
A Non-2,3,7,8-sub-PeCDF	26.737						0.2100	0.2100		
S Total PeCDF					87.0	87.0	0.2105	0.2105		RQ
D 13C-1,2,3,7,8-PeCDD	27.943	4535738	1.60	0.8292	92.4	92.4	0.1625	0.1625	92.44	
1,2,3,7,8-PeCDD	27.960	2471479	1.63	1.1200	48.7	48.7	0.0911	0.0911	97.30	
A Non-2,3,7,8-sub-PeCDD	26.873	12183	1.55	1.1200	0.5111	0.2398	0.0911	0.2398	0.00	RQ
S Total PeCDD					49.2	48.9	0.0911	0.0911		RQ
D 13C-1,2,3,4,7,8-HxCDF	33.708	6023139	0.54	1.1700	88.5	88.5	0.3483	0.3483	88.54	
1,2,3,4,7,8-HxCDF	33.725	3548053	1.26	1.3021	45.2	45.2	0.2308	0.2308	90.48	
D 13C-1,2,3,6,7,8-HxCDF	33.901	6861908	0.52	1.3168	89.6	89.6	0.3095	0.3095	89.63	
1,2,3,6,7,8-HxCDF	33.918	4167007	1.26	1.2907	47.0	47.0	0.2124	0.2124	94.10	
D 13C-2,3,4,6,7,8-HxCDF	34.874	6793586	0.53	1.2873	90.8	90.8	0.3165	0.3165	90.77	
2,3,4,6,7,8-HxCDF	34.891	4227056	1.25	1.3039	47.7	47.7	0.1819	0.1819	95.44	
D 13C-1,2,3,7,8,9-HxCDF	35.872	5768039	0.54	1.1987	82.8	82.8	0.3399	0.3399	82.76	
1,2,3,7,8,9-HxCDF	35.889	3583185	1.26	1.3329	46.6	46.6	0.1904	0.1904	93.21	
A Non-2,3,7,8-sub-HxCDF	33.765						0.2022	0.2022		
S Total HxCDF					186.6	186.6	0.2039	0.2039		

Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.671	5814141	1.24	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.126	4791326	1.27	0.8364	98.5	98.5	0.2778	0.2778	98.53	
1,2,3,4,7,8-HxCDD	35.142	2471149	1.26	1.1725	44.0	44.0	0.1309	0.1309	87.98	
D 13C-1,2,3,6,7,8-HxCDD	35.251	5360312	1.28	0.9040	102.0	102.0	0.2570	0.2570	102	
1,2,3,6,7,8-HxCDD	35.277	2786489	1.25	1.1256	46.2	46.2	0.1344	0.1344	92.37	
1,2,3,7,8,9-HxCDD	35.679	2788243	1.26	1.2327	44.6	44.6	0.1236	0.1236	89.12	
A Non-2,3,7,8-sub-HxCDD	34.302						0.1295	0.1295		
S Total HxCDD					134.7	134.7	0.1297	0.1297		
D 13C-1,2,3,4,6,7,8-HpCDF	37.858	4925411	0.45	0.9689	87.4	87.4	0.5449	0.5449	87.44	
1,2,3,4,6,7,8-HpCDF	37.866	3736169	1.04	1.6176	46.9	46.9	0.3229	0.3229	93.79	
D 13C-1,2,3,4,7,8,9-HpCDF	39.174	5054025	0.45	0.9231	94.2	94.2	0.5719	0.5719	94.17	
1,2,3,4,7,8,9-HpCDF	39.191	3305195	1.05	1.4672	44.6	44.6	0.3198	0.3198	89.14	
A Non-2,3,7,8-sub-HpCDF	38.571						0.3205	0.3205		
S Total HpCDF					91.5	91.5	0.3214	0.3214		
D 13C-1,2,3,4,6,7,8-HpCDD	38.872	5074561	1.07	0.9114	95.8	95.8	0.3268	0.3268	95.76	
1,2,3,4,6,7,8-HpCDD	38.881	2604714	1.03	1.1237	45.7	45.7	0.1778	0.1778	91.36	
A Non-2,3,7,8-sub-HpCDD	38.803						0.1778	0.1778		
S Total HpCDD					45.7	45.7	0.1778	0.1778		
D 13C-OCDD	41.309	7702171	0.90	0.6272	211.2	211.2	0.4174	0.4174	106	
OCDF	41.384	5237696	0.92	1.5416	88.2	88.2	0.1910	0.1910	88.22	
OCDD	41.317	4129113	0.89	1.1855	90.4	90.4	0.2114	0.2114	90.44	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNL4_00086 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 13-Dec-2019 13:24:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00086
Operator ID: Xcalibur_System Instrument ID: DFS 1
Sublist: chrom-Dioxin_DFS1*sub1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Dec-2019 01:10:36 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:46:21

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	19.505	19.505	0		2623263	409559	705	1762	581		
333.9338	19.505	19.505	0		3293776	512248	379	947	1352	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.614	18.614	0	0.954	3719287	590213	1373	3432	430		
317.9389	18.606	18.614	-1	0.954	4552719	742725	622	1555	1194	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.632	18.632	0	1.001	399395	65530	83	207	790		
305.8987	18.632	18.632	0	1.001	505037	78772	169	422	466	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	18.262						83	207			
305.8987	18.262						169	422			
13C-2,3,7,8-TCDD											
331.9368	19.851	19.851	0	1.018	2589512	388859	705	1762	552		
333.9338	19.851	19.851	0	1.018	3092199	450723	379	947	1189	0.84(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.877	19.877	0	1.001	278336	40184	206	515	195		
321.8936	19.877	19.877	0	1.001	349744	51257	79	197	649	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.877	19.877	0	1.019	910166	135255	99	247	1366		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.054						206	515			
321.8936	19.054						79	197			
13C-1,2,3,7,8-PeCDF											
351.9000	25.763	25.763	0	1.321	4432243	755658	1435	3587	527		
353.8970	25.763	25.763	0	1.321	2833324	468933	740	1850	634	1.56(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	25.788	25.788	0	1.001	2296114	381985	656	1640	582		
341.8567	25.780	25.788	-1	1.001	1465626	245801	499	1247	493	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.172	27.172	0	1.393	4417410	677623	1435	3587	472		
353.8970	27.180	27.172	1	1.393	2790415	432408	740	1850	584	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.205	27.205	0	1.001	2230635	345958	656	1640	527		
341.8567	27.205	27.205	0	1.001	1417517	218474	499	1247	438	1.57(1.32-1.78)	
A F1 PeCDFs											RQ
339.8597	23.067	23.271	-12	0.895	767	228	5	12	46		
341.8567	23.067	23.271	-12	0.895	5203	674	69	172	10	0.15(1.32-1.78)	
	Empc Correction				494	147	69	172	2		
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.737						656	1640			
341.8567	26.737						499	1247			
13C-1,2,3,7,8-PeCDD											
367.8949	27.943	27.943	0	1.433	2788143	417943	280	700	1493		
369.8919	27.935	27.943	-1	1.432	1747595	263345	217	542	1214	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.960	27.960	0	1.001	1533441	223894	189	472	1185		
357.8516	27.960	27.960	0	1.001	938038	141186	89	222	1586	1.63(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	28.731	26.873	111	1.028	21185	1968	189	472	10		
	Empc Correction				7405	788	189	472	4		
357.8516	28.773	26.873	114	1.030	4778	509	89	222	6	4.43(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.708	33.708	0	0.945	2110431	361508	688	1720	525		
385.8610	33.700	33.708	-1	0.945	3912708	683980	1315	3287	520	0.54(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.725	33.725	0	1.000	1978137	341921	728	1820	470		
375.8178	33.725	33.725	0	1.000	1569916	273899	529	1322	518	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.901	33.901	0	0.950	2351595	392538	688	1720	571		
385.8610	33.901	33.901	0	0.950	4510313	753743	1315	3287	573	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.918	33.918	0	1.000	2326603	372742	728	1820	512		
375.8178	33.918	33.918	0	1.000	1840404	299886	529	1322	567	1.26(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.874	34.874	0	0.978	2347375	457944	688	1720	666		
385.8610	34.874	34.874	0	0.978	4446211	866922	1315	3287	659	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.891	34.891	0	1.000	2344381	472051	728	1820	648		
375.8178	34.891	34.891	0	1.000	1882675	378966	529	1322	716	1.25(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.872	35.872	0	1.006	2011360	433481	688	1720	630		
385.8610	35.872	35.872	0	1.006	3756679	804742	1315	3287	612	0.54(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	35.889	35.889	0	1.000	1995556	427727	728	1820	588		
375.8178	35.889	35.889	0	1.000	1587629	342821	529	1322	648	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	33.765						728	1820			
375.8178	33.765						529	1322			
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.671	35.671	0		3222216	686323	594	1485	1155		
403.8529	35.671	35.671	0		2591925	542433	548	1370	990	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.126	35.126	0	0.985	2685092	579972	594	1485	976		
403.8529	35.117	35.126	-1	0.984	2106234	452478	548	1370	826	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.142	35.142	0	1.000	1379751	294920	332	830	888		
391.8127	35.142	35.142	0	1.000	1091398	234396	302	755	776	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.251	35.251	0	0.988	3007312	577974	594	1485	973		
403.8529	35.260	35.251	1	0.988	2353000	469768	548	1370	857	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.277	35.277	0	1.001	1548567	306476	332	830	923		
391.8127	35.277	35.277	0	1.001	1237922	242273	302	755	802	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	35.679	35.679	0	1.016	1551940	323612	332	830	975		
391.8127	35.679	35.679	0	1.016	1236303	258240	302	755	855	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	34.302						332	830			
391.8127	34.302						302	755			
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.858	37.858	0	1.061	1530848	352541	1013	2532	348		
419.8220	37.858	37.858	0	1.061	3394563	792672	1582	3955	501	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.866	37.866	0	1.000	1908852	437092	1258	3145	347		
409.7788	37.866	37.866	0	1.000	1827317	415333	1135	2837	366	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.174	39.174	0	1.098	1572241	396860	1013	2532	392		
419.8220	39.174	39.174	0	1.098	3481784	878007	1582	3955	555	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.191	39.191	0	1.000	1690849	421924	1258	3145	335		
409.7788	39.183	39.191	-1	1.000	1614346	409383	1135	2837	361	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.571						1258	3145			
409.7788	38.571						1135	2837			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.872	38.872	0	1.090	2619581	593769	861	2152	690		
437.8140	38.872	38.872	0	1.090	2454980	570945	603	1507	947	1.07(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	38.881	38.881	0	1.000	1322038	313691	511	1277	614		
425.7737	38.881	38.881	0	1.000	1282676	300388	420	1050	715	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.803						511	1277			
425.7737	38.803						420	1050			
13C-OCDD											
469.7780	41.309	41.309	0	1.158	3639232	612364	740	1850	828		
471.7750	41.309	41.309	0	1.158	4062939	672644	547	1367	1230	0.90(0.76-1.02)	
OCDF											
441.7428	41.384	41.384	0	1.002	2513633	503734	311	777	1620		
443.7399	41.384	41.384	0	1.002	2724063	538102	446	1115	1207	0.92(0.76-1.02)	
OCDD											
457.7377	41.317	41.317	0	1.000	1941987	326964	304	760	1076		
459.7348	41.317	41.317	0	1.000	2187126	372706	340	850	1096	0.89(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNL4_00086 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d
Lims ID: CCV
Client ID:
Inject. Date: 13-Dec-2019 13:24:00 Dil. Factor: 1.0000
Sample Type: CCV, Cal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 2
Sublist: chrom-Dioxin_DFS1*sub1

F1 PeCDFs, RT: 23.271

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	7265567	1224591
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	7207825	1110031

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	7236696	1167311

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
23.067	767	228	5203	674	0.0701	0.15	RnQ
23.067	767	228	494	147	0.0148		Empc Correction
Signal Totals:							
	767	228	494	147			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	5970	902				0.15	RQ
	1261	375					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0701 = (5970 * 100.000) / (7236696 * 1.178)
Empc Amount: 0.0148 = (1261 * 100.000) / (7236696 * 1.178)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d
Lims ID: CCV
Client ID:
Inject. Date: 13-Dec-2019 13:24:00 Dil. Factor: 1.0000
Sample Type: CCV, Cal Verification
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 2
Sublist: chrom-Dioxin_DFS1*sub1

Non-2,3,7,8-sub-PeCDD, RT: 26.873

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120	D 13C-1,2,3,7,8-PeCDD	100.000	4535738	681288

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.120		100.000	4535738	681288

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
28.731	21185	1968	4778	509	0.5111	4.43	RnQ
28.731	7405	788	4778	509	0.2398		Empc Correction
Signal Totals:							
	7405	788	4778	509			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	25963	2477				4.43	RQ
	12183	1297					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5111 = (25963 * 100.000) / (4535738 * 1.120)
Empc Amount: 0.2398 = (12183 * 100.000) / (4535738 * 1.120)

QC Flag Legend

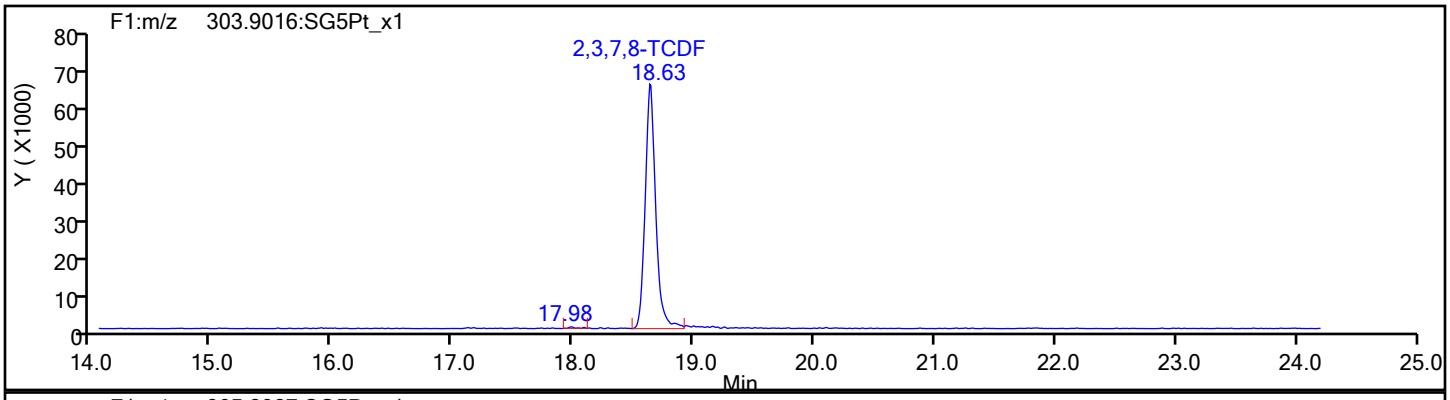
Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

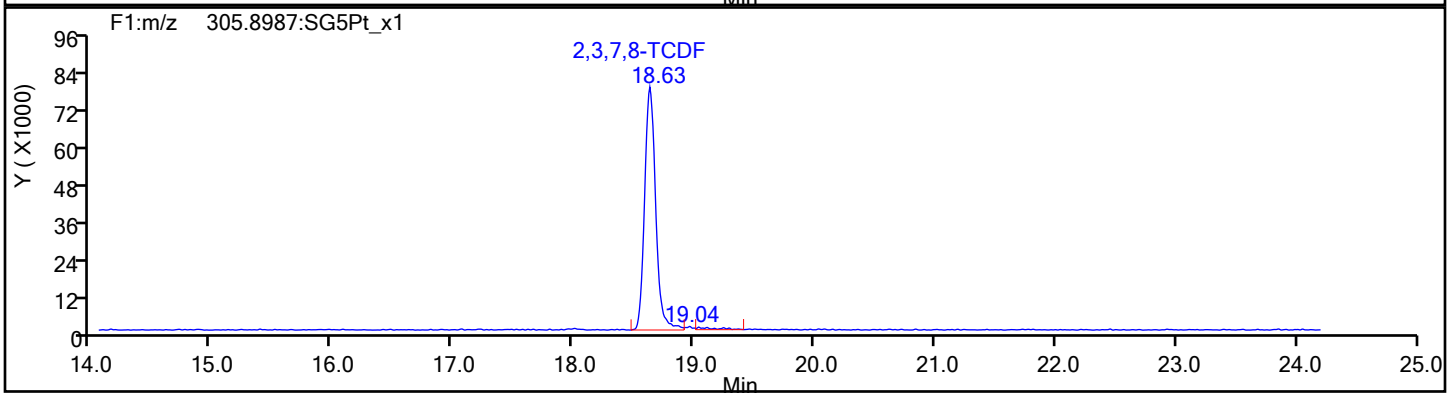
Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

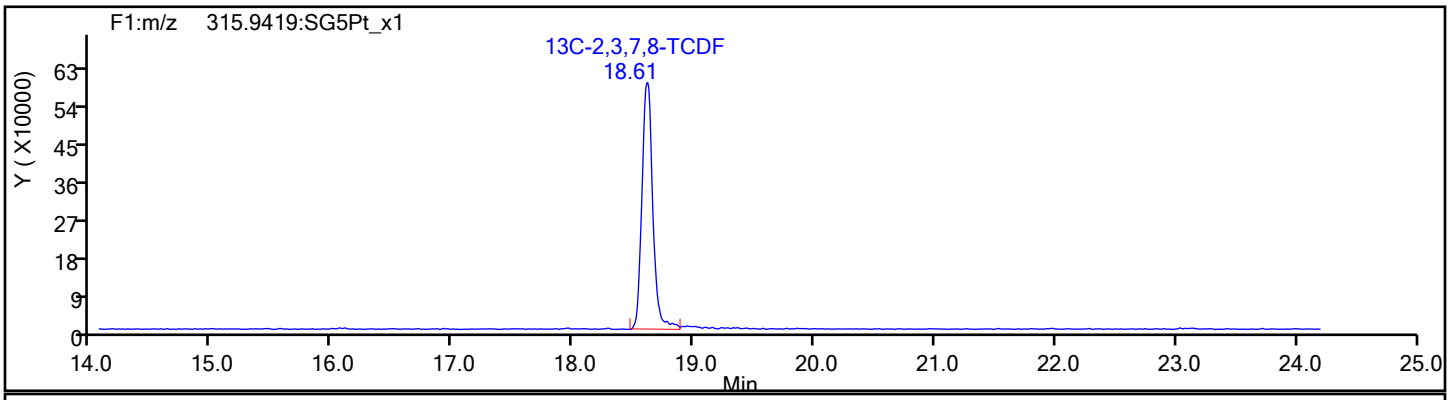
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

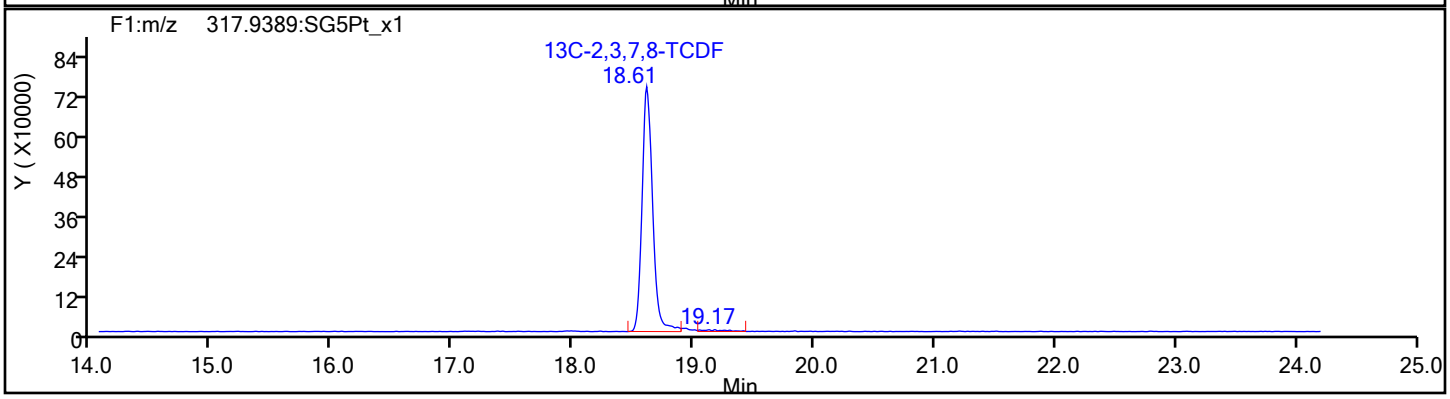
TCDF





TCDF Standards



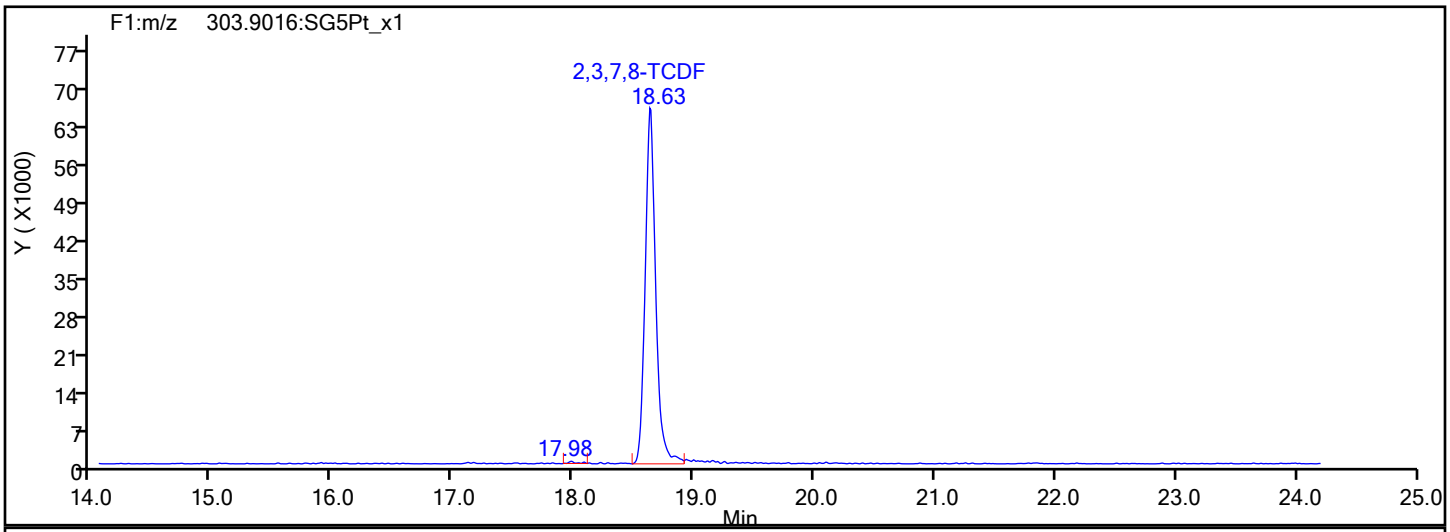


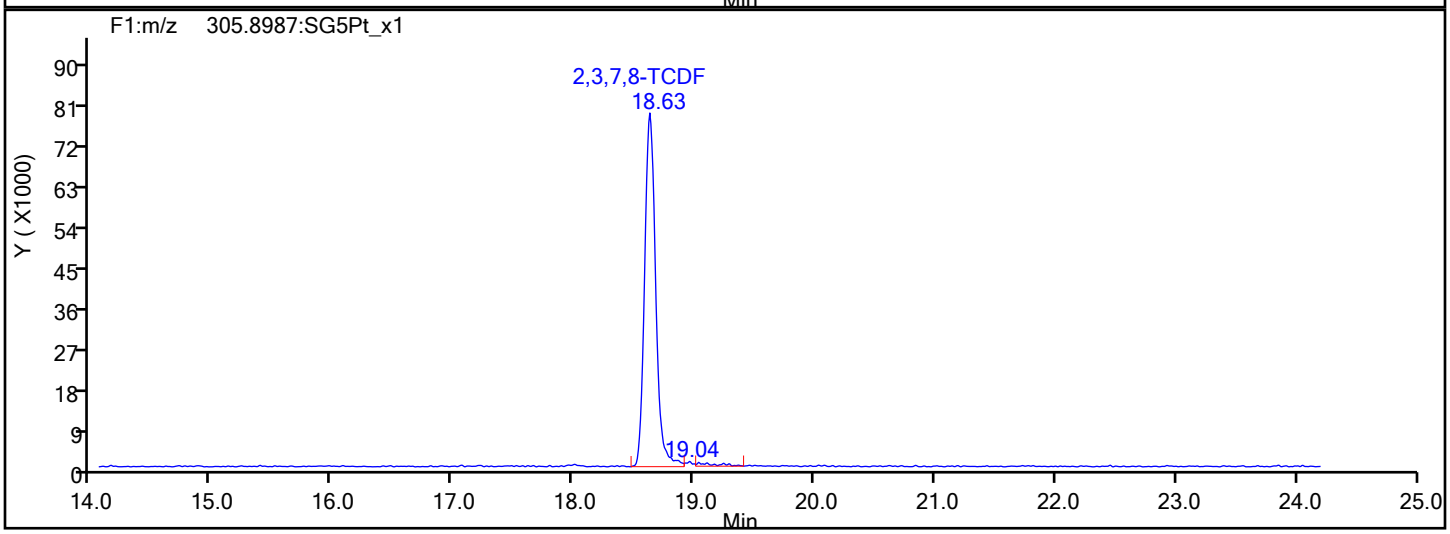
Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

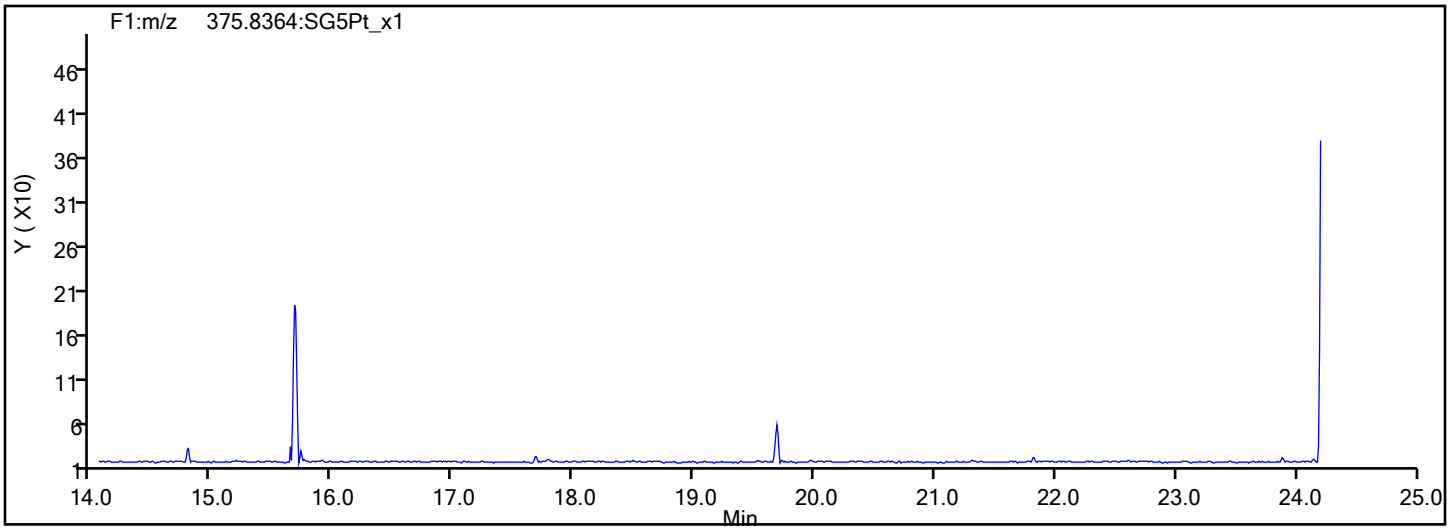
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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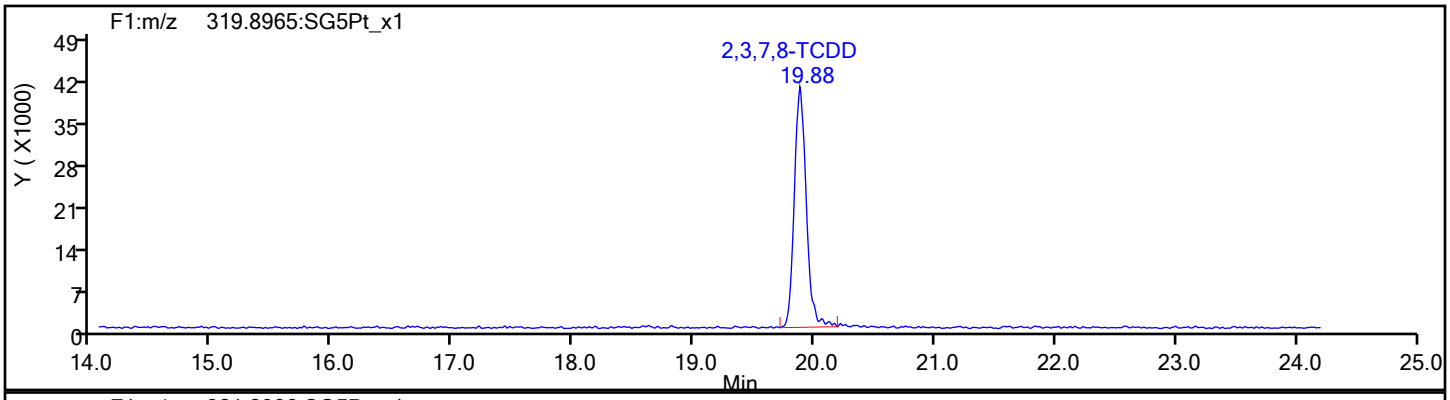
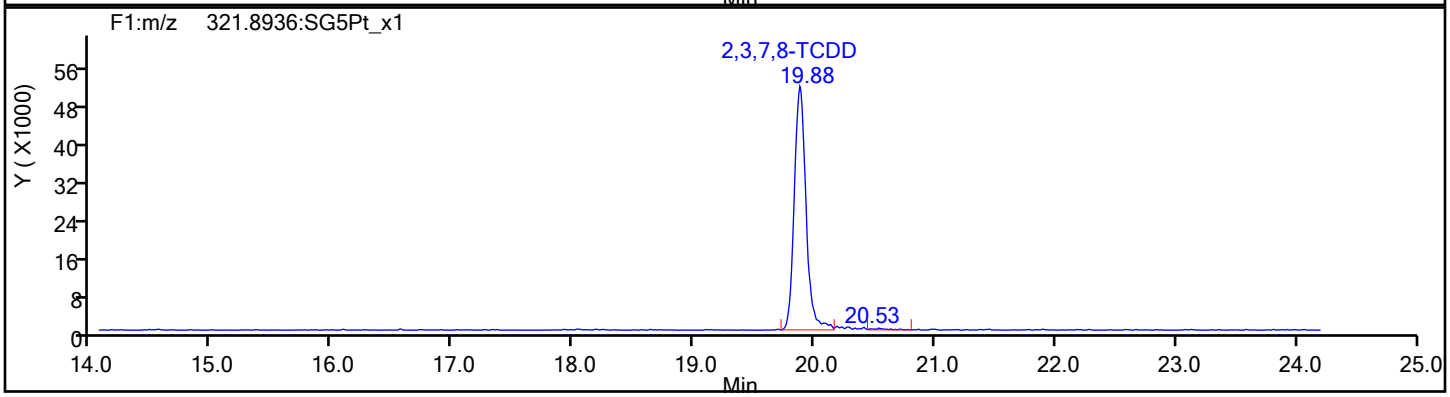
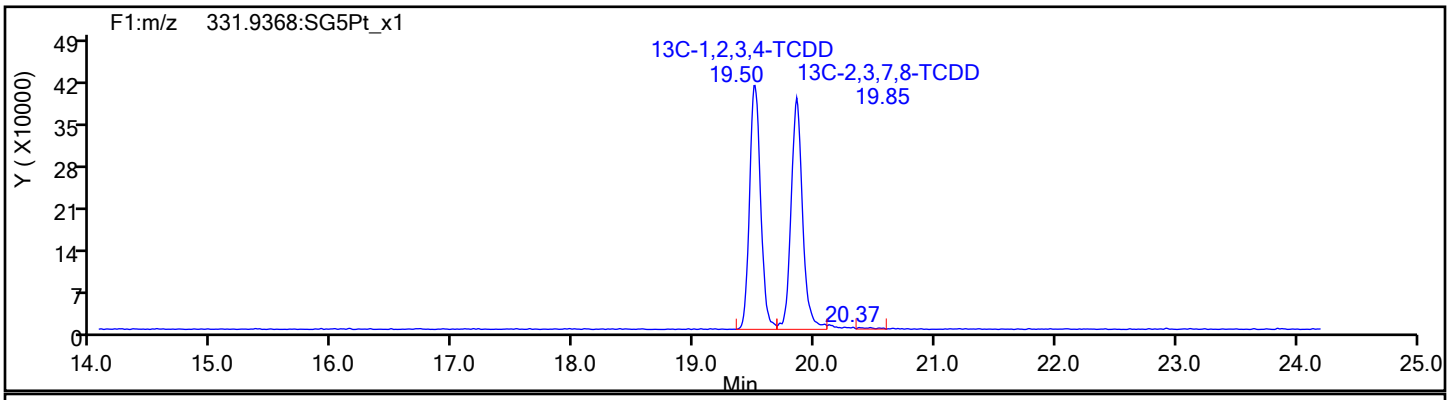
Column Type:	DB-5	Column Dia:	0.32 mm

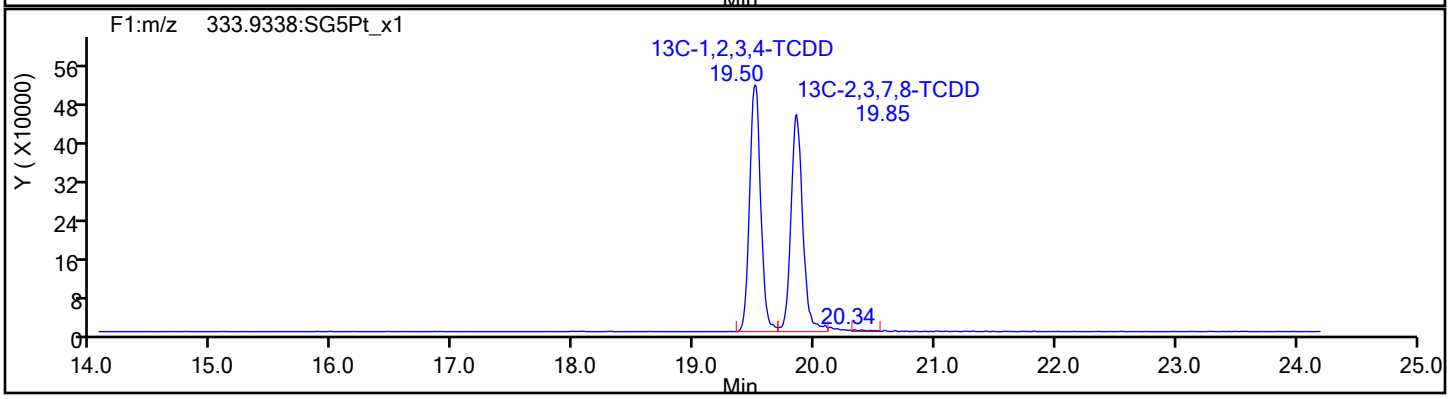
TCDD





TCDD Standards





Report Date: 14-Dec-2019 01:10:36 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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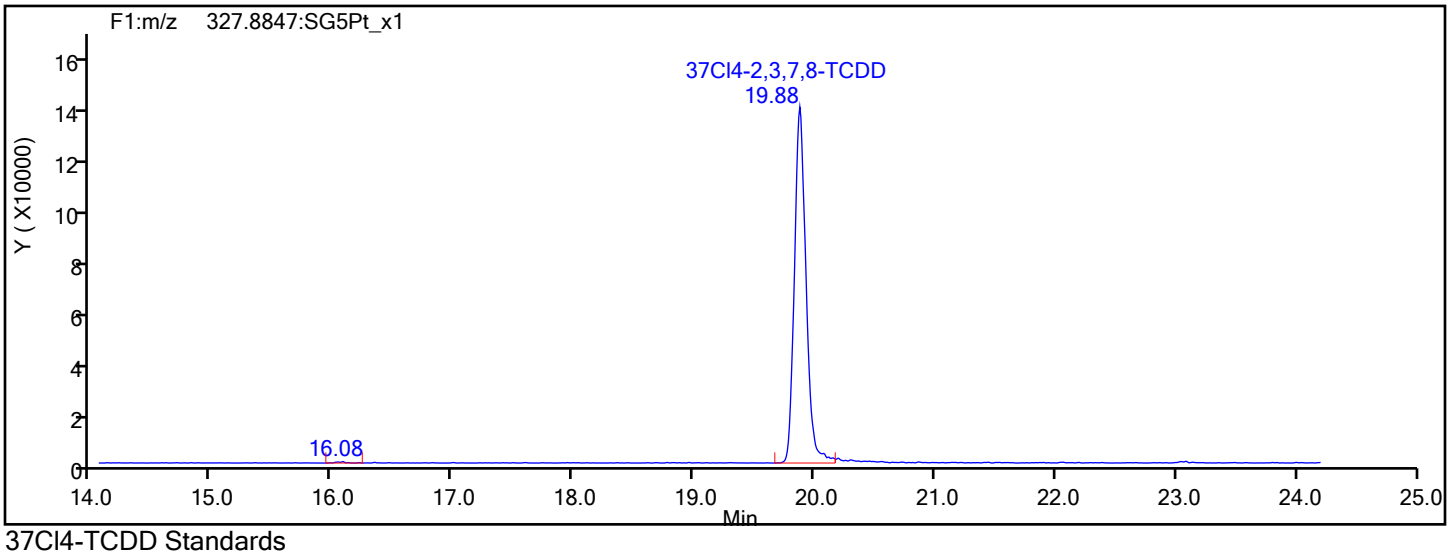
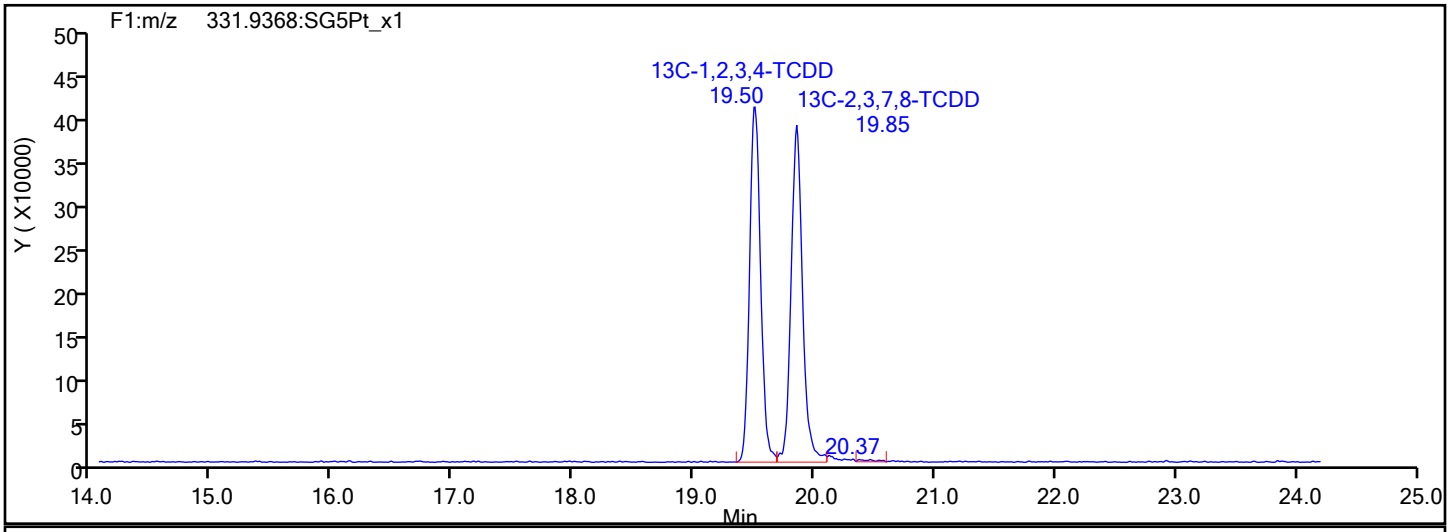
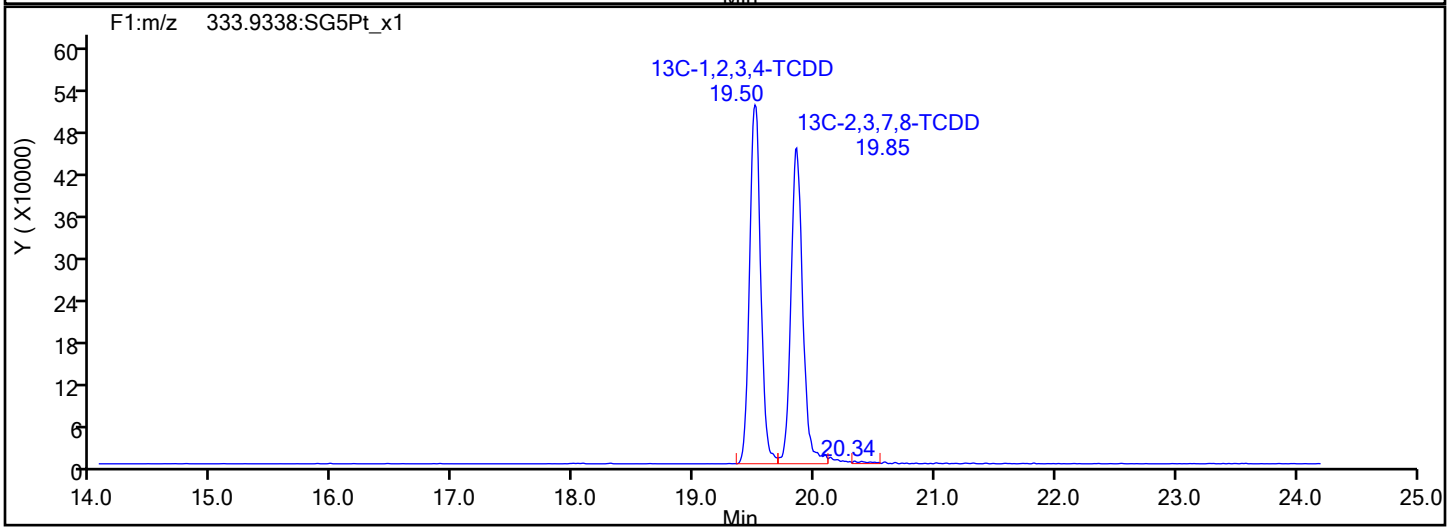
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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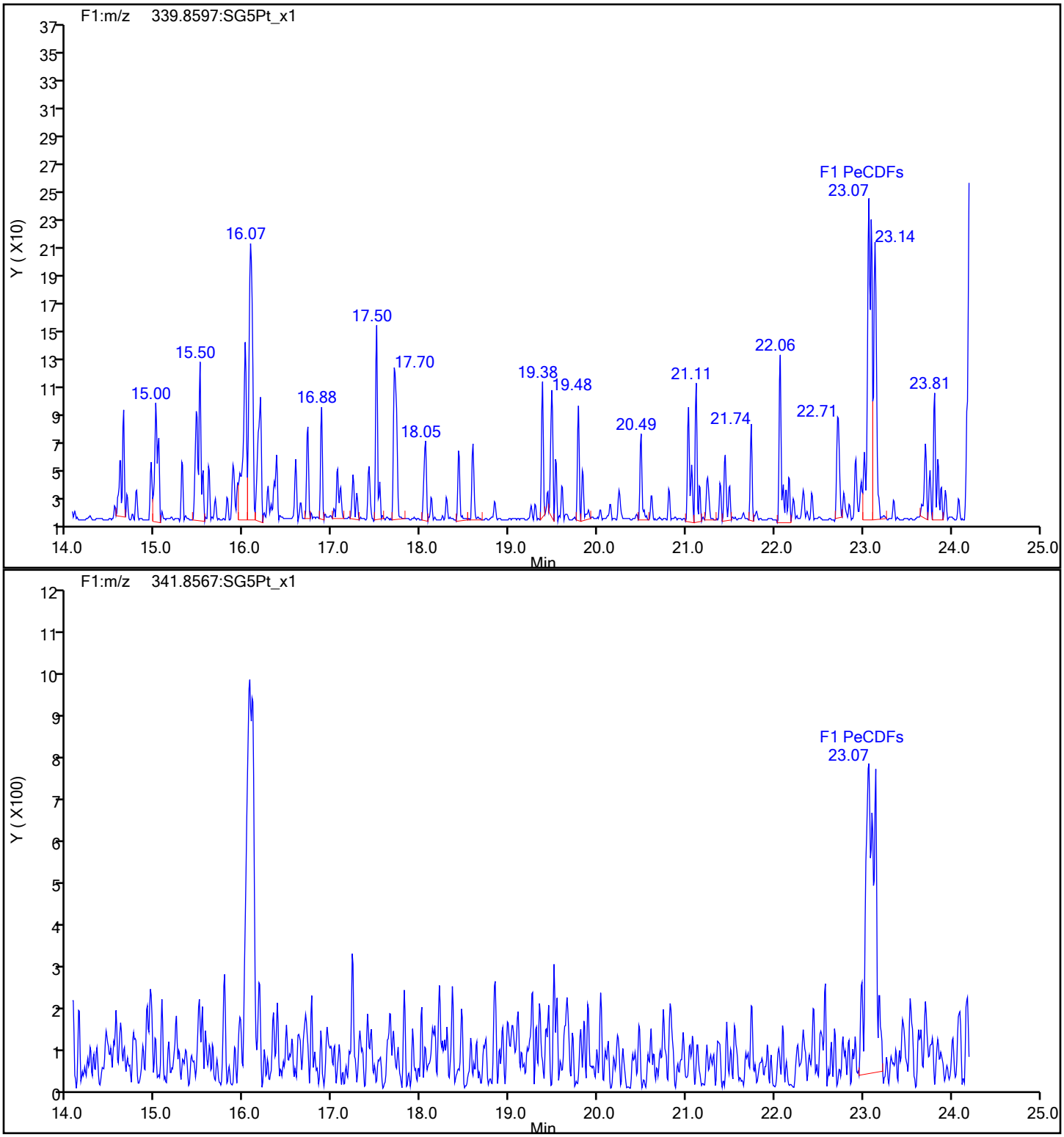
F1 PeCDFs



Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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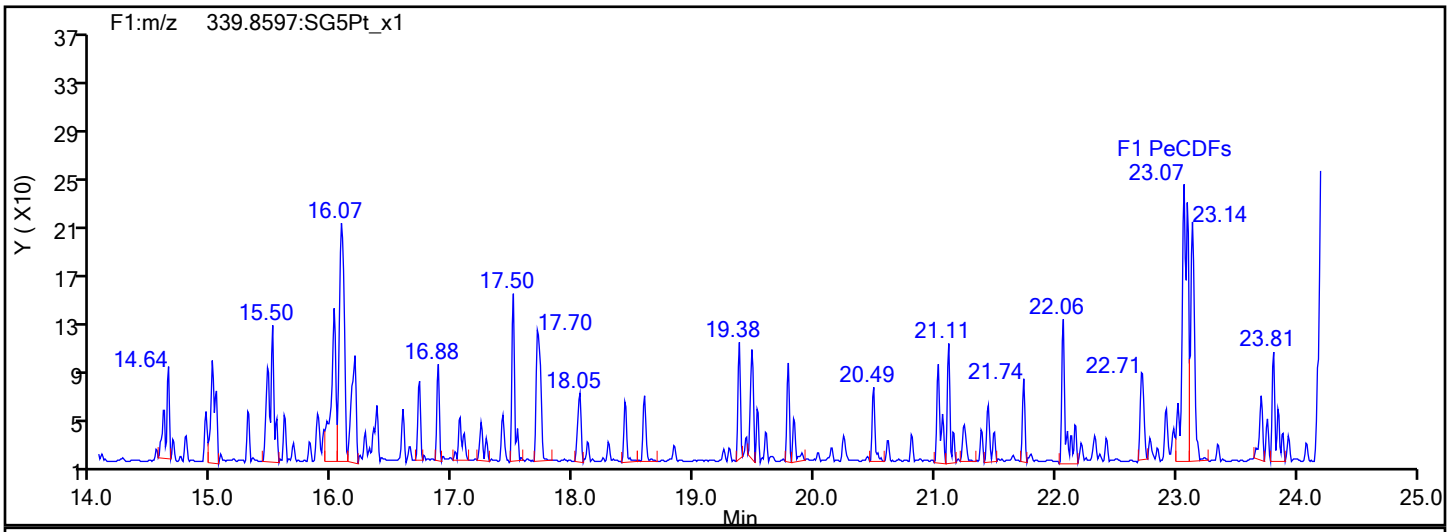
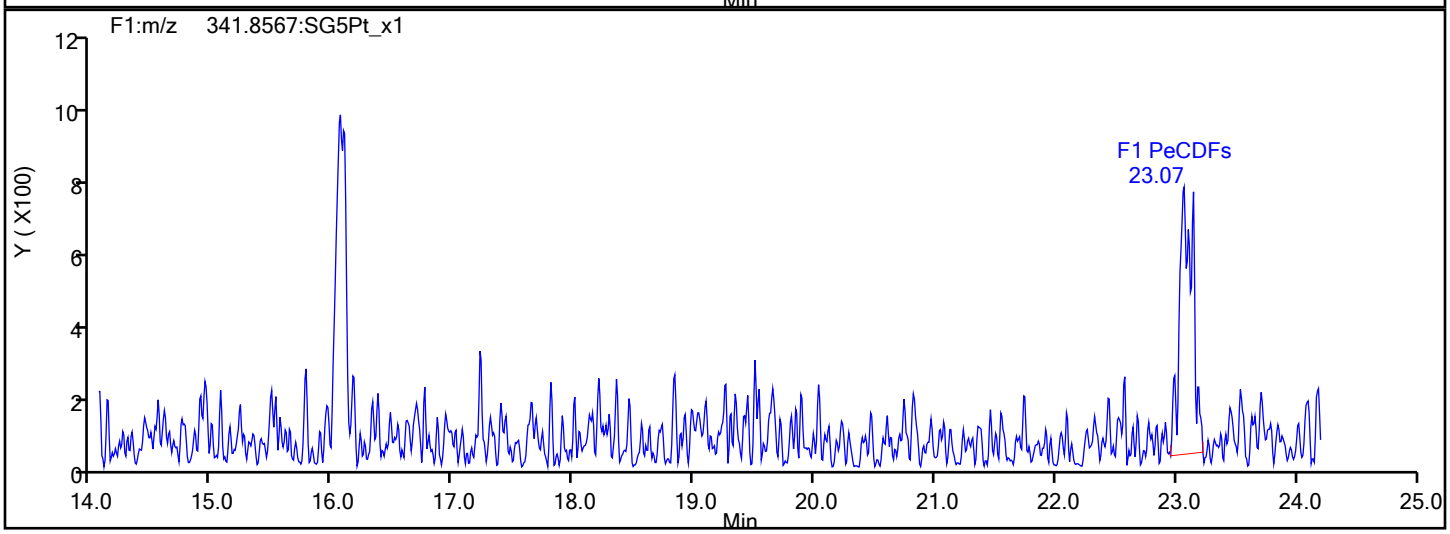
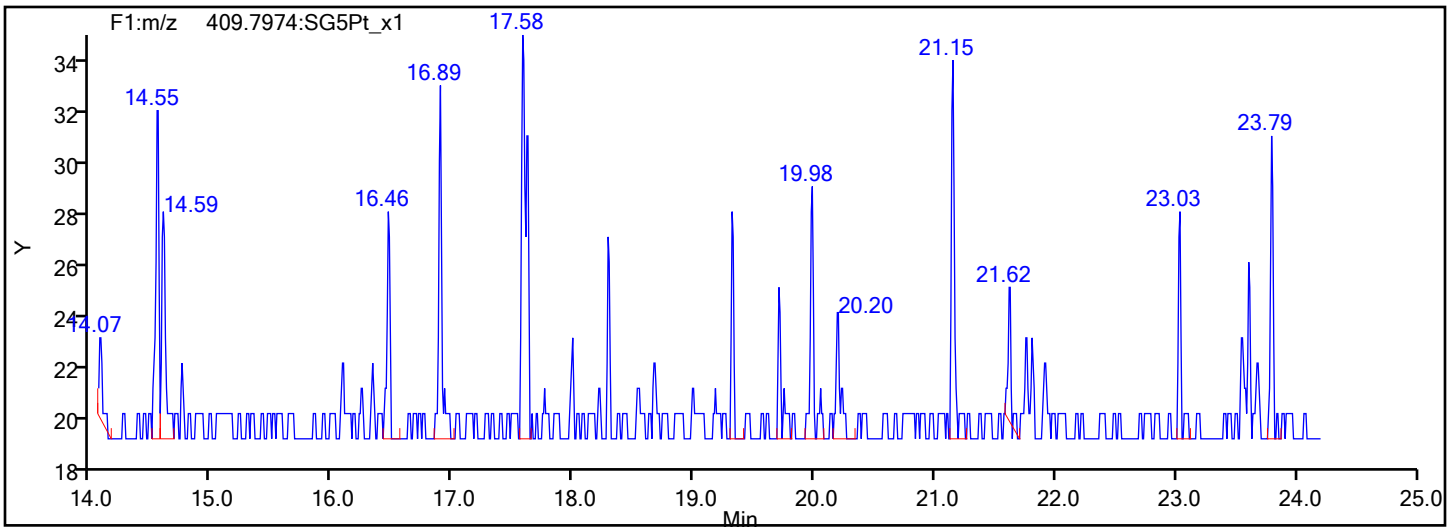
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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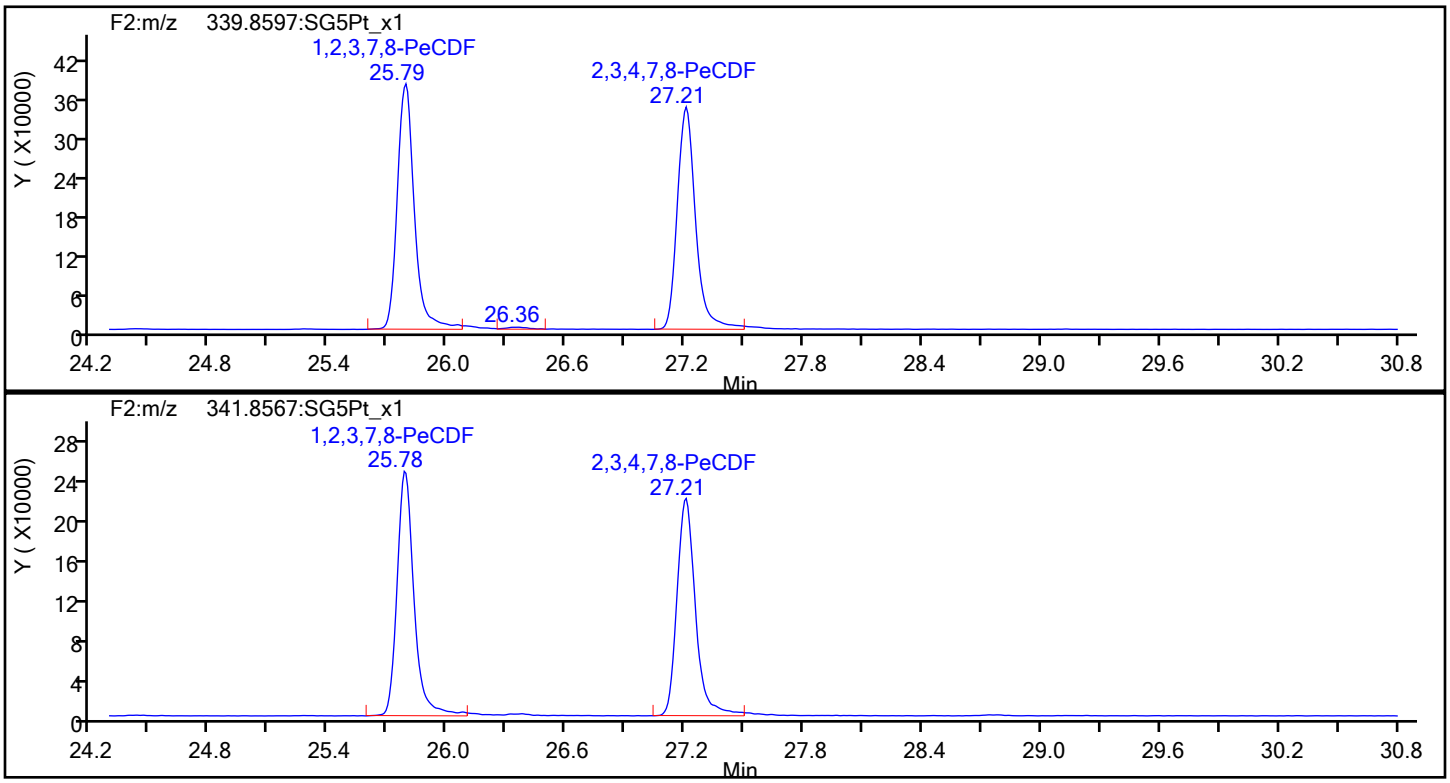
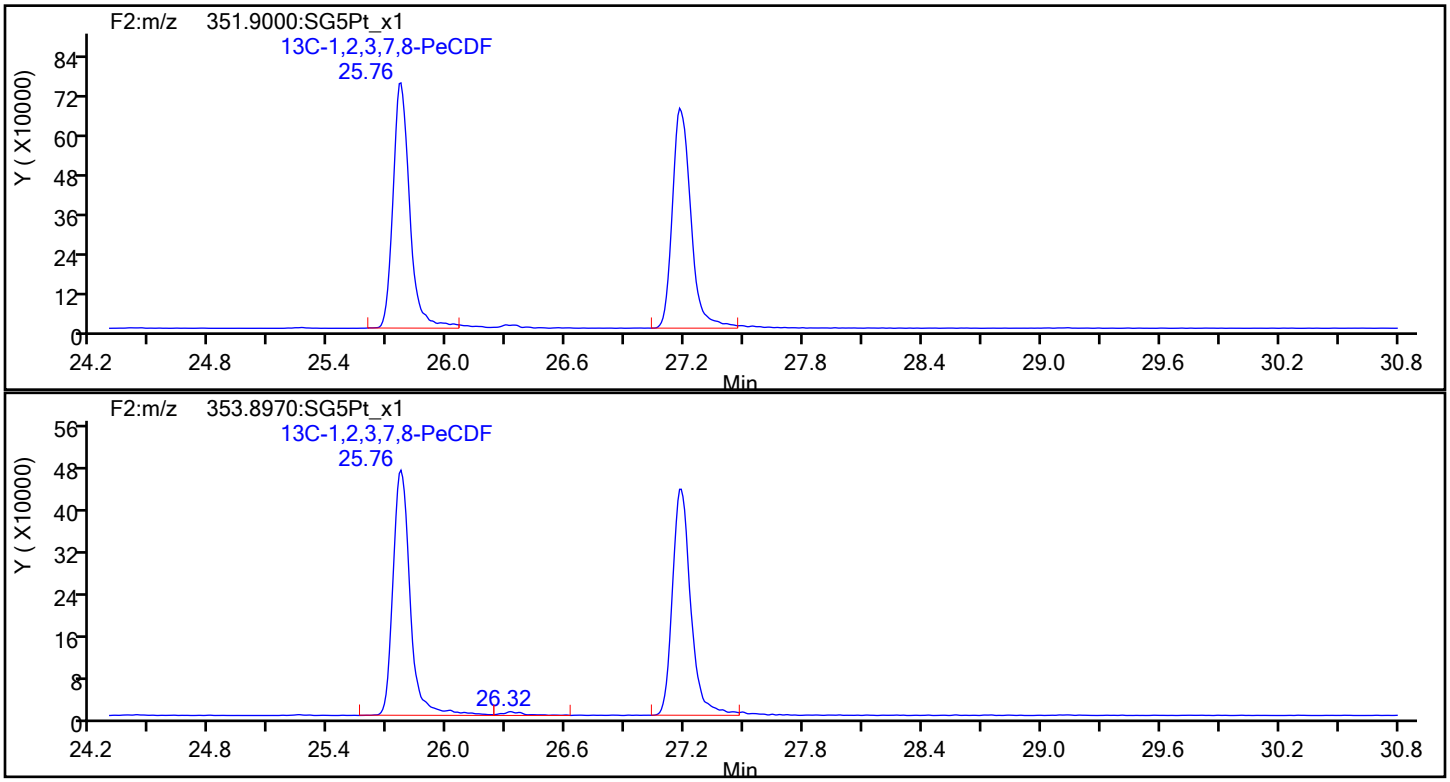
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
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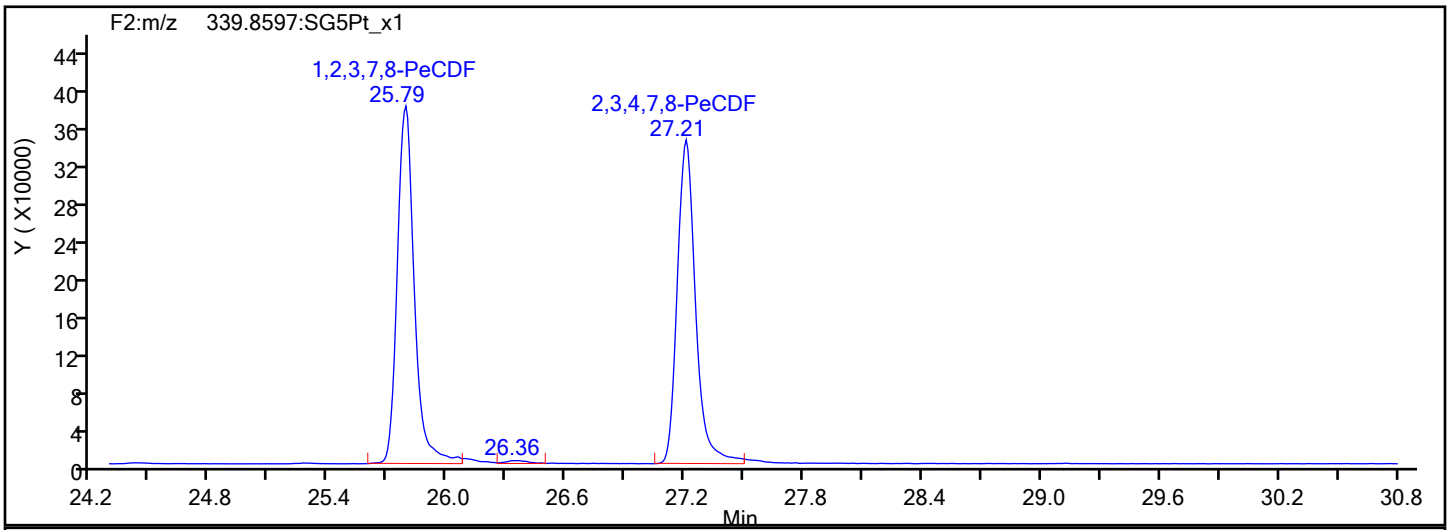
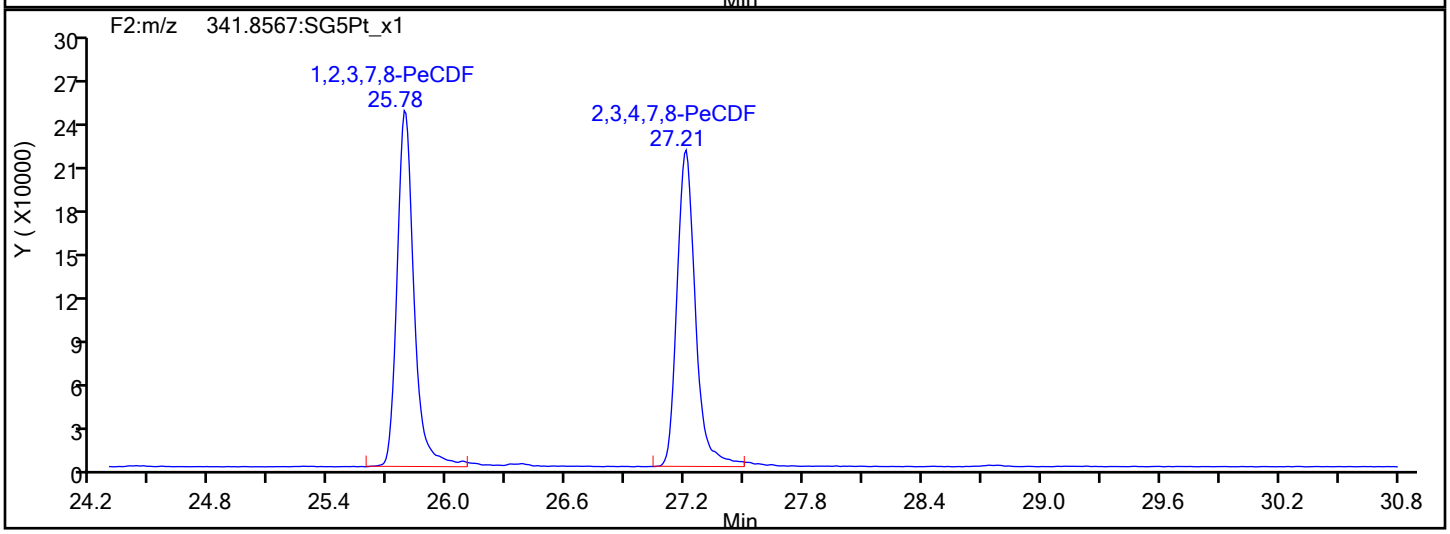
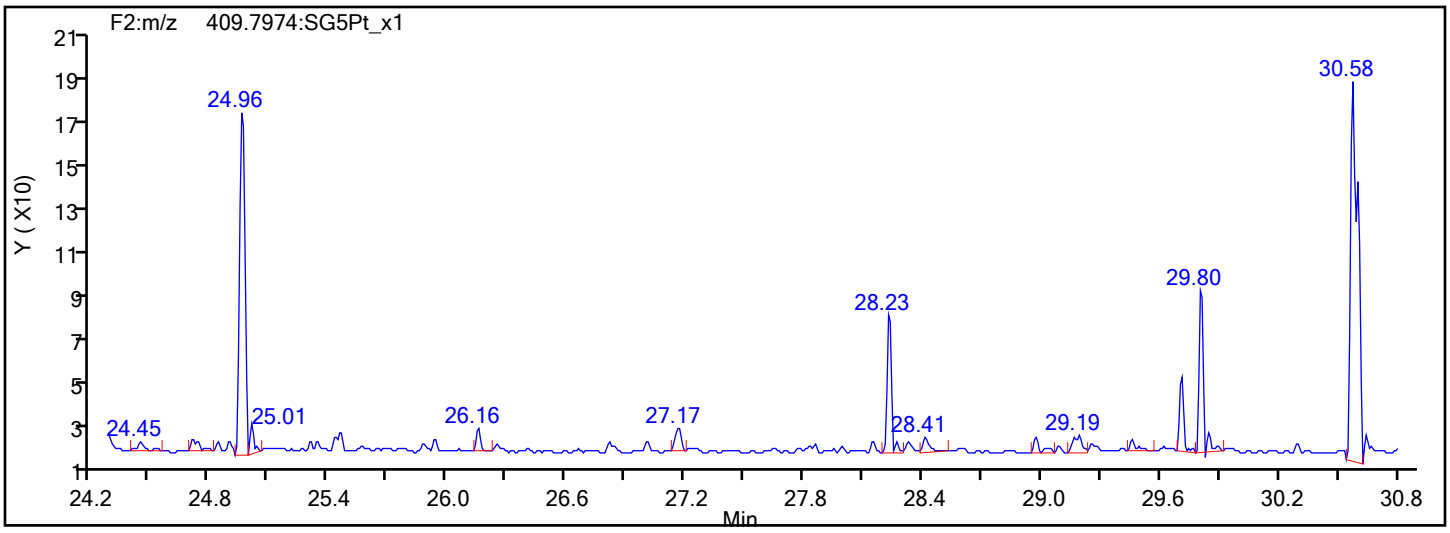
PeCDF





PeCDF Interference Mass



Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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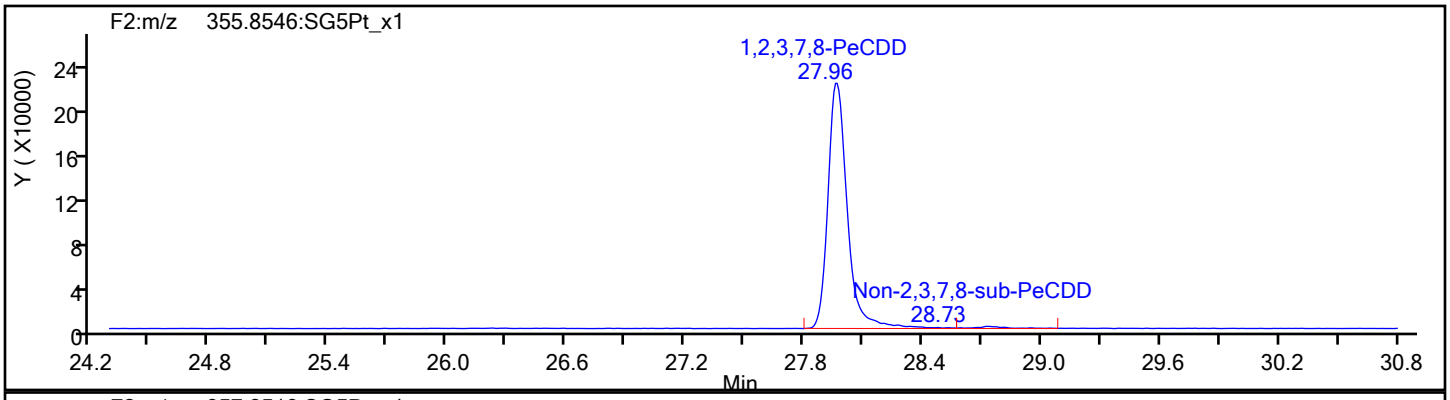
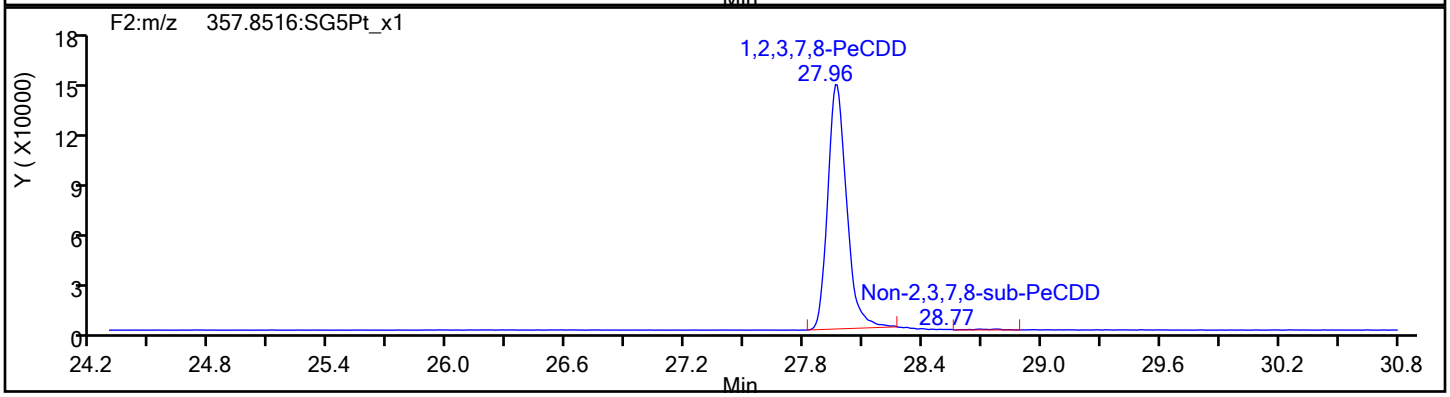
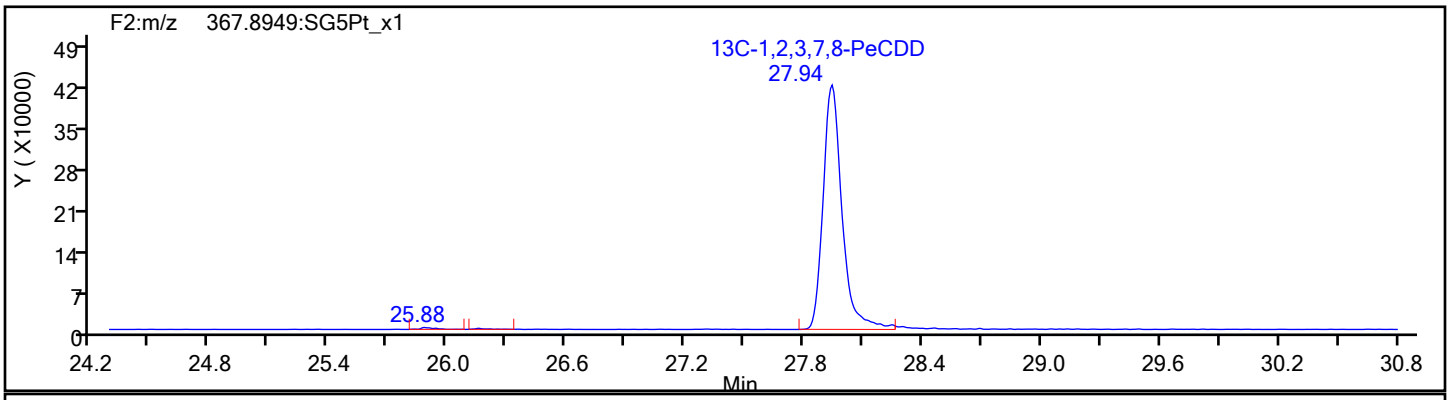
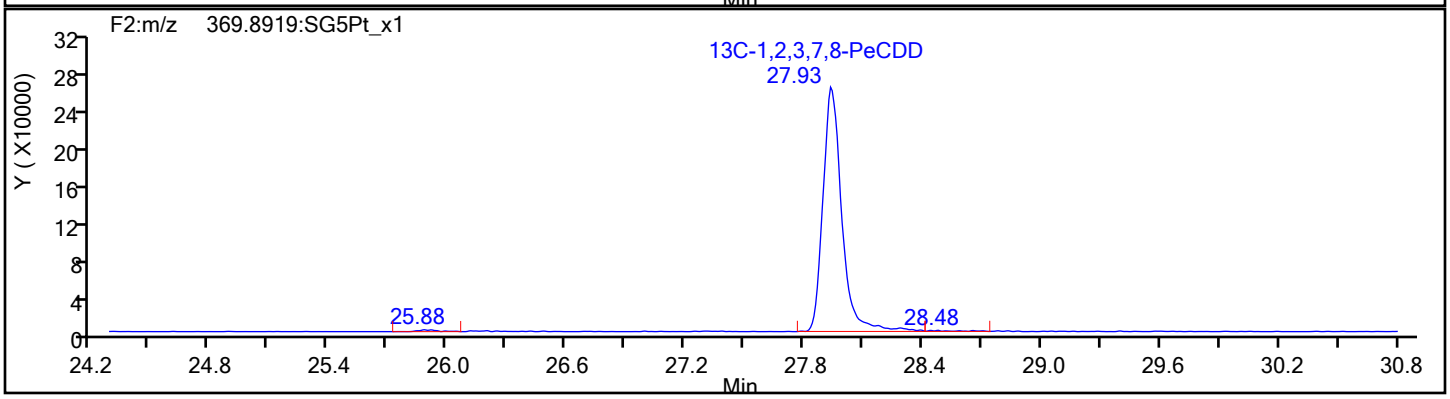
PeCDD





PeCDD Standards





Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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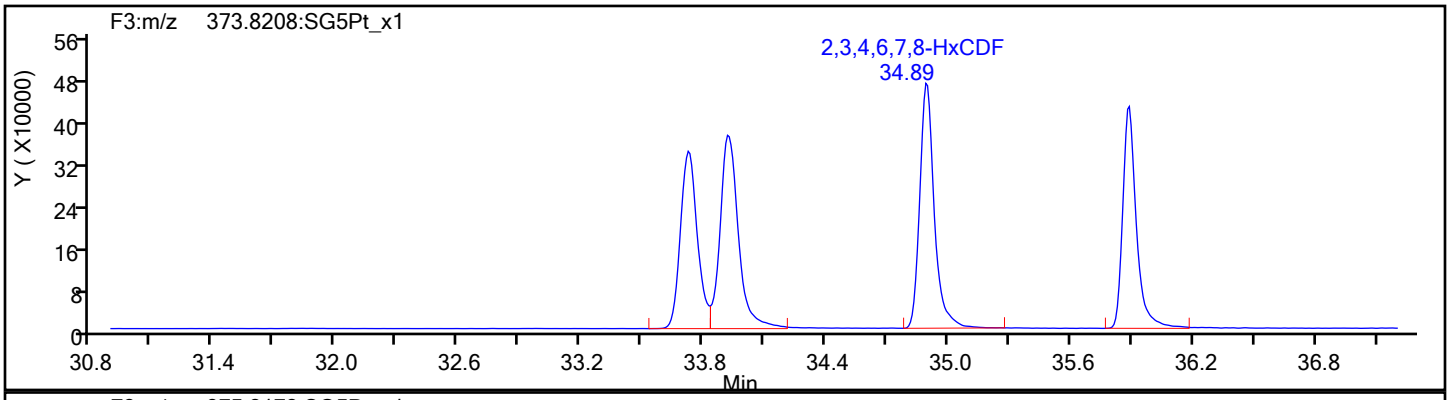
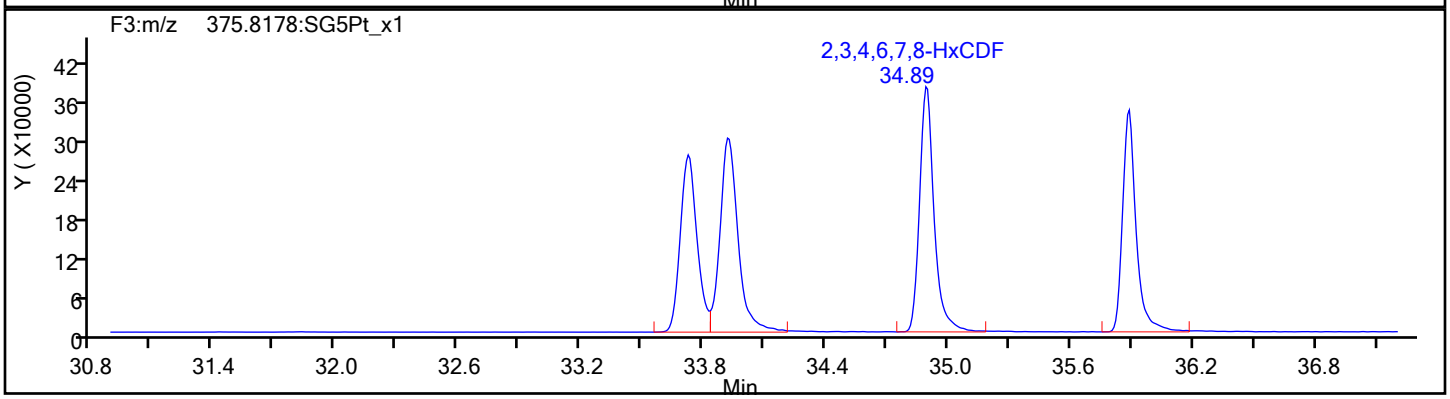
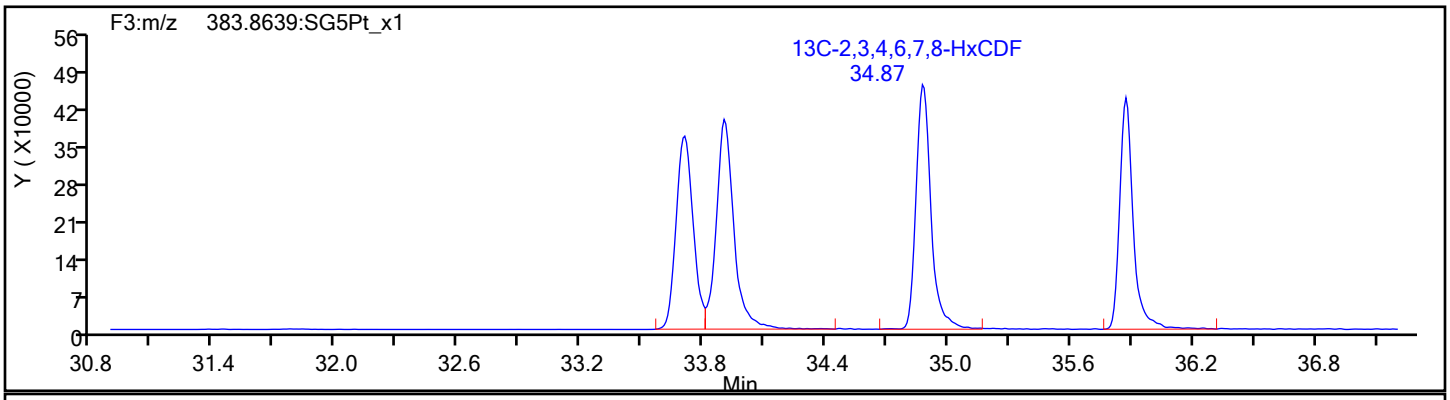
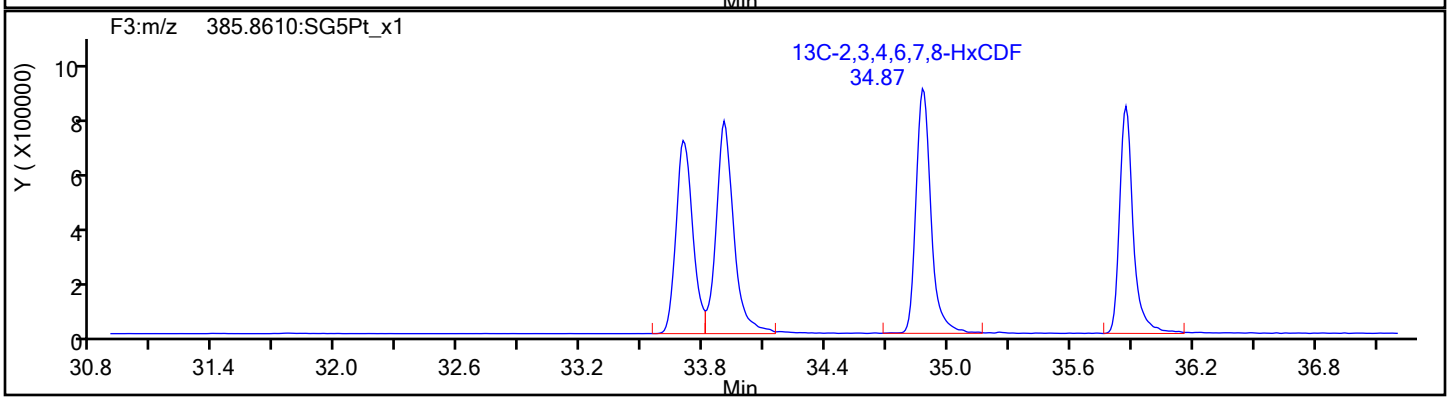
HxCDF





HxCDF Standards





Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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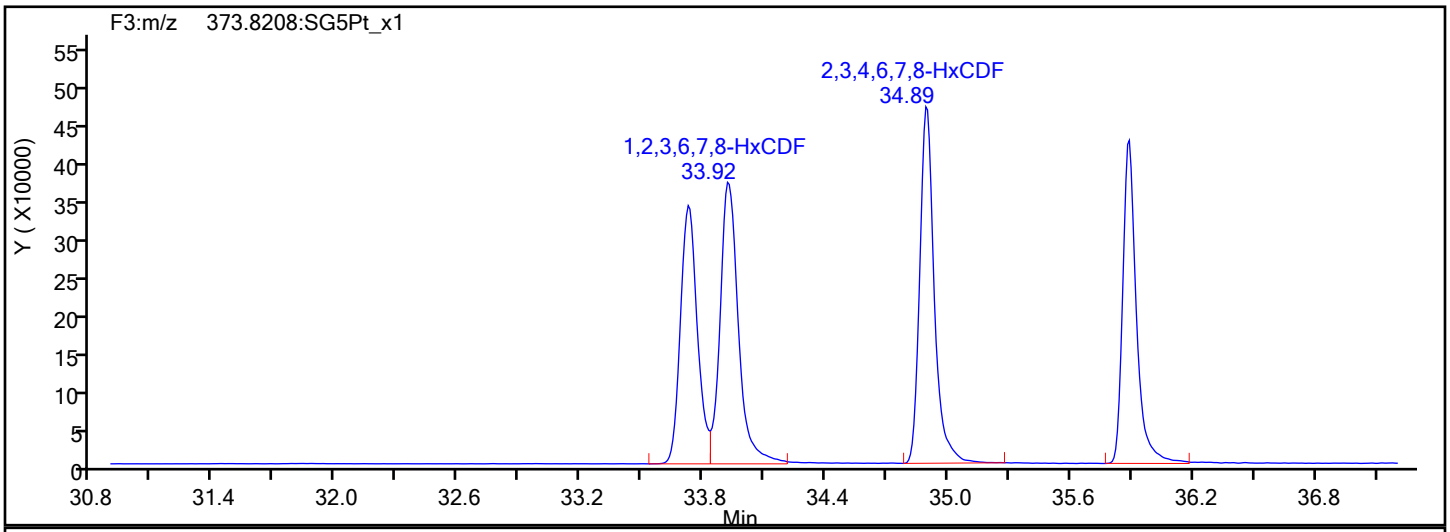
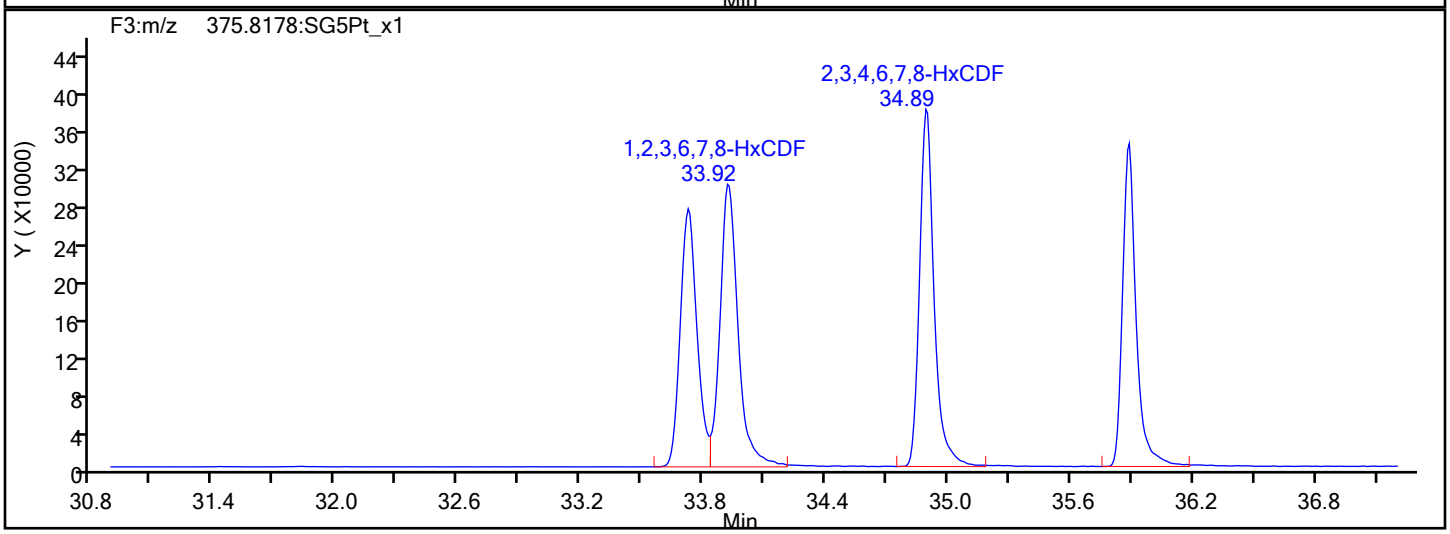
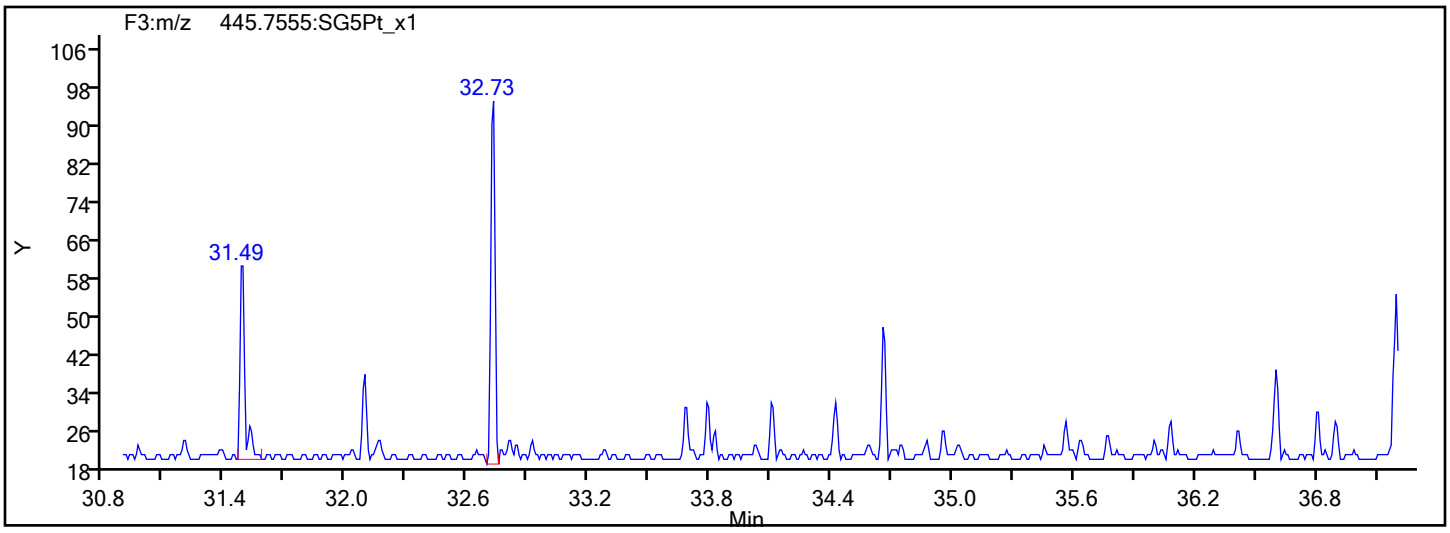
HxCDF





HxCDF Interference Mass



Report Date: 14-Dec-2019 01:10:37 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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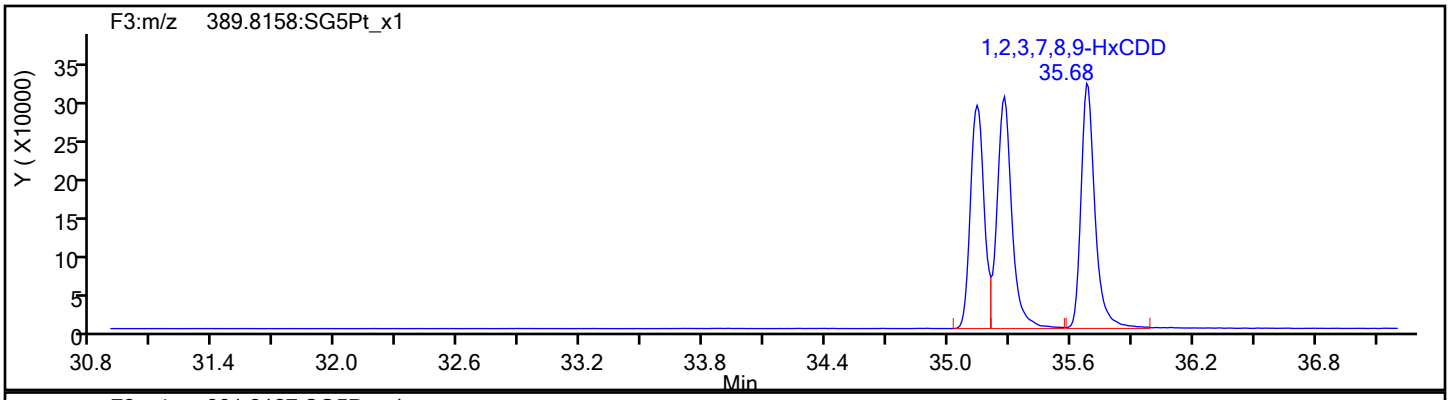
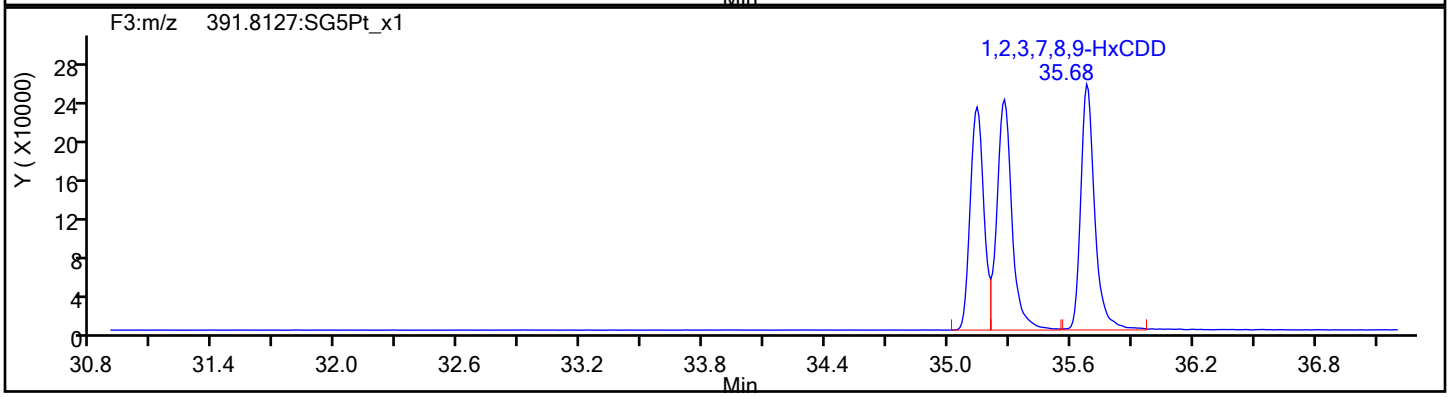
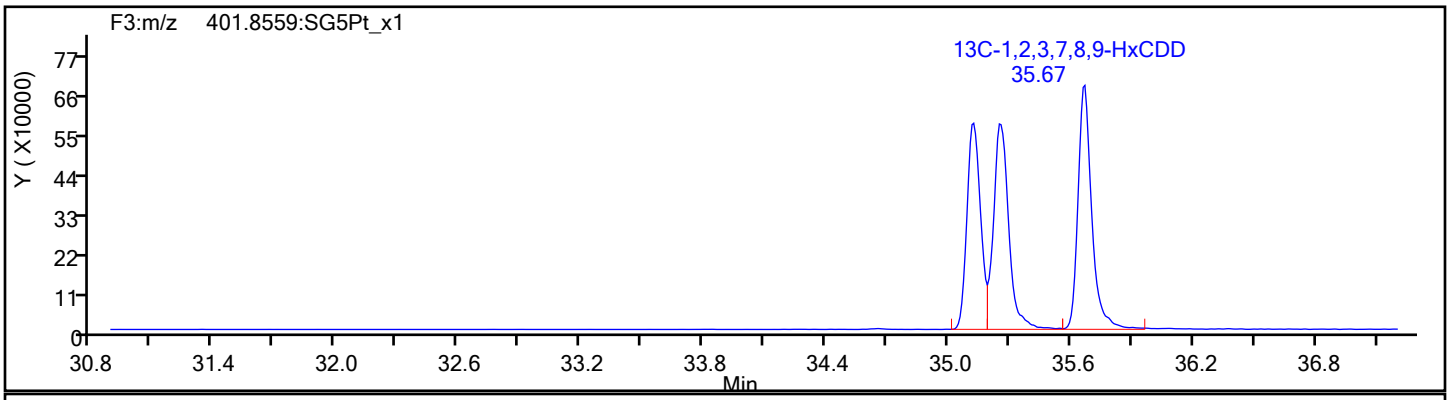
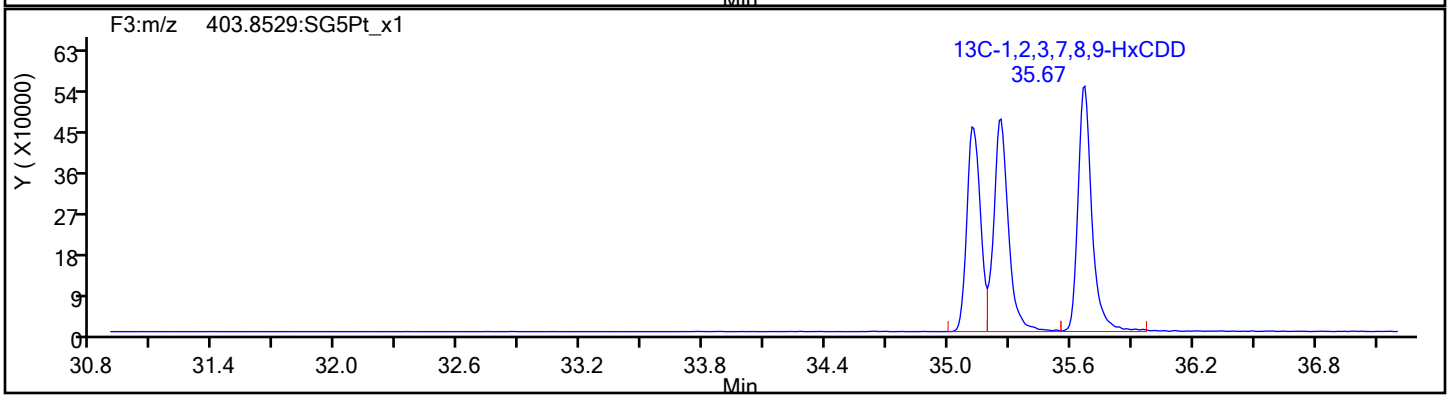
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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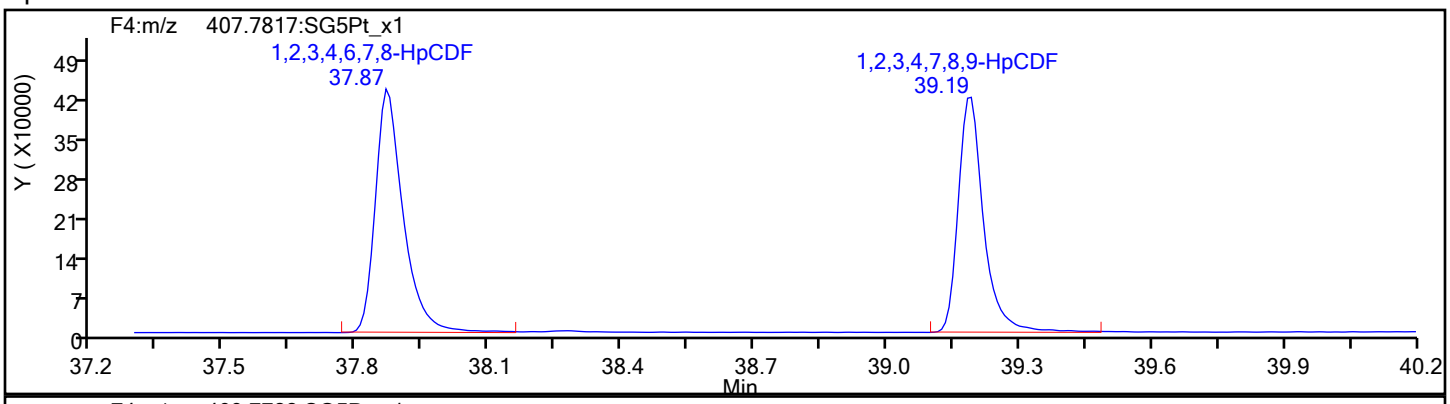
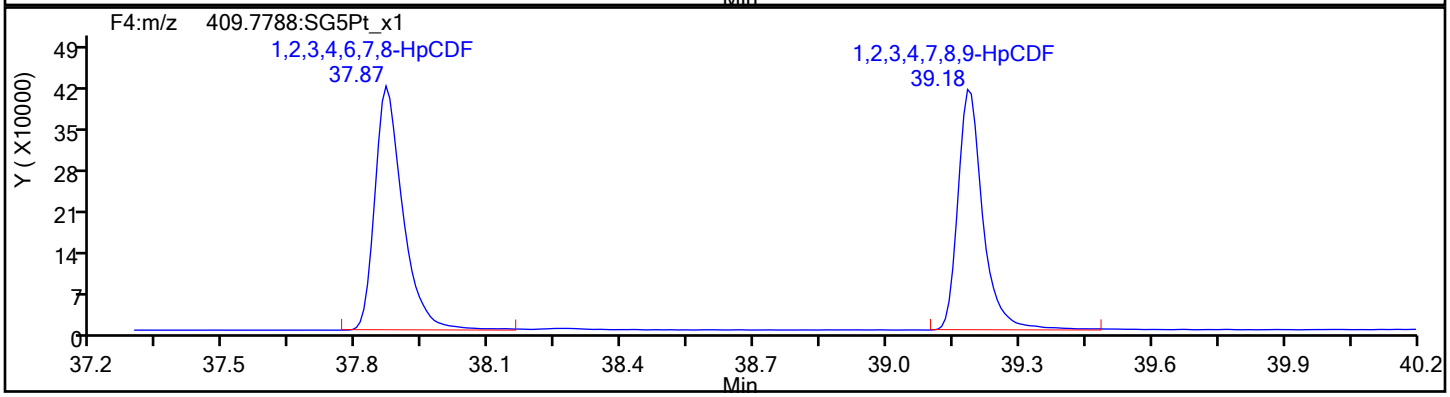
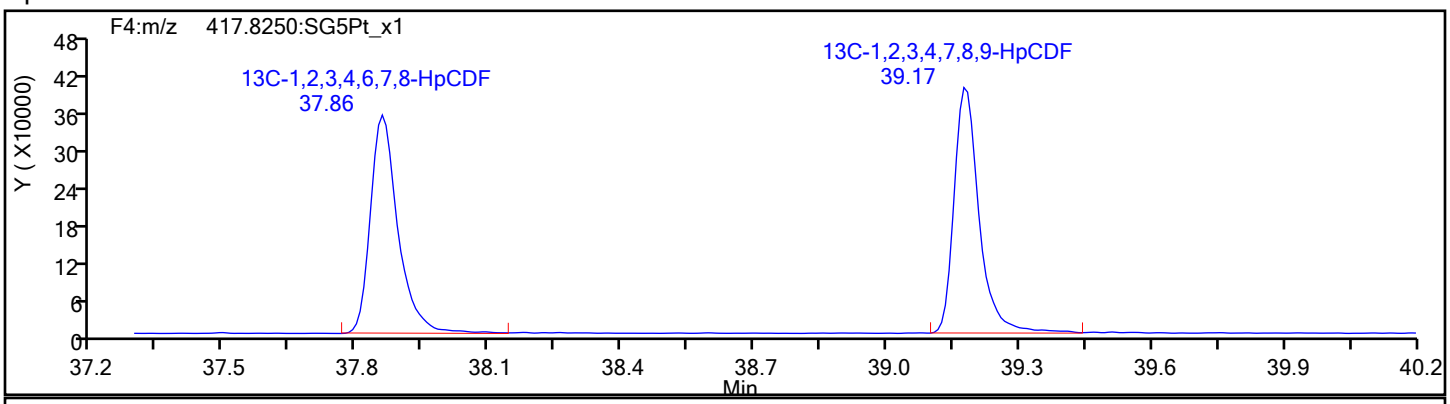
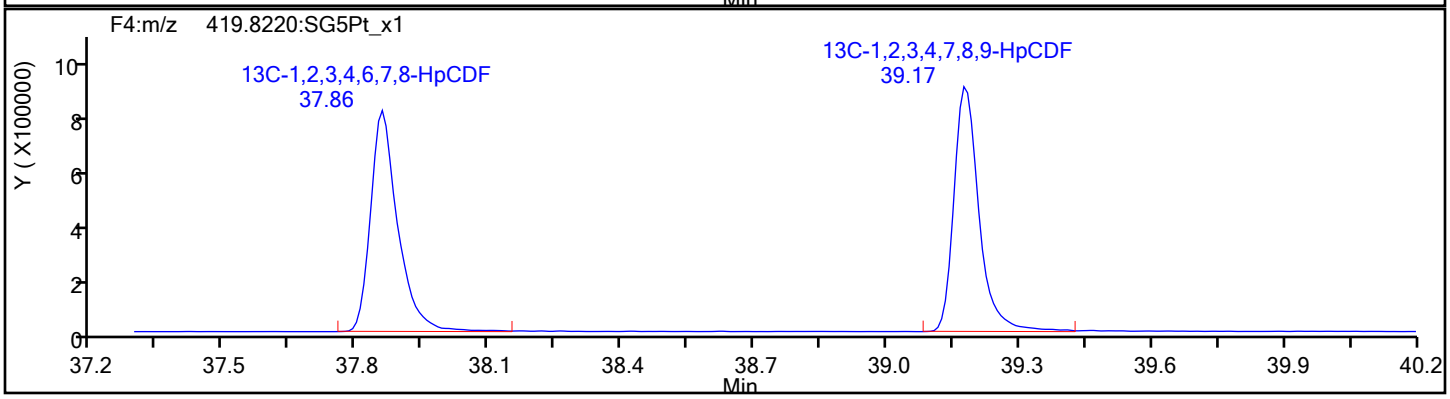
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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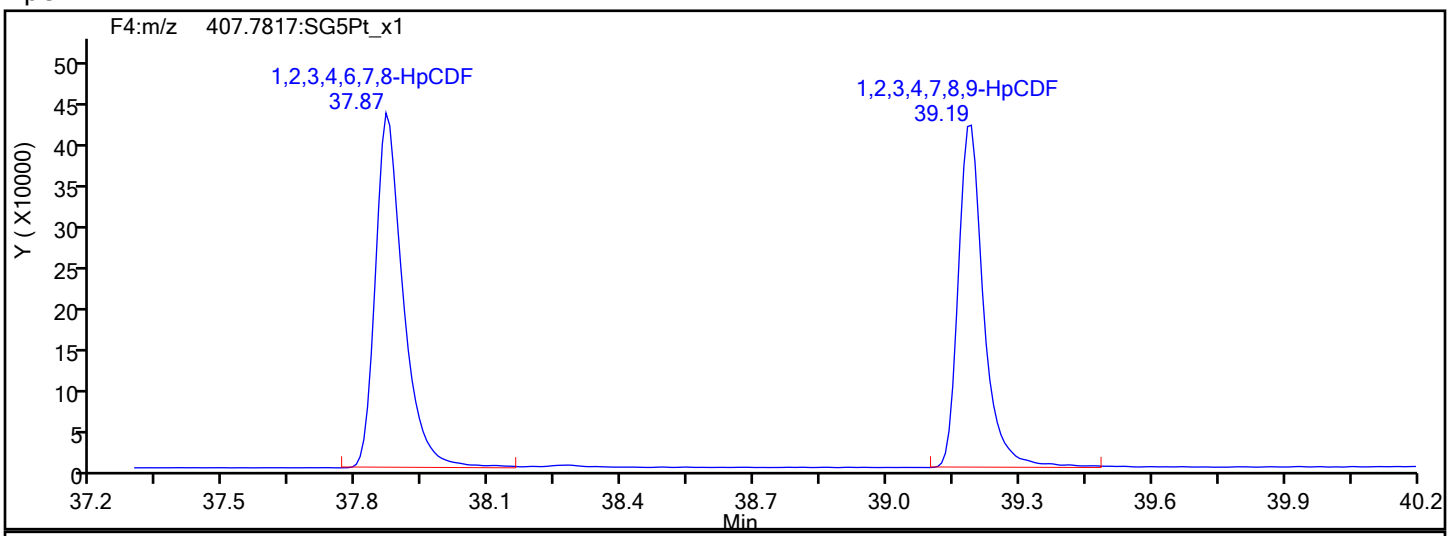
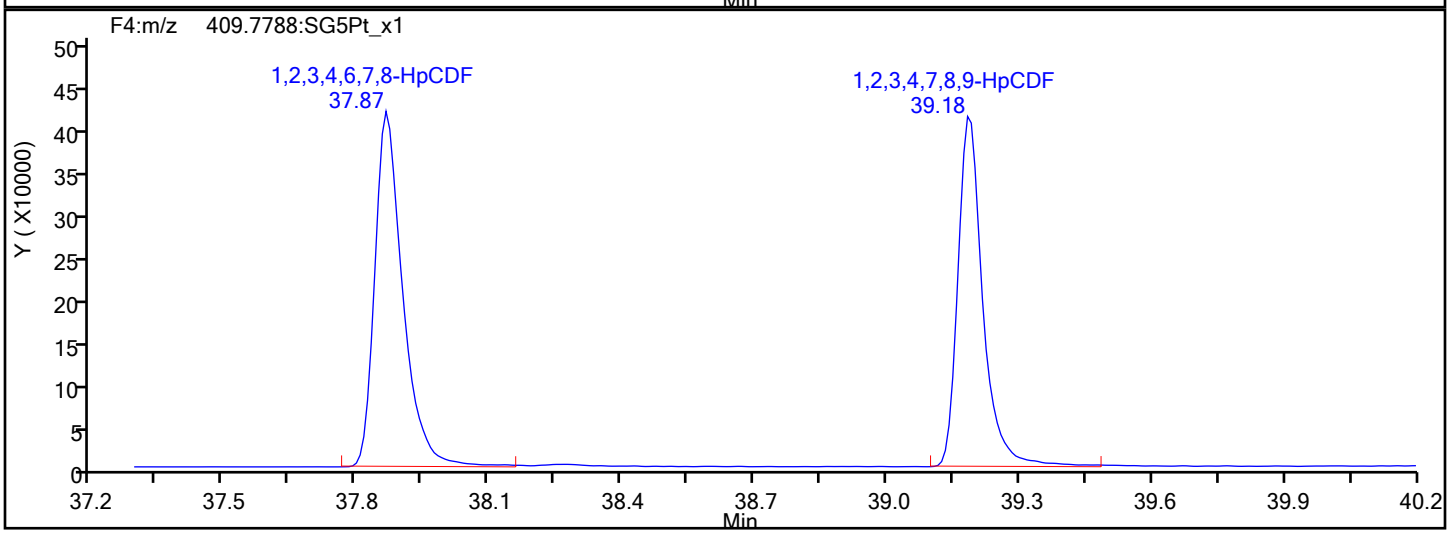
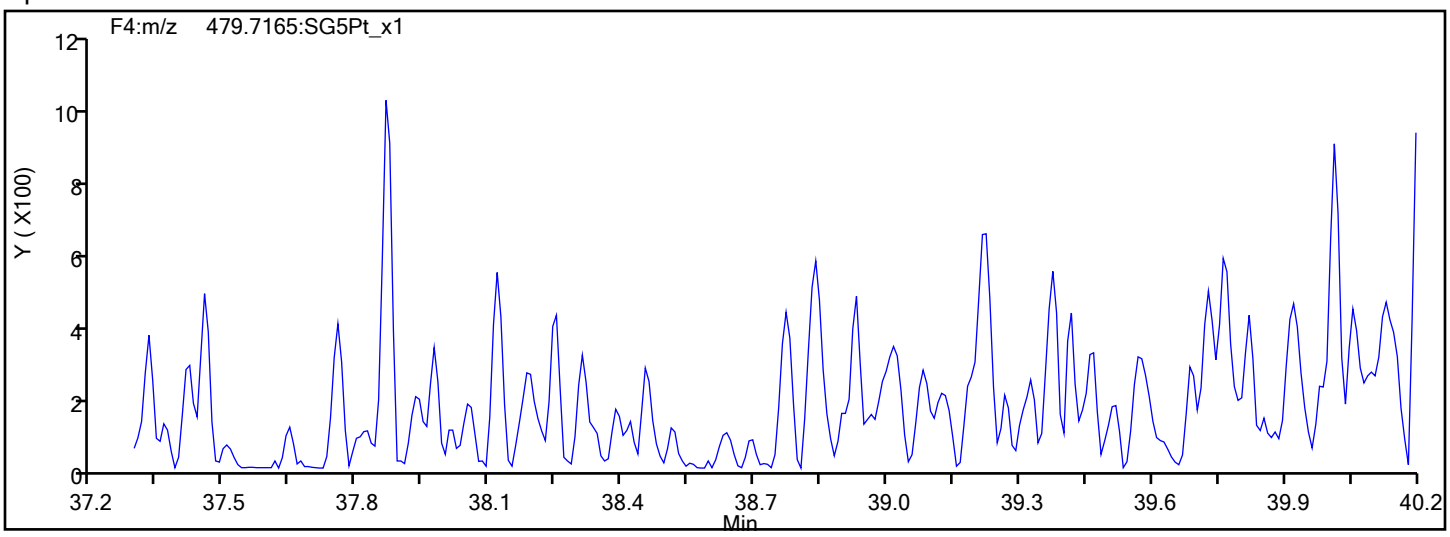
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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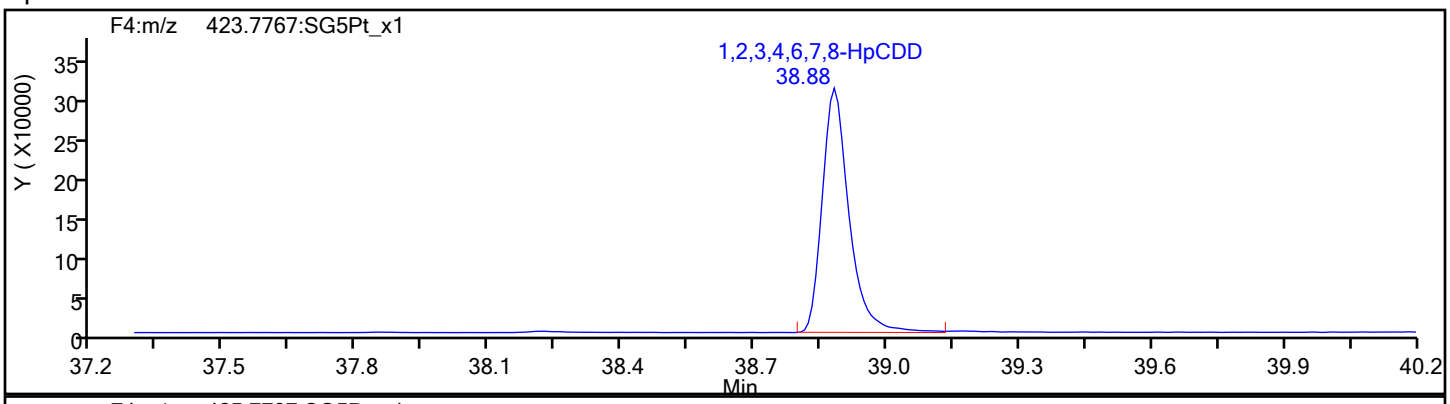
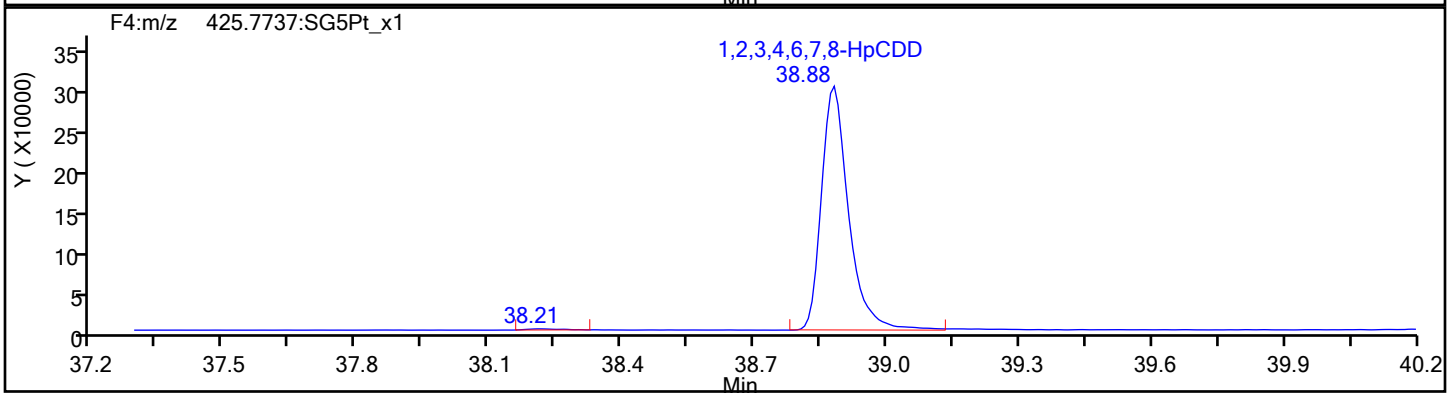
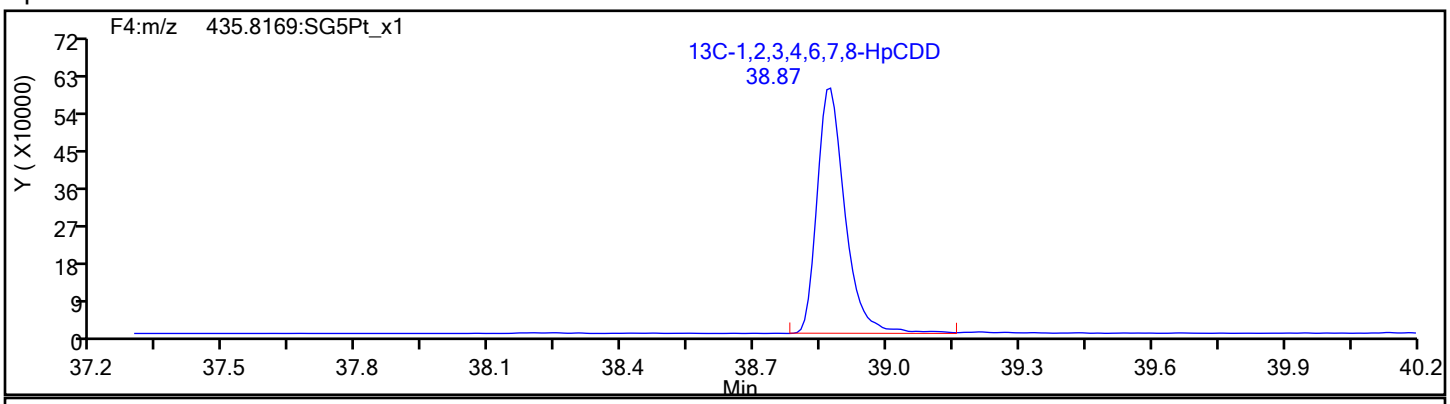
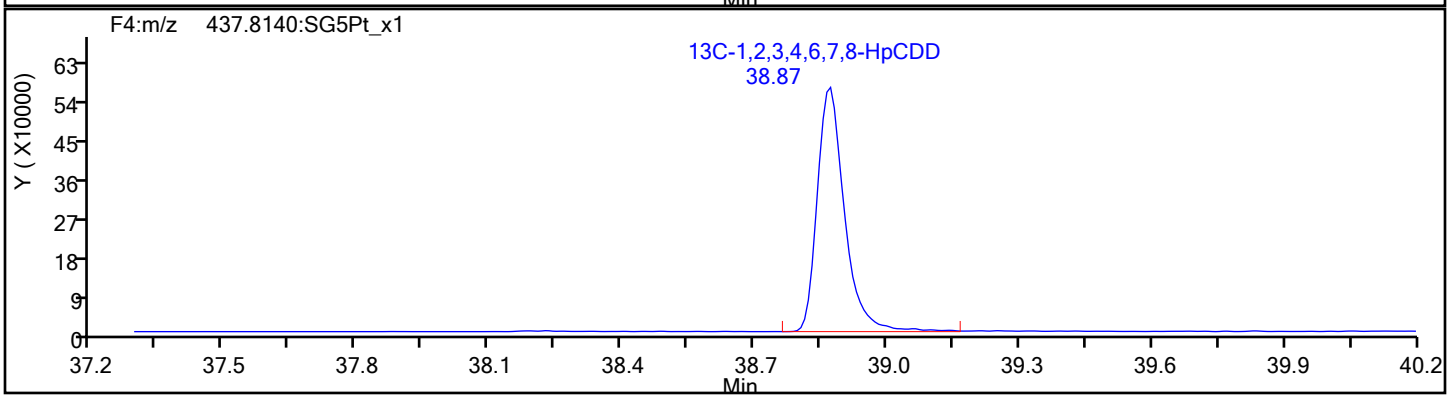
HpCDD





HpCDD Standards





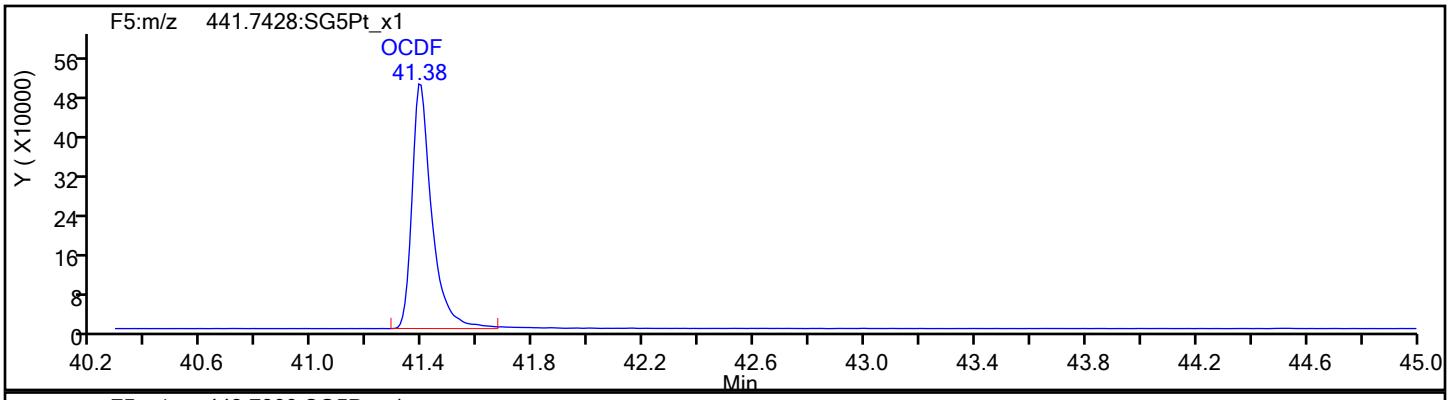
Report Date: 14-Dec-2019 01:10:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

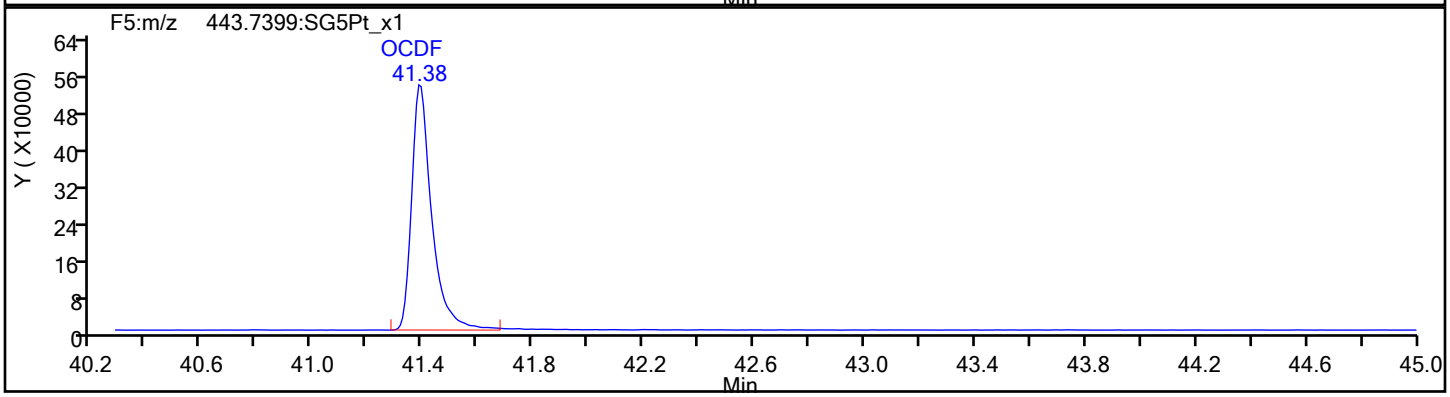
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d

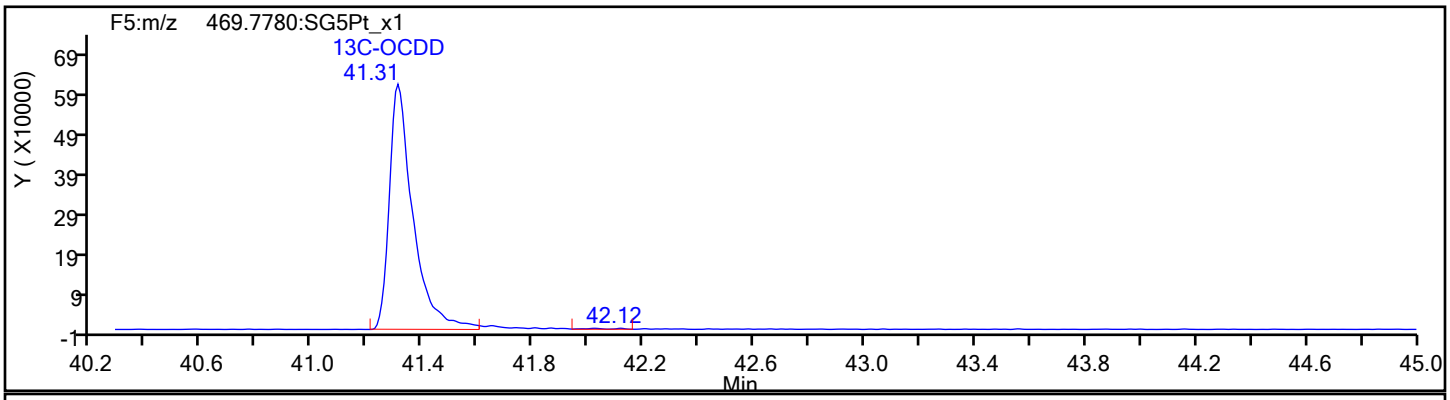
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

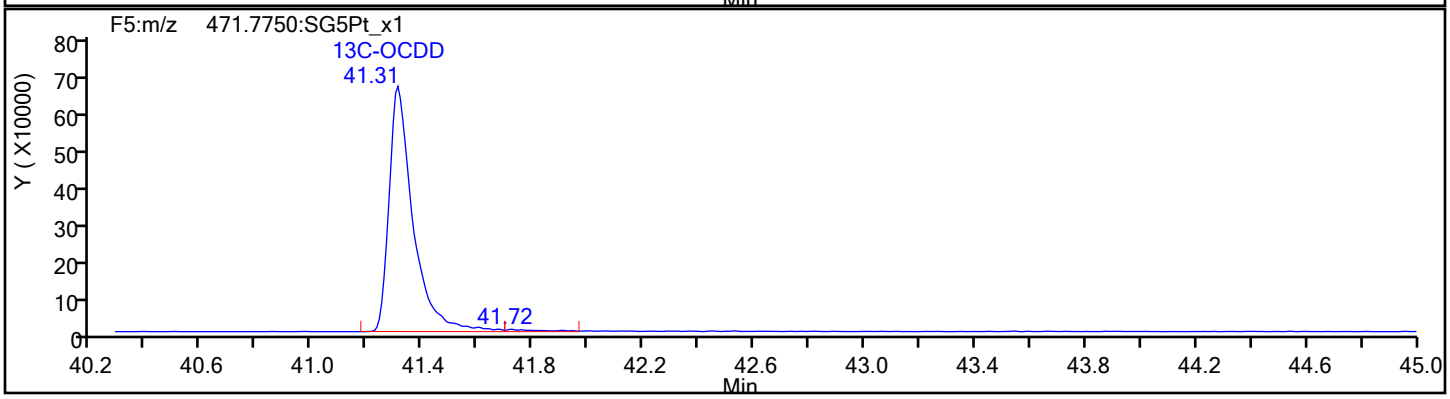
OCDF





OCDF Standards



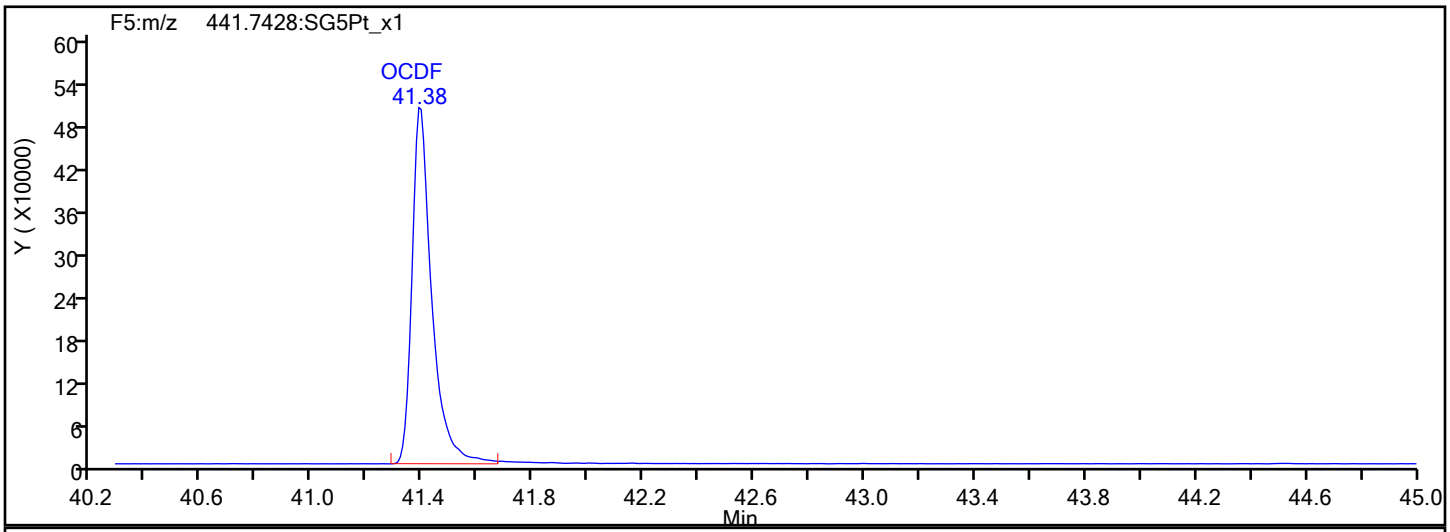


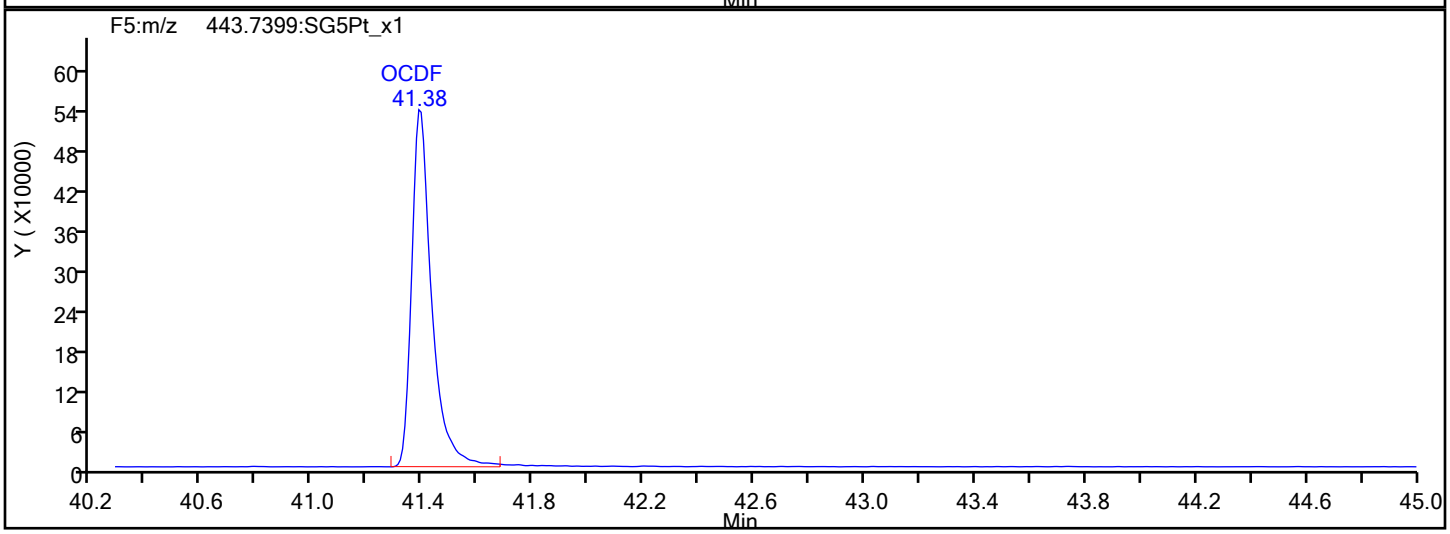
Report Date: 14-Dec-2019 01:10:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

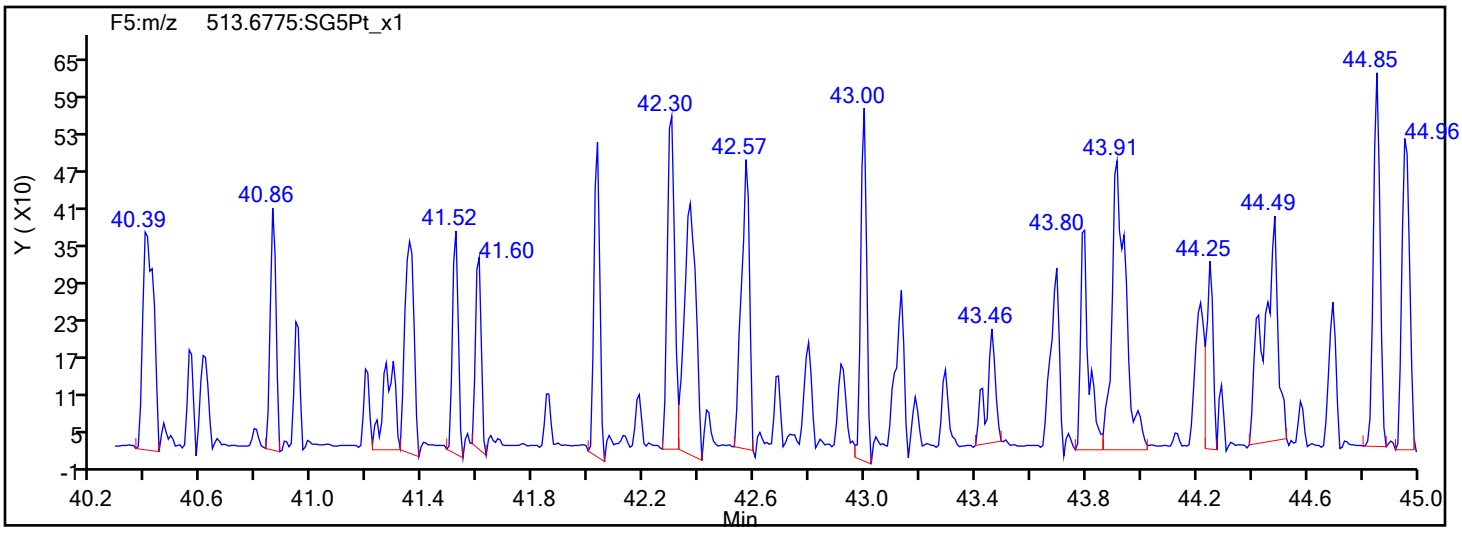
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

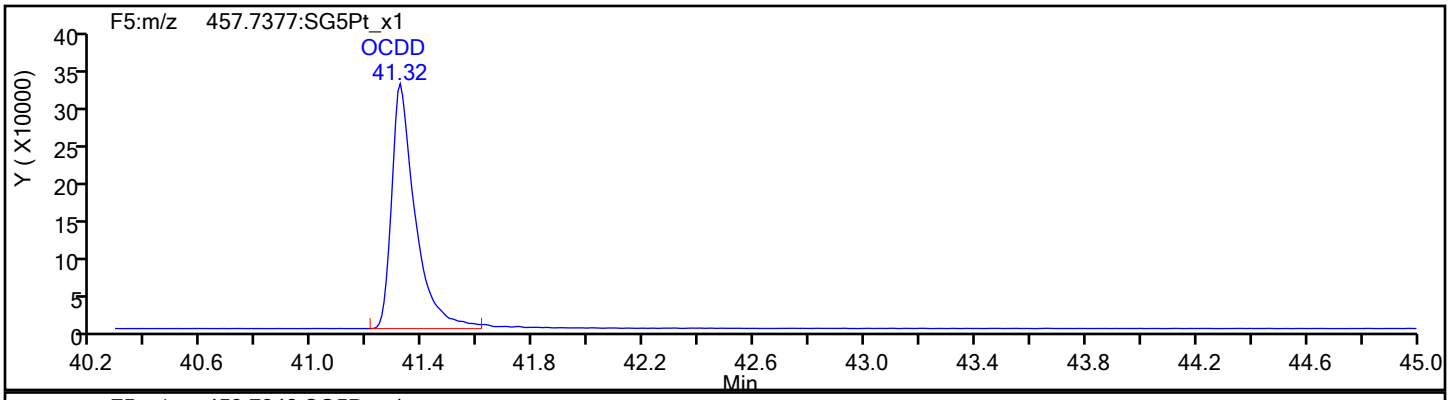


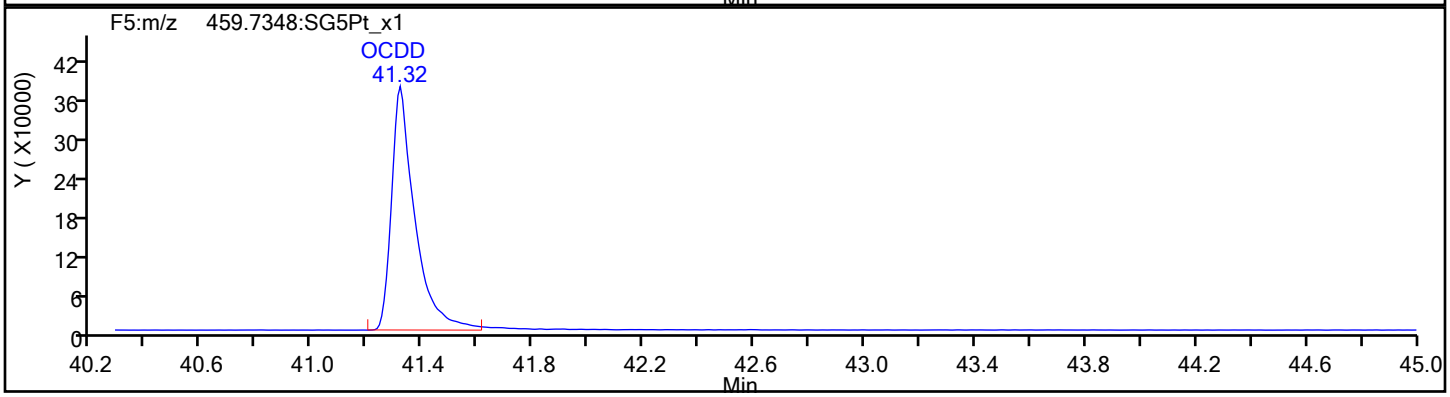
Report Date: 14-Dec-2019 01:10:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

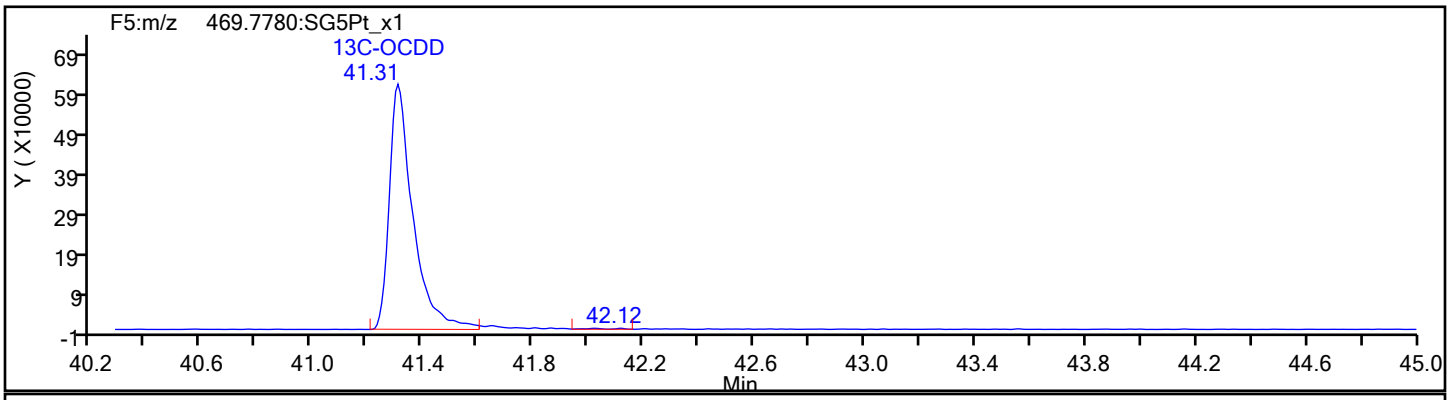
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

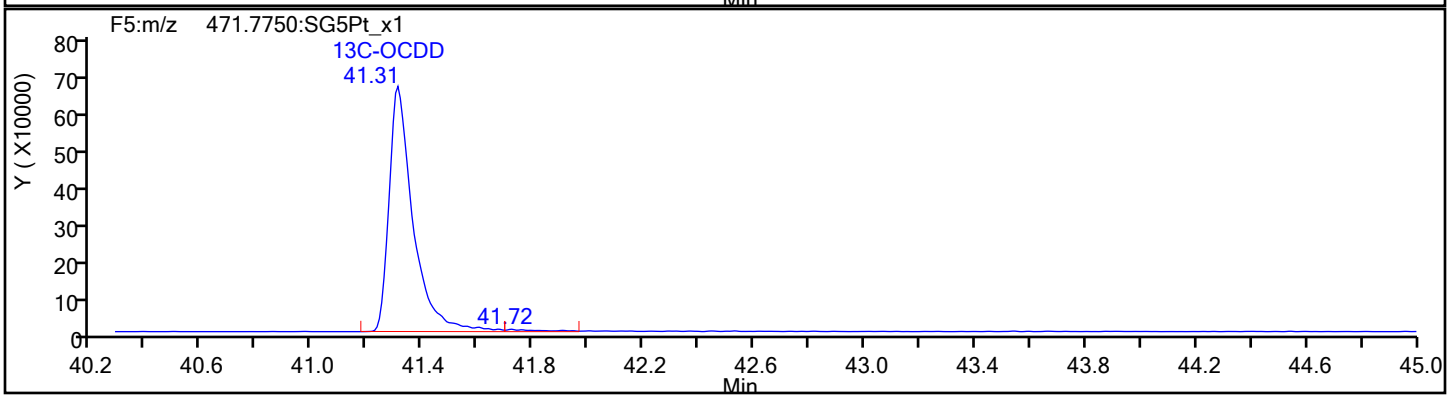
OCDD





OCDD Standards

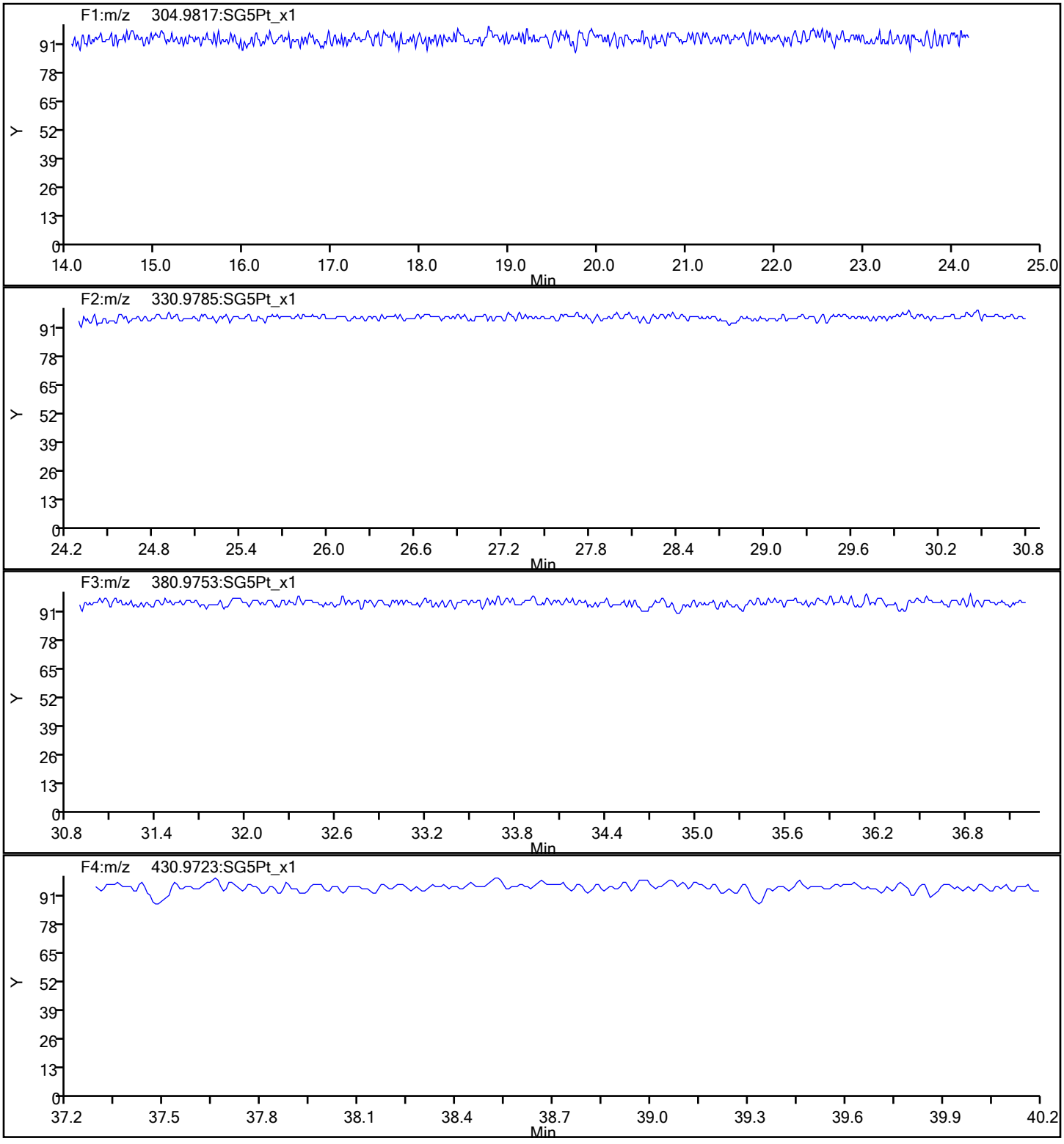




Report Date: 14-Dec-2019 01:10:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

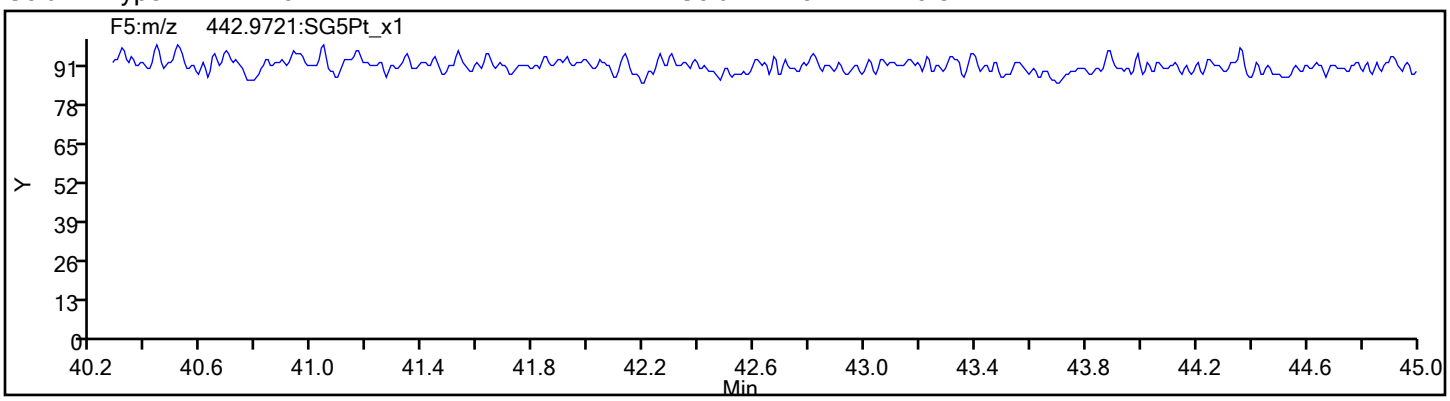
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 14-Dec-2019 01:10:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_3.d		
Injection Date:	13-Dec-2019 13:24:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 14-Nov-2019 08:14:53 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 111419 WDM HRDXNCP_00040
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 15-Nov-2019 12:54:54 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0323

First Level Reviewer: stephensk Date: 15-Nov-2019 12:54:54

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	17.034	71088860	0.79	1.3318					0.00	
2,3,7,8-TCDF	17.064	131317678	0.75	0.9005	82.1	82.1	0.2600	0.2600		
A Non-2,3,7,8-sub-TCDF	16.769						0.2600	0.2600		
S Total TCDF					82.1	82.1	0.2600	0.2600		
D 13C-2,3,7,8-TCDD	17.729	48784400	0.80	0.9647					0.00	
2,3,7,8-TCDD	17.744	52736237	0.78	1.0698	40.4	40.4	0.2860	0.2860		
A Non-2,3,7,8-sub-TCDD	17.207						0.2860	0.2860		
S Total TCDD					40.4	40.4	0.2860	0.2860		
A F1 PeCDFs	19.339						0.0	0.0		
A Non-2,3,7,8-sub-PeCDF	22.421	913390	1.57	0.0000						
S Total PeCDF										
A Non-2,3,7,8-sub-PeCDD	22.911						0.0	0.0		
S Total PeCDD										
A Non-2,3,7,8-sub-HxCDF	29.813						0.0	0.0		
S Total HxCDF										
A Non-2,3,7,8-sub-HxCDD	30.412						0.0	0.0		
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	33.579	41308036	1.03	1.4240						
1,2,3,4,7,8,9-HpCDF	34.636	34514634	1.03	1.2834						
A Non-2,3,7,8-sub-HpCDF	34.107						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	34.356	27686370	1.05	1.0174						
A Non-2,3,7,8-sub-HpCDD	34.089						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	14.690	72836881	0.76							
1,3,6,8-TCDD	15.582	52906876	0.78							
2,3,4,7-TCDF	17.064	131317678	0.75							
1,2,3,7-TCDD	17.638	47854729	0.78							
1,2,3,9-TCDF	17.910	57573865	0.77							
1,2,3,9-TCDD	17.910	56596493	0.78							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,8,9-TCDD	18.833	21892807								
1,2,8,9-TCDF	18.848	58664239	0.75							
1,3,4,6,8-PeCDF	19.105	69056670	1.55							
1,2,4,7,9-PeCDD	20.845	42866848	1.58							
1,2,3,8,9-PeCDD	24.977	39057505	1.60							
1,2,3,8,9-PeCDF	25.195	47095037	1.56							
1,2,3,4,6,8-HxCDF	27.411	40990392	1.22							
1,2,4,6,7,9-HxCDD	28.941	35148160	1.24							
1,2,3,4,6,7-HxCDD	31.883	33396222	1.24							
1,2,3,4,8,9-HxCDF	32.216	36251606	1.23							
1,2,3,4,6,7,9-HpCDD	33.822	31683527	1.05							

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Report Date: 15-Nov-2019 12:55:02 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 14-Nov-2019 08:14:53 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 111419 WDM HRDXNCP_00040
Misc. Info.: 14NO1910D5
Operator ID: SMA Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 15-Nov-2019 12:54:54 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0323

First Level Reviewer: stephensk Date: 15-Nov-2019 12:54:54

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	17.034	17.034	0	1.000	31313800	7720150	9080	22700	850		
317.9389	17.034	17.034	0	1.000	39775060	9968768	7897	19742	1262	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.064	17.049	1	1.002	56367823	13266582	17184	42960	772		
305.8987	17.064	17.049	1	1.002	74949855	17706849	24227	60567	731	0.75(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.769						17184	42960			
305.8987	16.769						24227	60567			
13C-2,3,7,8-TCDD											
331.9368	17.729	17.729	0	1.000	21688015	5257745	7059	17647	745		
333.9339	17.729	17.729	0	1.000	27096385	6628913	4465	11162	1485	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.744	17.744	0	1.001	23028700	5641767	13814	34535	408		
321.8936	17.744	17.744	0	1.001	29707537	7323313	22550	56375	325	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	17.207						13814	34535			
321.8936	17.207						22550	56375			
A F1 PeCDFs											
339.8597	19.339						1382	3455			
341.8567	19.339						1519	3797			
A Non-2,3,7,8-sub-PeCDF											
339.8597	21.417	22.421	-60	1.000	149257	26995	4749	11872	6		
341.8567	21.417	22.421	-60	1.000	109682	18668	3891	9727	5	1.36(1.32-1.78)	
339.8597	21.977	22.421	-27	1.000	233572	28198	4749	11872	6		
341.8567	21.963	22.421	-27	1.000	144515	19014	3891	9727	5	1.62(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	22.522	22.421	6	1.000	174851	26613	4749	11872	6		
341.8567	22.522	22.421	6	1.000	101513	16718	3891	9727	4	1.72(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.911						5813	14532			
357.8516	22.911						3503	8757			
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.813						6826	17065			
375.8178	29.813						5395	13487			
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.412						6286	15715			
391.8127	30.412						5033	12582			
1,2,3,4,6,7,8-HpCDF											
407.7818	33.579	33.579	0	1.000	20909426	6129774	47647	119117	129		
409.7789	33.579	33.579	0	1.000	20398610	5981280	37024	92560	162	1.03(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.636	34.629	0	1.000	17486437	4474188	47647	119117	94		
409.7789	34.636	34.629	0	1.000	17028197	4291296	37024	92560	116	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.107						47647	119117			
409.7789	34.107						37024	92560			
1,2,3,4,6,7,8-HpCDD											
423.7766	34.356	34.349	0	1.000	14163873	3712421	35302	88255	105		
425.7737	34.356	34.349	0	1.000	13522497	3489935	34596	86490	101	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.089						35302	88255			
425.7737	34.089						34596	86490			
1,3,6,8-TCDF											
303.9016	14.690	14.690	0		31486320	10256030	17184	42960	597		
305.8987	14.690	14.690	0		41350561	13354518	24227	60567	551	0.76(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	15.582	15.582	0		23178008	6815760	13814	34535	493		
321.8936	15.582	15.582	0		29728868	8577172	22550	56375	380	0.78(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	17.064	17.064	0		56367823	13266582	17184	42960	772		
305.8987	17.064	17.064	0		74949855	17706849	24227	60567	731	0.75(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	17.638	17.638	0		21012834	5232163	13814	34535	379		
321.8936	17.638	17.638	0		26841895	6618682	22550	56375	294	0.78(0.65-0.89)	
1,2,3,9-TCDF											
303.9016	17.910	17.910	0		24985520	6155159	17184	42960	358		
305.8987	17.910	17.910	0		32588345	7997634	24227	60567	330	0.77(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	17.910	17.910	0		24732086	6025748	13814	34535	436		
321.8936	17.910	17.910	0		31864407	7712994	22550	56375	342	0.78(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	18.833	18.833	0		21892807	4984353	13814	34535	361		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,8,9-TCDF											
303.9016	18.848	18.848	0		25098033	5635215	17184	42960	328		
305.8987	18.833	18.848	-1		33566206	7408842	24227	60567	306	0.75(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	19.105	19.105	0		41941201	9301647	1382	3455	6731		
341.8567	19.105	19.105	0		27115469	6057803	1519	3797	3988	1.55(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	20.845	20.845	0		26261054	4761926	5813	14532	819		
357.8516	20.845	20.845	0		16605794	3009451	3503	8757	859	1.58(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	24.977	24.977	0		24024983	3519789	5813	14532	606		
357.8516	24.977	24.977	0		15032522	2201465	3503	8757	628	1.60(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	25.195	25.195	0		28688854	4140718	4749	11872	872		
341.8567	25.195	25.195	0		18406183	2664386	3891	9727	685	1.56(1.32-1.78)	
1,2,3,4,6,8-HxCDF											
373.8208	27.411	27.411	0		22501597	3015418	6826	17065	442		
375.8178	27.411	27.411	0		18488795	2499708	5395	13487	463	1.22(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8157	28.941	28.941	0		19469349	2442738	6286	15715	389		
391.8127	28.941	28.941	0		15678811	1960439	5033	12582	390	1.24(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8157	31.883	31.883	0		18494152	4568168	6286	15715	727		
391.8127	31.883	31.883	0		14902070	3652757	5033	12582	726	1.24(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	32.216	32.216	0		20012667	5095885	6826	17065	747		
375.8178	32.202	32.216	-1		16238939	4121008	5395	13487	764	1.23(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7766	33.822	33.822	0		16238887	4477376	35302	88255	127		
425.7737	33.810	33.822	-1		15444640	4223506	34596	86490	122	1.05(0.88-1.20)	

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 14-Nov-2019 08:14:53 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 10D5 Operator: SMA
Lims Batch ID: 338471 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 22.421

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970				
2,3,4,7,8-PeCDF	0.999				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
21.417	149257	26995	109682	18668		1.36	
21.977	233572	28198	144515	19014		1.62	
22.522	174851	26613	101513	16718		1.72	
Signal Totals:							
	557680	81806	355710	54400			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	913390	136206				1.57	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

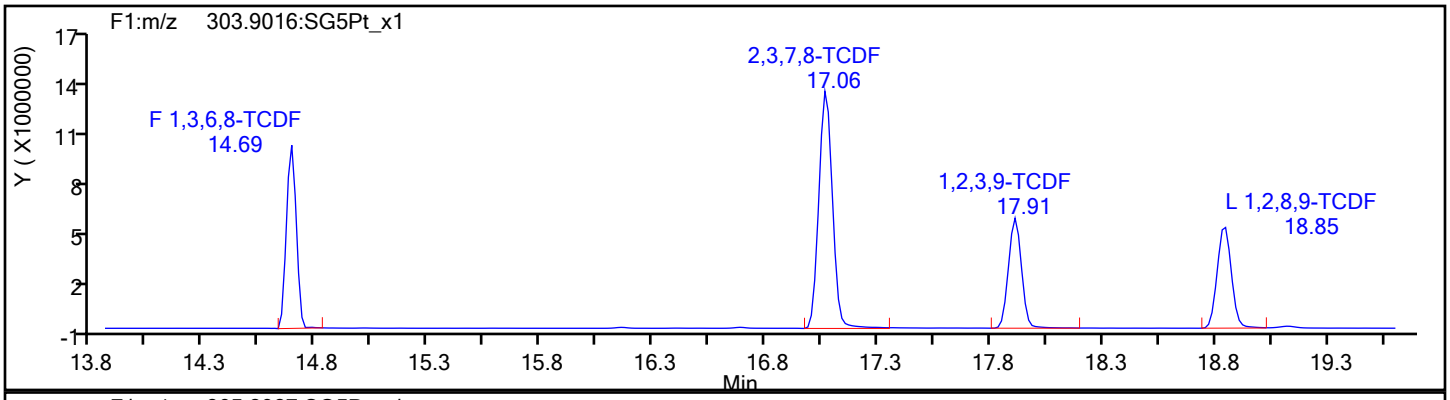
Amount: 0.0 = (913390 * 0.0) / (0 * 0.000)

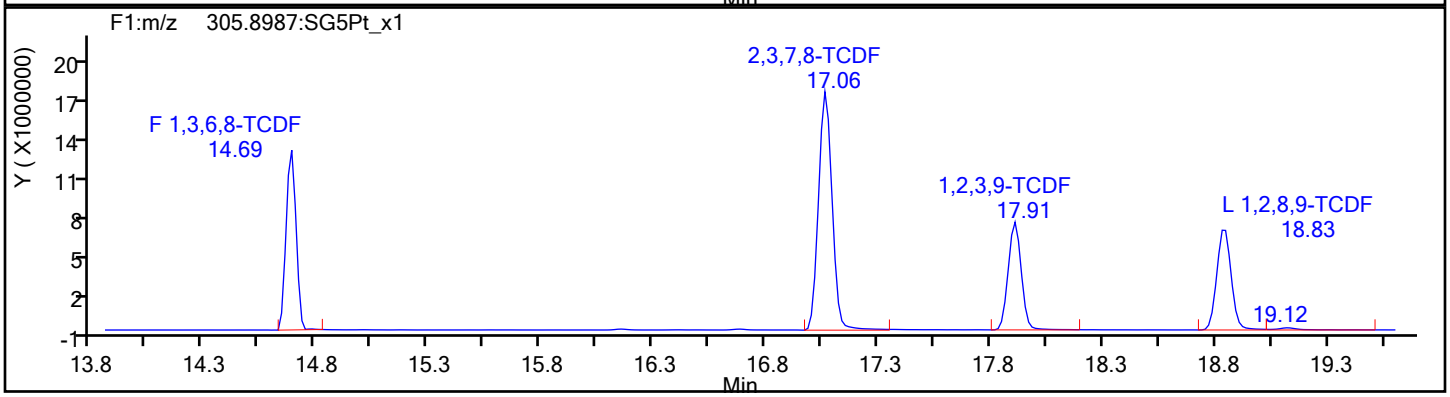
Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

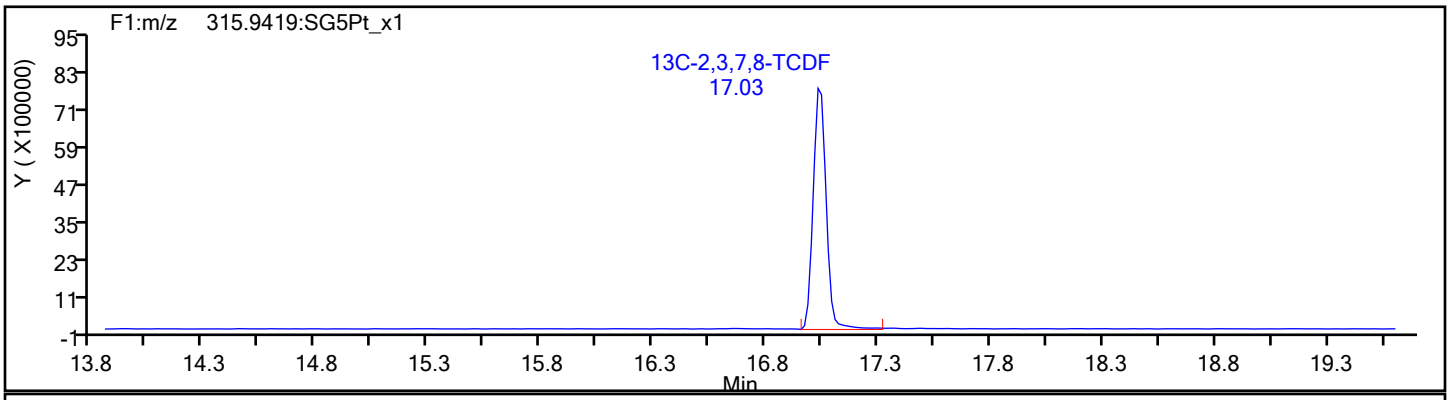
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

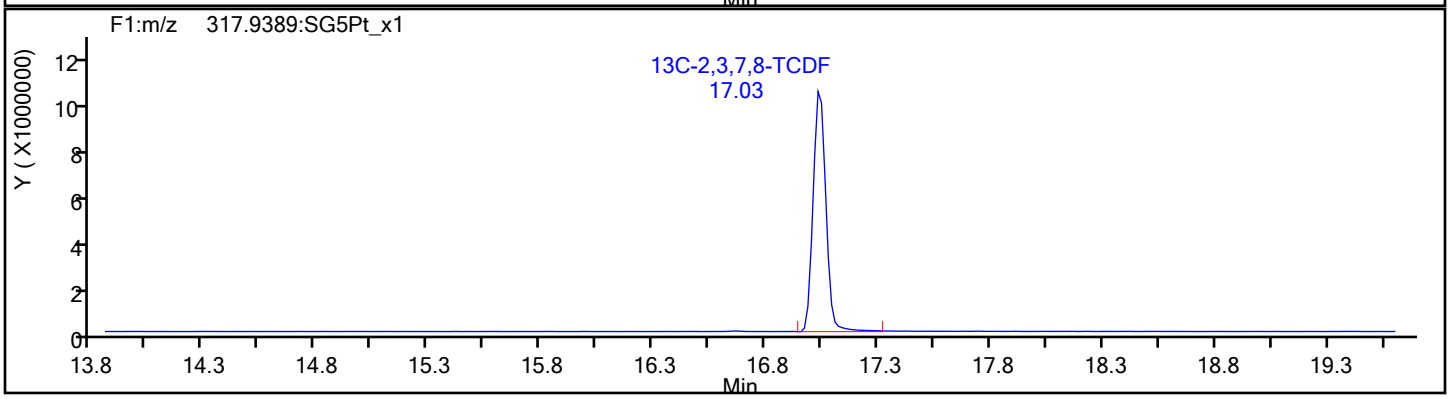
TCDF





TCDF Standards





Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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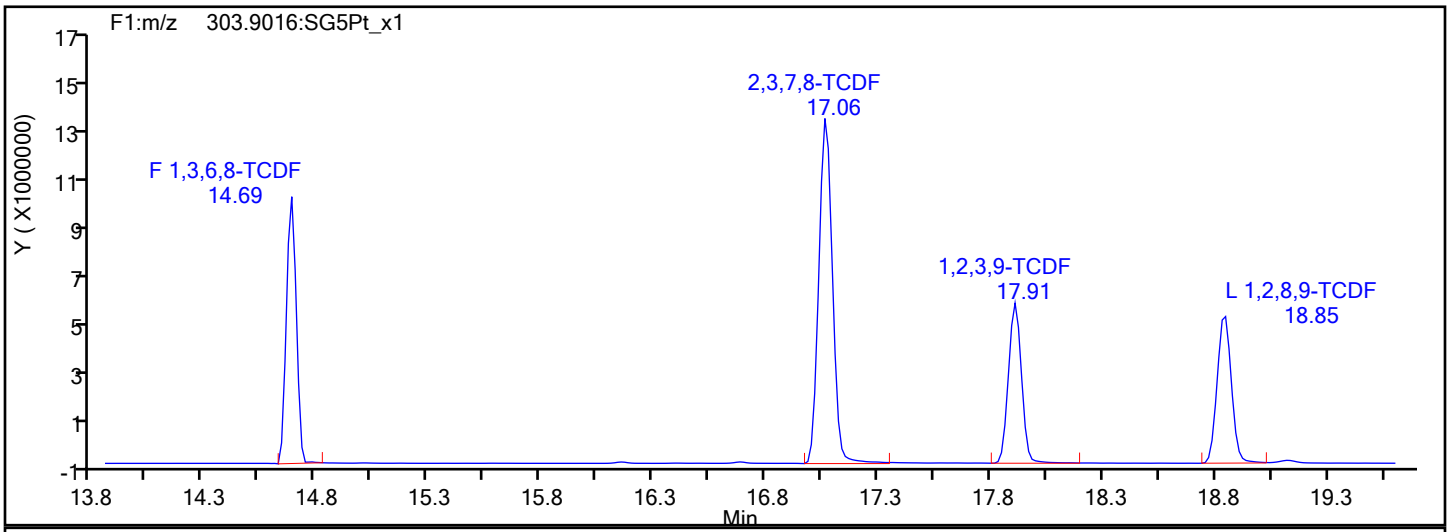
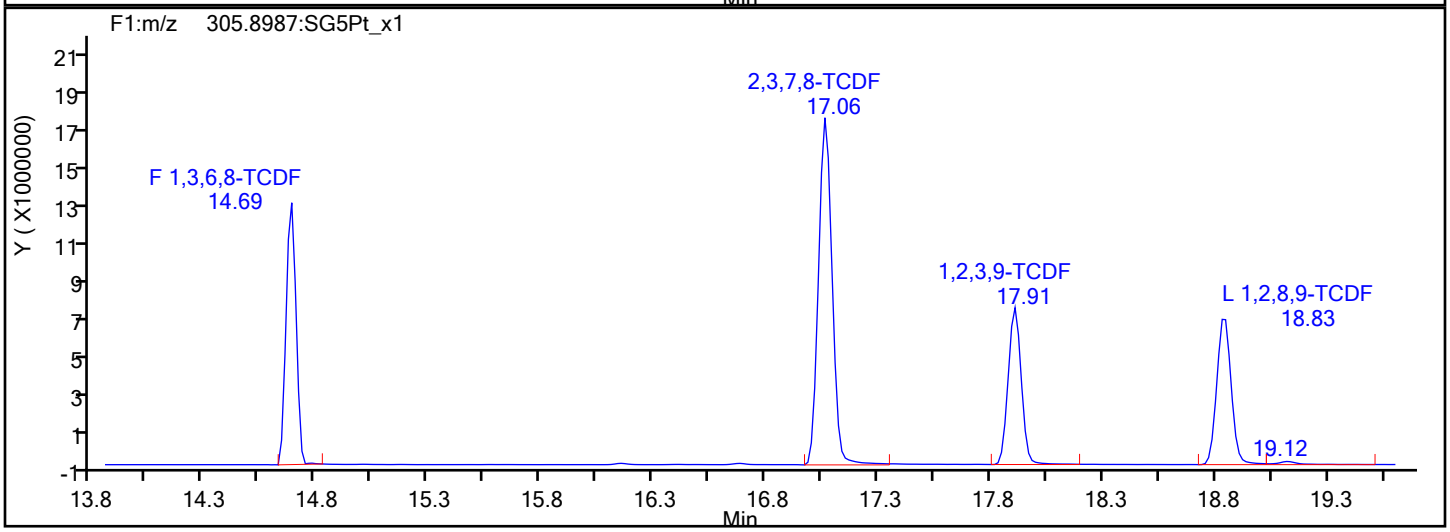
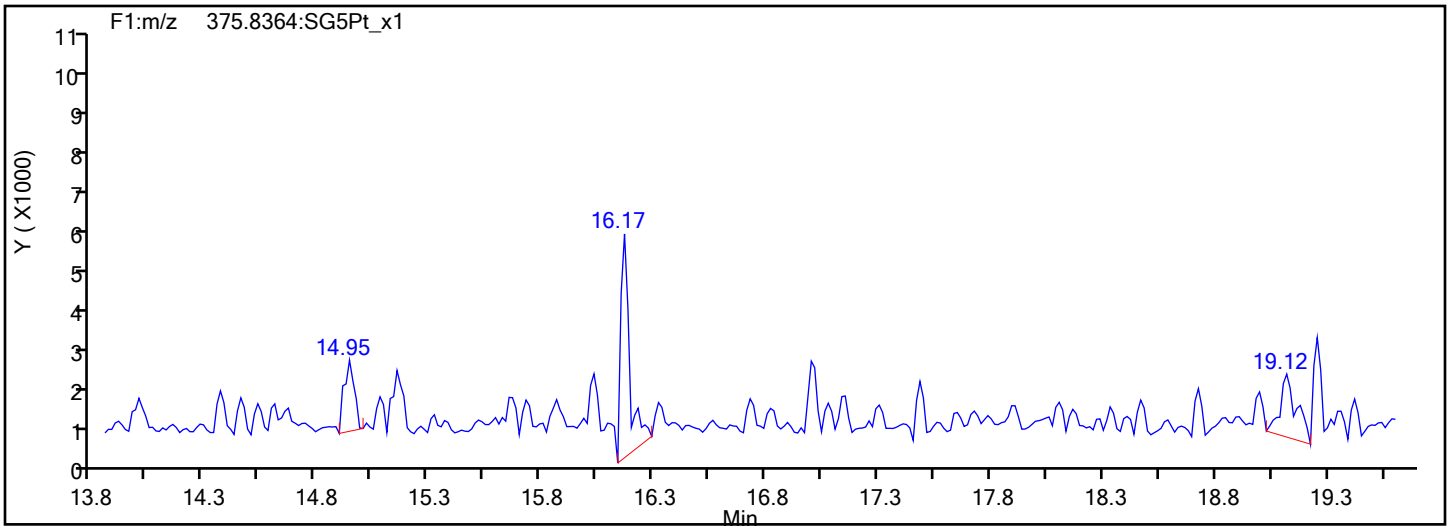
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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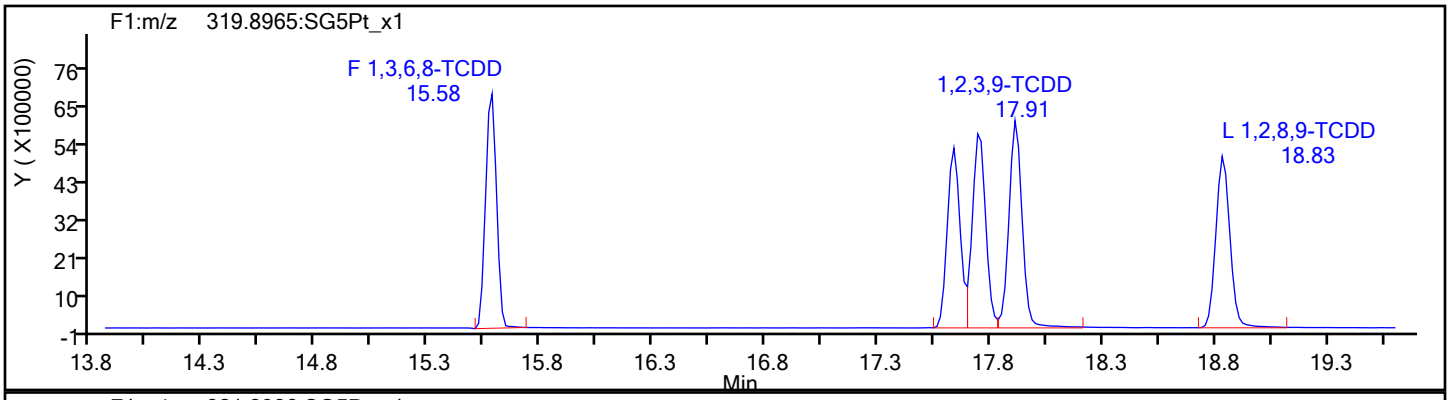
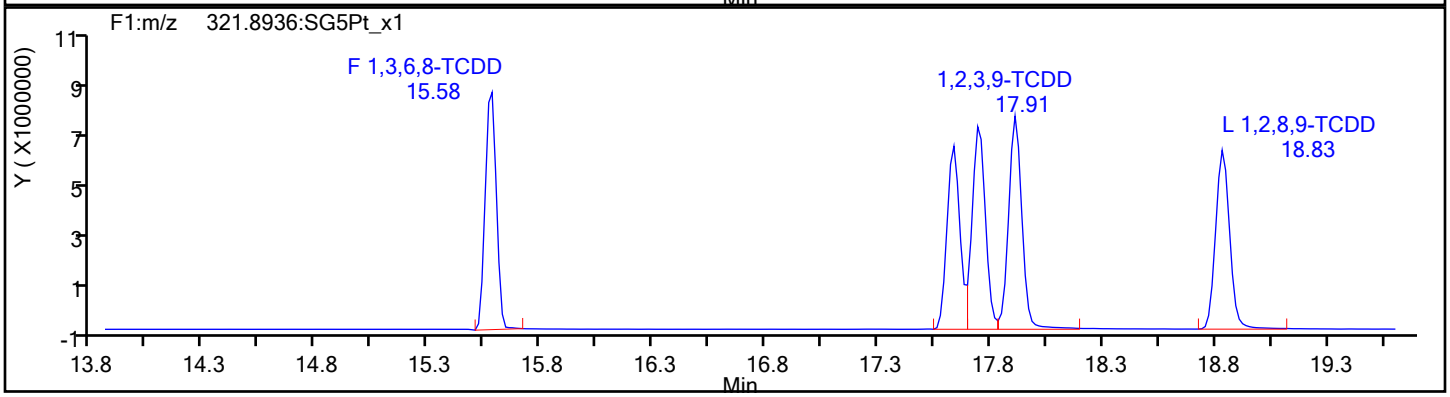
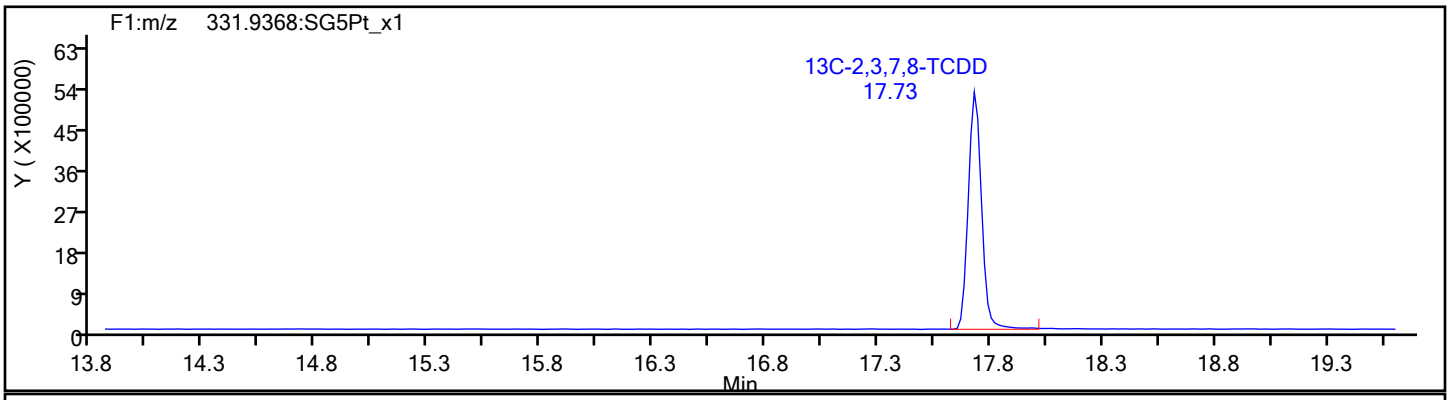
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

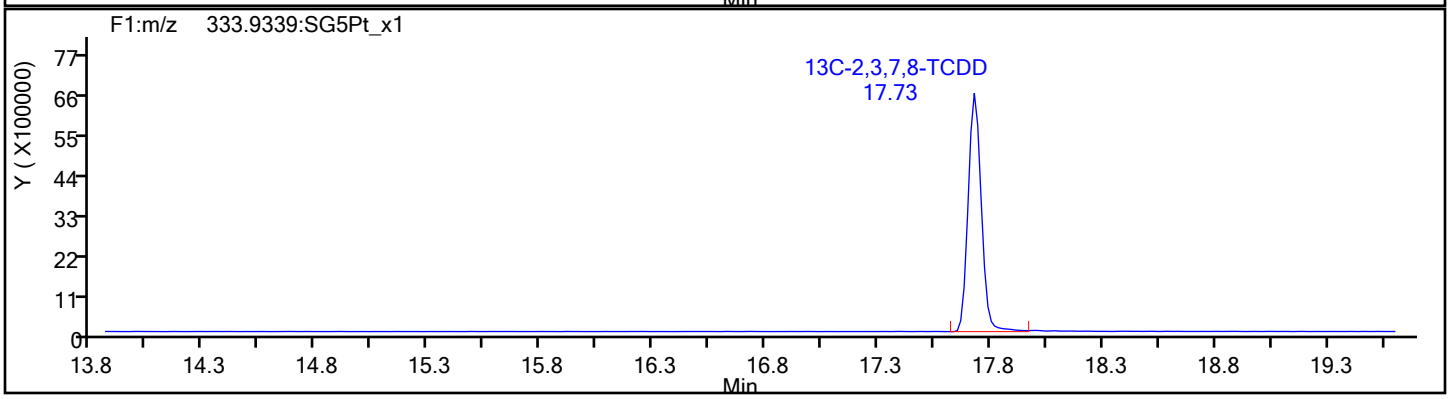
TCDD





TCDD Standards





Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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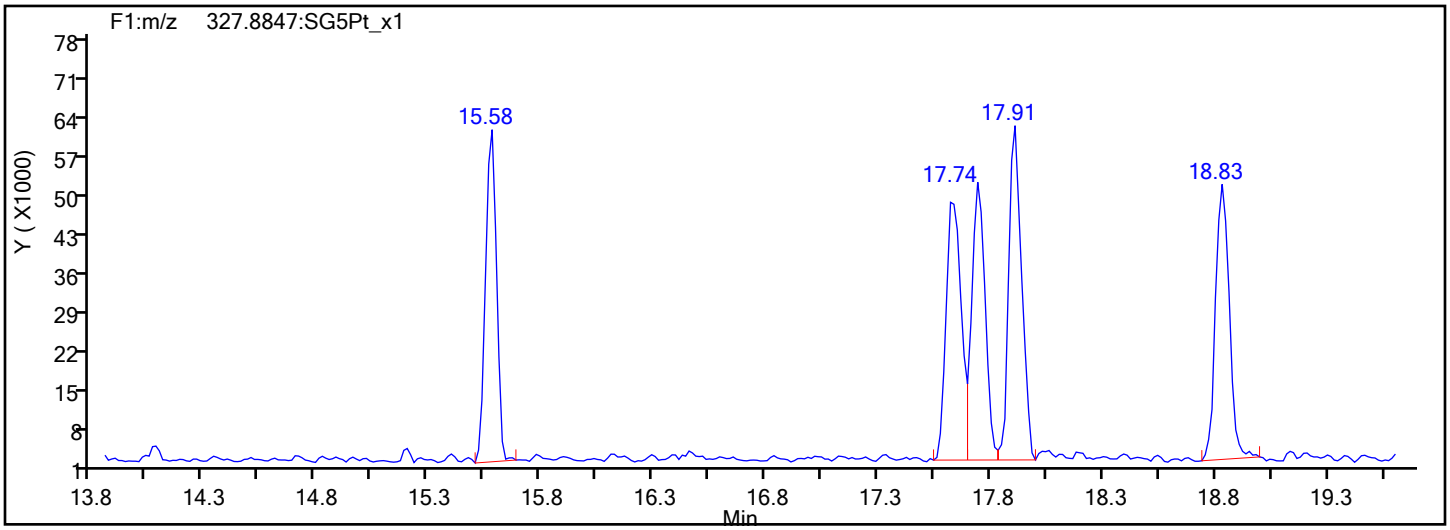
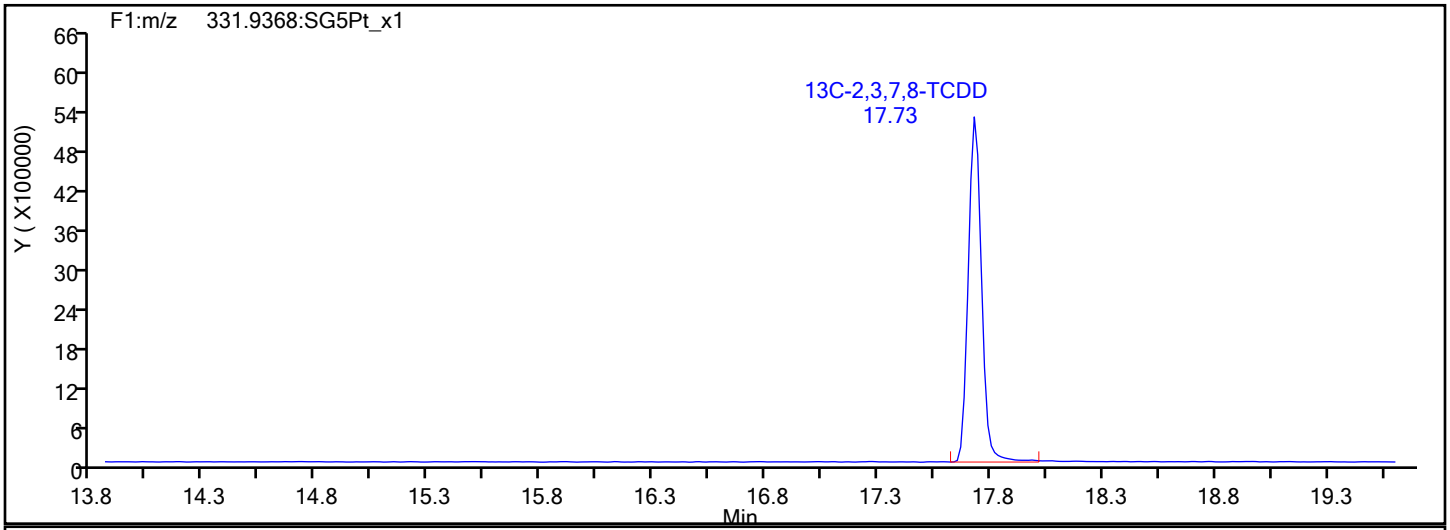
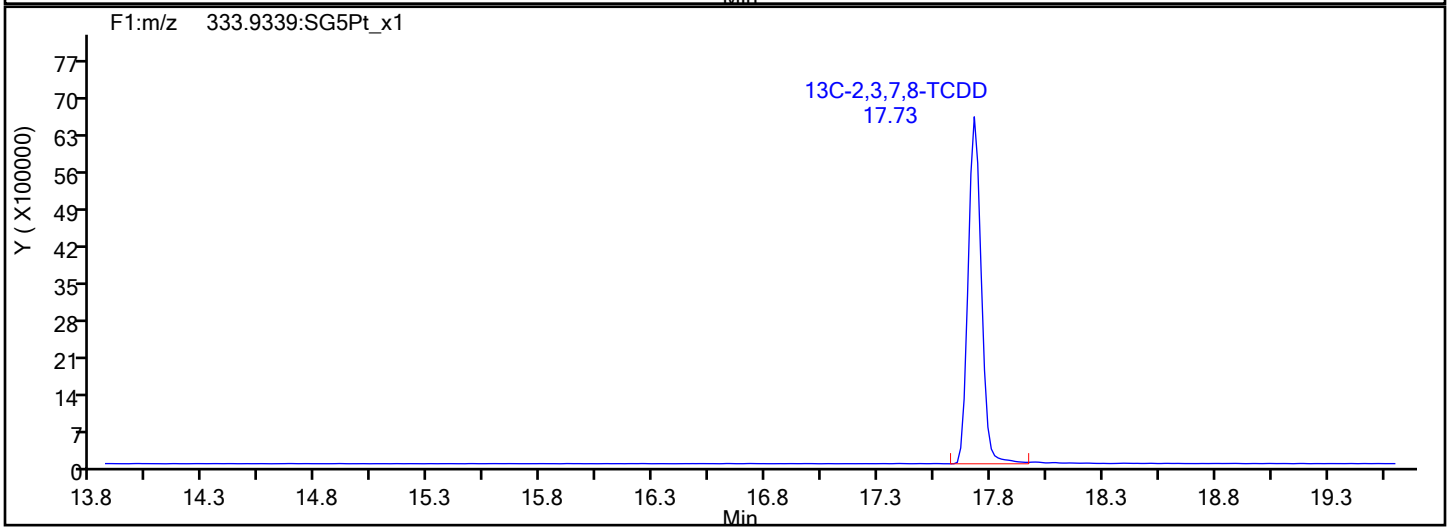
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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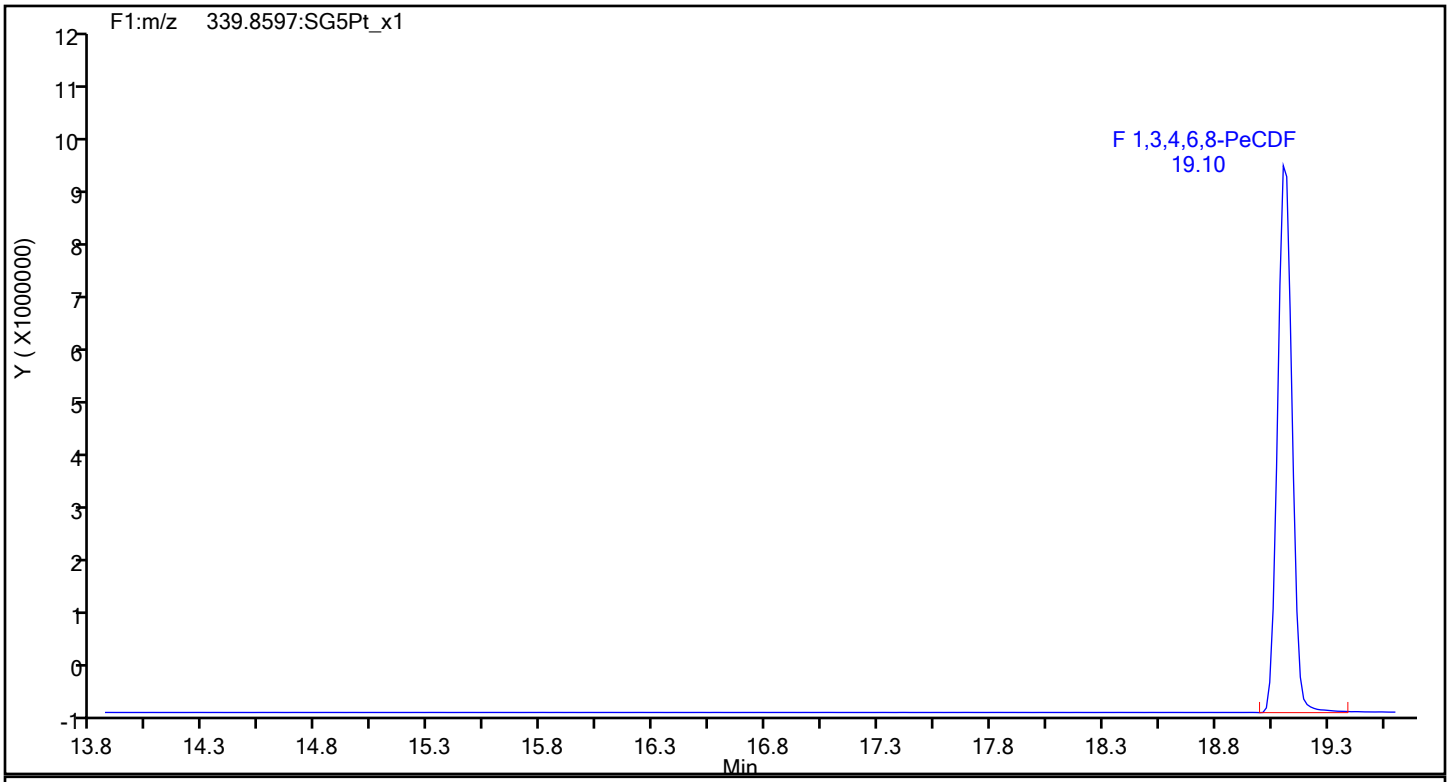
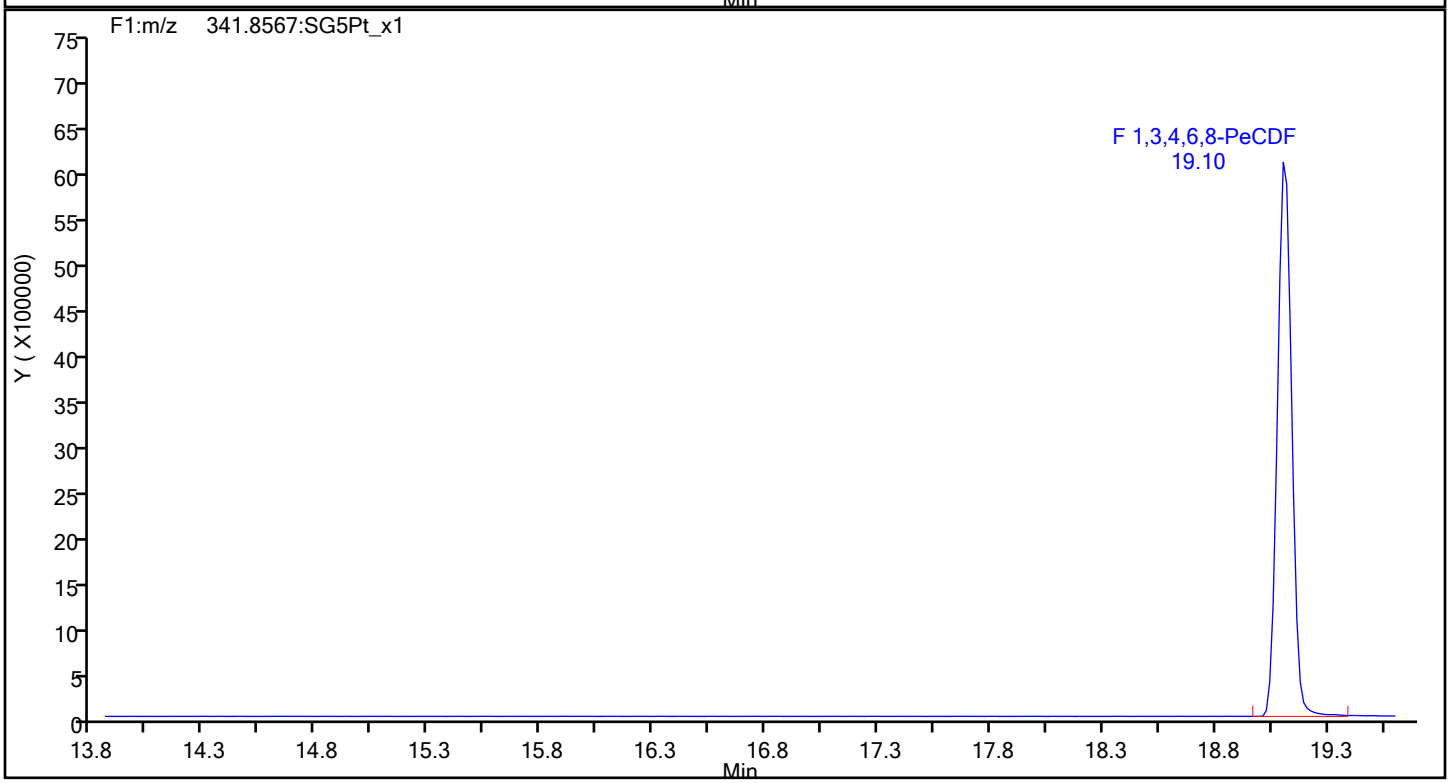
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
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Client ID:			
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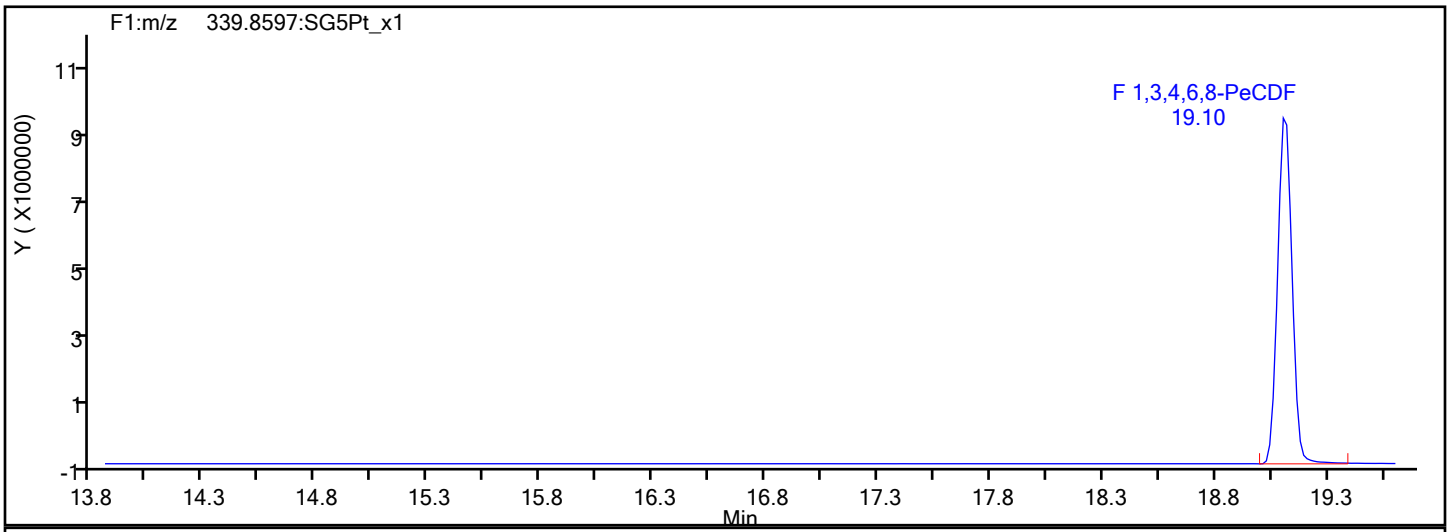
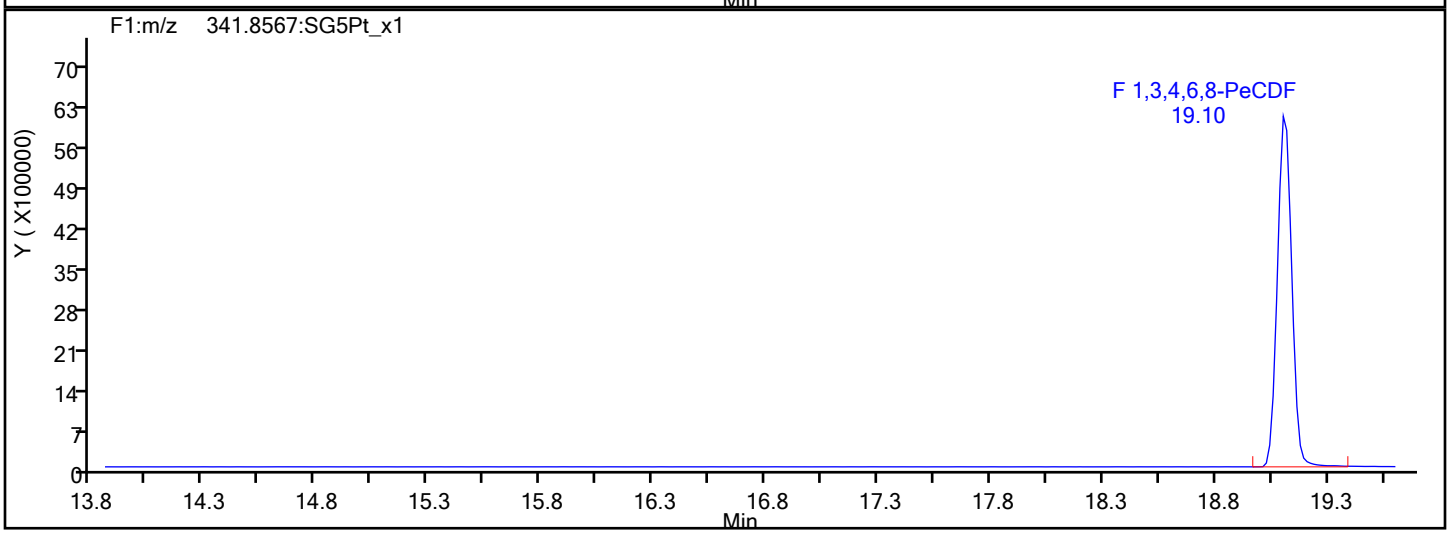
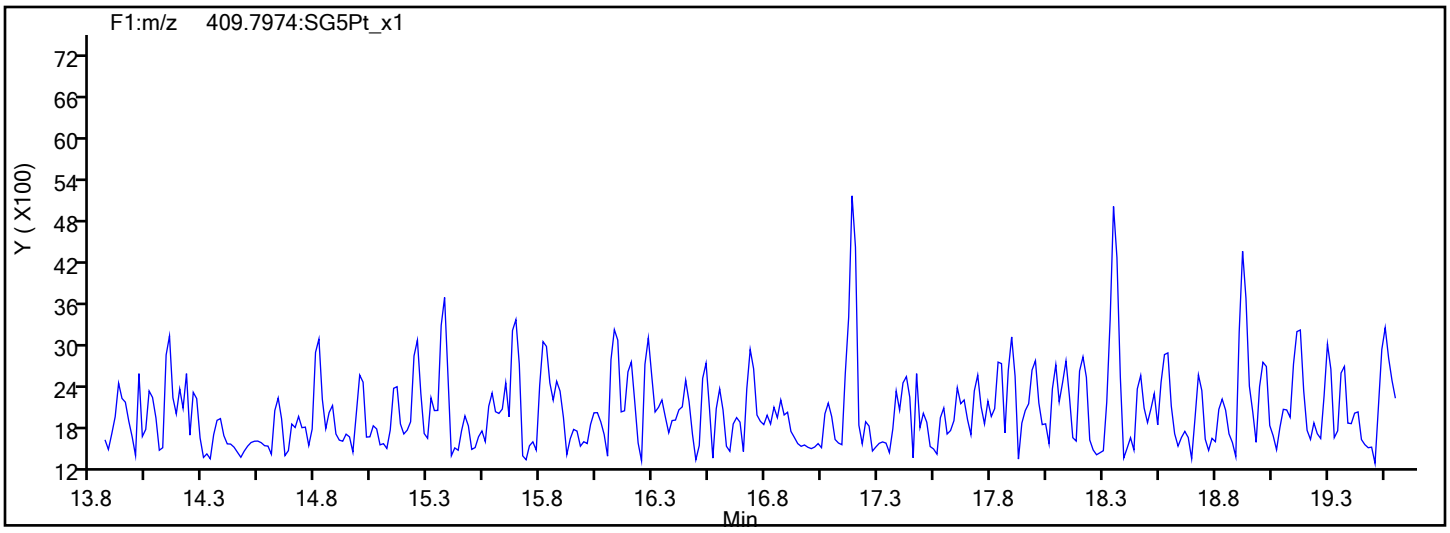
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

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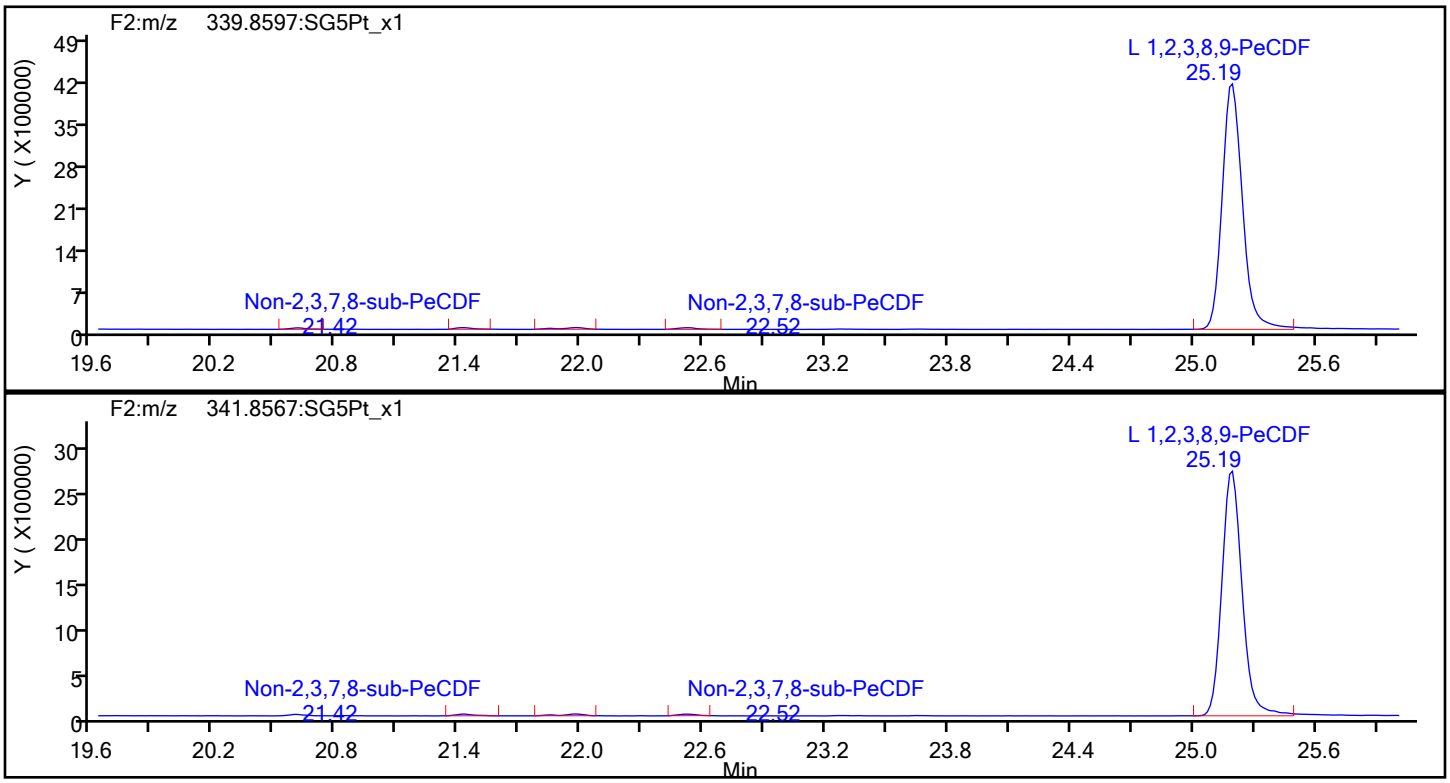
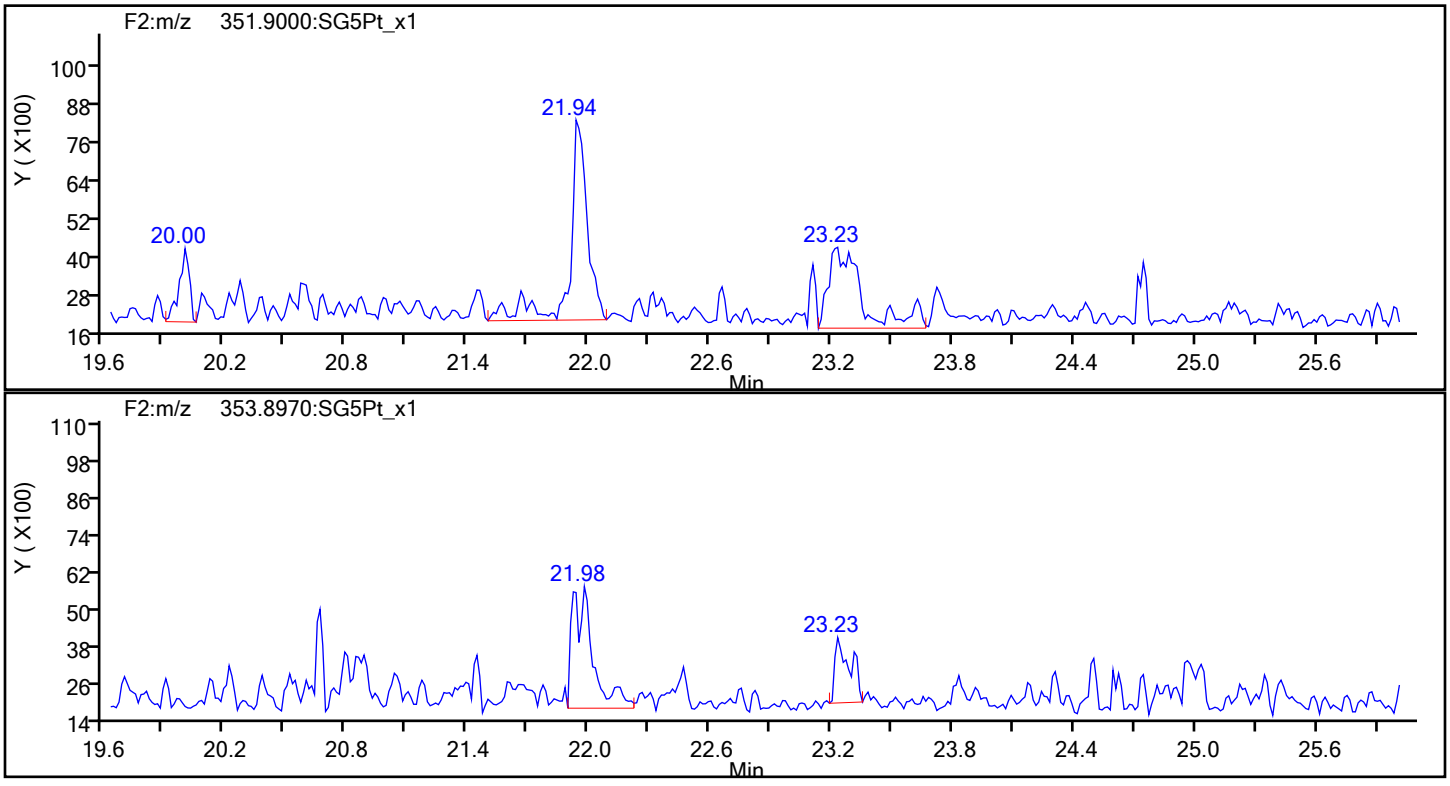
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
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Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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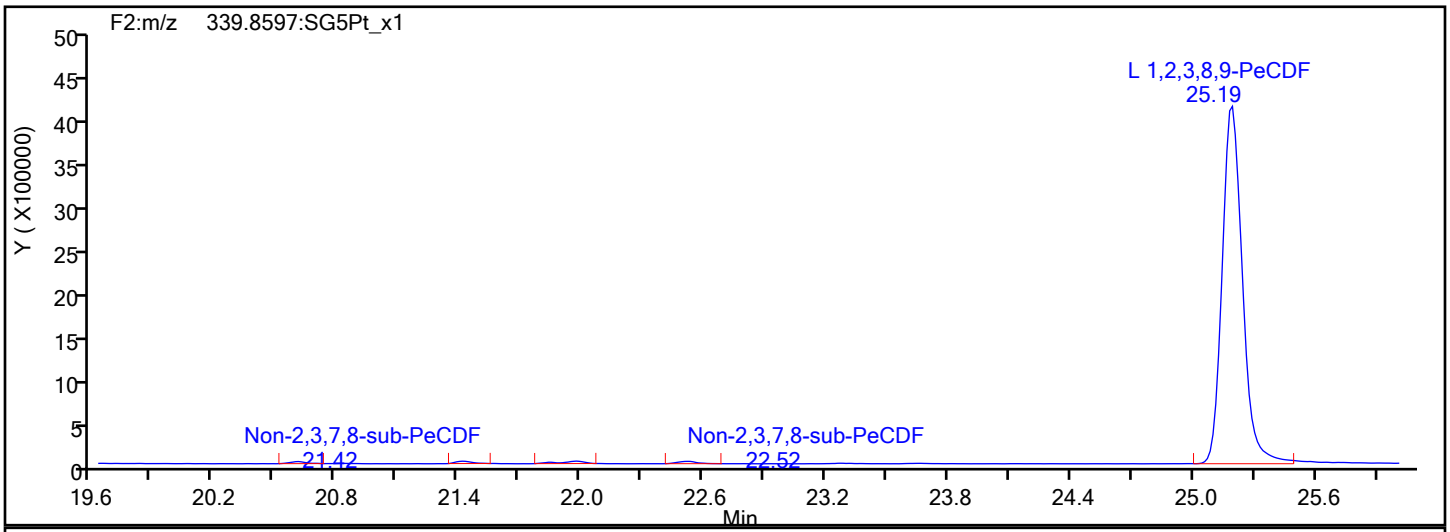
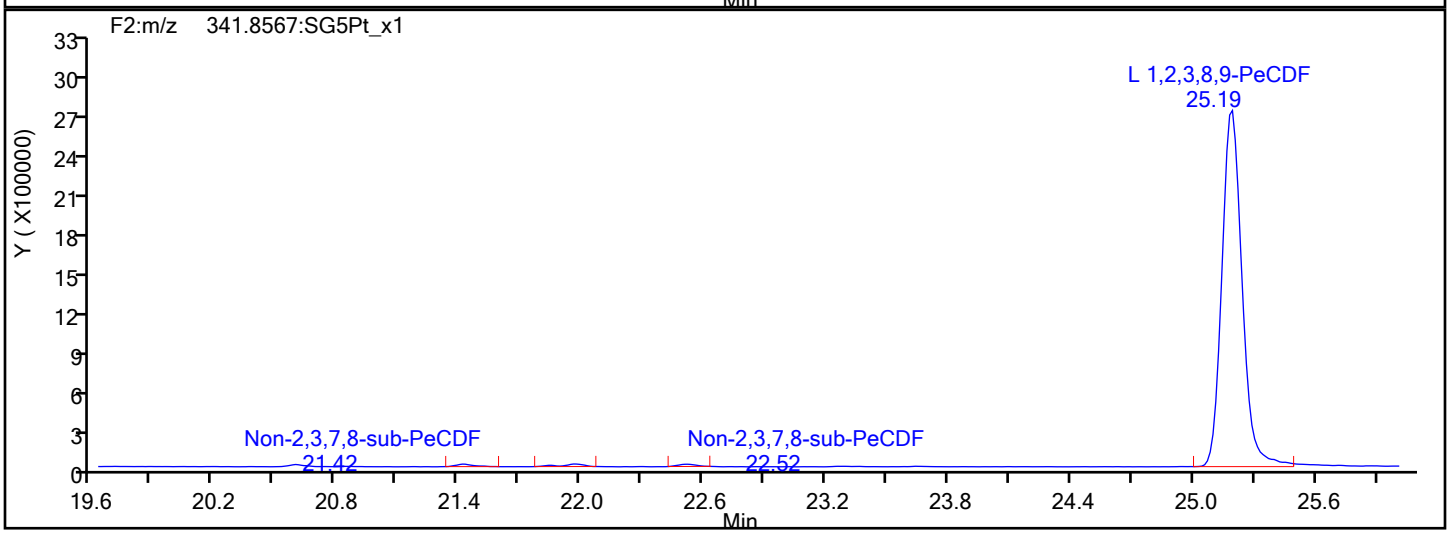
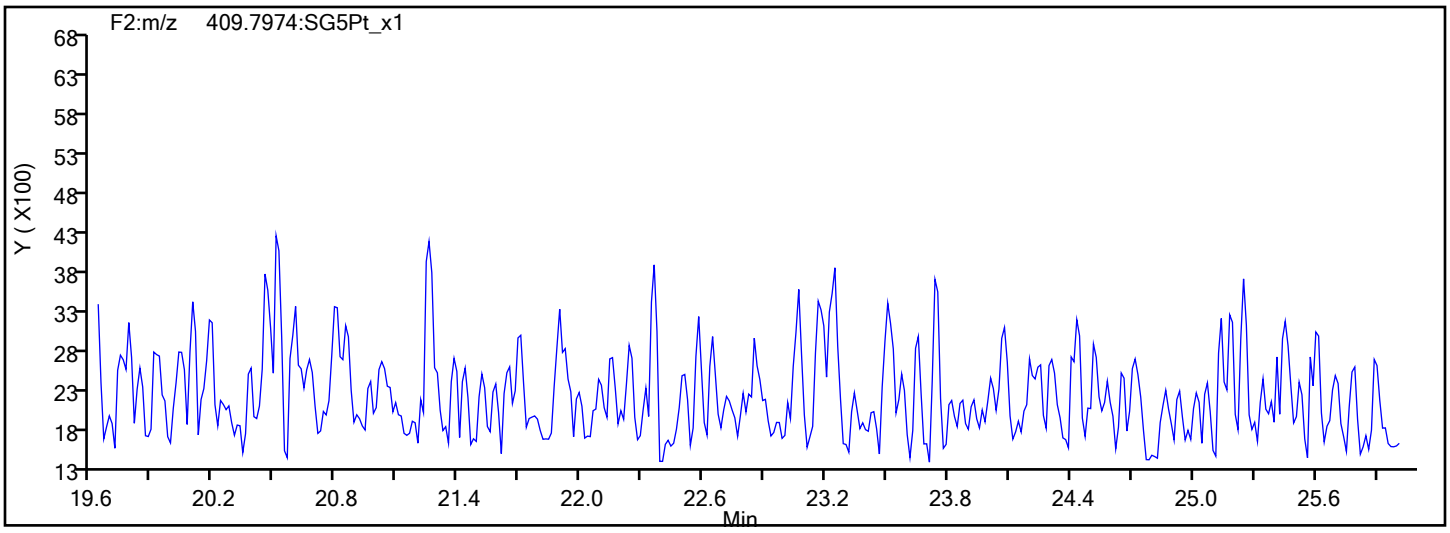
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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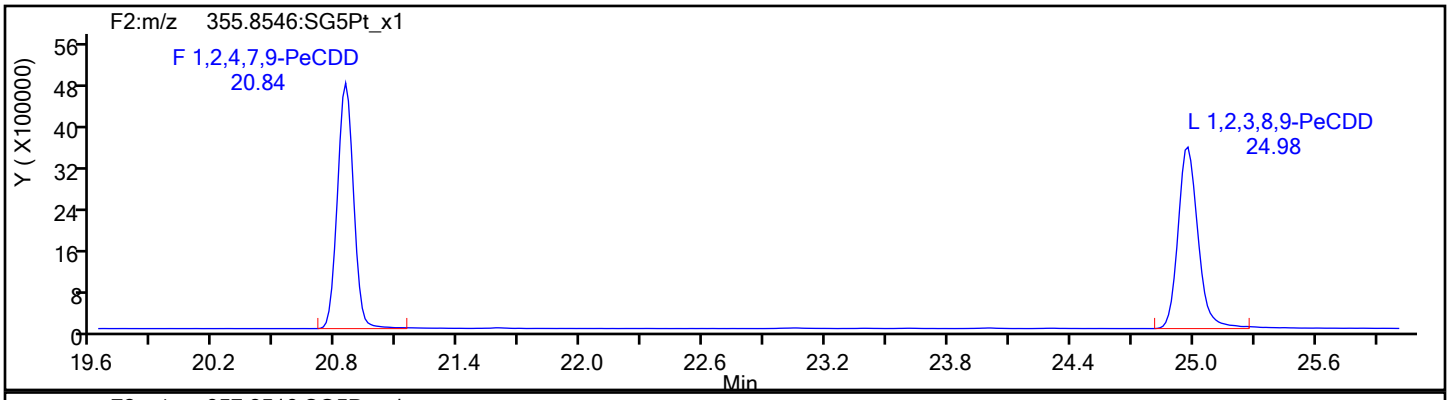
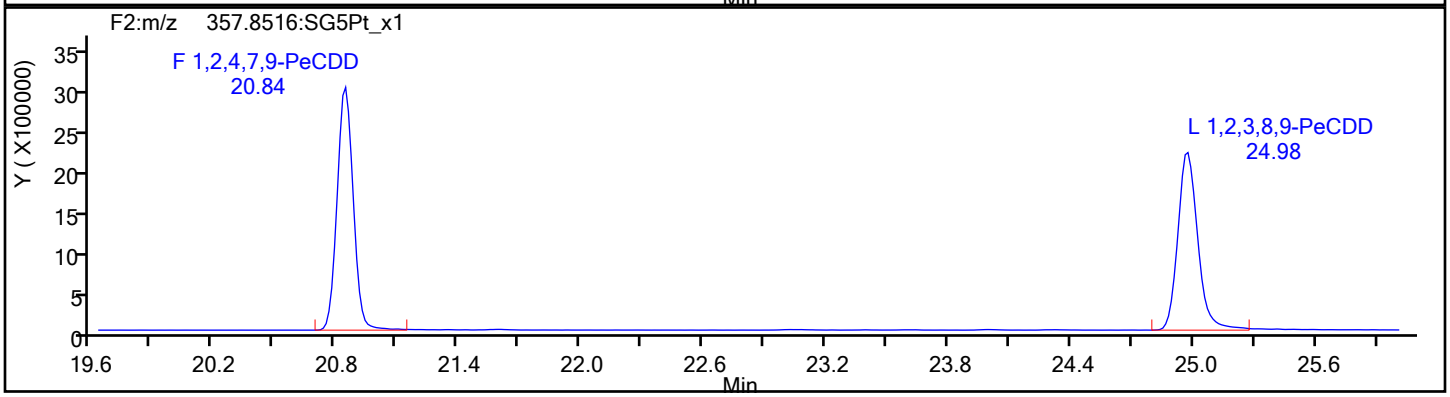
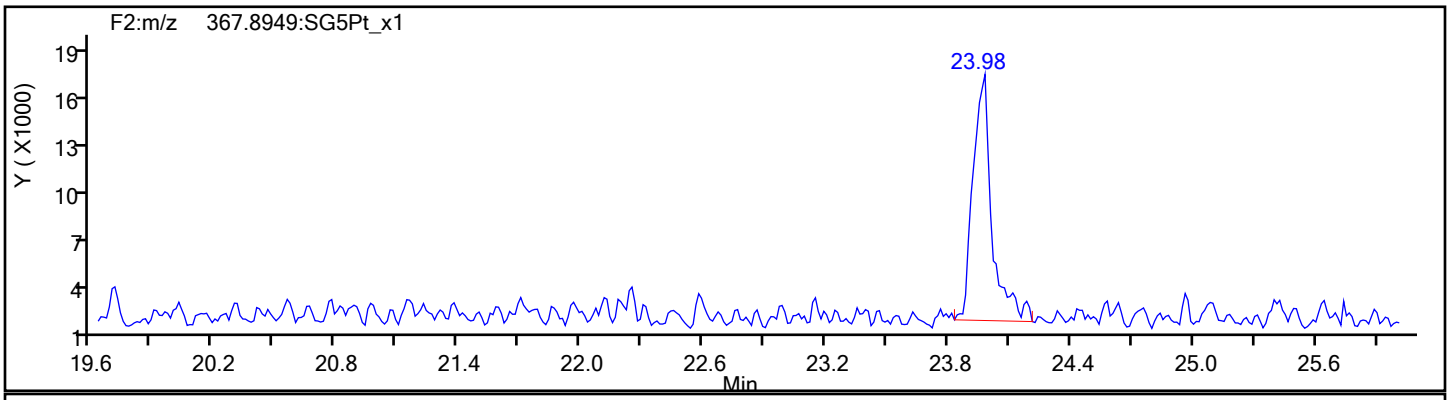
Column Type:	DB-5	Column Dia:	0.32 mm

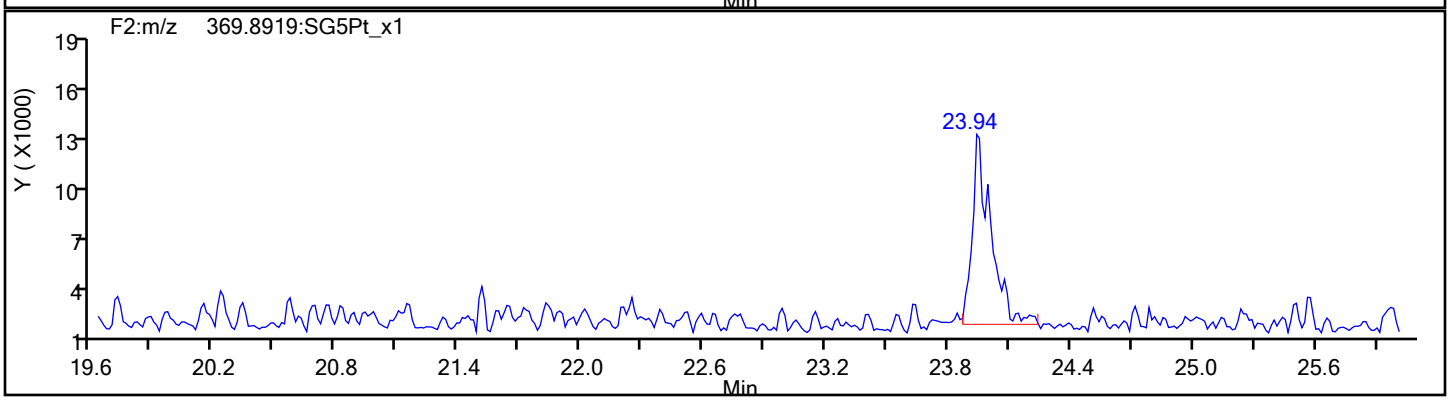
PeCDD





PeCDD Standards





Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
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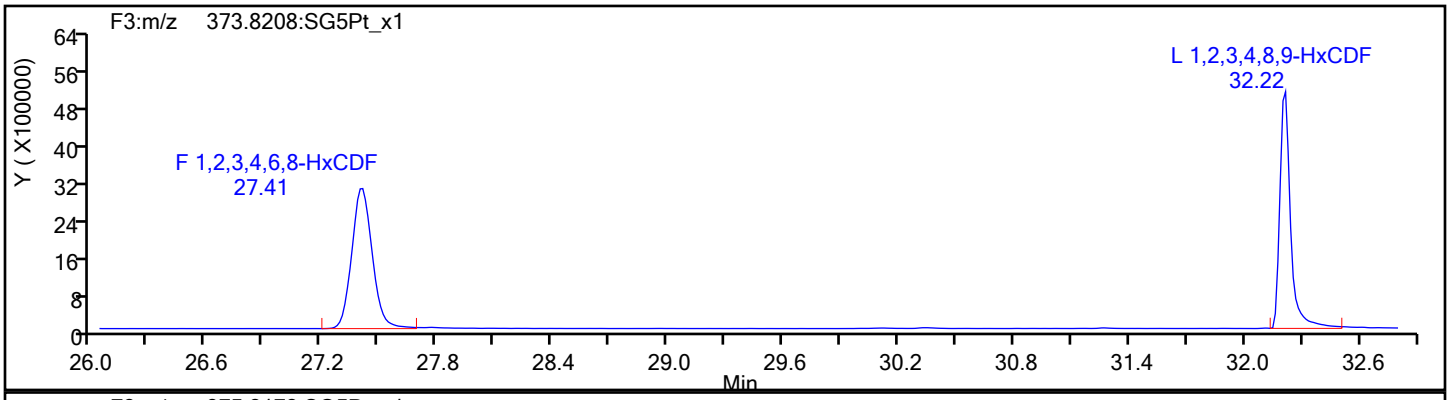
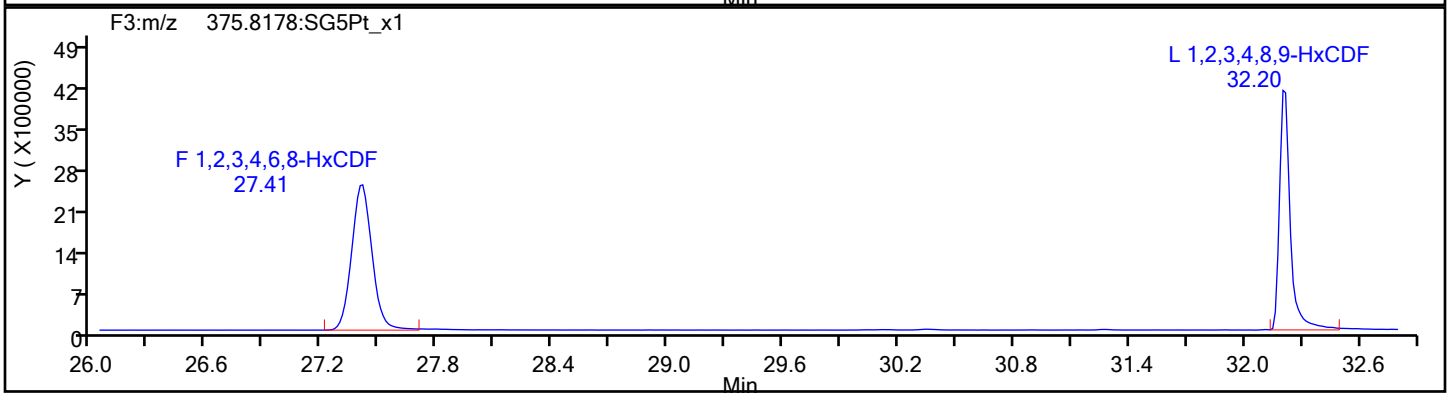
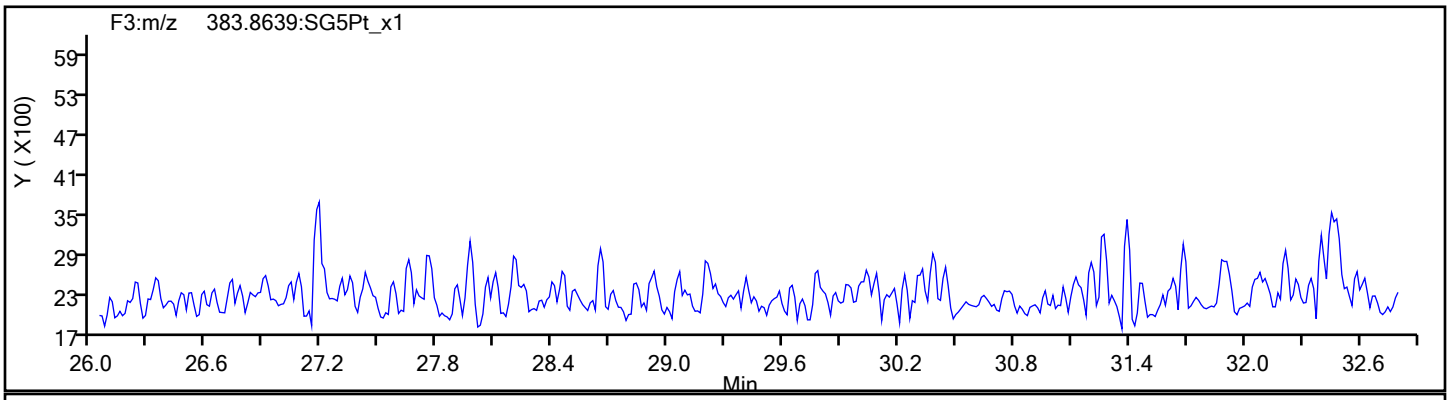
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

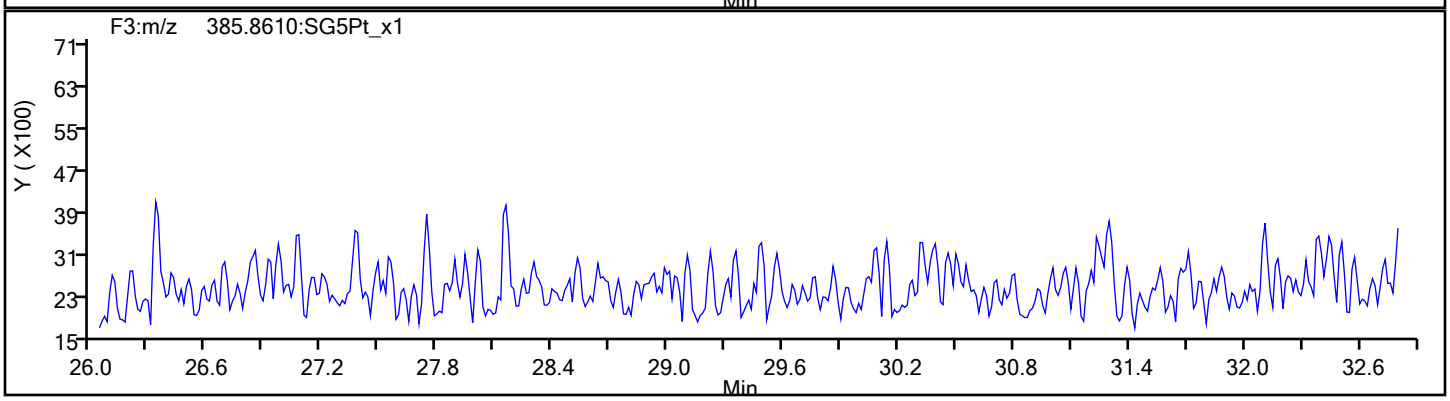
HxCDF





HxCDF Standards



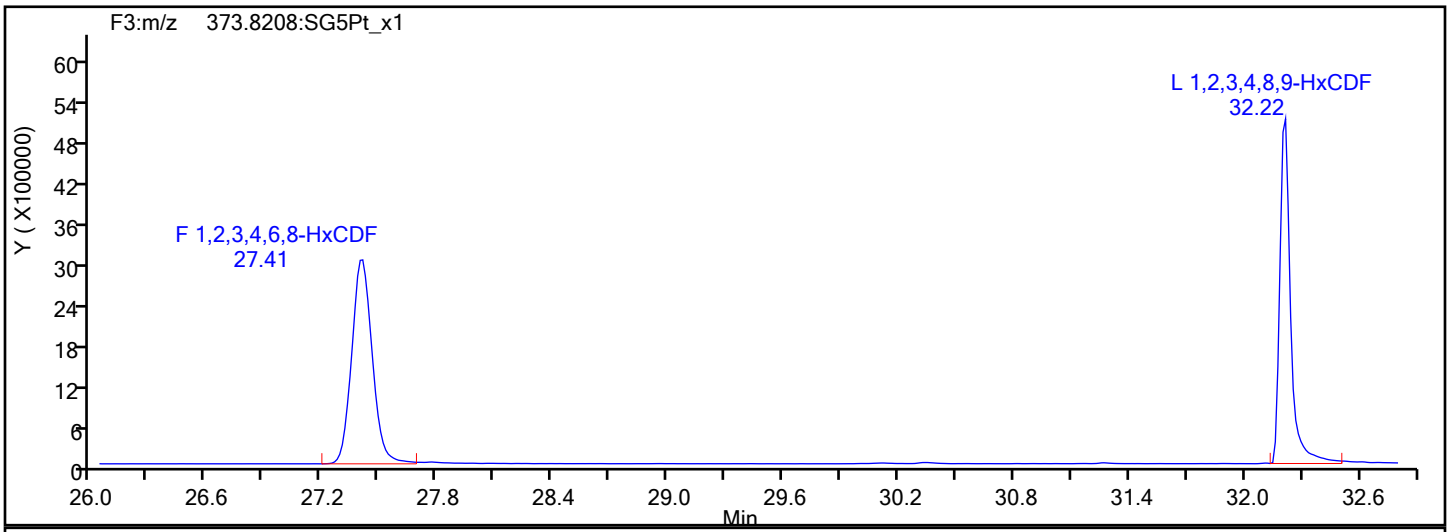


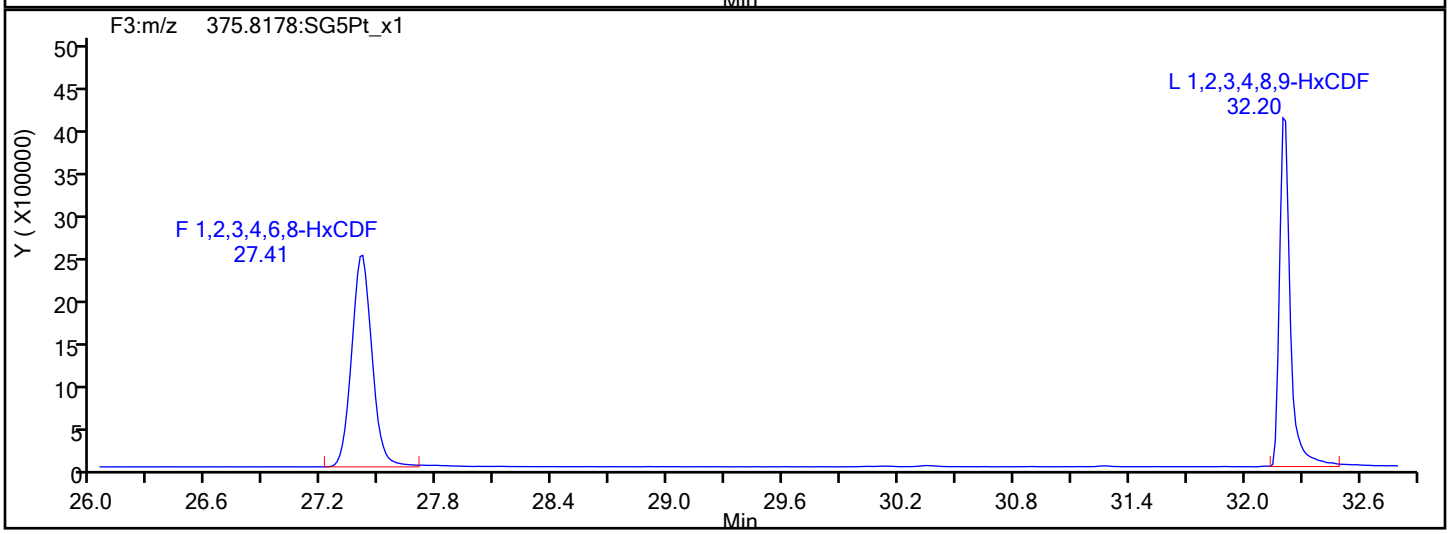
Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

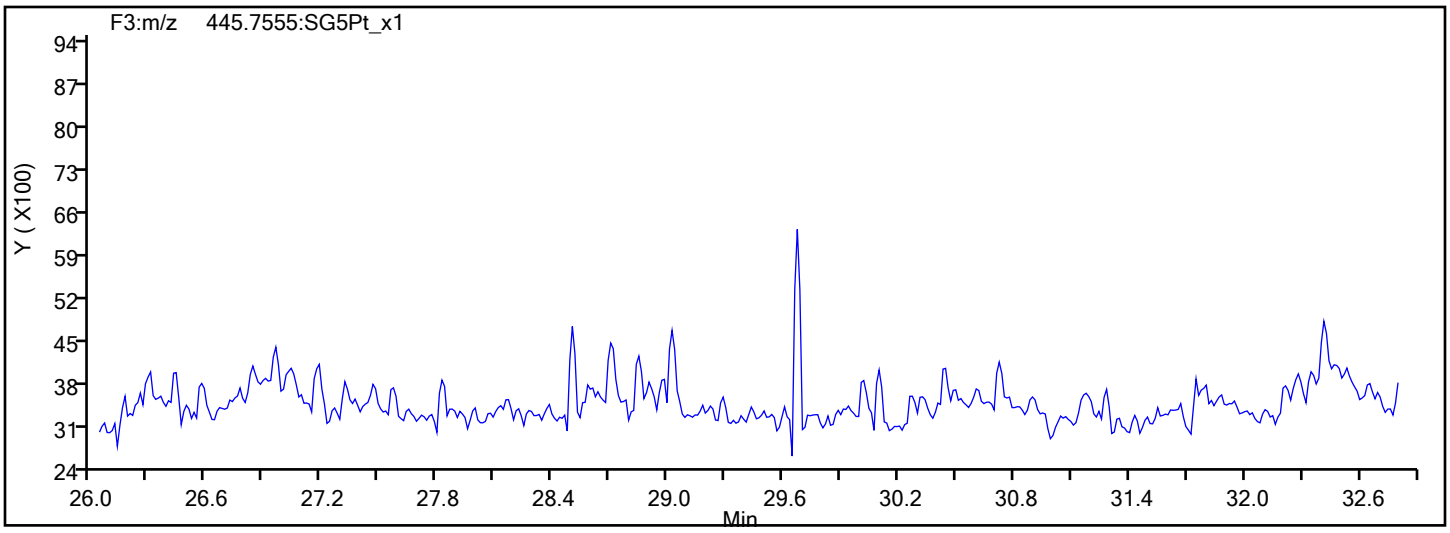
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

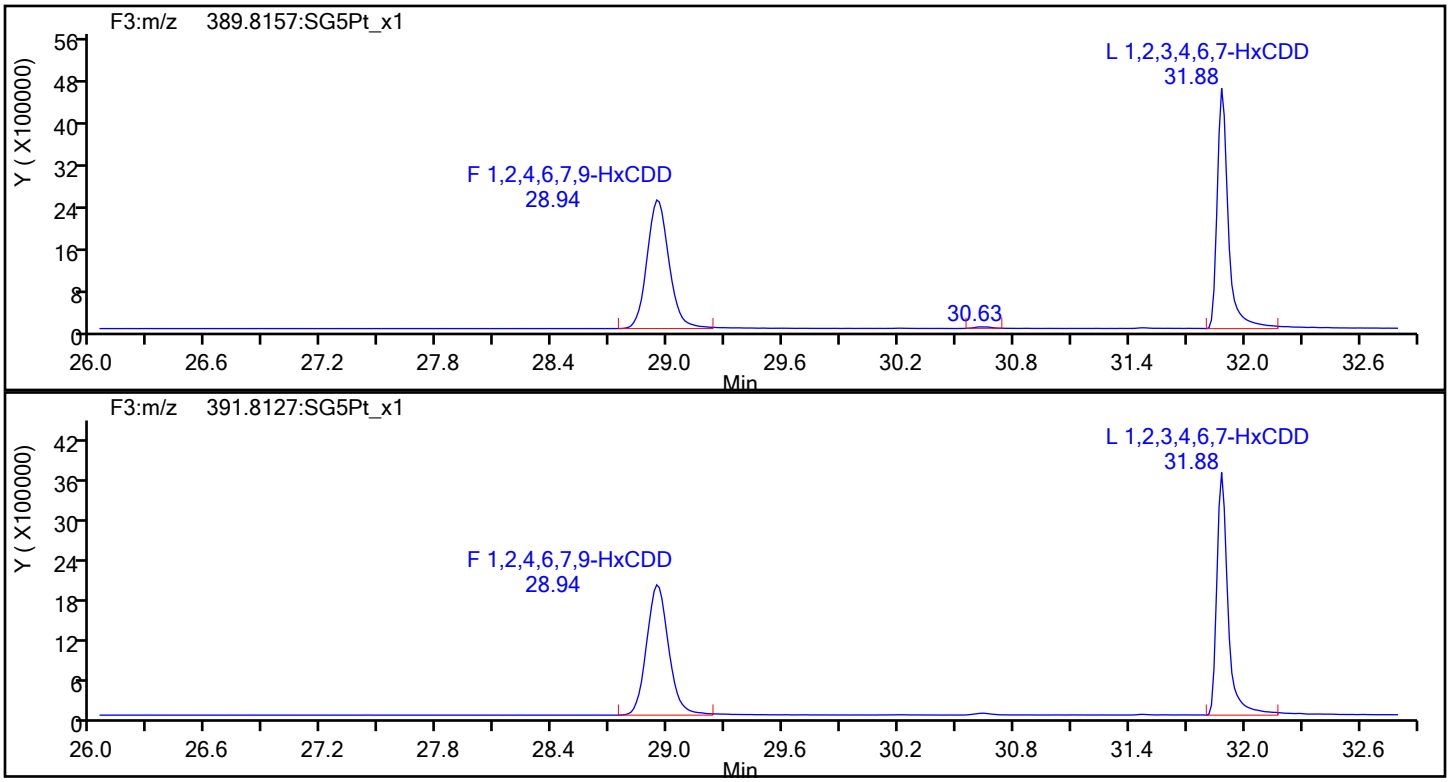


Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

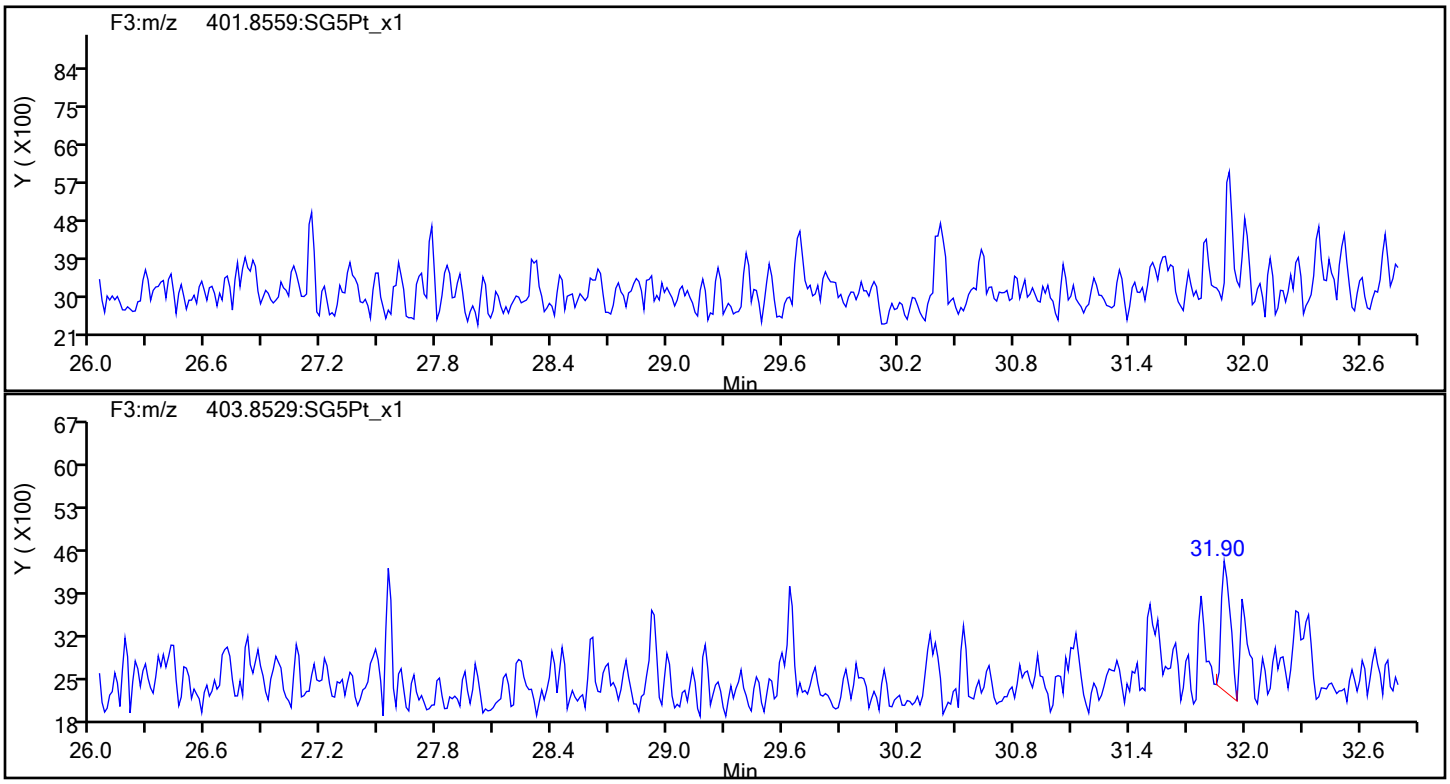
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDD



HxCDD Standards

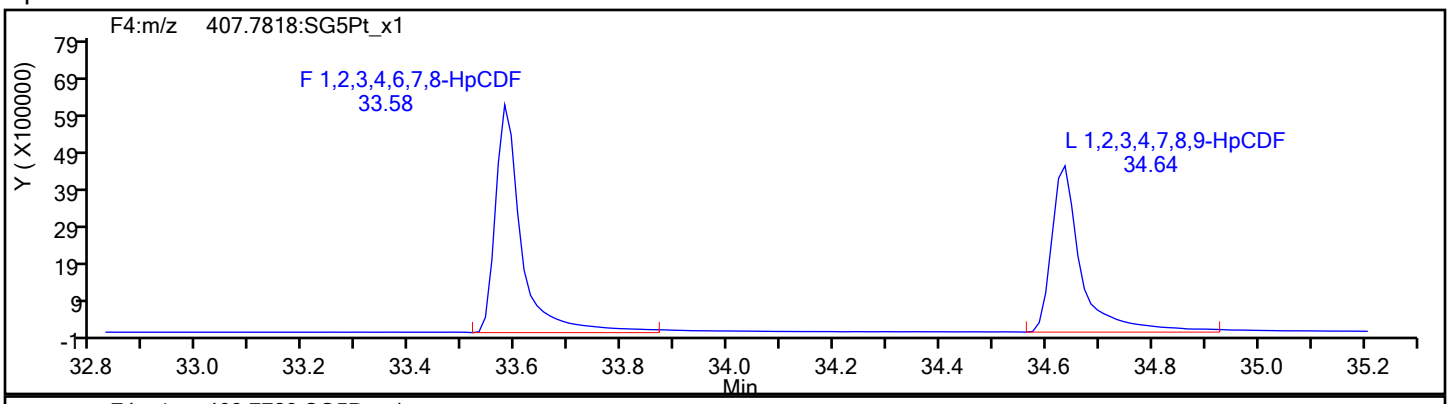


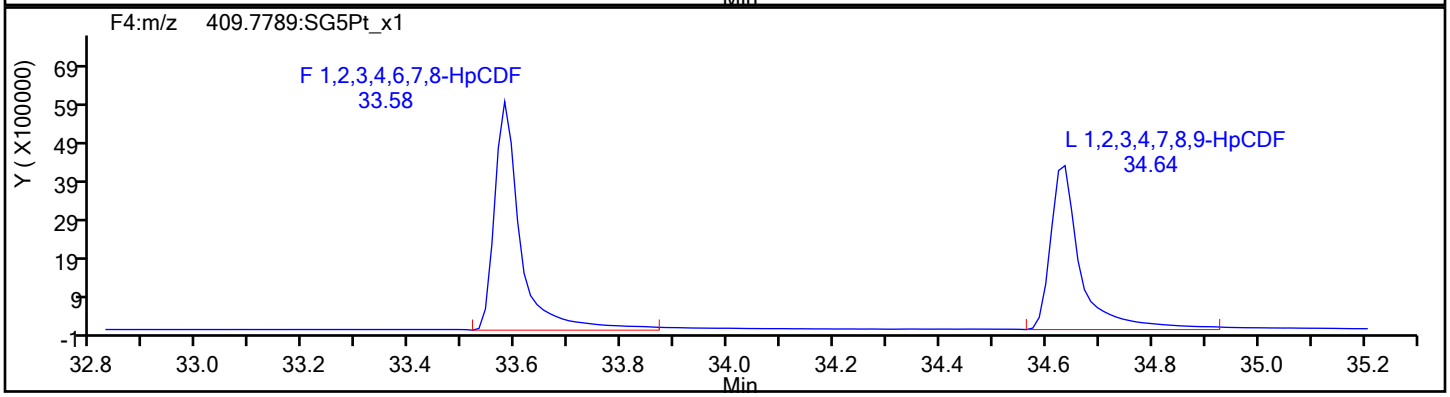
Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

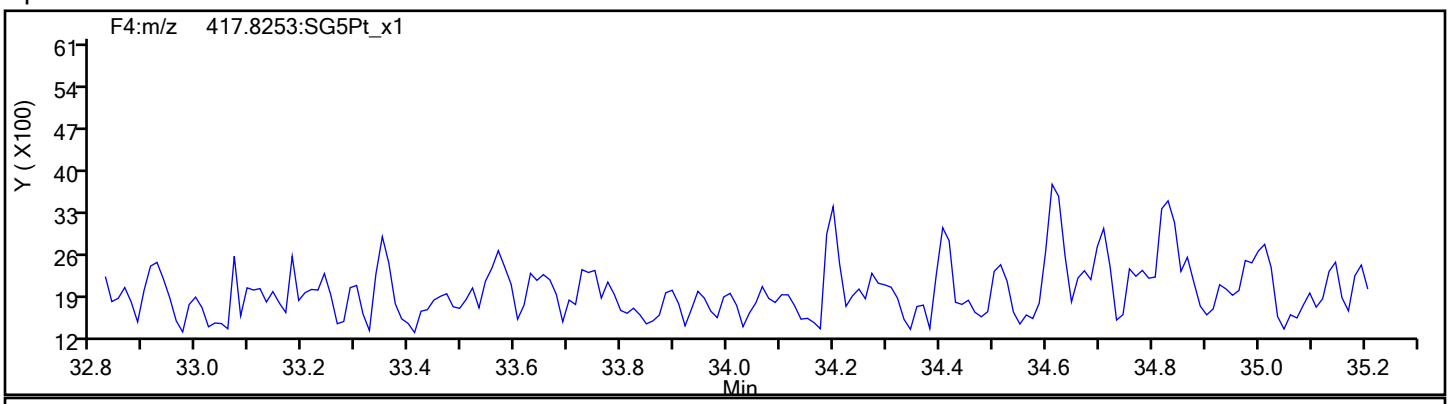
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

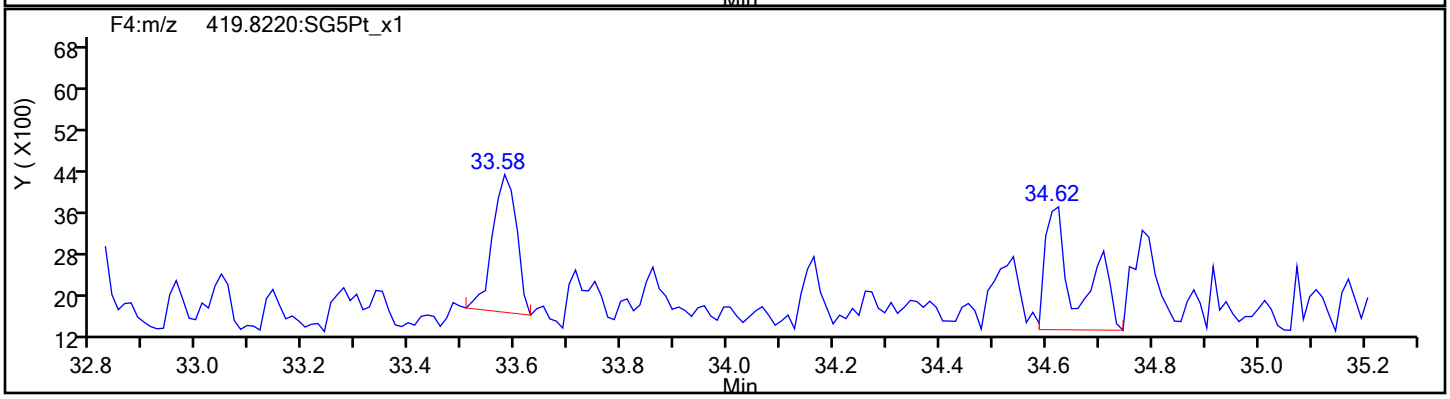
HpCDF





HpCDF Standards



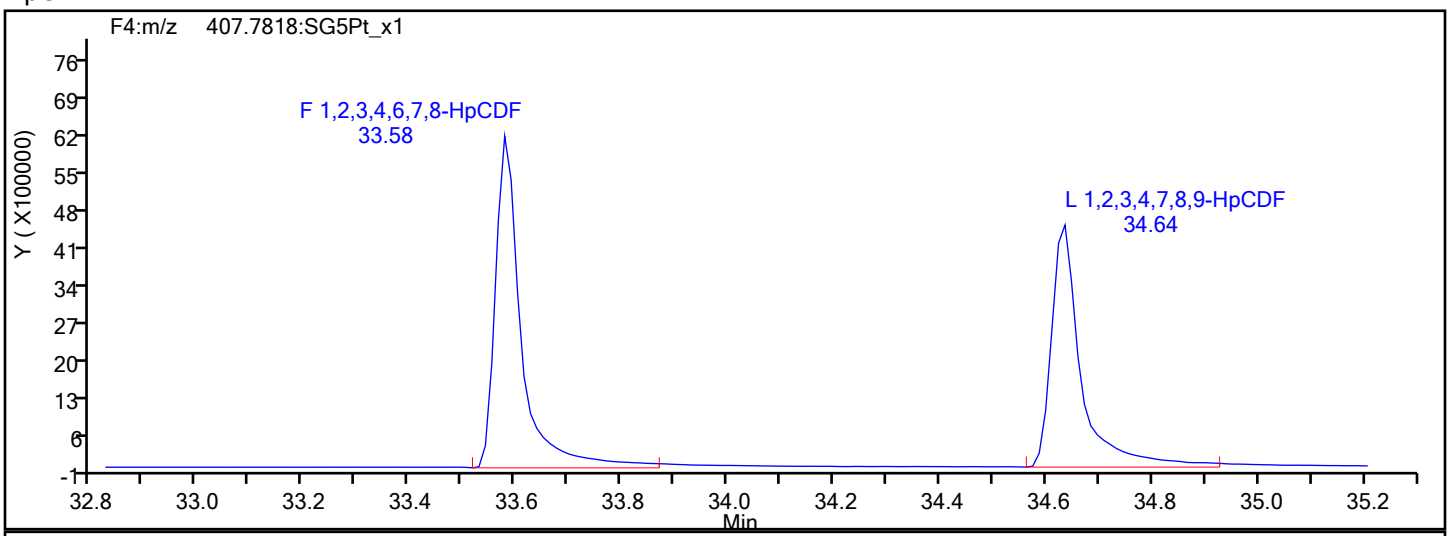


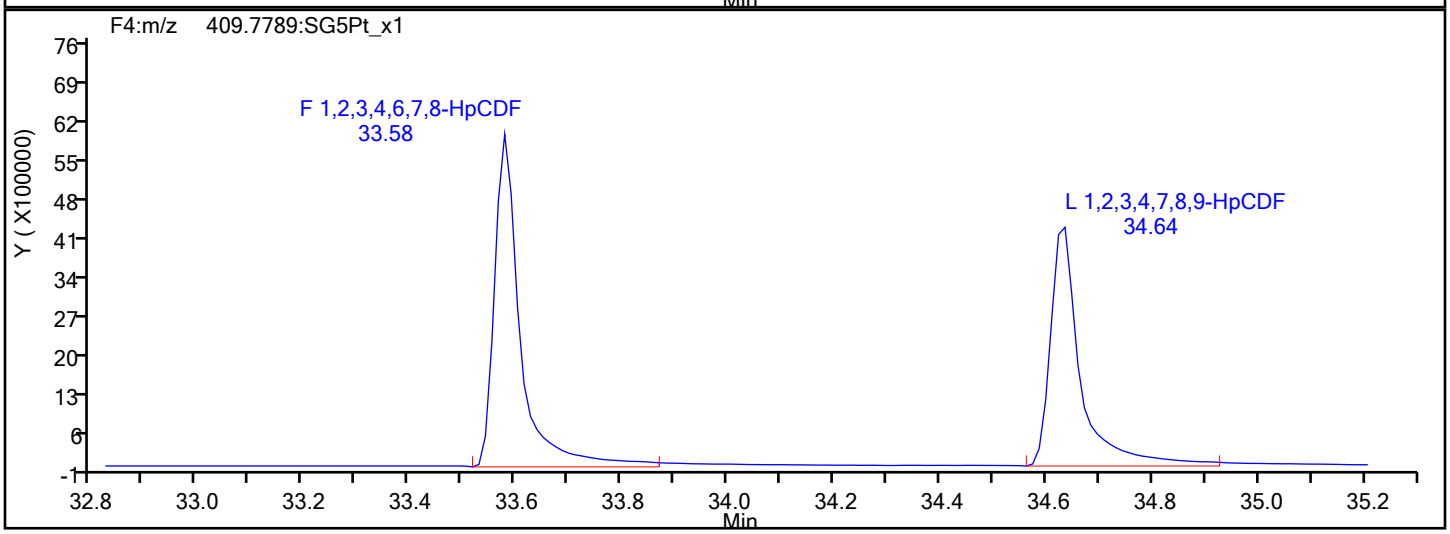
Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

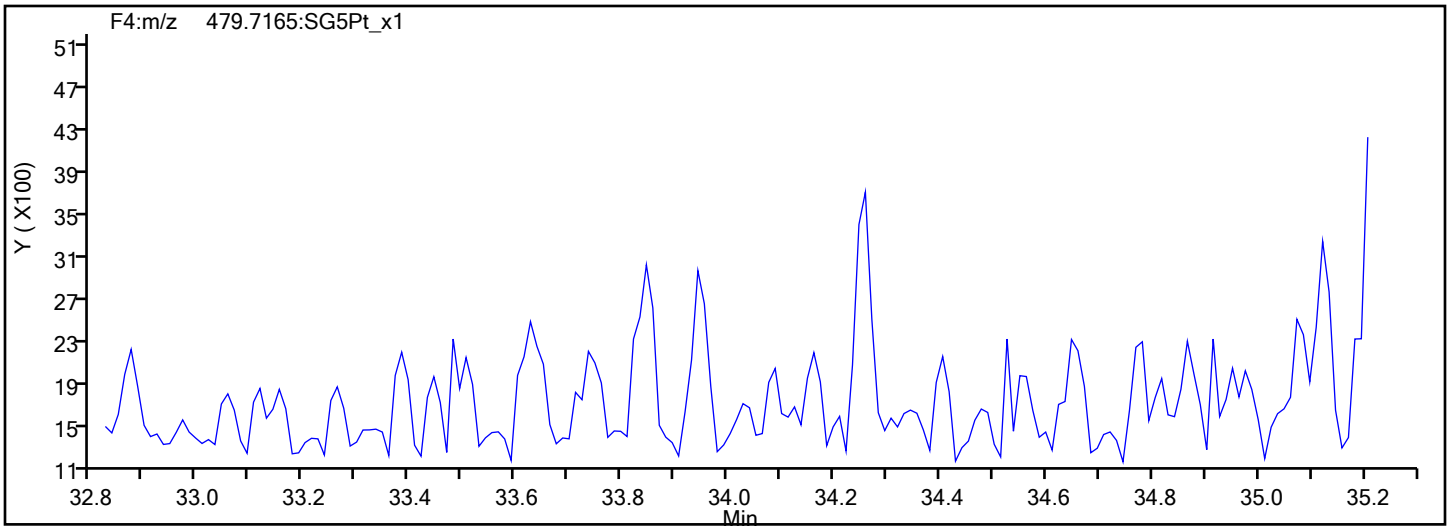
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

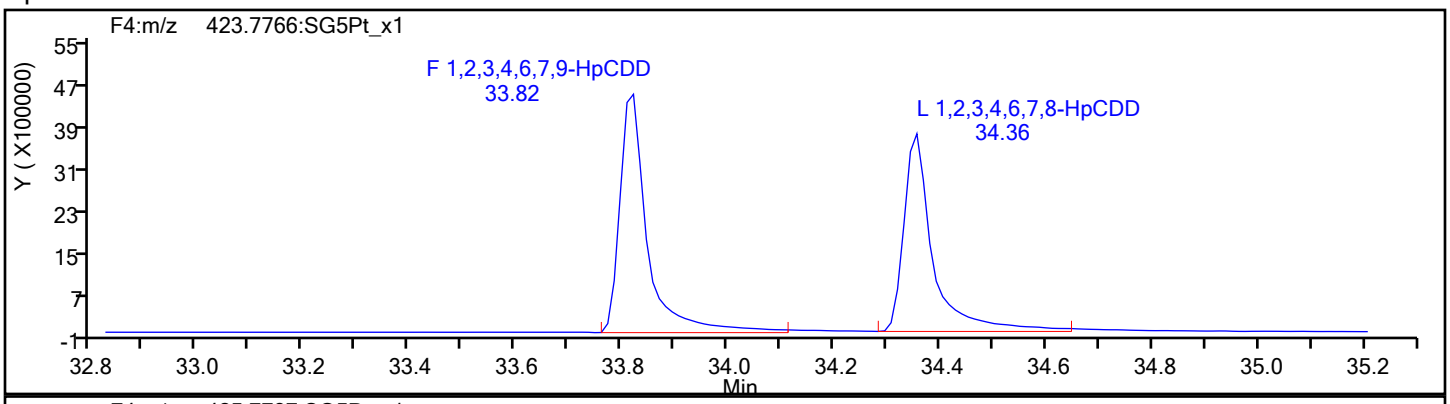


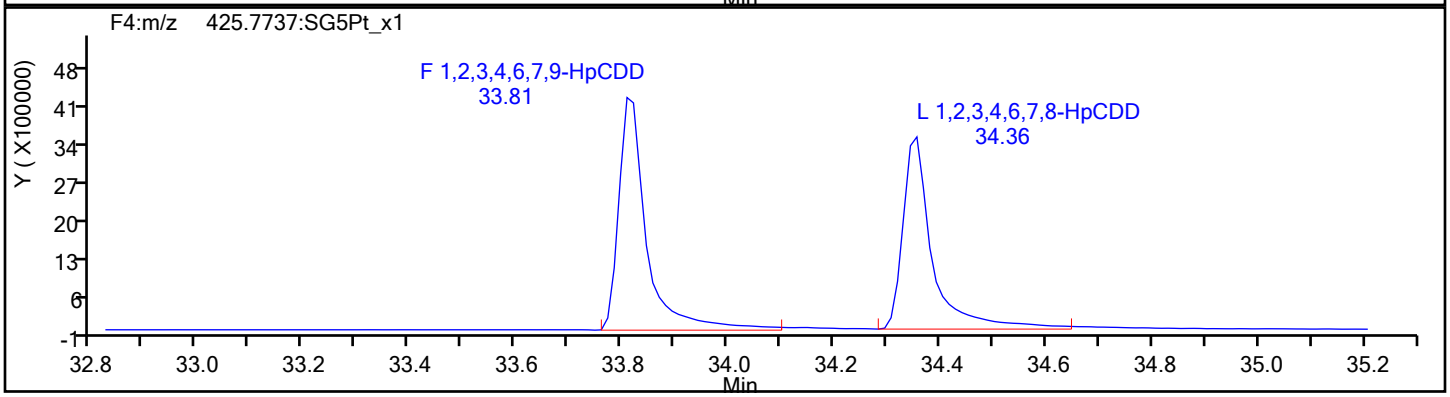
Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

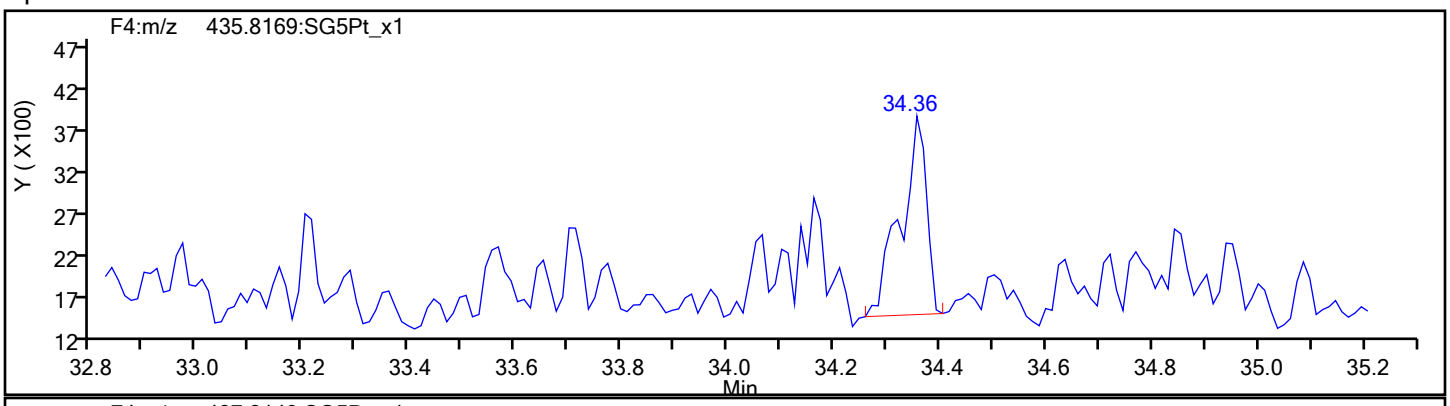
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

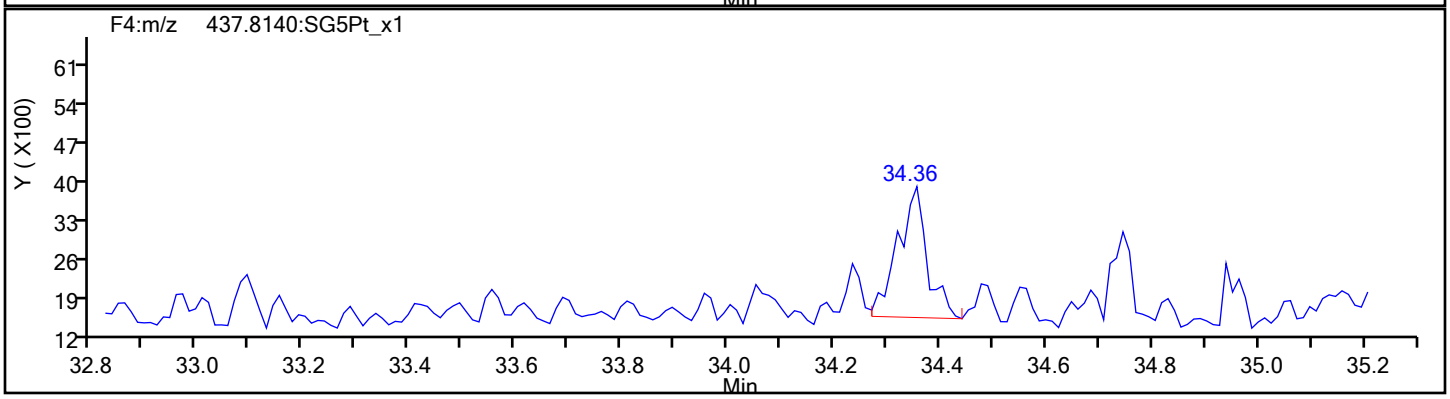
HpCDD





HpCDD Standards

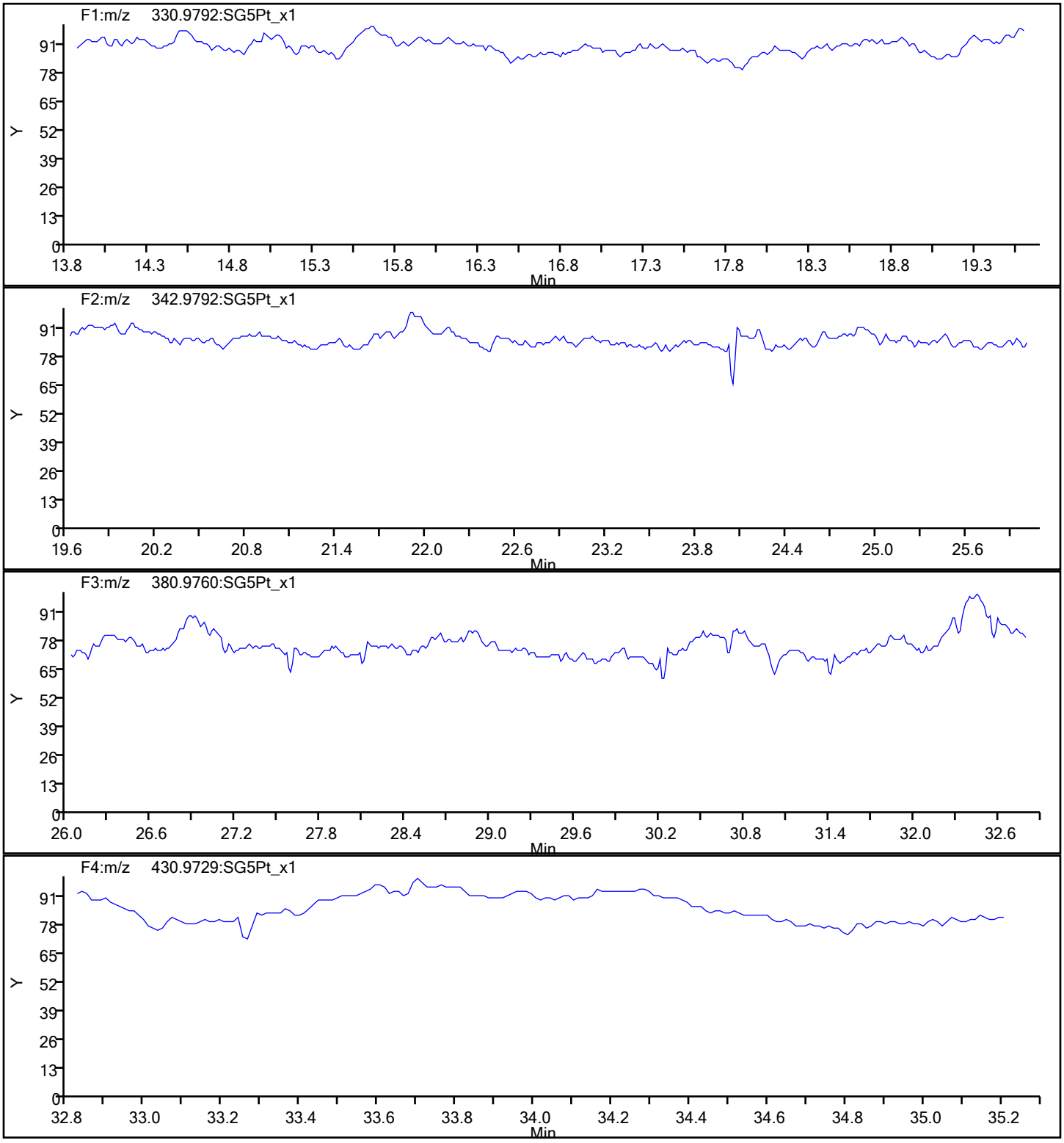




Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

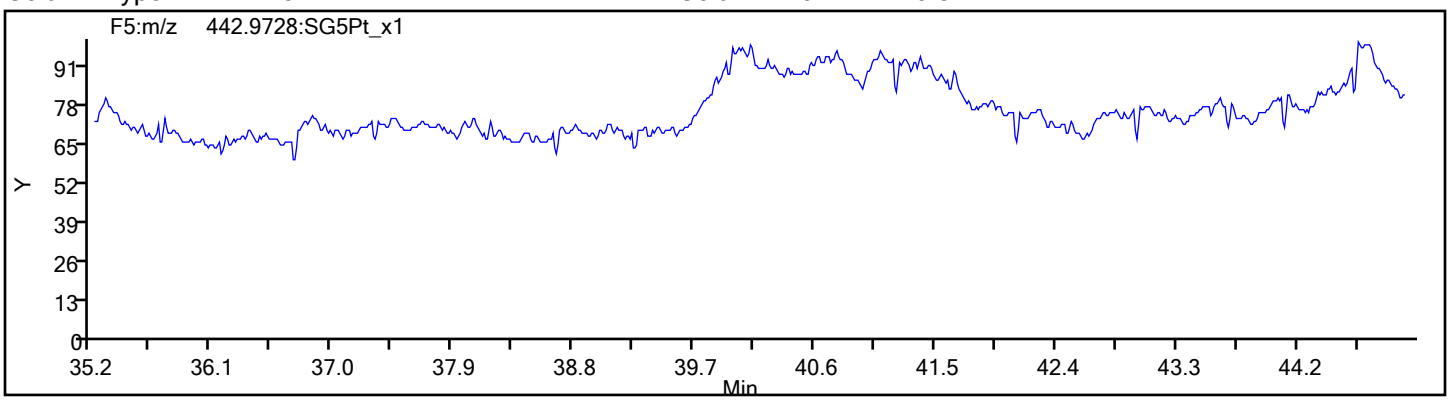
Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 15-Nov-2019 12:55:03 Chrom Revision: 2.3 31-Oct-2019 20:21:30

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_1.d		
Injection Date:	14-Nov-2019 08:14:53	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	SMA
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	338471	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 13-Dec-2019 11:08:40 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121319 WDM HRDXNCP_00040
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 23:51:32 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:34:10

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	17.342	29995784	0.78	1.3318					0.00	
2,3,7,8-TCDF	17.372	54146988	0.74	0.9005	80.2	80.2	0.2876	0.2876		
A Non-2,3,7,8-sub-TCDF	17.062	514187	0.77	0.9005	0.9435	0.7614	0.2876	0.7614		RQ
S Total TCDF					81.1	80.9	0.2876	0.2876		RQ
D 13C-2,3,7,8-TCDD	18.052	22602001	0.79	0.9647					0.00	
2,3,7,8-TCDD	18.067	23992643	0.74	1.0698	39.7	39.7	0.1625	0.1625		
A Non-2,3,7,8-sub-TCDD	17.516						0.1625	0.1625		
S Total TCDD					39.7	39.7	0.1625	0.1625		
A F1 PeCDFs	19.776						0.0	0.0		
A Non-2,3,7,8-sub-PeCDF	22.933	351598	1.55	0.0000						RQ
S Total PeCDF										RQ
A Non-2,3,7,8-sub-PeCDD	23.368						0.0	0.0		
S Total PeCDD										
A Non-2,3,7,8-sub-HxCDF	30.237						0.0	0.0		
S Total HxCDF										
A Non-2,3,7,8-sub-HxCDD	30.870	195280	1.29	0.0000						
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	33.805	21990017	1.03	1.4240						
1,2,3,4,7,8,9-HpCDF	34.874	19433666	1.02	1.2834						
A Non-2,3,7,8-sub-HpCDF	34.340						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	34.583	16876255	1.05	1.0174						
A Non-2,3,7,8-sub-HpCDD	34.309						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	14.923	28498503	0.76							
1,3,6,8-TCDD	15.845	22605886	0.78							
2,3,4,7-TCDF	17.372	54146988	0.74							
1,2,3,7-TCDD	17.962	20156504	0.81							
1,2,3,9-TCDF	18.234	23530986	0.76							
1,2,3,9-TCDD	18.234	23652482	0.78							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,8,9-TCDD	19.186	9718481								
1,2,8,9-TCDF	19.201	24586597	0.73							
1,3,4,6,8-PeCDF	19.473	32956694	1.56							
1,2,4,7,9-PeCDD	21.240	19368446	1.54							
1,2,3,8,9-PeCDD	25.495	18232593	1.59							
1,2,3,8,9-PeCDF	25.713	20097498	1.57							
1,2,3,4,6,8-HxCDF	28.001	17995537	1.22							
1,2,4,6,7,9-HxCDD	29.585	16891551	1.23							
1,2,3,4,6,7-HxCDD	32.154	17209591	1.25							
1,2,3,4,8,9-HxCDF	32.473	17503702	1.21							
1,2,3,4,6,7,9-HpCDD	34.036	18465435	1.03							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 13-Dec-2019 11:08:40 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121319 WDM HRDXNCP_00040
Misc. Info.: 13DE1910D5
Operator ID: AJS Instrument ID: 10D5

Method: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\Dioxin_10D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 23:51:32 Calib Date: 14-Nov-2019 12:50:49
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\10D5\20191114-86664.b\14NO1910D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:34:10

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	17.342	17.342	0	1.000	13156539	3341168	4468	11170	748		
317.9389	17.342	17.342	0	1.000	16839245	4230938	4536	11340	933	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.372	17.372	0	1.002	23089017	5378491	8062	20155	667		
305.8987	17.372	17.372	0	1.002	31057971	7211532	11551	28877	624	0.74(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	19.489	17.062	145	1.124	223686	40342	8062	20155	5		
305.8987	19.473	17.062	144	1.123	413460	68124	11551	28877	6	0.54(0.65-0.89)	
	Empc Correction				290501	52392	11551	28877	5		
13C-2,3,7,8-TCDD											
331.9368	18.052	18.052	0	1.000	9955327	2409582	2853	7132	845		
333.9339	18.052	18.052	0	1.000	12646674	3062437	2173	5432	1409	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	18.067	18.067	0	1.001	10220986	2466826	3400	8500	726		
321.8936	18.067	18.067	0	1.001	13771657	3162661	6110	15275	518	0.74(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	17.516						3400	8500			
321.8936	17.516						6110	15275			
A F1 PeCDFs											
339.8597	19.776						696	1740			
341.8567	19.776						720	1800			
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	21.854	22.933	-65	1.000	60973	9099	1925	4812	5		
341.8567	21.854	22.933	-65	1.000	44565	5660	1367	3417	4	1.37(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	22.413	22.933	-31	1.000	94995	13088	1925	4812	7		
341.8567	22.399	22.933	-32	1.000	65079	9044	1367	3417	7	1.46(1.32-1.78)	
339.8597	22.972	22.933	2	1.000	52266	9703	1925	4812	5		
341.8567	22.972	22.933	2	1.000	48663	7194	1367	3417	5	1.07(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	23.368						1895	4737			
357.8516	23.368						1306	3265			
A Non-2,3,7,8-sub-HxCDF											
373.8208	30.237						2057	5142			
375.8178	30.237						1740	4350			
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.996	30.870	8	1.000	110160	22608	2031	5077	11		
391.8127	30.996	30.870	8	1.000	85120	16937	1684	4210	10	1.29(1.05-1.43)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.805	33.805	0	1.000	11178437	3896859	8727	21817	447		
409.7789	33.805	33.805	0	1.000	10811580	3691560	4879	12197	757	1.03(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.874	34.874	0	1.000	9819357	3166778	8727	21817	363		
409.7789	34.874	34.874	0	1.000	9614309	3055609	4879	12197	626	1.02(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.340						8727	21817			
409.7789	34.340						4879	12197			
1,2,3,4,6,7,8-HpCDD											
423.7766	34.583	34.583	0	1.000	8634138	2824343	4176	10440	676		
425.7737	34.583	34.583	0	1.000	8242117	2733938	4657	11642	587	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.309						4176	10440			
425.7737	34.309						4657	11642			
1,3,6,8-TCDF											
303.9016	14.923	14.923	0		12349579	3716181	8062	20155	461		
305.8987	14.923	14.923	0		16148924	4903605	11551	28877	425	0.76(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	15.845	15.845	0		9883468	2862990	3400	8500	842		
321.8936	15.845	15.845	0		12722418	3662054	6110	15275	599	0.78(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	17.372	17.372	0		23089017	5378491	8062	20155	667		
305.8987	17.372	17.372	0		31057971	7211532	11551	28877	624	0.74(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	17.962	17.962	0		9023438	2172105	3400	8500	639		
321.8936	17.962	17.962	0		11133066	2802613	6110	15275	459	0.81(0.65-0.89)	
1,2,3,9-TCDF											
303.9016	18.234	18.234	0		10142471	2367858	8062	20155	294		
305.8987	18.234	18.234	0		13388515	3160372	11551	28877	274	0.76(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	18.234	18.234	0		10342208	2391529	3400	8500	703		
321.8936	18.234	18.234	0		13310274	3102254	6110	15275	508	0.78(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,8,9-TCDD											
319.8965	19.186	19.186	0		9718481	2159630	3400	8500	635		
1,2,8,9-TCDF											
303.9016	19.201	19.201	0		10403874	2262332	8062	20155	281		
305.8987	19.186	19.201	-1		14182723	3031064	11551	28877	262	0.73(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	19.473	19.473	0		20064677	4300266	696	1740	6179		
341.8567	19.458	19.473	-1		12892017	2735136	720	1800	3799	1.56(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	21.240	21.240	0		11757088	2089108	1895	4737	1102		
357.8516	21.240	21.240	0		7611358	1356262	1306	3265	1038	1.54(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	25.495	25.495	0		11181492	1670202	1895	4737	881		
357.8516	25.495	25.495	0		7051101	1038832	1306	3265	795	1.59(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	25.713	25.713	0		12285576	1764738	1925	4812	917		
341.8567	25.713	25.713	0		7811922	1090565	1367	3417	798	1.57(1.32-1.78)	
1,2,3,4,6,8-HxCDF											
373.8208	28.001	28.001	0		9895338	1298169	2057	5142	631		
375.8178	28.001	28.001	0		8100199	1037374	1740	4350	596	1.22(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8157	29.585	29.585	0		9330425	1189836	2031	5077	586		
391.8127	29.585	29.585	0		7561126	954041	1684	4210	567	1.23(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8157	32.154	32.154	0		9566194	2736822	2031	5077	1348		
391.8127	32.154	32.154	0		7643397	2247549	1684	4210	1335	1.25(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	32.473	32.473	0		9591677	2876105	2057	5142	1398		
375.8178	32.473	32.473	0		7912025	2322798	1740	4350	1335	1.21(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7766	34.036	34.036	0		9376689	3074218	4176	10440	736		
425.7737	34.036	34.036	0		9088746	3071481	4657	11642	660	1.03(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 11:08:40 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDF, RT: 17.062

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.901	D 13C-2,3,7,8-TCDF	40.000	29995784	7572106

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.901		40.000	29995784	7572106

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
19.489	223686	40342	413460	68124	0.9435	0.54	RQ
19.489	223686	40342	290501	52392	0.7614		Empc Correction
Signal Totals:							
	223686	40342	290501	52392			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	637146	108466				0.54	RQ
	514187	92734					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9435 = (637146 * 40.000) / (29995784 * 0.901)
Empc Amount: 0.7614 = (514187 * 40.000) / (29995784 * 0.901)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 11:08:40 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 22.933

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	0.970				
2,3,4,7,8-PeCDF	0.999				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
21.854	60973	9099	44565	5660		1.37	
22.413	94995	13088	65079	9044		1.46	
22.972	52266	9703	48663	7194		1.07	R
Signal Totals:							
	208234	31890	158307	21898			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	366541	53788				1.32	RQ
	351598	52854					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (366541 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (351598 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 11:08:40 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 10D5 Operator: AJS
Lims Batch ID: 345335 Lims Sample ID: 1

Non-2,3,7,8-sub-HxCDD, RT: 30.870

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.005				
1,2,3,6,7,8-HxCDD	0.983				
1,2,3,7,8,9-HxCDD	1.104				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
30.996	110160	22608	85120	16937		1.29	
Signal Totals:	110160	22608	85120	16937			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	195280	39545				1.29	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

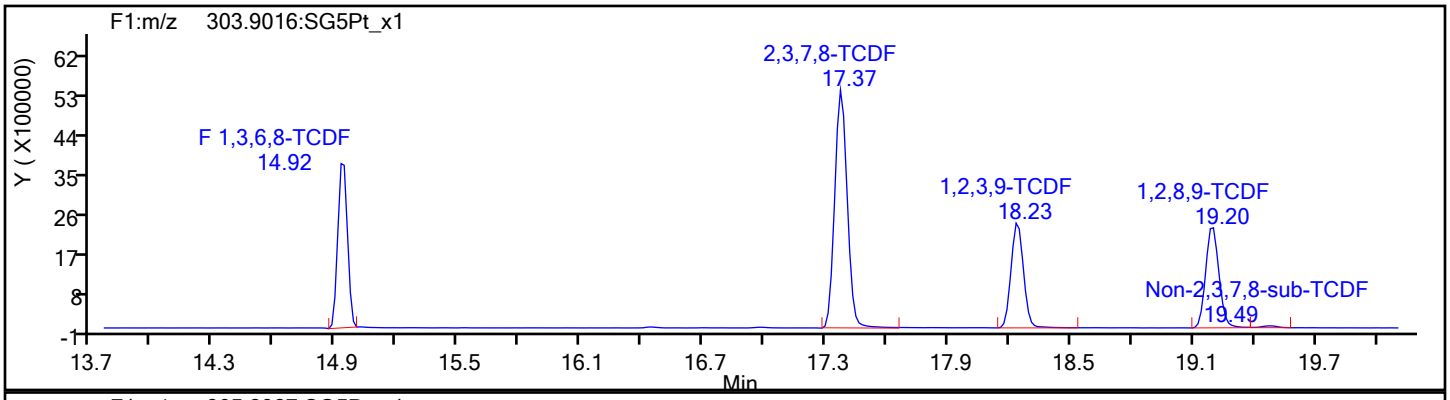
Amount: 0.0 = (195280 * 0.0) / (0 * 0.000)

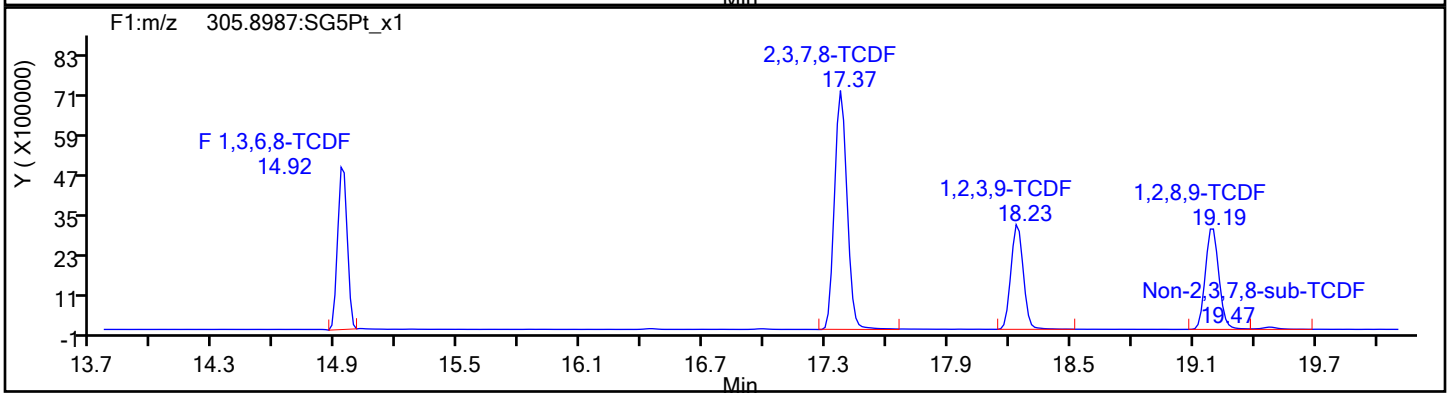
Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

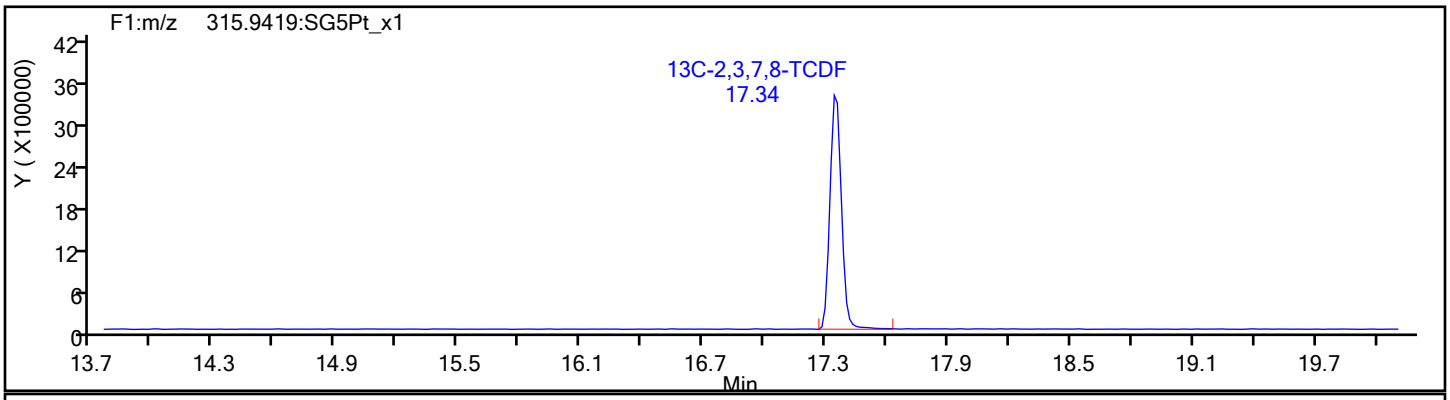
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

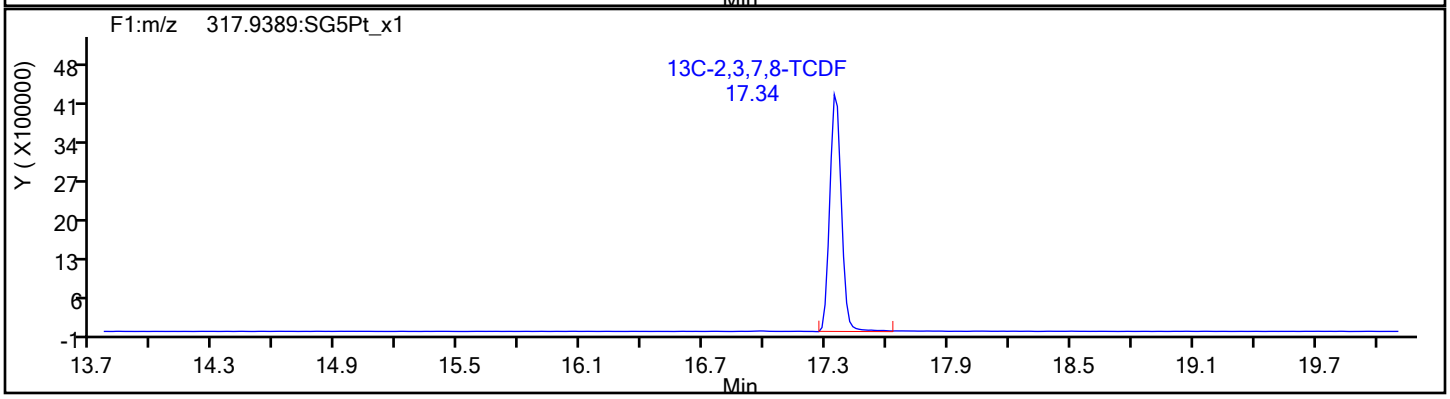
TCDF





TCDF Standards



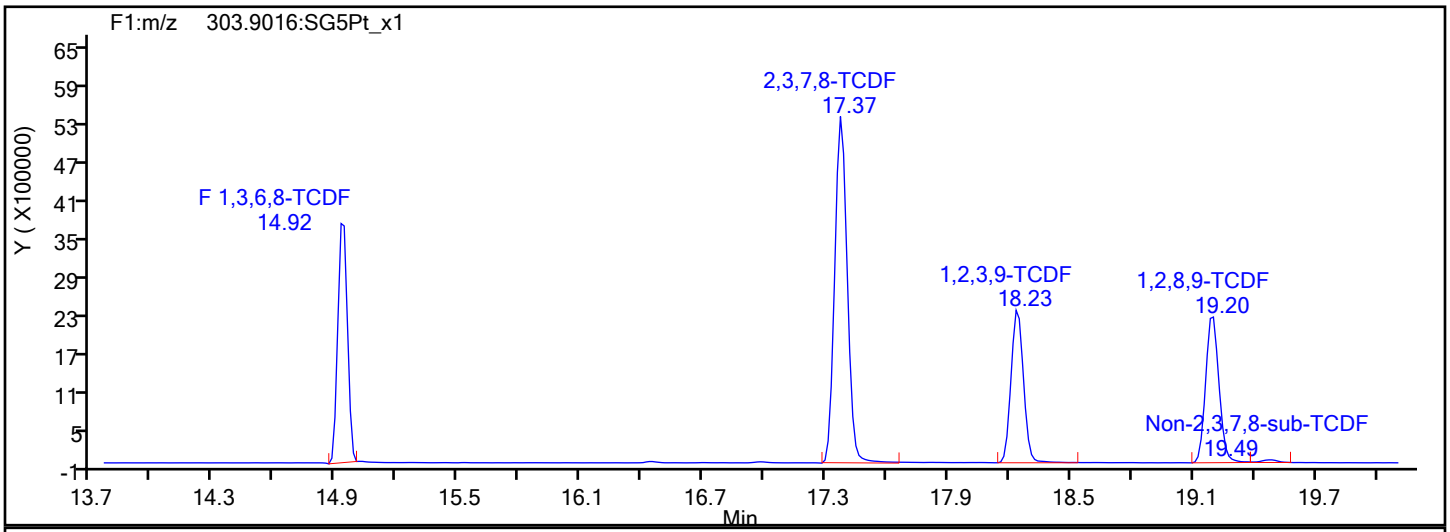


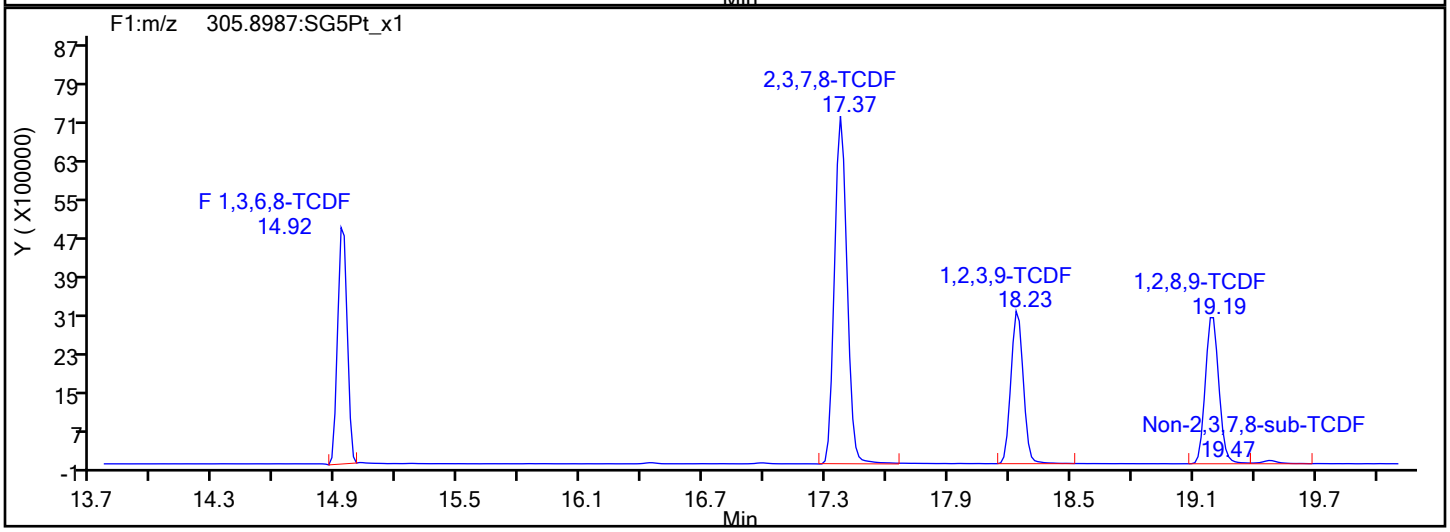
Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

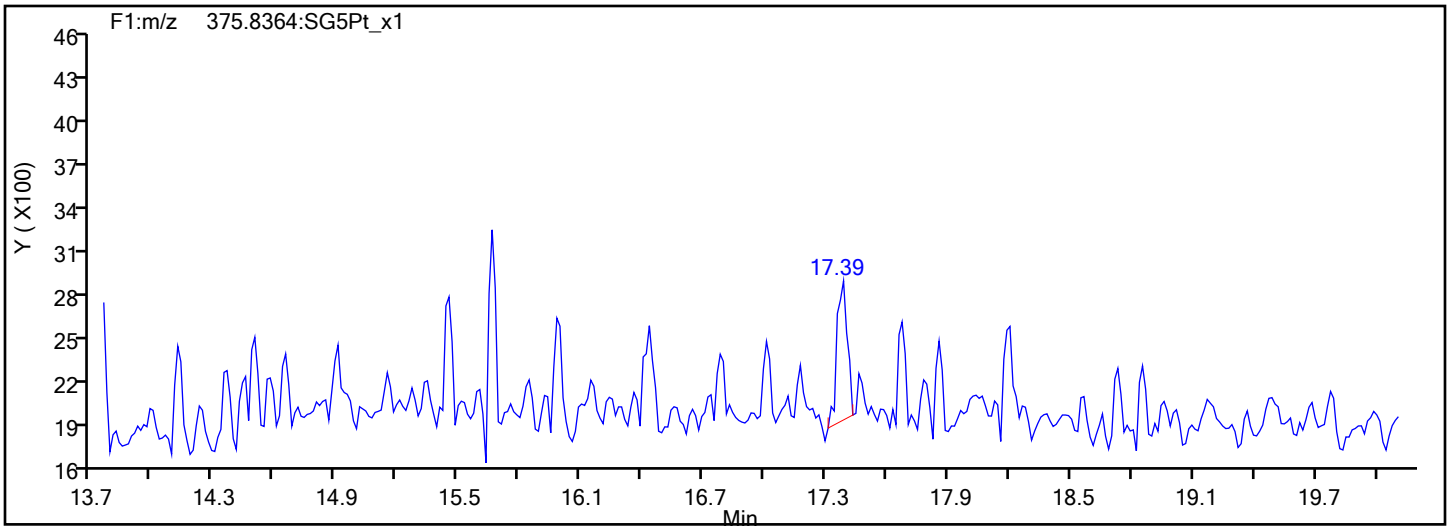
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

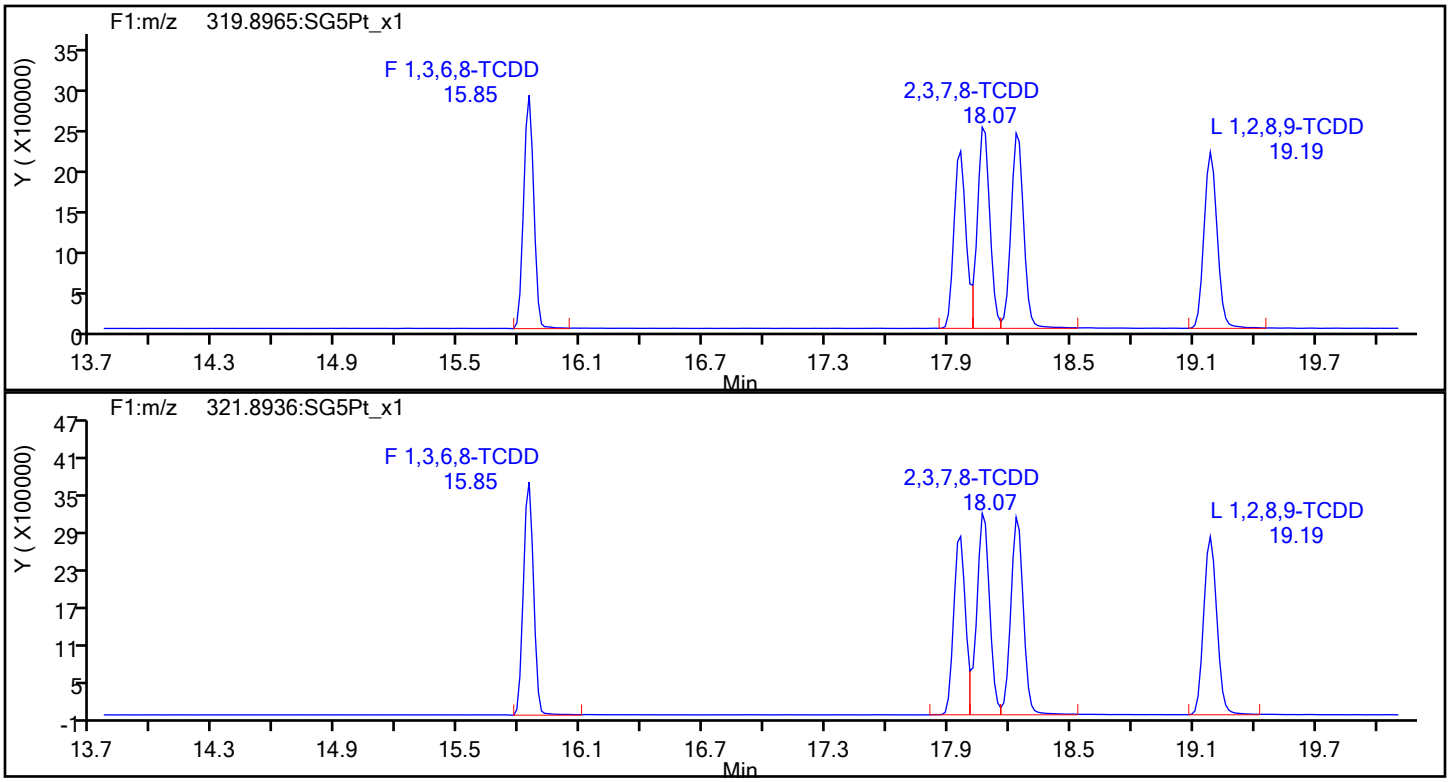


Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

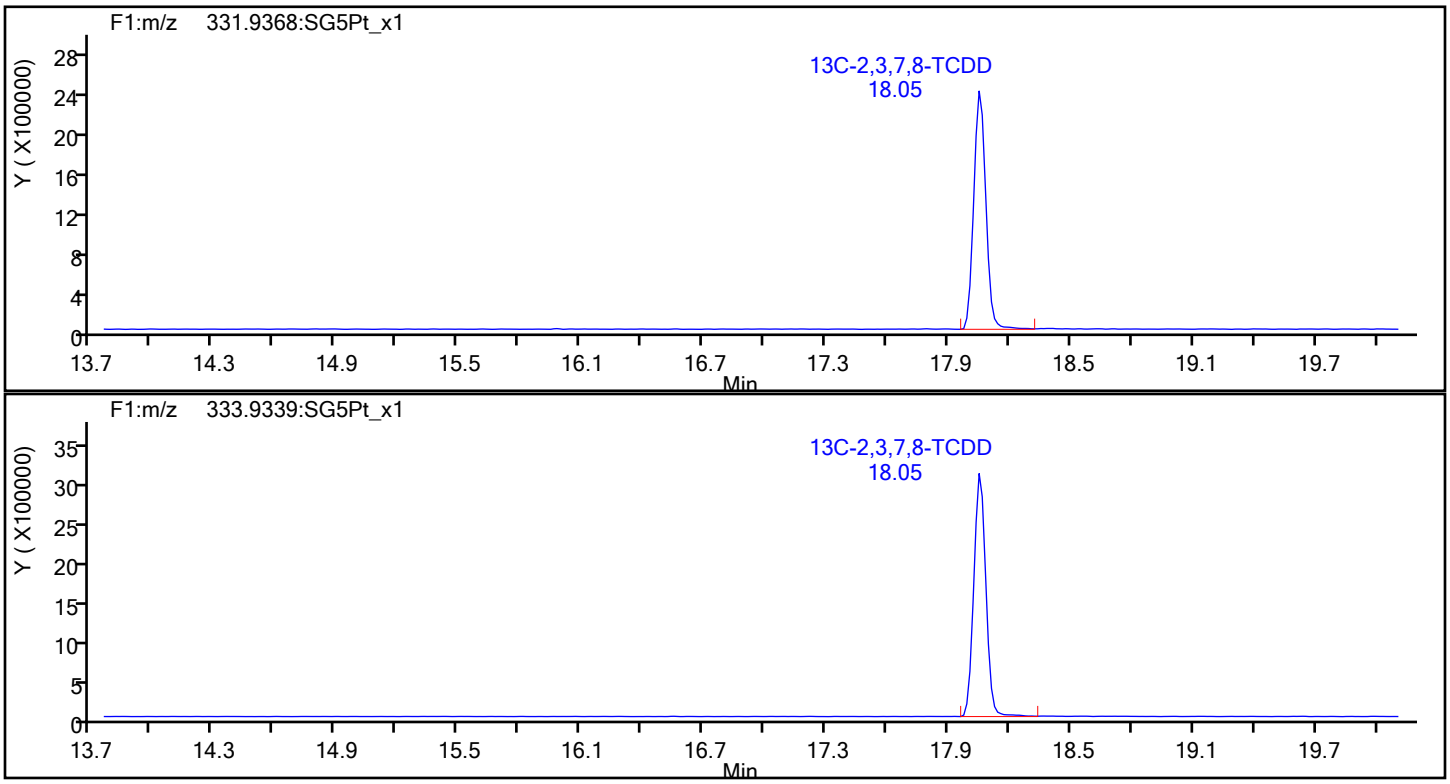
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDD



TCDD Standards

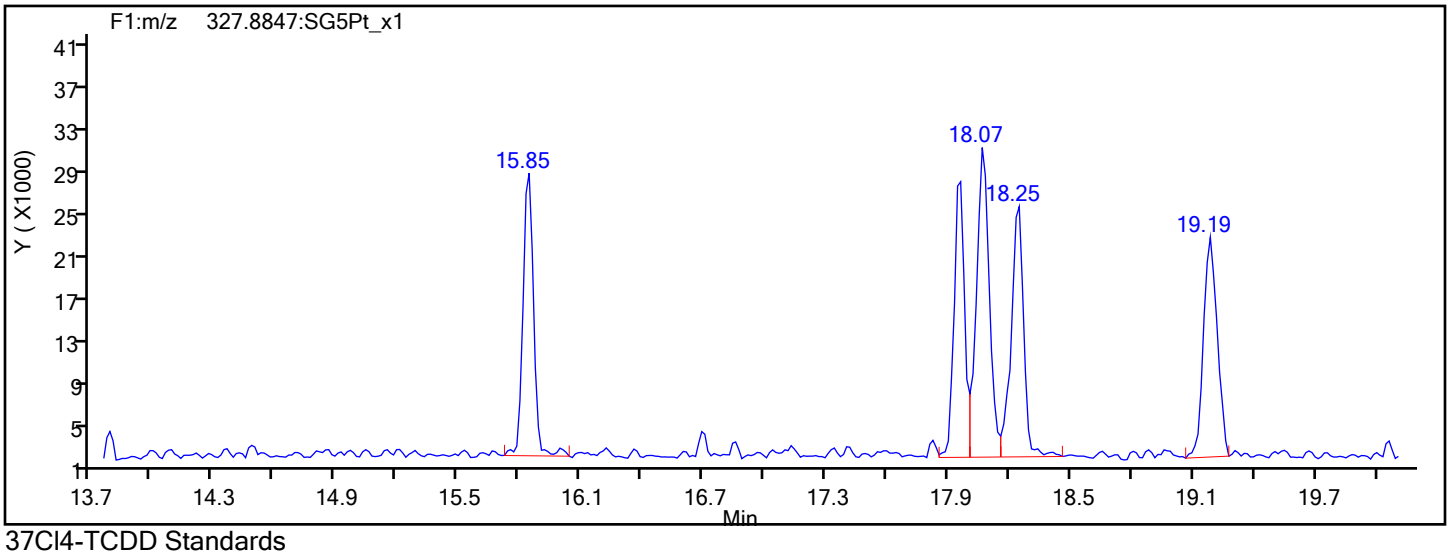


Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

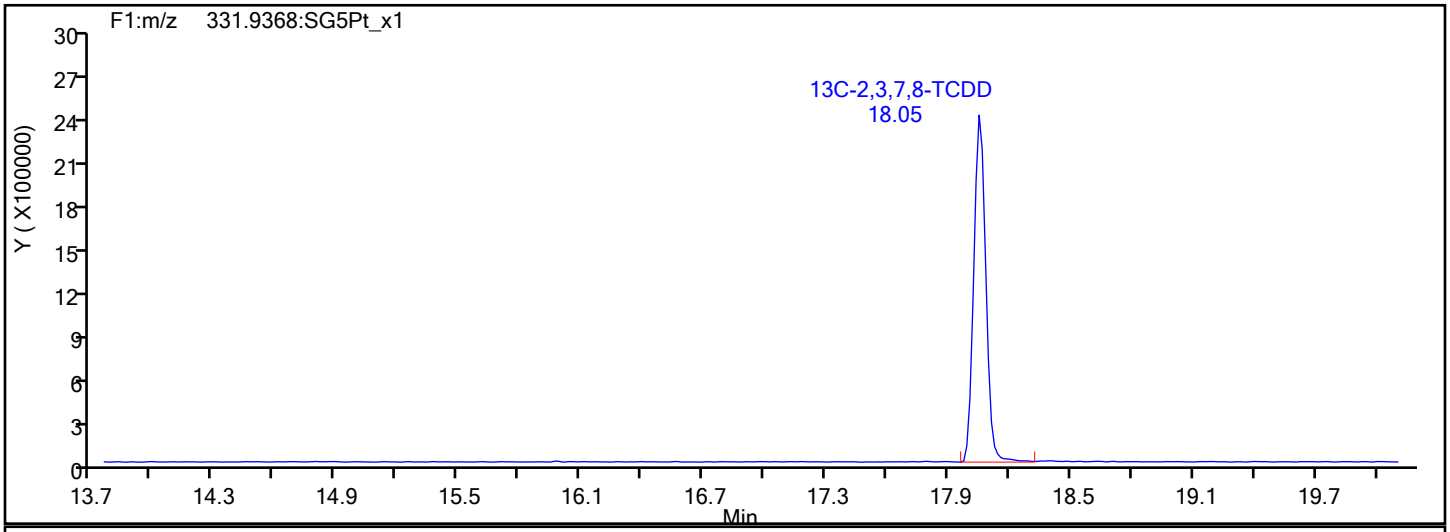
Eurofins TestAmerica, Sacramento

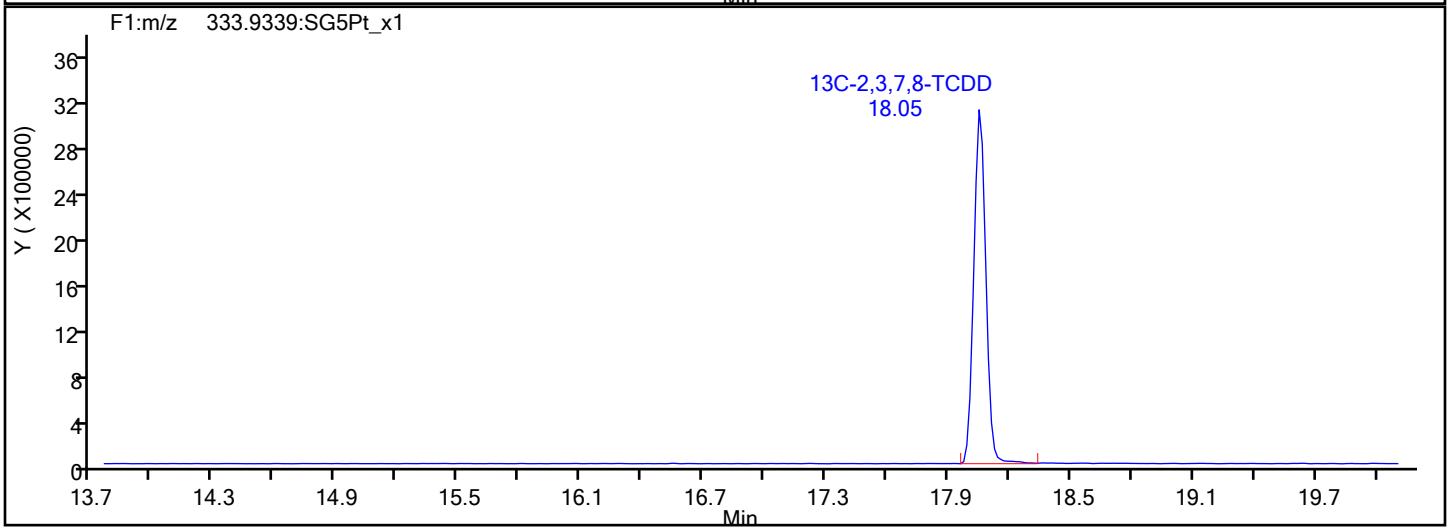
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





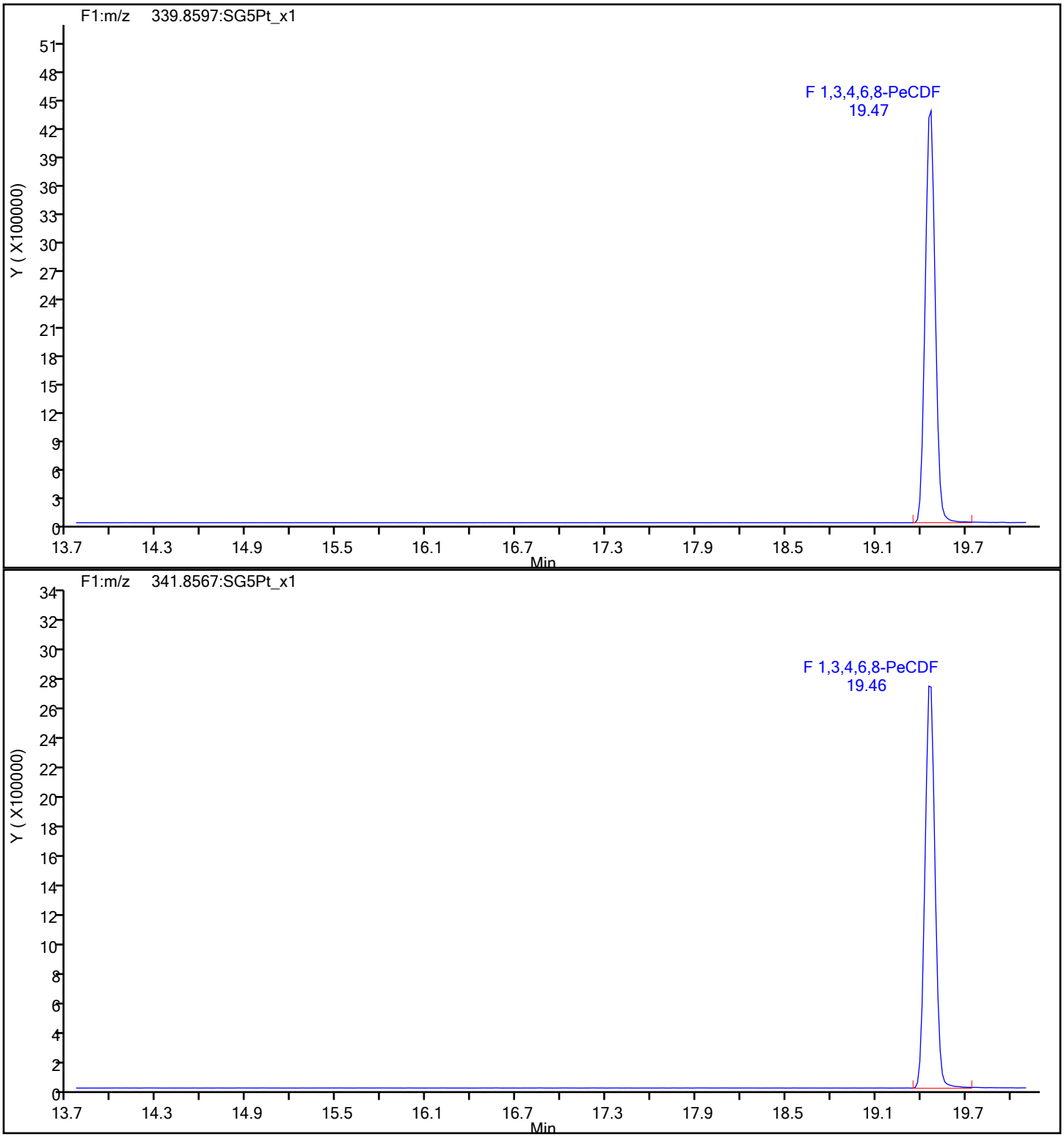
Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d

Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs

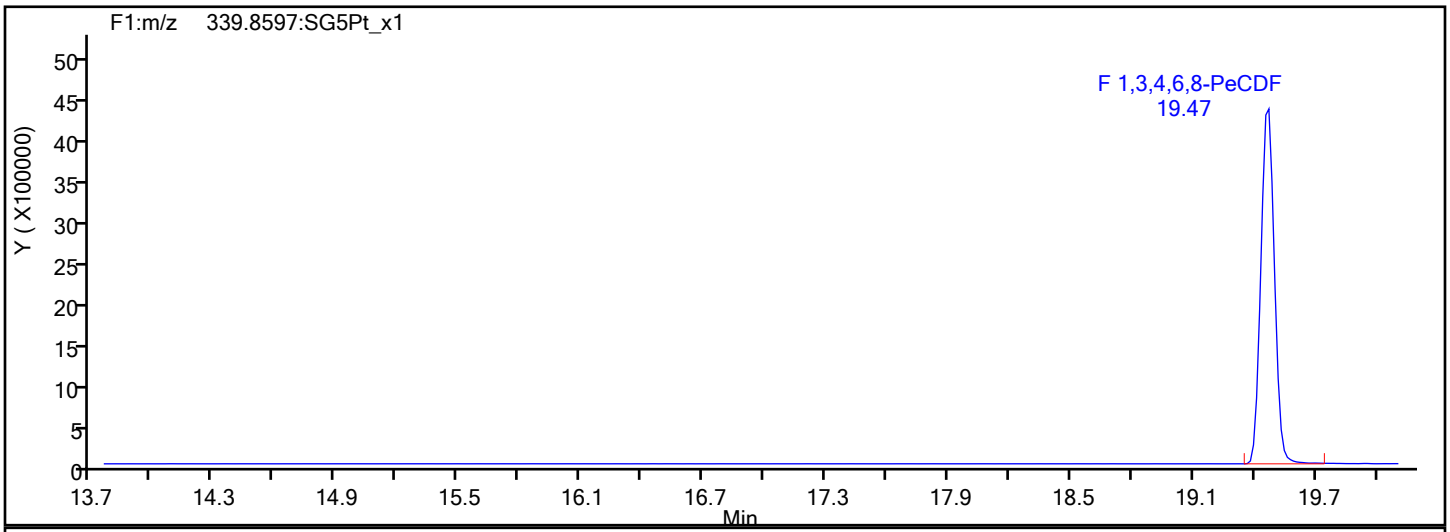


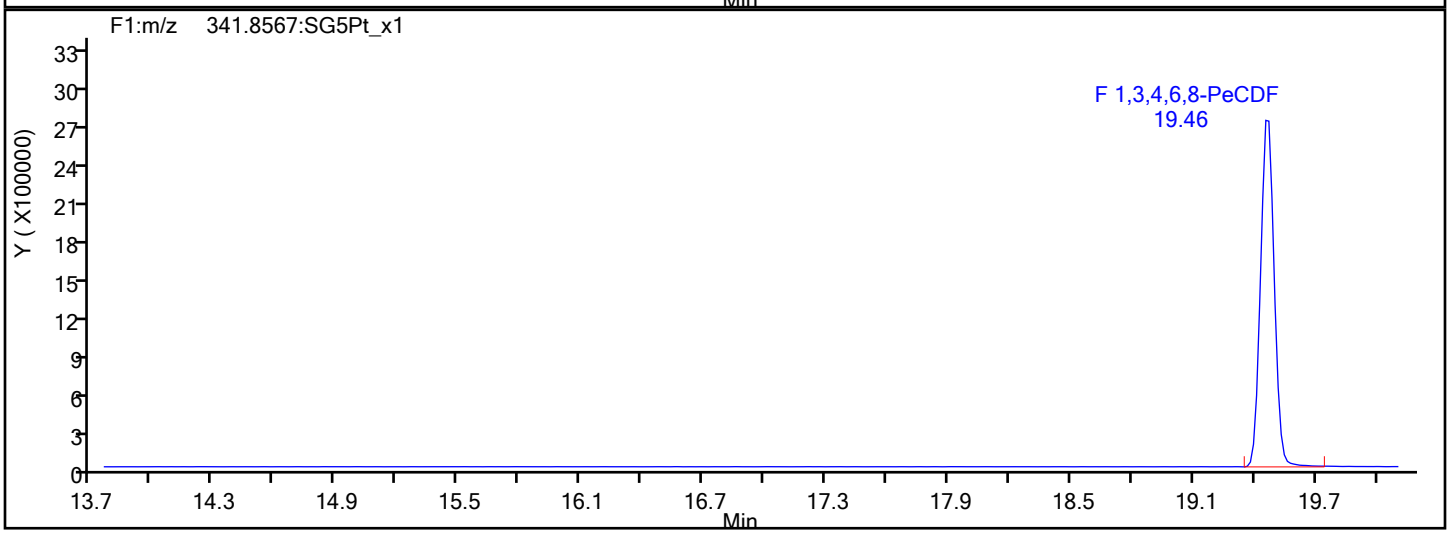
Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

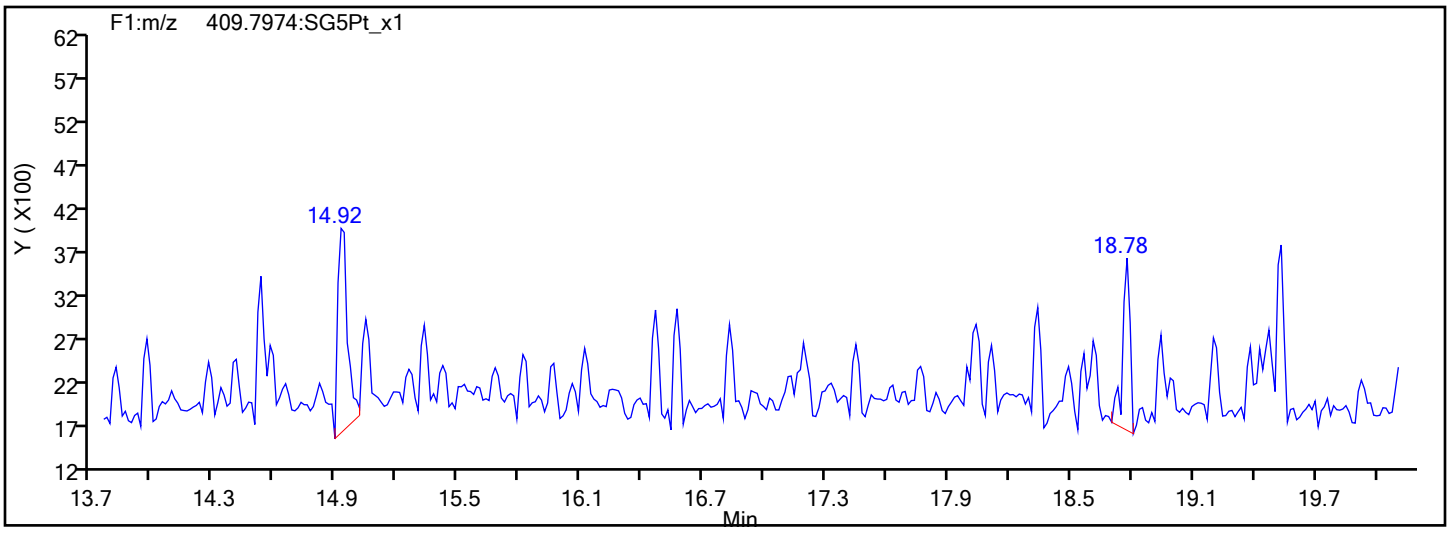
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

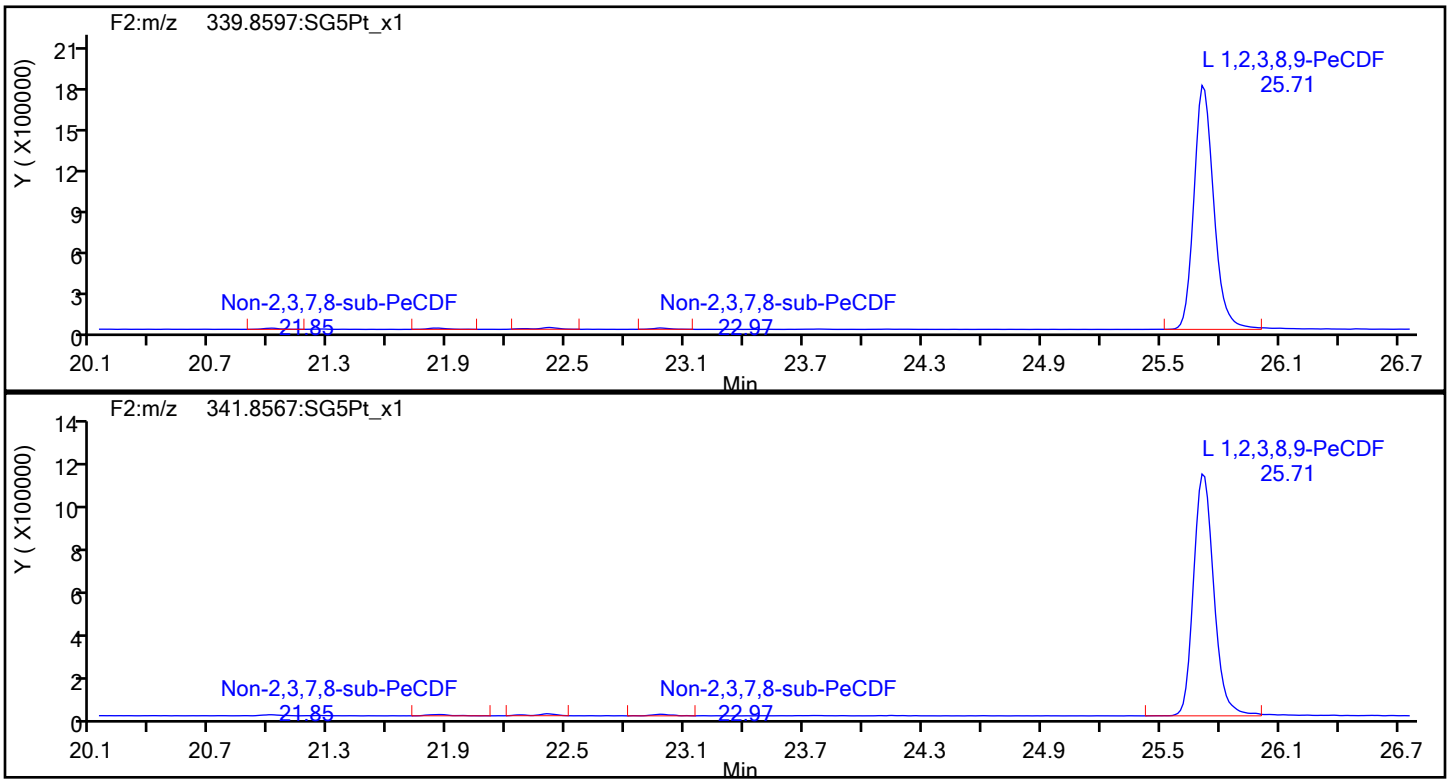


Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

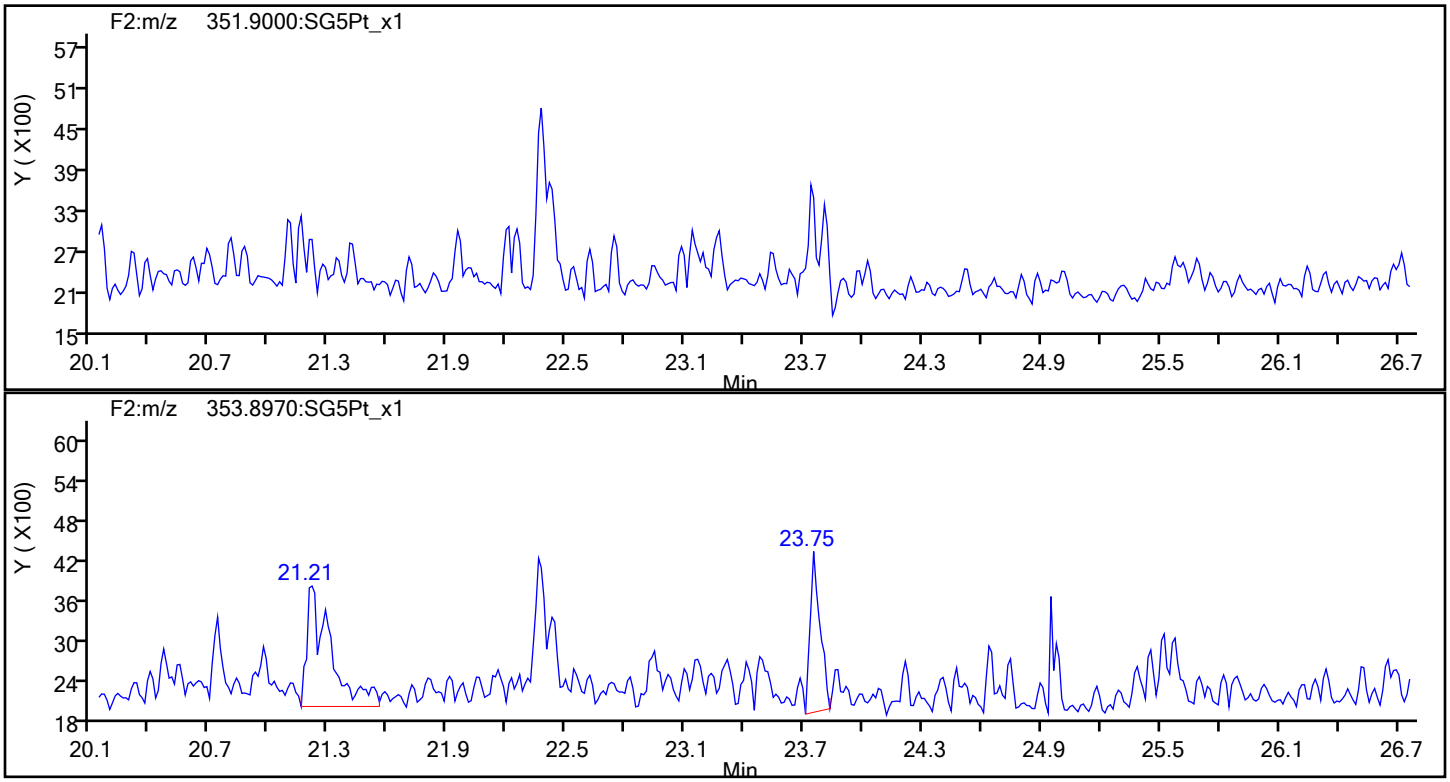
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

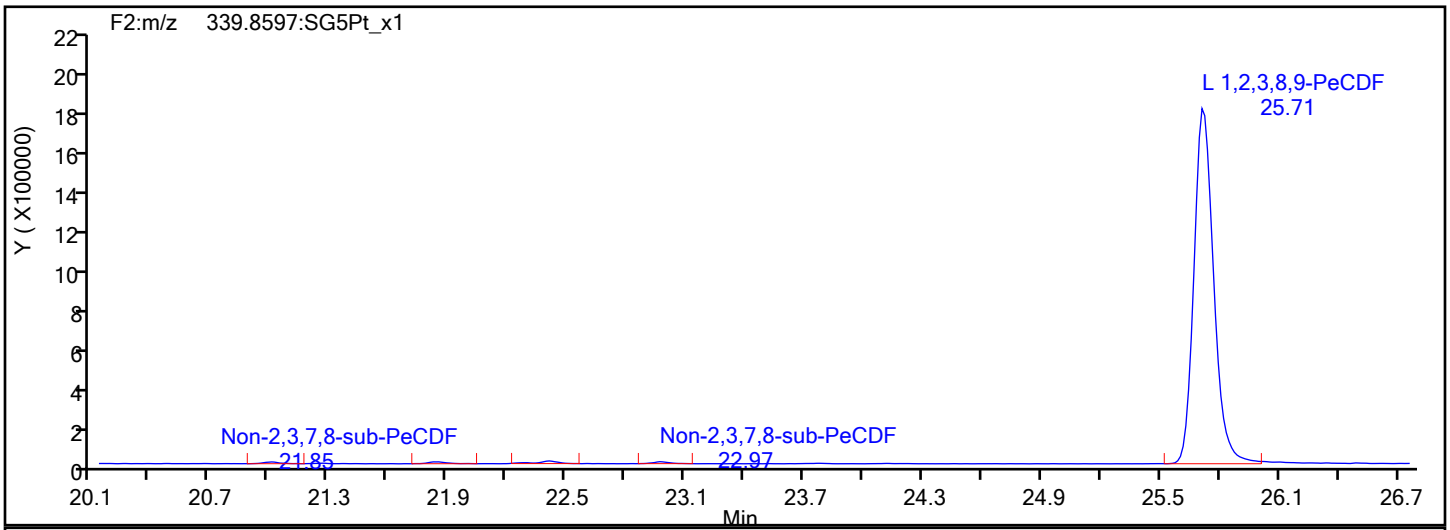


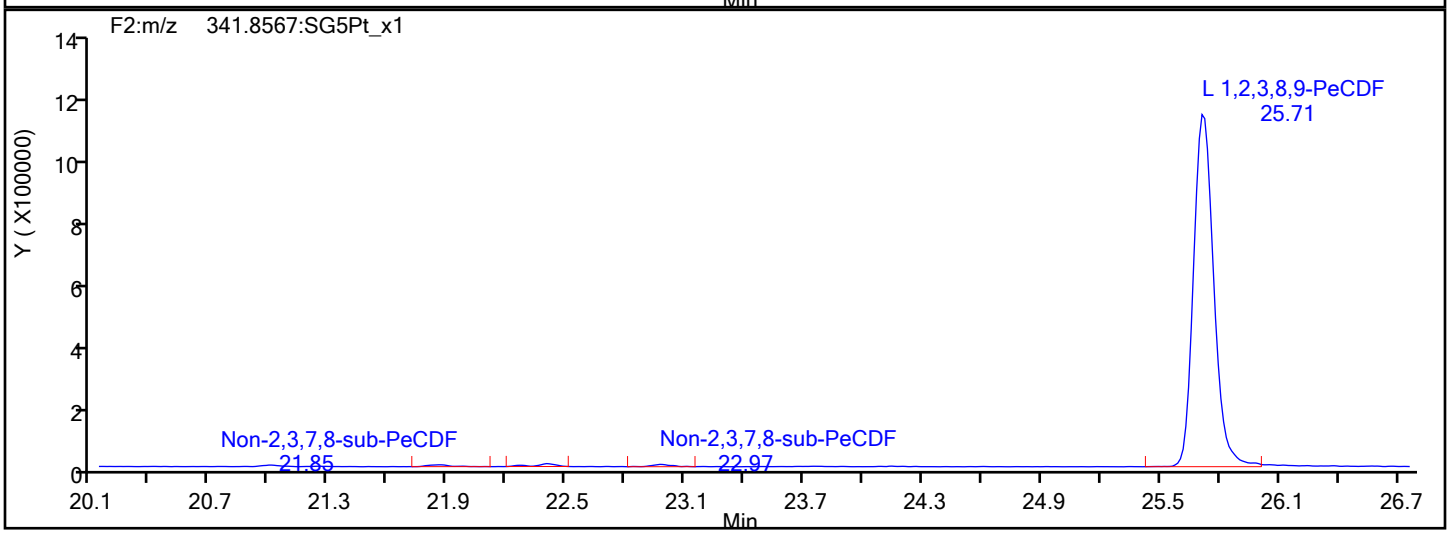
Report Date: 13-Dec-2019 23:51:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

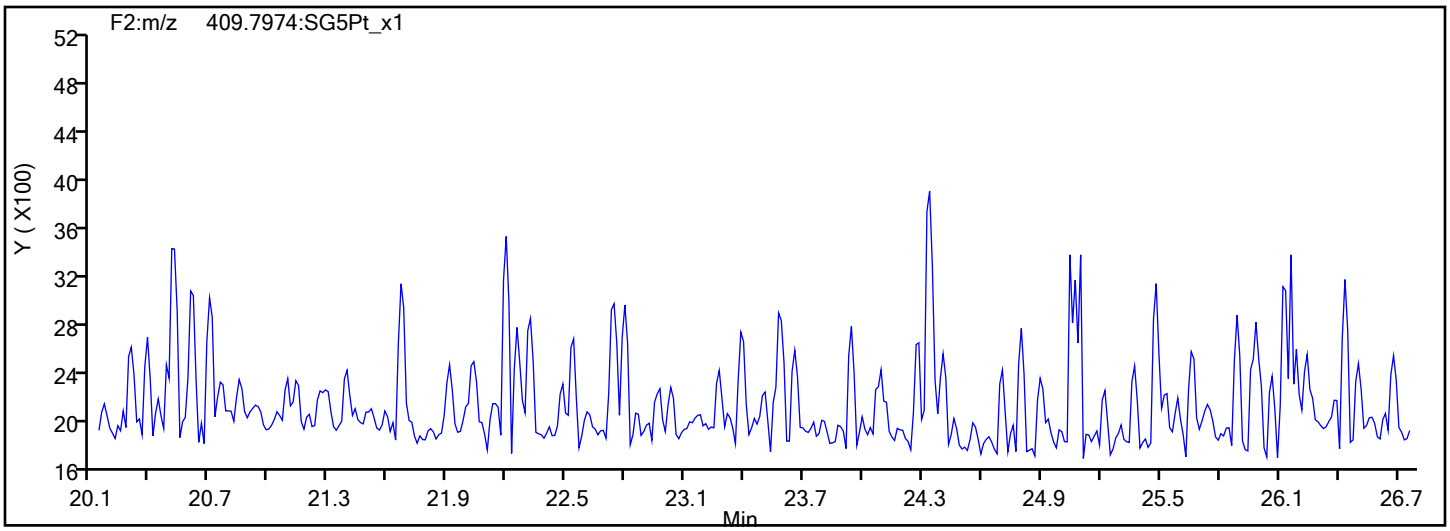
Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
Injection Date:	13-Dec-2019 11:08:40	Injection Vol:	2.0 ul
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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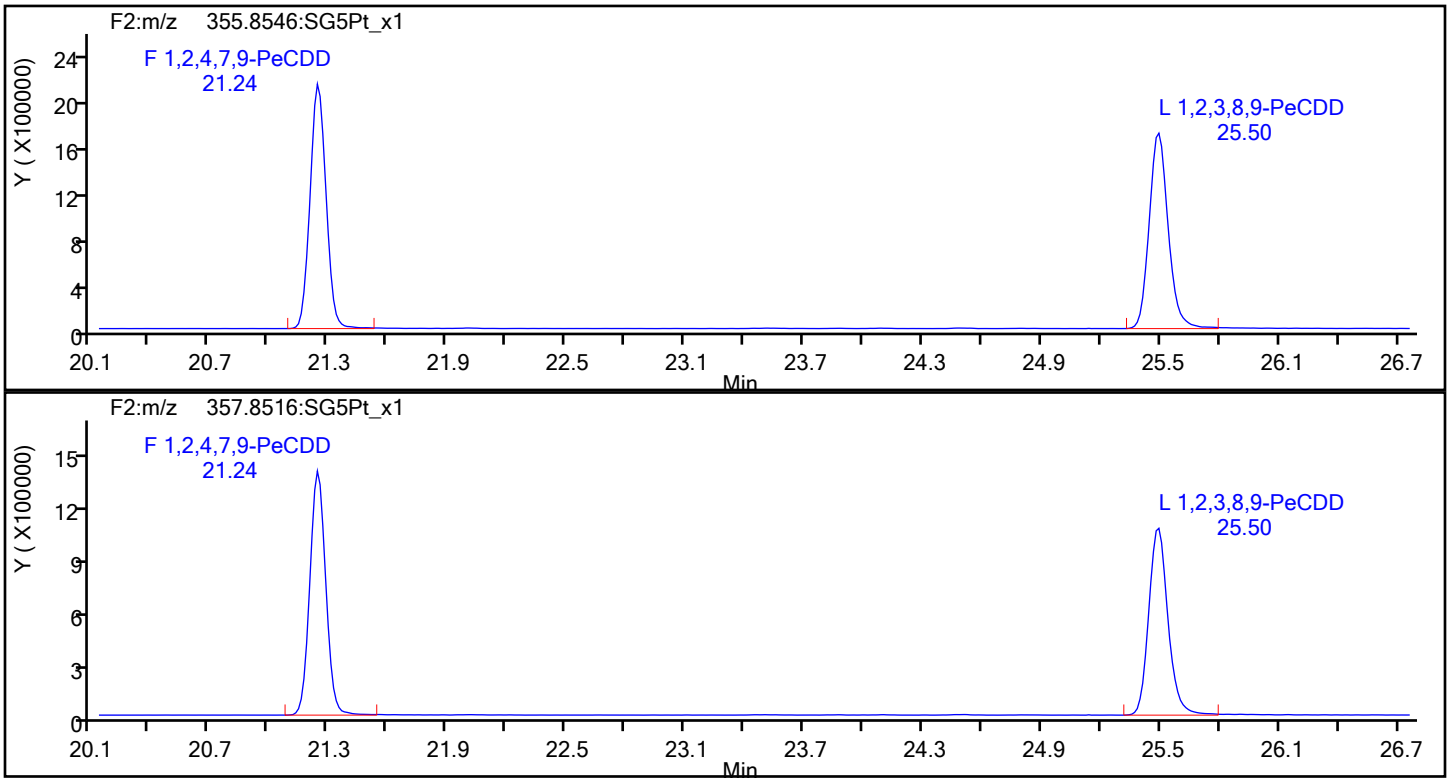
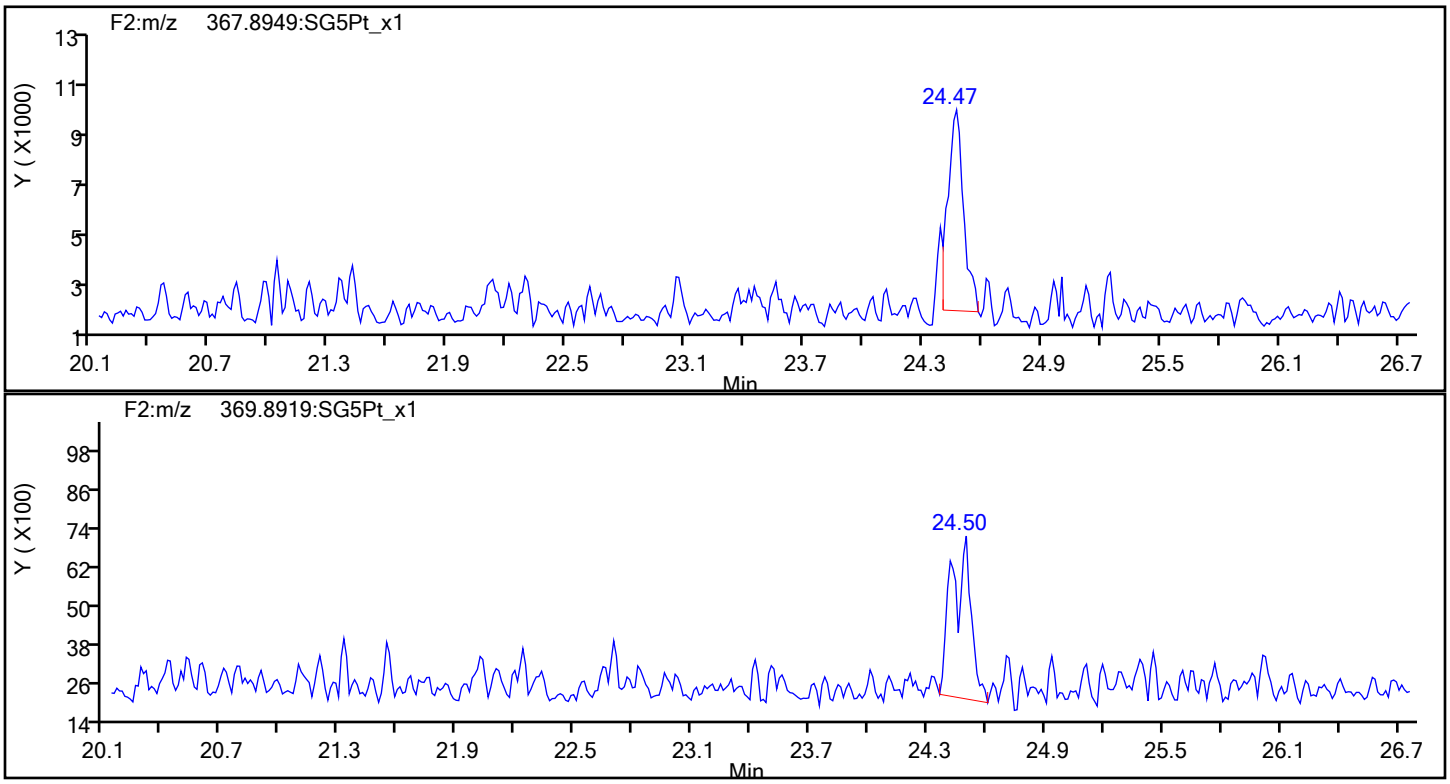
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards



Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d		
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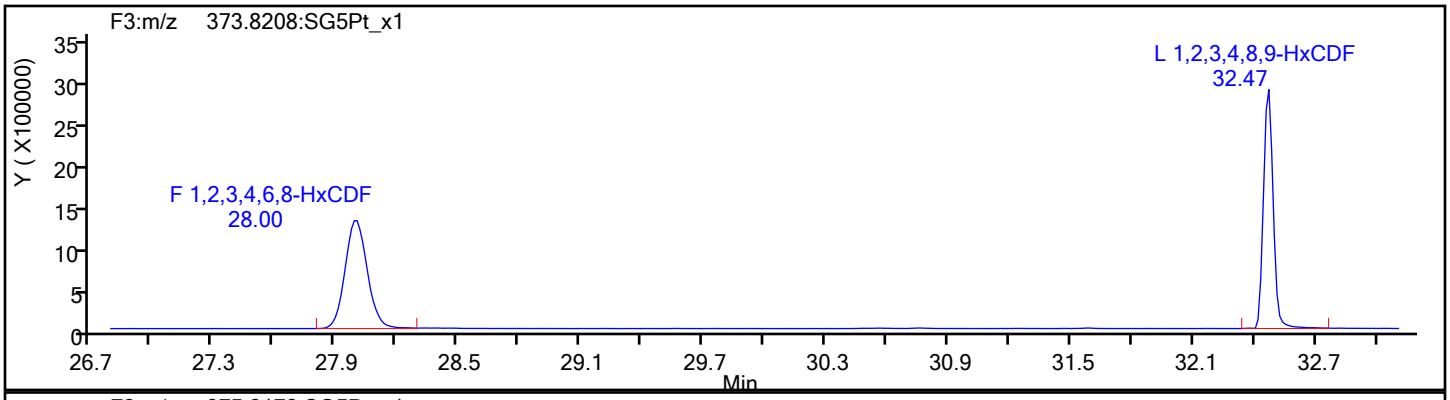
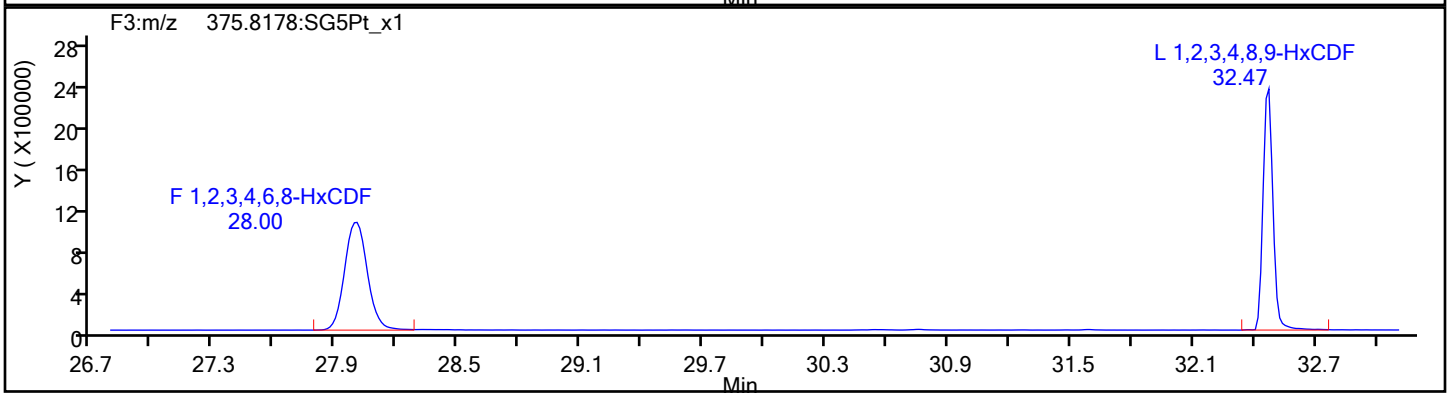
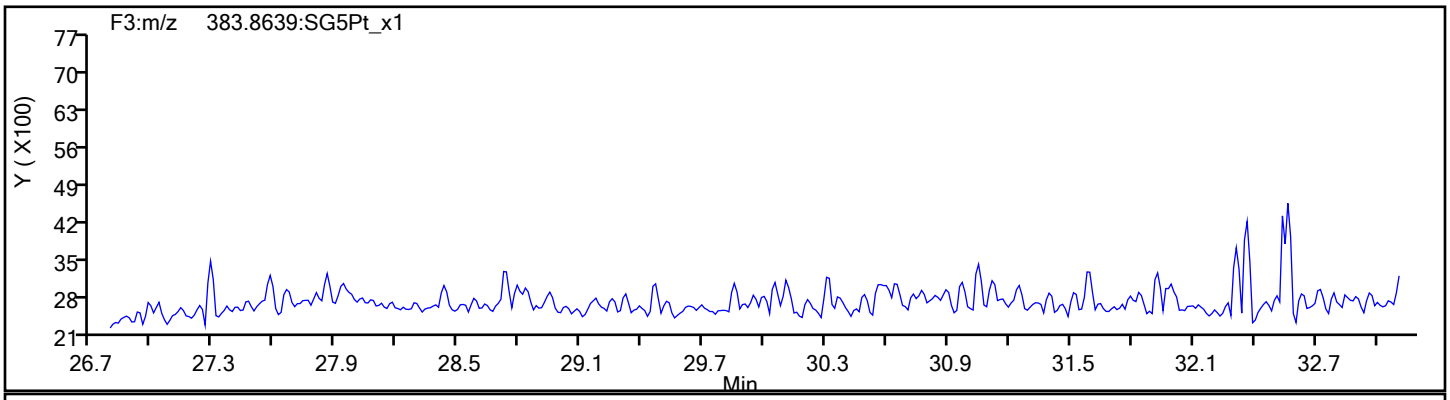
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

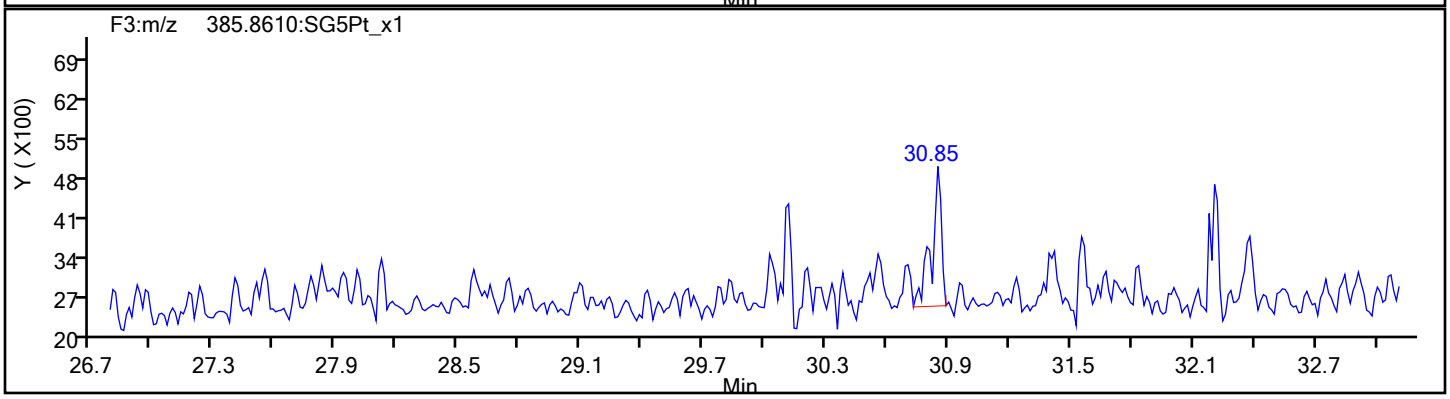
HxCDF





HxCDF Standards





Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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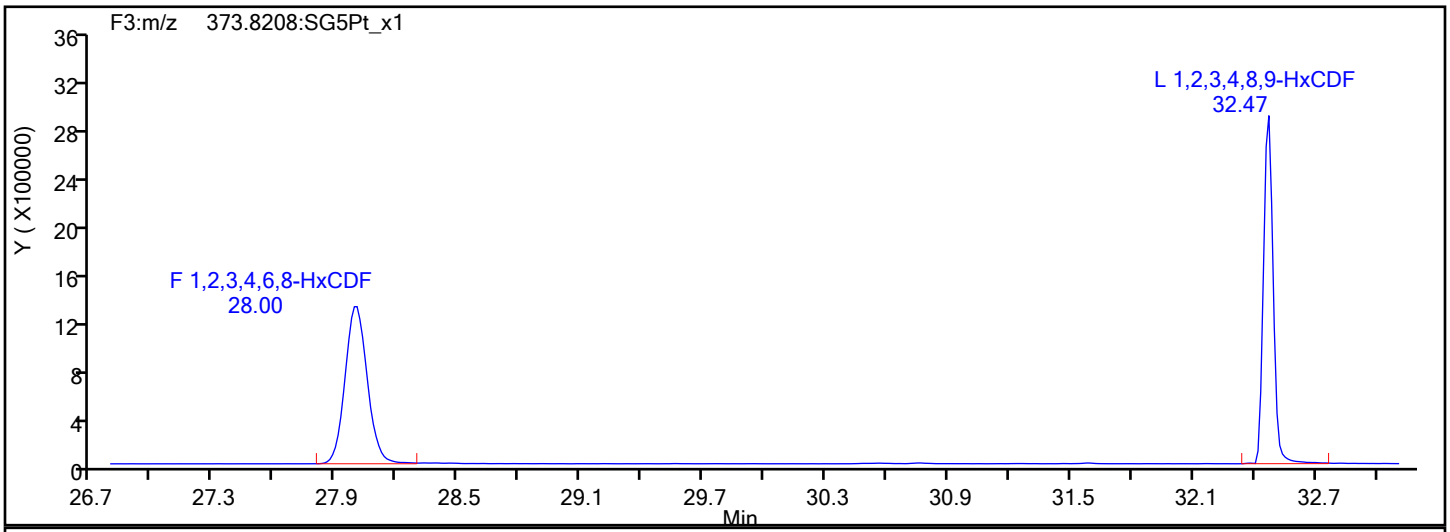
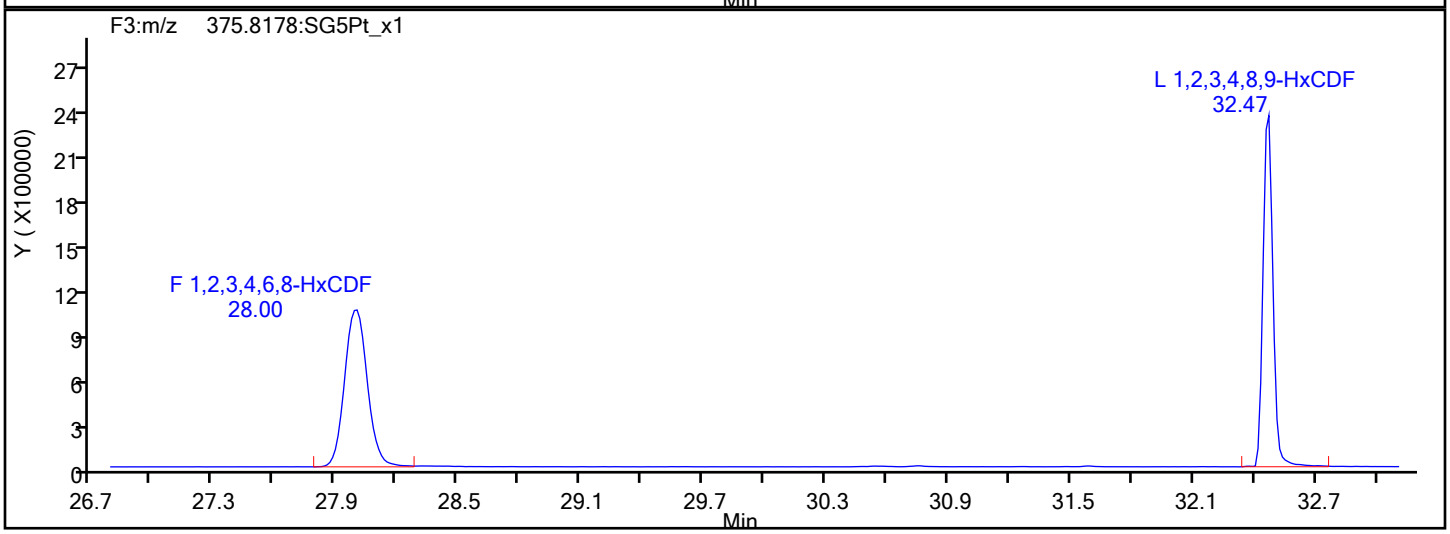
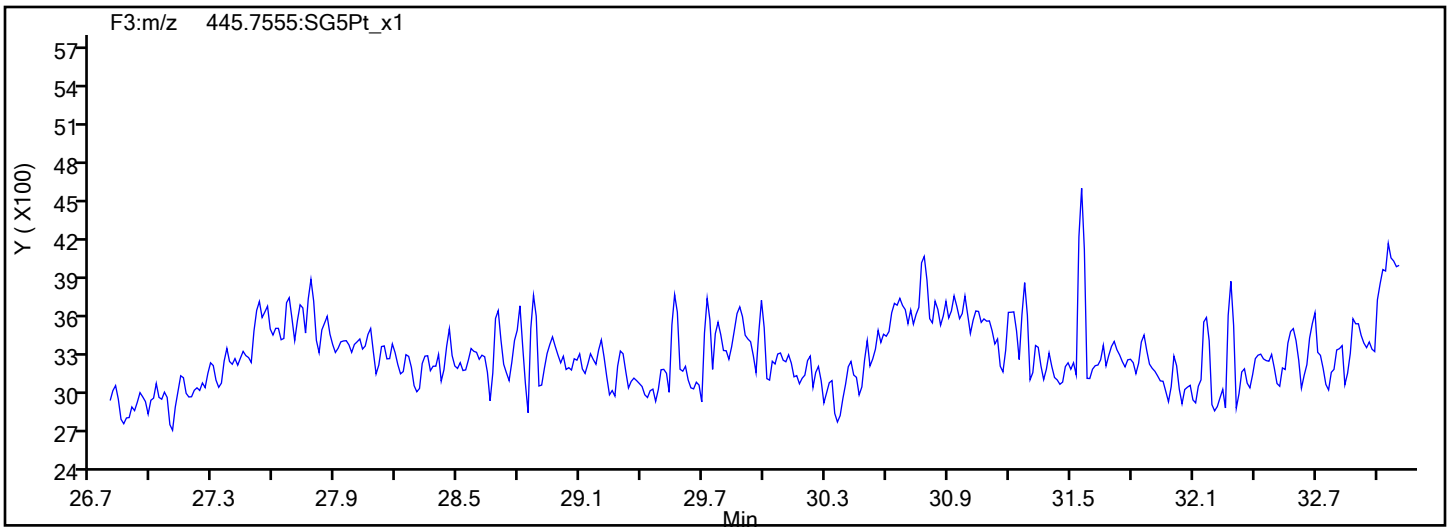
HxCDF





HxCDF Interference Mass



Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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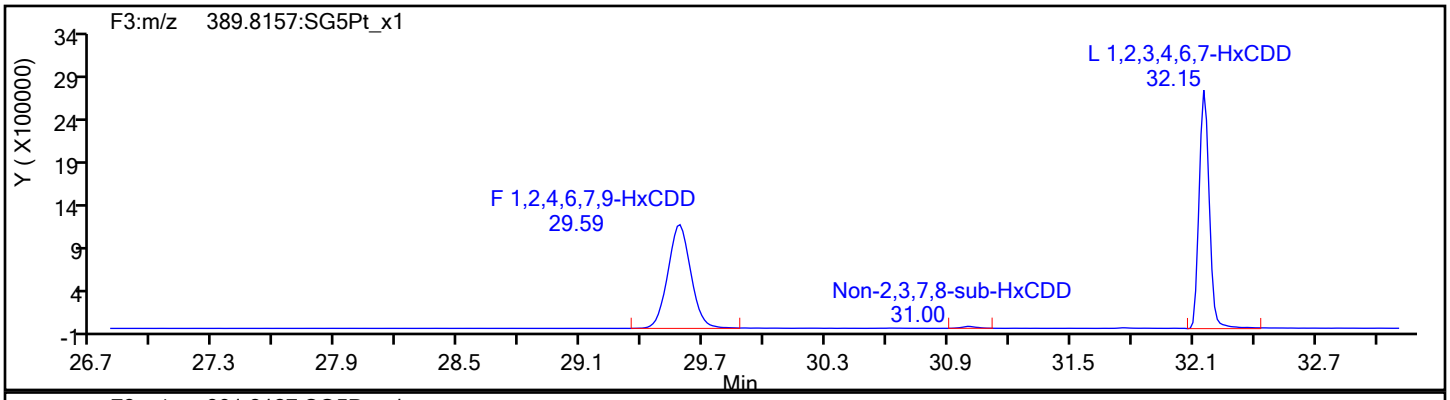
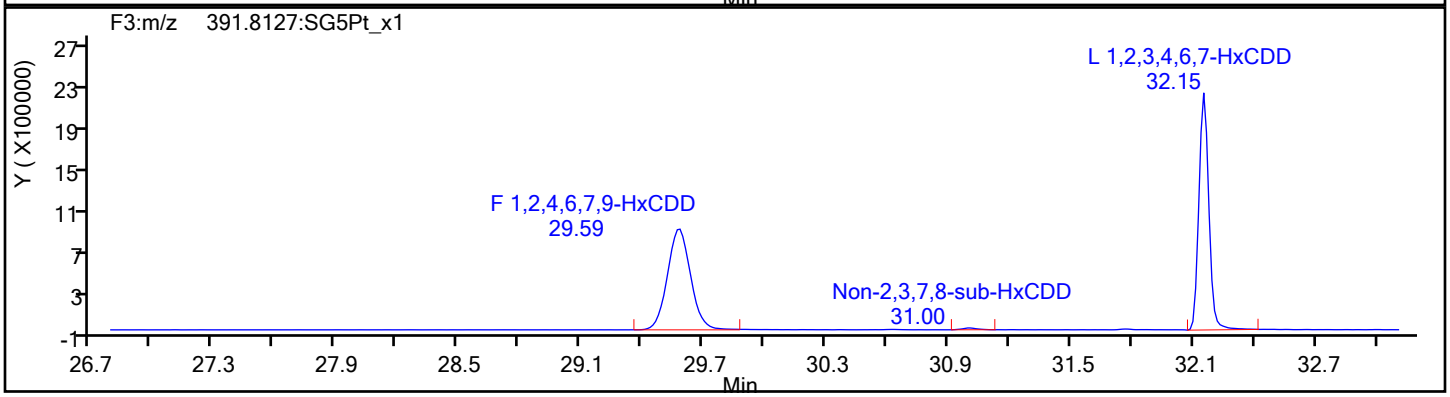
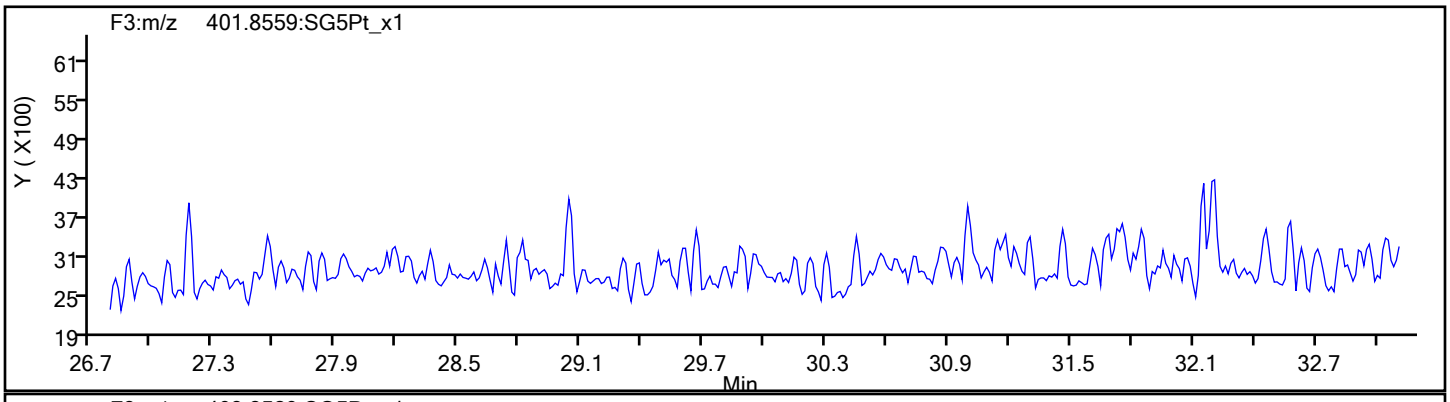
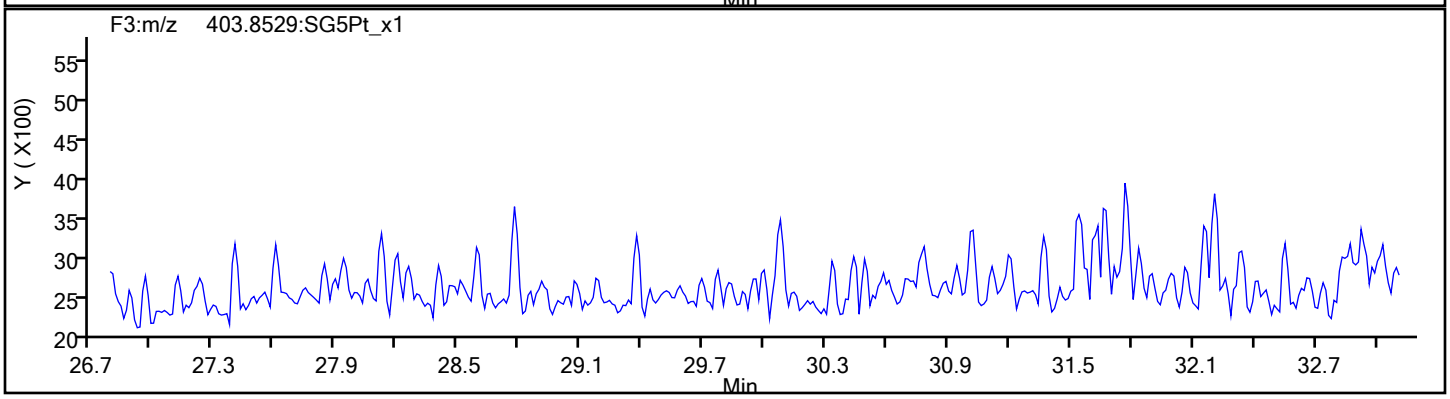
HxCDD





HxCDD Standards





Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\10D5\20191213-88255.b\13DE1910D5_1.d

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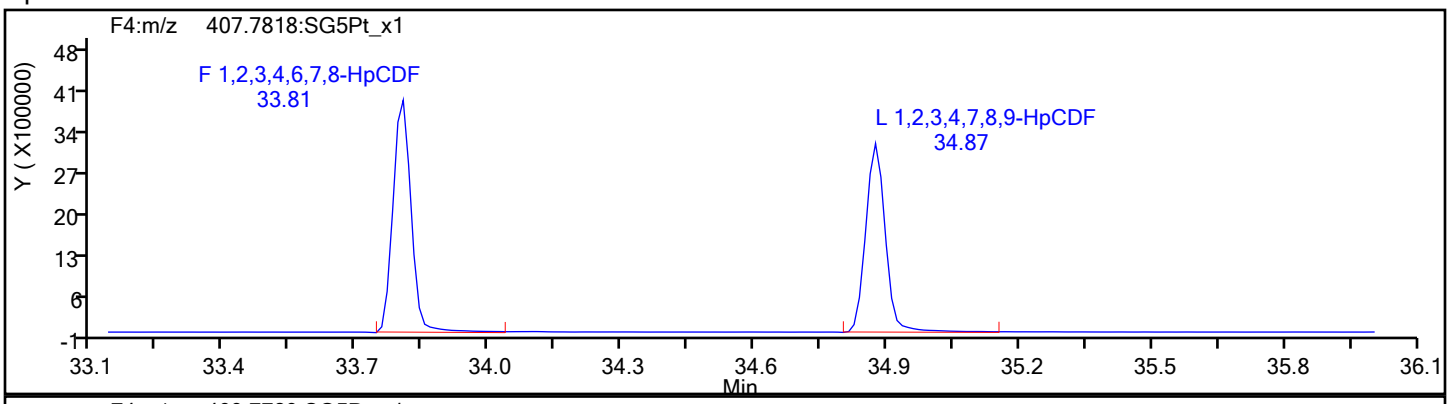

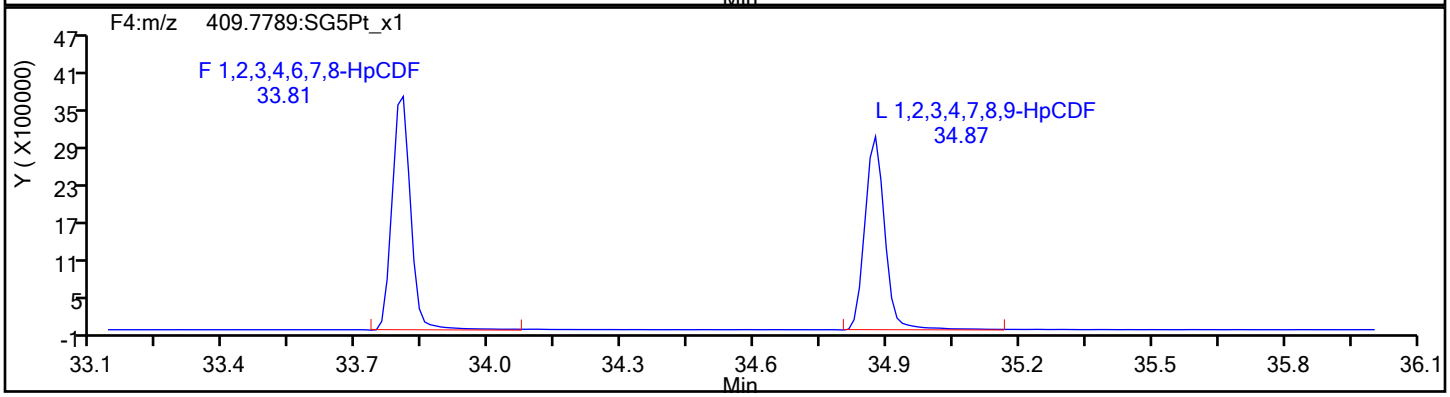

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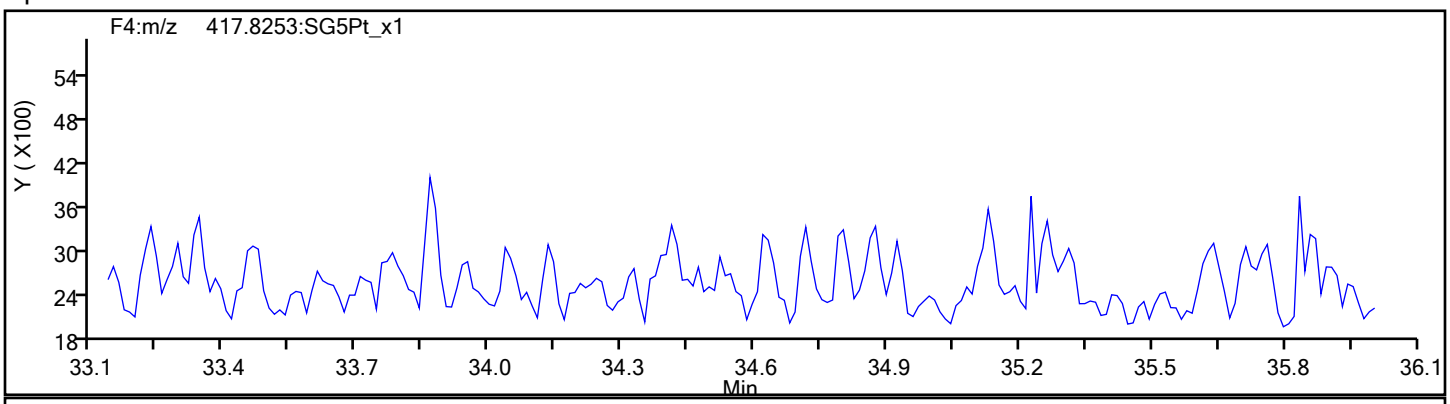

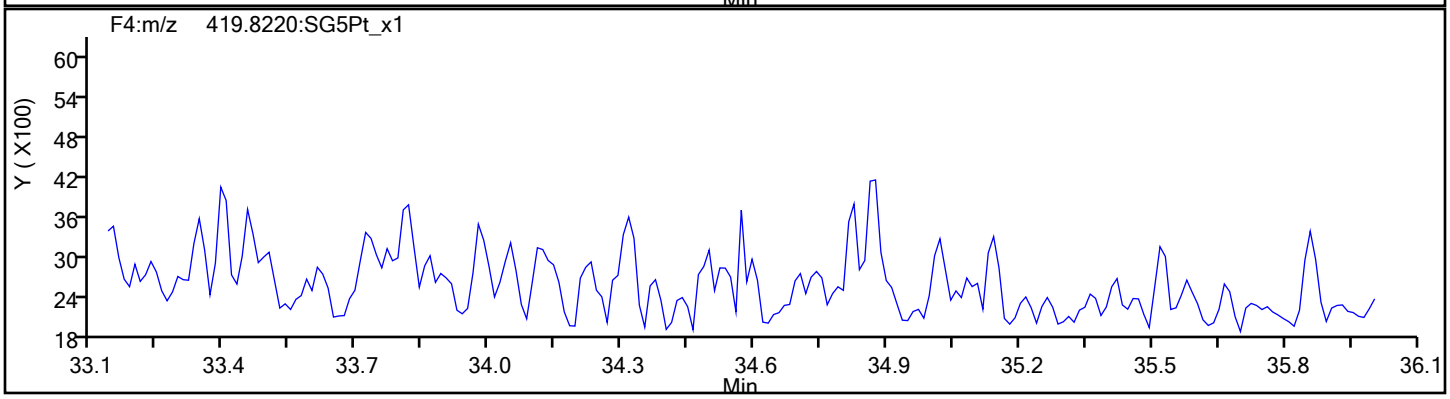

Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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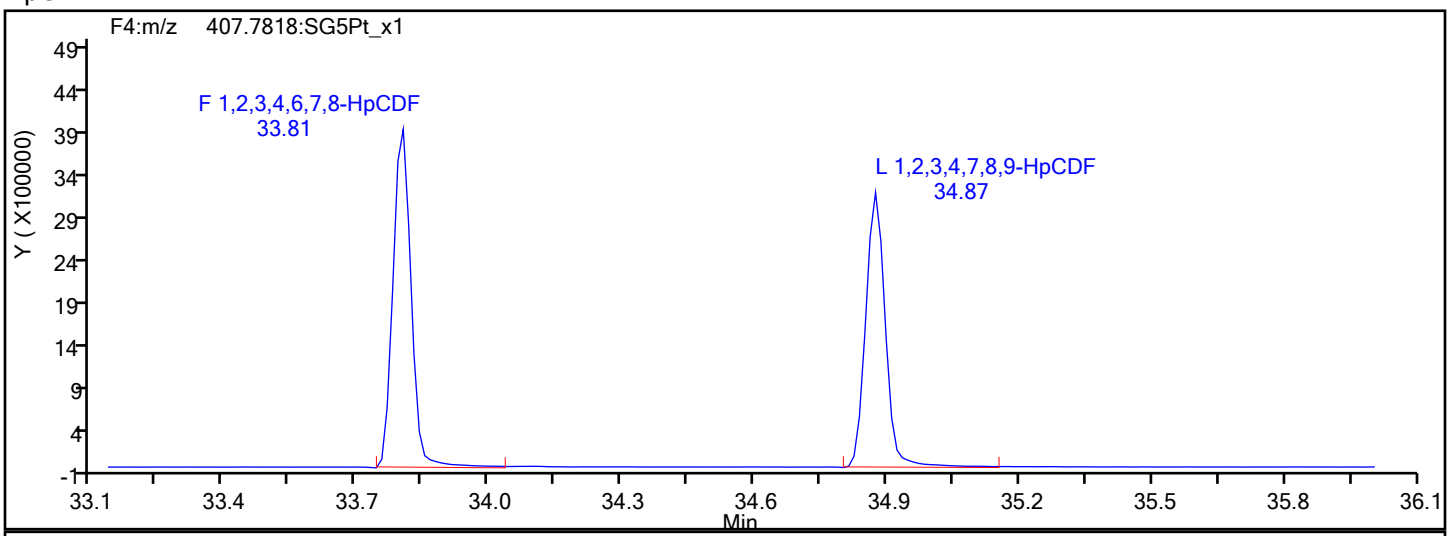
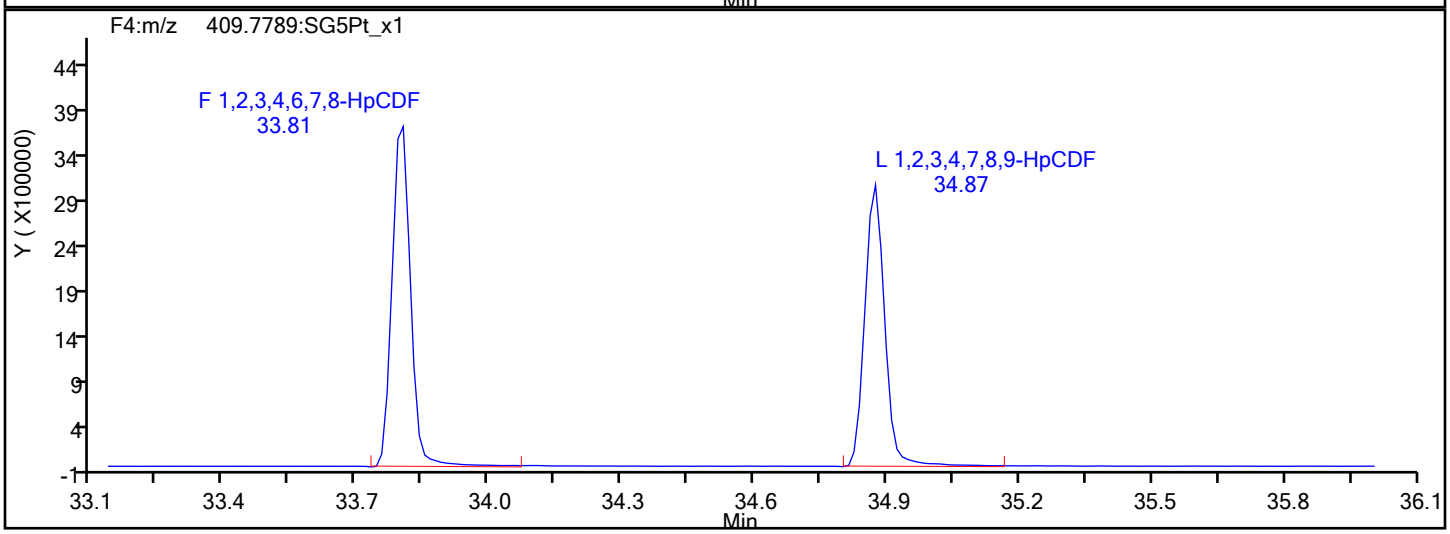
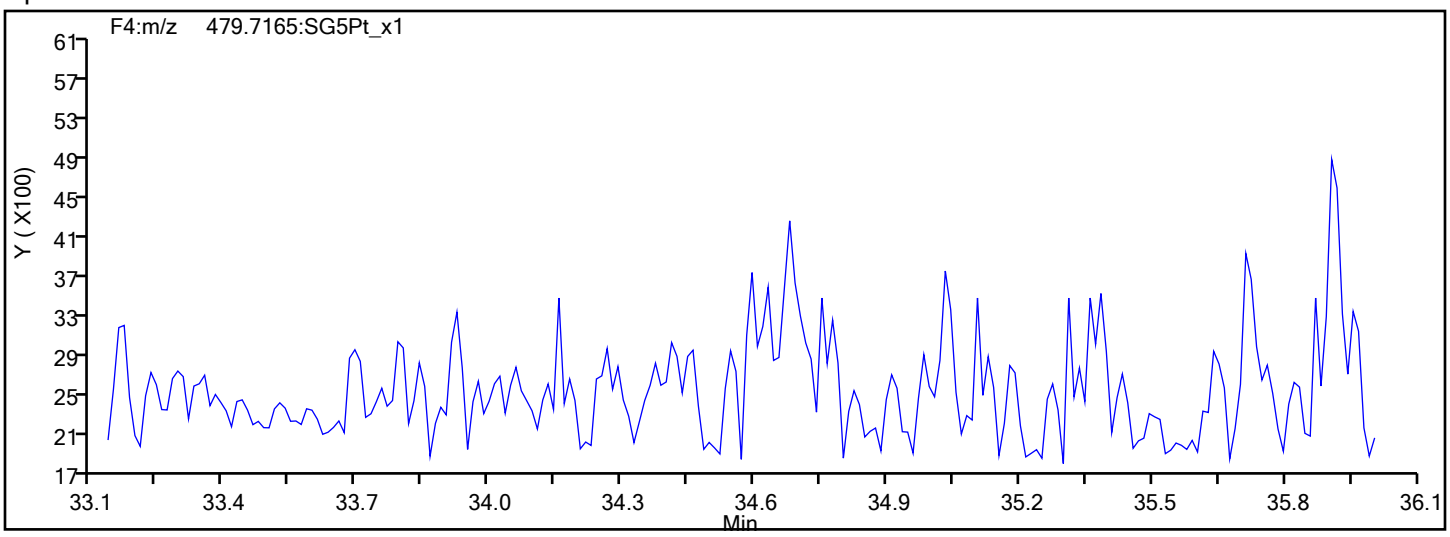
Instrument ID:	10D5	Operator ID:	AJS
Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345335	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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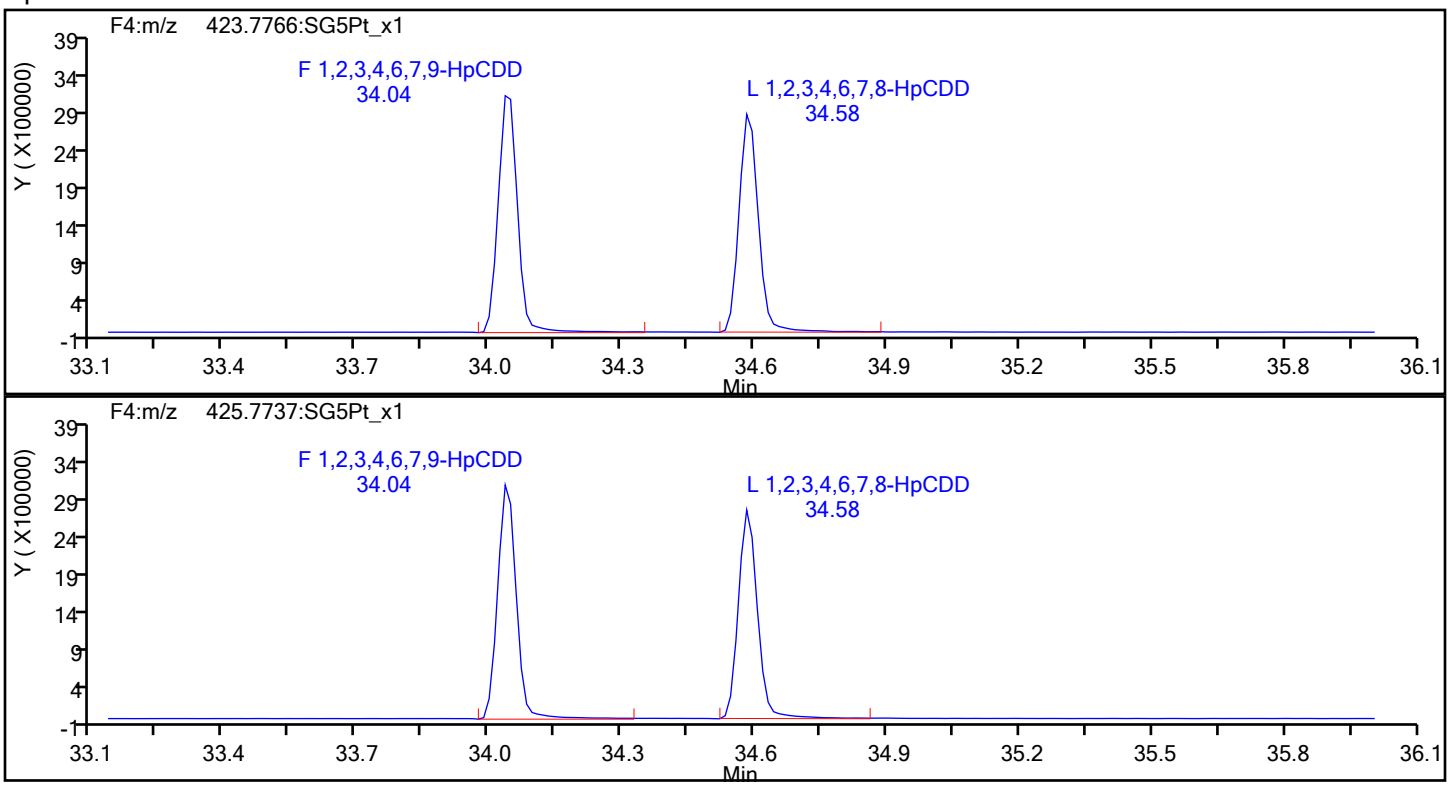
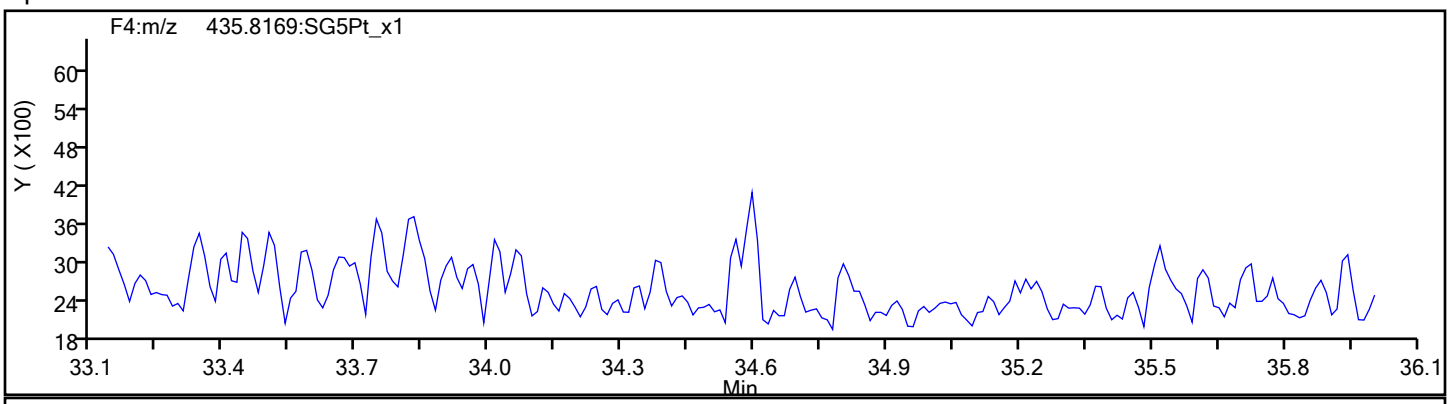
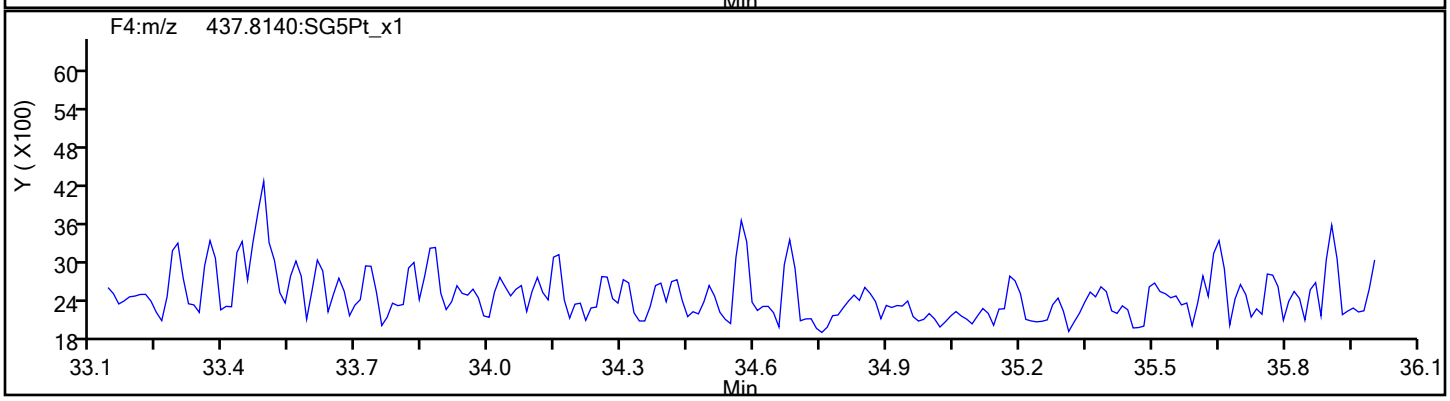
HpCDD



HpCDD Standards





Report Date: 13-Dec-2019 23:51:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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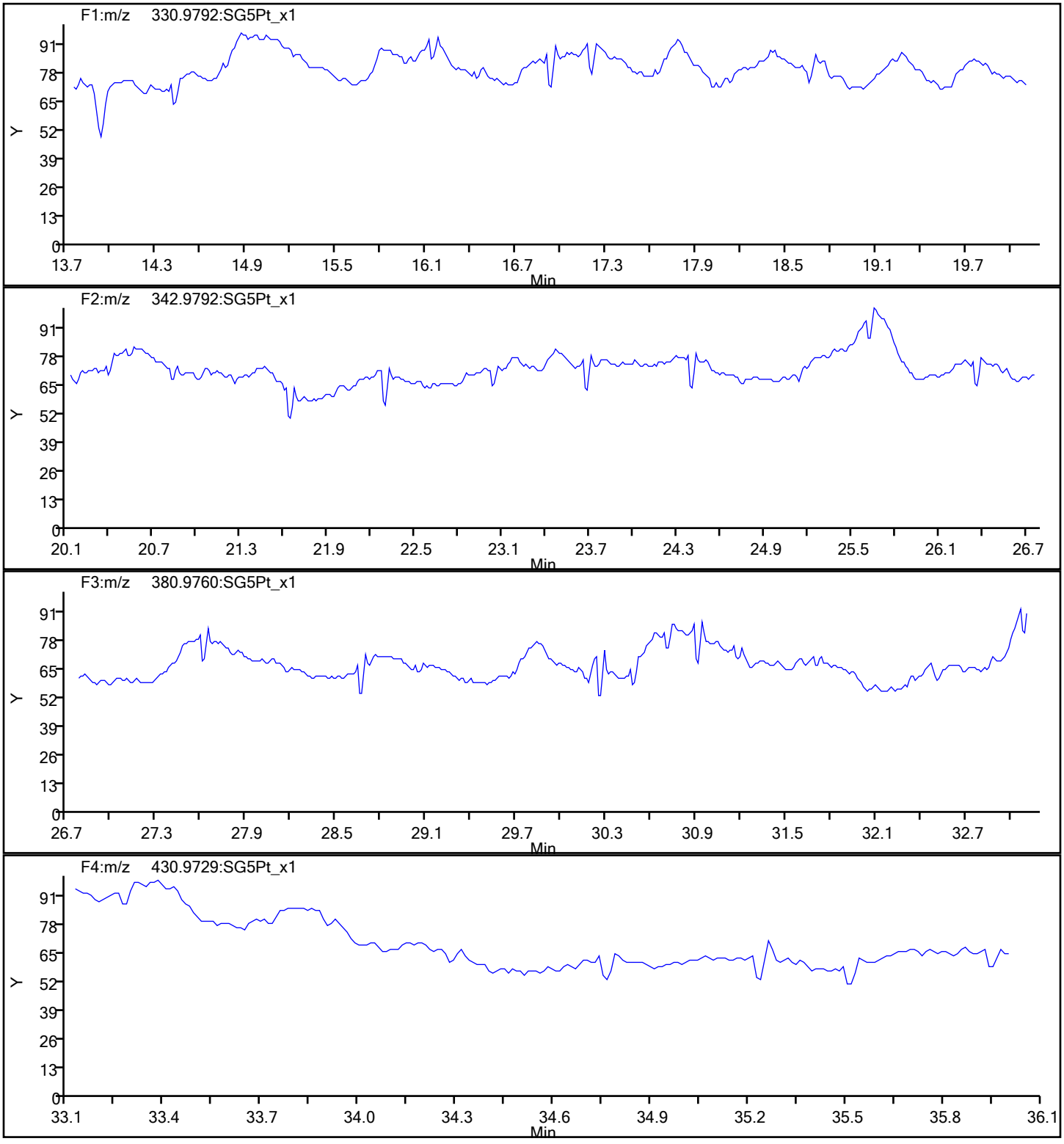

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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_10D5	Limit Group:	HR - 1613B - ICAL
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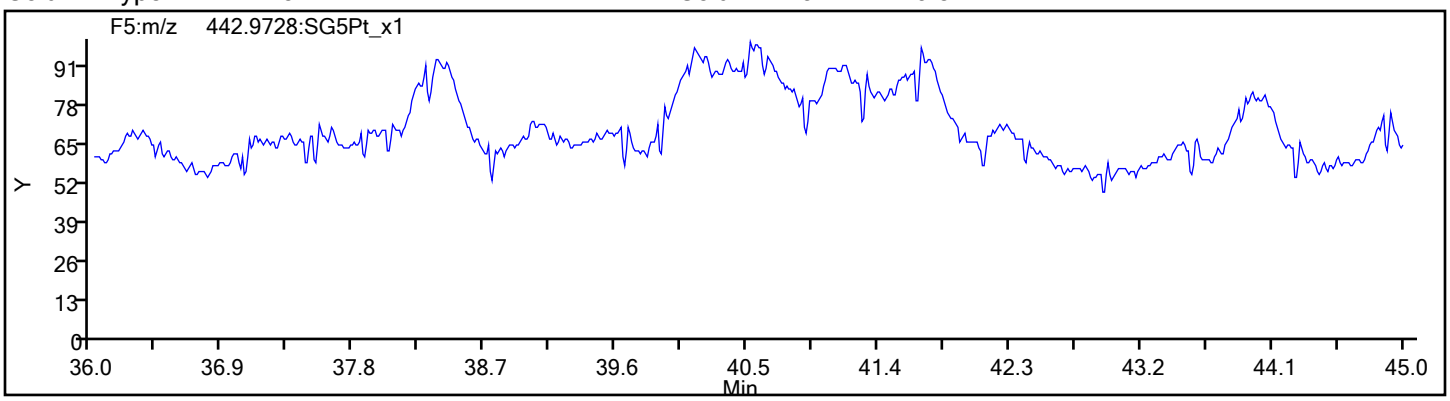


Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 02-Aug-2019 01:35:28 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:55:43 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:42:14

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	16.622	61074380	0.81	1.3379					0.00	
2,3,7,8-TCDF	16.636	61037608	0.79	0.8389	47.7	47.7	0.1209	0.1209		
D 13C-2,3,7,8-TCDD	15.154	40433427	0.78	0.9388					0.00	
2,3,7,8-TCDD	15.182	44564745	0.76	1.1538	38.2	38.2	0.1633	0.1633		
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNCP_00038 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 02-Aug-2019 01:35:28 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:55:43 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:42:14

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	16.622	16.580	3	1.000	27419709	5797675	45703	114257	127		
317.9389	16.622	16.580	3	1.000	33654671	7331370	15961	39902	459	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.636	16.599	2	1.001	26963677	5682254	5764	14410	986		
305.8987	16.636	16.599	2	1.001	34073931	7516270	7547	18867	996	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.154	15.136	1	1.000	17780107	4066450	14178	35445	287		
333.9339	15.154	15.136	1	1.000	22653320	5347910	7990	19975	669	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.182	15.156	2	1.002	19294731	4574819	7190	17975	636		
321.8936	15.182	15.156	2	1.002	25270014	5985037	10548	26370	567	0.76(0.65-0.89)	
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

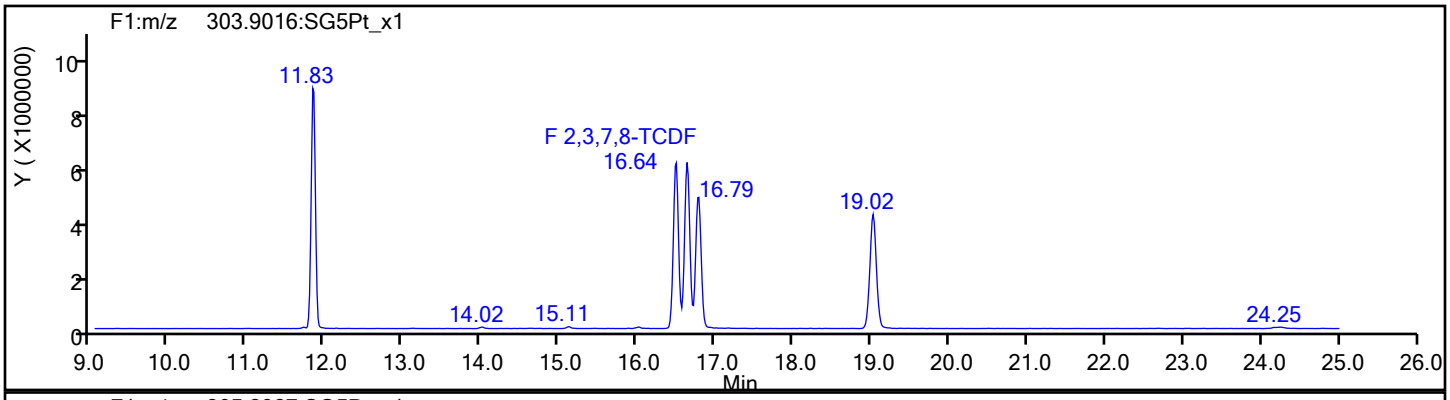
HRDXNCP_00038 Amount Added: 1.00 Units: mL

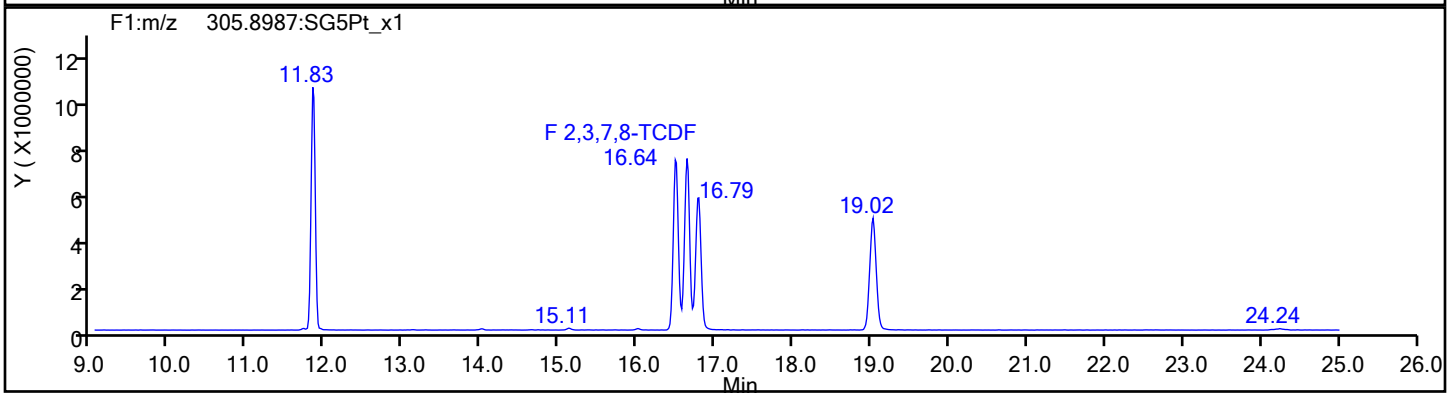
Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

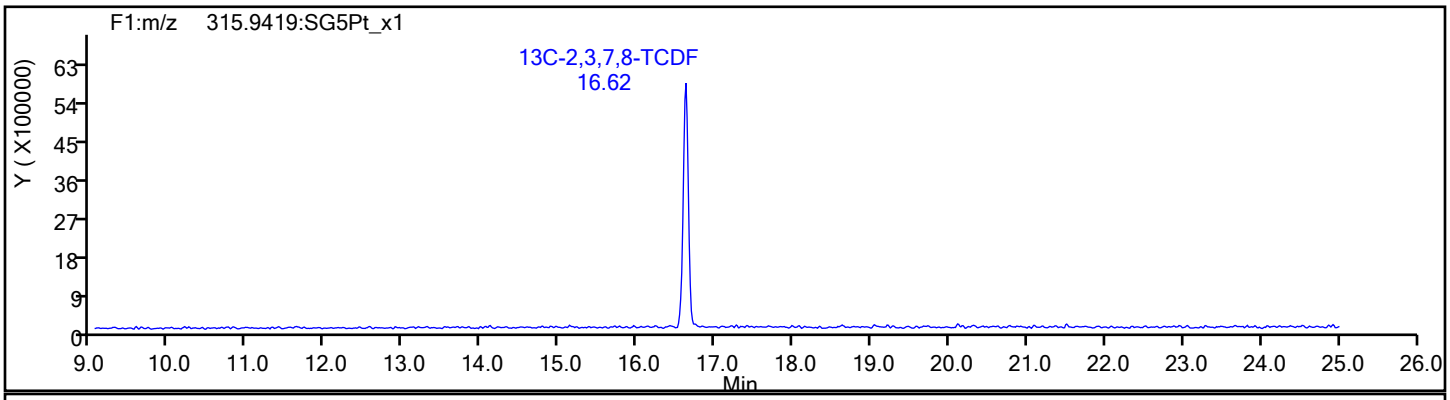
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

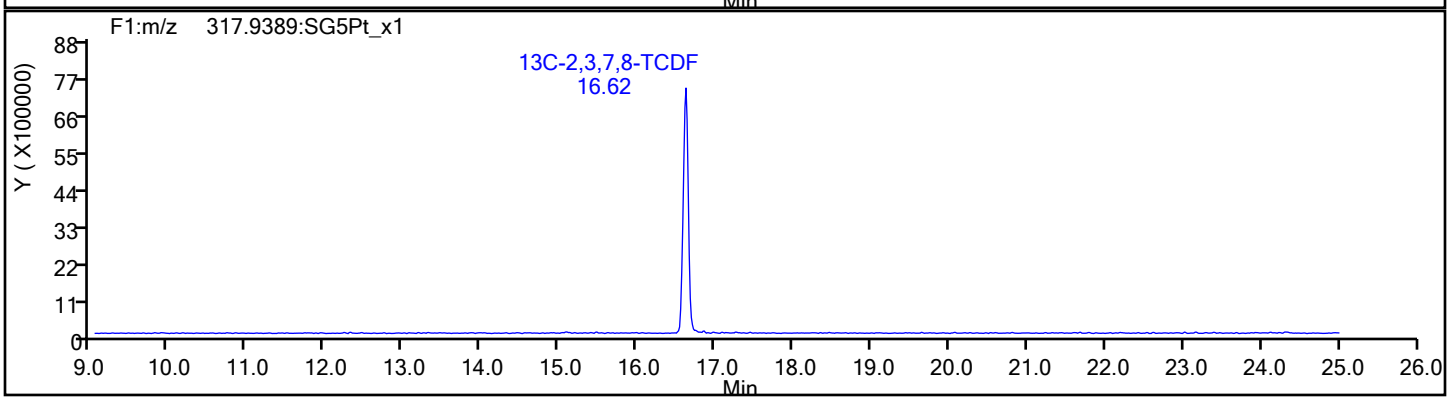
TCDF





TCDF Standards





Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
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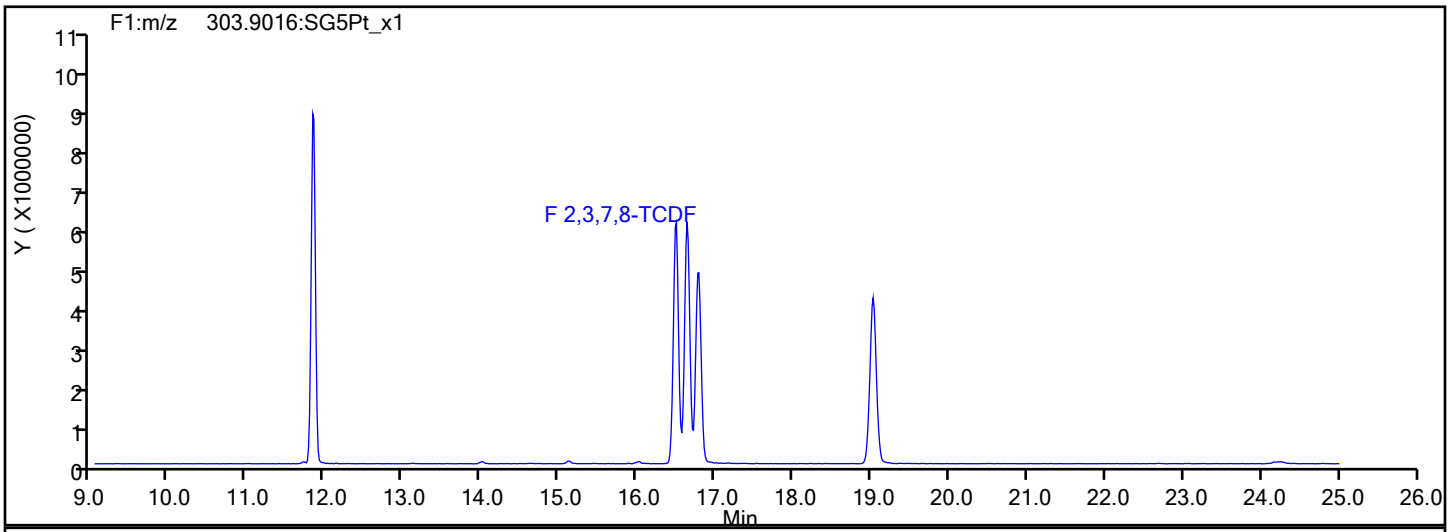
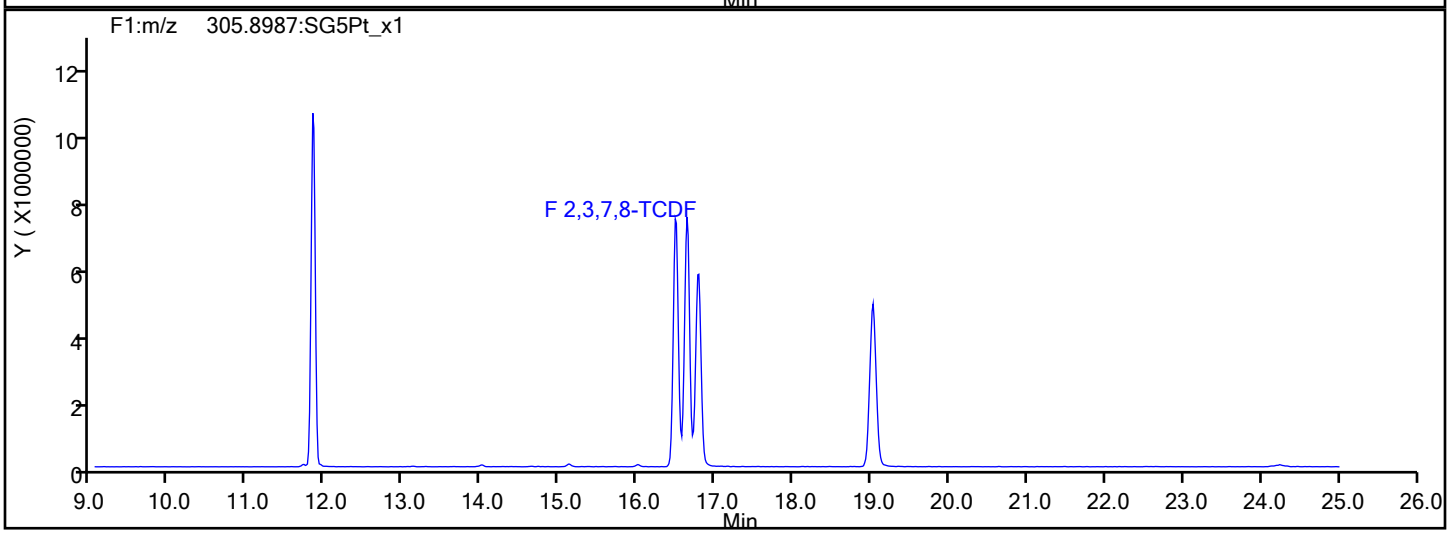
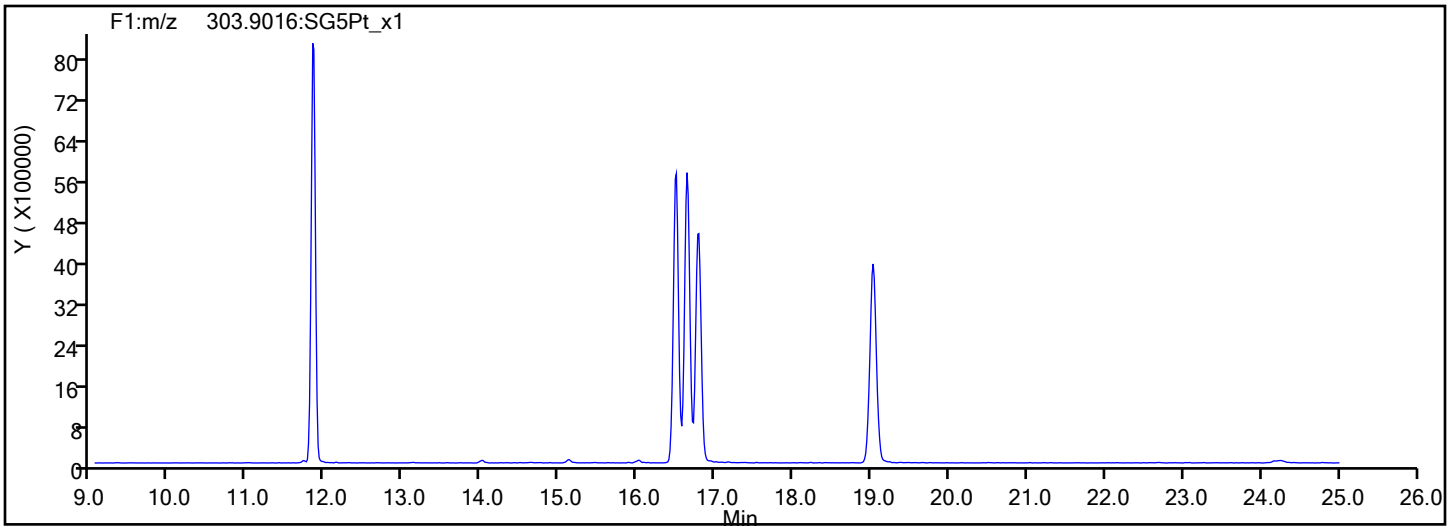
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
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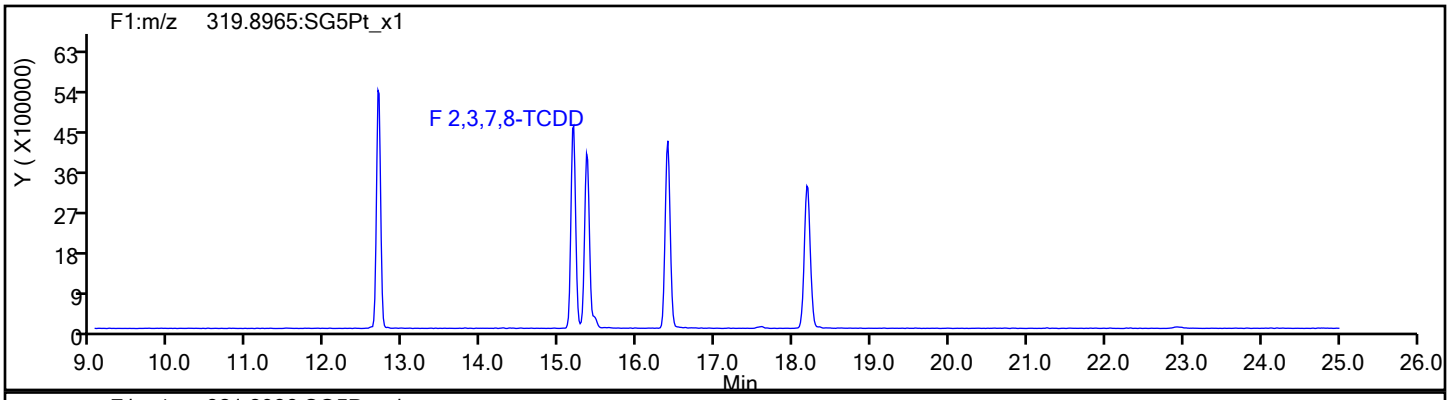
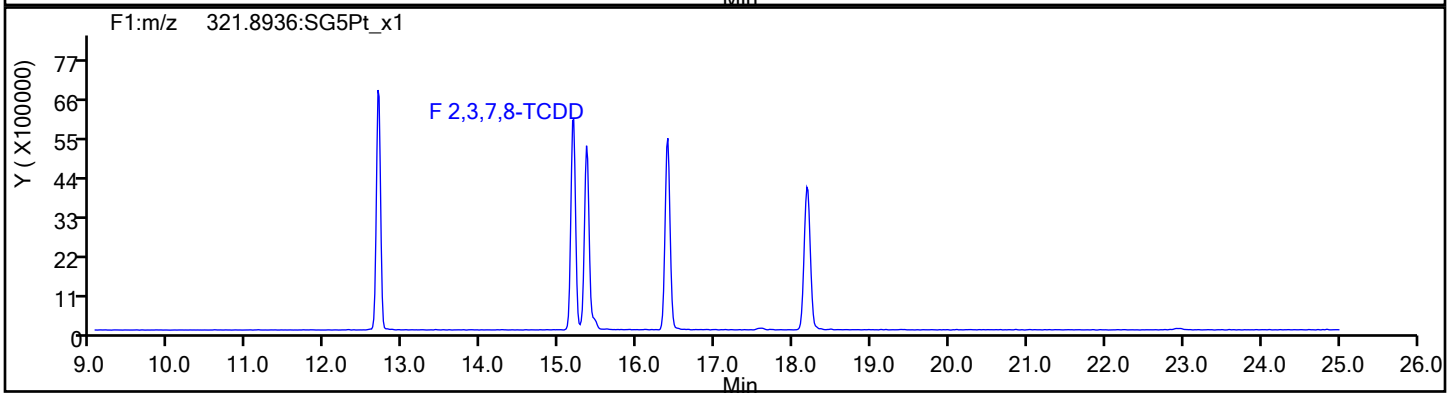
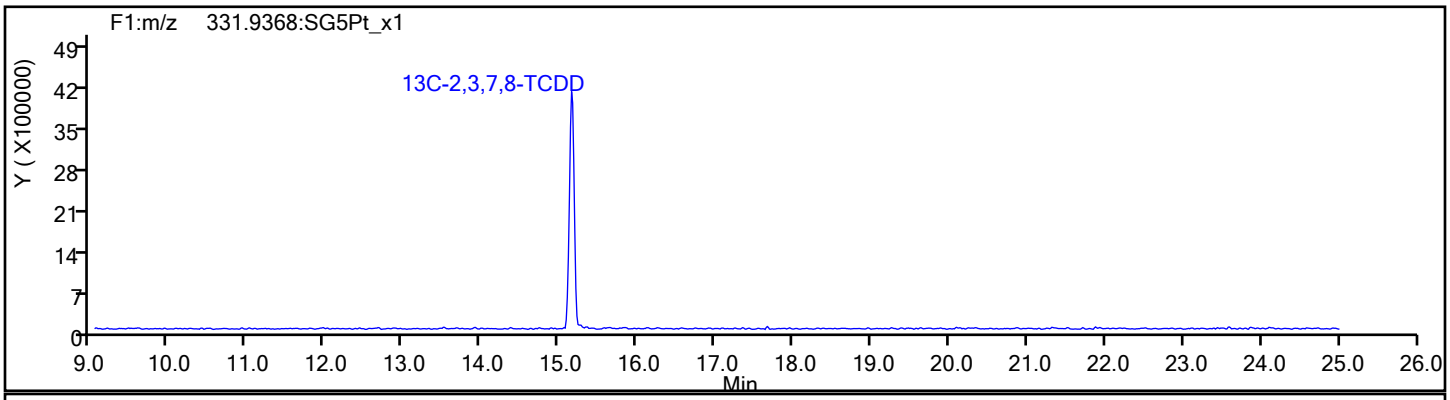
Column Type:	DB-225	Column Dia:	0.32 mm

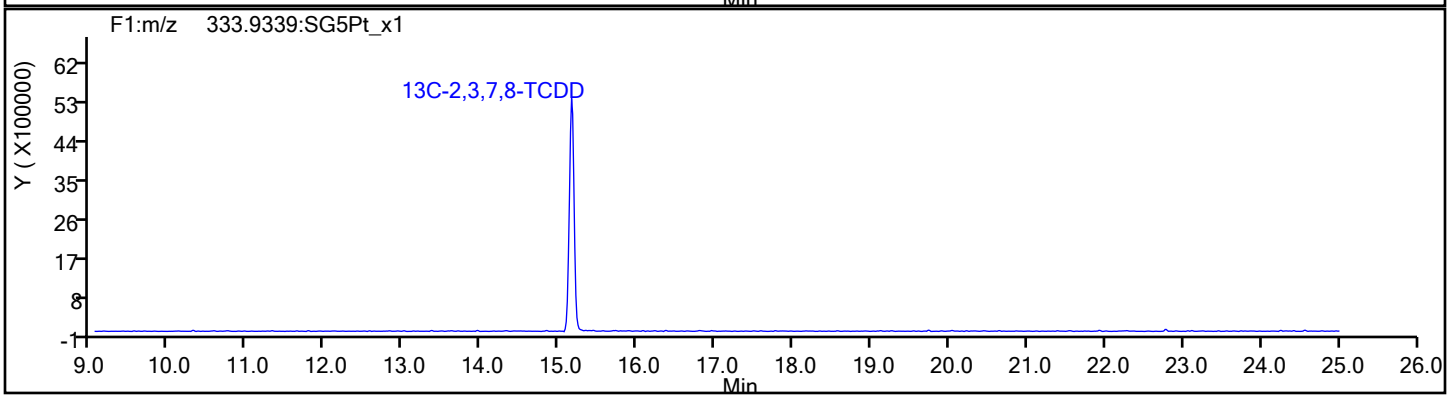
TCDD





TCDD Standards





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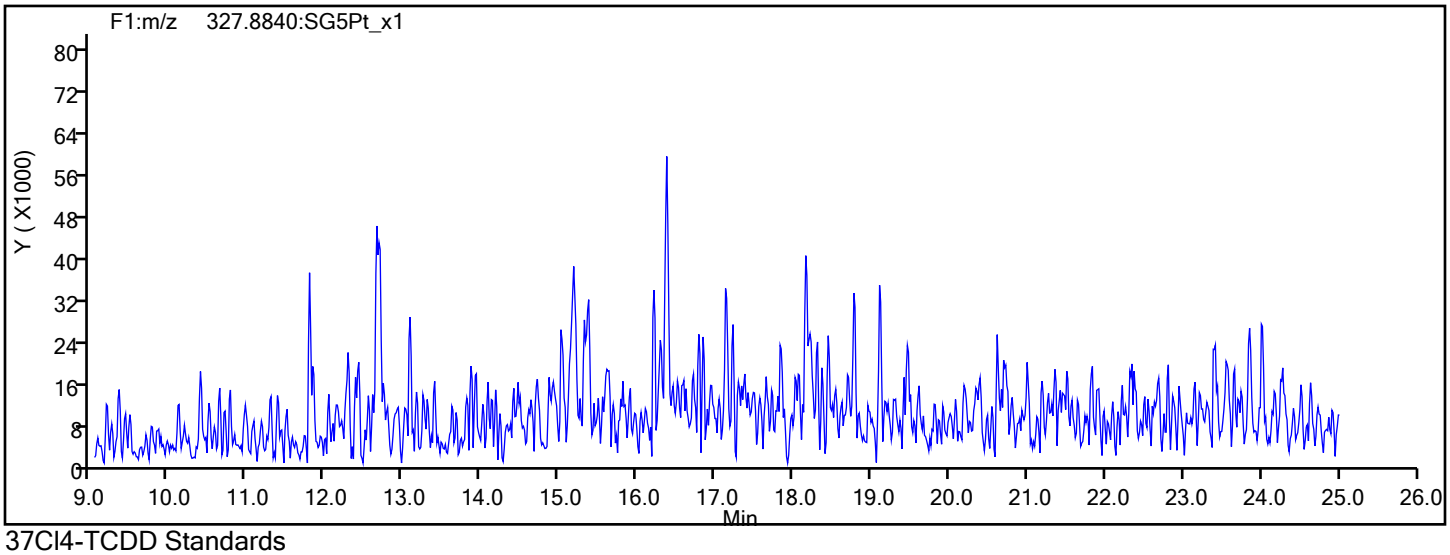
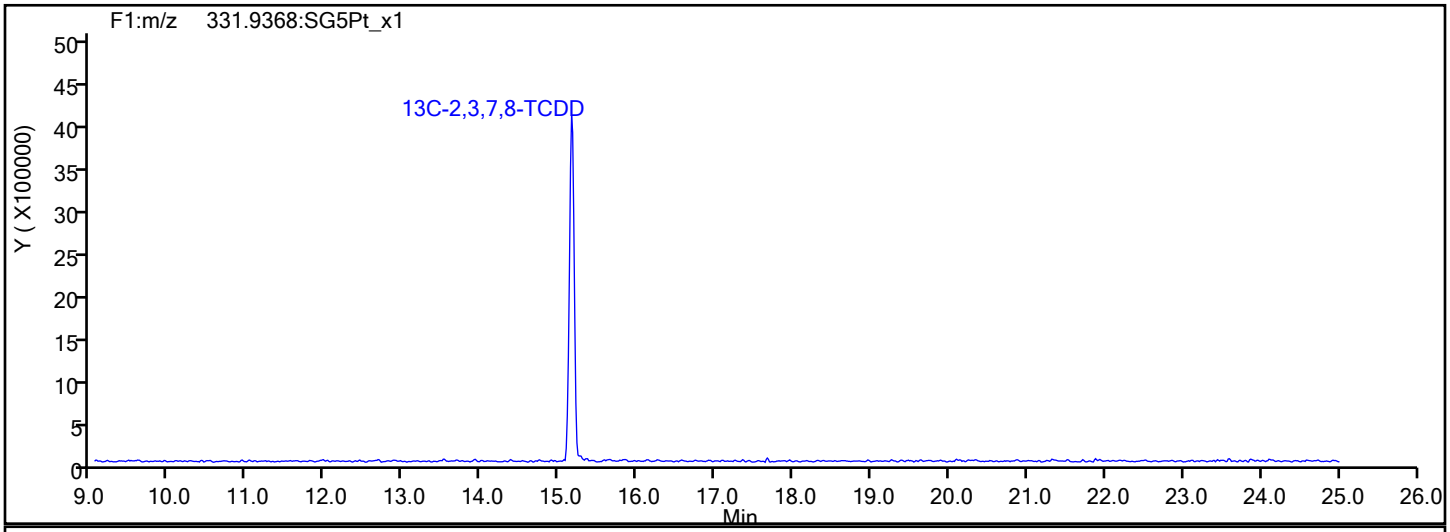
Eurofins TestAmerica, Sacramento

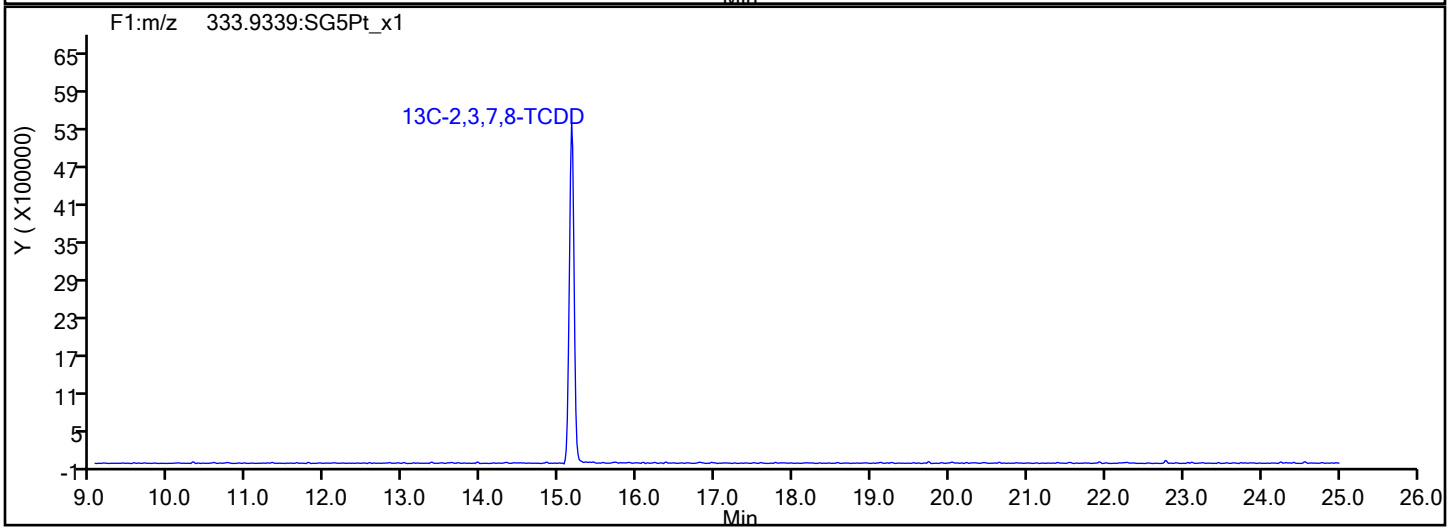
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

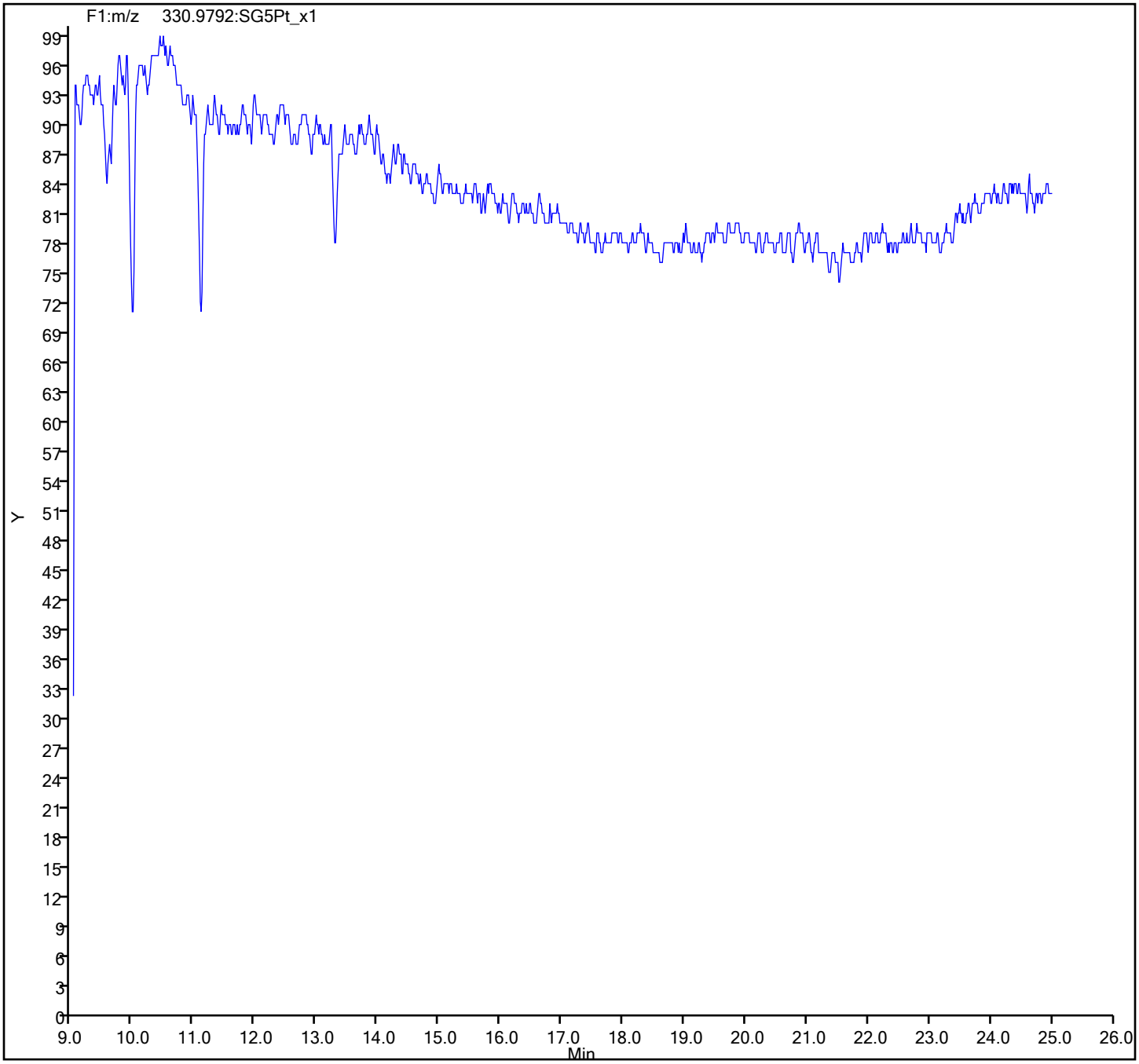




Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 16-Dec-2019 19:16:59 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:30:42

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	16.567	48758231	0.79	1.3379					0.00	
2,3,7,8-TCDF	16.581	50865122	0.77	0.8389	49.7	49.7	0.1583	0.1583		
D 13C-2,3,7,8-TCDD	15.126	31660967	0.78	0.9388					0.00	
2,3,7,8-TCDD	15.154						0.1387	0.1387		U
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Review Flags
U - Marked Undetected

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 16-Dec-2019 19:16:59 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:38:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0312

First Level Reviewer: arghestanis Date: 17-Dec-2019 09:30:42

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	16.567	16.567	0	1.000	21546530	3936923	21524	53810	183		
317.9389	16.567	16.567	0	1.000	27211701	5162296	13358	33395	386	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.581	16.581	0	1.001	22057817	4206596	4964	12410	847		
305.8987	16.581	16.581	0	1.001	28807305	5517493	7118	17795	775	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.126	15.126	0	1.000	13873214	2853238	16265	40662	175		
333.9339	15.126	15.126	0	1.000	17787753	3726911	4796	11990	777	0.78(0.65-0.89)	
2,3,7,8-TCDD											U
319.8965	15.154						5669	14172			
321.8936	15.154						4860	12150			
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

QC Flag Legend

Review Flags
U - Marked Undetected

Reagents:

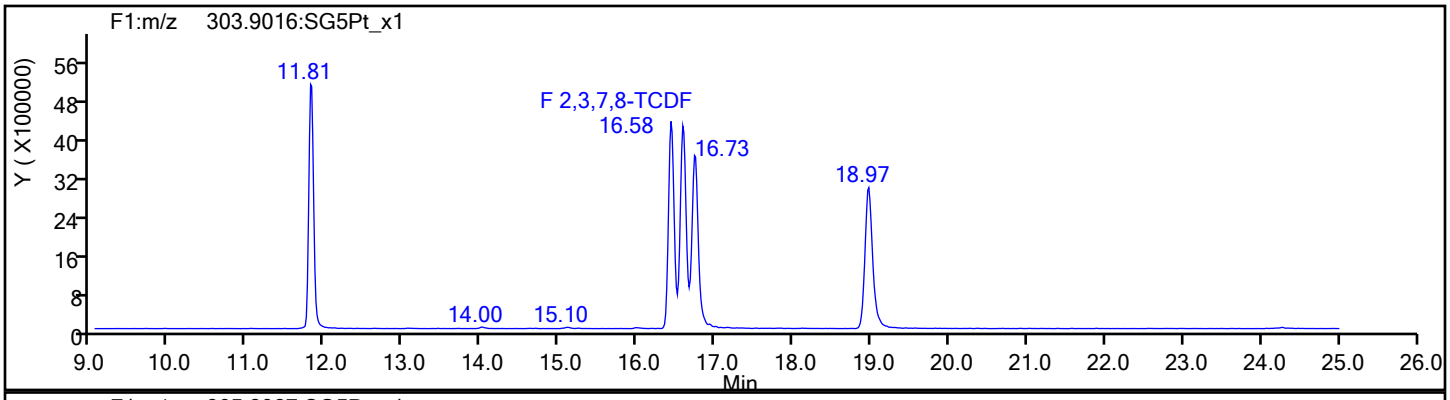
HRDXNCP_00040 Amount Added: 2.00 Units: uL

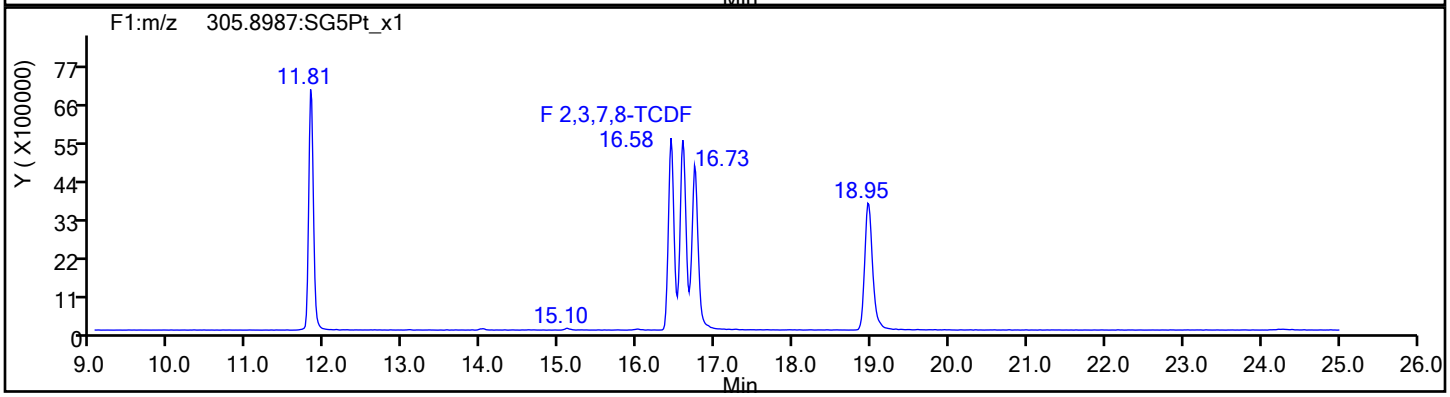
Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

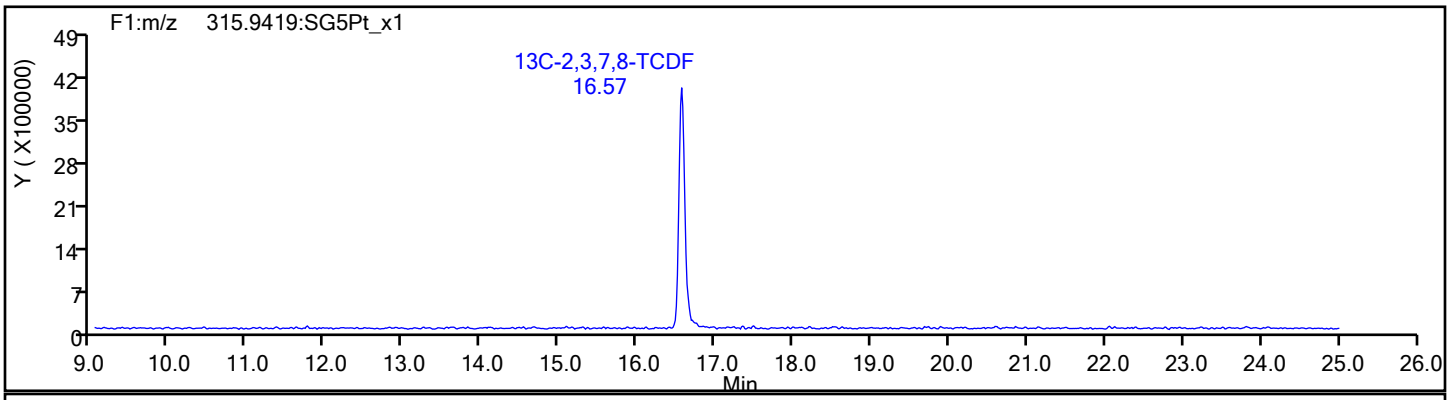
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d		
Injection Date:	16-Dec-2019 19:16:59	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

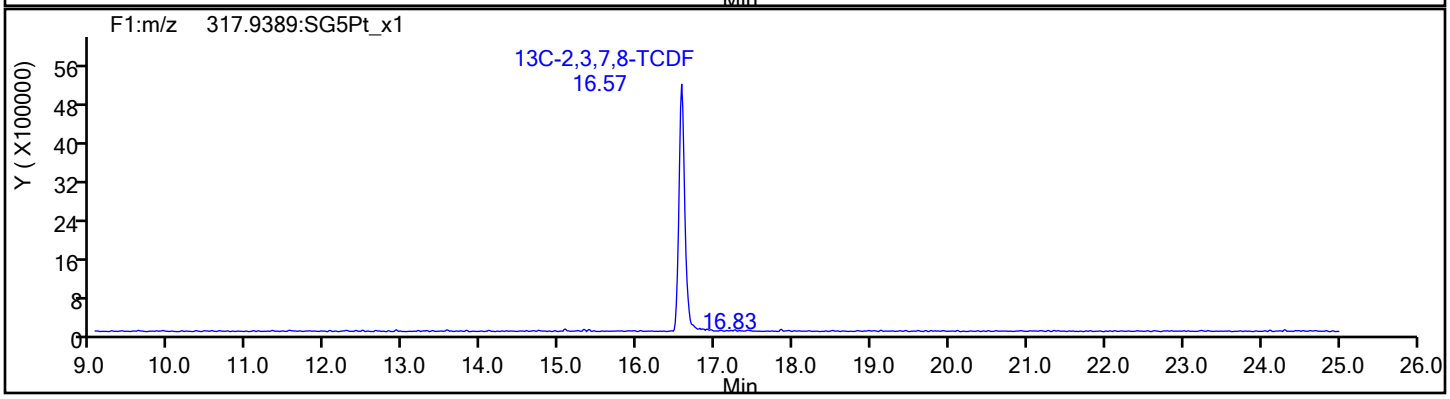
TCDF





TCDF Standards



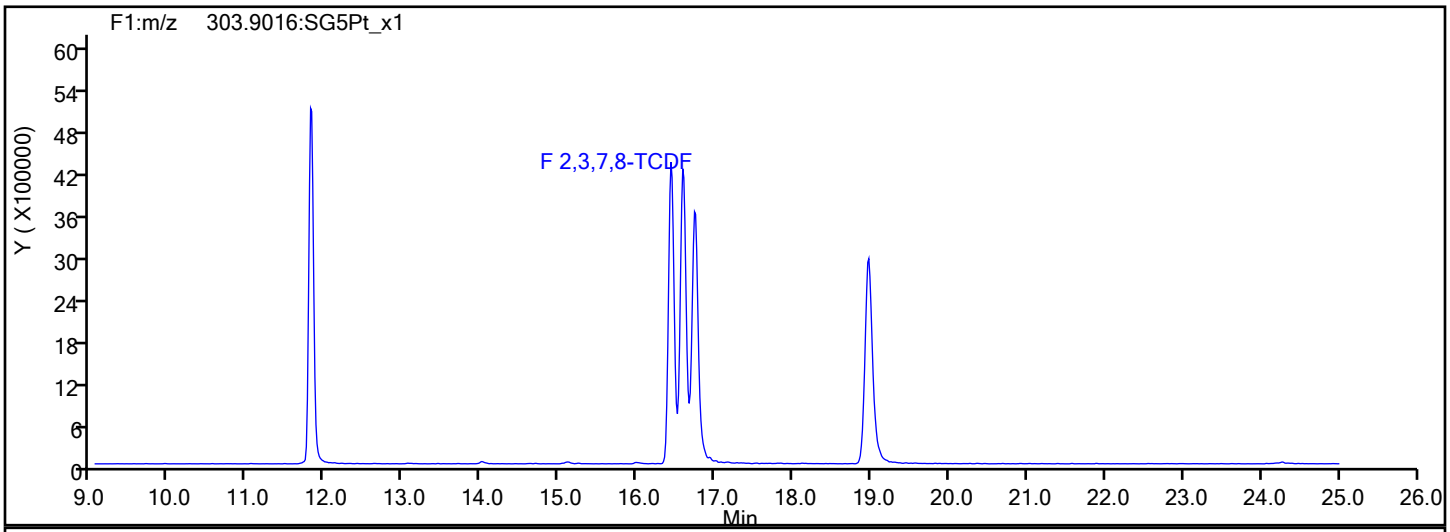


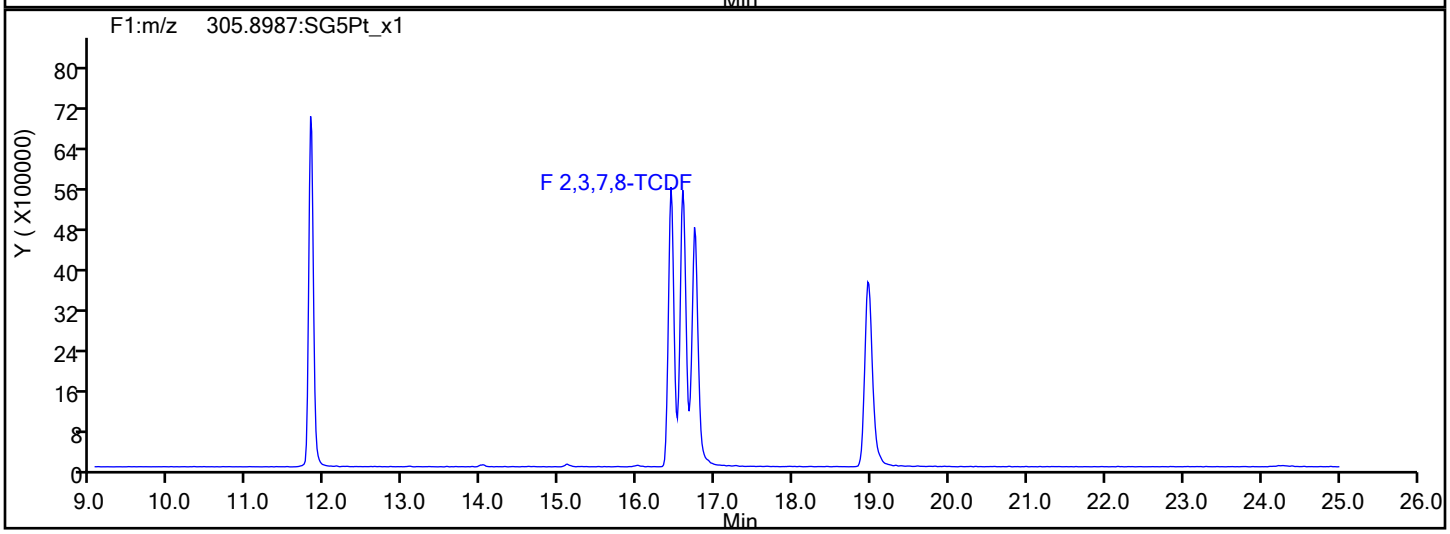
Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

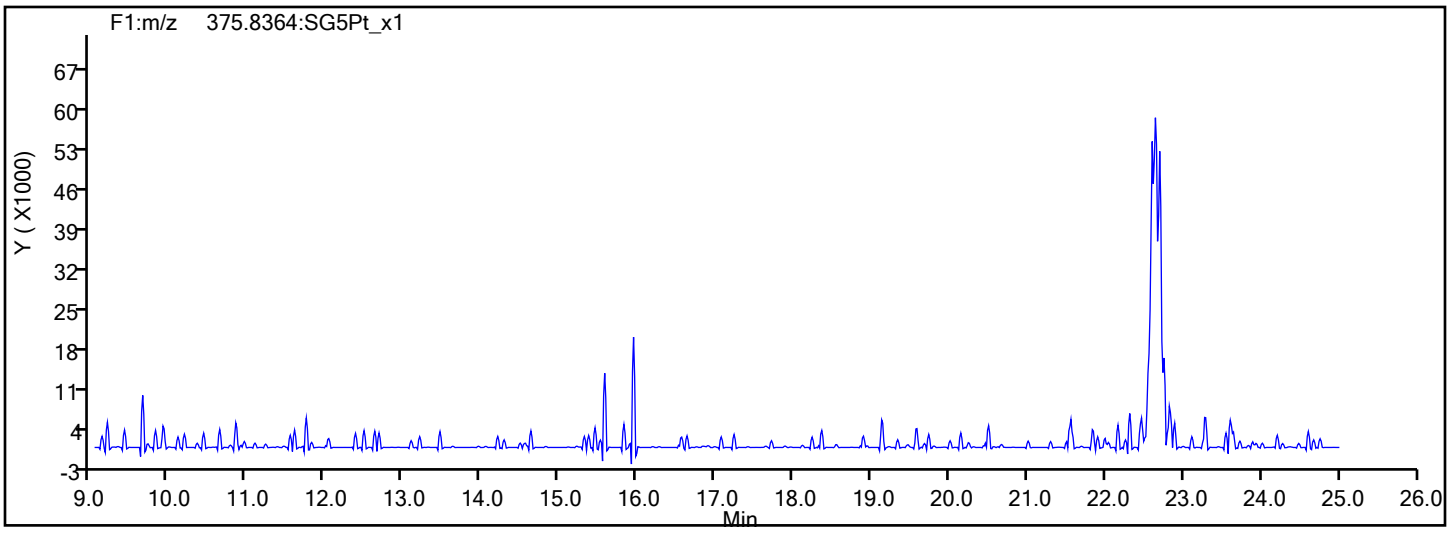
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d		
Injection Date:	16-Dec-2019 19:16:59	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

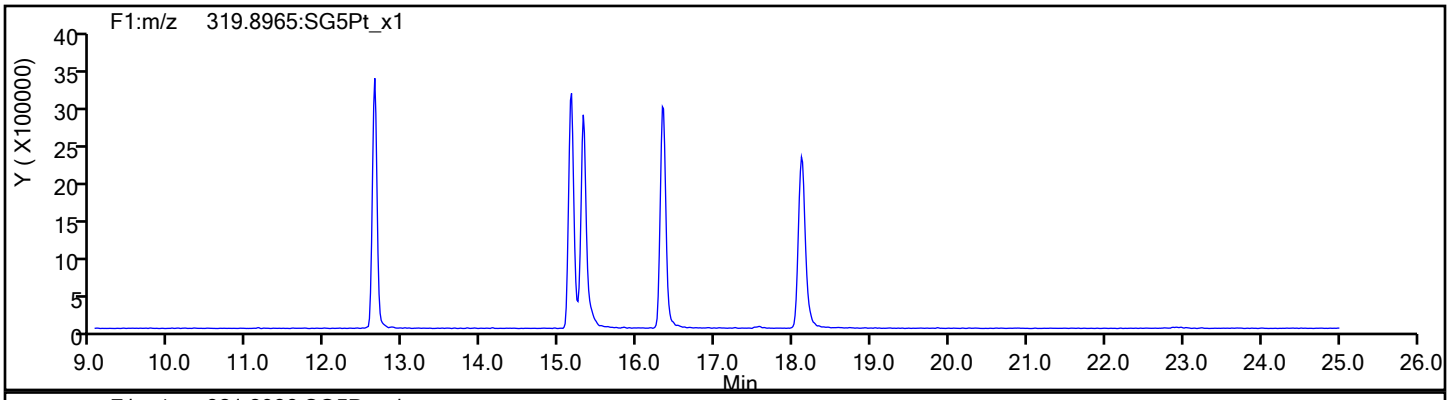


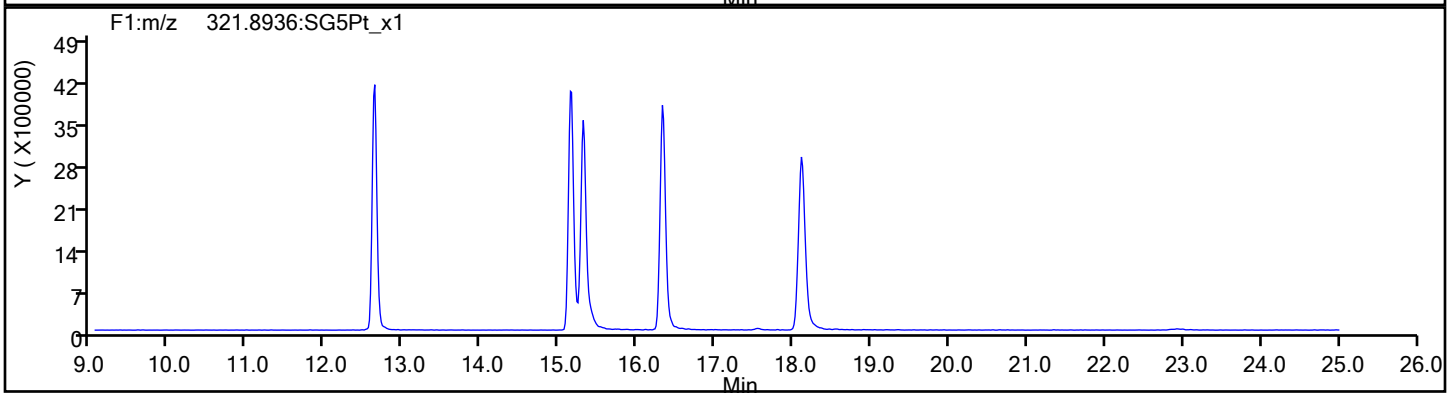
Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

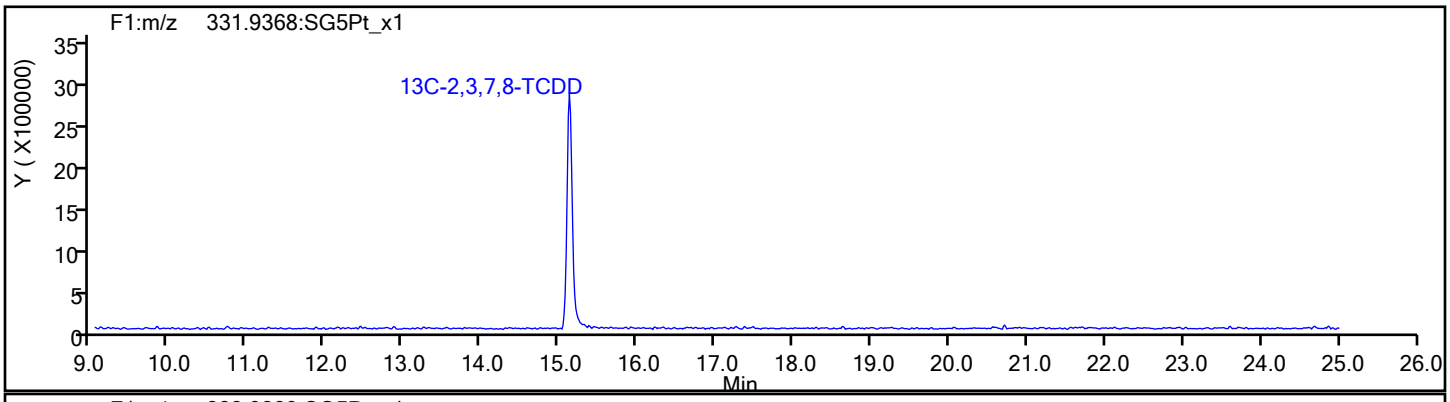
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d		
Injection Date:	16-Dec-2019 19:16:59	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

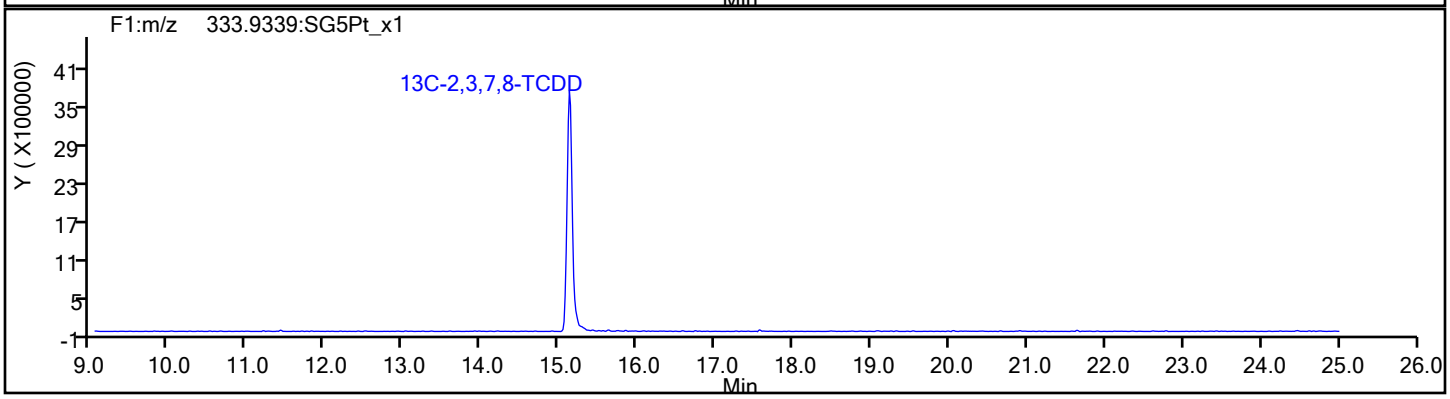
TCDD





TCDD Standards





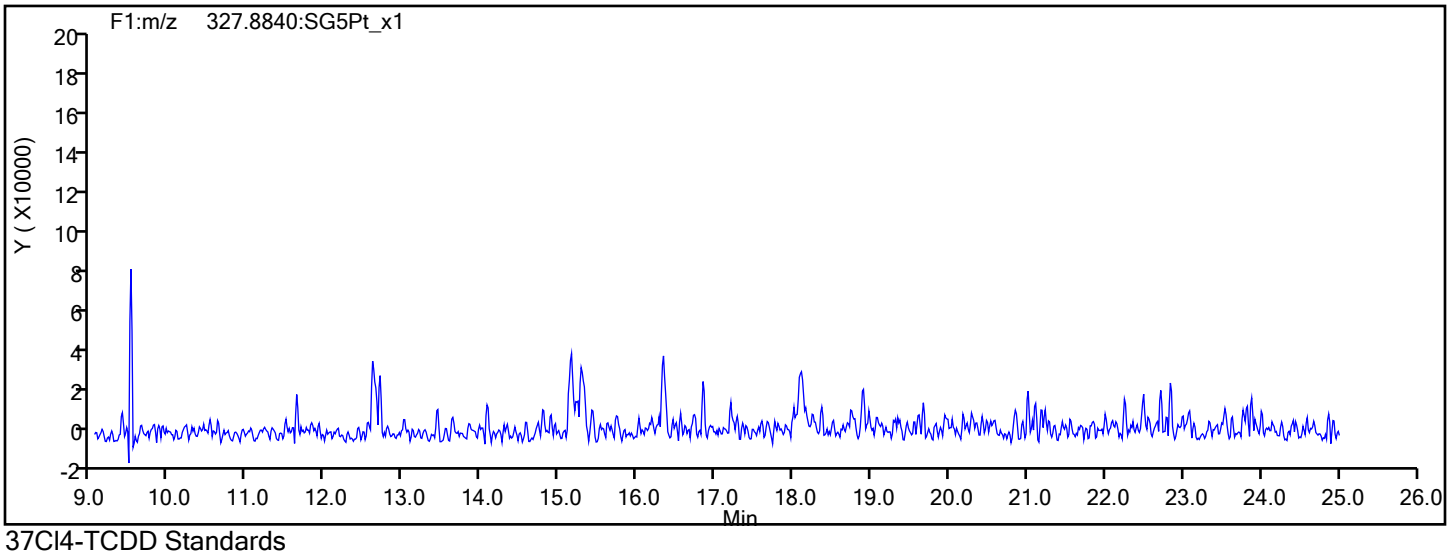
Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

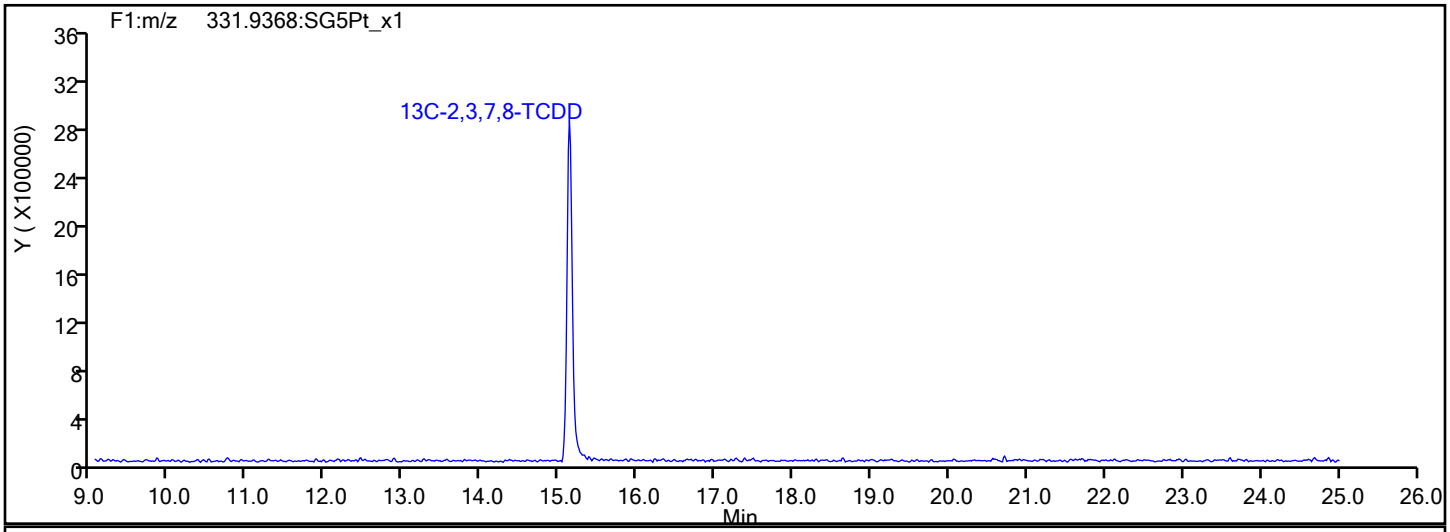
Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d

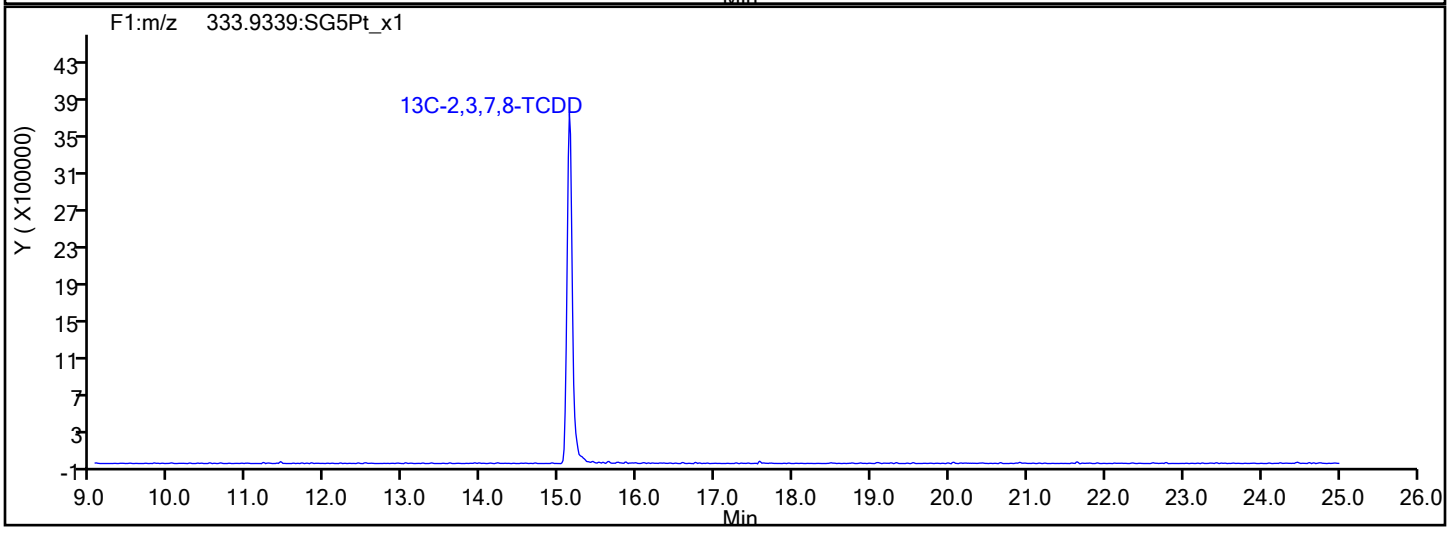
Injection Date:	16-Dec-2019 19:16:59	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

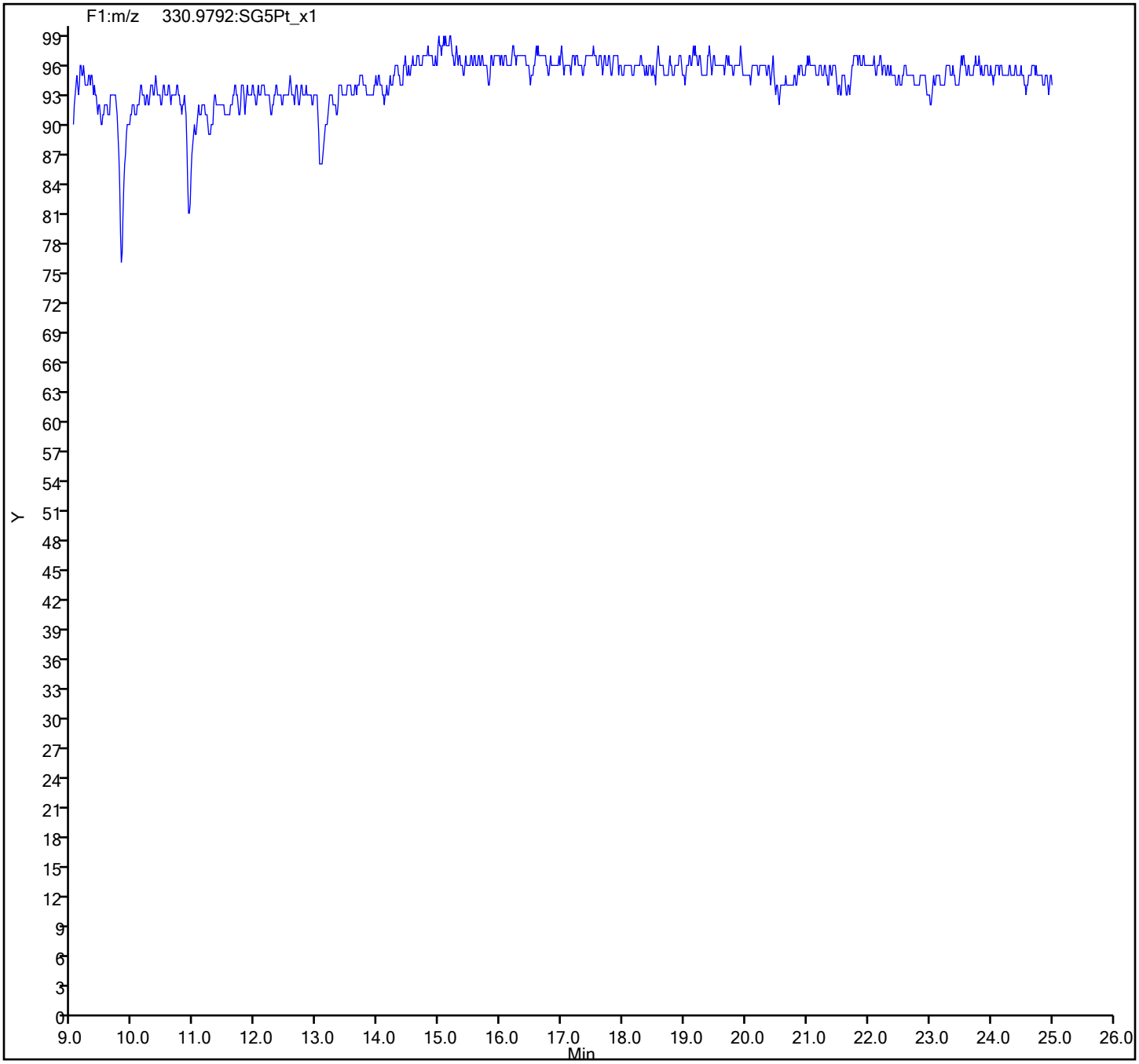




Report Date: 17-Dec-2019 09:38:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88406.b\16DE19A11D2_001.d		
Injection Date:	16-Dec-2019 19:16:59	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345960	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 17-Dec-2019 14:11:19 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:17 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	16.578	54173195	0.83	1.3379					0.00	
2,3,7,8-TCDF	16.592	52795244	0.76	0.8389	46.5	46.5	0.1336	0.1336		
D 13C-2,3,7,8-TCDD	15.138	35137561	0.81	0.9388					0.00	
2,3,7,8-TCDD	15.152	37971560	0.78	1.1538	37.5	37.5	0.1329	0.1329		
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 17-Dec-2019 14:11:19 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191217-88455.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 18-Dec-2019 01:04:17 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0317

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	16.578	16.578	0	1.000	24514617	4686655	16457	41142	285		
317.9389	16.578	16.578	0	1.000	29658578	5439774	13187	32967	413	0.83(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.592	16.592	0	1.001	22816591	4279312	4665	11662	917		
305.8987	16.592	16.592	0	1.001	29978653	5504903	6685	16712	823	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.138	15.138	0	1.000	15676706	3127867	11613	29032	269		
333.9339	15.138	15.138	0	1.000	19460855	3962747	4196	10490	944	0.81(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.152	15.152	0	1.001	16657923	3699672	5554	13885	666		
321.8936	15.152	15.152	0	1.001	21313637	4718023	5315	13287	888	0.78(0.65-0.89)	
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

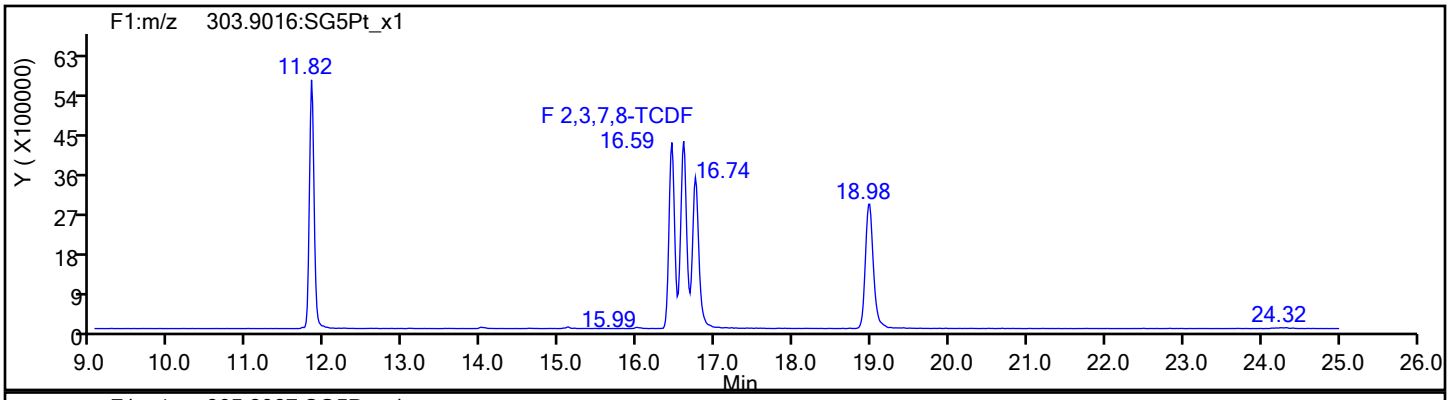
HRDXNCP_00040 Amount Added: 2.00 Units: uL

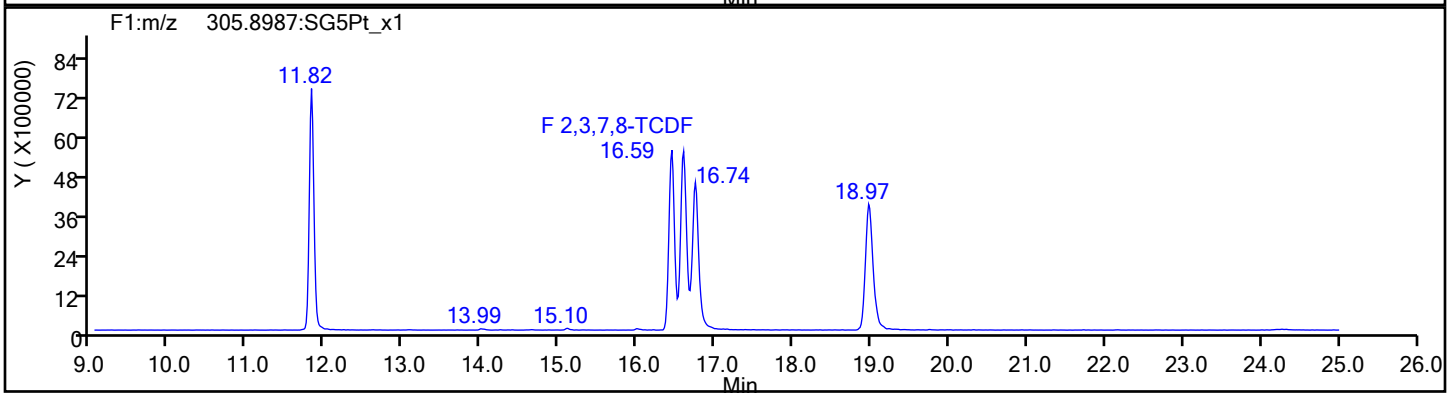
Report Date: 18-Dec-2019 01:04:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

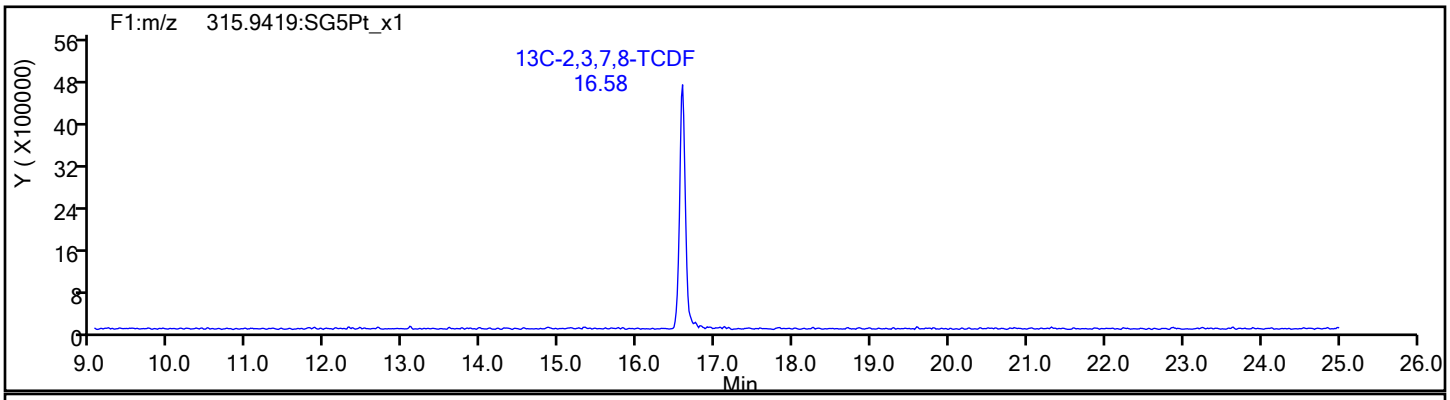
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d		
Injection Date:	17-Dec-2019 14:11:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

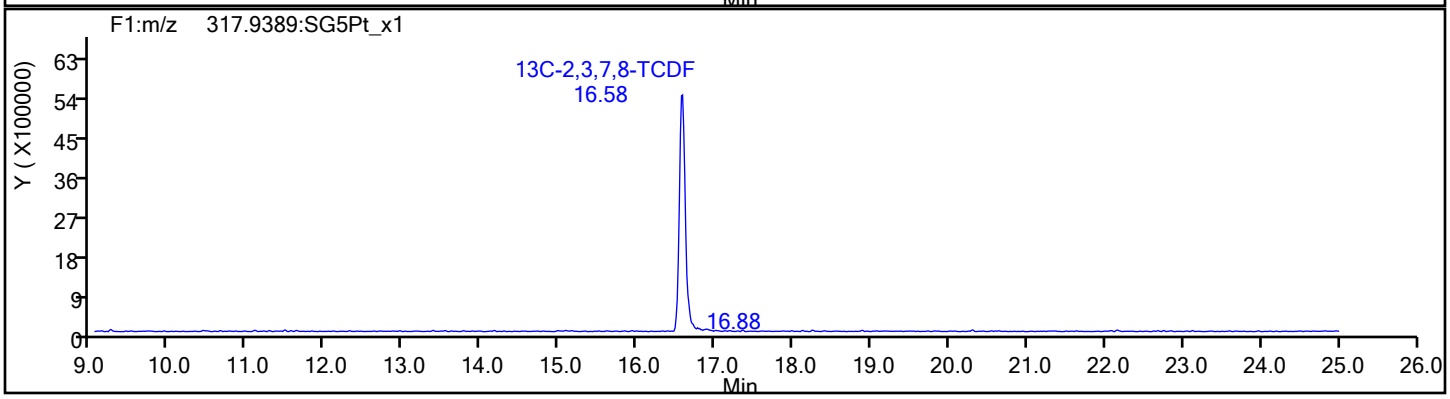
TCDF





TCDF Standards



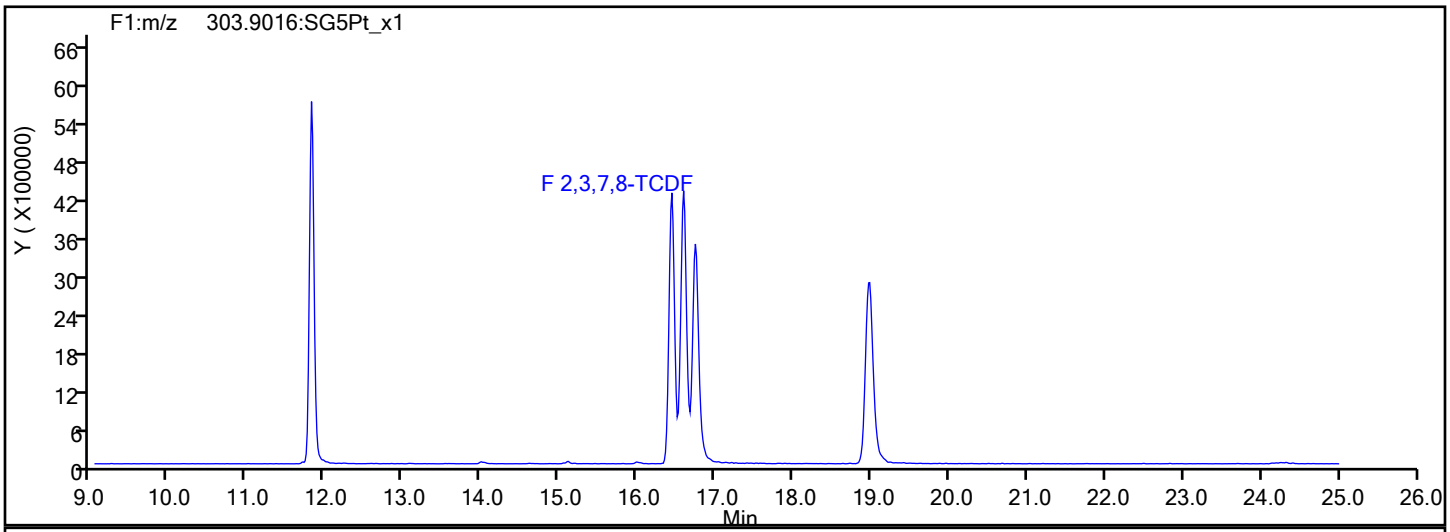


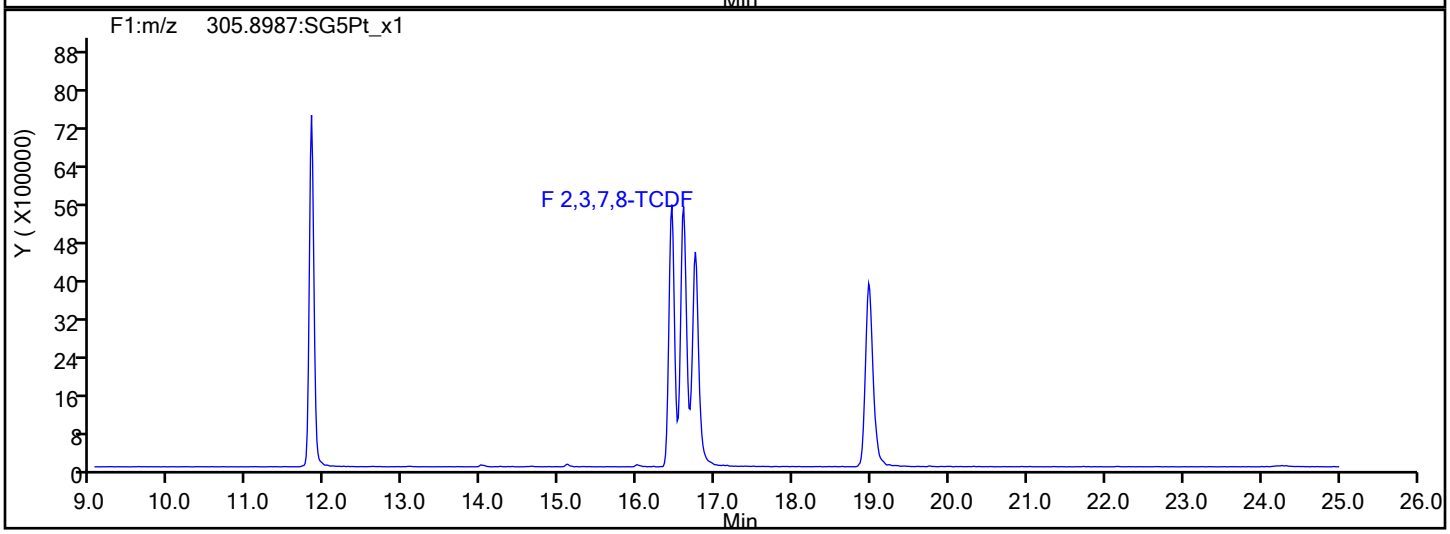
Report Date: 18-Dec-2019 01:04:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

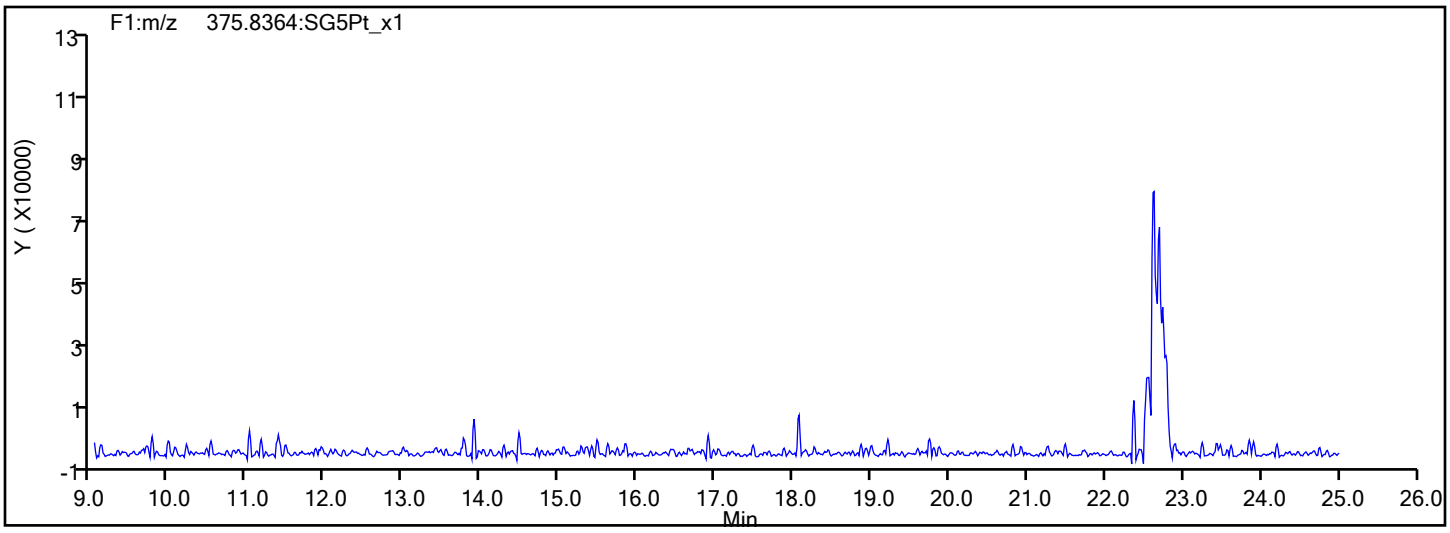
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d		
Injection Date:	17-Dec-2019 14:11:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

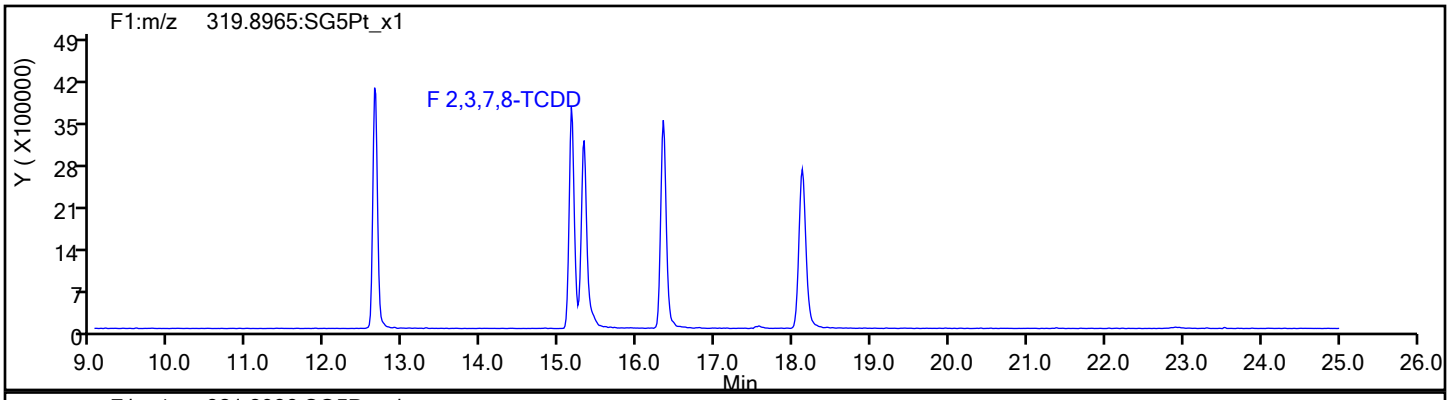


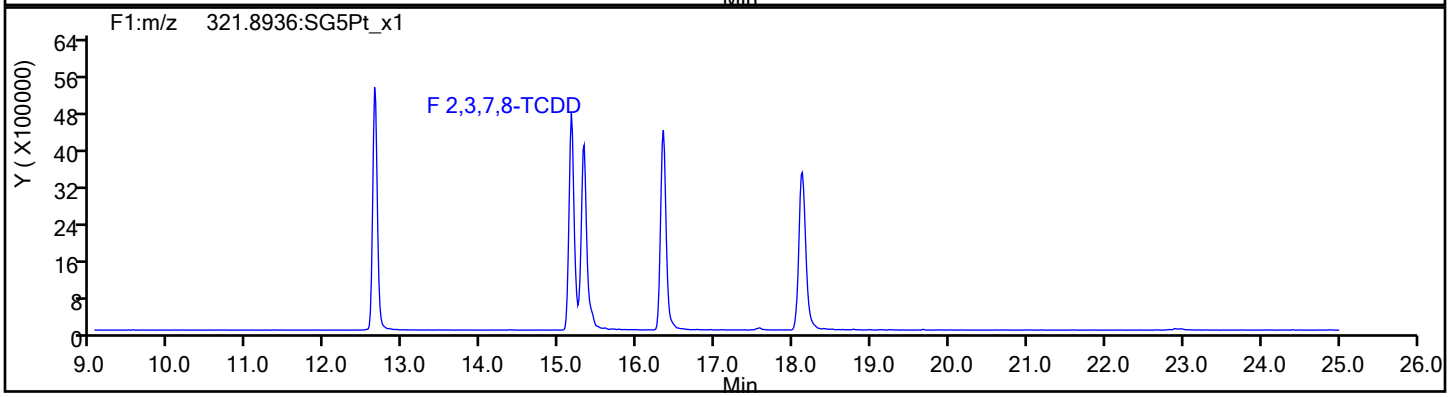
Report Date: 18-Dec-2019 01:04:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

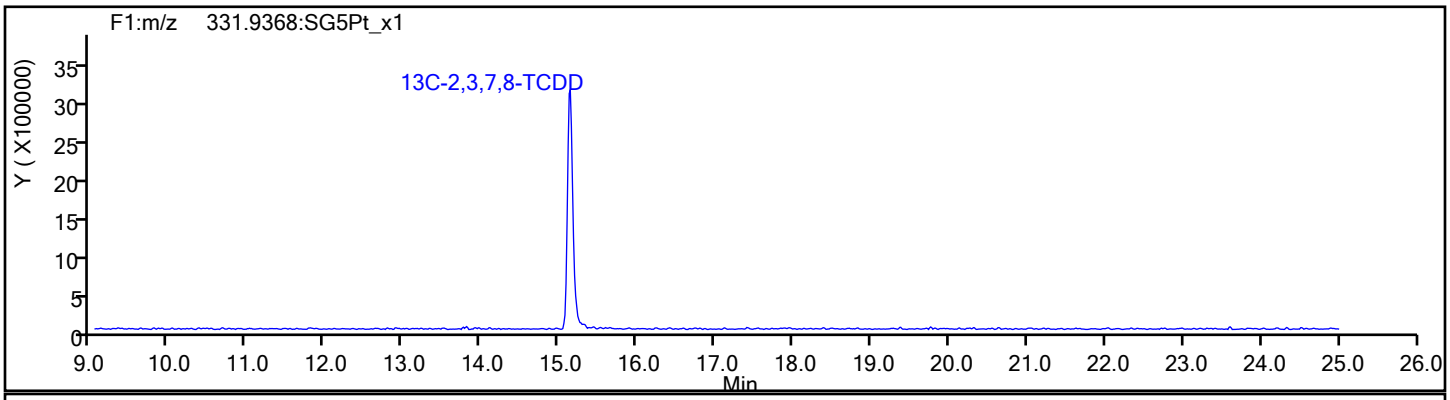
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d		
Injection Date:	17-Dec-2019 14:11:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

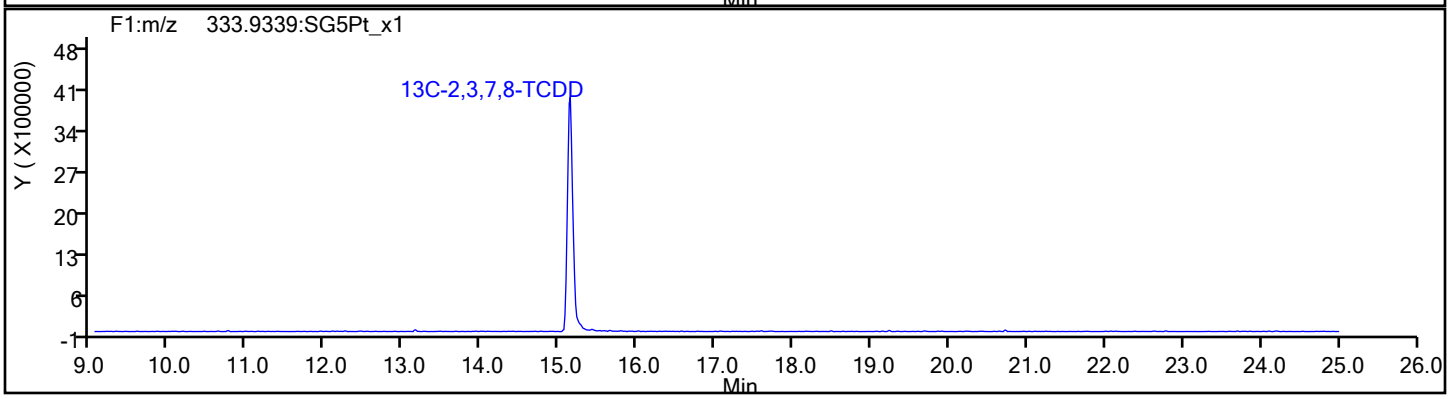
TCDD





TCDD Standards



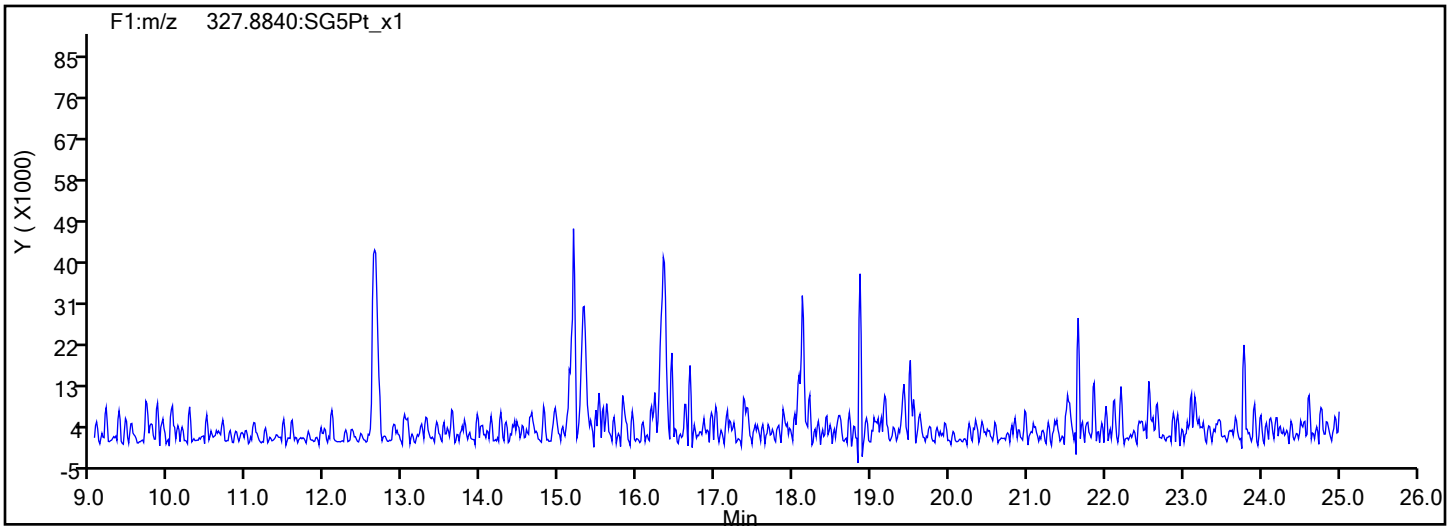


Report Date: 18-Dec-2019 01:04:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

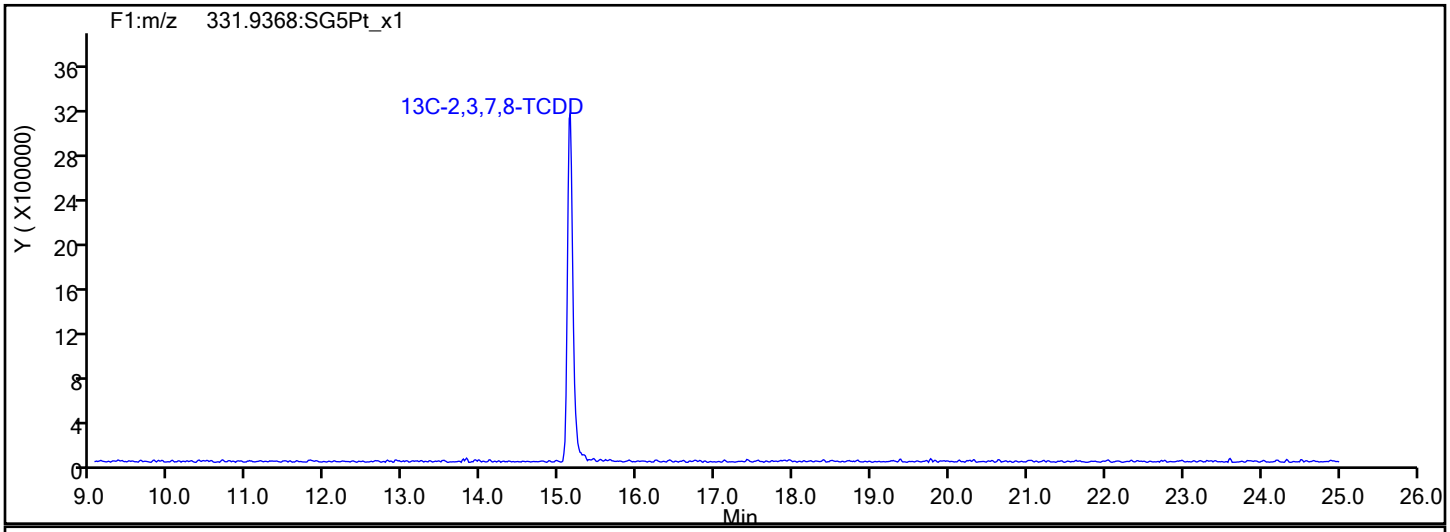
Eurofins TestAmerica, Sacramento

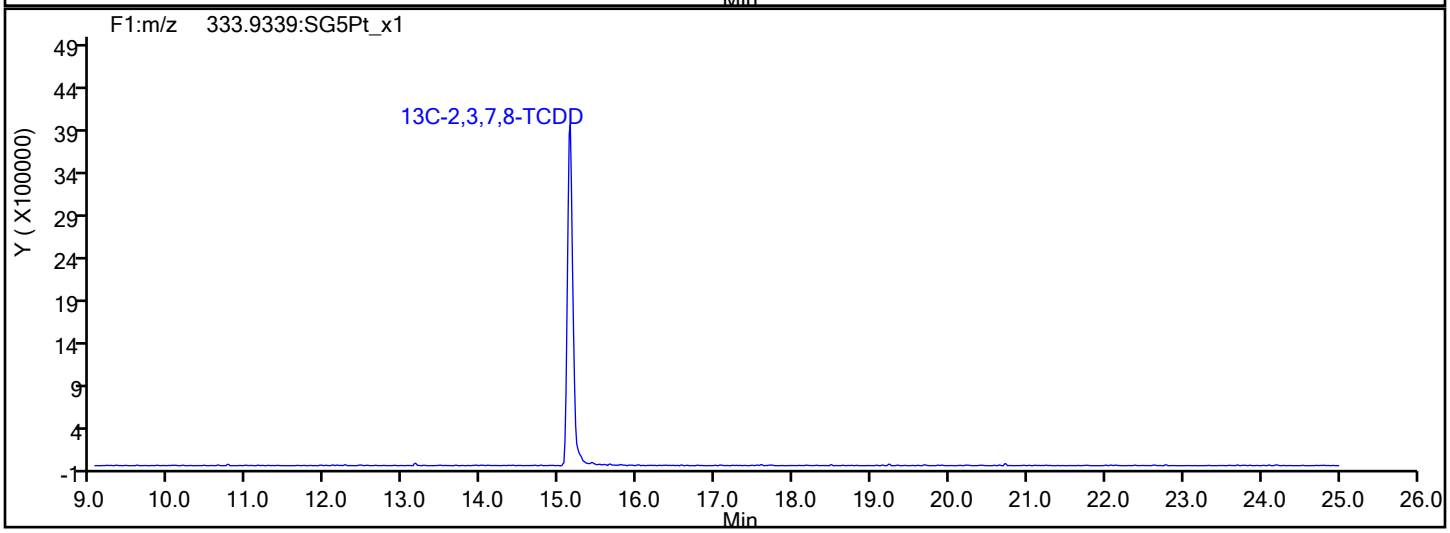
Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d		
Injection Date:	17-Dec-2019 14:11:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

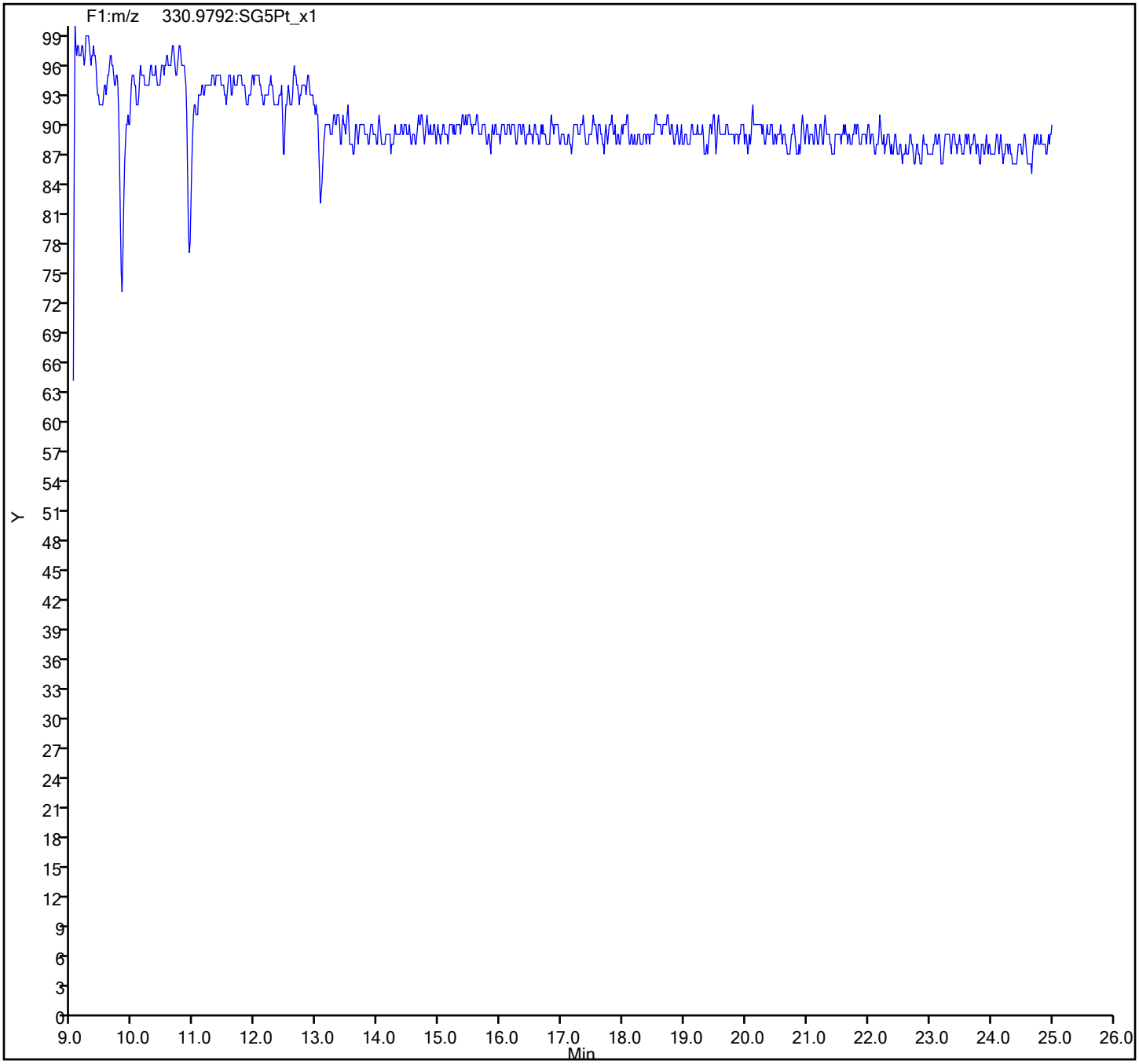




Report Date: 18-Dec-2019 01:04:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191217-88455.b\17DE1911D2_001.d		
Injection Date:	17-Dec-2019 14:11:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346137	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 18-Oct-2019 19:15:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WDM HRDXNCP_00040
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 17:15:06 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0319

First Level Reviewer: stephensk Date: 23-Oct-2019 17:15:06

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	19.870	2743689	0.84	1.6096					0.00	
2,3,7,8-TCDF	19.904	6418384	0.81	1.2332	75.9	75.9	0.1516	0.1516		
A Non-2,3,7,8-sub-TCDF	19.420	148353	0.71	1.2332	1.754	1.754	0.1516	1.133		
S Total TCDF					77.6	77.6	0.1516	0.1516		
D 13C-2,3,7,8-TCDD	21.183	1646257	0.82	0.9984					0.00	
2,3,7,8-TCDD	21.218	1935656	0.82	1.1988	39.2	39.2	0.1068	0.1068		
A Non-2,3,7,8-sub-TCDD	20.259	8175	0.77	1.1988	0.1920	0.1657	0.1068	0.1657		RQ
S Total TCDD					39.4	39.4	0.1068	0.1068		RQ
A F1 PeCDFs	24.168	2785	1.55	0.0000						RQ
A Non-2,3,7,8-sub-PeCDF	27.601	108609	1.55	0.0000						RQ
S Total PeCDF										RQ
A Non-2,3,7,8-sub-PeCDD	27.971	16413	1.55	0.0000						RQ
S Total PeCDD										RQ
A Non-2,3,7,8-sub-HxCDF	34.726	117832	1.24	0.0000						RQ
S Total HxCDF										RQ
A Non-2,3,7,8-sub-HxCDD	35.124	64948	1.15	0.0000						
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	38.408	2758922	1.07	1.6176						
1,2,3,4,7,8,9-HpCDF	39.666	2264219	1.08	1.4672						
A Non-2,3,7,8-sub-HpCDF	39.037						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	39.364	1791225	1.05	1.1237						
A Non-2,3,7,8-sub-HpCDD	39.134						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	15.669	3698145	0.82							
1,3,6,8-TCDD	17.259	2008974	0.79							
2,3,4,7-TCDF	19.904	6418384	0.81							
1,2,3,7-TCDD	21.019	1684985	0.77							
1,2,3,9-TCDF	21.408	2470382	1.00							R
1,2,3,9-TCDD	21.512	852214	0.79							
1,2,8,9-TCDF	23.171	2878860	0.82							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,8,9-TCDD	23.258	796641								
1,3,4,6,8-PeCDF	23.672	2123260	1.61							
1,2,4,7,9-PeCDD	25.703	1642283	1.57							
1,2,3,8,9-PeCDD	30.240	1609637	1.57							
1,2,3,8,9-PeCDF	30.399	2333013	1.61							
1,2,3,4,6,8-HxCDF	32.759	2733961	1.29							
1,2,4,6,7,9-HxCDD	33.917	1940308	1.26							
1,2,3,4,6,7-HxCDD	36.332	1911261	1.26							
1,2,3,4,8,9-HxCDF	36.692	2656804	1.26							
1,2,3,4,6,7,9-HpCDD	38.719	1887966	1.04							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 18-Oct-2019 19:15:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WDM HRDXNCP_00040
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 23-Oct-2019 17:15:06 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0319

First Level Reviewer: stephensk Date: 23-Oct-2019 17:15:06

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	19.870	19.735	8	1.000	1250984	195368	757	1892	258		
317.9389	19.861	19.735	8	1.000	1492705	239445	125	312	1916	0.84(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	19.904	19.792	7	1.002	2867994	412294	365	912	1130		
305.8987	19.904	19.792	7	1.002	3550390	511529	448	1120	1142	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	18.228	19.420	-71	0.917	11435	2522	365	912	7		
305.8987	18.193	19.420	-73	0.916	15690	2606	448	1120	6	0.73(0.65-0.89)	
303.9016	19.161	19.420	-16	0.964	10672	1887	365	912	5		
305.8987	19.170	19.420	-15	0.965	14729	2534	448	1120	6	0.72(0.65-0.89)	
303.9016	23.672	19.420	255	1.191	39517	7172	365	912	20		
305.8987	23.664	19.420	254	1.191	56310	8407	448	1120	19	0.70(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	21.183	21.057	8	1.000	741411	114263	213	532	536		
333.9338	21.192	21.057	8	1.000	904846	137948	14	35	9853	0.82(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	21.218	21.127	5	1.002	870913	126855	189	472	671		
321.8936	21.218	21.127	5	1.002	1064743	149668	134	335	1117	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	23.577	20.259	199	1.113	4853	879	189	472	5		
	Empc Correction				3556	641	189	472	3		
321.8936	23.664	20.259	204	1.117	4619	833	134	335	6	1.05(0.65-0.89)	
A F1 PeCDFs											RQ
339.8597	17.078	24.168	-425	1.000	1693	248	47	117	5		
341.8567	17.112	24.168	-422	1.000	4614	713	61	152	12	0.37(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	25.359	27.601	-134	1.000	8277	1008	280	700	4		
341.8567	25.367	27.601	-134	1.000	3541	740	237	592	3	2.34(1.32-1.78)	
339.8597	26.332	27.601	-76	1.000	9581	1408	280	700	5		
341.8567	26.323	27.601	-76	1.000	7634	924	237	592	4	1.26(1.32-1.78)	
339.8597	26.751	27.601	-51	1.000	4089	1048	280	700	4		
341.8567	26.701	27.601	-54	1.000	1341	480	237	592	2	3.05(1.32-1.78)	
339.8597	26.894	27.601	-42	1.000	21191	3146	280	700	11		
341.8567	26.902	27.601	-42	1.000	16624	1768	237	592	7	1.27(1.32-1.78)	
339.8597	27.498	27.601	-6	1.000	16419	2037	280	700	7		
341.8567	27.464	27.601	-8	1.000	10792	1089	237	592	5	1.52(1.32-1.78)	
339.8597	28.403	27.601	48	1.000	15971	1167	280	700	4		
341.8567	28.370	27.601	46	1.000	7187	860	237	592	4	2.22(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	29.183	27.971	73	1.000	5442	911	267	667	3		
357.8516	29.225	27.971	75	1.000	4214	705	147	367	5	1.29(1.32-1.78)	
355.8546	29.896	27.971	115	1.000	16114	2112	267	667	8		
357.8516	29.863	27.971	113	1.000	2926	429	147	367	3	5.51(1.32-1.78)	
A Non-2,3,7,8-sub-HxCDF											RQ
373.8208	34.655	34.726	-4	1.000	14585	2036	857	2142	2		
375.8178	34.671	34.726	-3	1.000	11747	1766	674	1685	3	1.24(1.05-1.43)	
373.8208	34.839	34.726	7	1.000	19740	3408	857	2142	4		
375.8178	34.822	34.726	6	1.000	16843	2715	674	1685	4	1.17(1.05-1.43)	
373.8208	35.703	34.726	59	1.000	29263	3164	857	2142	4		
375.8178	35.678	34.726	57	1.000	16325	2283	674	1685	3	1.79(1.05-1.43)	
373.8208	37.146	34.726	145	1.000	9065	1039	857	2142	1		
375.8178	37.070	34.726	140	1.000	9284	908	674	1685	1	0.98(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	35.107	35.124	-1	1.000	19272	3310	373	932	9		
391.8127	35.107	35.124	-1	1.000	15745	2760	303	757	9	1.22(1.05-1.43)	
389.8158	35.904	35.124	47	1.000	15414	2124	373	932	6		
391.8127	35.896	35.124	46	1.000	14517	1786	303	757	6	1.06(1.05-1.43)	
1,2,3,4,6,7,8-HpCDF											
407.7817	38.408	38.378	2	1.000	1426693	468815	868	2170	540		
409.7788	38.408	38.378	2	1.000	1332229	447613	766	1915	584	1.07(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.666	39.641	2	1.000	1176637	417678	868	2170	481		
409.7788	39.666	39.641	2	1.000	1087582	395659	766	1915	517	1.08(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	39.037						868	2170			
409.7788	39.037						766	1915			
1,2,3,4,6,7,8-HpCDD											
423.7767	39.364	39.334	2	1.000	916269	309891	497	1242	624		
425.7737	39.364	39.334	2	1.000	874956	295620	441	1102	670	1.05(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDD											
423.7767	39.134						497	1242			
425.7737	39.134						441	1102			
1,3,6,8-TCDF											
303.9016	15.669	15.669	0		1664855	345652	365	912	947		
305.8987	15.661	15.669	-1		2033290	427961	448	1120	955	0.82(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	17.259	17.259	0		886578	166481	189	472	881		
321.8936	17.259	17.259	0		1122396	211236	134	335	1576	0.79(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	19.904	19.904	0		2867994	412294	365	912	1130		
305.8987	19.904	19.904	0		3550390	511529	448	1120	1142	0.81(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	21.019	21.019	0		734489	109587	189	472	580		
321.8936	21.010	21.019	-1		950496	137423	134	335	1026	0.77(0.65-0.89)	
1,2,3,9-TCDF											R
303.9016	21.408	21.408	0		1235191	175912	365	912	482		
303.9016	21.408	21.408	0		1235191	175912	365	912	482	1.00(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	21.512	21.512	0		852214	116531	189	472	617		
321.8936	21.512	21.512	0		1081970	147181	134	335	1098	0.79(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	23.171	23.171	0		1297438	191225	365	912	524		
305.8987	23.171	23.171	0		1581422	239428	448	1120	534	0.82(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	23.258	23.258	0		796641	122730	189	472	649		
1,3,4,6,8-PeCDF											
339.8597	23.672	23.672	0		1308860	243917	47	117	5190		
341.8567	23.672	23.672	0		814400	152978	61	152	2508	1.61(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	25.703	25.703	0		1003649	170976	267	667	640		
357.8516	25.703	25.703	0		638634	109995	147	367	748	1.57(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	30.240	30.240	0		982102	143598	267	667	538		
357.8516	30.232	30.240	-1		627535	91717	147	367	624	1.57(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	30.399	30.399	0		1439754	203462	280	700	727		
341.8567	30.399	30.399	0		893259	123914	237	592	523	1.61(1.32-1.78)	
1,2,3,4,6,8-HxCDF											
373.8208	32.759	32.759	0		1538335	244733	857	2142	286		
375.8178	32.759	32.759	0		1195626	189943	674	1685	282	1.29(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	33.917	33.917	0		1083517	213641	373	932	573		
391.8127	33.917	33.917	0		856791	170926	303	757	564	1.26(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8158	36.332	36.332	0		1065259	280262	373	932	751		
391.8127	36.332	36.332	0		846002	223180	303	757	737	1.26(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,8,9-HxCDF											
373.8208	36.692	36.692	0		1479784	403447	857	2142	471		
375.8178	36.692	36.692	0		1177020	316764	674	1685	470	1.26(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	38.719	38.719	0		962079	323451	497	1242	651		
425.7737	38.719	38.719	0		925887	309534	441	1102	702	1.04(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDF, RT: 19.420

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	40.000	2743689	434813

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		40.000	2743689	434813

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
18.228	11435	2522	15690	2606	0.3207	0.73	
19.161	10672	1887	14729	2534	0.3003	0.72	
23.672	39517	7172	56310	8407	1.13	0.70	
Signal Totals:							
	61624	11581	86729	13547			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	148353	25128				0.71	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.754 = (148353 * 40.000) / (2743689 * 1.233)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDD, RT: 20.259

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.199	D 13C-2,3,7,8-TCDD	40.000	1646257	252211

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.199		40.000	1646257	252211

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
23.577	4853	879	4619	833	0.1920	1.05	RQ
23.577	3556	641	4619	833	0.1657		Empc Correction
Signal Totals:							
	3556	641	4619	833			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9472	1712				1.05	RQ
	8175	1474					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1920 = (9472 * 40.000) / (1646257 * 1.199)
Empc Amount: 0.1657 = (8175 * 40.000) / (1646257 * 1.199)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

F1 PeCDFs, RT: 24.168

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169				
2,3,4,7,8-PeCDF	1.186				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
17.078	1693	248	4614	713		0.37	R
Signal Totals:							
	1693	248	4614	713			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6307	961				0.37	RQ
	2785	408					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (6307 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (2785 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 23-Oct-2019 17:15:26 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 27.601

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169				
2,3,4,7,8-PeCDF	1.186				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
25.359	8277	1008	3541	740		2.34	R
26.332	9581	1408	7634	924		1.26	R
26.751	4089	1048	1341	480		3.05	Rn
26.894	21191	3146	16624	1768		1.27	R
27.498	16419	2037	10792	1089		1.52	
28.403	15971	1167	7187	860		2.22	R
Signal Totals:							
	75528	9814	47119	5861			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	122647	15675				1.60	RQ
	108609	15918					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (122647 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (108609 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDD, RT: 27.971

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.120				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
29.183	5442	911	4214	705		1.29	R
29.896	16114	2112	2926	429		5.51	R
Signal Totals:							
	21556	3023	7140	1134			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28696	4157				3.02	RQ
	16413	2591					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (28696 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (16413 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-HxCDF, RT: 34.726

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.302				
1,2,3,6,7,8-HxCDF	1.291				
2,3,4,6,7,8-HxCDF	1.304				
1,2,3,7,8,9-HxCDF	1.333				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
34.655	14585	2036	11747	1766		1.24	n
34.839	19740	3408	16843	2715		1.17	
35.703	29263	3164	16325	2283		1.79	R
37.146	9065	1039	9284	908		0.98	Rn
Signal Totals:							
	72653	9647	54199	7672			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	126852	17319				1.34	RQ
	117832	16985					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (126852 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (117832 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
n - Failed Sig-To-Noise Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 18-Oct-2019 19:15:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 332505 Lims Sample ID: 1

Non-2,3,7,8-sub-HxCDD, RT: 35.124

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172				
1,2,3,6,7,8-HxCDD	1.126				
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
35.107	19272	3310	15745	2760		1.22	
35.904	15414	2124	14517	1786		1.06	
Signal Totals:							
	34686	5434	30262	4546			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	64948	9980				1.15	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

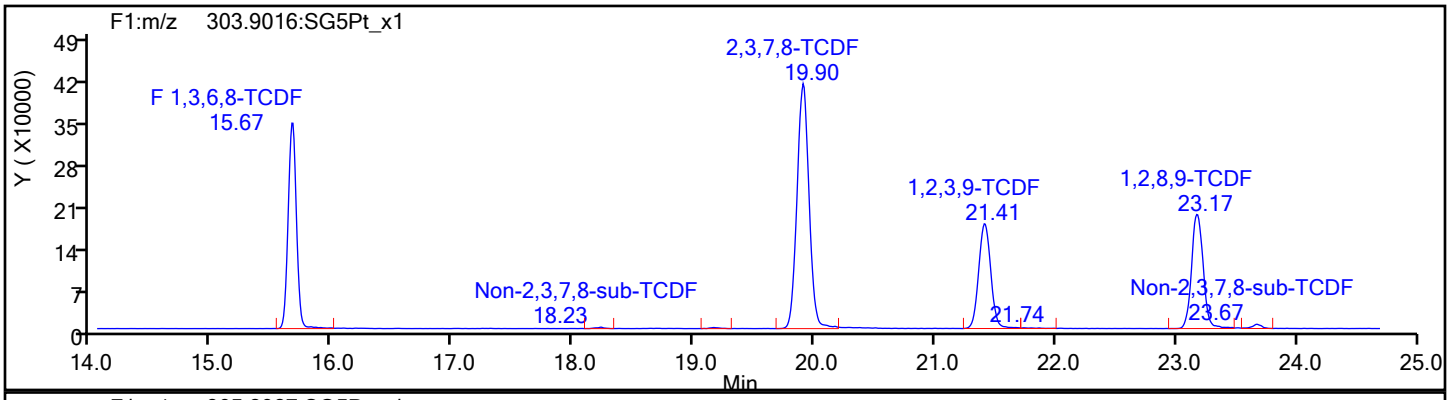
Amount: 0.0 = (64948 * 0.0) / (0 * 0.000)

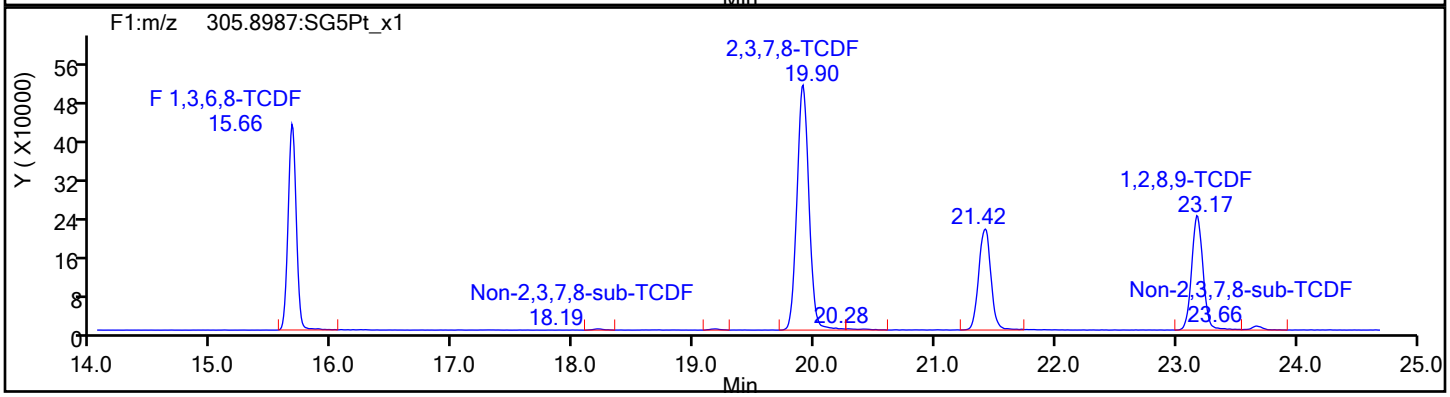
Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

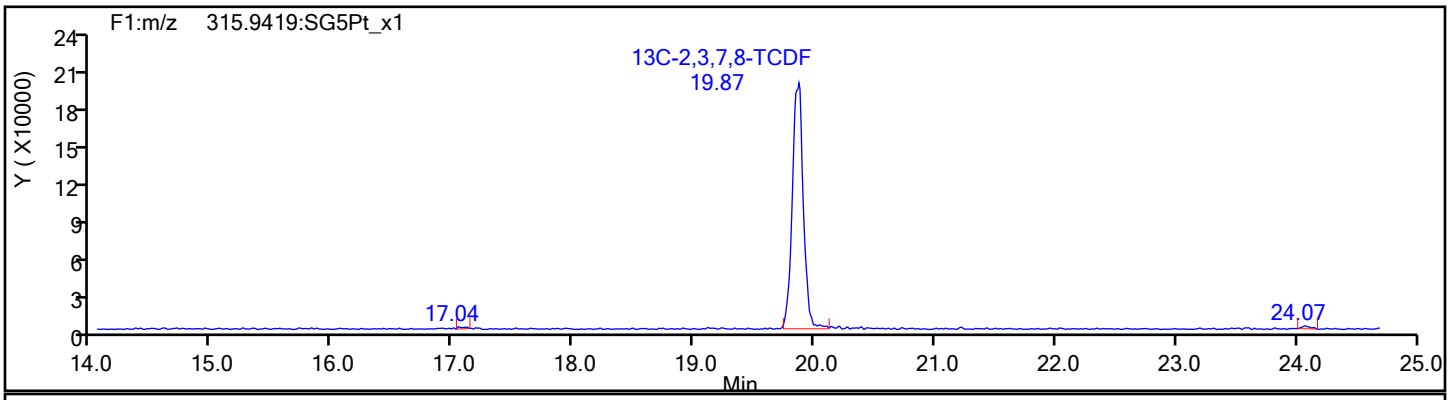
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

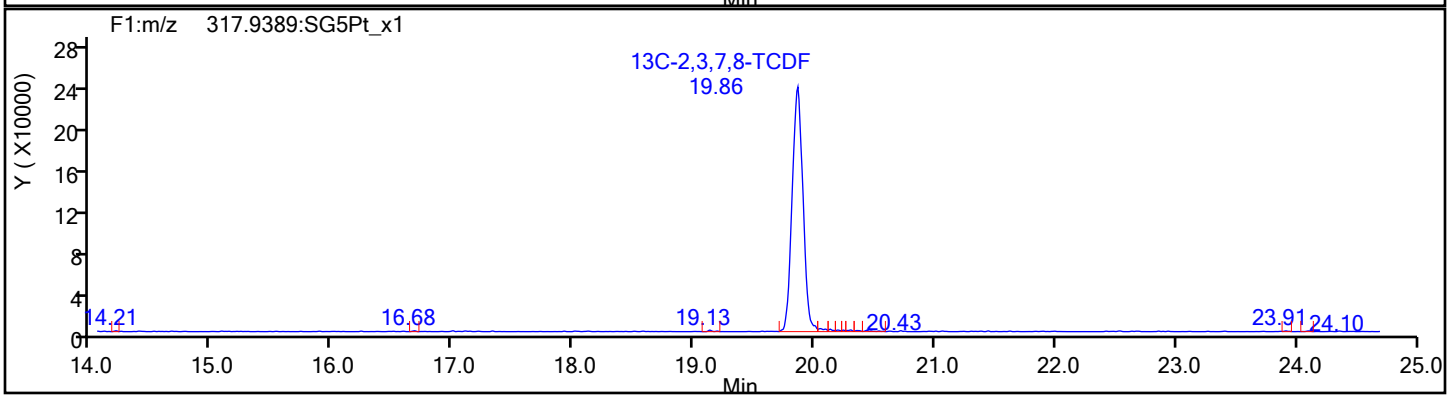
TCDF





TCDF Standards



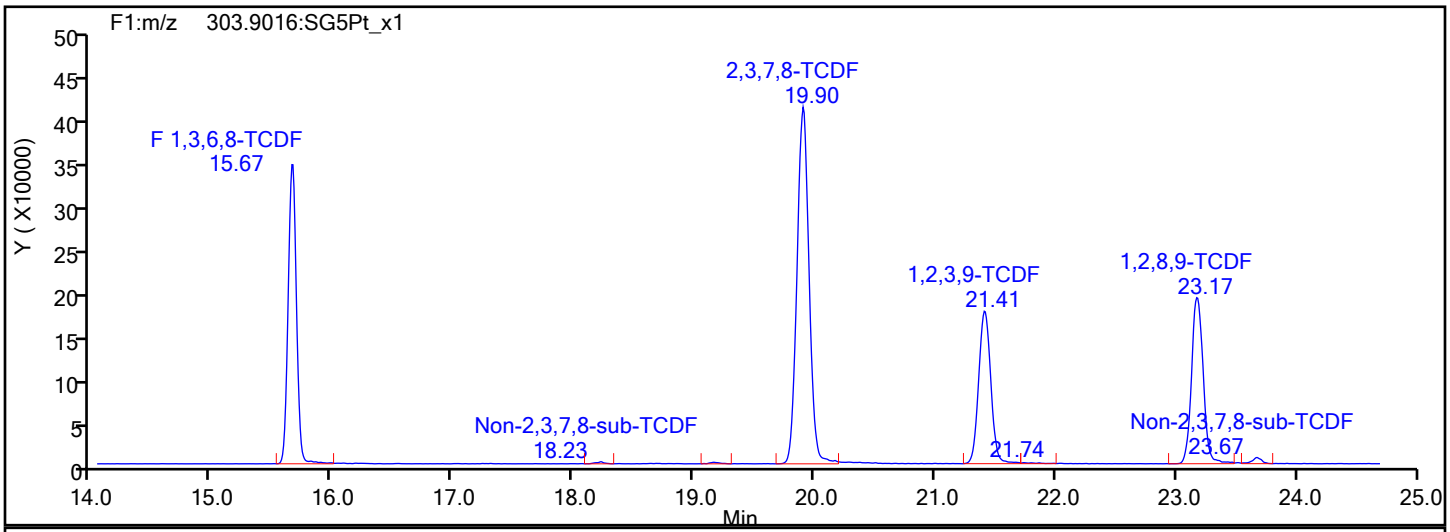


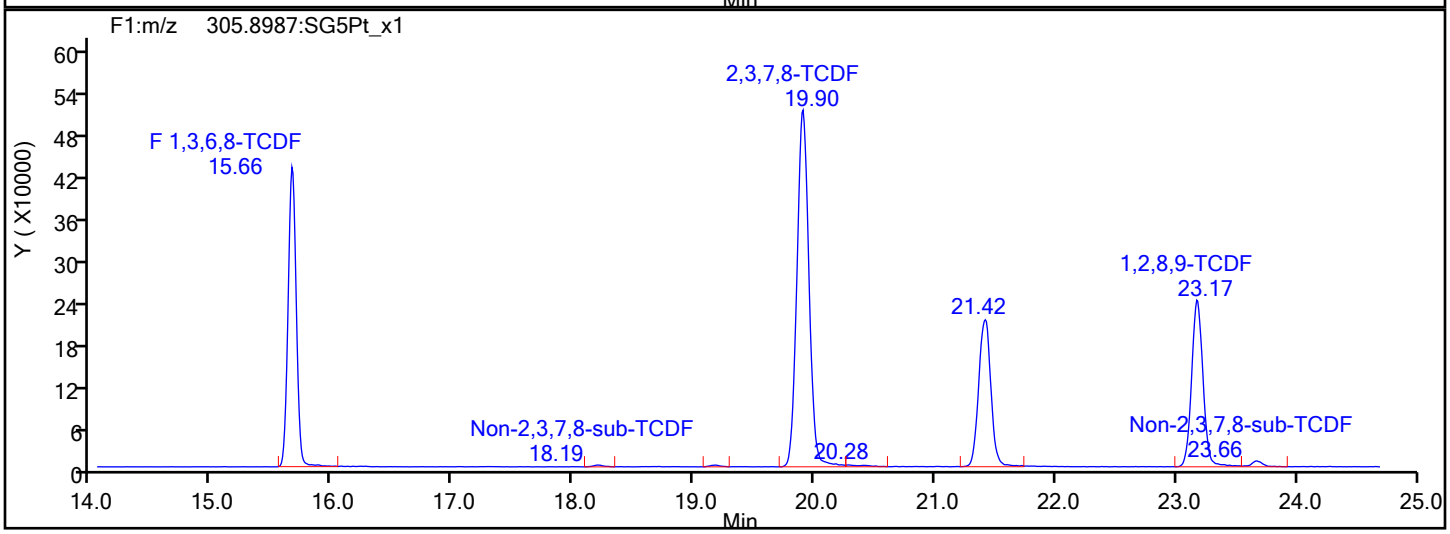
Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

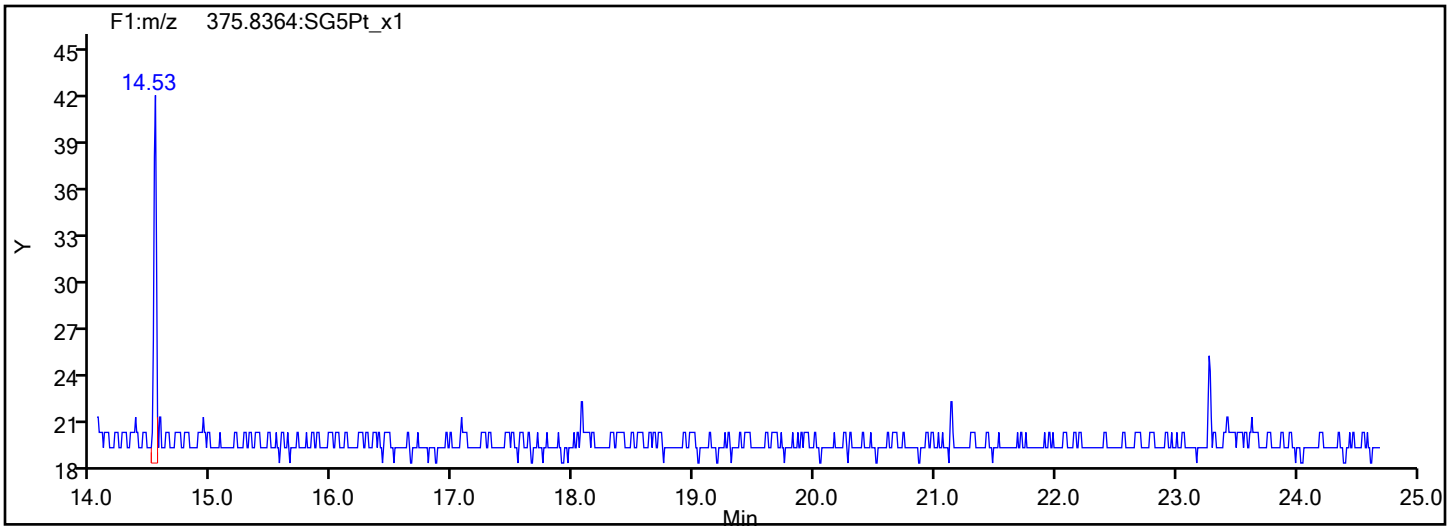
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

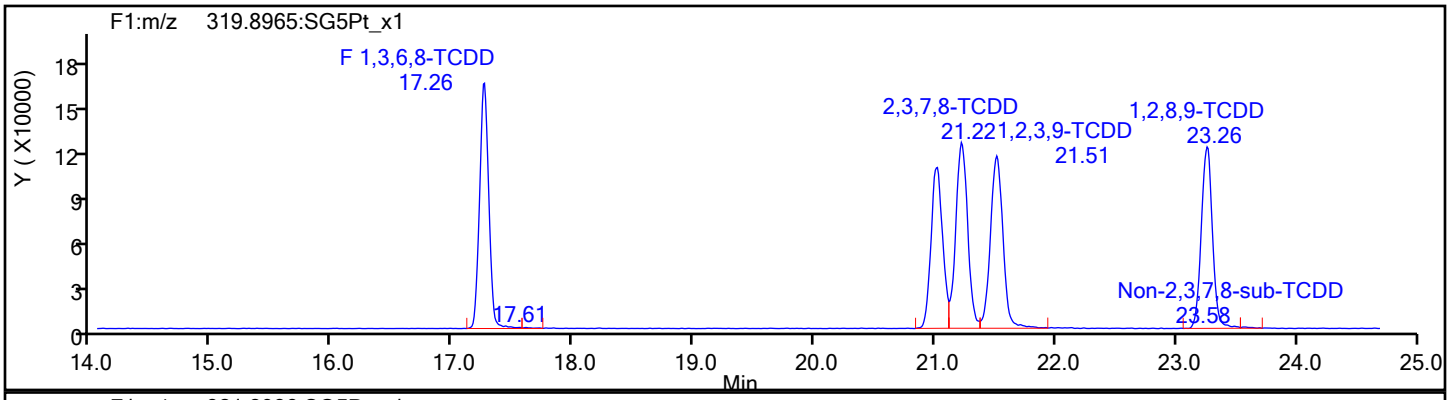


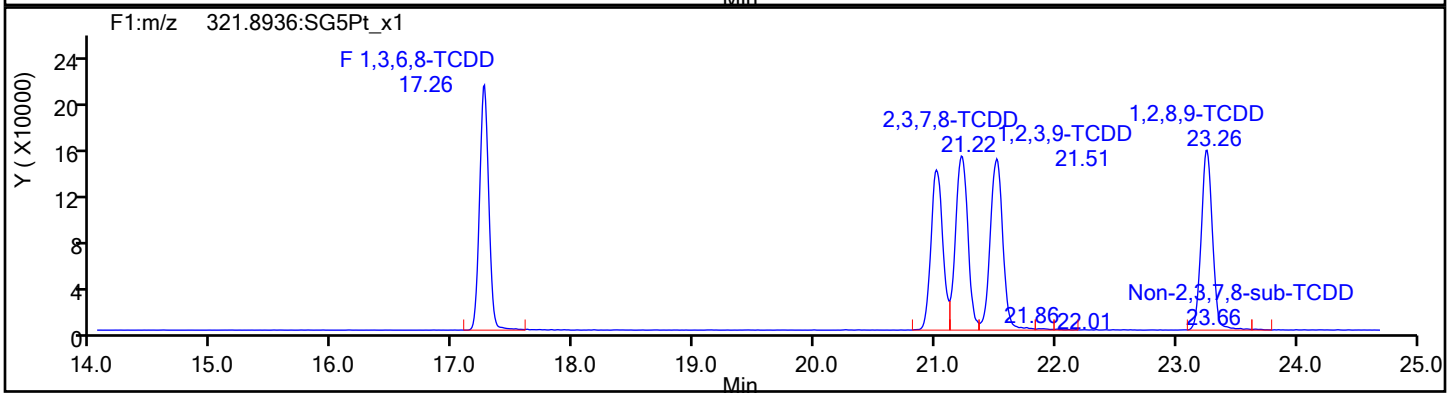
Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

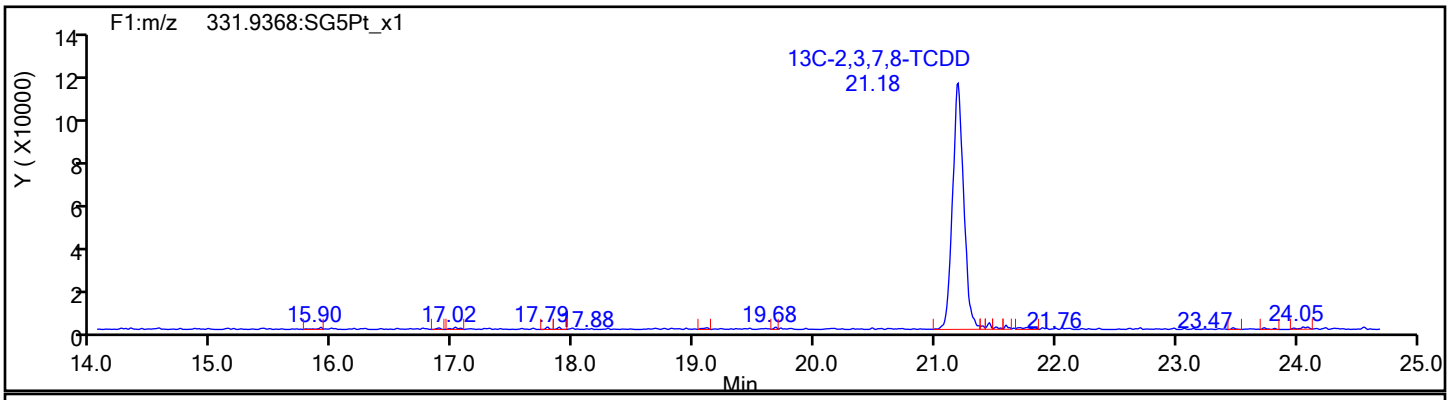
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

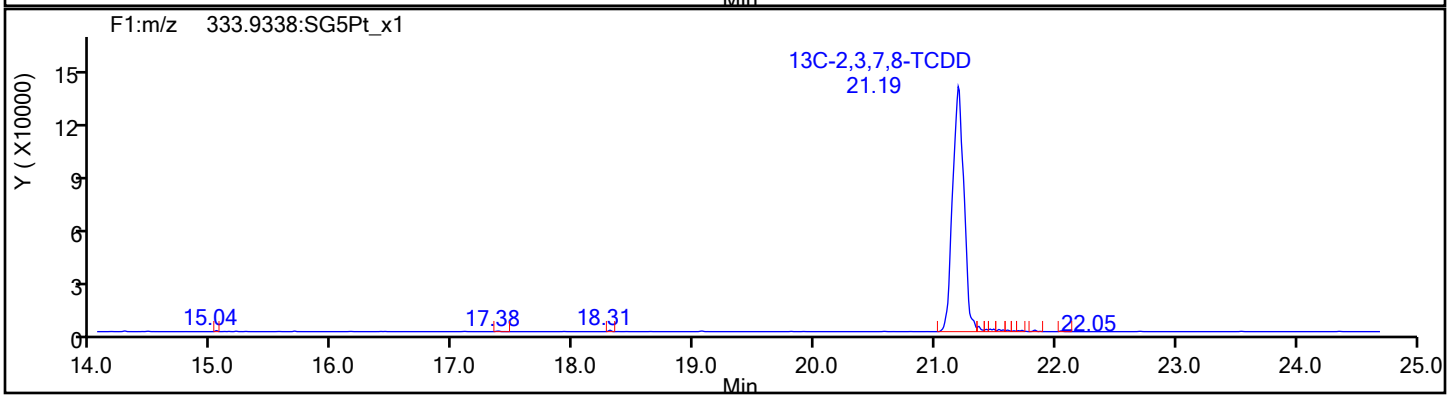
TCDD





TCDD Standards



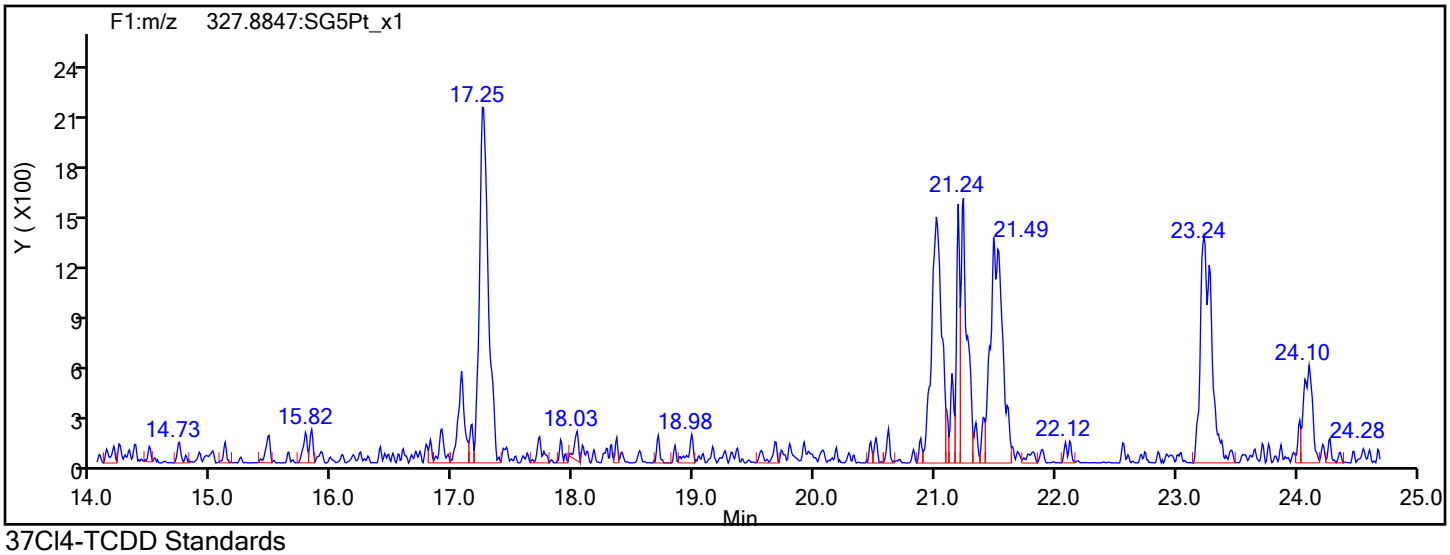


Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

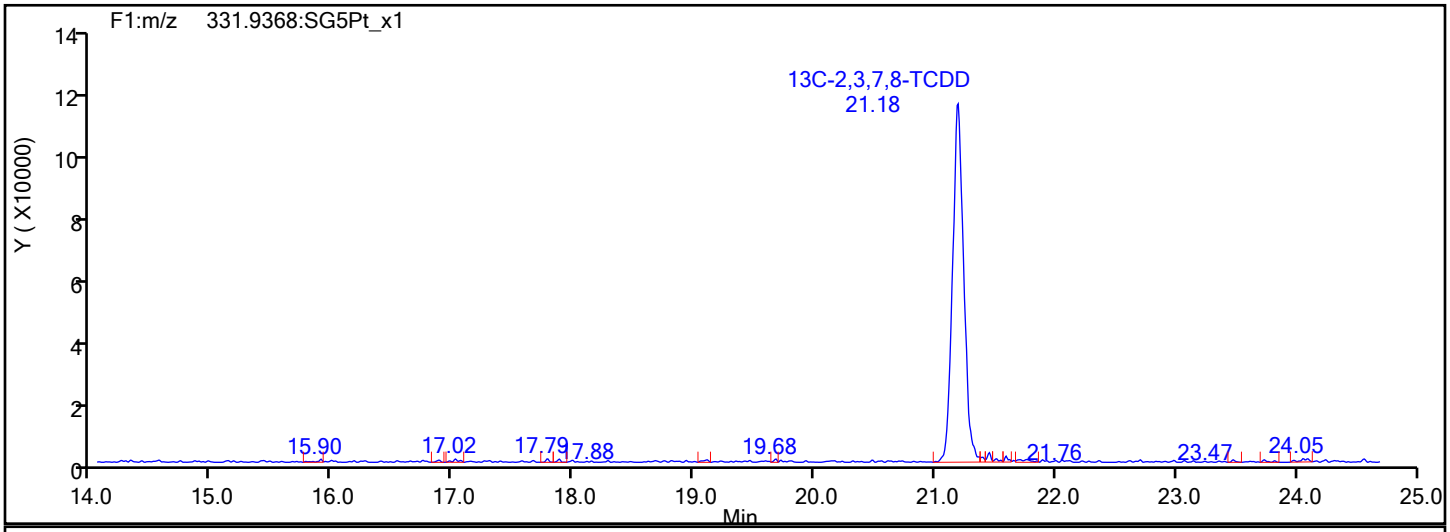
Eurofins TestAmerica, Sacramento

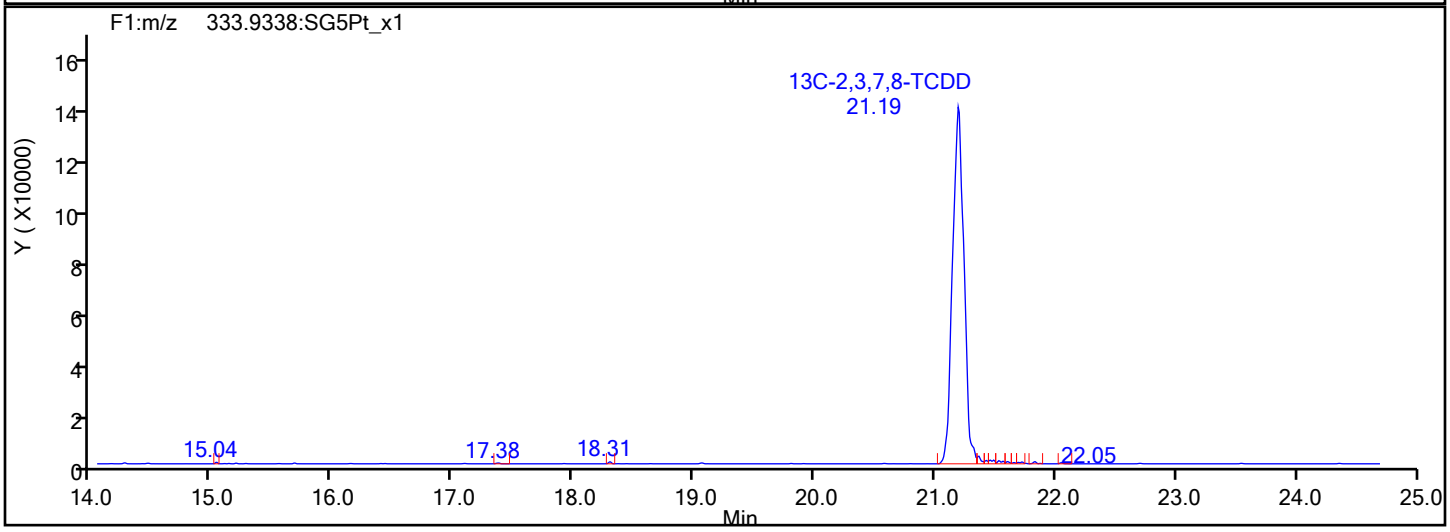
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



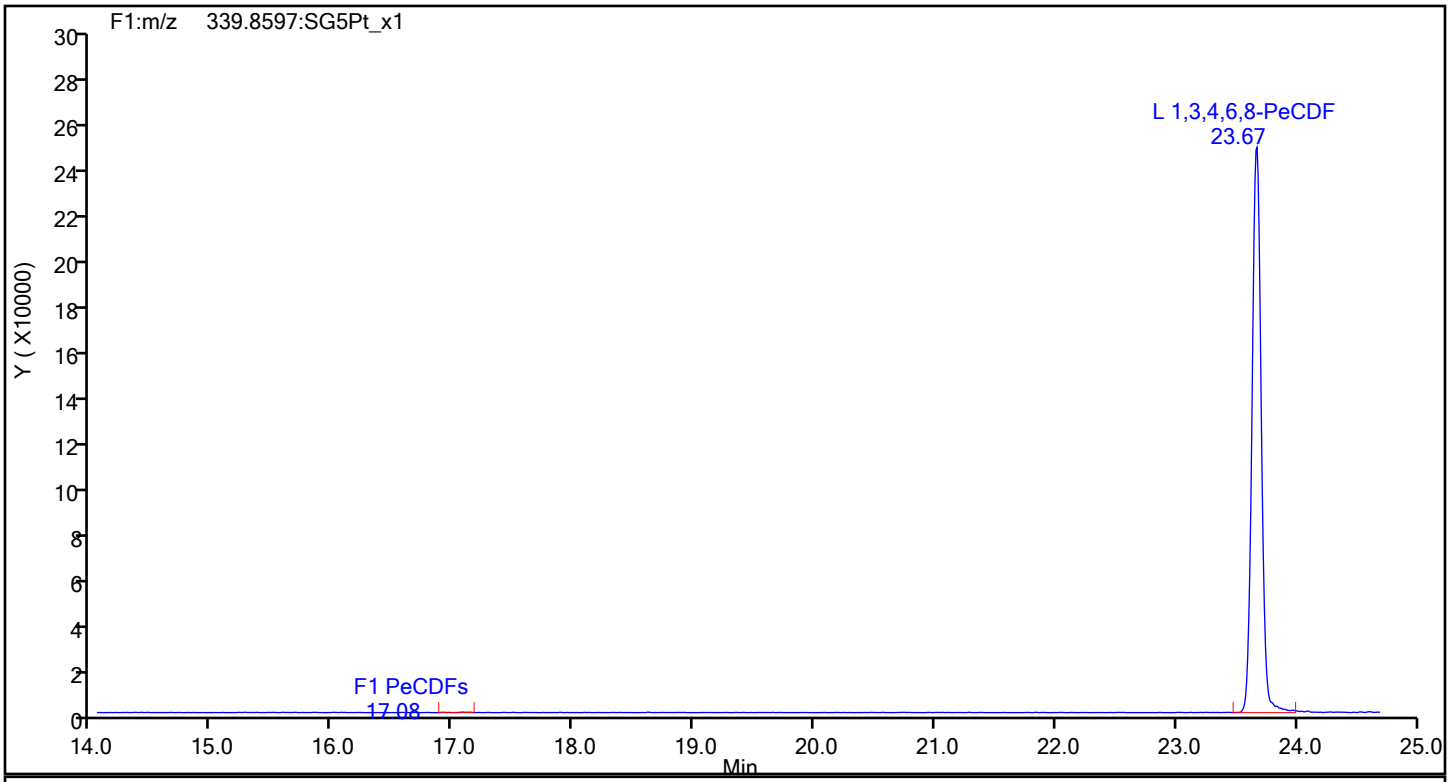


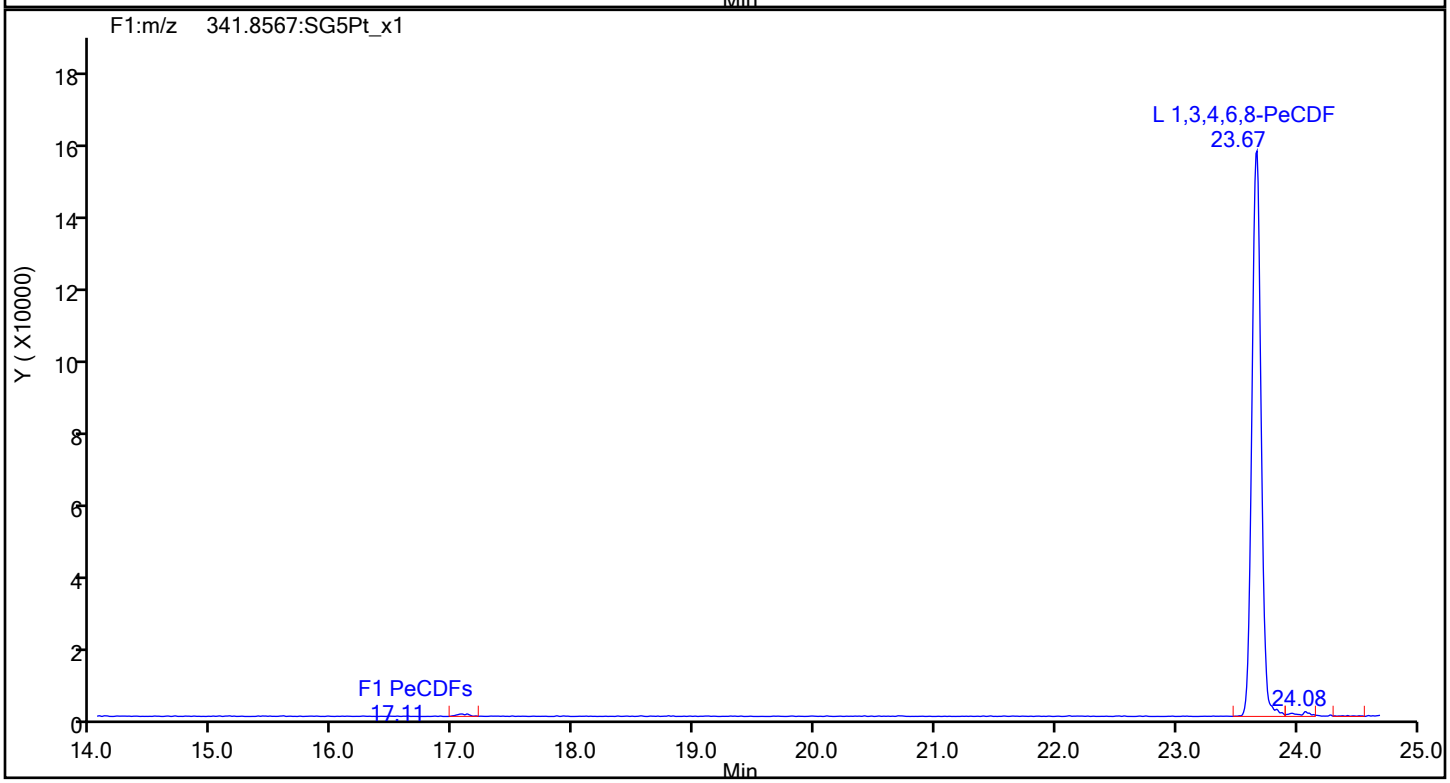
Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



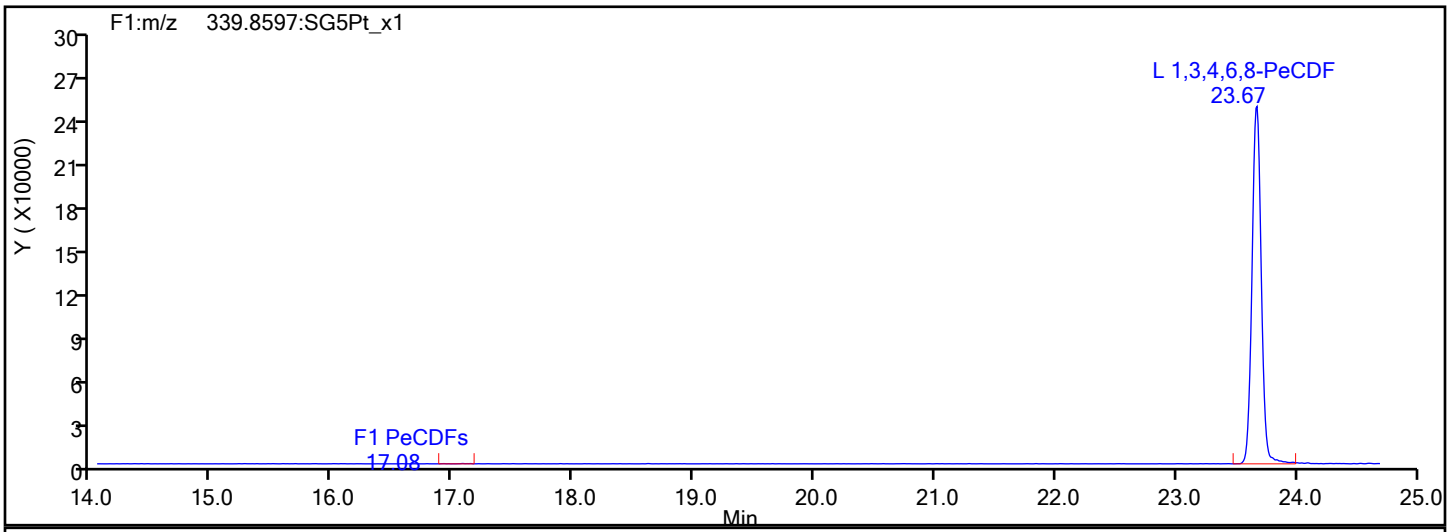


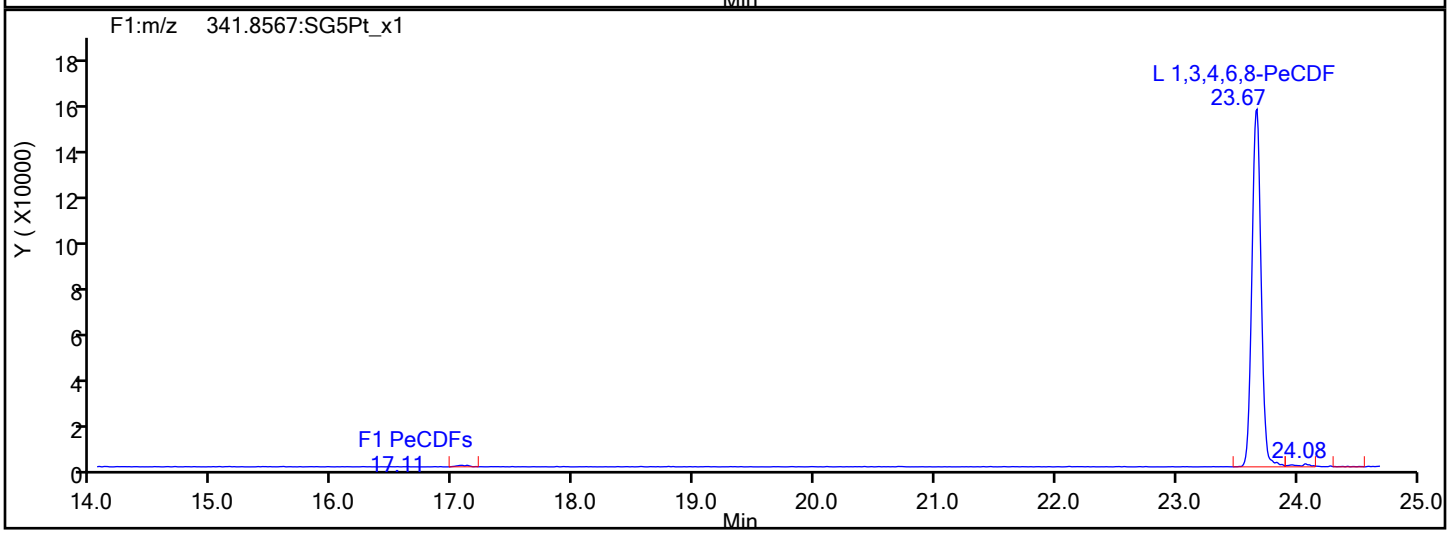
Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

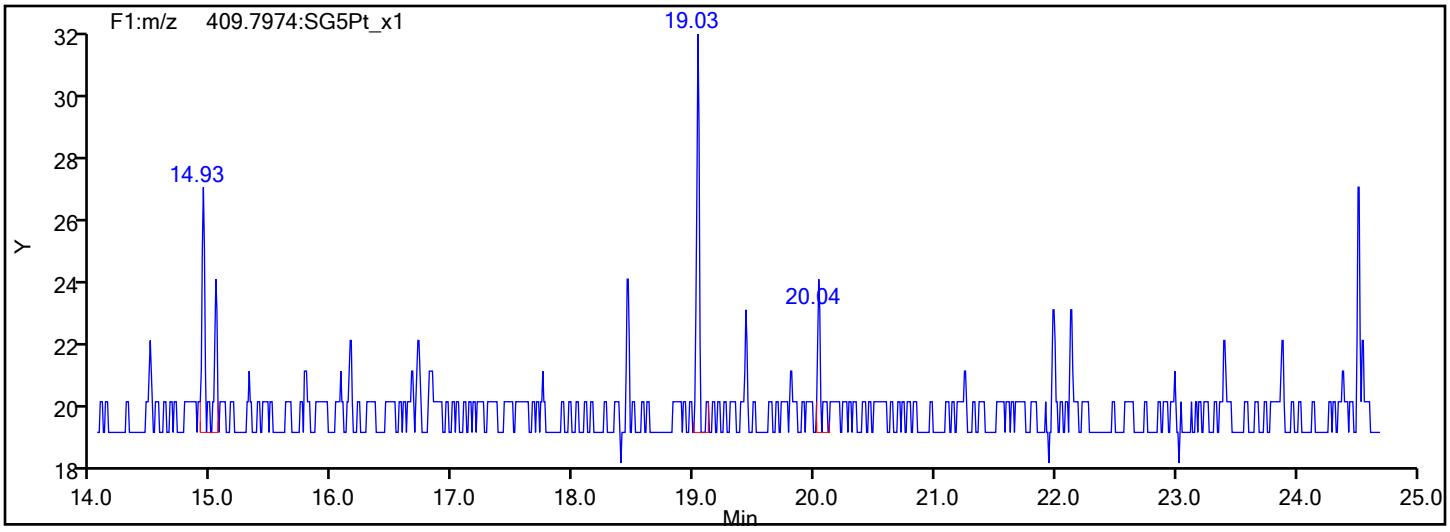
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	332505	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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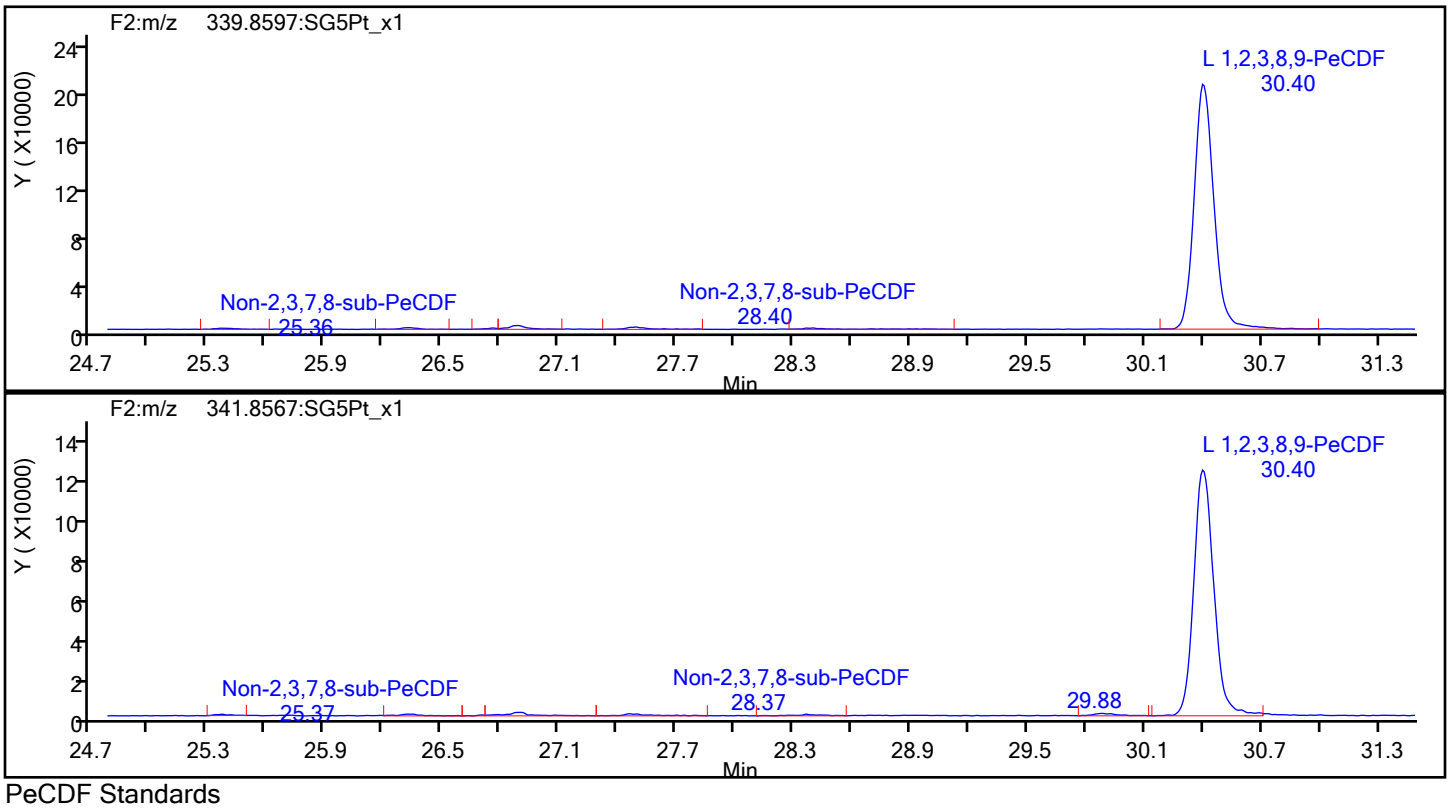
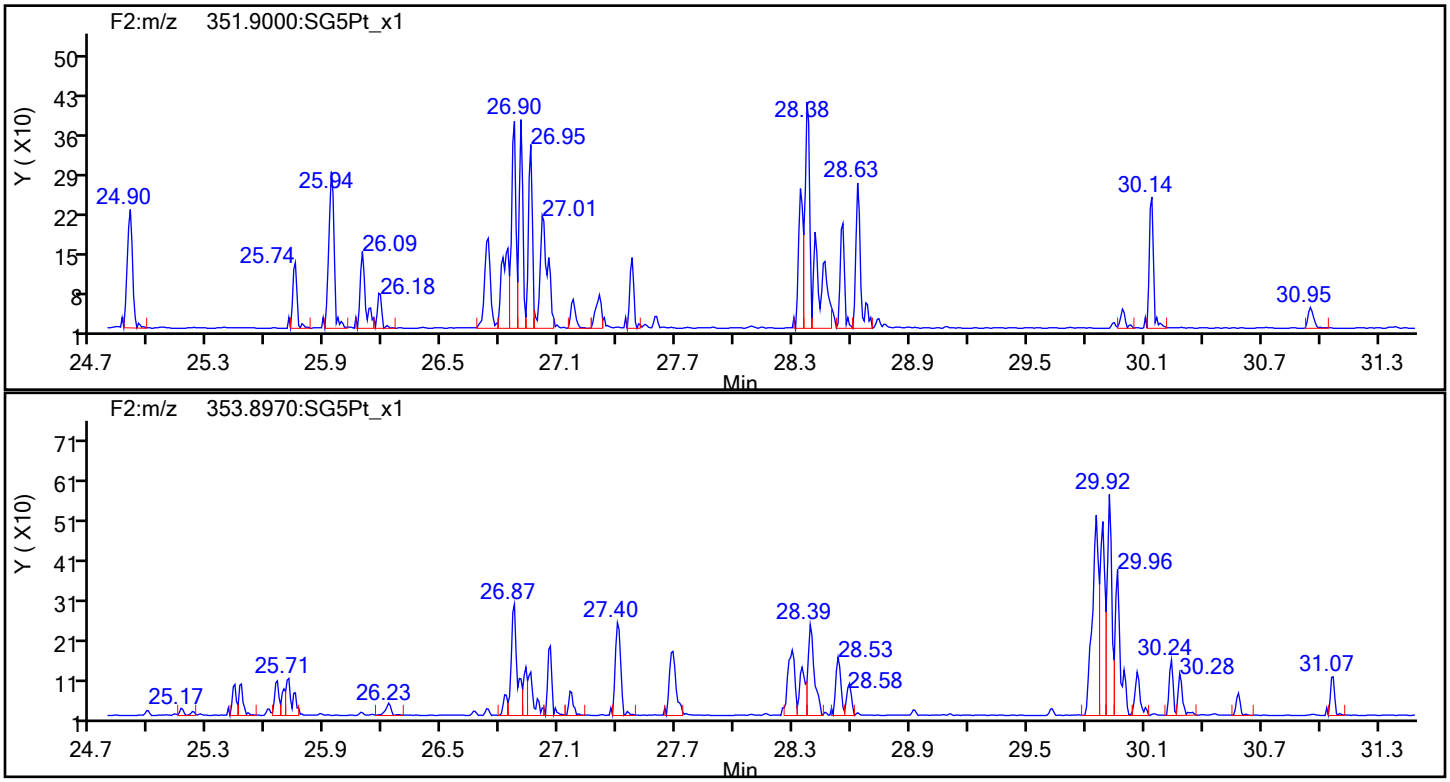
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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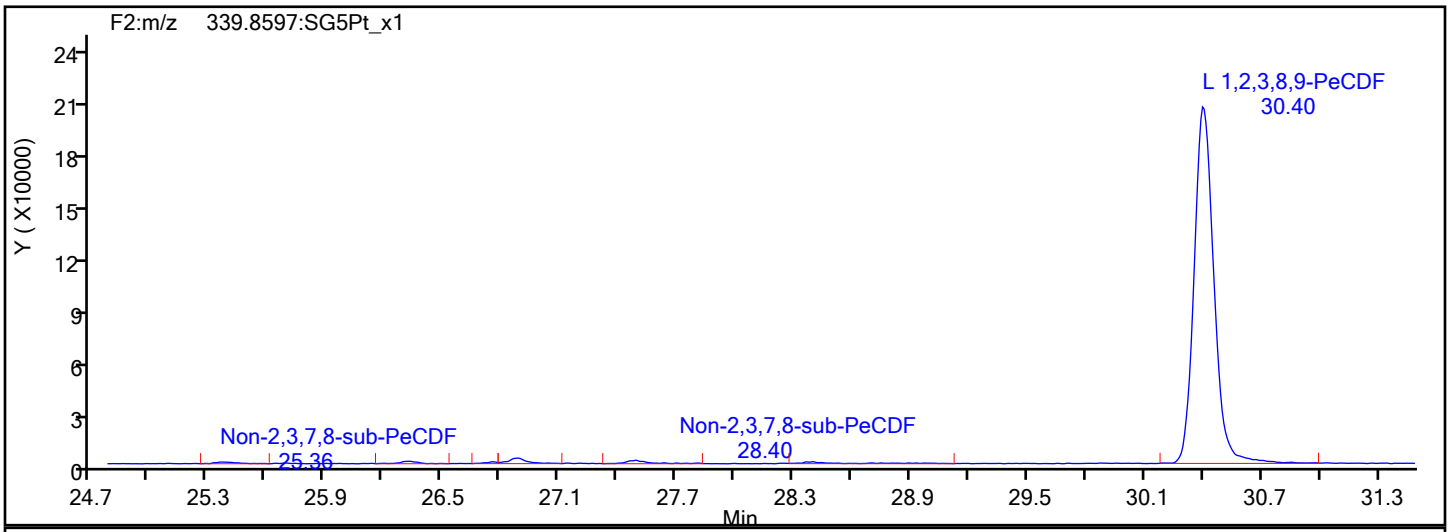
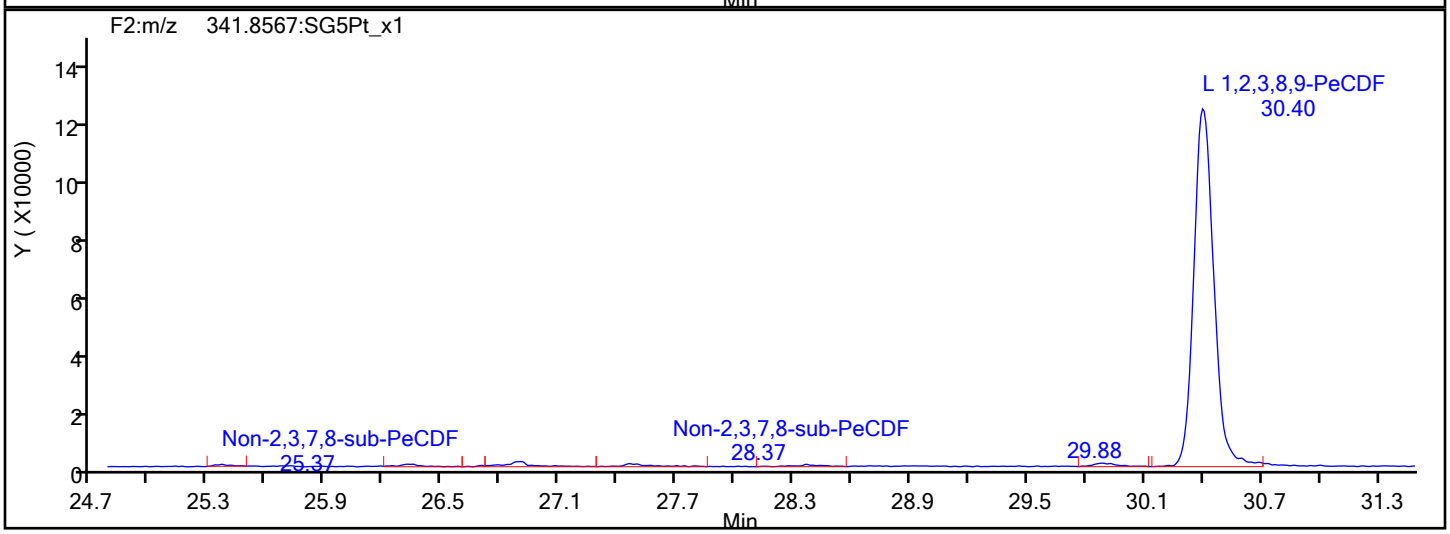
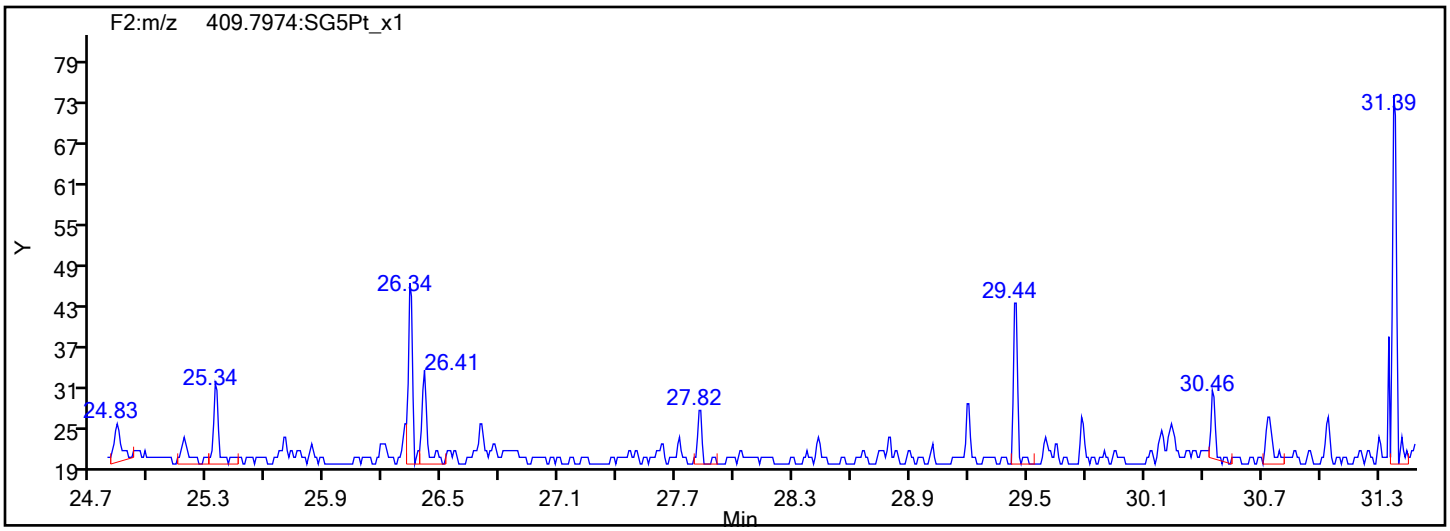




PeCDF Interference Mass



Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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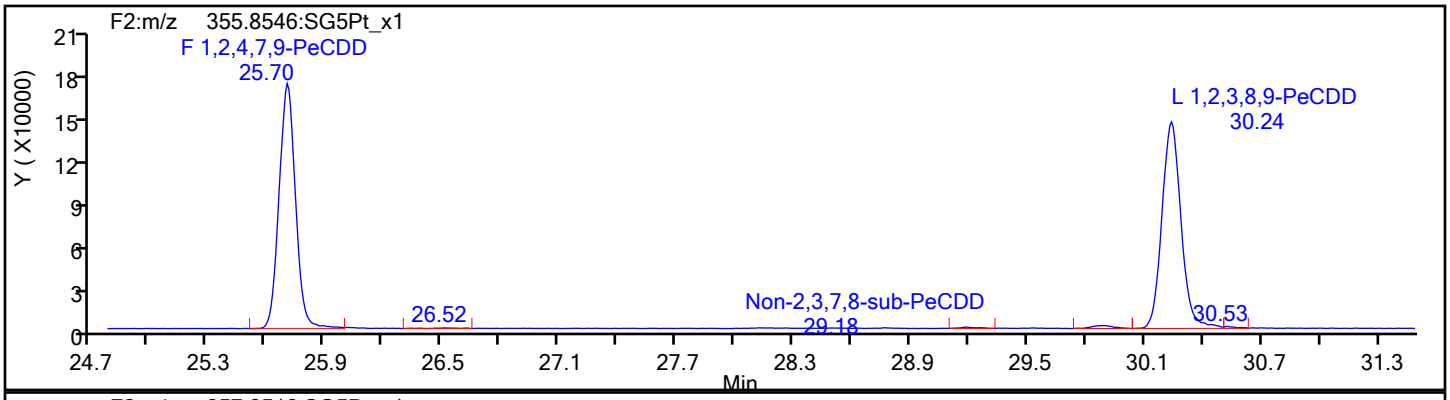
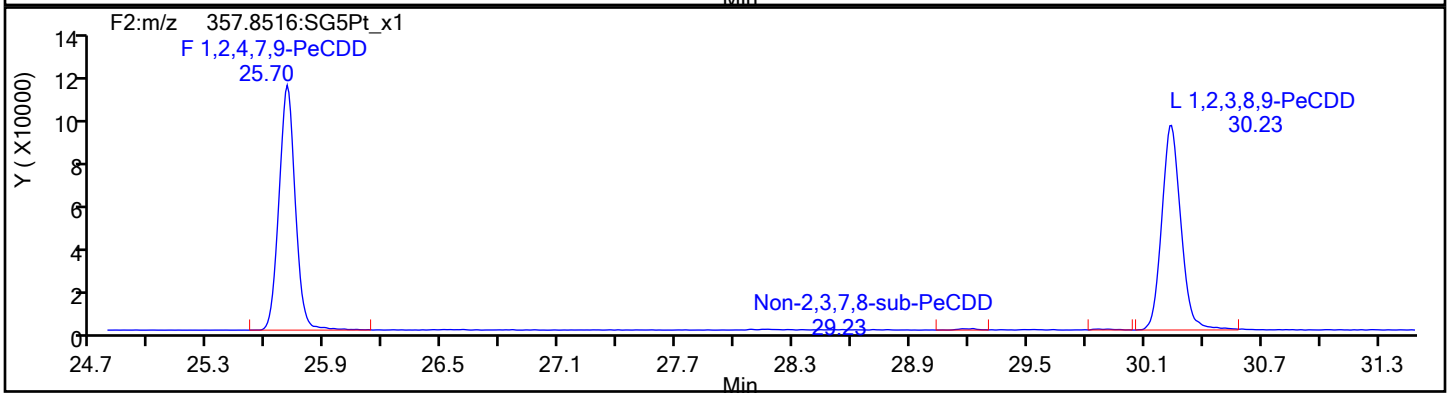
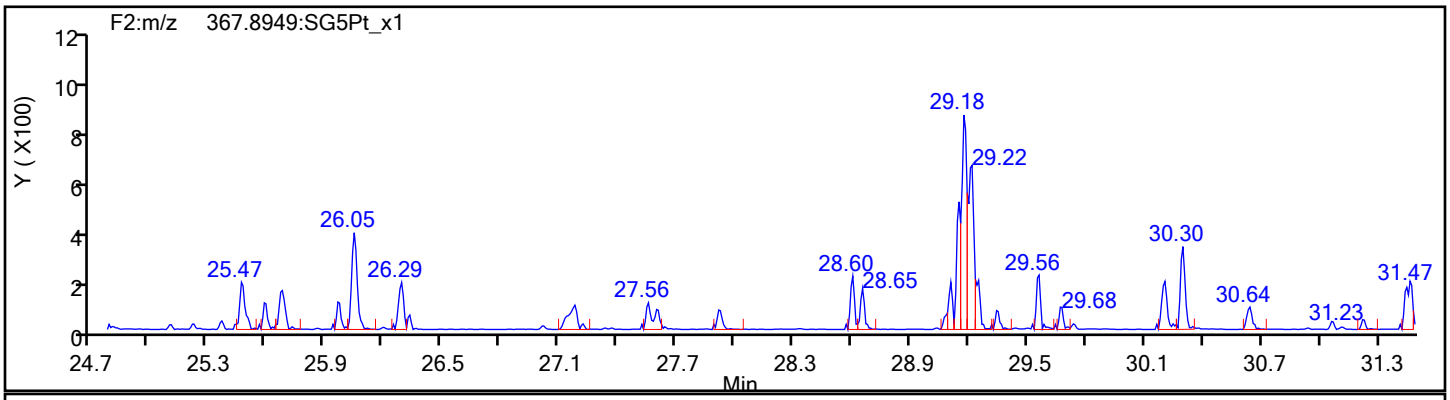
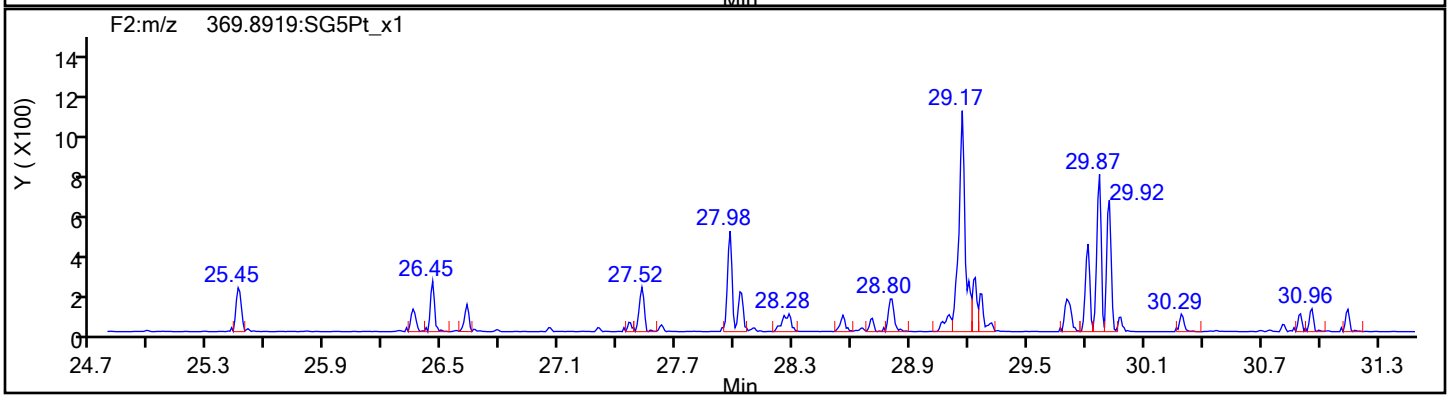
PeCDD





PeCDD Standards





Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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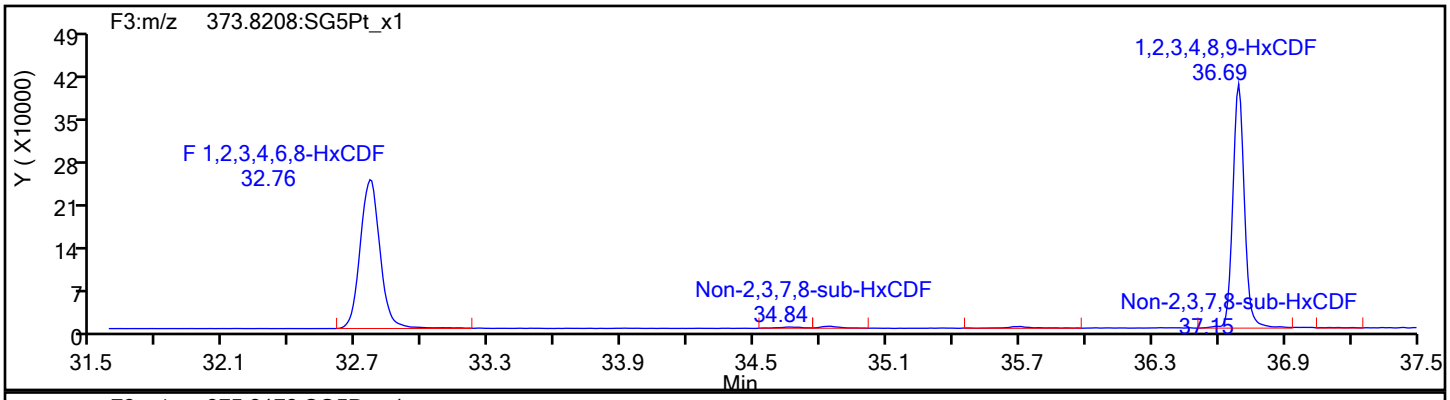
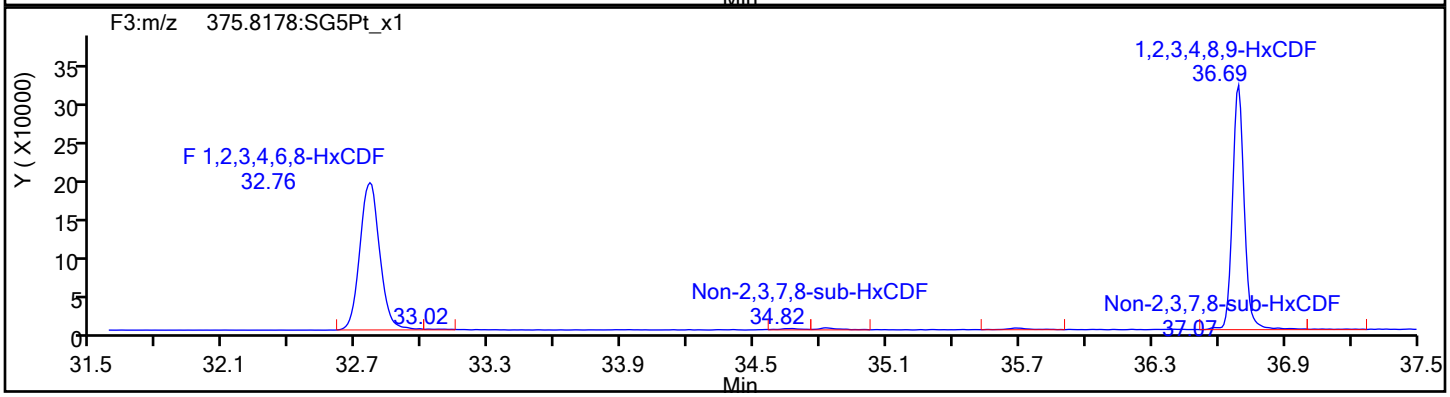
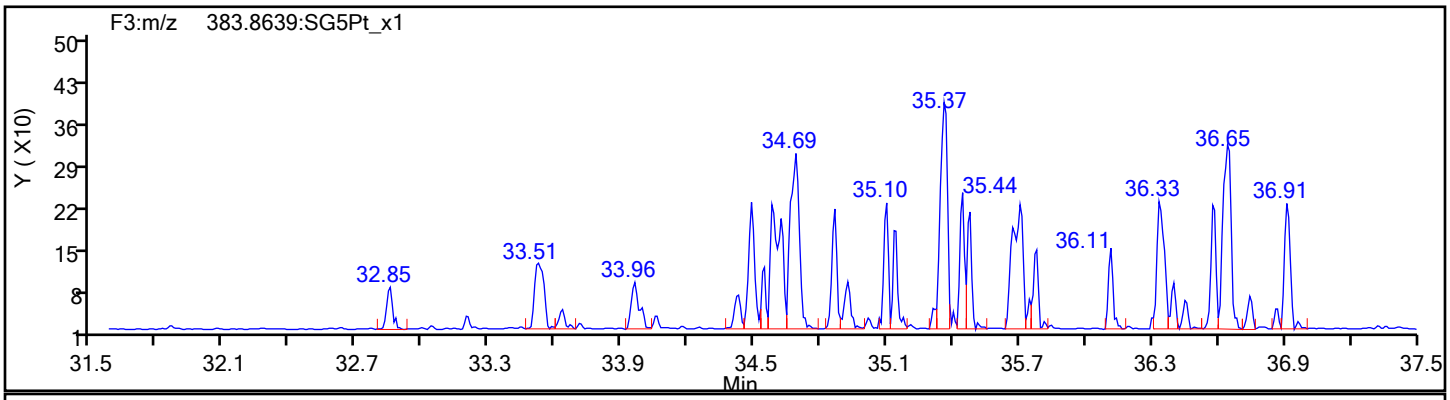
Column Type:	DB-5	Column Dia:	0.32 mm

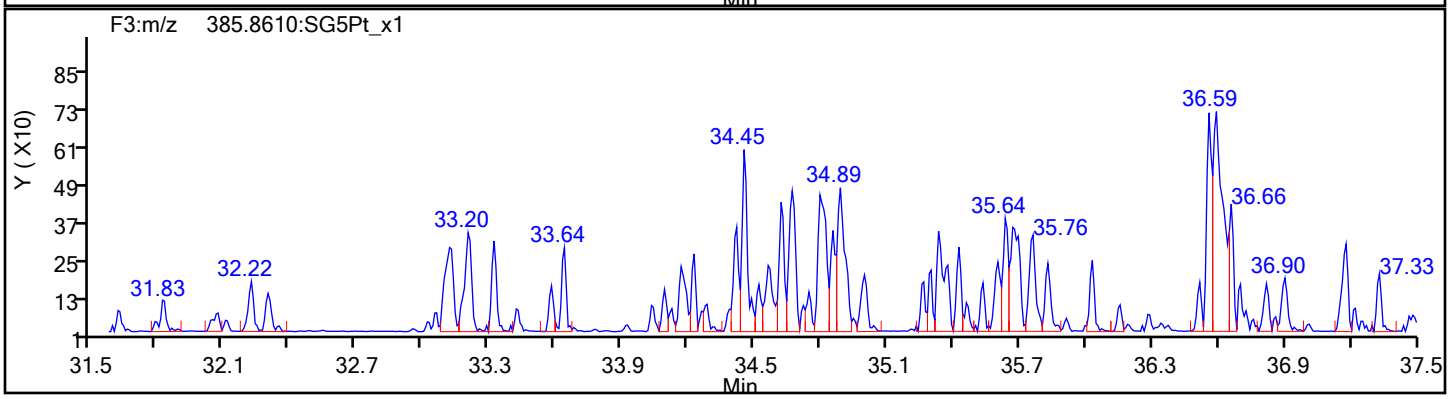
HxCDF





HxCDF Standards





Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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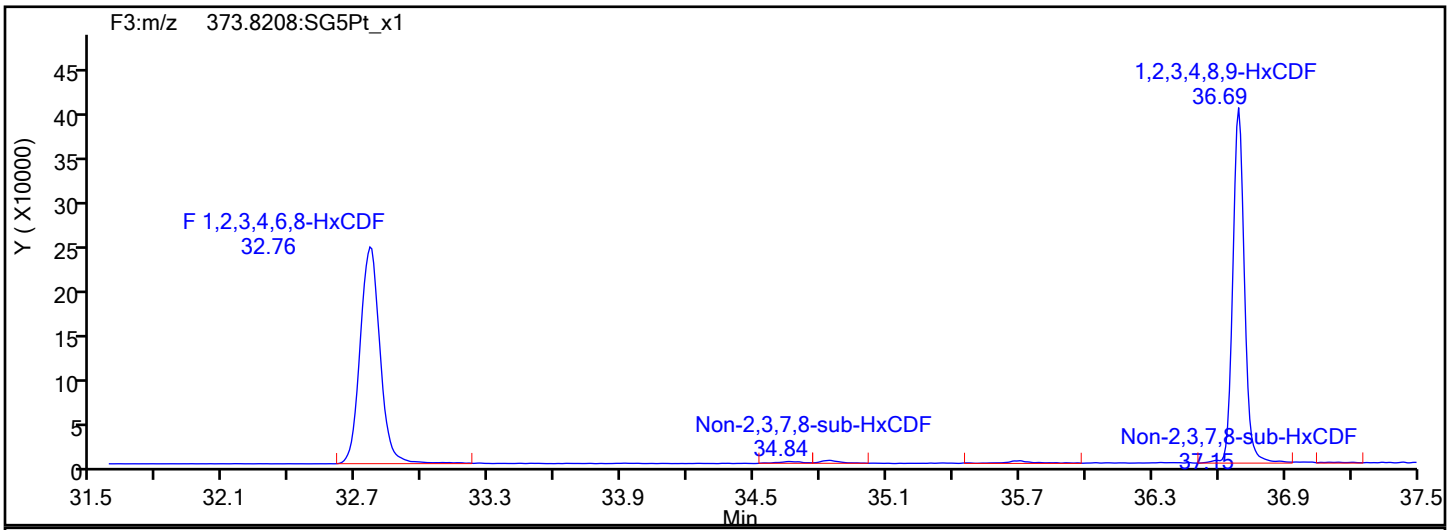
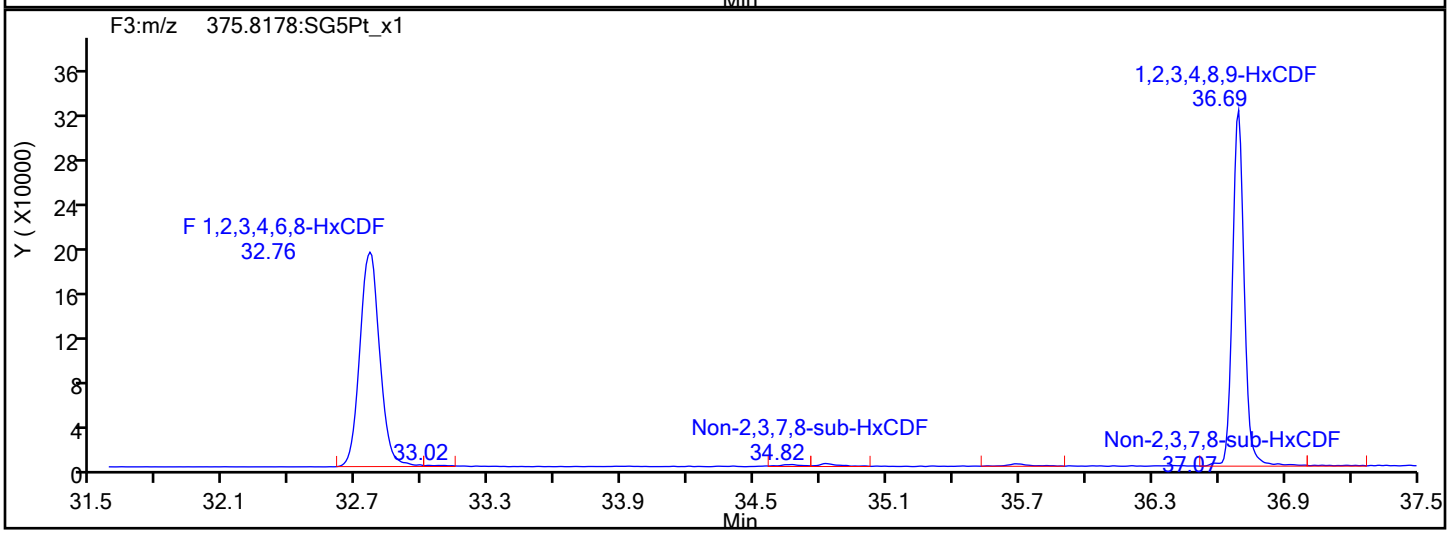
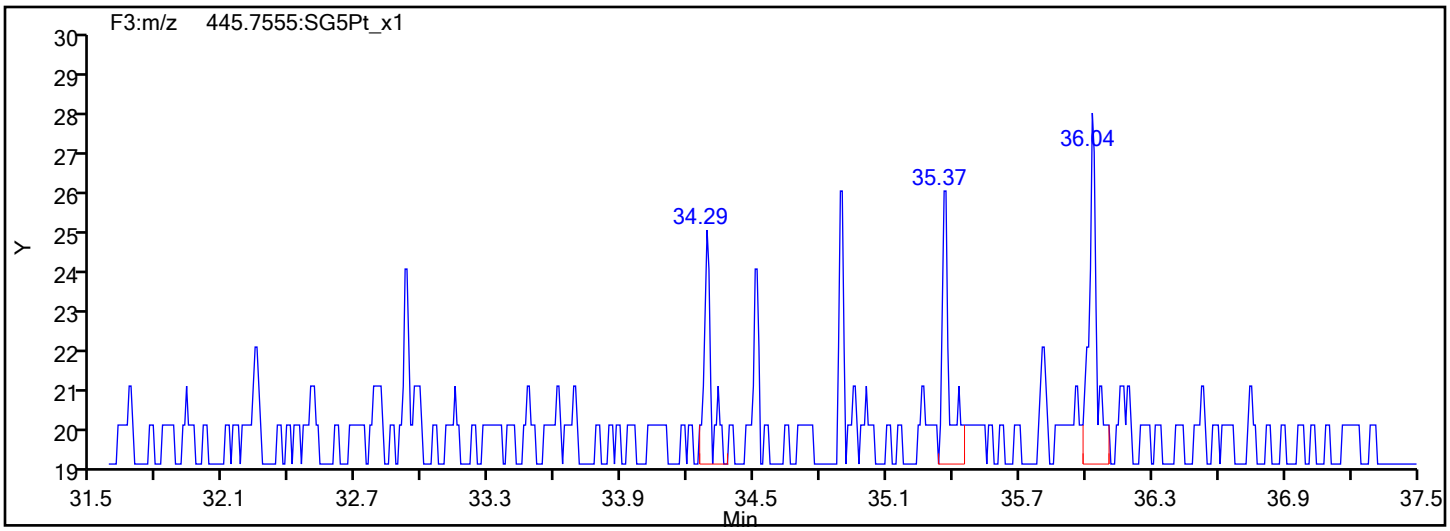
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 23-Oct-2019 17:15:27 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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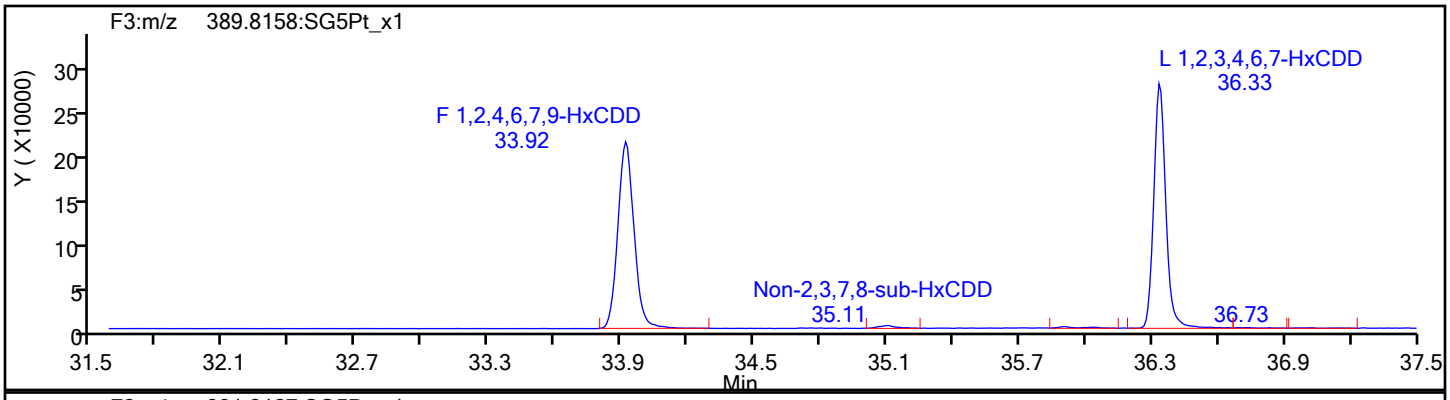
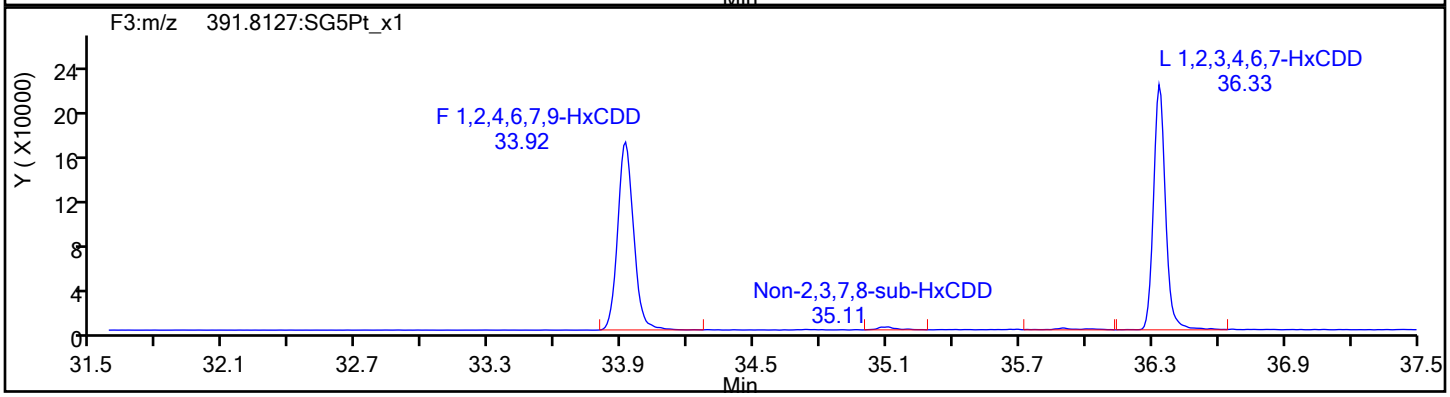
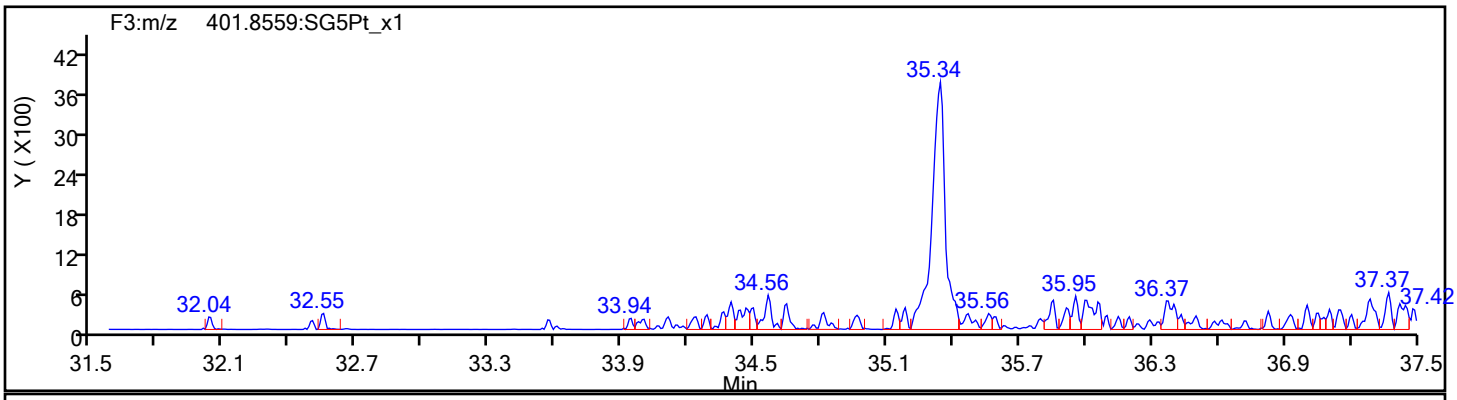
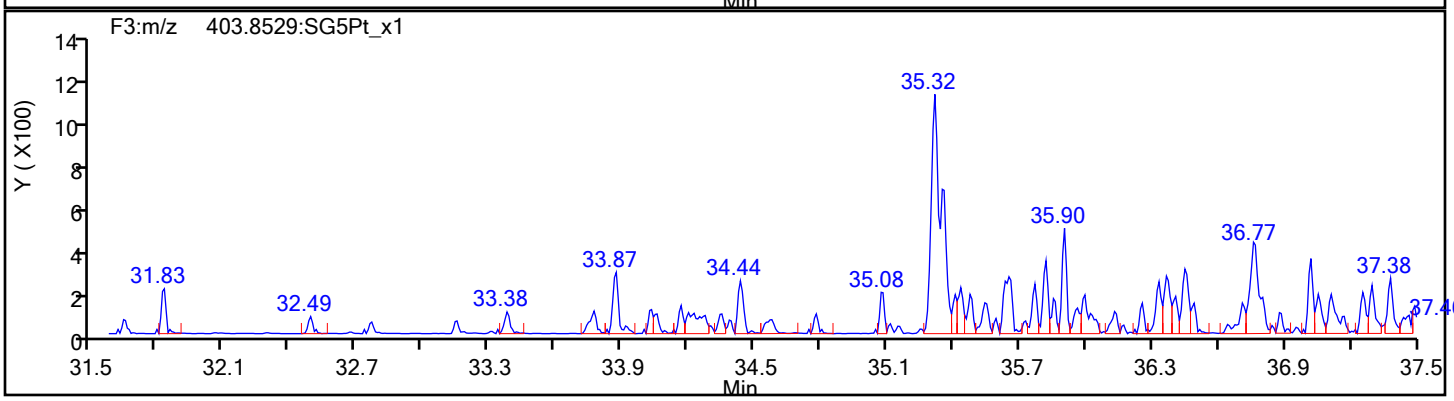
HxCDD





HxCDD Standards





Report Date: 23-Oct-2019 17:15:28 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d

Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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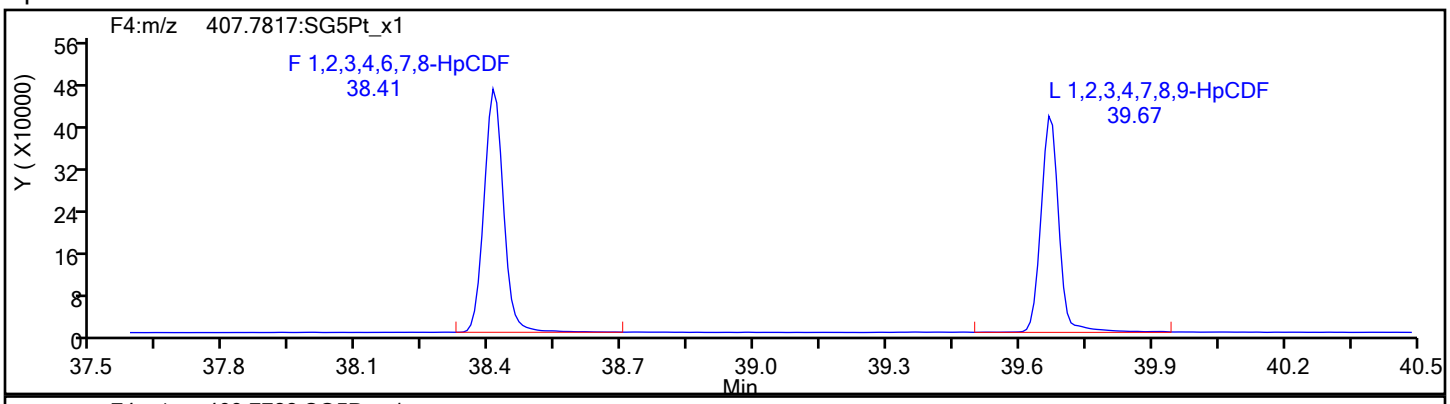
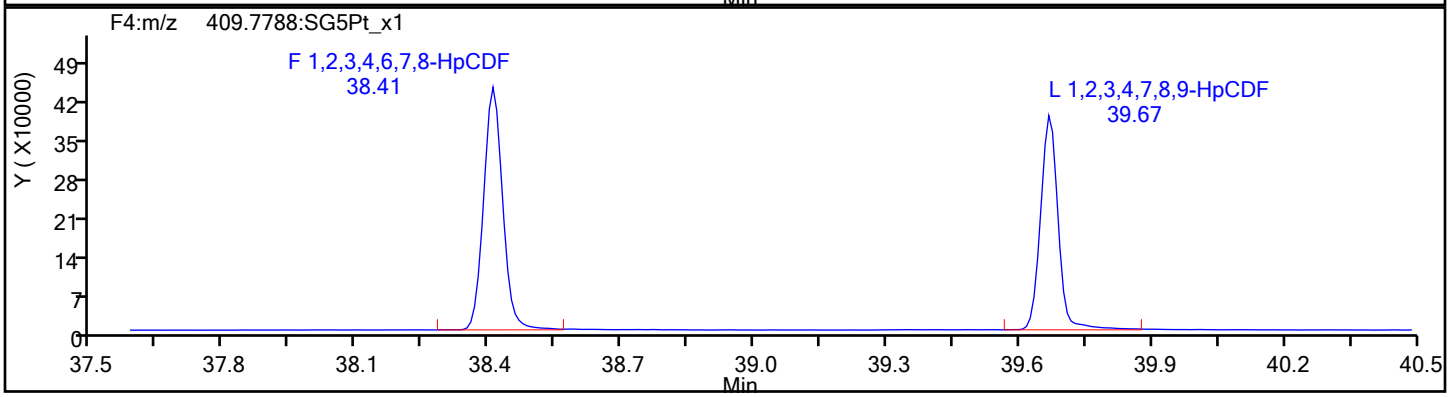
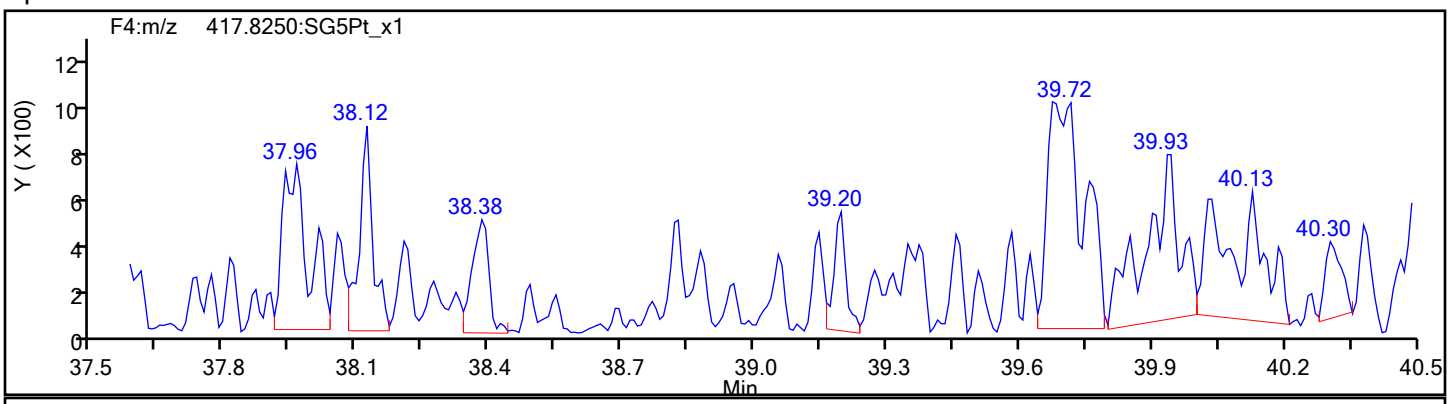
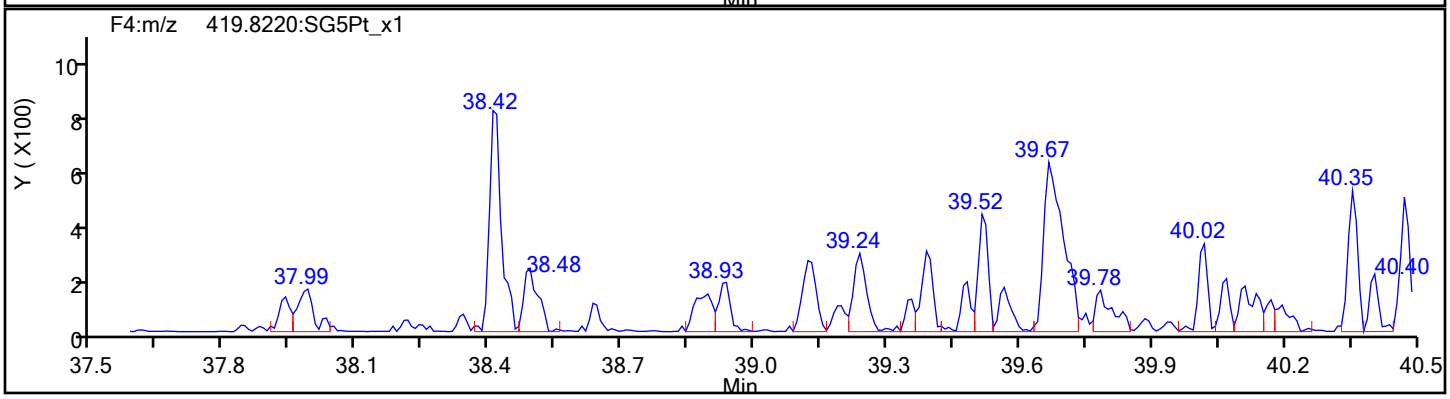
HpCDF





HpCDF Standards





Report Date: 23-Oct-2019 17:15:28 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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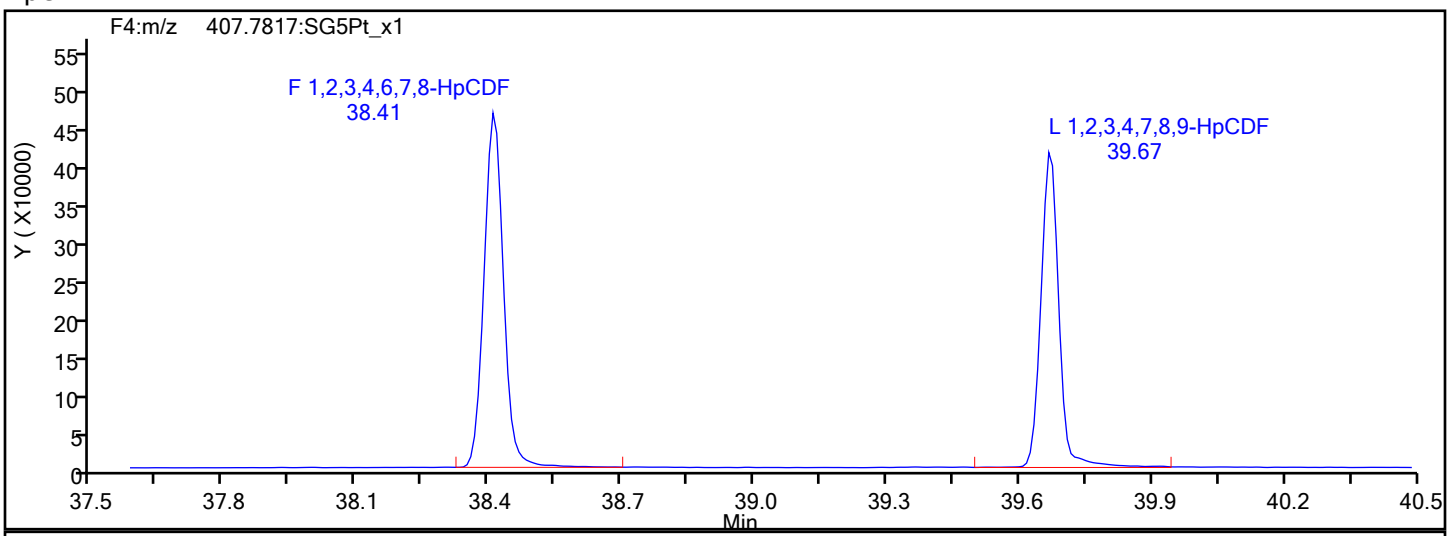
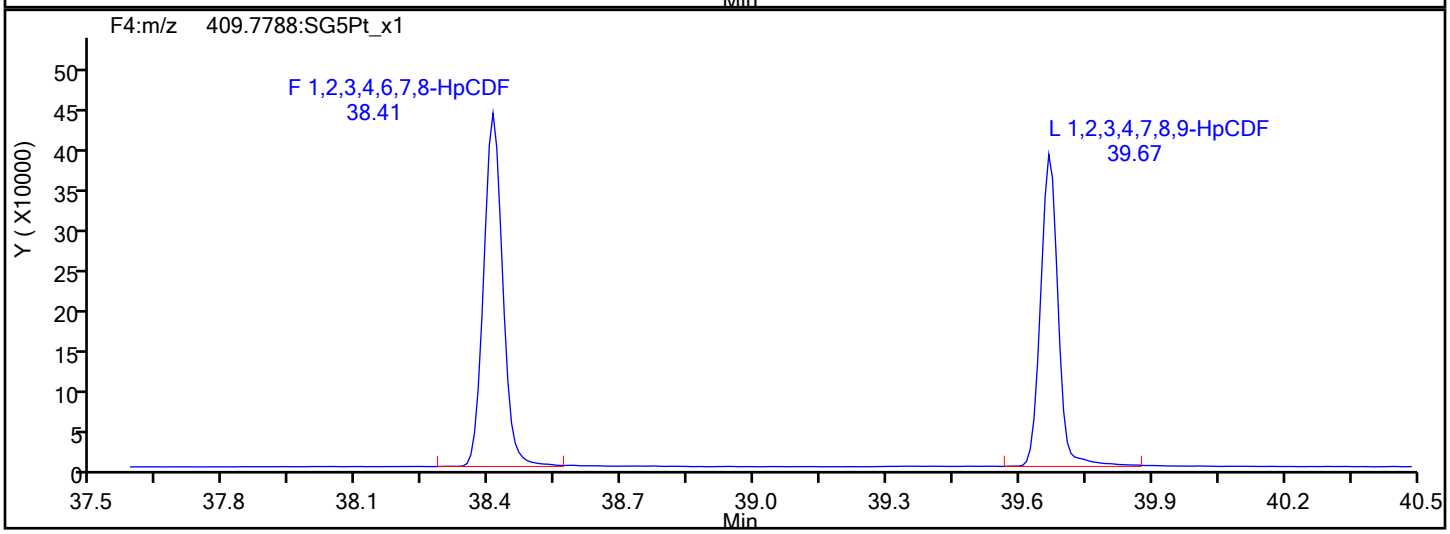
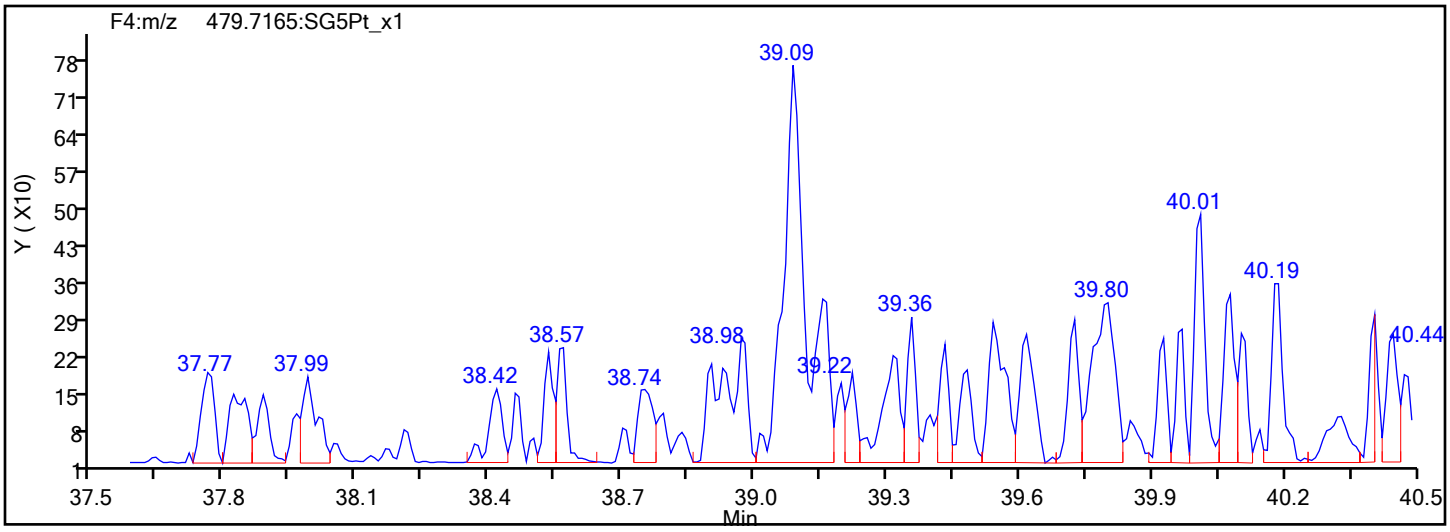
HpCDF





HpCDF Interference Mass



Report Date: 23-Oct-2019 17:15:28 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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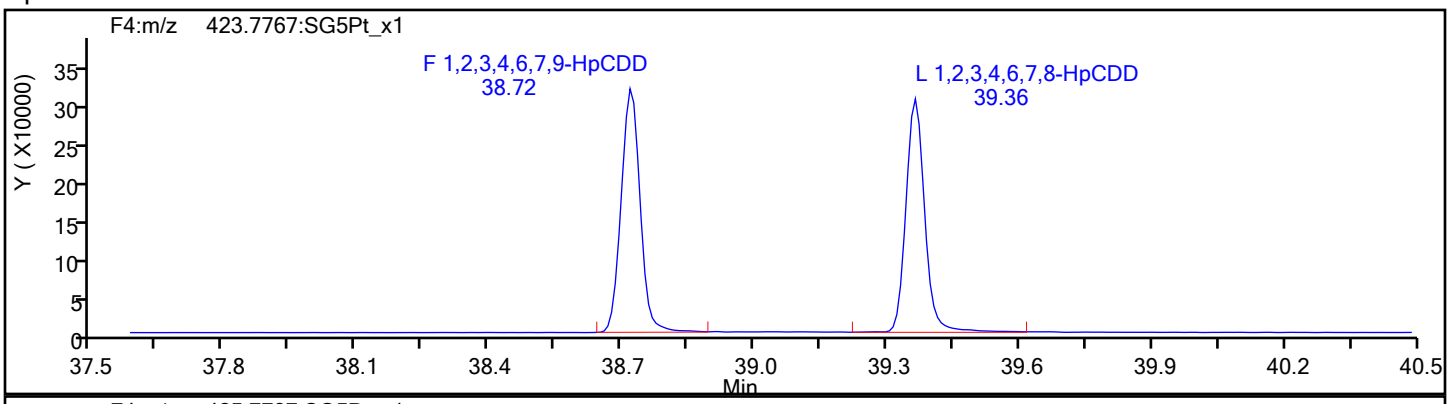
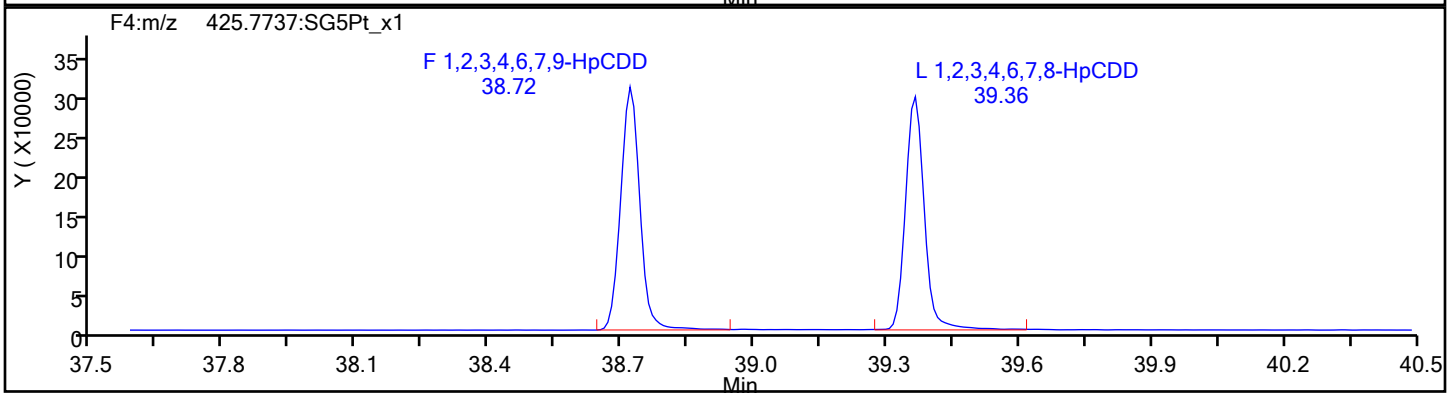
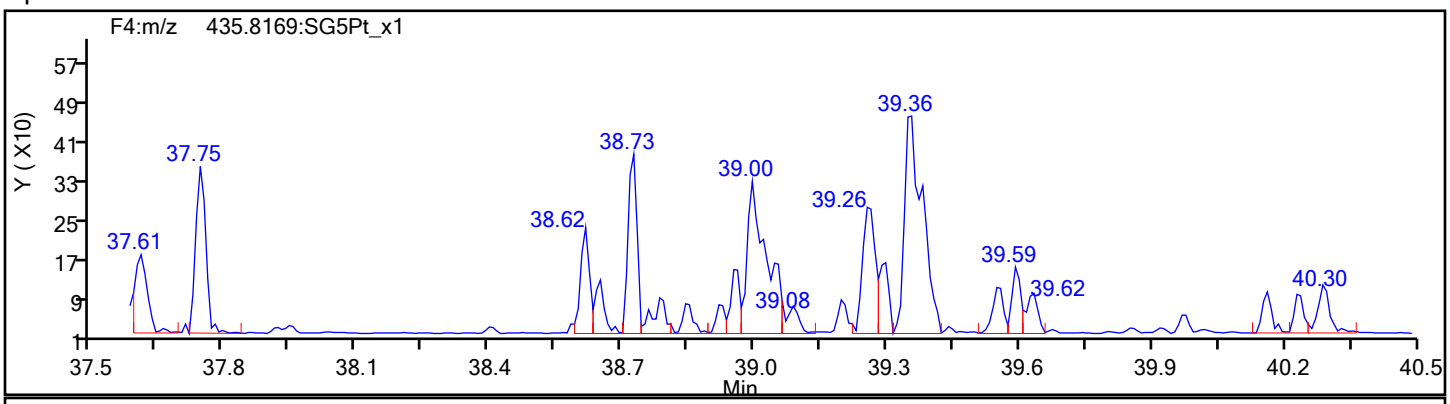
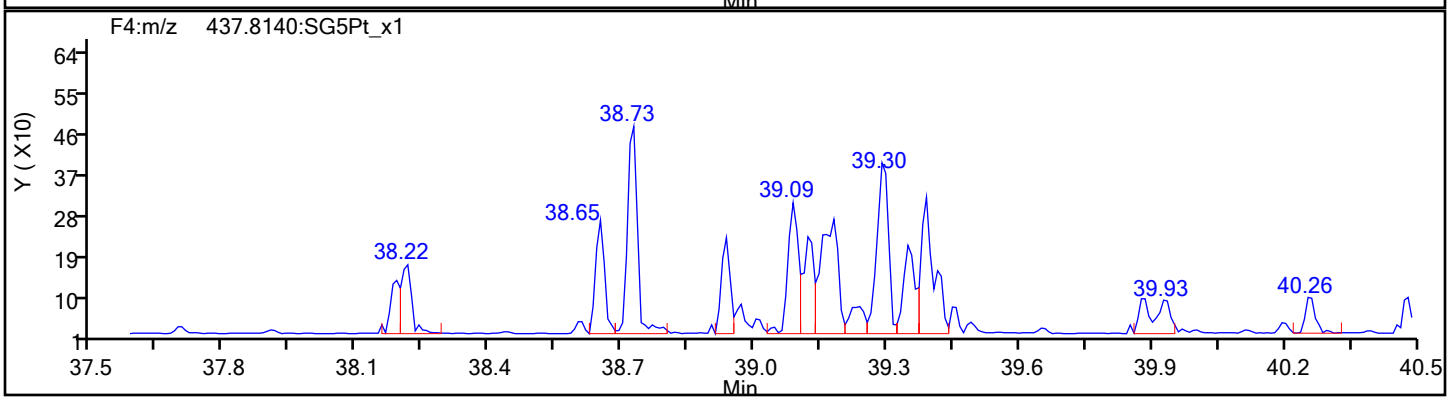
HpCDD





HpCDD Standards





Report Date: 23-Oct-2019 17:15:28 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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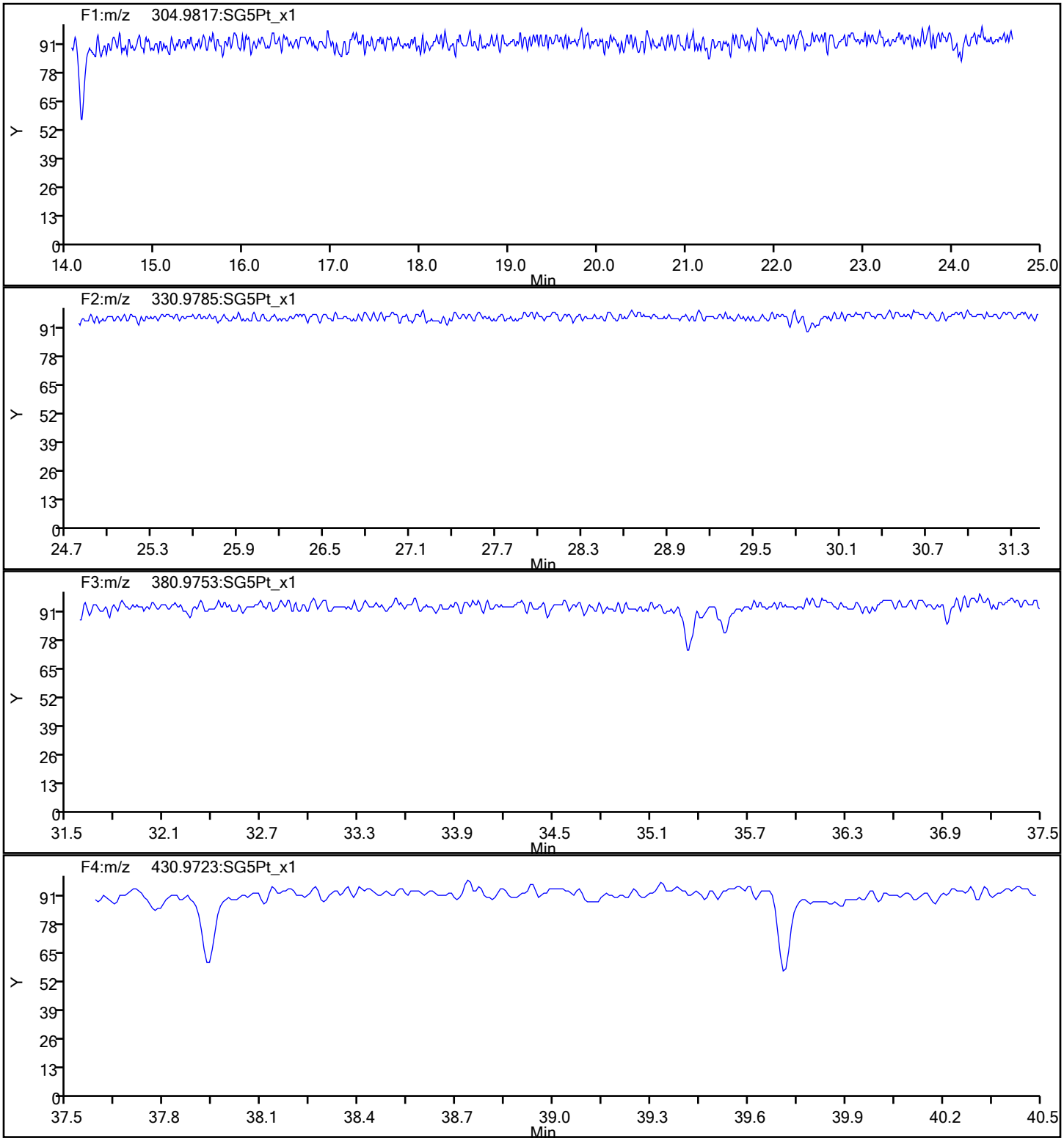

Report Date: 23-Oct-2019 17:15:28 Chrom Revision: 2.3 17-Sep-2019 16:19:08

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_2.d		
Injection Date:	18-Oct-2019 19:15:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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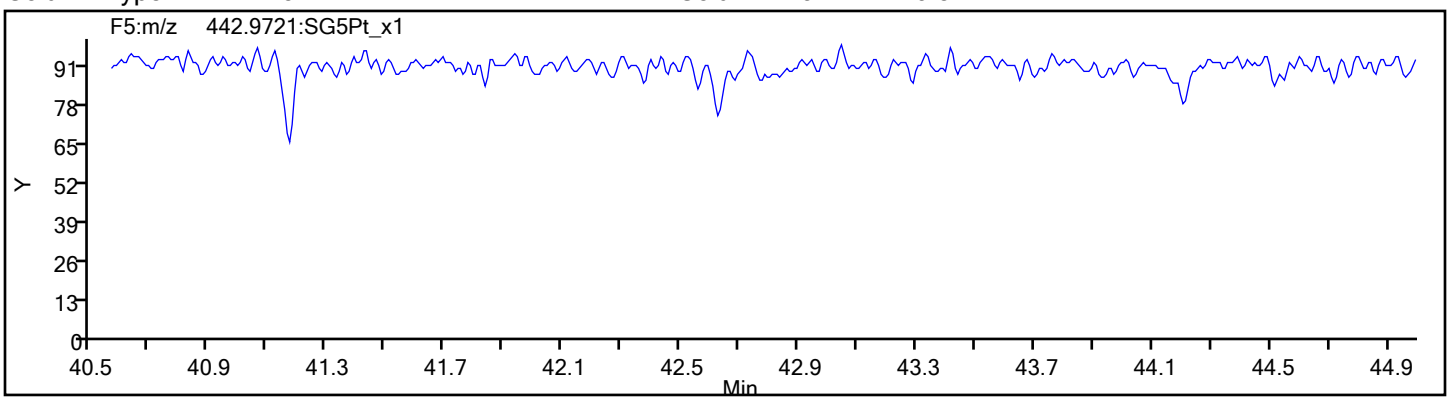


Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 13-Dec-2019 12:37:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WDM HRDXNCP_00040
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Dec-2019 01:10:32 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:45:37

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	18.673	4150337	0.81	1.6096					0.00	
2,3,7,8-TCDF	18.716	8993983	0.79	1.2332	70.3	70.3	0.2796	0.2796		
A Non-2,3,7,8-sub-TCDF	18.262	97086	0.78	1.2332	0.7587	0.7587	0.2796	0.7587		
S Total TCDF					71.0	71.0	0.2796	0.2796		
D 13C-2,3,7,8-TCDD	19.909	2648048	0.83	0.9984					0.00	
2,3,7,8-TCDD	19.944	3038883	0.79	1.1988	38.3	38.3	0.2285	0.2285		
A Non-2,3,7,8-sub-TCDD	19.054						0.2285	0.2285		
S Total TCDD					38.3	38.3	0.2285	0.2285		
A F1 PeCDFs	23.271						0.0	0.0		
A Non-2,3,7,8-sub-PeCDF	26.737	53680	1.55	0.0000						RQ
S Total PeCDF										RQ
A Non-2,3,7,8-sub-PeCDD	26.873						0.0	0.0		
S Total PeCDD										
A Non-2,3,7,8-sub-HxCDF	33.765						0.0	0.0		
S Total HxCDF										
A Non-2,3,7,8-sub-HxCDD	34.302	27323	1.29	0.0000						
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	37.912	3805487	1.04	1.6176						
1,2,3,4,7,8,9-HpCDF	39.229	3405260	1.06	1.4672						
A Non-2,3,7,8-sub-HpCDF	38.571						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	38.919	2646521	1.03	1.1237						
A Non-2,3,7,8-sub-HpCDD	38.803						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	14.765	5107119	0.79							
1,3,6,8-TCDD	16.253	3025786	0.79							
2,3,4,7-TCDF	18.716	8993983	0.79							
1,2,3,7-TCDD	19.745	2564171	0.78							
1,2,3,9-TCDF	20.108	3458768	1.00							R
1,2,3,9-TCDD	20.203	1406385	0.77							
1,2,8,9-TCDF	21.759	4034735	0.80							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,8,9-TCDD	21.855	1237834								
1,3,4,6,8-PeCDF	22.373	3528095	1.55							
1,2,4,7,9-PeCDD	24.730	2622382	1.54							
1,2,3,8,9-PeCDD	29.016	2516799	1.56							
1,2,3,8,9-PeCDF	29.167	3288548	1.59							
1,2,3,4,6,8-HxCDF	31.484	3758647	1.24							
1,2,4,6,7,9-HxCDD	32.926	2744168	1.25							
1,2,3,4,6,7-HxCDD	35.677	2873747	1.24							
1,2,3,4,8,9-HxCDF	36.046	3774242	1.25							
1,2,3,4,6,7,9-HpCDD	38.239	2848901	1.05							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Report Date: 14-Dec-2019 01:10:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 13-Dec-2019 12:37:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: WDM HRDXNCP_00040
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 14-Dec-2019 01:10:32 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0304

First Level Reviewer: shardaa Date: 13-Dec-2019 14:45:37

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	18.673	18.673	0	1.000	1852649	299193	1243	3107	241		
317.9389	18.664	18.673	-1	1.000	2297688	375282	625	1562	600	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.716	18.716	0	1.002	3983332	573085	982	2455	584		
305.8987	18.708	18.716	-1	1.002	5010651	719458	1344	3360	535	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	22.373	18.262	246	1.198	42579	5157	982	2455	5		
305.8987	22.391	18.262	247	1.199	54507	6510	1344	3360	5	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.909	19.909	0	1.000	1204643	179960	585	1462	308		
333.9338	19.918	19.909	1	1.000	1443405	227749	157	392	1451	0.83(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.944	19.944	0	1.002	1341840	195014	574	1435	340		
321.8936	19.944	19.944	0	1.002	1697043	249947	543	1357	460	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	19.054						574	1435			
321.8936	19.054						543	1357			
A F1 PeCDFs											
339.8597	23.271						39	97			
341.8567	23.271						97	242			
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	25.334	26.737	-84	1.000	10646	1437	346	865	4		
341.8567	25.342	26.737	-84	1.000	6472	1036	248	620	4	1.64(1.32-1.78)	
339.8597	25.871	26.737	-52	1.000	13622	2126	346	865	6		
341.8567	25.854	26.737	-53	1.000	10158	1446	248	620	6	1.34(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
339.8597	26.424	26.737	-19	1.000	7770	1458	346	865	4		
341.8567	26.432	26.737	-18	1.000	6568	1031	248	620	4	1.18(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.873						446	1115			
357.8516	26.873						283	707			
A Non-2,3,7,8-sub-HxCDF											
373.8208	33.765						593	1482			
375.8178	33.765						448	1120			
A Non-2,3,7,8-sub-HxCDD											
389.8158	34.293	34.302	0	1.000	15401	2774	384	960	7		
391.8127	34.302	34.302	0	1.000	11922	1877	352	880	5	1.29(1.05-1.43)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.912	37.912	0	1.000	1939708	322267	1383	3457	233		
409.7788	37.912	37.912	0	1.000	1865779	303865	1253	3132	243	1.04(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.229	39.229	0	1.000	1750317	309464	1383	3457	224		
409.7788	39.229	39.229	0	1.000	1654943	291086	1253	3132	232	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.571						1383	3457			
409.7788	38.571						1253	3132			
1,2,3,4,6,7,8-HpCDD											
423.7767	38.919	38.919	0	1.000	1344522	205615	1005	2512	205		
425.7737	38.919	38.919	0	1.000	1301999	203733	894	2235	228	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.803						1005	2512			
425.7737	38.803						894	2235			
1,3,6,8-TCDF											
303.9016	14.765	14.765	0		2256937	472884	982	2455	482		
305.8987	14.765	14.765	0		2850182	594487	1344	3360	442	0.79(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	16.253	16.253	0		1333331	255782	574	1435	446		
321.8936	16.253	16.253	0		1692455	319628	543	1357	589	0.79(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	18.716	18.716	0		3983332	573085	982	2455	584		
305.8987	18.708	18.716	-1		5010651	719458	1344	3360	535	0.79(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	19.745	19.745	0		1125873	171836	574	1435	299		
321.8936	19.754	19.745	1		1438298	221251	543	1357	407	0.78(0.65-0.89)	
1,2,3,9-TCDF											R
303.9016	20.108	20.108	0		1729384	252318	982	2455	257		
303.9016	20.108	20.108	0		1729384	252318	982	2455	257	1.00(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	20.203	20.203	0		1406385	196686	574	1435	343		
321.8936	20.212	20.203	1		1819645	248494	543	1357	458	0.77(0.65-0.89)	
1,2,8,9-TCDF											
303.9016	21.759	21.759	0		1790645	238832	982	2455	243		
305.8987	21.768	21.759	1		2244090	300851	1344	3360	224	0.80(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,8,9-TCDD											
319.8965	21.855	21.855	0		1237834	154260	574	1435	269		
1,3,4,6,8-PeCDF											
339.8597	22.373	22.373	0		2145072	267825	39	97	6867		
341.8567	22.373	22.373	0		1383023	169410	97	242	1746	1.55(1.32-1.78)	
1,2,4,7,9-PeCDD											
355.8546	24.730	24.730	0		1591582	258092	446	1115	579		
357.8516	24.739	24.730	1		1030800	162635	283	707	575	1.54(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	29.016	29.016	0		1534339	206845	446	1115	464		
357.8516	29.008	29.016	-1		982460	135509	283	707	479	1.56(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	29.167	29.167	0		2019438	257790	346	865	745		
341.8567	29.167	29.167	0		1269110	166109	248	620	670	1.59(1.32-1.78)	
1,2,3,4,6,8-HxCDF											
373.8208	31.484	31.484	0		2082983	222579	593	1482	375		
375.8178	31.492	31.484	1		1675664	178674	448	1120	399	1.24(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8158	32.926	32.926	0		1525228	200435	384	960	522		
391.8127	32.926	32.926	0		1218940	160931	352	880	457	1.25(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8158	35.677	35.677	0		1589079	294364	384	960	767		
391.8127	35.669	35.677	-1		1284668	240864	352	880	684	1.24(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	36.046	36.046	0		2099920	419990	593	1482	708		
375.8178	36.046	36.046	0		1674322	330026	448	1120	737	1.25(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7767	38.239	38.239	0		1456824	233747	1005	2512	233		
425.7737	38.239	38.239	0		1392077	223284	894	2235	250	1.05(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

HRDXNCP_00040 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 12:37:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 1

Non-2,3,7,8-sub-TCDF, RT: 18.262

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	40.000	4150337	674475

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		40.000	4150337	674475

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
22.373	42579	5157	54507	6510	0.7587	0.78	
Signal Totals:							
	42579	5157	54507	6510			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	97086	11667				0.78	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7587 = (97086 * 40.000) / (4150337 * 1.233)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 12:37:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 26.737

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169				
2,3,4,7,8-PeCDF	1.186				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
25.334	10646	1437	6472	1036		1.64	
25.871	13622	2126	10158	1446		1.34	
26.424	7770	1458	6568	1031		1.18	R
Signal Totals:							
	32038	5021	23198	3513			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	55236	8534				1.38	RQ
	53680	8443					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (55236 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (53680 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d
Lims ID: WDM
Client ID:
Inject. Date: 13-Dec-2019 12:37:00 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 1

Non-2,3,7,8-sub-HxCDD, RT: 34.302

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.172				
1,2,3,6,7,8-HxCDD	1.126				
1,2,3,7,8,9-HxCDD	1.233				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	389.8158 Area	389.8158 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
34.293	15401	2774	11922	1877		1.29	
Signal Totals:							
	15401	2774	11922	1877			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	27323	4651				1.29	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

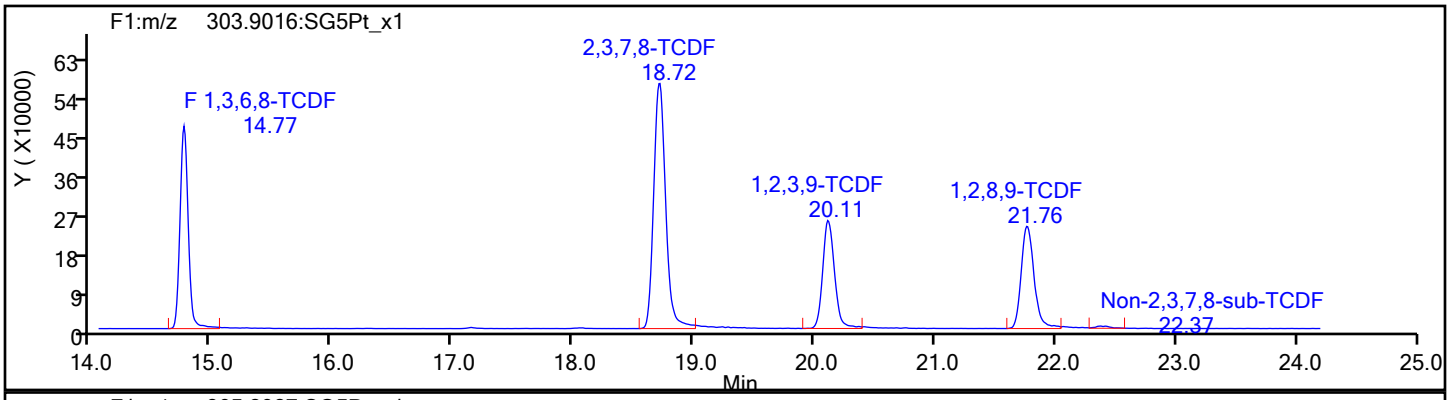
Amount: 0.0 = (27323 * 0.0) / (0 * 0.000)

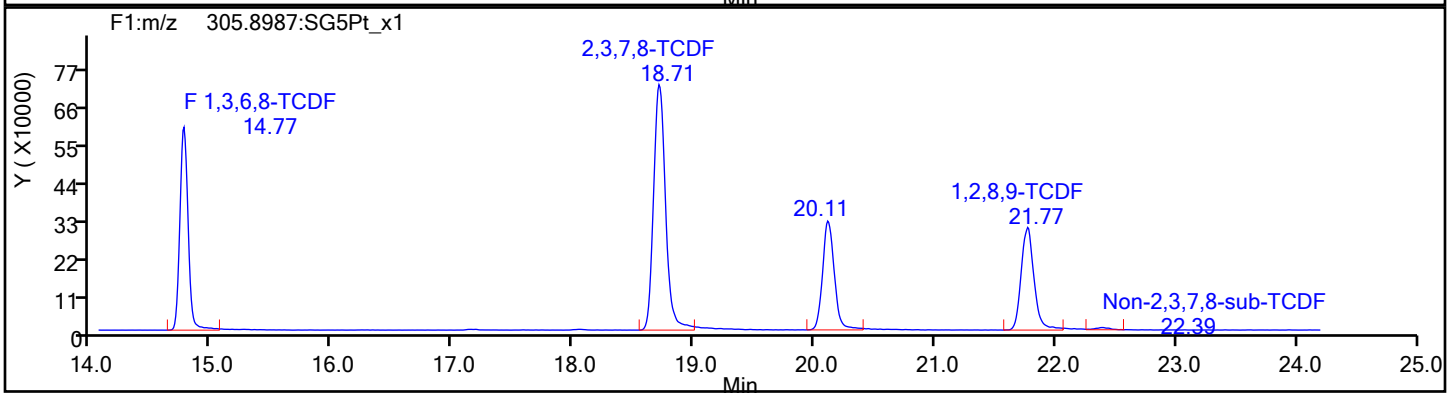
Report Date: 14-Dec-2019 01:10:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

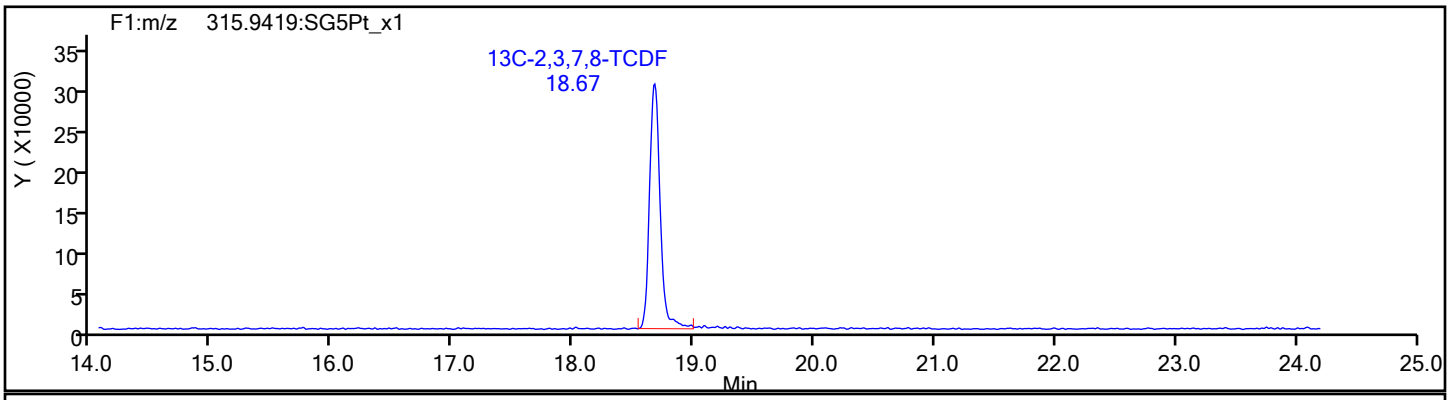
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d		
Injection Date:	13-Dec-2019 12:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

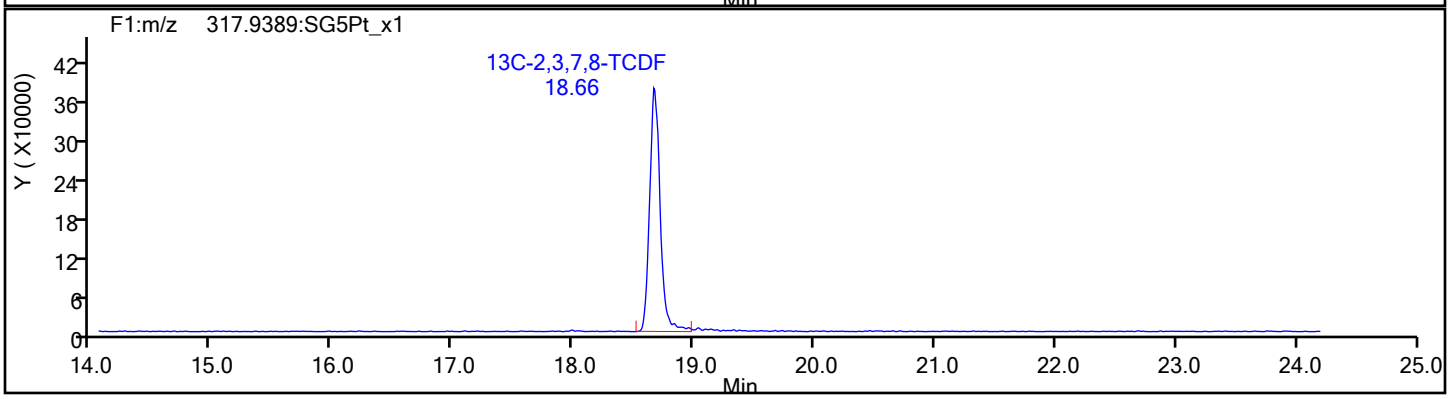
TCDF





TCDF Standards



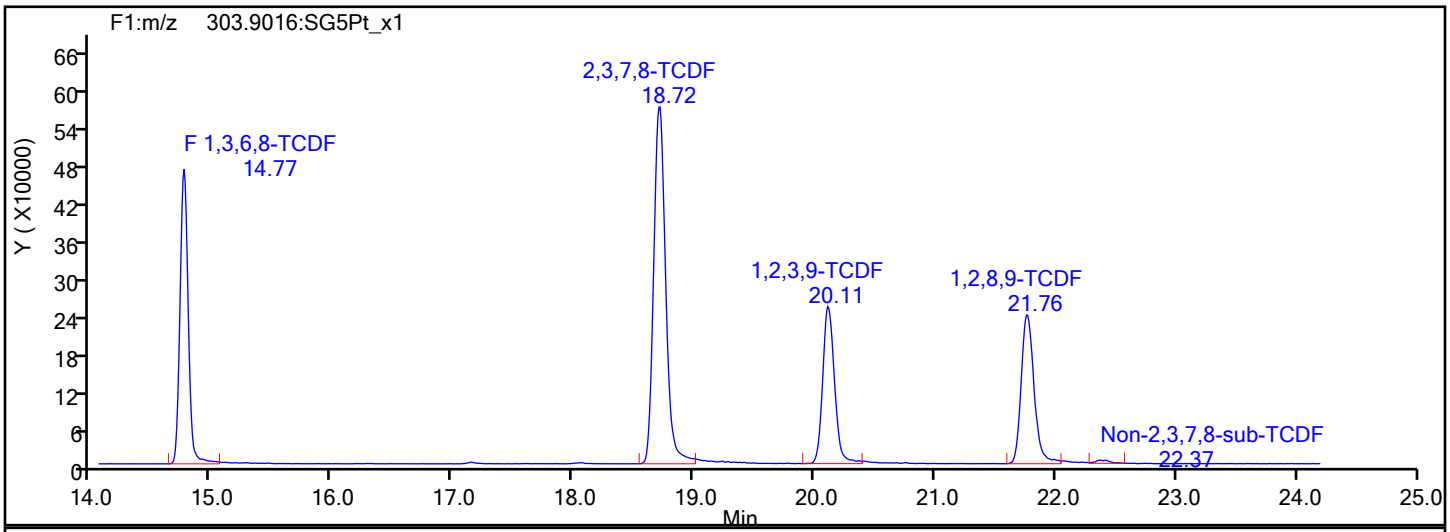


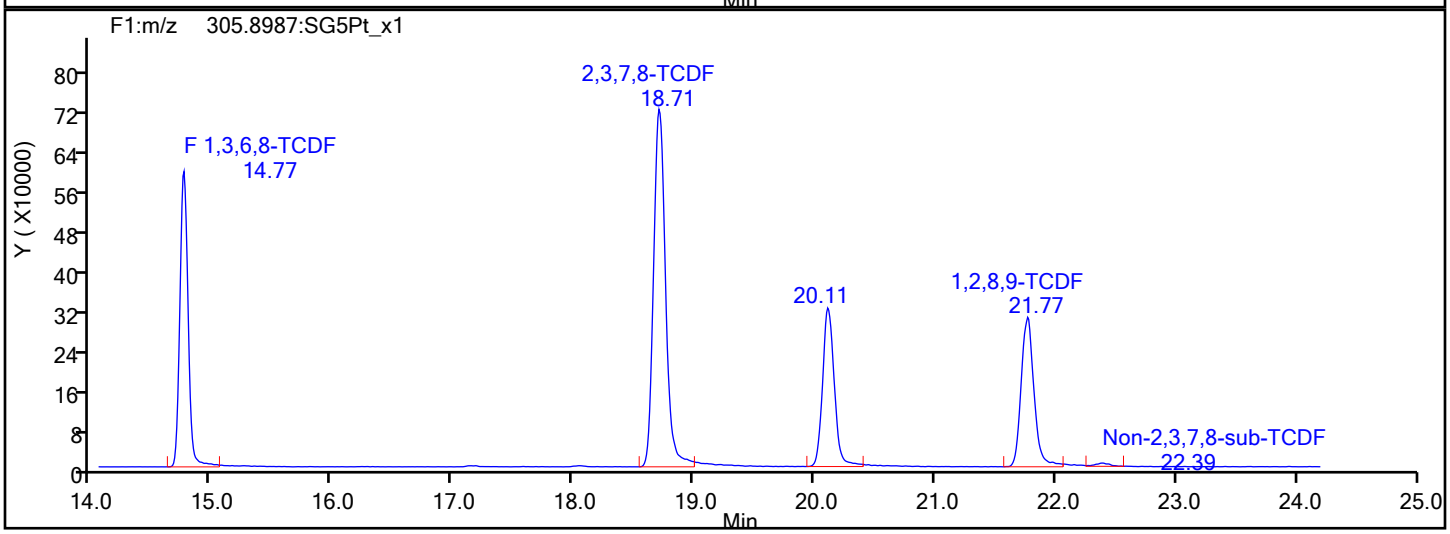
Report Date: 14-Dec-2019 01:10:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

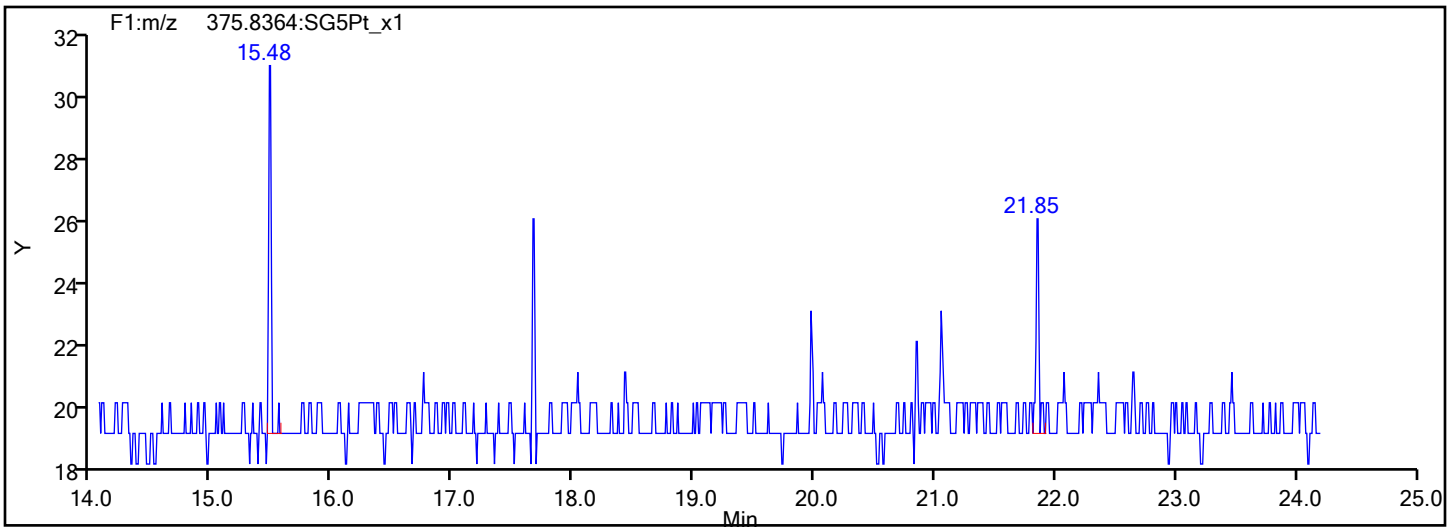
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d		
Injection Date:	13-Dec-2019 12:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



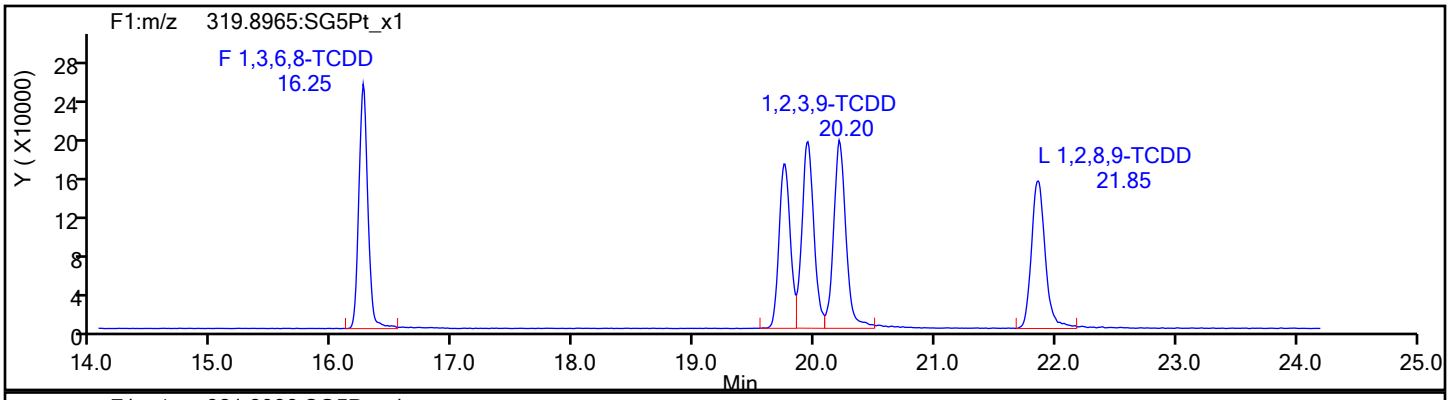
Report Date: 14-Dec-2019 01:10:32 Chrom Revision: 2.3 02-Dec-2019 08:23:04

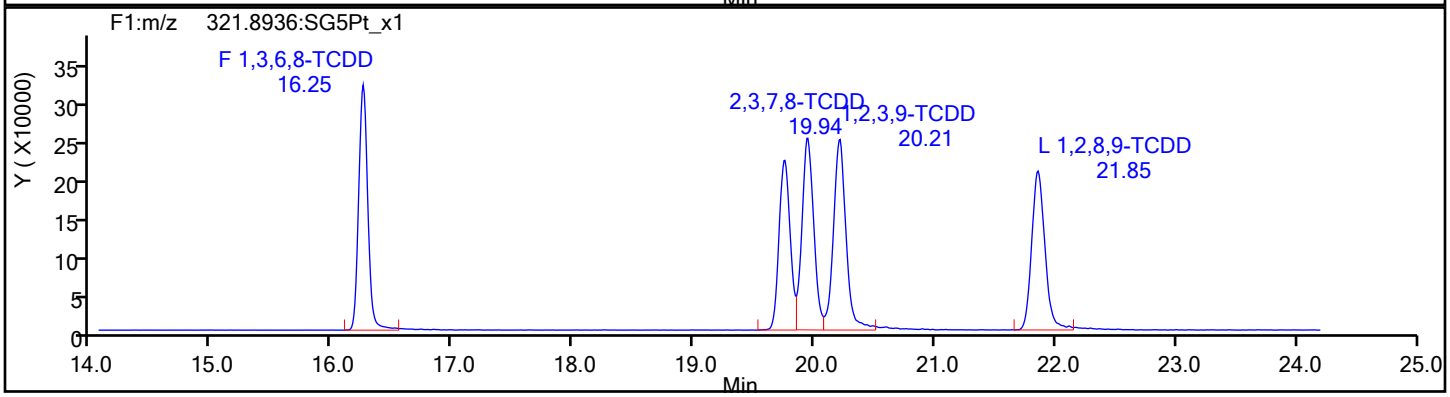
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d

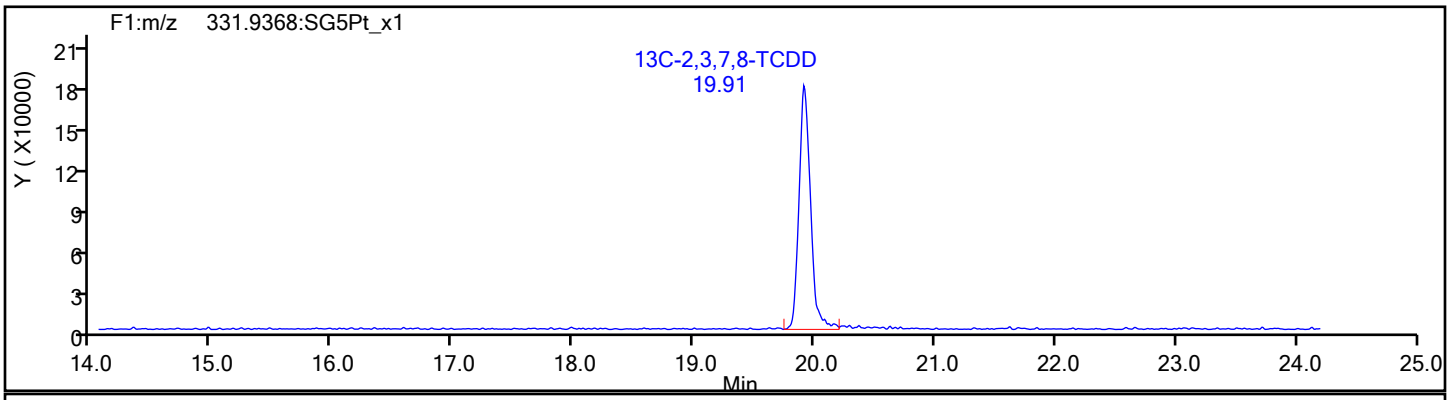
Injection Date:	13-Dec-2019 12:37:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

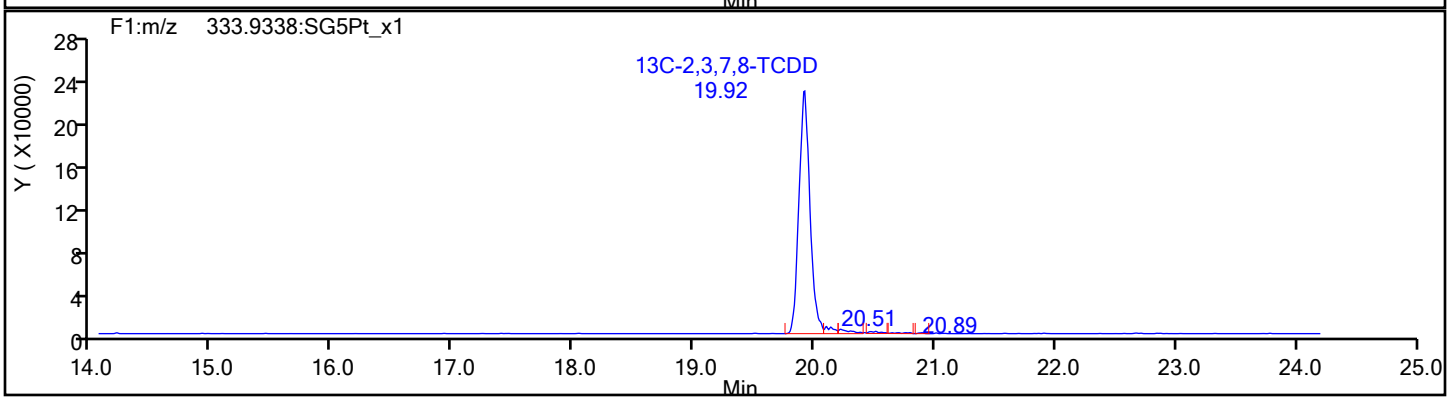
TCDD





TCDD Standards





Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_2.d		
Injection Date:	13-Dec-2019 12:37:00	Injection Vol:	1.0 ul
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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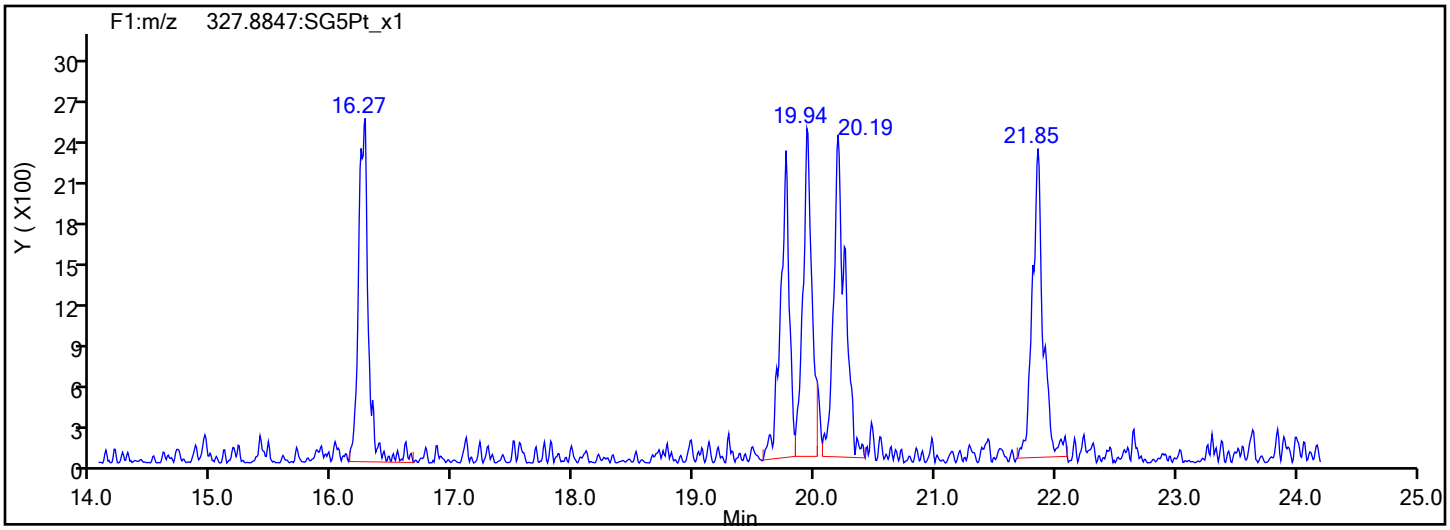
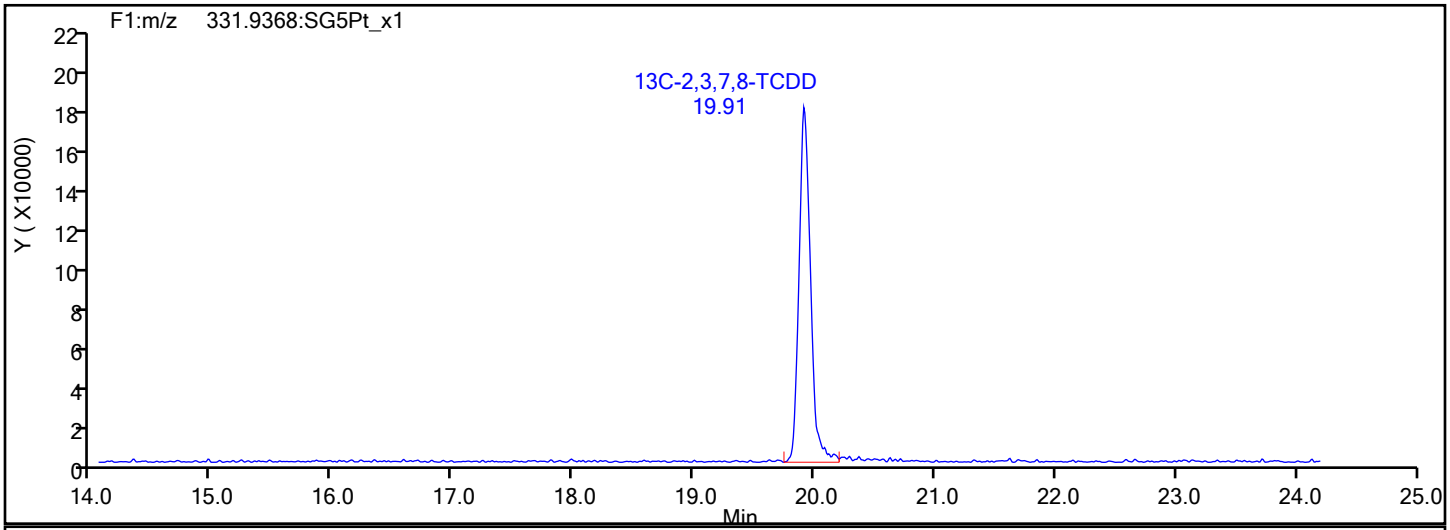
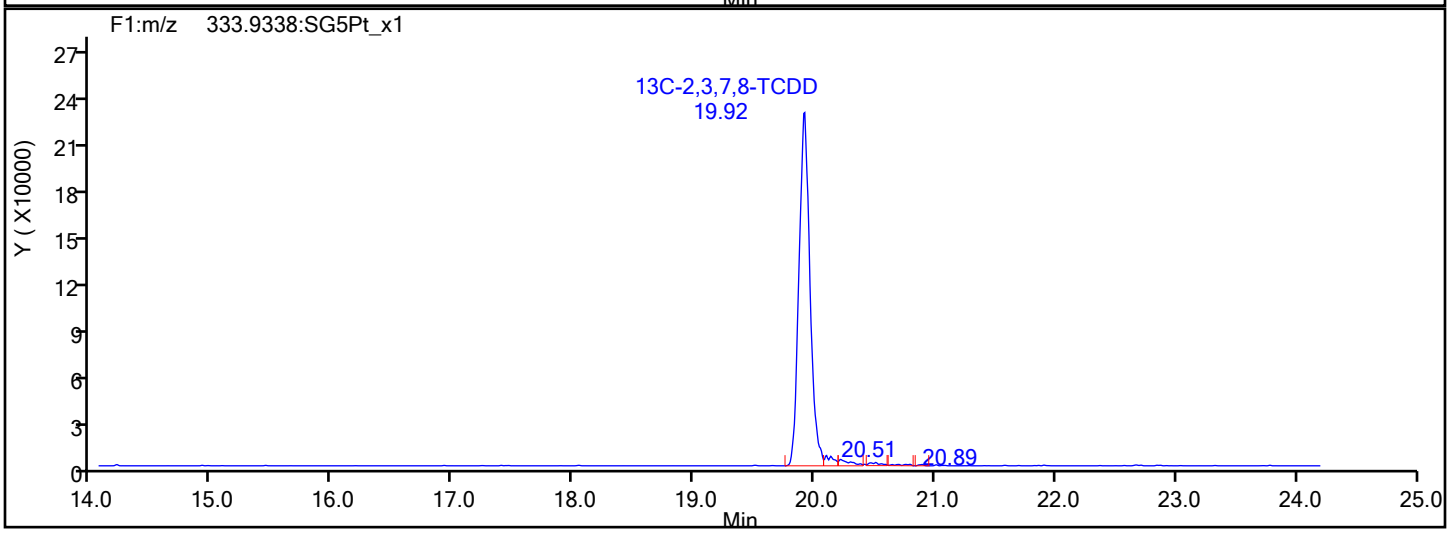
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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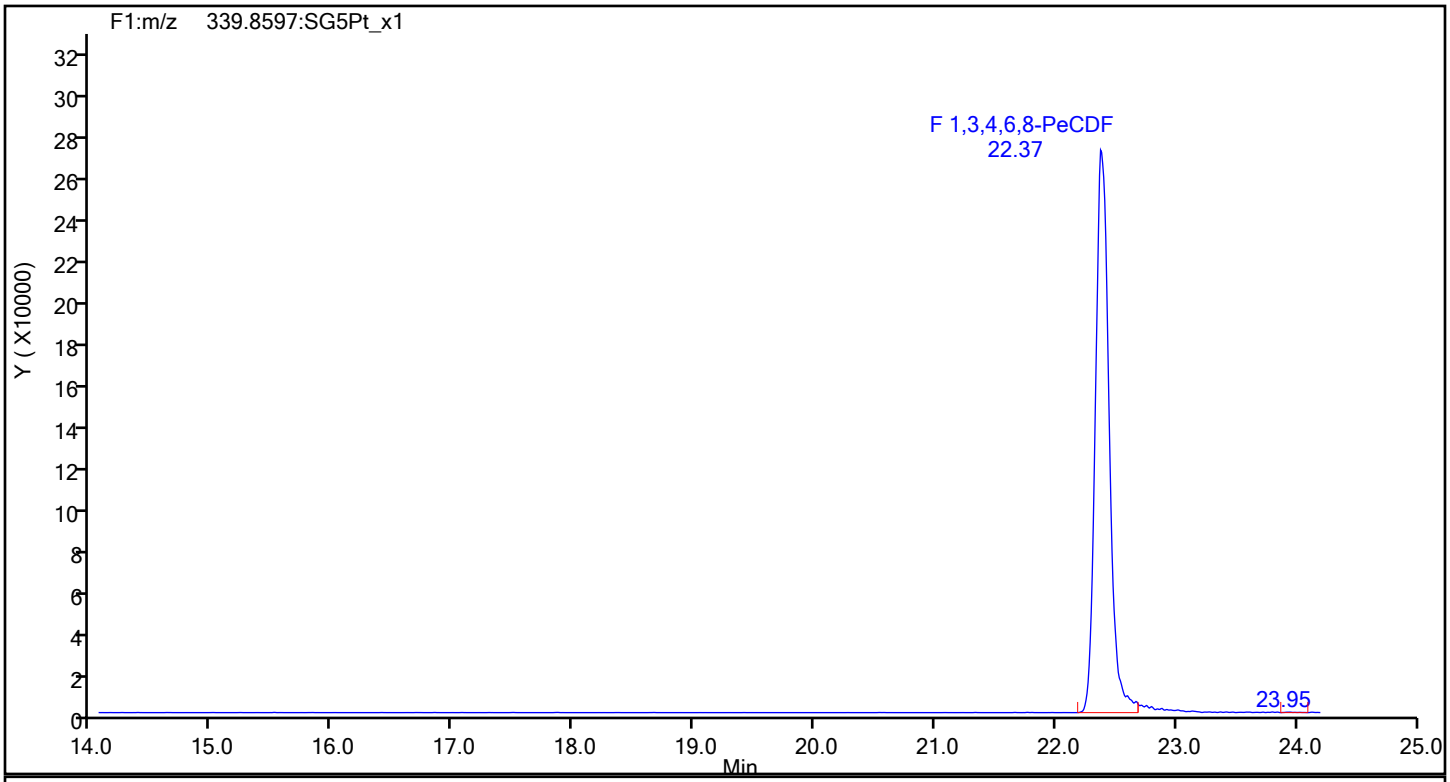
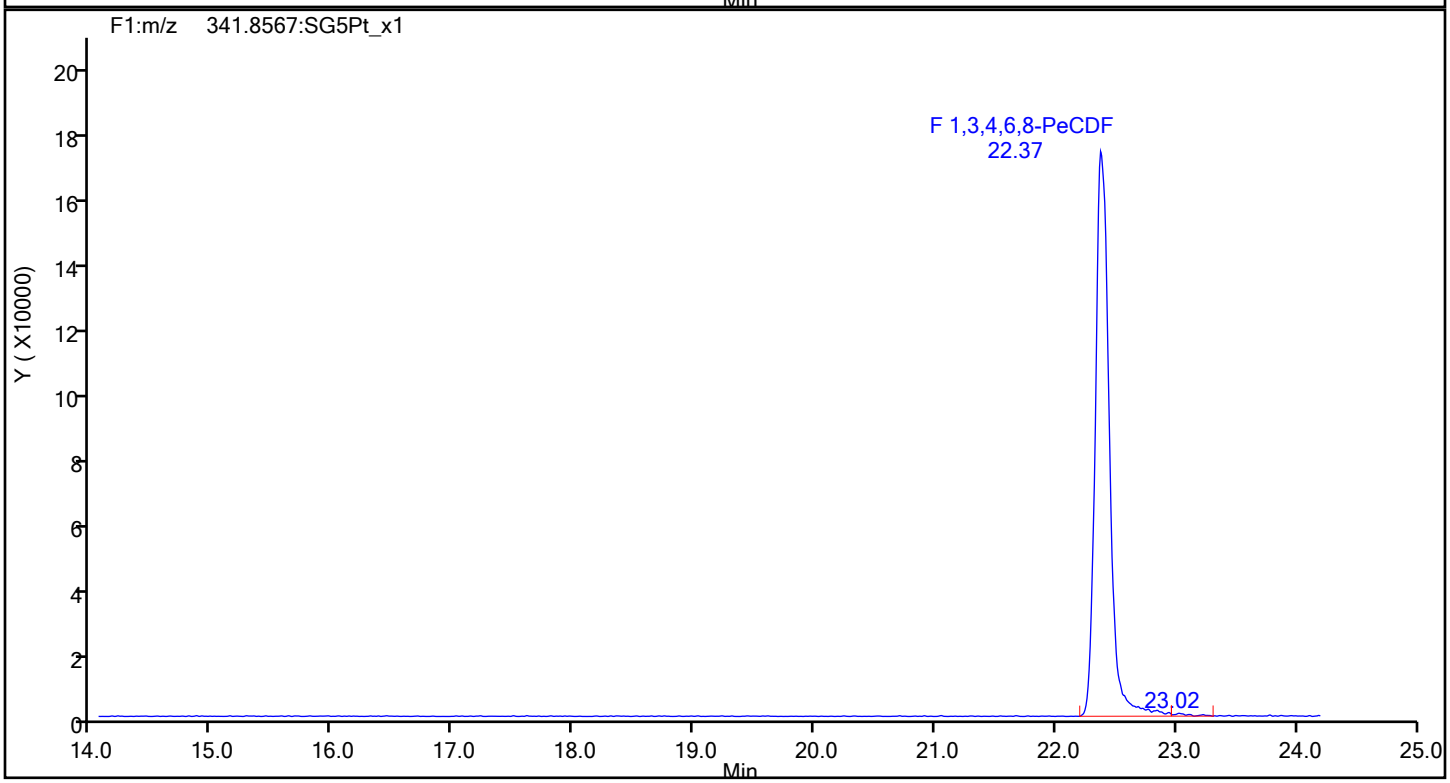
F1 PeCDFs





Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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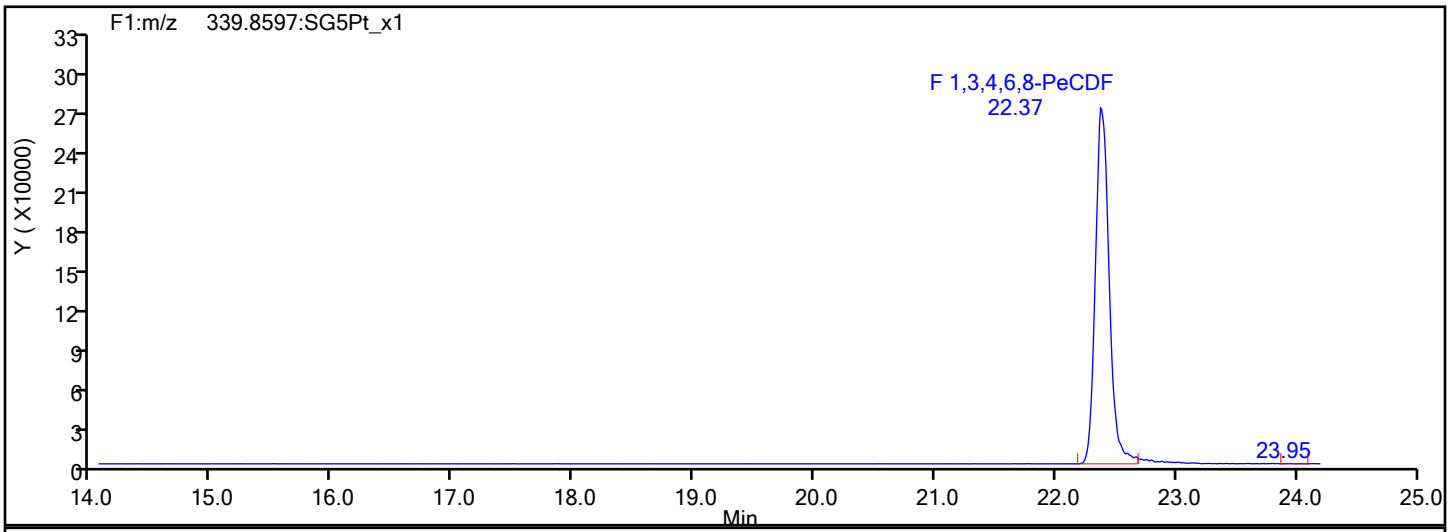

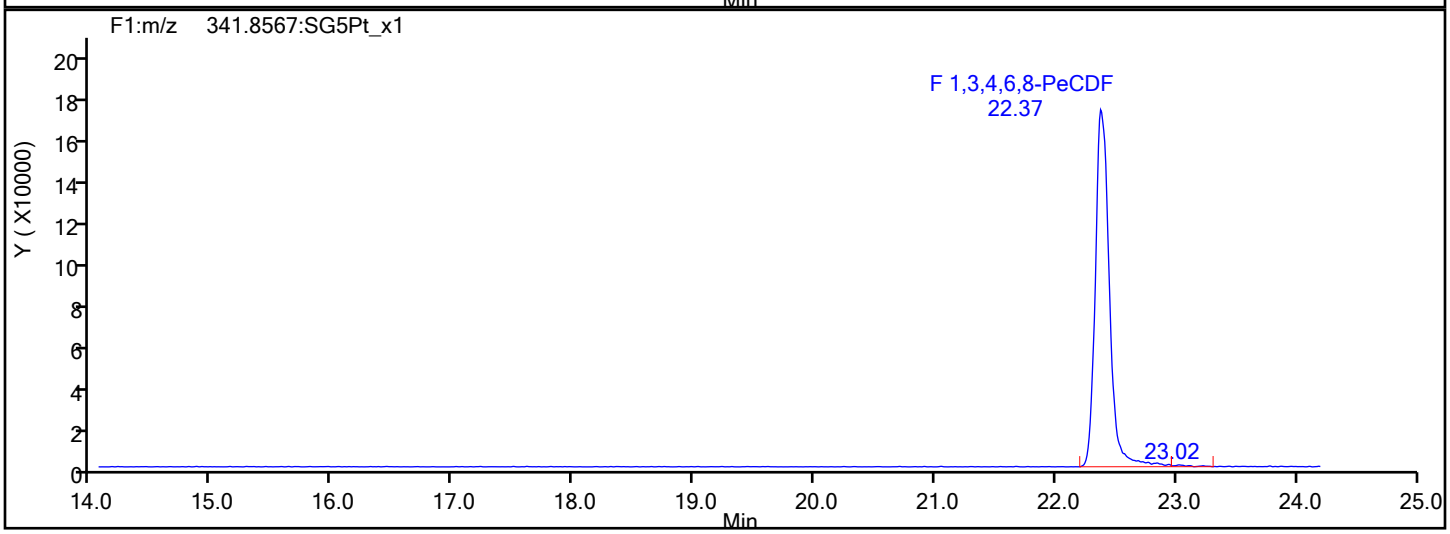

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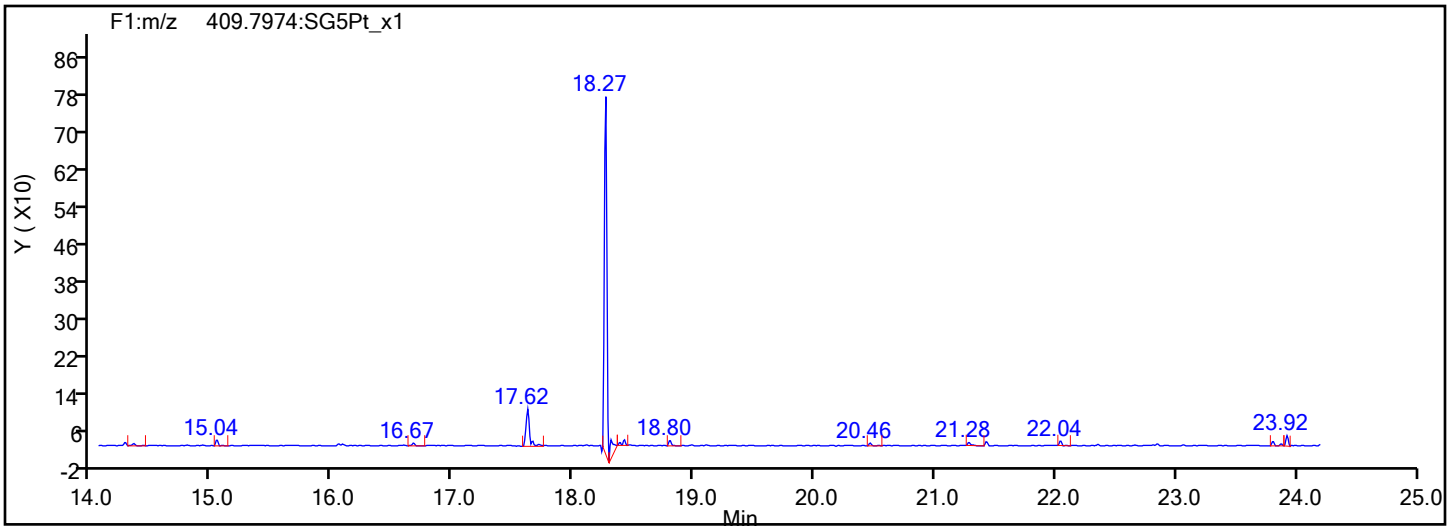

Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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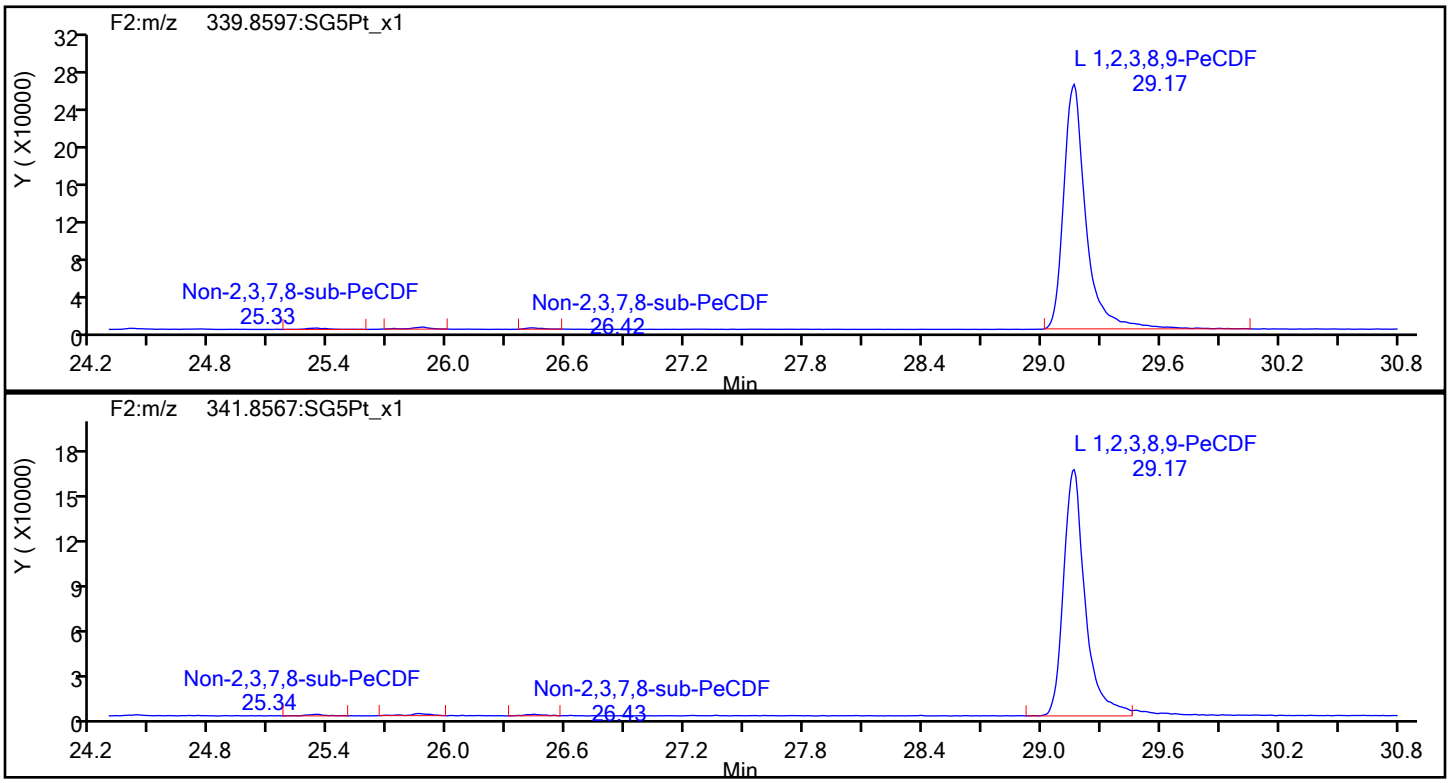
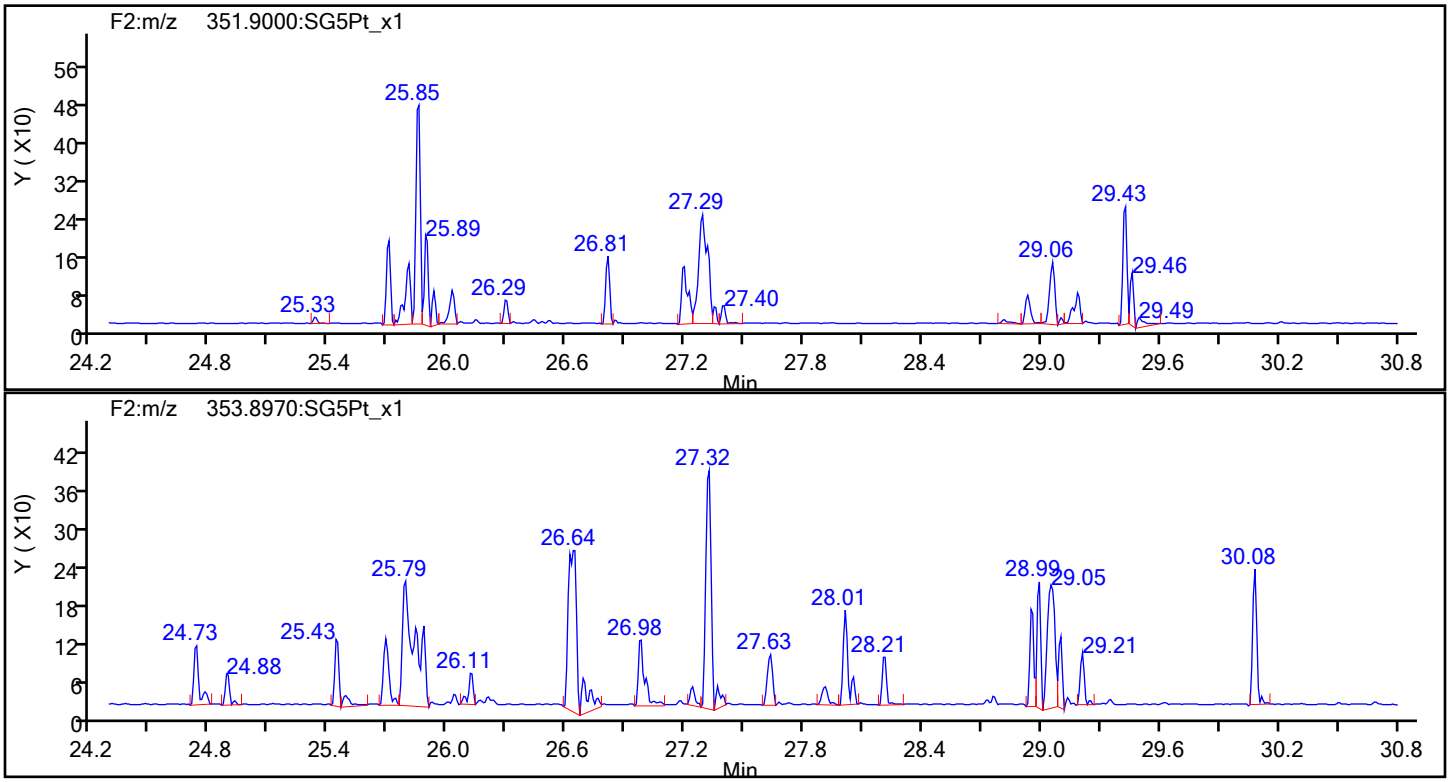


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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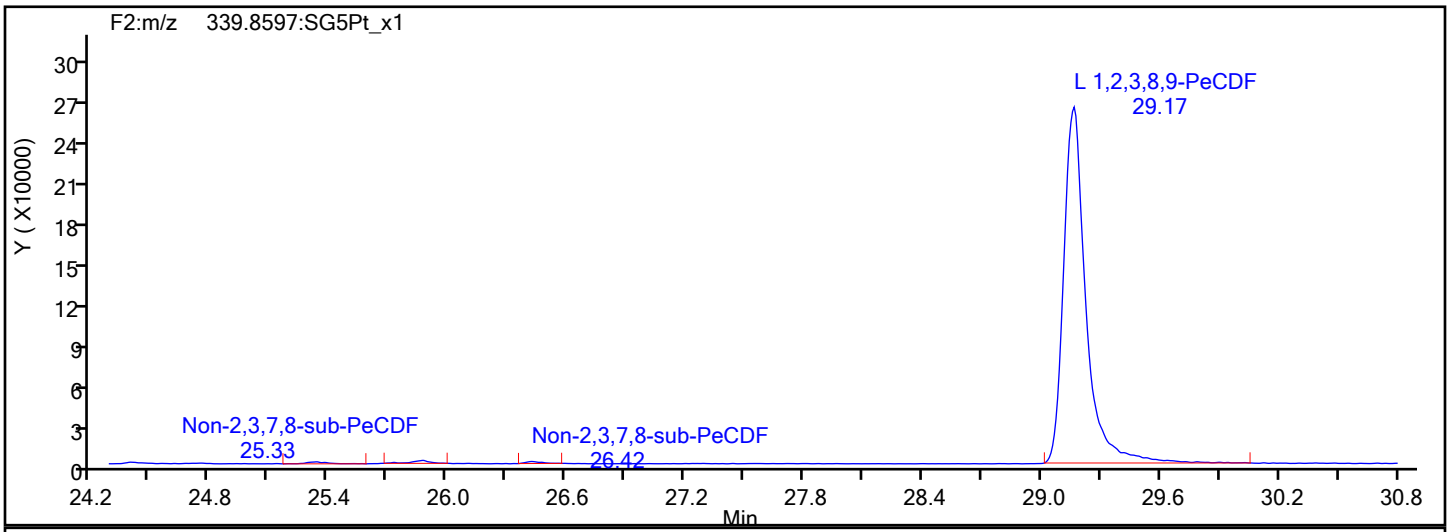
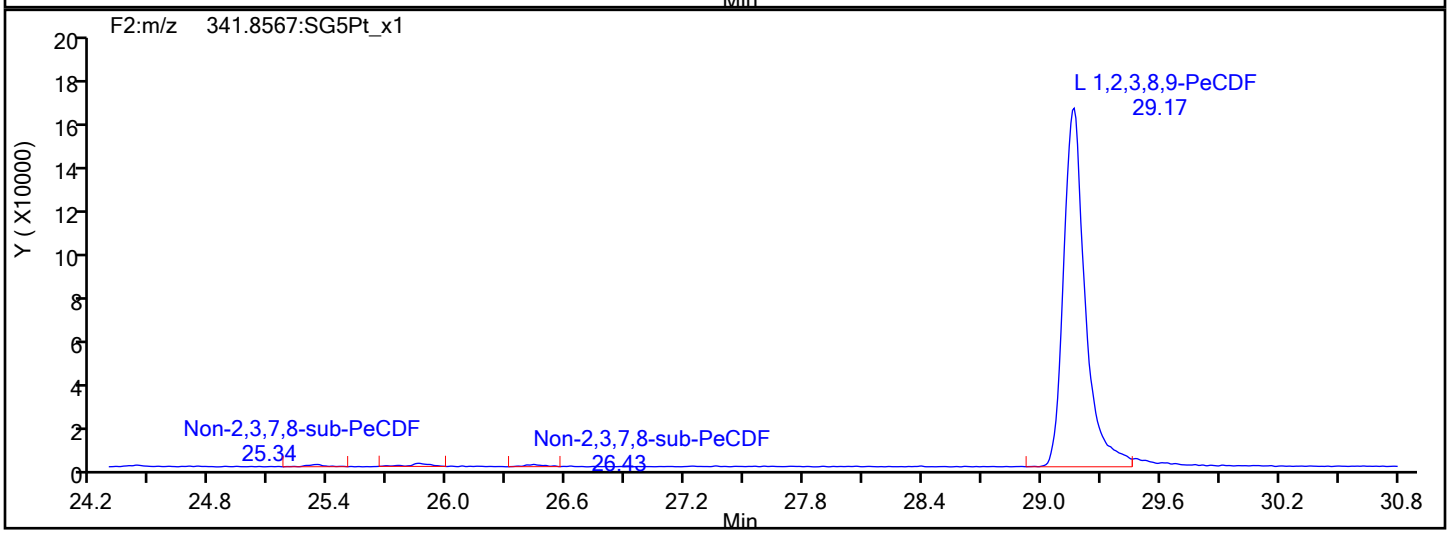
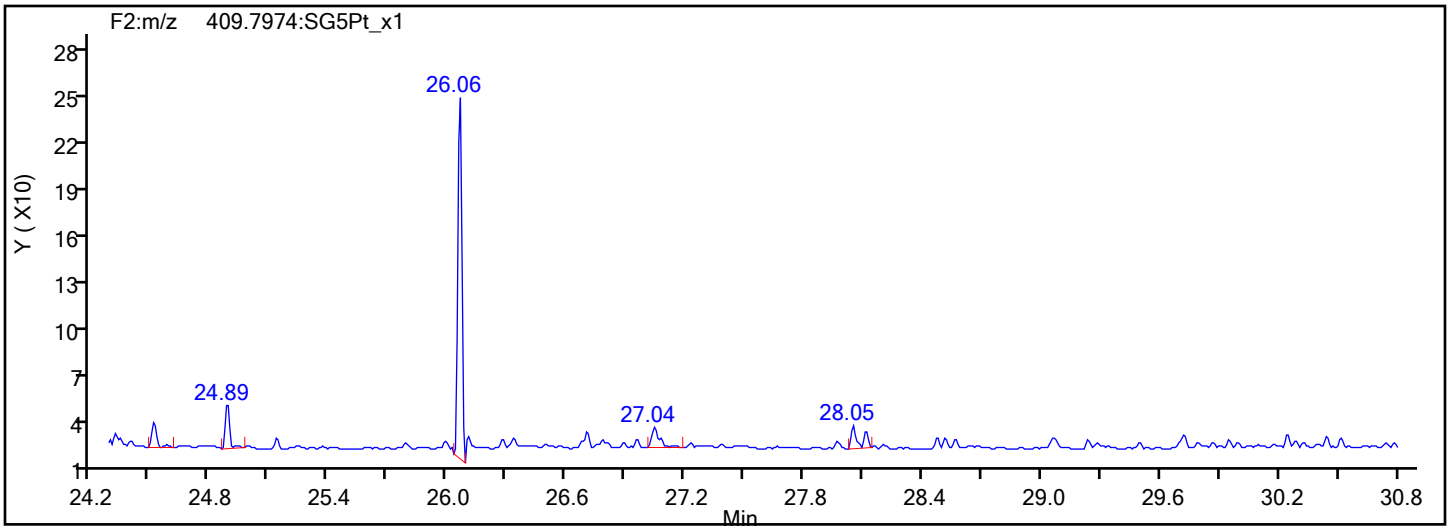




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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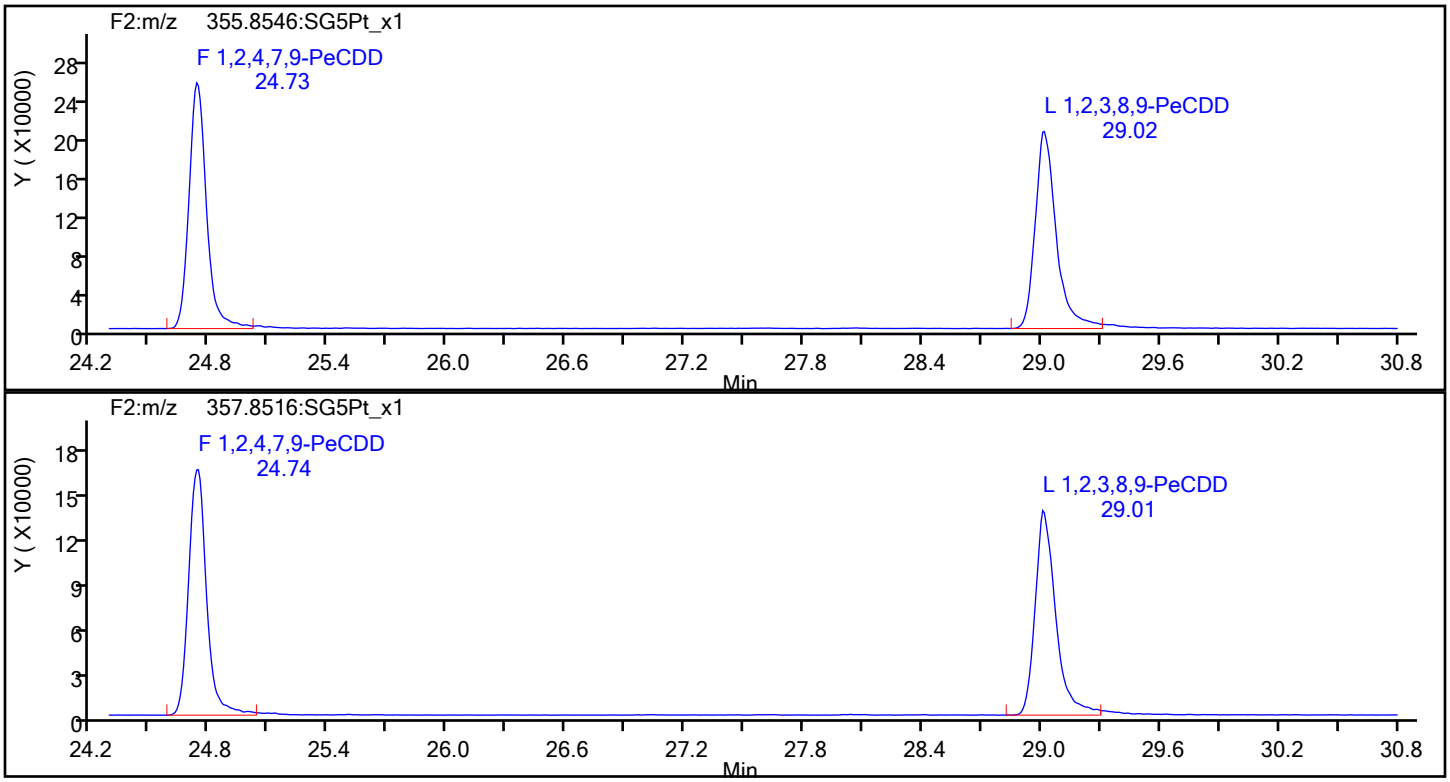
PeCDD



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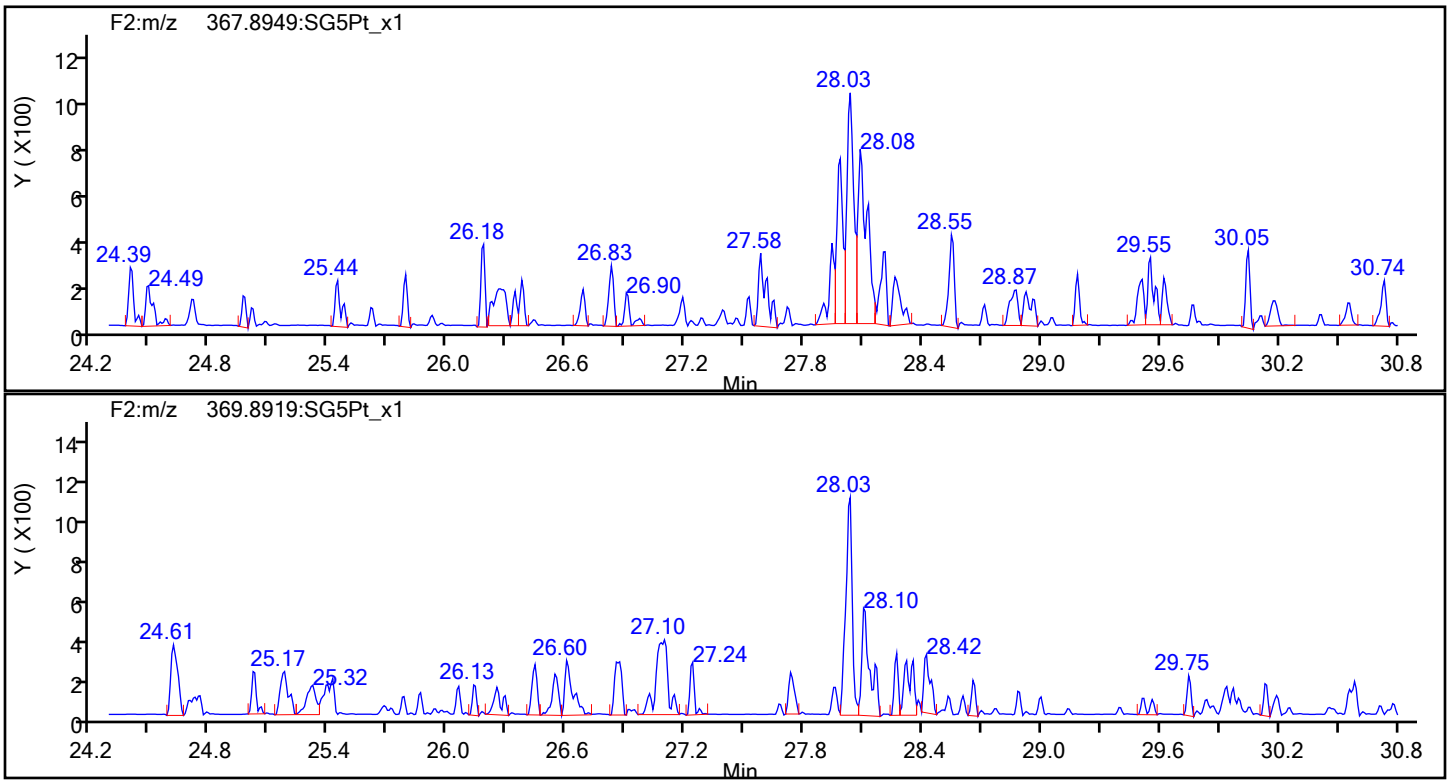

Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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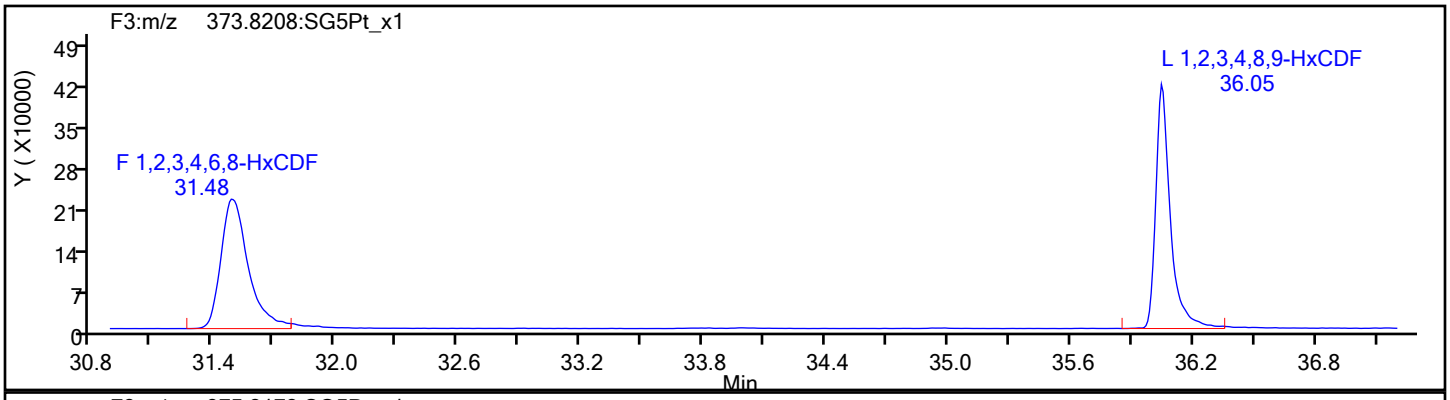
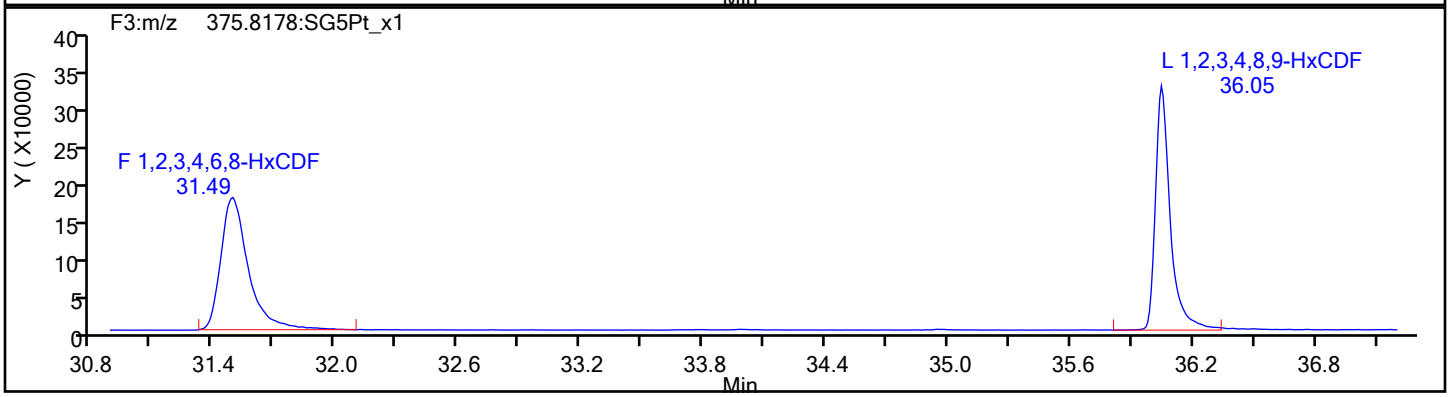
HxCDF





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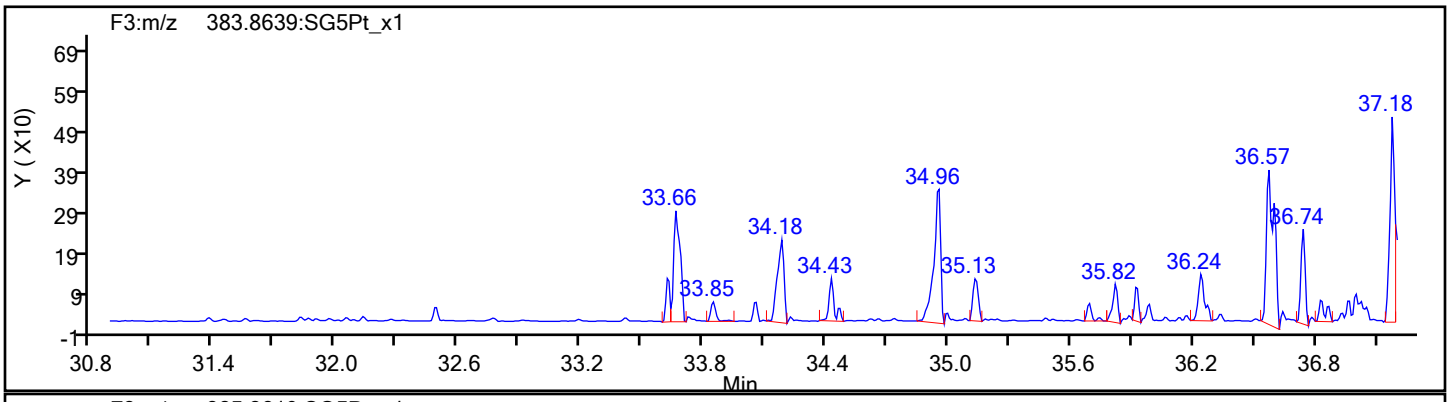

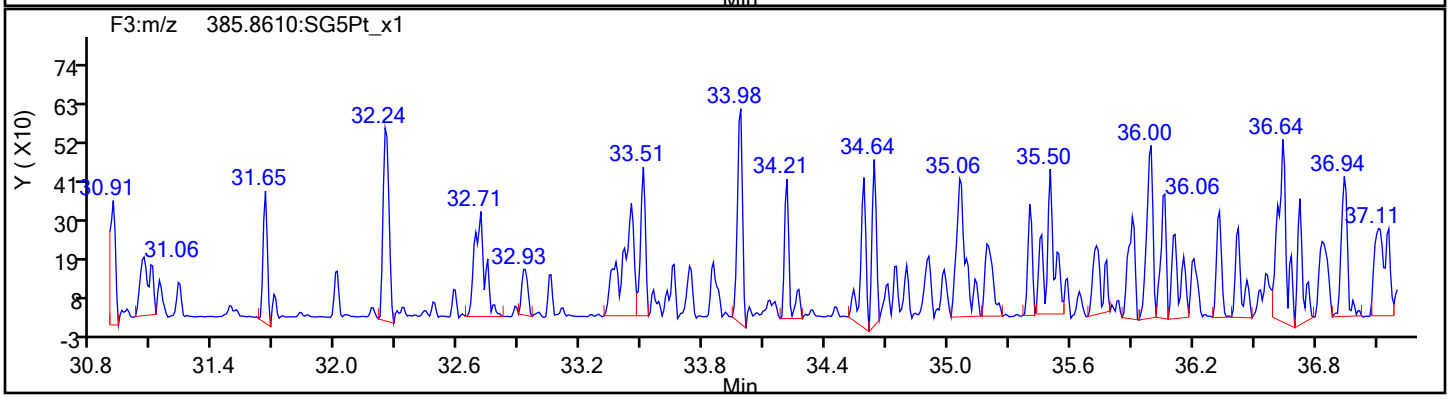

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Eurofins TestAmerica, Sacramento

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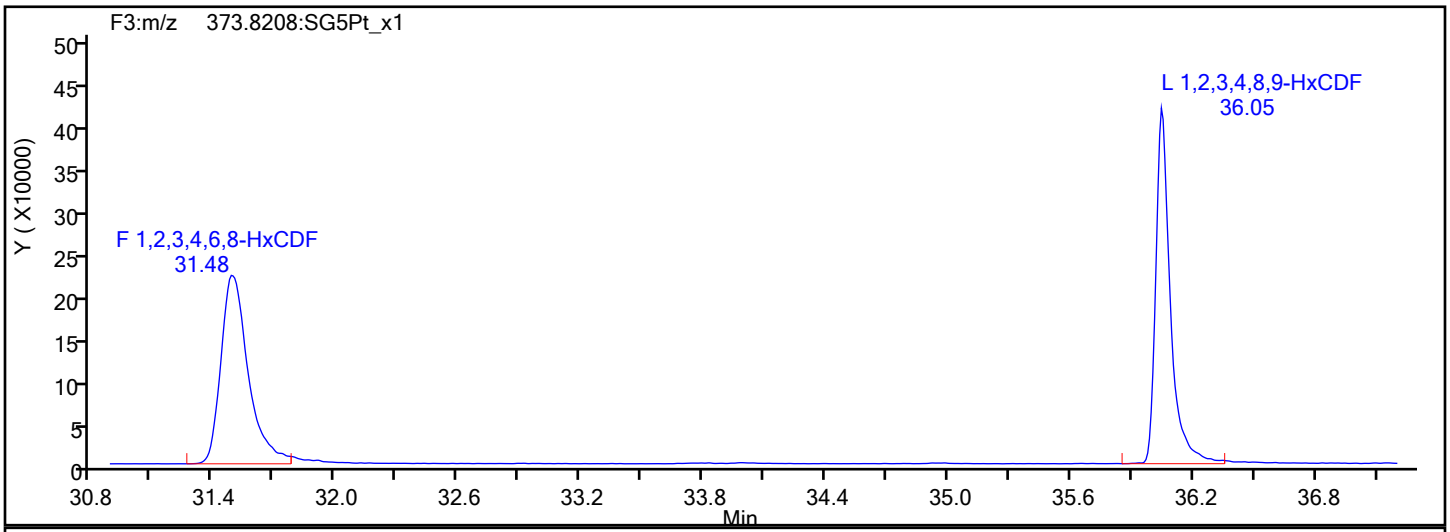
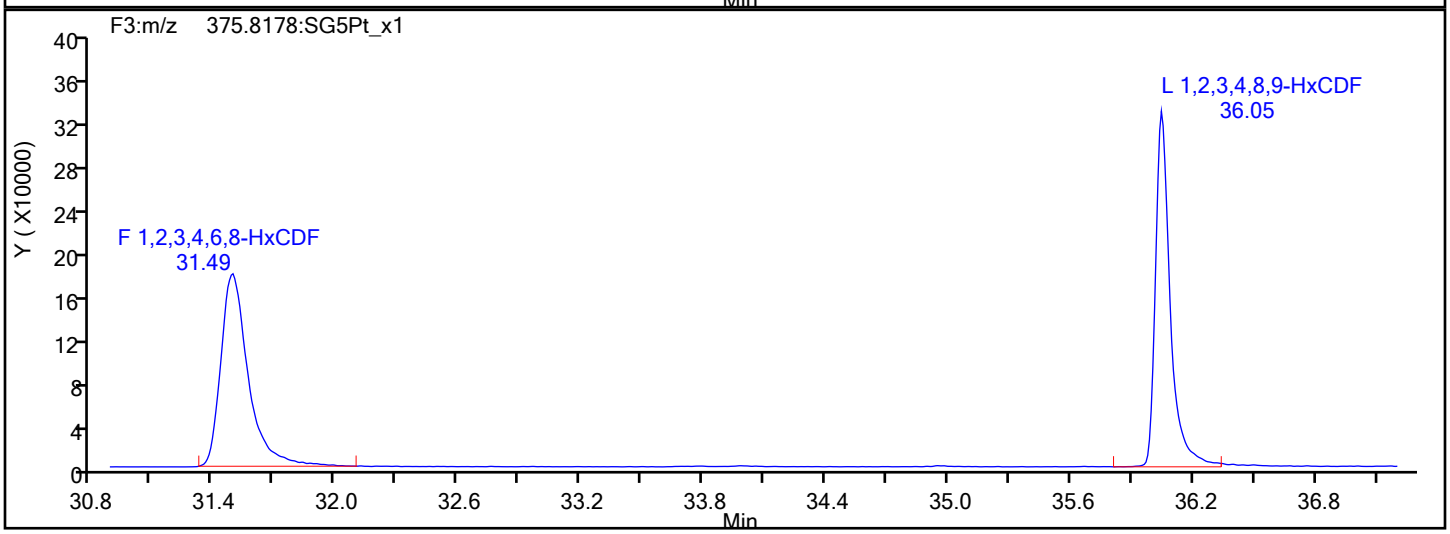
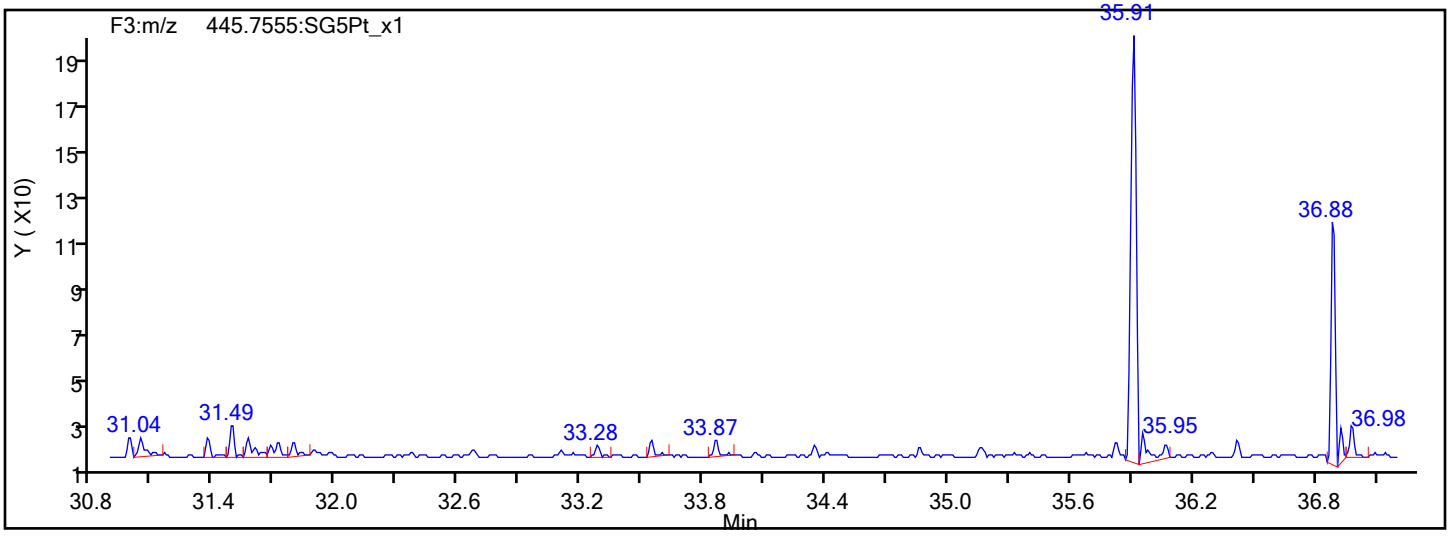




HxCDF Interference Mass



Report Date: 14-Dec-2019 01:10:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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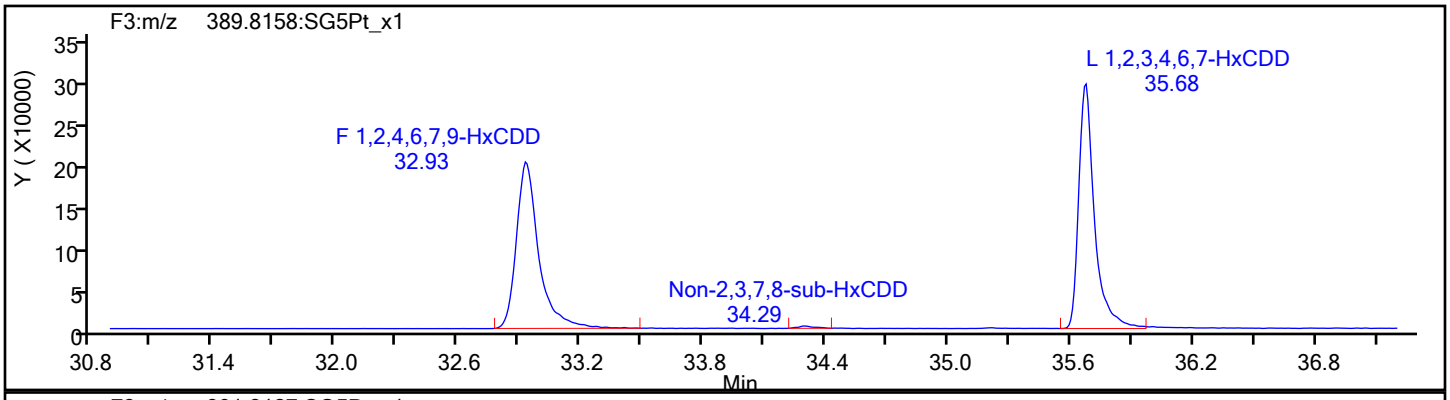
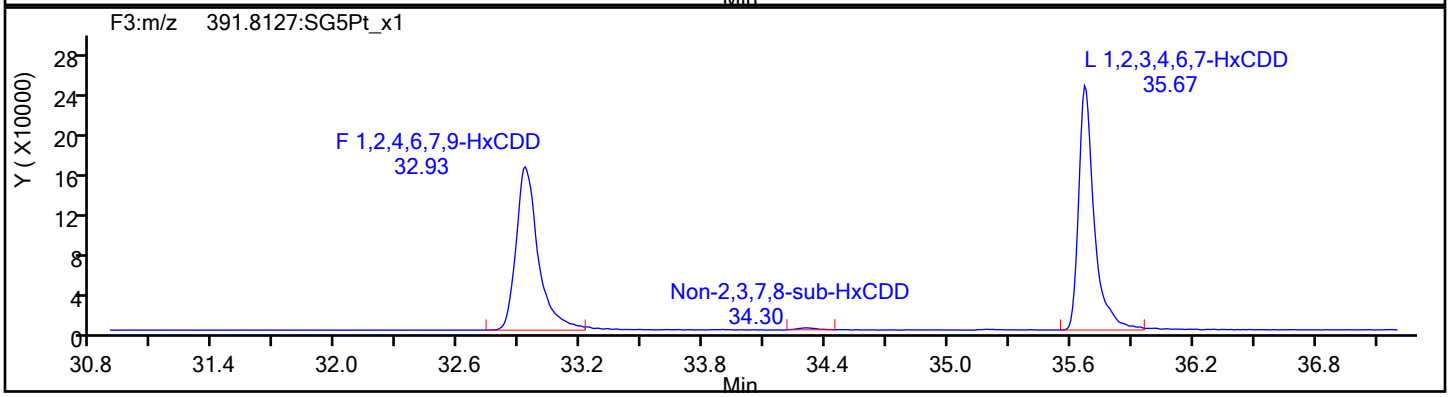
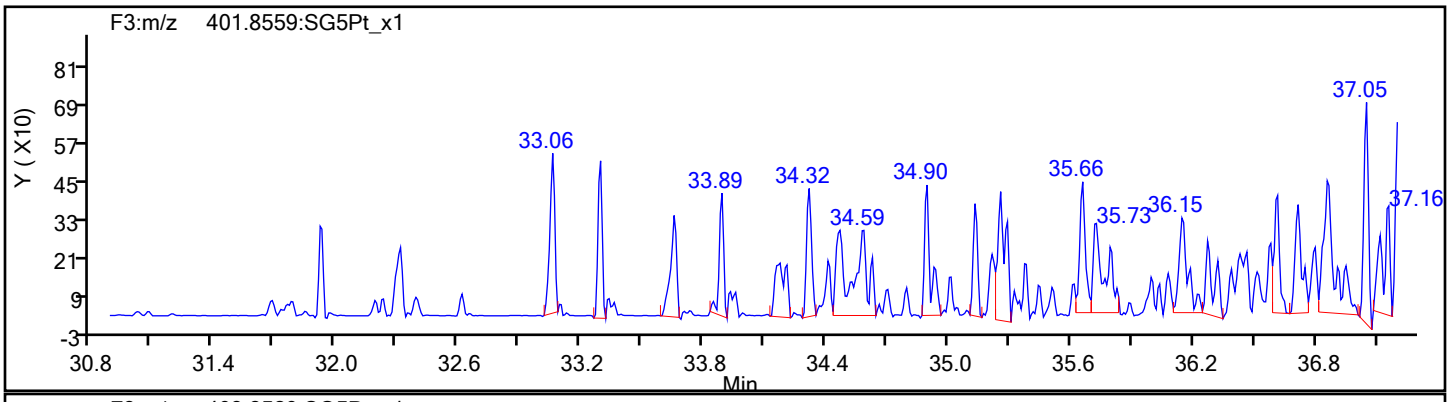
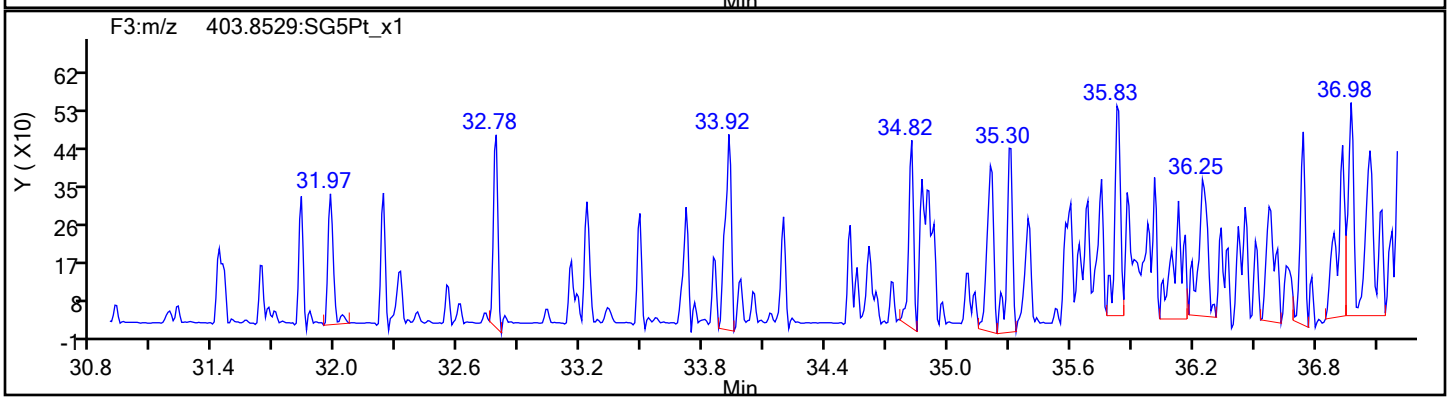
HxCDD





HxCDD Standards





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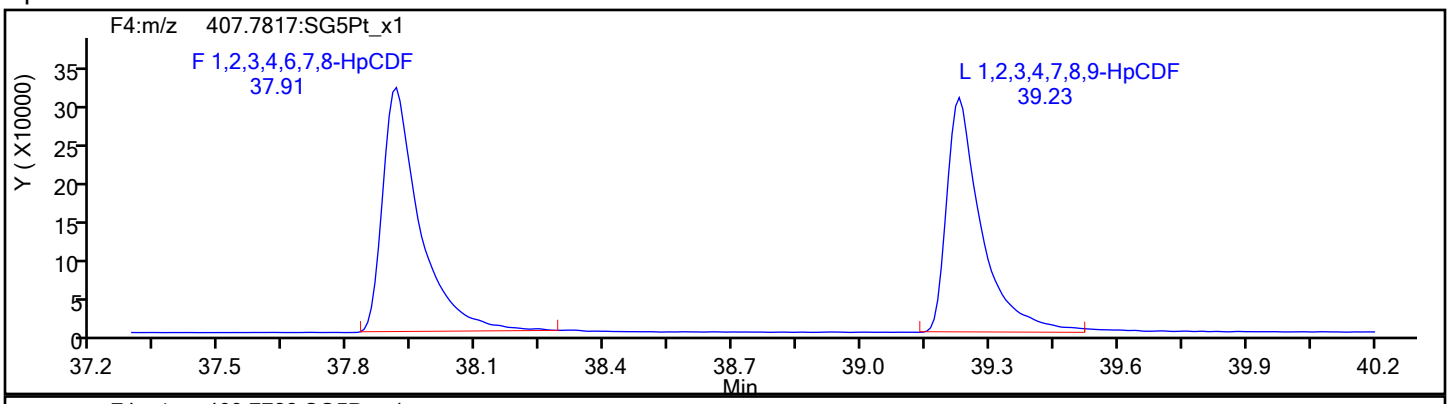

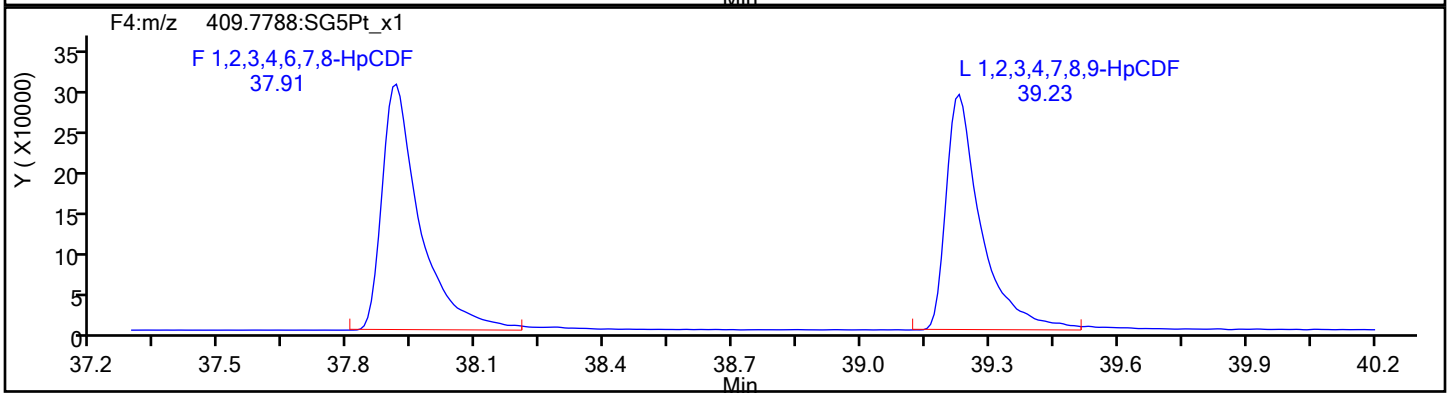

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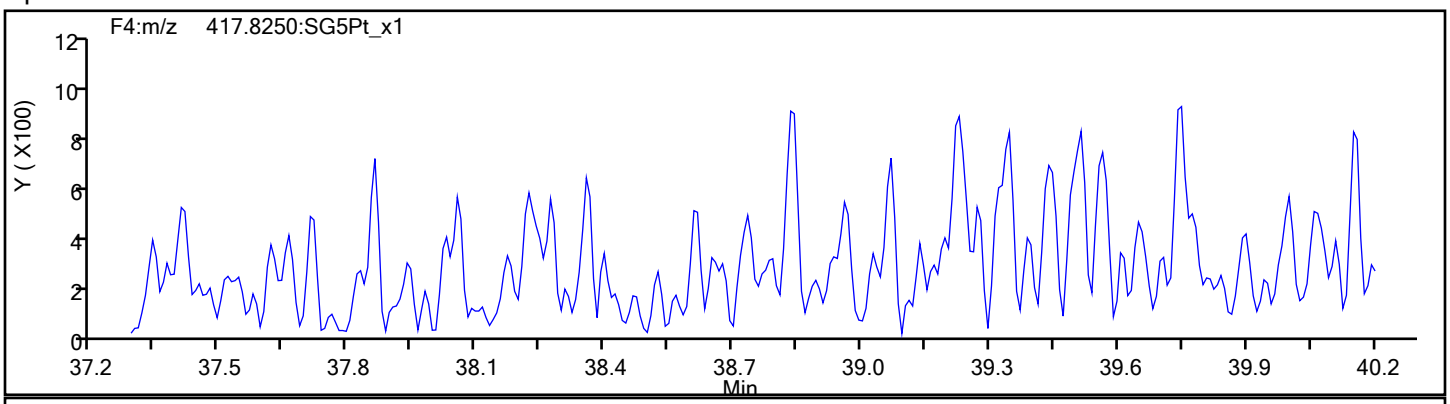

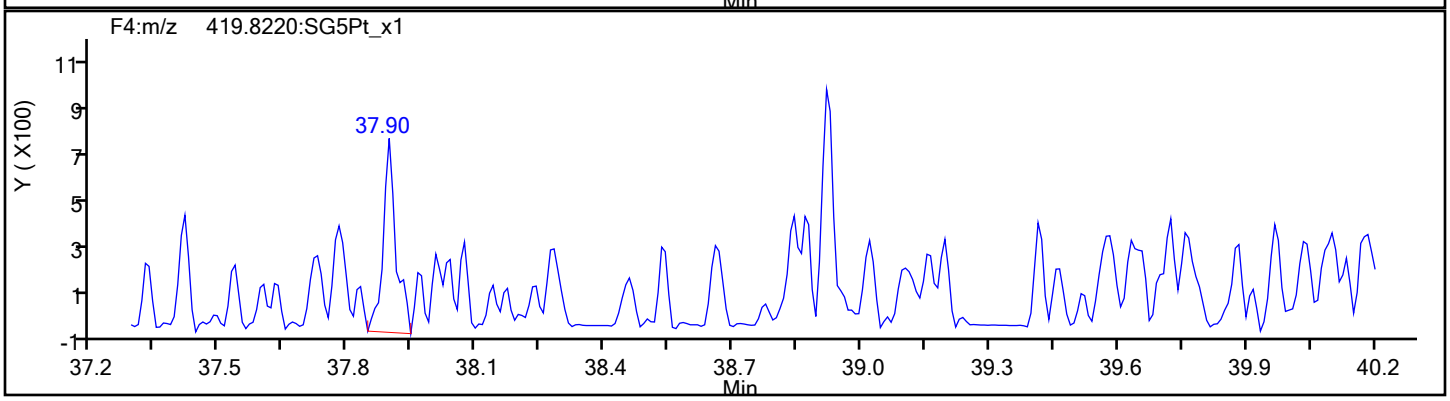

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Eurofins TestAmerica, Sacramento

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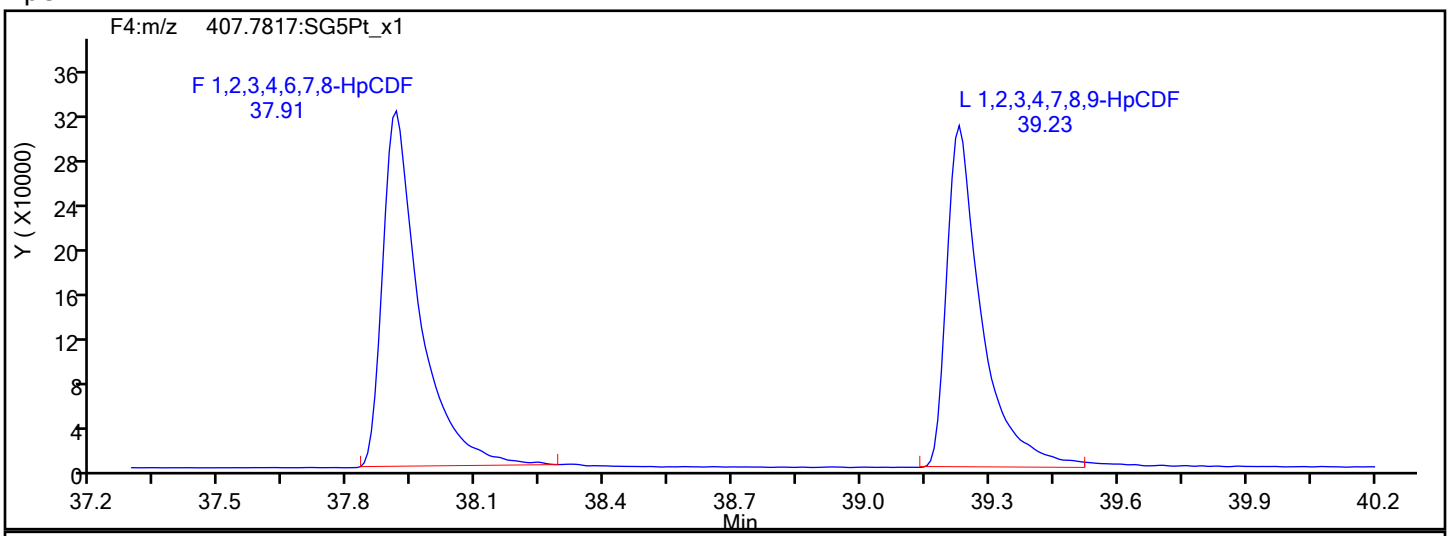
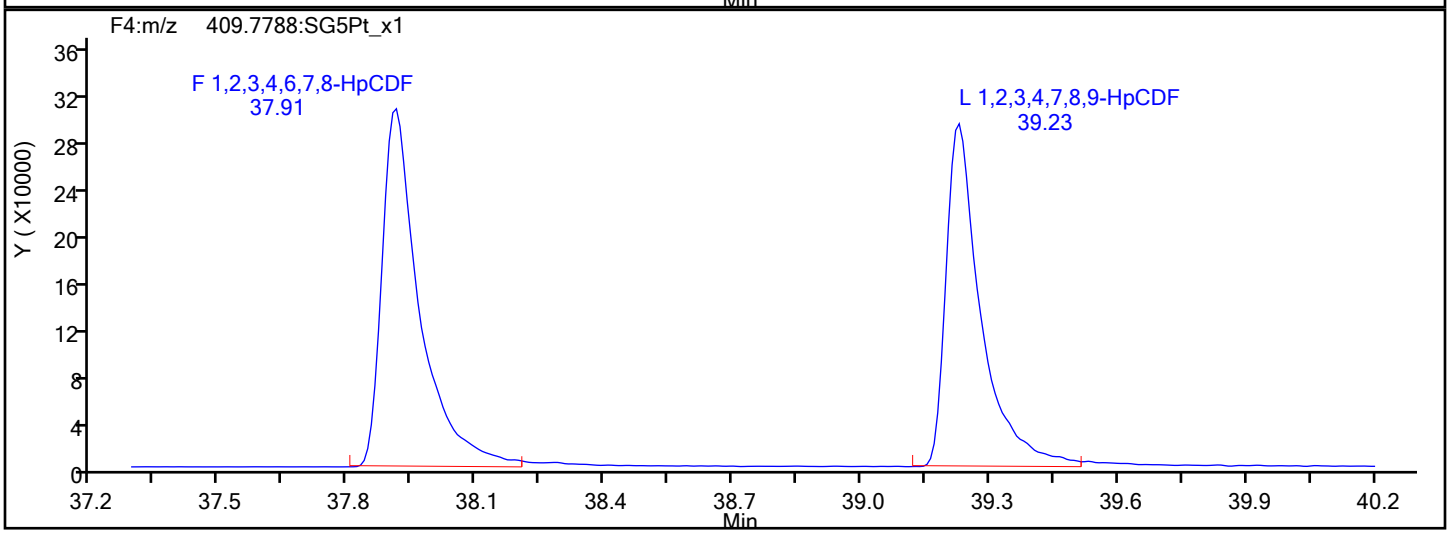
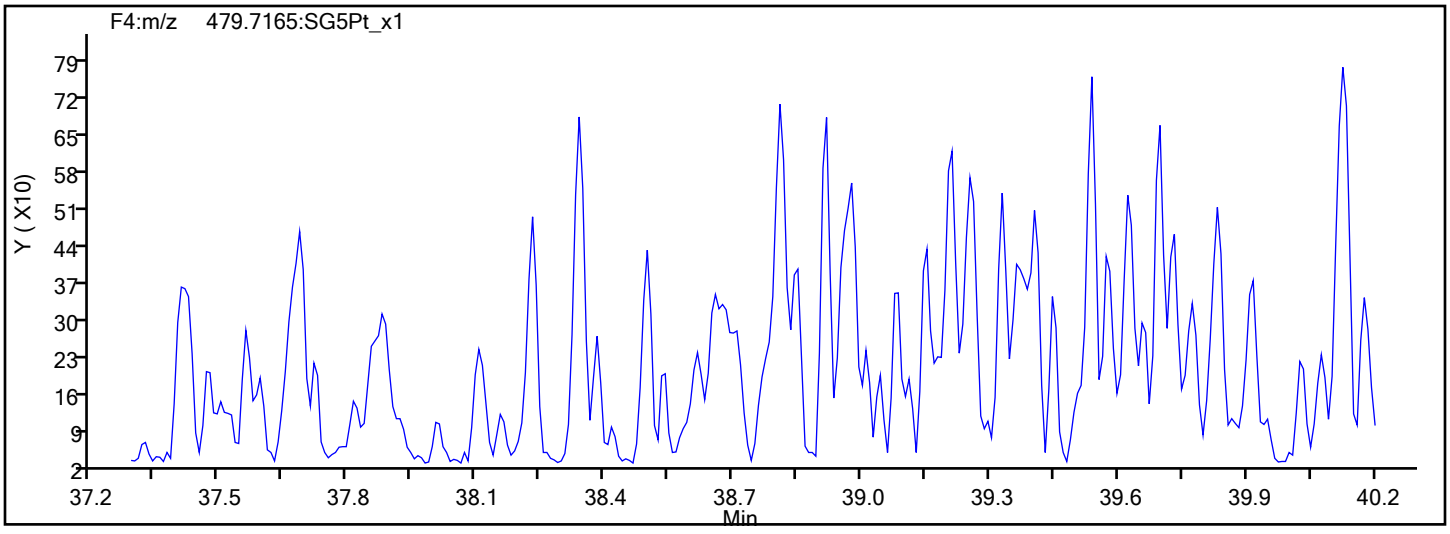




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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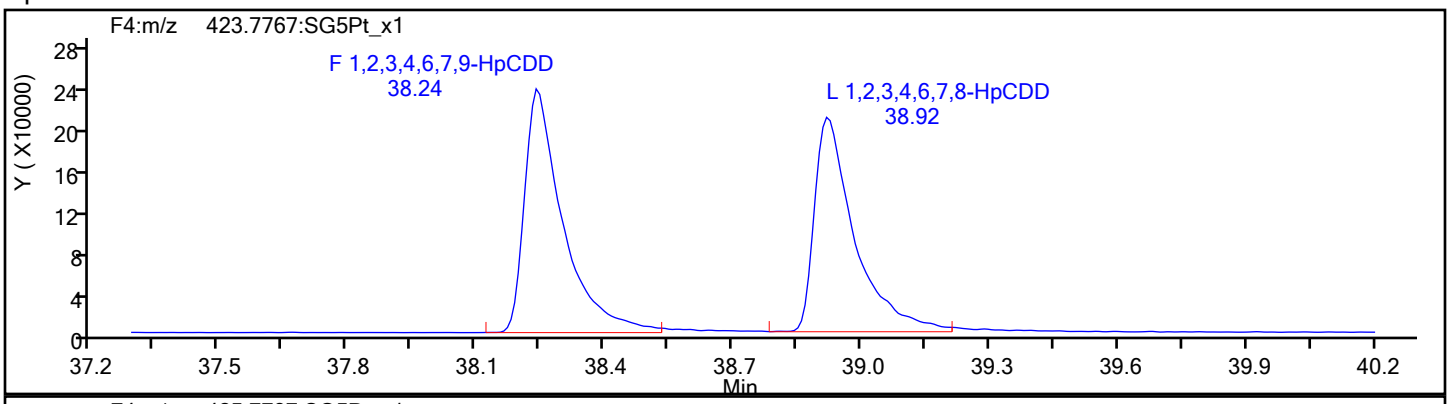
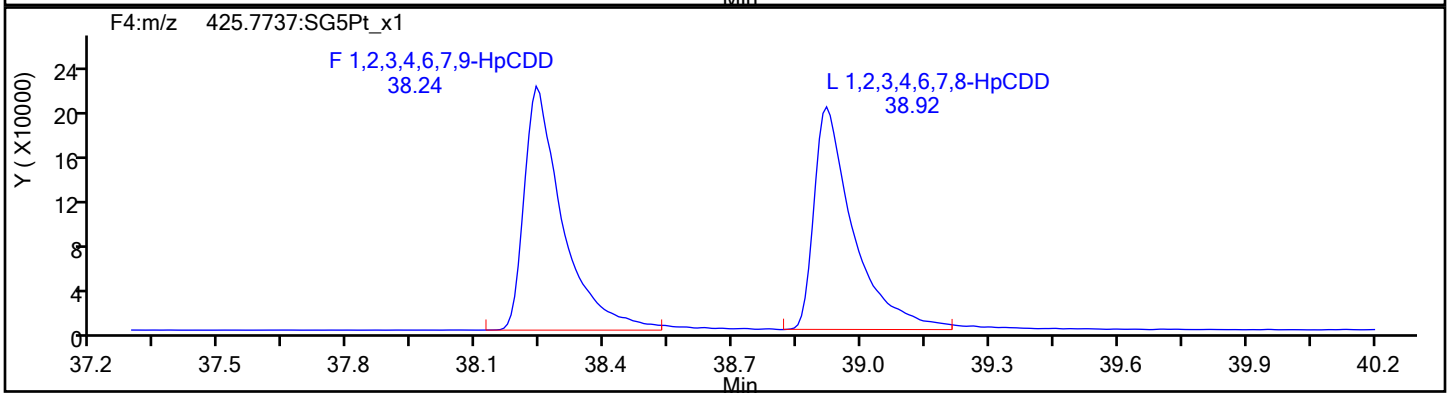
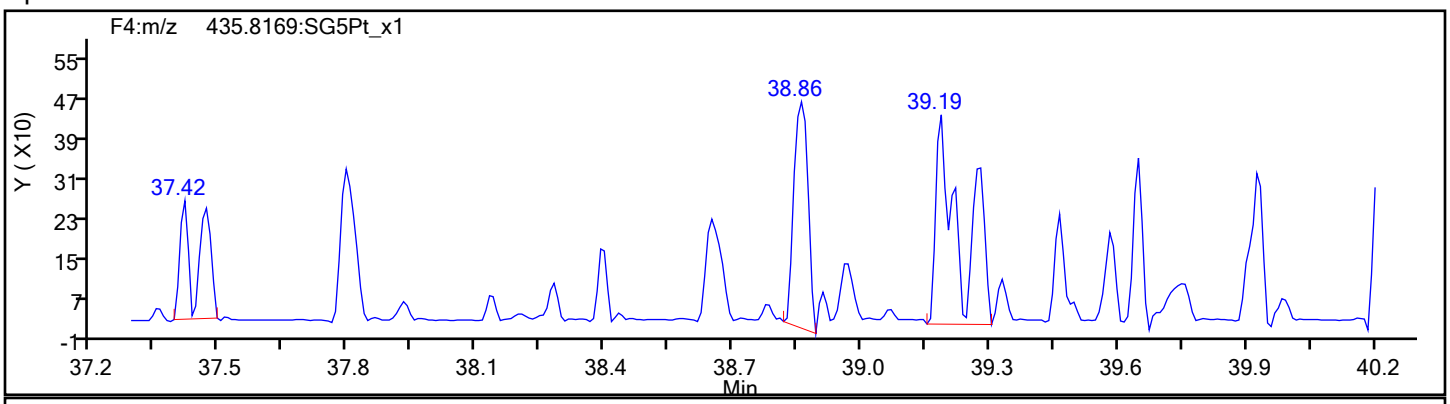
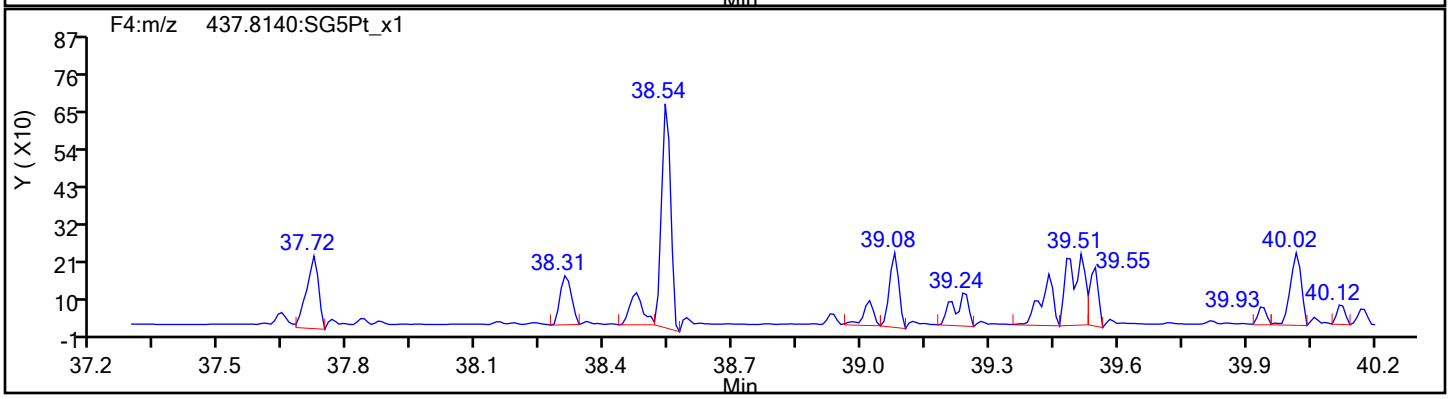
HpCDD





HpCDD Standards





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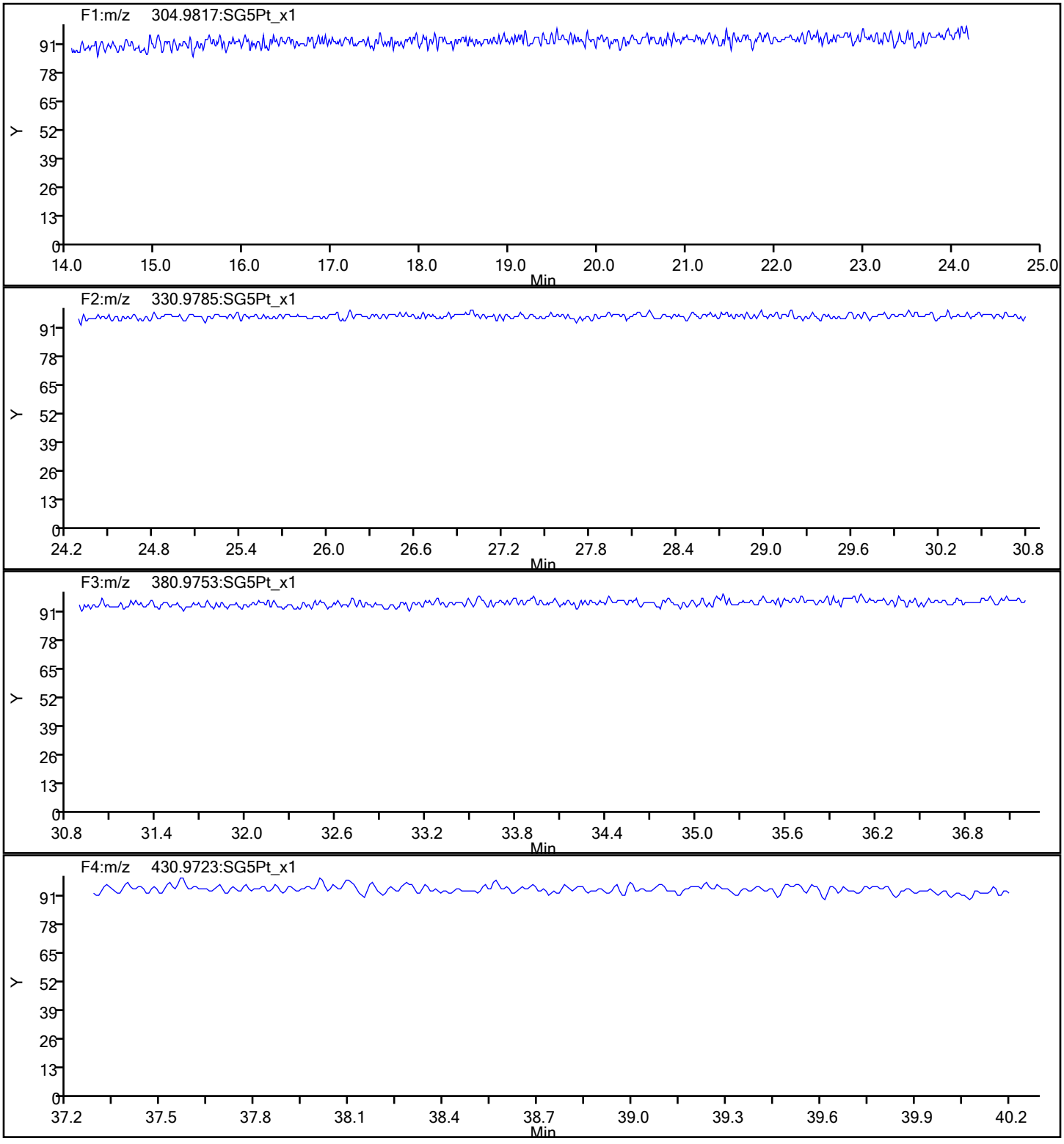

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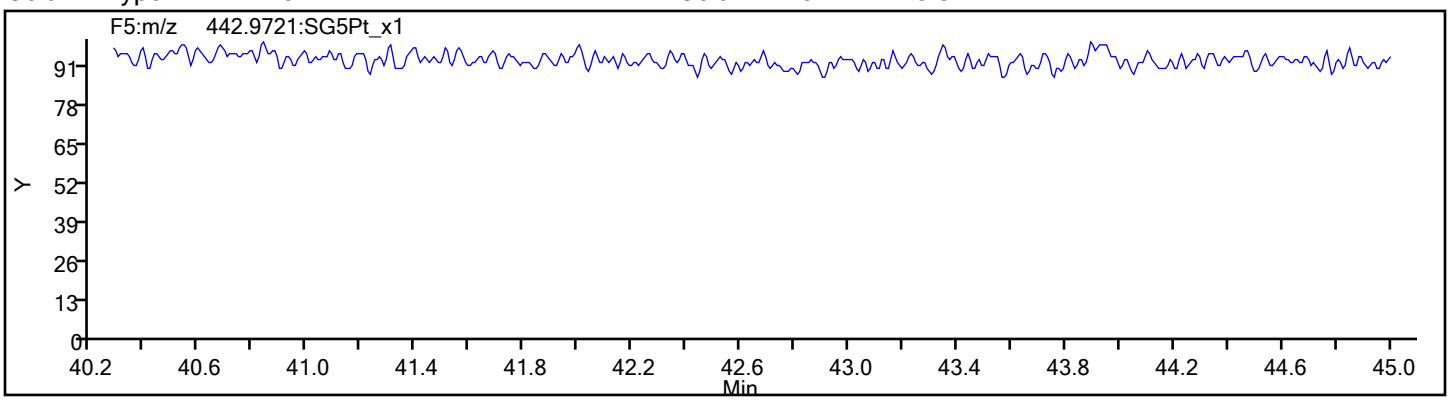
Worklist#:	345338	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-344634/1-A

Matrix: Sediment Lab File ID: 13de19dfs1_5.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 15:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		1.0	0.13
51207-31-9	2,3,7,8-TCDF	ND		1.0	0.044
40321-76-4	1,2,3,7,8-PeCDD	ND		5.0	0.10
57117-41-6	1,2,3,7,8-PeCDF	ND		5.0	0.072
57117-31-4	2,3,4,7,8-PeCDF	ND		5.0	0.073
39227-28-6	1,2,3,4,7,8-HxCDD	ND		5.0	0.056
57653-85-7	1,2,3,6,7,8-HxCDD	0.116	J	5.0	0.061
19408-74-3	1,2,3,7,8,9-HxCDD	ND		5.0	0.055
70648-26-9	1,2,3,4,7,8-HxCDF	ND		5.0	0.057
57117-44-9	1,2,3,6,7,8-HxCDF	ND		5.0	0.054
72918-21-9	1,2,3,7,8,9-HxCDF	ND		5.0	0.051
60851-34-5	2,3,4,6,7,8-HxCDF	ND		5.0	0.054
35822-46-9	1,2,3,4,6,7,8-HpCDD	0.337	J	5.0	0.053
67562-39-4	1,2,3,4,6,7,8-HpCDF	ND		5.0	0.087
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		5.0	0.084
3268-87-9	OCDD	2.53	J	10	0.14
39001-02-0	OCDF	0.585	J	10	0.17
41903-57-5	Total TCDD	ND		1.0	0.13
30402-14-3	Total TCDF	ND		1.0	0.044
36088-22-9	Total PeCDD	ND		5.0	0.10
30402-15-4	Total PeCDF	ND		5.0	0.073
34465-46-8	Total HxCDD	0.116	J	5.0	0.057
55684-94-1	Total HxCDF	ND		5.0	0.057
37871-00-4	Total HpCDD	0.574	J	5.0	0.053
38998-75-3	Total HpCDF	0.189	J	5.0	0.085

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-344634/1-A

Matrix: Sediment Lab File ID: 13de19dfs1_5.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 15:00

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	57		25-164
89059-46-1	13C-2,3,7,8-TCDF	48		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	52		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	50		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	55		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	61		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	63		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	54		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	57		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	48		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	50		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	56		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	50		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	55		26-138
114423-97-1	13C-OCDD	57		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	92		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Lims ID: MB 320-344634/1-A
Client ID:
Sample Type: MB
Inject. Date: 13-Dec-2019 15:00:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-344634/1-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:18:18

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.536	7570381	0.80	5.2E+04	100.0	100.0				a
D 13C-2,3,7,8-TCDF	18.645	5872686	0.83	1.6096	48.2	48.2	0.2333	0.2333	48.19	
2,3,7,8-TCDF	18.632						0.0222	0.0222		
A Non-2,3,7,8-sub-TCDF	18.244						0.0222	0.0222		
S Total TCDF							0.0222	0.0222		
D 13C-2,3,7,8-TCDD	19.899	4324043	0.80	0.9984	57.2	57.2	0.2314	0.2314	57.21	
2,3,7,8-TCDD	19.874						0.0648	0.0648		
$ 37Cl4-2,3,7,8-TCDD	19.916	4043365		1.4510	36.8	36.8	0.0259	0.0259	92.03	
A Non-2,3,7,8-sub-TCDD	19.035						0.0648	0.0648		
S Total TCDD							0.0648	0.0648		
D 13C-1,2,3,7,8-PeCDF	25.800	5227168	1.61	1.3678	50.5	50.5	0.2836	0.2836	50.48	
1,2,3,7,8-PeCDF	25.788						0.0362	0.0362		
D 13C-2,3,4,7,8-PeCDF	27.218	5413573	1.58	1.3045	54.8	54.8	0.2973	0.2973	54.82	
2,3,4,7,8-PeCDF	27.205						0.0364	0.0364		
A F1 PeCDFs	23.266						0.0162	0.0162		
A Non-2,3,7,8-sub-PeCDF	26.724						0.0363	0.0363		
S Total PeCDF							0.0364	0.0364		
D 13C-1,2,3,7,8-PeCDD	27.981	3281757	1.58	0.8292	52.3	52.3	0.1576	0.1576	52.28	
1,2,3,7,8-PeCDD	27.965						0.0501	0.0501		
A Non-2,3,7,8-sub-PeCDD	26.851						0.0501	0.0501		
S Total PeCDD							0.0501	0.0501		
D 13C-1,2,3,4,7,8-HxCDF	33.738	4406724	0.53	1.1700	54.0	54.0	0.2228	0.2228	53.98	
1,2,3,4,7,8-HxCDF	33.739						0.0285	0.0285		
D 13C-1,2,3,6,7,8-HxCDF	33.939	5203329	0.53	1.3168	56.6	56.6	0.1980	0.1980	56.63	
1,2,3,6,7,8-HxCDF	33.932						0.0269	0.0269		
D 13C-2,3,4,6,7,8-HxCDF	34.903	4500517	0.53	1.2873	50.1	50.1	0.2025	0.2025	50.10	
2,3,4,6,7,8-HxCDF	34.891						0.0272	0.0272		
D 13C-1,2,3,7,8,9-HxCDF	35.910	3981699	0.53	1.1987	47.6	47.6	0.2174	0.2174	47.60	
1,2,3,7,8,9-HxCDF	35.894						0.0254	0.0254		
A Non-2,3,7,8-sub-HxCDF	33.751						0.0270	0.0270		
S Total HxCDF							0.0285	0.0285		
* 13C-1,2,3,7,8,9-HxCDD	35.708	6977849	1.26	5.8E+04	100.0	100.0				a

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-1,2,3,4,7,8-HxCDD	35.163	3572211	1.30	0.8364	61.2	61.2	0.2208	0.2208	61.21	
1,2,3,4,7,8-HxCDD	35.289						0.0282	0.0282		RQU
D 13C-1,2,3,6,7,8-HxCDD	35.297	3954806	1.29	0.9040	62.7	62.7	0.2043	0.2043	62.69	
1,2,3,6,7,8-HxCDD	35.289	2588	1.24	1.1256	0.0689	0.0581	0.0305	0.0305		RQ
1,2,3,7,8,9-HxCDD	35.679						0.0273	0.0273		
A Non-2,3,7,8-sub-HxCDD	34.284						0.0286	0.0286		
S Total HxCDD					0.0689	0.0581	0.0287	0.0287		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	37.892	3395116	0.45	0.9689	50.2	50.2	0.3867	0.3867	50.22	
1,2,3,4,6,7,8-HpCDF	37.866						0.0434	0.0434		
D 13C-1,2,3,4,7,8,9-HpCDF	39.209	3531697	0.46	0.9231	54.8	54.8	0.4058	0.4058	54.83	
1,2,3,4,7,8,9-HpCDF	39.202						0.0419	0.0419		
A Non-2,3,7,8-sub-HpCDF	38.556	5048	1.04	1.5424	0.1109	0.0945	0.0425	0.0945		RQ
S Total HpCDF					0.1109	0.0945	0.0426	0.0426		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	38.899	3555250	1.07	0.9114	55.9	55.9	0.1700	0.1700	55.90	
1,2,3,4,6,7,8-HpCDD	38.899	6734	1.04	1.1237	0.1882	0.1686	0.0266	0.0266		RQM
A Non-2,3,7,8-sub-HpCDD	38.803	4725	0.94	1.1237	0.1183	0.1183	0.0266	0.1183		M
S Total HpCDD					0.3065	0.2868	0.0266	0.0266		RQ
D 13C-OCDD	41.352	5023290	0.90	0.6272	114.8	114.8	0.3269	0.3269	57.39	
OCDF	41.453	11321	0.86	1.5416	0.2924	0.2924	0.0834	0.0834		M
OCDD	41.369	37729	0.94	1.1855	1.267	1.267	0.0690	0.0690		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Lims ID: MB 320-344634/1-A
Client ID:
Sample Type: MB
Inject. Date: 13-Dec-2019 15:00:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-344634/1-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:18:18

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	19.536	19.502	2		3360512	513569	730	1825	704		a
333.9338	19.536	19.502	2		4209869	649240	345	862	1882	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.645	18.611	2	0.954	2655545	416960	980	2450	425		
317.9389	18.645	18.611	2	0.954	3217141	512550	767	1917	668	0.83(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.637						17	42			
305.8987	18.637						85	212			
A Non-2,3,7,8-sub-TCDF											
303.9016	18.244						17	42			
305.8987	18.244						85	212			
13C-2,3,7,8-TCDD											
331.9368	19.899	19.848	3	1.019	1919204	267689	730	1825	367		
333.9338	19.890	19.848	3	1.018	2404839	337365	345	862	978	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.874						163	407			
321.8936	19.874						25	62			
37Cl4-2,3,7,8-TCDD											
327.8847	19.916	19.882	2	1.019	4043365	587078	175	437	3355		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.035						163	407			
321.8936	19.035						25	62			
13C-1,2,3,7,8-PeCDF											
351.9000	25.800	25.760	2	1.321	3222573	526243	1071	2677	491		
353.8970	25.800	25.760	2	1.321	2004595	329640	733	1832	450	1.61(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	25.785						28	70			
341.8567	25.785						117	292			
13C-2,3,4,7,8-PeCDF											
351.9000	27.218	27.177	2	1.393	3315015	512807	1071	2677	479		
353.8970	27.218	27.177	2	1.393	2098558	325004	733	1832	443	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.202						28	70			
341.8567	27.202						117	292			
A F1 PeCDFs											
339.8597	23.266						2	5			
341.8567	23.266						63	157			
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.724						28	70			
341.8567	26.724						117	292			
13C-1,2,3,7,8-PeCDD											
367.8949	27.981	27.949	2	1.432	2011305	288446	436	1090	662		
369.8919	27.981	27.949	2	1.432	1270452	187055	172	430	1088	1.58(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.965						94	235			
357.8516	27.965						13	32			
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.851						94	235			
357.8516	26.851						13	32			
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.738	33.714	1	0.945	1534756	265073	499	1247	531		
385.8610	33.746	33.714	2	0.945	2871968	494447	1020	2550	485	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.739						69	172			
375.8178	33.739						44	110			
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.939	33.915	1	0.950	1811254	280536	499	1247	562		
385.8610	33.939	33.915	1	0.950	3392075	531837	1020	2550	521	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.932						69	172			
375.8178	33.932						44	110			
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.903	34.880	1	0.977	1556612	277011	499	1247	555		
385.8610	34.912	34.880	2	0.978	2943905	517352	1020	2550	507	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.905						69	172			
375.8178	34.905						44	110			
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.910	35.878	2	1.006	1385723	285466	499	1247	572		
385.8610	35.910	35.878	2	1.006	2595976	546853	1020	2550	536	0.53(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	35.894						69	172			
375.8178	35.894						44	110			
A Non-2,3,7,8-sub-HxCDF											
373.8208	33.751						69	172			
375.8178	33.751						44	110			
13C-1,2,3,7,8,9-HxCDD											a
401.8559	35.708	35.685	1		3884429	814000	669	1672	1217		a
403.8529	35.708	35.685	1		3093420	642670	407	1017	1579	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.163	35.131	2	0.985	2016537	434424	669	1672	649		
403.8529	35.163	35.131	2	0.985	1555674	352234	407	1017	865	1.30(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQU
389.8158	35.148						51	127			
391.8127	35.148						53	132			
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.297	35.265	2	0.988	2226897	426241	669	1672	637		
403.8529	35.297	35.265	2	0.988	1727909	331803	407	1017	815	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQ
389.8158	35.289	35.282	0	1.000	1433	306	51	127	6		
391.8127	35.331	35.282	3	1.001	1634	421	53	132	8	0.88(1.05-1.43)	
	Empc Correction				1155	246	53	132	5		
1,2,3,7,8,9-HxCDD											
389.8158	35.693						51	127			
391.8127	35.693						53	132			
A Non-2,3,7,8-sub-HxCDD											
389.8158	34.284						51	127			
391.8127	34.284						53	132			
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.892	37.877	1	1.061	1053298	231597	927	2317	250		
419.8220	37.892	37.877	1	1.061	2341818	519784	1256	3140	414	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.886						166	415			
409.7788	37.886						45	112			
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.209	39.194	1	1.098	1106010	272794	927	2317	294		
419.8220	39.209	39.194	1	1.098	2425687	584394	1256	3140	465	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.202						166	415			
409.7788	39.202						45	112			
A Non-2,3,7,8-sub-HpCDF											RQ
407.7817	38.295	38.556	-16	1.011	3449	909	166	415	5		
	Empc Correction				2573	719	166	415	4		
409.7788	38.295	38.556	-16	1.011	2475	692	45	112	15	1.39(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.899	38.892	0	1.089	1837259	415030	464	1160	894		
437.8140	38.899	38.892	0	1.089	1717991	388328	439	1097	885	1.07(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											RQM
423.7767	38.899	38.901	0	1.000	4218	971	62	155	16		
	Empc Correction				3433	663	62	155	11		
425.7737	38.916	38.901	1	1.000	3301	638	34	85	19	1.28(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDD											M
423.7767	38.245	38.803	-33	0.983	2293	457	62	155	7		M
425.7737	38.245	38.803	-33	0.983	2432	616	34	85	18	0.94(0.88-1.20)	M
13C-OCDD											
469.7780	41.352	41.345	0	1.158	2380897	360233	573	1432	629		
471.7750	41.344	41.345	0	1.158	2642393	409694	622	1555	659	0.90(0.76-1.02)	
OCDF											M
441.7428	41.453	41.413	2	1.002	5235	984	58	145	17		
443.7399	41.428	41.413	1	1.002	6086	1353	140	350	10	0.86(0.76-1.02)	M
OCDD											
457.7377	41.369	41.345	1	1.000	18267	2776	58	145	48		
459.7348	41.352	41.345	0	1.000	19462	3092	68	170	45	0.94(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

a - User Assigned ID

Report Date: 17-Dec-2019 09:18:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Lims ID: MB 320-344634/1-A
Client ID:
Inject. Date: 13-Dec-2019 15:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 4

Non-2,3,7,8-sub-HpCDF, RT: 38.556

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.618	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	3395116	751381
1,2,3,4,7,8,9-HpCDF	1.467	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	3531697	857188

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.542		100.000	3463406	804284

Sum the Uncalibrated Results

RT	407.7817 Area	407.7817 Height	409.7788 Area	409.7788 Height	Amount	Ratio	Flags
38.295	3449	909	2475	692	0.1109	1.39	RQ
38.295	2573	719	2475	692	0.0945		Empc Correction
Signal Totals:							
	2573	719	2475	692			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	5924	1601				1.39	RQ
	5048	1411					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1109 = (5924 * 100.000) / (3463406 * 1.542)
Empc Amount: 0.0945 = (5048 * 100.000) / (3463406 * 1.542)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Lims ID: MB 320-344634/1-A
Client ID:
Inject. Date: 13-Dec-2019 15:00:00 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 4

Non-2,3,7,8-sub-HpCDD, RT: 38.803

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.124	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	3555250	803358

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.124		100.000	3555250	803358

Sum the Uncalibrated Results

RT	423.7767 Area	423.7767 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
38.245	2293	457	2432	616	0.1183	0.94	M
Signal Totals:							
	2293	457	2432	616			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4725	1073				0.94	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1183 = (4725 * 100.000) / (3555250 * 1.124)

QC Flag Legend

Review Flags
M - Manually Integrated

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

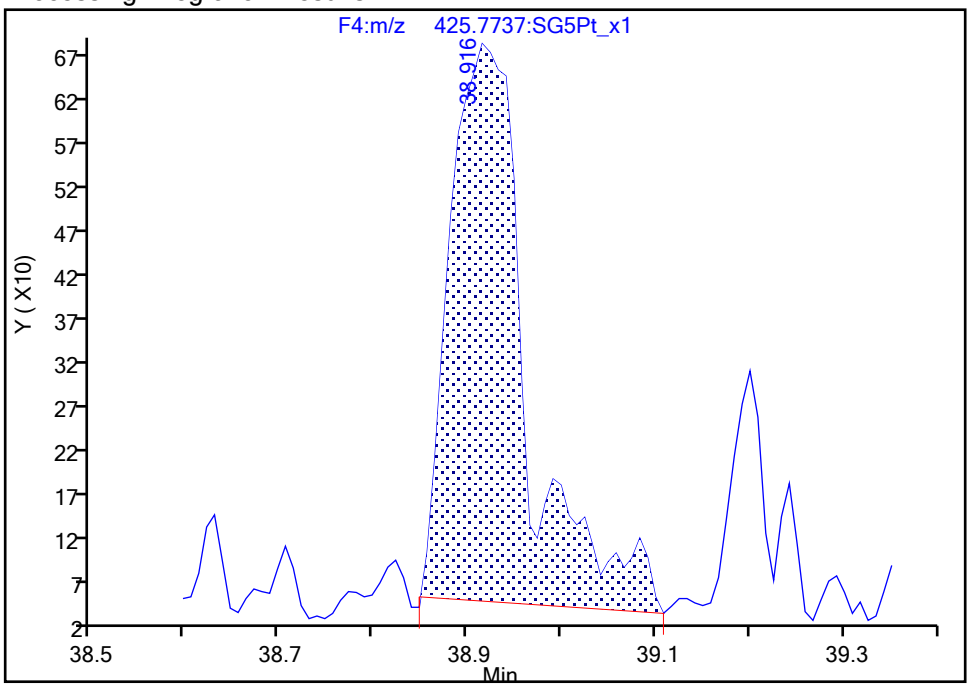
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Injection Date: 13-Dec-2019 15:00:00 Instrument ID: DFS 1
Lims ID: MB 320-344634/1-A
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: Dioxin_DFS1 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F4(34.11 :36.51)

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 2

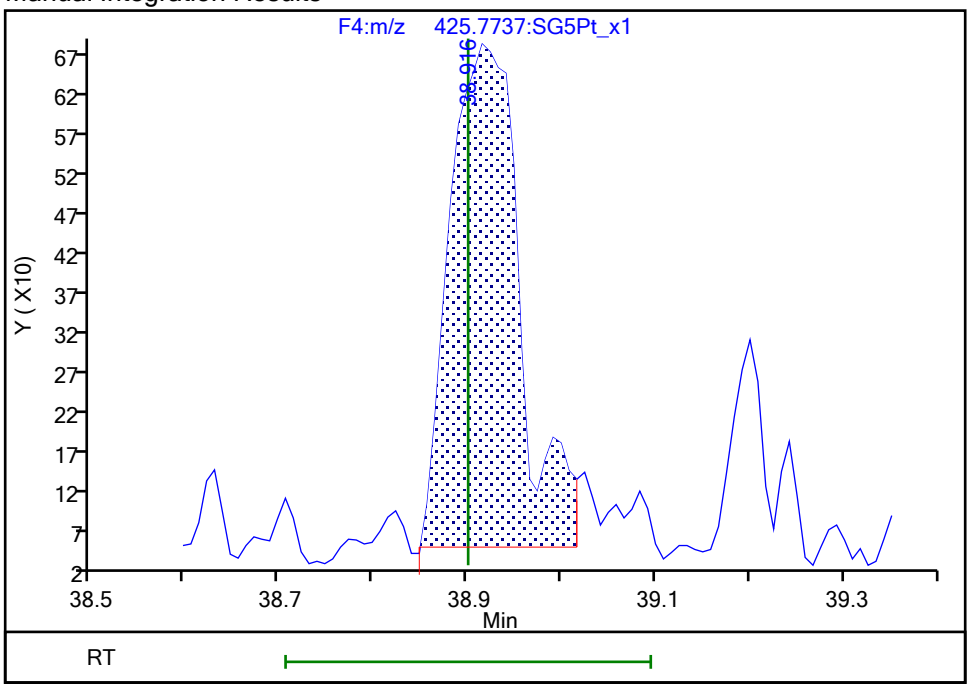
Processing Integration Results

RT: 38.92
Area: 3653
Amount: 0.197019
Amount Units: pg/ul



Manual Integration Results

RT: 38.92
Area: 3301
Amount: 0.188208
Amount Units: pg/ul



Reviewer: dadunj, 17-Dec-2019 09:15:47
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

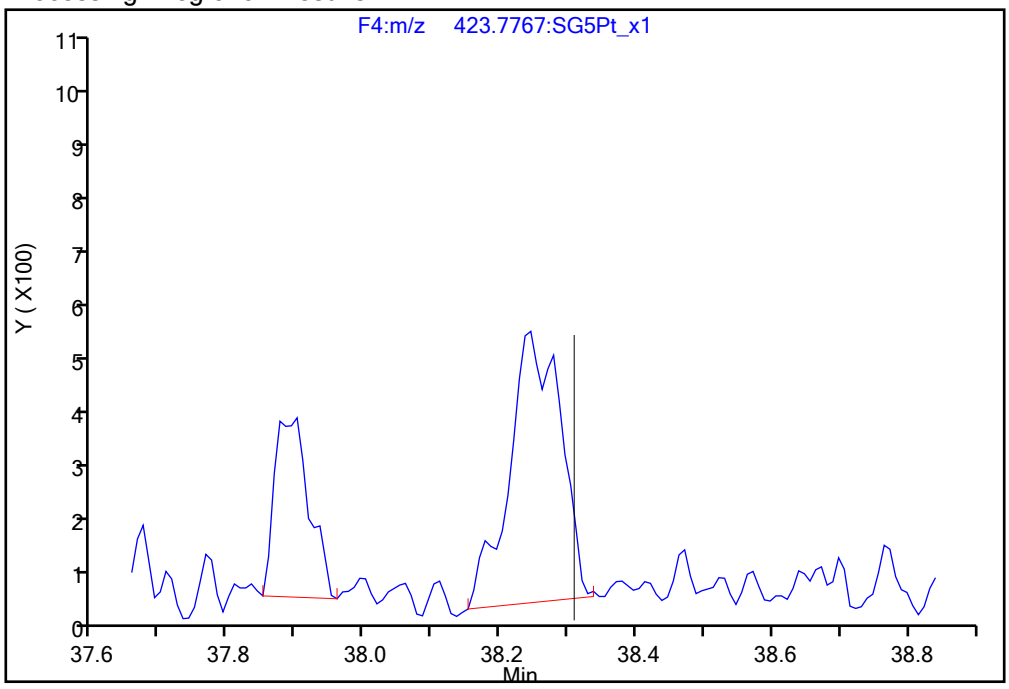
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d				
Injection Date:	13-Dec-2019 15:00:00	Instrument ID:	DFS 1		
Lims ID:	MB 320-344634/1-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7767, RT: (38.31- 39.30)

Signal: 1

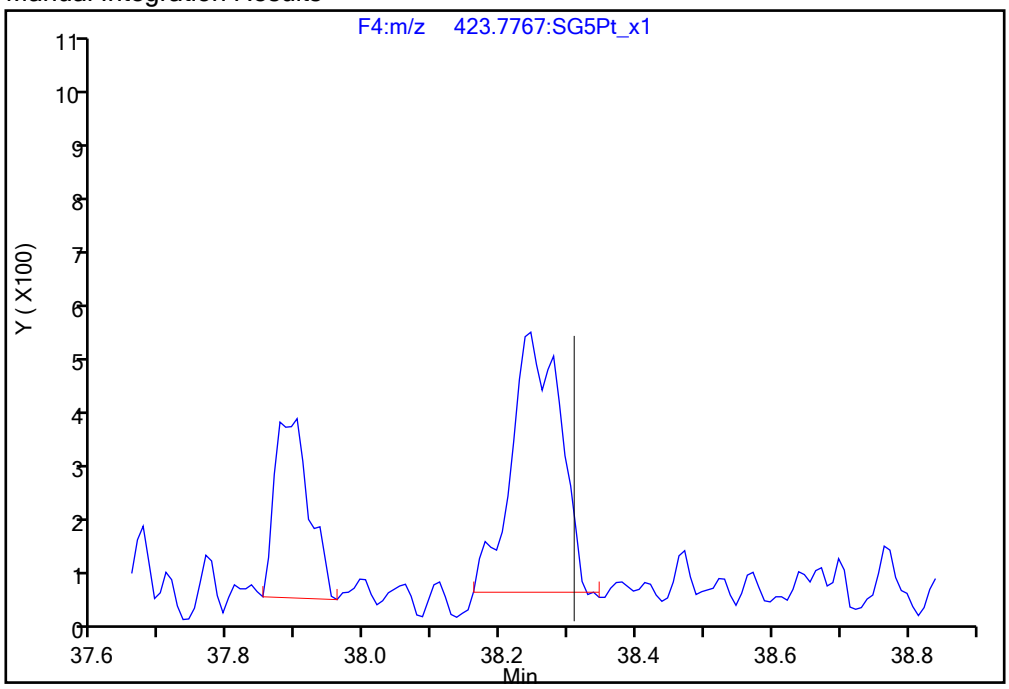
Processing Integration Results

RT = 38.245 Area = 2510



Manual Integration Results

RT = 38.245 Area = 2293 M



Reviewer: dadunj, 17-Dec-2019 09:16:24

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

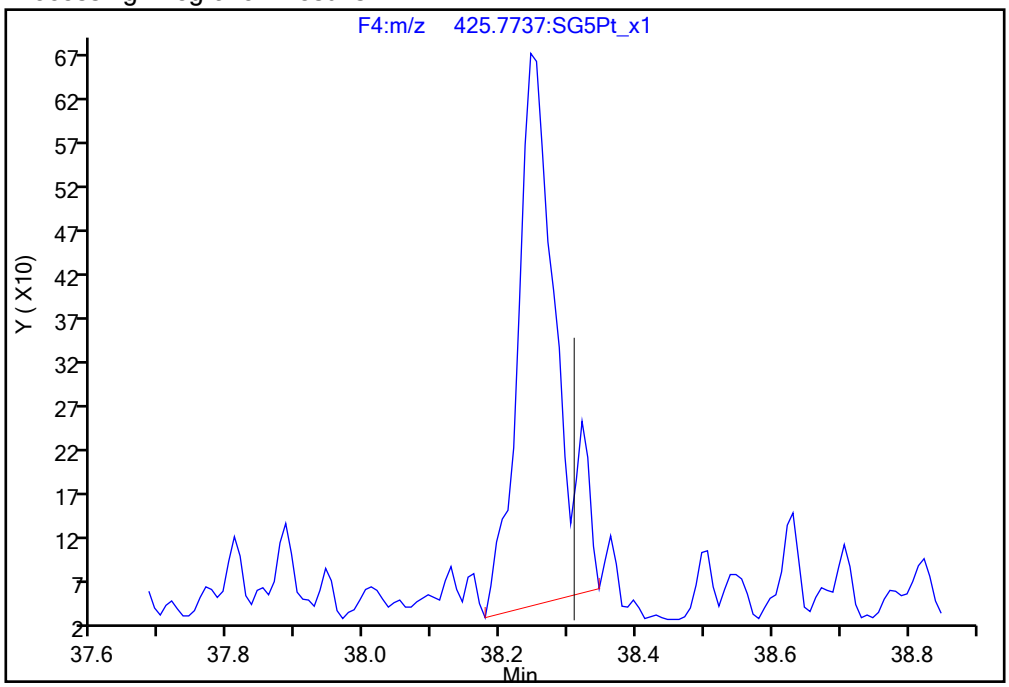
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d				
Injection Date:	13-Dec-2019 15:00:00	Instrument ID:	DFS 1		
Lims ID:	MB 320-344634/1-A				
Client ID:					
Operator ID:	Xcalibur_System	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4(34.11 :36.51)		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (38.31- 39.30)

Signal: 2

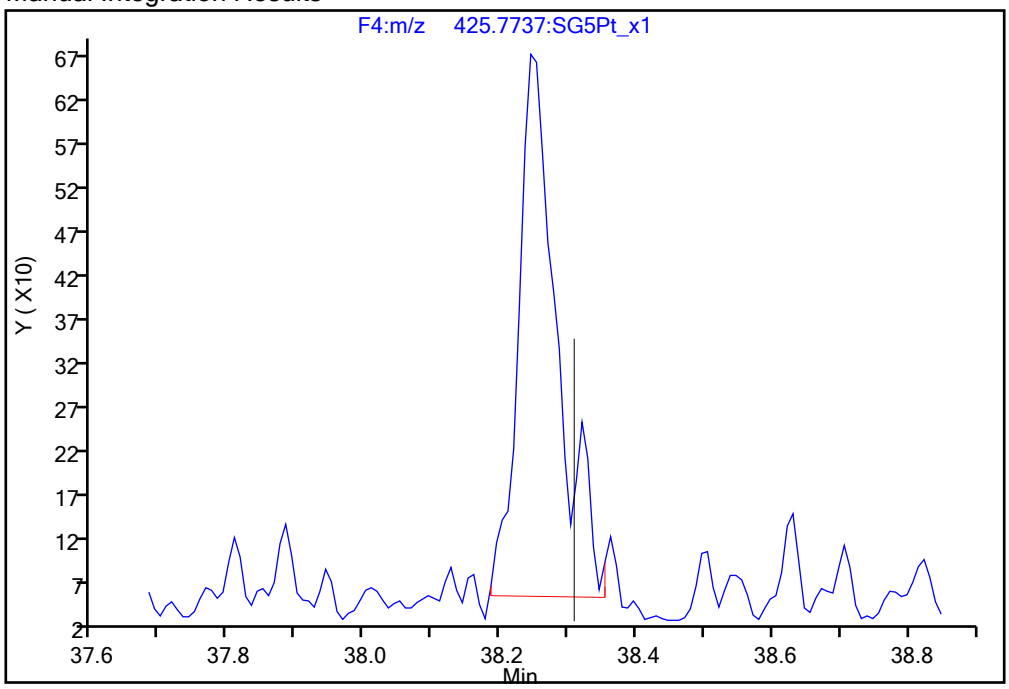
Processing Integration Results

RT = 38.245 Area = 2502



Manual Integration Results

RT = 38.245 Area = 2432 M



Reviewer: dadunj, 17-Dec-2019 09:16:14

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

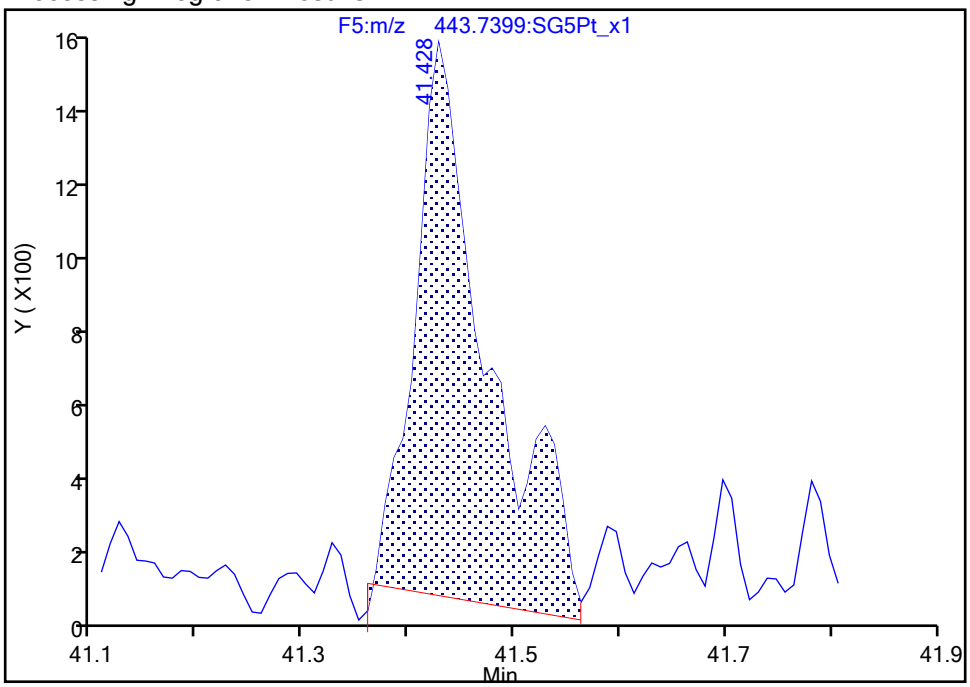
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d
Injection Date: 13-Dec-2019 15:00:00 Instrument ID: DFS 1
Lims ID: MB 320-344634/1-A
Client ID:
Operator ID: Xcalibur_System ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: Dioxin_DFS1 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F5(36.61 :39.00)

OCDF, CAS: 39001-02-0

Signal: 2

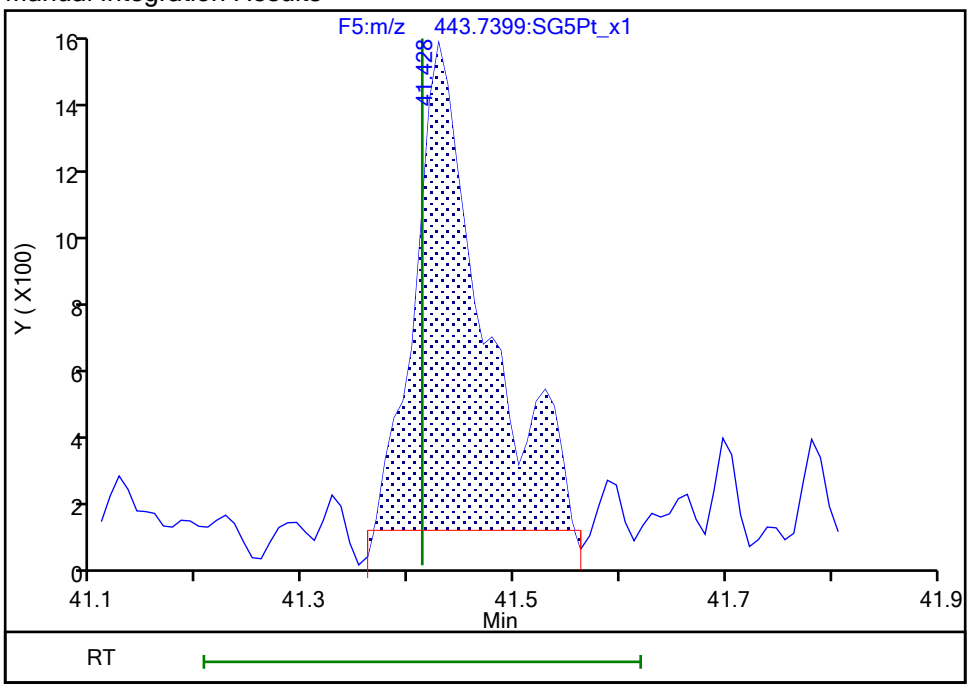
Processing Integration Results

RT: 41.43
Area: 6691
Amount: 0.308009
Amount Units: pg/ul



Manual Integration Results

RT: 41.43
Area: 6086
Amount: 0.292384
Amount Units: pg/ul



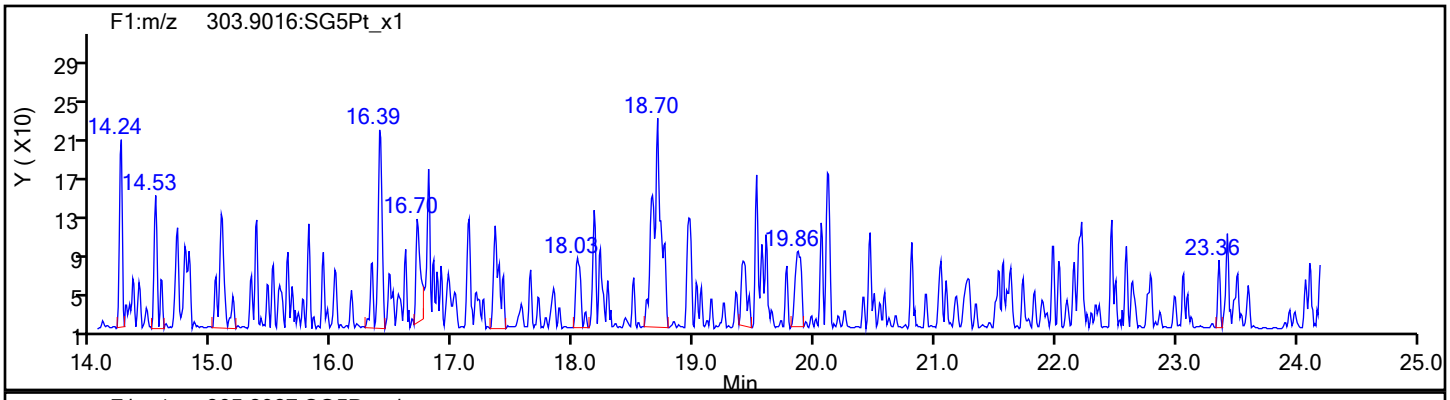
Reviewer: dadunj, 17-Dec-2019 09:17:10
Audit Action: Manually Integrated Audit Reason: Baseline

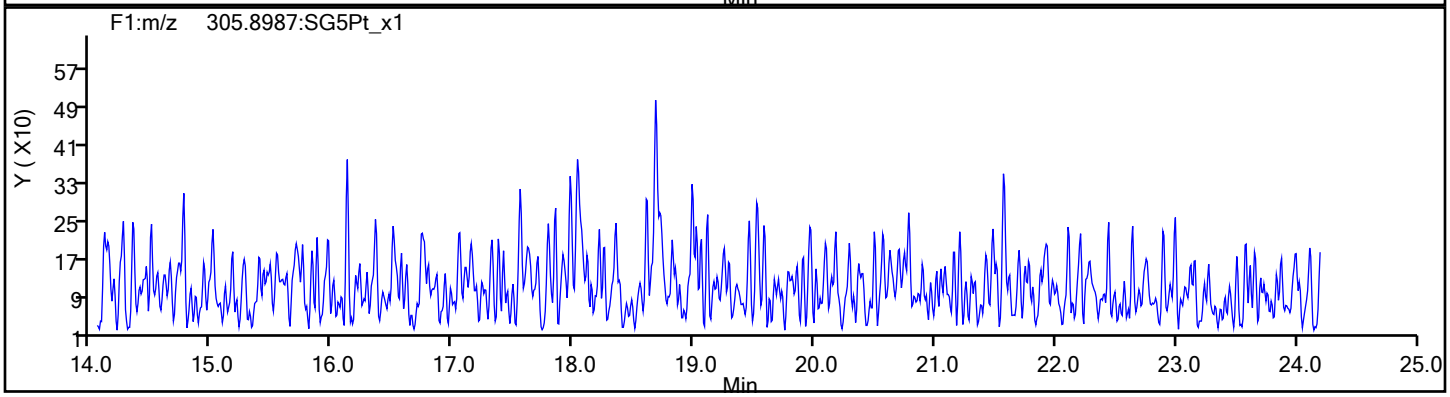
Report Date: 17-Dec-2019 09:18:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

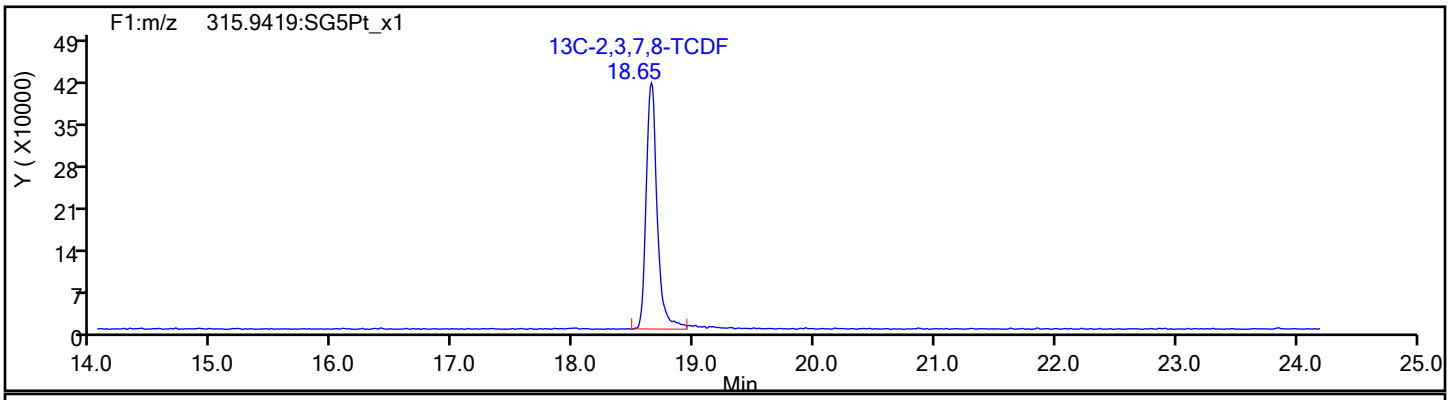
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

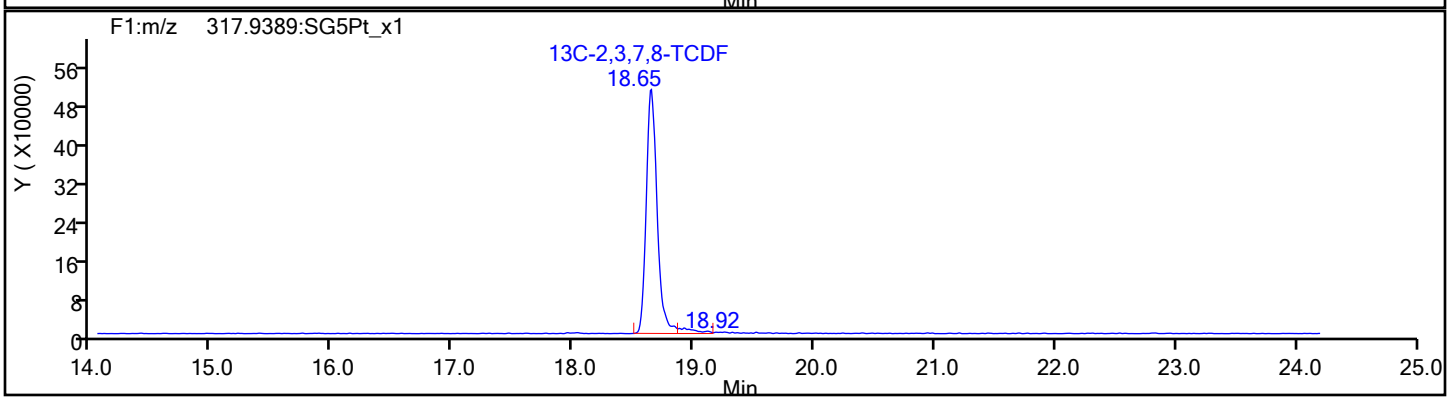
TCDF





TCDF Standards



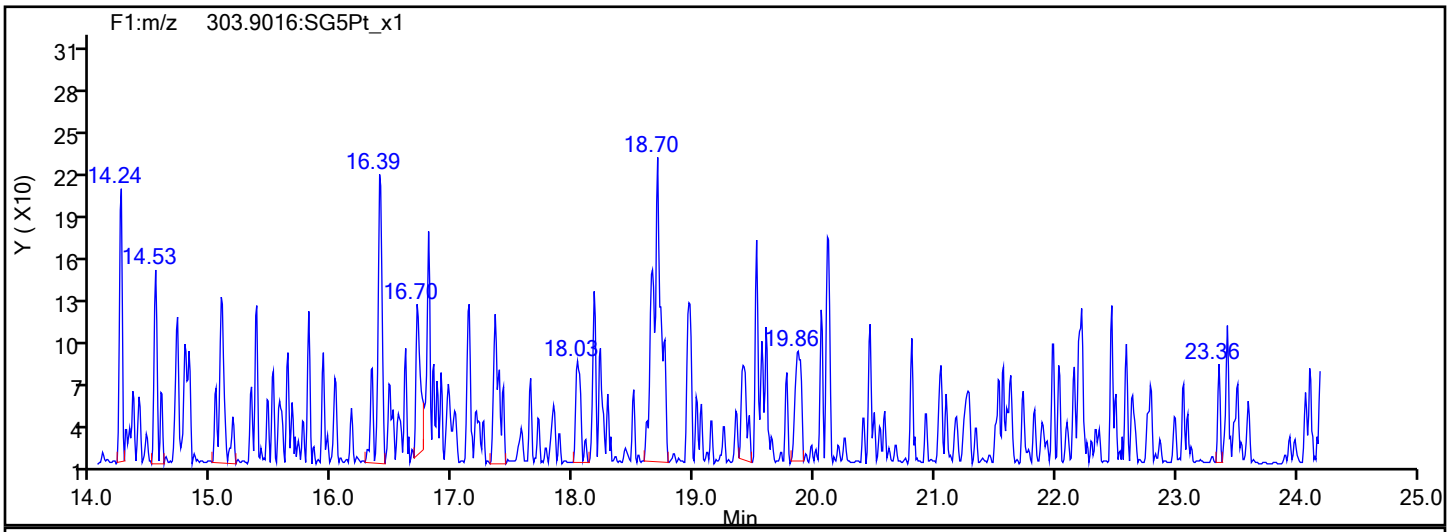


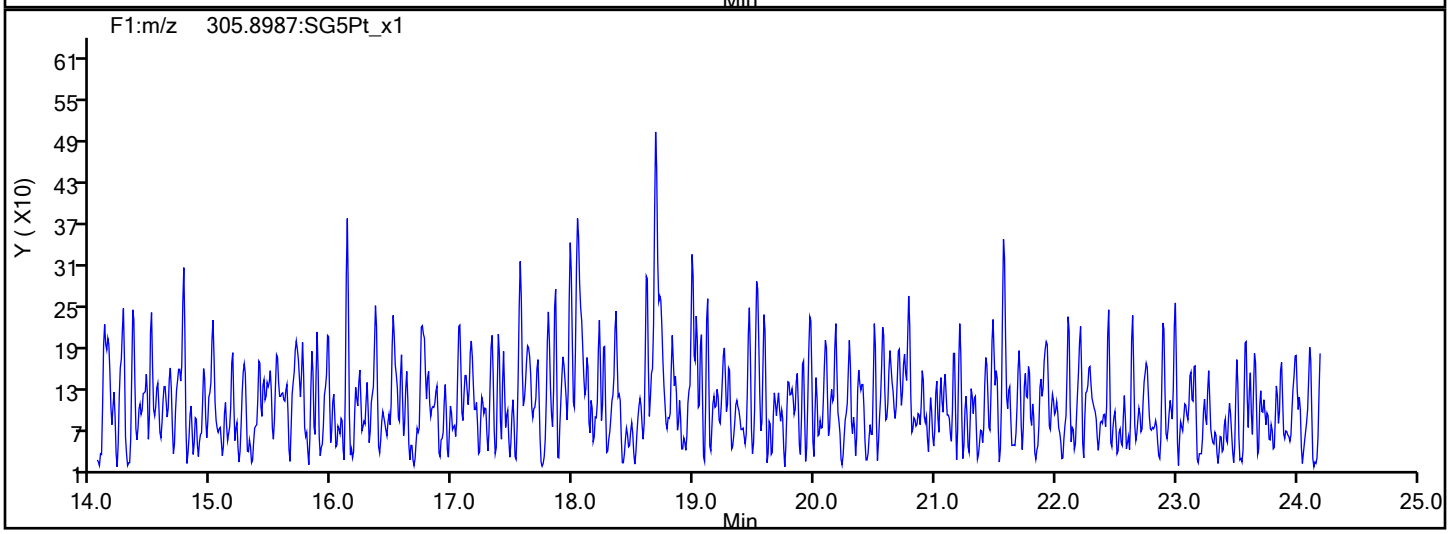
Report Date: 17-Dec-2019 09:18:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

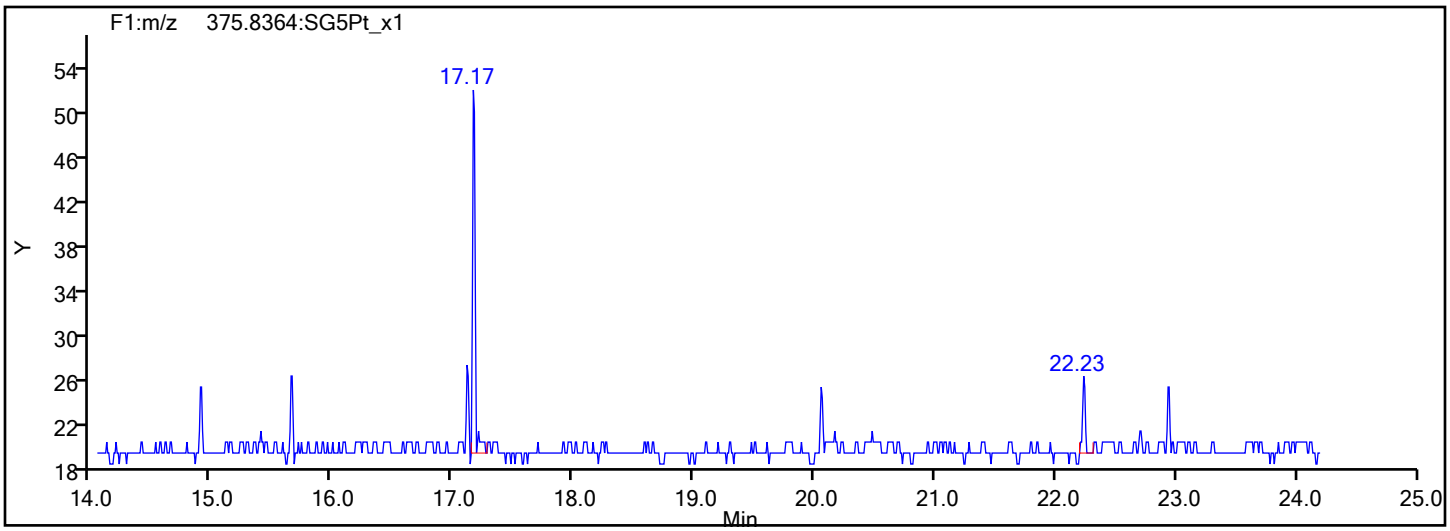
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

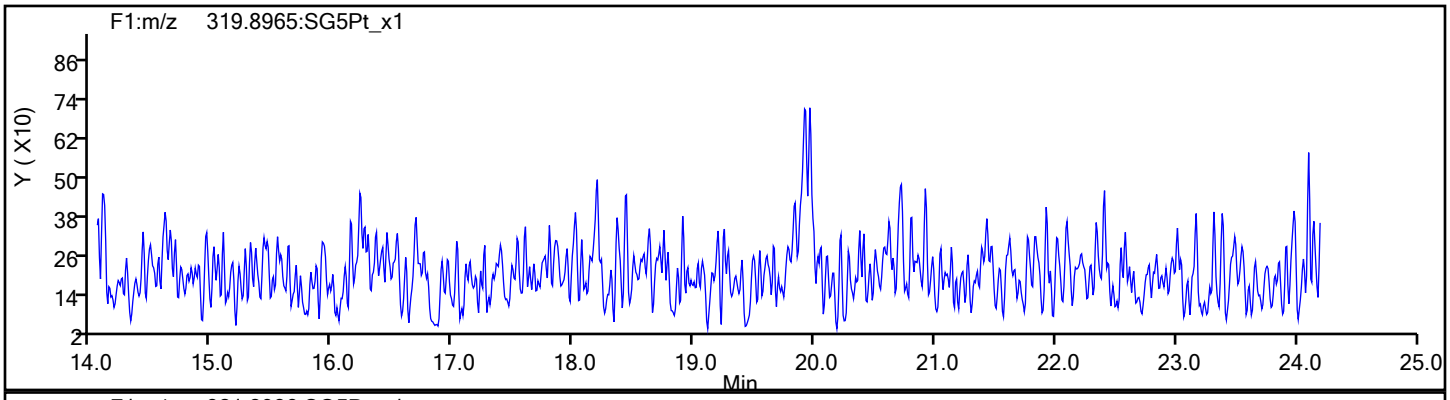


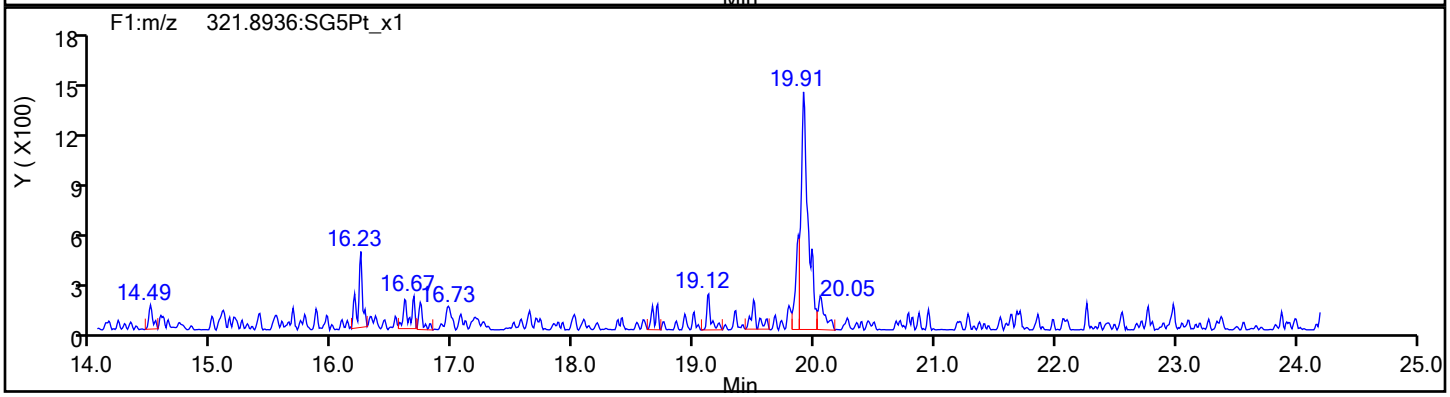
Report Date: 17-Dec-2019 09:18:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

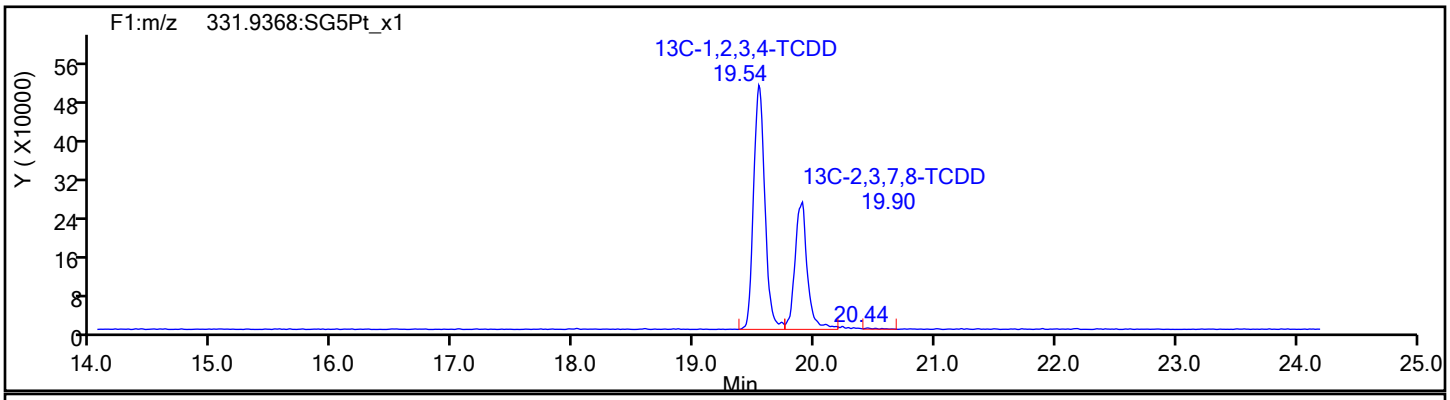
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

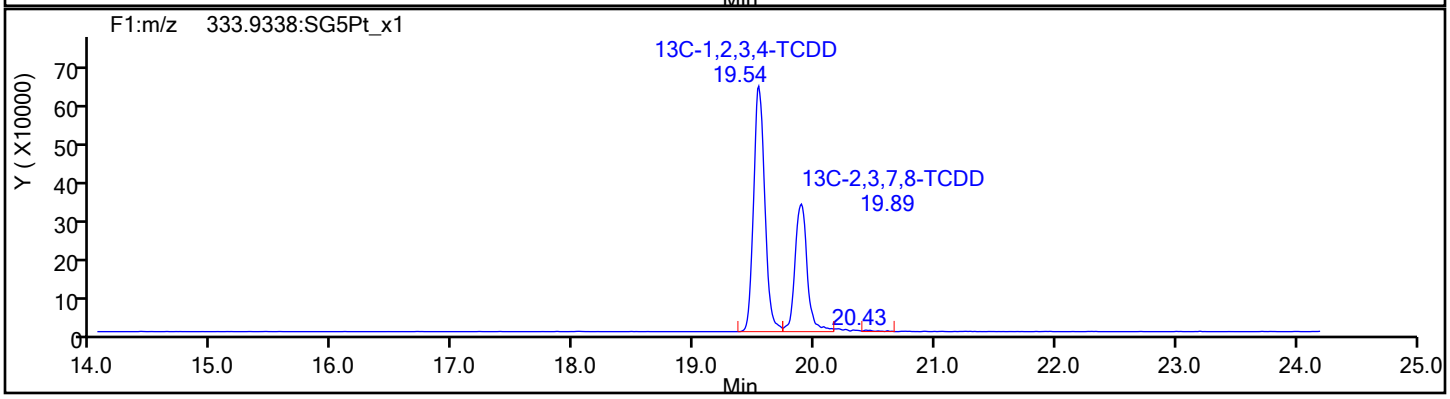
TCDD





TCDD Standards





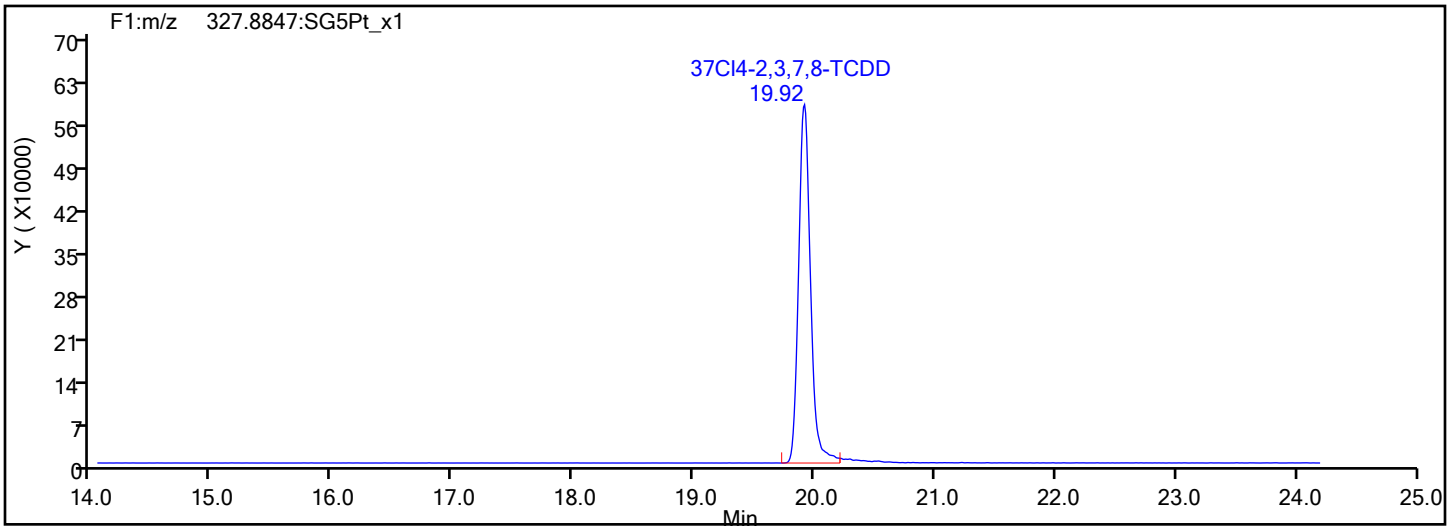
Report Date: 17-Dec-2019 09:18:21 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

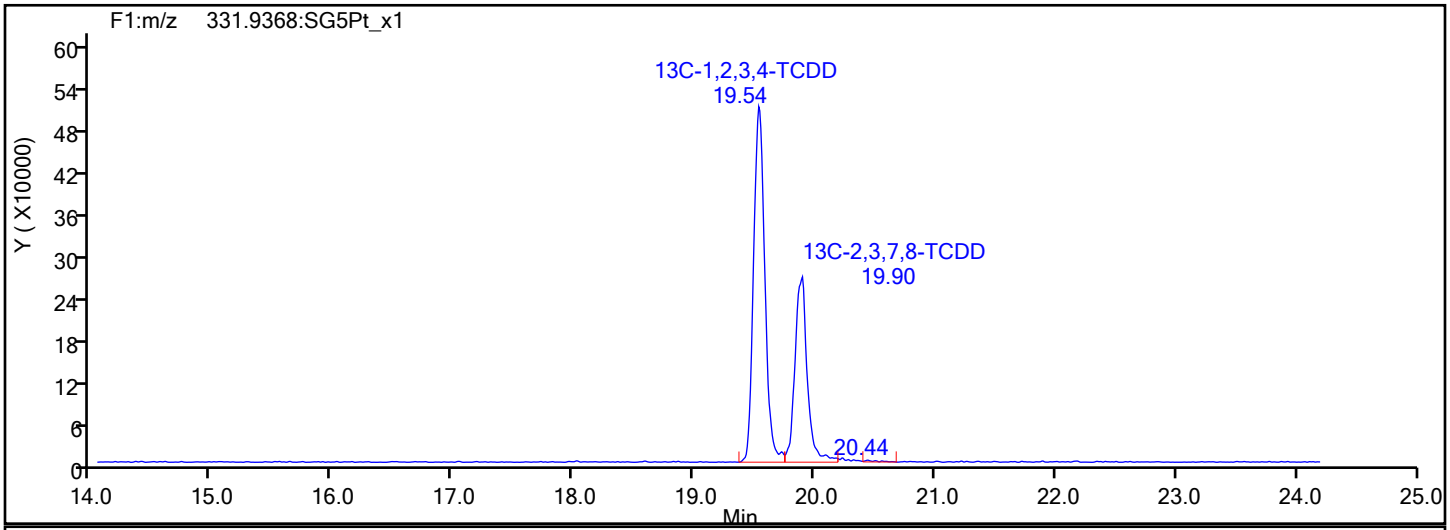
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d

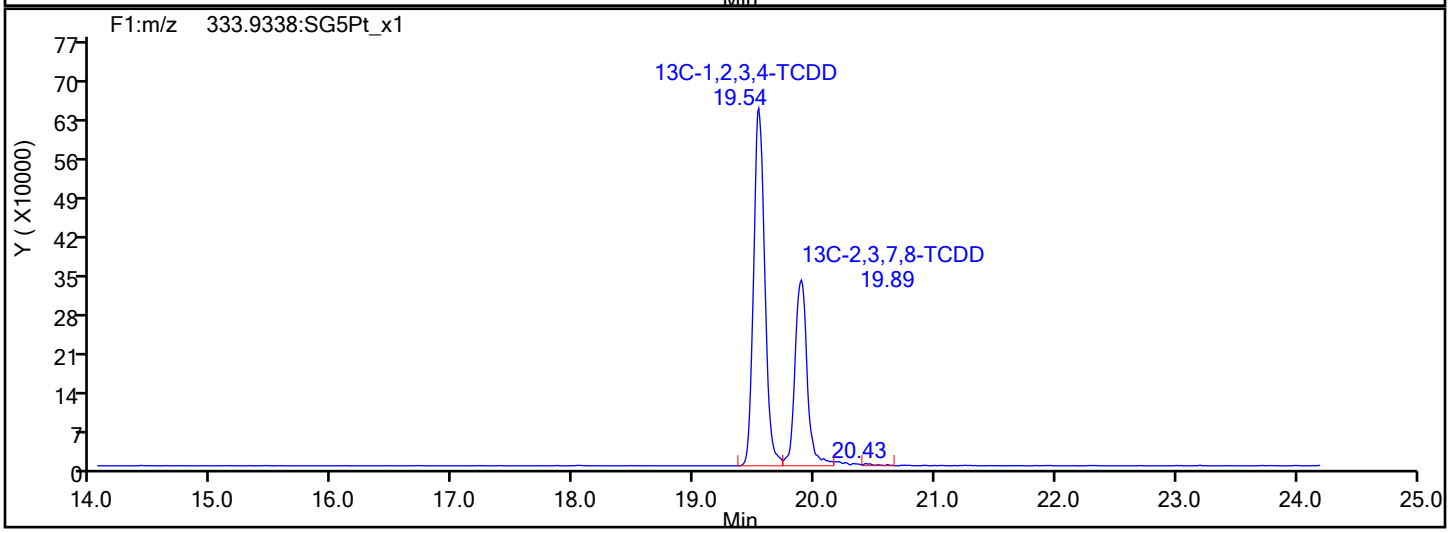
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



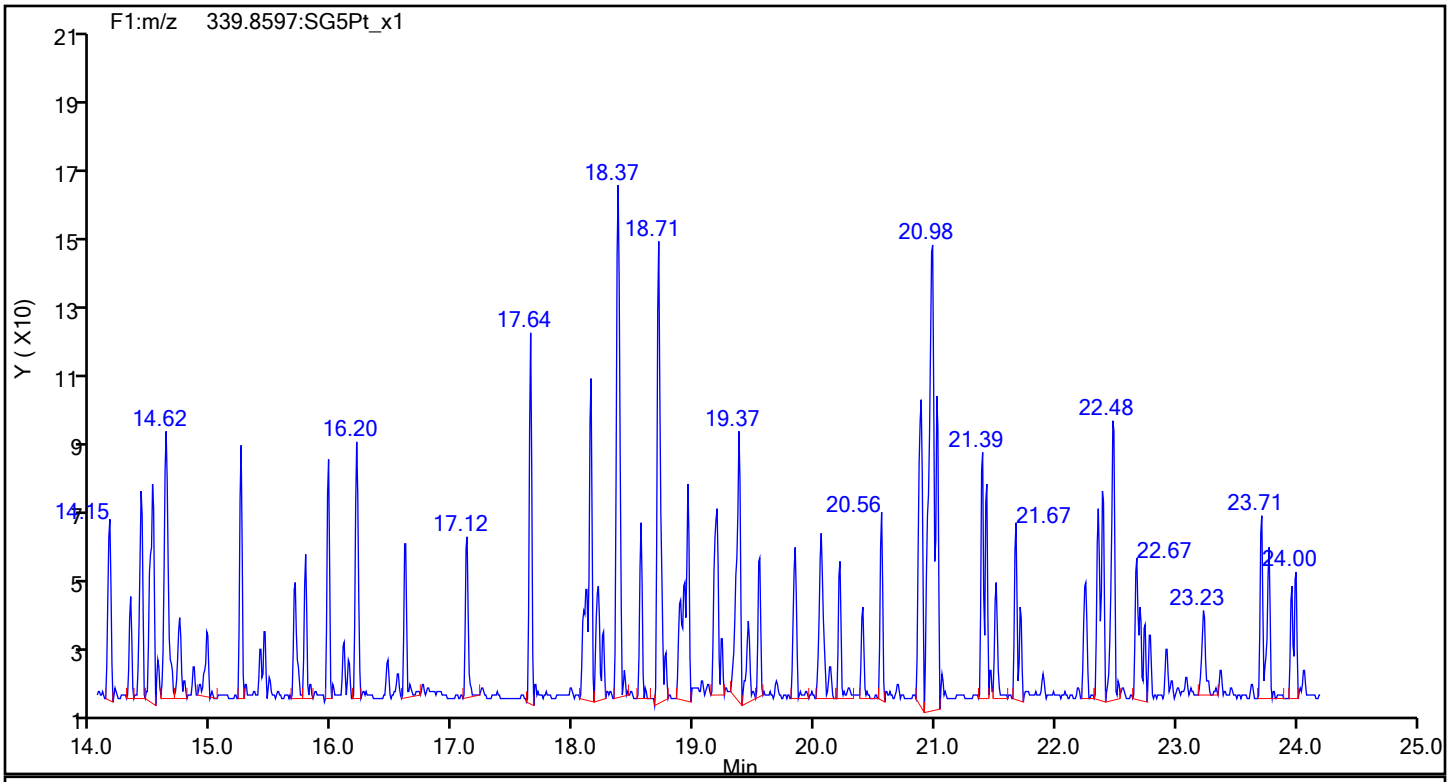


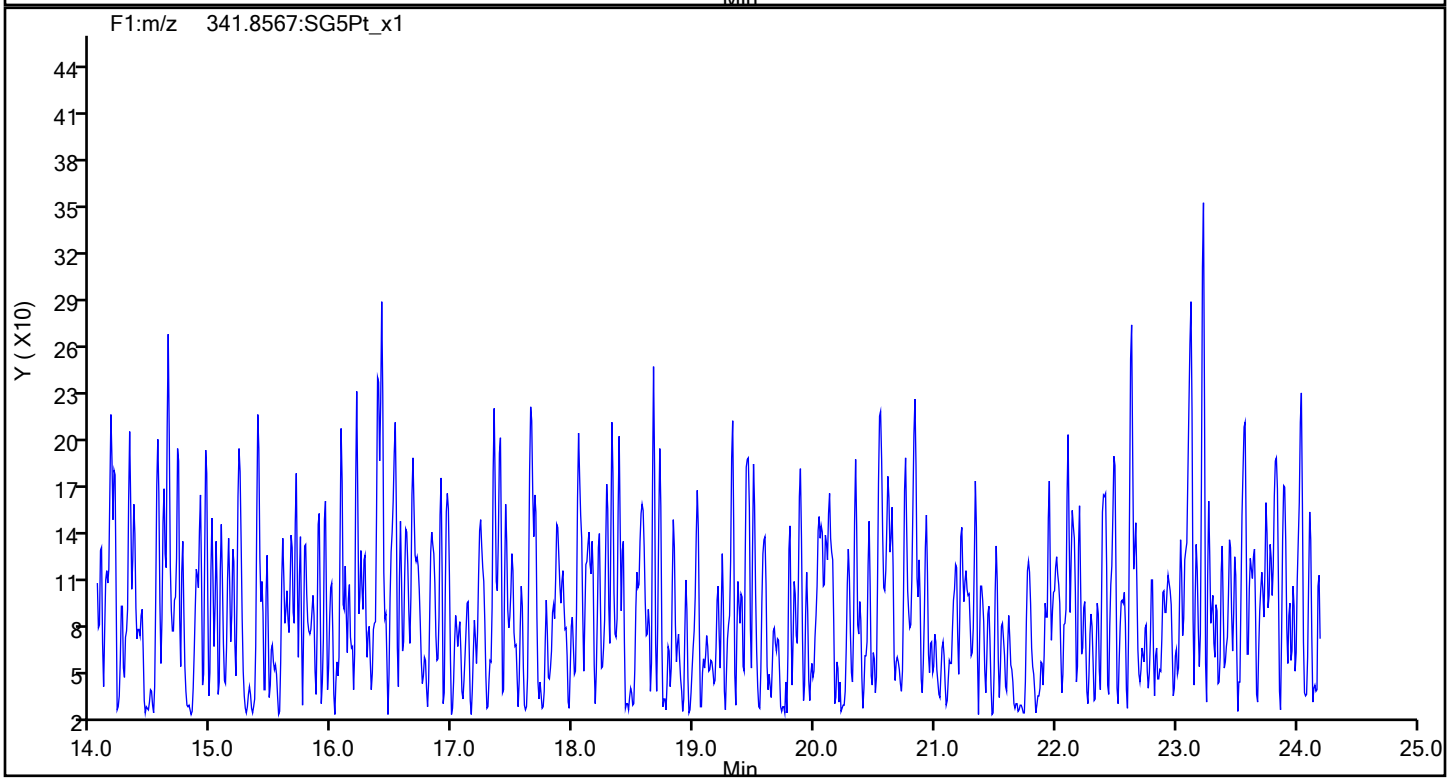
Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



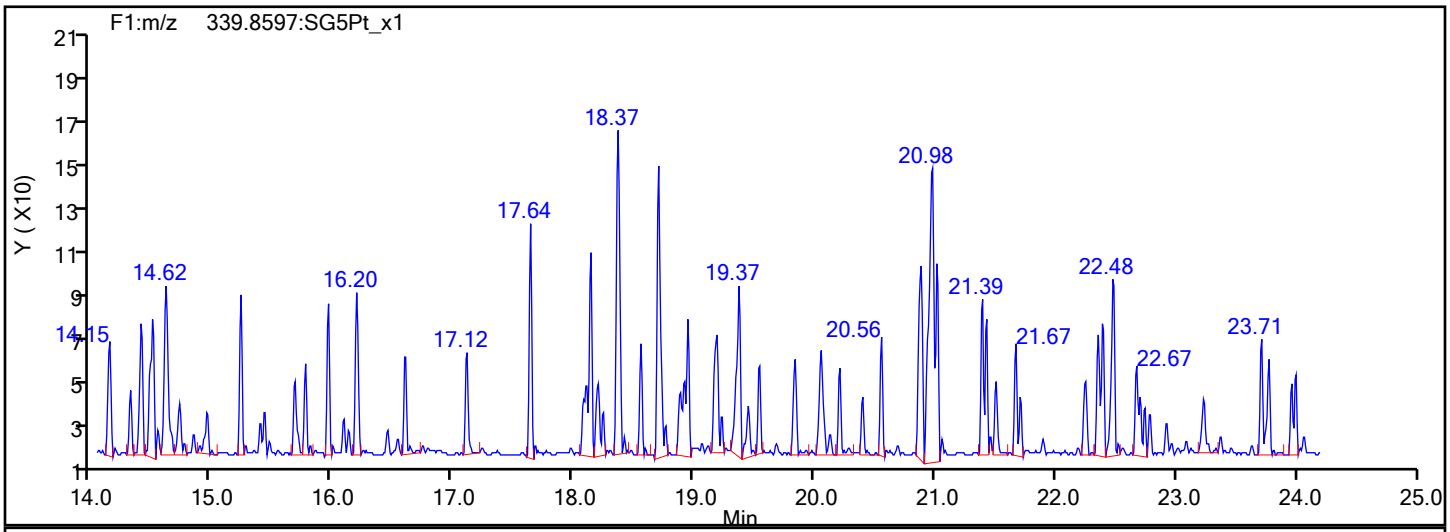


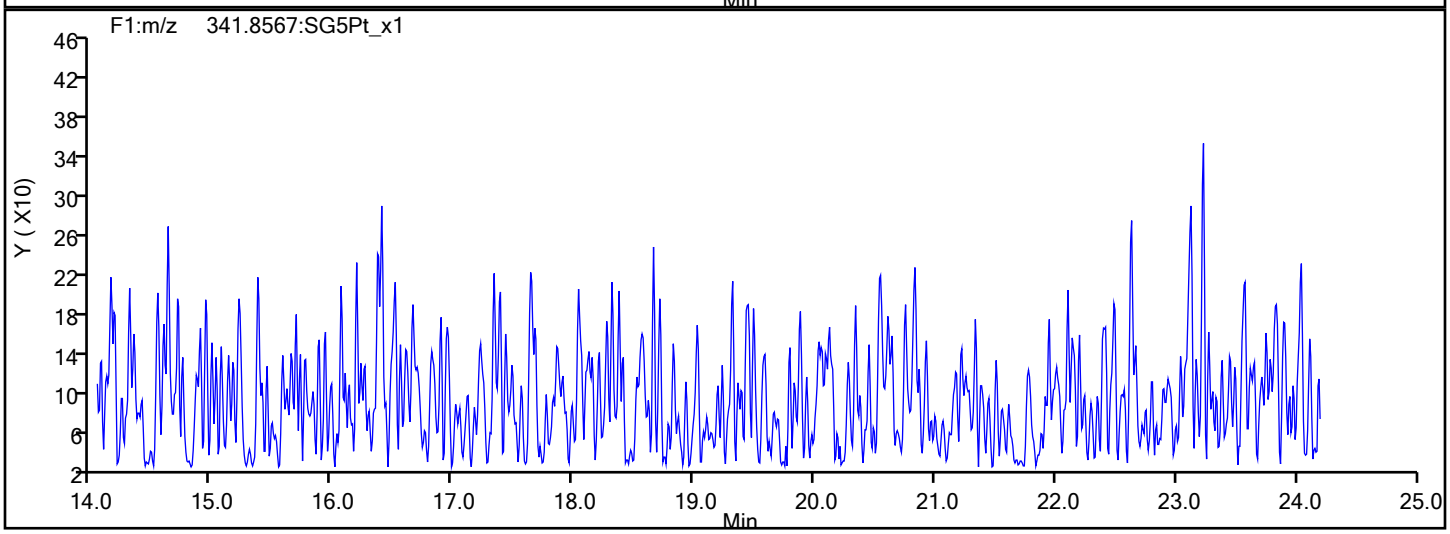
Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

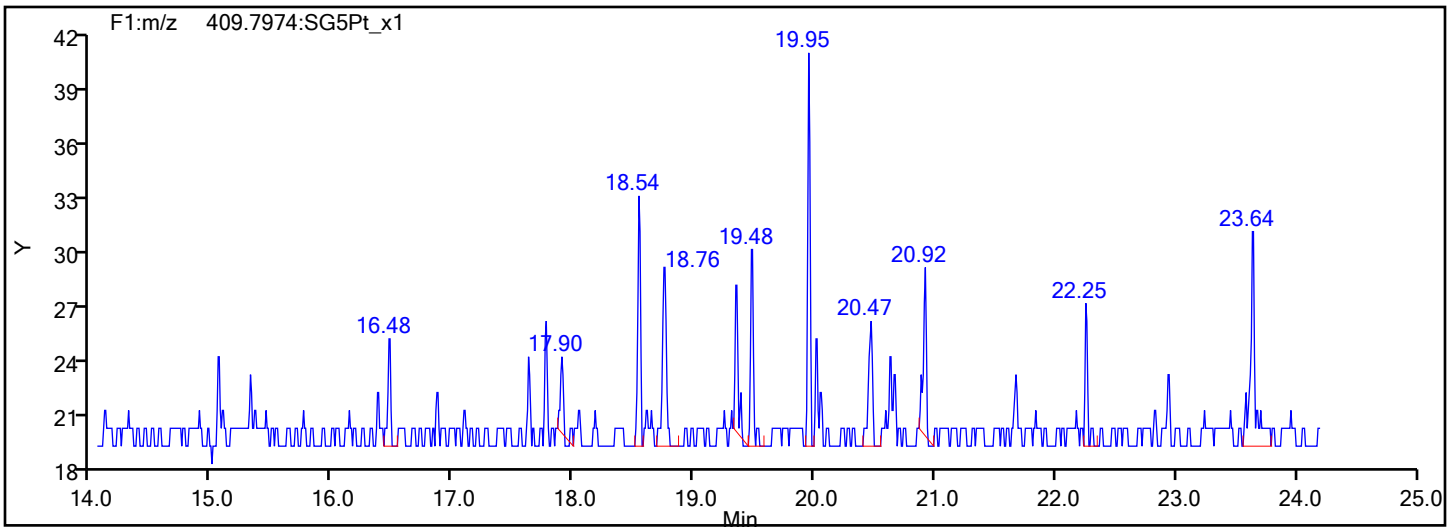
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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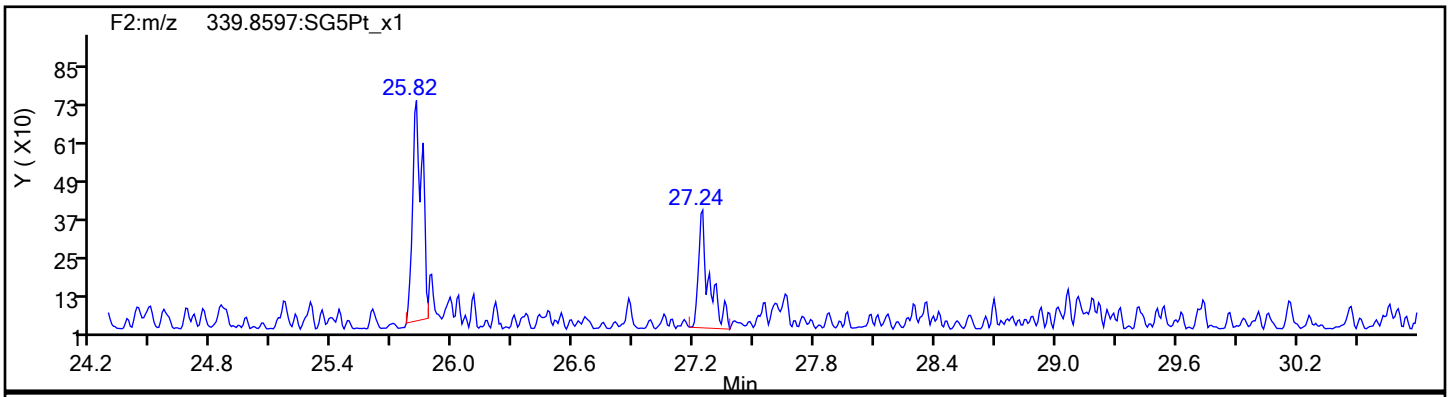
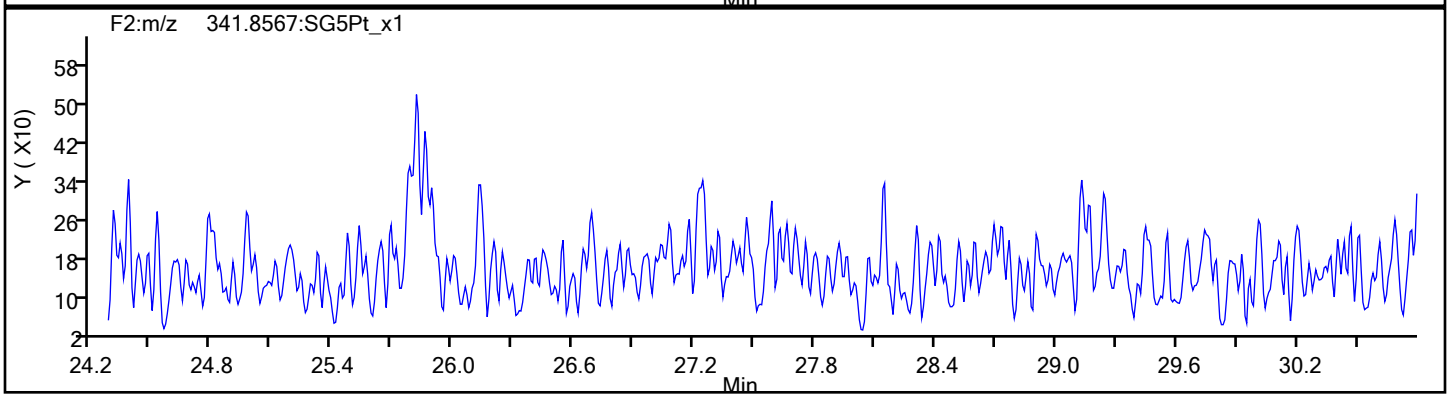
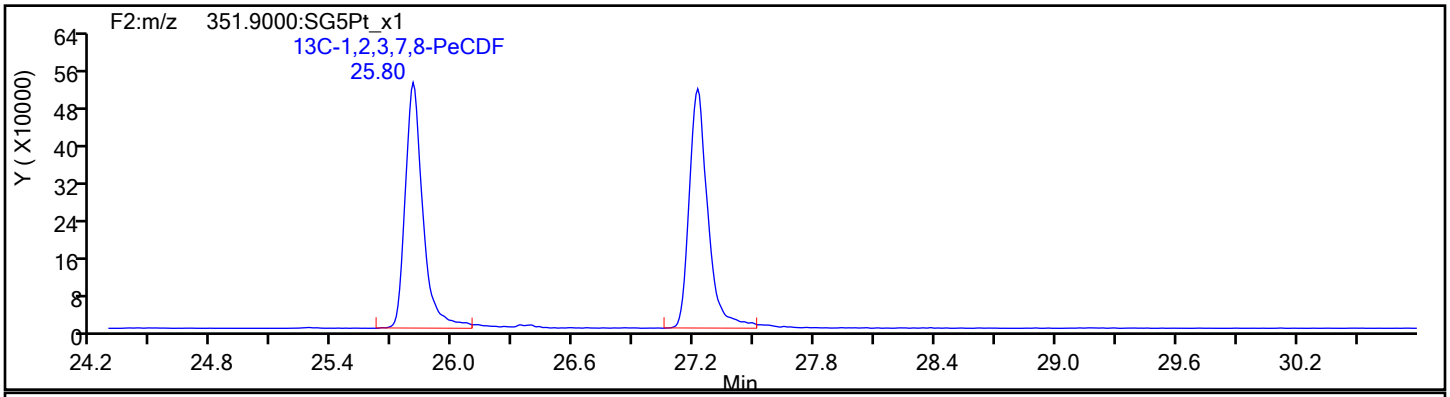
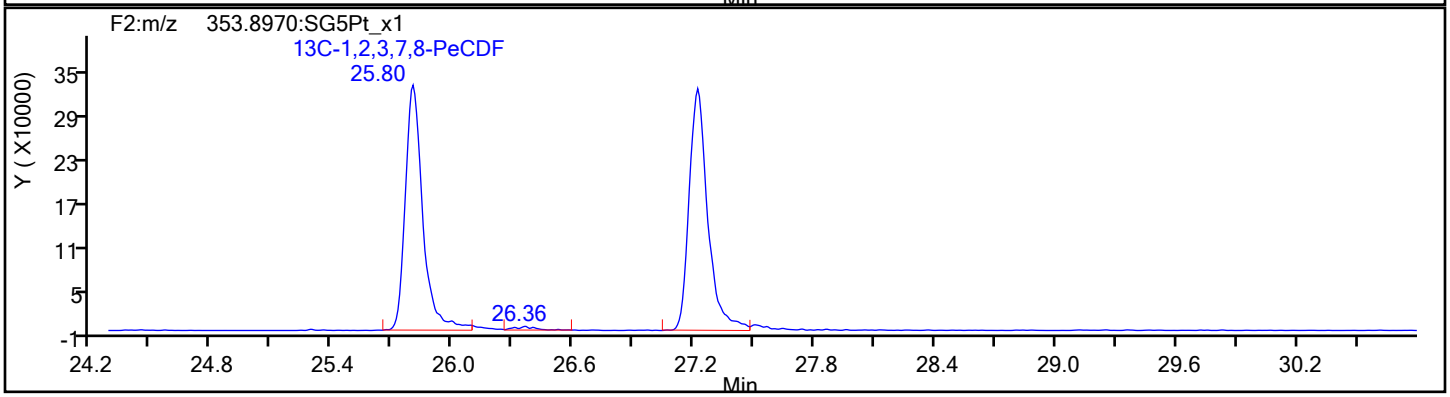
PeCDF





PeCDF Standards





Eurofins TestAmerica, Sacramento

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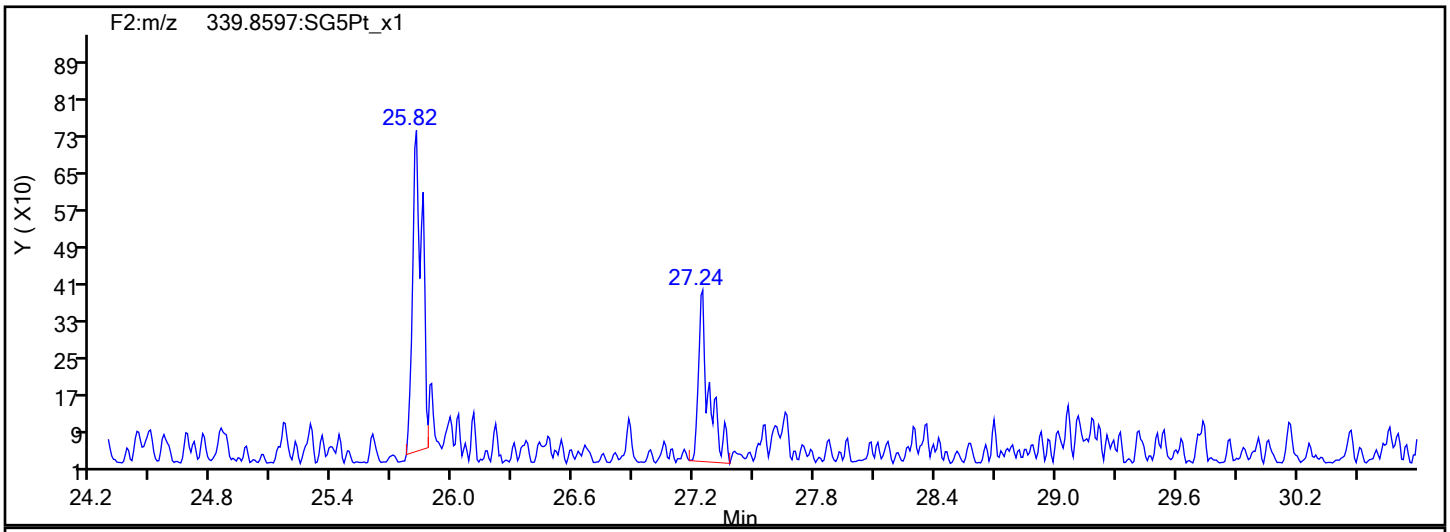
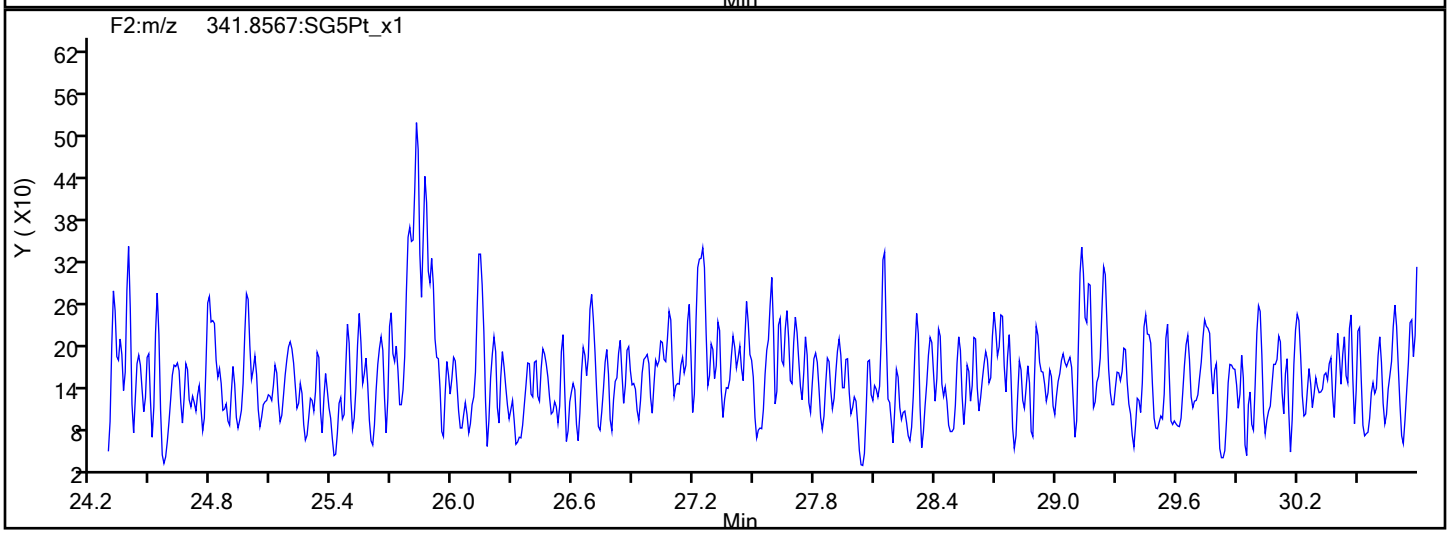
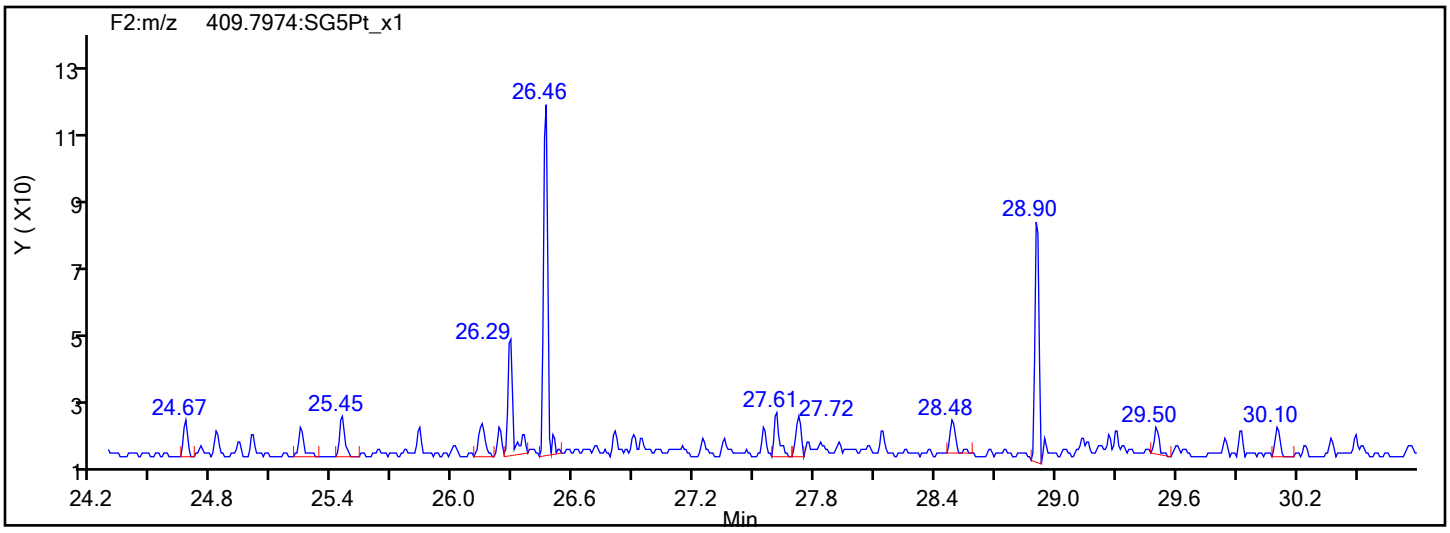




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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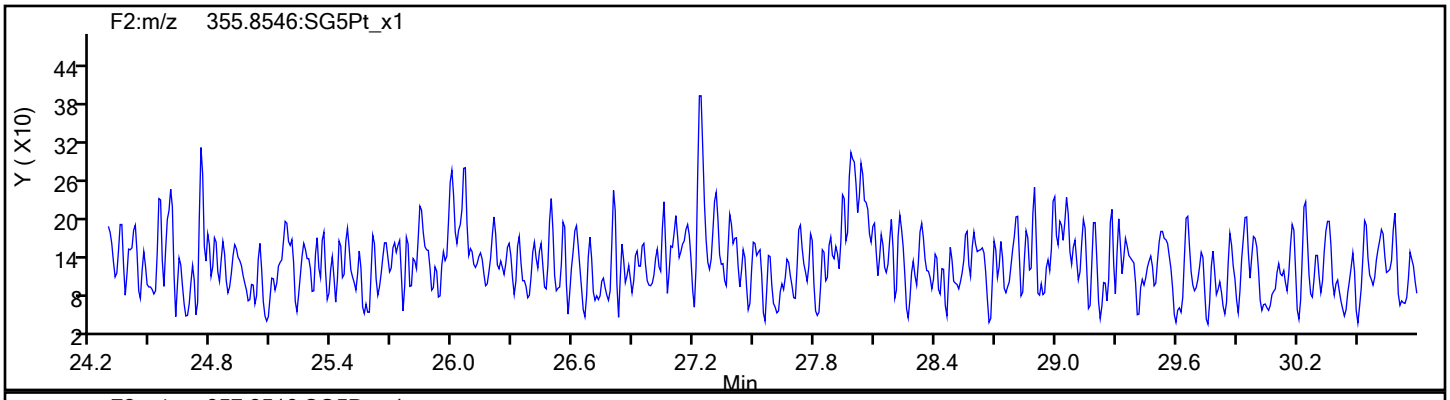
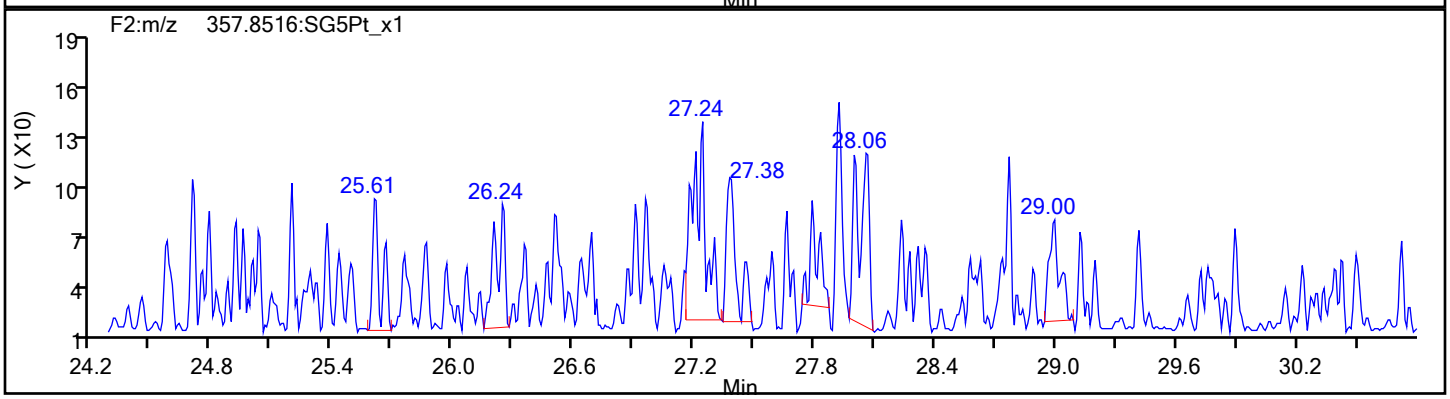
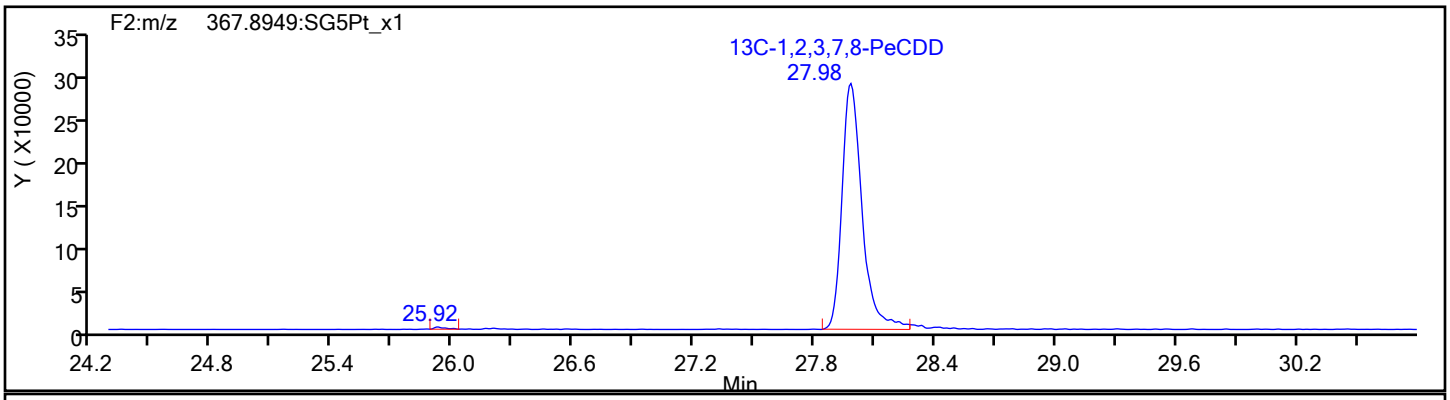
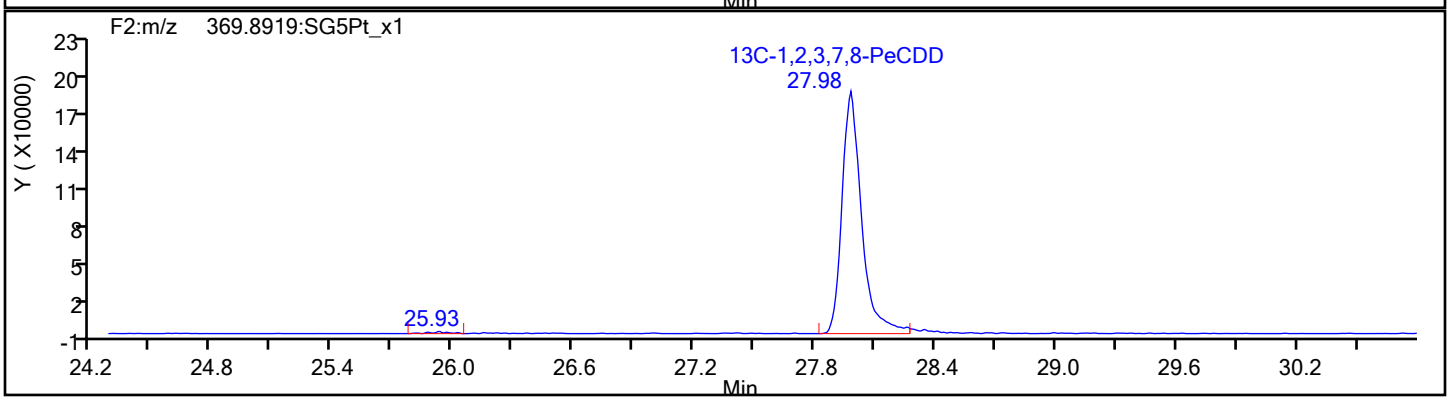
PeCDD





PeCDD Standards





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Eurofins TestAmerica, Sacramento

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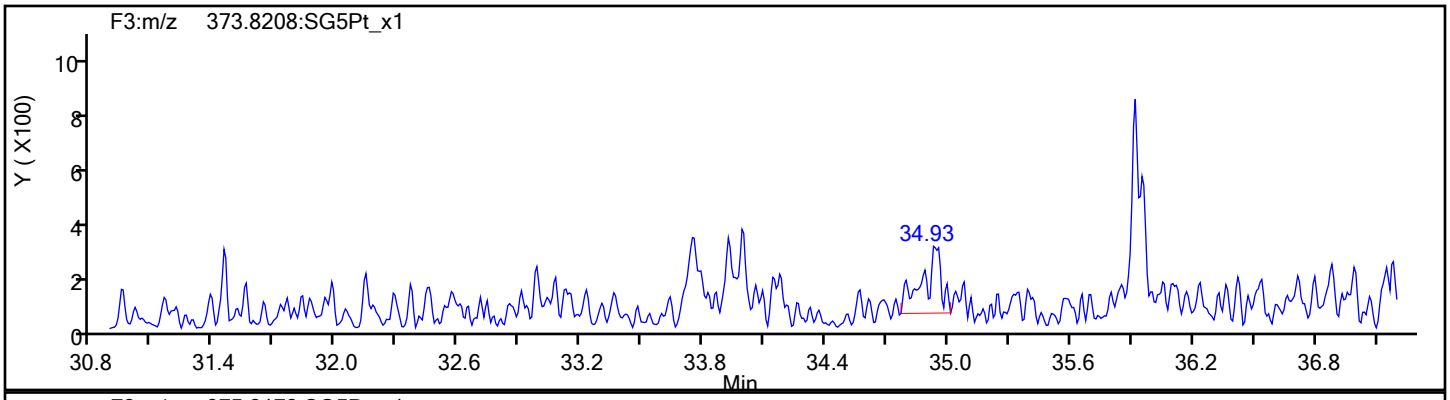
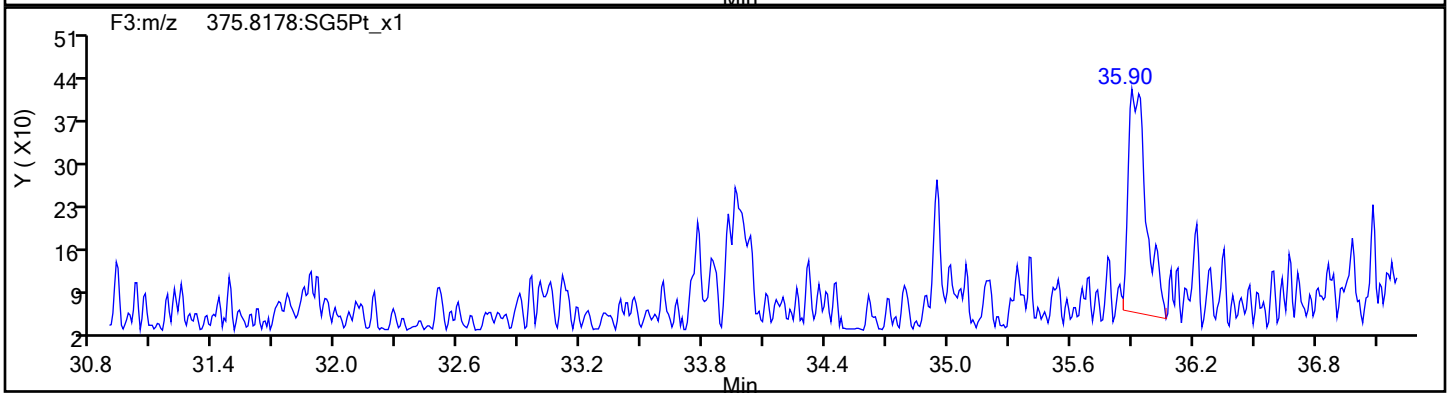
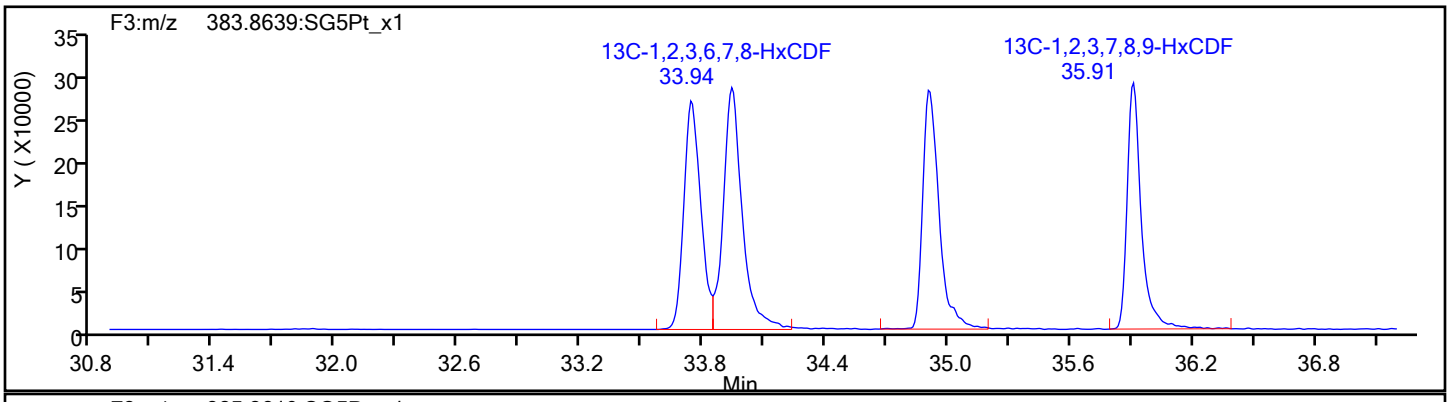
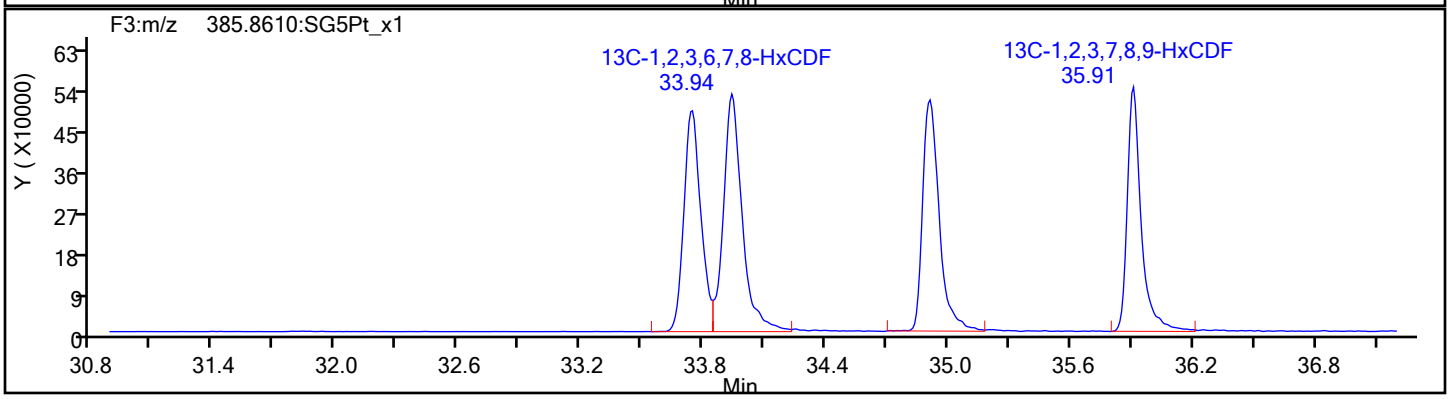
HxCDF





HxCDF Standards





Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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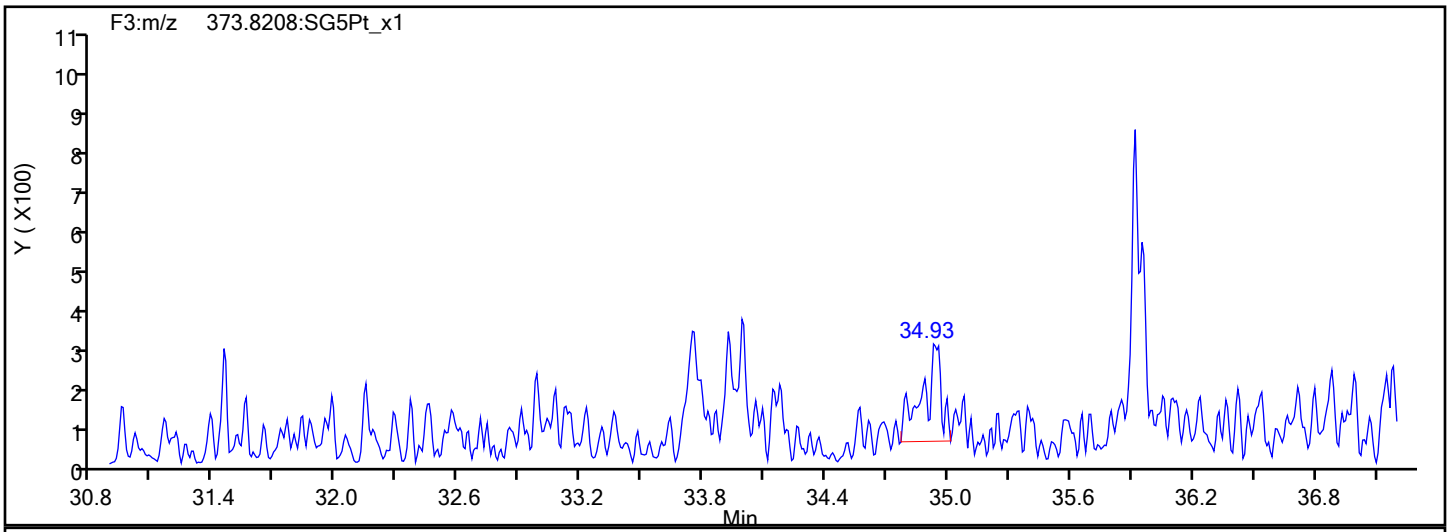
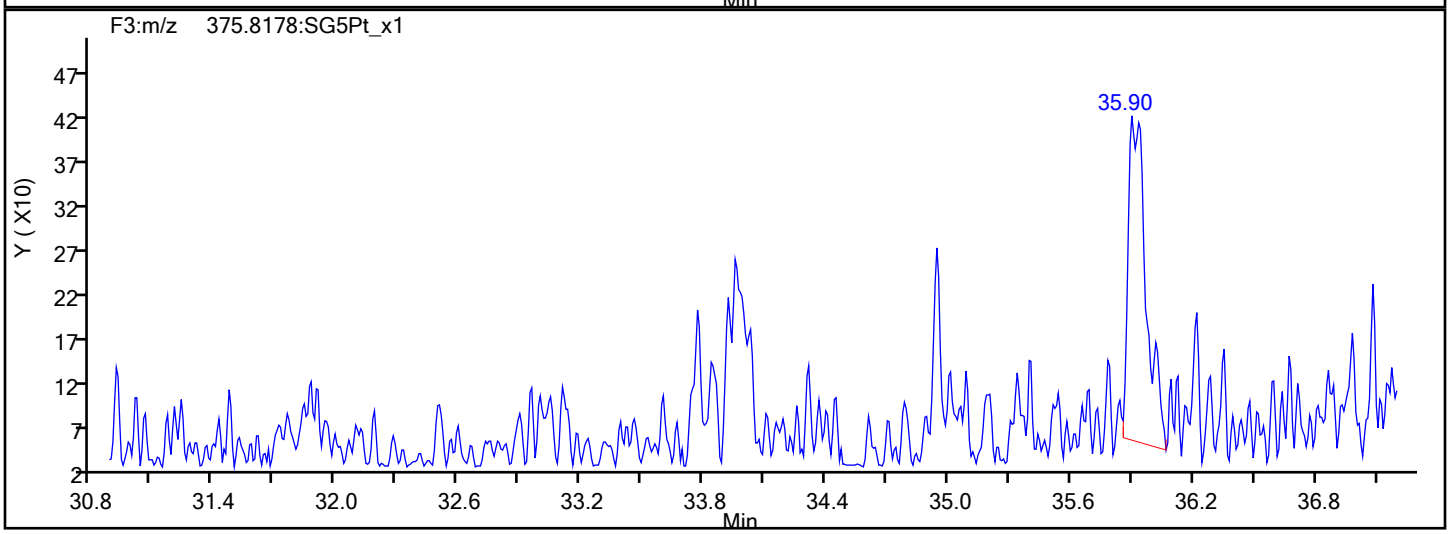
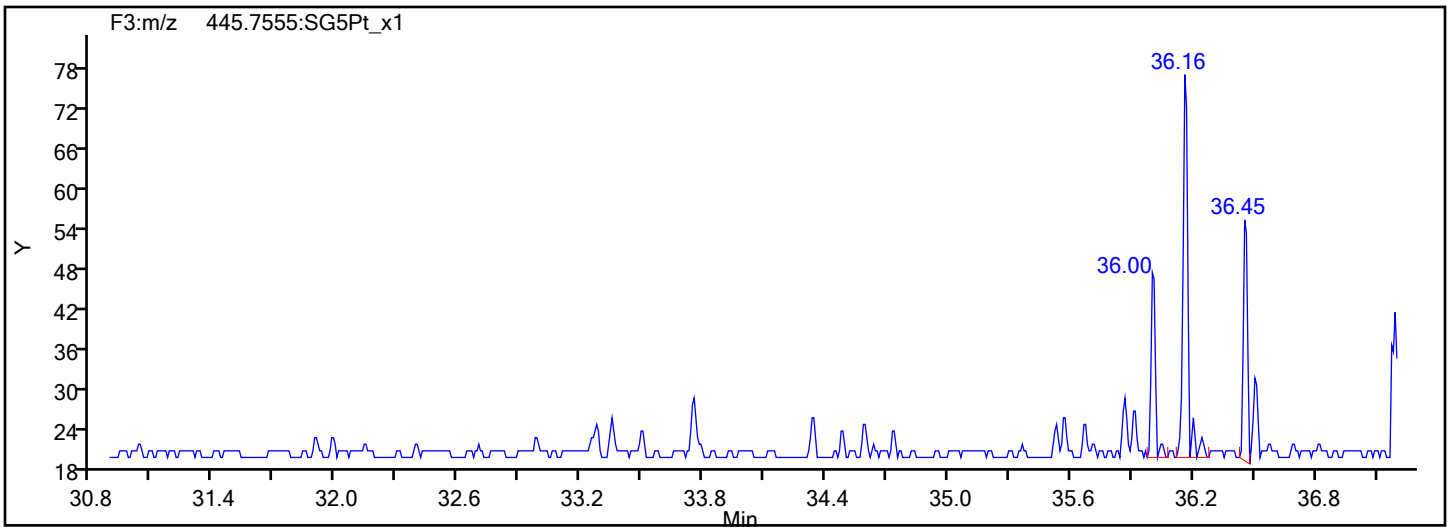
HxCDF





HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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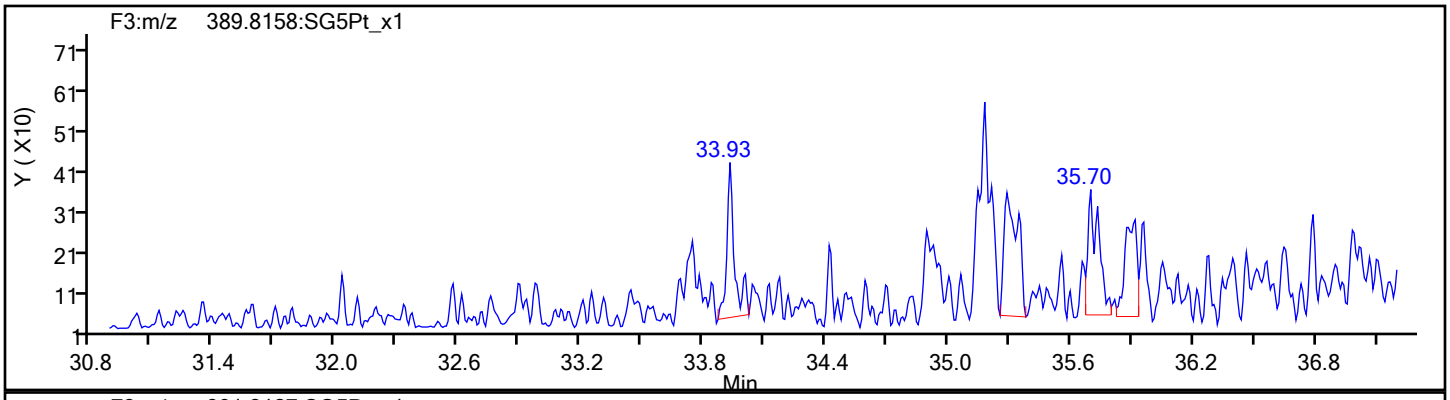
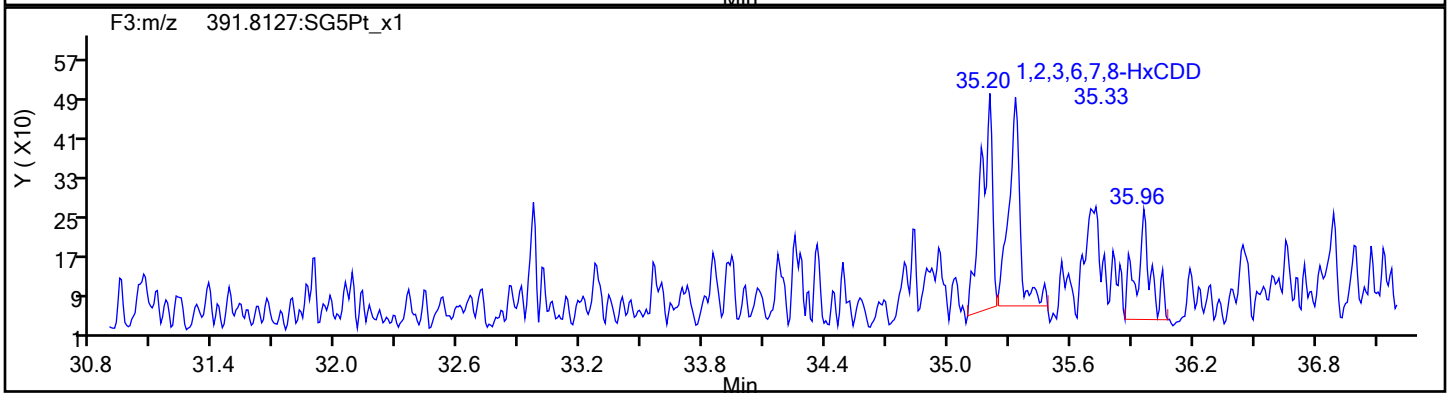
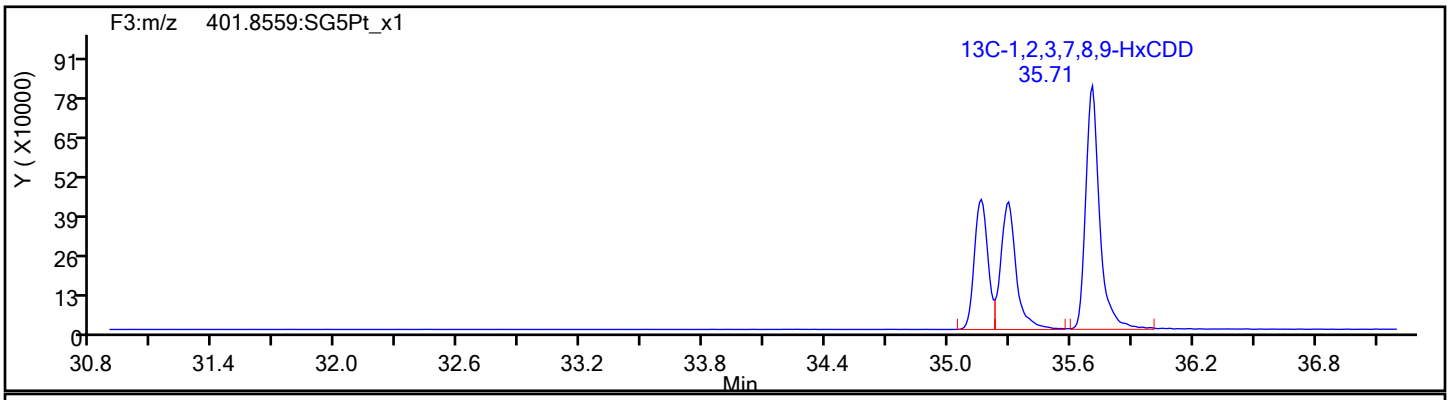
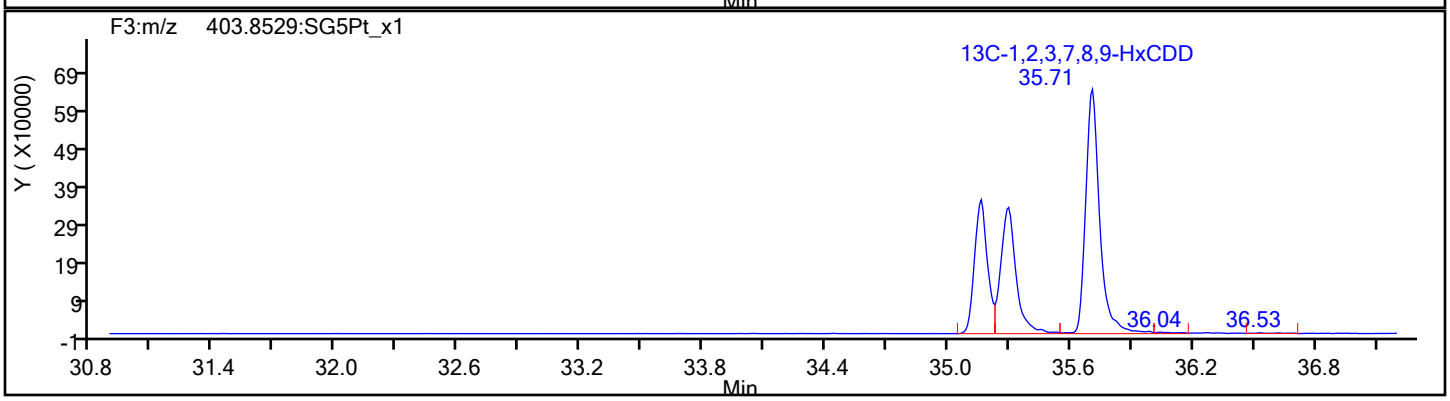
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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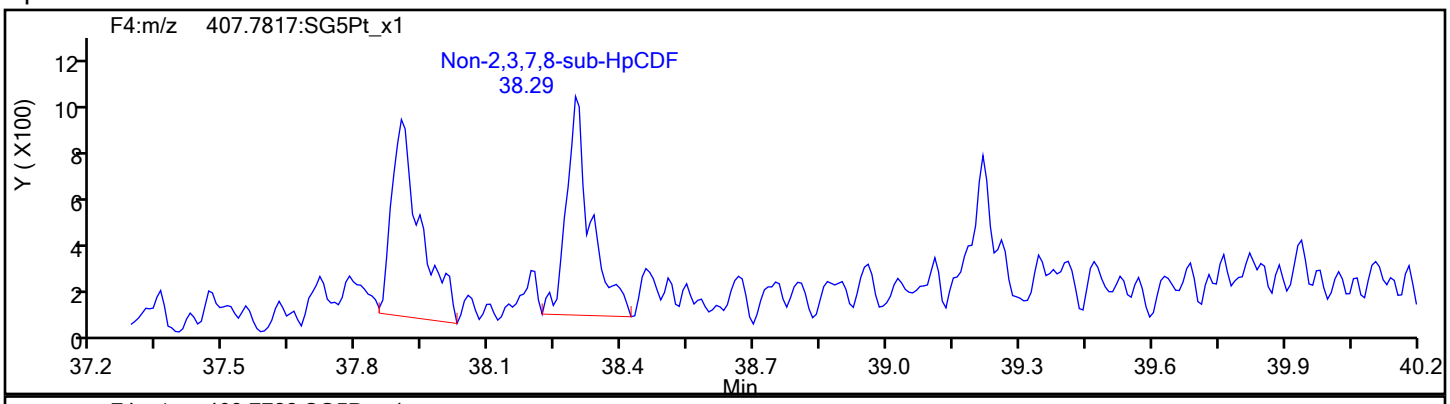
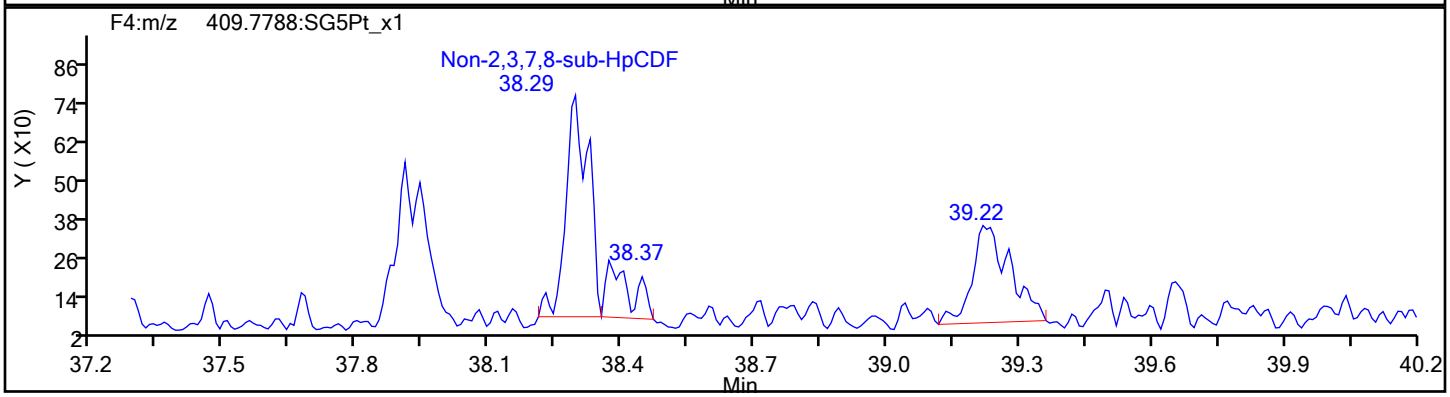
HpCDF





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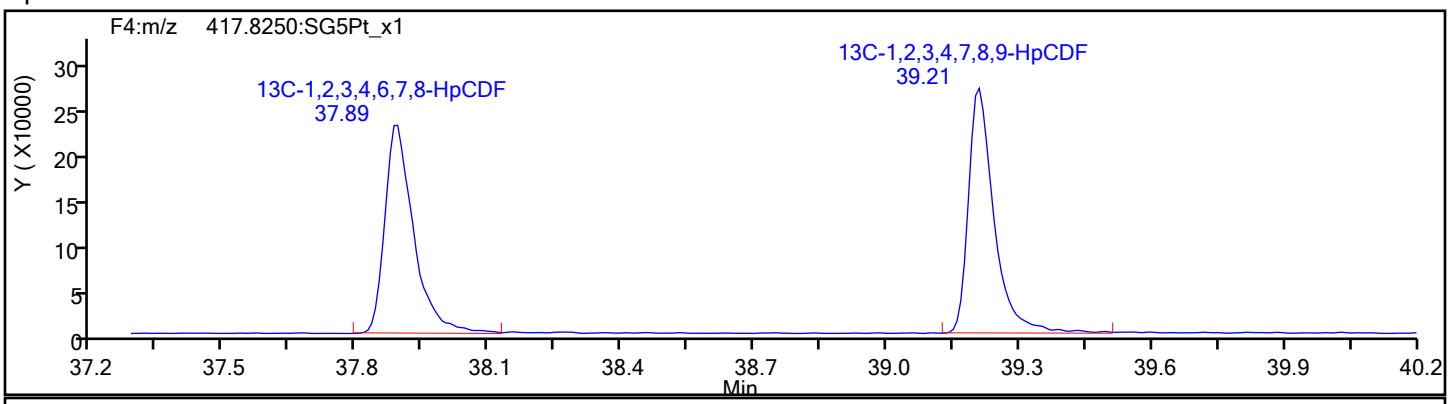

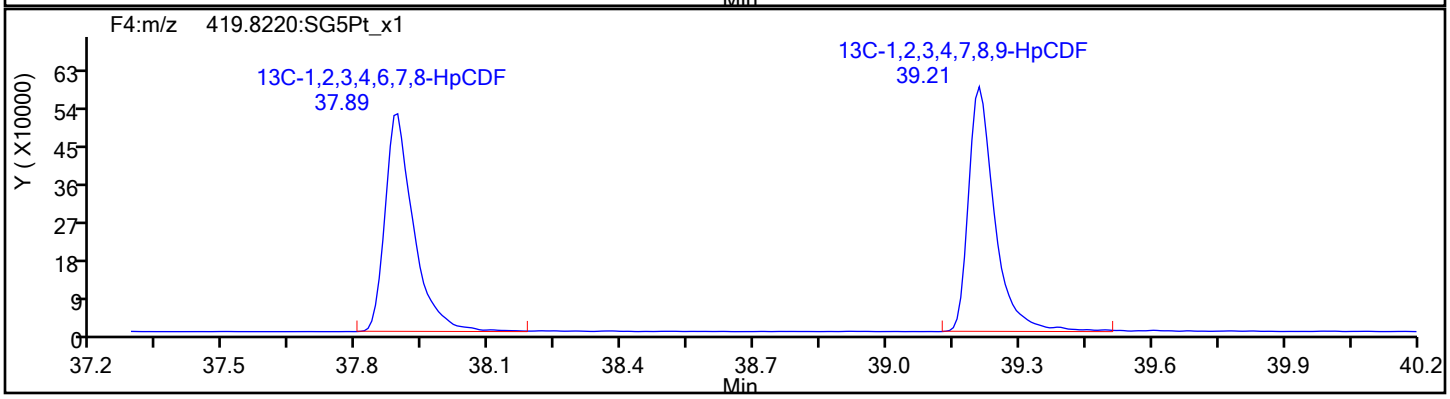

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Eurofins TestAmerica, Sacramento

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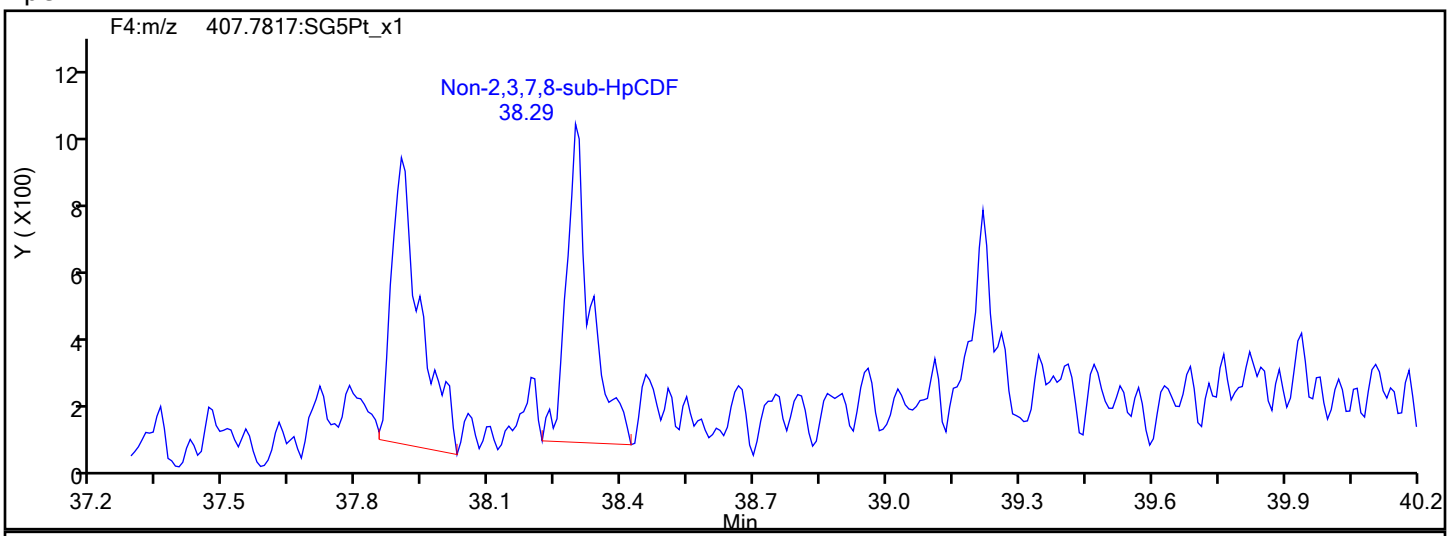
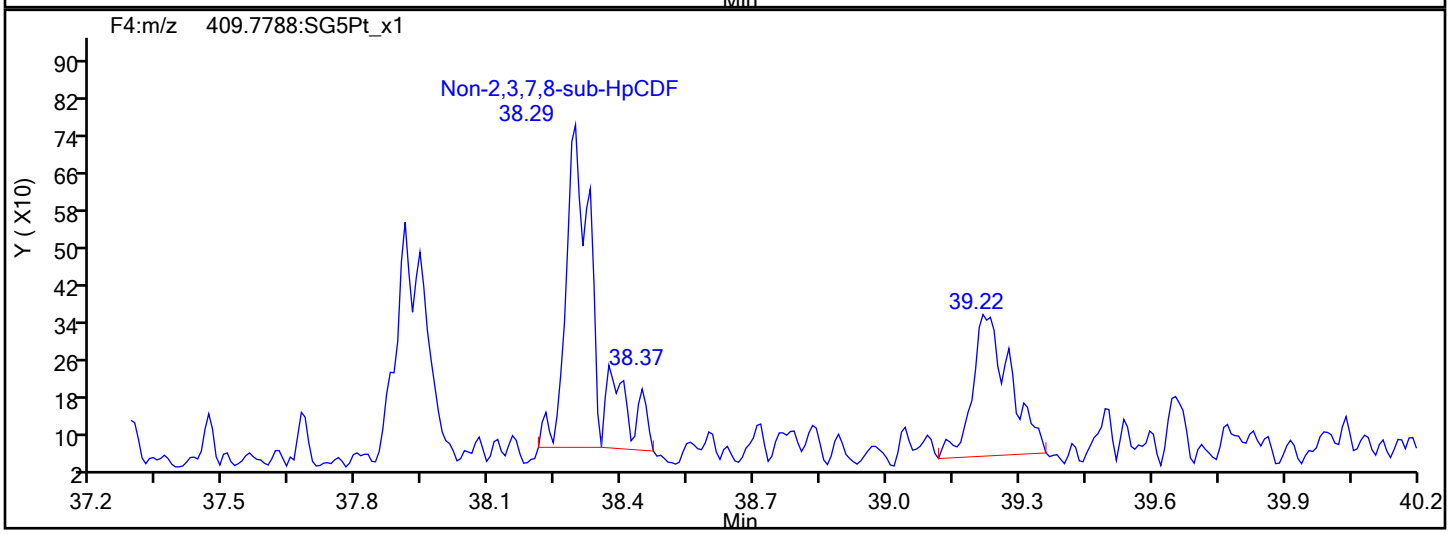
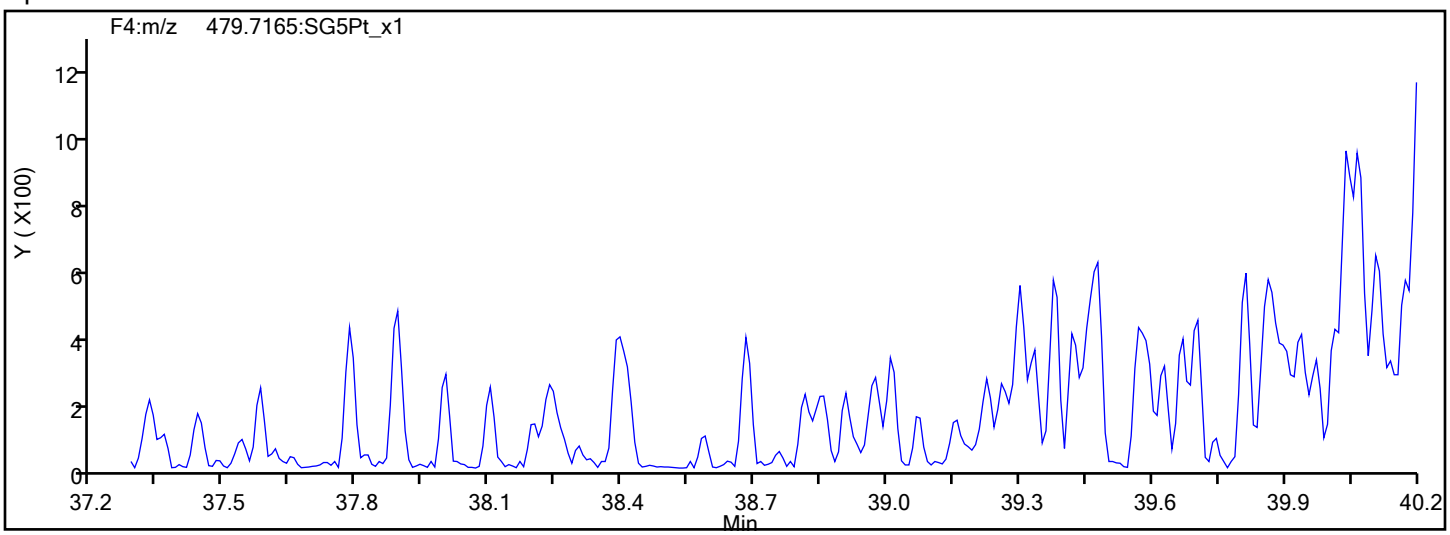




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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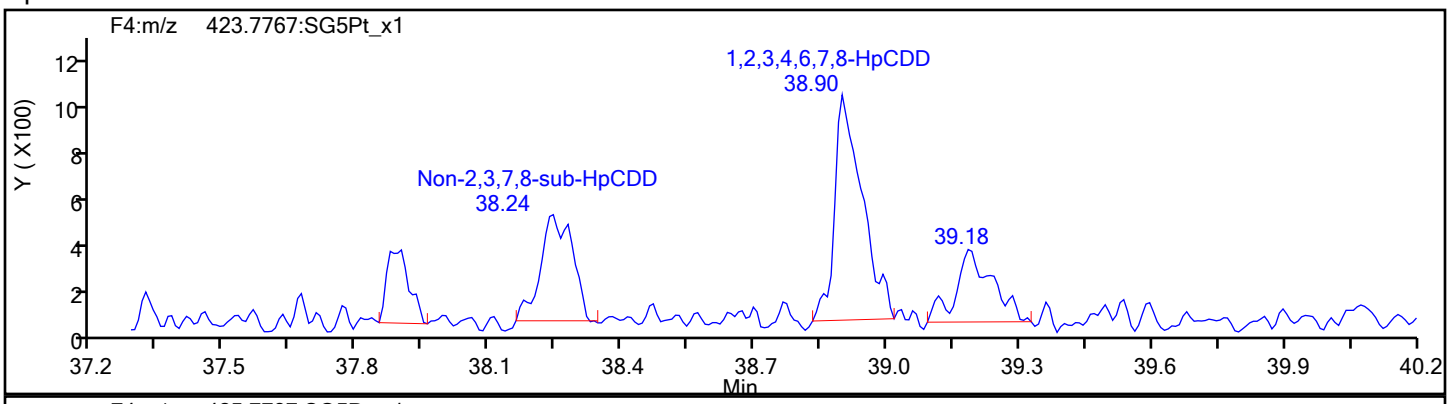
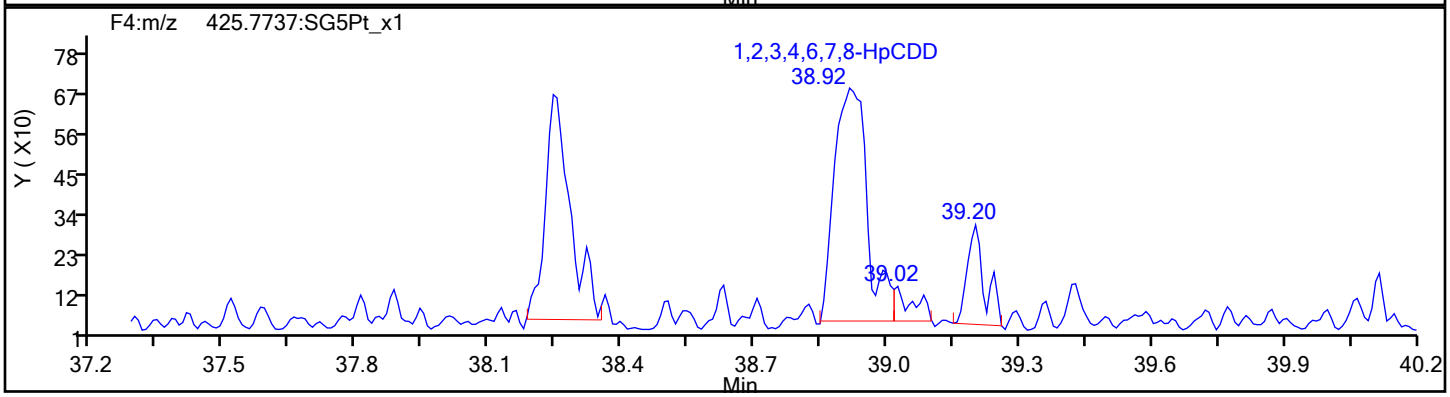
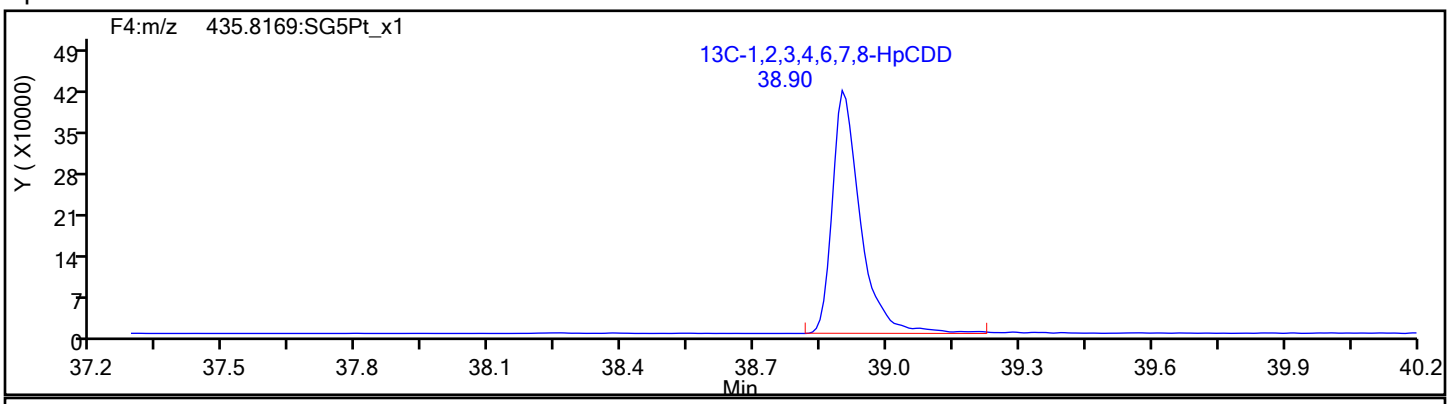
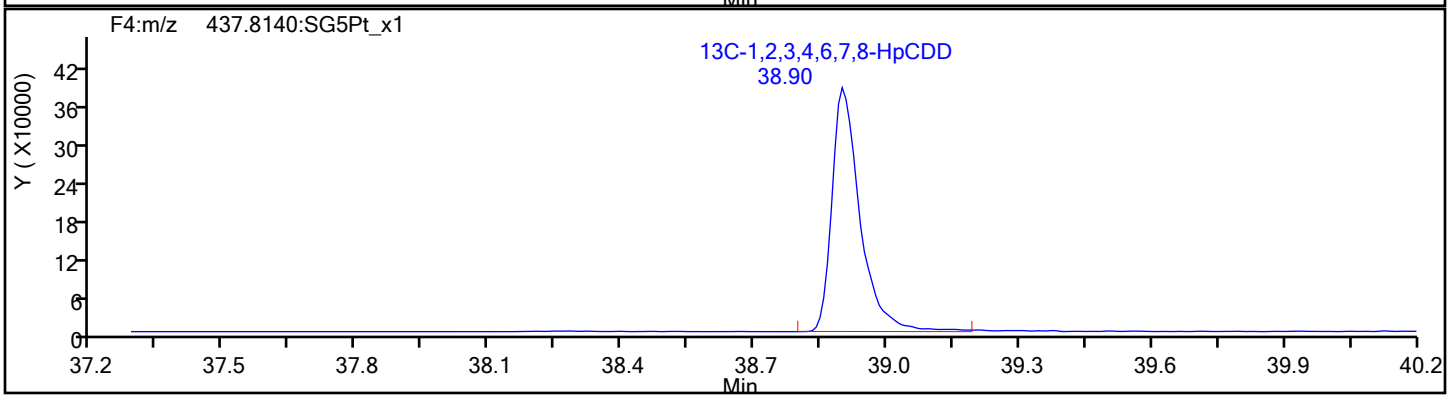
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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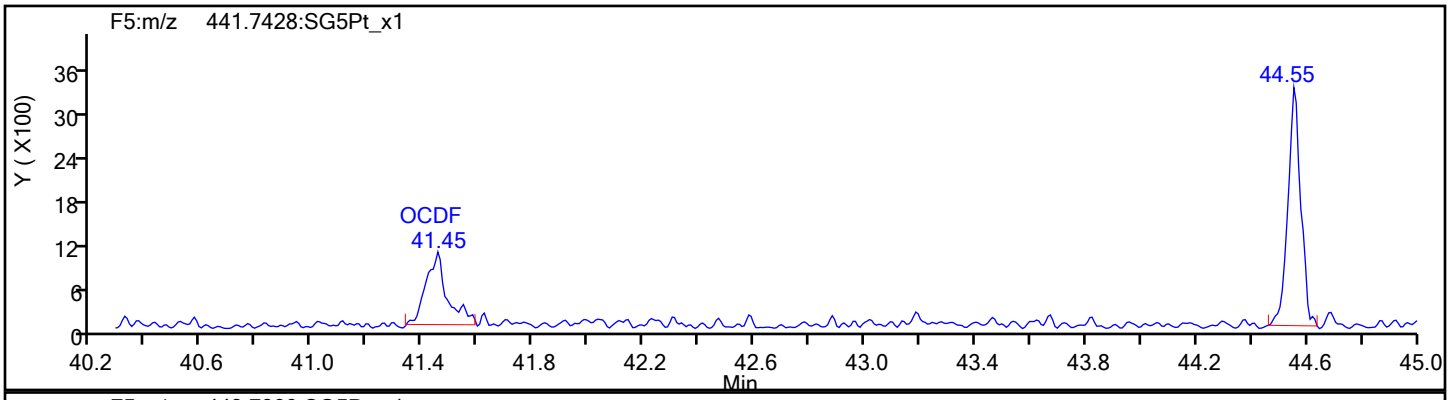
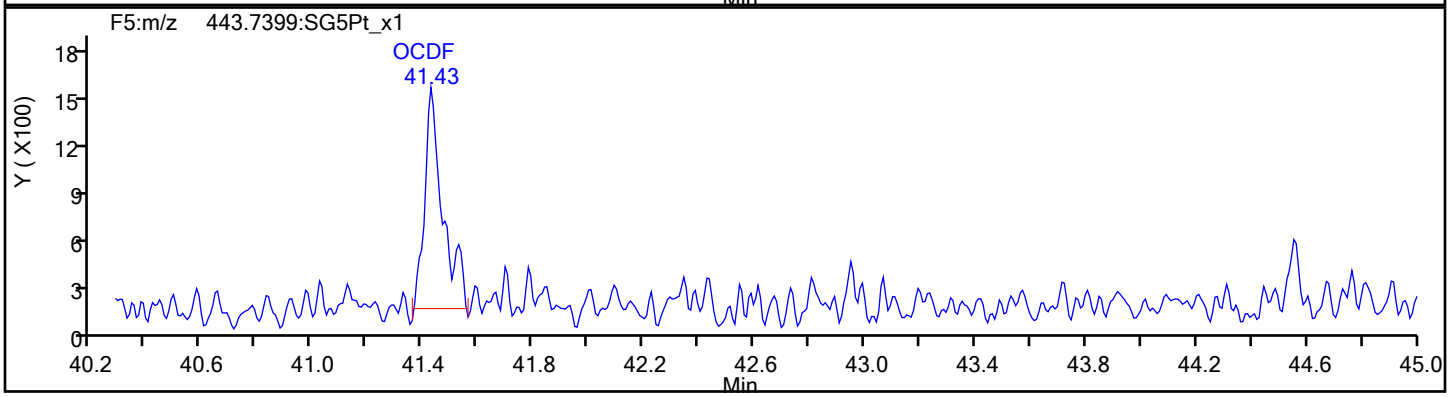
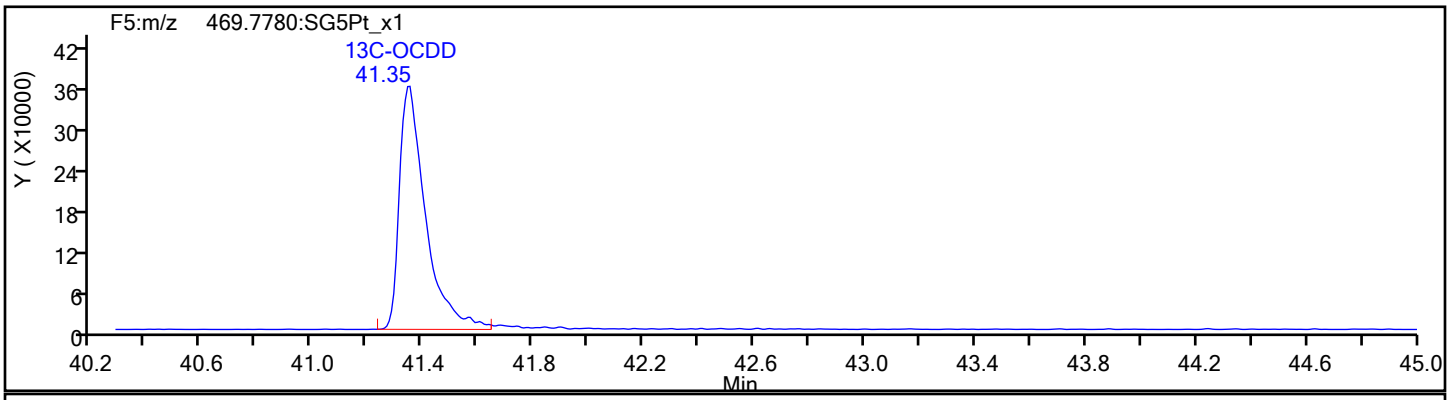
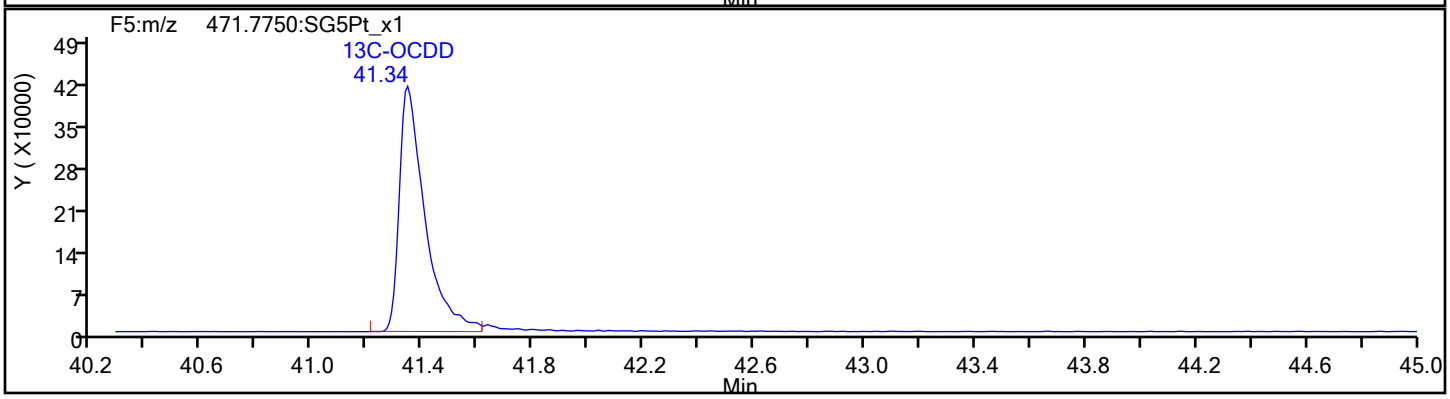
OCDF





OCDF Standards





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Eurofins TestAmerica, Sacramento

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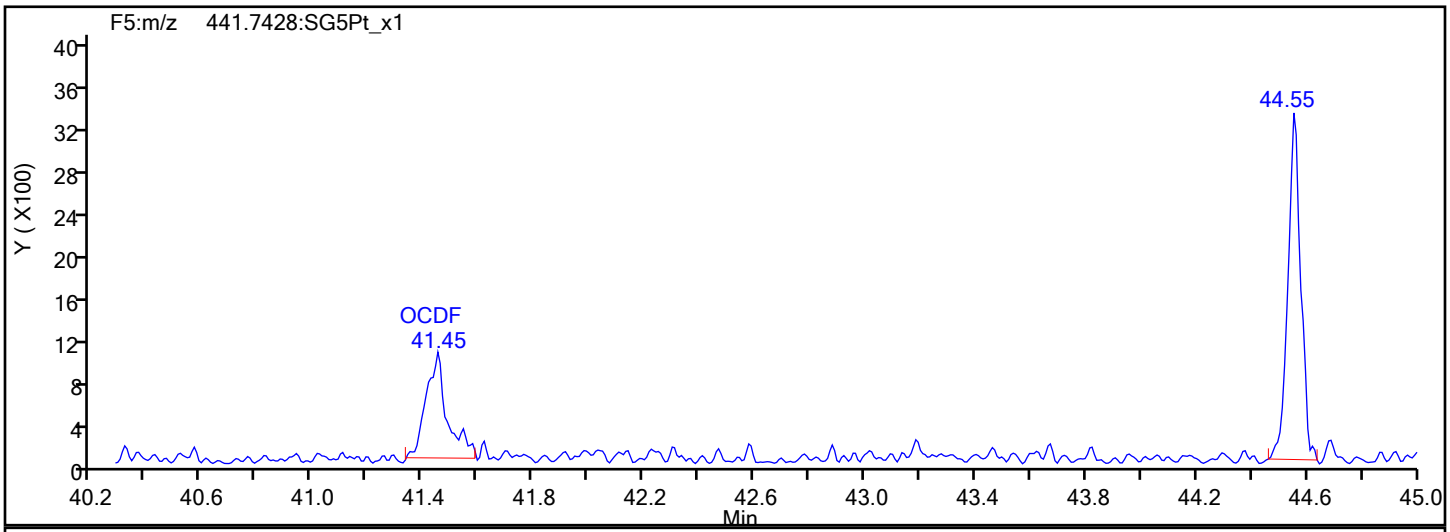
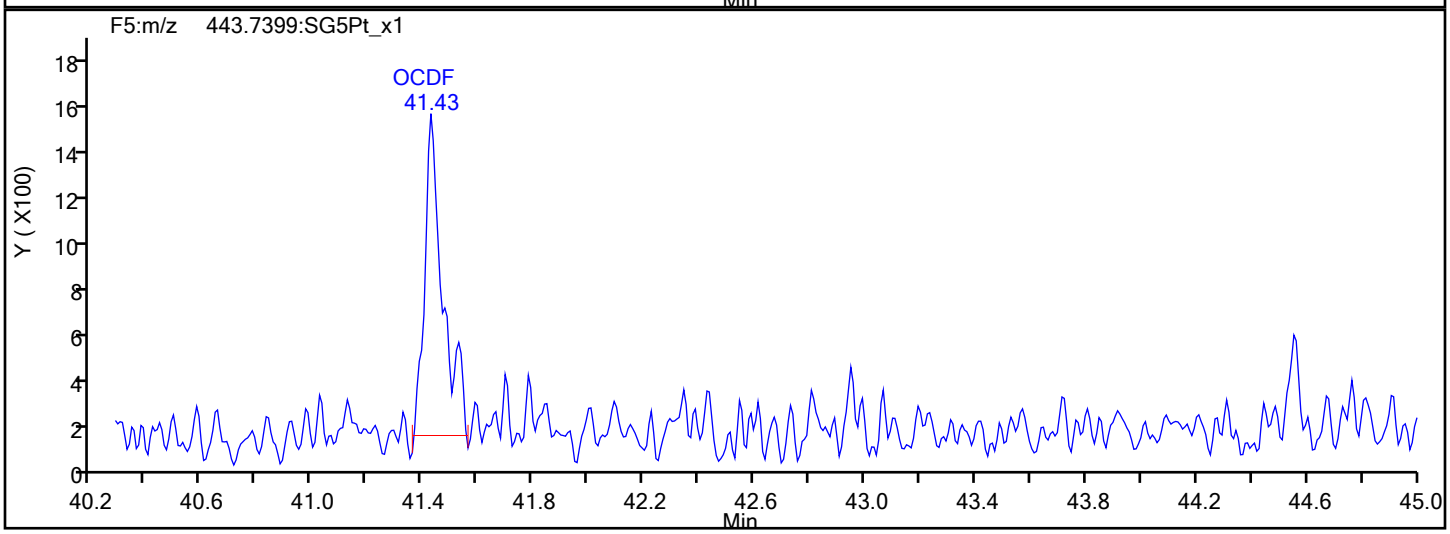
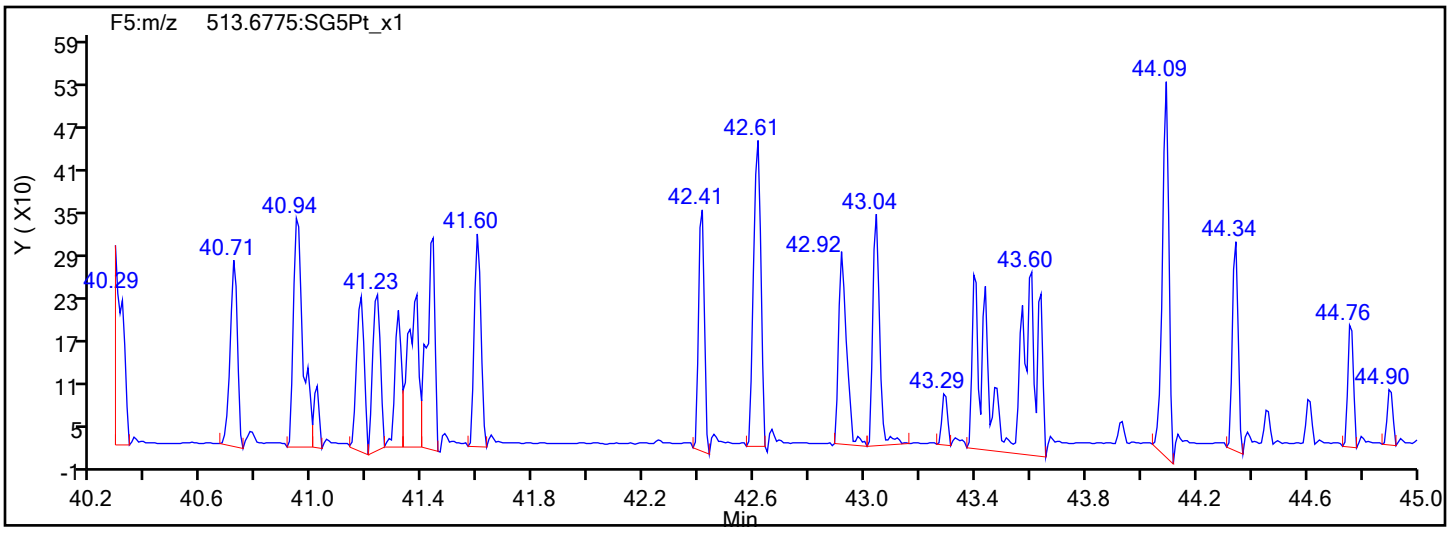
OCDF





OCDF Interference Mass



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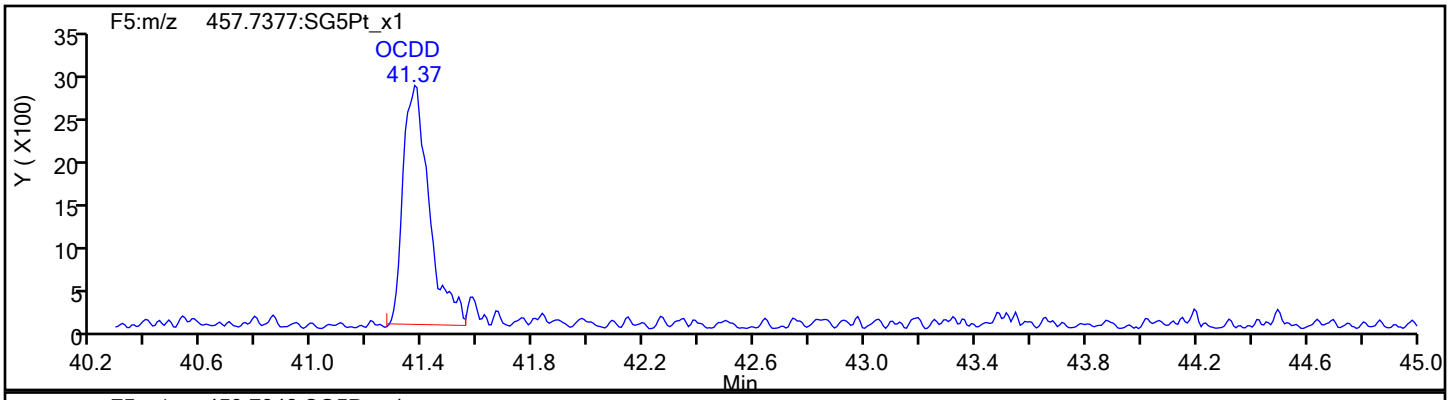
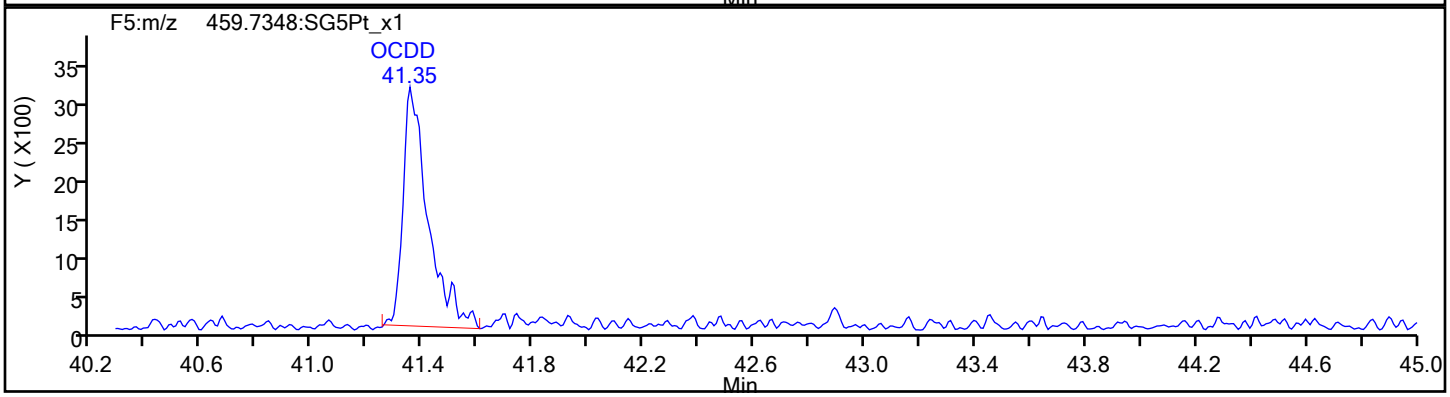
Eurofins TestAmerica, Sacramento

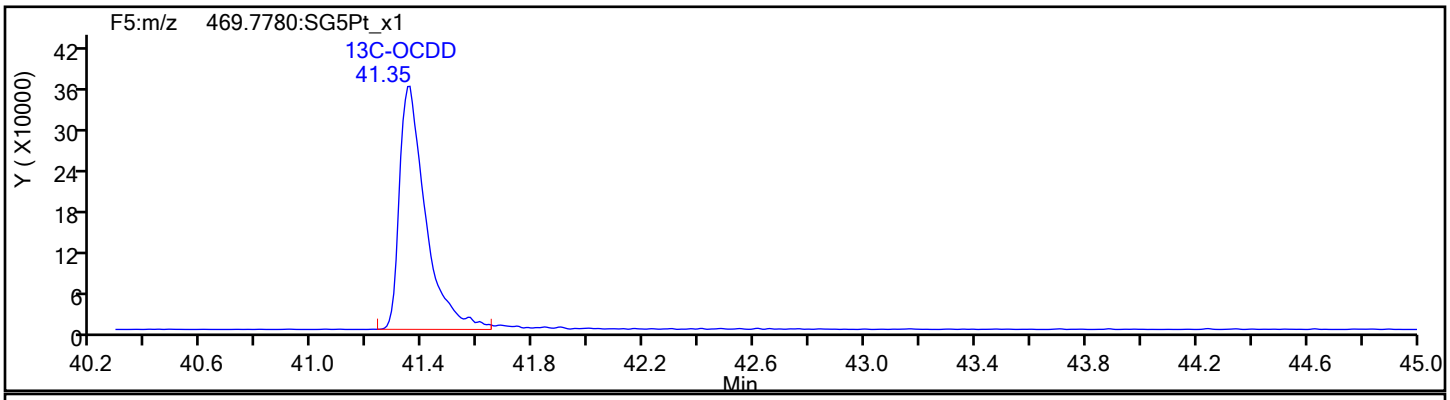
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

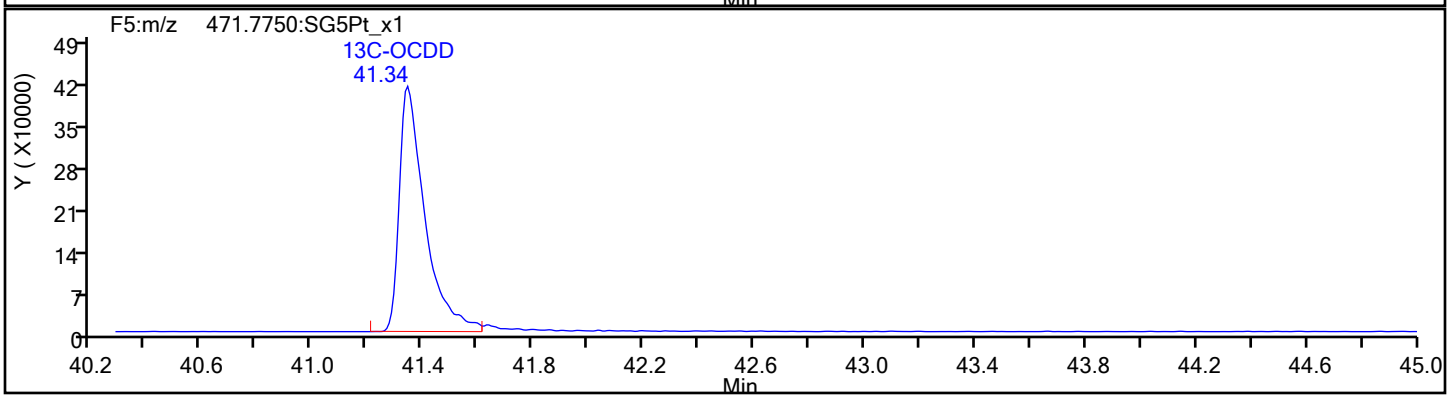
OCDD





OCDD Standards

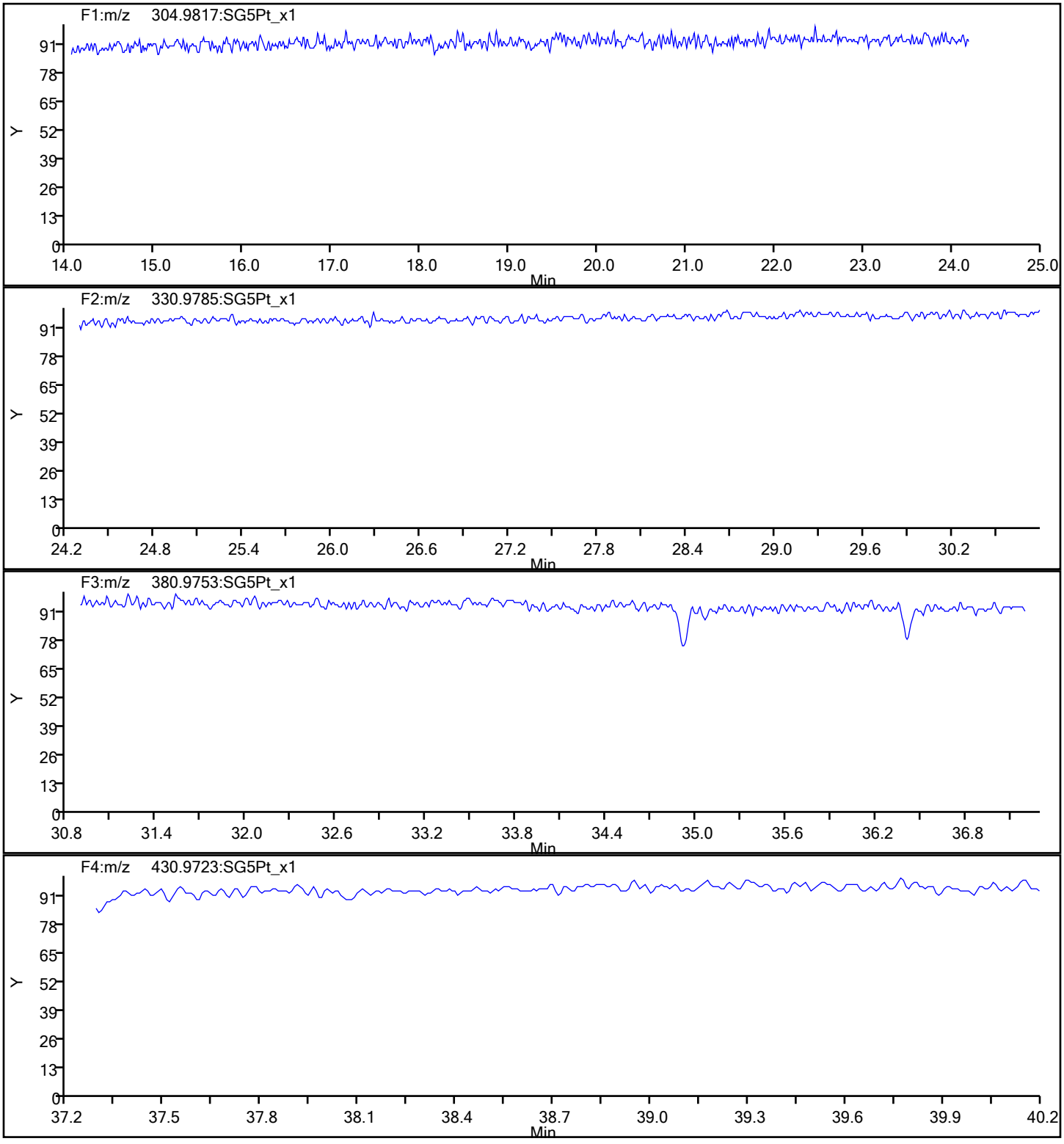




Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

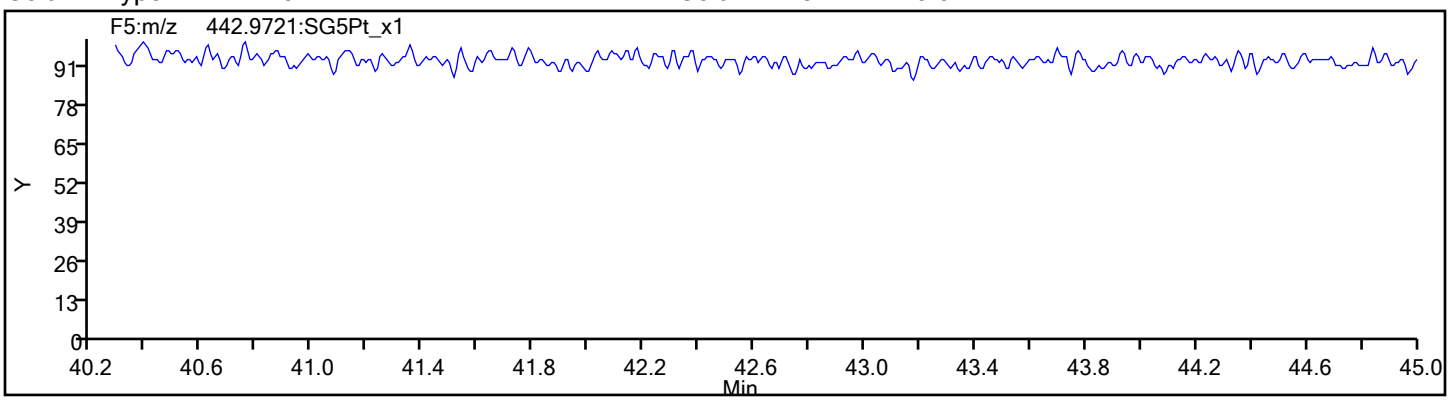
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:18:22 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_5.d		
Injection Date:	13-Dec-2019 15:00:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-344634/2-A

Matrix: Sediment Lab File ID: 13de19dfs1_6.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 15:48

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	19.4		1.0	0.16
51207-31-9	2,3,7,8-TCDF	18.3		1.0	0.097
40321-76-4	1,2,3,7,8-PeCDD	106		5.0	0.22
57117-41-6	1,2,3,7,8-PeCDF	93.3		5.0	0.43
57117-31-4	2,3,4,7,8-PeCDF	87.9		5.0	0.43
39227-28-6	1,2,3,4,7,8-HxCDD	90.9		5.0	0.25
57653-85-7	1,2,3,6,7,8-HxCDD	97.9		5.0	0.27
19408-74-3	1,2,3,7,8,9-HxCDD	93.0		5.0	0.24
70648-26-9	1,2,3,4,7,8-HxCDF	93.1		5.0	0.44
57117-44-9	1,2,3,6,7,8-HxCDF	100		5.0	0.42
72918-21-9	1,2,3,7,8,9-HxCDF	101		5.0	0.39
60851-34-5	2,3,4,6,7,8-HxCDF	103		5.0	0.42
35822-46-9	1,2,3,4,6,7,8-HpCDD	95.6		5.0	0.32
67562-39-4	1,2,3,4,6,7,8-HpCDF	99.4		5.0	0.61
55673-89-7	1,2,3,4,7,8,9-HpCDF	90.9		5.0	0.60
3268-87-9	OCDD	194		10	0.41
39001-02-0	OCDF	188		10	0.39
41903-57-5	Total TCDD	19.4		1.0	0.16
30402-14-3	Total TCDF	18.3		1.0	0.097
36088-22-9	Total PeCDD	106		5.0	0.22
30402-15-4	Total PeCDF	181		5.0	0.43
34465-46-8	Total HxCDD	282		5.0	0.25
55684-94-1	Total HxCDF	397		5.0	0.42
37871-00-4	Total HpCDD	95.6		5.0	0.32
38998-75-3	Total HpCDF	190		5.0	0.61

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-344634/2-A

Matrix: Sediment Lab File ID: 13de19dfs1_6.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 15:48

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	58		20-175
89059-46-1	13C-2,3,7,8-TCDF	50		22-152
109719-79-1	13C-1,2,3,7,8-PeCDD	54		21-227
109719-77-9	13C-1,2,3,7,8-PeCDF	53		21-192
116843-02-8	13C-2,3,4,7,8-PeCDF	57		13-328
109719-80-4	13C-1,2,3,4,7,8-HxCDD	62		21-193
109719-81-5	13C-1,2,3,6,7,8-HxCDD	62		25-163
114423-98-2	13C-1,2,3,4,7,8-HxCDF	55		19-202
116843-03-9	13C-1,2,3,6,7,8-HxCDF	56		21-159
116843-04-0	13C-1,2,3,7,8,9-HxCDF	49		17-205
116843-05-1	13C-2,3,4,6,7,8-HxCDF	50		22-176
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	57		26-166
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	52		21-158
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	58		20-186
114423-97-1	13C-OCDD	61		13-199

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	94		31-191

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d
Lims ID: LCS 320-344634/2-A
Client ID:
Sample Type: LCS
Inject. Date: 13-Dec-2019 15:48:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-344634/2-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: shardaa Date: 13-Dec-2019 17:26:46

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.514	7365276	0.83	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	18.623	5896003	0.79	1.6096	49.7	49.7	0.2424	0.2424	49.73	
2,3,7,8-TCDF	18.649	663592	0.78	1.2332	9.126	9.126	0.0484	0.0484	91.26	
A Non-2,3,7,8-sub-TCDF	18.244						0.0484	0.0484		
S Total TCDF					9.126	9.126	0.0484	0.0484		
D 13C-2,3,7,8-TCDD	19.860	4240189	0.80	0.9984	57.7	57.7	0.2222	0.2222	57.66	
2,3,7,8-TCDD	19.903	493804	0.77	1.1988	9.714	9.714	0.0792	0.0792	97.14	
$ 37Cl4-2,3,7,8-TCDD	19.895	4037760		1.4510	37.8	37.8	0.0283	0.0283	94.46	
A Non-2,3,7,8-sub-TCDD	19.035						0.0792	0.0792		
S Total TCDD					9.714	9.714	0.0792	0.0792		
D 13C-1,2,3,7,8-PeCDF	25.774	5321316	1.58	1.3678	52.8	52.8	0.2645	0.2645	52.82	
1,2,3,7,8-PeCDF	25.799	2900907	1.59	1.1689	46.6	46.6	0.2157	0.2157	93.28	
D 13C-2,3,4,7,8-PeCDF	27.199	5438218	1.60	1.3045	56.6	56.6	0.2773	0.2773	56.60	
2,3,4,7,8-PeCDF	27.216	2835746	1.56	1.1861	44.0	44.0	0.2169	0.2169	87.93	
A F1 PeCDFs	23.266						0.0161	0.0161		
A Non-2,3,7,8-sub-PeCDF	26.724						0.2163	0.2163		
S Total PeCDF					90.6	90.6	0.2163	0.2163		
D 13C-1,2,3,7,8-PeCDD	27.963	3271194	1.62	0.8292	53.6	53.6	0.1296	0.1296	53.56	
1,2,3,7,8-PeCDD	27.988	1943708	1.59	1.1200	53.1	53.1	0.1113	0.1113	106	
A Non-2,3,7,8-sub-PeCDD	26.851						0.1113	0.1113		
S Total PeCDD					53.1	53.1	0.1113	0.1113		
D 13C-1,2,3,4,7,8-HxCDF	33.718	4452939	0.53	1.1700	54.7	54.7	0.2036	0.2036	54.72	
1,2,3,4,7,8-HxCDF	33.743	2700144	1.27	1.3021	46.6	46.6	0.2198	0.2198	93.14	
D 13C-1,2,3,6,7,8-HxCDF	33.928	5106748	0.54	1.3168	55.8	55.8	0.1809	0.1809	55.76	
1,2,3,6,7,8-HxCDF	33.936	3306154	1.27	1.2907	50.2	50.2	0.2119	0.2119	100	
D 13C-2,3,4,6,7,8-HxCDF	34.884	4465182	0.54	1.2873	49.9	49.9	0.1850	0.1850	49.87	
2,3,4,6,7,8-HxCDF	34.909	2995672	1.27	1.3039	51.5	51.5	0.2077	0.2077	103	
D 13C-1,2,3,7,8,9-HxCDF	35.890	4102837	0.52	1.1987	49.2	49.2	0.1987	0.1987	49.21	
1,2,3,7,8,9-HxCDF	35.899	2763594	1.26	1.3329	50.5	50.5	0.1933	0.1933	101	
A Non-2,3,7,8-sub-HxCDF	33.751						0.2078	0.2078		
S Total HxCDF					198.7	198.7	0.2082	0.2082		
* 13C-1,2,3,7,8,9-HxCDD	35.680	6955604	1.25	5.8E+04	100.0	100.0				

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-1,2,3,4,7,8-HxCDD	35.135	3619036	1.29	0.8364	62.2	62.2	0.2080	0.2080	62.21	
1,2,3,4,7,8-HxCDD	35.152	1928649	1.28	1.1725	45.5	45.5	0.1257	0.1257	90.90	
D 13C-1,2,3,6,7,8-HxCDD	35.270	3884744	1.27	0.9040	61.8	61.8	0.1925	0.1925	61.78	
1,2,3,6,7,8-HxCDD	35.286	2141370	1.21	1.1256	49.0	49.0	0.1343	0.1343	97.94	
1,2,3,7,8,9-HxCDD	35.697	2151467	1.24	1.2327	46.5	46.5	0.1211	0.1211	93.04	
A Non-2,3,7,8-sub-HxCDD	34.284						0.1268	0.1268		
S Total HxCDD					140.9	140.9	0.1271	0.1271		
D 13C-1,2,3,4,6,7,8-HpCDF	37.865	3485492	0.44	0.9689	51.7	51.7	0.3091	0.3091	51.72	
1,2,3,4,6,7,8-HpCDF	37.882	2801585	1.05	1.6176	49.7	49.7	0.3066	0.3066	99.38	
D 13C-1,2,3,4,7,8,9-HpCDF	39.190	3748714	0.46	0.9231	58.4	58.4	0.3244	0.3244	58.38	
1,2,3,4,7,8,9-HpCDF	39.199	2499071	1.07	1.4672	45.4	45.4	0.2991	0.2991	90.87	
A Non-2,3,7,8-sub-HpCDF	38.556						0.3019	0.3019		
S Total HpCDF					95.1	95.1	0.3029	0.3029		
D 13C-1,2,3,4,6,7,8-HpCDD	38.880	3614053	1.05	0.9114	57.0	57.0	0.1805	0.1805	57.01	
1,2,3,4,6,7,8-HpCDD	38.888	1941833	1.04	1.1237	47.8	47.8	0.1609	0.1609	95.63	
A Non-2,3,7,8-sub-HpCDD	38.803						0.1609	0.1609		
S Total HpCDD					47.8	47.8	0.1609	0.1609		
D 13C-OCDD	41.317	5341547	0.88	0.6272	122.4	122.4	0.2439	0.2439	61.22	
OCDF	41.401	3862796	0.91	1.5416	93.8	93.8	0.1943	0.1943	93.82	
OCDD	41.325	3071175	0.90	1.1855	97.0	97.0	0.2035	0.2035	97.00	

Report Date: 17-Dec-2019 09:19:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d
Lims ID: LCS 320-344634/2-A
Client ID:
Sample Type: LCS
Inject. Date: 13-Dec-2019 15:48:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-344634/2-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: shardaa Date: 13-Dec-2019 17:26:46

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	19.514	19.502	1		3344116	521270	657	1642	793		
333.9338	19.523	19.502	1		4021160	634868	369	922	1721	0.83(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.623	18.611	1	0.954	2593335	404936	1255	3137	323		
317.9389	18.623	18.611	1	0.954	3302668	535754	549	1372	976	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.649	18.637	1	1.001	290344	47616	72	180	661		
305.8987	18.649	18.637	1	1.001	373248	57582	153	382	376	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	18.244						72	180			
305.8987	18.244						153	382			
13C-2,3,7,8-TCDD											
331.9368	19.860	19.848	1	1.018	1890967	275643	657	1642	420		
333.9338	19.869	19.848	1	1.018	2349222	350923	369	922	951	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.903	19.874	2	1.002	214486	31590	175	437	181		
321.8936	19.895	19.874	1	1.002	279318	43918	63	157	697	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.895	19.882	1	1.020	4037760	585269	190	475	3080		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.035						175	437			
321.8936	19.035						63	157			
13C-1,2,3,7,8-PeCDF											
351.9000	25.774	25.760	1	1.321	3256616	546619	1128	2820	485		
353.8970	25.774	25.760	1	1.321	2064700	341763	545	1362	627	1.58(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	25.799	25.785	1	1.001	1779933	301369	487	1217	619		
341.8567	25.799	25.785	1	1.001	1120974	190310	409	1022	465	1.59(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.199	27.177	1	1.394	3345320	535455	1128	2820	475		
353.8970	27.199	27.177	1	1.394	2092898	335317	545	1362	615	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.216	27.202	1	1.001	1727685	273192	487	1217	561		
341.8567	27.216	27.202	1	1.001	1108061	174074	409	1022	426	1.56(1.32-1.78)	
A F1 PeCDFs											
339.8597	23.266						2	5			
341.8567	23.266						65	162			
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.724						487	1217			
341.8567	26.724						409	1022			
13C-1,2,3,7,8-PeCDD											
367.8949	27.963	27.949	1	1.433	2022711	303552	220	550	1380		
369.8919	27.963	27.949	1	1.433	1248483	193712	277	692	699	1.62(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.988	27.965	1	1.001	1194439	178799	182	455	982		
357.8516	27.988	27.965	1	1.001	749269	109655	66	165	1661	1.59(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.851						182	455			
357.8516	26.851						66	165			
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.718	33.714	0	0.945	1549830	285055	494	1235	577		
385.8610	33.726	33.714	1	0.945	2903109	520897	949	2372	549	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.743	33.739	0	1.001	1509348	264999	532	1330	498		
375.8178	33.743	33.739	0	1.001	1190796	212466	391	977	543	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.928	33.915	1	0.951	1789185	287955	494	1235	583		
385.8610	33.919	33.915	0	0.951	3317563	555418	949	2372	585	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.936	33.932	0	1.000	1848305	312957	532	1330	588		
375.8178	33.936	33.932	0	1.000	1457849	248557	391	977	636	1.27(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.884	34.880	0	0.978	1557262	294012	494	1235	595		
385.8610	34.884	34.880	0	0.978	2907920	557812	949	2372	588	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.909	34.905	0	1.001	1673712	316020	532	1330	594		
375.8178	34.909	34.905	0	1.001	1321960	250793	391	977	641	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.890	35.878	1	1.006	1395690	310067	494	1235	628		
385.8610	35.882	35.878	0	1.006	2707147	585434	949	2372	617	0.52(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	35.899	35.894	0	1.000	1539180	335654	532	1330	631		
375.8178	35.899	35.894	0	1.000	1224414	259183	391	977	663	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	33.751						532	1330			
375.8178	33.751						391	977			
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.680	35.685	0		3864736	838977	597	1492	1405		
403.8529	35.680	35.685	0		3090868	675485	457	1142	1478	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.135	35.131	0	0.985	2036921	444057	597	1492	744		
403.8529	35.135	35.131	0	0.985	1582115	359751	457	1142	787	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.152	35.148	0	1.000	1084428	236705	260	650	910		
391.8127	35.152	35.148	0	1.000	844221	190169	214	535	889	1.28(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.270	35.265	0	0.988	2172104	438350	597	1492	734		
403.8529	35.270	35.265	0	0.988	1712640	345403	457	1142	756	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.286	35.282	0	1.000	1172640	237978	260	650	915		
391.8127	35.286	35.282	0	1.000	968730	197271	214	535	922	1.21(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	35.697	35.693	0	1.016	1190654	263846	260	650	1015		
391.8127	35.697	35.693	0	1.016	960813	211506	214	535	988	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	34.284						260	650			
391.8127	34.284						214	535			
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.865	37.877	-1	1.061	1064448	253253	630	1575	402		
419.8220	37.865	37.877	-1	1.061	2421044	587807	1184	2960	496	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.882	37.886	0	1.000	1436322	338748	899	2247	377		
409.7788	37.873	37.886	-1	1.000	1365263	321704	770	1925	418	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.190	39.194	0	1.098	1172699	293043	630	1575	465		
419.8220	39.182	39.194	-1	1.098	2576015	657507	1184	2960	555	0.46(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.199	39.202	0	1.000	1290326	329199	899	2247	366		
409.7788	39.199	39.202	0	1.000	1208745	312195	770	1925	405	1.07(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.556						899	2247			
409.7788	38.556						770	1925			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.880	38.892	-1	1.090	1847352	462883	557	1392	831		
437.8140	38.880	38.892	-1	1.090	1766701	436939	440	1100	993	1.05(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	38.888	38.901	-1	1.000	991047	249662	344	860	726		
425.7737	38.888	38.901	-1	1.000	950786	239188	307	767	779	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.803						344	860			
425.7737	38.803						307	767			
13C-OCDD											
469.7780	41.317	41.345	-2	1.158	2503977	452532	528	1320	857		
471.7750	41.317	41.345	-2	1.158	2837570	490271	399	997	1229	0.88(0.76-1.02)	
OCDF											
441.7428	41.401	41.413	-1	1.002	1839074	393537	245	612	1606		
443.7399	41.401	41.413	-1	1.002	2023722	428108	320	800	1338	0.91(0.76-1.02)	
OCDD											
457.7377	41.325	41.345	-1	1.000	1452411	259483	226	565	1148		
459.7348	41.325	41.345	-1	1.000	1618764	291701	229	572	1274	0.90(0.76-1.02)	

Report Date: 17-Dec-2019 09:19:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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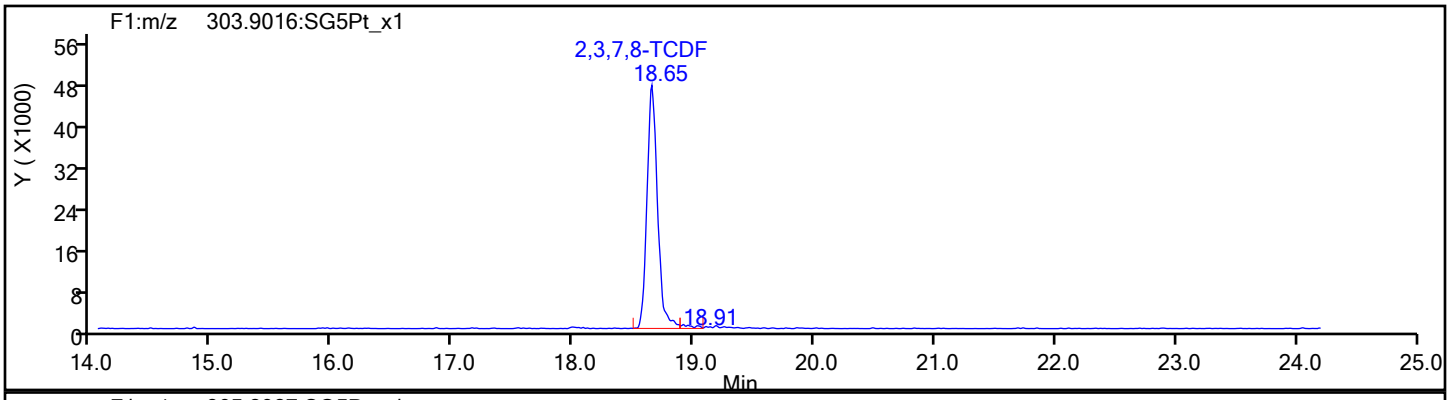
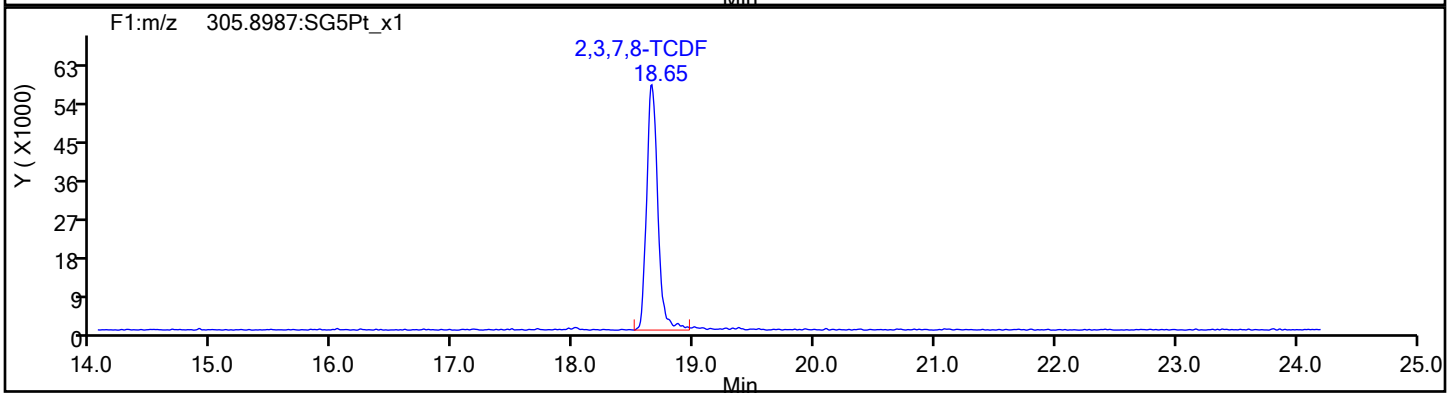
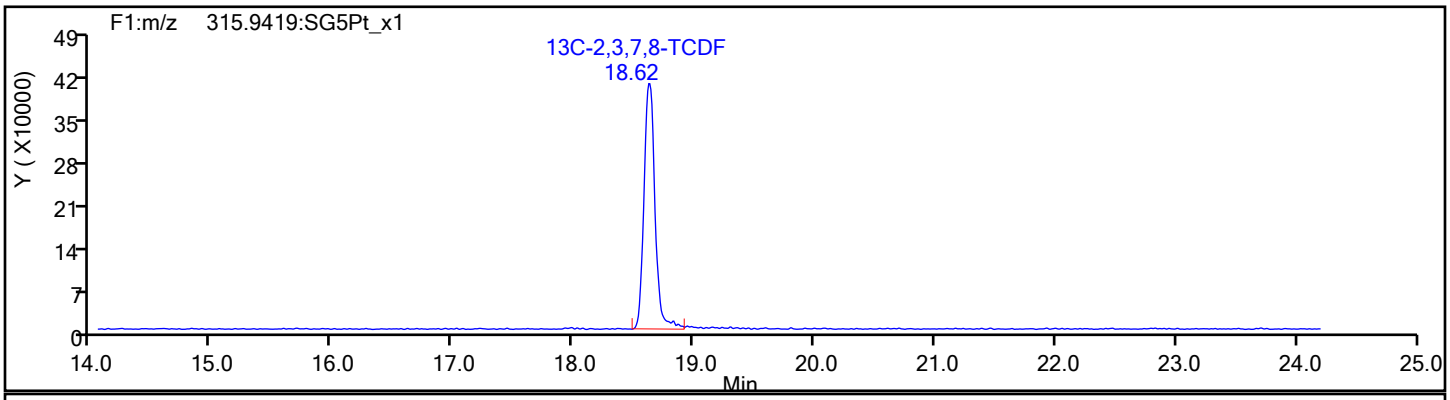
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

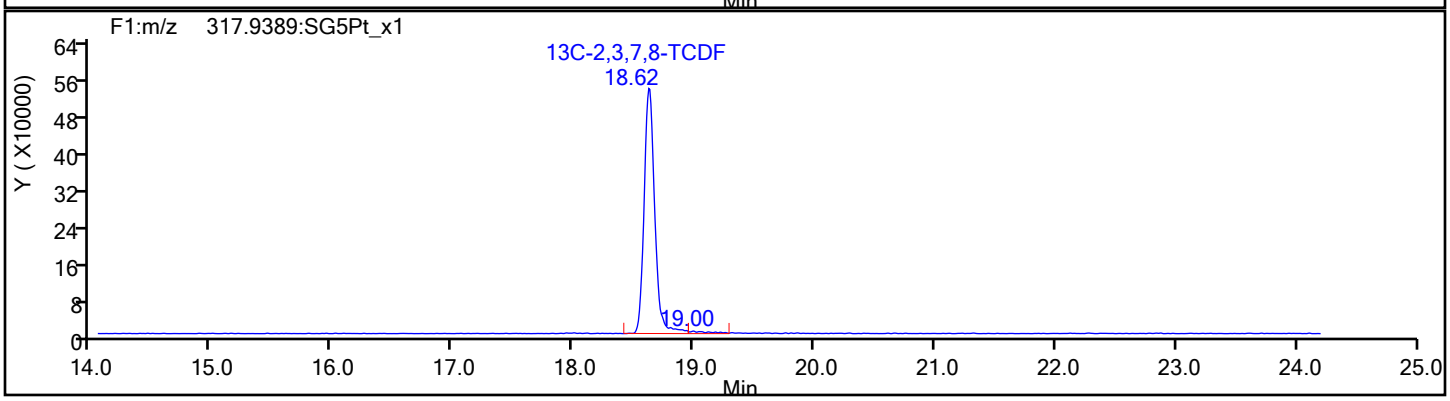
TCDF





TCDF Standards





Report Date: 17-Dec-2019 09:19:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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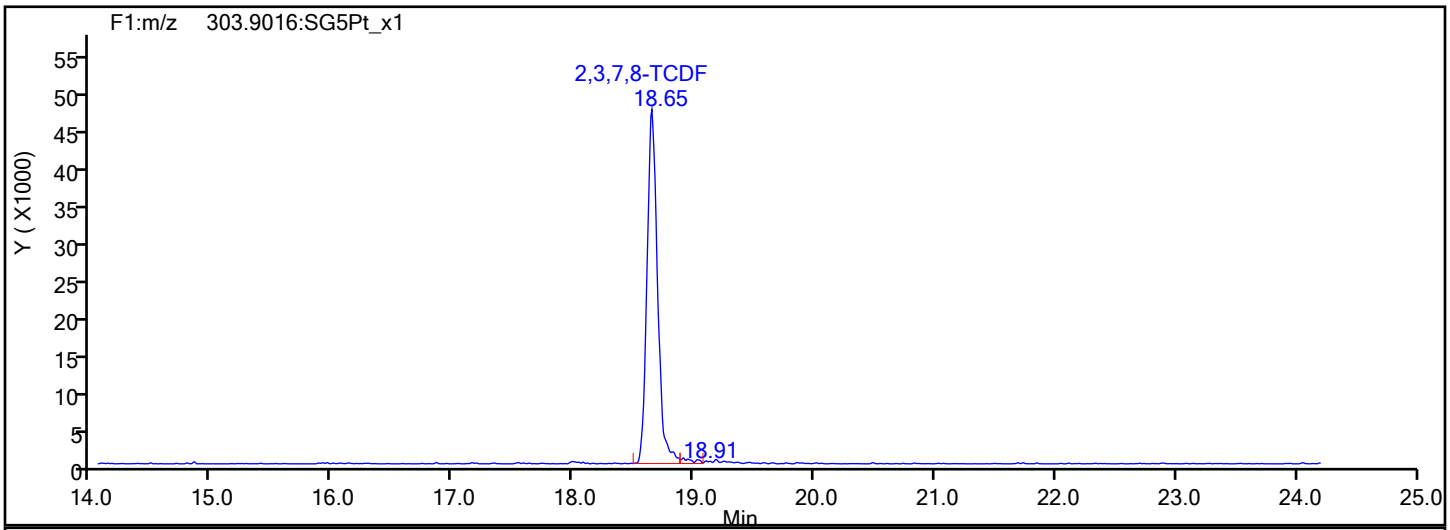
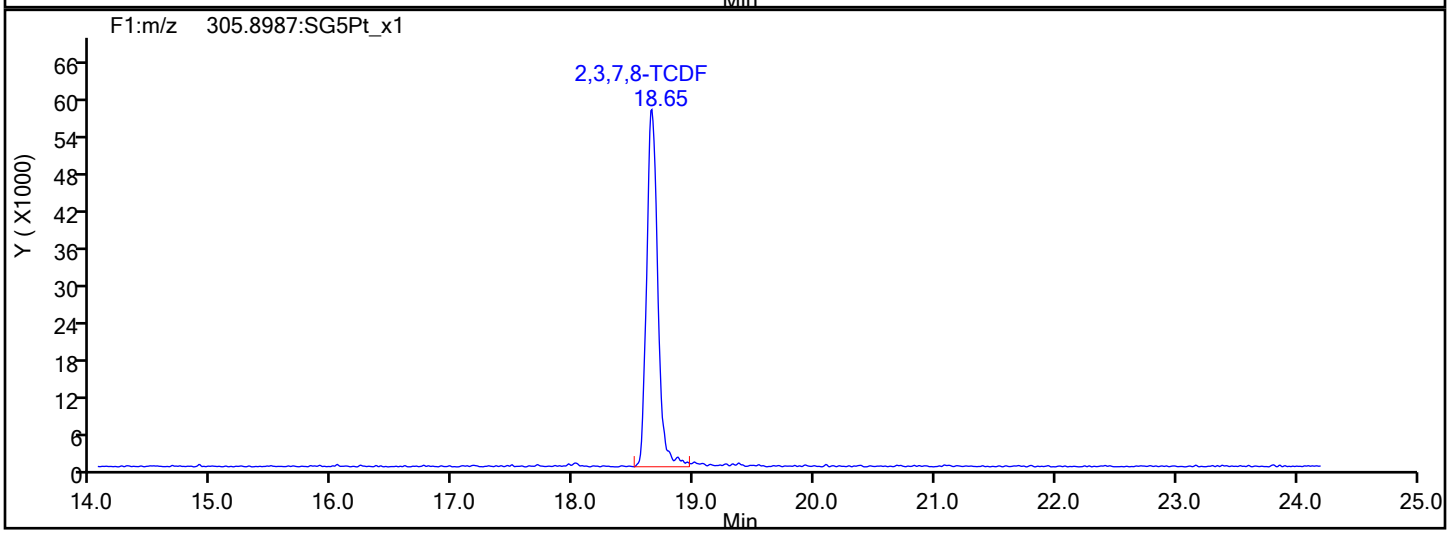
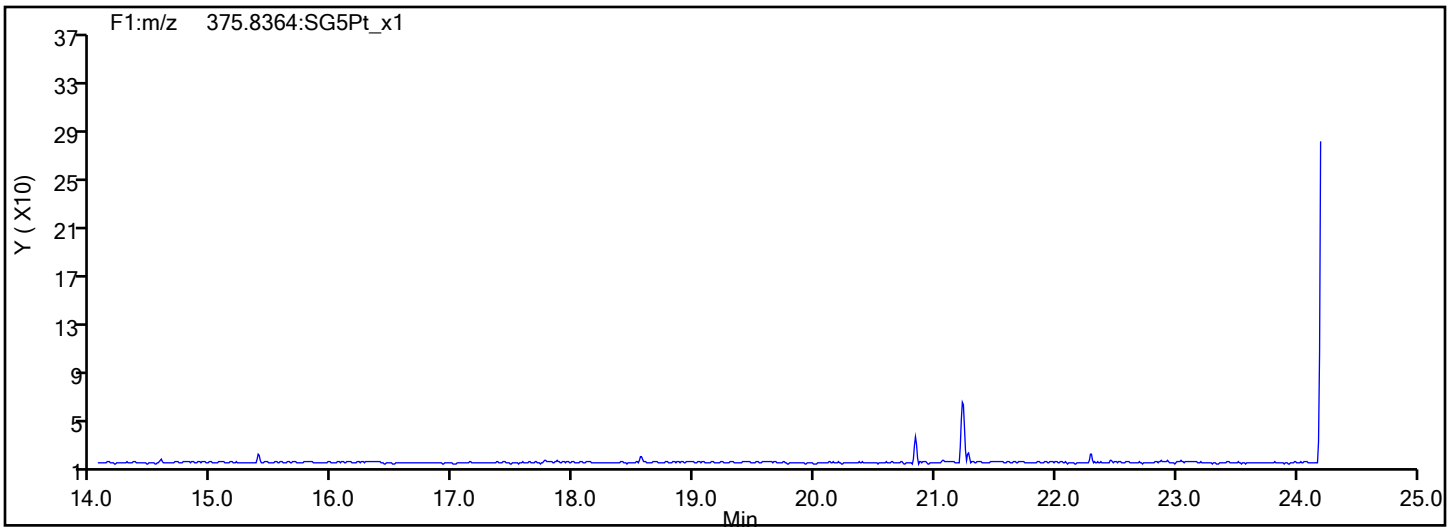
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 17-Dec-2019 09:19:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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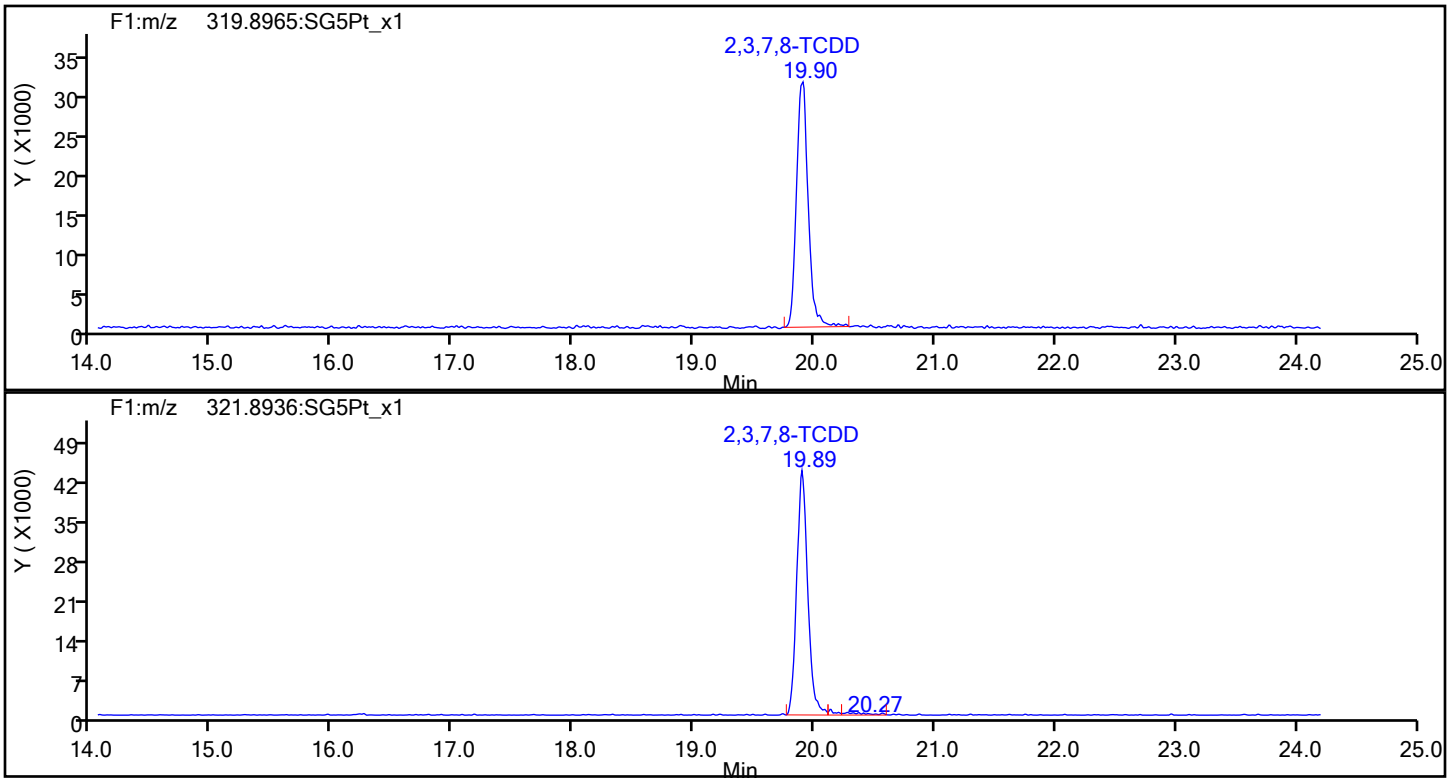
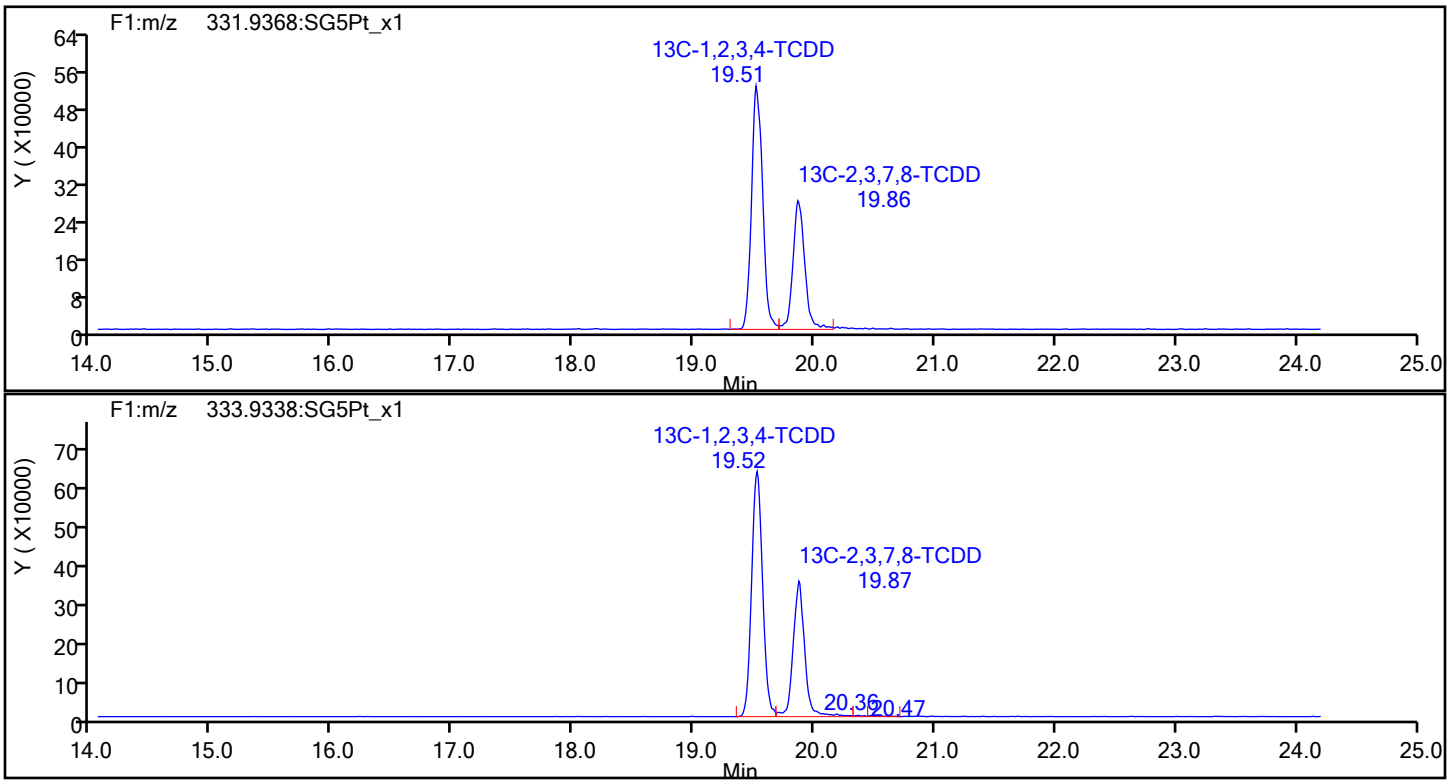
Column Type:	DB-5	Column Dia:	0.32 mm

TCDD



TCDD Standards



Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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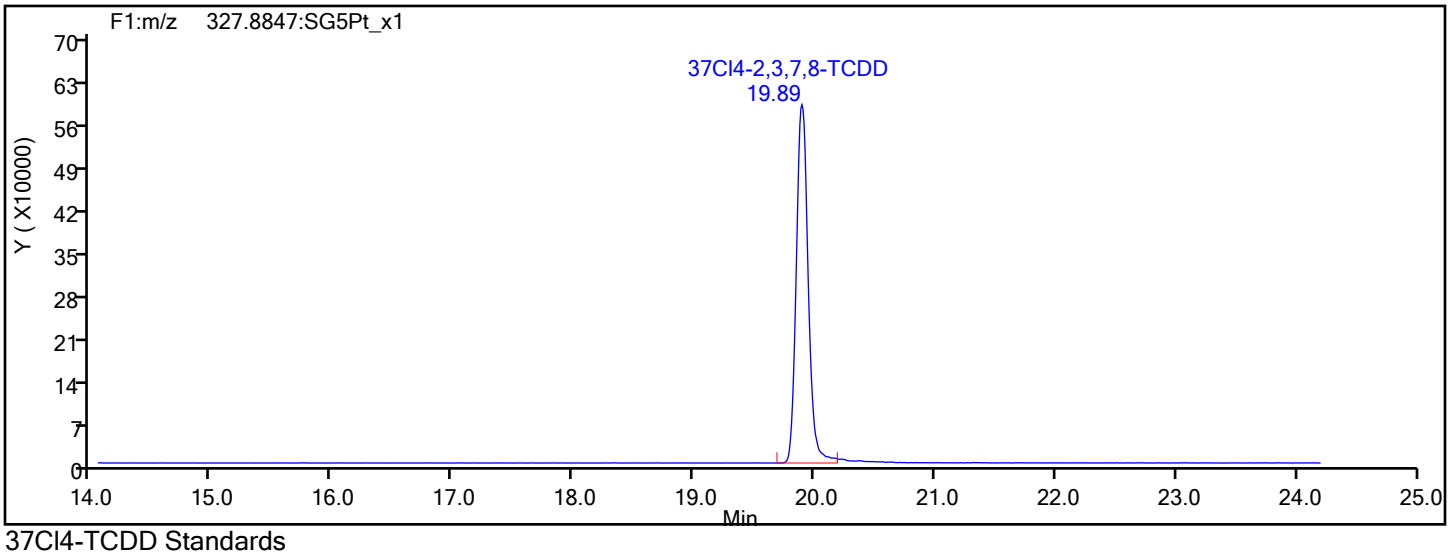
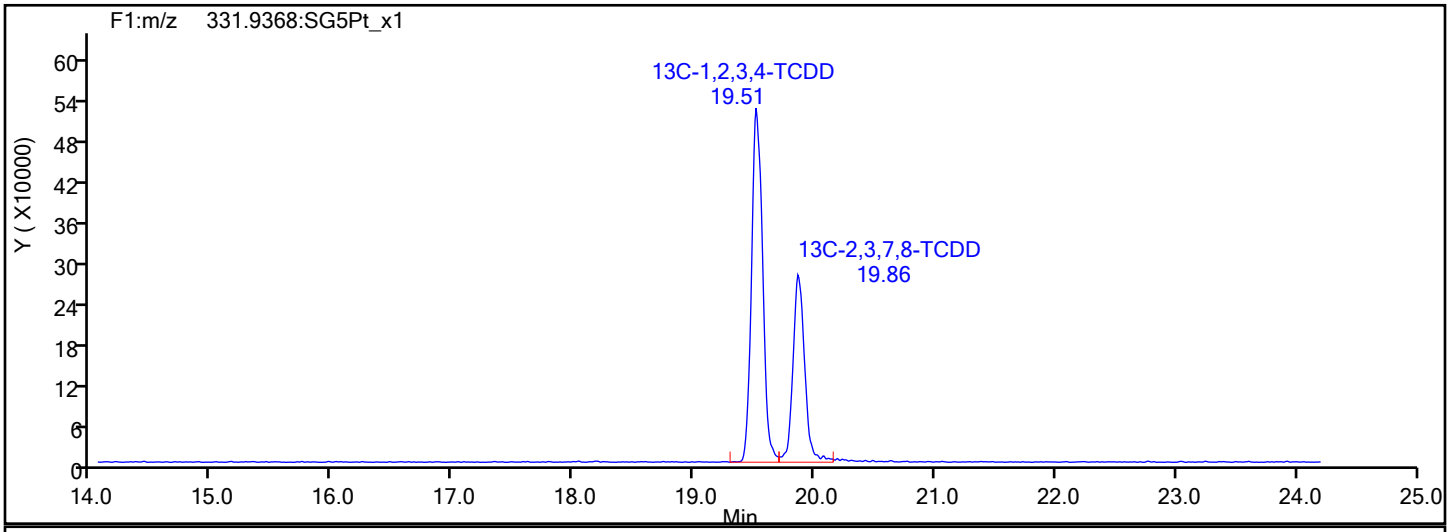
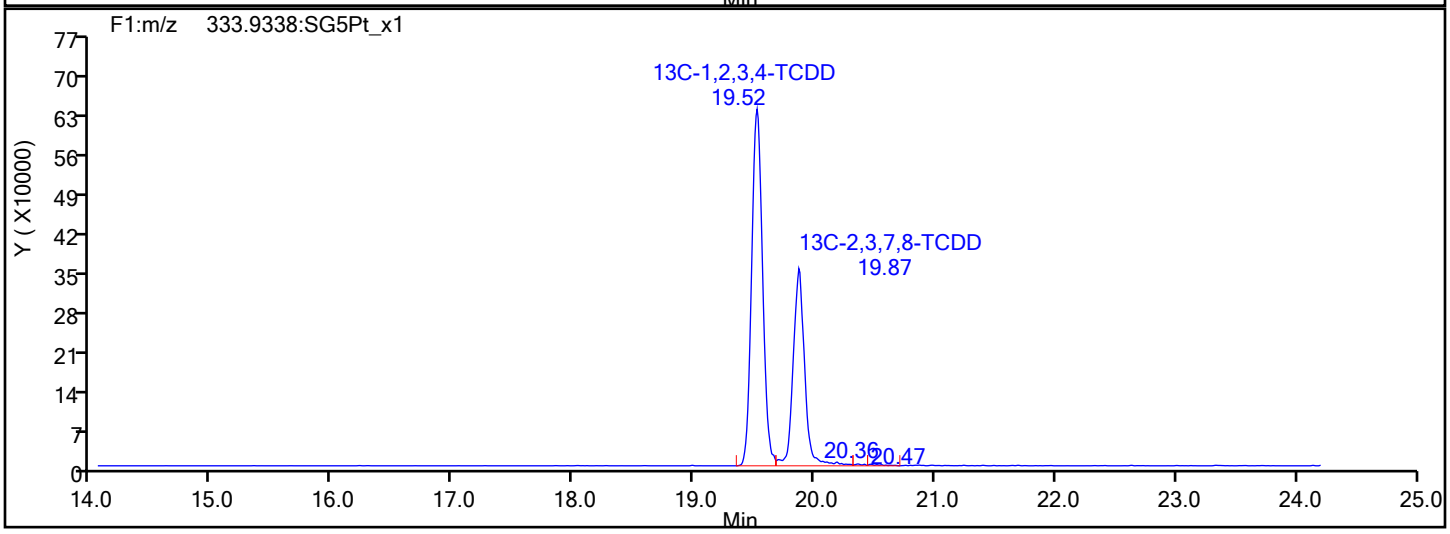
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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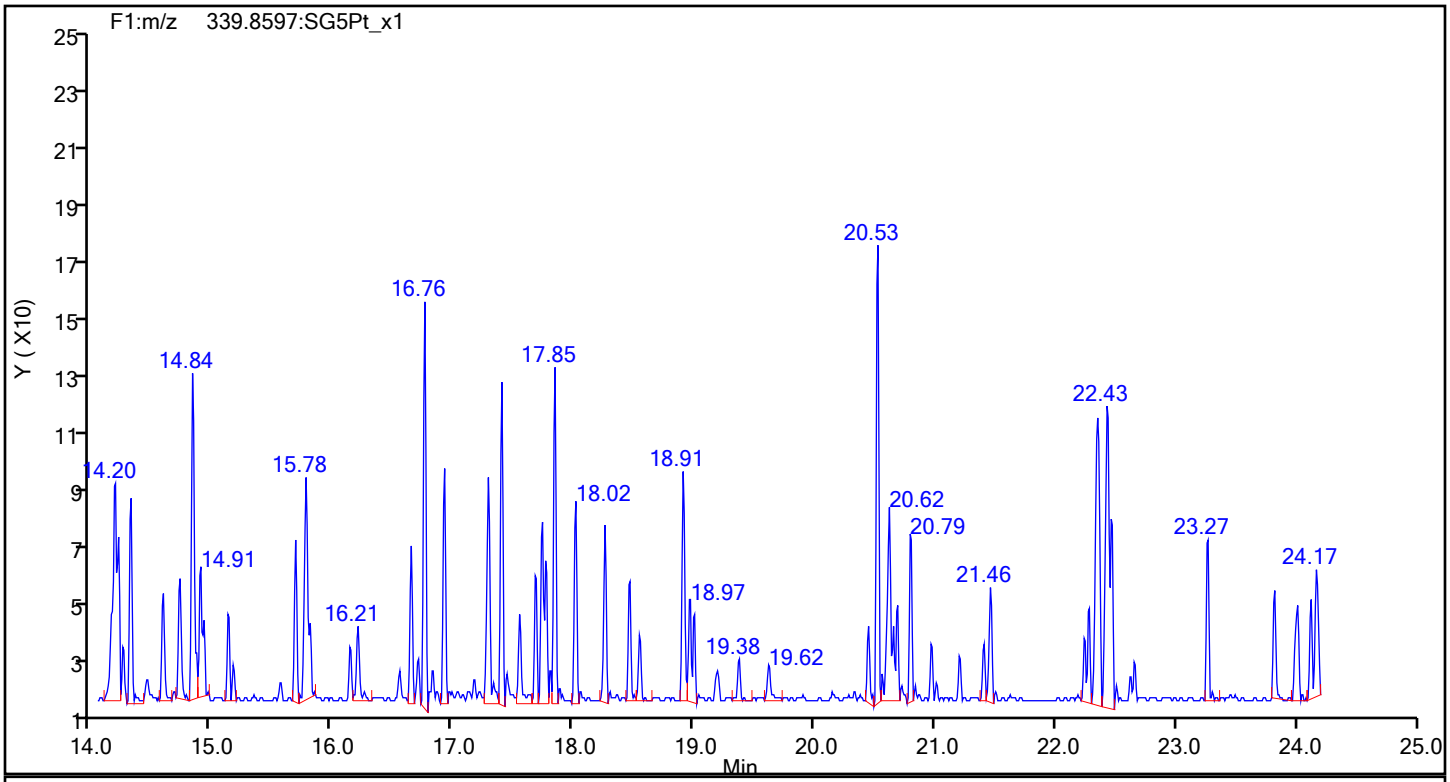
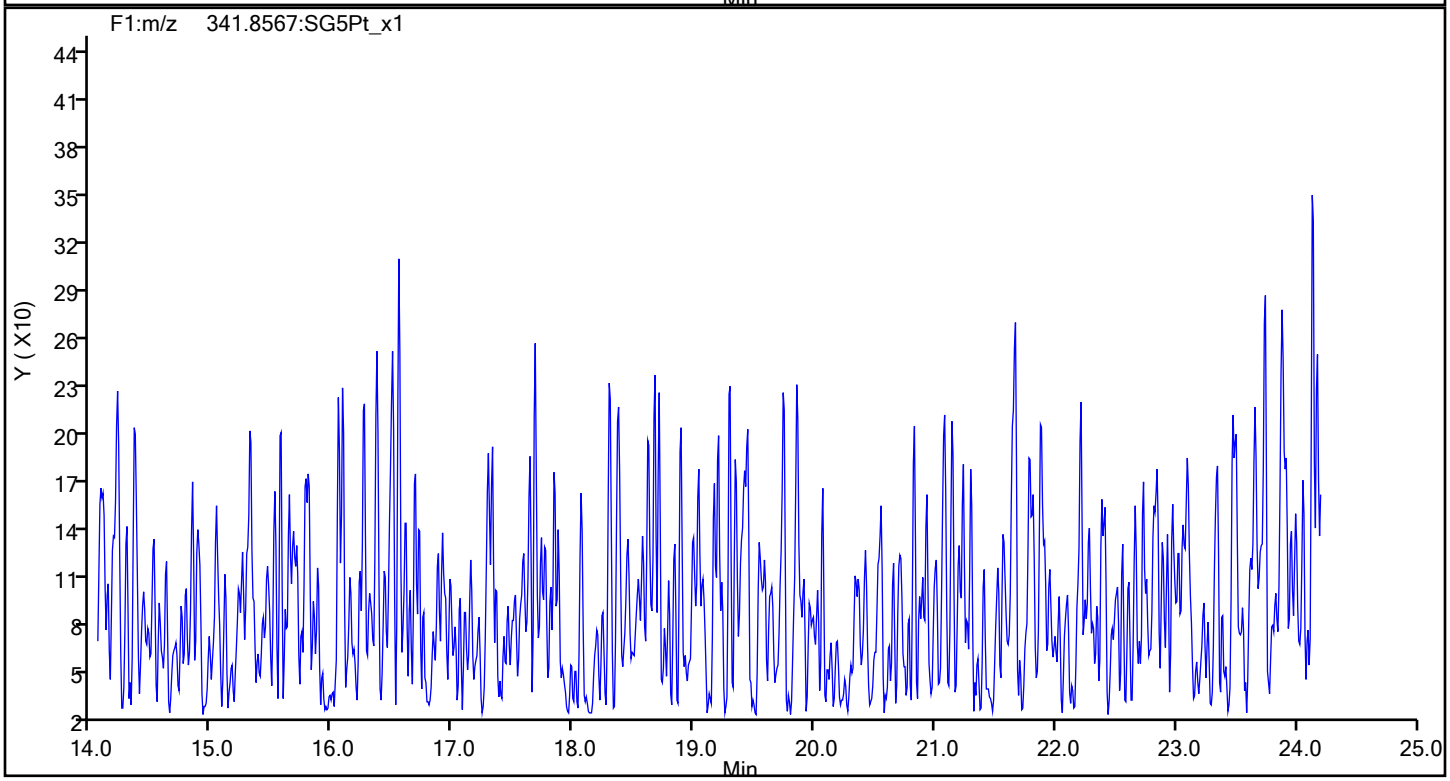
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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Client ID:			
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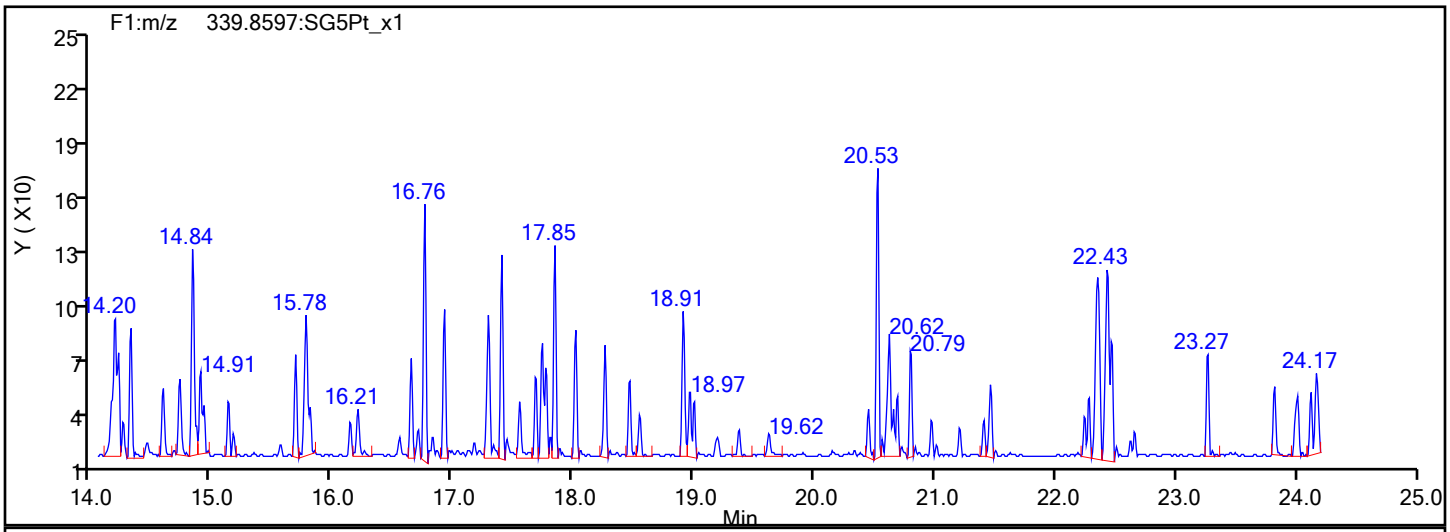
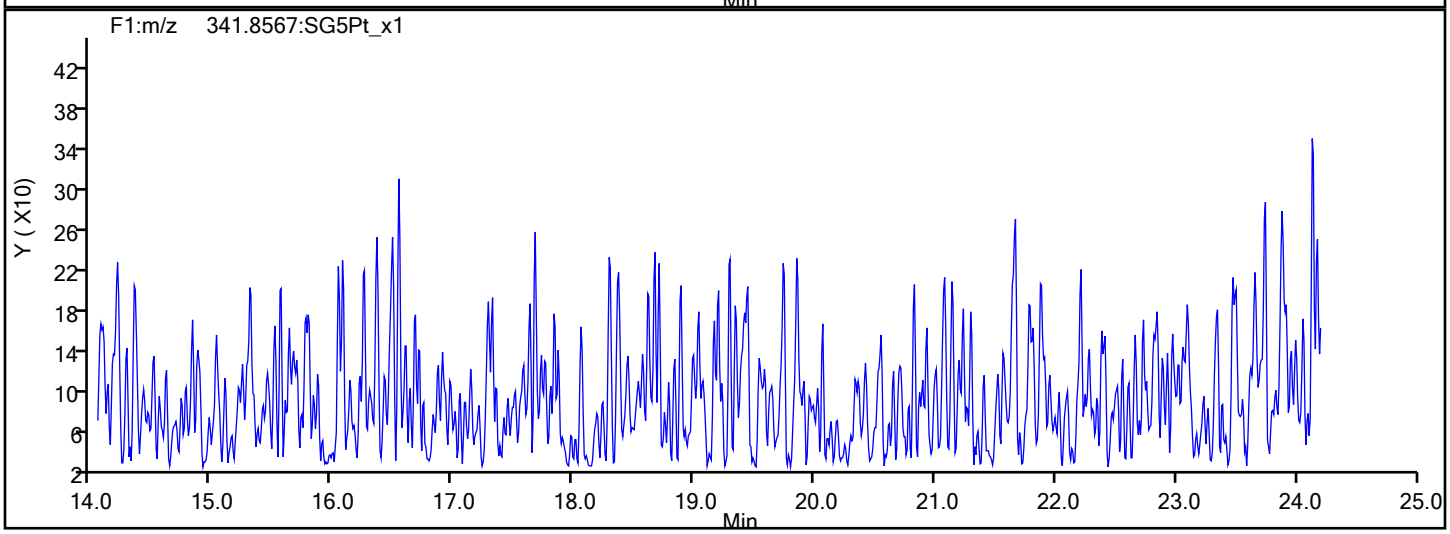
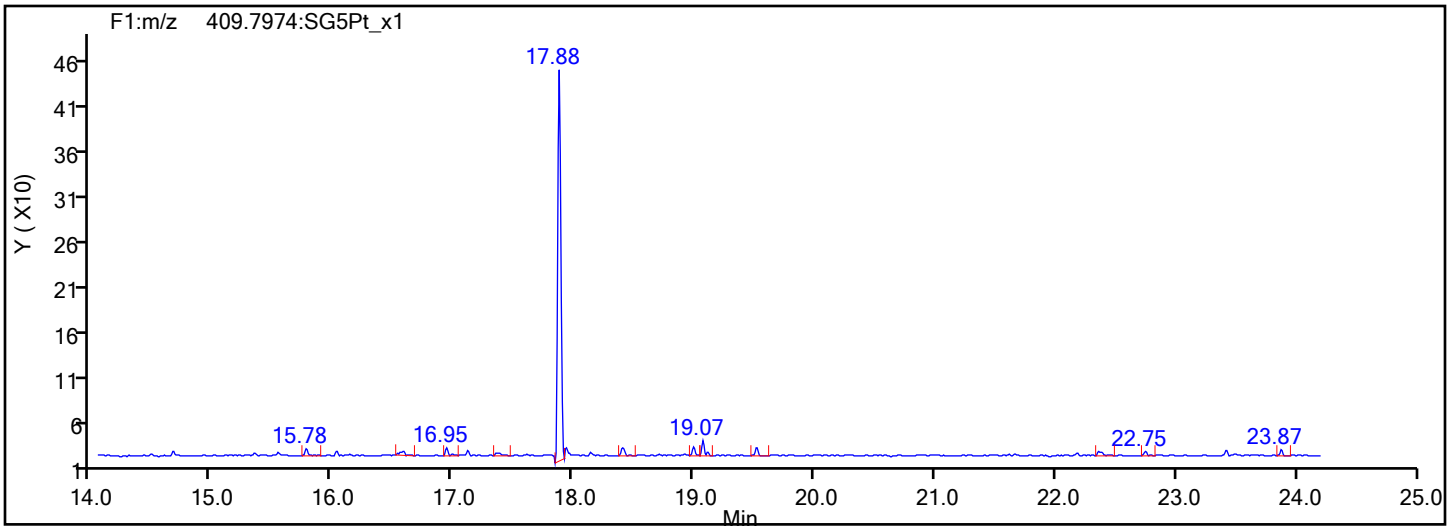
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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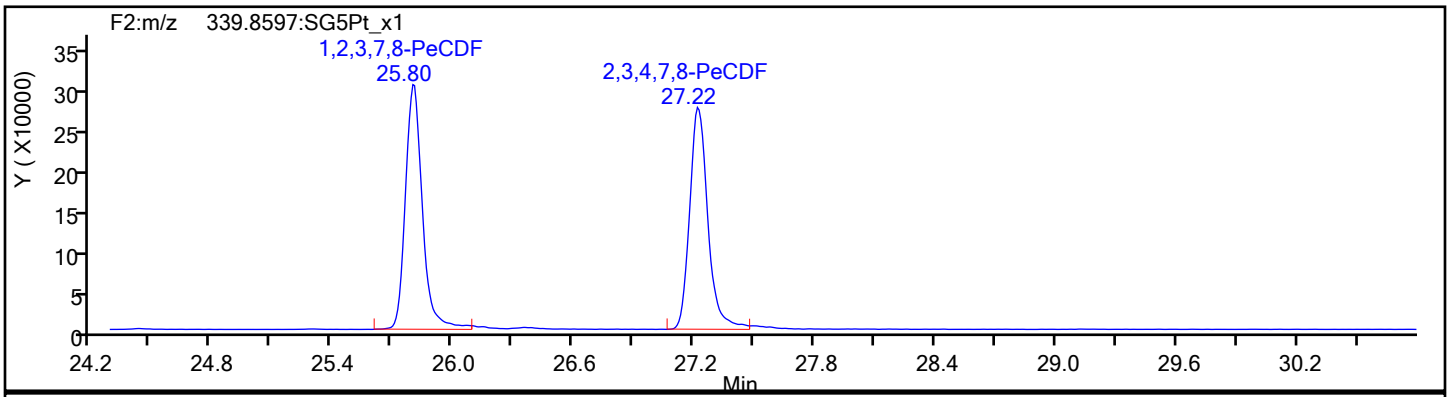
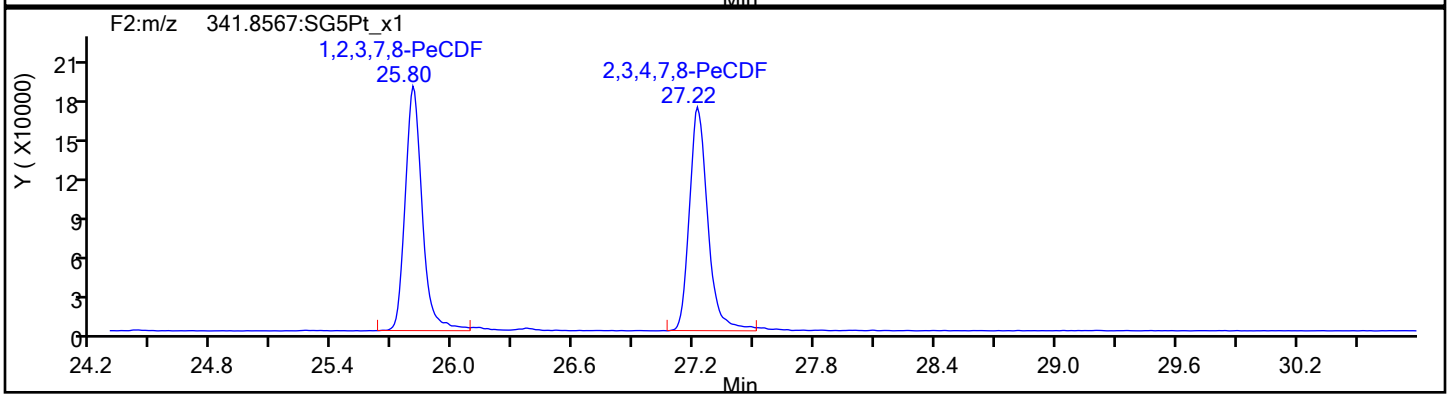
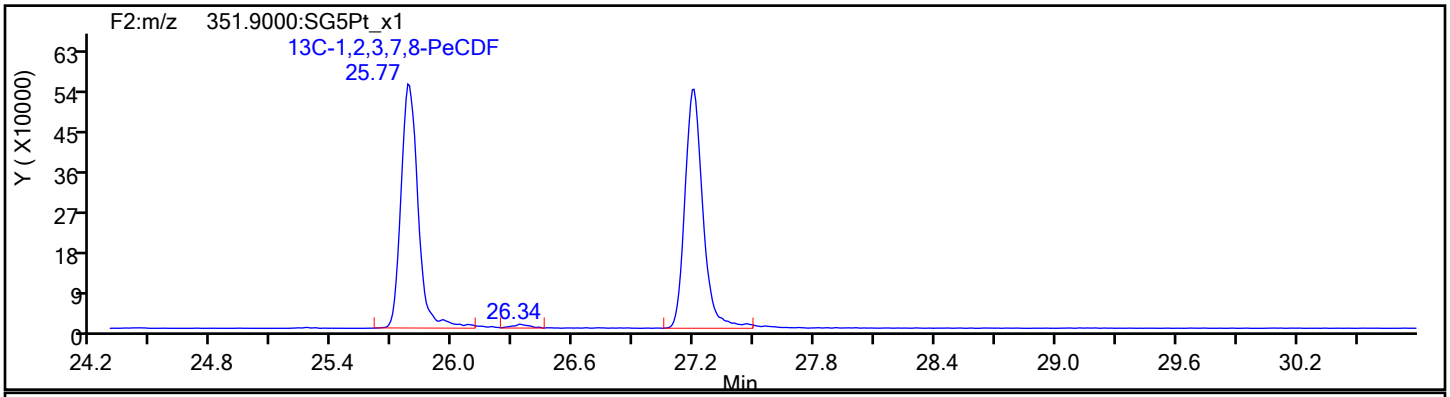
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

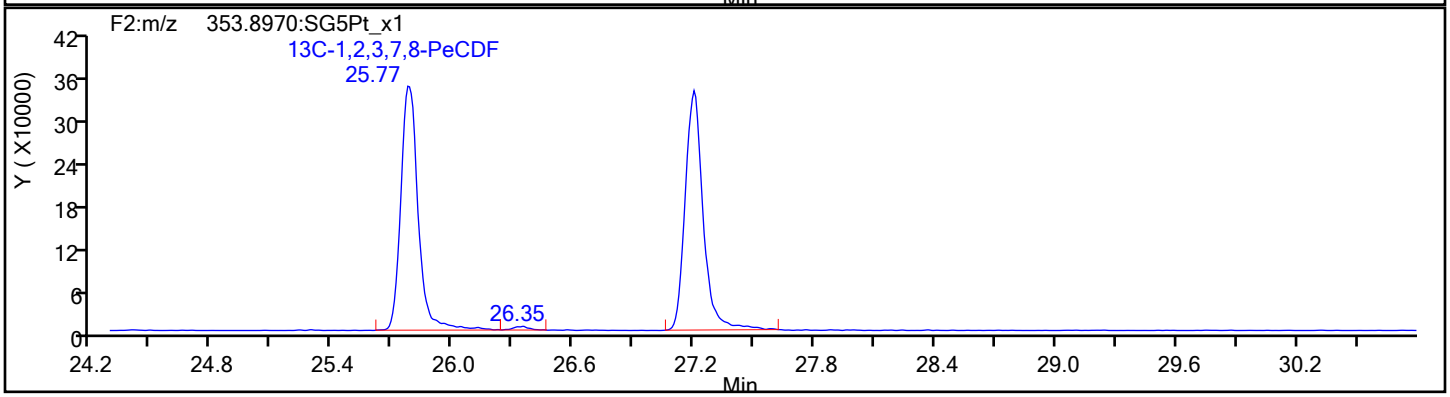
PeCDF





PeCDF Standards





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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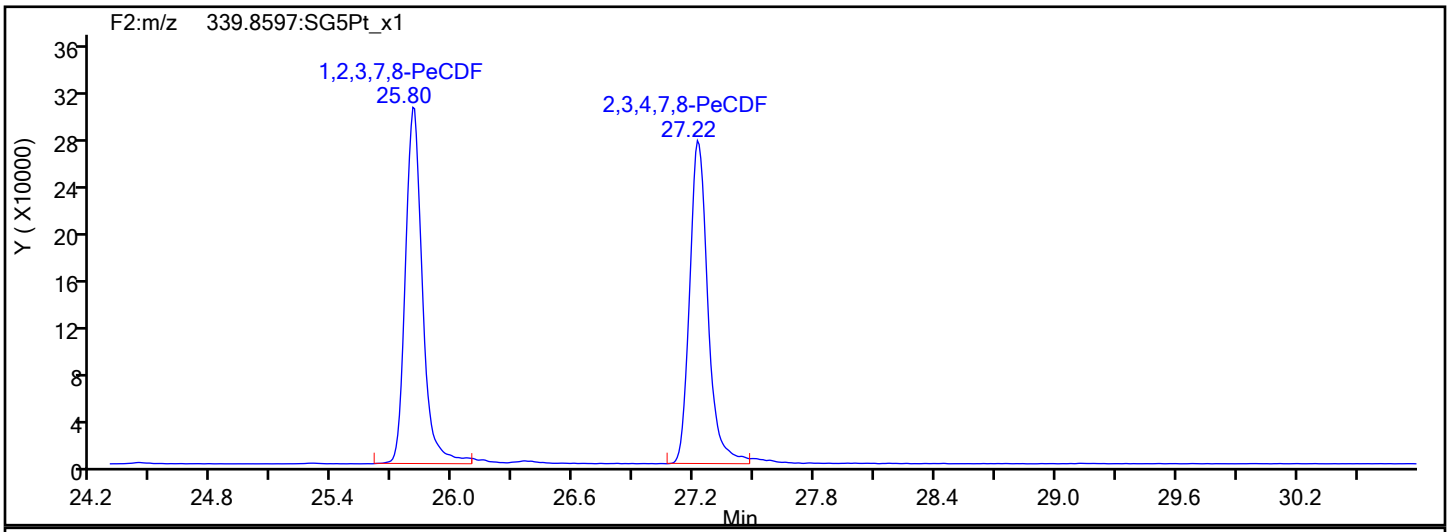
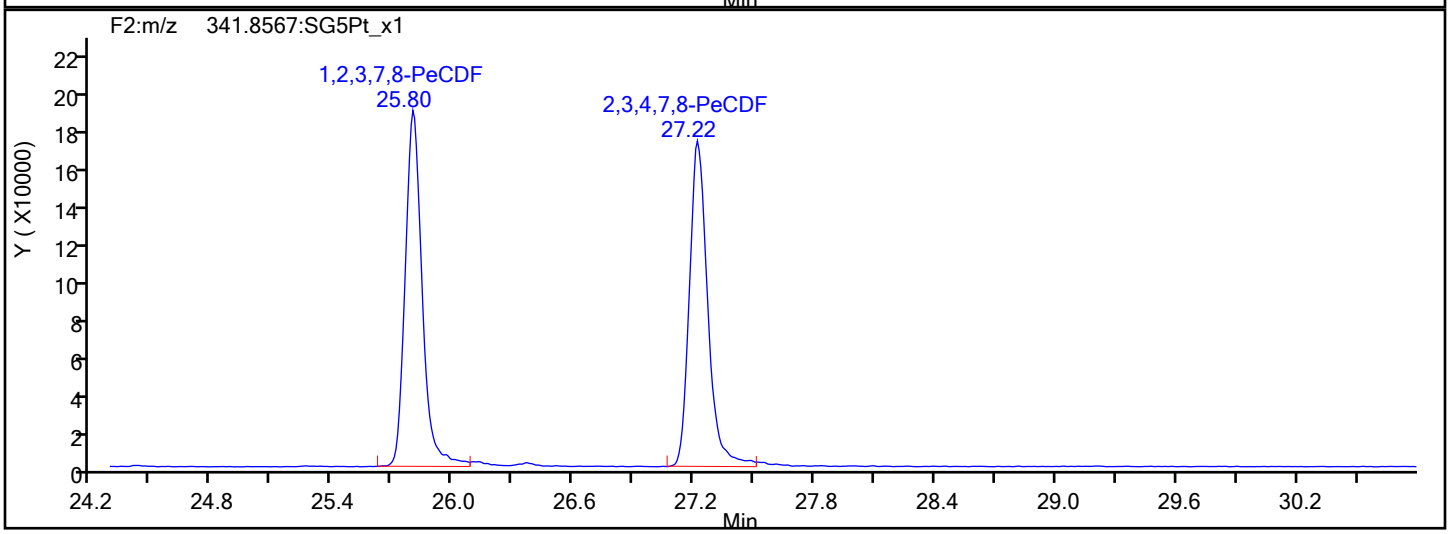
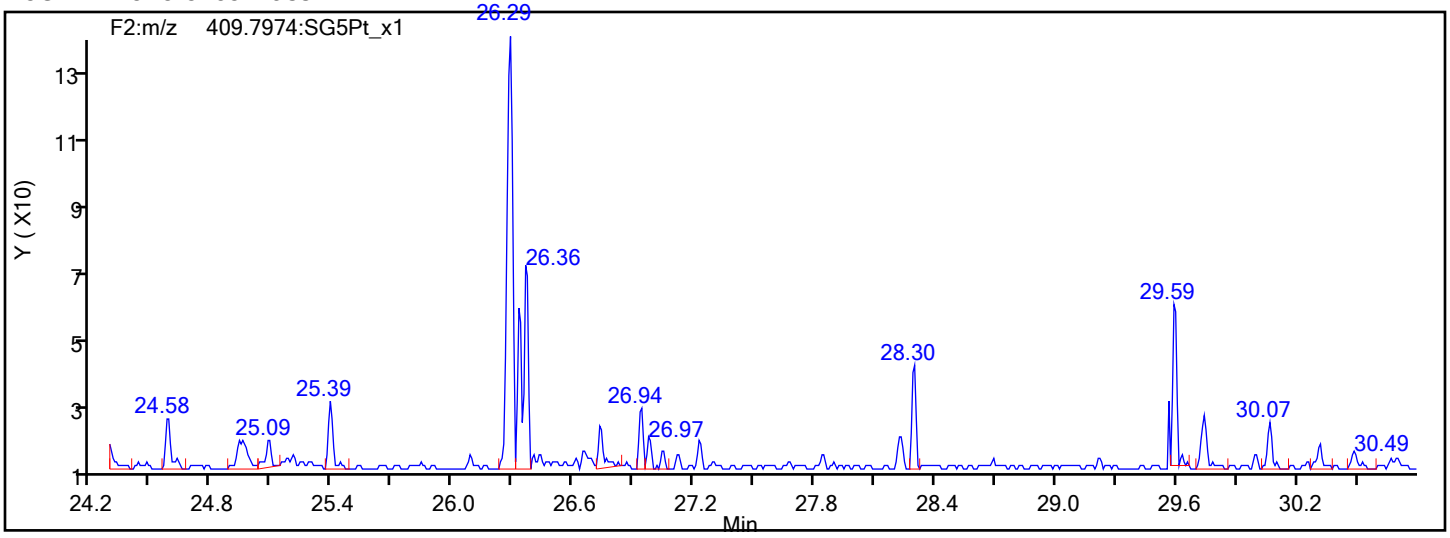
PeCDF





PeCDF Interference Mass



Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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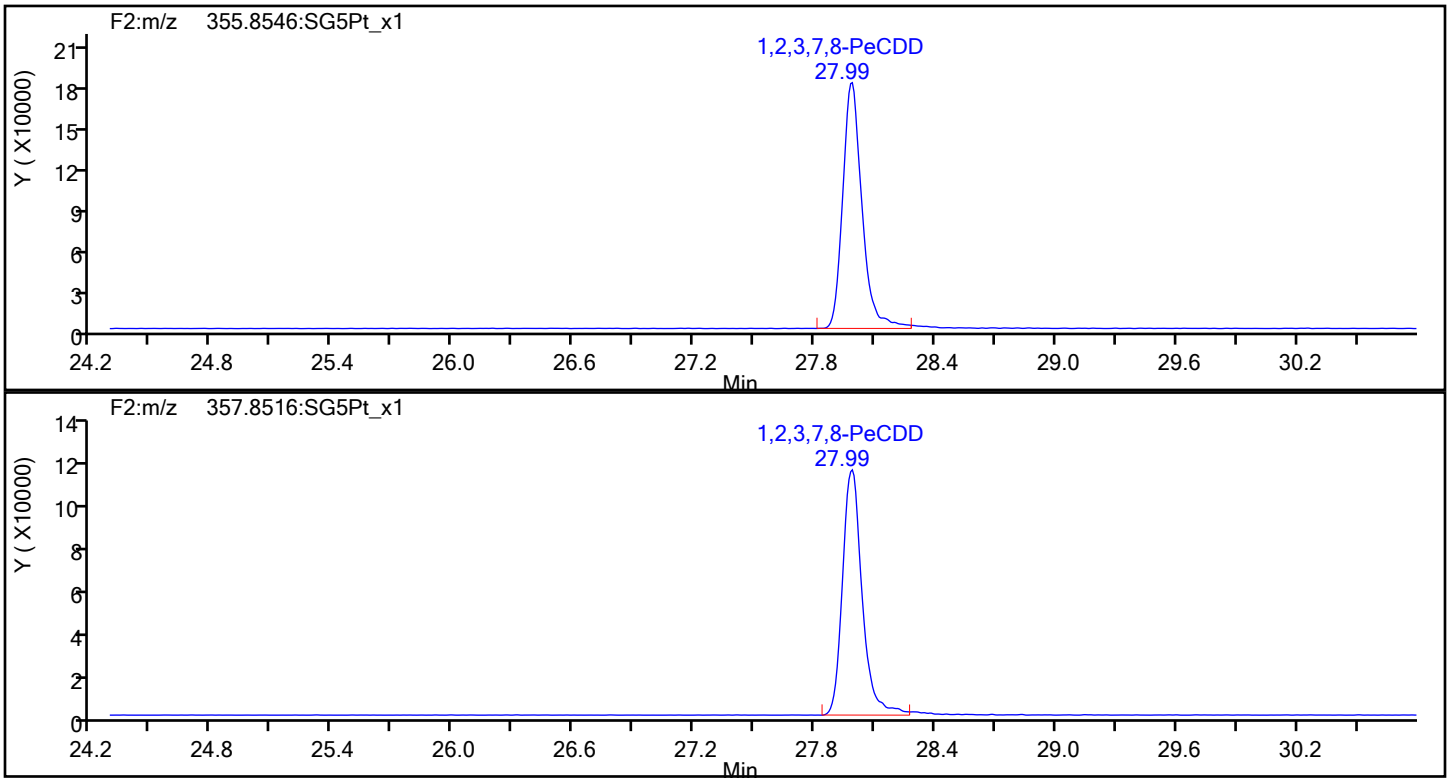
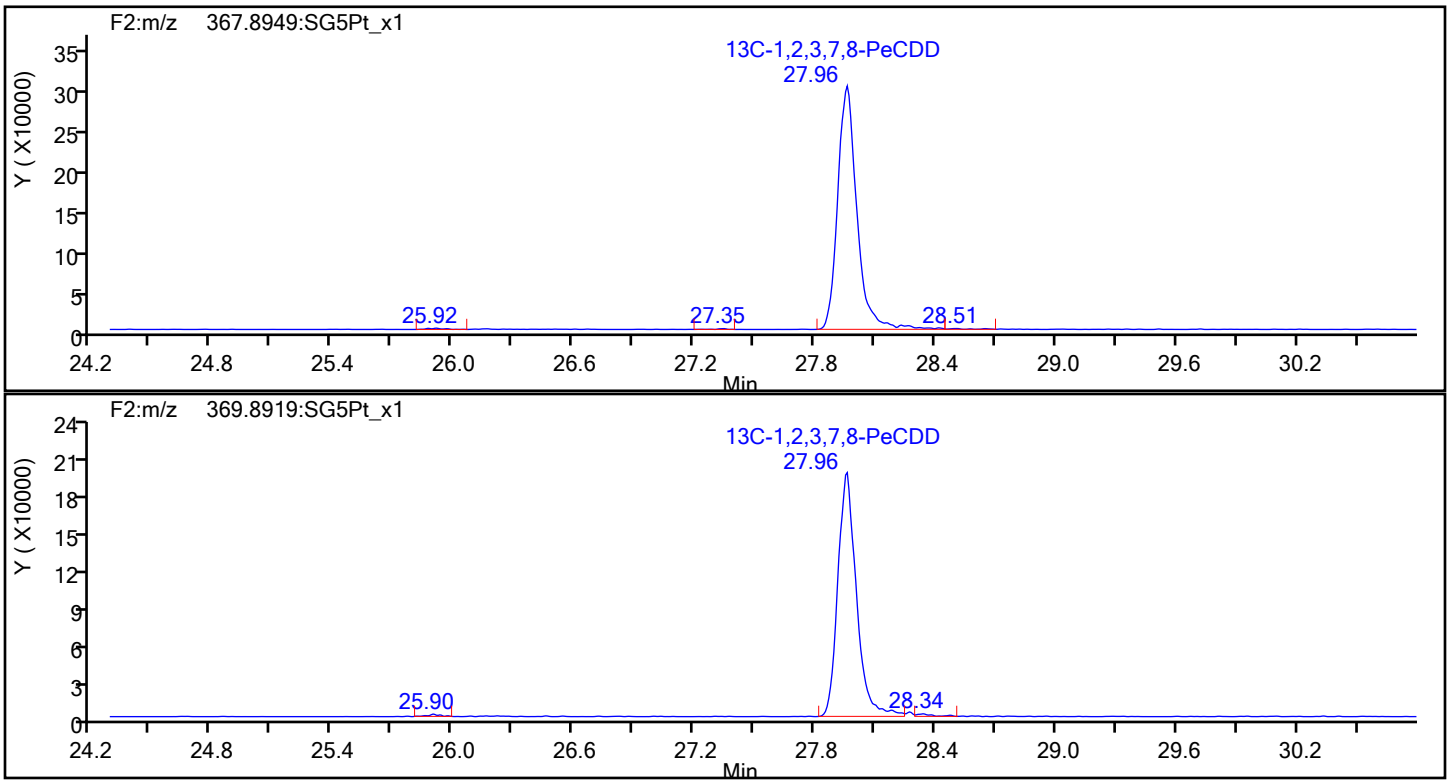
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards



Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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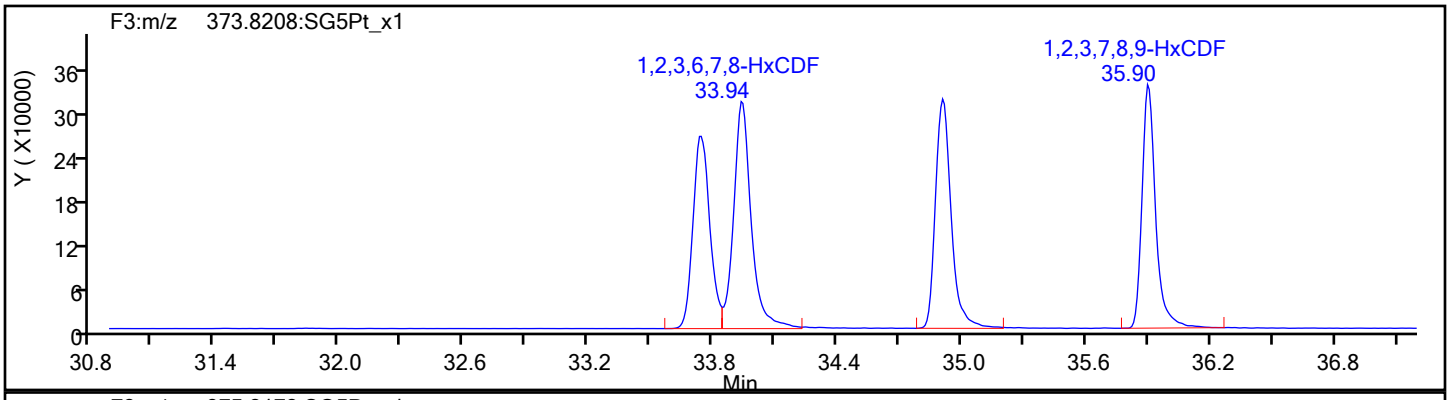
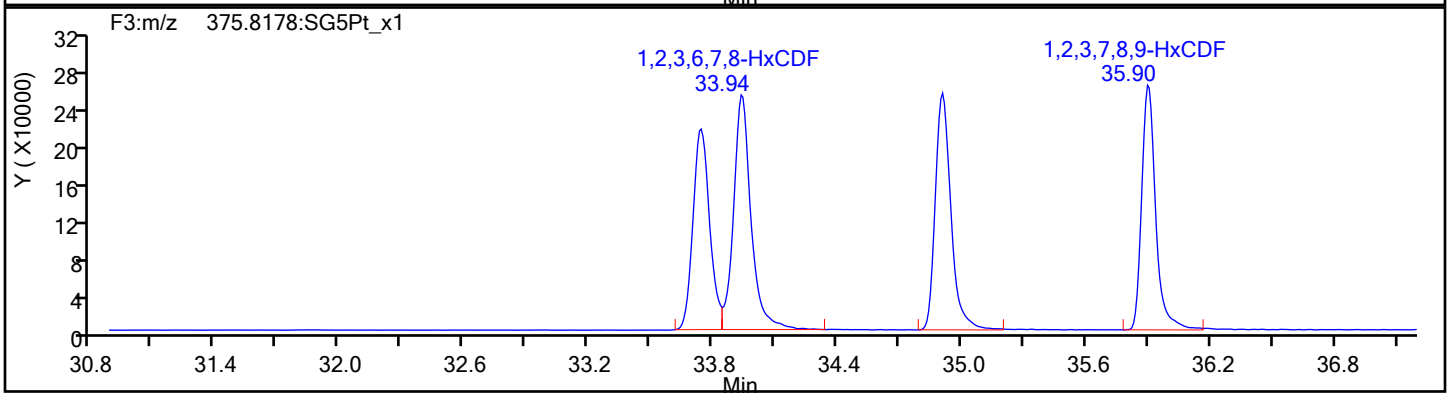
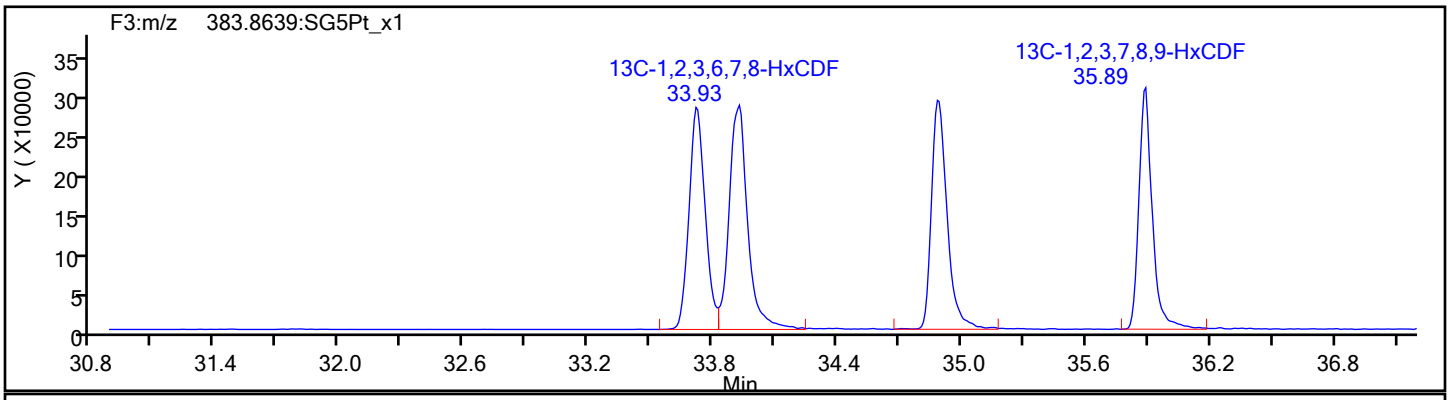
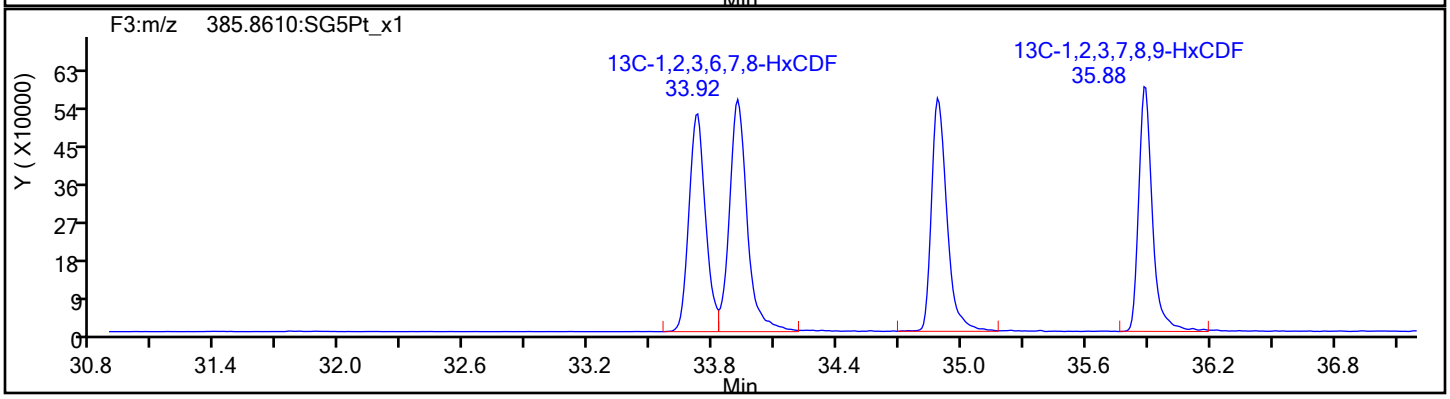
HxCDF





HxCDF Standards





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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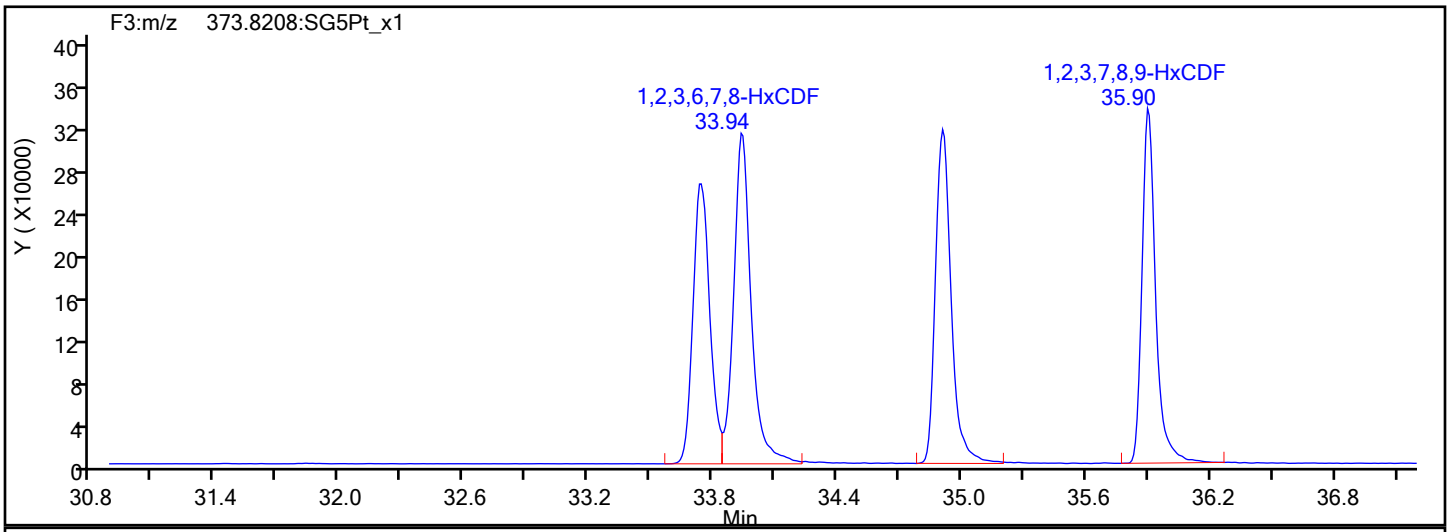
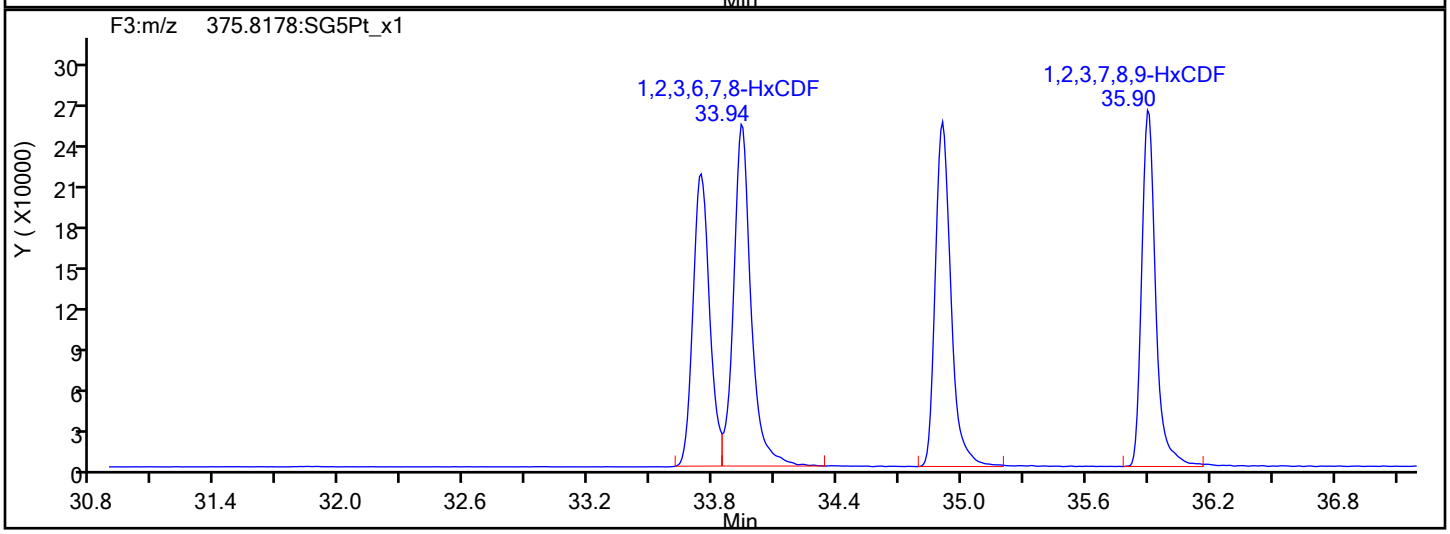
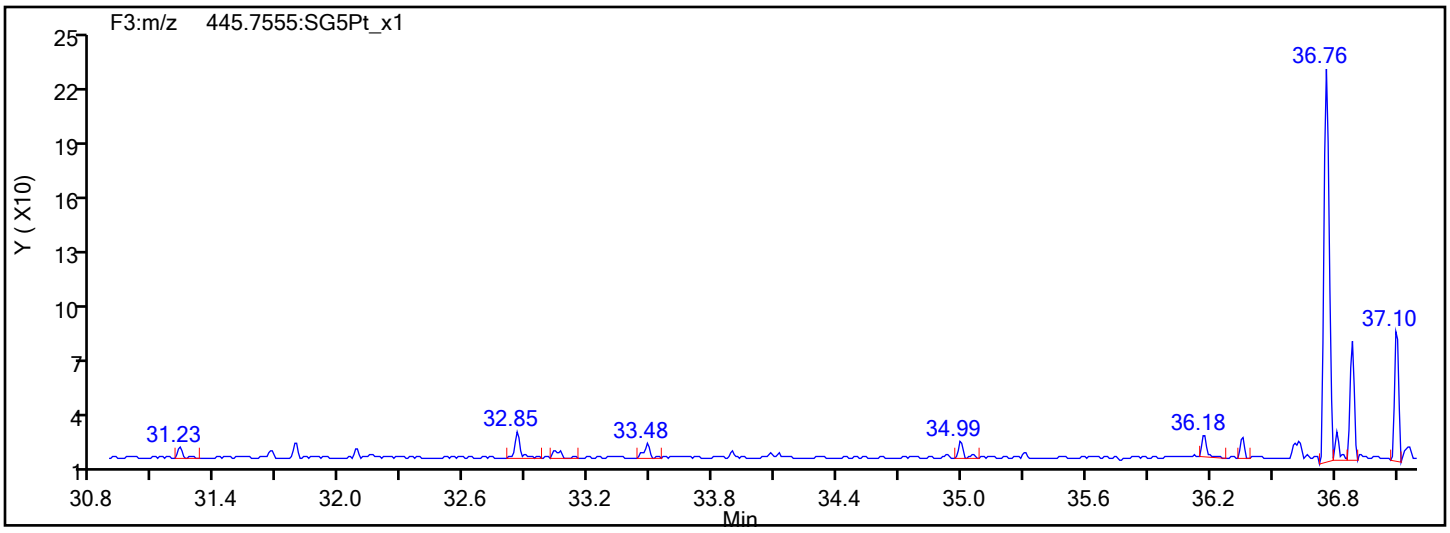




HxCDF Interference Mass



Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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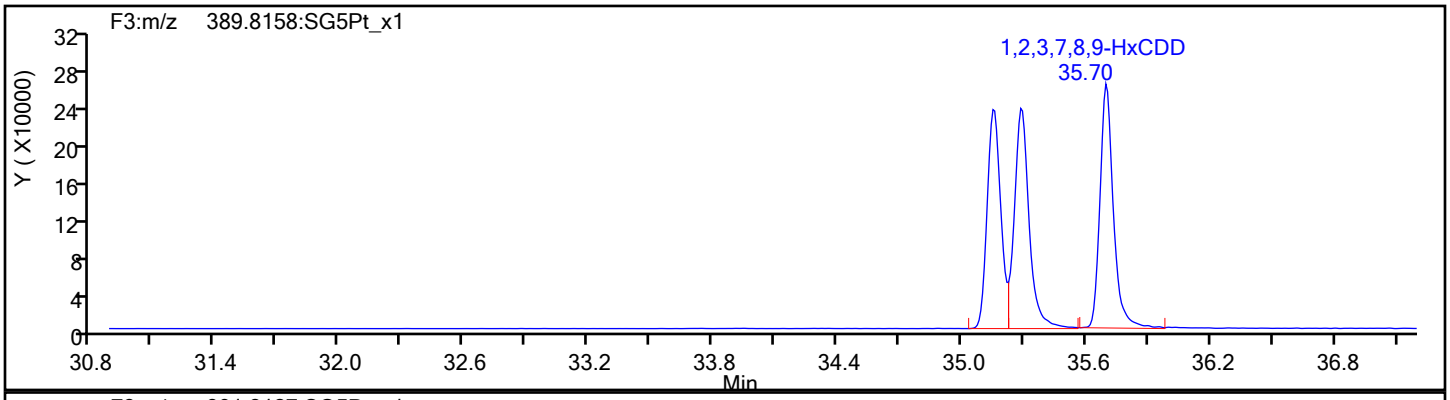
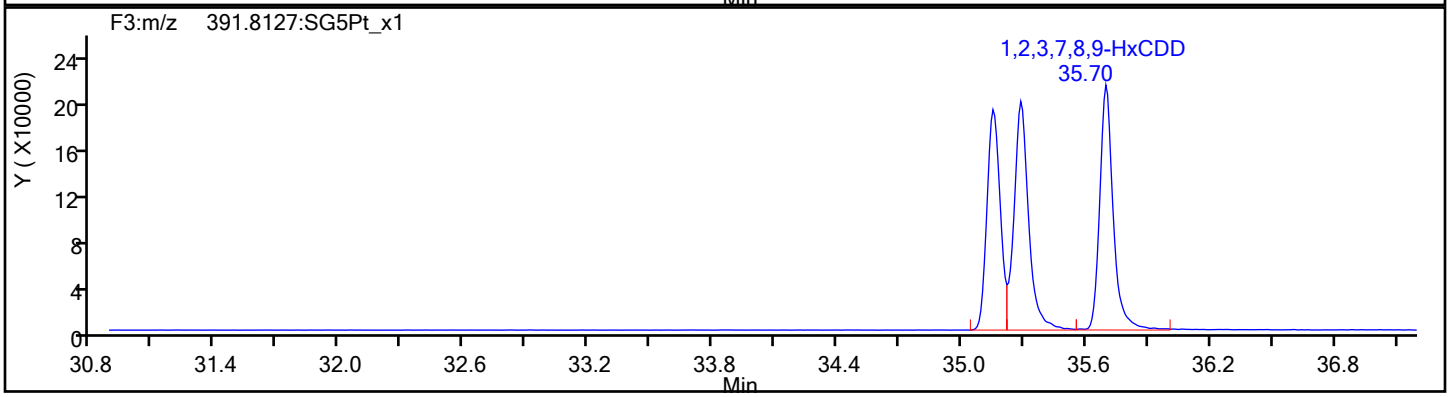
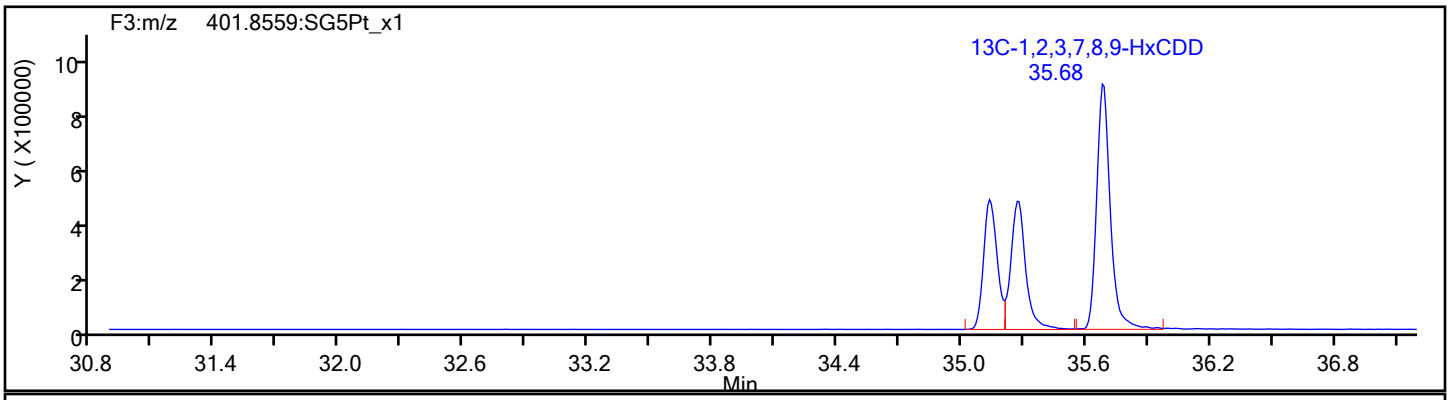
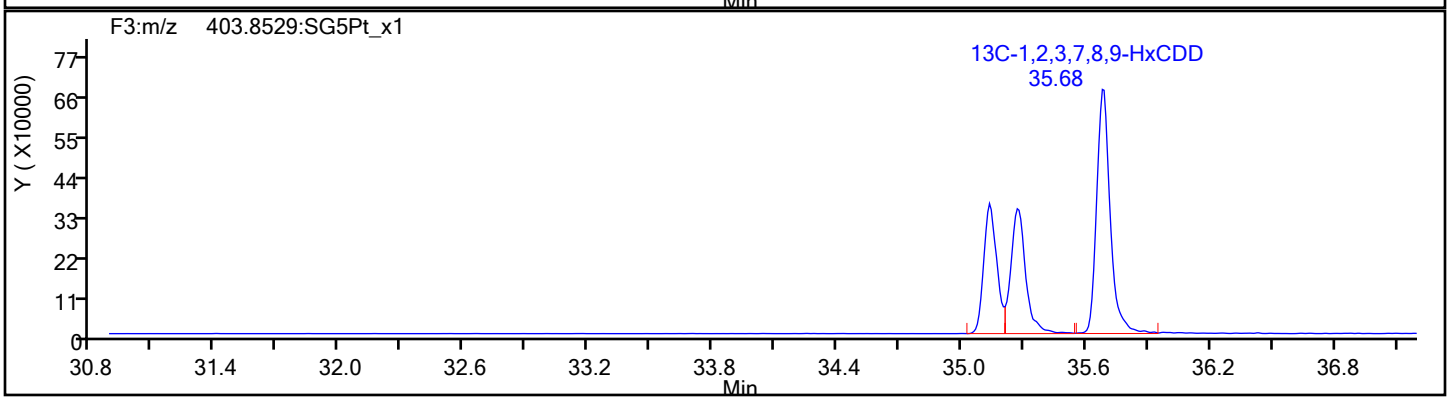
HxCDD





HxCDD Standards





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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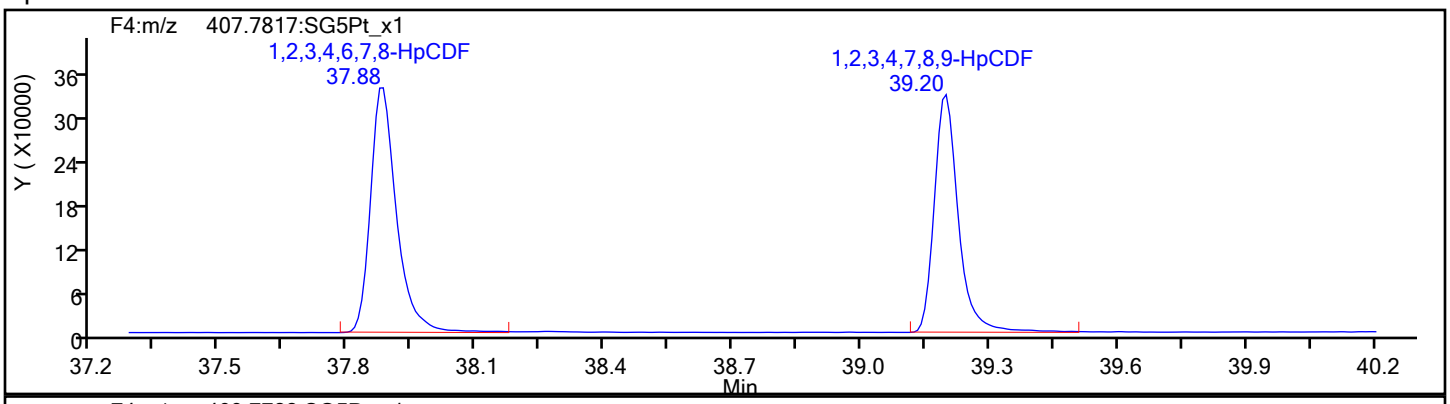
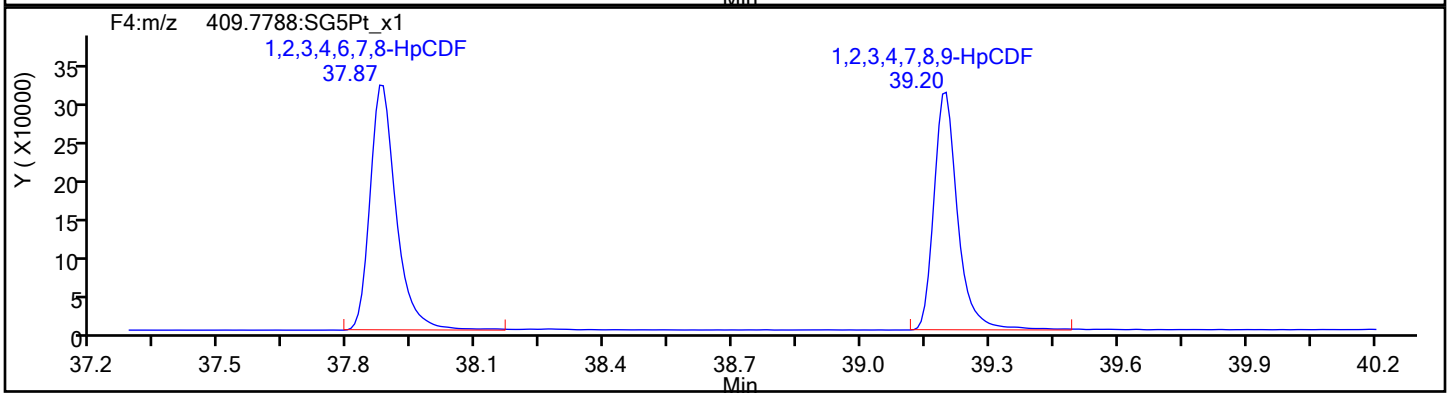
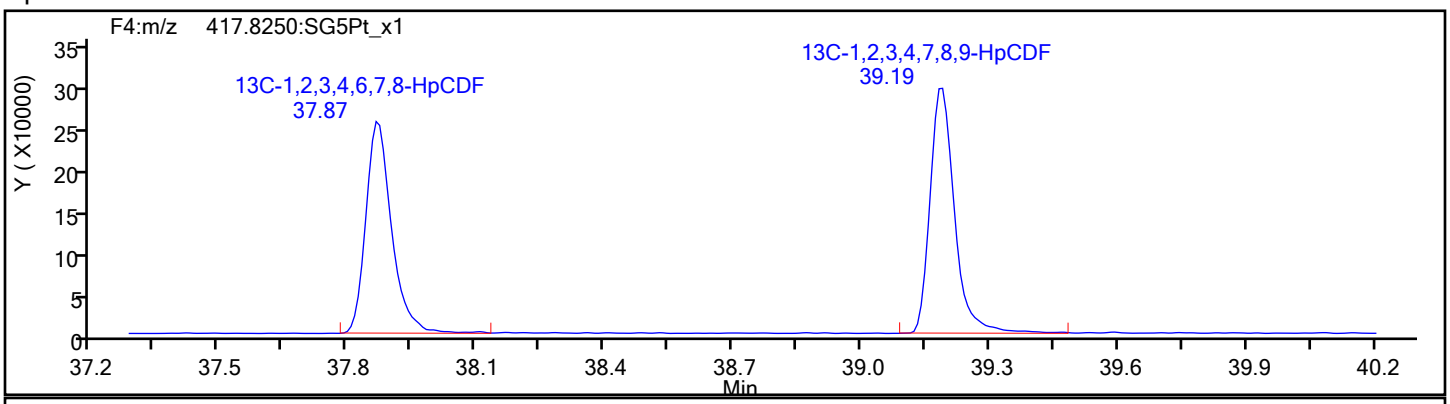
Column Type:	DB-5	Column Dia:	0.32 mm

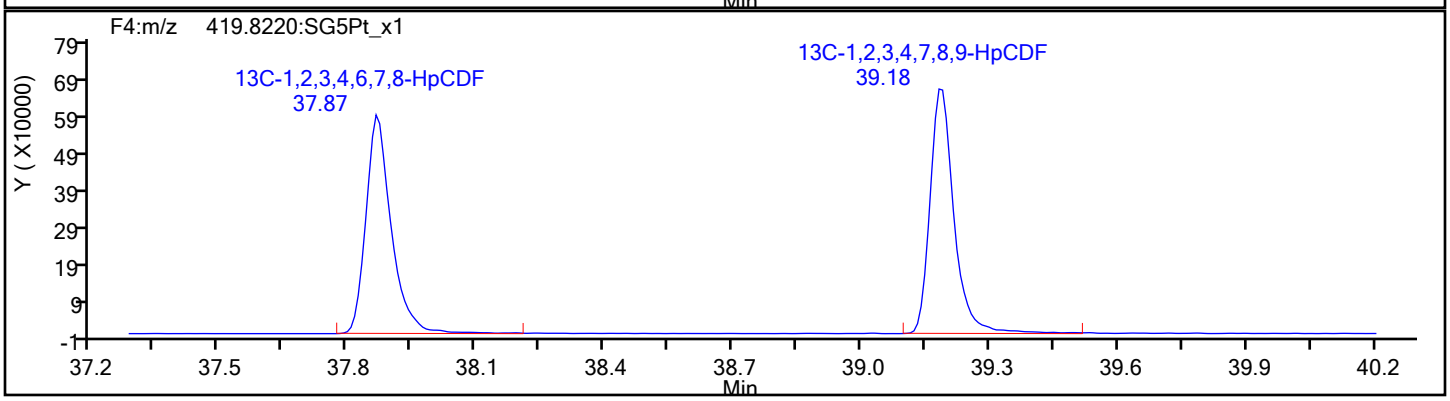
HpCDF





HpCDF Standards





Report Date: 17-Dec-2019 09:19:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_6.d		
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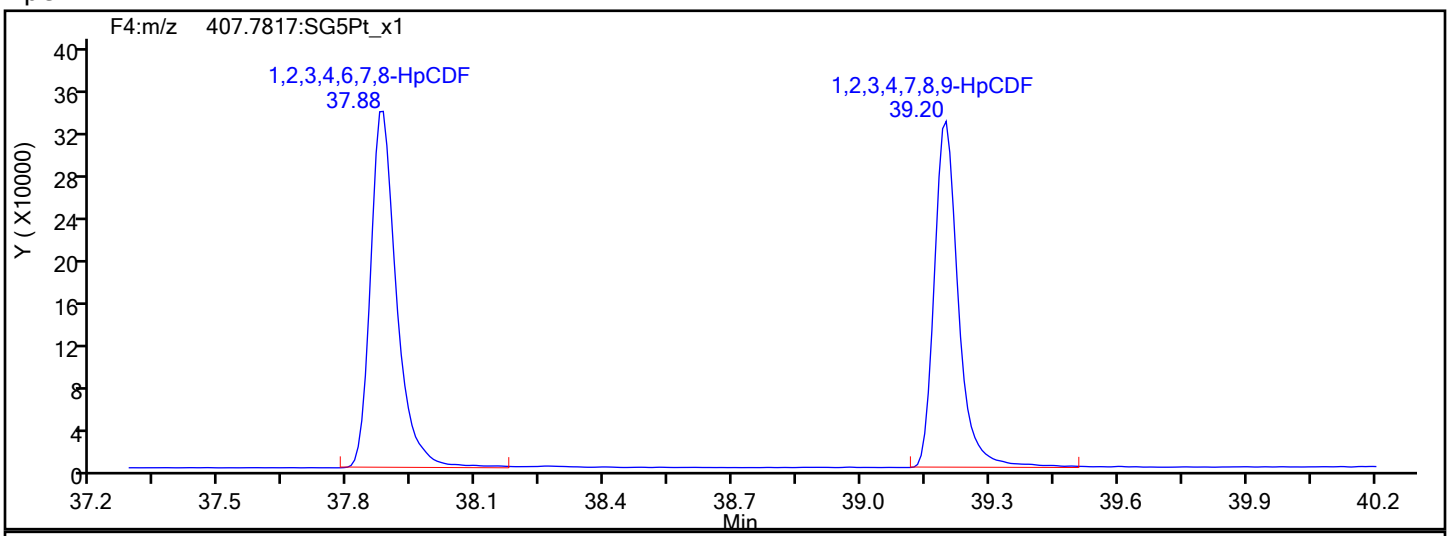
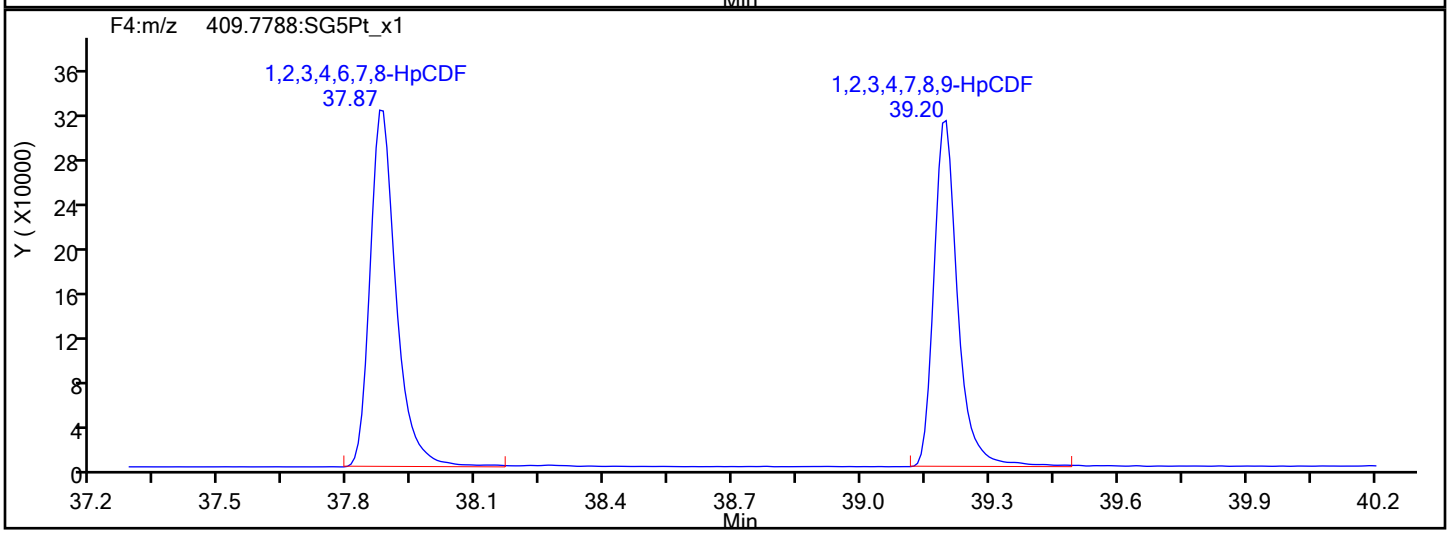
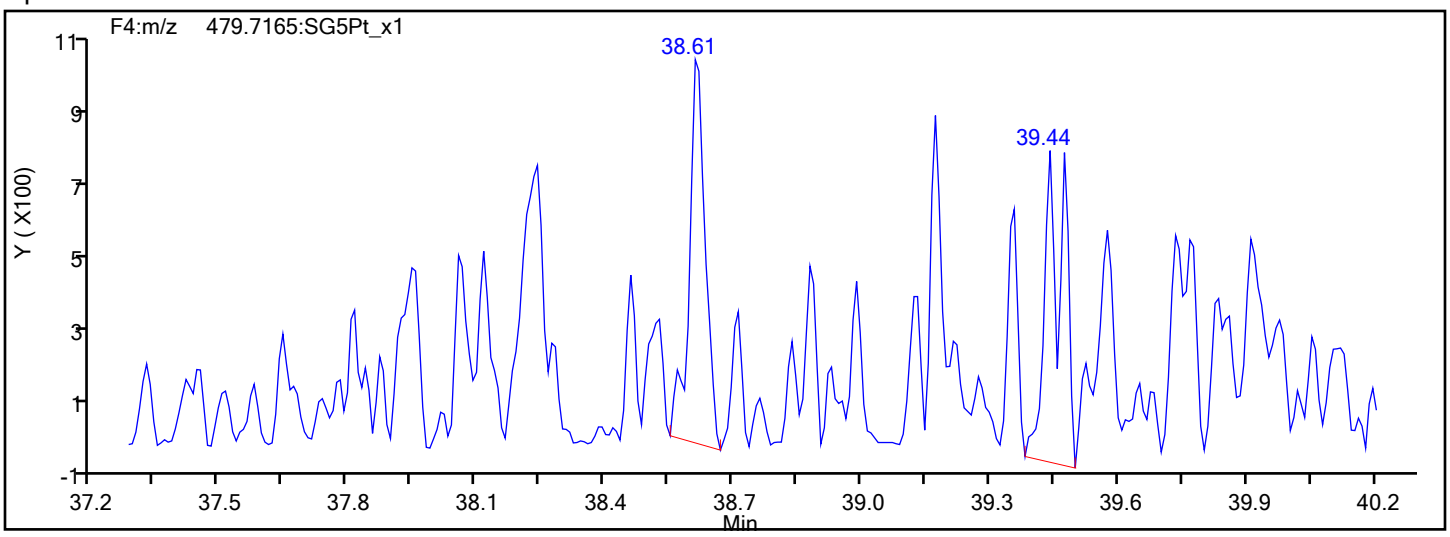
HpCDF





HpCDF Interference Mass



Report Date: 17-Dec-2019 09:19:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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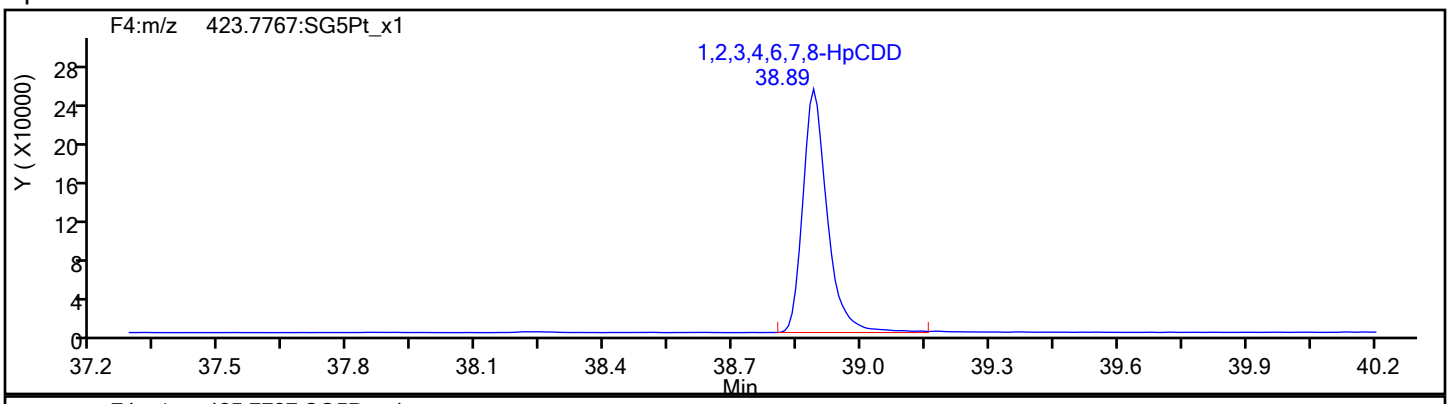
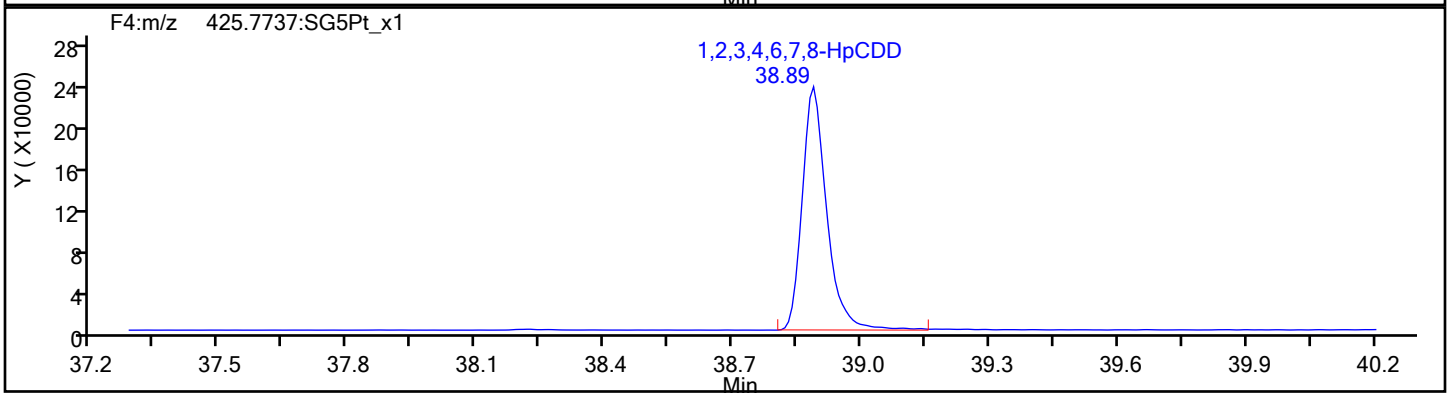
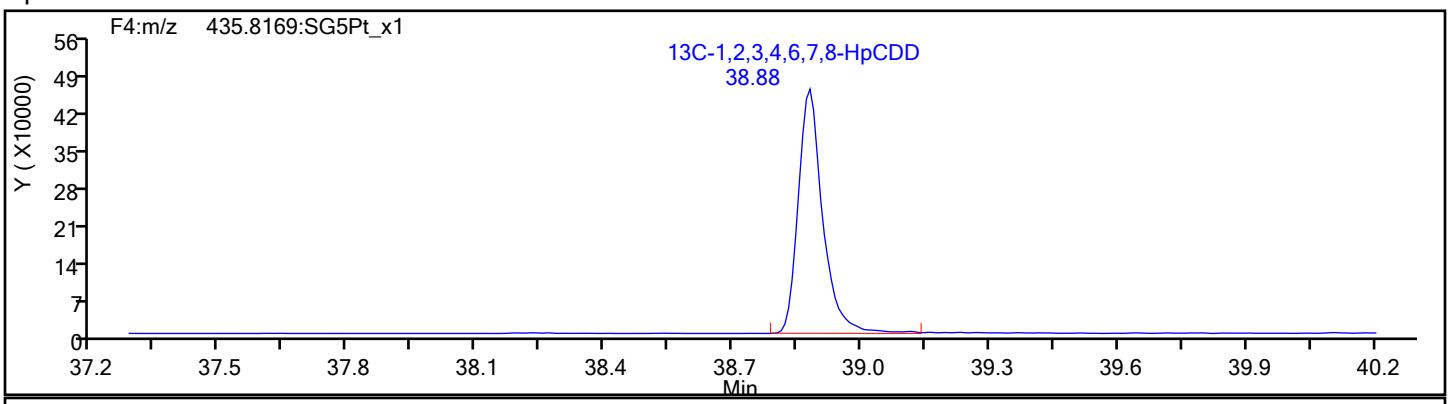
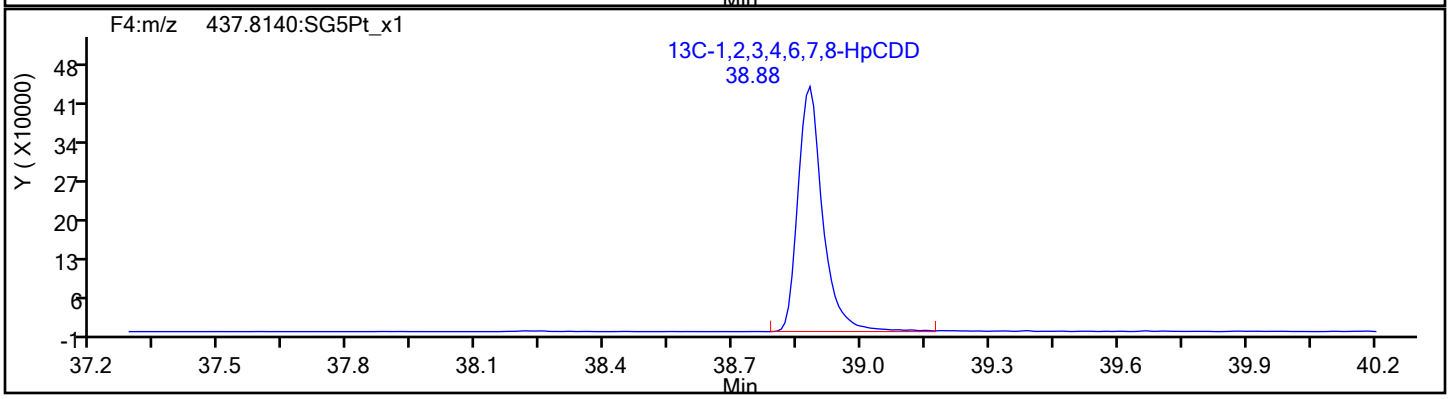
HpCDD





HpCDD Standards





Report Date: 17-Dec-2019 09:19:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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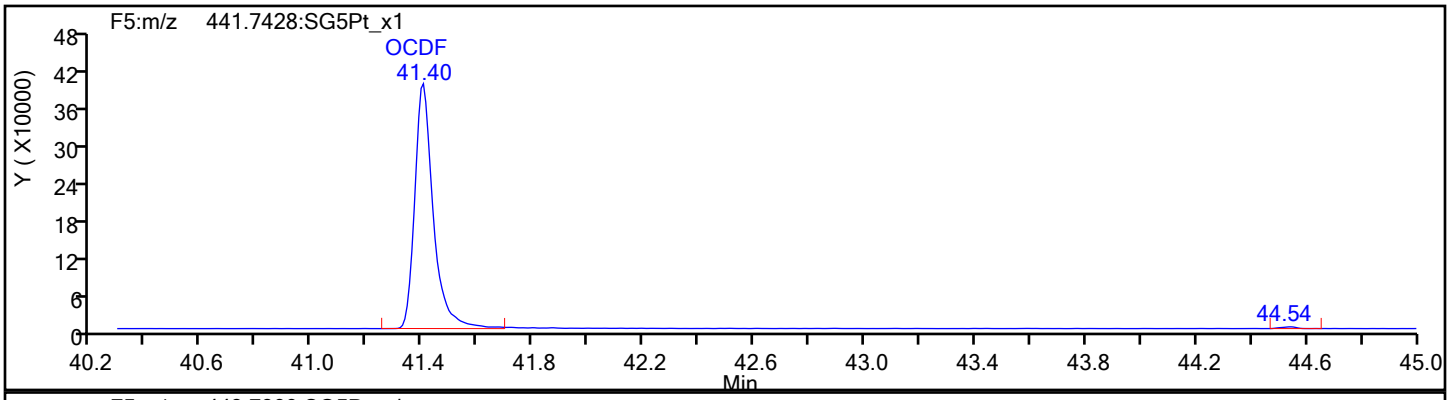
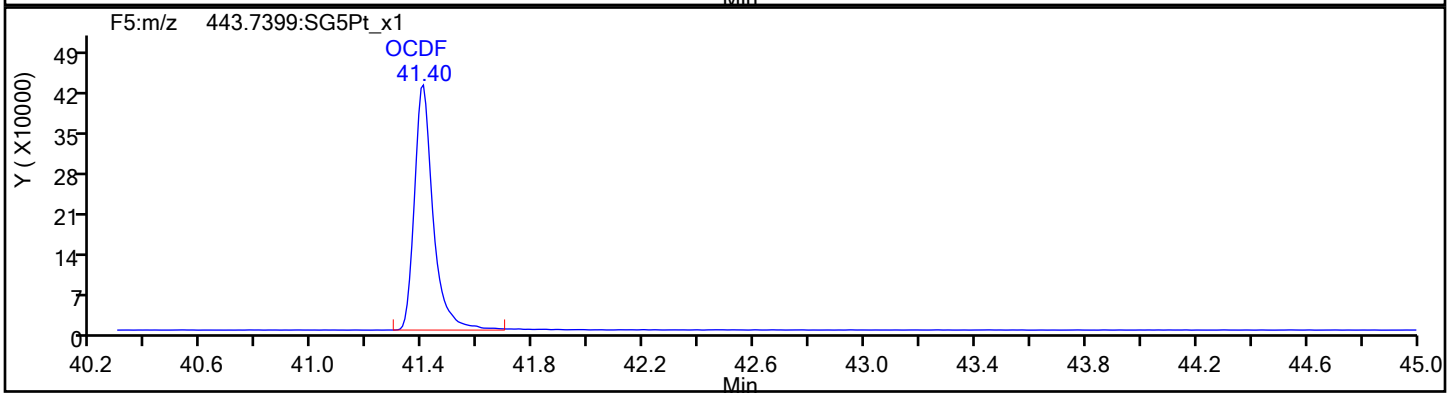
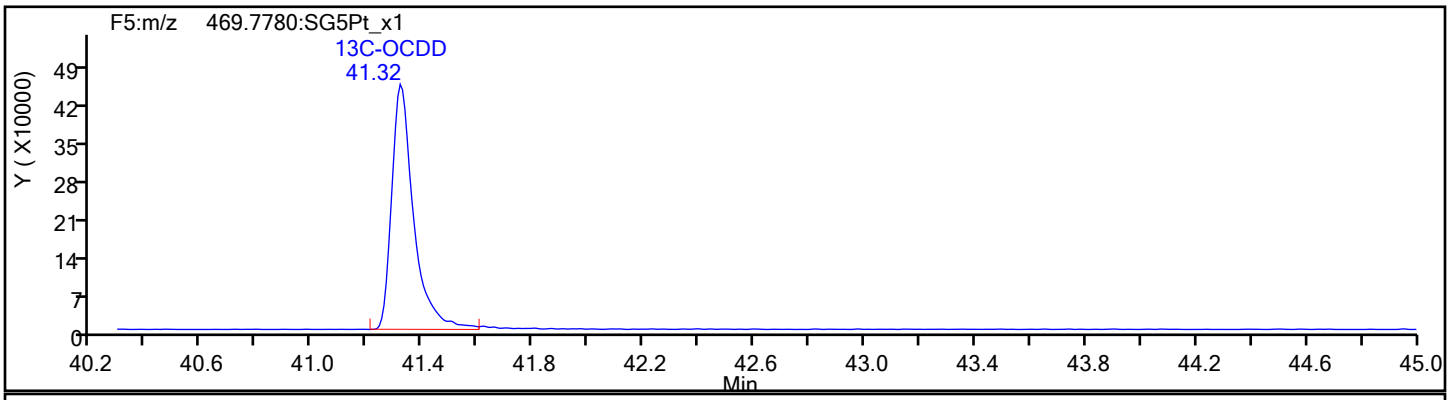
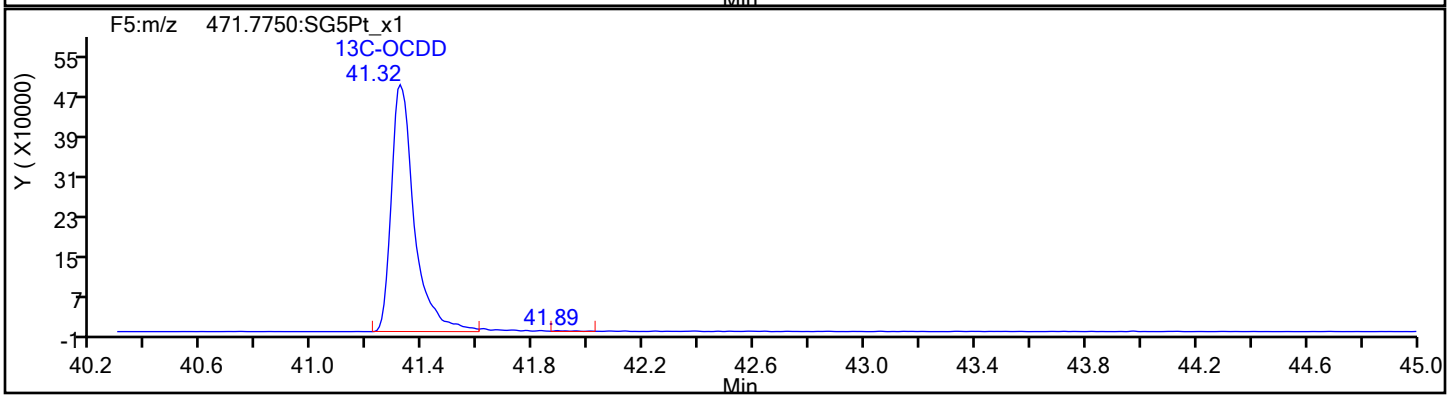
OCDF





OCDF Standards





Report Date: 17-Dec-2019 09:19:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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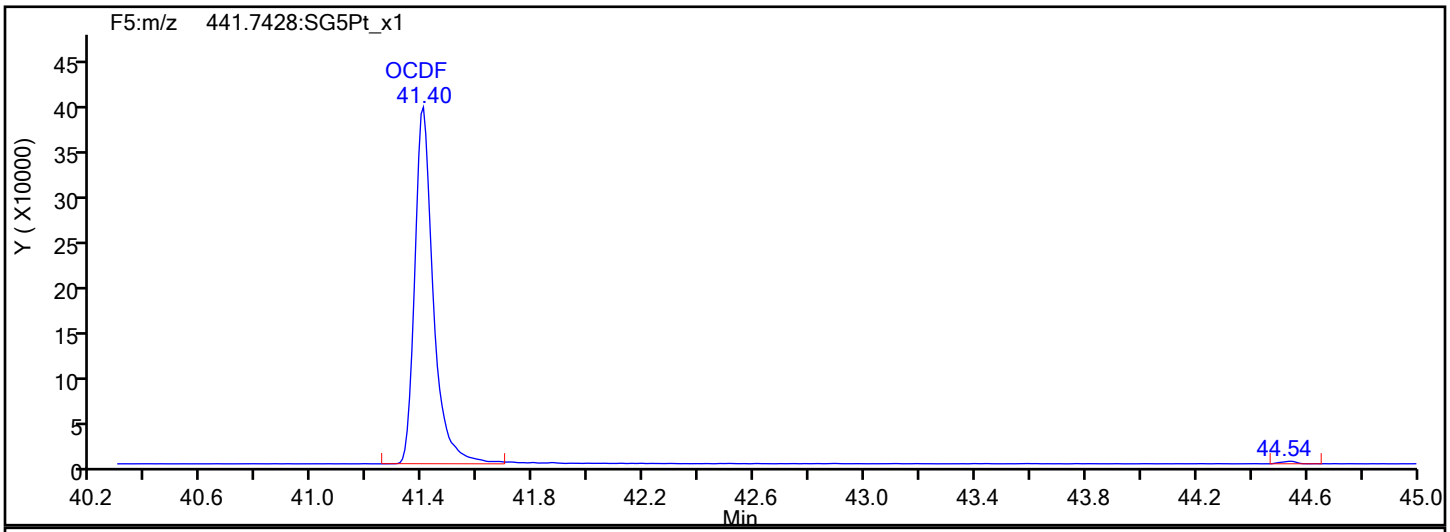
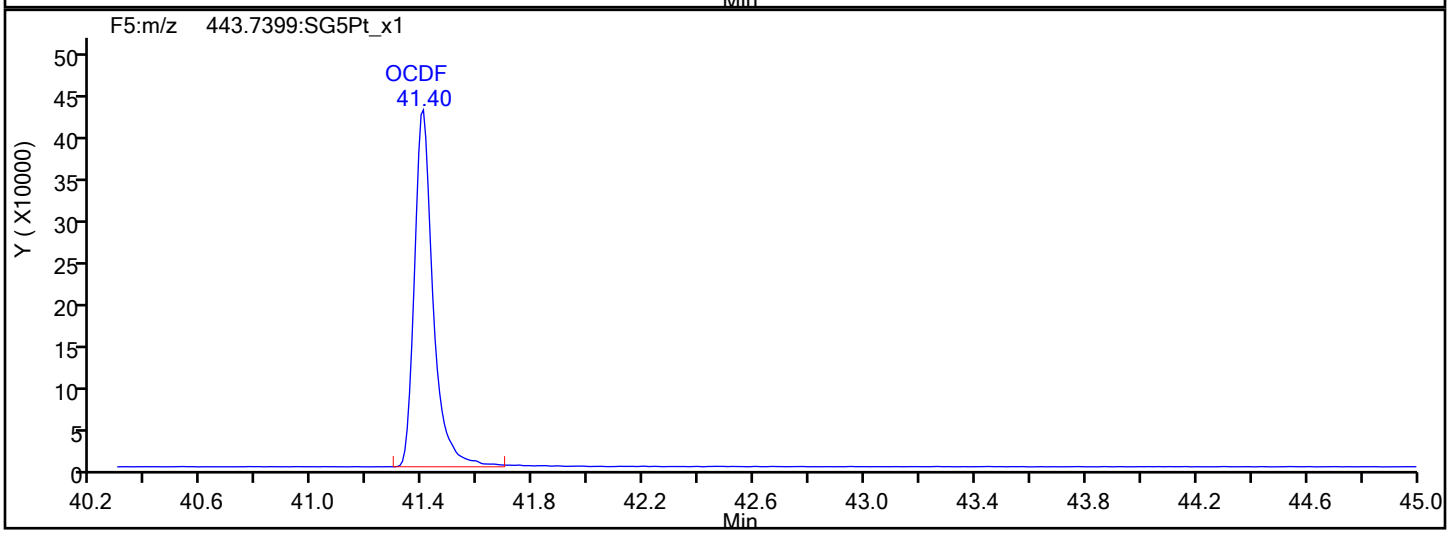
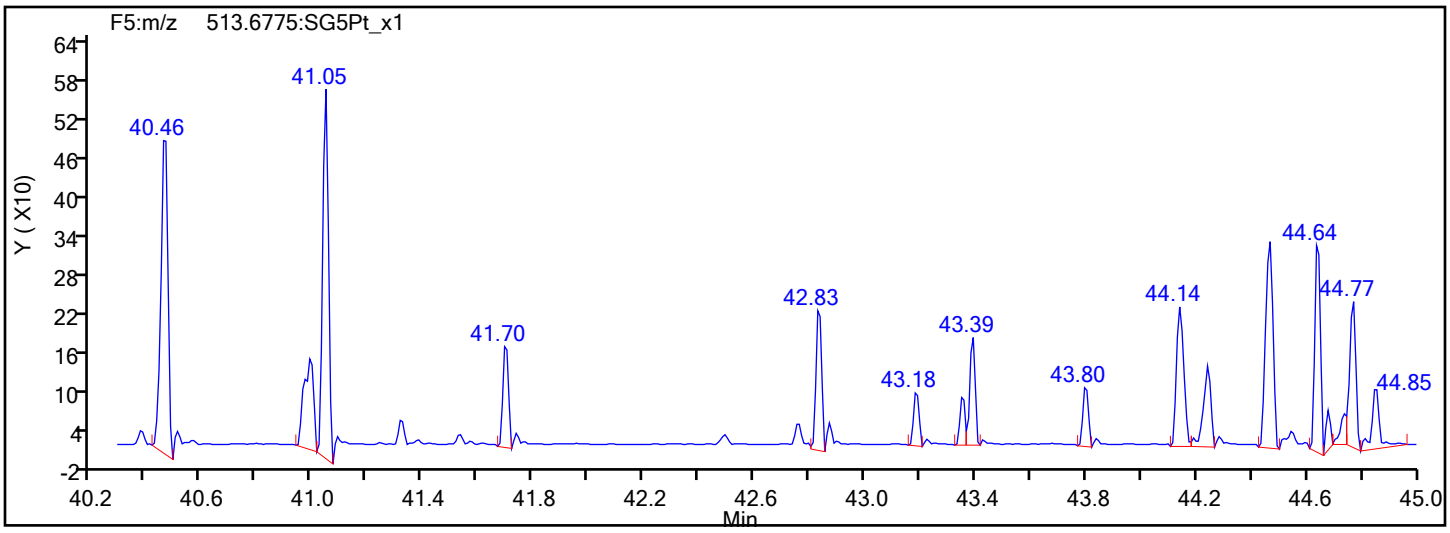
OCDF





OCDF Interference Mass



Report Date: 17-Dec-2019 09:19:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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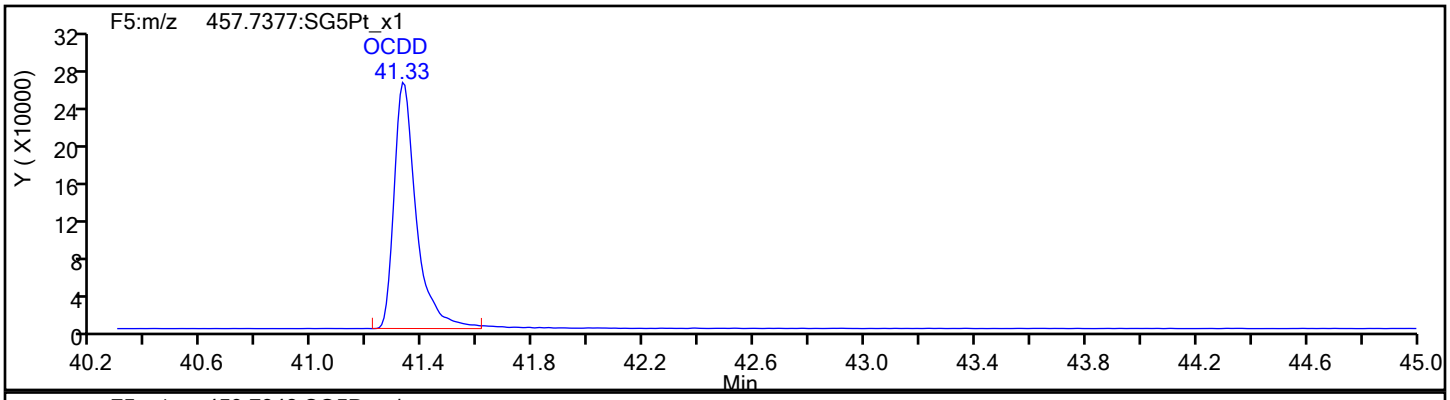
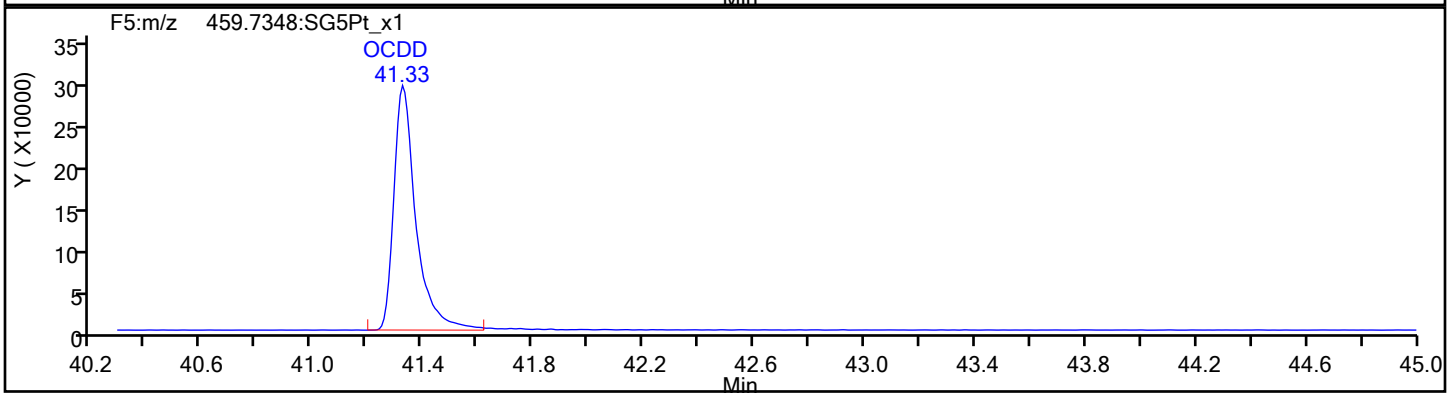
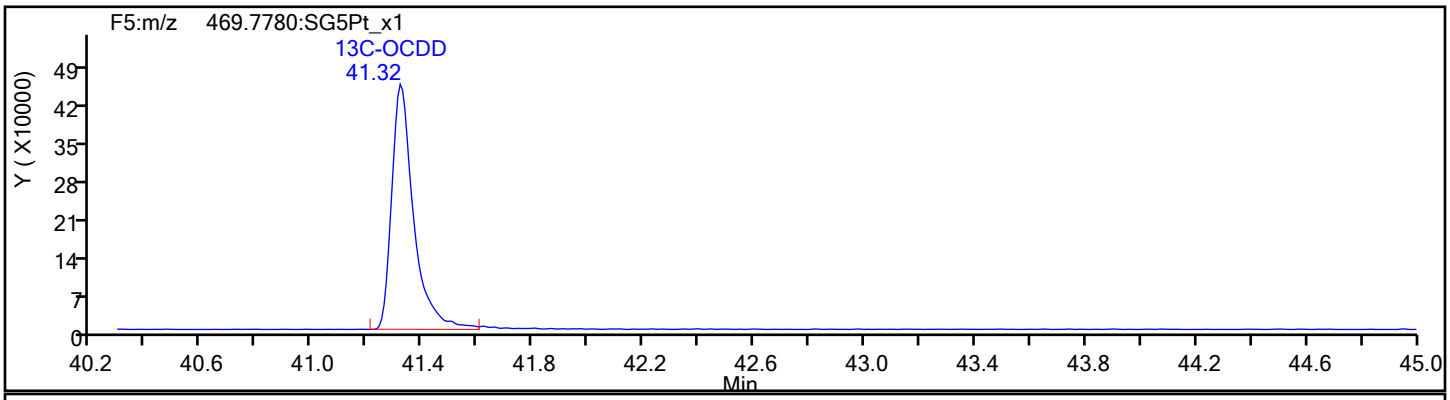
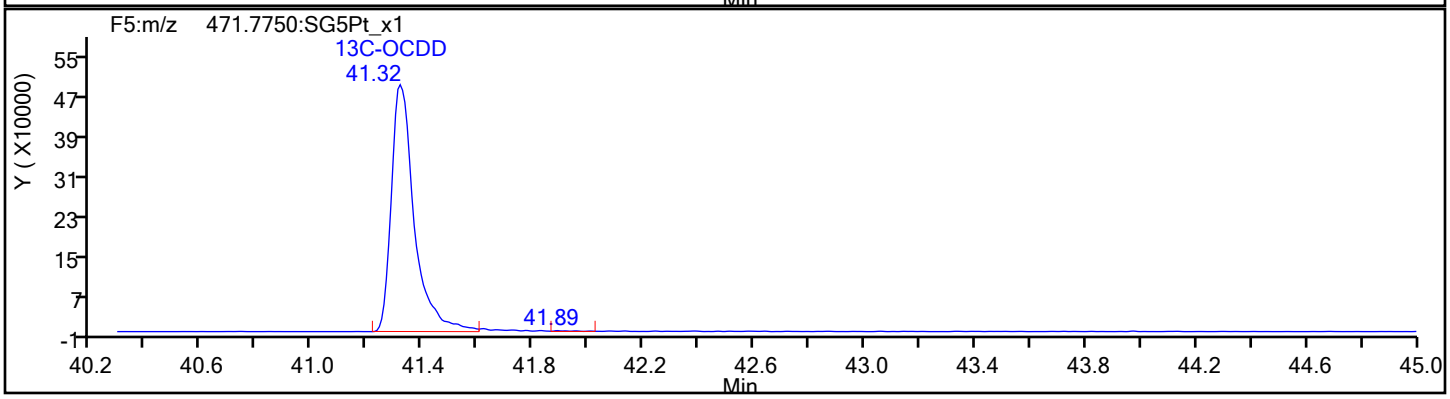




OCDD Standards





Report Date: 17-Dec-2019 09:19:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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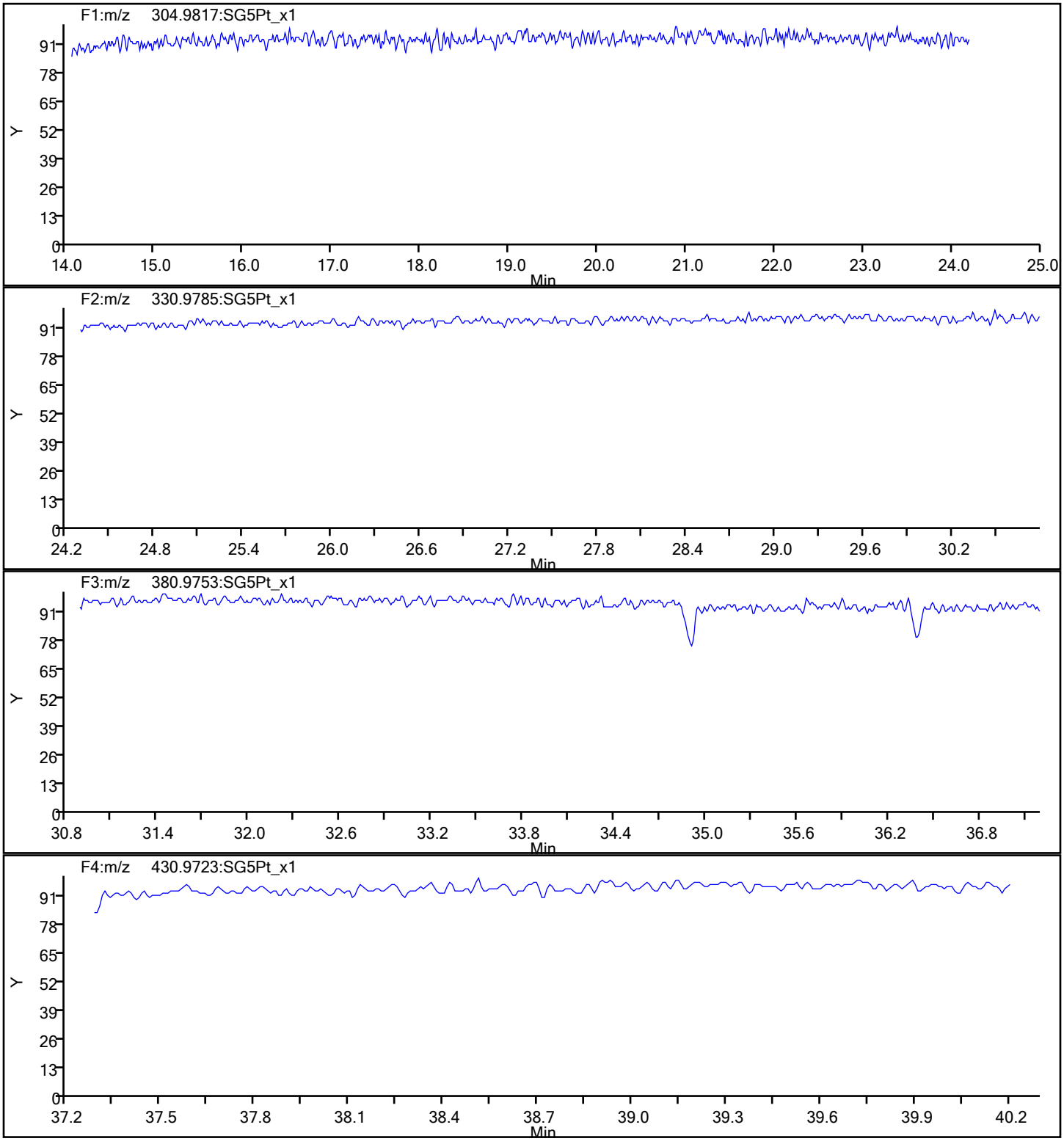

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Eurofins TestAmerica, Sacramento

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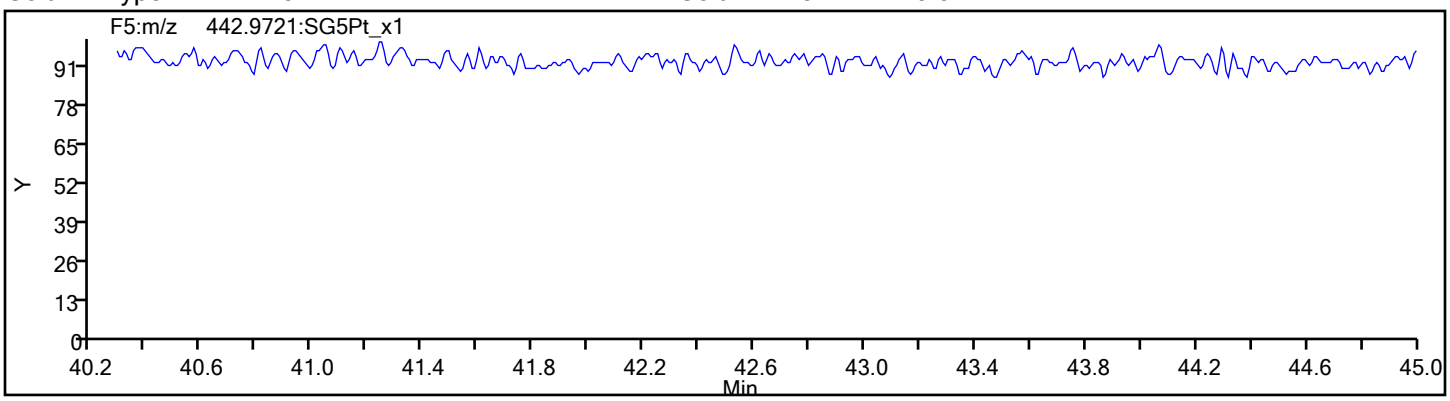


FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-344634/3-A

Matrix: Sediment Lab File ID: 13de19dfs1_7.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 16:36

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	19.3		1.0	0.14
51207-31-9	2,3,7,8-TCDF	18.4		1.0	0.073
40321-76-4	1,2,3,7,8-PeCDD	104		5.0	0.16
57117-41-6	1,2,3,7,8-PeCDF	92.5		5.0	0.41
57117-31-4	2,3,4,7,8-PeCDF	87.2		5.0	0.42
39227-28-6	1,2,3,4,7,8-HxCDD	91.1		5.0	0.23
57653-85-7	1,2,3,6,7,8-HxCDD	97.0		5.0	0.25
19408-74-3	1,2,3,7,8,9-HxCDD	92.2		5.0	0.22
70648-26-9	1,2,3,4,7,8-HxCDF	91.2		5.0	0.39
57117-44-9	1,2,3,6,7,8-HxCDF	99.2		5.0	0.37
72918-21-9	1,2,3,7,8,9-HxCDF	99.4		5.0	0.33
60851-34-5	2,3,4,6,7,8-HxCDF	101		5.0	0.35
35822-46-9	1,2,3,4,6,7,8-HpCDD	95.1		5.0	0.33
67562-39-4	1,2,3,4,6,7,8-HpCDF	99.1		5.0	0.66
55673-89-7	1,2,3,4,7,8,9-HpCDF	90.3		5.0	0.61
3268-87-9	OCDD	189		10	0.41
39001-02-0	OCDF	182		10	0.35
41903-57-5	Total TCDD	19.3		1.0	0.14
30402-14-3	Total TCDF	18.5		1.0	0.073
36088-22-9	Total PeCDD	104		5.0	0.16
30402-15-4	Total PeCDF	181		5.0	0.41
34465-46-8	Total HxCDD	280		5.0	0.24
55684-94-1	Total HxCDF	391		5.0	0.36
37871-00-4	Total HpCDD	95.1		5.0	0.33
38998-75-3	Total HpCDF	189		5.0	0.63

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-344634/3-A

Matrix: Sediment Lab File ID: 13de19dfs1_7.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/11/2019 08:20

Sample wt/vol: 10(g) Date Analyzed: 12/13/2019 16:36

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 1(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 345338 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	60		20-175
89059-46-1	13C-2,3,7,8-TCDF	52		22-152
109719-79-1	13C-1,2,3,7,8-PeCDD	56		21-227
109719-77-9	13C-1,2,3,7,8-PeCDF	55		21-192
116843-02-8	13C-2,3,4,7,8-PeCDF	60		13-328
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		21-193
109719-81-5	13C-1,2,3,6,7,8-HxCDD	65		25-163
114423-98-2	13C-1,2,3,4,7,8-HxCDF	58		19-202
116843-03-9	13C-1,2,3,6,7,8-HxCDF	57		21-159
116843-04-0	13C-1,2,3,7,8,9-HxCDF	52		17-205
116843-05-1	13C-2,3,4,6,7,8-HxCDF	53		22-176
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	59		26-166
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	54		21-158
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		20-186
114423-97-1	13C-OCDD	66		13-199

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	96		31-191

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d
Lims ID: LCSD 320-344634/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 13-Dec-2019 16:36:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-344634/3-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:19:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	19.521	7869425	0.82	5.2E+04	100.0	100.0				
D 13C-2,3,7,8-TCDF	18.622	6633931	0.79	1.6096	52.4	52.4	0.1985	0.1985	52.37	
2,3,7,8-TCDF	18.648	751663	0.78	1.2332	9.188	9.188	0.0367	0.0367	91.88	
A Non-2,3,7,8-sub-TCDF	18.244	4239	0.68	1.2332	0.0518	0.0518	0.0367	0.0518	0.00	
S Total TCDF					9.240	9.240	0.0367	0.0367		
D 13C-2,3,7,8-TCDD	19.867	4744008	0.78	0.9984	60.4	60.4	0.2199	0.2199	60.38	
2,3,7,8-TCDD	19.902	549938	0.79	1.1988	9.670	9.670	0.0689	0.0689	96.70	
$ 37Cl4-2,3,7,8-TCDD	19.893	4365706		1.4510	38.2	38.2	0.0357	0.0357	95.59	
A Non-2,3,7,8-sub-TCDD	19.035						0.0689	0.0689		
S Total TCDD					9.670	9.670	0.0689	0.0689		
D 13C-1,2,3,7,8-PeCDF	25.778	5966357	1.59	1.3678	55.4	55.4	0.2529	0.2529	55.43	
1,2,3,7,8-PeCDF	25.803	3225271	1.56	1.1689	46.2	46.2	0.2030	0.2030	92.49	
D 13C-2,3,4,7,8-PeCDF	27.195	6114574	1.55	1.3045	59.6	59.6	0.2652	0.2652	59.56	
2,3,4,7,8-PeCDF	27.221	3162918	1.55	1.1861	43.6	43.6	0.2113	0.2113	87.22	
A F1 PeCDFs	23.266						0.0164	0.0164		
A Non-2,3,7,8-sub-PeCDF	26.724	30756	1.63	1.1775	0.4324	0.4324	0.2070	0.4324	0.00	
S Total PeCDF					90.3	90.3	0.2071	0.2071		
D 13C-1,2,3,7,8-PeCDD	27.959	3686154	1.60	0.8292	56.5	56.5	0.1257	0.1257	56.49	
1,2,3,7,8-PeCDD	27.984	2146958	1.55	1.1200	52.0	52.0	0.0821	0.0821	104	
A Non-2,3,7,8-sub-PeCDD	26.851						0.0821	0.0821		
S Total PeCDD					52.0	52.0	0.0821	0.0821		
D 13C-1,2,3,4,7,8-HxCDF	33.723	5045863	0.54	1.1700	57.9	57.9	0.2019	0.2019	57.94	
1,2,3,4,7,8-HxCDF	33.740	2994526	1.26	1.3021	45.6	45.6	0.1938	0.1938	91.15	
D 13C-1,2,3,6,7,8-HxCDF	33.916	5620173	0.53	1.3168	57.3	57.3	0.1794	0.1794	57.35	
1,2,3,6,7,8-HxCDF	33.941	3598482	1.24	1.2907	49.6	49.6	0.1844	0.1844	99.21	
D 13C-2,3,4,6,7,8-HxCDF	34.889	5114860	0.53	1.2873	53.4	53.4	0.1835	0.1835	53.38	
2,3,4,6,7,8-HxCDF	34.906	3362852	1.26	1.3039	50.4	50.4	0.1770	0.1770	101	
D 13C-1,2,3,7,8,9-HxCDF	35.887	4627673	0.53	1.1987	51.9	51.9	0.1970	0.1970	51.87	
1,2,3,7,8,9-HxCDF	35.904	3065040	1.26	1.3329	49.7	49.7	0.1668	0.1668	99.38	
A Non-2,3,7,8-sub-HxCDF	33.751						0.1800	0.1800		
S Total HxCDF					195.3	195.3	0.1805	0.1805		

Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02
Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	35.685	7442888	1.24	5.8E+04	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	35.140	4024480	1.26	0.8364	64.7	64.7	0.2060	0.2060	64.65	
1,2,3,4,7,8-HxCDD	35.157	2148541	1.25	1.1725	45.5	45.5	0.1173	0.1173	91.07	
D 13C-1,2,3,6,7,8-HxCDD	35.274	4350599	1.28	0.9040	64.7	64.7	0.1906	0.1906	64.66	
1,2,3,6,7,8-HxCDD	35.291	2375187	1.25	1.1256	48.5	48.5	0.1238	0.1238	97.01	
1,2,3,7,8,9-HxCDD	35.702	2380477	1.23	1.2327	46.1	46.1	0.1123	0.1123	92.23	
A Non-2,3,7,8-sub-HxCDD	34.284						0.1176	0.1176		
S Total HxCDD					140.2	140.2	0.1178	0.1178		
D 13C-1,2,3,4,6,7,8-HpCDF	37.869	3884565	0.46	0.9689	53.9	53.9	0.3118	0.3118	53.87	
1,2,3,4,6,7,8-HpCDF	37.878	3114753	1.05	1.6176	49.6	49.6	0.3307	0.3307	99.14	
D 13C-1,2,3,4,7,8,9-HpCDF	39.186	4175182	0.45	0.9231	60.8	60.8	0.3272	0.3272	60.77	
1,2,3,4,7,8,9-HpCDF	39.195	2764833	1.05	1.4672	45.1	45.1	0.3028	0.3028	90.27	
A Non-2,3,7,8-sub-HpCDF	38.556						0.3147	0.3147		
S Total HpCDF					94.7	94.7	0.3168	0.3168		
D 13C-1,2,3,4,6,7,8-HpCDD	38.876	4007981	1.06	0.9114	59.1	59.1	0.1845	0.1845	59.08	
1,2,3,4,6,7,8-HpCDD	38.893	2140610	1.03	1.1237	47.5	47.5	0.1648	0.1648	95.06	
A Non-2,3,7,8-sub-HpCDD	38.803						0.1648	0.1648		
S Total HpCDD					47.5	47.5	0.1648	0.1648		
D 13C-OCDD	41.322	6149921	0.90	0.6272	131.7	131.7	0.2505	0.2505	65.87	
OCDF	41.398	4315466	0.91	1.5416	91.0	91.0	0.1730	0.1730	91.04	
OCDD	41.330	3444878	0.89	1.1855	94.5	94.5	0.2071	0.2071	94.50	

Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d
Lims ID: LCSD 320-344634/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 13-Dec-2019 16:36:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-344634/3-A
Operator ID: Xcalibur_System Instrument ID: DFS 1

Method: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\Dioxin_DFS1.m
Limit Group: HR - 1613B - ICAL
Last Update: 17-Dec-2019 09:18:18 Calib Date: 19-Oct-2019 00:02:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Chromna\Sacramento\ChromData\DFS1\20191021-85289.b\18oc19adfs1_8.d

Column 1 : DB-5 (0.32 mm) Det: F1(14.07 :22.11)
Process Host: CTX0311

First Level Reviewer: dadunj Date: 17-Dec-2019 09:19:45

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	19.521	19.502	1		3546496	564726	768	1920	735		
333.9338	19.530	19.502	2		4322929	663714	311	777	2134	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	18.622	18.611	1	0.954	2926925	483921	957	2392	506		
317.9389	18.622	18.611	1	0.954	3707006	592791	613	1532	967	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	18.648	18.637	1	1.001	328761	50104	62	155	808		
305.8987	18.656	18.637	1	1.002	422902	66773	133	332	502	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	17.999	18.244	-15	0.967	1716	313	62	155	5		
305.8987	17.991	18.244	-15	0.966	2523	476	133	332	4	0.68(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	19.867	19.848	1	1.018	2083069	307146	768	1920	400		
333.9338	19.876	19.848	2	1.018	2660939	406731	311	777	1308	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	19.902	19.874	2	1.002	242594	37762	176	440	215		
321.8936	19.893	19.874	1	1.001	307344	47961	60	150	799	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	19.893	19.882	1	1.019	4365706	666061	255	637	2612		
A Non-2,3,7,8-sub-TCDD											
319.8965	19.035						176	440			
321.8936	19.035						60	150			
13C-1,2,3,7,8-PeCDF											
351.9000	25.778	25.760	1	1.321	3661830	620290	1038	2595	598		
353.8970	25.778	25.760	1	1.321	2304527	402705	662	1655	608	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	25.803	25.785	1	1.001	1964314	334260	539	1347	620		
341.8567	25.795	25.785	1	1.001	1260957	214492	432	1080	497	1.56(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	27.195	27.177	1	1.393	3713660	586761	1038	2595	565		
353.8970	27.195	27.177	1	1.393	2400914	381510	662	1655	576	1.55(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	27.221	27.202	1	1.001	1924722	304470	539	1347	565		
341.8567	27.221	27.202	1	1.001	1238196	197530	432	1080	457	1.55(1.32-1.78)	
A F1 PeCDFs											
339.8597	23.266						18	45			
341.8567	23.266						59	147			
A Non-2,3,7,8-sub-PeCDF											
339.8597	26.348	26.724	-22	1.022	19041	2673	539	1347	5		
341.8567	26.365	26.724	-21	1.023	11715	1688	432	1080	4	1.63(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	27.959	27.949	1	1.432	2269643	353190	328	820	1077		
369.8919	27.959	27.949	1	1.432	1416511	220010	184	460	1196	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	27.984	27.965	1	1.001	1305638	191163	155	387	1233		
357.8516	27.984	27.965	1	1.001	841320	120670	56	140	2155	1.55(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	26.851						155	387			
357.8516	26.851						56	140			
13C-1,2,3,4,7,8-HxCDF											
383.8639	33.723	33.714	1	0.945	1772472	312127	515	1287	606		
385.8610	33.723	33.714	1	0.945	3273391	579611	991	2477	585	0.54(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	33.740	33.739	0	1.000	1671320	290293	494	1235	588		
375.8178	33.740	33.739	0	1.000	1323206	235578	406	1015	580	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	33.916	33.915	0	0.950	1939736	329678	515	1287	640		
385.8610	33.916	33.915	0	0.950	3680437	615474	991	2477	621	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	33.941	33.932	1	1.001	1992089	327173	494	1235	662		
375.8178	33.933	33.932	0	1.000	1606393	262791	406	1015	647	1.24(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	34.889	34.880	1	0.978	1765102	343591	515	1287	667		
385.8610	34.880	34.880	0	0.977	3349758	631098	991	2477	637	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	34.906	34.905	0	1.000	1871650	346873	494	1235	702		
375.8178	34.914	34.905	1	1.001	1491202	275098	406	1015	678	1.26(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	35.887	35.878	1	1.006	1593779	358740	515	1287	697		
385.8610	35.887	35.878	1	1.006	3033894	653458	991	2477	659	0.53(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	35.904	35.894	1	1.000	1708764	374433	494	1235	758		
375.8178	35.904	35.894	1	1.000	1356276	293509	406	1015	723	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	33.751						494	1235			
375.8178	33.751						406	1015			
13C-1,2,3,7,8,9-HxCDD											
401.8559	35.685	35.685	0		4126444	884879	649	1622	1363		
403.8529	35.685	35.685	0		3316444	709123	450	1125	1576	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	35.140	35.131	1	0.985	2243785	496605	649	1622	765		
403.8529	35.140	35.131	1	0.985	1780695	412242	450	1125	916	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8158	35.157	35.148	1	1.000	1193903	269040	283	707	951		
391.8127	35.157	35.148	1	1.000	954638	214429	217	542	988	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	35.274	35.265	1	0.988	2440200	501551	649	1622	773		
403.8529	35.274	35.265	1	0.988	1910399	395754	450	1125	879	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8158	35.291	35.282	1	1.000	1321802	276714	283	707	978		
391.8127	35.291	35.282	1	1.000	1053385	217849	217	542	1004	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8158	35.702	35.693	1	1.016	1312635	287949	283	707	1017		
391.8127	35.702	35.693	1	1.016	1067842	233145	217	542	1074	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8158	34.284						283	707			
391.8127	34.284						217	542			
13C-1,2,3,4,6,7,8-HpCDF											
417.8250	37.869	37.877	0	1.061	1222076	287002	713	1782	403		
419.8220	37.869	37.877	0	1.061	2662489	621842	1213	3032	513	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7817	37.878	37.886	0	1.000	1596701	370500	1073	2682	345		
409.7788	37.878	37.886	0	1.000	1518052	353688	872	2180	406	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8250	39.186	39.194	0	1.098	1299371	341654	713	1782	479		
419.8220	39.186	39.194	0	1.098	2875811	752573	1213	3032	620	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7817	39.195	39.202	0	1.000	1418467	370851	1073	2682	346		
409.7788	39.195	39.202	0	1.000	1346366	352718	872	2180	404	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7817	38.556						1073	2682			
409.7788	38.556						872	2180			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	38.876	38.892	-1	1.089	2066480	492543	590	1475	835		
437.8140	38.884	38.892	0	1.090	1941501	475096	482	1205	986	1.06(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7767	38.893	38.901	0	1.000	1087805	266664	382	955	698		
425.7737	38.893	38.901	0	1.000	1052805	257554	335	837	769	1.03(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7767	38.803						382	955			
425.7737	38.803						335	837			
13C-OCDD											
469.7780	41.322	41.345	-1	1.158	2909199	527598	583	1457	905		
471.7750	41.322	41.345	-1	1.158	3240722	602351	419	1047	1438	0.90(0.76-1.02)	
OCDF											
441.7428	41.398	41.413	-1	1.002	2051048	431582	277	692	1558		
443.7399	41.398	41.413	-1	1.002	2264418	478950	326	815	1469	0.91(0.76-1.02)	
OCDD											
457.7377	41.330	41.345	-1	1.000	1624761	301966	266	665	1135		
459.7348	41.330	41.345	-1	1.000	1820117	336075	289	722	1163	0.89(0.76-1.02)	

Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d
Lims ID: LCSD 320-344634/3-A
Client ID:
Inject. Date: 13-Dec-2019 16:36:00 Dil. Factor: 1.0000
Sample Type: LCSD, LCS Duplicate
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 6

Non-2,3,7,8-sub-TCDF, RT: 18.244

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	1.233	D 13C-2,3,7,8-TCDF	100.000	6633931	1076712

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.233		100.000	6633931	1076712

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
17.999	1716	313	2523	476	0.0518	0.68	
Signal Totals:							
	1716	313	2523	476			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	4239	789				0.68	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0518 = (4239 * 100.000) / (6633931 * 1.233)

Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d
Lims ID: LCSD 320-344634/3-A
Client ID:
Inject. Date: 13-Dec-2019 16:36:00 Dil. Factor: 1.0000
Sample Type: LCSD, LCS Duplicate
Instrument ID: DFS 1 Operator: Xcalibur_System
Lims Batch ID: 345338 Lims Sample ID: 6

Non-2,3,7,8-sub-PeCDF, RT: 26.724

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.169	D 13C-1,2,3,7,8-PeCDF	100.000	5966357	1022995
2,3,4,7,8-PeCDF	1.186	D 13C-2,3,4,7,8-PeCDF	100.000	6114574	968271

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.178		100.000	6040465	995633

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
26.348	19041	2673	11715	1688	0.4324	1.63	
Signal Totals:							
	19041	2673	11715	1688			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	30756	4361				1.63	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

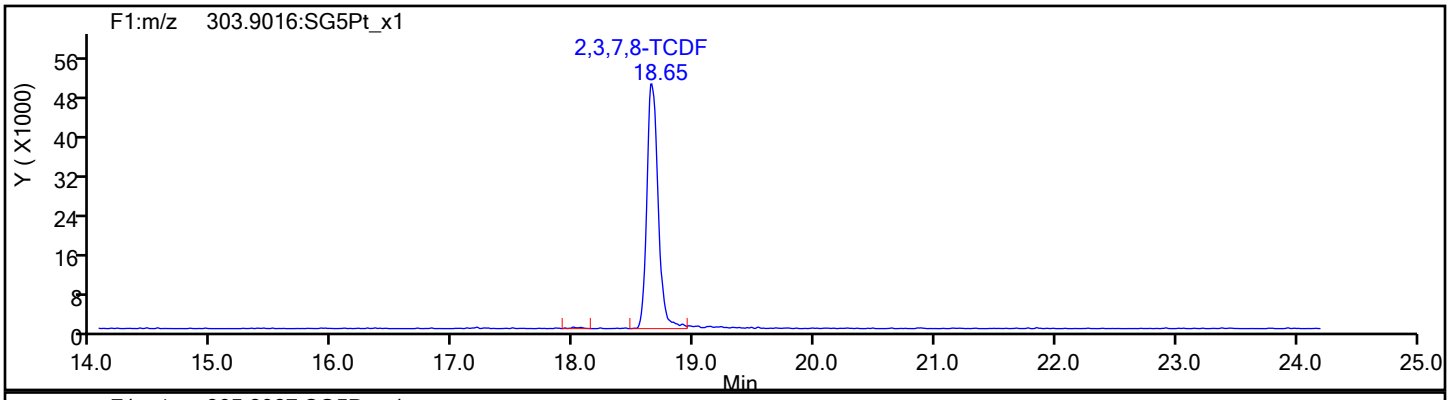
Amount: 0.4324 = (30756 * 100.000) / (6040465 * 1.178)

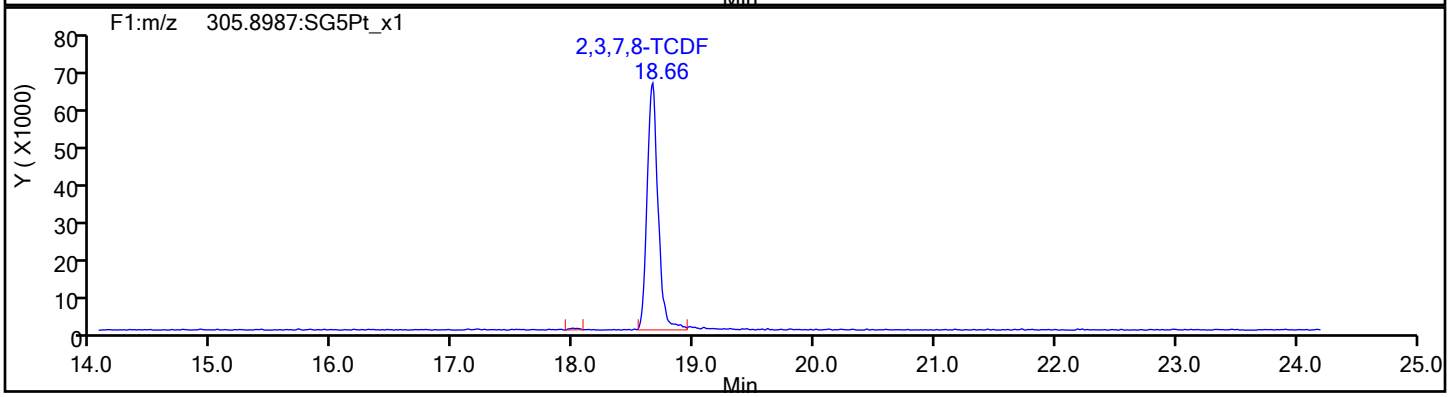
Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

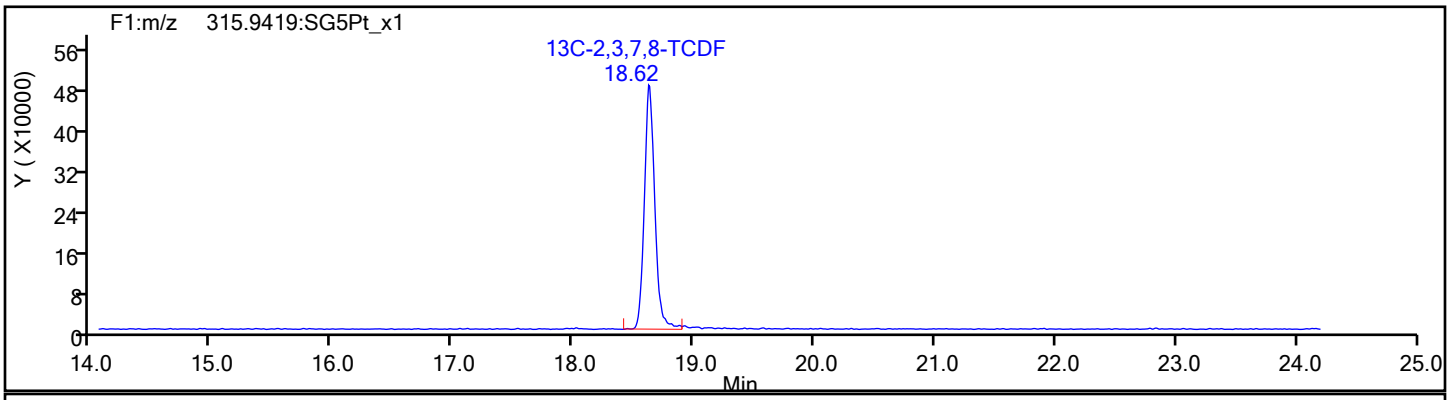
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

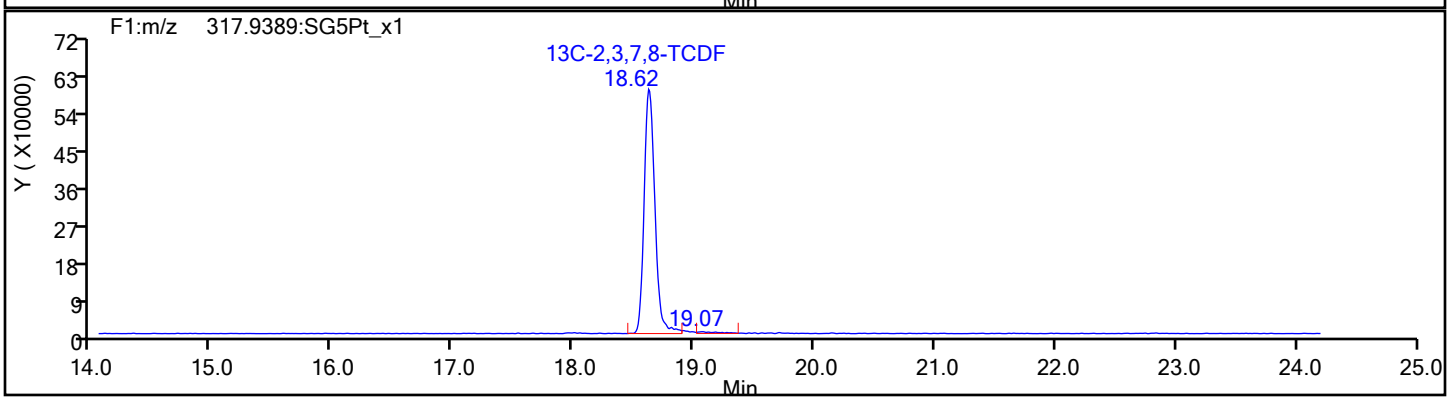
TCDF





TCDF Standards



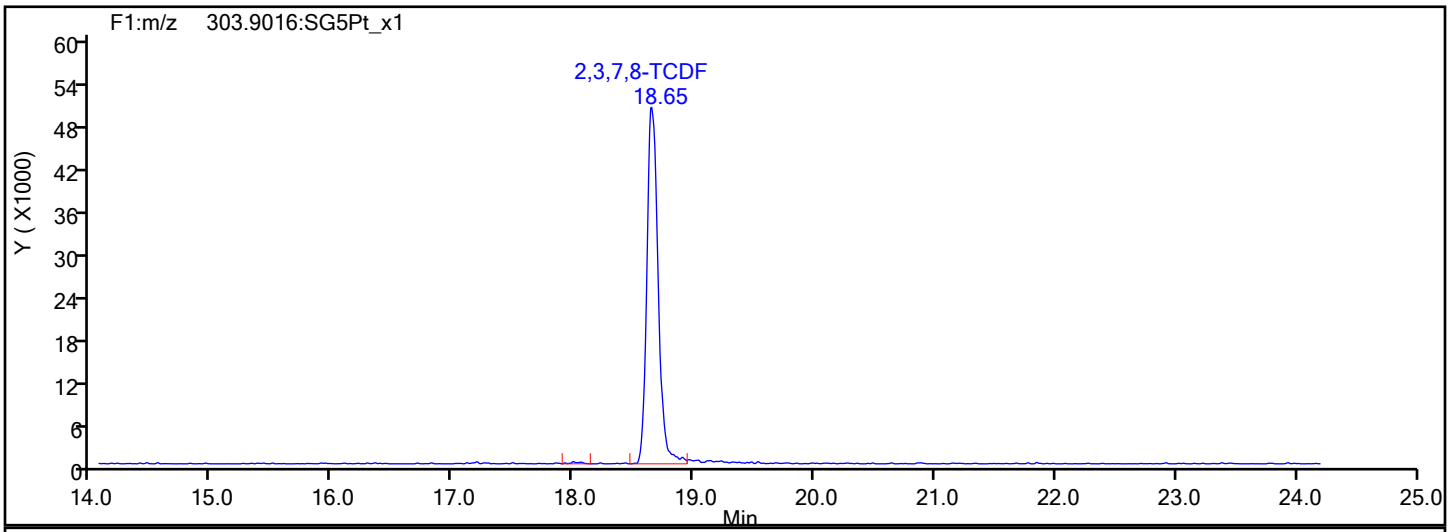


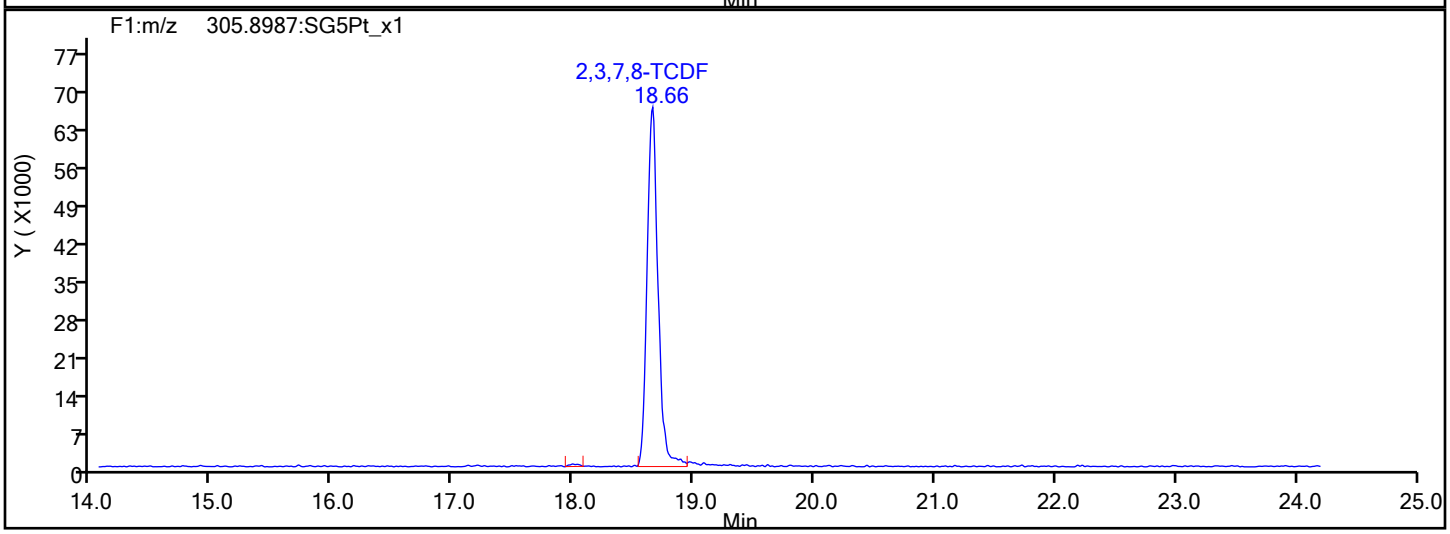
Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

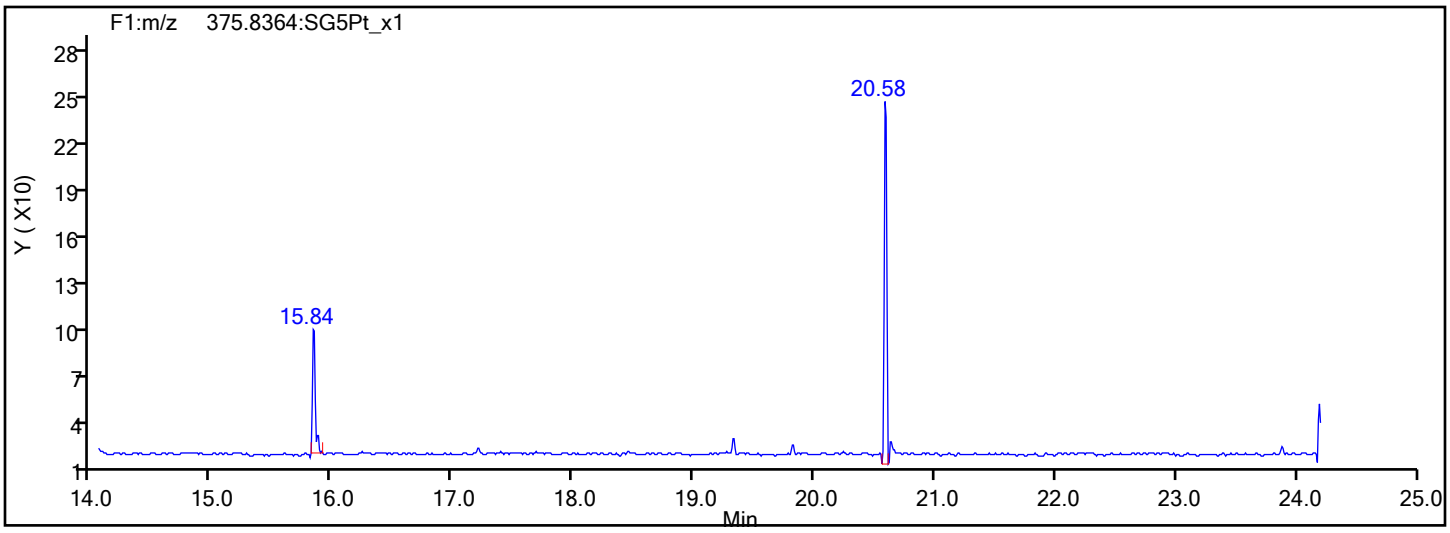
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

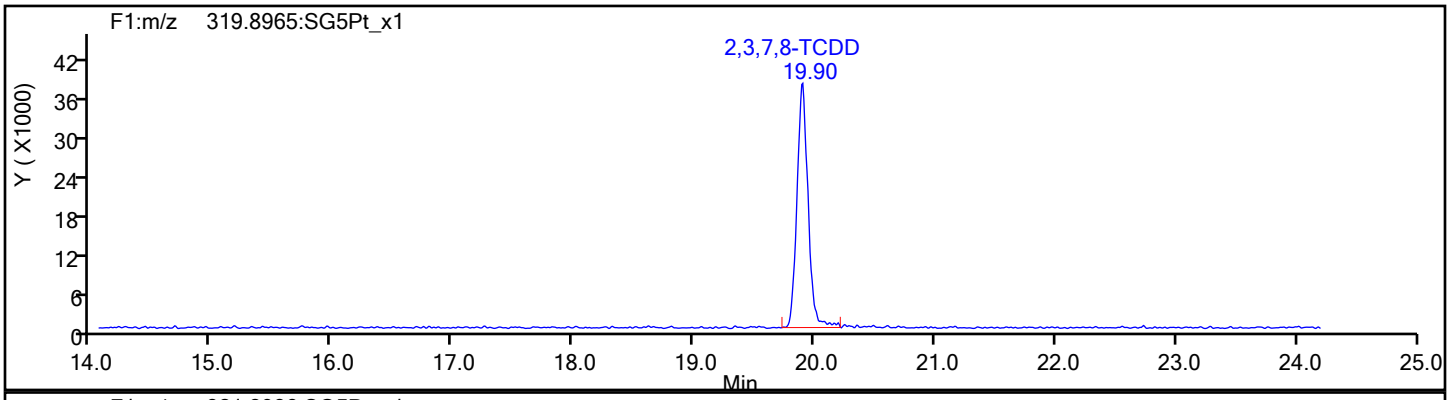


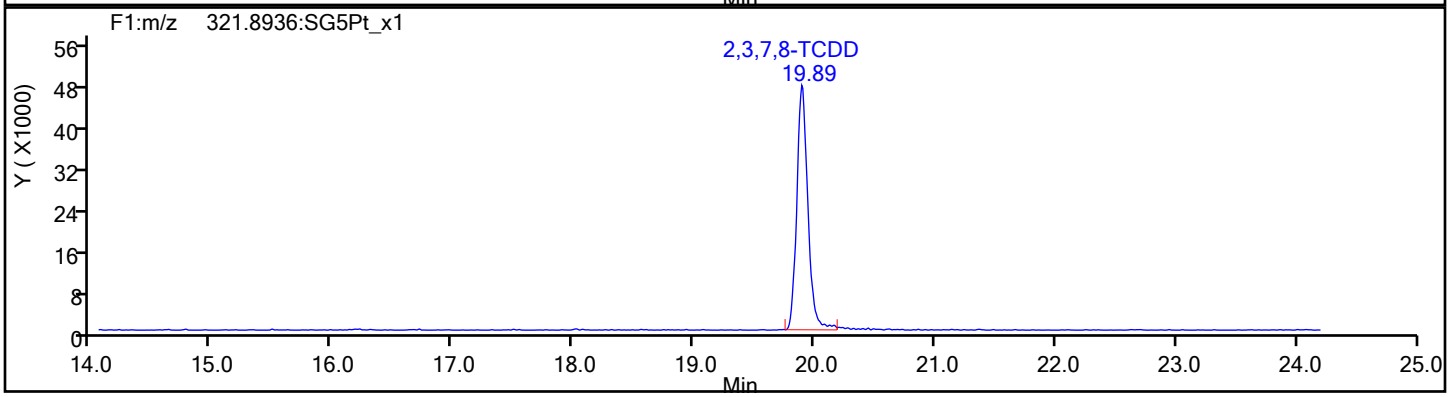
Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

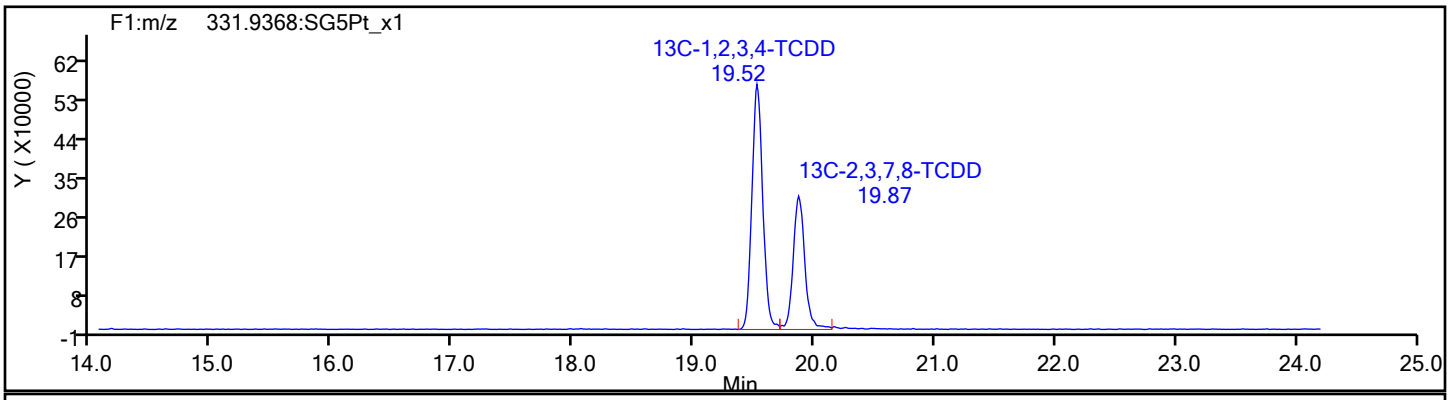
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

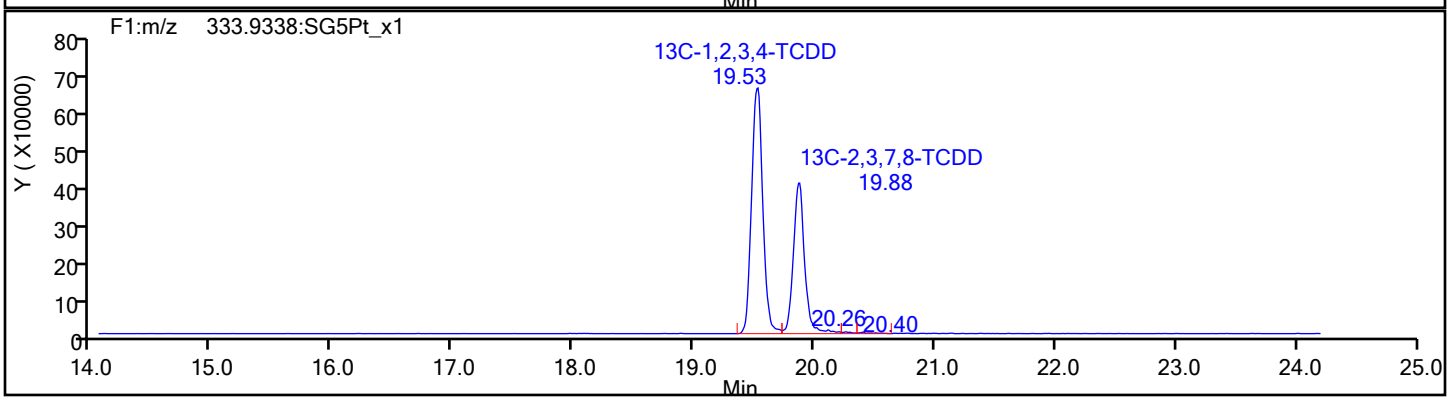
TCDD





TCDD Standards





Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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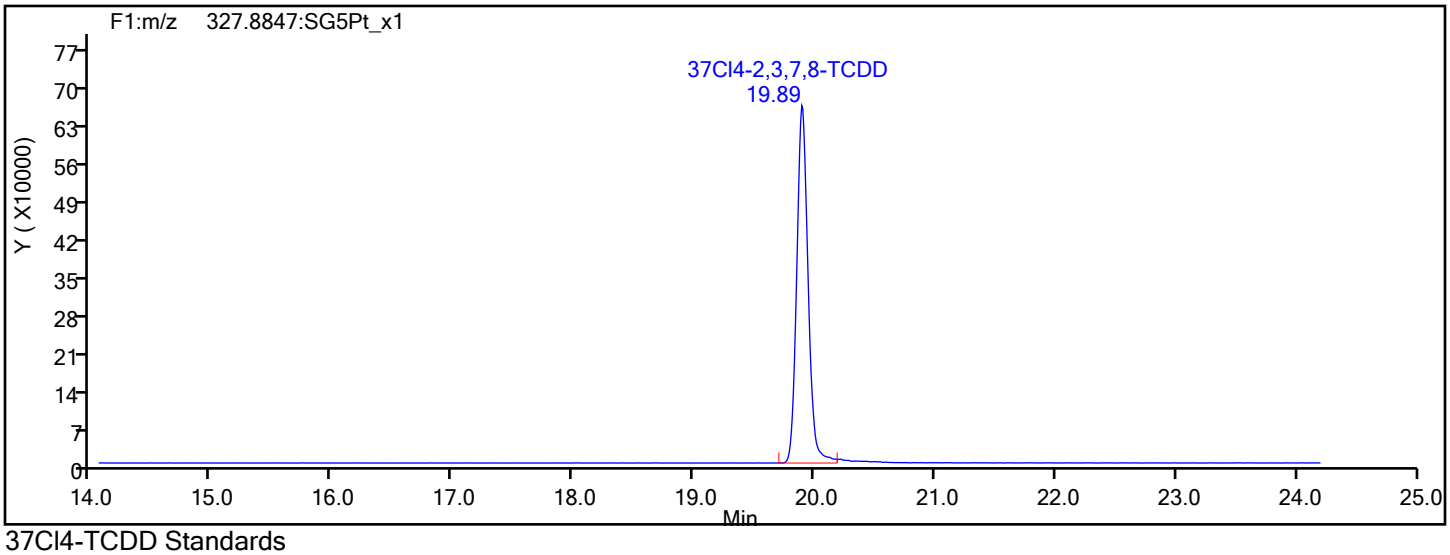
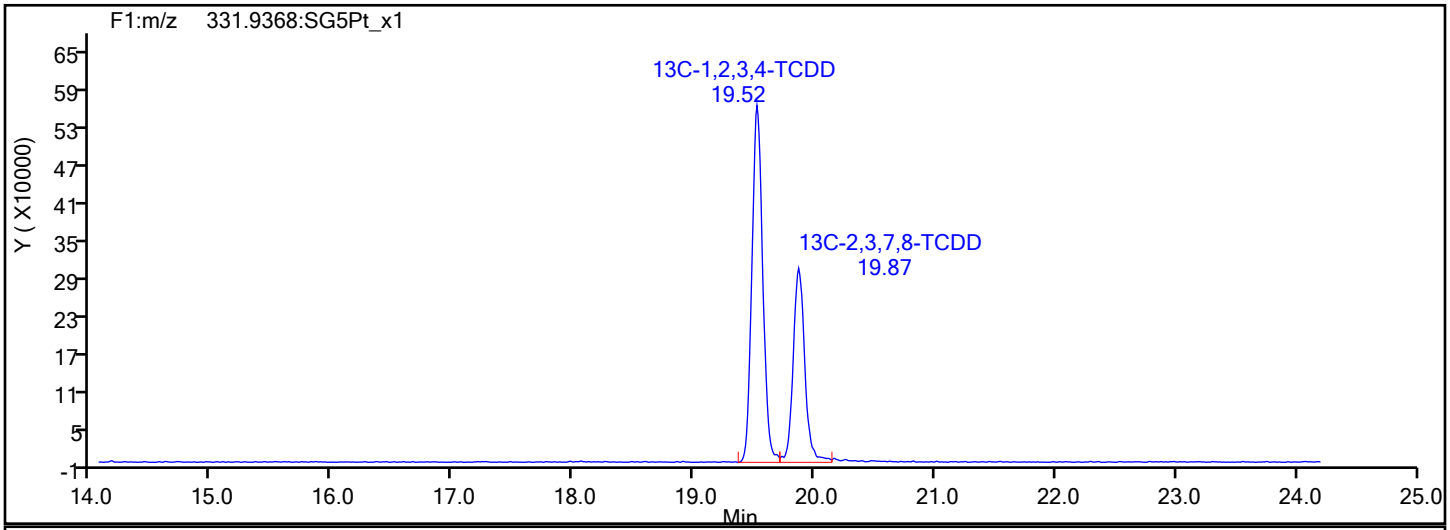
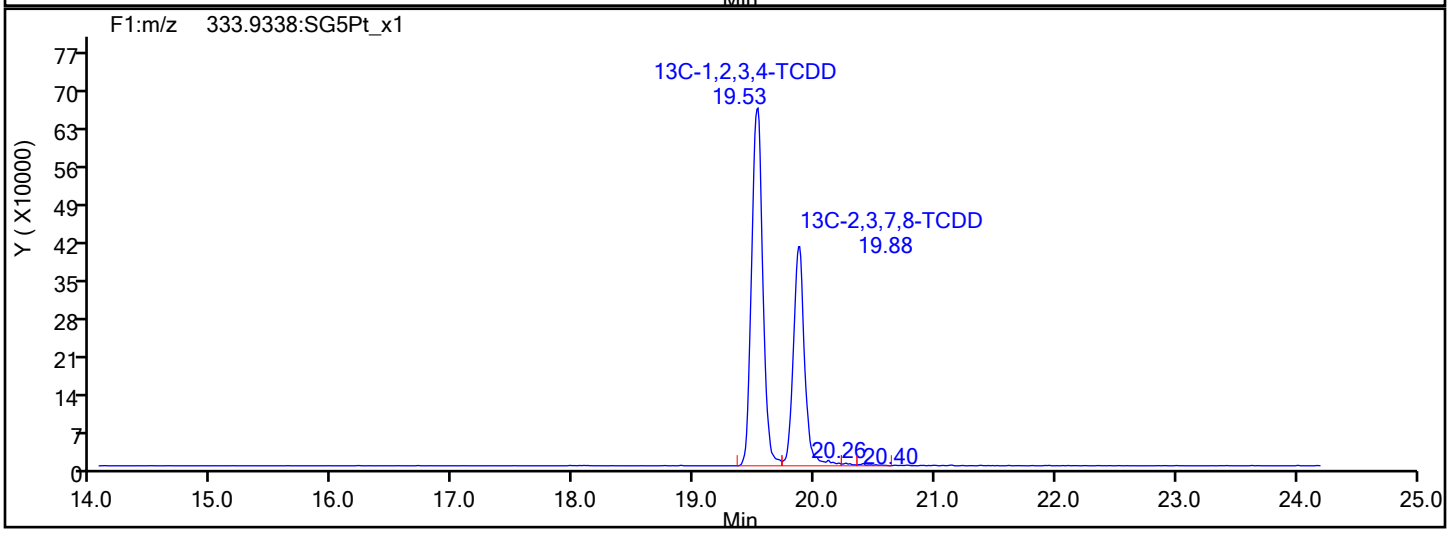
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
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Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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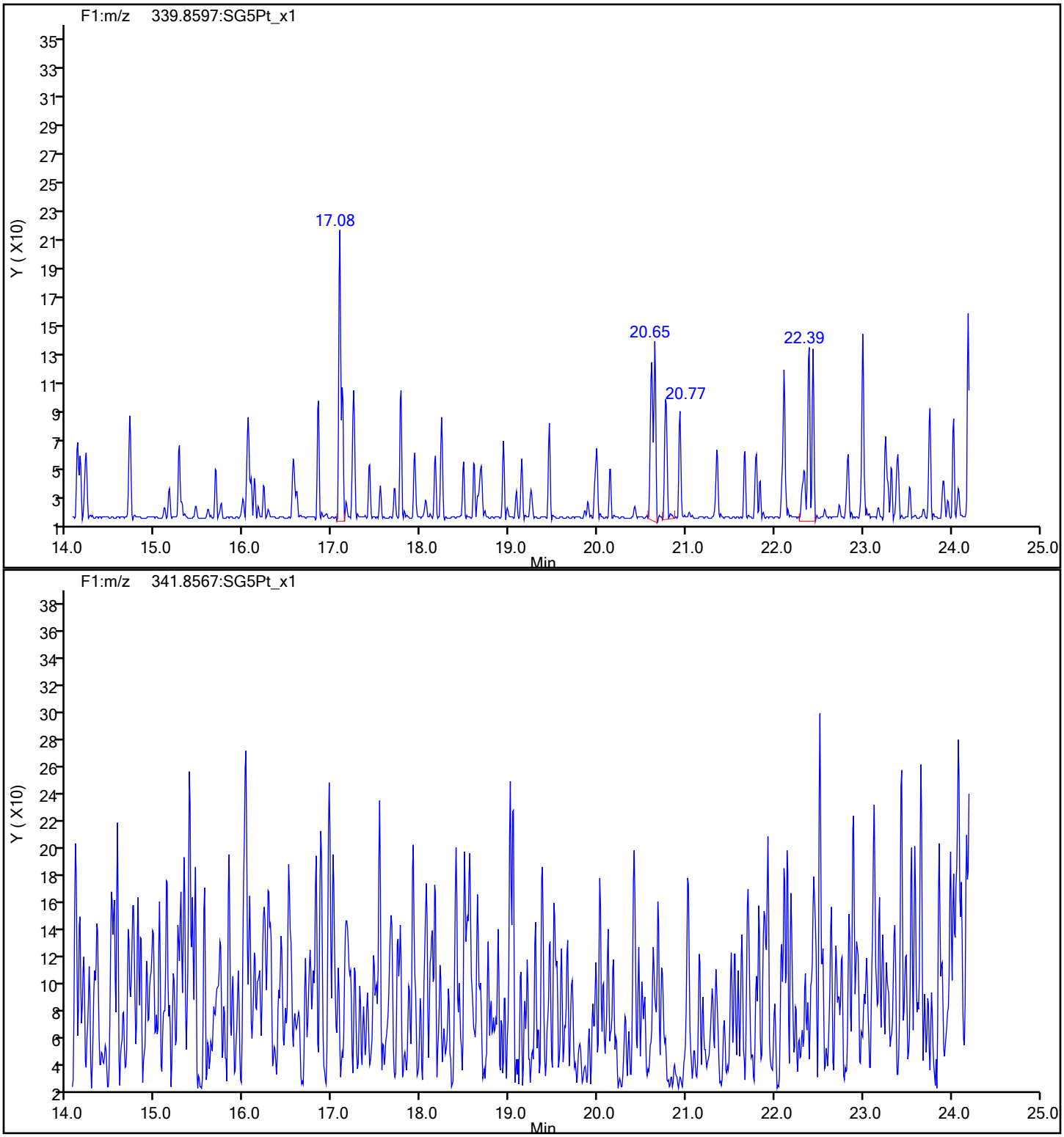
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
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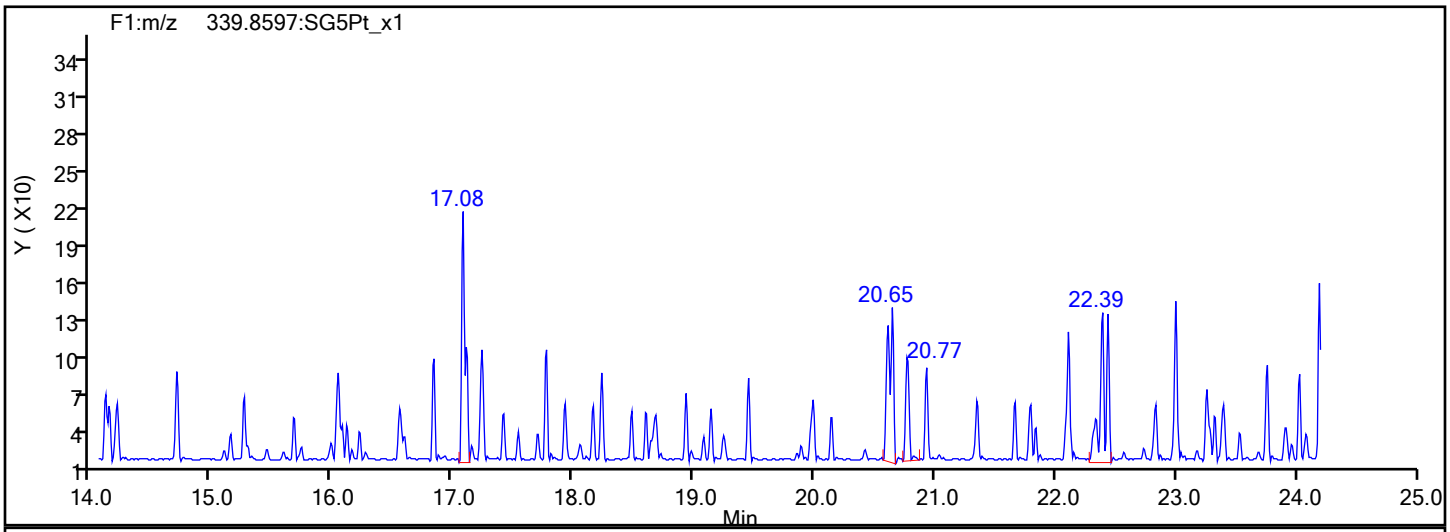
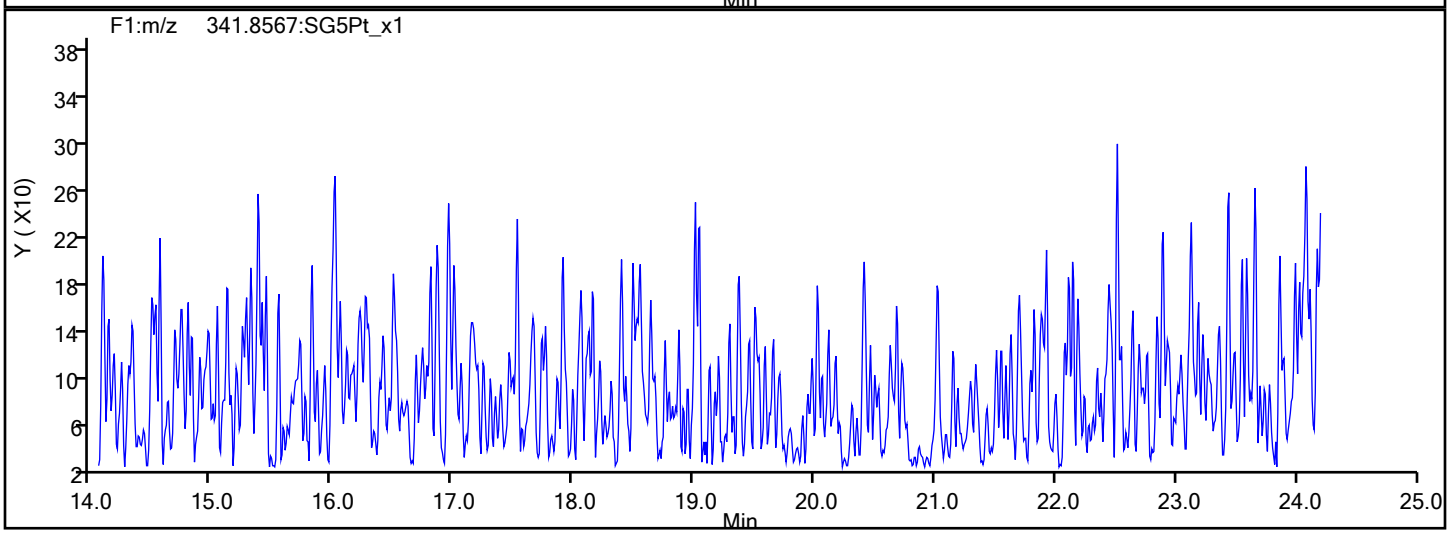
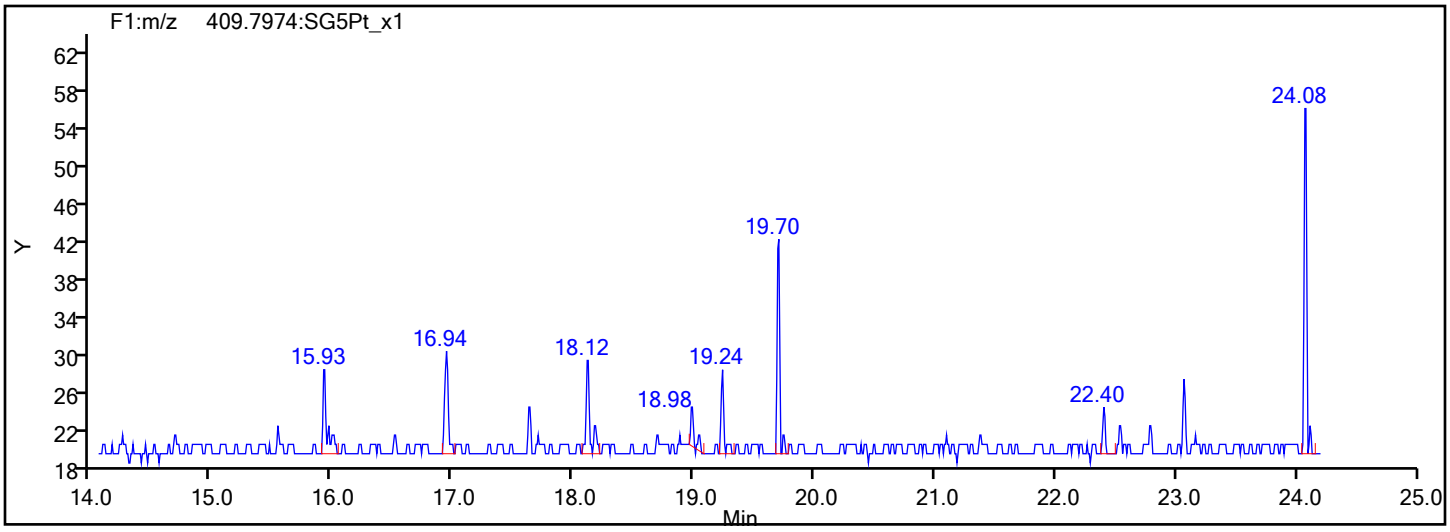
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

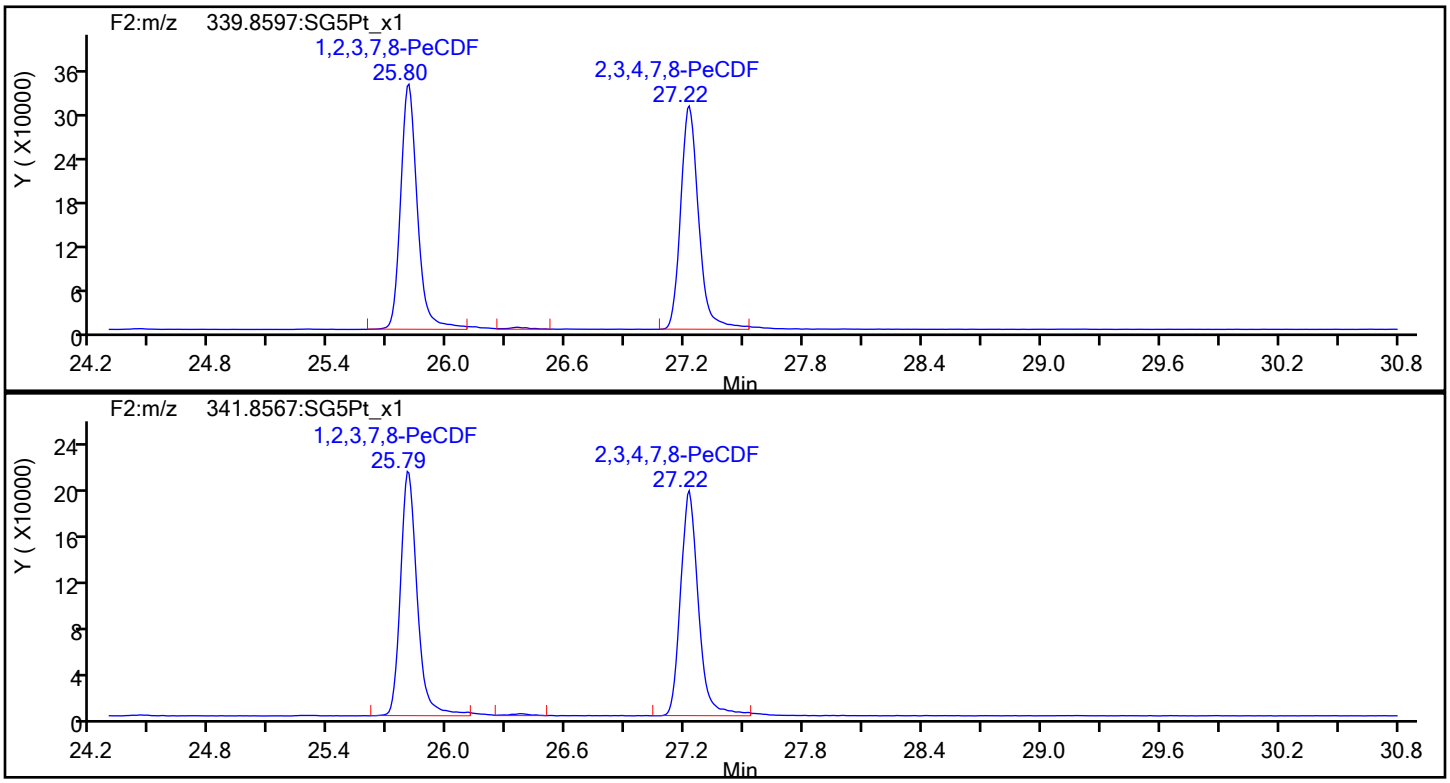


Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

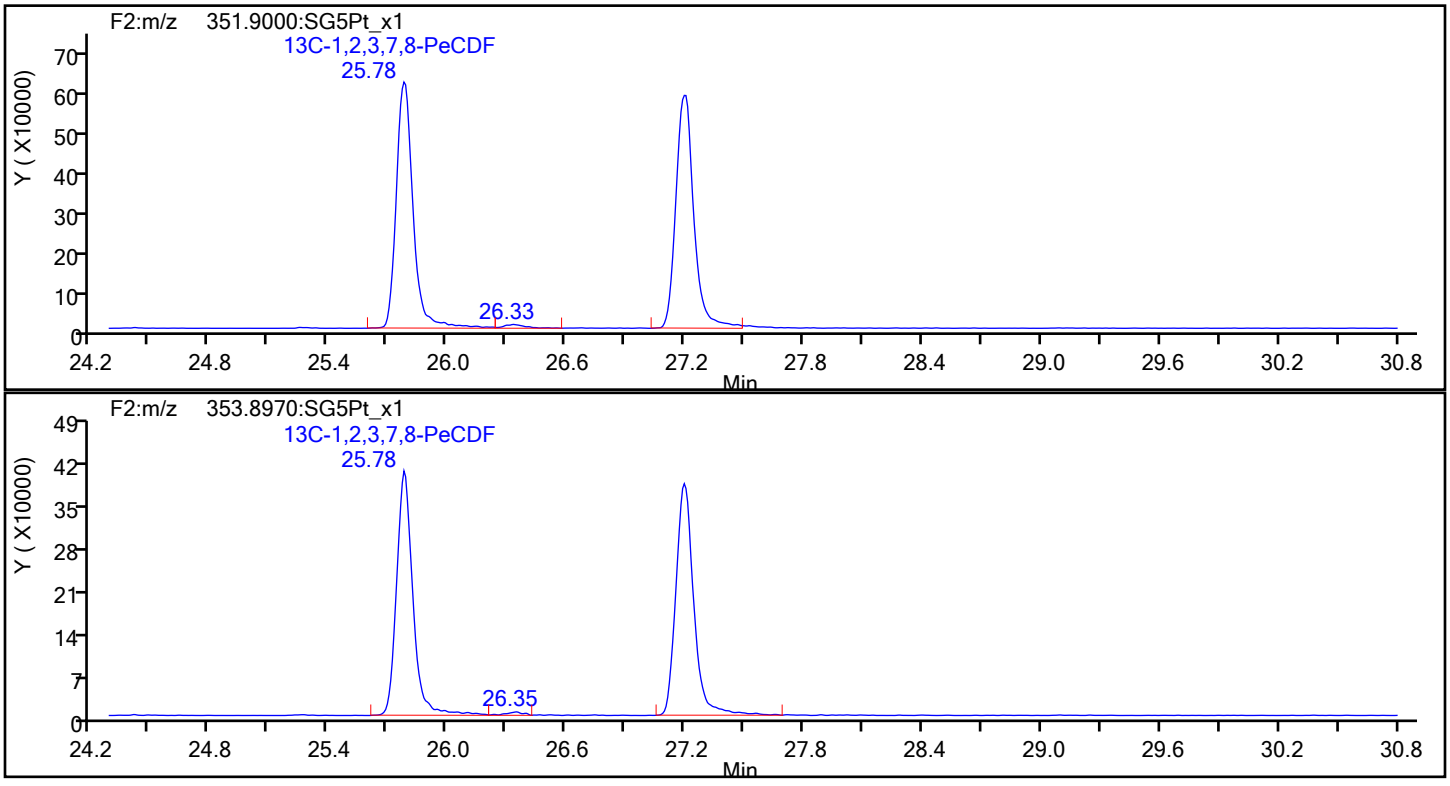
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

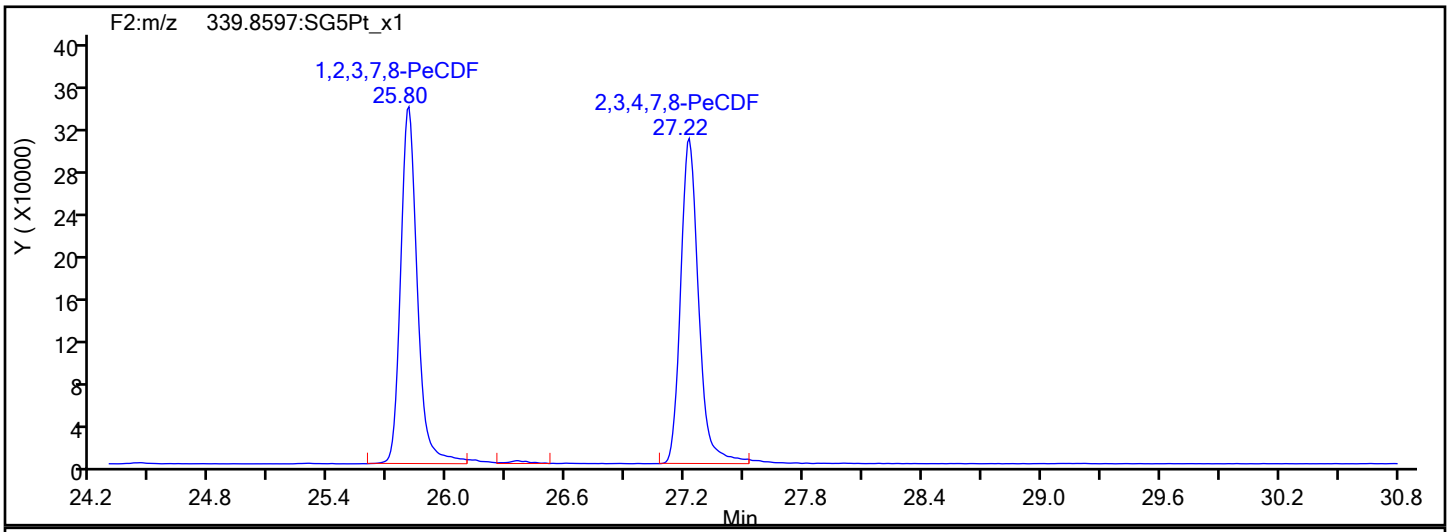


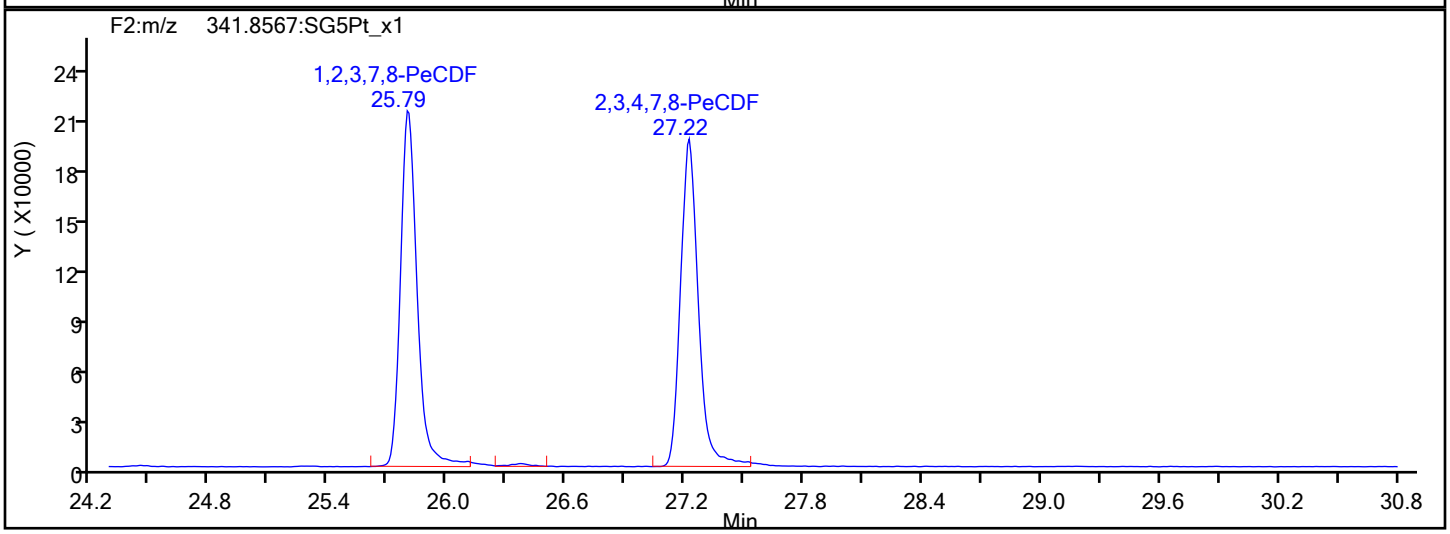
Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

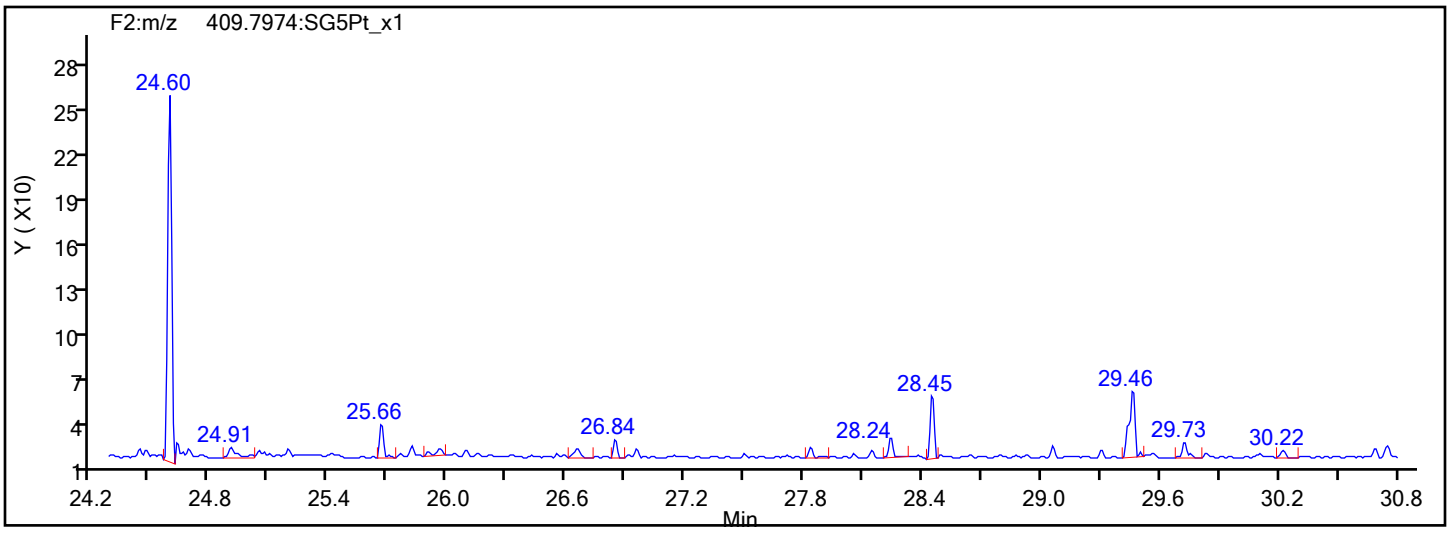
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 17-Dec-2019 09:19:46 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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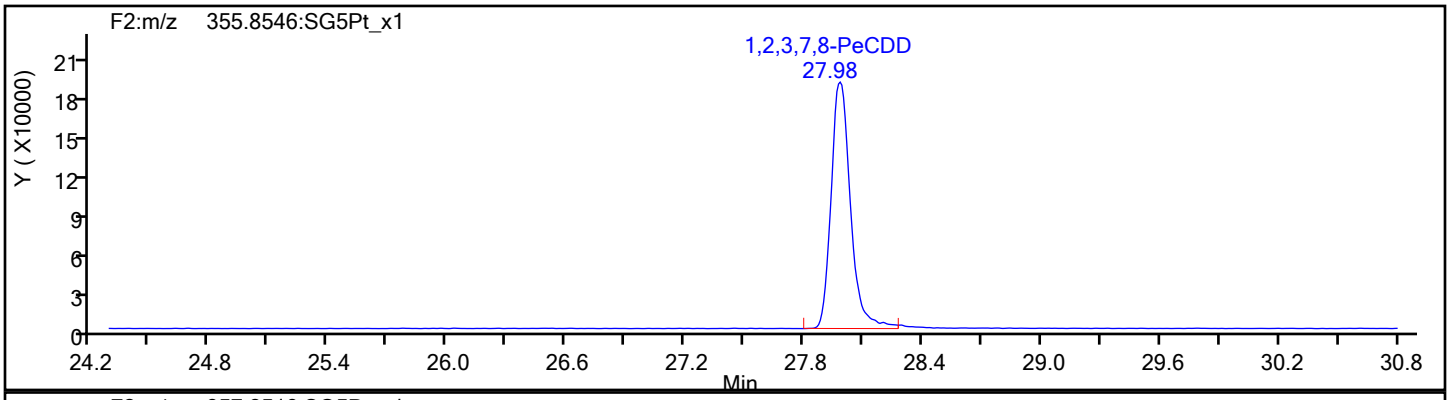
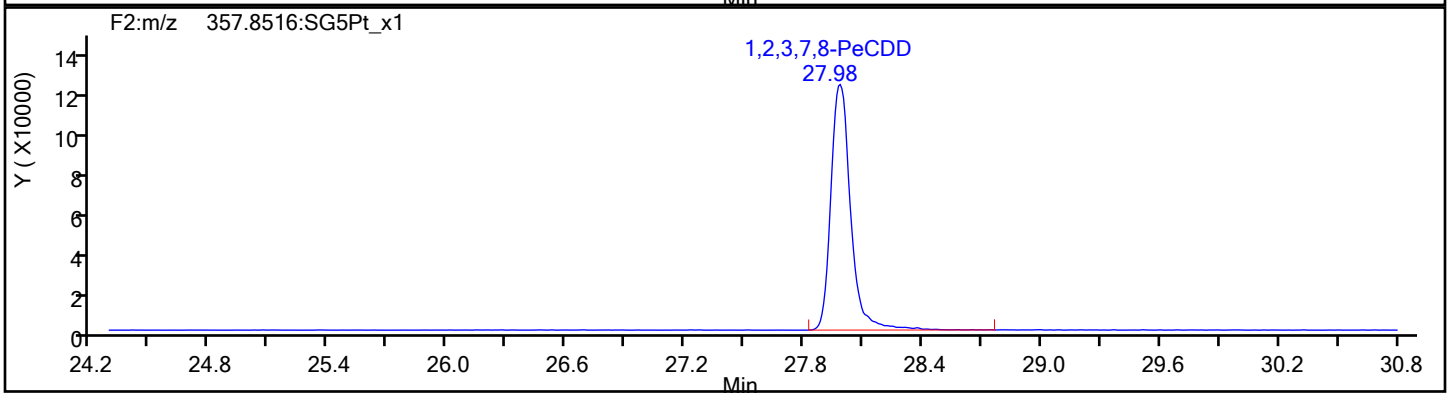
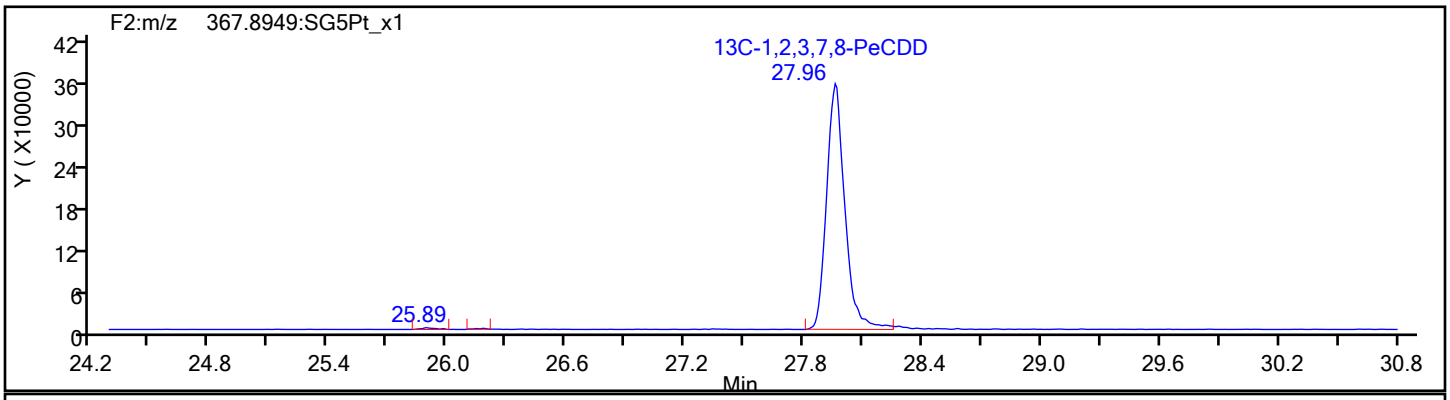
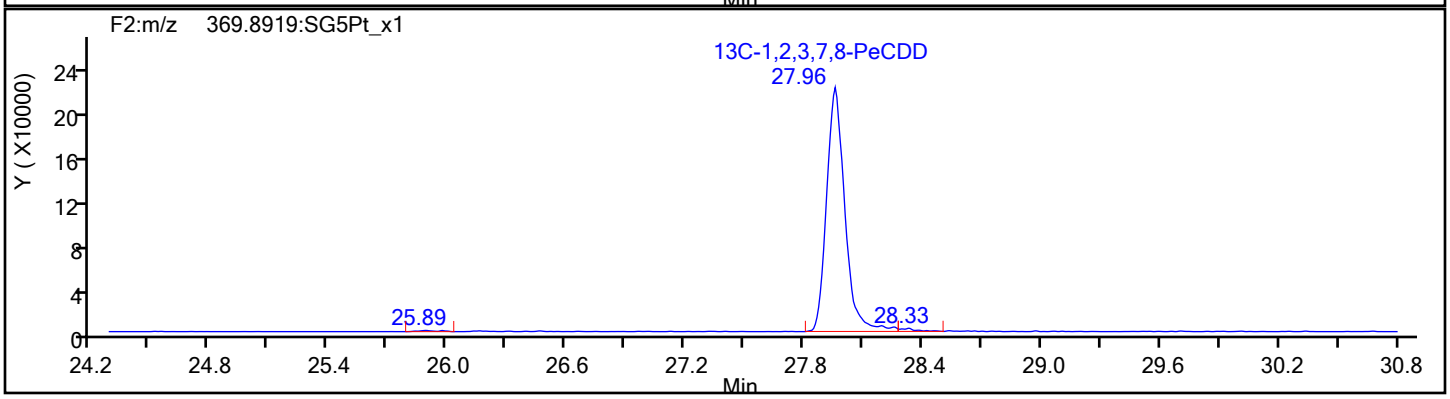
PeCDD





PeCDD Standards





Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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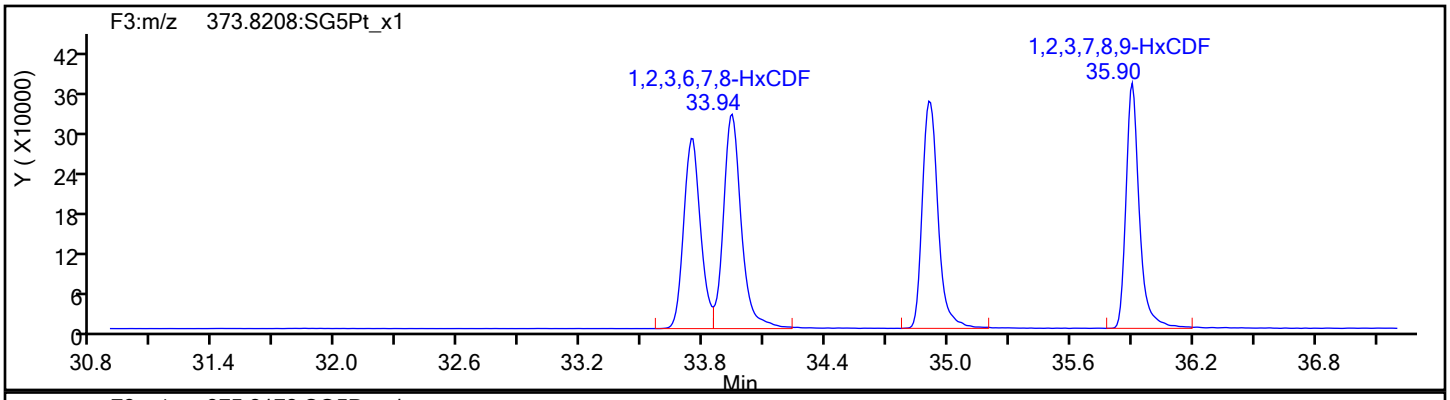
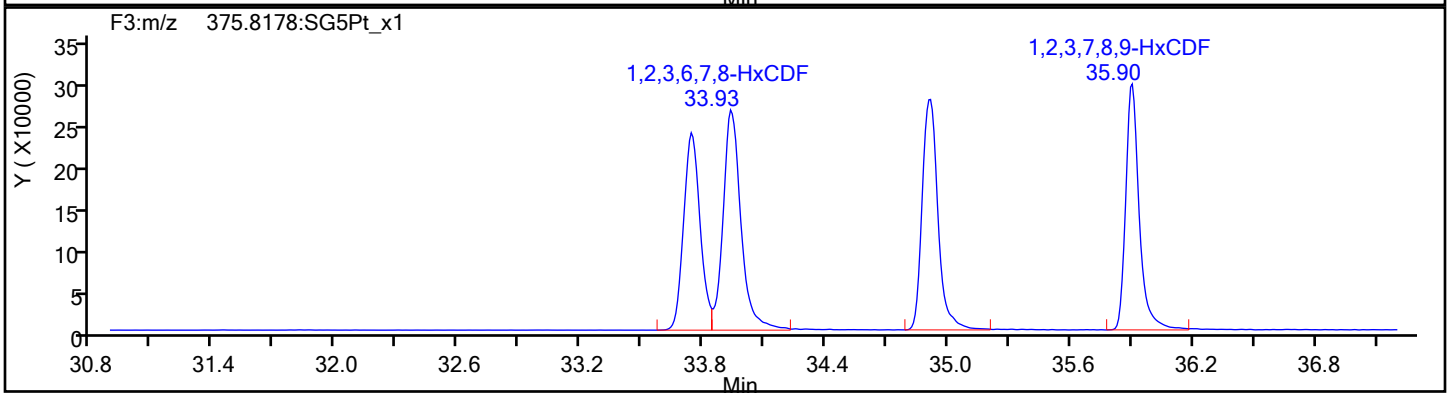
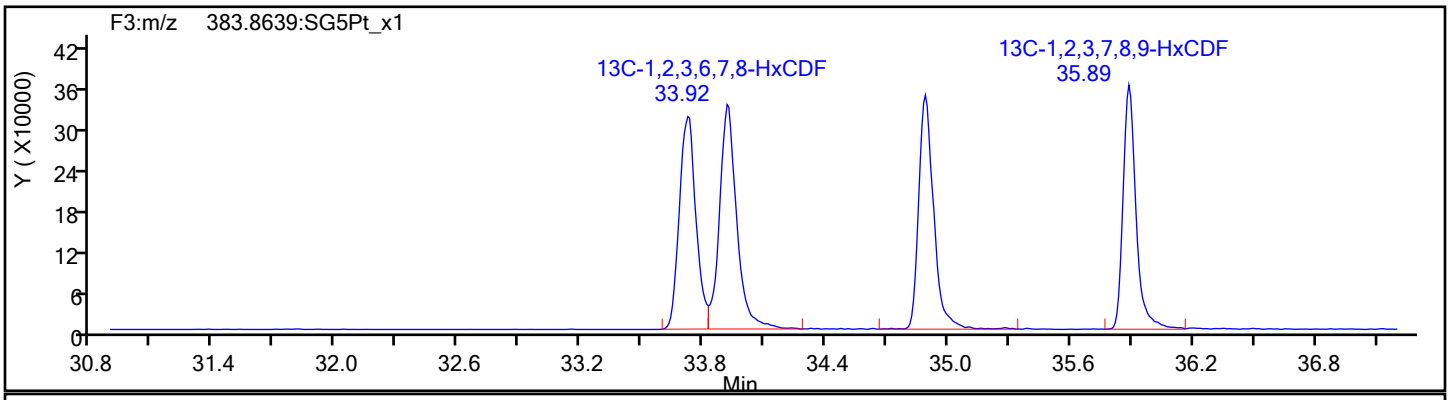
Column Type:	DB-5	Column Dia:	0.32 mm

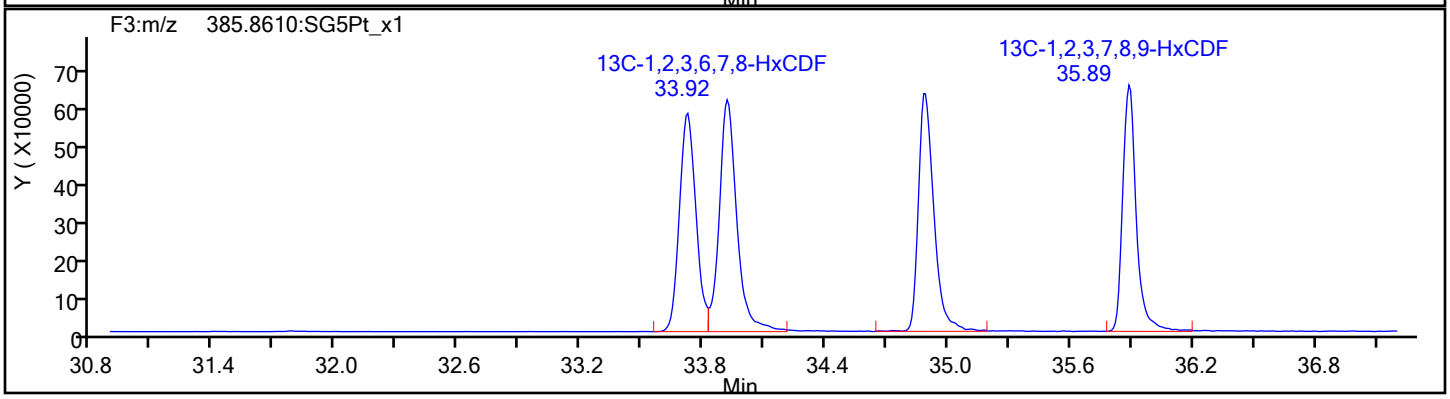
HxCDF





HxCDF Standards



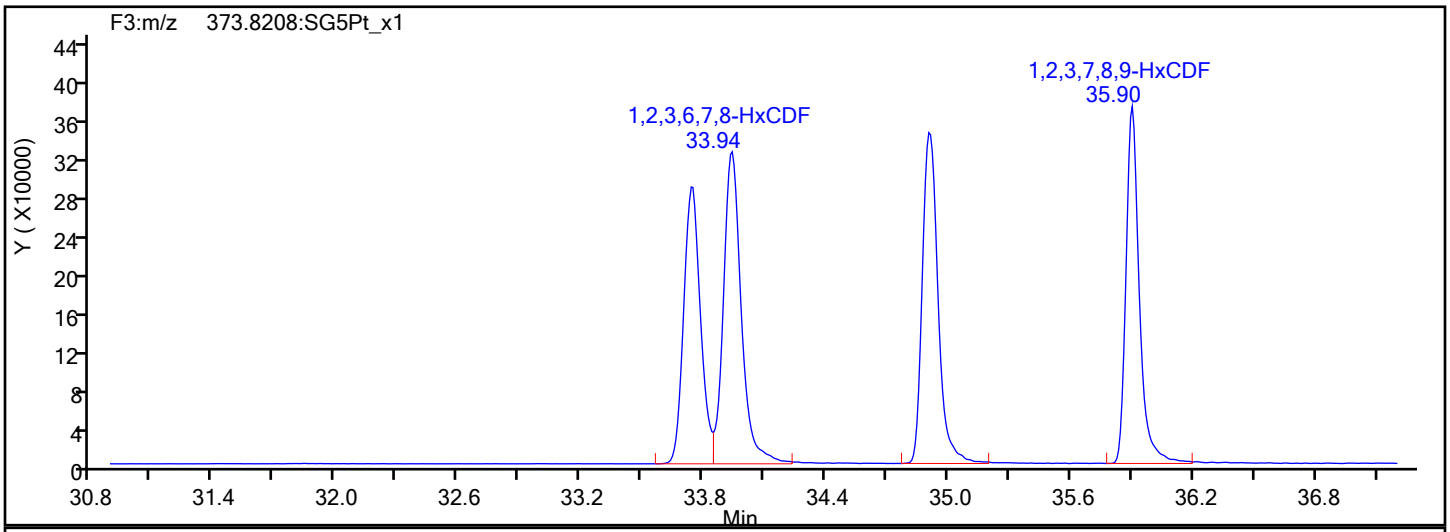


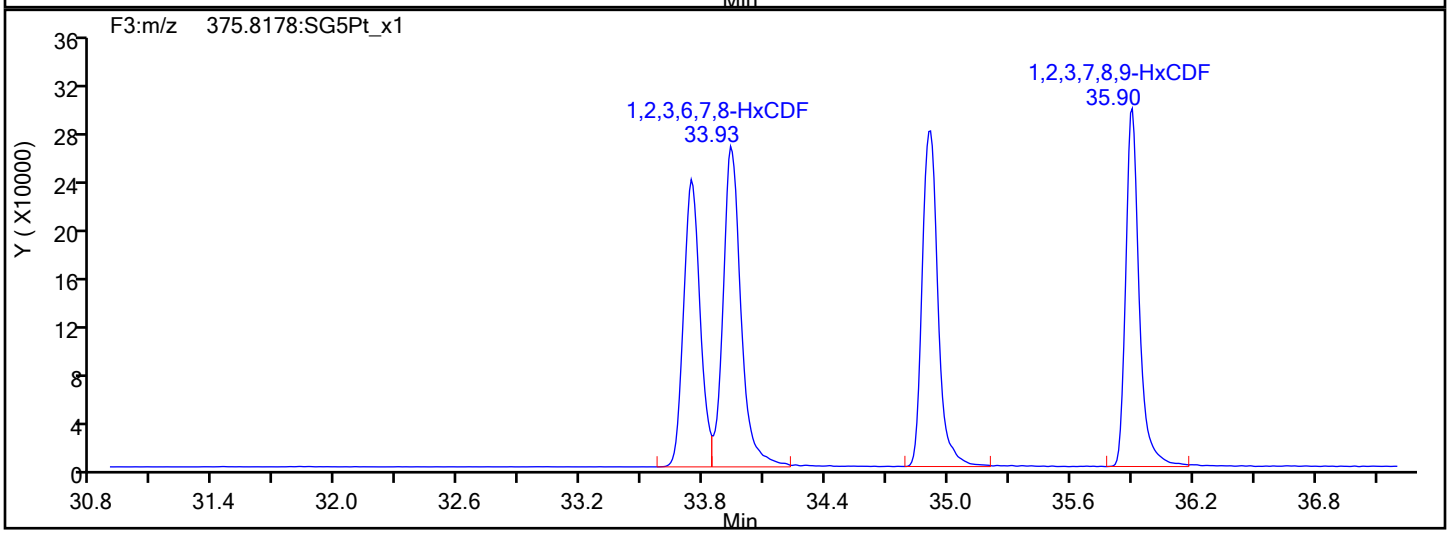
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

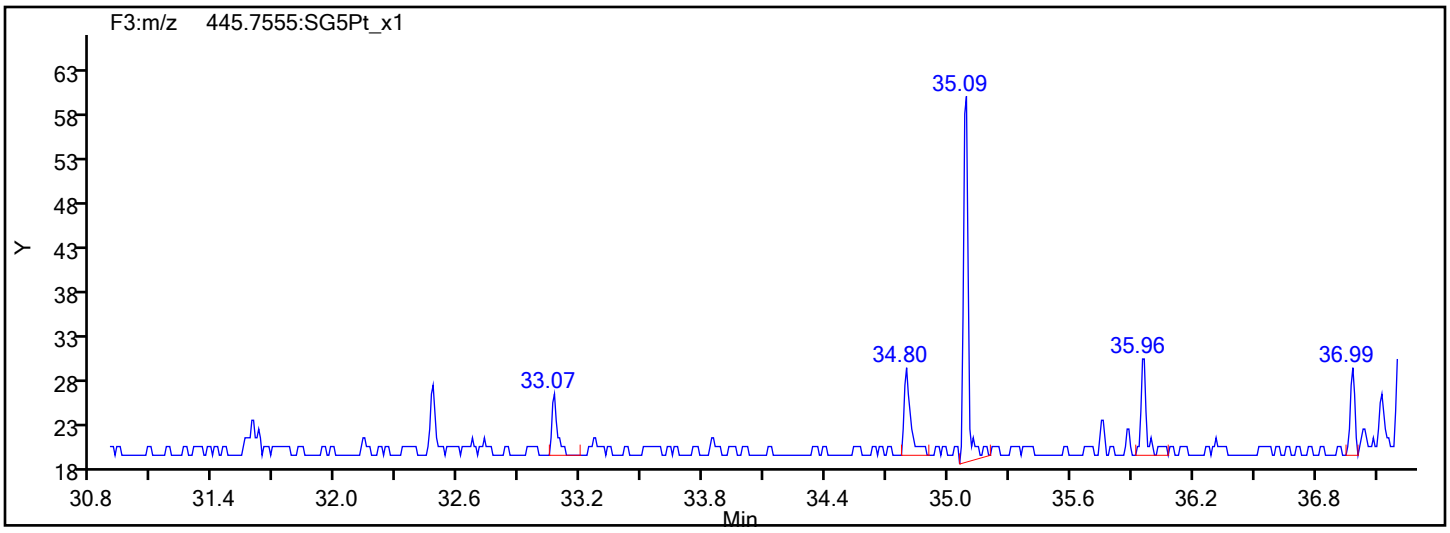
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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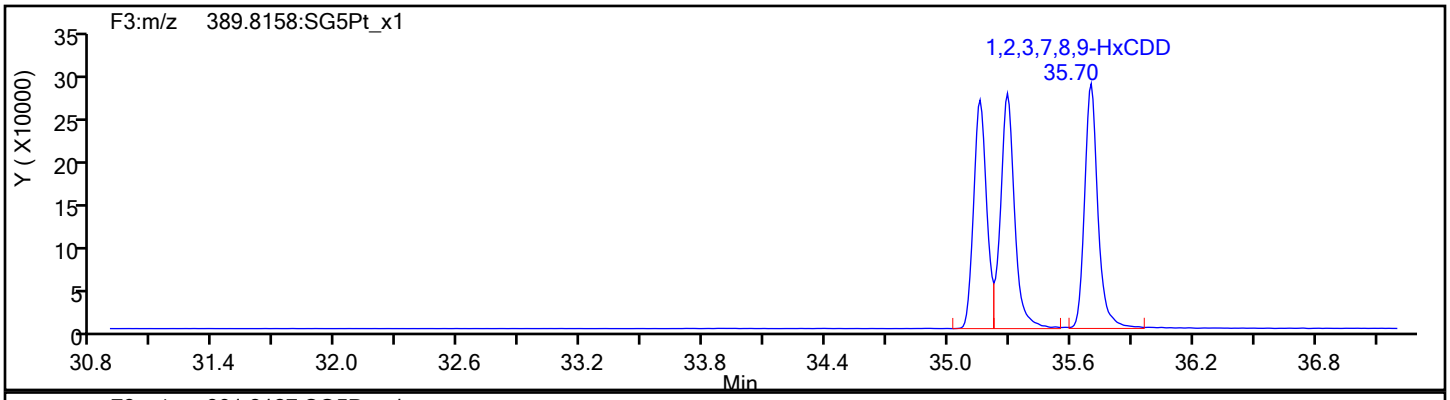
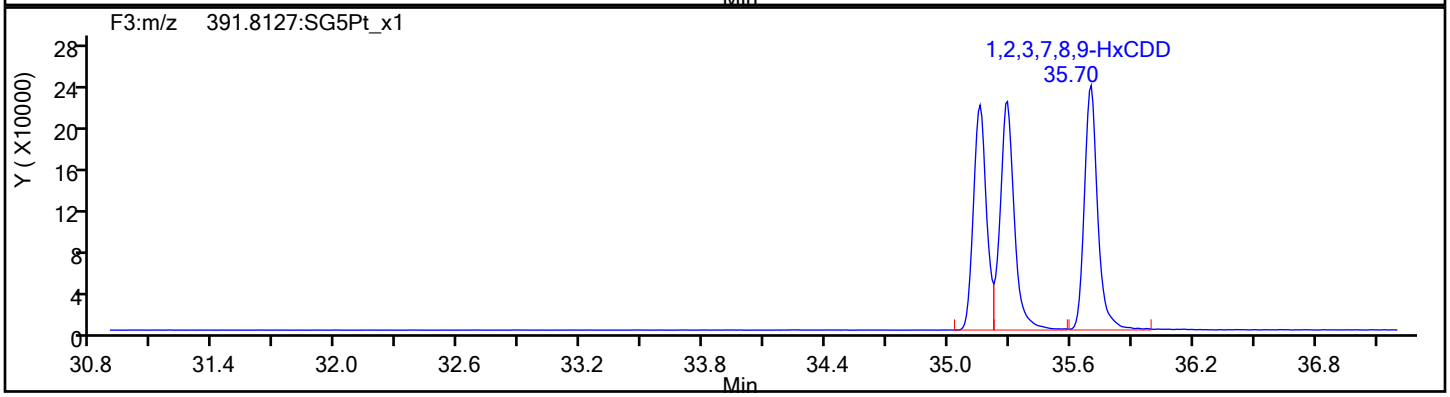
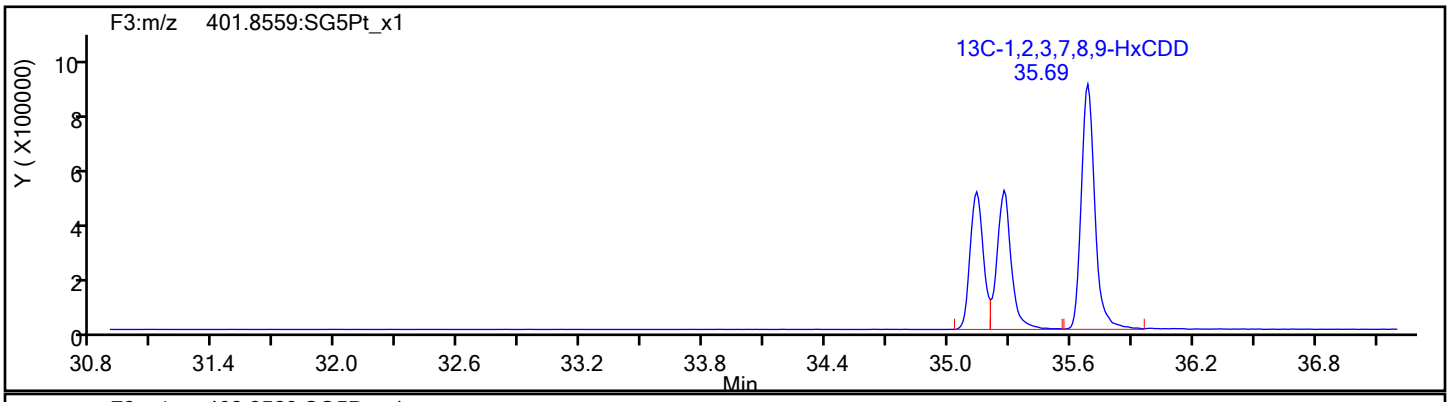
Column Type:	DB-5	Column Dia:	0.32 mm

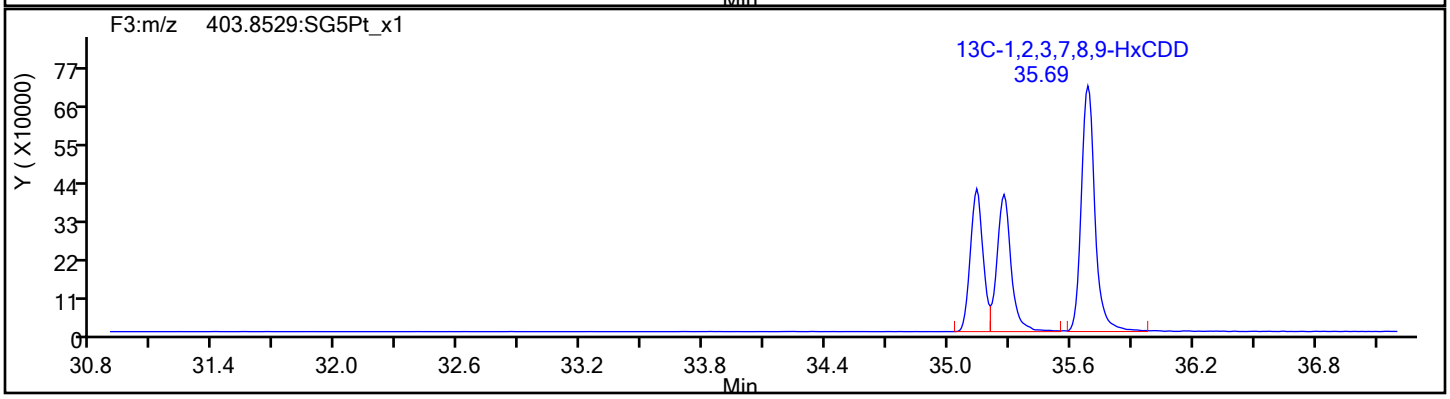
HxCDD





HxCDD Standards



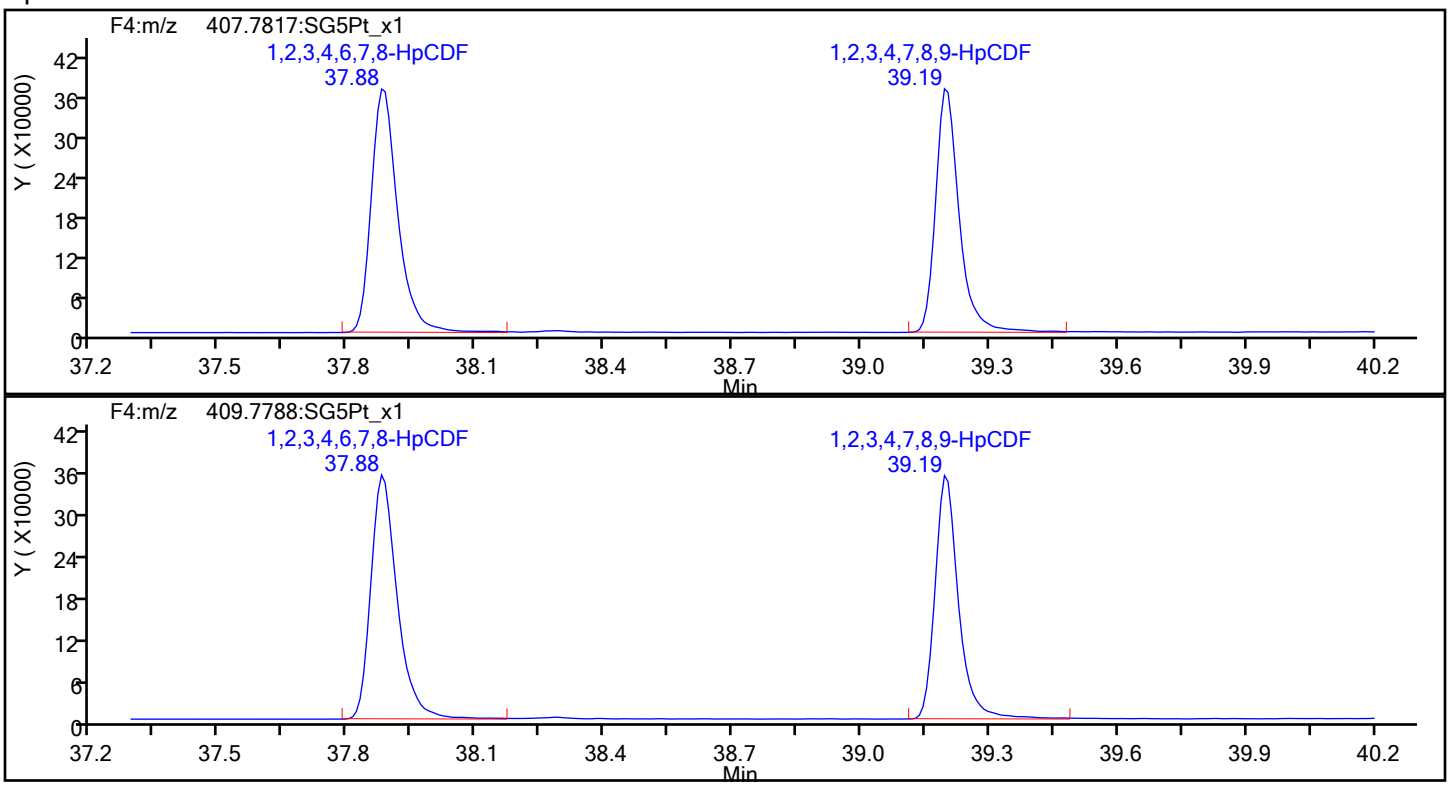


Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

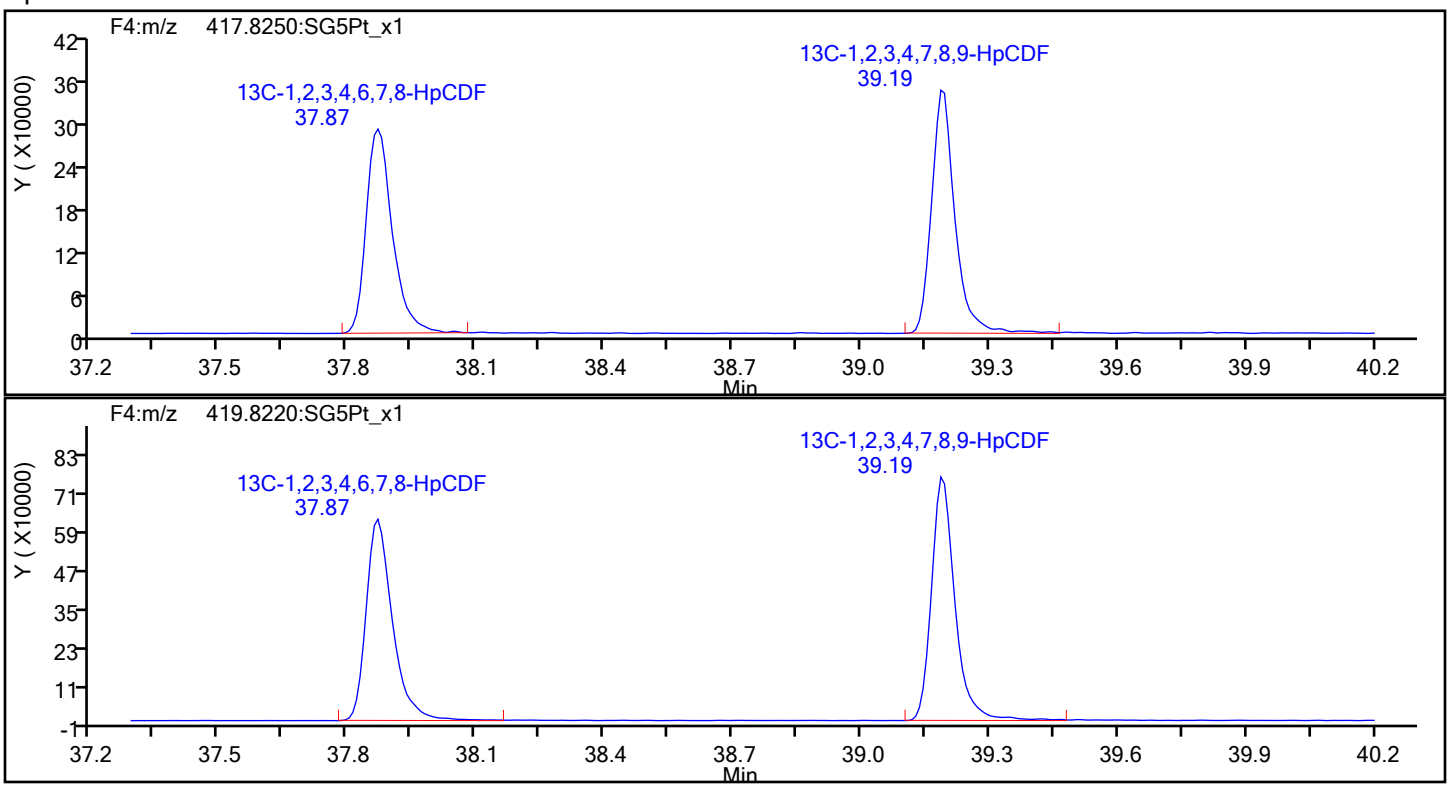
Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF



HpCDF Standards

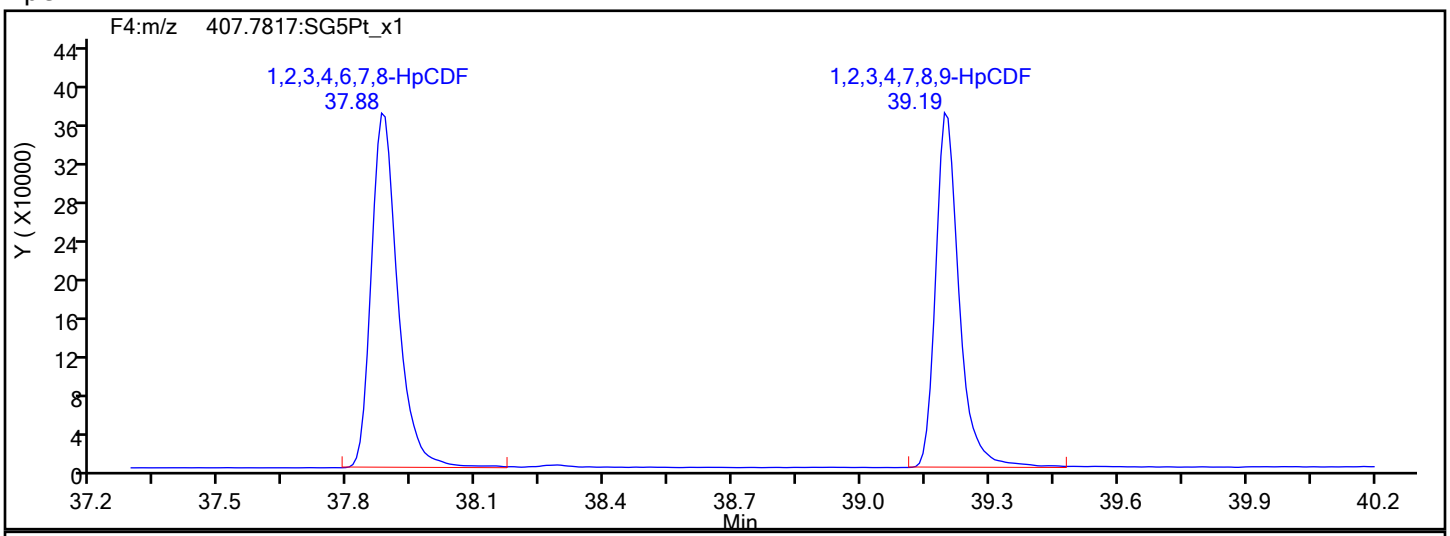


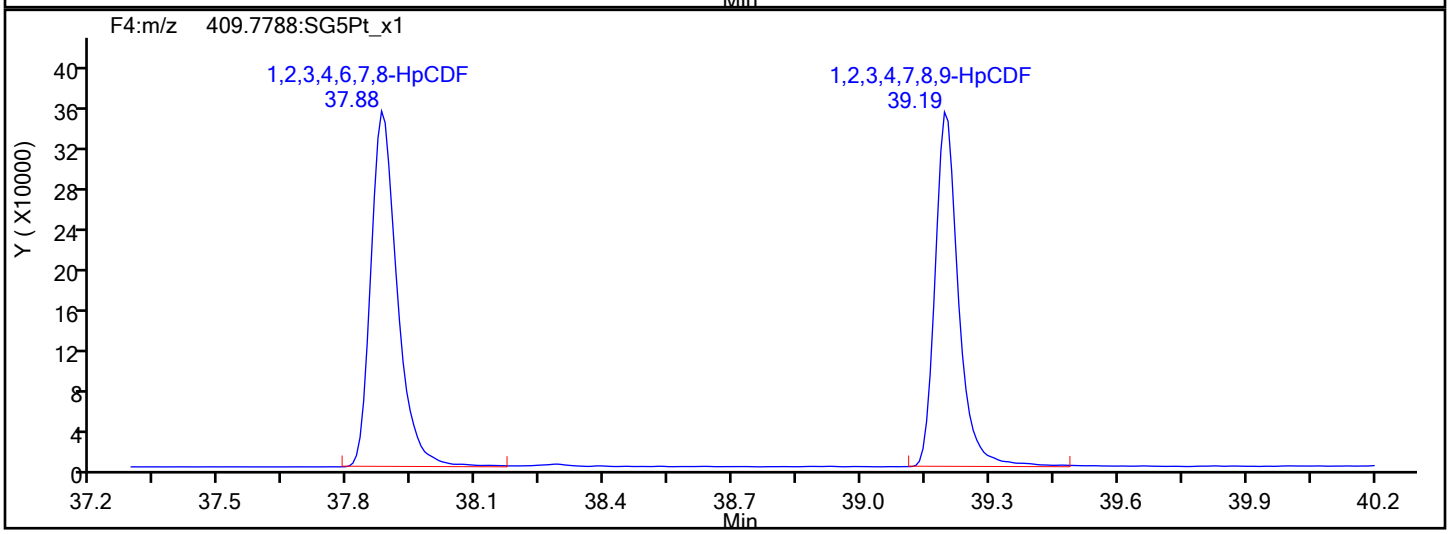
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

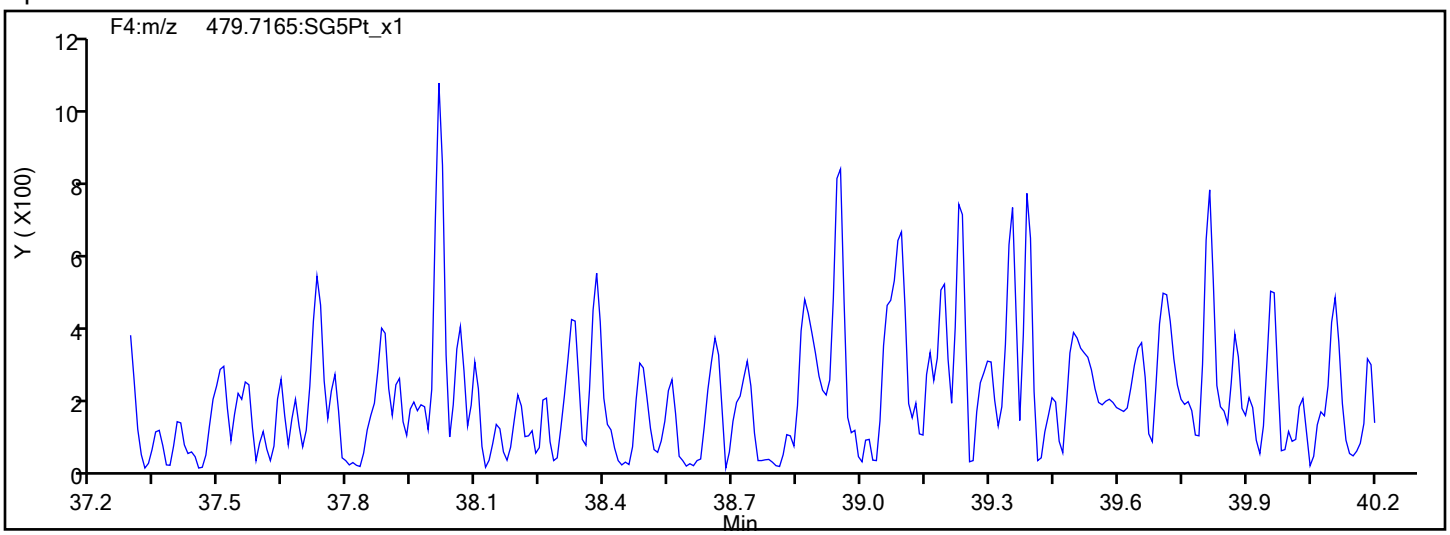
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



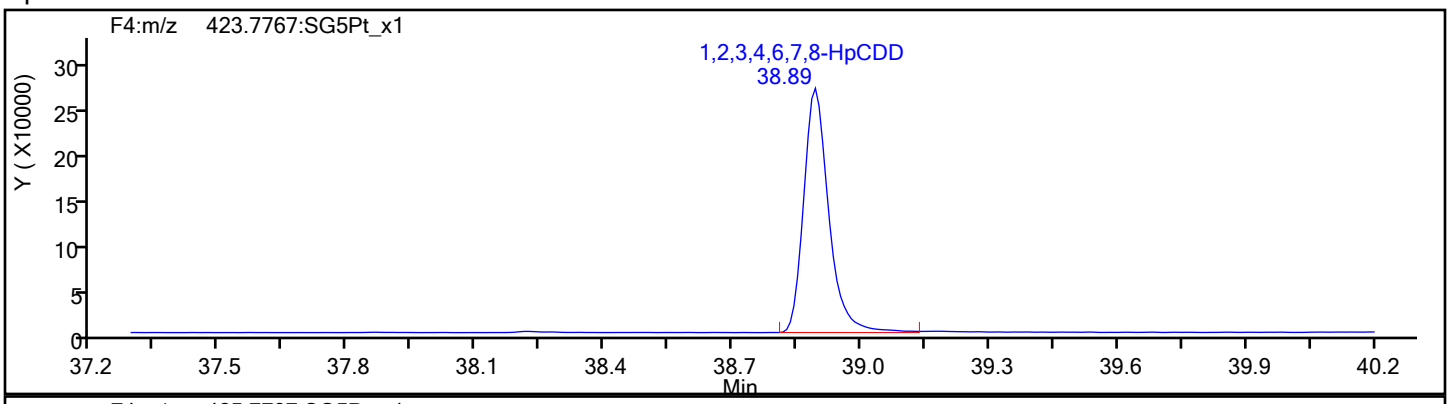
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

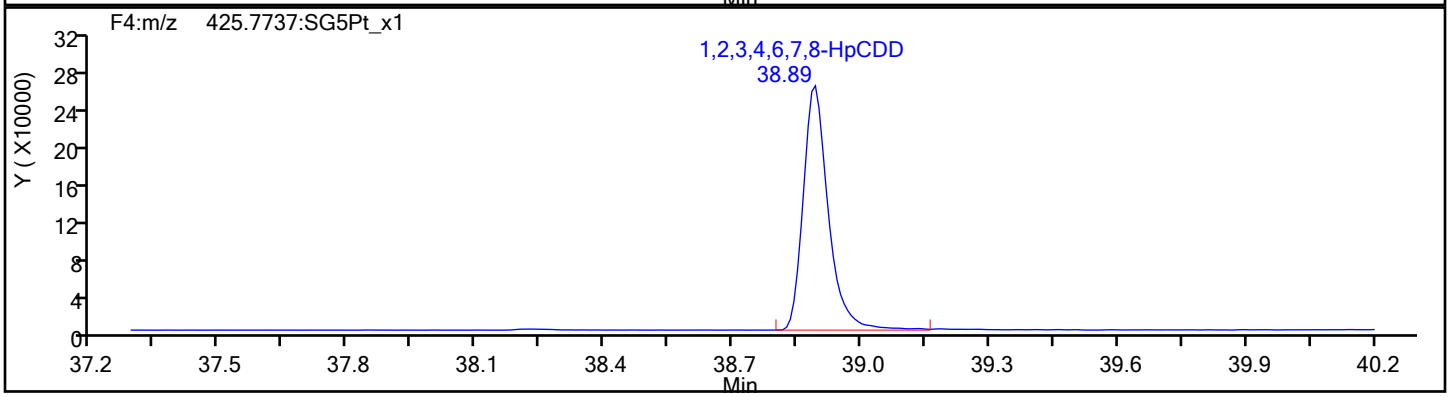
Eurofins TestAmerica, Sacramento

Data File: \\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d

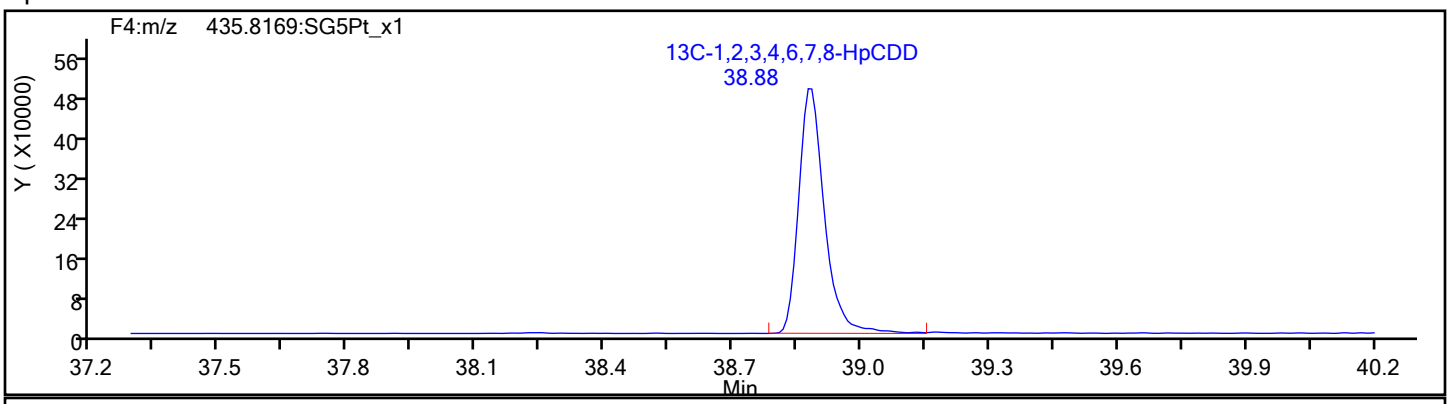
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

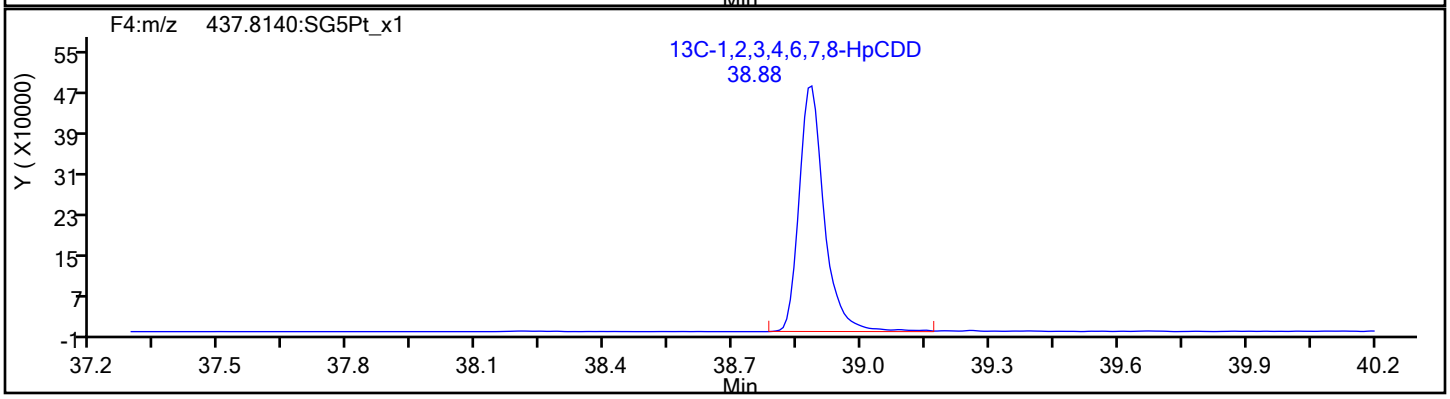
HpCDD





HpCDD Standards



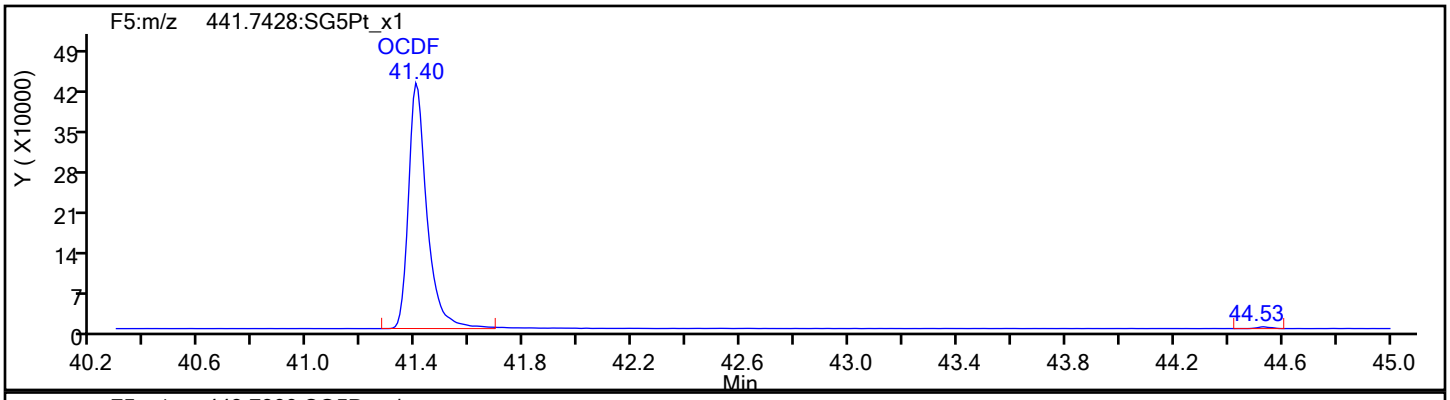


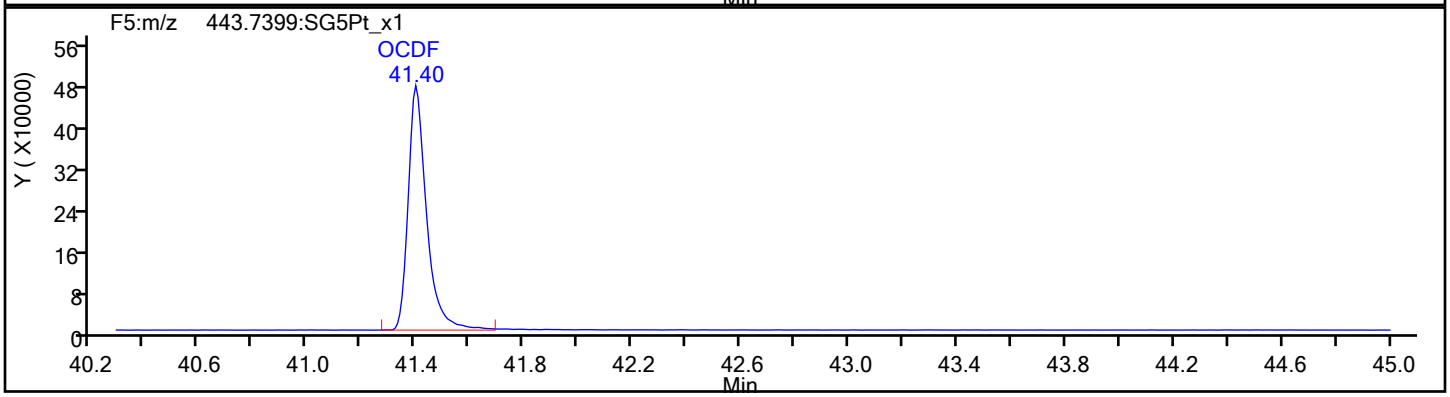
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

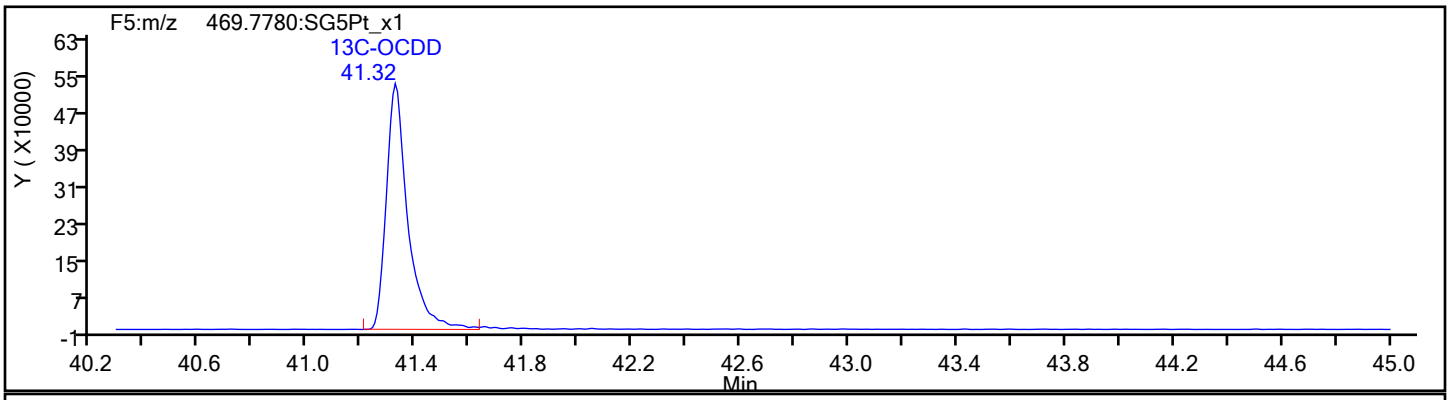
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

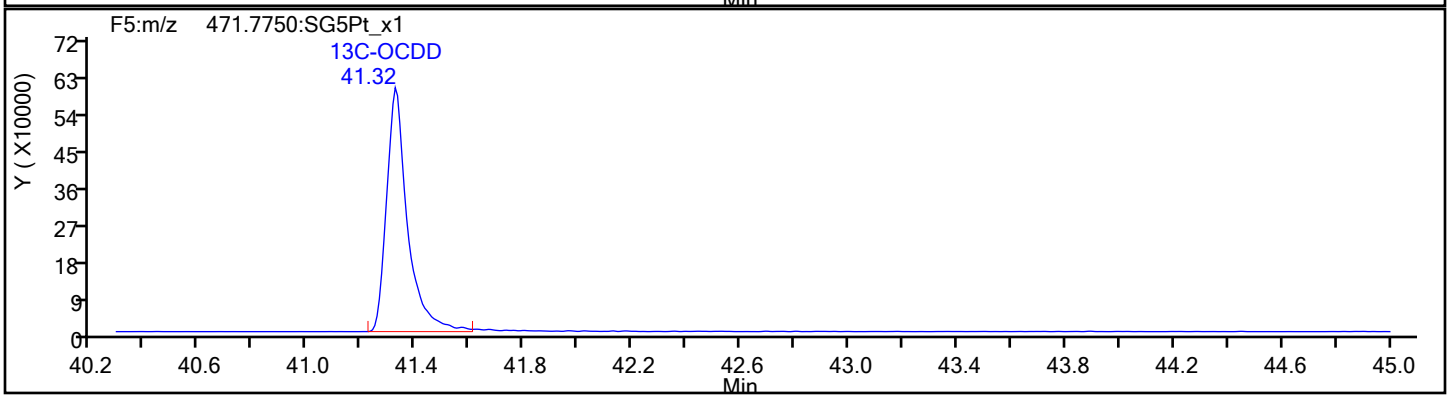
OCDF





OCDF Standards



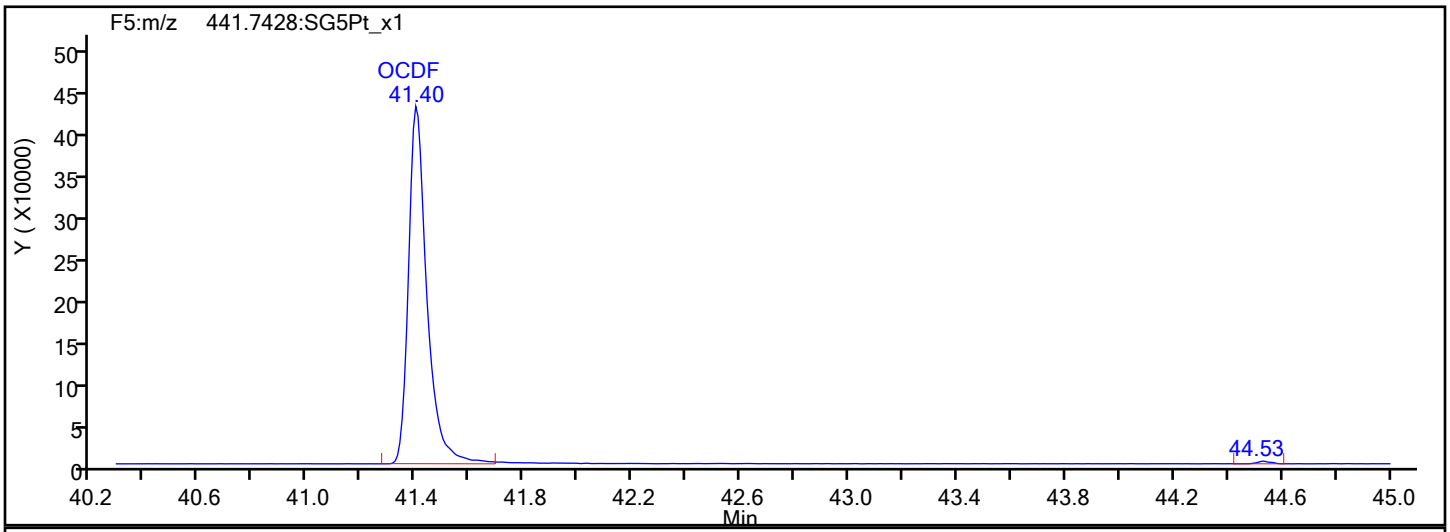


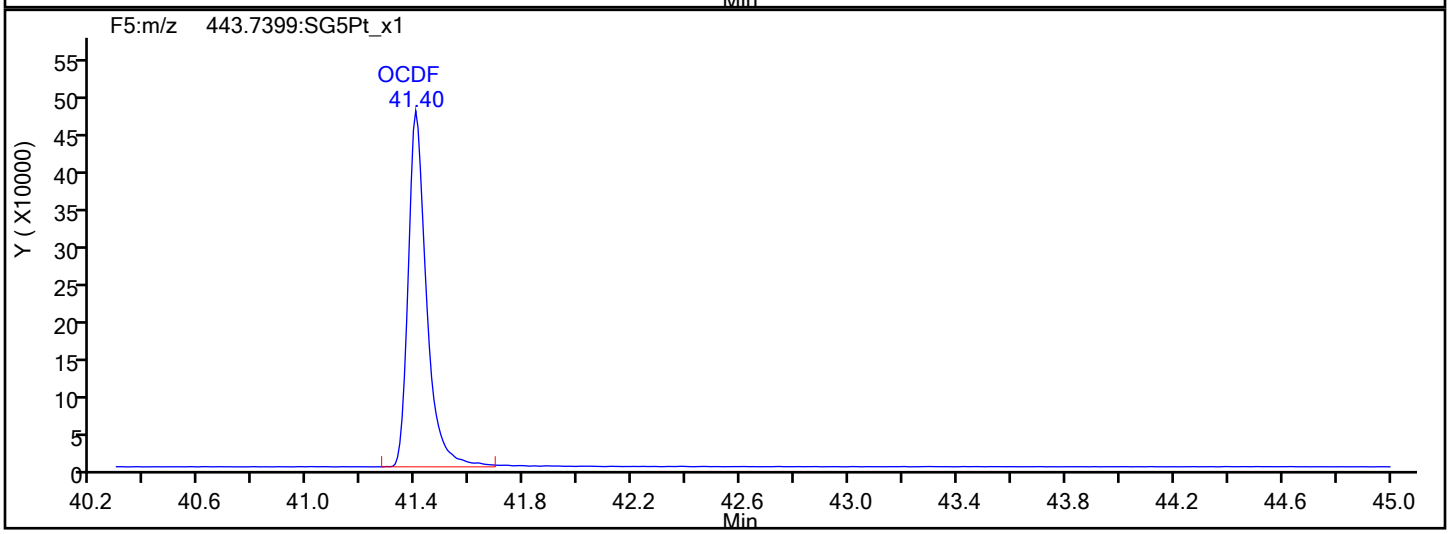
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

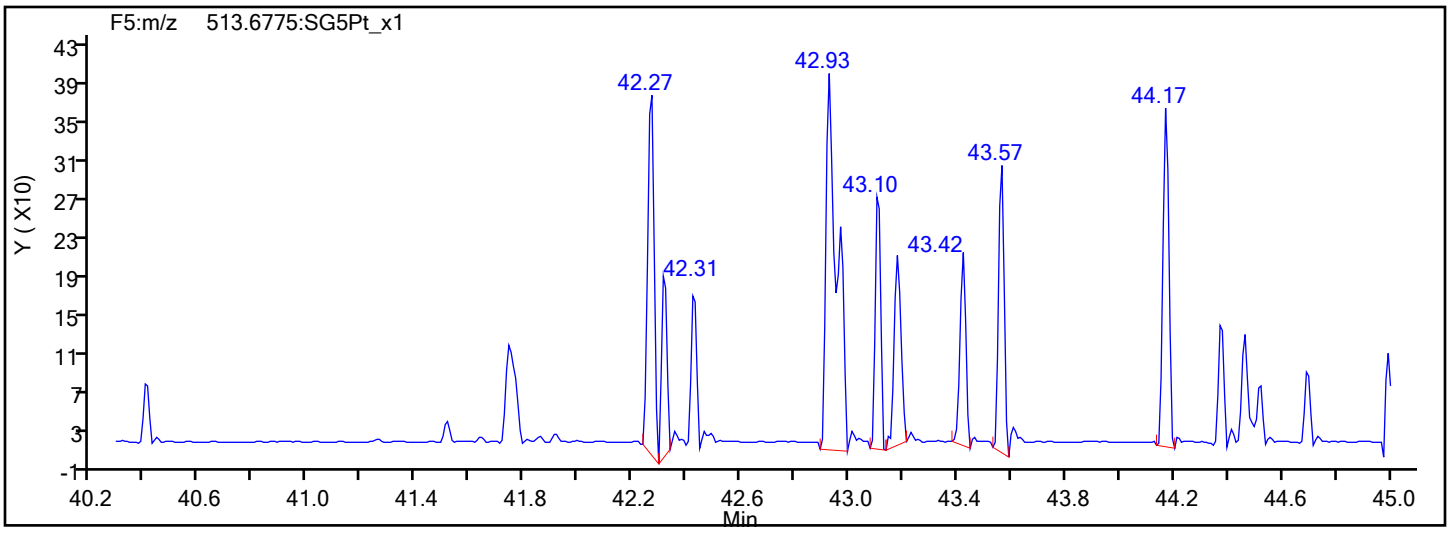
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

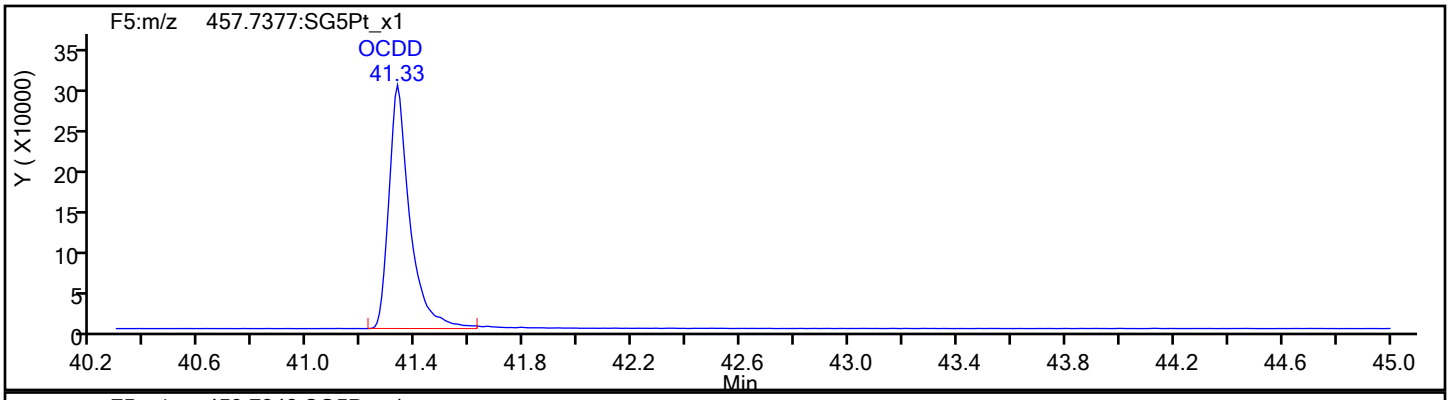


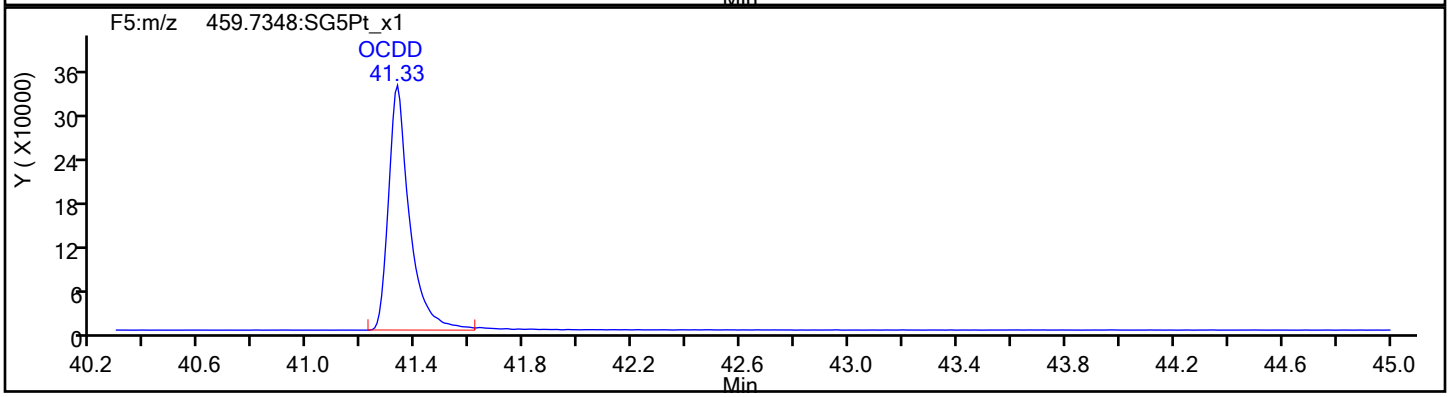
Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

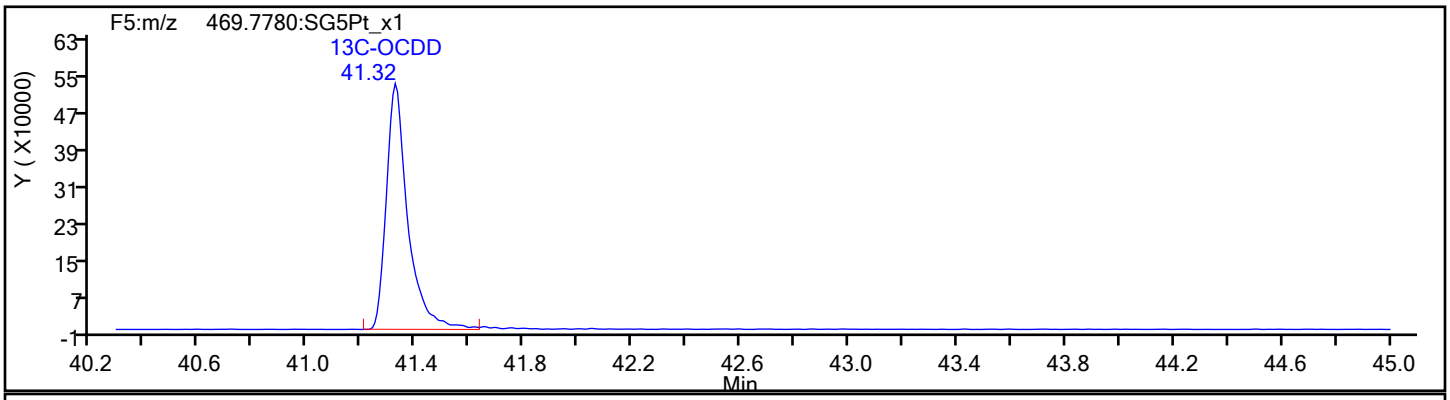
Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

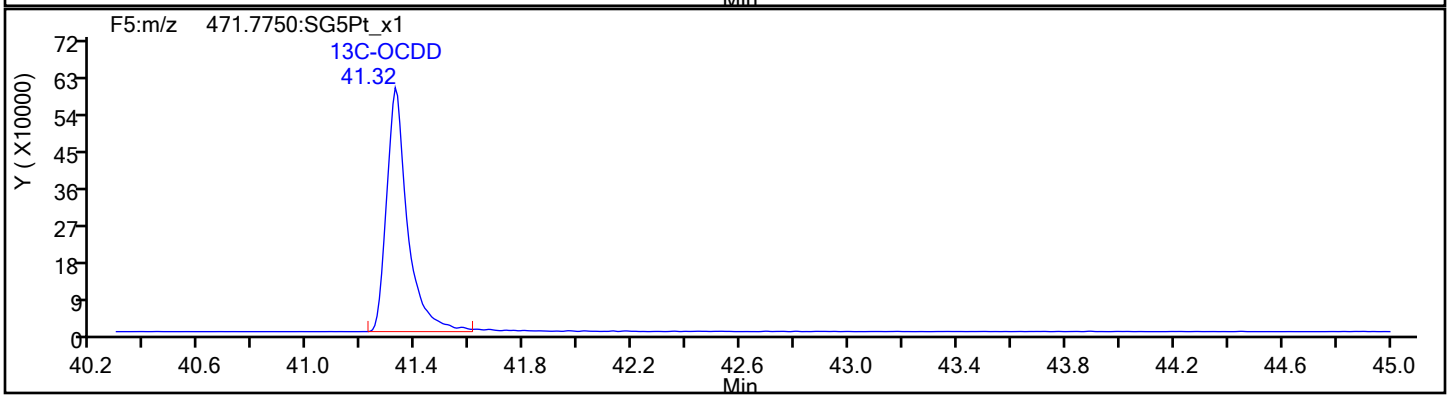
OCDD





OCDD Standards

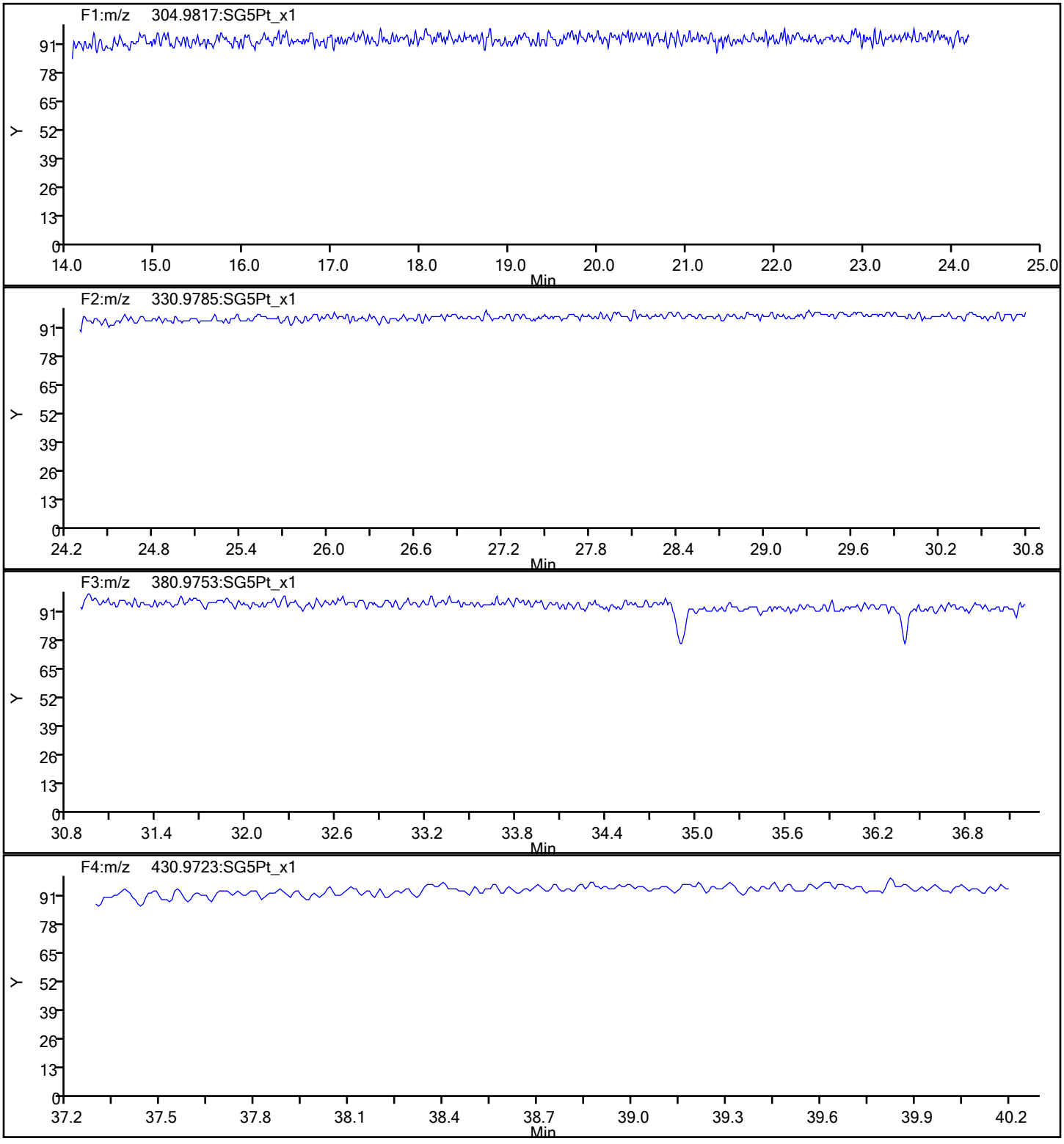




Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345338	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 17-Dec-2019 09:19:47 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\Chromna\Sacramento\ChromData\DFS1\20191213-88256.b\13de19dfs1_7.d		
Injection Date:	13-Dec-2019 16:36:00	Injection Vol:	1.0 ul
Instrument ID:	DFS 1	Operator ID:	Xcalibur_System
Method:	Dioxin_DFS1	Limit Group:	HR - 1613B - ICAL
Client ID:			
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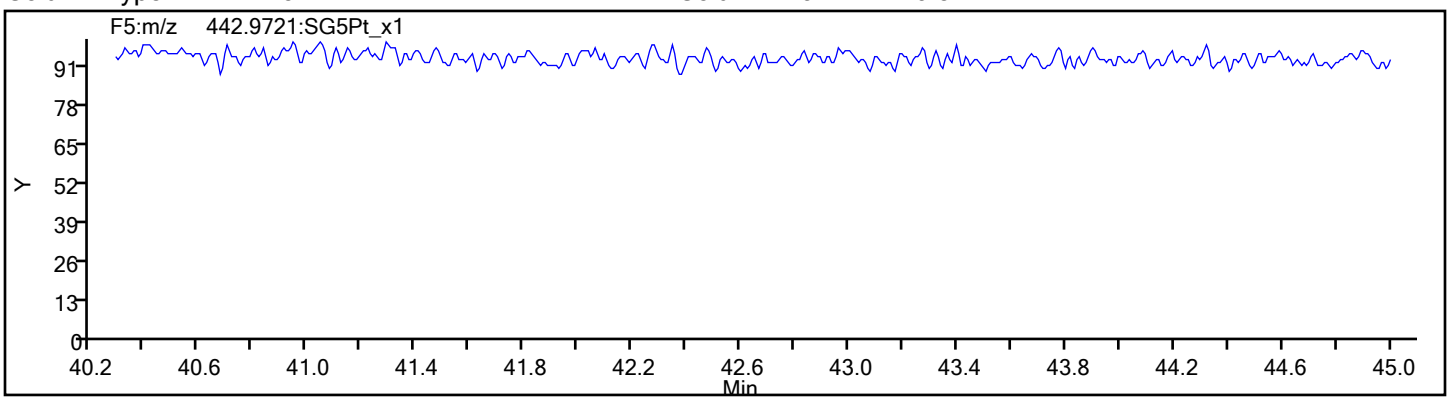

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: 11D2 Start Date: 08/02/2019 01:35

Analysis Batch Number: 312067 End Date: 08/02/2019 06:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 320-312067/1		08/02/2019 01:35	1	02AU1911D2_001.d	DB-225 0.32(mm)
IC 320-312067/3		08/02/2019 02:52	1	02AU1911D2_003.d	DB-225 0.32(mm)
IC 320-312067/4		08/02/2019 03:30	1	02AU1911D2_004.d	DB-225 0.32(mm)
IC 320-312067/5		08/02/2019 04:08	1	02AU1911D2_005.d	DB-225 0.32(mm)
IC 320-312067/6		08/02/2019 04:46	1	02AU1911D2_006.d	DB-225 0.32(mm)
IC 320-312067/7		08/02/2019 05:25	1	02AU1911D2_007.d	DB-225 0.32(mm)
ICV 320-312067/8		08/02/2019 06:03	1	02AU1911D2_008.d	DB-225 0.32(mm)

1613B

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: DFS 1 Start Date: 10/18/2019 19:15

Analysis Batch Number: 332505 End Date: 10/19/2019 01:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-332505/1		10/18/2019 19:15	1	18oc19adfs1_2.d	DB-5 0.32(mm)
IC 320-332505/3		10/18/2019 20:50	1	18oc19adfs1_4.d	DB-5 0.32(mm)
IC 320-332505/4		10/18/2019 21:38	1	18oc19adfs1_5.d	DB-5 0.32(mm)
IC 320-332505/5		10/18/2019 22:26	1	18oc19adfs1_6.d	DB-5 0.32(mm)
IC 320-332505/6		10/18/2019 23:14	1	18oc19adfs1_7.d	DB-5 0.32(mm)
IC 320-332505/7		10/19/2019 00:02	1	18oc19adfs1_8.d	DB-5 0.32(mm)
ICV 320-332505/9		10/19/2019 01:37	1	18oc19adfs1_10.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: 10D5 Start Date: 11/14/2019 08:14

Analysis Batch Number: 338471 End Date: 11/14/2019 14:22

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-338471/1		11/14/2019 08:14	1	14NO1910D5_1.d	DB-5 0.32(mm)
IC 320-338471/3		11/14/2019 09:46	1	14NO1910D5_3.d	DB-5 0.32(mm)
IC 320-338471/4		11/14/2019 10:32	1	14NO1910D5_4.d	DB-5 0.32(mm)
IC 320-338471/5		11/14/2019 11:18	1	14NO1910D5_5.d	DB-5 0.32(mm)
IC 320-338471/6		11/14/2019 12:04	1	14NO1910D5_6.d	DB-5 0.32(mm)
IC 320-338471/7		11/14/2019 12:50	1	14NO1910D5_7.d	DB-5 0.32(mm)
ICV 320-338471/9		11/14/2019 14:22	1	14NO1910D5_9.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: 10D5 Start Date: 12/13/2019 11:08

Analysis Batch Number: 345335 End Date: 12/13/2019 20:57

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-345335/1		12/13/2019 11:08	1	13DE1910D5_1.d	DB-5 0.32(mm)
CCV 320-345335/2		12/13/2019 11:54	1	13DE1910D5_2.d	DB-5 0.32(mm)
ZZZZZ		12/13/2019 13:26	20		DB-5 0.32(mm)
ZZZZZ		12/13/2019 14:12	40		DB-5 0.32(mm)
ZZZZZ		12/13/2019 14:58	30		DB-5 0.32(mm)
320-56911-7		12/13/2019 16:21	1	13DE1910D5_7.d	DB-5 0.32(mm)
320-56911-8		12/13/2019 17:07	1	13DE1910D5_8.d	DB-5 0.32(mm)
320-56911-9		12/13/2019 17:53	1	13DE1910D5_9.d	DB-5 0.32(mm)
320-56911-10		12/13/2019 18:39	1	13DE1910D5_10.d	DB-5 0.32(mm)
320-56911-11		12/13/2019 19:25	1	13DE1910D5_11.d	DB-5 0.32(mm)
320-56911-12		12/13/2019 20:11	1	13DE1910D5_12.d	DB-5 0.32(mm)
320-56911-13		12/13/2019 20:57	1	13DE1910D5_13.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: DFS 1 Start Date: 12/13/2019 12:37

Analysis Batch Number: 345338 End Date: 12/13/2019 21:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-345338/1		12/13/2019 12:37	1	13de19dfs1_2.d	DB-5 0.32(mm)
CCV 320-345338/2		12/13/2019 13:24	1	13de19dfs1_3.d	DB-5 0.32(mm)
MB 320-344634/1-A		12/13/2019 15:00	1	13de19dfs1_5.d	DB-5 0.32(mm)
LCS 320-344634/2-A		12/13/2019 15:48	1	13de19dfs1_6.d	DB-5 0.32(mm)
LCSD 320-344634/3-A		12/13/2019 16:36	1	13de19dfs1_7.d	DB-5 0.32(mm)
320-56911-1		12/13/2019 17:23	1	13de19dfs1_8.d	DB-5 0.32(mm)
320-56911-2		12/13/2019 18:11	1	13de19dfs1_9.d	DB-5 0.32(mm)
320-56911-3		12/13/2019 18:59	1	13de19dfs1_10.d	DB-5 0.32(mm)
320-56911-4		12/13/2019 19:47	1	13de19dfs1_11.d	DB-5 0.32(mm)
320-56911-5		12/13/2019 20:35	1	13de19dfs1_12.d	DB-5 0.32(mm)
320-56911-6		12/13/2019 21:23	1	13de19dfs1_13.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: 11D2 Start Date: 12/16/2019 19:16

Analysis Batch Number: 345960 End Date: 12/17/2019 03:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 320-345960/1		12/16/2019 19:16	1	16DE19A11D2_001.d	DB-225 0.32(mm)
CCV 320-345960/2		12/16/2019 19:55	1	16DE19A11D2_002.d	DB-225 0.32(mm)
ZZZZZ		12/16/2019 20:40	1		DB-225 0.32(mm)
320-56911-3 RA		12/16/2019 21:18	1	16DE19A11D2_004.d	DB-225 0.32(mm)
320-56911-4 RA		12/16/2019 21:56	1	16DE19A11D2_005.d	DB-225 0.32(mm)
320-56911-5 RA		12/16/2019 22:35	1	16DE19A11D2_006.d	DB-225 0.32(mm)
320-56911-6 RA		12/16/2019 23:13	1	16DE19A11D2_007.d	DB-225 0.32(mm)
320-56911-7 RA		12/16/2019 23:51	1	16DE19A11D2_008.d	DB-225 0.32(mm)
320-56911-8 RA		12/17/2019 00:29	1	16DE19A11D2_009.d	DB-225 0.32(mm)
320-56911-9 RA		12/17/2019 01:08	1	16DE19A11D2_010.d	DB-225 0.32(mm)
320-56911-10 RA		12/17/2019 01:46	1	16DE19A11D2_011.d	DB-225 0.32(mm)
320-56911-11 RA		12/17/2019 02:24	1	16DE19A11D2_012.d	DB-225 0.32(mm)
320-56911-12 RA		12/17/2019 03:03	1	16DE19A11D2_013.d	DB-225 0.32(mm)
320-56911-13 RA		12/17/2019 03:41	1	16DE19A11D2_014.d	DB-225 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: 11D2 Start Date: 12/17/2019 14:11

Analysis Batch Number: 346137 End Date: 12/17/2019 16:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 320-346137/1		12/17/2019 14:11	1	17DE1911D2_001.d	DB-225 0.32(mm)
CCV 320-346137/2		12/17/2019 14:49	1	17DE1911D2_002.d	DB-225 0.32(mm)
320-56911-1 RA		12/17/2019 16:06	1	17DE1911D2_004.d	DB-225 0.32(mm)
320-56911-2 RA		12/17/2019 16:44	1	17DE1911D2_005.d	DB-225 0.32(mm)

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 344634 Batch Start Date: 12/11/19 08:20 Batch Analyst: Hubbard, Justin M

Batch Method: HRMS-Sox Batch End Date: 12/13/19 11:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ExtractionID	RotoVapID	HRDXNIDA 00406	HRDXNIS 00121
MB 320-344634/1		HRMS-Sox, 1613B		10 g	20 uL	E1	1	1 mL	20 uL
LCS 320-344634/2		HRMS-Sox, 1613B		10 g	20 uL	2	3	1 mL	20 uL
LCSD 320-344634/3		HRMS-Sox, 1613B		10 g	20 uL	3	1	1 mL	20 uL
320-56911-A-1	11187072-120719-SS-SJSSA01 (0-1)	HRMS-Sox, 1613B	T	10.11 g	20 uL	4	3	1 mL	20 uL
320-56911-A-2	11187072-120719-SS-SJSSA01 (1-2)	HRMS-Sox, 1613B	T	10.11 g	20 uL	5	1	1 mL	20 uL
320-56911-A-3	11187072-120719-SS-SJSSA01 (2-4)	HRMS-Sox, 1613B	T	10.02 g	20 uL	6	3	1 mL	20 uL
320-56911-A-4	11187072-120719-SS-SJSSA01 (4-6)	HRMS-Sox, 1613B	T	10.09 g	20 uL	I1	1	1 mL	20 uL
320-56911-A-5	11187072-120819-BN-SJSSA09 (0-1)	HRMS-Sox, 1613B	T	9.99 g	20 uL	2	3	1 mL	20 uL
320-56911-A-6	11187072-120819-BN-SJSSA09 (1-2)	HRMS-Sox, 1613B	T	10.21 g	20 uL	3	1	1 mL	20 uL
320-56911-A-7	11187072-120819-BN-SJSSA09 (2-4)	HRMS-Sox, 1613B	T	10.11 g	20 uL	4	3	1 mL	20 uL
320-56911-A-8	11187072-120819-BN-SJSSA09 (4-6)	HRMS-Sox, 1613B	T	10.10 g	20 uL	5	1	1 mL	20 uL
320-56911-A-9	11187072-120819-BN-SJSSA05 (0-1)	HRMS-Sox, 1613B	T	10.15 g	20 uL	6	3	1 mL	20 uL
320-56911-A-10	11187072-120819-BN-SJSSA05 (1-2)	HRMS-Sox, 1613B	T	10.32 g	20 uL	J1	1	1 mL	20 uL
320-56911-A-11	11187072-120819-BN-SJSSA05 (2-4)	HRMS-Sox, 1613B	T	10.09 g	20 uL	2	3	1 mL	20 uL
320-56911-A-12	11187072-120819-BN-SJSSA05 (4-6)	HRMS-Sox, 1613B	T	10.23 g	20 uL	3	1	1 mL	20 uL
320-56911-A-13	11187072-120819-BN-DUP2	HRMS-Sox, 1613B	T	10.11 g	20 uL	4	3	1 mL	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNSU 00223	HRDXNTA 00117				
MB 320-344634/1		HRMS-Sox, 1613B		1 mL					
LCS 320-344634/2		HRMS-Sox, 1613B		1 mL	50 uL				
LCSD 320-344634/3		HRMS-Sox, 1613B		1 mL	50 uL				
320-56911-A-1	11187072-120719-SS-SJSSA01 (0-1)	HRMS-Sox, 1613B	T	1 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 344634 Batch Start Date: 12/11/19 08:20 Batch Analyst: Hubbard, Justin M

Batch Method: HRMS-Sox Batch End Date: 12/13/19 11:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNSU 00223	HRDXNTA 00117				
320-56911-A-2	11187072-120719-SS-SJSSA01 (1-2)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-3	11187072-120719-SS-SJSSA01 (2-4)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-4	11187072-120719-SS-SJSSA01 (4-6)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-5	11187072-120819-BN-SJSSA09 (0-1)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-6	11187072-120819-BN-SJSSA09 (1-2)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-7	11187072-120819-BN-SJSSA09 (2-4)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-8	11187072-120819-BN-SJSSA09 (4-6)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-9	11187072-120819-BN-SJSSA05 (0-1)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-10	11187072-120819-BN-SJSSA05 (1-2)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-11	11187072-120819-BN-SJSSA05 (2-4)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-12	11187072-120819-BN-SJSSA05 (4-6)	HRMS-Sox, 1613B	T	1 mL					
320-56911-A-13	11187072-120819-BN-DUP2	HRMS-Sox, 1613B	T	1 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 344634 Batch Start Date: 12/11/19 08:20 Batch Analyst: Hubbard, Justin M

Batch Method: HRMS-Sox Batch End Date: 12/13/19 11:00

Batch Notes	
20% DCM:Hexane ID	1783360 mL
65% DCM:Hexane ID	1813088 mL
Acid Silica Gel ID	1833426
Acid Alumina ID	28X
Balance ID	QA-070
C14 ID	STBJ0716
Hexane ID	0000234722 mL
IFB Clean Up	GLB 12-13-19
Na2SO4 ID	0000228308
Analyst ID - IDA Reagent Drop	FC 12/11/19 HD05018 HRDXNIDA_00406 B-2/4
Analyst ID - IDA Reagent Drop Witness	JH 12/11/19
Analyst ID - IS Reagent Drop	GLB 12-13-19 20uL HRDXNIS00121 B 2/4 DB15270
Analyst ID - IS Reagent Drop Witness	NR 12-13-19
Analyst ID - SU Reagent Drop	GLB 12-13-19 1.0mL HRDXNSU 00223 B 2/4 HD05018
Analyst ID - SU Reagent Drop Witness	RDR 12-13-19
Analyst ID - TA Reagent Drop	FC 12/11/19 DB15270 HRDXNTA_00117 B-7/10
Analyst ID - TA Reagent Drop Witness	JH 12/11/19
Silica Gel ID	1825738
Soxhlet/Soxtherm End	13:30
Soxhlet/Soxtherm Start	10:30 FC 12-11-19
Storage Box ID	DXN117
Toluene ID	0000218358 mL

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacramento Job Number: 320-56911-1

SDG No.:

Project: San Jacinto River Waste Pits Superfund

Client Sample ID	Lab Sample ID
11187072-120719-SS-SJSSA01 (0-1)	320-56911-1
11187072-120719-SS-SJSSA01 (1-2)	320-56911-2
11187072-120719-SS-SJSSA01 (2-4)	320-56911-3
11187072-120719-SS-SJSSA01 (4-6)	320-56911-4
11187072-120819-BN-SJSSA09 (0-1)	320-56911-5
11187072-120819-BN-SJSSA09 (1-2)	320-56911-6
11187072-120819-BN-SJSSA09 (2-4)	320-56911-7
11187072-120819-BN-SJSSA09 (4-6)	320-56911-8
11187072-120819-BN-SJSSA05 (0-1)	320-56911-9
11187072-120819-BN-SJSSA05 (1-2)	320-56911-10
11187072-120819-BN-SJSSA05 (2-4)	320-56911-11
11187072-120819-BN-SJSSA05 (4-6)	320-56911-12
11187072-120819-BN-DUP2	320-56911-13

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacrament Job Number: 320-56911-1

SDG Number:

Matrix: Sediment Instrument ID: NOEQUIP

Method: D 2216 MDL Date: 01/01/2017 12:44

Analyte	Wavelength/ Mass	RL (%)	MDL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacrament Job Number: 320-56911-1

SDG Number:

Matrix: Sediment Instrument ID: NOEQUIP

Method: D 2216 XMDL Date: 01/01/2017 12:46

Analyte	Wavelength/ Mass	XRL (%)	XMDL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 12/12/2019 11:45 End Date: 12/12/2019 11:45

Lab Sample Id	D/F	Type	Time	Analytes																									
				% Sol	Moist																								
320-56911-8	1	T	11:45	X	X																								
320-56911-8 DU	1	T	11:45	X	X																								
320-56911-9	1	T	11:45	X	X																								
320-56911-11	1	T	11:45	X	X																								
320-56911-5	1	T	11:45	X	X																								
320-56911-10	1	T	11:45	X	X																								
320-56911-6	1	T	11:45	X	X																								
320-56911-1	1	T	11:45	X	X																								
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
320-56911-7	1	T	11:45	X	X																								
320-56911-12	1	T	11:45	X	X																								
320-56911-13	1	T	11:45	X	X																								
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										
ZZZZZZ			11:45																										

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56911-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 12/13/2019 14:32 End Date: 12/13/2019 14:32

Lab Sample Id	D/F	Type	Time	Analytes																									
				% Sol	Moist																								
ZZZZZZ			14:32																										
ZZZZZZ			14:32																										
ZZZZZZ			14:32																										
ZZZZZZ			14:32																										
ZZZZZZ			14:32																										
320-56911-4	1	T	14:32	X	X																								
320-56911-2	1	T	14:32	X	X																								
320-56911-3	1	T	14:32	X	X																								
ZZZZZZ			14:32																										
ZZZZZZ			14:32																										

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 344979 Batch Start Date: 12/12/19 11:45 Batch Analyst: Braun, Hannah R

Batch Method: D 2216 Batch End Date: 12/13/19 10:26

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-56911-A-8	11187072-120819-BN-SJSSA09 (4-6)	D 2216	T	1	1.03 g	8.31 g	6.52 g		
320-56911-A-8 DU	11187072-120819-BN-SJSSA09 (4-6)	D 2216	T	2	1.00 g	6.93 g	5.49 g		
320-56911-A-9	11187072-120819-BN-SJSSA05 (0-1)	D 2216	T	3	1.03 g	10.92 g	7.37 g		
320-56911-A-11	11187072-120819-BN-SJSSA05 (2-4)	D 2216	T	4	1.03 g	11.42 g	8.91 g		
320-56911-A-5	11187072-120819-BN-SJSSA09 (0-1)	D 2216	T	5	1.06 g	8.37 g	6.25 g		
320-56911-A-10	11187072-120819-BN-SJSSA05 (1-2)	D 2216	T	6	1.01 g	9.23 g	6.87 g		
320-56911-A-6	11187072-120819-BN-SJSSA09 (1-2)	D 2216	T	7	1.01 g	9.16 g	7.14 g		
320-56911-A-1	11187072-120719-SS-SJSSA01 (0-1)	D 2216	T	8	1.02 g	7.53 g	3.96 g		
320-56911-A-7	11187072-120819-BN-SJSSA09 (2-4)	D 2216	T	12	1.02 g	9.30 g	7.51 g		
320-56911-A-12	11187072-120819-BN-SJSSA05 (4-6)	D 2216	T	13	1.02 g	12.47 g	8.86 g		
320-56911-A-13	11187072-120819-BN-DUP2	D 2216	T	14	1.03 g	7.02 g	5.61 g		

Batch Notes	
Balance ID	QA-068
Date and Time Samples in Desiccator	12/13/2019 08:28
Date and Time Samples out of Desiccator	12/13/2019 10:26
Date samples were placed in the oven	12/12/2019
Oven Temp In	117 Degrees C
Time samples were place in the oven	11:45
Date samples were removed from oven	12/13/2019
Oven Temp Out	119 Degrees C
Time Samples were removed from oven	08:28
Oven ID	Soil prep #2
Thermometer ID	151969607

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 344979 Batch Start Date: 12/12/19 11:45 Batch Analyst: Braun, Hannah R

Batch Method: D 2216 Batch End Date: 12/13/19 10:26

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56911-1

SDG No.:

Batch Number: 345327 Batch Start Date: 12/13/19 14:32 Batch Analyst: Braun, Hannah R

Batch Method: D 2216 Batch End Date: 12/16/19 11:18

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-56911-A-4	11187072-120719-SS-SJSSA01 (4-6)	D 2216	T	6	1.006 g	7.092 g	4.486 g		
320-56911-A-2	11187072-120719-SS-SJSSA01 (1-2)	D 2216	T	7	1.002 g	8.882 g	5.527 g		
320-56911-A-3	11187072-120719-SS-SJSSA01 (2-4)	D 2216	T	8	1.003 g	8.014 g	4.761 g		

Batch Notes	
Balance ID	QA-076
Date and Time Samples in Desiccator	12/16/2019 08:31
Date and Time Samples out of Desiccator	12/16/2019 11:18
Date samples were placed in the oven	12/13/2019
Oven Temp In	117 Degrees C
Time samples were place in the oven	14:32
Date samples were removed from oven	12/16/2019
Oven Temp Out	118 Degrees C
Time Samples were removed from oven	08:31
Oven ID	Soil Prep #2
Thermometer ID	151969607

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95606-1500
Phone (916) 373-5600 Fax (303) 467-7248

Chain of Custody Record

eurofins

Client Information	Sampler: Stephen Saller	Lab PM: Gamber, Carrie L	Carrier Tracking No(s):	COC No: 180-54151-11295.10
Client Contact: Janie Smith	Phone: 979-220-6642	E-Mail: carrie.gamber@testamericainc.com		Page: ~~Page 10 of 10~~ 1 of 2
Company: GHD Services Inc.	Breanna North 501-454-9966	Analysis Requested		Job #:
Address: 5551 Corporate Boulevard Suite 200	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - Di Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Baton Rouge	TAT Requested (days): 10 day			
State, Zip: LA, 70808				
Phone: 225-292-9007(Tel)	PO #: Purchase Order Requested			Other:
Email: janie.smith@ghd.com	WO #:			
Project Name: San Jacinto River Waste Pits Superfund S	Project #: 18020662			
Site: Sand Seperation Area	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Dioxins / Furans	Moisture Content	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
11187072-120719-SS-SJSSA01(0-1)	12-7-19	1510	G	S	N	N	X	X		
11187072-120719-SS-SJSSA01(1-2)	12-7-19	1515	G	S	N	N	X	X		
11187072-120719-SS-SJSSA01(2-4)	12-7-19	1520	G	S	N	N	X	X		
11187072-120719-SS-SJSSA01(4-6)	12-7-19	1525	G	S	N	N	X	X		
11187072-120819-BN-SJSSA09(0-1)	12-8-19	1315	G	S	N	N	X	X		
11187072-120819-BN-SJSSA09(1-2)	12-8-19	1320	G	S	N	N	X	X		
11187072-120819-BN-SJSSA09(2-4)	12-8-19	1325	G	S	N	N	X	X		
11187072-120819-BN-SJSSA09(4-6)	12-8-19	1330	G	S	N	N	X	X		
11187072-120819-BN-SJSSA05(0-1)	12-8-19	1510	G	S	N	N	X	X		
11187072-120819-BN-SJSSA05(1-2)	12-8-19	1515	G	S	N	N	X	X		
11187072-120819-BN-SJSSA05(2-4)	12-8-19	1520	G	S	N	N	X	X		

320-56911 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
N. Gross	12-9-19 1300		Will Mh	12-9-19 100	SDS
Will Mh	12-9-19 100	SDS		12/10/19 920	Eurofins
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.4 corr 2.9

Ver: 01/16/2019

Eurofins TestAmerica, ~~Knoxville~~ Sacramento
~~5815 Middlebrook Pike~~ 880 Riverside Pkwy
~~Knoxville, TN 37921~~ W. Sacramento, CA
~~Phone 865.291.3000 Fax 865.584.4315~~ 916-373-5600

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler: Breanna North	Lab PM: Gamber, Carrie L	Carrier Tracking No(s):	COC No: 180-54151-11295.1
Client Contact: Janie Smith	Phone: 501-454-9966	E-Mail: carrie.gamber@testamericainc.com		Page: ~~Page 1 of 10~~ 2 of 2
Company: GHD Services Inc.				Job #:

Address: 5551 Corporate Boulevard Suite 200	Due Date Requested:	
City: Baton Rouge	TAT Requested (days): 10 day	
State, Zip: LA, 70808		
Phone: 225-292-9007(Tel)	PO #: Purchase Order Requested	
Email: janie.smith@ghd.com	WO #:	
Project Name: San Jacinto River Waste Pits Superfund S	Project #: 18020662	
Site: Sand Separation Area	SSOW#:	

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Dioxins/Furans	Moisture Content	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
111187072-120819-BN-SJSSA05(4-6)	12-8-19	1525	G	S	N	N	X	X		
111187072-120819-BN-DUP2	12-8-19	—	G	S	N	N	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	N. Graves	12-9-19 1300			12-9-19 100	SDS
2		12-9-19 100	SDS		12/10/19 920	eta SAC
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.4 corr 2.9

Ver: 01/16/2019

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Sacramento
Sample Receiving Notes

320-56911 Field Sheet

Job:_____

Tracking # : 4840 2908 4646

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other_____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:_____

Therm. ID: AK7 Corr. Factor: (+/-) 0.5 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1069520

Cooler ID: —

Temp Observed: 2.4 °C Corrected: 2.9 °C

From: Temp Blank ☐ Sample ☑

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: MAN Date: 12/10/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
NCM Filed	☐	☐	☑

Initials: MAN Date: 12/10/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")


eurofins
Environment Testing
TestAmerica
1069520
eurofins
esting
1
10:30
F
4646
12.10
RT 362
FZ
ORIGIN ID:LKSA (713) 690 44
EUROFINS TESTAMERICA HOUSTON
6310 ROTHWAY STREET
HOUSTON, TX 770405062
UNITED STATES US
SHIP DATE: 09DEC19
ACTWGT: 10.00 LB MAN
CAD: 0758523/CAFE3211
BILL RECIPIENT
TO SHIPPING/RECEIVING
TESTAMERICA LABORATORIES
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 95605
(916) 373-5600
REF:
INV:
PO:
DEPT:
FedEx
Express
TUE - 10 DEC 10:30A
TRK# 0201 4840 2908 4646
PRIORITY OVERNIGHT
AJ BLUA
95605
CA-US SMF
SIGNATURE
DATE
Custody Seal
eurofins
Environment Testing
TestAmerica
1069520

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 320-56911-1

Login Number: 56911
List Number: 1
Creator: Oropeza, Salvador

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1069520
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Job Number: 320-56953-1

Job Description: San Jacinto River Waste Pits Superfund

For:
GHD Services Inc.
5551 Corporate Boulevard
Suite 200
Baton Rouge, LA 70808

Attention: Janie Smith

Approved for release.
Carrie L Gamber
Senior Project Manager
12/23/2019 10:20 AM

Carrie L Gamber, Senior Project Manager
301 Alpha Drive, Pittsburgh, PA, 15238
(412)963-2428
carrie.gamber@testamericainc.com
12/23/2019

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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Definitions/Glossary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Qualifiers

Dioxin

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: GHD Services Inc.

Project: San Jacinto River Waste Pits Superfund

Report Number: 320-56953-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 12/11/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.6 C.

NOTE: Results for non-detect PCDD/PCDF analytes are reported using the Estimated Detection Limit (EDL) convention, which provides the lowest possible detection limits for each analyte in each sample based on the magnitude of chromatographic and detector 'noise' at the expected retention time of each analyte. EDL values are typically well below 1 pg/g, and the TEQ-weighted sum of EDL values is below the targeted action limit of 30 pg/g in each reported sample.

DIOXINS
Several analytes were detected in method blank MB 320-344942/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

PERCENT SOLIDS
No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	8.6		2.2	0.34	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.1	J q	11	0.33	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.74	J q	11	0.33	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	1.1	J	11	0.32	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.9	J	11	0.34	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.7	J	11	0.29	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.3	J	11	0.33	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.1	J	11	0.32	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.78	J	11	0.24	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.60	J	11	0.24	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	61	B	11	1.5	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	4.8	J B	11	0.43	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	1.3	J q B	11	0.50	pg/g	1	☼	1613B	Total/NA
OCDD	2400	B	22	1.8	pg/g	1	☼	1613B	Total/NA
OCDF	44	B	22	0.42	pg/g	1	☼	1613B	Total/NA
Total TCDD	11		2.2	0.34	pg/g	1	☼	1613B	Total/NA
Total TCDF	47	q	2.2	0.44	pg/g	1	☼	1613B	Total/NA
Total PeCDD	3.7	J q	11	0.51	pg/g	1	☼	1613B	Total/NA
Total PeCDF	4.8	J q	11	0.33	pg/g	1	☼	1613B	Total/NA
Total HxCDD	38		11	0.31	pg/g	1	☼	1613B	Total/NA
Total HxCDF	8.8	J q	11	0.28	pg/g	1	☼	1613B	Total/NA
Total HpCDD	220	B	11	1.5	pg/g	1	☼	1613B	Total/NA
Total HpCDF	15	q B	11	0.47	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	28		2.2	0.30	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.1	J	1.5	0.18	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.40	J q	7.6	0.19	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.59	J	7.6	0.20	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.3	J	7.6	0.17	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.15	J q	7.6	0.12	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	16	B	7.6	0.54	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	0.64	J B	7.6	0.19	pg/g	1	☼	1613B	Total/NA
OCDD	430	B	15	0.48	pg/g	1	☼	1613B	Total/NA
OCDF	5.4	J B	15	0.27	pg/g	1	☼	1613B	Total/NA
Total TCDD	3.8	q	1.5	0.18	pg/g	1	☼	1613B	Total/NA
Total TCDF	3.1	q	1.5	0.12	pg/g	1	☼	1613B	Total/NA
Total PeCDD	4.2	J q	7.6	0.28	pg/g	1	☼	1613B	Total/NA
Total HxCDD	20	q	7.6	0.19	pg/g	1	☼	1613B	Total/NA
Total HxCDF	0.15	J q	7.6	0.11	pg/g	1	☼	1613B	Total/NA
Total HpCDD	75	B	7.6	0.54	pg/g	1	☼	1613B	Total/NA
Total HpCDF	1.5	J q B	7.6	0.20	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	2.7		1.5	0.14	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,7,8-HxCDD	0.19	J q	6.0	0.11	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	1.4	J B	6.0	0.11	pg/g	1	☼	1613B	Total/NA
OCDD	36	B	12	0.18	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) (Continued) — Lab Sample ID: 320-56953-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total TCDD	0.40	J q	1.2	0.10	pg/g	1	☼	1613B	Total/NA
Total PeCDD	0.28	J	6.0	0.15	pg/g	1	☼	1613B	Total/NA
Total HxCDD	1.9	J q	6.0	0.10	pg/g	1	☼	1613B	Total/NA
Total HpCDD	5.7	J B	6.0	0.11	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) — Lab Sample ID: 320-56953-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8,9-HxCDD	2.6	J	8.8	0.46	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	39	B	8.8	1.0	pg/g	1	☼	1613B	Total/NA
OCDD	890	B	18	1.2	pg/g	1	☼	1613B	Total/NA
OCDF	27	B	18	0.62	pg/g	1	☼	1613B	Total/NA
Total TCDD	0.57	J q	1.8	0.34	pg/g	1	☼	1613B	Total/NA
Total PeCDD	5.4	J q	8.8	0.66	pg/g	1	☼	1613B	Total/NA
Total HxCDD	28		8.8	0.50	pg/g	1	☼	1613B	Total/NA
Total HpCDD	130	B	8.8	1.0	pg/g	1	☼	1613B	Total/NA
Total HpCDF	5.6	J B	8.8	0.61	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) — Lab Sample ID: 320-56953-5

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	11		2.4	0.33	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.1	J q	12	0.29	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.77	J	12	0.31	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.63	J q	12	0.35	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.88	J	12	0.37	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.4	J	12	0.32	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.2	J	12	0.20	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.41	J q	12	0.21	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.61	J q	12	0.16	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	31	B	12	0.95	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.7	J B	12	0.27	pg/g	1	☼	1613B	Total/NA
OCDD	720	B	24	0.64	pg/g	1	☼	1613B	Total/NA
OCDF	12	J B	24	0.35	pg/g	1	☼	1613B	Total/NA
Total TCDD	21	q	2.4	0.33	pg/g	1	☼	1613B	Total/NA
Total TCDF	72	q	2.4	0.36	pg/g	1	☼	1613B	Total/NA
Total PeCDD	8.9	J q	12	0.40	pg/g	1	☼	1613B	Total/NA
Total PeCDF	2.7	J q	12	0.30	pg/g	1	☼	1613B	Total/NA
Total HxCDD	41	q	12	0.35	pg/g	1	☼	1613B	Total/NA
Total HxCDF	4.1	J q	12	0.18	pg/g	1	☼	1613B	Total/NA
Total HpCDD	130	B	12	0.95	pg/g	1	☼	1613B	Total/NA
Total HpCDF	4.9	J B	12	0.30	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	43		2.4	0.30	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) — Lab Sample ID: 320-56953-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	13		1.9	0.41	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	1.6	J q	9.7	0.46	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	1.0	J	9.7	0.48	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.98	J q	9.7	0.47	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) (Continued) Lab Sample ID: 320-56953-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,6,7,8-HxCDD	1.5	J q	9.7	0.46	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.3	J	9.7	0.41	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.8	J q	9.7	0.39	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.2	J	9.7	0.40	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	57	B	9.7	1.5	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	4.2	J q B	9.7	0.44	pg/g	1	☼	1613B	Total/NA
OCDD	2100	B	19	1.9	pg/g	1	☼	1613B	Total/NA
OCDF	35	B	19	0.59	pg/g	1	☼	1613B	Total/NA
Total TCDD	19	q	1.9	0.41	pg/g	1	☼	1613B	Total/NA
Total TCDF	89	q	1.9	0.57	pg/g	1	☼	1613B	Total/NA
Total PeCDD	5.3	J q	9.7	0.71	pg/g	1	☼	1613B	Total/NA
Total PeCDF	5.4	J q	9.7	0.47	pg/g	1	☼	1613B	Total/NA
Total HxCDD	40	q	9.7	0.45	pg/g	1	☼	1613B	Total/NA
Total HxCDF	6.4	J q	9.7	0.35	pg/g	1	☼	1613B	Total/NA
Total HpCDD	220	B	9.7	1.5	pg/g	1	☼	1613B	Total/NA
Total HpCDF	12	q B	9.7	0.50	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	50		1.9	0.27	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	7.7		2.1	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	0.70	J q	11	0.26	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	0.60	J	11	0.27	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	0.63	J q	11	0.34	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDD	0.99	J	11	0.36	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.5	J	11	0.31	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.78	J	11	0.22	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.33	J q	11	0.22	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	31	B	11	0.84	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	1.0	J B	11	0.29	pg/g	1	☼	1613B	Total/NA
OCDD	750	B	21	0.64	pg/g	1	☼	1613B	Total/NA
OCDF	9.2	J B	21	0.33	pg/g	1	☼	1613B	Total/NA
Total TCDD	16	q	2.1	0.27	pg/g	1	☼	1613B	Total/NA
Total TCDF	52	q	2.1	0.38	pg/g	1	☼	1613B	Total/NA
Total PeCDD	7.7	J	11	0.40	pg/g	1	☼	1613B	Total/NA
Total PeCDF	2.1	J q	11	0.26	pg/g	1	☼	1613B	Total/NA
Total HxCDD	39	q	11	0.34	pg/g	1	☼	1613B	Total/NA
Total HxCDF	1.1	J q	11	0.19	pg/g	1	☼	1613B	Total/NA
Total HpCDD	120	B	11	0.84	pg/g	1	☼	1613B	Total/NA
Total HpCDF	2.5	J B q	11	0.32	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	29		2.1	0.25	pg/g	1	☼	1613B	Total/NA

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	31		2.3	0.50	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDD	0.88	J q	12	0.49	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8-PeCDF	3.9	J	12	0.48	pg/g	1	☼	1613B	Total/NA
2,3,4,7,8-PeCDF	2.1	J q	12	0.52	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDD	1.9	J	12	0.40	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) (Continued)

Lab Sample ID: 320-56953-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,6,7,8-HxCDD	4.4	J	12	0.45	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDD	5.7	J	12	0.38	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8-HxCDF	5.6	J	12	0.45	pg/g	1	☼	1613B	Total/NA
1,2,3,6,7,8-HxCDF	2.6	J	12	0.45	pg/g	1	☼	1613B	Total/NA
1,2,3,7,8,9-HxCDF	0.39	J	12	0.33	pg/g	1	☼	1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.92	J q	12	0.34	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	180	B	12	3.5	pg/g	1	☼	1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	20	B	12	0.90	pg/g	1	☼	1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	2.2	J B	12	1.1	pg/g	1	☼	1613B	Total/NA
OCDD	4700	B	23	3.4	pg/g	1	☼	1613B	Total/NA
OCDF	190	B	23	0.40	pg/g	1	☼	1613B	Total/NA
Total TCDD	39	q	2.3	0.50	pg/g	1	☼	1613B	Total/NA
Total TCDF	180	q	2.3	0.79	pg/g	1	☼	1613B	Total/NA
Total PeCDD	13	q	12	0.49	pg/g	1	☼	1613B	Total/NA
Total PeCDF	16	q	12	0.50	pg/g	1	☼	1613B	Total/NA
Total HxCDD	96		12	0.41	pg/g	1	☼	1613B	Total/NA
Total HxCDF	29	q	12	0.39	pg/g	1	☼	1613B	Total/NA
Total HpCDD	610	B	12	3.5	pg/g	1	☼	1613B	Total/NA
Total HpCDF	65	B	12	1.0	pg/g	1	☼	1613B	Total/NA
2,3,7,8-TCDF - RA	110		2.3	0.51	pg/g	1	☼	1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1)

Lab Sample ID: 320-56953-1
Date Collected: 12/09/19 15:35
Matrix: Sediment
Date Received: 12/11/19 09:30
Percent Solids: 43.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	8.6		2.2	0.34	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,7,8-PeCDD	ND		11	0.51	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,7,8-PeCDF	1.1	J q	11	0.33	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
2,3,4,7,8-PeCDF	0.74	J q	11	0.33	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,4,7,8-HxCDD	1.1	J	11	0.32	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,6,7,8-HxCDD	1.9	J	11	0.34	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,7,8,9-HxCDD	2.7	J	11	0.29	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,4,7,8-HxCDF	1.3	J	11	0.33	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,6,7,8-HxCDF	1.1	J	11	0.32	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,7,8,9-HxCDF	0.78	J	11	0.24	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
2,3,4,6,7,8-HxCDF	0.60	J	11	0.24	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,4,6,7,8-HpCDD	61	B	11	1.5	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,4,6,7,8-HpCDF	4.8	J B	11	0.43	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
1,2,3,4,7,8,9-HpCDF	1.3	J q B	11	0.50	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
OCDD	2400	B	22	1.8	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
OCDF	44	B	22	0.42	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total TCDD	11		2.2	0.34	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total TCDF	47	q	2.2	0.44	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total PeCDD	3.7	J q	11	0.51	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total PeCDF	4.8	J q	11	0.33	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total HxCDD	38		11	0.31	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total HxCDF	8.8	J q	11	0.28	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total HpCDD	220	B	11	1.5	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1
Total HpCDF	15	q B	11	0.47	pg/g	☼	12/12/19 08:56	12/19/19 15:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,7,8-PeCDD	*60*		*25 - 181*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,6,7,8-HxCDD	*64*		*28 - 130*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,4,7,8-HxCDF	*61*		*26 - 152*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*56*		*28 - 143*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*12/12/19 08:56*	*12/19/19 15:46*	*1*
13C-OCDD	*68*		*17 - 157*	*12/12/19 08:56*	*12/19/19 15:46*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*12/12/19 08:56*	*12/19/19 15:46*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	28		2.2	0.30	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*12/12/19 08:56*	*12/19/19 21:19*	*1*

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 43.4**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	12/12/19 08:56	12/19/19 21:19	1

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 64.4**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**1.1**	**J**	1.5	0.18	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,7,8-PeCDD	ND		7.6	0.28	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,7,8-PeCDF	ND		7.6	0.16	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
2,3,4,7,8-PeCDF	ND		7.6	0.16	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,4,7,8-HxCDD	**0.40**	**J q**	7.6	0.19	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,6,7,8-HxCDD	**0.59**	**J**	7.6	0.20	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,7,8,9-HxCDD	**1.3**	**J**	7.6	0.17	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,4,7,8-HxCDF	ND		7.6	0.12	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,6,7,8-HxCDF	**0.15**	**J q**	7.6	0.12	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,7,8,9-HxCDF	ND		7.6	0.097	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
2,3,4,6,7,8-HxCDF	ND		7.6	0.093	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,4,6,7,8-HpCDD	**16**	**B**	7.6	0.54	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,4,6,7,8-HpCDF	**0.64**	**J B**	7.6	0.19	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
1,2,3,4,7,8,9-HpCDF	ND		7.6	0.21	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
OCDD	**430**	**B**	15	0.48	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
OCDF	**5.4**	**J B**	15	0.27	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total TCDD	**3.8**	**q**	1.5	0.18	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total TCDF	**3.1**	**q**	1.5	0.12	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total PeCDD	**4.2**	**J q**	7.6	0.28	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total PeCDF	ND		7.6	0.17	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total HxCDD	**20**	**q**	7.6	0.19	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total HxCDF	**0.15**	**J q**	7.6	0.11	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total HpCDD	**75**	**B**	7.6	0.54	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1
Total HpCDF	**1.5**	**J q B**	7.6	0.20	pg/g	☼	12/12/19 08:56	12/19/19 16:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	61		25 - 164	12/12/19 08:56	12/19/19 16:33	1
13C-2,3,7,8-TCDF	63		24 - 169	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	12/12/19 08:56	12/19/19 16:33	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	12/12/19 08:56	12/19/19 16:33	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	12/12/19 08:56	12/19/19 16:33	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138	12/12/19 08:56	12/19/19 16:33	1
13C-OCDD	60		17 - 157	12/12/19 08:56	12/19/19 16:33	1

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 64.4**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	12/12/19 08:56	12/19/19 16:33	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**2.7**		1.5	0.14	pg/g	☼	12/12/19 08:56	12/19/19 20:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169	12/12/19 08:56	12/19/19 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	12/12/19 08:56	12/19/19 20:41	1

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 81.7**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.2	0.10	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
2,3,7,8-TCDF	ND		1.2	0.073	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,7,8-PeCDD	ND		6.0	0.15	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,7,8-PeCDF	ND		6.0	0.11	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
2,3,4,7,8-PeCDF	ND		6.0	0.12	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,4,7,8-HxCDD	**0.19**	**J q**	6.0	0.11	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,6,7,8-HxCDD	ND		6.0	0.11	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,7,8,9-HxCDD	ND		6.0	0.096	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,4,7,8-HxCDF	ND		6.0	0.092	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,6,7,8-HxCDF	ND		6.0	0.088	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,7,8,9-HxCDF	ND		6.0	0.071	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
2,3,4,6,7,8-HxCDF	ND		6.0	0.070	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,4,6,7,8-HpCDD	**1.4**	**J B**	6.0	0.11	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,4,6,7,8-HpCDF	ND		6.0	0.15	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
1,2,3,4,7,8,9-HpCDF	ND		6.0	0.17	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
OCDD	**36**	**B**	12	0.18	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
OCDF	ND		12	0.17	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total TCDD	**0.40**	**J q**	1.2	0.10	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total TCDF	ND		1.2	0.073	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total PeCDD	**0.28**	**J**	6.0	0.15	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total PeCDF	ND		6.0	0.12	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total HxCDD	**1.9**	**J q**	6.0	0.10	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total HxCDF	ND		6.0	0.092	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total HpCDD	**5.7**	**J B**	6.0	0.11	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1
Total HpCDF	ND		6.0	0.17	pg/g	☼	12/12/19 08:56	12/19/19 17:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	64		25 - 164	12/12/19 08:56	12/19/19 17:21	1
13C-2,3,7,8-TCDF	63		24 - 169	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	12/12/19 08:56	12/19/19 17:21	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130	12/12/19 08:56	12/19/19 17:21	1

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 81.7**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,7,8-HxCDF	67		26 - 152	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	12/12/19 08:56	12/19/19 17:21	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,4,6,7,8-HpCDD	67		23 - 140	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	12/12/19 08:56	12/19/19 17:21	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138	12/12/19 08:56	12/19/19 17:21	1
13C-OCDD	72		17 - 157	12/12/19 08:56	12/19/19 17:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	12/12/19 08:56	12/19/19 17:21	1

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 56.0**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.8	0.34	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
2,3,7,8-TCDF	ND		1.8	0.25	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,7,8-PeCDD	ND		8.8	0.66	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,7,8-PeCDF	ND		8.8	0.39	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
2,3,4,7,8-PeCDF	ND		8.8	0.41	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,4,7,8-HxCDD	ND		8.8	0.51	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,6,7,8-HxCDD	ND		8.8	0.54	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,7,8,9-HxCDD	**2.6**	**J**	8.8	0.46	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,4,7,8-HxCDF	ND		8.8	0.33	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,6,7,8-HxCDF	ND		8.8	0.31	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,7,8,9-HxCDF	ND		8.8	0.26	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
2,3,4,6,7,8-HxCDF	ND		8.8	0.24	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,4,6,7,8-HpCDD	**39**	**B**	8.8	1.0	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,4,6,7,8-HpCDF	ND		8.8	0.52	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
1,2,3,4,7,8,9-HpCDF	ND		8.8	0.70	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
OCDD	**890**	**B**	18	1.2	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
OCDF	**27**	**B**	18	0.62	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total TCDD	**0.57**	**J q**	1.8	0.34	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total TCDF	ND		1.8	0.25	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total PeCDD	**5.4**	**J q**	8.8	0.66	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total PeCDF	ND		8.8	0.43	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total HxCDD	**28**		8.8	0.50	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total HxCDF	ND		8.8	0.33	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total HpCDD	**130**	**B**	8.8	1.0	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1
Total HpCDF	**5.6**	**J B**	8.8	0.61	pg/g	☼	12/12/19 08:56	12/19/19 18:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164	12/12/19 08:56	12/19/19 18:09	1
13C-2,3,7,8-TCDF	65		24 - 169	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	12/12/19 08:56	12/19/19 18:09	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	12/12/19 08:56	12/19/19 18:09	1

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 56.0**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	74		28 - 130	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	12/12/19 08:56	12/19/19 18:09	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,4,6,7,8-HpCDD	69		23 - 140	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,4,6,7,8-HpCDF	68		28 - 143	12/12/19 08:56	12/19/19 18:09	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	12/12/19 08:56	12/19/19 18:09	1
13C-OCDD	72		17 - 157	12/12/19 08:56	12/19/19 18:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	12/12/19 08:56	12/19/19 18:09	1

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 41.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**11**		2.4	0.33	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,7,8-PeCDD	ND		12	0.40	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,7,8-PeCDF	**1.1**	**J q**	12	0.29	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
2,3,4,7,8-PeCDF	**0.77**	**J**	12	0.31	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,4,7,8-HxCDD	**0.63**	**J q**	12	0.35	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,6,7,8-HxCDD	**0.88**	**J**	12	0.37	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,7,8,9-HxCDD	**2.4**	**J**	12	0.32	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,4,7,8-HxCDF	**1.2**	**J**	12	0.20	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,6,7,8-HxCDF	**0.41**	**J q**	12	0.21	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,7,8,9-HxCDF	**0.61**	**J q**	12	0.16	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
2,3,4,6,7,8-HxCDF	ND		12	0.16	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,4,6,7,8-HpCDD	**31**	**B**	12	0.95	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,4,6,7,8-HpCDF	**1.7**	**J B**	12	0.27	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
1,2,3,4,7,8,9-HpCDF	ND		12	0.32	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
OCDD	**720**	**B**	24	0.64	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
OCDF	**12**	**J B**	24	0.35	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total TCDD	**21**	**q**	2.4	0.33	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total TCDF	**72**	**q**	2.4	0.36	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total PeCDD	**8.9**	**J q**	12	0.40	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total PeCDF	**2.7**	**J q**	12	0.30	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total HxCDD	**41**	**q**	12	0.35	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total HxCDF	**4.1**	**J q**	12	0.18	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total HpCDD	**130**	**B**	12	0.95	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1
Total HpCDF	**4.9**	**J B**	12	0.30	pg/g	☼	12/12/19 08:56	12/19/19 18:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	62		25 - 164	12/12/19 08:56	12/19/19 18:56	1
13C-2,3,7,8-TCDF	63		24 - 169	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	12/12/19 08:56	12/19/19 18:56	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	12/12/19 08:56	12/19/19 18:56	1

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 41.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	65		28 - 130	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	12/12/19 08:56	12/19/19 18:56	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,4,6,7,8-HpCDD	63		23 - 140	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,4,6,7,8-HpCDF	61		28 - 143	12/12/19 08:56	12/19/19 18:56	1
13C-1,2,3,4,7,8,9-HpCDF	69		26 - 138	12/12/19 08:56	12/19/19 18:56	1
13C-OCDD	67		17 - 157	12/12/19 08:56	12/19/19 18:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	12/12/19 08:56	12/19/19 18:56	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	43		2.4	0.30	pg/g	☼	12/12/19 08:56	12/19/19 21:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169	12/12/19 08:56	12/19/19 21:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	12/12/19 08:56	12/19/19 21:57	1

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 50.8**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	13		1.9	0.41	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,7,8-PeCDD	ND		9.7	0.71	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,7,8-PeCDF	1.6	J q	9.7	0.46	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
2,3,4,7,8-PeCDF	1.0	J	9.7	0.48	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,4,7,8-HxCDD	0.98	J q	9.7	0.47	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,6,7,8-HxCDD	1.5	J q	9.7	0.46	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,7,8,9-HxCDD	2.3	J	9.7	0.41	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,4,7,8-HxCDF	1.8	J q	9.7	0.39	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,6,7,8-HxCDF	1.2	J	9.7	0.40	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,7,8,9-HxCDF	ND		9.7	0.31	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
2,3,4,6,7,8-HxCDF	ND		9.7	0.31	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,4,6,7,8-HpCDD	57	B	9.7	1.5	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,4,6,7,8-HpCDF	4.2	J q B	9.7	0.44	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
1,2,3,4,7,8,9-HpCDF	ND		9.7	0.56	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
OCDD	2100	B	19	1.9	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
OCDF	35	B	19	0.59	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total TCDD	19	q	1.9	0.41	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total TCDF	89	q	1.9	0.57	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total PeCDD	5.3	J q	9.7	0.71	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total PeCDF	5.4	J q	9.7	0.47	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total HxCDD	40	q	9.7	0.45	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total HxCDF	6.4	J q	9.7	0.35	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 50.8**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	**220**	**B**	9.7	1.5	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1
Total HpCDF	**12**	**q B**	9.7	0.50	pg/g	☼	12/12/19 08:56	12/19/19 19:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*65*		*23 - 140*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*28 - 143*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*26 - 138*	*12/12/19 08:56*	*12/19/19 19:44*	*1*
13C-OCDD	*64*		*17 - 157*	*12/12/19 08:56*	*12/19/19 19:44*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*102*		*35 - 197*	*12/12/19 08:56*	*12/19/19 19:44*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**50**		1.9	0.27	pg/g	☼	12/12/19 08:56	12/19/19 22:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*12/12/19 08:56*	*12/19/19 22:36*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*111*		*35 - 197*	*12/12/19 08:56*	*12/19/19 22:36*	*1*

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 46.1**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**7.7**		2.1	0.27	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,7,8-PeCDD	ND		11	0.40	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,7,8-PeCDF	**0.70**	**J q**	11	0.26	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
2,3,4,7,8-PeCDF	**0.60**	**J**	11	0.27	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,4,7,8-HxCDD	**0.63**	**J q**	11	0.34	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,6,7,8-HxCDD	**0.99**	**J**	11	0.36	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,7,8,9-HxCDD	**2.5**	**J**	11	0.31	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,4,7,8-HxCDF	**0.78**	**J**	11	0.22	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,6,7,8-HxCDF	**0.33**	**J q**	11	0.22	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,7,8,9-HxCDF	ND		11	0.16	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
2,3,4,6,7,8-HxCDF	ND		11	0.16	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,4,6,7,8-HpCDD	**31**	**B**	11	0.84	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
1,2,3,4,6,7,8-HpCDF	**1.0**	**J B**	11	0.29	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 46.1**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8,9-HpCDF	ND		11	0.36	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
OCDD	**750**	**B**	21	0.64	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
OCDF	**9.2**	**J B**	21	0.33	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total TCDD	**16**	**q**	2.1	0.27	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total TCDF	**52**	**q**	2.1	0.38	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total PeCDD	**7.7**	**J**	11	0.40	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total PeCDF	**2.1**	**J q**	11	0.26	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total HxCDD	**39**	**q**	11	0.34	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total HxCDF	**1.1**	**J q**	11	0.19	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total HpCDD	**120**	**B**	11	0.84	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1
Total HpCDF	**2.5**	**J B q**	11	0.32	pg/g	☼	12/12/19 08:56	12/19/19 20:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,7,8-PeCDF	*52*		*24 - 185*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,6,7,8-HxCDD	*60*		*28 - 130*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,4,7,8-HxCDF	*57*		*26 - 152*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,7,8,9-HxCDF	*55*		*29 - 147*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-2,3,4,6,7,8-HxCDF	*56*		*28 - 136*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*23 - 140*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*56*		*28 - 143*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*12/12/19 08:56*	*12/19/19 20:31*	*1*
13C-OCDD	*63*		*17 - 157*	*12/12/19 08:56*	*12/19/19 20:31*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*92*		*35 - 197*	*12/12/19 08:56*	*12/19/19 20:31*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**29**		2.1	0.25	pg/g	☼	12/12/19 08:56	12/19/19 23:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/12/19 08:56*	*12/19/19 23:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*102*		*35 - 197*	*12/12/19 08:56*	*12/19/19 23:14*	*1*

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 42.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**31**		2.3	0.50	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,7,8-PeCDD	**0.88**	**J q**	12	0.49	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,7,8-PeCDF	**3.9**	**J**	12	0.48	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
2,3,4,7,8-PeCDF	**2.1**	**J q**	12	0.52	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) **Lab Sample ID: 320-56953-8**
Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 42.6**

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDD	1.9	J	12	0.40	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,6,7,8-HxCDD	4.4	J	12	0.45	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,7,8,9-HxCDD	5.7	J	12	0.38	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,4,7,8-HxCDF	5.6	J	12	0.45	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,6,7,8-HxCDF	2.6	J	12	0.45	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,7,8,9-HxCDF	0.39	J	12	0.33	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
2,3,4,6,7,8-HxCDF	0.92	J q	12	0.34	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,4,6,7,8-HpCDD	180	B	12	3.5	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,4,6,7,8-HpCDF	20	B	12	0.90	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
1,2,3,4,7,8,9-HpCDF	2.2	J B	12	1.1	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
OCDD	4700	B	23	3.4	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
OCDF	190	B	23	0.40	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total TCDD	39	q	2.3	0.50	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total TCDF	180	q	2.3	0.79	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total PeCDD	13	q	12	0.49	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total PeCDF	16	q	12	0.50	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total HxCDD	96		12	0.41	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total HxCDF	29	q	12	0.39	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total HpCDD	610	B	12	3.5	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1
Total HpCDF	65	B	12	1.0	pg/g	☼	12/12/19 08:56	12/19/19 21:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-2,3,7,8-TCDF	*60*		*24 - 169*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,6,7,8-HxCDD	*62*		*28 - 130*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,4,7,8-HxCDF	*62*		*26 - 152*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-2,3,4,6,7,8-HxCDF	*59*		*28 - 136*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*28 - 143*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*12/12/19 08:56*	*12/19/19 21:19*	*1*
13C-OCDD	*72*		*17 - 157*	*12/12/19 08:56*	*12/19/19 21:19*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*109*		*35 - 197*	*12/12/19 08:56*	*12/19/19 21:19*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	110		2.3	0.51	pg/g	☼	12/12/19 08:56	12/19/19 23:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*12/12/19 08:56*	*12/19/19 23:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*12/12/19 08:56*	*12/19/19 23:52*	*1*

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**8.6**		2.2	0.34	pg/g	1	**8.6**	1613B
1,2,3,7,8-PeCDD	ND		11	0.51	pg/g	1	0.26	1613B
1,2,3,7,8-PeCDF	**1.1**	**J q**	11	0.33	pg/g	0.03	**0.033**	1613B
2,3,4,7,8-PeCDF	**0.74**	**J q**	11	0.33	pg/g	0.3	**0.22**	1613B
1,2,3,4,7,8-HxCDD	**1.1**	**J**	11	0.32	pg/g	0.1	**0.11**	1613B
1,2,3,6,7,8-HxCDD	**1.9**	**J**	11	0.34	pg/g	0.1	**0.19**	1613B
1,2,3,7,8,9-HxCDD	**2.7**	**J**	11	0.29	pg/g	0.1	**0.27**	1613B
1,2,3,4,7,8-HxCDF	**1.3**	**J**	11	0.33	pg/g	0.1	**0.13**	1613B
1,2,3,6,7,8-HxCDF	**1.1**	**J**	11	0.32	pg/g	0.1	**0.11**	1613B
1,2,3,7,8,9-HxCDF	**0.78**	**J**	11	0.24	pg/g	0.1	**0.078**	1613B
2,3,4,6,7,8-HxCDF	**0.60**	**J**	11	0.24	pg/g	0.1	**0.060**	1613B
1,2,3,4,6,7,8-HpCDD	**61**	**B**	11	1.5	pg/g	0.01	**0.61**	1613B
1,2,3,4,6,7,8-HpCDF	**4.8**	**J B**	11	0.43	pg/g	0.01	**0.048**	1613B
1,2,3,4,7,8,9-HpCDF	**1.3**	**J q B**	11	0.50	pg/g	0.01	**0.013**	1613B
OCDD	**2400**	**B**	22	1.8	pg/g	0.0003	**0.72**	1613B
OCDF	**44**	**B**	22	0.42	pg/g	0.0003	**0.013**	1613B
2,3,7,8-TCDF - RA	**28**		2.2	0.30	pg/g	0.1	**2.8**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		14	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	**1.1**	**J**	1.5	0.18	pg/g	1	**1.1**	1613B
1,2,3,7,8-PeCDD	ND		7.6	0.28	pg/g	1	0.14	1613B
1,2,3,7,8-PeCDF	ND		7.6	0.16	pg/g	0.03	0.0024	1613B
2,3,4,7,8-PeCDF	ND		7.6	0.16	pg/g	0.3	0.024	1613B
1,2,3,4,7,8-HxCDD	**0.40**	**J q**	7.6	0.19	pg/g	0.1	**0.040**	1613B
1,2,3,6,7,8-HxCDD	**0.59**	**J**	7.6	0.20	pg/g	0.1	**0.059**	1613B
1,2,3,7,8,9-HxCDD	**1.3**	**J**	7.6	0.17	pg/g	0.1	**0.13**	1613B
1,2,3,4,7,8-HxCDF	ND		7.6	0.12	pg/g	0.1	0.0060	1613B
1,2,3,6,7,8-HxCDF	**0.15**	**J q**	7.6	0.12	pg/g	0.1	**0.015**	1613B
1,2,3,7,8,9-HxCDF	ND		7.6	0.097	pg/g	0.1	0.0049	1613B
2,3,4,6,7,8-HxCDF	ND		7.6	0.093	pg/g	0.1	0.0047	1613B
1,2,3,4,6,7,8-HpCDD	**16**	**B**	7.6	0.54	pg/g	0.01	**0.16**	1613B
1,2,3,4,6,7,8-HpCDF	**0.64**	**J B**	7.6	0.19	pg/g	0.01	**0.0064**	1613B
1,2,3,4,7,8,9-HpCDF	ND		7.6	0.21	pg/g	0.01	0.0011	1613B
OCDD	**430**	**B**	15	0.48	pg/g	0.0003	**0.13**	1613B
OCDF	**5.4**	**J B**	15	0.27	pg/g	0.0003	**0.0016**	1613B
2,3,7,8-TCDF - RA	**2.7**		1.5	0.14	pg/g	0.1	**0.27**	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) (Continued) Lab Sample ID: 320-56953-2

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		2.1	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	ND		1.2	0.10	pg/g	1	0.050	1613B
2,3,7,8-TCDF	ND		1.2	0.073	pg/g	0.1	0.0037	1613B
1,2,3,7,8-PeCDD	ND		6.0	0.15	pg/g	1	0.075	1613B
1,2,3,7,8-PeCDF	ND		6.0	0.11	pg/g	0.03	0.0017	1613B
2,3,4,7,8-PeCDF	ND		6.0	0.12	pg/g	0.3	0.018	1613B
1,2,3,4,7,8-HxCDD	**0.19**	**J q**	6.0	0.11	pg/g	0.1	**0.019**	1613B
1,2,3,6,7,8-HxCDD	ND		6.0	0.11	pg/g	0.1	0.0055	1613B
1,2,3,7,8,9-HxCDD	ND		6.0	0.096	pg/g	0.1	0.0048	1613B
1,2,3,4,7,8-HxCDF	ND		6.0	0.092	pg/g	0.1	0.0046	1613B
1,2,3,6,7,8-HxCDF	ND		6.0	0.088	pg/g	0.1	0.0044	1613B
1,2,3,7,8,9-HxCDF	ND		6.0	0.071	pg/g	0.1	0.0036	1613B
2,3,4,6,7,8-HxCDF	ND		6.0	0.070	pg/g	0.1	0.0035	1613B
1,2,3,4,6,7,8-HpCDD	**1.4**	**J B**	6.0	0.11	pg/g	0.01	**0.014**	1613B
1,2,3,4,6,7,8-HpCDF	ND		6.0	0.15	pg/g	0.01	0.00075	1613B
1,2,3,4,7,8,9-HpCDF	ND		6.0	0.17	pg/g	0.01	0.00085	1613B
OCDD	**36**	**B**	12	0.18	pg/g	0.0003	**0.011**	1613B
OCDF	ND		12	0.17	pg/g	0.0003	0.000026	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		0.22	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	TEQ	Method
2,3,7,8-TCDD	ND		1.8	0.34	pg/g	1	0.17	1613B
2,3,7,8-TCDF	ND		1.8	0.25	pg/g	0.1	0.013	1613B
1,2,3,7,8-PeCDD	ND		8.8	0.66	pg/g	1	0.33	1613B
1,2,3,7,8-PeCDF	ND		8.8	0.39	pg/g	0.03	0.0059	1613B
2,3,4,7,8-PeCDF	ND		8.8	0.41	pg/g	0.3	0.062	1613B
1,2,3,4,7,8-HxCDD	ND		8.8	0.51	pg/g	0.1	0.026	1613B
1,2,3,6,7,8-HxCDD	ND		8.8	0.54	pg/g	0.1	0.027	1613B
1,2,3,7,8,9-HxCDD	**2.6**	**J**	8.8	0.46	pg/g	0.1	**0.26**	1613B
1,2,3,4,7,8-HxCDF	ND		8.8	0.33	pg/g	0.1	0.017	1613B
1,2,3,6,7,8-HxCDF	ND		8.8	0.31	pg/g	0.1	0.016	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) (Continued) — Lab Sample ID: 320-56953-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
1,2,3,7,8,9-HxCDF	ND		8.8	0.26	pg/g	0.1	0.013	1613B
2,3,4,6,7,8-HxCDF	ND		8.8	0.24	pg/g	0.1	0.012	1613B
1,2,3,4,6,7,8-HpCDD	**39**	**B**	8.8	1.0	pg/g	0.01	**0.39**	1613B
1,2,3,4,6,7,8-HpCDF	ND		8.8	0.52	pg/g	0.01	0.0026	1613B
1,2,3,4,7,8,9-HpCDF	ND		8.8	0.70	pg/g	0.01	0.0035	1613B
OCDD	**890**	**B**	18	1.2	pg/g	0.0003	**0.27**	1613B
OCDF	**27**	**B**	18	0.62	pg/g	0.0003	**0.0081**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		1.6	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) — Lab Sample ID: 320-56953-5

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	**11**		2.4	0.33	pg/g	1	**11**	1613B
1,2,3,7,8-PeCDD	ND		12	0.40	pg/g	1	0.20	1613B
1,2,3,7,8-PeCDF	**1.1**	**J q**	12	0.29	pg/g	0.03	**0.033**	1613B
2,3,4,7,8-PeCDF	**0.77**	**J**	12	0.31	pg/g	0.3	**0.23**	1613B
1,2,3,4,7,8-HxCDD	**0.63**	**J q**	12	0.35	pg/g	0.1	**0.063**	1613B
1,2,3,6,7,8-HxCDD	**0.88**	**J**	12	0.37	pg/g	0.1	**0.088**	1613B
1,2,3,7,8,9-HxCDD	**2.4**	**J**	12	0.32	pg/g	0.1	**0.24**	1613B
1,2,3,4,7,8-HxCDF	**1.2**	**J**	12	0.20	pg/g	0.1	**0.12**	1613B
1,2,3,6,7,8-HxCDF	**0.41**	**J q**	12	0.21	pg/g	0.1	**0.041**	1613B
1,2,3,7,8,9-HxCDF	**0.61**	**J q**	12	0.16	pg/g	0.1	**0.061**	1613B
2,3,4,6,7,8-HxCDF	ND		12	0.16	pg/g	0.1	0.0080	1613B
1,2,3,4,6,7,8-HpCDD	**31**	**B**	12	0.95	pg/g	0.01	**0.31**	1613B
1,2,3,4,6,7,8-HpCDF	**1.7**	**J B**	12	0.27	pg/g	0.01	**0.017**	1613B
1,2,3,4,7,8,9-HpCDF	ND		12	0.32	pg/g	0.01	0.0016	1613B
OCDD	**720**	**B**	24	0.64	pg/g	0.0003	**0.22**	1613B
OCDF	**12**	**J B**	24	0.35	pg/g	0.0003	**0.0036**	1613B
2,3,7,8-TCDF - RA	**43**		2.4	0.30	pg/g	0.1	**4.3**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		17	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	13		1.9	0.41	pg/g	1	13	1613B
1,2,3,7,8-PeCDD	ND		9.7	0.71	pg/g	1	0.36	1613B
1,2,3,7,8-PeCDF	1.6	J q	9.7	0.46	pg/g	0.03	0.048	1613B
2,3,4,7,8-PeCDF	1.0	J	9.7	0.48	pg/g	0.3	0.30	1613B
1,2,3,4,7,8-HxCDD	0.98	J q	9.7	0.47	pg/g	0.1	0.098	1613B
1,2,3,6,7,8-HxCDD	1.5	J q	9.7	0.46	pg/g	0.1	0.15	1613B
1,2,3,7,8,9-HxCDD	2.3	J	9.7	0.41	pg/g	0.1	0.23	1613B
1,2,3,4,7,8-HxCDF	1.8	J q	9.7	0.39	pg/g	0.1	0.18	1613B
1,2,3,6,7,8-HxCDF	1.2	J	9.7	0.40	pg/g	0.1	0.12	1613B
1,2,3,7,8,9-HxCDF	ND		9.7	0.31	pg/g	0.1	0.016	1613B
2,3,4,6,7,8-HxCDF	ND		9.7	0.31	pg/g	0.1	0.016	1613B
1,2,3,4,6,7,8-HpCDD	57	B	9.7	1.5	pg/g	0.01	0.57	1613B
1,2,3,4,6,7,8-HpCDF	4.2	J q B	9.7	0.44	pg/g	0.01	0.042	1613B
1,2,3,4,7,8,9-HpCDF	ND		9.7	0.56	pg/g	0.01	0.0028	1613B
OCDD	2100	B	19	1.9	pg/g	0.0003	0.63	1613B
OCDF	35	B	19	0.59	pg/g	0.0003	0.011	1613B
2,3,7,8-TCDF - RA	50		1.9	0.27	pg/g	0.1	5.0	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		21	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	7.7		2.1	0.27	pg/g	1	7.7	1613B
1,2,3,7,8-PeCDD	ND		11	0.40	pg/g	1	0.20	1613B
1,2,3,7,8-PeCDF	0.70	J q	11	0.26	pg/g	0.03	0.021	1613B
2,3,4,7,8-PeCDF	0.60	J	11	0.27	pg/g	0.3	0.18	1613B
1,2,3,4,7,8-HxCDD	0.63	J q	11	0.34	pg/g	0.1	0.063	1613B
1,2,3,6,7,8-HxCDD	0.99	J	11	0.36	pg/g	0.1	0.099	1613B
1,2,3,7,8,9-HxCDD	2.5	J	11	0.31	pg/g	0.1	0.25	1613B
1,2,3,4,7,8-HxCDF	0.78	J	11	0.22	pg/g	0.1	0.078	1613B
1,2,3,6,7,8-HxCDF	0.33	J q	11	0.22	pg/g	0.1	0.033	1613B
1,2,3,7,8,9-HxCDF	ND		11	0.16	pg/g	0.1	0.0080	1613B
2,3,4,6,7,8-HxCDF	ND		11	0.16	pg/g	0.1	0.0080	1613B
1,2,3,4,6,7,8-HpCDD	31	B	11	0.84	pg/g	0.01	0.31	1613B
1,2,3,4,6,7,8-HpCDF	1.0	J B	11	0.29	pg/g	0.01	0.010	1613B
1,2,3,4,7,8,9-HpCDF	ND		11	0.36	pg/g	0.01	0.0018	1613B
OCDD	750	B	21	0.64	pg/g	0.0003	0.23	1613B
OCDF	9.2	J B	21	0.33	pg/g	0.0003	0.0028	1613B
2,3,7,8-TCDF - RA	29		2.1	0.25	pg/g	0.1	2.9	1613B

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) (Continued) Lab Sample ID: 320-56953-7

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		12	TEQ

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
2,3,7,8-TCDD	31		2.3	0.50	pg/g	1	31	1613B
1,2,3,7,8-PeCDD	0.88	J q	12	0.49	pg/g	1	0.88	1613B
1,2,3,7,8-PeCDF	3.9	J	12	0.48	pg/g	0.03	0.12	1613B
2,3,4,7,8-PeCDF	2.1	J q	12	0.52	pg/g	0.3	0.63	1613B
1,2,3,4,7,8-HxCDD	1.9	J	12	0.40	pg/g	0.1	0.19	1613B
1,2,3,6,7,8-HxCDD	4.4	J	12	0.45	pg/g	0.1	0.44	1613B
1,2,3,7,8,9-HxCDD	5.7	J	12	0.38	pg/g	0.1	0.57	1613B
1,2,3,4,7,8-HxCDF	5.6	J	12	0.45	pg/g	0.1	0.56	1613B
1,2,3,6,7,8-HxCDF	2.6	J	12	0.45	pg/g	0.1	0.26	1613B
1,2,3,7,8,9-HxCDF	0.39	J	12	0.33	pg/g	0.1	0.039	1613B
2,3,4,6,7,8-HxCDF	0.92	J q	12	0.34	pg/g	0.1	0.092	1613B
1,2,3,4,6,7,8-HpCDD	180	B	12	3.5	pg/g	0.01	1.8	1613B
1,2,3,4,6,7,8-HpCDF	20	B	12	0.90	pg/g	0.01	0.20	1613B
1,2,3,4,7,8,9-HpCDF	2.2	J B	12	1.1	pg/g	0.01	0.022	1613B
OCDD	4700	B	23	3.4	pg/g	0.0003	1.4	1613B
OCDF	190	B	23	0.40	pg/g	0.0003	0.057	1613B
2,3,7,8-TCDF - RA	110		2.3	0.51	pg/g	0.1	11	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	Method
Total Dioxin/Furan TEQ					pg/g		49	TEQ

TEF Reference:
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Default Detection Limits

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Prep: HRMS-Sox

Analyte	RL		Units
1,2,3,4,6,7,8-HpCDD	5.0		pg/g
1,2,3,4,6,7,8-HpCDF	5.0		pg/g
1,2,3,4,7,8,9-HpCDF	5.0		pg/g
1,2,3,4,7,8-HxCDD	5.0		pg/g
1,2,3,4,7,8-HxCDF	5.0		pg/g
1,2,3,6,7,8-HxCDD	5.0		pg/g
1,2,3,6,7,8-HxCDF	5.0		pg/g
1,2,3,7,8,9-HxCDD	5.0		pg/g
1,2,3,7,8,9-HxCDF	5.0		pg/g
1,2,3,7,8-PeCDD	5.0		pg/g
1,2,3,7,8-PeCDF	5.0		pg/g
2,3,4,6,7,8-HxCDF	5.0		pg/g
2,3,4,7,8-PeCDF	5.0		pg/g
2,3,7,8-TCDD	1.0		pg/g
2,3,7,8-TCDF	1.0		pg/g
OCDD	10		pg/g
OCDF	10		pg/g
Total HpCDD	5.0		pg/g
Total HpCDF	5.0		pg/g
Total HxCDD	5.0		pg/g
Total HxCDF	5.0		pg/g
Total PeCDD	5.0		pg/g
Total PeCDF	5.0		pg/g
Total TCDD	1.0		pg/g
Total TCDF	1.0		pg/g

Surrogate Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	37TCDD (35-197)
320-56953-1	11187072-120919-BN-SJSSA07	100
320-56953-1 - RA	11187072-120919-BN-SJSSA07(0-1)	103
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	104
320-56953-2 - RA	11187072-120919-BN-SJSSA07(1-2)	110
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	100
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	100
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	99
320-56953-5 - RA	11187072-120919-BN-SJSSA04(0-1)	109
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	102
320-56953-6 - RA	11187072-120919-BN-SJSSA04(1-2)	111
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	92
320-56953-7 - RA	11187072-120919-BN-SJSSA04(2-4)	102
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	109
320-56953-8 - RA	11187072-120919-BN-SJSSA04(4-6)	116
MB 320-344942/1-A	Method Blank	100

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	37TCDD (31-191)
LCS 320-344942/2-A	Lab Control Sample	106
LCSD 320-344942/3-A	Lab Control Sample Dup	88

Surrogate Legend

37TCDD = 37Cl4-2,3,7,8-TCDD

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
320-56953-1	11187072-120919-BN-SJSSA07	61	59	60	58	63	63	64	61
320-56953-1 - RA	11187072-120919-BN-SJSSA07(0-1)		68						
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	61	63	59	58	62	65	62	63
320-56953-2 - RA	11187072-120919-BN-SJSSA07(1-2)		69						
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	64	63	59	60	64	69	70	67
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	66	65	61	61	66	70	74	71
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	62	63	59	60	62	63	65	65
320-56953-5 - RA	11187072-120919-BN-SJSSA04(0-1)		67						
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	65	64	62	61	66	66	70	68
320-56953-6 - RA	11187072-120919-BN-SJSSA04(1-2)		75						
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	57	56	51	52	55	56	60	57
320-56953-7 - RA	11187072-120919-BN-SJSSA04(2-4)		65						
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	60	60	57	57	60	62	62	62
320-56953-8 - RA	11187072-120919-BN-SJSSA04(4-6)		65						
MB 320-344942/1-A	Method Blank	60	60	61	57	62	65	65	64

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
320-56953-1	11187072-120919-BN-SJSSA07	59	60	60	62	56	66	68
320-56953-1 - RA	11187072-120919-BN-SJSSA07(0-1)							
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	60	60	61	61	55	67	60
320-56953-2 - RA	11187072-120919-BN-SJSSA07(1-2)							
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	66	62	65	67	64	71	72
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	72	63	68	69	68	72	72
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	62	60	61	63	61	69	67
320-56953-5 - RA	11187072-120919-BN-SJSSA04(0-1)							
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	65	61	65	65	60	68	64
320-56953-6 - RA	11187072-120919-BN-SJSSA04(1-2)							
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	55	55	56	59	56	63	63
320-56953-7 - RA	11187072-120919-BN-SJSSA04(2-4)							

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)	
320-56953-8	11187072-120919-BN-SJSSA04	59	59	59	62	59	66	72	
320-56953-8 - RA	11187072-120919-BN-SJSSA04(4-6)								
MB 320-344942/1-A	Method Blank	63	57	60	61	61	65	64	

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-344942/2-A	Lab Control Sample	67	68	66	66	71	74	73	72
LCSD 320-344942/3-A	Lab Control Sample Dup	55	53	53	53	55	57	59	57

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)	
LCS 320-344942/2-A	Lab Control Sample	72	65	69	71	71	73	70	
LCSD 320-344942/3-A	Lab Control Sample Dup	55	54	56	58	56	61	63	

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 320-56953-1

Project/Site: San Jacinto River Waste Pits Superfund

OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-344942/1-A **Client Sample ID: Method Blank**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 346752 **Prep Batch: 344942**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.098	pg/g		12/12/19 08:56	12/19/19 13:23	1
2,3,7,8-TCDF	ND		1.0	0.078	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,7,8-PeCDD	ND		5.0	0.16	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,7,8-PeCDF	ND		5.0	0.14	pg/g		12/12/19 08:56	12/19/19 13:23	1
2,3,4,7,8-PeCDF	ND		5.0	0.14	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.11	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.11	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.096	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.089	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.088	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.071	pg/g		12/12/19 08:56	12/19/19 13:23	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.070	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,4,6,7,8-HpCDD	0.458	J	5.0	0.076	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,4,6,7,8-HpCDF	0.287	J	5.0	0.11	pg/g		12/12/19 08:56	12/19/19 13:23	1
1,2,3,4,7,8,9-HpCDF	0.344	J	5.0	0.14	pg/g		12/12/19 08:56	12/19/19 13:23	1
OCDD	2.41	J	10	0.11	pg/g		12/12/19 08:56	12/19/19 13:23	1
OCDF	1.80	J	10	0.15	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total TCDD	ND		1.0	0.098	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total TCDF	ND		1.0	0.078	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total PeCDD	ND		5.0	0.16	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total PeCDF	ND		5.0	0.14	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total HxCDD	ND		5.0	0.11	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total HxCDF	ND		5.0	0.089	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total HpCDD	0.593	J q	5.0	0.076	pg/g		12/12/19 08:56	12/19/19 13:23	1
Total HpCDF	0.631	J	5.0	0.12	pg/g		12/12/19 08:56	12/19/19 13:23	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-2,3,7,8-TCDF	*60*		*24 - 169*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,7,8-PeCDD	*61*		*25 - 181*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-2,3,4,7,8-PeCDF	*62*		*21 - 178*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,6,7,8-HxCDF	*63*		*26 - 123*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*61*		*23 - 140*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*12/12/19 08:56*	*12/19/19 13:23*	*1*
13C-OCDD	*64*		*17 - 157*	*12/12/19 08:56*	*12/19/19 13:23*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*12/12/19 08:56*	*12/19/19 13:23*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-344942/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Sediment — **Prep Type: Total/NA**
Analysis Batch: 346752 — **Prep Batch: 344942**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,3,7,8-TCDD			20.0	20.7		pg/g		104	67 - 158		
2,3,7,8-TCDF			20.0	22.0		pg/g		110	75 - 158		
1,2,3,7,8-PeCDD			100	99.6		pg/g		100	70 - 142		
1,2,3,7,8-PeCDF			100	104		pg/g		104	80 - 134		
2,3,4,7,8-PeCDF			100	98.8		pg/g		99	68 - 160		
1,2,3,4,7,8-HxCDD			100	95.3		pg/g		95	70 - 164		
1,2,3,6,7,8-HxCDD			100	105		pg/g		105	76 - 134		
1,2,3,7,8,9-HxCDD			100	98.0		pg/g		98	64 - 162		
1,2,3,4,7,8-HxCDF			100	101		pg/g		101	72 - 134		
1,2,3,6,7,8-HxCDF			100	107		pg/g		107	84 - 130		
1,2,3,7,8,9-HxCDF			100	110		pg/g		110	78 - 130		
2,3,4,6,7,8-HxCDF			100	108		pg/g		108	70 - 156		
1,2,3,4,6,7,8-HpCDD			100	101		pg/g		101	70 - 140		
1,2,3,4,6,7,8-HpCDF			100	105		pg/g		105	82 - 122		
1,2,3,4,7,8,9-HpCDF			100	103		pg/g		103	78 - 138		
OCDD			200	186		pg/g		93	78 - 144		
OCDF			200	208		pg/g		104	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*67*		*20 - 175*
13C-2,3,7,8-TCDF	*68*		*22 - 152*
13C-1,2,3,7,8-PeCDD	*66*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*66*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*71*		*13 - 328*
13C-1,2,3,4,7,8-HxCDD	*74*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*73*		*25 - 163*
13C-1,2,3,4,7,8-HxCDF	*72*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*72*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*65*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*69*		*22 - 176*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*71*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*73*		*20 - 186*
13C-OCDD	*70*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*106*		*31 - 191*

Lab Sample ID: LCSD 320-344942/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Sediment — **Prep Type: Total/NA**
Analysis Batch: 346752 — **Prep Batch: 344942**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			20.0	19.5		pg/g		97	67 - 158	6	50
2,3,7,8-TCDF			20.0	21.1		pg/g		106	75 - 158	4	50
1,2,3,7,8-PeCDD			100	100		pg/g		100	70 - 142	0	50
1,2,3,7,8-PeCDF			100	102		pg/g		102	80 - 134	2	50
2,3,4,7,8-PeCDF			100	97.9		pg/g		98	68 - 160	1	50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-344942/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Sediment **Prep Type: Total/NA**
Analysis Batch: 346752 **Prep Batch: 344942**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD			100	96.9		pg/g		97	70 - 164	2	50
1,2,3,6,7,8-HxCDD			100	101		pg/g		101	76 - 134	4	50
1,2,3,7,8,9-HxCDD			100	96.3		pg/g		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF			100	98.3		pg/g		98	72 - 134	3	50
1,2,3,6,7,8-HxCDF			100	105		pg/g		105	84 - 130	2	50
1,2,3,7,8,9-HxCDF			100	106		pg/g		106	78 - 130	4	50
2,3,4,6,7,8-HxCDF			100	106		pg/g		106	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD			100	99.1		pg/g		99	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF			100	107		pg/g		107	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF			100	99.8		pg/g		100	78 - 138	3	50
OCDD			200	199		pg/g		99	78 - 144	7	50
OCDF			200	199		pg/g		99	63 - 170	4	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*55*		*20 - 175*
13C-2,3,7,8-TCDF	*53*		*22 - 152*
13C-1,2,3,7,8-PeCDD	*53*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*53*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*55*		*13 - 328*
13C-1,2,3,4,7,8-HxCDD	*57*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*59*		*25 - 163*
13C-1,2,3,4,7,8-HxCDF	*57*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*55*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*54*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*56*		*22 - 176*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*56*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*20 - 186*
13C-OCDD	*63*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*88*		*31 - 191*

Specialty Organics

Prep Batch: 344942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56953-1 - RA	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	HRMS-Sox	
320-56953-1	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	HRMS-Sox	
320-56953-2 - RA	11187072-120919-BN-SJSSA07(1-2)	Total/NA	Sediment	HRMS-Sox	
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	Total/NA	Sediment	HRMS-Sox	
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	Total/NA	Sediment	HRMS-Sox	
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	Total/NA	Sediment	HRMS-Sox	
320-56953-5 - RA	11187072-120919-BN-SJSSA04(0-1)	Total/NA	Sediment	HRMS-Sox	
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	Total/NA	Sediment	HRMS-Sox	
320-56953-6 - RA	11187072-120919-BN-SJSSA04(1-2)	Total/NA	Sediment	HRMS-Sox	
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	Total/NA	Sediment	HRMS-Sox	
320-56953-7 - RA	11187072-120919-BN-SJSSA04(2-4)	Total/NA	Sediment	HRMS-Sox	
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	Total/NA	Sediment	HRMS-Sox	
320-56953-8 - RA	11187072-120919-BN-SJSSA04(4-6)	Total/NA	Sediment	HRMS-Sox	
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	Total/NA	Sediment	HRMS-Sox	
MB 320-344942/1-A	Method Blank	Total/NA	Sediment	HRMS-Sox	
LCS 320-344942/2-A	Lab Control Sample	Total/NA	Sediment	HRMS-Sox	
LCSD 320-344942/3-A	Lab Control Sample Dup	Total/NA	Sediment	HRMS-Sox	

Analysis Batch: 346752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56953-1	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	1613B	344942
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	Total/NA	Sediment	1613B	344942
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	Total/NA	Sediment	1613B	344942
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	Total/NA	Sediment	1613B	344942
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	Total/NA	Sediment	1613B	344942
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	Total/NA	Sediment	1613B	344942
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	Total/NA	Sediment	1613B	344942
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	Total/NA	Sediment	1613B	344942
MB 320-344942/1-A	Method Blank	Total/NA	Sediment	1613B	344942
LCS 320-344942/2-A	Lab Control Sample	Total/NA	Sediment	1613B	344942
LCSD 320-344942/3-A	Lab Control Sample Dup	Total/NA	Sediment	1613B	344942

Analysis Batch: 346764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56953-1 - RA	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	1613B	344942
320-56953-2 - RA	11187072-120919-BN-SJSSA07(1-2)	Total/NA	Sediment	1613B	344942
320-56953-5 - RA	11187072-120919-BN-SJSSA04(0-1)	Total/NA	Sediment	1613B	344942
320-56953-6 - RA	11187072-120919-BN-SJSSA04(1-2)	Total/NA	Sediment	1613B	344942
320-56953-7 - RA	11187072-120919-BN-SJSSA04(2-4)	Total/NA	Sediment	1613B	344942
320-56953-8 - RA	11187072-120919-BN-SJSSA04(4-6)	Total/NA	Sediment	1613B	344942

General Chemistry

Analysis Batch: 344997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56953-1	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	D 2216	
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	Total/NA	Sediment	D 2216	
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	Total/NA	Sediment	D 2216	
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	Total/NA	Sediment	D 2216	
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	Total/NA	Sediment	D 2216	
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	Total/NA	Sediment	D 2216	

General Chemistry (Continued)

Analysis Batch: 344997 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	Total/NA	Sediment	D 2216	
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	Total/NA	Sediment	D 2216	
320-56953-1 DU	11187072-120919-BN-SJSSA07(0-1)	Total/NA	Sediment	D 2216	

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 43.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 21:19	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 15:46	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Date Collected: 12/09/19 15:35 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 64.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 20:41	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 16:33	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 81.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 17:21	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Date Collected: 12/09/19 15:40 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 56.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 18:09	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 41.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 21:57	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 18:56	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Date Collected: 12/09/19 16:15 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 50.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 22:36	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 19:44	ALM	TAL SAC

Lab Chronicle

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 46.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 23:14	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 20:31	ALM	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	344997	12/12/19 12:52	AA	TAL SAC

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Date Collected: 12/09/19 16:20 **Matrix: Sediment**
Date Received: 12/11/19 09:30 **Percent Solids: 42.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B	RA	1	346764	12/19/19 23:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			344942	12/12/19 08:56	JMH	TAL SAC
Total/NA	Analysis	1613B		1	346752	12/19/19 21:19	ALM	TAL SAC

Laboratory References:
TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704399	05-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,6,7,8-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8,9-HpCDF
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,4,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8,9-HxCDF
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDD
1613B	HRMS-Sox	Sediment	1,2,3,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,4,6,7,8-HxCDF
1613B	HRMS-Sox	Sediment	2,3,4,7,8-PeCDF
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDD
1613B	HRMS-Sox	Sediment	2,3,7,8-TCDF
1613B	HRMS-Sox	Sediment	OCDD
1613B	HRMS-Sox	Sediment	OCDF
1613B	HRMS-Sox	Sediment	Total HpCDD
1613B	HRMS-Sox	Sediment	Total HpCDF
1613B	HRMS-Sox	Sediment	Total HxCDD
1613B	HRMS-Sox	Sediment	Total HxCDF
1613B	HRMS-Sox	Sediment	Total PeCDD
1613B	HRMS-Sox	Sediment	Total PeCDF
1613B	HRMS-Sox	Sediment	Total TCDD
1613B	HRMS-Sox	Sediment	Total TCDF
D 2216		Sediment	Percent Moisture
D 2216		Sediment	Percent Solids

Laboratory: Eurofins TestAmerica, Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704528-15-2	03-31-20

Method Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
TEQ	Total TEQ Calculation	TAL SOP	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
HRMS-Sox	Soxhlet Extraction	EPA	TAL SAC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
ASTM = ASTM International

EPA = US Environmental Protection Agency

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: GHD Services Inc. Job ID: 320-56953-1
Project/Site: San Jacinto River Waste Pits Superfund

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56953-1	11187072-120919-BN-SJSSA07(0-1)	Sediment	12/09/19 15:35	12/11/19 09:30	
320-56953-2	11187072-120919-BN-SJSSA07(1-2)	Sediment	12/09/19 15:35	12/11/19 09:30	
320-56953-3	11187072-120919-BN-SJSSA07(2-4)	Sediment	12/09/19 15:40	12/11/19 09:30	
320-56953-4	11187072-120919-BN-SJSSA07(4-6)	Sediment	12/09/19 15:40	12/11/19 09:30	
320-56953-5	11187072-120919-BN-SJSSA04(0-1)	Sediment	12/09/19 16:15	12/11/19 09:30	
320-56953-6	11187072-120919-BN-SJSSA04(1-2)	Sediment	12/09/19 16:15	12/11/19 09:30	
320-56953-7	11187072-120919-BN-SJSSA04(2-4)	Sediment	12/09/19 16:20	12/11/19 09:30	
320-56953-8	11187072-120919-BN-SJSSA04(4-6)	Sediment	12/09/19 16:20	12/11/19 09:30	

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Analysis Batch Number: 345037

Lab Sample ID: IC 320-345037/4 Client Sample ID:

Date Analyzed: 12/12/19 12:16 Lab File ID: 12DE193D5_4.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,4,7,8-PeCDF	23.41	Peak assignment corrected	stephensk	12/12/19 13:35
13C-1,2,3,4,7,8-HxCDD	31.55	Peak assignment corrected	stephensk	12/12/19 13:36
13C-1,2,3,4,7,8,9-HpCDF	34.72	Peak assignment corrected	stephensk	12/12/19 13:36

Lab Sample ID: IC 320-345037/6 Client Sample ID:

Date Analyzed: 12/12/19 13:51 Lab File ID: 12DE193D5_6.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,4,7,8-PeCDF	23.42	Peak assignment corrected	stephensk	12/12/19 14:41
13C-1,2,3,4,7,8-HxCDD	31.55	Peak assignment corrected	stephensk	12/12/19 14:41
13C-1,2,3,4,7,8,9-HpCDF	34.72	Peak assignment corrected	stephensk	12/12/19 14:41

Lab Sample ID: IC 320-345037/7 Client Sample ID:

Date Analyzed: 12/12/19 14:39 Lab File ID: 12DE193D5_7.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-2,3,4,7,8-PeCDF	23.42	Peak assignment corrected	stephensk	12/12/19 15:48
13C-1,2,3,4,7,8-HxCDD	31.55	Peak assignment corrected	stephensk	12/12/19 15:48
13C-1,2,3,4,7,8,9-HpCDF	34.72	Peak assignment corrected	stephensk	12/12/19 15:49

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Analysis Batch Number: 346752

Lab Sample ID: MB 320-344942/1-A Client Sample ID:

Date Analyzed: 12/19/19 13:23 Lab File ID: 19DE193D5_4.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,6,7,8-HpCDF	33.64	Split Peak	dadunj	12/20/19 14:10
1,2,3,4,6,7,8-HpCDD	34.42	Split Peak	dadunj	12/20/19 14:11
1,2,3,4,7,8,9-HpCDF	34.70	Split Peak	dadunj	12/20/19 14:11

Lab Sample ID: 320-56953-1 Client Sample ID: 11187072-120919-BN-SJSSA07(0-1)

Date Analyzed: 12/19/19 15:46 Lab File ID: 19DE193D5_7.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,4,7,8-PeCDF	23.38	Assign Peak	dadunj	12/20/19 14:14
1,2,3,4,7,8-HxCDF	30.21	Baseline	dadunj	12/20/19 14:15
1,2,3,6,7,8-HxCDF	30.43	Baseline	dadunj	12/20/19 14:15
2,3,4,6,7,8-HxCDF	31.34	Split Peak	dadunj	12/20/19 14:15
1,2,3,7,8,9-HxCDD	31.98	Baseline	dadunj	12/20/19 14:16
1,2,3,4,6,7,8-HpCDF	33.64	Split Peak	dadunj	12/20/19 14:16
1,2,3,4,7,8,9-HpCDF	34.71	Split Peak	dadunj	12/20/19 14:16

Lab Sample ID: 320-56953-2 Client Sample ID: 11187072-120919-BN-SJSSA07(1-2)

Date Analyzed: 12/19/19 16:33 Lab File ID: 19DE193D5_8.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	17.13	Split Peak	dadunj	12/20/19 14:18
1,2,3,7,8,9-HxCDD	31.96	Split Peak	dadunj	12/20/19 14:19
1,2,3,4,6,7,8-HpCDF	33.64	Split Peak	dadunj	12/20/19 14:20

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Analysis Batch Number: 346752

Lab Sample ID: 320-56953-3 Client Sample ID: 11187072-120919-BN-SJSSA07(2-4)

Date Analyzed: 12/19/19 17:21 Lab File ID: 19DE193D5_9.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,6,7,8-HxCDD		Invalid Compound ID	dadunj	12/20/19 14:22
1,2,3,4,7,8-HxCDD	31.53	Split Peak	dadunj	12/20/19 14:22

Lab Sample ID: 320-56953-4 Client Sample ID: 11187072-120919-BN-SJSSA07(4-6)

Date Analyzed: 12/19/19 18:09 Lab File ID: 19DE193D5_10.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8,9-HxCDD	31.95	Split Peak	dadunj	12/20/19 14:24

Lab Sample ID: 320-56953-5 Client Sample ID: 11187072-120919-BN-SJSSA04(0-1)

Date Analyzed: 12/19/19 18:56 Lab File ID: 19DE193D5_11.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	17.81	Split Peak	dadunj	12/20/19 14:26
2,3,4,7,8-PeCDF	23.36	Assign Peak	dadunj	12/20/19 14:27
1,2,3,4,7,8-HxCDF	30.21	Baseline	dadunj	12/20/19 14:28
1,2,3,6,7,8-HxCDF	30.39	Baseline	dadunj	12/20/19 14:28
1,2,3,4,7,8-HxCDD	31.51	Invalid Compound ID	dadunj	12/20/19 14:29
1,2,3,6,7,8-HxCDD	31.63	Invalid Compound ID	dadunj	12/20/19 14:29
1,2,3,7,8,9-HxCDF	32.15	Baseline	dadunj	12/20/19 14:28
1,2,3,4,6,7,8-HpCDF	33.63	Split Peak	dadunj	12/20/19 14:30

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Analysis Batch Number: 346752

Lab Sample ID: 320-56953-6 Client Sample ID: 11187072-120919-BN-SJSSA04(1-2)

Date Analyzed: 12/19/19 19:44 Lab File ID: 19DE193D5_12.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	17.79	Split Peak	dadunj	12/20/19 14:32
1,2,3,7,8-PeCDF	22.06	Baseline	dadunj	12/20/19 14:33
2,3,4,7,8-PeCDF	23.40	Baseline	dadunj	12/20/19 14:33
1,2,3,4,7,8-HxCDF	30.23	Baseline	dadunj	12/20/19 14:34
1,2,3,4,7,8-HxCDD	31.53	Split Peak	dadunj	12/20/19 14:35
1,2,3,6,7,8-HxCDD	31.63	Invalid Compound ID	dadunj	12/20/19 14:35
1,2,3,7,8,9-HxCDD	31.98	Split Peak	dadunj	12/20/19 14:35
1,2,3,4,6,7,8-HpCDF	33.63	Split Peak	dadunj	12/20/19 14:35

Lab Sample ID: 320-56953-7 Client Sample ID: 11187072-120919-BN-SJSSA04(2-4)

Date Analyzed: 12/19/19 20:31 Lab File ID: 19DE193D5_13.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	17.81	Split Peak	dadunj	12/20/19 14:38
2,3,4,7,8-PeCDF	23.34	Assign Peak	dadunj	12/20/19 14:39
1,2,3,4,7,8-HxCDF	30.21	Split Peak	dadunj	12/20/19 14:40
1,2,3,6,7,8-HxCDF	30.39	Split Peak	dadunj	12/20/19 14:40
1,2,3,4,7,8-HxCDD	31.54	Invalid Compound ID	dadunj	12/20/19 14:40
1,2,3,6,7,8-HxCDD	31.63	Invalid Compound ID	dadunj	12/20/19 14:40

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Analysis Batch Number: 346752

Lab Sample ID: 320-56953-8 Client Sample ID: 11187072-120919-BN-SJSSA04(4-6)

Date Analyzed: 12/19/19 21:19 Lab File ID: 19DE193D5_14.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD	17.81	Split Peak	dadunj	12/20/19 14:43
1,2,3,7,8-PeCDF	22.05	Split Peak	dadunj	12/20/19 14:43
2,3,4,6,7,8-HxCDF	31.31	Split Peak	dadunj	12/20/19 14:44
1,2,3,7,8,9-HxCDD	31.96	Split Peak	dadunj	12/20/19 14:45
1,2,3,7,8,9-HxCDF	32.16	Invalid Compound ID	dadunj	12/20/19 14:45
1,2,3,4,6,7,8-HpCDF	33.63	Split Peak	dadunj	12/20/19 14:45

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HRDXNCP_00038	10/16/19	10/16/18	C14, Lot STBH5862	6 mL	HRDXNCP_00037	1.2 mL	13C-2,3,7,8-TCDD	40 pg/uL
							13C-2,3,7,8-TCDF	40 pg/uL
							2,3,7,8-TCDD	40 pg/uL
							2,3,7,8-TCDF	40 pg/uL
.HRDXNCP_00037	03/31/25		CIL, Lot ER03111502		(Purchased Reagent)		13C-2,3,7,8-TCDD	200 ng/mL
							13C-2,3,7,8-TCDF	200 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
HRDXNCP_00040	08/30/20	08/30/19	C14, Lot STBH7678	6 mL	HRDXNCP_00039	1.2 mL	1,2,3,4,6,7,9-HpCDD	40 pg/uL
							1,2,3,4,6,7-HxCDD	40 pg/uL
							1,2,3,4,6,8-HxCDF	40 pg/uL
							1,2,3,4,8,9-HxCDF	40 pg/uL
							1,2,3,7-TCDD	40 pg/uL
							1,2,3,8,9-PeCDD	40 pg/uL
							1,2,3,8,9-PeCDF	40 pg/uL
							1,2,3,9-TCDD	40 pg/uL
							1,2,3,9-TCDF	40 pg/uL
							1,2,4,6,7,9-HxCDD	40 pg/uL
							1,2,4,7,9-PeCDD	40 pg/uL
							1,2,8,9-TCDD	40 pg/uL
							1,2,8,9-TCDF	40 pg/uL
							1,3,4,6,8-PeCDF	40 pg/uL
							1,3,6,8-TCDD	40 pg/uL
							1,3,6,8-TCDF	40 pg/uL
							13C-2,3,7,8-TCDD	40 pg/uL
							13C-2,3,7,8-TCDF	40 pg/uL
							2,3,4,7-TCDF	40 pg/uL
							2,3,7,8-TCDD	40 pg/uL
							2,3,7,8-TCDF	40 pg/uL
.HRDXNCP_00039	03/31/25		CIL, Lot ER03111502		(Purchased Reagent)		1,2,3,4,6,7,9-HpCDD	200 ng/mL
							1,2,3,4,6,7-HxCDD	200 ng/mL
							1,2,3,4,6,8-HxCDF	200 ng/mL
							1,2,3,4,8,9-HxCDF	200 ng/mL
							1,2,3,7-TCDD	200 ng/mL
							1,2,3,8,9-PeCDD	200 ng/mL
							1,2,3,8,9-PeCDF	200 ng/mL
							1,2,3,9-TCDD	200 ng/mL
							1,2,3,9-TCDF	200 ng/mL
							1,2,4,6,7,9-HxCDD	200 ng/mL
							1,2,4,7,9-PeCDD	200 ng/mL
							1,2,8,9-TCDD	200 ng/mL
							1,2,8,9-TCDF	200 ng/mL
							1,3,4,6,8-PeCDF	200 ng/mL
							1,3,6,8-TCDD	200 ng/mL
							1,3,6,8-TCDF	200 ng/mL
							13C-2,3,7,8-TCDD	200 ng/mL
							13C-2,3,7,8-TCDF	200 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,4,7-TCDF	200 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
HRDXNIC_00042	04/29/20	07/02/19	C14, Lot STBH7678	0.5 mL	HRDXNIDA_00303	0.125 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.25 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNSU_00196	0.05 mL	37Cl4-2,3,7,8-TCDD	40 ng/mL
					HRDXNTA_00102	0.5 mL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20	CIL, Lot ER111010-01			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24	CIL, Lot ER08101404			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26	CIL, Lot ER09131601			(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26	CIL, Lot ER03031601			(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26	CIL, Lot ER02241603			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20	CIL, Lot ER100610-01			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20	CIL, Lot ER100610-02			(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24	CIL, Lot ER08041401			(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21	CIL, Lot ER012111-01			(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28	CIL, Lot ER03151801			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27	CIL, Lot ER04051701			(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25	CIL, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00102	03/01/25	Wellington Labs, Lot 13PAR0418			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
HRDXNIDA_00406	11/30/20	12/02/19	Acetone, Lot 0000236139	500 mL	HRDXNIDA_00364	5 mL	13C-1,2,3,4,6,7,8-HpCDD	2 pg/uL
							13C-1,2,3,4,6,7,8-HpCDF	2 pg/uL
							13C-2,3,7,8-TCDF	2 pg/uL
							13C-2,3,7,8-TCDD	2 pg/uL
							13C-1,2,3,6,7,8-HxCDF	2 pg/uL
							13C-1,2,3,7,8,9-HxCDF	2 pg/uL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-2,3,4,6,7,8-HxCDF	2 pg/uL
							13C-1,2,3,7,8-PeCDD	2 pg/uL
							13C-1,2,3,7,8-PeCDF	2 pg/uL
							13C-1,2,3,6,7,8-HxCDD	2 pg/uL
							13C-OCDD	4 pg/uL
					HRDXNIDA_00379	2.5 mL	13C-1,2,3,4,7,8,9-HpCDF	2 pg/uL
							13C-2,3,4,7,8-PeCDF	2 pg/uL
							13C-1,2,3,4,7,8-HxCDD	2 pg/uL
							13C-1,2,3,4,7,8-HxCDF	2 pg/uL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIDA_00379	04/11/26	04/11/19	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00375	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00376	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00377	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00378	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00375	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00376	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00377	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00378	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
HRDXNIS_00121	10/09/20	10/09/19	C14, Lot STBJ0716	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
.HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
..HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
..HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HRDXNL2_00027	04/29/20	07/02/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00303	0.25 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.5 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00217	0.625 mL	37Cl4-2,3,7,8-TCDD	0.5 ng/mL
					HRDXNTA_00113	0.125 mL	1,2,3,4,6,7,8-HpCDD	2.5 ng/mL
							1,2,3,4,6,7,8-HpCDF	2.5 ng/mL
							1,2,3,4,7,8,9-HpCDF	2.5 ng/mL
							1,2,3,4,7,8-HxCDD	2.5 ng/mL
							1,2,3,4,7,8-HxCDF	2.5 ng/mL
							1,2,3,6,7,8-HxCDD	2.5 ng/mL
							1,2,3,6,7,8-HxCDF	2.5 ng/mL
							1,2,3,7,8,9-HxCDD	2.5 ng/mL
							1,2,3,7,8,9-HxCDF	2.5 ng/mL
							1,2,3,7,8-PeCDD	2.5 ng/mL
							1,2,3,7,8-PeCDF	2.5 ng/mL
							2,3,4,6,7,8-HxCDF	2.5 ng/mL
							2,3,4,7,8-PeCDF	2.5 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							OCDD	5 ng/mL
							OCDF	5 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26	CIL, Lot ER053107-02			(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27	CIL, Lot ER01061701			(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21	CIL, Lot ER102711-01			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20	CIL, Lot ER072810-02			(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00217	07/01/20	07/01/19	Isooctane, Lot 0000201867	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
...HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
....HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00113	05/29/20	05/29/19	Acetone, Lot 00000197752	25 mL	HRDXNTA_00092	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00092	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL3_00025	04/29/20	07/02/19	C14, Lot STBH7678	0.5 mL	HRDXNIDA_00303	0.125 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.25 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.5 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00217	1.25 mL	37Cl4-2,3,7,8-TCDD	2 ng/mL
					HRDXNTA_00113	0.25 mL	1,2,3,4,6,7,8-HpCDD	10 ng/mL
							1,2,3,4,6,7,8-HpCDF	10 ng/mL
							1,2,3,4,7,8,9-HpCDF	10 ng/mL
							1,2,3,4,7,8-HxCDD	10 ng/mL
							1,2,3,4,7,8-HxCDF	10 ng/mL
							1,2,3,6,7,8-HxCDD	10 ng/mL
							1,2,3,6,7,8-HxCDF	10 ng/mL
							1,2,3,7,8,9-HxCDD	10 ng/mL
							1,2,3,7,8,9-HxCDF	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8-PeCDD	10 ng/mL
							1,2,3,7,8-PeCDF	10 ng/mL
							2,3,4,6,7,8-HxCDF	10 ng/mL
							2,3,4,7,8-PeCDF	10 ng/mL
							2,3,7,8-TCDD	2 ng/mL
							2,3,7,8-TCDF	2 ng/mL
							OCDD	20 ng/mL
							OCDF	20 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNSU_00217	07/01/20	07/01/19	Isooctane, Lot 0000201867	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
...HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
....HRDXNSU_00187	07/31/25	CIL, Lot ER05211501			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00113	05/29/20	05/29/19	Acetone, Lot 00000197752	25 mL	HRDXNTA_00092	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00092	04/30/26	CIL, Lot ER02241602			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL4_00084	04/29/20	07/11/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00364	0.5 mL	13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.02 mL	37Cl4-2,3,7,8-TCDD	8 ng/mL
					HRDXNTA_00093	0.025 mL	2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
HRDXNL4_00086	04/29/20	10/03/19	C14, Lot STBH7678	1 mL	HRDXNIDA_00364	0.5 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIDA_00379	0.25 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIS_00117	1 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.025 mL	37Cl4-2,3,7,8-TCDD	10 ng/mL
					HRDXNTA_00093	0.025 mL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIDA_00379	04/11/26	04/11/19	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00375	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00376	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00377	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00378	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00375	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00376	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00377	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00378	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL5_00028	04/29/20	07/02/19	C14, Lot STBH7678	0.2 mL	HRDXNIDA_00303	0.05 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.1 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.2 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.02 mL	37Cl4-2,3,7,8-TCDD	40 ng/mL
					HRDXNTA_00093	0.02 mL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNL6_00024	04/29/20	07/02/19	C14, Lot STBH7678	0.2 mL	HRDXNIDA_00303	0.05 mL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00364	0.1 mL	13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-OCDD	200 ng/mL
					HRDXNIS_00117	0.2 mL	13C-1,2,3,7,8,9-HxCDD	100 ng/mL
							13C-1,2,3,4-TCDD	100 ng/mL
					HRDXNSU_00196	0.1 mL	37Cl4-2,3,7,8-TCDD	200 ng/mL
					HRDXNTA_00093	0.1 mL	1,2,3,4,6,7,8-HpCDD	1000 ng/mL
							1,2,3,4,6,7,8-HpCDF	1000 ng/mL
							1,2,3,4,7,8,9-HpCDF	1000 ng/mL
							1,2,3,4,7,8-HxCDD	1000 ng/mL
							1,2,3,4,7,8-HxCDF	1000 ng/mL
							1,2,3,6,7,8-HxCDD	1000 ng/mL
							1,2,3,6,7,8-HxCDF	1000 ng/mL
							1,2,3,7,8,9-HxCDD	1000 ng/mL
							1,2,3,7,8,9-HxCDF	1000 ng/mL
							1,2,3,7,8-PeCDD	1000 ng/mL
							1,2,3,7,8-PeCDF	1000 ng/mL
							2,3,4,6,7,8-HxCDF	1000 ng/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,4,7,8-PeCDF	1000 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
							OCDD	2000 ng/mL
							OCDF	2000 ng/mL
.HRDXNIDA_00303	07/31/20	09/20/17	Isooctane, Lot 0000134126	100 mL	HRDXNIDA_00247	0.8 mL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00297	0.8 mL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00301	0.8 mL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00302	0.8 mL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00247	03/31/26		CIL, Lot ER053107-02		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00297	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00301	10/31/21		CIL, Lot ER102711-01		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00302	07/31/20		CIL, Lot ER072810-02		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00364	11/30/20	01/28/19	Isooctane, Lot 0000192372	250 mL	HRDXNIDA_00075	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00353	1 mL	13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
					HRDXNIDA_00354	1 mL	13C-2,3,7,8-TCDF	0.2 ug/mL
					HRDXNIDA_00355	1 mL	13C-2,3,7,8-TCDD	0.2 ug/mL
					HRDXNIDA_00357	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00358	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00359	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00360	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
					HRDXNIDA_00361	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00362	1 mL	13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
					HRDXNIDA_00365	10 mL	13C-OCDD	0.4 ug/mL
..HRDXNIDA_00075	11/30/20		CIL, Lot ER111010-01		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00353	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
..HRDXNIDA_00354	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00355	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00357	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00358	12/31/20		CIL, Lot ER100610-01		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00359	12/31/20		CIL, Lot ER100610-02		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00360	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
..HRDXNIDA_00361	01/31/21		CIL, Lot ER012111-01		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00362	03/31/28		CIL, Lot ER03151801		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00365	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
.HRDXNIS_00117	04/29/20	04/29/19	C14, Lot STBH7678	100 mL	HRDXNIS_00112	2 mL	13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
							13C-1,2,3,4-TCDD	0.1 ug/mL
..HRDXNIS_00112	09/30/26	10/25/18	Isooctane, Lot 0000192372	10 mL	HRDXNIS_00110	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
					HRDXNIS_00111	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
...HRDXNIS_00110	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
...HRDXNIS_00111	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL
HRDXNSU_00223	12/02/20	12/02/19	Isooctane, Lot 0000221197	500 mL	HRDXNSU_00196	1000 uL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
.HRDXNSU_00196	07/31/25	09/10/18	Isooctane, Lot 0000192372	25 mL	HRDXNSU_00195	2 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00195	07/31/25	09/10/18	Isooctane, Lot 0000192372	10 mL	HRDXNSU_00187	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00187	07/31/25		CIL, Lot ER05211501		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
HRDXNTA_00117	10/18/20	10/18/19	Acetone, Lot 00000236139	25 mL	HRDXNTA_00093	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
.HRDXNTA_00093	04/30/26		CIL, Lot ER02241602		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2 ug/mL
							1,2,3,4,6,7,8-HpCDF	2 ug/mL
							1,2,3,4,7,8,9-HpCDF	2 ug/mL
							1,2,3,4,7,8-HxCDD	2 ug/mL
							1,2,3,4,7,8-HxCDF	2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,6,7,8-HxCDD	2 ug/mL
							1,2,3,6,7,8-HxCDF	2 ug/mL
							1,2,3,7,8,9-HxCDD	2 ug/mL
							1,2,3,7,8,9-HxCDF	2 ug/mL
							1,2,3,7,8-PeCDD	2 ug/mL
							1,2,3,7,8-PeCDF	2 ug/mL
							2,3,4,6,7,8-HxCDF	2 ug/mL
							2,3,4,7,8-PeCDF	2 ug/mL
							2,3,7,8-TCDD	0.4 ug/mL
							2,3,7,8-TCDF	0.4 ug/mL
							OCDD	4 ug/mL
							OCDF	4 ug/mL

Reagent

HRDXNCP_00039

received 8/30/19 KSS

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

PCDD/PCDF Window Defining and Isomer Specificity Mix (DB-5)

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number:	EDF-4147
Solution Lot:	ER03111502
Expiration Date:	March 2025
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

March 24, 2015
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Component	Chromatographic Purity	Concentration
1,3,6,8-Tetrachlorodibenzo-p-dioxin	99.9%	200.3 ± 2.0 ng/mL
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin	99.8%	200.6 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzo-p-dioxin	99.2%	200.3 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.9%	200.1 ± 2.0 ng/mL
1,2,3,9-Tetrachlorodibenzo-p-dioxin	99.6%	199.9 ± 2.0 ng/mL
1,2,8,9-Tetrachlorodibenzo-p-dioxin	99.2%	200.2 ± 2.0 ng/mL
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	98.9%	200.6 ± 2.0 ng/mL
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	99.0%	200.1 ± 2.0 ng/mL
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	98.7%	200.2 ± 2.0 ng/mL
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	99.0%	200.5 ± 2.0 ng/mL
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	98.9%	200.1 ± 2.0 ng/mL
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	99.8%	200.3 ± 2.0 ng/mL
1,3,6,8-Tetrachlorodibenzofuran	98.5%	200.1 ± 2.0 ng/mL
1,2,3,9-Tetrachlorodibenzofuran	98.2%	200.4 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzofuran	99.4%	200.0 ± 2.0 ng/mL
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	99.2%	200.5 ± 2.0 ng/mL
2,3,4,7-Tetrachlorodibenzofuran	98.7%	200.2 ± 2.0 ng/mL
1,2,8,9-Tetrachlorodibenzofuran	99.3%	199.9 ± 2.0 ng/mL
1,3,4,6,8-Pentachlorodibenzofuran	99.5%	200.6 ± 2.0 ng/mL
1,2,3,8,9-Pentachlorodibenzofuran	99.0%	200.5 ± 2.0 ng/mL
1,2,3,4,6,8-Hexachlorodibenzofuran	98.6%	200.5 ± 2.0 ng/mL
1,2,3,4,8,9-Hexachlorodibenzofuran	99.7%	200.5 ± 2.0 ng/mL
1,2,3,4,6,7,8-Heptachlorodibenzofuran	98.9%	200.6 ± 2.0 ng/mL
1,2,3,4,7,8,9-Heptachlorodibenzofuran	99.1%	200.1 ± 2.0 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Standard Solution Assay Parameters

Analysis Method:	GC/MS
Column:	DB-5ms 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	140°C to 200°C at 40°C/min 200°C to 300°C at 4°C/min
Injector Temp:	Cool-on-Column
Detector Temp:	280°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration ng/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
1,3,6,8-Tetrachlorodibenzo-p-dioxin	200 4	± 10%	1 6	≤ 5%
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin/ 2,3,7,8-Tetrachlorodibenzo-p-dioxin/ 1,2,3,9-Tetrachlorodibenzo-p-dioxin [1]	591.2	± 10%	1 6	≤ 5%
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	196 8	± 10%	2 7	≤ 5%
1,2,8,9-Tetrachlorodibenzo-p-dioxin	197 2	± 10%	2 8	≤ 5%
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	194 6	± 10%	2 8	≤ 5%
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	194 7	± 10%	2 3	≤ 5%
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	195 3	± 10%	1 7	≤ 5%
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	192.6	± 10%	2 3	≤ 5%
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	191.2	± 10%	2 5	≤ 5%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	196 7	± 10%	2 1	≤ 5%
1,3,6,8-Tetrachlorodibenzofuran	202 3	± 10%	2 1	≤ 5%
1,2,3,9-Tetrachlorodibenzofuran	194 4	± 10%	2 4	≤ 5%
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	198 0	± 10%	3.3	≤ 5%
2,3,4,7-Tetrachlorodibenzofuran/ 2,3,7,8-Tetrachlorodibenzofuran [1]	399.3	± 10%	2.4	≤ 5%
1,2,8,9-Tetrachlorodibenzofuran	198 9	± 10%	2.9	≤ 5%
1,3,4,6,8-Pentachlorodibenzofuran	195 0	± 10%	2.1	≤ 5%
1,2,3,8,9-Pentachlorodibenzofuran	199.6	± 10%	2.1	≤ 5%
1,2,3,4,6,8-Hexachlorodibenzofuran	195.5	± 10%	2.4	≤ 5%
1,2,3,4,8,9-Hexachlorodibenzofuran	196.4	± 10%	1.8	≤ 5%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	197.4	± 10%	2.9	≤ 5%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	195.3	± 10%	2.1	≤ 5%

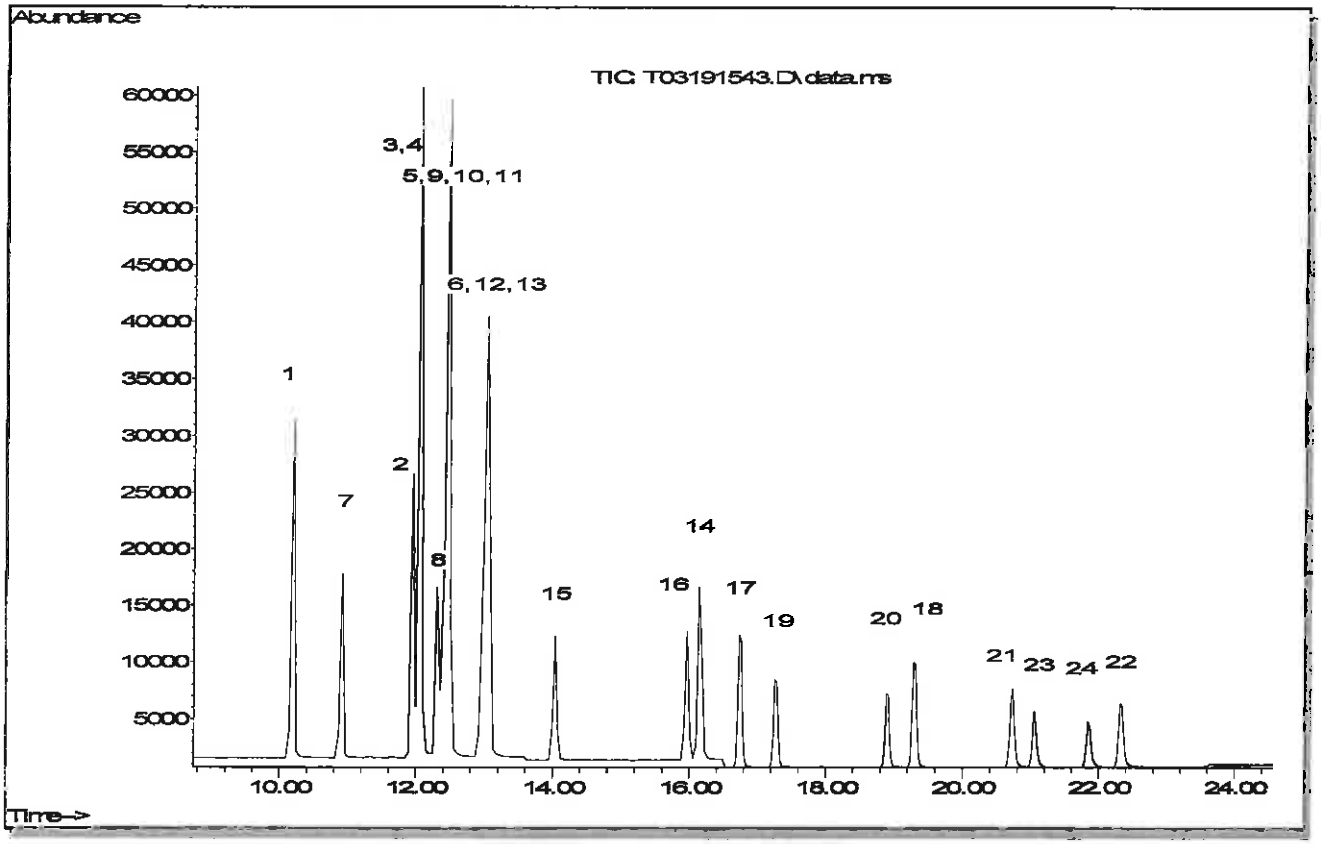
- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- Product is compared to prior lot and meets acceptance criteria of ± 10%.

[1] Compounds co-elute. Concentration is the sum of both or all analytes.

Neat Material Data

Compound	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity
1,3,6,8-Tetrachlorodibenzo-p-dioxin	ER040811-02	33423-92-6	$C_{12}H_4Cl_4O_2$	321.97	99.9%
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin	ER021510-01	NA	$C_{12}H_4Cl_4O_2$	321.97	99.8%
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ER061009-02	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	ER01031401	76523-40-5	$^{13}C_{12}H_4Cl_4O_2$	333.84	98.9%
1,2,3,9-Tetrachlorodibenzo-p-dioxin	ER0529401	71669-26-6	$C_{12}H_4Cl_4O_2$	321.97	99.6%
1,2,8,9-Tetrachlorodibenzo-p-dioxin	ER11201301	62470-54-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%
1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin	ER11051302	NA	$C_{12}H_3Cl_5O_2$	356.42	98.9%
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	ER05161401	NA	$C_{12}H_3Cl_5O_2$	356.42	99.0%
1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	ER08101402	NA	$C_{12}H_2Cl_6O_2$	390.86	98.7%
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	ER030107-01	NA	$C_{12}H_2Cl_6O_2$	390.86	99.0%
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	ER01201502	58200-70-7	$C_{12}HCl_7O_2$	425.31	98.9%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	ER100207-02	35822-46-9	$C_{12}HCl_7O_2$	425.31	99.8%
1,3,6,8-Tetrachlorodibenzofuran	ER021808-01	71998-72-6	$C_{12}H_4Cl_4O$	305.98	98.5%
1,2,3,9-Tetrachlorodibenzofuran	ER071107-01	NA	$C_{12}H_4Cl_4O$	305.98	98.2%
2,3,7,8-Tetrachlorodibenzofuran	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.98	99.4%
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	ER12101304	89059-46-1	$^{13}C_{12}H_4Cl_4O$	317.88	99.2%
2,3,4,7-Tetrachlorodibenzofuran	ER052307-01	NA	$C_{12}H_4Cl_4O$	305.98	98.7%
1,2,8,9-Tetrachlorodibenzofuran	ER041508-03	NA	$C_{12}H_4Cl_4O$	305.98	99.3%
1,3,4,6,8-Pentachlorodibenzofuran	ER04231401	NA	$C_{12}H_3Cl_5O$	340.42	99.5%
1,2,3,8,9-Pentachlorodibenzofuran	ER12101303	NA	$C_{12}H_3Cl_5O$	340.42	99.0%
1,2,3,4,6,8-Hexachlorodibenzofuran	ER04231402	NA	$C_{12}H_2Cl_6O$	374.86	98.6%
1,2,3,4,8,9-Hexachlorodibenzofuran	ER12091401	92341-07-6	$C_{12}H_2Cl_6O$	374.86	99.7%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%

Product Analysis



1 1,3,6,8-Tetrachlorodibenzofuran
2 2,3,4,7-Tetrachlorodibenzofuran
3 2,3,7,8-Tetrachlorodibenzofuran
4 2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$
5 1,2,3,9-Tetrachlorodibenzofuran
6 1,2,8,9-Tetrachlorodibenzofuran
7 1,3,6,8-Tetrachlorodibenzo-p-dioxin
8 1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin
9 1,2,3,9-Tetrachlorodibenzo-p-dioxin
10 2,3,7,8-Tetrachlorodibenzo-p-dioxin
11 2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$
12 1,2,8,9-Tetrachlorodibenzo-p-dioxin
13 1,3,4,6,8-Pentachlorodibenzofuran
14 1,2,3,8,9-Pentachlorodibenzofuran
15 1,2,4,6,8/1,2,4,7,9-Pentachlorodibenzo-p-dioxin
16 1,2,3,8,9-Pentachlorodibenzo-p-dioxin
17 1,2,3,4,6,8-Hexachlorodibenzofuran
18 1,2,3,4,8,9-Hexachlorodibenzofuran
19 1,2,4,6,7,9/1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin
20 1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin
21 1,2,3,4,6,7,8-Heptachlorodibenzofuran
22 1,2,3,4,7,8,9-Heptachlorodibenzofuran
23 1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin
24 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin

COA Revision History

Revision No.	Date	Reason for Revision
00	March 24, 2015	Initial version

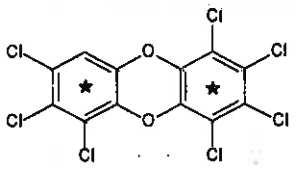
Reagent

HRDXNIDA_00075

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-972
Solution Lot:	ER111010-01
Expiration Date:	November 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Chromatographic Purity	Certified Concentration
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.9%	50.03 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and *balance and weighing technique*.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER111010-01	50.5	± 5%	0.5	≤ 3%
Previous Lot	ER011807-01	47.4	± 5%	1.8	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

January 15, 2016
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HO_2Cl_7$
Compound Lot:	ER100110-01	**CAS Number:**	NA
		Molecular Weight:	437.22

Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.9%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.10% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		98.91%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

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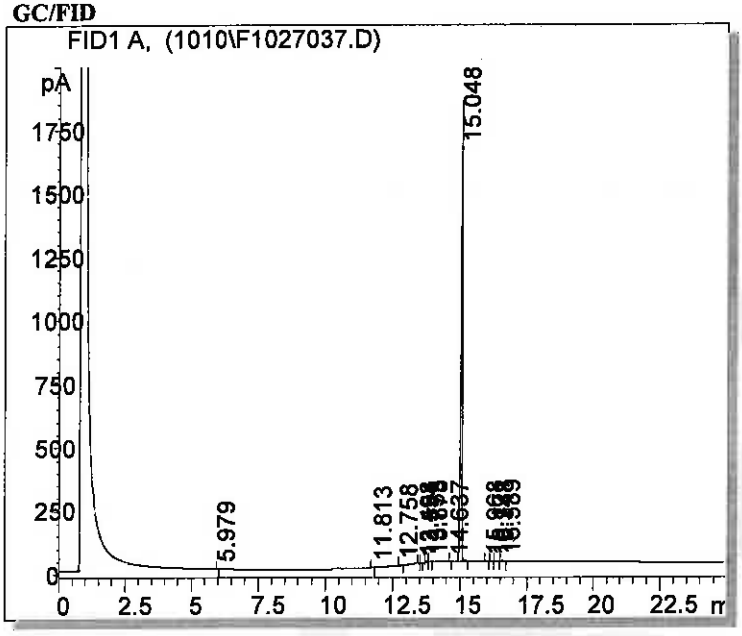
Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	S:\GC\GC6\2010\1010\F1027037.D
Instrument:	GC#6
Sample Name:	ER100110-01
Acquired:	October 28, 2010

Peak #	Ret Time	Area	Height	Area %
1	5.98	0.34	0.18	0.00
2	11.81	1.00	0.08	0.01
3	12.76	10.96	2.89	0.16
4	13.50	1.19	0.32	0.02
5	13.55	2.63	0.80	0.04
6	13.75	13.39	3.28	0.19
7	13.88	7.04	1.81	0.10
8	14.64	0.86	0.28	0.01
9	15.05	6900.70	1812.09	98.81
10	15.97	3.15	0.73	0.05
11	16.17	2.25	0.55	0.03
12	16.35	5.12	1.10	0.07
13	16.59	18.93	4.26	0.27
14	26.99	15.17	0.35	0.22
15	35.58	0.06	0.21	0.00
16	41.80	0.77	0.13	0.01

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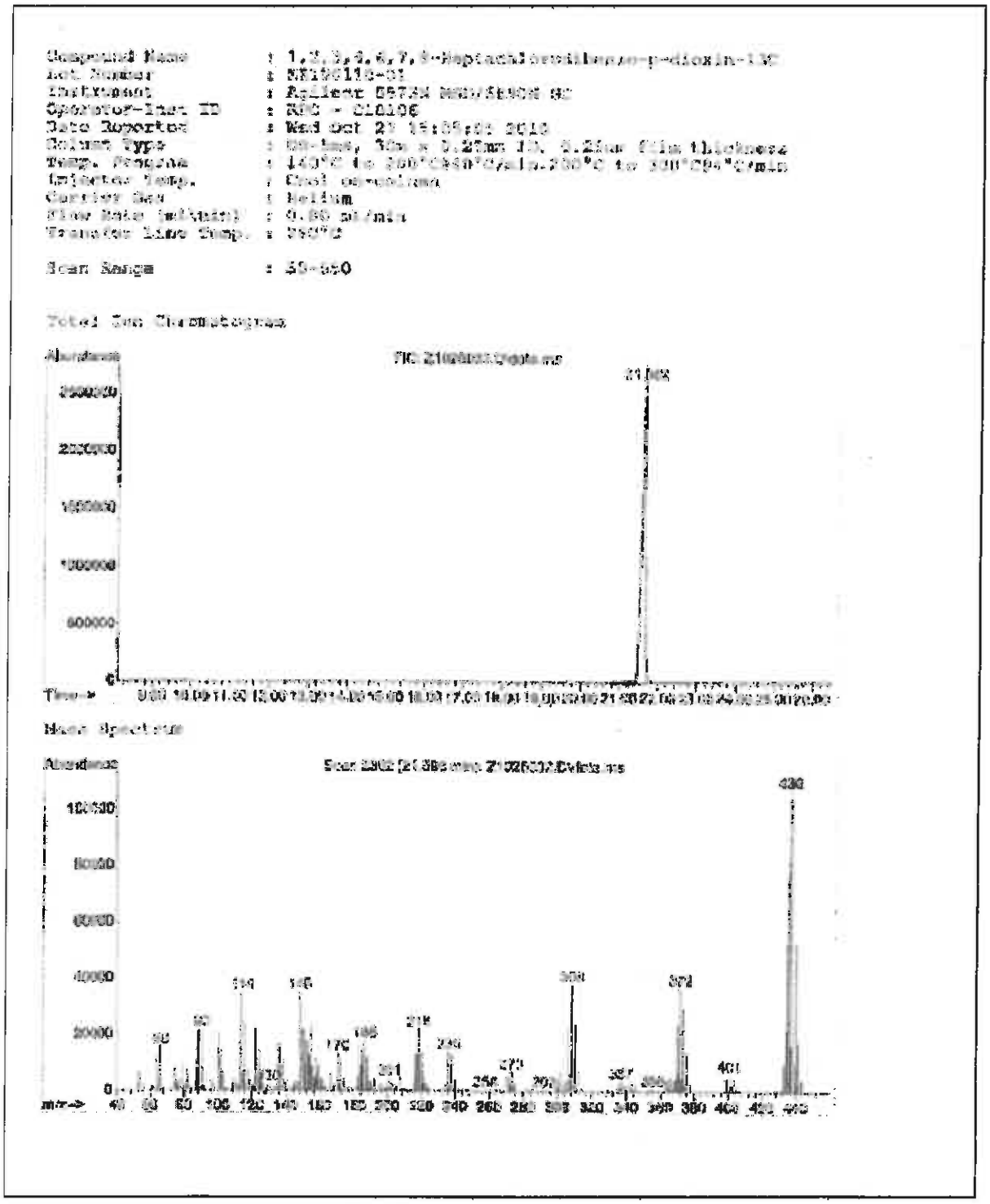
Spectral and Physical Data (cont.)

GC/MS



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COA Revision History

Revision No.	Date	Reason for Revision
00	November 24, 2010	Initial version
01	January 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

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Reagent

HRDXNIDA_00247

Received 8-17-16

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

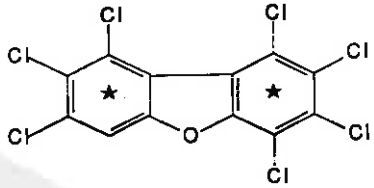
CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$

1,2,3,4,7,8,9-HpCDF



Catalog Number:	EF-988
Solution Lot:	ER04251601
Expiration Date:	March 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	99.1%	49.99 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04251601	49.11	± 5%	0.2	≤ 3%
Previous Lot	ER053107-02	50.58	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darren Ellsworth, Quality Assurance Manager

June 21, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER04041602	**CAS Number:**	109719-94-0
		Molecular Weight:	421.22

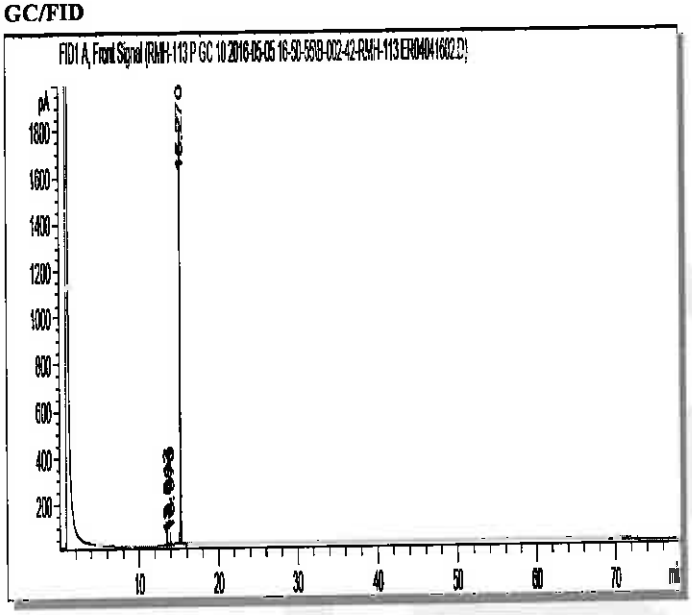
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.10%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data (cont.)

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-113 P GC 10 2016-05-05 16-50-55\B-002-42.D
Instrument:	GC#10
Sample Name:	ER04041602
Acquired:	May 05, 2016

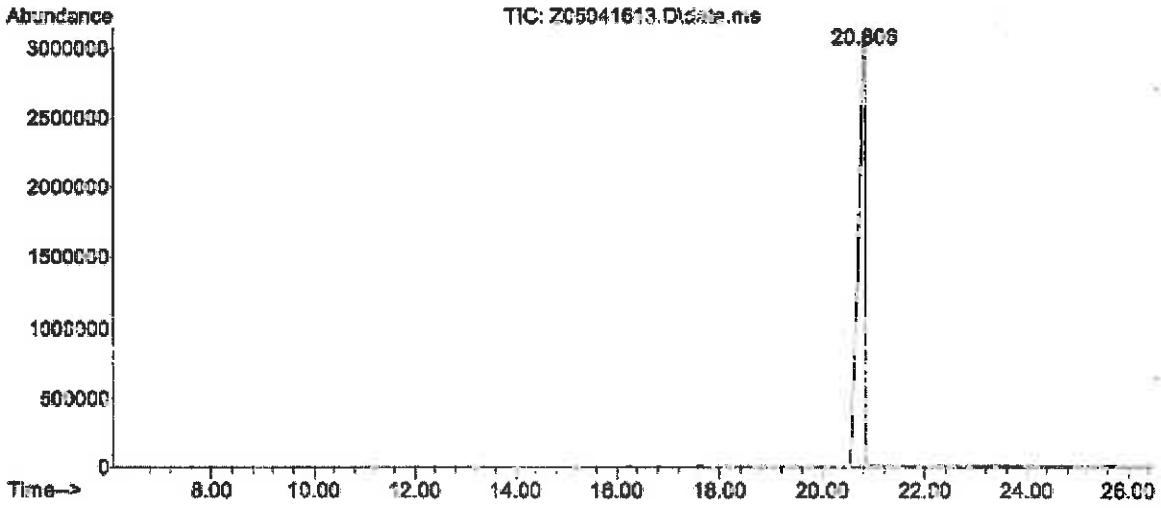
Peak #	Ret Time	Area	Height	Area %
1	13.51	8.76	2.52	0.12
2	13.68	17.42	7.45	0.24
3	13.97	39.65	15.48	0.54
4	15.27	7226.95	1798.33	99.10

Spectral and Physical Data (cont.)

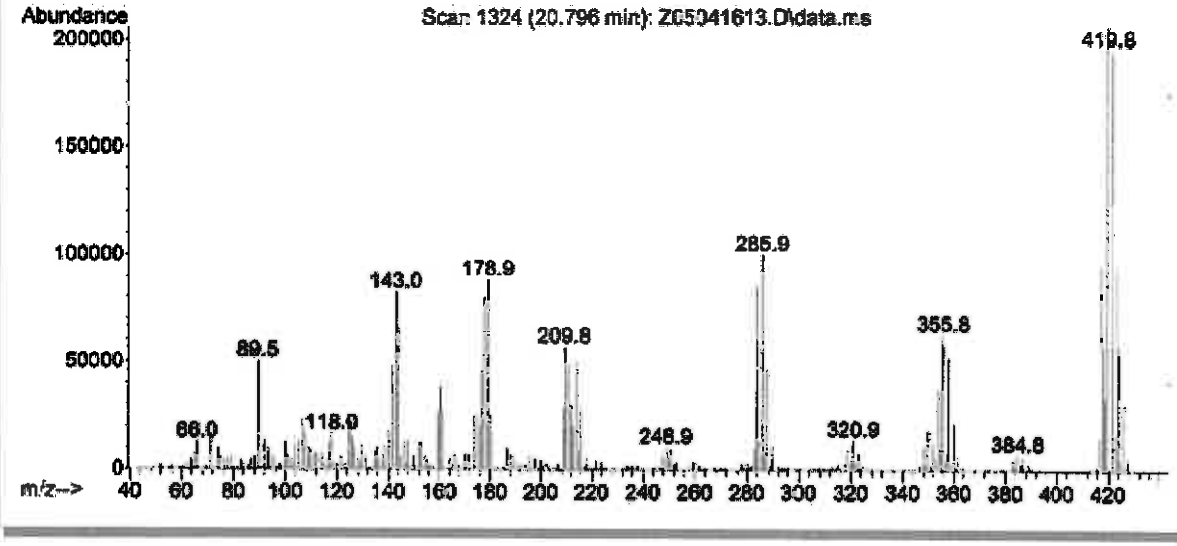
GC/MS

```
Compound Name          : 1,2,3,4,7,8,9-Heptachlorodibenzofuran-13C12
Lot Number             : ER04041602
Instrument             : Agilent GCMS
Operator               : ECM(SGUFFRE)
Date Reported          : Wed May 04 15:34:28 2016
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	June 21, 2016	Initial version

Reagent

HRDXNIDA_00297

12/28/17 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

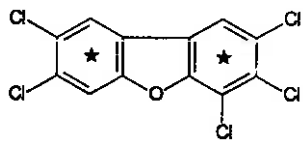
1042065
ID: HRDXNIDA_00297
Exp: 01/31/27 Prpd: SKV
13C-2,3,4,7,8-PeCDF [50ug

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-958
Solution Lot: ER01061701
Expiration Date: January 2027
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	97.9%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER01061701	50.51	± 5%	0.1	≤ 3%
Previous Lot	ER11041601	49.56	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

January 27, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O$
Compound Lot:	ER11101601	**CAS Number:**	116843-02-8
		Molecular Weight:	352.33

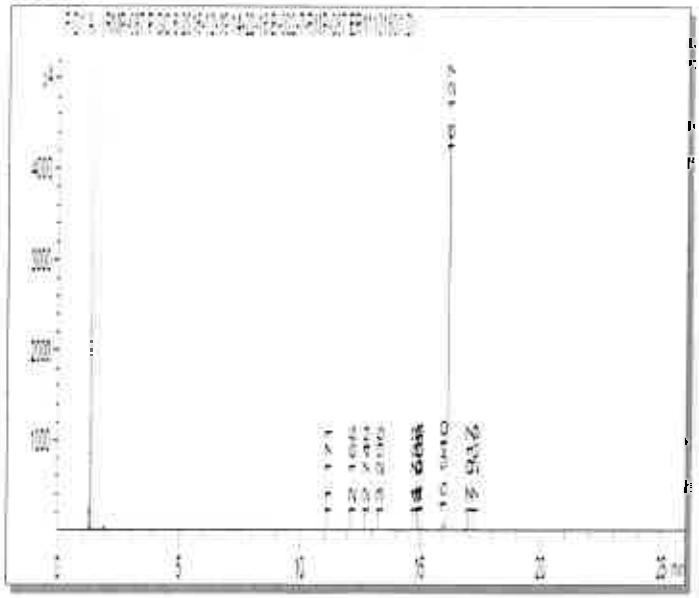
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.02% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		98.33%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Specirai and Physicai Data

GC/FID



Column: DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program: 100°C to 300°C at 15°C/min hold 10 min
Injector Temp: Cool-on-Column
Detector Temp: 325°C

Data File Name: RMP-087 P GC 6 2016-12-19 14-22-16\B-002-7.D
Instrument: GC#6
Sample Name: ER11101601
Acquired: December 19, 2016

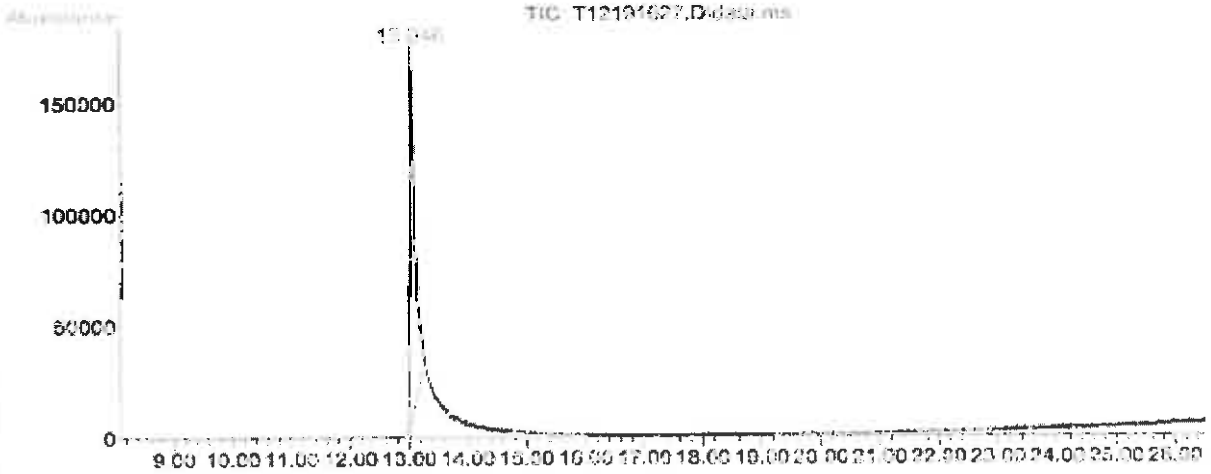
Peak #	Ret Time	Area	Height	Area %
1	11 17	0.94	0.40	0.01
2	12.17	1 30	0.39	0.01
3	12.75	0 47	0.20	0.00
4	13 30	0 90	0.35	0.01
5	14 75	1 70	0.87	0.02
6	14 91	1 09	0.56	0.01
7	14.97	32 24	17.54	0.29
8	15.94	124 38	64.36	1.13
9	16.13	10866 60	4688.80	98.41
10	17.02	6.31	2.46	0.06
11	17.27	6 76	2.34	0.06

Spectral and Physical Data (cont.)

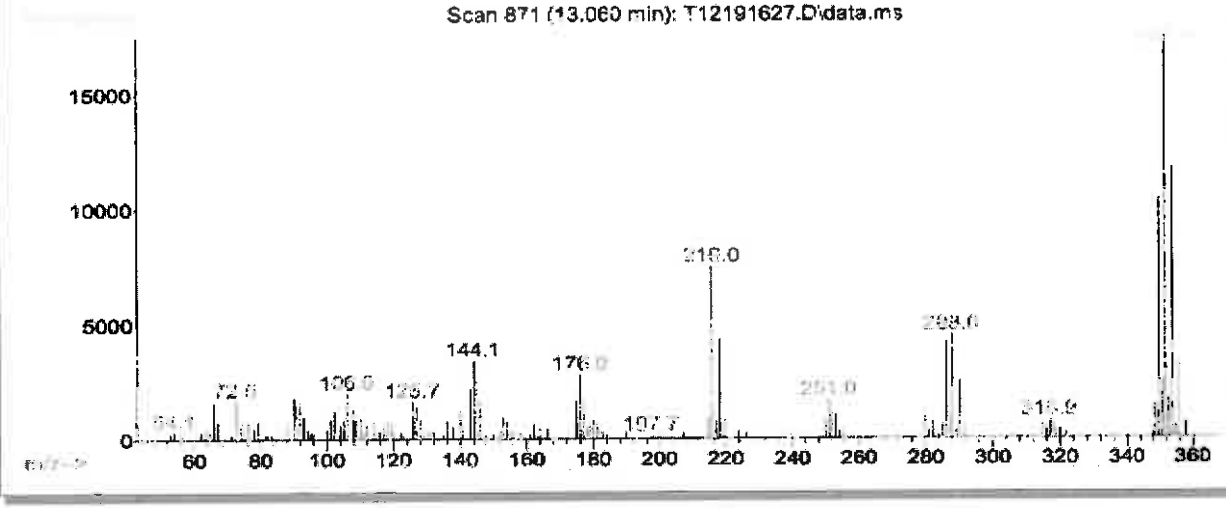
GC/MS

Compound Name : 2,3,4,7,8-Pentachlorodibenzofuran-13C12
Lot Number : ER11101601
Instrument : Agilent GCMS
Operator : ECM(SGIUFFRE)
Date Reported : Tue Dec 20 12:19:55 2016
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.50 ml/min
Transfer Line Temp. : 280°C
Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00301

n: 9/2017 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

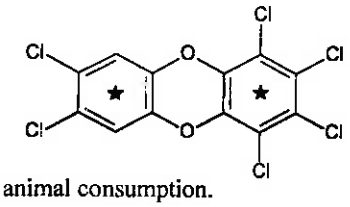
1042073
ID: HRDXNIDA_00301
Exp: 10/31/21 Prpd: SKV
13C-1,2,3,4,7,8-HxCDD [50

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-946
Solution Lot: ER102711-01
Expiration Date: October 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.0%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER102711-01	48.2	± 5%	0.2	≤ 3%
Previous Lot	ER012208-01	49.6	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

September 17, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER011008-01	**CAS Number:**	109719-80-4
		Molecular Weight:	402.77

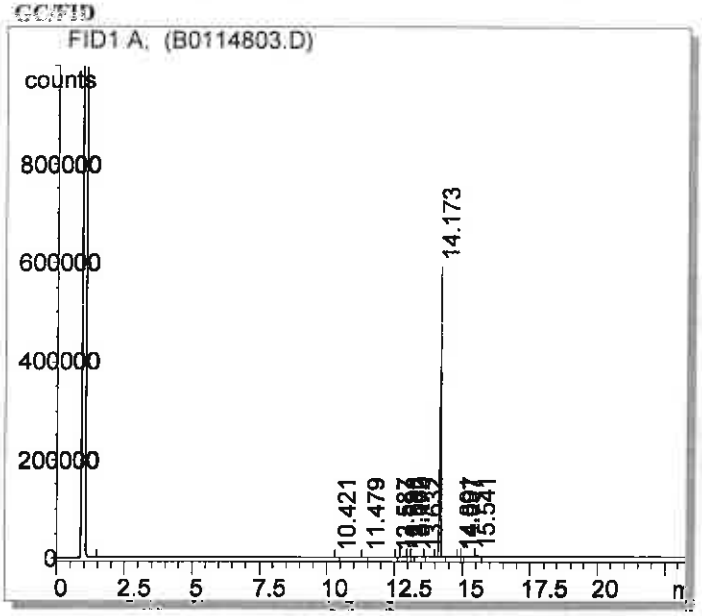
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.08% $^{13}C_0$ vs $^{13}C_{12}$
		0.19% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.19%

- Chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0114803.D
Instrument:	GC#2
Sample Name:	ER011008-01
Acquired:	January 14, 2008

Peak #	Ret Time	Area	Height	Area %
1	10.42	287.44	132.33	0.02
2	11.48	242.24	92.03	0.01
3	12.59	389.12	196.33	0.02
4	12.90	3015.36	1199.07	0.17
5	13.06	2243.36	788.13	0.13
6	13.17	2243.90	754.45	0.13
7	13.63	2349.03	134.07	0.02
8	14.17	427.02	588610.00	99.20
9	14.89	1731980.00	110.79	0.03
10	15.00	512.26	86.41	0.02
11	15.54	4077.63	1008.44	0.23

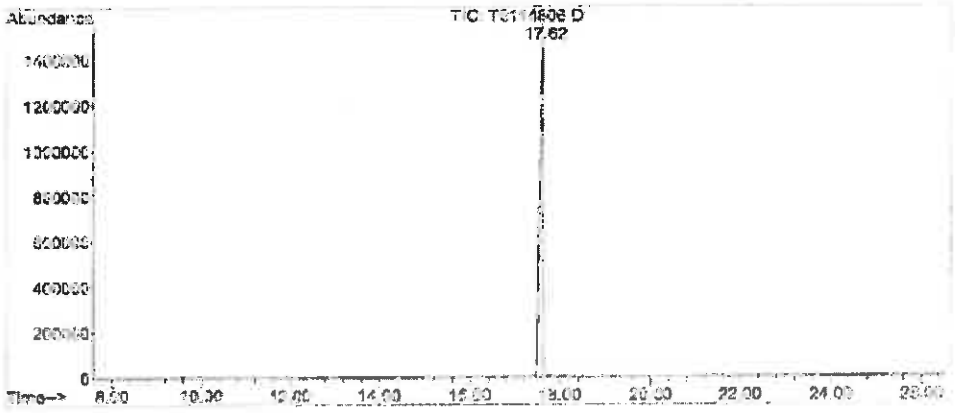
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

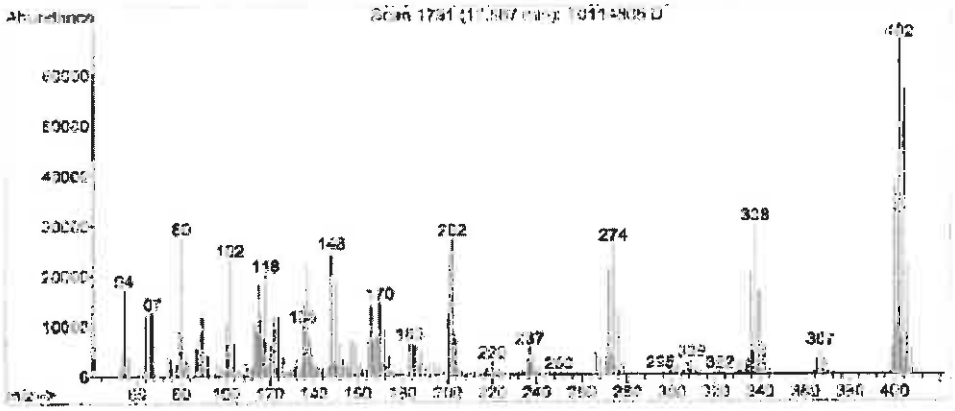
Compound Name : 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-13C12
Lot Number : WR011008-01
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : REC - C1010E
Date Reported : Wed Jan 16 11:15:58 2008
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 208°C@40°C/min,208°C to 300°C@8°C/min (5 min)
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL/min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-350

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	November 12, 2011	Initial version
01	September 17, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"

Reagent

HRDXNIDA_00302

R: 9/20/17 SKV

Cerilliant
Analytical Reference Standards
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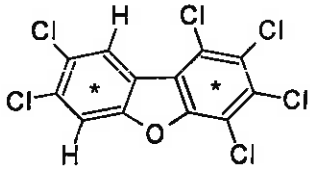
1042074
ID: HRDXNIDA_00302
Exp: 07/31/20 Prpd: SKV
13C-1,2,3,4,7,8-HxCDF [50

CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-963
Solution Lot:	ER072810-02
Expiration Date:	July 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Protect from air and light, store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.6%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER072810-02	47.4	± 5%	0.3	≤ 3%
Previous Lot	LR011907-01	46.6	—	1.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

November 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2OCl_6$
Compound Lot:	35135-45	**CAS Number:**	114423-98-2
		Molecular Weight:	386.77

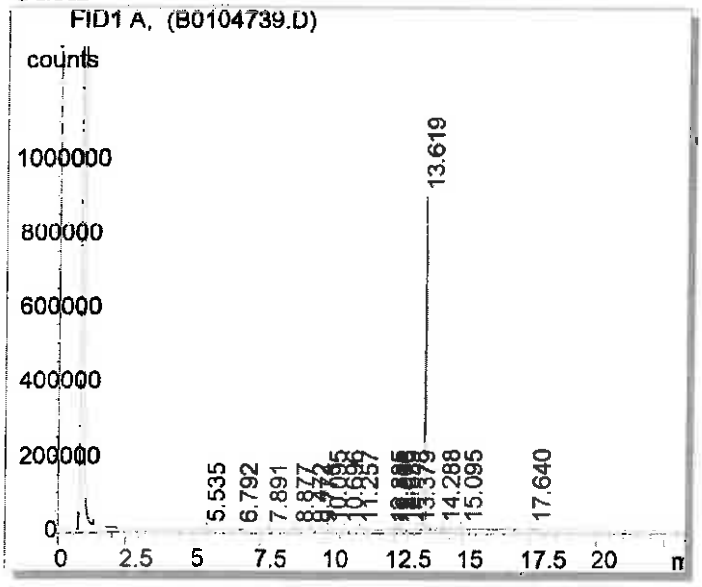
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.6%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% C_0 vs C_{12}
		0.13% C_6 vs C_{12}
Purity Factor		99.57%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

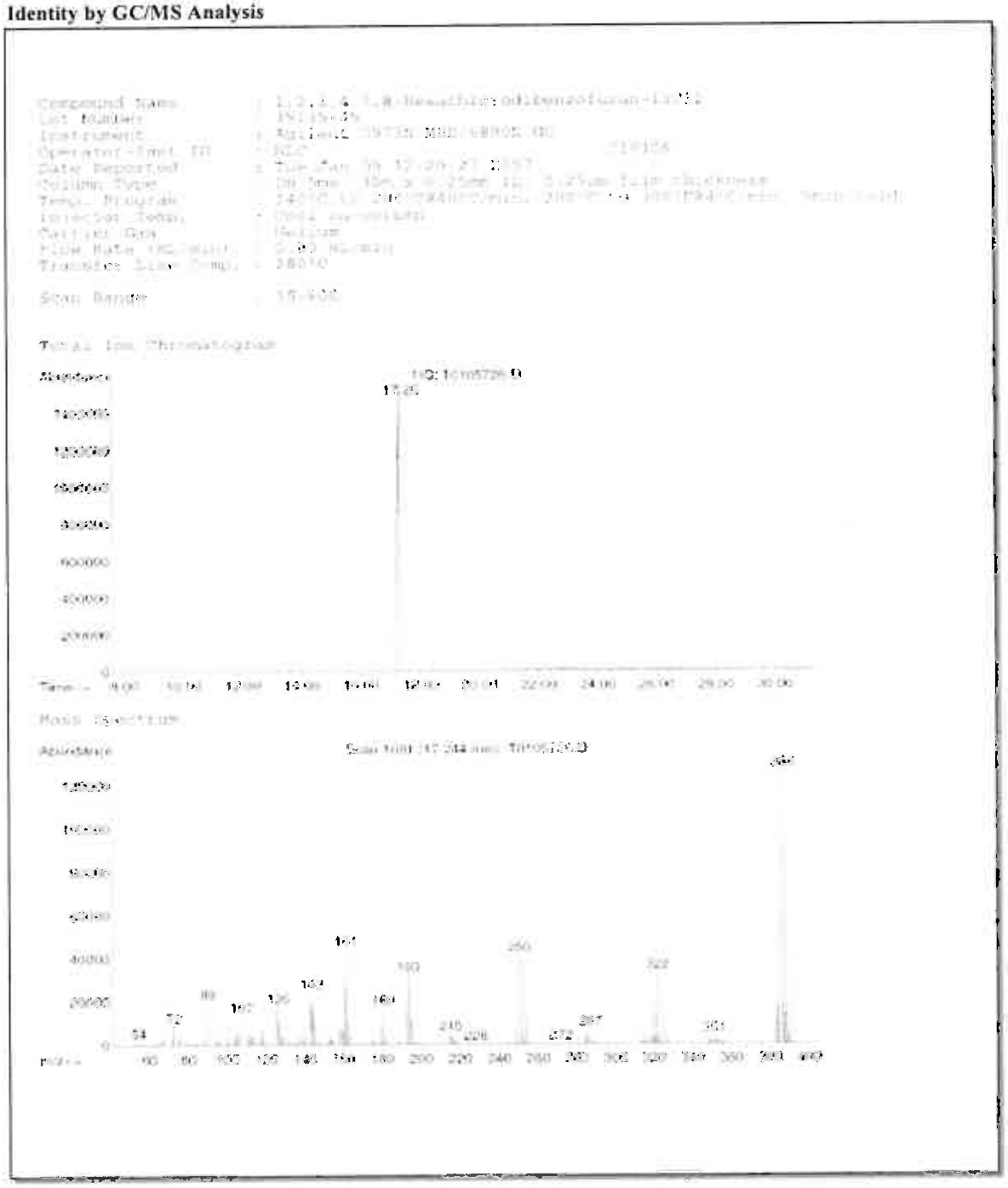


Column:	DB-5ms, 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0104739.D
Instrument:	GC#2
Sample Name:	35135-45
Acquired:	January 05, 2007

Peak #	Ret Time	Area	Height	Area %
1	4.21	615.24	161.26	0.02
2	5.21	1024.94	292.85	0.04
3	6.09	326.05	83.67	0.01
4	7.10	301.83	31.69	0.01
5	7.75	169.71	40.31	0.01
6	8.38	136.91	47.17	0.01
7	8.97	123.76	38.29	0.00
8	12.30	2684.80	1153.73	0.10
9	12.48	1162.83	467.42	0.04
10	12.56	1893.94	719.41	0.07
11	12.68	466.69	180.24	0.02
12	12.86	690.32	301.63	0.03
13	13.62	2651450.00	979725.00	99.58
14	14.34	274.11	82.01	0.01
15	15.17	1208.09	320.67	0.05
16	19.00	166.44	32.66	0.01

Spectral and Physical Data (cont.)

Identity by GC/MS Analysis



COA Revision History

Revision No.	Date	Reason for Revision
00	September 22, 2010	Initial version
01	September 22, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"
02	November 15, 2016	Corrected Molecular Weight from 368.77 to 386.77

Reagent

HRDXNIDA_00353

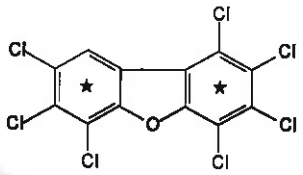
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-974
Solution Lot: ER08101404
Expiration Date: November 2024
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$	98.3%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08101404	48.75	± 5%	0.3	≤ 3%
Previous Lot	ER102711-02	51.49	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS ACCREDITED
REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

December 03, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,6,7,8-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER020507-02	**CAS Number:**	109719-84-8
		Molecular Weight:	421.22

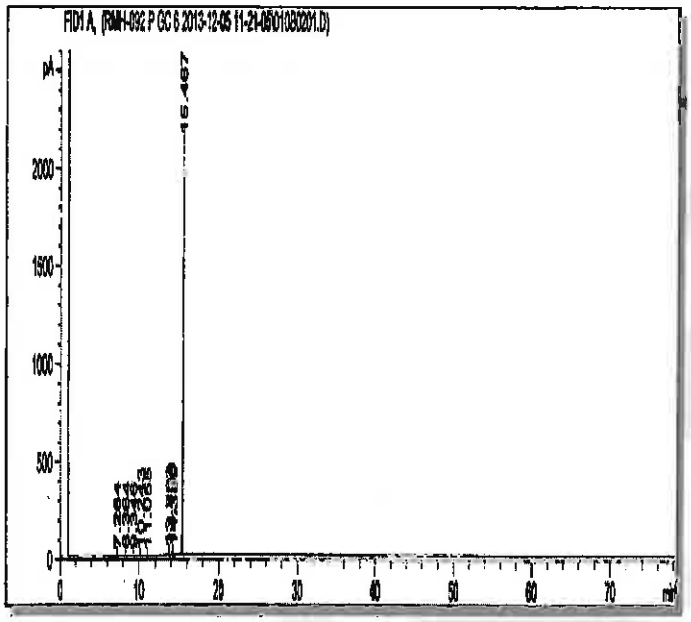
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	98.7%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS	SP10-0105	Pass
		no single DD/DF impurity ≥1.0%
Purity Factor		98.69%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-092 P GC 6 2013-12-05 11-21-05\010B0201.D
Instrument:	GC#6
Sample Name:	ER020507-02
Acquired:	December 05, 2013

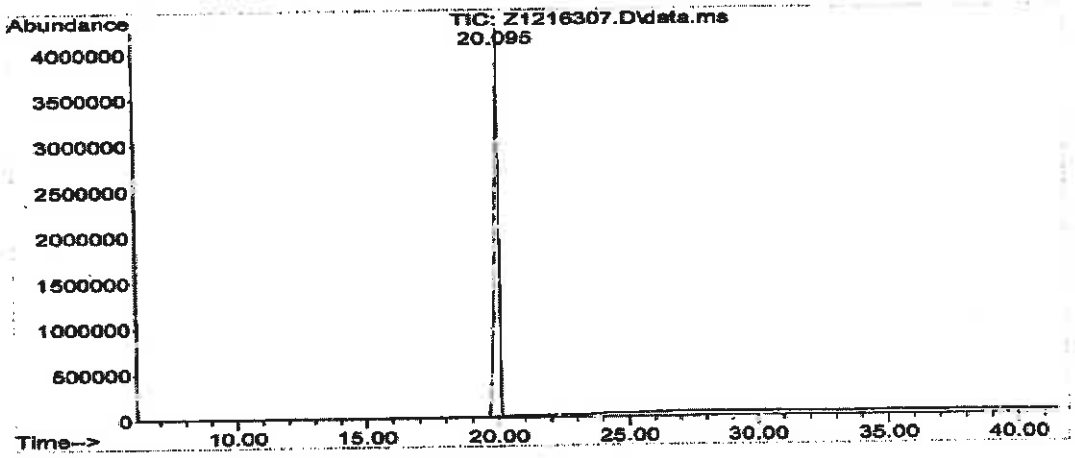
Peak #	Ret Time	Area	Height	Area %
1	7.26	4.41	2.08	0.05
2	8.36	11.76	5.45	0.12
3	9.35	5.20	2.32	0.05
4	10.24	1.47	0.62	0.02
5	11.06	0.34	0.17	0.00
6	13.75	8.81	4.38	0.09
7	13.80	23.67	9.98	0.25
8	14.13	43.07	16.42	0.45
9	14.20	21.73	8.77	0.23
10	14.39	4.79	1.81	0.05
11	15.47	9349.36	2200.33	98.68

Spectral and Physical Data (cont.)

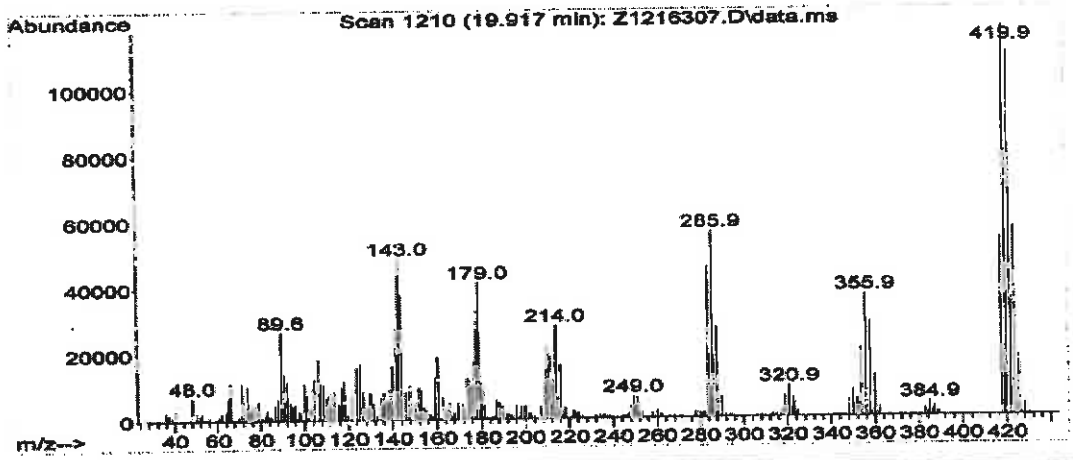
GC/MS

Compound Name : 1,2,3,4,6,7,8-Heptachlorodibenzofuran-13C12
Lot Number : ER020507-02
Instrument : Agilent GCMS
Operator : ECM(BRYAN_DOCKERY)
Date Reported : Tue Dec 17 09:08:58 2013
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C
Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	January 19, 2015	Initial version
01	December 04, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet"

Reagent

HRDXNIDA_00354

Rec: 11/28/18 SKV

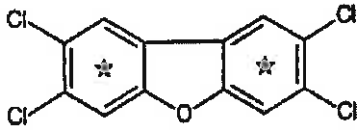
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-904
Solution Lot: ER09131601
Expiration Date: September 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	99.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER09131601	49.91	± 5%	0.2	≤ 3%
Previous Lot	ER12101304	51.13	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darren Ellsworth, Quality Assurance Manager

November 02, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

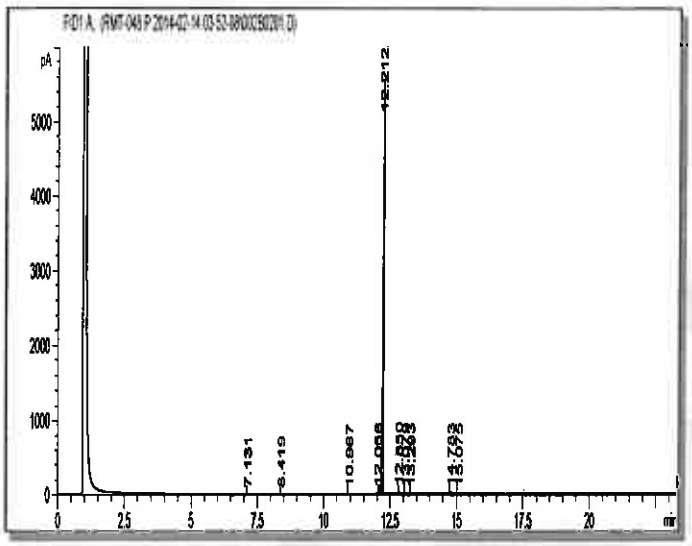
Compound Name:	2,3,7,8-Tetrachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O$
Compound Lot:	ER01161401	**CAS Number:**	89059-46-1
		Molecular Weight:	317.88

Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	No single DD/DF ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.00% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.24%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

GC/FID



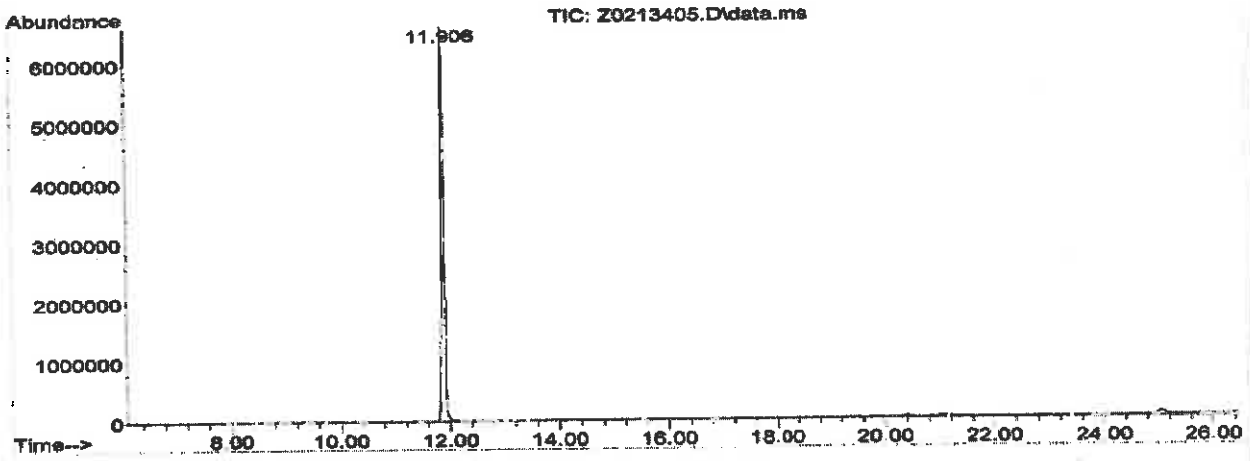
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-048 P 2014-02-14 03-52-08\002B0201.D
Instrument:	GC#10
Sample Name:	ER01161401
Acquired:	February 14, 2014

Peak #	Ret Time	Area	Height	Area %
1	7.13	1.19	0.61	0.01
2	8.42	3.23	1.42	0.03
3	10.97	3.57	1.04	0.03
4	12.06	20.86	12.47	0.18
5	12.21	11764.70	5466.96	99.29
6	12.85	30.72	15.48	0.26
7	13.08	7.62	4.03	0.06
8	13.29	5.47	2.91	0.05
9	14.78	7.62	2.76	0.06
10	15.08	3.87	1.33	0.03

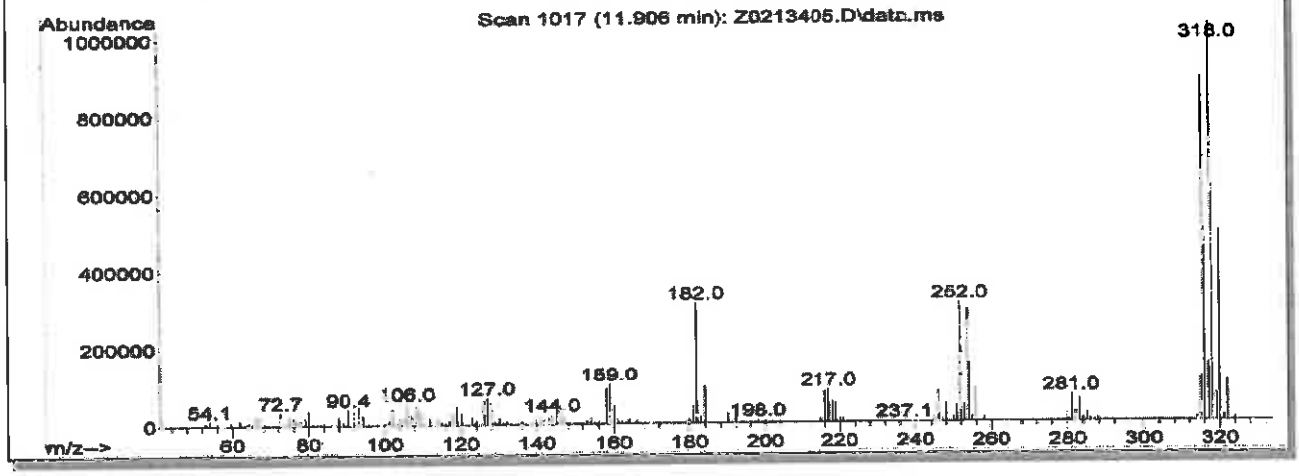
GC/MS

Compound Name	:	2,3,7,8-Tetrachlorodibenzofuran-13C12
Lot Number	:	ER01161401
Instrument	:	Agilent GCMS
Operator	:	ECM(SAMUEL_GIUFFRE)
Date Reported	:	Thu Feb 13 11:57:07 2014
Column Type	:	DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	:	140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	:	Cool on-column
Carrier Gas	:	Helium
Flow Rate (mL\min)	:	0.80 mL/min
Transfer Line Temp.	:	280°C
Scan Range	:	50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	November 02, 2016	Initial version

Reagent

HRDXNIDA_00355

Cerilliant
Analytical Reference Standards
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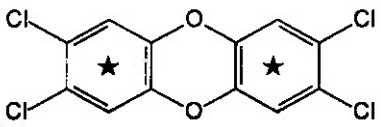
CIL

Certificate of Analysis

Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO TS17M
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-900
Solution Lot: ER03031601
Expiration Date: March 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.4%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER03031601	52.66	± 5%	0.3	≤ 3%
Previous Lot	ER01031401	49.83	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darren Ellsworth, Quality Assurance Manager

March 24, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-35ms 30 m x 0.53 mm ID, 1.0 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O_2$
Compound Lot:	ER01201405	**CAS Number:**	76523-40-5
		Molecular Weight:	333.88

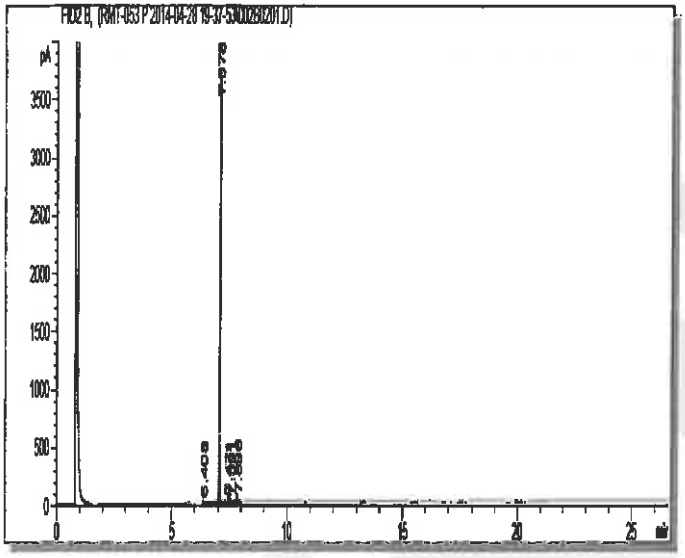
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity and Distribution by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.05% $^{13}C_6$ vs $^{13}C_{12}$
Impurities by GC/MS SIM Analysis	SP10-0105	no single DD/DF impurity $\geq$ 0.5%
Mass Balance Purity Factor		99.34%

- The primary chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Mass Balance Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-35ms, 30 m x 0.53 mm ID, 1.0 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-053 P 2014-04-28 19-37-53\002B0201.D
Instrument:	GC#6
Sample Name:	ER01201405
Acquired:	April 28, 2014

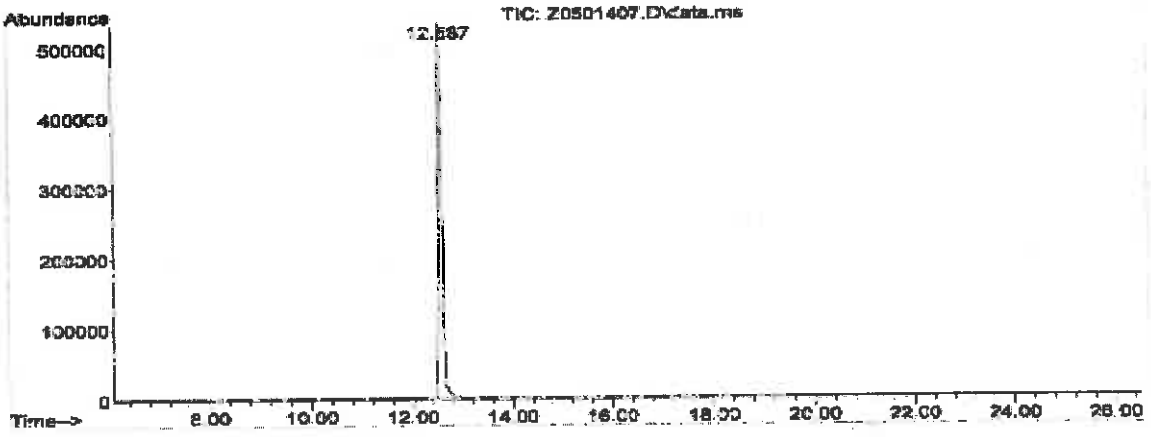
Peak #	Ret Time	Area	Height	Area %
1	6.41	4 36	2.80	0.08
2	7 08	5225 21	3678.99	99.32
3	7 47	5 29	3.00	0.10
4	7 59	9 11	4.81	0.17
5	7.90	17 05	9.22	0.32

Spectral and Physical Data (cont.)

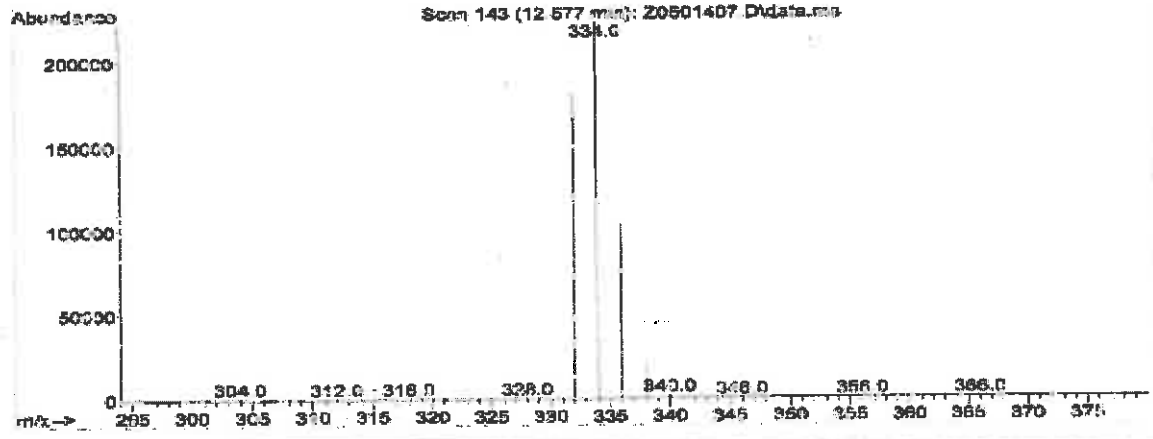
GC/MS

```
Compound Name          : 2,3,7,8-Tetrachlorodibenzo-p-dioxin-13C12
Lot Number             : ER032201405
Instrument             : Agilent GCMS
Operator               : ECM(SAMUEL_GIUFFRE)
Date Reported          : Tue May 06 09:30:26 2014
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 220°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00357

R: 1/15/19 SKV

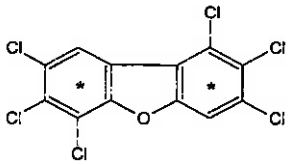
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Certificate of Analysis

1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-985
Solution Lot:	ER02241603
Expiration Date:	April 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.6%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER02241603	50.09	± 5%	0.4	≤ 3%
Previous Lot	ER053107-03	50.81	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

May 04, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O$
Compound Lot:	ER051607-01	**CAS Number:**	116843-03-9
		Molecular Weight:	386.77

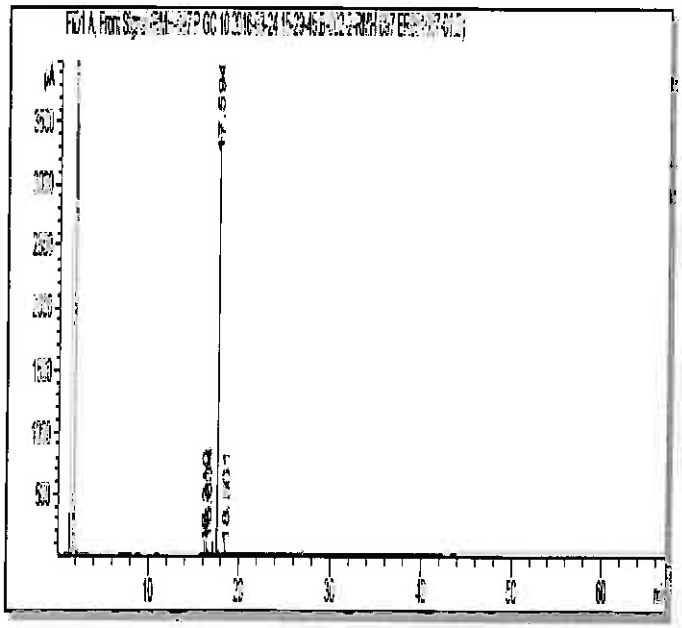
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.06% $^{13}C_6$ vs $^{13}C_{12}$
Impurities by GC/MS SIM Analysis	SP10-0105	no single DD/DF impurity $\geq$ 0.5%
Mass Balance Purity Factor		99.01%

- The chromatographic purity is calculated as the average of two independently performed analyses utilizing two different methods Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Mass Balance Purity Factor
- Mass Balance Purity Factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-097 P GC 10 2016-03-24 15-29-45\B-002-2.D
Instrument:	GC#10
Sample Name:	ER051607-01
Acquired:	March 24, 2016

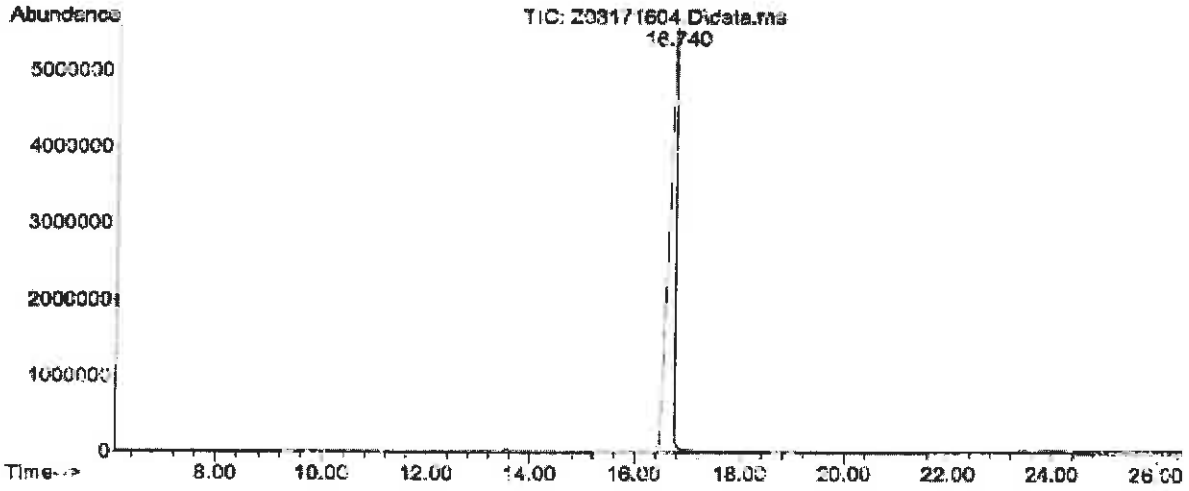
Peak #	Ret Time	Area	Height	Area %
1	16.31	6.97	3.21	0.08
2	16.60	77.08	33.51	0.83
3	17.59	9156.82	3458.38	99.00
4	18.56	8.48	2.69	0.09

Spectral and Physical Data (cont.)

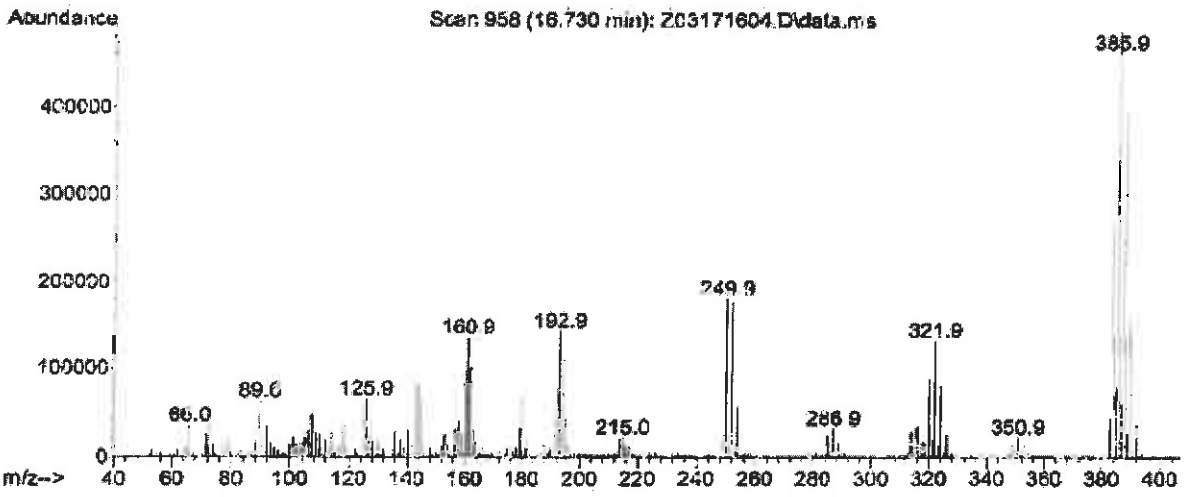
GC/MS

Compound Name	: 1,2,3,6,7,8 Hexachlorodibenzofuran-13C12
Lot Number	: ER051607-01
Instrument	: Agilent GCMS
Operator	: ECM(SGIUFFRE)
Date Reported	: Fri Mar 18 07:08:54 2016
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp Program	: 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.80 mL/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	May 04, 2016	Initial version

Reagent

HRDXNIDA_00358

r: 1/15/19 SK✓

Cerilliant
Analytical Reference Standards
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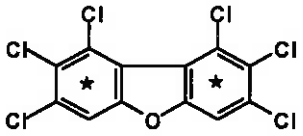
ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

1,2,3,7,8,9-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-986
Solution Lot:	ER100610-01
Expiration Date:	December 2020
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,7,8,9-Hexachlorodibenzofuran-$^{13}C_{12}$	99.5%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER100610-01	51.2	± 5%	0.4	≤ 3%
Previous Lot	ER100107-01	49.9	± 5%	1.4	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darron Ellsworth, Quality Assurance Manager

February 14, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2OCl_6$
Compound Lot:	ER080108-03	**CAS Number:**	116843-04-0
		Molecular Weight:	386.77

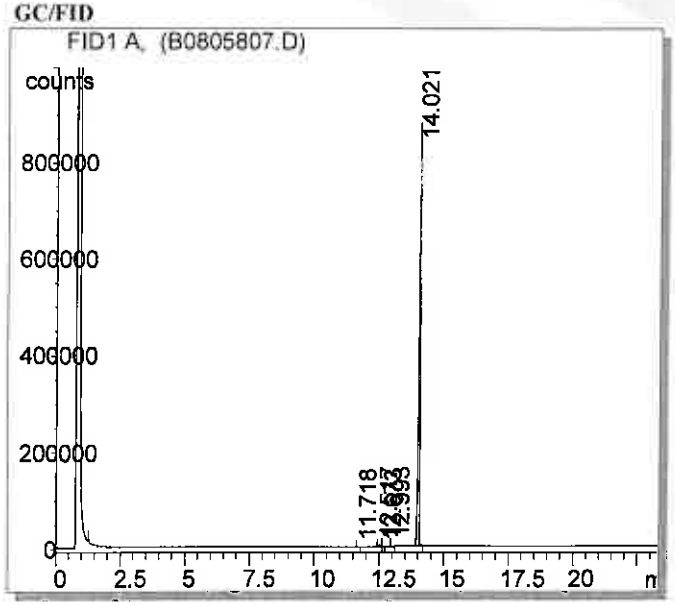
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.5%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.03% $^{13}C_0$ vs $^{13}C_{12}$
		0.09% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.49%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

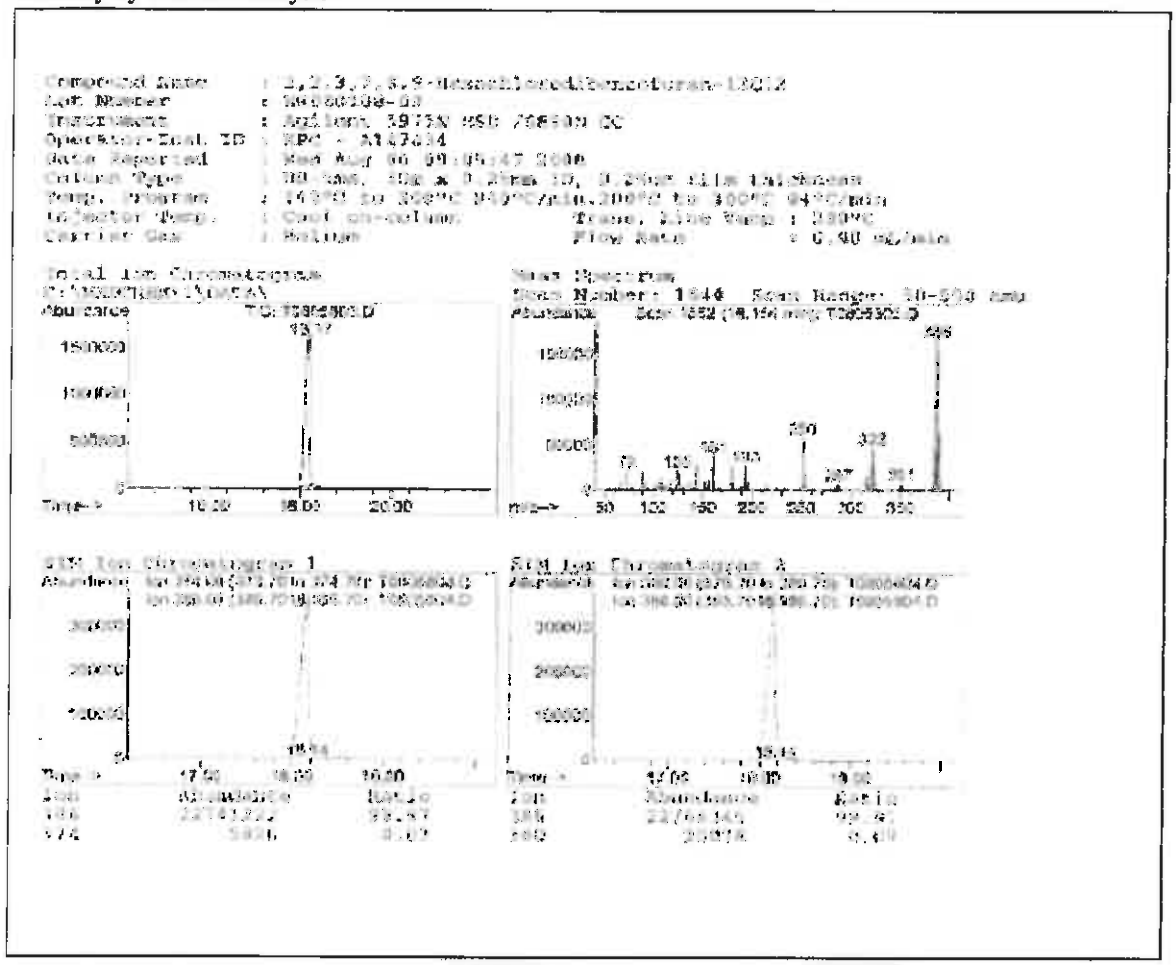


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0805807.D
Instrument:	GC#2
Sample Name:	ER080108-03
Acquired:	August 05, 2008

Peak #	Ret Time	Area	Height	Area %
1	11.72	318.47	152.10	0.01
2	12.52	8294.54	2994.64	0.30
3	12.67	155.17	67.29	0.01
4	12.99	4248.66	1646.53	0.16
5	14.02	2708910.00	880320.00	99.52

Spectral and Physical Data (cont.)

Identity by GC/MS Analysis



COA Revision History

Revision No.	Date	Reason for Revision
00	January 12, 2011	Initial version
01	November 05, 2015	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".
02	February 14, 2017	Corrected Isotopic Purity by GC/MS SIM from C to ^{13}C.

Reagent

HRDXNIDA_00359

r: 1/15/19 SKV

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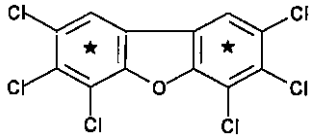
CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

Certificate of Analysis

2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number: EF-987
Solution Lot: ER100610-02
Expiration Date: December 2020
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For laboratory use only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Chromatographic Purity	Certified Concentration
2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.4%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER100610-02	50.9	± 5%	0.6	≤ 3%
Previous Lot	ER031507-03	50.3	± 5%	1.8	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

January 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,6,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O$
Compound Lot:	ER061906-02	**CAS Number:**	116843-05-1
		Molecular Weight:	386.73

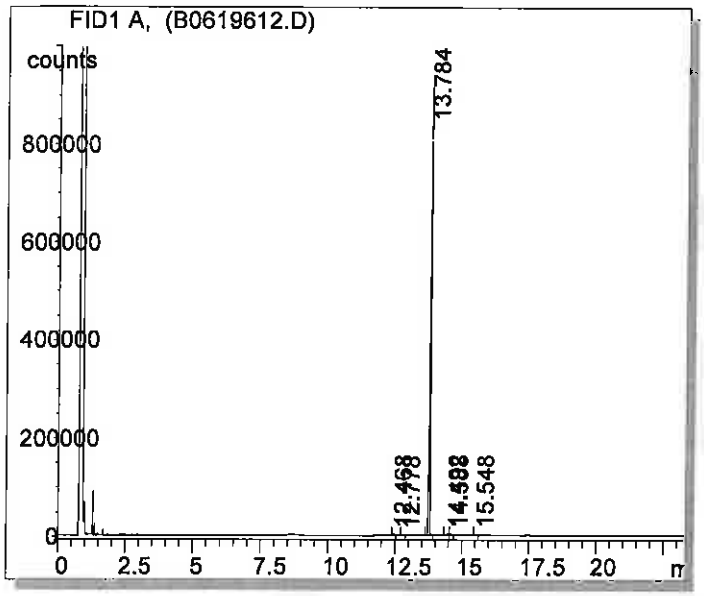
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.4%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.04% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.40%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

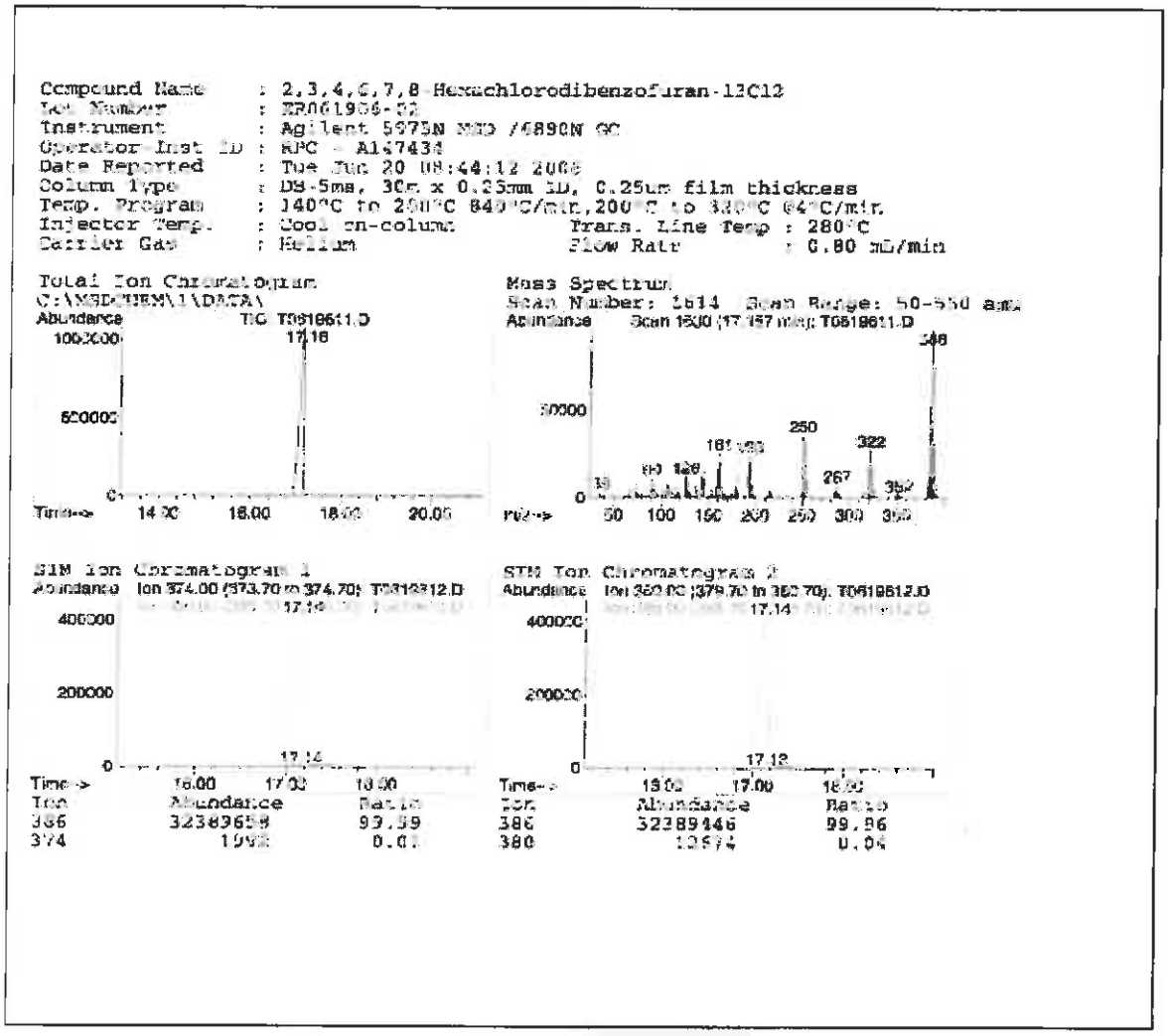


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	C:\HPCHEM\1\DATA\B0619612.D
Instrument:	GC#2
Sample Name:	ER061906-02
Acquired:	June 19, 2006

Peak #	Ret Time	Area	Height	Area %
1	12.47	4458	1822	0.18
2	12.78	3496	1304	0.14
3	13.78	2443150	925399	99.39
4	14.49	1528	387	0.06
5	14.59	4236	1332	0.17
6	15.55	1361	348	0.06

Spectral and Physical Data (cont.)

GC/MS



COA Revision History

Revision No.	Date	Reason for Revision
00	January 04, 2011	Initial version
01	January 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00360

r: 1/15/19 SKV

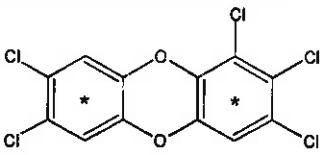
Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Certificate of Analysis

1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-955
Solution Lot:	ER08041401
Expiration Date:	August 2024
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$	98.2%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08041401	48.80	± 5%	0.3	≤ 3%
Previous Lot	ER030907-02	49.84	± 5%	0.4	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACCLASS

Darron Ellsworth, Quality Assurance Manager

February 10, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8-Pentachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O_2$
Compound Lot:	ER06241403	**CAS Number.**	109719-79-1
		Molecular Weight.	368.33

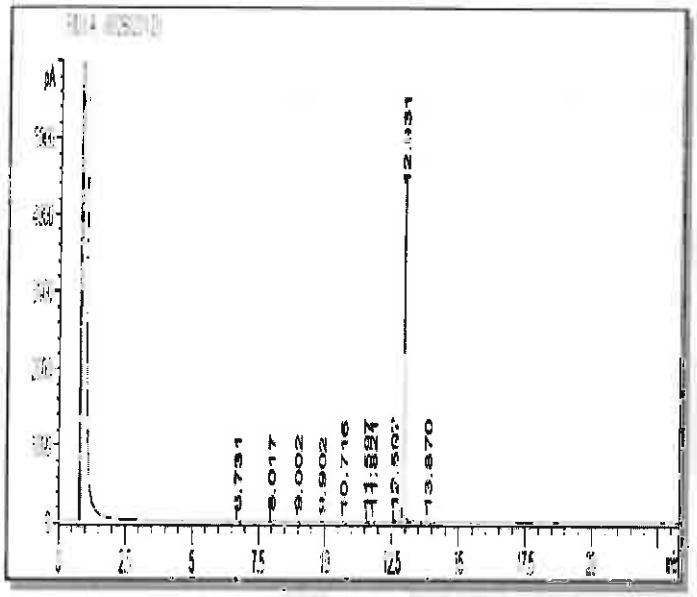
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.9%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS-SIM Analysis	SP10-0105	0.07% $^{13}C_0$ vs $^{13}C_{12}$ 0.14% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS	SP10-0105	No single DD/DF $\geq$ 0.5%
Mass Balance Purity Factor		98.90%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

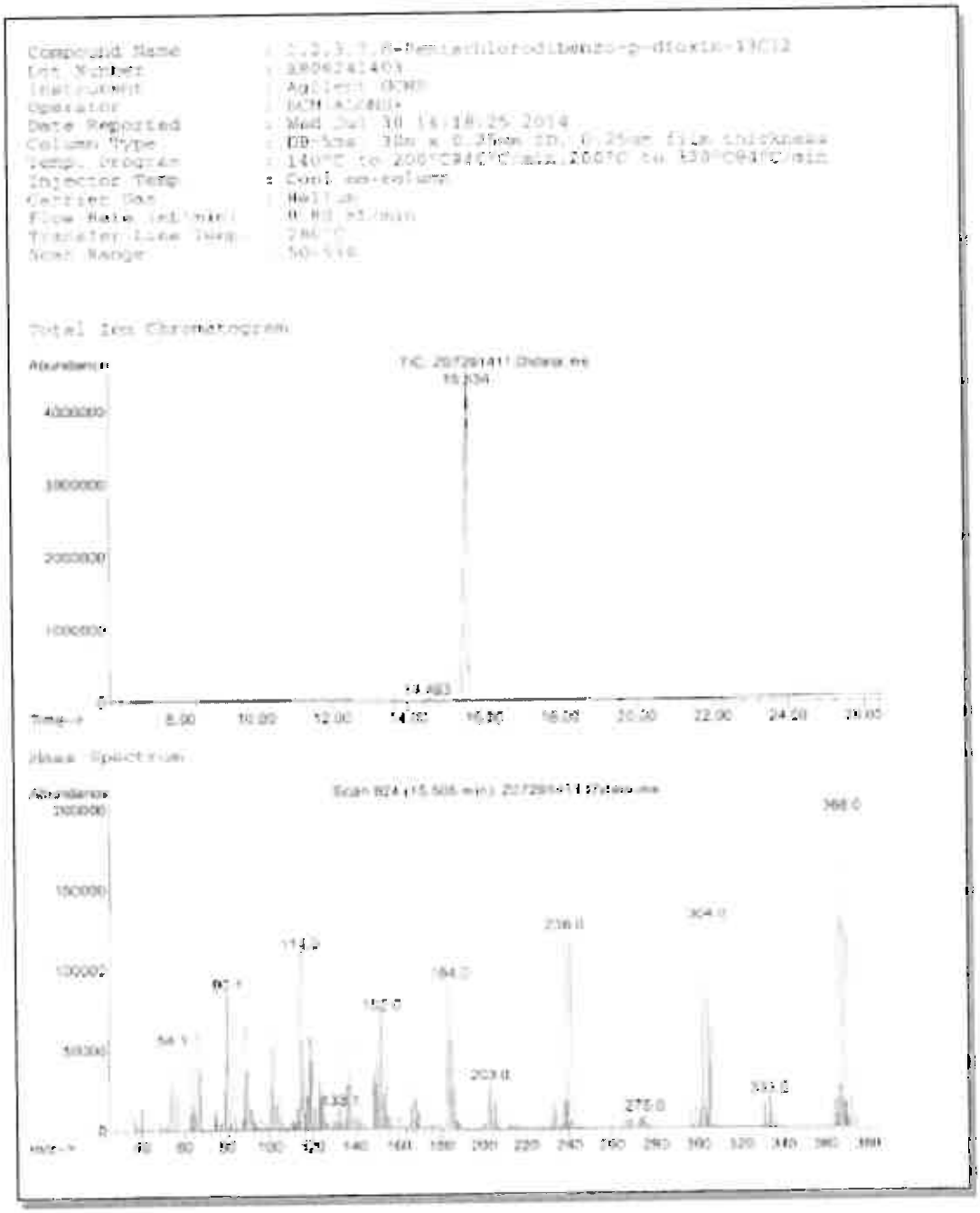


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min, hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMP-085 P GC 6 2014-07-30 18-11-11\002B0201.D
Instrument:	GC#6
Sample Name:	ER06241403
Acquired:	July 30, 2014

Peak #	Ret Time	Area	Height	Area %
1	6.73	7.32	3.42	0.07
2	8.02	3.79	1.60	0.04
3	9.00	8.74	3.64	0.08
4	9.90	3.38	1.35	0.03
5	10.72	1.31	0.45	0.01
6	11.60	14.46	6.69	0.14
7	11.82	2.21	1.11	0.02
8	12.60	68.05	28.10	0.64
9	12.93	10594.10	4235.85	98.91
10	13.87	7.09	2.57	0.07

Spectral and Physical Data (cont.)

GC/MS



COA Revision History

Revision No.	Date	Reason for Revision
00	September 24, 2014	Initial version
01	February 10, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00361

r: 1/15/19 SKV

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

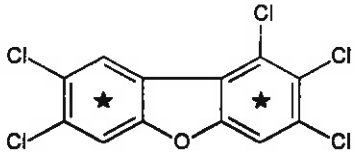
CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008

1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$

Catalog Number: EF-952
Solution Lot: ER012111-01
Expiration Date: January 2021
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For laboratory use only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**



- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	99.2%	50.00 ± 0.32 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	ER012111-01	50.7	± 5%	0.4	≤ 3%
Previous Lot	ER0100407-02	51.0	± 5%	0.5	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Darren Ellsworth, Quality Assurance Manager

February 15, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3OCl_5$
Compound Lot:	ER090110-01	**CAS Number:**	109719-77-9
		Molecular Weight:	352.33

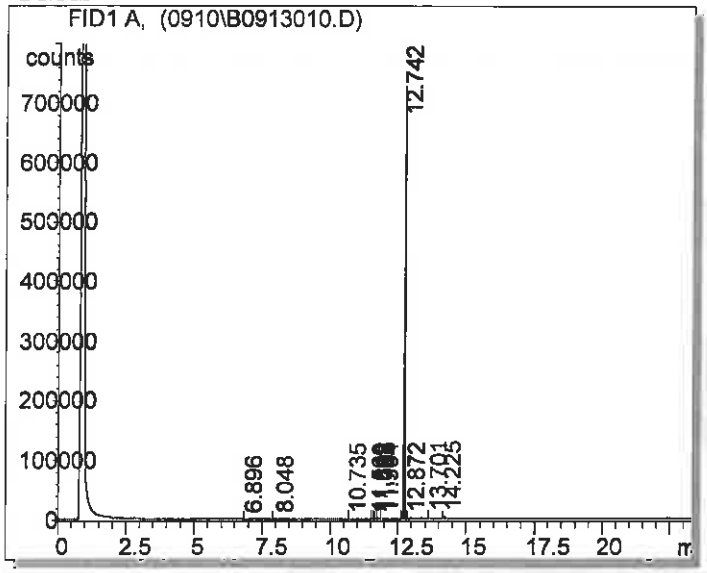
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.2%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.03% $^{13}C_6$ vs $^{13}C_{12}$
Purity Factor		99.17%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	S:\GC\GC2\2010\0910\B0913010.D
Instrument:	GC#2
Sample Name:	ER090110-01
Acquired:	September 13, 2010

Peak #	Ret Time	Area	Height	Area %
1	6.90	618.64	296.84	0.04
2	8.05	254 50	102.70	0.01
3	10.74	162 25	70.86	0.01
4	11 57	145 03	82.11	0.01
5	11 62	468 46	216.27	0.03
6	11 69	1863 76	870.51	0.11
7	11.79	1631 76	576.35	0.10
8	11.90	421 31	184.81	0.02
9	12.74	1702290 00	729831.00	99.20
10	12.87	308 15	147.54	0.02
11	13.70	3743 55	1299.40	0.22
12	14.23	4032 24	1491.01	0.23

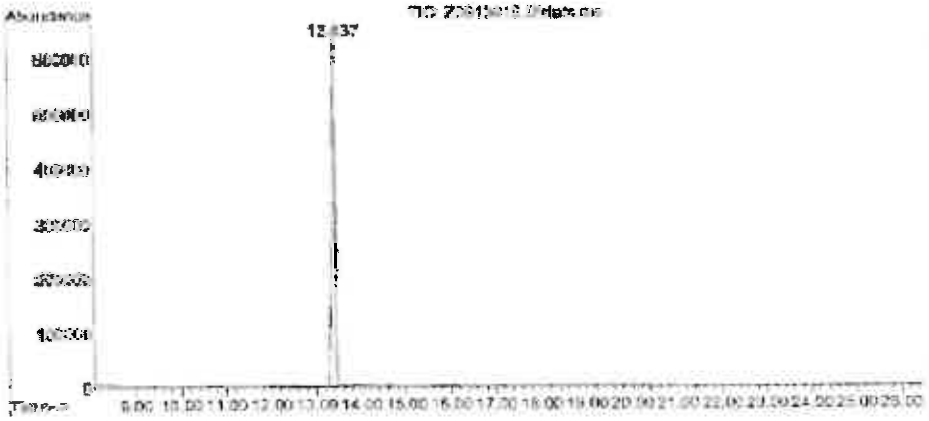
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

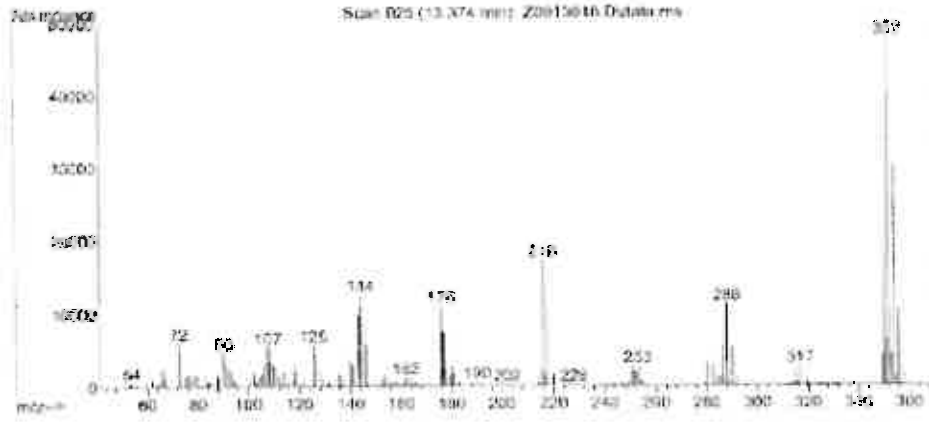
Compound Name : 1,2,3,7,8-Pentachlorodibenzofuran-13C12
Lot Number : ER090110-01
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : RPC - C10106
Date Reported : Tue Sep 14 11:05:33 2010
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@40°C/min,200°C to 300°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL/min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	February 11, 2011	Initial version
01	March 01, 2011	Corrected typographical error: Chemical Structure
02	February 15, 2016	Updated Safety Section from "Flammable" to "Danger. See Safety Data Sheet".

Reagent

HRDXNIDA_00362

P: 1/15/19 SKV

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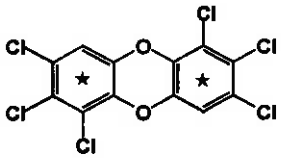
Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number:	ED-966
Solution Lot:	ER03151801
Expiration Date:	March 2028
Solvent:	n-Nonane:Toluene (80:20) (v/v)
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	> 99.9%	50.03 ± 0.28 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER03151801	52.29	± 5%	0.2	≤ 3%
Previous Lot	ER010209-01	48.05	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using balances that have been qualified and calibrated to ISO 17025 requirements. All calibrations utilize NIST traceable weights which are calibrated externally by a qualified ISO 17025 accredited calibration laboratory to NIST standards. Qualification of each balance includes the assignment of a minimum weighing by a qualified and ISO 17025 accredited calibration vendor taking into consideration the balance and installed environmental conditions to ensure compliance with USP tolerances of NMT 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darren Ellsworth, Quality Assurance Manager

April 19, 2018
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	FN01151802	**CAS Number:**	109719-81-5
		Molecular Weight:	402.77

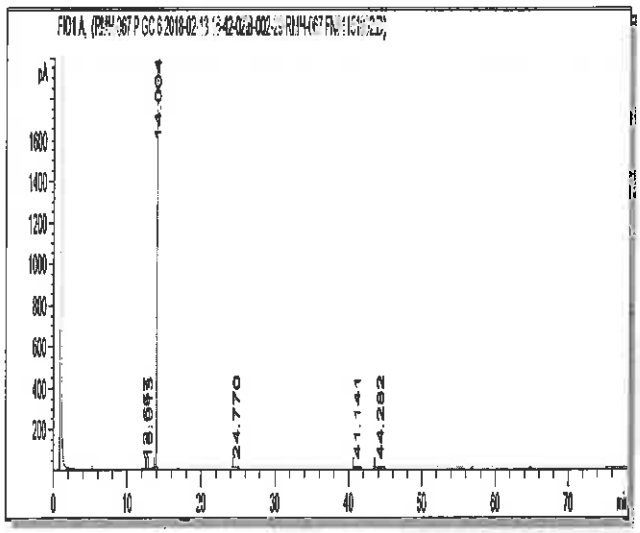
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$ 0.04% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 1.0%
Mass Balance Purity Factor		98.96%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-067 P GC 6 2018-02-13 16-42-02\B-002-29.D
Instrument:	GC#6
Sample Name:	FN01151802
Acquired:	February 13, 2018

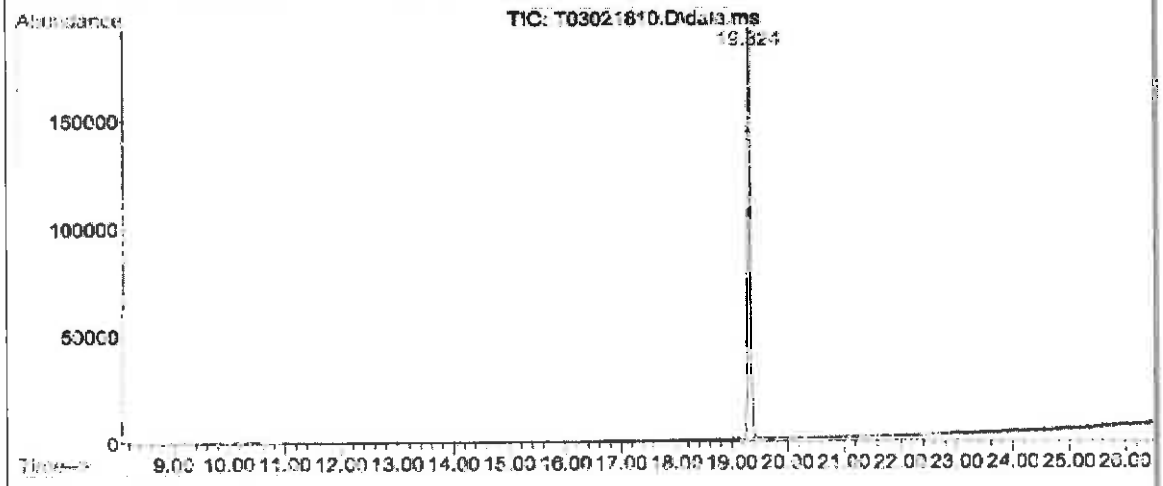
Peak #	Ret Time	Area	Height	Area %
1	12.66	1 69	0.62	0.03
2	13.01	1 96	0.53	0.03
3	14 00	5617 62	1952.76	98.87
4	24 77	5.26	0.34	0.09
5	41 14	10.58	0.38	0.19
6	44 28	44.69	1.49	0.79

Spectral and Physical Data (cont.)

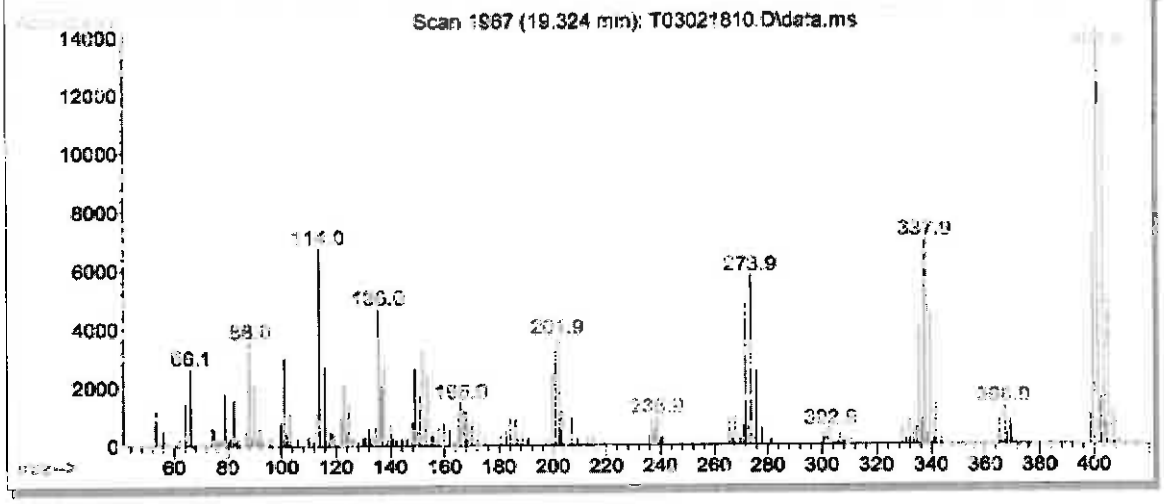
GC/MS

```
Compound Name          : 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin-13C12
Lot Number             : FW01151802
Instrument             : Agilent GCMS
Operator               : ECM(SGIUPTRE)
Date Reported          : Mon Mar 05 10:17:32 2018
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00365

Rec 11/28/18 SKV

1450145
ID: HRDXNIDA_00347
Exp: 04/30/27 Prpd: SKV
13C-OCDD [10 ug/mL]

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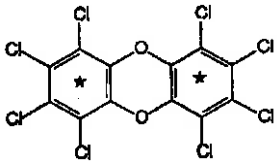
Cerilliant Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Octachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-981-1.2
Solution Lot: ER04051701
Expiration Date: April 2027
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
Octachlorodibenzo-p-dioxin-$^{13}C_{12}$	> 99.9%	10.00 ± 0.05 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04057101	10.22	± 5%	1.1	≤ 5%
Previous Lot	ER06061601	10.17	± 5%	0 8	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

May 19, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	70°C to 200°C at 40°C/min 200°C to 280°C at 10°C/min hold 15 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	3
Linearity (r):	0.997

Neat Material Data

Compound Name:	Octachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}Cl_8O_2$
Compound Lot:	ER04041601	**CAS Number:**	114423-97-1
		Molecular Weight:	471.66

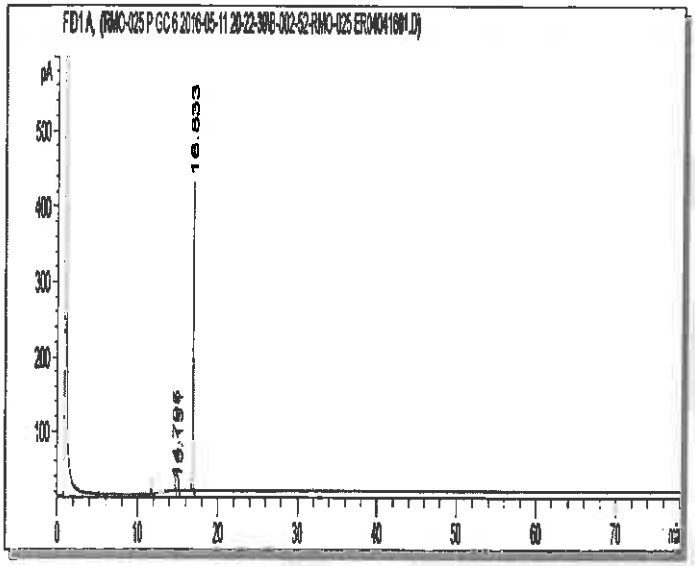
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.07% $^{13}C_0$ vs $^{13}C_{12}$
		0.96% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.15%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMO-025 P GC 6 2016-05-11 20-22-39\B-002-52.D
Instrument:	GC#6
Sample Name:	ER04041601
Acquired:	May 11, 2016

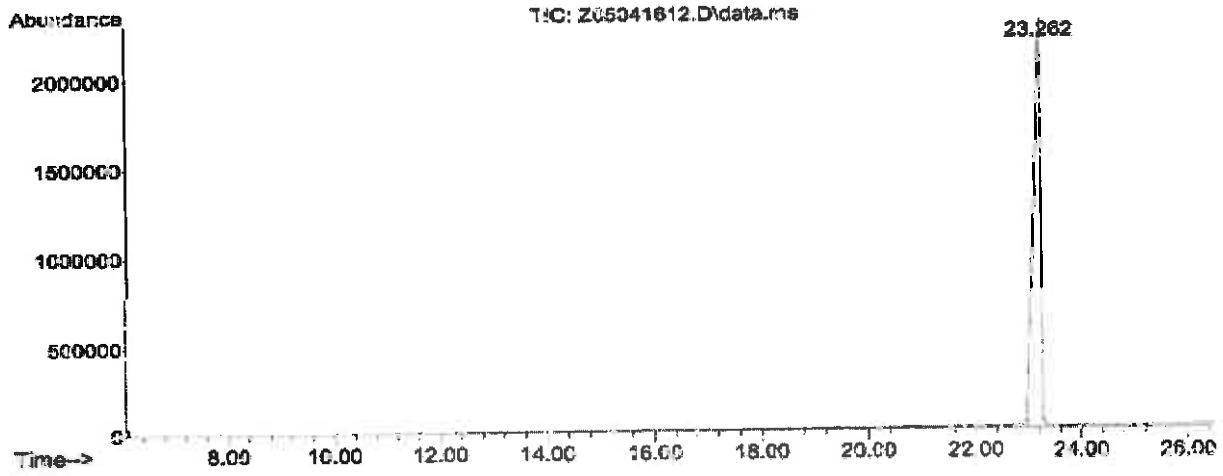
Peak #	Ret Time	Area	Height	Area %
1	14.80	12.12	3.62	0.61
2	15.15	4.72	1.32	0.24
3	16.83	1980.56	409.54	99.16

Spectral and Physical Data (cont.)

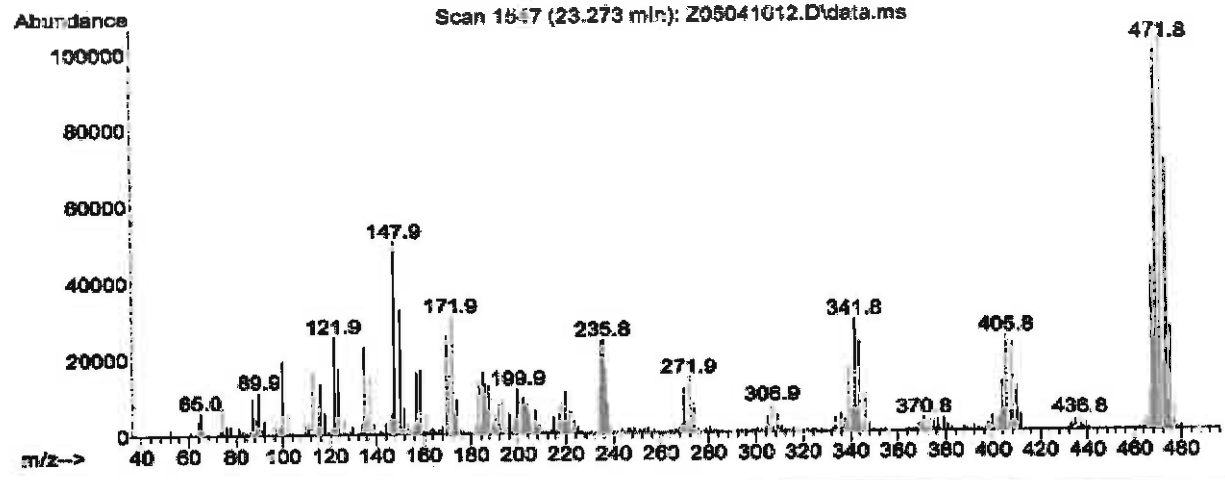
GC/MS

Compound Name	: Octachlorodibenzo-p-dioxin-13C12
Lot Number	: ERC-041601
Instrument	: Agilent GCMS
Operator	: ECM(SGIUFFRE)
Date Reported	: Wed May 04 13:45:40 2016
Column Type	: DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program	: 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.	: Cool on-column
Carrier Gas	: Helium
Flow Rate (mL\min)	: 0.80 mL/min
Transfer Line Temp.	: 280°C
Scan Range	: 50-550

Total Ion Chromatogram



Mass Spectrum



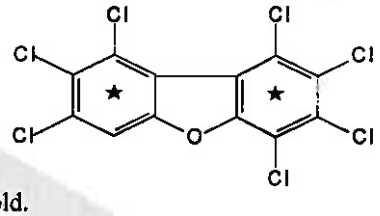
Reagent

HRDXNIDA_00375

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-988
Solution Lot:	ER04251601
Expiration Date:	May 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	99.1%	49.99 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass, Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL)		%RSD - Homogeneity	
		Actual Results	Acceptance Criteria	Actual Results	Acceptance Criteria
New Lot	ER04251601	49.11	± 5%	0.2	≤ 3%
Previous Lot	ER053107-02	50.58	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Darron Ellsworth, Quality Assurance Manager

November 09, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8,9-Heptachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}HCl_7O$
Compound Lot:	ER04041602	**CAS Number:**	109719-94-0
		Molecular Weight:	421.22

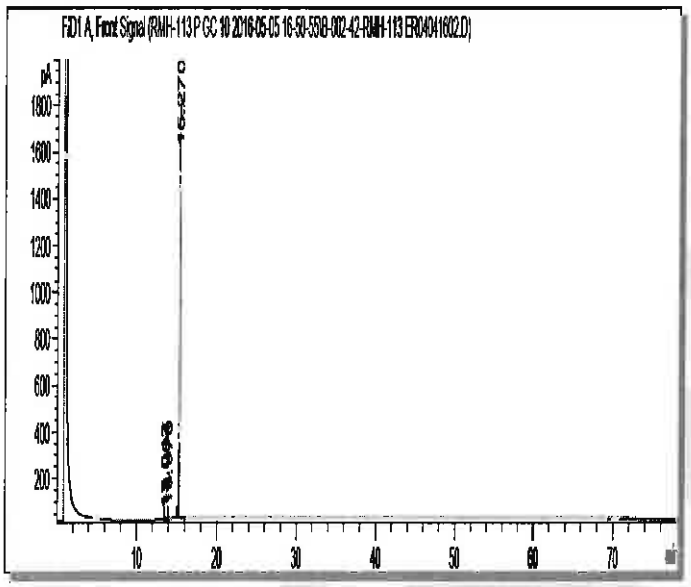
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.1%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS SIM	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.02% $^{13}C_0$ vs $^{13}C_{12}$
		0.16% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.10%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The primary chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data (cont.)

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-113 P GC 10 2016-05-05 16-50-55\B-002-42.D
Instrument:	GC#10
Sample Name:	ER04041602
Acquired:	May 05, 2016

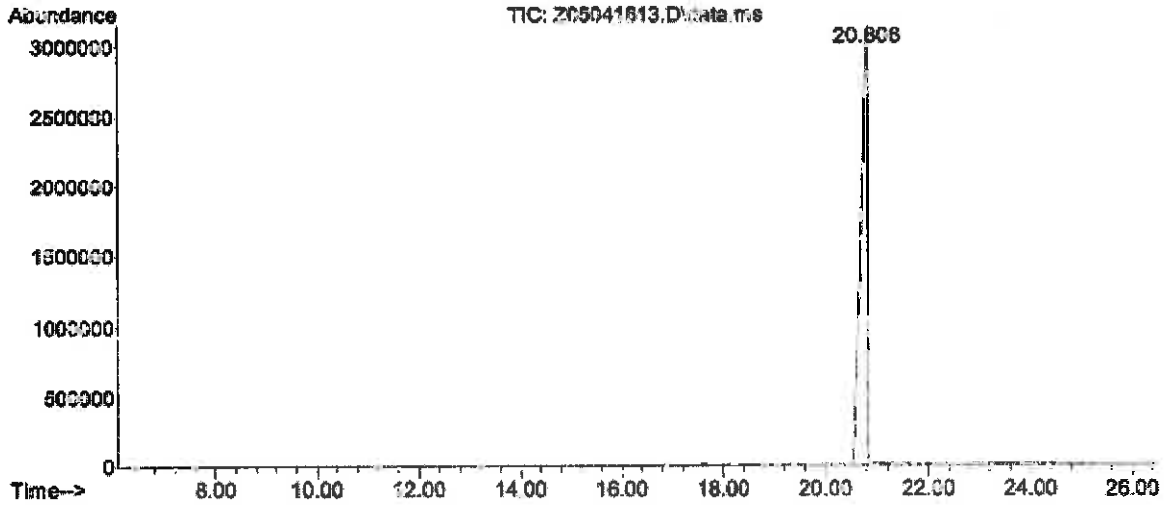
Peak #	Ret Time	Area	Height	Area %
1	13.51	8.76	2.52	0.12
2	13.68	17.42	7.45	0.24
3	13.97	39.65	15.48	0.54
4	15.27	7226.95	1798.33	99.10

Spectral and Physical Data (cont.)

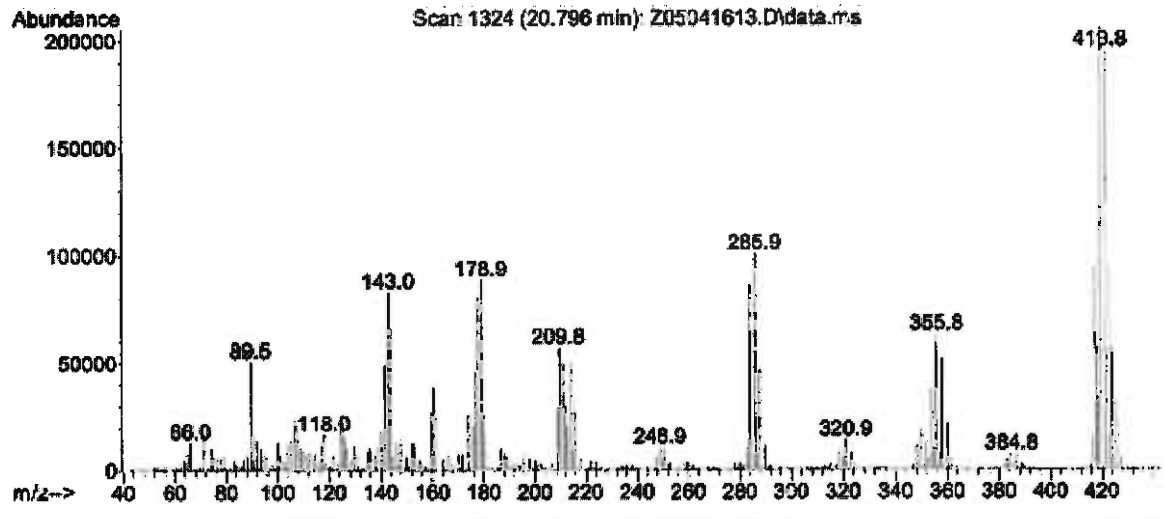
GC/MS

```
Compound Name          : 1,2,3,4,7,8,9-Heptachlorodibenzofuran-13C12
Lot Number             : ER04041602
Instrument             : Agilent GCMS
Operator               : ECM(SGIUFFRE)
Date Reported          : Wed May 04 15:34:28 2016
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



COA Revision History

Revision No.	Date	Reason for Revision
00	June 21, 2016	Initial version
01	November 09, 2016	Corrected Expiration Date from March 2026 to May 2026.

Reagent

HRDXNIDA_00376

N: 4/8/19 SW

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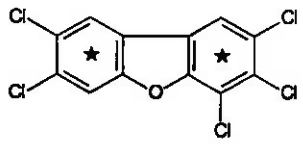
Revision 00

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-958
Solution Lot:	ER01061701
Expiration Date:	January 2027
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	97.9%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass, Purity Factor of the analyte(s), measured mass of the solution, and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER01061701	50.51	± 5%	0.1	≤ 3%
Previous Lot	ER11041601	49.56	± 5%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

January 27, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,4,7,8-Pentachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_3Cl_5O$
Compound Lot:	ER11101601	**CAS Number:**	116843-02-8
		Molecular Weight:	352.33

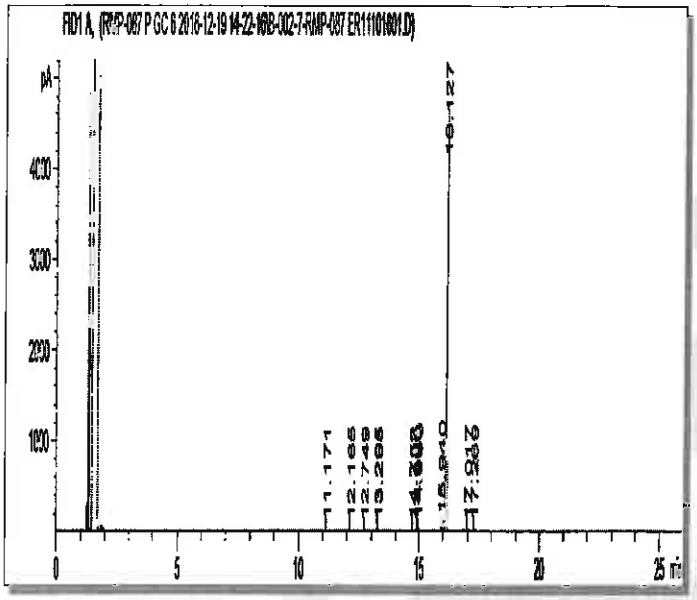
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{13}C_0$ vs $^{13}C_{12}$
		0.02% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		**98.33%**

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMP-087 P GC 6 2016-12-19 14-22-16\B-002-7.D
Instrument:	GC#6
Sample Name:	ER11101601
Acquired:	December 19, 2016

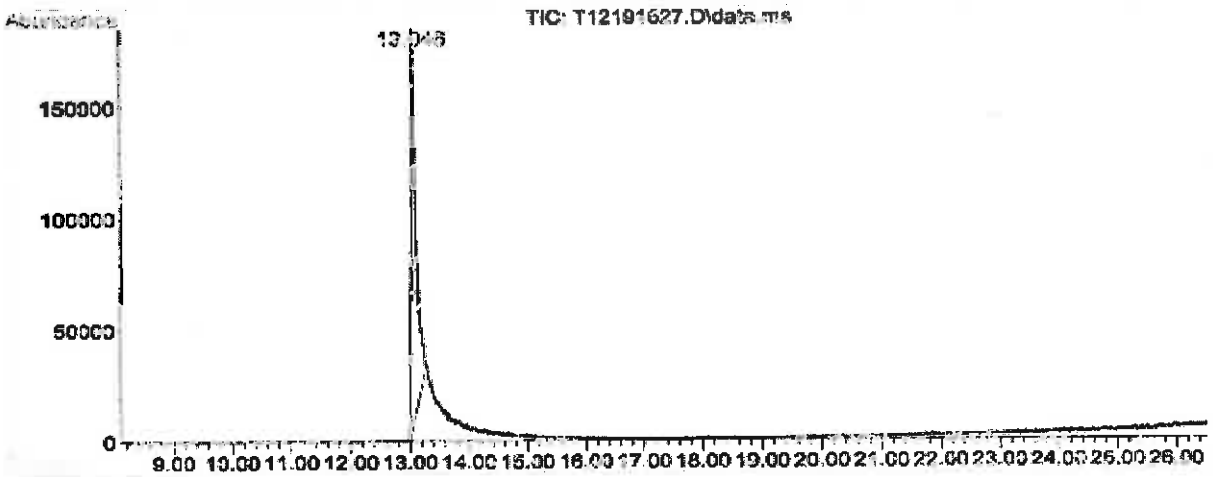
Peak #	Ret Time	Area	Height	Area %
1	11.17	0.94	0.40	0.01
2	12.17	1.30	0.39	0.01
3	12.75	0.47	0.20	0.00
4	13.30	0.90	0.35	0.01
5	14.75	1.70	0.87	0.02
6	14.91	1.09	0.56	0.01
7	14.97	32.24	17.54	0.29
8	15.94	124.38	64.36	1.13
9	16.13	10866.60	4688.80	98.41
10	17.02	6.31	2.46	0.06
11	17.27	6.76	2.34	0.06

Spectral and Physical Data (cont.)

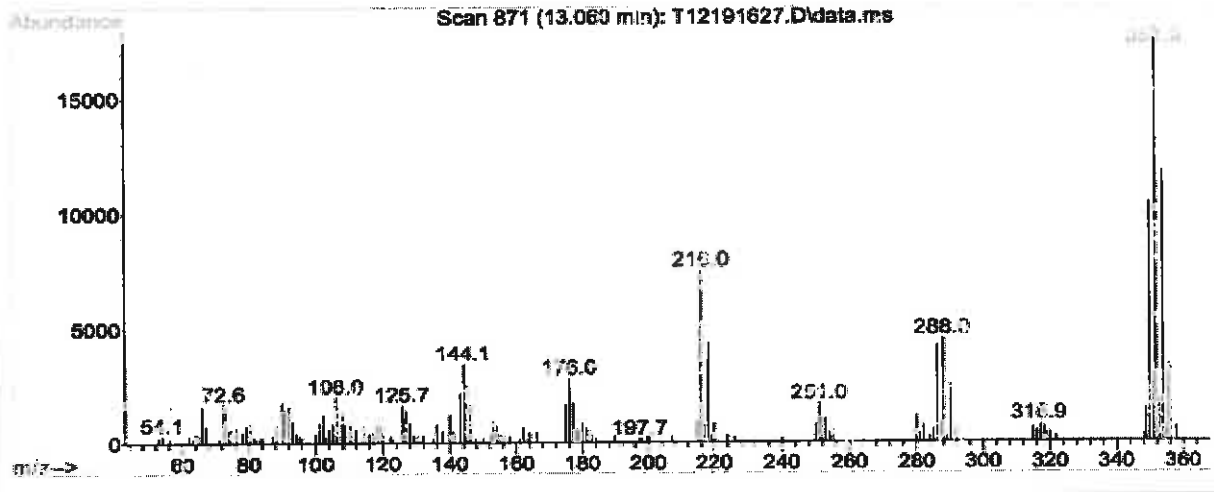
GC/MS

```
Compound Name          : 2,3,4,7,8-Pentachlorodibenzofuran-13C12
Lot Number             : ER111201601
Instrument             : Agilent GCMS
Operator               : ECM(SGUFFRE)
Date Reported          : Tue Dec 20 12:19:55 2016
Column Type            : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program          : 140°C to 200°C@40°C/min,200°C to 320°C@4°C/min
Injector Temp.         : Cool on-column
Carrier Gas            : Helium
Flow Rate (mL\min)     : 0.80 mL/min
Transfer Line Temp.    : 280°C
Scan Range             : 50-550
```

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIDA_00377

r: 4/8/19 SKJ

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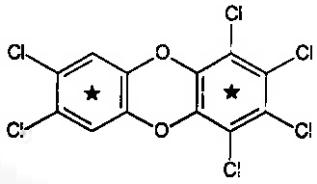
Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$



Catalog Number: ED-946
Solution Lot: ER04211601
Expiration Date: June 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.3%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL)		%RSD - Homogeneity	
		Actual Results	Acceptance Criteria	Actual Results	Acceptance Criteria
New Lot	ER04211601	49.24	± 5%	0.4	≤ 3%
Previous Lot	ER102711-01	49.69	± 5%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darren Ellsworth, Quality Assurance Manager

August 11, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER011008-01	**CAS Number:**	109719-80-4
		Molecular Weight:	402.77

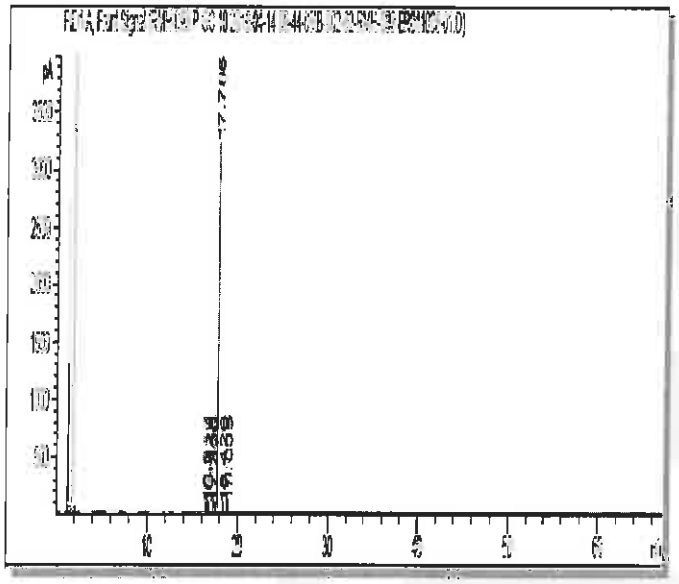
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 0.5%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.08% $^{13}C_0$ vs $^{13}C_{12}$
		0.21% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.26%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

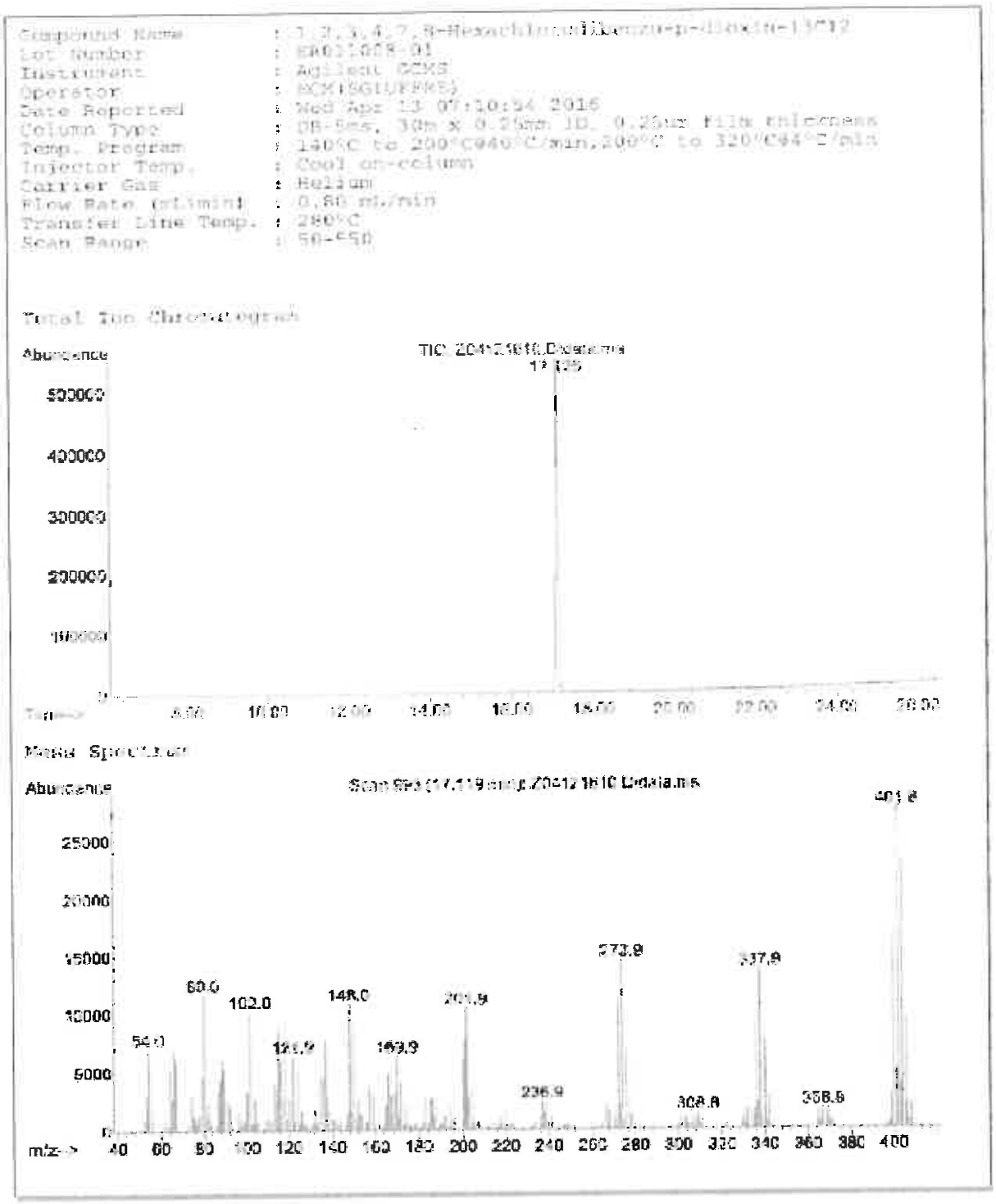


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-098 P GC 10 2016-04-14 08-44-08\B-002-62.D
Instrument:	GC#10
Sample Name:	ER011008-01
Acquired:	April 14, 2016

Peak #	Ret Time	Area	Height	Area %
1	16.56	16.58	7.74	0.19
2	16.72	11.25	5.08	0.13
3	16.83	8.45	4.05	0.10
4	17.30	1.81	0.71	0.02
5	17.48	1.07	0.50	0.01
6	17.79	8682.22	3203.58	99.29
7	18.43	1.99	0.68	0.02
8	19.01	20.62	6.08	0.24

Spectral and Physical Data (cont.)

GC/MS



Reagent

HRDXNIDA_00378

r: 4/6/18 SKJ

Cerilliant
Analytical Reference Standards
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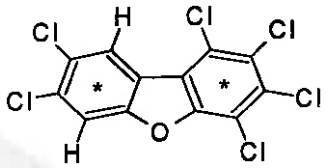
Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$



Catalog Number:	EF-963
Solution Lot:	ER04211701
Expiration Date:	July 2027
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration

Component	Solution Purity	Certified Concentration
1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	99.4%	50.00 ± 0.28 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s); measured mass of the solution; and the density of the pure diluent at 20°C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER04211701	49.47	± 5%	0.2	≤ 3%
Previous Lot	ER072810-02	45.87	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release

Traceability

- Gravemetrically prepared using balances that have been qualified and calibrated to ISO 17025 requirements. All calibrations utilize NIST traceable weights which are calibrated externally by a qualified ISO 17025 accredited calibration laboratory to NIST standards. Qualification of each balance includes the assignment of a minimum weighing by a qualified and ISO 17025 accredited calibration vendor taking into consideration the balance and installed environmental conditions to ensure compliance with USP tolerances of NMT 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

September 11, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4,7,8-Hexachlorodibenzofuran-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}Cl_6H_2O$
Compound Lot:	ER11281601	**CAS Number:**	114423-98-2
		Molecular Weight:	386.77

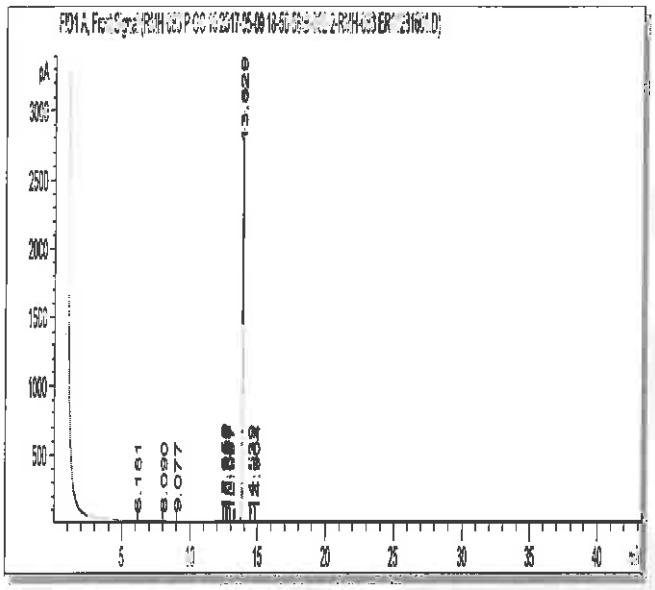
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0102	99.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.01% $^{13}C_0$ vs $^{13}C_{12}$
		0.06% $^{13}C_6$ vs $^{13}C_{12}$
Impurity Analysis by GC/MS SIM	SP10-0105	No Single DD/DF ≥ 0.5%
Mass Balance Purity Factor		99.31%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods Acceptance criteria requires the purity values to be within 0.5% of each other.
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 30 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMH-083 P GC 10 2017-05-09 18-50-58\B-002-2.D
Instrument:	GC#10
Sample Name:	ER11281601
Acquired:	May 09, 2017

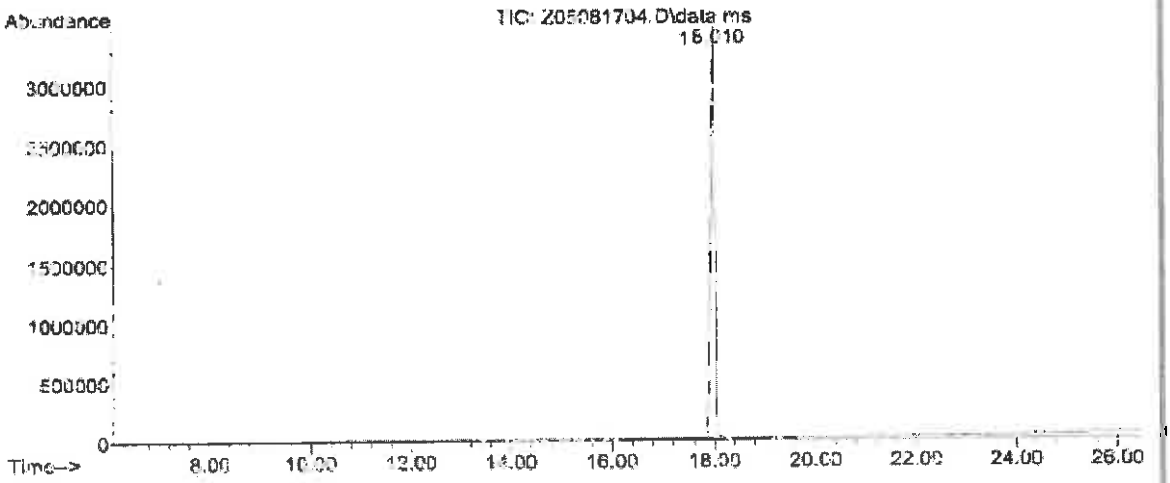
Peak #	Ret Time	Area	Height	Area %
1	6.18	1.10	0.64	0.01
2	8.09	2.00	0.70	0.02
3	9.08	1.17	0.48	0.01
4	12.55	14.76	7.25	0.16
5	12.73	32.67	11.32	0.36
6	12.84	5.45	2.50	0.06
7	13.00	2.51	1.30	0.03
8	13.83	8993.56	3122.16	99.30
9	14.54	1.11	0.20	0.01
10	14.90	2.71	0.86	0.03

Spectral and Physical Data (cont.)

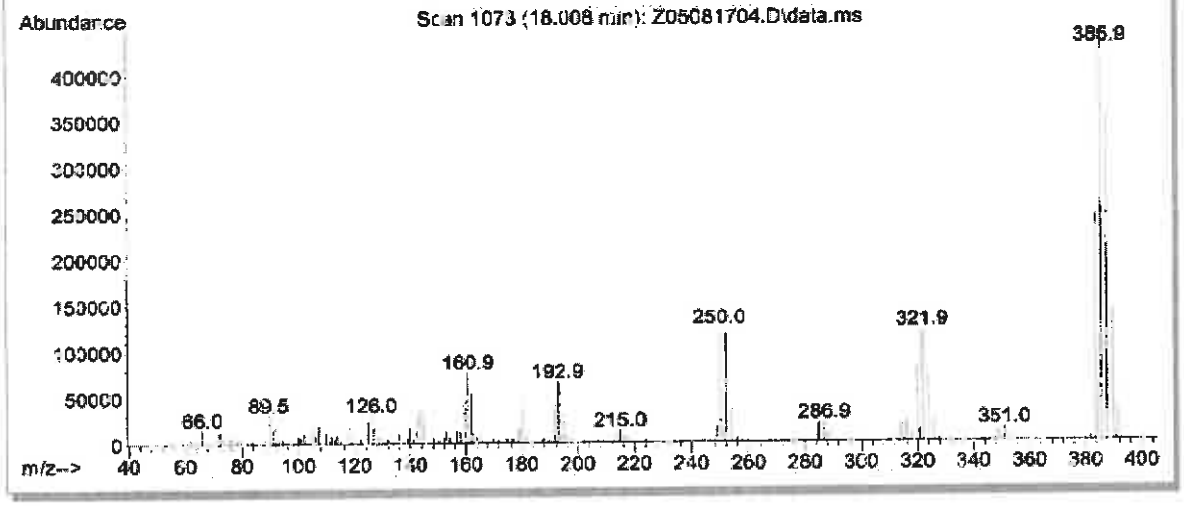
GC/MS

Compound Name : 1,2,3,4,7,8-hexachlorodibenzofuran-13C12
Lot Number : ERL180160
Instrument : Agilent GCMS
Operator : ECM(SGIUFFRE)
Date Reported : Mon May 08 09:30:09 2017
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 200°C@6°C/min,200°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C
Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNIS_00110

R: 9/4/18 SKV

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CIL

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$

Catalog Number: ED-996
Solution Lot: ER08221601
Expiration Date: September 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampoules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER08221601	49.20	± 5%	0.3	≤ 3%
Previous Lot	ER021313-01	49.56	± 5%	0.2	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

September 28, 2016
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_2Cl_6O_2$
Compound Lot:	ER110510-01	**CAS Number:**	109719-82-6
		Molecular Weight:	402.77

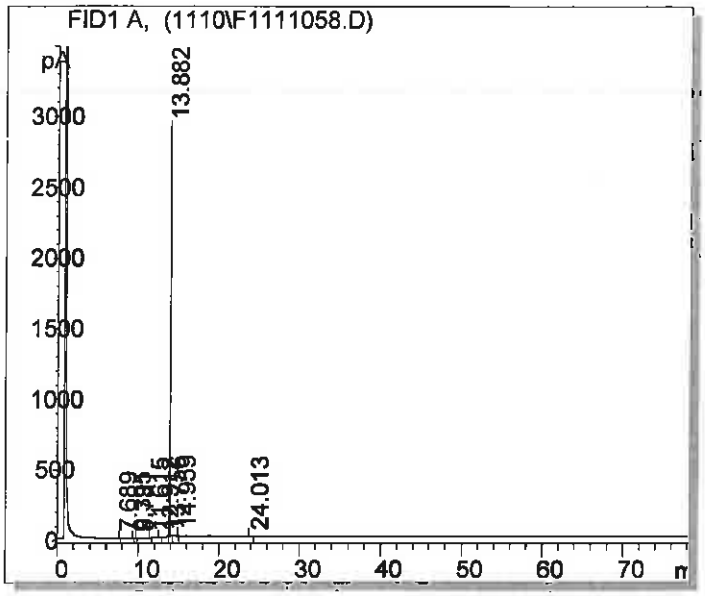
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.04% $^{13}C_0$ vs $^{13}C_{12}$
		0.27% $^{13}C_6$ vs $^{13}C_{12}$
Mass Balance Purity Factor		99.02%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID



Column:	DB-5ms 30m x 0.53mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 65 min
Injector Temp:	Cool-on-column
Detector Temp:	325°C
Data File Name:	S:\GC\GC6\2010\1110\F1111058.D
Instrument:	GC#6
Sample Name:	ER110510-01
Acquired:	November 12, 2010

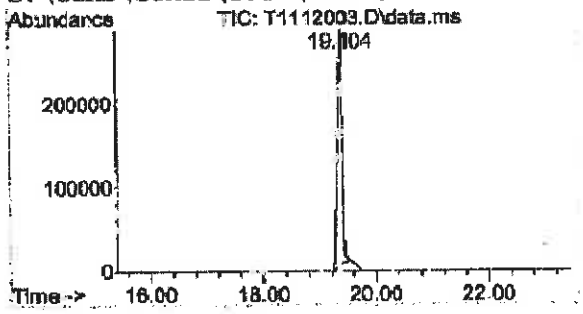
Peak #	Ret Time	Area	Height	Area %
1	4 69	0.45	0.10	0.01
2	9.40	0 72	0.14	0.01
3	9.78	0 80	0.13	0.01
4	11 62	7.34	2.54	0.09
5	12 91	2.59	0.23	0.03
6	13 76	1.91	1.00	0.02
7	13 88	8026.07	2938.74	99.11
8	14.96	36.82	11.38	0.45
9	24.01	21.08	1.62	0.26

Spectral and Physical Data (cont.)

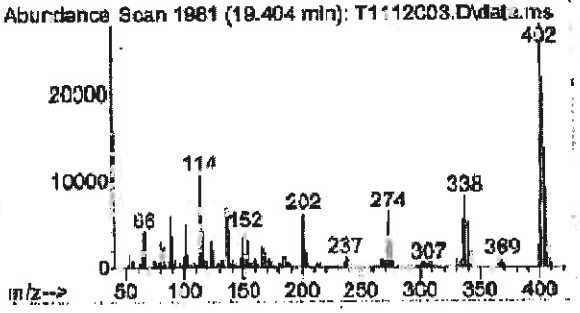
GC/MS

```
Compound Name     : 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin-13C12
Lot Number        : ER110510-01
Instrument        : Agilent 5973N MSD /6890N GC
Operator-Inst ID  : RPC - A147434
Date Reported     : Fri Nov 12 16:41:14 2010
Column Type       : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program     : 140°C to 200°C @40°C/min,200°C to 320°C @4°C/min
Injector Temp.    : Cool on-column          Trans. Line Temp : 280°C
Carrier Gas       : Helium                  Flow Rate        : 0.80 mL/min
```

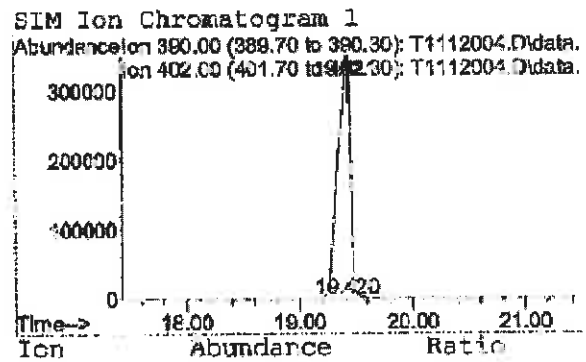
Total Ion Chromatogram
S:\GCMS\GCMS2\2010\1110\



Mass Spectrum
Scan Number: 1976 Scan Range: 50-550 amu

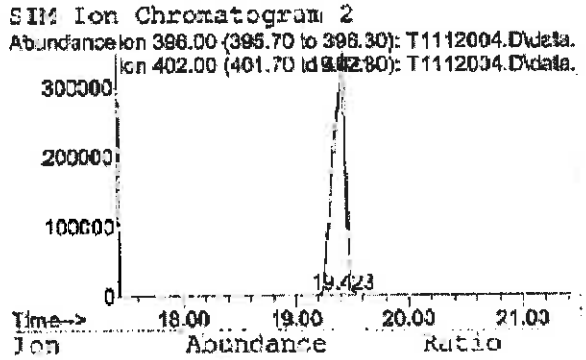


SIM Ion Chromatogram 1



Ion	Abundance	Ratio
402	26368380	99.96
390	9776	0.04

SIM Ion Chromatogram 2



Ion	Abundance	Ratio
402	26368380	99.73
396	72626	0.27

Reagent

HRDXNIS_00111

Rec: 9/4/18 SKV

Cerilliant
Analytical Reference Standards
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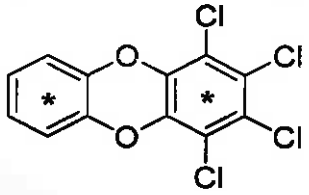
Certificate of Analysis

1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP



Catalog Number:	ED-911
Solution Lot:	ER11081602
Expiration Date:	January 2027
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration.

Component	Solution Purity	Certified Concentration
1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	99.7%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER11081602	51.01	± 10%	0.1	≤ 3%
Previous Lot	ER060710-01	50.59	± 10%	0.1	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB

Darron Ellsworth, Quality Assurance Manager

January 23, 2017
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	1,2,3,4-Tetrachlorodibenzo-p-dioxin-$^{13}C_{12}$	**Chemical Formula:**	$^{13}C_{12}H_4Cl_4O_2$
Compound Lot:	ER02021602	**CAS Number:**	114423-99-3
		Molecular Weight:	333.88

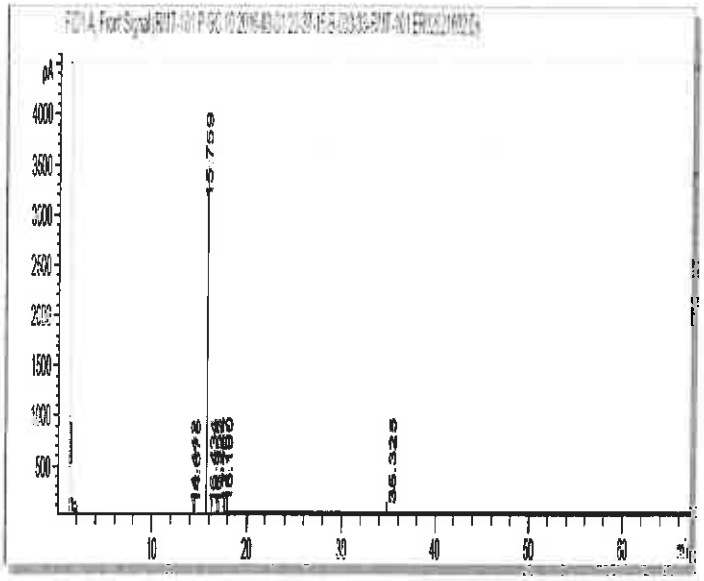
Neat Material Characterization Summary

Analytical Test	Method	Results
Chromatographic Purity by GC/FID Analysis	SP10-0101	99.0%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Impurity Analysis by GC/MS	SP10-0105	no single DD/DF impurity ≥ 1.0%
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.03% $^{13}C_0$ vs $^{13}C_{12}$ 0.01% $^{13}C_6$ vs $^{13}C_{12}$
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent by ^{1}H-NMR Analysis	USP <761>, SP10-0116	0.31% Dichloromethane
Mass Balance Purity Factor		98.71%

- Purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other
- The chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity.

Spectral and Physical Data

GC/FID

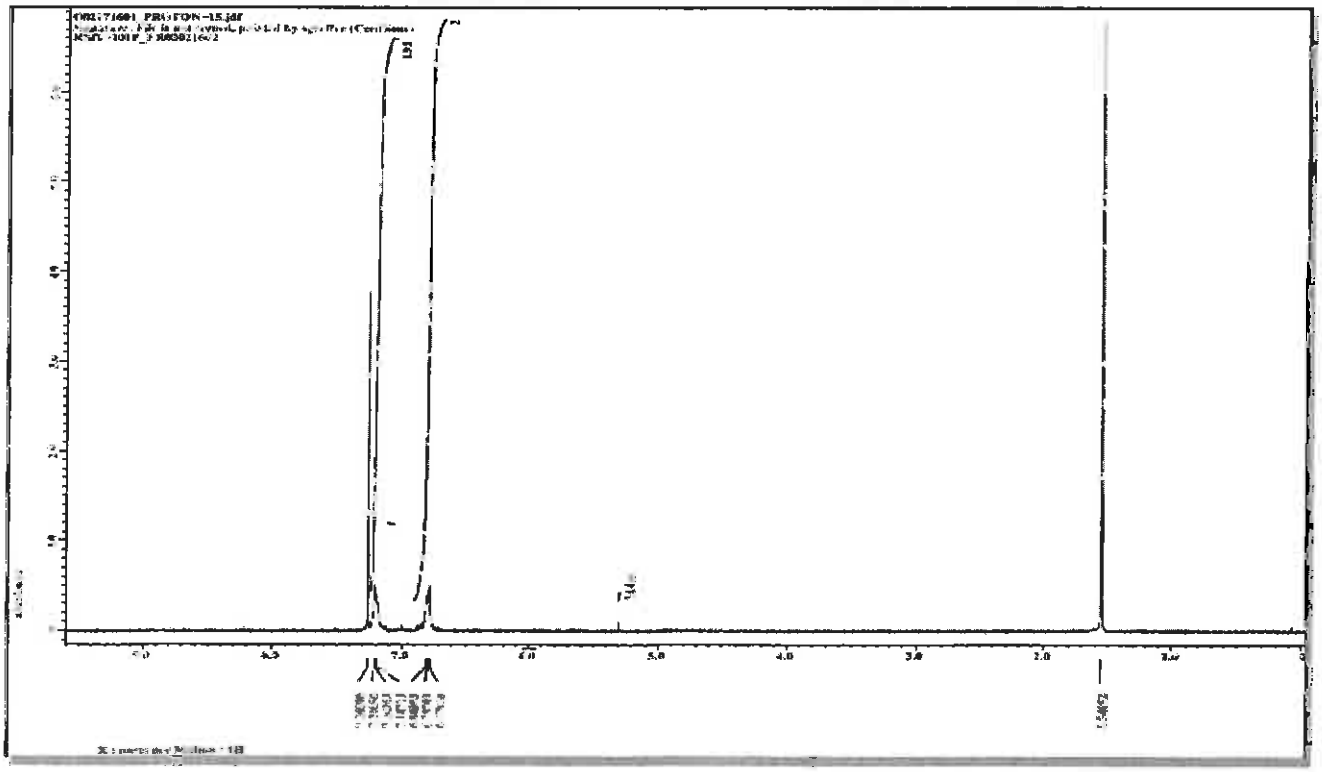


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	40°C to 300°C at 15°C/min hold 50 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	RMT-101 P GC 10 2016-03-01 20-37-15\B-003-33.D
Instrument:	GC#10
Sample Name:	ER02021602
Acquired:	March 01, 2016

Peak #	Ret Time	Area	Height	Area %
1	14.44	1.34	0.53	0.02
2	14.68	3.60	0.58	0.05
3	15.76	7522.29	3054.11	99.22
4	16.43	3.51	0.80	0.05
5	16.96	2.38	1.09	0.03
6	17.13	4.79	2.26	0.06
7	17.77	8.72	3.38	0.11
8	18.10	1.68	0.54	0.02
9	35.33	32.94	1.28	0.43

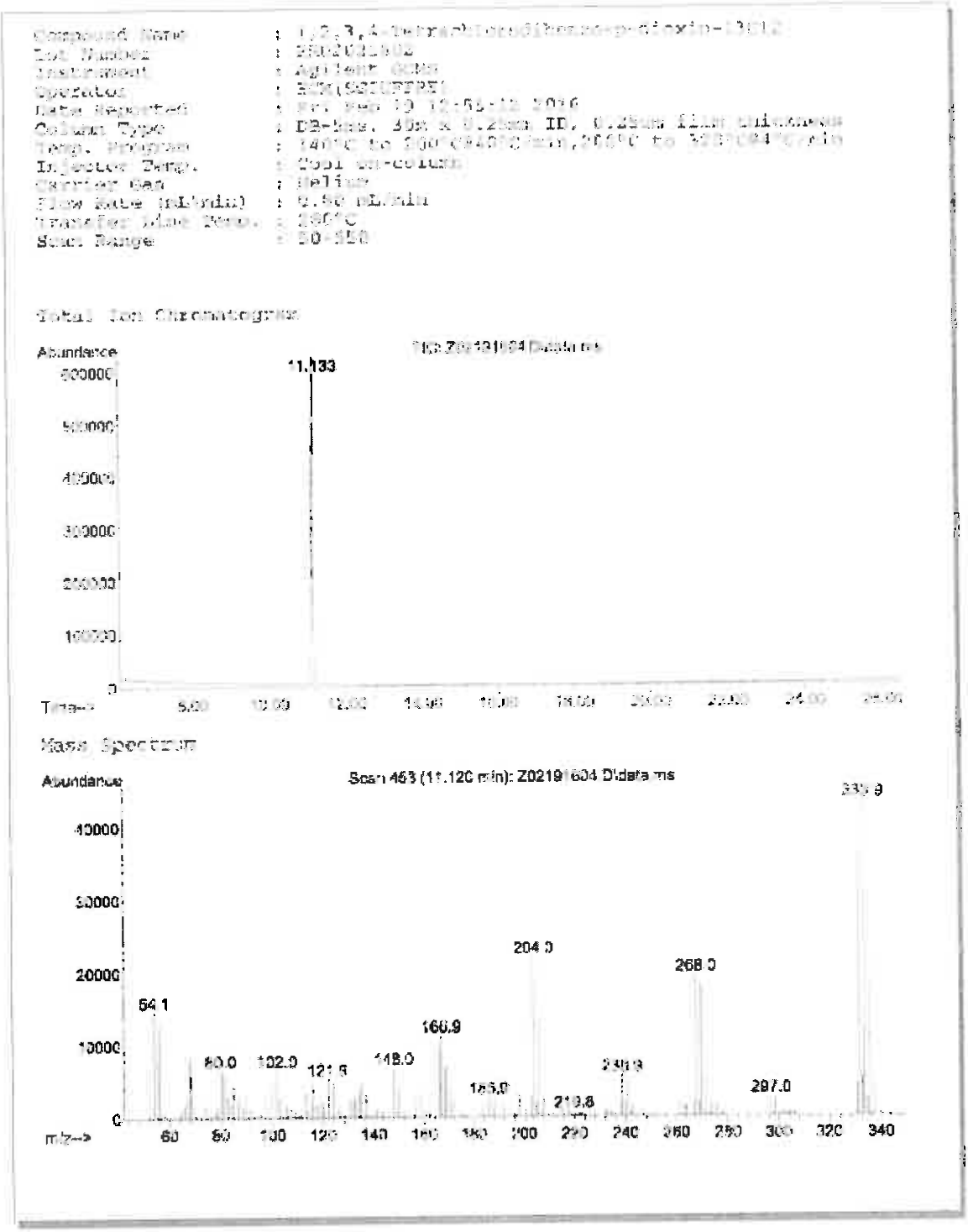
^{1}H NMR

Instrument:	JEOL ECS 400
Solvent:	Chloroform-D



Spectral and Physical Data (cont.)

GC/MS



Reagent

HRDXNSU_00187

R: 7/30/18 SRV

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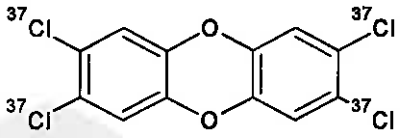
Revision 0

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$



Catalog Number:	ED-907
Solution Lot:	ER05211501
Expiration Date:	July 2025
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold
Shipping:	Ambient.
Intended Use:	For R&D/analytical purposes only. Not suitable for human or animal consumption.
Instructions for Use:	Sonicate before use.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 mL volume. We advise laboratories to quantitatively transfer desired volumes of this standard using established good laboratory practices to dilute to the desired concentration
- For MS Applications, we advise laboratories not to mix lots during a single sequence.

Component	Solution Purity	Certified Concentration
2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$	98.5%	50.00 ± 0.23 µg/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- This standard is prepared gravimetrically and mass results are reported on the conventional basis for weighing in air. Concentration is calculated based on: the actual measured mass; Purity Factor of the analyte(s), measured mass of the solution; and the density of the pure diluent at 20 °C.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (µg/mL) Actual Results	Verified Concentration (µg/mL) Acceptance Criteria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Criteria
New Lot	ER05211501	50.60	± 10%	0.2	≤ 5%
Previous Lot	ER052010-02	49.73	± 10%	0.5	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.
- The % RSD of the Previous Lot represents variability of the analysis performed at the time of release.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared 4-point calibration curve gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after

ACLASS ACCREDITED
REFERENCE MATERIAL PRODUCER

Darron Ellsworth, Quality Assurance Manager

August 03, 2015
Date

Standard Solution Assay Parameters

Analysis Method:	GC/FID
Column:	DB-5ms 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	60°C to 300°C at 40°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	4
Linearity (r):	1.000

Neat Material Data

Compound Name:	2,3,7,8-Tetrachlorodibenzo-p-dioxin-$^{37}Cl_4$	**Chemical Formula:**	$C_{12}H_4O_2{}^{37}Cl_4$
Compound Lot:	ER040510-01	**CAS Number**	85508-50-5
		Molecular Weight	328.02

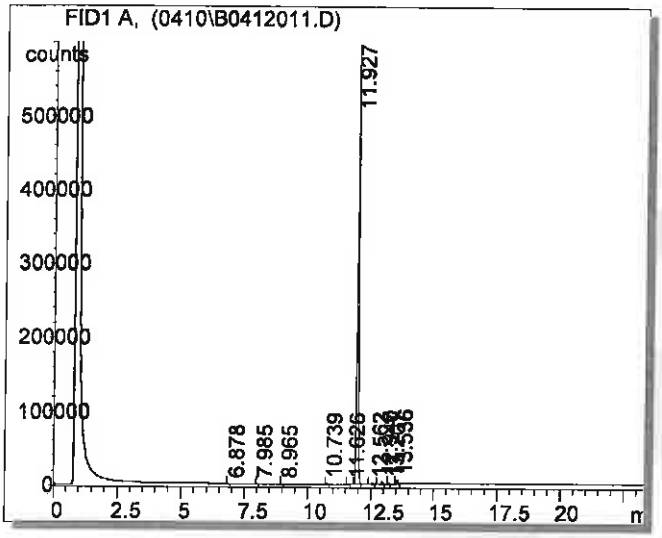
Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by GC/FID Analysis	SP10-0101	98.3%
Identity by GC/MS Analysis	SP10-0105	Consistent with Structure
Isotopic Purity by GC/MS SIM Analysis	SP10-0105	0.00% $^{37}Cl_0$ vs $^{37}Cl_4$
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent Analysis by ^{1}H-NMR	USP <761>, SP10-0116	1.2% Chloroform
Purity Factor		97.14%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor.
- Purity factor does not include adjustment for chiral and/or isotopic purity

Spectral and Physical Data

GC/FID

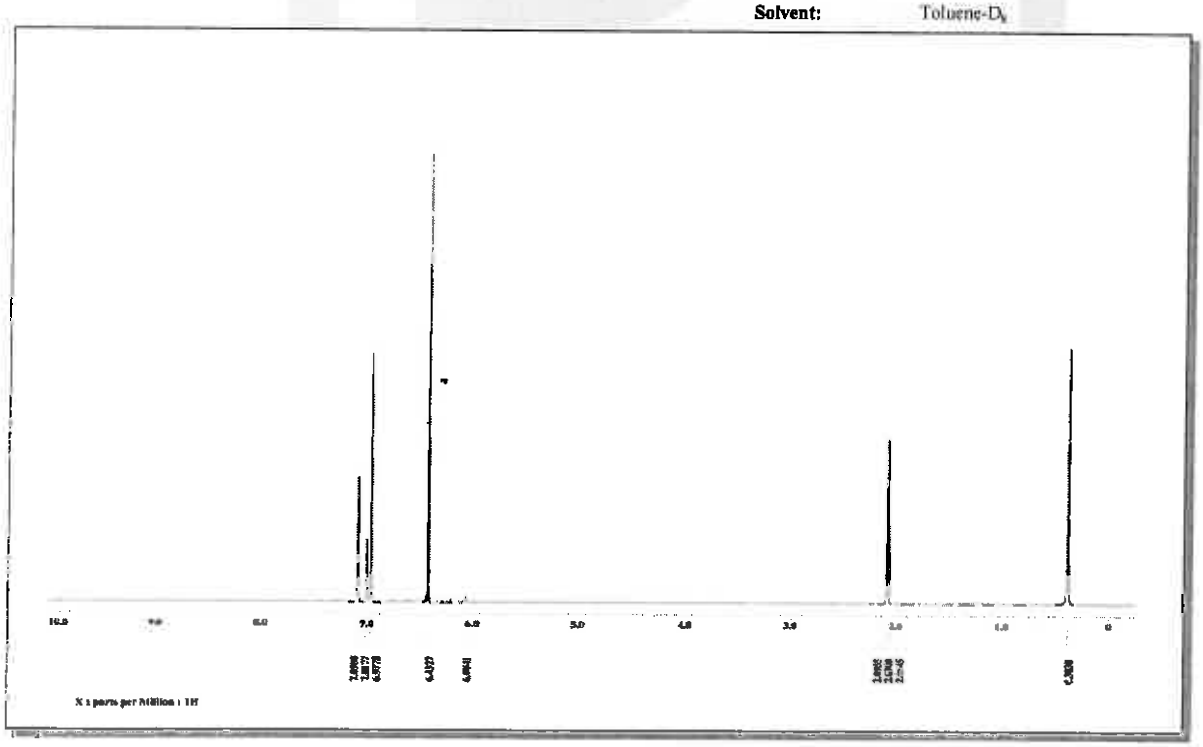


Column:	DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness
Temp Program:	100°C to 300°C at 15°C/min hold 10 min
Injector Temp:	Cool-on-Column
Detector Temp:	325°C
Data File Name:	S:\GC\GC2\2010\0410\B0412011.D
Instrument:	GC#2
Sample Name:	ER040510-01
Acquired:	April 13, 2010

Peak #	Ret Time	Area	Height	Area %
1	6.88	245.58	89.37	0.01
2	7.99	304.03	131.27	0.01
3	8.97	233.91	72.32	0.01
4	10.74	931.14	265.29	0.04
5	11.63	127.86	46.74	0.01
6	11.93	2261830.00	580792.00	98.34
7	12.56	6435.54	1838.17	0.28
8	12.94	13336.80	4373.86	0.58
9	13.20	2178.30	729.98	0.09
10	13.54	14483.80	5038.43	0.63

^{1}H NMR

Instrument: JEOL ECS 400
Solvent: Toluene-D_8



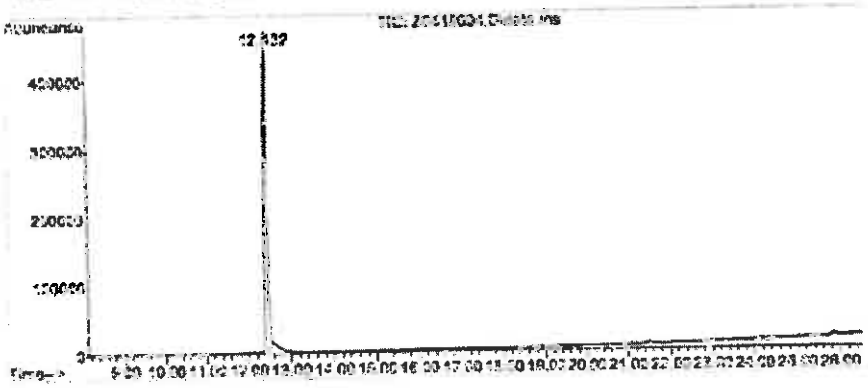
Spectral and Physical Data (cont.)

Identity by GC/MS Analysis

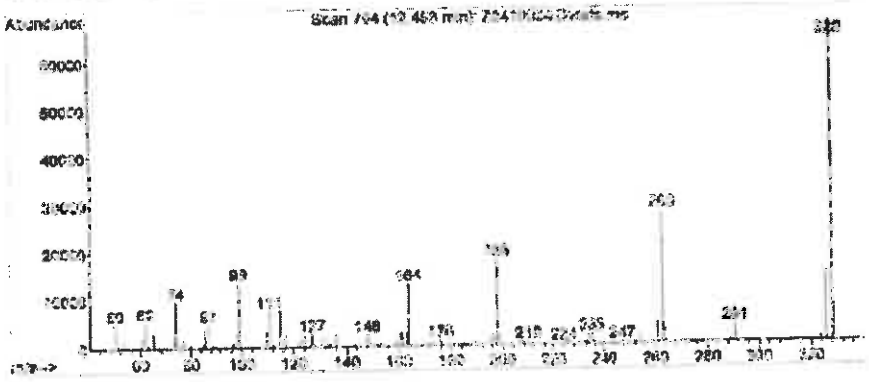
Compound Name : 2,3,7,8-Tetrachlorodibenzo-p-dioxin-37Cl4
Lot Number : WR060510-02
Instrument : Agilent 5973N MSD/6890N GC
Operator-Inst ID : RPC - C10106
Date Acquired : Mon Apr 19 13:28:09 2010
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness
Temp. Program : 140°C to 240°C@40°C/min,240°C to 320°C@4°C/min
Injector Temp. : Cool on-column
Carrier Gas : Helium
Flow Rate (mL\min) : 0.80 mL/min
Transfer Line Temp. : 280°C

Scan Range : 50-550

Total Ion Chromatogram



Mass Spectrum



Reagent

HRDXNTA_00092

R: 7/6/18 SRJ

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL

Certificate of Analysis

Method 1613 PAR Stock Solution

Certificate Quality
ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 15194
ISO 9001
GMP/GLP

Catalog Number: EDF-7999-10X
Solution Lot: ER02241602
Expiration Date: April 2026
Solvent: n-Nonane
Volume per Ampule: Not less than 1.2 mL
Storage: Store at room temperature. Do not store cold.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety: **Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1.2 volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TeCDD	ER04271502	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%	399.9 ± 4.0 ng/mL
2,3,7,8-TeCDF	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.97	99.4%	399.9 ± 4.0 ng/mL
1,2,3,7,8-PeCDD	ER110909-02	40321-76-4	$C_{12}H_3Cl_5O_2$	356.42	99.2%	2000 ± 20 ng/mL
1,2,3,7,8-PeCDF	ER03121401	57117-41-6	$C_{12}H_3Cl_5O$	340.42	99.5%	1999 ± 20 ng/mL
2,3,4,7,8-PeCDF	ER070710-01	57117-31-4	$C_{12}H_3Cl_5O$	340.42	99.4%	1999 ± 20 ng/mL
1,2,3,4,7,8-HxCDD	ER080108-02	39227-28-6	$C_{12}H_2Cl_6O_2$	390.86	98.6%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDD	ER03231501	57653-85-7	$C_{12}H_2Cl_6O_2$	390.86	99.6%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDD	ER02041601	19408-74-3	$C_{12}H_2Cl_6O_2$	390.86	99.2%	2000 ± 20 ng/mL
1,2,3,4,7,8-HxCDF	ER021110-01	70648-26-9	$C_{12}H_2Cl_6O$	374.86	99.0%	2000 ± 20 ng/mL
1,2,3,6,7,8-HxCDF	ER04161501	57117-44-9	$C_{12}H_2Cl_6O$	374.86	99.8%	2000 ± 20 ng/mL
1,2,3,7,8,9-HxCDF	ER060107-01	72918-21-9	$C_{12}H_2Cl_6O$	374.86	97.5%	1999 ± 20 ng/mL
2,3,4,6,7,8-HxCDF	ER02041602	60851-34-5	$C_{12}H_2Cl_6O$	374.86	99.1%	2001 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDD	ER01201504	35822-46-9	$C_{12}HCl_7O_2$	425.31	98.5%	1999 ± 20 ng/mL
1,2,3,4,6,7,8-HpCDF	ER02281403	67562-39-4	$C_{12}HCl_7O$	409.31	98.9%	1999 ± 20 ng/mL
1,2,3,4,7,8,9-HpCDF	ER01121503	55673-89-7	$C_{12}HCl_7O$	409.31	99.1%	1999 ± 20 ng/mL
OCDD	ER05221301	3268-87-9	$C_{12}Cl_8O_2$	459.75	99.9%	3999 ± 40 ng/mL
OCDF	ER040811-01	39001-02-0	$C_{12}Cl_8O$	443.75	98.9%	4000 ± 40 ng/mL

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Stock solution concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ANAB ACCREDITED

Darron Ellsworth, Quality Assurance Manager

April 28, 2016
Date

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.10% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Standard Solution Assay Parameters

Analysis Method:	GC/ECD
Column:	DB-5ms, 30 m x 0.25 mm ID, 0 25 µm film thickness
Temp Program:	140°C to 200°C at 40°C/min, 200°C to 300°C at 4°C/min hold 3 min
Injector Temp:	Cool on-column
Detector Temp:	280°C

Calibration Curve

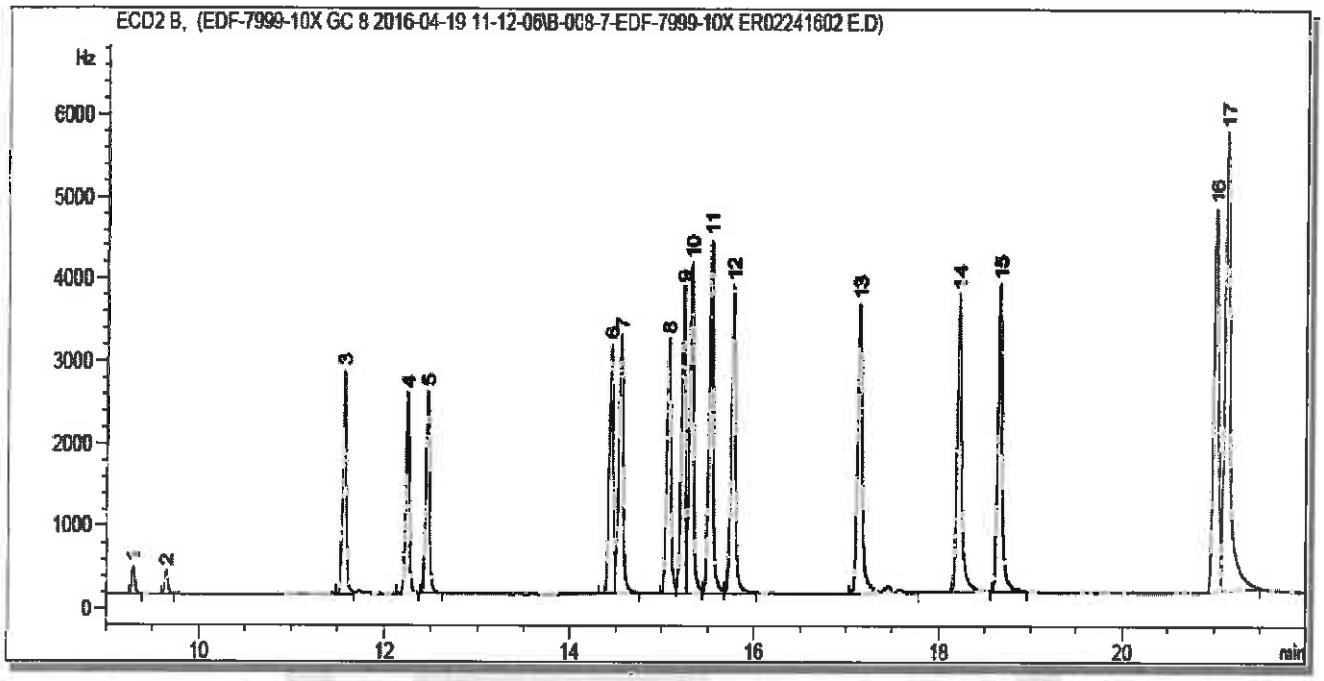
Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration ng/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
2,3,7,8-TeCDD	397 1	± 10%	0.7	≤ 5%
2,3,7,8-TeCDF	386 6	± 10%	0.7	≤ 5%
1,2,3,7,8-PeCDD	1937	± 10%	0 8	≤ 5%
1,2,3,7,8-PeCDF	1919	± 10%	0.8	≤ 5%
2,3,4,7,8-PeCDF	1941	± 10%	0.8	≤ 5%
1,2,3,4,7,8-HxCDD	1932	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDD	1987	± 10%	0 8	≤ 5%
1,2,3,7,8,9-HxCDD	1943	± 10%	0 7	≤ 5%
1,2,3,4,7,8-HxCDF	1933	± 10%	0.9	≤ 5%
1,2,3,6,7,8-HxCDF	1909	± 10%	0.9	≤ 5%
1,2,3,7,8,9-HxCDF	1942	± 10%	0.7	≤ 5%
2,3,4,6,7,8-HxCDF	1950	± 10%	0.8	≤ 5%
1.2.3.4.6.7.8-HpCDD	1930	± 10%	0.9	≤ 5%
1,2,3,4,6,7,8-HpCDF	1919	± 10%	0.9	≤ 5%
1,2,3,4,7,8,9-HpCDF	1943	± 10%	1.0	≤ 5%
OCDD	3844	± 10%	1.0	≤ 5%
OCDF	3906	± 10%	0.9	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- Product is compared to prior lot and meets acceptance criteria of ± 10%.

Product Analysis



Peak:	Analyte:
1	2,3,7,8-Tetrachlorodibenzofuran
2	2,3,7,8-Tetrachloro-p-dioxin
3	1,2,3,7,8-Pentachlorodibenzofuran
4	2,3,4,7,8-Pentachlorodibenzofuran
5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
6	1,2,3,4,7,8-Hexachlorodibenzofuran
7	1,2,3,6,7,8-Hexachlorodibenzofuran
8	2,3,4,6,7,8-Hexachlorodibenzofuran
9	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
10	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
11	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
12	1,2,3,7,8,9-Hexachlorodibenzofuran
13	1,2,3,4,6,7,8-Heptachlorodibenzofuran
14	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
15	1,2,3,4,7,8,9-Heptachlorodibenzofuran
16	Octachlorodibenzo-p-dioxin
17	Octachlorodibenzofuran

COA Revision History

Revision No.	Date	Reason for Revision
00	April 28, 2016	Initial version

Reagent

HRDXNTA_00093

Certificate of Analysis

Method 1613 PAR Stock Solution

Catalog Number:	EDF-7999-10X
Solution Lot:	ER02241602
Expiration Date:	April 2026
Solvent:	n-Nonane
Volume per Ampule:	Not less than 1.2 mL
Storage:	Store at room temperature. Do not store cold.
Intended Use:	For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Safety:	**Danger. See Safety Data Sheet.**

- Expiration Date has been established through real time stability studies
- Ampules are overfilled to ensure a minimum 1 2 volume We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
2,3,7,8-TeCDD	ER04271502	1746-01-6	$C_{12}H_4Cl_4O_2$	321.97	99.2%	399.9 ± 4.0 ng/mL
2,3,7,8-TeCDF	ER101211-02	51207-31-9	$C_{12}H_4Cl_4O$	305.97	99.4%	399.9 ± 4.0 ng/mL
1,2,3,7,8-PeCDD	ER110909-02	40321-76-4	$C_{12}H_3Cl_5O_2$	356.42	99.2%	2000 ± 20 ng/mL
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Darron Ellsworth, Quality Assurance Manager

April 28, 2016
Date

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Detector Temp: 280°C

Calibration Curve

Calibration Curve: Linear Regression
Number of Points: 1

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1,2,3,6,7,8-HxCDD	1987	± 10%	0 8	≤ 5%
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2,3,4,6,7,8-HxCDF	1950	± 10%	0.8	≤ 5%
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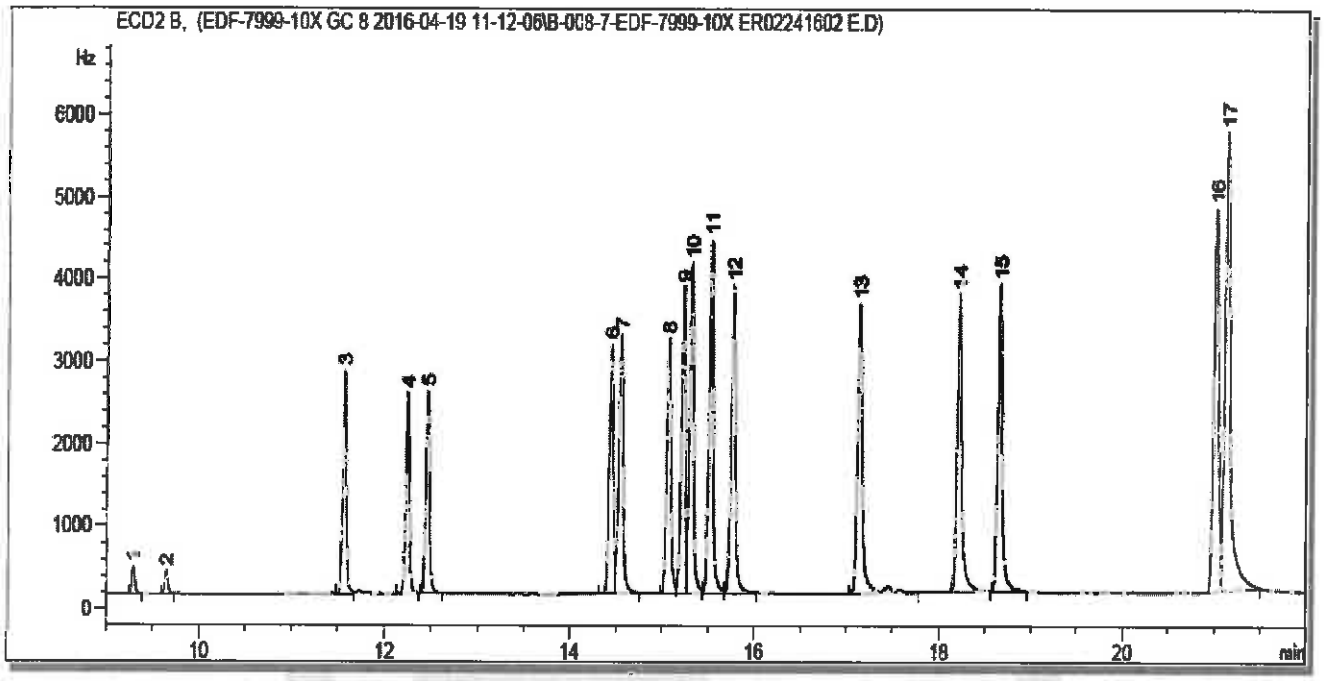

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14	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
15	1,2,3,4,7,8,9-Heptachlorodibenzofuran
16	Octachlorodibenzo-p-dioxin
17	Octachlorodibenzofuran

COA Revision History

Revision No.	Date	Reason for Revision
00	April 28, 2016	Initial version

Reagent

HRDXNTA_00102

Rec: 1/31/19 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF
Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR0418
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	04/11/2018
LAST TESTED: (mm/dd/yyyy)	04/12/2018
EXPIRY DATE: (mm/dd/yyyy)	03/01/2025
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted chlorinated dibenzo-p-dioxins (PCDDs) and 2,3,7,8-substituted dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual PCDDs and PCDFs all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

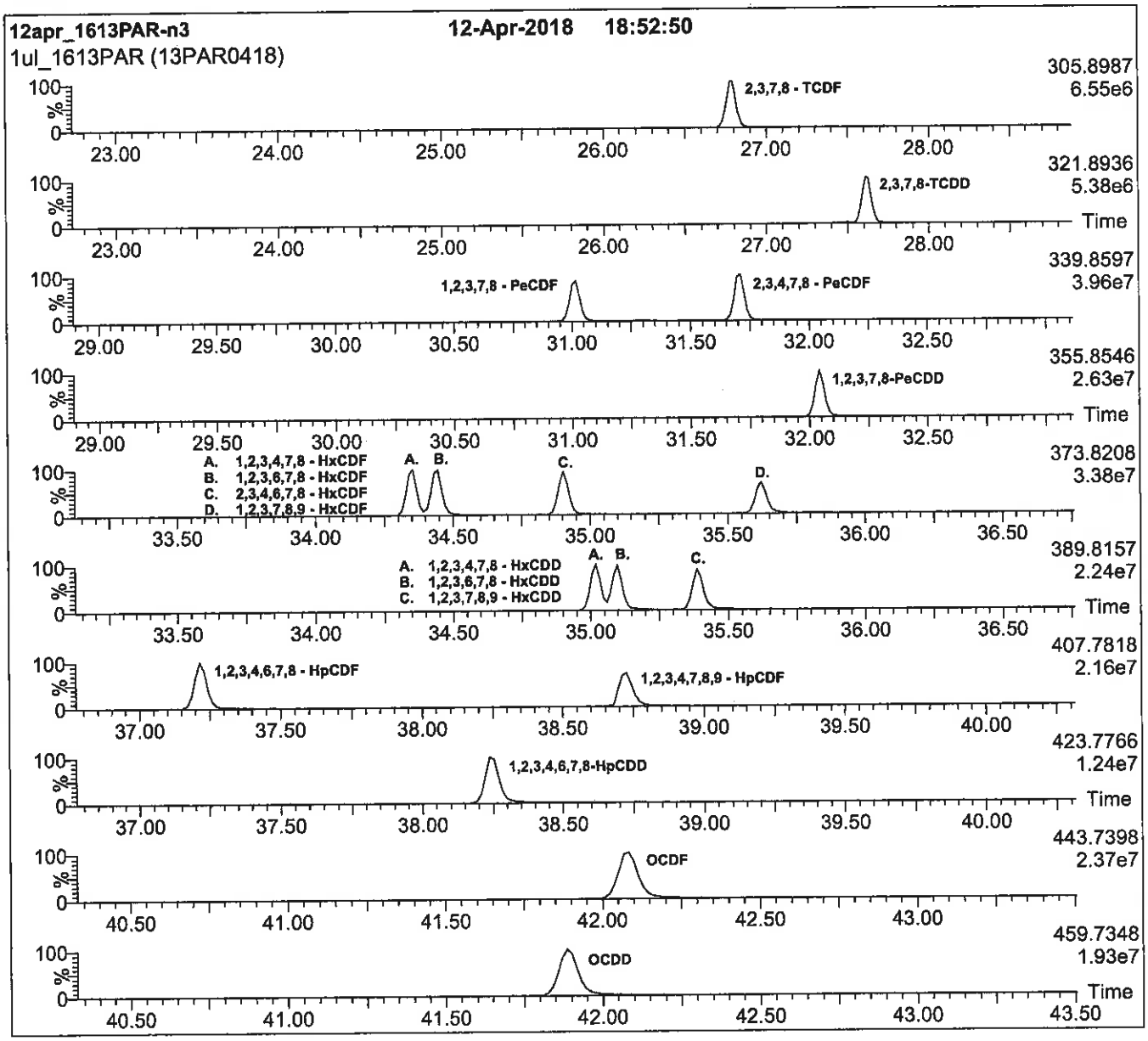
Table A: **EPA-1613PAR; Components and Concentrations (ng/ml, ± 5% in nonane/ 2.4% toluene)**

	Concentration (ng/ml)
PCDDs:	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	40
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	200
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	200
Octachlorodibenzo-p-dioxin	400
PCDFs:	
2,3,7,8-Tetrachlorodibenzofuran	40
1,2,3,7,8-Pentachlorodibenzofuran	200
2,3,4,7,8-Pentachlorodibenzofuran	200
1,2,3,4,7,8-Hexachlorodibenzofuran	200
1,2,3,6,7,8-Hexachlorodibenzofuran	200
1,2,3,7,8,9-Hexachlorodibenzofuran	200
2,3,4,6,7,8-Hexachlorodibenzofuran	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	200
Octachlorodibenzofuran	400

Certified By: _____ **Date:** 04/16/2018
(mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

Method 1613B

Dioxins and Furans (HRGC/HRMS) by Method 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
	LCS 320-344942/2-A	68	67	106	66	71	66	72	72
	LCSD 320-344942/3-A	53	55	88	53	55	53	57	55

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	22-152
TCDD = 13C-2,3,7,8-TCDD	20-175
37TCDD = 37Cl4-2,3,7,8-TCDD	31-191
PeCDF = 13C-1,2,3,7,8-PeCDF	21-192
PeCF = 13C-2,3,4,7,8-PeCDF	13-328
PeCDD = 13C-1,2,3,7,8-PeCDD	21-227
HxCDF = 13C-1,2,3,4,7,8-HxCDF	19-202
HxDF = 13C-1,2,3,6,7,8-HxCDF	21-159

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
	LCS 320-344942/2-A	69	74	73	65	71	71	73	70
	LCSD 320-344942/3-A	56	57	59	54	56	58	61	63

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	22-176
HxCDD = 13C-1,2,3,4,7,8-HxCDD	21-193
HxDD = 13C-1,2,3,6,7,8-HxCDD	25-163
HxCF = 13C-1,2,3,7,8,9-HxCDF	17-205
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	21-158
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	26-166
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	20-186
OCDD = 13C-OCDD	13-199

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-225 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	37TCDD #
11187072-120919-BN-SJSSA07(0-1) RA	320-56953-1 RA	68	103
11187072-120919-BN-SJSSA07(1-2) RA	320-56953-2 RA	69	110
11187072-120919-BN-SJSSA04(0-1) RA	320-56953-5 RA	67	109
11187072-120919-BN-SJSSA04(1-2) RA	320-56953-6 RA	75	111
11187072-120919-BN-SJSSA04(2-4) RA	320-56953-7 RA	65	102
11187072-120919-BN-SJSSA04(4-6) RA	320-56953-8 RA	65	116

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
37TCDD = 37Cl4-2,3,7,8-TCDD	35-197

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	37TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #
11187072-120919-BN-SJSSA07(0-1)	320-56953-1	59	61	100	58	63	60	61	59
11187072-120919-BN-SJSSA07(1-2)	320-56953-2	63	61	104	58	62	59	63	60
11187072-120919-BN-SJSSA07(2-4)	320-56953-3	63	64	100	60	64	59	67	66
11187072-120919-BN-SJSSA07(4-6)	320-56953-4	65	66	100	61	66	61	71	72
11187072-120919-BN-SJSSA04(0-1)	320-56953-5	63	62	99	60	62	59	65	62
11187072-120919-BN-SJSSA04(1-2)	320-56953-6	64	65	102	61	66	62	68	65
11187072-120919-BN-SJSSA04(2-4)	320-56953-7	56	57	92	52	55	51	57	55
11187072-120919-BN-SJSSA04(4-6)	320-56953-8	60	60	109	57	60	57	62	59
	MB 320-344942/1-A	60	60	100	57	62	61	64	63

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
TCDD = 13C-2,3,7,8-TCDD	25-164
37TCDD = 37Cl4-2,3,7,8-TCDD	35-197
PeCDF = 13C-1,2,3,7,8-PeCDF	24-185
PeCF = 13C-2,3,4,7,8-PeCDF	21-178
PeCDD = 13C-1,2,3,7,8-PeCDD	25-181
HxCDF = 13C-1,2,3,4,7,8-HxCDF	26-152
HxDF = 13C-1,2,3,6,7,8-HxCDF	26-123

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	13CHxCF #	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #
11187072-120919-BN-SJSSA07(0-1)	320-56953-1	60	63	64	60	56	62	66	68
11187072-120919-BN-SJSSA07(1-2)	320-56953-2	61	65	62	60	55	61	67	60
11187072-120919-BN-SJSSA07(2-4)	320-56953-3	65	69	70	62	64	67	71	72
11187072-120919-BN-SJSSA07(4-6)	320-56953-4	68	70	74	63	68	69	72	72
11187072-120919-BN-SJSSA04(0-1)	320-56953-5	61	63	65	60	61	63	69	67
11187072-120919-BN-SJSSA04(1-2)	320-56953-6	65	66	70	61	60	65	68	64
11187072-120919-BN-SJSSA04(2-4)	320-56953-7	56	56	60	55	56	59	63	63
11187072-120919-BN-SJSSA04(4-6)	320-56953-8	59	62	62	59	59	62	66	72
	MB 320-344942/1-A	60	65	65	57	61	61	65	64

	QC LIMITS
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	28-136
HxCDD = 13C-1,2,3,4,7,8-HxCDD	32-141
HxDD = 13C-1,2,3,6,7,8-HxCDD	28-130
HxCF = 13C-1,2,3,7,8,9-HxCDF	29-147
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	28-143
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	23-140
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	26-138
OCDD = 13C-OCDD	17-157

Column to be used to flag recovery values

FORM II 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 19DE193D5_5.d

Lab ID: LCS 320-344942/2-A Client ID:

COMPOUND	SPIKE ADDED (pg/g)	LCS CONCENTRATION (pg/g)	LCS % REC	QC LIMITS REC	#
2,3,7,8-TCDD	20.0	20.7	104	67-158	
2,3,7,8-TCDF	20.0	22.0	110	75-158	
1,2,3,7,8-PeCDD	100	99.6	100	70-142	
1,2,3,7,8-PeCDF	100	104	104	80-134	
2,3,4,7,8-PeCDF	100	98.8	99	68-160	
1,2,3,4,7,8-HxCDD	100	95.3	95	70-164	
1,2,3,6,7,8-HxCDD	100	105	105	76-134	
1,2,3,7,8,9-HxCDD	100	98.0	98	64-162	
1,2,3,4,7,8-HxCDF	100	101	101	72-134	
1,2,3,6,7,8-HxCDF	100	107	107	84-130	
1,2,3,7,8,9-HxCDF	100	110	110	78-130	
2,3,4,6,7,8-HxCDF	100	108	108	70-156	
1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	
1,2,3,4,6,7,8-HpCDF	100	105	105	82-122	
1,2,3,4,7,8,9-HpCDF	100	103	103	78-138	
OCDD	200	186	93	78-144	
OCDF	200	208	104	63-170	
13C-2,3,7,8-TCDD	200	135	67	20-175	
13C-2,3,7,8-TCDF	200	135	68	22-152	
13C-1,2,3,7,8-PeCDD	200	133	66	21-227	
13C-1,2,3,7,8-PeCDF	200	132	66	21-192	
13C-2,3,4,7,8-PeCDF	200	143	71	13-328	
13C-1,2,3,4,7,8-HxCDD	200	148	74	21-193	
13C-1,2,3,6,7,8-HxCDD	200	147	73	25-163	
13C-1,2,3,4,7,8-HxCDF	200	144	72	19-202	
13C-1,2,3,6,7,8-HxCDF	200	143	72	21-159	
13C-1,2,3,7,8,9-HxCDF	200	130	65	17-205	
13C-2,3,4,6,7,8-HxCDF	200	139	69	22-176	
13C-1,2,3,4,6,7,8-HpCDD	200	141	71	26-166	
13C-1,2,3,4,6,7,8-HpCDF	200	141	71	21-158	
13C-1,2,3,4,7,8,9-HpCDF	200	147	73	20-186	
13C-OCDD	400	280	70	13-199	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Matrix: Sediment Level: Low Lab File ID: 19DE193D5_6.d

Lab ID: LCSD 320-344942/3-A Client ID:

COMPOUND	SPIKE ADDED (pg/g)	LCSD CONCENTRATION (pg/g)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,3,7,8-TCDD	20.0	19.5	97	6	50	67-158	
2,3,7,8-TCDF	20.0	21.1	106	4	50	75-158	
1,2,3,7,8-PeCDD	100	100	100	0	50	70-142	
1,2,3,7,8-PeCDF	100	102	102	2	50	80-134	
2,3,4,7,8-PeCDF	100	97.9	98	1	50	68-160	
1,2,3,4,7,8-HxCDD	100	96.9	97	2	50	70-164	
1,2,3,6,7,8-HxCDD	100	101	101	4	50	76-134	
1,2,3,7,8,9-HxCDD	100	96.3	96	2	50	64-162	
1,2,3,4,7,8-HxCDF	100	98.3	98	3	50	72-134	
1,2,3,6,7,8-HxCDF	100	105	105	2	50	84-130	
1,2,3,7,8,9-HxCDF	100	106	106	4	50	78-130	
2,3,4,6,7,8-HxCDF	100	106	106	2	50	70-156	
1,2,3,4,6,7,8-HpCDD	100	99.1	99	1	50	70-140	
1,2,3,4,6,7,8-HpCDF	100	107	107	2	50	82-122	
1,2,3,4,7,8,9-HpCDF	100	99.8	100	3	50	78-138	
OCDD	200	199	99	7	50	78-144	
OCDF	200	199	99	4	50	63-170	
13C-2,3,7,8-TCDD	200	110	55			20-175	
13C-2,3,7,8-TCDF	200	105	53			22-152	
13C-1,2,3,7,8-PeCDD	200	105	53			21-227	
13C-1,2,3,7,8-PeCDF	200	106	53			21-192	
13C-2,3,4,7,8-PeCDF	200	110	55			13-328	
13C-1,2,3,4,7,8-HxCDD	200	113	57			21-193	
13C-1,2,3,6,7,8-HxCDD	200	118	59			25-163	
13C-1,2,3,4,7,8-HxCDF	200	113	57			19-202	
13C-1,2,3,6,7,8-HxCDF	200	109	55			21-159	
13C-1,2,3,7,8,9-HxCDF	200	107	54			17-205	
13C-2,3,4,6,7,8-HxCDF	200	112	56			22-176	
13C-1,2,3,4,6,7,8-HpCDD	200	117	58			26-166	
13C-1,2,3,4,6,7,8-HpCDF	200	112	56			21-158	
13C-1,2,3,4,7,8,9-HpCDF	200	121	61			20-186	
13C-OCDD	400	251	63			13-199	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab File ID: 19DE193D5_4.d Lab Sample ID: MB 320-344942/1-A

Matrix: Sediment Date Extracted: 12/12/2019 08:56

Instrument ID: 3D5 Date Analyzed: 12/19/2019 13:23

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-344942/2-A	19DE193D5_5.d	12/19/2019 14:11
	LCSD 320-344942/3-A	19DE193D5_6.d	12/19/2019 14:58
11187072-120919-BN-SJSSA07(0-1)	320-56953-1	19DE193D5_7.d	12/19/2019 15:46
11187072-120919-BN-SJSSA07(1-2)	320-56953-2	19DE193D5_8.d	12/19/2019 16:33
11187072-120919-BN-SJSSA07(2-4)	320-56953-3	19DE193D5_9.d	12/19/2019 17:21
11187072-120919-BN-SJSSA07(4-6)	320-56953-4	19DE193D5_10.d	12/19/2019 18:09
11187072-120919-BN-SJSSA04(0-1)	320-56953-5	19DE193D5_11.d	12/19/2019 18:56
11187072-120919-BN-SJSSA04(1-2)	320-56953-6	19DE193D5_12.d	12/19/2019 19:44
11187072-120919-BN-SJSSA04(2-4)	320-56953-7	19DE193D5_13.d	12/19/2019 20:31
11187072-120919-BN-SJSSA07(1-2) RA	320-56953-2 RA	19DE19A11D2_008.d	12/19/2019 20:41
11187072-120919-BN-SJSSA07(0-1) RA	320-56953-1 RA	19DE19A11D2_009.d	12/19/2019 21:19
11187072-120919-BN-SJSSA04(4-6)	320-56953-8	19DE193D5_14.d	12/19/2019 21:19
11187072-120919-BN-SJSSA04(0-1) RA	320-56953-5 RA	19DE19A11D2_010.d	12/19/2019 21:57
11187072-120919-BN-SJSSA04(1-2) RA	320-56953-6 RA	19DE19A11D2_011.d	12/19/2019 22:36
11187072-120919-BN-SJSSA04(2-4) RA	320-56953-7 RA	19DE19A11D2_012.d	12/19/2019 23:14
11187072-120919-BN-SJSSA04(4-6) RA	320-56953-8 RA	19DE19A11D2_013.d	12/19/2019 23:52

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Matrix: Sediment Lab File ID: 19DE193D5_7.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.31(g) Date Analyzed: 12/19/2019 15:46

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 56.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	8.6		2.2	0.34
40321-76-4	1,2,3,7,8-PeCDD	ND		11	0.51
57117-41-6	1,2,3,7,8-PeCDF	1.1	J q	11	0.33
57117-31-4	2,3,4,7,8-PeCDF	0.74	J q	11	0.33
39227-28-6	1,2,3,4,7,8-HxCDD	1.1	J	11	0.32
57653-85-7	1,2,3,6,7,8-HxCDD	1.9	J	11	0.34
19408-74-3	1,2,3,7,8,9-HxCDD	2.7	J	11	0.29
70648-26-9	1,2,3,4,7,8-HxCDF	1.3	J	11	0.33
57117-44-9	1,2,3,6,7,8-HxCDF	1.1	J	11	0.32
72918-21-9	1,2,3,7,8,9-HxCDF	0.78	J	11	0.24
60851-34-5	2,3,4,6,7,8-HxCDF	0.60	J	11	0.24
35822-46-9	1,2,3,4,6,7,8-HpCDD	61	B	11	1.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	4.8	J B	11	0.43
55673-89-7	1,2,3,4,7,8,9-HpCDF	1.3	J q B	11	0.50
3268-87-9	OCDD	2400	B	22	1.8
39001-02-0	OCDF	44	B	22	0.42
41903-57-5	Total TCDD	11		2.2	0.34
30402-14-3	Total TCDF	47	q	2.2	0.44
36088-22-9	Total PeCDD	3.7	J q	11	0.51
30402-15-4	Total PeCDF	4.8	J q	11	0.33
34465-46-8	Total HxCDD	38		11	0.31
55684-94-1	Total HxCDF	8.8	J q	11	0.28
37871-00-4	Total HpCDD	220	B	11	1.5
38998-75-3	Total HpCDF	15	q B	11	0.47

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) Lab Sample ID: 320-56953-1

Matrix: Sediment Lab File ID: 19DE193D5_7.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.31(g) Date Analyzed: 12/19/2019 15:46

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 56.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	61		25-164
89059-46-1	13C-2,3,7,8-TCDF	59		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	60		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	58		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	63		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	63		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	64		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	61		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	59		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	60		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	60		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	62		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	56		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	66		26-138
114423-97-1	13C-OCDD	68		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	100		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 15:46:27 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-1-A 320-56953-A-1-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:44:01 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 12:44:01

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.612	198041387	0.79	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.113	166320094	0.79	1.4157	59.3	59.3	0.2217	0.2217	59.32	
2,3,7,8-TCDF	17.128	9583344	0.76	0.9502	6.064	6.064	0.0983	0.0983		
A Non-2,3,7,8-sub-TCDF	16.811	7027783	0.77	0.9502	4.508	4.447	0.0983	2.404		RQa
S Total TCDF					10.6	10.5	0.0983	0.0983		RQ
D 13C-2,3,7,8-TCDD	17.808	118389805	0.80	0.9751	61.3	61.3	0.1803	0.1803	61.31	
2,3,7,8-TCDD	17.823	2392207	0.82	1.0477	1.929	1.929	0.0763	0.0763		
$ 37Cl4-2,3,7,8-TCDD	17.823	106461715		1.3480	39.9	39.9	0.0760	0.0760	99.70	
A Non-2,3,7,8-sub-TCDD	17.249	666931	0.87	1.0477	0.5377	0.5377	0.0763	0.5377		
S Total TCDD					2.466	2.466	0.0763	0.0763		
D 13C-1,2,3,7,8-PeCDF	22.032	134526502	1.57	1.1786	57.6	57.6	0.1820	0.1820	57.64	
1,2,3,7,8-PeCDF	22.059	348508	1.55	1.0302	0.2780	0.2515	0.0731	0.0731		RQ
D 13C-2,3,4,7,8-PeCDF	23.355	141826654	1.58	1.1308	63.3	63.3	0.1897	0.1897	63.33	
2,3,4,7,8-PeCDF	23.382	245750	1.55	1.0410	0.1855	0.1665	0.0741	0.0741		RQM
A F1 PeCDFs	19.774	343044	1.55	1.0356	0.2676	0.2397	0.0541	0.2397		RQ
A Non-2,3,7,8-sub-PeCDF	22.858	585592	1.36	1.0356	0.4092	0.4092	0.0736	0.4092		M
S Total PeCDF					1.140	1.067	0.0736	0.0736		RQ
D 13C-1,2,3,7,8-PeCDD	24.064	89532174	1.65	0.7572	59.7	59.7	0.1035	0.1035	59.71	
1,2,3,7,8-PeCDD	24.077						0.1140	0.1140		
A Non-2,3,7,8-sub-PeCDD	22.973	799896	1.55	1.0855	0.9365	0.8230	0.1140	0.5564		RQ
S Total PeCDD					0.9365	0.8230	0.1140	0.1140		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.193	117270817	0.53	1.1043	60.9	60.9	0.2722	0.2722	60.90	
1,2,3,4,7,8-HxCDF	30.206	397700	1.28	1.1472	0.2956	0.2956	0.0728	0.0728		M
D 13C-1,2,3,6,7,8-HxCDF	30.406	118529467	0.51	1.1470	59.3	59.3	0.2620	0.2620	59.25	
1,2,3,6,7,8-HxCDF	30.433	319165	1.17	1.1450	0.2352	0.2352	0.0727	0.0727		M
D 13C-2,3,4,6,7,8-HxCDF	31.312	112608830	0.52	1.0769	60.0	60.0	0.2791	0.2791	59.96	
2,3,4,6,7,8-HxCDF	31.338	176160	1.19	1.1726	0.1334	0.1334	0.0538	0.0538		M
D 13C-1,2,3,7,8,9-HxCDF	32.164	106567674	0.53	1.0115	60.4	60.4	0.2972	0.2972	60.41	
1,2,3,7,8,9-HxCDF	32.164	217980	1.30	1.1717	0.1746	0.1746	0.0538	0.0538		
A Non-2,3,7,8-sub-HxCDF	29.880	1494558	1.24	1.1591	1.168	1.134	0.0620	0.4573		RQMa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					2.007	1.972	0.0633	0.0633		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.964	174394278	1.28	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	86883713	1.29	0.7962	62.6	62.6	0.2850	0.2850	62.57	
1,2,3,4,7,8-HxCDD	31.525	232509	1.17	1.0934	0.2448	0.2448	0.0714	0.0714		
D 13C-1,2,3,6,7,8-HxCDD	31.618	97676997	1.24	0.8720	64.2	64.2	0.2603	0.2603	64.23	
1,2,3,6,7,8-HxCDD	31.631	423915	1.21	1.0429	0.4161	0.4161	0.0751	0.0751		
1,2,3,7,8,9-HxCDD	31.977	678793	1.28	1.2073	0.6093	0.6093	0.0648	0.0648		M
A Non-2,3,7,8-sub-HxCDD	30.519	7447066	1.24	1.1145	7.241	7.241	0.0702	5.182		Ma
S Total HxCDD					8.511	8.511	0.0704	0.0704		
D 13C-1,2,3,4,6,7,8-HpCDF	33.628	73353781	0.44	0.7577	55.5	55.5	0.7493	0.7493	55.52	
1,2,3,4,6,7,8-HpCDF	33.640	1165276	1.04	1.4804	1.073	1.073	0.0971	0.0971		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	79682767	0.44	0.6941	65.8	65.8	0.8179	0.8179	65.82	
1,2,3,4,7,8,9-HpCDF	34.709	289227	1.04	1.2933	0.3451	0.2807	0.1116	0.1116		RQM
A Non-2,3,7,8-sub-HpCDF	34.169	2072519	1.03	1.3868	1.953	1.953	0.1039	1.953		M
S Total HpCDF					3.371	3.307	0.1044	0.1044		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	34.418	76280879	1.04	0.7058	62.0	62.0	0.3662	0.3662	61.97	
1,2,3,4,6,7,8-HpCDD	34.418	11031911	1.05	1.0535	13.7	13.7	0.3361	0.3361		
A Non-2,3,7,8-sub-HpCDD	34.144	28107376	1.06	1.0535	35.0	35.0	0.3361	35.0		
S Total HpCDD					48.7	48.7	0.3361	0.3361		
D 13C-OCDD	36.734	108793887	0.88	0.4603	135.5	135.5	0.1709	0.1709	67.77	
OCDF	36.830	7404171	0.86	1.3945	9.761	9.761	0.0945	0.0945		
OCDD	36.746	331223661	0.90	1.1362	535.9	535.9	0.4136	0.4136		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 15:46:27 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-1-A 320-56953-A-1-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:44:01 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 12:44:01

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.612	17.612	0		87226609	22427321	19687	49217	1139		
333.9339	17.612	17.612	0		110814778	28388960	16054	40135	1768	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.113	17.113	0	0.972	73468197	18803933	20108	50270	935		
317.9389	17.113	17.113	0	0.972	92851897	23852465	43680	109200	546	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128	17.128	0	1.001	4136707	994842	6235	15587	160		
305.8987	17.128	17.128	0	1.001	5446637	1374034	9701	24252	142	0.76(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	15.752	16.811	-63	0.920	239780	56802	6235	15587	9		
	Empc Correction				192128	53154	6235	15587	9		
305.8987	15.737	16.811	-64	0.920	249518	69032	9701	24252	7	0.96(0.65-0.89)	
303.9016	16.024	16.811	-47	0.936	290327	60267	6235	15587	10		
305.8987	16.024	16.811	-47	0.936	365981	79811	9701	24252	8	0.79(0.65-0.89)	
303.9016	16.251	16.811	-34	0.950	195253	52206	6235	15587	8		
305.8987	16.236	16.811	-34	0.949	239022	58745	9701	24252	6	0.82(0.65-0.89)	
303.9016	16.478	16.811	-20	0.963	212178	41586	6235	15587	7		
	Empc Correction				164006	25604	6235	15587	4		
305.8987	16.478	16.811	-20	0.963	212996	33253	9701	24252	3	1.00(0.65-0.89)	
303.9016	16.750	16.811	-4	0.979	1709651	463644	6235	15587	74		a
305.8987	16.750	16.811	-4	0.979	2089584	547015	9701	24252	56	0.82(0.65-0.89)	
303.9016	17.551	16.811	44	1.026	304051	76632	6235	15587	12		
305.8987	17.551	16.811	44	1.026	393857	103198	9701	24252	11	0.77(0.65-0.89)	
303.9016	18.912	16.811	126	1.105	281375	53771	6235	15587	9		
305.8987	18.912	16.811	126	1.105	340034	83122	9701	24252	9	0.83(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDD											
331.9368	17.808	17.793	1	1.011	52657790	12621993	19687	49217	641		
333.9339	17.808	17.793	1	1.011	65732015	15242421	16054	40135	949	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823	17.823	0	1.001	1075773	251489	5792	14480	43		
321.8936	17.823	17.823	0	1.001	1316434	321888	3119	7797	103	0.82(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.823	17.823	0	1.012	106461715	25035397	20812	52030	1203		
A Non-2,3,7,8-sub-TCDD											
319.8965	16.705	17.249	-33	0.938	310326	84268	5792	14480	15		
321.8936	16.705	17.249	-33	0.938	356605	106101	3119	7797	34	0.87(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.032	22.018	1	1.251	82153699	14825769	26309	65772	564		
353.8970	22.032	22.018	1	1.251	52372803	9565867	17301	43252	553	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											RQ
339.8597	22.059	22.045	1	1.001	248669	38751	2352	5880	16		
	Empc Correction				211838	33335	2352	5880	14		
341.8567	22.045	22.045	0	1.001	136670	21507	4994	12485	4	1.82(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.355	23.341	1	1.326	86796636	14735293	26309	65772	560		
353.8970	23.355	23.341	1	1.326	55030018	9064570	17301	43252	524	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											RQM
339.8597	23.382	23.355	2	1.001	149378	27905	2352	5880	12		
341.8567	23.368	23.355	1	1.001	124427	18931	4994	12485	4	1.20(1.32-1.78)	M
	Empc Correction				96372	18003	4994	12485	4		
A F1 PeCDFs											RQ
339.8597	19.199	19.774	-34	0.871	208517	44144	1723	4307	26		
341.8567	19.199	19.774	-34	0.871	174403	20761	3677	9192	6	1.20(1.32-1.78)	
	Empc Correction				134527	28480	3677	9192	8		
A Non-2,3,7,8-sub-PeCDF											M
339.8597	20.736	22.858	-127	0.941	337152	51112	2352	5880	22		
341.8567	20.736	22.858	-127	0.941	248440	39857	4994	12485	8	1.36(1.32-1.78)	M
13C-1,2,3,7,8-PeCDD											
367.8949	24.064	24.050	1	1.366	55784872	8408091	8531	21327	986		
369.8919	24.050	24.050	0	1.366	33747302	5375148	7399	18497	726	1.65(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						4694	11735			
357.8516	24.077						2129	5322			
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	20.914	22.973	-123	0.869	157501	36258	4694	11735	8		
357.8516	20.927	22.973	-122	0.870	211923	40454	2129	5322	19	0.74(1.32-1.78)	
	Empc Correction				101613	23392	2129	5322	11		
355.8546	21.664	22.973	-78	0.900	329988	64496	4694	11735	14		
357.8516	21.664	22.973	-78	0.900	210794	37516	2129	5322	18	1.57(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	40796601	6583146	15740	39350	418		
385.8610	30.193	30.193	0	0.945	76474216	12796318	34522	86305	371	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	30.206	30.206	0	1.000	222934	30004	3508	8770	9		
375.8178	30.233	30.206	2	1.001	174766	24958	2966	7415	8	1.28(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	39983501	6651231	15740	39350	423		
385.8610	30.406	30.406	0	0.951	78545966	12790679	34522	86305	371	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											M
373.8208	30.433	30.420	1	1.001	172400	30893	3508	8770	9		
375.8178	30.420	30.420	0	1.000	146765	23890	2966	7415	8	1.17(1.05-1.43)	M
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	38408301	8979132	15740	39350	570		
385.8610	31.312	31.312	0	0.980	74200529	16662857	34522	86305	483	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											M
373.8208	31.338	31.325	1	1.001	95778	19283	3508	8770	5		M
375.8178	31.325	31.325	0	1.000	80382	17873	2966	7415	6	1.19(1.05-1.43)	M
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.164	32.151	1	1.006	37089964	8893743	15740	39350	565		
385.8610	32.151	32.151	0	1.006	69477710	16762419	34522	86305	486	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164	32.164	0	1.000	123289	21916	3508	8770	6		
375.8178	32.164	32.164	0	1.000	94691	18701	2966	7415	6	1.30(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											RQMa
373.8208	27.903	29.880	-118	0.924	338054	43626	3508	8770	12		
375.8178	27.903	29.880	-118	0.924	262309	36244	2966	7415	12	1.29(1.05-1.43)	
373.8208	29.234	29.880	-39	0.968	342897	43453	3508	8770	12		
375.8178	29.208	29.880	-40	0.967	260055	33835	2966	7415	11	1.32(1.05-1.43)	
373.8208	31.165	29.880	77	1.032	161224	36719	3508	8770	10		M
375.8178	31.165	29.880	77	1.032	175914	35107	2966	7415	12	0.92(1.05-1.43)	
	Empc Correction				130019	29612	2966	7415	10		
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		97882540	23230223	20725	51812	1121		
403.8529	31.964	31.964	0		76511738	18573897	17224	43060	1078	1.28(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	48955025	12359998	20725	51812	596		
403.8529	31.511	31.511	0	0.986	37928688	9670807	17224	43060	561	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.525	31.525	0	1.000	125158	38158	2784	6960	14		
391.8127	31.525	31.525	0	1.000	107351	32283	4094	10235	8	1.17(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	54052502	11930339	20725	51812	576		
403.8529	31.618	31.618	0	0.989	43624495	10015230	17224	43060	581	1.24(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,6,7,8-HxCDD											
389.8157	31.631	31.631	0	1.000	231880	48202	2784	6960	17		
391.8127	31.631	31.631	0	1.000	192035	40943	4094	10235	10	1.21(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	31.977	31.977	0	1.015	380954	75248	2784	6960	27		M
391.8127	31.977	31.977	0	1.015	297839	56393	4094	10235	14	1.28(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											Ma
389.8157	29.061	30.519	-87	0.919	2975236	374050	2784	6960	134		
391.8127	29.075	30.519	-87	0.920	2354294	308217	4094	10235	75	1.26(1.05-1.43)	
389.8157	30.712	30.519	12	0.971	986417	180686	2784	6960	65		
391.8127	30.699	30.519	11	0.971	827040	159270	4094	10235	39	1.19(1.05-1.43)	M
389.8157	30.912	30.519	24	0.978	164879	31644	2784	6960	11		M
391.8127	30.912	30.519	24	0.978	139200	25633	4094	10235	6	1.18(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.628	33.628	0	1.052	22520420	7606890	34811	87027	219		
419.8220	33.628	33.628	0	1.052	50833361	16430557	60119	150297	273	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.640	33.628	1	1.000	594471	187446	10422	26055	18		M
409.7789	33.640	33.628	1	1.000	570805	186886	3403	8507	55	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	24240239	7473518	34811	87027	215		
419.8220	34.697	34.697	0	1.086	55442528	16475135	60119	150297	274	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											RQM
407.7818	34.709	34.709	0	1.000	213863	50541	10422	26055	5		M
	Empc Correction				147449	47899	10422	26055	5		
409.7789	34.709	34.709	0	1.000	141778	46057	3403	8507	14	1.51(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											M
407.7818	33.931	34.169	-14	1.009	1053066	307332	10422	26055	29		
409.7789	33.931	34.169	-14	1.009	1019453	309870	3403	8507	91	1.03(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.418	34.418	0	1.077	38841477	11314727	25305	63262	447		
437.8140	34.418	34.418	0	1.077	37439402	10972829	17918	44795	612	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	5655382	1703380	16472	41180	103		
425.7737	34.418	34.418	0	1.000	5376529	1648940	15098	37745	109	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	14478737	4495943	16472	41180	273		
425.7737	33.871	34.144	-16	0.984	13628639	4355679	15098	37745	288	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.734	36.734	0	1.149	51020177	13123190	6642	16605	1976		
471.7750	36.734	36.734	0	1.149	57773710	14753136	6512	16280	2266	0.88(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	3416128	909096	2922	7305	311		
443.7399	36.830	36.830	0	1.003	3988043	1060107	4426	11065	240	0.86(0.76-1.02)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
OCDD											
457.7377	36.746	36.746	0	1.000	157255283	40472416	15146	37865	2672		
459.7348	36.746	36.746	0	1.000	173968378	45028806	11056	27640	4073	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	166320094	42656398

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	166320094	42656398

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.752	239780	56802	249518	69032	0.3096	0.96	RQ
15.752	192128	53154	249518	69032	0.2795		Empc Correction
16.024	290327	60267	365981	79811	0.4153	0.79	
16.251	195253	52206	239022	58745	0.2748	0.82	
16.478	212178	41586	212996	33253	0.2690	1.00	RQ
16.478	164006	25604	212996	33253	0.2386		Empc Correction
16.750	1709651	463644	2089584	547015	2.40	0.82	a
17.551	304051	76632	393857	103198	0.4416	0.77	
18.912	281375	53771	340034	83122	0.3932	0.83	
Signal Totals:							
	3136791	785278	3890992	974176			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	7123607	1779084				0.83	RQa
	7027783	1759454					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.508 = (7123607 * 100.000) / (166320094 * 0.950)
Empc Amount: 4.447 = (7027783 * 100.000) / (166320094 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	118389805	27864414

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	118389805	27864414

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.705	310326	84268	356605	106101	0.5377	0.87	
Signal Totals:							
	310326	84268	356605	106101			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	666931	190369				0.87	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.5377 = (666931 * 100.000) / (118389805 * 1.048)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

F1 PeCDFs, RT: 19.774

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	134526502	24391636
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	141826654	23799863

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	138176578	24095749

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
19.199	208517	44144	174403	20761	0.2676	1.20	RQ
19.199	208517	44144	134527	28480	0.2397		Empc Correction
Signal Totals:							
	208517	44144	134527	28480			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	382920	64905				1.20	RQ
	343044	72624					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2676 = (382920 * 100.000) / (138176578 * 1.036)
Empc Amount: 0.2397 = (343044 * 100.000) / (138176578 * 1.036)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	134526502	24391636
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	141826654	23799863

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	138176578	24095749

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
20.736	337152	51112	248440	39857	0.4092	1.36	M
Signal Totals:							
	337152	51112	248440	39857			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	585592	90969				1.36	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4092 = (585592 * 100.000) / (138176578 * 1.036)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	89532174	13783239

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	89532174	13783239

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.914	157501	36258	211923	40454	0.3801	0.74	RQ
20.914	157501	36258	101613	23392	0.2666		Empc Correction
21.664	329988	64496	210794	37516	0.5564	1.57	
Signal Totals:							
	487489	100754	312407	60908			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	910206	178724				1.15	RQ
	799896	161662					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.9365 = (910206 * 100.000) / (89532174 * 1.086)
Empc Amount: 0.8230 = (799896 * 100.000) / (89532174 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Report Date: 22-Dec-2019 12:44:04 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDF, RT: 29.880

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.147	D 13C-1,2,3,4,7,8-HxCDF	100.000	117270817	19379464
1,2,3,6,7,8-HxCDF	1.145	D 13C-1,2,3,6,7,8-HxCDF	100.000	118529467	19441910
2,3,4,6,7,8-HxCDF	1.173	D 13C-2,3,4,6,7,8-HxCDF	100.000	112608830	25641989
1,2,3,7,8,9-HxCDF	1.172	D 13C-1,2,3,7,8,9-HxCDF	100.000	106567674	25656162

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.159		100.000	113744197	22529881

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
27.903	338054	43626	262309	36244	0.4554	1.29	
29.234	342897	43453	260055	33835	0.4573	1.32	
31.165	161224	36719	175914	35107	0.2557	0.92	RQMa
31.165	161224	36719	130019	29612	0.2209		Empc Correction
Signal Totals:							
	842175	123798	652383	99691			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1540453	228984				1.21	RQMa
	1494558	223489					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.168 = (1540453 * 100.000) / (113744197 * 1.159)
Empc Amount: 1.134 = (1494558 * 100.000) / (113744197 * 1.159)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	86883713	22030805
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	97676997	21945569
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	92280355	21988187

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.061	2975236	374050	2354294	308217	5.18	1.26	
30.712	986417	180686	827040	159270	1.76	1.19	M
30.912	164879	31644	139200	25633	0.2957	1.18	Ma
Signal Totals:							
	4126532	586380	3320534	493120			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	7447066	1079500				1.24	Ma

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.241 = (7447066 * 100.000) / (92280355 * 1.115)

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	73353781	24037447
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	79682767	23948653

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	76518274	23993050

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.931	1053066	307332	1019453	309870	1.95	1.03	M
Signal Totals:							
	1053066	307332	1019453	309870			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2072519	617202				1.03	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.953 = (2072519 * 100.000) / (76518274 * 1.387)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Inject. Date: 19-Dec-2019 15:46:27 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 7

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	76280879	22287556

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	76280879	22287556

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	14478737	4495943	13628639	4355679	35.0	1.06	
Signal Totals:							
	14478737	4495943	13628639	4355679			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	28107376	8851622				1.06	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 34.975 = (28107376 * 100.000) / (76280879 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

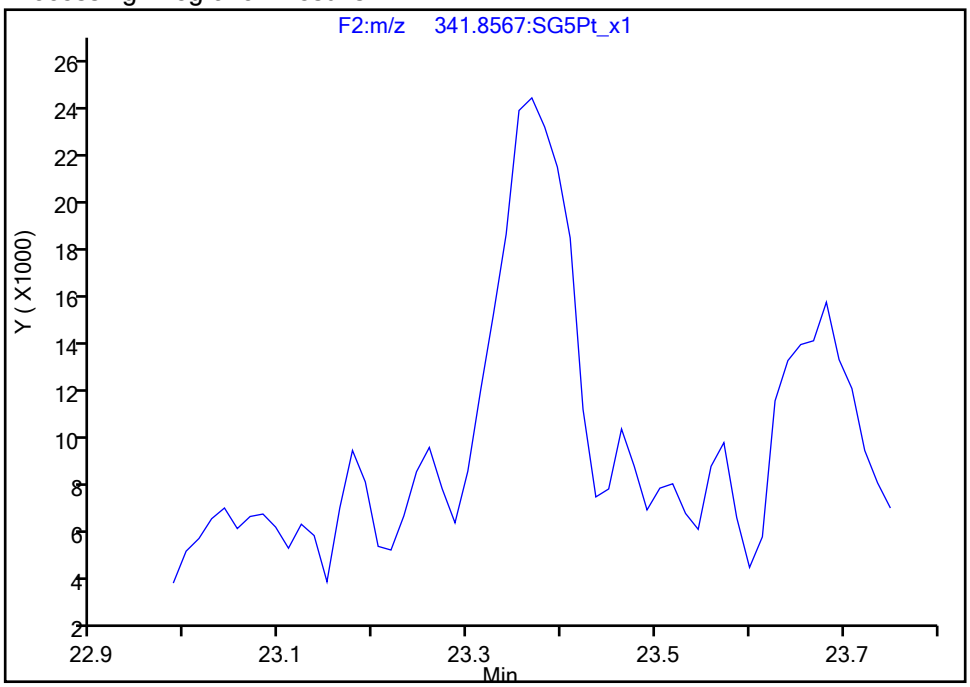
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

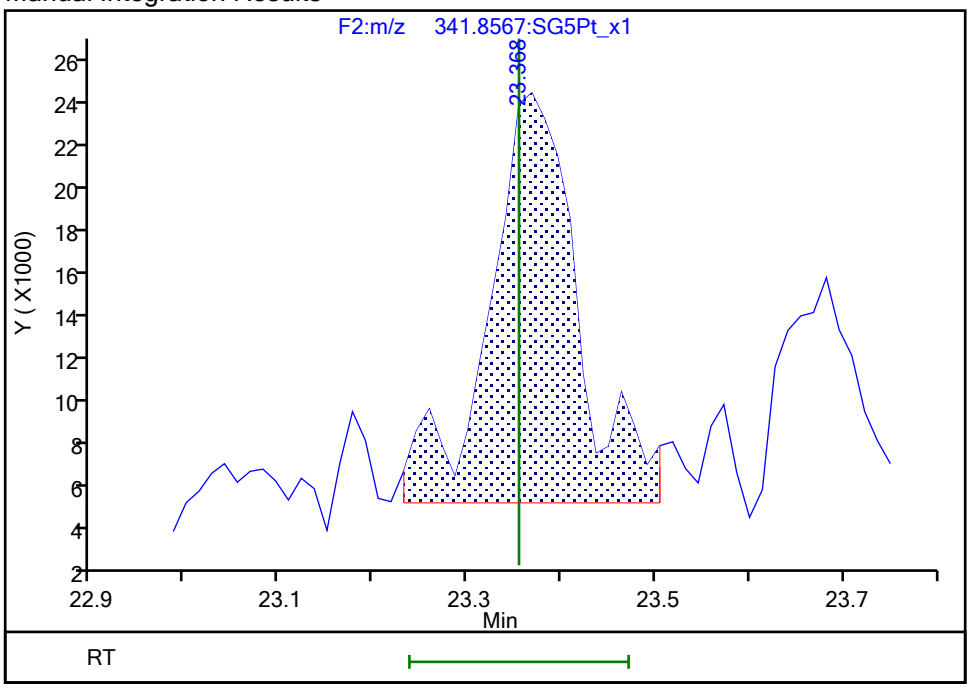
Not Detected
Expected RT: 23.35

Processing Integration Results



Manual Integration Results

RT: 23.37
Area: 124427
Amount: 0.185458
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:14:33
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

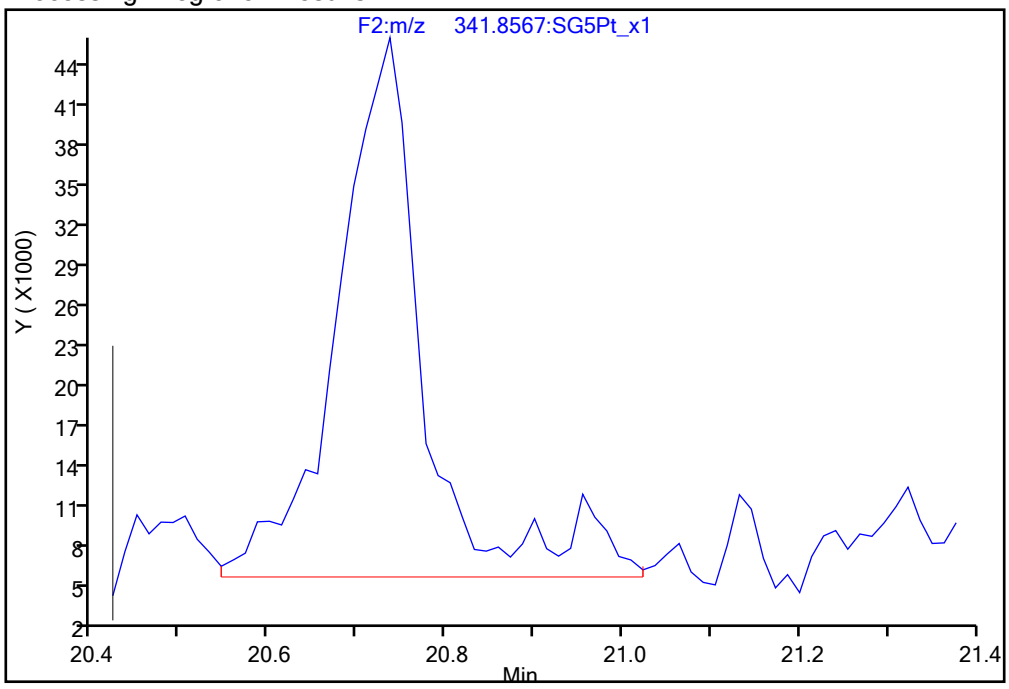
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (20.42- 25.29)

Signal: 2

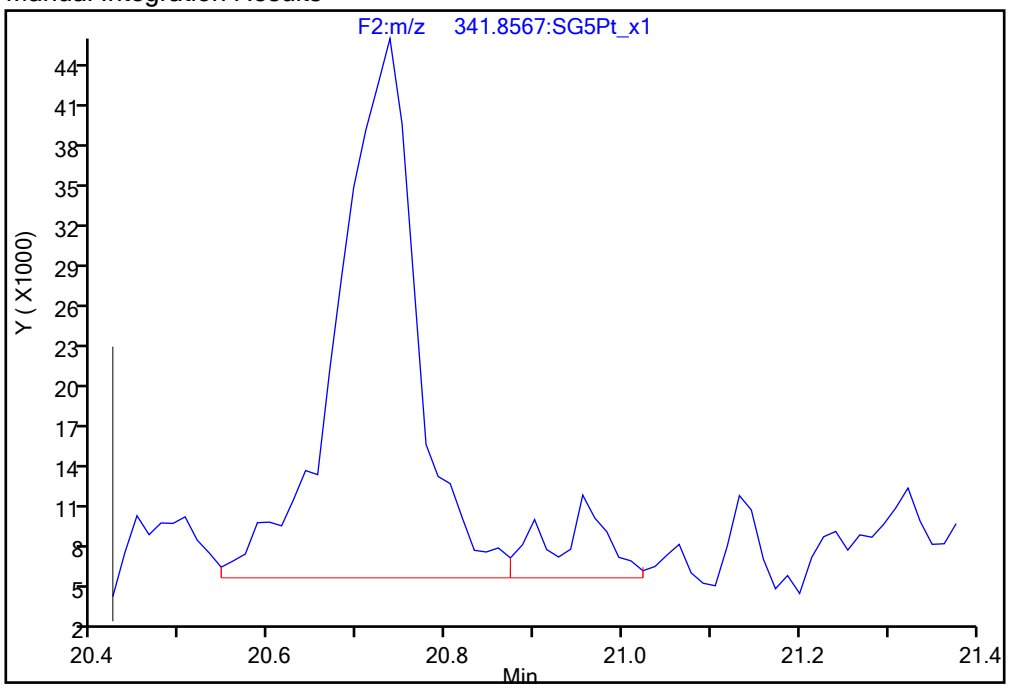
Processing Integration Results

RT = 20.736 Area = 273168



Manual Integration Results

RT = 20.736 Area = 248440 M



Reviewer: dadunj, 20-Dec-2019 14:14:44

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

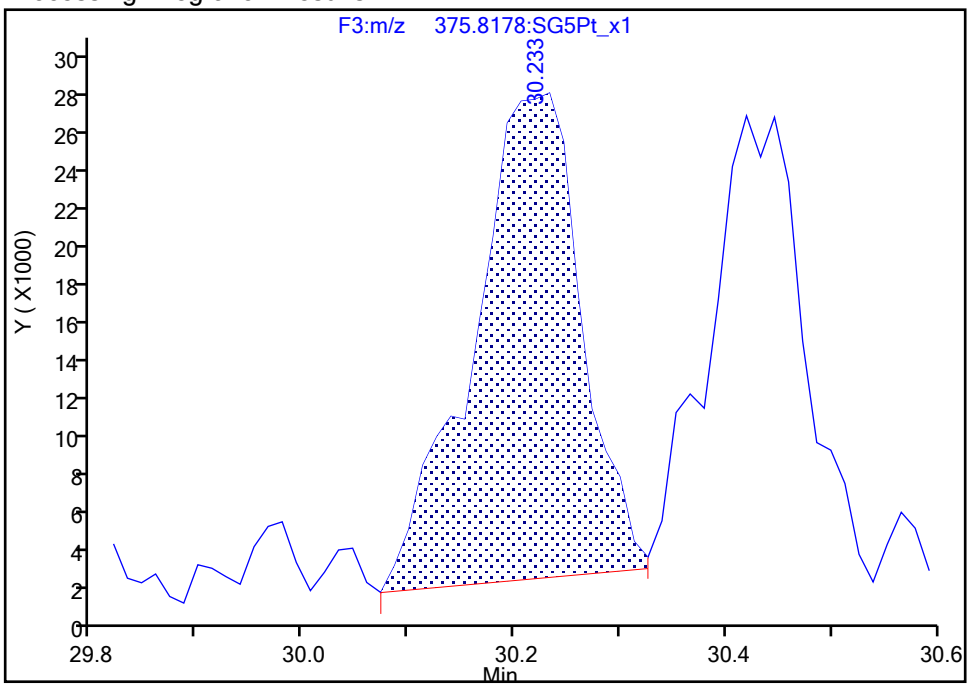
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

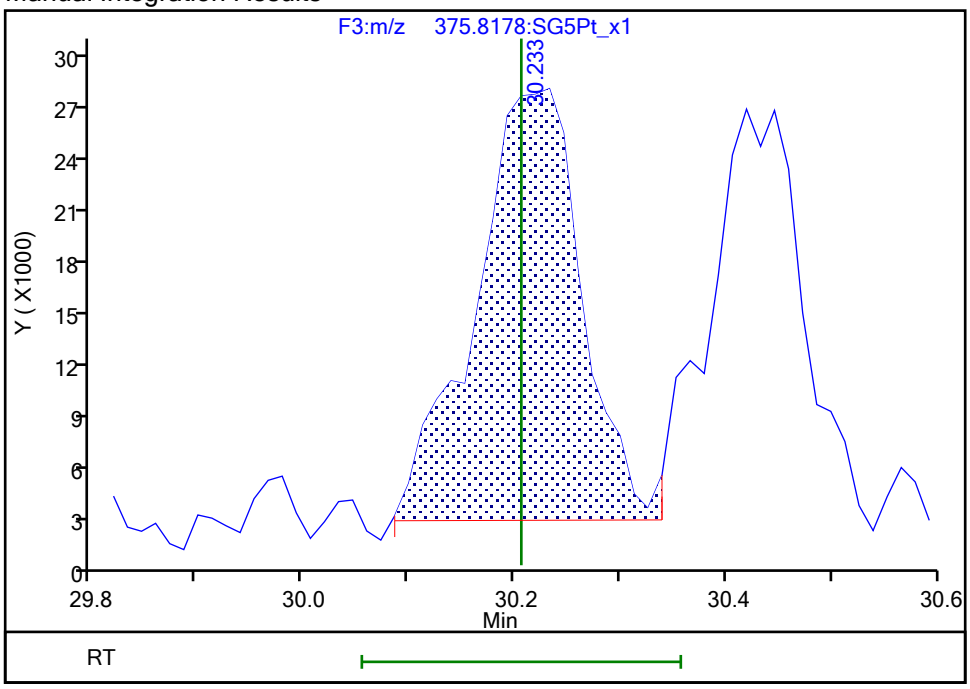
Processing Integration Results

RT: 30.23
Area: 180945
Amount: 0.300206
Amount Units: pg/ul



Manual Integration Results

RT: 30.23
Area: 174766
Amount: 0.295613
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:15:08

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

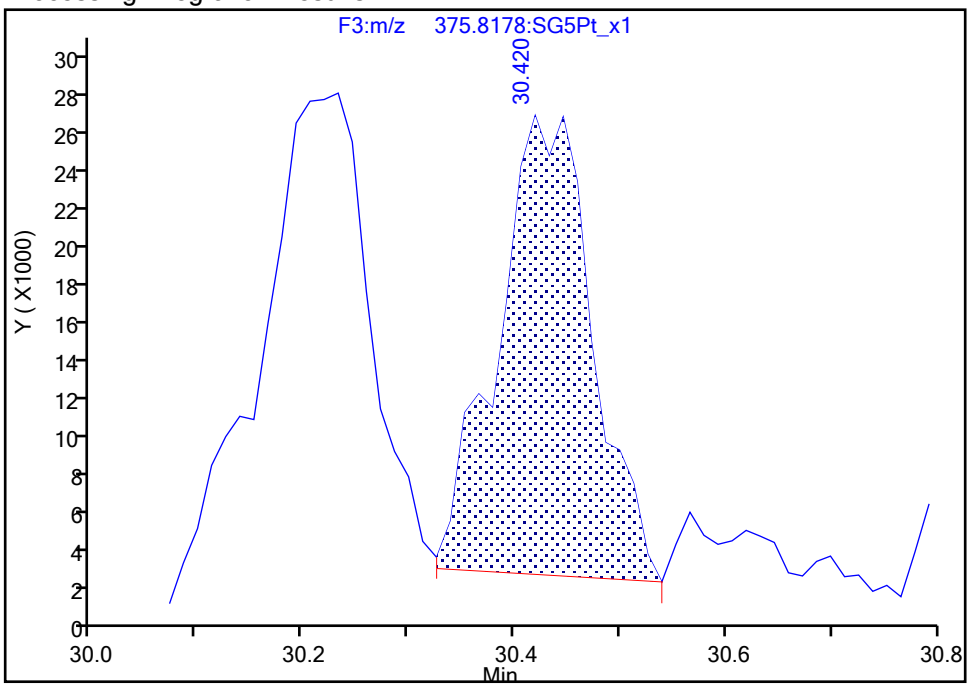
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

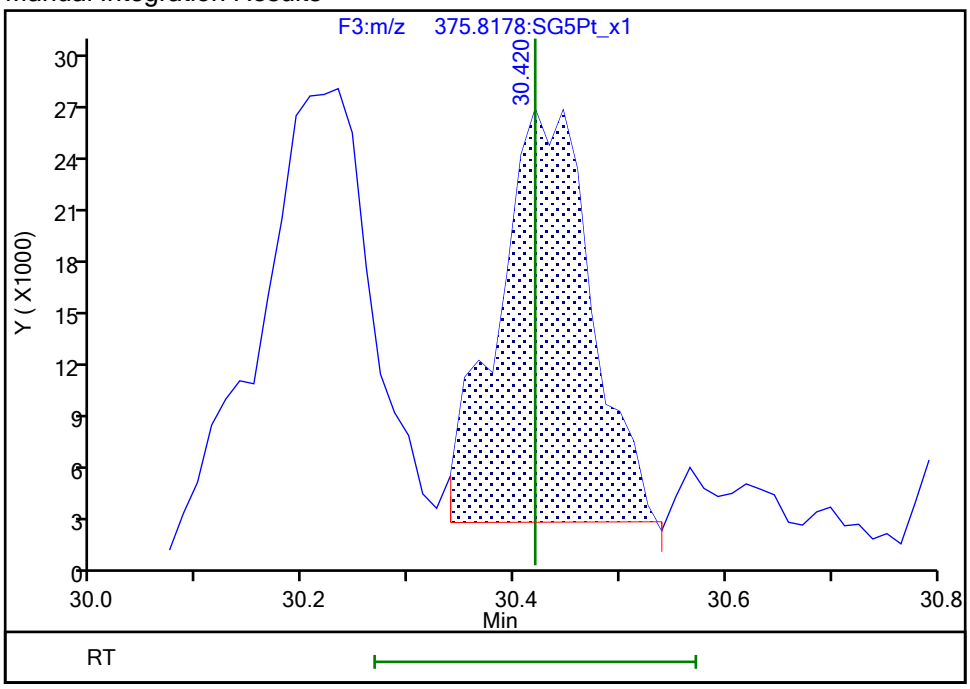
Processing Integration Results

RT: 30.42
Area: 149863
Amount: 0.237447
Amount Units: pg/ul



Manual Integration Results

RT: 30.42
Area: 146765
Amount: 0.235164
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:15:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

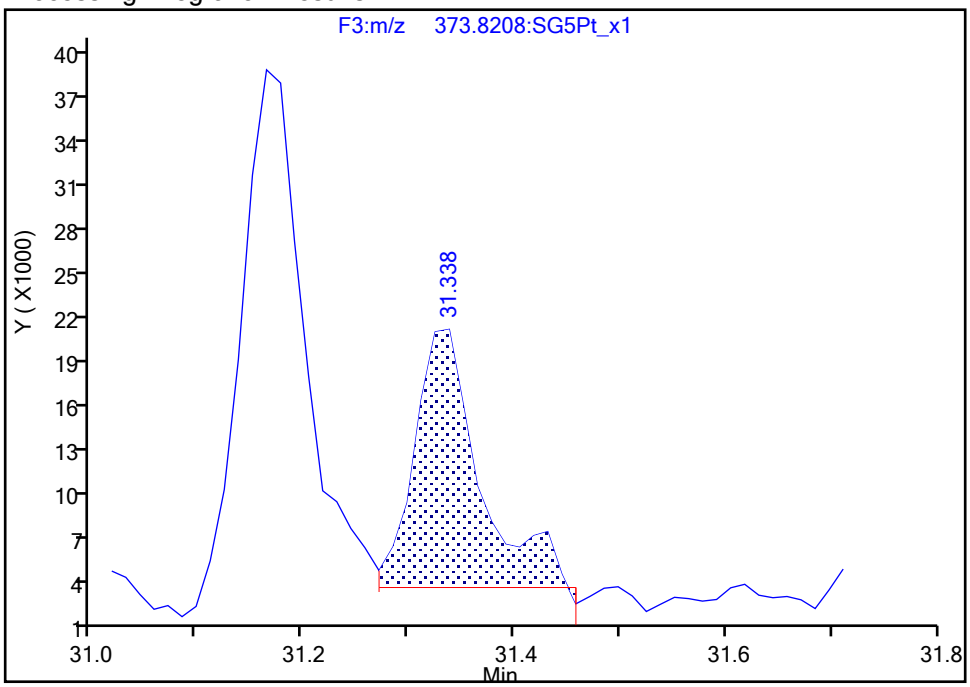
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

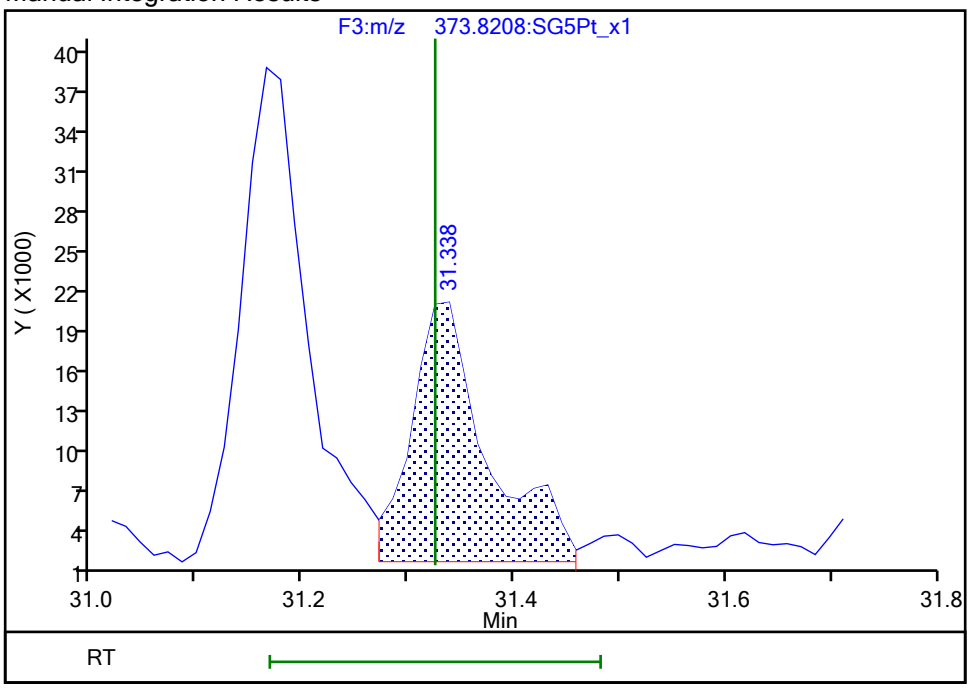
Processing Integration Results

RT: 31.34
Area: 74055
Amount: 0.090957
Amount Units: pg/ul



Manual Integration Results

RT: 31.34
Area: 95778
Amount: 0.133411
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:15:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

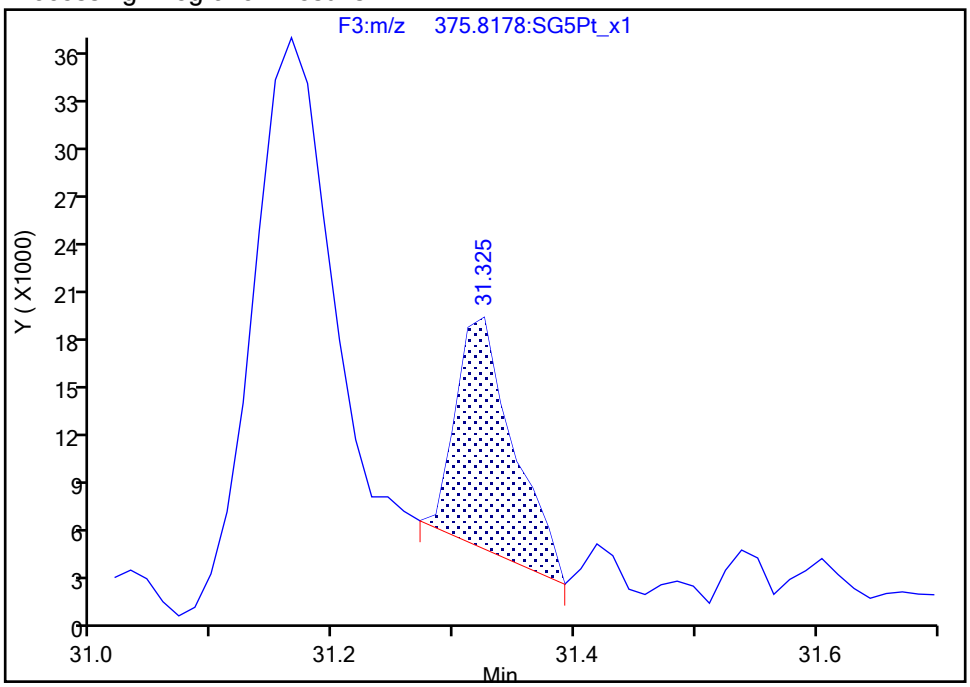
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

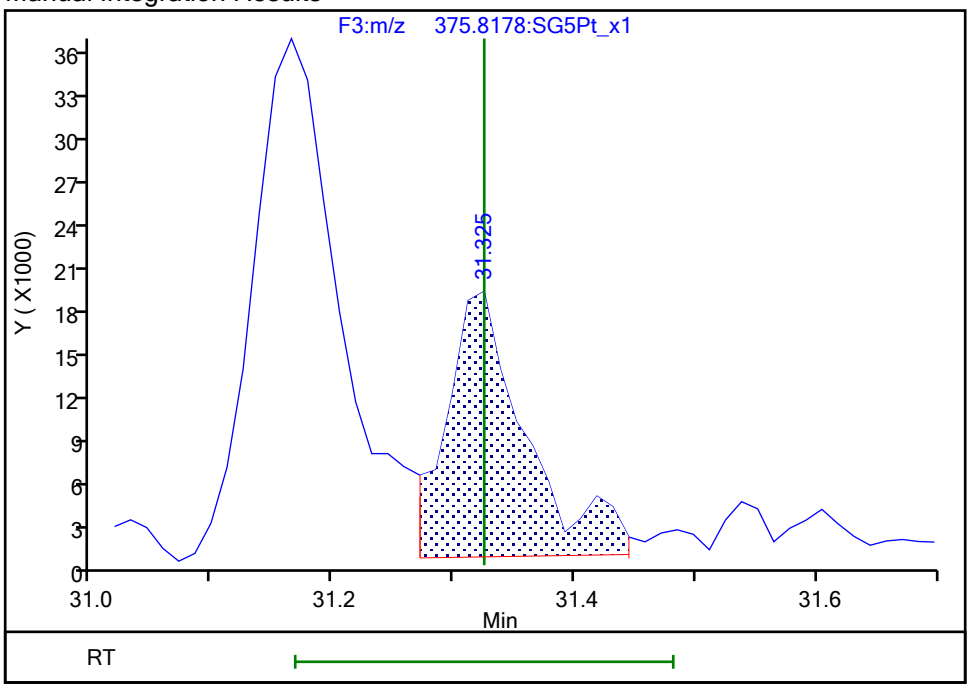
Processing Integration Results

RT: 31.32
Area: 46048
Amount: 0.090957
Amount Units: pg/ul



Manual Integration Results

RT: 31.32
Area: 80382
Amount: 0.133411
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:15:57

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

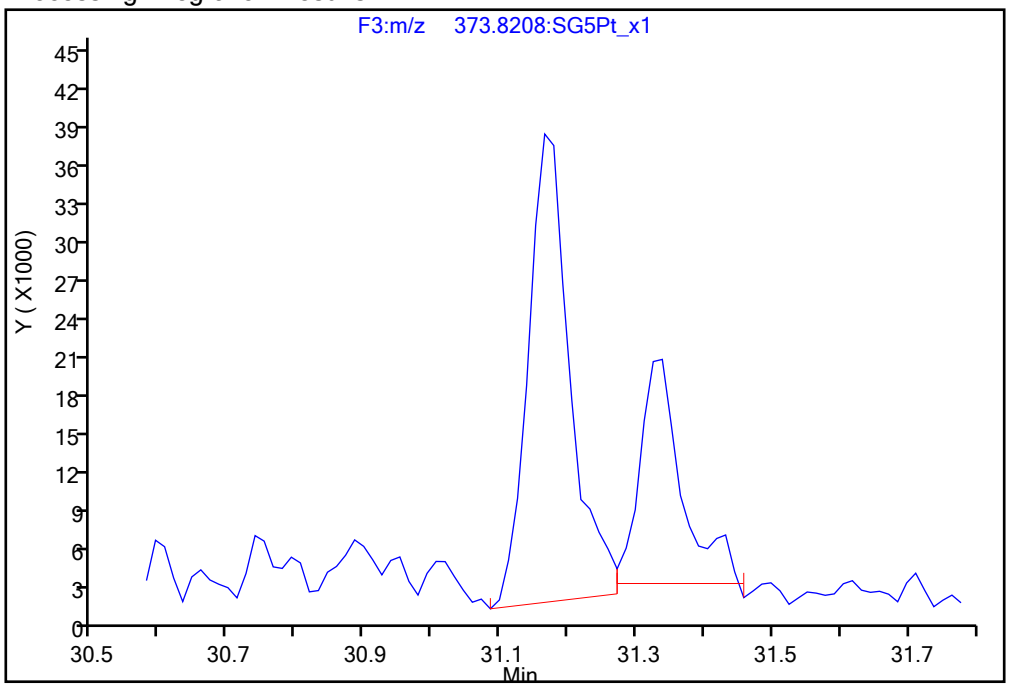
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (27.47- 32.29)

Signal: 1

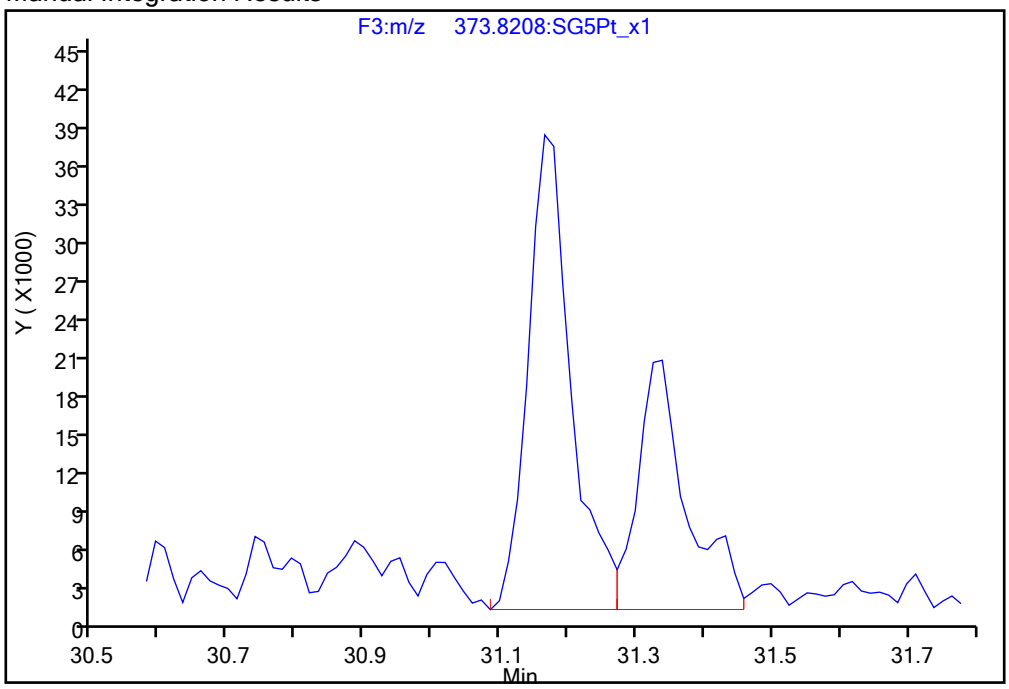
Processing Integration Results

RT = 31.165 Area = 154901



Manual Integration Results

RT = 31.165 Area = 161224 M



Reviewer: krenns, 22-Dec-2019 12:43:26

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

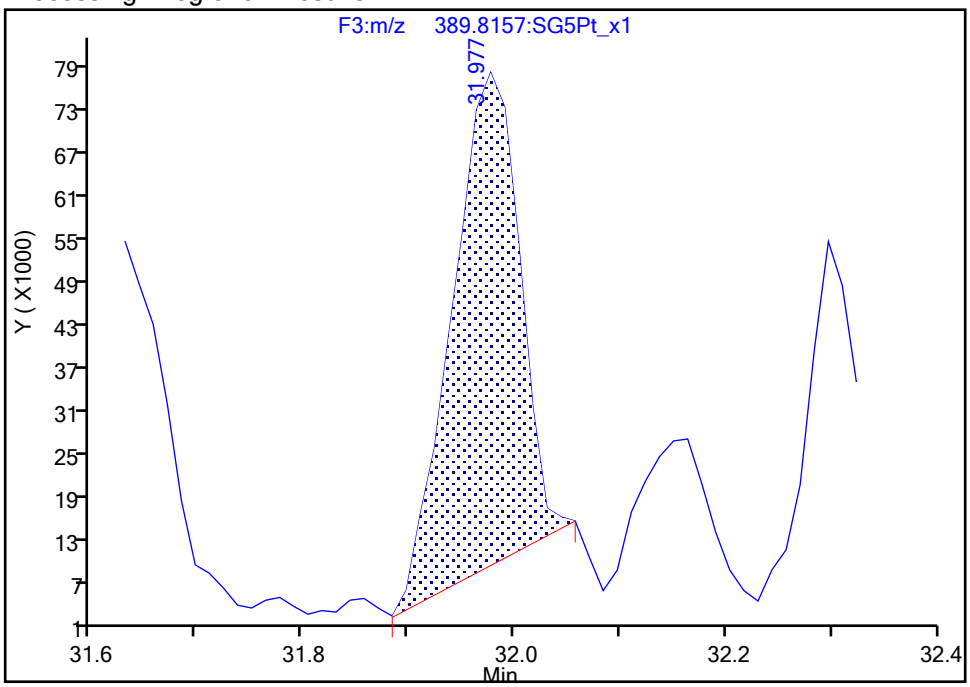
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

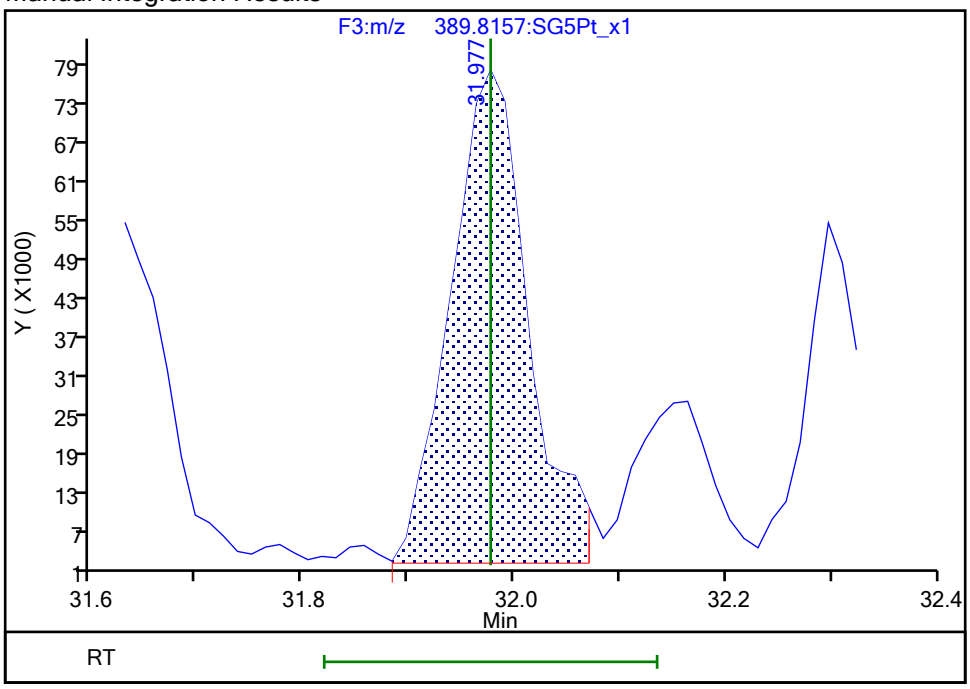
Processing Integration Results

RT: 31.98
Area: 302232
Amount: 0.538602
Amount Units: pg/ul



Manual Integration Results

RT: 31.98
Area: 380954
Amount: 0.609260
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:16:30

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

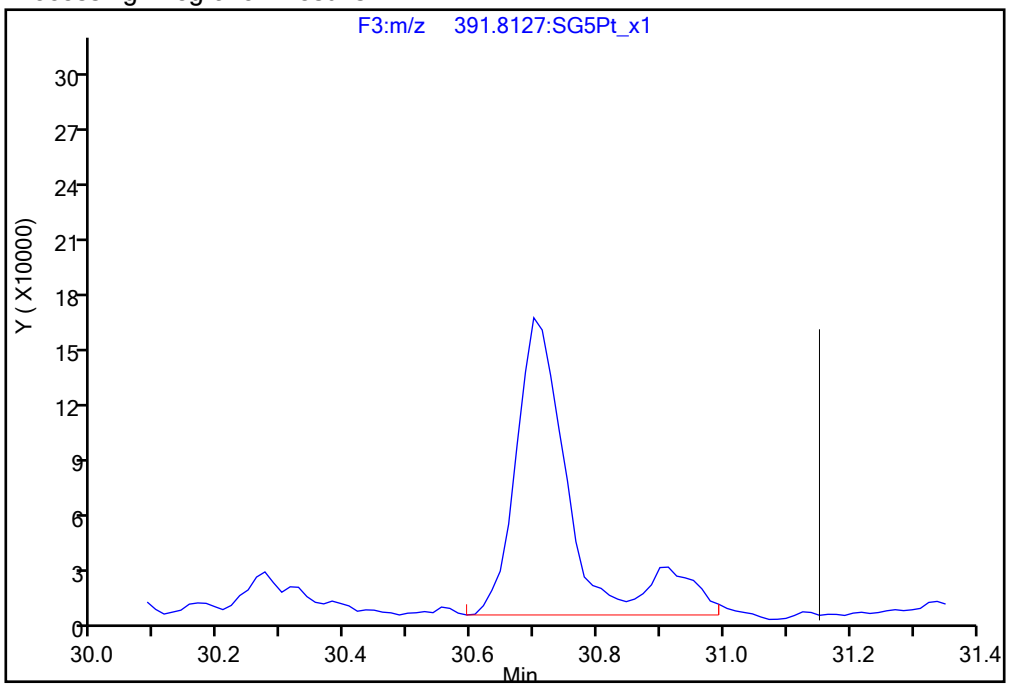
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (28.85- 32.19)

Signal: 2

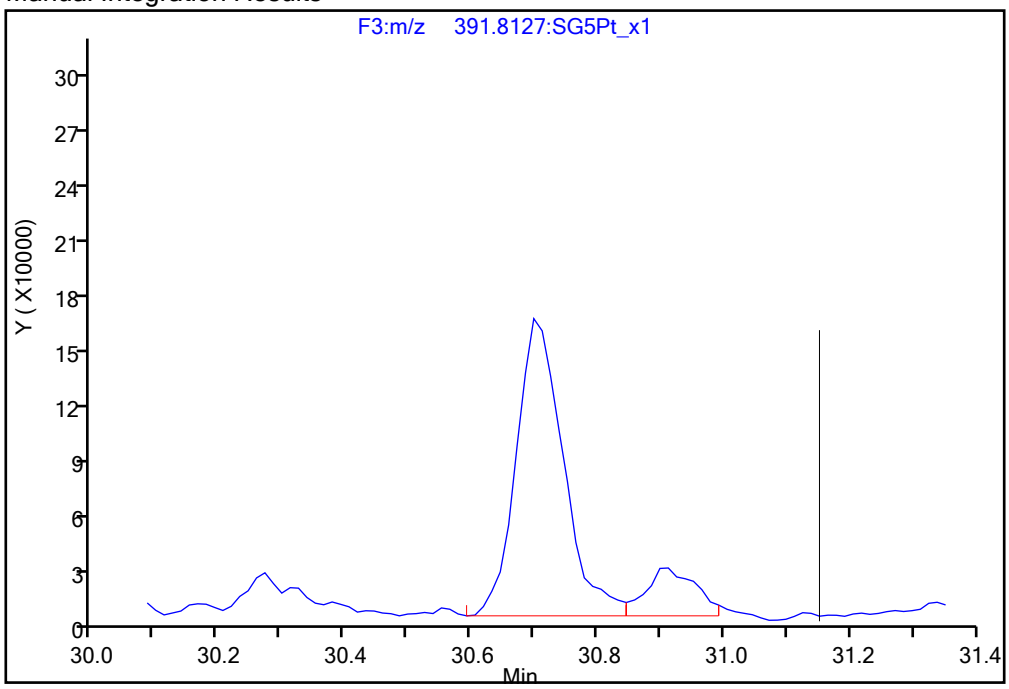
Processing Integration Results

RT = 30.699 Area = 966240



Manual Integration Results

RT = 30.699 Area = 827040 M



Reviewer: dadunj, 20-Dec-2019 14:16:40

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

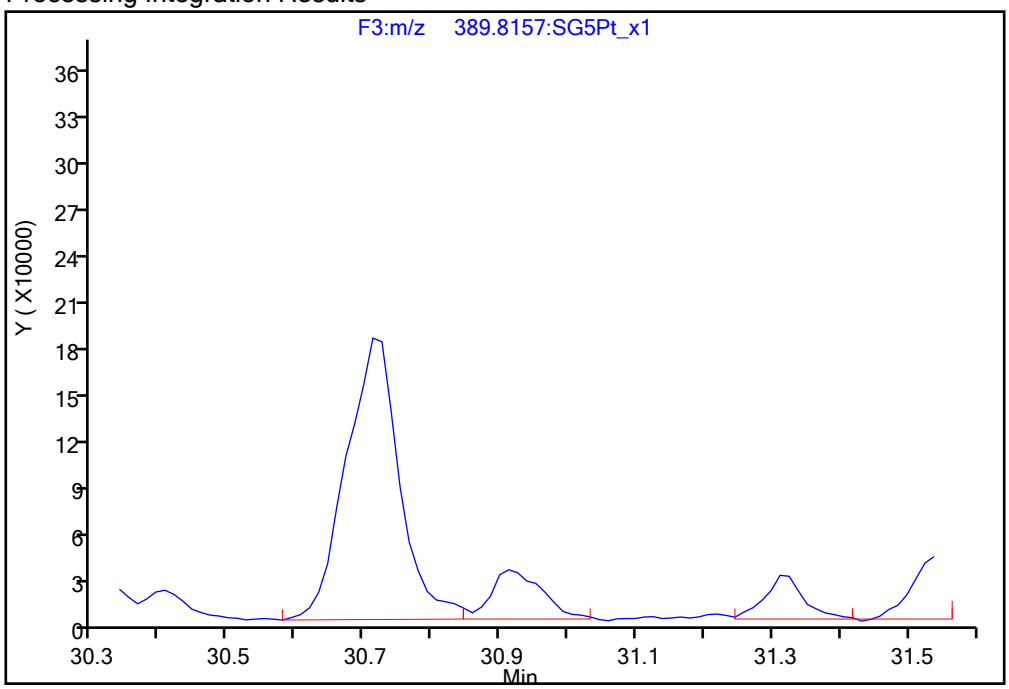
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDD, Signal: 1, m/z: 389.8157, RT: (28.85- 32.19)

Signal: 1

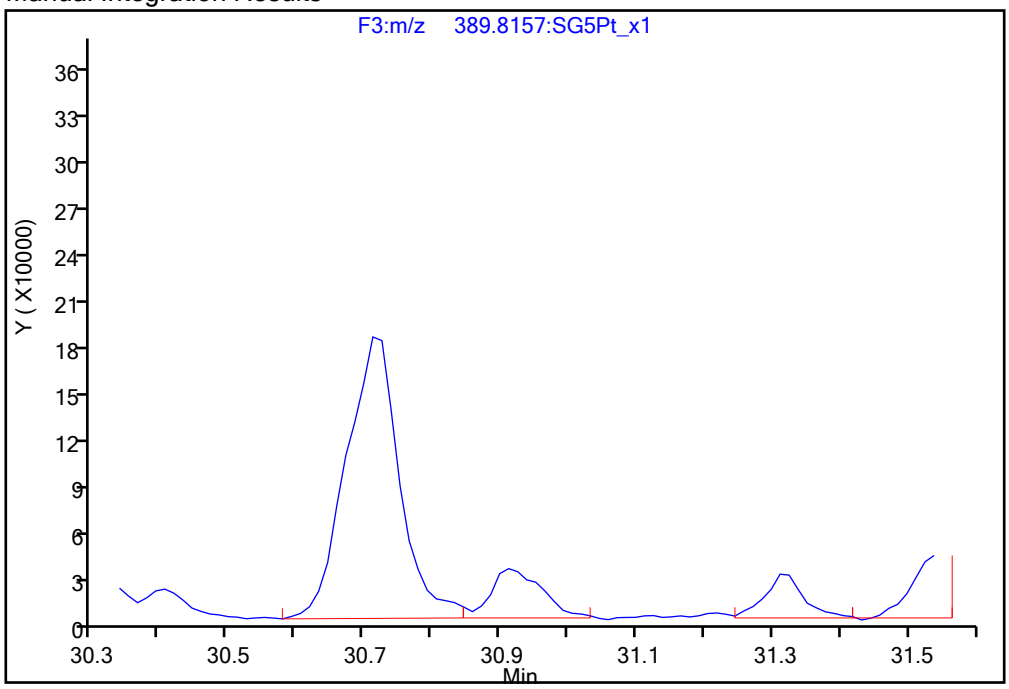
Processing Integration Results

RT = 30.912 Area = 164879



Manual Integration Results

RT = 30.912 Area = 164879



Reviewer: dadunj, 20-Dec-2019 14:17:53

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

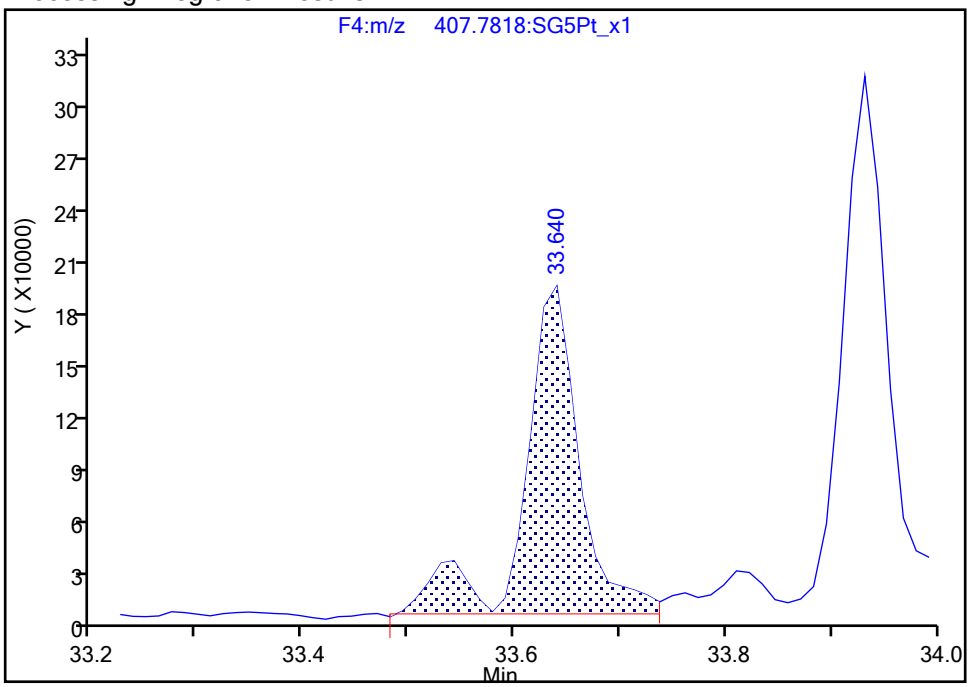
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

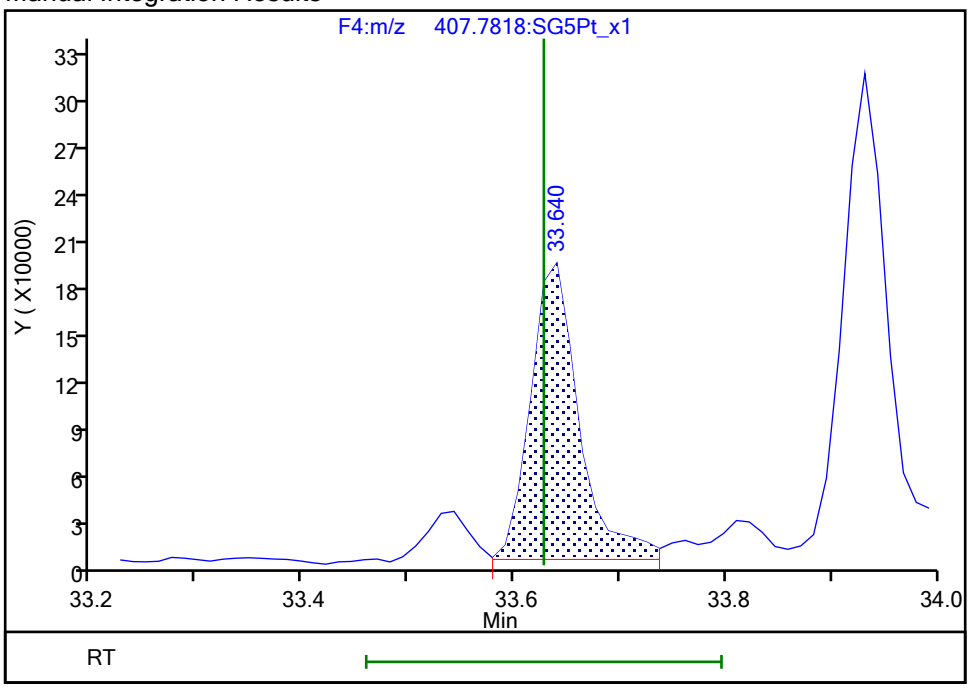
Processing Integration Results

RT: 33.64
Area: 677337
Amount: 1.149411
Amount Units: pg/ul



Manual Integration Results

RT: 33.64
Area: 594471
Amount: 1.073100
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:16:46
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

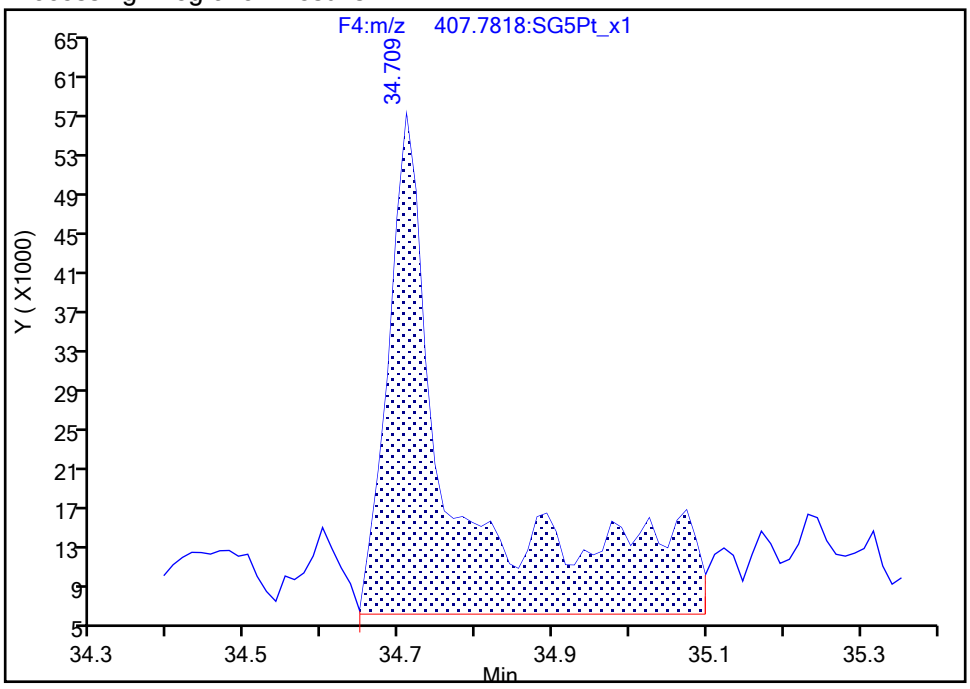
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

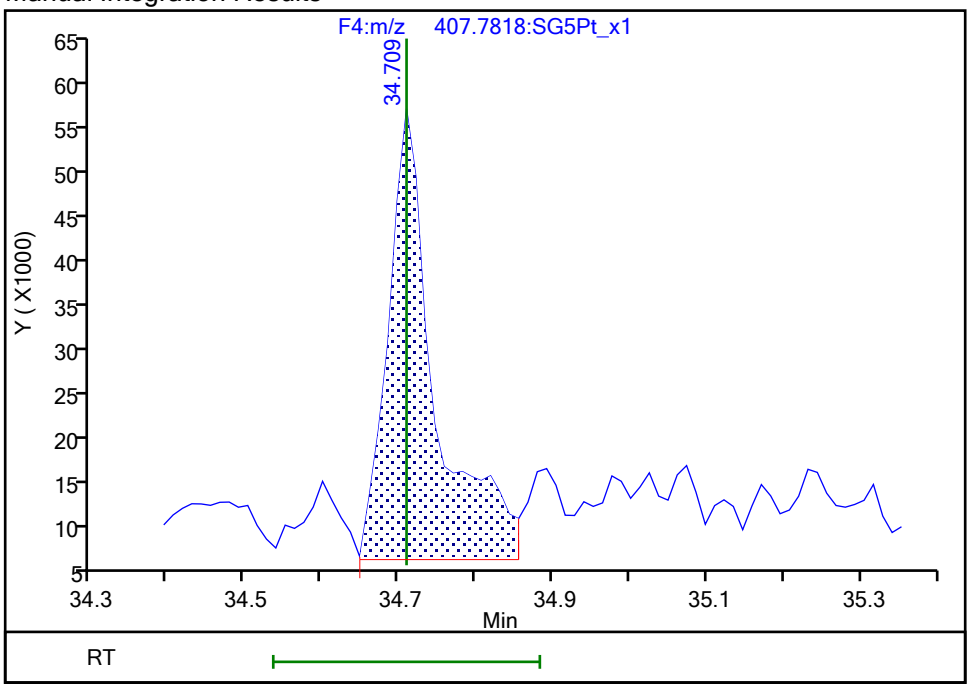
Processing Integration Results

RT: 34.71
Area: 324830
Amount: 0.452783
Amount Units: pg/ul



Manual Integration Results

RT: 34.71
Area: 213863
Amount: 0.345104
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:16:51

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

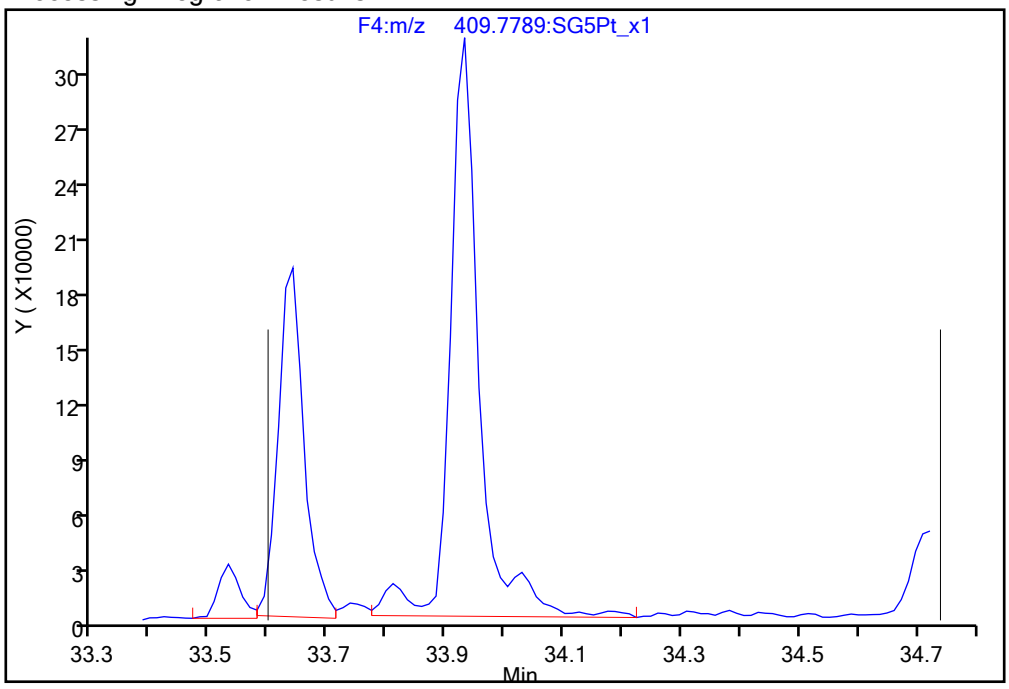
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d				
Injection Date:	19-Dec-2019 15:46:27	Instrument ID:	3D5		
Lims ID:	320-56953-A-1-A	Lab Sample ID:	320-56953-1		
Client ID:	11187072-120919-BN-SJSSA07(0-1)				
Operator ID:	AJS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.60- 34.74)

Signal: 2

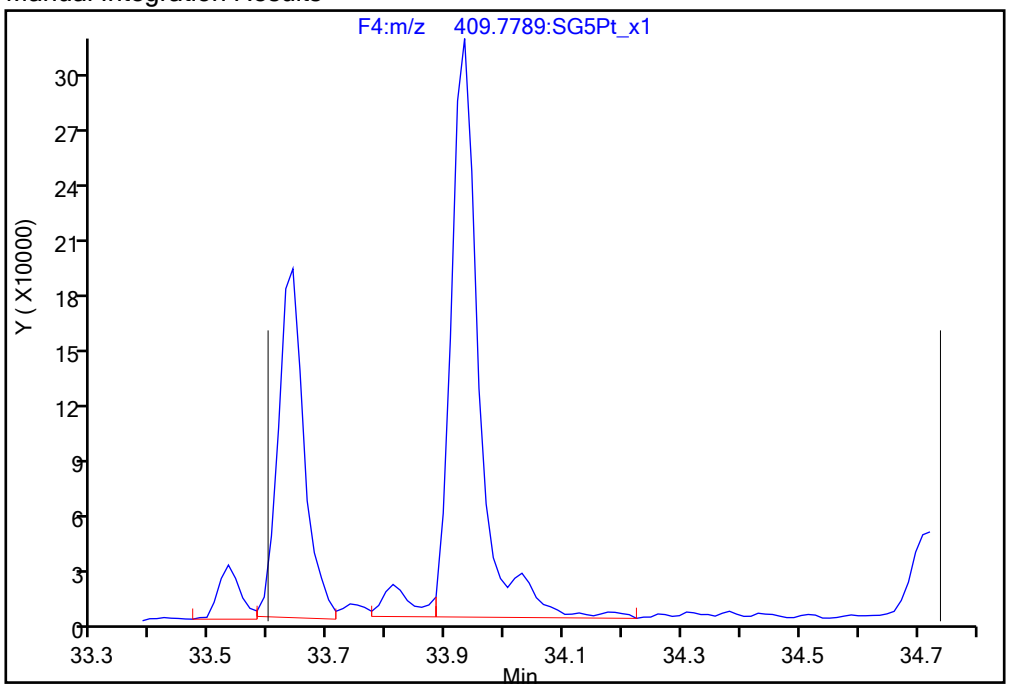
Processing Integration Results

RT = 33.931 Area = 1080026



Manual Integration Results

RT = 33.931 Area = 1019453 M



Reviewer: dadunj, 20-Dec-2019 14:16:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 22-Dec-2019 12:44:04 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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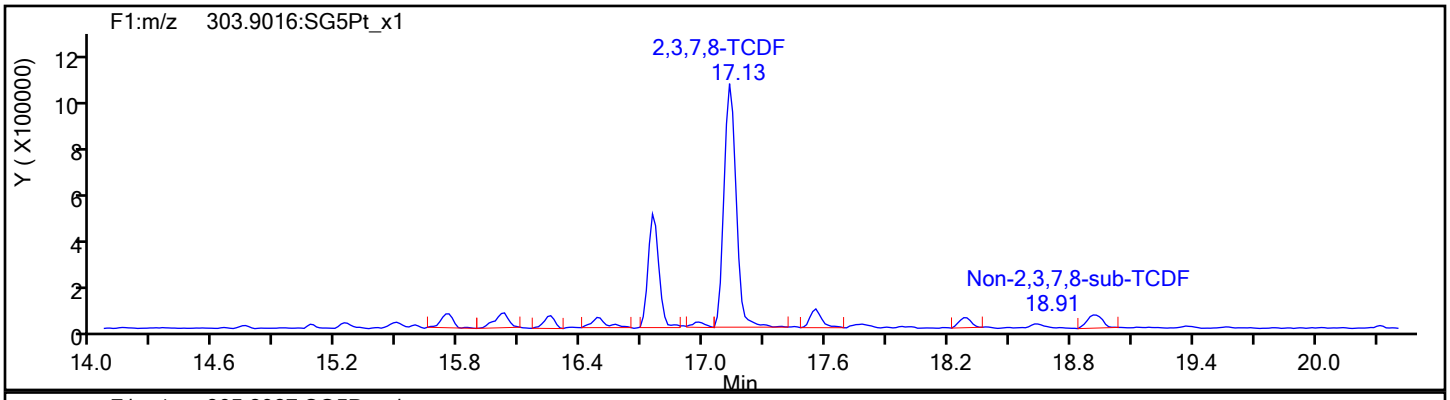
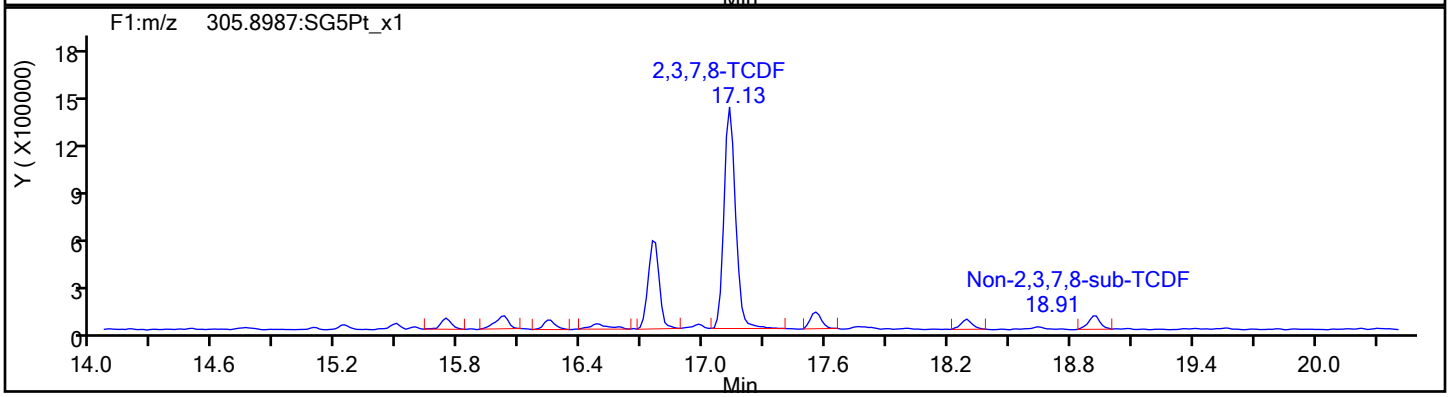
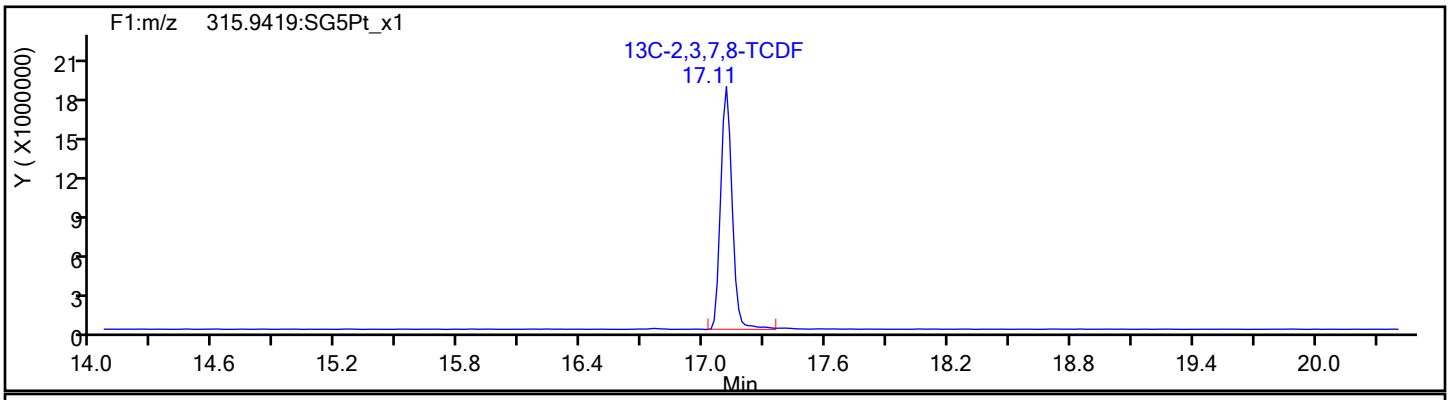
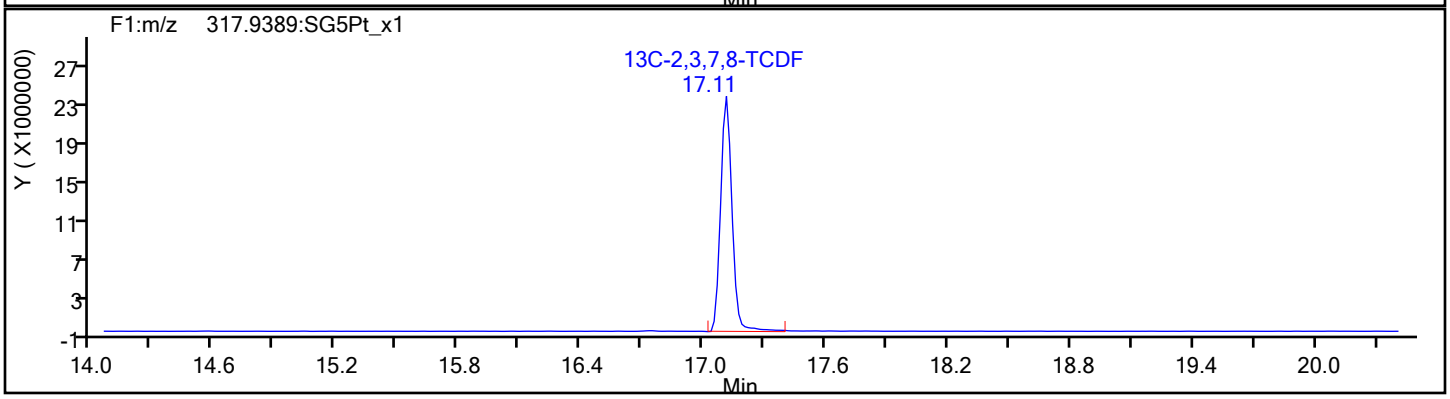
TCDF





TCDF Standards





Report Date: 22-Dec-2019 12:44:04 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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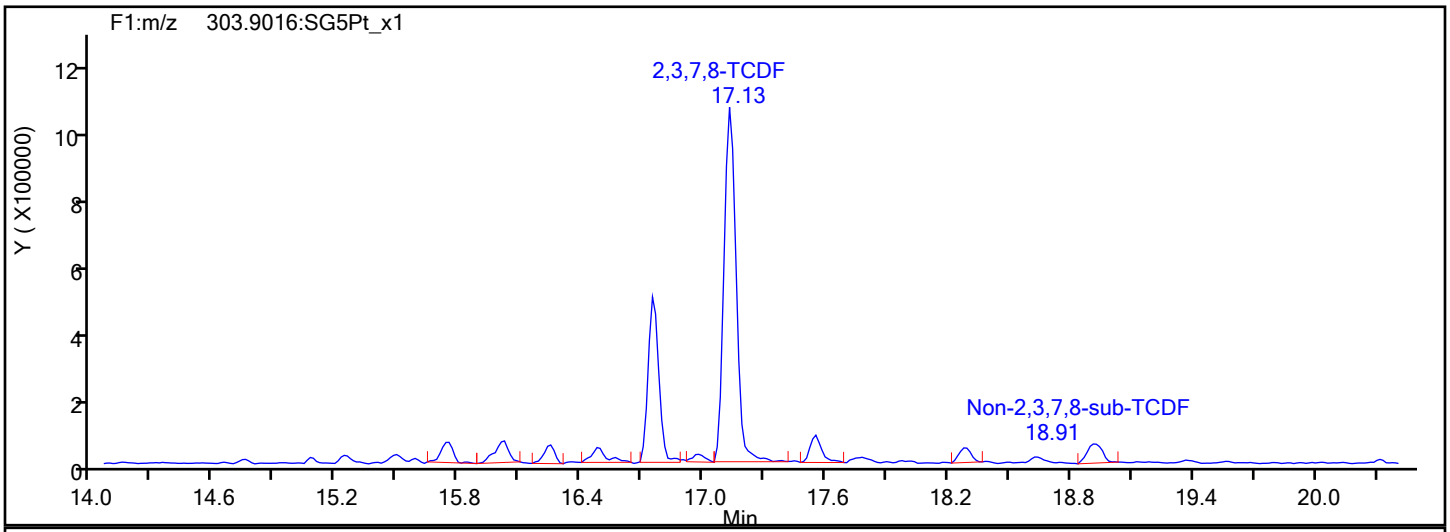
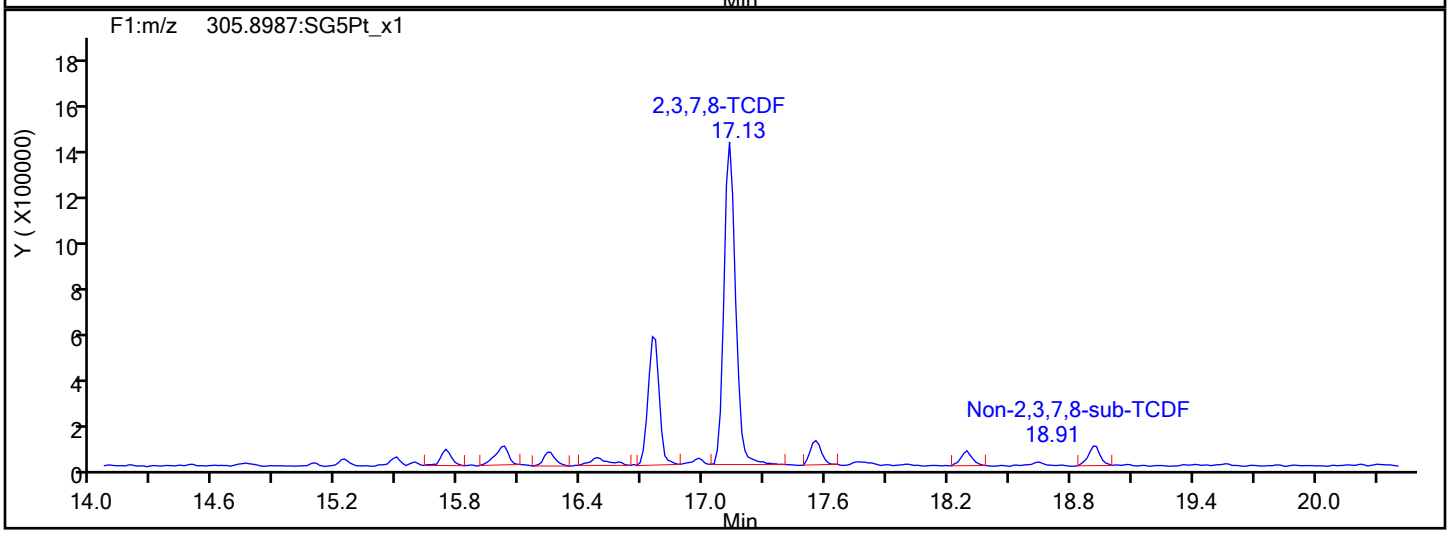
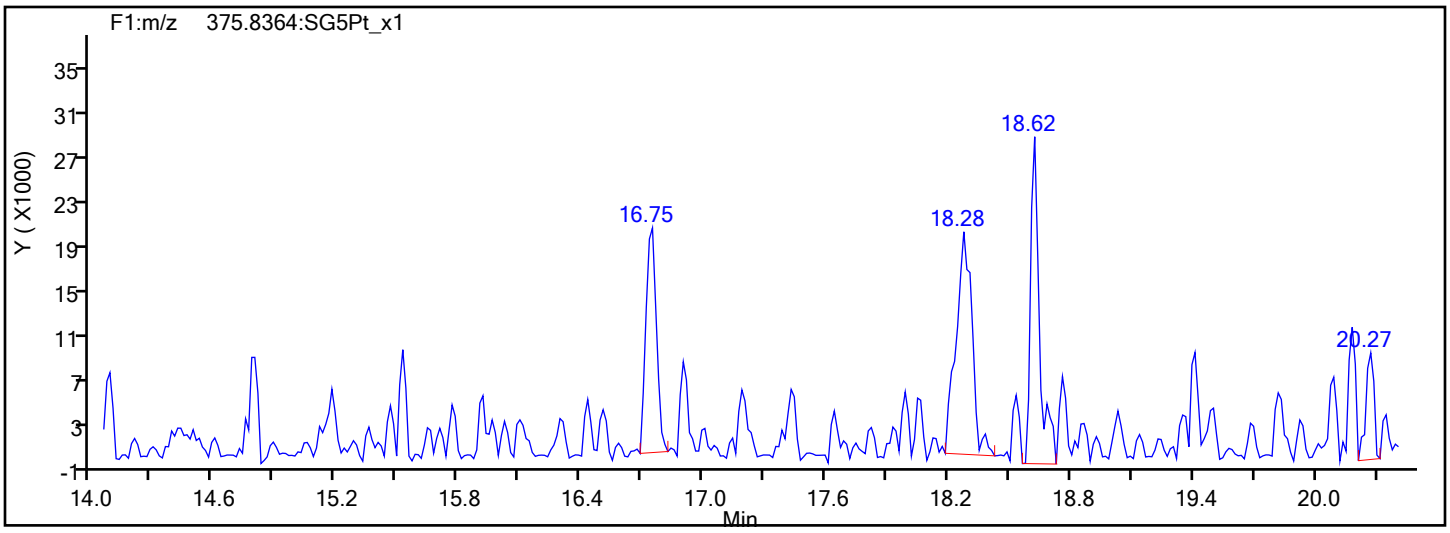
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 22-Dec-2019 12:44:04 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
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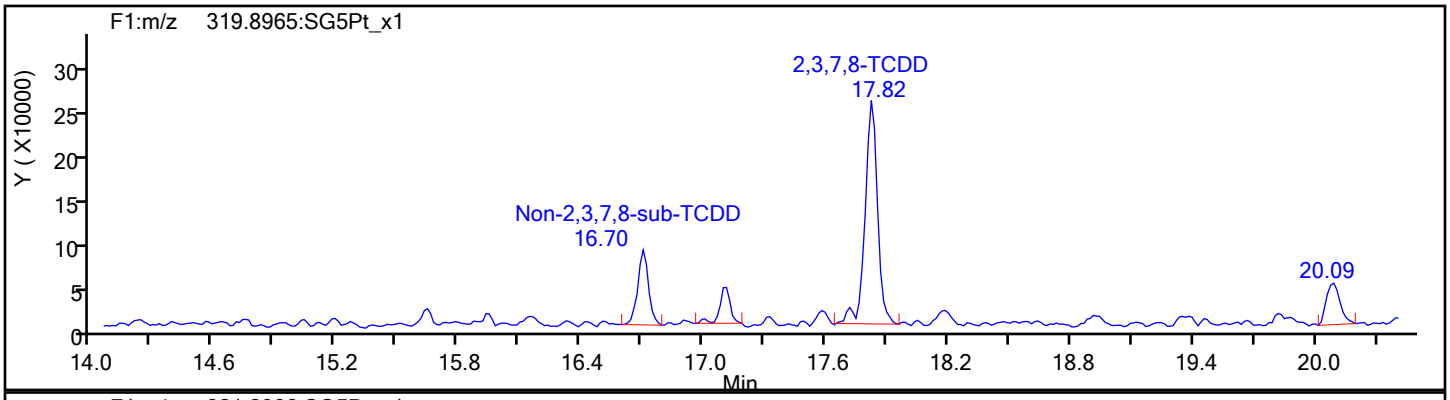
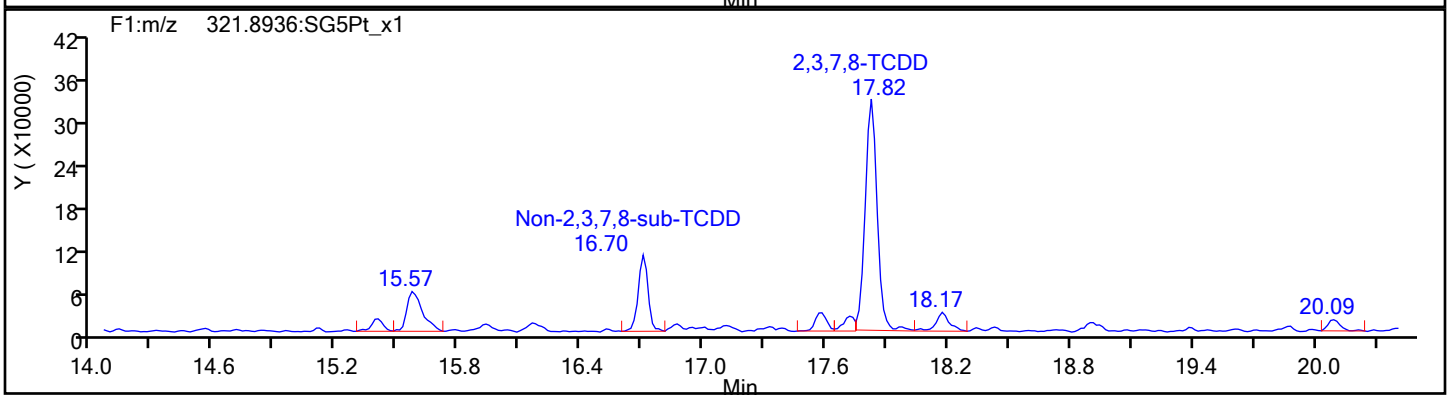
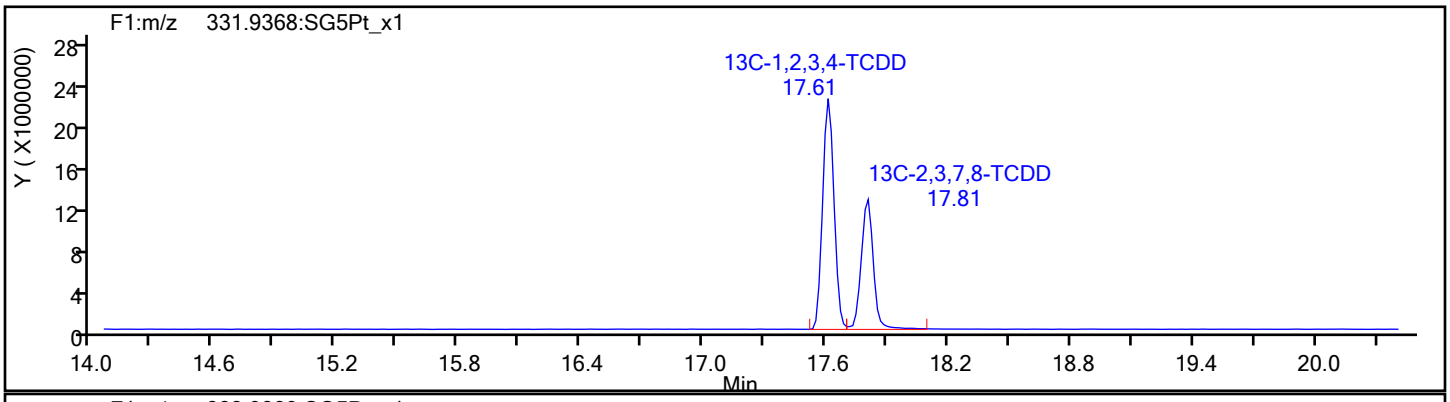
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

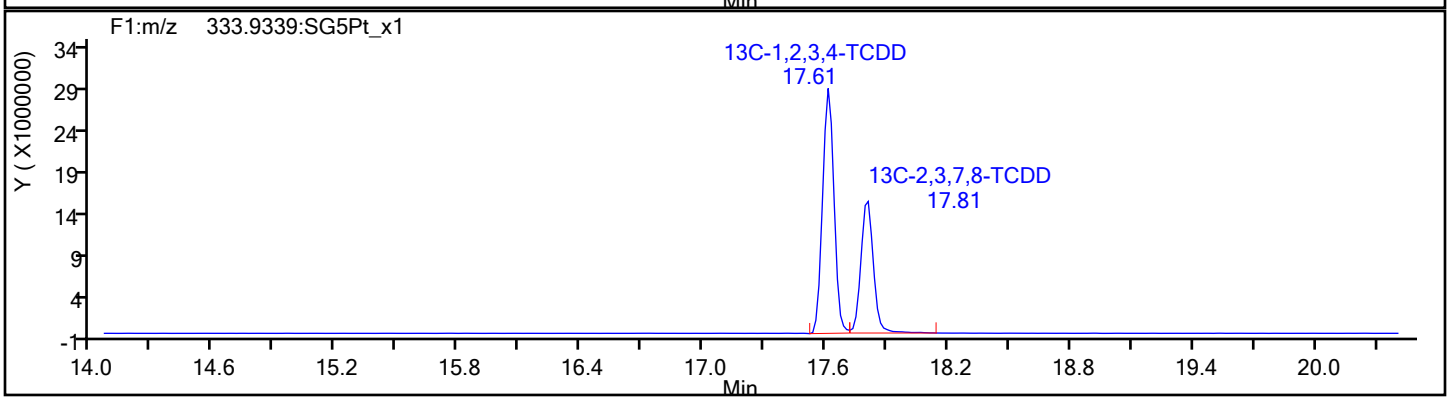
TCDD





TCDD Standards





Report Date: 22-Dec-2019 12:44:04 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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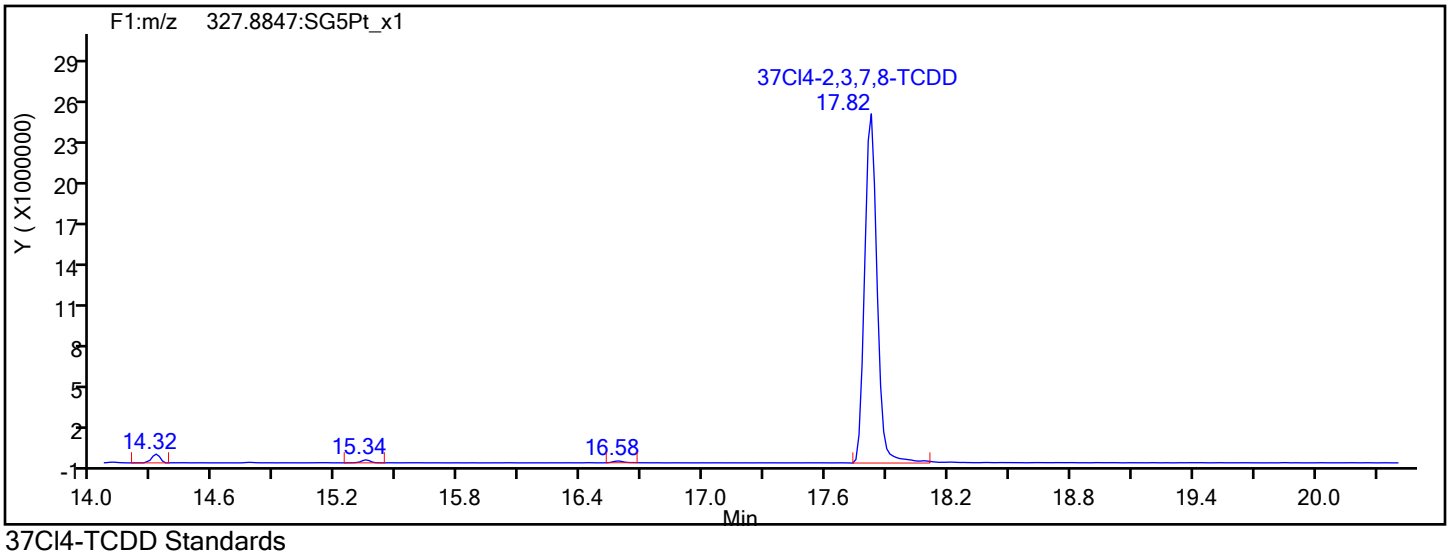
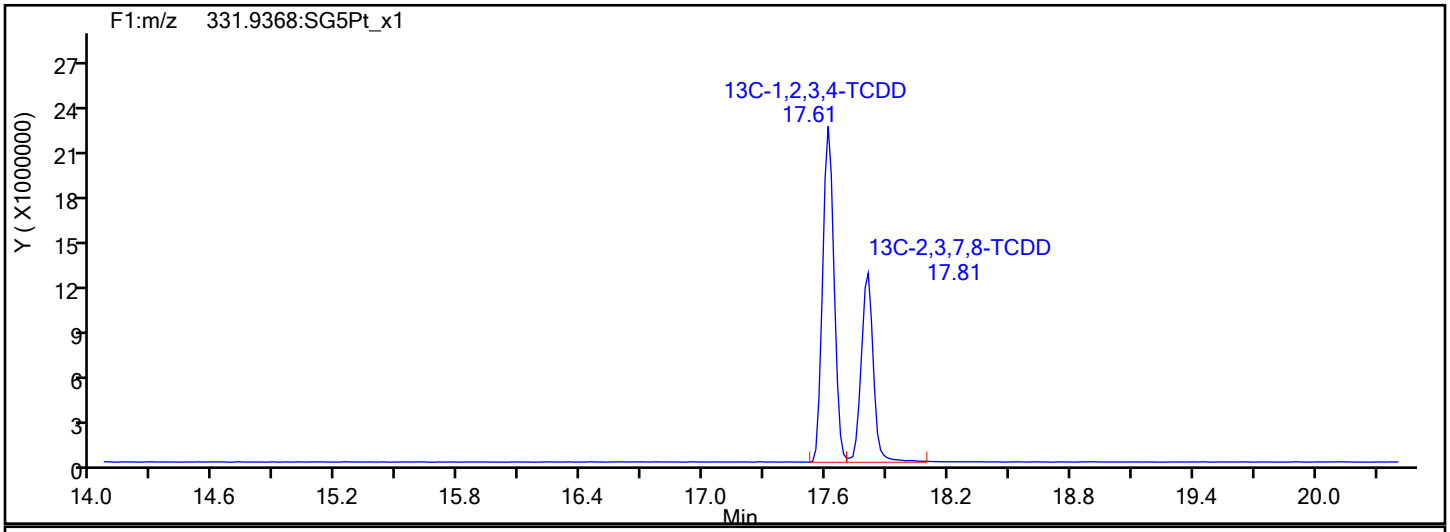
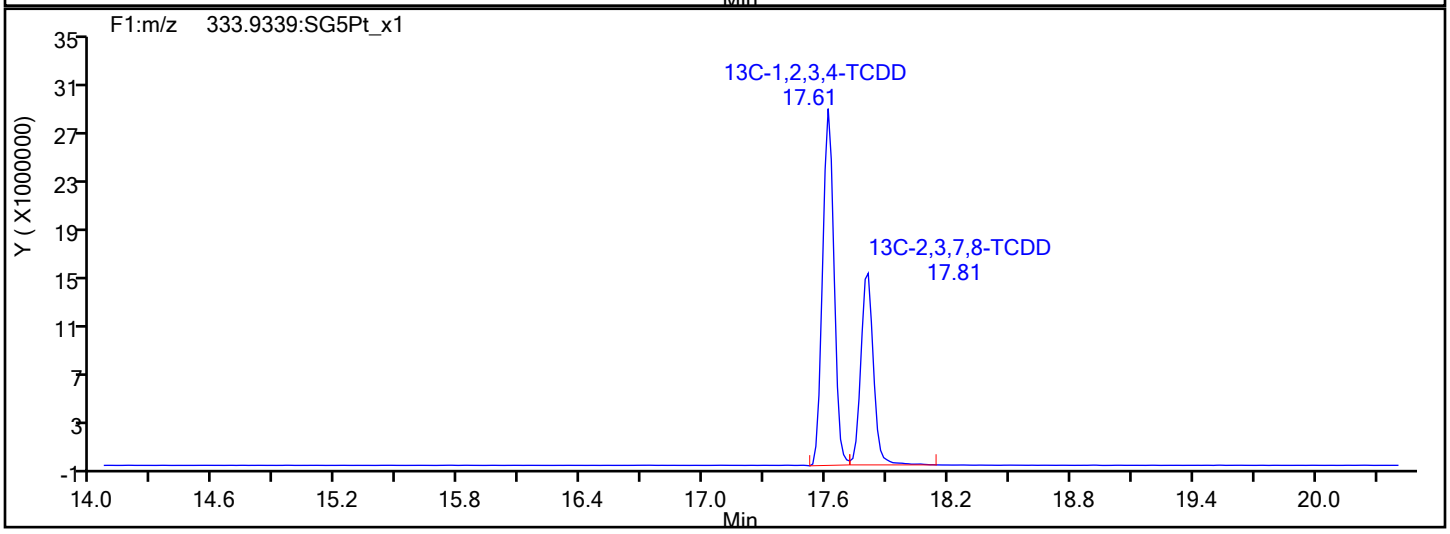
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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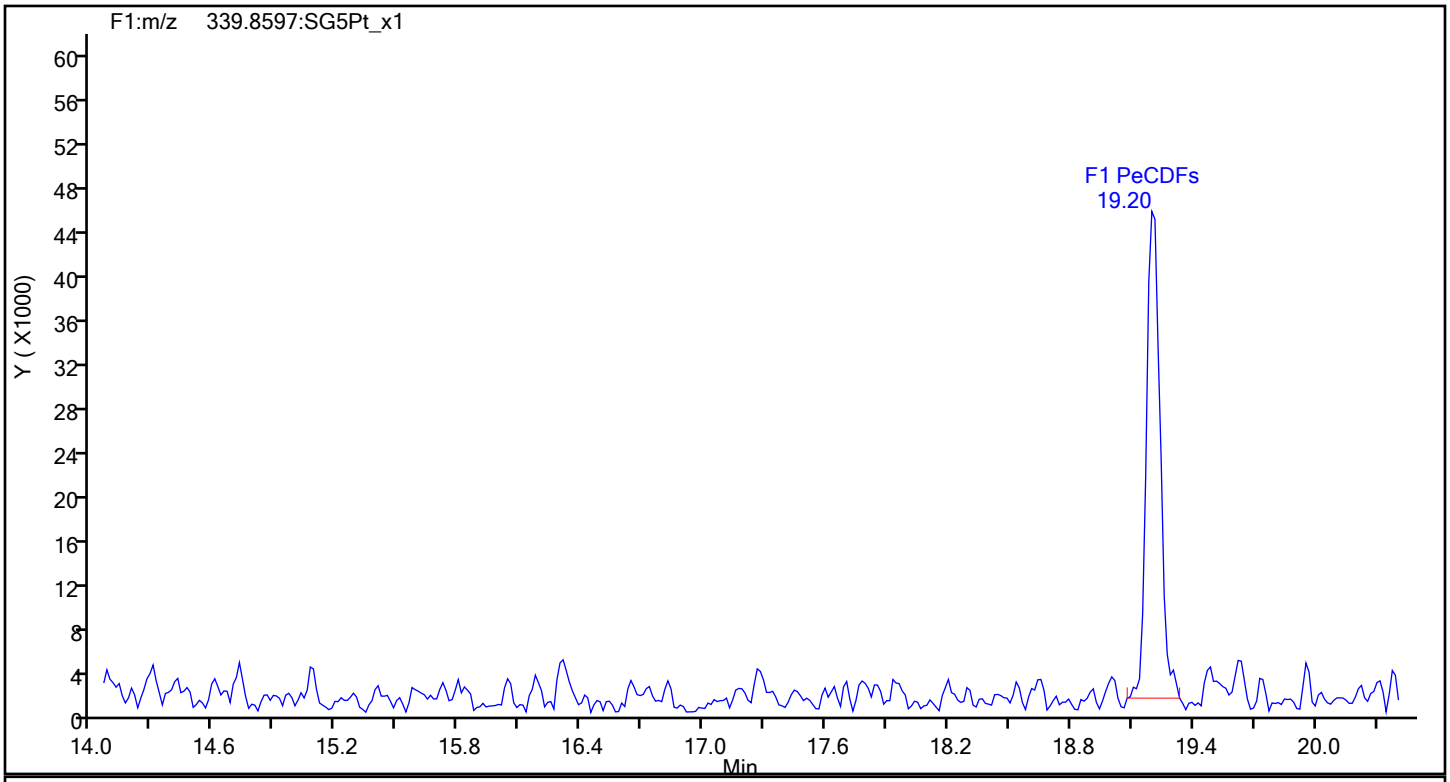
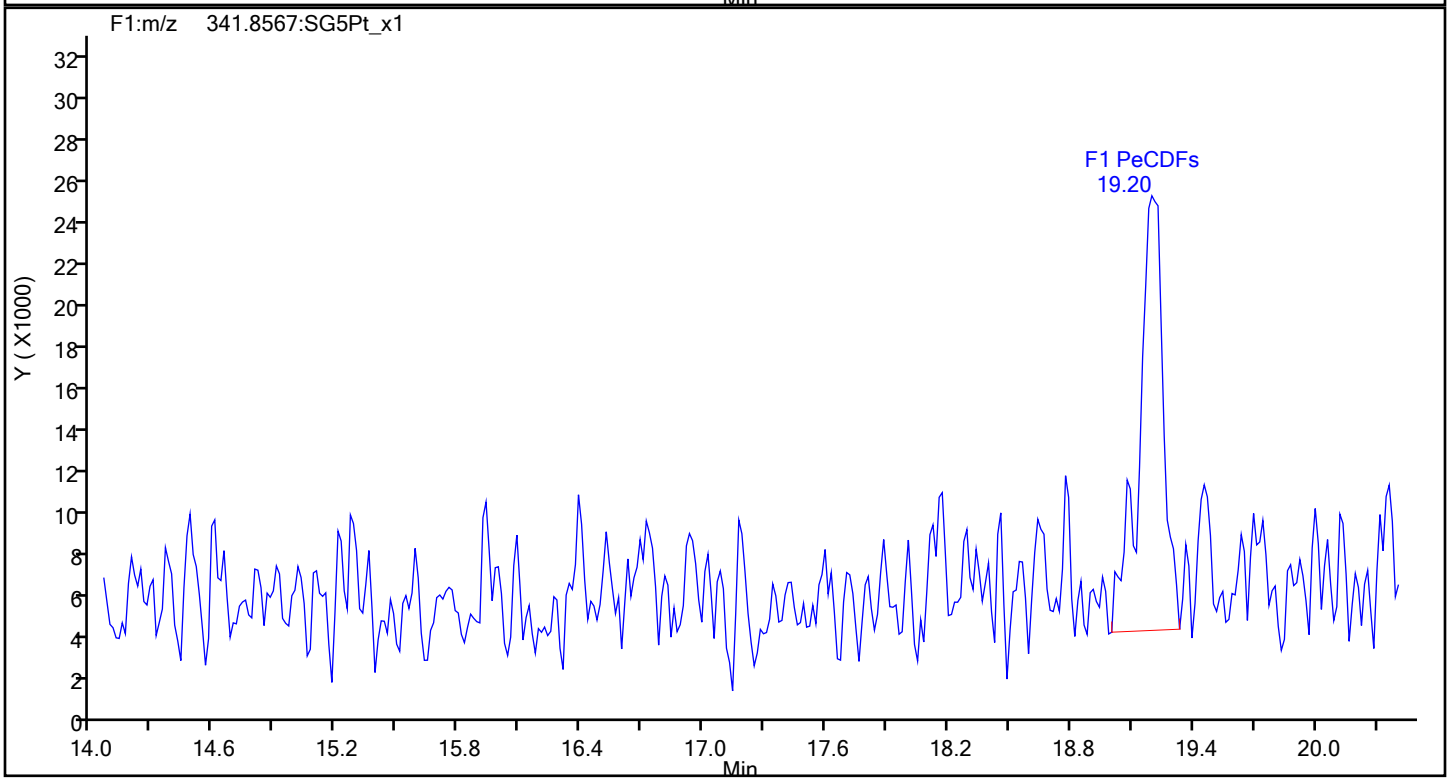
F1 PeCDFs





Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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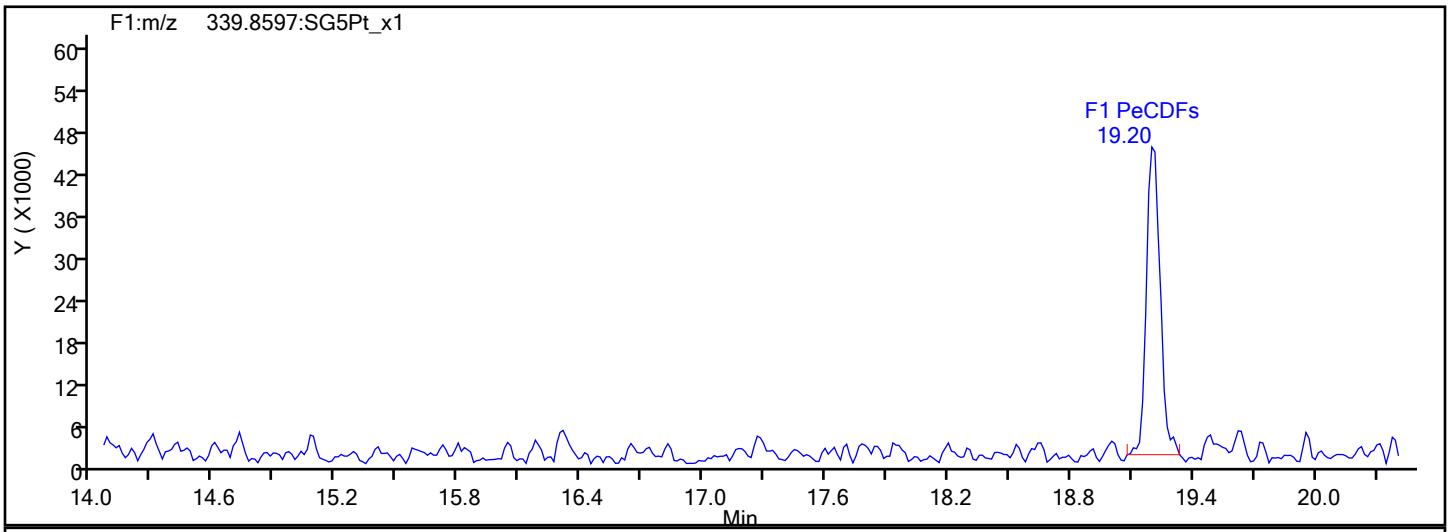
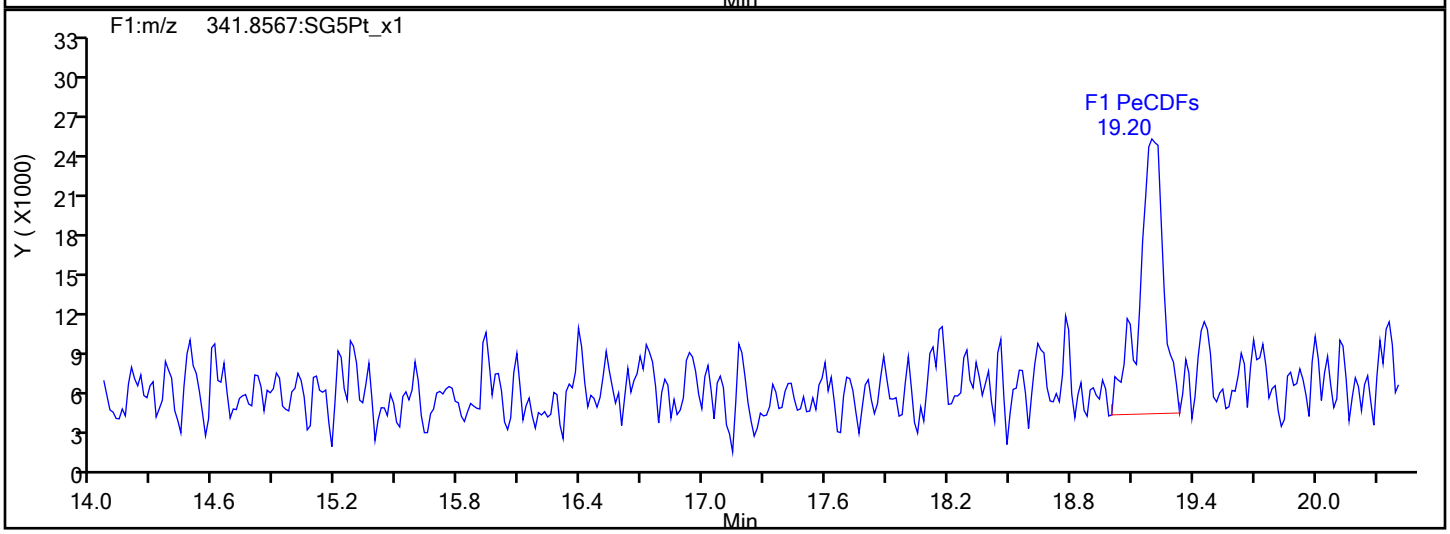
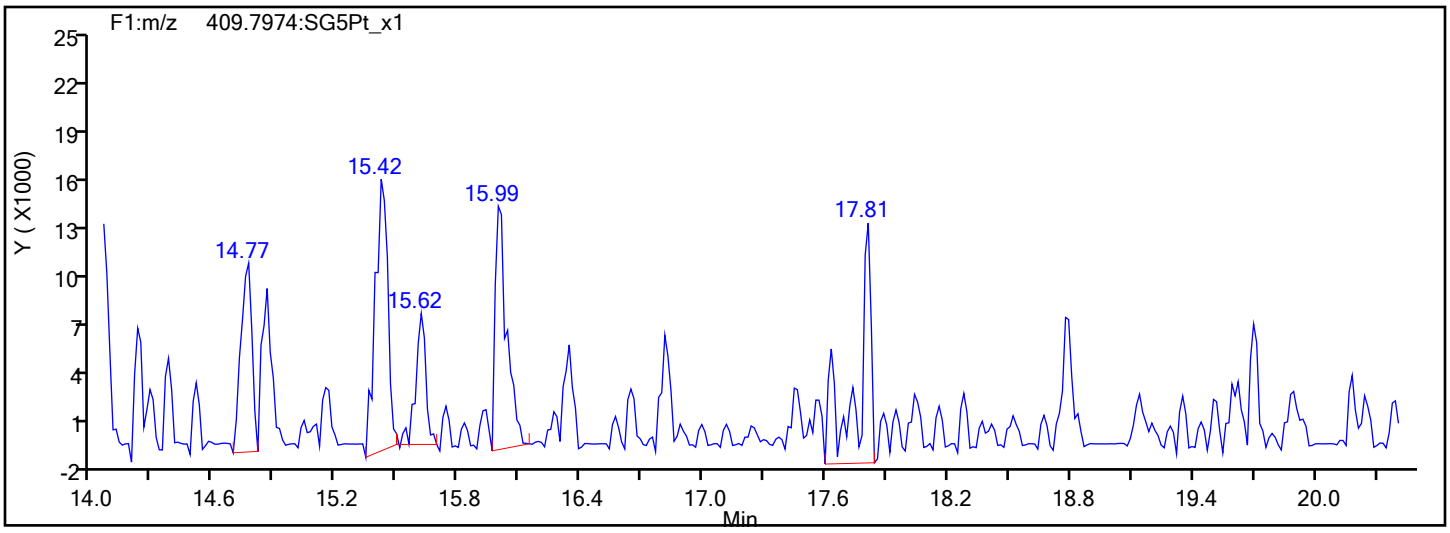
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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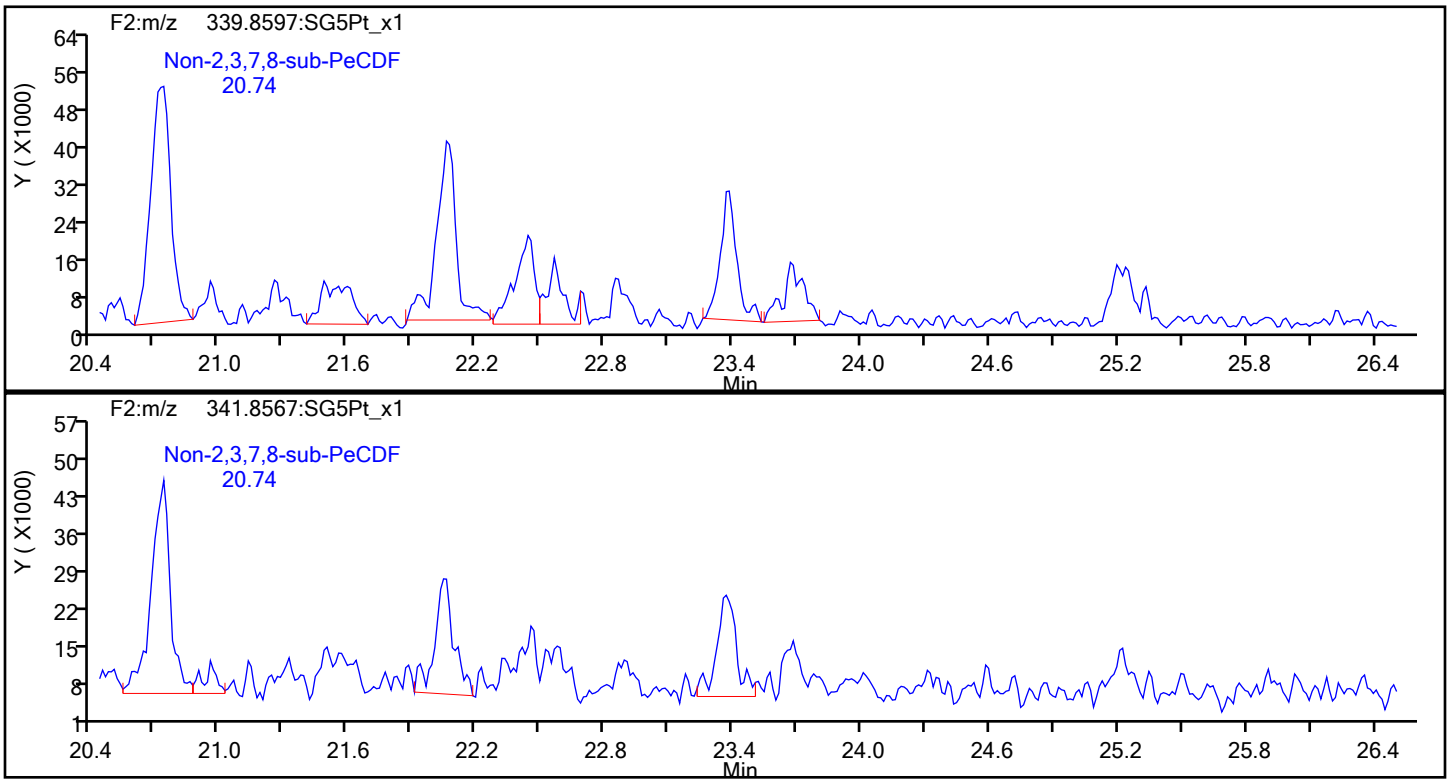
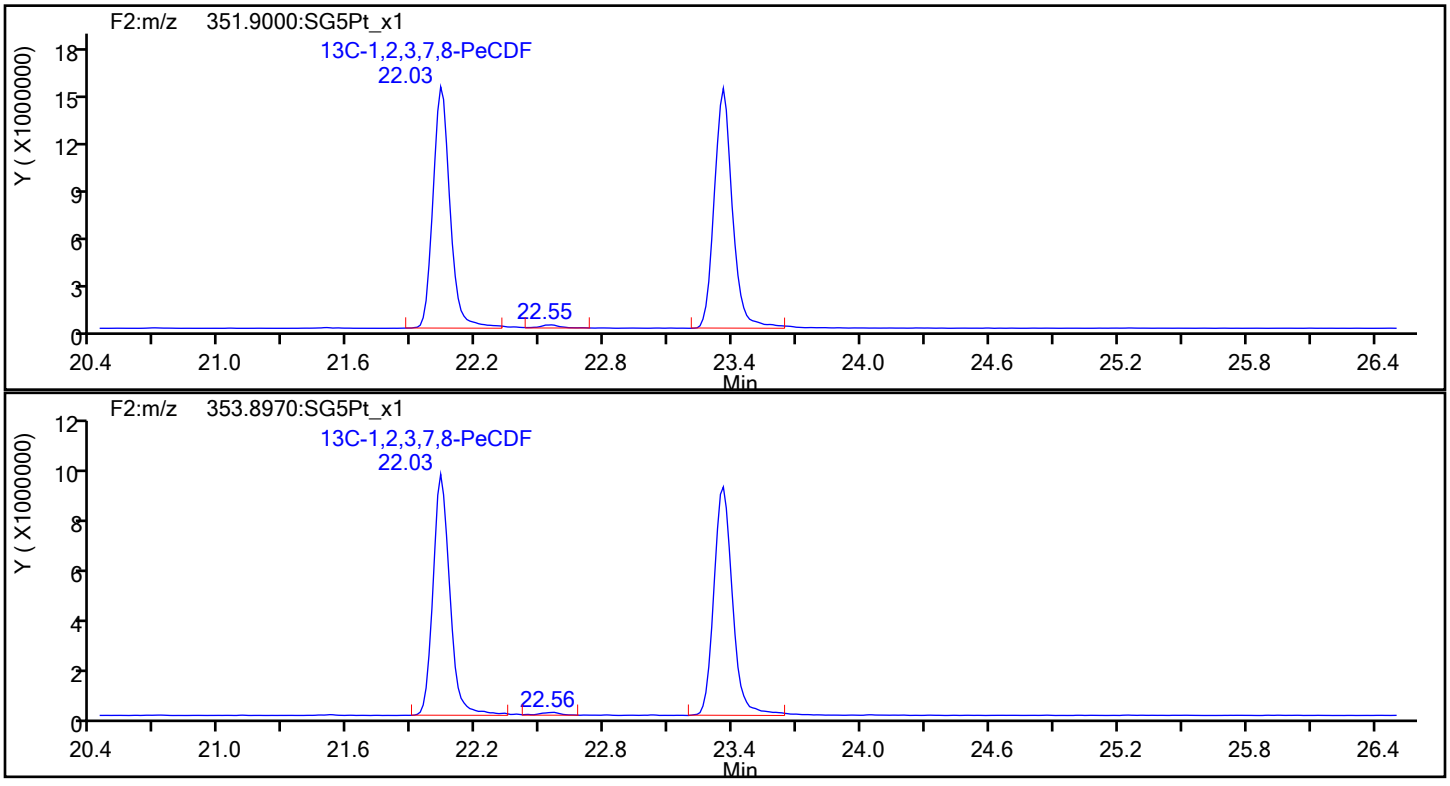
PeCDF



PeCDF Standards



Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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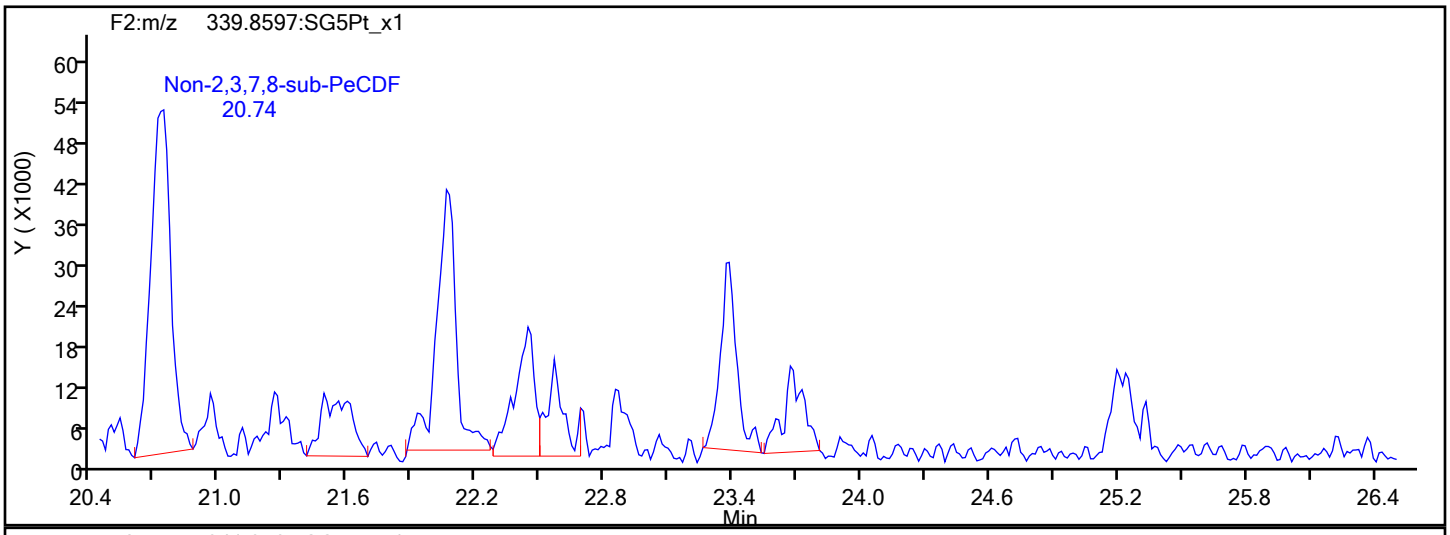
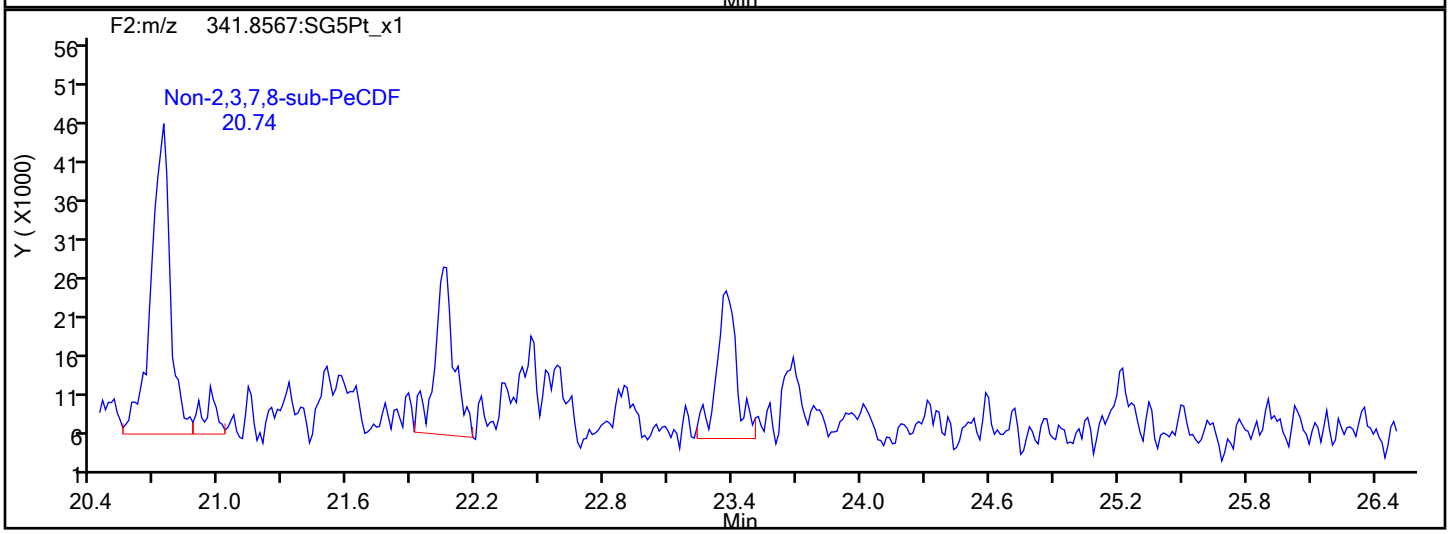
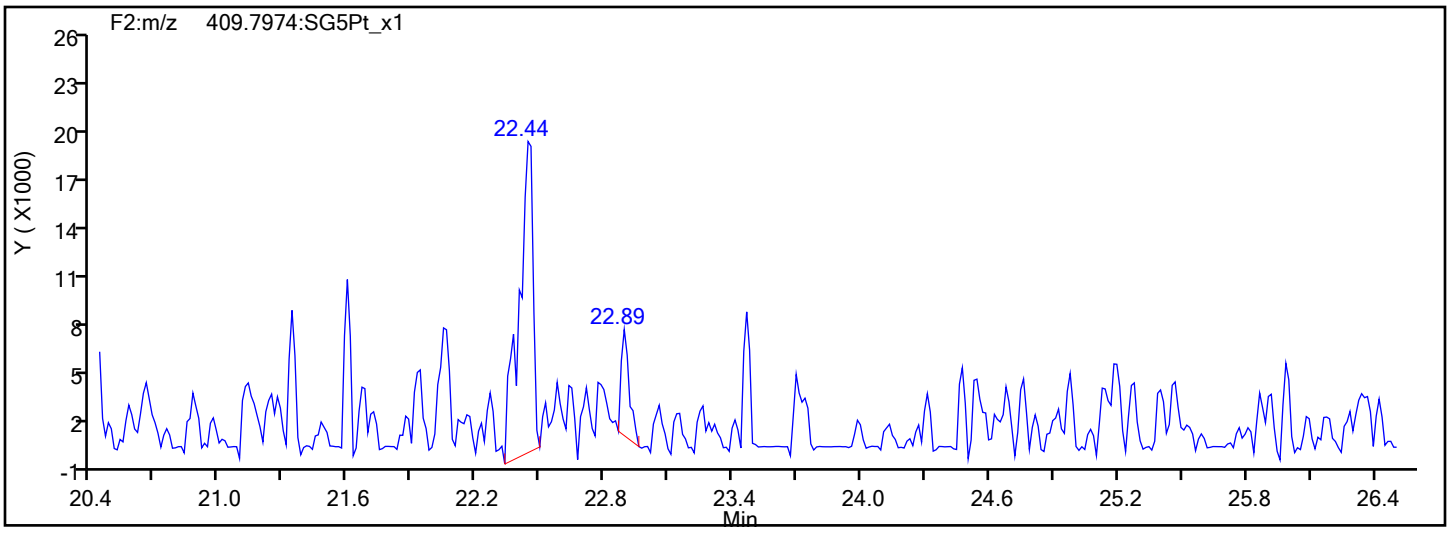
PeCDF





PeCDF Interference Mass



Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
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Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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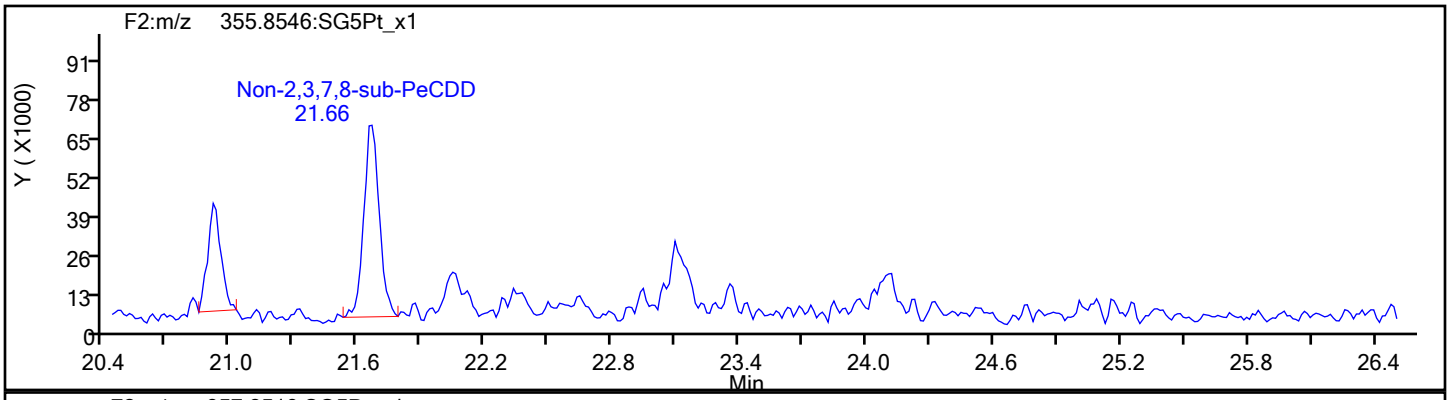
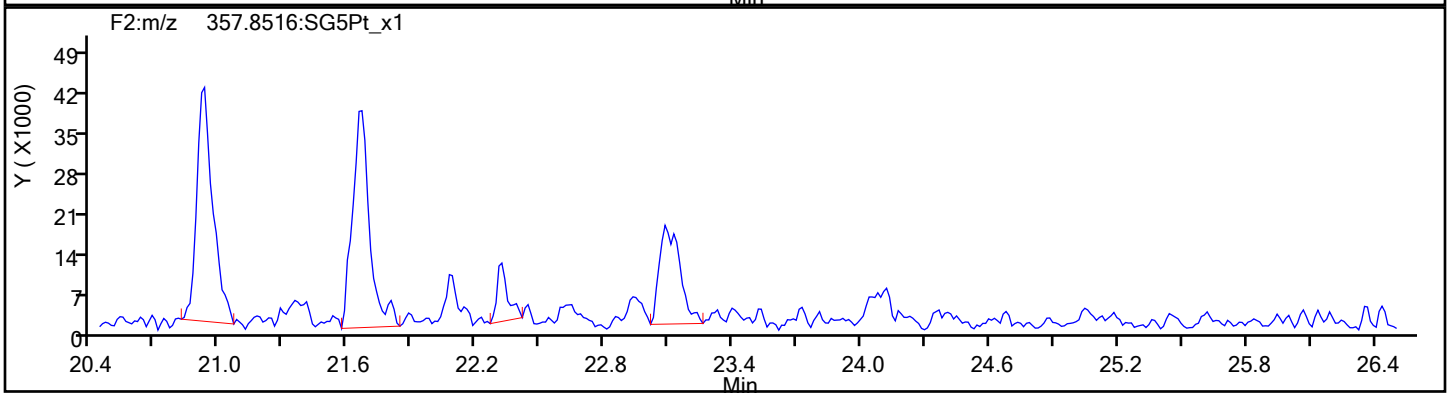
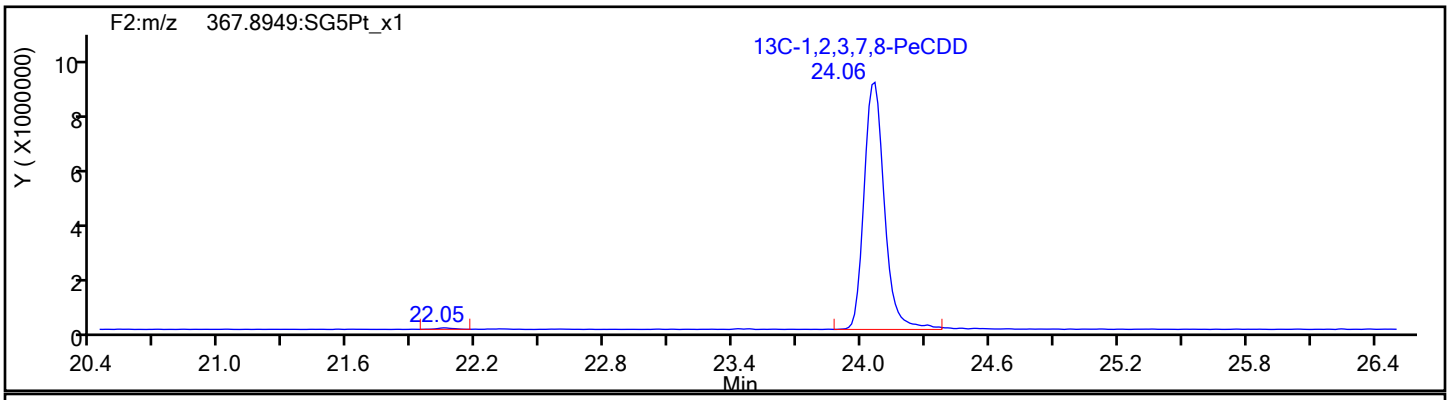
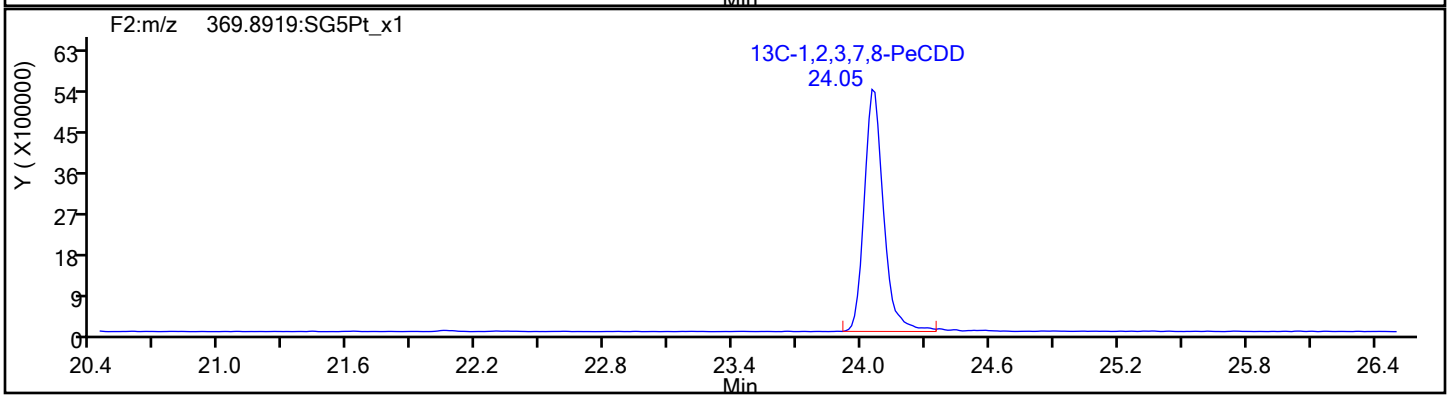
PeCDD





PeCDD Standards





Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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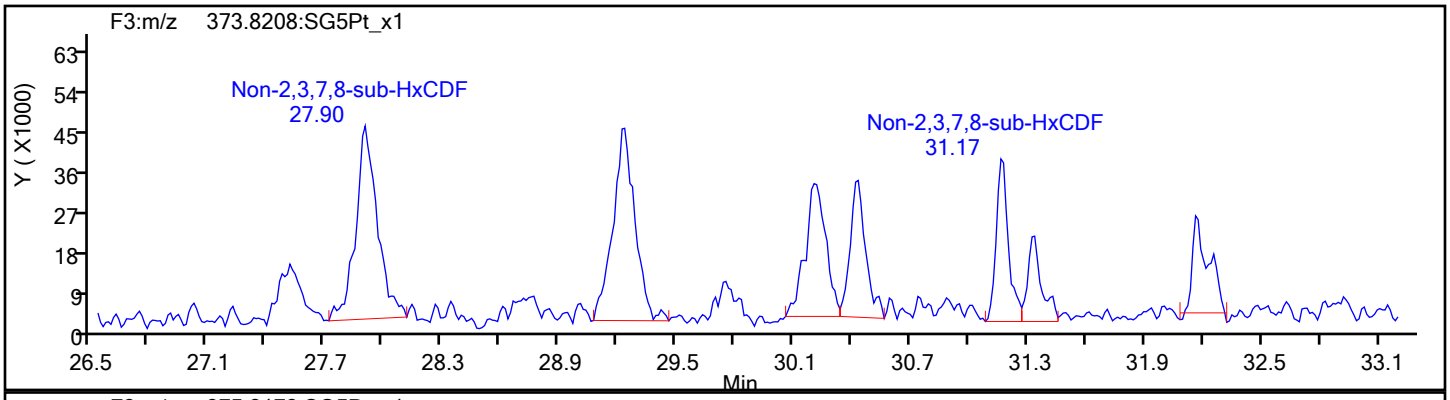
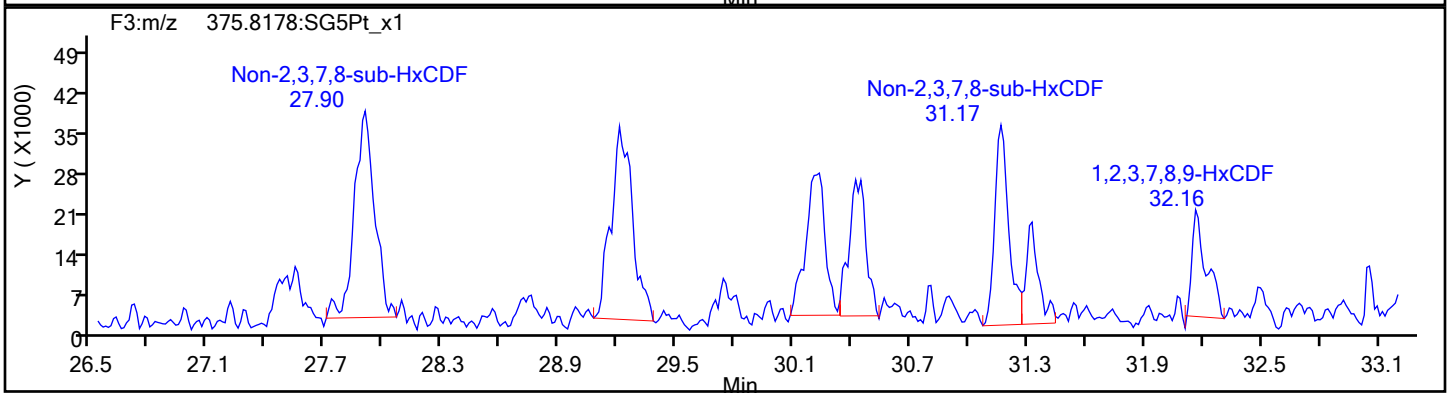
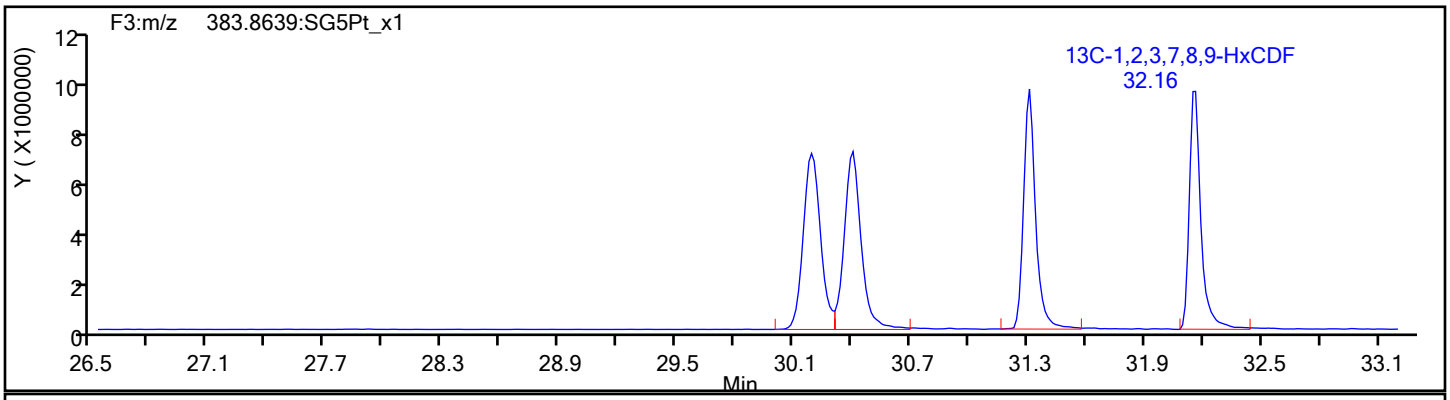
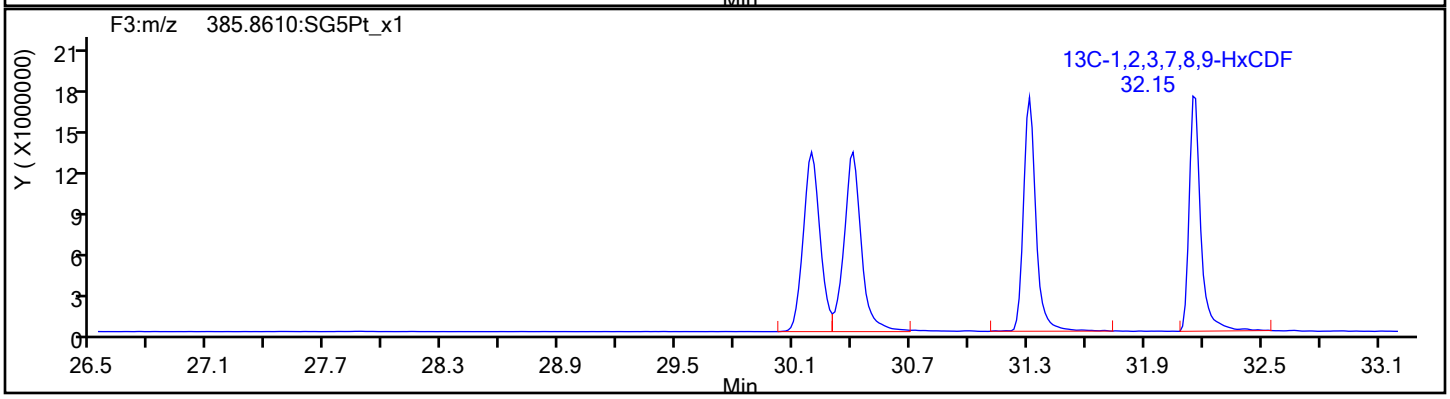
HxCDF





HxCDF Standards





Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
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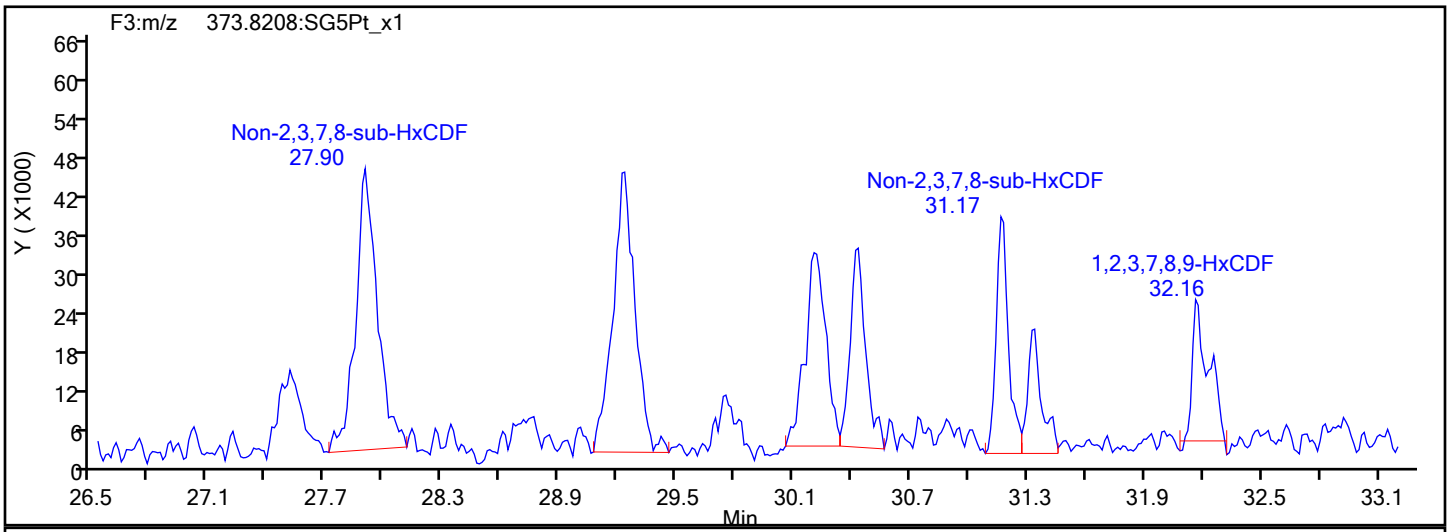
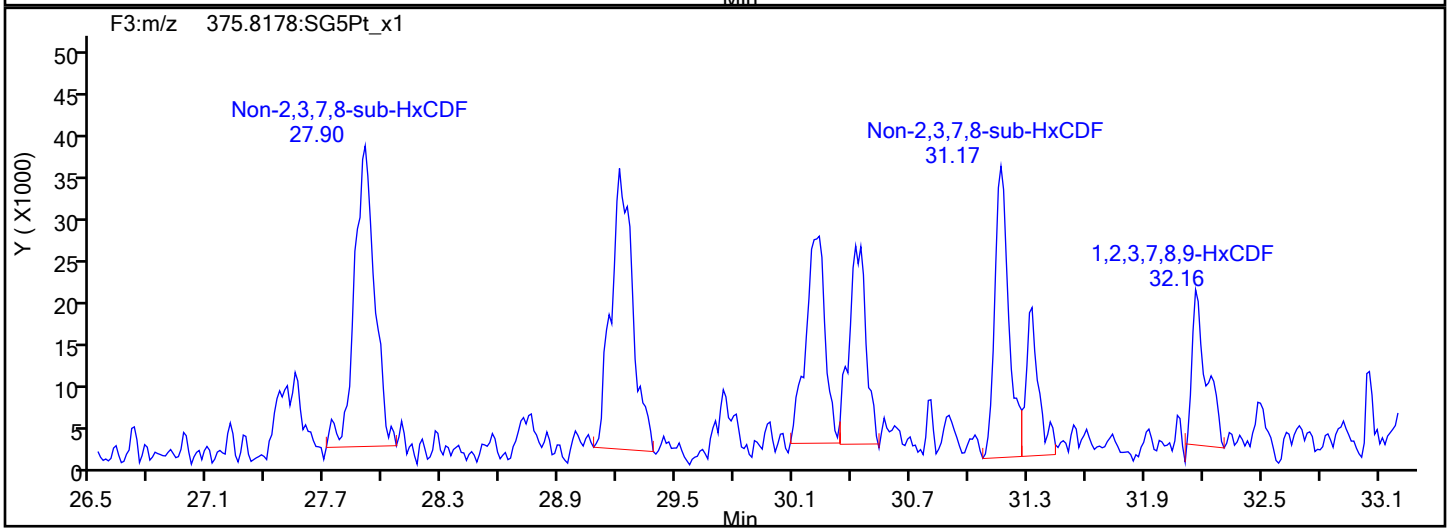
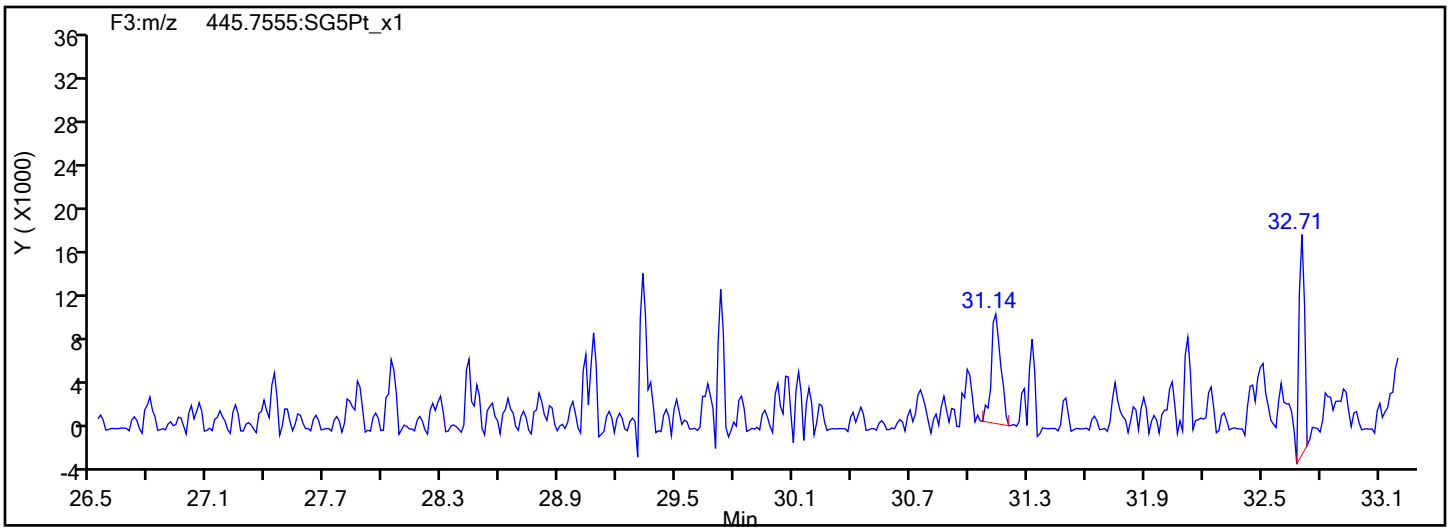
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
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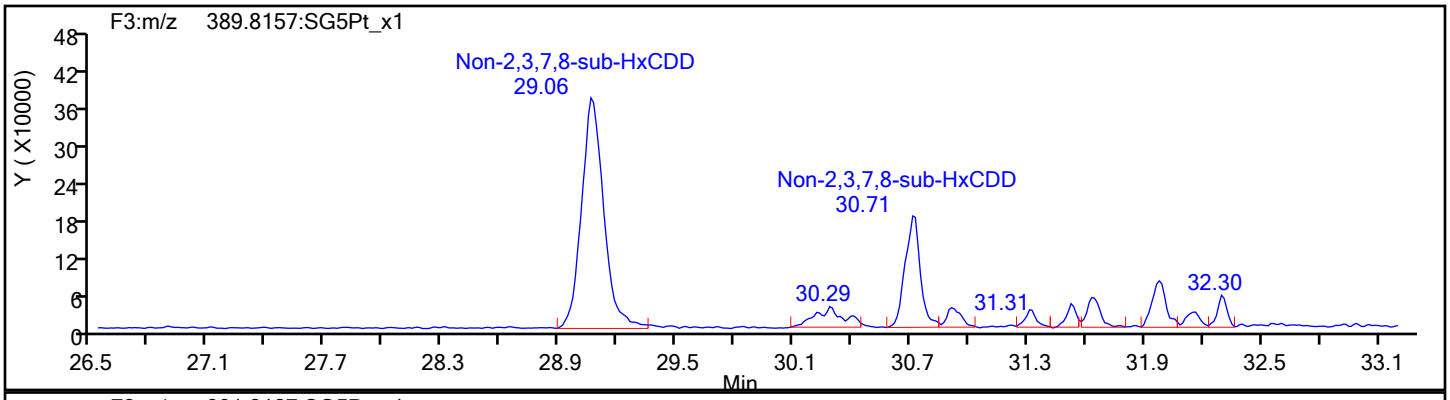
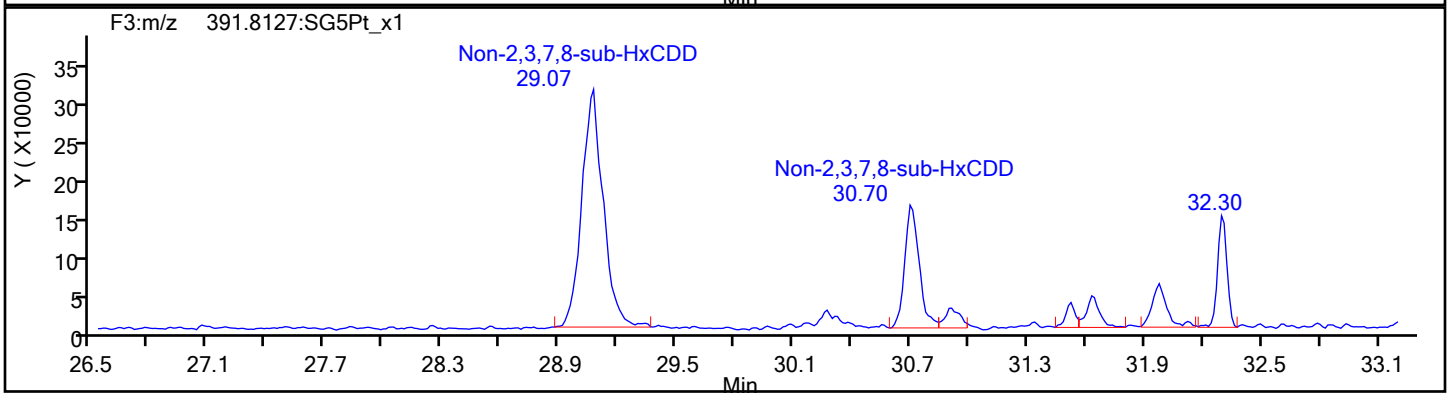
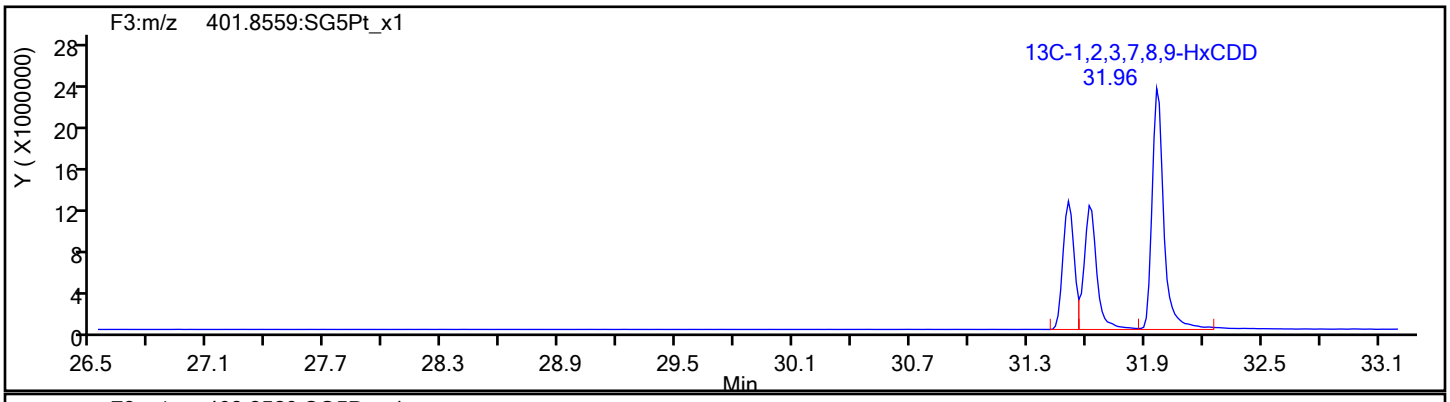
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

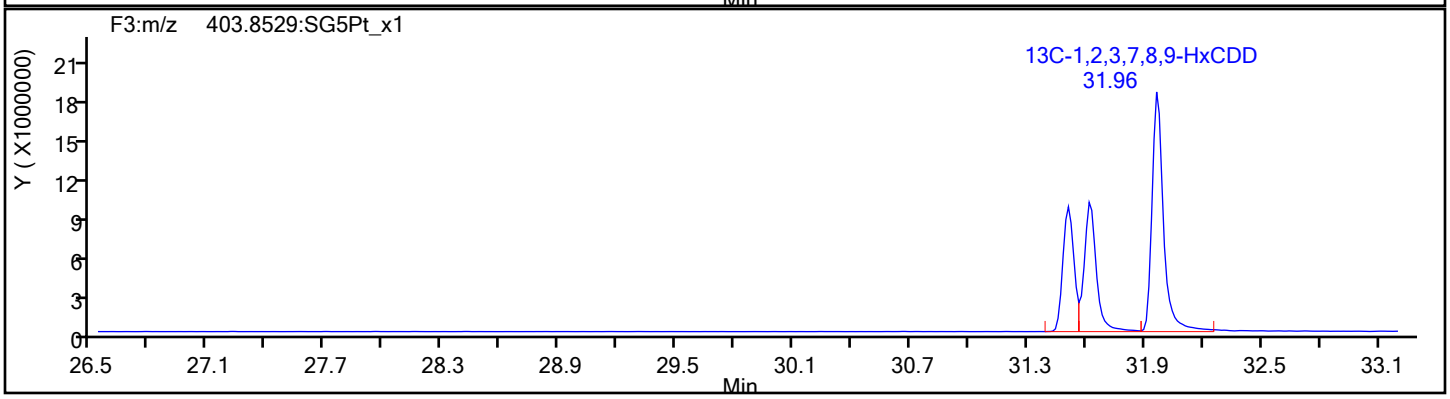
HxCDD





HxCDD Standards



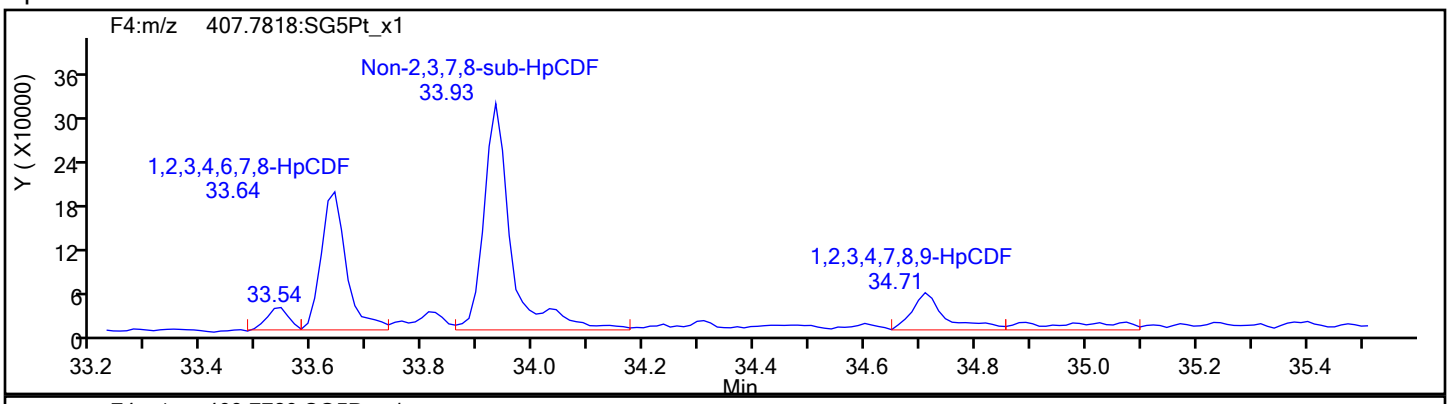


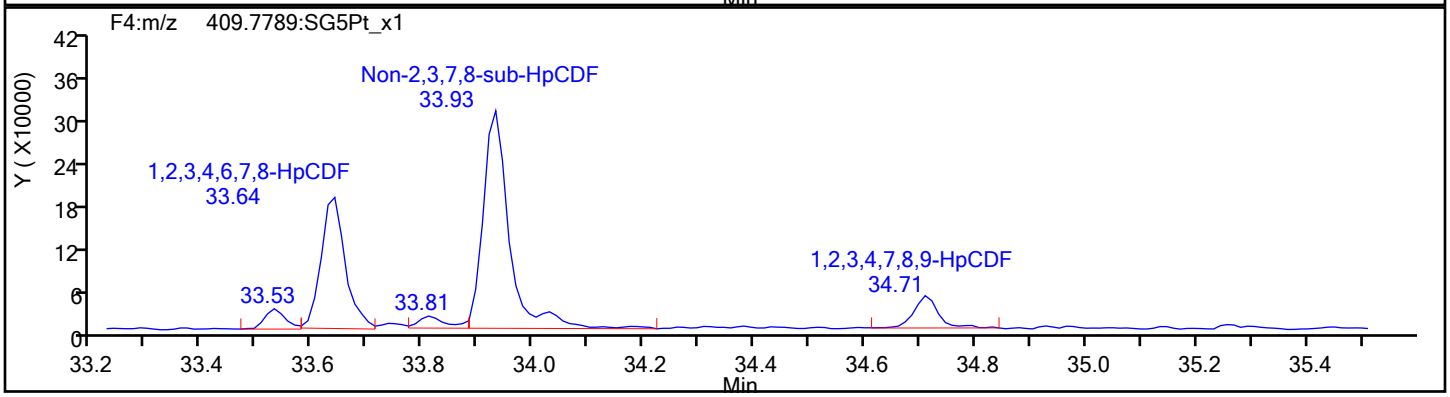
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

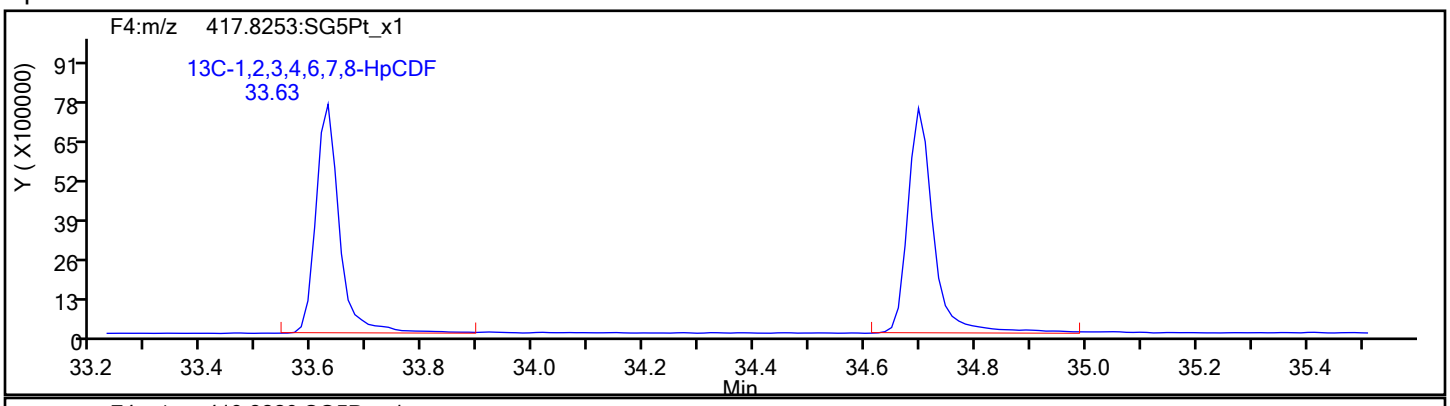
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

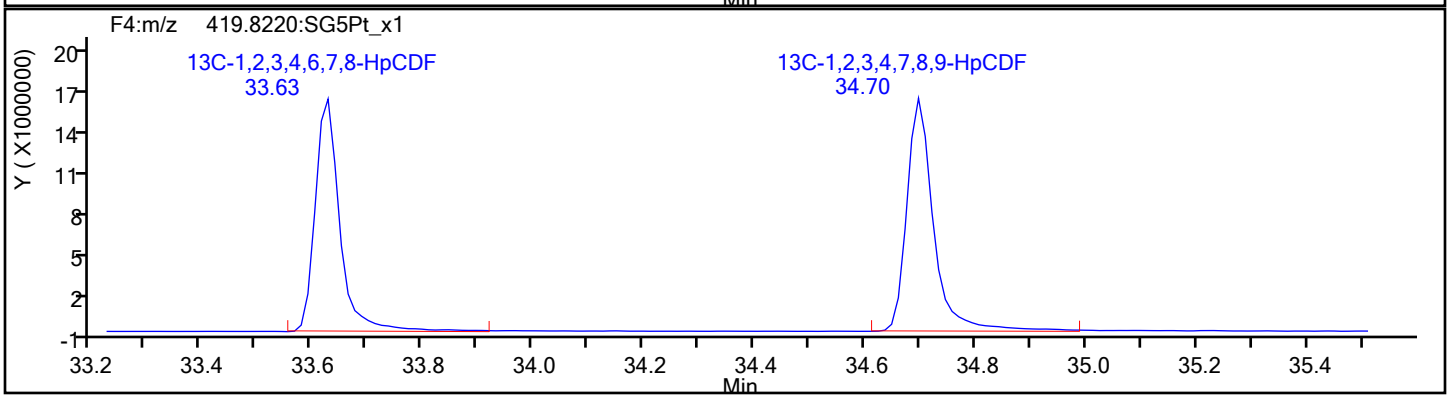
HpCDF





HpCDF Standards



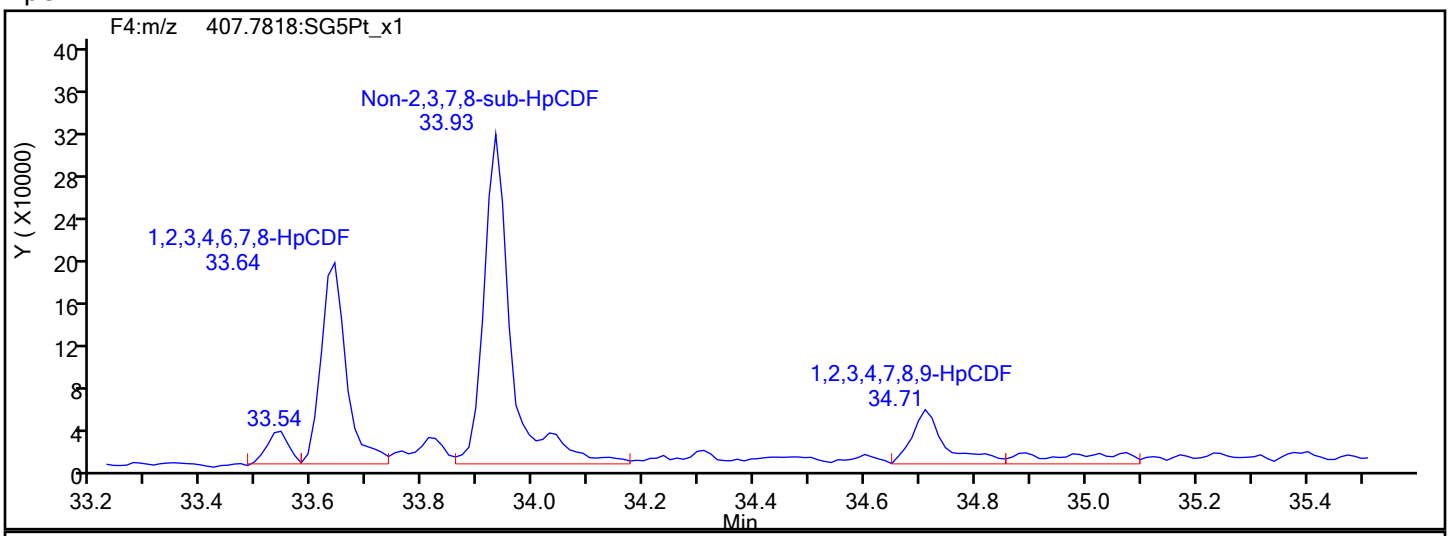


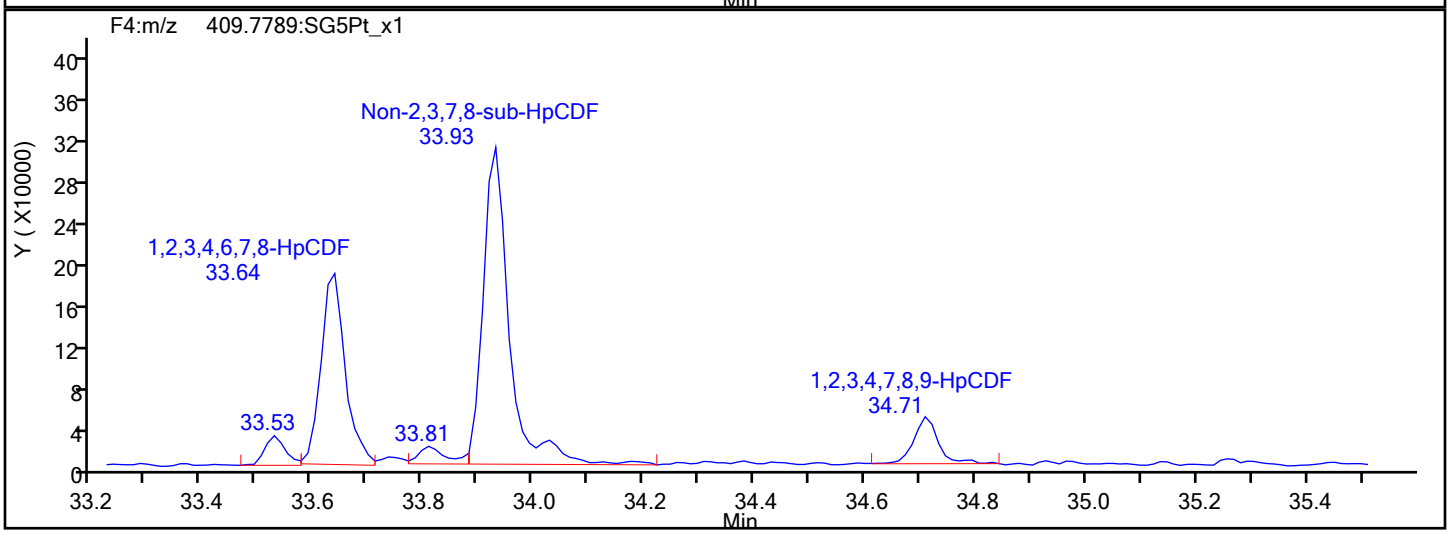
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

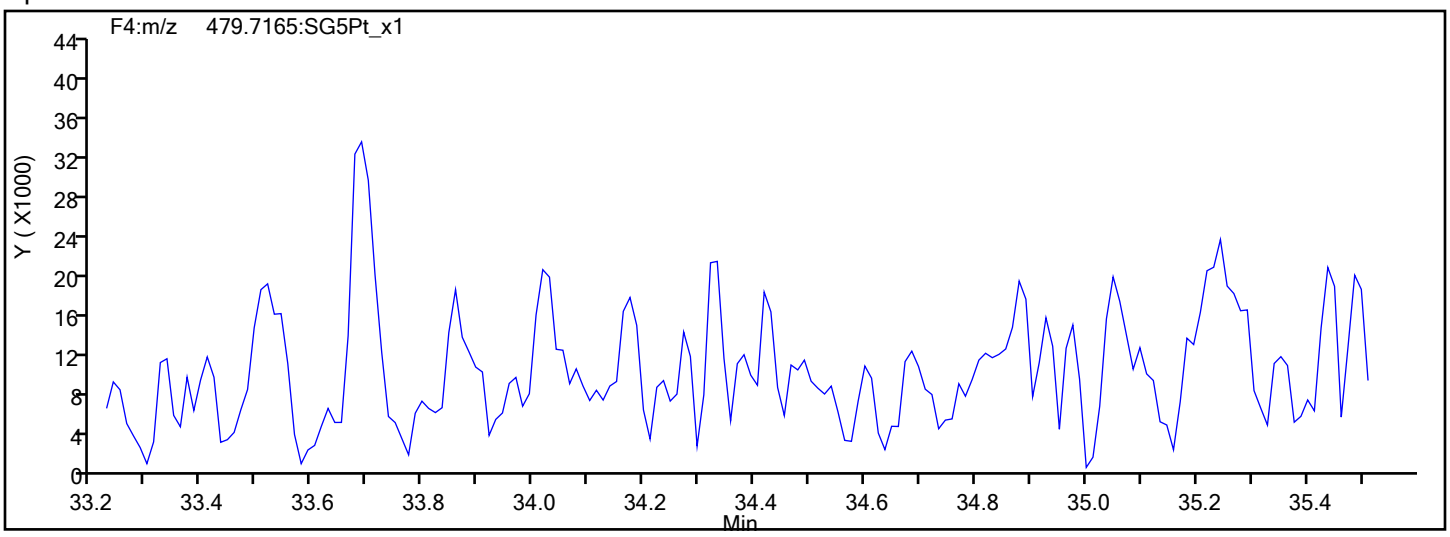
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

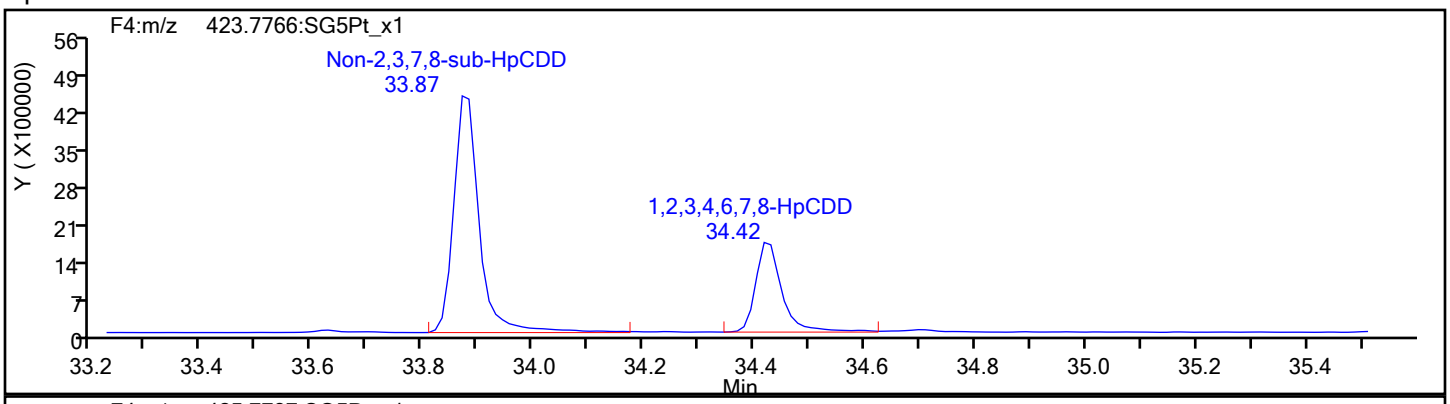


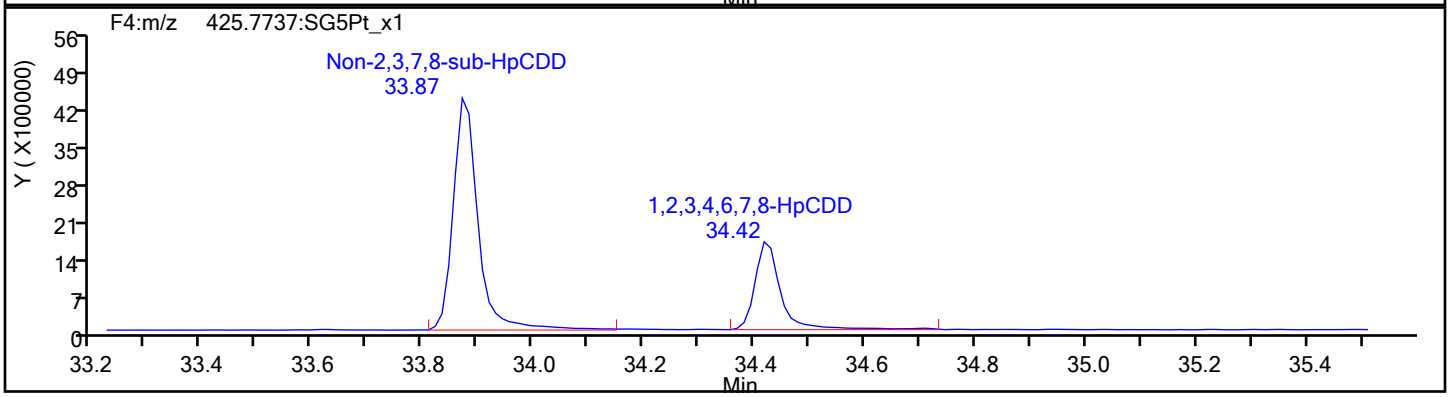
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

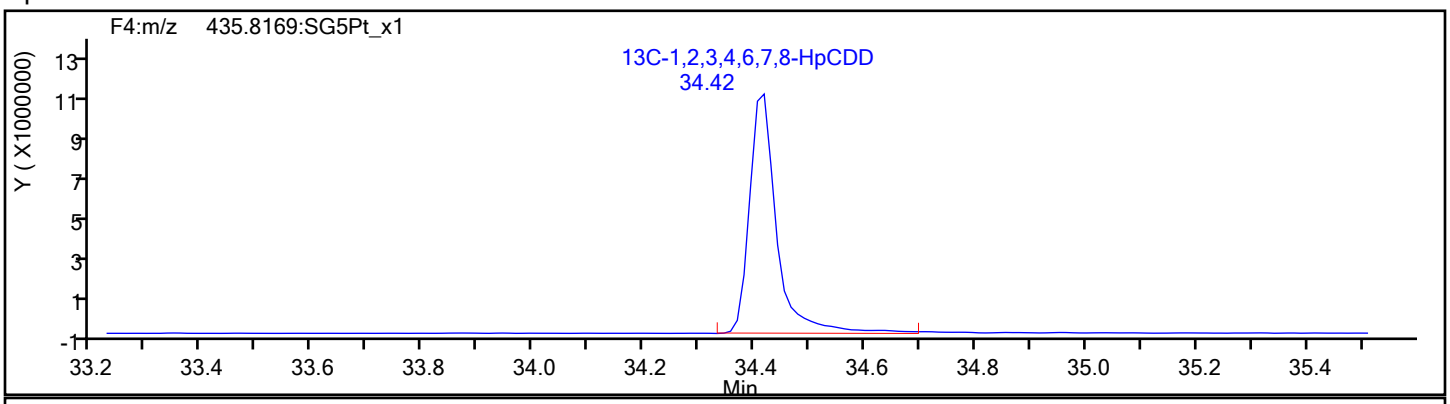
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

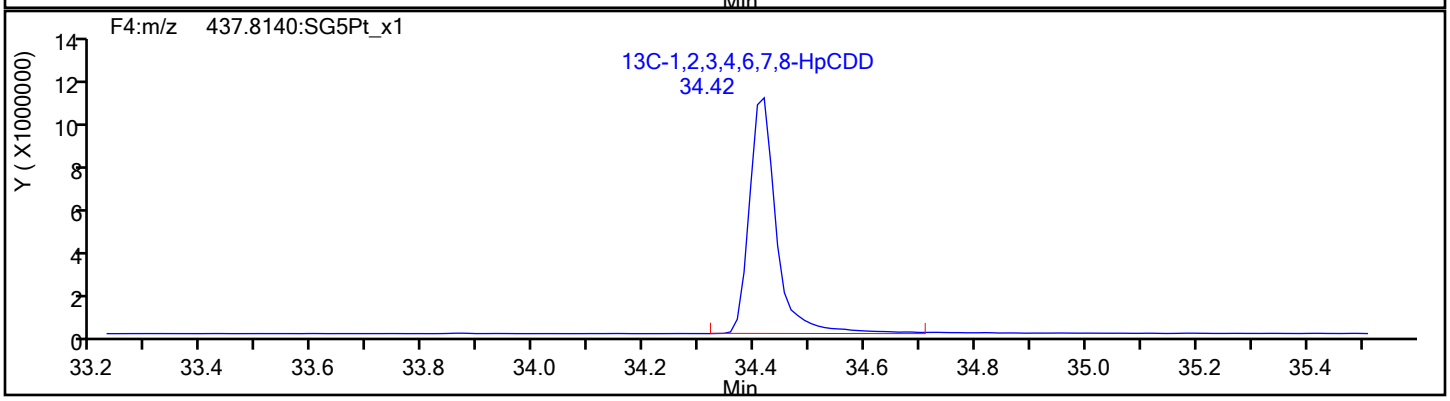
HpCDD





HpCDD Standards



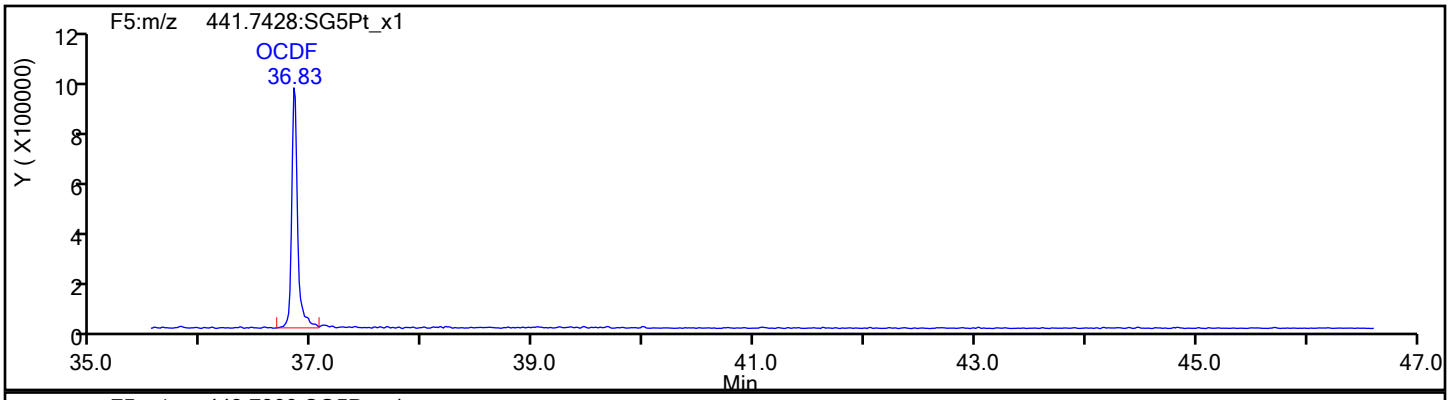


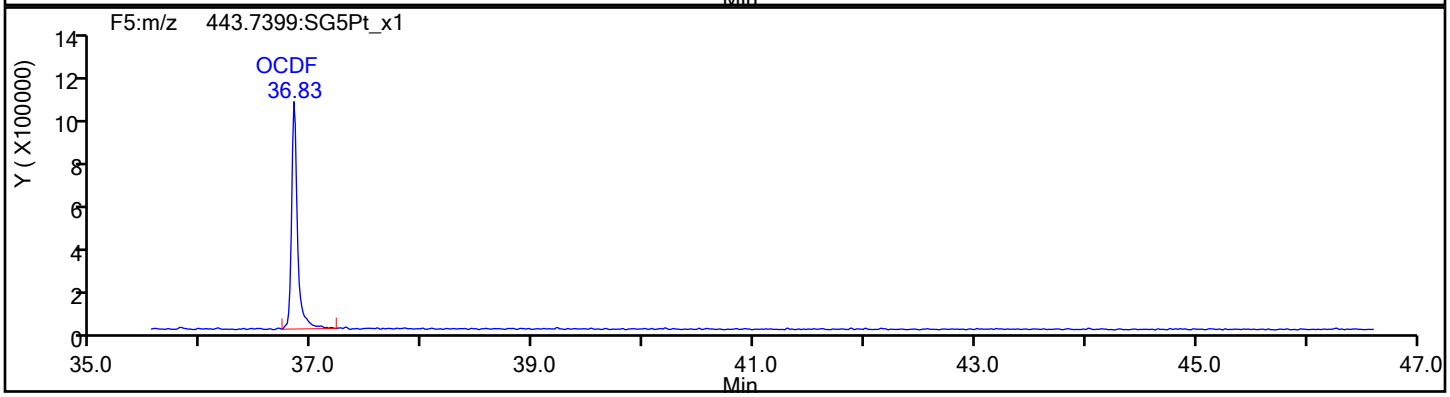
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

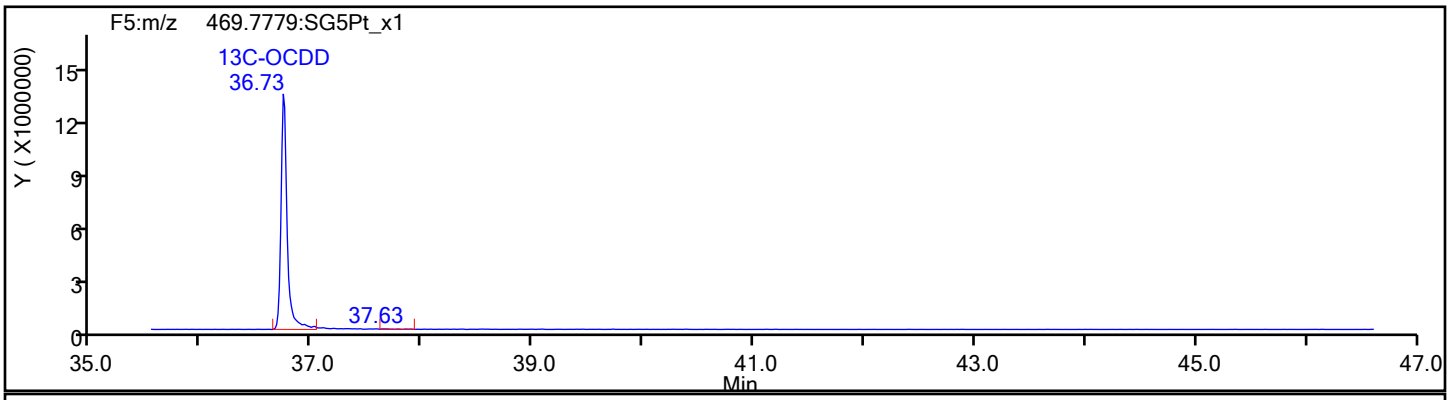
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

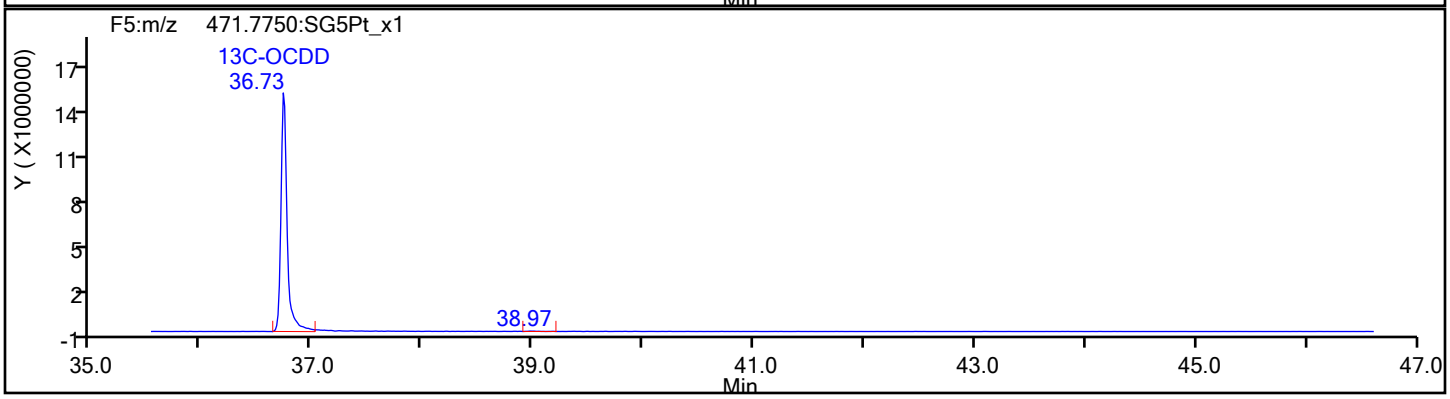
OCDF





OCDF Standards



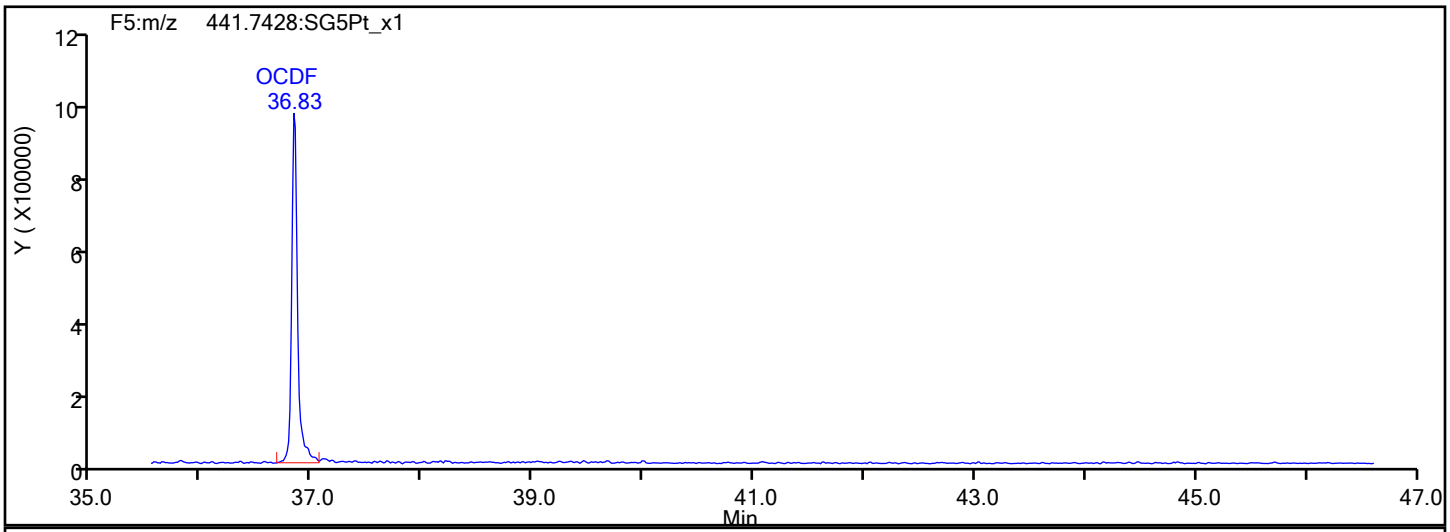


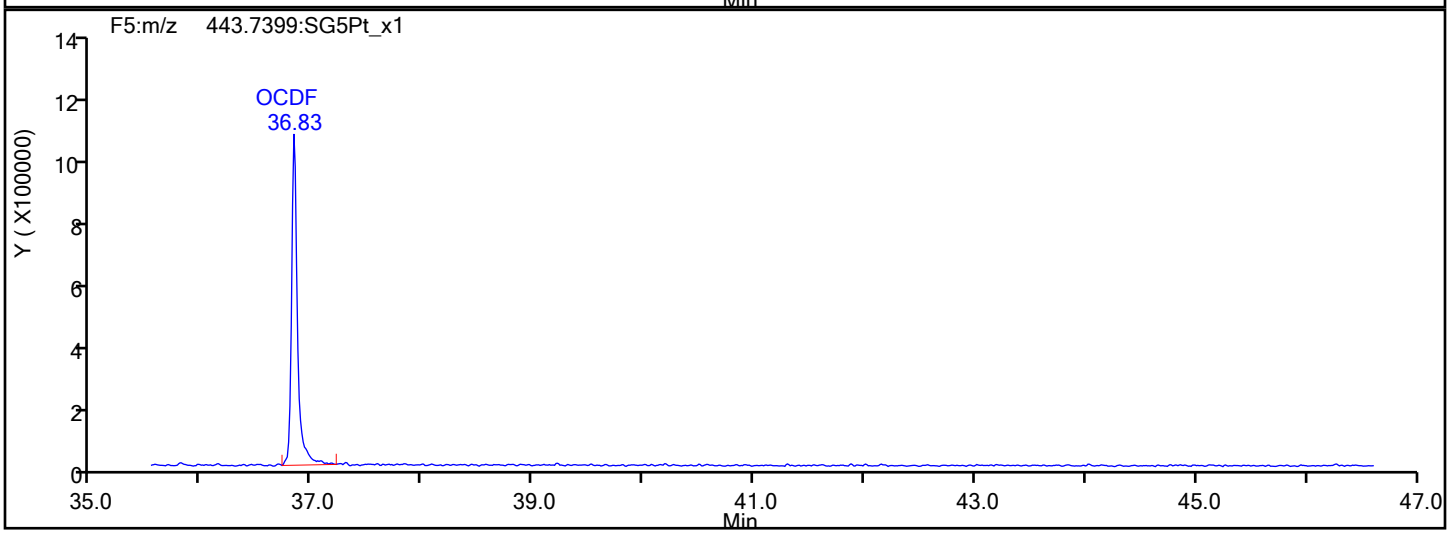
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

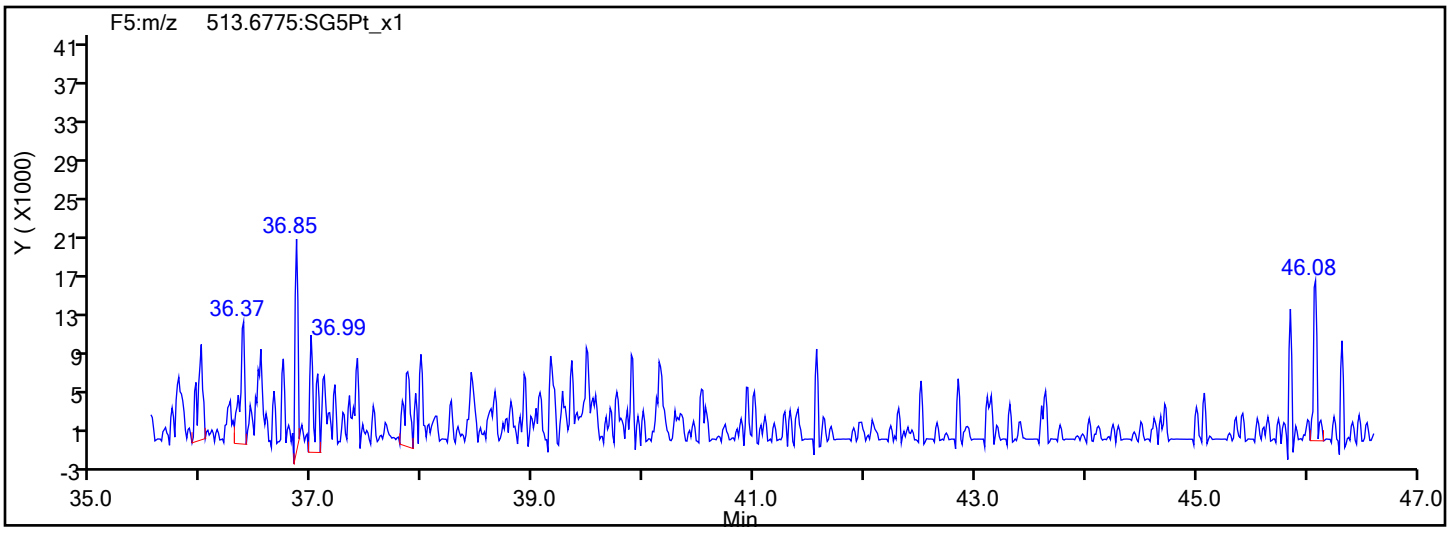
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

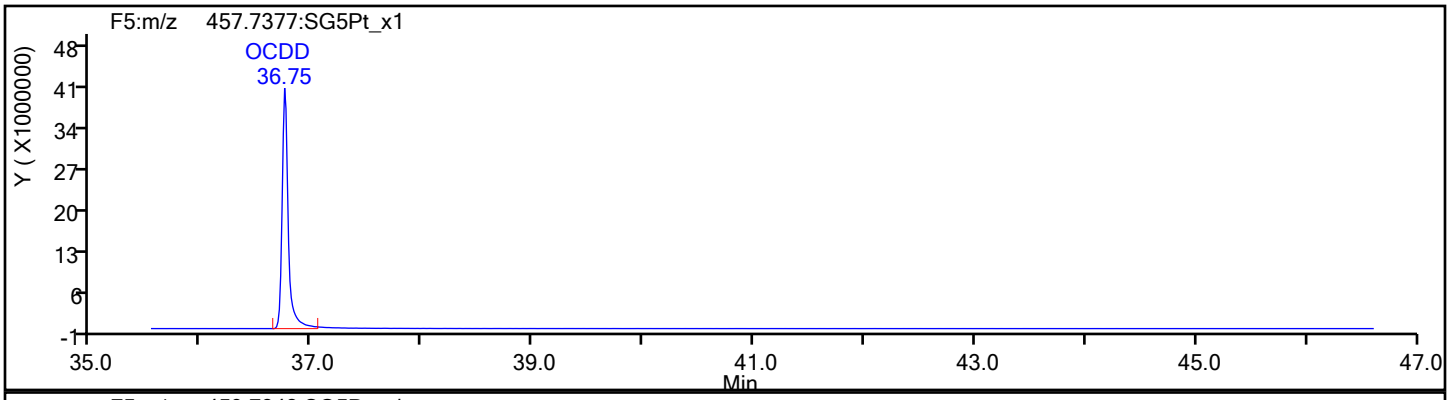


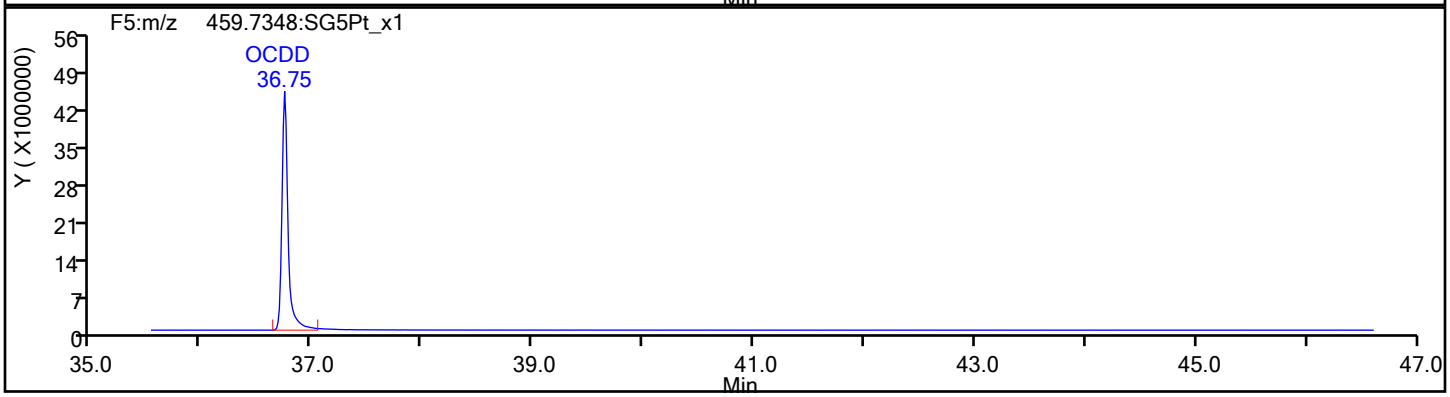
Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

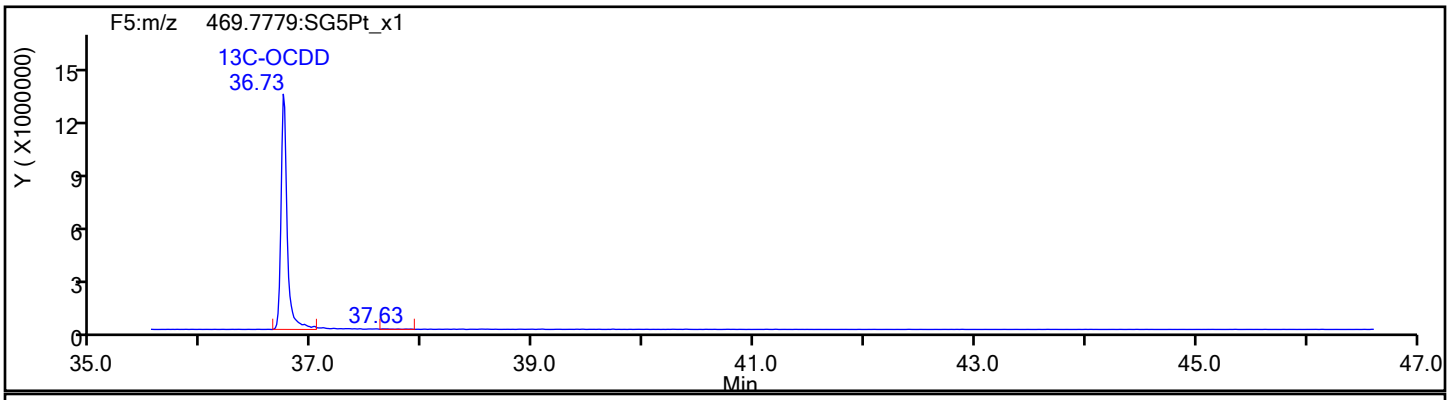
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

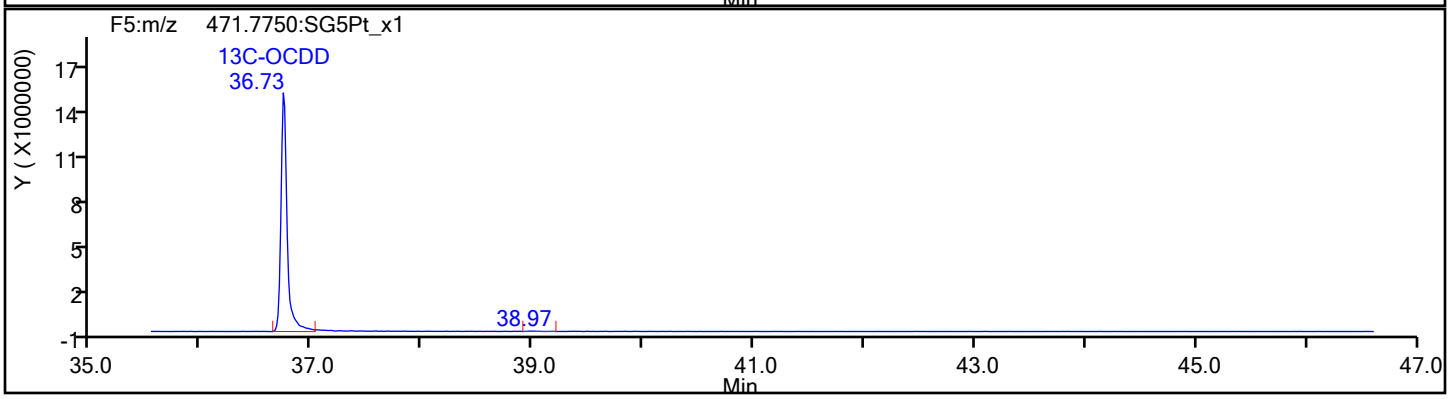
OCDD





OCDD Standards

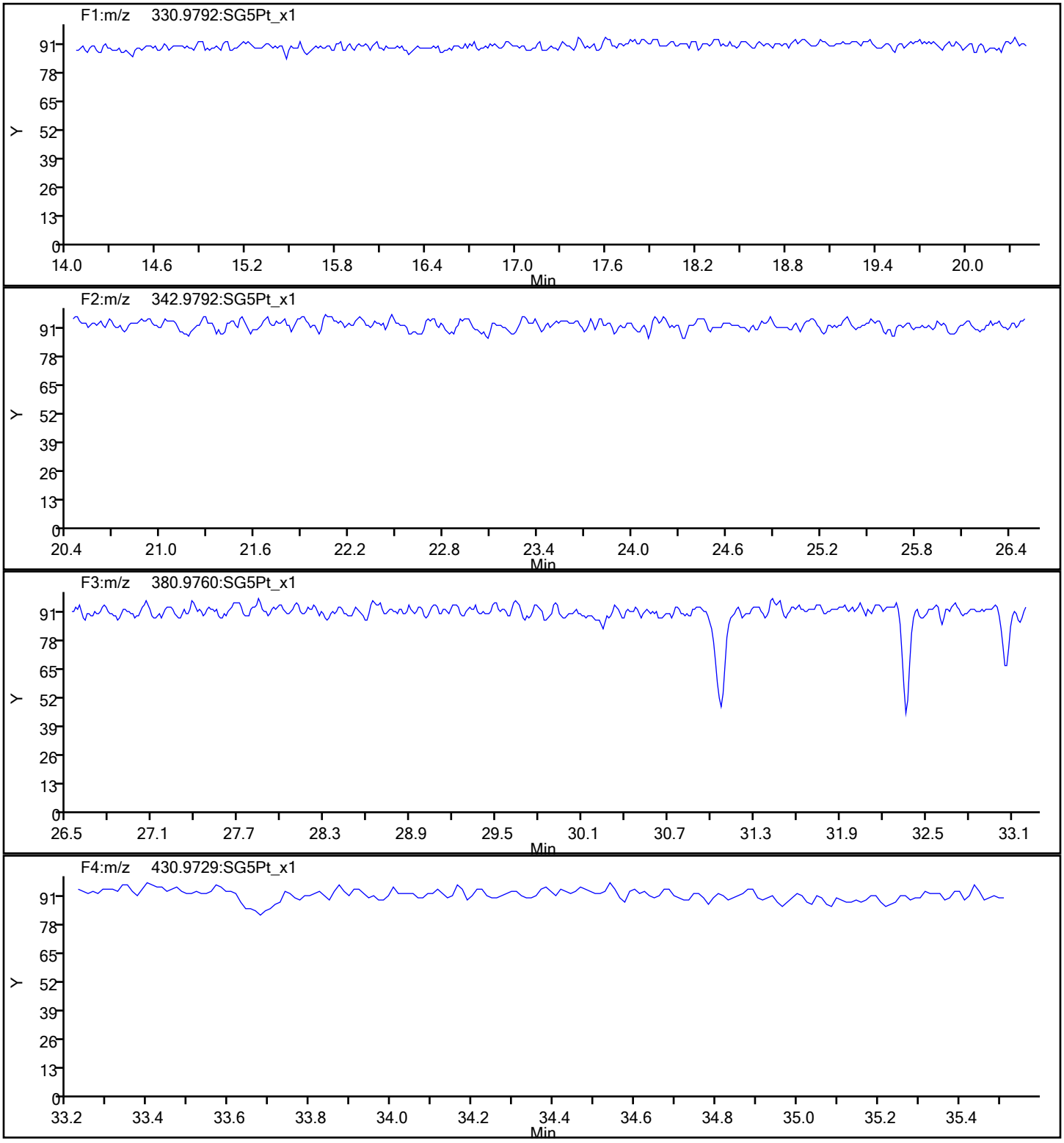




Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

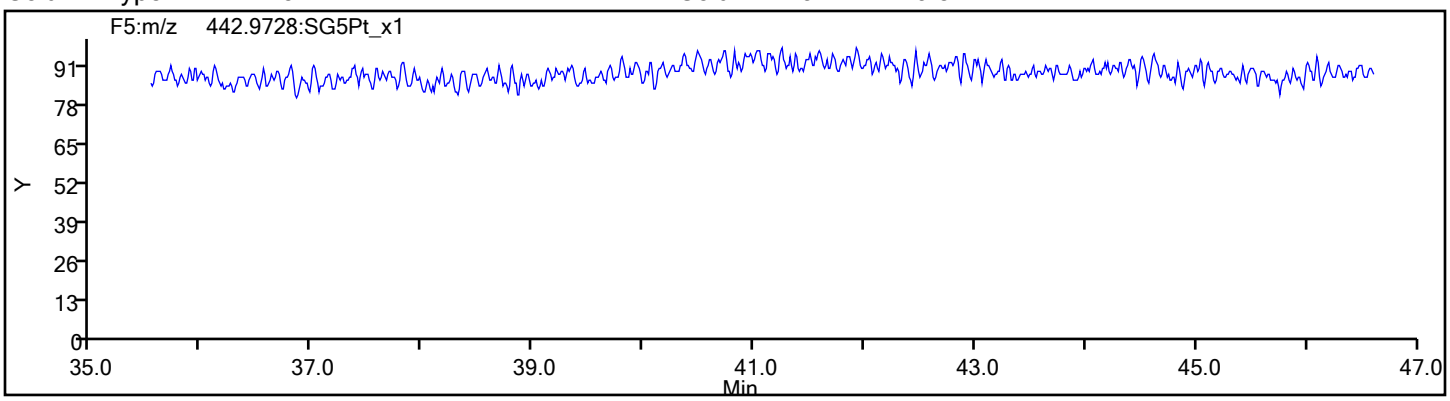
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 22-Dec-2019 12:44:05 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_7.d		
Injection Date:	19-Dec-2019 15:46:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346752	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(0-1) RA Lab Sample ID: 320-56953-1 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_009.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.31(g) Date Analyzed: 12/19/2019 21:19

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 56.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	28		2.2	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	68		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	103		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:19:38 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-1-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:17

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.379	196324304	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.558	177806791	0.79	1.3379	67.7	67.7	0.2047	0.2047	67.69	
2,3,7,8-TCDF	16.586	9455757	0.76	0.8389	6.339	6.339	0.0680	0.0680		
D 13C-2,3,7,8-TCDD	15.132	115089426	0.78	0.9388	62.4	62.4	0.5728	0.5728	62.44	
2,3,7,8-TCDD	15.159	2843271	0.70	1.1538	2.141	2.141	0.0693	0.0693		
$ 37Cl4-2,3,7,8-TCDD	15.145	95463997		1.1816	41.2	41.2	0.0505	0.0505	103	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d
Lims ID: 320-56953-A-1-A
Client ID: 11187072-120919-BN-SJSSA07(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:19:38 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-1-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:17

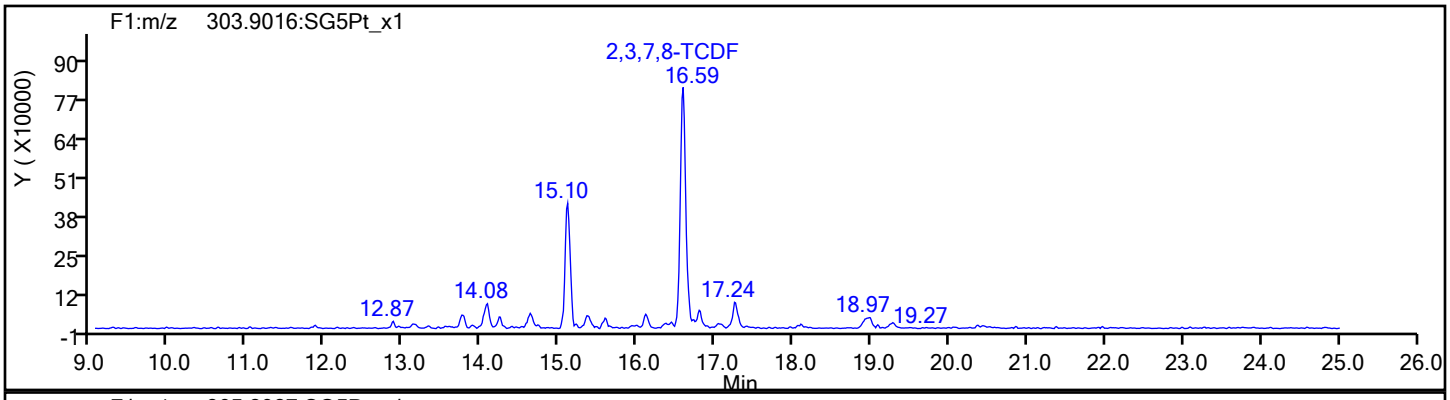
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.379	15.376	0		86095538	18567976	48420	121050	383		
333.9339	15.379	15.376	0		110228766	23422981	41900	104750	559	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.558	16.556	0	1.077	78458437	15409135	26527	66317	581		
317.9389	16.558	16.556	0	1.077	99348354	19048144	19468	48670	978	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.586	16.570	1	1.002	4077343	808717	3129	7822	258		
305.8987	16.586	16.570	1	1.002	5378414	1026359	4736	11840	217	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.132	15.116	1	0.984	50311358	11218513	48420	121050	232		
333.9339	15.132	15.116	1	0.984	64778068	14340638	41900	104750	342	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.159	15.143	1	1.002	1173638	240317	4769	11922	50		
321.8936	15.145	15.143	0	1.001	1669633	341948	3400	8500	101	0.70(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.145	15.143	0	0.985	95463997	20493136	10029	25072	2043		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

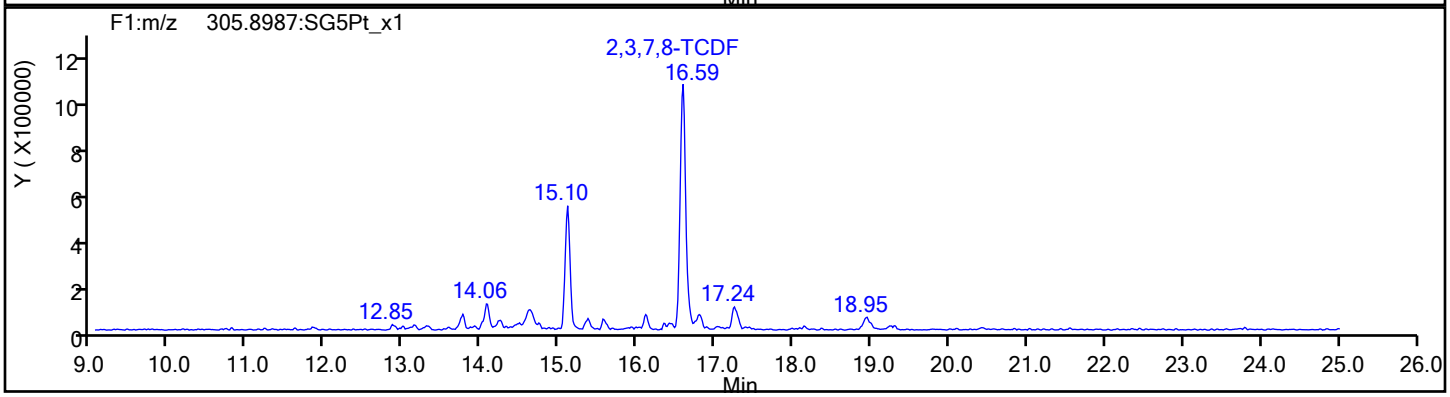
Report Date: 20-Dec-2019 14:38:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

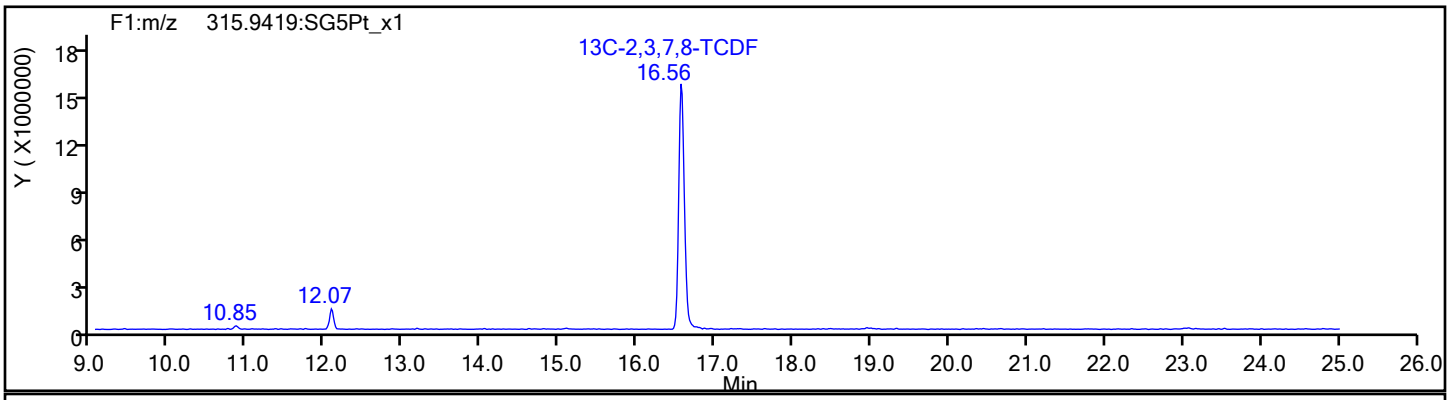
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d		
Injection Date:	19-Dec-2019 21:19:38	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346764	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

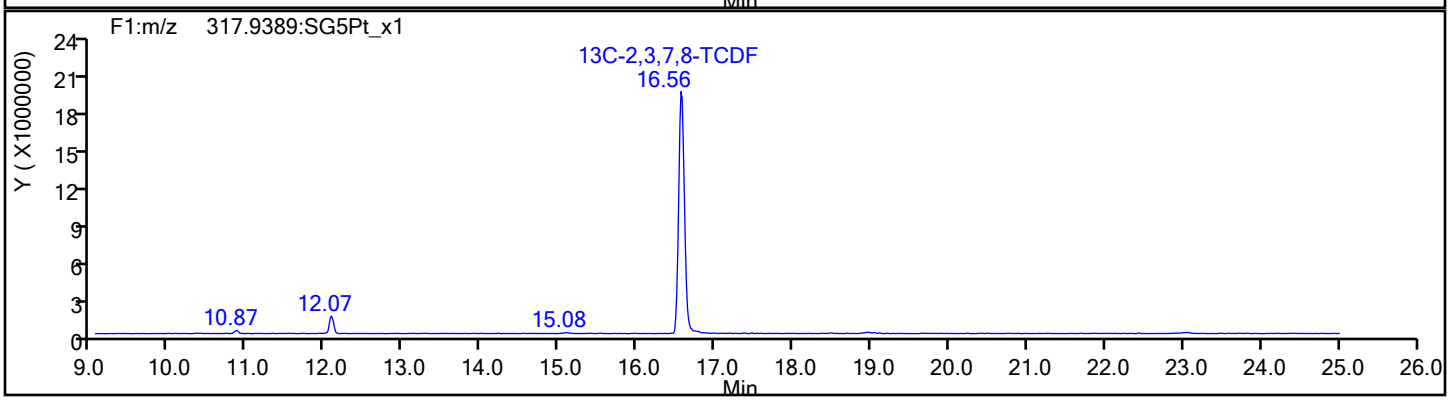
TCDF





TCDF Standards



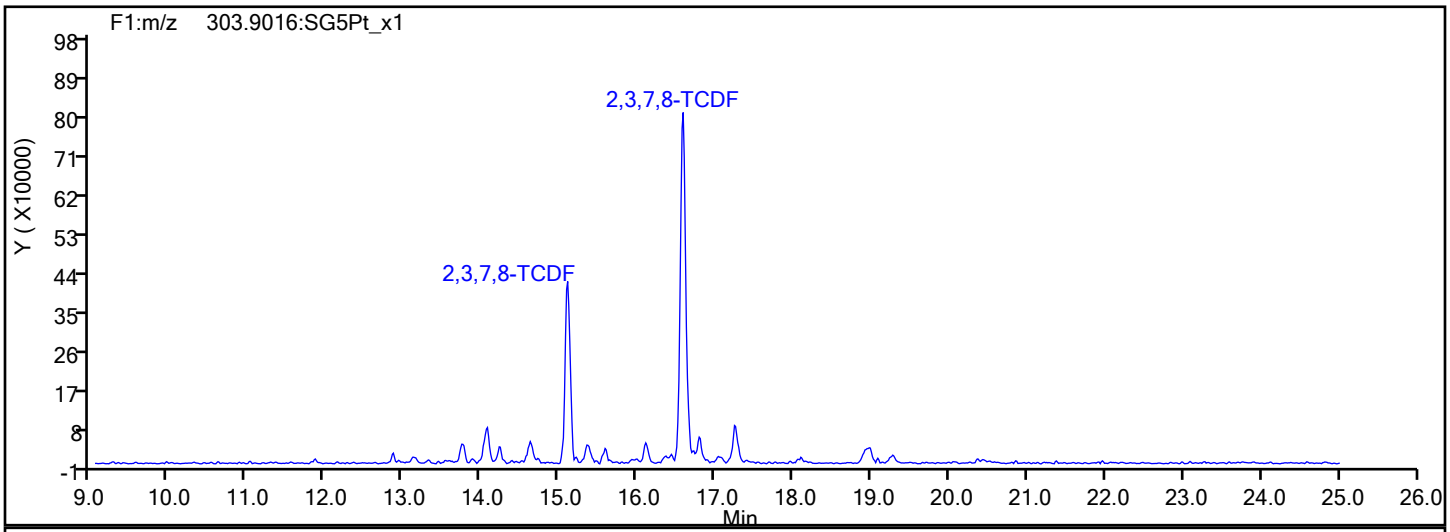


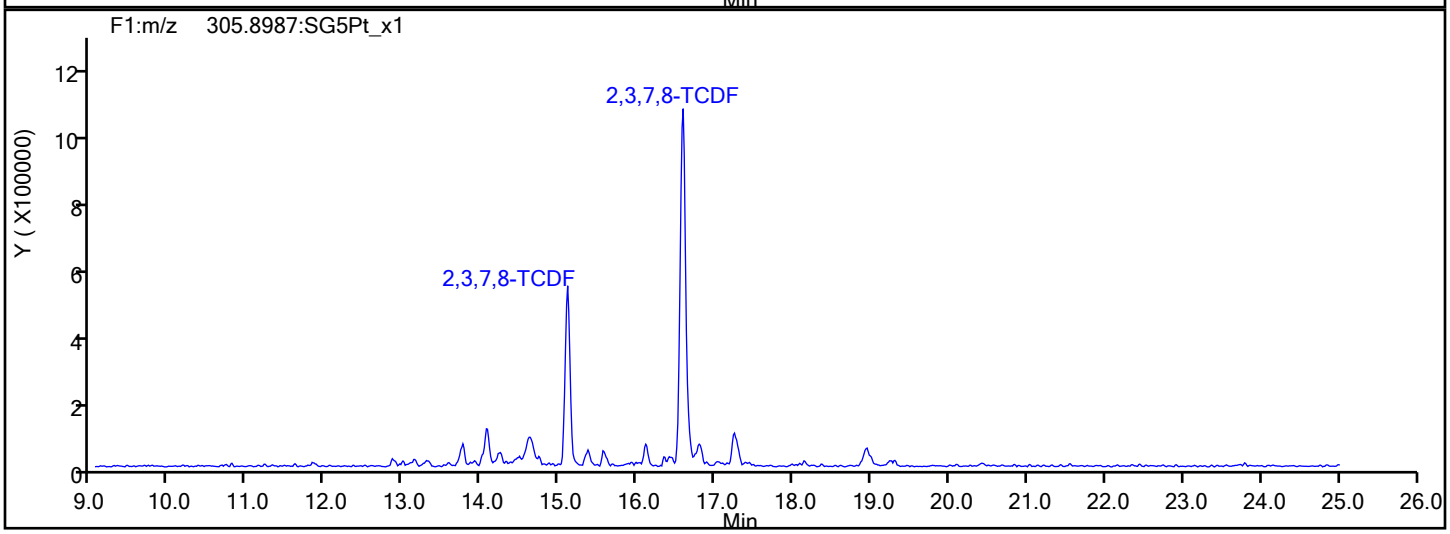
Report Date: 20-Dec-2019 14:38:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

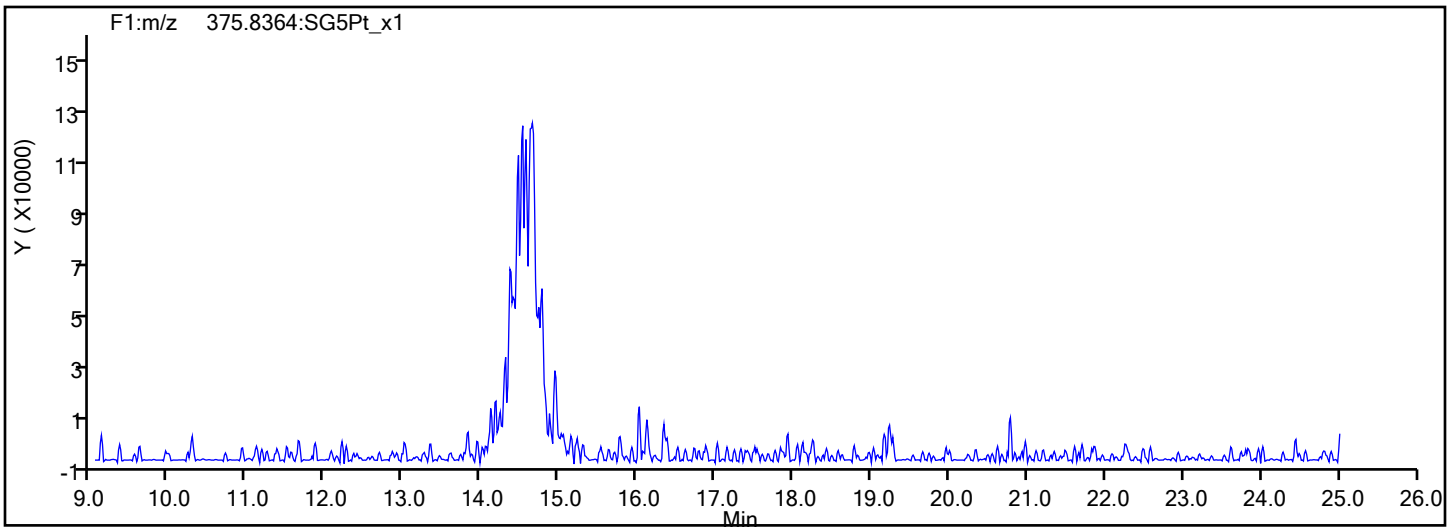
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d		
Injection Date:	19-Dec-2019 21:19:38	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346764	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

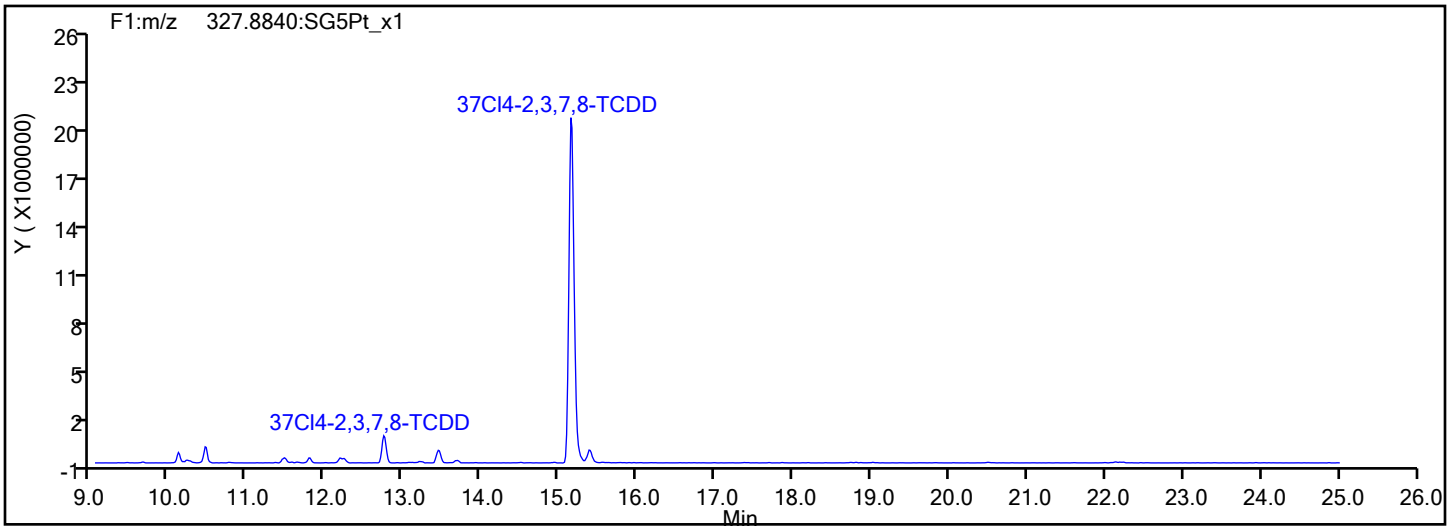


Report Date: 20-Dec-2019 14:38:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

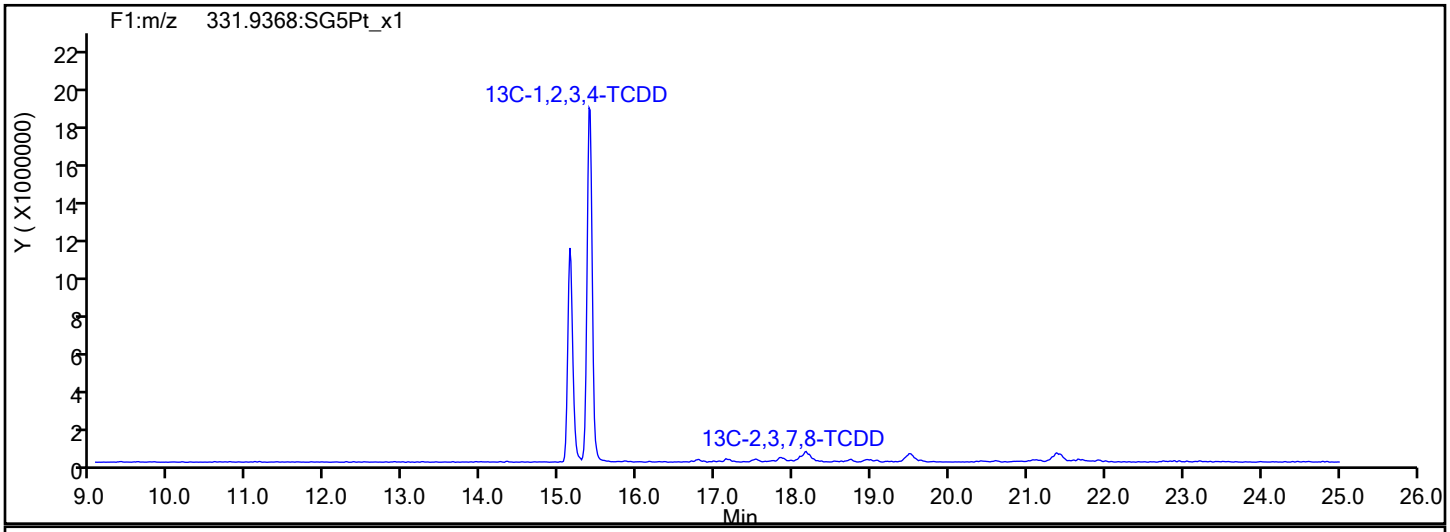
Eurofins TestAmerica, Sacramento

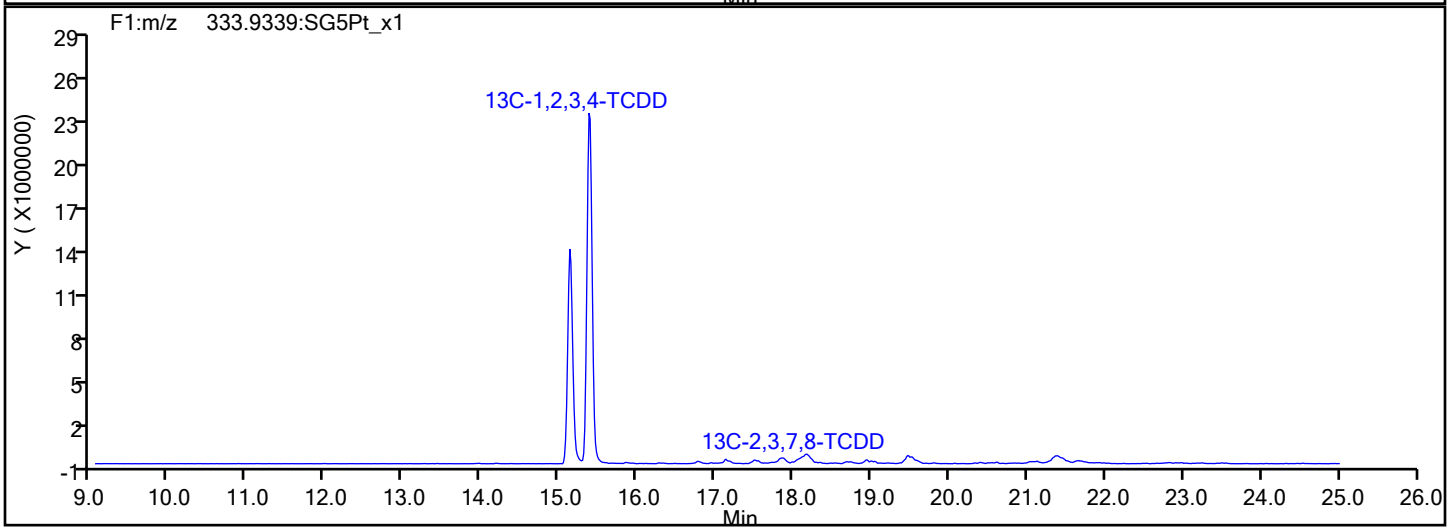
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d		
Injection Date:	19-Dec-2019 21:19:38	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346764	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

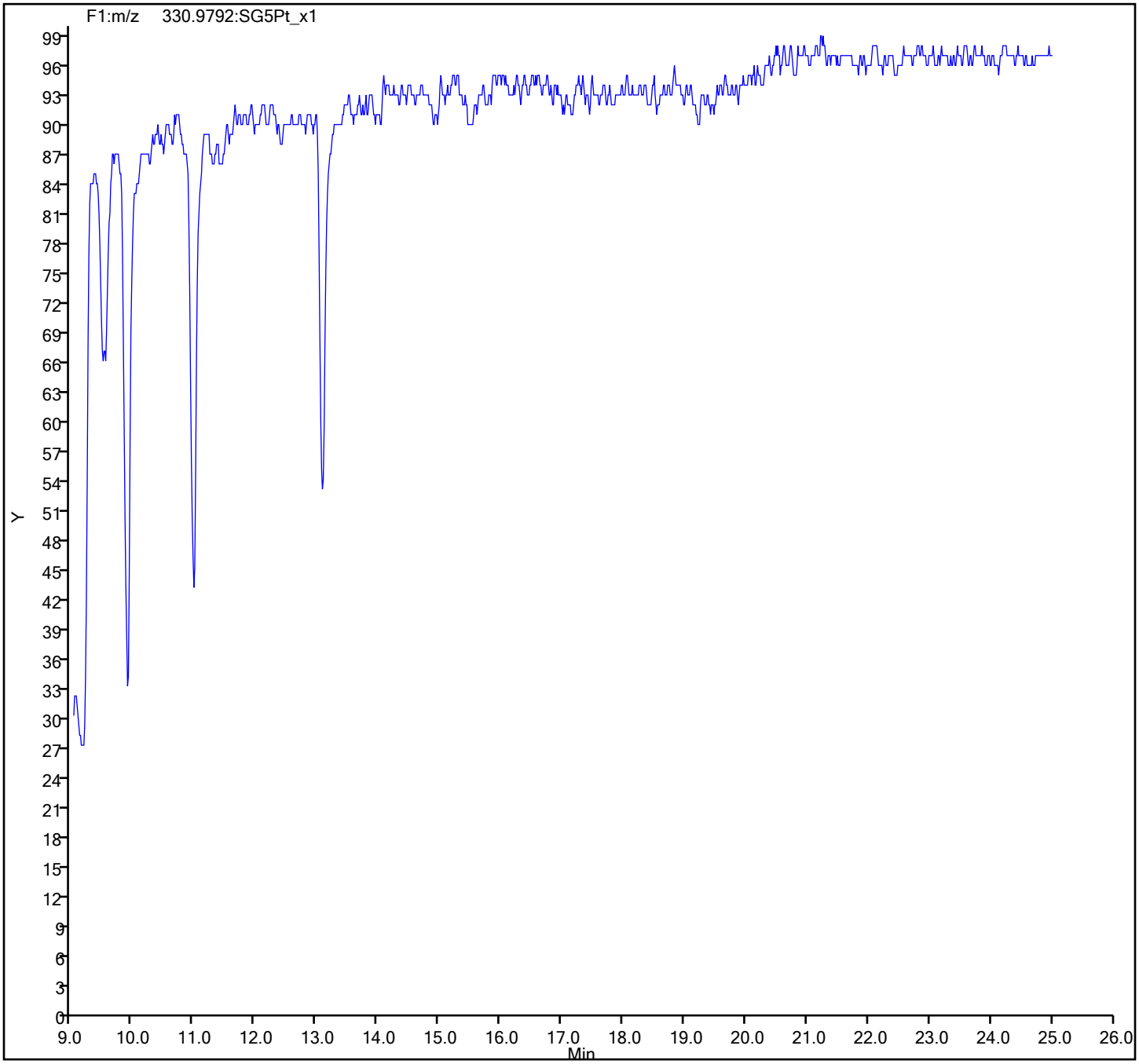




Report Date: 20-Dec-2019 14:38:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_009.d		
Injection Date:	19-Dec-2019 21:19:38	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(0-1)		
Worklist#:	346764	Sample Line#:	9
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Matrix: Sediment Lab File ID: 19DE193D5_8.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.25(g) Date Analyzed: 12/19/2019 16:33

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	1.1	J	1.5	0.18
40321-76-4	1,2,3,7,8-PeCDD	ND		7.6	0.28
57117-41-6	1,2,3,7,8-PeCDF	ND		7.6	0.16
57117-31-4	2,3,4,7,8-PeCDF	ND		7.6	0.16
39227-28-6	1,2,3,4,7,8-HxCDD	0.40	J q	7.6	0.19
57653-85-7	1,2,3,6,7,8-HxCDD	0.59	J	7.6	0.20
19408-74-3	1,2,3,7,8,9-HxCDD	1.3	J	7.6	0.17
70648-26-9	1,2,3,4,7,8-HxCDF	ND		7.6	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	0.15	J q	7.6	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	ND		7.6	0.097
60851-34-5	2,3,4,6,7,8-HxCDF	ND		7.6	0.093
35822-46-9	1,2,3,4,6,7,8-HpCDD	16	B	7.6	0.54
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.64	J B	7.6	0.19
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		7.6	0.21
3268-87-9	OCDD	430	B	15	0.48
39001-02-0	OCDF	5.4	J B	15	0.27
41903-57-5	Total TCDD	3.8	q	1.5	0.18
30402-14-3	Total TCDF	3.1	q	1.5	0.12
36088-22-9	Total PeCDD	4.2	J q	7.6	0.28
30402-15-4	Total PeCDF	ND		7.6	0.17
34465-46-8	Total HxCDD	20	q	7.6	0.19
55684-94-1	Total HxCDF	0.15	J q	7.6	0.11
37871-00-4	Total HpCDD	75	B	7.6	0.54
38998-75-3	Total HpCDF	1.5	J q B	7.6	0.20

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) Lab Sample ID: 320-56953-2

Matrix: Sediment Lab File ID: 19DE193D5_8.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.25(g) Date Analyzed: 12/19/2019 16:33

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	61		25-164
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	59		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	58		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	62		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	62		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	63		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	60		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	60		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	61		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	61		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	55		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	67		26-138
114423-97-1	13C-OCDD	60		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	104		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 16:33:59 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-2-A 320-56953-A-2-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:45:56 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: dadunj Date: 20-Dec-2019 14:21:03

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.612	206281513	0.82	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.113	182639822	0.82	1.4157	62.5	62.5	0.1327	0.1327	62.54	
2,3,7,8-TCDF	17.128	1133195	0.77	0.9502	0.6530	0.6530	0.0404	0.0404		M
A Non-2,3,7,8-sub-TCDF	16.811	656035	0.77	0.9502	0.3900	0.3780	0.0404	0.3072		RQMa
S Total TCDF					1.043	1.031	0.0404	0.0404		RQ
D 13C-2,3,7,8-TCDD	17.808	123554781	0.77	0.9751	61.4	61.4	0.1836	0.1836	61.43	
2,3,7,8-TCDD	17.808	480496	0.84	1.0477	0.3712	0.3712	0.0610	0.0610		
$ 37Cl4-2,3,7,8-TCDD	17.823	115412494		1.3480	41.5	41.5	0.1030	0.1030	104	
A Non-2,3,7,8-sub-TCDD	17.249	1132582	0.77	1.0477	1.065	0.8749	0.0610	0.3524		RQ
S Total TCDD					1.436	1.246	0.0610	0.0610		RQ
D 13C-1,2,3,7,8-PeCDF	22.032	140588769	1.62	1.1786	57.8	57.8	0.1531	0.1531	57.83	
1,2,3,7,8-PeCDF	22.045						0.0522	0.0522		
D 13C-2,3,4,7,8-PeCDF	23.341	145025384	1.61	1.1308	62.2	62.2	0.1596	0.1596	62.17	
2,3,4,7,8-PeCDF	23.355						0.0528	0.0528		
A F1 PeCDFs	19.774						0.0551	0.0551		
A Non-2,3,7,8-sub-PeCDF	22.858						0.0525	0.0525		
S Total PeCDF							0.0551	0.0551		
D 13C-1,2,3,7,8-PeCDD	24.050	91997844	1.59	0.7572	58.9	58.9	0.1049	0.1049	58.90	
1,2,3,7,8-PeCDD	24.077						0.0941	0.0941		
A Non-2,3,7,8-sub-PeCDD	22.973	1400383	1.55	1.0855	1.492	1.402	0.0941	0.6451		RQ
S Total PeCDD					1.492	1.402	0.0941	0.0941		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.193	124157343	0.52	1.1043	63.2	63.2	0.2600	0.2600	63.20	
1,2,3,4,7,8-HxCDF	30.206						0.0412	0.0412		
D 13C-1,2,3,6,7,8-HxCDF	30.406	122235087	0.50	1.1470	59.9	59.9	0.2503	0.2503	59.90	
1,2,3,6,7,8-HxCDF	30.433	70242	1.24	1.1450	0.0547	0.0502	0.0410	0.0410		RQ
D 13C-2,3,4,6,7,8-HxCDF	31.312	116964487	0.53	1.0769	61.1	61.1	0.2666	0.2666	61.05	
2,3,4,6,7,8-HxCDF	31.325						0.0309	0.0309		
D 13C-1,2,3,7,8,9-HxCDF	32.164	107304546	0.52	1.0115	59.6	59.6	0.2838	0.2838	59.63	
1,2,3,7,8,9-HxCDF	32.164						0.0320	0.0320		
A Non-2,3,7,8-sub-HxCDF	29.880						0.0357	0.0357		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.0547	0.0502	0.0363	0.0363		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.964	177904020	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	91805884	1.28	0.7962	64.8	64.8	0.2855	0.2855	64.81	
1,2,3,4,7,8-HxCDD	31.538	133911	1.24	1.0934	0.1471	0.1334	0.0625	0.0625		RQ
D 13C-1,2,3,6,7,8-HxCDD	31.631	96038284	1.30	0.8720	61.9	61.9	0.2607	0.2607	61.91	
1,2,3,6,7,8-HxCDD	31.645	196150	1.19	1.0429	0.1958	0.1958	0.0671	0.0671		
1,2,3,7,8,9-HxCDD	31.964	492322	1.40	1.2073	0.4342	0.4342	0.0573	0.0573		M
A Non-2,3,7,8-sub-HxCDD	30.519	6278274	1.28	1.1145	5.998	5.998	0.0621	4.825		M
S Total HxCDD					6.775	6.761	0.0623	0.0623		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.628	74050863	0.44	0.7577	54.9	54.9	0.7315	0.7315	54.94	
1,2,3,4,6,7,8-HpCDF	33.640	233300	0.98	1.4804	0.2128	0.2128	0.0623	0.0623		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	82317289	0.44	0.6941	66.7	66.7	0.7984	0.7984	66.66	
1,2,3,4,7,8,9-HpCDF	34.709						0.0707	0.0707		
A Non-2,3,7,8-sub-HpCDF	34.169	299867	1.04	1.3868	0.2998	0.2766	0.0662	0.2766		RQ
S Total HpCDF					0.5126	0.4894	0.0665	0.0665		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	34.417	76193055	1.00	0.7058	60.7	60.7	0.3141	0.3141	60.68	
1,2,3,4,6,7,8-HpCDD	34.430	4335455	1.08	1.0535	5.401	5.401	0.1786	0.1786		
A Non-2,3,7,8-sub-HpCDD	34.144	15452879	1.08	1.0535	19.3	19.3	0.1786	19.3		
S Total HpCDD					24.7	24.7	0.1786	0.1786		
D 13C-OCDD	36.734	98699558	0.91	0.4603	120.5	120.5	0.1740	0.1740	60.27	
OCDF	36.841	1237877	0.90	1.3945	1.799	1.799	0.0892	0.0892		
OCDD	36.746	79662347	0.90	1.1362	142.1	142.1	0.1579	0.1579		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 16:33:59 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-2-A 320-56953-A-2-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:45:56 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: dadunj Date: 20-Dec-2019 14:21:03

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.612	17.612	0		92643769	23584995	19467	48667	1212		
333.9339	17.612	17.612	0		113637744	29114294	18265	45662	1594	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.113	17.113	0	0.972	82021045	20363427	22455	56137	907		
317.9389	17.113	17.113	0	0.972	100618777	25789420	17142	42855	1504	0.82(0.65-0.89)	
2,3,7,8-TCDF											M
303.9016	17.128	17.128	0	1.001	493679	116943	3209	8022	36		M
305.8987	17.128	17.128	0	1.001	639516	155585	3876	9690	40	0.77(0.65-0.89)	M
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	15.253	16.811	-93	0.891	53480	13131	3209	8022	4		a
305.8987	15.238	16.811	-94	0.890	90195	17145	3876	9690	4	0.59(0.65-0.89)	
	Empc Correction				69454	17053	3876	9690	4		
303.9016	16.750	16.811	-4	0.979	251361	60180	3209	8022	19		M
305.8987	16.750	16.811	-4	0.979	281740	67814	3876	9690	17	0.89(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.808	17.793	1	1.011	53684821	12184533	19467	48667	626		
333.9339	17.793	17.793	0	1.010	69869960	16188221	18265	45662	886	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.808	17.823	-1	1.000	219276	46129	4832	12080	10		
321.8936	17.808	17.823	-1	1.000	261220	64887	2419	6047	27	0.84(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.823	17.823	0	1.012	115412494	27154695	29275	73187	928		
A Non-2,3,7,8-sub-TCDD											RQ

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	15.918	17.249	-80	0.894	85395	19808	4832	12080	4		
321.8936	15.918	17.249	-80	0.894	107836	26202	2419	6047	11	0.79(0.65-0.89)	
319.8965	16.705	17.249	-33	0.938	200694	47127	4832	12080	10		
321.8936	16.705	17.249	-33	0.938	255447	55606	2419	6047	23	0.79(0.65-0.89)	
319.8965	17.113	17.249	-8	0.961	181326	39041	4832	12080	8		
	Empc Correction				28742	9487	4832	12080	2		
321.8936	17.098	17.249	-9	0.960	37328	12322	2419	6047	5	4.86(0.65-0.89)	
319.8965	17.581	17.249	20	0.987	116262	23043	4832	12080	5		
	Empc Correction				78884	16623	4832	12080	3		
321.8936	17.566	17.249	19	0.986	102448	21589	2419	6047	9	1.13(0.65-0.89)	
319.8965	17.702	17.249	27	0.994	158752	40697	4832	12080	8		
	Empc Correction				102583	26535	4832	12080	5		
321.8936	17.718	17.249	28	0.995	133225	34462	2419	6047	14	1.19(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.032	22.018	1	1.251	86868004	15371672	21462	53655	716		
353.8970	22.032	22.018	1	1.251	53720765	9482956	16579	41447	572	1.62(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.045						1988	4970			
341.8567	22.045						3361	8402			
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.325	89478040	14926875	21462	53655	696		
353.8970	23.341	23.341	0	1.325	55547344	9420821	16579	41447	568	1.61(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355						1988	4970			
341.8567	23.355						3361	8402			
A F1 PeCDFs											
339.8597	19.774						1588	3970			
341.8567	19.774						4030	10075			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						1988	4970			
341.8567	22.858						3361	8402			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.366	56493313	8973023	10731	26827	836		
369.8919	24.050	24.050	0	1.366	35504531	5384700	6011	15027	896	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						4057	10142			
357.8516	24.077						1811	4527			
A Non-2,3,7,8-sub-PeCDD											RQ
355.8546	20.927	22.973	-122	0.870	313985	55349	4057	10142	14		
	Empc Correction				262543	52217	4057	10142	13		
357.8516	20.914	22.973	-123	0.870	169383	33689	1811	4527	19	1.85(1.32-1.78)	
355.8546	21.664	22.973	-78	0.901	385271	75162	4057	10142	19		
357.8516	21.650	22.973	-79	0.900	258955	47690	1811	4527	26	1.49(1.32-1.78)	
355.8546	23.109	22.973	8	0.961	197082	28489	4057	10142	7		
357.8516	23.109	22.973	8	0.961	165188	18878	1811	4527	10	1.19(1.32-1.78)	
	Empc Correction				127149	18380	1811	4527	10		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	42215239	6909484	16834	42085	410		
385.8610	30.193	30.193	0	0.945	81942104	13651733	31744	79360	430	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206						2033	5082			
375.8178	30.206						1858	4645			
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	40766999	7021341	16834	42085	417		
385.8610	30.406	30.406	0	0.951	81468088	13706781	31744	79360	432	0.50(0.43-0.59)	
1,2,3,6,7,8-HxCDF											RQ
373.8208	30.433	30.420	1	1.001	38884	10369	2033	5082	5		
375.8178	30.433	30.420	1	1.001	37734	6876	1858	4645	4	1.03(1.05-1.43)	
	Empc Correction				31358	8362	1858	4645	5		
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	40474610	9360228	16834	42085	556		
385.8610	31.312	31.312	0	0.980	76489877	17515550	31744	79360	552	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						2033	5082			
375.8178	31.325						1858	4645			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.164	32.151	1	1.006	36492449	8954800	16834	42085	532		
385.8610	32.164	32.151	1	1.006	70812097	17006661	31744	79360	536	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						2033	5082			
375.8178	32.164						1858	4645			
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						2033	5082			
375.8178	29.880						1858	4645			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		100163769	23695645	20431	51077	1160		
403.8529	31.964	31.964	0		77740251	18611463	18037	45092	1032	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	51451965	12741503	20431	51077	624		
403.8529	31.511	31.511	0	0.986	40353919	10218854	18037	45092	567	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQ
389.8157	31.538	31.525	1	1.001	87842	23369	3010	7525	8		
	Empc Correction				74129	17037	3010	7525	6		
391.8127	31.524	31.525	0	1.000	59782	13740	3271	8177	4	1.47(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.631	31.618	1	0.990	54292929	12715159	20431	51077	622		
403.8529	31.631	31.618	1	0.990	41745355	9729285	18037	45092	539	1.30(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.645	31.631	1	1.000	106592	21992	3010	7525	7		
391.8127	31.631	31.631	0	1.000	89558	24779	3271	8177	8	1.19(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	31.964	31.977	-1	1.014	287033	47080	3010	7525	16		
391.8127	31.964	31.977	-1	1.014	205289	34799	3271	8177	11	1.40(1.05-1.43)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDD											M
389.8157	29.074	30.519	-87	0.919	2821468	343303	3010	7525	114		
391.8127	29.061	30.519	-87	0.919	2229214	268488	3271	8177	82	1.27(1.05-1.43)	
389.8157	30.712	30.519	12	0.971	702049	121297	3010	7525	40		
391.8127	30.699	30.519	11	0.971	525543	87064	3271	8177	27	1.34(1.05-1.43)	M
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.628	33.628	0	1.052	22525870	7575433	34729	86822	218		
419.8220	33.628	33.628	0	1.052	51524993	16718210	59057	147642	283	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.640	33.628	1	1.000	115512	33803	6692	16730	5		M
409.7789	33.640	33.628	1	1.000	117788	31289	2277	5692	14	0.98(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	25236125	7598417	34729	86822	219		
419.8220	34.697	34.697	0	1.086	57081164	16935796	59057	147642	287	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						6692	16730			
409.7789	34.709						2277	5692			
A Non-2,3,7,8-sub-HpCDF											RQ
407.7818	33.944	34.169	-13	1.009	178068	43271	6692	16730	6		
	Empc Correction				152873	42148	6692	16730	6		
409.7789	33.931	34.169	-14	1.009	146994	40527	2277	5692	18	1.21(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.417	34.418	0	1.077	38146347	11596199	20172	50430	575		
437.8140	34.417	34.418	0	1.077	38046708	11683947	17340	43350	674	1.00(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.430	34.418	1	1.000	2251547	724096	9883	24707	73		
425.7737	34.430	34.418	1	1.000	2083908	664923	7639	19097	87	1.08(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.883	34.144	-16	0.984	8025300	2612828	9883	24707	264		
425.7737	33.883	34.144	-16	0.984	7427579	2332577	7639	19097	305	1.08(0.88-1.20)	
13C-OCDD											
469.7779	36.734	36.734	0	1.149	46920570	12172933	8265	20662	1473		
471.7750	36.734	36.734	0	1.149	51778988	13319242	5291	13227	2517	0.91(0.76-1.02)	
OCDF											
441.7428	36.841	36.830	1	1.003	586592	144253	2304	5760	63		
443.7399	36.841	36.830	1	1.003	651285	161925	4041	10102	40	0.90(0.76-1.02)	
OCDD											
457.7377	36.746	36.746	0	1.000	37794200	10041915	4126	10315	2434		
459.7348	36.746	36.746	0	1.000	41868147	11114020	5019	12547	2214	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	182639822	46152847

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	182639822	46152847

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.253	53480	13131	90195	17145	0.0828	0.59	RQa
15.253	53480	13131	69454	17053	0.0708		Empc Correction
16.750	251361	60180	281740	67814	0.3072	0.89	Ma
Signal Totals:							
	304841	73311	351194	84867			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	676776	158270				0.82	RQMa
	656035	158178					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3900 = (676776 * 100.000) / (182639822 * 0.950)
Empc Amount: 0.3780 = (656035 * 100.000) / (182639822 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	123554781	28372754

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	123554781	28372754

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
15.918	85395	19808	107836	26202	0.1493	0.79	
16.705	200694	47127	255447	55606	0.3524	0.79	
17.113	181326	39041	37328	12322	0.1689	4.86	RQ
17.113	28742	9487	37328	12322	0.0510		Empc Correction
17.581	116262	23043	102448	21589	0.1690	1.13	RQ
17.581	78884	16623	102448	21589	0.1401		Empc Correction
17.702	158752	40697	133225	34462	0.2256	1.19	RQ
17.702	102583	26535	133225	34462	0.1822		Empc Correction
Signal Totals:							
	496298	119580	636284	150181			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1378713	319897				1.17	RQ
	1132582	269761					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.065 = (1378713 * 100.000) / (123554781 * 1.048)
Empc Amount: 0.8749 = (1132582 * 100.000) / (123554781 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	91997844	14357723

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	91997844	14357723

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.927	313985	55349	169383	33689	0.4840	1.85	RQ
20.927	262543	52217	169383	33689	0.4325		Empc Correction
21.664	385271	75162	258955	47690	0.6451	1.49	
23.109	197082	28489	165188	18878	0.3628	1.19	RQ
23.109	197082	28489	127149	18380	0.3247		Empc Correction
Signal Totals:							
	844896	155868	555487	99759			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1489864	259257				1.51	RQ
	1400383	255627					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.492 = (1489864 * 100.000) / (91997844 * 1.086)
Empc Amount: 1.402 = (1400383 * 100.000) / (91997844 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	91805884	22960357
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	96038284	22444444
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	93922084	22702400

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.074	2821468	343303	2229214	268488	4.82	1.27	
30.712	702049	121297	525543	87064	1.17	1.34	M
Signal Totals:							
	3523517	464600	2754757	355552			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6278274	820152				1.28	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.998 = (6278274 * 100.000) / (93922084 * 1.115)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	74050863	24293643
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	82317289	24534213

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	78184076	24413928

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.944	178068	43271	146994	40527	0.2998	1.21	RQ
33.944	152873	42148	146994	40527	0.2766		Empc Correction
Signal Totals:							
	152873	42148	146994	40527			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	325062	83798				1.21	RQ
	299867	82675					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2998 = (325062 * 100.000) / (78184076 * 1.387)
Empc Amount: 0.2766 = (299867 * 100.000) / (78184076 * 1.387)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Inject. Date: 19-Dec-2019 16:33:59 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 8

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	76193055	23280146

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	76193055	23280146

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.883	8025300	2612828	7427579	2332577	19.3	1.08	
Signal Totals:							
	8025300	2612828	7427579	2332577			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	15452879	4945405				1.08	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 19.251 = (15452879 * 100.000) / (76193055 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

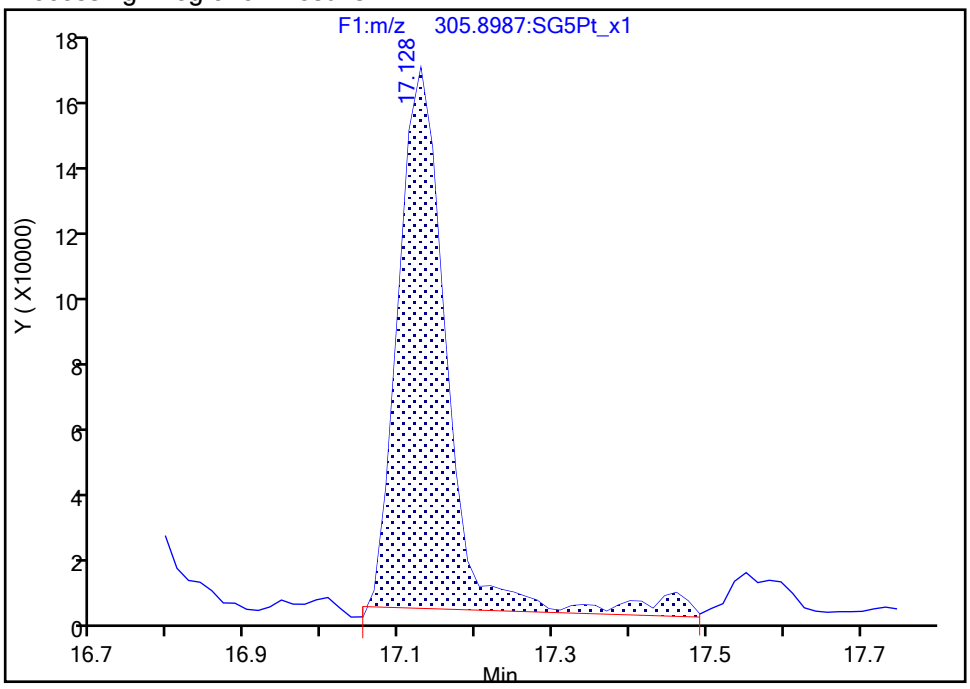
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 2

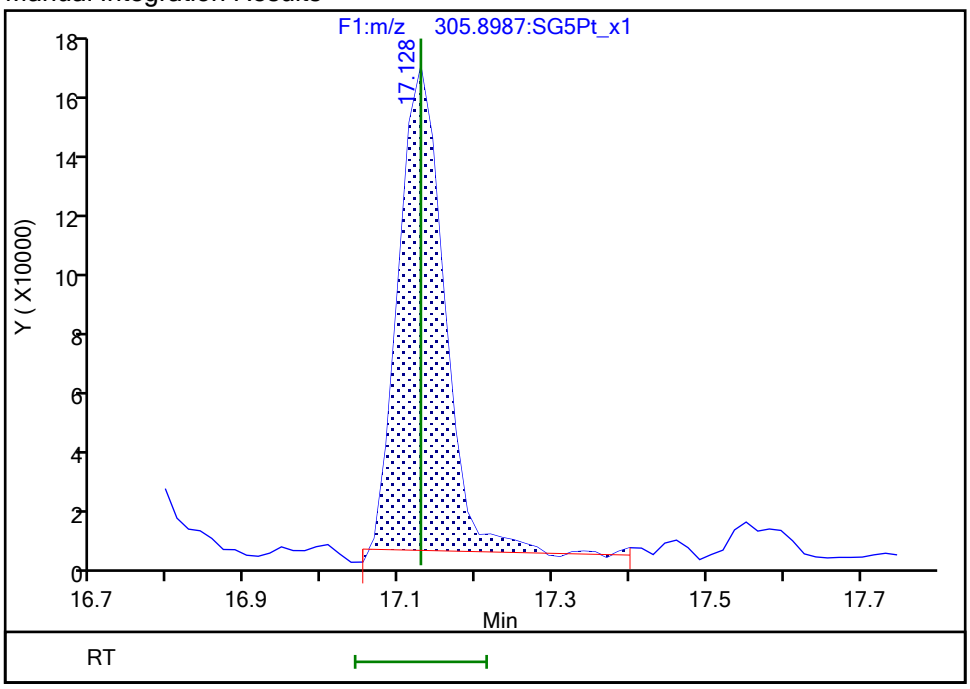
Processing Integration Results

RT: 17.13
Area: 692736
Amount: 0.692929
Amount Units: pg/ul



Manual Integration Results

RT: 17.13
Area: 639516
Amount: 0.652979
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:18:56

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

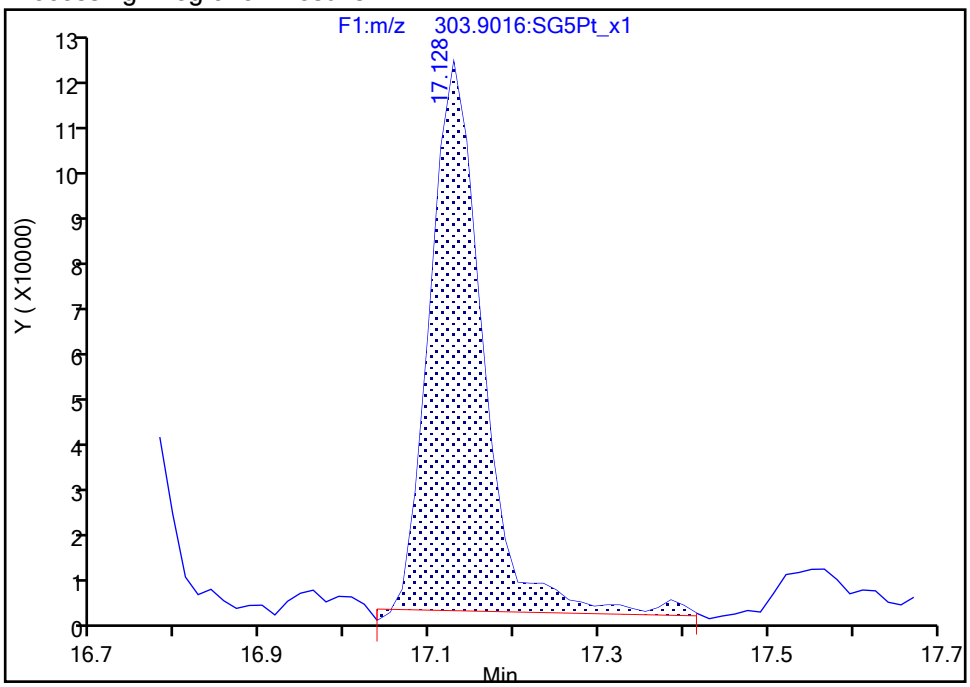
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDF, CAS: 51207-31-9

Signal: 1

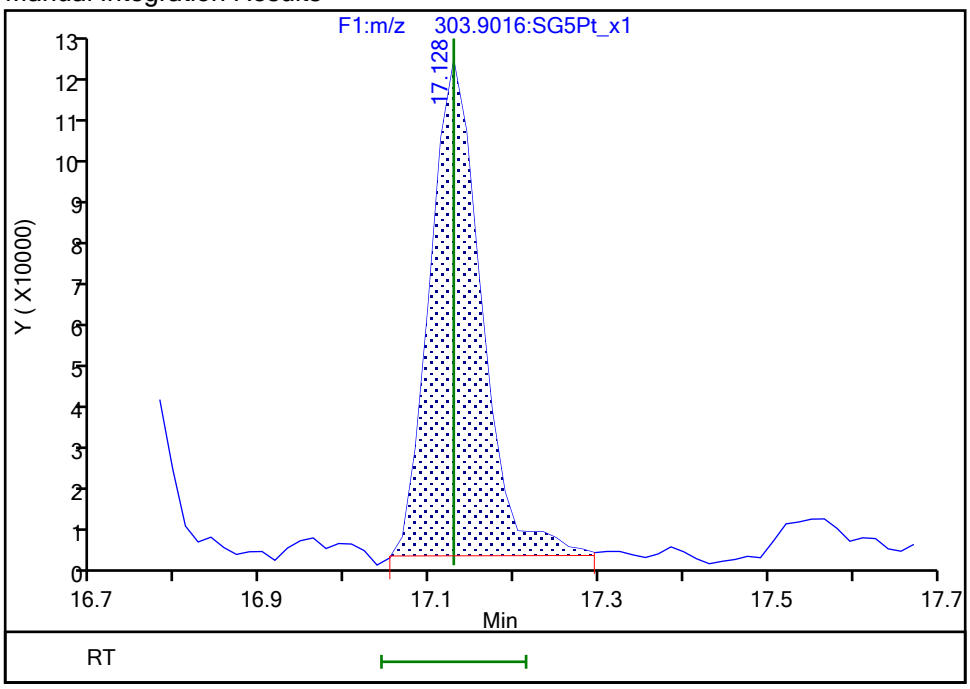
Processing Integration Results

RT: 17.13
Area: 509790
Amount: 0.692929
Amount Units: pg/ul



Manual Integration Results

RT: 17.13
Area: 493679
Amount: 0.652979
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:19:01

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

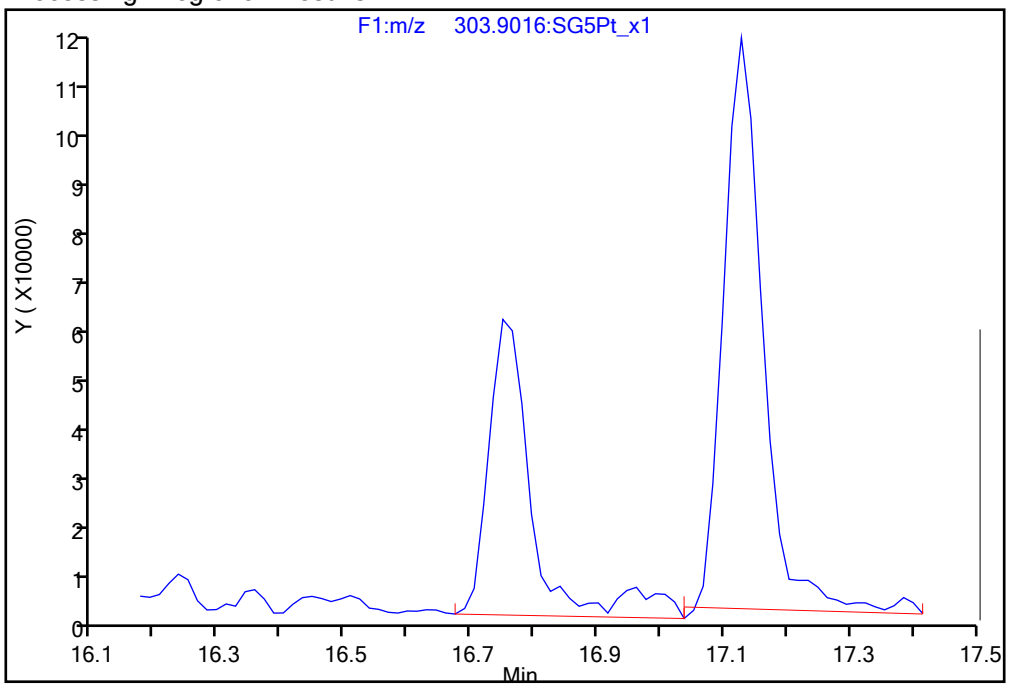
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDF, Signal: 1, m/z: 303.9016, RT: (14.69- 18.93)

Signal: 1

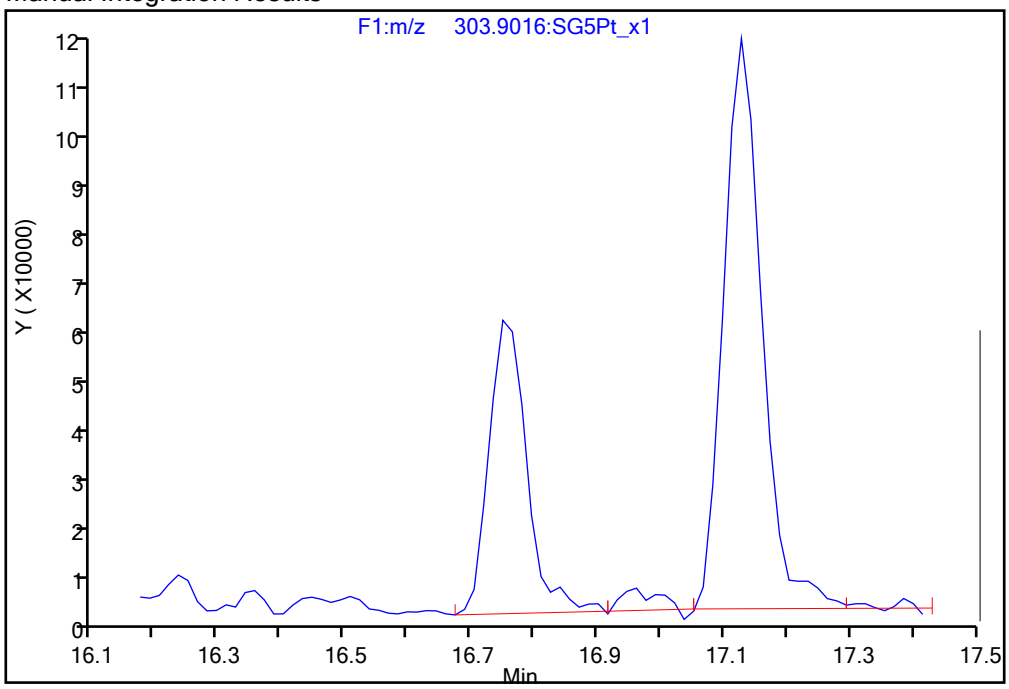
Processing Integration Results

RT = 16.750 Area = 291086



Manual Integration Results

RT = 16.750 Area = 251361 M



Reviewer: krenns, 22-Dec-2019 12:44:51

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

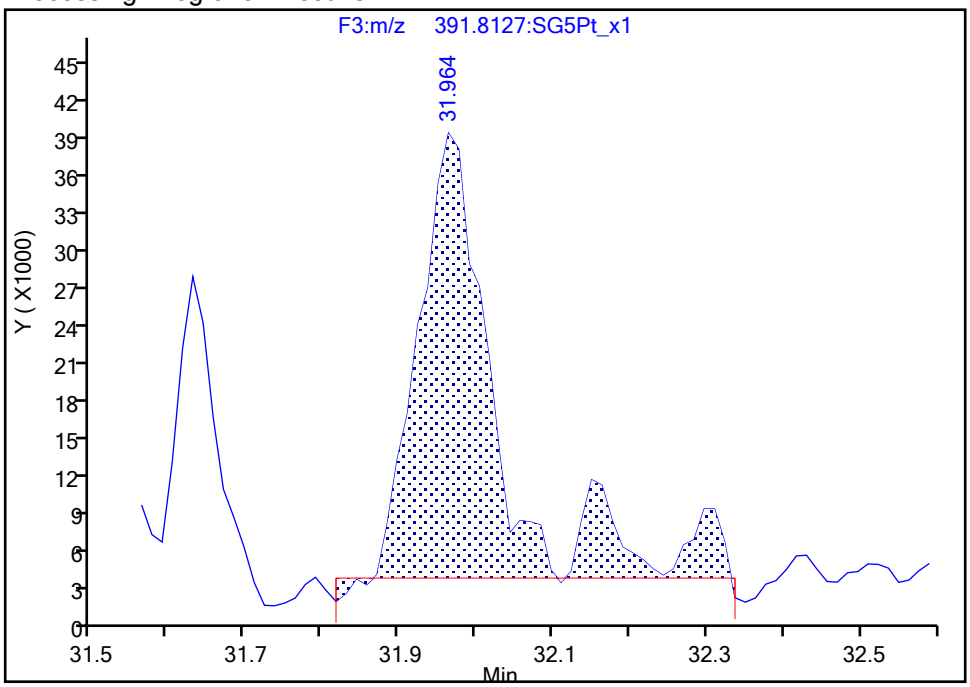
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

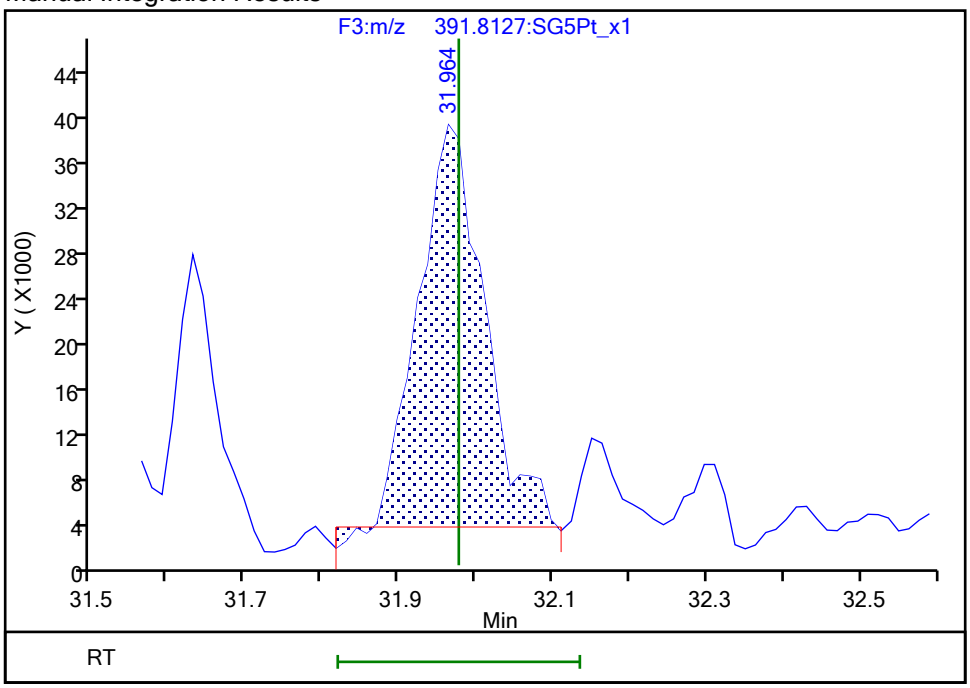
Processing Integration Results

RT: 31.96
Area: 245327
Amount: 0.469475
Amount Units: pg/ul



Manual Integration Results

RT: 31.96
Area: 205289
Amount: 0.434166
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:19:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

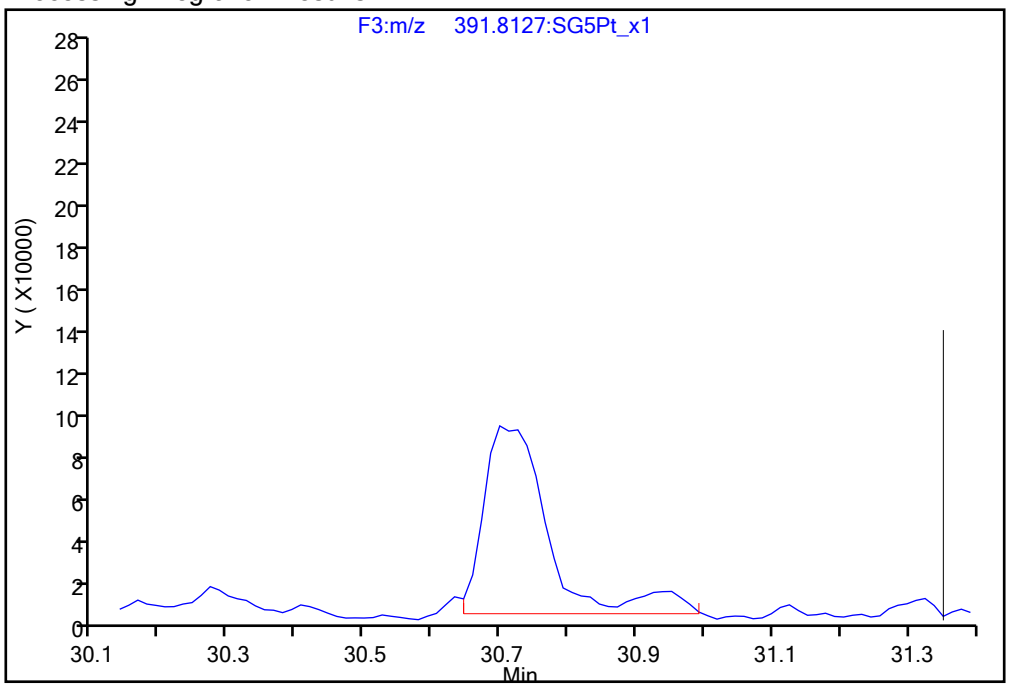
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (28.85- 32.19)

Signal: 2

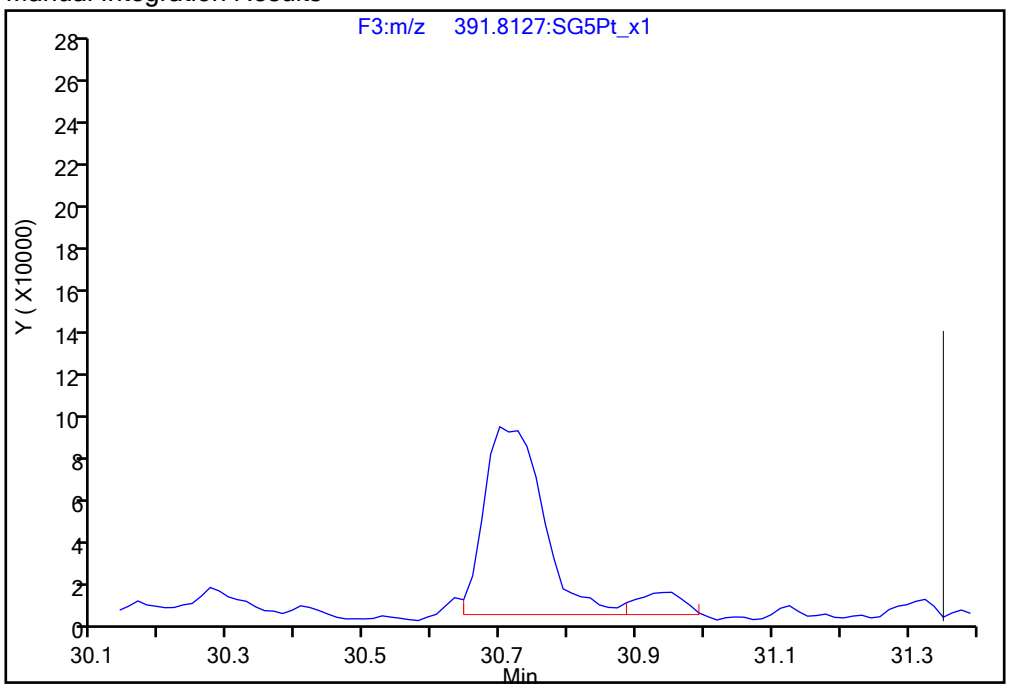
Processing Integration Results

RT = 30.699 Area = 573880



Manual Integration Results

RT = 30.699 Area = 525543 M



Reviewer: dadunj, 20-Dec-2019 14:19:58

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

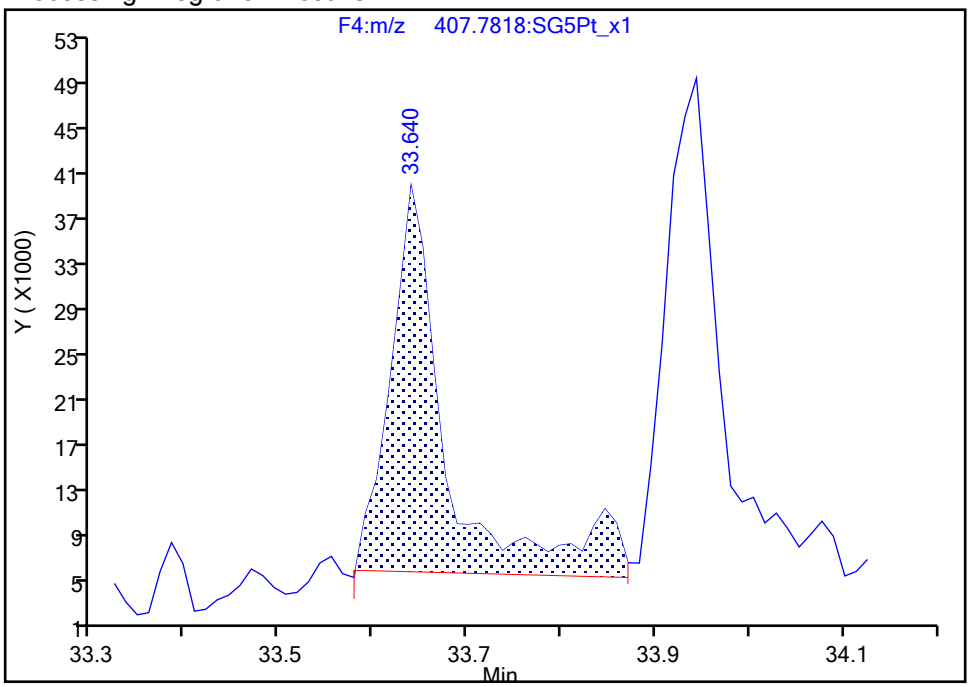
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d				
Injection Date:	19-Dec-2019 16:33:59	Instrument ID:	3D5		
Lims ID:	320-56953-A-2-A	Lab Sample ID:	320-56953-2		
Client ID:	11187072-120919-BN-SJSSA07(1-2)				
Operator ID:	AJS	ALS Bottle#:	8	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

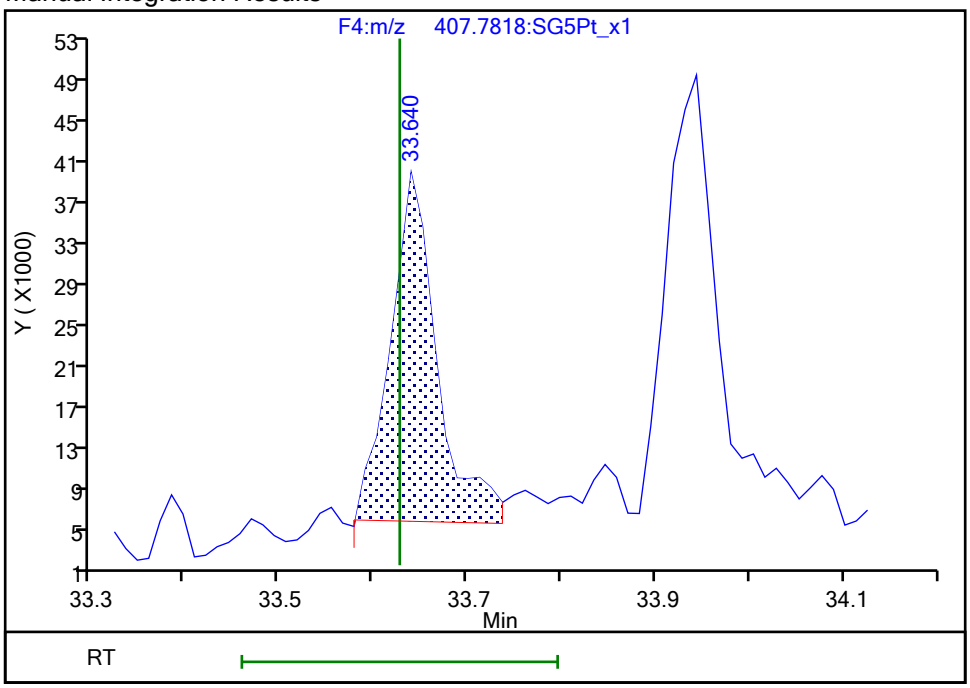
RT: 33.64
Area: 141139
Amount: 0.236201
Amount Units: pg/ul

Processing Integration Results



RT: 33.64
Area: 115512
Amount: 0.212823
Amount Units: pg/ul

Manual Integration Results



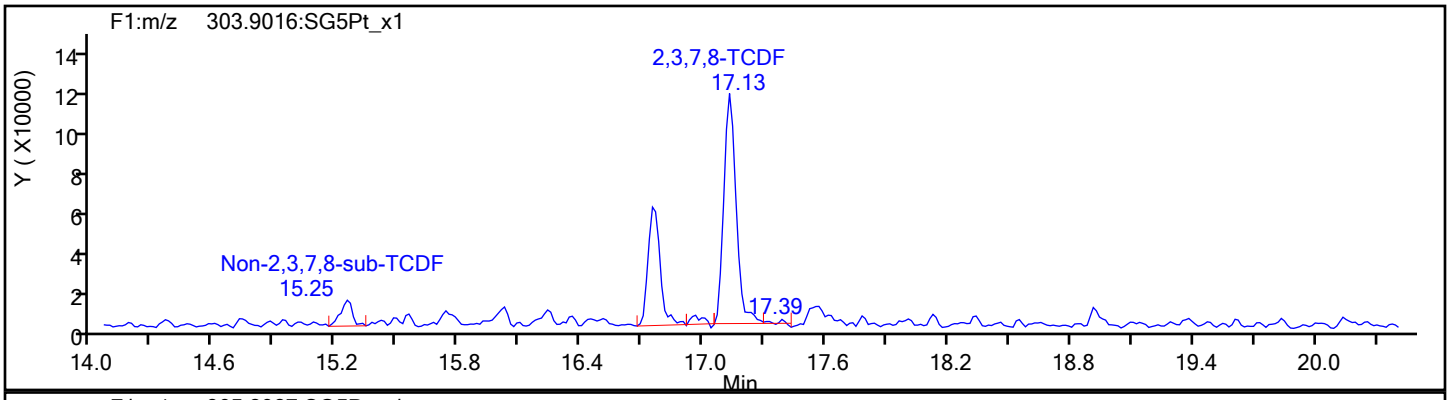
Reviewer: dadunj, 20-Dec-2019 14:20:09
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

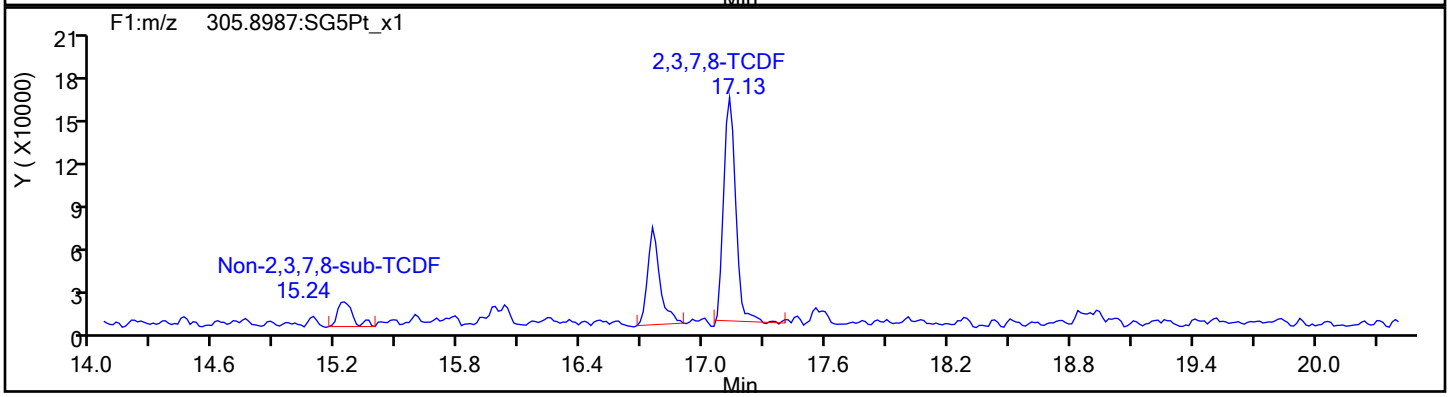
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

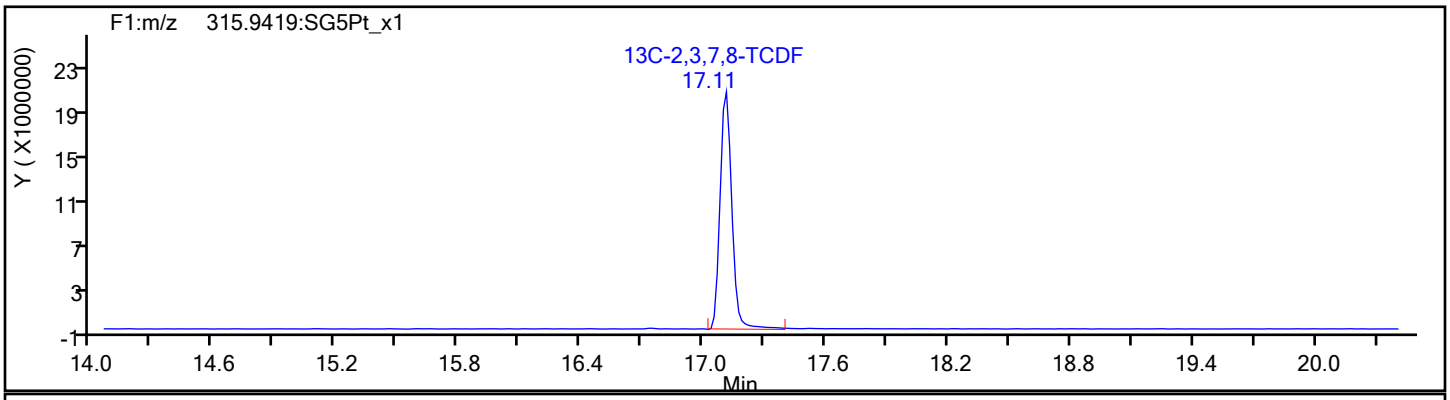
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

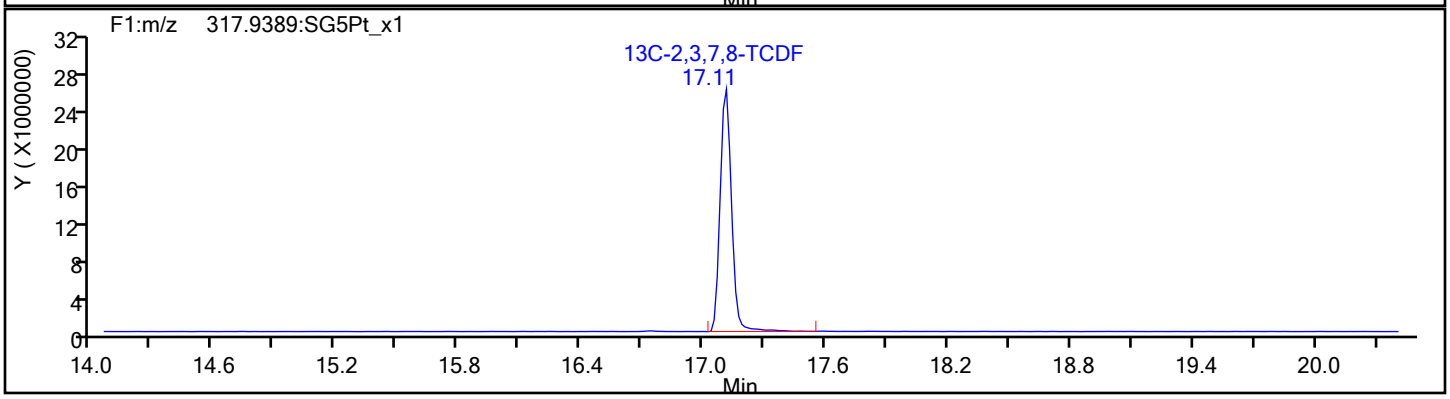
TCDF





TCDF Standards



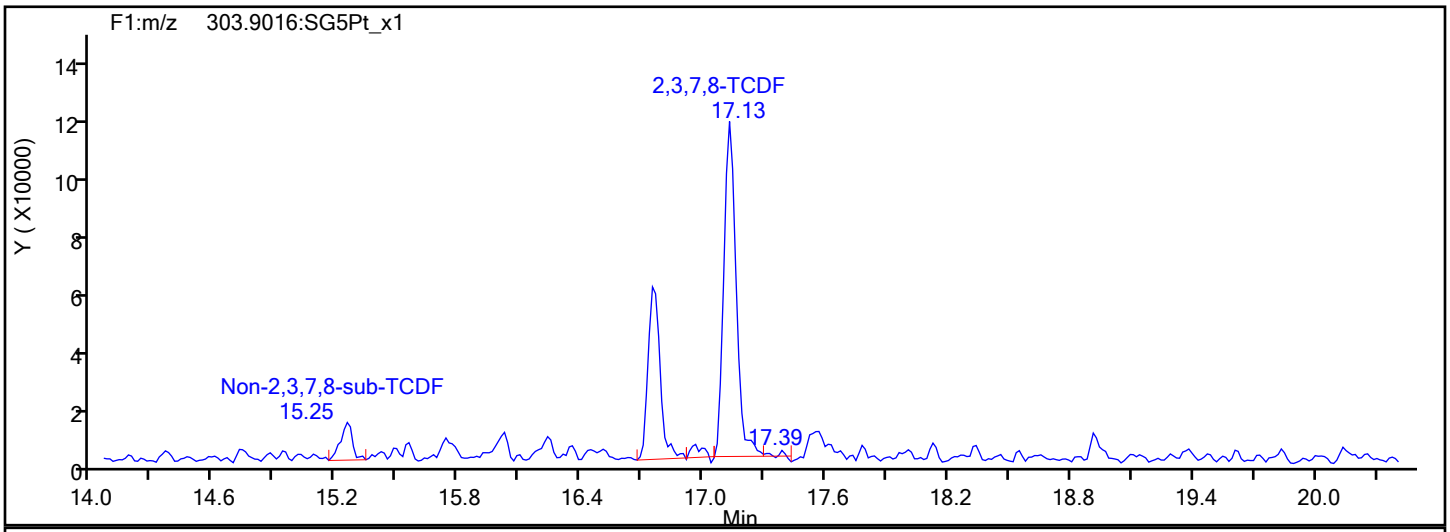


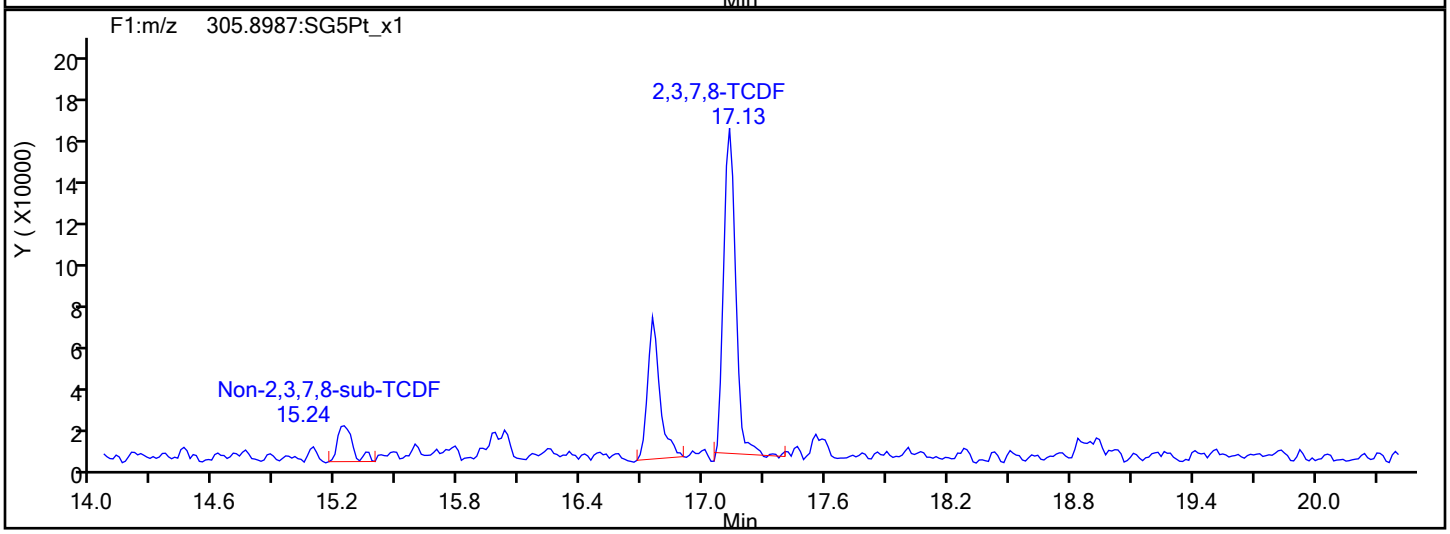
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

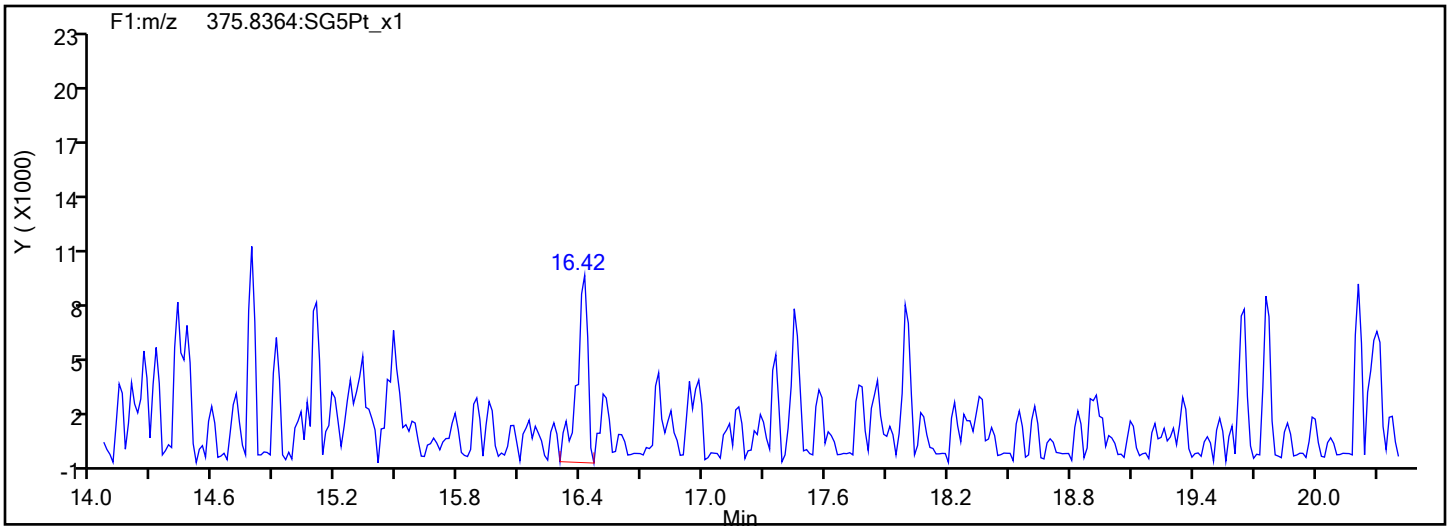
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

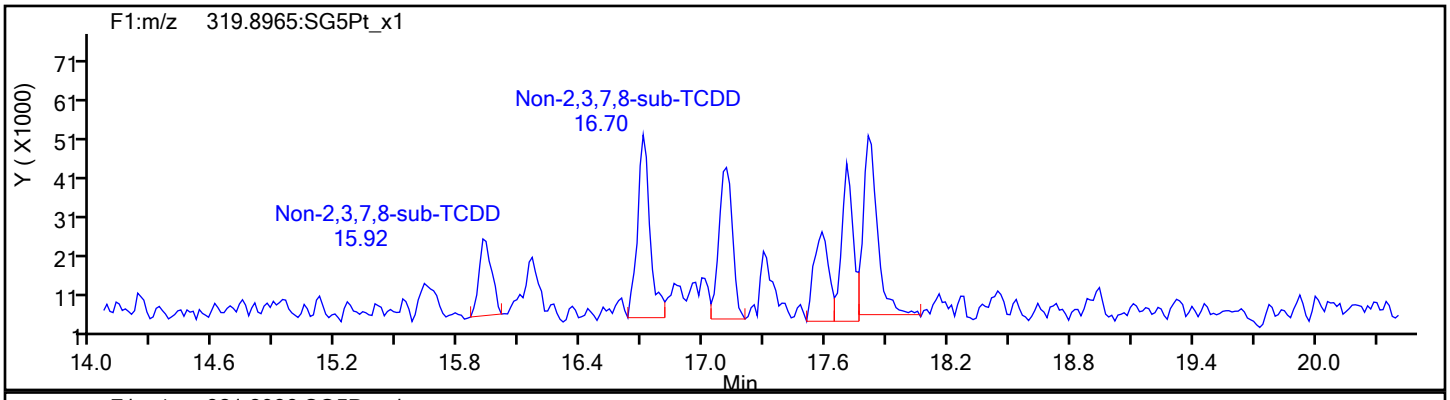


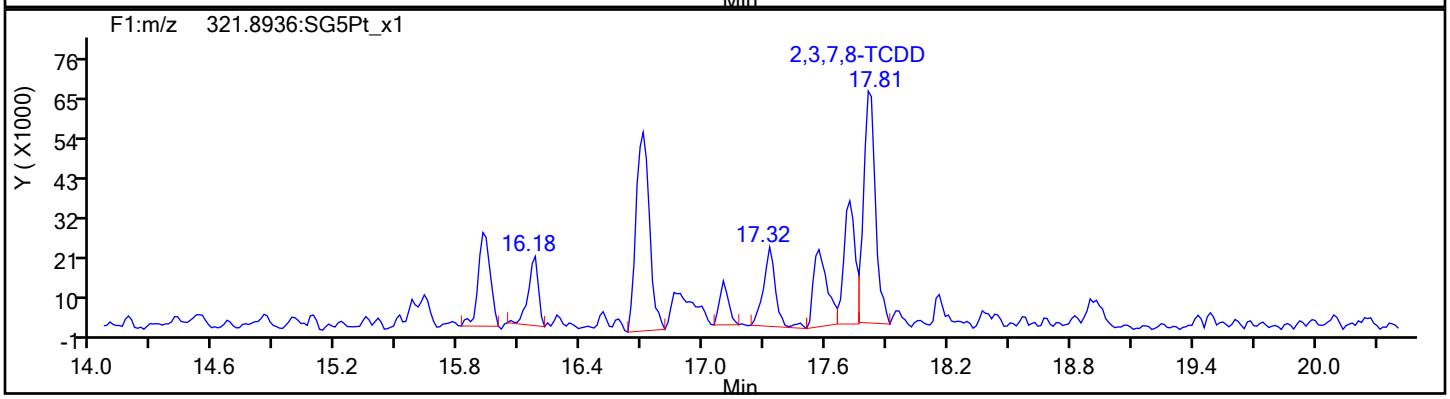
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

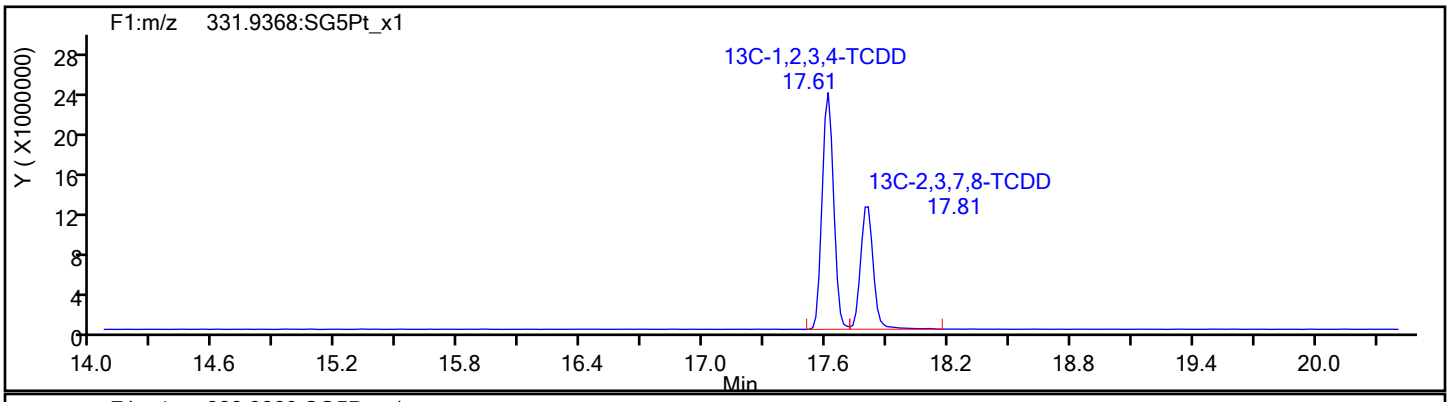
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

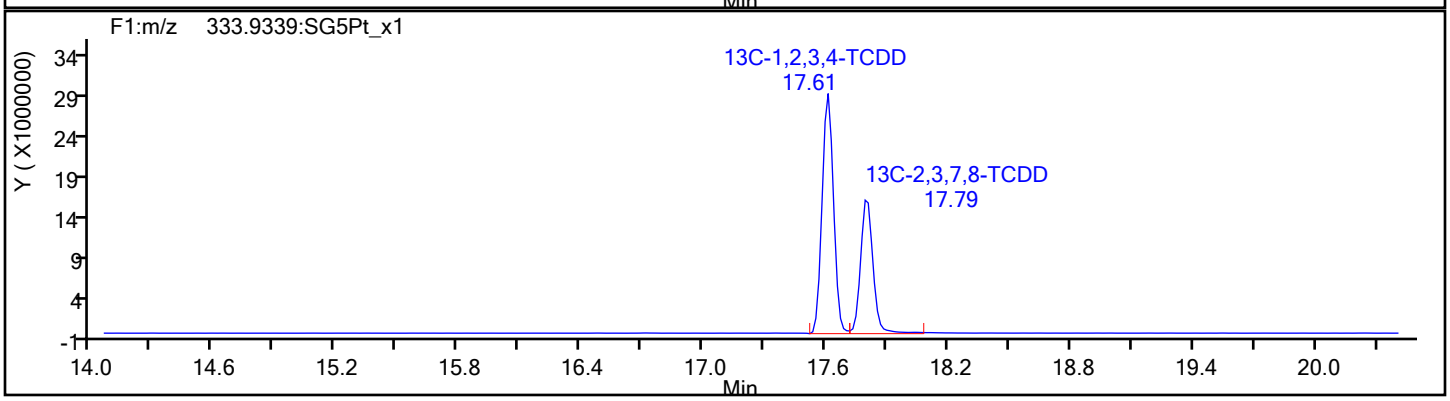
TCDD





TCDD Standards



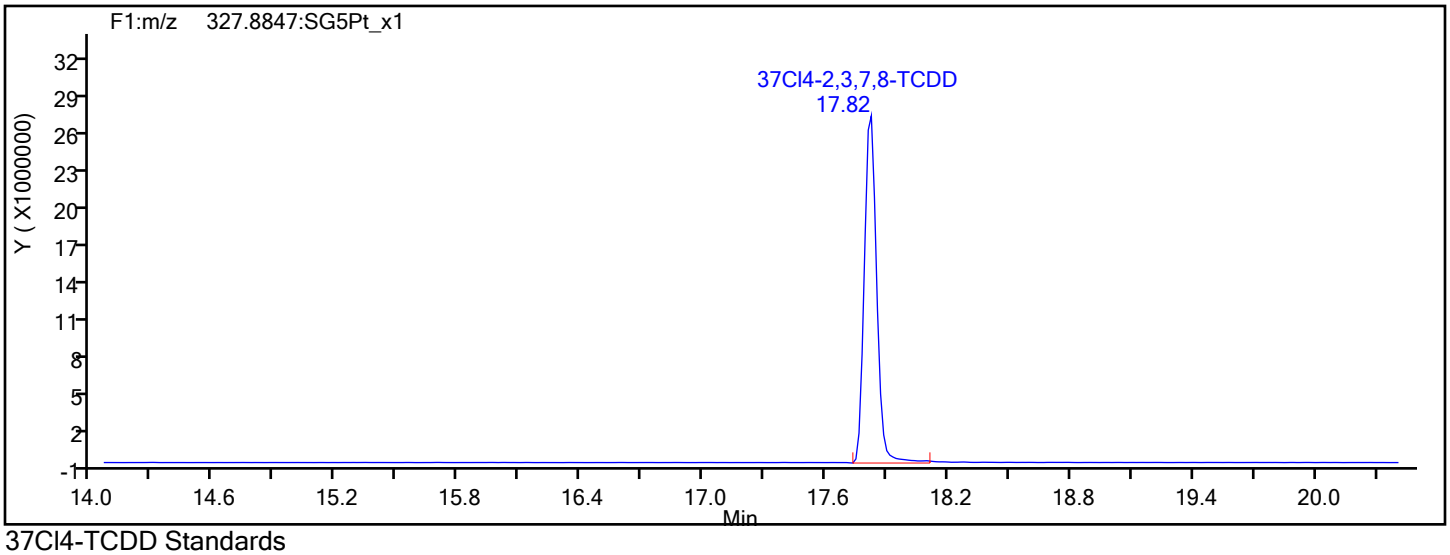


Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

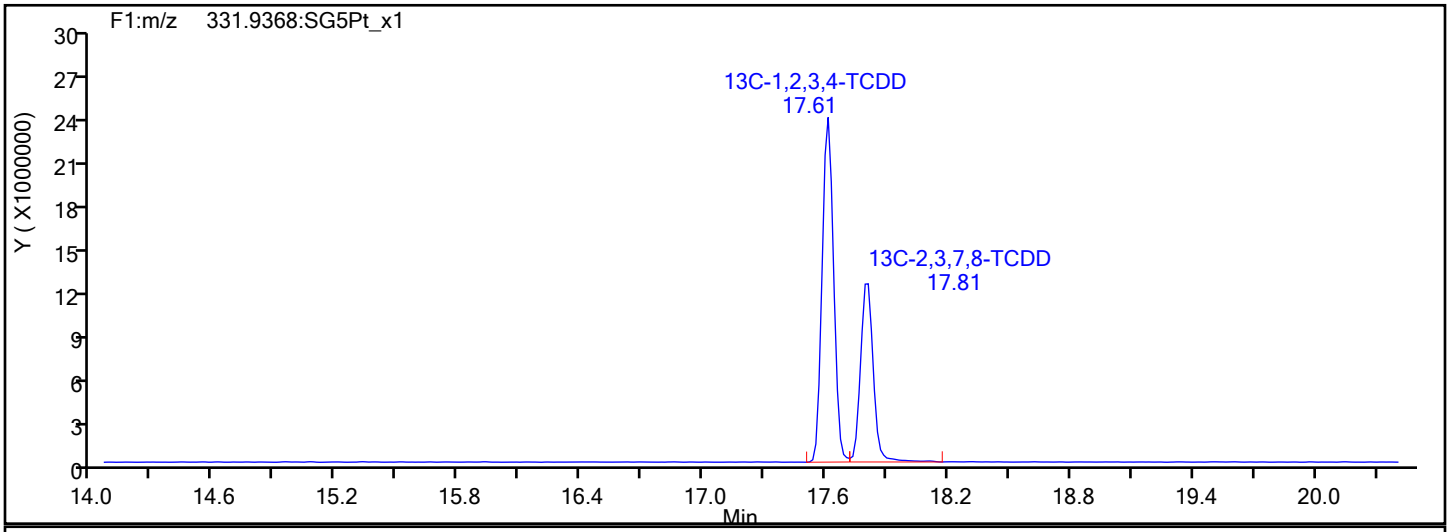
Eurofins TestAmerica, Sacramento

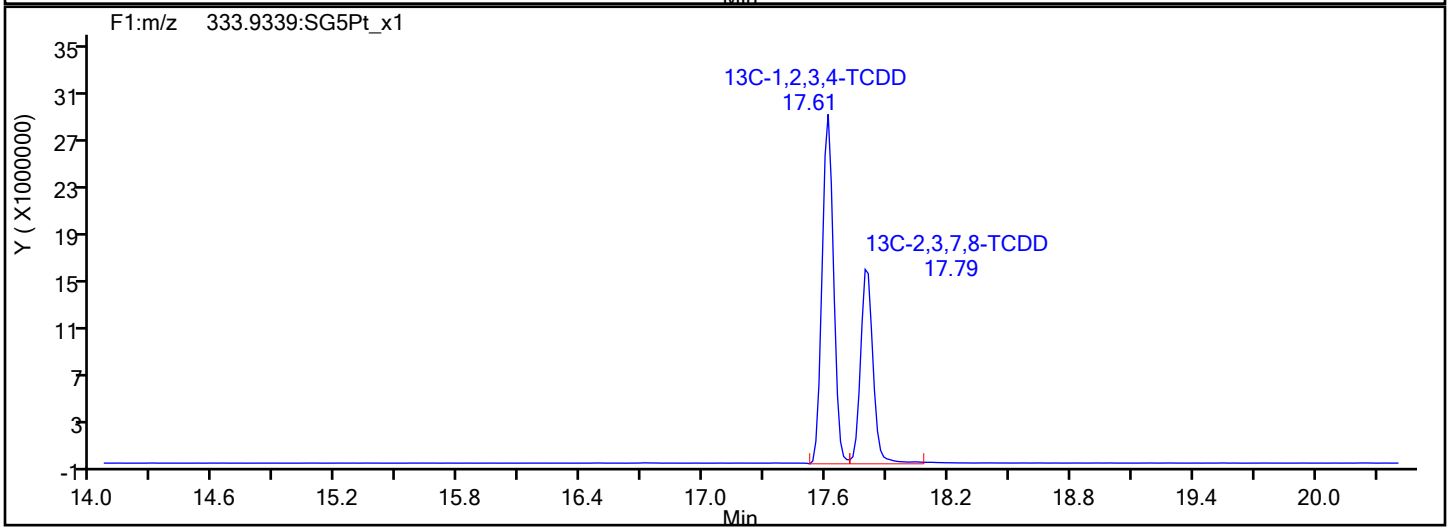
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



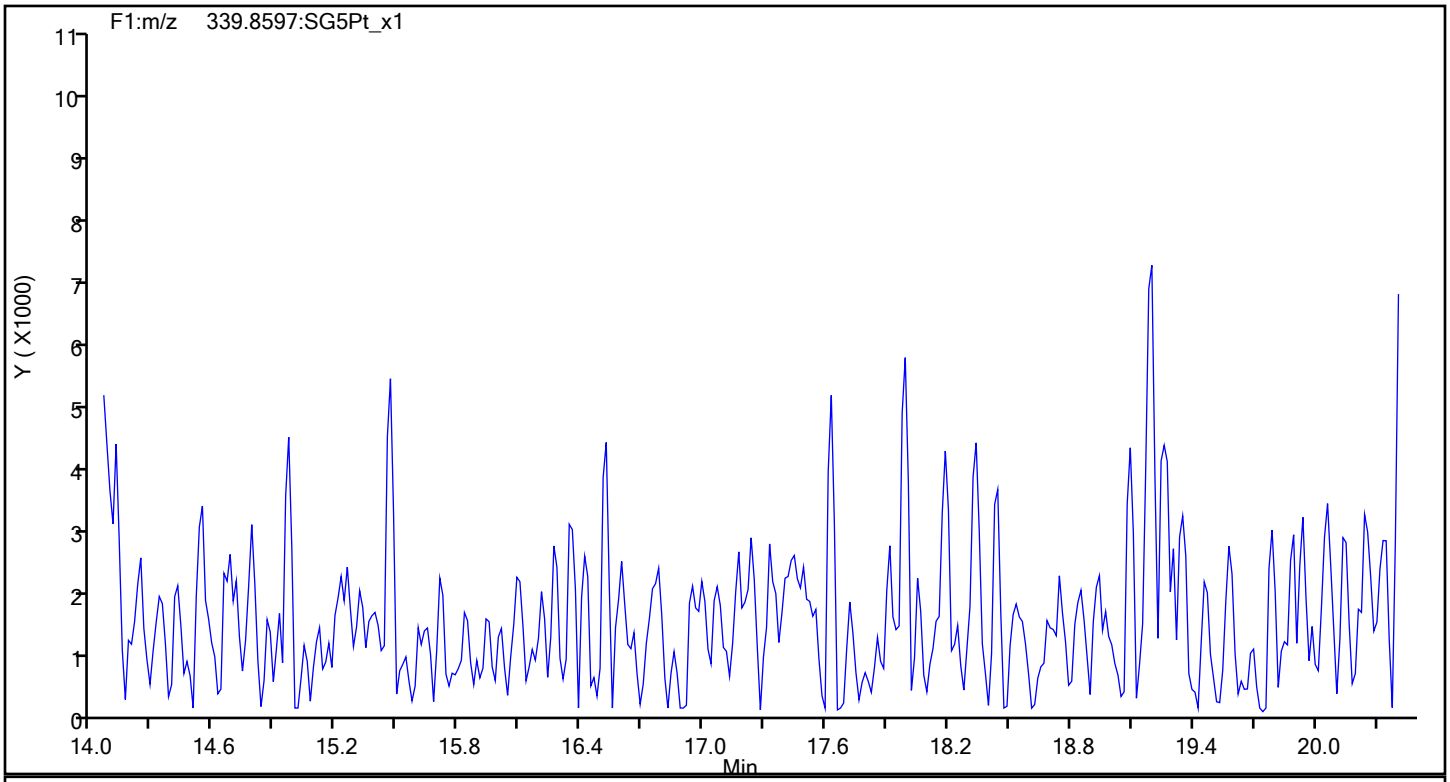


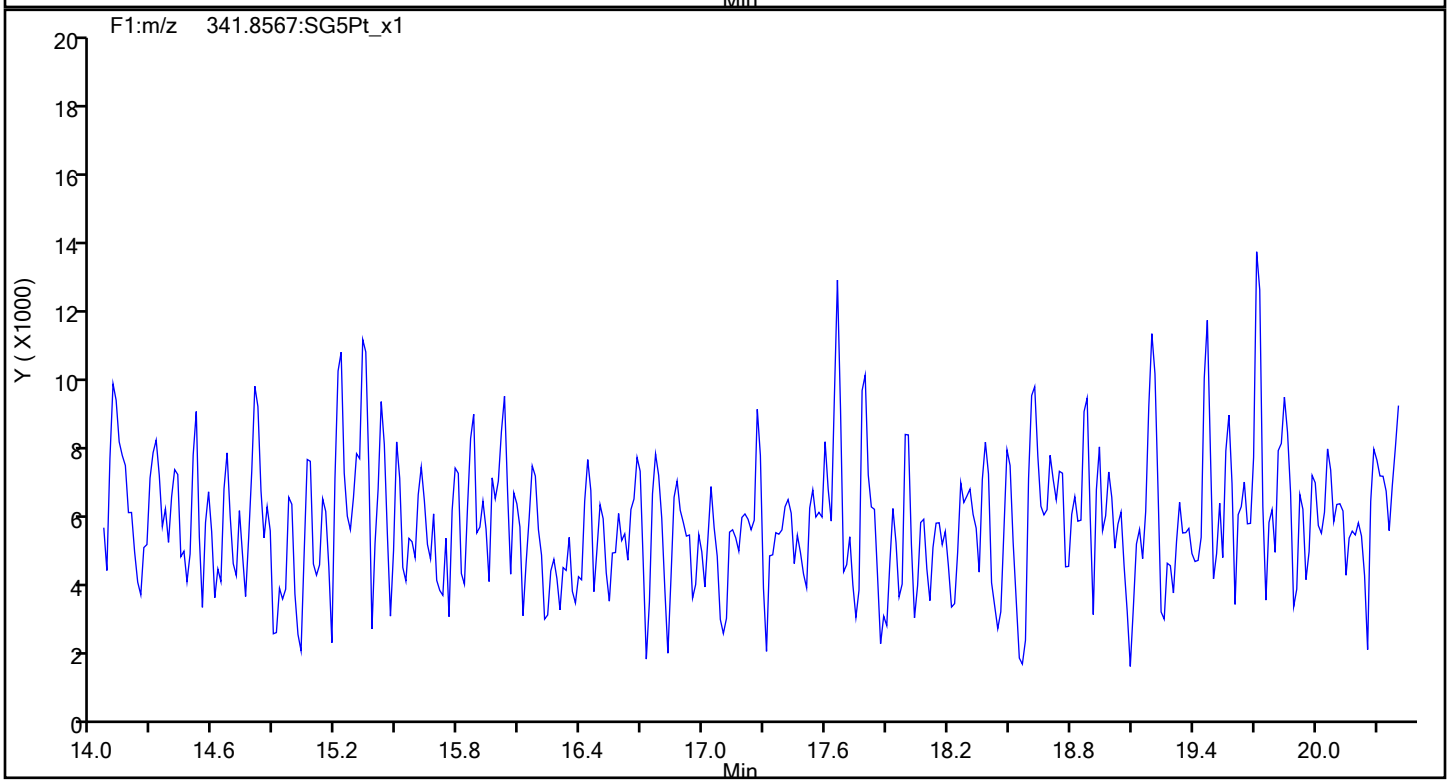
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



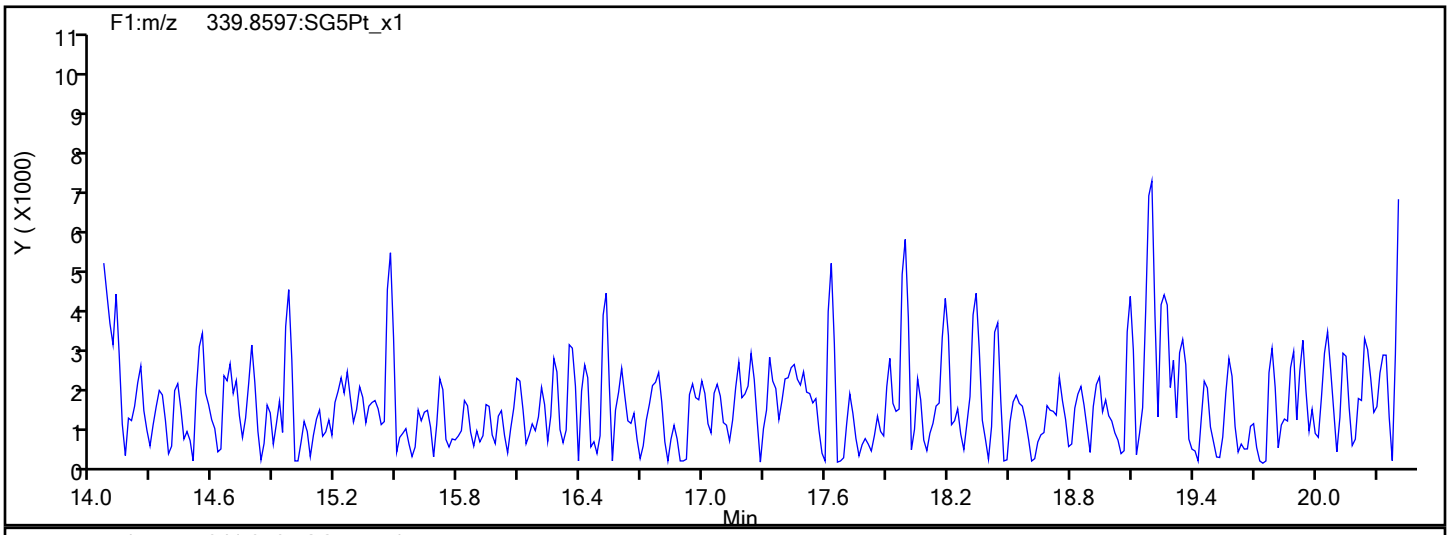


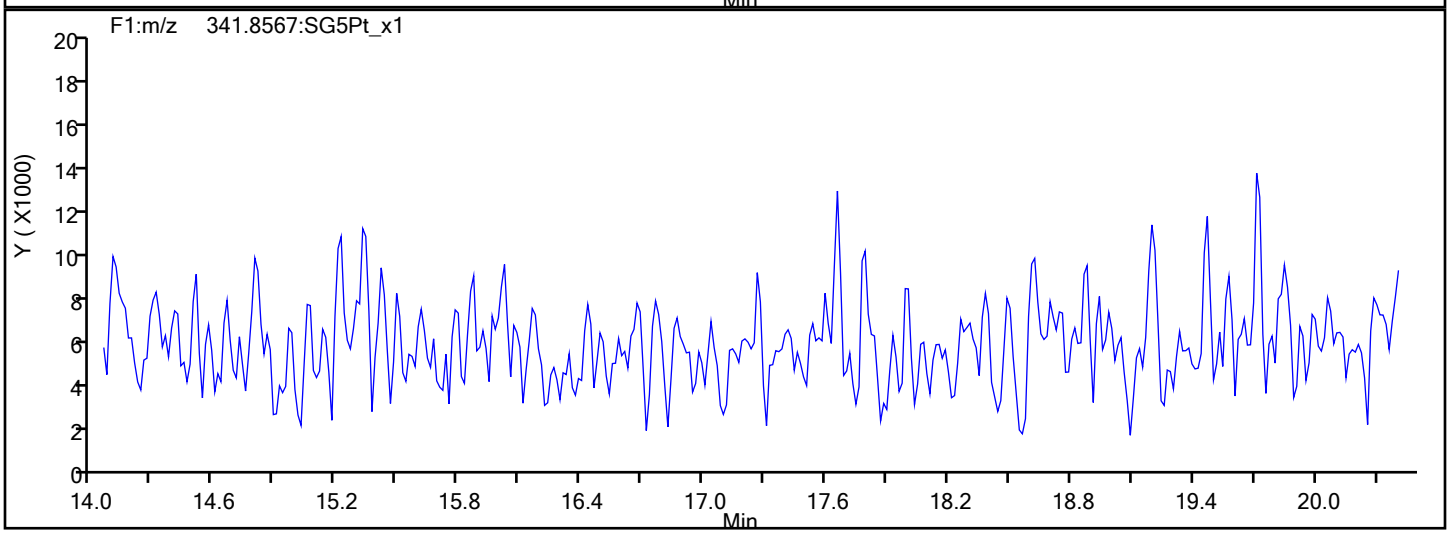
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

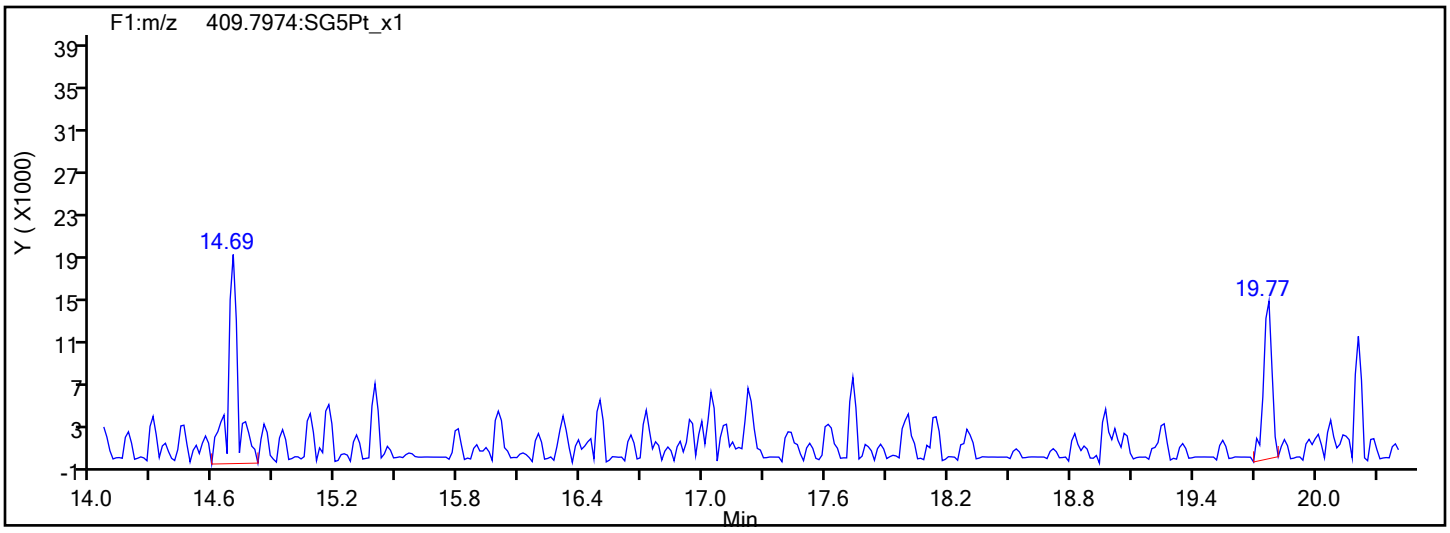
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA07(1-2)		
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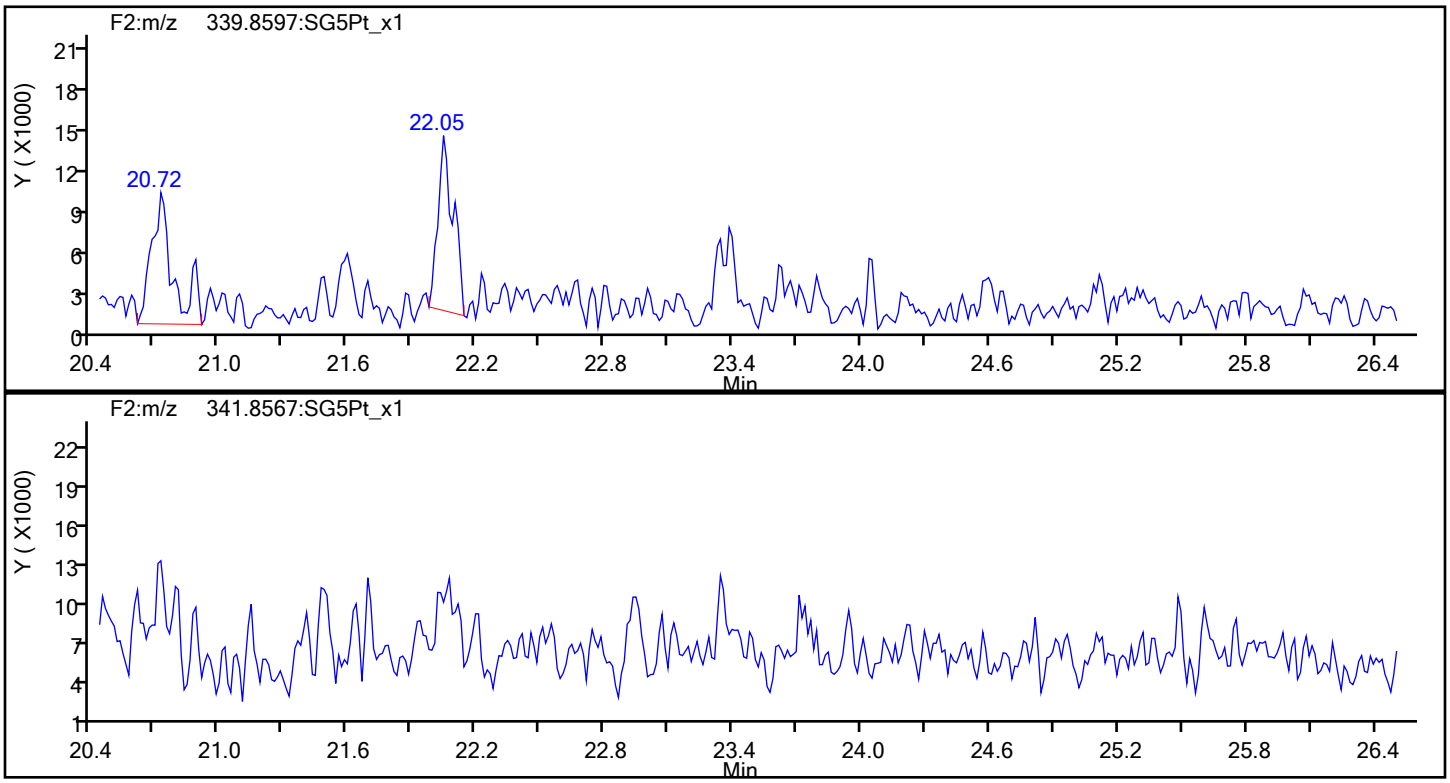
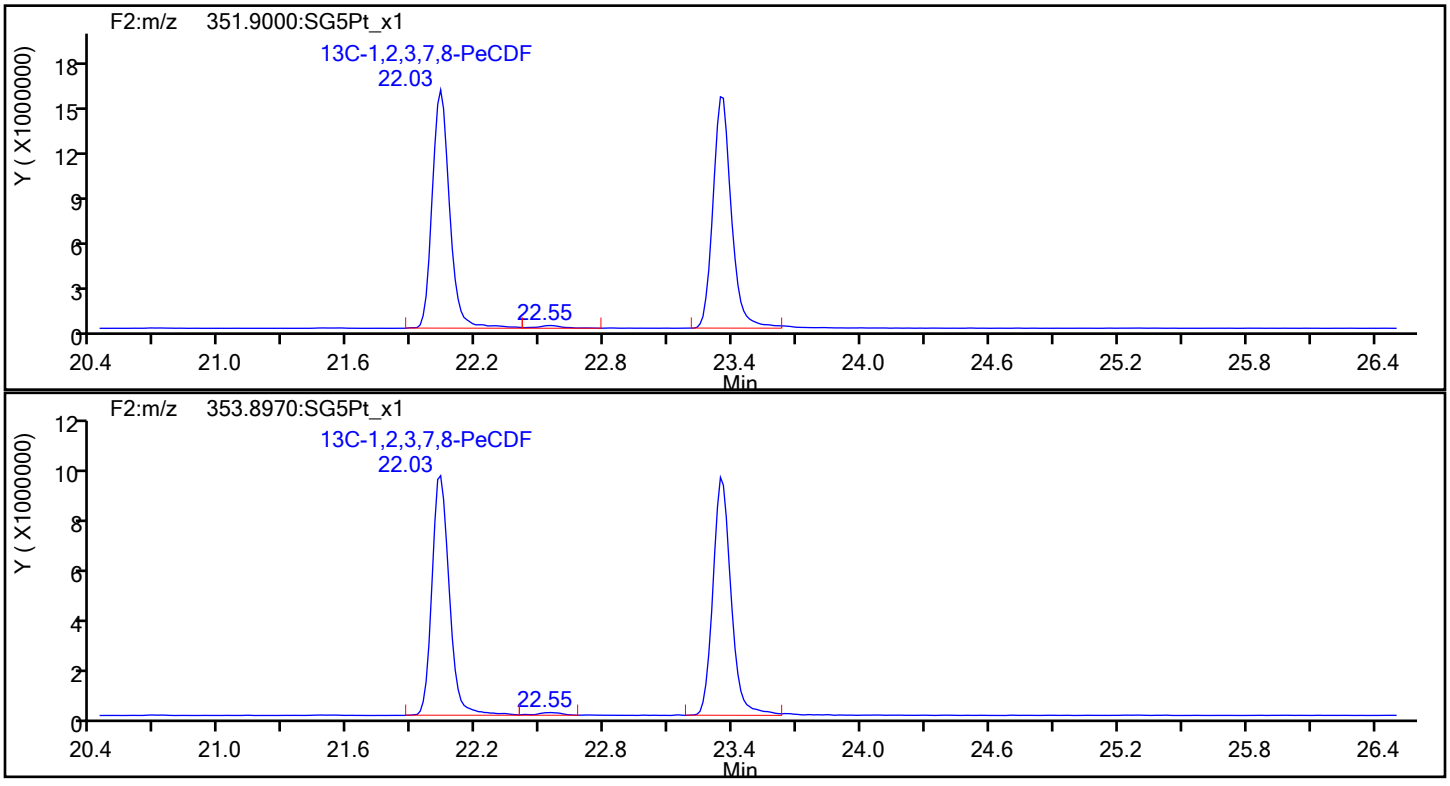


PeCDF Standards



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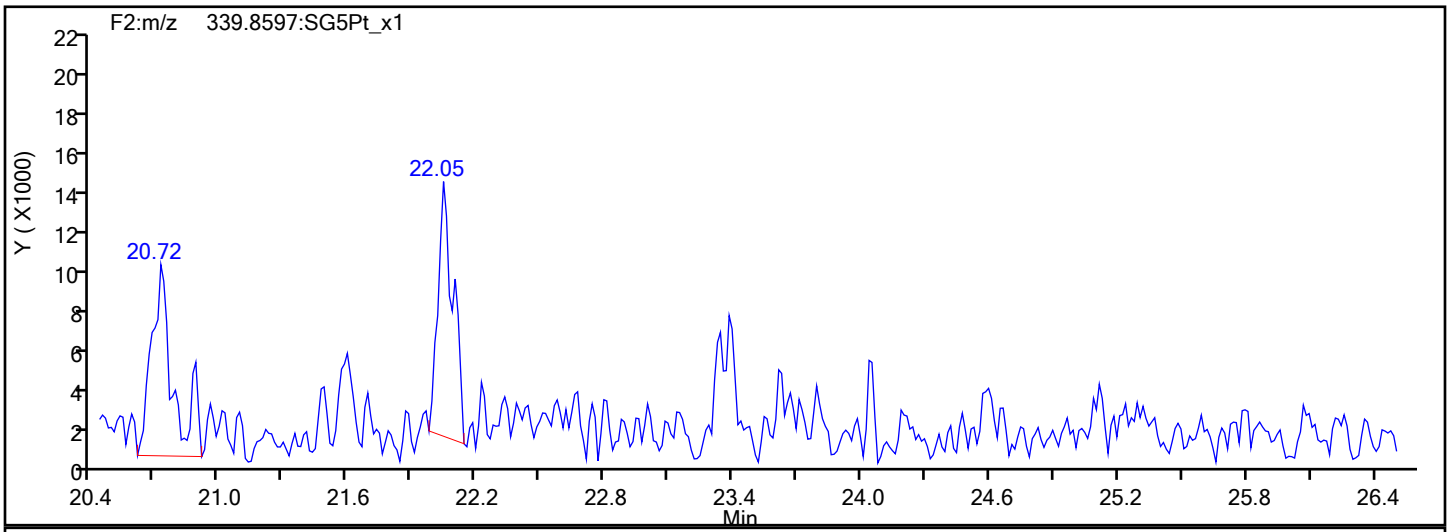
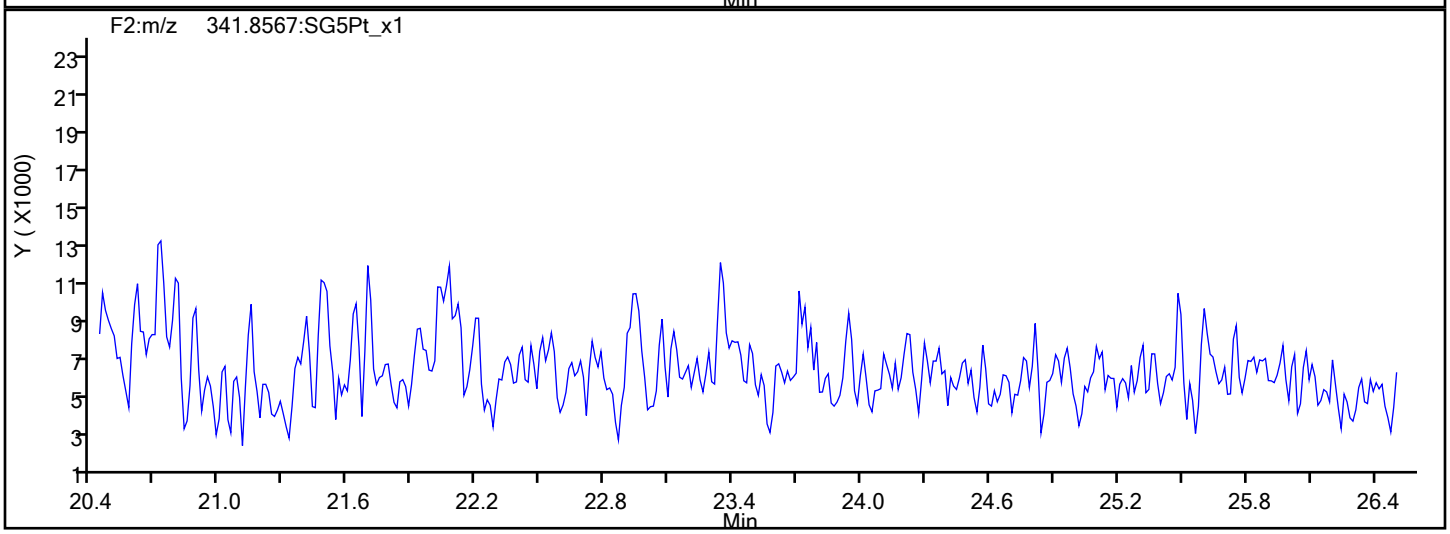
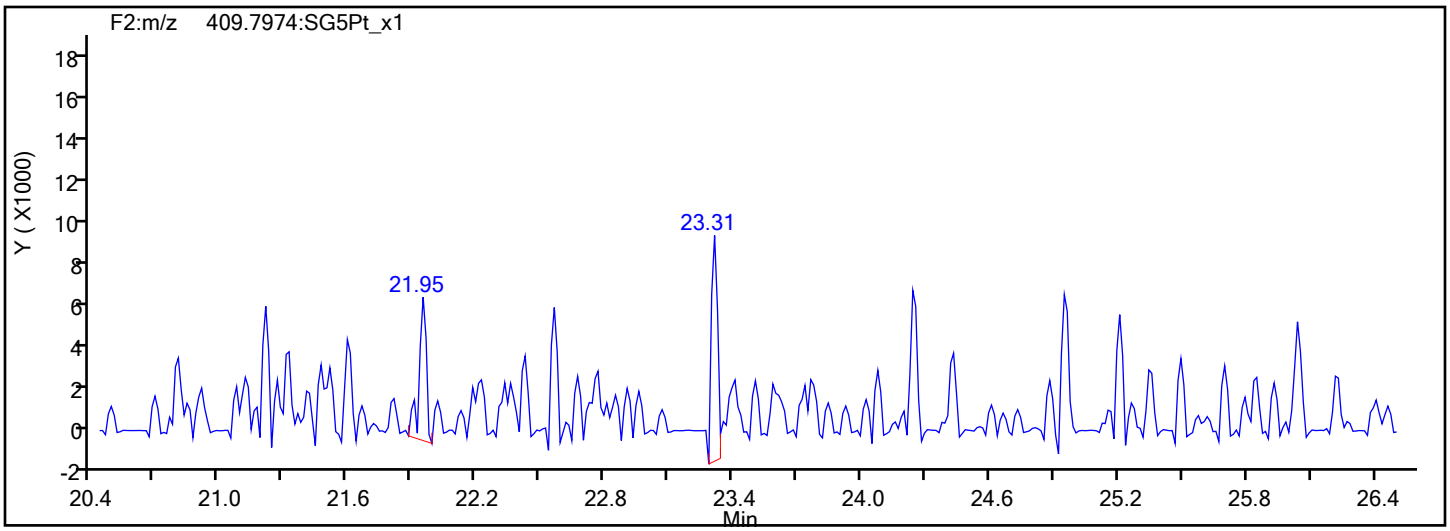




PeCDF Interference Mass



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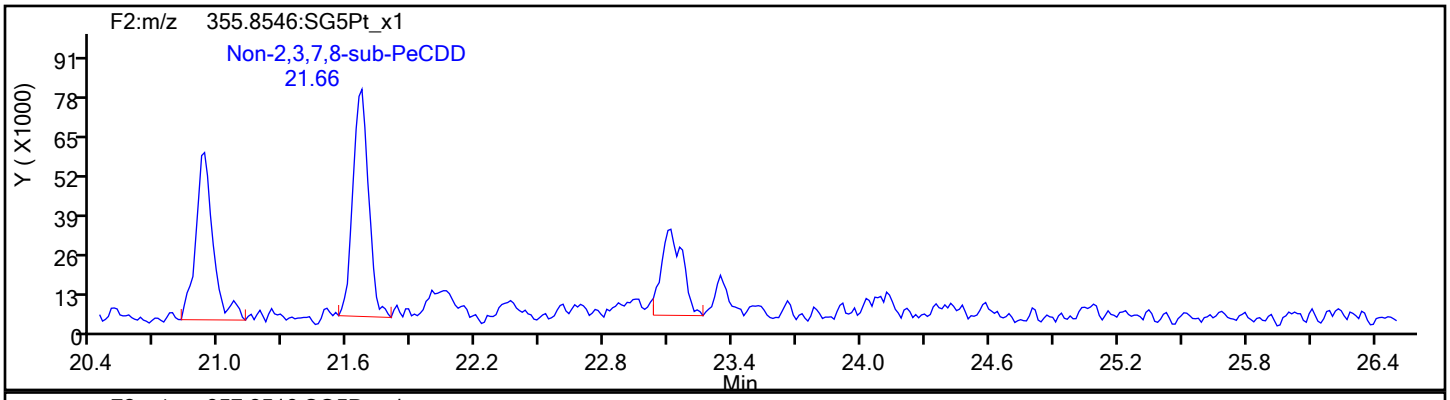

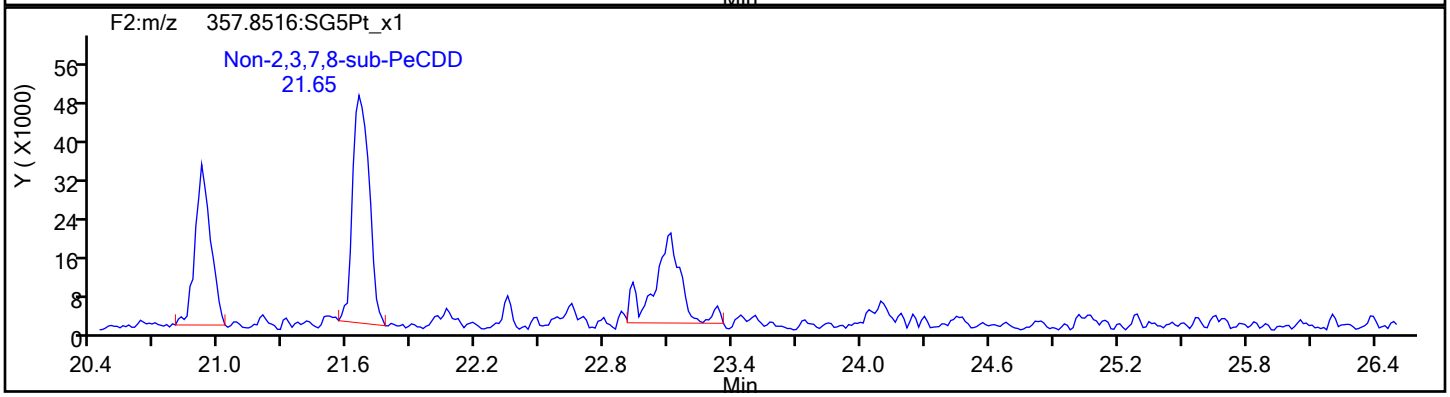

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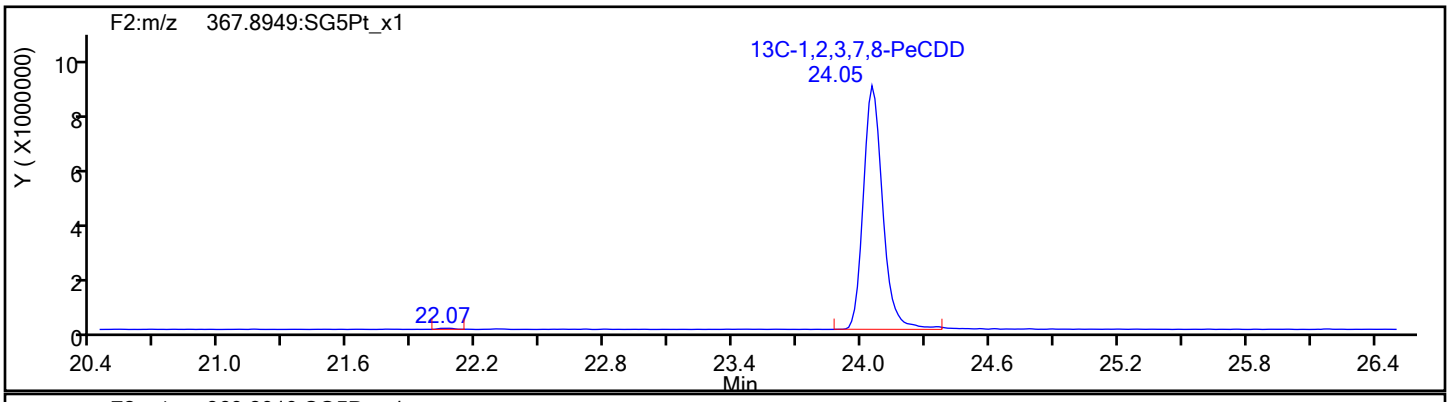

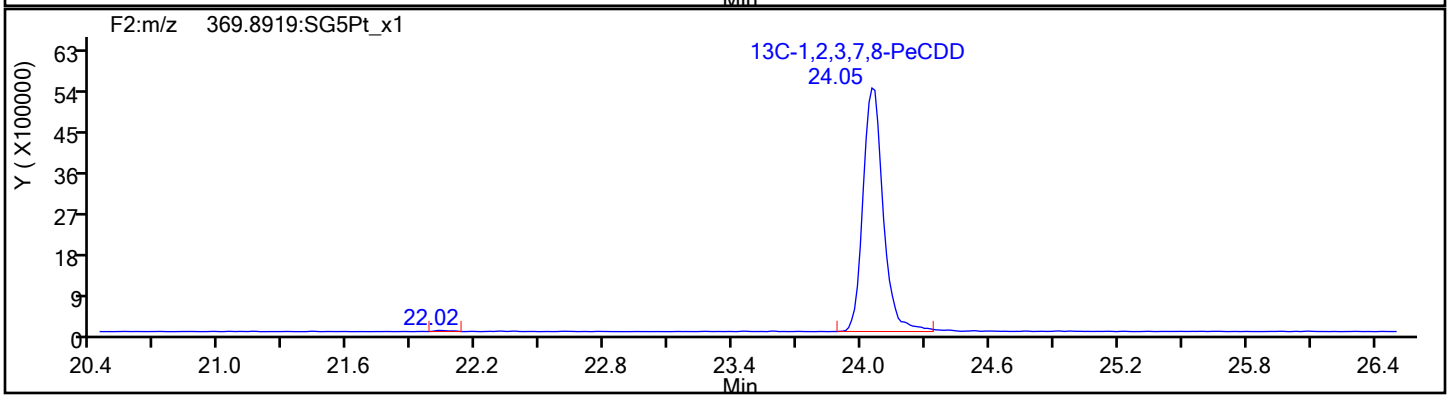

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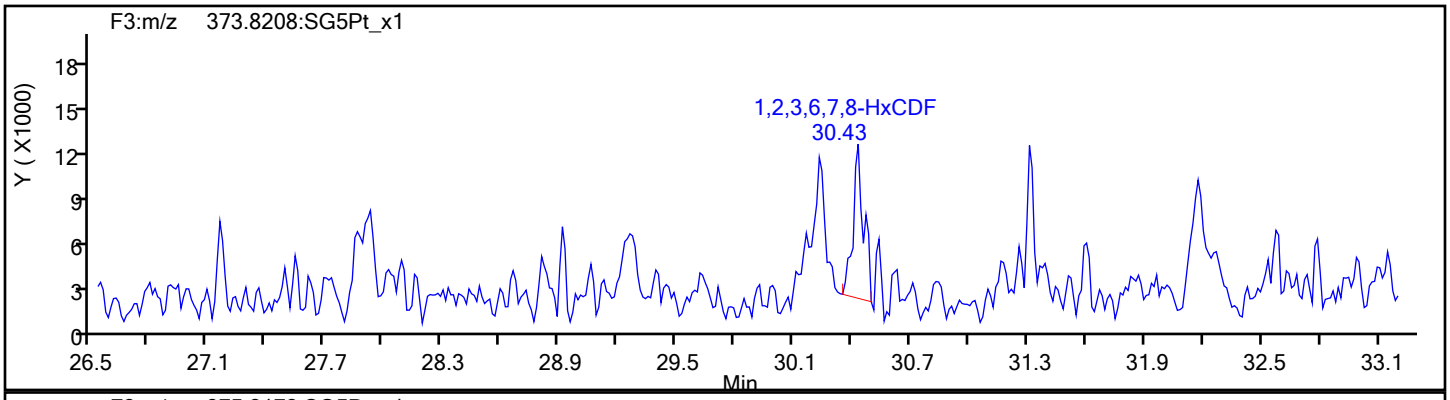
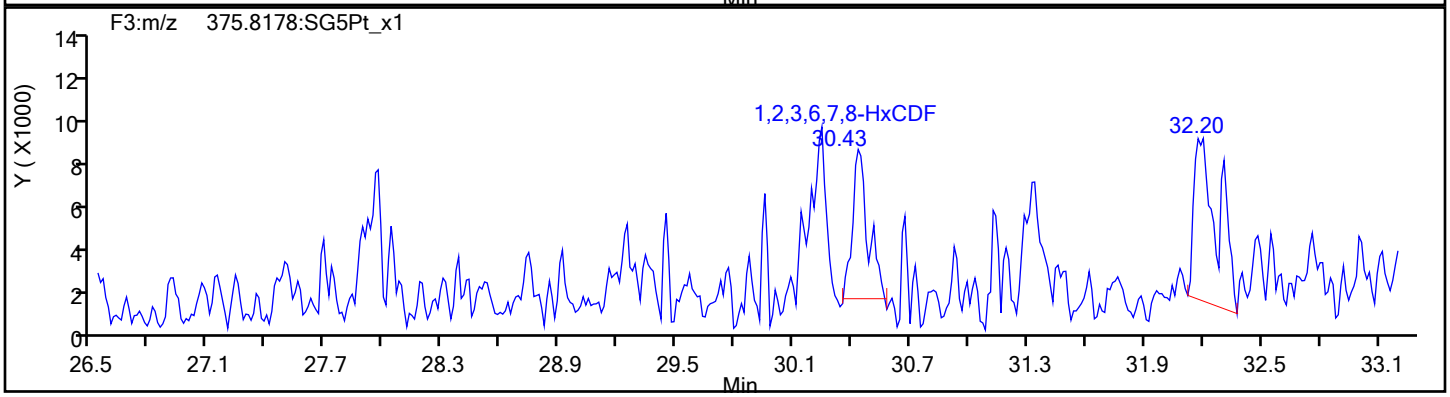
HxCDF





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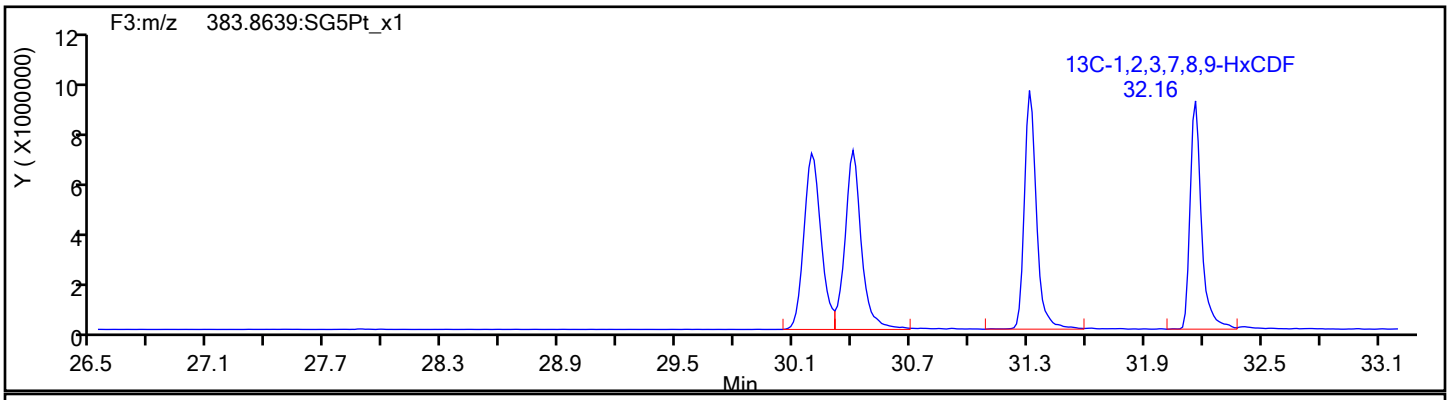

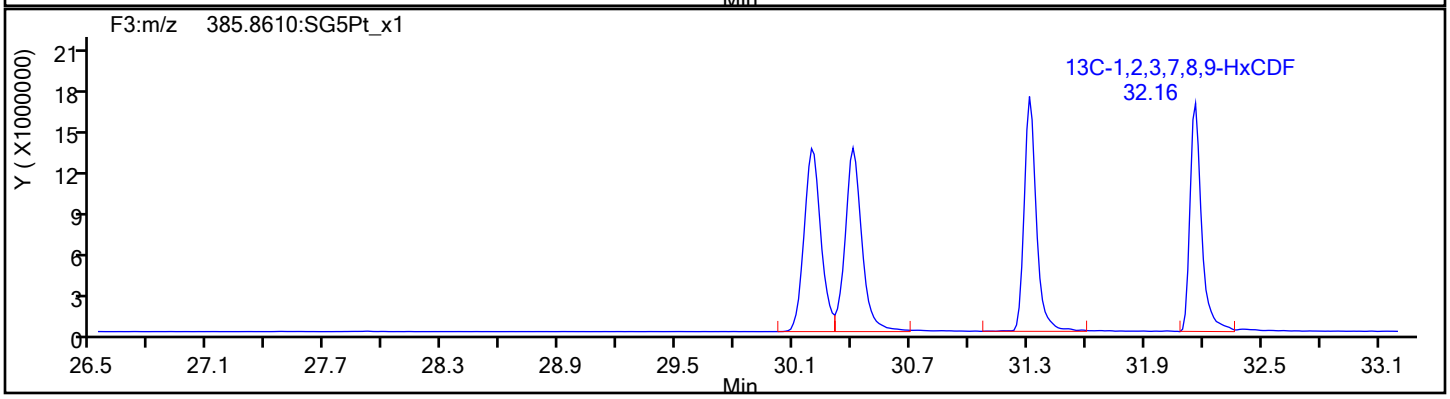

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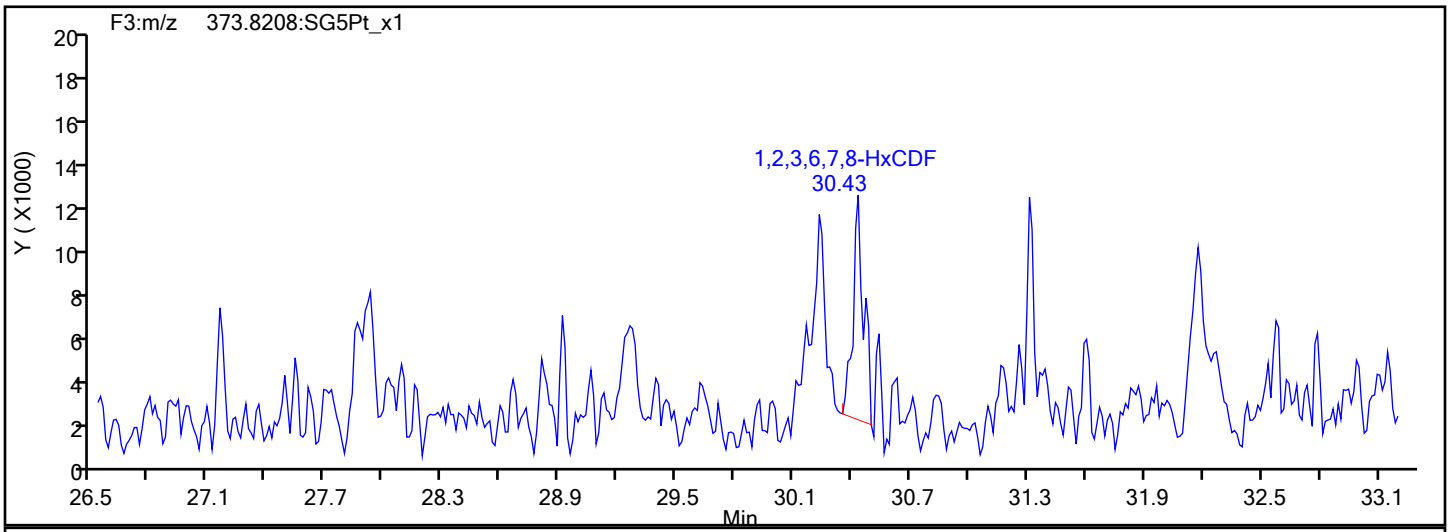
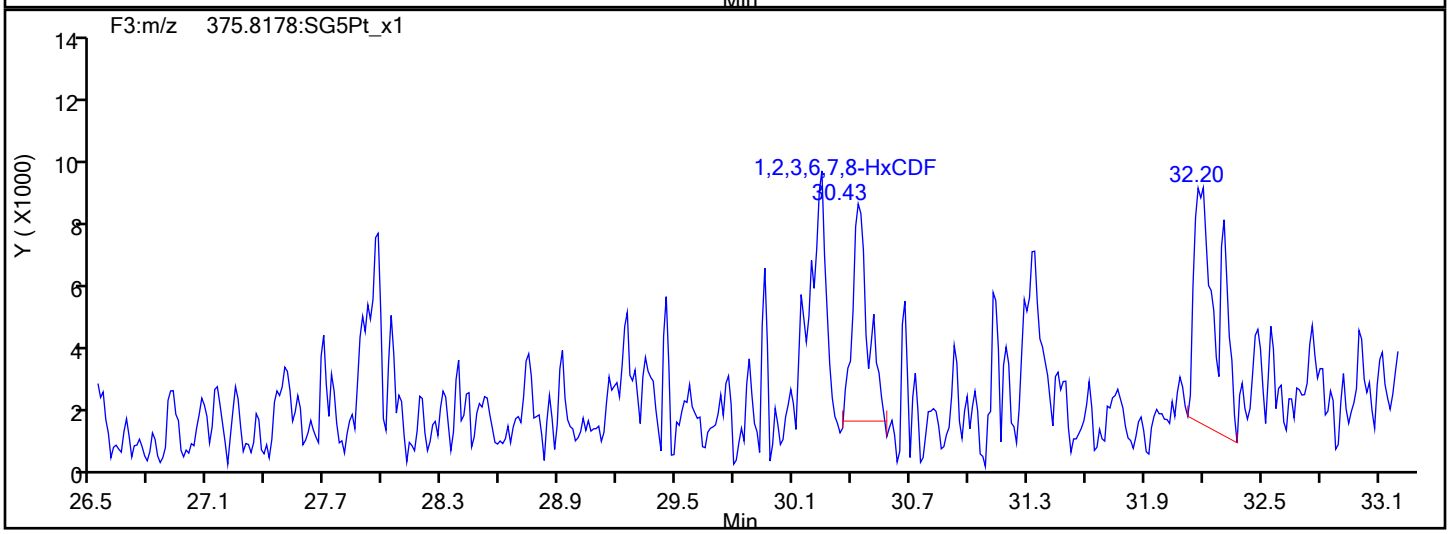
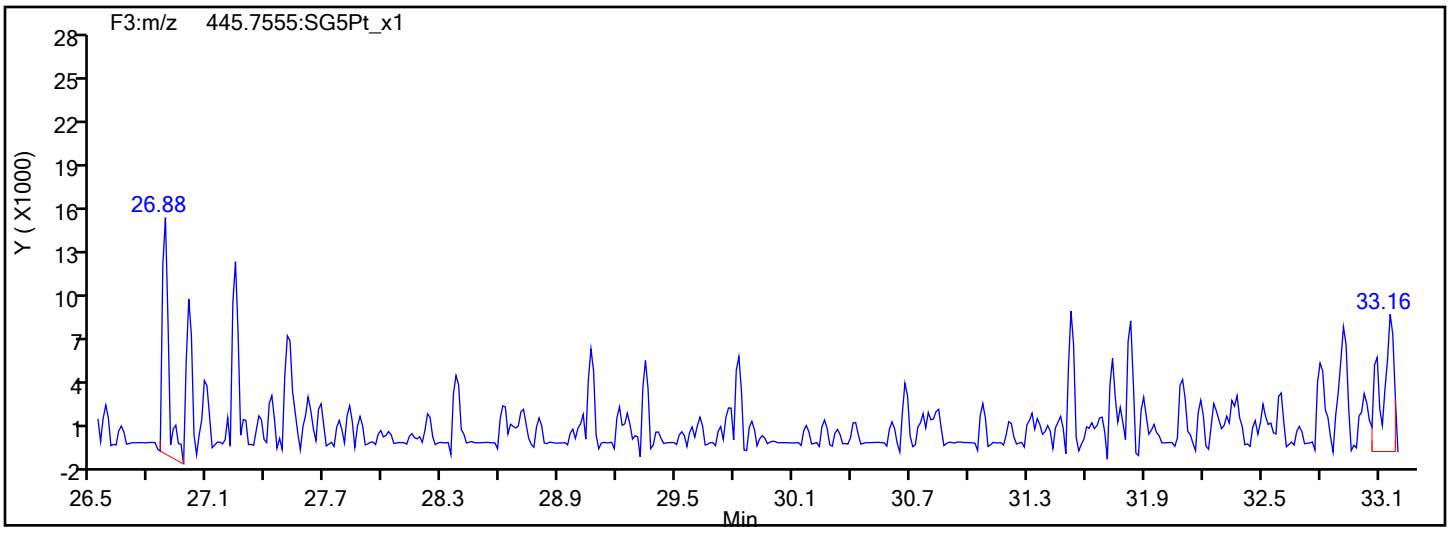




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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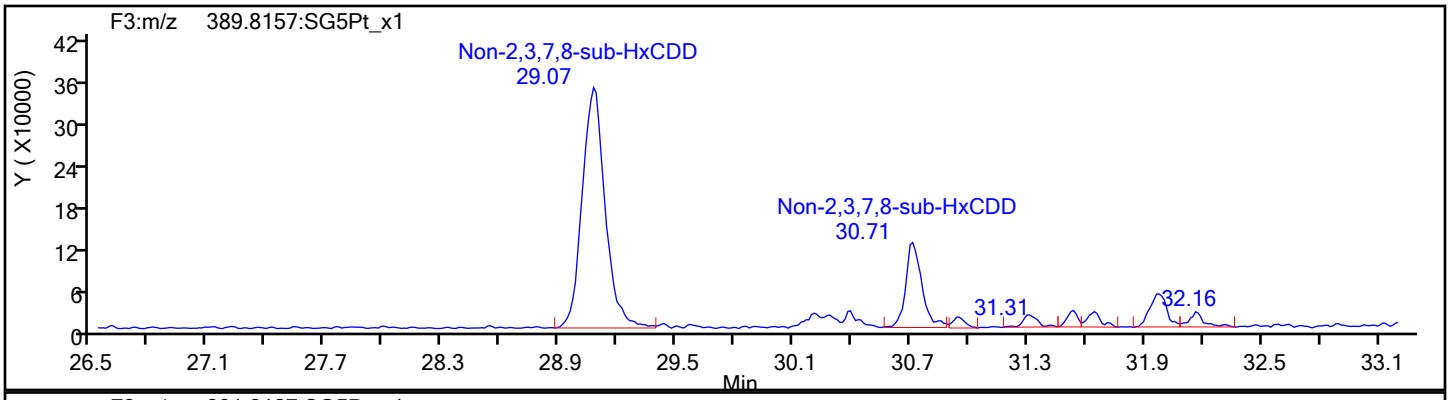
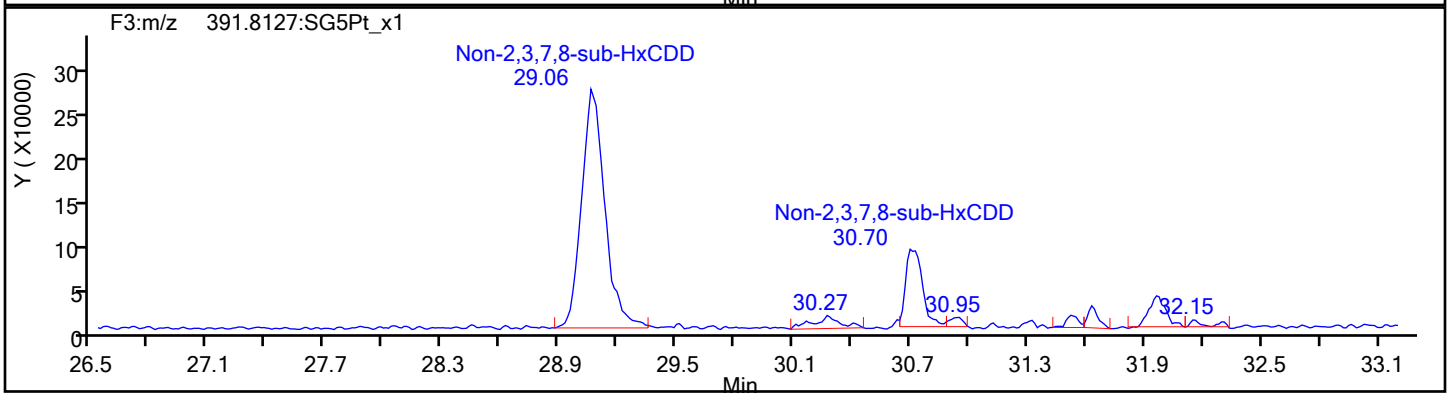
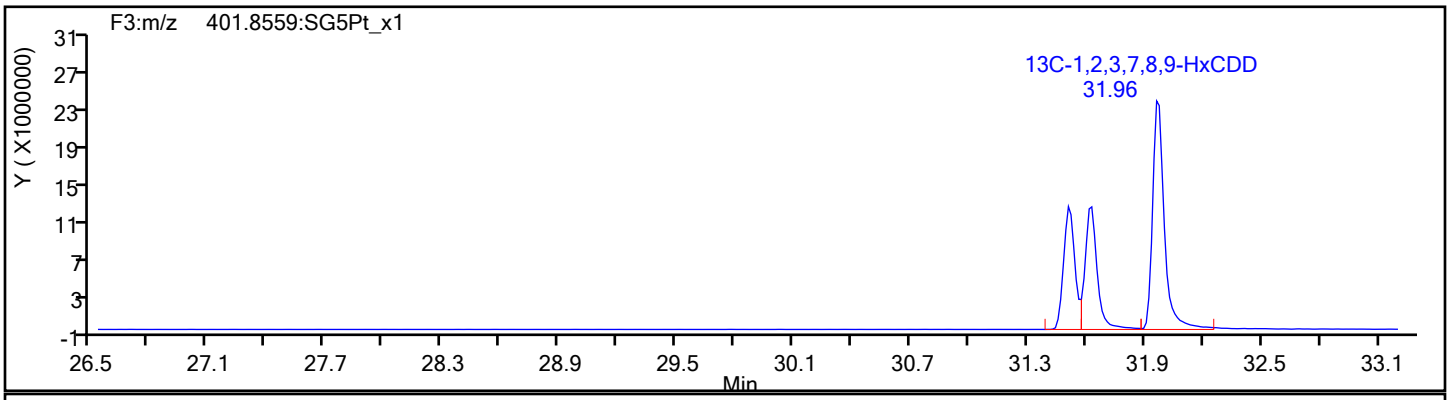
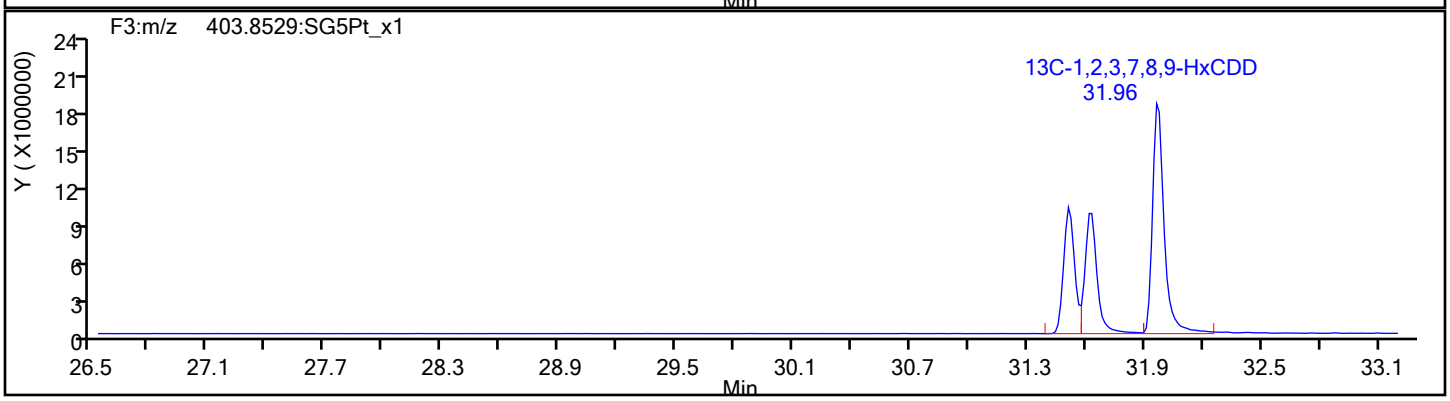




HxCDD Standards





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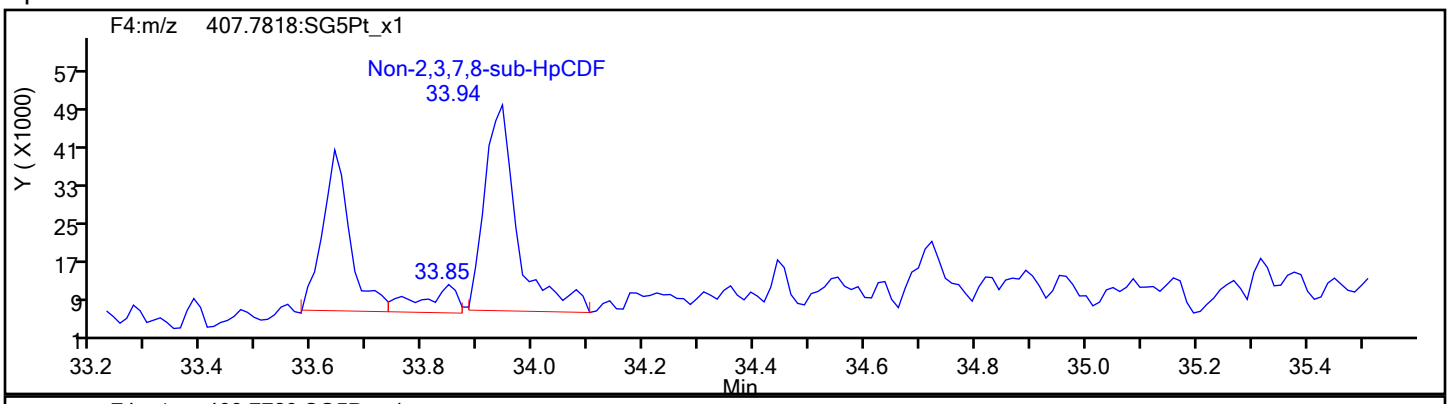

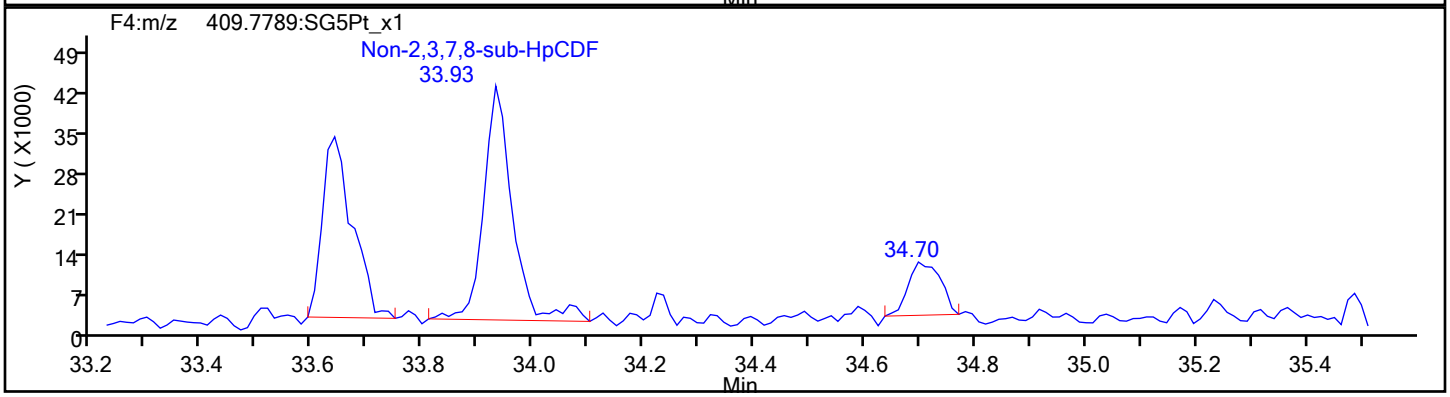

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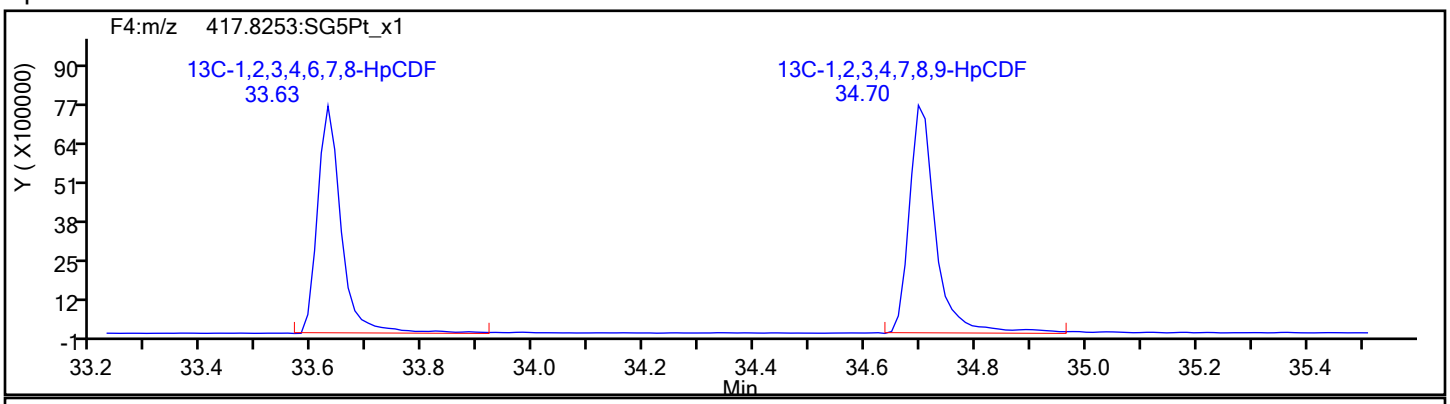

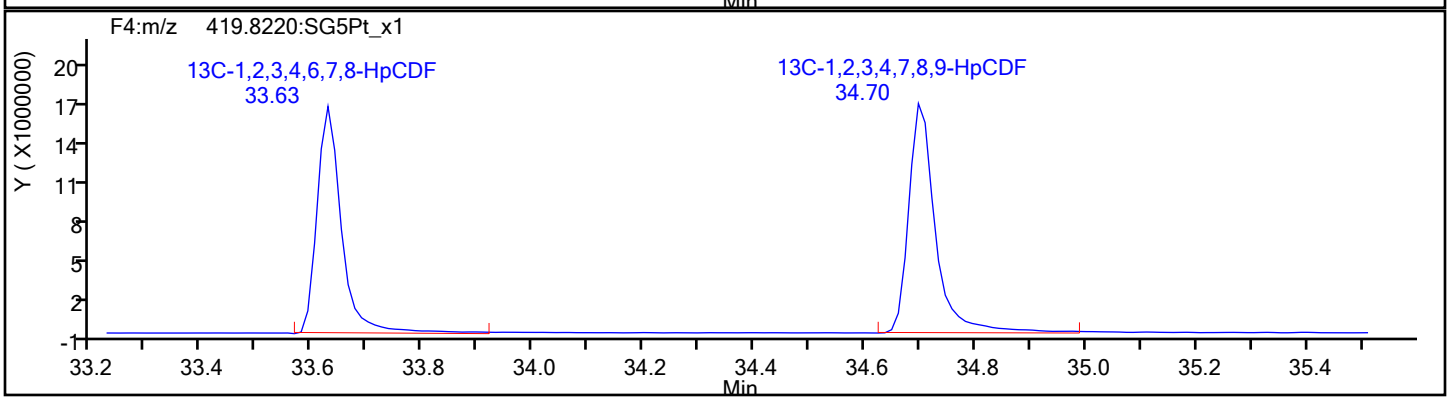

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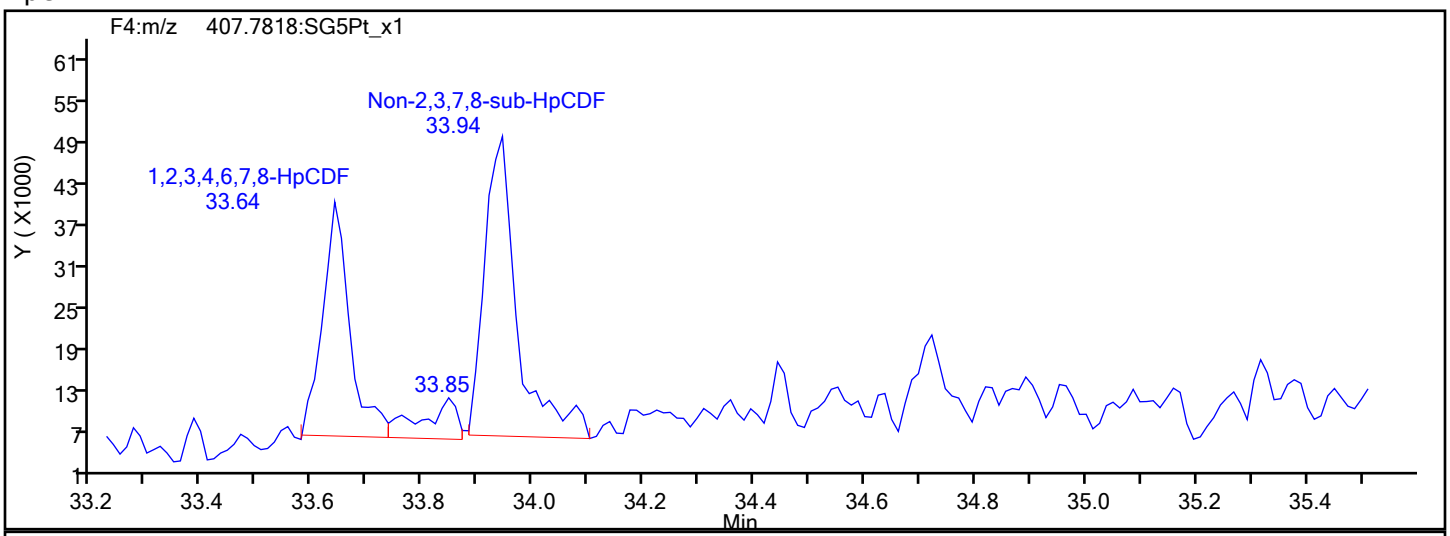
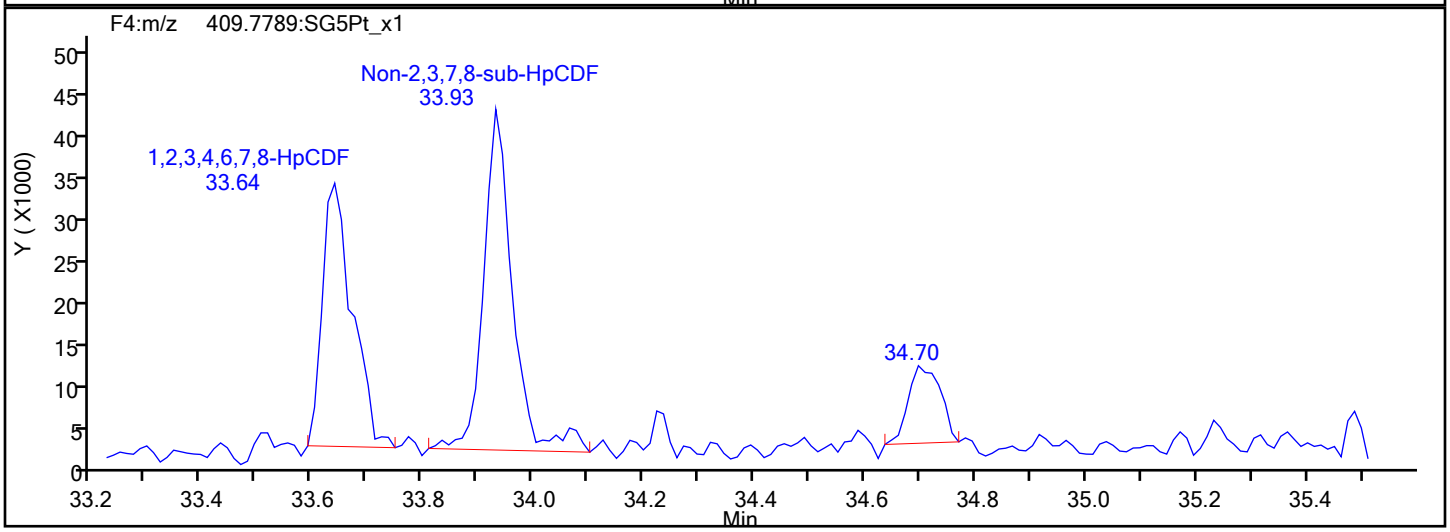
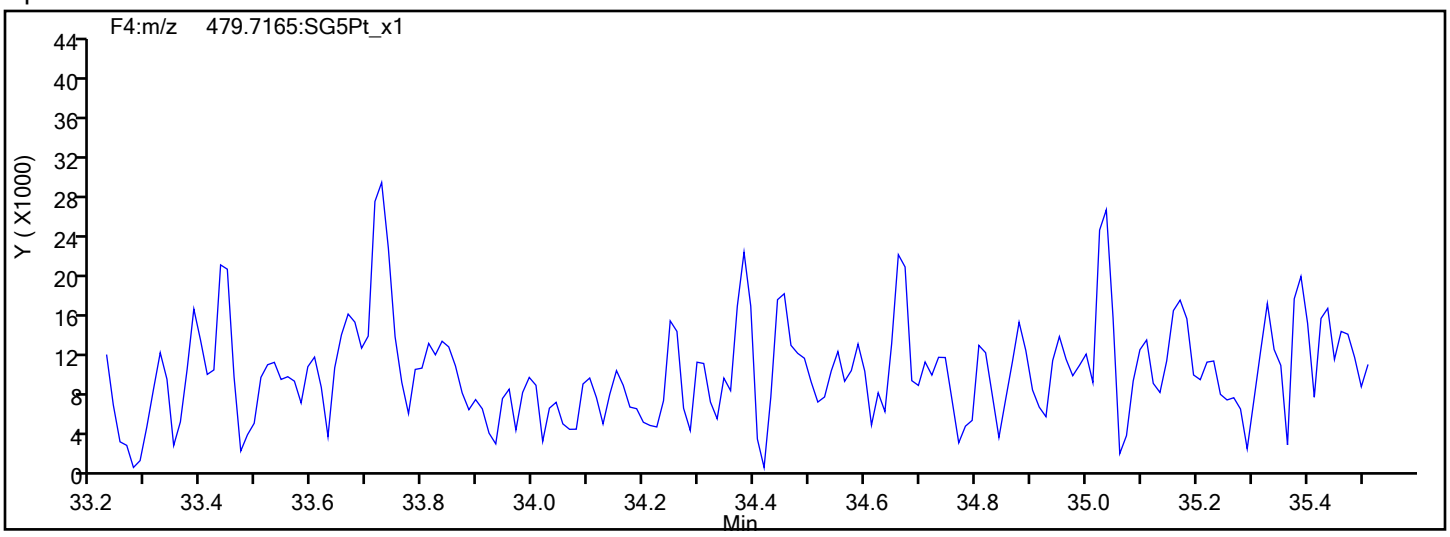




HpCDF Interference Mass



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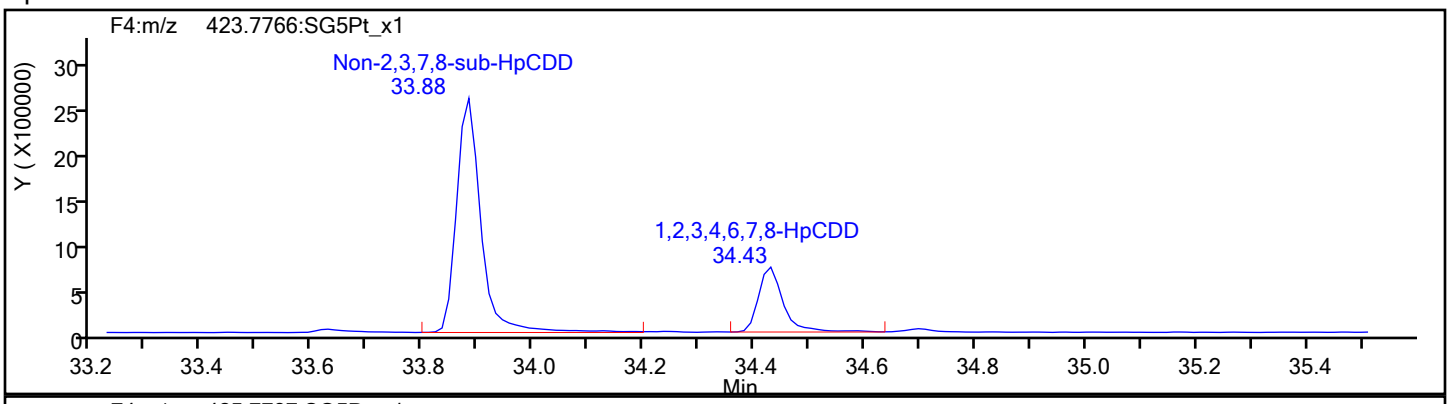
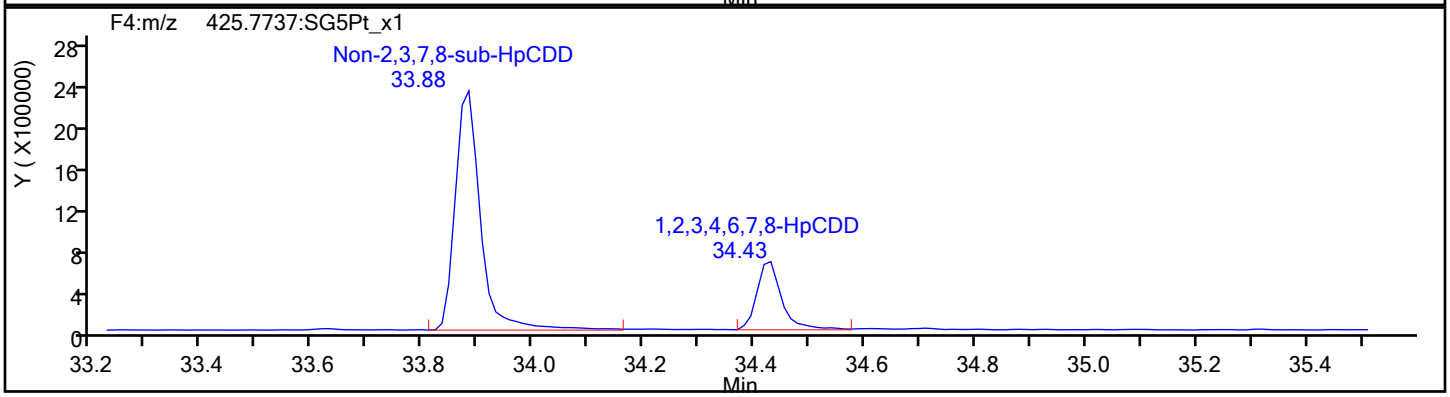
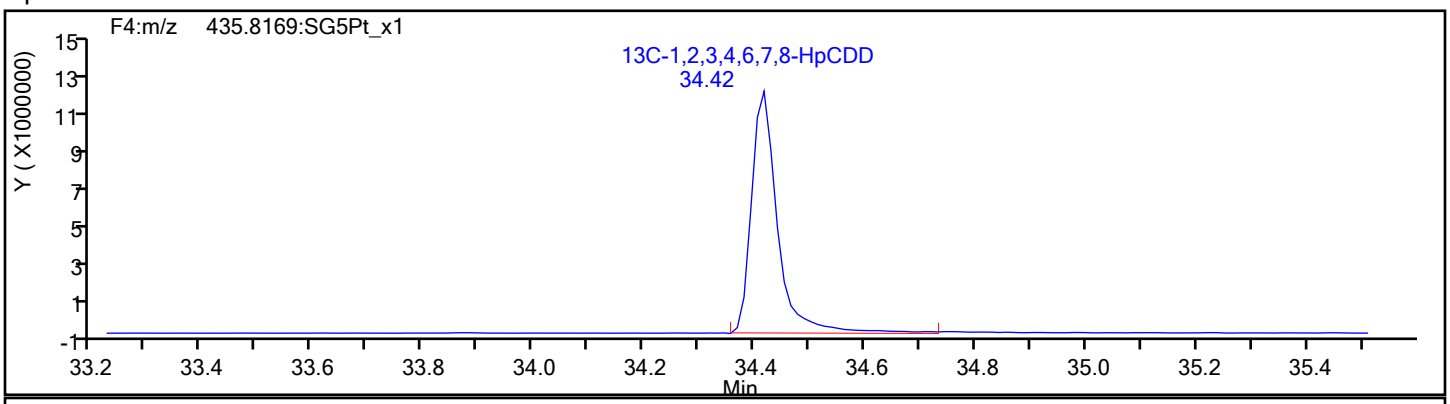
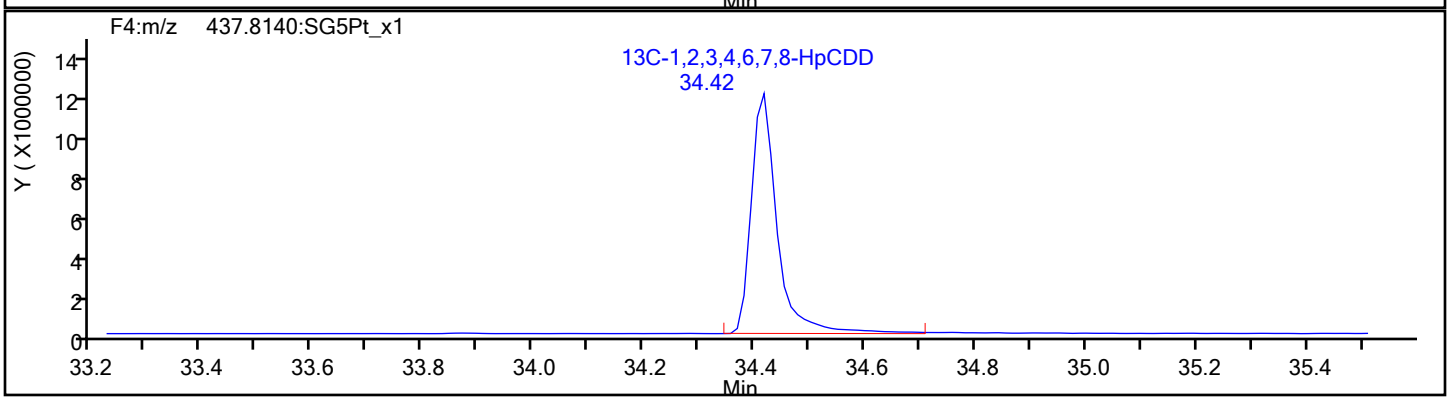
HpCDD





HpCDD Standards





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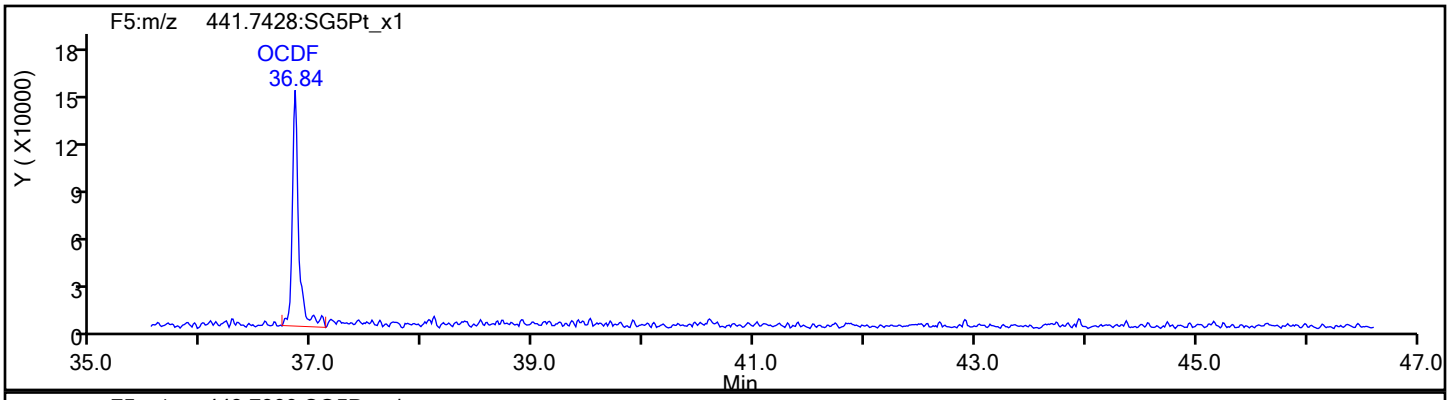

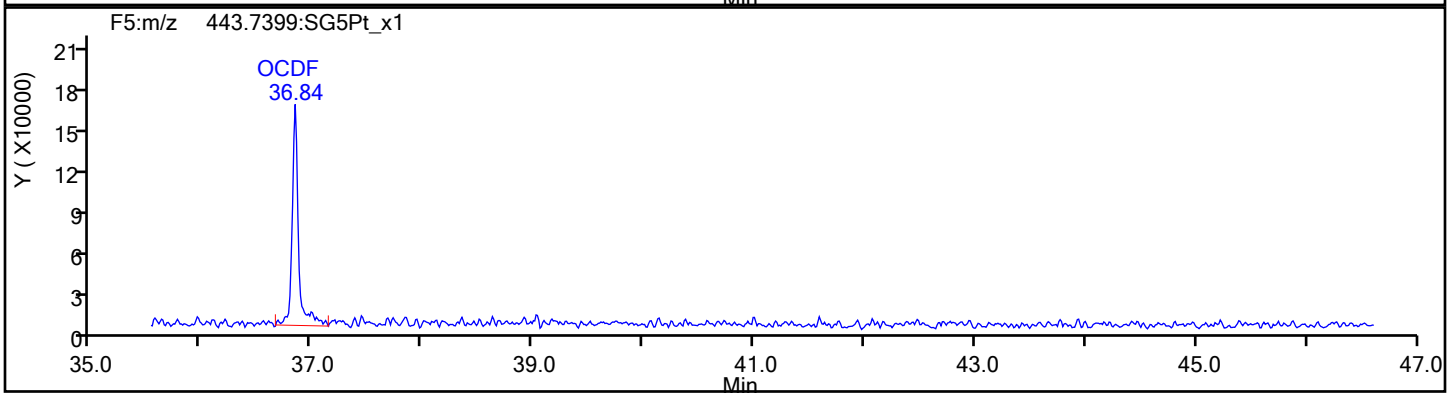

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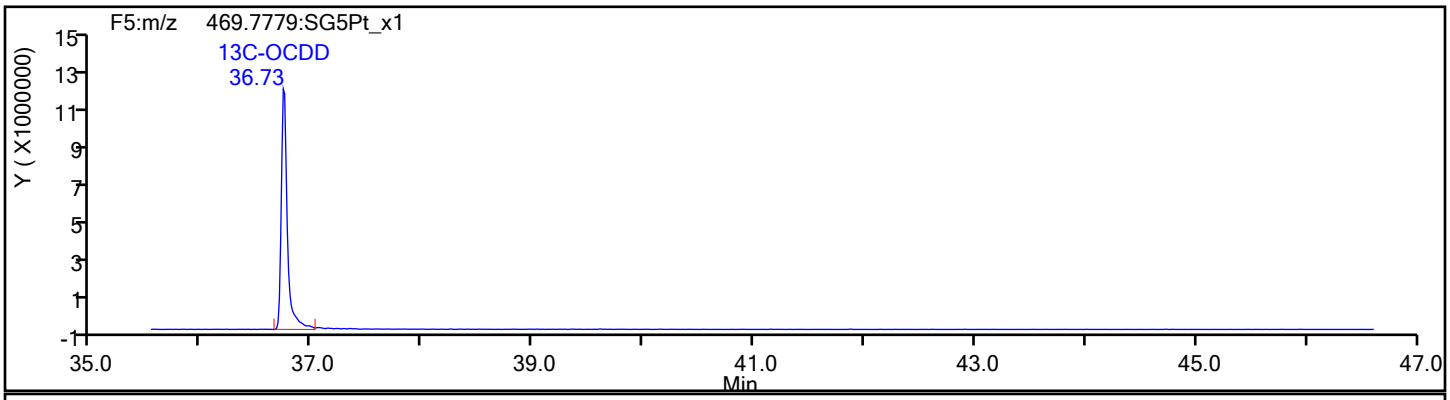

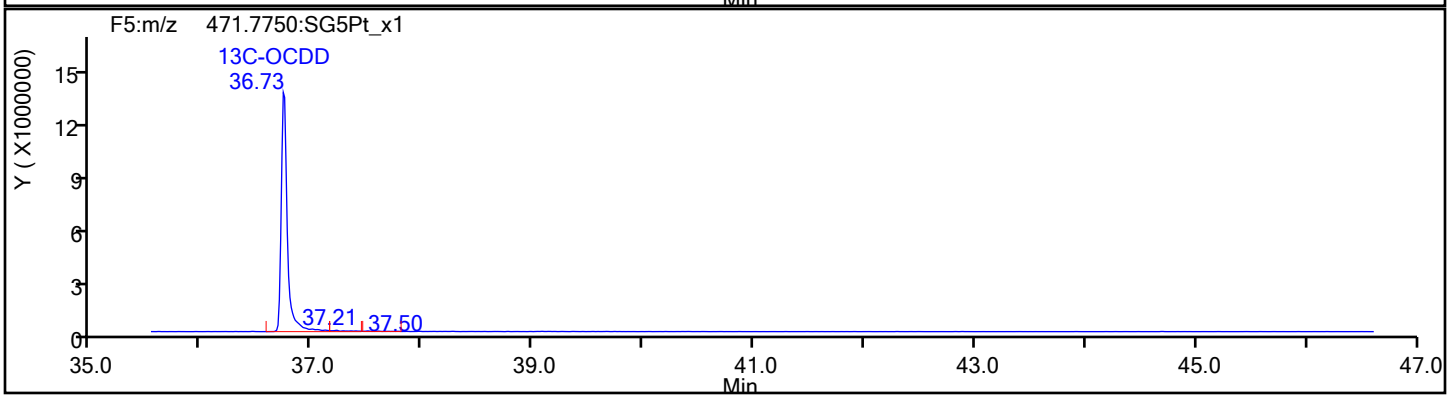

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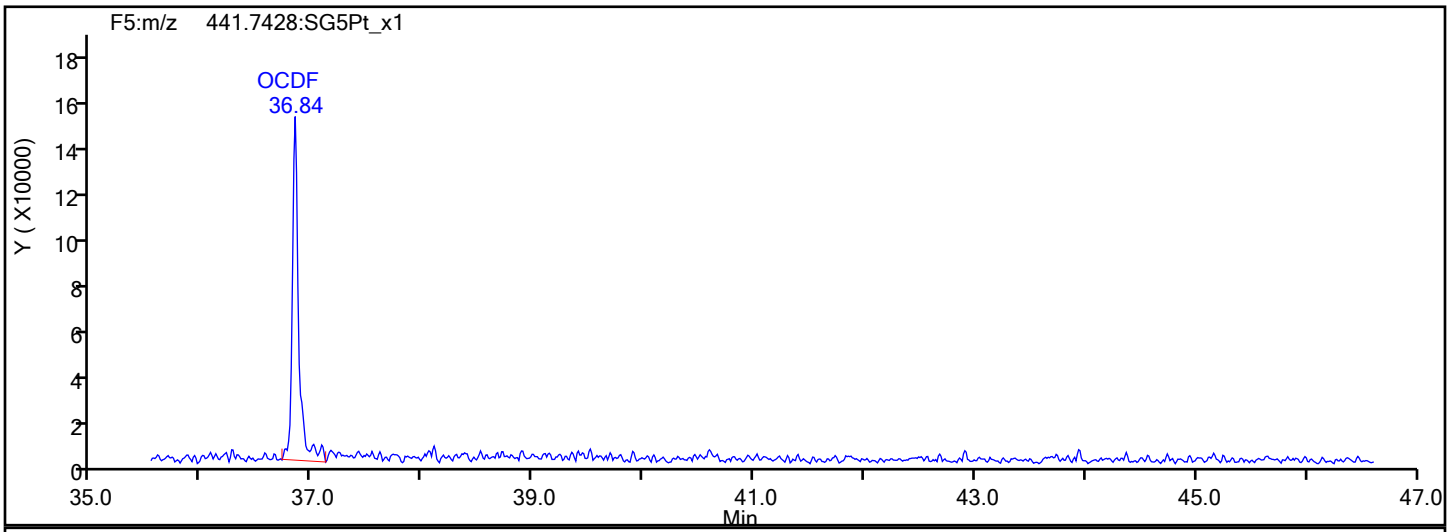
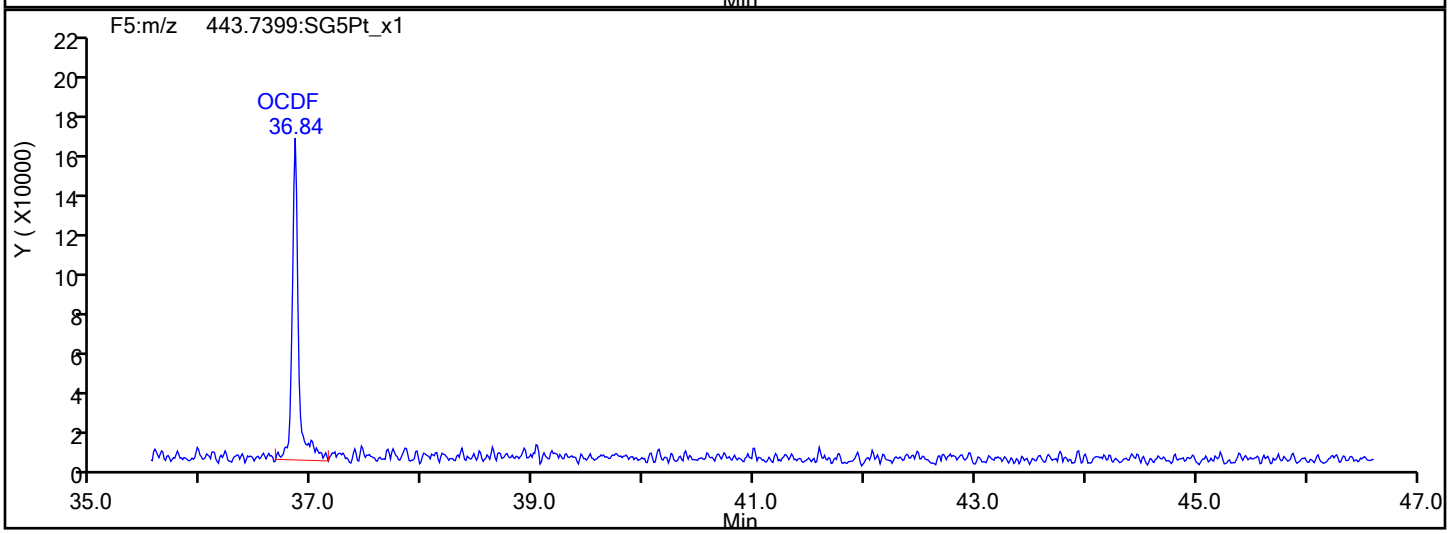
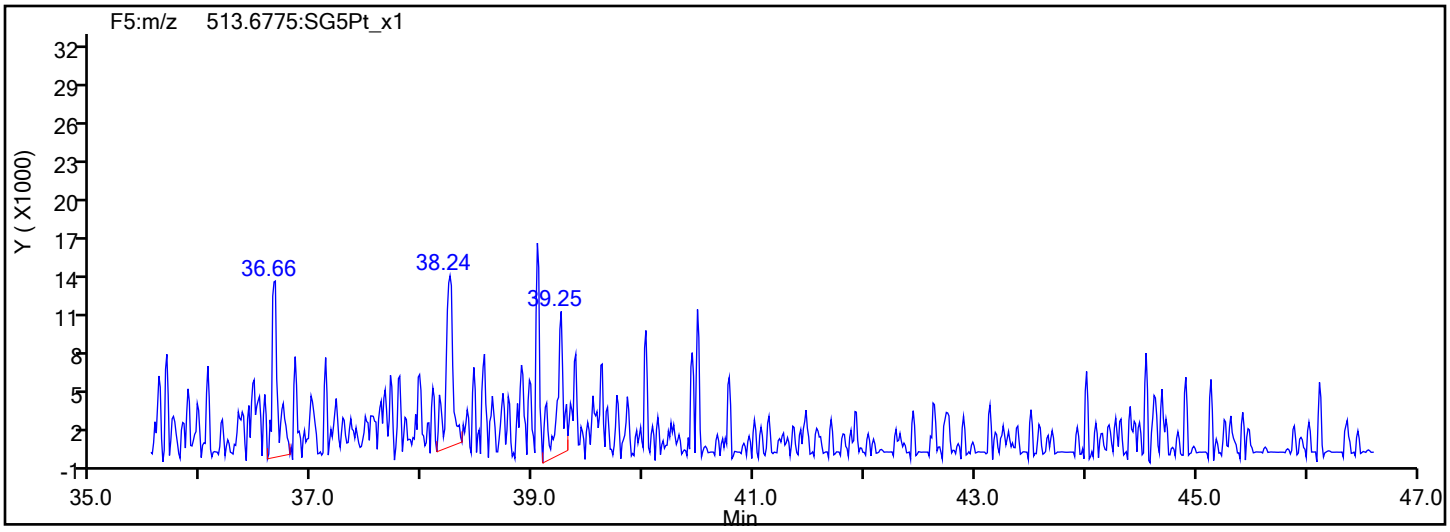




OCDF Interference Mass

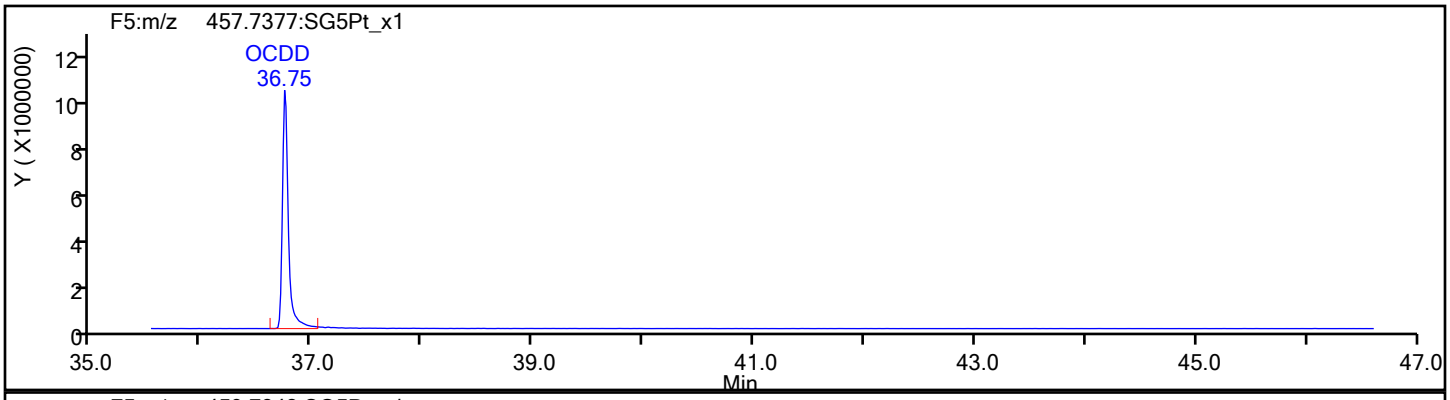


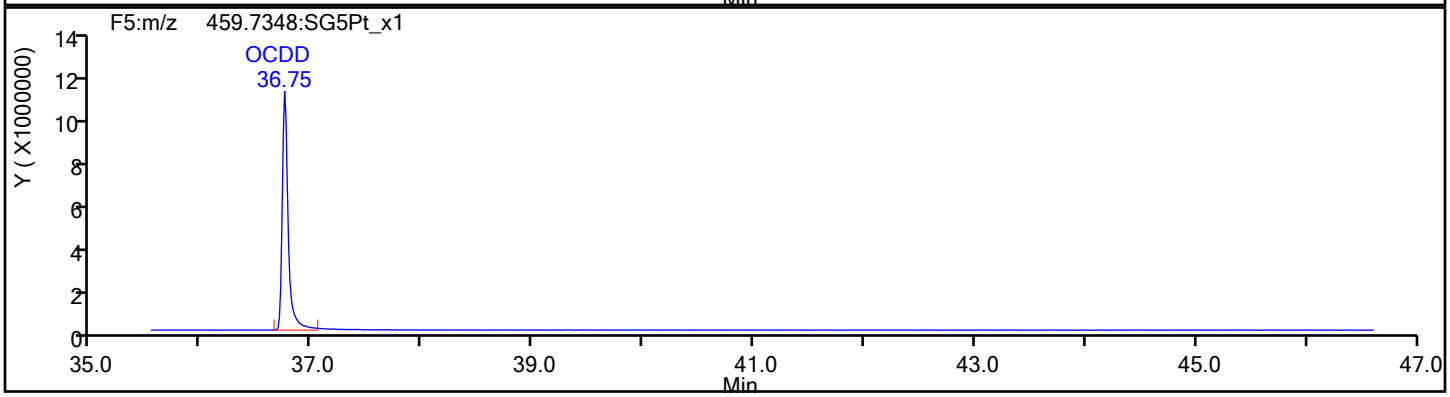
Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

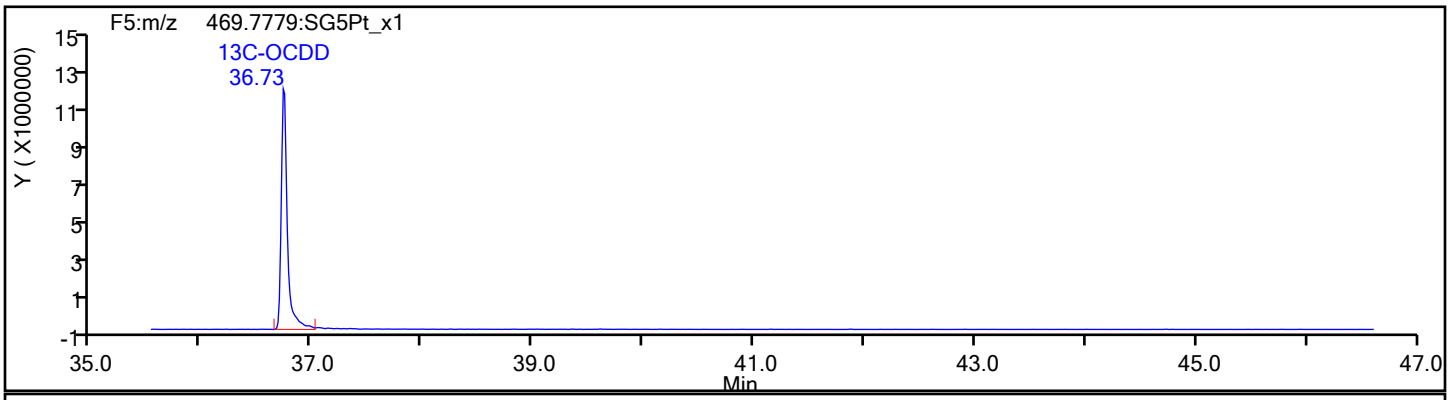
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm

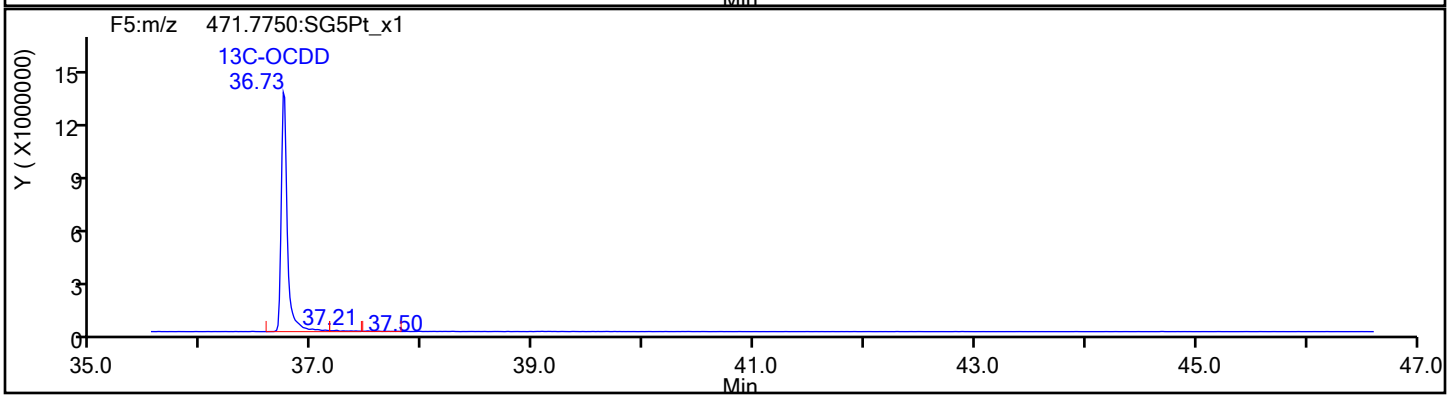
OCDD





OCDD Standards

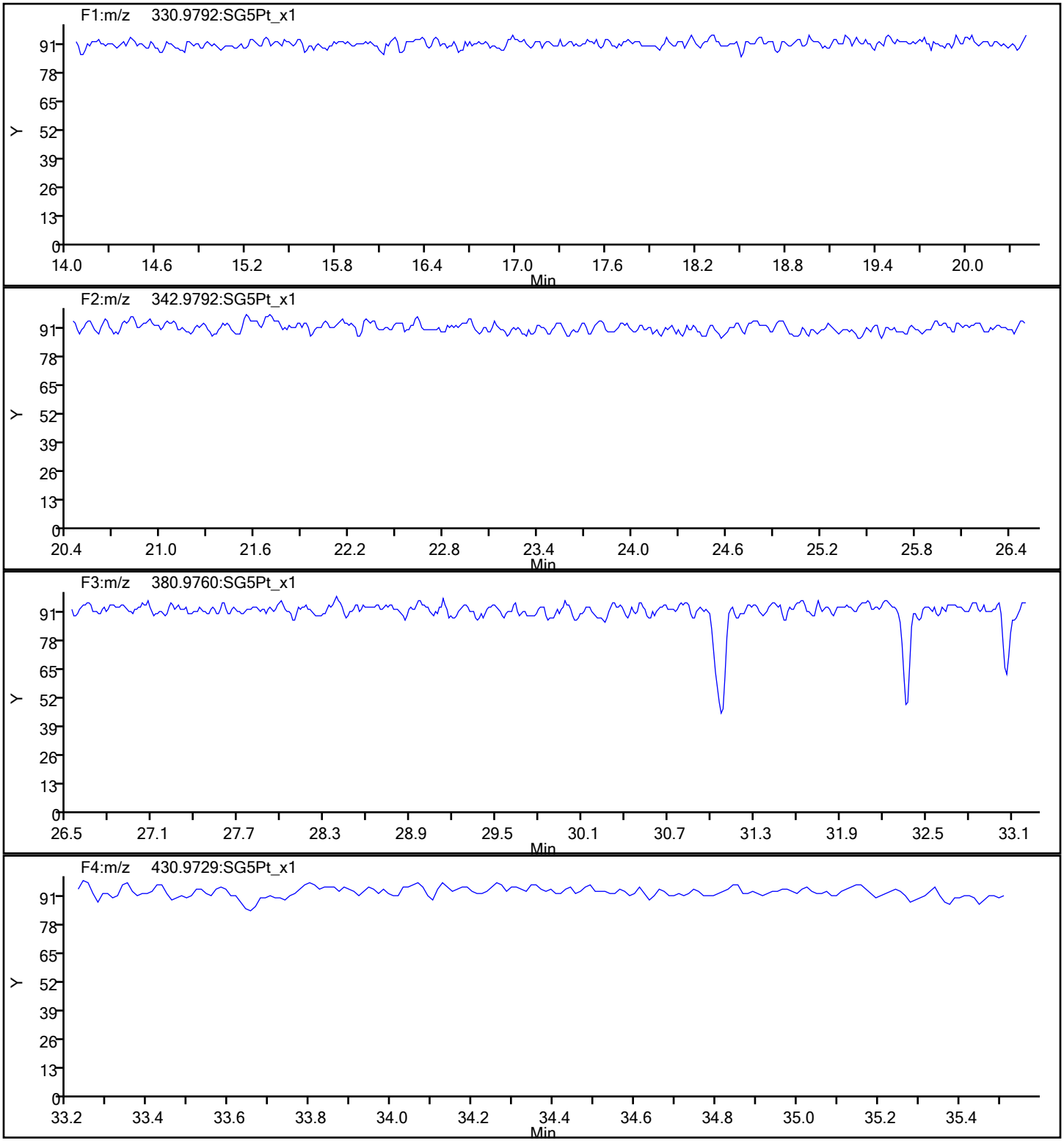




Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

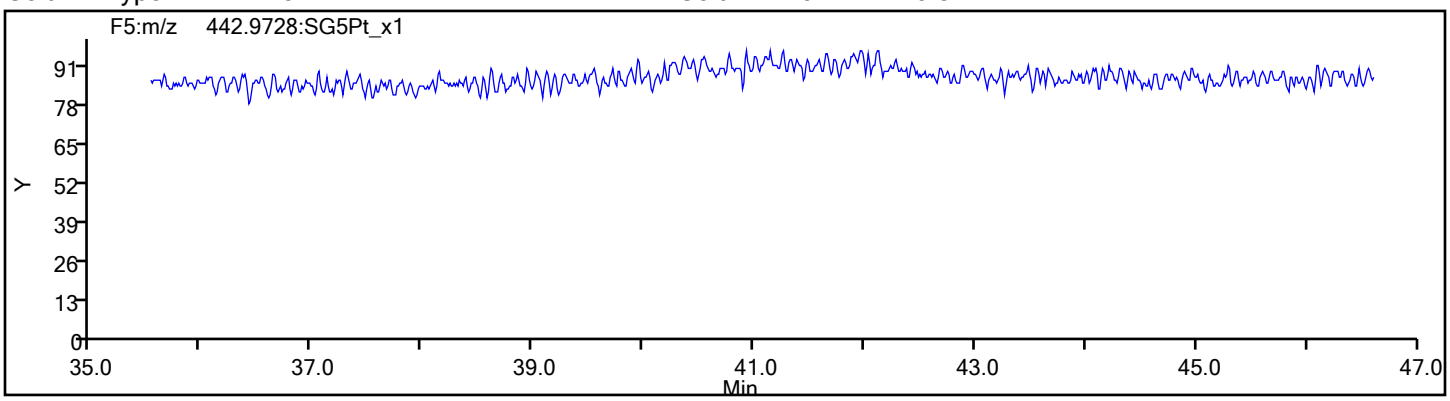
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 22-Dec-2019 12:46:03 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_8.d		
Injection Date:	19-Dec-2019 16:33:59	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346752	Sample Line#:	8
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(1-2) RA Lab Sample ID: 320-56953-2 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_008.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:35

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.25(g) Date Analyzed: 12/19/2019 20:41

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 35.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	2.7		1.5	0.14

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	69		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	110		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 20:41:20 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-2-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:09

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.379	175509564	0.76	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.573	162754752	0.79	1.3379	69.3	69.3	0.1962	0.1962	69.31	
2,3,7,8-TCDF	16.600	1212831	0.78	0.8389	0.8883	0.8883	0.0467	0.0467		
D 13C-2,3,7,8-TCDD	15.132	104615506	0.78	0.9388	63.5	63.5	0.2256	0.2256	63.49	
2,3,7,8-TCDD	15.146	461990	0.77	1.1538	0.4262	0.3827	0.0722	0.0722		RQ
$ 37Cl4-2,3,7,8-TCDD	15.146	91549026		1.1816	44.1	44.1	0.0404	0.0404	110	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d
Lims ID: 320-56953-A-2-A
Client ID: 11187072-120919-BN-SJSSA07(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 20:41:20 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-2-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:09

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.379	15.376	0		76040834	16601896	20224	50560	821		
333.9339	15.379	15.376	0		99468730	20813044	11477	28692	1813	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.573	16.556	1	1.078	71957014	13527732	20633	51582	656		
317.9389	16.573	16.556	1	1.078	90797738	17291783	18655	46637	927	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.600	16.570	2	1.002	530480	89663	1954	4885	46		
305.8987	16.573	16.570	0	1.000	682351	124913	2880	7200	43	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.132	15.116	1	0.984	45807064	9796952	20224	50560	484		
333.9339	15.132	15.116	1	0.984	58808442	12520112	11477	28692	1091	0.78(0.65-0.89)	
2,3,7,8-TCDD											RQ
319.8965	15.146	15.143	0	1.001	200979	45290	4765	11912	10		
321.8936	15.146	15.143	0	1.001	313467	64362	2674	6685	24	0.64(0.65-0.89)	
	Empc Correction				261011	58818	2674	6685	22		
37Cl4-2,3,7,8-TCDD											
327.8840	15.146	15.143	0	0.985	91549026	19145718	7147	17867	2679		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

QC Flag Legend

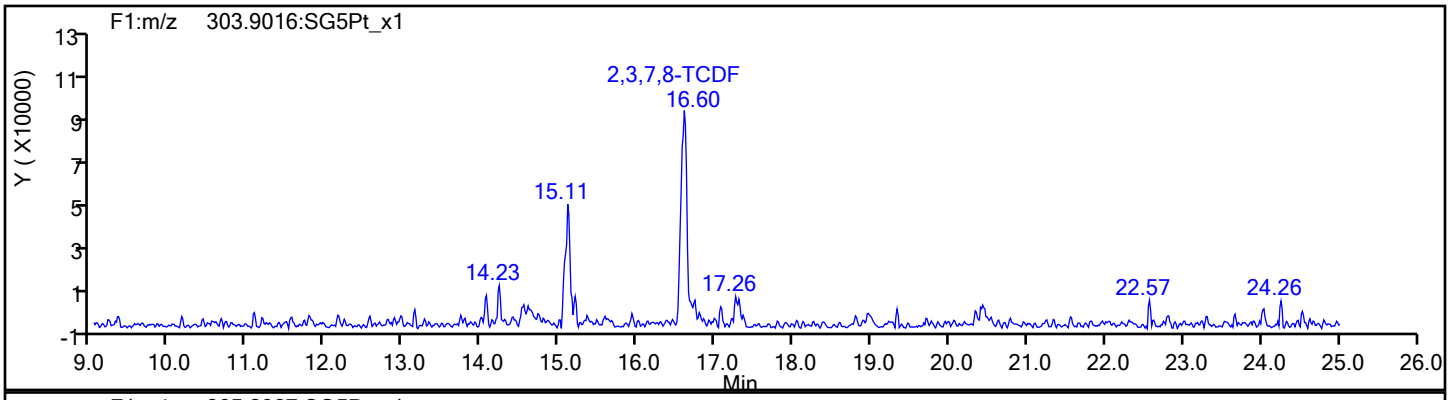
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

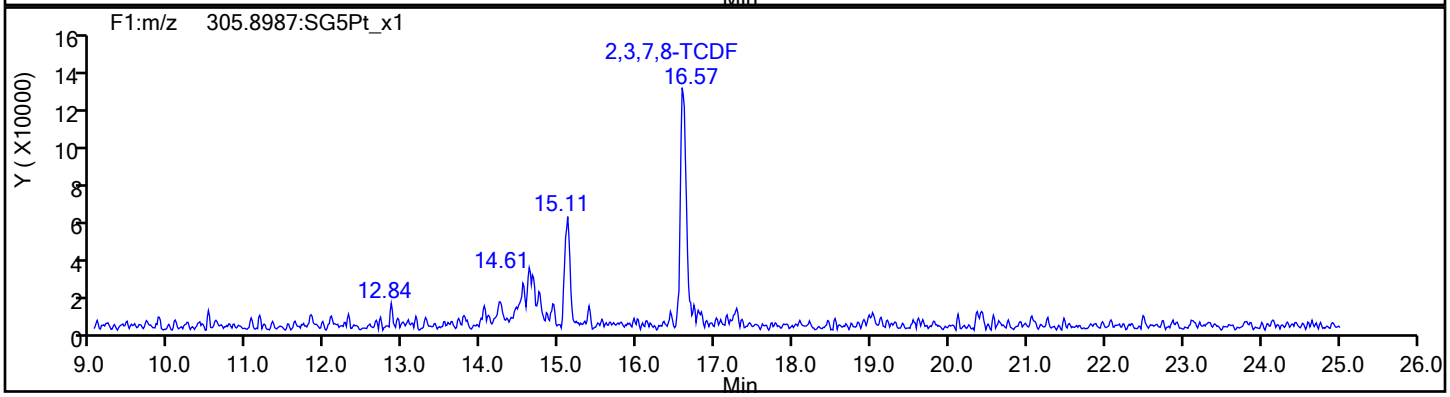
Report Date: 20-Dec-2019 14:38:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

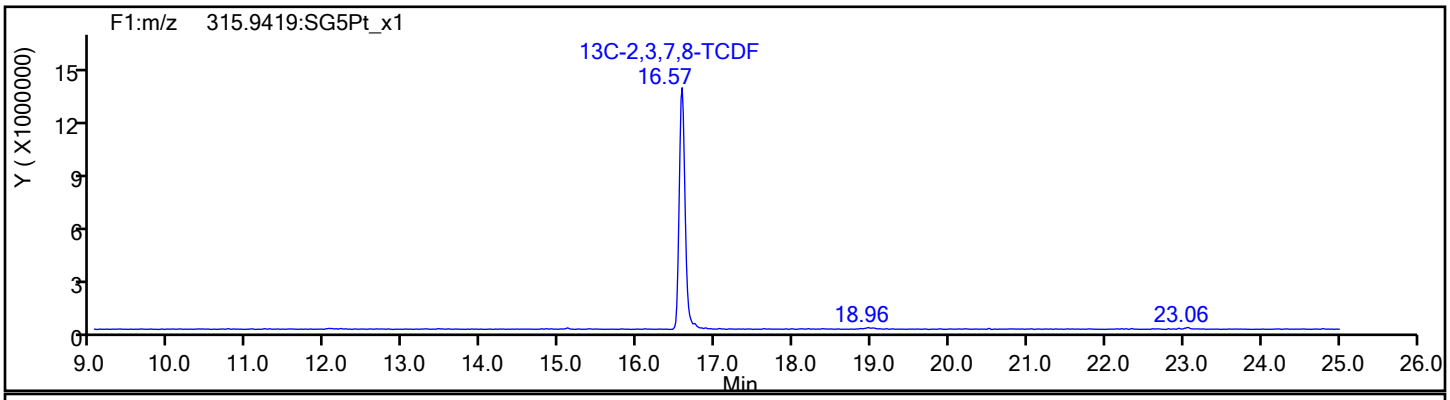
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d		
Injection Date:	19-Dec-2019 20:41:20	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346764	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

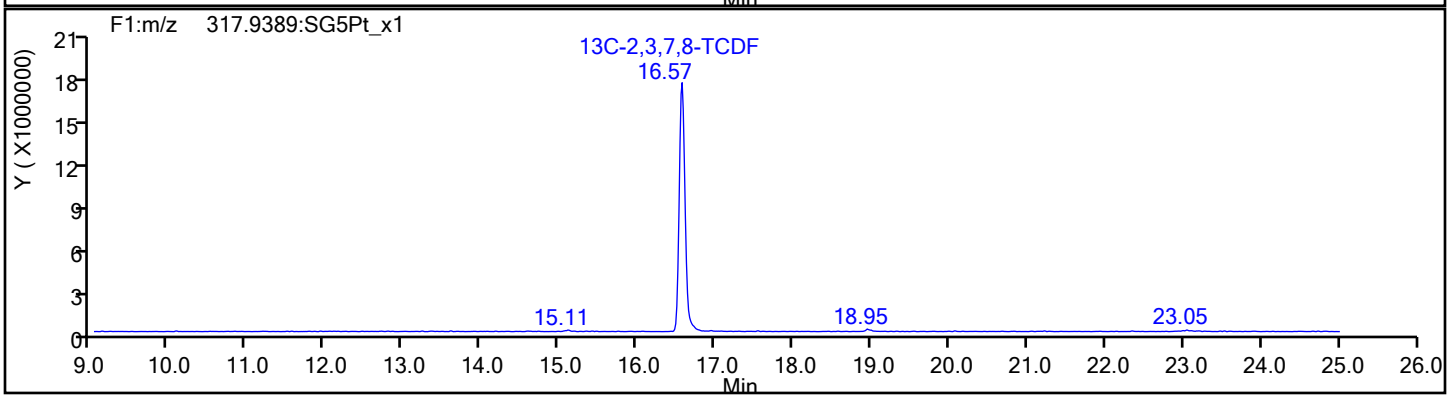
TCDF





TCDF Standards



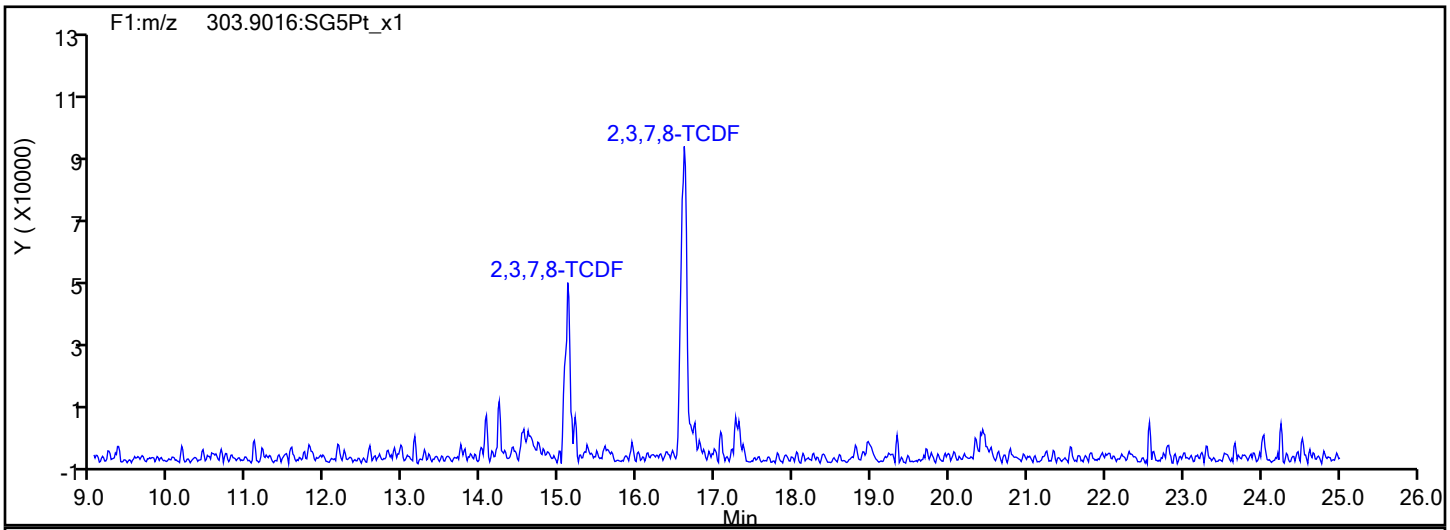


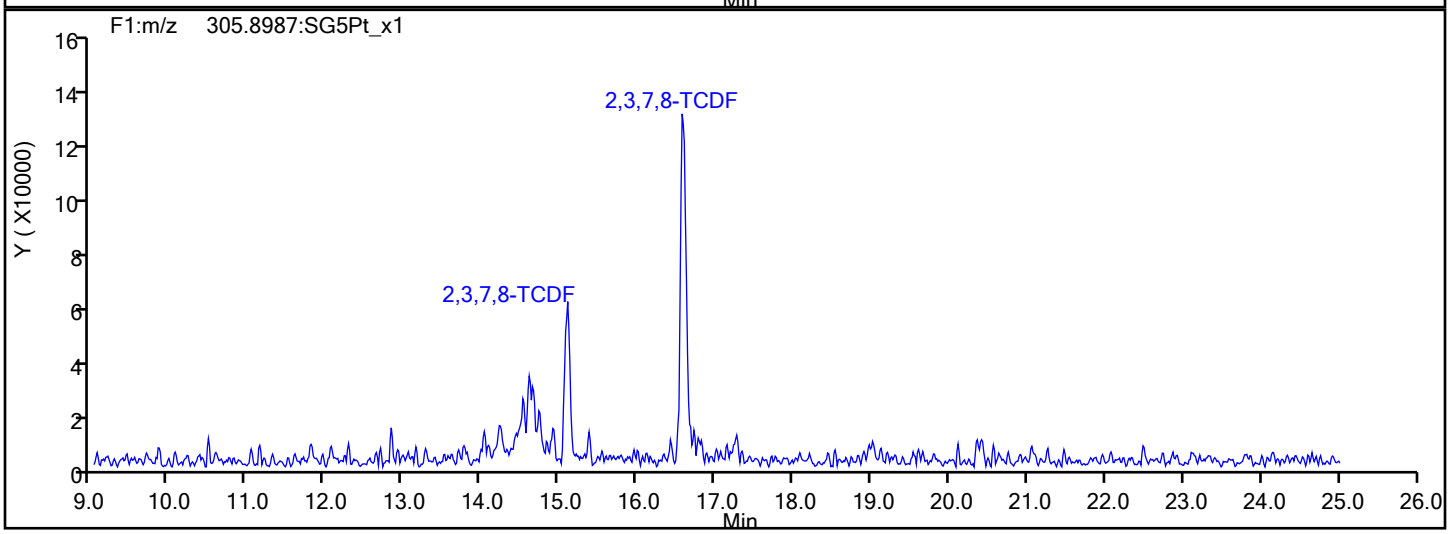
Report Date: 20-Dec-2019 14:38:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

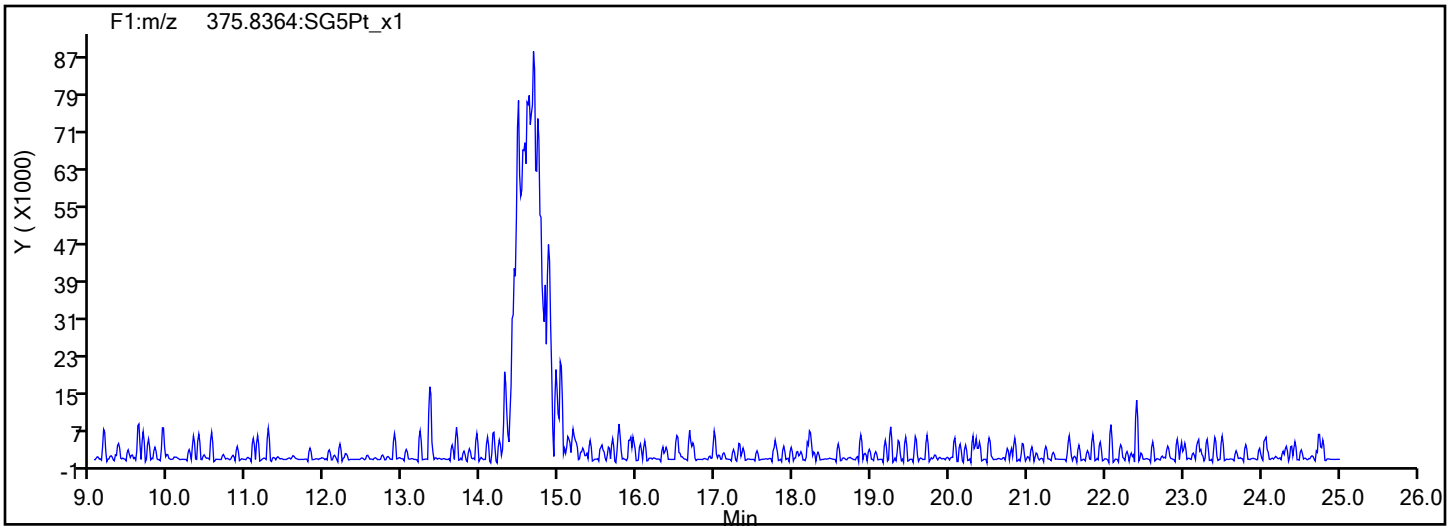
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d		
Injection Date:	19-Dec-2019 20:41:20	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346764	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

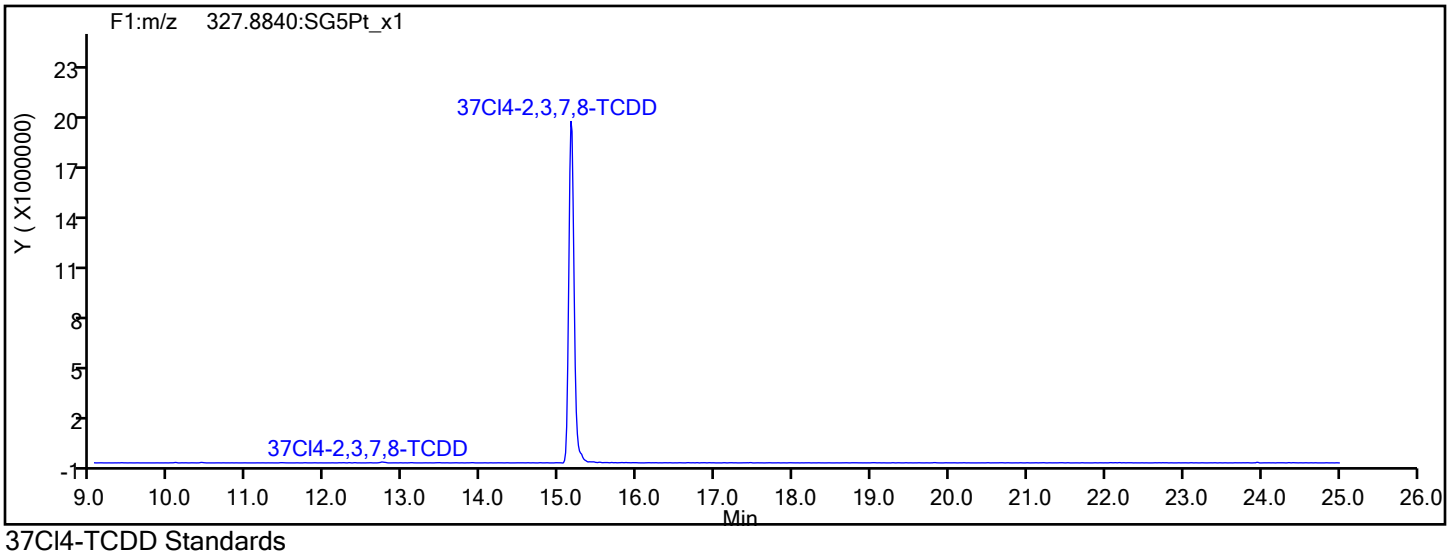


Report Date: 20-Dec-2019 14:38:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

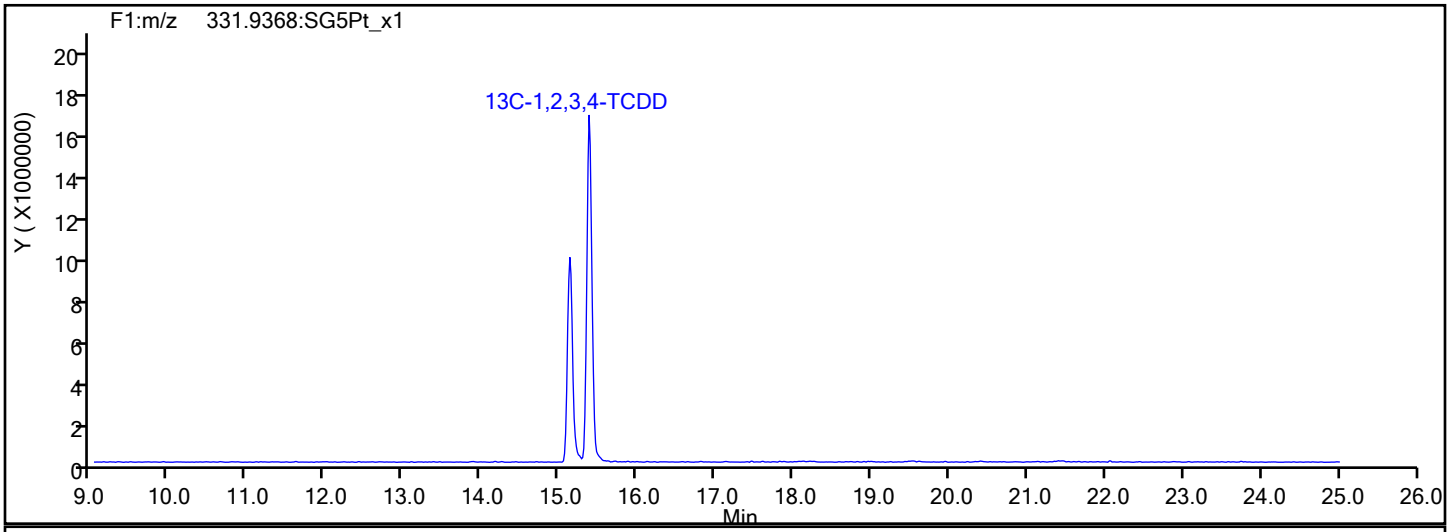
Eurofins TestAmerica, Sacramento

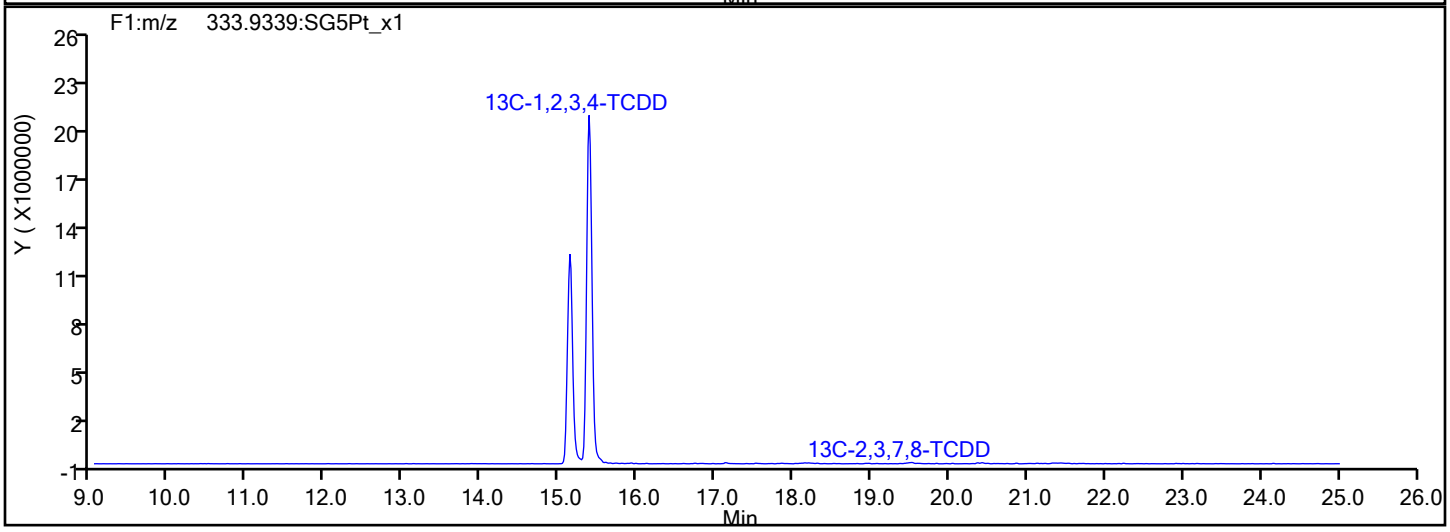
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d		
Injection Date:	19-Dec-2019 20:41:20	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346764	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

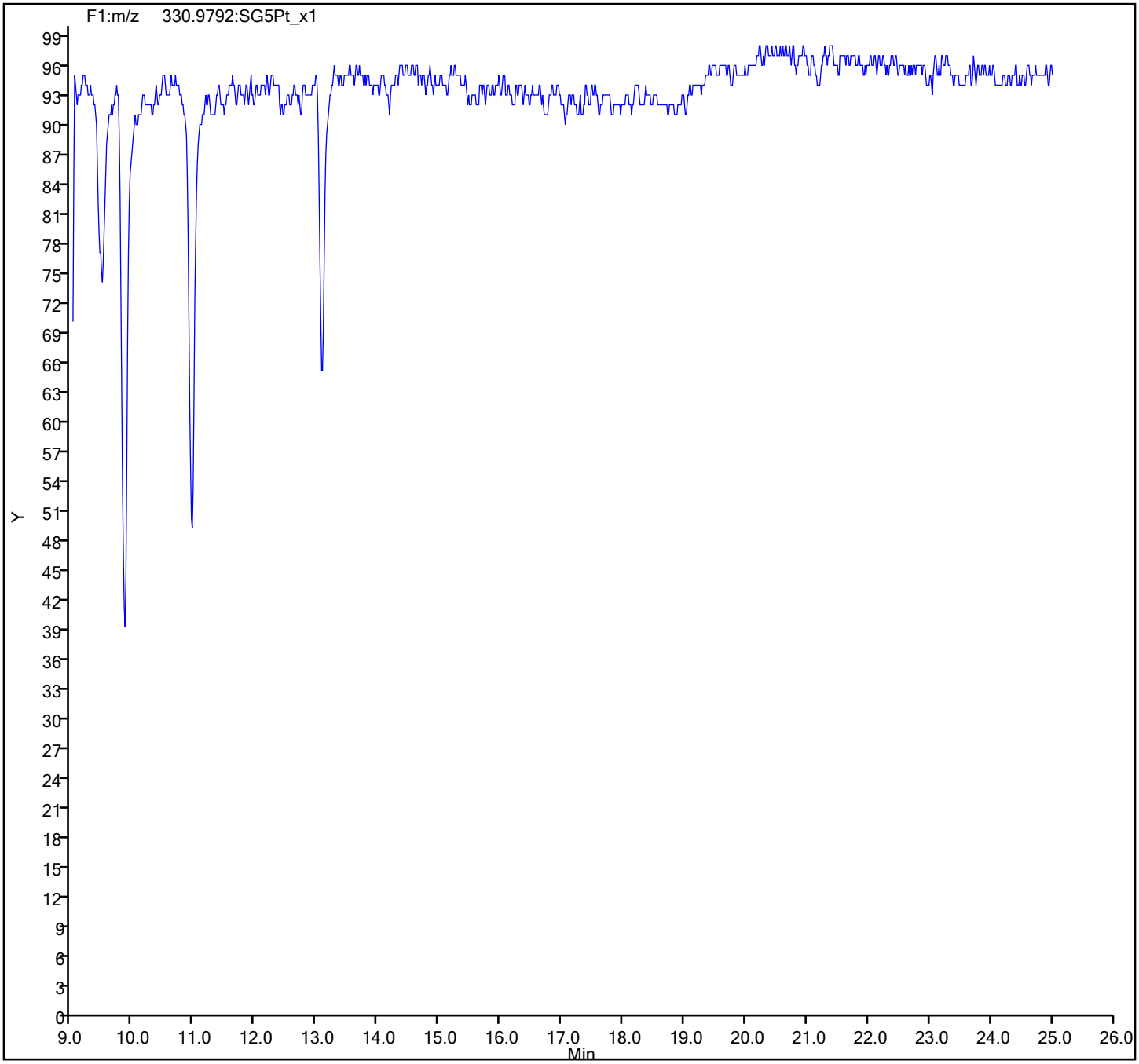




Report Date: 20-Dec-2019 14:38:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_008.d		
Injection Date:	19-Dec-2019 20:41:20	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(1-2)		
Worklist#:	346764	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Matrix: Sediment Lab File ID: 19DE193D5_9.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.17(g) Date Analyzed: 12/19/2019 17:21

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 18.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		1.2	0.10
51207-31-9	2,3,7,8-TCDF	ND		1.2	0.073
40321-76-4	1,2,3,7,8-PeCDD	ND		6.0	0.15
57117-41-6	1,2,3,7,8-PeCDF	ND		6.0	0.11
57117-31-4	2,3,4,7,8-PeCDF	ND		6.0	0.12
39227-28-6	1,2,3,4,7,8-HxCDD	0.19	J q	6.0	0.11
57653-85-7	1,2,3,6,7,8-HxCDD	ND		6.0	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	ND		6.0	0.096
70648-26-9	1,2,3,4,7,8-HxCDF	ND		6.0	0.092
57117-44-9	1,2,3,6,7,8-HxCDF	ND		6.0	0.088
72918-21-9	1,2,3,7,8,9-HxCDF	ND		6.0	0.071
60851-34-5	2,3,4,6,7,8-HxCDF	ND		6.0	0.070
35822-46-9	1,2,3,4,6,7,8-HpCDD	1.4	J B	6.0	0.11
67562-39-4	1,2,3,4,6,7,8-HpCDF	ND		6.0	0.15
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		6.0	0.17
3268-87-9	OCDD	36	B	12	0.18
39001-02-0	OCDF	ND		12	0.17
41903-57-5	Total TCDD	0.40	J q	1.2	0.10
30402-14-3	Total TCDF	ND		1.2	0.073
36088-22-9	Total PeCDD	0.28	J	6.0	0.15
30402-15-4	Total PeCDF	ND		6.0	0.12
34465-46-8	Total HxCDD	1.9	J q	6.0	0.10
55684-94-1	Total HxCDF	ND		6.0	0.092
37871-00-4	Total HpCDD	5.7	J B	6.0	0.11
38998-75-3	Total HpCDF	ND		6.0	0.17

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(2-4) Lab Sample ID: 320-56953-3

Matrix: Sediment Lab File ID: 19DE193D5_9.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.17(g) Date Analyzed: 12/19/2019 17:21

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 18.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	64		25-164
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	59		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	60		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	64		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	69		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	67		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	66		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	62		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	67		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	64		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	71		26-138
114423-97-1	13C-OCDD	72		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	100		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 17:21:32 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-3-A 320-56953-A-3-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:23:40 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:23:40

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.612	211496525	0.78	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.113	189114976	0.78	1.4157	63.2	63.2	0.1099	0.1099	63.16	
2,3,7,8-TCDF	17.128						0.0302	0.0302		
A Non-2,3,7,8-sub-TCDF	16.811						0.0302	0.0302		
S Total TCDF							0.0302	0.0302		
D 13C-2,3,7,8-TCDD	17.793	131999187	0.78	0.9751	64.0	64.0	0.1809	0.1809	64.01	
2,3,7,8-TCDD	17.823						0.0418	0.0418		
$ 37Cl4-2,3,7,8-TCDD	17.808	113479417		1.3480	39.8	39.8	0.0445	0.0445	99.51	
A Non-2,3,7,8-sub-TCDD	17.249	228228	0.77	1.0477	0.2830	0.1650	0.0418	0.1055		RQM
S Total TCDD					0.2830	0.1650	0.0418	0.0418		RQ
D 13C-1,2,3,7,8-PeCDF	22.018	149204084	1.60	1.1786	59.9	59.9	0.1958	0.1958	59.86	
1,2,3,7,8-PeCDF	22.045						0.0469	0.0469		
D 13C-2,3,4,7,8-PeCDF	23.341	153719219	1.62	1.1308	64.3	64.3	0.2041	0.2041	64.28	
2,3,4,7,8-PeCDF	23.355						0.0494	0.0494		
A F1 PeCDFs	19.774						0.0500	0.0500		
A Non-2,3,7,8-sub-PeCDF	22.858						0.0481	0.0481		
S Total PeCDF							0.0500	0.0500		
D 13C-1,2,3,7,8-PeCDD	24.050	93911027	1.62	0.7572	58.6	58.6	0.0981	0.0981	58.64	
1,2,3,7,8-PeCDD	24.077						0.0628	0.0628		
A Non-2,3,7,8-sub-PeCDD	22.973	119611	1.40	1.0855	0.1173	0.1173	0.0628	0.1173		
S Total PeCDD					0.1173	0.1173	0.0628	0.0628		
D 13C-1,2,3,4,7,8-HxCDF	30.180	132470320	0.52	1.1043	67.0	67.0	0.2814	0.2814	67.00	
1,2,3,4,7,8-HxCDF	30.206						0.0383	0.0383		
D 13C-1,2,3,6,7,8-HxCDF	30.393	135958127	0.51	1.1470	66.2	66.2	0.2709	0.2709	66.20	
1,2,3,6,7,8-HxCDF	30.420						0.0365	0.0365		
D 13C-2,3,4,6,7,8-HxCDF	31.312	126174253	0.51	1.0769	65.4	65.4	0.2885	0.2885	65.44	
2,3,4,6,7,8-HxCDF	31.325						0.0289	0.0289		
D 13C-1,2,3,7,8,9-HxCDF	32.151	112613757	0.52	1.0115	62.2	62.2	0.3072	0.3072	62.18	
1,2,3,7,8,9-HxCDF	32.164						0.0295	0.0295		
A Non-2,3,7,8-sub-HxCDF	29.880						0.0329	0.0329		
S Total HxCDF							0.0383	0.0383		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	179036907	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	98652624	1.31	0.7962	69.2	69.2	0.3017	0.3017	69.21	
1,2,3,4,7,8-HxCDD	31.525	85246	1.24	1.0934	0.0956	0.0790	0.0451	0.0451		RQM
D 13C-1,2,3,6,7,8-HxCDD	31.618	109434444	1.32	0.8720	70.1	70.1	0.2755	0.2755	70.10	
1,2,3,6,7,8-HxCDD	31.525						0.0453	0.0453		RQMU
1,2,3,7,8,9-HxCDD	31.977						0.0400	0.0400		
A Non-2,3,7,8-sub-HxCDD	30.519	839700	1.24	1.1145	0.7643	0.7241	0.0433	0.6281		RQM
S Total HxCDD					0.8599	0.8032	0.0435	0.0435		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.628	86715344	0.44	0.7577	63.9	63.9	0.8405	0.8405	63.93	
1,2,3,4,6,7,8-HpCDF	33.628						0.0609	0.0609		
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	87850264	0.43	0.6941	70.7	70.7	0.9174	0.9174	70.69	
1,2,3,4,7,8,9-HpCDF	34.709						0.0719	0.0719		
A Non-2,3,7,8-sub-HpCDF	34.169						0.0660	0.0660		
S Total HpCDF							0.0719	0.0719		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	84622606	1.07	0.7058	67.0	67.0	0.3472	0.3472	66.96	
1,2,3,4,6,7,8-HpCDD	34.418	510534	1.06	1.0535	0.5726	0.5726	0.0474	0.0474		
A Non-2,3,7,8-sub-HpCDD	34.144	1605446	1.08	1.0535	1.801	1.801	0.0474	1.801		
S Total HpCDD					2.373	2.373	0.0474	0.0474		
D 13C-OCDD	36.734	118491241	0.89	0.4603	143.8	143.8	0.1732	0.1732	71.90	
OCDF	36.830						0.0686	0.0686		
OCDD	36.746	10166119	0.92	1.1362	15.1	15.1	0.0729	0.0729		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- U - Marked Undetected

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 17:21:32 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-3-A 320-56953-A-3-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:23:40 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:23:40

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.612	17.612	0		92809395	23328622	24163	60407	965		
333.9339	17.612	17.612	0		118687130	29217355	12915	32287	2262	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.113	17.113	0	0.972	82982643	20063579	17706	44265	1133		
317.9389	17.098	17.113	-1	0.971	106132333	25961405	15001	37502	1731	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128						1869	4672			
305.8987	17.128						3418	8545			
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						1869	4672			
305.8987	16.811						3418	8545			
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.010	57820117	13249727	24163	60407	548		
333.9339	17.793	17.793	0	1.010	74179070	17321383	12915	32287	1341	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823						3454	8635			
321.8936	17.823						1902	4755			
37Cl4-2,3,7,8-TCDD											
327.8847	17.808	17.823	-1	1.011	113479417	26295711	12613	31532	2085		
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	16.690	17.249	-34	0.938	89976	17848	3454	8635	5		M
	Empc Correction				63454	14222	3454	8635	4		
321.8936	16.690	17.249	-34	0.938	82409	18471	1902	4755	10	1.09(0.65-0.89)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
319.8965	17.098	17.249	-9	0.961	172467	38251	3454	8635	11		
	Empc Correction				35831	6572	3454	8635	2		
321.8936	17.143	17.249	-6	0.963	46534	8536	1902	4755	4	3.71(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.250	91778052	16070182	29498	73745	545		
353.8970	22.018	22.018	0	1.250	57426032	10014421	19016	47540	527	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.045						1442	3605			
341.8567	22.045						3595	8987			
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.325	94968878	15144315	29498	73745	513		
353.8970	23.341	23.341	0	1.325	58750341	9331904	19016	47540	491	1.62(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355						1442	3605			
341.8567	23.355						3595	8987			
A F1 PeCDFs											
339.8597	19.774						1208	3020			
341.8567	19.774						4031	10077			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						1442	3605			
341.8567	22.858						3595	8987			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.366	58082167	8933677	10814	27035	826		
369.8919	24.050	24.050	0	1.366	35828860	5582747	4800	12000	1163	1.62(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						2727	6817			
357.8516	24.077						1231	3077			
A Non-2,3,7,8-sub-PeCDD											
355.8546	21.650	22.973	-79	0.900	69683	13277	2727	6817	5		
357.8516	21.650	22.973	-79	0.900	49928	10134	1231	3077	8	1.40(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.180	30.193	-1	0.944	45332383	7191092	18303	45757	393		
385.8610	30.180	30.193	-1	0.944	87137937	13625489	33615	84037	405	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206						1953	4882			
375.8178	30.206						1708	4270			
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.393	30.406	-1	0.951	46192516	7547862	18303	45757	412		
385.8610	30.393	30.406	-1	0.951	89765611	14335987	33615	84037	426	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.420						1953	4882			
375.8178	30.420						1708	4270			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	42658031	9264340	18303	45757	506		
385.8610	31.312	31.312	0	0.980	83516222	17719544	33615	84037	527	0.51(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
2,3,4,6,7,8-HxCDF											
373.8208	31.325						1953	4882			
375.8178	31.325						1708	4270			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	38731251	9014347	18303	45757	493		
385.8610	32.151	32.151	0	1.006	73882506	17436093	33615	84037	519	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						1953	4882			
375.8178	32.164						1708	4270			
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						1953	4882			
375.8178	29.880						1708	4270			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		100923390	23581424	20622	51555	1144		
403.8529	31.964	31.964	0		78113517	18195382	19517	48792	932	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	56037129	13592182	20622	51555	659		
403.8529	31.511	31.511	0	0.986	42615495	10377233	19517	48792	532	1.31(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQM
389.8157	31.525	31.525	0	1.000	47190	11896	2281	5702	5		M
391.8127	31.538	31.525	1	1.001	55927	12128	2451	6127	5	0.84(1.05-1.43)	M
	Empc Correction				38056	9593	2451	6127	4		
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	62192747	14163230	20622	51555	687		
403.8529	31.618	31.618	0	0.989	47241697	10895612	19517	48792	558	1.32(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMU
389.8157	31.631						2281	5702			
391.8127	31.631						2451	6127			
1,2,3,7,8,9-HxCDD											
389.8157	31.977						2281	5702			
391.8127	31.977						2451	6127			
A Non-2,3,7,8-sub-HxCDD											RQM
389.8157	29.048	30.519	-88	0.919	386001	44021	2281	5702	19		
391.8127	29.061	30.519	-87	0.919	342289	46626	2451	6127	19	1.13(1.05-1.43)	
389.8157	31.312	30.519	47	0.990	108298	21641	2281	5702	9		
	Empc Correction				61673	10972	2281	5702	5		
391.8127	31.298	30.519	47	0.990	49737	8849	2451	6127	4	2.18(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.628	33.628	0	1.052	26534873	8093488	35671	89177	227		
419.8220	33.628	33.628	0	1.052	60180471	18337085	70742	176855	259	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628						7241	18102			
409.7789	33.628						2287	5717			
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	26532096	7779177	35671	89177	218		
419.8220	34.697	34.697	0	1.086	61318168	17852869	70742	176855	252	0.43(0.37-0.51)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						7241	18102			
409.7789	34.709						2287	5717			
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						7241	18102			
409.7789	34.169						2287	5717			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.076	43728395	12125388	22481	56202	539		
437.8140	34.405	34.418	-1	1.076	40894211	11735886	18475	46187	635	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	262319	73772	2421	6052	30		
425.7737	34.418	34.418	0	1.000	248215	65105	2344	5860	28	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	832691	242689	2421	6052	100		
425.7737	33.871	34.144	-16	0.984	772755	227967	2344	5860	97	1.08(0.88-1.20)	
13C-OCDD											
469.7779	36.734	36.734	0	1.149	55867958	14504857	7211	18027	2011		
471.7750	36.734	36.734	0	1.149	62623283	15622269	6111	15277	2556	0.89(0.76-1.02)	
OCDF											
441.7428	36.830						2064	5160			
443.7399	36.830						3701	9252			
OCDD											
457.7377	36.746	36.746	0	1.000	4869314	1212741	2559	6397	474		
459.7348	36.746	36.746	0	1.000	5296805	1331007	2430	6075	548	0.92(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

U - Marked Undetected

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Inject. Date: 19-Dec-2019 17:21:32 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 9

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	131999187	30571110

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	131999187	30571110

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.690	89976	17848	82409	18471	0.1246	1.09	RQM
16.690	63454	14222	82409	18471	0.1055		Empc Correction
17.098	172467	38251	46534	8536	0.1584	3.71	RQ
17.098	35831	6572	46534	8536	0.0596		Empc Correction
Signal Totals:							
	99285	20794	128943	27007			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	391386	83106				2.04	RQM
	228228	47801					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2830 = (391386 * 100.000) / (131999187 * 1.048)
Empc Amount: 0.1650 = (228228 * 100.000) / (131999187 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Inject. Date: 19-Dec-2019 17:21:32 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 9

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	93911027	14516424

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	93911027	14516424

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
21.650	69683	13277	49928	10134	0.1173	1.40	
Signal Totals:							
	69683	13277	49928	10134			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	119611	23411				1.40	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1173 = (119611 * 100.000) / (93911027 * 1.086)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Inject. Date: 19-Dec-2019 17:21:32 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 9

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	98652624	23969415
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	109434444	25058842
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	104043534	24514128

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.048	386001	44021	342289	46626	0.6281	1.13	
31.312	108298	21641	49737	8849	0.1363	2.18	RQ
31.312	61673	10972	49737	8849	0.0961		Empc Correction
Signal Totals:							
	447674	54993	392026	55475			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	886325	121137				1.26	RQ
	839700	110468					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7643 = (886325 * 100.000) / (104043534 * 1.115)
Empc Amount: 0.7241 = (839700 * 100.000) / (104043534 * 1.115)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d
Lims ID: 320-56953-A-3-A
Client ID: 11187072-120919-BN-SJSSA07(2-4)
Inject. Date: 19-Dec-2019 17:21:32 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 9

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	84622606	23861274

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	84622606	23861274

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	832691	242689	772755	227967	1.80	1.08	
Signal Totals:							
	832691	242689	772755	227967			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1605446	470656				1.08	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.801 = (1605446 * 100.000) / (84622606 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

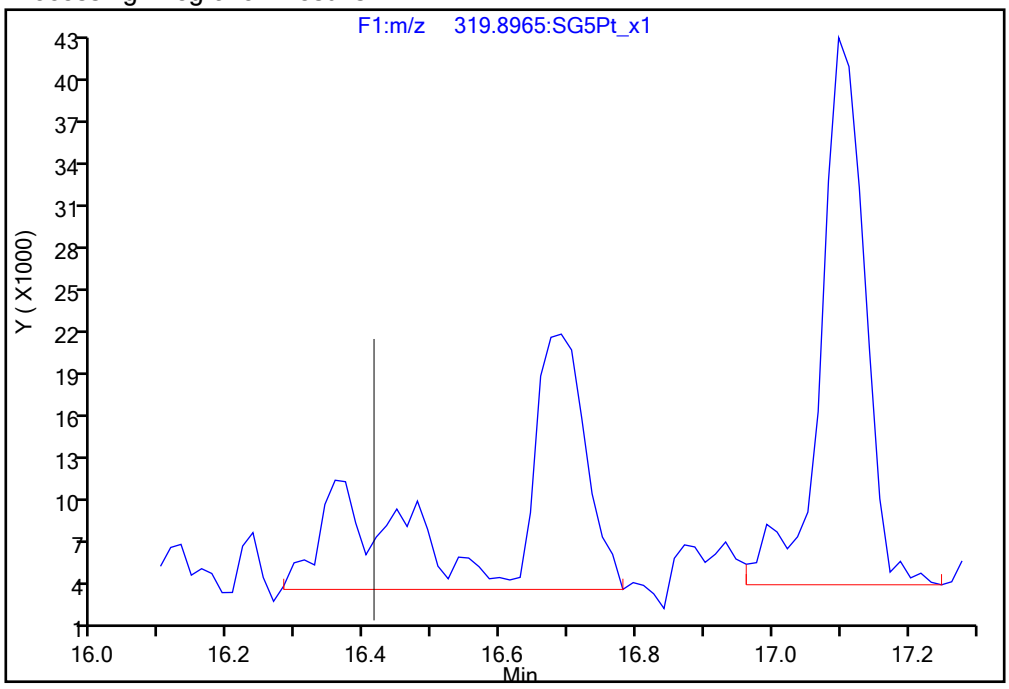
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d				
Injection Date:	19-Dec-2019 17:21:32	Instrument ID:	3D5		
Lims ID:	320-56953-A-3-A	Lab Sample ID:	320-56953-3		
Client ID:	11187072-120919-BN-SJSSA07(2-4)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

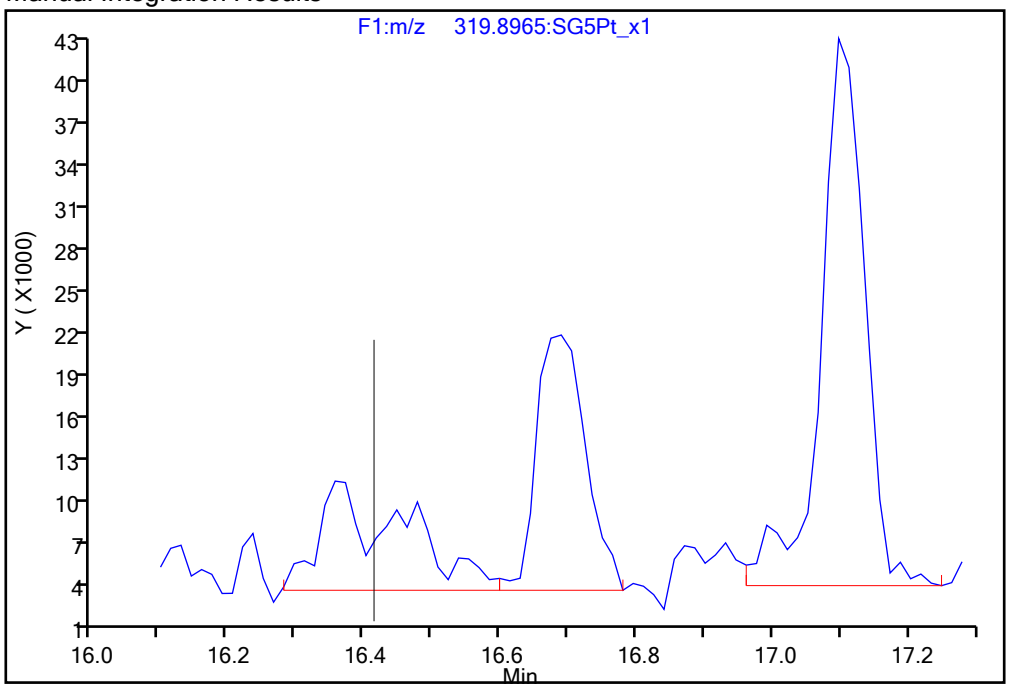
Processing Integration Results

RT = 16.690 Area = 155293



Manual Integration Results

RT = 16.690 Area = 89976 M



Reviewer: dadunj, 20-Dec-2019 14:21:27

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

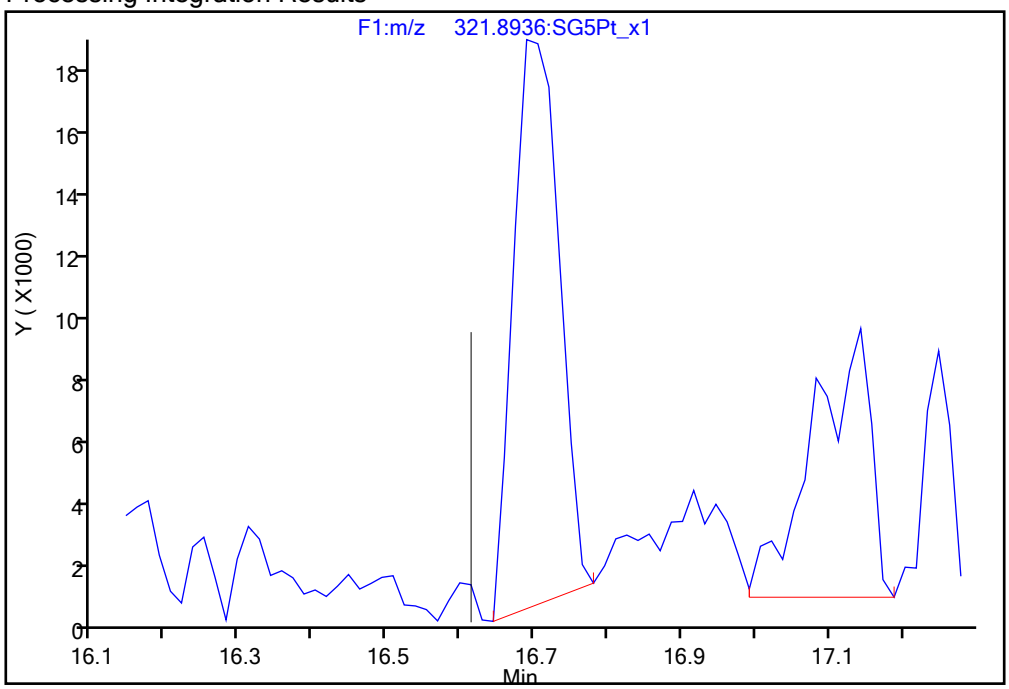
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d				
Injection Date:	19-Dec-2019 17:21:32	Instrument ID:	3D5		
Lims ID:	320-56953-A-3-A	Lab Sample ID:	320-56953-3		
Client ID:	11187072-120919-BN-SJSSA07(2-4)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (15.59- 18.91)

Signal: 2

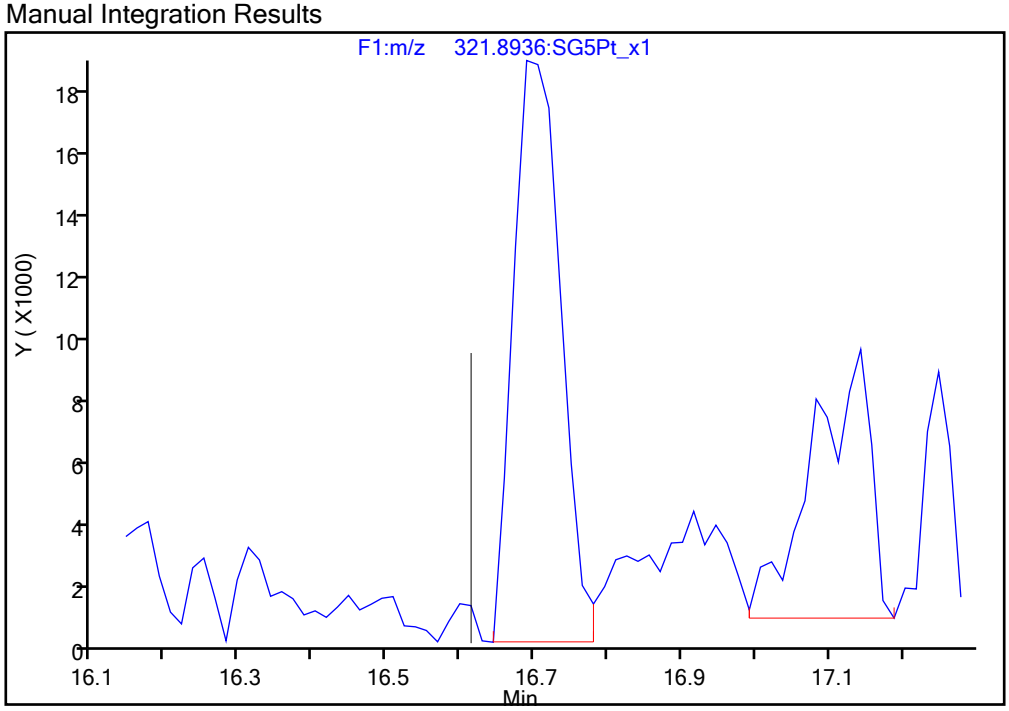
Processing Integration Results

RT = 16.690 Area = 77554



Manual Integration Results

RT = 16.690 Area = 82409 M



Reviewer: dadunj, 20-Dec-2019 14:21:57

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

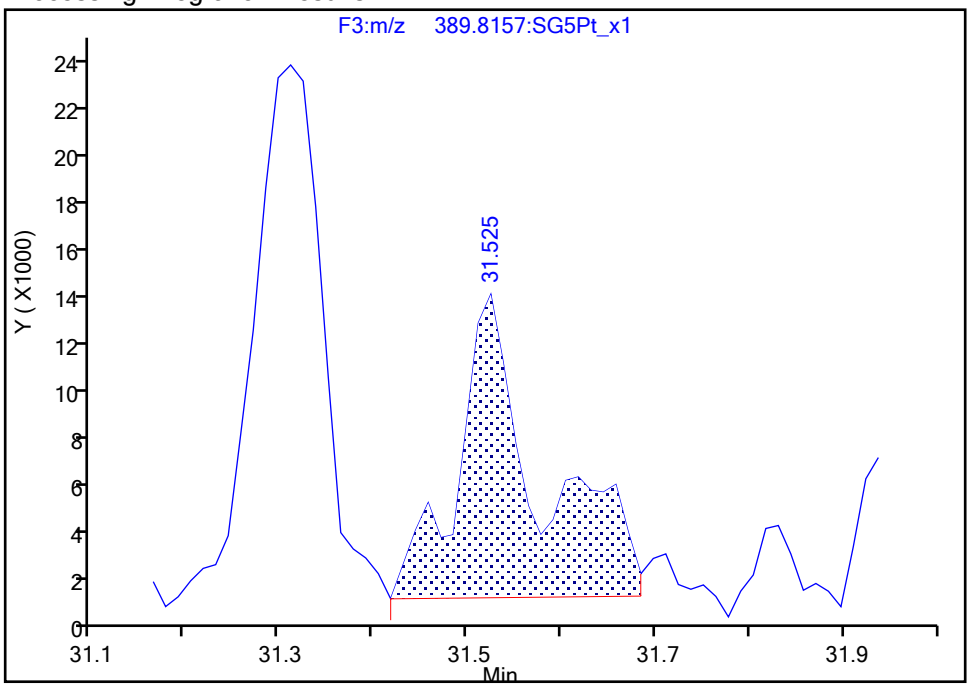
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d				
Injection Date:	19-Dec-2019 17:21:32	Instrument ID:	3D5		
Lims ID:	320-56953-A-3-A	Lab Sample ID:	320-56953-3		
Client ID:	11187072-120919-BN-SJSSA07(2-4)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

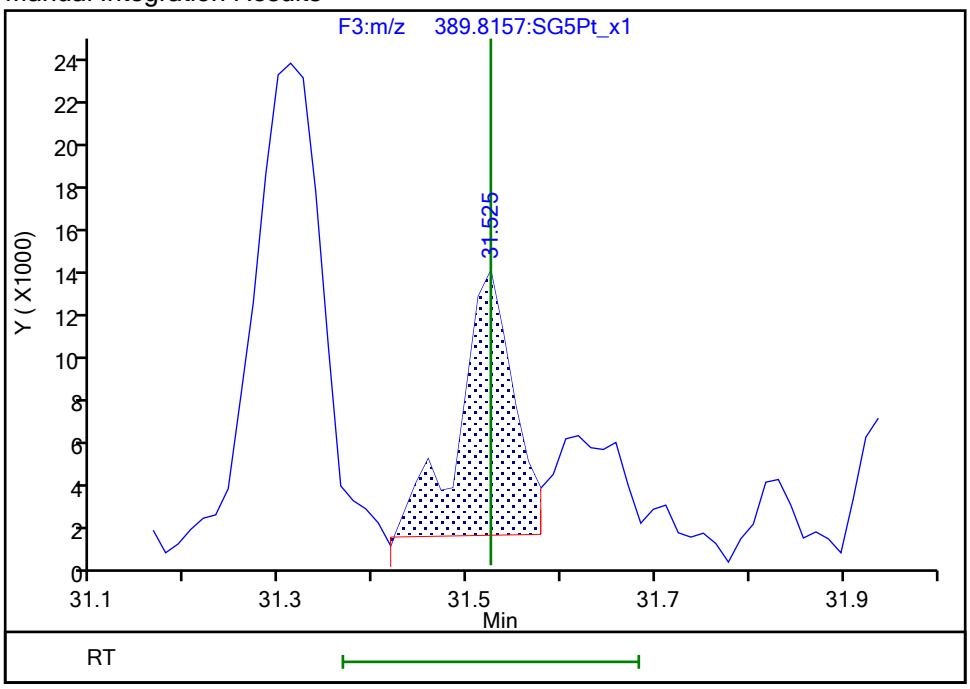
Processing Integration Results

RT: 31.52
Area: 75295
Amount: 0.158878
Amount Units: pg/ul



Manual Integration Results

RT: 31.52
Area: 47190
Amount: 0.095598
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:22:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

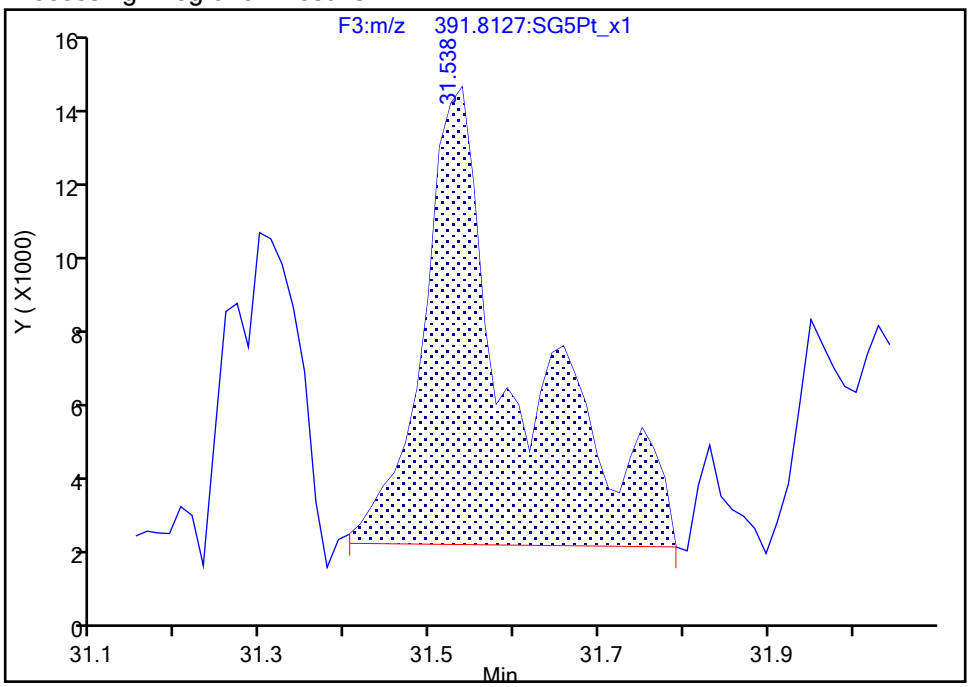
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d				
Injection Date:	19-Dec-2019 17:21:32	Instrument ID:	3D5		
Lims ID:	320-56953-A-3-A	Lab Sample ID:	320-56953-3		
Client ID:	11187072-120919-BN-SJSSA07(2-4)				
Operator ID:	AJS	ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

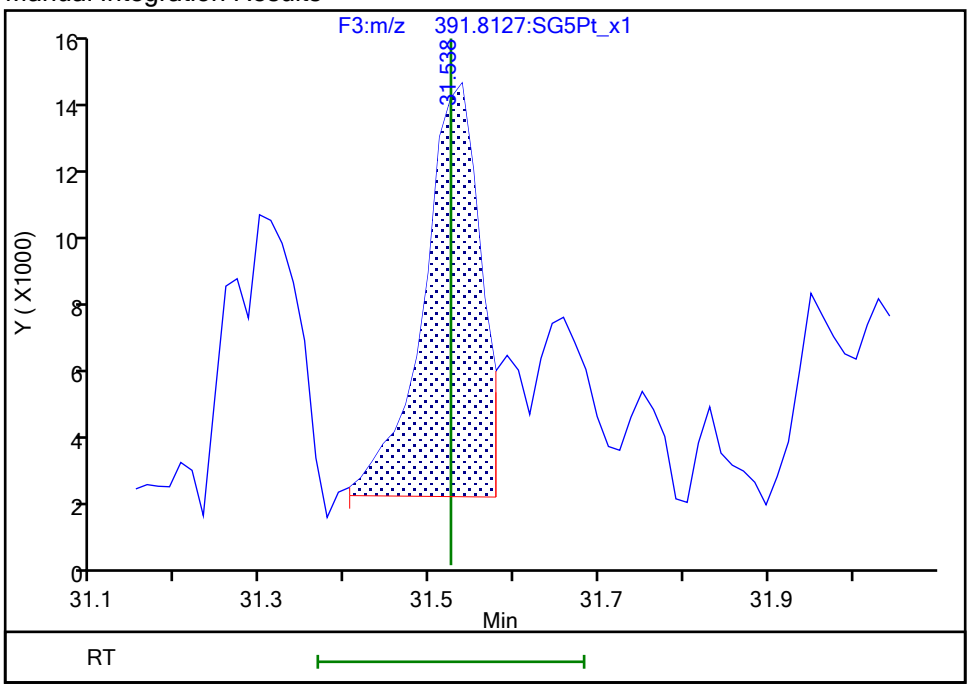
Processing Integration Results

RT: 31.54
Area: 96078
Amount: 0.158878
Amount Units: pg/ul



Manual Integration Results

RT: 31.54
Area: 55927
Amount: 0.095598
Amount Units: pg/ul



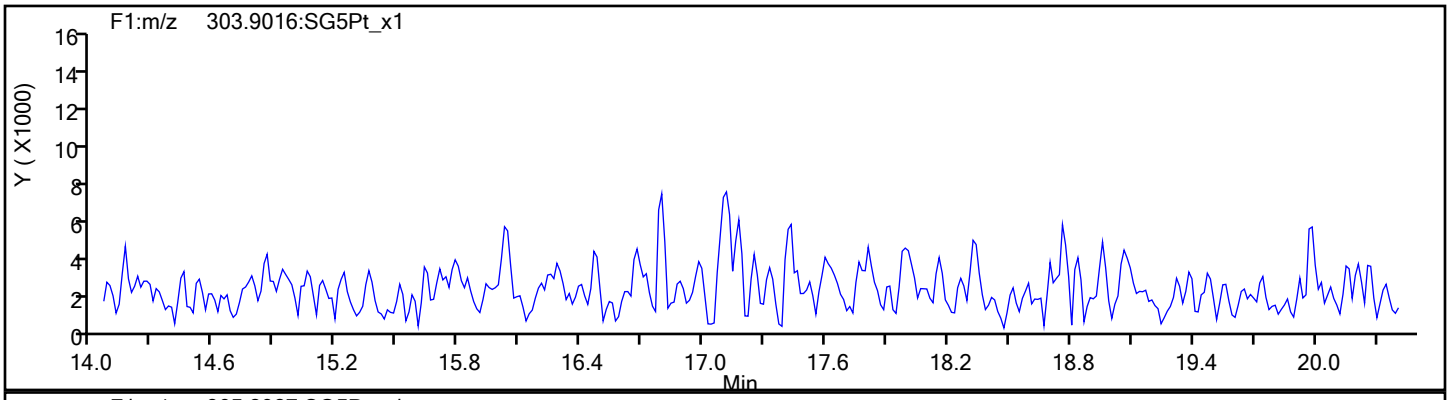
Reviewer: dadunj, 20-Dec-2019 14:22:34
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

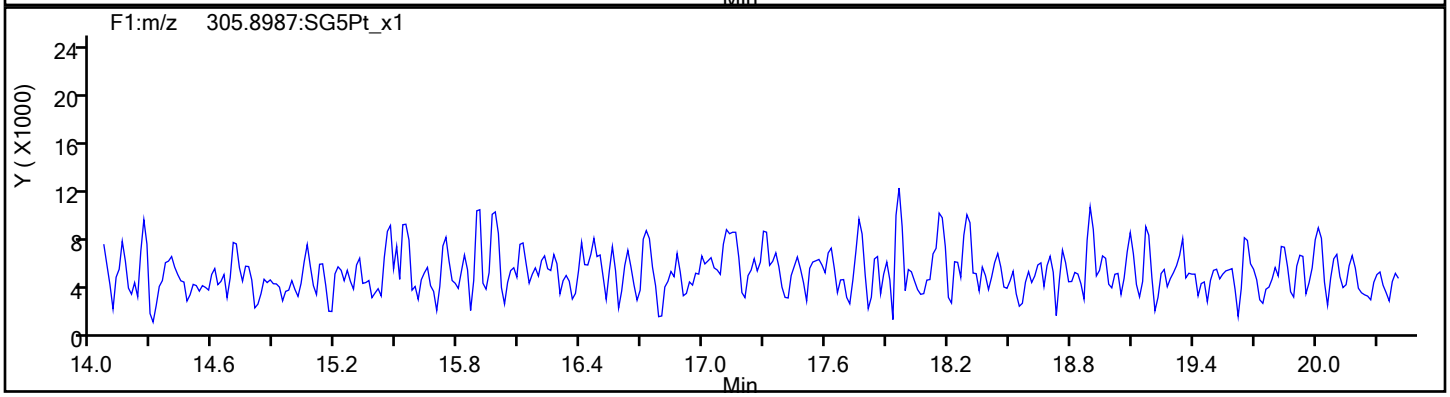
Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

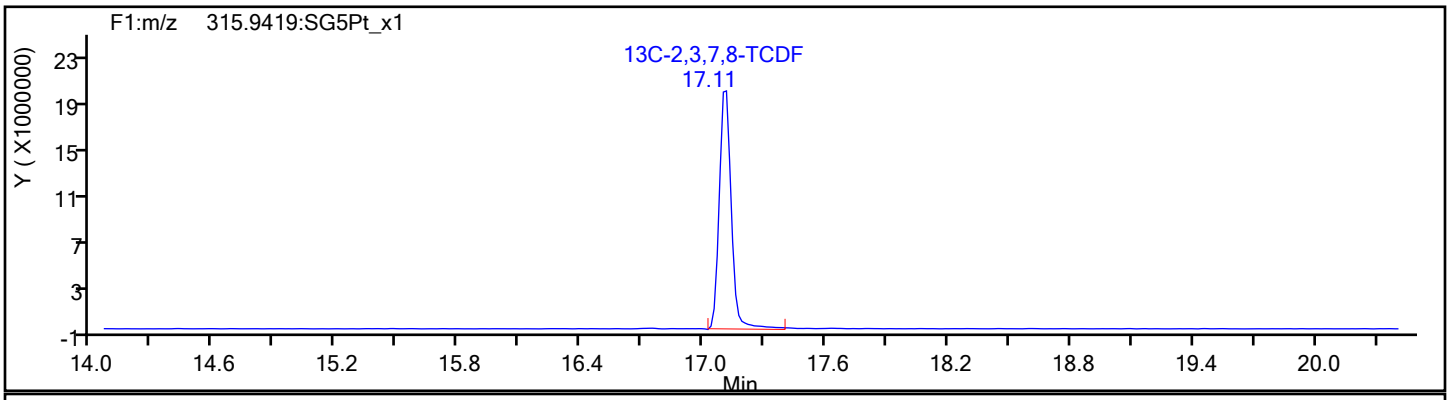
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

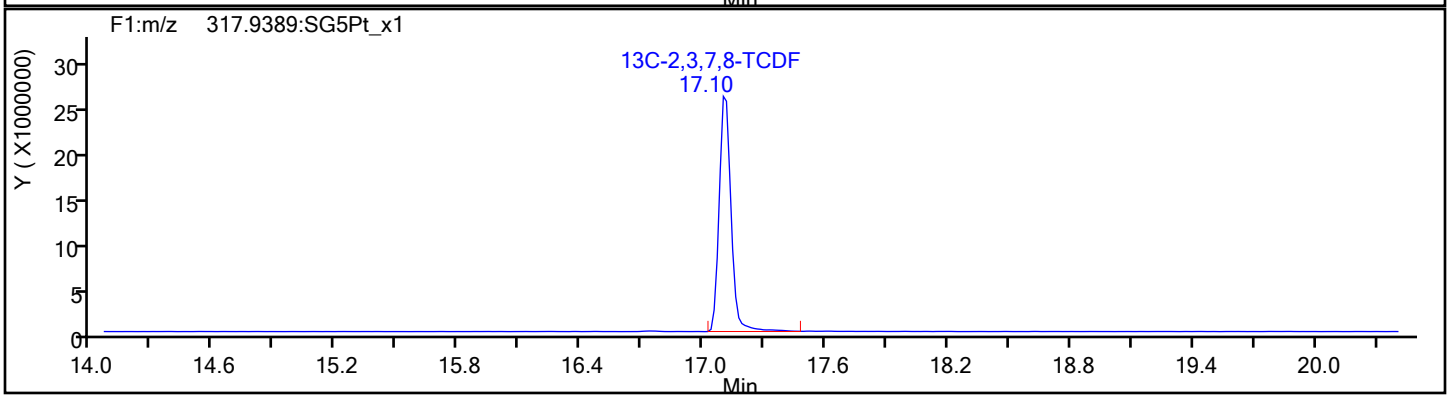
TCDF





TCDF Standards



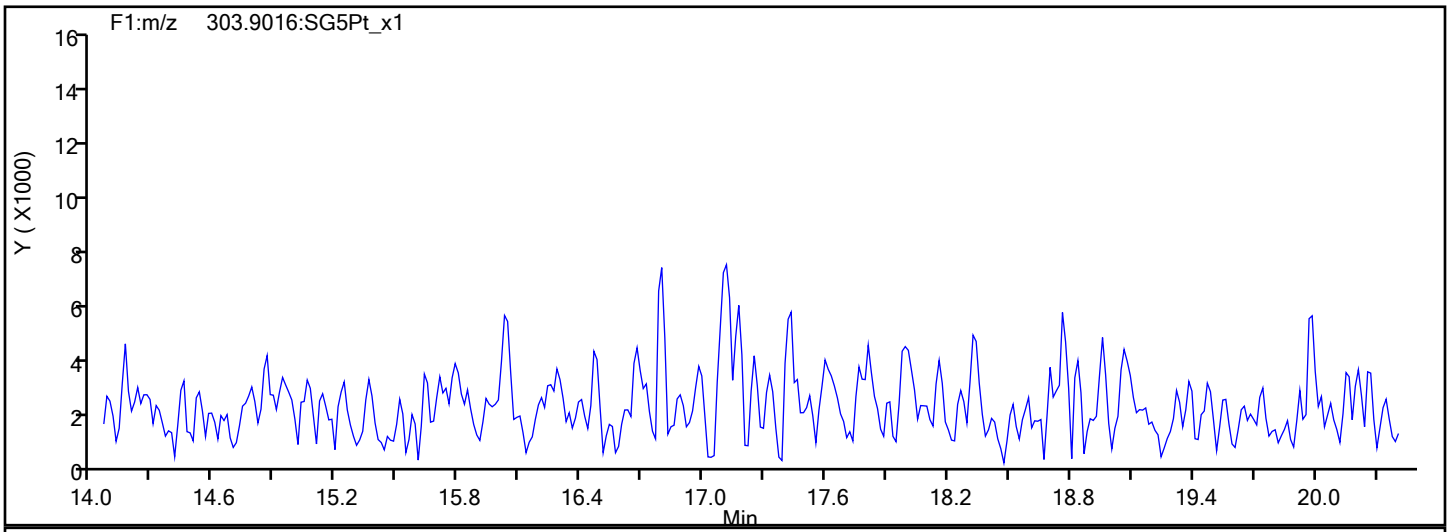


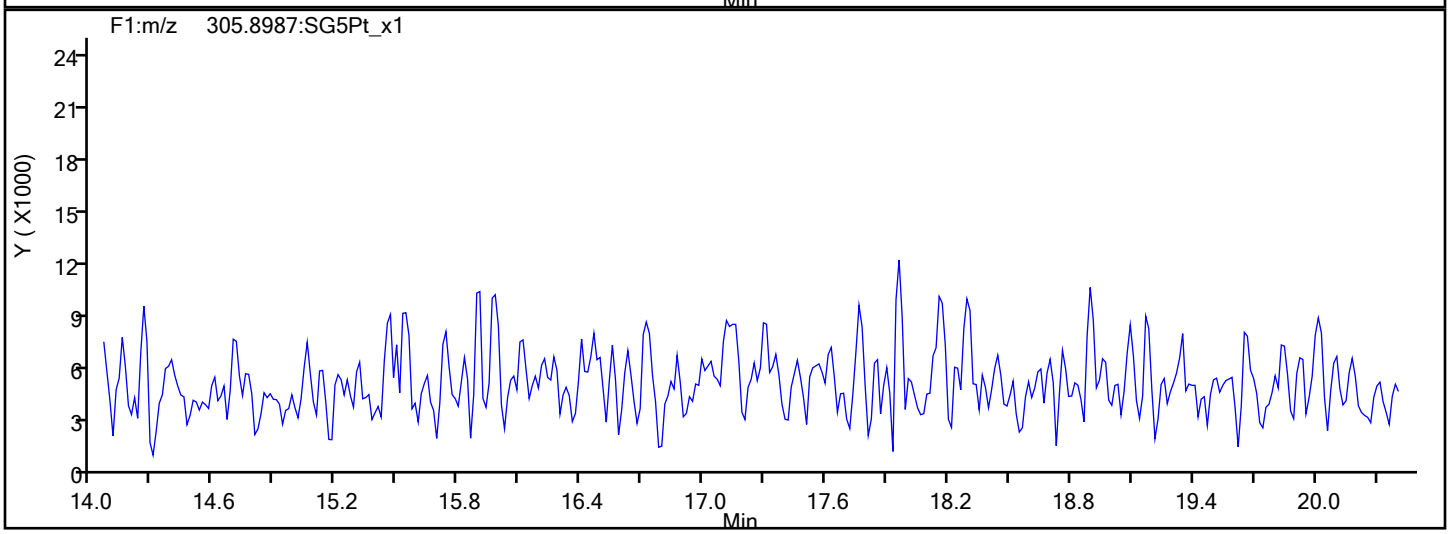
Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

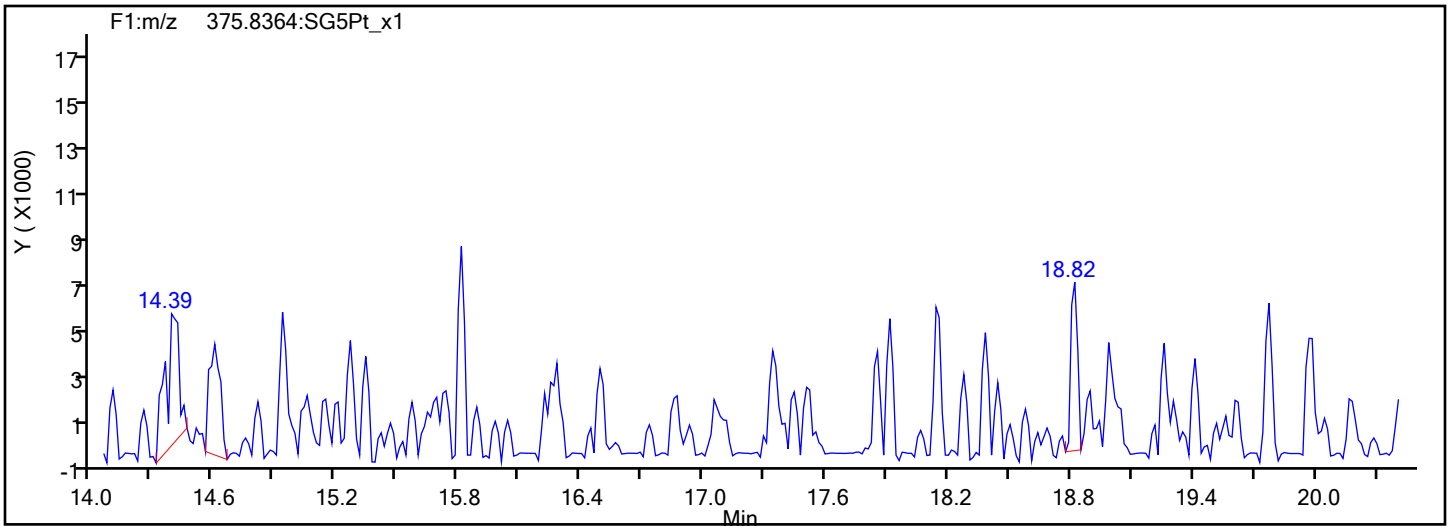
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

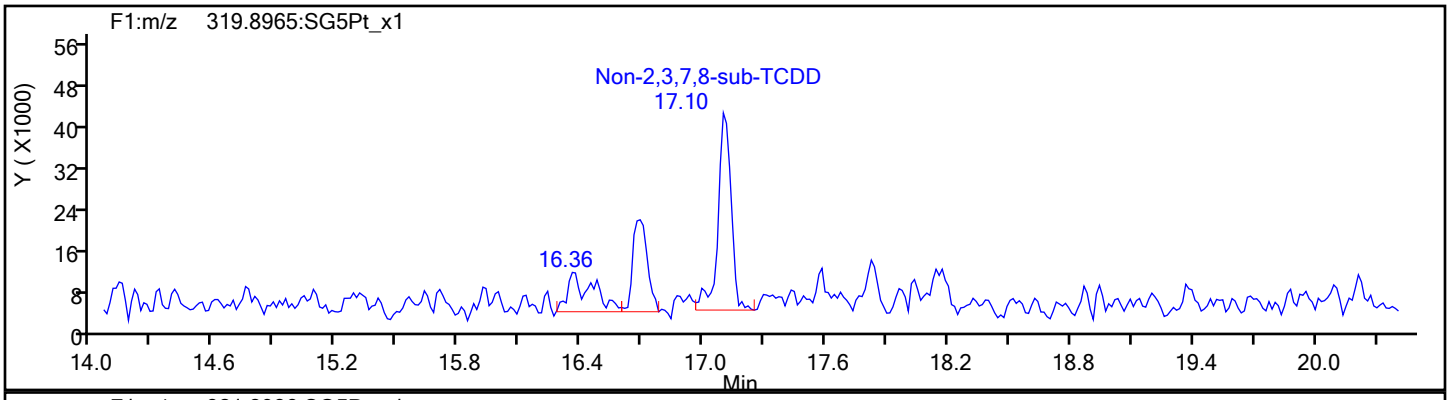


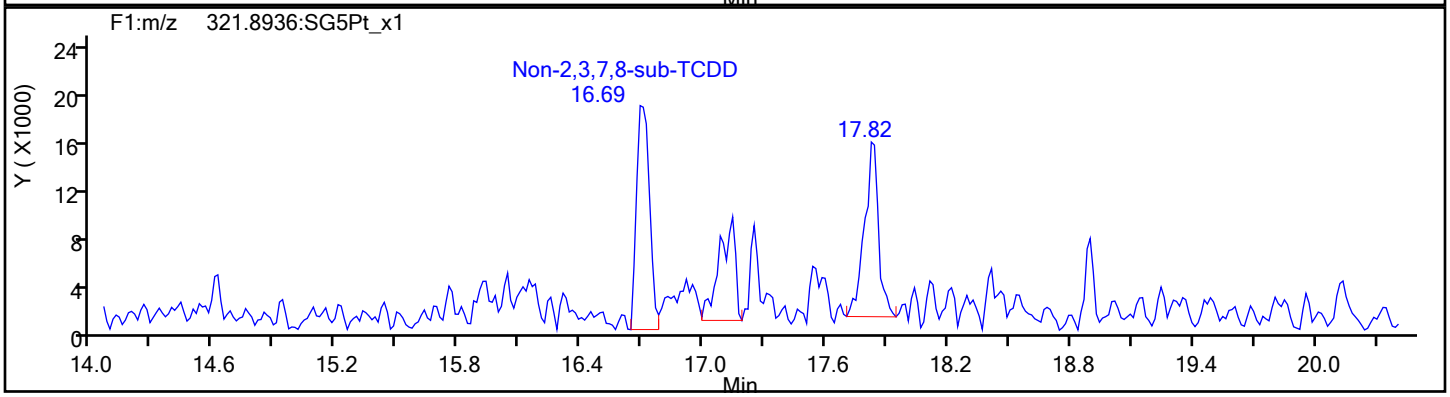
Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

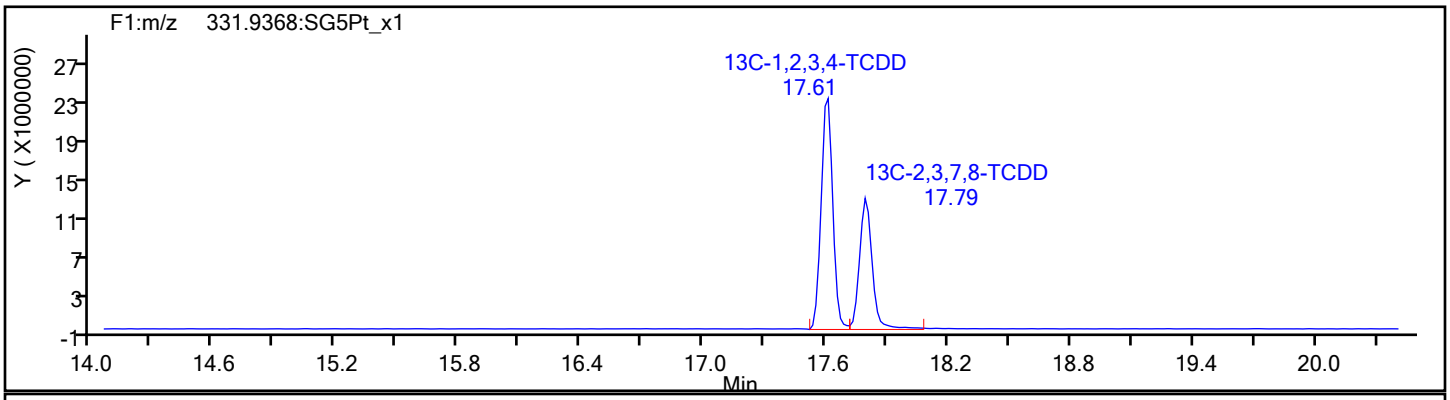
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

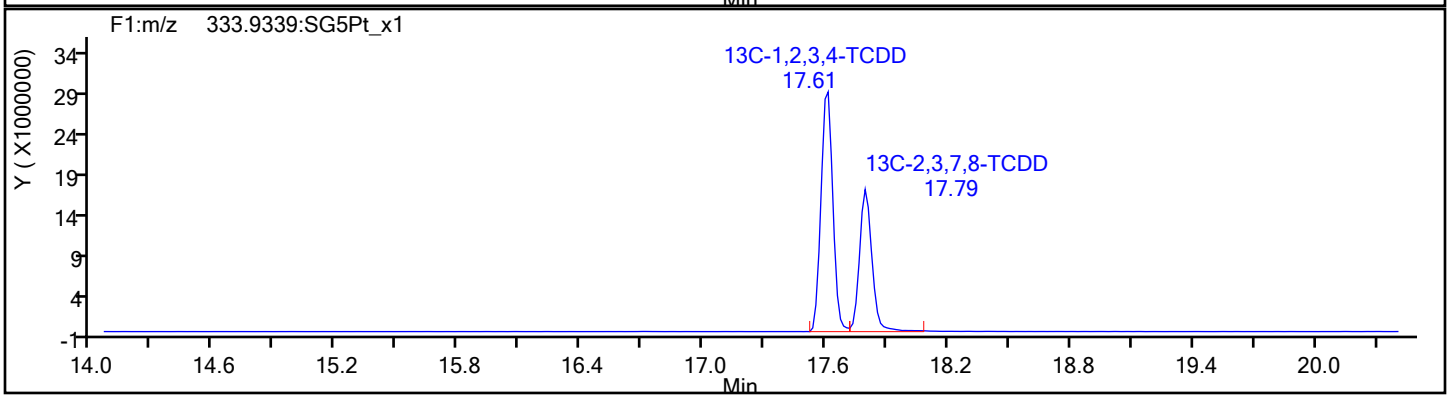
TCDD





TCDD Standards



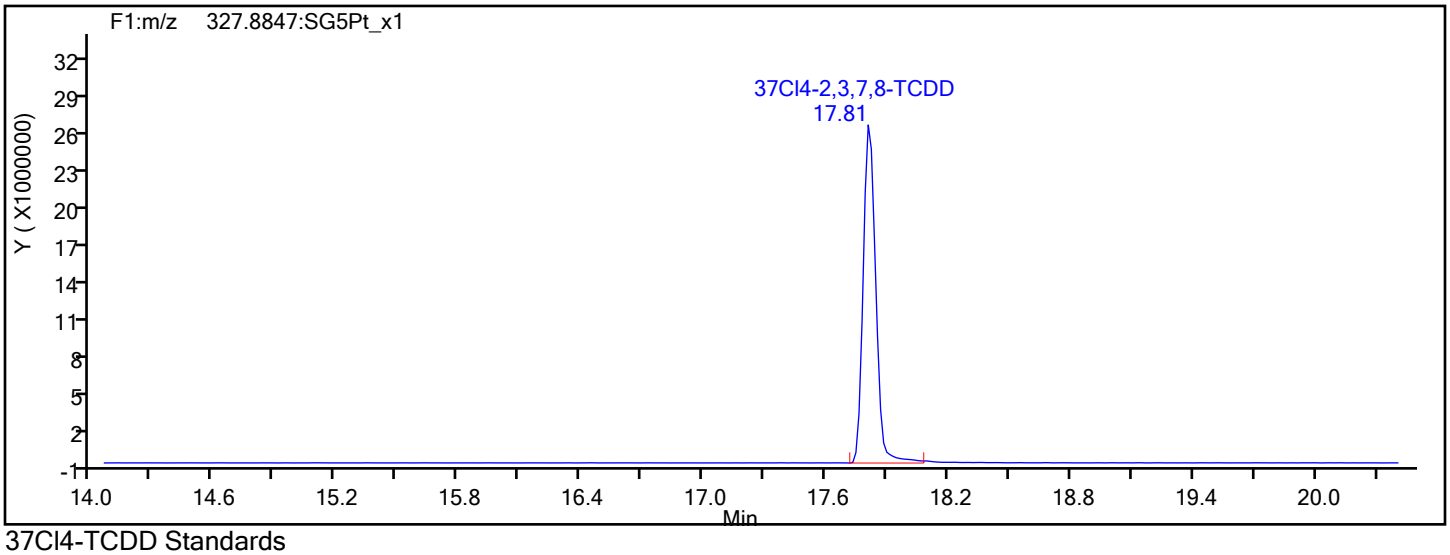


Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

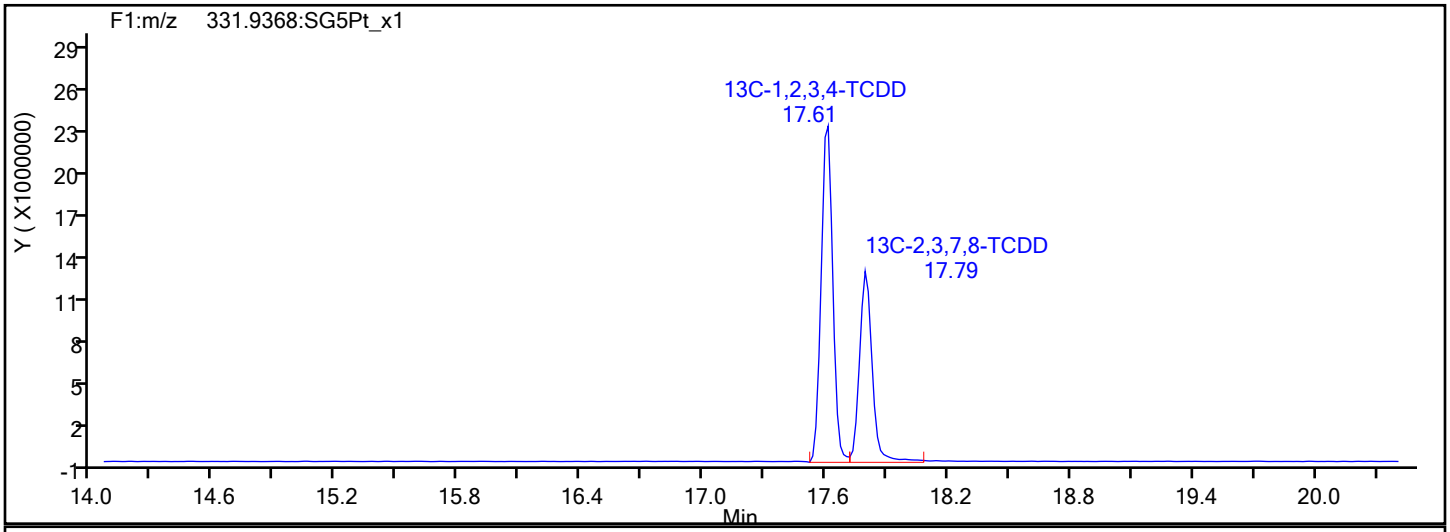
Eurofins TestAmerica, Sacramento

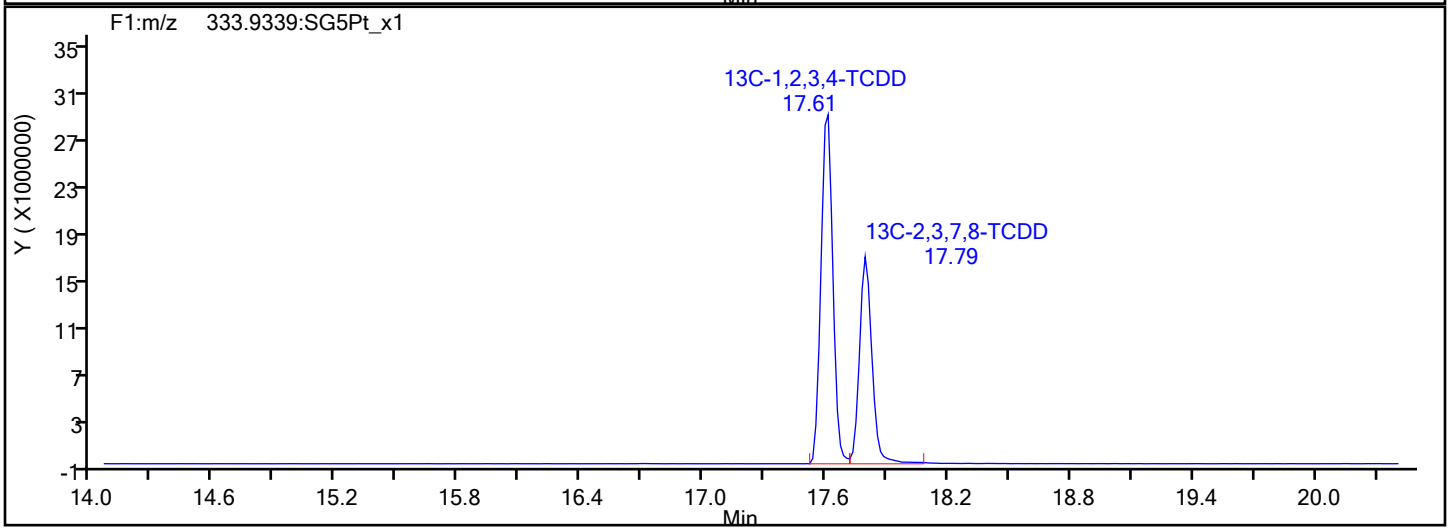
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



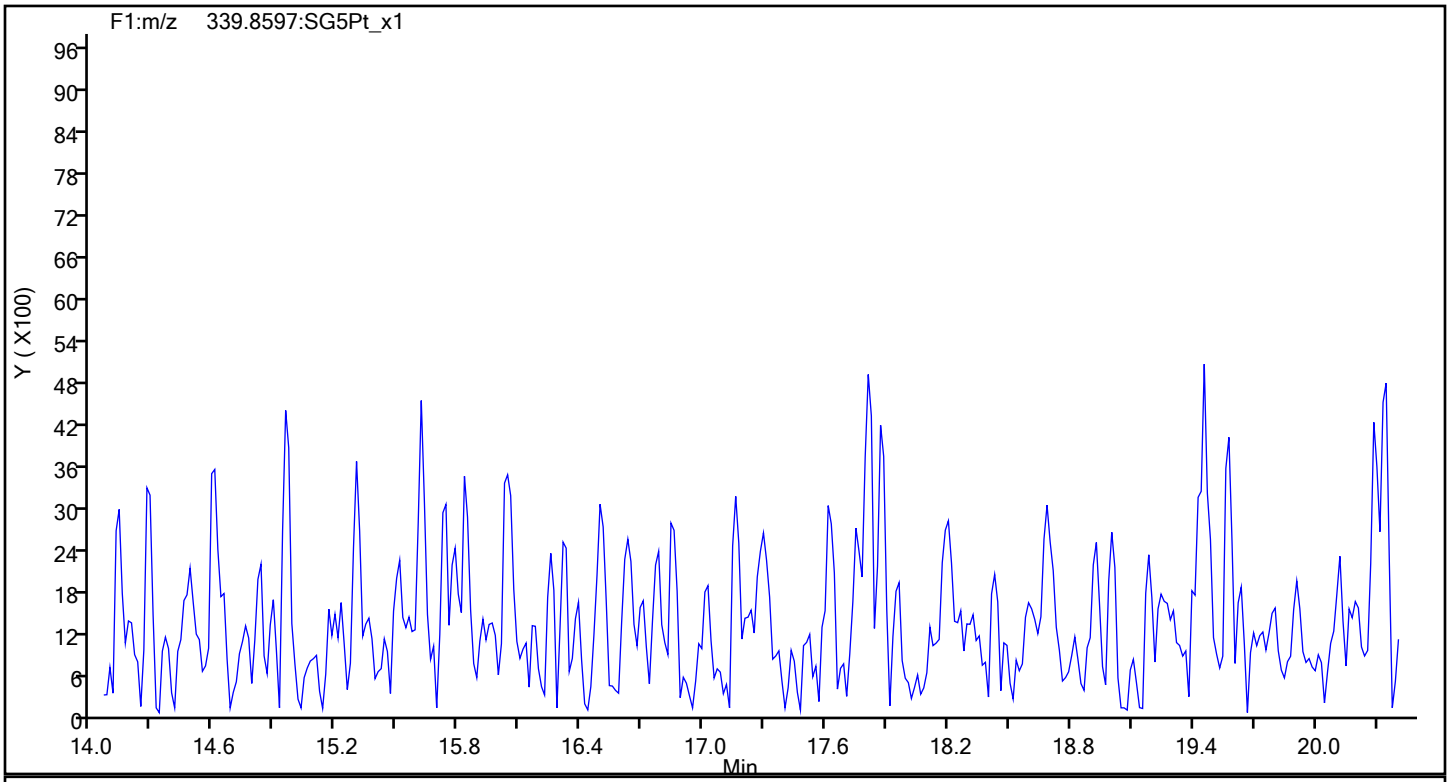


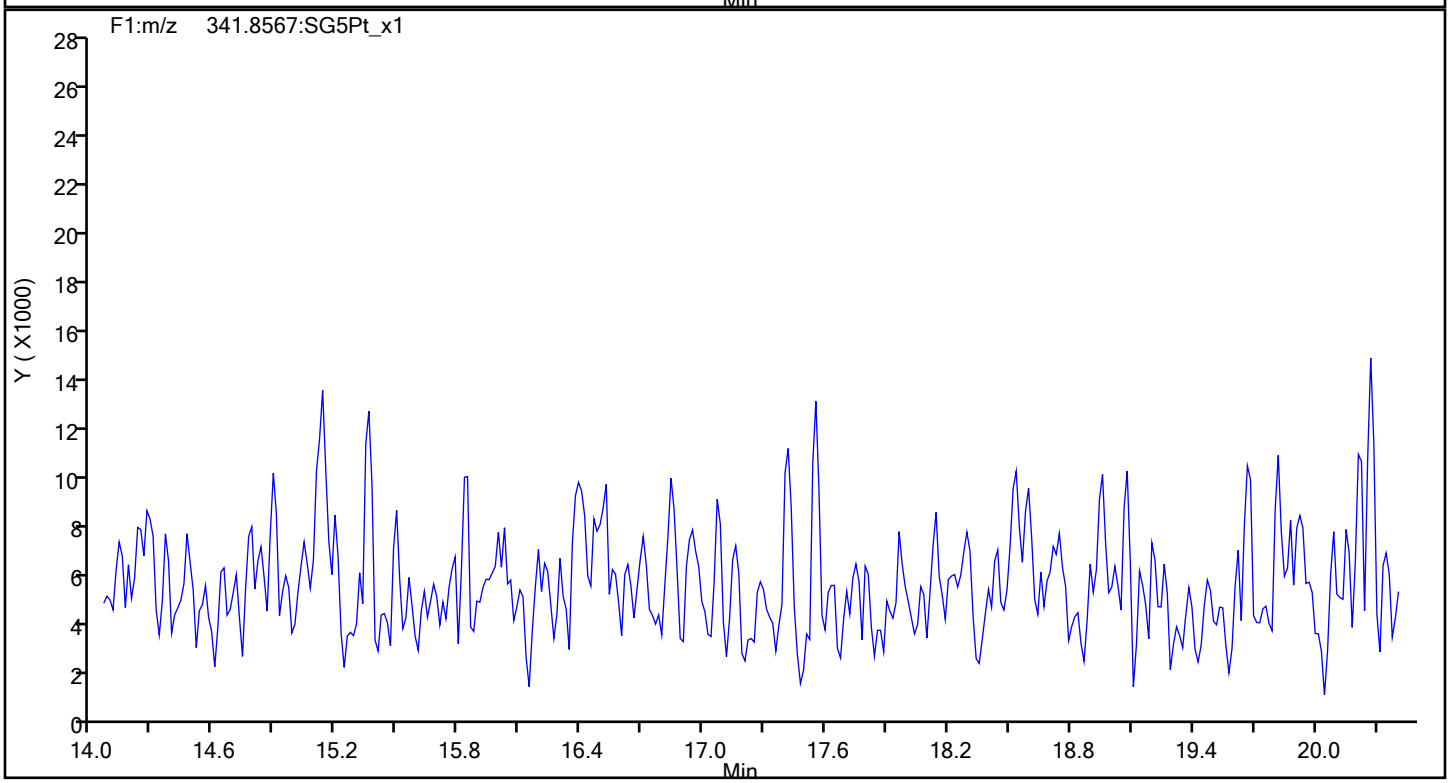
Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



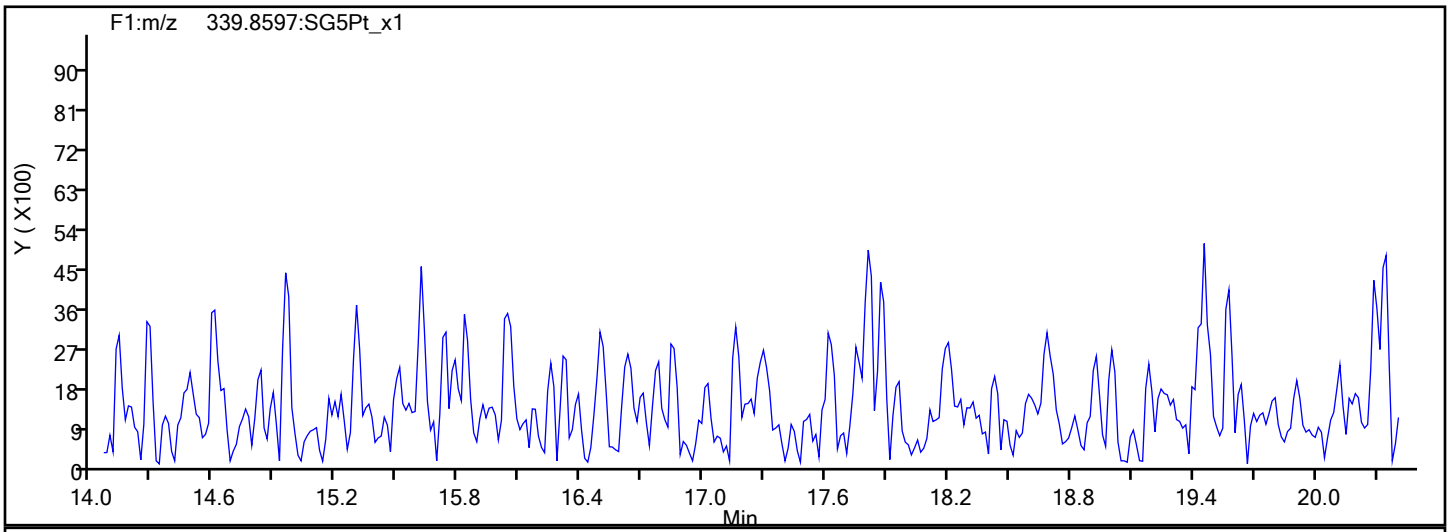


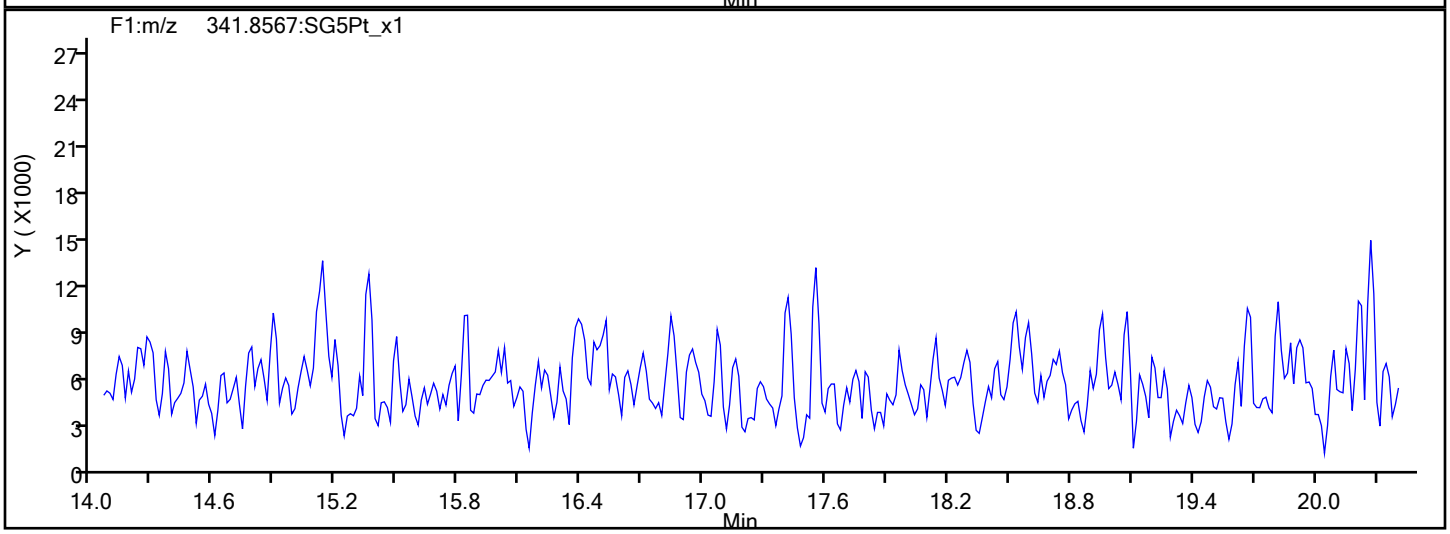
Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

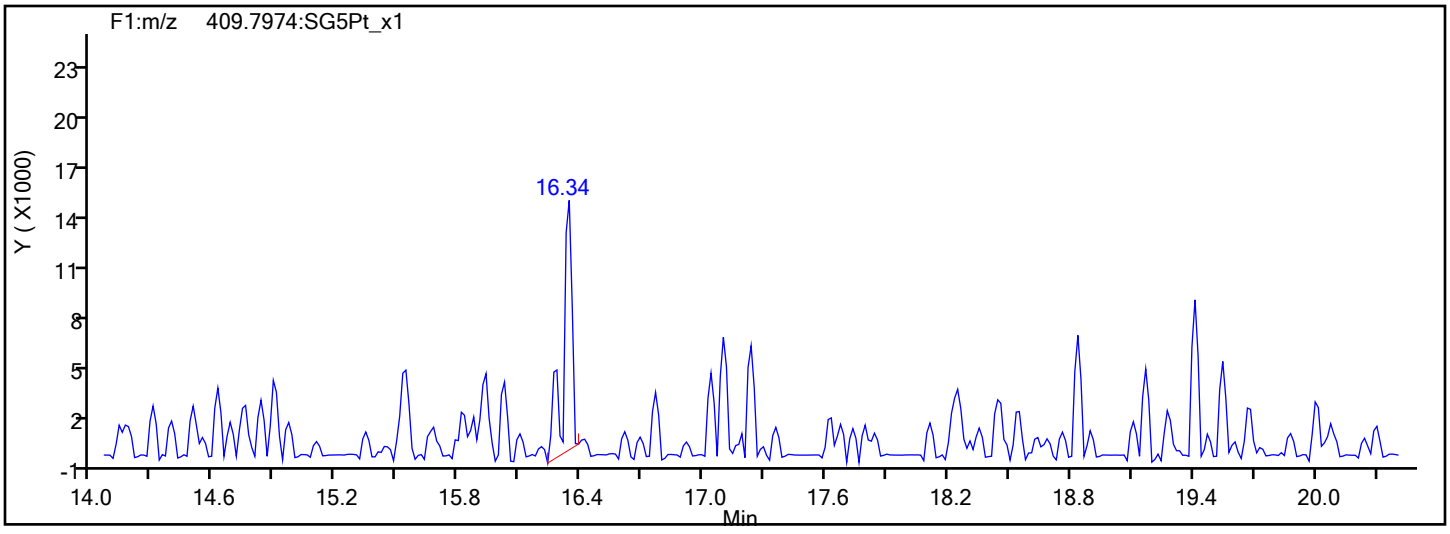
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 20-Dec-2019 14:23:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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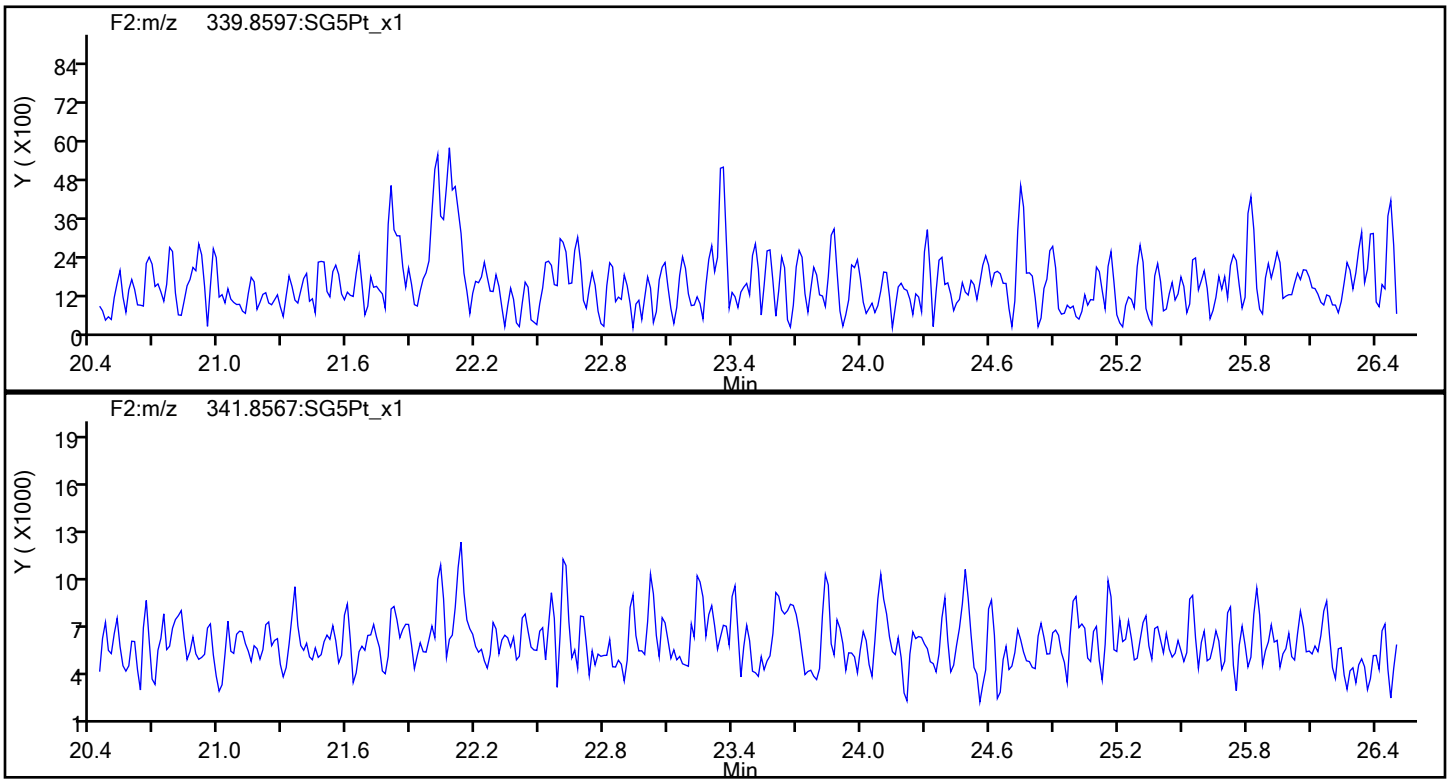

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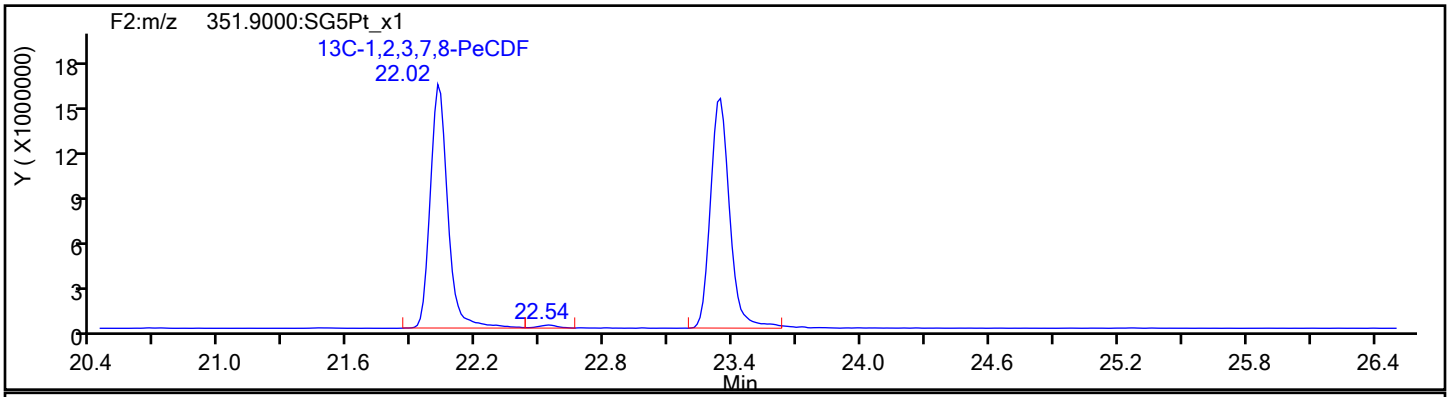

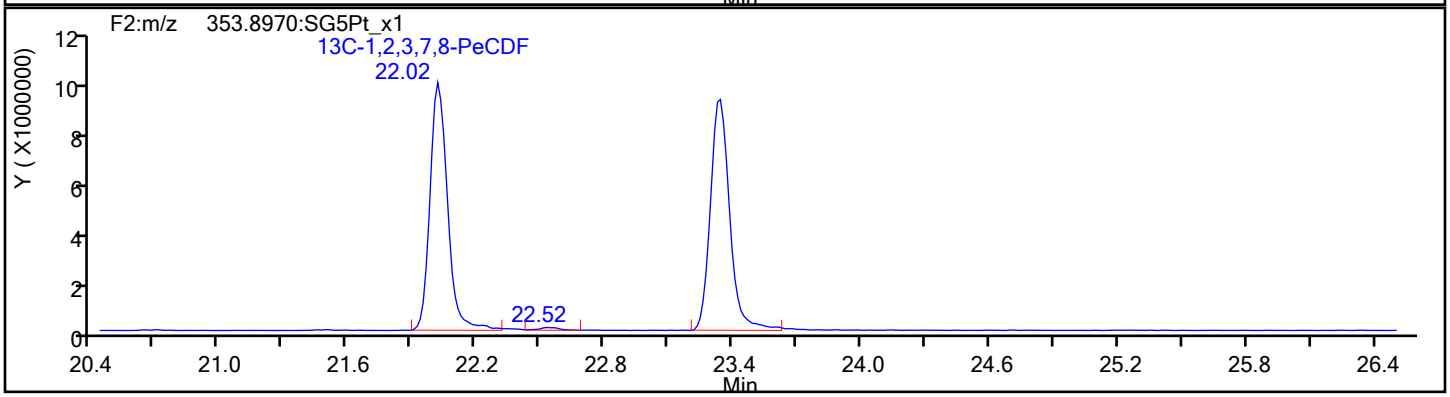

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Eurofins TestAmerica, Sacramento

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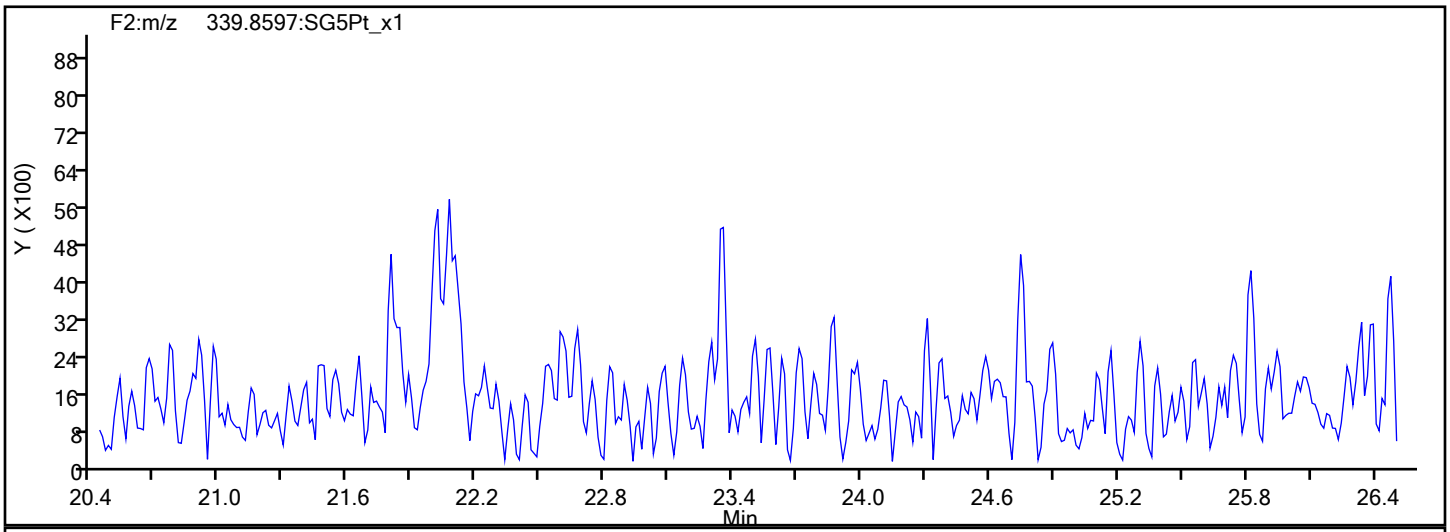
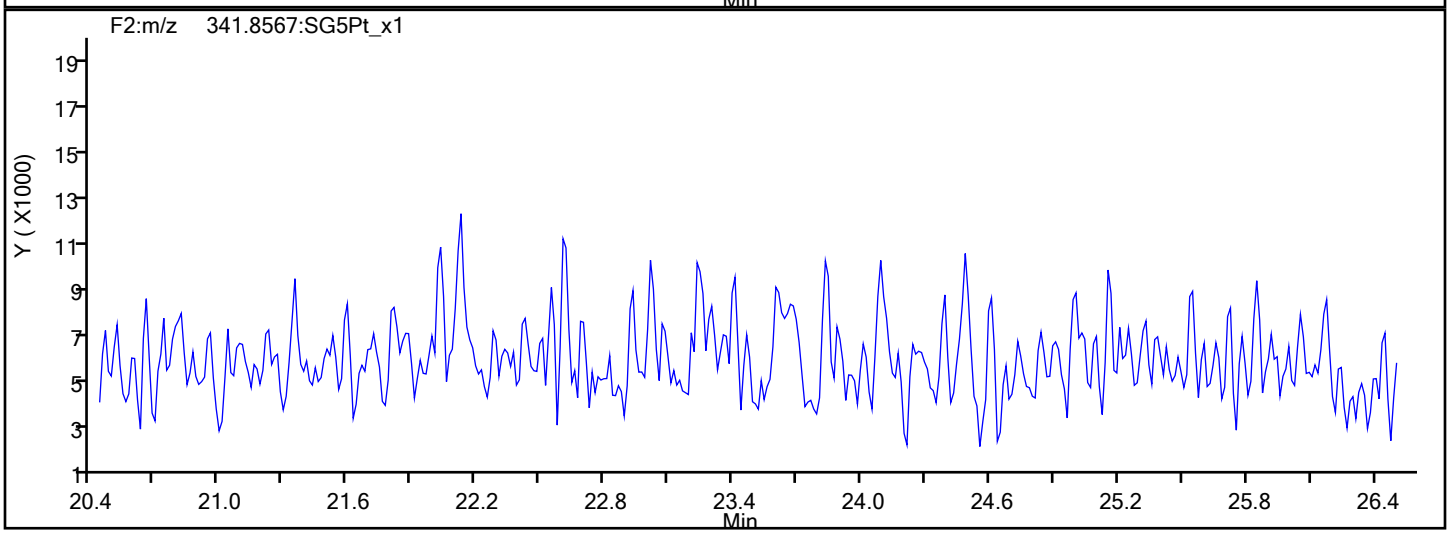
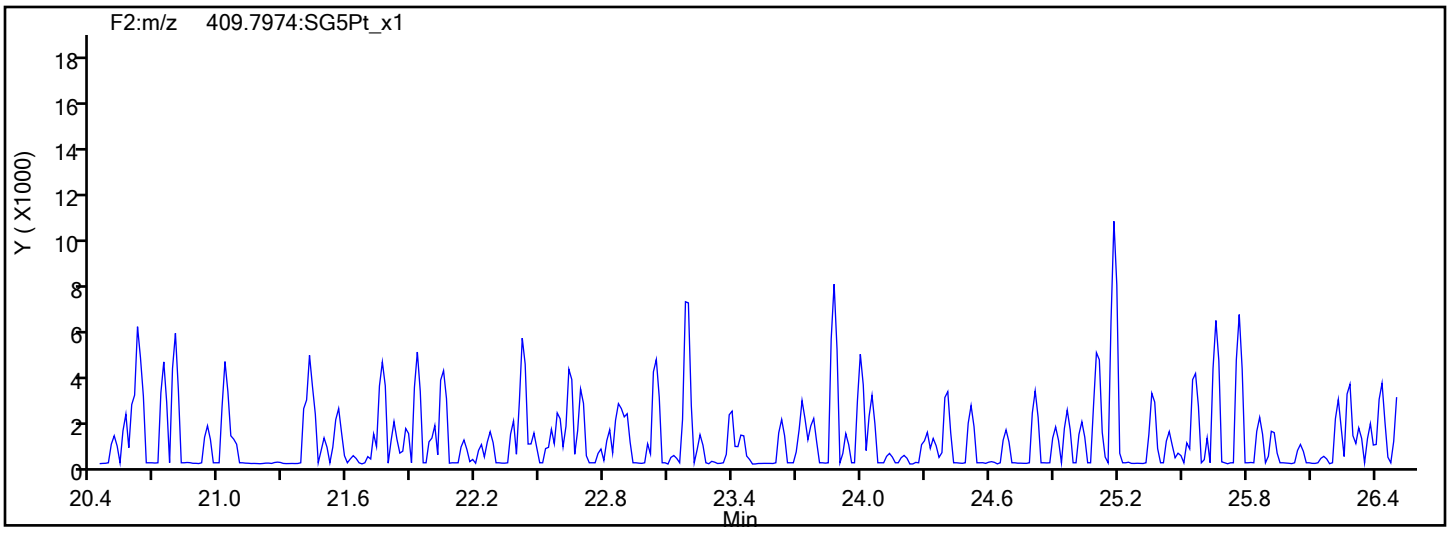




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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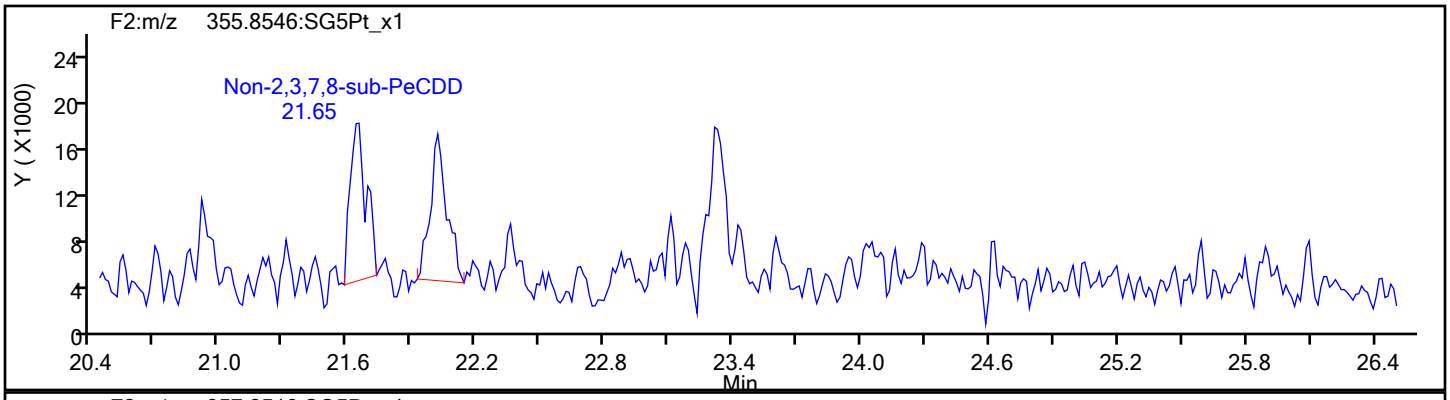

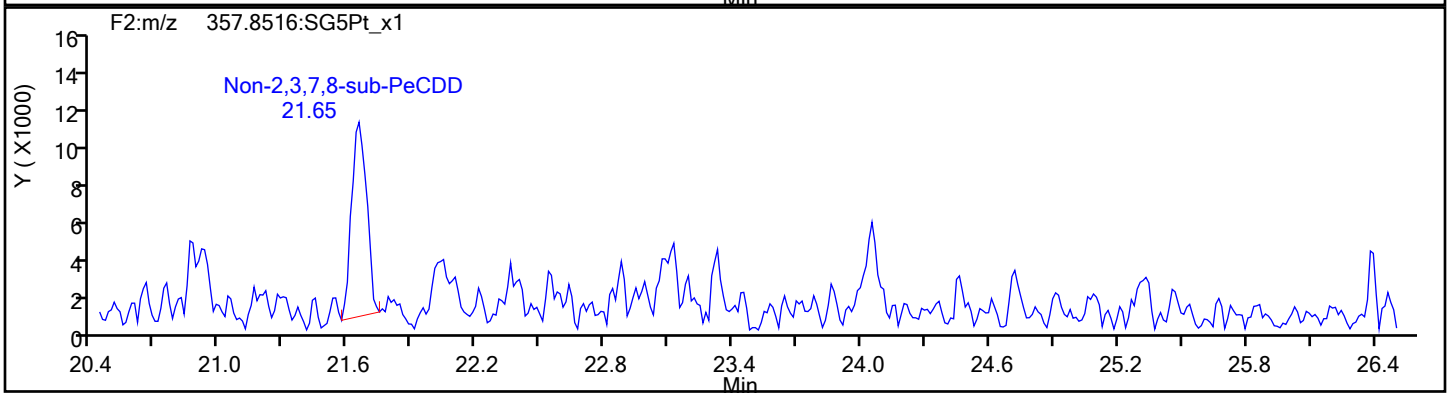

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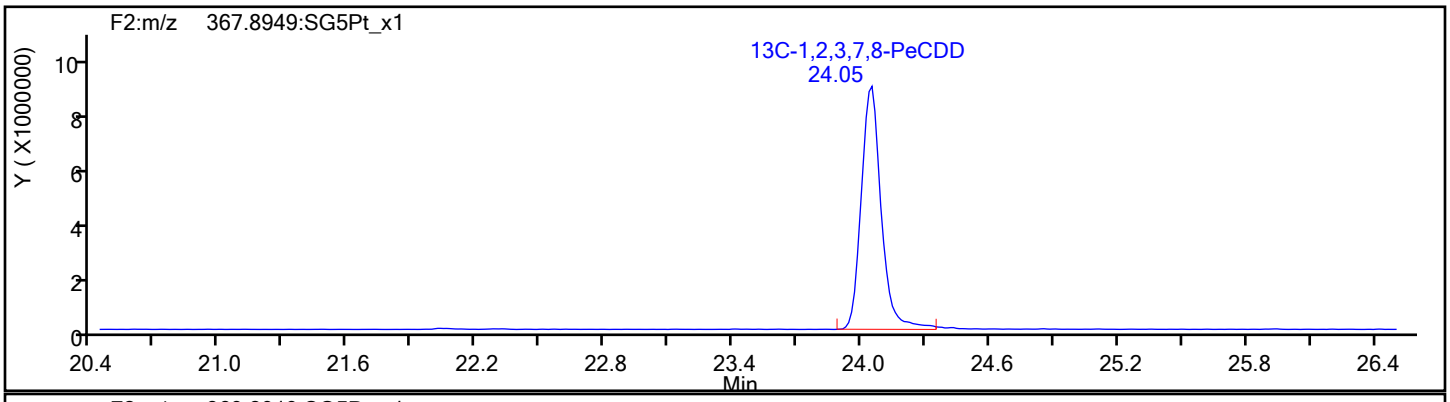

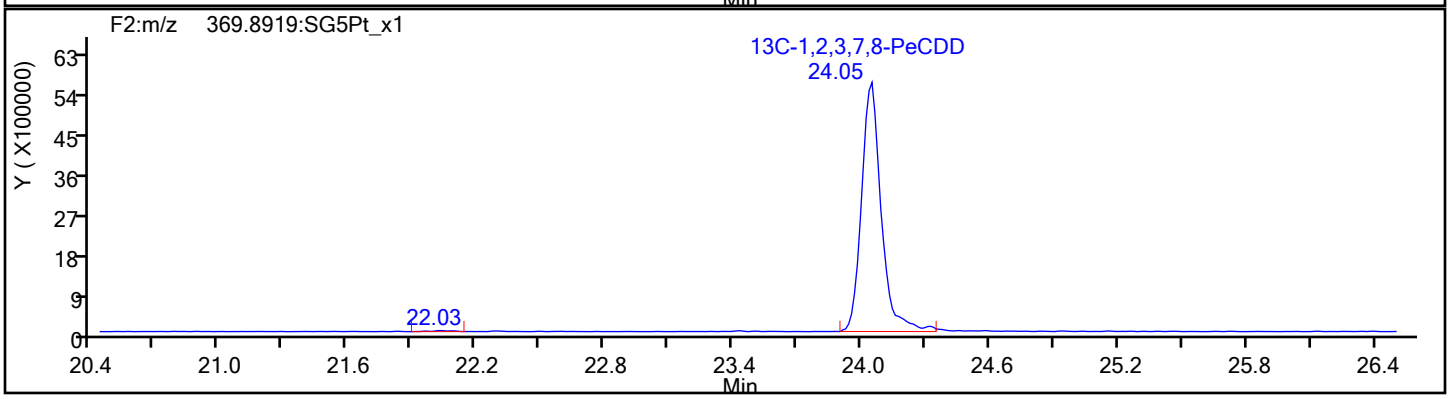

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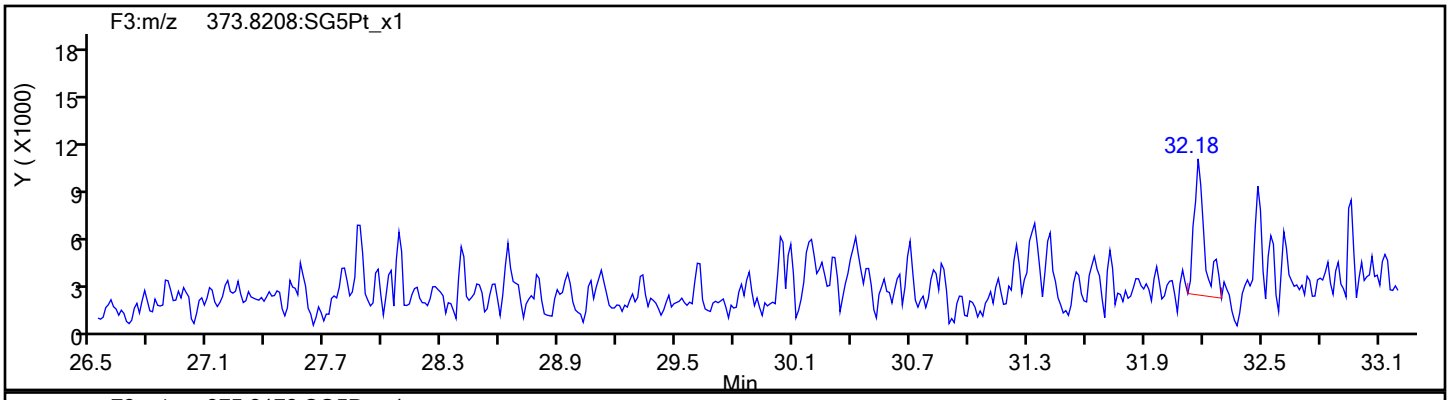
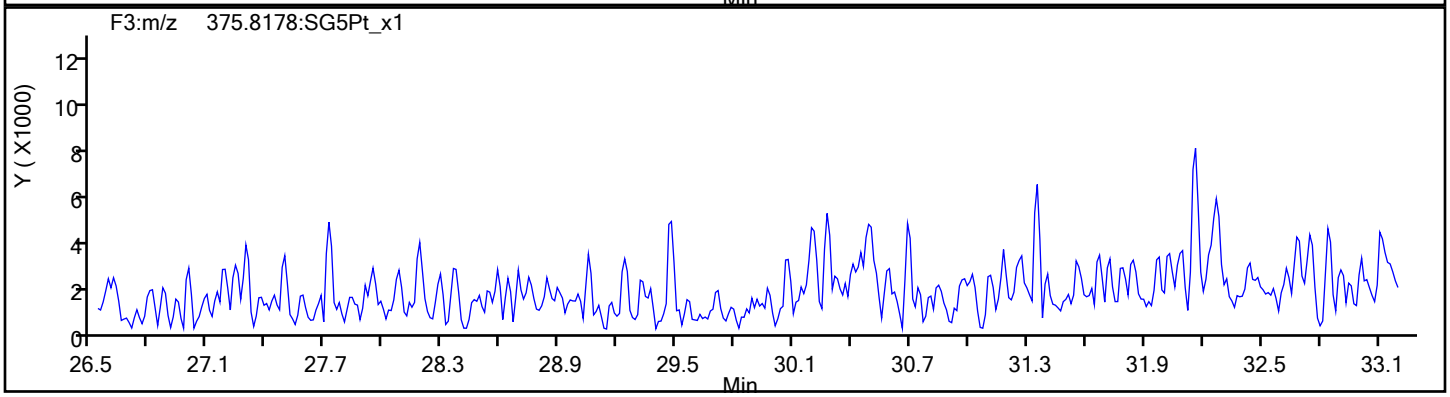
HxCDF





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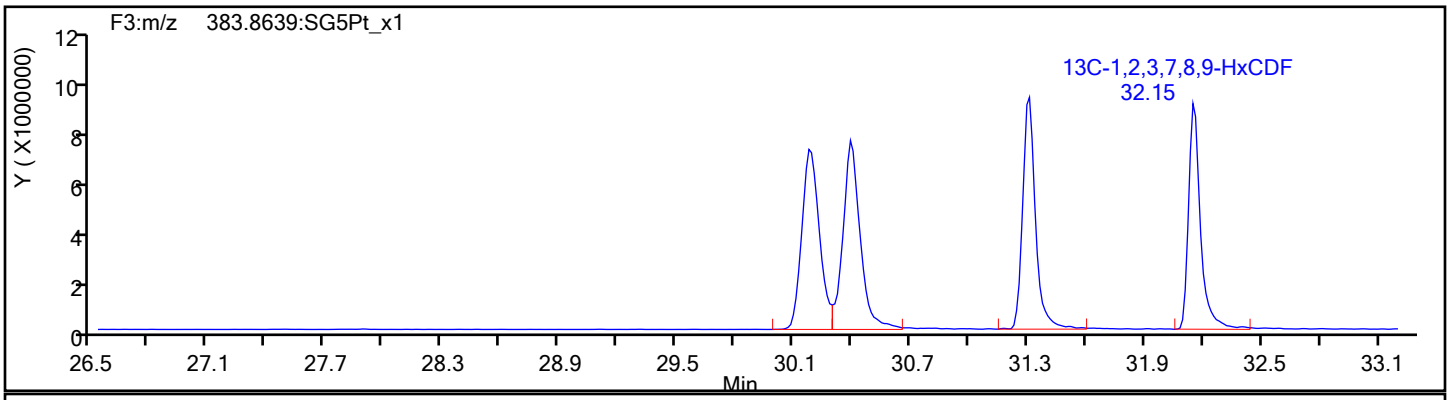

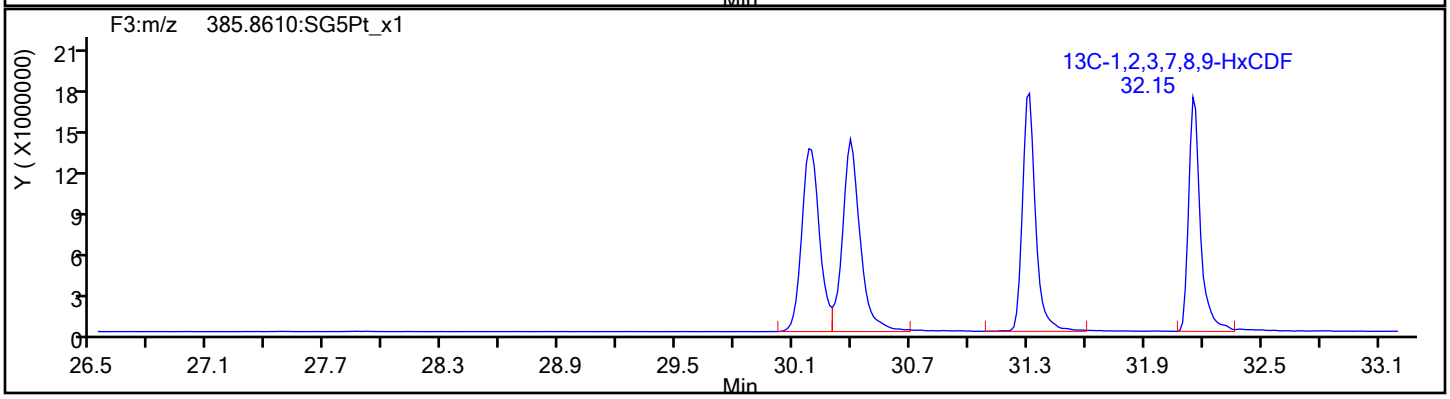

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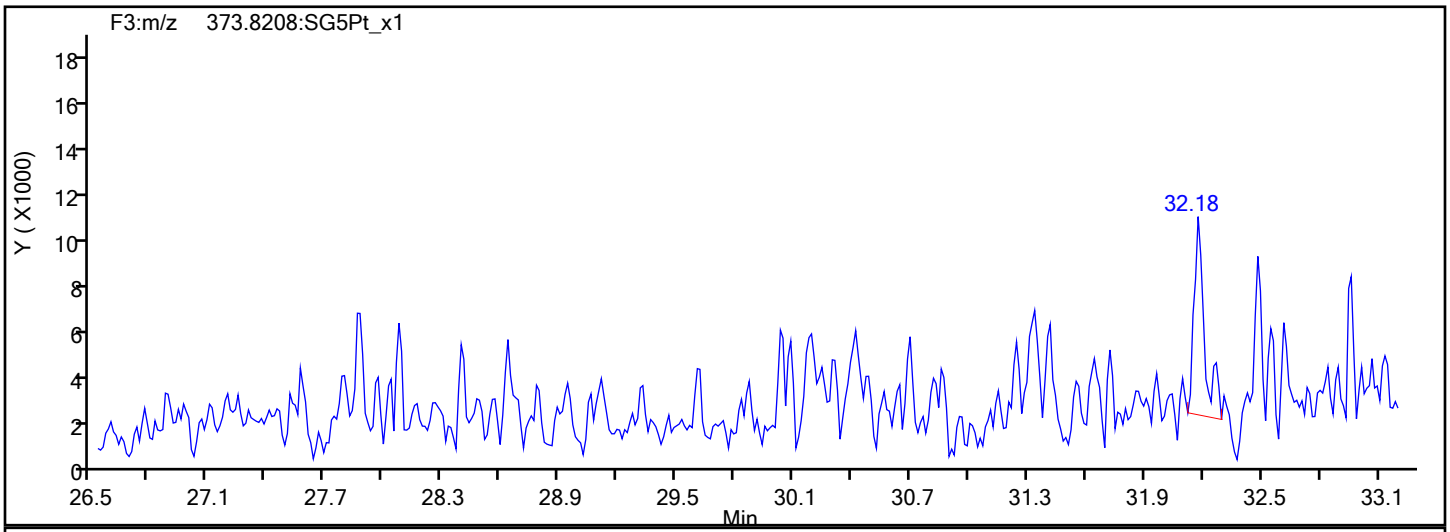
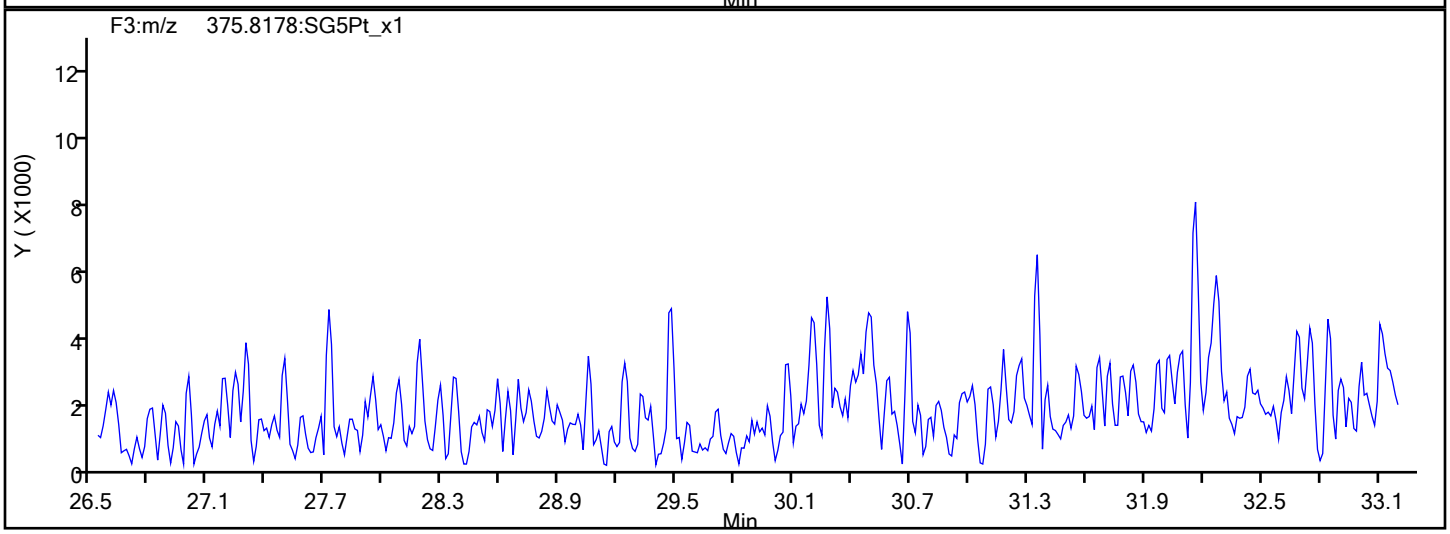
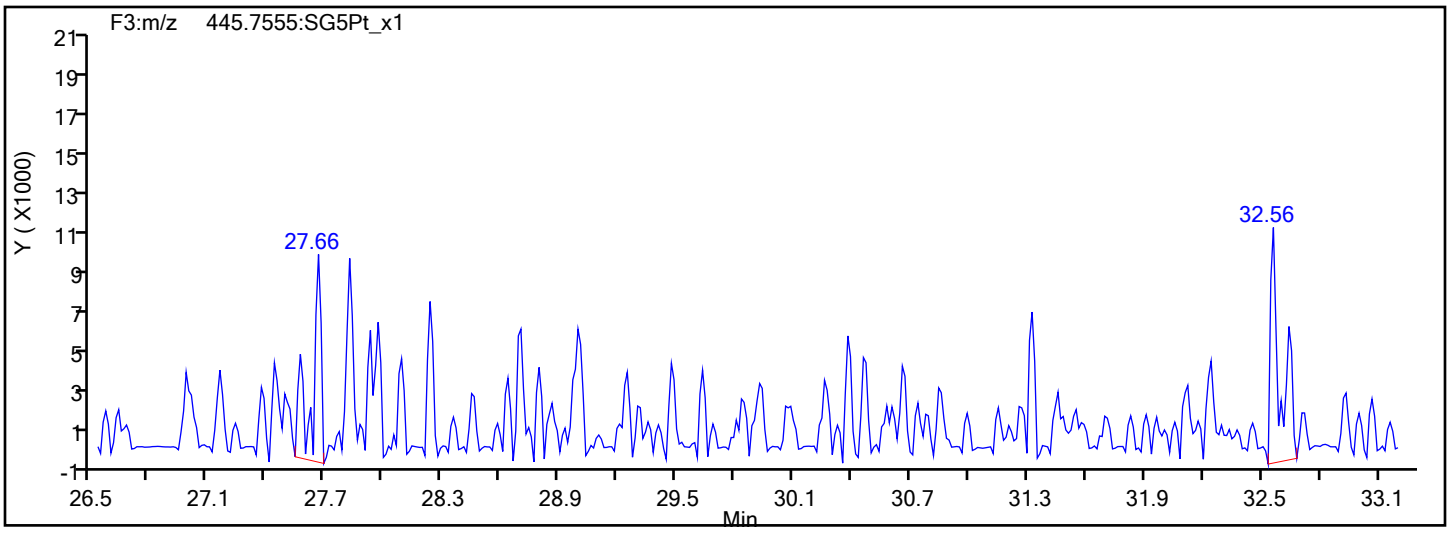




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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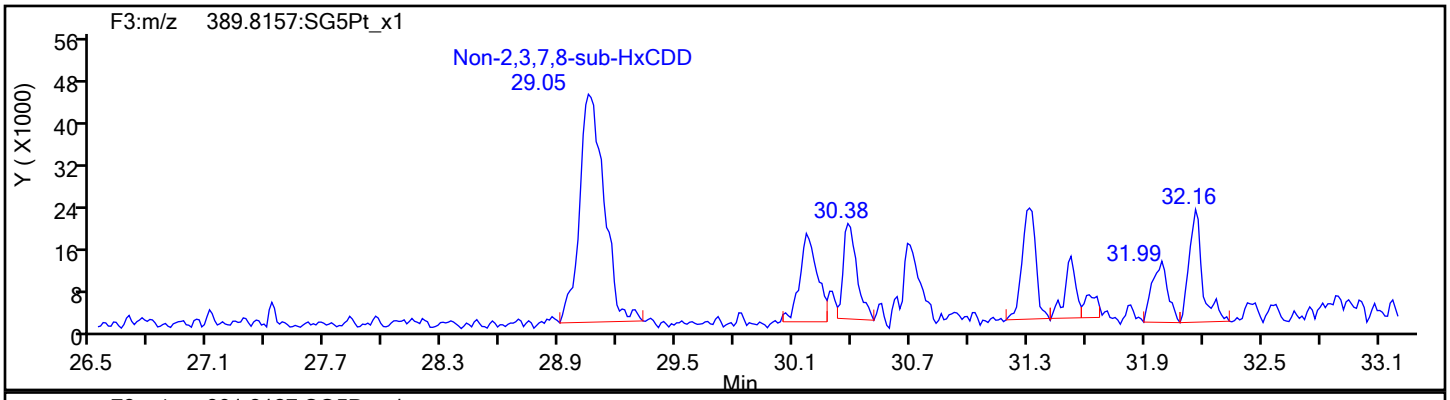
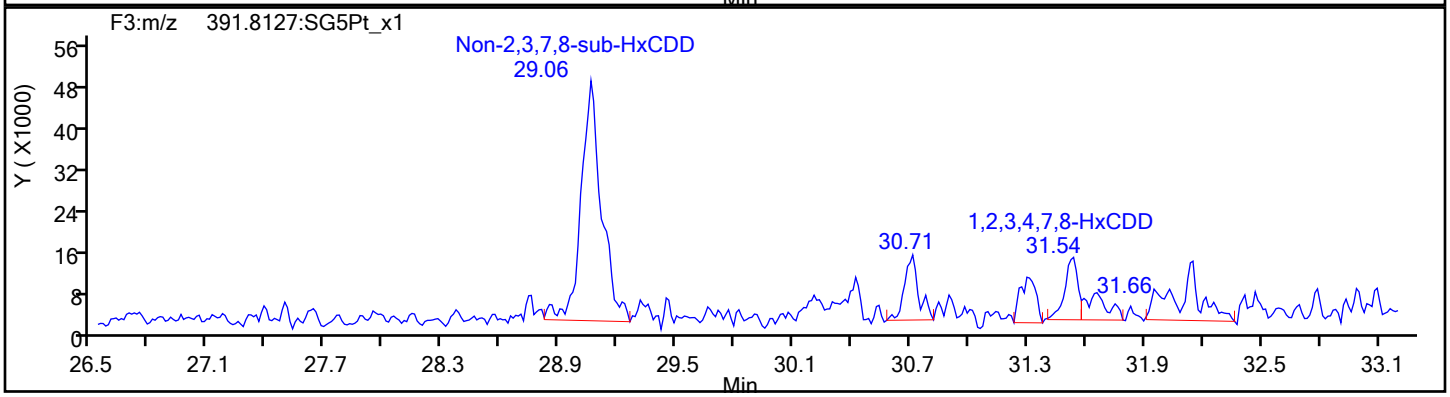
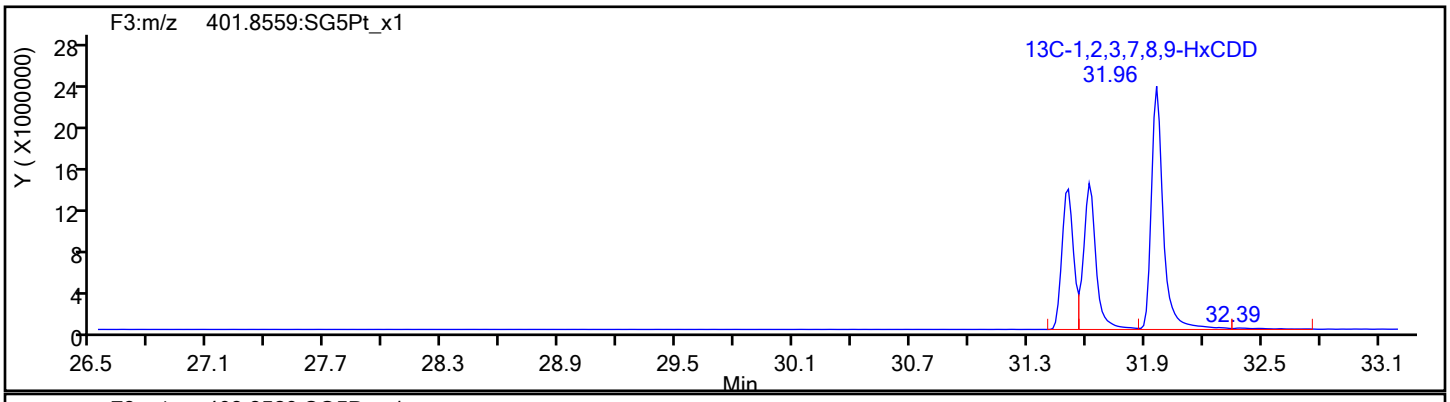
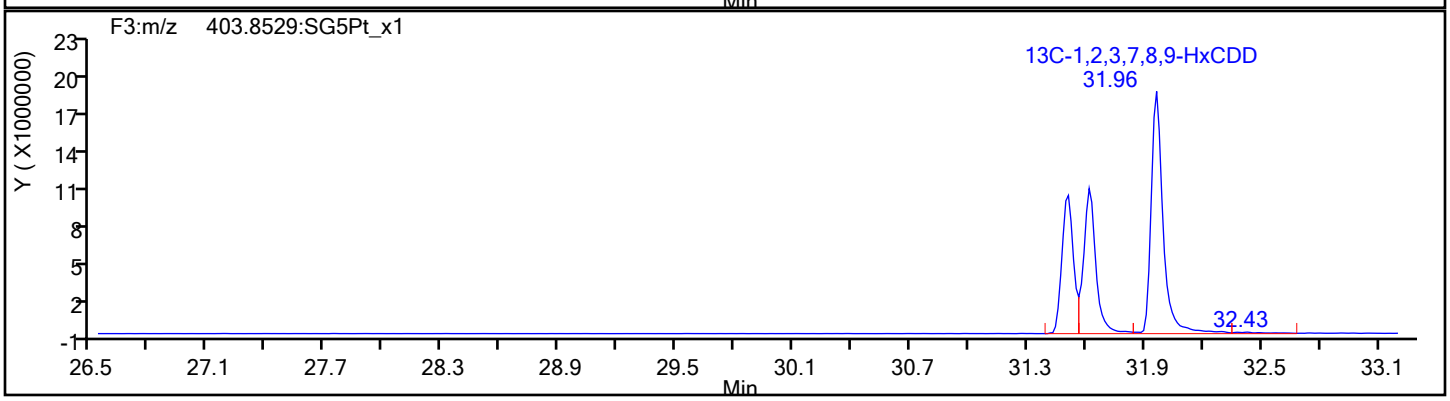




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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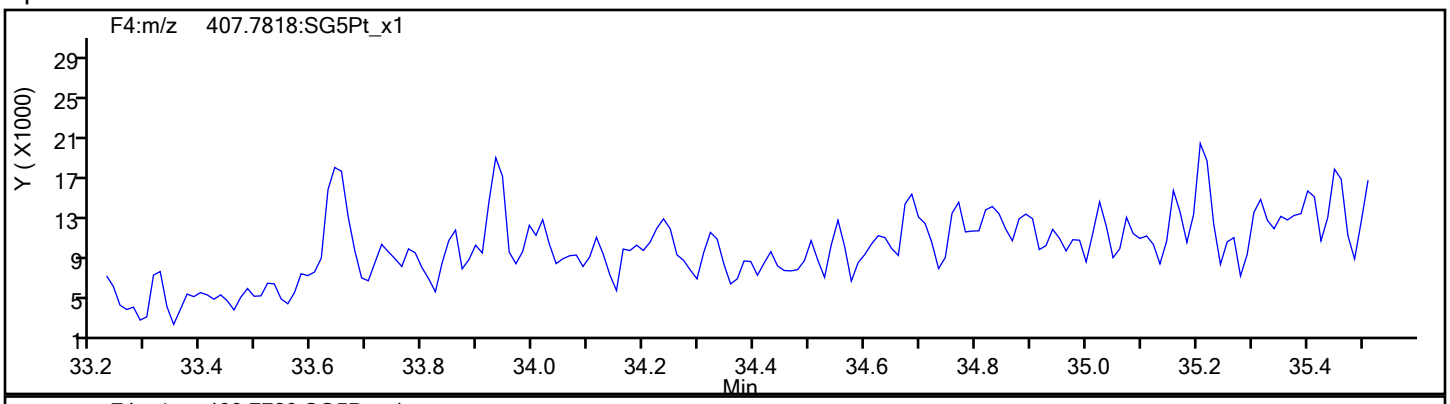
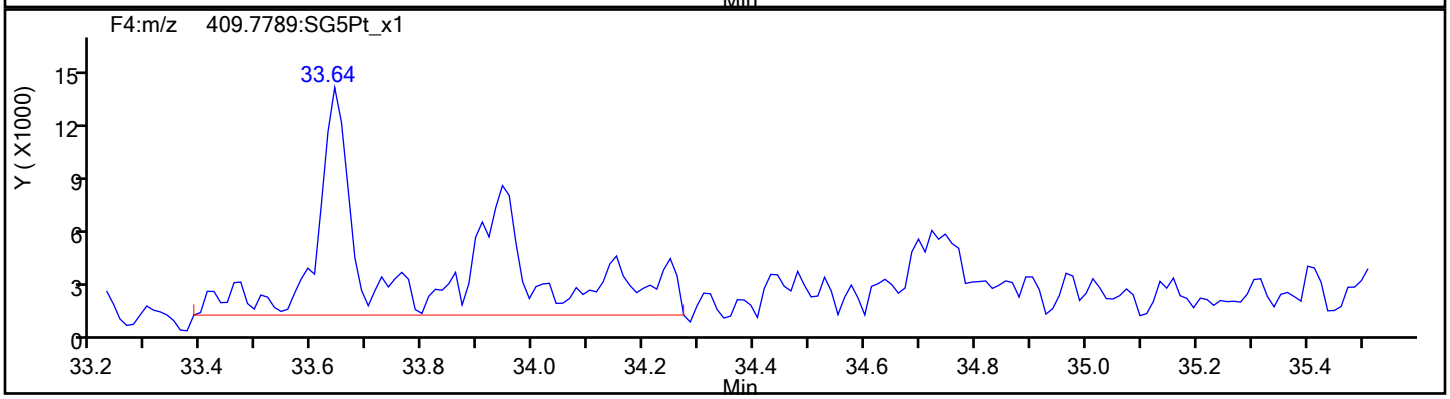
HpCDF





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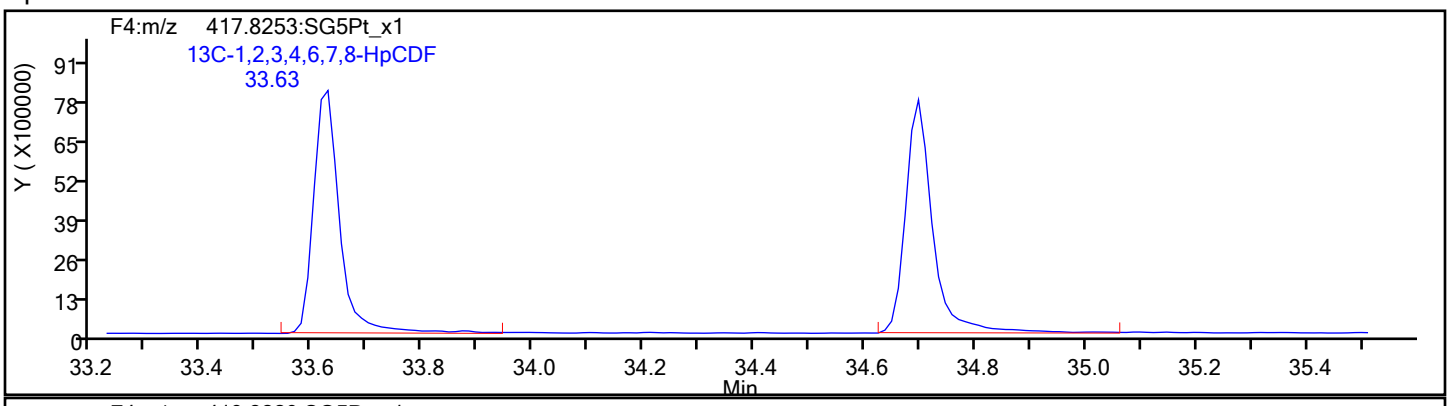

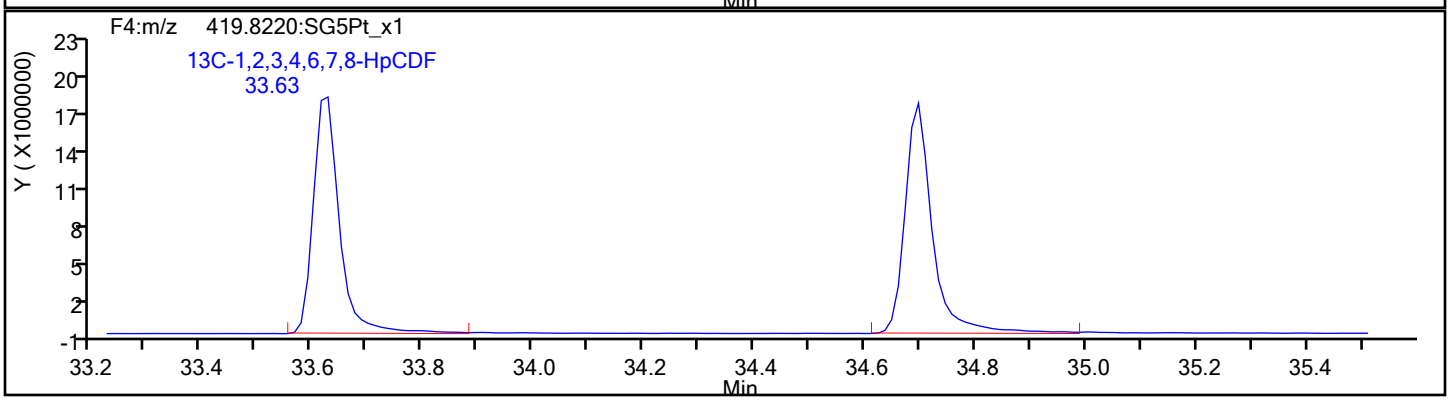

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Eurofins TestAmerica, Sacramento

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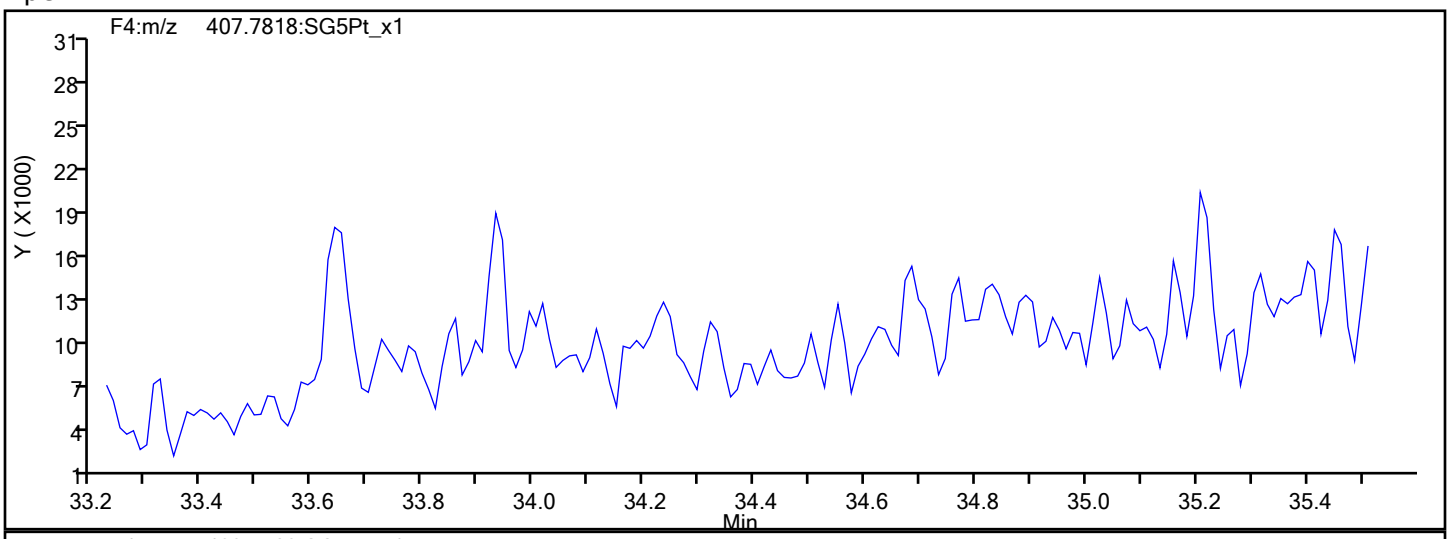
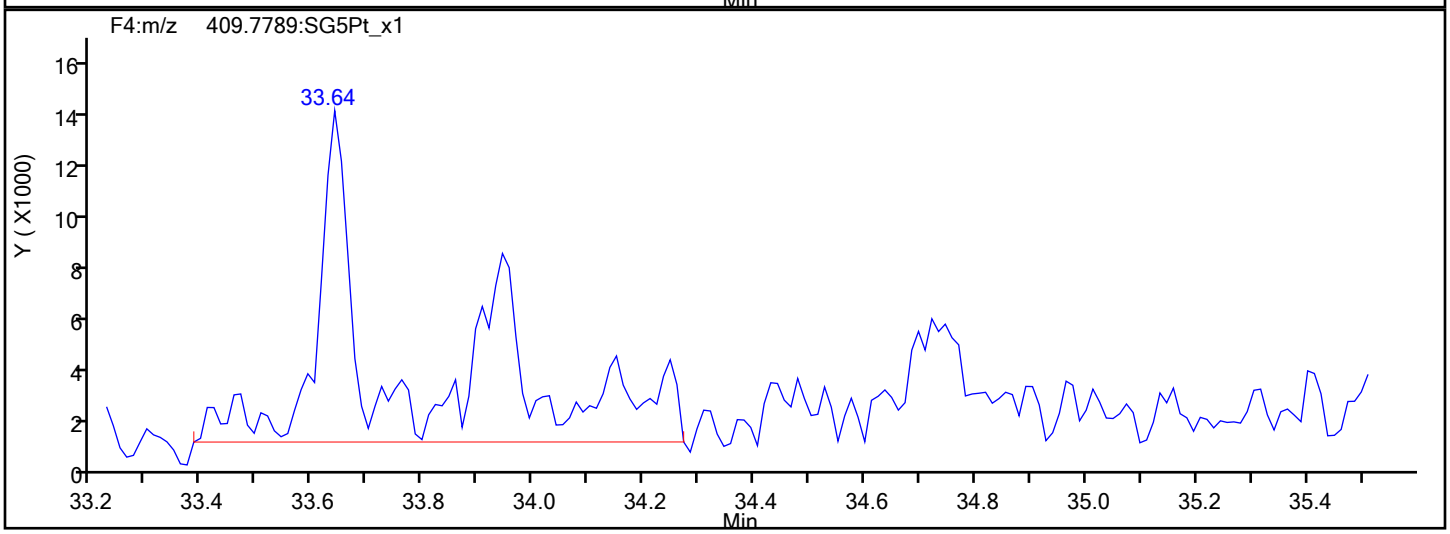
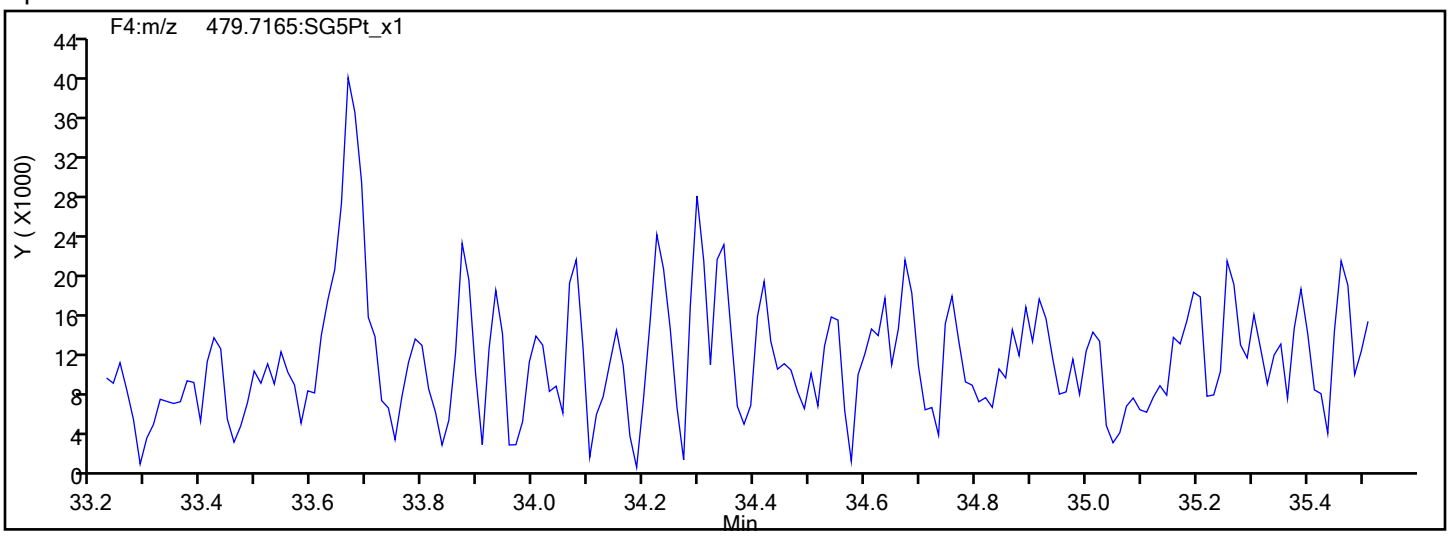




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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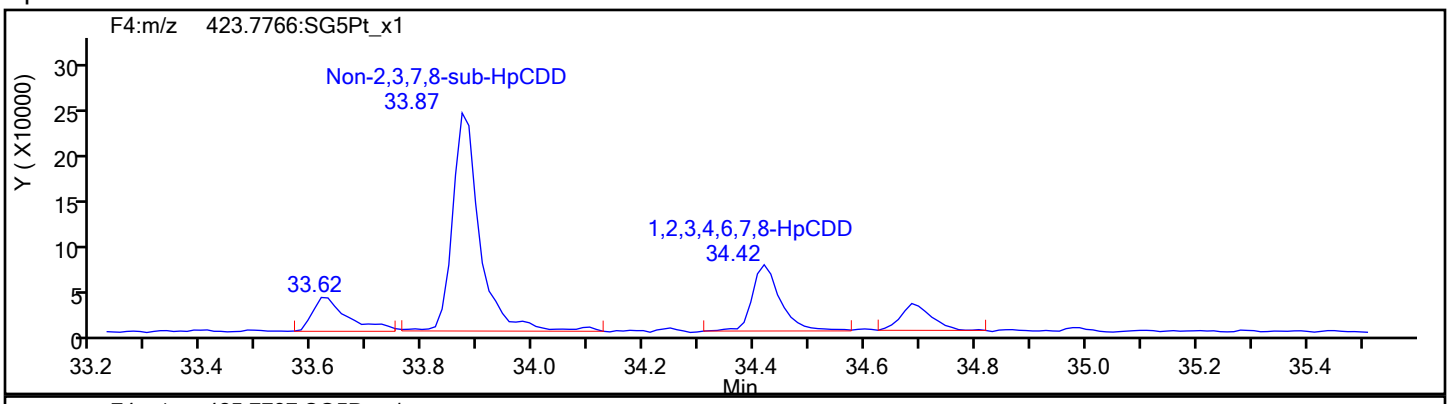

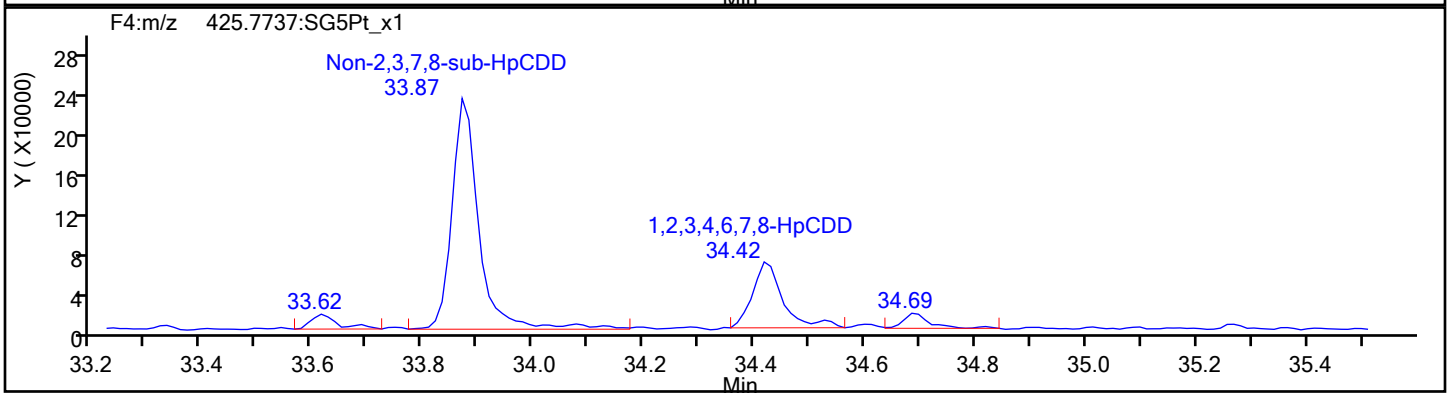

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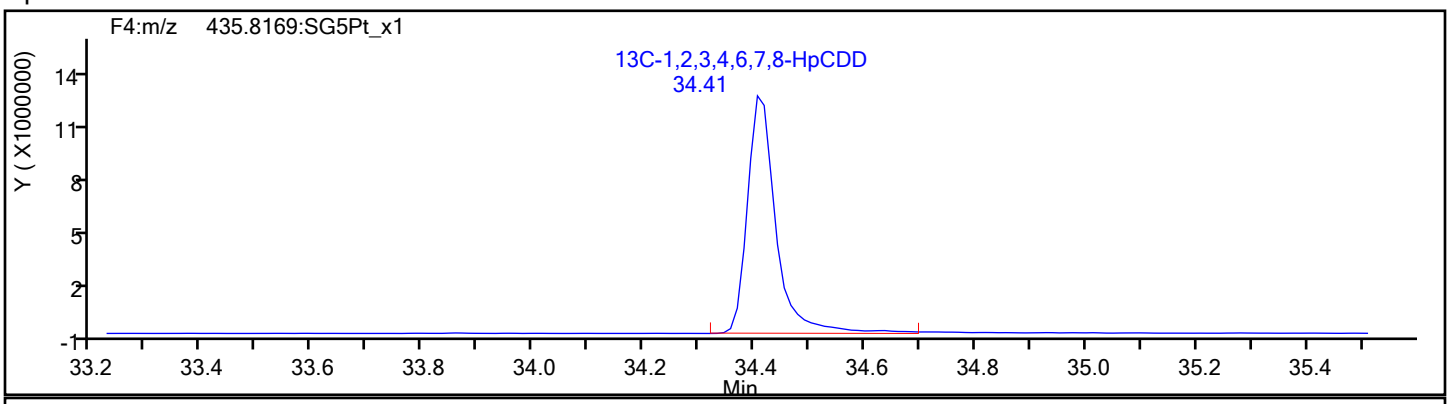

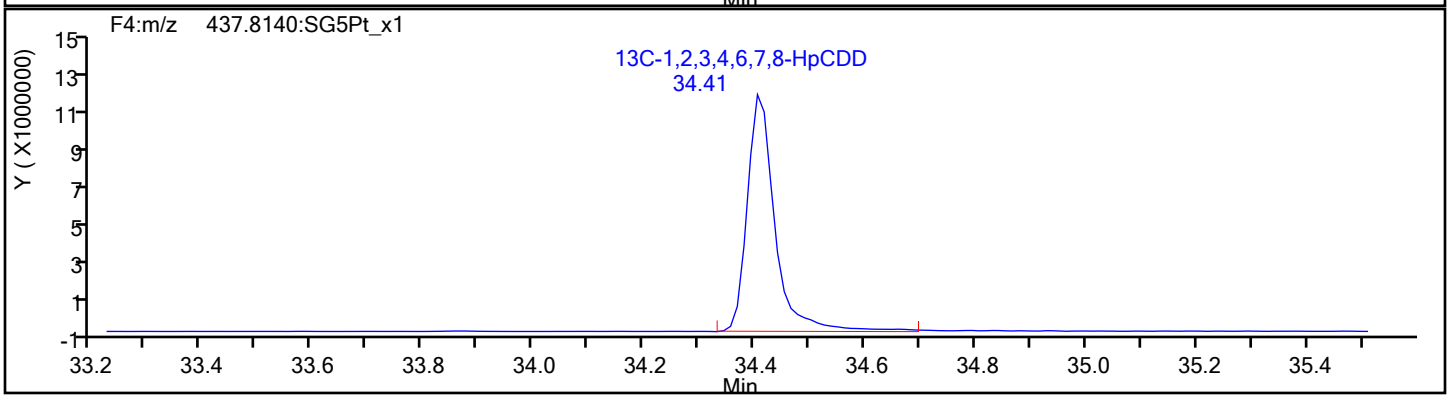

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Eurofins TestAmerica, Sacramento

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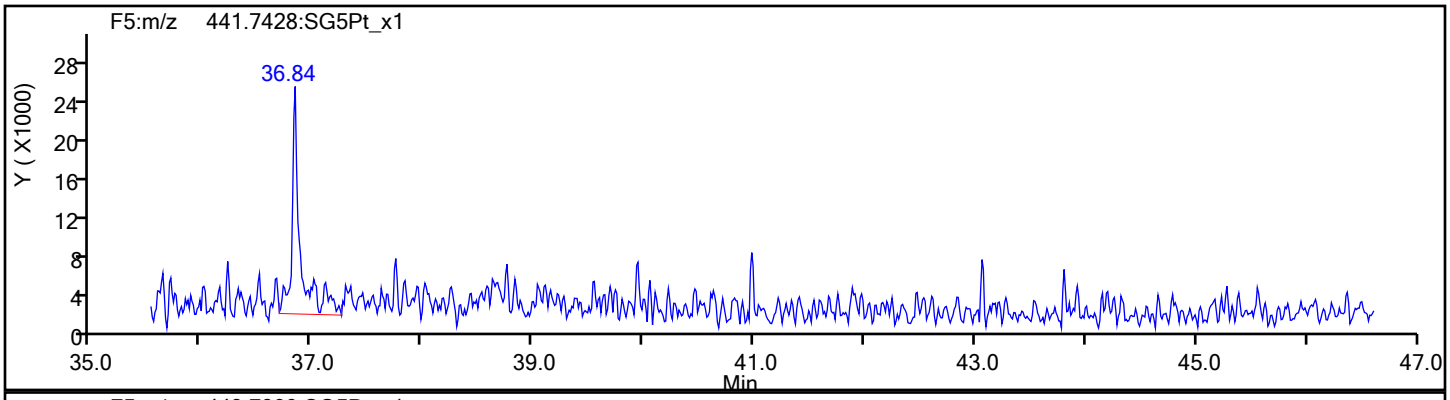
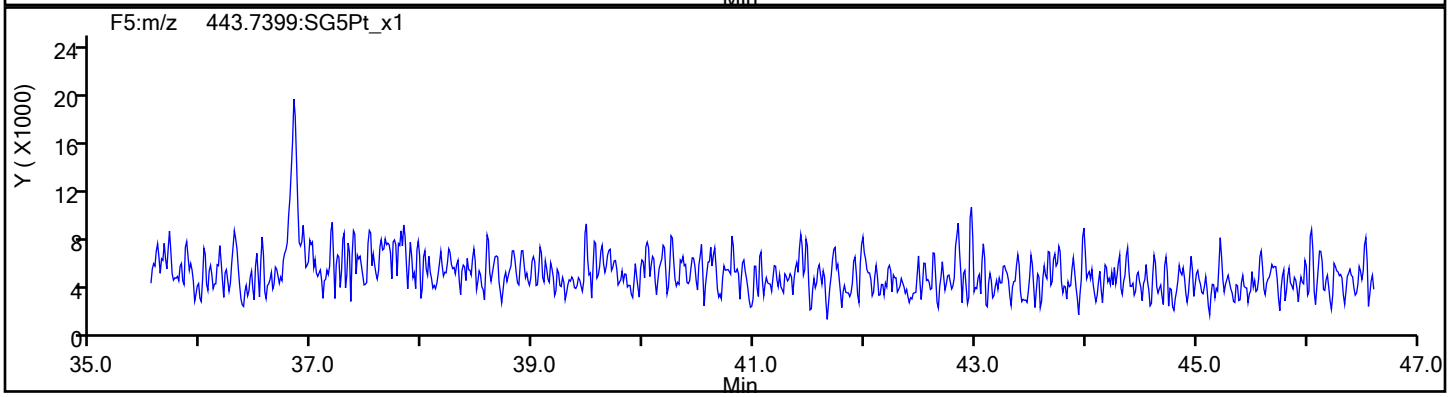
OCDF





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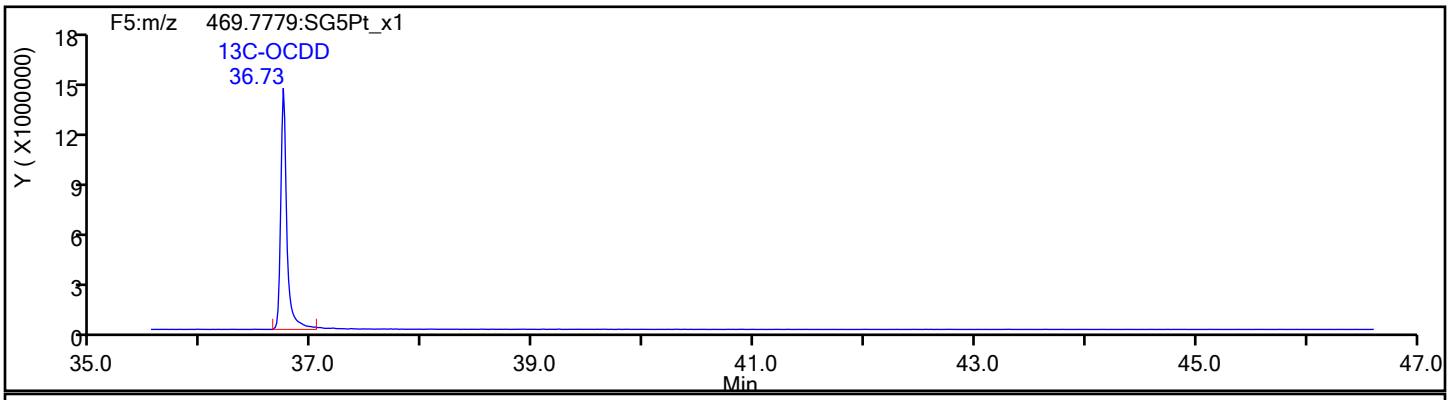

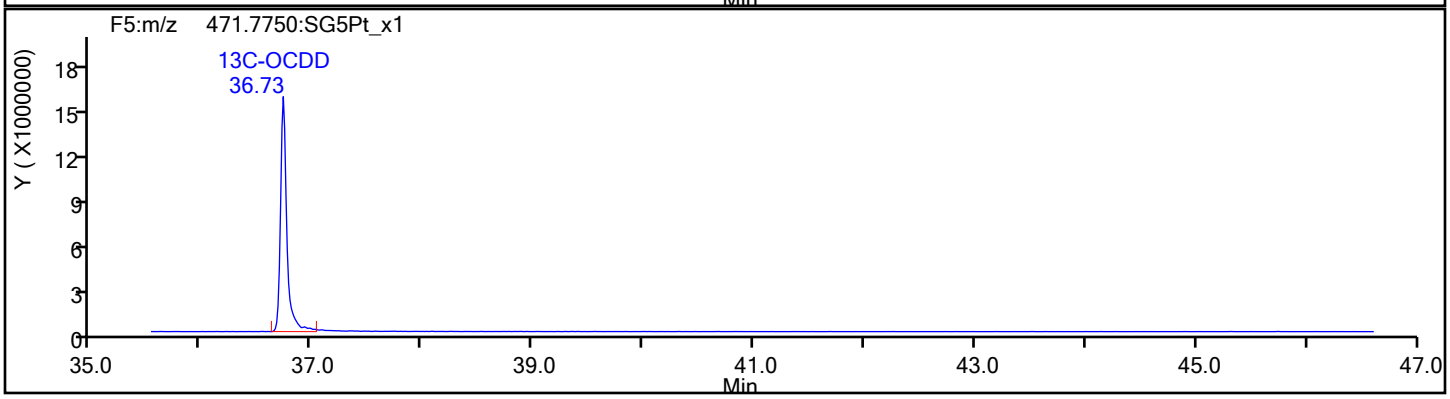

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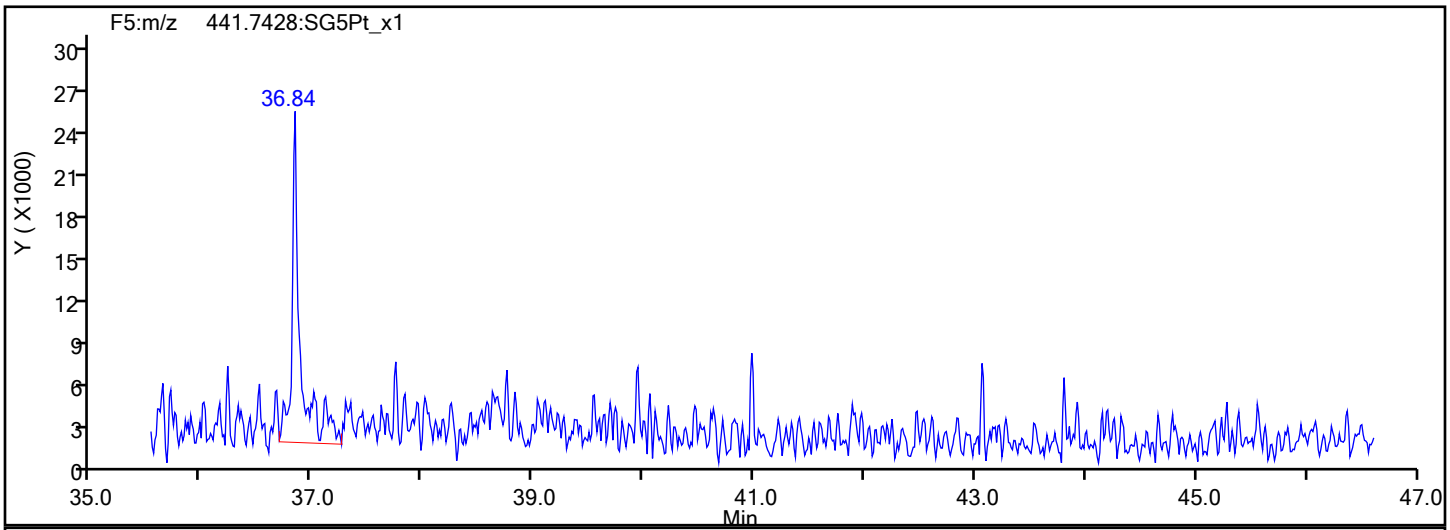
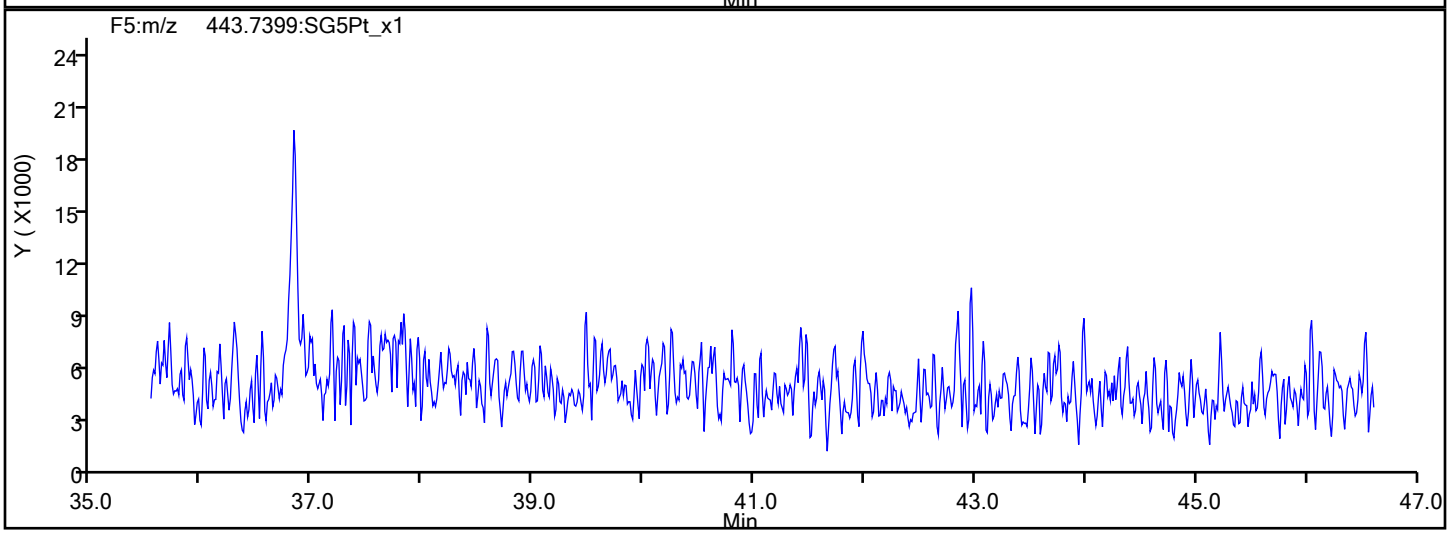
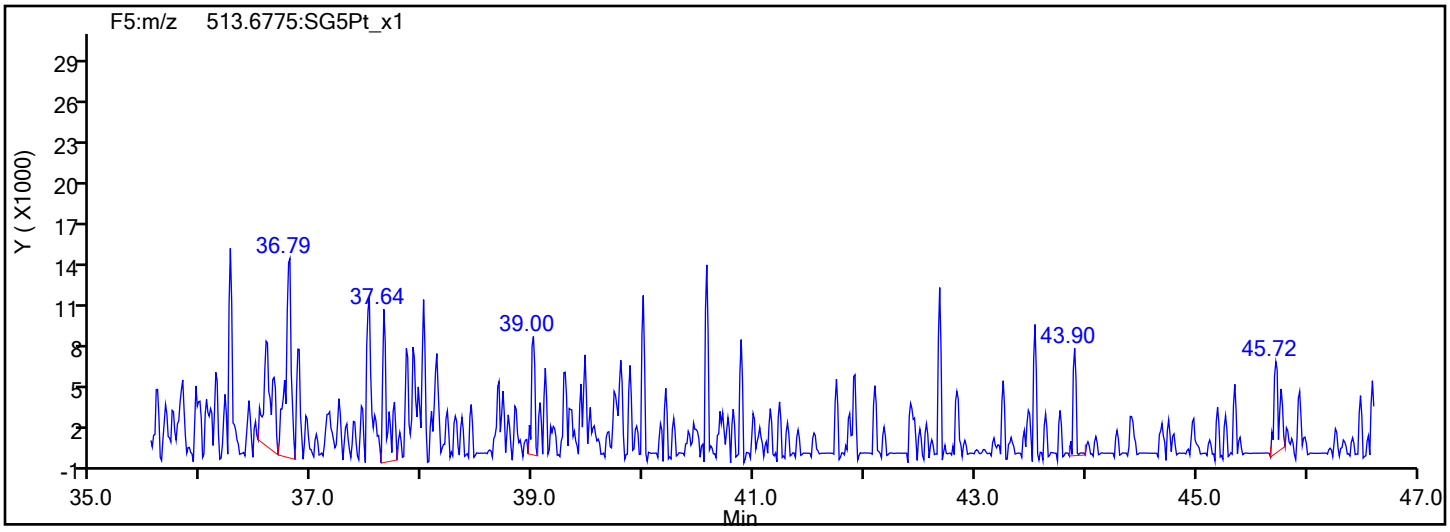




OCDF Interference Mass

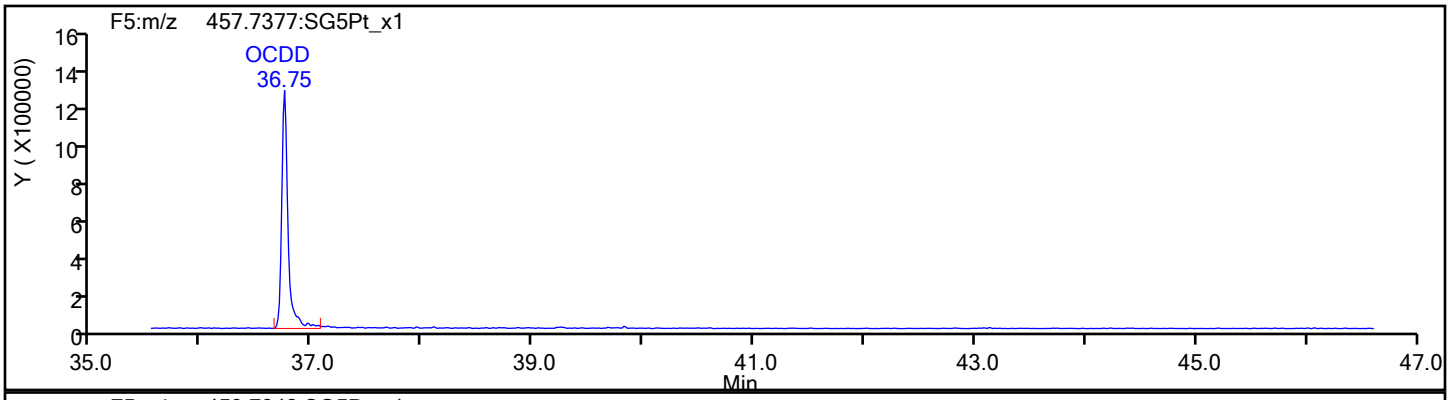


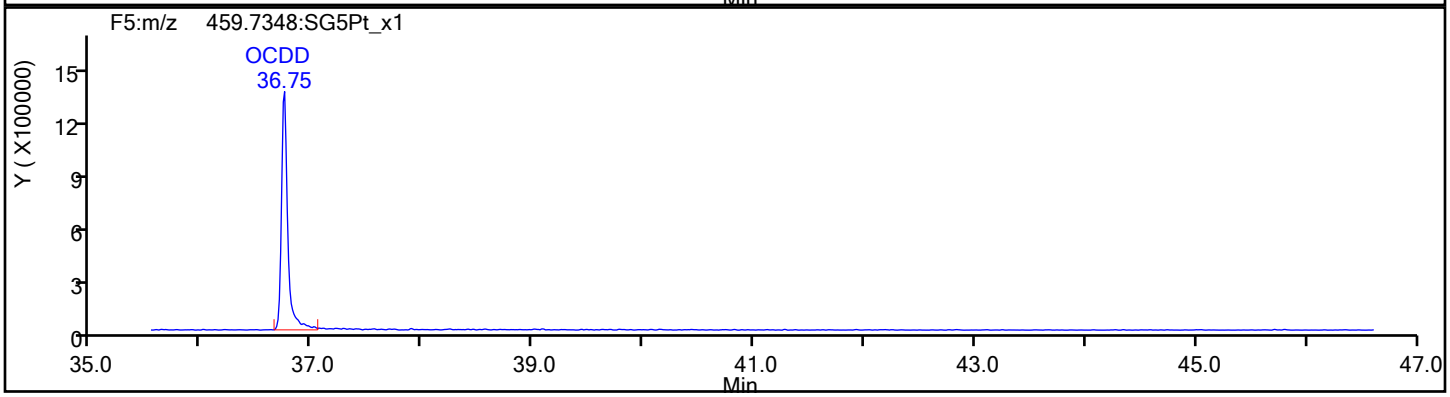
Report Date: 20-Dec-2019 14:23:45 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

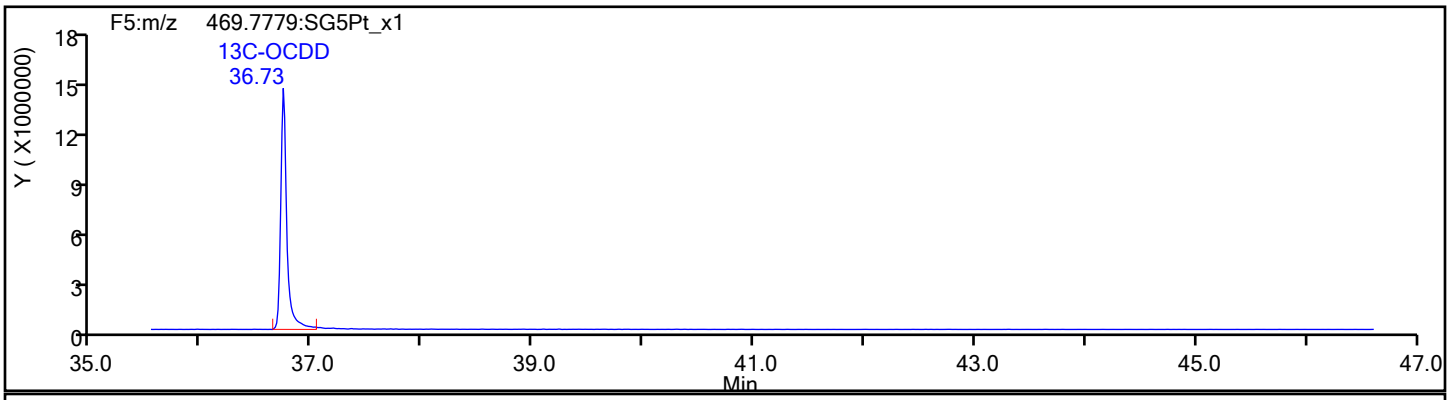
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

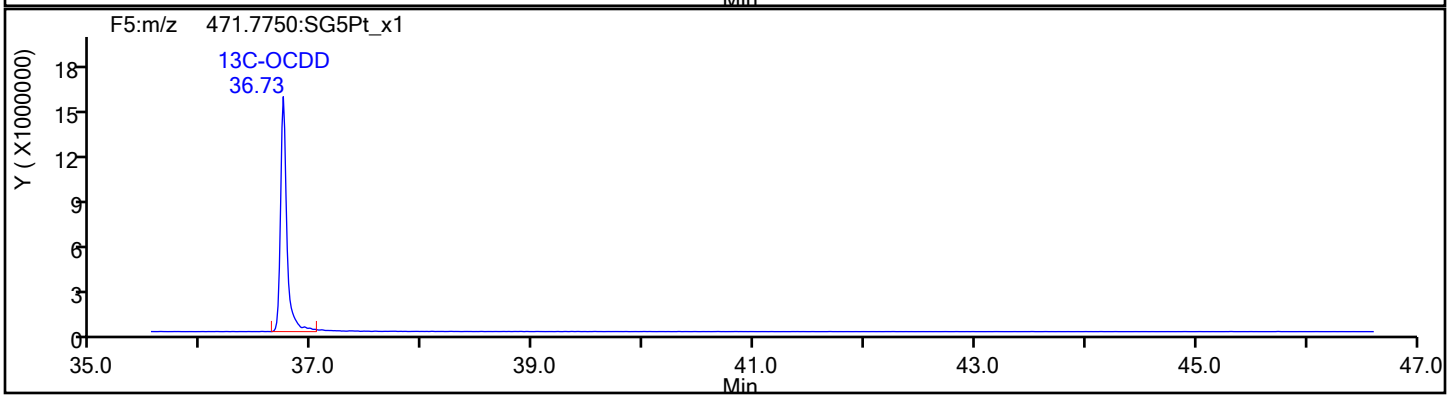
OCDD





OCDD Standards

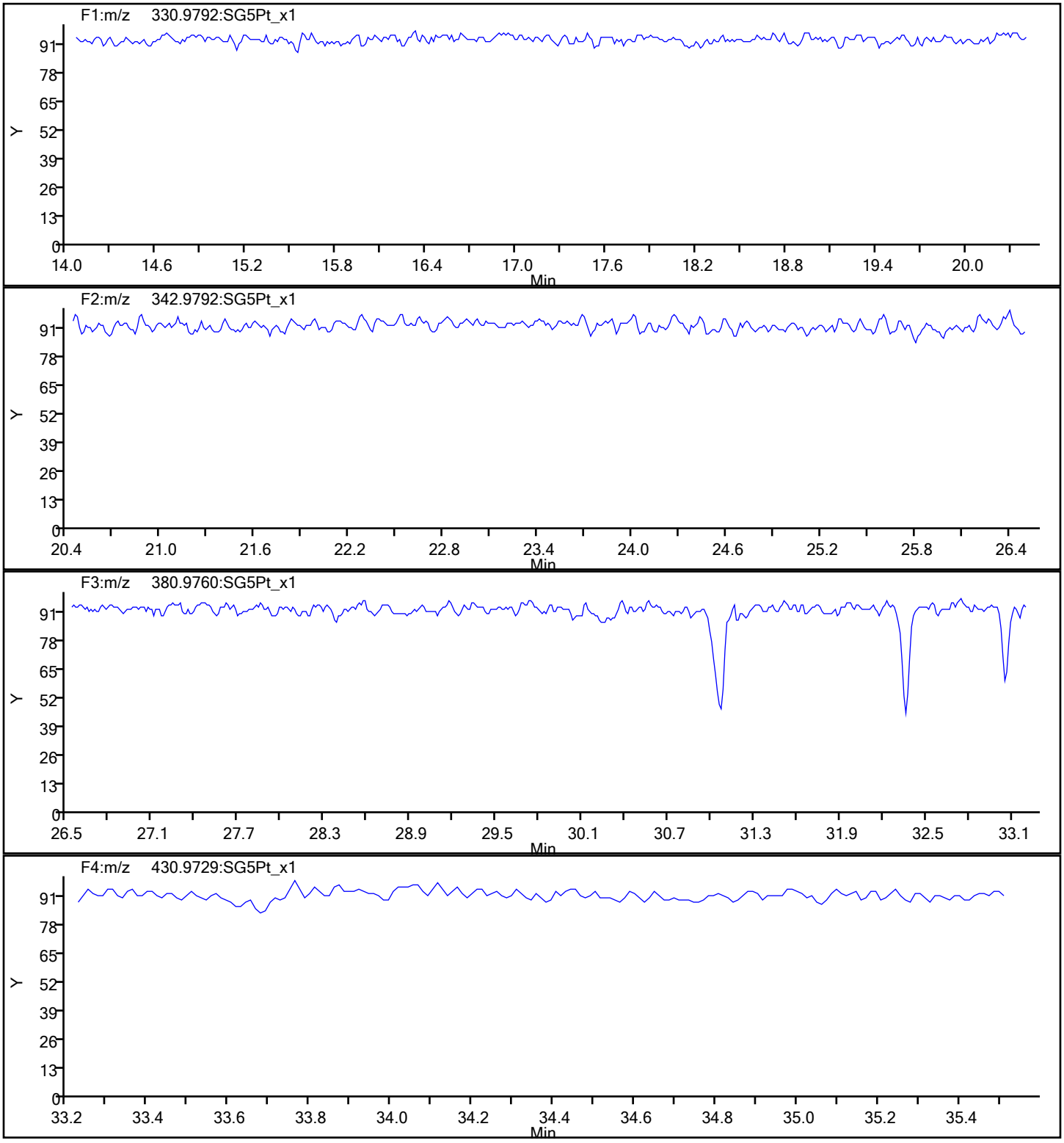




Report Date: 20-Dec-2019 14:23:45 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

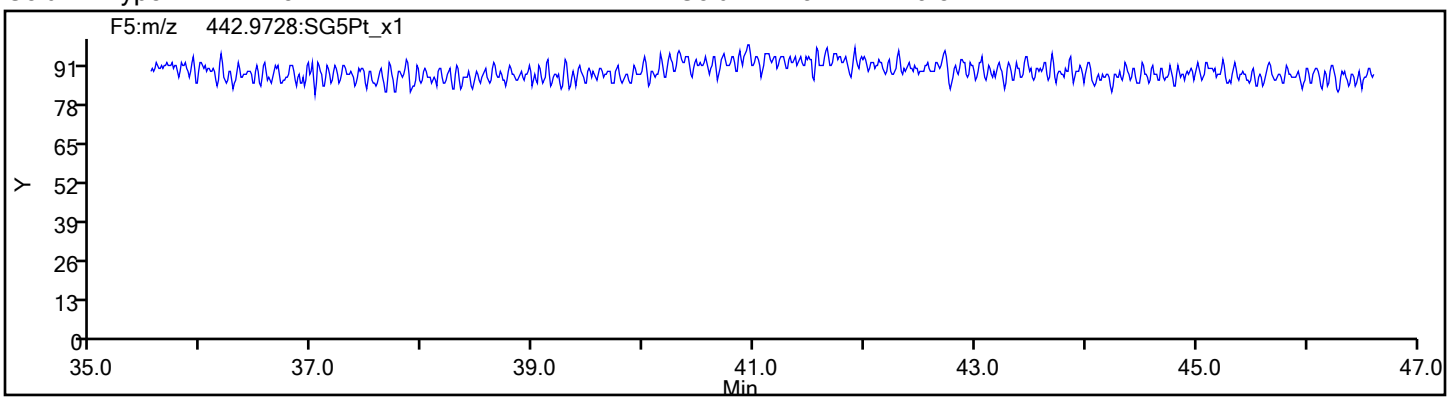
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:23:45 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_9.d		
Injection Date:	19-Dec-2019 17:21:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(2-4)		
Worklist#:	346752	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Matrix: Sediment Lab File ID: 19DE193D5_10.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.12(g) Date Analyzed: 12/19/2019 18:09

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 44.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		1.8	0.34
51207-31-9	2,3,7,8-TCDF	ND		1.8	0.25
40321-76-4	1,2,3,7,8-PeCDD	ND		8.8	0.66
57117-41-6	1,2,3,7,8-PeCDF	ND		8.8	0.39
57117-31-4	2,3,4,7,8-PeCDF	ND		8.8	0.41
39227-28-6	1,2,3,4,7,8-HxCDD	ND		8.8	0.51
57653-85-7	1,2,3,6,7,8-HxCDD	ND		8.8	0.54
19408-74-3	1,2,3,7,8,9-HxCDD	2.6	J	8.8	0.46
70648-26-9	1,2,3,4,7,8-HxCDF	ND		8.8	0.33
57117-44-9	1,2,3,6,7,8-HxCDF	ND		8.8	0.31
72918-21-9	1,2,3,7,8,9-HxCDF	ND		8.8	0.26
60851-34-5	2,3,4,6,7,8-HxCDF	ND		8.8	0.24
35822-46-9	1,2,3,4,6,7,8-HpCDD	39	B	8.8	1.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	ND		8.8	0.52
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		8.8	0.70
3268-87-9	OCDD	890	B	18	1.2
39001-02-0	OCDF	27	B	18	0.62
41903-57-5	Total TCDD	0.57	J q	1.8	0.34
30402-14-3	Total TCDF	ND		1.8	0.25
36088-22-9	Total PeCDD	5.4	J q	8.8	0.66
30402-15-4	Total PeCDF	ND		8.8	0.43
34465-46-8	Total HxCDD	28		8.8	0.50
55684-94-1	Total HxCDF	ND		8.8	0.33
37871-00-4	Total HpCDD	130	B	8.8	1.0
38998-75-3	Total HpCDF	5.6	J B	8.8	0.61

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA07(4-6) Lab Sample ID: 320-56953-4

Matrix: Sediment Lab File ID: 19DE193D5_10.d

Analysis Method: 1613B Date Collected: 12/09/2019 15:40

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.12(g) Date Analyzed: 12/19/2019 18:09

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 44.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	66		25-164
89059-46-1	13C-2,3,7,8-TCDF	65		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	61		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	61		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	70		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	74		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	71		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	72		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	63		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	68		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	69		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	68		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	72		26-138
114423-97-1	13C-OCDD	72		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	100		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 18:09:03 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-4-A 320-56953-A-4-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:26:04 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: messecara Date: 19-Dec-2019 19:49:33

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.582	92245604	0.79	2.2E+06	100.0	100.0				a
D 13C-2,3,7,8-TCDF	17.083	84945980	0.81	1.4157	65.0	65.0	0.2642	0.2642	65.05	
2,3,7,8-TCDF	17.128						0.0697	0.0697		
A Non-2,3,7,8-sub-TCDF	16.811						0.0697	0.0697		
S Total TCDF							0.0697	0.0697		
D 13C-2,3,7,8-TCDD	17.778	59661221	0.79	0.9751	66.3	66.3	0.3066	0.3066	66.33	
2,3,7,8-TCDD	17.823						0.0957	0.0957		
$ 37Cl4-2,3,7,8-TCDD	17.793	49583993		1.3480	39.9	39.9	0.0689	0.0689	99.69	
A Non-2,3,7,8-sub-TCDD	17.249	100592	0.77	1.0477	0.2210	0.1609	0.0957	0.1609		RQM
S Total TCDD					0.2210	0.1609	0.0957	0.0957		RQ
D 13C-1,2,3,7,8-PeCDF	22.032	66296912	1.58	1.1786	61.0	61.0	0.2418	0.2418	60.98	
1,2,3,7,8-PeCDF	22.045						0.1103	0.1103		
D 13C-2,3,4,7,8-PeCDF	23.341	68414514	1.65	1.1308	65.6	65.6	0.2520	0.2520	65.59	
2,3,4,7,8-PeCDF	23.355						0.1153	0.1153		
A F1 PeCDFs	19.774						0.1218	0.1218		
A Non-2,3,7,8-sub-PeCDF	22.858						0.1127	0.1127		
S Total PeCDF							0.1218	0.1218		
D 13C-1,2,3,7,8-PeCDD	24.064	42670897	1.71	0.7572	61.1	61.1	0.2565	0.2565	61.09	
1,2,3,7,8-PeCDD	24.077						0.1862	0.1862		
A Non-2,3,7,8-sub-PeCDD	22.973	703038	1.55	1.0855	1.636	1.518	0.1862	0.5795		RQM
S Total PeCDD					1.636	1.518	0.1862	0.1862		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.193	58620203	0.52	1.1043	70.6	70.6	0.3655	0.3655	70.60	
1,2,3,4,7,8-HxCDF	30.206						0.0929	0.0929		
D 13C-1,2,3,6,7,8-HxCDF	30.406	62116616	0.52	1.1470	72.0	72.0	0.3518	0.3518	72.02	
1,2,3,6,7,8-HxCDF	30.420						0.0890	0.0890		
D 13C-2,3,4,6,7,8-HxCDF	31.312	55409899	0.52	1.0769	68.4	68.4	0.3748	0.3748	68.43	
2,3,4,6,7,8-HxCDF	31.325						0.0693	0.0693		
D 13C-1,2,3,7,8,9-HxCDF	32.151	47870683	0.52	1.0115	62.9	62.9	0.3990	0.3990	62.94	
1,2,3,7,8,9-HxCDF	32.164						0.0738	0.0738		
A Non-2,3,7,8-sub-HxCDF	29.880						0.0801	0.0801		
S Total HxCDF							0.0929	0.0929		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	75189615	1.34	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	41625202	1.30	0.7962	69.5	69.5	0.3971	0.3971	69.53	
1,2,3,4,7,8-HxCDD	31.525						0.1459	0.1459		
D 13C-1,2,3,6,7,8-HxCDD	31.618	48655740	1.32	0.8720	74.2	74.2	0.3625	0.3625	74.21	
1,2,3,6,7,8-HxCDD	31.631						0.1520	0.1520		
1,2,3,7,8,9-HxCDD	31.951	407839	1.11	1.2073	0.7483	0.7483	0.1317	0.1317		M
A Non-2,3,7,8-sub-HxCDD	30.519	3676299	1.27	1.1145	7.307	7.307	0.1427	5.884		M
S Total HxCDD					8.056	8.056	0.1432	0.1432		
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	38761231	0.42	0.7577	68.0	68.0	1.543	1.543	68.04	
1,2,3,4,6,7,8-HpCDF	33.628						0.1488	0.1488		
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	37795910	0.43	0.6941	72.4	72.4	1.684	1.684	72.42	
1,2,3,4,7,8,9-HpCDF	34.709						0.1974	0.1974		
A Non-2,3,7,8-sub-HpCDF	34.169	840064	1.15	1.3868	1.582	1.582	0.1705	1.582		M
S Total HpCDF					1.582	1.582	0.1731	0.1731		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	36864758	1.08	0.7058	69.5	69.5	0.6335	0.6335	69.46	
1,2,3,4,6,7,8-HpCDD	34.418	4265898	0.98	1.0535	11.0	11.0	0.2825	0.2825		
A Non-2,3,7,8-sub-HpCDD	34.144	9625363	1.07	1.0535	24.8	24.8	0.2825	24.8		
S Total HpCDD					35.8	35.8	0.2825	0.2825		
D 13C-OCDD	36.722	49812325	0.87	0.4603	143.9	143.9	0.3321	0.3321	71.97	
OCDF	36.830	2689125	0.90	1.3945	7.743	7.743	0.1761	0.1761		
OCDD	36.734	71783893	0.88	1.1362	253.7	253.7	0.3409	0.3409		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 18:09:03 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-4-A 320-56953-A-4-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:26:04 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: messecara Date: 19-Dec-2019 19:49:33

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	17.582	17.612	-2		40598759	9931645	16657	41642	596		a
333.9339	17.582	17.612	-2		51646845	12384061	10034	25085	1234	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.083	17.113	-2	0.972	38092563	9101737	16329	40822	557		
317.9389	17.083	17.113	-2	0.972	46853417	10994670	17057	42642	645	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128						1831	4577			
305.8987	17.128						3489	8722			
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						1831	4577			
305.8987	16.811						3489	8722			
13C-2,3,7,8-TCDD											
331.9368	17.778	17.793	-1	1.011	26343090	5756556	16657	41642	346		
333.9339	17.778	17.793	-1	1.011	33318131	7374886	10034	25085	735	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823						3474	8685			
321.8936	17.823						1792	4480			
37Cl4-2,3,7,8-TCDD											
327.8847	17.793	17.823	-2	1.012	49583993	11140472	8290	20725	1344		
A Non-2,3,7,8-sub-TCDD											RQM
319.8965	16.690	17.249	-34	0.939	81336	17272	3474	8685	5		M
	Empc Correction				43760	12631	3474	8685	4		
321.8936	16.674	17.249	-34	0.938	56832	16404	1792	4480	9	1.43(0.65-0.89)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	22.032	22.018	1	1.253	40615273	6773220	16035	40087	422		
353.8970	22.032	22.018	1	1.253	25681639	4156959	9404	23510	442	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.045						1597	3992			
341.8567	22.045						3372	8430			
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.328	42600576	6399701	16035	40087	399		
353.8970	23.355	23.341	1	1.328	25813938	3947683	9404	23510	420	1.65(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355						1597	3992			
341.8567	23.355						3372	8430			
A F1 PeCDFs											
339.8597	19.774						1503	3757			
341.8567	19.774						3863	9657			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						1597	3992			
341.8567	22.858						3372	8430			
13C-1,2,3,7,8-PeCDD											
367.8949	24.064	24.050	1	1.369	26898964	3964832	8847	22117	448		
369.8919	24.064	24.050	1	1.369	15771933	2278059	8492	21230	268	1.71(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						3761	9402			
357.8516	24.077						1285	3212			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	20.914	22.973	-123	0.869	124210	21633	3761	9402	6		
357.8516	20.914	22.973	-123	0.869	105005	15383	1285	3212	12	1.18(1.32-1.78)	
	Empc Correction				80135	13956	1285	3212	11		
355.8546	21.664	22.973	-78	0.900	193052	28810	3761	9402	8		
	Empc Correction				163145	31750	3761	9402	8		
357.8516	21.664	22.973	-78	0.900	105255	20484	1285	3212	16	1.83(1.32-1.78)	
355.8546	23.096	22.973	7	0.960	141641	17537	3761	9402	5		M
357.8516	23.096	22.973	7	0.960	88652	11955	1285	3212	9	1.60(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	20133239	3074871	9988	24970	308		
385.8610	30.193	30.193	0	0.945	38486964	5928143	18547	46367	320	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206						2186	5465			
375.8178	30.206						1654	4135			
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	21176477	3138524	9988	24970	314		
385.8610	30.406	30.406	0	0.951	40940139	6283994	18547	46367	339	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.420						2186	5465			
375.8178	30.420						1654	4135			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	18954958	4139199	9988	24970	414		
385.8610	31.312	31.312	0	0.980	36454941	7678123	18547	46367	414	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						2186	5465			
375.8178	31.325						1654	4135			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	16273562	3822806	9988	24970	383		
385.8610	32.151	32.151	0	1.006	31597121	7286530	18547	46367	393	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						2186	5465			
375.8178	32.164						1654	4135			
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						2186	5465			
375.8178	29.880						1654	4135			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		43054747	9999221	10595	26487	944		
403.8529	31.964	31.964	0		32134868	7677352	11758	29395	653	1.34(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	23560922	5991458	10595	26487	565		
403.8529	31.511	31.511	0	0.986	18064280	4443891	11758	29395	378	1.30(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.525						3081	7702			
391.8127	31.525						3579	8947			
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	27712314	6013099	10595	26487	568		
403.8529	31.618	31.618	0	0.989	20943426	4493257	11758	29395	382	1.32(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.631						3081	7702			
391.8127	31.631						3579	8947			
1,2,3,7,8,9-HxCDD											M
389.8157	31.951	31.977	-2	1.014	214590	33176	3081	7702	11		M
391.8127	31.964	31.977	-1	1.014	193249	39880	3579	8947	11	1.11(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											M
389.8157	29.075	30.519	-87	0.920	1661839	193190	3081	7702	63		
391.8127	29.075	30.519	-87	0.920	1298341	155287	3579	8947	43	1.28(1.05-1.43)	
389.8157	30.726	30.519	12	0.972	391905	65731	3081	7702	21		
391.8127	30.712	30.519	12	0.971	324214	59470	3579	8947	17	1.21(1.05-1.43)	M
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	11534887	3630509	22930	57325	158		
419.8220	33.616	33.628	-1	1.052	27226344	8571716	59718	149295	144	0.42(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628						7807	19517			
409.7789	33.628						2945	7362			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.085	11294377	3178515	22930	57325	139		
419.8220	34.685	34.697	-1	1.085	26501533	7352991	59718	149295	123	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						7807	19517			
409.7789	34.709						2945	7362			
A Non-2,3,7,8-sub-HpCDF											M
407.7818	33.919	34.169	-15	1.009	448533	126549	7807	19517	16		
409.7789	33.919	34.169	-15	1.009	391531	113918	2945	7362	39	1.15(0.88-1.20)	M
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.076	19139502	5917345	16237	40592	364		
437.8140	34.405	34.418	-1	1.076	17725256	5293030	15377	38442	344	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	2108830	648585	7314	18285	89		
425.7737	34.418	34.418	0	1.000	2157068	665176	6033	15082	110	0.98(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	4982056	1606985	7314	18285	220		
425.7737	33.871	34.144	-16	0.984	4643307	1480068	6033	15082	245	1.07(0.88-1.20)	
13C-OCDD											
469.7779	36.722	36.734	-1	1.149	23194164	5811069	5042	12605	1153		
471.7750	36.722	36.734	-1	1.149	26618161	6674172	5766	14415	1158	0.87(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	1274094	341032	2146	5365	159		
443.7399	36.830	36.830	0	1.003	1415031	366954	3985	9962	92	0.90(0.76-1.02)	
OCDD											
457.7377	36.734	36.746	-1	1.000	33679209	8920917	4776	11940	1868		
459.7348	36.734	36.746	-1	1.000	38104684	9865875	4895	12237	2016	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Inject. Date: 19-Dec-2019 18:09:03 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 10

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	59661221	13131442

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	59661221	13131442

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.690	81336	17272	56832	16404	0.2210	1.43	RQM
16.690	43760	12631	56832	16404	0.1609		Empc Correction
Signal Totals:							
	43760	12631	56832	16404			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	138168	33676				1.43	RQM
	100592	29035					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2210 = (138168 * 100.000) / (59661221 * 1.048)
Empc Amount: 0.1609 = (100592 * 100.000) / (59661221 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Inject. Date: 19-Dec-2019 18:09:03 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 10

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	42670897	6242891

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	42670897	6242891

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.914	124210	21633	105005	15383	0.4949	1.18	RQ
20.914	124210	21633	80135	13956	0.4412		Empc Correction
21.664	193052	28810	105255	20484	0.6440	1.83	RQ
21.664	163145	31750	105255	20484	0.5795		Empc Correction
23.096	141641	17537	88652	11955	0.4972	1.60	M
Signal Totals:							
	428996	70920	274042	46395			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	757815	115802				1.54	RQM
	703038	117315					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.636 = (757815 * 100.000) / (42670897 * 1.086)
Empc Amount: 1.518 = (703038 * 100.000) / (42670897 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Inject. Date: 19-Dec-2019 18:09:03 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 10

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	41625202	10435349
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	48655740	10506356
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	45140471	10470852

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.075	1661839	193190	1298341	155287	5.88	1.28	
30.726	391905	65731	324214	59470	1.42	1.21	M
Signal Totals:							
	2053744	258921	1622555	214757			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3676299	473678				1.27	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.307 = (3676299 * 100.000) / (45140471 * 1.115)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Inject. Date: 19-Dec-2019 18:09:03 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	38761231	12202225
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	37795910	10531506

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	38278570	11366865

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.919	448533	126549	391531	113918	1.58	1.15	M
Signal Totals:							
	448533	126549	391531	113918			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	840064	240467				1.15	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.582 = (840064 * 100.000) / (38278570 * 1.387)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d
Lims ID: 320-56953-A-4-A
Client ID: 11187072-120919-BN-SJSSA07(4-6)
Inject. Date: 19-Dec-2019 18:09:03 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 10

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	36864758	11210375

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	36864758	11210375

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	4982056	1606985	4643307	1480068	24.8	1.07	
Signal Totals:							
	4982056	1606985	4643307	1480068			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9625363	3087053				1.07	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 24.783 = (9625363 * 100.000) / (36864758 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

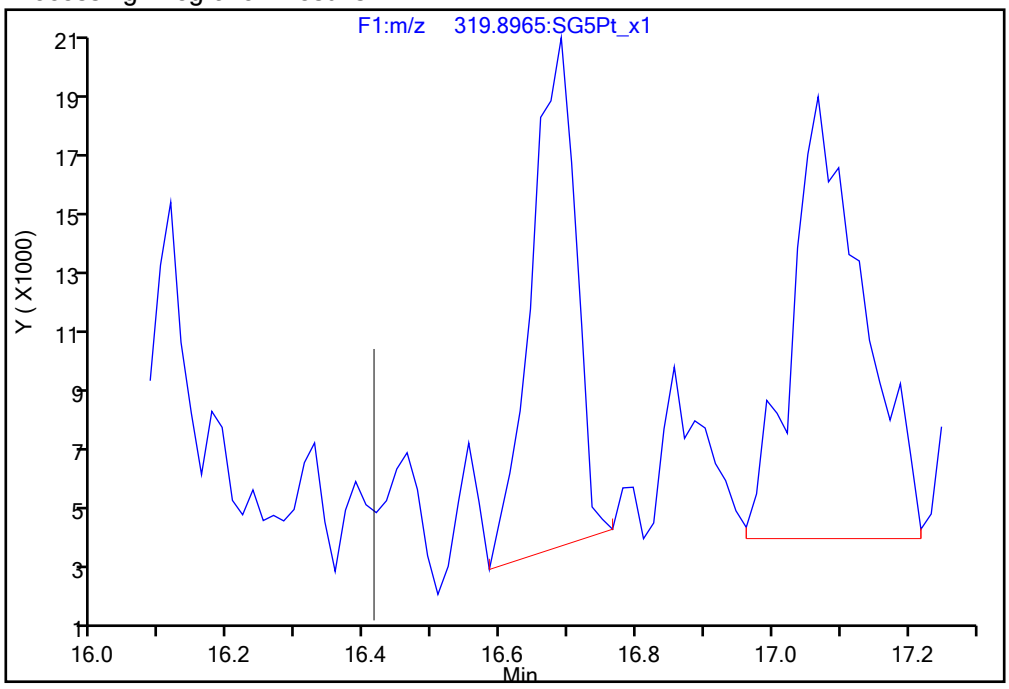
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

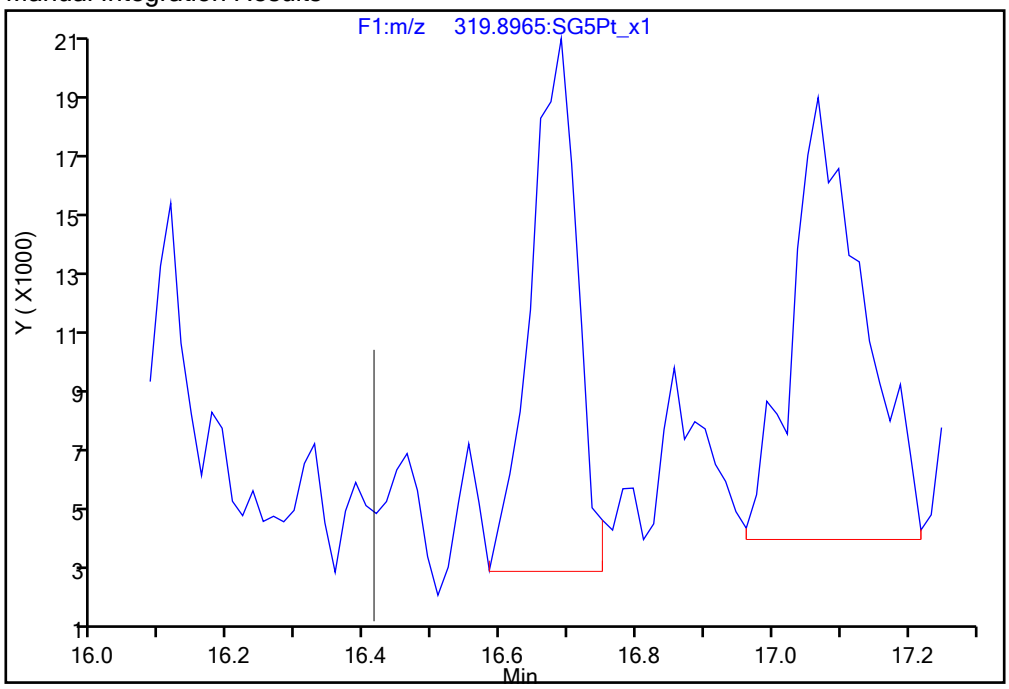
Processing Integration Results

RT = 16.690 Area = 75232



Manual Integration Results

RT = 16.690 Area = 81336 M



Reviewer: dadunj, 20-Dec-2019 14:24:12

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

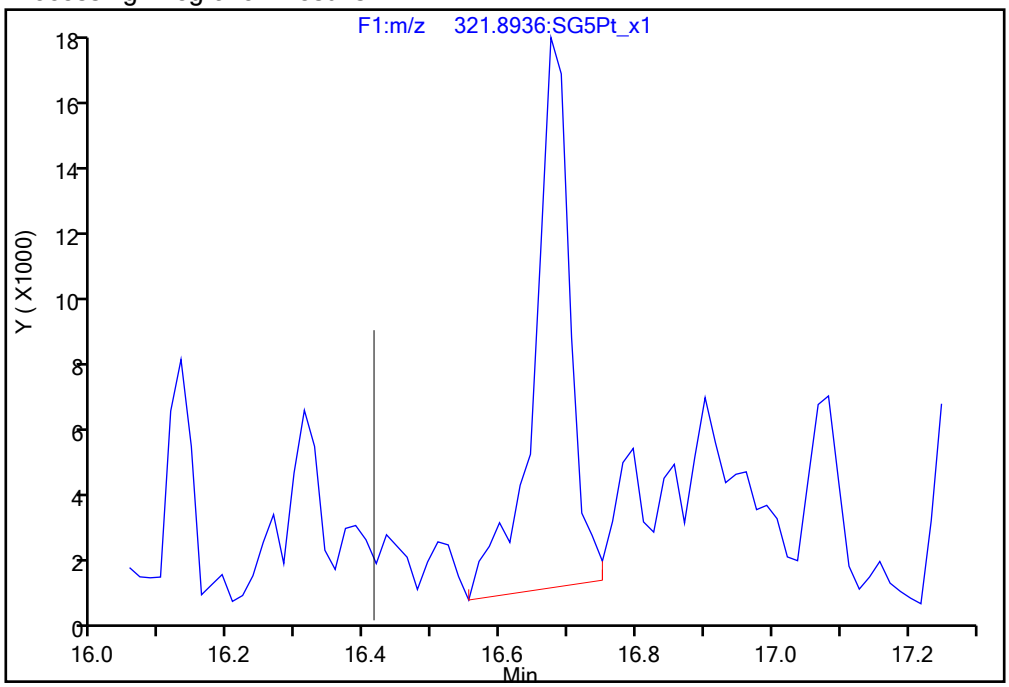
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 2, m/z: 321.8936, RT: (15.59- 18.91)

Signal: 2

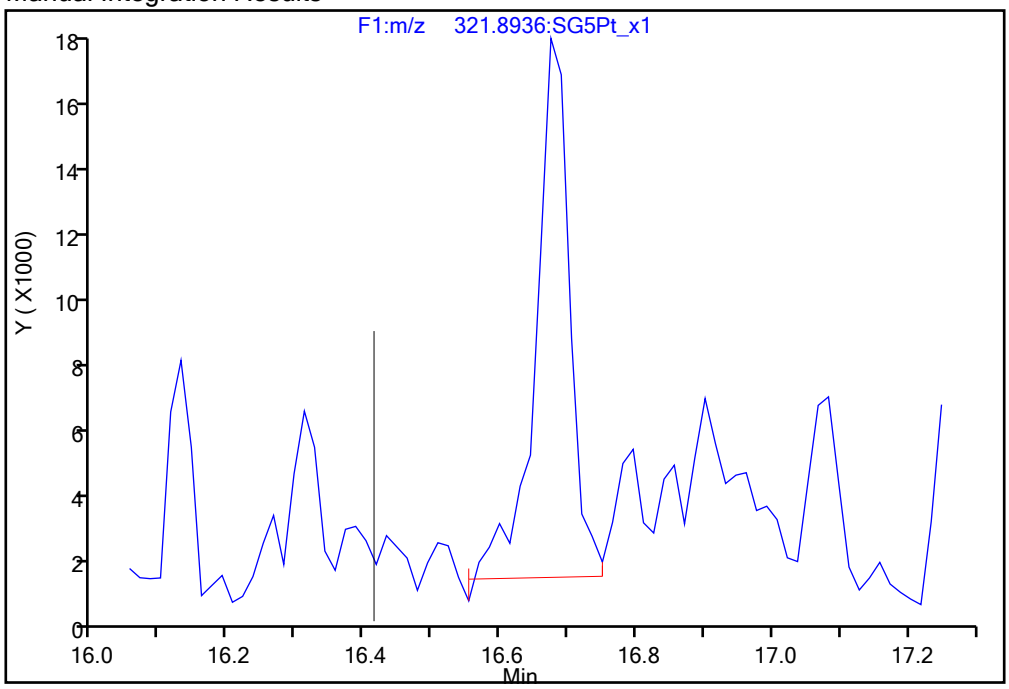
Processing Integration Results

RT = 16.674 Area = 61591



Manual Integration Results

RT = 16.674 Area = 56832 M



Reviewer: dadunj, 20-Dec-2019 14:24:19

Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

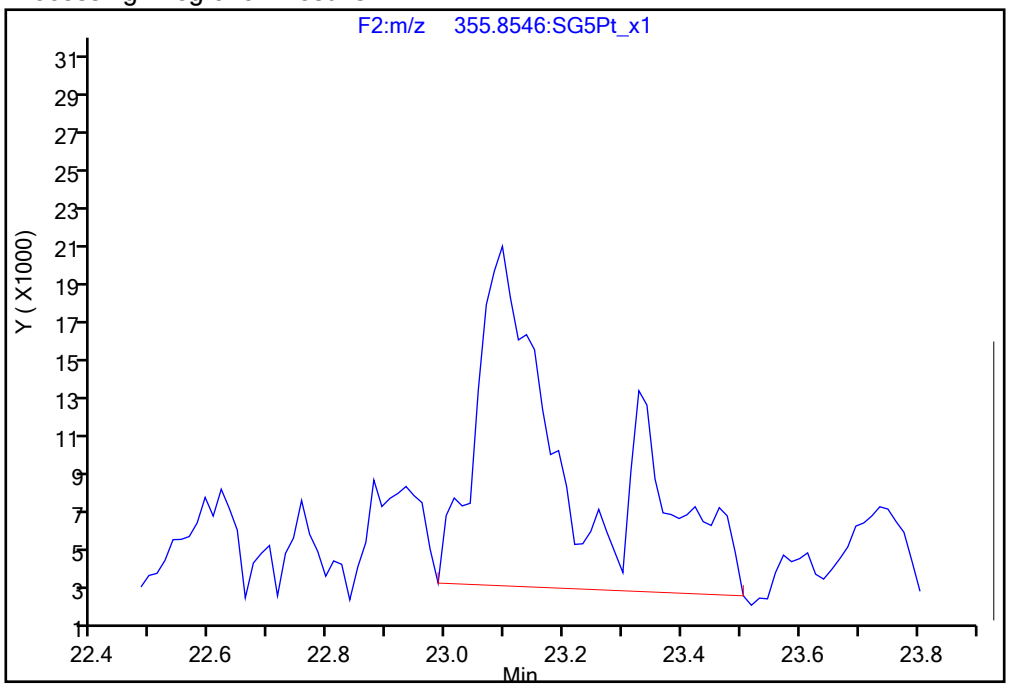
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

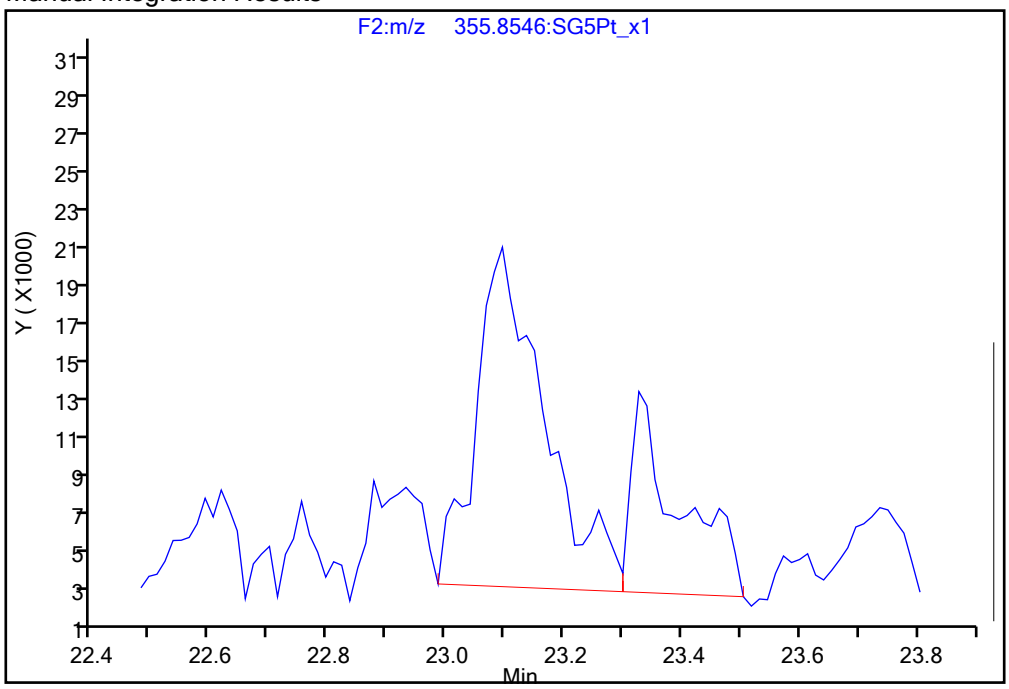
Processing Integration Results

RT = 23.096 Area = 199895



Manual Integration Results

RT = 23.096 Area = 141641 M



Reviewer: dadunj, 20-Dec-2019 14:24:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

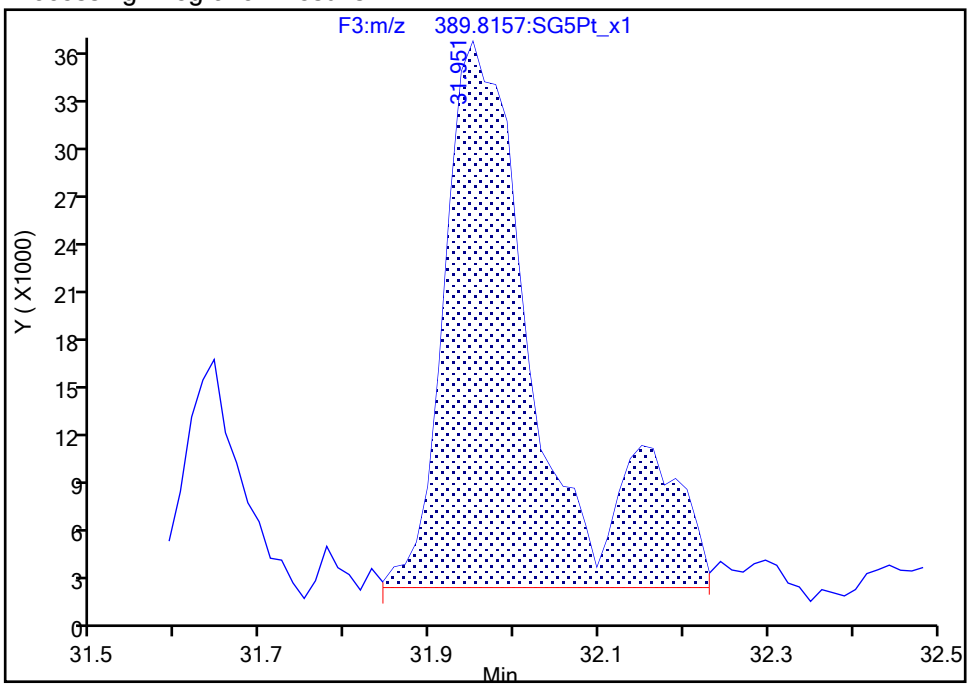
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

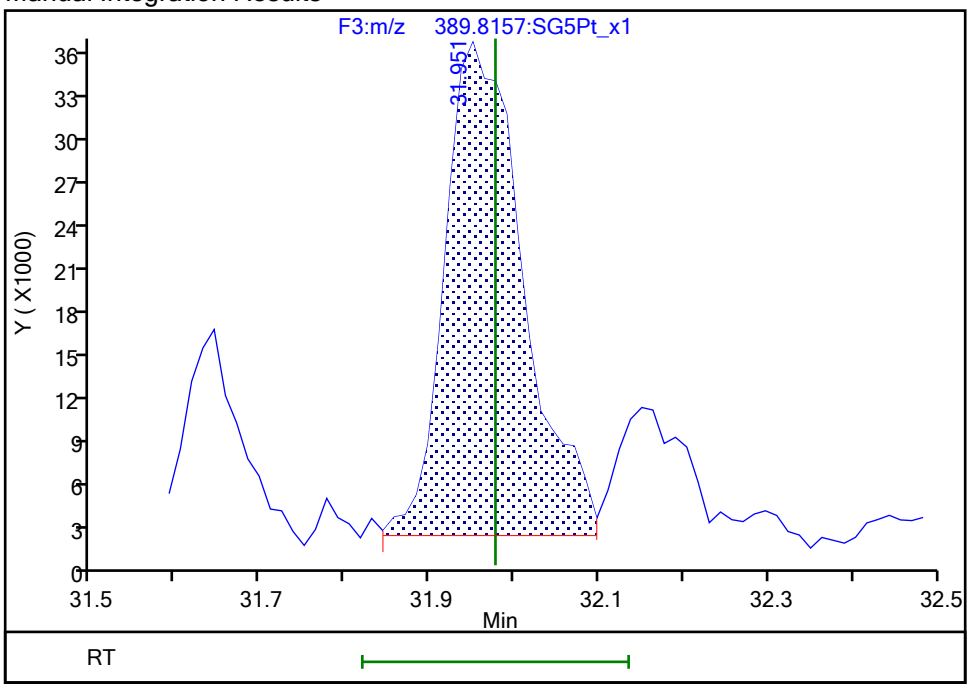
Processing Integration Results

RT: 31.95
Area: 260228
Amount: 0.876790
Amount Units: pg/ul



Manual Integration Results

RT: 31.95
Area: 214590
Amount: 0.748337
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:24:56

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

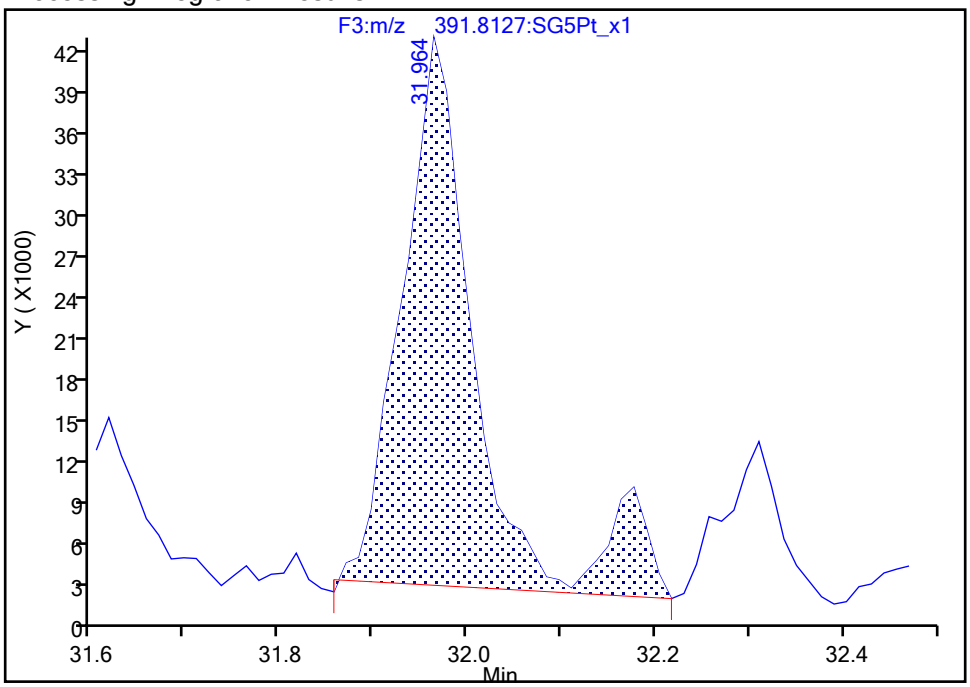
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

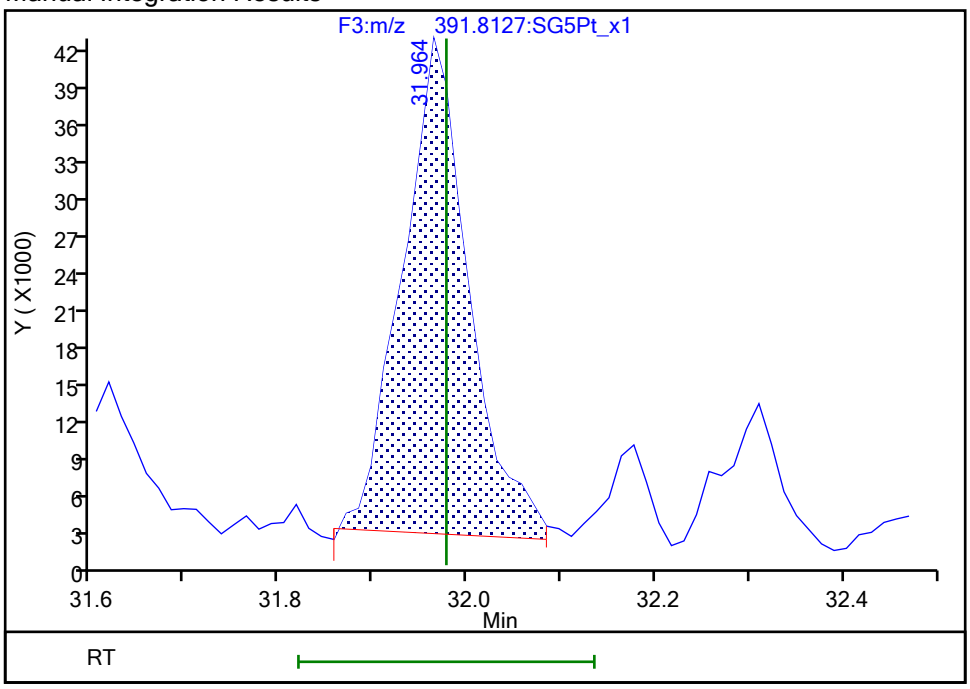
Processing Integration Results

RT: 31.96
Area: 217617
Amount: 0.876790
Amount Units: pg/ul



Manual Integration Results

RT: 31.96
Area: 193249
Amount: 0.748337
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:24:57

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

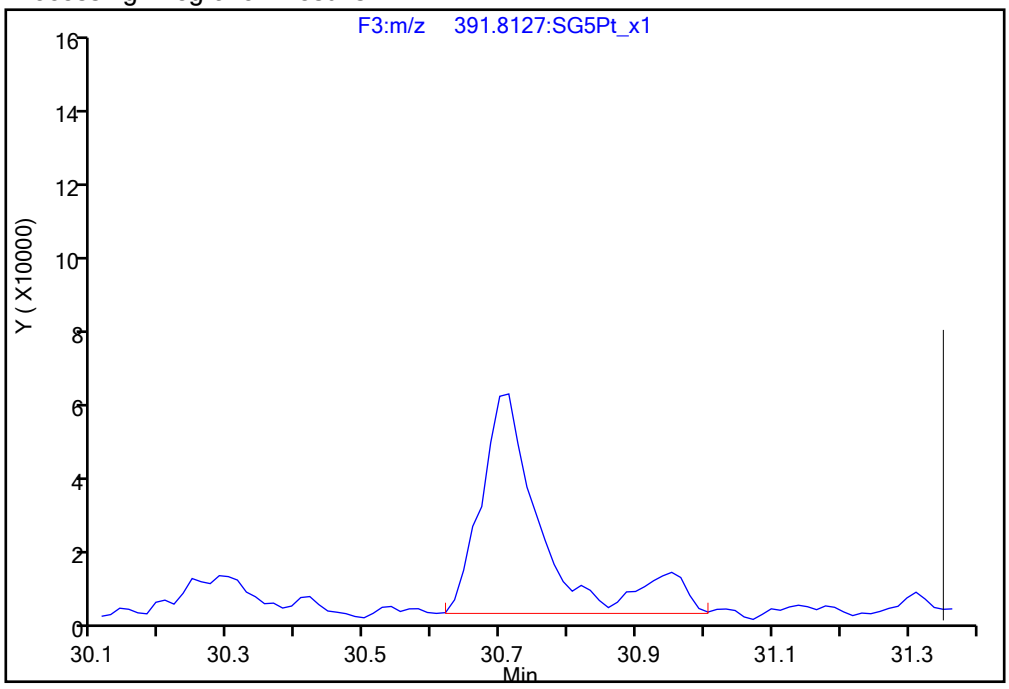
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDD, Signal: 2, m/z: 391.8127, RT: (28.85- 32.19)

Signal: 2

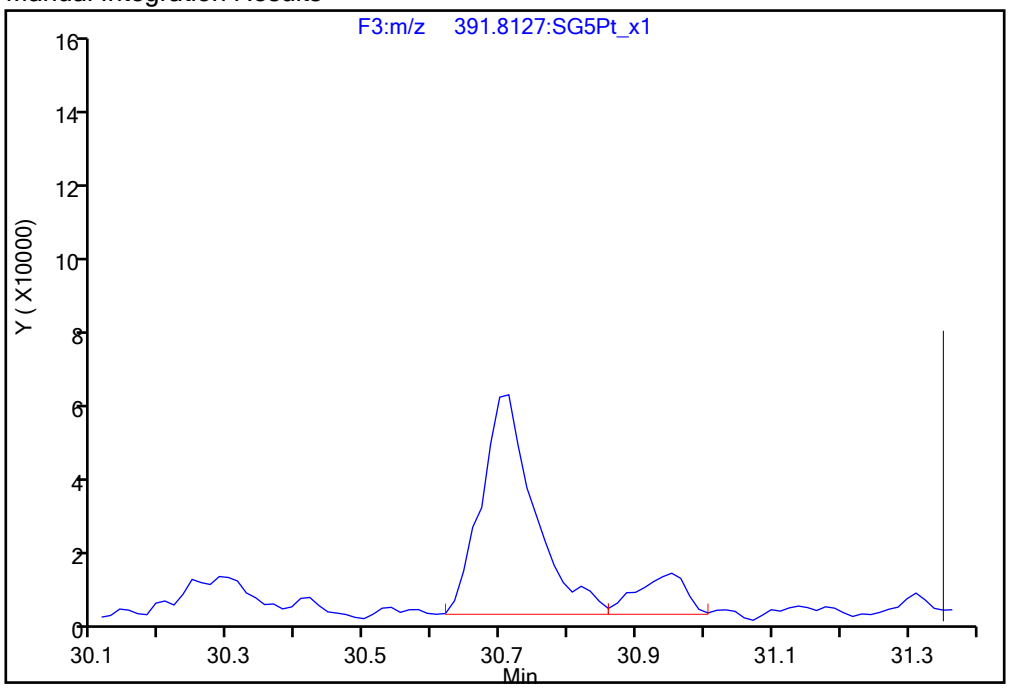
Processing Integration Results

RT = 30.712 Area = 379396



Manual Integration Results

RT = 30.712 Area = 324214 M



Reviewer: dadunj, 20-Dec-2019 14:25:02

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

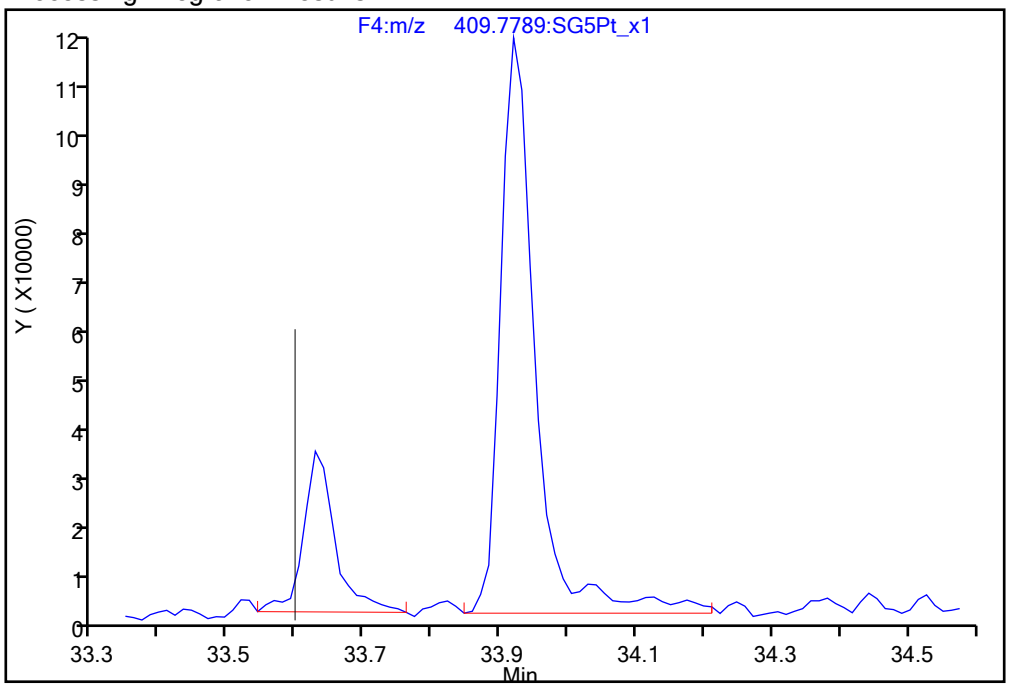
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d				
Injection Date:	19-Dec-2019 18:09:03	Instrument ID:	3D5		
Lims ID:	320-56953-A-4-A	Lab Sample ID:	320-56953-4		
Client ID:	11187072-120919-BN-SJSSA07(4-6)				
Operator ID:	AJS	ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.60- 34.74)

Signal: 2

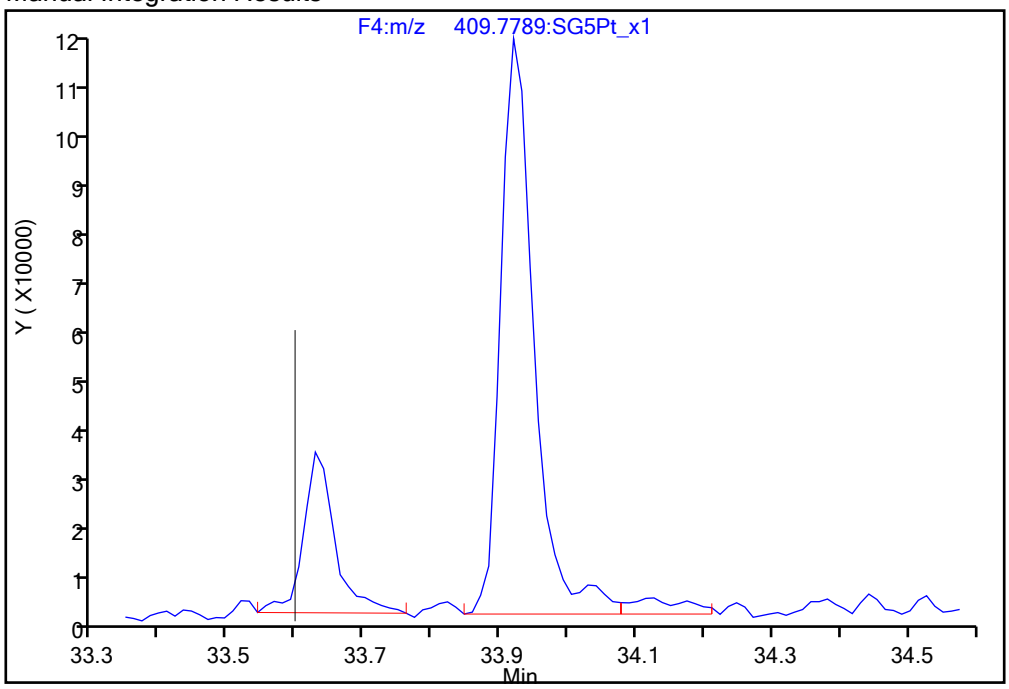
Processing Integration Results

RT = 33.919 Area = 409629



Manual Integration Results

RT = 33.919 Area = 391531 M



Reviewer: dadunj, 20-Dec-2019 14:25:18

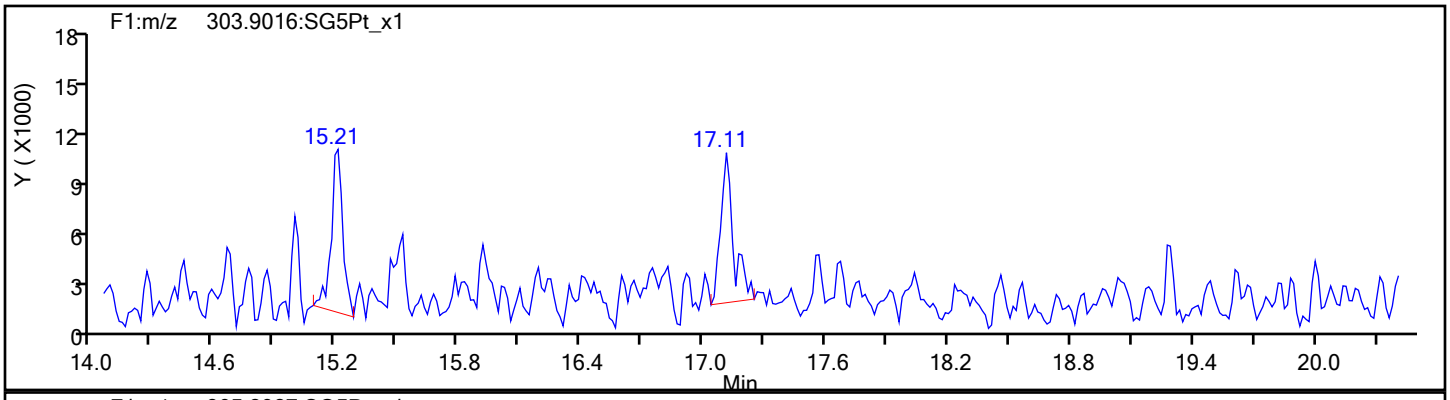
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

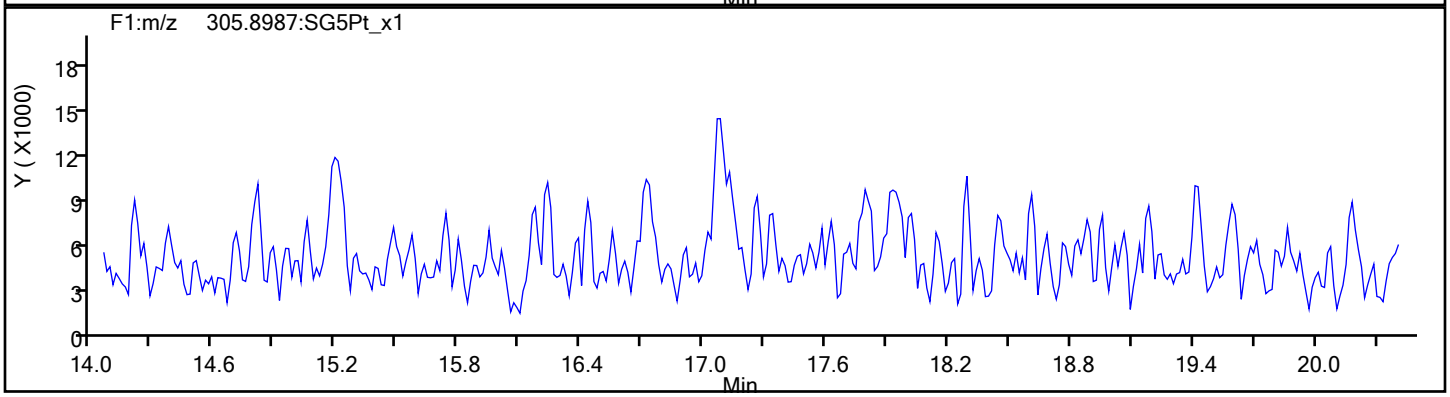
Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

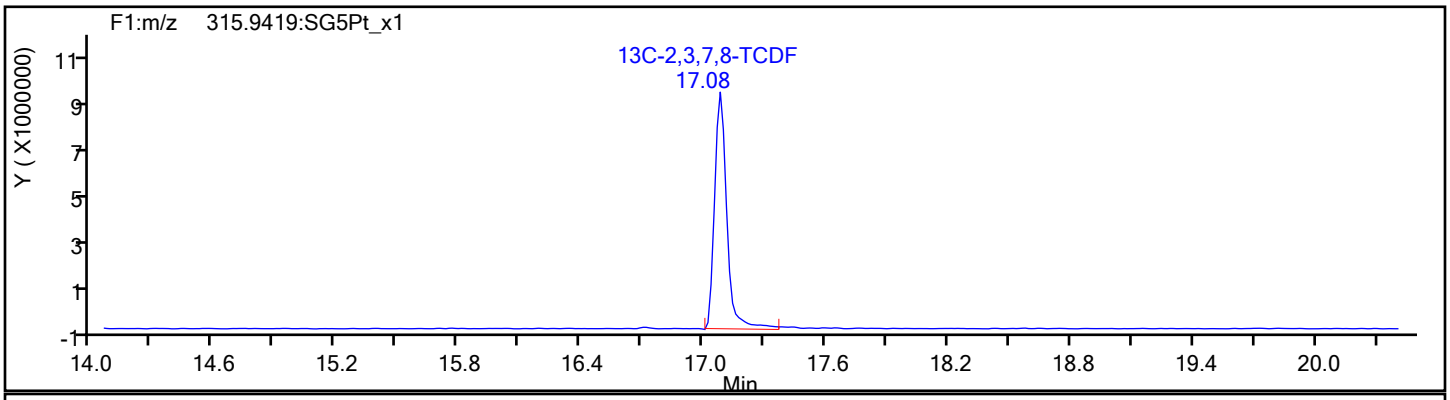
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

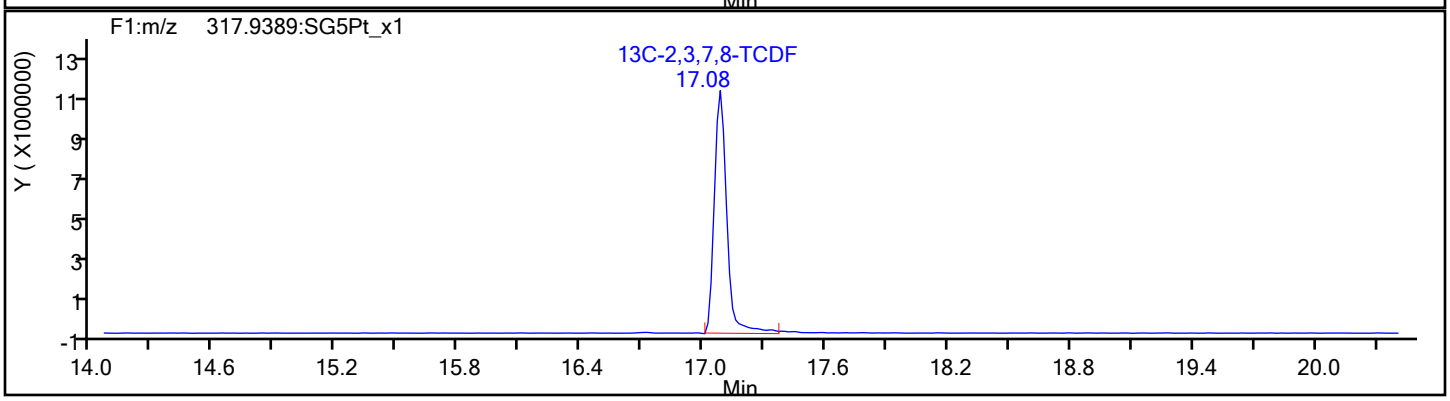
TCDF





TCDF Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
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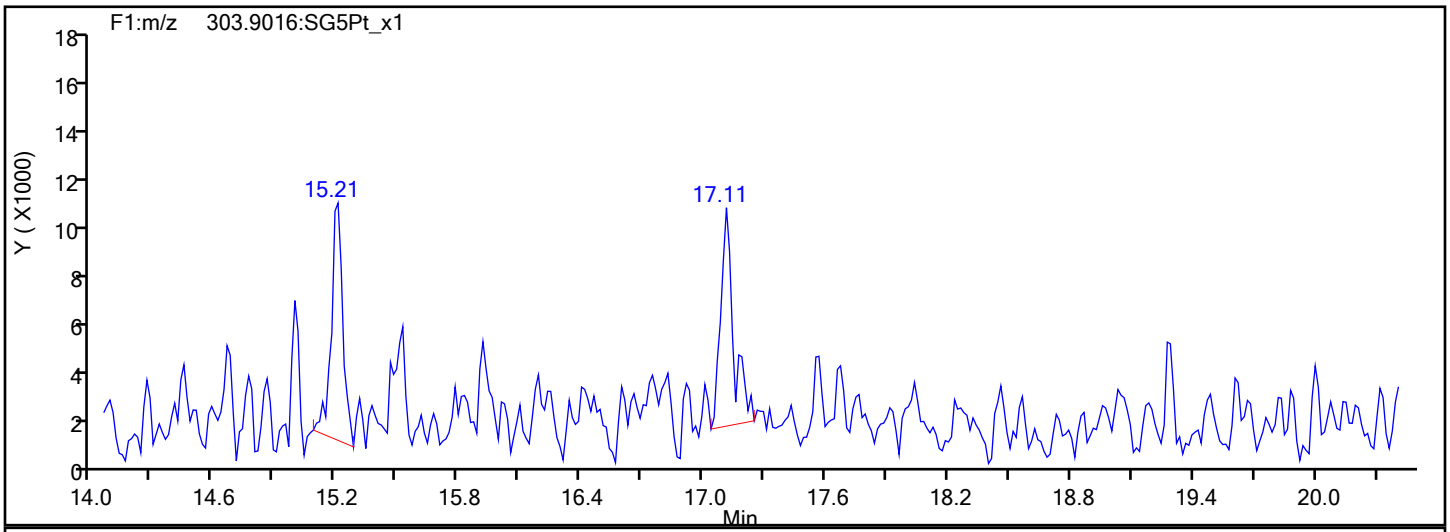
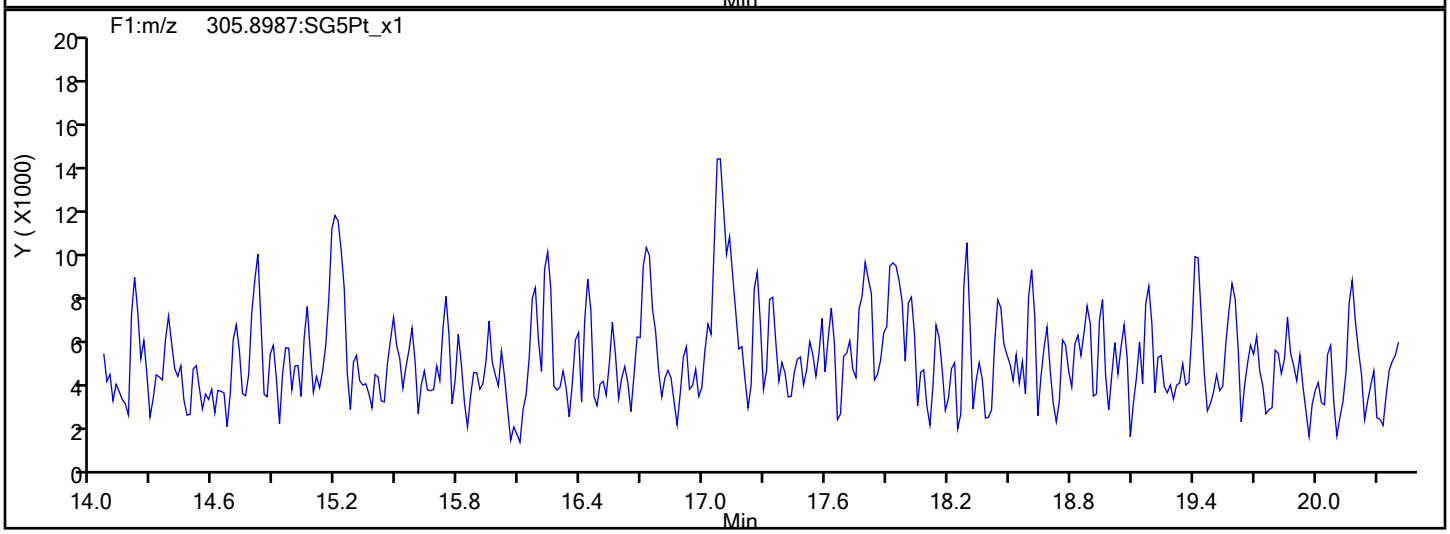
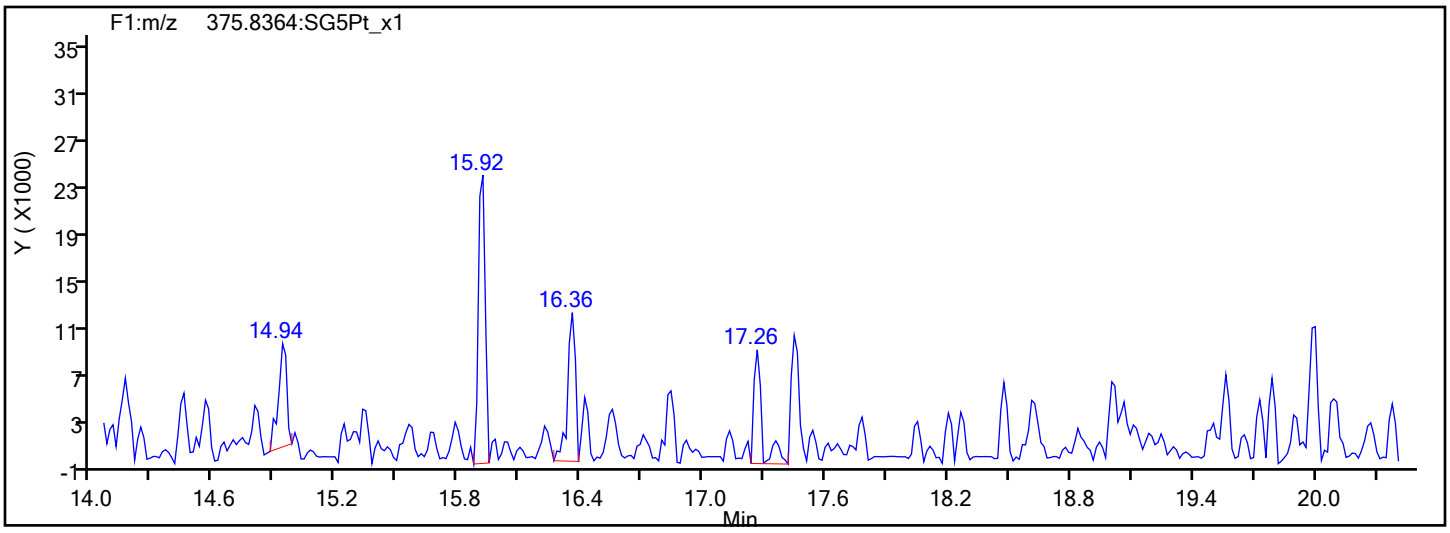
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

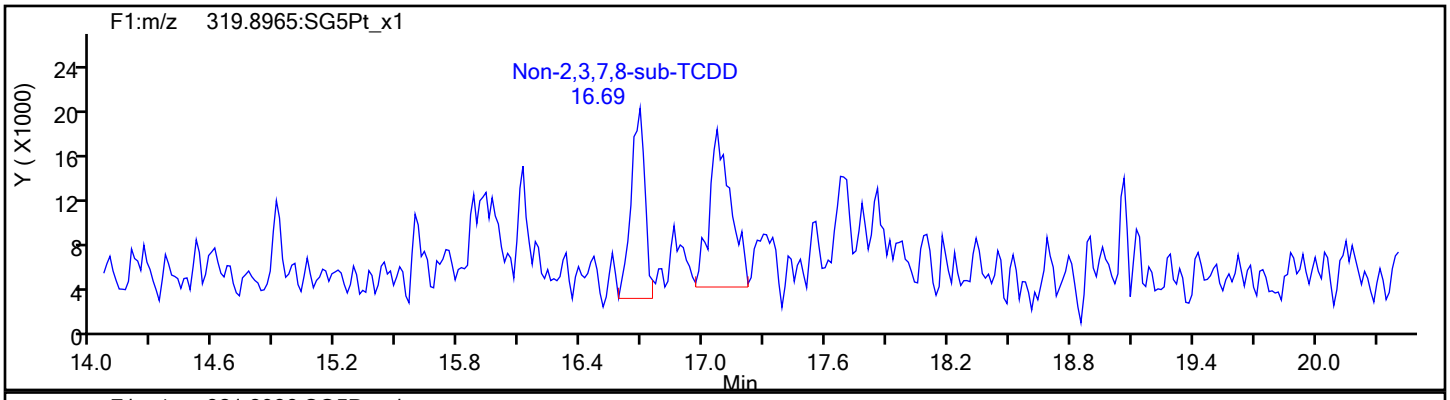


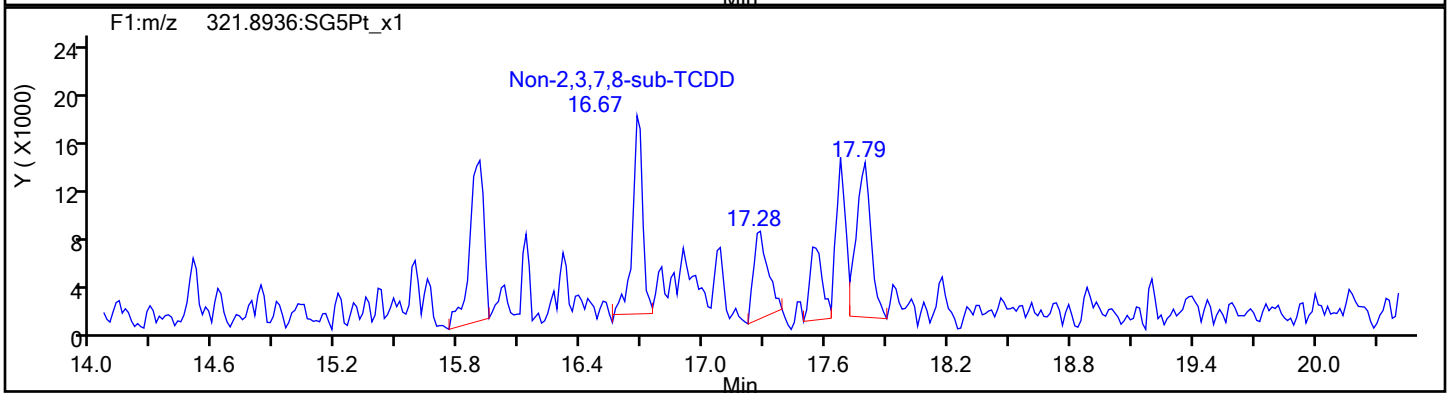
Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

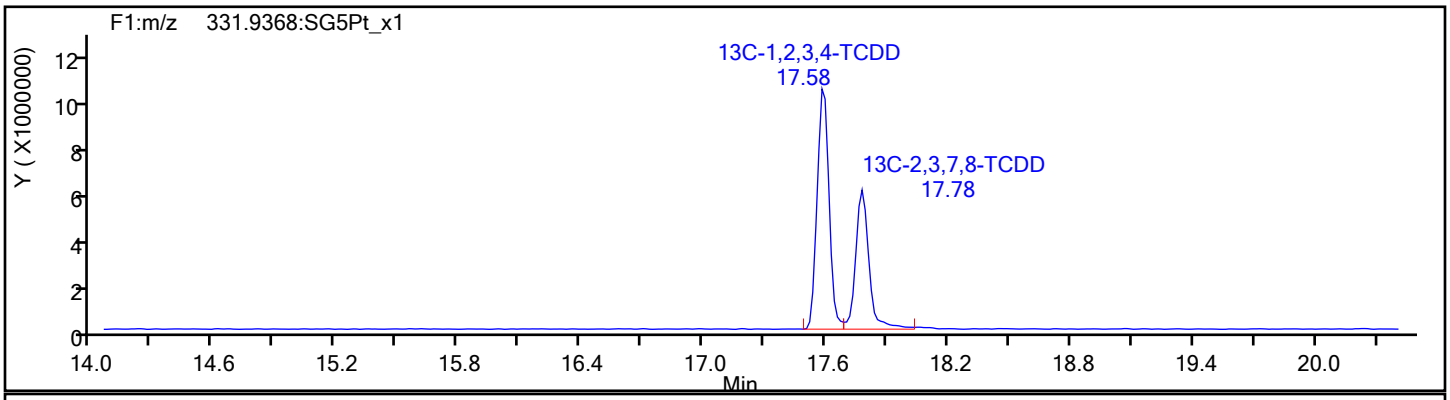
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

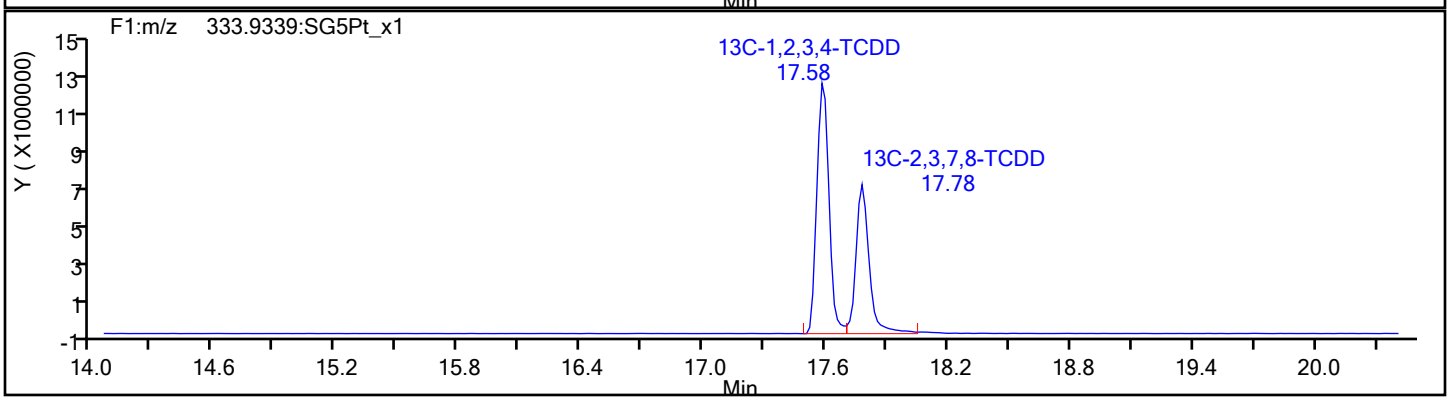
TCDD





TCDD Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d

Injection Date: 19-Dec-2019 18:09:03 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

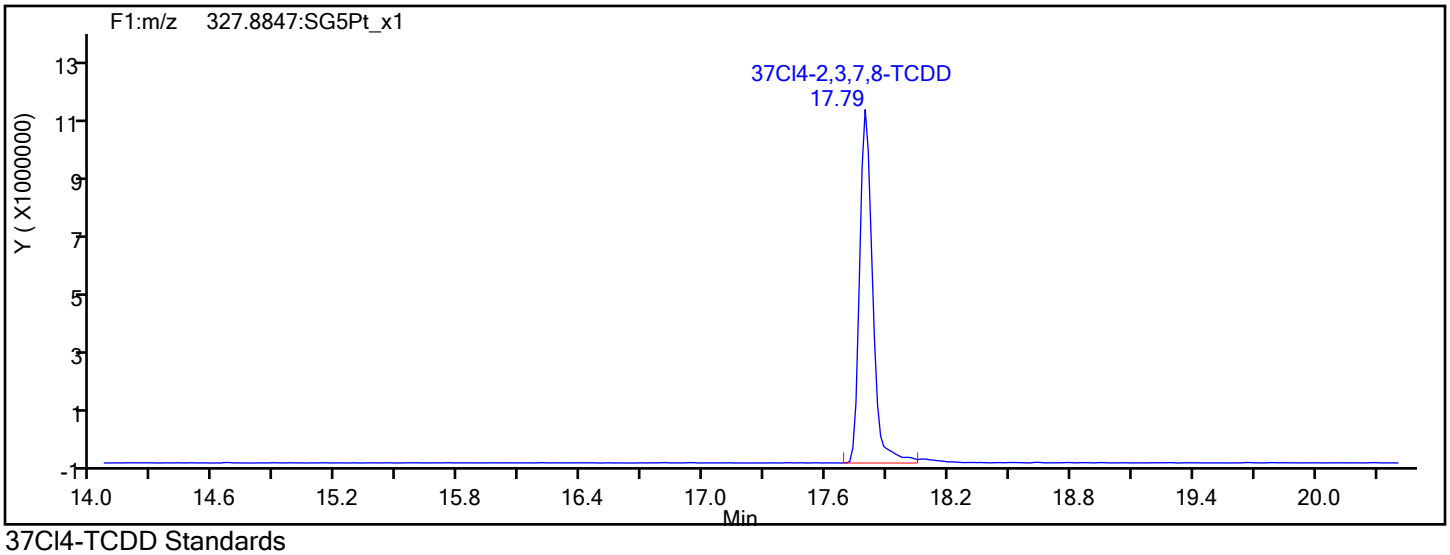
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

Client ID: 11187072-120919-BN-SJSSA07(4-6)

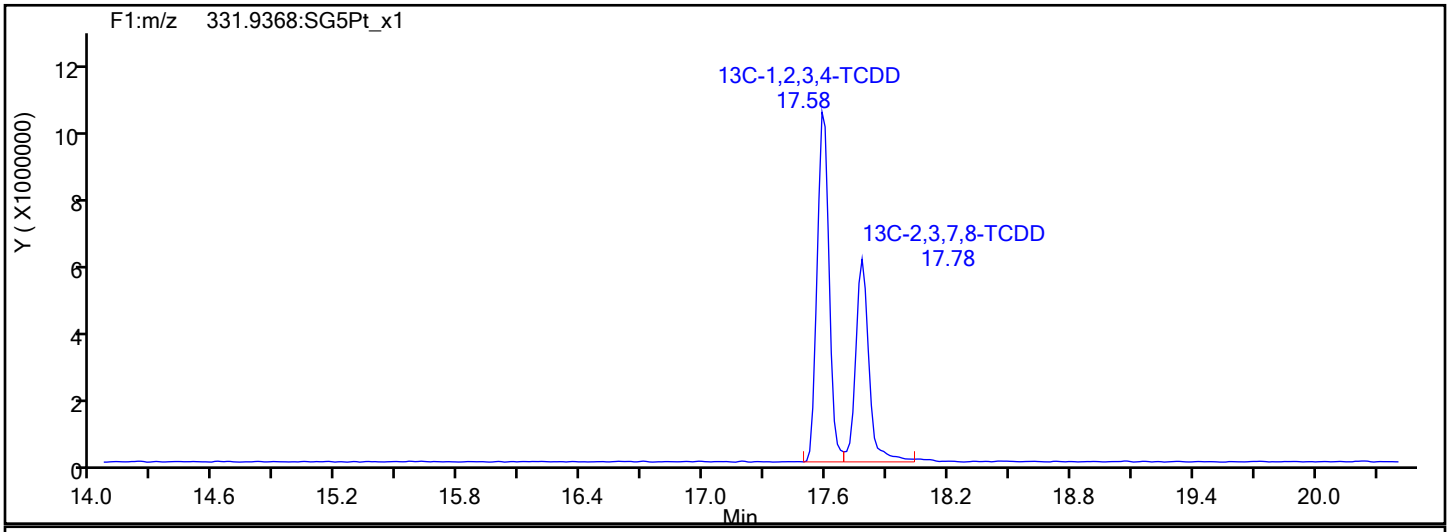
Worklist#: 346752 Sample Line#: 10

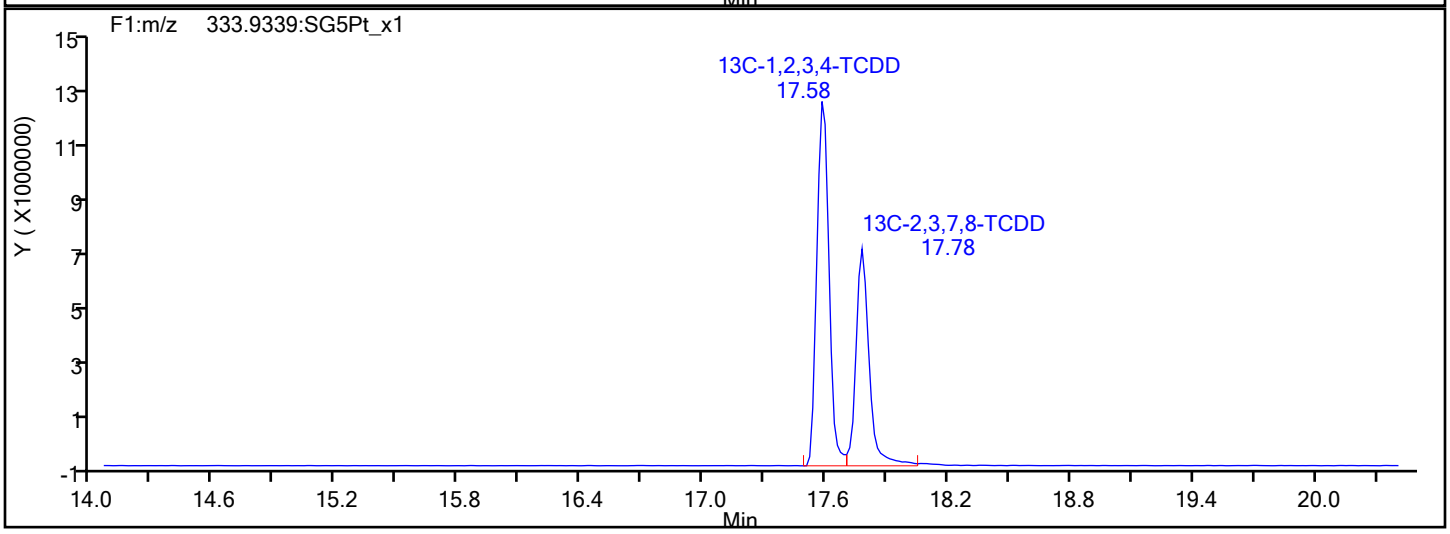
Column Type: DB-5 Column Dia: 0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
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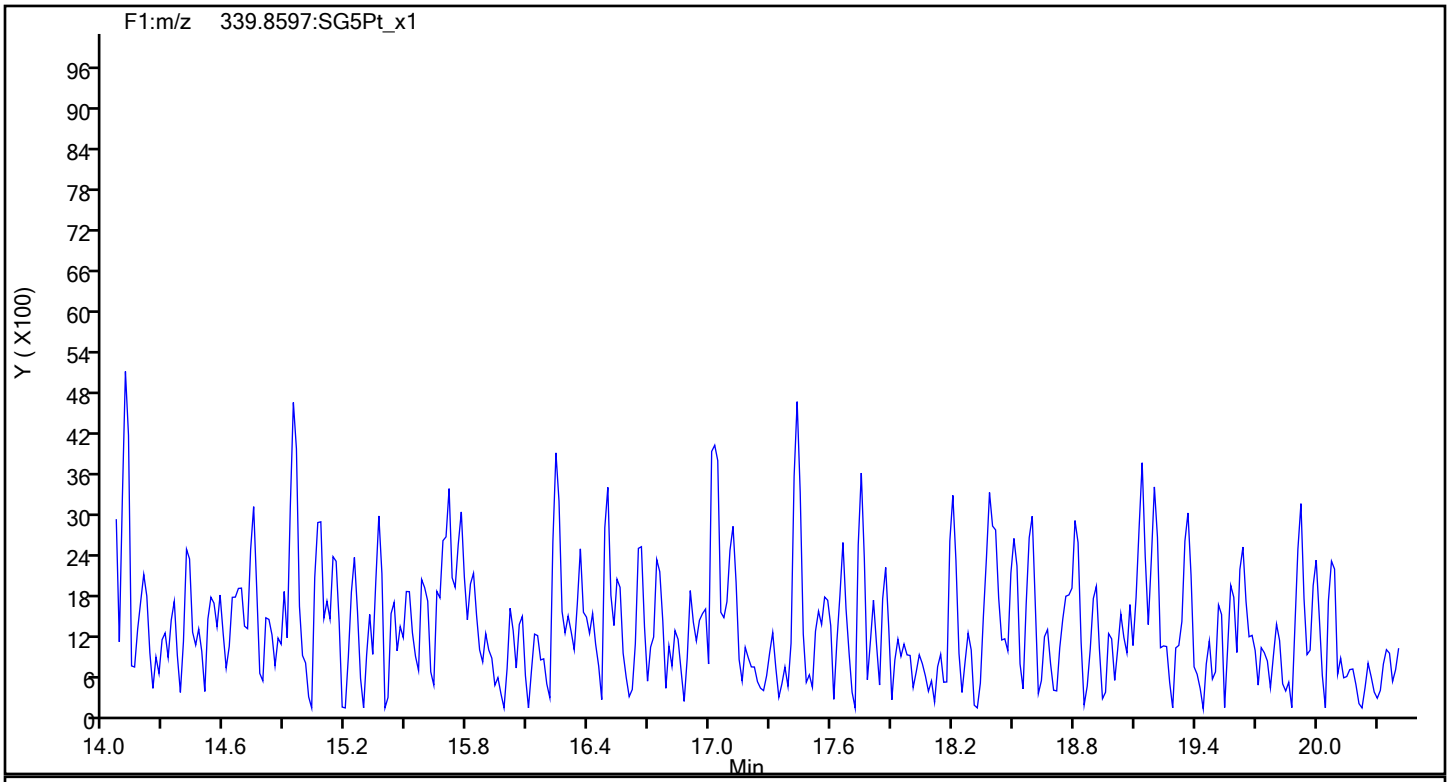
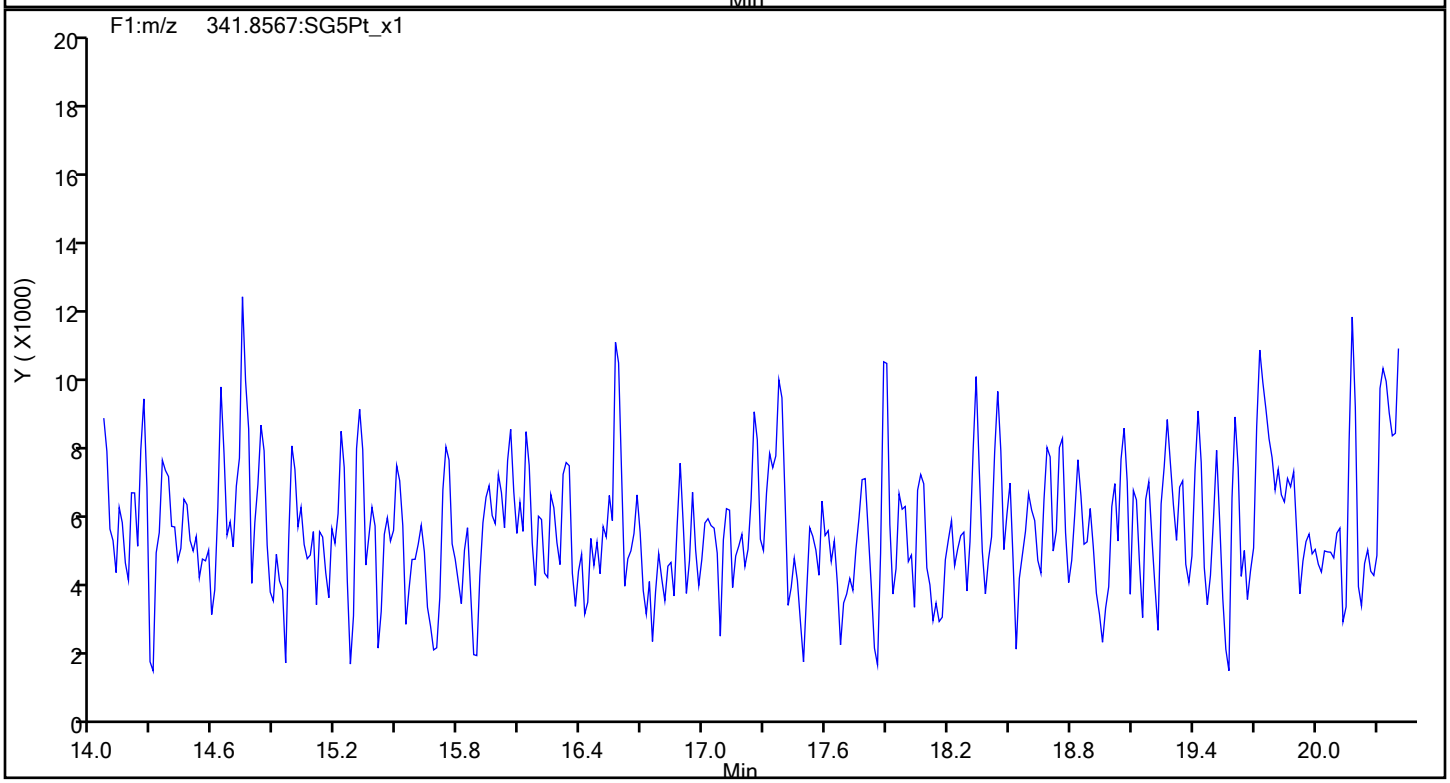
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



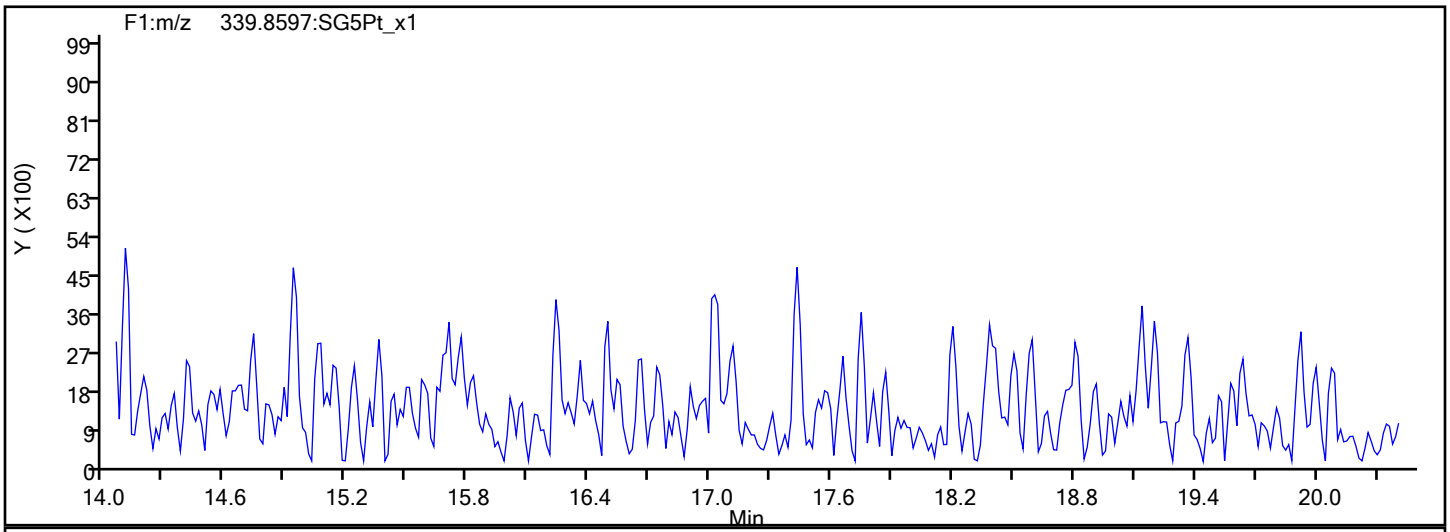


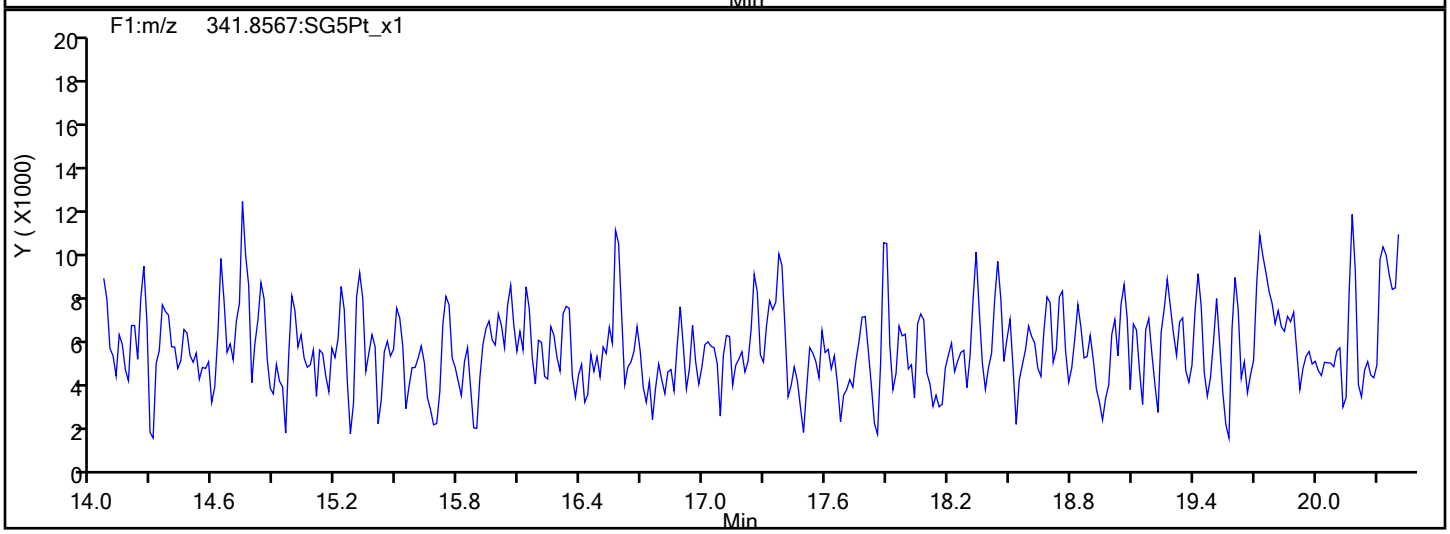
Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

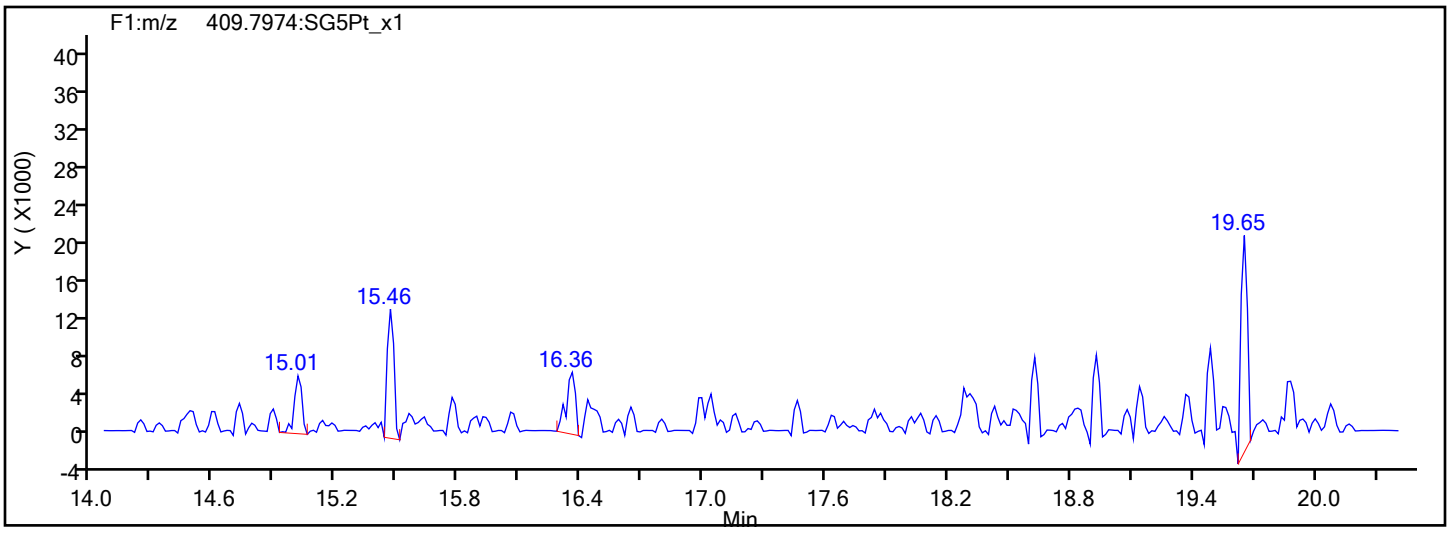
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

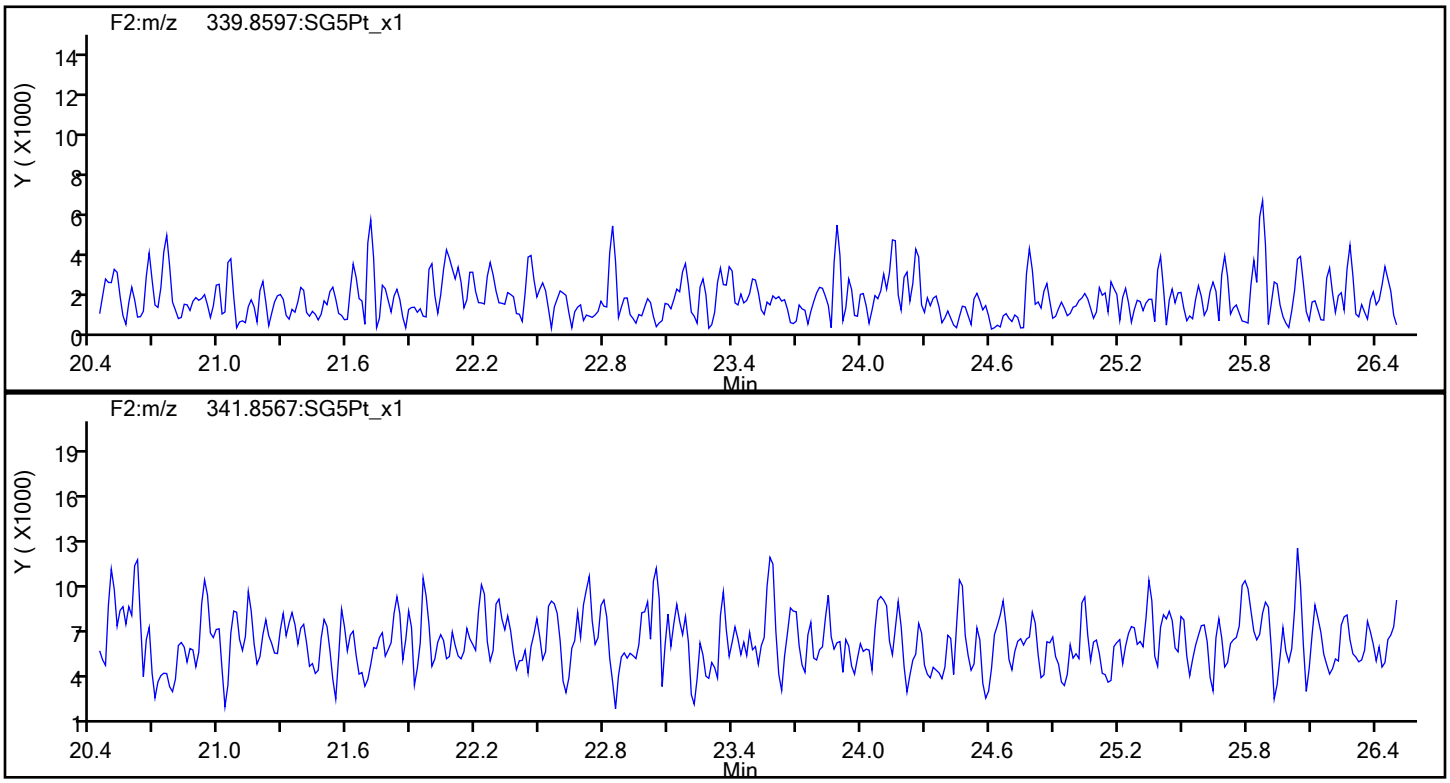


Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

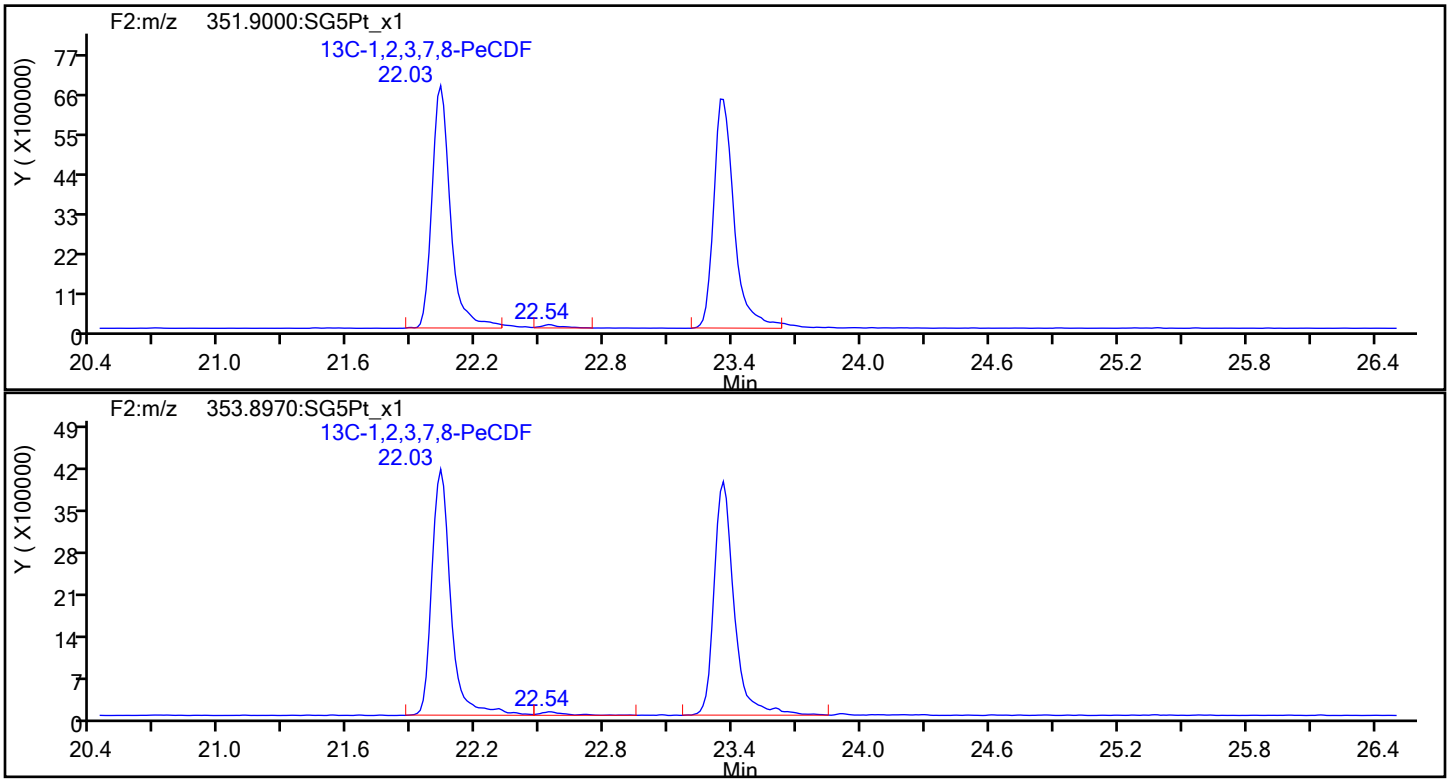
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

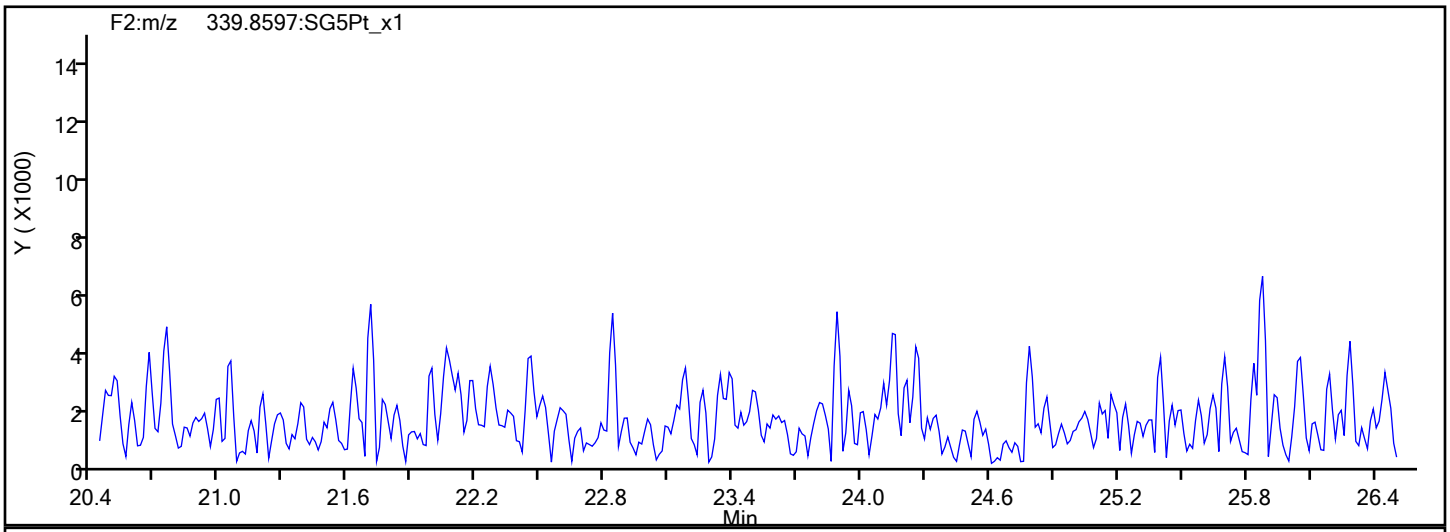


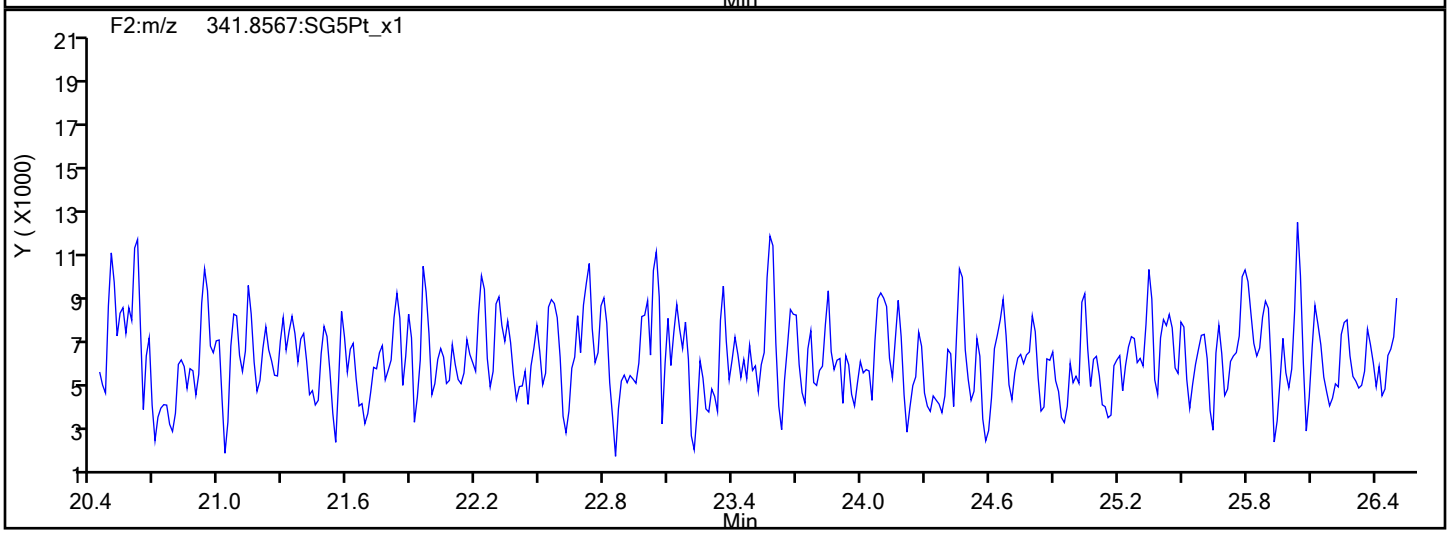
Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

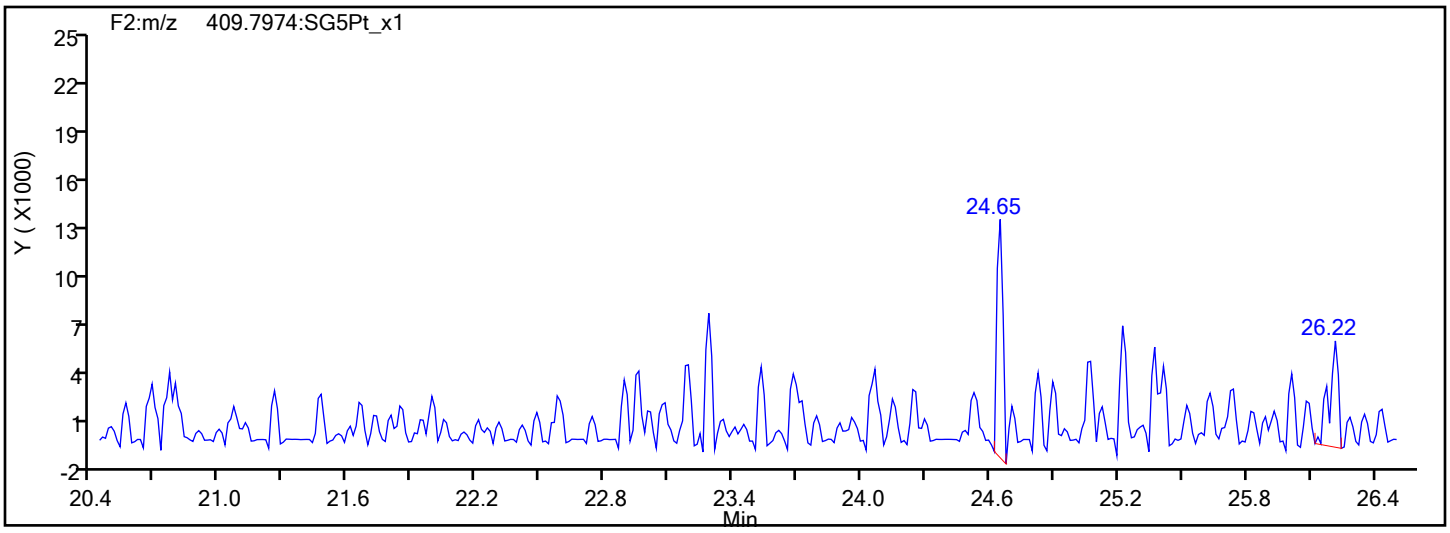
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
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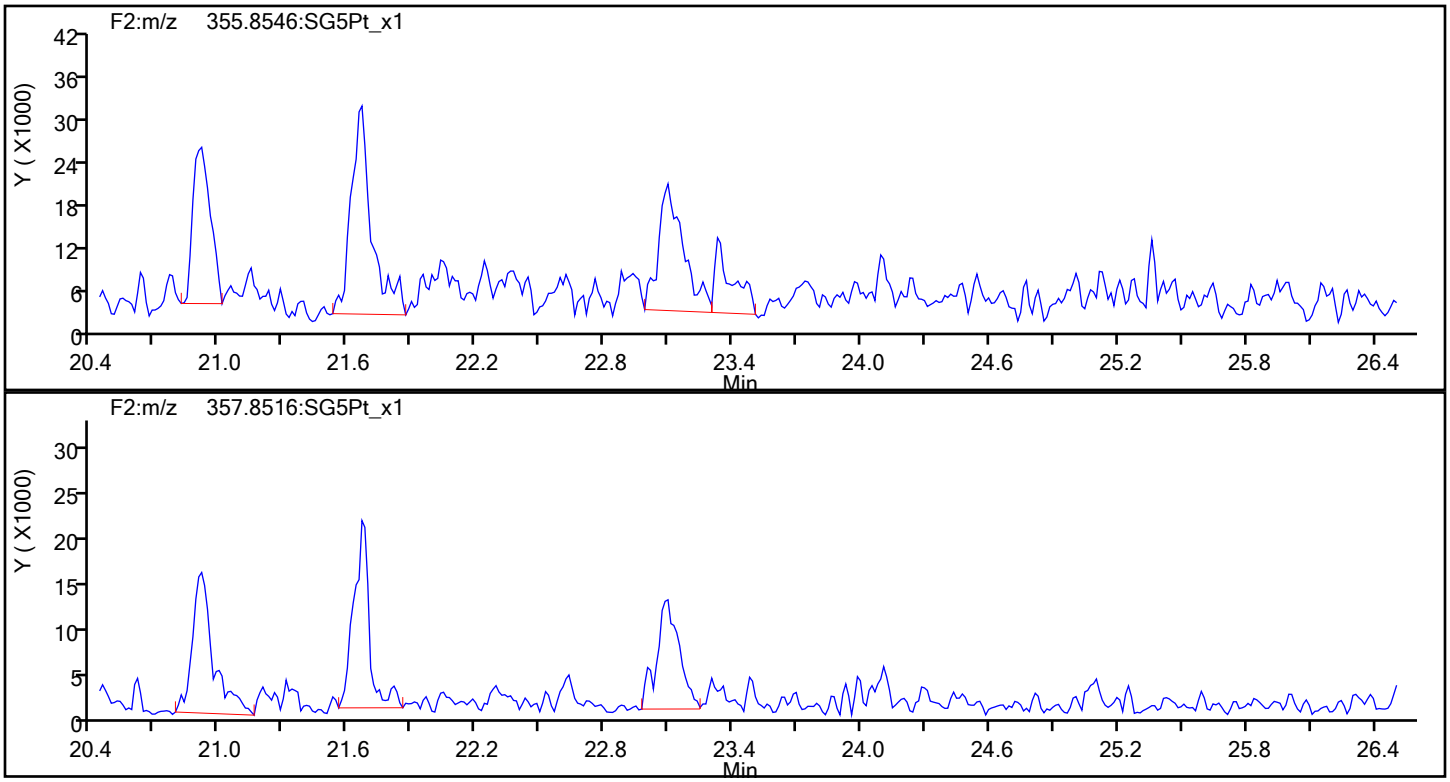
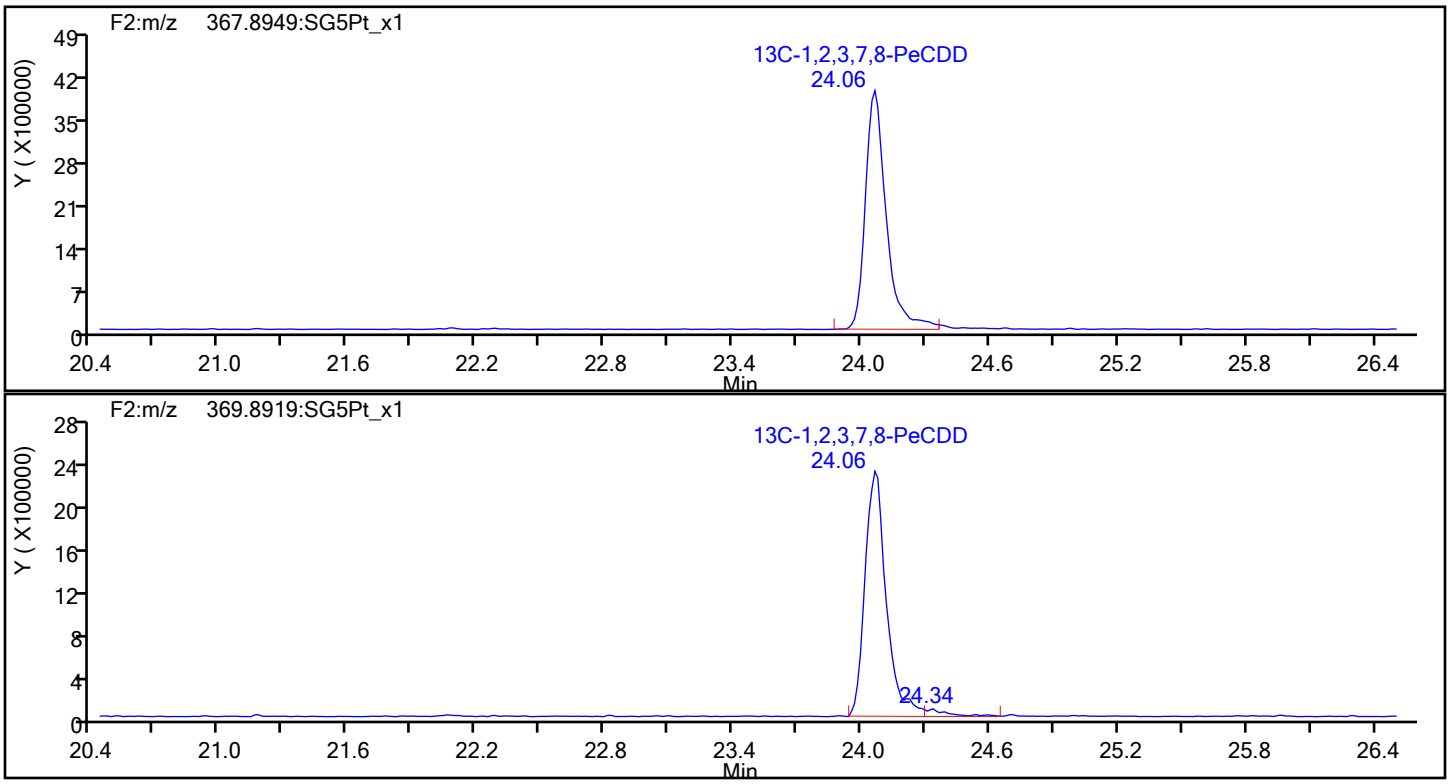
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards

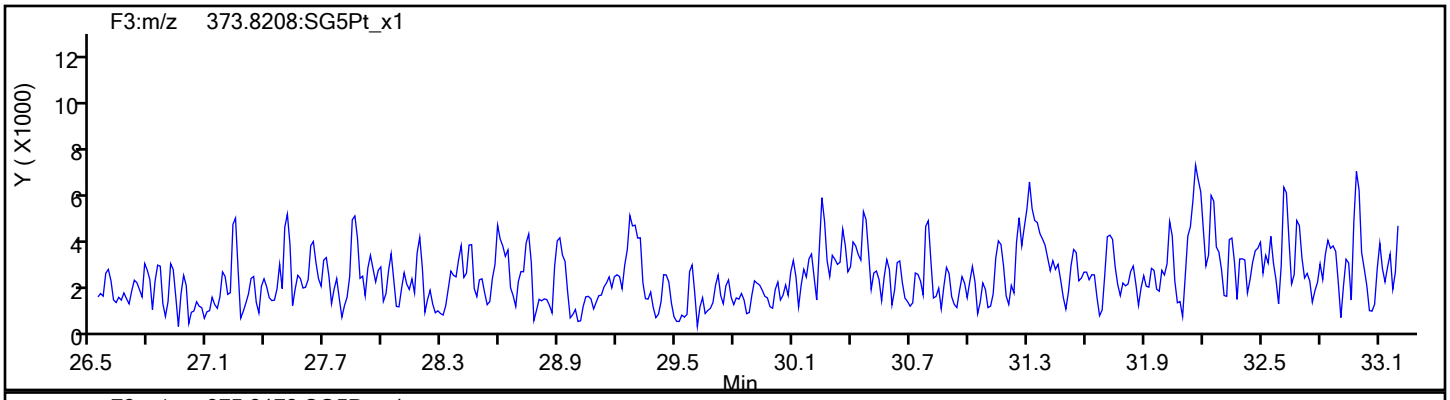


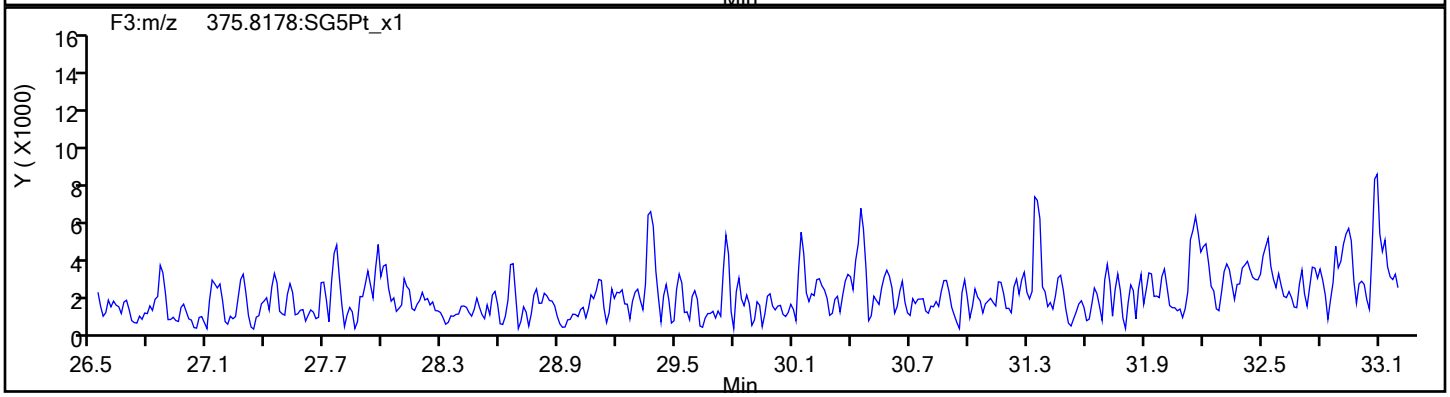
Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

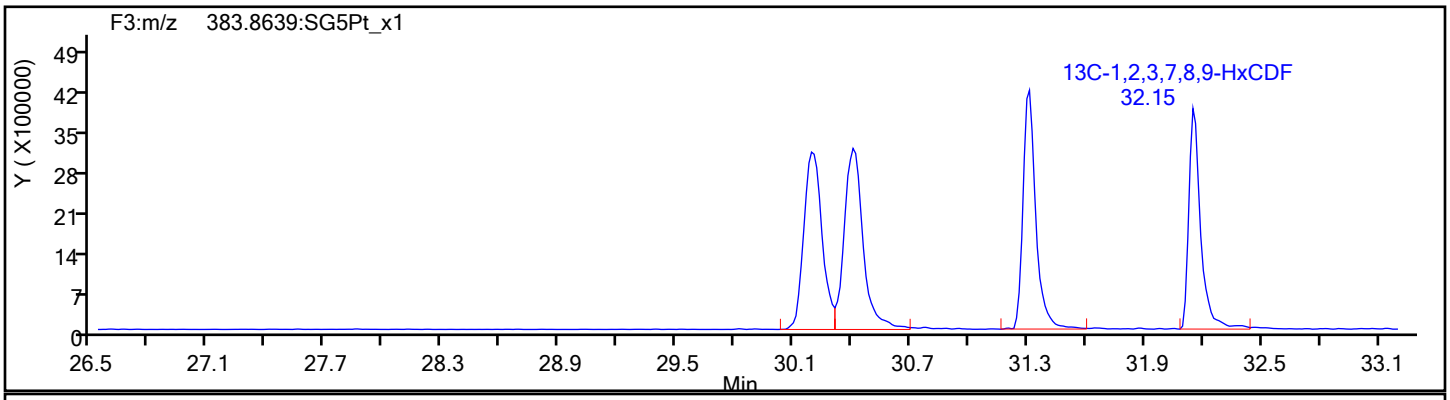
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
Column Type:	DB-5	Column Dia:	0.32 mm

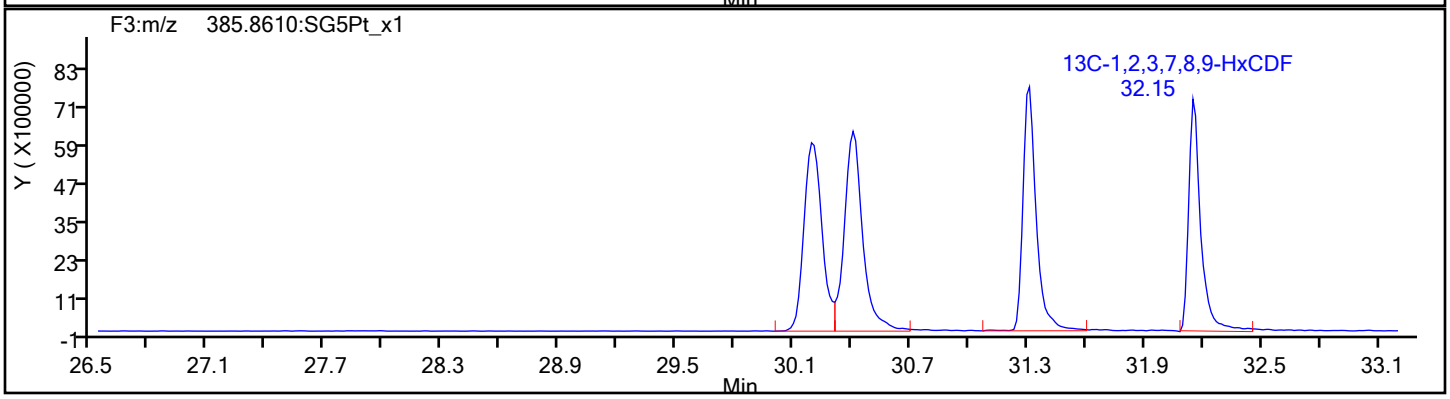
HxCDF





HxCDF Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
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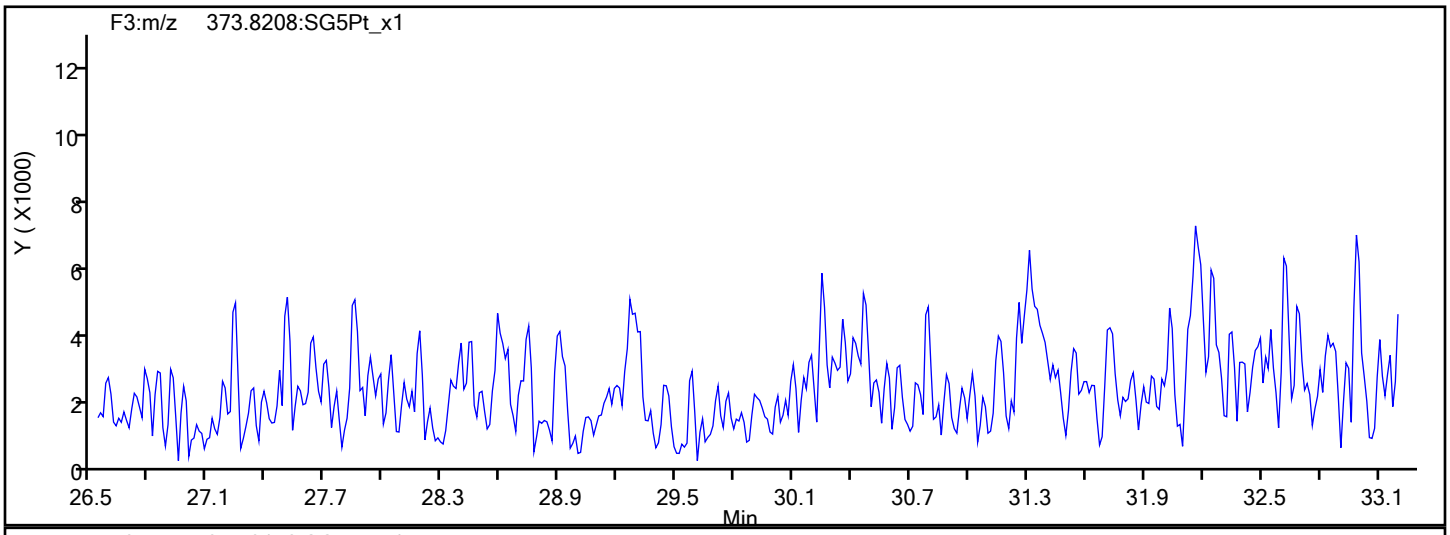
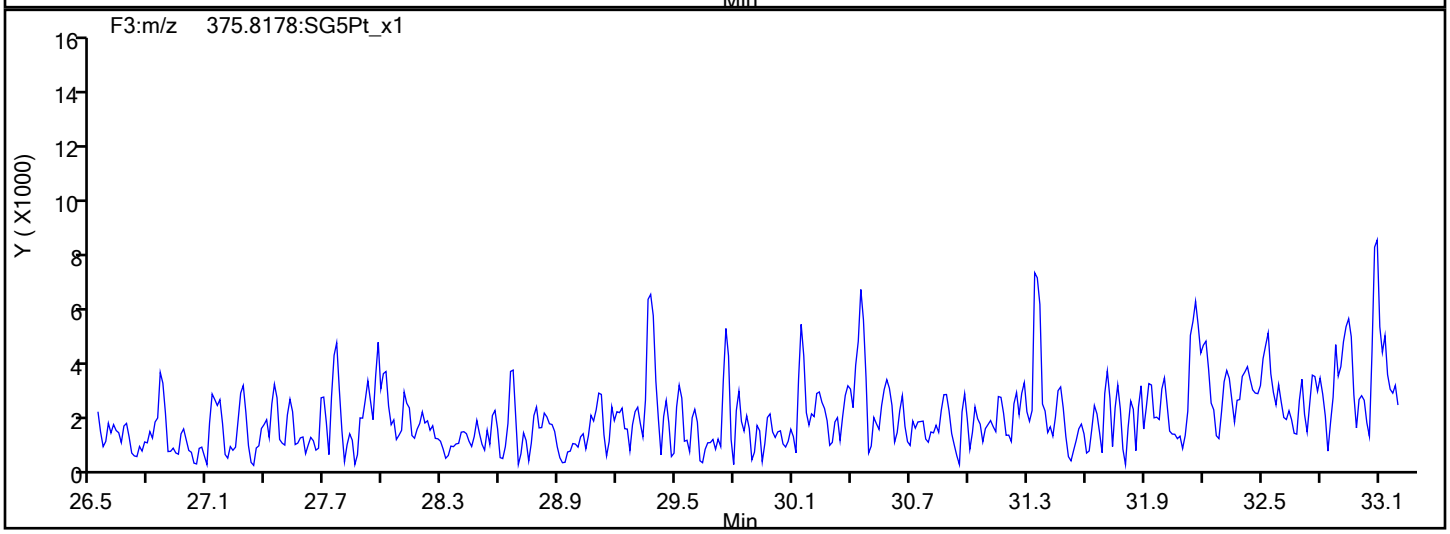
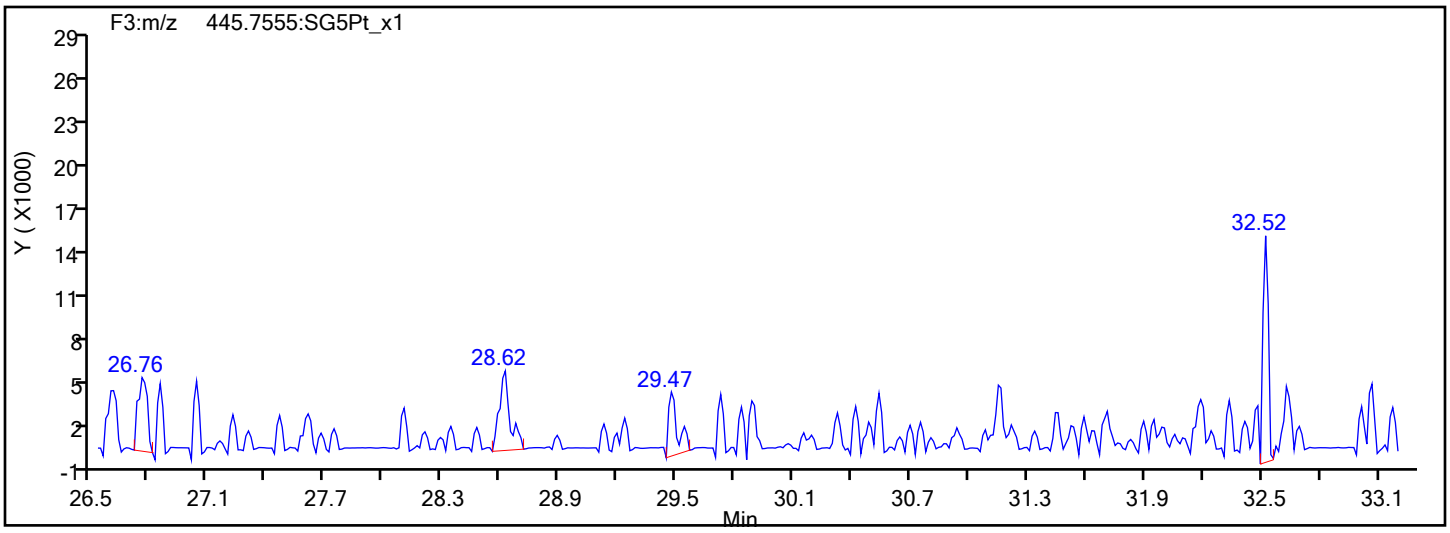
HxCDF





HxCDF Interference Mass



Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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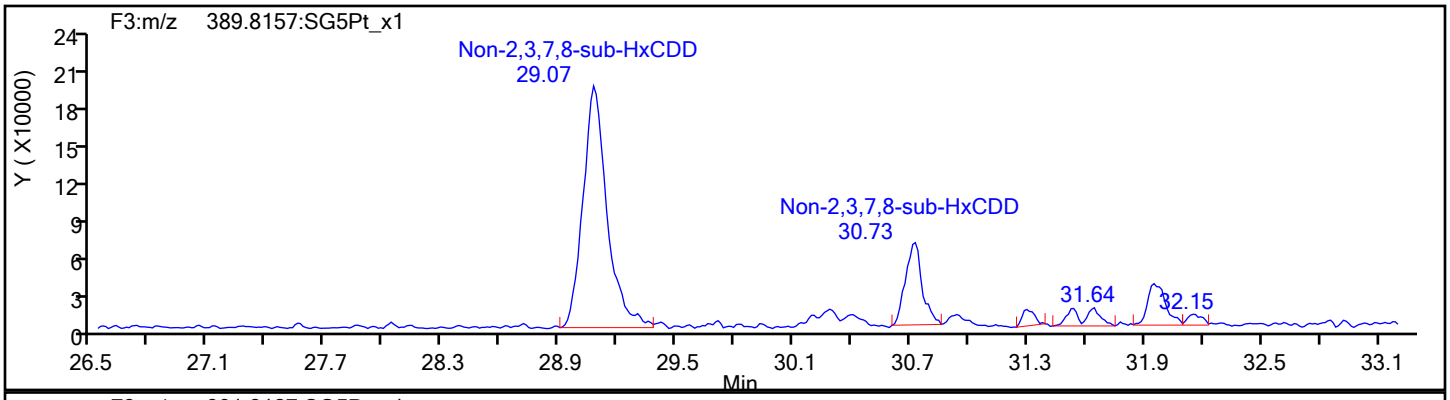
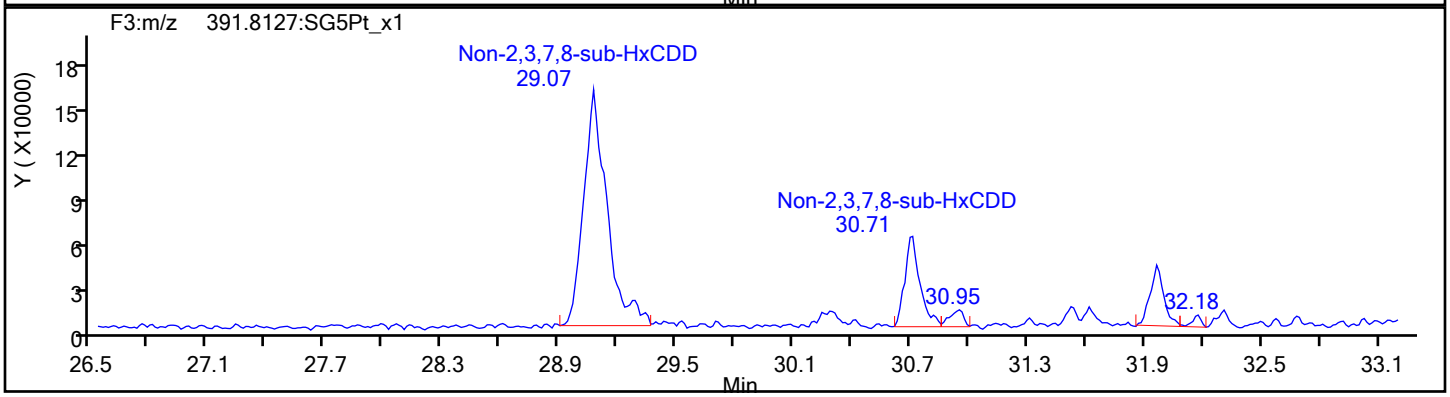
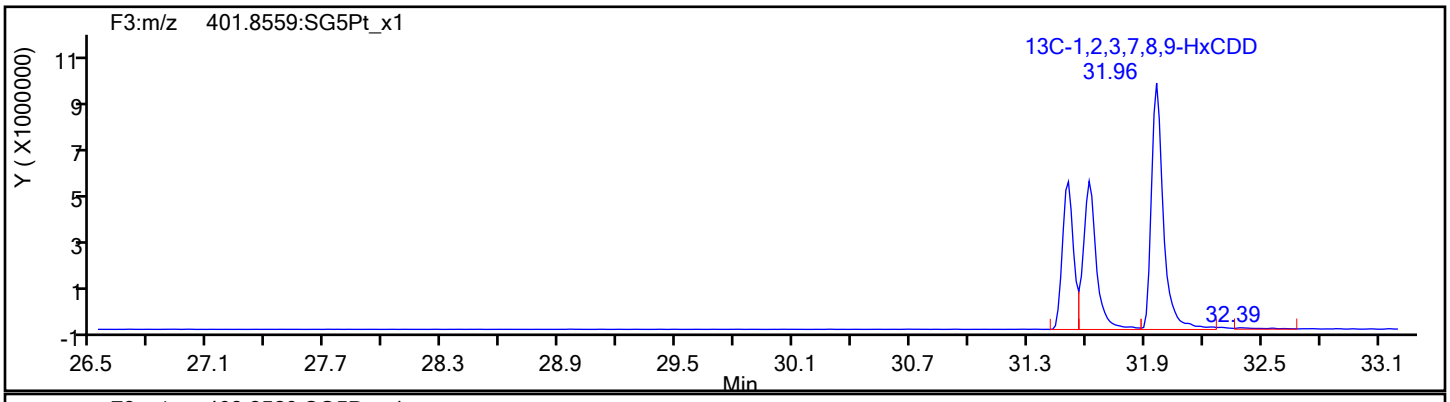
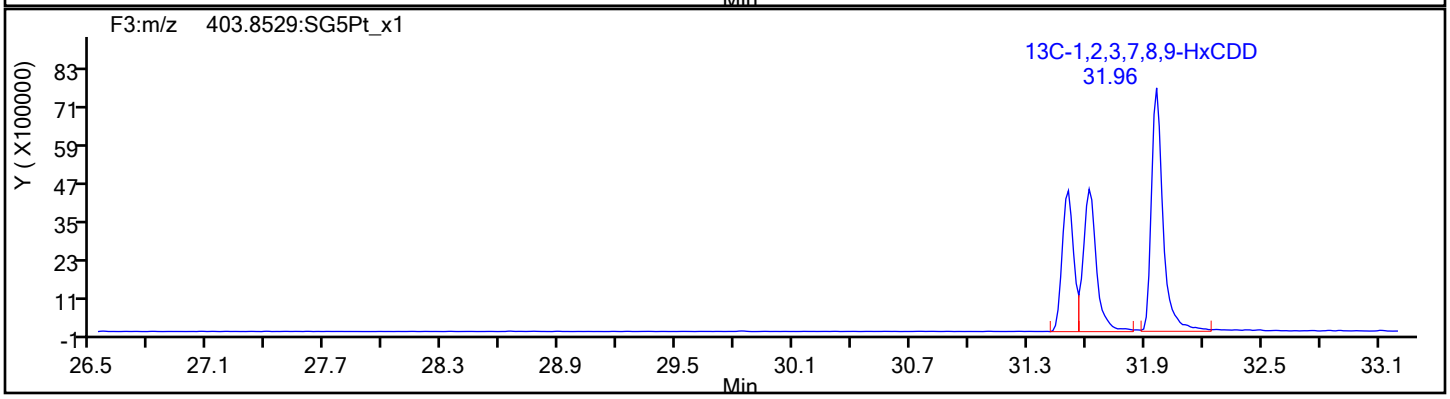
HxCDD





HxCDD Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA07(4-6)		
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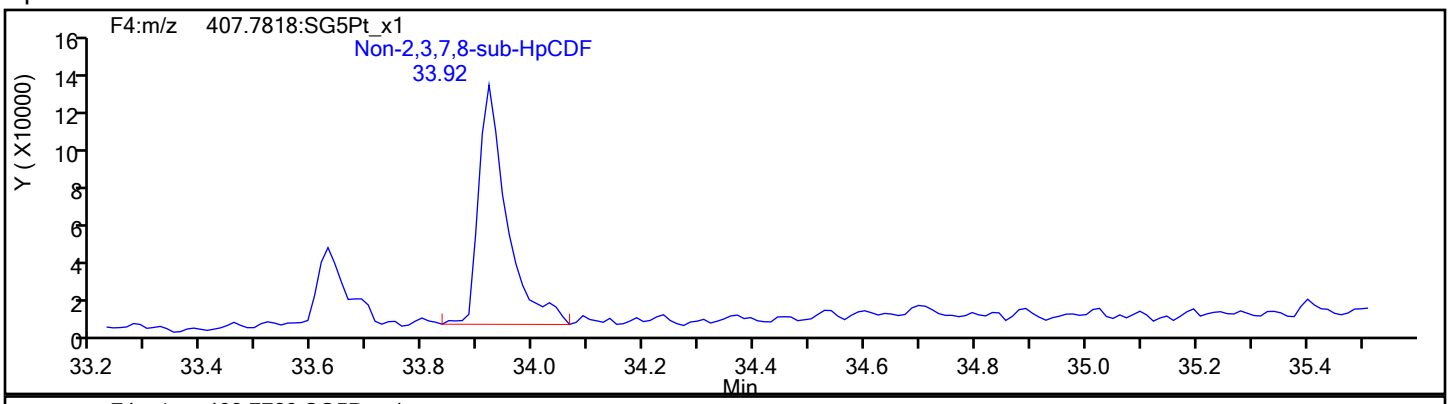
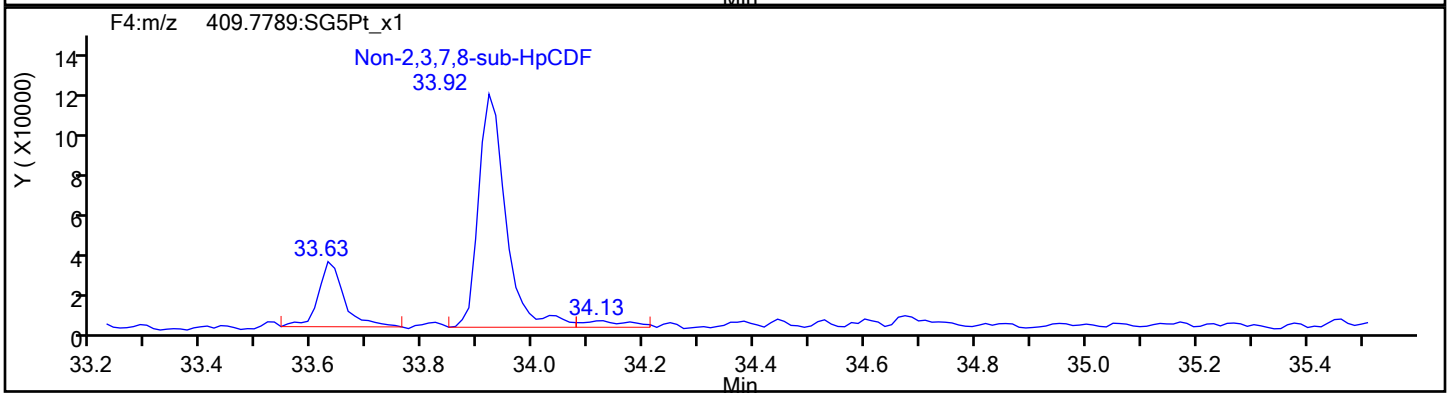
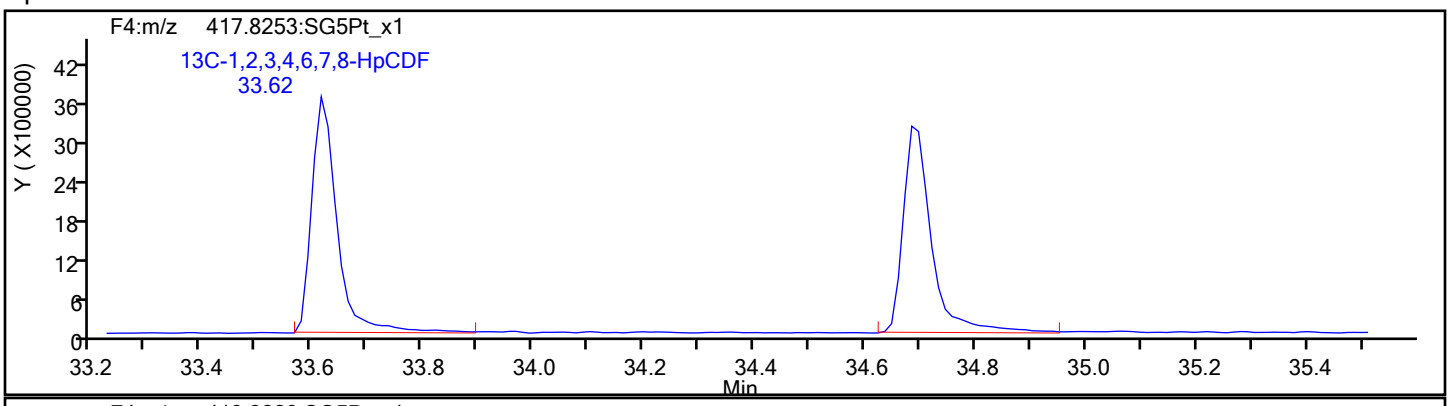
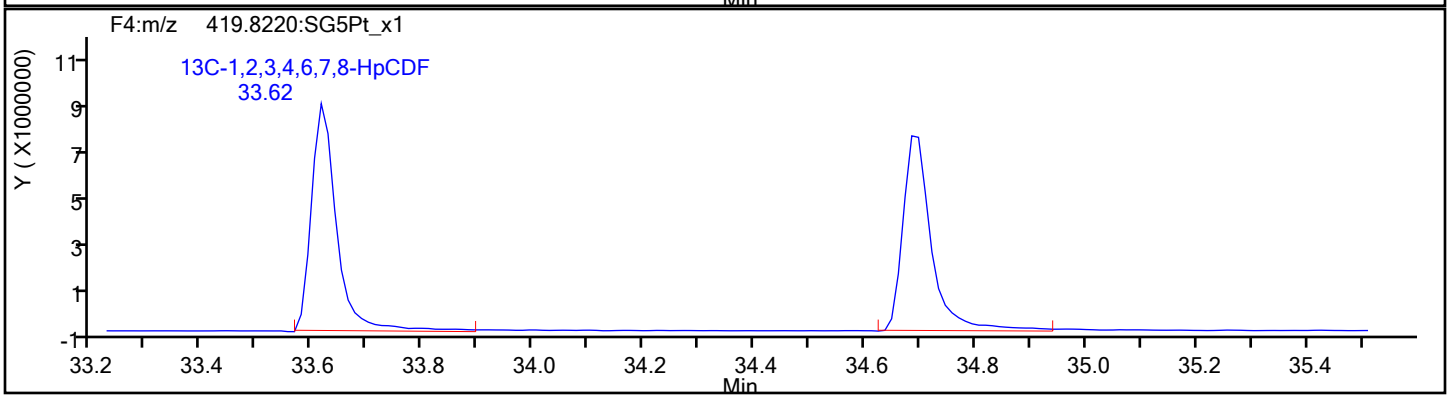
HpCDF





HpCDF Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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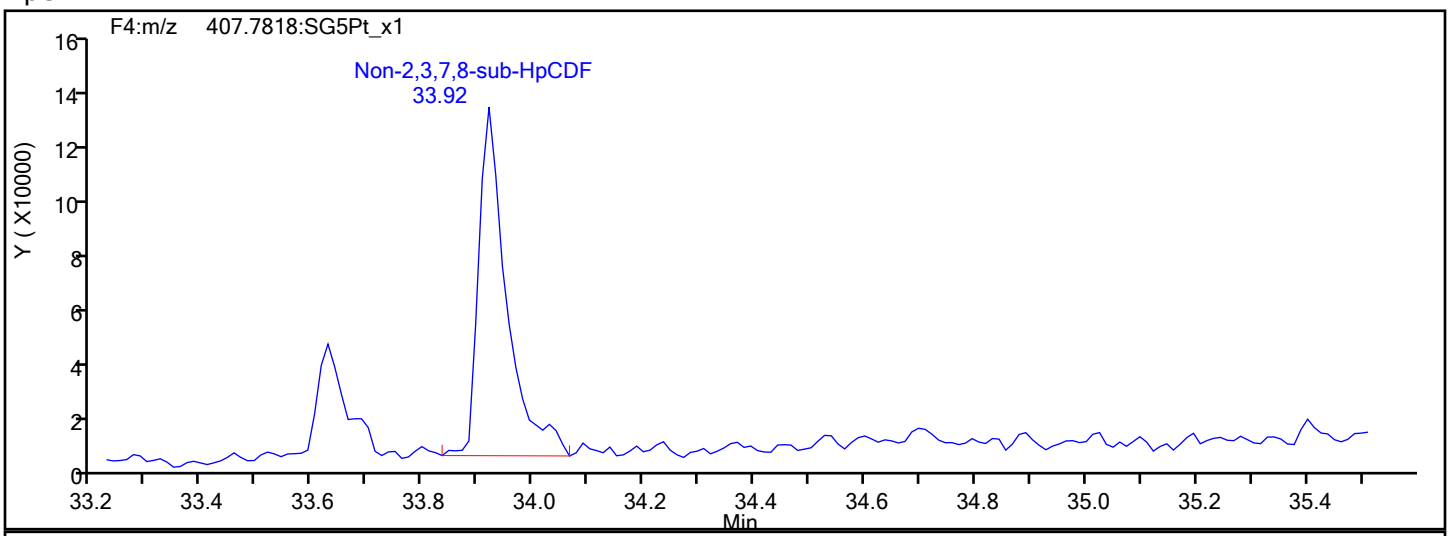
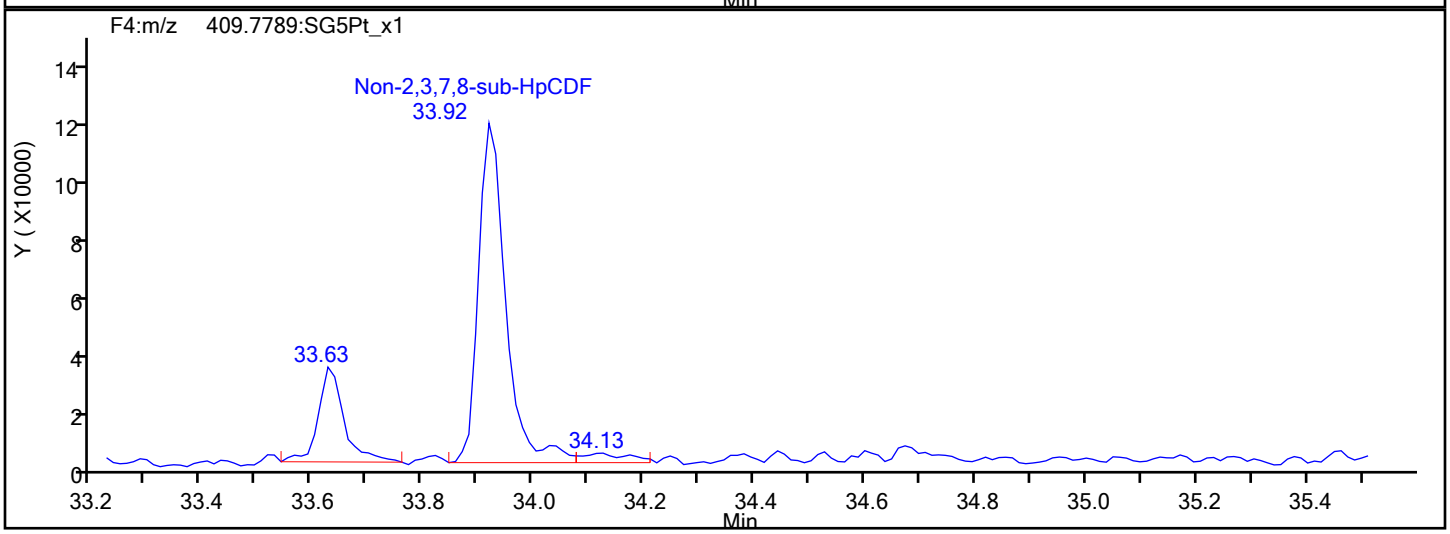
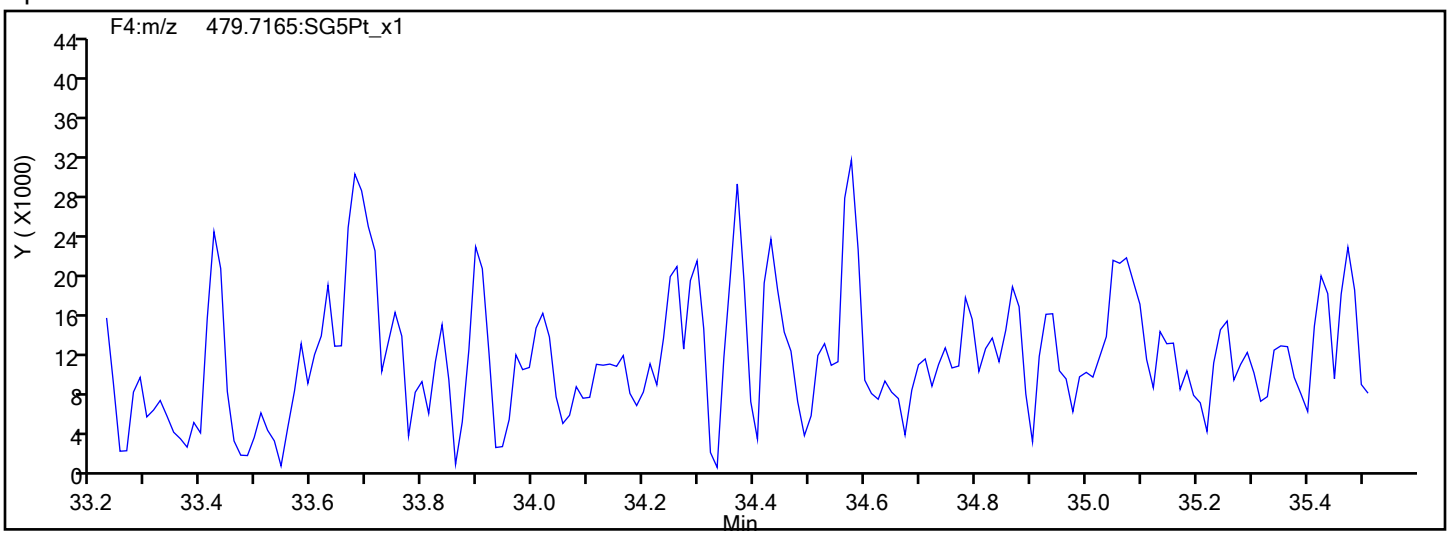
HpCDF





HpCDF Interference Mass



Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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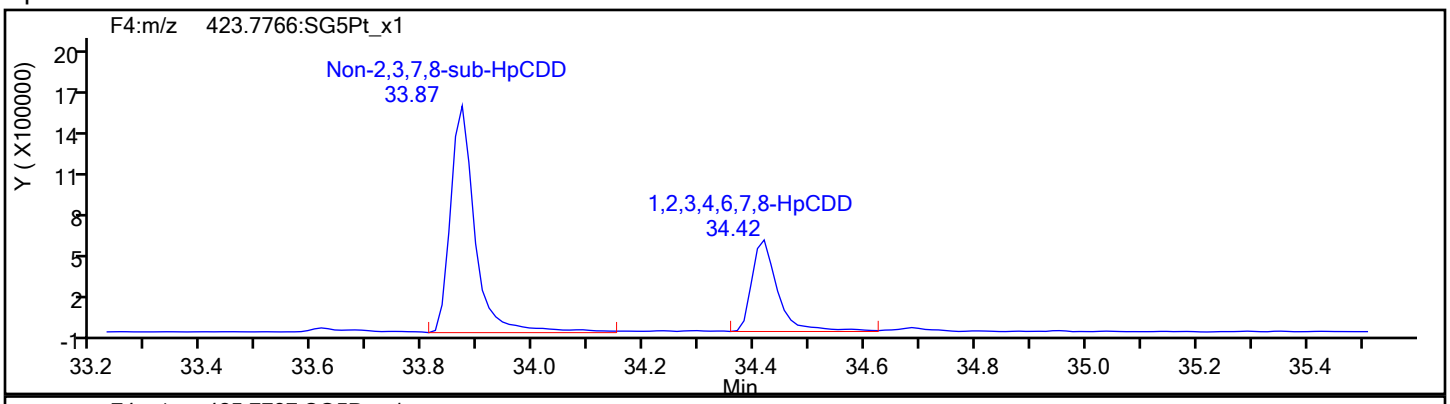
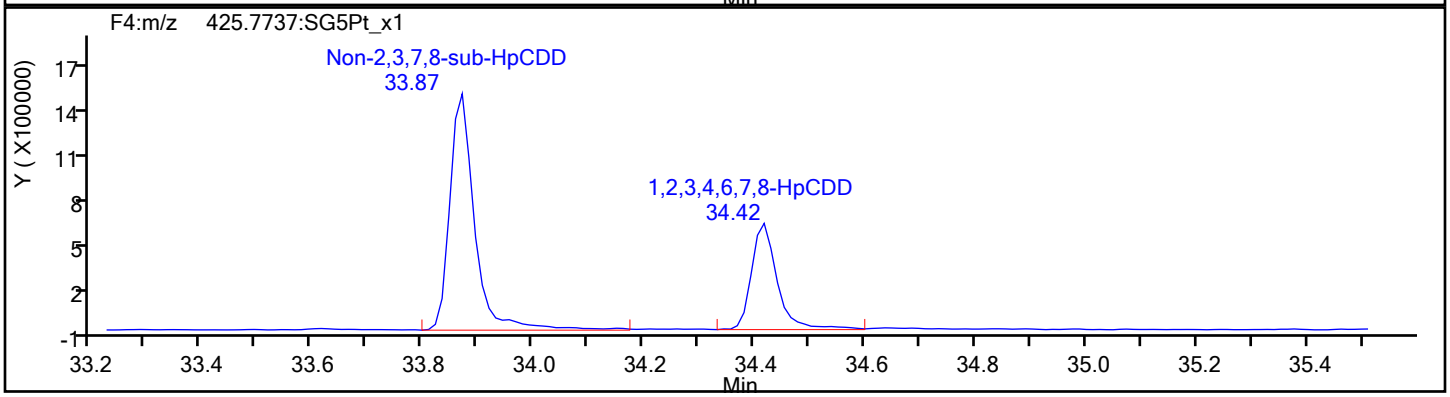
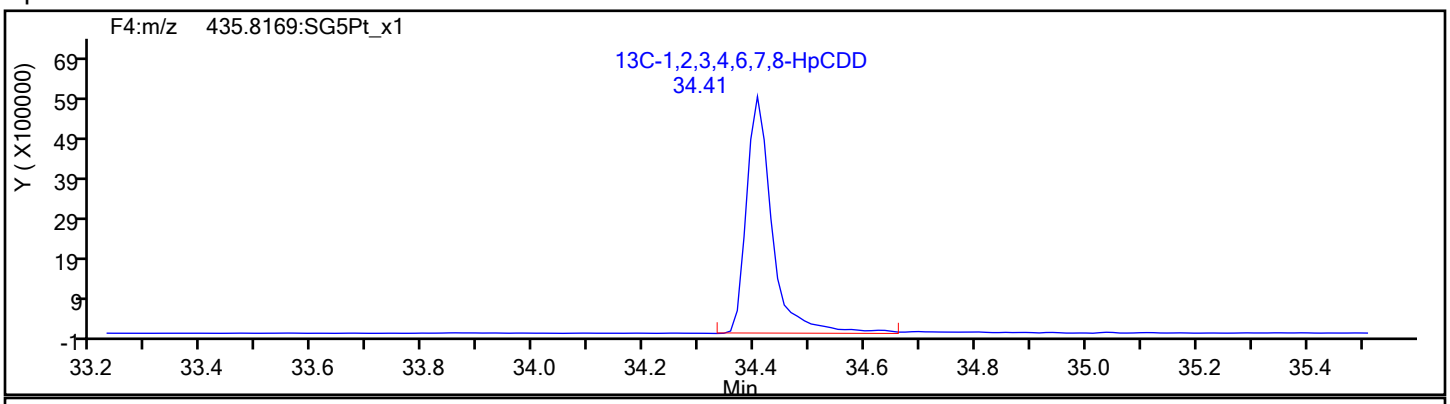
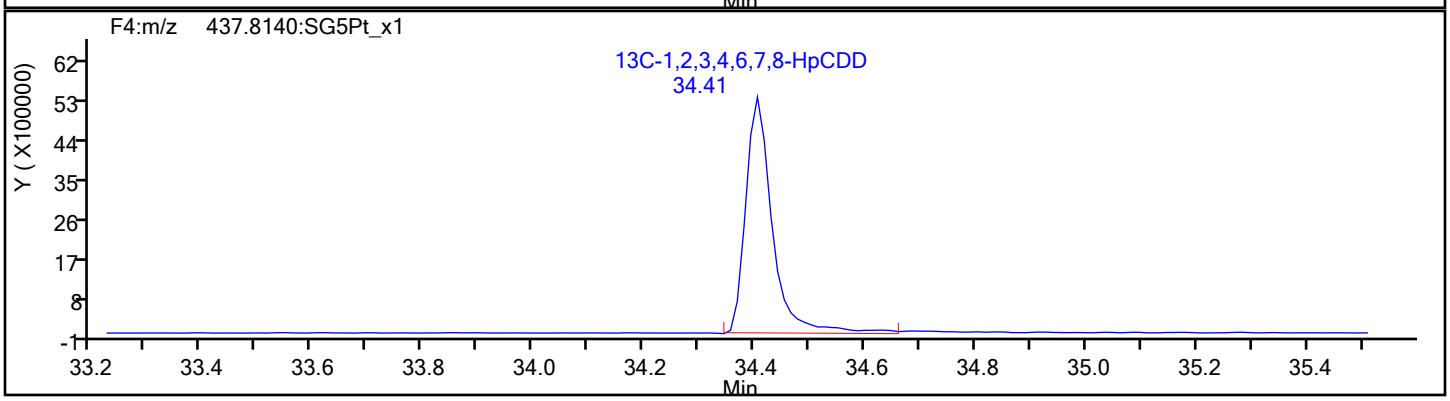
HpCDD





HpCDD Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_10.d		
Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
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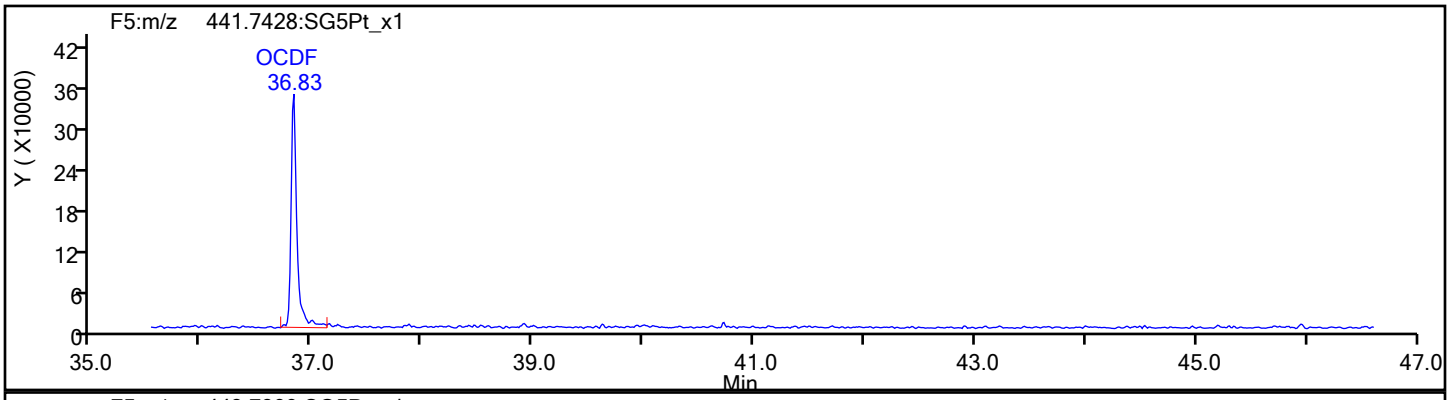
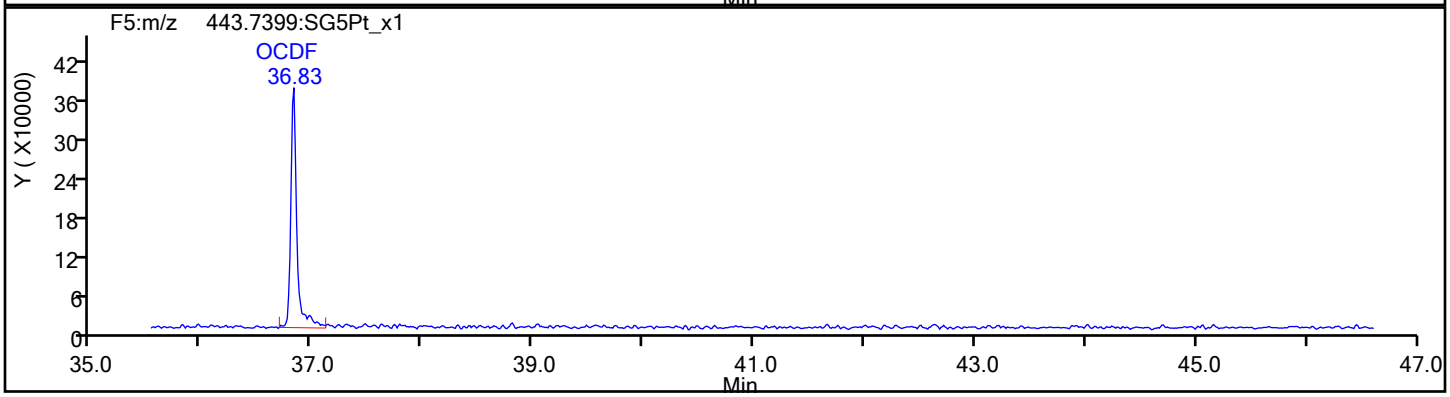
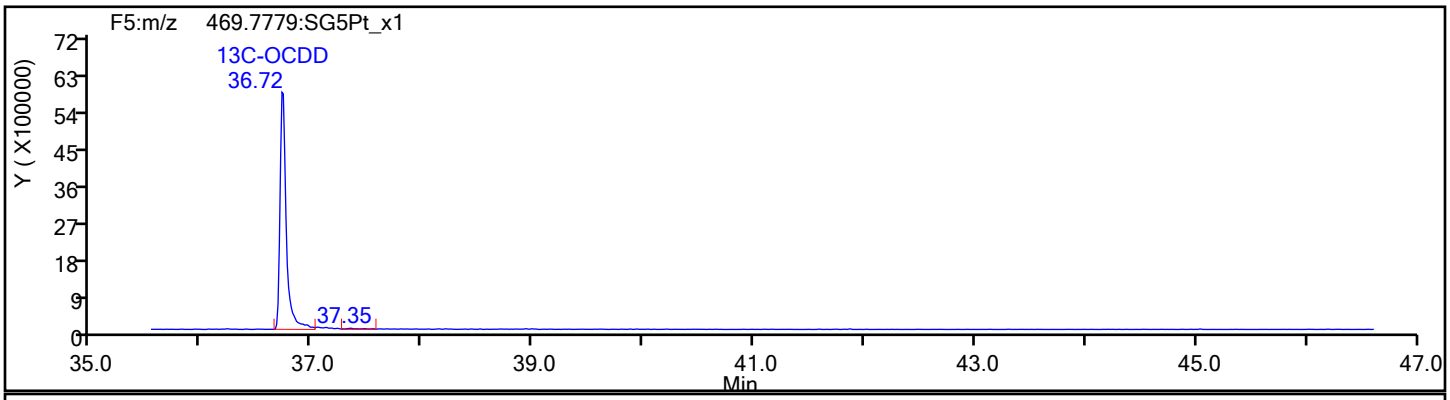
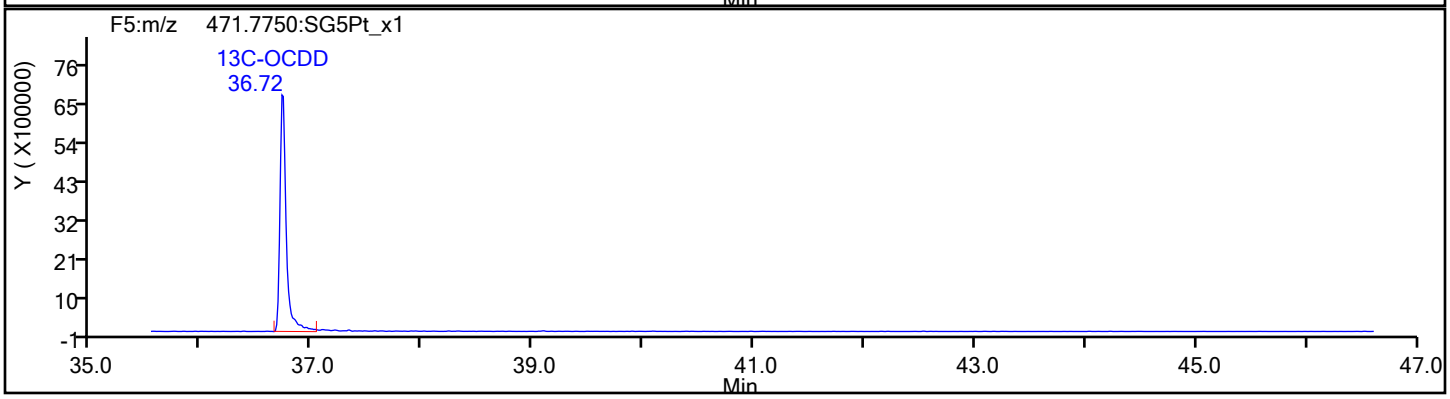
OCDF





OCDF Standards





Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date:	19-Dec-2019 18:09:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
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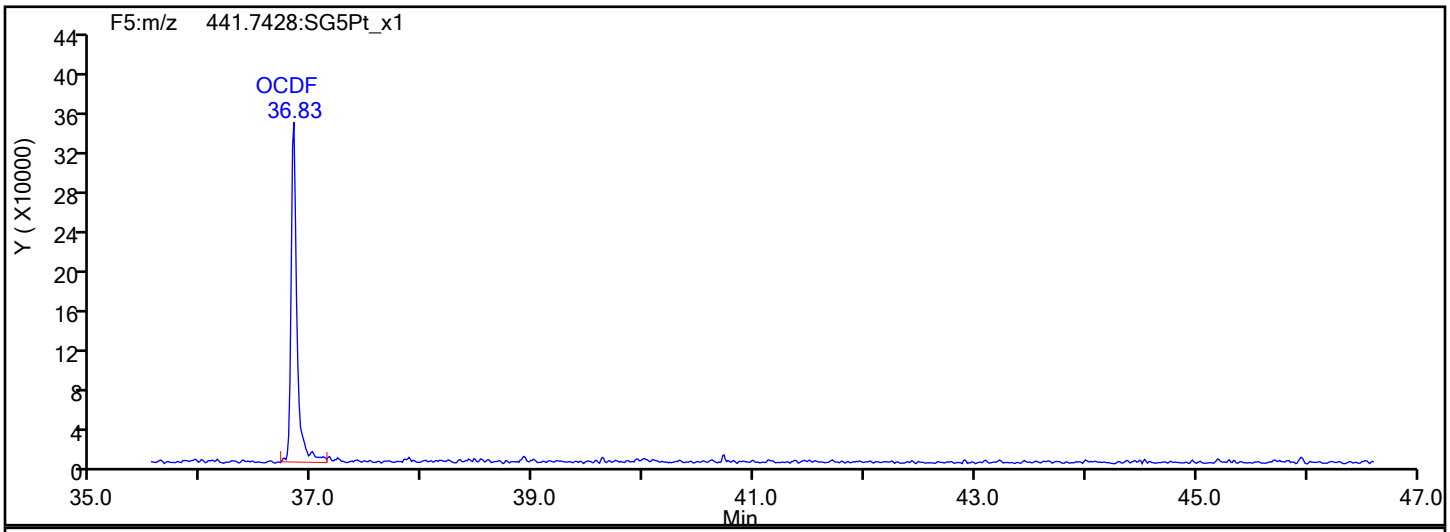
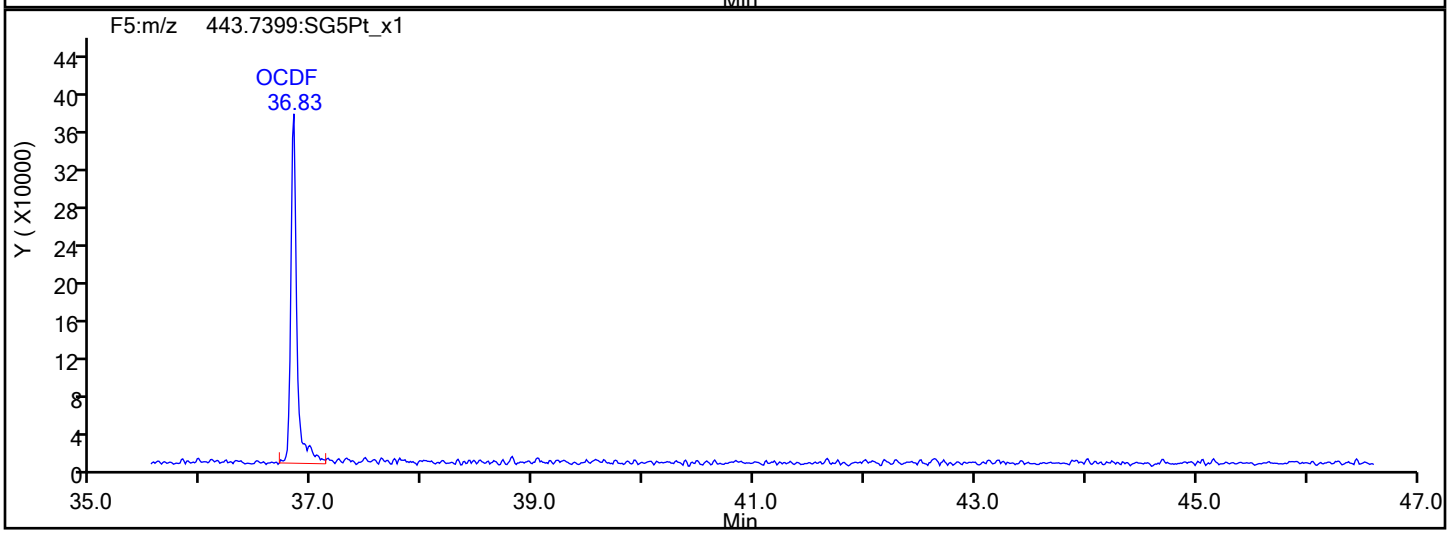
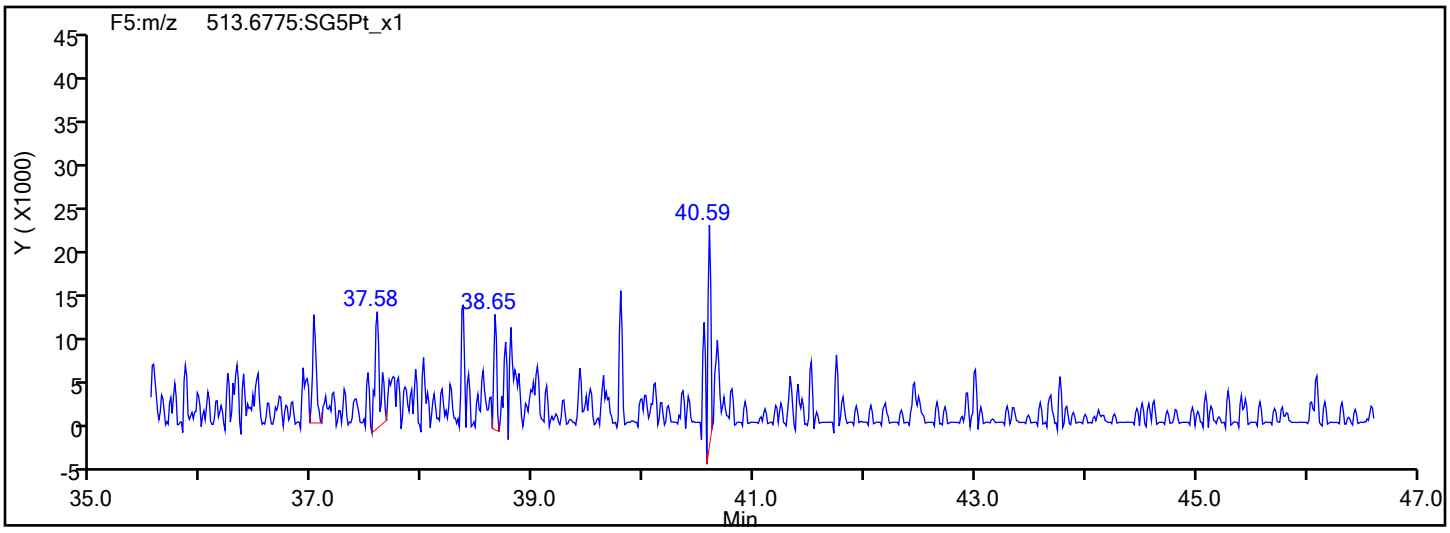
OCDF





OCDF Interference Mass



Report Date: 20-Dec-2019 14:26:07 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA07(4-6)		
Worklist#:	346752	Sample Line#:	10
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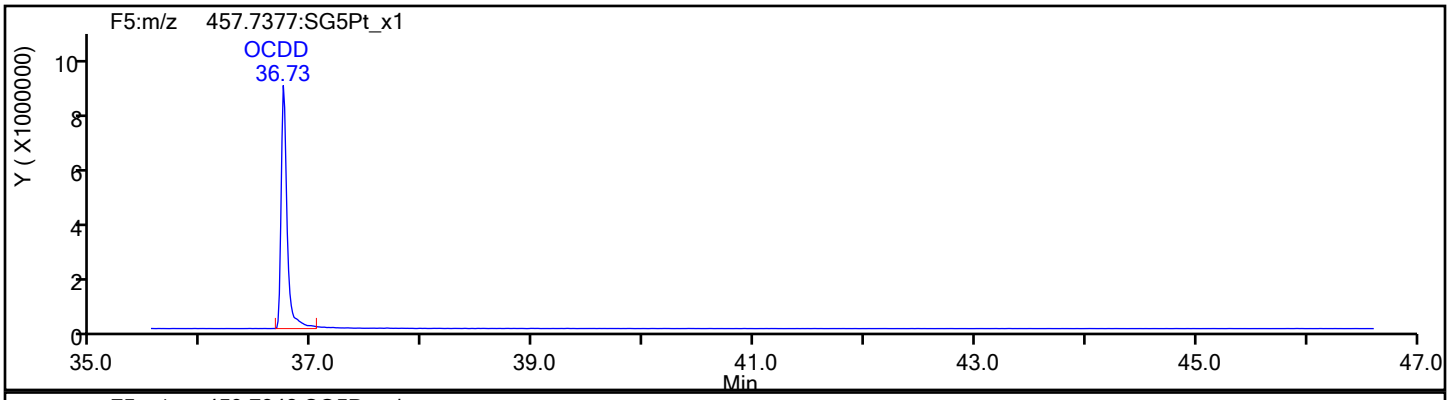
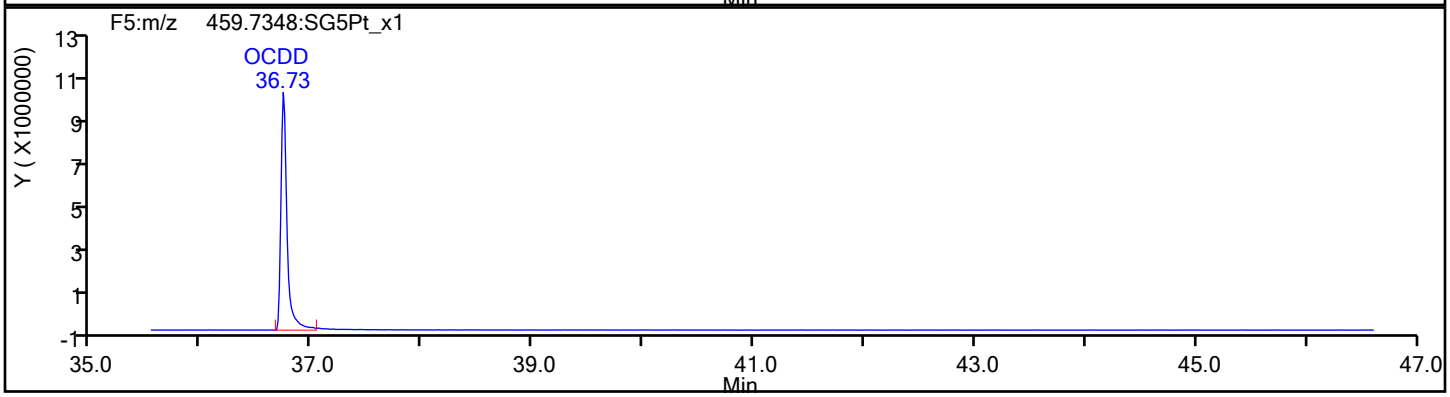
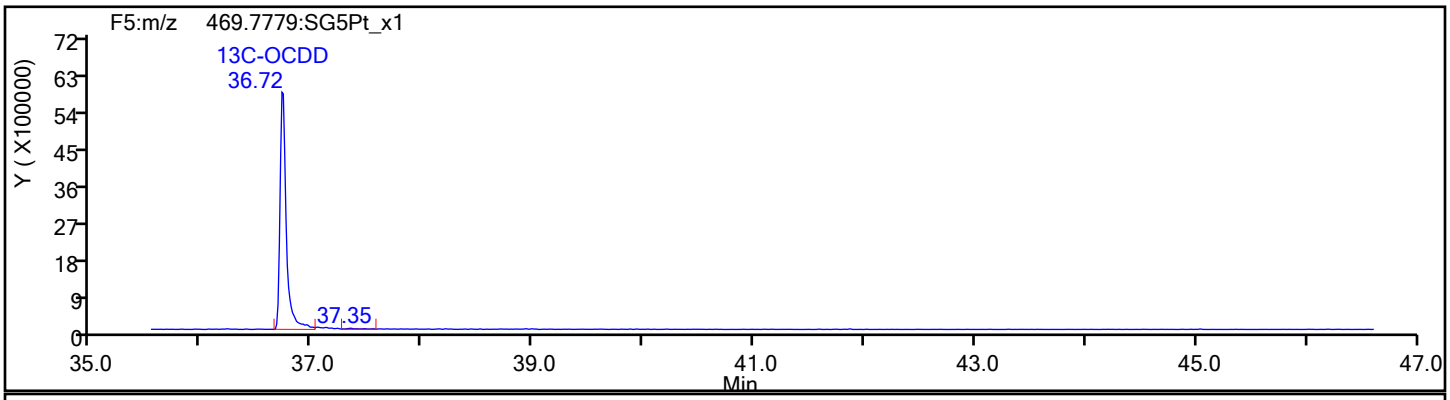
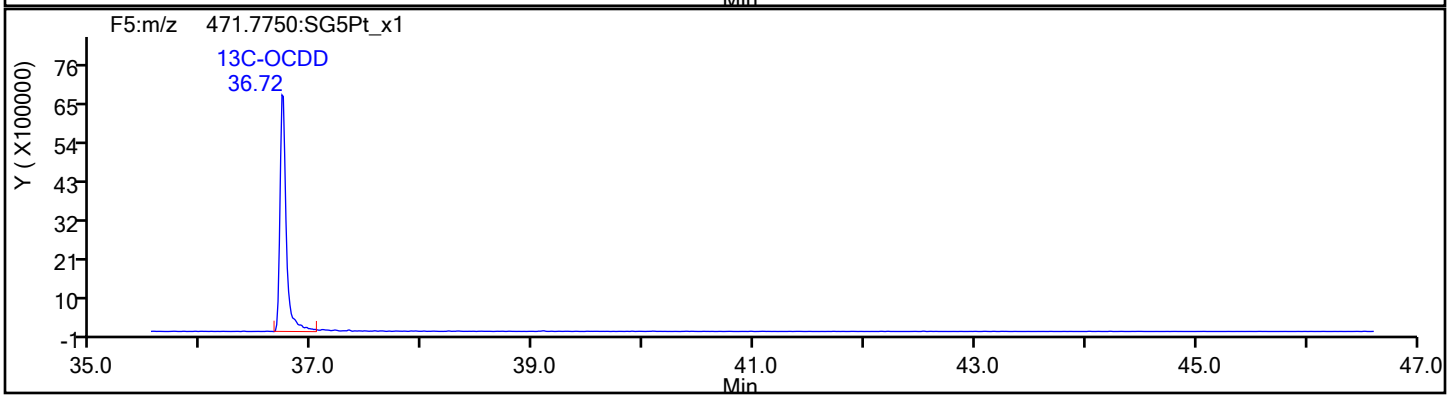




OCDD Standards





Report Date: 20-Dec-2019 14:26:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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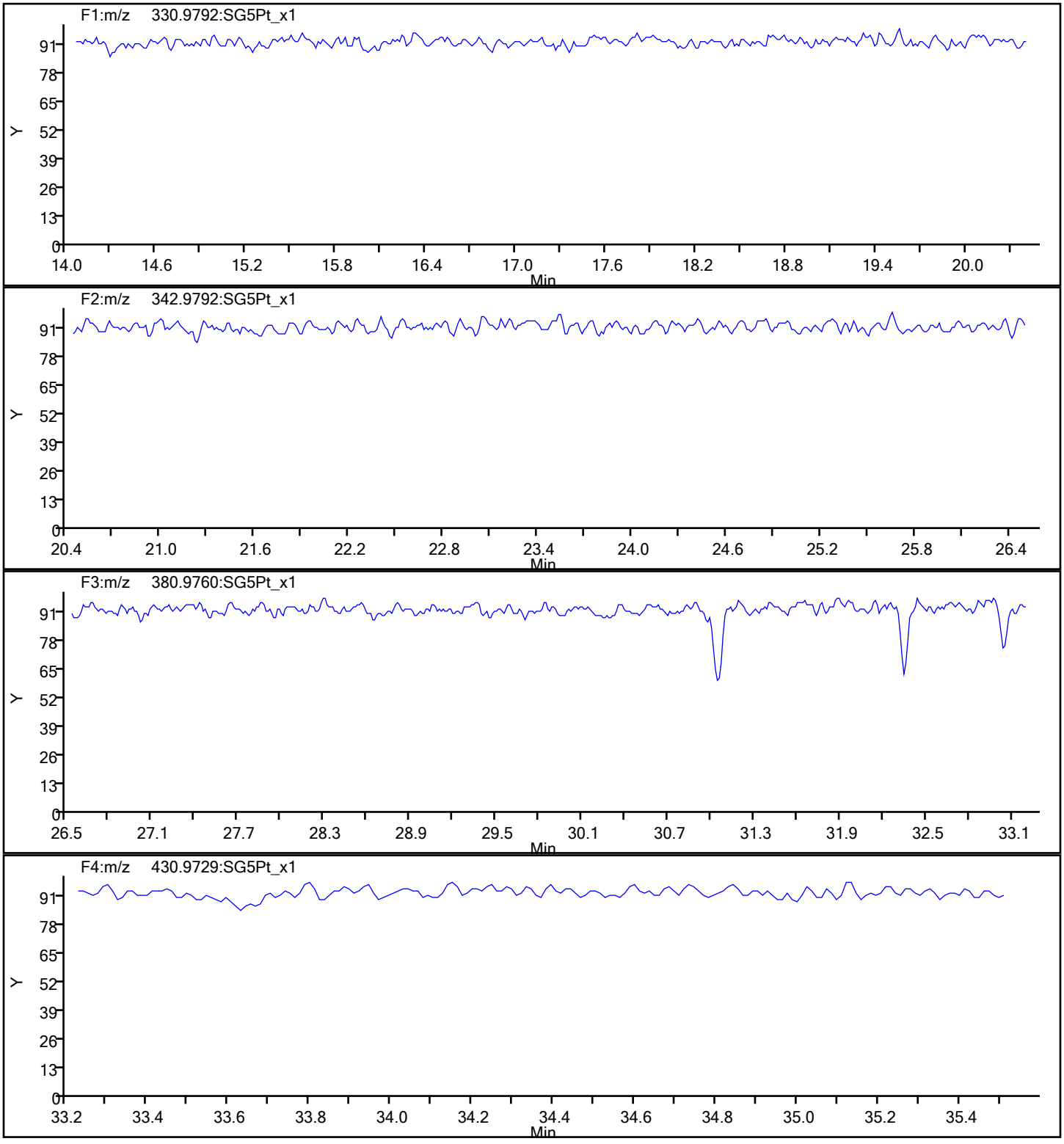

Report Date: 20-Dec-2019 14:26:08 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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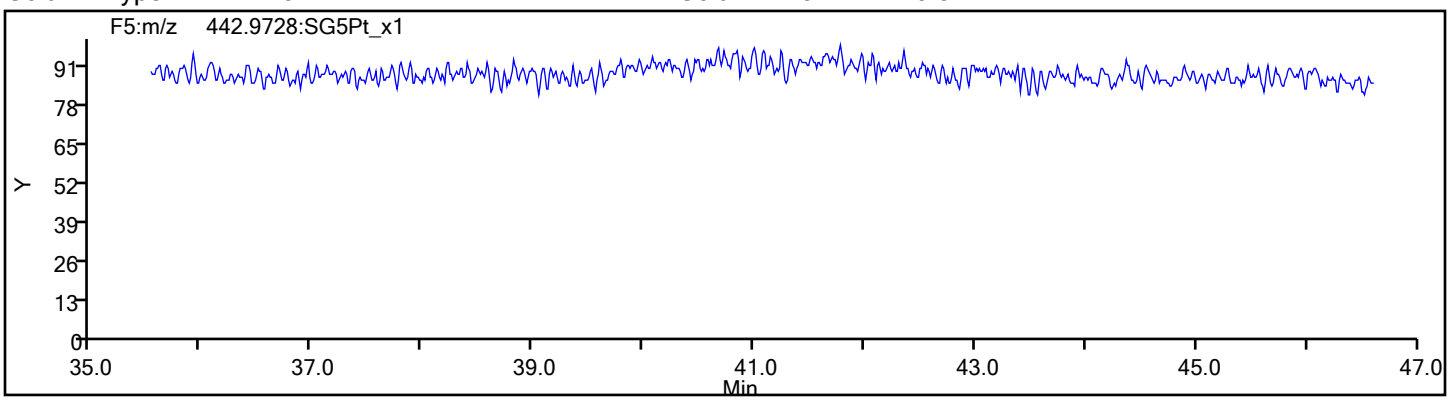
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Matrix: Sediment Lab File ID: 19DE193D5_11.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.09(g) Date Analyzed: 12/19/2019 18:56

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 58.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	11		2.4	0.33
40321-76-4	1,2,3,7,8-PeCDD	ND		12	0.40
57117-41-6	1,2,3,7,8-PeCDF	1.1	J q	12	0.29
57117-31-4	2,3,4,7,8-PeCDF	0.77	J	12	0.31
39227-28-6	1,2,3,4,7,8-HxCDD	0.63	J q	12	0.35
57653-85-7	1,2,3,6,7,8-HxCDD	0.88	J	12	0.37
19408-74-3	1,2,3,7,8,9-HxCDD	2.4	J	12	0.32
70648-26-9	1,2,3,4,7,8-HxCDF	1.2	J	12	0.20
57117-44-9	1,2,3,6,7,8-HxCDF	0.41	J q	12	0.21
72918-21-9	1,2,3,7,8,9-HxCDF	0.61	J q	12	0.16
60851-34-5	2,3,4,6,7,8-HxCDF	ND		12	0.16
35822-46-9	1,2,3,4,6,7,8-HpCDD	31	B	12	0.95
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.7	J B	12	0.27
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		12	0.32
3268-87-9	OCDD	720	B	24	0.64
39001-02-0	OCDF	12	J B	24	0.35
41903-57-5	Total TCDD	21	q	2.4	0.33
30402-14-3	Total TCDF	72	q	2.4	0.36
36088-22-9	Total PeCDD	8.9	J q	12	0.40
30402-15-4	Total PeCDF	2.7	J q	12	0.30
34465-46-8	Total HxCDD	41	q	12	0.35
55684-94-1	Total HxCDF	4.1	J q	12	0.18
37871-00-4	Total HpCDD	130	B	12	0.95
38998-75-3	Total HpCDF	4.9	J B	12	0.30

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) Lab Sample ID: 320-56953-5

Matrix: Sediment Lab File ID: 19DE193D5_11.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.09(g) Date Analyzed: 12/19/2019 18:56

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 58.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	62		25-164
89059-46-1	13C-2,3,7,8-TCDF	63		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	59		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	60		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	62		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	63		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	65		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	65		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	62		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	60		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	61		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	63		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	61		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	69		26-138
114423-97-1	13C-OCDD	67		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	99		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 18:56:35 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-5-A 320-56953-A-5-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:31:40 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: messecara Date: 19-Dec-2019 21:00:53

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.597	218610352	0.82	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.098	193710028	0.79	1.4157	62.6	62.6	0.1200	0.1200	62.59	
2,3,7,8-TCDF	17.113	17202151	0.79	0.9502	9.346	9.346	0.0764	0.0764		
A Non-2,3,7,8-sub-TCDF	16.811	10677044	0.77	0.9502	5.924	5.801	0.0764	3.649		RQ
S Total TCDF					15.3	15.1	0.0764	0.0764		RQ
D 13C-2,3,7,8-TCDD	17.793	131780348	0.79	0.9751	61.8	61.8	0.1692	0.1692	61.82	
2,3,7,8-TCDD	17.808	3178238	0.75	1.0477	2.302	2.302	0.0698	0.0698		M
$ 37Cl4-2,3,7,8-TCDD	17.808	116765777		1.3480	39.6	39.6	0.0838	0.0838	99.06	
A Non-2,3,7,8-sub-TCDD	17.249	2991308	0.77	1.0477	2.200	2.167	0.0698	1.497		RQMa
S Total TCDD					4.502	4.468	0.0698	0.0698		RQ
D 13C-1,2,3,7,8-PeCDF	22.018	153495405	1.56	1.1786	59.6	59.6	0.1542	0.1542	59.57	
1,2,3,7,8-PeCDF	22.032	356633	1.55	1.0302	0.2585	0.2255	0.0614	0.0614		RQ
D 13C-2,3,4,7,8-PeCDF	23.327	153626433	1.61	1.1308	62.1	62.1	0.1607	0.1607	62.15	
2,3,4,7,8-PeCDF	23.355	257691	1.40	1.0410	0.1611	0.1611	0.0645	0.0645		M
A F1 PeCDFs	19.774						0.0480	0.0480		
A Non-2,3,7,8-sub-PeCDF	22.858	278761	1.55	1.0356	0.1886	0.1753	0.0629	0.1753		RQM
S Total PeCDF					0.6082	0.5620	0.0630	0.0630		RQ
D 13C-1,2,3,7,8-PeCDD	24.037	97958887	1.64	0.7572	59.2	59.2	0.1025	0.1025	59.18	
1,2,3,7,8-PeCDD	24.077						0.0843	0.0843		
A Non-2,3,7,8-sub-PeCDD	22.973	1989362	1.55	1.0855	1.910	1.871	0.0843	1.075		RQM
S Total PeCDD					1.910	1.871	0.0843	0.0843		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.180	135623309	0.52	1.1043	64.8	64.8	0.2497	0.2497	64.85	
1,2,3,4,7,8-HxCDF	30.206	405395	1.24	1.1472	0.2606	0.2606	0.0422	0.0422		M
D 13C-1,2,3,6,7,8-HxCDF	30.393	135273779	0.51	1.1470	62.3	62.3	0.2404	0.2404	62.27	
1,2,3,6,7,8-HxCDF	30.393	132940	1.24	1.1450	0.0933	0.0858	0.0439	0.0439		RQM
D 13C-2,3,4,6,7,8-HxCDF	31.298	125071353	0.50	1.0769	61.3	61.3	0.2561	0.2561	61.32	
2,3,4,6,7,8-HxCDF	31.325						0.0332	0.0332		
D 13C-1,2,3,7,8,9-HxCDF	32.150	114717712	0.52	1.0115	59.9	59.9	0.2726	0.2726	59.88	
1,2,3,7,8,9-HxCDF	32.150	170652	1.24	1.1717	0.1398	0.1270	0.0346	0.0346		RQM
A Non-2,3,7,8-sub-HxCDF	29.880	575548	1.24	1.1591	0.4028	0.3889	0.0380	0.1642		RQM

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.8965	0.8623	0.0385	0.0385		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.951	189395996	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.498	94846108	1.26	0.7962	62.9	62.9	0.2733	0.2733	62.90	
1,2,3,4,7,8-HxCDD	31.511	136818	1.24	1.0934	0.1464	0.1319	0.0733	0.0733		RQMa
D 13C-1,2,3,6,7,8-HxCDD	31.604	107659697	1.27	0.8720	65.2	65.2	0.2495	0.2495	65.19	
1,2,3,6,7,8-HxCDD	31.631	208037	1.08	1.0429	0.1853	0.1853	0.0786	0.0786		Ma
1,2,3,7,8,9-HxCDD	31.951	603438	1.19	1.2073	0.4936	0.4936	0.0671	0.0671		
A Non-2,3,7,8-sub-HxCDD	30.519	8897823	1.24	1.1145	7.926	7.885	0.0727	6.354		RQ
S Total HxCDD					8.752	8.695	0.0730	0.0730		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	87570623	0.44	0.7577	61.0	61.0	0.7856	0.7856	61.03	
1,2,3,4,6,7,8-HpCDF	33.628	474960	1.17	1.4804	0.3664	0.3664	0.0569	0.0569		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	91148672	0.43	0.6941	69.3	69.3	0.8575	0.8575	69.33	
1,2,3,4,7,8,9-HpCDF	34.709						0.0674	0.0674		
A Non-2,3,7,8-sub-HpCDF	34.169	812570	1.19	1.3868	0.6557	0.6557	0.0618	0.6557		M
S Total HpCDF					1.022	1.022	0.0621	0.0621		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	83553730	1.02	0.7058	62.5	62.5	0.3932	0.3932	62.50	
1,2,3,4,6,7,8-HpCDD	34.418	5765523	1.04	1.0535	6.550	6.550	0.1989	0.1989		
A Non-2,3,7,8-sub-HpCDD	34.144	19118275	1.05	1.0535	21.7	21.7	0.1989	21.7		
S Total HpCDD					28.3	28.3	0.1989	0.1989		
D 13C-OCDD	36.722	115940906	0.92	0.4603	133.0	133.0	0.1750	0.1750	66.50	
OCDF	36.818	2081835	0.88	1.3945	2.575	2.575	0.0731	0.0731		
OCDD	36.734	99663563	0.88	1.1362	151.3	151.3	0.1338	0.1338		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 18:56:35 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-5-A 320-56953-A-5-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:31:40 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: messecara Date: 19-Dec-2019 21:00:53

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.597	17.612	-1		98277021	25066031	18519	46297	1354		
333.9339	17.597	17.612	-1		120333331	30443622	18108	45270	1681	0.82(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.098	17.113	-1	0.972	85615821	21883956	21854	54635	1001		
317.9389	17.098	17.113	-1	0.972	108094207	27291202	15865	39662	1720	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.113	17.128	-1	1.001	7587639	1855027	5528	13820	336		
305.8987	17.113	17.128	-1	1.001	9614512	2374919	8749	21872	271	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	15.737	16.811	-64	0.920	192149	52895	5528	13820	10		
305.8987	15.722	16.811	-65	0.920	291736	72089	8749	21872	8	0.66(0.65-0.89)	
303.9016	15.994	16.811	-49	0.935	293296	61690	5528	13820	11		
305.8987	15.994	16.811	-49	0.935	360382	76254	8749	21872	9	0.81(0.65-0.89)	
303.9016	16.236	16.811	-34	0.950	230609	61026	5528	13820	11		
	Empc Correction				169235	44526	5528	13820	8		
305.8987	16.221	16.811	-35	0.949	219786	57827	8749	21872	7	1.05(0.65-0.89)	
303.9016	16.463	16.811	-21	0.963	259738	55907	5528	13820	10		
	Empc Correction				184338	49592	5528	13820	9		
305.8987	16.463	16.811	-21	0.963	239401	64406	8749	21872	7	1.08(0.65-0.89)	
303.9016	16.750	16.811	-4	0.980	3073795	755954	5528	13820	137		
305.8987	16.735	16.811	-5	0.979	3641749	901459	8749	21872	103	0.84(0.65-0.89)	
303.9016	16.947	16.811	8	0.991	162054	37005	5528	13820	7		
305.8987	16.962	16.811	9	0.992	202406	43453	8749	21872	5	0.80(0.65-0.89)	
303.9016	17.536	16.811	43	1.026	450801	102902	5528	13820	19		
	Empc Correction				361598	81140	5528	13820	15		
305.8987	17.536	16.811	43	1.026	469609	105377	8749	21872	12	0.96(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	18.912	16.811	126	1.106	381806	84772	5528	13820	15		
305.8987	18.897	16.811	125	1.105	433704	109074	8749	21872	12	0.88(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.011	58333649	13684170	18519	46297	739		
333.9339	17.793	17.793	0	1.011	73446699	17238176	18108	45270	952	0.79(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	17.808	17.823	-1	1.001	1356942	337251	5676	14190	59		M
321.8936	17.808	17.823	-1	1.001	1821296	418838	3371	8427	124	0.75(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	17.808	17.823	-1	1.012	116765777	28173283	25086	62715	1123		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.145	17.249	-66	0.907	79306	23654	5676	14190	4		
321.8936	16.145	17.249	-66	0.907	92905	21943	3371	8427	7	0.85(0.65-0.89)	
319.8965	16.690	17.249	-34	0.938	923388	247108	5676	14190	44		
321.8936	16.690	17.249	-34	0.938	1143297	307522	3371	8427	91	0.81(0.65-0.89)	
319.8965	17.566	17.249	19	0.987	165724	41996	5676	14190	7		
321.8936	17.566	17.249	19	0.987	244942	61120	3371	8427	18	0.68(0.65-0.89)	
319.8965	17.702	17.249	27	0.995	36032	16253	5676	14190	3		M
321.8936	17.718	17.249	28	0.996	50371	20190	3371	8427	6	0.72(0.65-0.89)	
319.8965	18.156	17.249	54	1.020	157037	35410	5676	14190	6		
	Empc Correction				111081	23491	5676	14190	4		
321.8936	18.156	17.249	54	1.020	144262	30509	3371	8427	9	1.09(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.251	93626186	16199118	25260	63150	641		
353.8970	22.018	22.018	0	1.251	59869219	10544733	15091	37727	699	1.56(1.32-1.78)	
1,2,3,7,8-PeCDF											RQ
339.8597	22.032	22.045	-1	1.001	216777	34855	2516	6290	14		
341.8567	22.032	22.045	-1	1.001	191915	29875	4251	10627	7	1.13(1.32-1.78)	
	Empc Correction				139856	22487	4251	10627	5		
13C-2,3,4,7,8-PeCDF											
351.9000	23.327	23.341	-1	1.326	94673924	15640017	25260	63150	619		
353.8970	23.327	23.341	-1	1.326	58952509	9555872	15091	37727	633	1.61(1.32-1.78)	
2,3,4,7,8-PeCDF											M
339.8597	23.355	23.355	0	1.001	150472	26168	2516	6290	10		
341.8567	23.355	23.355	0	1.001	107219	17006	4251	10627	4	1.40(1.32-1.78)	M
A F1 PeCDFs											
339.8597	19.774						1475	3687			
341.8567	19.774						3689	9222			
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	20.709	22.858	-129	0.941	169443	32097	2516	6290	13		M
341.8567	20.709	22.858	-129	0.941	130521	26289	4251	10627	6	1.30(1.32-1.78)	M
	Empc Correction				109318	20707	4251	10627	5		
13C-1,2,3,7,8-PeCDD											
367.8949	24.037	24.050	-1	1.366	60795776	9472532	10149	25372	933		
369.8919	24.037	24.050	-1	1.366	37163111	5704230	7082	17705	805	1.64(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDD											
355.8546	24.077						3679	9197			
357.8516	24.077						1874	4685			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	20.900	22.973	-124	0.870	237024	42626	3679	9197	12		
357.8516	20.914	22.973	-123	0.870	194993	32300	1874	4685	17	1.22(1.32-1.78)	
	Empc Correction				152918	27500	1874	4685	15		
355.8546	21.636	22.973	-80	0.900	700466	134319	3679	9197	37		M
357.8516	21.623	22.973	-81	0.900	442490	82243	1874	4685	44	1.58(1.32-1.78)	
355.8546	23.109	22.973	8	0.961	280129	37191	3679	9197	10		M
357.8516	23.109	22.973	8	0.961	176335	25883	1874	4685	14	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.180	30.193	-1	0.945	46200037	7794725	16992	42480	459		
385.8610	30.180	30.193	-1	0.945	89423272	14933340	32836	82090	455	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	30.206	30.206	0	1.001	224304	30886	2228	5570	14		M
375.8178	30.206	30.206	0	1.001	181091	27264	2175	5437	13	1.24(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.393	30.406	-1	0.951	45538995	7530801	16992	42480	443		
385.8610	30.393	30.406	-1	0.951	89734784	14358017	32836	82090	437	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											RQM
373.8208	30.393	30.420	-2	1.000	73592	12975	2228	5570	6		M
375.8178	30.433	30.420	1	1.001	70894	14049	2175	5437	6	1.04(1.05-1.43)	
	Empc Correction				59348	10463	2175	5437	5		
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.298	31.312	-1	0.980	41642892	9333661	16992	42480	549		
385.8610	31.298	31.312	-1	0.980	83428461	18906961	32836	82090	576	0.50(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						2228	5570			
375.8178	31.325						2175	5437			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.150	32.151	0	1.006	39024400	9351560	16992	42480	550		
385.8610	32.150	32.151	0	1.006	75693312	17813750	32836	82090	543	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											RQM
373.8208	32.150	32.164	-1	1.000	111726	11456	2228	5570	5		
	Empc Correction				94468	21289	2228	5570	10		
375.8178	32.150	32.164	-1	1.000	76184	17169	2175	5437	8	1.47(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDF											RQM
373.8208	27.903	29.880	-118	0.925	137608	15656	2228	5570	7		
	Empc Correction				116997	18014	2228	5570	8		
375.8178	27.850	29.880	-122	0.923	94353	14528	2175	5437	7	1.46(1.05-1.43)	
373.8208	29.221	29.880	-39	0.968	141823	13802	2228	5570	6		
375.8178	29.221	29.880	-39	0.968	101097	13258	2175	5437	6	1.40(1.05-1.43)	
373.8208	30.978	29.880	66	0.000			2228	5570			
375.8178	30.978	29.880	66	0.000			2175	5437		0.00(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	31.165	29.880	77	1.033	63569	10937	2228	5570	5		M
375.8178	31.165	29.880	77	1.033	57709	11172	2175	5437	5	1.10(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.951	31.964	-1		106732901	25412325	22400	56000	1134		
403.8529	31.951	31.964	-1		82663095	19758491	16911	42277	1168	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.498	31.511	-1	0.986	52863813	13667928	22400	56000	610		
403.8529	31.498	31.511	-1	0.986	41982295	10927871	16911	42277	646	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQMa
389.8157	31.511	31.525	-1	1.000	75739	23937	4494	11235	5		M
391.8127	31.511	31.525	-1	1.000	76041	23404	3391	8477	7	1.00(1.05-1.43)	
Empc Correction					61079	19304	3391	8477	6		
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.604	31.618	-1	0.989	60233414	13342358	22400	56000	596		
403.8529	31.604	31.618	-1	0.989	47426283	10711811	16911	42277	633	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.631	31.631	0	1.001	107982	28130	4494	11235	6		M
391.8127	31.631	31.631	0	1.001	100055	23597	3391	8477	7	1.08(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.951	31.977	-2	1.014	328309	65730	4494	11235	15		
391.8127	31.964	31.977	-1	1.015	275129	49094	3391	8477	14	1.19(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.048	30.519	-88	0.919	4011156	477727	4494	11235	106		
391.8127	29.048	30.519	-88	0.919	3159798	384169	3391	8477	113	1.27(1.05-1.43)	
389.8157	30.699	30.519	11	0.971	858051	141732	4494	11235	32		
391.8127	30.699	30.519	11	0.971	666656	118914	3391	8477	35	1.29(1.05-1.43)	
389.8157	30.912	30.519	24	0.978	158865	29225	4494	11235	7		
Empc Correction					111911	23090	4494	11235	5		
391.8127	30.912	30.519	24	0.978	90251	18621	3391	8477	5	1.76(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	26684215	8834173	37144	92860	238		
419.8220	33.616	33.628	-1	1.052	60886408	19858587	70408	176020	282	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.628	33.628	0	1.000	256528	81465	6972	17430	12		
409.7789	33.628	33.628	0	1.000	218432	65220	2695	6737	24	1.17(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.086	27544804	8578557	37144	92860	231		
419.8220	34.685	34.697	-1	1.086	63603868	19145829	70408	176020	272	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						6972	17430			
409.7789	34.709						2695	6737			
A Non-2,3,7,8-sub-HpCDF											M
407.7818	33.919	34.169	-15	1.009	441065	123117	6972	17430	18		M
409.7789	33.919	34.169	-15	1.009	371505	114932	2695	6737	43	1.19(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.077	42236085	12607674	24675	61687	511		
437.8140	34.405	34.418	-1	1.077	41317645	12365387	25468	63670	486	1.02(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	2942126	885394	11661	29152	76		
425.7737	34.418	34.418	0	1.000	2823397	847512	9274	23185	91	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	9812870	3087880	11661	29152	265		
425.7737	33.859	34.144	-17	0.984	9305405	2897263	9274	23185	312	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.722	36.734	-1	1.149	55496467	14523363	8320	20800	1746		
471.7750	36.722	36.734	-1	1.149	60444439	15501835	6235	15587	2486	0.92(0.76-1.02)	
OCDF											
441.7428	36.818	36.830	-1	1.003	972239	236370	2310	5775	102		
443.7399	36.818	36.830	-1	1.003	1109596	291288	3810	9525	76	0.88(0.76-1.02)	
OCDD											
457.7377	36.734	36.746	-1	1.000	46716928	12355256	4157	10392	2972		
459.7348	36.734	36.746	-1	1.000	52946635	14321262	4971	12427	2881	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	193710028	49175158

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	193710028	49175158

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.737	192149	52895	291736	72089	0.2629	0.66	
15.994	293296	61690	360382	76254	0.3551	0.81	
16.236	230609	61026	219786	57827	0.2447	1.05	RQ
16.236	169235	44526	219786	57827	0.2114		Empc Correction
16.463	259738	55907	239401	64406	0.2712	1.08	RQ
16.463	184338	49592	239401	64406	0.2302		Empc Correction
16.750	3073795	755954	3641749	901459	3.65	0.84	
16.947	162054	37005	202406	43453	0.1980	0.80	
17.536	450801	102902	469609	105377	0.5001	0.96	RQ
17.536	361598	81140	469609	105377	0.4516		Empc Correction
18.912	381806	84772	433704	109074	0.4431	0.88	
Signal Totals:							
	4818271	1167574	5858773	1429939			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	10903021	2642090				0.86	RQ
	10677044	2597513					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.924 = (10903021 * 100.000) / (193710028 * 0.950)
Empc Amount: 5.801 = (10677044 * 100.000) / (193710028 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	131780348	30922346

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	131780348	30922346

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.145	79306	23654	92905	21943	0.1247	0.85	
16.690	923388	247108	1143297	307522	1.50	0.81	
17.566	165724	41996	244942	61120	0.2974	0.68	
17.702	36032	16253	50371	20190	0.0626	0.72	Ma
18.156	157037	35410	144262	30509	0.2182	1.09	RQ
18.156	111081	23491	144262	30509	0.1849		Empc Correction
Signal Totals:							
	1315531	352502	1675777	441284			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	3037264	805705				0.81	RQMa
	2991308	793786					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.200 = (3037264 * 100.000) / (131780348 * 1.048)
Empc Amount: 2.167 = (2991308 * 100.000) / (131780348 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	153495405	26743851
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	153626433	25195889

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	153560919	25969870

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
20.709	169443	32097	130521	26289	0.1886	1.30	RQM
20.709	169443	32097	109318	20707	0.1753		Empc Correction
Signal Totals:							
	169443	32097	109318	20707			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	299964	58386				1.30	RQM
	278761	52804					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1886 = (299964 * 100.000) / (153560919 * 1.036)
Empc Amount: 0.1753 = (278761 * 100.000) / (153560919 * 1.036)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	97958887	15176762

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	97958887	15176762

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.900	237024	42626	194993	32300	0.4063	1.22	RQ
20.900	237024	42626	152918	27500	0.3667		Empc Correction
21.636	700466	134319	442490	82243	1.07	1.58	M
23.109	280129	37191	176335	25883	0.4293	1.59	M
Signal Totals:							
	1217619	214136	771743	135626			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2031437	354562				1.50	RQM
	1989362	349762					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.910 = (2031437 * 100.000) / (97958887 * 1.086)
Empc Amount: 1.871 = (1989362 * 100.000) / (97958887 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 20-Dec-2019 14:31:43 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDF, RT: 29.880

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.147	D 13C-1,2,3,4,7,8-HxCDF	100.000	135623309	22728065
1,2,3,6,7,8-HxCDF	1.145	D 13C-1,2,3,6,7,8-HxCDF	100.000	135273779	21888818
2,3,4,6,7,8-HxCDF	1.173	D 13C-2,3,4,6,7,8-HxCDF	100.000	125071353	28240622
1,2,3,7,8,9-HxCDF	1.172	D 13C-1,2,3,7,8,9-HxCDF	100.000	114717712	27165310

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.159		100.000	127671538	25005703

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
27.903	137608	15656	94353	14528	0.1567	1.46	RQ
27.903	116997	18014	94353	14528	0.1428		Empc Correction
29.221	141823	13802	101097	13258	0.1642	1.40	
30.978	0	0	0	0		0.00	
31.165	63569	10937	57709	11172	0.0820	1.10	M
Signal Totals:							
	322389	42753	253159	38958			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	596159	79353				1.35	RQM
	575548	81711					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4028 = (596159 * 100.000) / (127671538 * 1.159)
Empc Amount: 0.3889 = (575548 * 100.000) / (127671538 * 1.159)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Report Date: 20-Dec-2019 14:31:43 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	94846108	24595799
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	107659697	24054169
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	101252902	24324984

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.048	4011156	477727	3159798	384169	6.35	1.27	
30.699	858051	141732	666656	118914	1.35	1.29	
30.912	158865	29225	90251	18621	0.2207	1.76	RQ
30.912	111911	23090	90251	18621	0.1791		Empc Correction
Signal Totals:							
	4981118	642549	3916705	521704			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	8944777	1170388				1.28	RQ
	8897823	1164253					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 7.926 = (8944777 * 100.000) / (101252902 * 1.115)
Empc Amount: 7.885 = (8897823 * 100.000) / (101252902 * 1.115)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	87570623	28692760
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	91148672	27724386

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	89359647	28208573

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.919	441065	123117	371505	114932	0.6557	1.19	M
Signal Totals:							
	441065	123117	371505	114932			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	812570	238049				1.19	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.6557 = (812570 * 100.000) / (89359647 * 1.387)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Inject. Date: 19-Dec-2019 18:56:35 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 11

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	83553730	24973061

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	83553730	24973061

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	9812870	3087880	9305405	2897263	21.7	1.05	
Signal Totals:							
	9812870	3087880	9305405	2897263			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	19118275	5985143				1.05	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 21.719 = (19118275 * 100.000) / (83553730 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

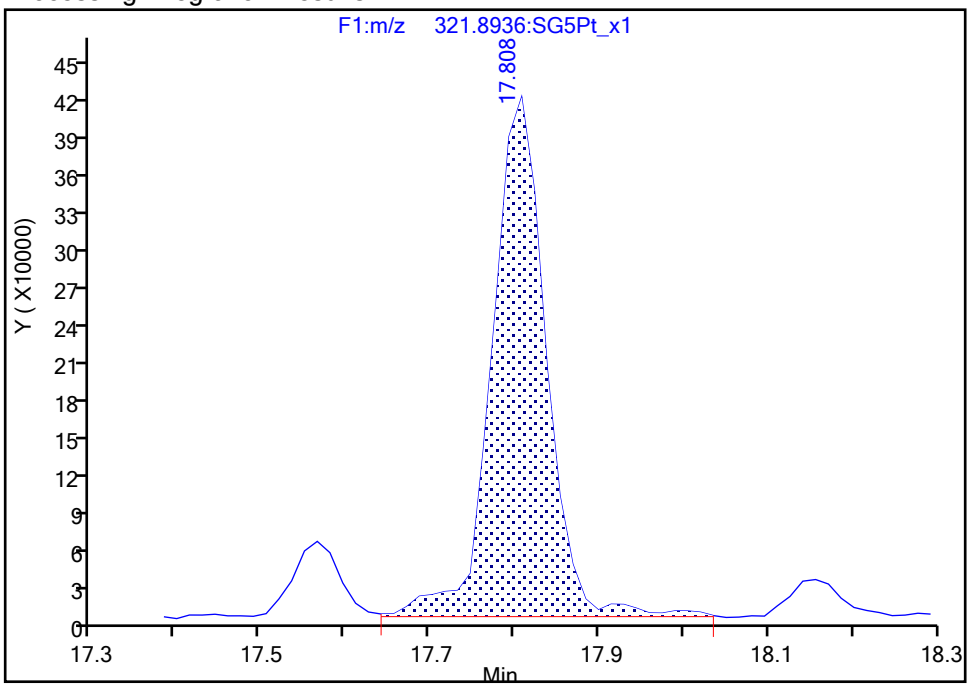
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

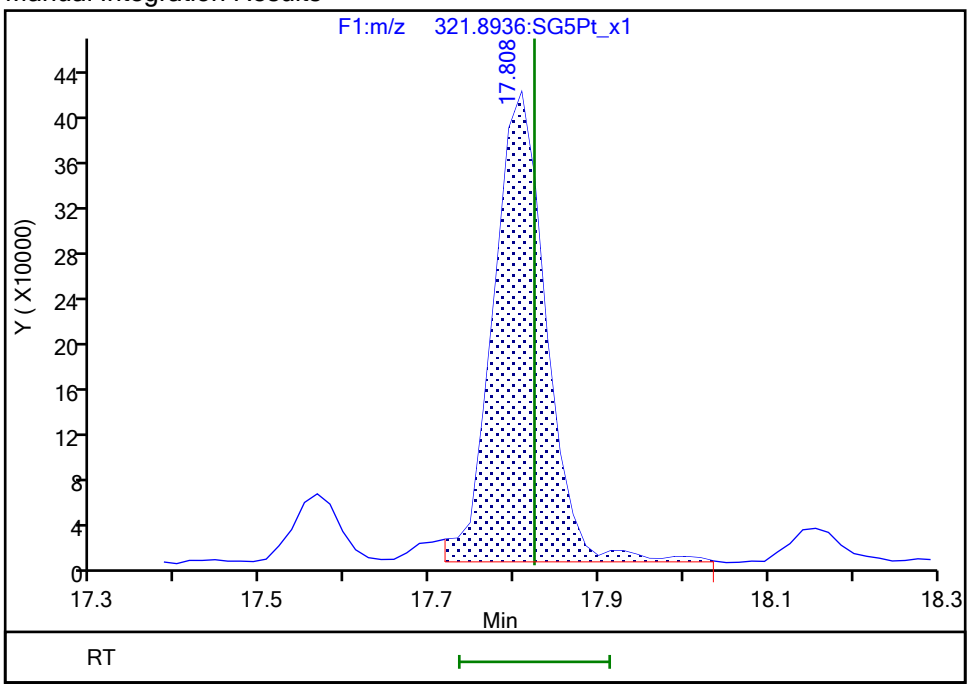
Processing Integration Results

RT: 17.81
Area: 1871667
Amount: 2.387894
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 1821296
Amount: 2.301919
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:26:54

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

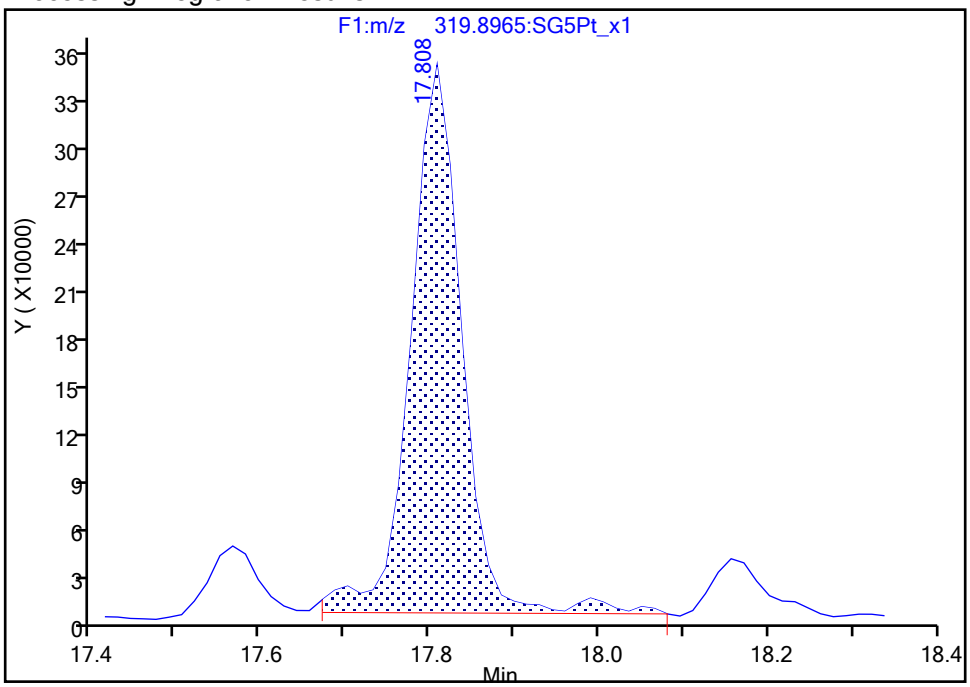
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

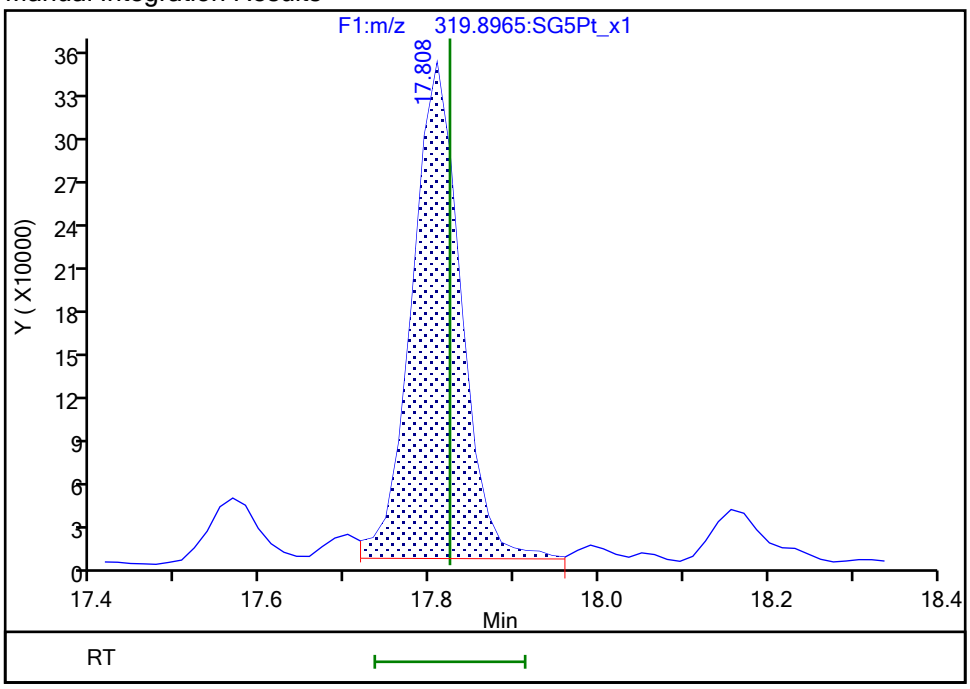
Processing Integration Results

RT: 17.81
Area: 1425275
Amount: 2.387894
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 1356942
Amount: 2.301919
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:26:55

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

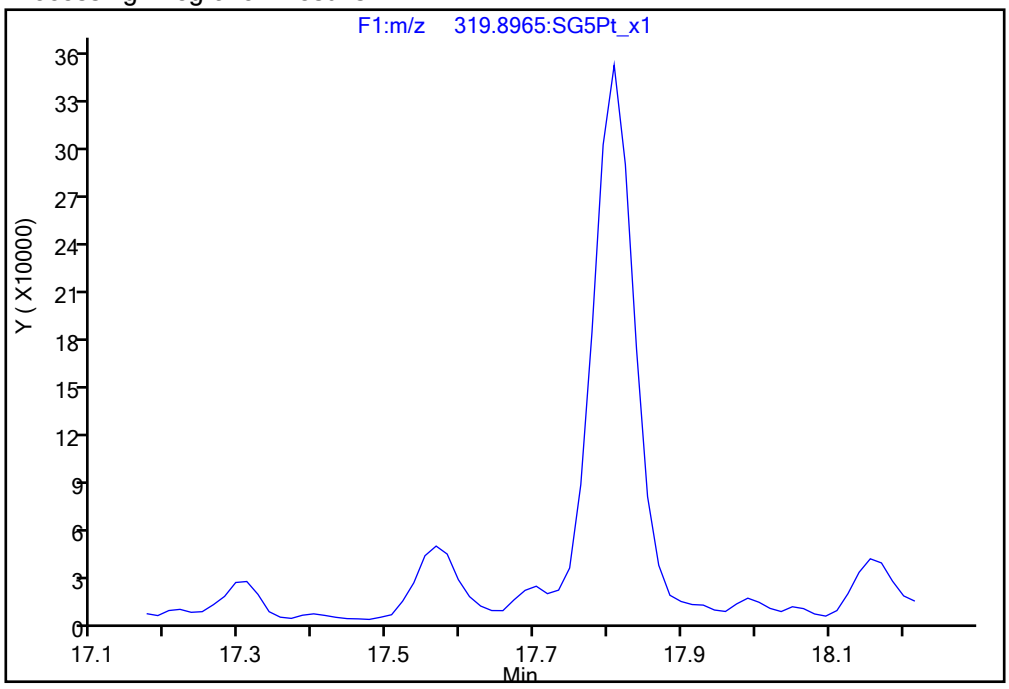
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

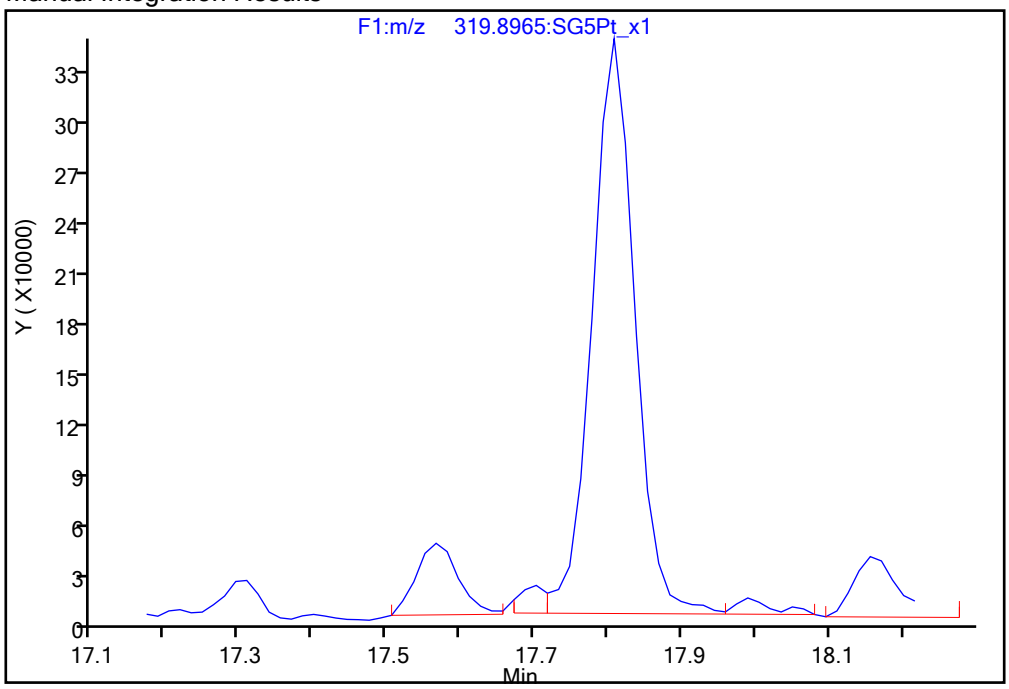
Not Detected
RT: 15.59- 18.91

Processing Integration Results



Manual Integration Results

RT = 17.702 Area = 36032 M



Reviewer: dadunj, 20-Dec-2019 14:27:02
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

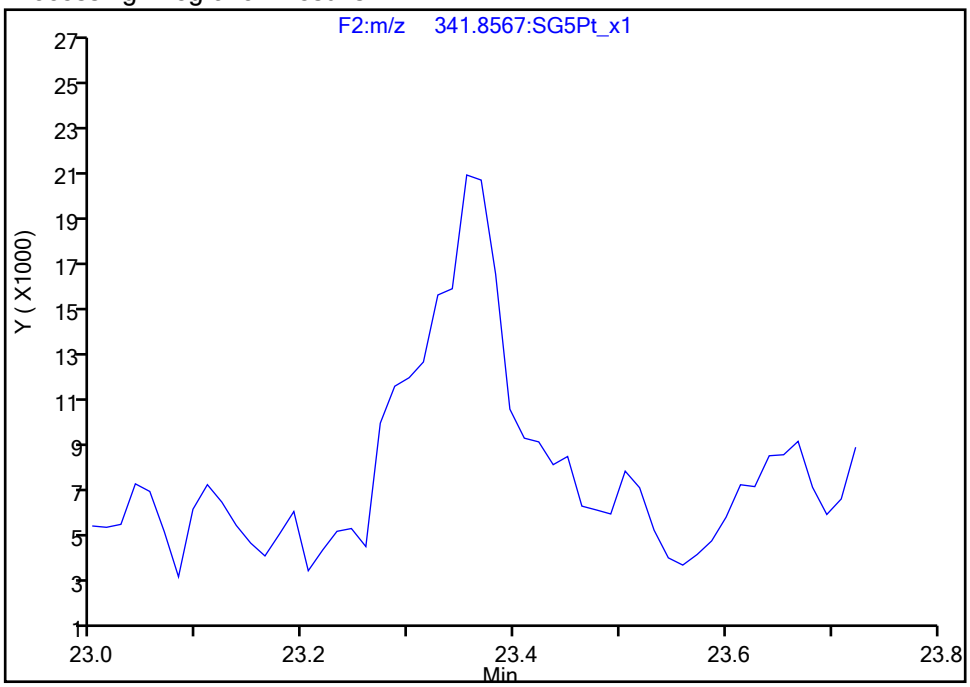
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

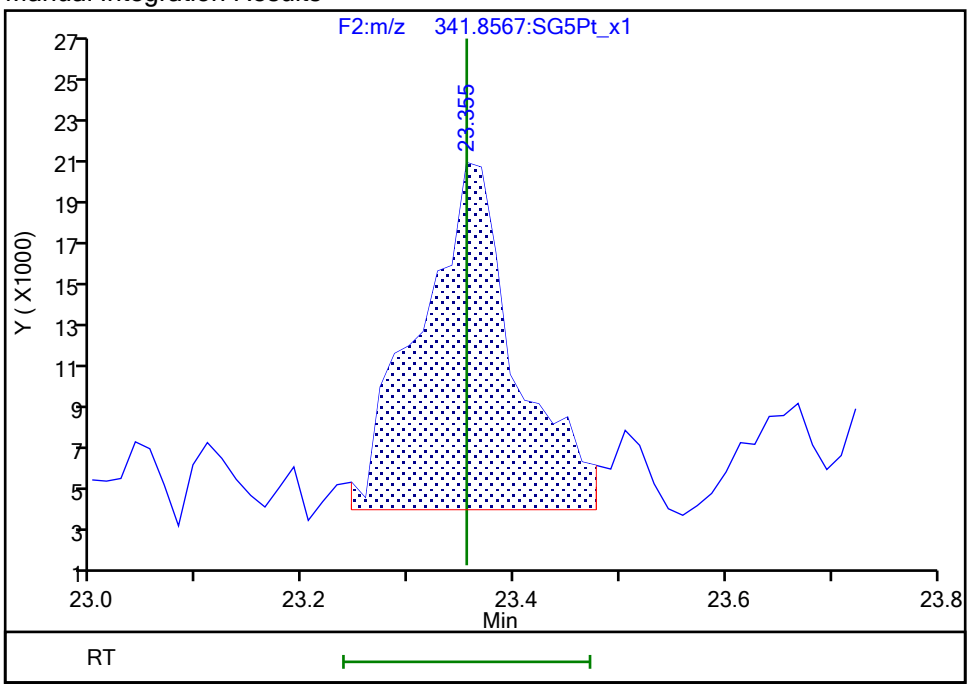
Not Detected
Expected RT: 23.35

Processing Integration Results



Manual Integration Results

RT: 23.35
Area: 107219
Amount: 0.161137
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:27:27
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

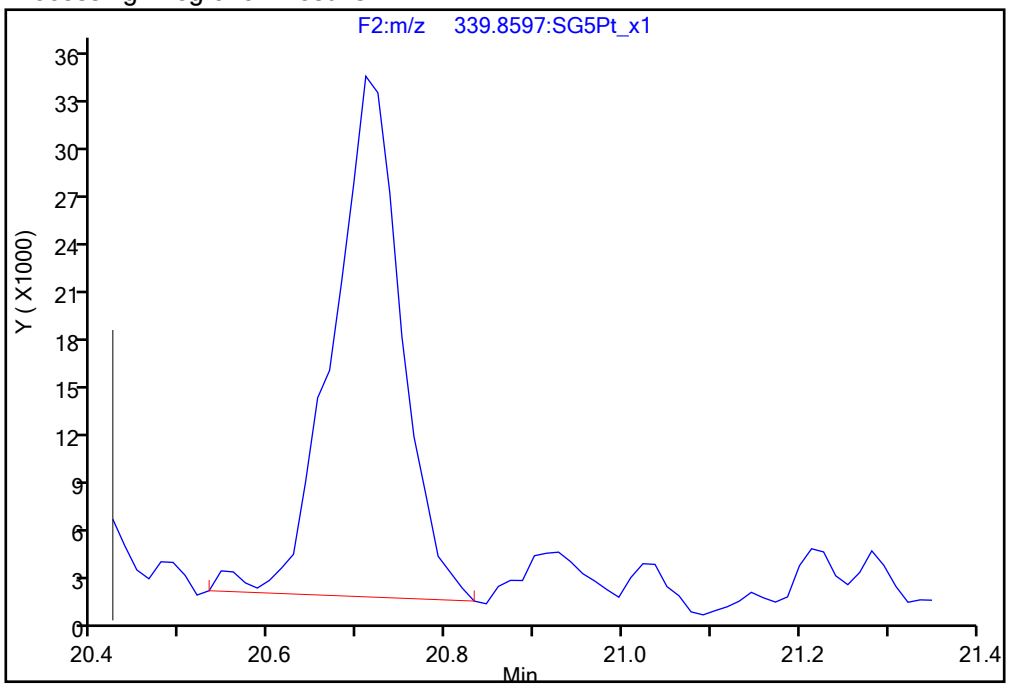
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (20.42- 25.29)

Signal: 1

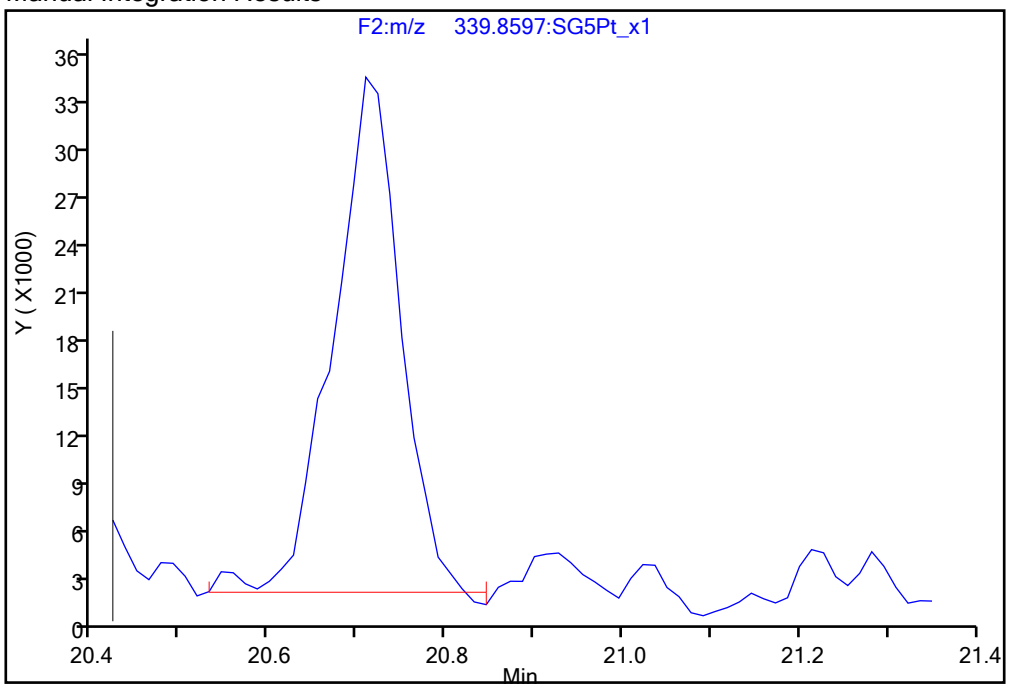
Processing Integration Results

RT = 20.709 Area = 175074



Manual Integration Results

RT = 20.709 Area = 169443 M



Reviewer: dadunj, 20-Dec-2019 14:27:42

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

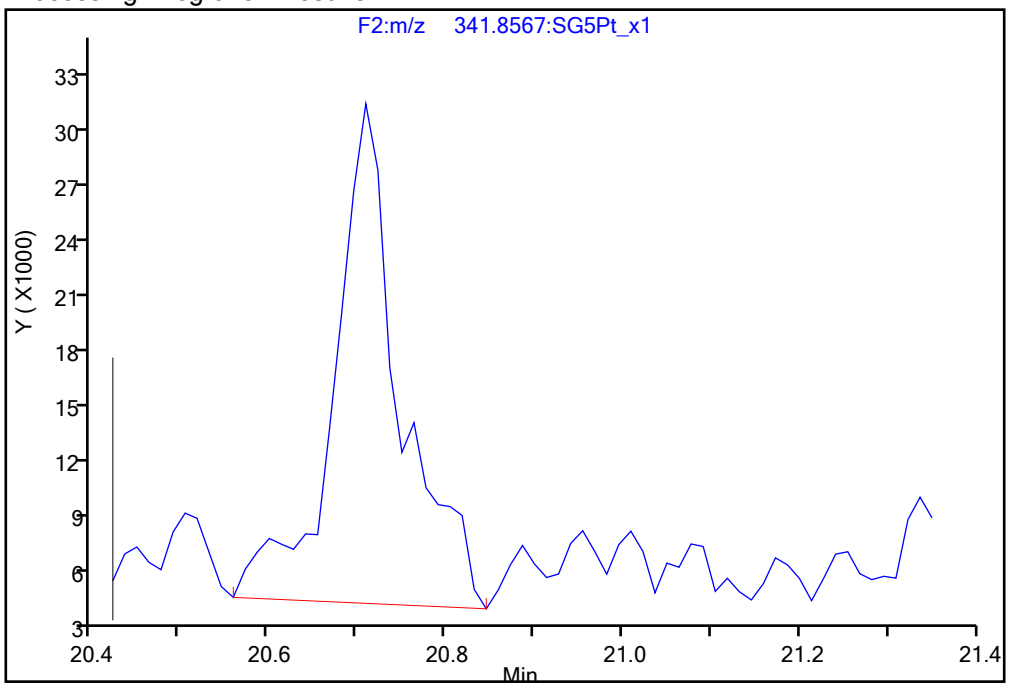
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (20.42- 25.29)

Signal: 2

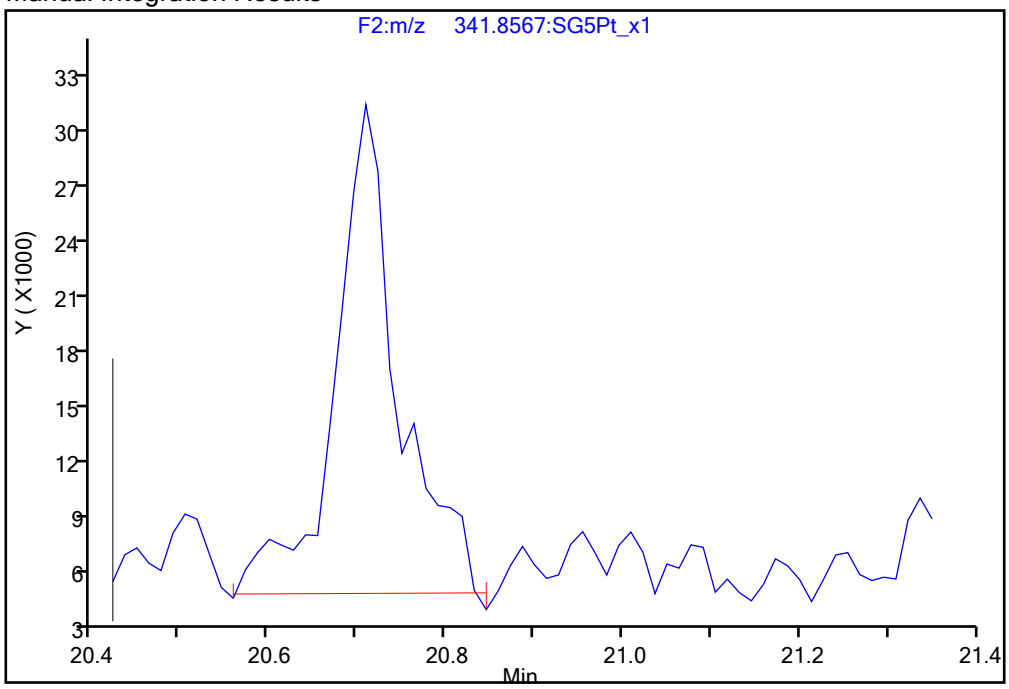
Processing Integration Results

RT = 20.709 Area = 140228



Manual Integration Results

RT = 20.709 Area = 130521 M



Reviewer: dadunj, 20-Dec-2019 14:27:49

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

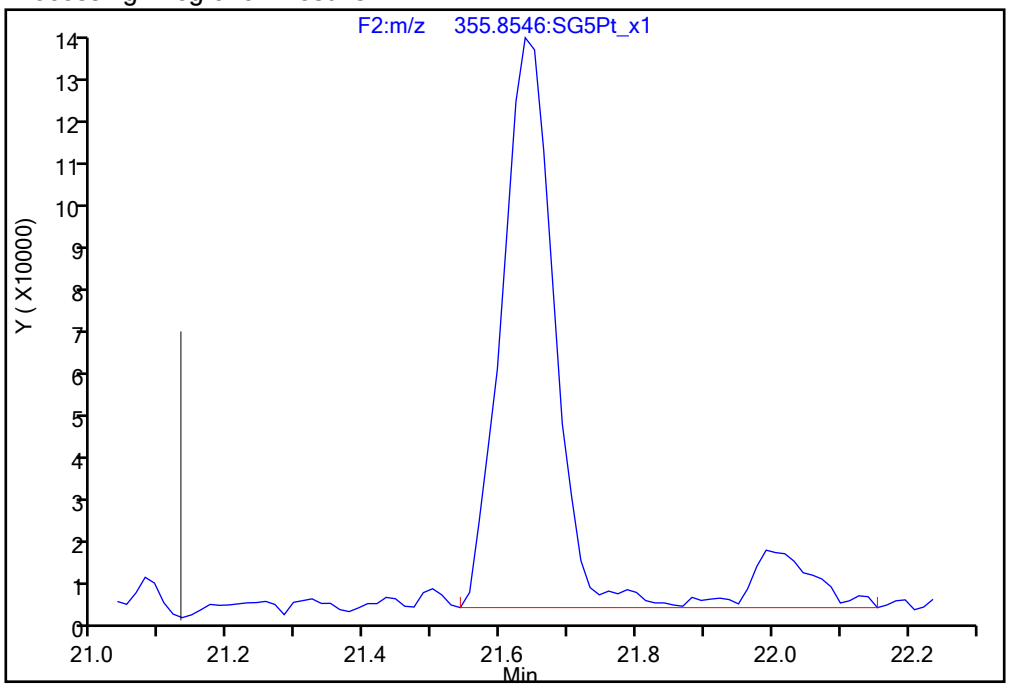
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

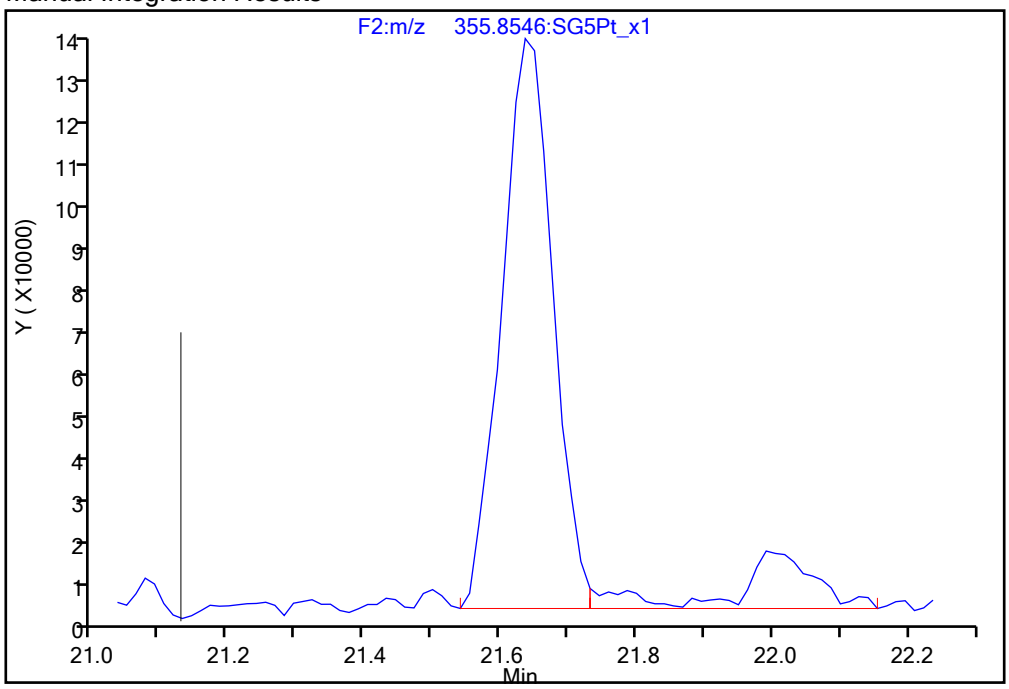
Processing Integration Results

RT = 21.636 Area = 812037



Manual Integration Results

RT = 21.636 Area = 700466 M



Reviewer: dadunj, 20-Dec-2019 14:28:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

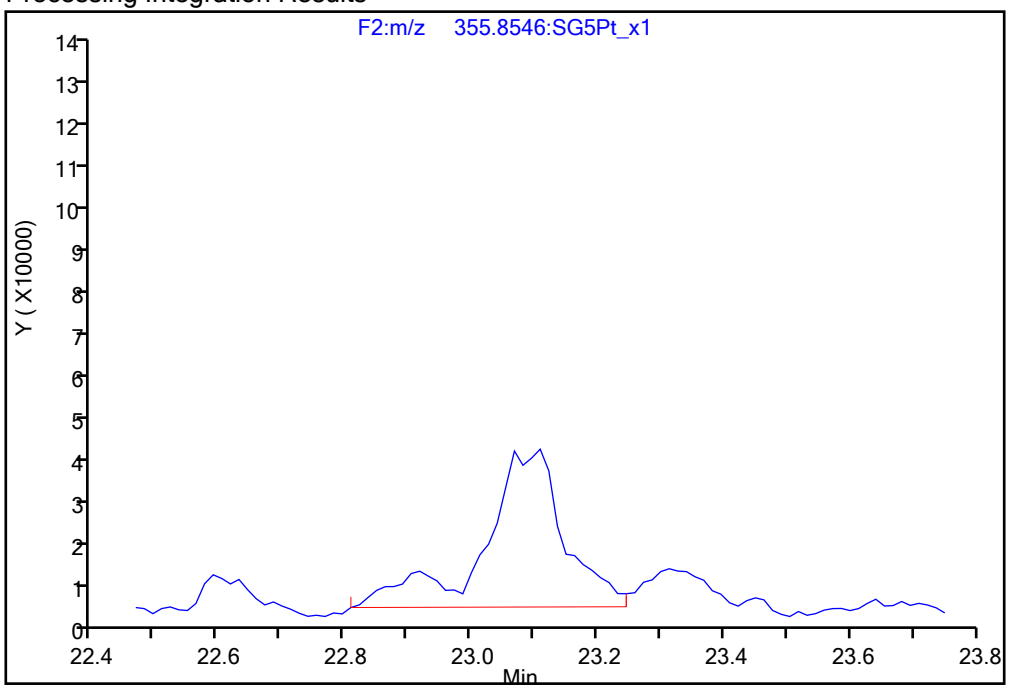
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

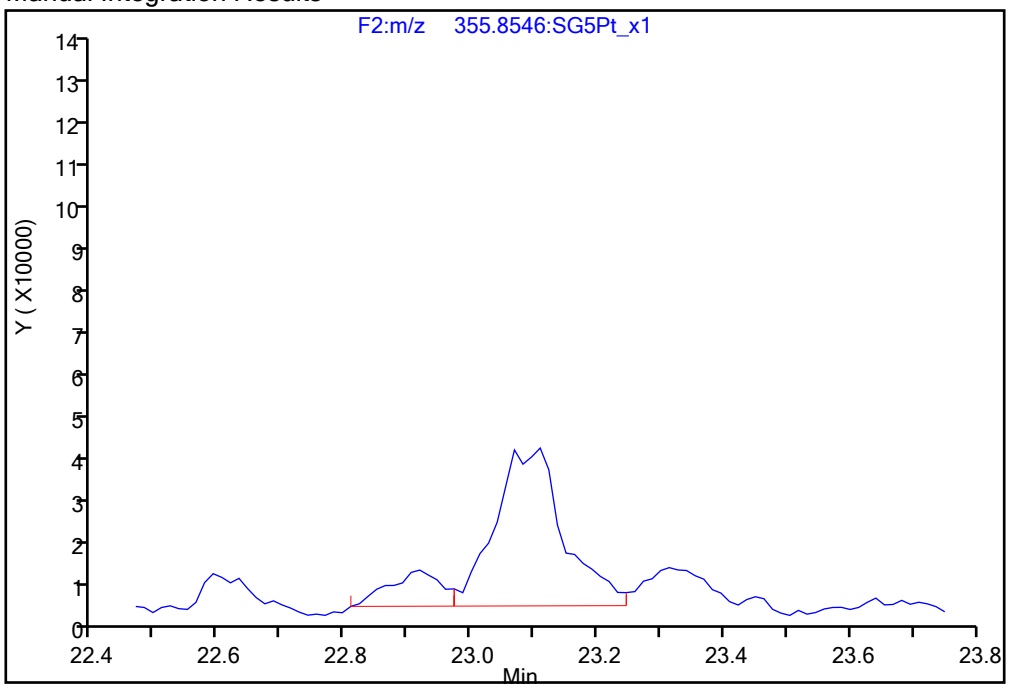
Processing Integration Results

RT = 23.109 Area = 327872



Manual Integration Results

RT = 23.109 Area = 280129 M



Reviewer: dadunj, 20-Dec-2019 14:28:04

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

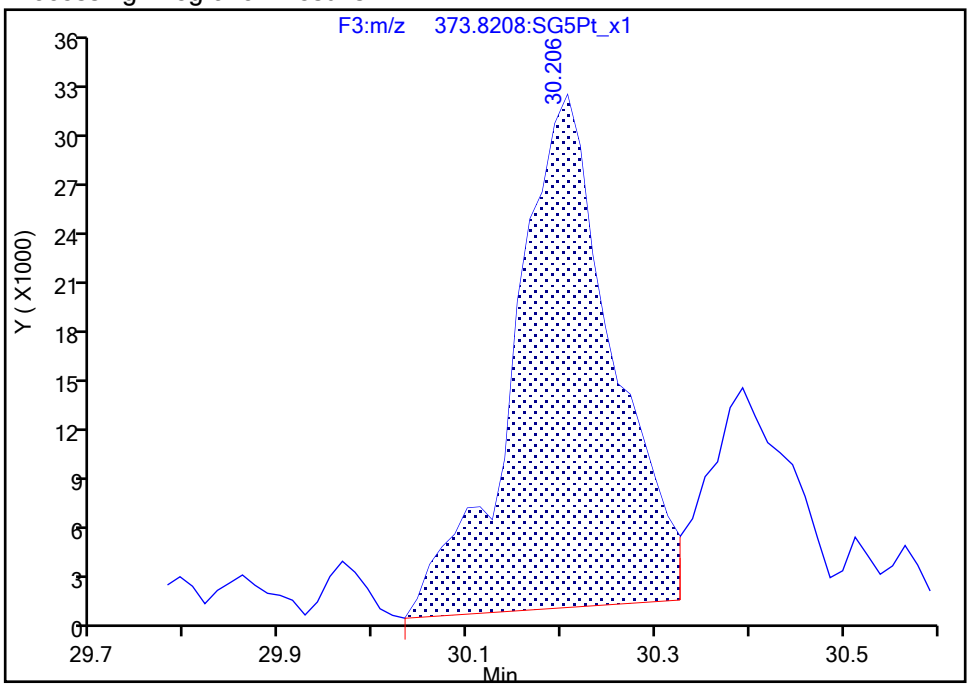
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

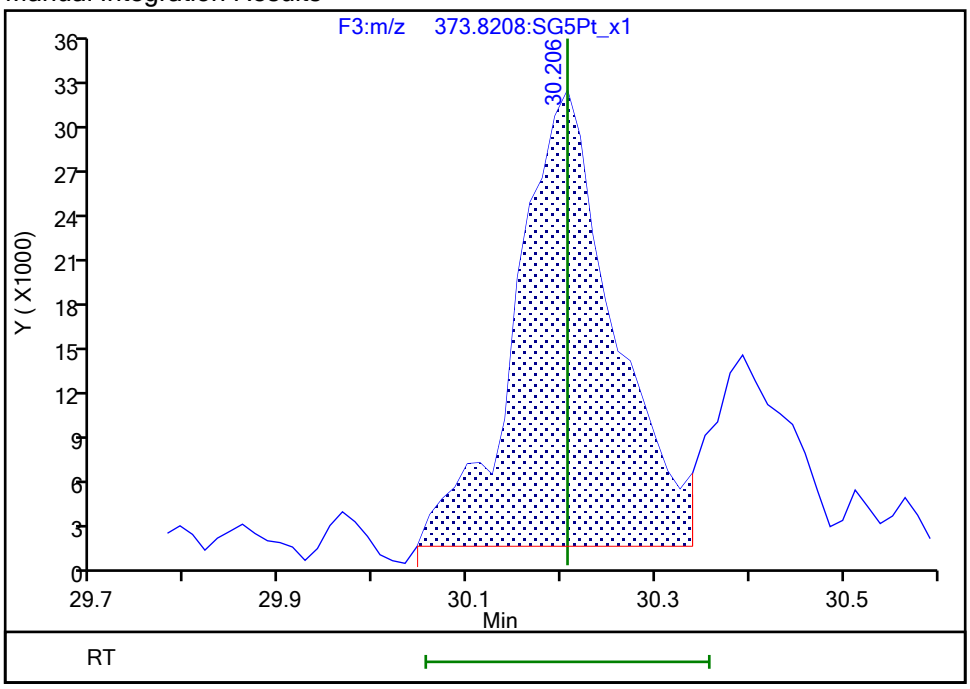
Processing Integration Results

RT: 30.21
Area: 230848
Amount: 0.264763
Amount Units: pg/ul



Manual Integration Results

RT: 30.21
Area: 224304
Amount: 0.260557
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:28:22

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

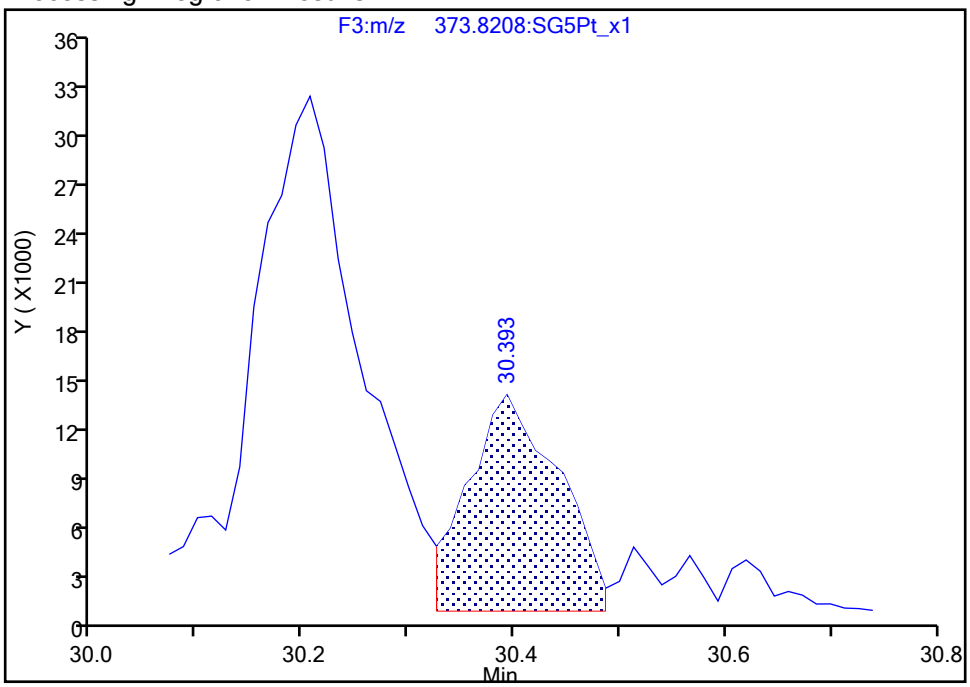
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

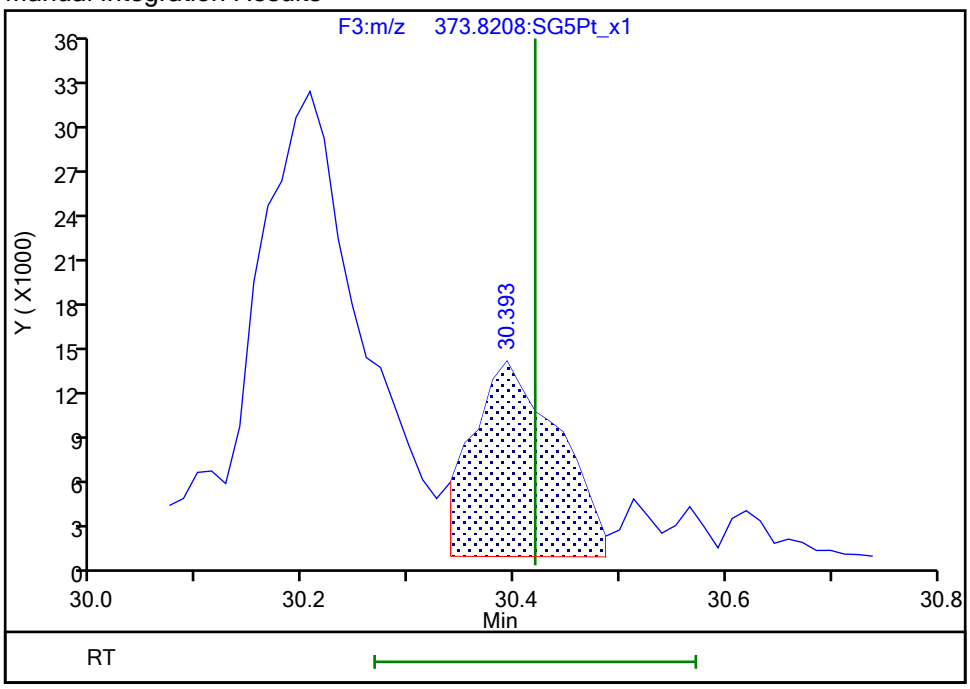
Processing Integration Results

RT: 30.39
Area: 77310
Amount: 0.095682
Amount Units: pg/ul



Manual Integration Results

RT: 30.39
Area: 73592
Amount: 0.093281
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:28:22

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

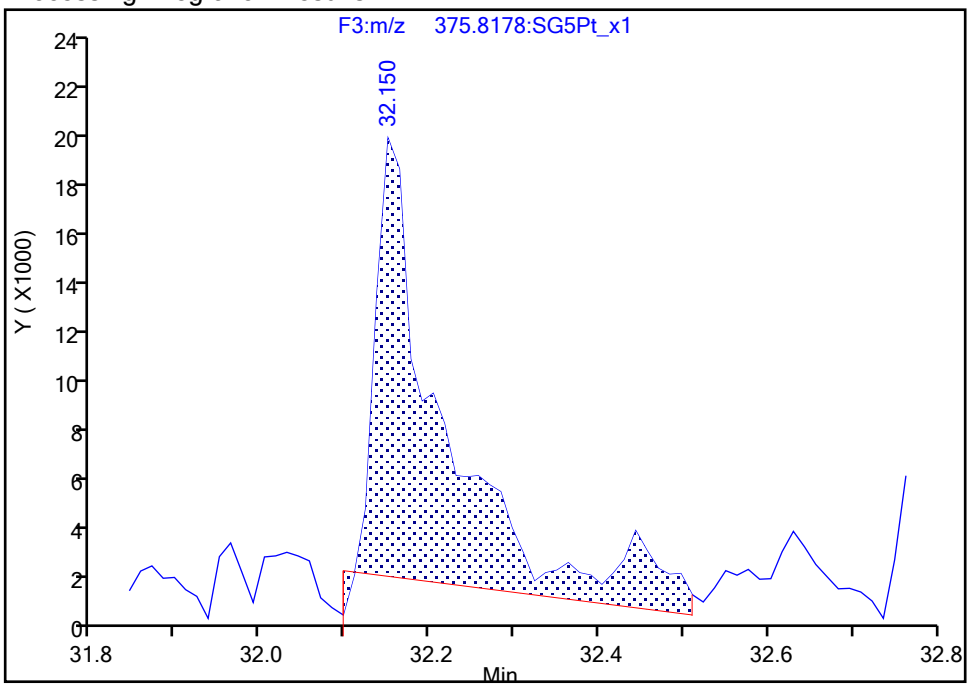
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

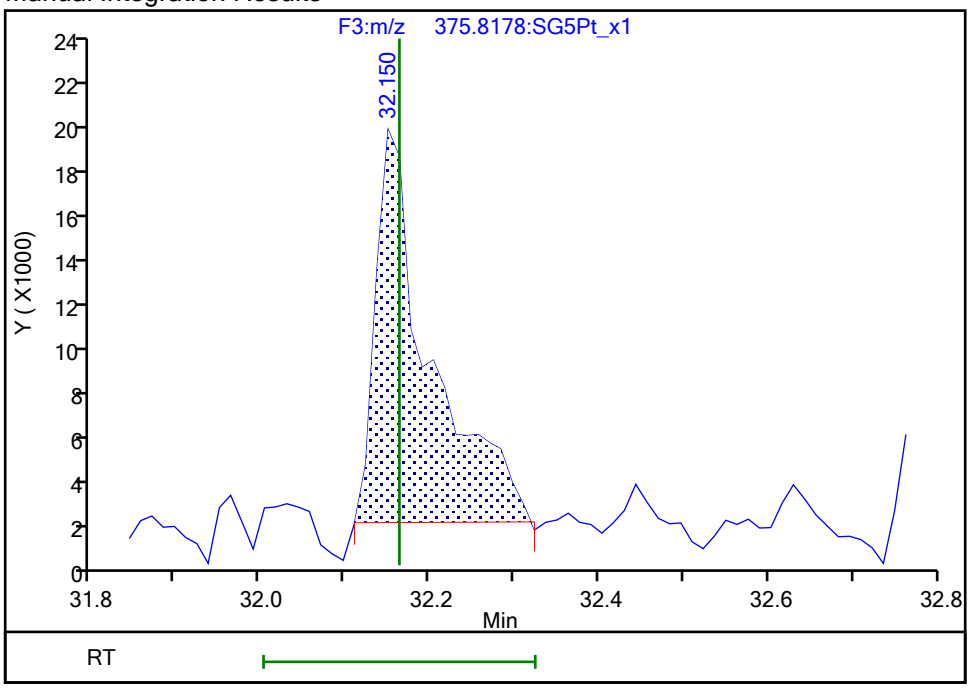
Processing Integration Results

RT: 32.15
Area: 96950
Amount: 0.155254
Amount Units: pg/ul



Manual Integration Results

RT: 32.15
Area: 76184
Amount: 0.139804
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:28:38

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

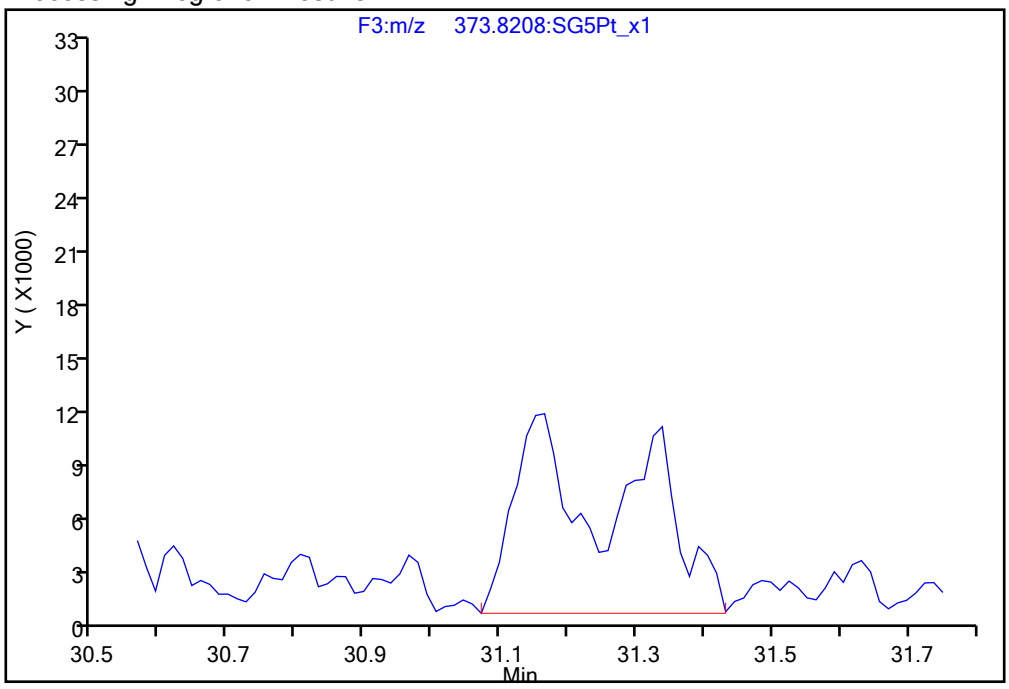
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (27.47- 32.29)

Signal: 1

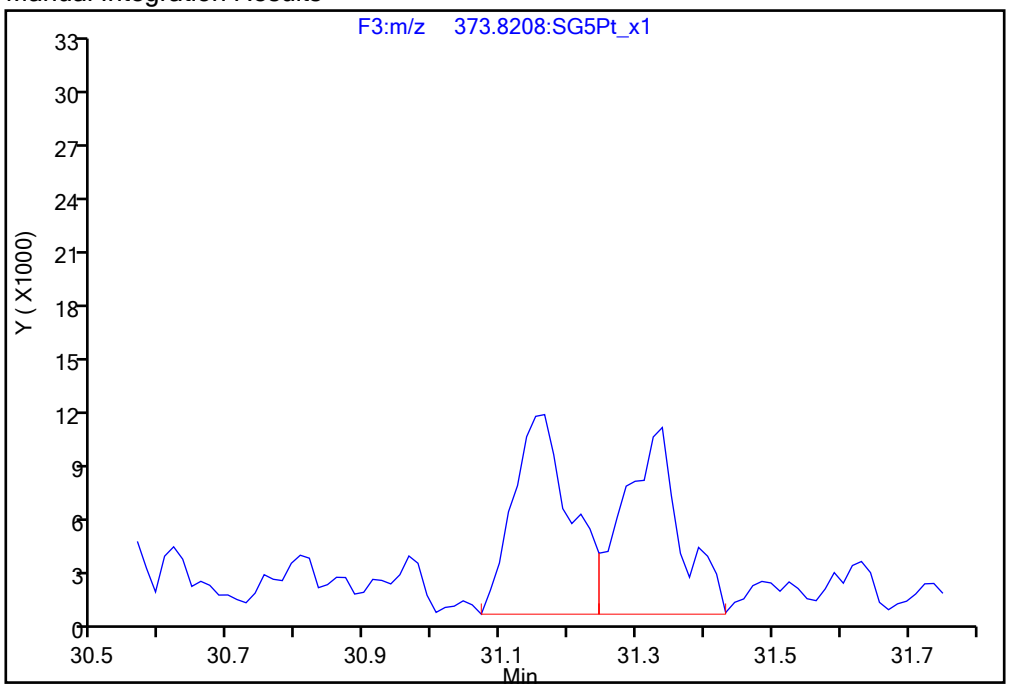
Processing Integration Results

RT = 31.165 Area = 121779



Manual Integration Results

RT = 31.165 Area = 63569 M



Reviewer: dadunj, 20-Dec-2019 14:29:23

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

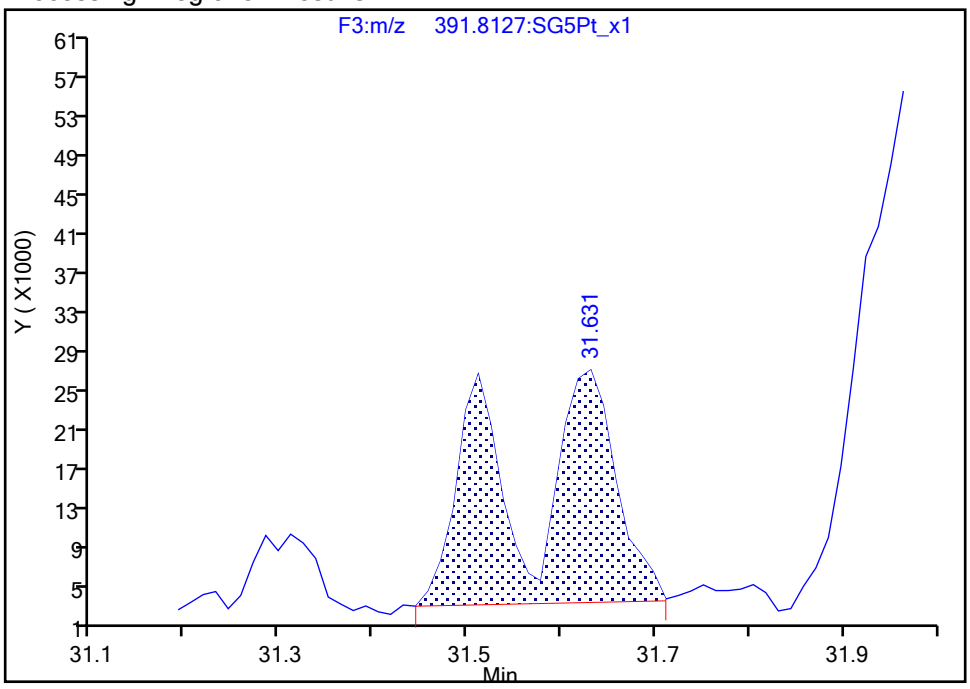
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

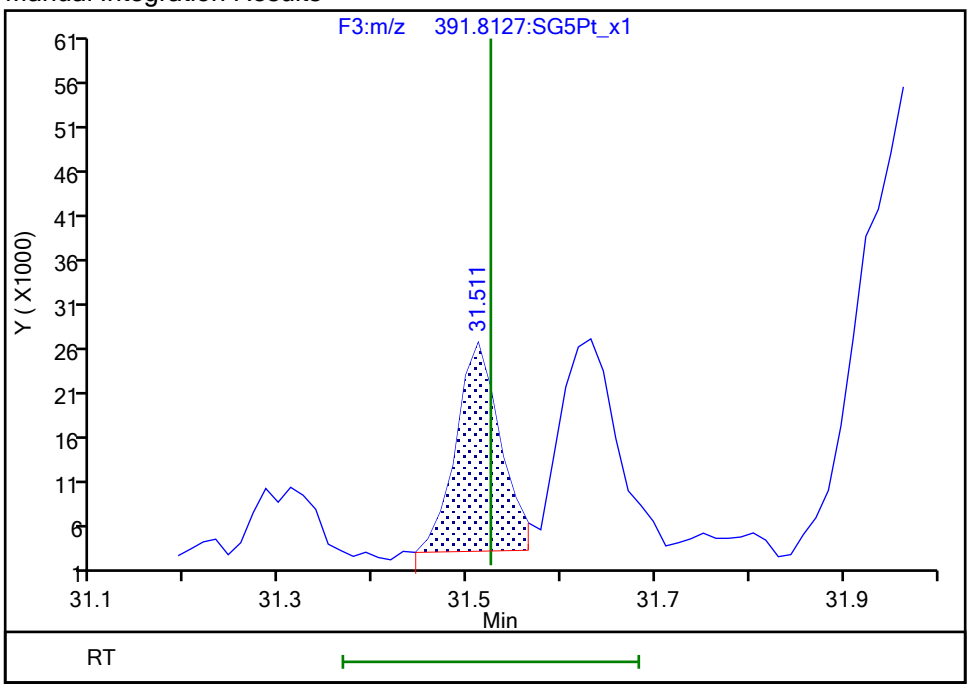
Processing Integration Results

RT: 31.63
Area: 176099
Amount: 0.273938
Amount Units: pg/ul



Manual Integration Results

RT: 31.51
Area: 76041
Amount: 0.146361
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:29:40
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

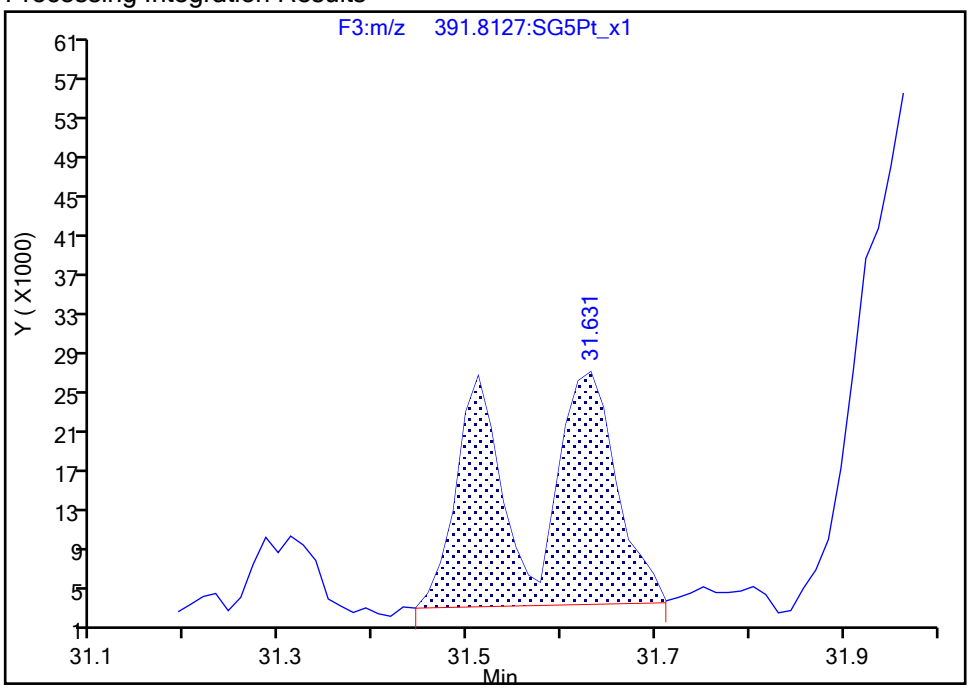
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 3

Processing Integration Results

RT: 31.63
Area: 284081
Amount: 0.273938
Amount Units: pg/ul



Manual Integration Results

RT: 31.51
Area: 151780
Amount: 0.146361
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:29:40
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

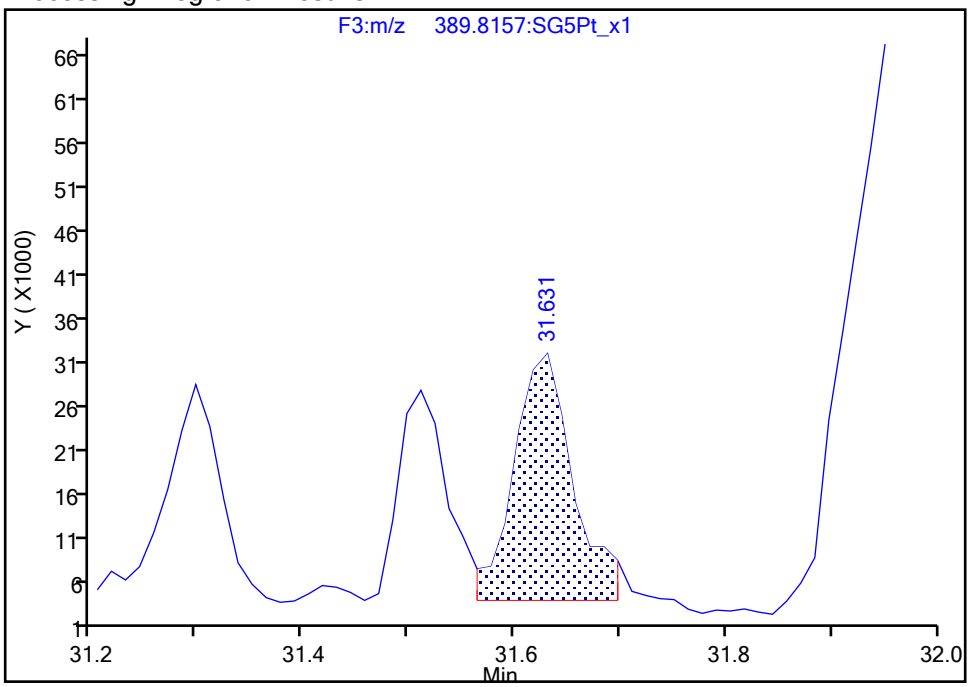
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

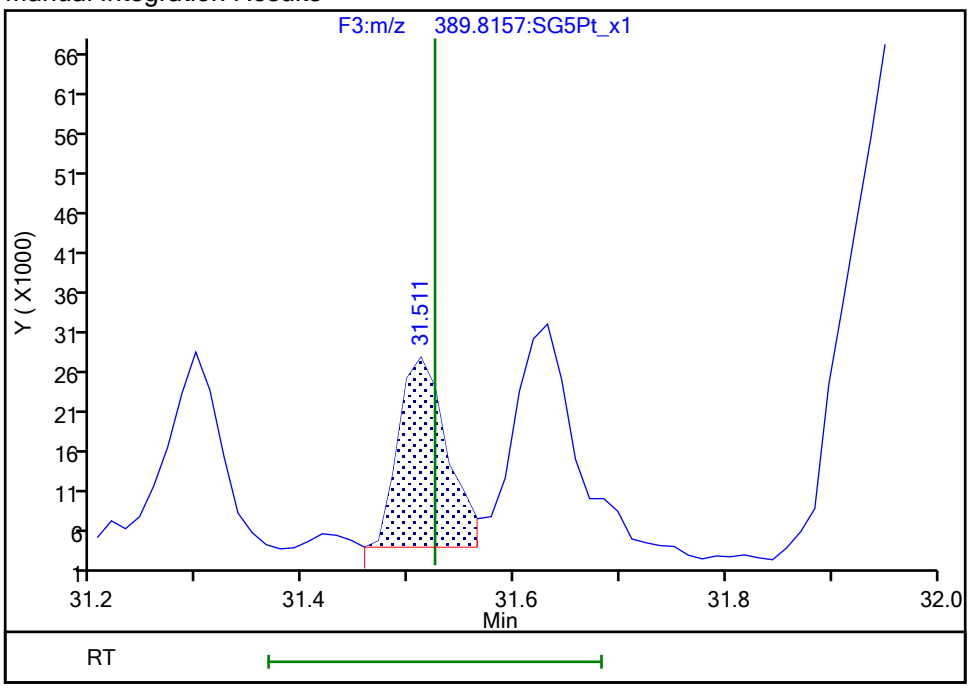
Processing Integration Results

RT: 31.63
Area: 107982
Amount: 0.273938
Amount Units: pg/ul



Manual Integration Results

RT: 31.51
Area: 75739
Amount: 0.146361
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:29:41
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

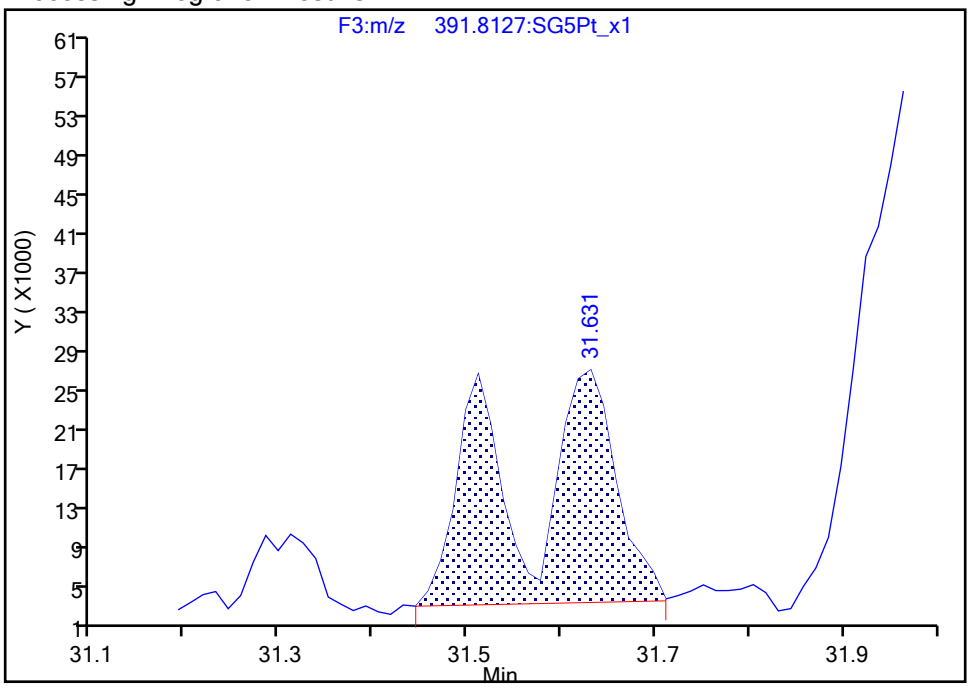
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

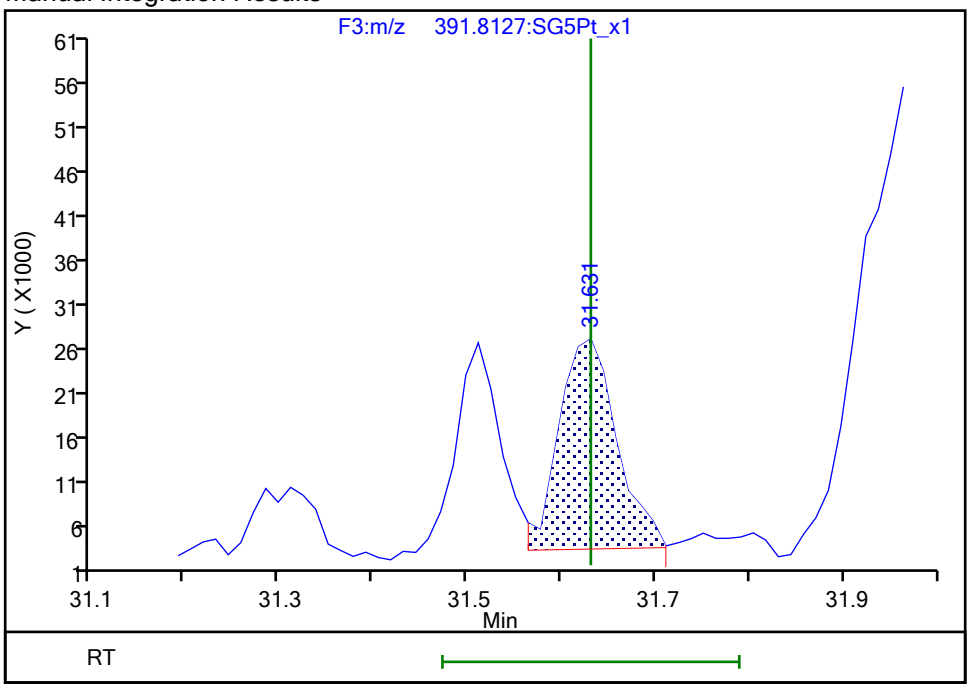
Processing Integration Results

RT: 31.63
Area: 176099
Amount: 0.253014
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 100055
Amount: 0.185286
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:29:45
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

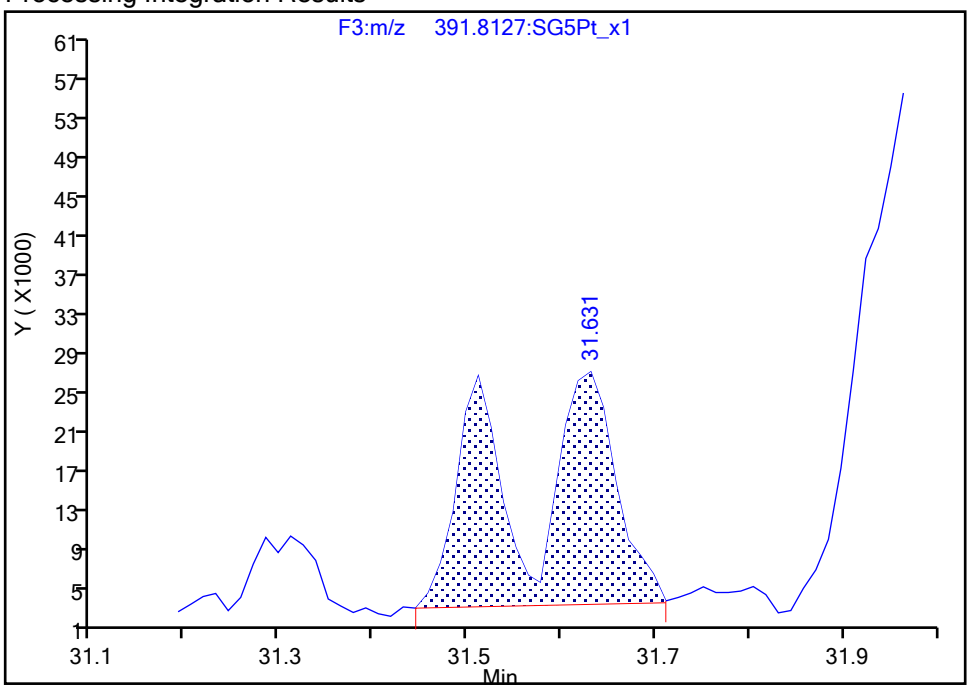
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.63
Area: 284081
Amount: 0.253014
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 208037
Amount: 0.185286
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:29:45
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

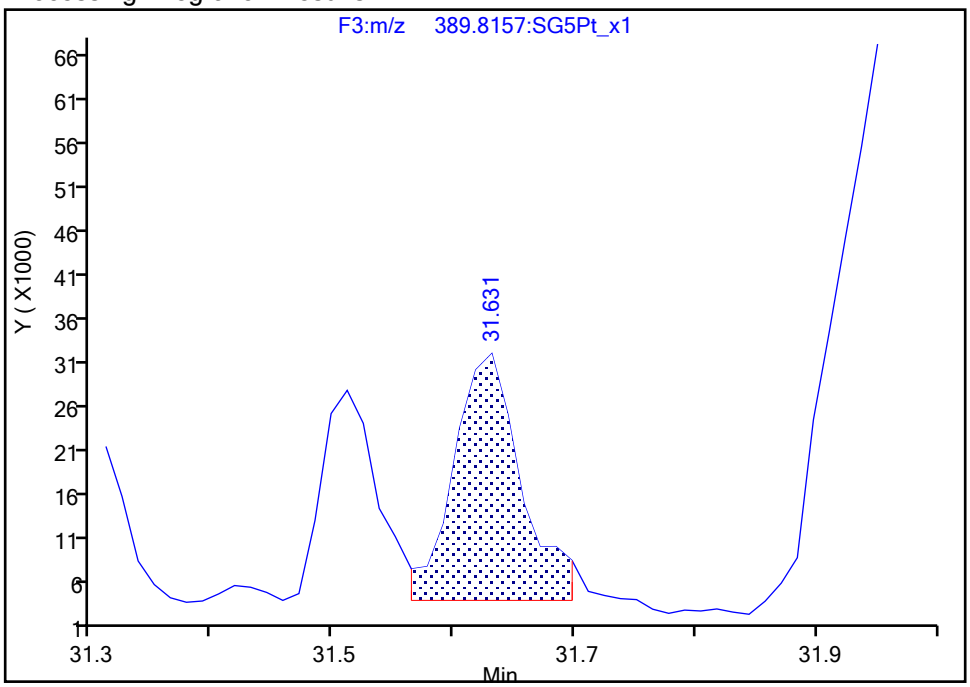
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

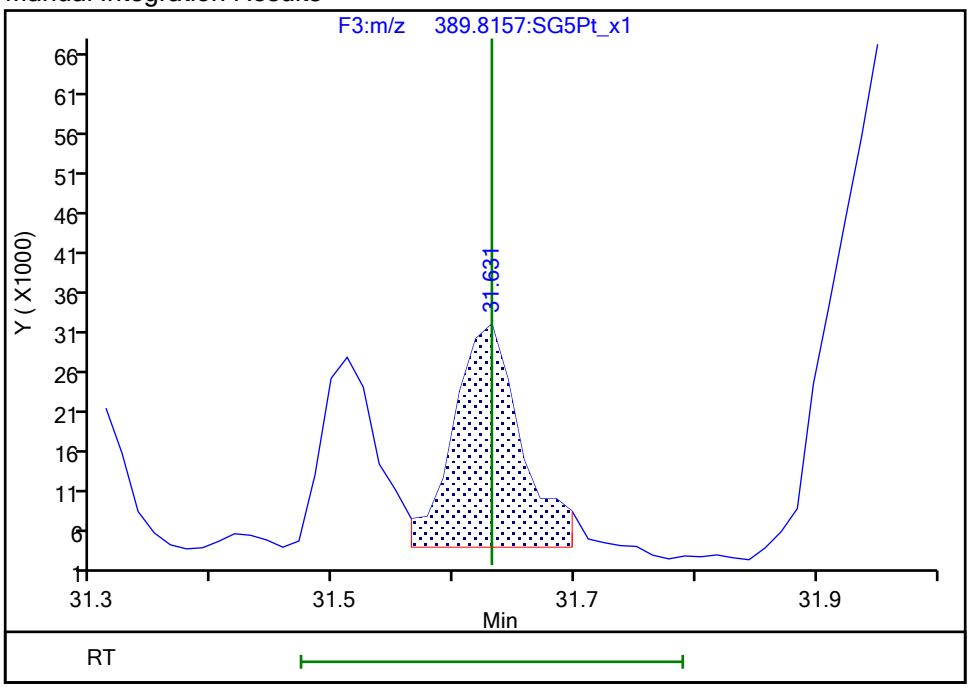
Processing Integration Results

RT: 31.63
Area: 107982
Amount: 0.253014
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 107982
Amount: 0.185286
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:29:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

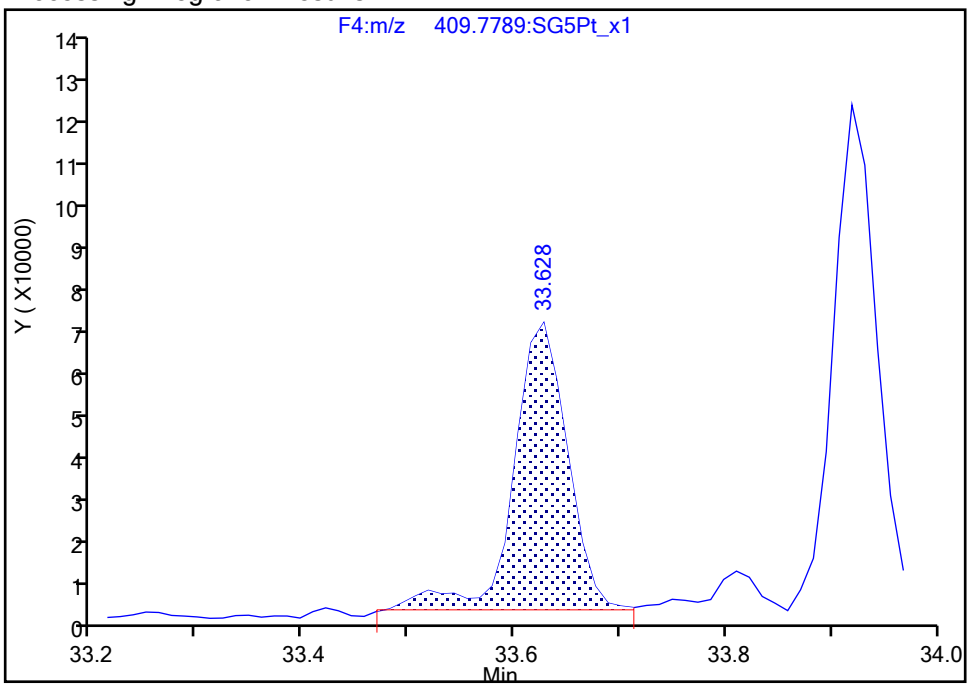
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

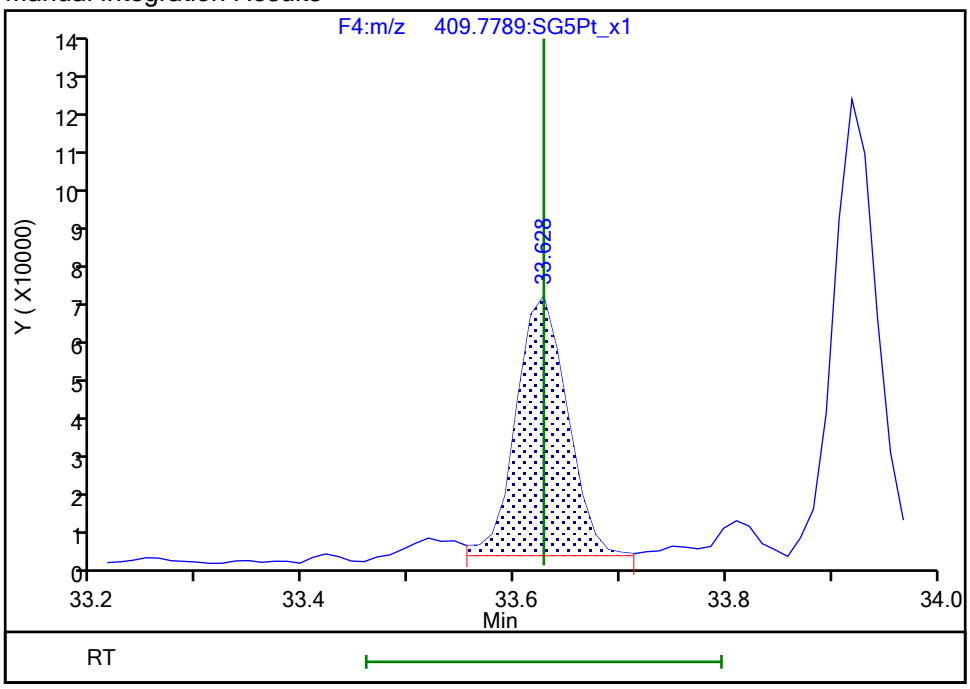
Processing Integration Results

RT: 33.63
Area: 231448
Amount: 0.376421
Amount Units: pg/ul



Manual Integration Results

RT: 33.63
Area: 218432
Amount: 0.366381
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:30:03

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

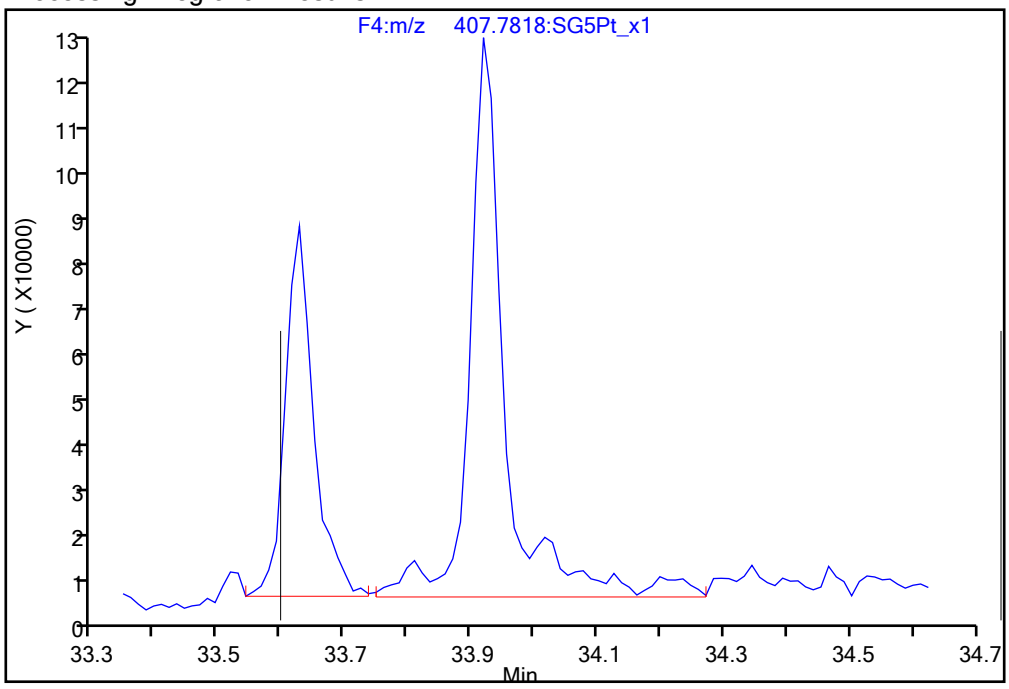
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d				
Injection Date:	19-Dec-2019 18:56:35	Instrument ID:	3D5		
Lims ID:	320-56953-A-5-A	Lab Sample ID:	320-56953-5		
Client ID:	11187072-120919-BN-SJSSA04(0-1)				
Operator ID:	AJS	ALS Bottle#:	11	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7818, RT: (33.60- 34.74)

Signal: 1

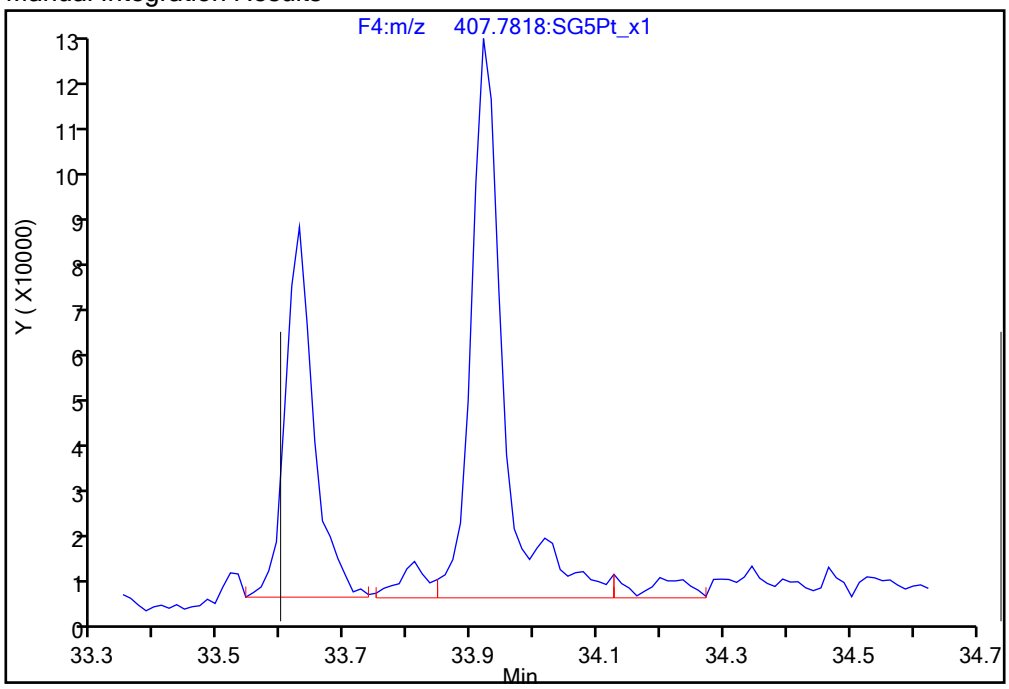
Processing Integration Results

RT = 33.919 Area = 489106



Manual Integration Results

RT = 33.919 Area = 441065 M



Reviewer: dadunj, 20-Dec-2019 14:30:11

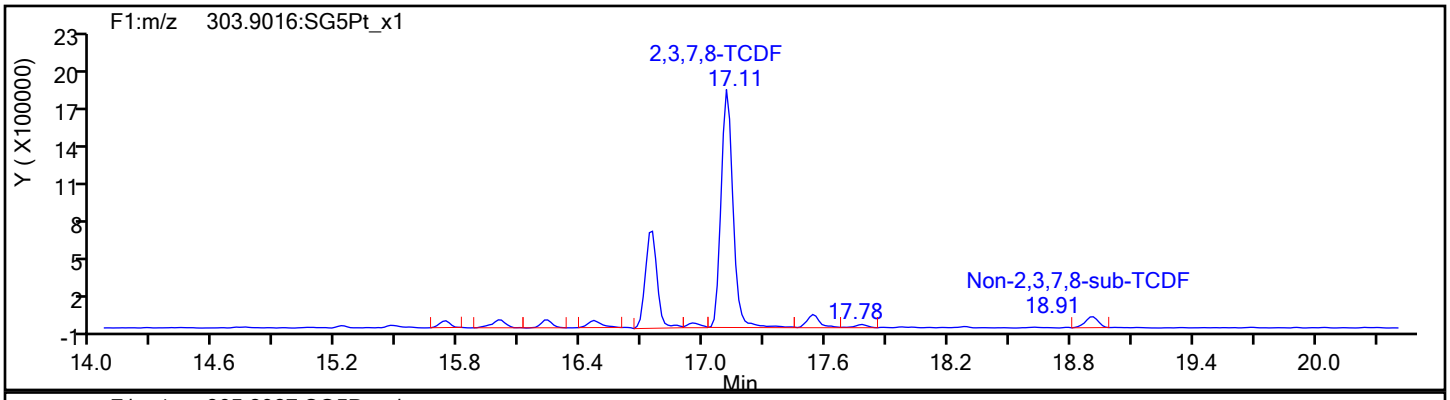
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

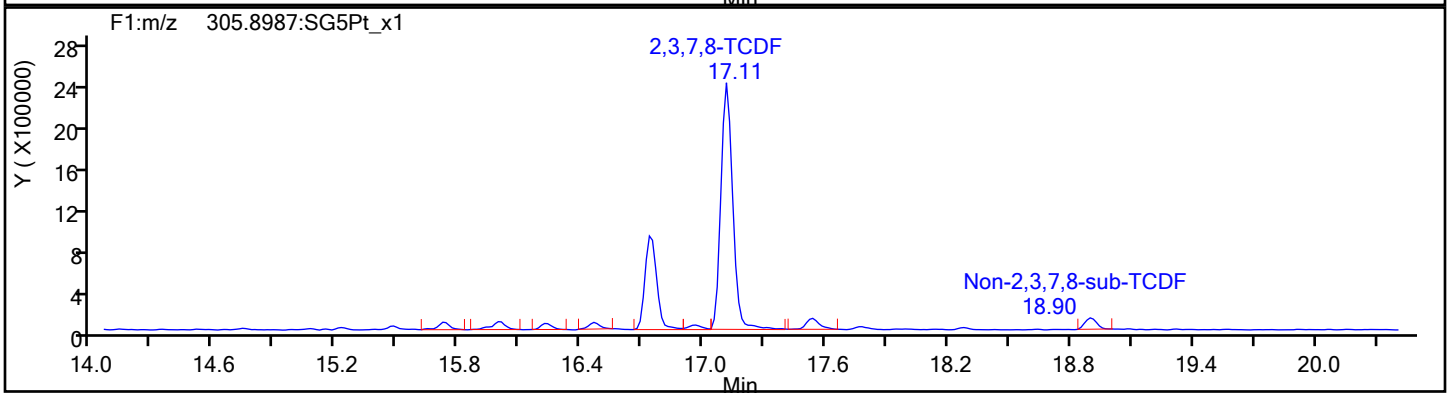
Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

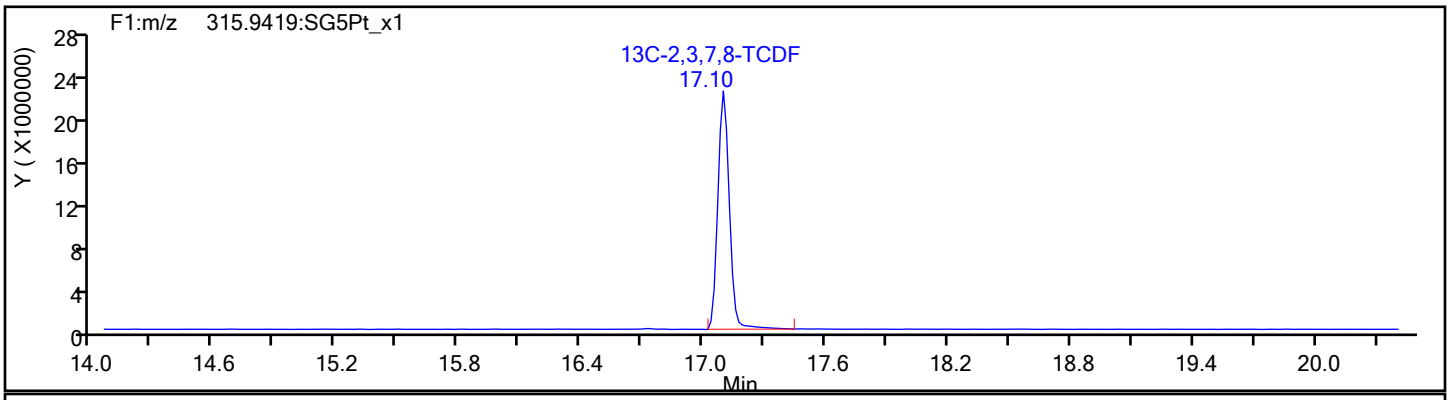
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

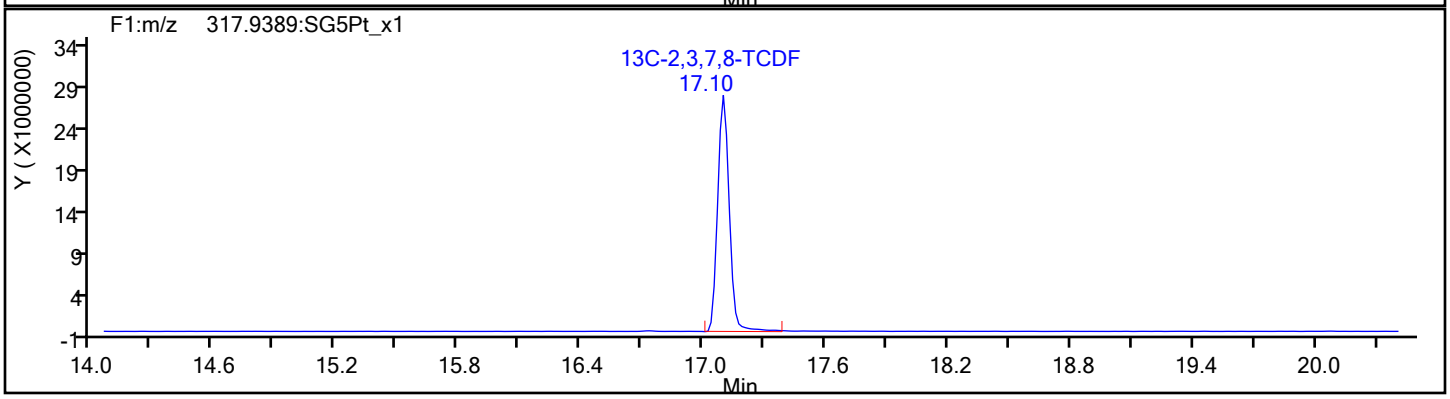
TCDF





TCDF Standards



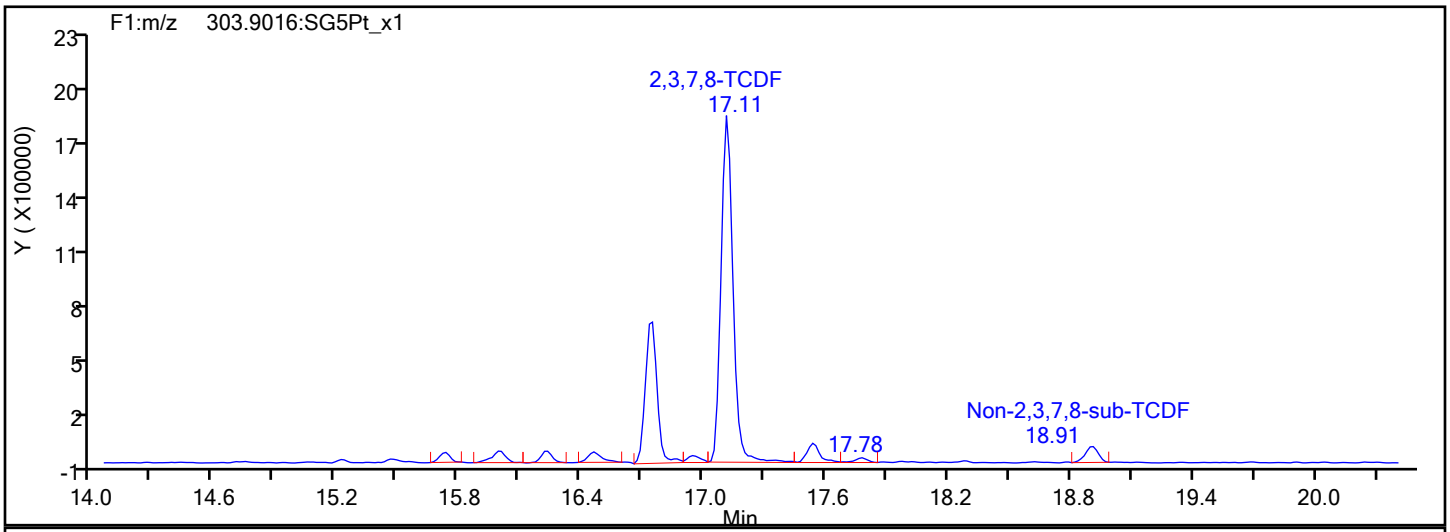


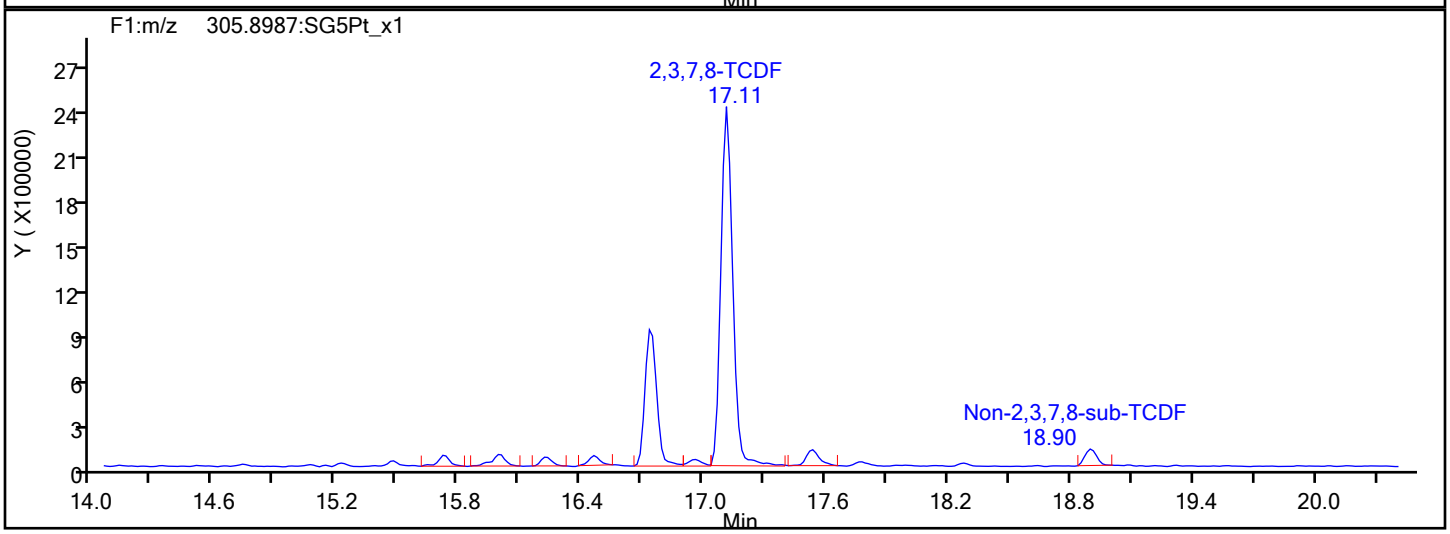
Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

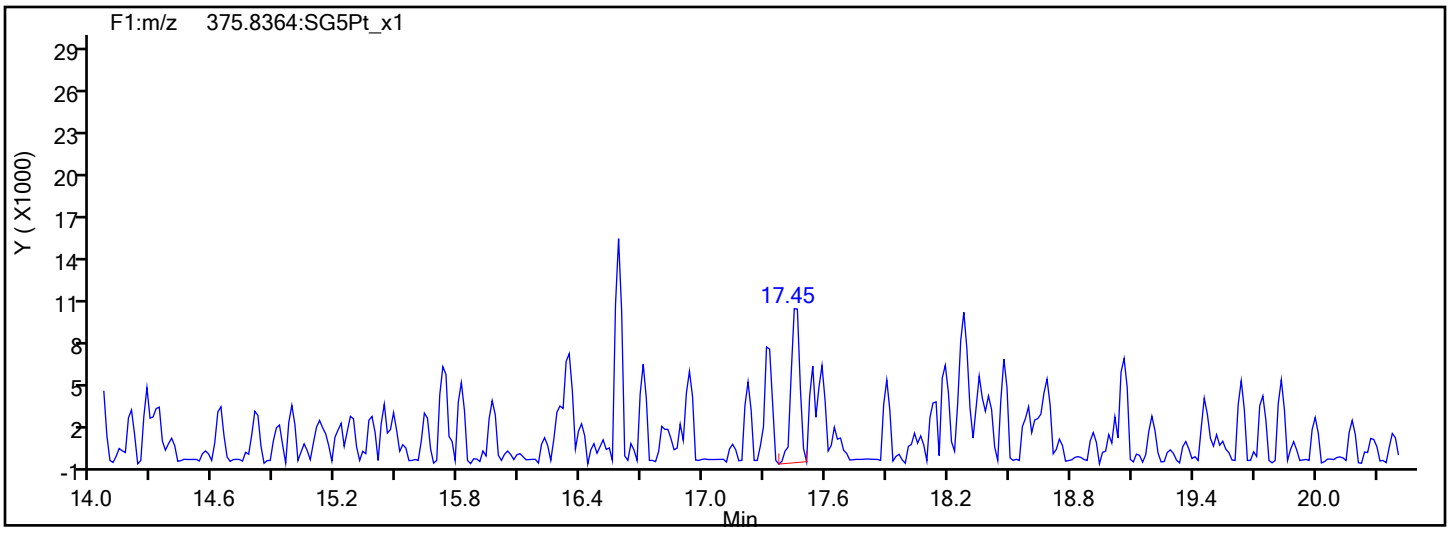
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

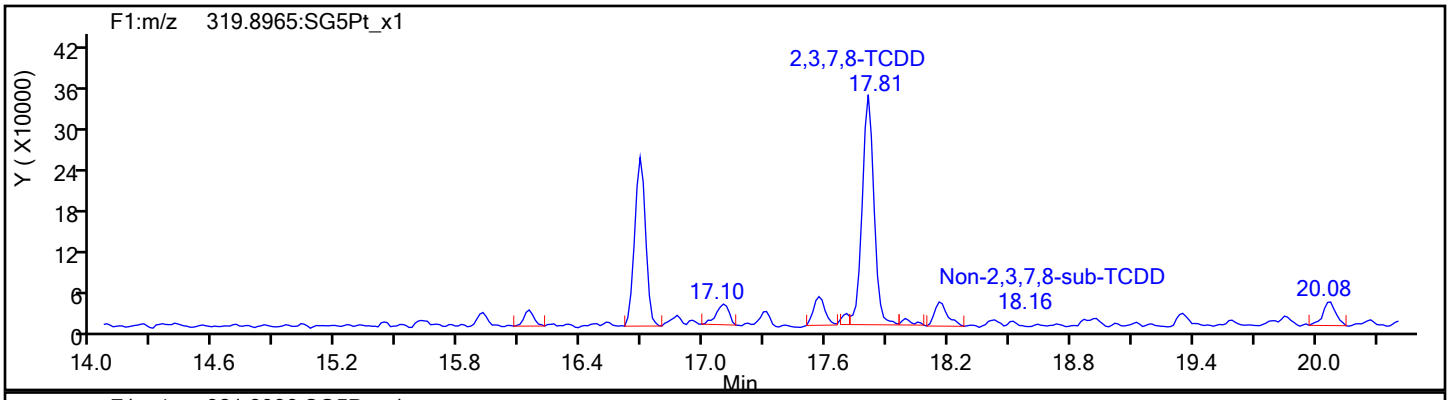


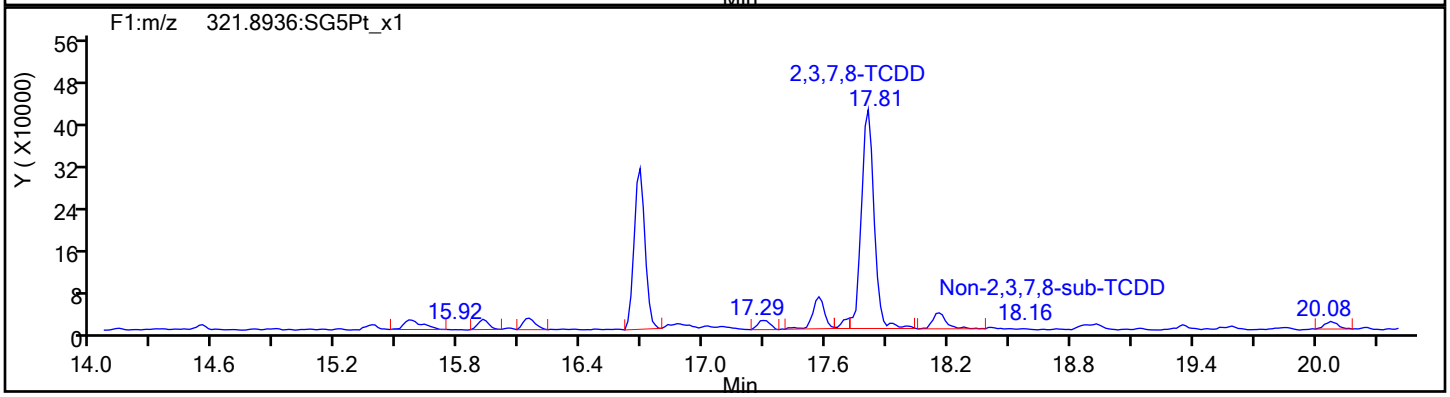
Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

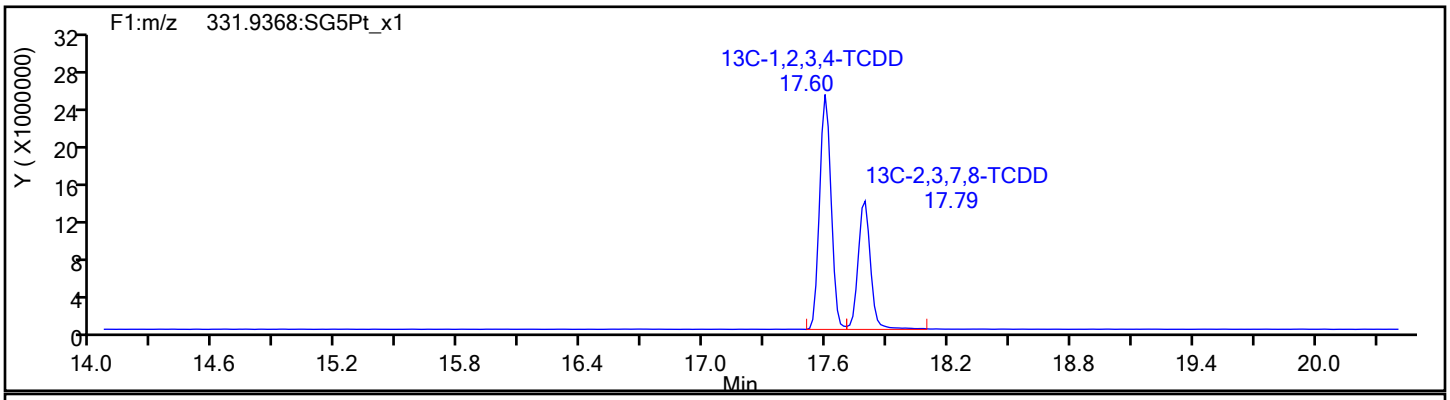
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

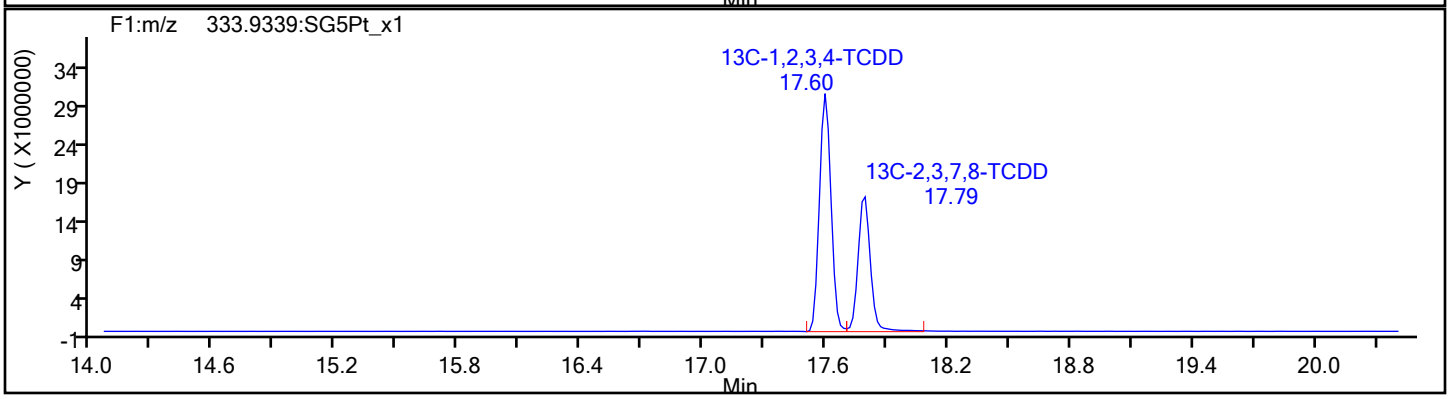
TCDD





TCDD Standards



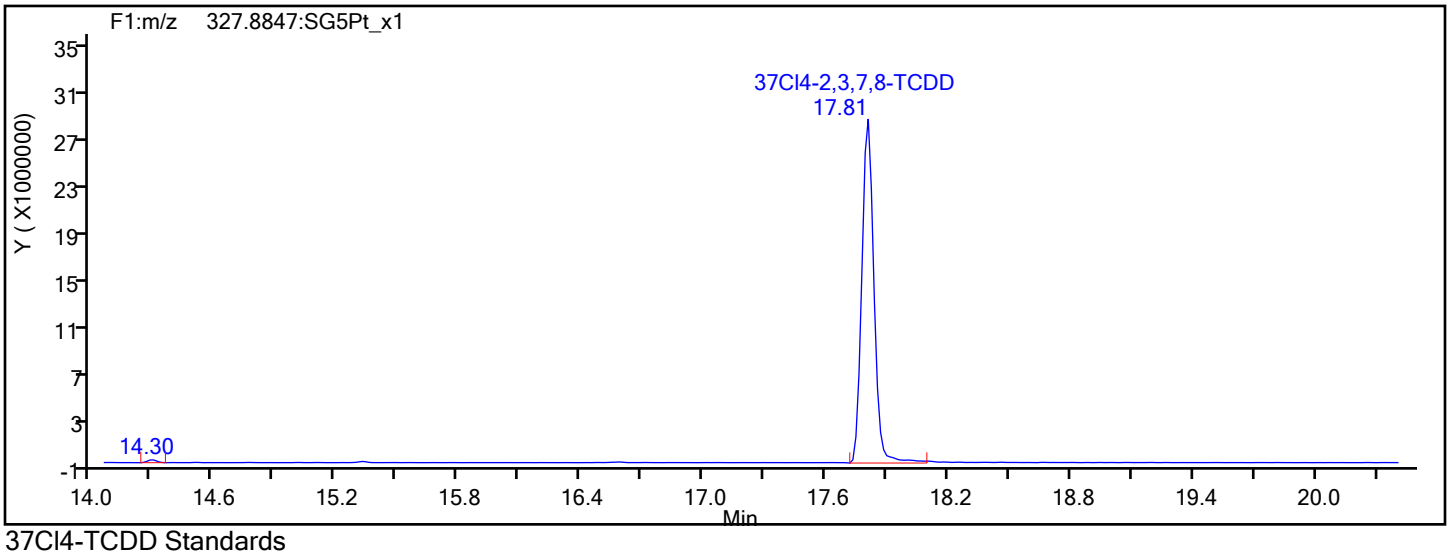


Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

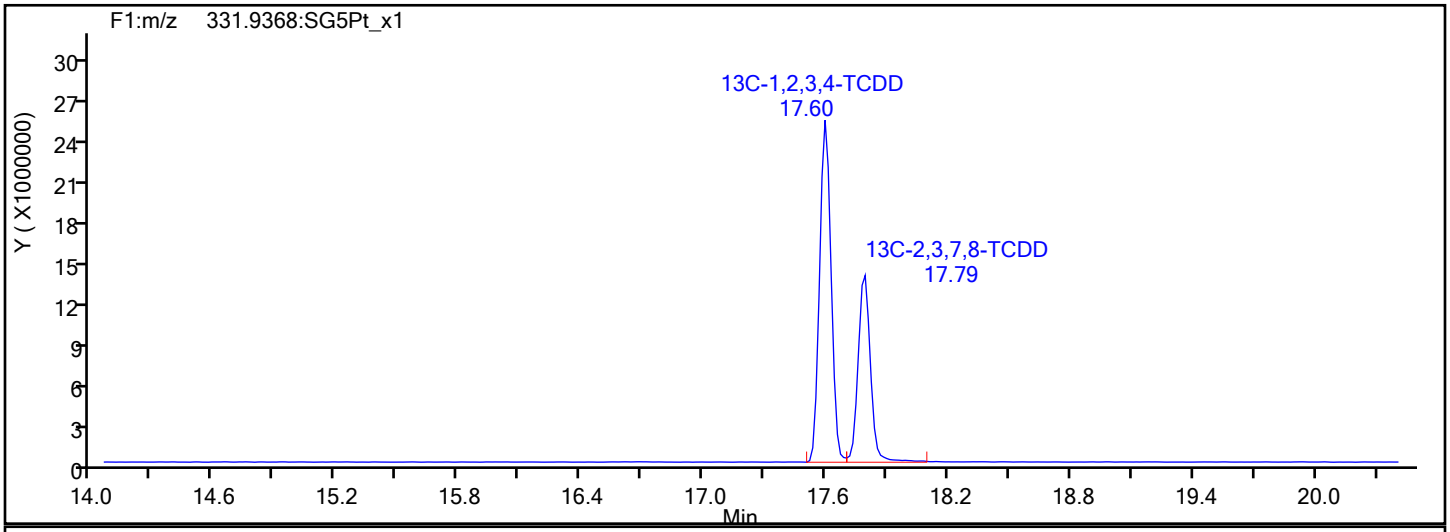
Eurofins TestAmerica, Sacramento

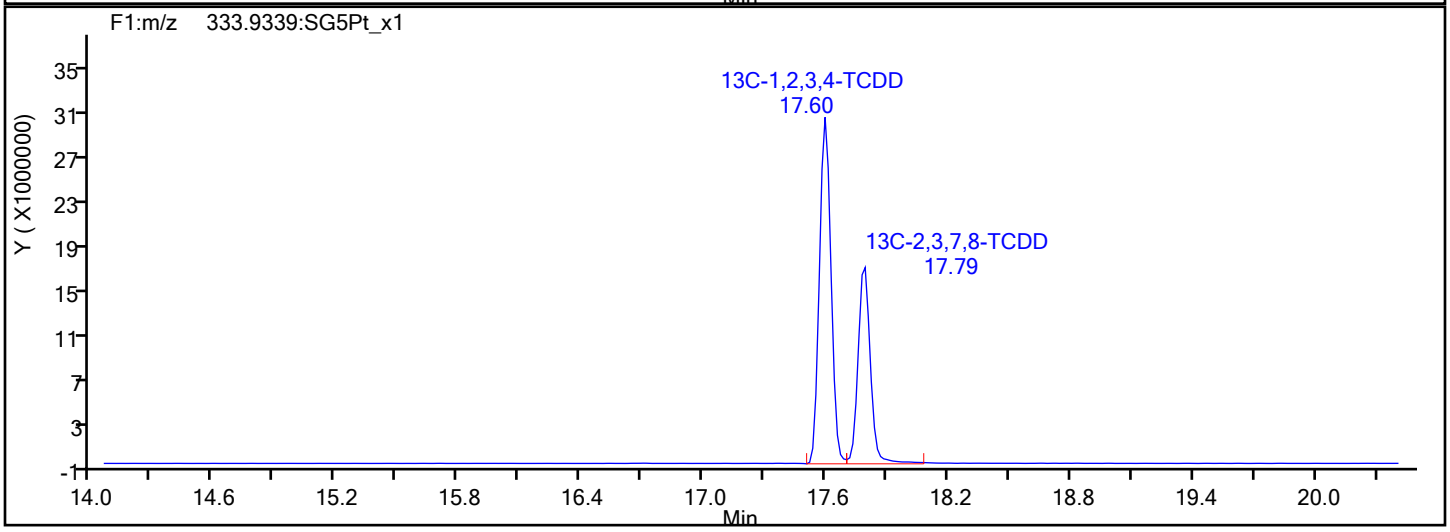
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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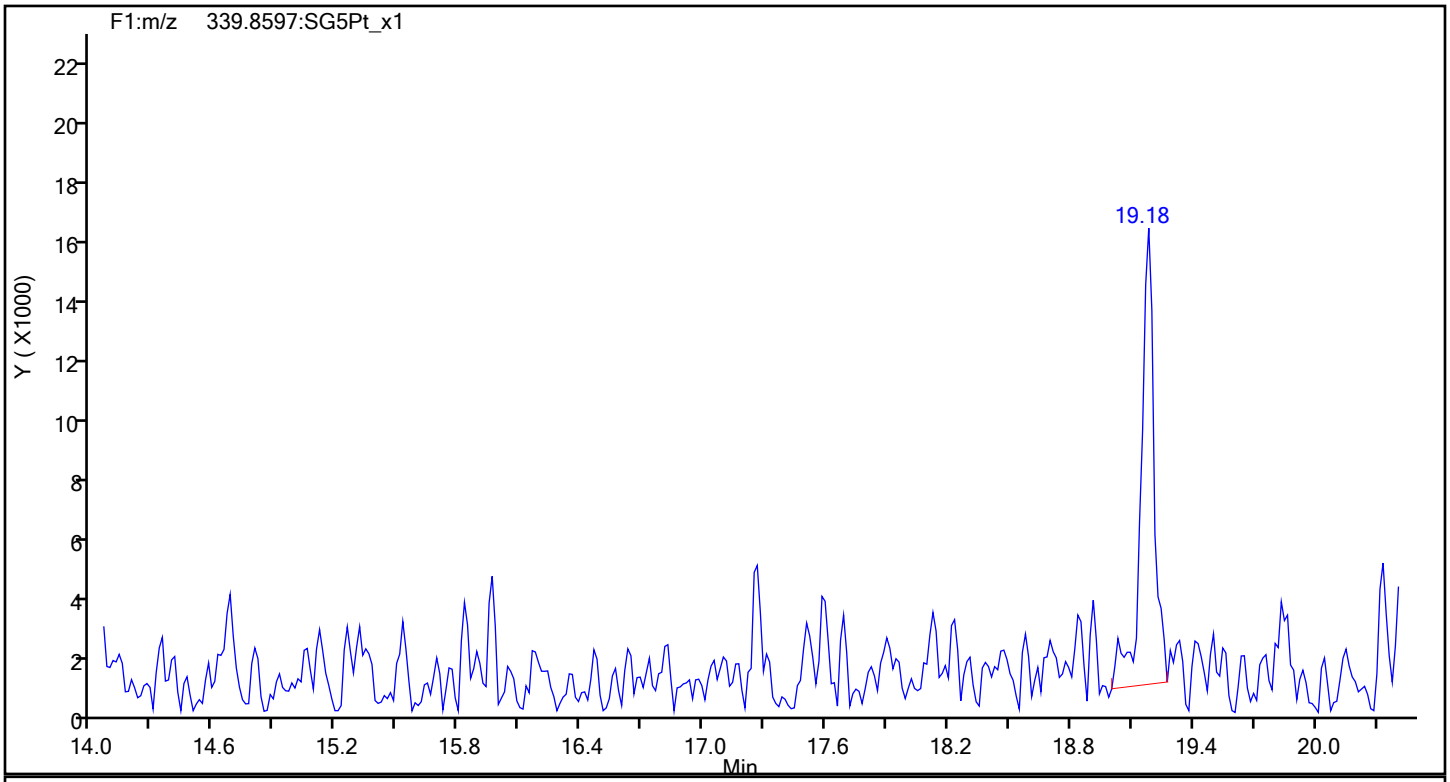
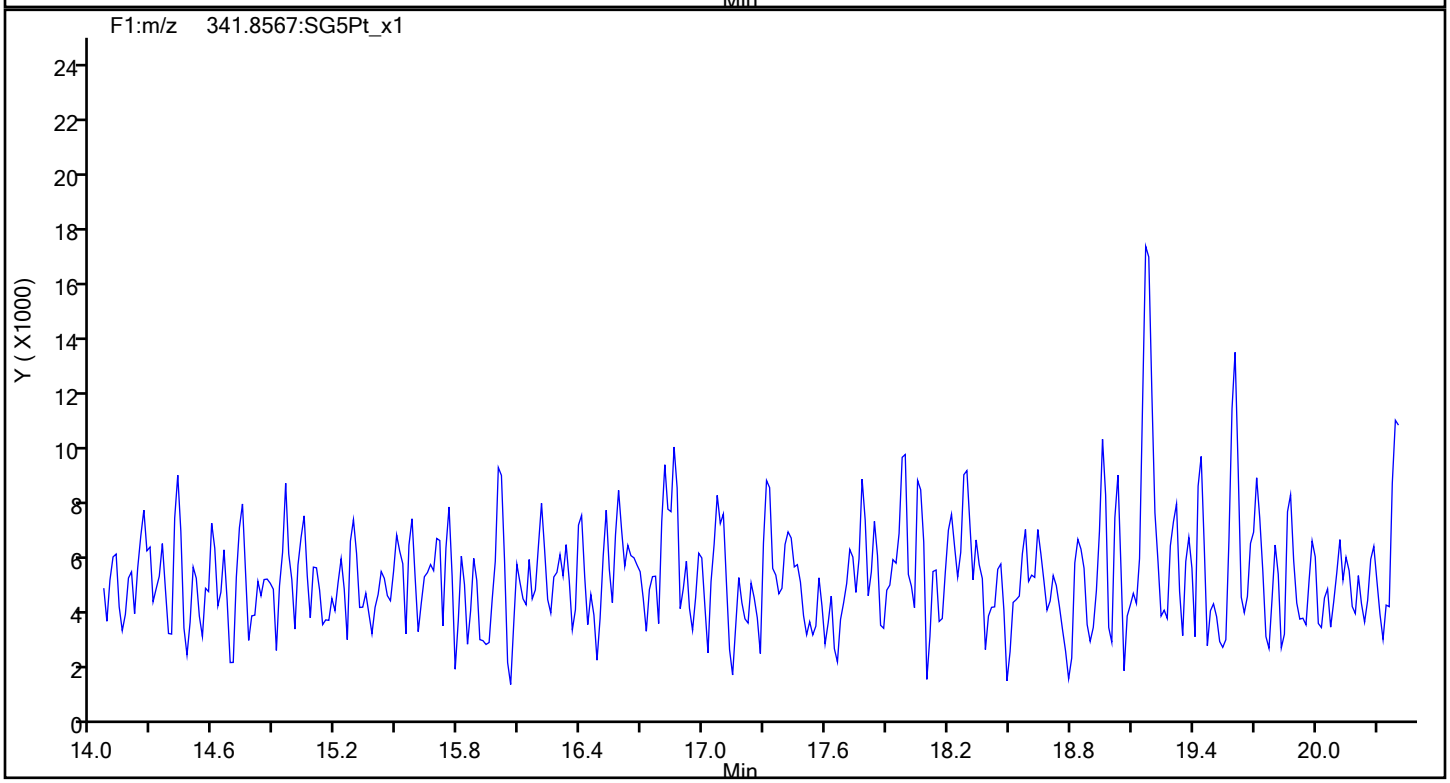
F1 PeCDFs





Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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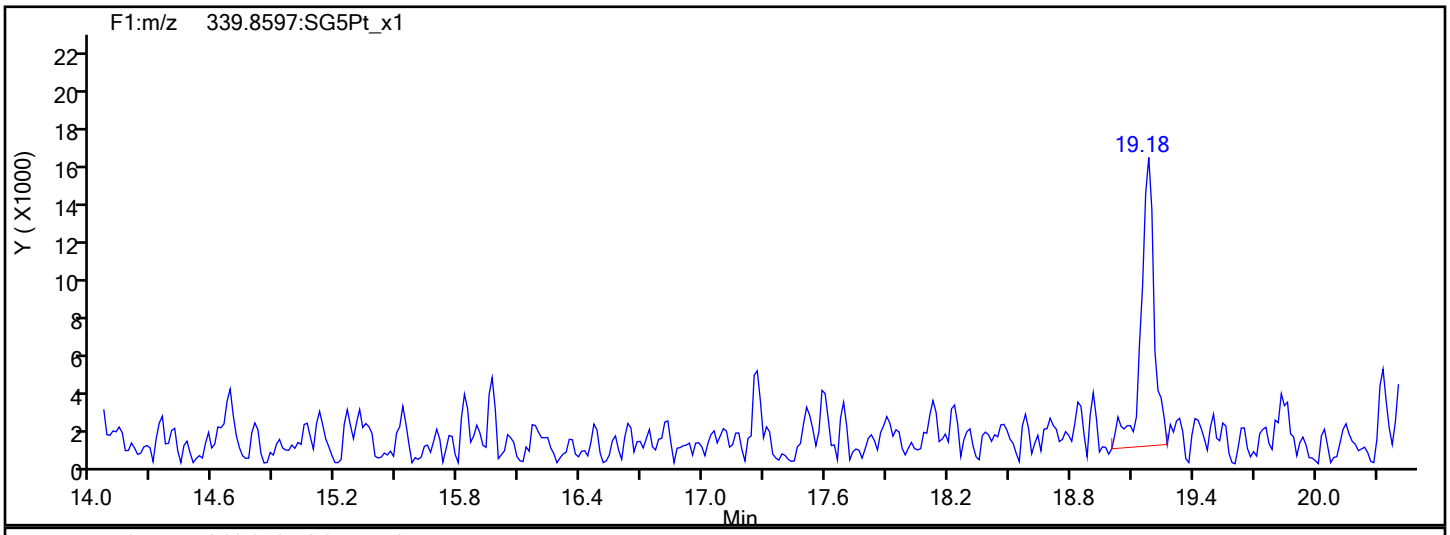

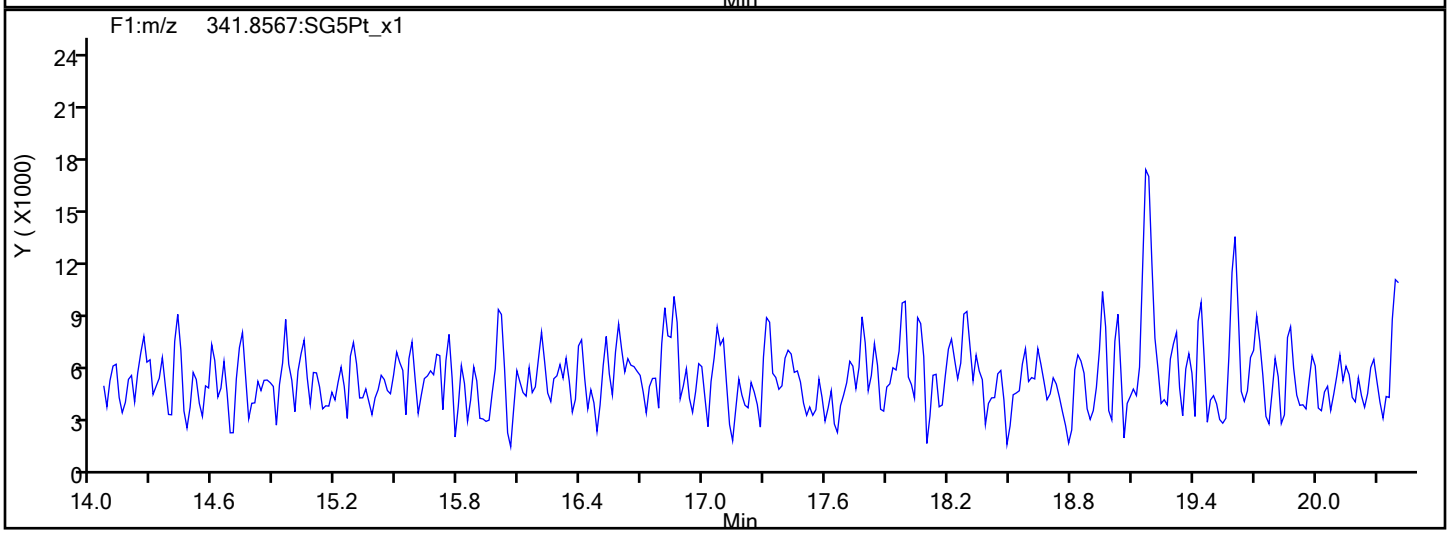

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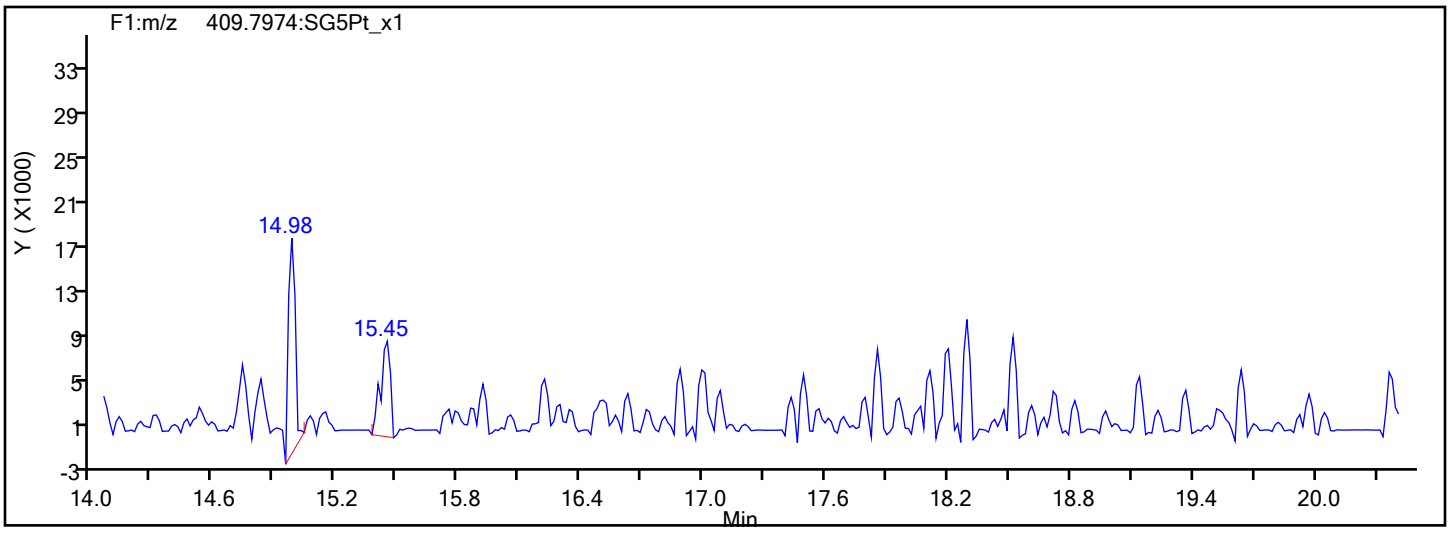

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Eurofins TestAmerica, Sacramento

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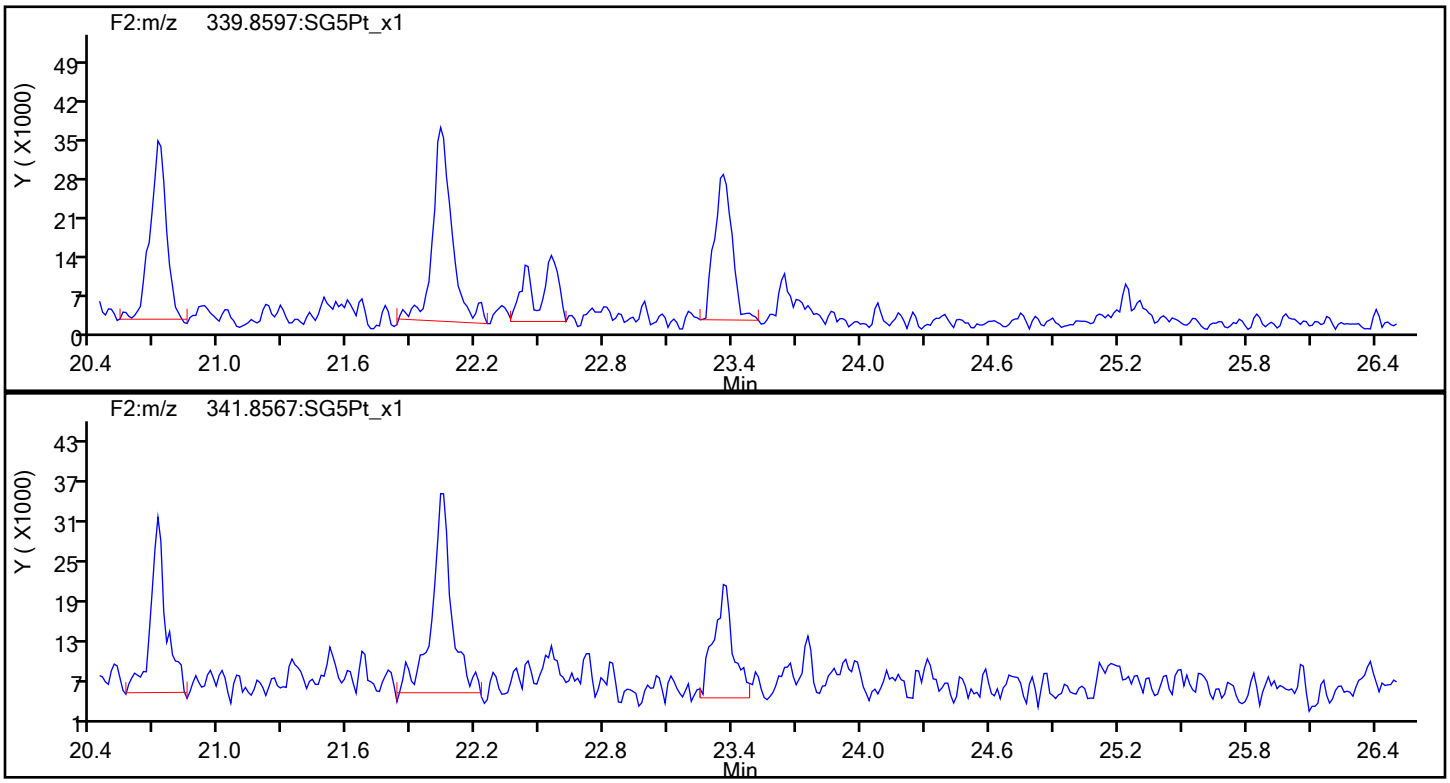
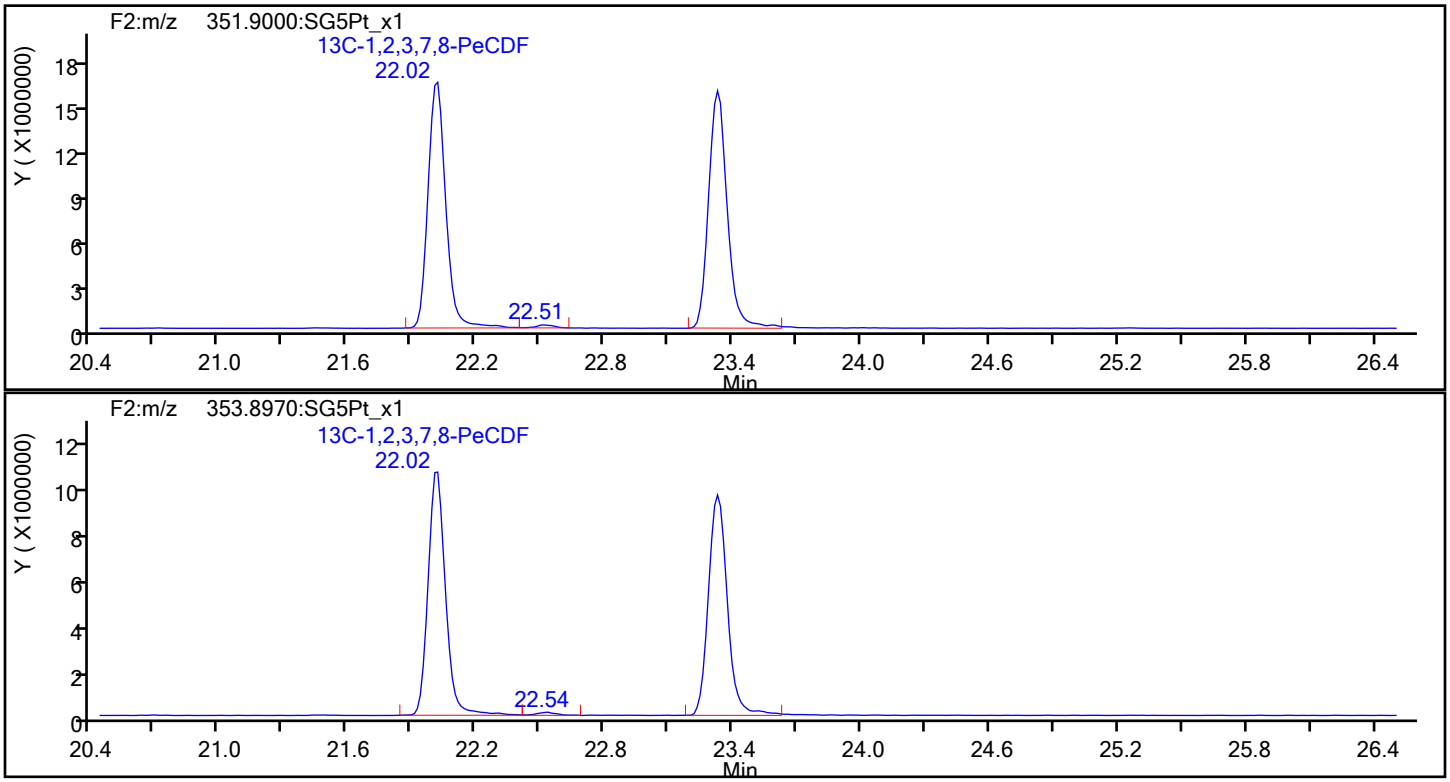


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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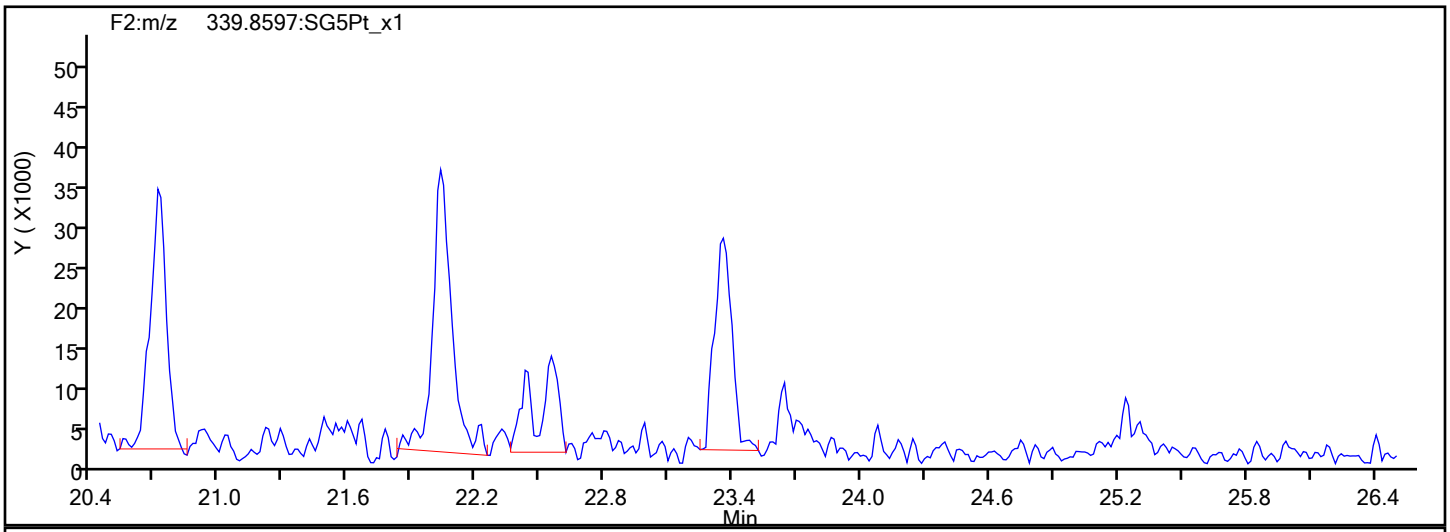
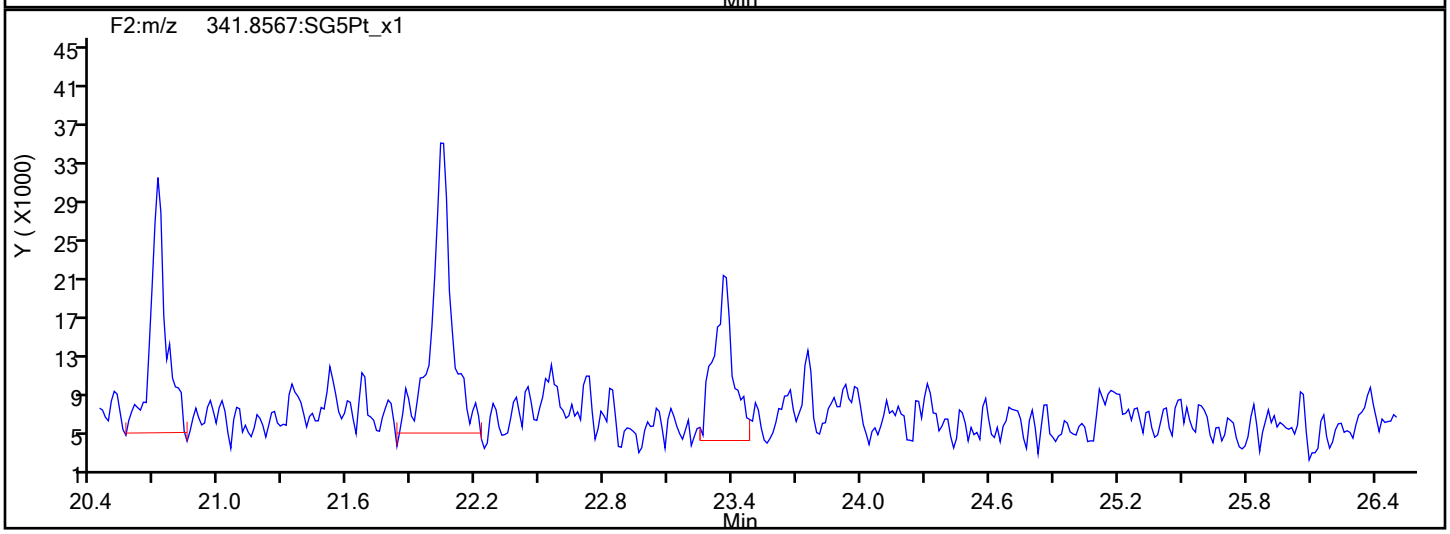
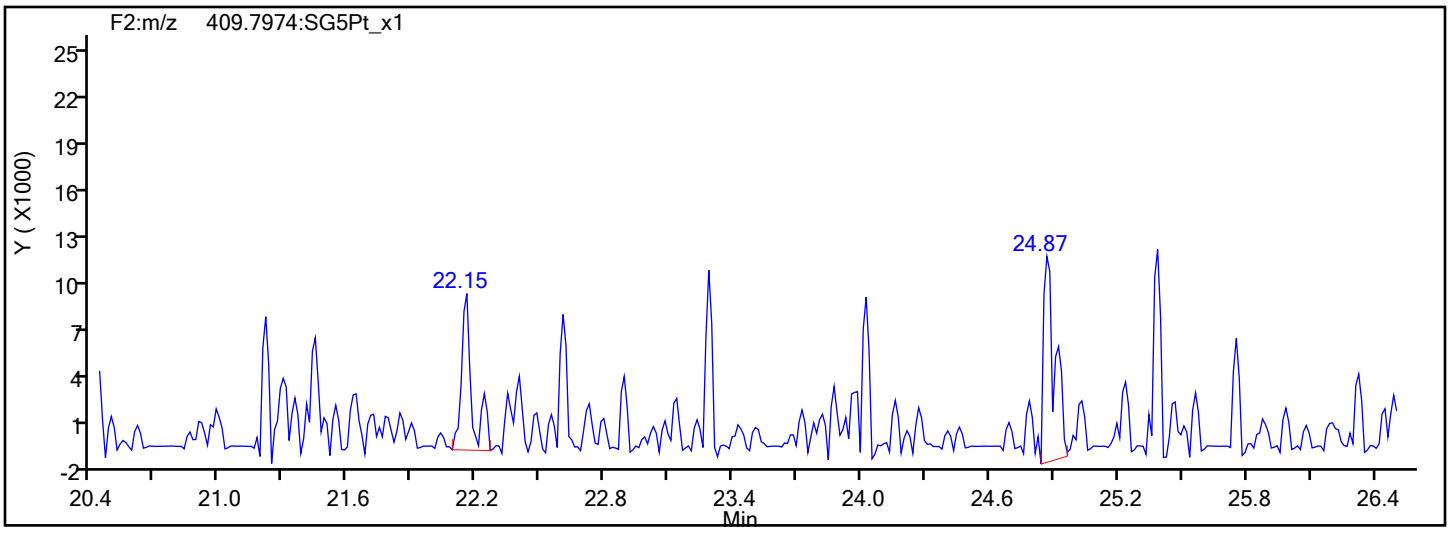




PeCDF Interference Mass



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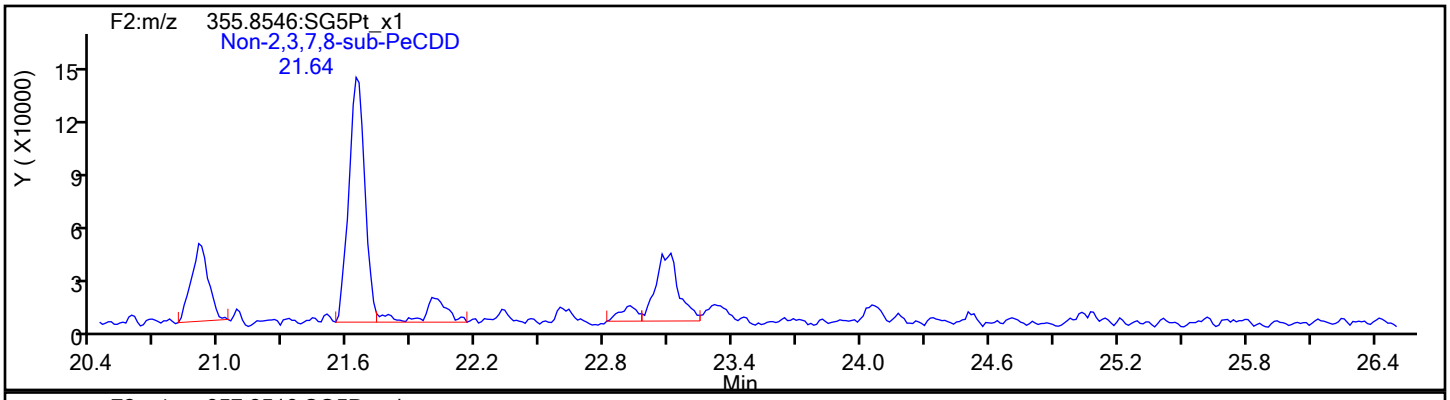
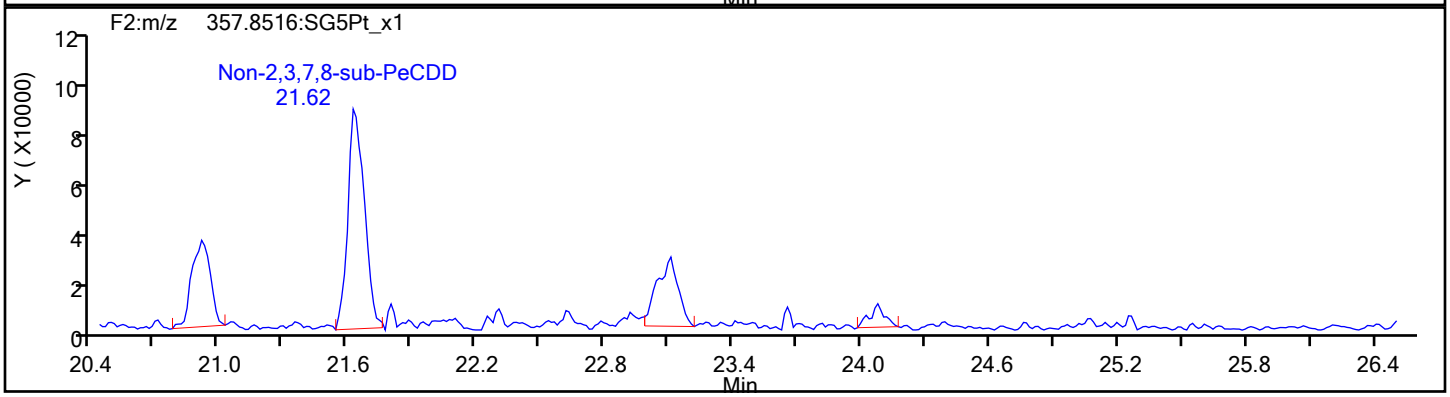
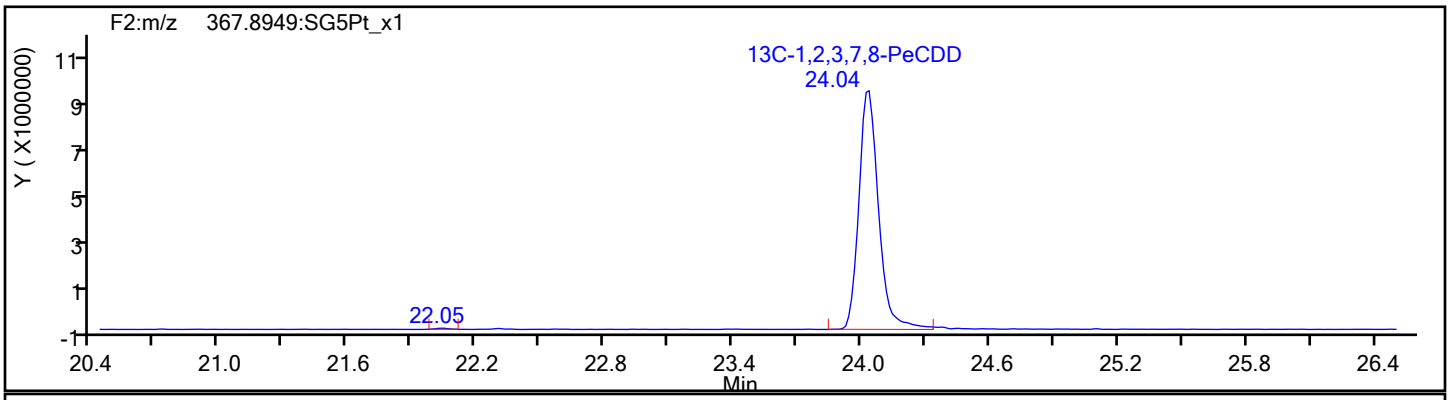
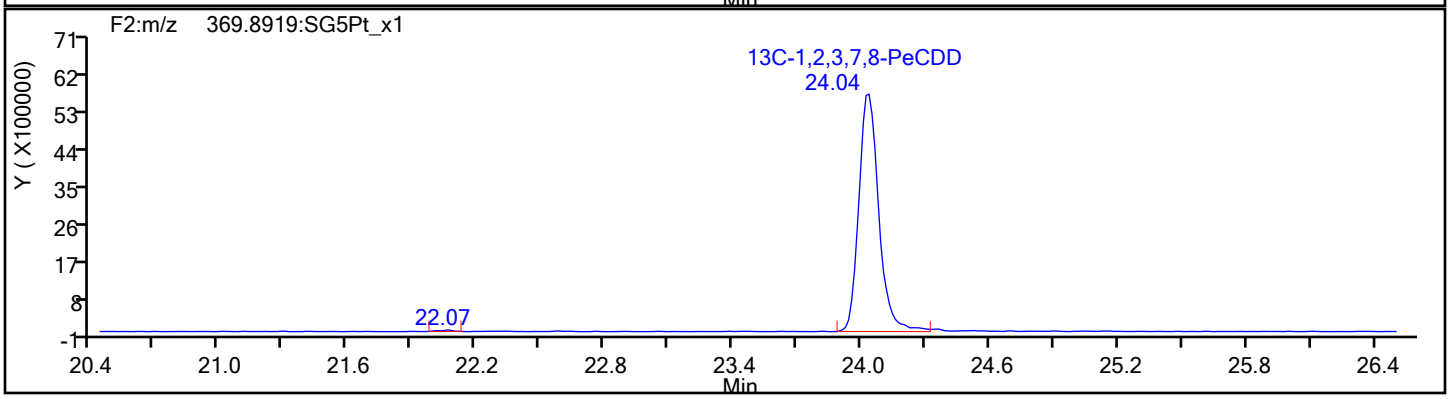




PeCDD Standards





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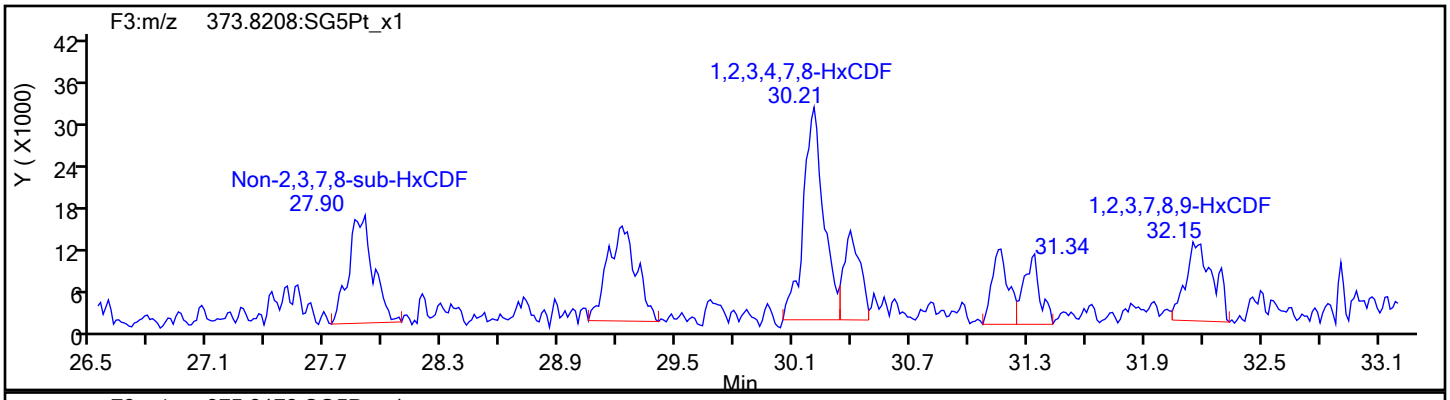
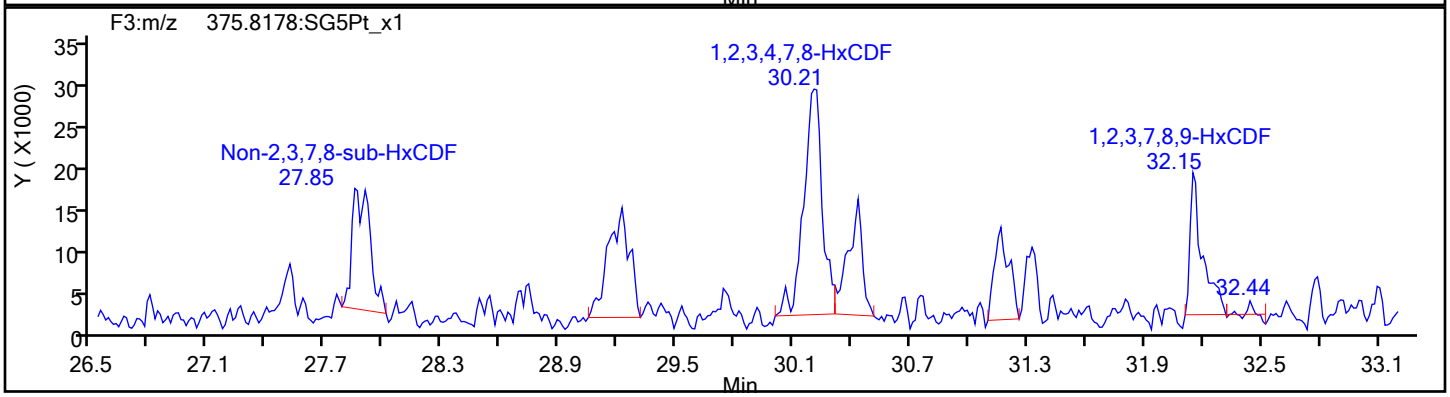
HxCDF





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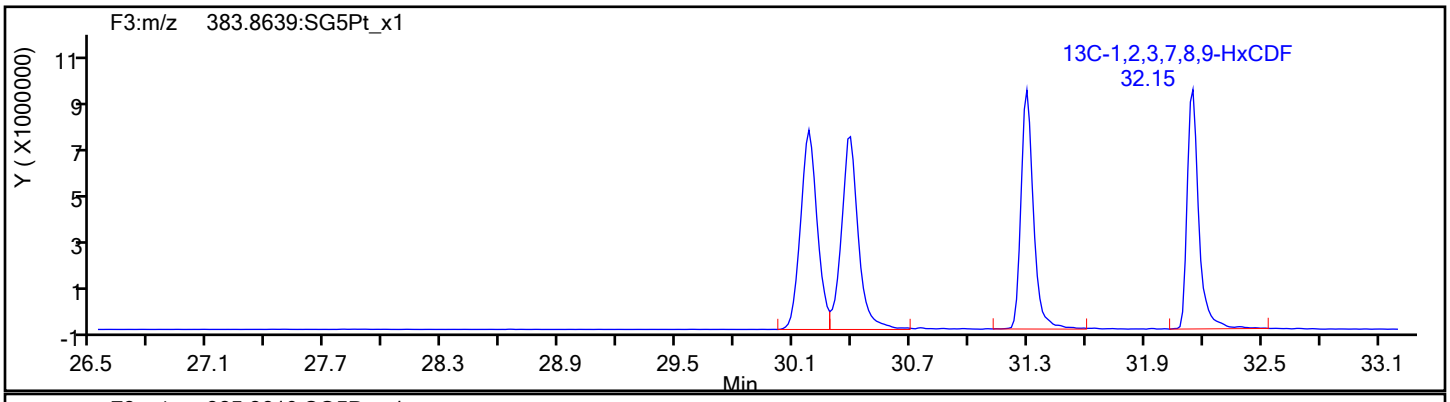

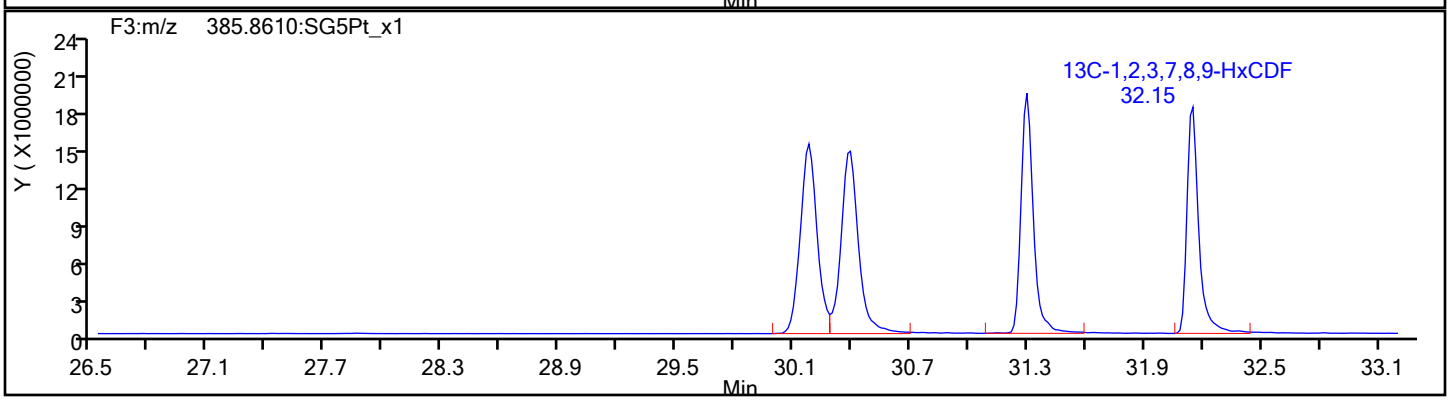

Eurofins TestAmerica, Sacramento

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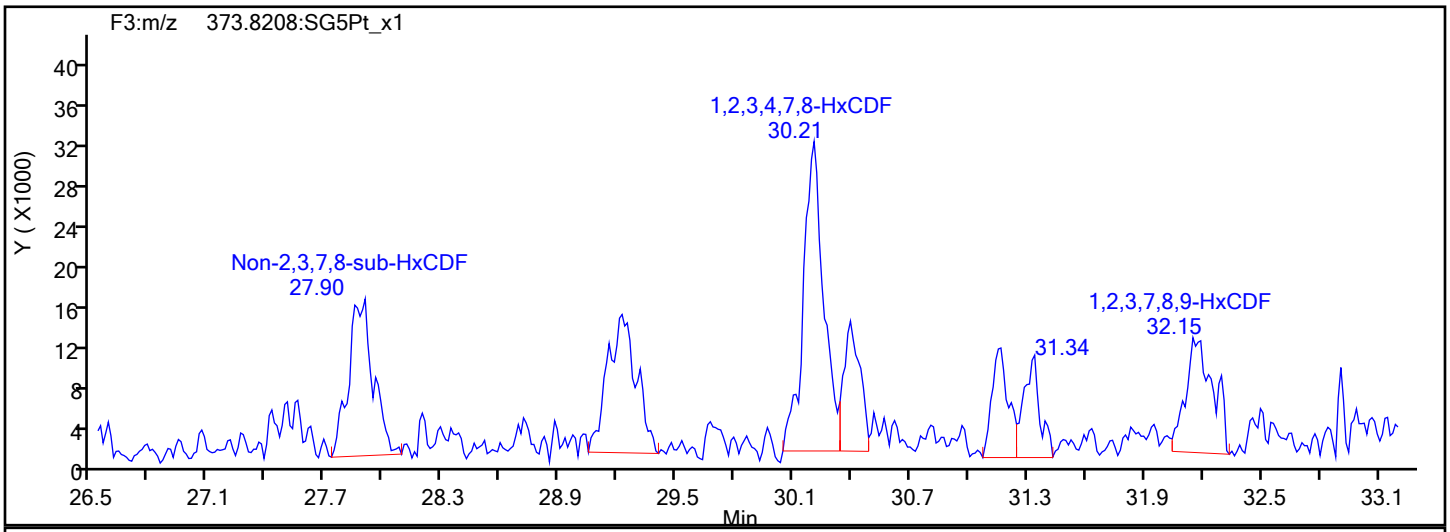
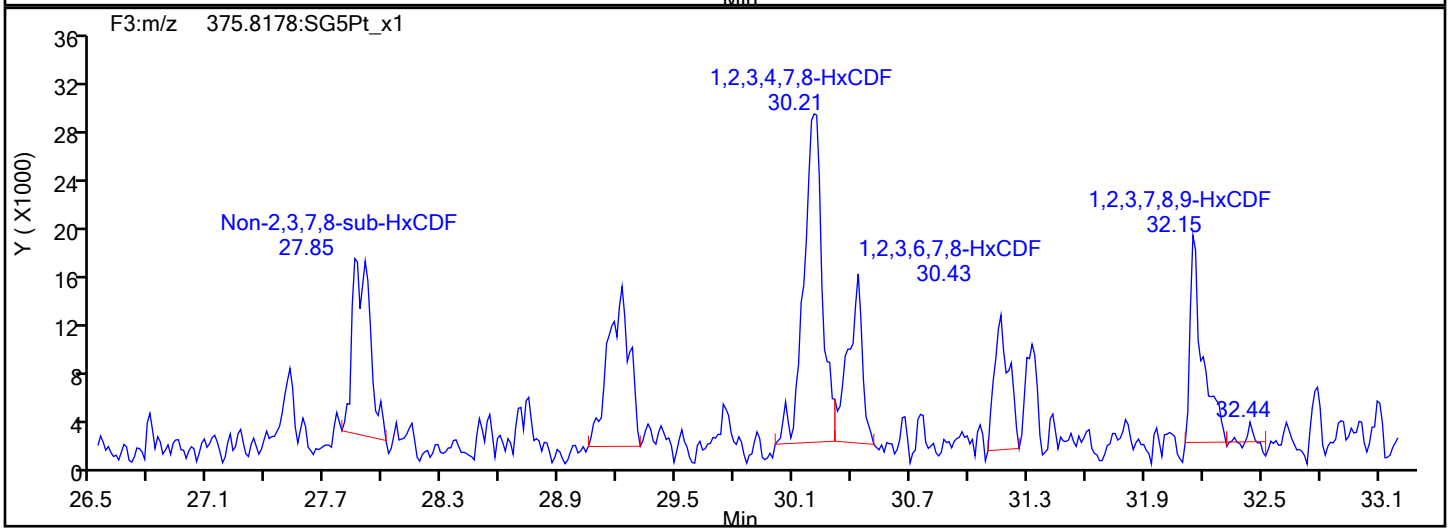
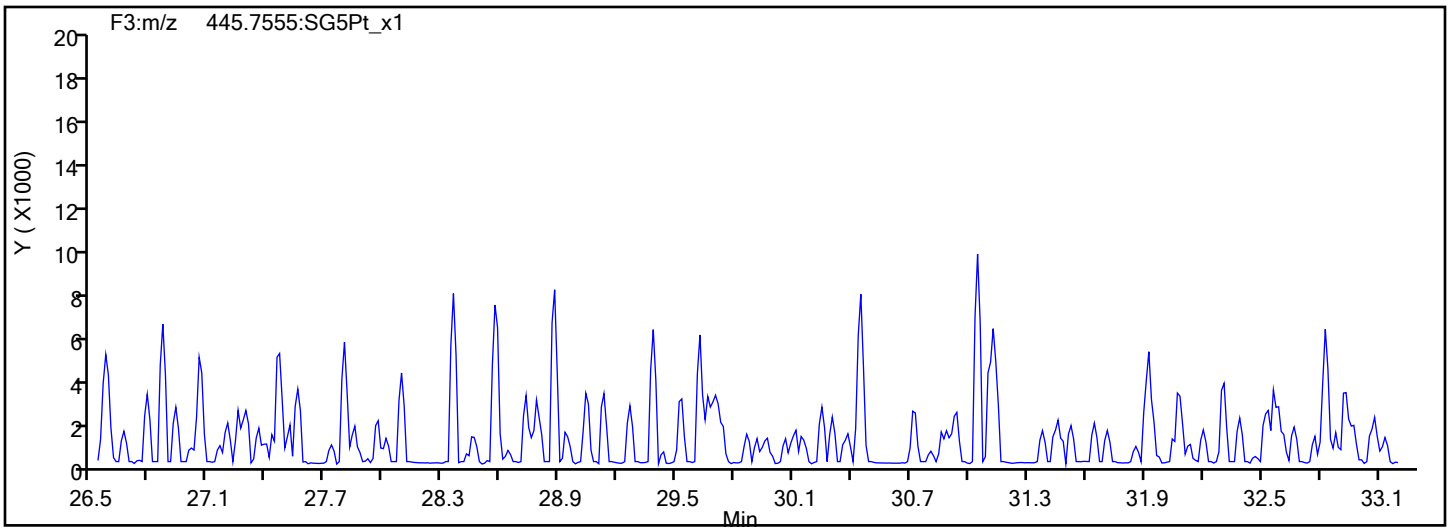




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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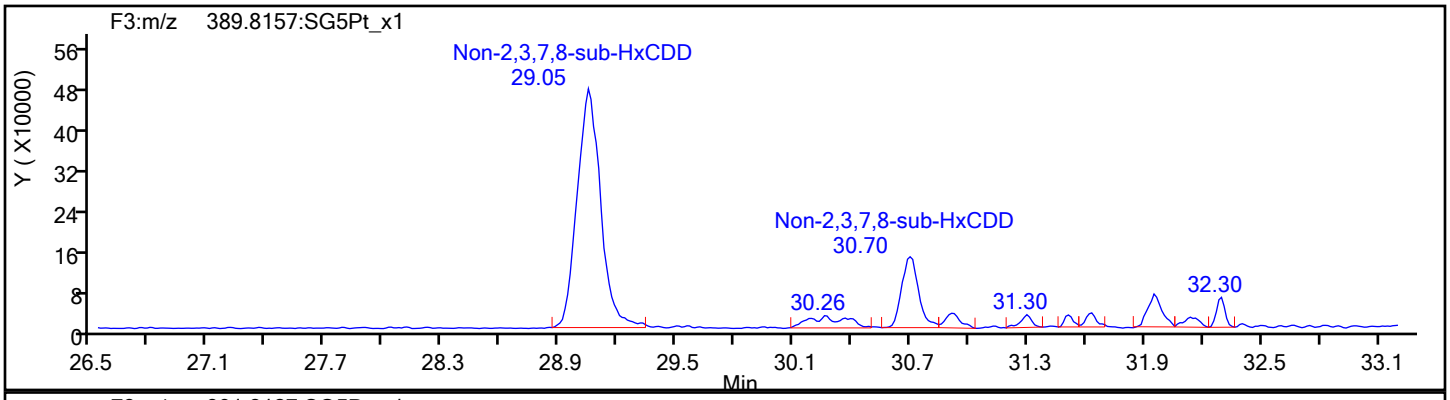
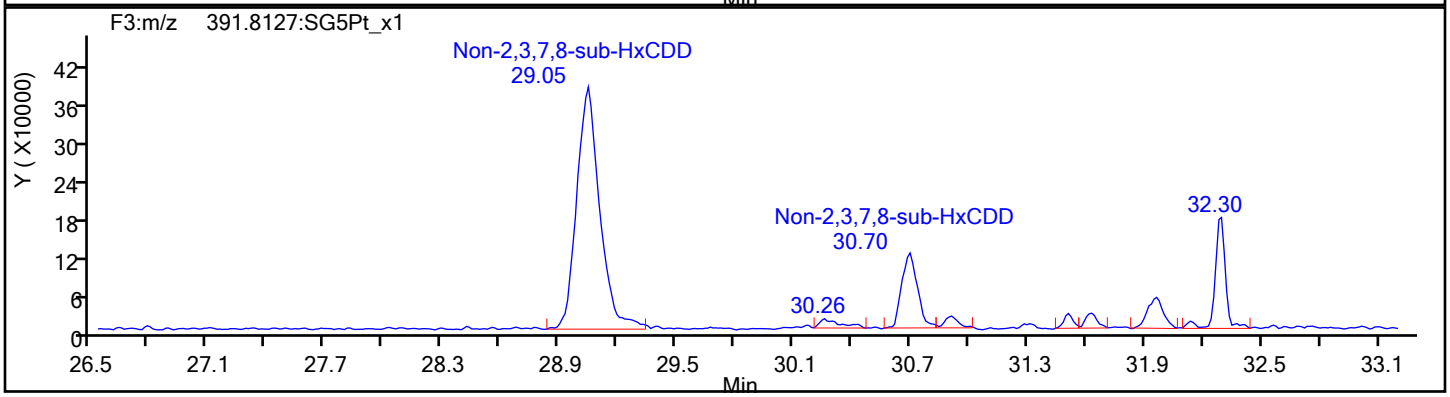
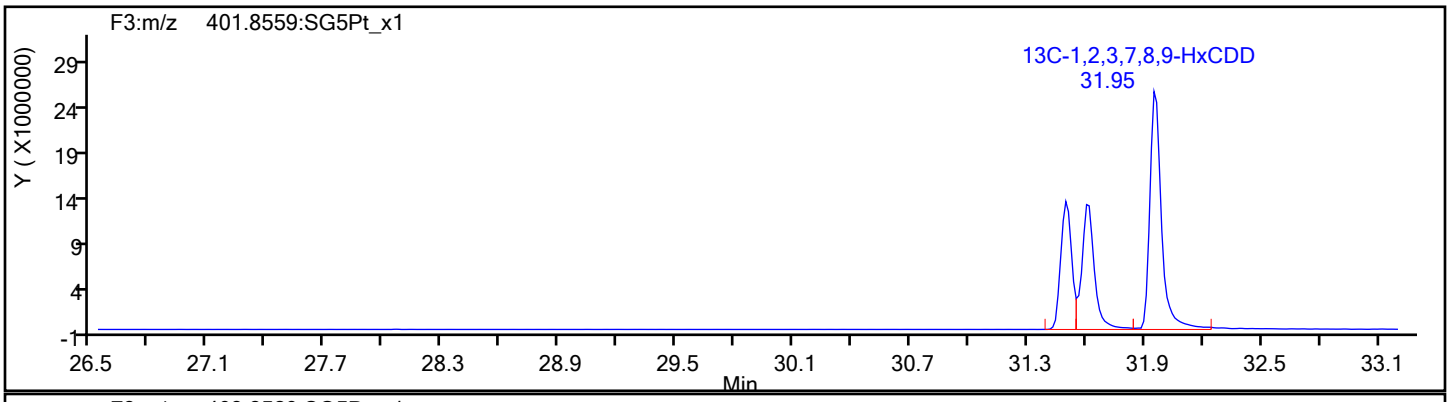
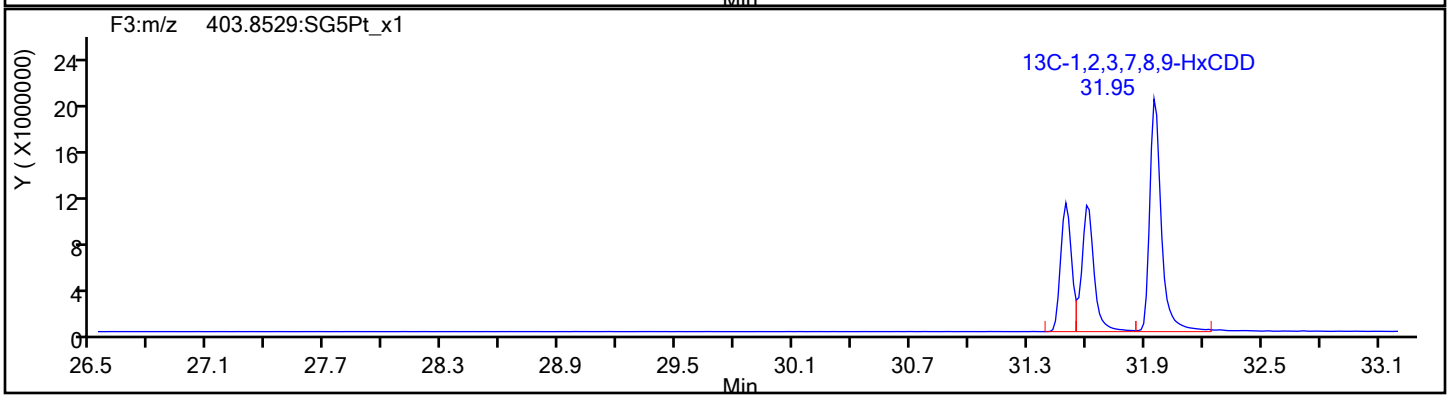
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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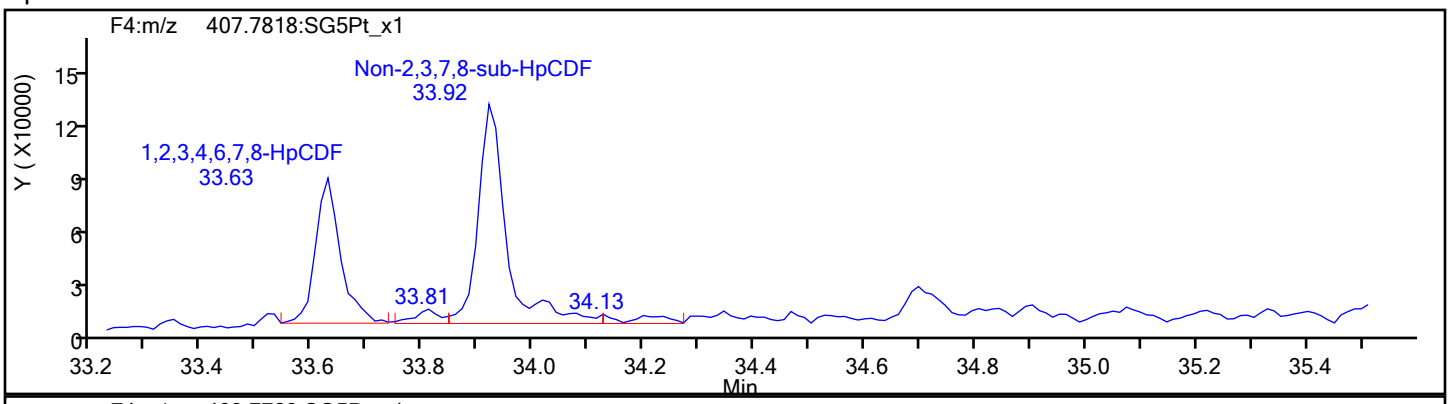

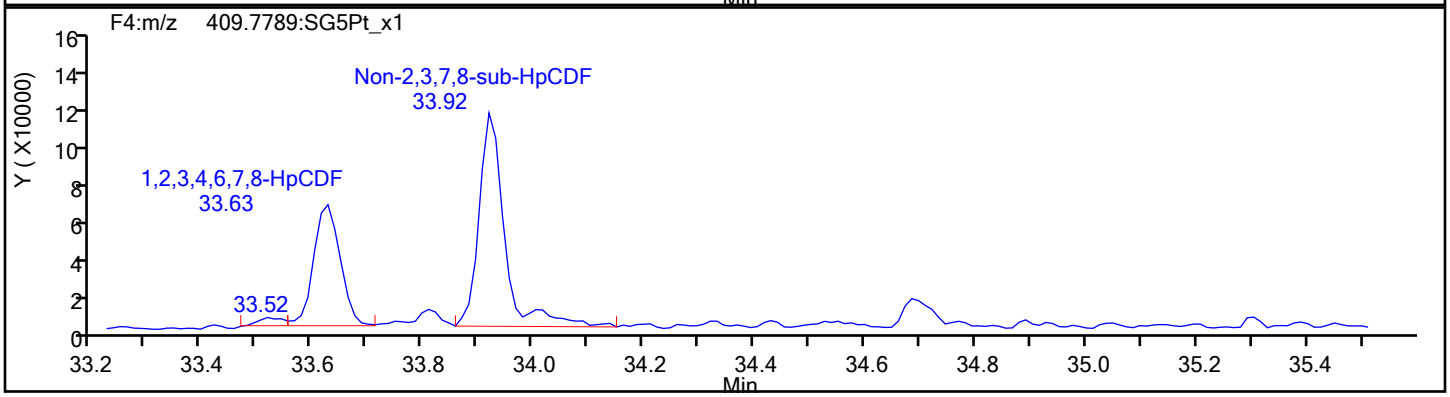

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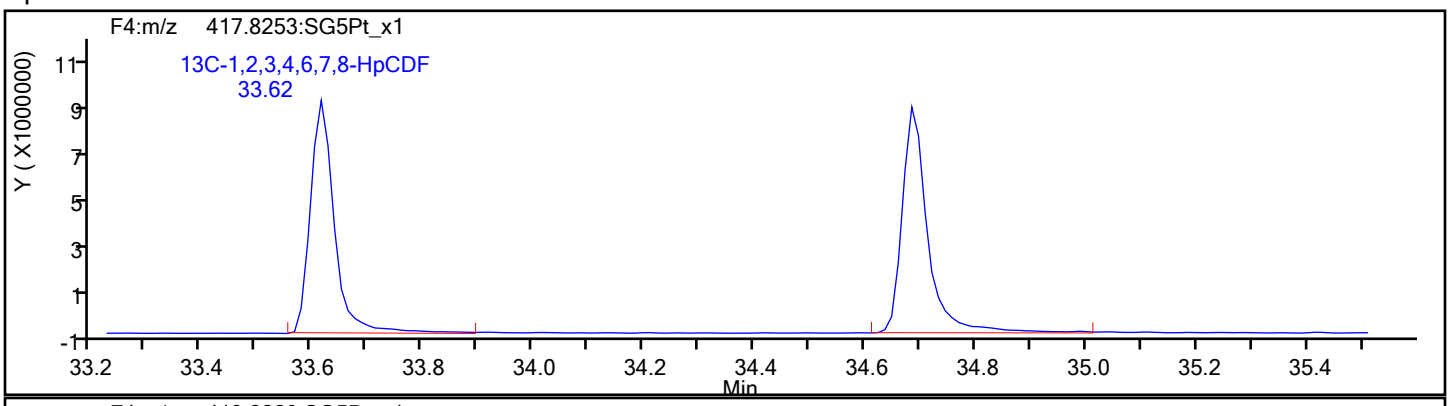

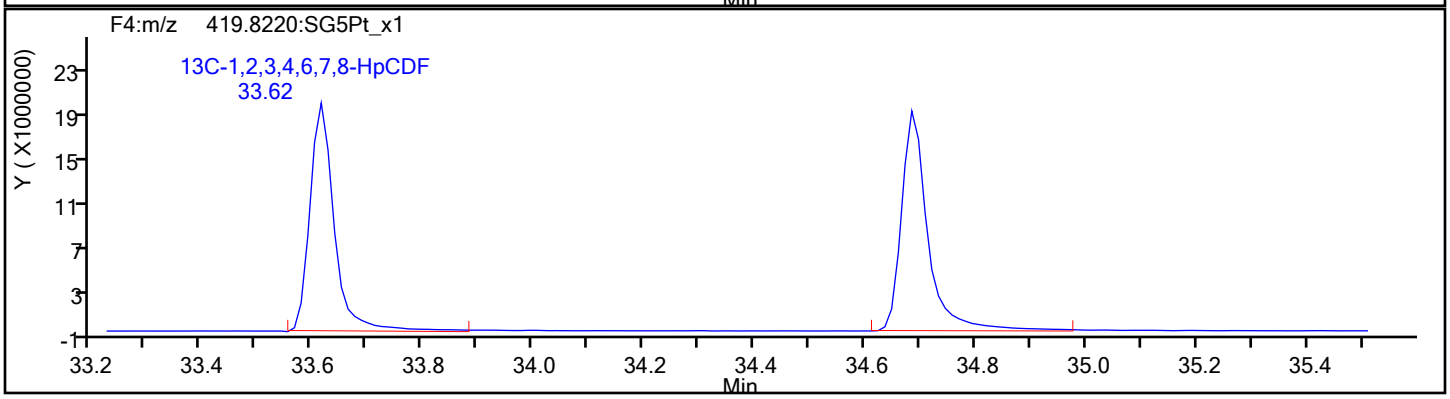

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Eurofins TestAmerica, Sacramento

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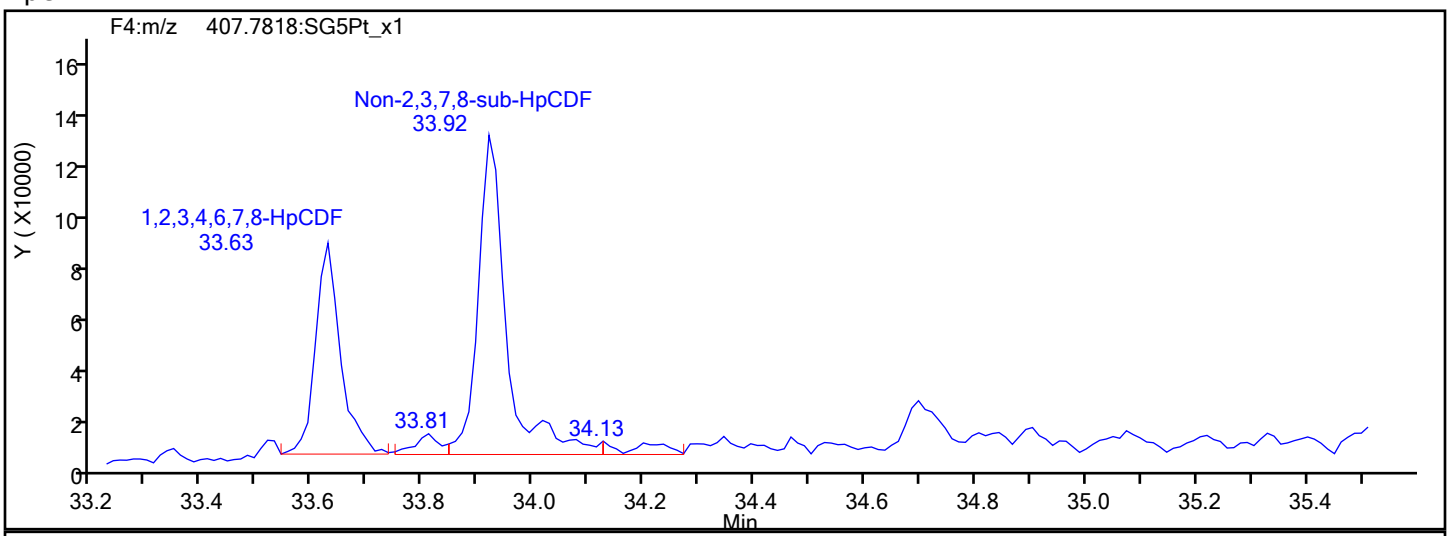
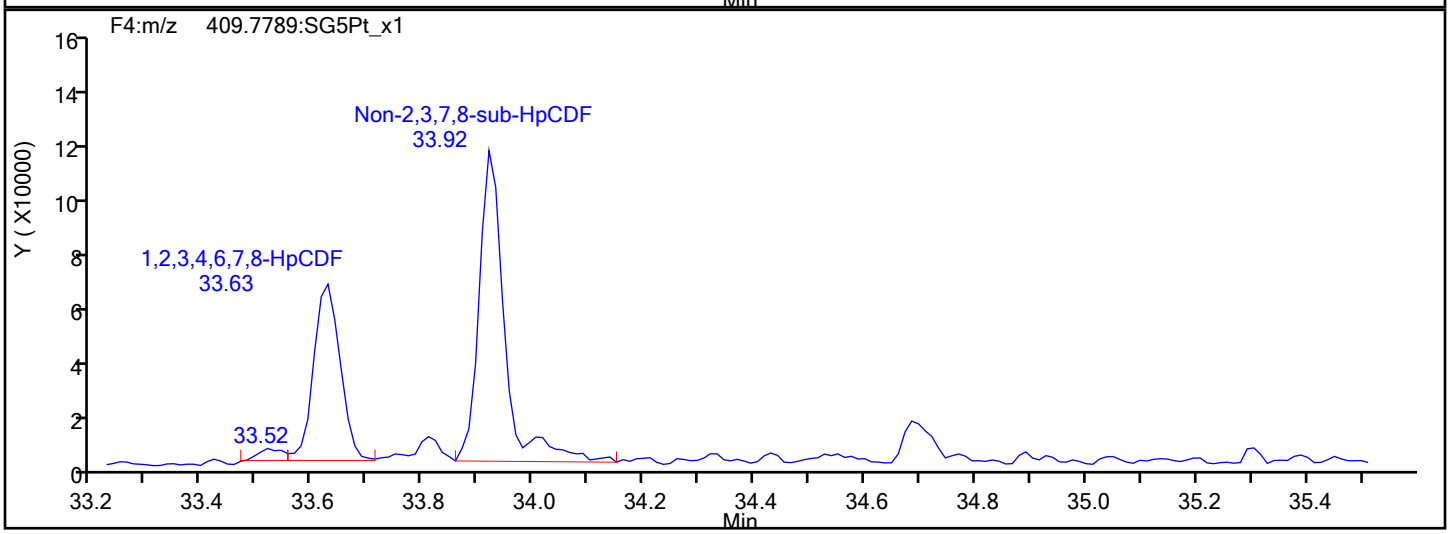
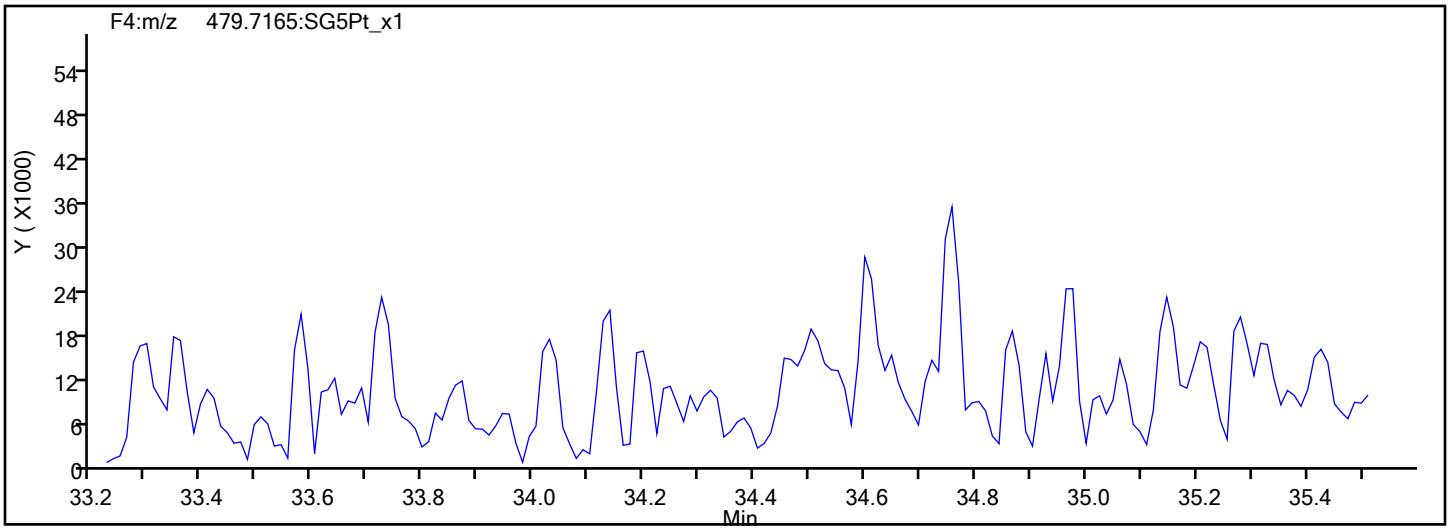




HpCDF Interference Mass



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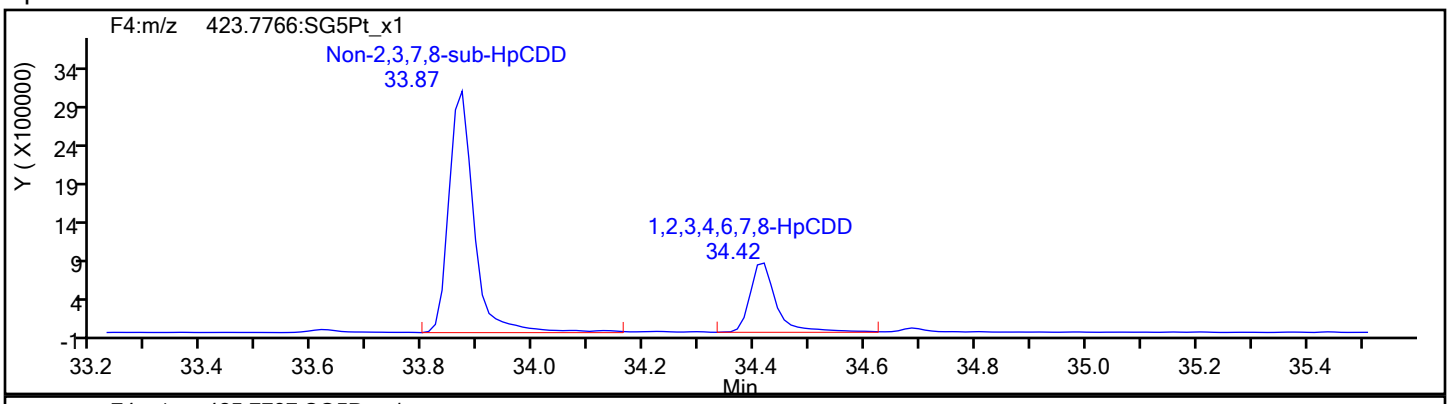
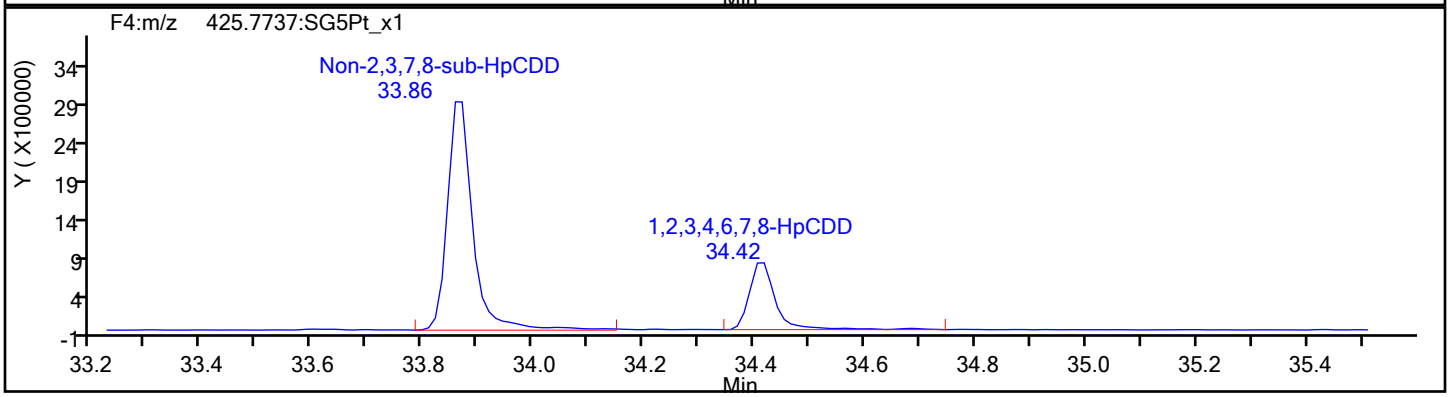
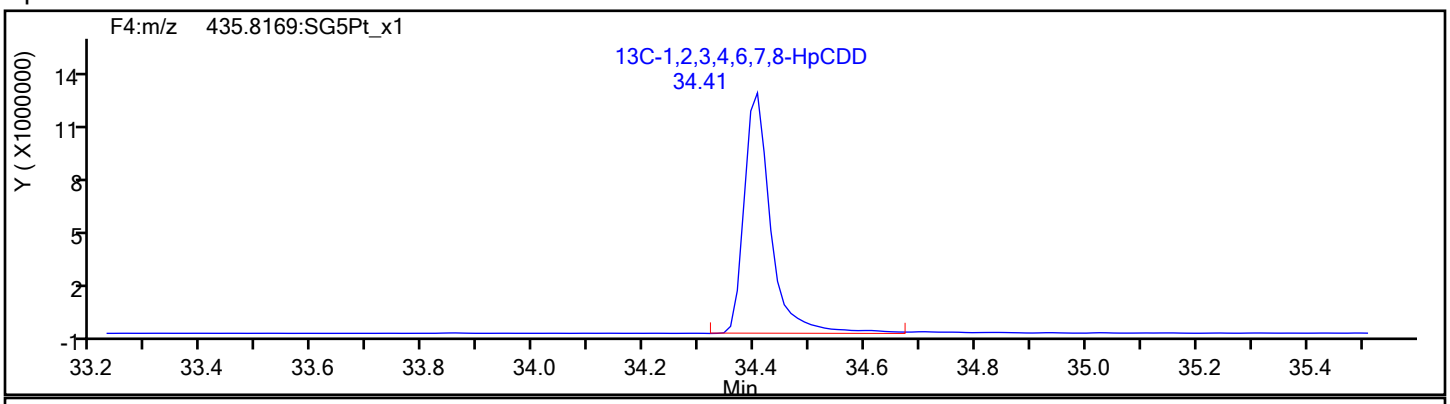
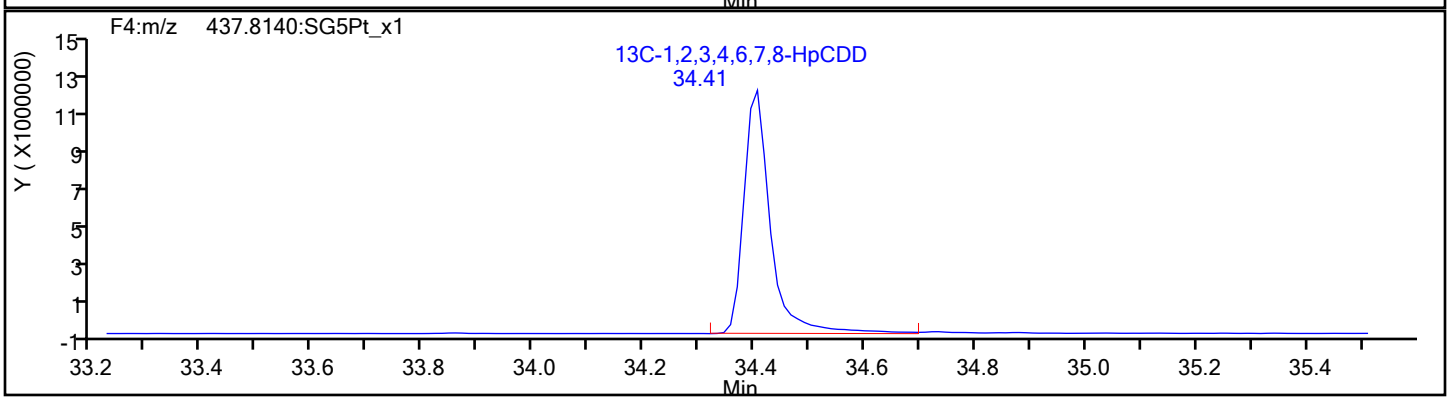




HpCDD Standards





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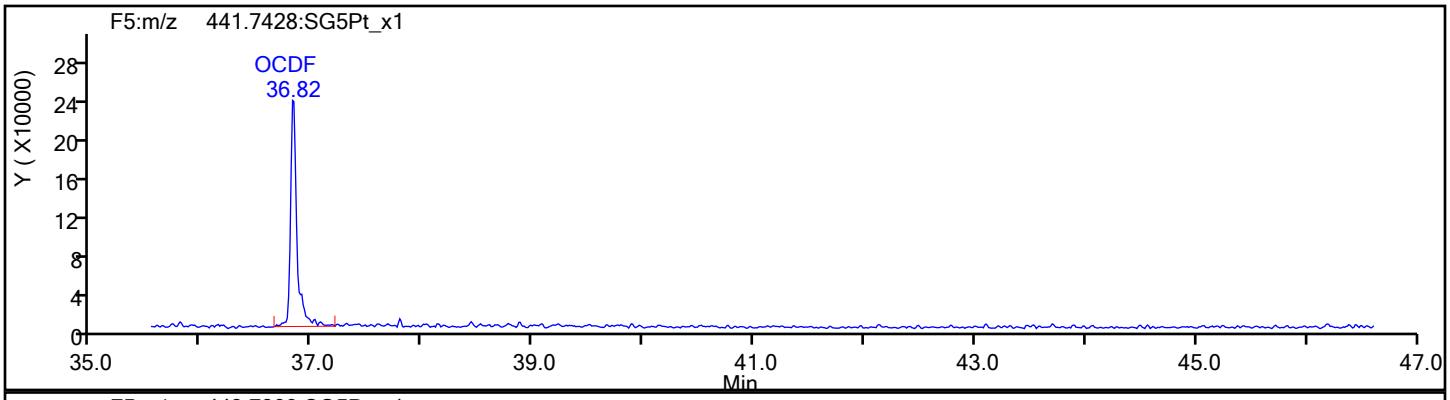

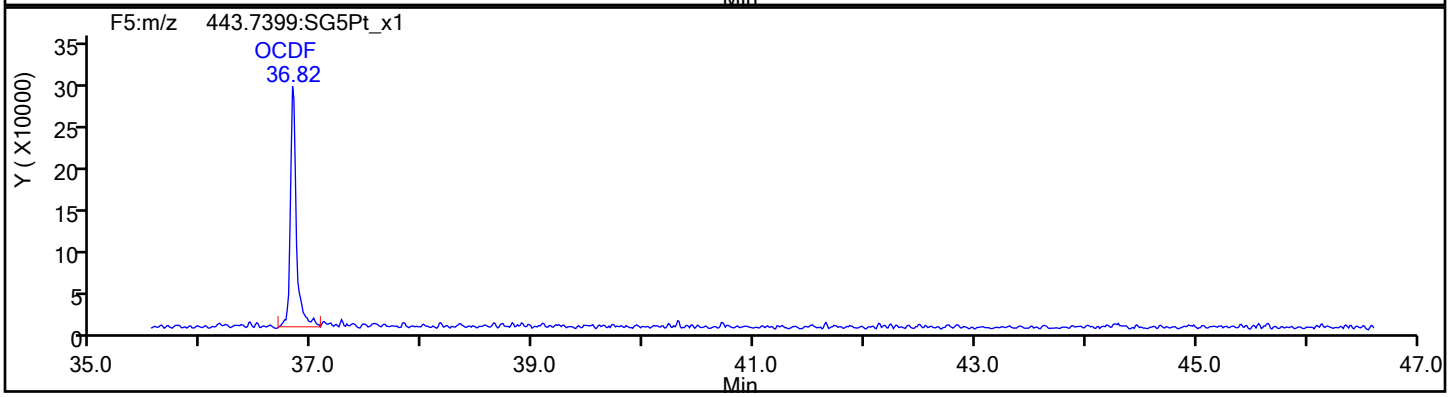

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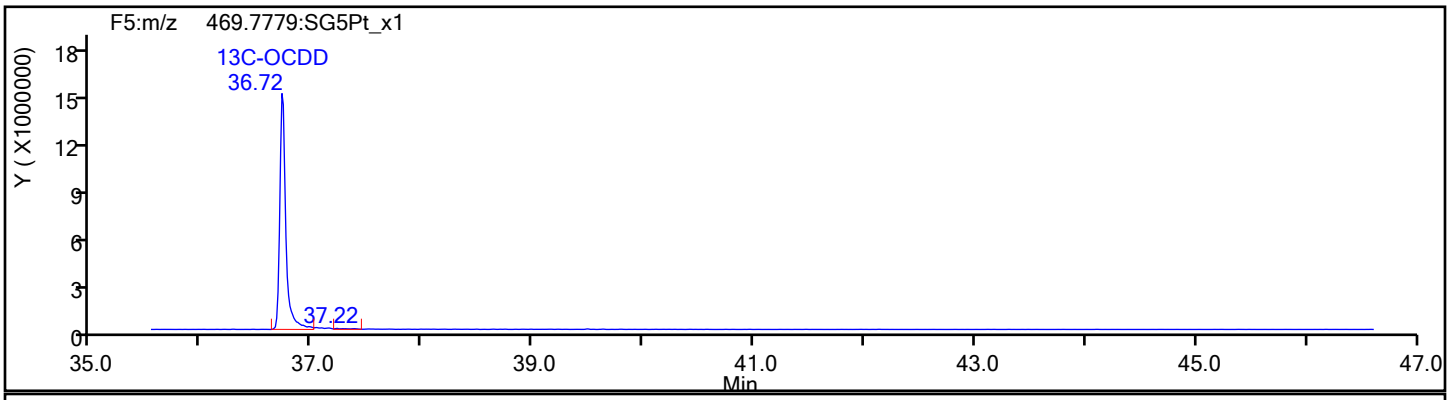

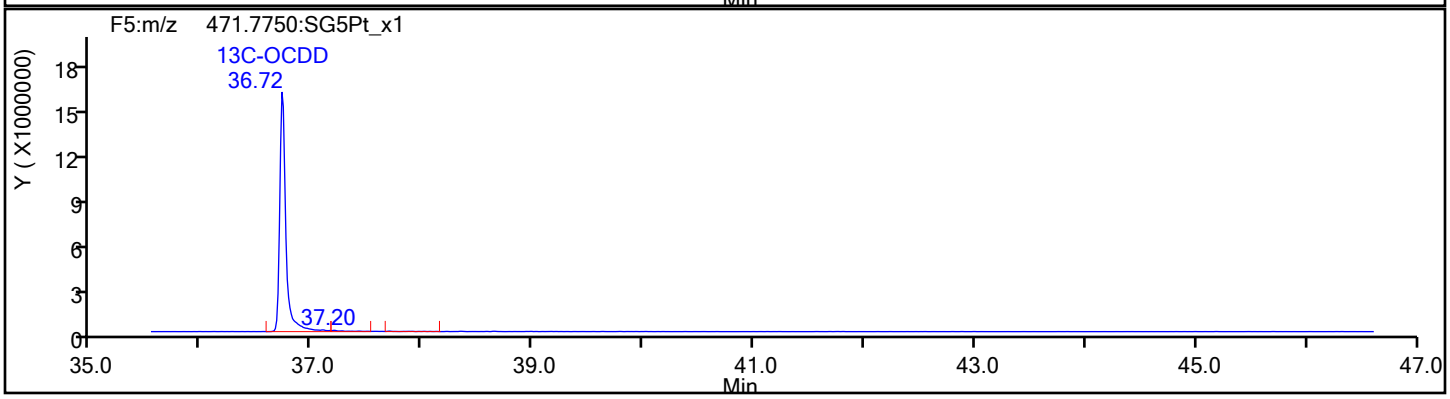

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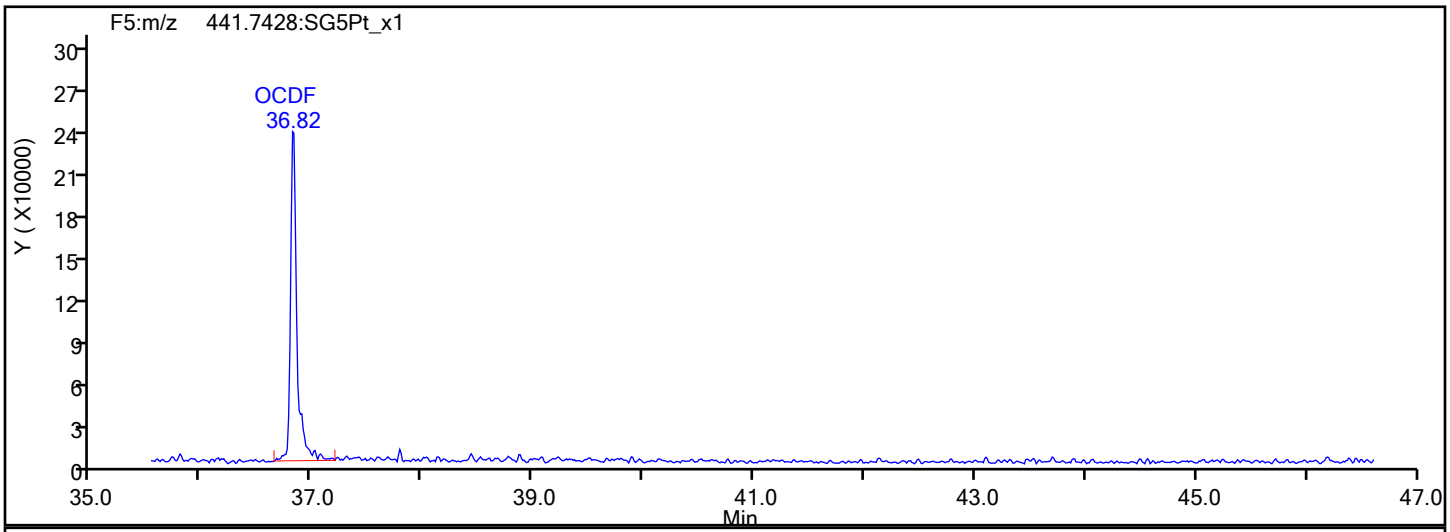
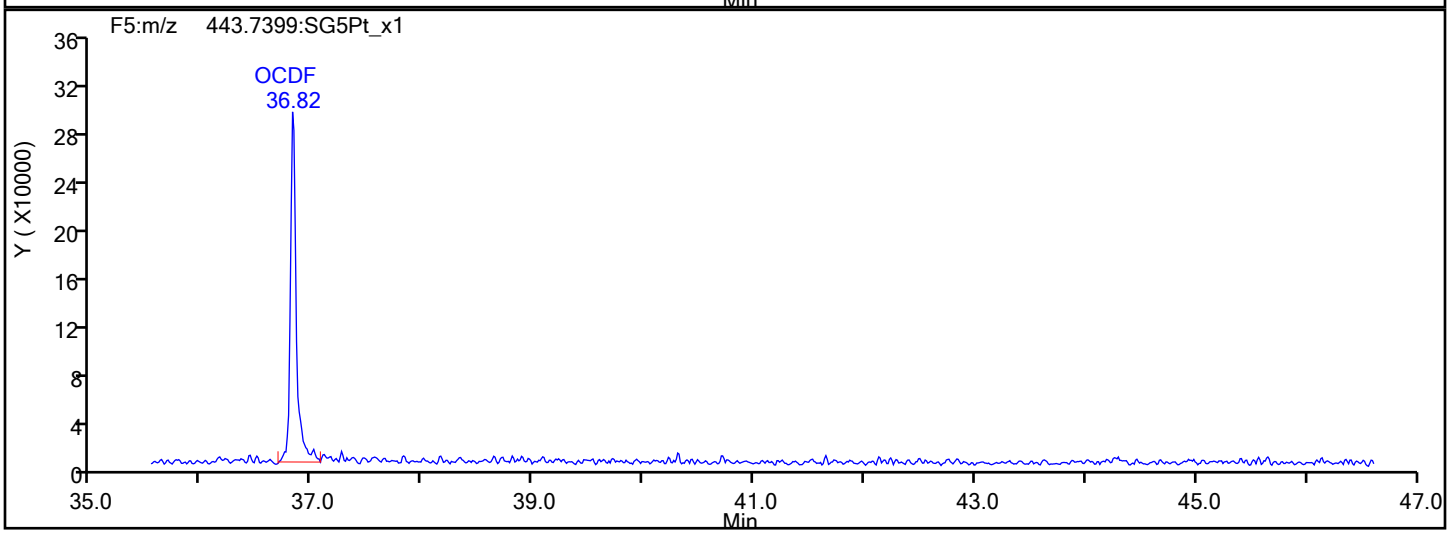
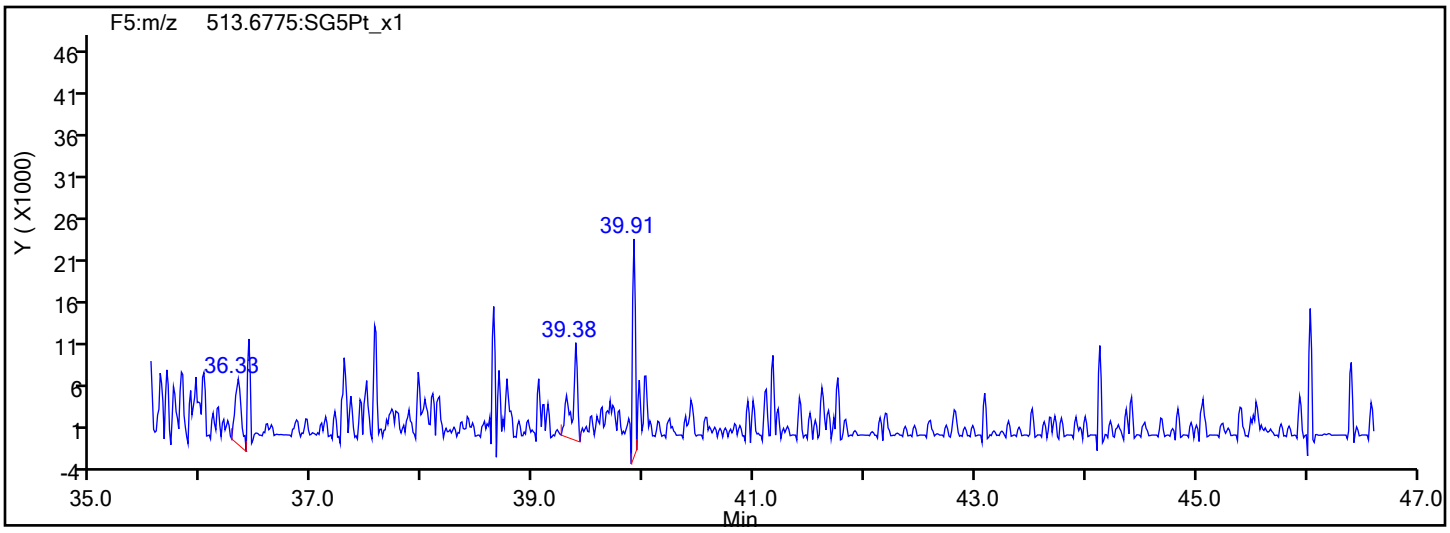
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

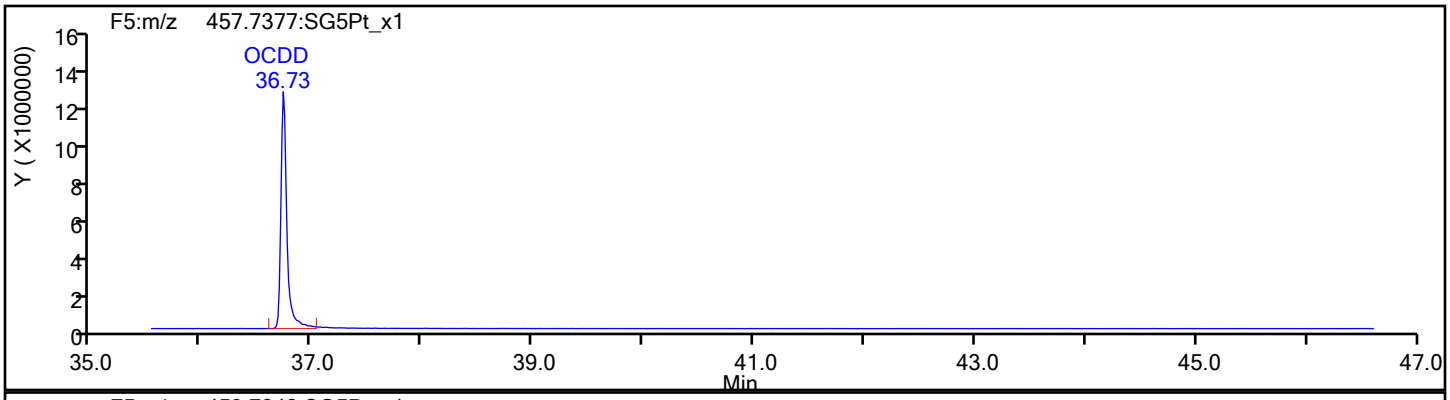


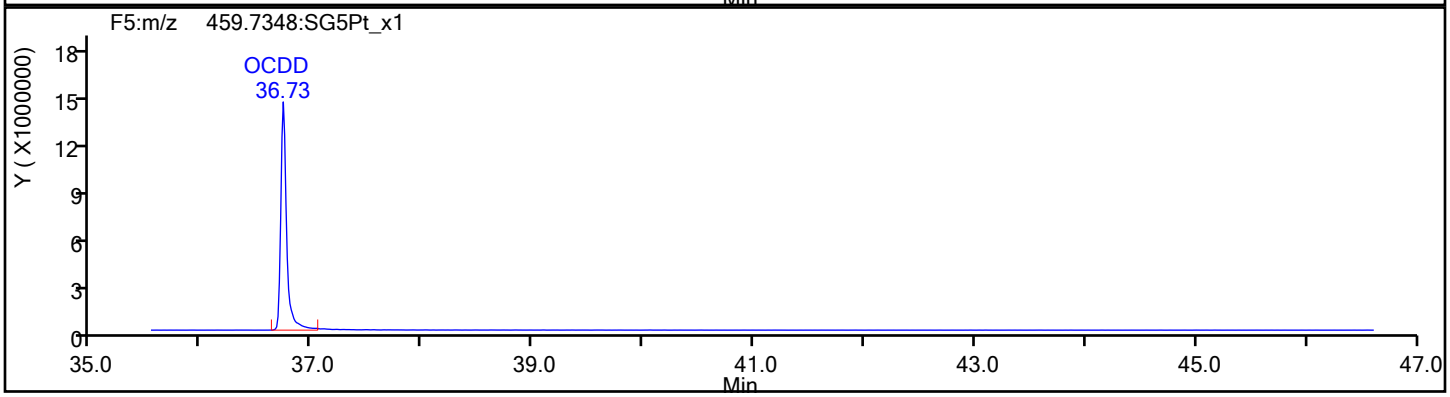
Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

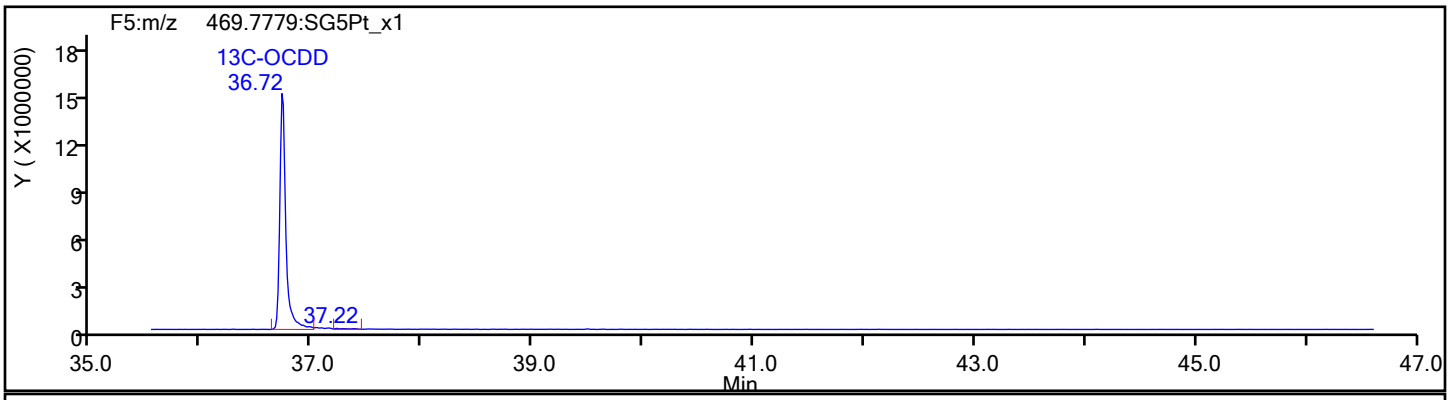
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm

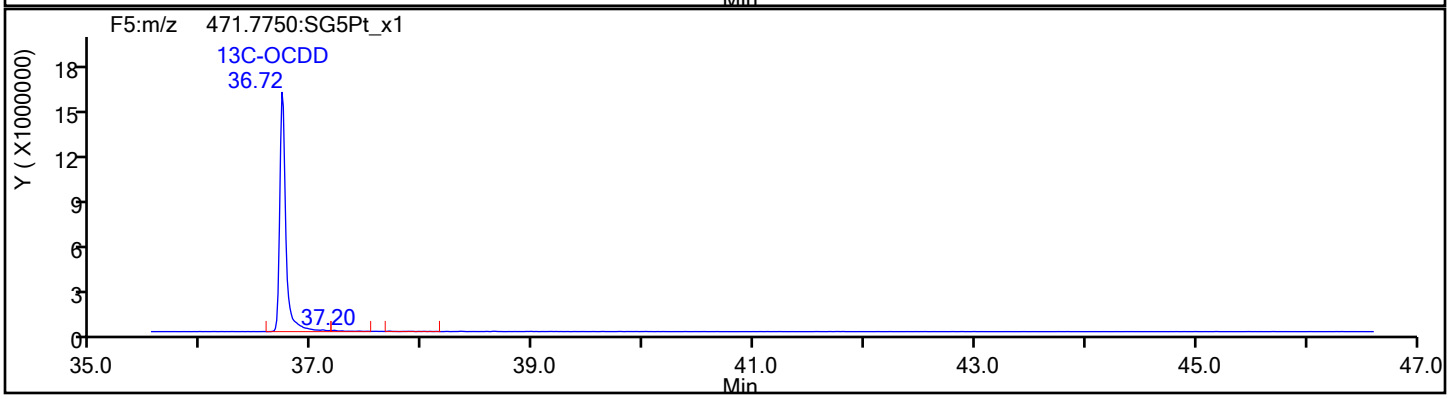
OCDD





OCDD Standards

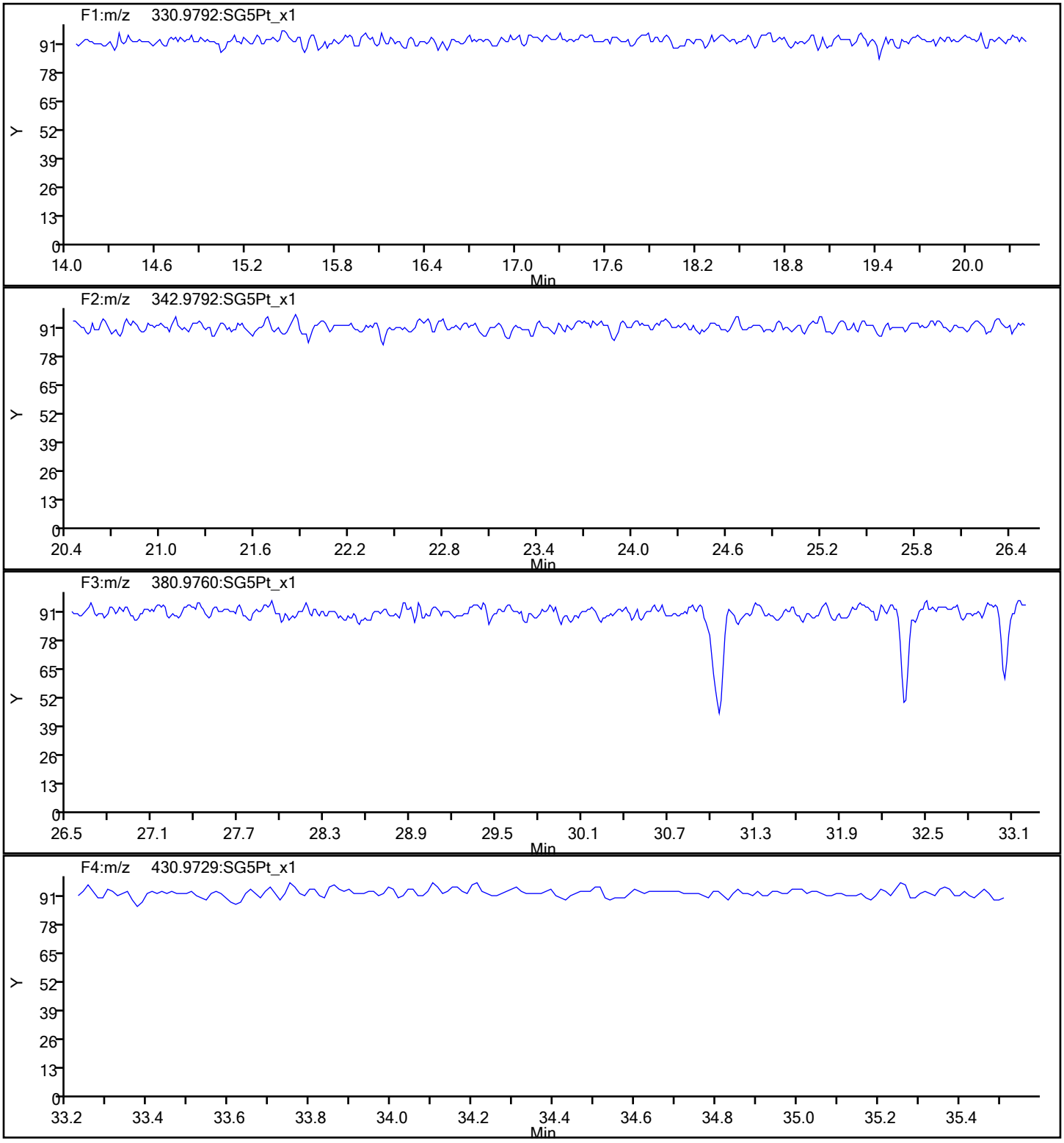




Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

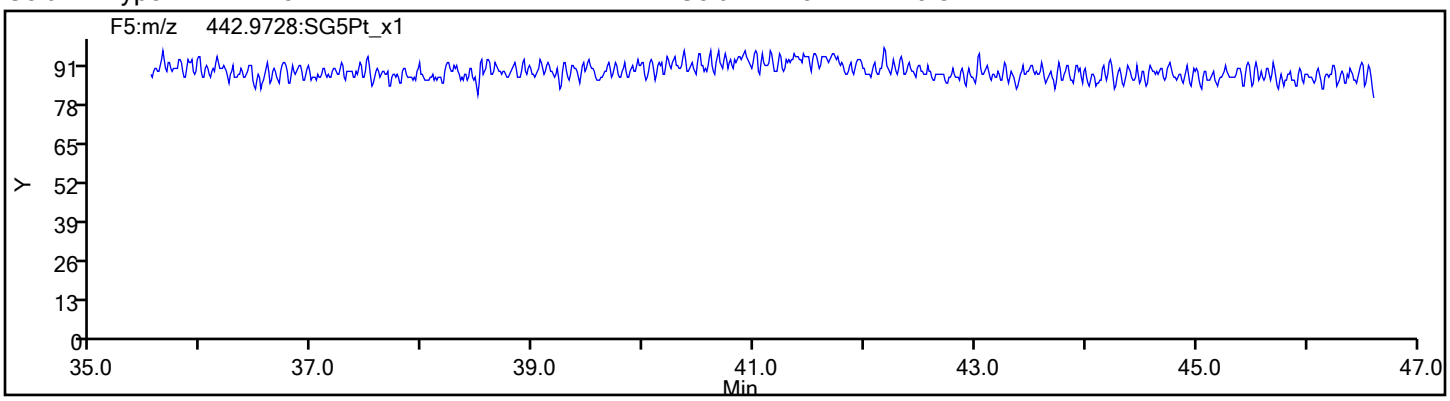
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:31:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_11.d		
Injection Date:	19-Dec-2019 18:56:35	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346752	Sample Line#:	11
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(0-1) RA Lab Sample ID: 320-56953-5 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_010.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.09(g) Date Analyzed: 12/19/2019 21:57

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 58.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	43		2.4	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	67		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	109		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:57:56 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-5-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:25

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.368	219199251	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.548	195255093	0.77	1.3379	66.6	66.6	0.1612	0.1612	66.58	
2,3,7,8-TCDF	16.561	14757088	0.81	0.8389	9.009	9.009	0.0627	0.0627		
D 13C-2,3,7,8-TCDD	15.121	126651270	0.78	0.9388	61.5	61.5	0.5322	0.5322	61.54	
2,3,7,8-TCDD	15.134	3987690	0.73	1.1538	2.729	2.729	0.0670	0.0670		
$ 37Cl4-2,3,7,8-TCDD	15.134	113256297		1.1816	43.7	43.7	0.0386	0.0386	109	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d
Lims ID: 320-56953-A-5-A
Client ID: 11187072-120919-BN-SJSSA04(0-1)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:57:56 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-5-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:25

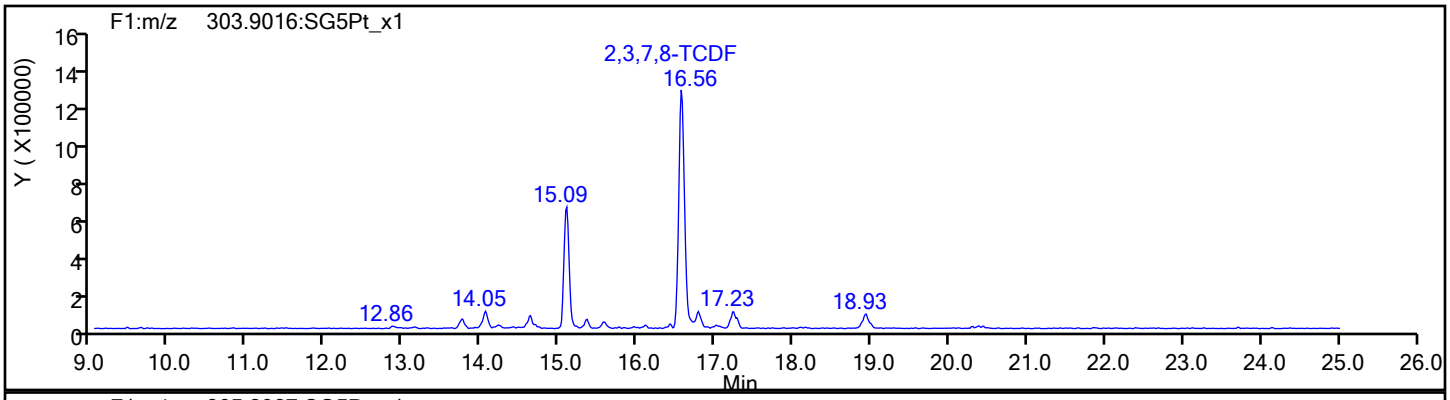
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.368	15.376	-1		95766343	21299104	49737	124342	428		
333.9339	15.368	15.376	-1		123432908	27459852	47713	119282	576	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.548	16.556	-1	1.077	85100005	16817405	22655	56637	742		
317.9389	16.548	16.556	-1	1.077	110155088	21775582	19412	48530	1122	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.561	16.570	-1	1.001	6598703	1277559	2873	7182	445		
305.8987	16.561	16.570	-1	1.001	8158385	1586293	5245	13112	302	0.81(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.121	15.116	0	0.984	55584023	12429205	49737	124342	250		
333.9339	15.121	15.116	0	0.984	71067247	15503820	47713	119282	325	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.134	15.143	-1	1.001	1688818	344711	5350	13375	64		
321.8936	15.148	15.143	0	1.002	2298872	462115	3284	8210	141	0.73(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.134	15.143	-1	0.985	113256297	24599232	8885	22212	2769		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

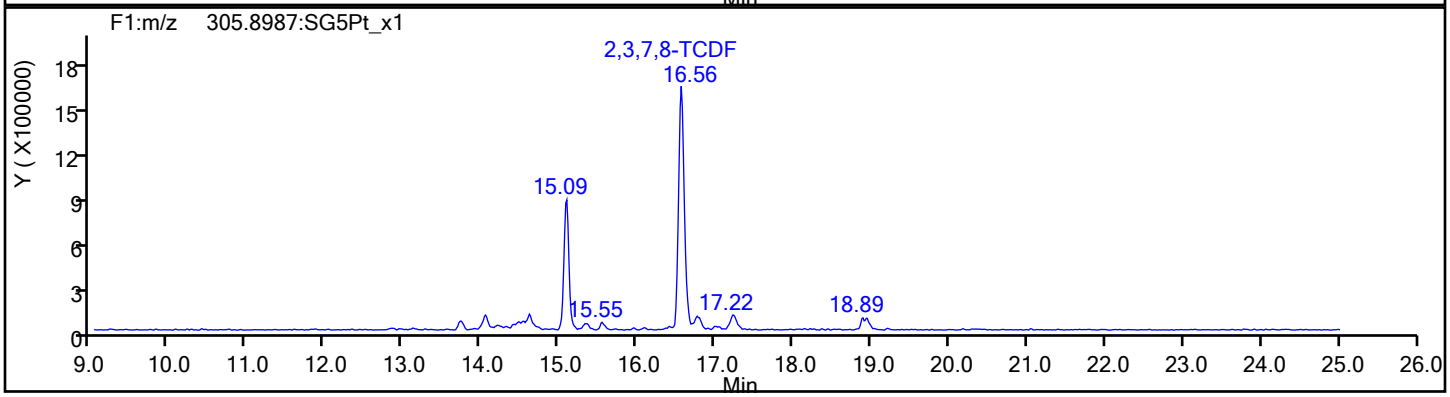
Report Date: 20-Dec-2019 14:38:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

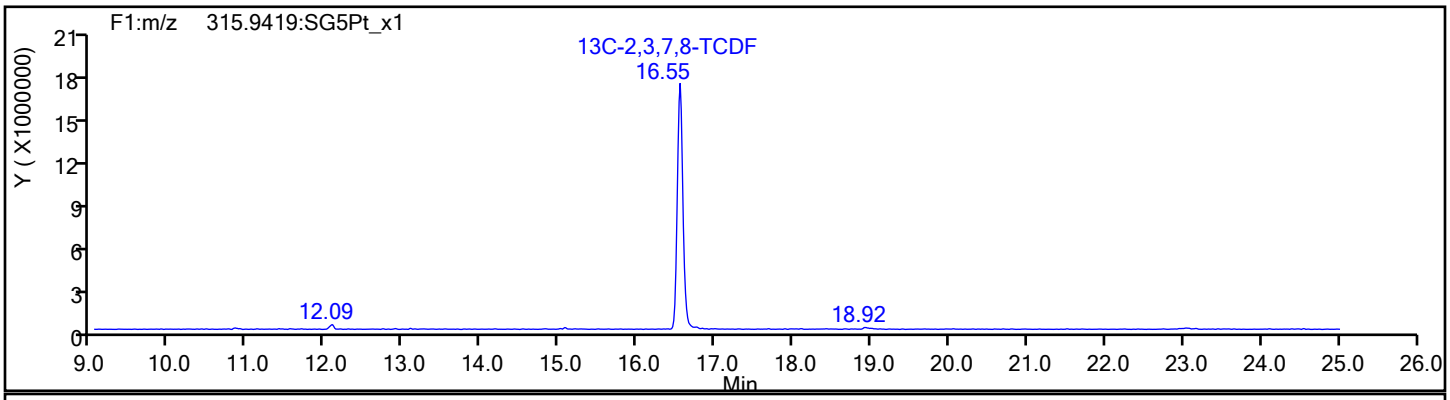
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d		
Injection Date:	19-Dec-2019 21:57:56	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346764	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

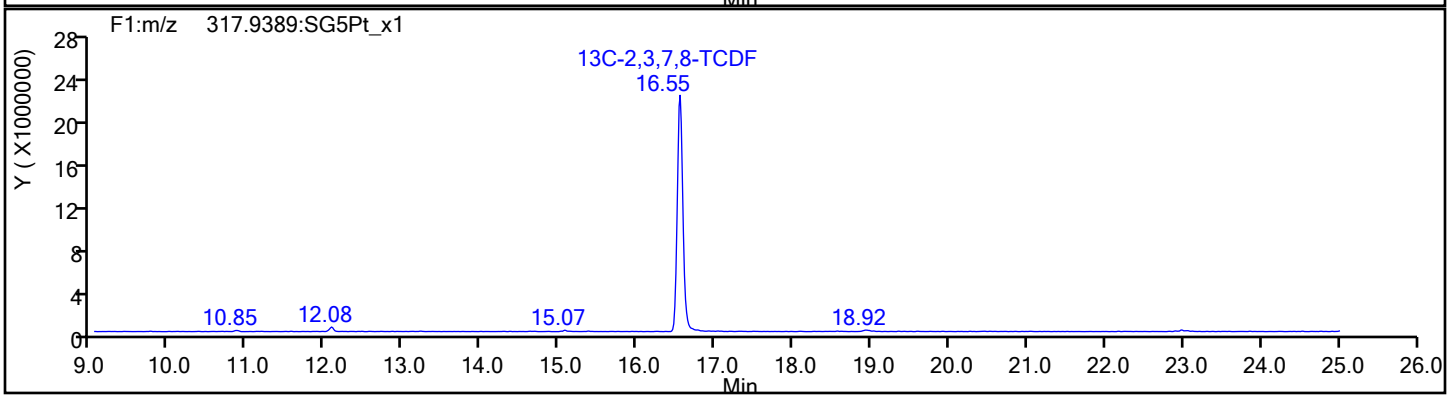
TCDF





TCDF Standards



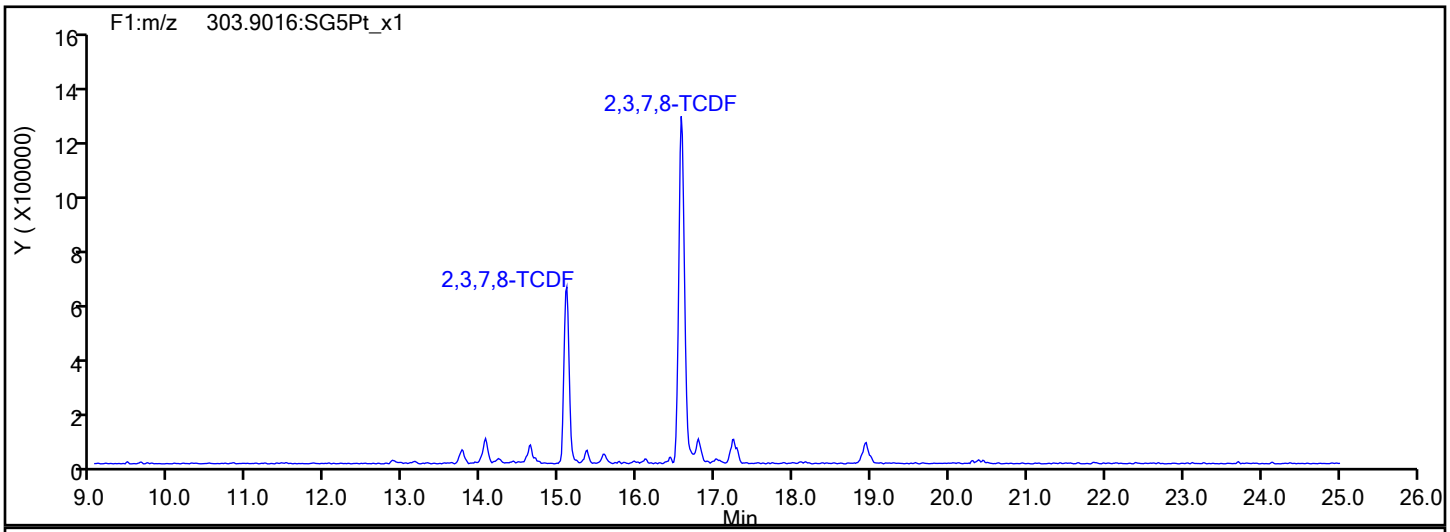


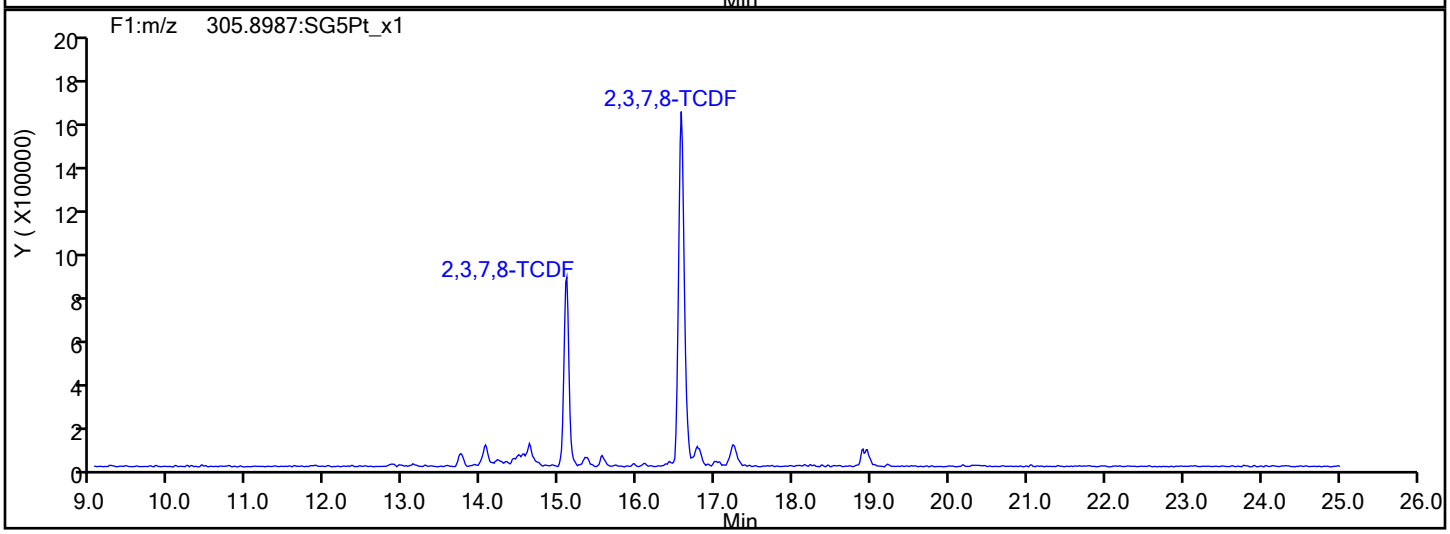
Report Date: 20-Dec-2019 14:38:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

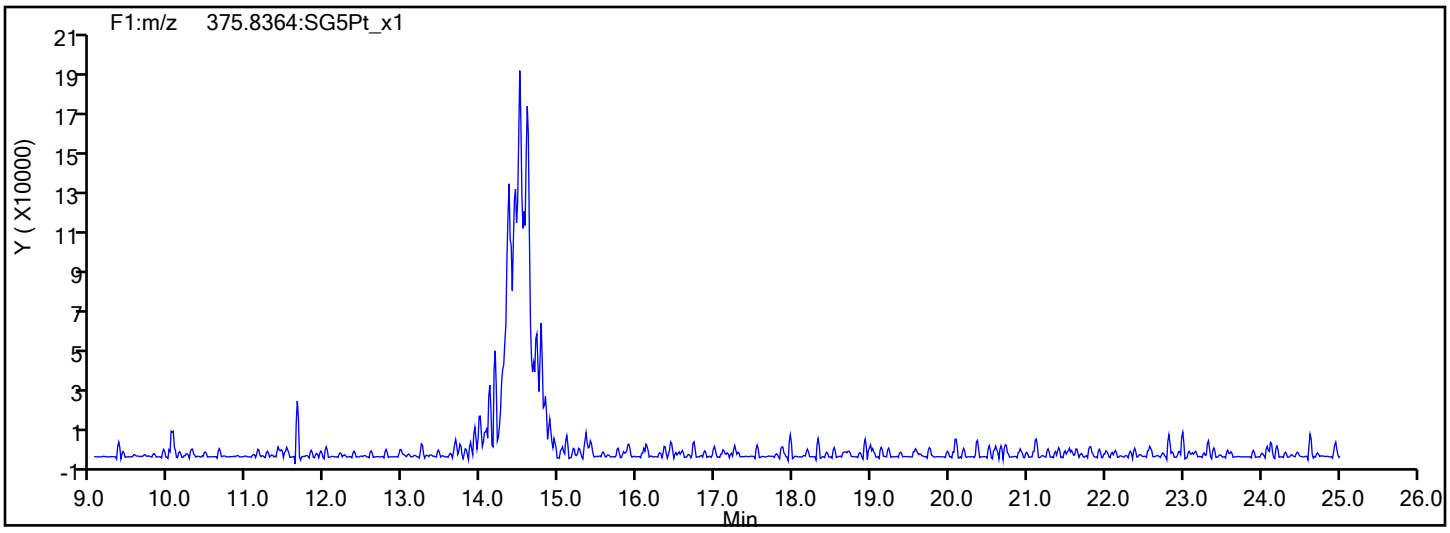
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d		
Injection Date:	19-Dec-2019 21:57:56	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346764	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

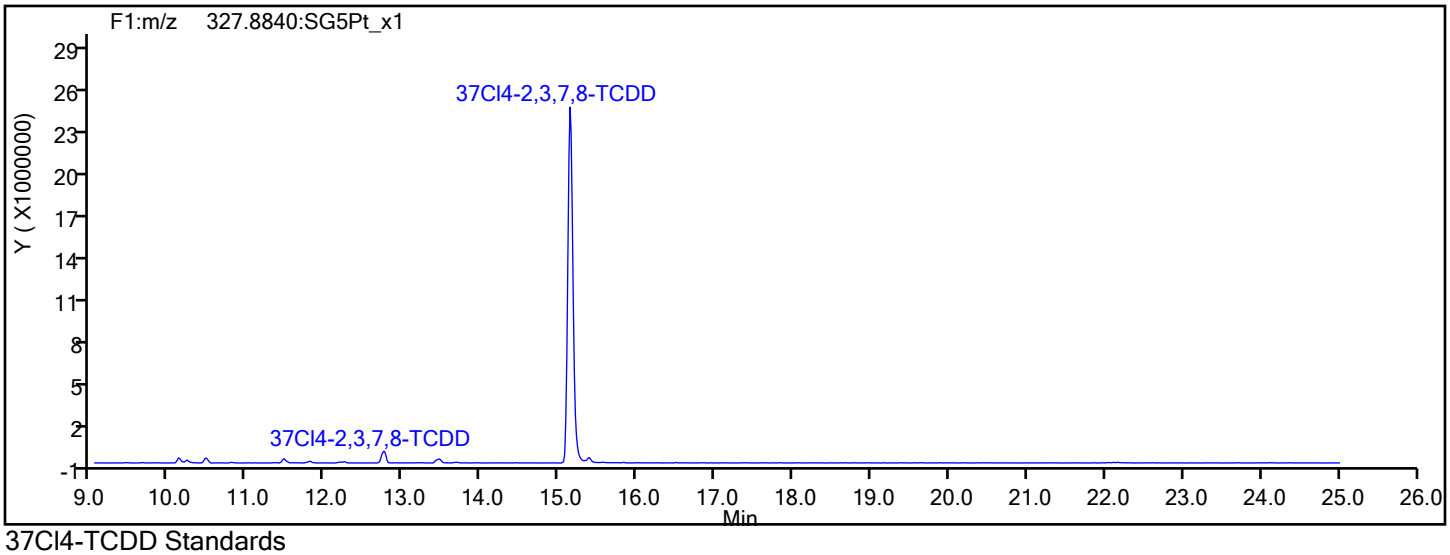


Report Date: 20-Dec-2019 14:38:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

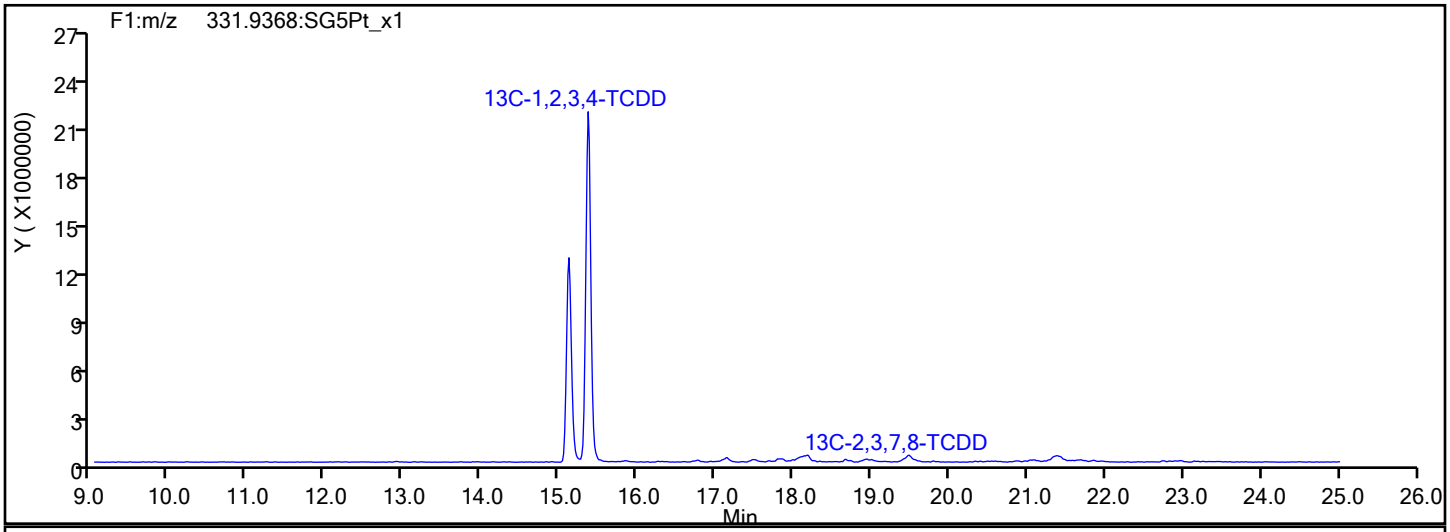
Eurofins TestAmerica, Sacramento

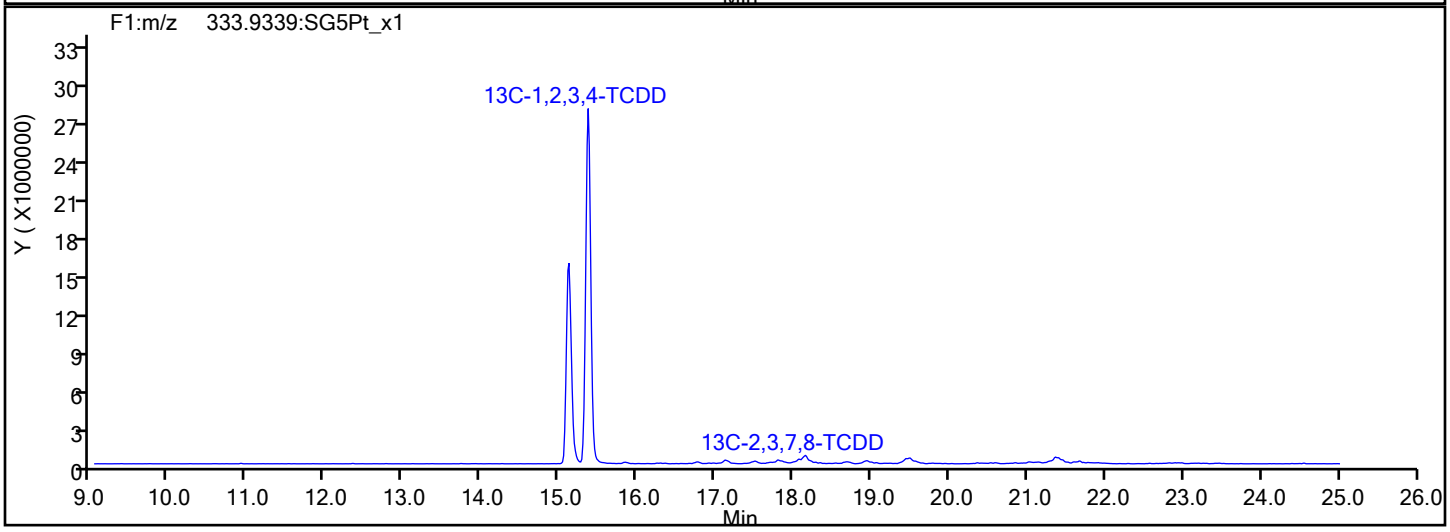
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d		
Injection Date:	19-Dec-2019 21:57:56	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346764	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

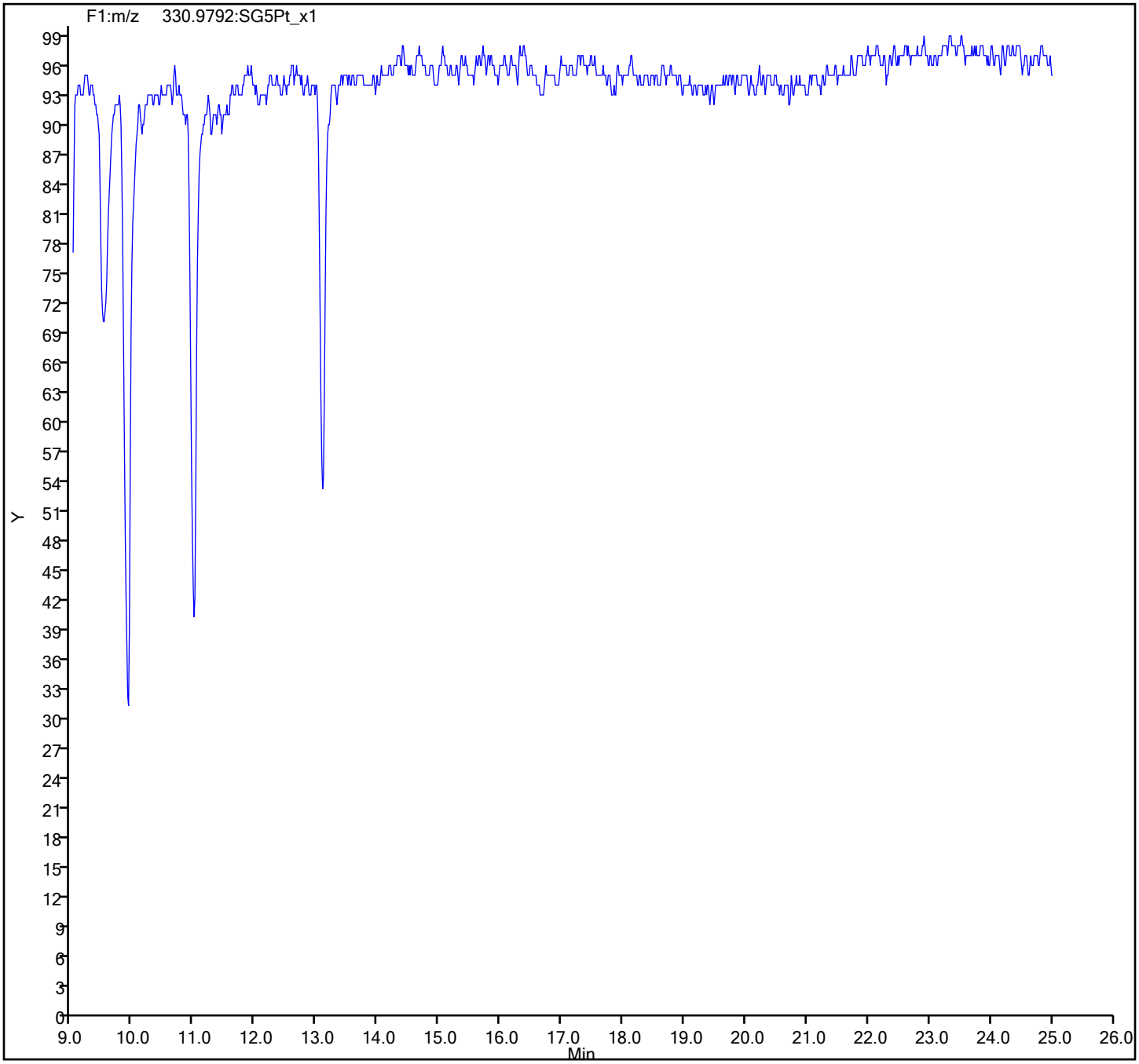




Report Date: 20-Dec-2019 14:38:16 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_010.d		
Injection Date:	19-Dec-2019 21:57:56	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(0-1)		
Worklist#:	346764	Sample Line#:	10
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Matrix: Sediment Lab File ID: 19DE193D5_12.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.10(g) Date Analyzed: 12/19/2019 19:44

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 49.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	13		1.9	0.41
40321-76-4	1,2,3,7,8-PeCDD	ND		9.7	0.71
57117-41-6	1,2,3,7,8-PeCDF	1.6	J q	9.7	0.46
57117-31-4	2,3,4,7,8-PeCDF	1.0	J	9.7	0.48
39227-28-6	1,2,3,4,7,8-HxCDD	0.98	J q	9.7	0.47
57653-85-7	1,2,3,6,7,8-HxCDD	1.5	J q	9.7	0.46
19408-74-3	1,2,3,7,8,9-HxCDD	2.3	J	9.7	0.41
70648-26-9	1,2,3,4,7,8-HxCDF	1.8	J q	9.7	0.39
57117-44-9	1,2,3,6,7,8-HxCDF	1.2	J	9.7	0.40
72918-21-9	1,2,3,7,8,9-HxCDF	ND		9.7	0.31
60851-34-5	2,3,4,6,7,8-HxCDF	ND		9.7	0.31
35822-46-9	1,2,3,4,6,7,8-HpCDD	57	B	9.7	1.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	4.2	J q B	9.7	0.44
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		9.7	0.56
3268-87-9	OCDD	2100	B	19	1.9
39001-02-0	OCDF	35	B	19	0.59
41903-57-5	Total TCDD	19	q	1.9	0.41
30402-14-3	Total TCDF	89	q	1.9	0.57
36088-22-9	Total PeCDD	5.3	J q	9.7	0.71
30402-15-4	Total PeCDF	5.4	J q	9.7	0.47
34465-46-8	Total HxCDD	40	q	9.7	0.45
55684-94-1	Total HxCDF	6.4	J q	9.7	0.35
37871-00-4	Total HpCDD	220	B	9.7	1.5
38998-75-3	Total HpCDF	12	q B	9.7	0.50

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) Lab Sample ID: 320-56953-6

Matrix: Sediment Lab File ID: 19DE193D5_12.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.10(g) Date Analyzed: 12/19/2019 19:44

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 49.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	65		25-164
89059-46-1	13C-2,3,7,8-TCDF	64		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	62		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	61		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	66		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	68		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	65		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	61		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	65		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	60		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	68		26-138
114423-97-1	13C-OCDD	64		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	102		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 19:44:08 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-6-A 320-56953-A-6-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:56:22 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 12:56:22

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.581	114604919	0.80	2.2E+06	100.0	100.0				a
D 13C-2,3,7,8-TCDF	17.083	104641840	0.80	1.4157	64.5	64.5	0.1996	0.1996	64.49	
2,3,7,8-TCDF	17.098	13179751	0.81	0.9502	13.3	13.3	0.1470	0.1470		
A Non-2,3,7,8-sub-TCDF	16.811	9585140	0.77	0.9502	9.759	9.640	0.1470	5.759		RQa
S Total TCDF					23.0	22.9	0.1470	0.1470		RQ
D 13C-2,3,7,8-TCDD	17.778	72929931	0.81	0.9751	65.3	65.3	0.3016	0.3016	65.26	
2,3,7,8-TCDD	17.793	2527864	0.88	1.0477	3.308	3.308	0.1044	0.1044		M
$ 37Cl4-2,3,7,8-TCDD	17.793	62785478		1.3480	40.6	40.6	0.1476	0.1476	102	
A Non-2,3,7,8-sub-TCDD	17.249	1192560	0.77	1.0477	1.724	1.561	0.1044	0.8899		RQMa
S Total TCDD					5.032	4.869	0.1044	0.1044		RQ
D 13C-1,2,3,7,8-PeCDF	22.032	82285944	1.55	1.1786	60.9	60.9	0.2349	0.2349	60.92	
1,2,3,7,8-PeCDF	22.059	357040	1.55	1.0302	0.4718	0.4212	0.1187	0.1187		RQM
D 13C-2,3,4,7,8-PeCDF	23.355	85523009	1.57	1.1308	66.0	66.0	0.2449	0.2449	65.99	
2,3,4,7,8-PeCDF	23.396	234565	1.67	1.0410	0.2635	0.2635	0.1223	0.1223		M
A F1 PeCDFs	19.774	209500	1.50	1.0356	0.2411	0.2411	0.1022	0.2411		
A Non-2,3,7,8-sub-PeCDF	22.858	394674	1.44	1.0356	0.4542	0.4542	0.1204	0.4542		M
S Total PeCDF					1.431	1.380	0.1205	0.1205		RQ
D 13C-1,2,3,7,8-PeCDD	24.050	53446945	1.55	0.7572	61.6	61.6	0.1482	0.1482	61.59	
1,2,3,7,8-PeCDD	24.077						0.1827	0.1827		
A Non-2,3,7,8-sub-PeCDD	22.973	788700	1.55	1.0855	1.625	1.359	0.1827	0.8273		RQM
S Total PeCDD					1.625	1.359	0.1827	0.1827		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.193	72671335	0.52	1.1043	67.9	67.9	0.3178	0.3178	67.91	
1,2,3,4,7,8-HxCDF	30.233	380265	1.24	1.1472	0.5195	0.4561	0.1010	0.1010		RQM
D 13C-1,2,3,6,7,8-HxCDF	30.406	72448703	0.54	1.1470	65.2	65.2	0.3060	0.3060	65.18	
1,2,3,6,7,8-HxCDF	30.420	248862	1.24	1.1450	0.3000	0.3000	0.1024	0.1024		
D 13C-2,3,4,6,7,8-HxCDF	31.312	67539960	0.54	1.0769	64.7	64.7	0.3259	0.3259	64.72	
2,3,4,6,7,8-HxCDF	31.325						0.0793	0.0793		
D 13C-1,2,3,7,8,9-HxCDF	32.151	60239983	0.51	1.0115	61.5	61.5	0.3470	0.3470	61.46	
1,2,3,7,8,9-HxCDF	32.164						0.0800	0.0800		
A Non-2,3,7,8-sub-HxCDF	29.880	697827	1.26	1.1591	0.8824	0.8824	0.0894	0.4899		M

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					1.702	1.639	0.0907	0.0907		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.964	96905551	1.25	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	51308406	1.28	0.7962	66.5	66.5	0.3608	0.3608	66.50	
1,2,3,4,7,8-HxCDD	31.525	140822	1.24	1.0934	0.2871	0.2510	0.1218	0.1218		RQM
D 13C-1,2,3,6,7,8-HxCDD	31.618	59154503	1.29	0.8720	70.0	70.0	0.3294	0.3294	70.00	
1,2,3,6,7,8-HxCDD	31.631	235603	1.24	1.0429	0.4246	0.3819	0.1191	0.1191		RQMa
1,2,3,7,8,9-HxCDD	31.977	391862	1.24	1.2073	0.5877	0.5877	0.1064	0.1064		M
A Non-2,3,7,8-sub-HxCDD	30.519	5550153	1.24	1.1145	9.016	9.016	0.1153	6.691		
S Total HxCDD					10.3	10.2	0.1158	0.1158		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	43792139	0.42	0.7577	59.6	59.6	1.118	1.118	59.64	
1,2,3,4,6,7,8-HpCDF	33.628	694619	1.04	1.4804	1.182	1.071	0.1131	0.1131		RQM
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	45476311	0.44	0.6941	67.6	67.6	1.220	1.220	67.61	
1,2,3,4,7,8,9-HpCDF	34.709						0.1447	0.1447		
A Non-2,3,7,8-sub-HpCDF	34.169	1230838	1.04	1.3868	2.034	1.988	0.1275	1.746		RQMa
S Total HpCDF					3.216	3.060	0.1289	0.1289		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	44197021	1.07	0.7058	64.6	64.6	0.3675	0.3675	64.62	
1,2,3,4,6,7,8-HpCDD	34.418	6814501	0.98	1.0535	14.6	14.6	0.3975	0.3975		
A Non-2,3,7,8-sub-HpCDD	34.144	19596288	1.05	1.0535	42.1	42.1	0.3975	42.1		
S Total HpCDD					56.7	56.7	0.3975	0.3975		
D 13C-OCDD	36.734	57249050	0.88	0.4603	128.4	128.4	0.3197	0.3197	64.18	
OCDF	36.830	3612013	0.87	1.3945	9.049	9.049	0.1518	0.1518		
OCDD	36.734	171880720	0.88	1.1362	528.5	528.5	0.4813	0.4813		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 19:44:08 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-6-A 320-56953-A-6-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 12:56:22 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 12:56:22

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											a
331.9368	17.581	17.612	-2		51097666	12504473	23717	59292	527		a
333.9339	17.581	17.612	-2		63507253	15454805	9169	22922	1686	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.083	17.113	-2	0.972	46346957	11542145	16353	40882	706		
317.9389	17.083	17.113	-2	0.972	58294883	14178065	15248	38120	930	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.098	17.128	-2	1.001	5886084	1331876	6331	15827	210		
305.8987	17.098	17.128	-2	1.001	7293667	1719598	8041	20102	214	0.81(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQa
303.9016	15.707	16.811	-66	0.919	175566	45427	6331	15827	7		
305.8987	15.707	16.811	-66	0.919	290818	74016	8041	20102	9	0.60(0.65-0.89)	
	Empc Correction				228007	58996	8041	20102	7		
303.9016	15.994	16.811	-49	0.936	271006	57172	6331	15827	9		
305.8987	15.979	16.811	-50	0.935	310668	69273	8041	20102	9	0.87(0.65-0.89)	
303.9016	16.206	16.811	-36	0.949	189106	46548	6331	15827	7		
305.8987	16.221	16.811	-35	0.950	235236	62776	8041	20102	8	0.80(0.65-0.89)	
303.9016	16.448	16.811	-22	0.963	259653	50044	6331	15827	8		
305.8987	16.448	16.811	-22	0.963	356642	61765	8041	20102	8	0.73(0.65-0.89)	
303.9016	16.720	16.811	-5	0.979	2582589	643775	6331	15827	102		a
305.8987	16.720	16.811	-5	0.979	3143739	806610	8041	20102	100	0.82(0.65-0.89)	
303.9016	16.947	16.811	8	0.992	135093	37205	6331	15827	6		
305.8987	16.947	16.811	8	0.992	230861	47327	8041	20102	6	0.59(0.65-0.89)	
	Empc Correction				175445	48318	8041	20102	6		
303.9016	17.521	16.811	43	1.026	367166	78804	6331	15827	12		
305.8987	17.521	16.811	43	1.026	422318	99226	8041	20102	12	0.87(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	18.897	16.811	125	1.106	334104	81199	6331	15827	13		
305.8987	18.897	16.811	125	1.106	398802	84993	8041	20102	11	0.84(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.778	17.793	-1	1.011	32543966	7400772	23717	59292	312		
333.9339	17.778	17.793	-1	1.011	40385965	9276216	9169	22922	1012	0.81(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	17.793	17.823	-2	1.001	1185960	258224	4397	10992	59		
321.8936	17.793	17.823	-2	1.001	1341904	312782	2898	7245	108	0.88(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	17.793	17.823	-2	1.012	62785478	14663477	22250	55625	659		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.674	17.249	-34	0.938	372271	93414	4397	10992	21		
	Empc Correction				295818	81895	4397	10992	19		
321.8936	16.674	17.249	-34	0.938	384180	106358	2898	7245	37	0.97(0.65-0.89)	
319.8965	17.551	17.249	18	0.987	69086	19324	4397	10992	4		
321.8936	17.551	17.249	18	0.987	109363	27950	2898	7245	10	0.63(0.65-0.89)	
	Empc Correction				89722	25096	2898	7245	9		
319.8965	17.688	17.249	26	0.995	63889	22583	4397	10992	5		M
	Empc Correction				35481	12378	4397	10992	3		
321.8936	17.688	17.249	26	0.995	46080	16076	2898	7245	6	1.39(0.65-0.89)	
319.8965	18.156	17.249	54	1.021	119315	26275	4397	10992	6		
321.8936	18.171	17.249	55	1.022	152878	33566	2898	7245	12	0.78(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.032	22.018	1	1.253	49963775	8485740	18048	45120	470		
353.8970	22.018	22.018	0	1.252	32322169	5544153	12918	32295	429	1.55(1.32-1.78)	
1,2,3,7,8-PeCDF											RQM
339.8597	22.059	22.045	1	1.001	259972	46041	2438	6095	19		
	Empc Correction				217024	32247	2438	6095	13		
341.8567	22.032	22.045	-1	1.000	140016	20805	4422	11055	5	1.86(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.355	23.341	1	1.328	52228728	8099095	18048	45120	449		
353.8970	23.355	23.341	1	1.328	33294281	5369388	12918	32295	416	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											M
339.8597	23.396	23.355	2	1.002	146723	24274	2438	6095	10		
341.8567	23.368	23.355	1	1.001	87842	17281	4422	11055	4	1.67(1.32-1.78)	M
A F1 PeCDFs											
339.8597	19.199	19.774	-34	0.871	125698	18723	1483	3707	13		
341.8567	19.184	19.774	-35	0.871	83802	17551	4340	10850	4	1.50(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											M
339.8597	20.709	22.858	-129	0.940	233191	34598	2438	6095	14		M
341.8567	20.709	22.858	-129	0.940	161483	25357	4422	11055	6	1.44(1.32-1.78)	M
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.368	32452902	4624589	6015	15037	769		
369.8919	24.050	24.050	0	1.368	20994043	3134919	6534	16335	480	1.55(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDD											
355.8546	24.077						4245	10612			
357.8516	24.077						1911	4777			
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	20.900	22.973	-124	0.869	187664	34522	4245	10612	8		
357.8516	20.927	22.973	-122	0.870	199091	34440	1911	4777	18	0.94(1.32-1.78)	
	Empc Correction				121073	22272	1911	4777	12		
355.8546	21.664	22.973	-78	0.901	367655	61233	4245	10612	14		M
	Empc Correction				291742	47206	4245	10612	11		
357.8516	21.650	22.973	-79	0.900	188221	30456	1911	4777	16	1.95(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	24902735	4118262	11587	28967	355		
385.8610	30.193	30.193	0	0.945	47768600	7618073	20604	51510	370	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											RQM
373.8208	30.233	30.206	2	1.001	210504	36110	3090	7725	12		
375.8178	30.233	30.206	2	1.001	222619	32231	2350	5875	14	0.95(1.05-1.43)	M
	Empc Correction				169761	29120	2350	5875	12		
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	25436221	3953652	11587	28967	341		
385.8610	30.406	30.406	0	0.951	47012482	7649251	20604	51510	371	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.420	30.420	0	1.000	137906	24515	3090	7725	8		
375.8178	30.420	30.420	0	1.000	110956	21930	2350	5875	9	1.24(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	23543126	5092975	11587	28967	440		
385.8610	31.312	31.312	0	0.980	43996834	9532176	20604	51510	463	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						3090	7725			
375.8178	31.325						2350	5875			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	20278841	4842750	11587	28967	418		
385.8610	32.151	32.151	0	1.006	39961142	9660865	20604	51510	469	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						3090	7725			
375.8178	32.164						2350	5875			
A Non-2,3,7,8-sub-HxCDF											M
373.8208	27.916	29.880	-118	0.925	209547	27434	3090	7725	9		
375.8178	27.903	29.880	-118	0.924	177890	17688	2350	5875	8	1.18(1.05-1.43)	
373.8208	29.221	29.880	-39	0.968	179822	21667	3090	7725	7		
375.8178	29.248	29.880	-38	0.969	130568	16906	2350	5875	7	1.38(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		53802901	12794598	13193	32982	970		
403.8529	31.964	31.964	0		43102650	10135222	13152	32880	771	1.25(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	28762411	7153108	13193	32982	542		
403.8529	31.511	31.511	0	0.986	22545995	5486336	13152	32880	417	1.28(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8-HxCDD											RQM
389.8157	31.525	31.525	0	1.000	98167	23994	3493	8732	7		M
	Empc Correction				77955	19071	3493	8732	5		
391.8127	31.525	31.525	0	1.000	62867	15380	3238	8095	5	1.56(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	33311656	7709942	13193	32982	584		
403.8529	31.618	31.618	0	0.989	25842847	5837073	13152	32880	444	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											RQMa
389.8157	31.631	31.631	0	1.000	156741	34740	3493	8732	10		M
	Empc Correction				130423	36981	3493	8732	11		
391.8127	31.631	31.631	0	1.000	105180	29824	3238	8095	9	1.49(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	31.977	31.977	0	1.015	216930	44003	3493	8732	13		M
391.8127	31.977	31.977	0	1.015	174932	32708	3238	8095	10	1.24(1.05-1.43)	M
A Non-2,3,7,8-sub-HxCDD											
389.8157	29.061	30.519	-87	0.919	2315306	274759	3493	8732	79		
391.8127	29.088	30.519	-86	0.920	1803805	210588	3238	8095	65	1.28(1.05-1.43)	
389.8157	30.699	30.519	11	0.971	636736	118725	3493	8732	34		
391.8127	30.712	30.519	12	0.971	566368	90839	3238	8095	28	1.12(1.05-1.43)	
389.8157	30.939	30.519	25	0.979	120616	19187	3493	8732	5		
391.8127	30.926	30.519	24	0.978	107322	17602	3238	8095	5	1.12(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	12851093	4291367	21531	53827	199		
419.8220	33.616	33.628	-1	1.052	30941046	9969686	56136	140340	178	0.42(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											RQM
407.7818	33.628	33.628	0	1.000	425697	127387	6680	16700	19		M
	Empc Correction				354119	126365	6680	16700	19		
409.7789	33.628	33.628	0	1.000	340500	121505	2875	7187	42	1.25(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.085	13896429	4004577	21531	53827	186		
419.8220	34.685	34.697	-1	1.085	31579882	8762489	56136	140340	156	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						6680	16700			
409.7789	34.709						2875	7187			
A Non-2,3,7,8-sub-HpCDF											RQMa
407.7818	33.931	34.169	-14	1.009	576471	177189	6680	16700	27		M
409.7789	33.919	34.169	-15	1.009	504001	168458	2875	7187	59	1.14(0.88-1.20)	
407.7818	34.017	34.169	-9	1.012	104879	29046	6680	16700	4		M
	Empc Correction				76657	34123	6680	16700	5		
409.7789	34.017	34.169	-9	1.012	73709	32811	2875	7187	11	1.42(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.076	22839991	6980701	10361	25902	674		
437.8140	34.405	34.418	-1	1.076	21357030	6581999	13433	33582	490	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	3367249	1050913	11563	28907	91		
425.7737	34.418	34.418	0	1.000	3447252	1019962	11159	27897	91	0.98(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	10032033	3209086	11563	28907	278		
425.7737	33.871	34.144	-16	0.984	9564255	3001627	11159	27897	269	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.734	36.734	0	1.149	26787317	6900453	6955	17387	992		
471.7750	36.722	36.734	-1	1.149	30461733	7833642	6541	16352	1198	0.88(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	1676070	418901	2403	6007	174		
443.7399	36.818	36.830	-1	1.002	1935943	476089	3834	9585	124	0.87(0.76-1.02)	
OCDD											
457.7377	36.734	36.746	-1	1.000	80684789	21034760	7756	19390	2712		
459.7348	36.734	36.746	-1	1.000	91195931	23700221	8360	20900	2835	0.88(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	104641840	25720210

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	104641840	25720210

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.707	175566	45427	290818	74016	0.4691	0.60	RQ
15.707	175566	45427	228007	58996	0.4059		Empc Correction
15.994	271006	57172	310668	69273	0.5850	0.87	
16.206	189106	46548	235236	62776	0.4268	0.80	
16.448	259653	50044	356642	61765	0.6198	0.73	
16.720	2582589	643775	3143739	806610	5.76	0.82	a
16.947	135093	37205	230861	47327	0.3681	0.59	RQ
16.947	135093	37205	175445	48318	0.3123		Empc Correction
17.521	367166	78804	422318	99226	0.7940	0.87	
18.897	334104	81199	398802	84993	0.7371	0.84	
Signal Totals:							
	4314283	1040174	5270857	1291957			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9703367	2346160				0.80	RQa
	9585140	2332131					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.759 = (9703367 * 100.000) / (104641840 * 0.950)
Empc Amount: 9.640 = (9585140 * 100.000) / (104641840 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	72929931	16676988

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	72929931	16676988

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.674	372271	93414	384180	106358	0.9900	0.97	RQ
16.674	295818	81895	384180	106358	0.8899		Empc Correction
17.551	69086	19324	109363	27950	0.2335	0.63	RQ
17.551	69086	19324	89722	25096	0.2078		Empc Correction
17.688	63889	22583	46080	16076	0.1439	1.39	RQMa
17.688	35481	12378	46080	16076	0.1067		Empc Correction
18.156	119315	26275	152878	33566	0.3562	0.78	
Signal Totals:							
	519700	139872	672860	181096			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1317062	345546				0.90	RQMa
	1192560	320968					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.724 = (1317062 * 100.000) / (72929931 * 1.048)
Empc Amount: 1.561 = (1192560 * 100.000) / (72929931 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

F1 PeCDFs, RT: 19.774

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	82285944	14029893
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	85523009	13468483

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	83904476	13749188

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
19.199	125698	18723	83802	17551	0.2411	1.50	
Signal Totals:							
	125698	18723	83802	17551			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	209500	36274				1.50	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2411 = (209500 * 100.000) / (83904476 * 1.036)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	82285944	14029893
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	85523009	13468483

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	83904476	13749188

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
20.709	233191	34598	161483	25357	0.4542	1.44	M
Signal Totals:							
	233191	34598	161483	25357			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	394674	59955				1.44	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.4542 = (394674 * 100.000) / (83904476 * 1.036)

QC Flag Legend

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	53446945	7759508

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	53446945	7759508

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.900	187664	34522	199091	34440	0.6666	0.94	RQ
20.900	187664	34522	121073	22272	0.5321		Empc Correction
21.664	367655	61233	188221	30456	0.9581	1.95	RQM
21.664	291742	47206	188221	30456	0.8273		Empc Correction
Signal Totals:							
	479406	81728	309294	52728			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	942631	160651				1.43	RQM
	788700	134456					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.625 = (942631 * 100.000) / (53446945 * 1.086)
Empc Amount: 1.359 = (788700 * 100.000) / (53446945 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDF, RT: 29.880

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.147	D 13C-1,2,3,4,7,8-HxCDF	100.000	72671335	11736335
1,2,3,6,7,8-HxCDF	1.145	D 13C-1,2,3,6,7,8-HxCDF	100.000	72448703	11602903
2,3,4,6,7,8-HxCDF	1.173	D 13C-2,3,4,6,7,8-HxCDF	100.000	67539960	14625151
1,2,3,7,8,9-HxCDF	1.172	D 13C-1,2,3,7,8,9-HxCDF	100.000	60239983	14503615

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.159		100.000	68224995	13117001

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
27.916	209547	27434	177890	17688	0.4899	1.18	
29.221	179822	21667	130568	16906	0.3925	1.38	
Signal Totals:	389369	49101	308458	34594			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	697827	83695				1.26	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.8824 = (697827 * 100.000) / (68224995 * 1.159)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	51308406	12639444
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	59154503	13547015
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	55231454	13093229

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.061	2315306	274759	1803805	210588	6.69	1.28	
30.699	636736	118725	566368	90839	1.95	1.12	
30.939	120616	19187	107322	17602	0.3703	1.12	
Signal Totals:							
	3072658	412671	2477495	319029			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	5550153	731700				1.24	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.016 = (5550153 * 100.000) / (55231454 * 1.115)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	43792139	14261053
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	45476311	12767066

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	44634225	13514059

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.931	576471	177189	504001	168458	1.75	1.14	M
34.017	104879	29046	73709	32811	0.2885	1.42	RQMa
34.017	76657	34123	73709	32811	0.2429		Empc Correction
Signal Totals:							
	653128	211312	577710	201269			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1259060	407504				1.18	RQMa
	1230838	412581					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.034 = (1259060 * 100.000) / (44634225 * 1.387)
Empc Amount: 1.988 = (1230838 * 100.000) / (44634225 * 1.387)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Inject. Date: 19-Dec-2019 19:44:08 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 12

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	44197021	13562700

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	44197021	13562700

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	10032033	3209086	9564255	3001627	42.1	1.05	
Signal Totals:							
	10032033	3209086	9564255	3001627			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	19596288	6210713				1.05	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 42.085 = (19596288 * 100.000) / (44197021 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

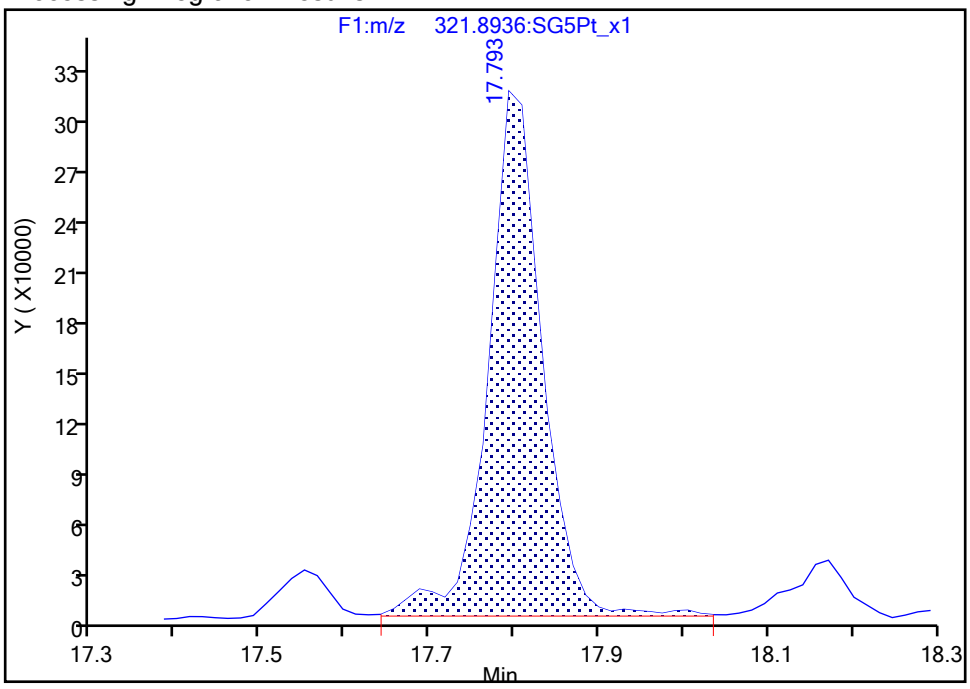
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

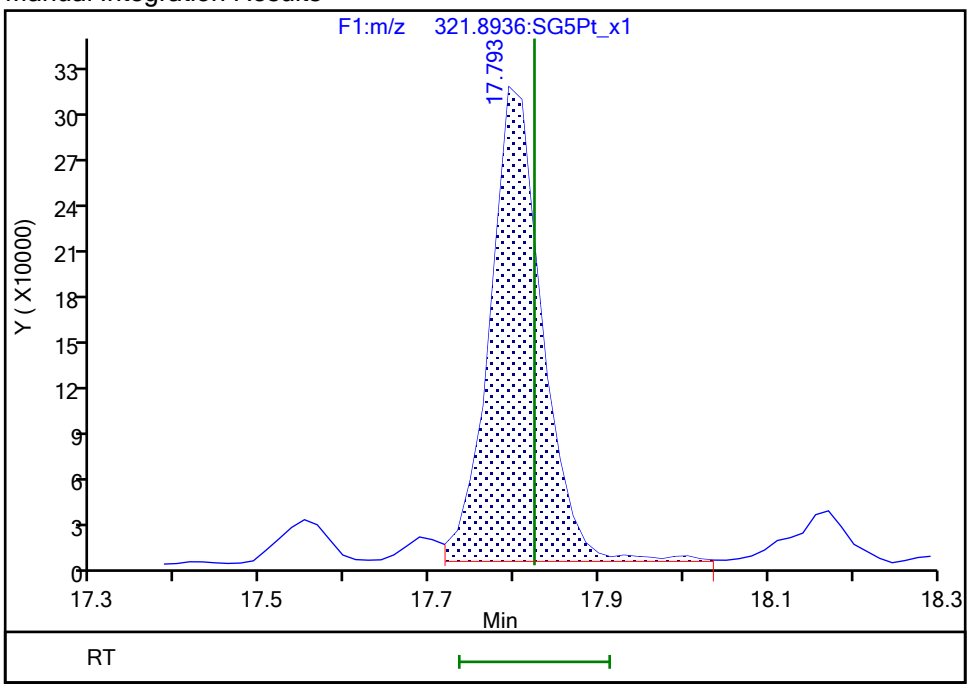
Processing Integration Results

RT: 17.79
Area: 1387984
Amount: 3.368586
Amount Units: pg/ul



Manual Integration Results

RT: 17.79
Area: 1341904
Amount: 3.308280
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:32:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

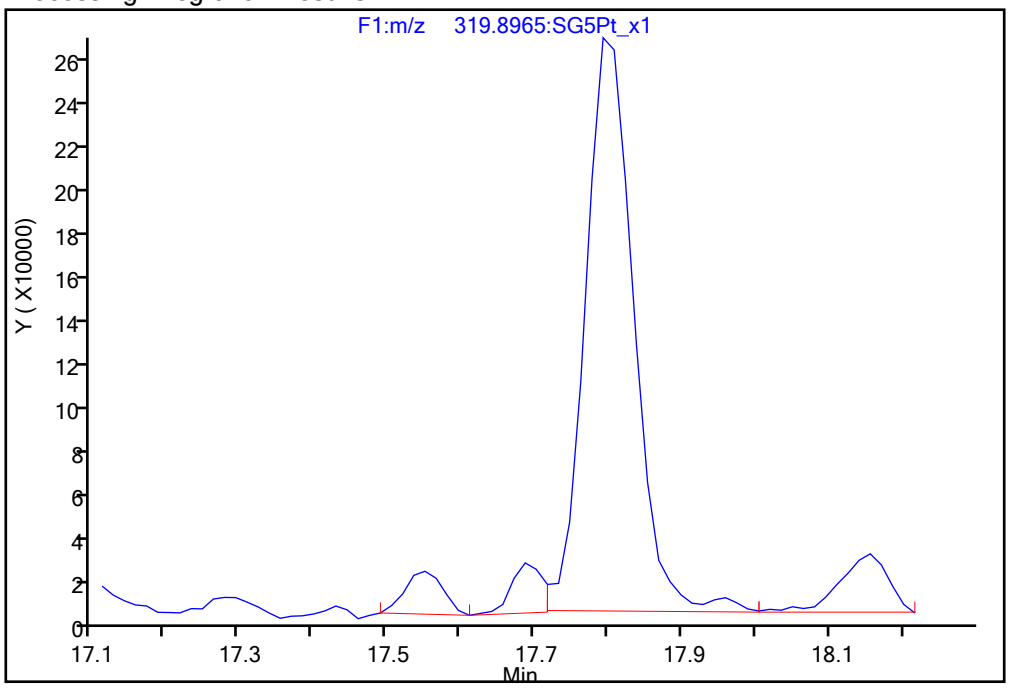
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

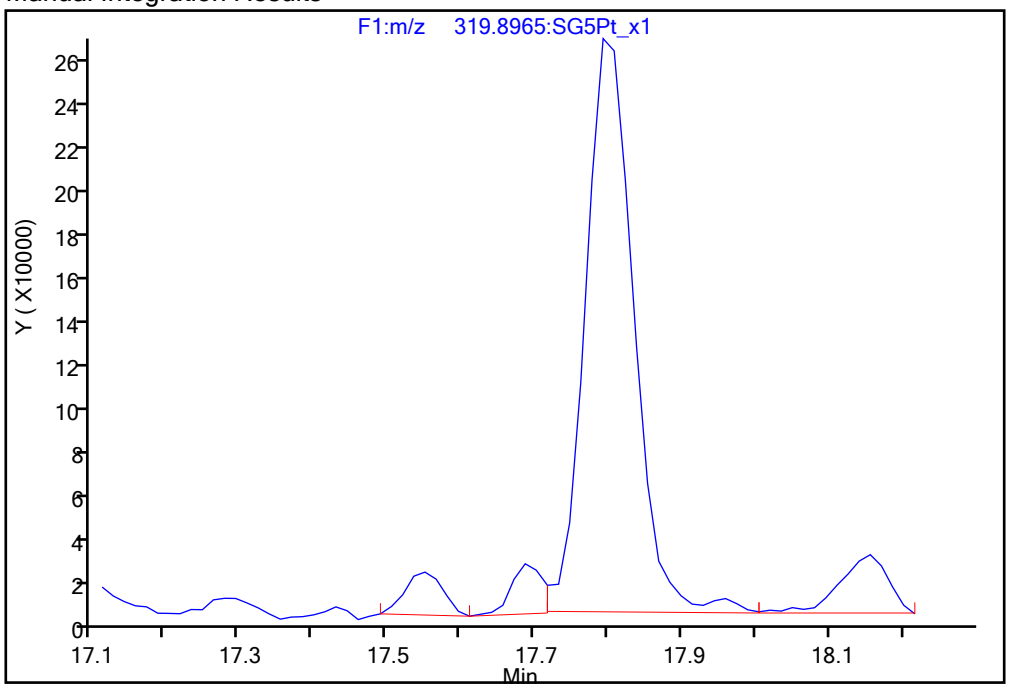
Processing Integration Results

RT = 17.688 Area = 63889



Manual Integration Results

RT = 17.688 Area = 63889



Reviewer: dadunj, 20-Dec-2019 14:32:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

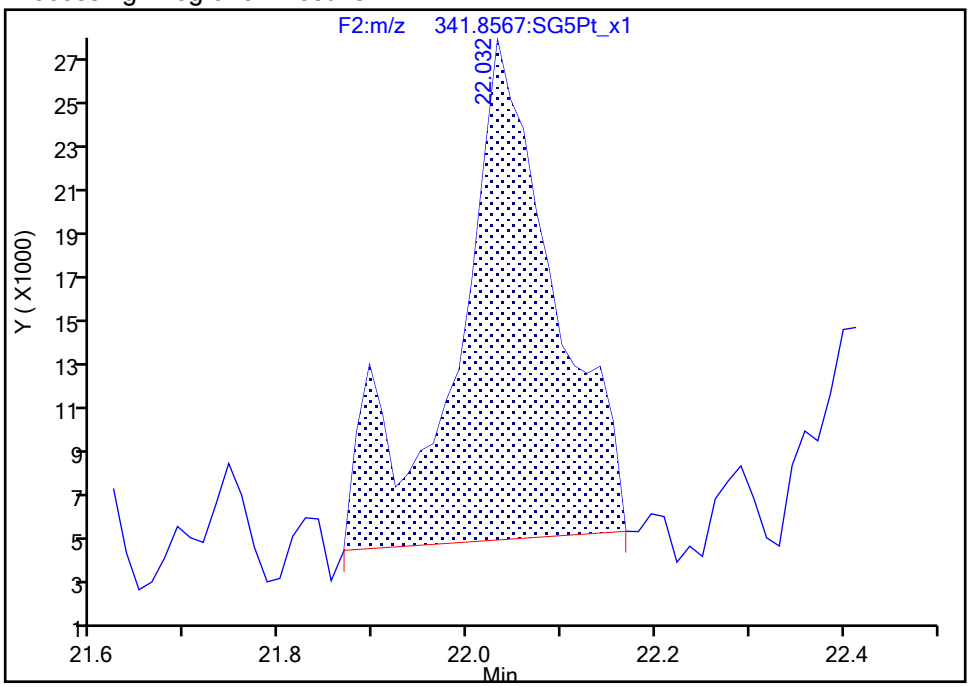
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

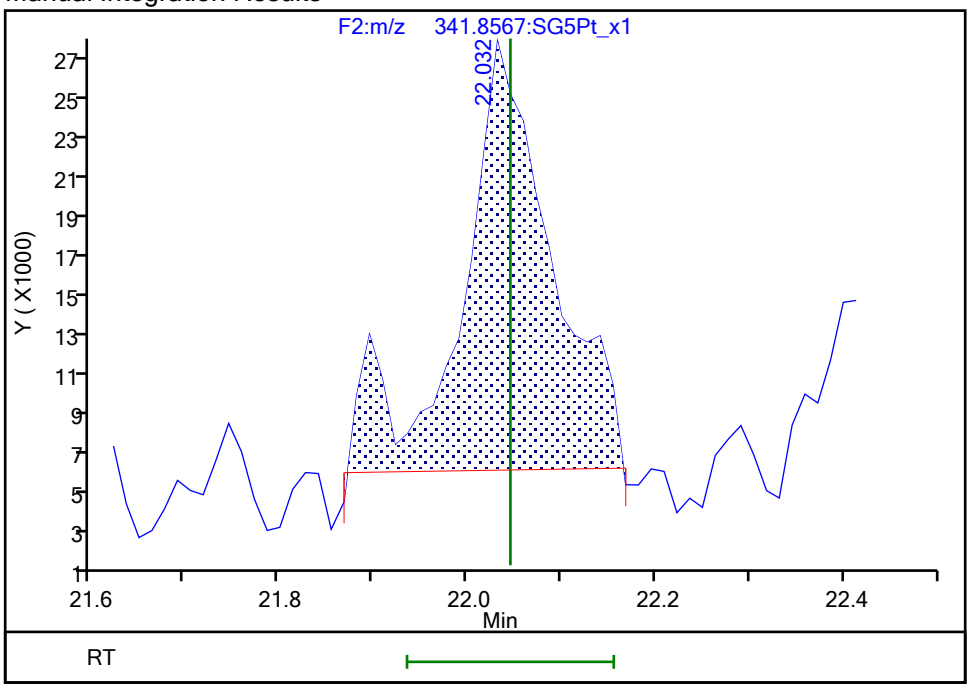
Processing Integration Results

RT: 22.03
Area: 160070
Amount: 0.495500
Amount Units: pg/ul



Manual Integration Results

RT: 22.03
Area: 140016
Amount: 0.471843
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:33:07

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

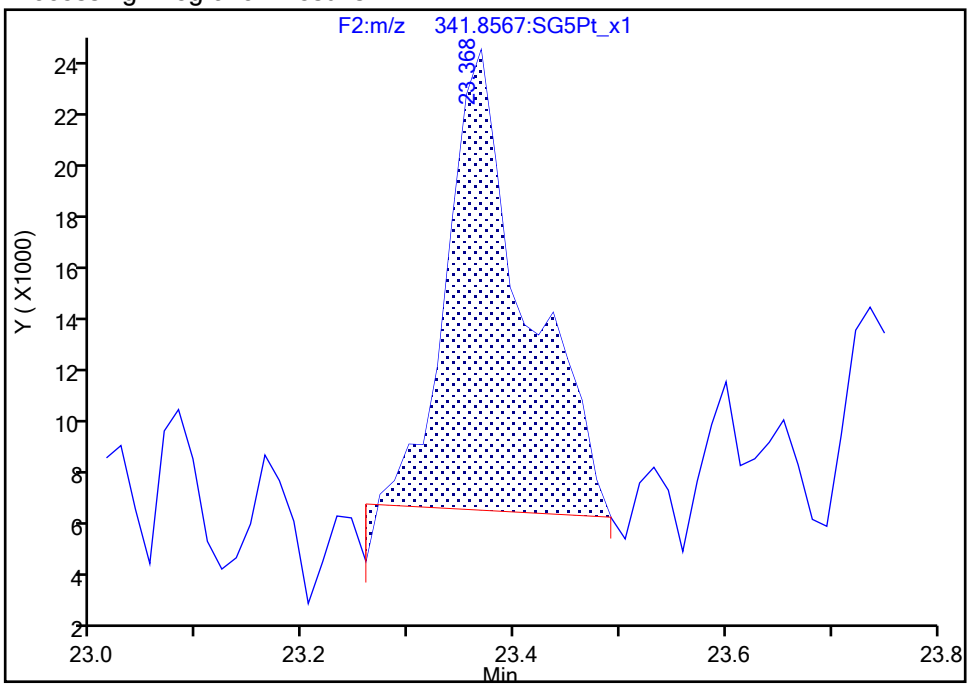
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

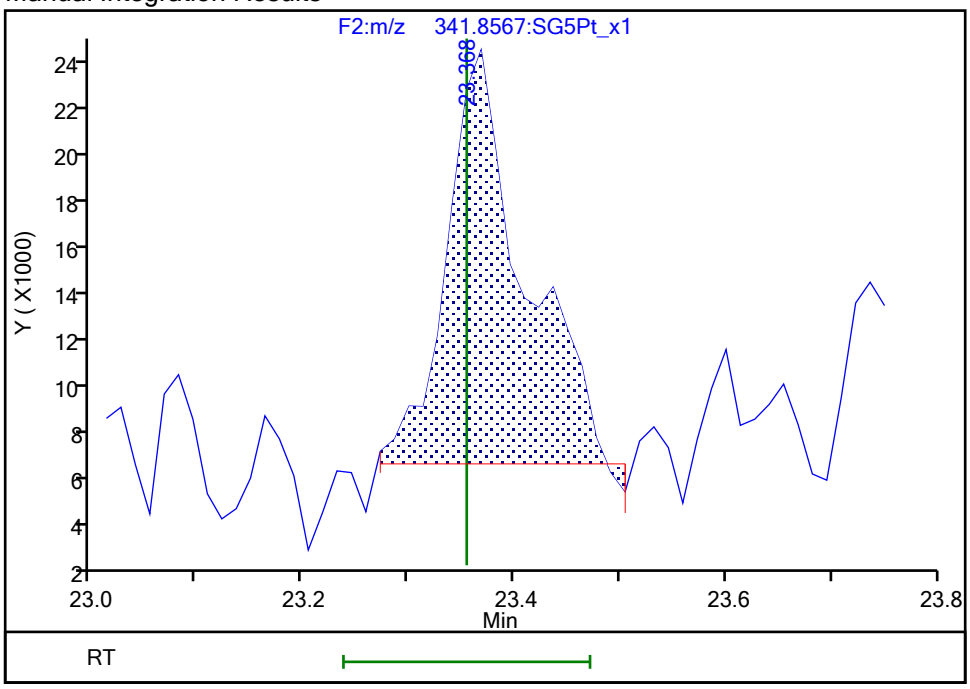
Processing Integration Results

RT: 23.37
Area: 89080
Amount: 0.264868
Amount Units: pg/ul



Manual Integration Results

RT: 23.37
Area: 87842
Amount: 0.263477
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:33:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

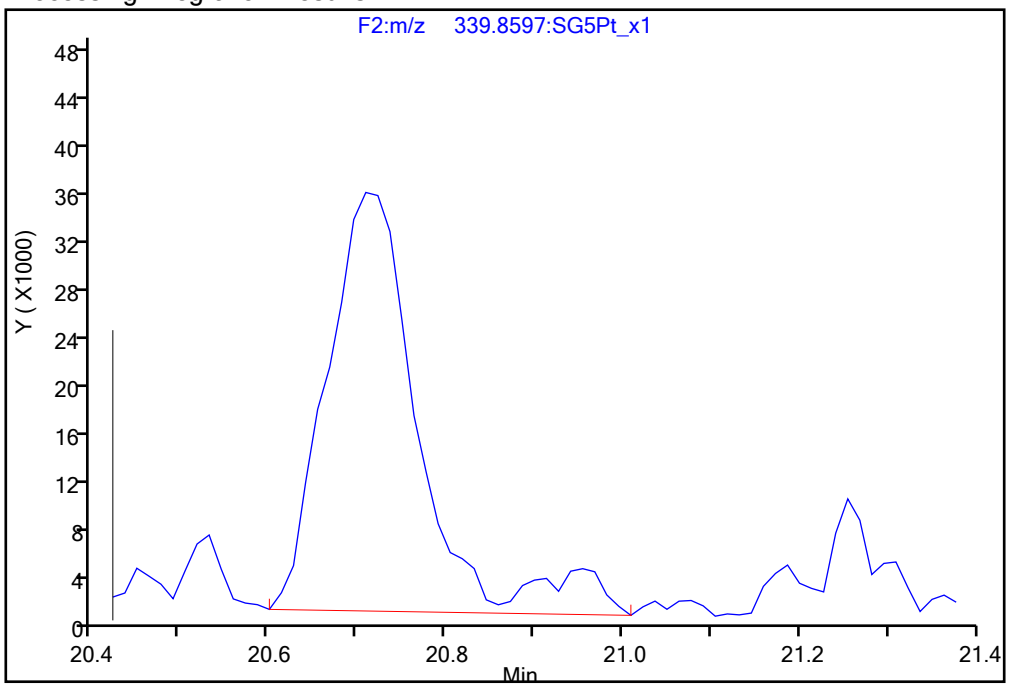
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (20.42- 25.29)

Signal: 1

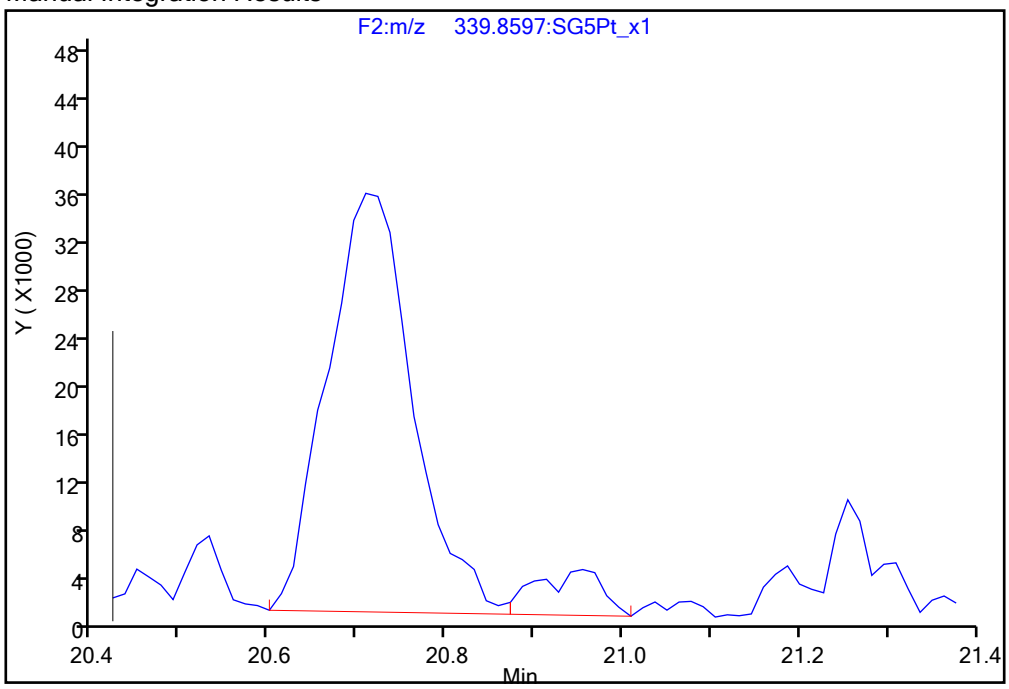
Processing Integration Results

RT = 20.709 Area = 252585



Manual Integration Results

RT = 20.709 Area = 233191 M



Reviewer: dadunj, 20-Dec-2019 14:33:56

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

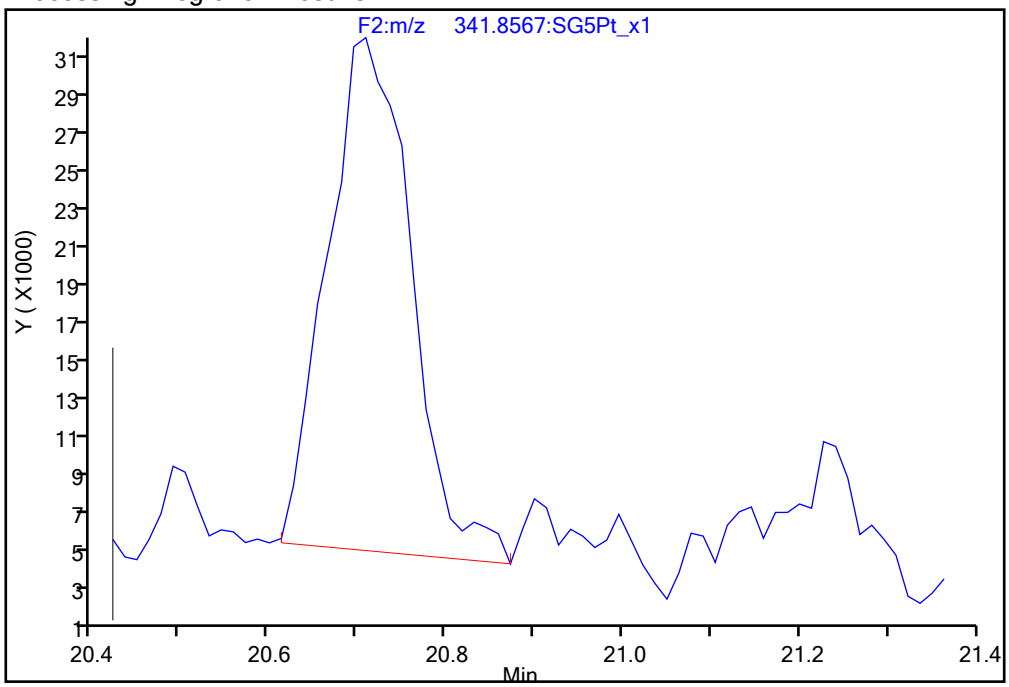
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (20.42- 25.29)

Signal: 2

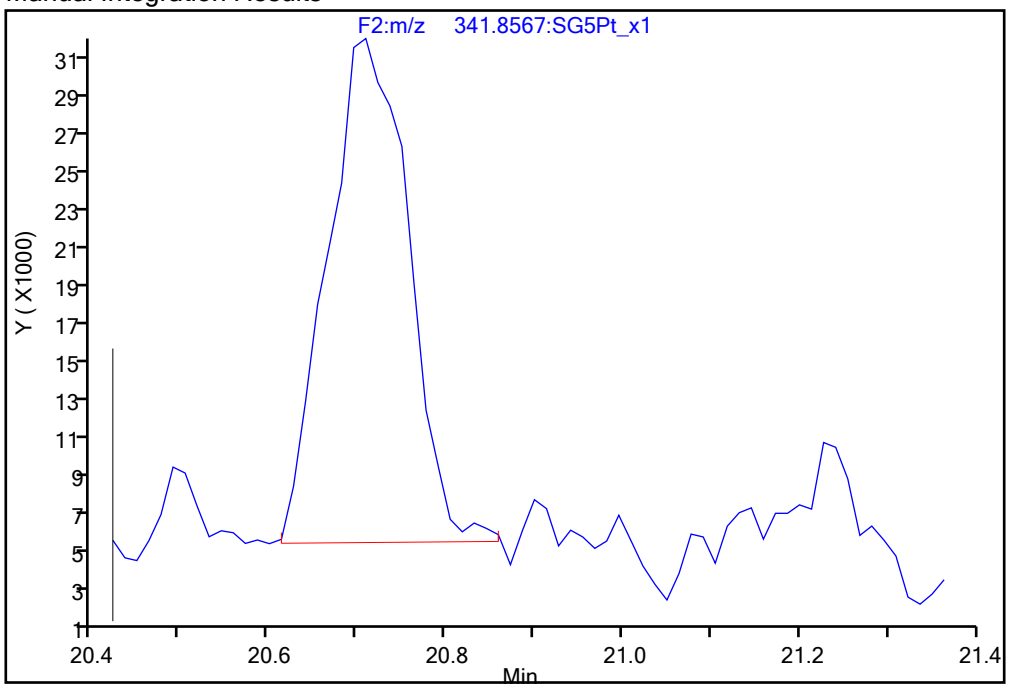
Processing Integration Results

RT = 20.709 Area = 170440



Manual Integration Results

RT = 20.709 Area = 161483 M



Reviewer: dadunj, 20-Dec-2019 14:33:50

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

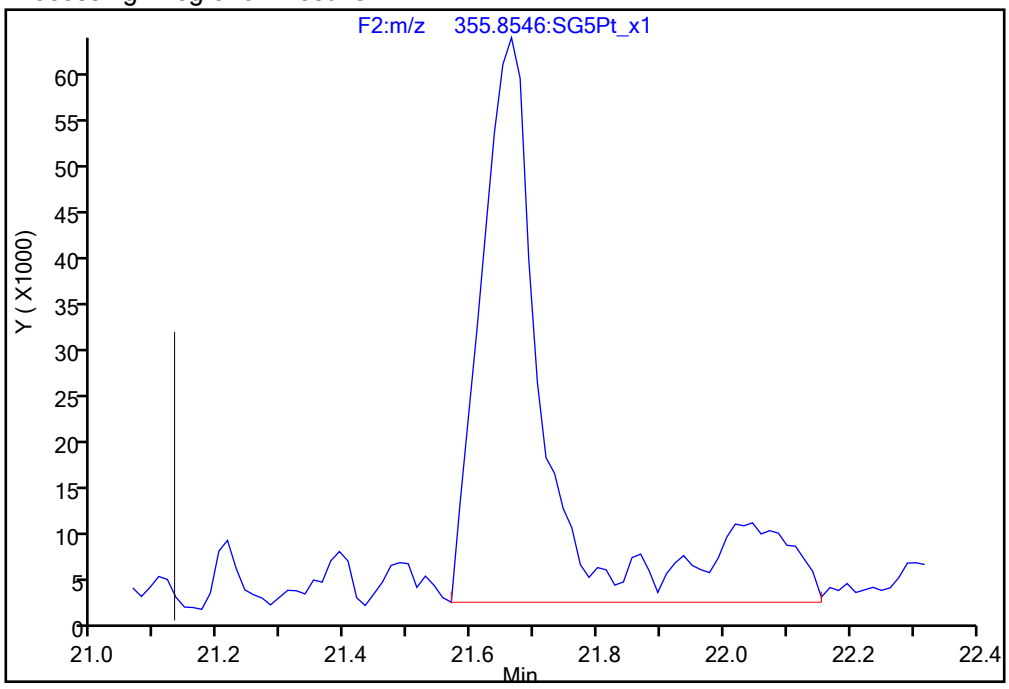
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

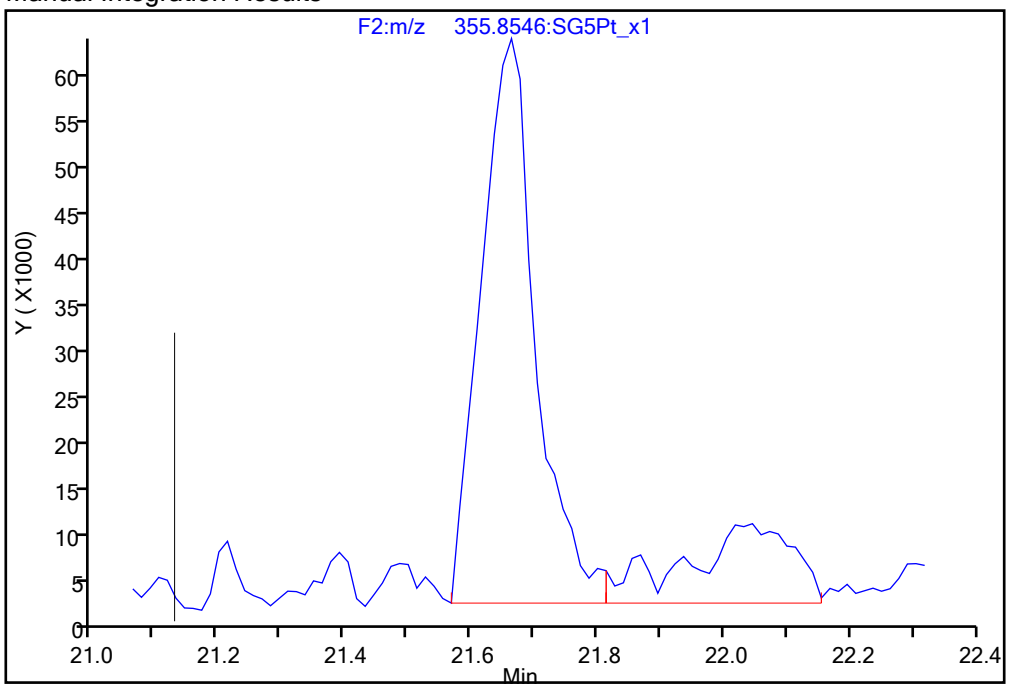
Processing Integration Results

RT = 21.664 Area = 468996



Manual Integration Results

RT = 21.664 Area = 367655 M



Reviewer: dadunj, 20-Dec-2019 14:34:15

Audit Action: Split an Integrated Peak Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

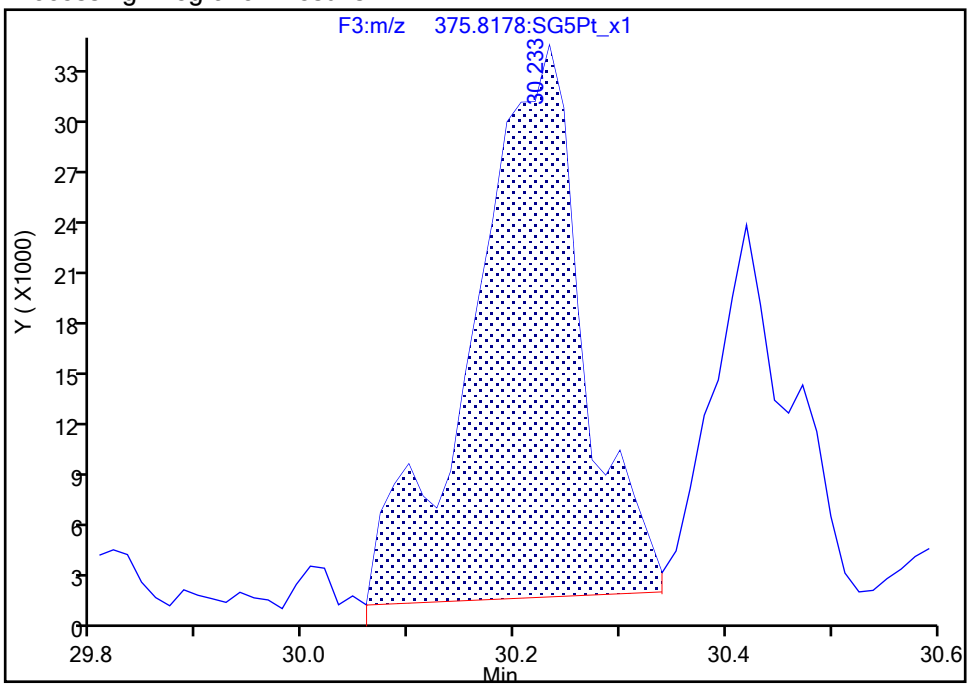
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

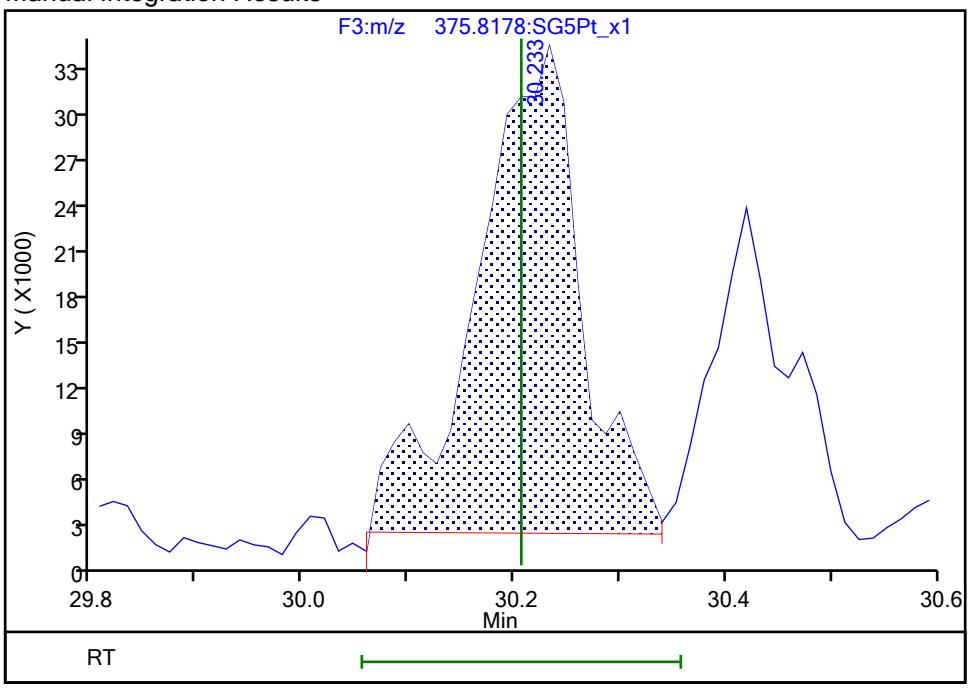
Processing Integration Results

RT: 30.23
Area: 236325
Amount: 0.535965
Amount Units: pg/ul



Manual Integration Results

RT: 30.23
Area: 222619
Amount: 0.519525
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:34:28

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

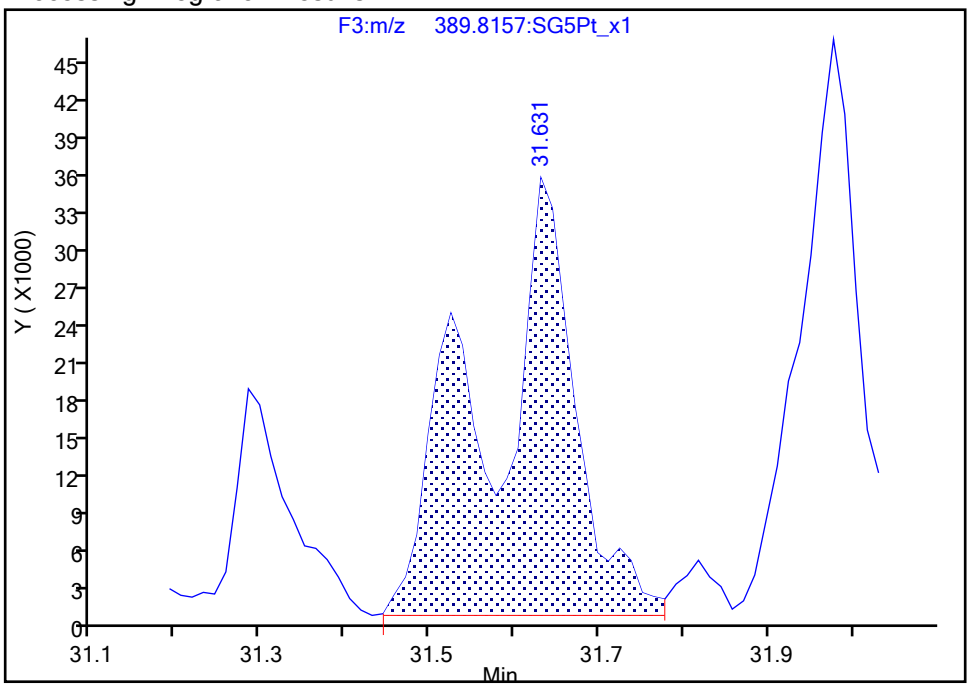
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

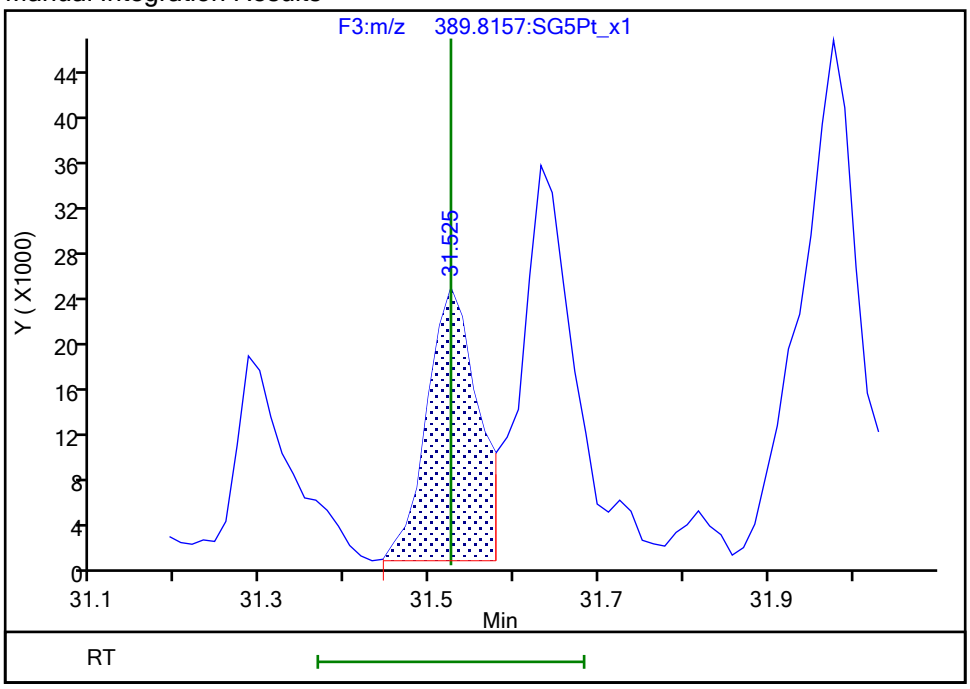
Processing Integration Results

RT: 31.63
Area: 254909
Amount: 0.667749
Amount Units: pg/ul



Manual Integration Results

RT: 31.52
Area: 98167
Amount: 0.287050
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

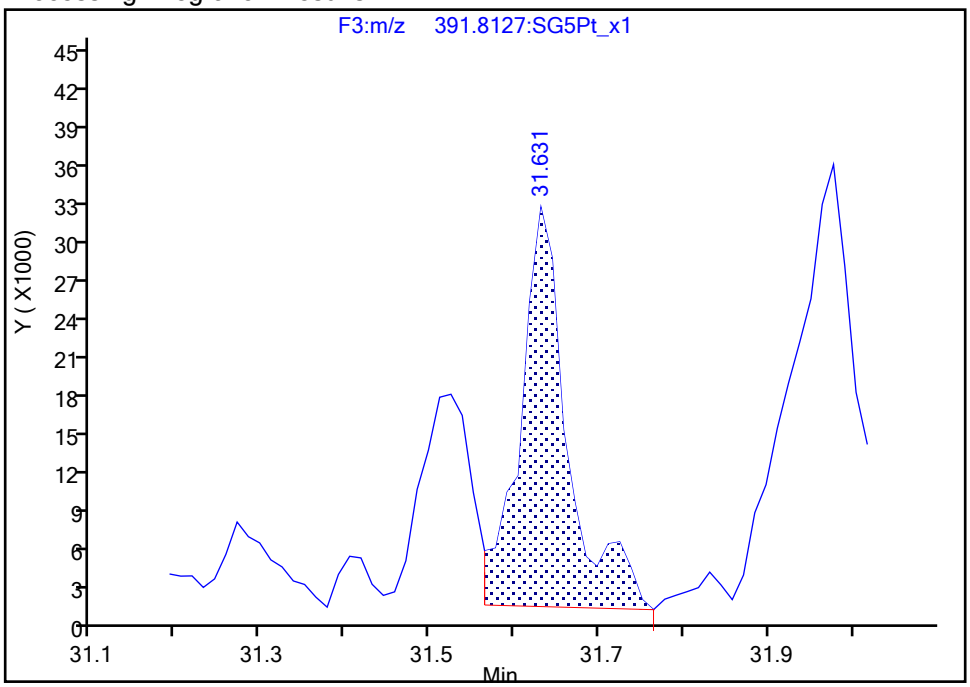
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

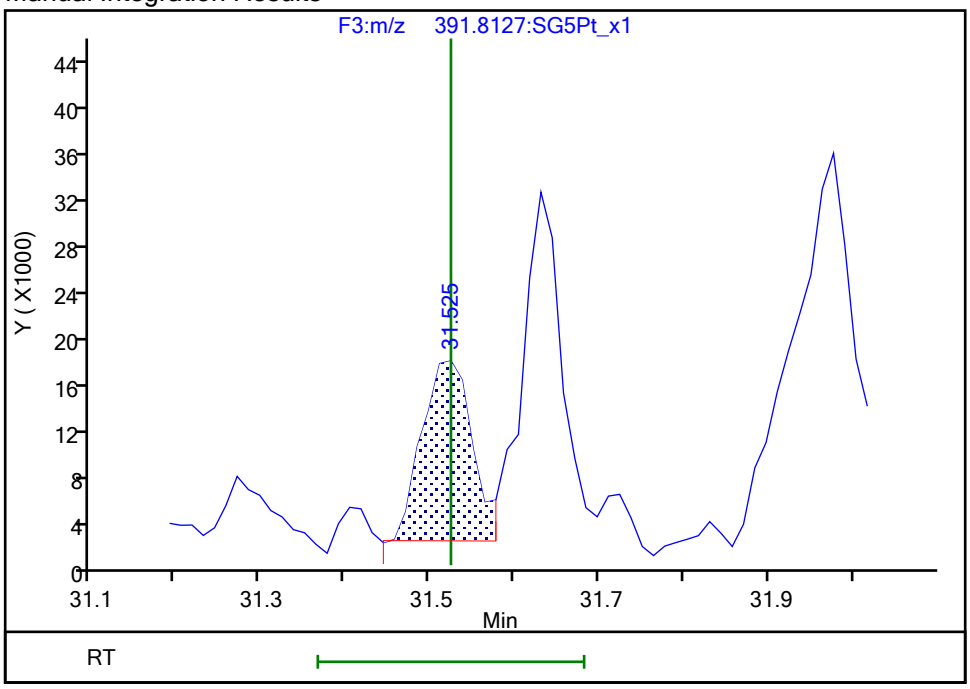
Processing Integration Results

RT: 31.63
Area: 119695
Amount: 0.667749
Amount Units: pg/ul



Manual Integration Results

RT: 31.52
Area: 62867
Amount: 0.287050
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:23
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

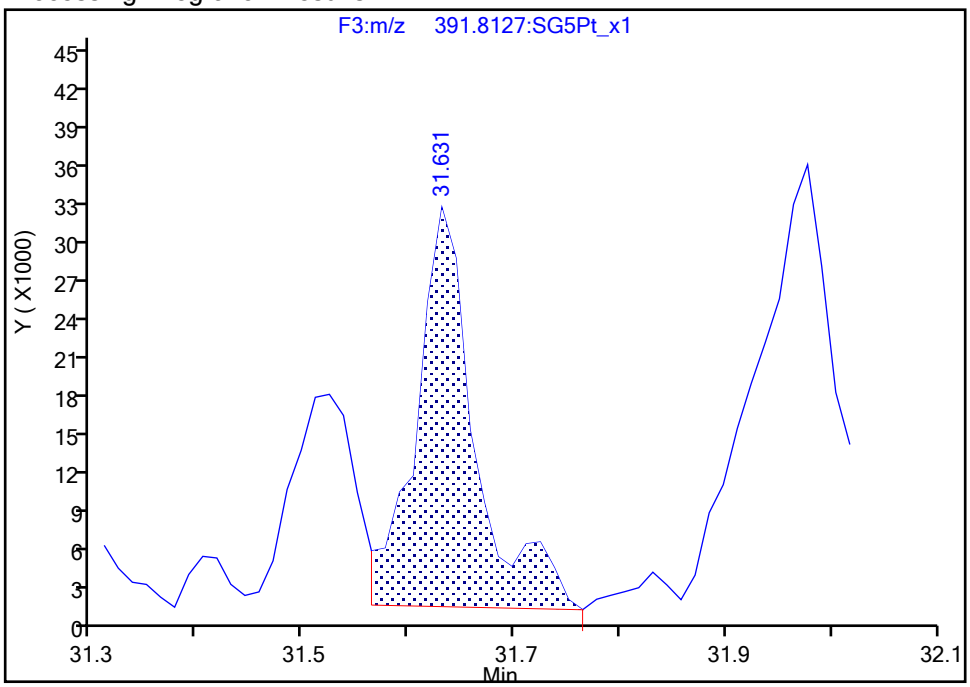
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

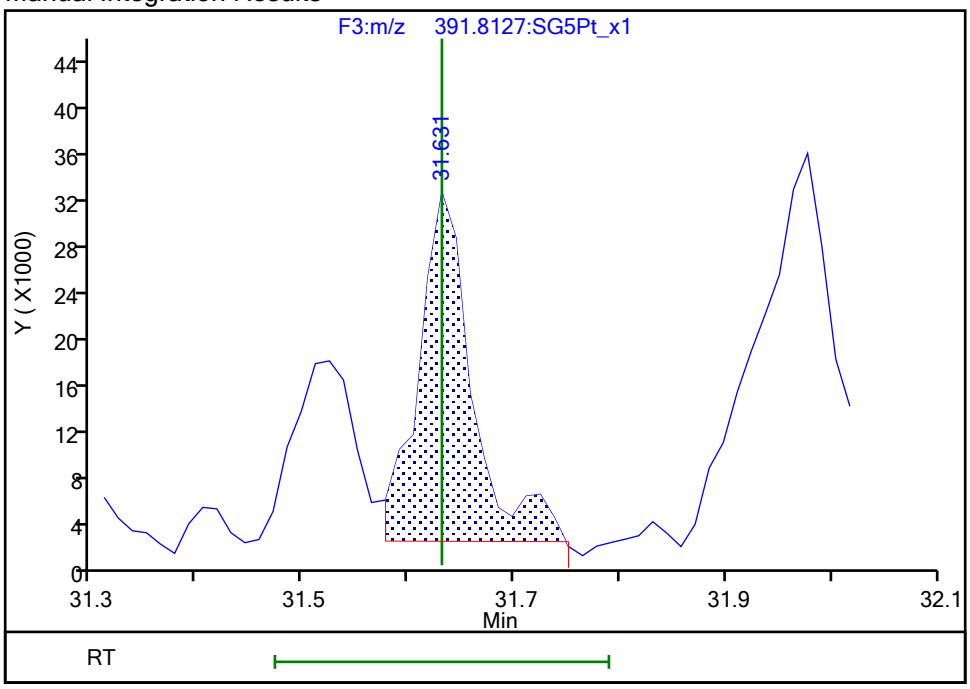
Processing Integration Results

RT: 31.63
Area: 119695
Amount: 0.607213
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 105180
Amount: 0.424560
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:28
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

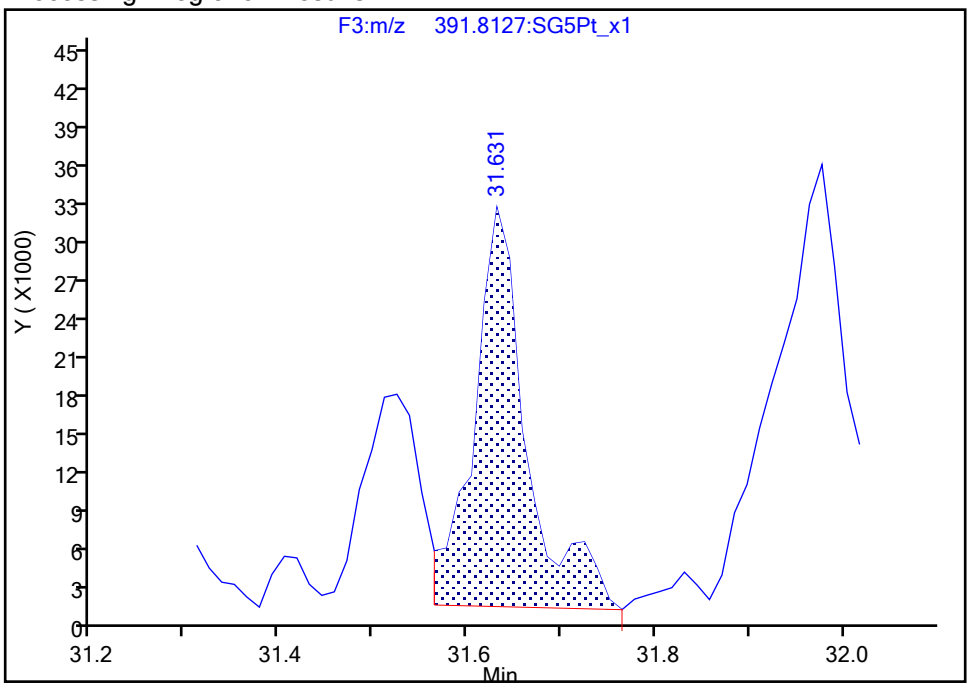
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.63
Area: 374604
Amount: 0.607213
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 261921
Amount: 0.424560
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:35:28
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

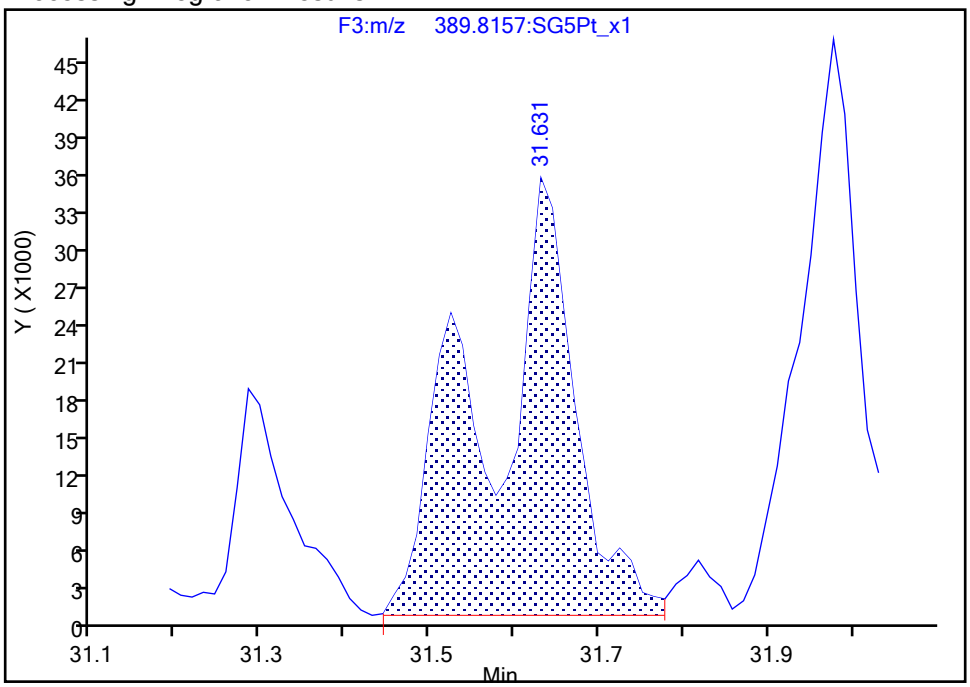
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

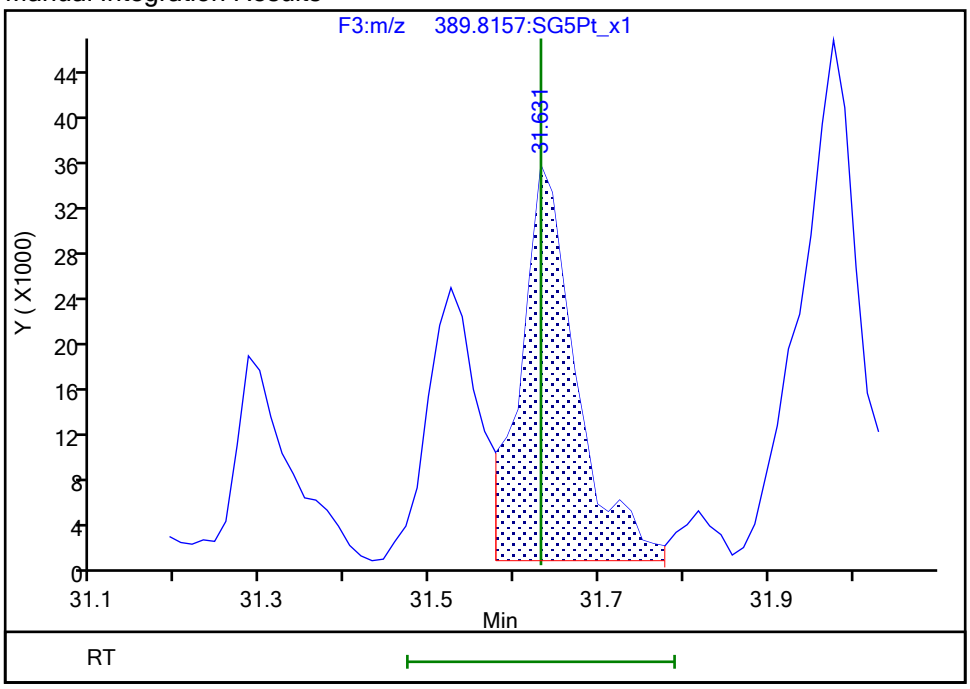
Processing Integration Results

RT: 31.63
Area: 254909
Amount: 0.607213
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 156741
Amount: 0.424560
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:29

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

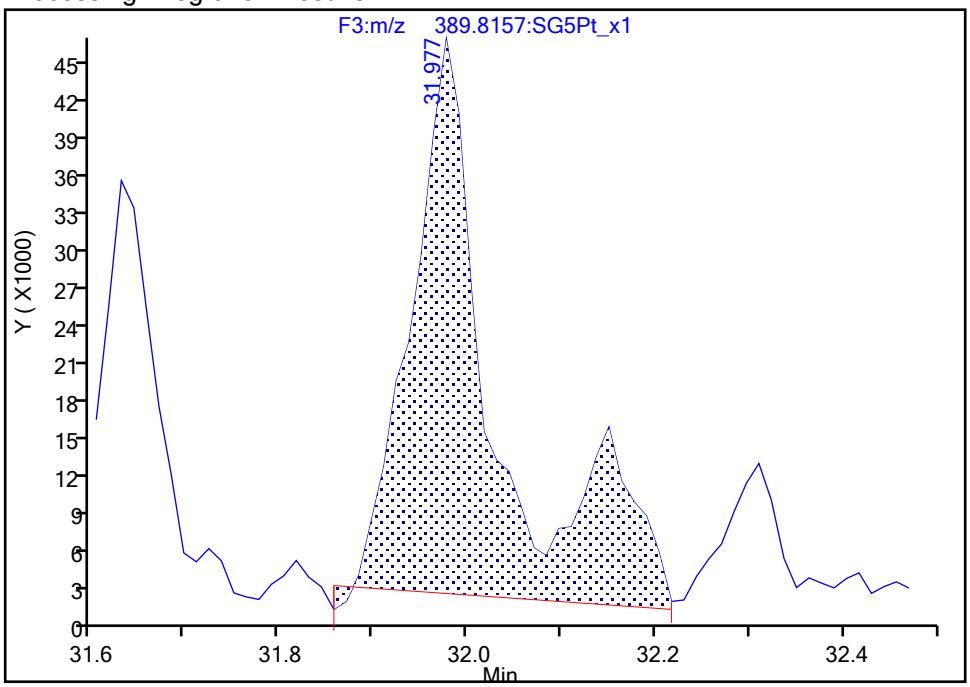
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

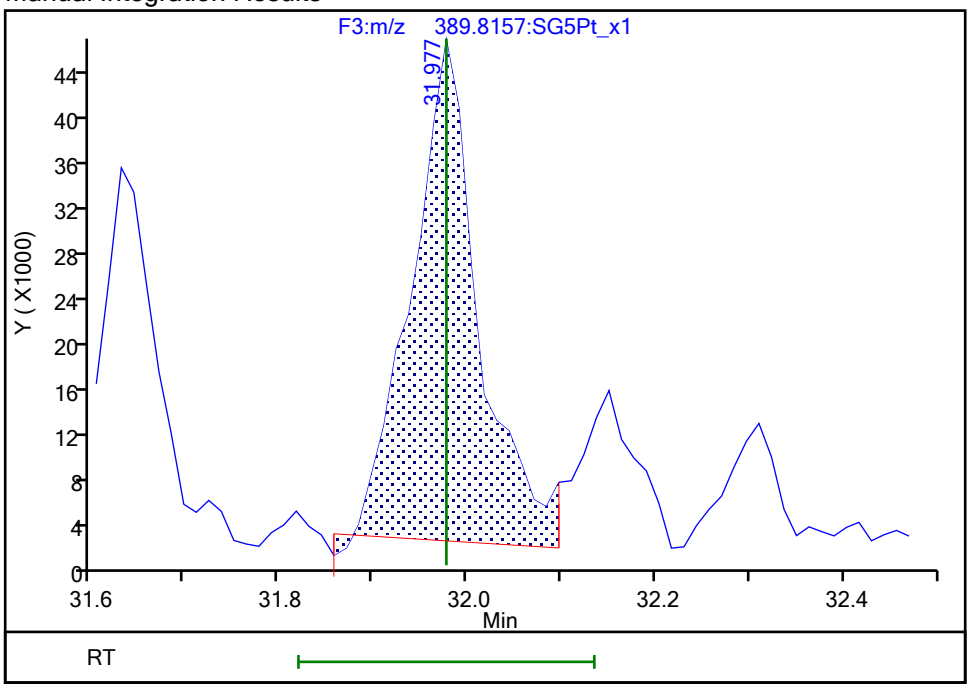
Processing Integration Results

RT: 31.98
Area: 275659
Amount: 0.729713
Amount Units: pg/ul



Manual Integration Results

RT: 31.98
Area: 216930
Amount: 0.587654
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:33
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

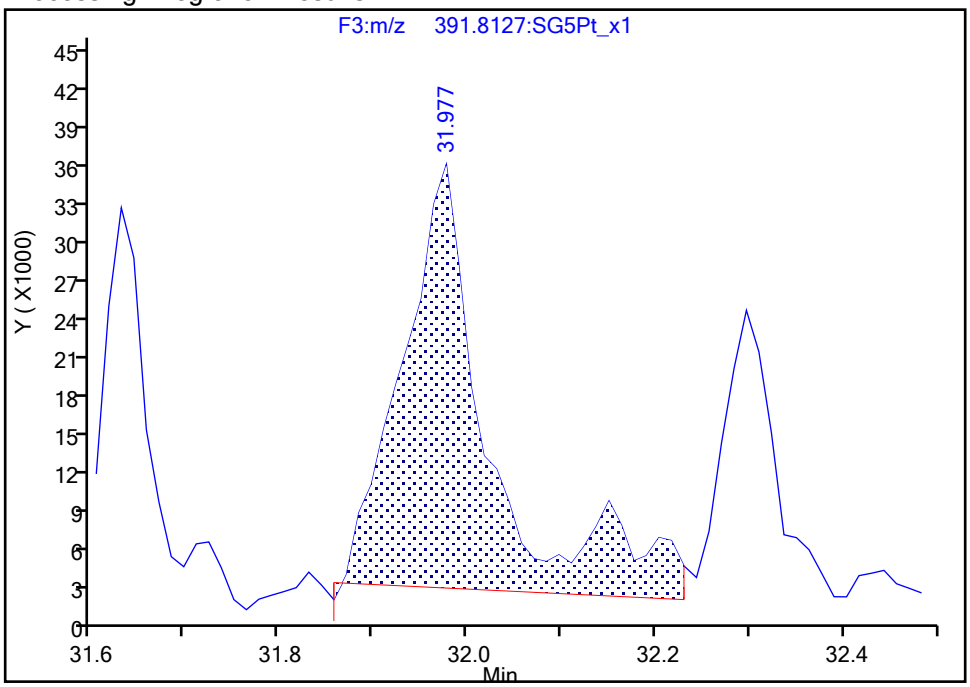
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 2

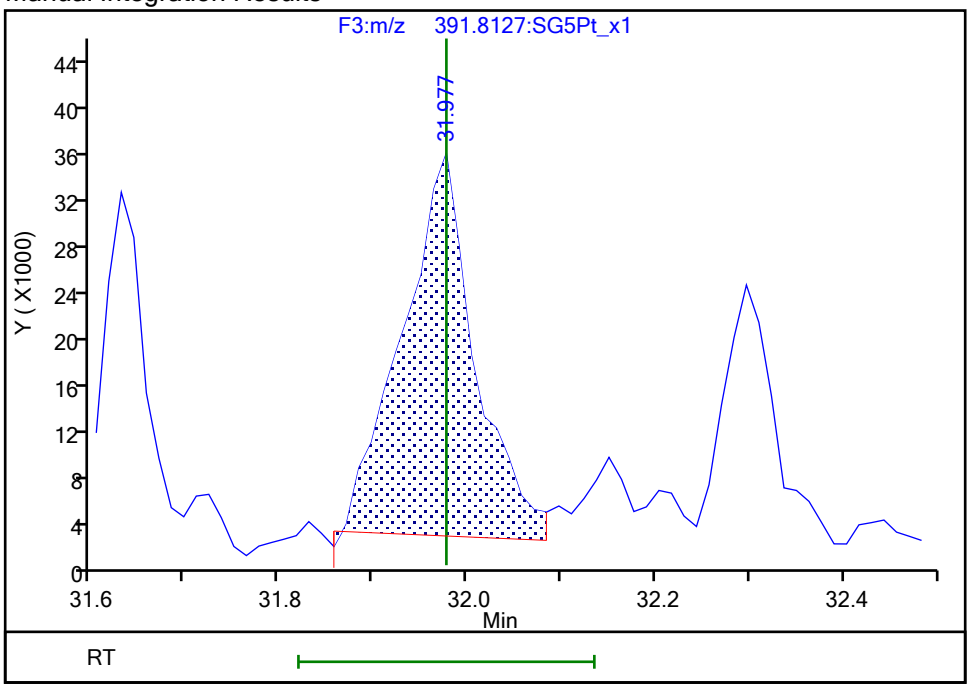
Processing Integration Results

RT: 31.98
Area: 210932
Amount: 0.729713
Amount Units: pg/ul



Manual Integration Results

RT: 31.98
Area: 174932
Amount: 0.587654
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:35
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

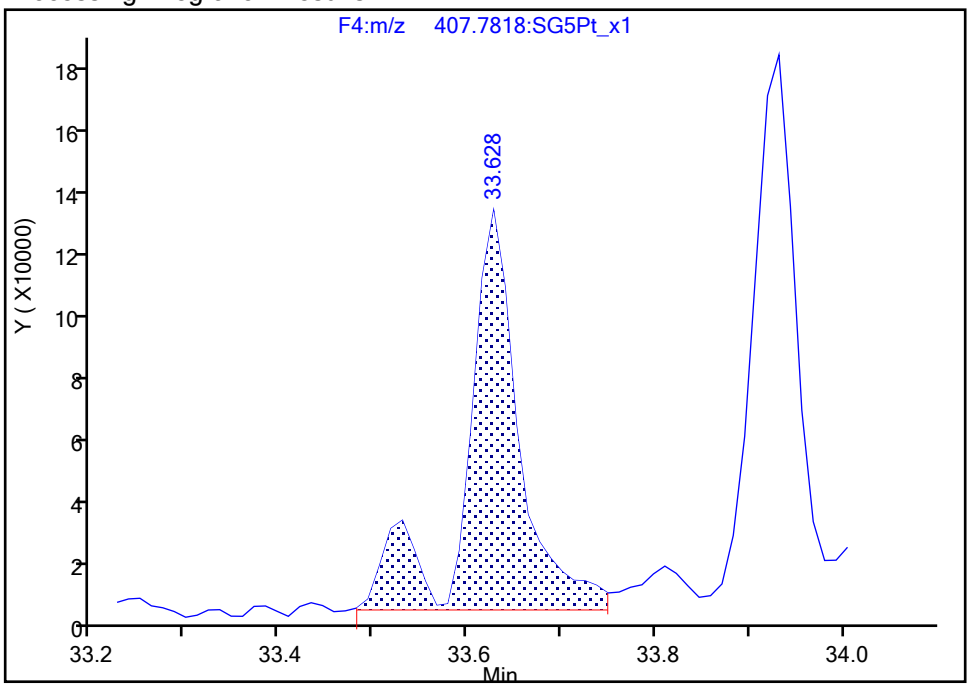
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

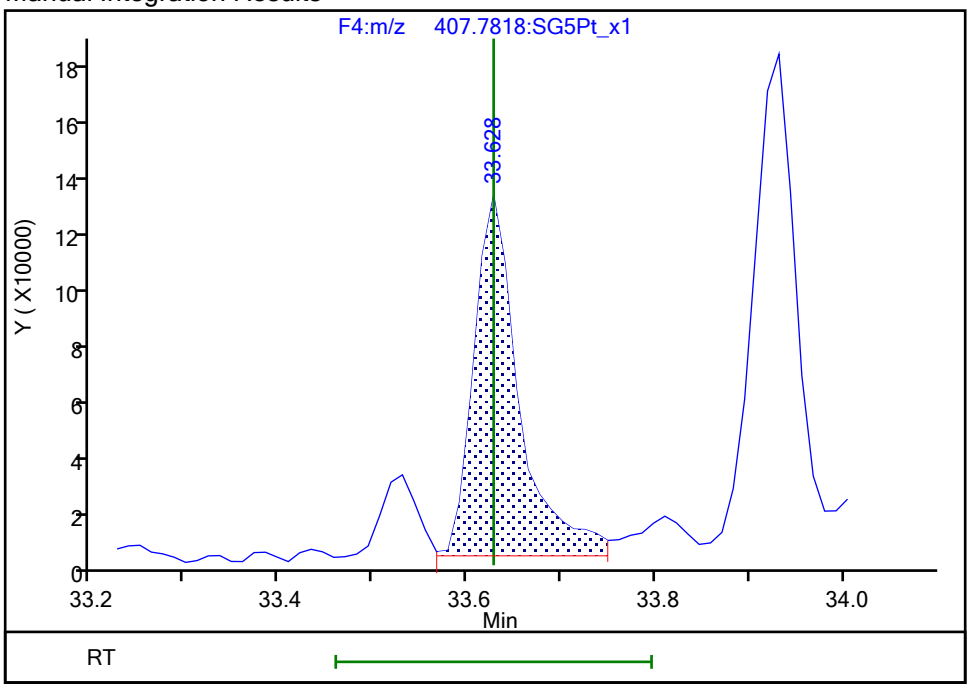
Processing Integration Results

RT: 33.63
Area: 500026
Amount: 1.296549
Amount Units: pg/ul



Manual Integration Results

RT: 33.63
Area: 425697
Amount: 1.181893
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:35:43

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

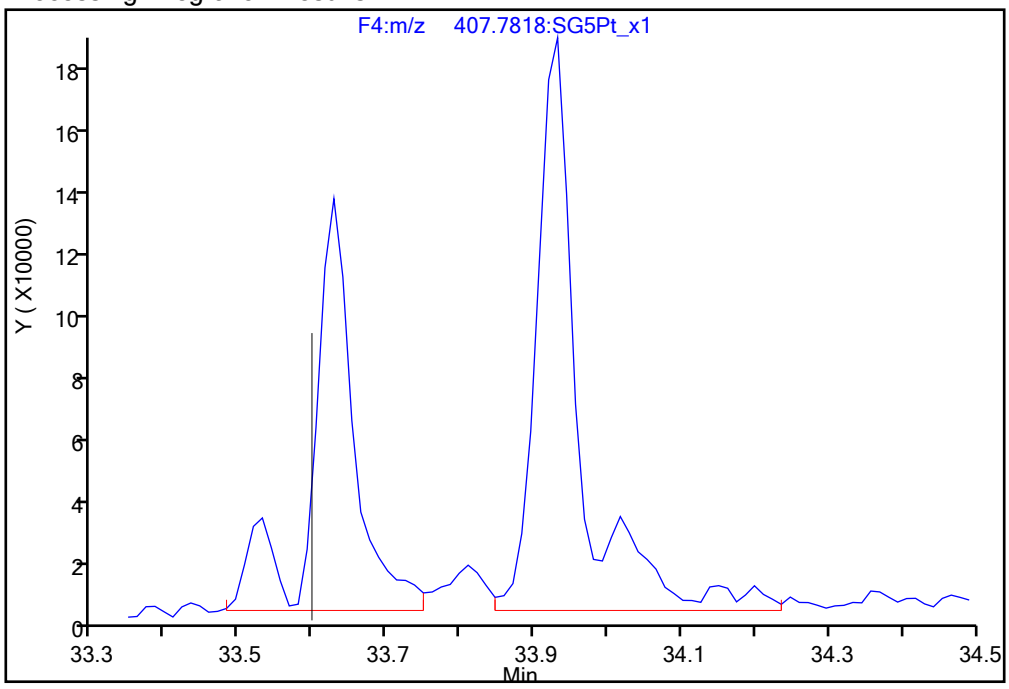
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7818, RT: (33.60- 34.74)

Signal: 1

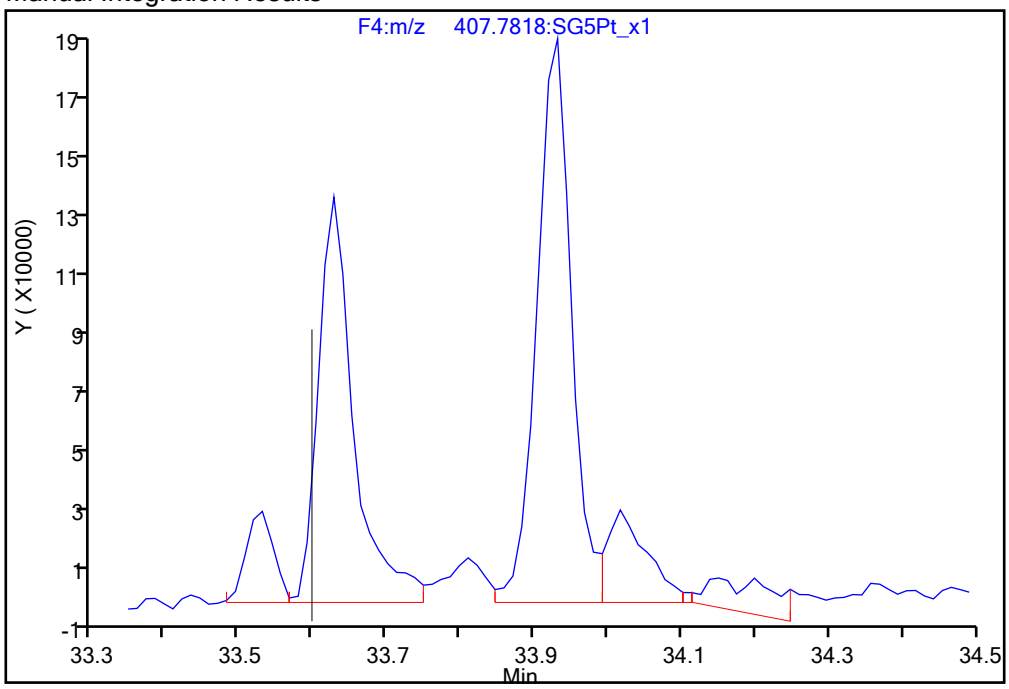
Processing Integration Results

RT = 33.931 Area = 720281



Manual Integration Results

RT = 33.931 Area = 576471 M



Reviewer: dadunj, 20-Dec-2019 14:36:21

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d				
Injection Date:	19-Dec-2019 19:44:08	Instrument ID:	3D5		
Lims ID:	320-56953-A-6-A	Lab Sample ID:	320-56953-6		
Client ID:	11187072-120919-BN-SJSSA04(1-2)				
Operator ID:	AJS	ALS Bottle#:	12	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

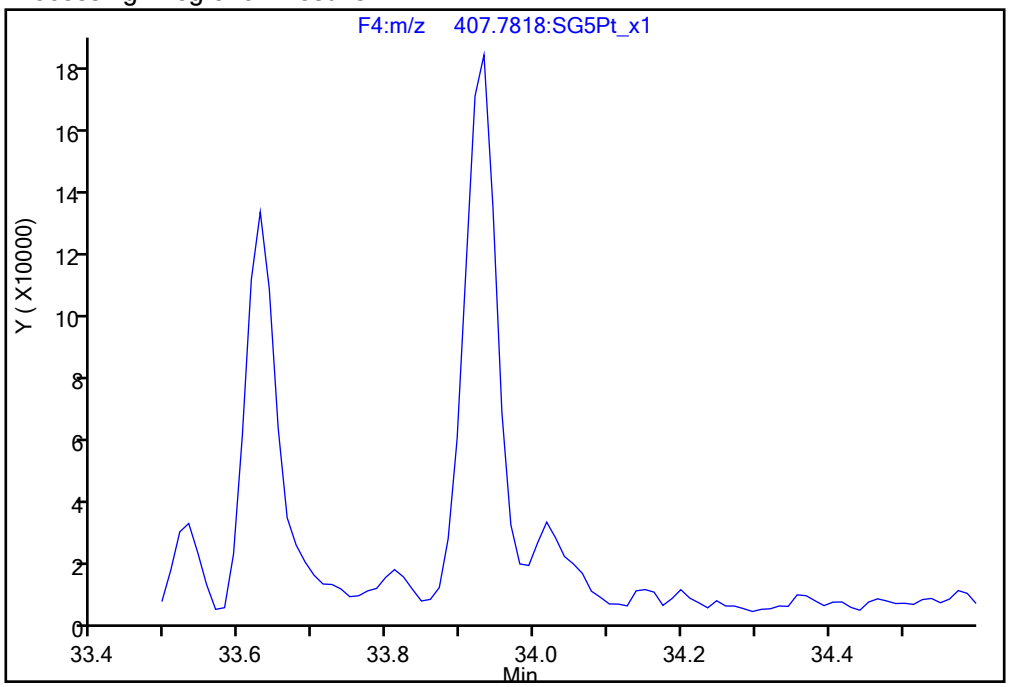
Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7818, RT: (33.60- 34.74)

Signal: 1

Not Detected

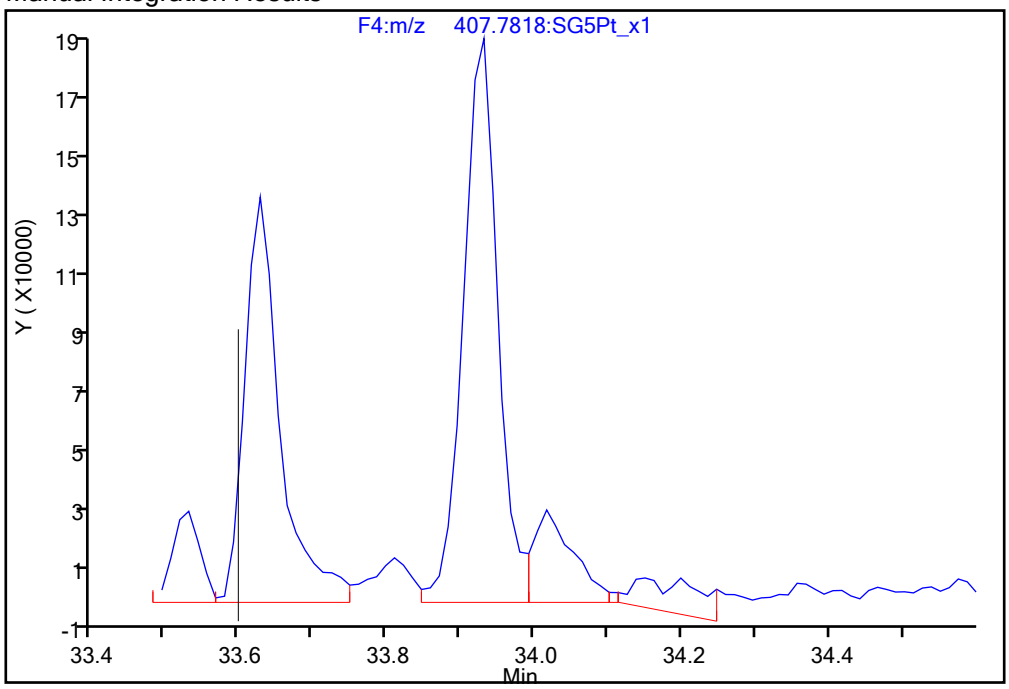
RT: 33.60- 34.74

Processing Integration Results



Manual Integration Results

RT = 34.017 Area = 104879 M



Reviewer: dadunj, 20-Dec-2019 14:36:21

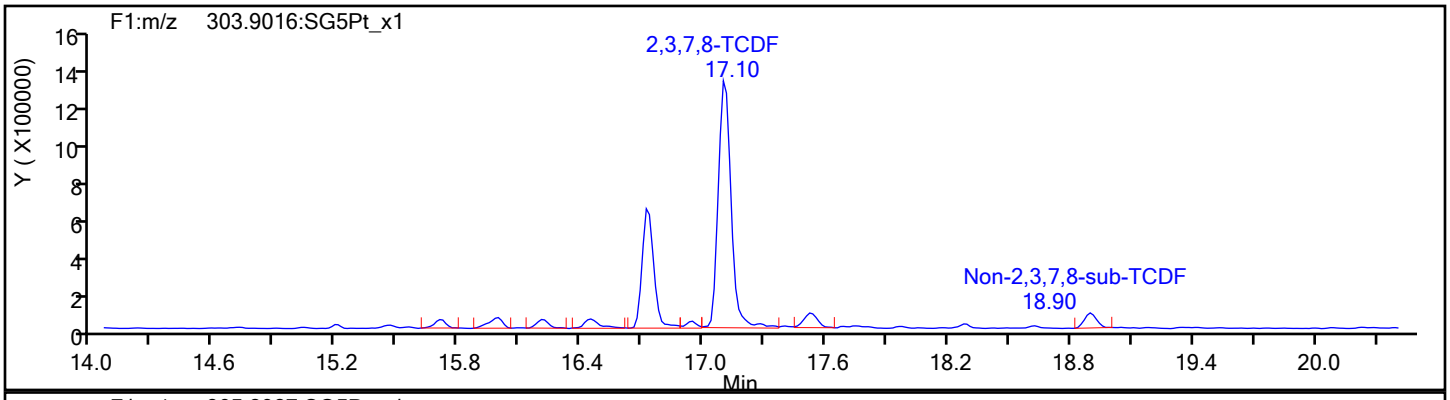
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

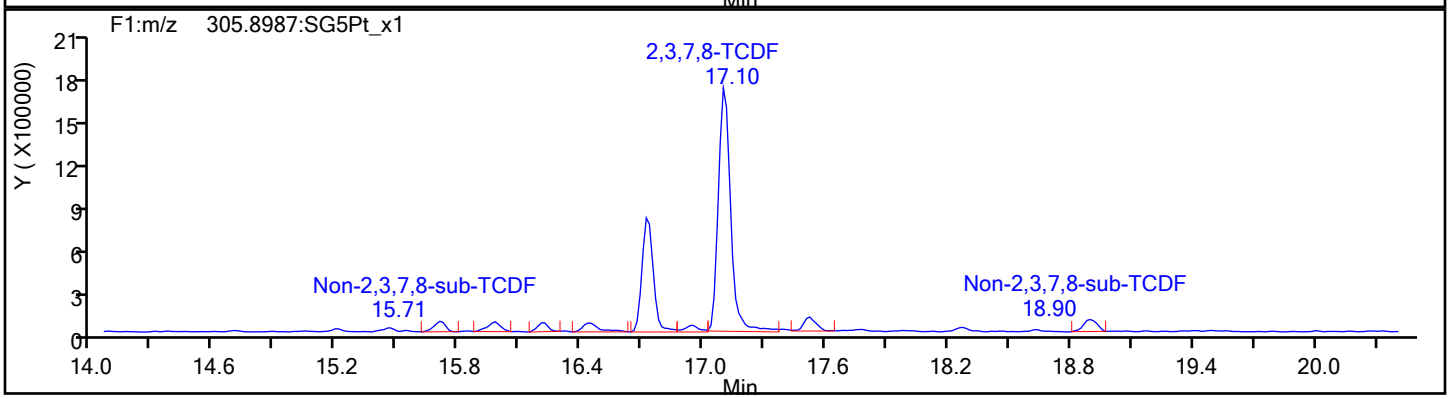
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

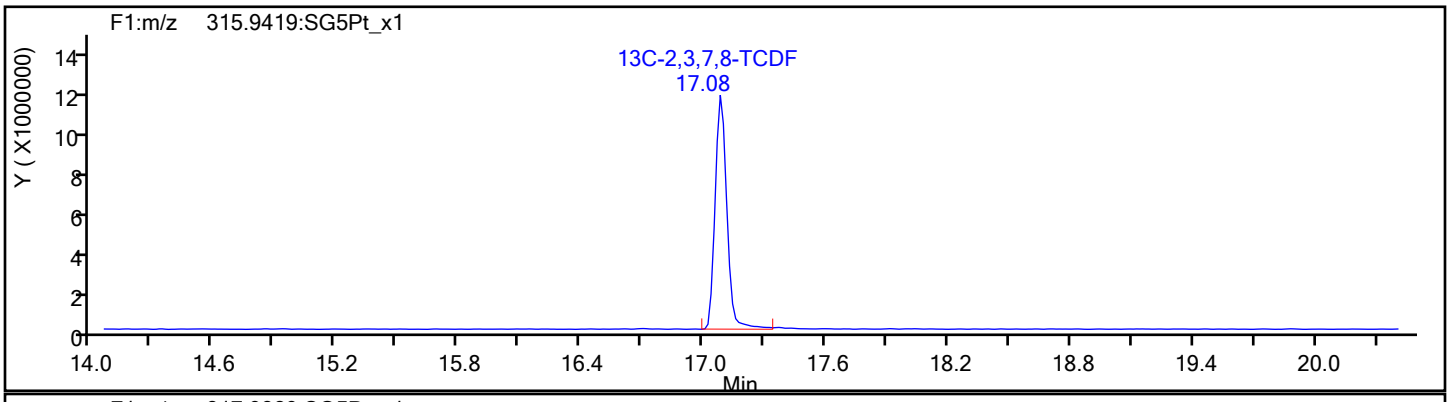
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

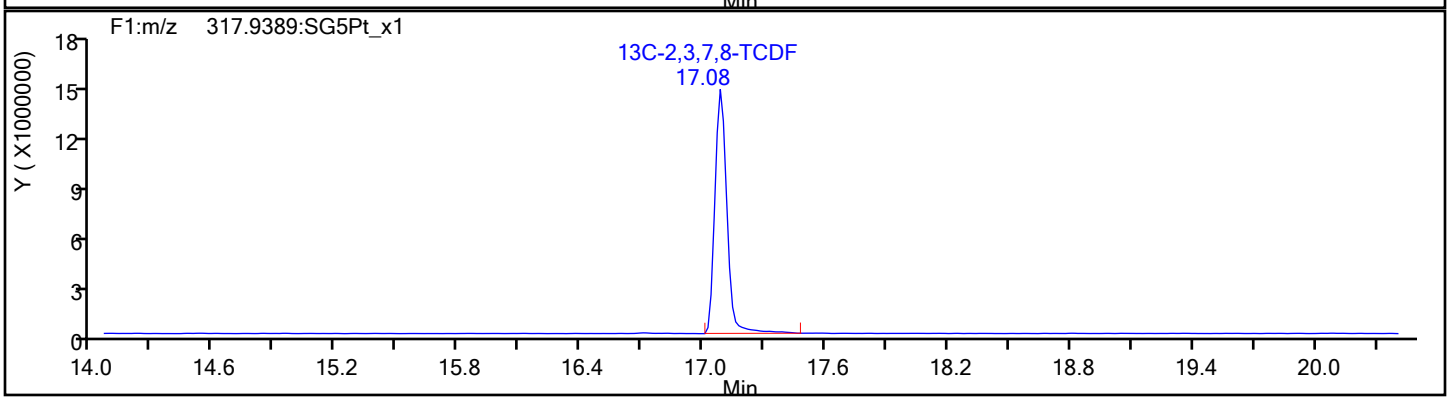
TCDF





TCDF Standards



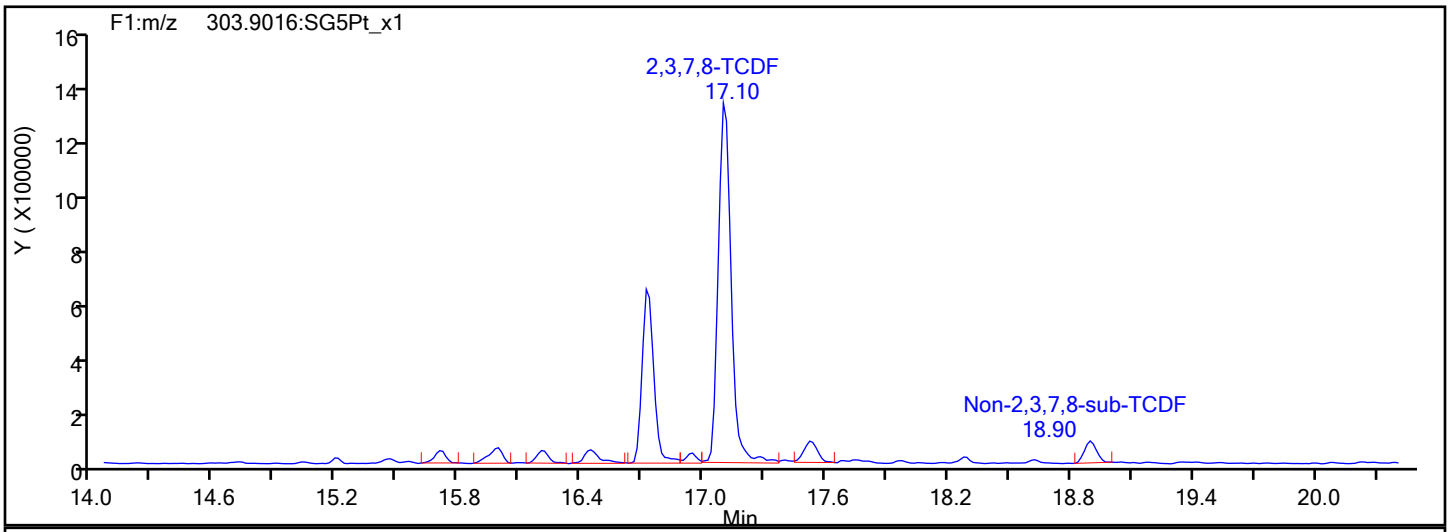


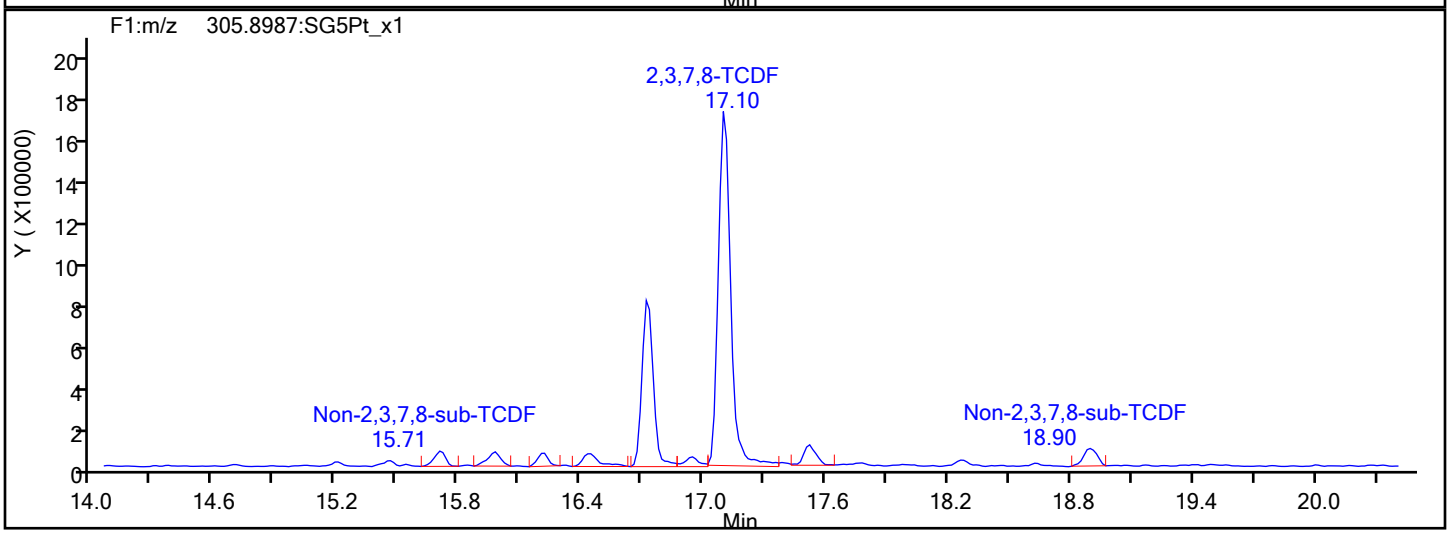
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

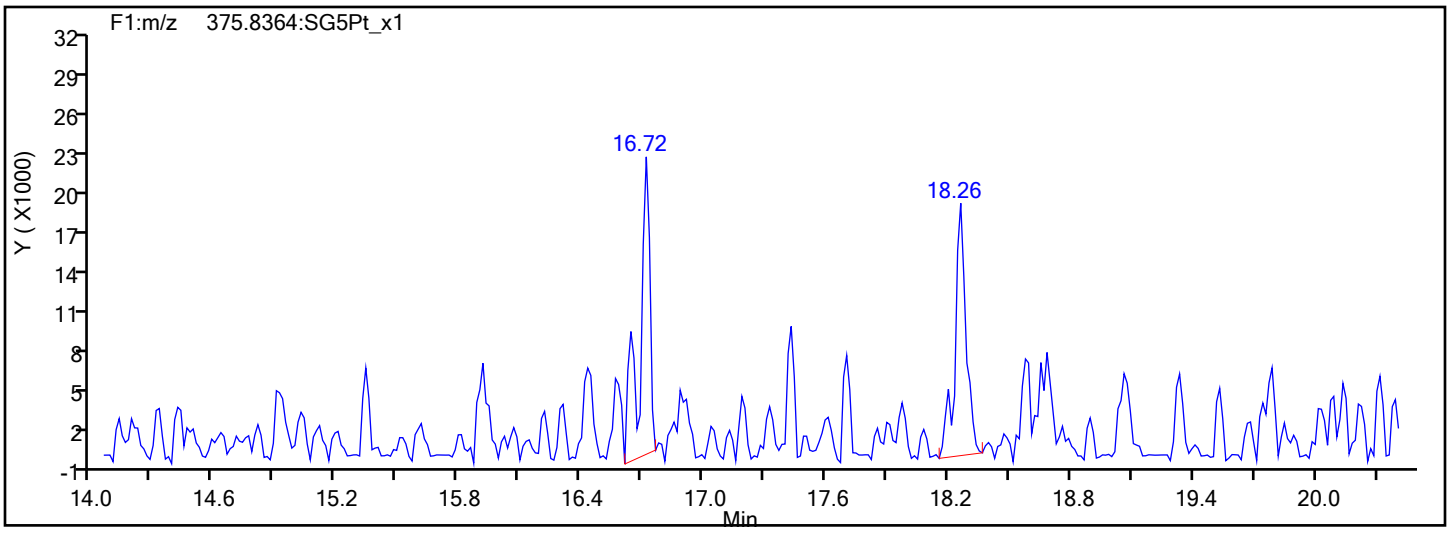
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

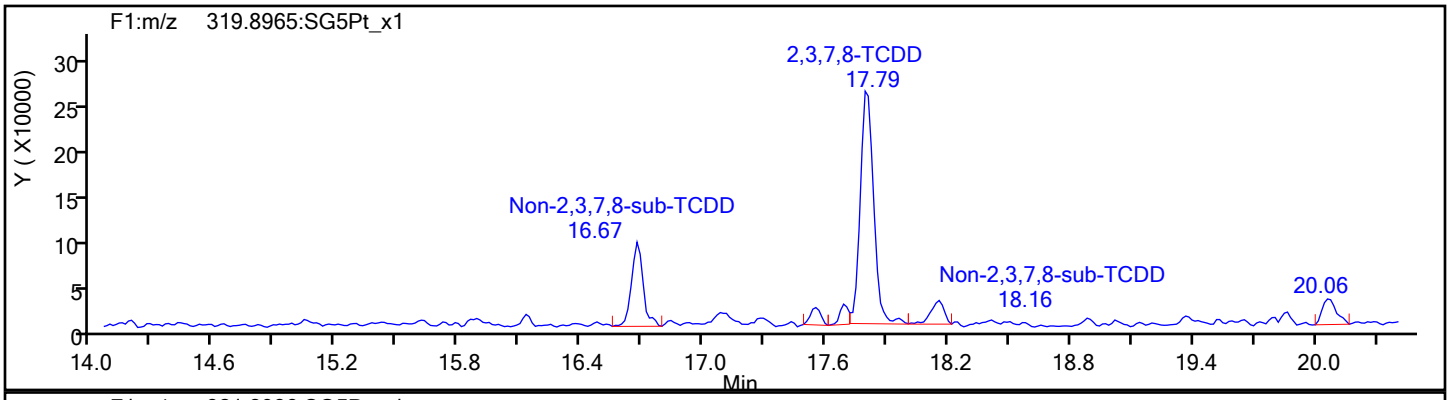


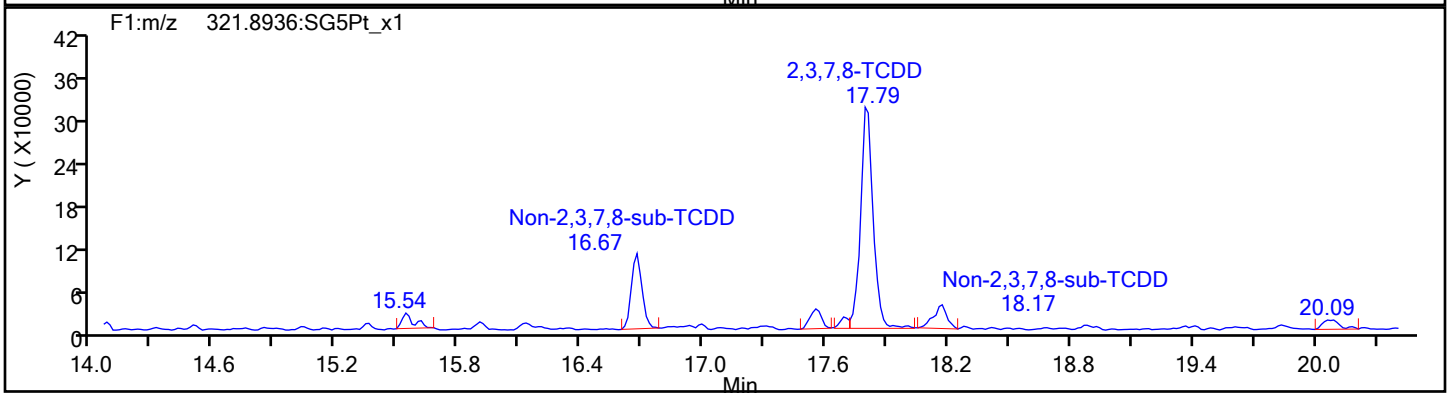
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

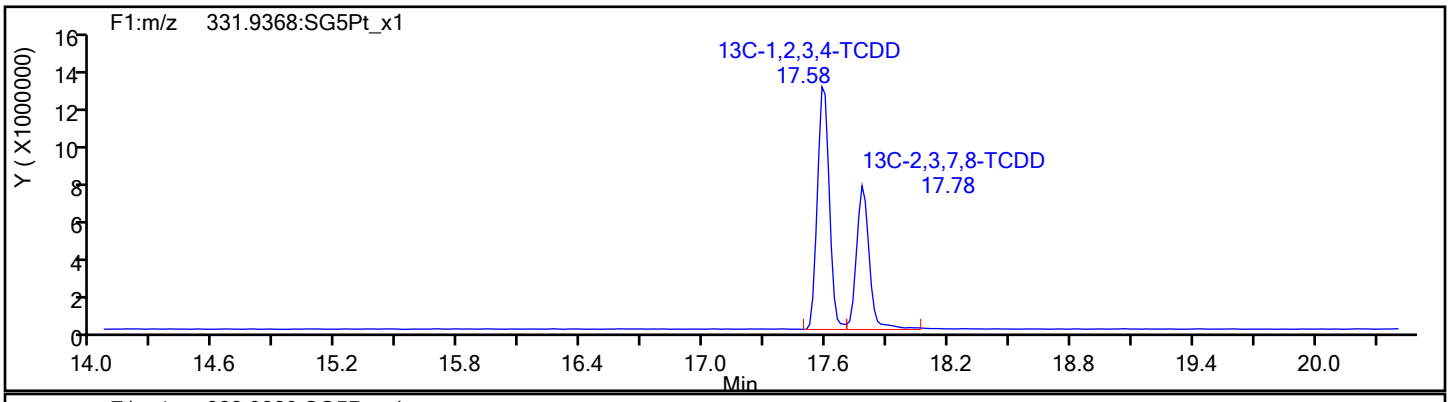
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

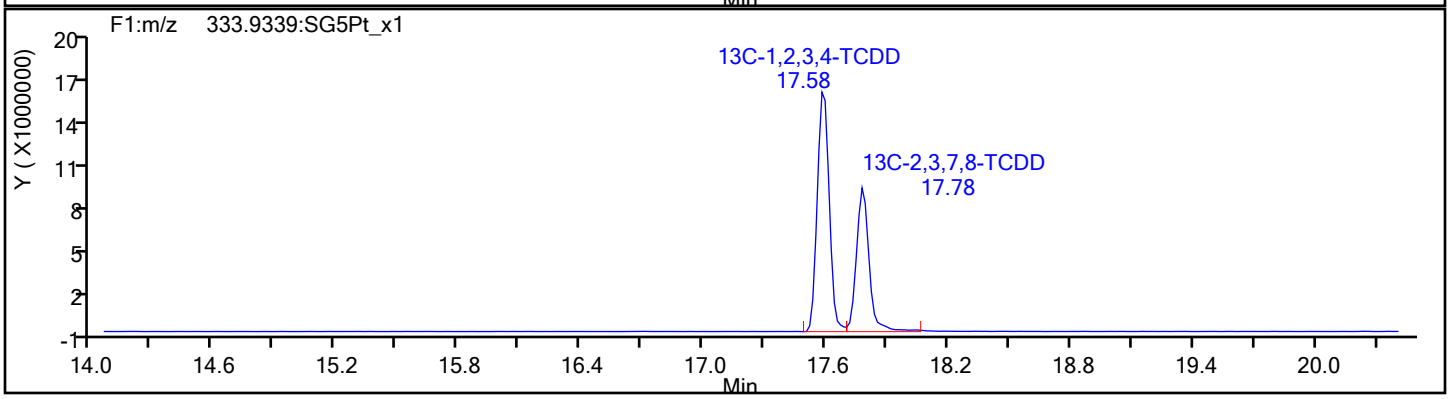
TCDD





TCDD Standards



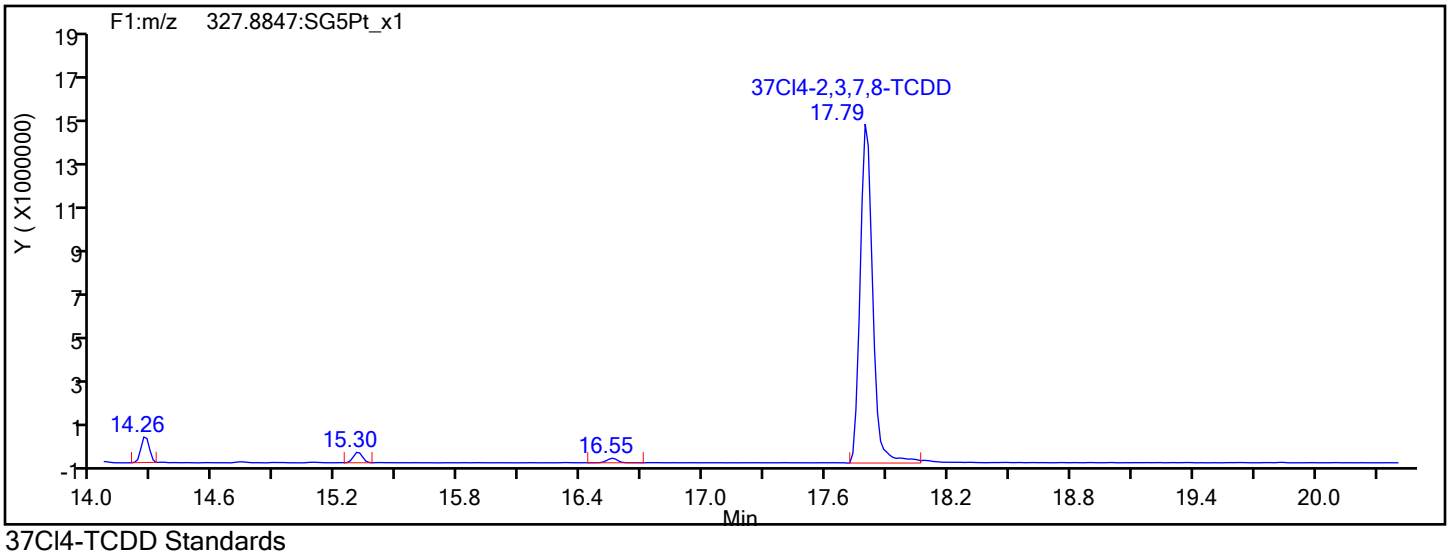


Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

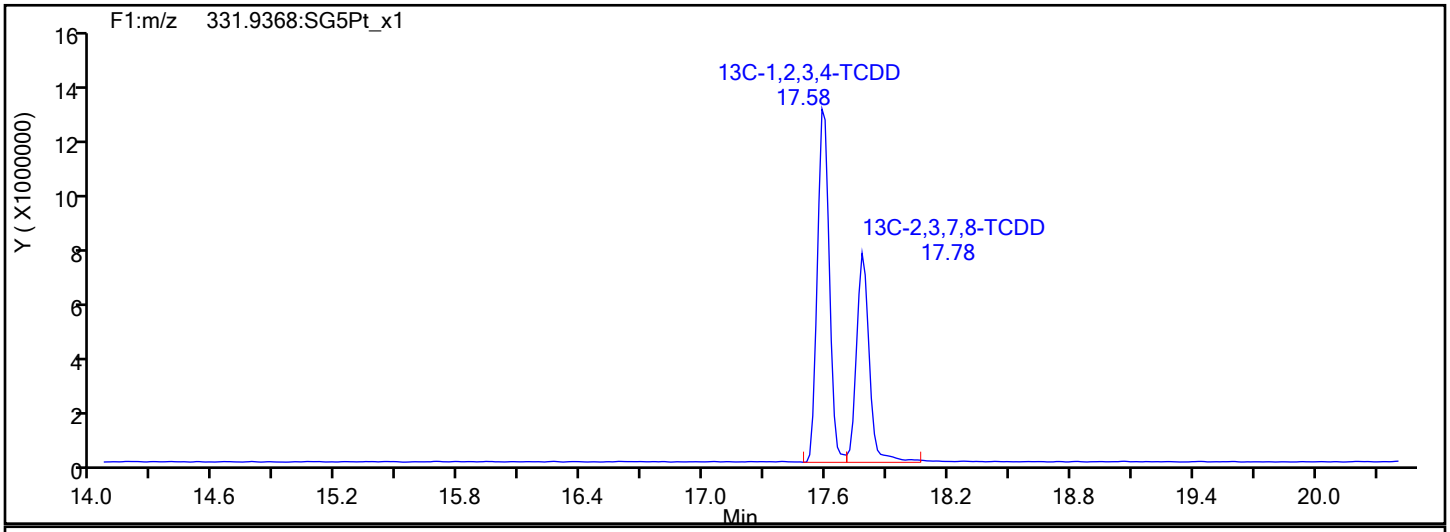
Eurofins TestAmerica, Sacramento

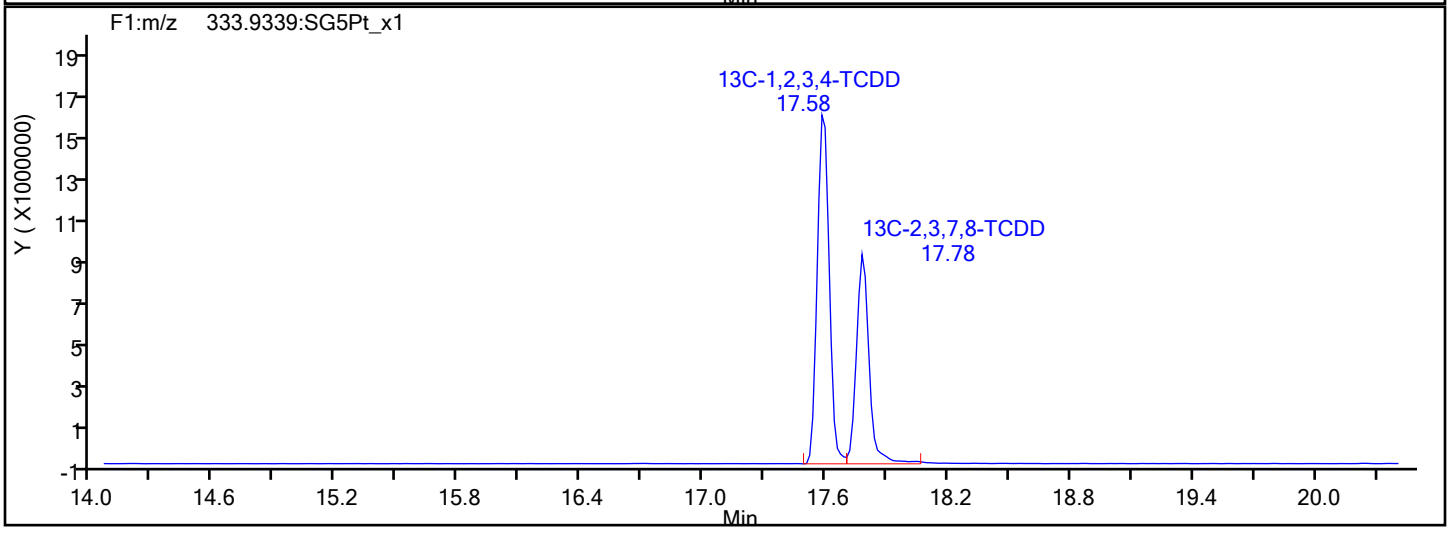
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



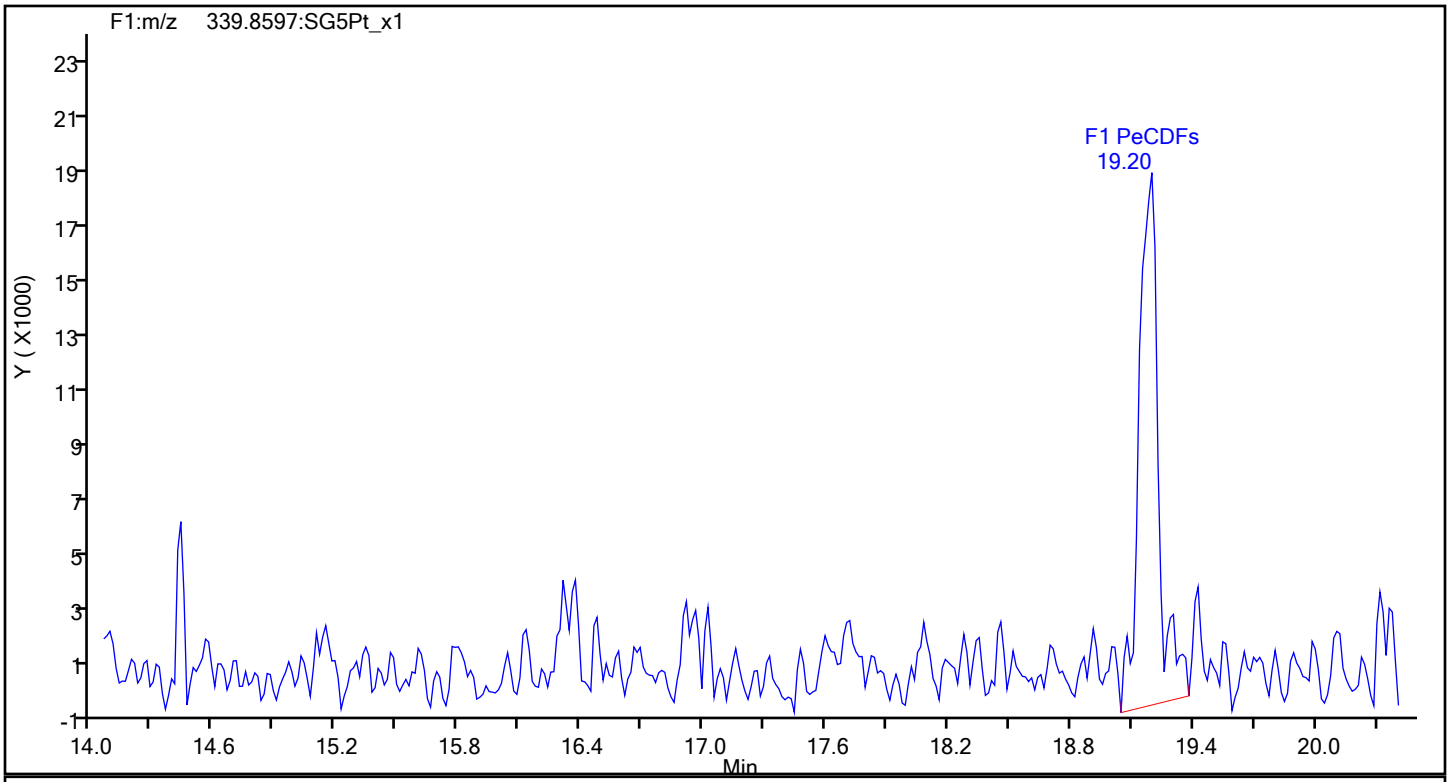


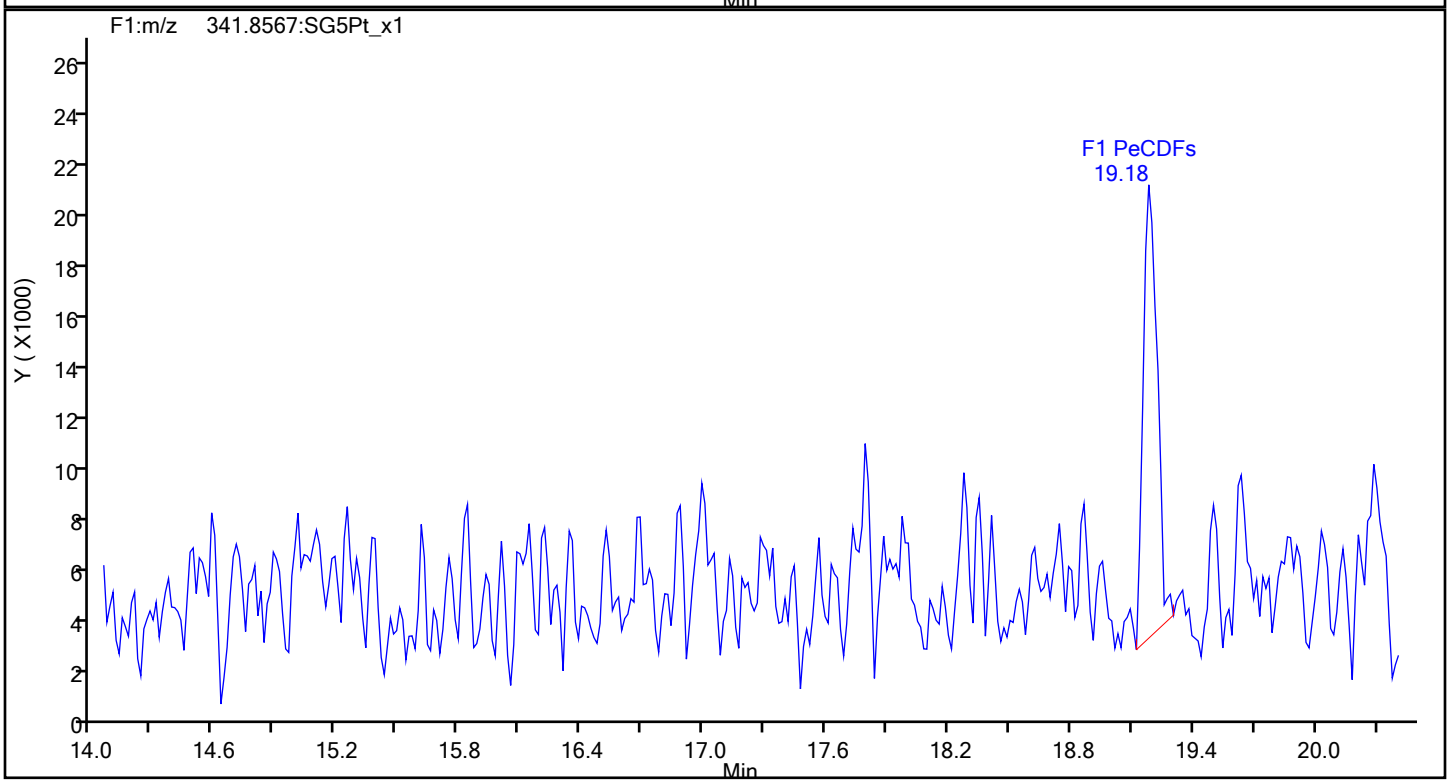
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



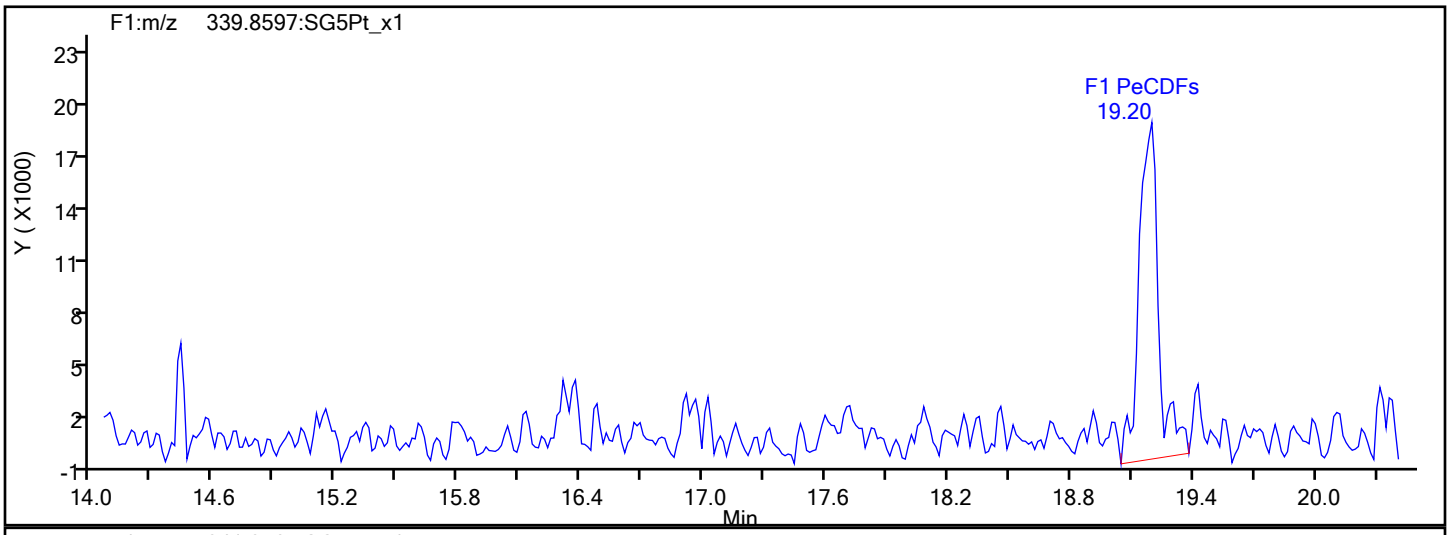


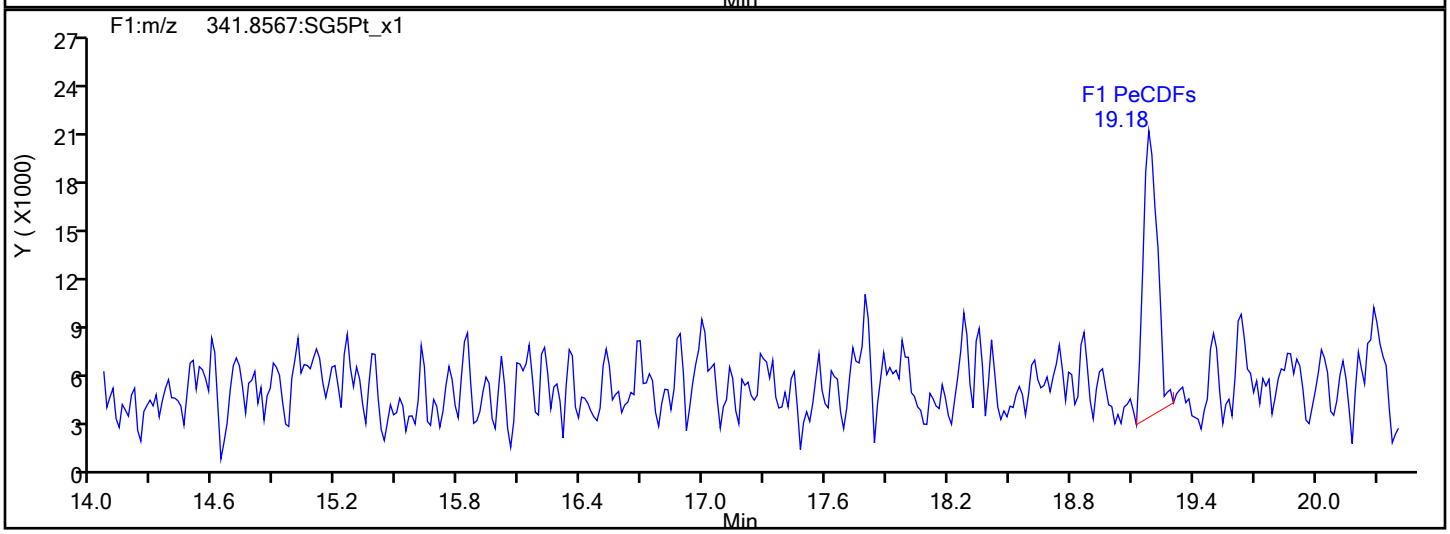
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

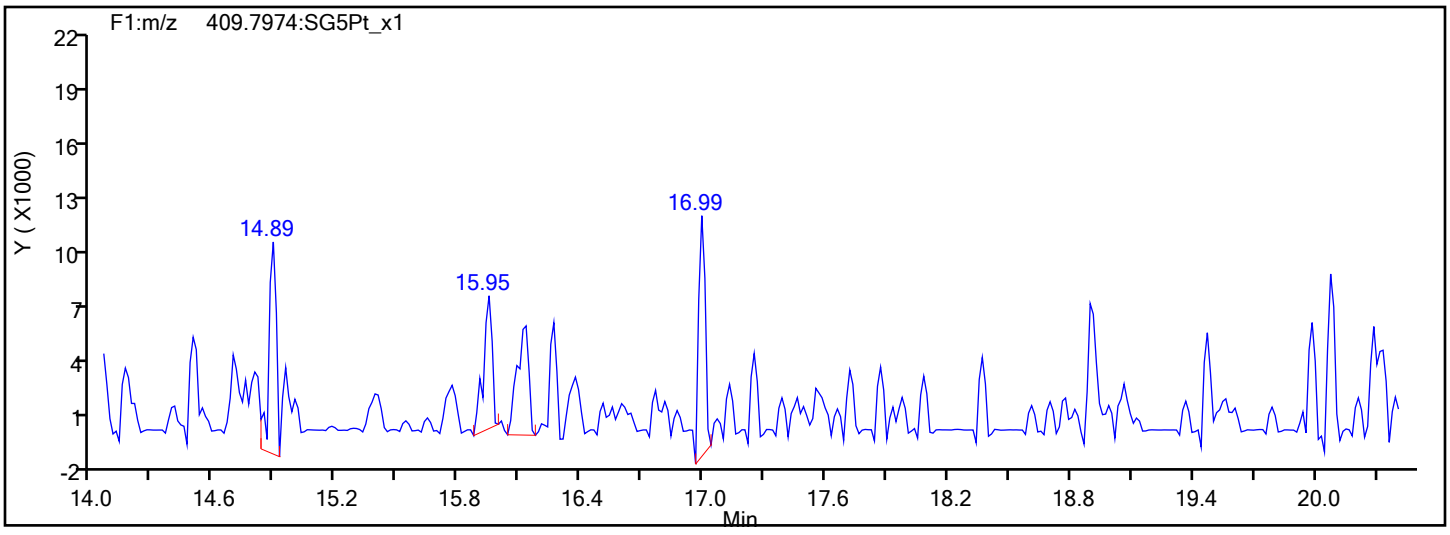
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

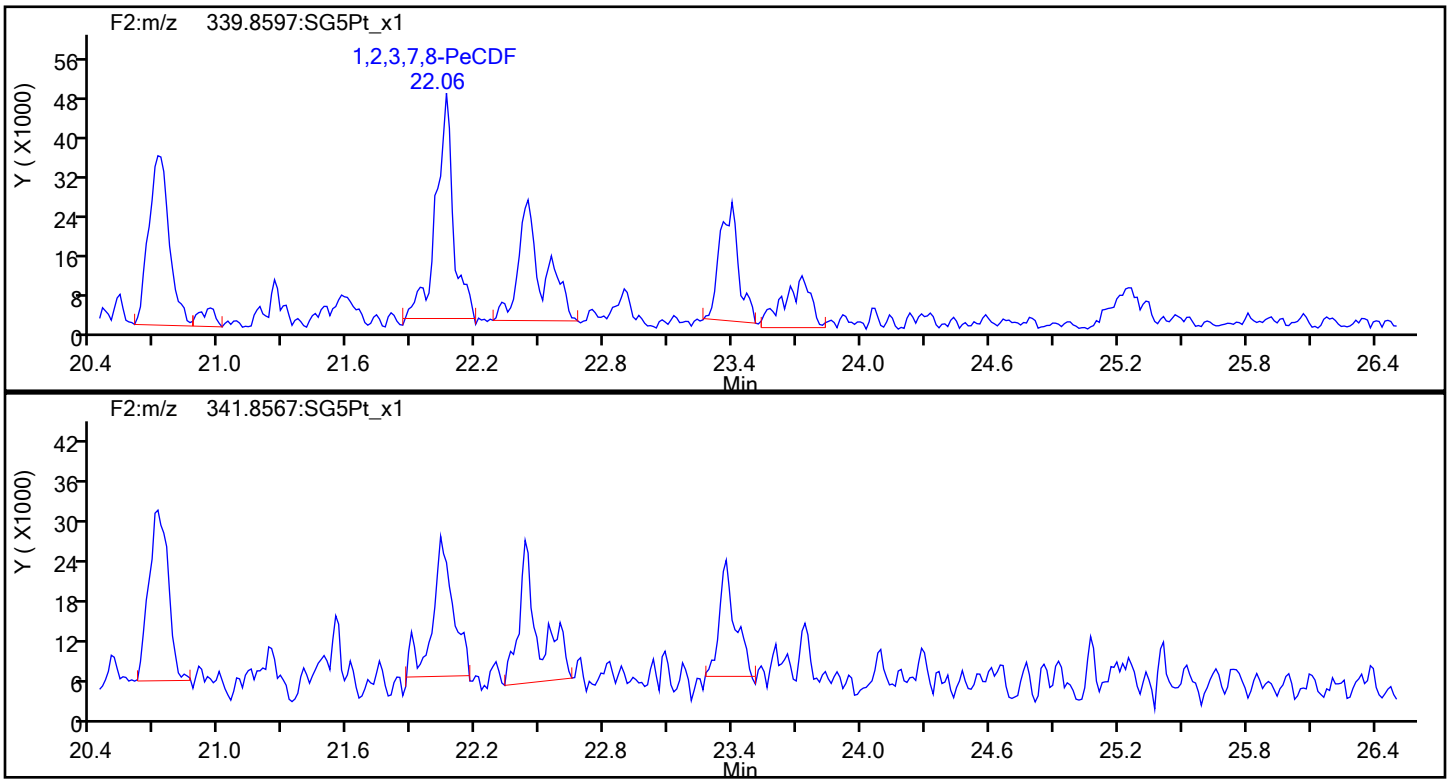


Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

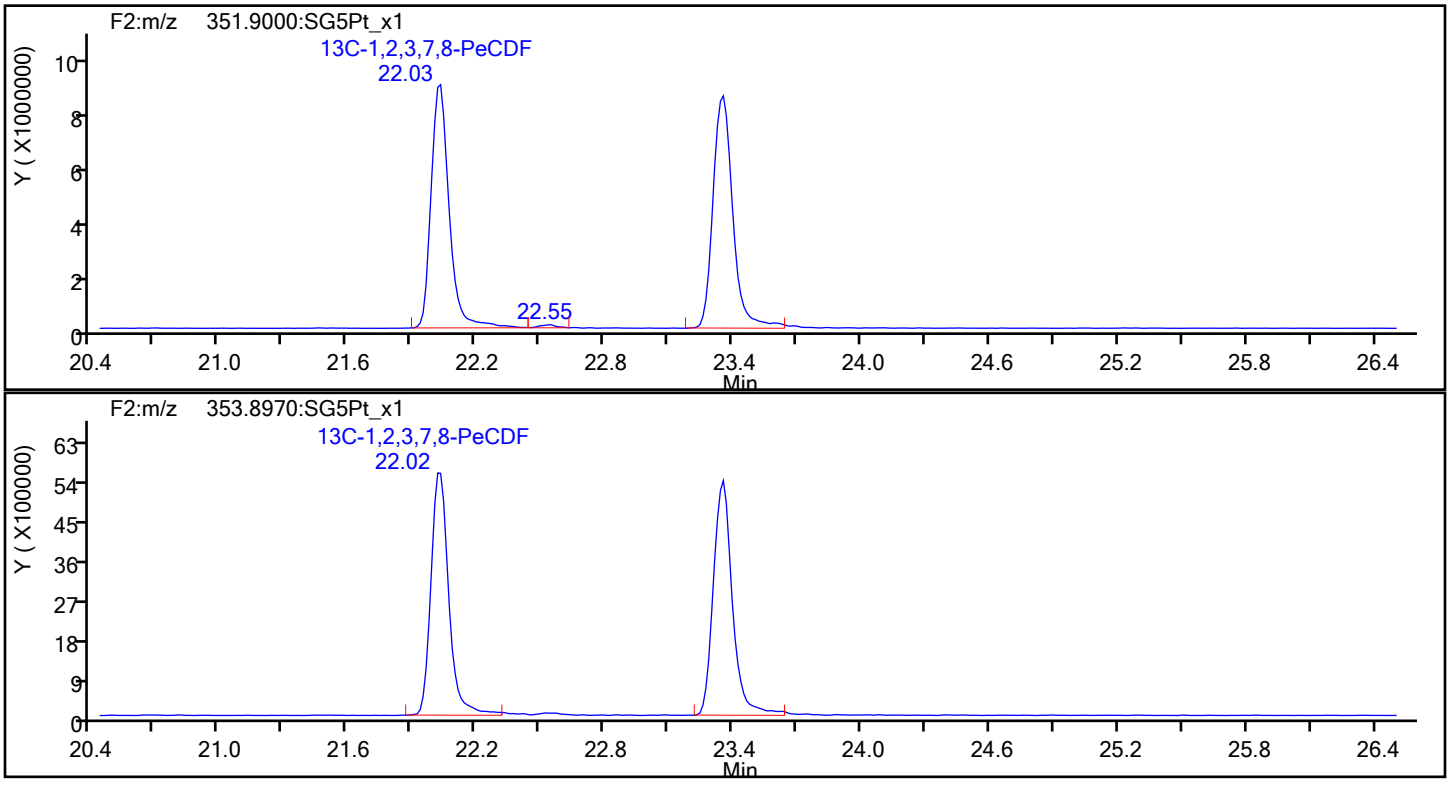
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

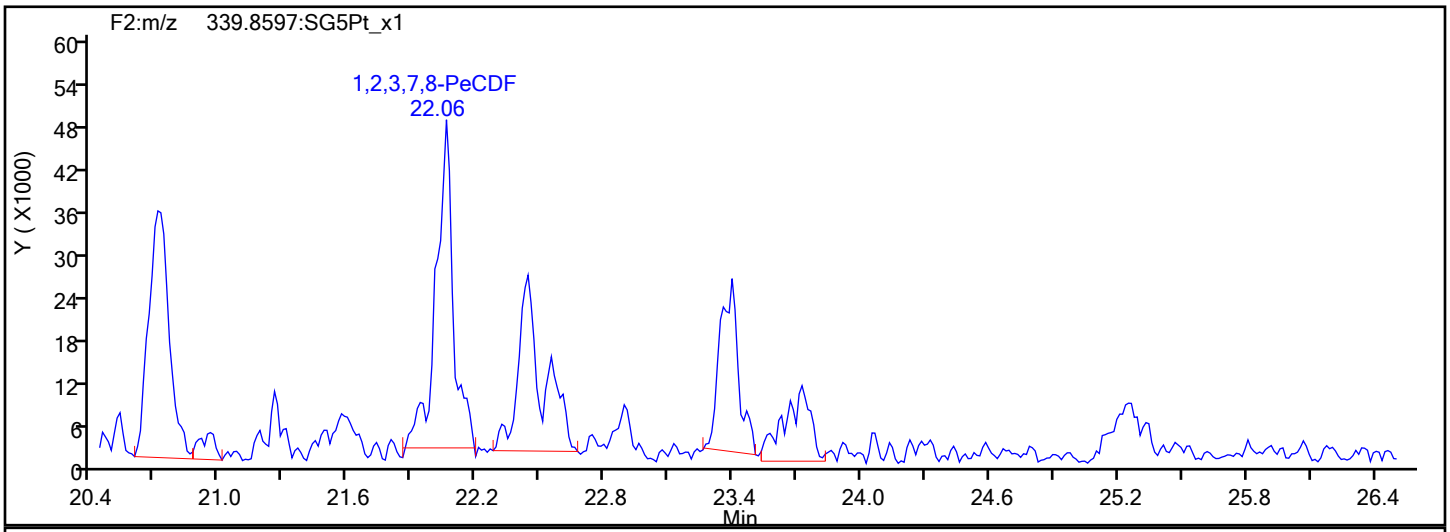


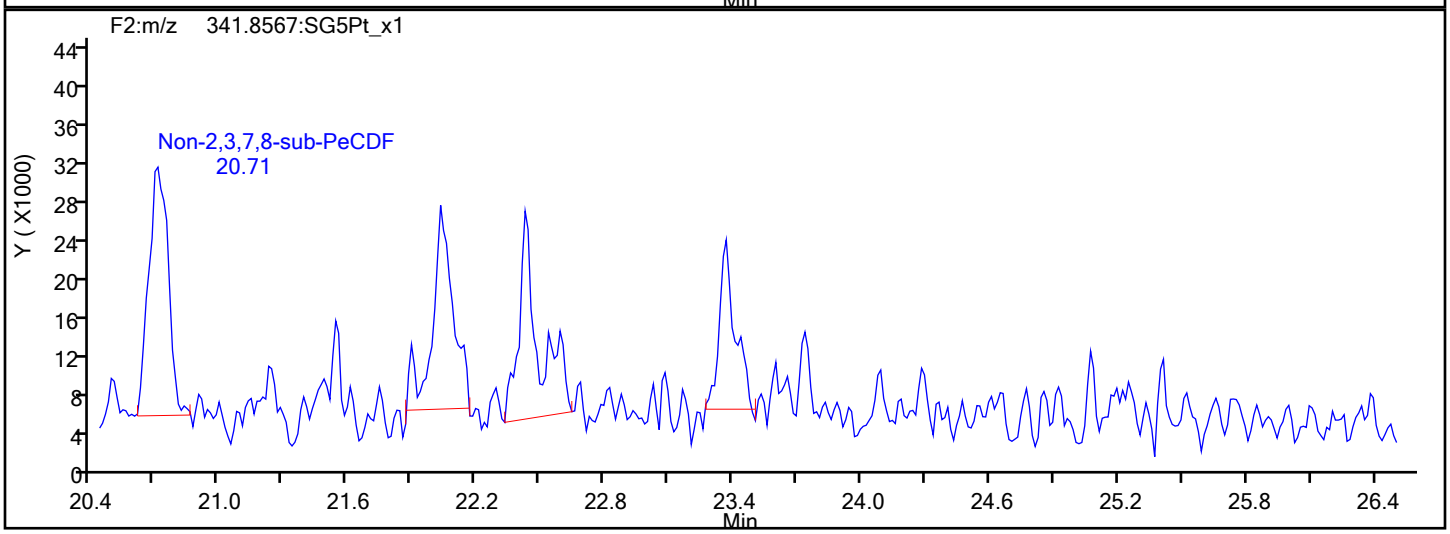
Report Date: 22-Dec-2019 12:56:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

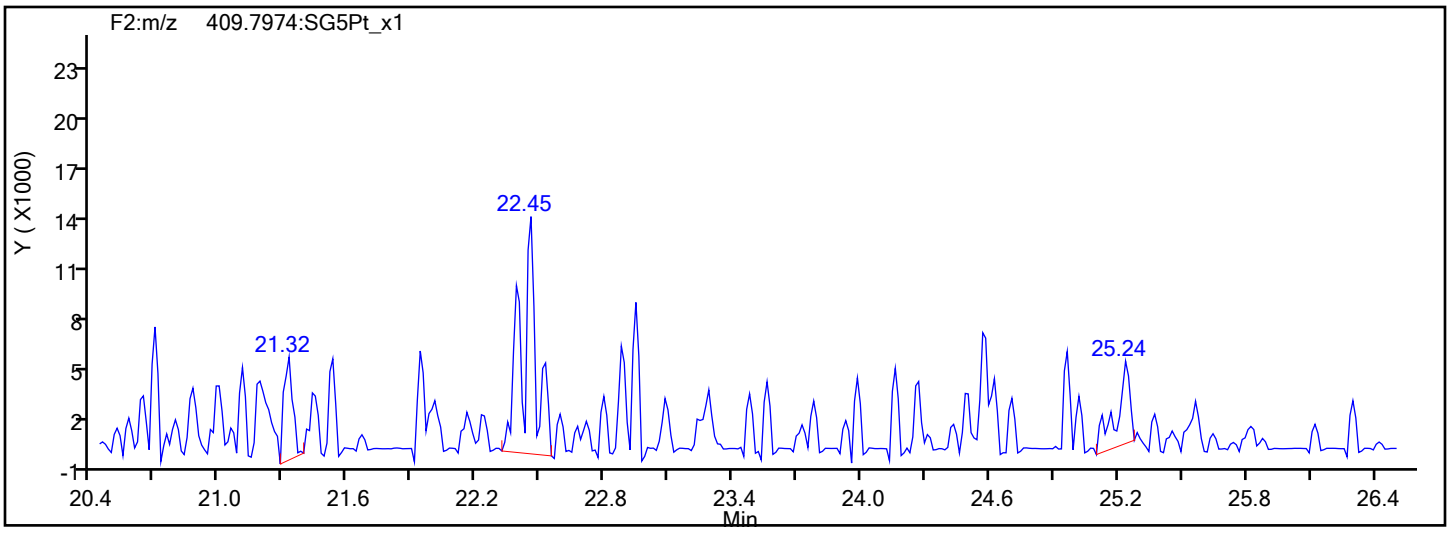
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d

Injection Date: 19-Dec-2019 19:44:08 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

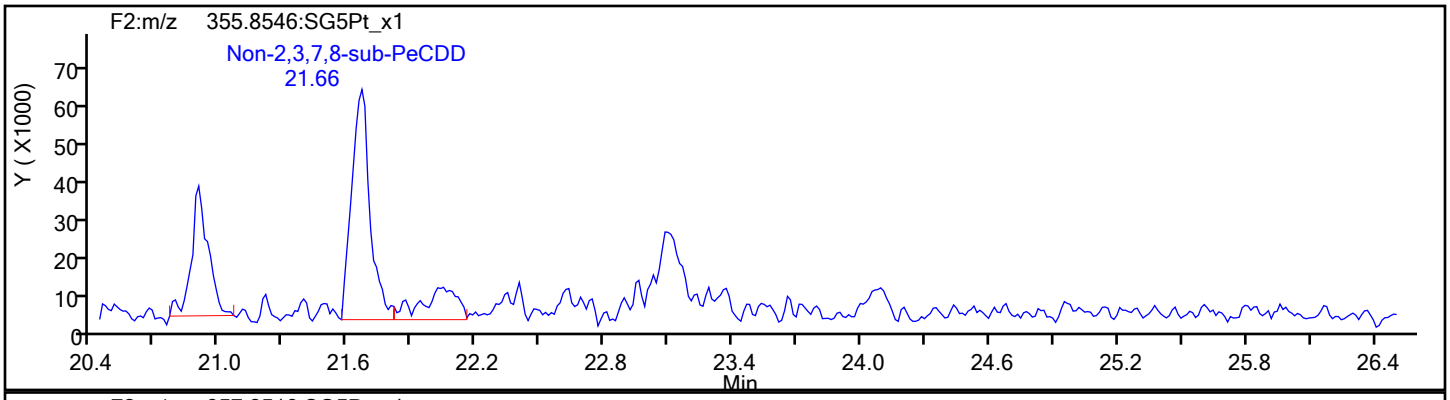
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

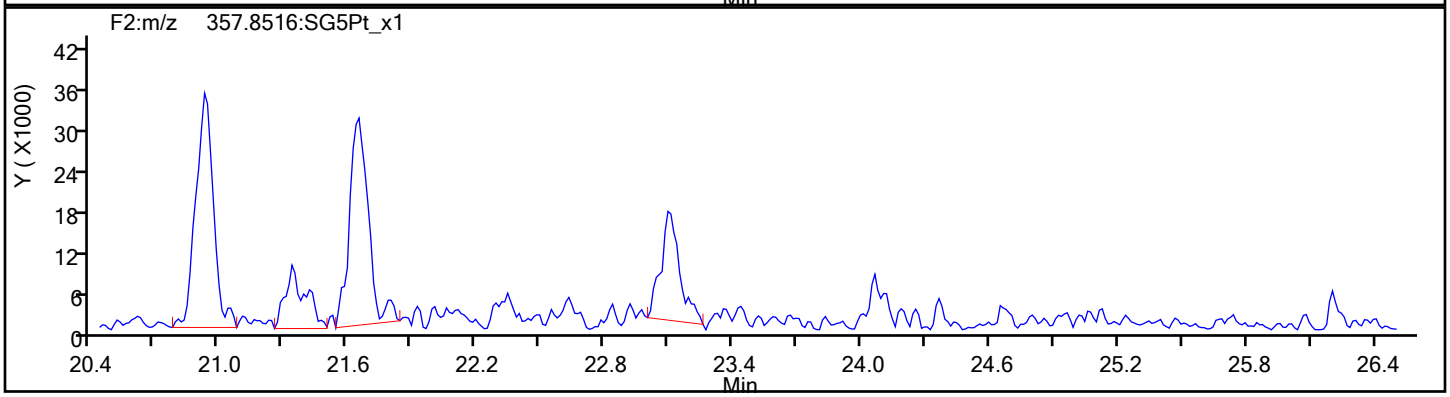
Client ID: 11187072-120919-BN-SJSSA04(1-2)

Worklist#: 346752 Sample Line#: 12

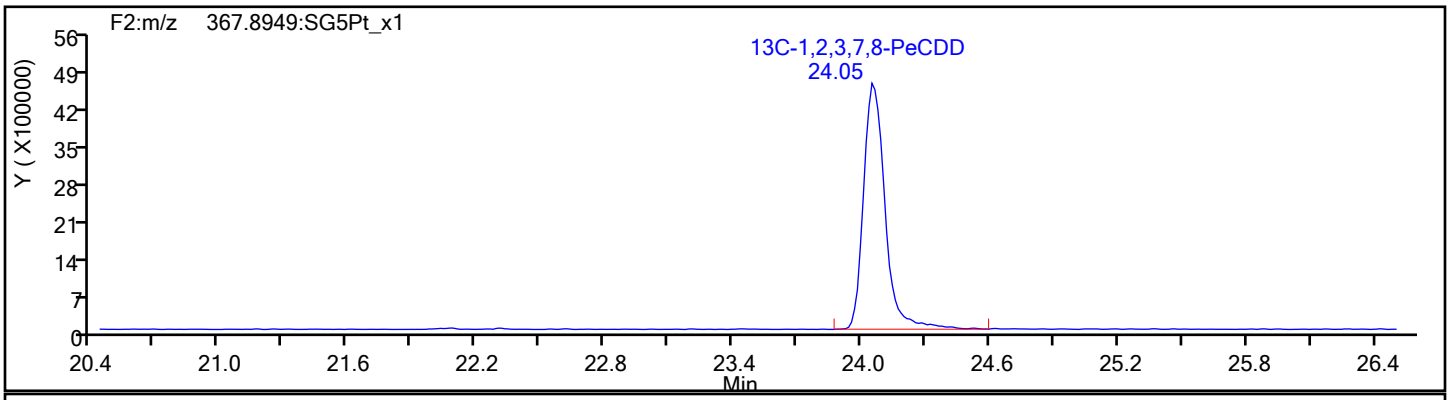
Column Type: DB-5 Column Dia: 0.32 mm

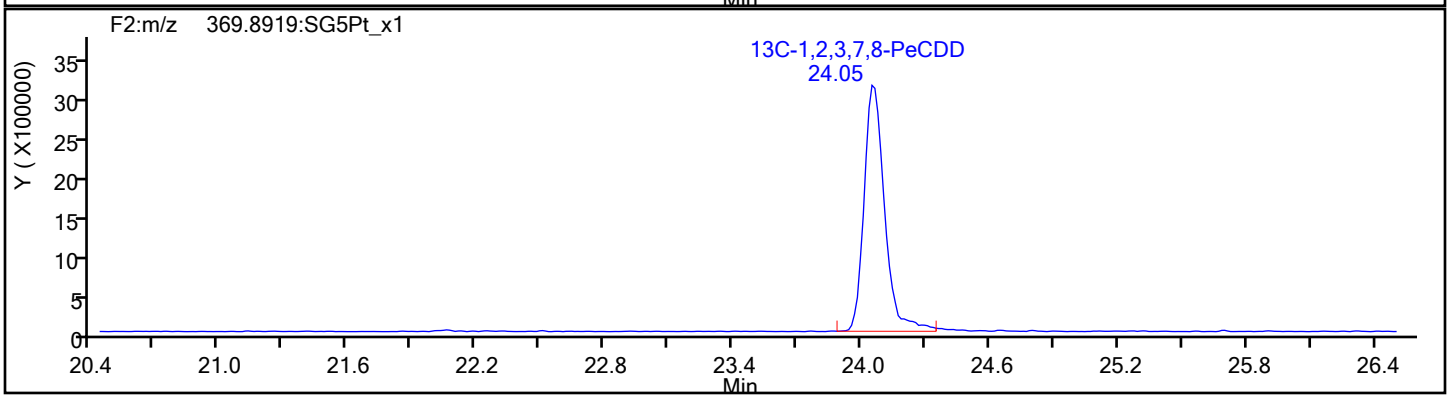
PeCDD





PeCDD Standards





Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
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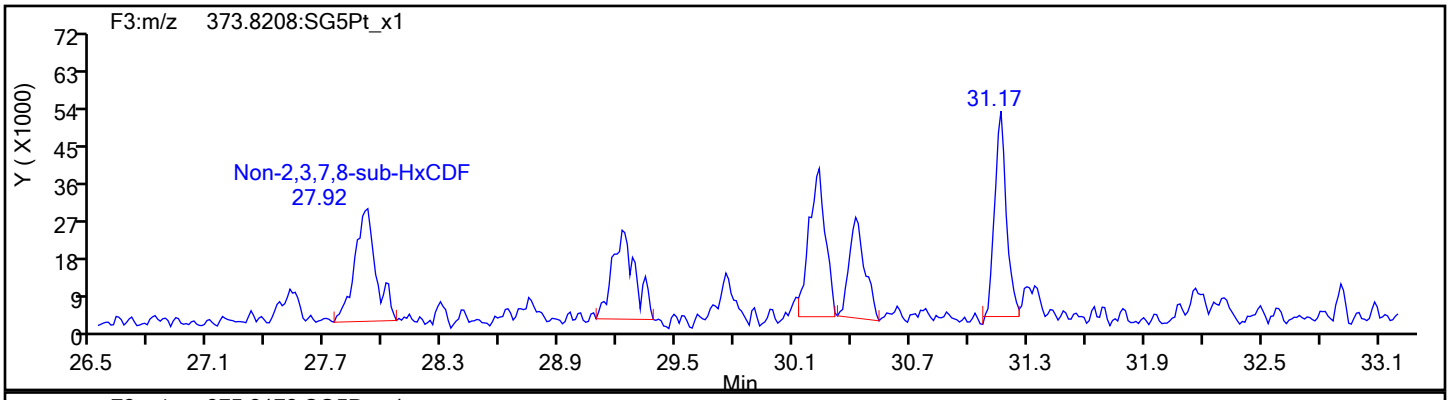
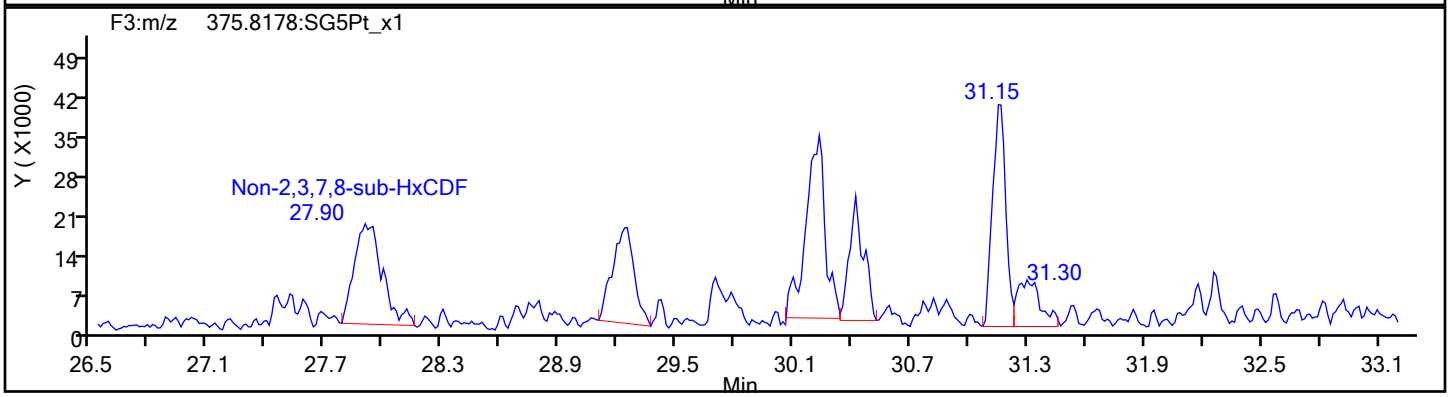
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





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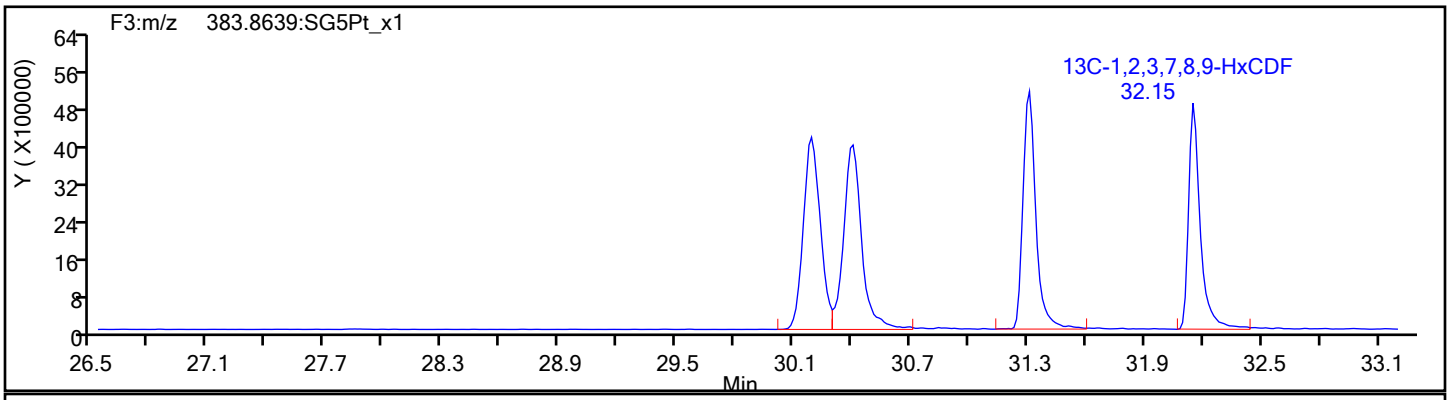

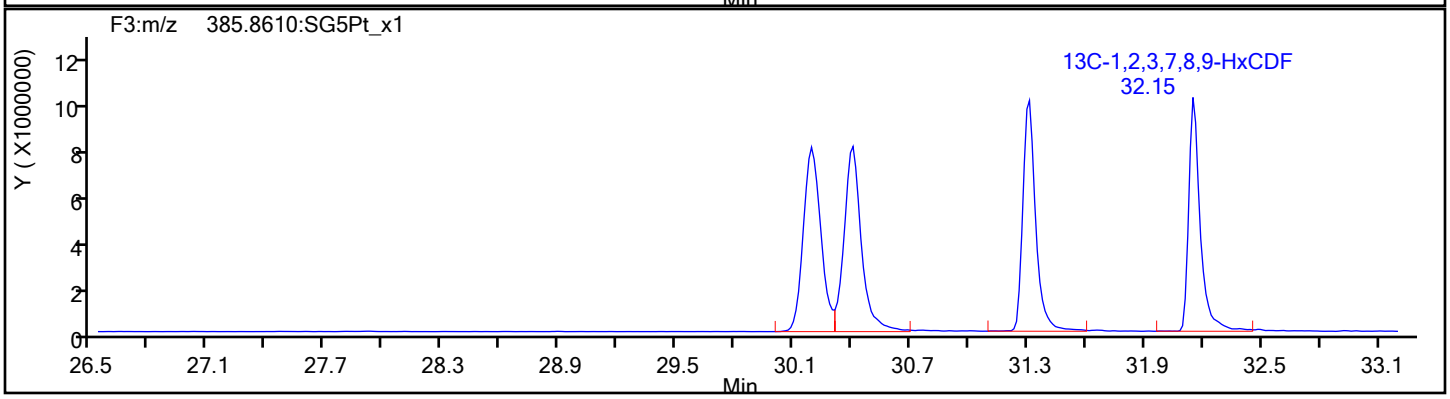

Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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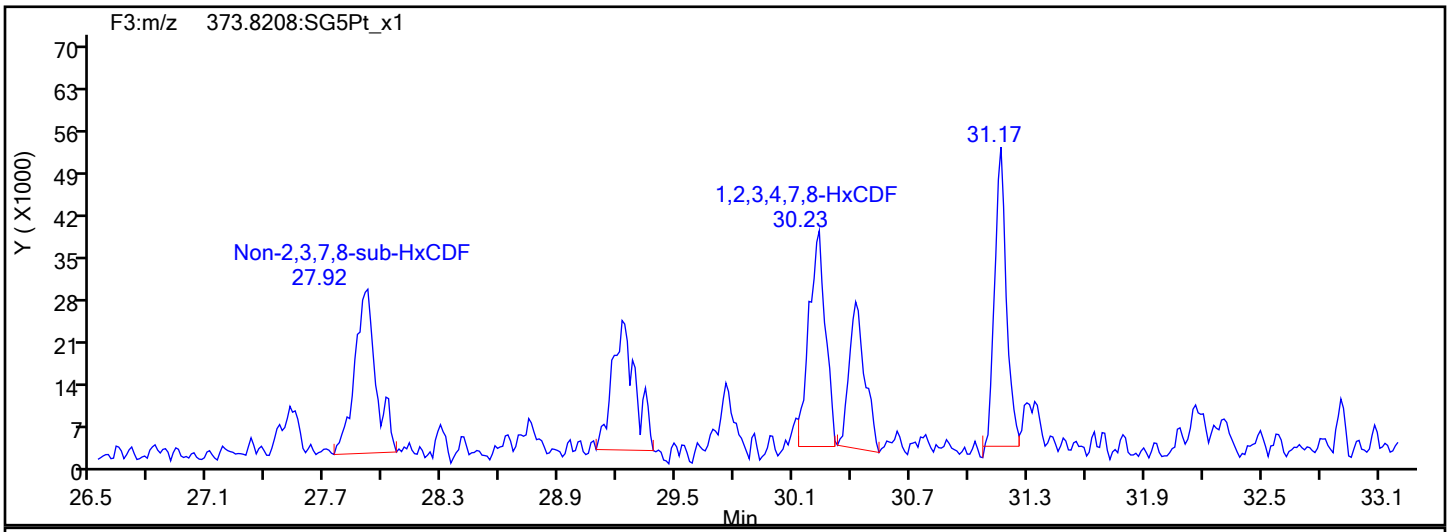
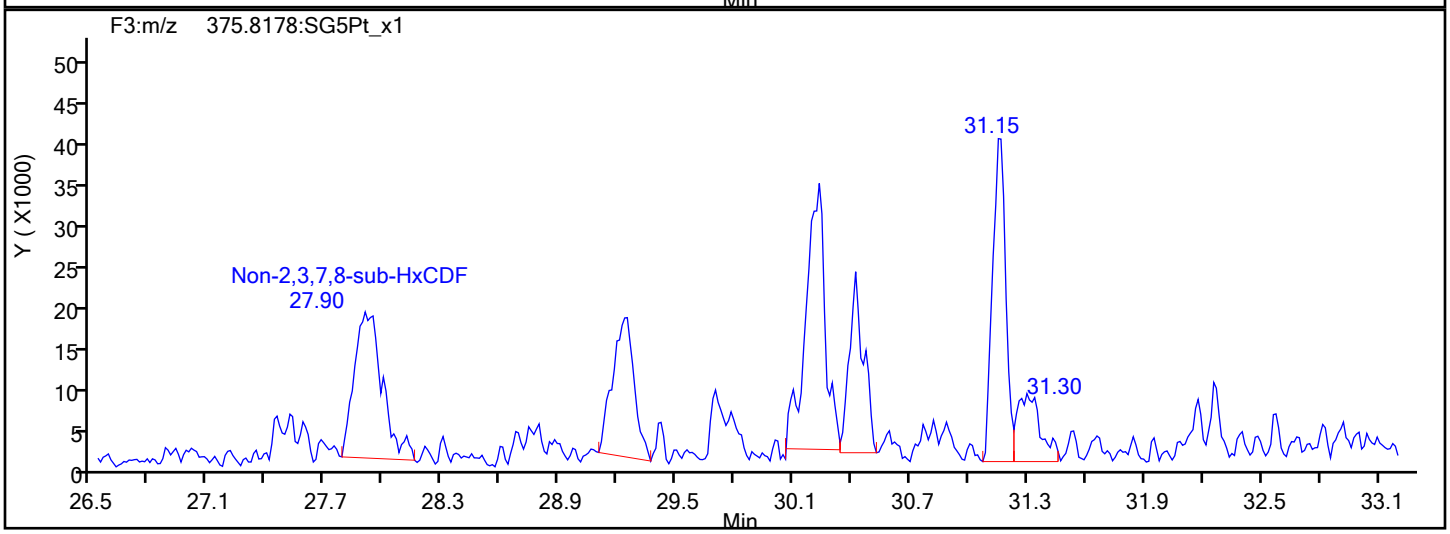
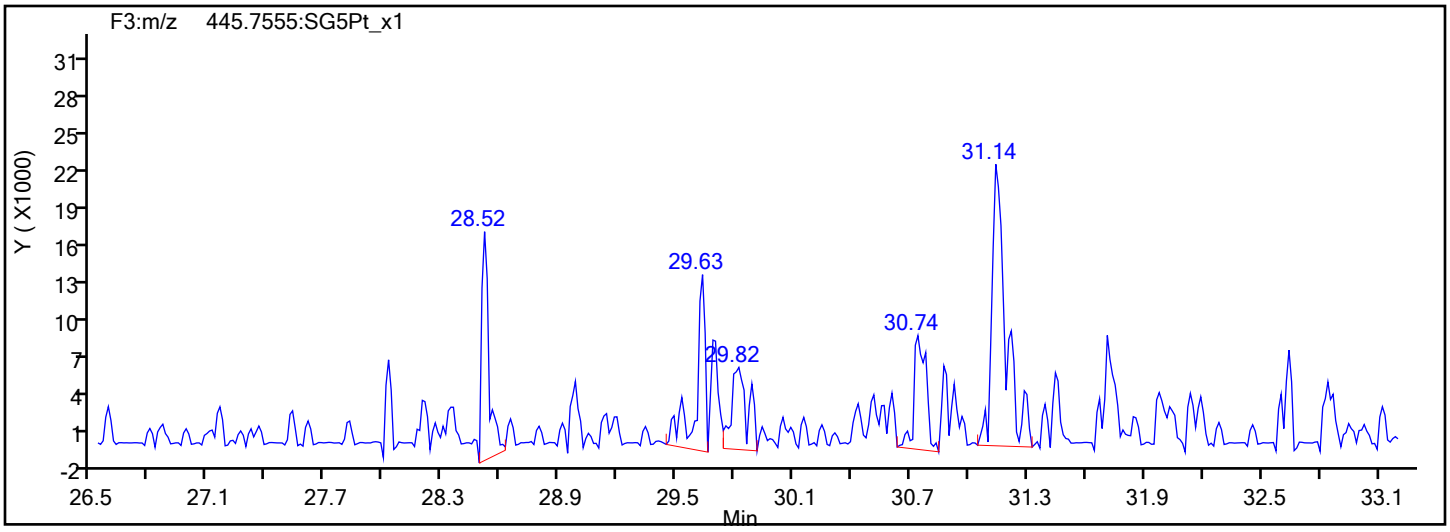




HxCDF Interference Mass



Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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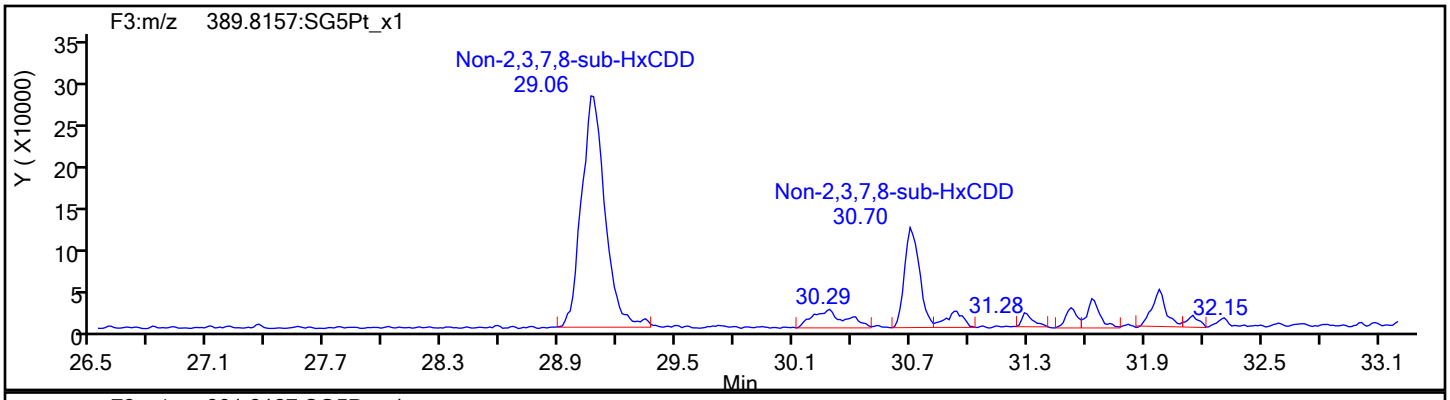
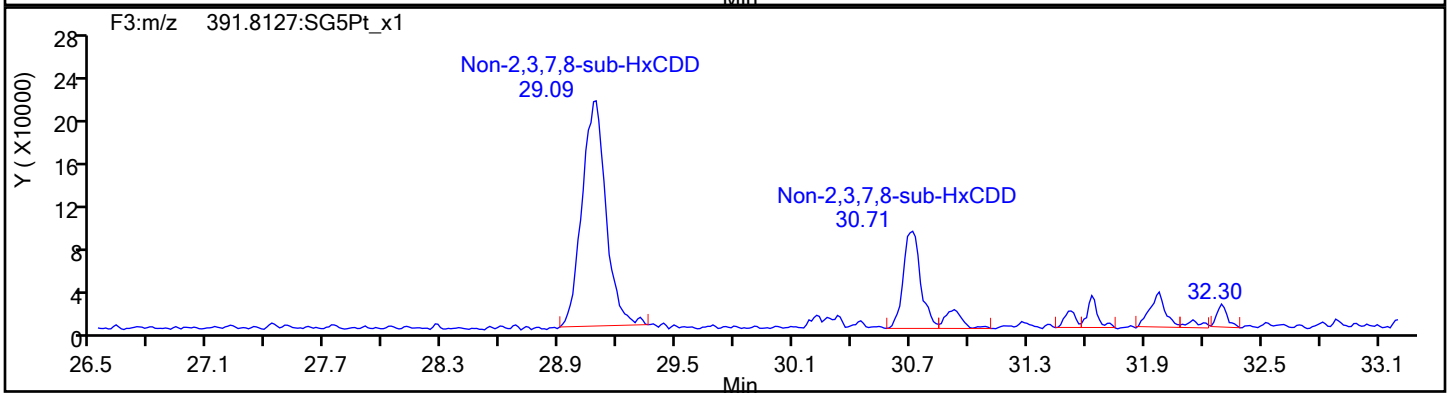
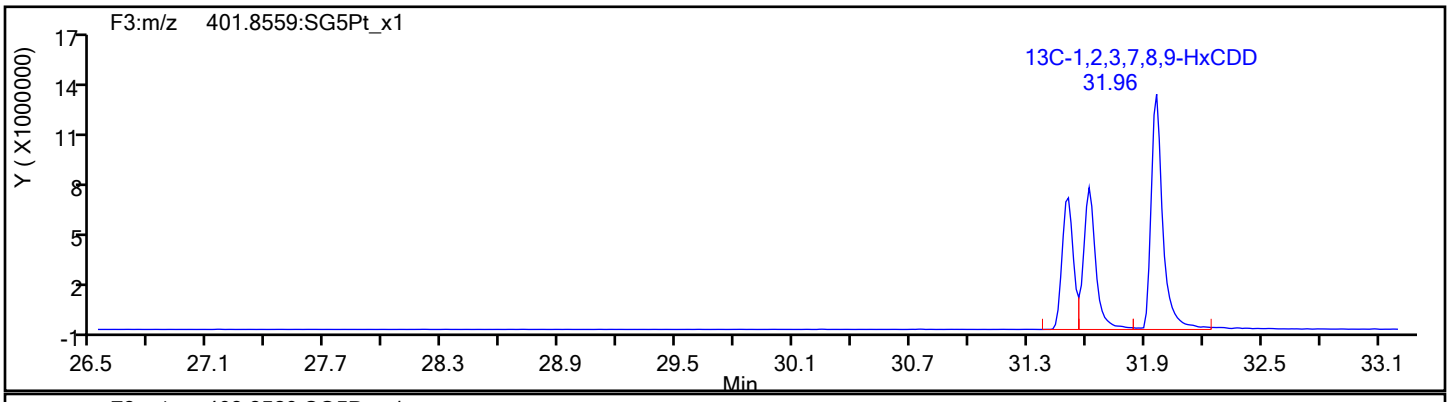
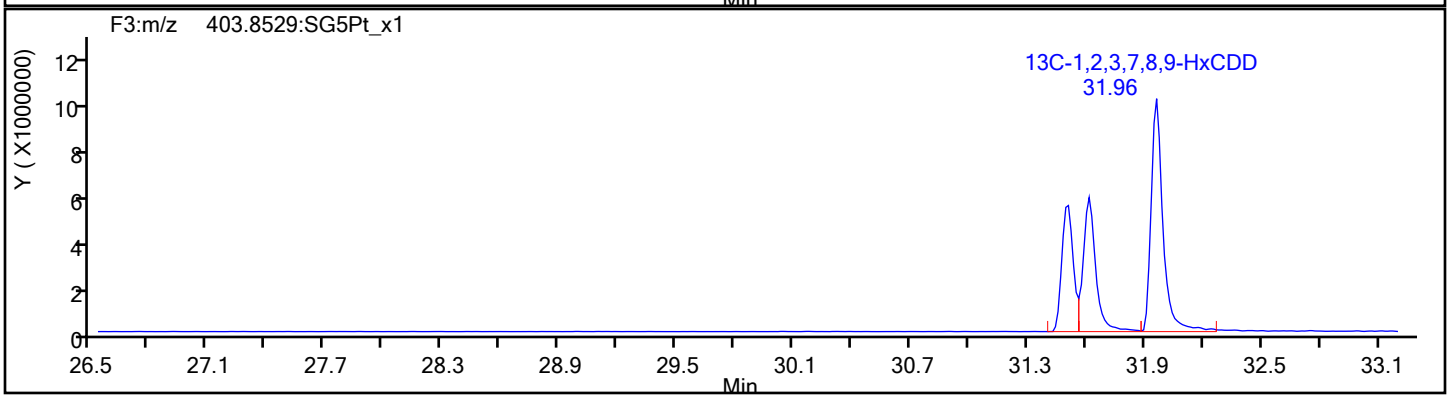
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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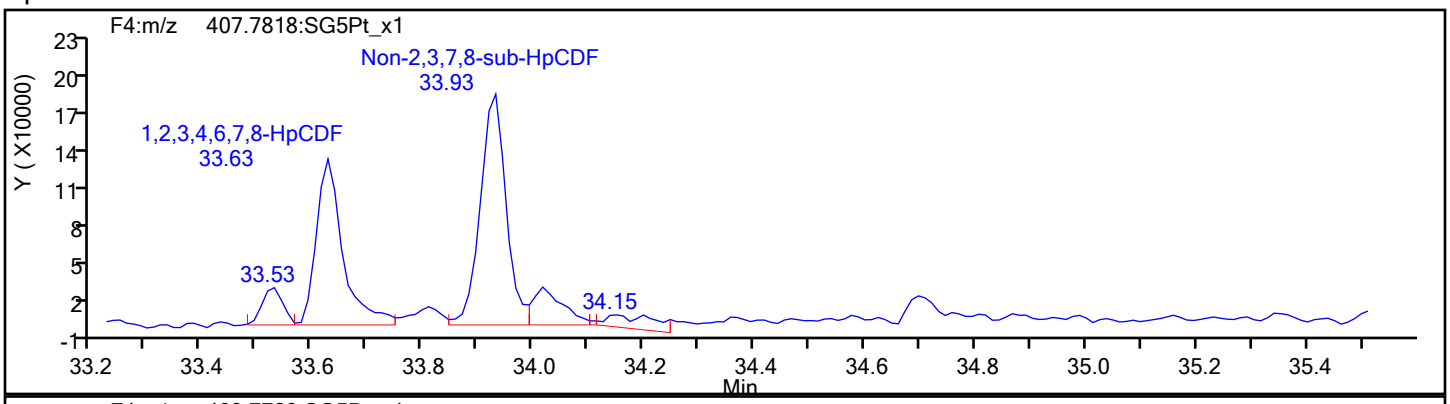
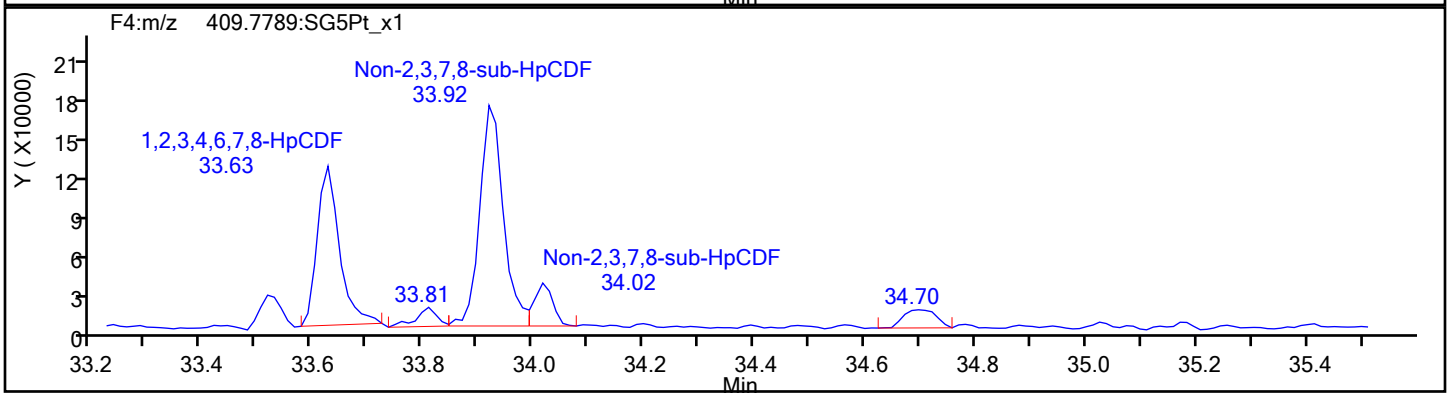
HpCDF





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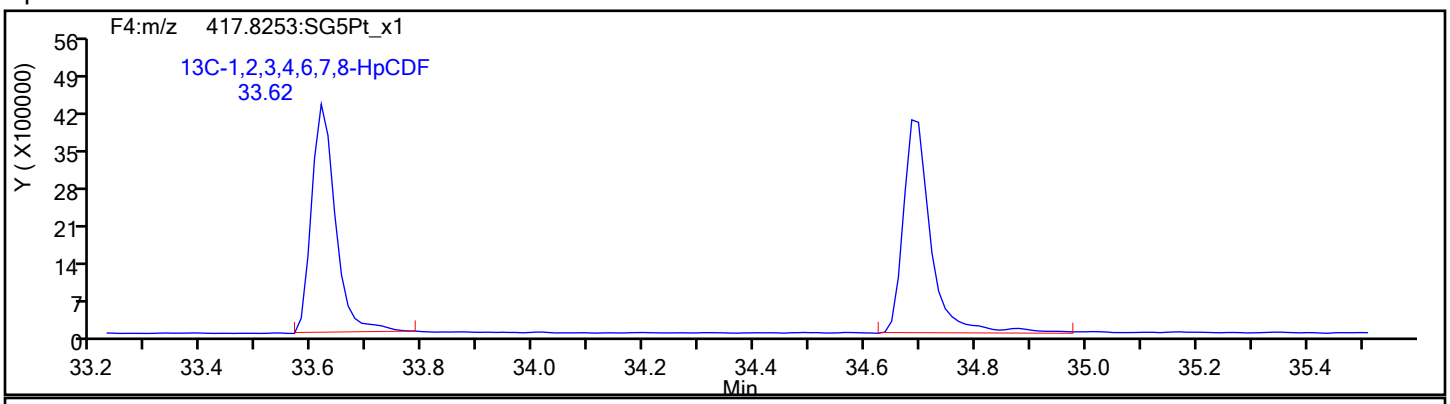

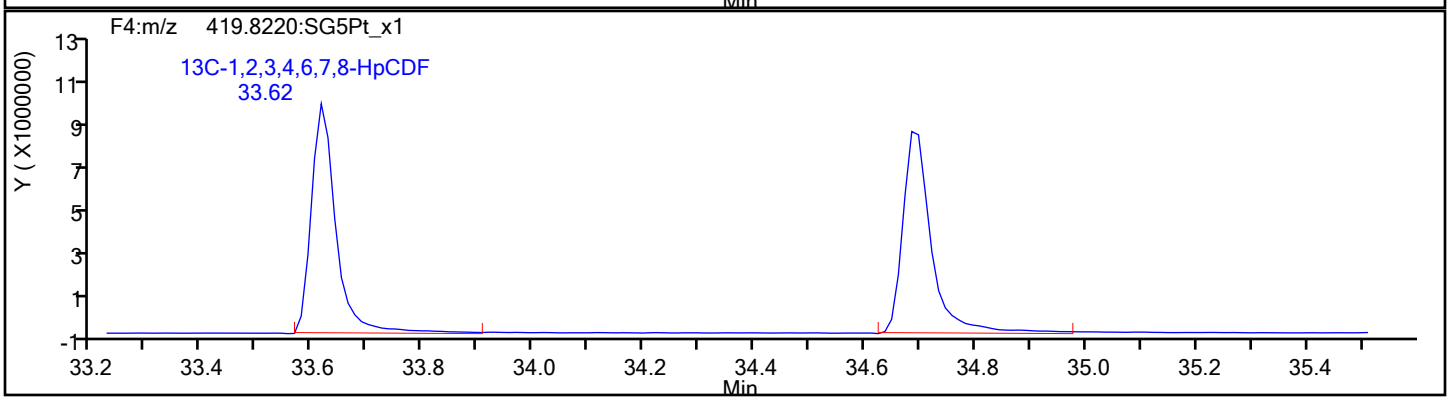

Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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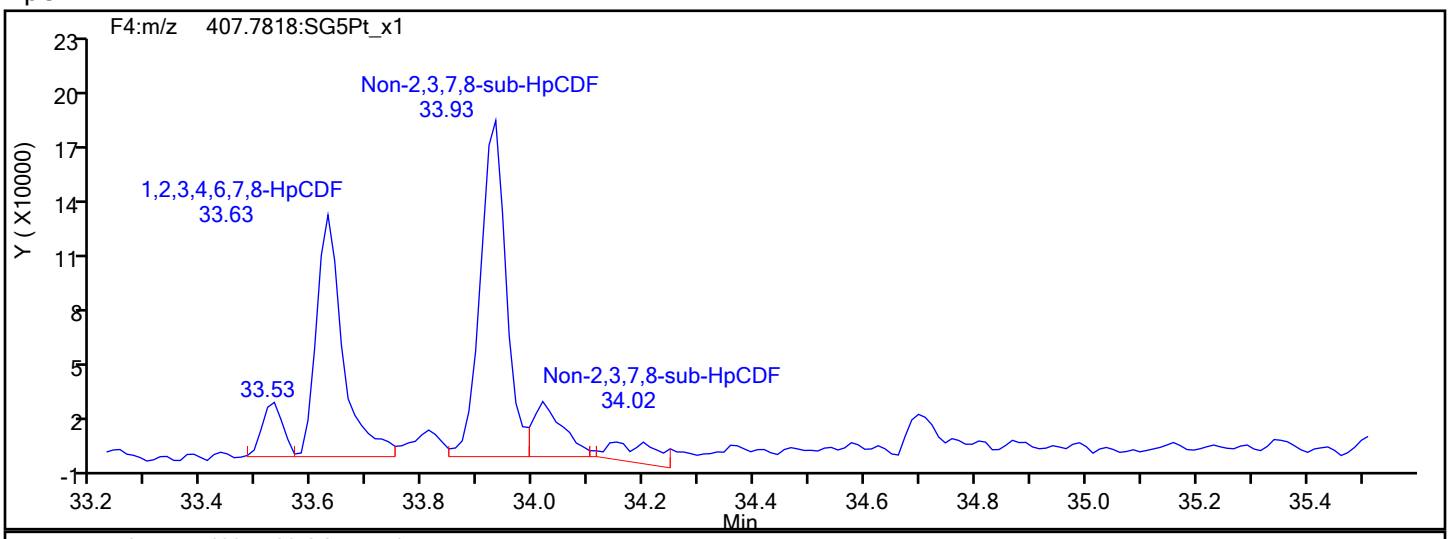
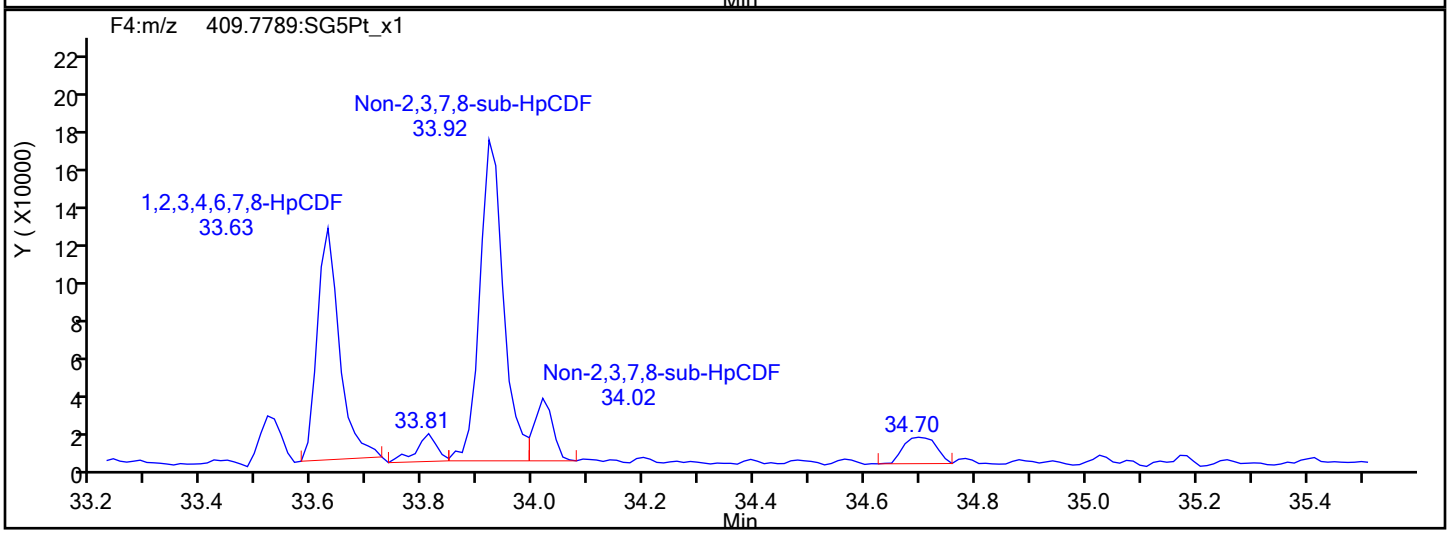
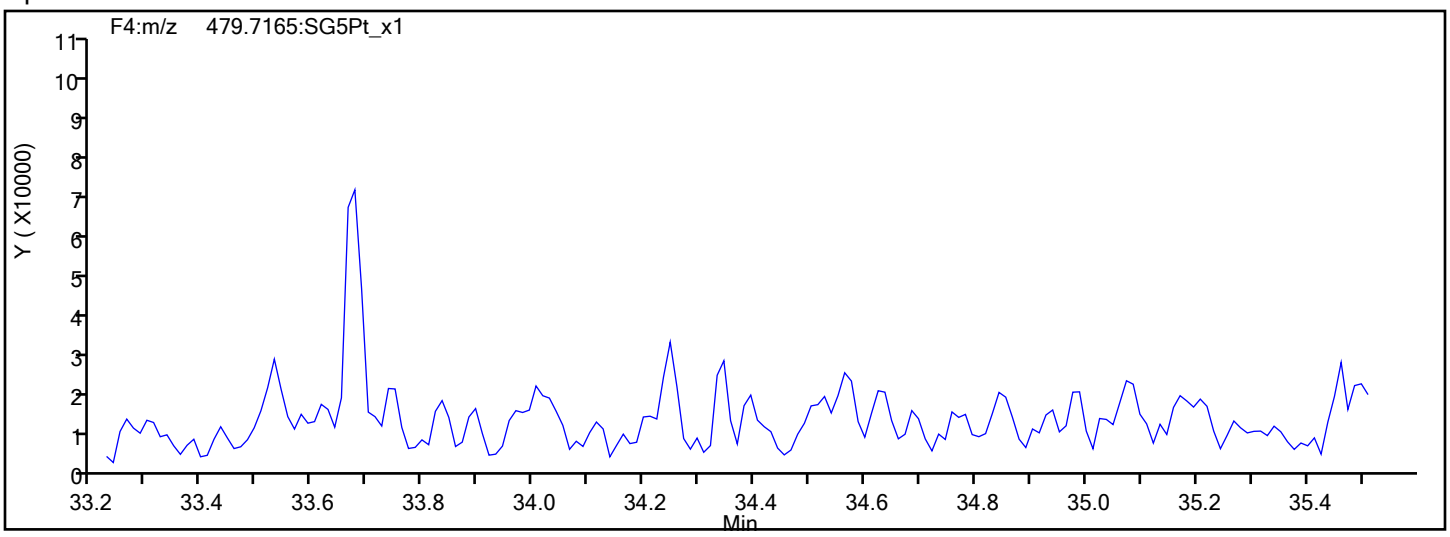




HpCDF Interference Mass



Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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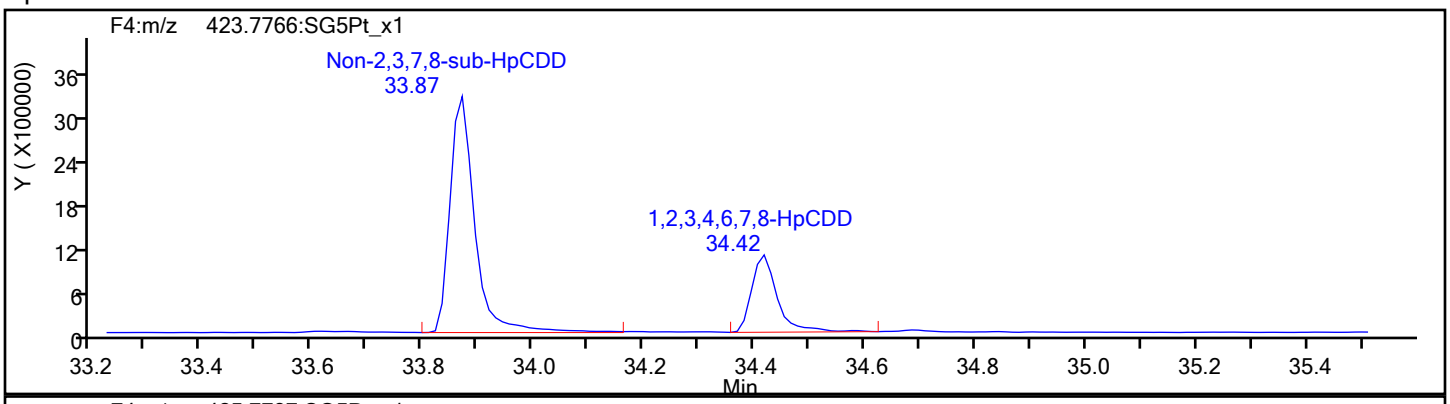
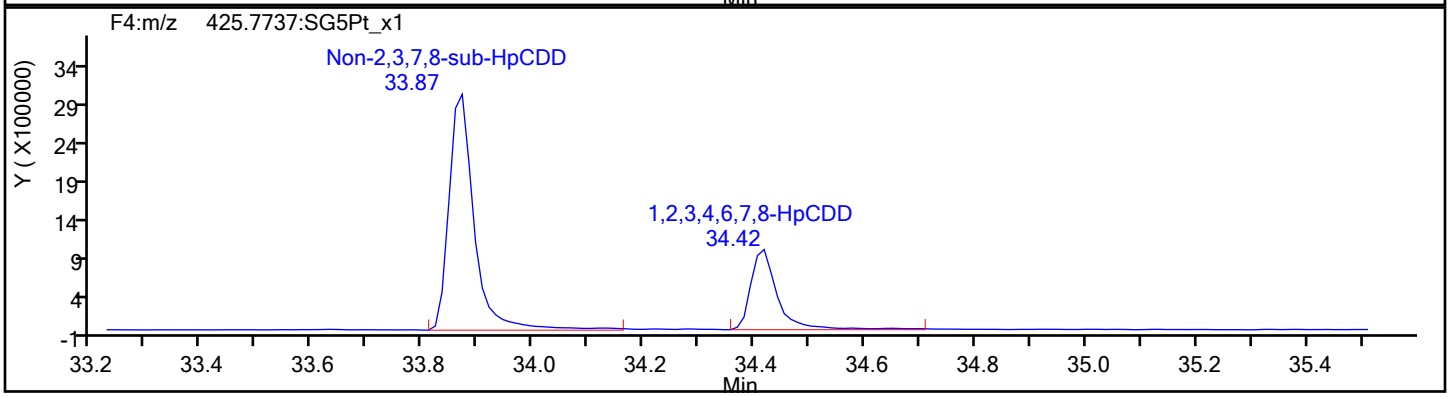
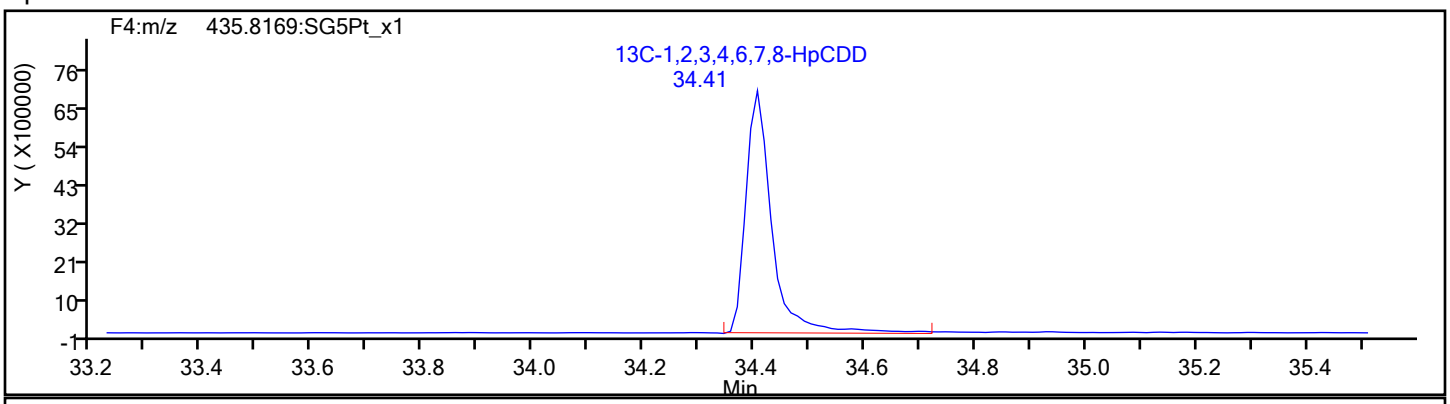
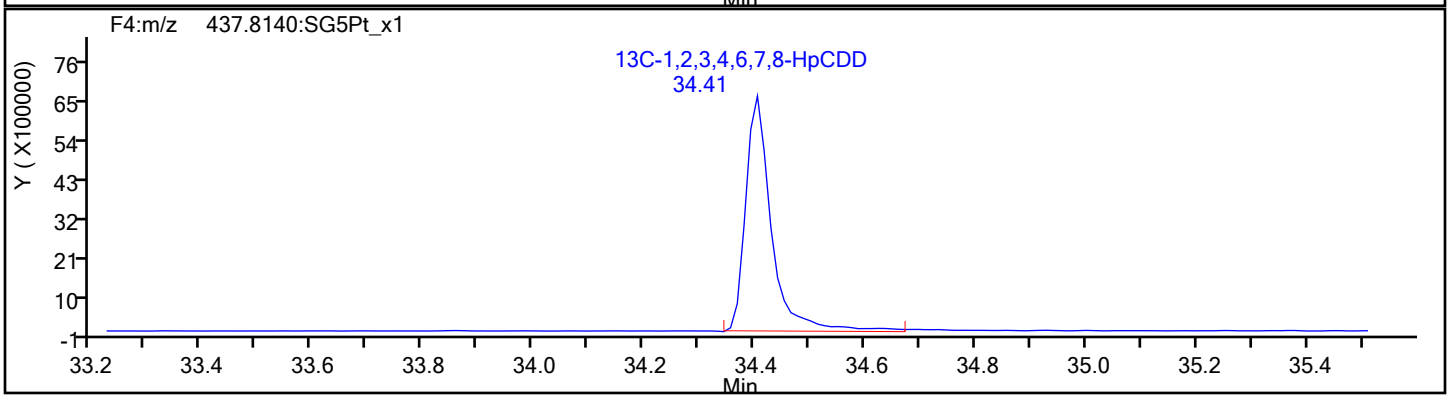




HpCDD Standards





Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
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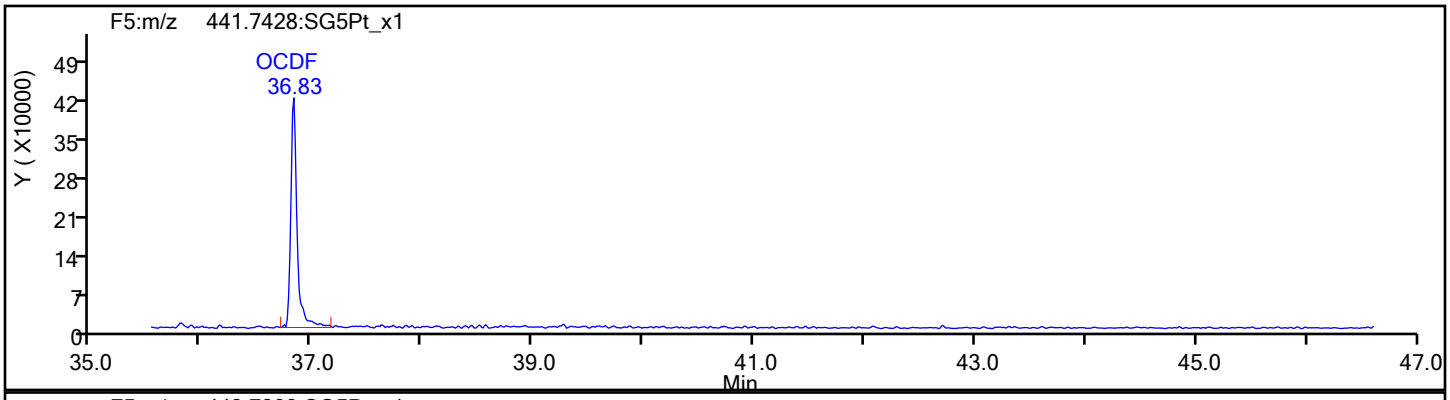
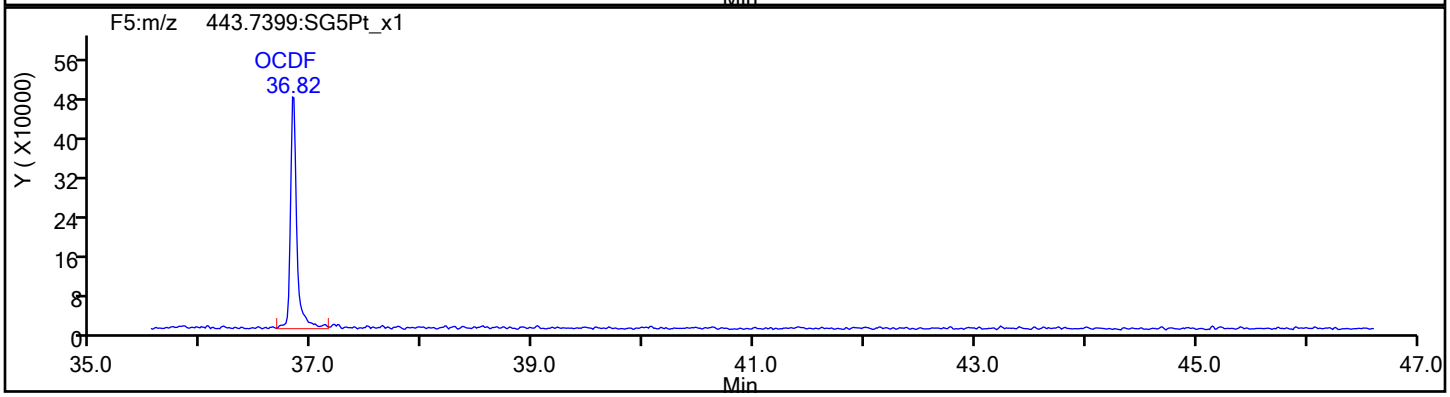
OCDF





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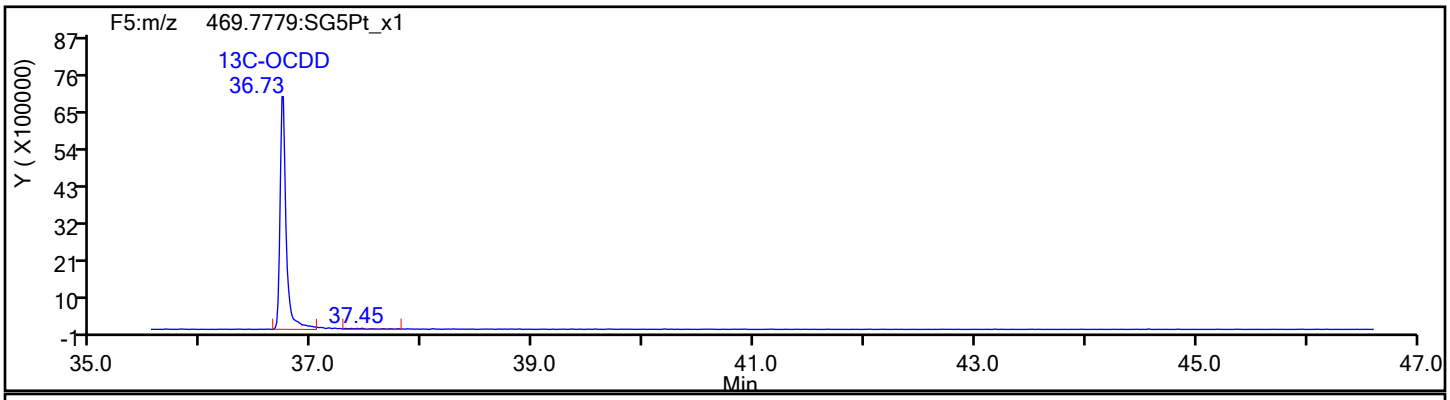

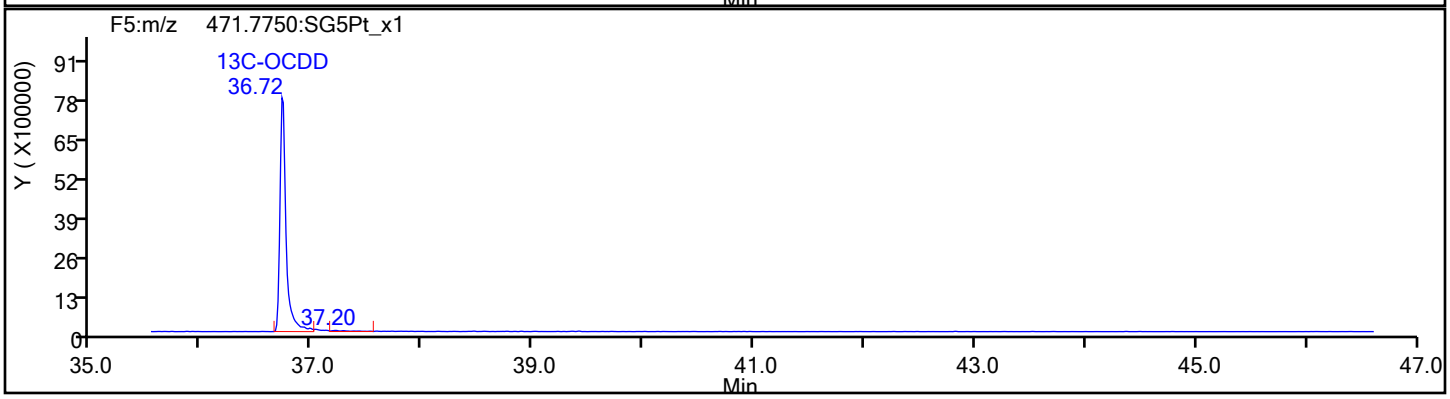

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Eurofins TestAmerica, Sacramento

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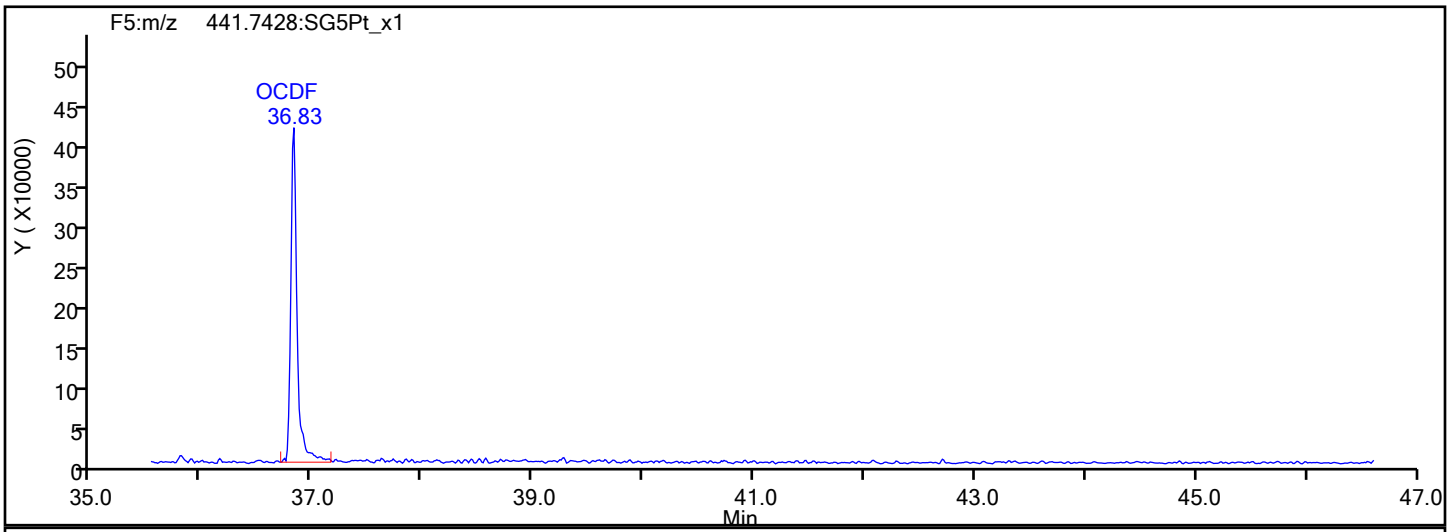
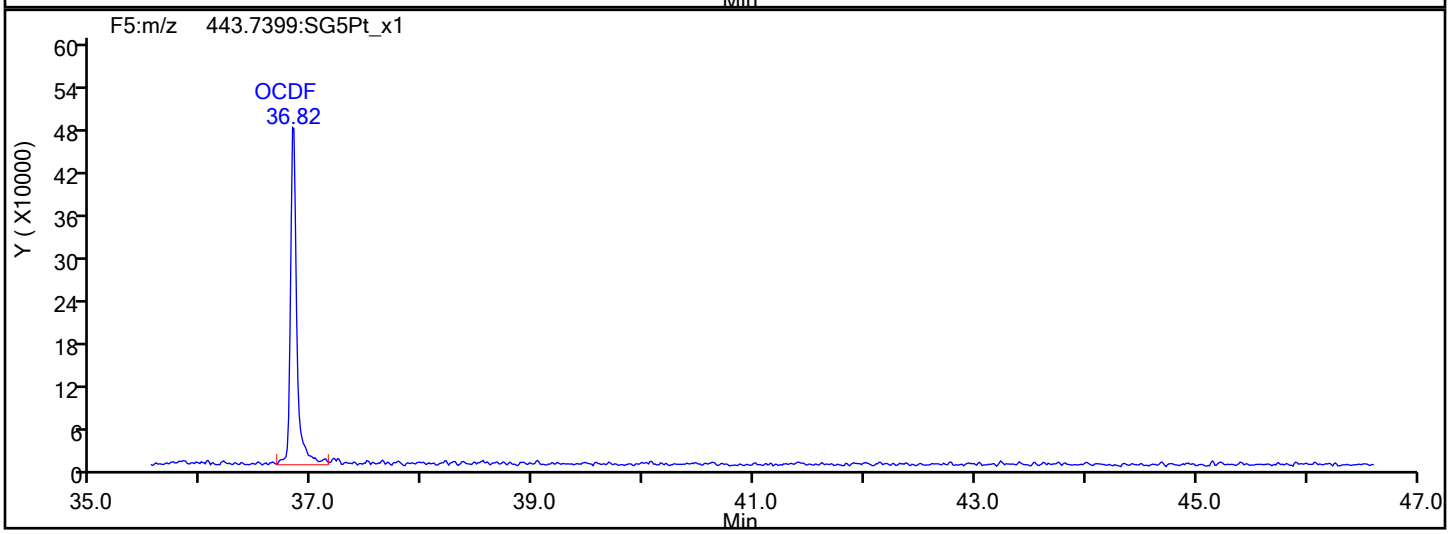
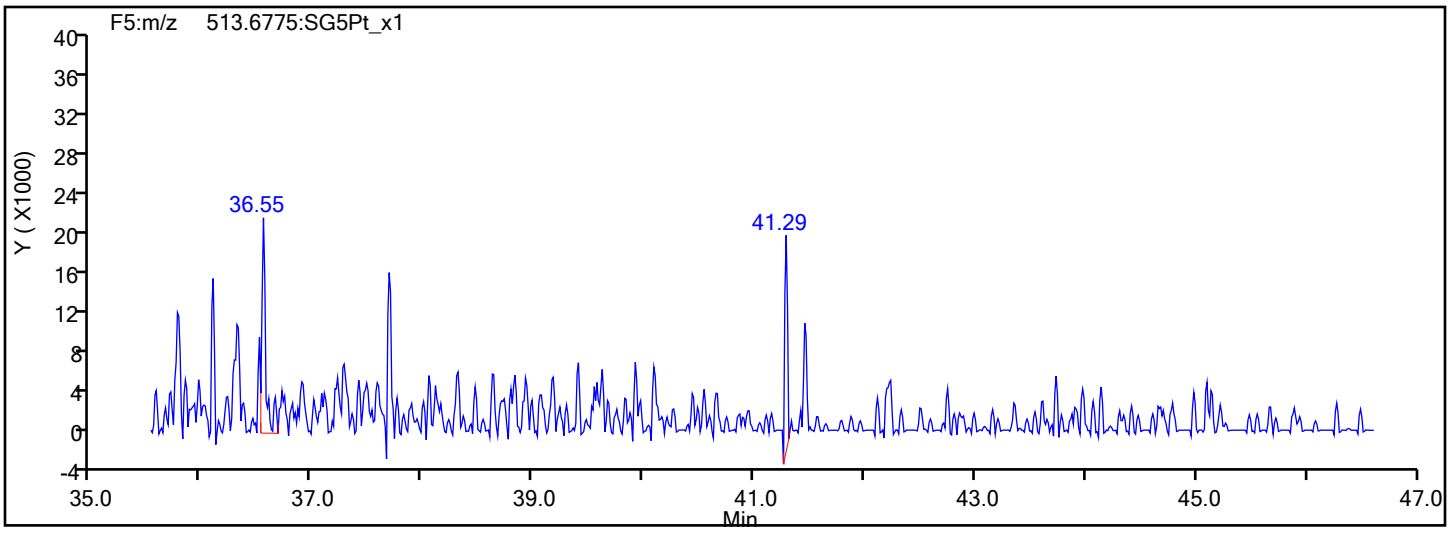
OCDF





OCDF Interference Mass



Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
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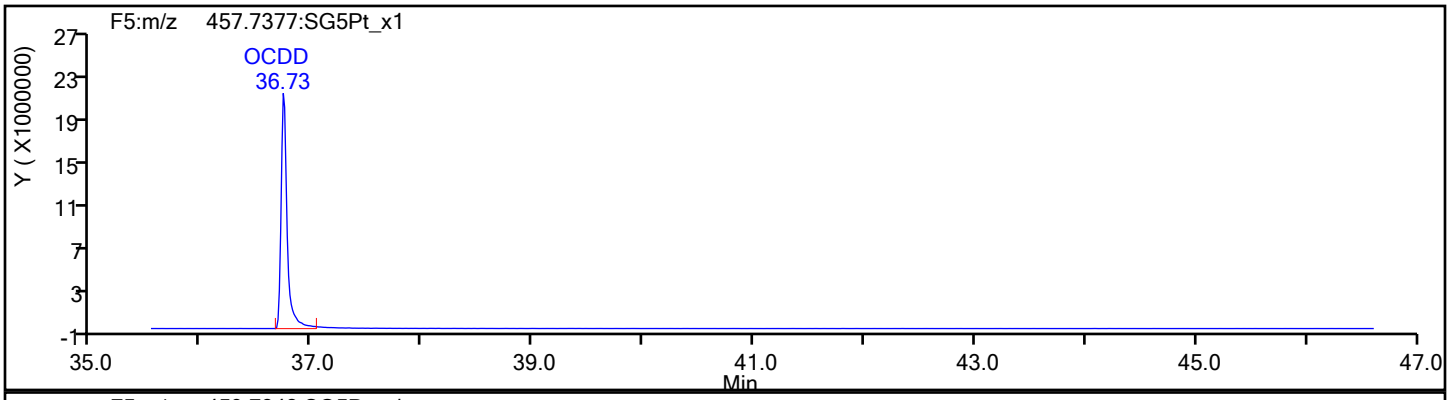
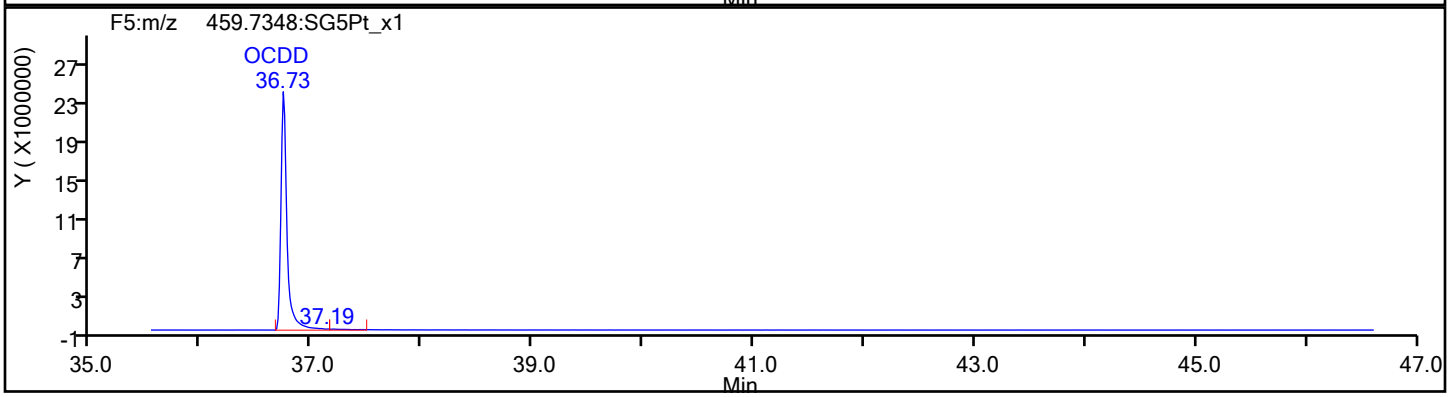
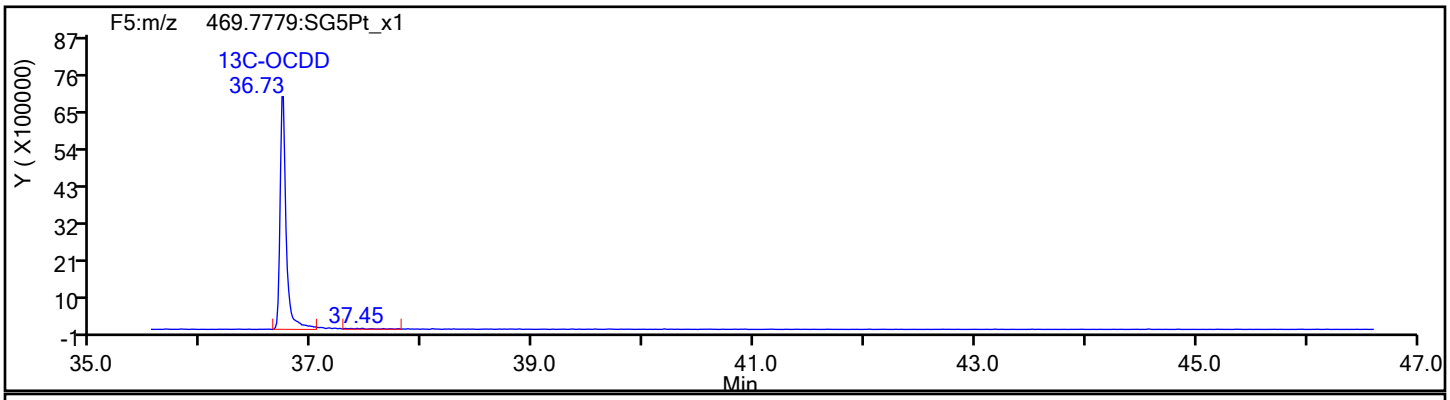
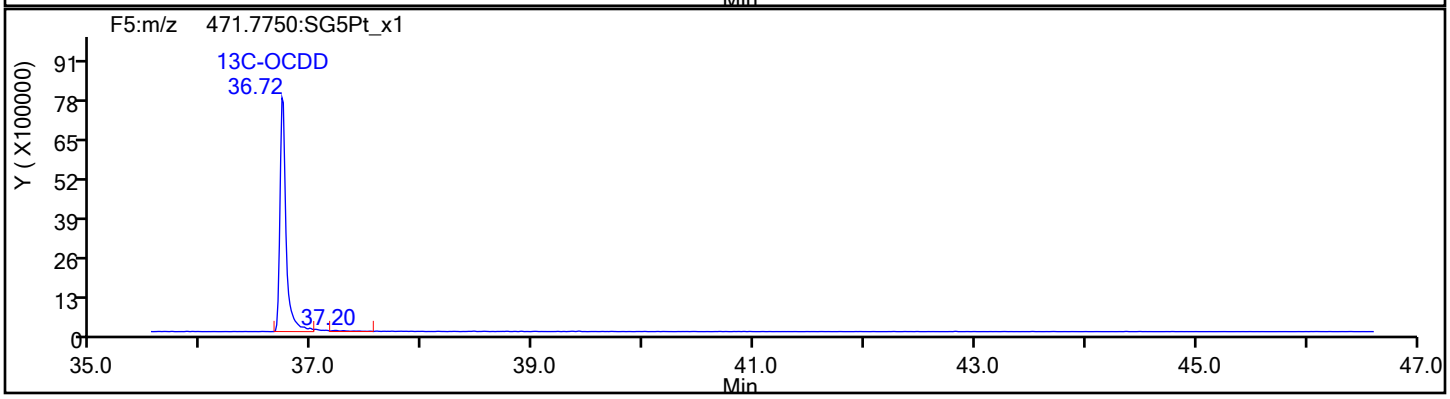
OCDD





OCDD Standards





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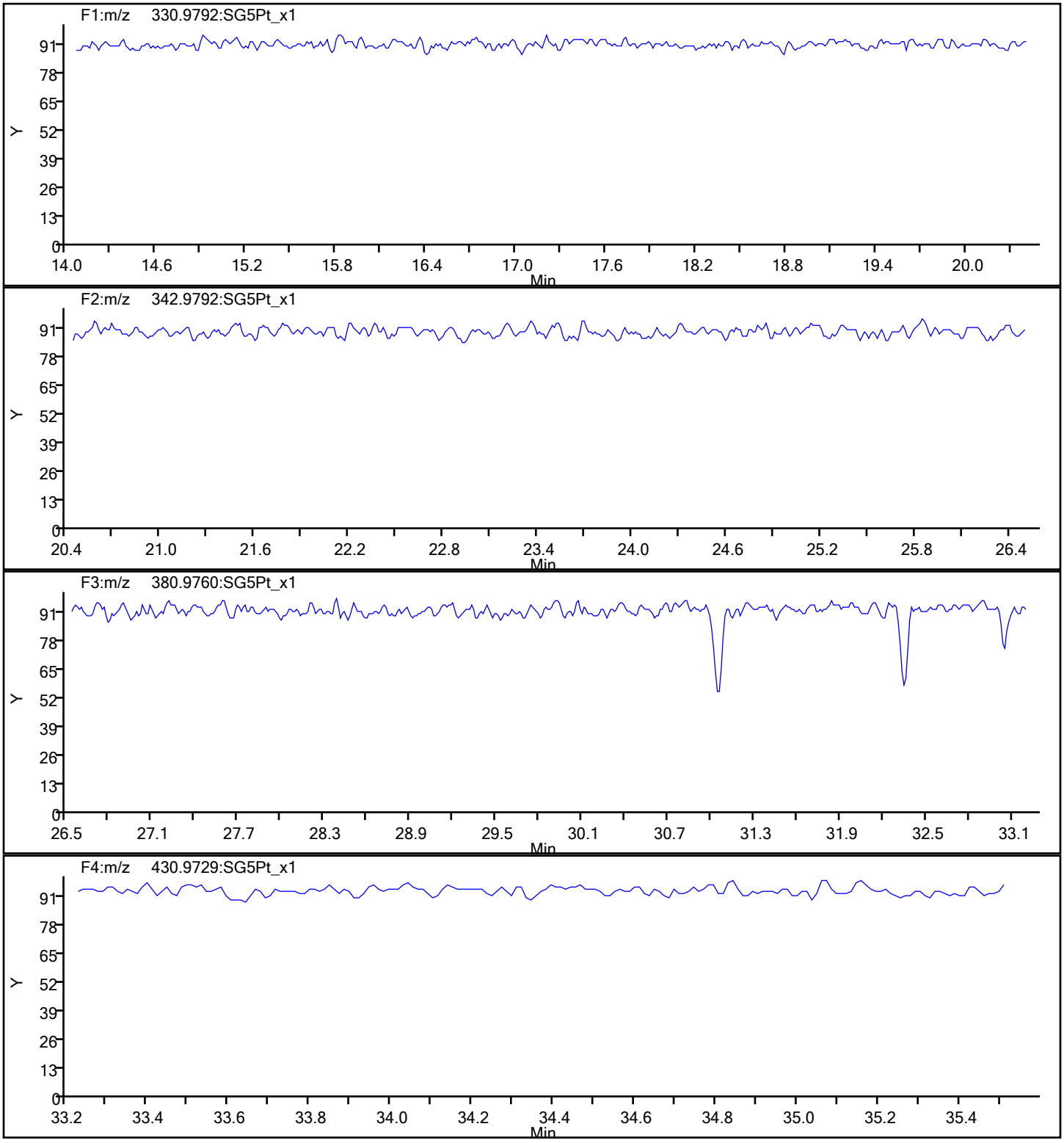
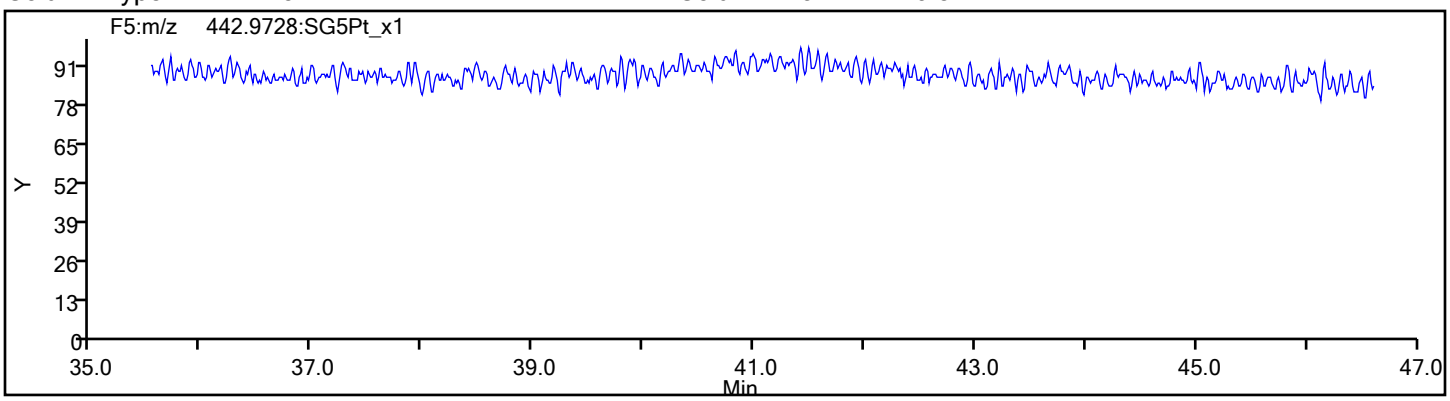
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 22-Dec-2019 12:56:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_12.d		
Injection Date:	19-Dec-2019 19:44:08	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346752	Sample Line#:	12
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(1-2) RA Lab Sample ID: 320-56953-6 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_011.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:15

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.10(g) Date Analyzed: 12/19/2019 22:36

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 49.2 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	50		1.9	0.27

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	75		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	111		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 22:36:14 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-6-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:33

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.381	198170727	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.561	197631110	0.80	1.3379	74.5	74.5	0.2109	0.2109	74.54	
2,3,7,8-TCDF	16.574	21377810	0.79	0.8389	12.9	12.9	0.0682	0.0682		
D 13C-2,3,7,8-TCDD	15.120	116351221	0.79	0.9388	62.5	62.5	0.6164	0.6164	62.54	
2,3,7,8-TCDD	15.147	5165573	0.75	1.1538	3.848	3.848	0.0838	0.0838		
$ 37Cl4-2,3,7,8-TCDD	15.147	104147782		1.1816	44.5	44.5	0.0860	0.0860	111	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d
Lims ID: 320-56953-A-6-A
Client ID: 11187072-120919-BN-SJSSA04(1-2)
Sample Type: Client
Inject. Date: 19-Dec-2019 22:36:14 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-6-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:33

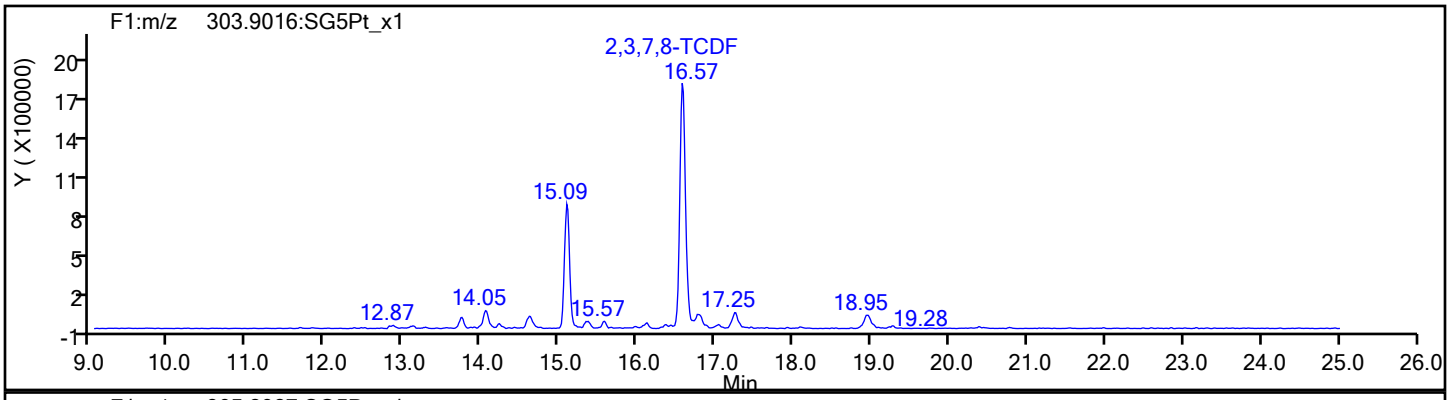
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.381	15.376	0		87518240	19508741	51079	127697	382		
333.9339	15.381	15.376	0		110652487	23822345	49221	123052	484	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.561	16.556	0	1.077	88137455	17567710	27830	69575	631		
317.9389	16.561	16.556	0	1.077	109493655	21734492	21081	52702	1031	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.574	16.570	0	1.001	9407306	1810181	3240	8100	559		
305.8987	16.574	16.570	0	1.001	11970504	2389832	5761	14402	415	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.120	15.116	0	0.983	51270304	11030732	51079	127697	216		
333.9339	15.120	15.116	0	0.983	65080917	14206532	49221	123052	289	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.147	15.143	0	1.002	2210730	461900	5340	13350	86		
321.8936	15.147	15.143	0	1.002	2954843	622307	4421	11052	141	0.75(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.147	15.143	0	0.985	104147782	21769508	17621	44052	1235		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

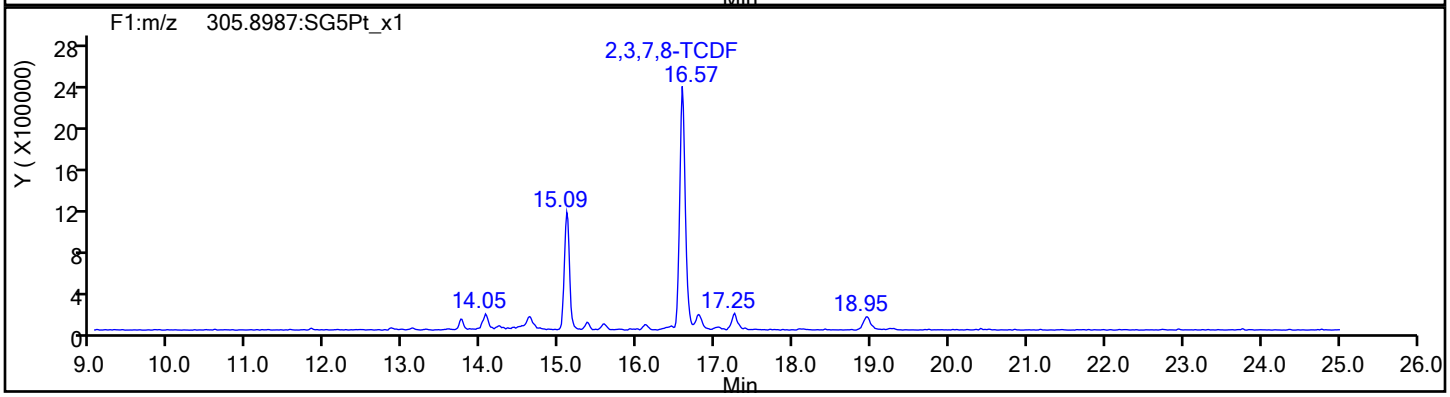
Report Date: 20-Dec-2019 14:38:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

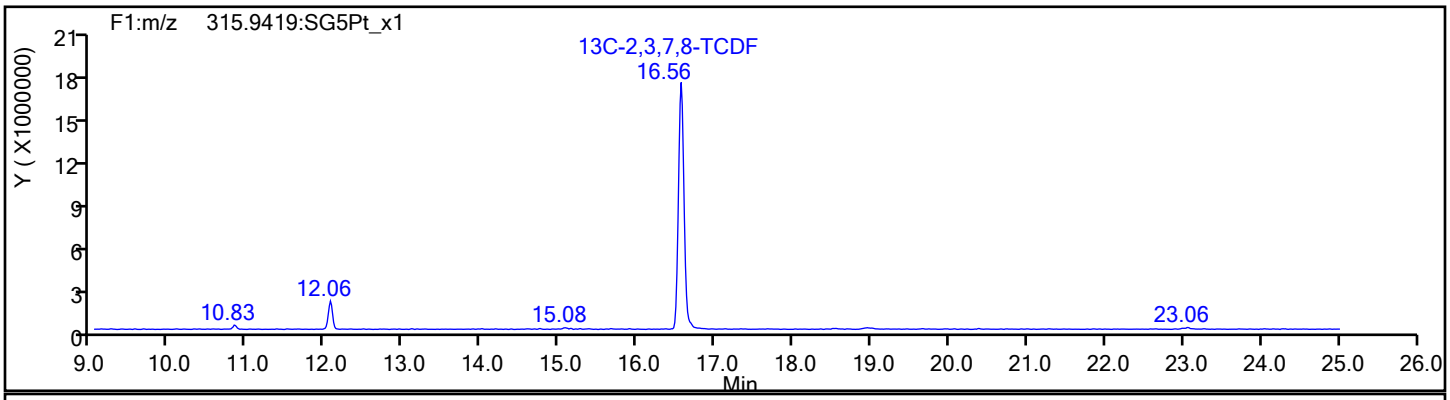
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d		
Injection Date:	19-Dec-2019 22:36:14	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346764	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

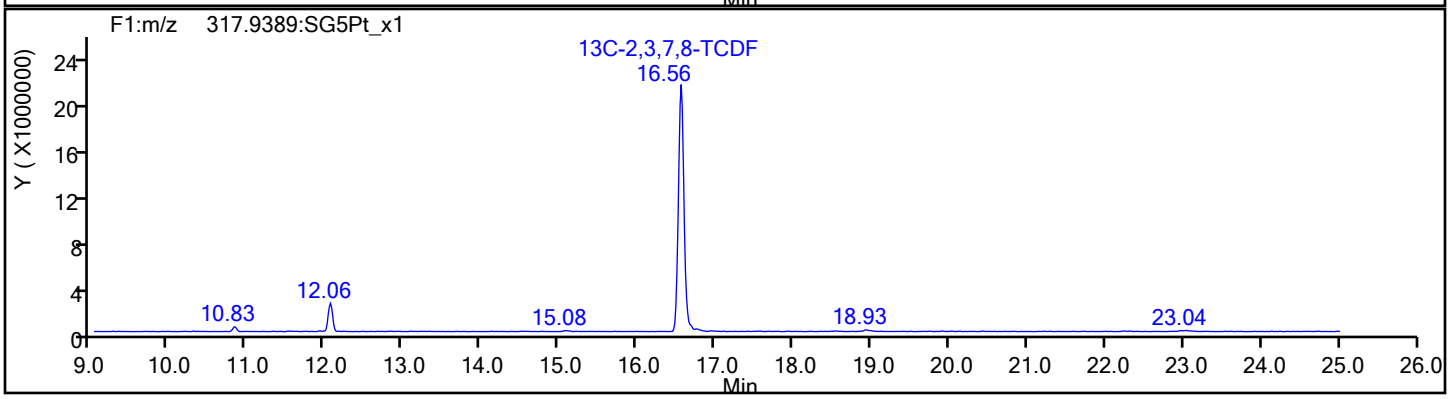
TCDF





TCDF Standards



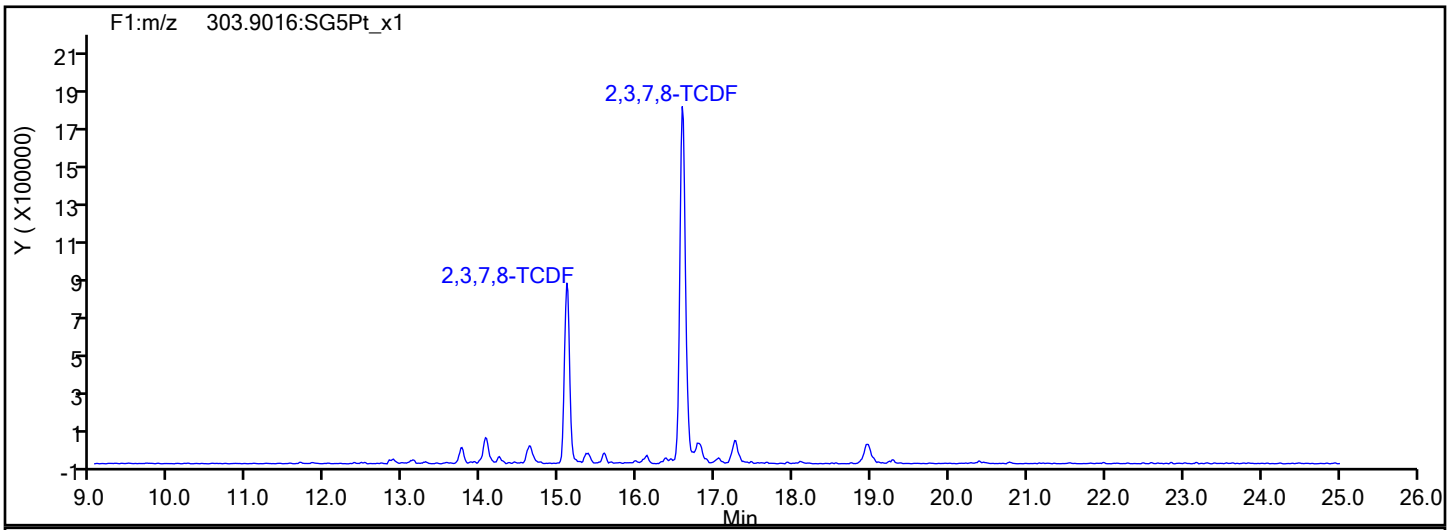


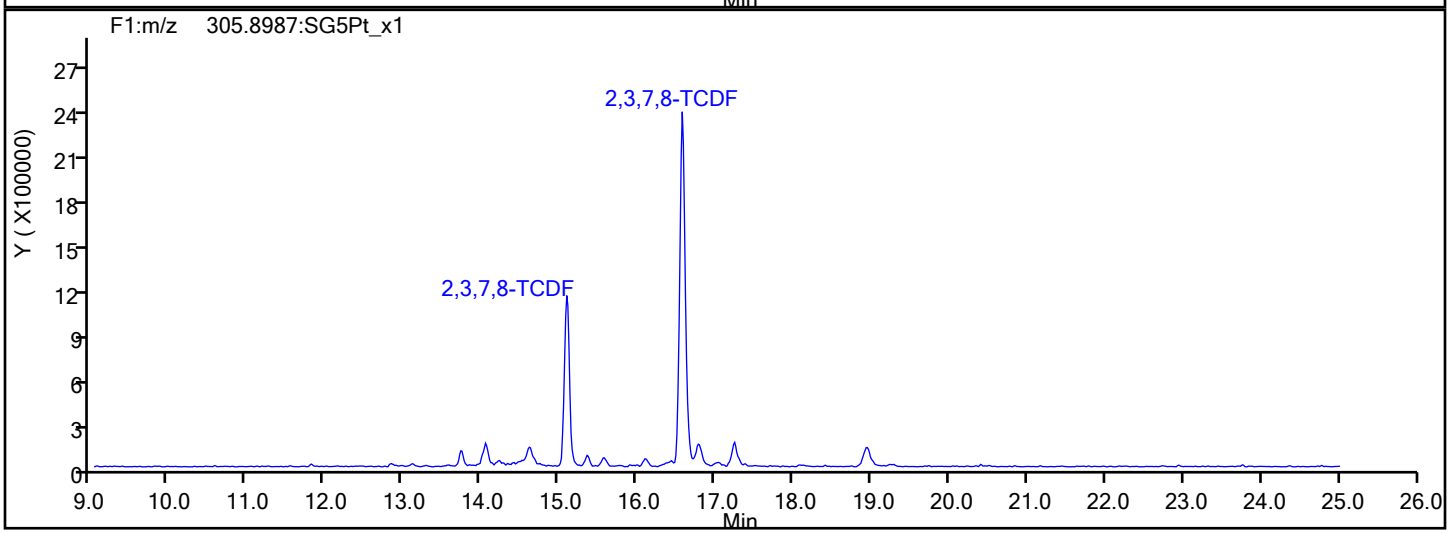
Report Date: 20-Dec-2019 14:38:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

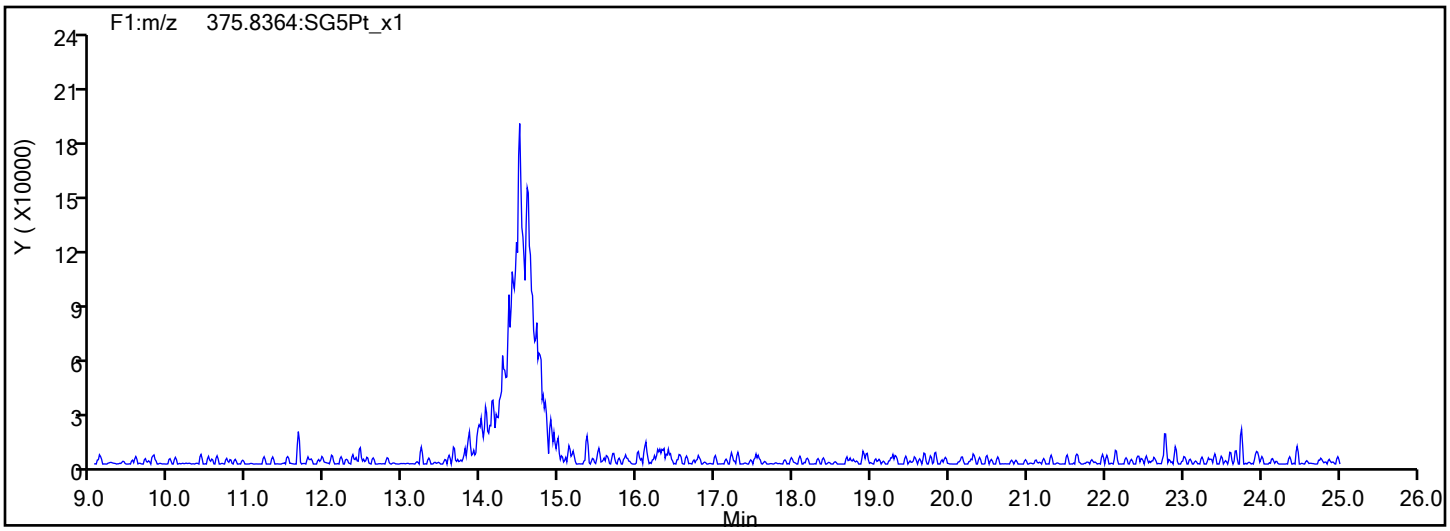
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d		
Injection Date:	19-Dec-2019 22:36:14	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346764	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

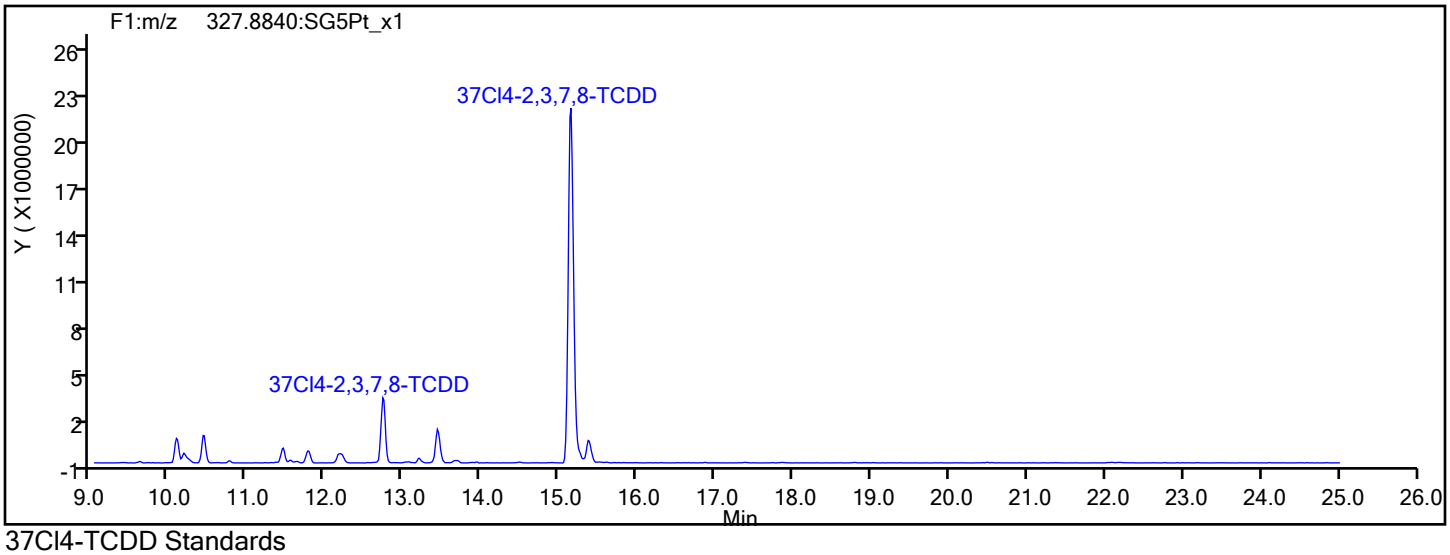


Report Date: 20-Dec-2019 14:38:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

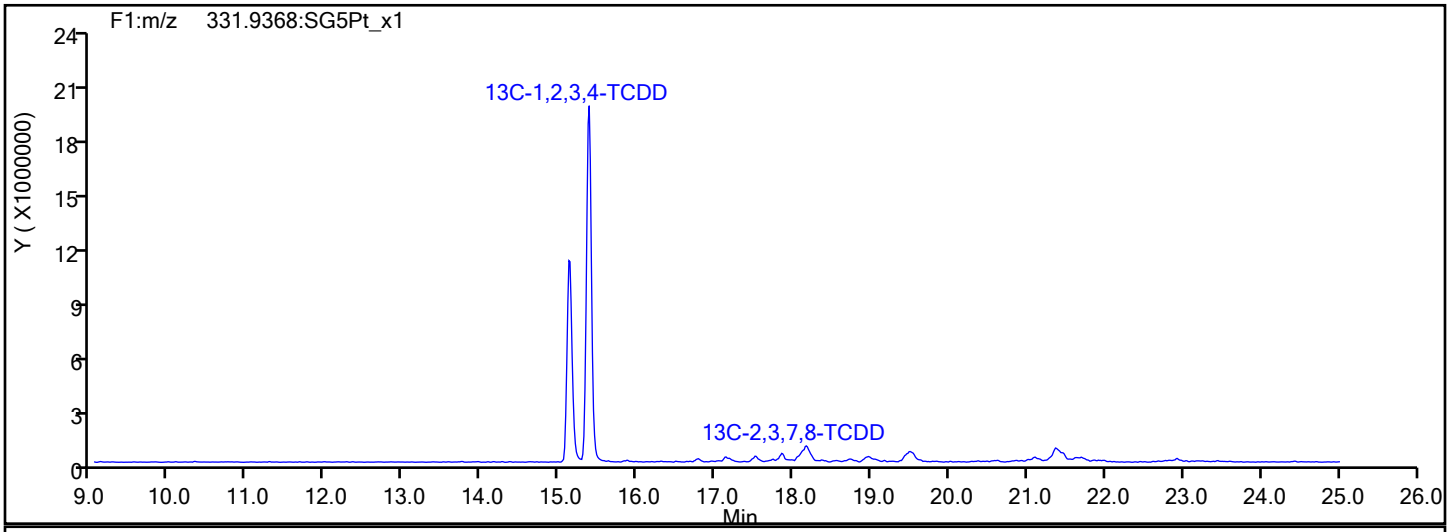
Eurofins TestAmerica, Sacramento

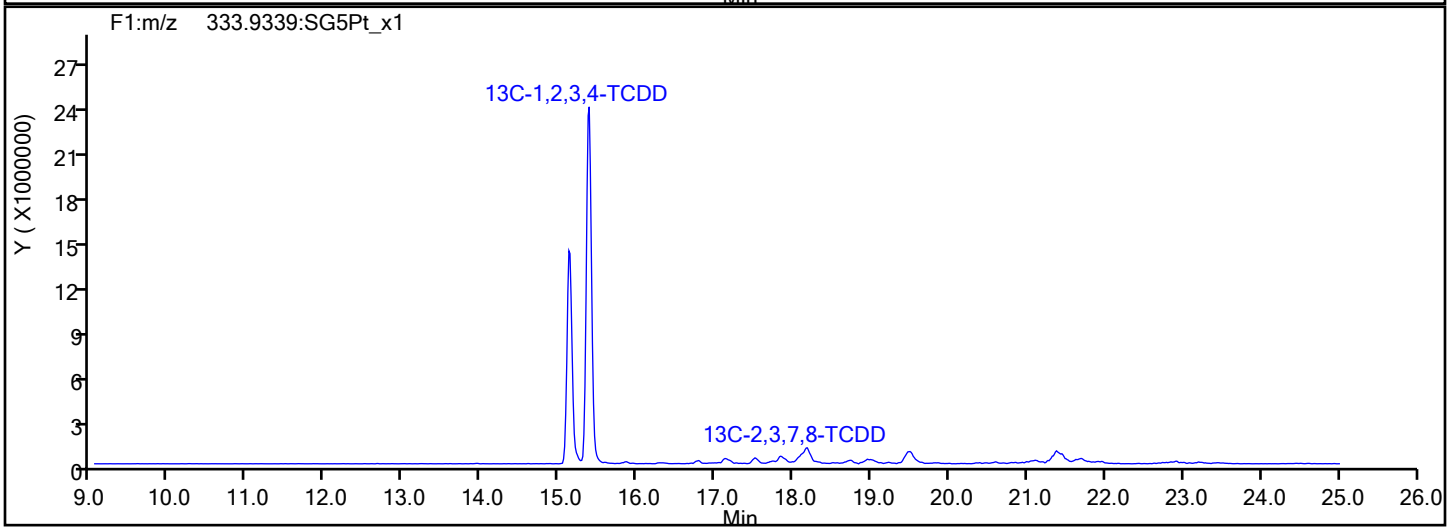
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d		
Injection Date:	19-Dec-2019 22:36:14	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346764	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

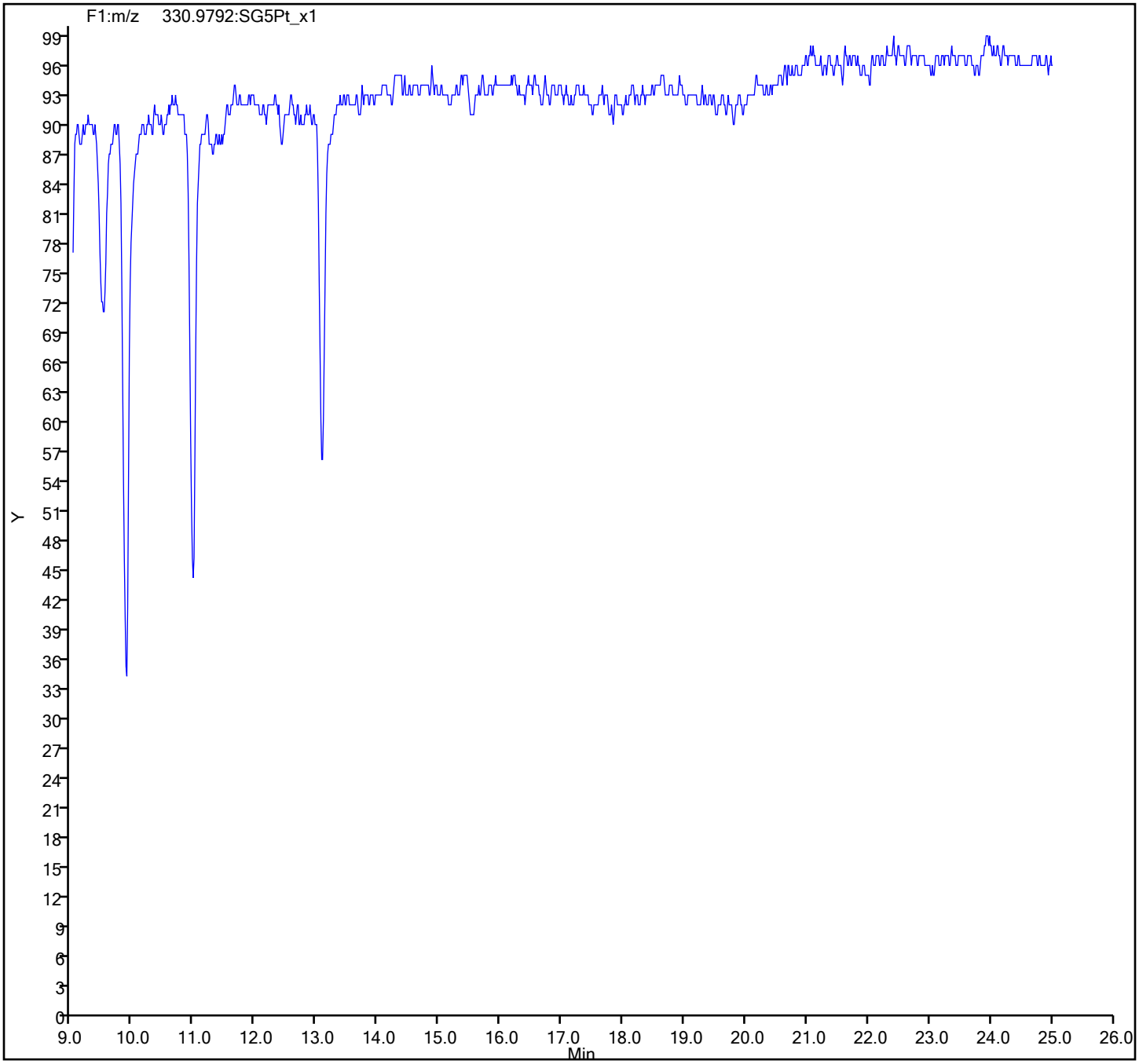




Report Date: 20-Dec-2019 14:38:15 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_011.d		
Injection Date:	19-Dec-2019 22:36:14	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(1-2)		
Worklist#:	346764	Sample Line#:	11
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Matrix: Sediment Lab File ID: 19DE193D5_13.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.22(g) Date Analyzed: 12/19/2019 20:31

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 53.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	7.7		2.1	0.27
40321-76-4	1,2,3,7,8-PeCDD	ND		11	0.40
57117-41-6	1,2,3,7,8-PeCDF	0.70	J q	11	0.26
57117-31-4	2,3,4,7,8-PeCDF	0.60	J	11	0.27
39227-28-6	1,2,3,4,7,8-HxCDD	0.63	J q	11	0.34
57653-85-7	1,2,3,6,7,8-HxCDD	0.99	J	11	0.36
19408-74-3	1,2,3,7,8,9-HxCDD	2.5	J	11	0.31
70648-26-9	1,2,3,4,7,8-HxCDF	0.78	J	11	0.22
57117-44-9	1,2,3,6,7,8-HxCDF	0.33	J q	11	0.22
72918-21-9	1,2,3,7,8,9-HxCDF	ND		11	0.16
60851-34-5	2,3,4,6,7,8-HxCDF	ND		11	0.16
35822-46-9	1,2,3,4,6,7,8-HpCDD	31	B	11	0.84
67562-39-4	1,2,3,4,6,7,8-HpCDF	1.0	J B	11	0.29
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		11	0.36
3268-87-9	OCDD	750	B	21	0.64
39001-02-0	OCDF	9.2	J B	21	0.33
41903-57-5	Total TCDD	16	q	2.1	0.27
30402-14-3	Total TCDF	52	q	2.1	0.38
36088-22-9	Total PeCDD	7.7	J	11	0.40
30402-15-4	Total PeCDF	2.1	J q	11	0.26
34465-46-8	Total HxCDD	39	q	11	0.34
55684-94-1	Total HxCDF	1.1	J q	11	0.19
37871-00-4	Total HpCDD	120	B	11	0.84
38998-75-3	Total HpCDF	2.5	J B q	11	0.32

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) Lab Sample ID: 320-56953-7

Matrix: Sediment Lab File ID: 19DE193D5_13.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.22(g) Date Analyzed: 12/19/2019 20:31

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 53.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	57		25-164
89059-46-1	13C-2,3,7,8-TCDF	56		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	51		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	52		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	55		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	56		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	60		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	57		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	55		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	55		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	56		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	59		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	56		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	63		26-138
114423-97-1	13C-OCDD	63		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	92		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 20:31:41 ALS Bottle#: 13 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-7-A 320-56953-A-7-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:42:17 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:42:17

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.597	223276955	0.81	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.098	175816783	0.80	1.4157	55.6	55.6	0.1474	0.1474	55.62	
2,3,7,8-TCDF	17.113	11551038	0.82	0.9502	6.914	6.914	0.0883	0.0883		
A Non-2,3,7,8-sub-TCDF	16.811	8909654	0.77	0.9502	5.451	5.333	0.0883	2.814		RQ
S Total TCDF					12.4	12.2	0.0883	0.0883		RQ
D 13C-2,3,7,8-TCDD	17.793	123497681	0.79	0.9751	56.7	56.7	0.1289	0.1289	56.72	
2,3,7,8-TCDD	17.808	2336569	0.79	1.0477	1.806	1.806	0.0639	0.0639		M
$ 37Cl4-2,3,7,8-TCDD	17.808	110243460		1.3480	36.6	36.6	0.0949	0.0949	91.57	
A Non-2,3,7,8-sub-TCDD	17.249	2526479	0.77	1.0477	1.995	1.953	0.0639	0.9520		RQMa
S Total TCDD					3.801	3.758	0.0639	0.0639		RQ
D 13C-1,2,3,7,8-PeCDF	22.005	137027955	1.62	1.1786	52.1	52.1	0.1568	0.1568	52.07	
1,2,3,7,8-PeCDF	22.045	231055	1.55	1.0302	0.2170	0.1637	0.0606	0.0606		RQ
D 13C-2,3,4,7,8-PeCDF	23.327	139581919	1.55	1.1308	55.3	55.3	0.1634	0.1634	55.29	
2,3,4,7,8-PeCDF	23.341	206266	1.47	1.0410	0.1420	0.1420	0.0637	0.0637		M
A F1 PeCDFs	19.774						0.0458	0.0458		
A Non-2,3,7,8-sub-PeCDF	22.858	265742	1.55	1.0356	0.2070	0.1855	0.0621	0.1855		RQM
S Total PeCDF					0.5659	0.4912	0.0621	0.0621		RQ
D 13C-1,2,3,7,8-PeCDD	24.037	86710011	1.54	0.7572	51.3	51.3	0.0937	0.0937	51.29	
1,2,3,7,8-PeCDD	24.077						0.0945	0.0945		
A Non-2,3,7,8-sub-PeCDD	22.973	1715120	1.66	1.0855	1.822	1.822	0.0945	0.8642		M
S Total PeCDD					1.822	1.822	0.0945	0.0945		
D 13C-1,2,3,4,7,8-HxCDF	30.180	119804517	0.52	1.1043	57.4	57.4	0.2441	0.2441	57.40	
1,2,3,4,7,8-HxCDF	30.206	252989	1.25	1.1472	0.1841	0.1841	0.0508	0.0508		M
D 13C-1,2,3,6,7,8-HxCDF	30.379	118939807	0.52	1.1470	54.9	54.9	0.2350	0.2350	54.86	
1,2,3,6,7,8-HxCDF	30.393	105560	1.24	1.1450	0.0890	0.0775	0.0522	0.0522		RQMa
D 13C-2,3,4,6,7,8-HxCDF	31.298	114605815	0.51	1.0769	56.3	56.3	0.2504	0.2504	56.31	
2,3,4,6,7,8-HxCDF	31.325						0.0374	0.0374		
D 13C-1,2,3,7,8,9-HxCDF	32.151	104329889	0.52	1.0115	54.6	54.6	0.2665	0.2665	54.57	
1,2,3,7,8,9-HxCDF	32.164						0.0388	0.0388		
A Non-2,3,7,8-sub-HxCDF	29.880						0.0438	0.0438		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					0.2731	0.2616	0.0448	0.0448		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.951	189009888	1.30	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.498	84537726	1.25	0.7962	56.2	56.2	0.2716	0.2716	56.17	
1,2,3,4,7,8-HxCDD	31.538	137306	1.24	1.0934	0.1889	0.1485	0.0807	0.0807		RQMa
D 13C-1,2,3,6,7,8-HxCDD	31.618	98953141	1.29	0.8720	60.0	60.0	0.2480	0.2480	60.04	
1,2,3,6,7,8-HxCDD	31.631	240802	1.42	1.0429	0.2333	0.2333	0.0846	0.0846		Ma
1,2,3,7,8,9-HxCDD	31.964	663745	1.07	1.2073	0.5992	0.5992	0.0730	0.0730		
A Non-2,3,7,8-sub-HxCDD	30.519	8290371	1.24	1.1145	8.132	8.108	0.0791	6.307		RQ
S Total HxCDD					9.153	9.089	0.0794	0.0794		RQ
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	80026686	0.43	0.7577	55.9	55.9	0.8293	0.8293	55.88	
1,2,3,4,6,7,8-HpCDF	33.628	279701	0.91	1.4804	0.2361	0.2361	0.0676	0.0676		
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	82423584	0.44	0.6941	62.8	62.8	0.9052	0.9052	62.82	
1,2,3,4,7,8,9-HpCDF	34.709						0.0842	0.0842		
A Non-2,3,7,8-sub-HpCDF	34.169	394973	1.04	1.3868	0.3853	0.3506	0.0752	0.3506		RQM
S Total HpCDF					0.6214	0.5867	0.0759	0.0759		RQ
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	78298694	1.04	0.7058	58.7	58.7	0.3543	0.3543	58.69	
1,2,3,4,6,7,8-HpCDD	34.418	6079286	0.99	1.0535	7.370	7.370	0.1974	0.1974		
A Non-2,3,7,8-sub-HpCDD	34.144	17878077	1.06	1.0535	21.7	21.7	0.1974	21.7		
S Total HpCDD					29.0	29.0	0.1974	0.1974		
D 13C-OCDD	36.722	108858356	0.87	0.4603	125.1	125.1	0.1819	0.1819	62.57	
OCDF	36.830	1648992	0.96	1.3945	2.173	2.173	0.0769	0.0769		
OCDD	36.734	109083615	0.90	1.1362	176.4	176.4	0.1514	0.1514		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 20:31:41 ALS Bottle#: 13 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-7-A 320-56953-A-7-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:42:17 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:42:17

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.597	17.612	-1		100224979	25648865	17398	43495	1474		
333.9339	17.597	17.612	-1		123051976	31343328	11248	28120	2787	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.098	17.113	-1	0.972	78161590	19658036	19559	48897	1005		
317.9389	17.098	17.113	-1	0.972	97655193	24573131	27999	69997	878	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.113	17.128	-1	1.001	5208532	1232036	5979	14947	206		
305.8987	17.113	17.128	-1	1.001	6342506	1552769	8864	22160	175	0.82(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQ
303.9016	15.223	16.811	-95	0.890	144665	44247	5979	14947	7		
305.8987	15.223	16.811	-95	0.890	179170	48572	8864	22160	5	0.81(0.65-0.89)	
303.9016	15.480	16.811	-80	0.905	149186	43074	5979	14947	7		
305.8987	15.465	16.811	-81	0.904	207908	53360	8864	22160	6	0.72(0.65-0.89)	
303.9016	15.722	16.811	-65	0.920	210638	46169	5979	14947	8		
	Empc Correction				167143	35030	5979	14947	6		
305.8987	15.737	16.811	-64	0.920	217069	45494	8864	22160	5	0.97(0.65-0.89)	
303.9016	16.009	16.811	-48	0.936	220625	38804	5979	14947	6		
305.8987	15.994	16.811	-49	0.935	332243	65064	8864	22160	7	0.66(0.65-0.89)	
303.9016	16.236	16.811	-34	0.950	241339	62937	5979	14947	11		
	Empc Correction				202469	49136	5979	14947	8		
305.8987	16.221	16.811	-35	0.949	262948	63813	8864	22160	7	0.92(0.65-0.89)	
303.9016	16.463	16.811	-21	0.963	267375	48087	5979	14947	8		
	Empc Correction				153323	34916	5979	14947	6		
305.8987	16.463	16.811	-21	0.963	199122	45346	8864	22160	5	1.34(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	16.735	16.811	-5	0.979	2064495	502099	5979	14947	84		
305.8987	16.735	16.811	-5	0.979	2637384	714556	8864	22160	81	0.78(0.65-0.89)	
303.9016	16.962	16.811	9	0.992	126990	29499	5979	14947	5		
305.8987	16.962	16.811	9	0.992	155924	44240	8864	22160	5	0.81(0.65-0.89)	
303.9016	17.536	16.811	43	1.026	366569	100033	5979	14947	17		
305.8987	17.536	16.811	43	1.026	458312	95725	8864	22160	11	0.80(0.65-0.89)	
303.9016	18.897	16.811	125	1.105	294705	67140	5979	14947	11		
305.8987	18.897	16.811	125	1.105	369404	80216	8864	22160	9	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.011	54551469	12418334	17398	43495	714		
333.9339	17.793	17.793	0	1.011	68946212	15412830	11248	28120	1370	0.79(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	17.808	17.823	-1	1.001	1029935	249894	4571	11427	55		M
321.8936	17.808	17.823	-1	1.001	1306634	318360	2878	7195	111	0.79(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	17.808	17.823	-1	1.012	110243460	26158307	29172	72930	897		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	15.646	17.249	-96	0.879	82121	22465	4571	11427	5		
321.8936	15.631	17.249	-97	0.878	109180	19380	2878	7195	7	0.75(0.65-0.89)	
319.8965	15.918	17.249	-80	0.895	120886	26990	4571	11427	6		
	Empc Correction				89724	25565	4571	11427	6		
321.8936	15.918	17.249	-80	0.895	116525	33202	2878	7195	12	1.04(0.65-0.89)	
319.8965	16.690	17.249	-34	0.938	549240	141019	4571	11427	31		
321.8936	16.690	17.249	-34	0.938	682562	175077	2878	7195	61	0.80(0.65-0.89)	
319.8965	17.566	17.249	19	0.987	161003	41289	4571	11427	9		
321.8936	17.566	17.249	19	0.987	229810	53110	2878	7195	18	0.70(0.65-0.89)	
319.8965	17.702	17.249	27	0.995	112927	31216	4571	11427	7		M
321.8936	17.702	17.249	27	0.995	160167	44998	2878	7195	16	0.71(0.65-0.89)	
319.8965	18.141	17.249	53	1.020	125323	23967	4571	11427	5		
	Empc Correction				101457	20254	4571	11427	4		
321.8936	18.156	17.249	54	1.020	131763	26304	2878	7195	9	0.95(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.005	22.018	-1	1.251	84675146	14456803	24286	60715	595		
353.8970	22.005	22.018	-1	1.251	52352809	9398483	17833	44582	527	1.62(1.32-1.78)	
1,2,3,7,8-PeCDF											RQ
339.8597	22.045	22.045	0	1.002	215689	37225	1988	4970	19		
	Empc Correction				140445	30491	1988	4970	15		
341.8567	22.032	22.045	-1	1.001	90610	19672	3971	9927	5	2.38(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.327	23.341	-1	1.326	84813806	13542641	24286	60715	558		
353.8970	23.327	23.341	-1	1.326	54768113	8937239	17833	44582	501	1.55(1.32-1.78)	
2,3,4,7,8-PeCDF											M
339.8597	23.341	23.355	-1	1.001	122918	20029	1988	4970	10		
341.8567	23.368	23.355	1	1.002	83348	14503	3971	9927	4	1.47(1.32-1.78)	M

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A F1 PeCDFs											
339.8597	19.774						1465	3662			
341.8567	19.774						2926	7315			
A Non-2,3,7,8-sub-PeCDF											RQM
339.8597	20.723	22.858	-128	0.942	161530	30456	1988	4970	15		
341.8567	20.709	22.858	-129	0.941	134966	17524	3971	9927	4	1.20(1.32-1.78)	M
	Empc Correction				104212	19649	3971	9927	5		
13C-1,2,3,7,8-PeCDD											
367.8949	24.037	24.050	-1	1.366	52521756	8012388	10166	25415	788		
369.8919	24.037	24.050	-1	1.366	34188255	5349671	6005	15012	891	1.54(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						3721	9302			
357.8516	24.077						1763	4407			
A Non-2,3,7,8-sub-PeCDD											M
355.8546	20.900	22.973	-124	0.870	300581	48180	3721	9302	13		M
357.8516	20.900	22.973	-124	0.870	176109	27562	1763	4407	16	1.71(1.32-1.78)	
355.8546	21.636	22.973	-80	0.900	500138	96385	3721	9302	26		
357.8516	21.636	22.973	-80	0.900	313239	59855	1763	4407	34	1.60(1.32-1.78)	
355.8546	23.082	22.973	7	0.960	268492	47052	3721	9302	13		M
357.8516	23.096	22.973	7	0.961	156561	23477	1763	4407	13	1.71(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.180	30.193	-1	0.945	41218045	6712781	18028	45070	372		
385.8610	30.180	30.193	-1	0.945	78586472	12564283	30456	76140	413	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											M
373.8208	30.206	30.206	0	1.001	140680	21295	2444	6110	9		M
375.8178	30.193	30.206	-1	1.000	112309	18283	2048	5120	9	1.25(1.05-1.43)	M
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.379	30.406	-2	0.951	40661263	6506044	18028	45070	361		
385.8610	30.379	30.406	-2	0.951	78278544	12289437	30456	76140	404	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											RQMa
373.8208	30.393	30.420	-2	1.000	74068	12620	2444	6110	5		M
	Empc Correction				58435	10363	2444	6110	4		
375.8178	30.406	30.420	-1	1.001	47125	8358	2048	5120	4	1.57(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.298	31.312	-1	0.980	38609698	8456784	18028	45070	469		
385.8610	31.298	31.312	-1	0.980	75996117	17157163	30456	76140	563	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						2444	6110			
375.8178	31.325						2048	5120			
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	35517973	8608486	18028	45070	478		
385.8610	32.151	32.151	0	1.006	68811916	16120486	30456	76140	529	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						2444	6110			
375.8178	32.164						2048	5120			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						2444	6110			
375.8178	29.880						2048	5120			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.951	31.964	-1		106679996	25238818	21158	52895	1193		
403.8529	31.951	31.964	-1		82329892	19720604	17735	44337	1112	1.30(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.498	31.511	-1	0.986	46971788	11860157	21158	52895	561		
403.8529	31.498	31.511	-1	0.986	37565938	9665902	17735	44337	545	1.25(1.05-1.43)	
1,2,3,4,7,8-HxCDD											RQMa
389.8157	31.538	31.525	1	1.001	76009	17729	4346	10865	4		M
391.8127	31.498	31.525	-2	1.000	98559	23865	3247	8117	7	0.77(1.05-1.43)	
	Empc Correction				61297	14297	3247	8117	4		
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.990	55826407	12068746	21158	52895	570		
403.8529	31.604	31.618	-1	0.989	43126734	9452392	17735	44337	533	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											Ma
389.8157	31.631	31.631	0	1.000	141381	31013	4346	10865	7		M
391.8127	31.631	31.631	0	1.000	99421	26438	3247	8117	8	1.42(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.964	31.977	-1	1.015	343843	61993	4346	10865	14		
391.8127	31.951	31.977	-2	1.014	319902	54425	3247	8117	17	1.07(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											RQ
389.8157	29.048	30.519	-88	0.919	3490344	428773	4346	10865	99		
391.8127	29.048	30.519	-88	0.919	2958344	370296	3247	8117	114	1.18(1.05-1.43)	
389.8157	30.699	30.519	11	0.971	888492	162056	4346	10865	37		
391.8127	30.686	30.519	10	0.971	725313	136471	3247	8117	42	1.22(1.05-1.43)	
389.8157	30.912	30.519	24	0.978	126147	28446	4346	10865	7		
391.8127	30.912	30.519	24	0.978	126679	25054	3247	8117	8	1.00(1.05-1.43)	
	Empc Correction				101731	22940	3247	8117	7		
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	24213473	7890352	35544	88860	222		
419.8220	33.616	33.628	-1	1.052	55813213	17899788	77449	193622	231	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628	33.628	0	1.000	133237	44312	7474	18685	6		
409.7789	33.628	33.628	0	1.000	146464	44458	2846	7115	16	0.91(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.086	24993013	7329212	35544	88860	206		
419.8220	34.685	34.697	-1	1.086	57430571	16370409	77449	193622	211	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709						7474	18685			
409.7789	34.709						2846	7115			
A Non-2,3,7,8-sub-HpCDF											RQM
407.7818	33.919	34.169	-15	1.009	201359	65311	7474	18685	9		M
409.7789	33.919	34.169	-15	1.009	232684	75461	2846	7115	27	0.87(0.88-1.20)	M
	Empc Correction				193614	62799	2846	7115	22		

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.077	40003107	12101877	22898	57245	529		
437.8140	34.405	34.418	-1	1.077	38295587	11434374	22070	55175	518	1.04(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	3019523	928107	10860	27150	85		
425.7737	34.418	34.418	0	1.000	3059763	907992	8723	21807	104	0.99(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	9219929	2929821	10860	27150	270		
425.7737	33.859	34.144	-17	0.984	8658148	2657696	8723	21807	305	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.722	36.734	-1	1.149	50645950	12405597	6730	16825	1843		
471.7750	36.722	36.734	-1	1.149	58212406	14602582	8323	20807	1754	0.87(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	806613	186099	2305	5762	81		
443.7399	36.830	36.830	0	1.003	842379	200367	3489	8722	57	0.96(0.76-1.02)	
OCDD											
457.7377	36.734	36.746	-1	1.000	51639297	13221811	4195	10487	3152		
459.7348	36.734	36.746	-1	1.000	57444318	14678586	5096	12740	2880	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	175816783	44231167

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	175816783	44231167

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.223	144665	44247	179170	48572	0.1938	0.81	
15.480	149186	43074	207908	53360	0.2138	0.72	
15.722	210638	46169	217069	45494	0.2560	0.97	RQ
15.722	167143	35030	217069	45494	0.2300		Empc Correction
16.009	220625	38804	332243	65064	0.3309	0.66	
16.236	241339	62937	262948	63813	0.3019	0.92	RQ
16.236	202469	49136	262948	63813	0.2786		Empc Correction
16.463	267375	48087	199122	45346	0.2792	1.34	RQ
16.463	153323	34916	199122	45346	0.2110		Empc Correction
16.735	2064495	502099	2637384	714556	2.81	0.78	
16.962	126990	29499	155924	44240	0.1693	0.81	
17.536	366569	100033	458312	95725	0.4938	0.80	
18.897	294705	67140	369404	80216	0.3975	0.80	
Signal Totals:							
	3890170	943978	5019484	1256386			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	9106071	2238475				0.81	RQ
	8909654	2200364					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 5.451 = (9106071 * 100.000) / (175816783 * 0.950)
Empc Amount: 5.333 = (8909654 * 100.000) / (175816783 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	123497681	27831164

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	123497681	27831164

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
15.646	82121	22465	109180	19380	0.1478	0.75	
15.918	120886	26990	116525	33202	0.1835	1.04	RQ
15.918	89724	25565	116525	33202	0.1594		Empc Correction
16.690	549240	141019	682562	175077	0.9520	0.80	
17.566	161003	41289	229810	53110	0.3020	0.70	
17.702	112927	31216	160167	44998	0.2111	0.71	Ma
18.141	125323	23967	131763	26304	0.1987	0.95	RQ
18.141	101457	20254	131763	26304	0.1802		Empc Correction
Signal Totals:							
	1096472	281808	1430007	352071			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2581507	639017				0.81	RQMa
	2526479	633879					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.995 = (2581507 * 100.000) / (123497681 * 1.048)
Empc Amount: 1.953 = (2526479 * 100.000) / (123497681 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	137027955	23855286
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	139581919	22479880

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	138304937	23167583

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
20.723	161530	30456	134966	17524	0.2070	1.20	RQM
20.723	161530	30456	104212	19649	0.1855		Empc Correction
Signal Totals:							
	161530	30456	104212	19649			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	296496	47980				1.20	RQM
	265742	50105					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.2070 = (296496 * 100.000) / (138304937 * 1.036)
Empc Amount: 0.1855 = (265742 * 100.000) / (138304937 * 1.036)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	86710011	13362059

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	86710011	13362059

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.900	300581	48180	176109	27562	0.5064	1.71	M
21.636	500138	96385	313239	59855	0.8642	1.60	
23.082	268492	47052	156561	23477	0.4516	1.71	M
Signal Totals:							
	1069211	191617	645909	110894			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1715120	302511				1.66	M

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.822 = (1715120 * 100.000) / (86710011 * 1.086)

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	84537726	21526059
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	98953141	21521138
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	91745433	21523598

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.048	3490344	428773	2958344	370296	6.31	1.18	
30.699	888492	162056	725313	136471	1.58	1.22	
30.912	126147	28446	126679	25054	0.2473	1.00	RQ
30.912	126147	28446	101731	22940	0.2229		Empc Correction
Signal Totals:							
	4504983	619275	3785388	529707			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	8315319	1151096				1.18	RQ
	8290371	1148982					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 8.132 = (8315319 * 100.000) / (91745433 * 1.115)
Empc Amount: 8.108 = (8290371 * 100.000) / (91745433 * 1.115)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	80026686	25790140
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	82423584	23699621

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	81225135	24744880

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.919	201359	65311	232684	75461	0.3853	0.87	RQM
33.919	201359	65311	193614	62799	0.3506		Empc Correction
Signal Totals:							
	201359	65311	193614	62799			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	434043	140772				0.87	RQM
	394973	128110					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3853 = (434043 * 100.000) / (81225135 * 1.387)
Empc Amount: 0.3506 = (394973 * 100.000) / (81225135 * 1.387)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Inject. Date: 19-Dec-2019 20:31:41 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 13

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	78298694	23536251

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	78298694	23536251

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	9219929	2929821	8658148	2657696	21.7	1.06	
Signal Totals:							
	9219929	2929821	8658148	2657696			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	17878077	5587517				1.06	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 21.673 = (17878077 * 100.000) / (78298694 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

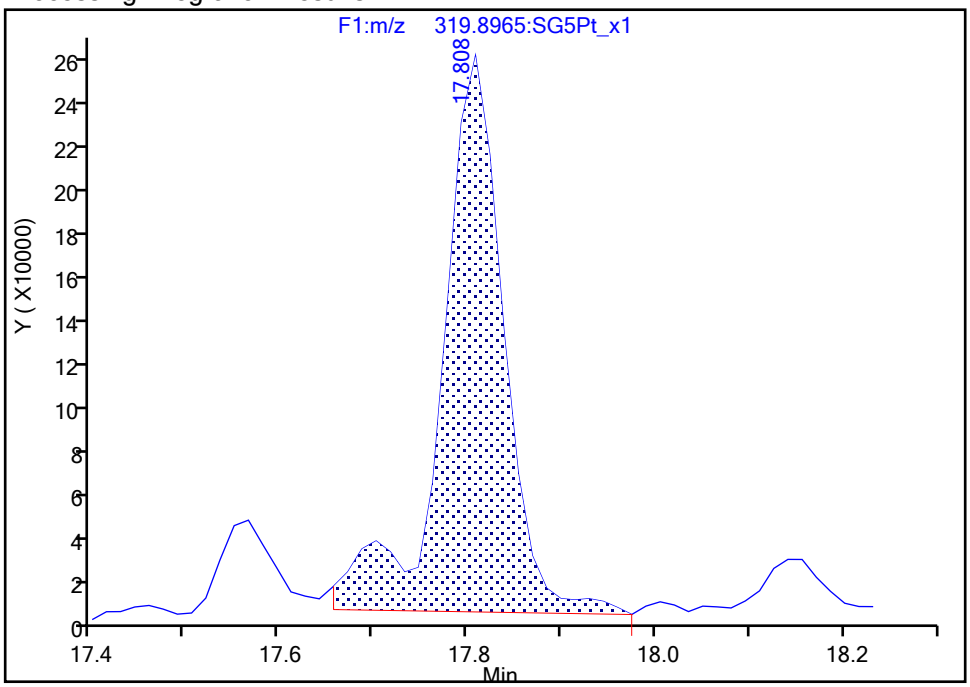
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

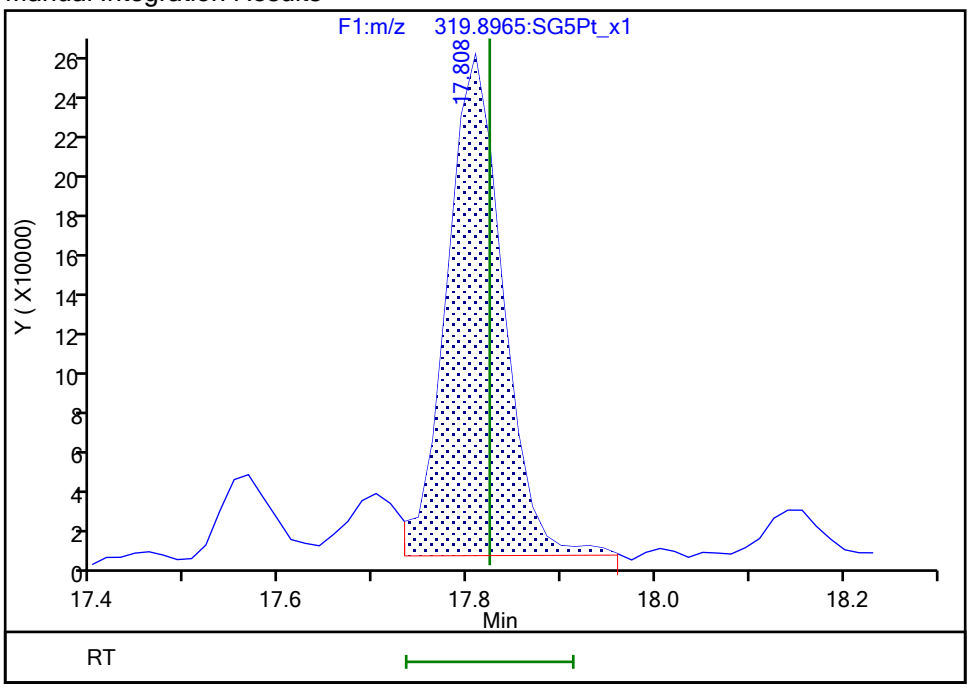
Processing Integration Results

RT: 17.81
Area: 1154618
Amount: 1.931105
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 1029935
Amount: 1.805819
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:38:38
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

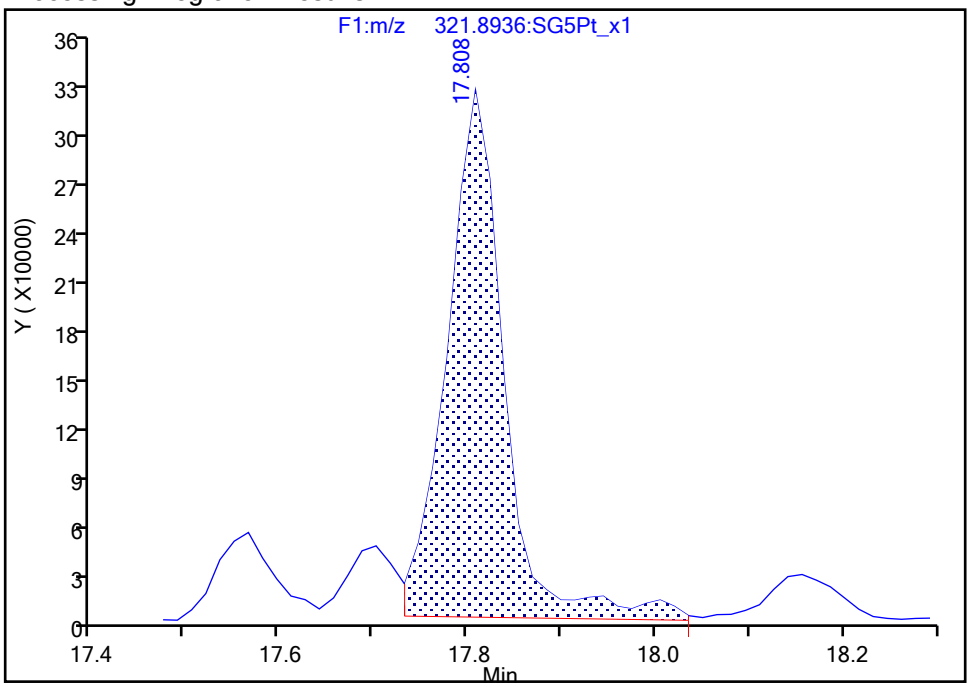
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

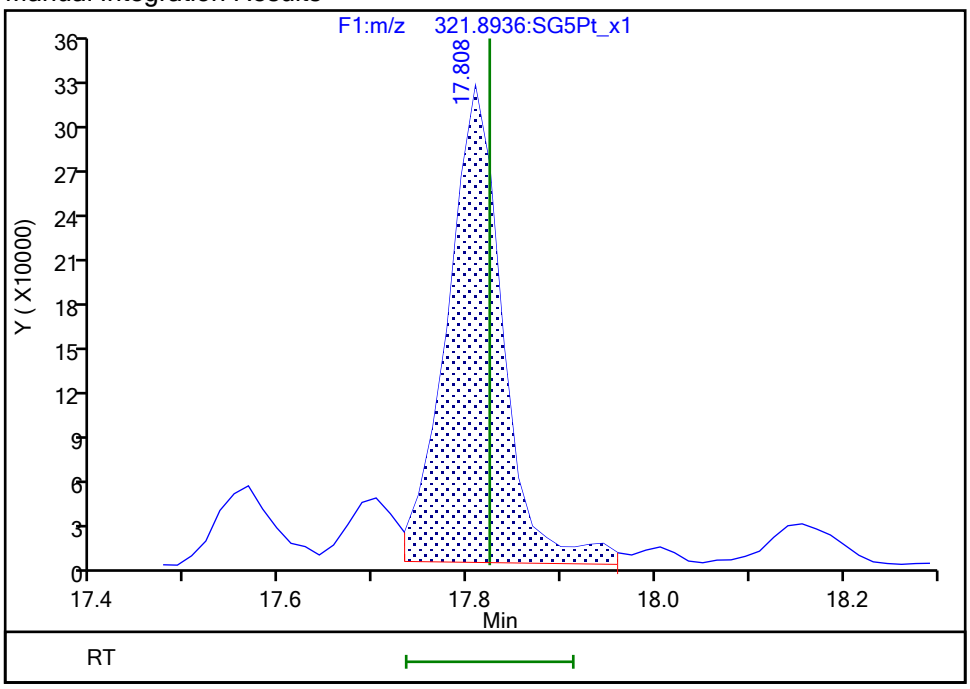
Processing Integration Results

RT: 17.81
Area: 1344061
Amount: 1.931105
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 1306634
Amount: 1.805819
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:38:41

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

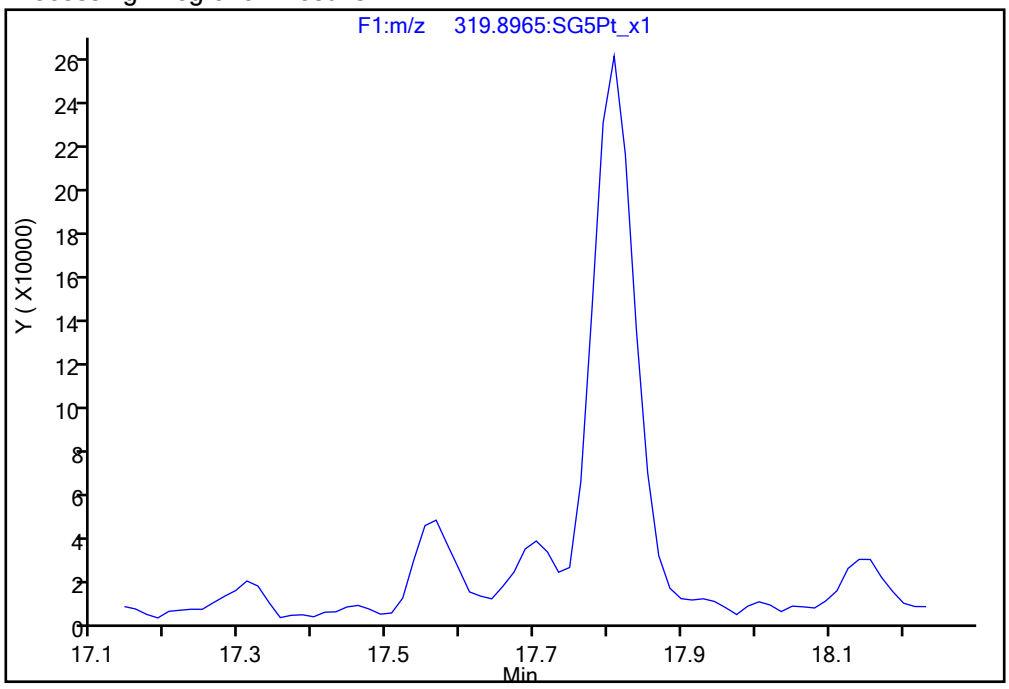
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

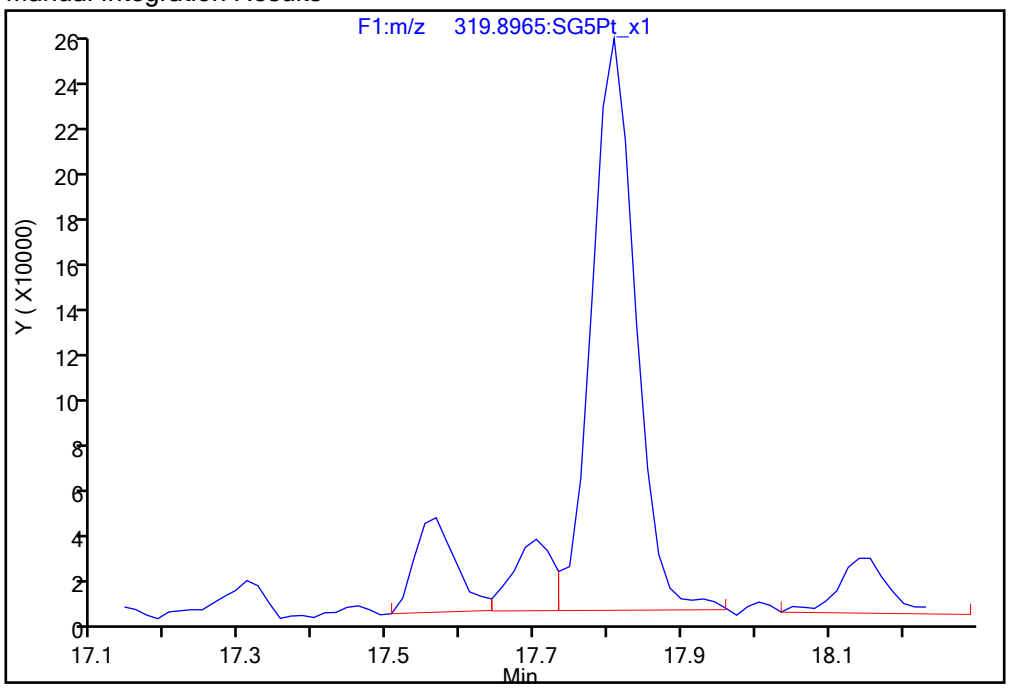
Not Detected
RT: 15.59- 18.91

Processing Integration Results



Manual Integration Results

RT = 17.702 Area = 112927 M



Reviewer: dadunj, 20-Dec-2019 14:38:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

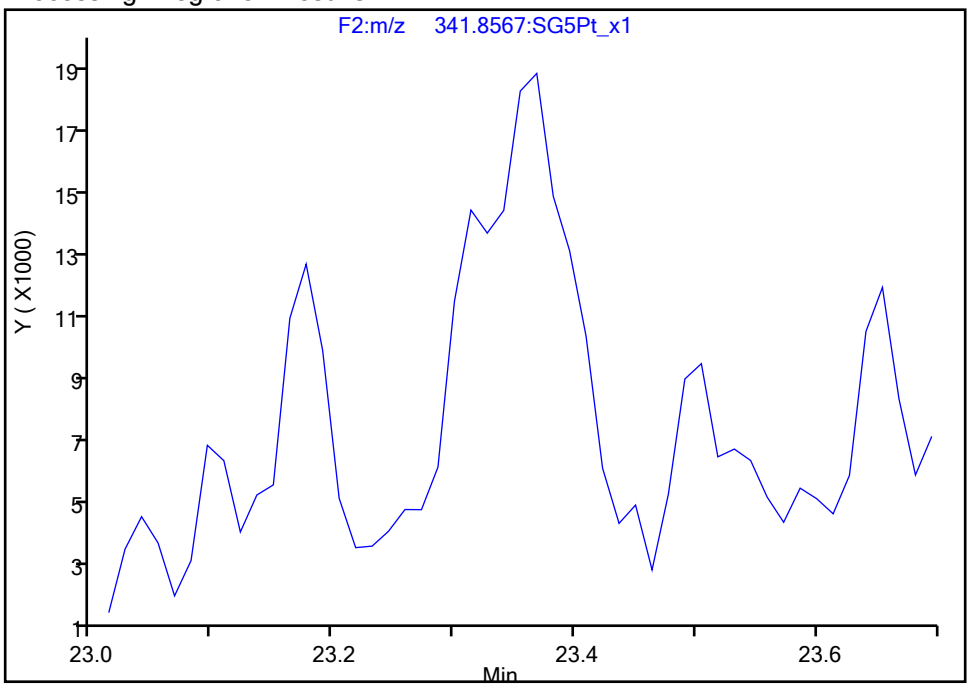
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

2,3,4,7,8-PeCDF, CAS: 57117-31-4

Signal: 2

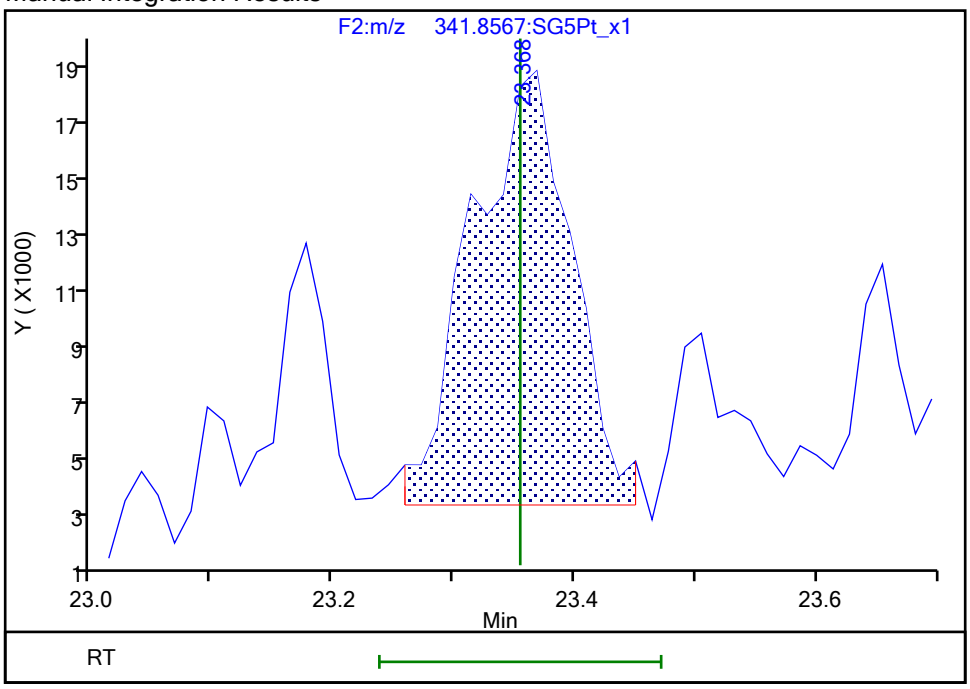
Not Detected
Expected RT: 23.35

Processing Integration Results



Manual Integration Results

RT: 23.37
Area: 83348
Amount: 0.141958
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:39:22
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

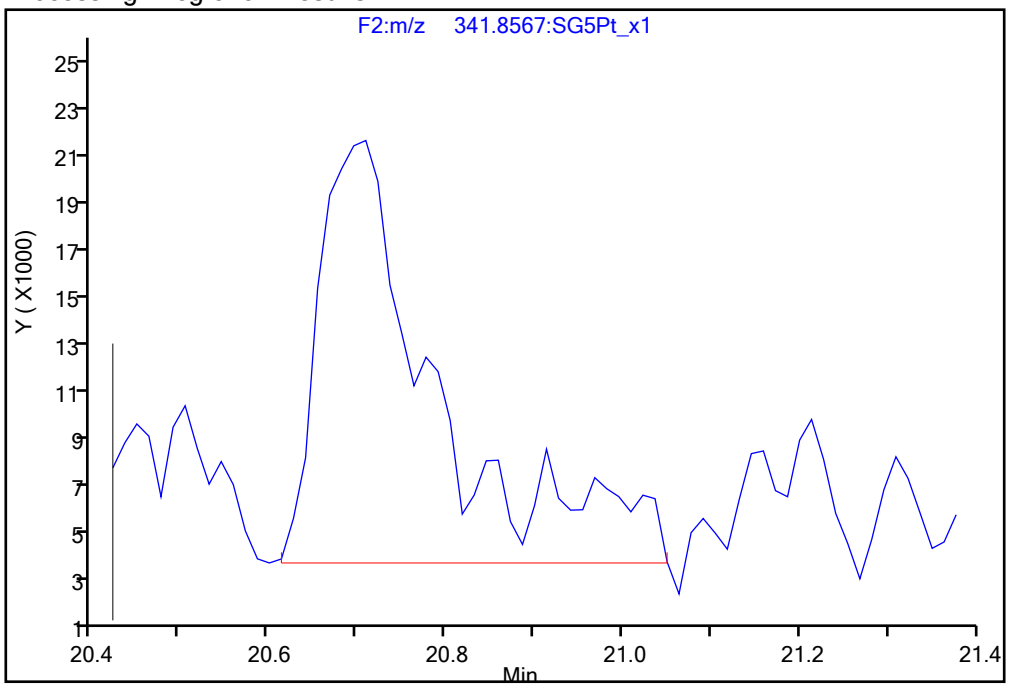
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 2, m/z: 341.8567, RT: (20.42- 25.29)

Signal: 2

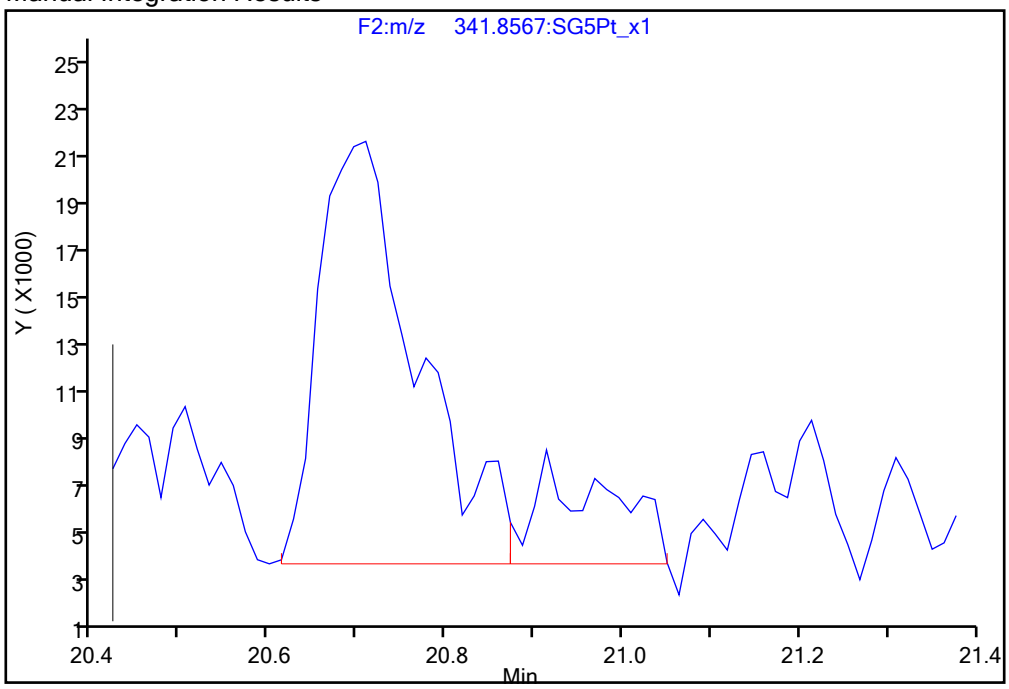
Processing Integration Results

RT = 20.709 Area = 161803



Manual Integration Results

RT = 20.709 Area = 134966 M



Reviewer: dadunj, 20-Dec-2019 14:39:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

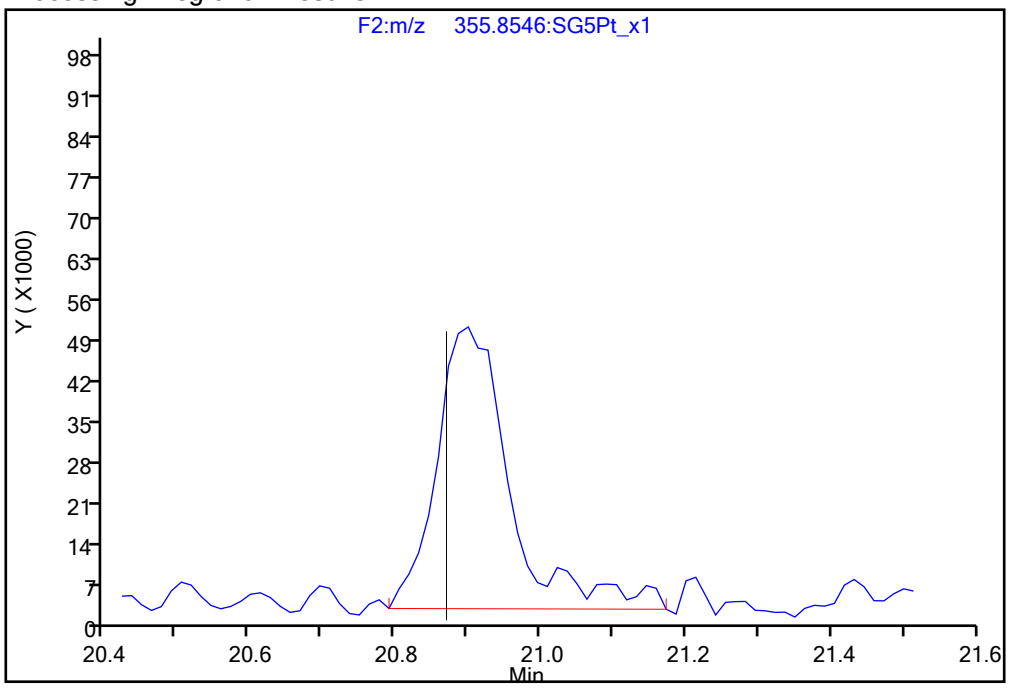
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

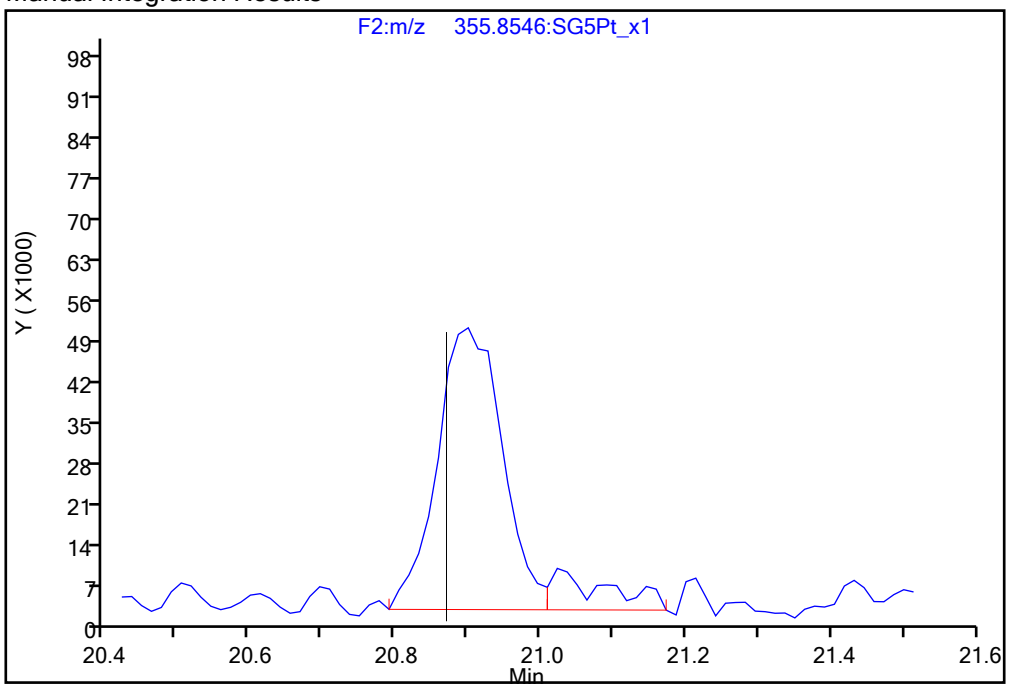
Processing Integration Results

RT = 20.900 Area = 337761



Manual Integration Results

RT = 20.900 Area = 300581 M



Reviewer: dadunj, 20-Dec-2019 14:39:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

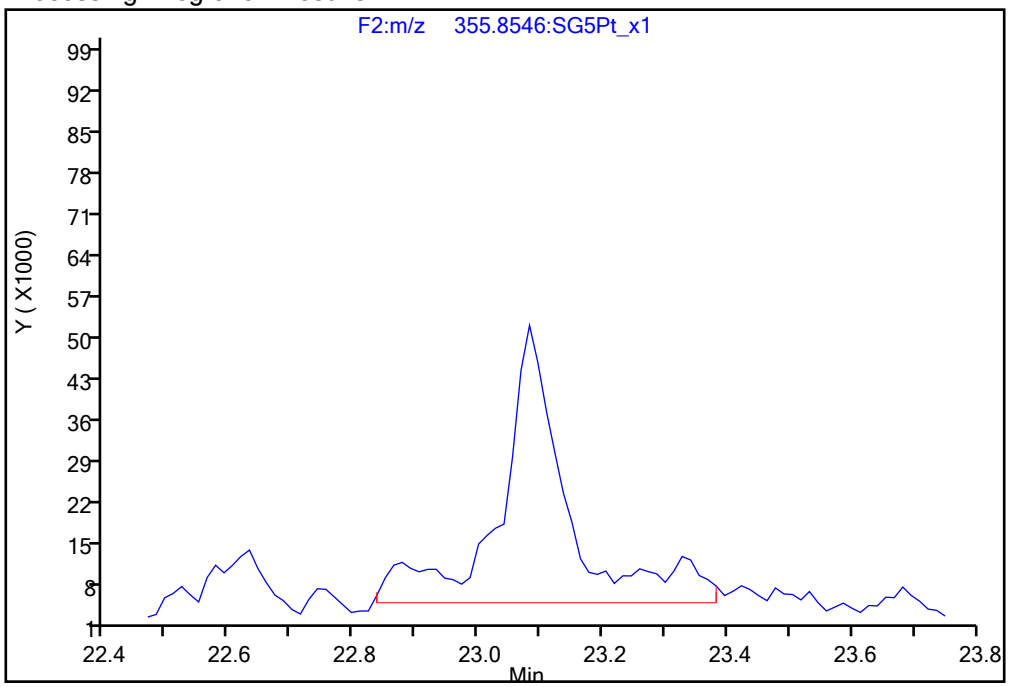
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

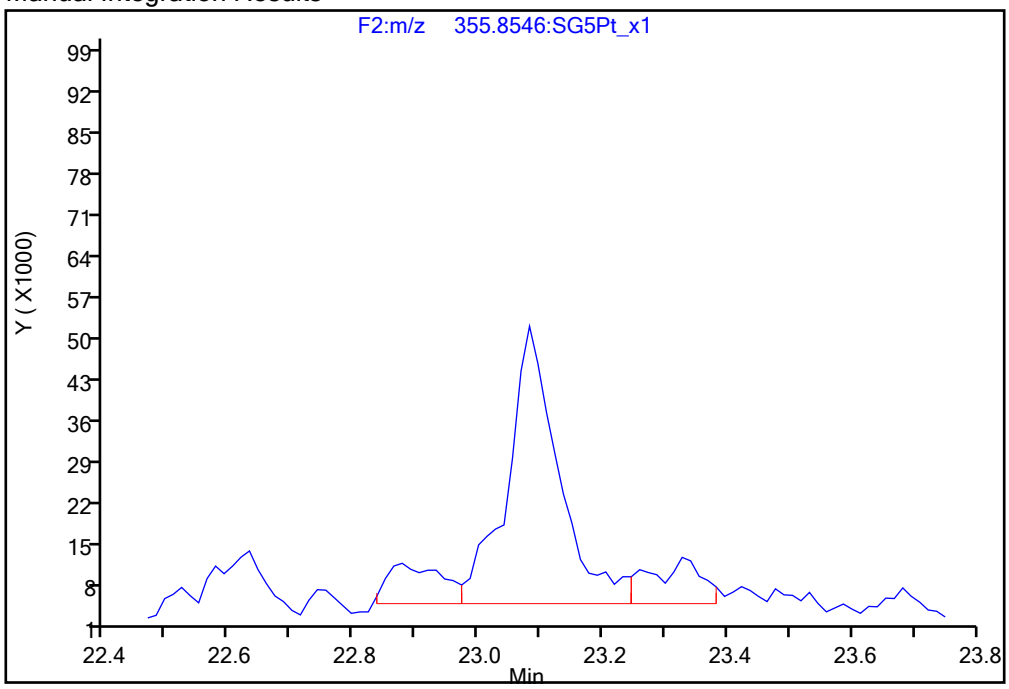
Processing Integration Results

RT = 23.082 Area = 352154



Manual Integration Results

RT = 23.082 Area = 268492 M



Reviewer: dadunj, 20-Dec-2019 14:39:42

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

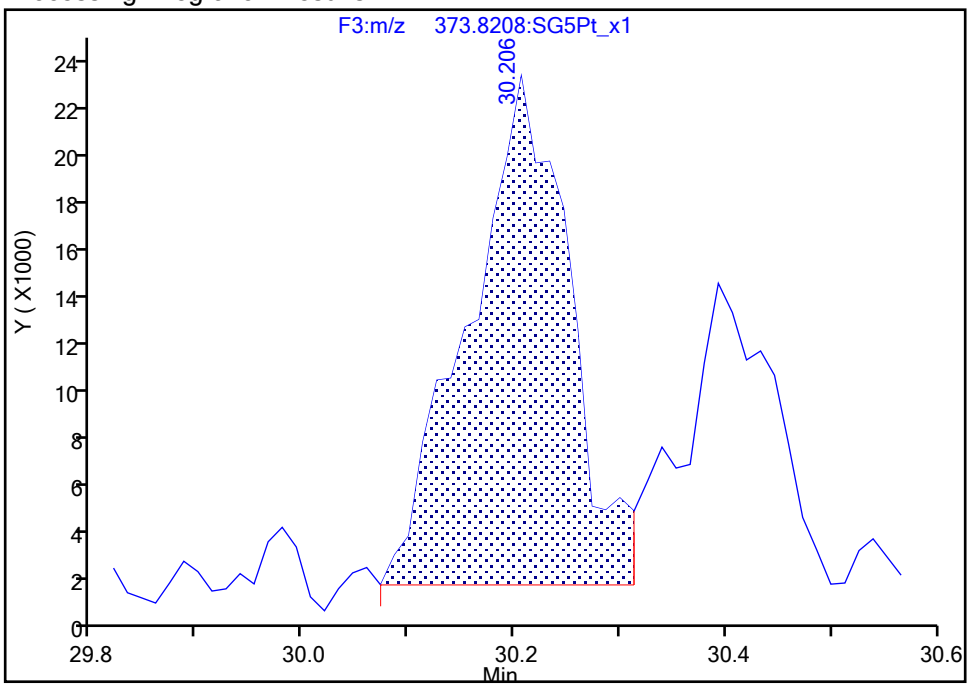
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 1

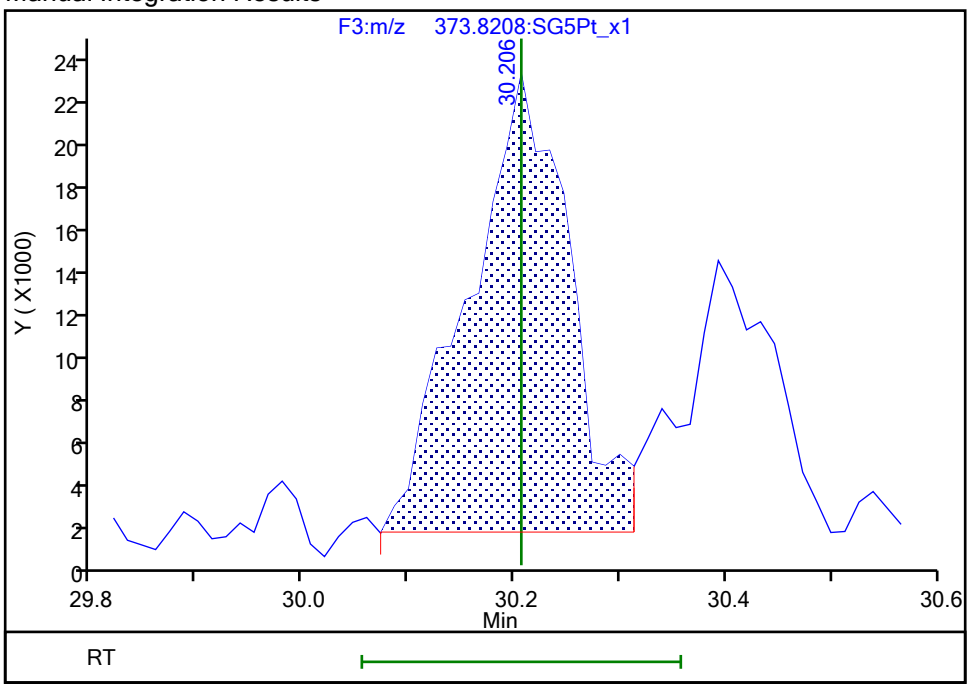
Processing Integration Results

RT: 30.21
Area: 141443
Amount: 0.183218
Amount Units: pg/ul



Manual Integration Results

RT: 30.21
Area: 140680
Amount: 0.184072
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:25

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

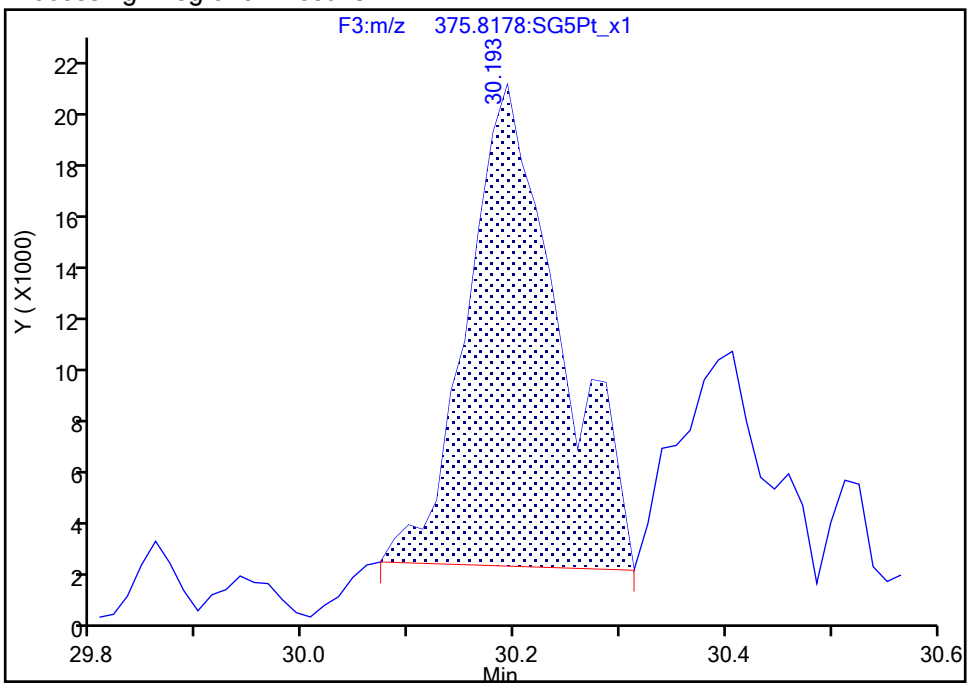
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDF, CAS: 70648-26-9

Signal: 2

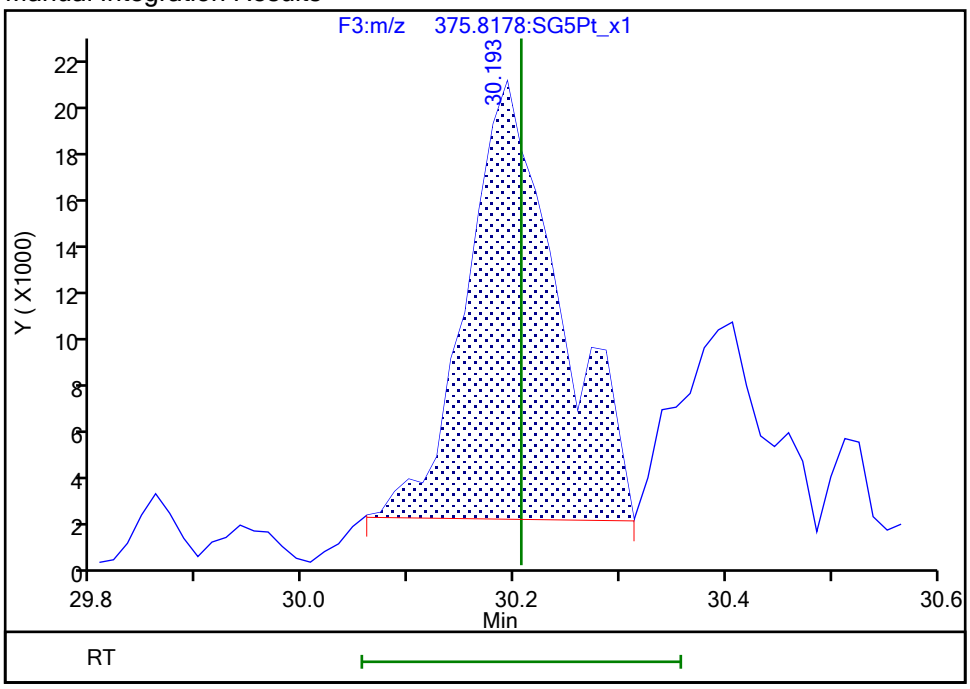
Processing Integration Results

RT: 30.19
Area: 110372
Amount: 0.183218
Amount Units: pg/ul



Manual Integration Results

RT: 30.19
Area: 112309
Amount: 0.184072
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:30
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

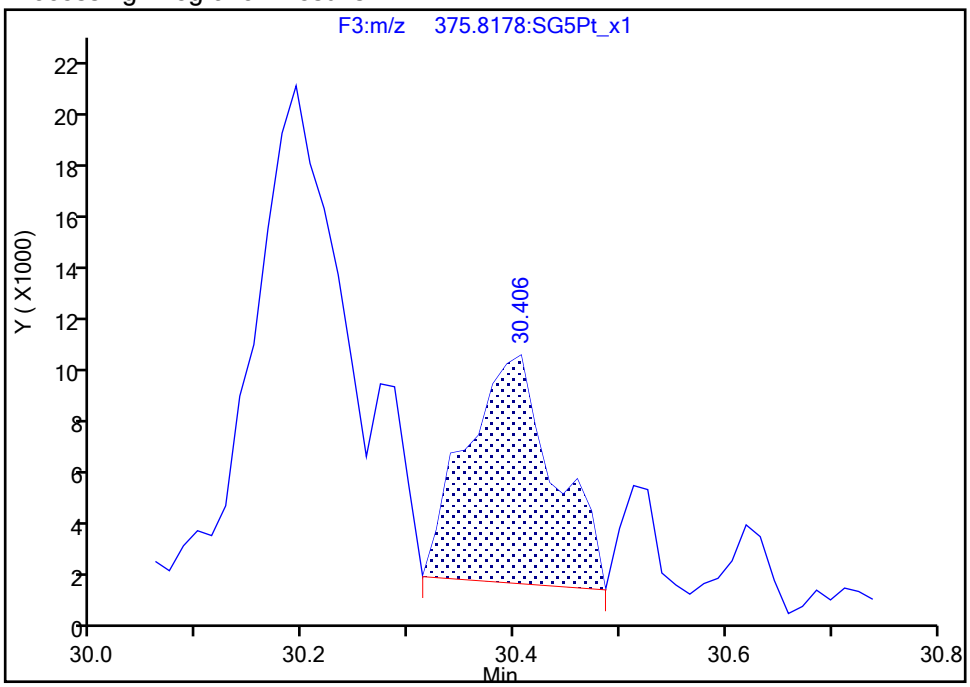
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 2

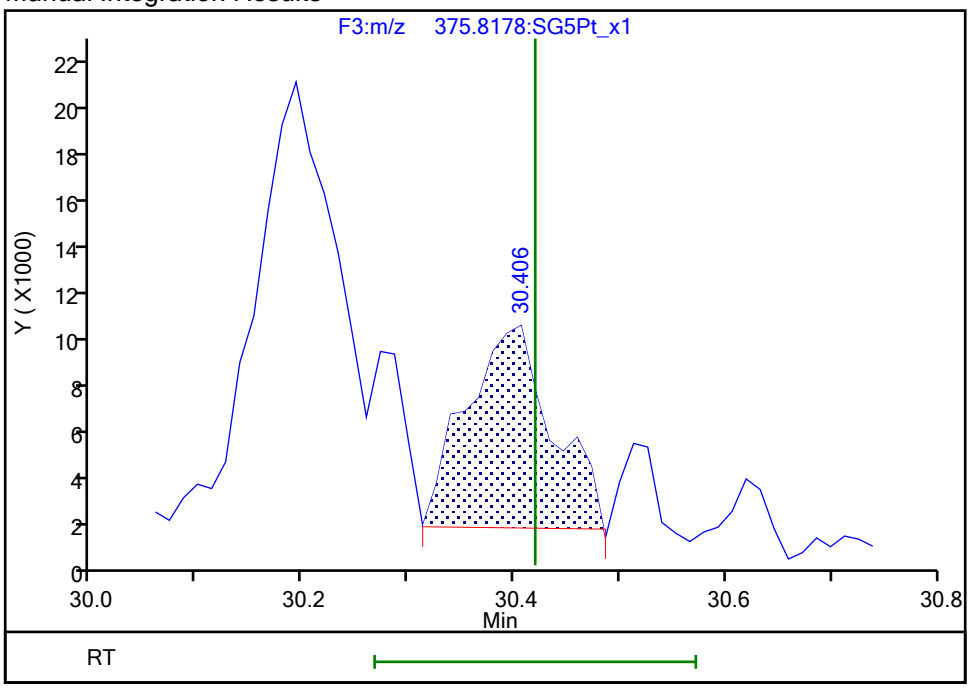
RT: 30.41
Area: 48744
Amount: 0.077641
Amount Units: pg/ul

Processing Integration Results



RT: 30.41
Area: 47125
Amount: 0.088988
Amount Units: pg/ul

Manual Integration Results



Reviewer: dadunj, 20-Dec-2019 14:40:18
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

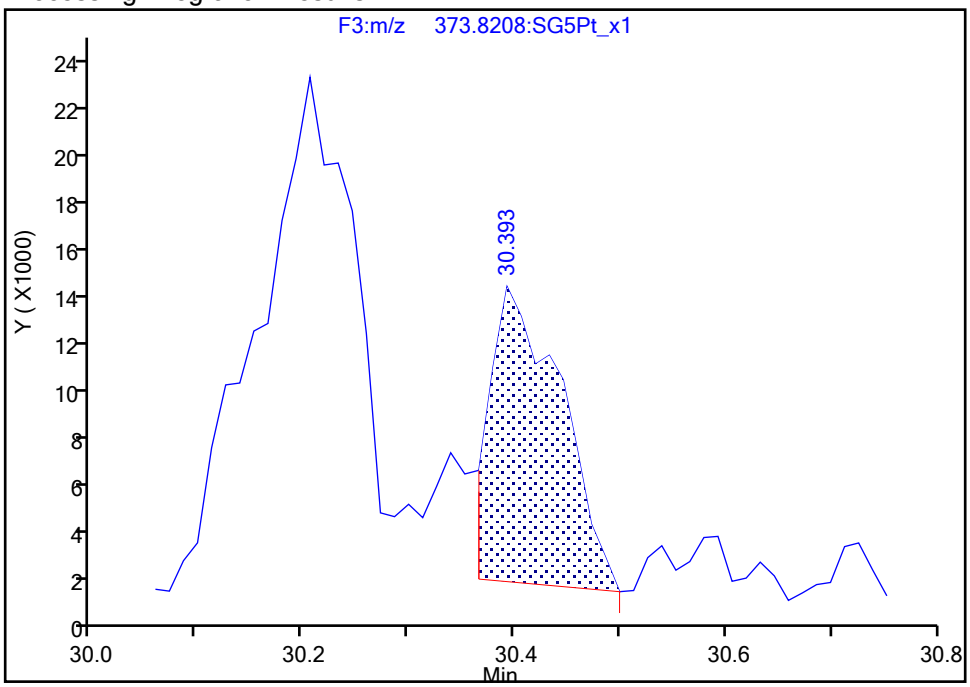
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDF, CAS: 57117-44-9

Signal: 1

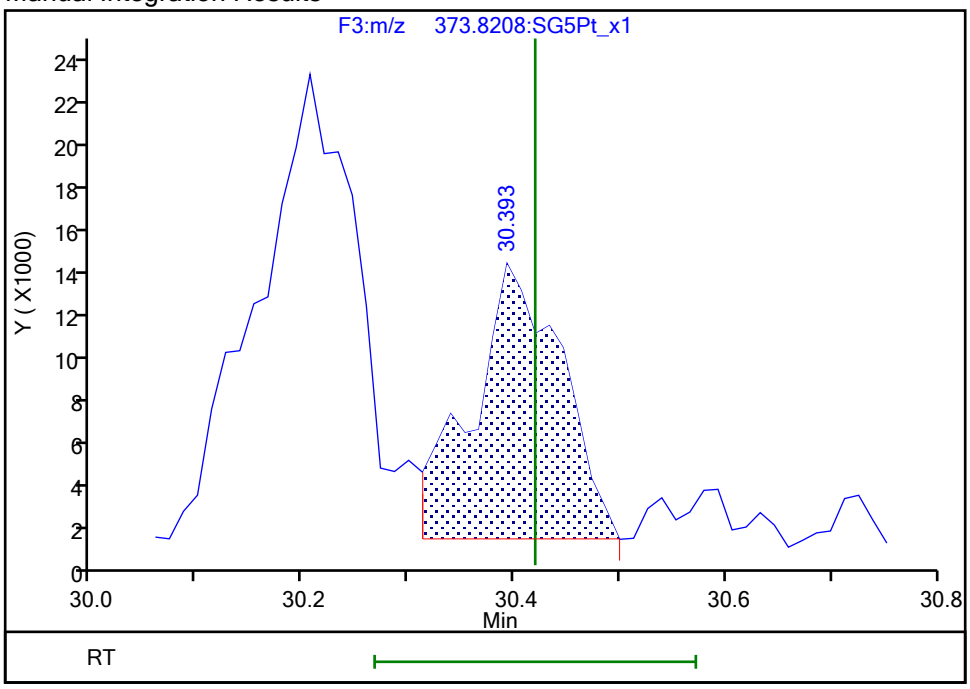
Processing Integration Results

RT: 30.39
Area: 56995
Amount: 0.077641
Amount Units: pg/ul



Manual Integration Results

RT: 30.39
Area: 74068
Amount: 0.088988
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:36

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

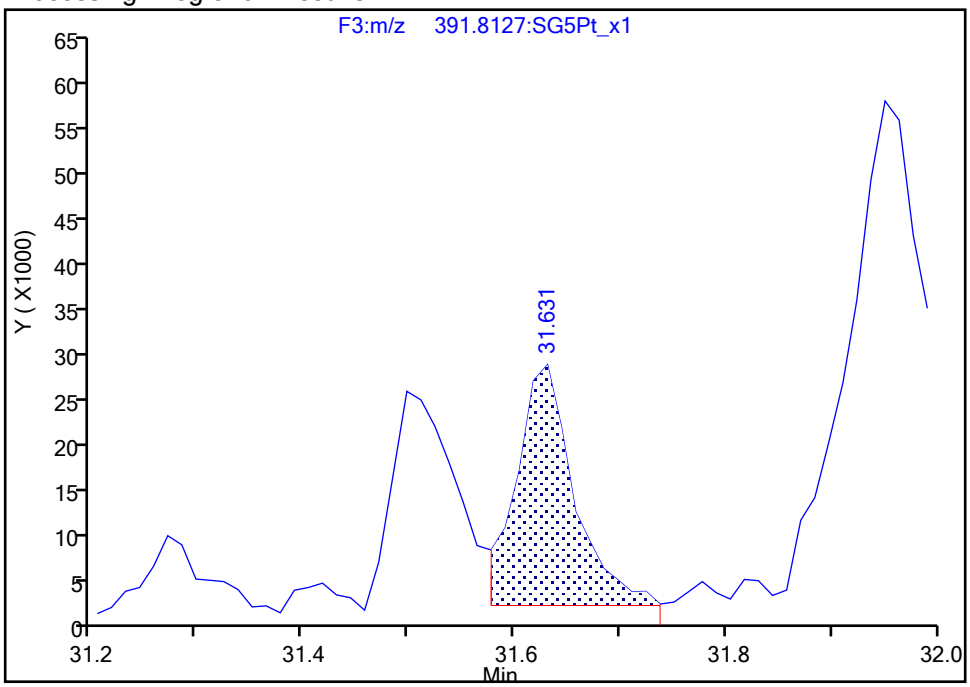
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 2

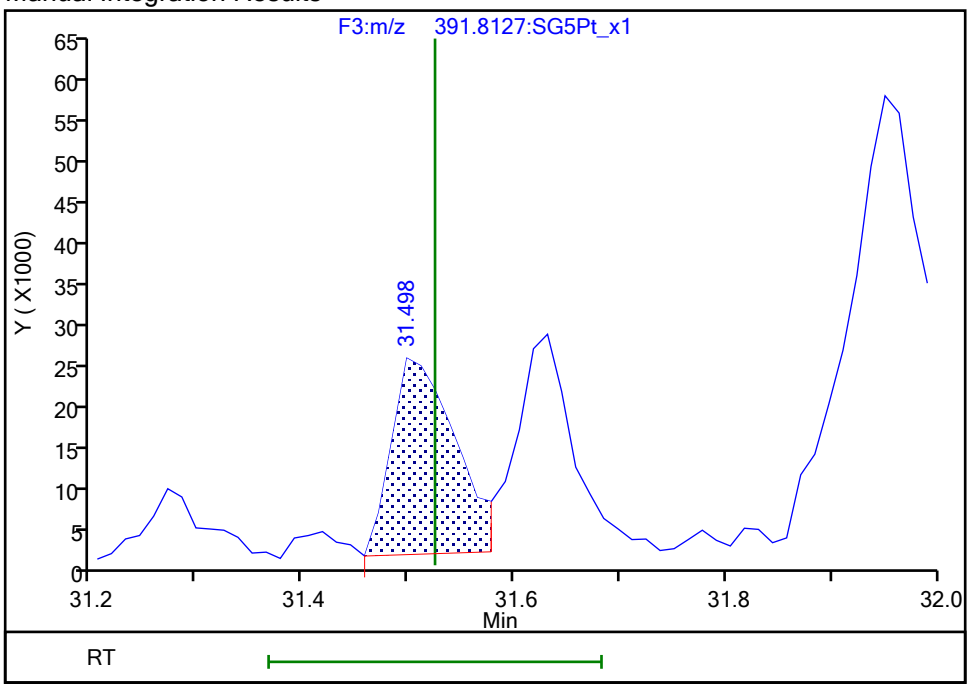
Processing Integration Results

RT: 31.63
Area: 99421
Amount: 0.342784
Amount Units: pg/ul



Manual Integration Results

RT: 31.50
Area: 98559
Amount: 0.188861
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:50
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

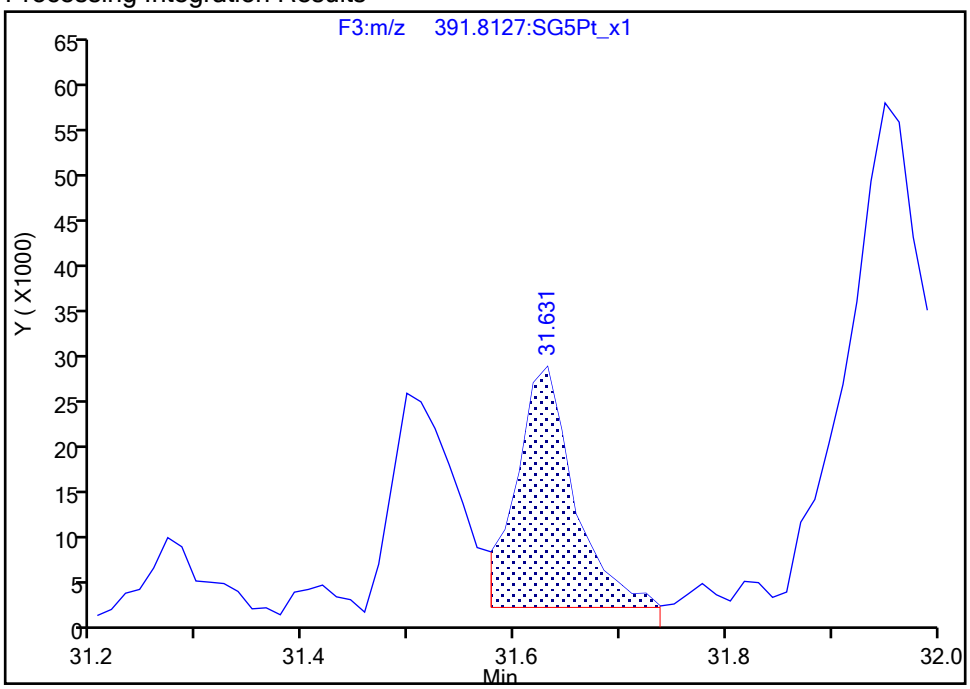
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 3

Processing Integration Results

RT: 31.63
Area: 316841
Amount: 0.342784
Amount Units: pg/ul



Manual Integration Results

RT: 31.54
Area: 174568
Amount: 0.188861
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:40:50
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

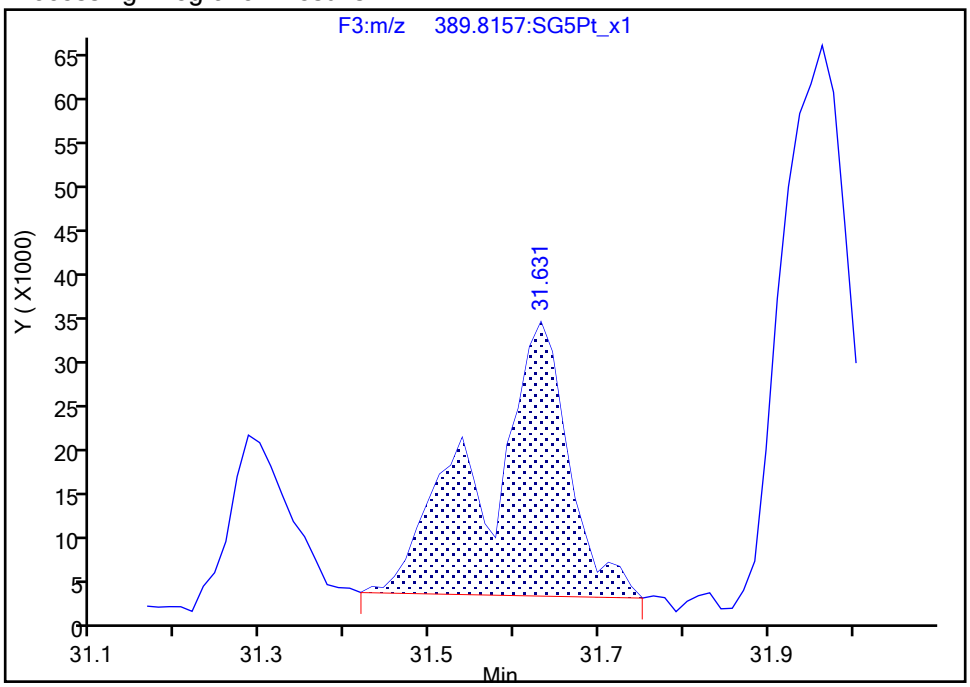
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,4,7,8-HxCDD, CAS: 39227-28-6

Signal: 1

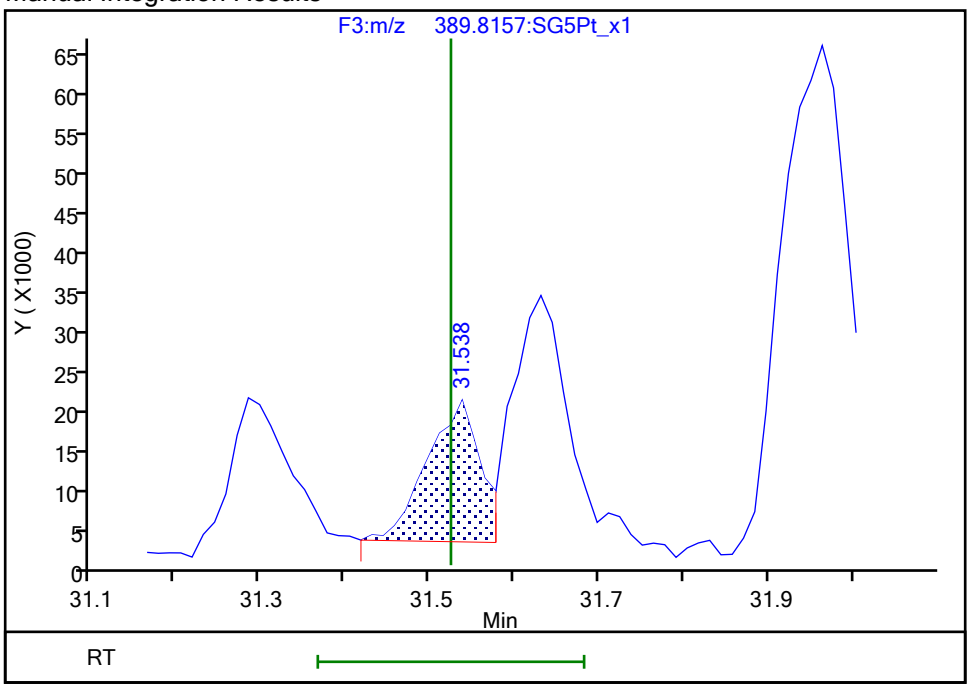
Processing Integration Results

RT: 31.63
Area: 217420
Amount: 0.342784
Amount Units: pg/ul



Manual Integration Results

RT: 31.54
Area: 76009
Amount: 0.188861
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:51

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

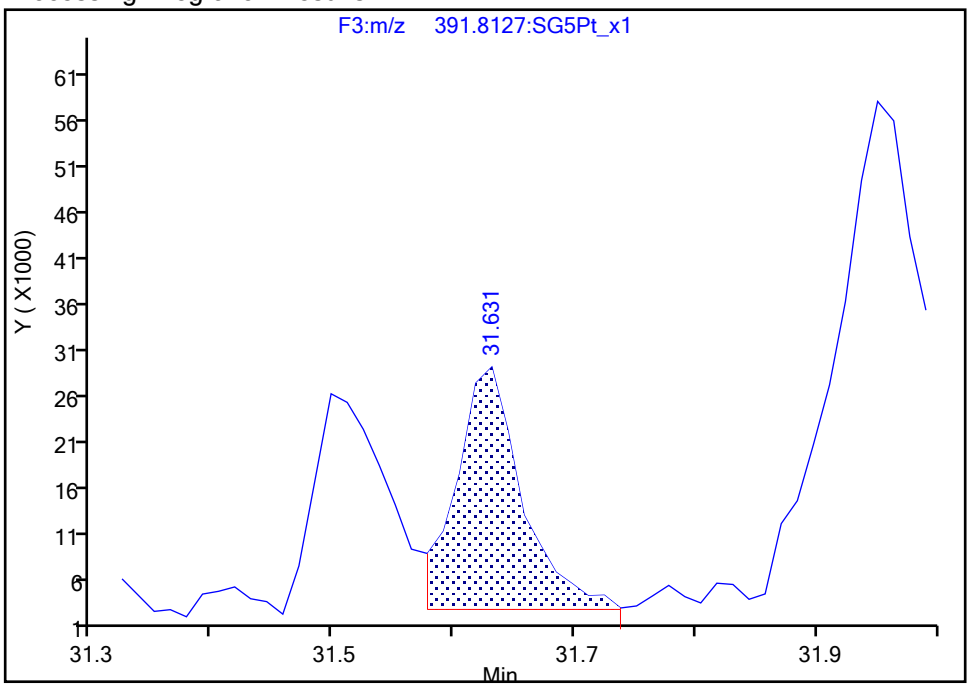
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 2

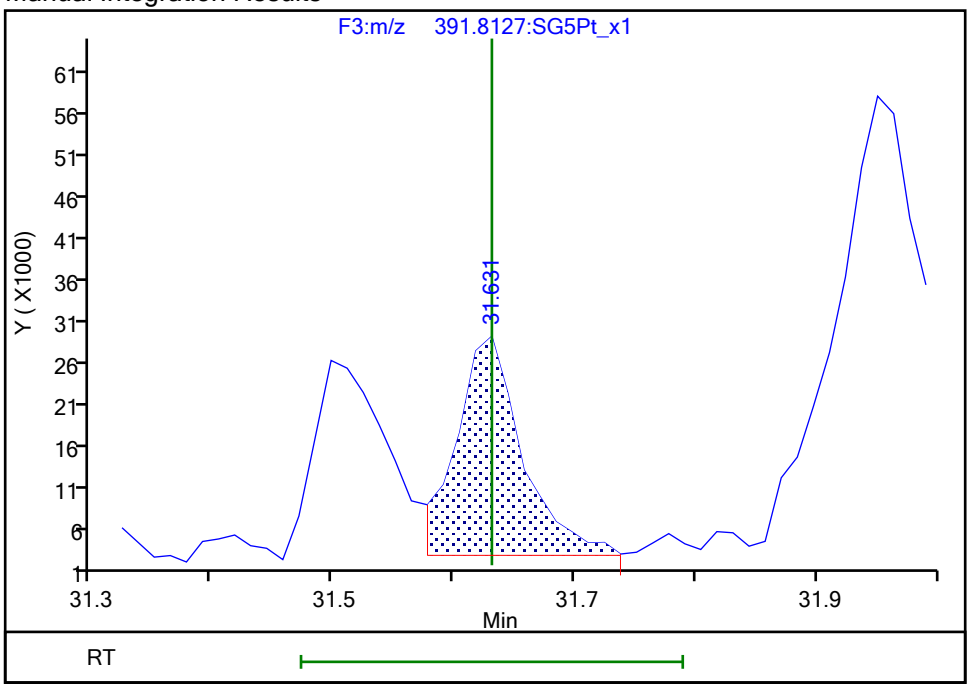
Processing Integration Results

RT: 31.63
Area: 99421
Amount: 0.307021
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 99421
Amount: 0.233339
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:54
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

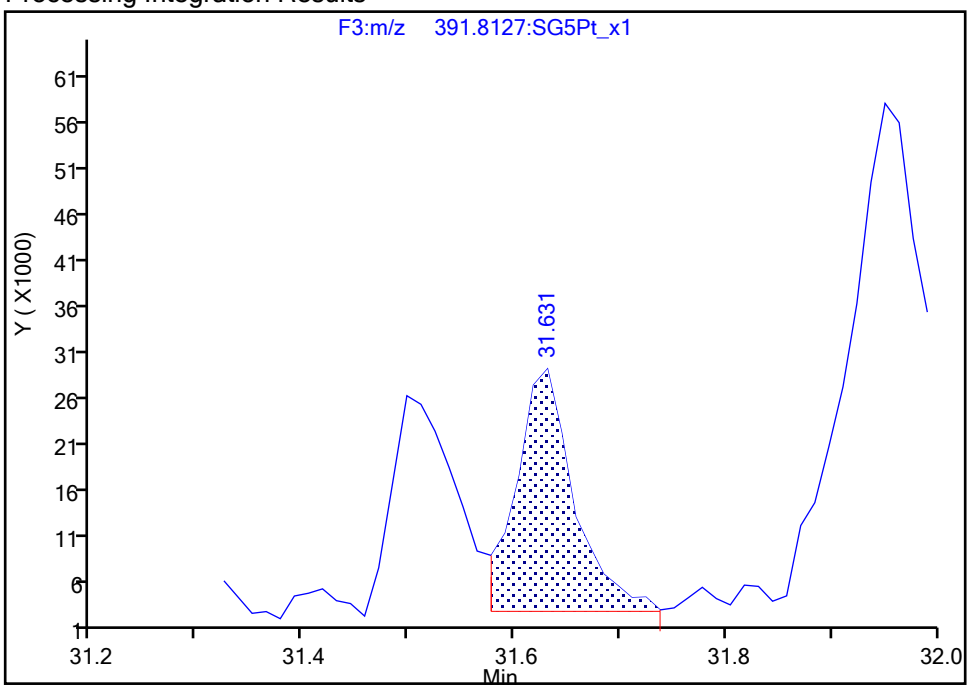
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 3

Processing Integration Results

RT: 31.63
Area: 316841
Amount: 0.307021
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 240802
Amount: 0.233339
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:40:54
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

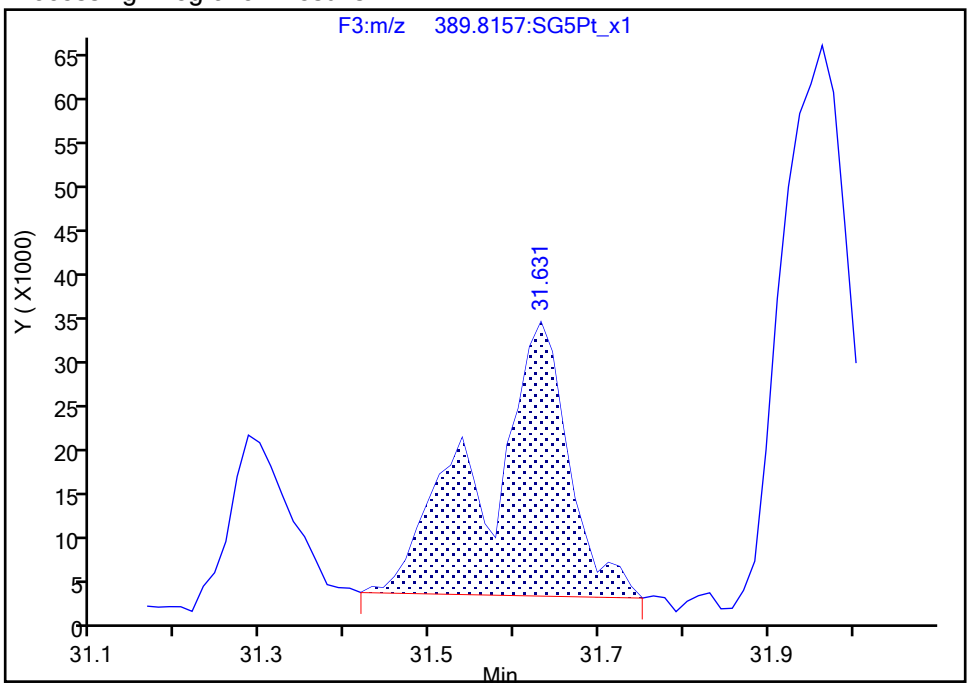
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,6,7,8-HxCDD, CAS: 57653-85-7

Signal: 1

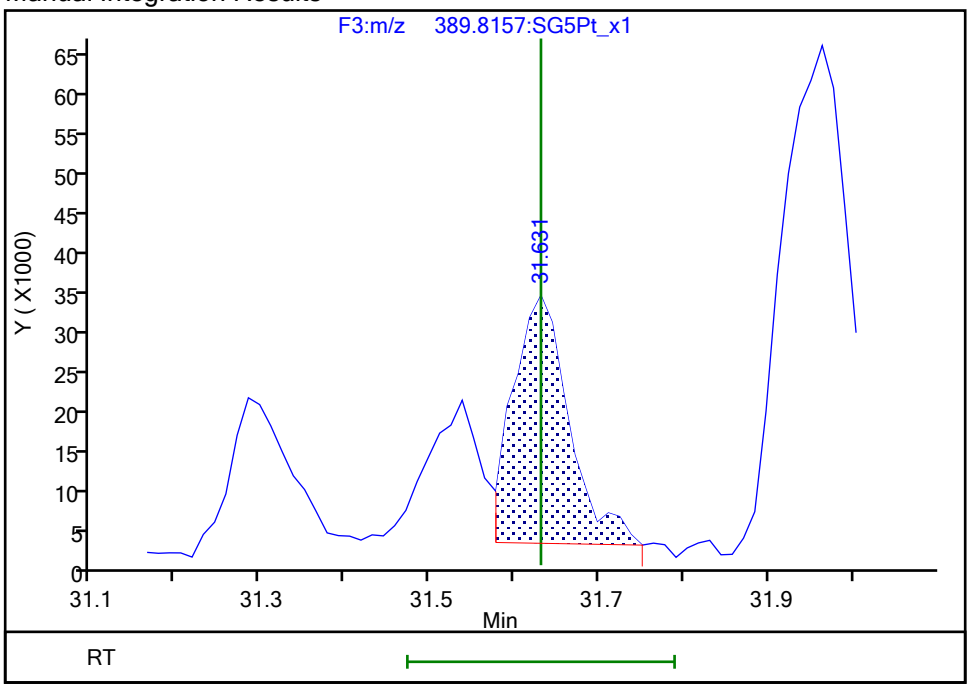
Processing Integration Results

RT: 31.63
Area: 217420
Amount: 0.307021
Amount Units: pg/ul



Manual Integration Results

RT: 31.63
Area: 141381
Amount: 0.233339
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:40:56
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

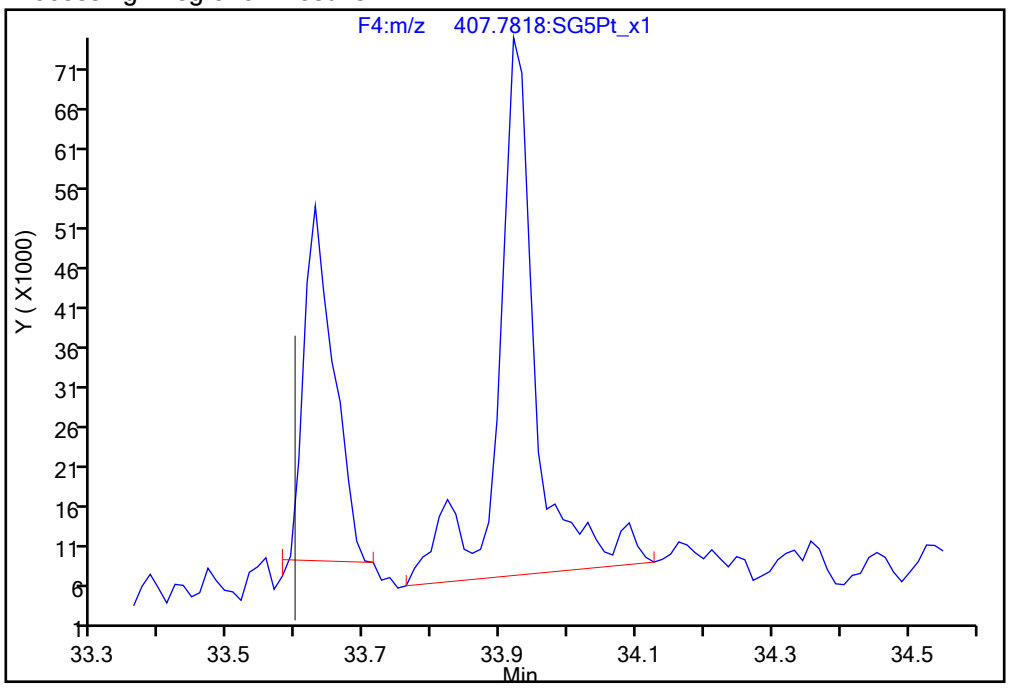
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 1, m/z: 407.7818, RT: (33.60- 34.74)

Signal: 1

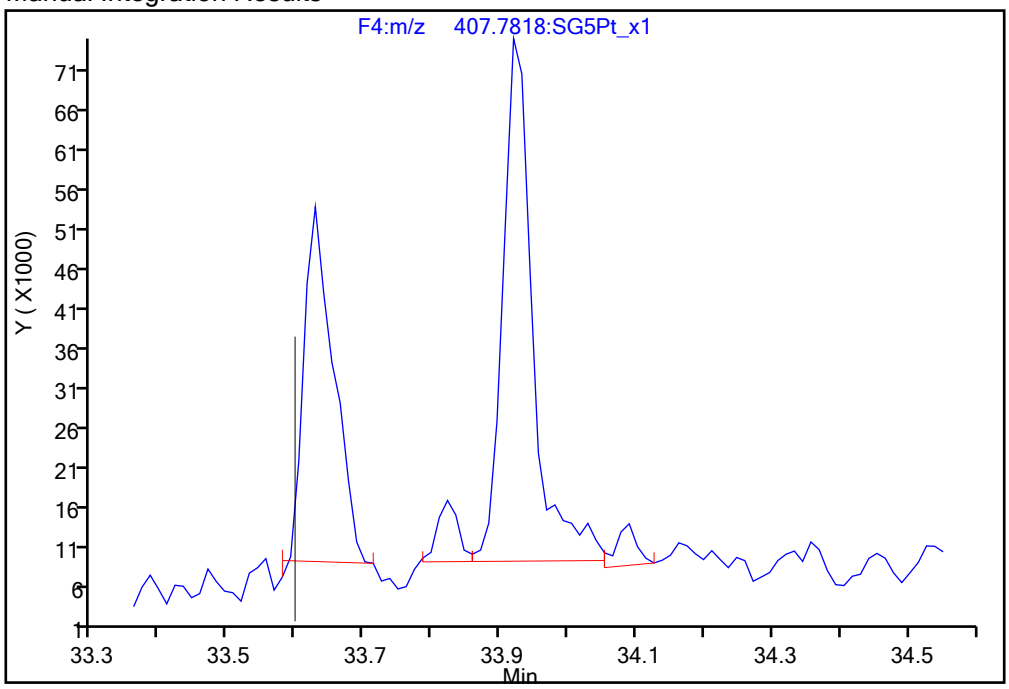
Processing Integration Results

RT = 33.919 Area = 261556



Manual Integration Results

RT = 33.919 Area = 201359 M



Reviewer: dadunj, 20-Dec-2019 14:41:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

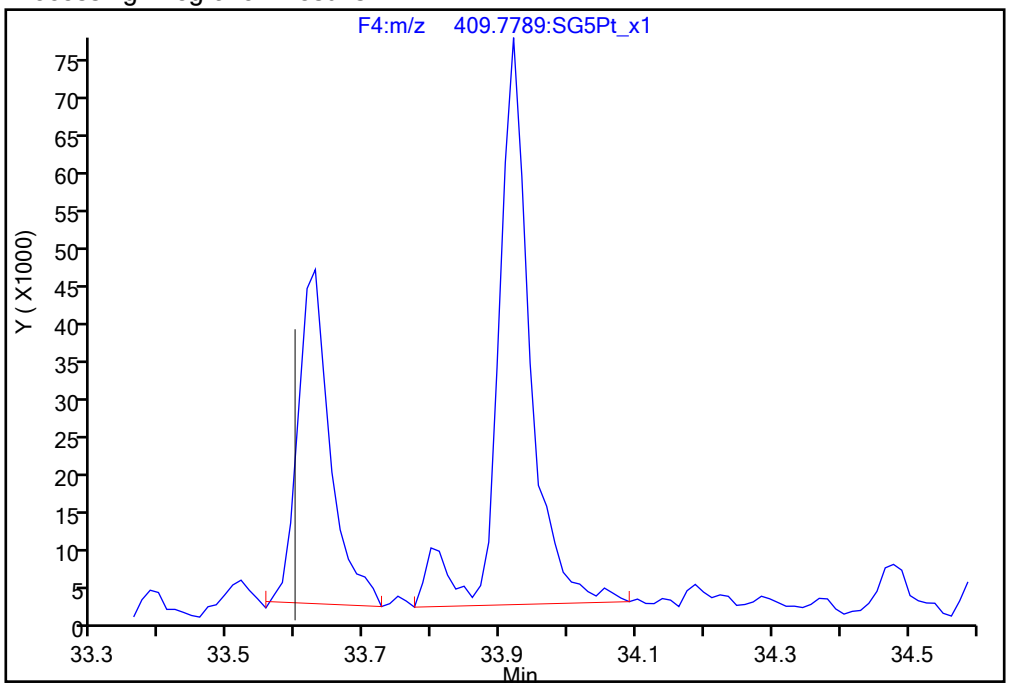
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d				
Injection Date:	19-Dec-2019 20:31:41	Instrument ID:	3D5		
Lims ID:	320-56953-A-7-A	Lab Sample ID:	320-56953-7		
Client ID:	11187072-120919-BN-SJSSA04(2-4)				
Operator ID:	AJS	ALS Bottle#:	13	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDF, Signal: 2, m/z: 409.7789, RT: (33.60- 34.74)

Signal: 2

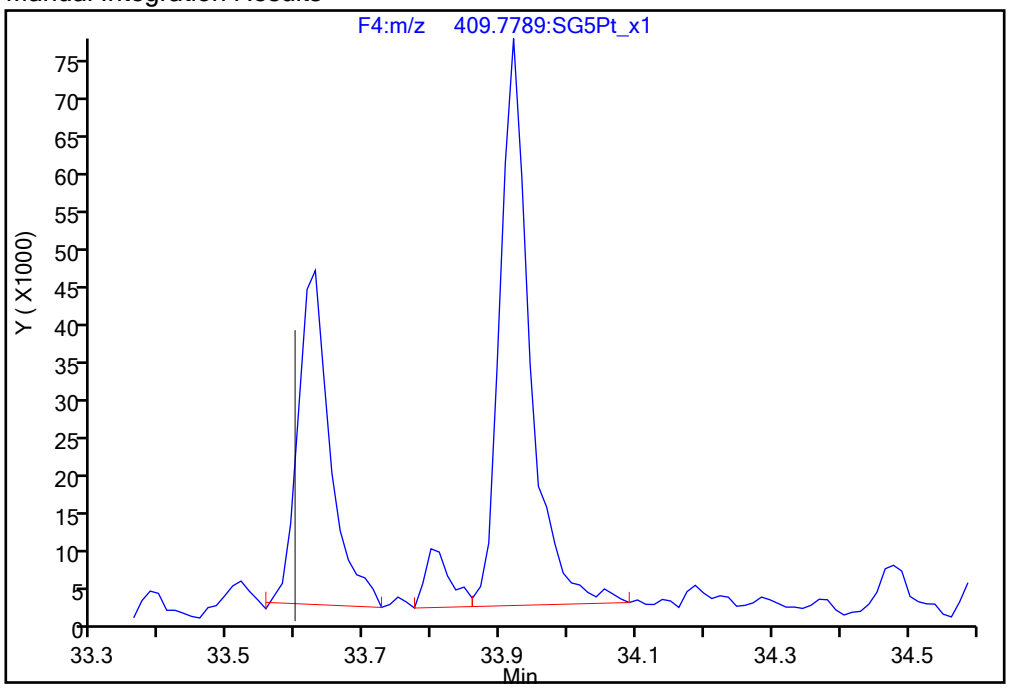
Processing Integration Results

RT = 33.919 Area = 253094



Manual Integration Results

RT = 33.919 Area = 232684 M



Reviewer: dadunj, 20-Dec-2019 14:41:09

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
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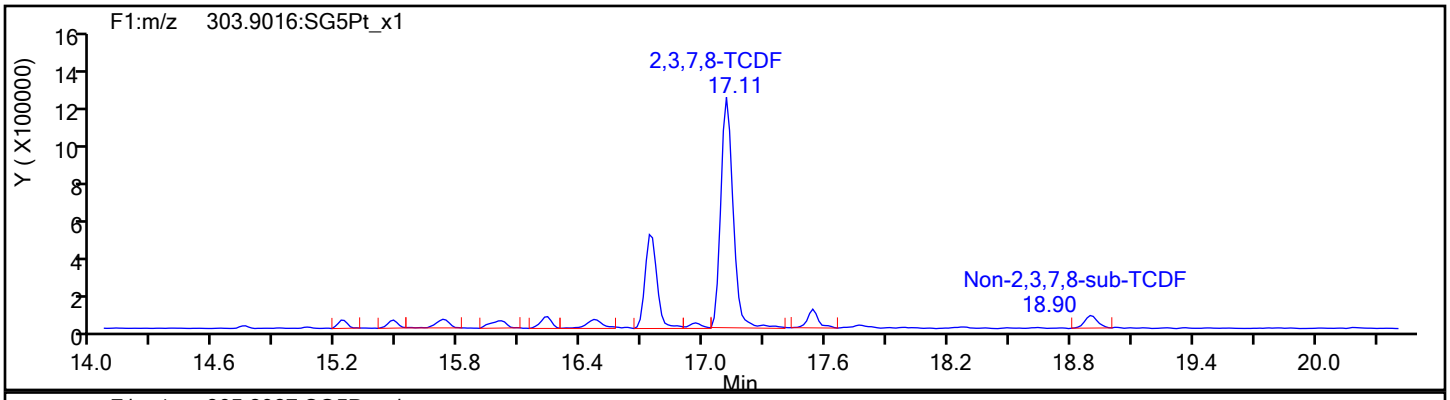
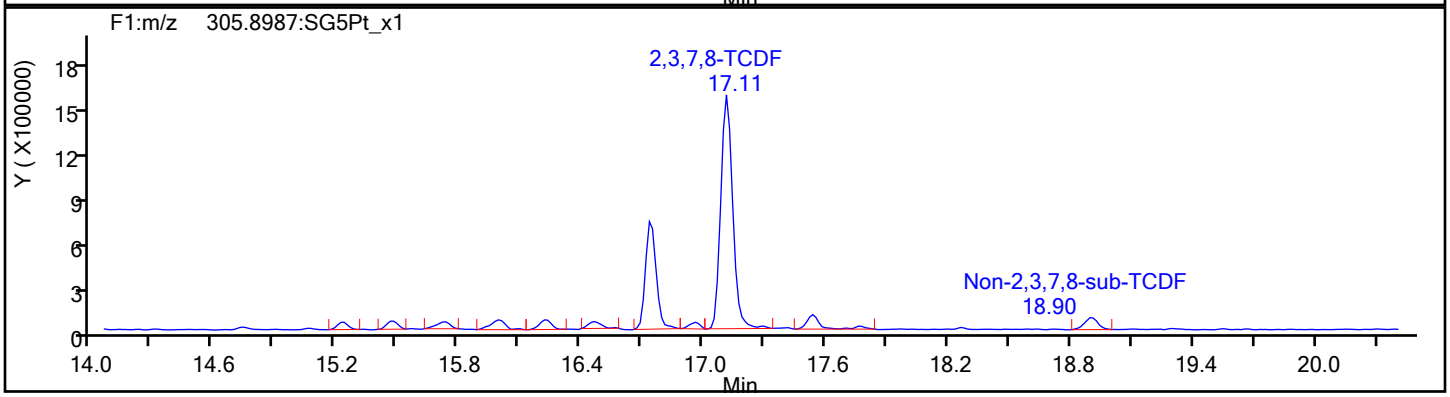
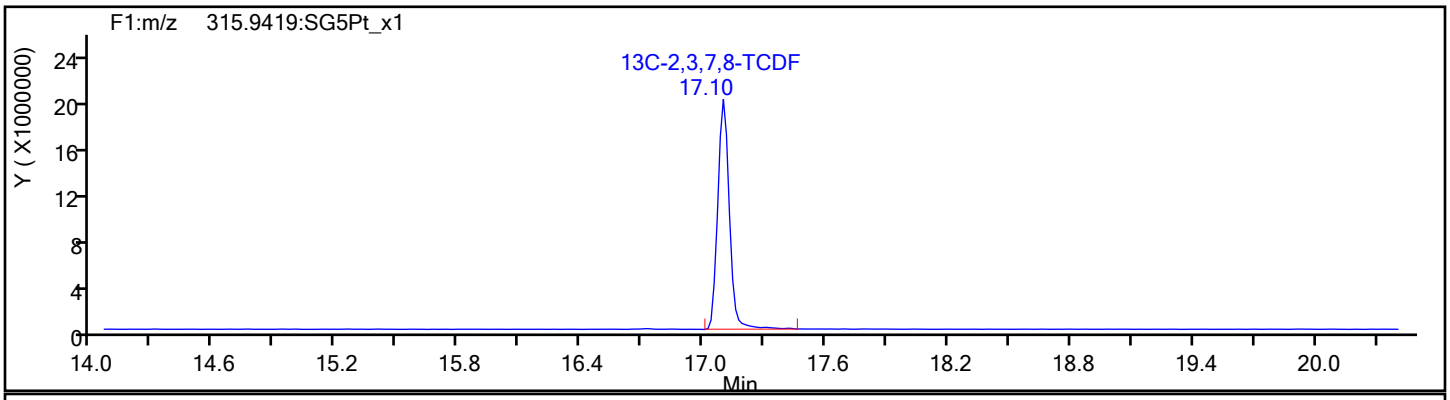
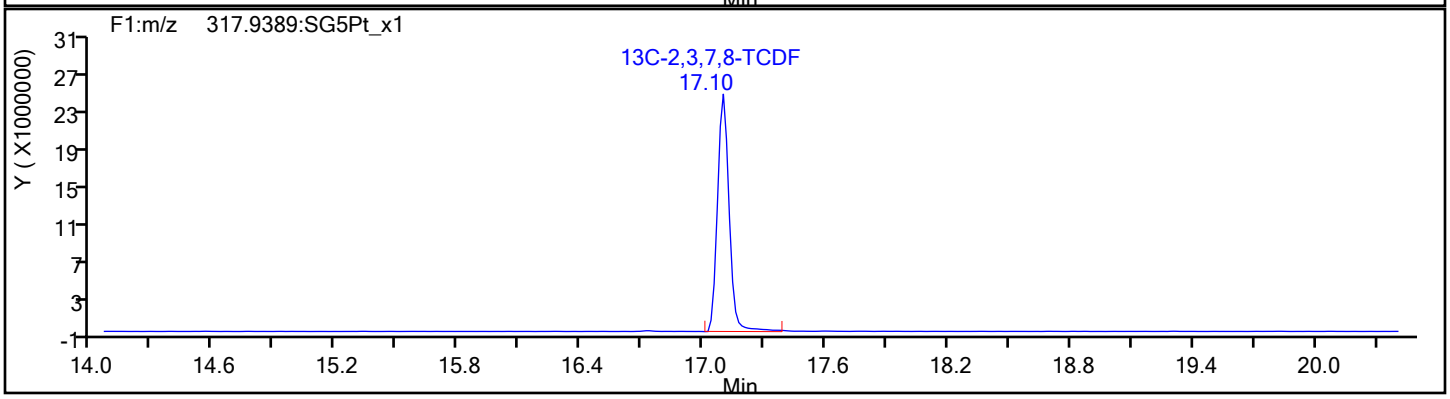
TCDF





TCDF Standards





Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA04(2-4)		
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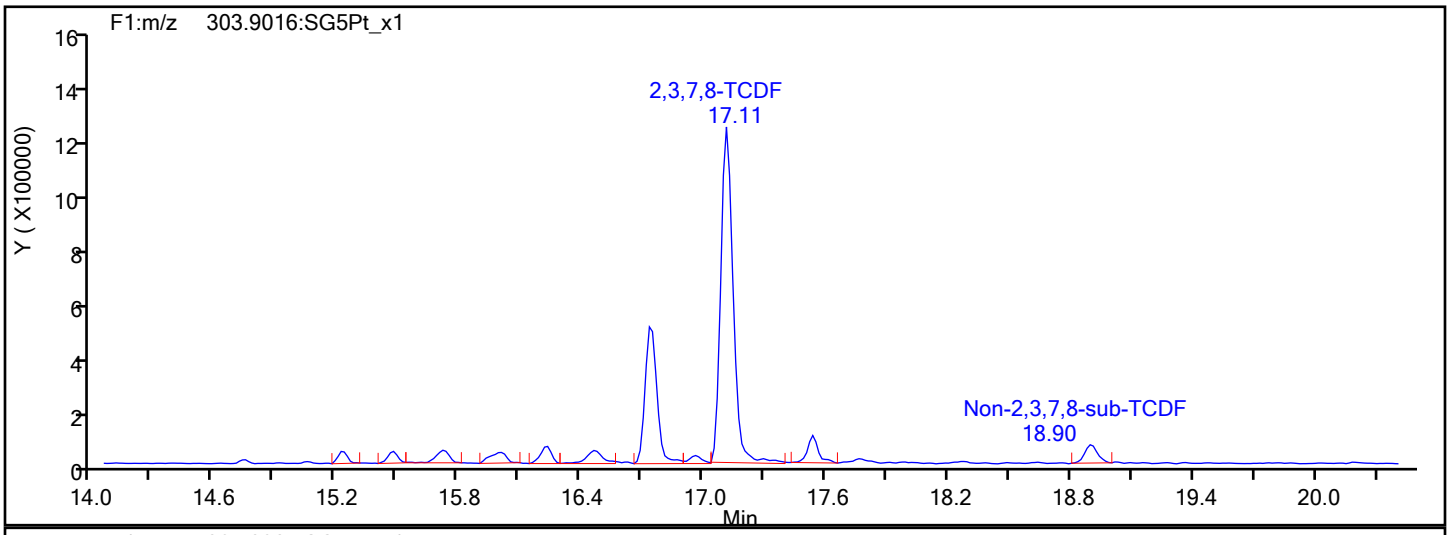
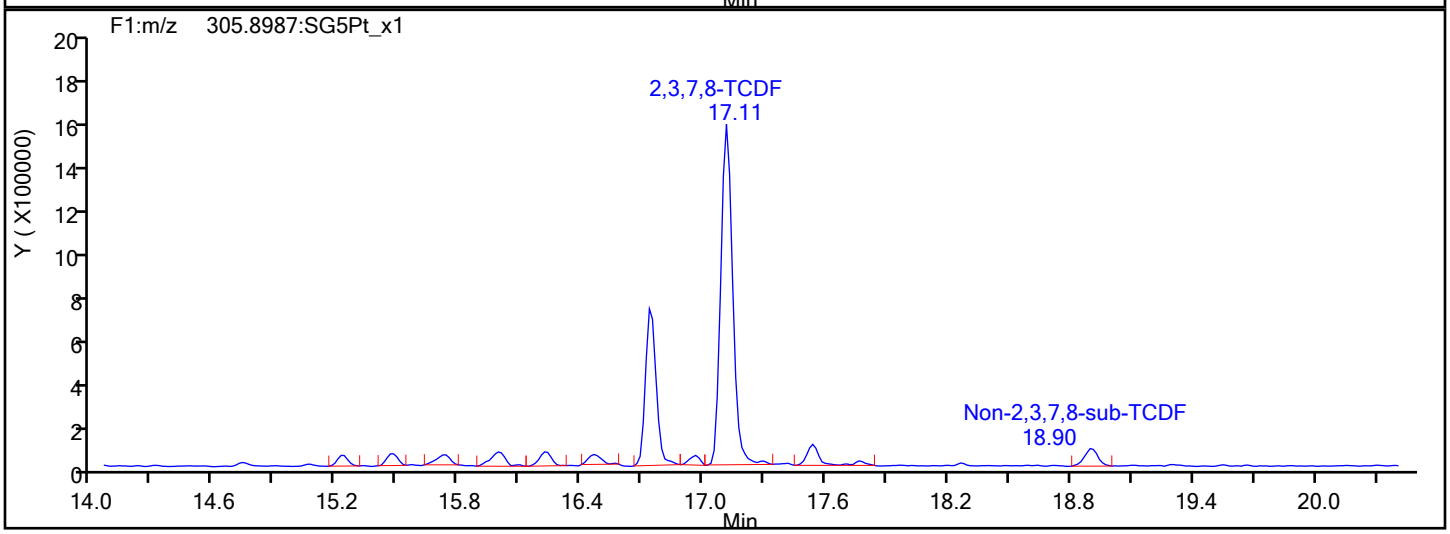
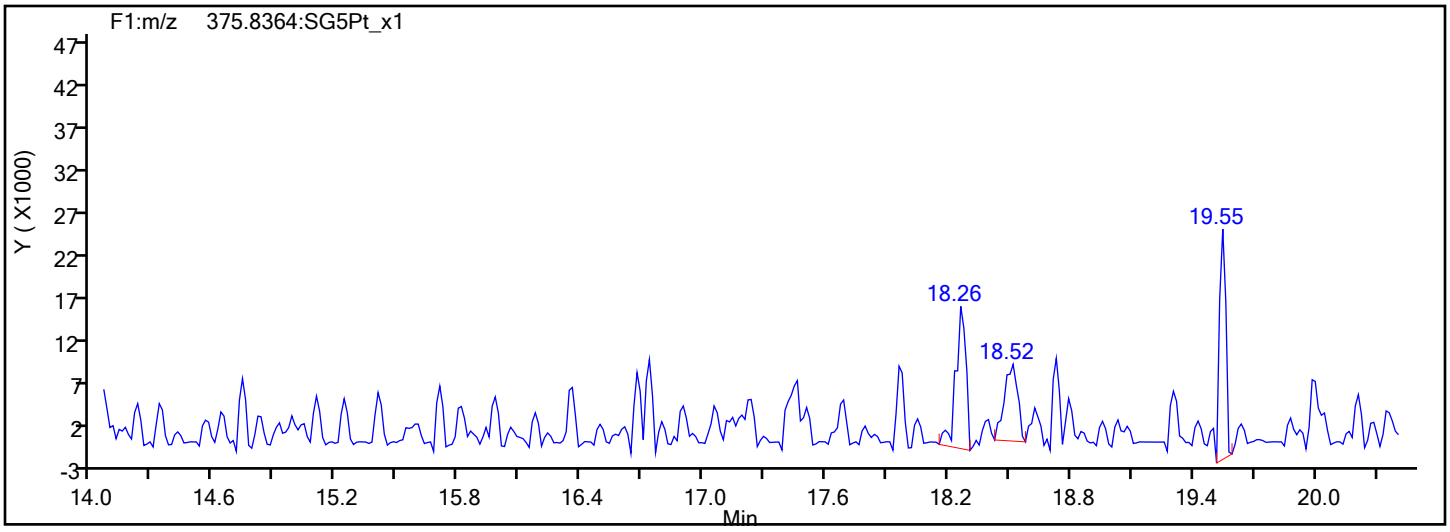
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
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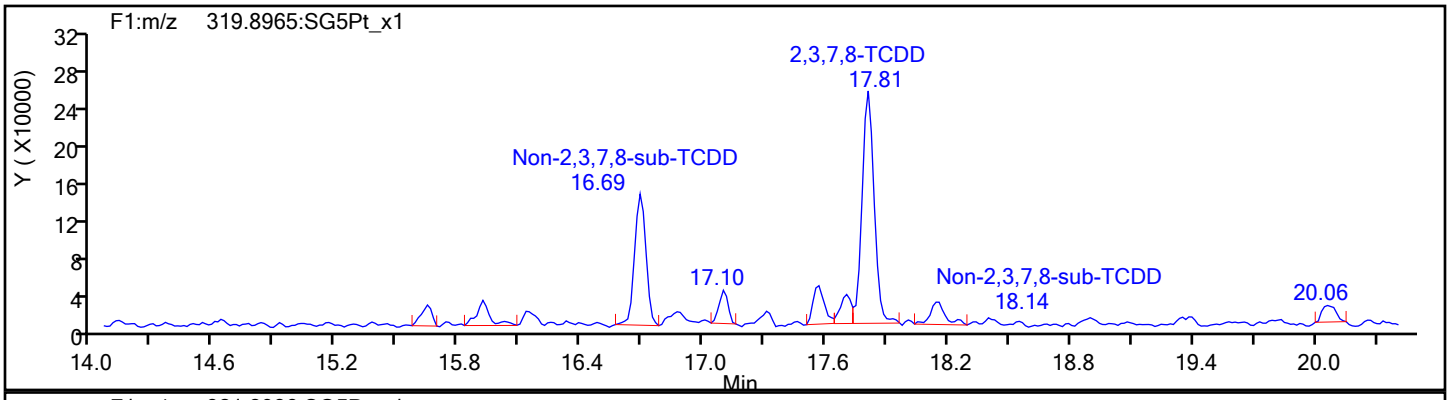
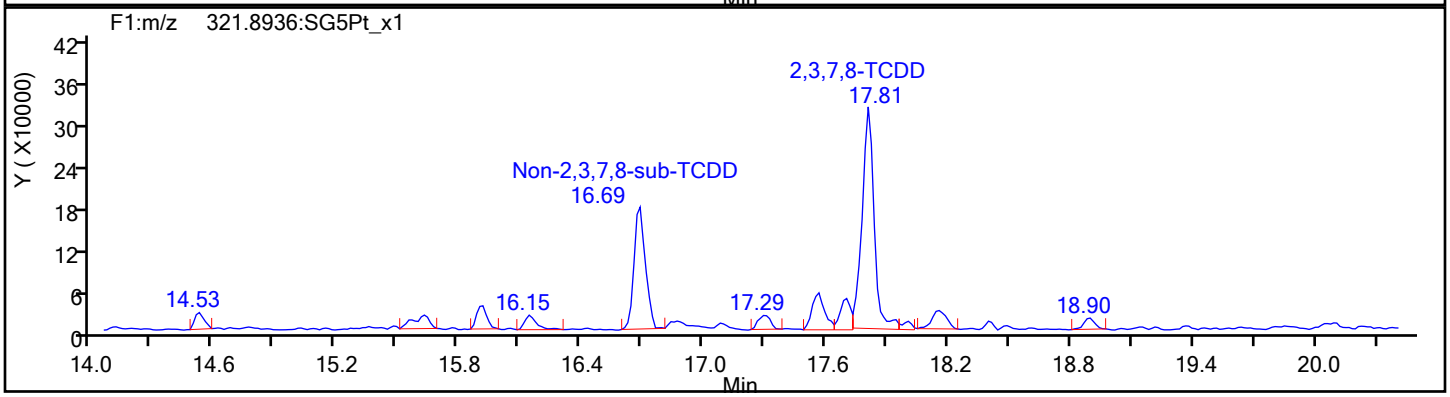
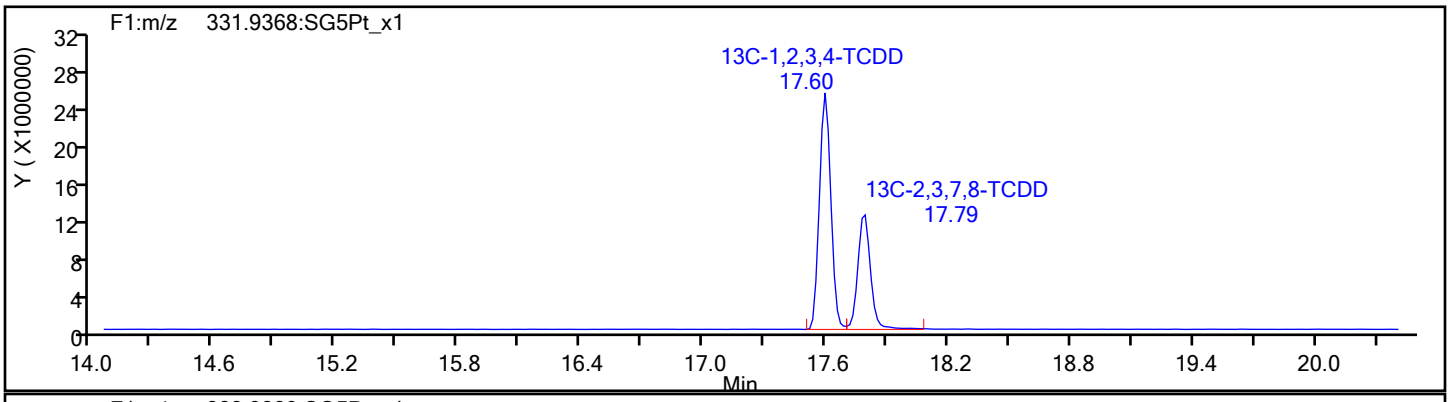
Column Type:	DB-5	Column Dia:	0.32 mm

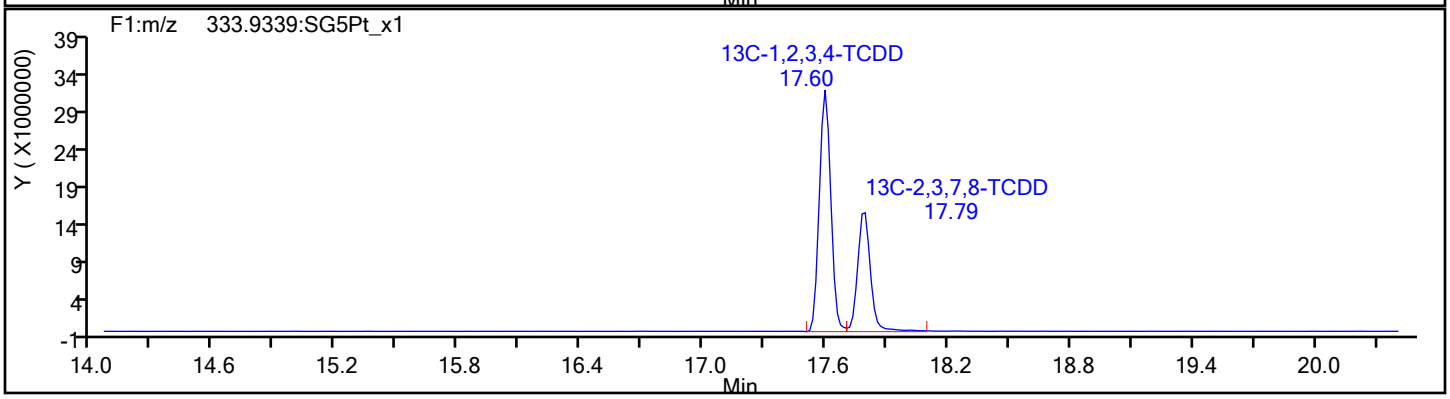
TCDD





TCDD Standards





Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
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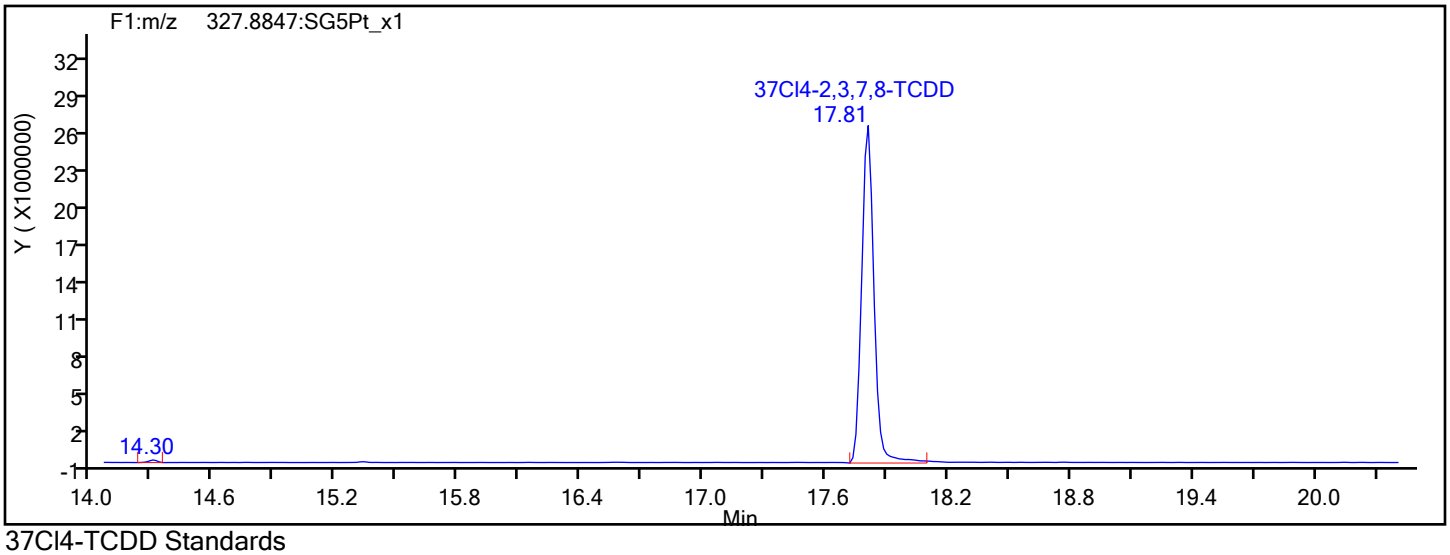
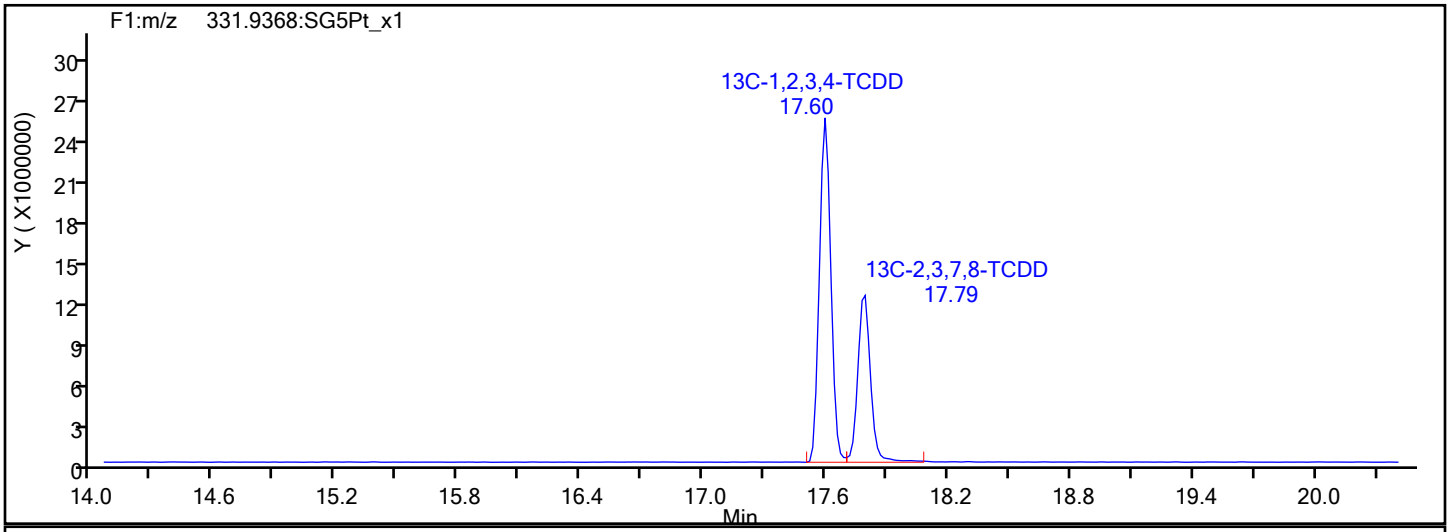
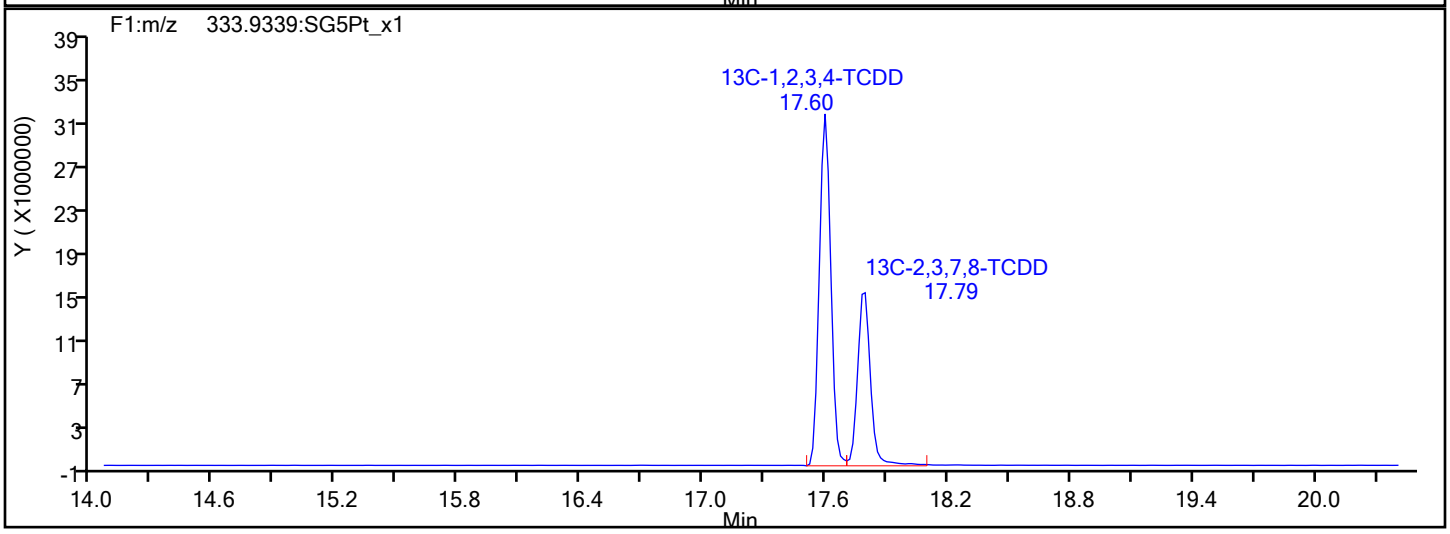
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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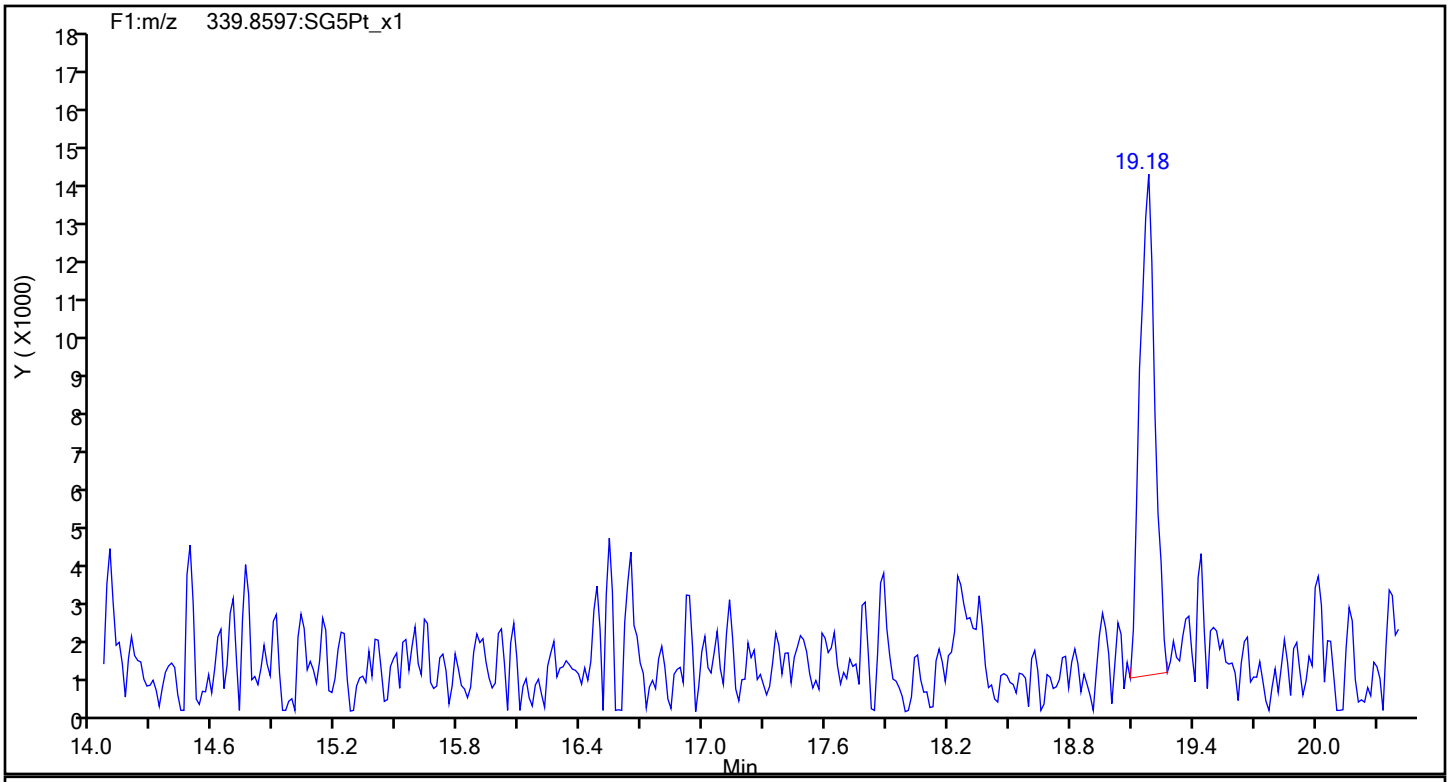
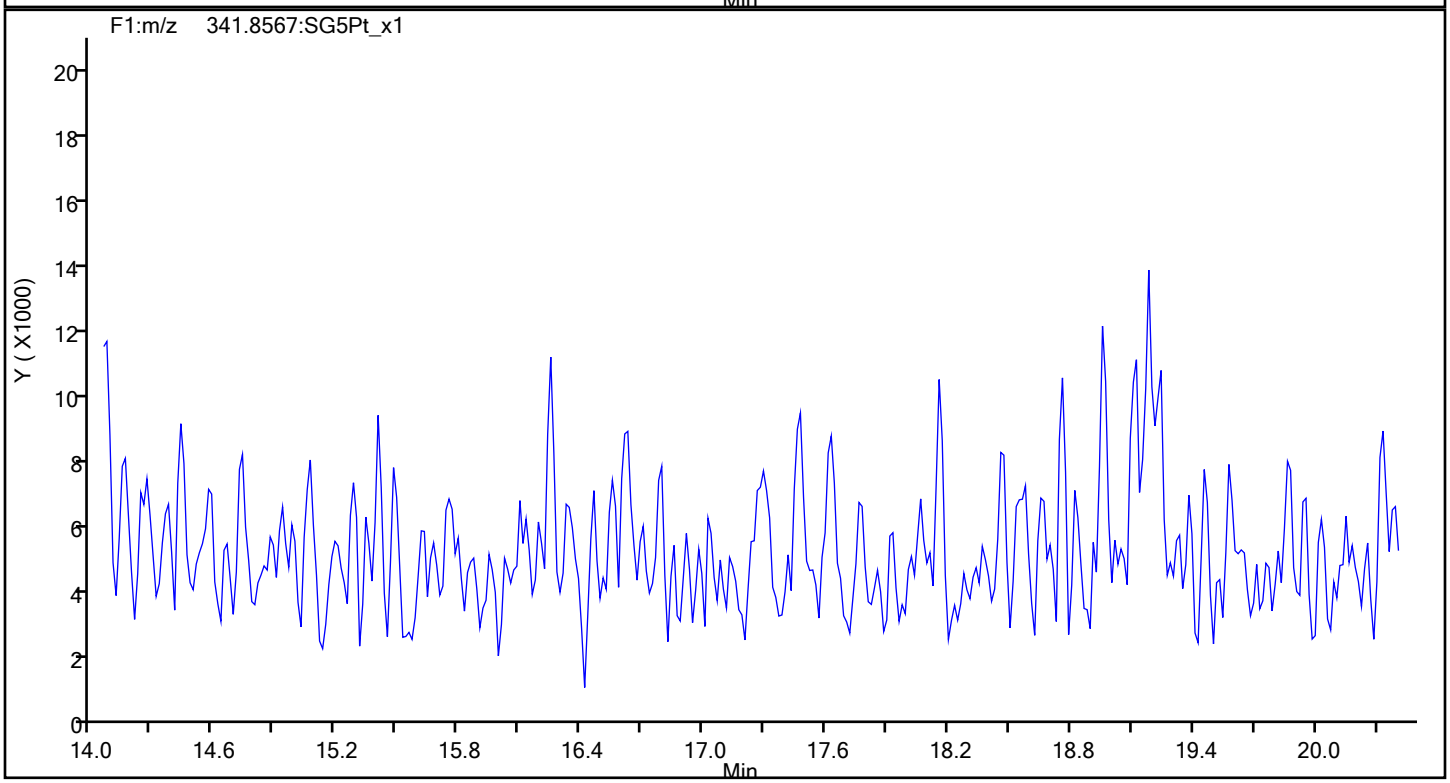
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
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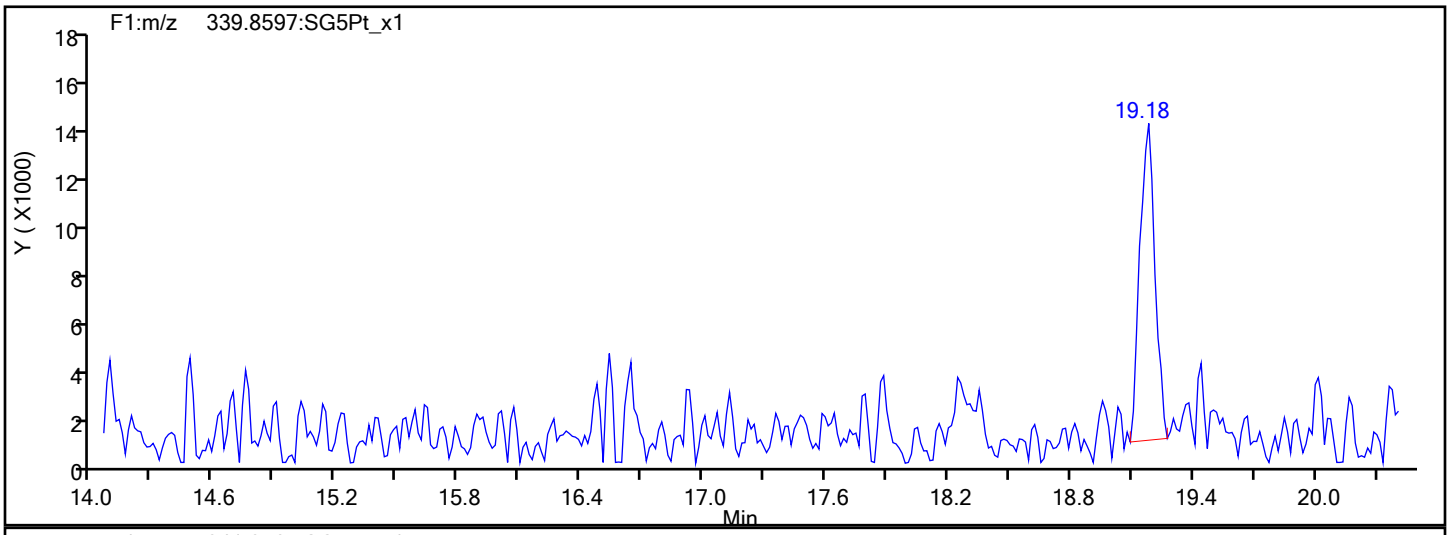
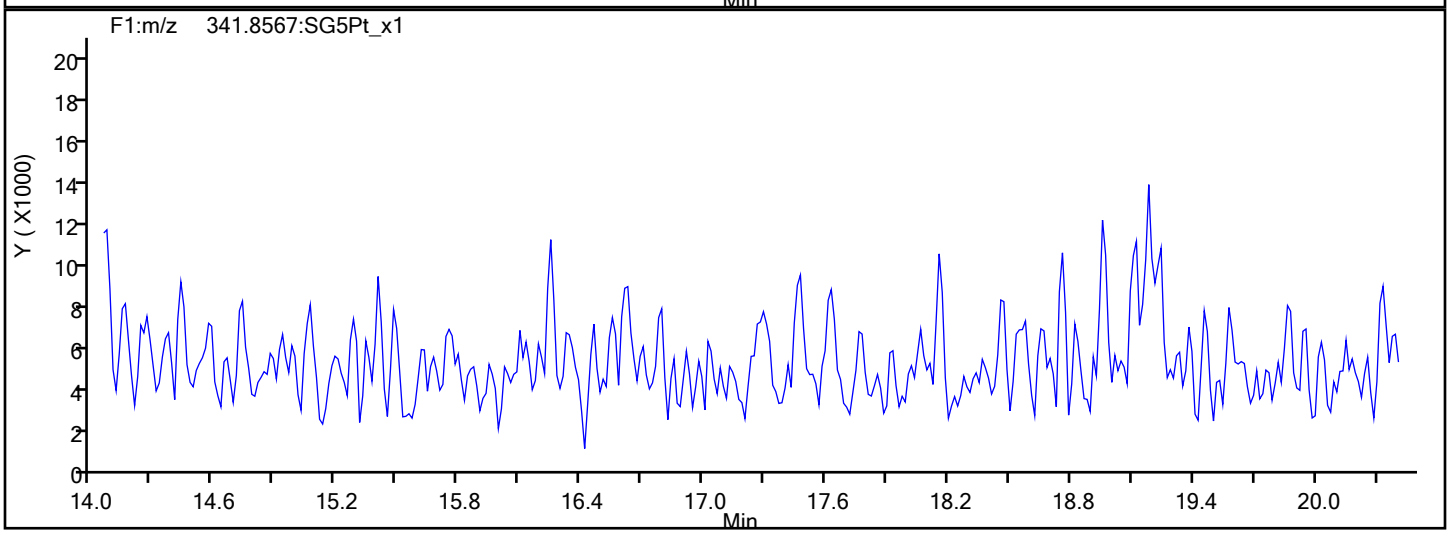
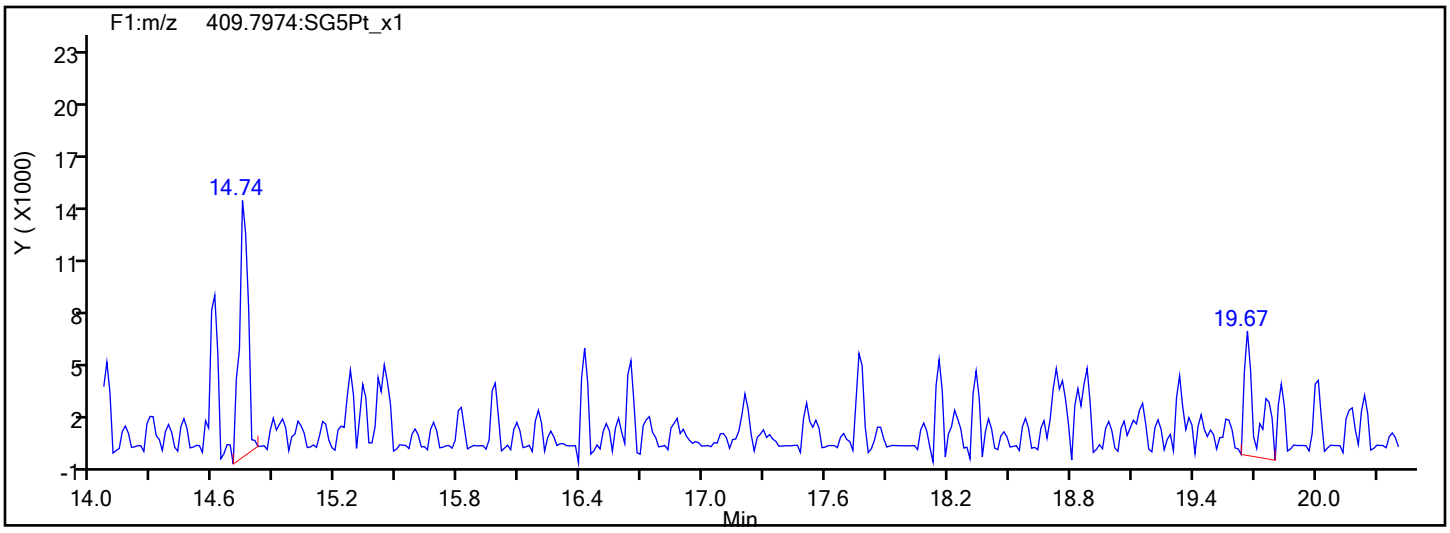
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
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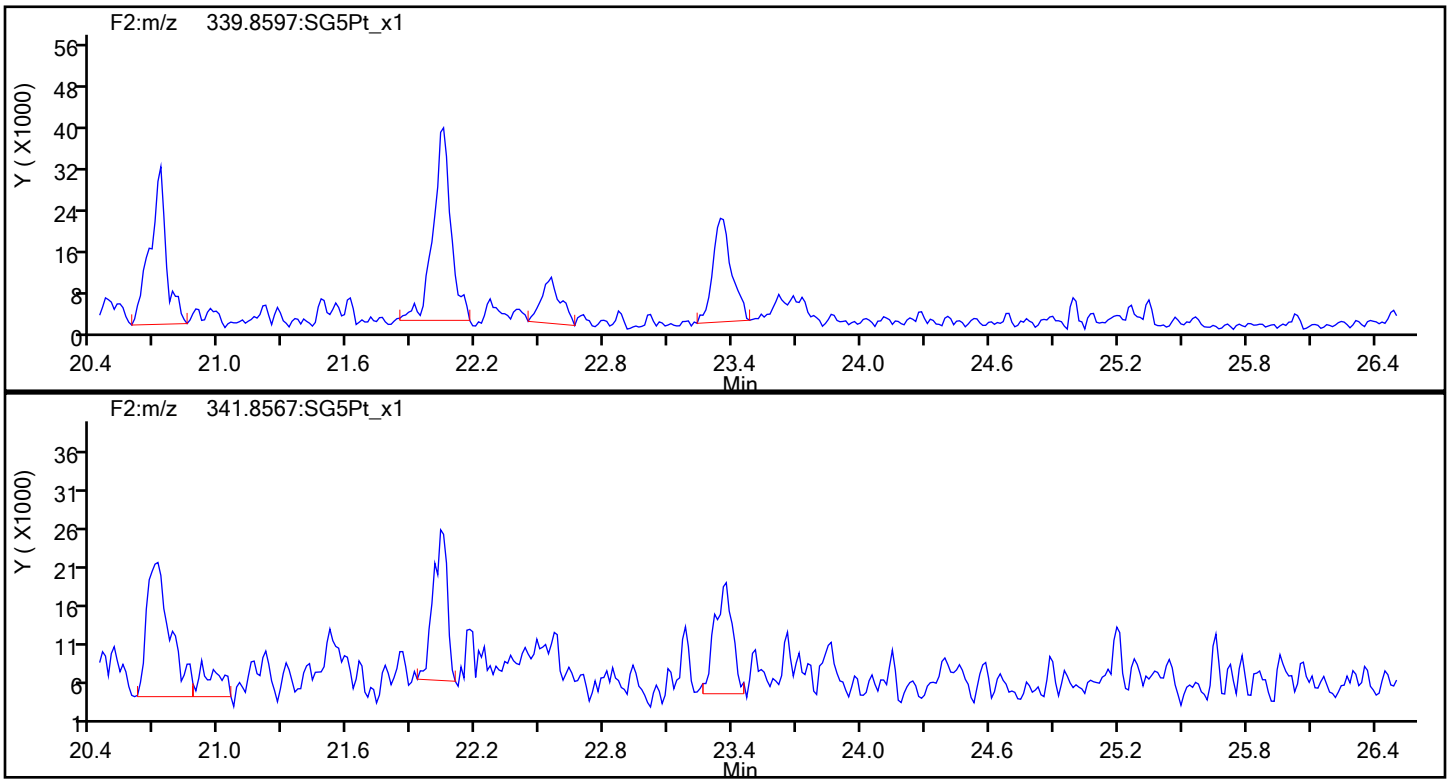
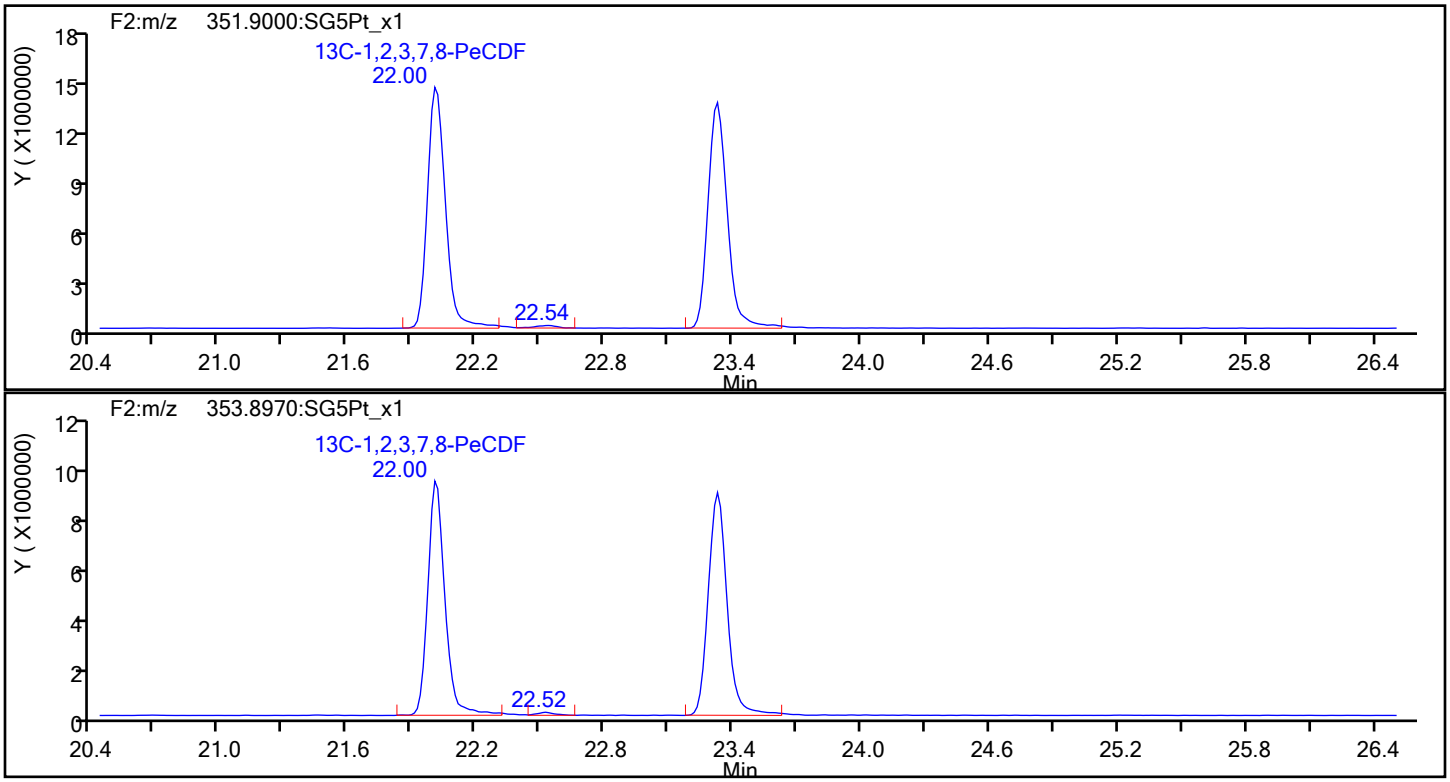
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
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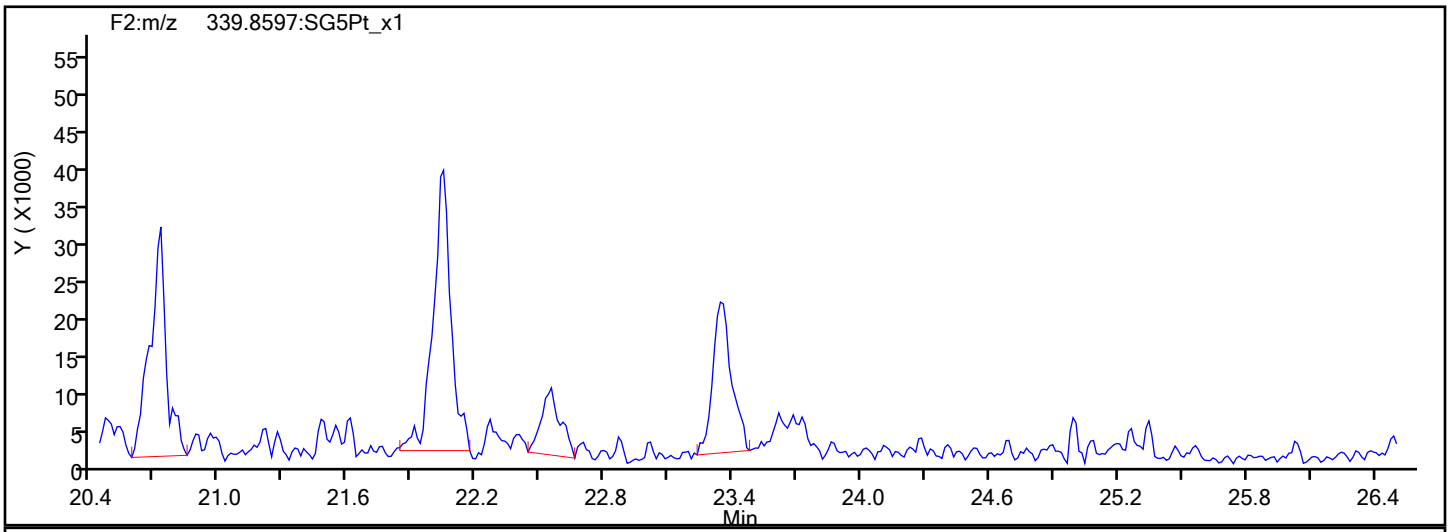
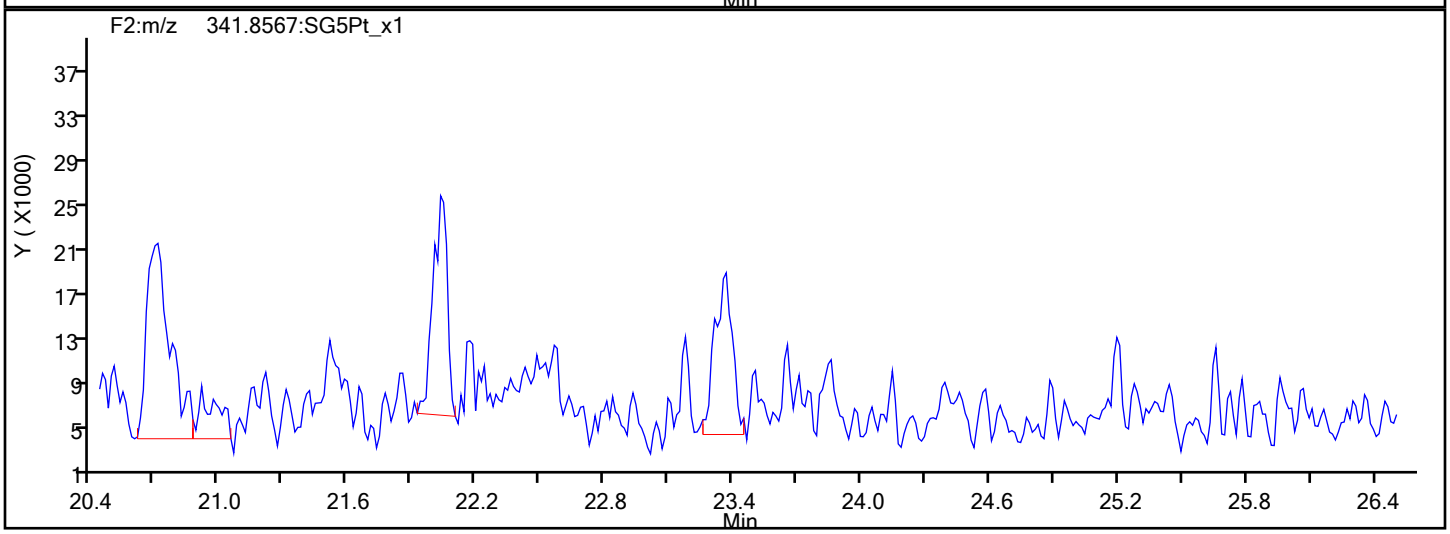
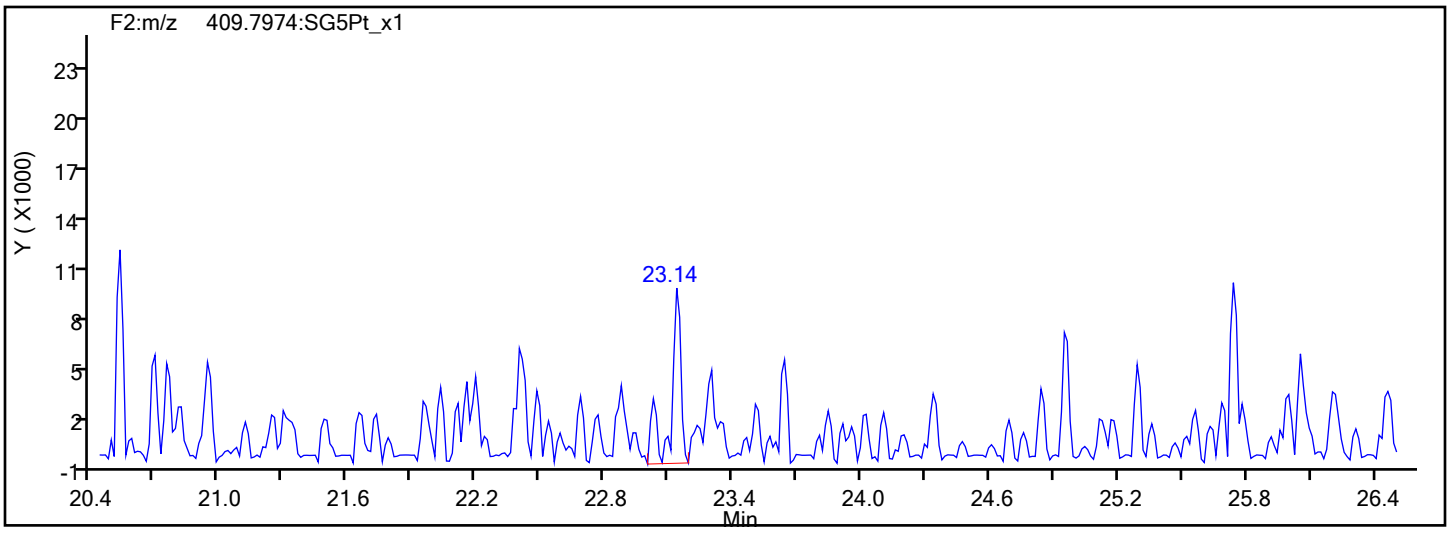
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
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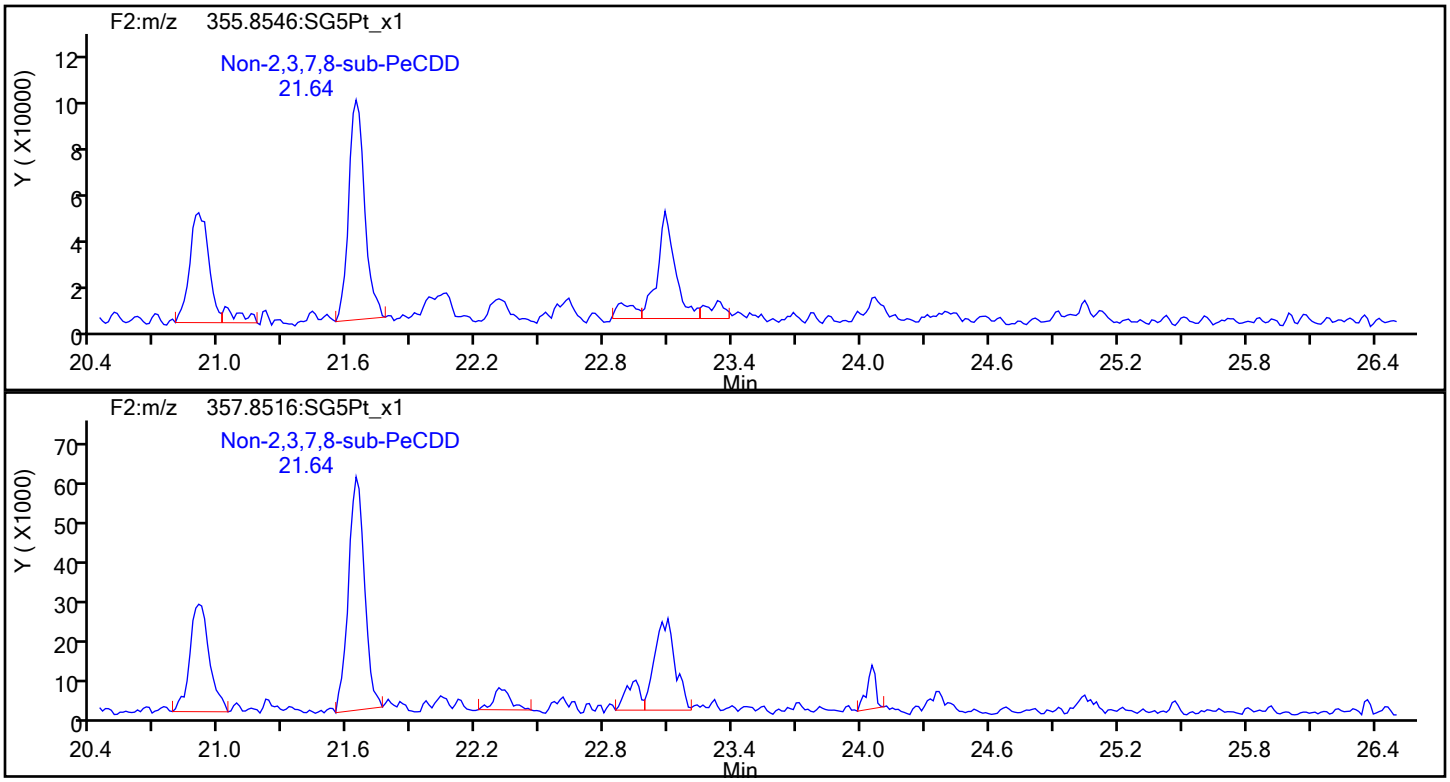
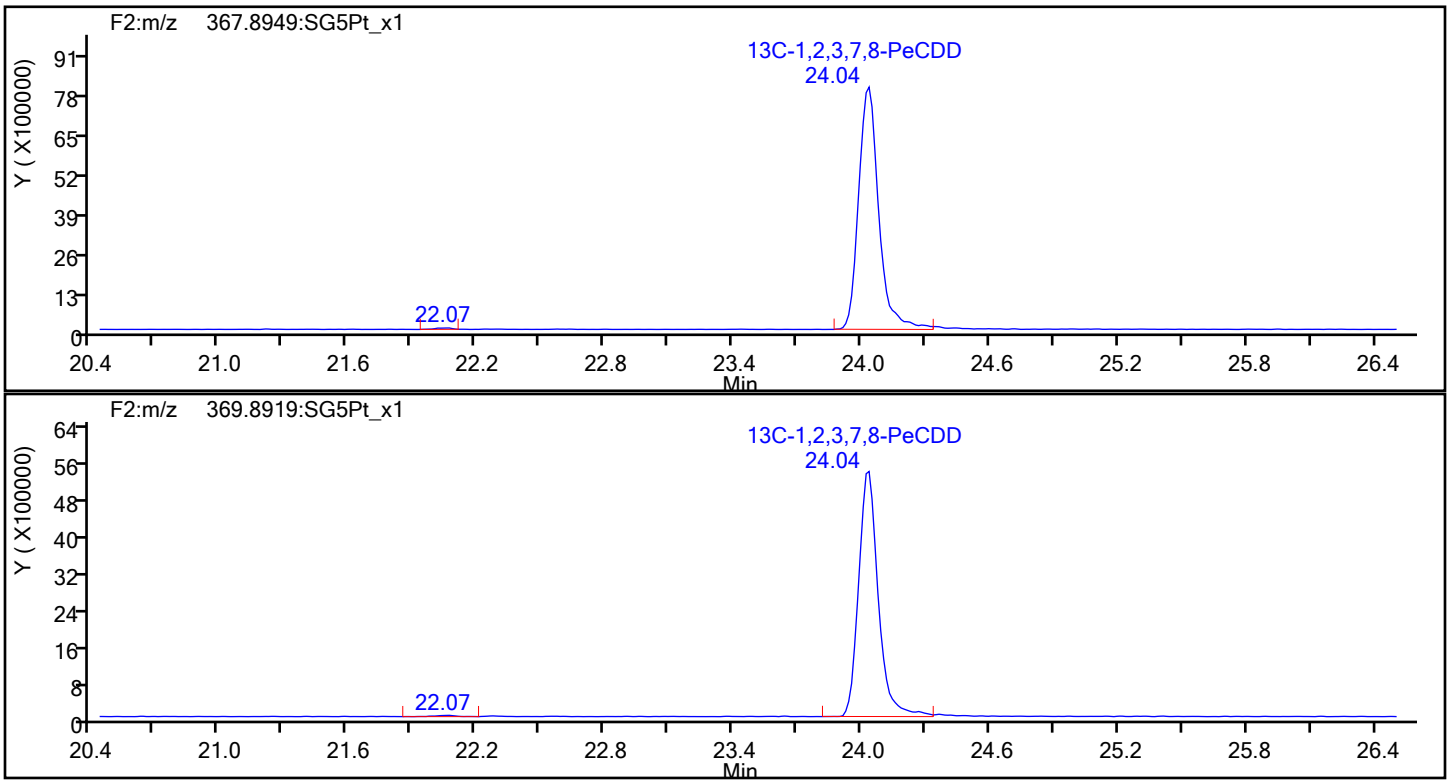
PeCDD



PeCDD Standards

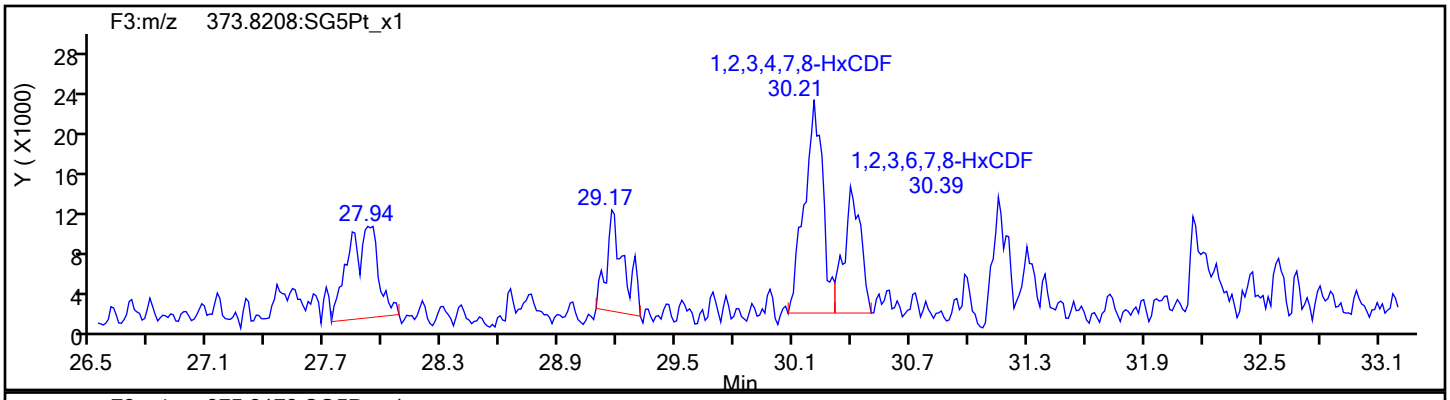


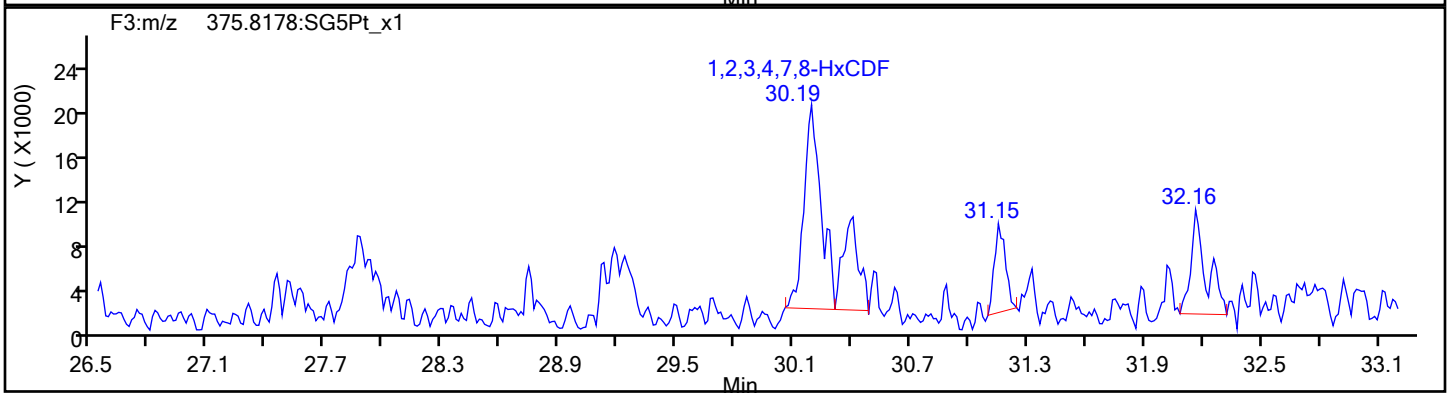
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

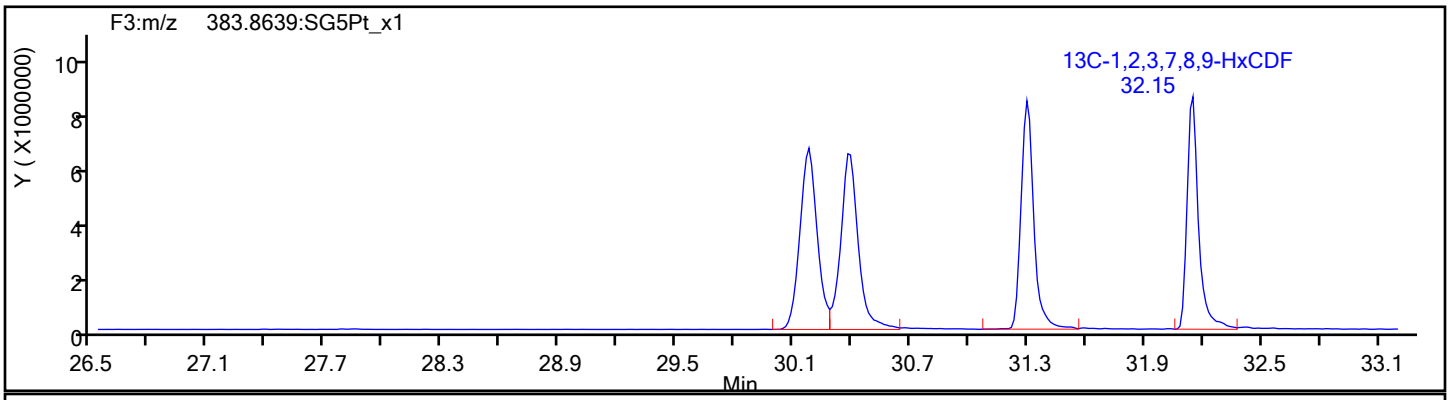
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

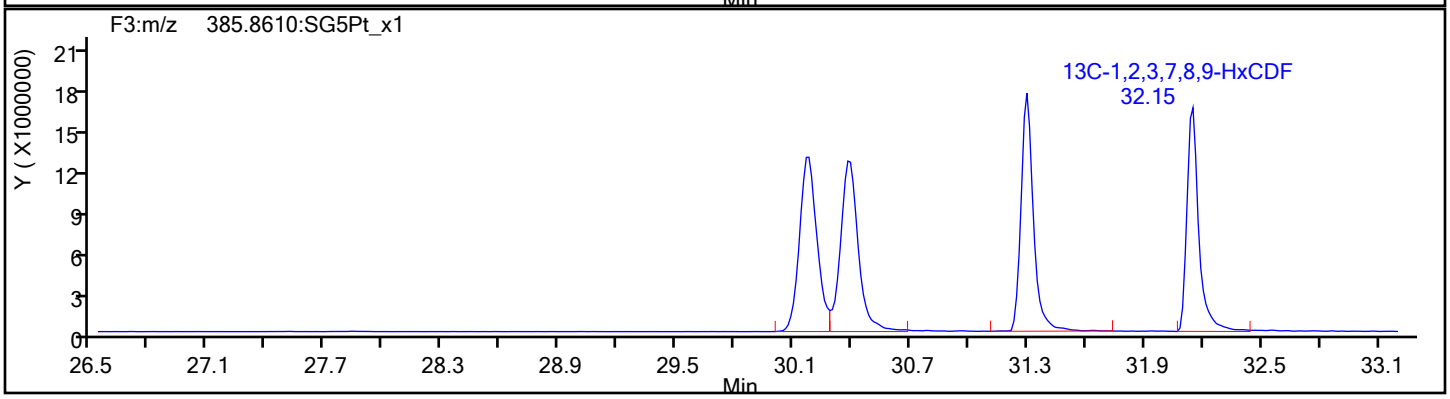
HxCDF





HxCDF Standards

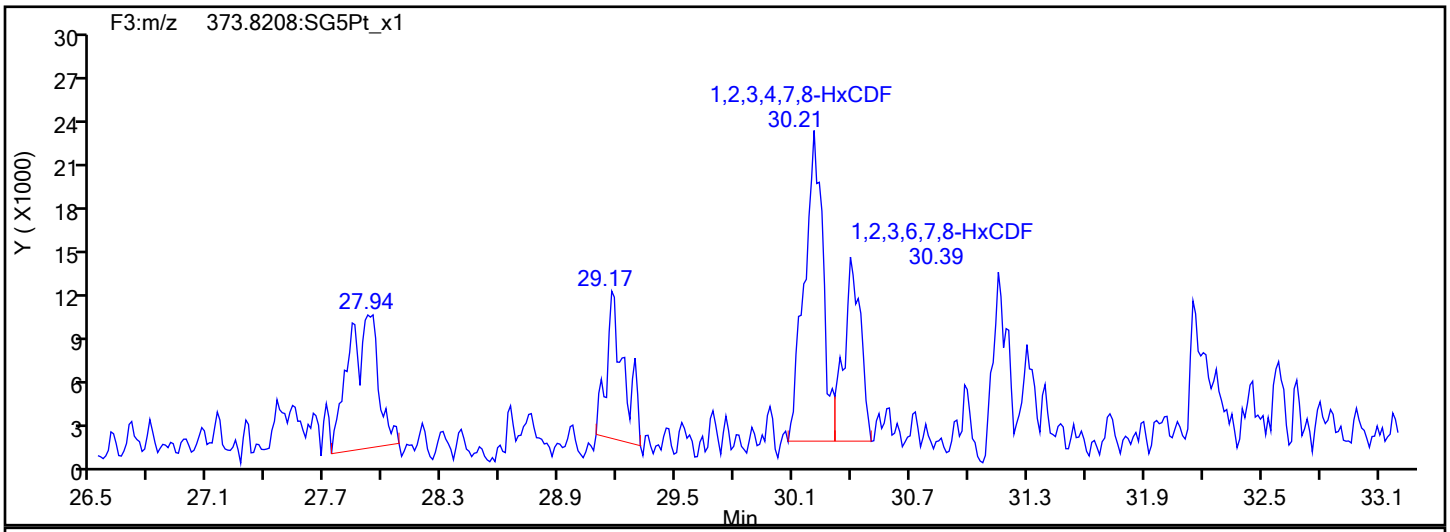


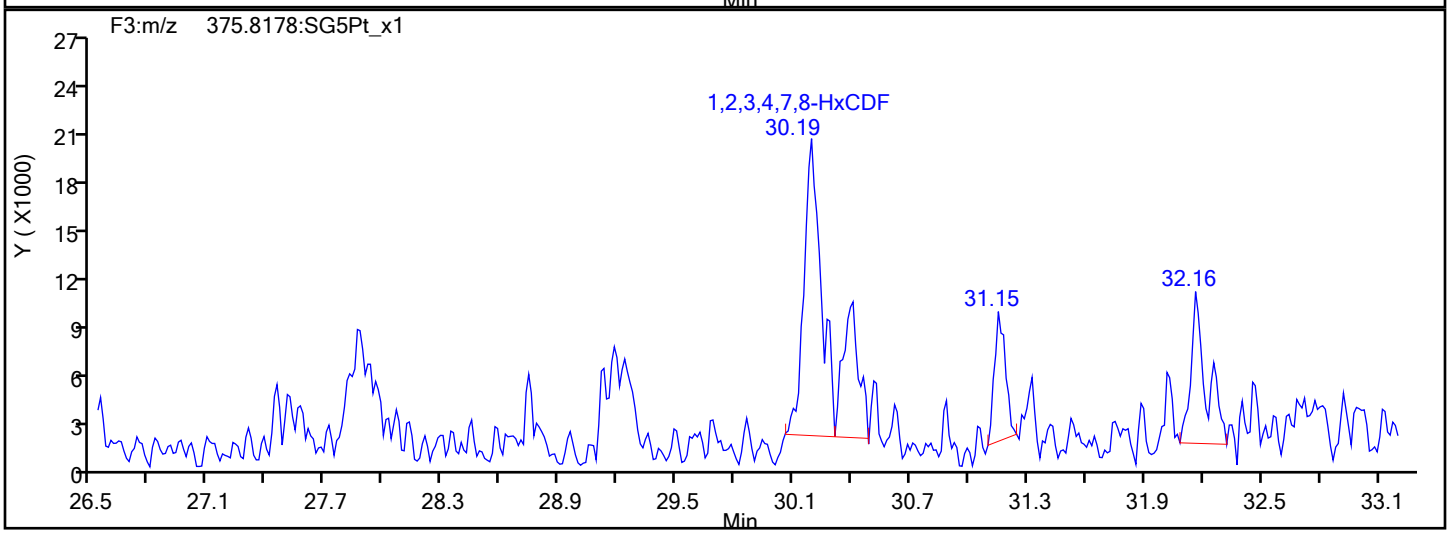


Eurofins TestAmerica, Sacramento

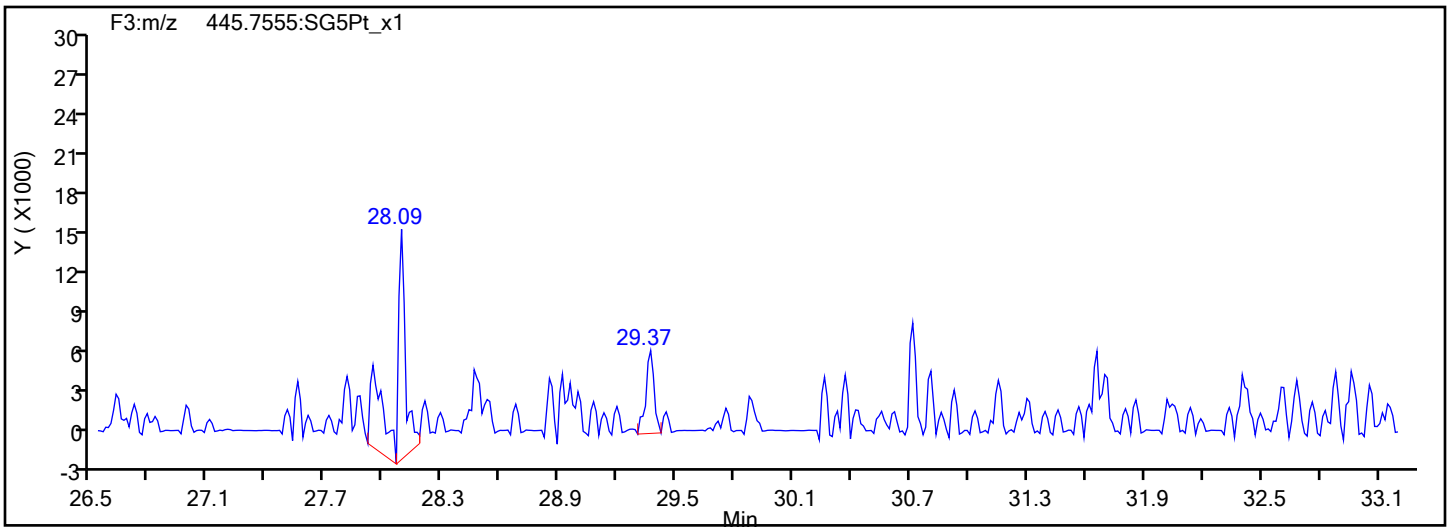
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

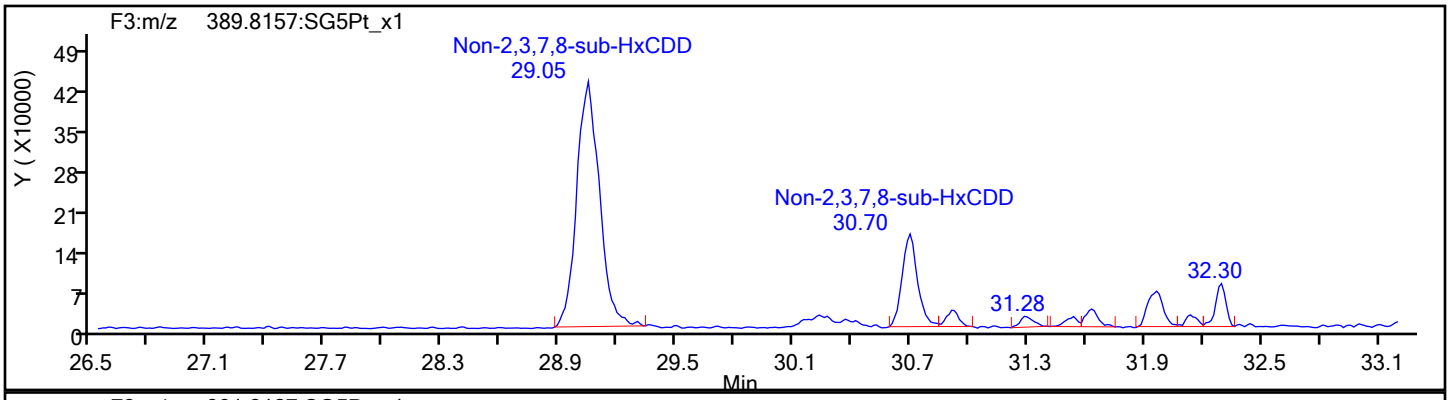


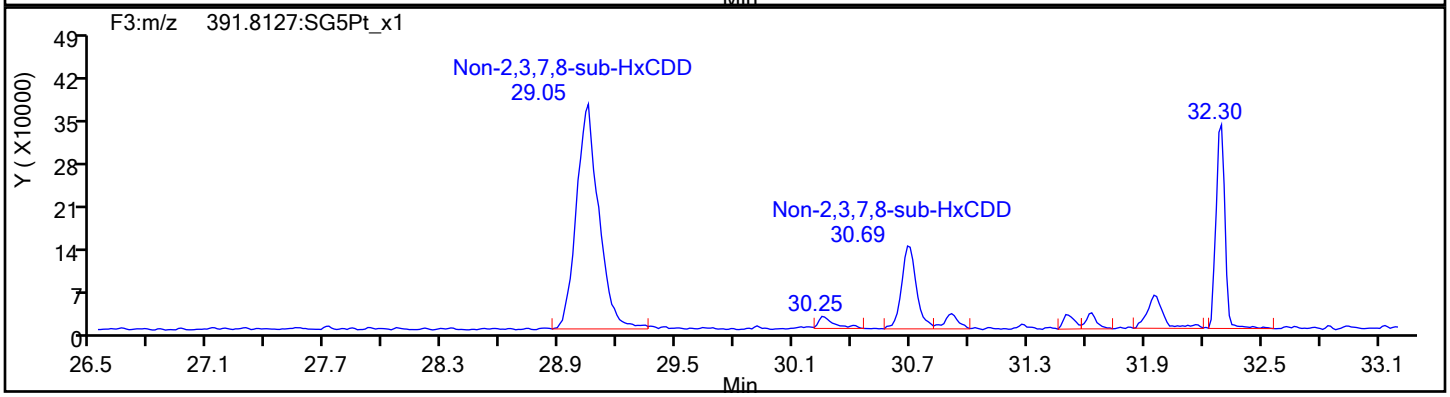
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

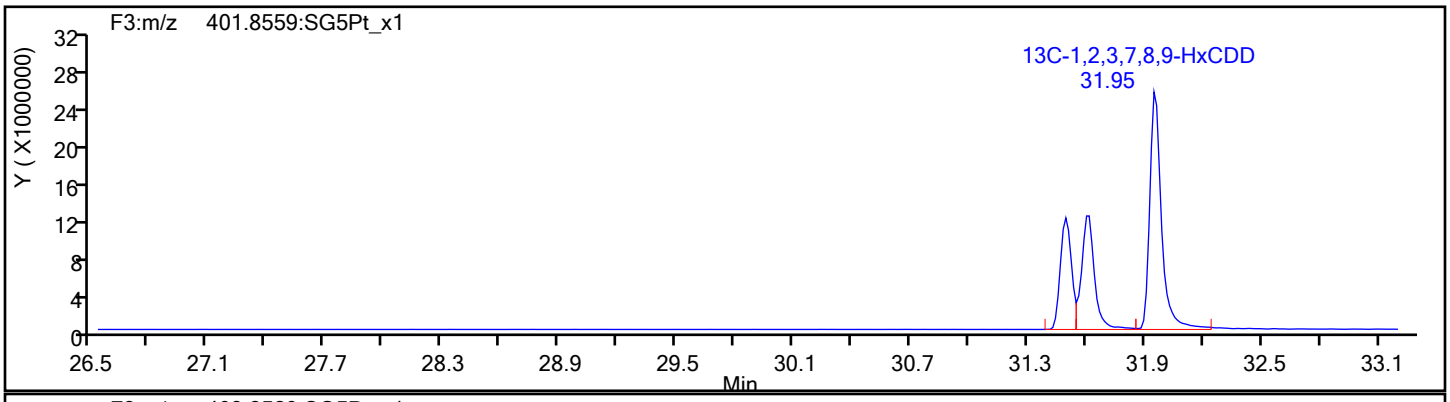
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

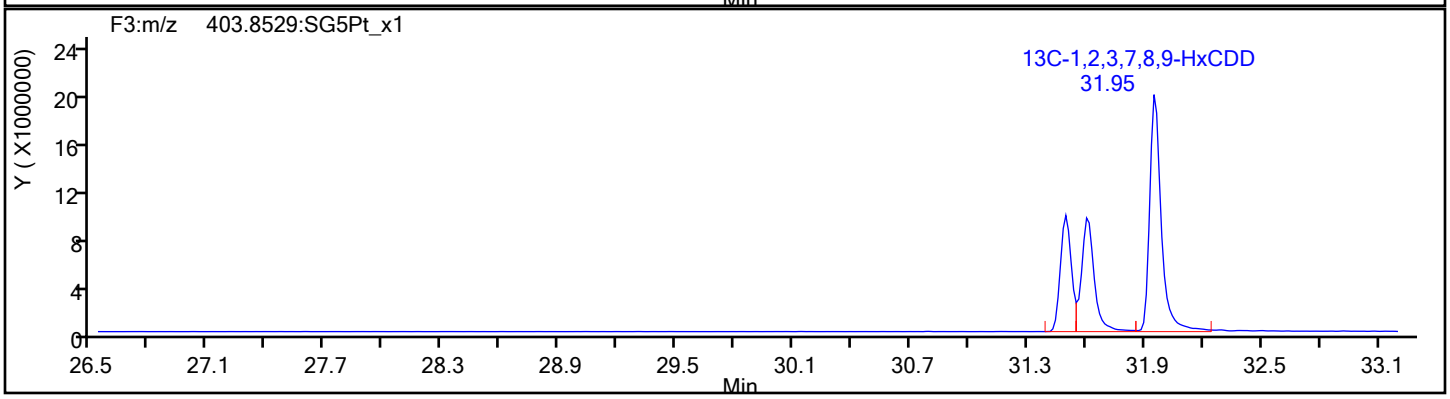
HxCDD





HxCDD Standards



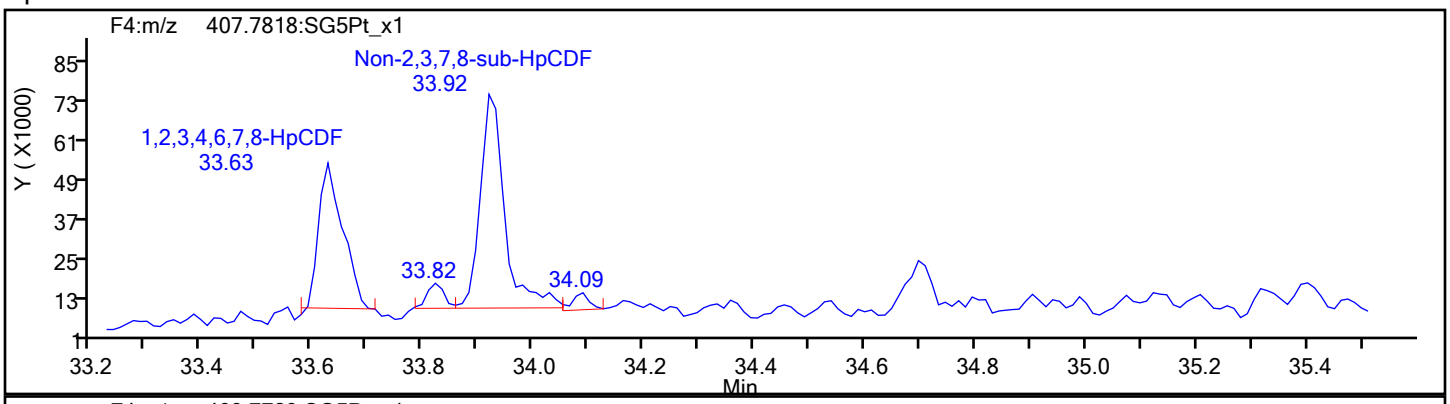


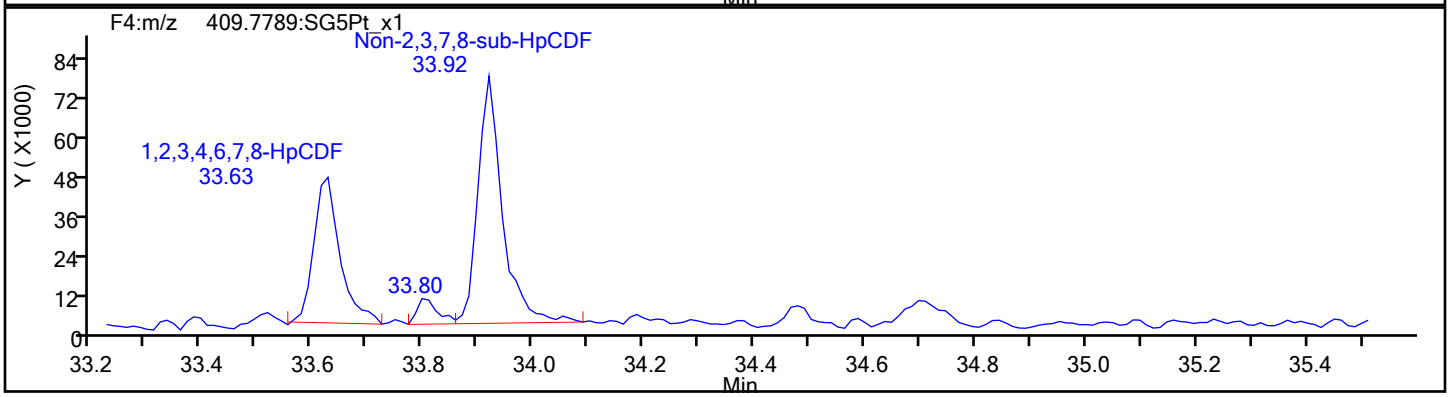
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

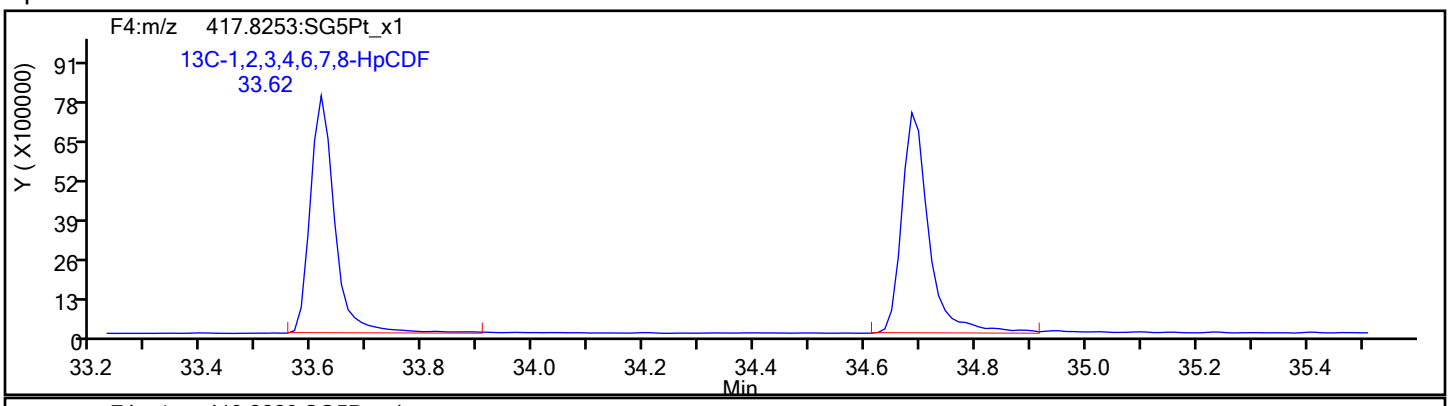
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

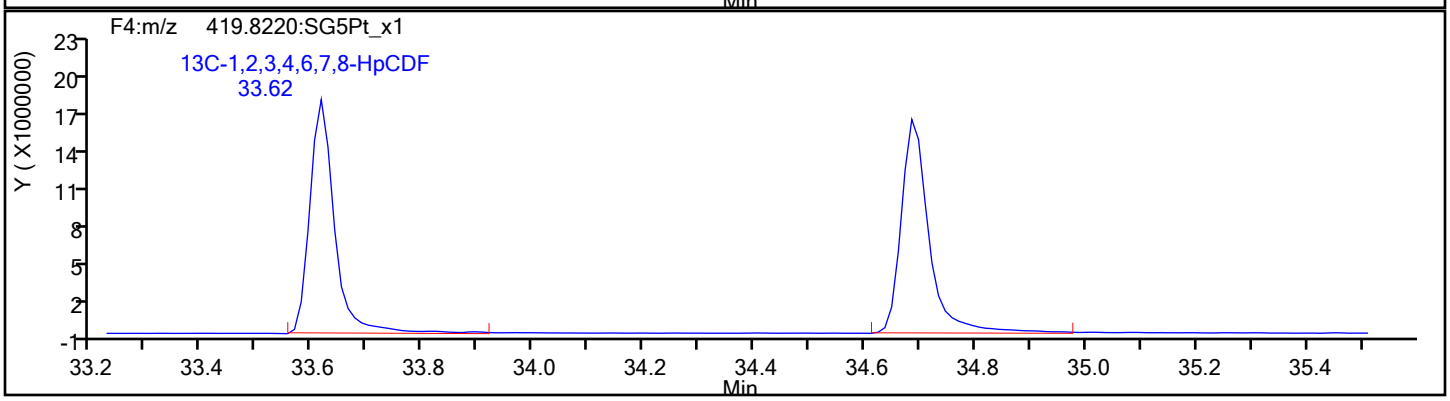
HpCDF





HpCDF Standards



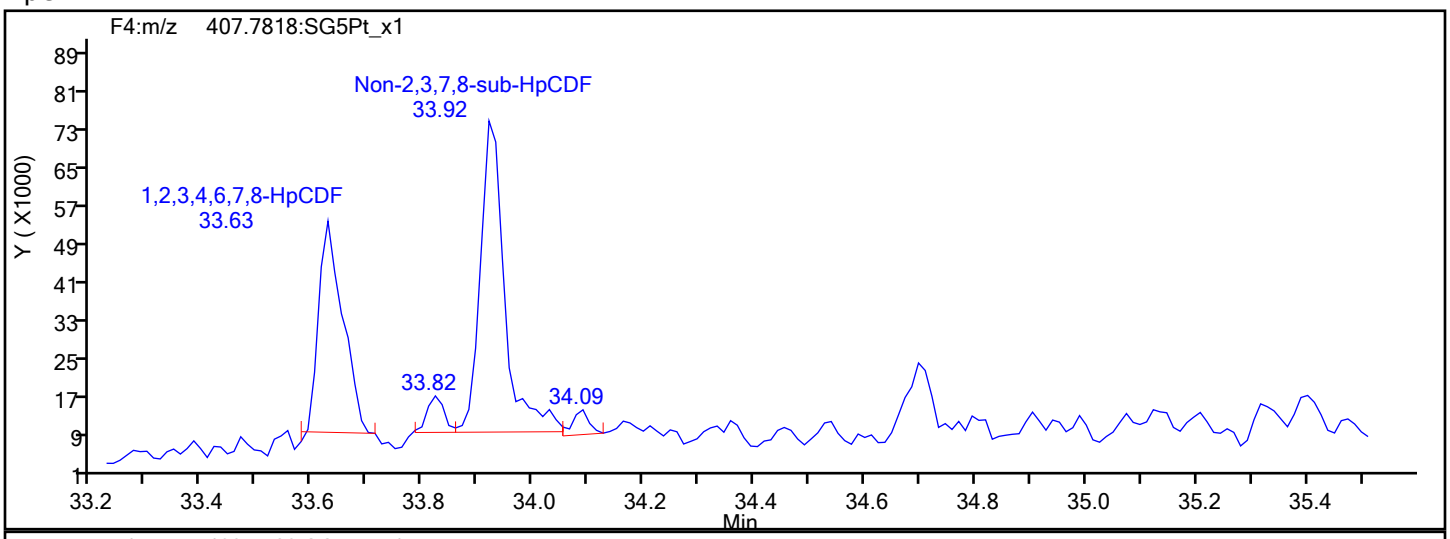


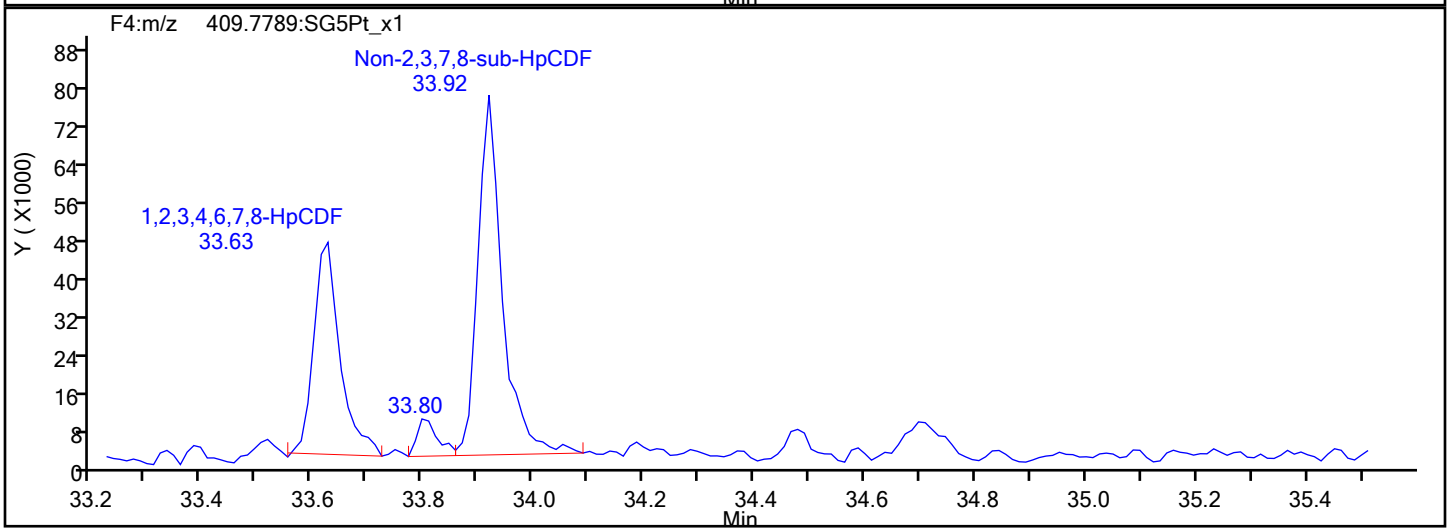
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

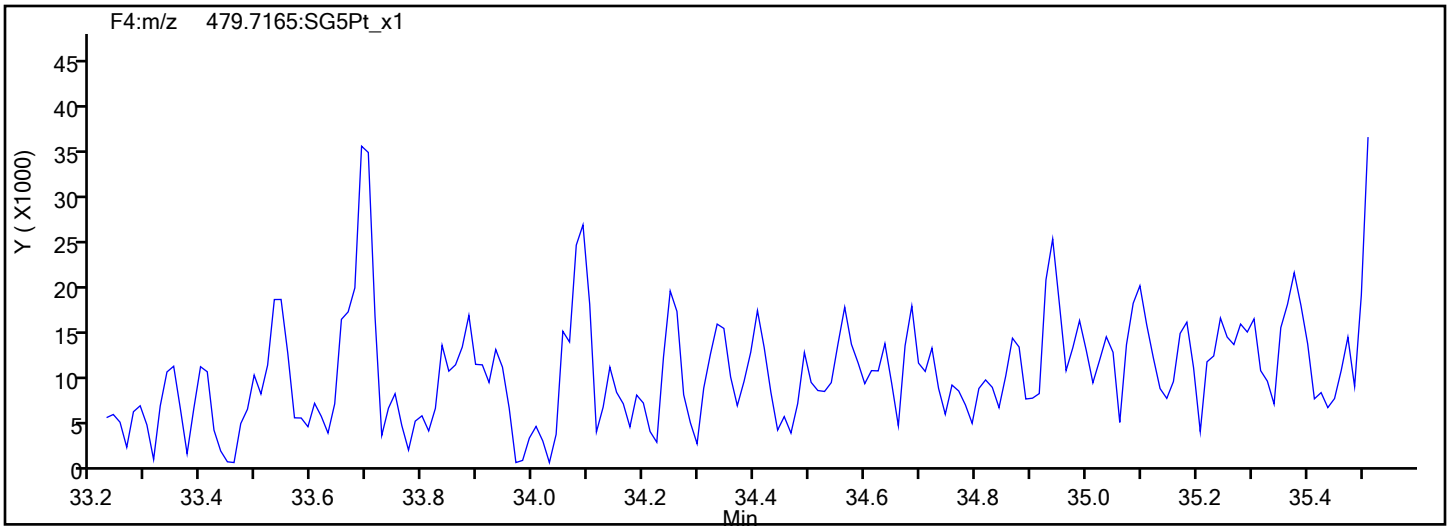
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

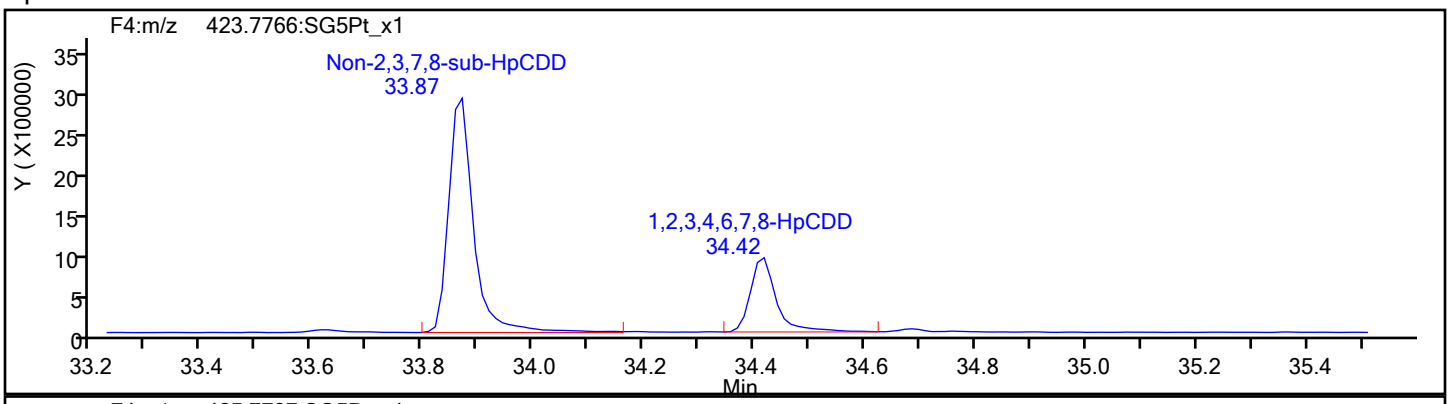


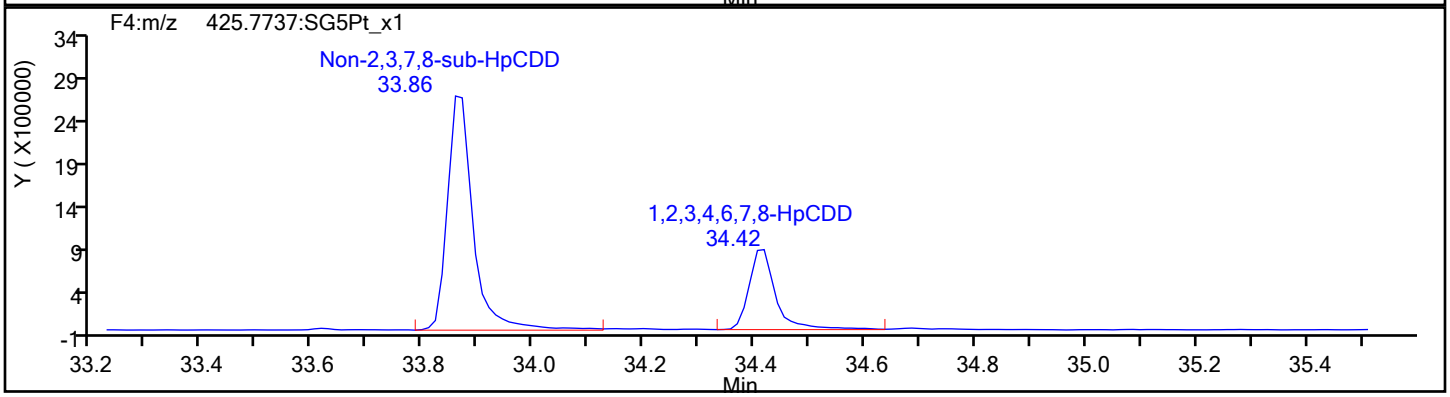
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

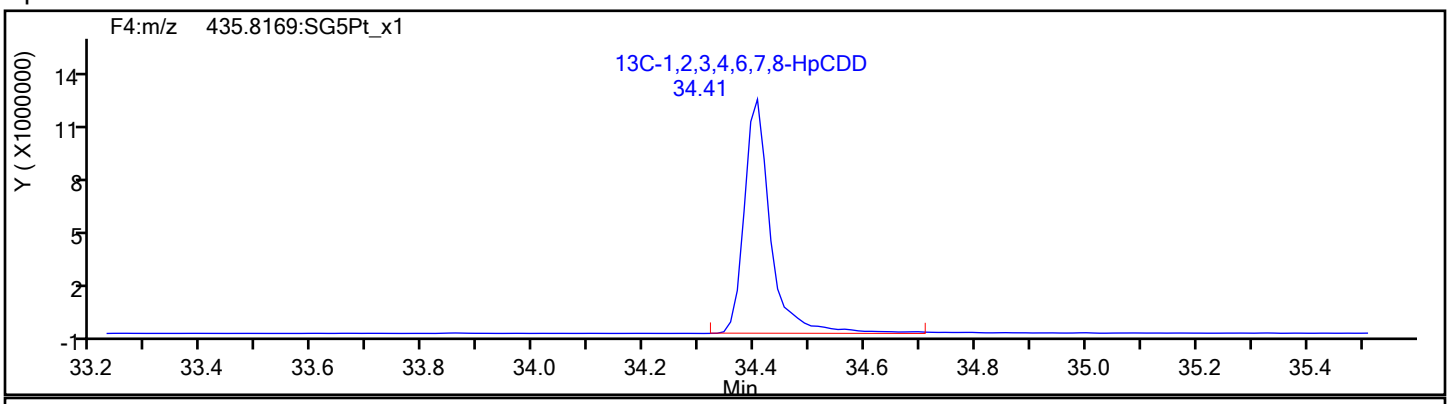
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

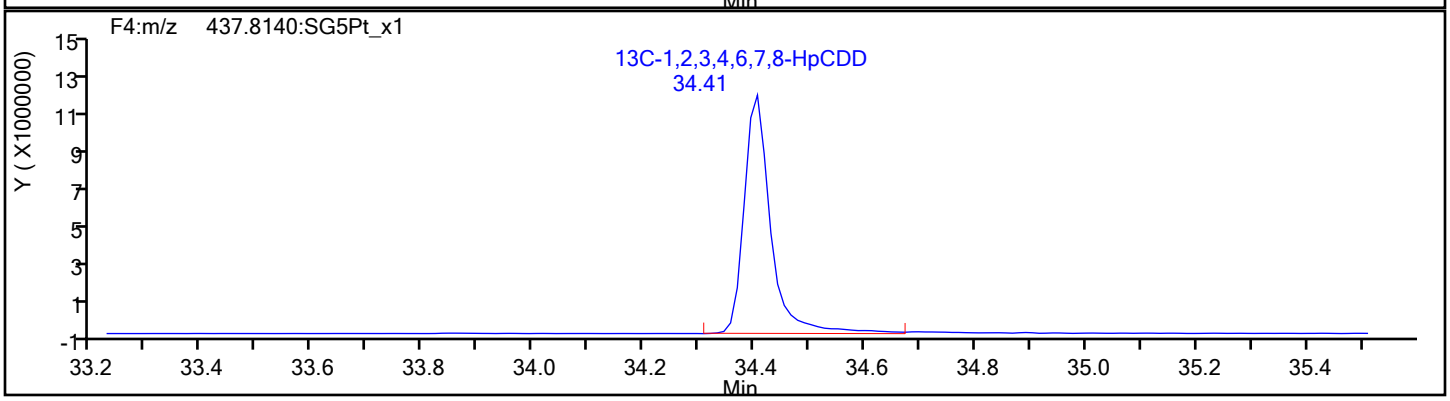
HpCDD





HpCDD Standards



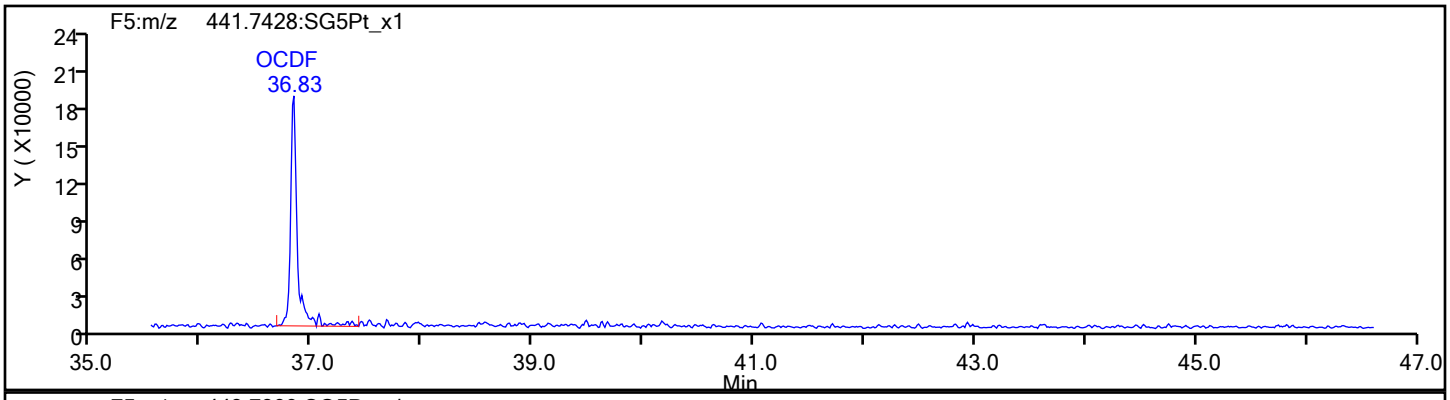


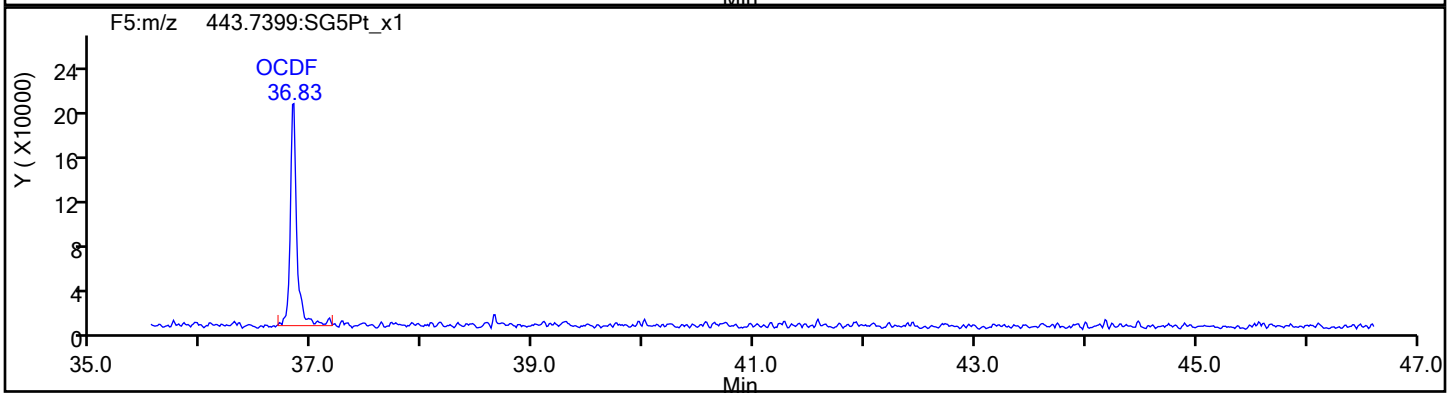
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

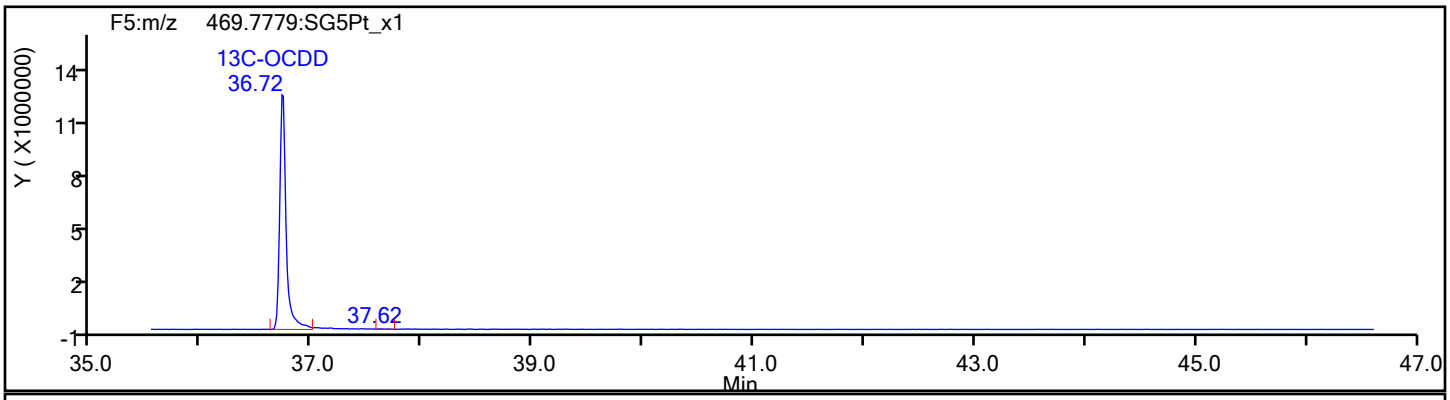
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

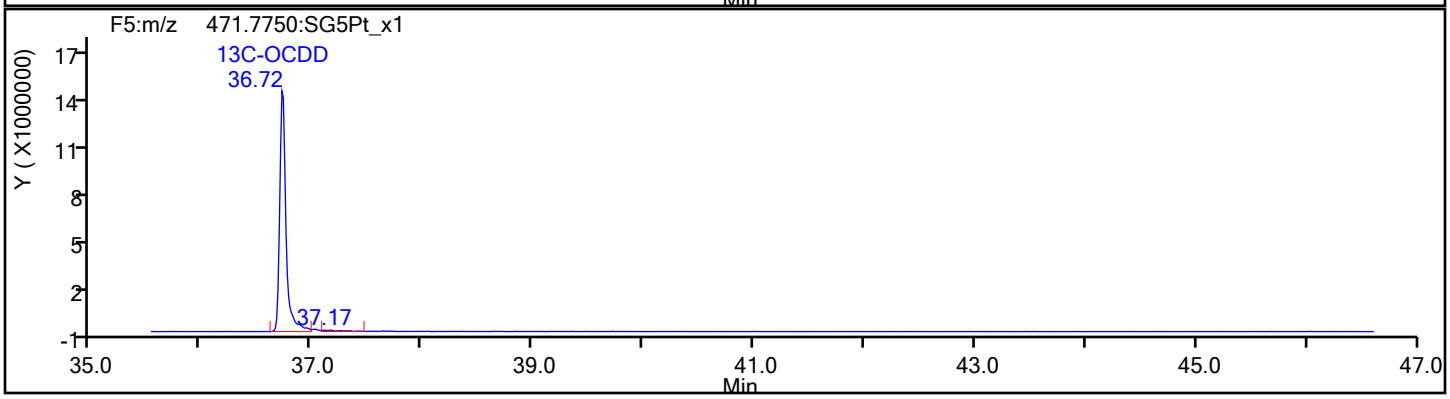
OCDF





OCDF Standards



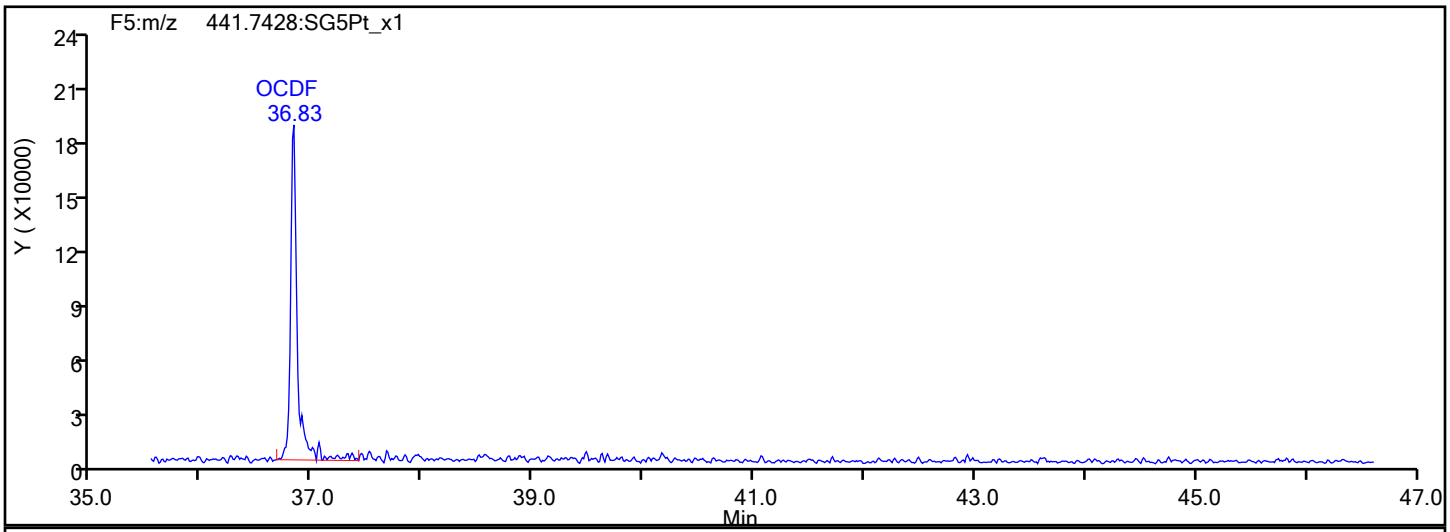


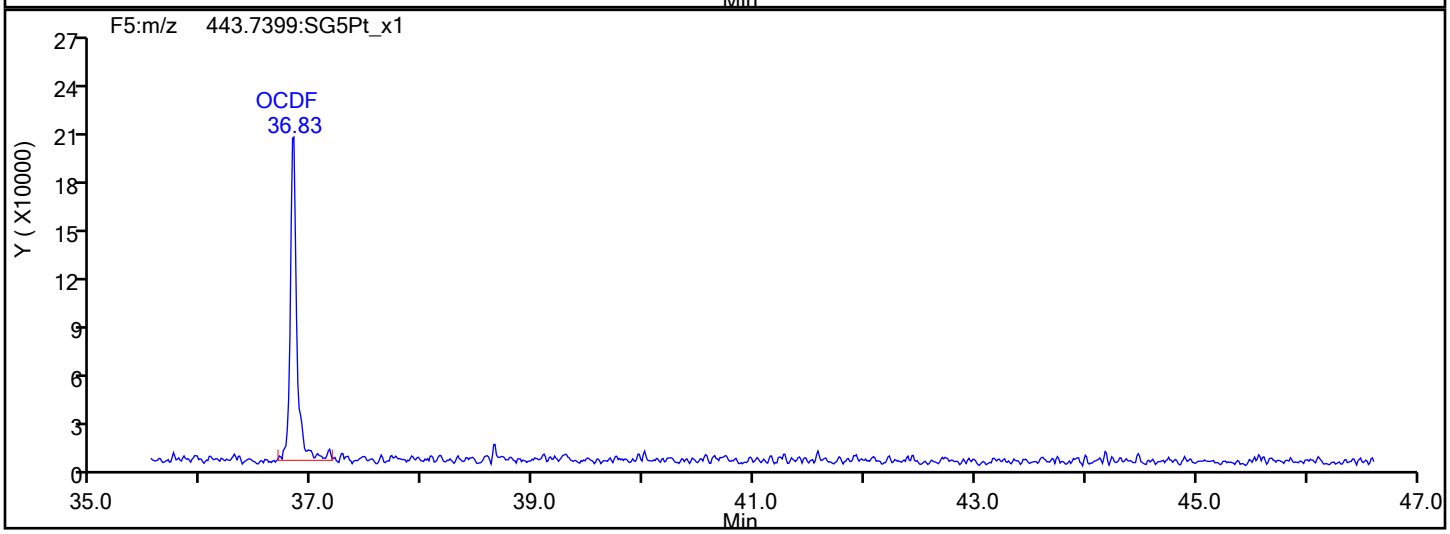
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

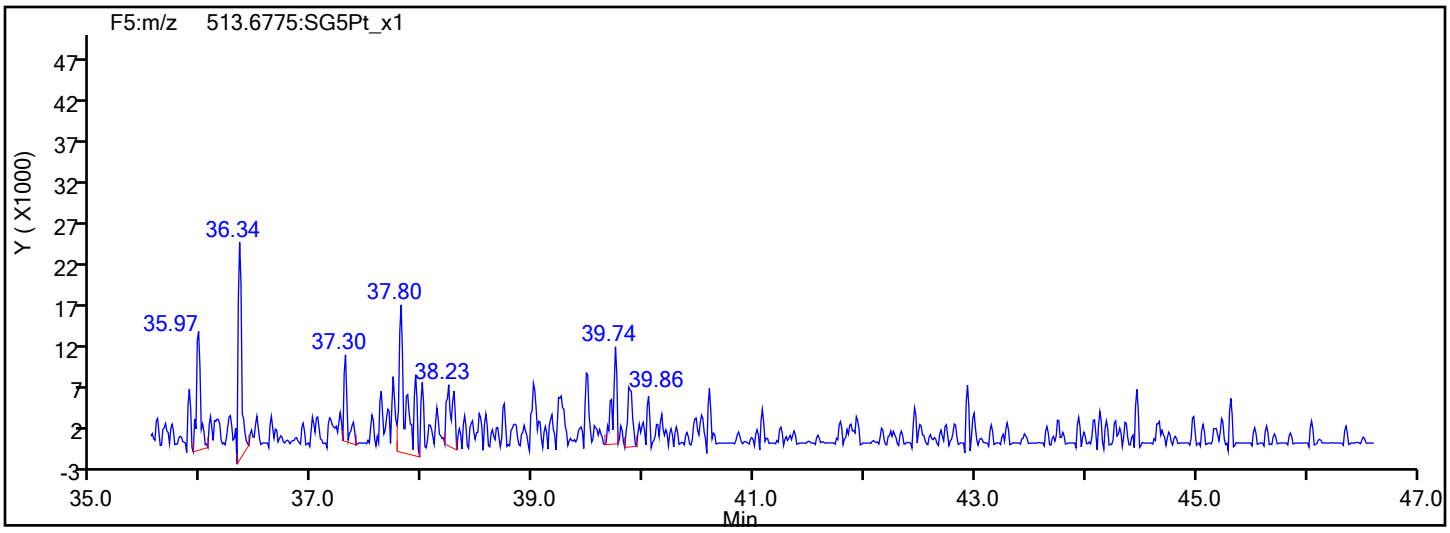
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

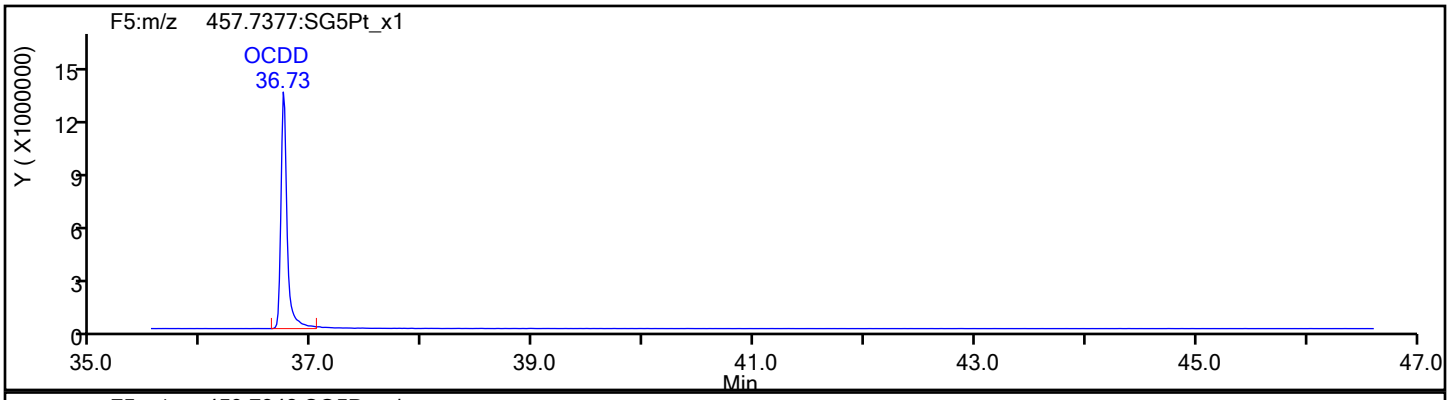


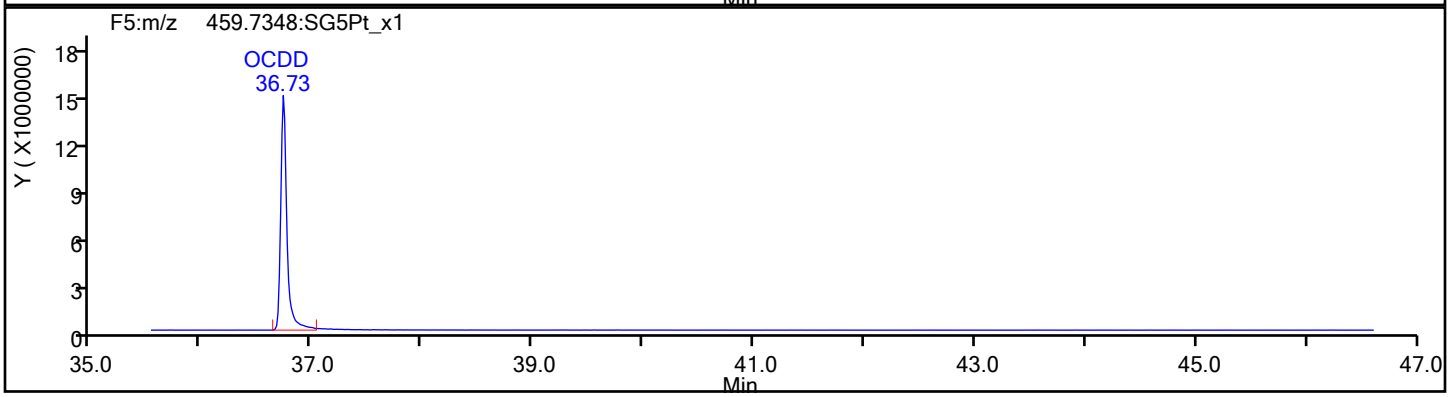
Report Date: 20-Dec-2019 14:42:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

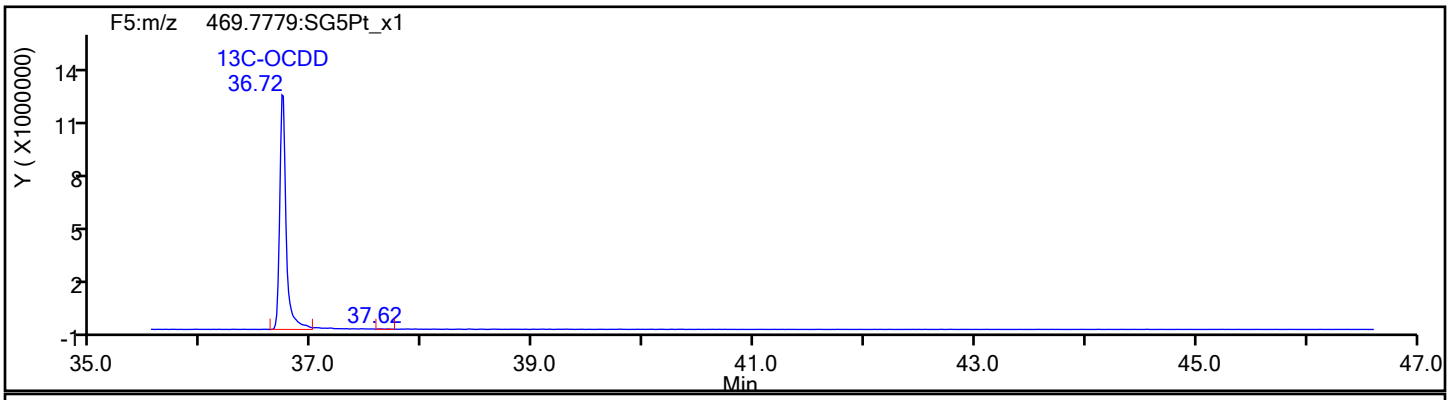
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm

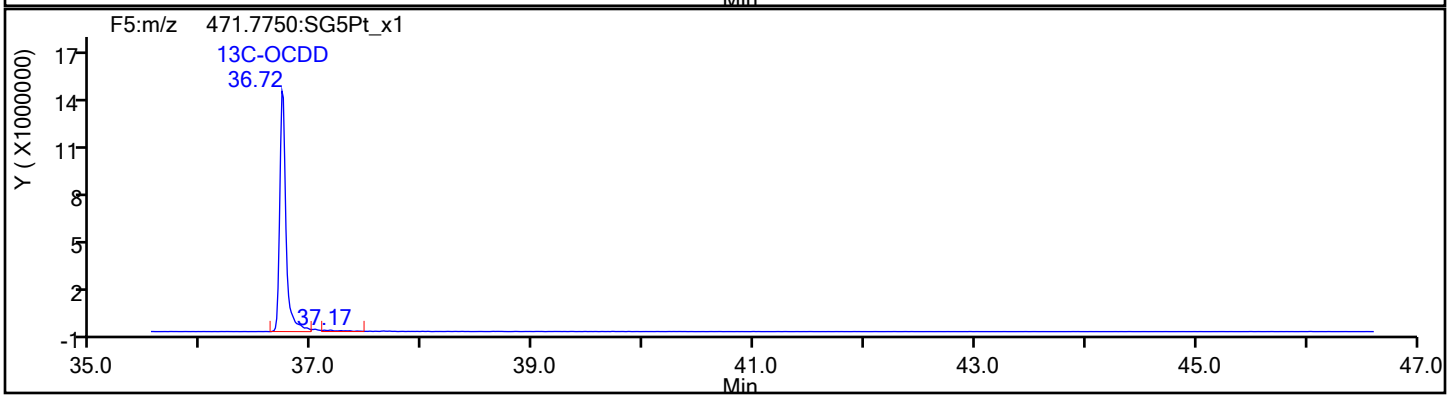
OCDD





OCDD Standards

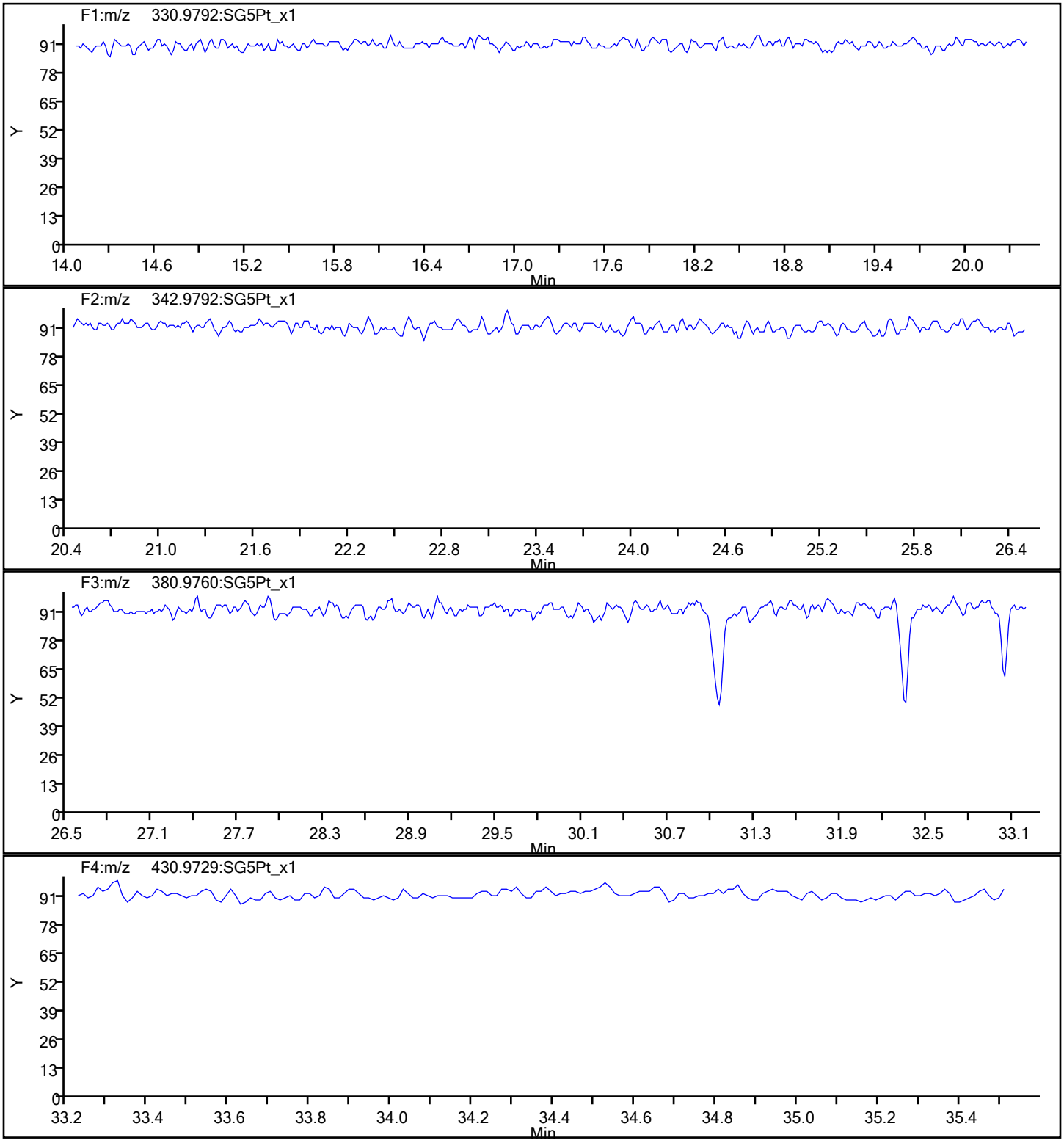




Report Date: 20-Dec-2019 14:42:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

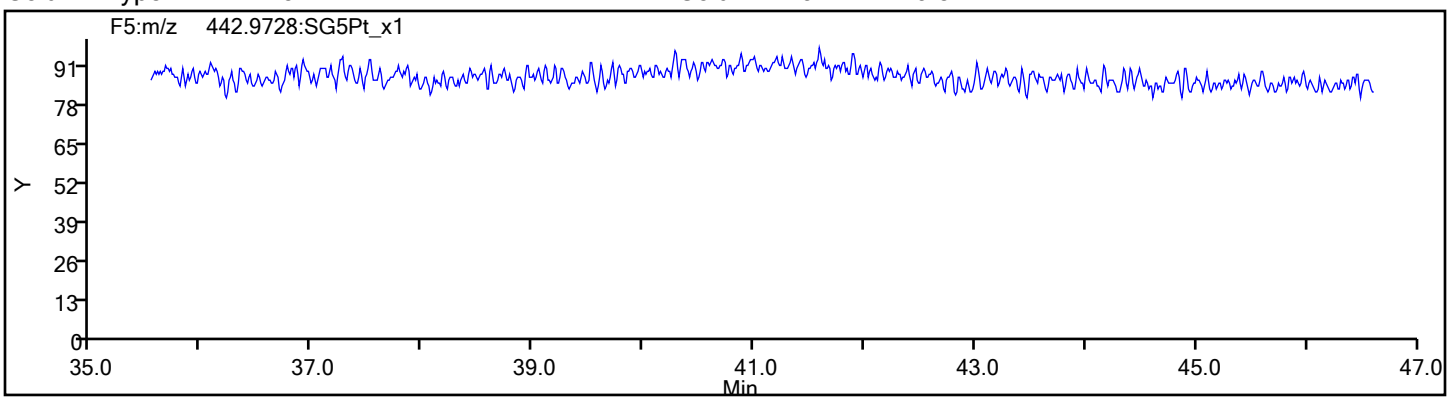
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:42:19 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_13.d		
Injection Date:	19-Dec-2019 20:31:41	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346752	Sample Line#:	13
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(2-4) RA Lab Sample ID: 320-56953-7 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_012.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10.22(g) Date Analyzed: 12/19/2019 23:14

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 53.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	29		2.1	0.25

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	65		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	102		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 23:14:31 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-7-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:39

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.381	231839116	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.547	200292227	0.80	1.3379	64.6	64.6	0.1764	0.1764	64.57	
2,3,7,8-TCDF	16.575	11577953	0.78	0.8389	6.891	6.891	0.0591	0.0591		
D 13C-2,3,7,8-TCDD	15.120	126090725	0.79	0.9388	57.9	57.9	0.4507	0.4507	57.93	
2,3,7,8-TCDD	15.148	3007034	0.70	1.1538	2.067	2.067	0.0689	0.0689		
$ 37Cl4-2,3,7,8-TCDD	15.148	111471636		1.1816	40.7	40.7	0.0416	0.0416	102	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d
Lims ID: 320-56953-A-7-A
Client ID: 11187072-120919-BN-SJSSA04(2-4)
Sample Type: Client
Inject. Date: 19-Dec-2019 23:14:31 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-7-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:39

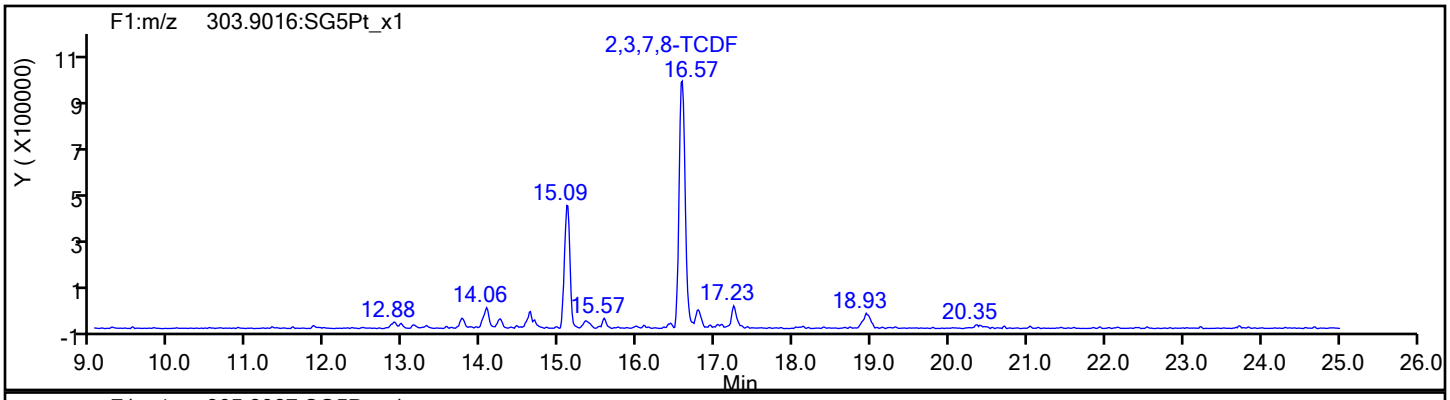
Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.381	15.376	0		101684989	22365983	44513	111282	502		
333.9339	15.381	15.376	0		130154127	28336311	41297	103242	686	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.547	16.556	-1	1.076	88760179	17107056	27337	68342	626		
317.9389	16.547	16.556	-1	1.076	111532048	21826026	20524	51310	1063	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.575	16.570	0	1.002	5075543	927571	3299	8247	281		
305.8987	16.575	16.570	0	1.002	6502410	1227247	4424	11060	277	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.120	15.116	0	0.983	55685263	12276409	44513	111282	276		
333.9339	15.120	15.116	0	0.983	70405462	15697006	41297	103242	380	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.148	15.143	0	1.002	1233764	268734	5611	14027	48		
321.8936	15.148	15.143	0	1.002	1773270	376474	3286	8215	115	0.70(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.148	15.143	0	0.985	111471636	23327032	9980	24950	2337		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

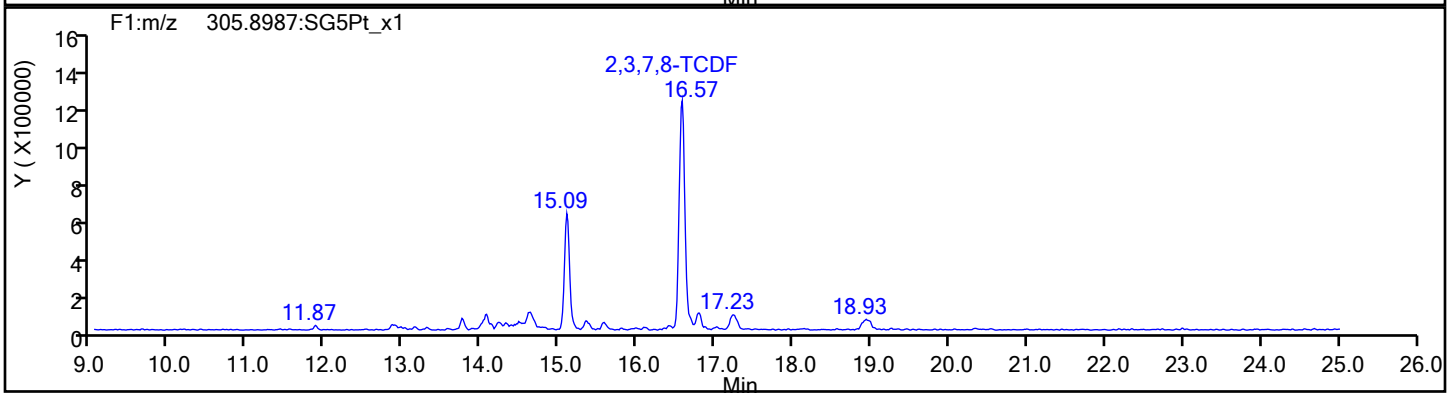
Report Date: 20-Dec-2019 14:38:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

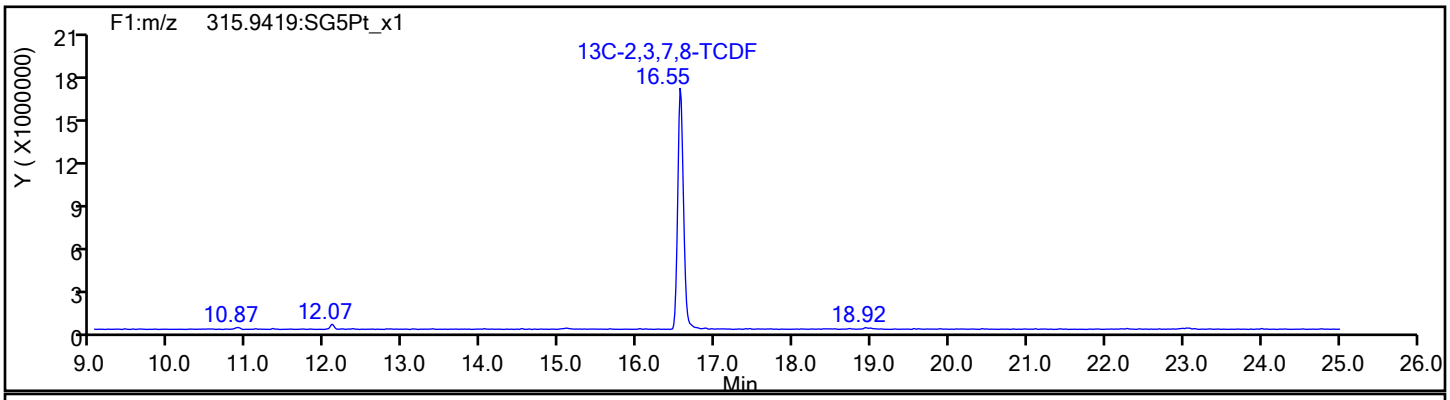
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d		
Injection Date:	19-Dec-2019 23:14:31	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346764	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

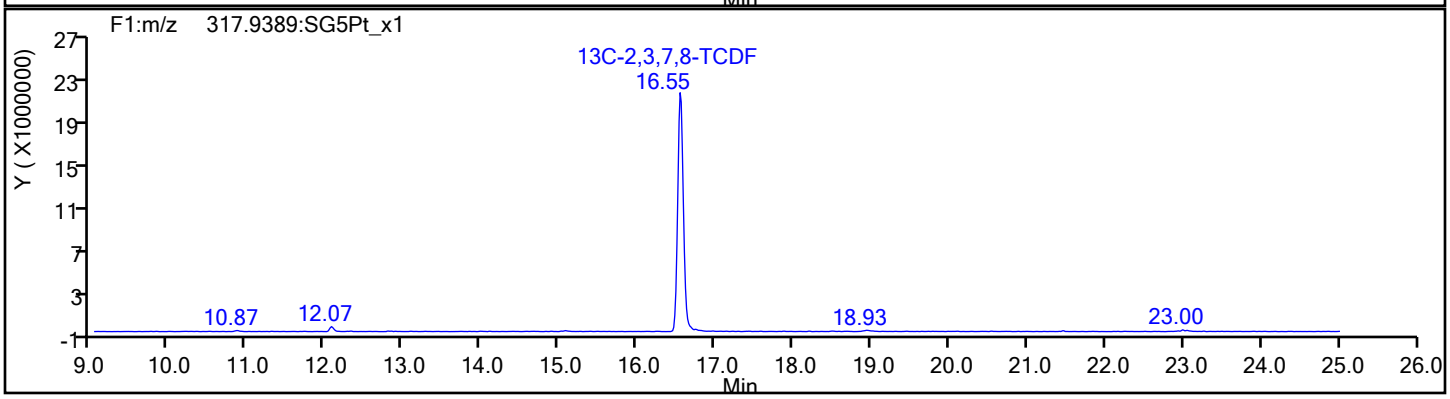
TCDF





TCDF Standards



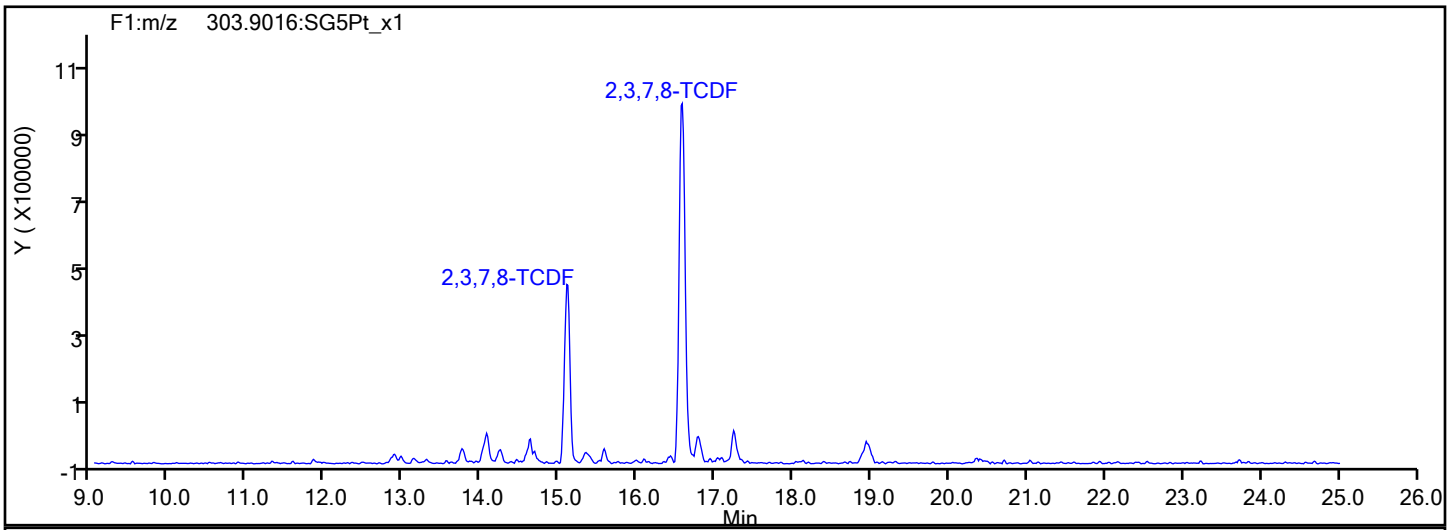


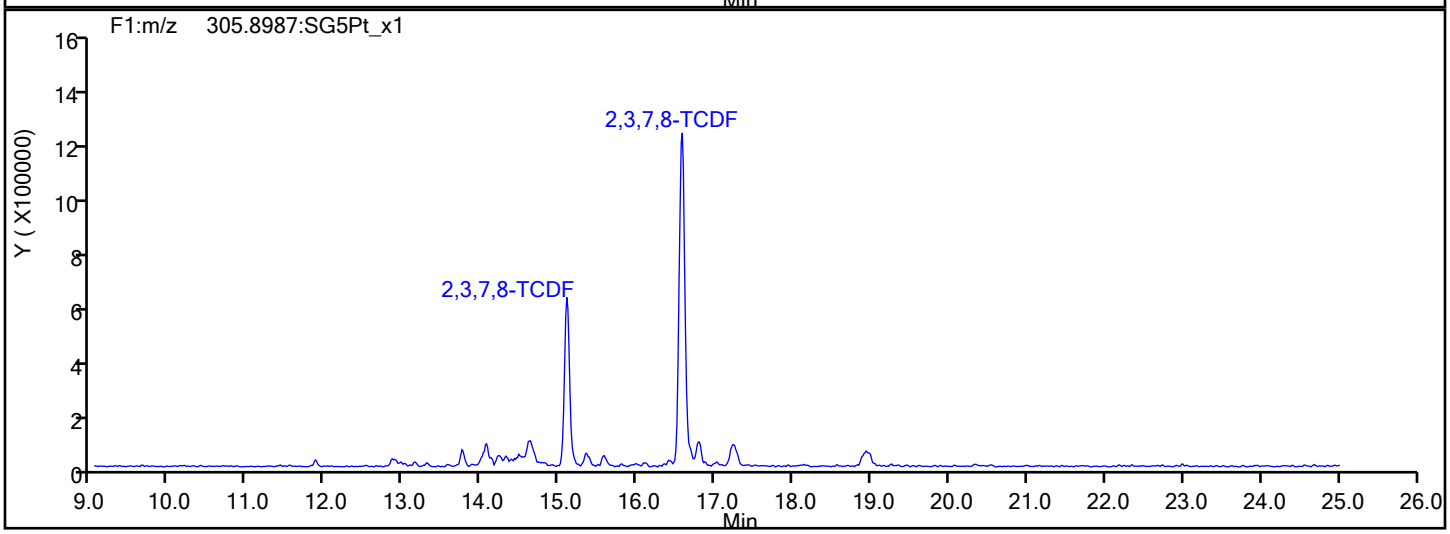
Report Date: 20-Dec-2019 14:38:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

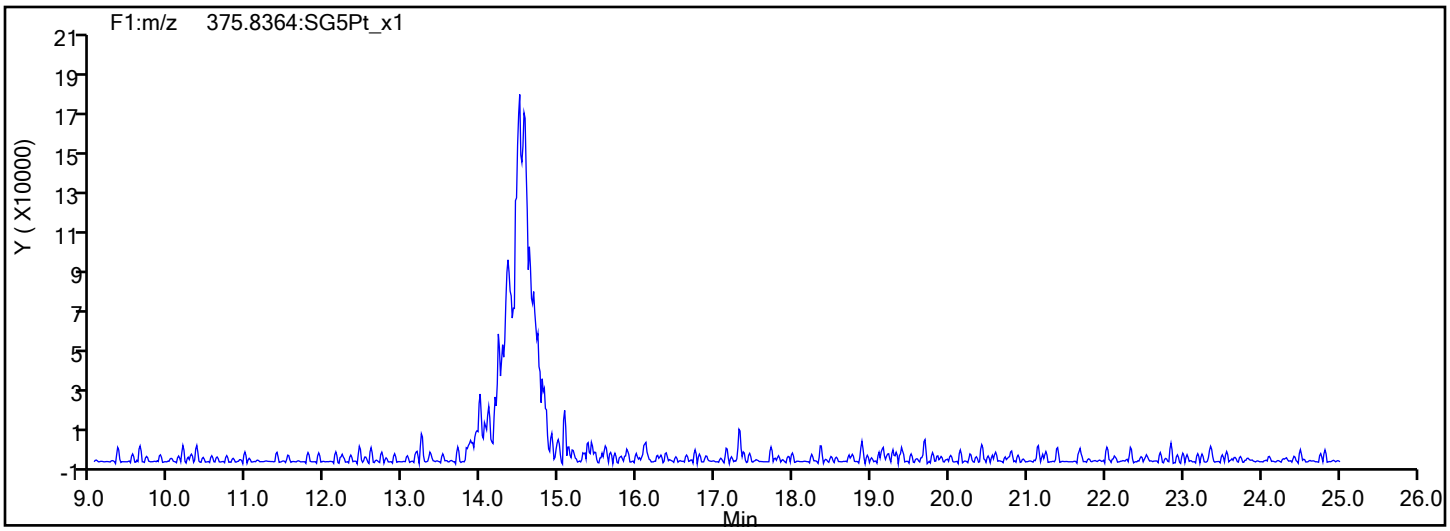
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d		
Injection Date:	19-Dec-2019 23:14:31	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346764	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

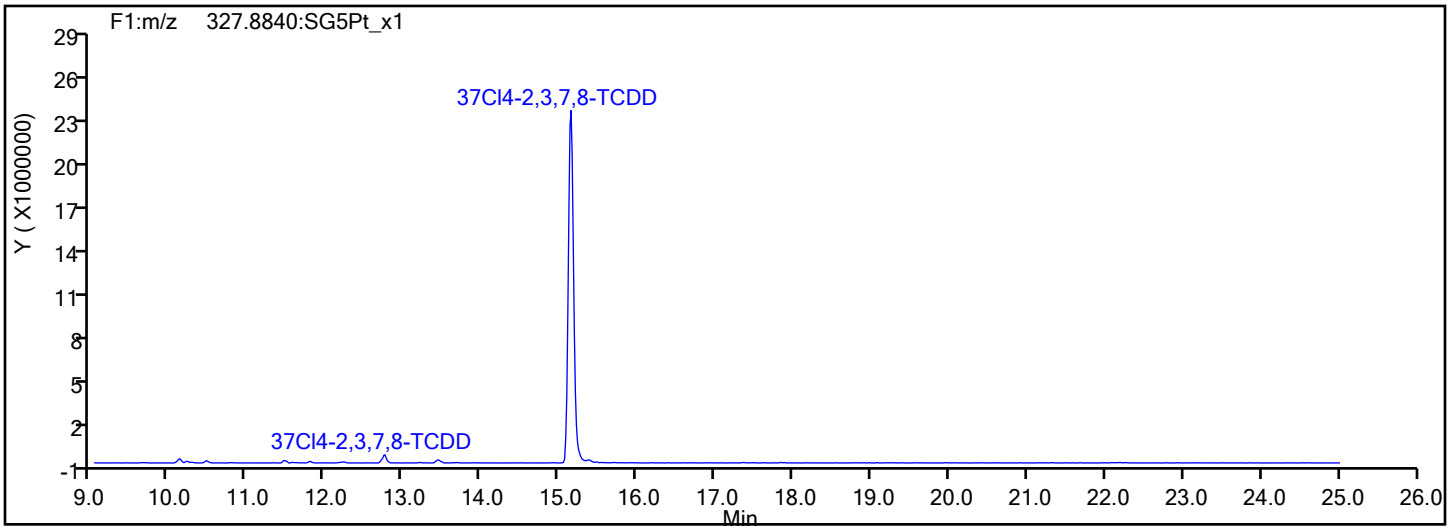


Report Date: 20-Dec-2019 14:38:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

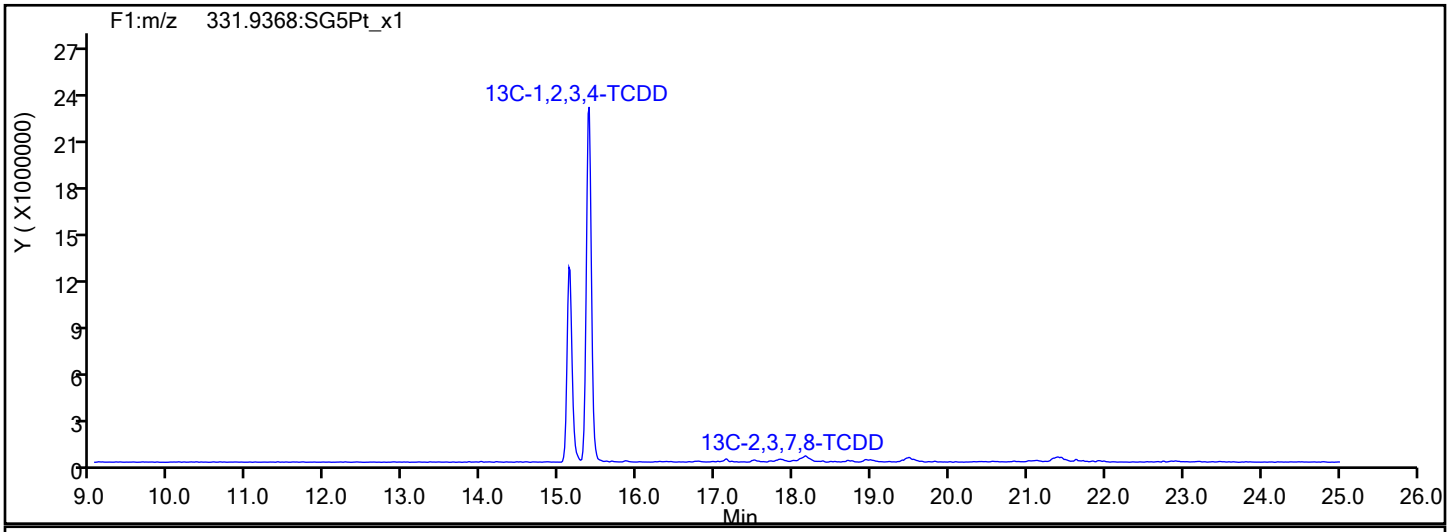
Eurofins TestAmerica, Sacramento

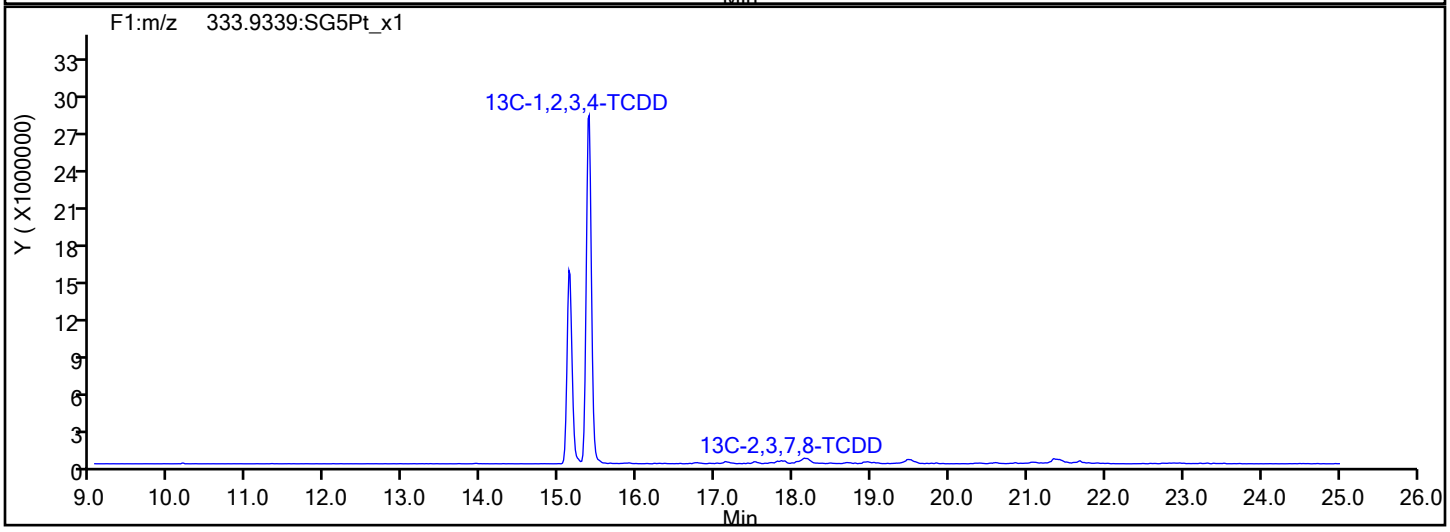
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d		
Injection Date:	19-Dec-2019 23:14:31	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346764	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

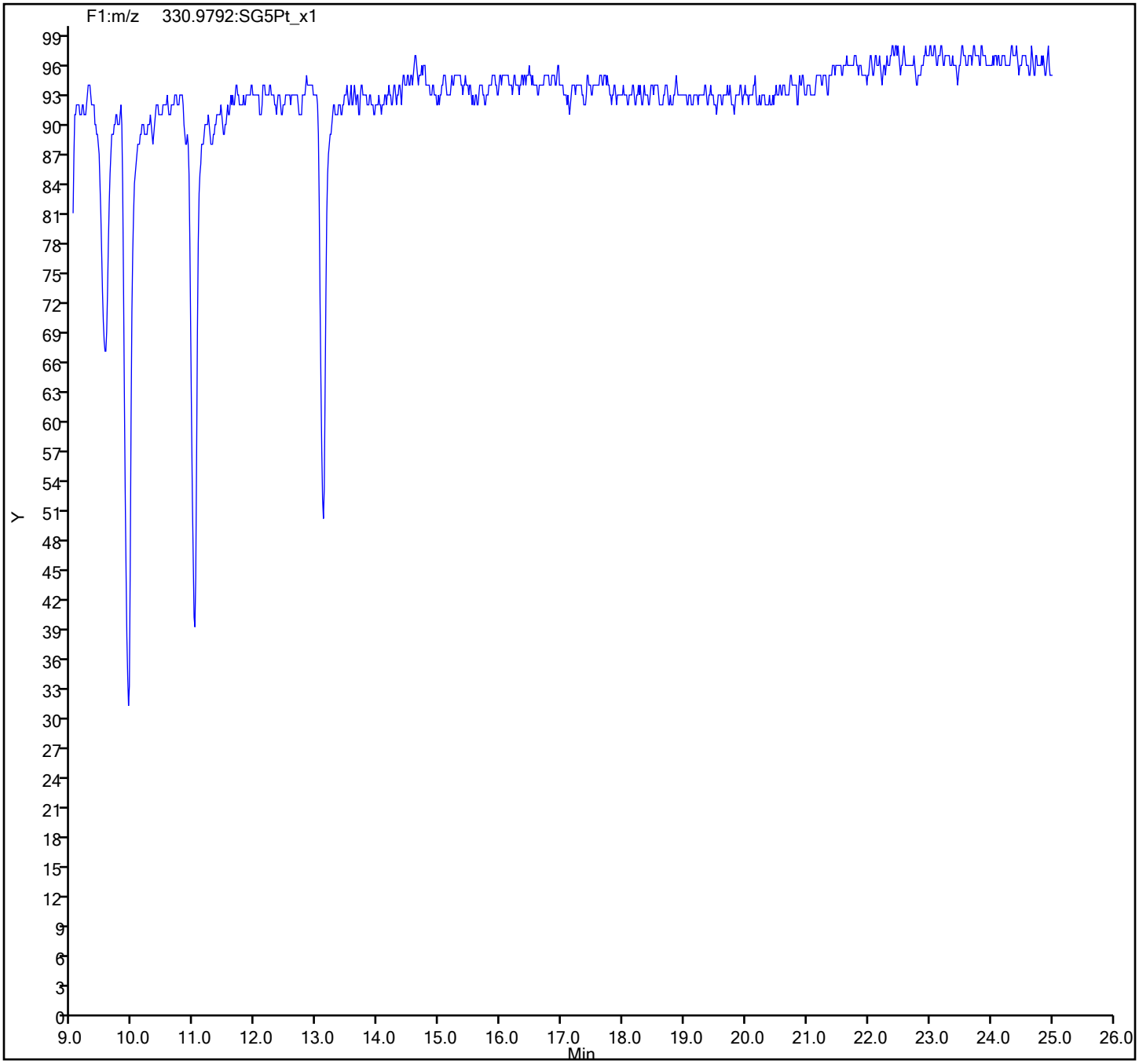




Report Date: 20-Dec-2019 14:38:14 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_012.d		
Injection Date:	19-Dec-2019 23:14:31	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(2-4)		
Worklist#:	346764	Sample Line#:	12
Column Type:	DB-225	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Matrix: Sediment Lab File ID: 19DE193D5_14.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 9.99(g) Date Analyzed: 12/19/2019 21:19

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 57.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	31		2.3	0.50
40321-76-4	1,2,3,7,8-PeCDD	0.88	J q	12	0.49
57117-41-6	1,2,3,7,8-PeCDF	3.9	J	12	0.48
57117-31-4	2,3,4,7,8-PeCDF	2.1	J q	12	0.52
39227-28-6	1,2,3,4,7,8-HxCDD	1.9	J	12	0.40
57653-85-7	1,2,3,6,7,8-HxCDD	4.4	J	12	0.45
19408-74-3	1,2,3,7,8,9-HxCDD	5.7	J	12	0.38
70648-26-9	1,2,3,4,7,8-HxCDF	5.6	J	12	0.45
57117-44-9	1,2,3,6,7,8-HxCDF	2.6	J	12	0.45
72918-21-9	1,2,3,7,8,9-HxCDF	0.39	J	12	0.33
60851-34-5	2,3,4,6,7,8-HxCDF	0.92	J q	12	0.34
35822-46-9	1,2,3,4,6,7,8-HpCDD	180	B	12	3.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	20	B	12	0.90
55673-89-7	1,2,3,4,7,8,9-HpCDF	2.2	J B	12	1.1
3268-87-9	OCDD	4700	B	23	3.4
39001-02-0	OCDF	190	B	23	0.40
41903-57-5	Total TCDD	39	q	2.3	0.50
30402-14-3	Total TCDF	180	q	2.3	0.79
36088-22-9	Total PeCDD	13	q	12	0.49
30402-15-4	Total PeCDF	16	q	12	0.50
34465-46-8	Total HxCDD	96		12	0.41
55684-94-1	Total HxCDF	29	q	12	0.39
37871-00-4	Total HpCDD	610	B	12	3.5
38998-75-3	Total HpCDF	65	B	12	1.0

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) Lab Sample ID: 320-56953-8

Matrix: Sediment Lab File ID: 19DE193D5_14.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 9.99(g) Date Analyzed: 12/19/2019 21:19

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 57.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	60		25-164
89059-46-1	13C-2,3,7,8-TCDF	60		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	57		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	57		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	60		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	62		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	62		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	62		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	59		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	59		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	59		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	62		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	59		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	66		26-138
114423-97-1	13C-OCDD	72		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	109		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:19:13 ALS Bottle#: 14 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-8-A 320-56953-A-8-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 13:01:06 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 13:01:06

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.597	222545846	0.76	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.098	188147118	0.78	1.4157	59.7	59.7	0.1041	0.1041	59.72	
2,3,7,8-TCDF	17.113	39296117	0.79	0.9502	22.0	22.0	0.1689	0.1689		
A Non-2,3,7,8-sub-TCDF	16.811	30845036	0.77	0.9502	17.4	17.3	0.1689	10.4		RQMa
S Total TCDF					39.4	39.2	0.1689	0.1689		RQ
D 13C-2,3,7,8-TCDD	17.793	129850657	0.78	0.9751	59.8	59.8	0.1387	0.1387	59.84	
2,3,7,8-TCDD	17.808	8985742	0.77	1.0477	6.605	6.605	0.1057	0.1057		M
$ 37Cl4-2,3,7,8-TCDD	17.808	130763399		1.3480	43.6	43.6	0.0760	0.0760	109	
A Non-2,3,7,8-sub-TCDD	17.249	2239375	0.77	1.0477	1.692	1.646	0.1057	0.8444		RQMa
S Total TCDD					8.297	8.251	0.1057	0.1057		RQ
D 13C-1,2,3,7,8-PeCDF	22.018	149773083	1.63	1.1786	57.1	57.1	0.1550	0.1550	57.10	
1,2,3,7,8-PeCDF	22.045	1286462	1.58	1.0302	0.8338	0.8338	0.1030	0.1030		M
D 13C-2,3,4,7,8-PeCDF	23.327	151775504	1.58	1.1308	60.3	60.3	0.1616	0.1616	60.31	
2,3,4,7,8-PeCDF	23.355	692052	1.55	1.0410	0.4962	0.4380	0.1099	0.1099		RQ
A F1 PeCDFs	19.774	1149540	1.64	1.0356	0.7362	0.7362	0.0546	0.7362		
A Non-2,3,7,8-sub-PeCDF	22.858	2338000	1.55	1.0356	1.542	1.497	0.1063	1.300		RQMa
S Total PeCDF					3.608	3.505	0.1065	0.1065		RQ
D 13C-1,2,3,7,8-PeCDD	24.037	95956922	1.65	0.7572	56.9	56.9	0.0917	0.0917	56.94	
1,2,3,7,8-PeCDD	24.077	195161	1.55	1.0855	0.2056	0.1874	0.1039	0.1039		RQ
A Non-2,3,7,8-sub-PeCDD	22.973	2716318	1.55	1.0855	2.624	2.608	0.1039	0.8431		RQM
S Total PeCDD					2.830	2.795	0.1039	0.1039		RQ
D 13C-1,2,3,4,7,8-HxCDF	30.180	131559880	0.53	1.1043	61.8	61.8	0.2388	0.2388	61.81	
1,2,3,4,7,8-HxCDF	30.206	1803801	1.35	1.1472	1.195	1.195	0.0959	0.0959		
D 13C-1,2,3,6,7,8-HxCDF	30.393	130330007	0.53	1.1470	58.9	58.9	0.2299	0.2299	58.95	
1,2,3,6,7,8-HxCDF	30.419	841285	1.23	1.1450	0.5637	0.5637	0.0963	0.0963		
D 13C-2,3,4,6,7,8-HxCDF	31.298	123077720	0.53	1.0769	59.3	59.3	0.2449	0.2449	59.29	
2,3,4,6,7,8-HxCDF	31.312	282521	1.24	1.1726	0.2138	0.1958	0.0724	0.0724		RQMa
D 13C-1,2,3,7,8,9-HxCDF	32.150	115446572	0.50	1.0115	59.2	59.2	0.2607	0.2607	59.21	
1,2,3,7,8,9-HxCDF	32.164	112567	1.18	1.1717	0.0832	0.0832	0.0702	0.0702		Ma
A Non-2,3,7,8-sub-HxCDF	29.880	6069900	1.24	1.1591	4.202	4.186	0.0820	1.878		RQMa

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
S Total HxCDF					6.258	6.224	0.0837	0.0837		RQ
* 13C-1,2,3,7,8,9-HxCDD	31.951	192751044	1.26	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.498	94787197	1.28	0.7962	61.8	61.8	0.2739	0.2739	61.76	
1,2,3,4,7,8-HxCDD	31.511	427417	1.27	1.0934	0.4124	0.4124	0.0858	0.0858		
D 13C-1,2,3,6,7,8-HxCDD	31.618	104772012	1.26	0.8720	62.3	62.3	0.2501	0.2501	62.34	
1,2,3,6,7,8-HxCDD	31.631	1027582	1.22	1.0429	0.9404	0.9404	0.0959	0.0959		
1,2,3,7,8,9-HxCDD	31.964	1460972	1.24	1.2073	1.213	1.213	0.0802	0.0802		M
A Non-2,3,7,8-sub-HxCDD	30.519	19839649	1.30	1.1145	17.8	17.8	0.0869	11.4		
S Total HxCDD					20.4	20.4	0.0873	0.0873		
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	85552426	0.42	0.7577	58.6	58.6	0.8438	0.8438	58.58	
1,2,3,4,6,7,8-HpCDF	33.628	5375765	1.13	1.4804	4.245	4.245	0.1910	0.1910		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	88692649	0.44	0.6941	66.3	66.3	0.9210	0.9210	66.29	
1,2,3,4,7,8,9-HpCDF	34.697	530736	1.14	1.2933	0.4627	0.4627	0.2372	0.2372		
A Non-2,3,7,8-sub-HpCDF	34.169	11082012	1.06	1.3868	9.172	9.172	0.2122	9.172		
S Total HpCDF					13.9	13.9	0.2141	0.2141		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	85025924	1.11	0.7058	62.5	62.5	0.4268	0.4268	62.50	
1,2,3,4,6,7,8-HpCDD	34.417	34615473	1.04	1.0535	38.6	38.6	0.7401	0.7401		
A Non-2,3,7,8-sub-HpCDD	34.144	80813829	1.04	1.0535	90.2	90.2	0.7401	90.2		
S Total HpCDD					128.9	128.9	0.7401	0.7401		
D 13C-OCDD	36.734	127903843	0.90	0.4603	144.2	144.2	0.2055	0.2055	72.09	
OCDF	36.829	36395787	0.90	1.3945	40.8	40.8	0.0854	0.0854		
OCDD	36.746	724039876	0.90	1.1362	996.5	996.5	0.7221	0.7221		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated
- a - User Assigned ID

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 21:19:13 ALS Bottle#: 14 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-8-A 320-56953-A-8-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 22-Dec-2019 13:01:06 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0319

First Level Reviewer: krenns Date: 22-Dec-2019 13:01:06

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.597	17.612	-1		96216820	24439441	16613	41532	1471		
333.9339	17.597	17.612	-1		126329026	32637797	14268	35670	2287	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.098	17.113	-1	0.972	82341822	21244967	18541	46352	1146		
317.9389	17.098	17.113	-1	0.972	105805296	27138527	15098	37745	1797	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.113	17.128	-1	1.001	17282073	4301492	13547	33867	318		
305.8987	17.113	17.128	-1	1.001	22014044	5567169	17513	43782	318	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											RQMa
303.9016	15.480	16.811	-80	0.905	434479	103291	13547	33867	8		
	Empc Correction				296661	92123	13547	33867	7		
305.8987	15.480	16.811	-80	0.905	385275	119641	17513	43782	7	1.13(0.65-0.89)	
303.9016	15.737	16.811	-64	0.920	601619	134244	13547	33867	10		
	Empc Correction				492210	128195	13547	33867	9		
305.8987	15.737	16.811	-64	0.920	639234	166488	17513	43782	10	0.94(0.65-0.89)	
303.9016	16.009	16.811	-48	0.936	883321	199414	13547	33867	15		
305.8987	16.009	16.811	-48	0.936	1188221	262480	17513	43782	15	0.74(0.65-0.89)	
303.9016	16.221	16.811	-35	0.949	530531	138412	13547	33867	10		
305.8987	16.221	16.811	-35	0.949	679541	177447	17513	43782	10	0.78(0.65-0.89)	M
303.9016	16.463	16.811	-21	0.963	672264	136227	13547	33867	10		
305.8987	16.463	16.811	-21	0.963	873399	184020	17513	43782	11	0.77(0.65-0.89)	
303.9016	16.735	16.811	-5	0.979	8117615	2109274	13547	33867	156		a
305.8987	16.735	16.811	-5	0.979	10436967	2733993	17513	43782	156	0.78(0.65-0.89)	
303.9016	16.962	16.811	9	0.992	341571	83767	13547	33867	6		
305.8987	16.962	16.811	9	0.992	392048	88113	17513	43782	5	0.87(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Δ Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
303.9016	17.536	16.811	43	1.026	1051892	216253	13547	33867	16		
305.8987	17.536	16.811	43	1.026	1339751	283881	17513	43782	16	0.79(0.65-0.89)	
303.9016	18.897	16.811	125	1.105	1173741	263548	13547	33867	19		
305.8987	18.897	16.811	125	1.105	1350794	312194	17513	43782	18	0.87(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.011	56722932	13075591	16613	41532	787		
333.9339	17.793	17.793	0	1.011	73127725	17483043	14268	35670	1225	0.78(0.65-0.89)	
2,3,7,8-TCDD											M
319.8965	17.808	17.823	-1	1.001	3914816	1022817	7437	18592	138		M
321.8936	17.808	17.823	-1	1.001	5070926	1283809	6097	15242	211	0.77(0.65-0.89)	M
37Cl4-2,3,7,8-TCDD											
327.8847	17.808	17.823	-1	1.012	130763399	31488148	23401	58502	1346		
A Non-2,3,7,8-sub-TCDD											RQMa
319.8965	16.690	17.249	-34	0.938	503870	142118	7437	18592	19		
321.8936	16.690	17.249	-34	0.938	644847	172718	6097	15242	28	0.78(0.65-0.89)	
319.8965	17.566	17.249	19	0.987	202104	52238	7437	18592	7		
	Empc Correction				139265	38635	7437	18592	5		
321.8936	17.566	17.249	19	0.987	180864	50176	6097	15242	8	1.12(0.65-0.89)	
319.8965	17.702	17.249	27	0.995	58303	18702	7437	18592	3		M
321.8936	17.702	17.249	27	0.995	67818	21240	6097	15242	3	0.86(0.65-0.89)	
319.8965	18.156	17.249	54	1.020	267420	70306	7437	18592	9		
321.8936	18.156	17.249	54	1.020	376988	87808	6097	15242	14	0.71(0.65-0.89)	
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.251	92727659	16602768	24164	60410	687		
353.8970	22.018	22.018	0	1.251	57045424	10303766	17556	43890	587	1.63(1.32-1.78)	
1,2,3,7,8-PeCDF											M
339.8597	22.045	22.045	0	1.001	788477	145471	4047	10117	36		
341.8567	22.018	22.045	-2	1.000	497985	90282	7376	18440	12	1.58(1.32-1.78)	M
13C-2,3,4,7,8-PeCDF											
351.9000	23.327	23.341	-1	1.326	92922728	15203112	24164	60410	629		
353.8970	23.327	23.341	-1	1.326	58852776	9753365	17556	43890	556	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											RQ
339.8597	23.355	23.355	0	1.001	512603	95902	4047	10117	24		
	Empc Correction				420659	81976	4047	10117	20		
341.8567	23.355	23.355	0	1.001	271393	52888	7376	18440	7	1.89(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.184	19.774	-35	0.871	714904	159806	1629	4072	98		
341.8567	19.184	19.774	-35	0.871	434636	99161	4234	10585	23	1.64(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDF											RQMa
339.8597	20.709	22.858	-129	0.941	1228952	194190	4047	10117	48		
341.8567	20.709	22.858	-129	0.941	800626	147956	7376	18440	20	1.53(1.32-1.78)	
339.8597	22.537	22.858	-19	1.024	257471	46062	4047	10117	11		M
	Empc Correction				187472	36352	4047	10117	9		
341.8567	22.550	22.858	-18	1.024	120950	23453	7376	18440	3	2.13(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDD											
367.8949	24.037	24.050	-1	1.366	59776709	9388136	9849	24622	953		
369.8919	24.037	24.050	-1	1.366	36180213	5614531	6005	15012	935	1.65(1.32-1.78)	
1,2,3,7,8-PeCDD											RQ
355.8546	24.077	24.077	0	1.002	137634	28917	3862	9655	7		
	Empc Correction				118627	21470	3862	9655	6		
357.8516	24.037	24.077	-2	1.000	76534	13852	2904	7260	5	1.80(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											RQM
355.8546	20.900	22.973	-124	0.870	496349	89805	3862	9655	23		
357.8516	20.900	22.973	-124	0.870	363357	66299	2904	7260	23	1.37(1.32-1.78)	
355.8546	21.650	22.973	-79	0.901	531967	107351	3862	9655	28		M
357.8516	21.636	22.973	-80	0.900	346222	68724	2904	7260	24	1.54(1.32-1.78)	
355.8546	22.059	22.973	-55	0.918	125597	22879	3862	9655	6		
	Empc Correction				108290	20391	3862	9655	5		
357.8516	22.045	22.973	-56	0.917	69865	13156	2904	7260	5	1.80(1.32-1.78)	
355.8546	22.918	22.973	-3	0.953	87615	16661	3862	9655	4		
357.8516	22.877	22.973	-6	0.952	59849	12342	2904	7260	4	1.46(1.32-1.78)	
355.8546	23.068	22.973	6	0.960	387224	60857	3862	9655	16		M
357.8516	23.082	22.973	7	0.960	265580	39021	2904	7260	13	1.46(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.180	30.193	-1	0.945	45491577	7342287	17422	43555	421		
385.8610	30.180	30.193	-1	0.945	86068303	13756914	30231	75577	455	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206	30.206	0	1.001	1037284	175020	5174	12935	34		
375.8178	30.193	30.206	-1	1.000	766517	113167	4109	10272	28	1.35(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.393	30.406	-1	0.951	45006354	7316223	17422	43555	420		
385.8610	30.393	30.406	-1	0.951	85323653	13727008	30231	75577	454	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.419	30.420	0	1.001	464741	77005	5174	12935	15		
375.8178	30.406	30.420	-1	1.000	376544	58998	4109	10272	14	1.23(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.298	31.312	-1	0.980	42473845	9475666	17422	43555	544		
385.8610	31.298	31.312	-1	0.980	80603875	17868049	30231	75577	591	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											RQMa
373.8208	31.312	31.325	-1	1.000	156396	34533	5174	12935	7		M
375.8178	31.312	31.325	-1	1.000	152218	29233	4109	10272	7	1.03(1.05-1.43)	
	Empc Correction				126125	27849	4109	10272	7		
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.150	32.151	0	1.006	38599670	9601010	17422	43555	551		
385.8610	32.150	32.151	0	1.006	76846902	18618789	30231	75577	616	0.50(0.43-0.59)	
1,2,3,7,8,9-HxCDF											Ma
373.8208	32.164	32.164	0	1.000	61027	19072	5174	12935	4		M
375.8178	32.164	32.164	0	1.000	51540	13770	4109	10272	3	1.18(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											RQMa

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
373.8208	27.490	29.880	-143	0.911	391316	52143	5174	12935	10		
375.8178	27.490	29.880	-143	0.911	291508	43452	4109	10272	11	1.34(1.05-1.43)	
373.8208	27.889	29.880	-119	0.924	1324854	178204	5174	12935	34		
375.8178	27.903	29.880	-118	0.925	1152189	141105	4109	10272	34	1.15(1.05-1.43)	
373.8208	29.194	29.880	-41	0.967	1498423	187816	5174	12935	36		
375.8178	29.194	29.880	-41	0.967	1225535	145357	4109	10272	35	1.22(1.05-1.43)	
373.8208	32.244	29.880	142	1.068	103006	30913	5174	12935	6		M
375.8178	32.244	29.880	142	1.068	106549	25562	4109	10272	6	0.97(1.05-1.43)	
	Empc Correction				83069	24929	4109	10272	6		
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.951	31.964	-1		107564320	25282868	20694	51735	1222		
403.8529	31.951	31.964	-1		85186724	19891697	18716	46790	1063	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.498	31.511	-1	0.986	53156107	13839849	20694	51735	669		
403.8529	31.498	31.511	-1	0.986	41631090	10848667	18716	46790	580	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.511	31.525	-1	1.000	239454	66157	5966	14915	11		
391.8127	31.511	31.525	-1	1.000	187963	43284	3303	8257	13	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.990	58359407	12959915	20694	51735	626		
403.8529	31.618	31.618	0	0.990	46412605	10216229	18716	46790	546	1.26(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.631	31.631	0	1.000	564219	130290	5966	14915	22		
391.8127	31.631	31.631	0	1.000	463363	105431	3303	8257	32	1.22(1.05-1.43)	
1,2,3,7,8,9-HxCDD											M
389.8157	31.964	31.977	-1	1.015	808872	162218	5966	14915	27		M
391.8127	31.964	31.977	-1	1.015	652100	130478	3303	8257	40	1.24(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	29.048	30.519	-88	0.919	7186469	868025	5966	14915	145		
391.8127	29.061	30.519	-87	0.919	5497496	672084	3303	8257	203	1.31(1.05-1.43)	
389.8157	30.260	30.519	-16	0.957	556988	70135	5966	14915	12		
391.8127	30.273	30.519	-15	0.957	388363	52349	3303	8257	16	1.43(1.05-1.43)	
389.8157	30.699	30.519	11	0.971	3023165	545889	5966	14915	92		
391.8127	30.699	30.519	11	0.971	2378158	422695	3303	8257	128	1.27(1.05-1.43)	
389.8157	30.912	30.519	24	0.978	432994	91219	5966	14915	15		
391.8127	30.912	30.519	24	0.978	376016	70981	3303	8257	21	1.15(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	25511602	8455588	39595	98987	214		
419.8220	33.616	33.628	-1	1.052	60040824	19458507	75928	189820	256	0.42(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.628	33.628	0	1.000	2854333	986634	19033	47582	52		
409.7789	33.628	33.628	0	1.000	2521432	841696	12537	31342	67	1.13(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.086	27182436	7771759	39595	98987	196		
419.8220	34.685	34.697	-1	1.086	61510213	17950873	75928	189820	236	0.44(0.37-0.51)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,7,8,9-HpCDF											
407.7818	34.697	34.709	-1	1.000	283085	89555	19033	47582	5		
409.7789	34.697	34.709	-1	1.000	247651	89232	12537	31342	7	1.14(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	33.919	34.169	-15	1.009	5701013	1845912	19033	47582	97		
409.7789	33.919	34.169	-15	1.009	5380999	1752562	12537	31342	140	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.077	44722754	13402513	30189	75472	444		
437.8140	34.405	34.418	-1	1.077	40303170	12374415	24252	60630	510	1.11(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.417	34.418	0	1.000	17646128	5425767	41119	102797	132		
425.7737	34.417	34.418	0	1.000	16969345	5085903	39281	98202	129	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.871	34.144	-16	0.984	41186823	13283482	41119	102797	323		
425.7737	33.871	34.144	-16	0.984	39627006	12561528	39281	98202	320	1.04(0.88-1.20)	
13C-OCDD											
469.7779	36.734	36.734	0	1.150	60662579	15686983	9620	24050	1631		
471.7750	36.734	36.734	0	1.150	67241264	17113716	7473	18682	2290	0.90(0.76-1.02)	
OCDF											
441.7428	36.829	36.830	0	1.003	17191686	4503270	3421	8552	1316		
443.7399	36.829	36.830	0	1.003	19204101	4892164	4396	10990	1113	0.90(0.76-1.02)	
OCDD											
457.7377	36.746	36.746	0	1.000	343075071	87184951	22561	56402	3864		
459.7348	36.734	36.746	-1	1.000	380964805	95940320	31257	78142	3069	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDF, RT: 16.811

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	188147118	48383494

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	188147118	48383494

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
15.480	434479	103291	385275	119641	0.4585	1.13	RQ
15.480	296661	92123	385275	119641	0.3814		Empc Correction
15.737	601619	134244	639234	166488	0.6941	0.94	RQ
15.737	492210	128195	639234	166488	0.6329		Empc Correction
16.009	883321	199414	1188221	262480	1.16	0.74	
16.221	530531	138412	679541	177447	0.6769	0.78	M
16.463	672264	136227	873399	184020	0.8646	0.77	
16.735	8117615	2109274	10436967	2733993	10.4	0.78	a
16.962	341571	83767	392048	88113	0.4104	0.87	
17.536	1051892	216253	1339751	283881	1.34	0.79	
18.897	1173741	263548	1350794	312194	1.41	0.87	
Signal Totals:							
	13559806	3367213	17285230	4328257			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	31092263	7712687				0.80	RQMa
	30845036	7695470					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 17.392 = (31092263 * 100.000) / (188147118 * 0.950)
Empc Amount: 17.254 = (30845036 * 100.000) / (188147118 * 0.950)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	129850657	30558634

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	129850657	30558634

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
16.690	503870	142118	644847	172718	0.8444	0.78	
17.566	202104	52238	180864	50176	0.2815	1.12	RQ
17.566	139265	38635	180864	50176	0.2353		Empc Correction
17.702	58303	18702	67818	21240	0.0927	0.86	Ma
18.156	267420	70306	376988	87808	0.4737	0.71	
Signal Totals:							
	968858	269761	1270517	331942			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2302214	615306				0.81	RQMa
	2239375	601703					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.692 = (2302214 * 100.000) / (129850657 * 1.048)
Empc Amount: 1.646 = (2239375 * 100.000) / (129850657 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

F1 PeCDFs, RT: 19.774

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	149773083	26906534
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	151775504	24956477

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	150774293	25931505

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
19.184	714904	159806	434636	99161	0.7362	1.64	
Signal Totals:							
	714904	159806	434636	99161			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1149540	258967				1.64	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7362 = (1149540 * 100.000) / (150774293 * 1.036)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	149773083	26906534
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	151775504	24956477

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	150774293	25931505

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
20.709	1228952	194190	800626	147956	1.30	1.53	
22.537	257471	46062	120950	23453	0.2424	2.13	RQMa
22.537	187472	36352	120950	23453	0.1975		Empc Correction
Signal Totals:							
	1416424	230542	921576	171409			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2407999	411661				1.61	RQMa
	2338000	401951					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 1.542 = (2407999 * 100.000) / (150774293 * 1.036)
Empc Amount: 1.497 = (2338000 * 100.000) / (150774293 * 1.036)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-PeCDD, RT: 22.973

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDD	1.086	D 13C-1,2,3,7,8-PeCDD	100.000	95956922	15002667

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.086		100.000	95956922	15002667

Sum the Uncalibrated Results

RT	355.8546 Area	355.8546 Height	357.8516 Area	357.8516 Height	Amount	Ratio	Flags
20.900	496349	89805	363357	66299	0.8254	1.37	
21.650	531967	107351	346222	68724	0.8431	1.54	M
22.059	125597	22879	69865	13156	0.1877	1.80	RQ
22.059	108290	20391	69865	13156	0.1710		Empc Correction
22.918	87615	16661	59849	12342	0.1416	1.46	
23.068	387224	60857	265580	39021	0.6267	1.46	M
Signal Totals:							
	1611445	295065	1104873	199542			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2733625	497095				1.47	RQM
	2716318	494607					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 2.624 = (2733625 * 100.000) / (95956922 * 1.086)
Empc Amount: 2.608 = (2716318 * 100.000) / (95956922 * 1.086)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDF, RT: 29.880

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDF	1.147	D 13C-1,2,3,4,7,8-HxCDF	100.000	131559880	21099201
1,2,3,6,7,8-HxCDF	1.145	D 13C-1,2,3,6,7,8-HxCDF	100.000	130330007	21043231
2,3,4,6,7,8-HxCDF	1.173	D 13C-2,3,4,6,7,8-HxCDF	100.000	123077720	27343715
1,2,3,7,8,9-HxCDF	1.172	D 13C-1,2,3,7,8,9-HxCDF	100.000	115446572	28219799

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.159		100.000	125103544	24426486

Sum the Uncalibrated Results

RT	373.8208 Area	373.8208 Height	375.8178 Area	375.8178 Height	Amount	Ratio	Flags
27.490	391316	52143	291508	43452	0.4709	1.34	
27.889	1324854	178204	1152189	141105	1.71	1.15	
29.194	1498423	187816	1225535	145357	1.88	1.22	
32.244	103006	30913	106549	25562	0.1445	0.97	RQMa
32.244	103006	30913	83069	24929	0.1283		Empc Correction
Signal Totals:							
	3317599	449076	2752301	354843			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6093380	804552				1.20	RQMa
	6069900	803919					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.202 = (6093380 * 100.000) / (125103544 * 1.159)
Empc Amount: 4.186 = (6069900 * 100.000) / (125103544 * 1.159)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated
a - User Assigned ID

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-HxCDD, RT: 30.519

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093	D 13C-1,2,3,4,7,8-HxCDD	100.000	94787197	24688516
1,2,3,6,7,8-HxCDD	1.043	D 13C-1,2,3,6,7,8-HxCDD	100.000	104772012	23176144
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.115		100.000	99779604	23932330

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
29.048	7186469	868025	5497496	672084	11.4	1.31	
30.260	556988	70135	388363	52349	0.8501	1.43	
30.699	3023165	545889	2378158	422695	4.86	1.27	
30.912	432994	91219	376016	70981	0.7275	1.15	
Signal Totals:							
	11199616	1575268	8640033	1218109			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	19839649	2793377				1.30	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 17.840 = (19839649 * 100.000) / (99779604 * 1.115)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDF, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDF	1.480	D 13C-1,2,3,4,6,7,8-HpCDF	100.000	85552426	27914095
1,2,3,4,7,8,9-HpCDF	1.293	D 13C-1,2,3,4,7,8,9-HpCDF	100.000	88692649	25722632

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.387		100.000	87122537	26818363

Sum the Uncalibrated Results

RT	407.7818 Area	407.7818 Height	409.7789 Area	409.7789 Height	Amount	Ratio	Flags
33.919	5701013	1845912	5380999	1752562	9.17	1.06	
Signal Totals:							
	5701013	1845912	5380999	1752562			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	11082012	3598474				1.06	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 9.172 = (11082012 * 100.000) / (87122537 * 1.387)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Inject. Date: 19-Dec-2019 21:19:13 Dil. Factor: 1.0000
Sample Type: Client Sample
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 14

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	85025924	25776928

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	85025924	25776928

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	41186823	13283482	39627006	12561528	90.2	1.04	
Signal Totals:							
	41186823	13283482	39627006	12561528			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	80813829	25845010				1.04	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 90.216 = (80813829 * 100.000) / (85025924 * 1.054)

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

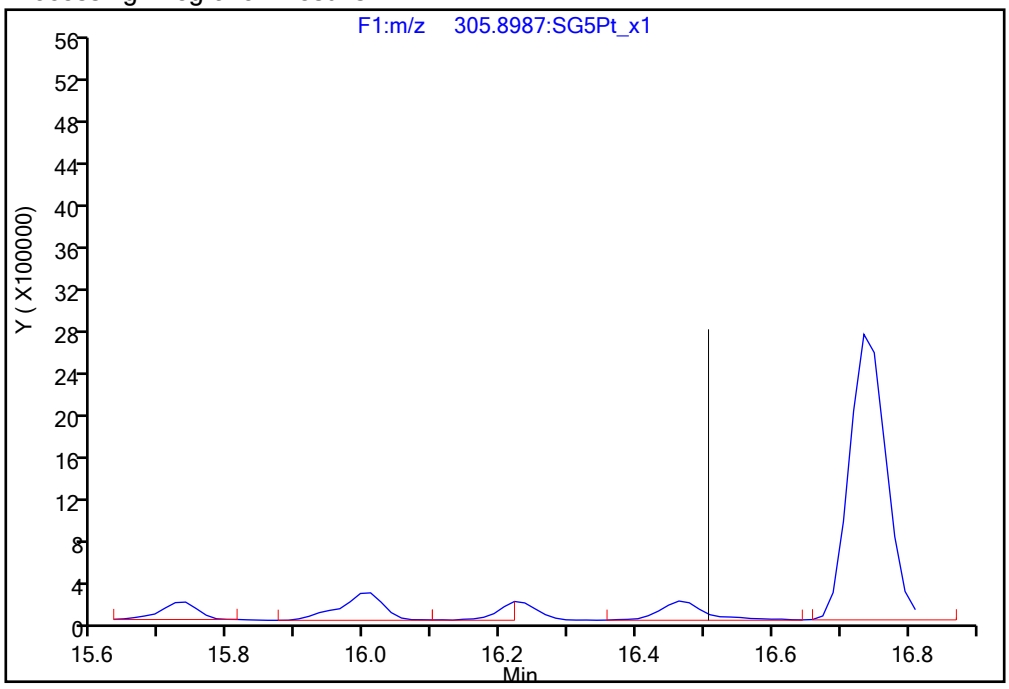
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDF, Signal: 2, m/z: 305.8987, RT: (14.69- 18.93)

Signal: 2

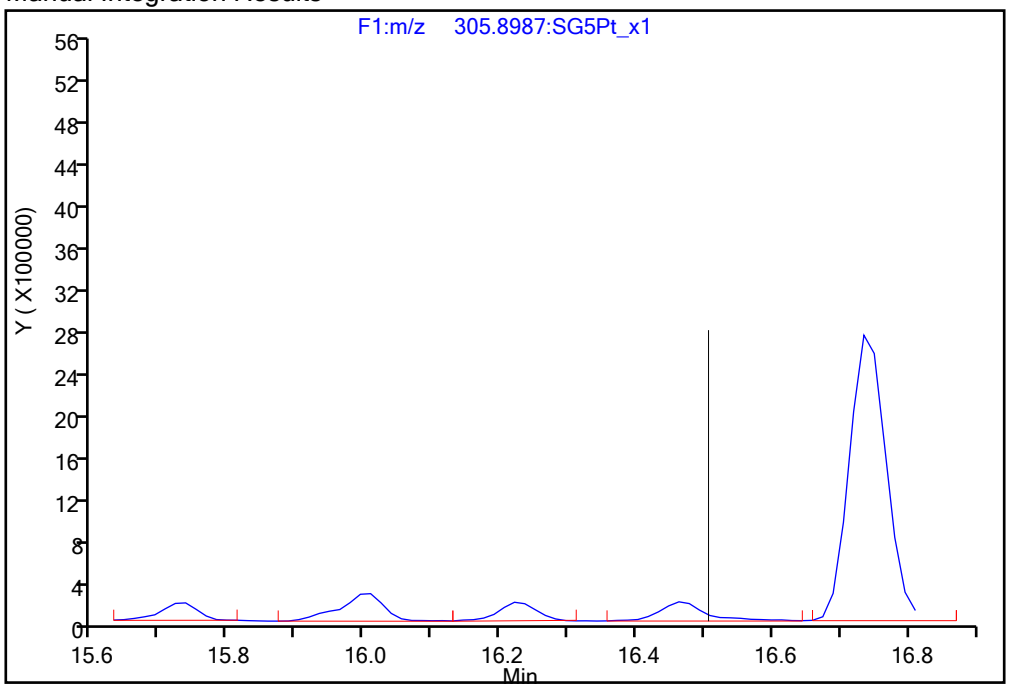
Processing Integration Results

RT = 16.206 Area = 308573



Manual Integration Results

RT = 16.221 Area = 679541 M



Reviewer: dadunj, 20-Dec-2019 14:42:55

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

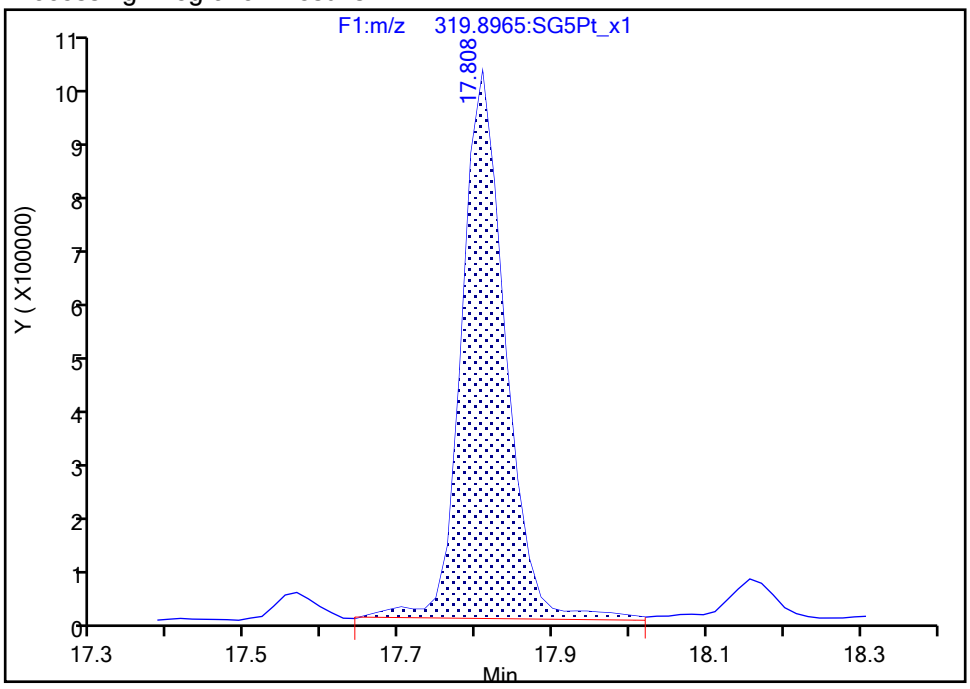
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 1

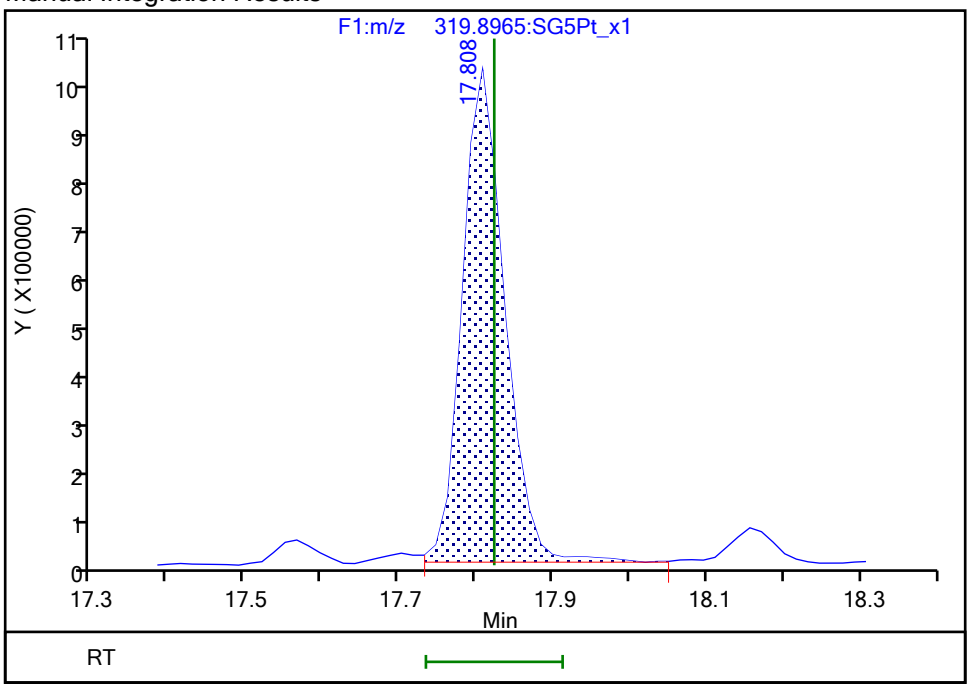
Processing Integration Results

RT: 17.81
Area: 4043089
Amount: 6.749002
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 3914816
Amount: 6.604868
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:43:23

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

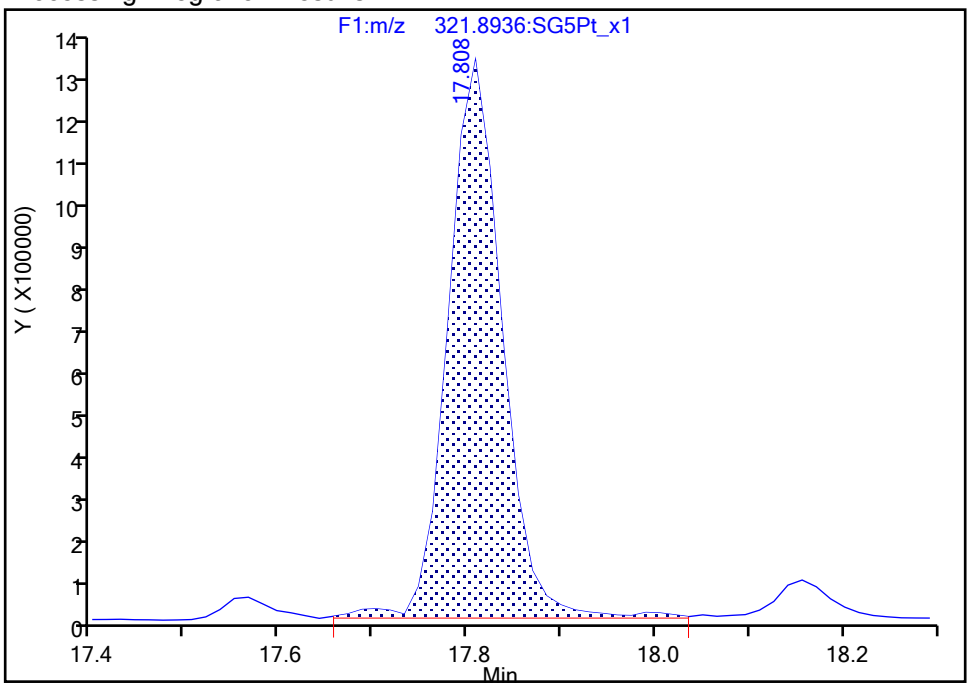
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

2,3,7,8-TCDD, CAS: 1746-01-6

Signal: 2

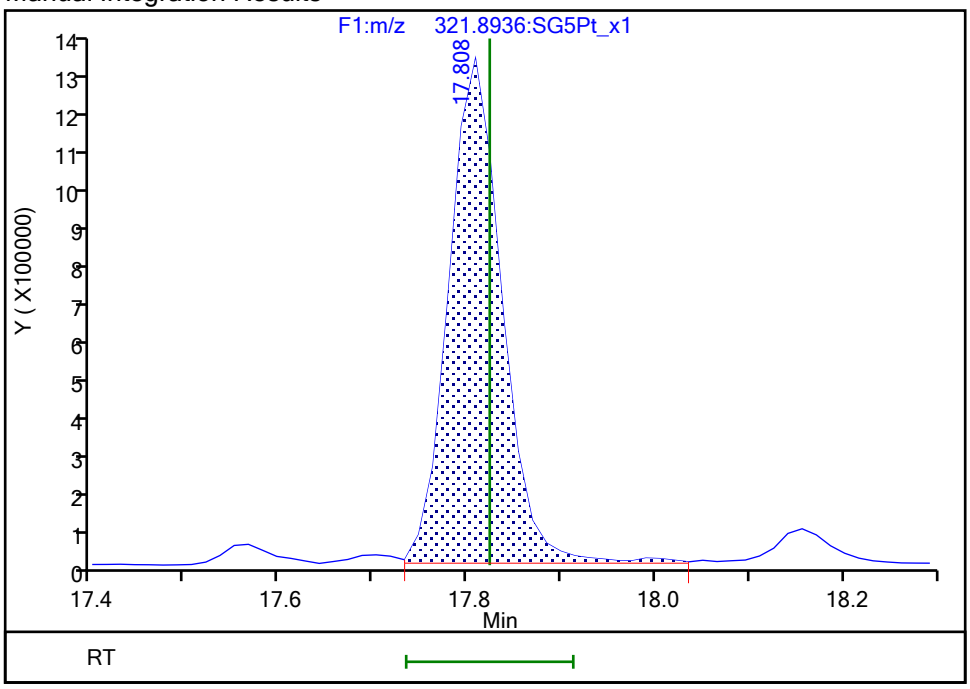
Processing Integration Results

RT: 17.81
Area: 5138744
Amount: 6.749002
Amount Units: pg/ul



Manual Integration Results

RT: 17.81
Area: 5070926
Amount: 6.604868
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:43:25

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Eurofins TestAmerica, Sacramento

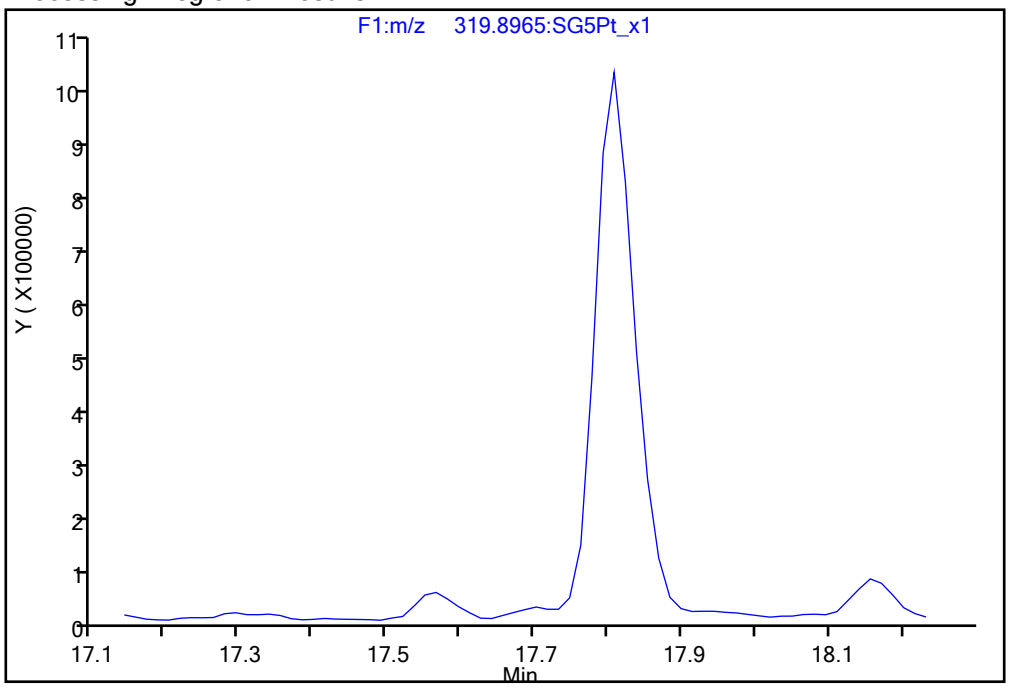
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F1:HRSIR		

Non-2,3,7,8-sub-TCDD, Signal: 1, m/z: 319.8965, RT: (15.59- 18.91)

Signal: 1

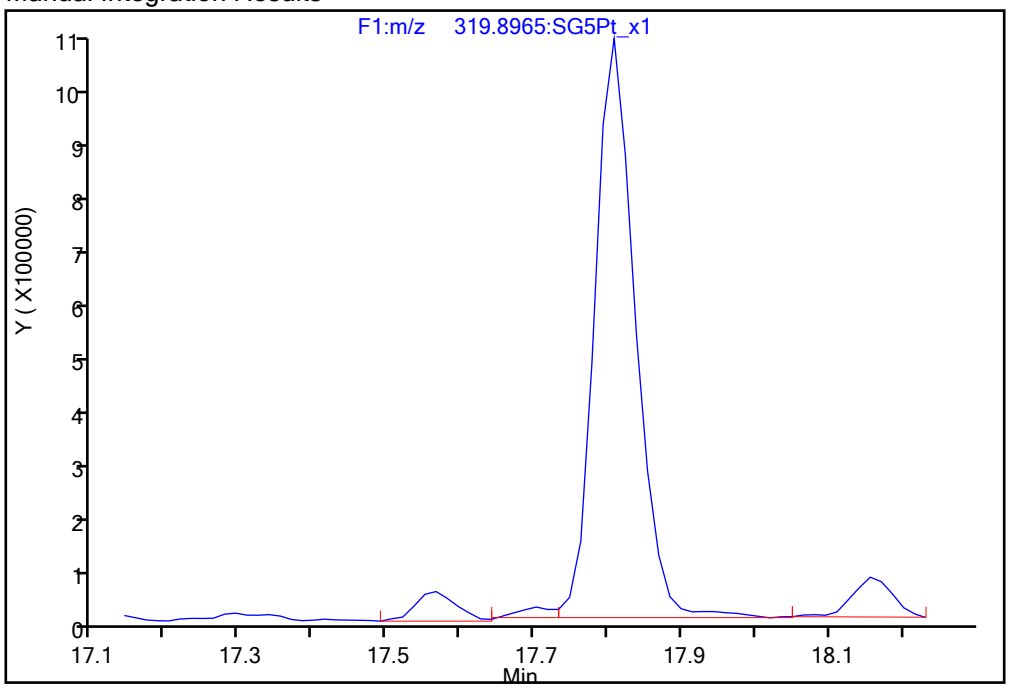
Not Detected
RT: 15.59- 18.91

Processing Integration Results



Manual Integration Results

RT = 17.702 Area = 58303 M



Reviewer: dadunj, 20-Dec-2019 14:43:32
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

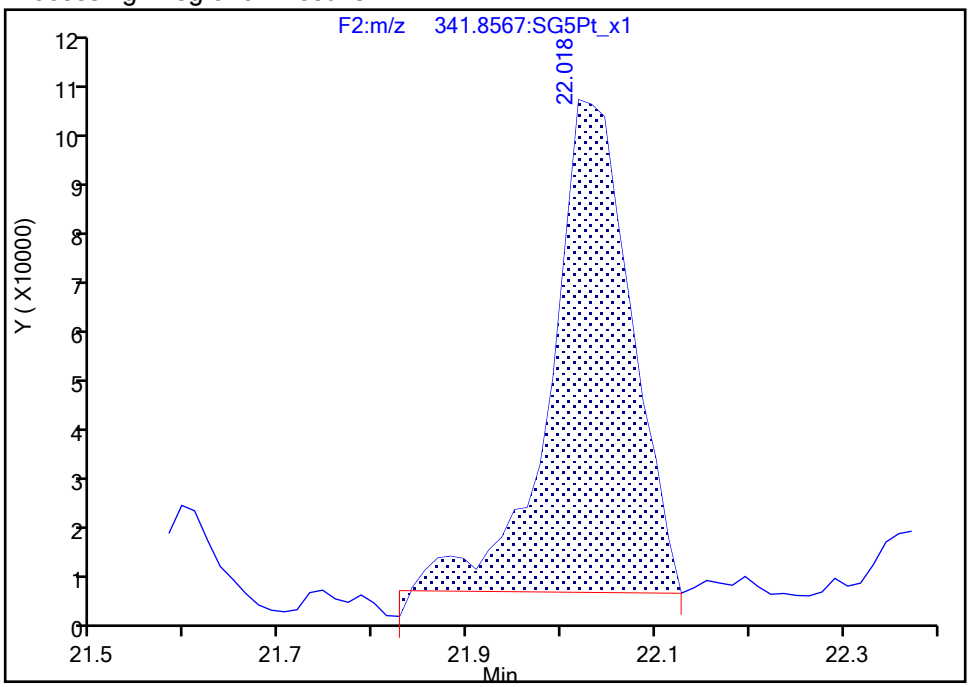
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

1,2,3,7,8-PeCDF, CAS: 57117-41-6

Signal: 2

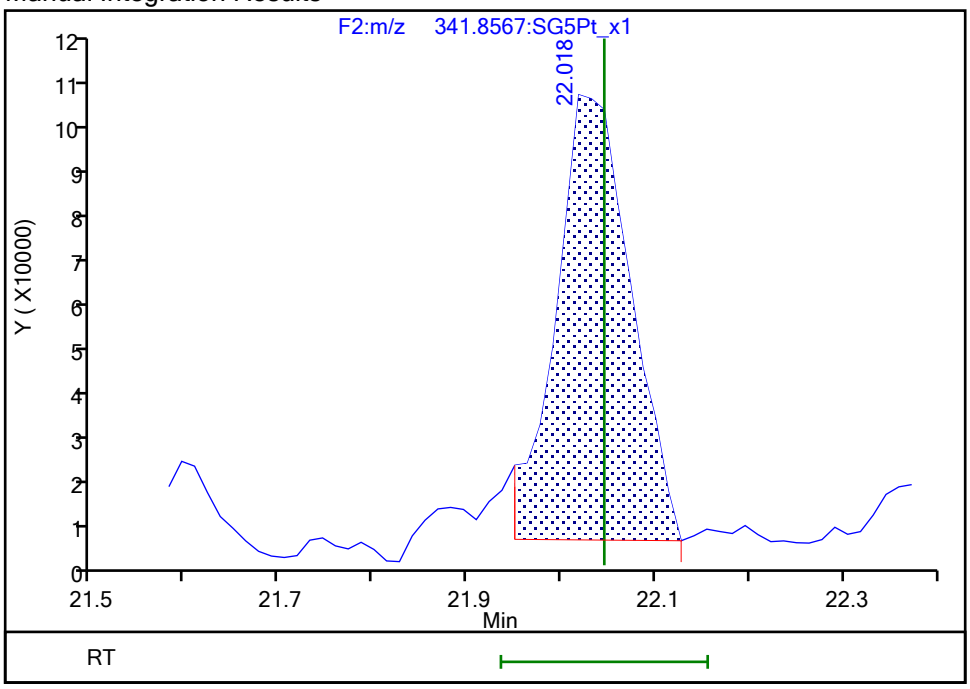
Processing Integration Results

RT: 22.02
Area: 538292
Amount: 0.859880
Amount Units: pg/ul



Manual Integration Results

RT: 22.02
Area: 497985
Amount: 0.833757
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:43:39

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

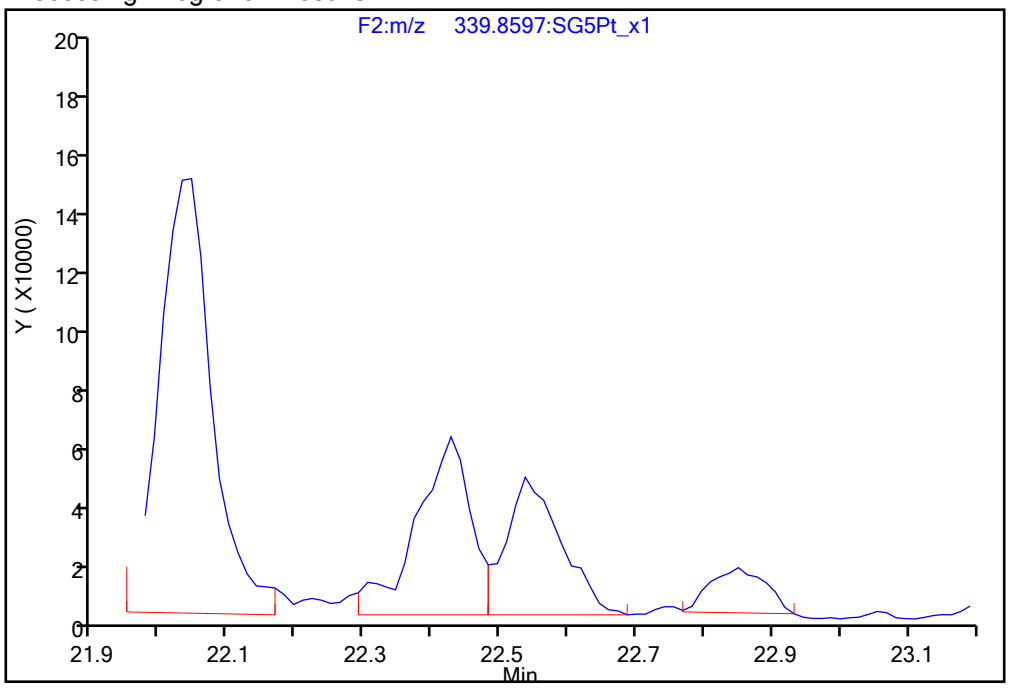
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDF, Signal: 1, m/z: 339.8597, RT: (20.42- 25.29)

Signal: 1

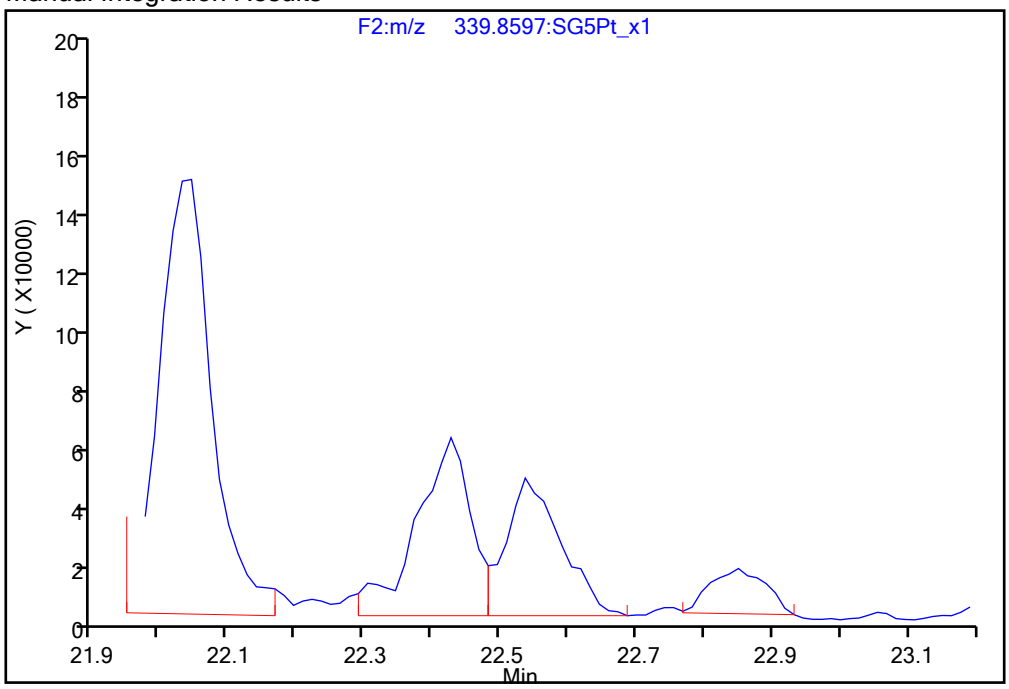
Processing Integration Results

RT = 22.537 Area = 257471



Manual Integration Results

RT = 22.537 Area = 257471



Reviewer: dadunj, 20-Dec-2019 14:44:00

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

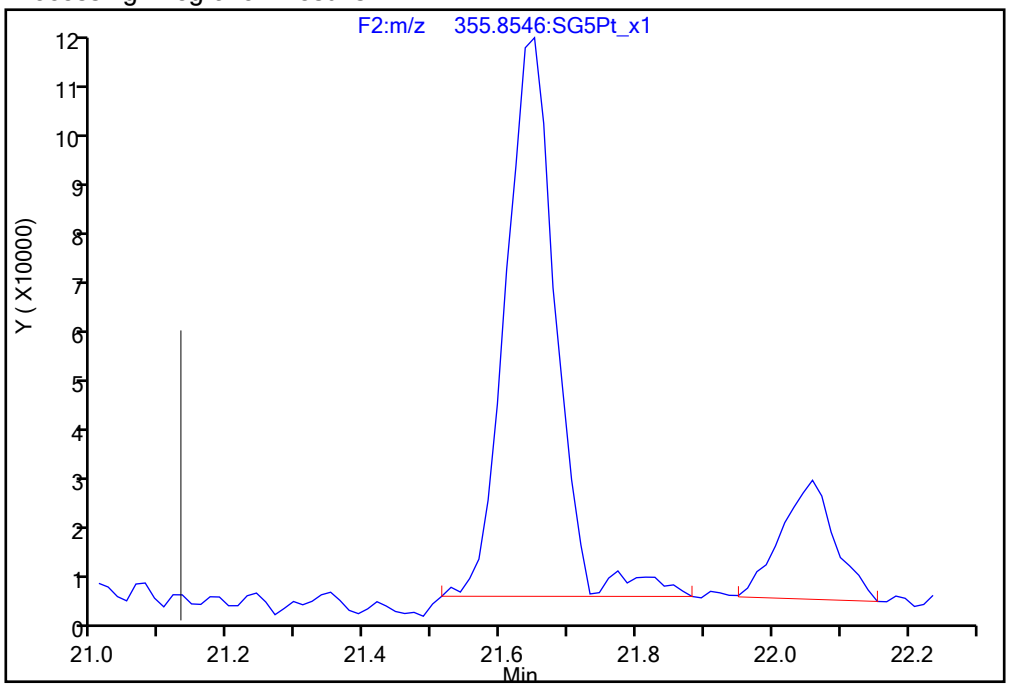
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

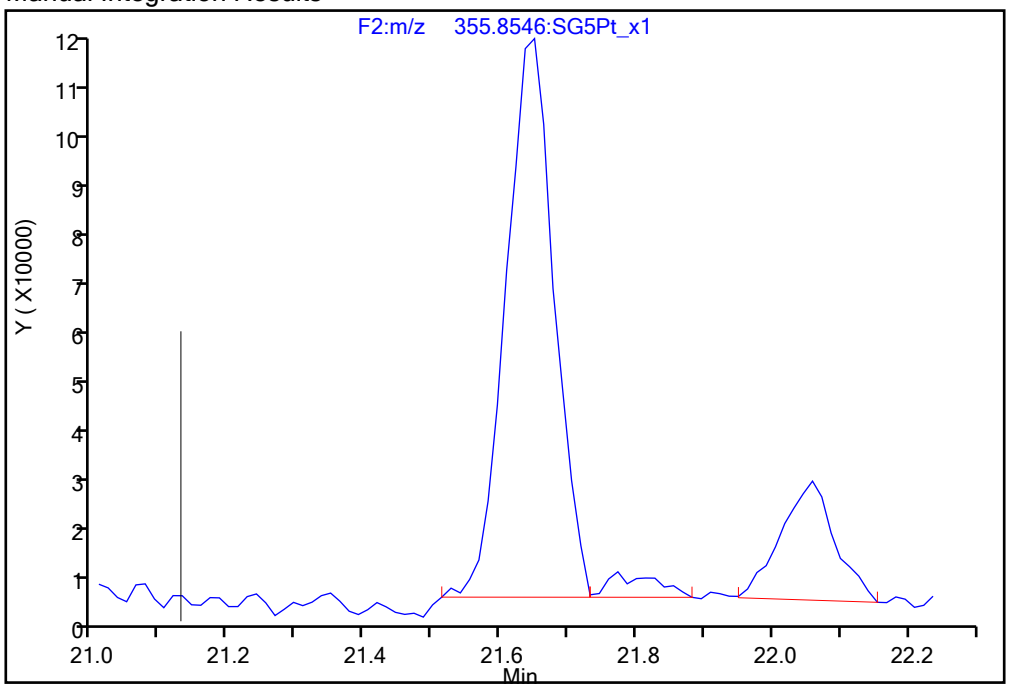
Processing Integration Results

RT = 21.650 Area = 554964



Manual Integration Results

RT = 21.650 Area = 531967 M



Reviewer: dadunj, 20-Dec-2019 14:44:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

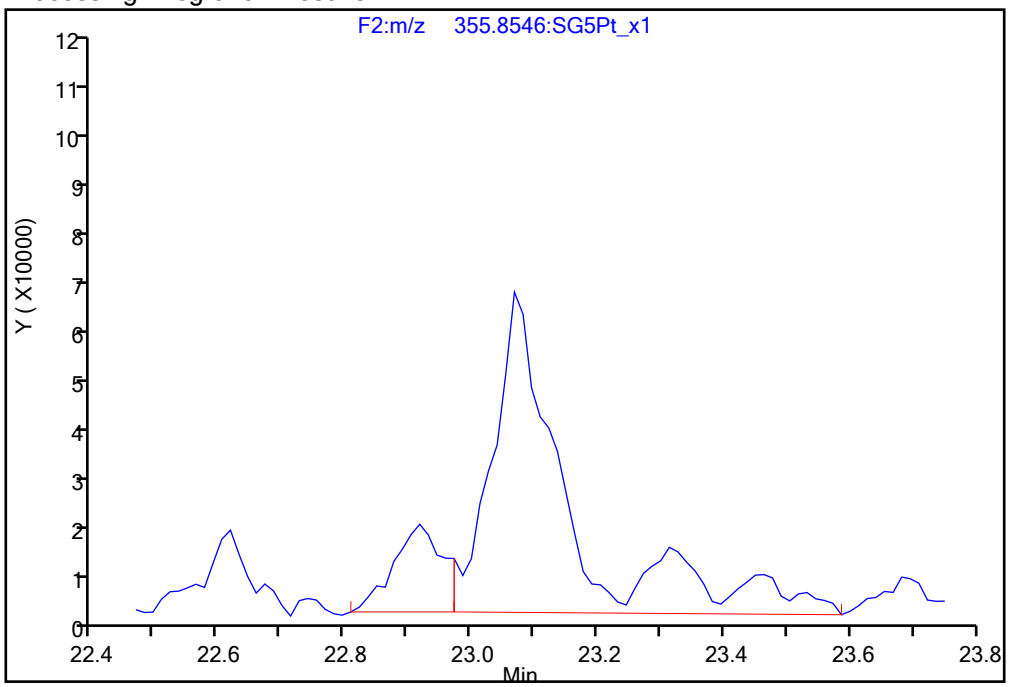
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

Non-2,3,7,8-sub-PeCDD, Signal: 1, m/z: 355.8546, RT: (20.87- 25.08)

Signal: 1

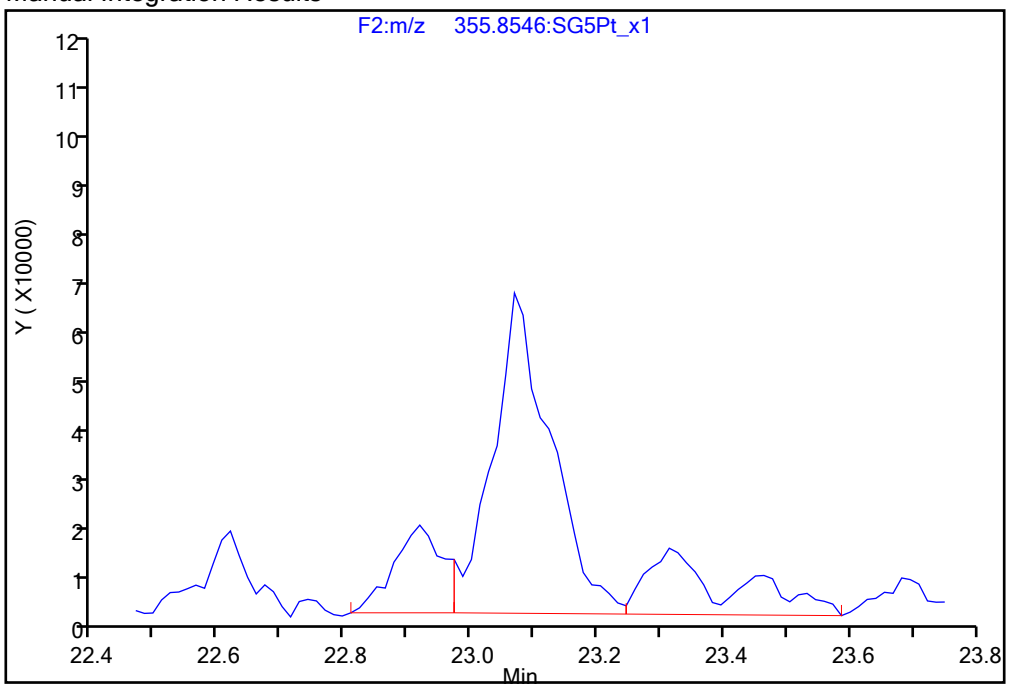
Processing Integration Results

RT = 23.068 Area = 503442



Manual Integration Results

RT = 23.068 Area = 387224 M



Reviewer: dadunj, 20-Dec-2019 14:44:13

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

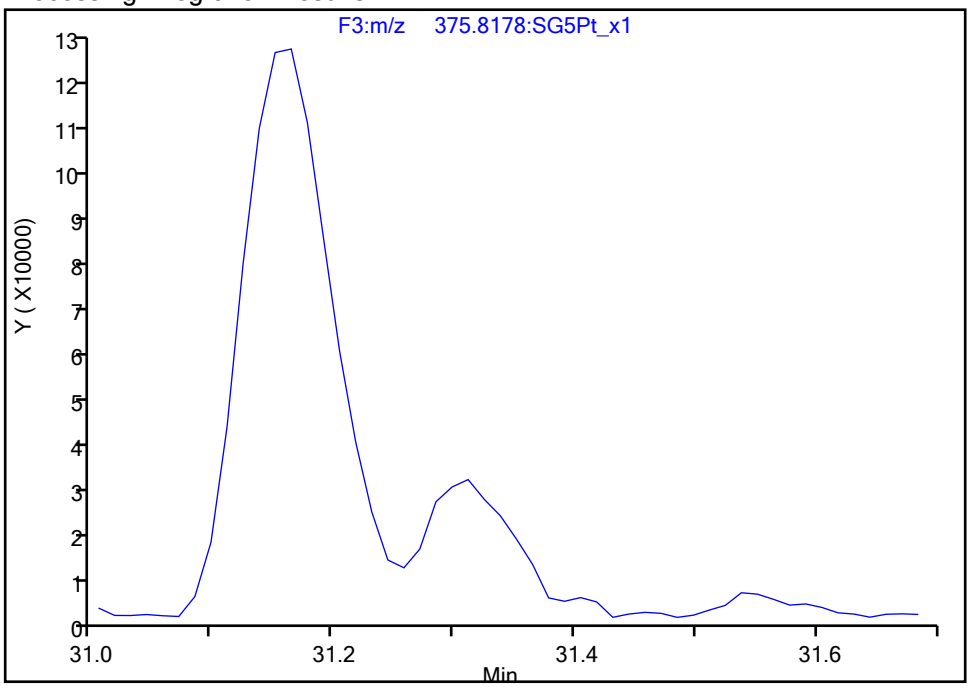
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 2

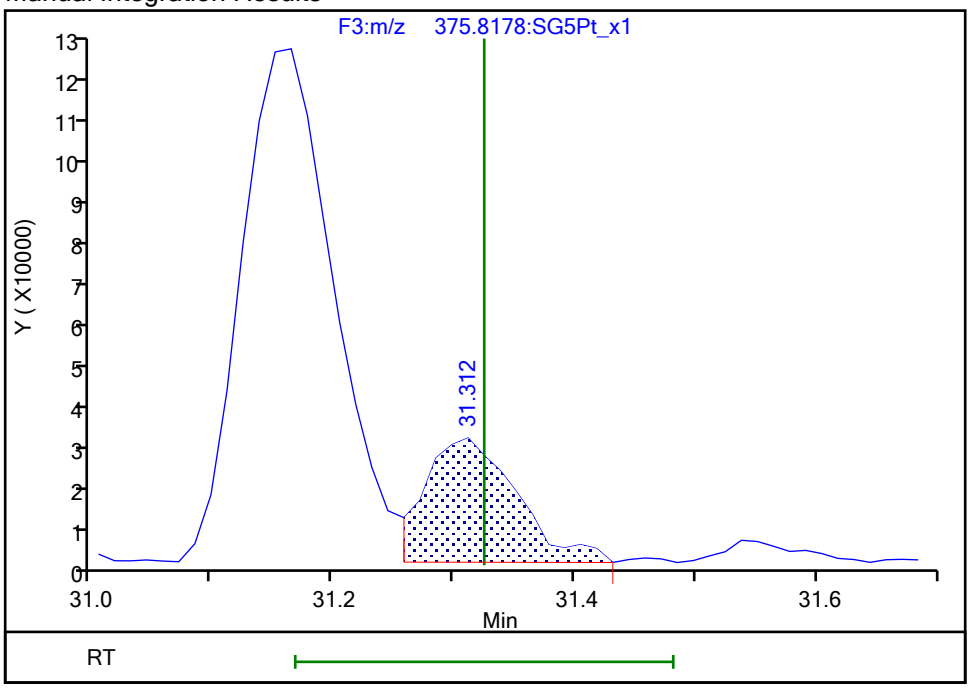
Not Detected
Expected RT: 31.32

Processing Integration Results



Manual Integration Results

RT: 31.31
Area: 152218
Amount: 0.213842
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:44:50
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

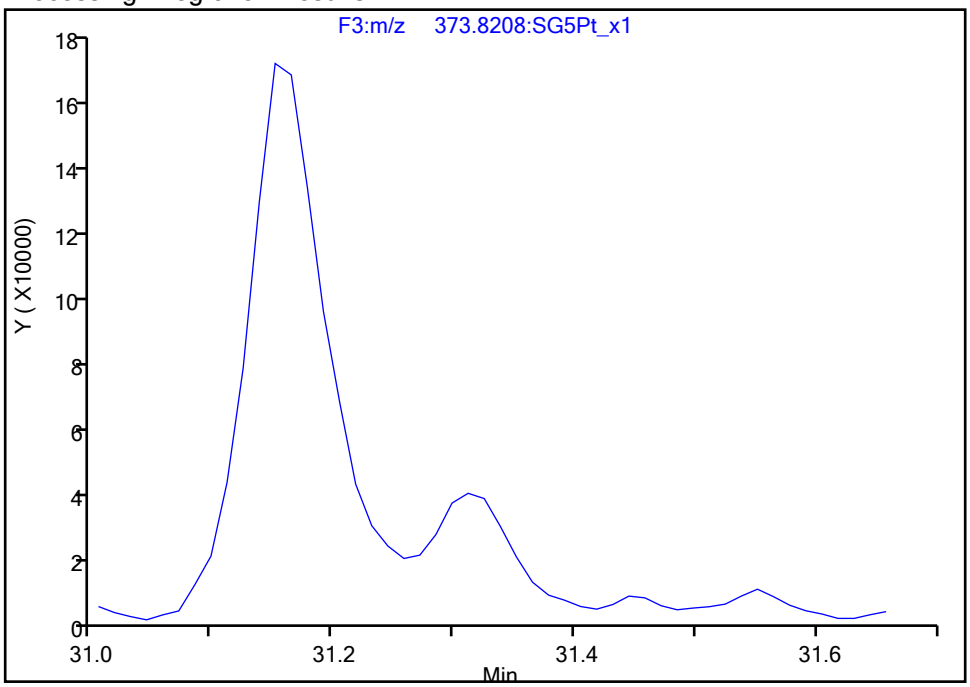
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

2,3,4,6,7,8-HxCDF, CAS: 60851-34-5

Signal: 1

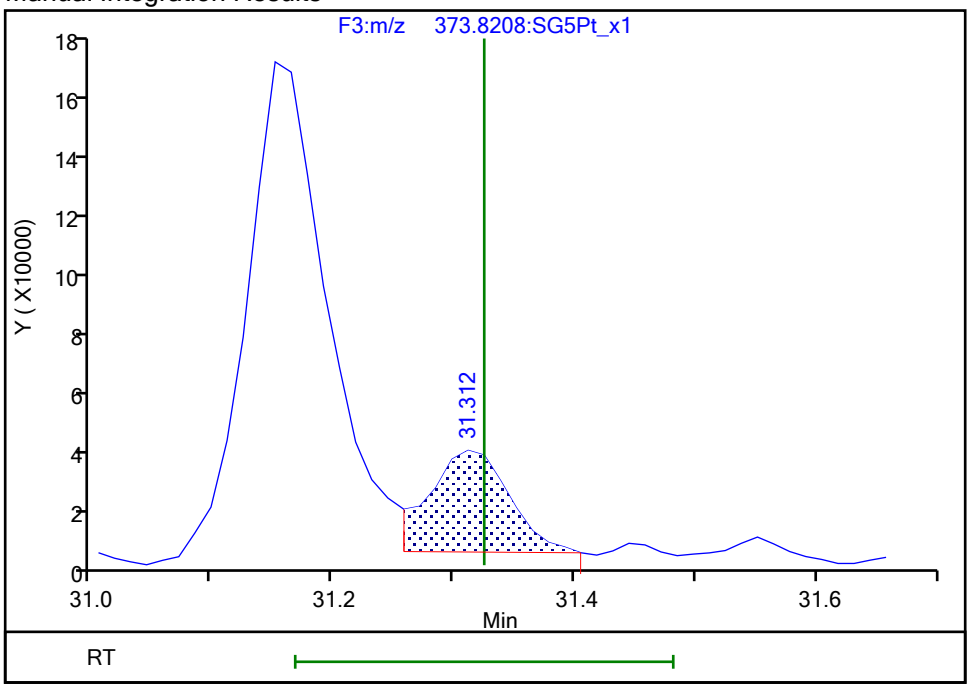
Not Detected
Expected RT: 31.32

Processing Integration Results



Manual Integration Results

RT: 31.31
Area: 156396
Amount: 0.213842
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:44:55
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

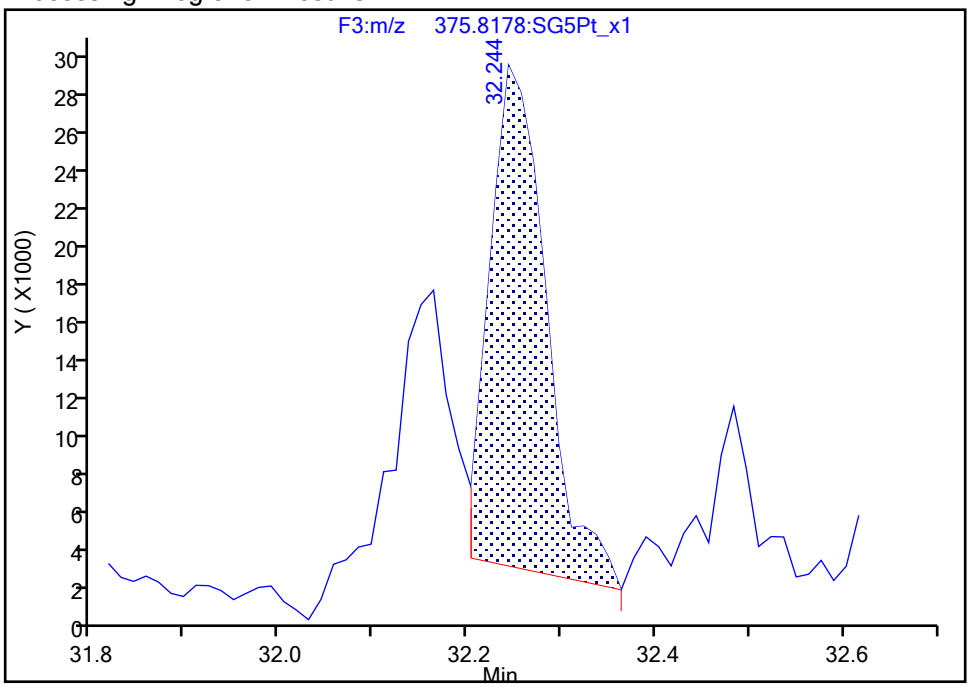
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 2

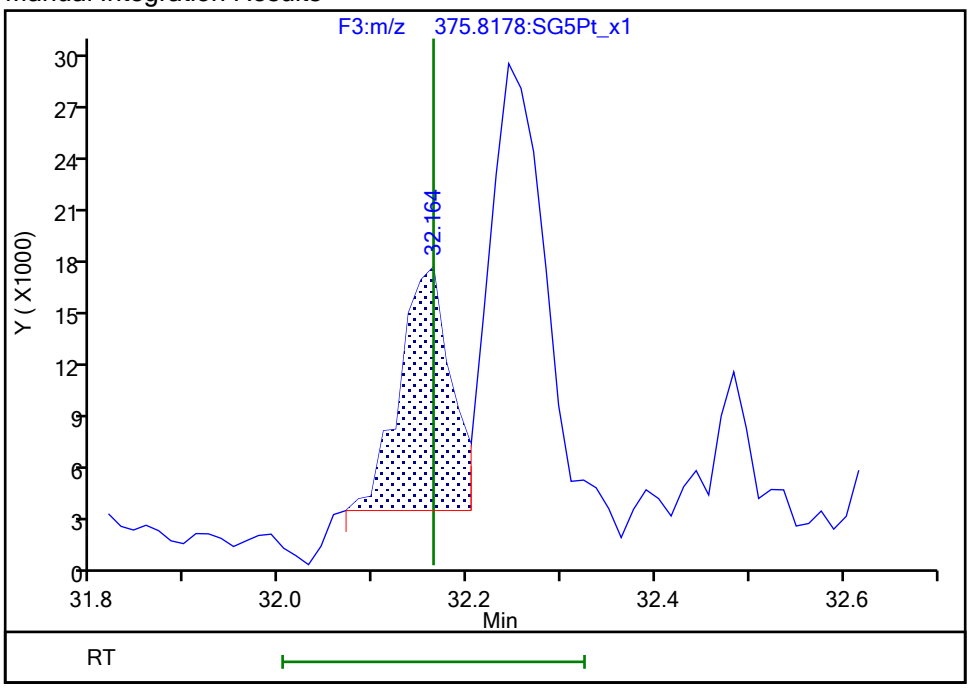
Processing Integration Results

RT: 32.24
Area: 106549
Amount: 0.200042
Amount Units: pg/ul



Manual Integration Results

RT: 32.16
Area: 51540
Amount: 0.083221
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:45:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

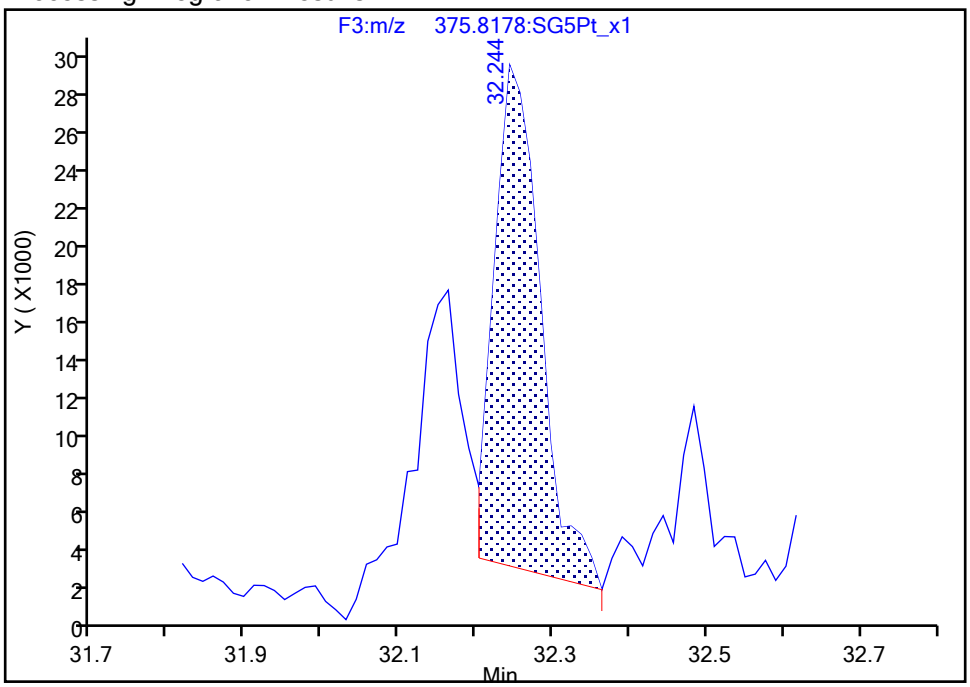
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 3

Processing Integration Results

RT: 32.24
Area: 270583
Amount: 0.200042
Amount Units: pg/ul



Manual Integration Results

RT: 32.16
Area: 112567
Amount: 0.083221
Amount Units: pg/ul
Reviewer: dadunj, 20-Dec-2019 14:45:00
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

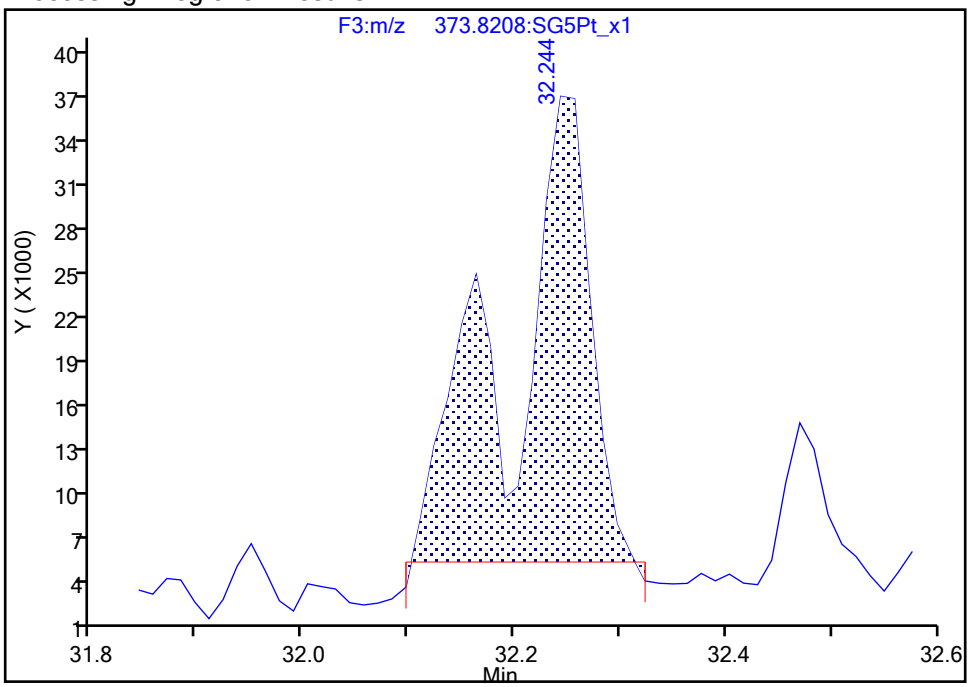
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDF, CAS: 72918-21-9

Signal: 1

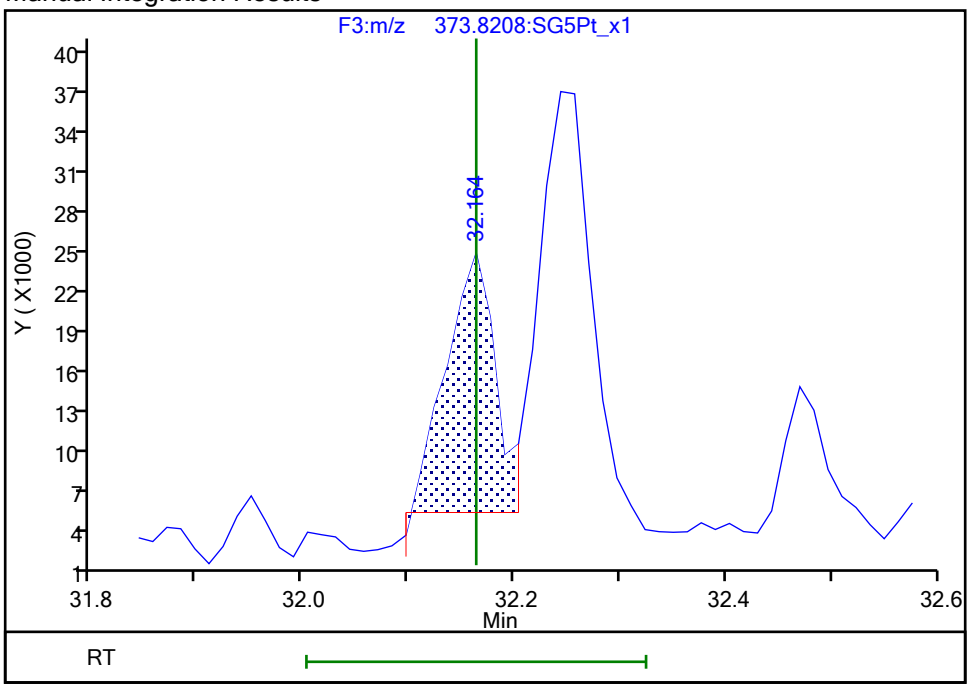
Processing Integration Results

RT: 32.24
Area: 164034
Amount: 0.200042
Amount Units: pg/ul



Manual Integration Results

RT: 32.16
Area: 61027
Amount: 0.083221
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:45:01

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

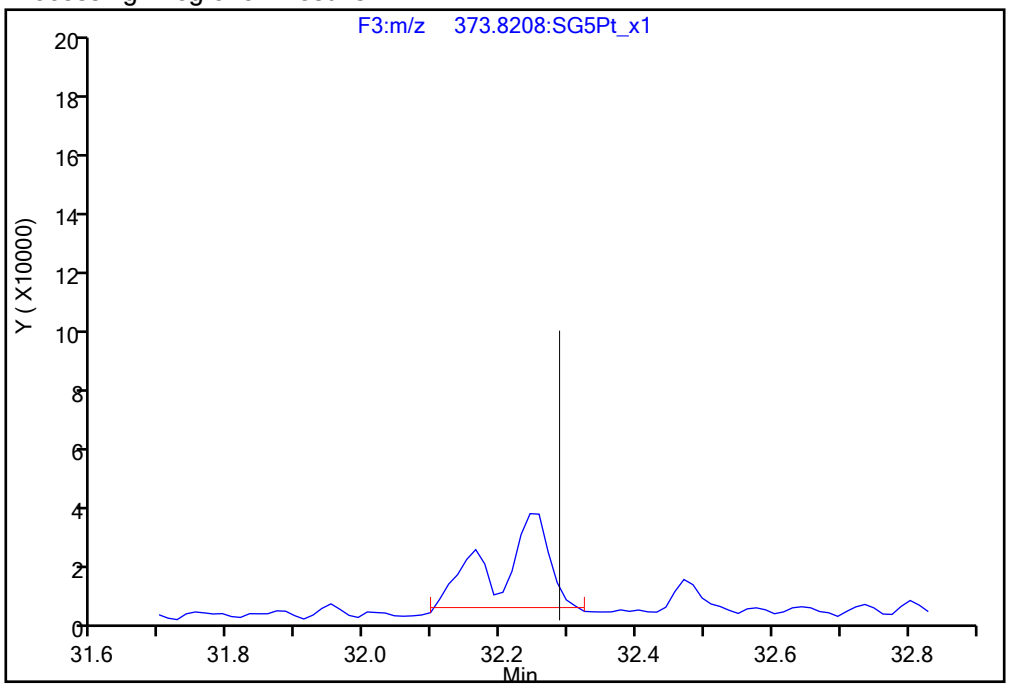
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

Non-2,3,7,8-sub-HxCDF, Signal: 1, m/z: 373.8208, RT: (27.47- 32.29)

Signal: 1

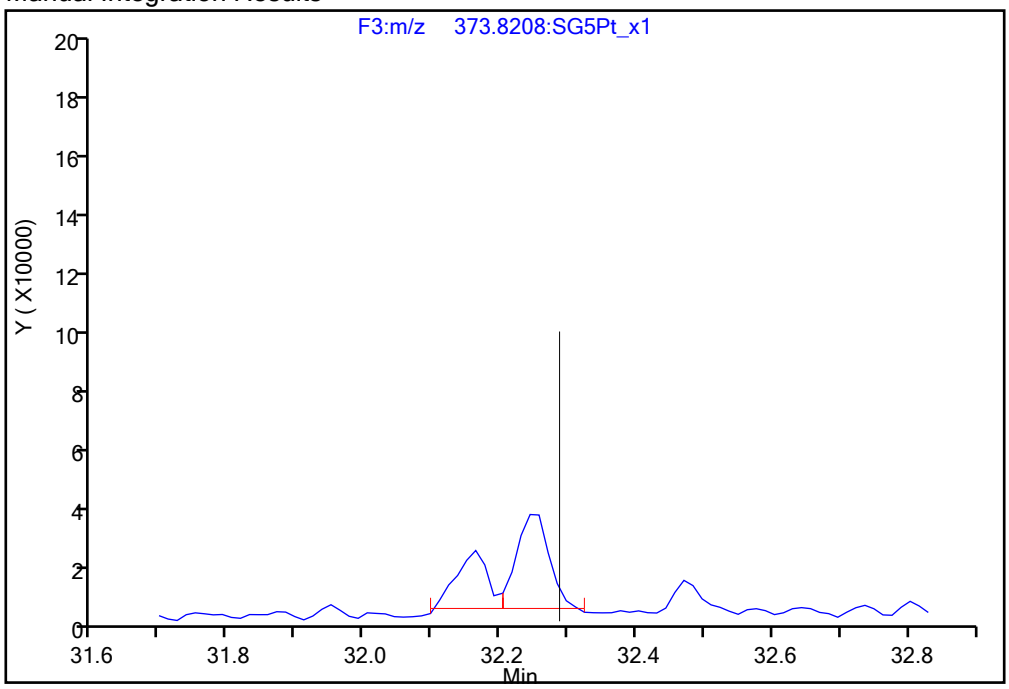
Processing Integration Results

RT = 32.244 Area = 164034



Manual Integration Results

RT = 32.244 Area = 103006 M



Reviewer: dadunj, 20-Dec-2019 14:45:15

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

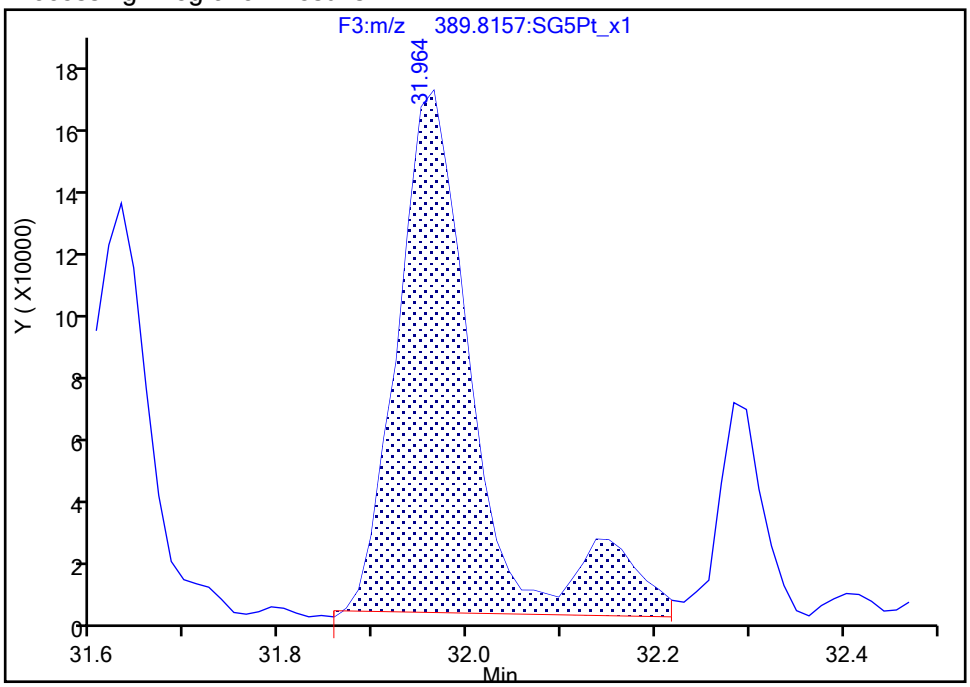
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

1,2,3,7,8,9-HxCDD, CAS: 19408-74-3

Signal: 1

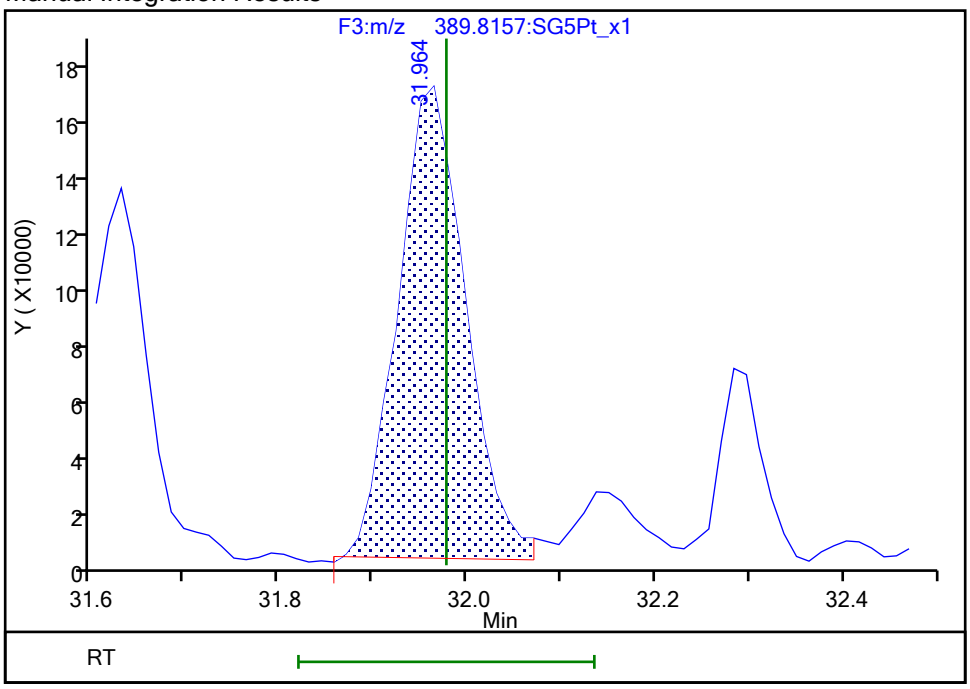
Processing Integration Results

RT: 31.96
Area: 926521
Amount: 1.310421
Amount Units: pg/ul



Manual Integration Results

RT: 31.96
Area: 808872
Amount: 1.212760
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:45:50

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

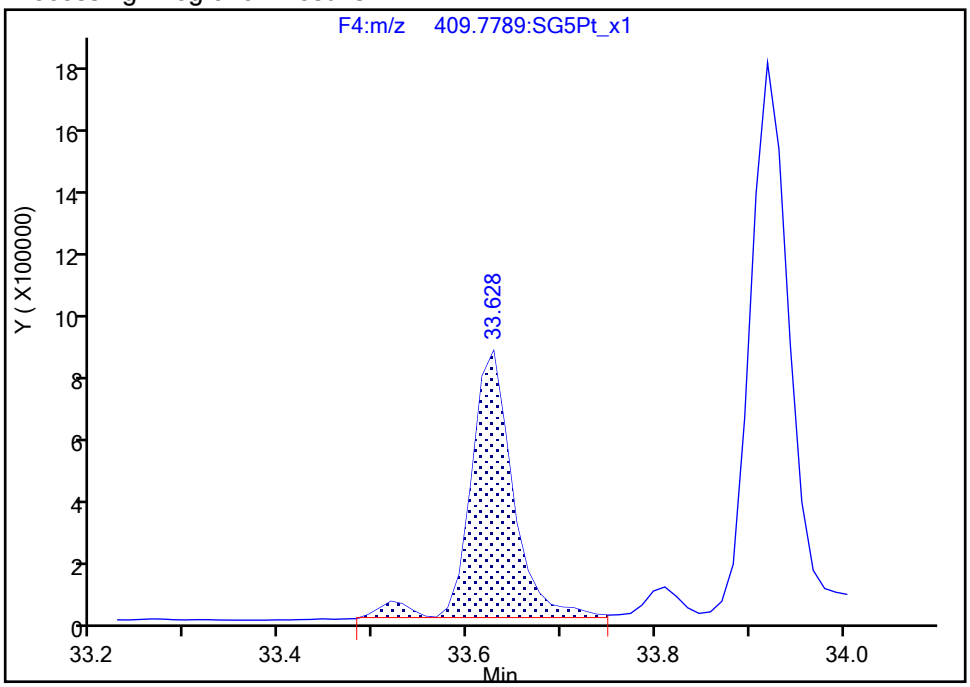
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d				
Injection Date:	19-Dec-2019 21:19:13	Instrument ID:	3D5		
Lims ID:	320-56953-A-8-A	Lab Sample ID:	320-56953-8		
Client ID:	11187072-120919-BN-SJSSA04(4-6)				
Operator ID:	AJS	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

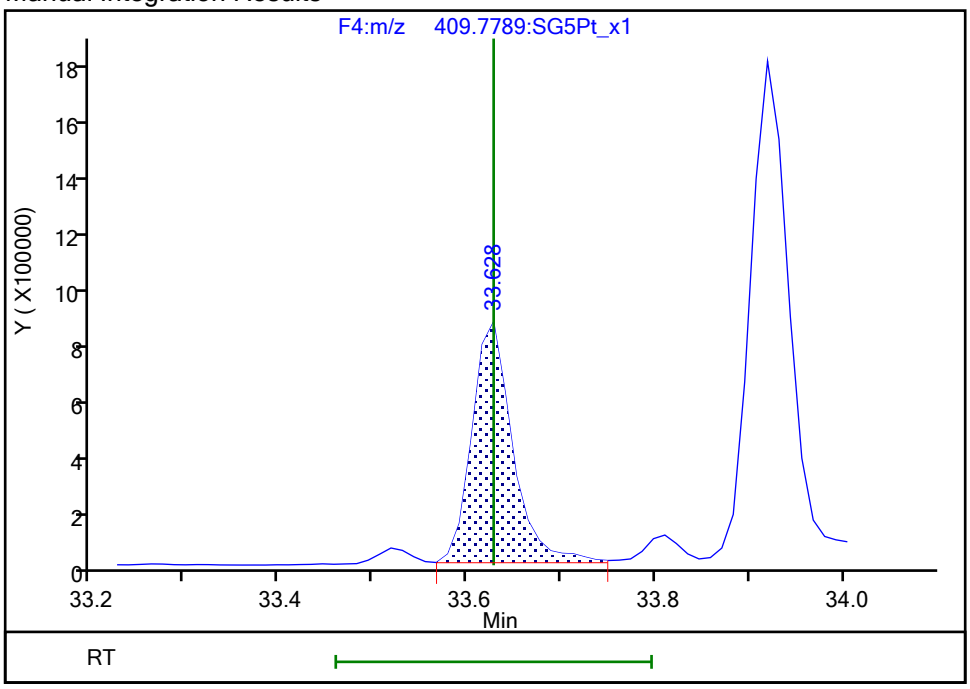
Processing Integration Results

RT: 33.63
Area: 2635769
Amount: 4.334930
Amount Units: pg/ul



Manual Integration Results

RT: 33.63
Area: 2521432
Amount: 4.244650
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:45:55

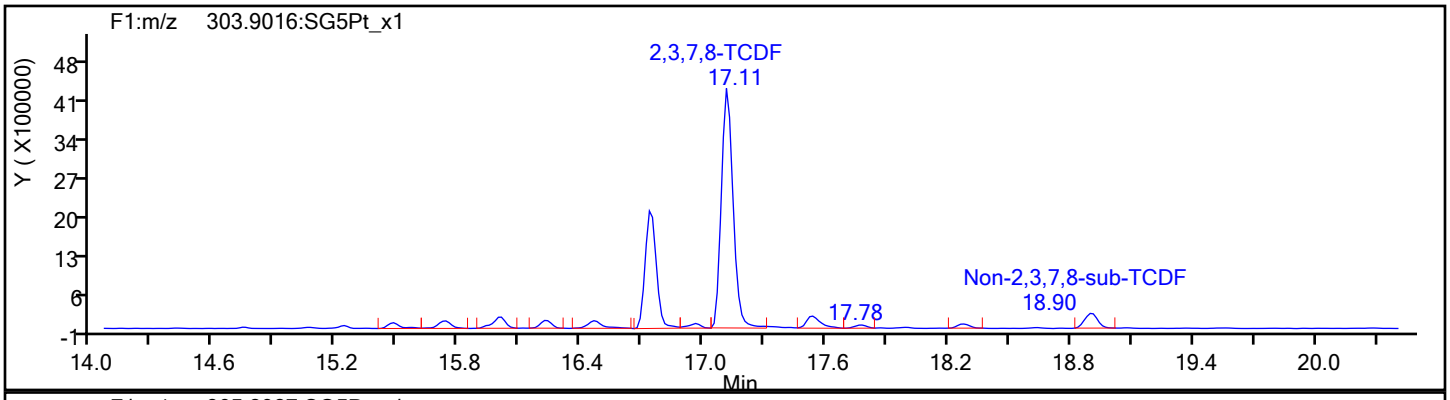
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

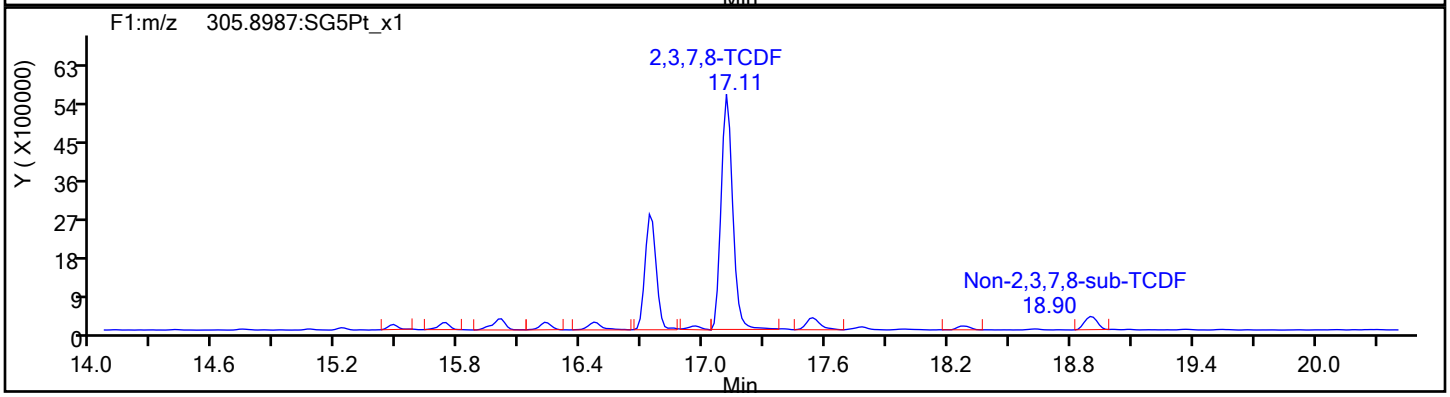
Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

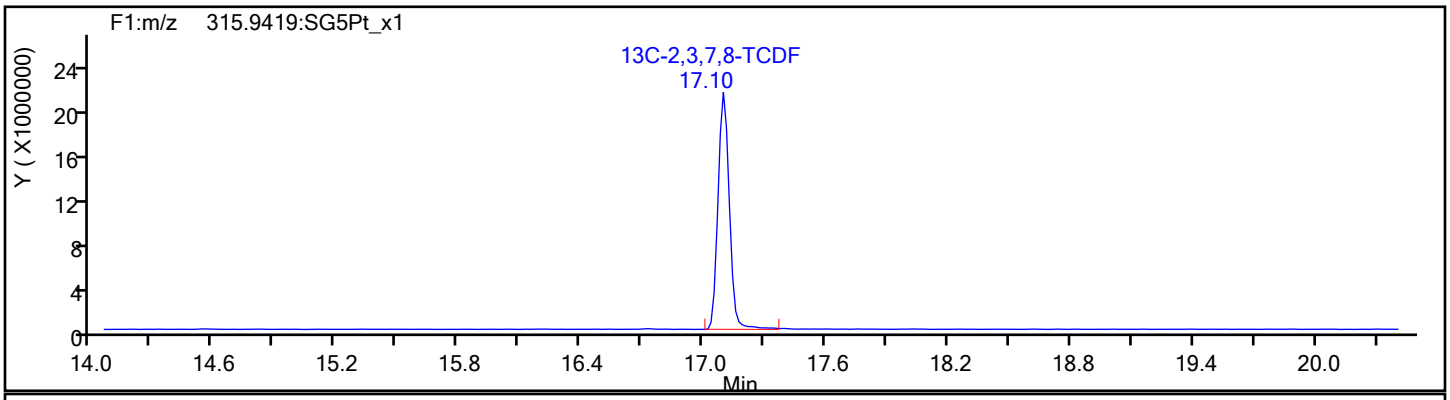
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

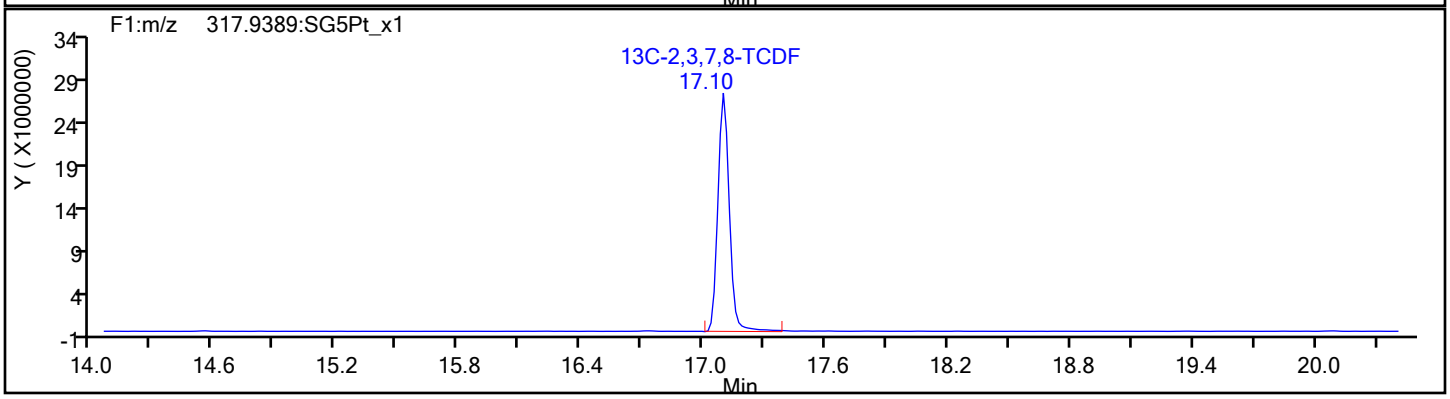
TCDF





TCDF Standards





Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
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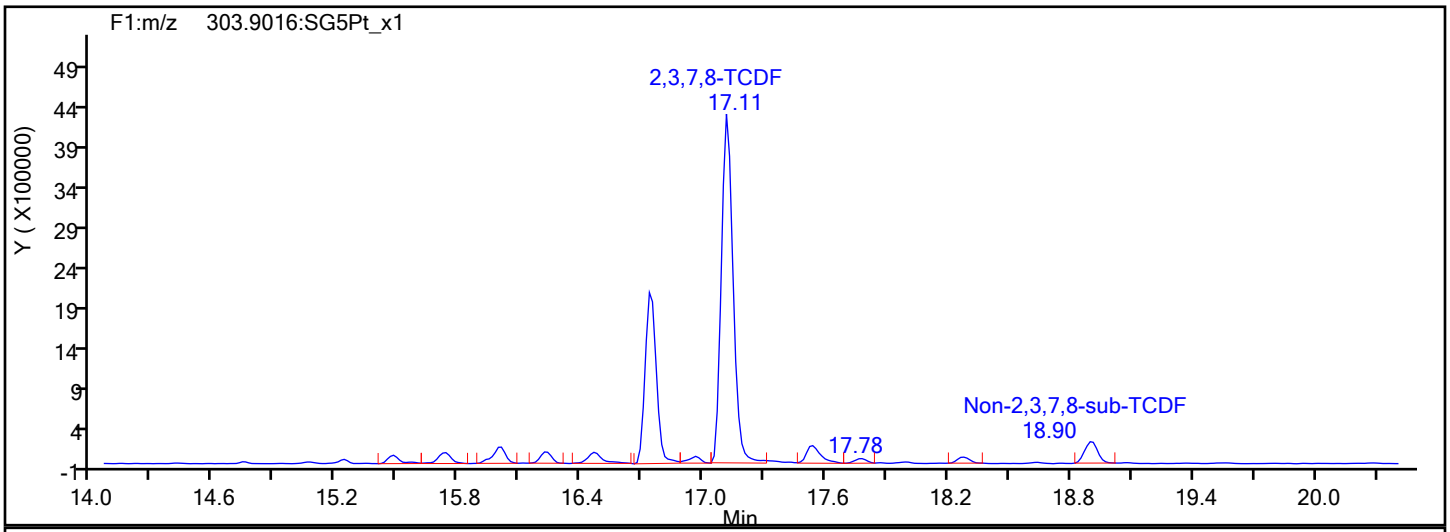
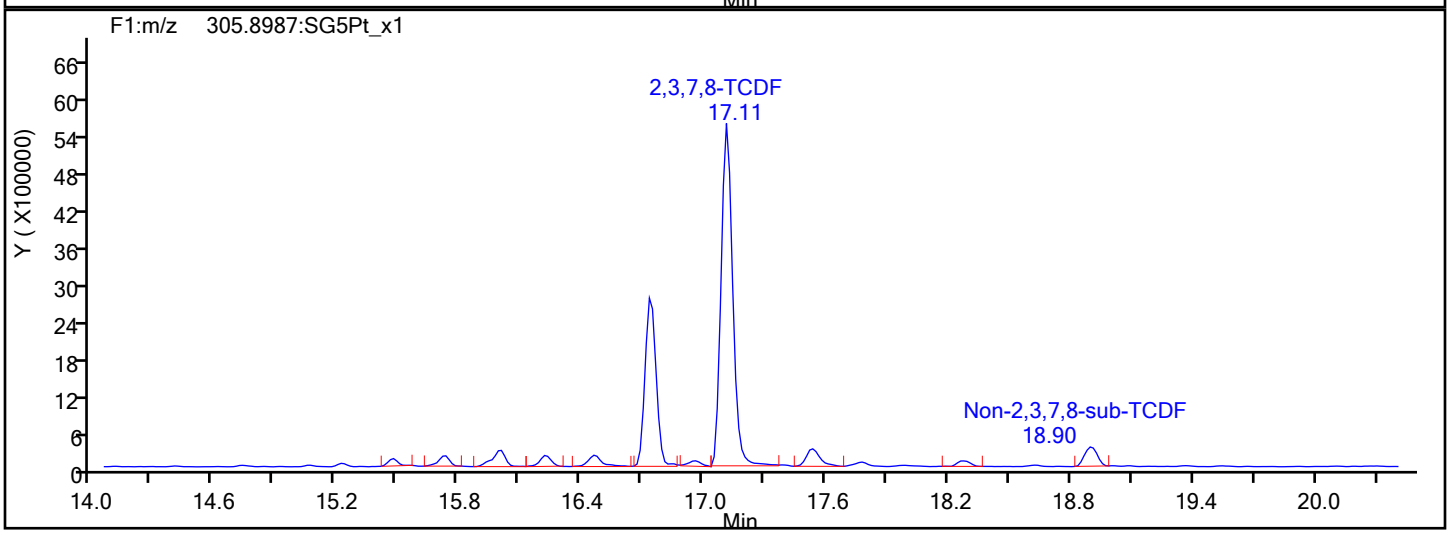
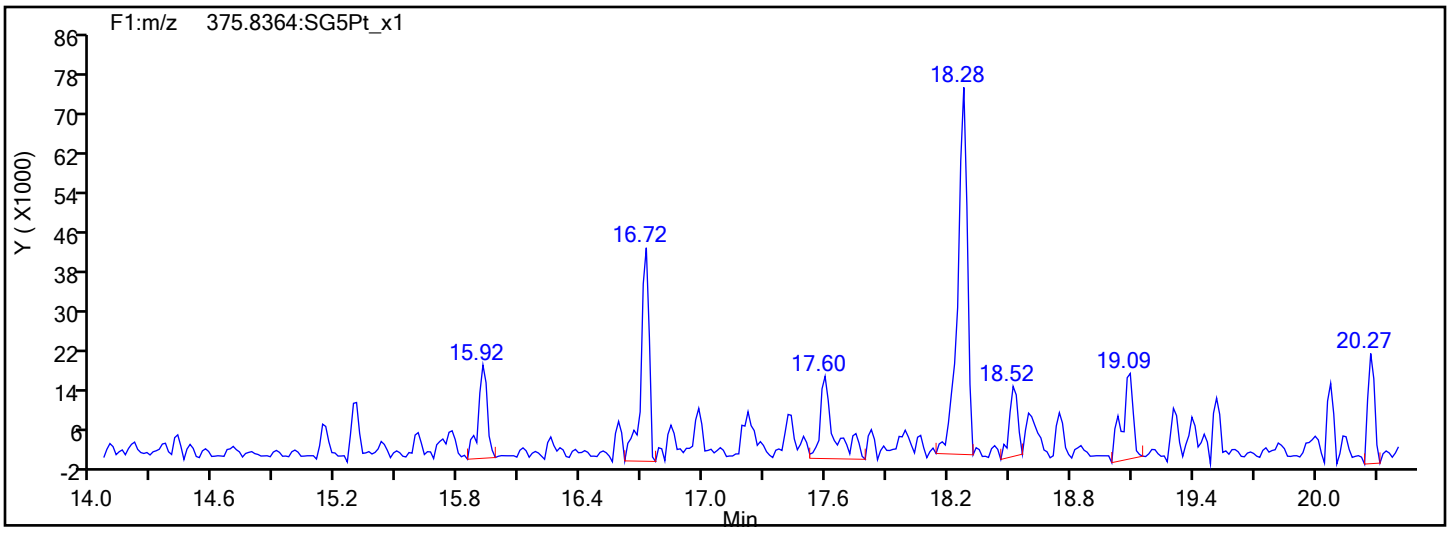
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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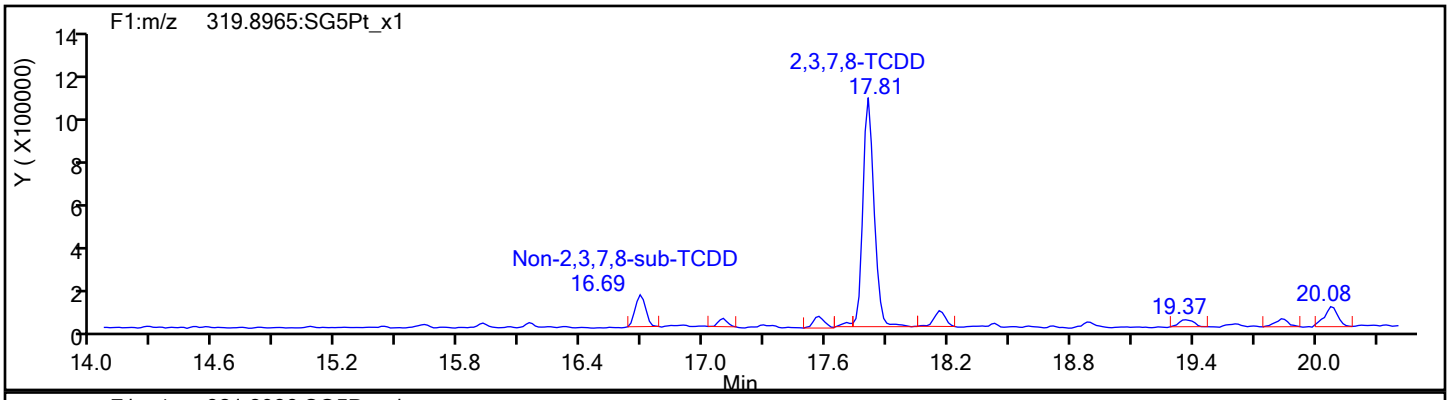
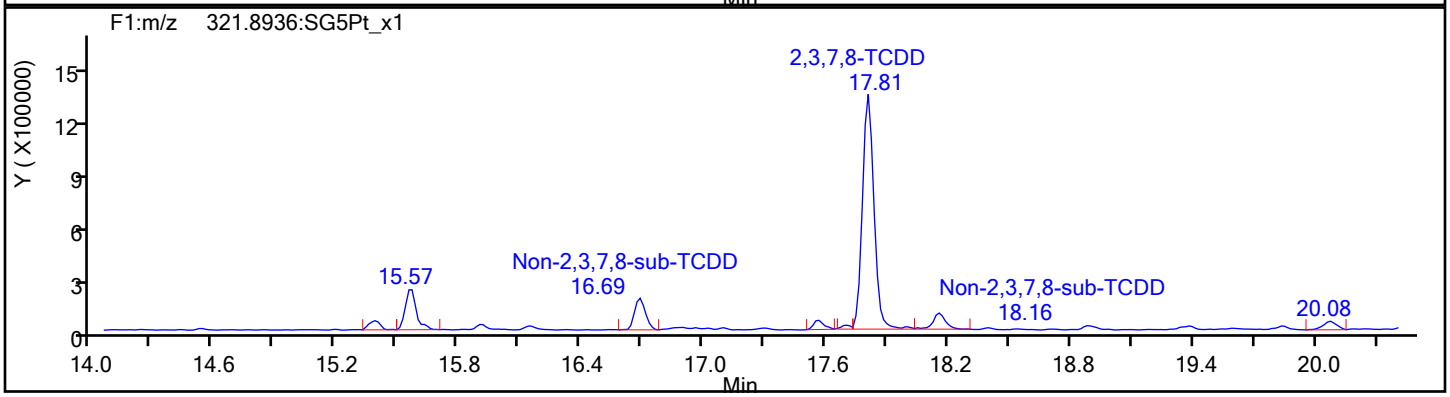
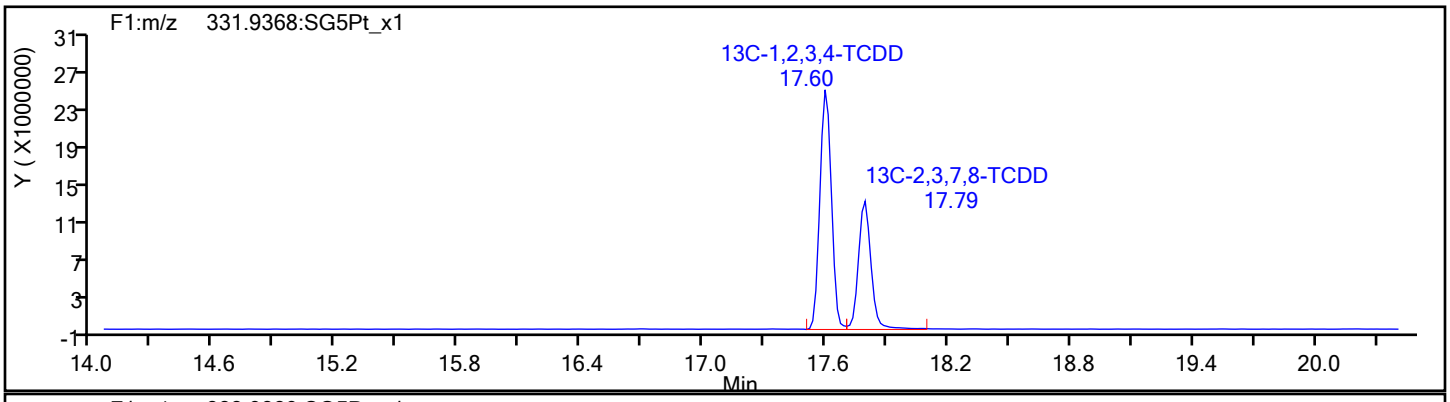
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

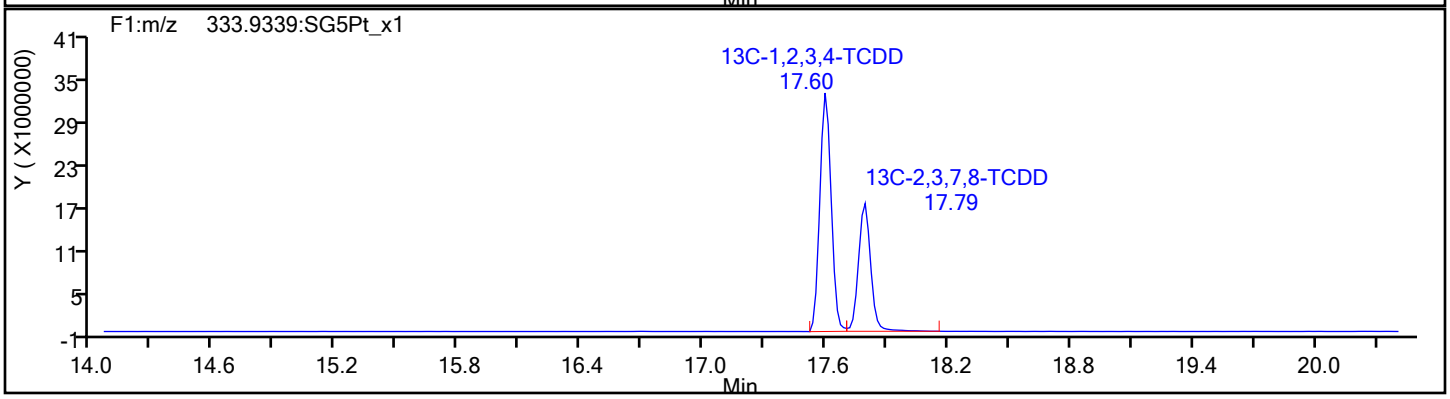
TCDD





TCDD Standards





Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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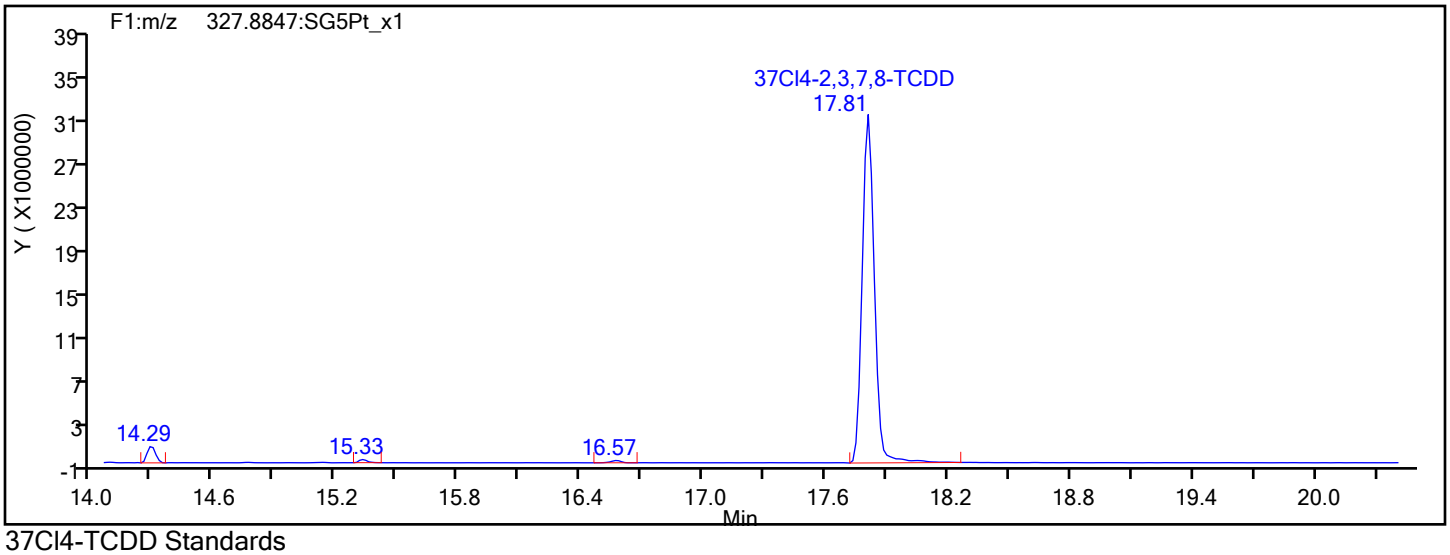
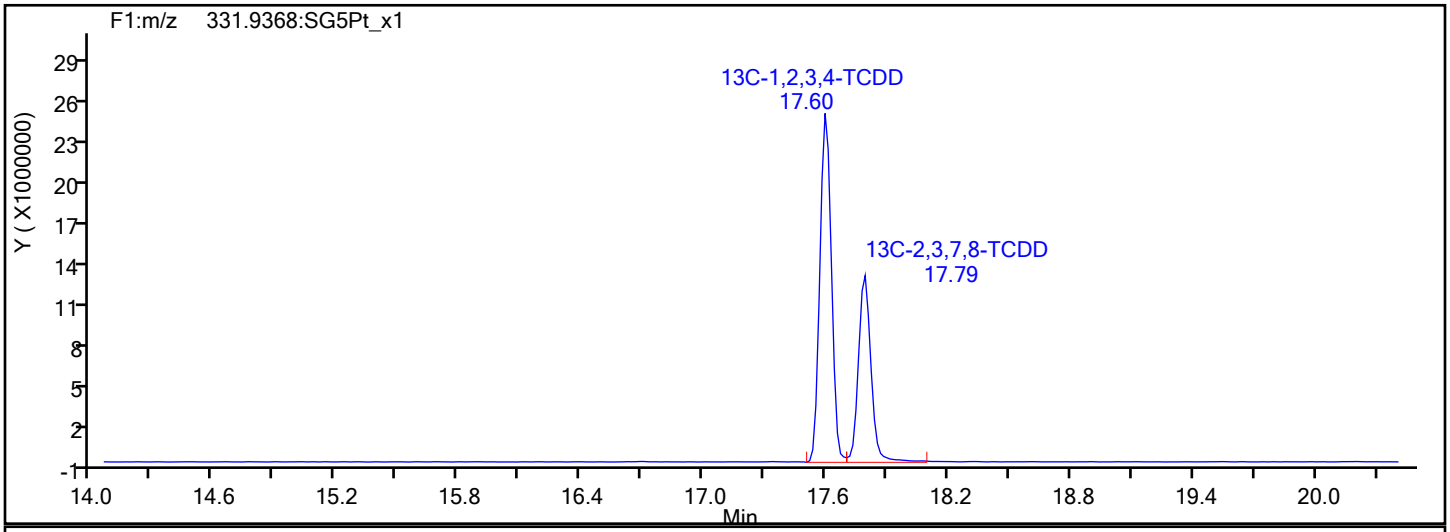
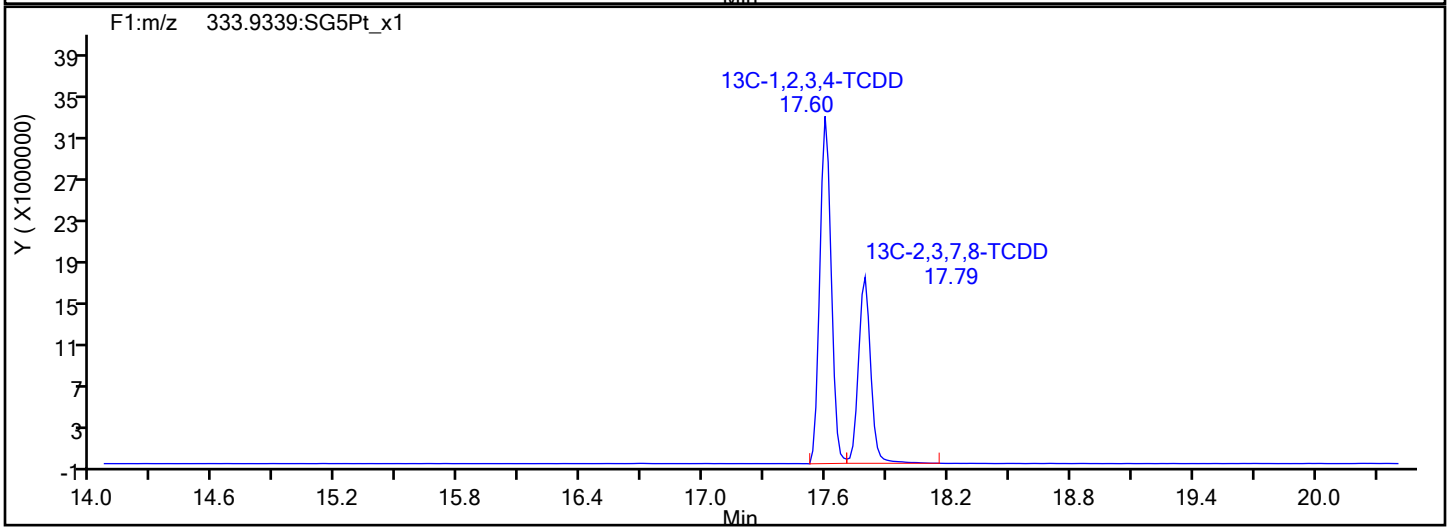
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA04(4-6)		
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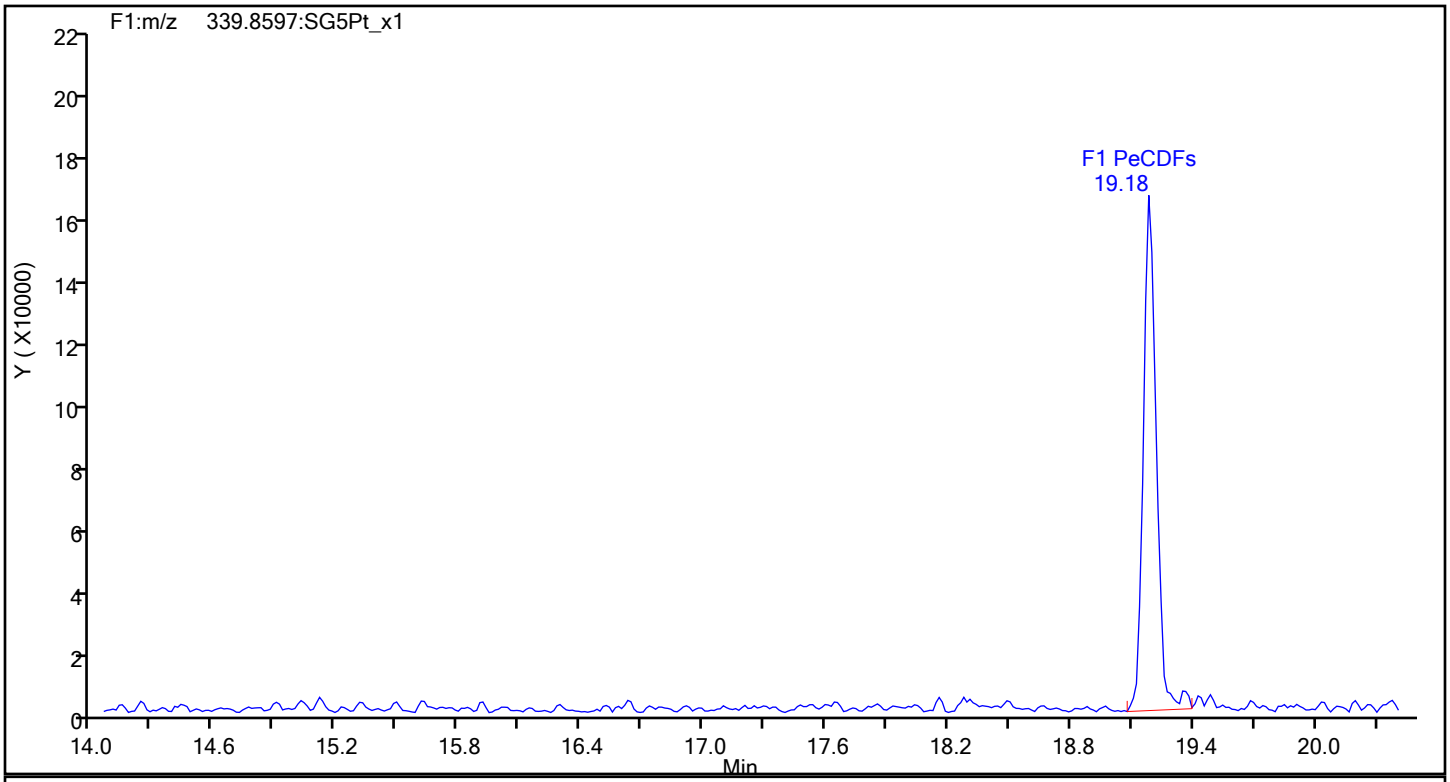
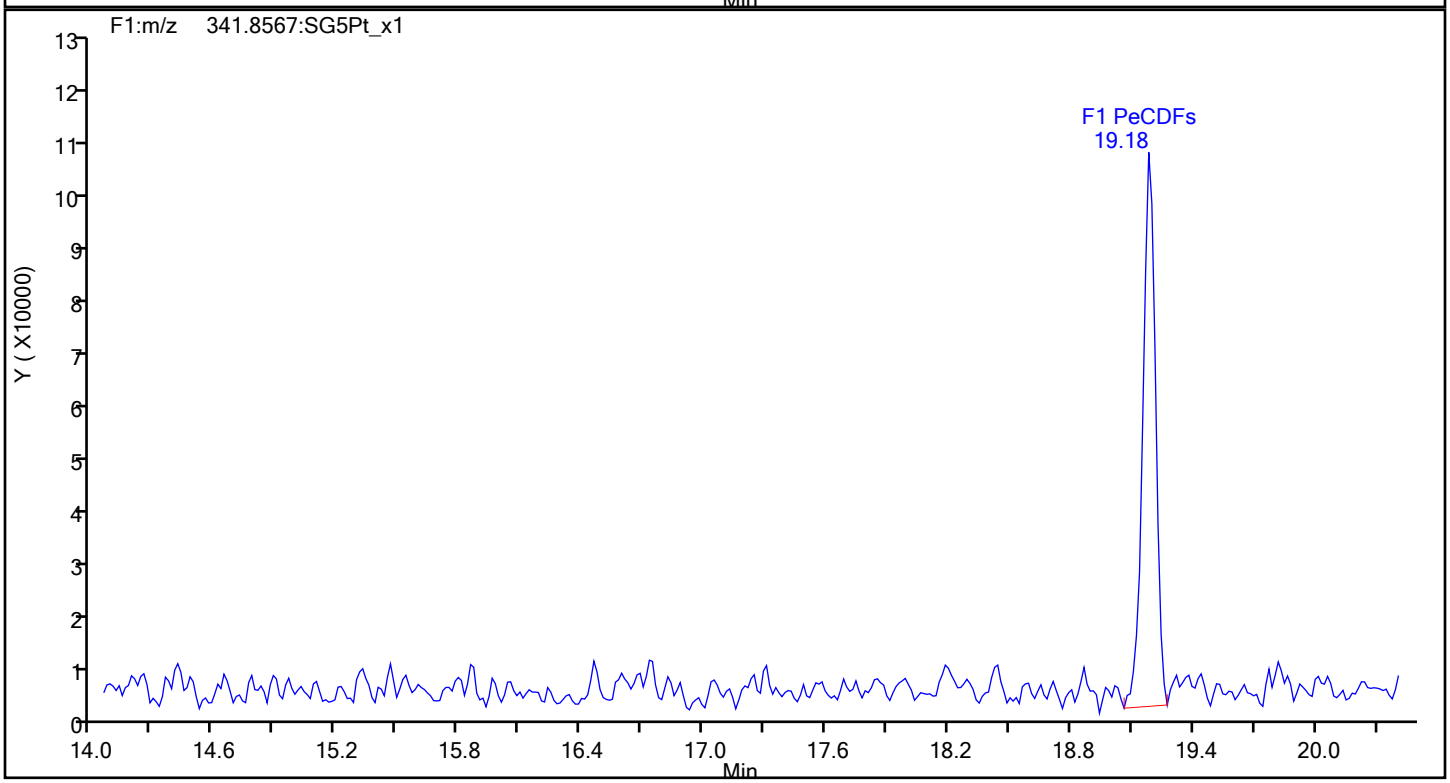
F1 PeCDFs





Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Client ID:	11187072-120919-BN-SJSSA04(4-6)		
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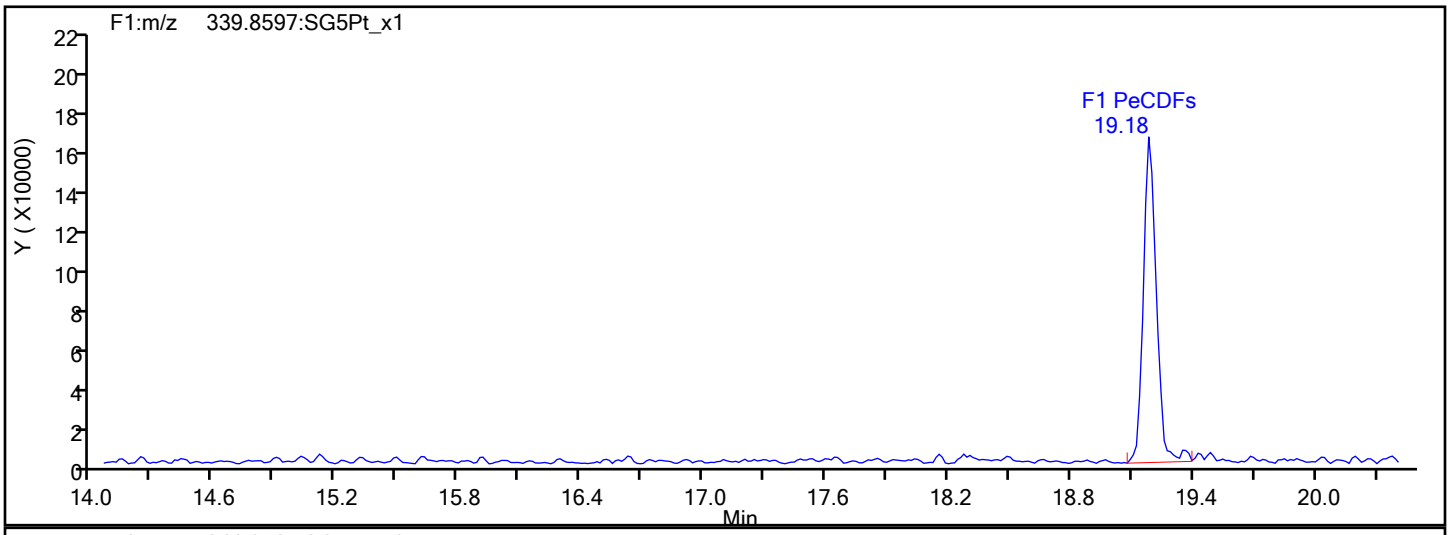
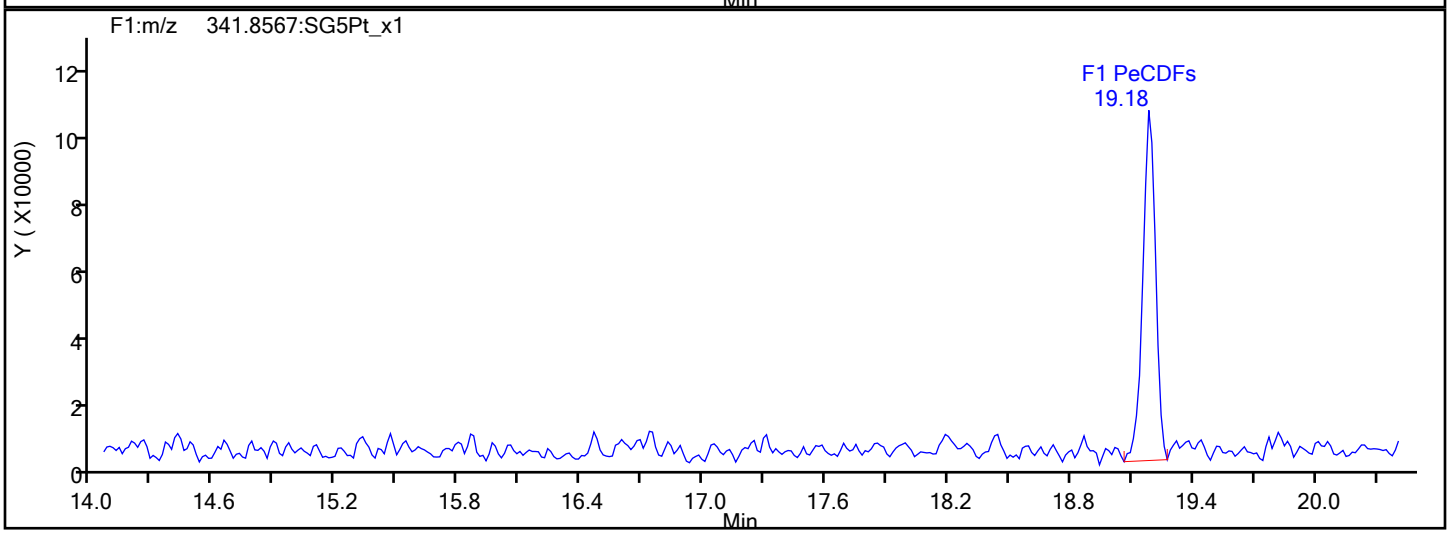
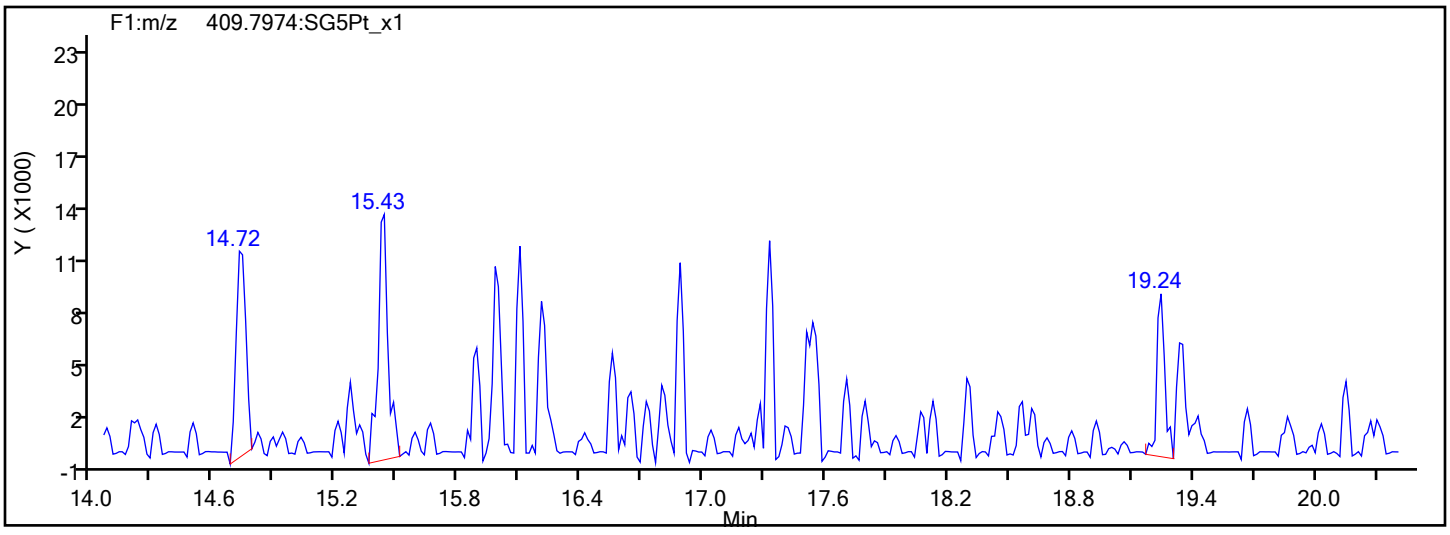
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 22-Dec-2019 13:01:17 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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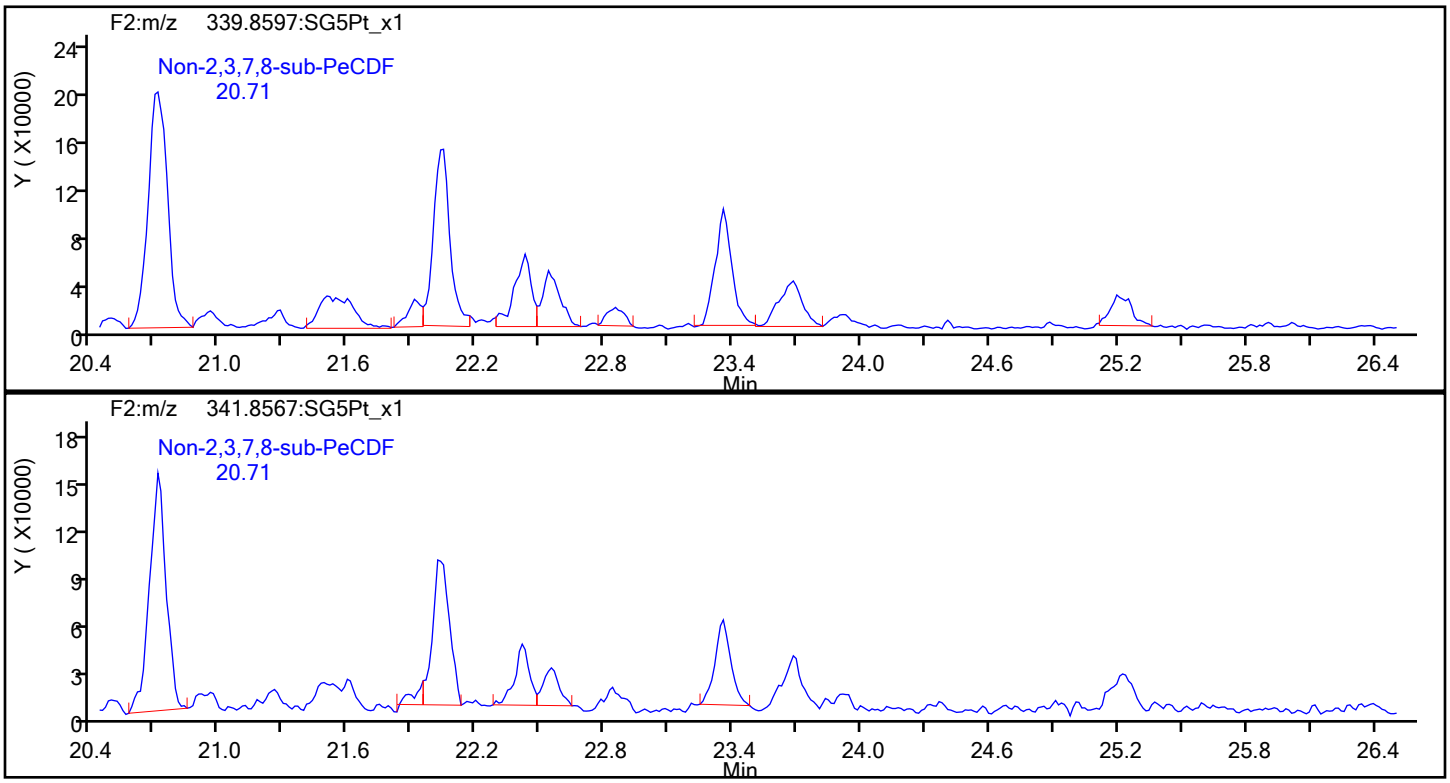
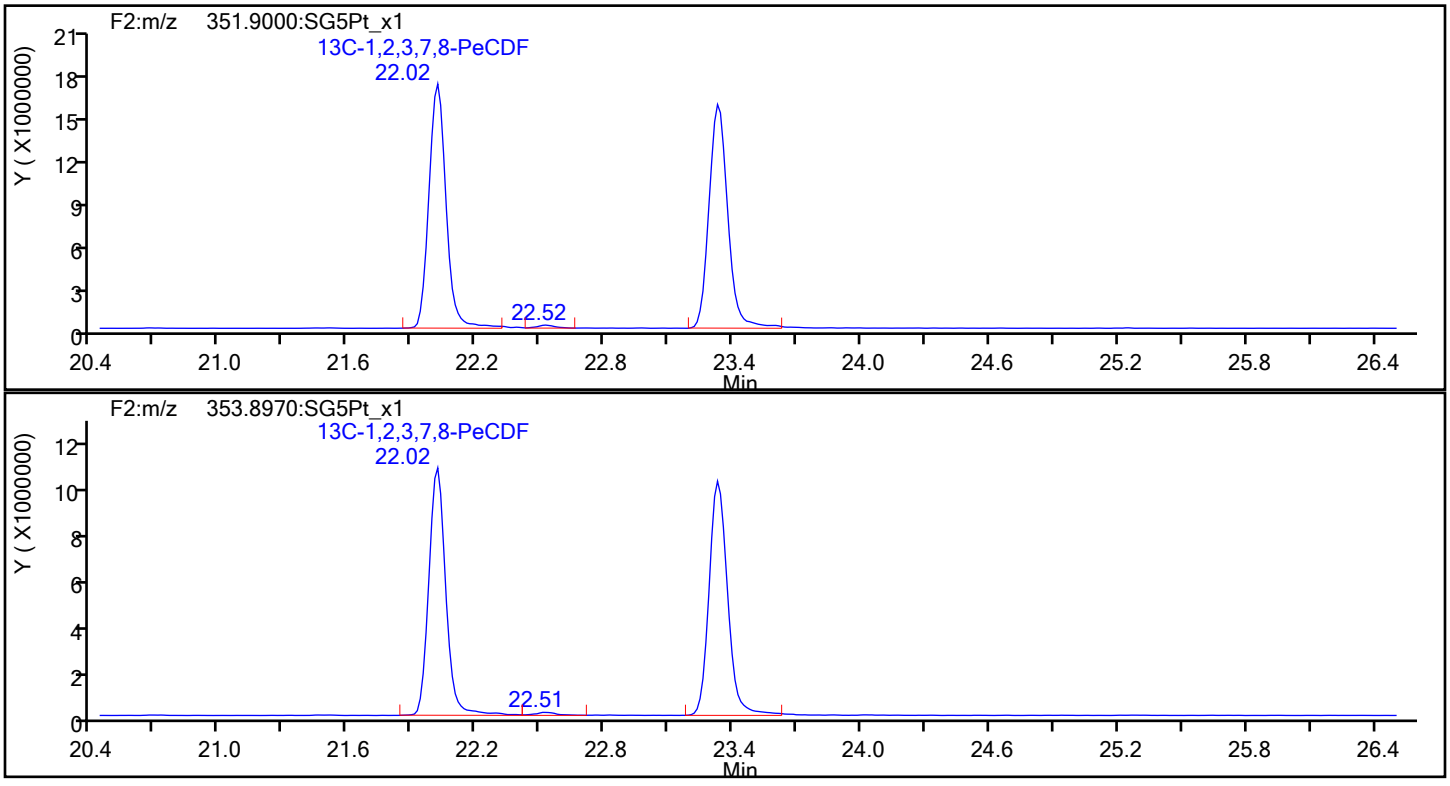
PeCDF



PeCDF Standards



Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
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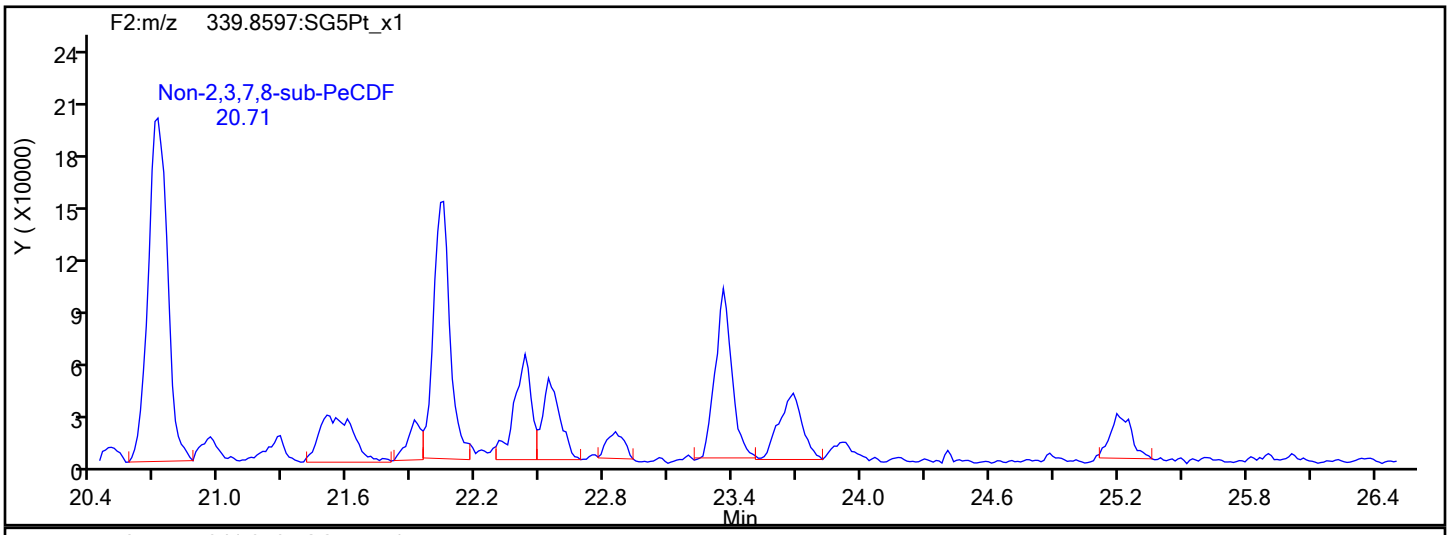
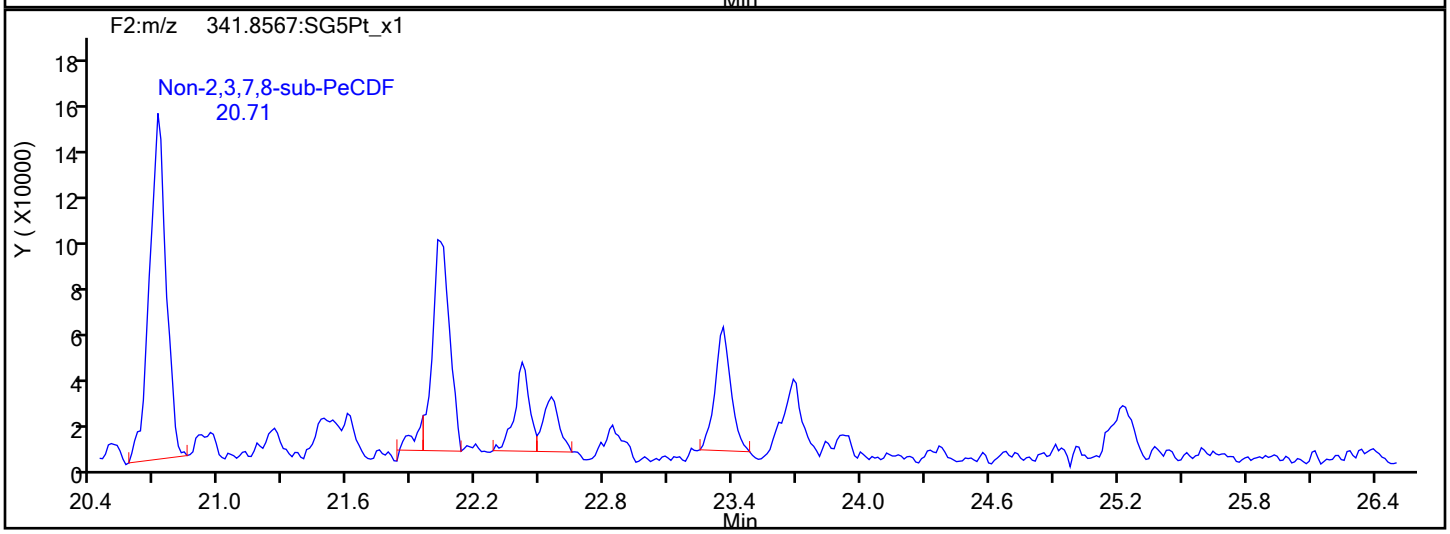
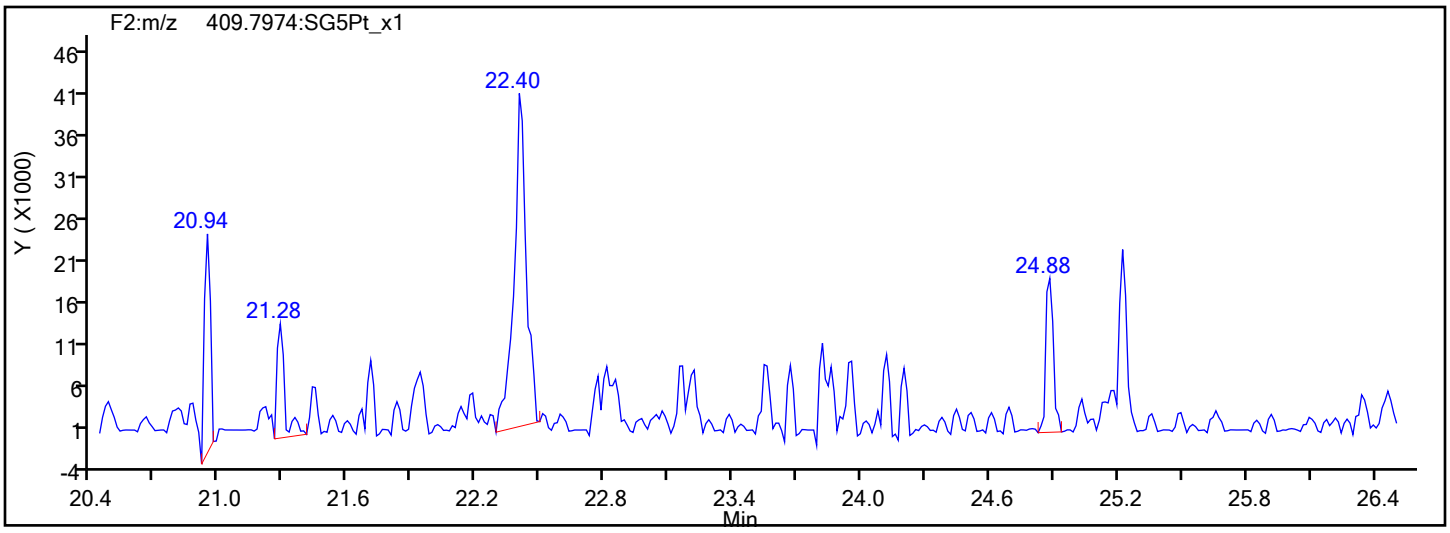
PeCDF





PeCDF Interference Mass



Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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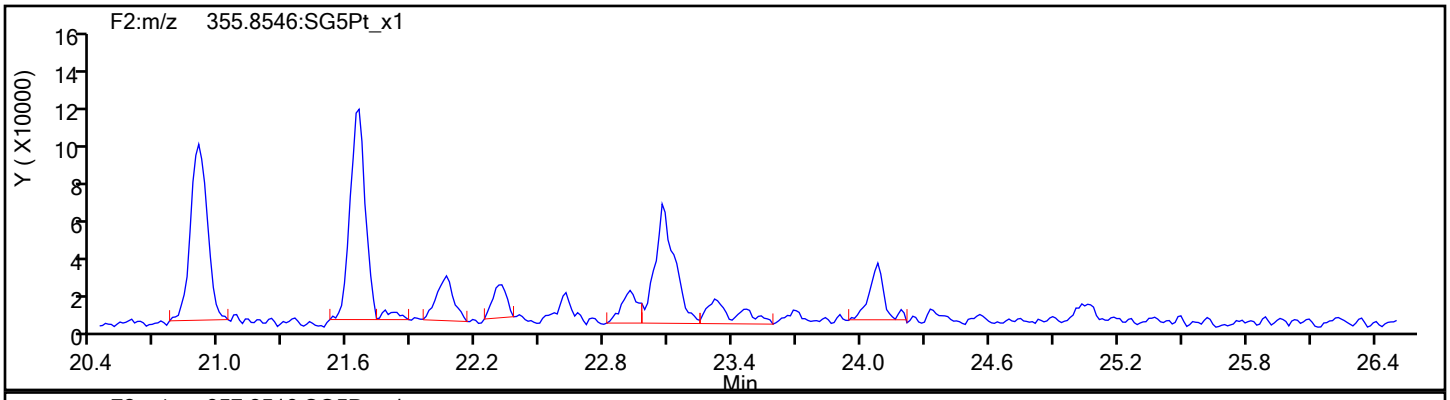
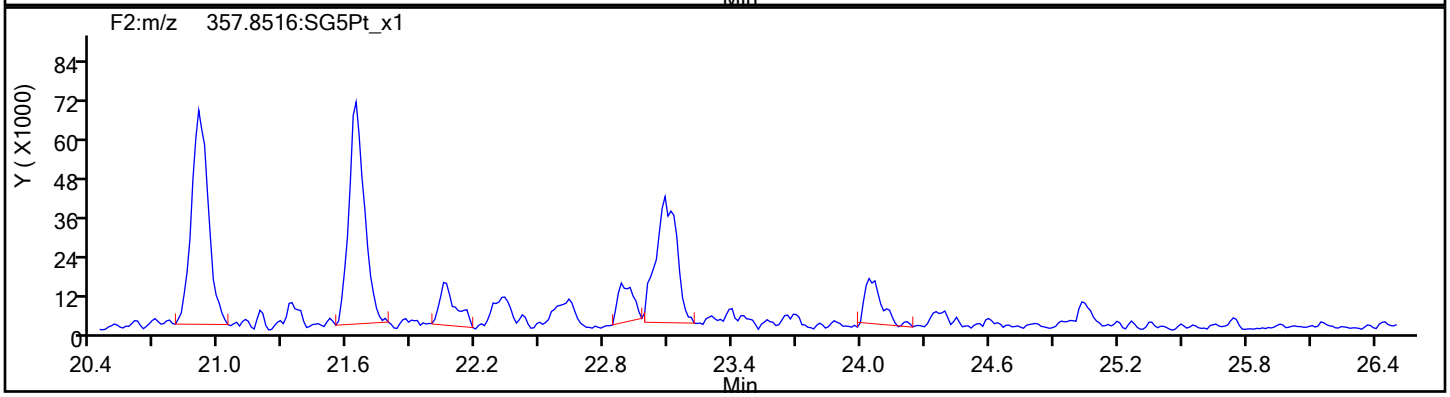
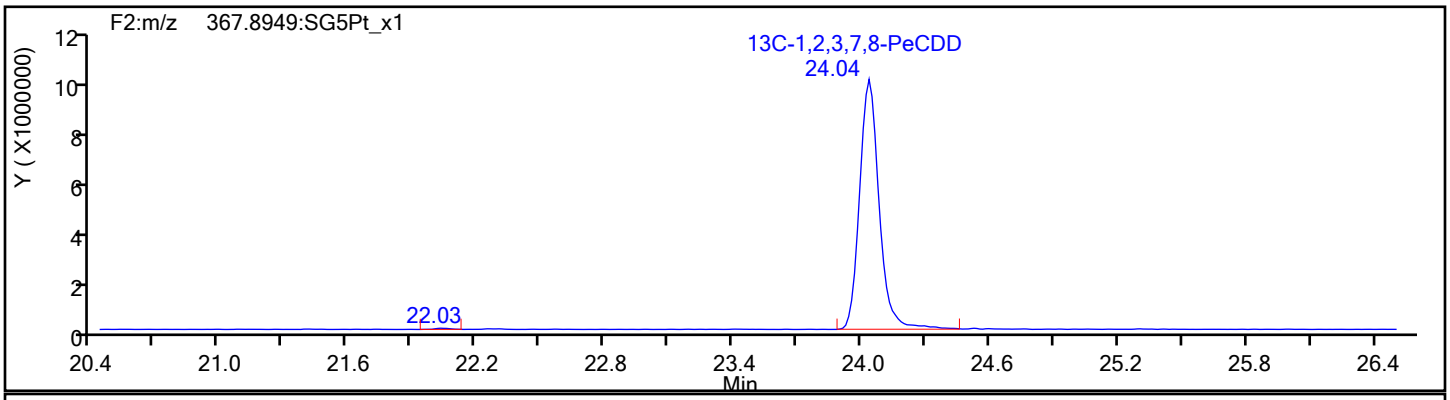
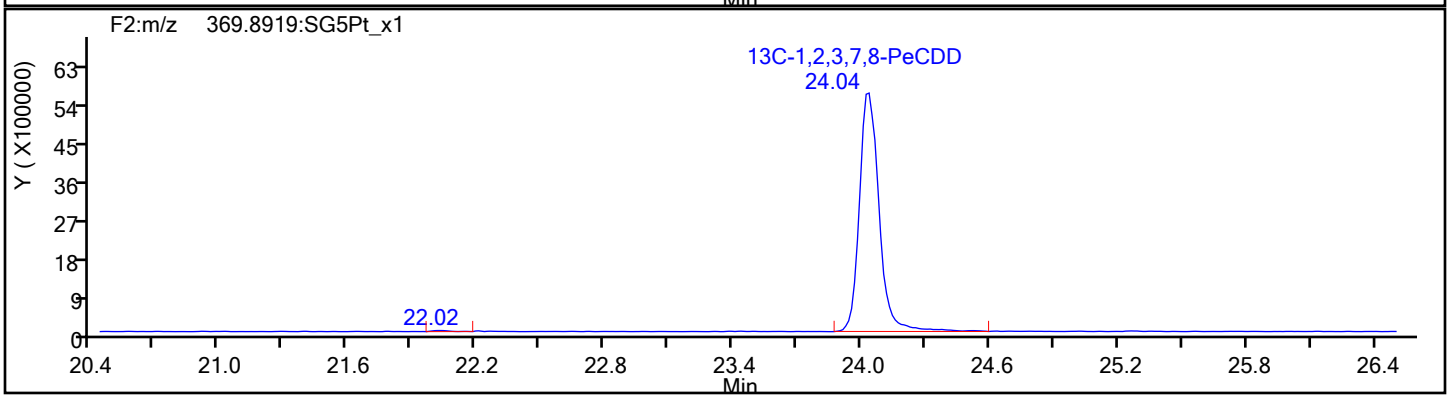
PeCDD





PeCDD Standards





Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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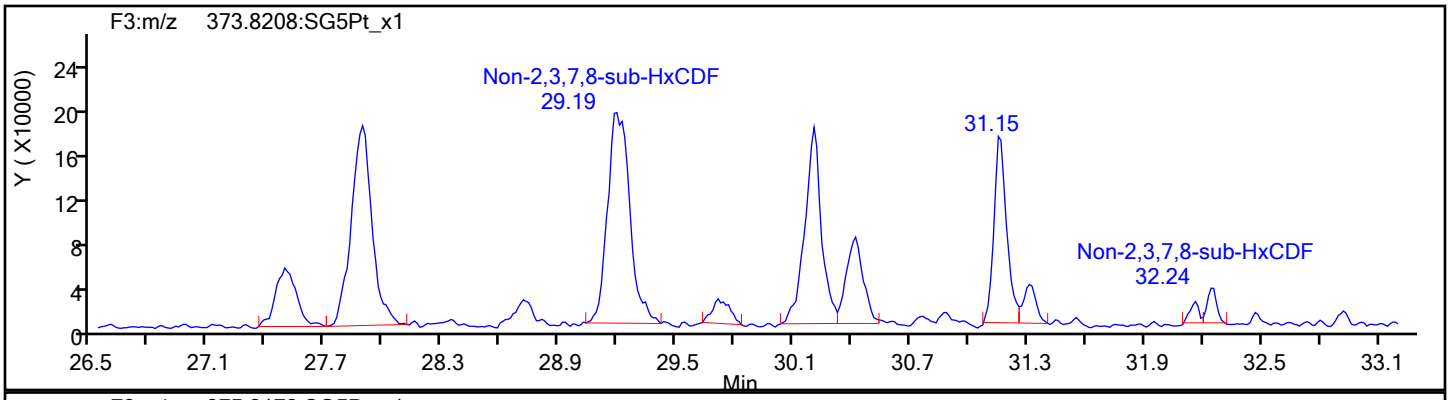
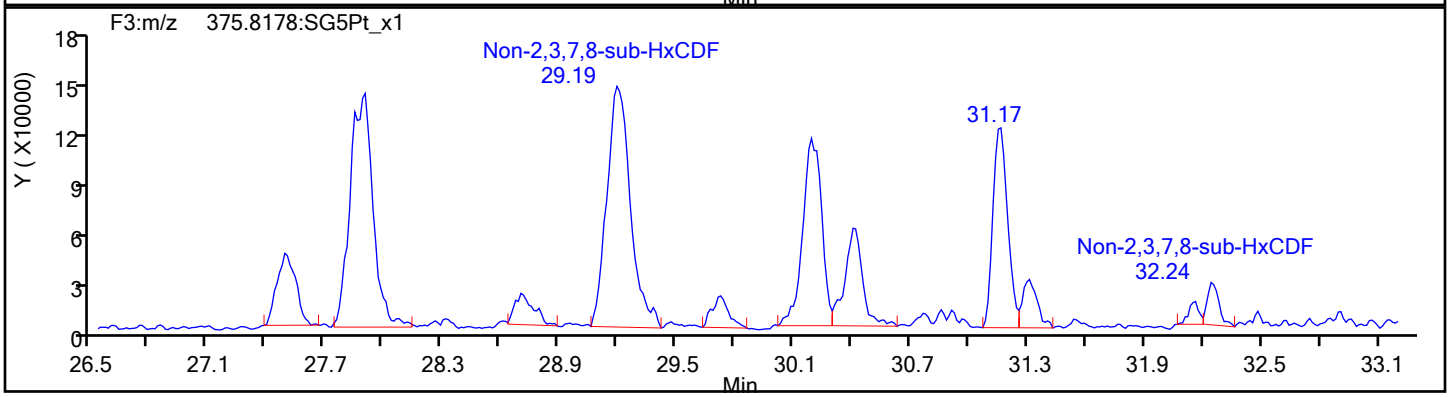
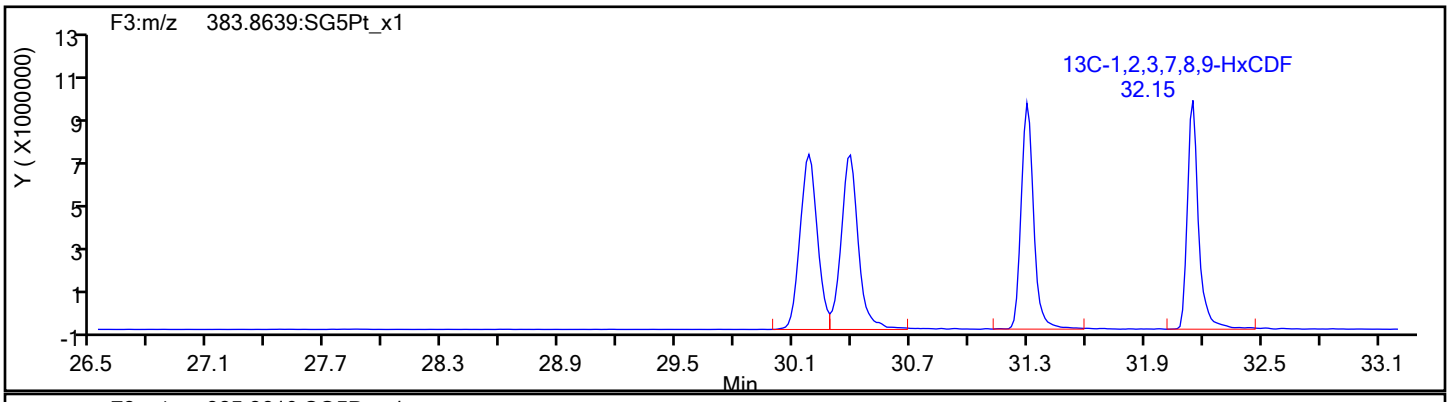
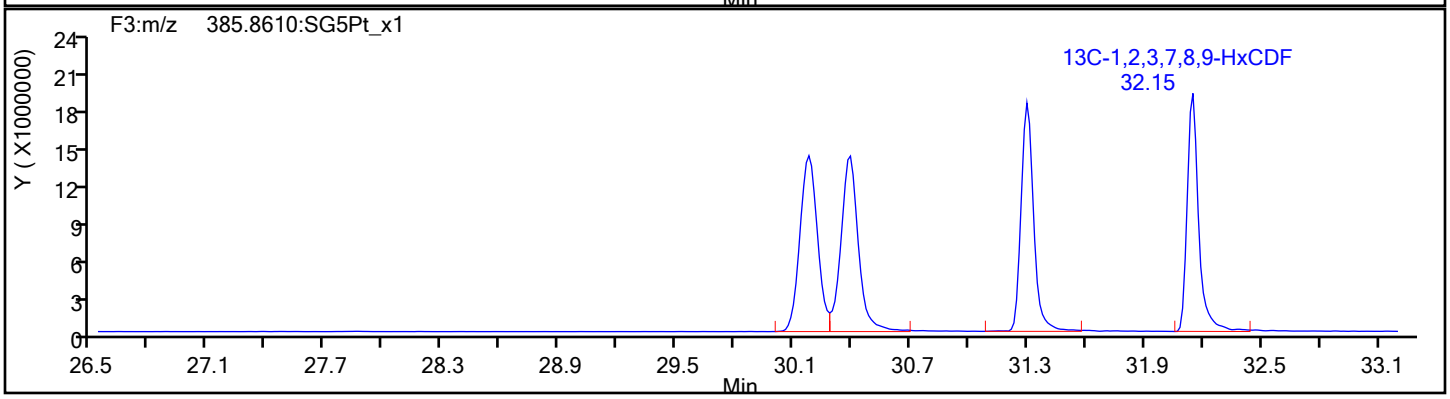
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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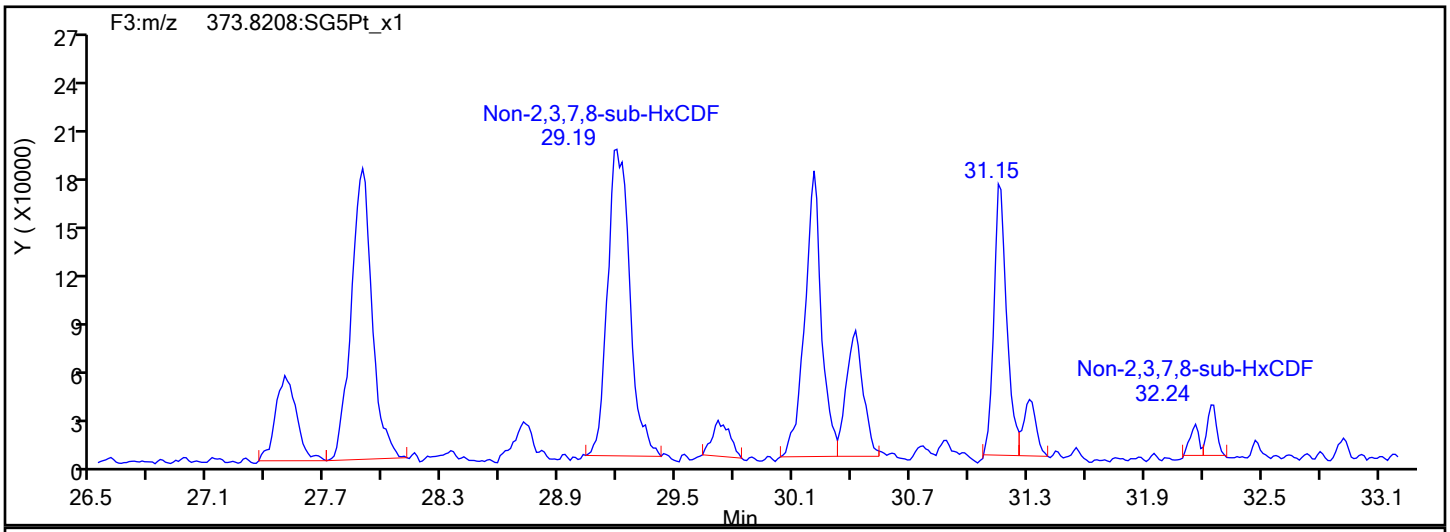
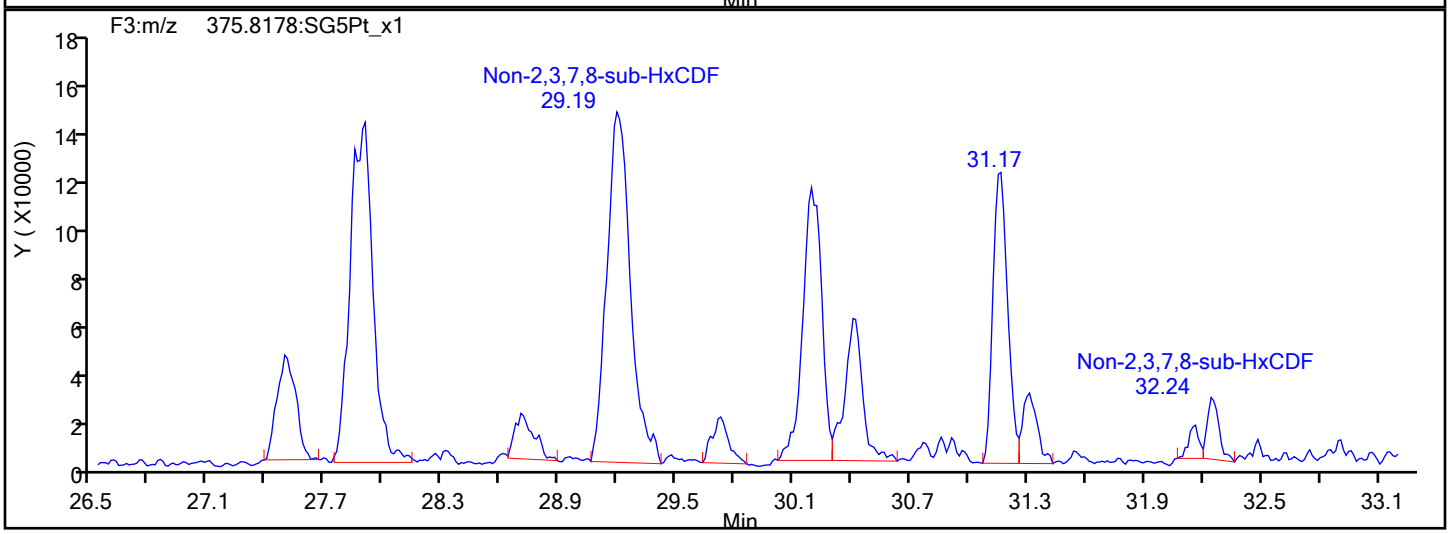
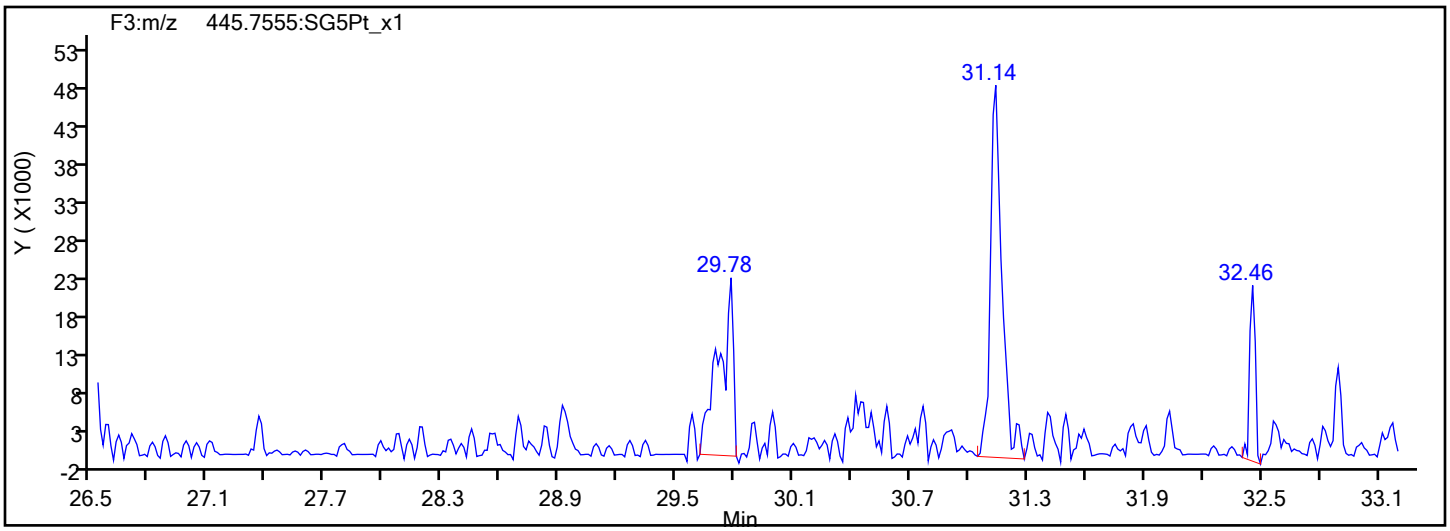




HxCDF Interference Mass



Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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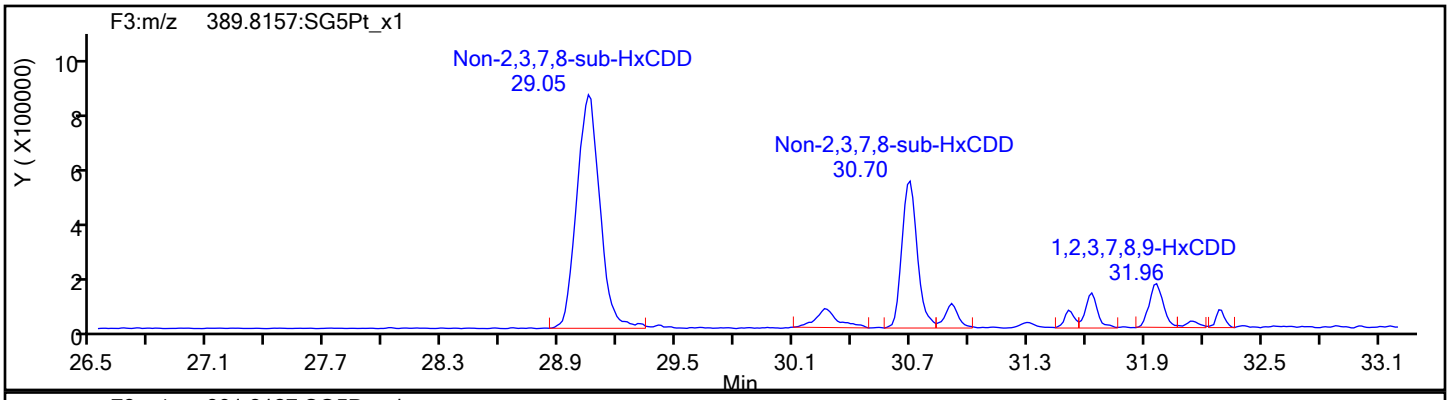
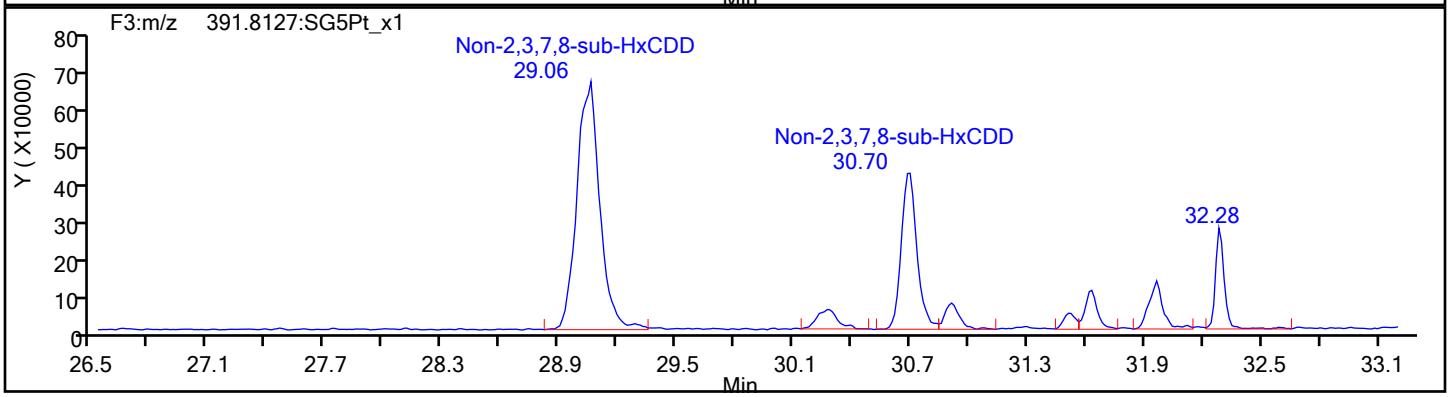
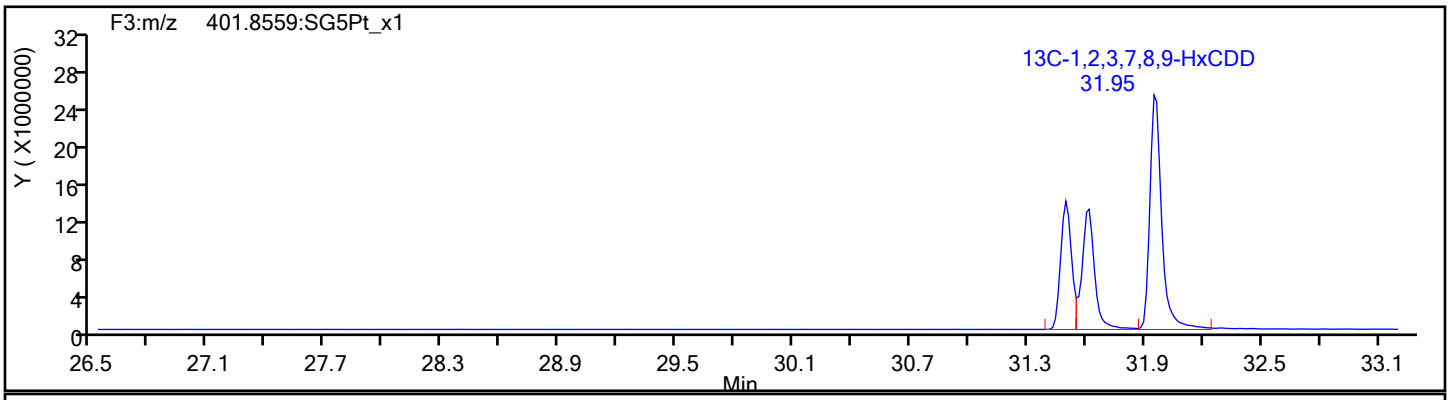
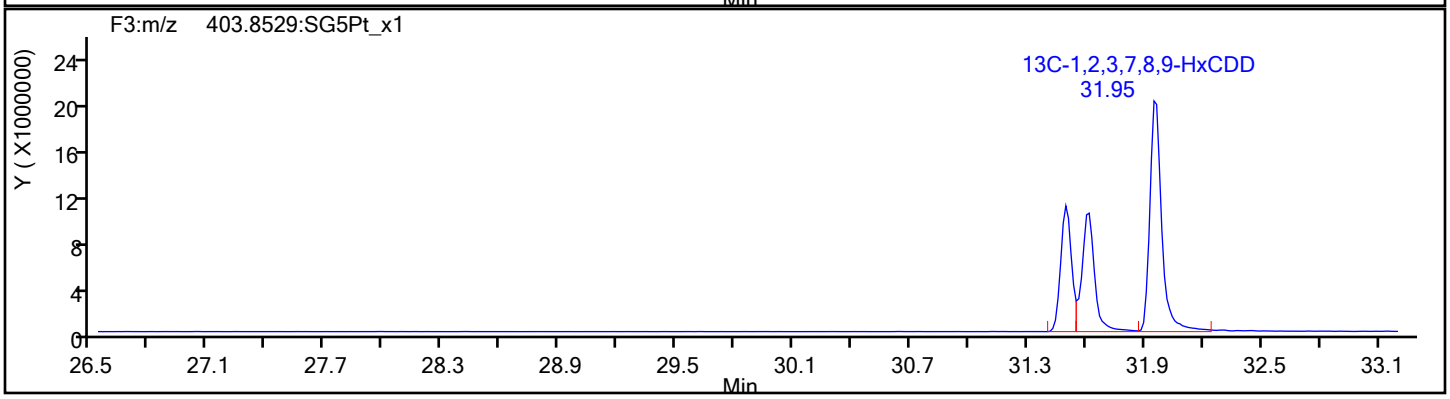
HxCDD





HxCDD Standards





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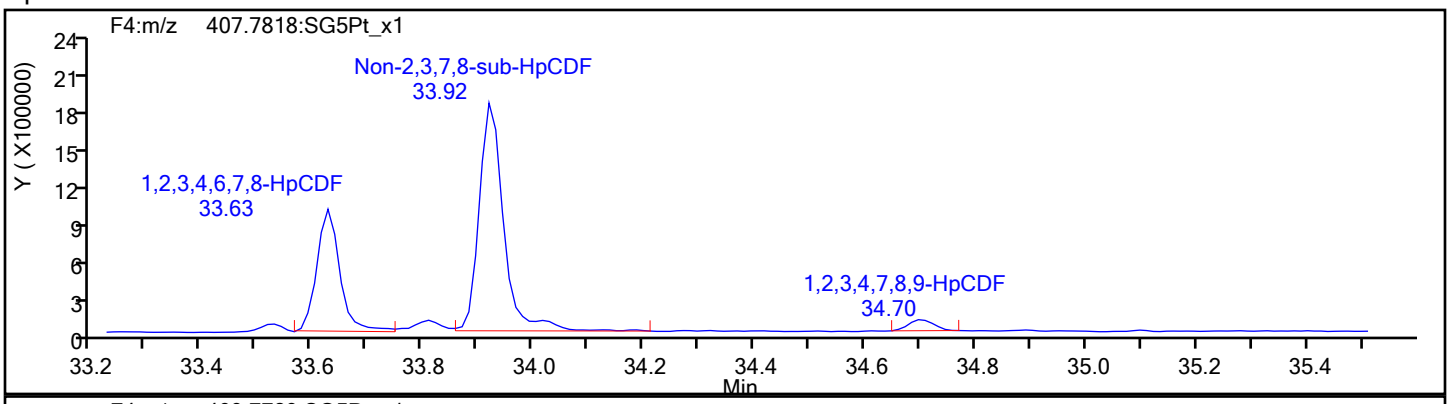
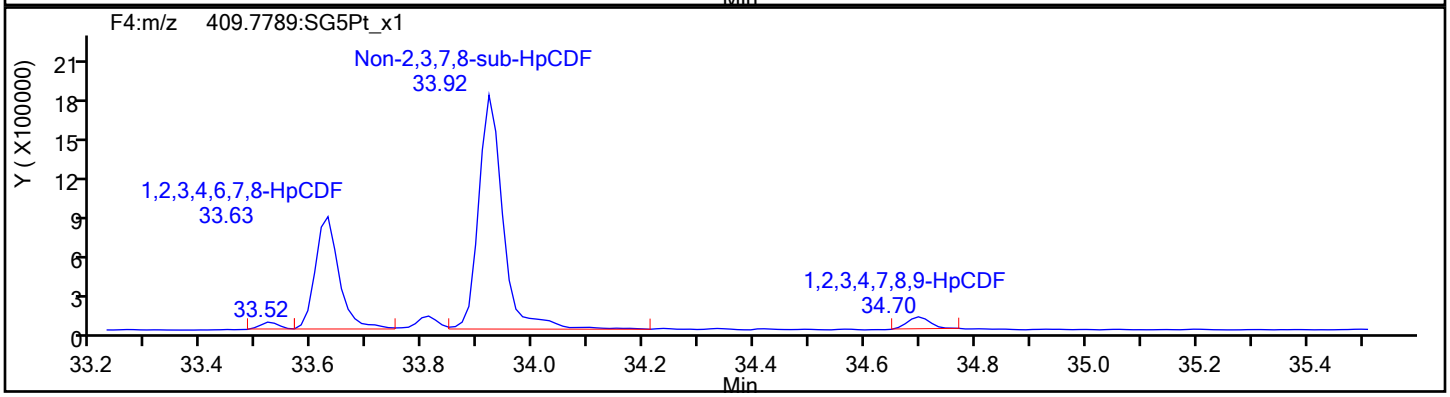
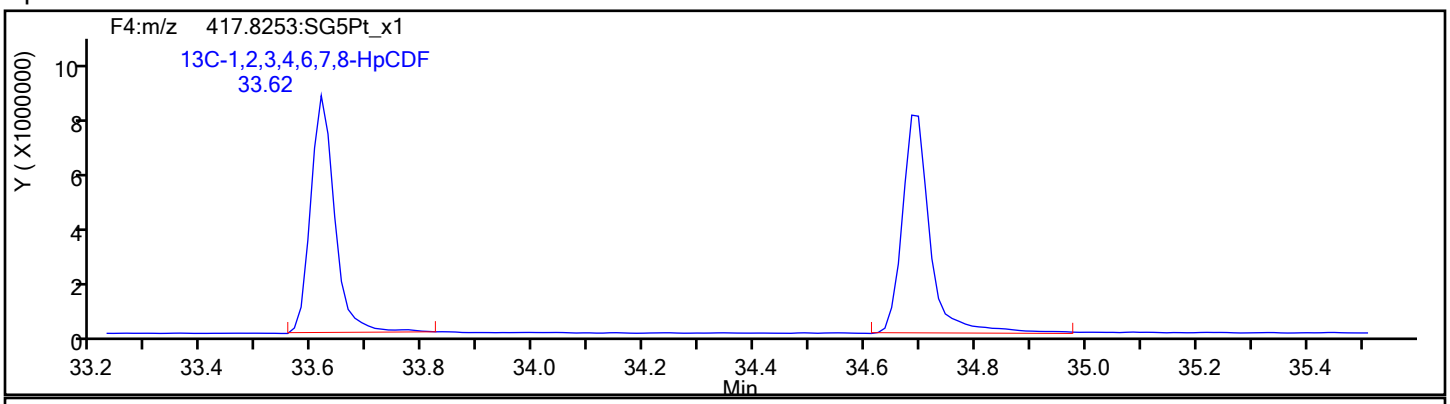
Column Type:	DB-5	Column Dia:	0.32 mm

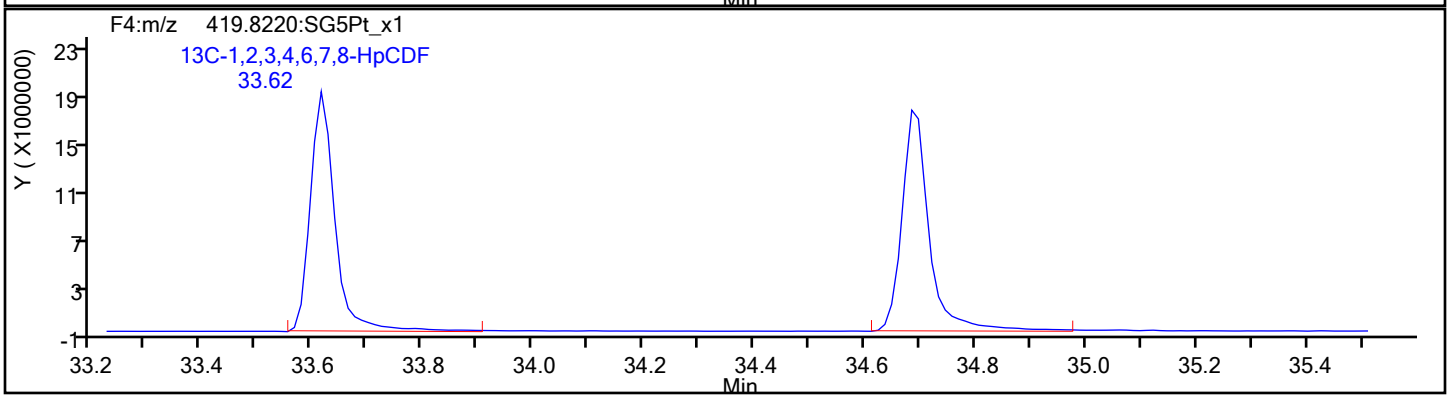
HpCDF





HpCDF Standards



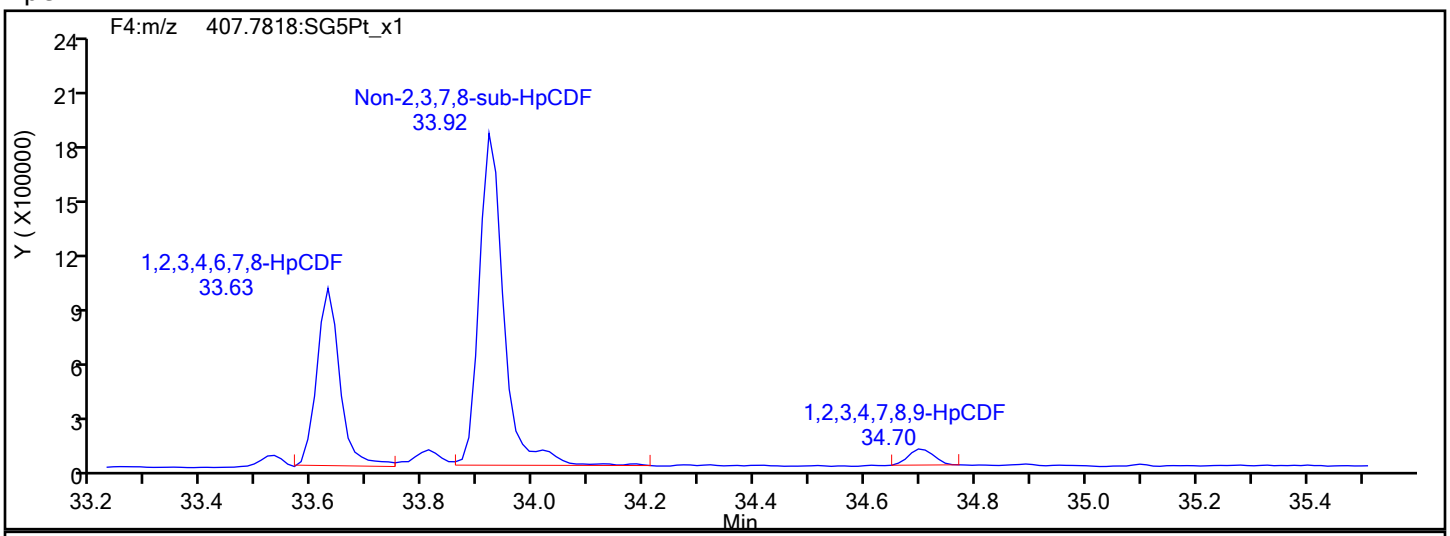


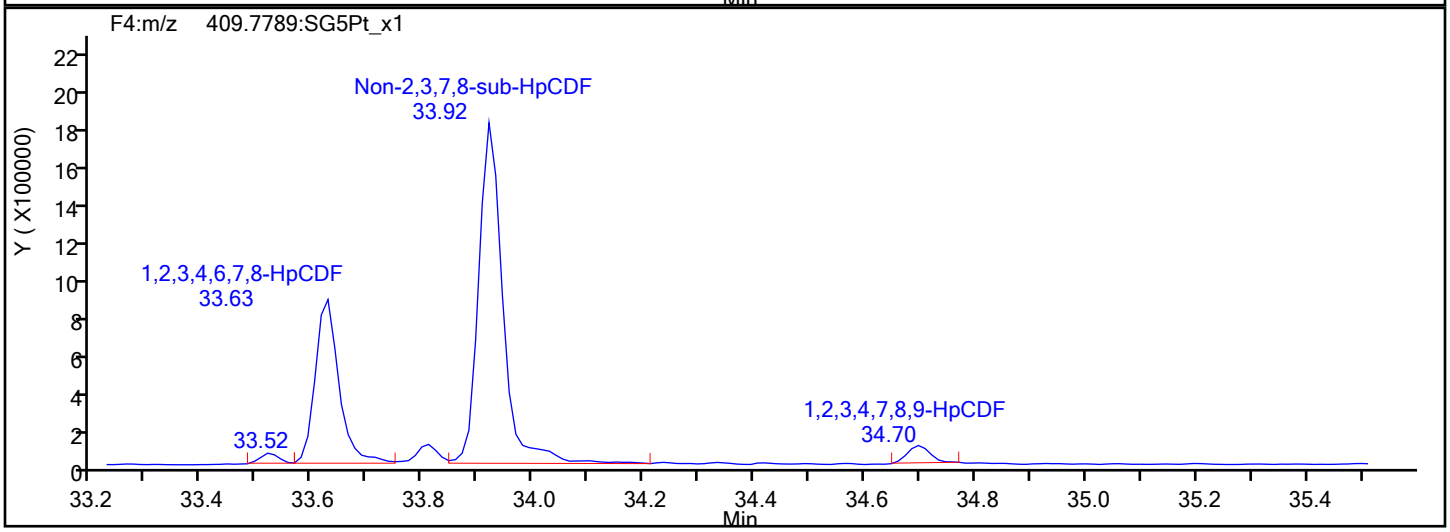
Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

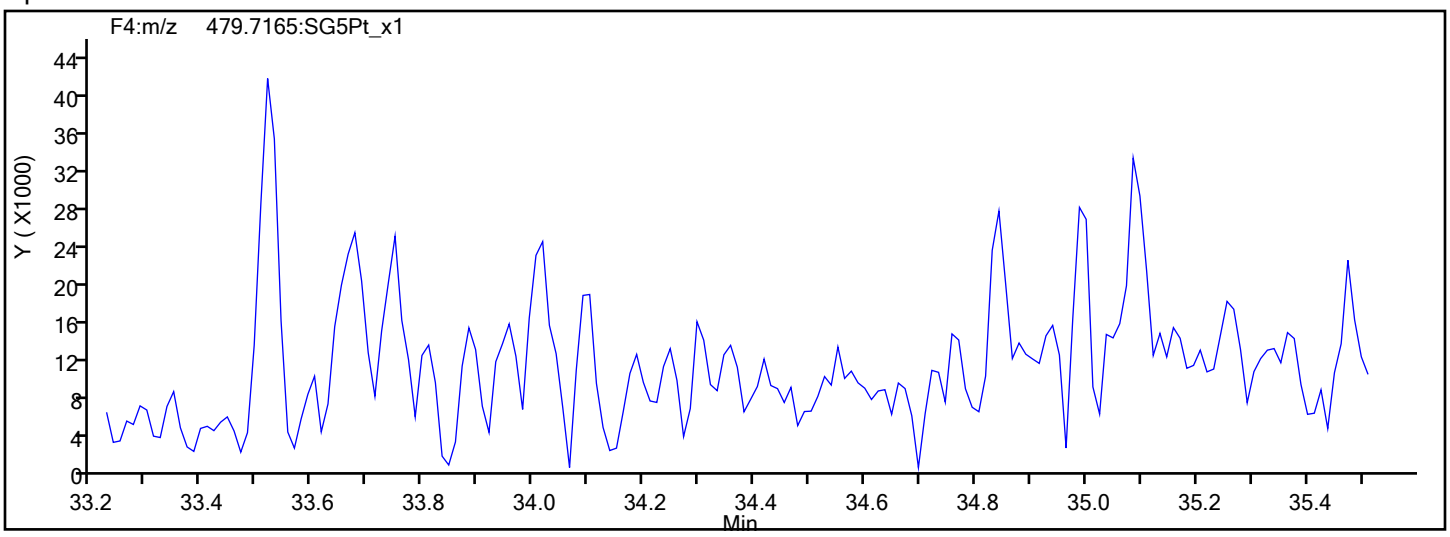
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d

Injection Date: 19-Dec-2019 21:19:13 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

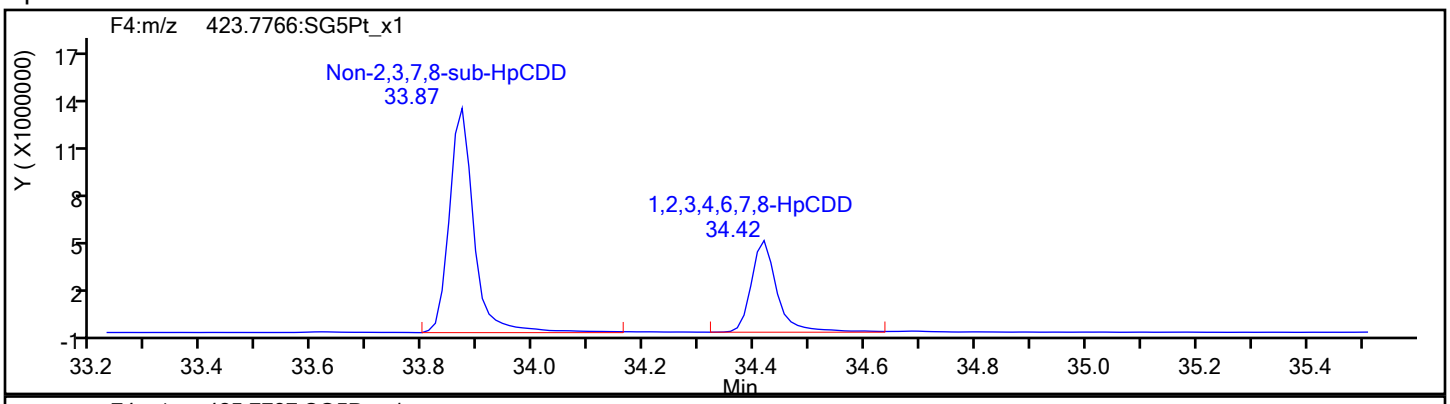
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

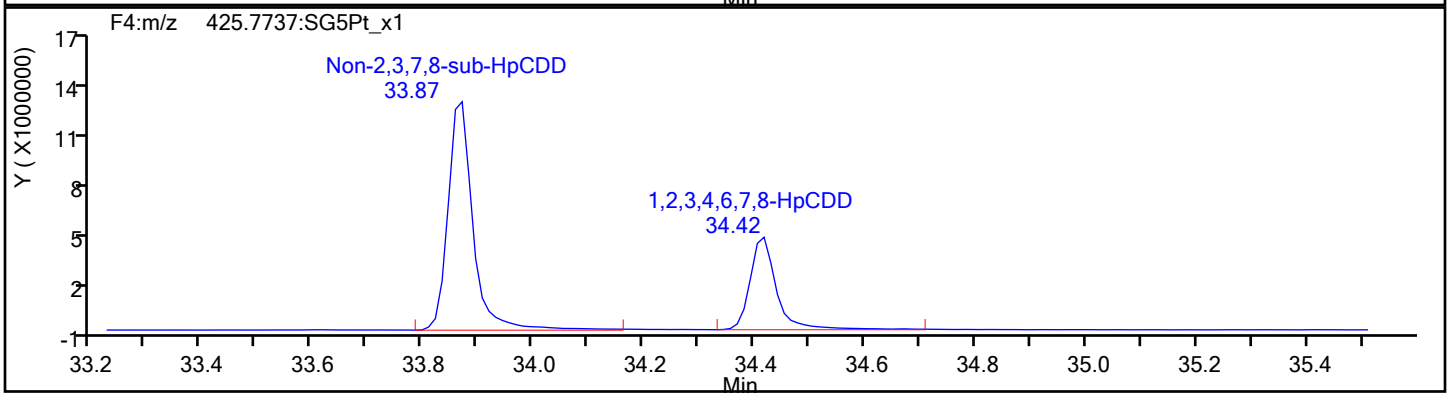
Client ID: 11187072-120919-BN-SJSSA04(4-6)

Worklist#: 346752 Sample Line#: 14

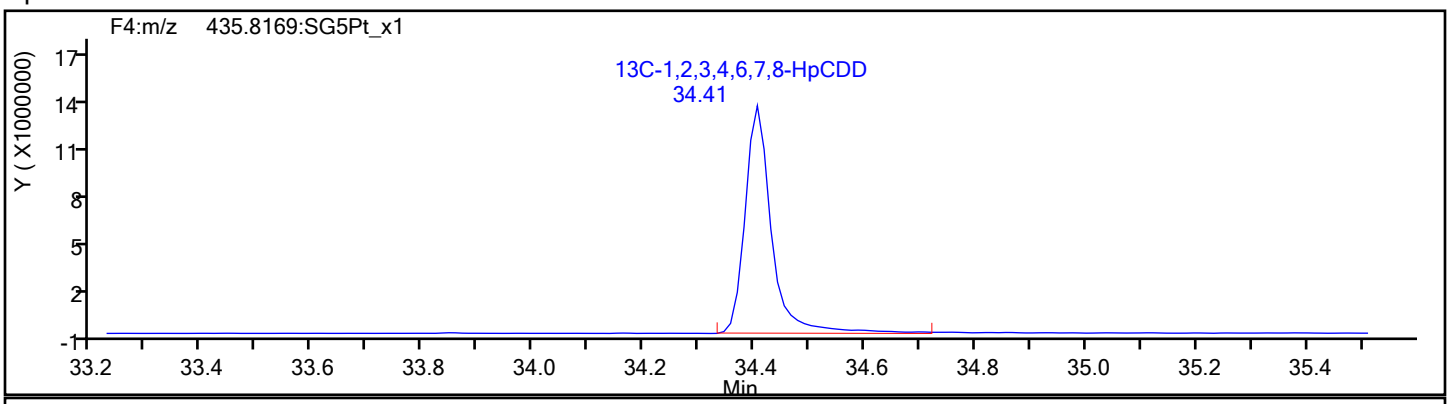
Column Type: DB-5 Column Dia: 0.32 mm

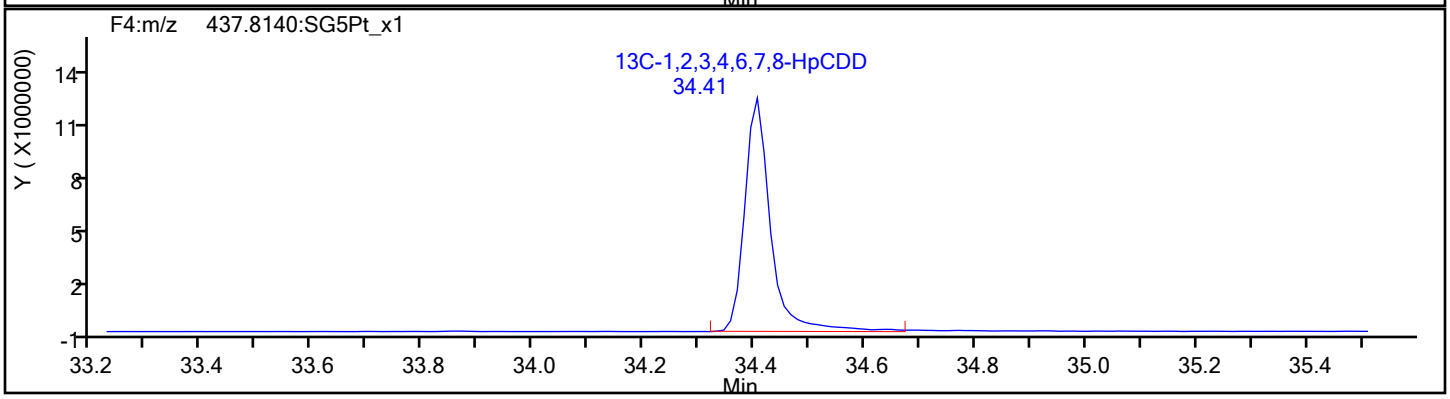
HpCDD





HpCDD Standards



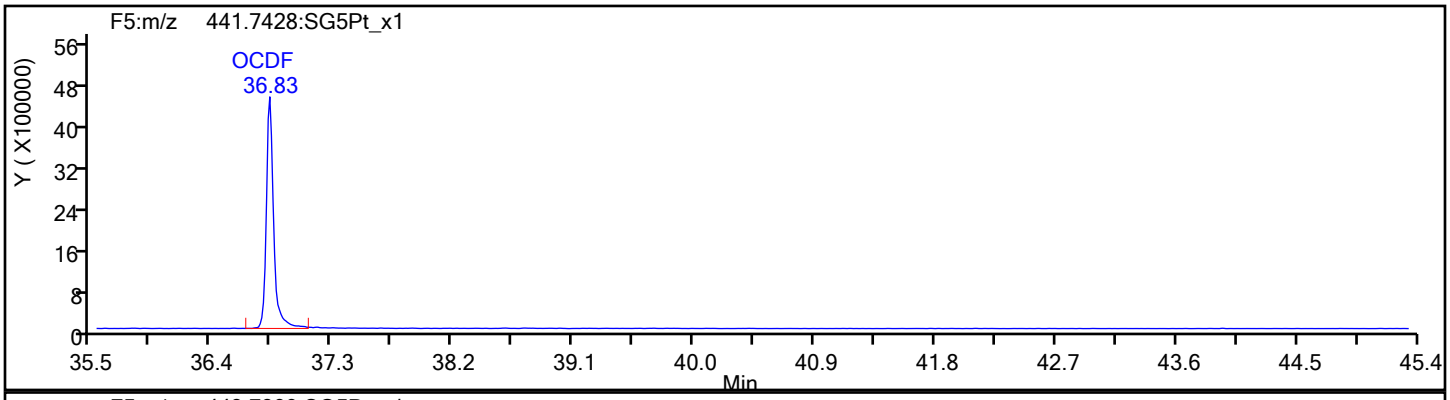


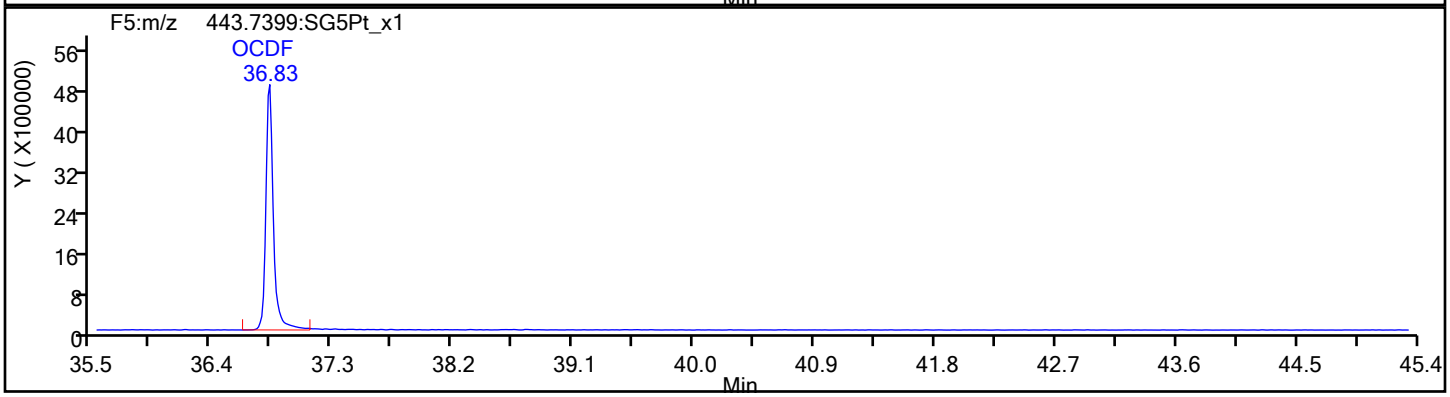
Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

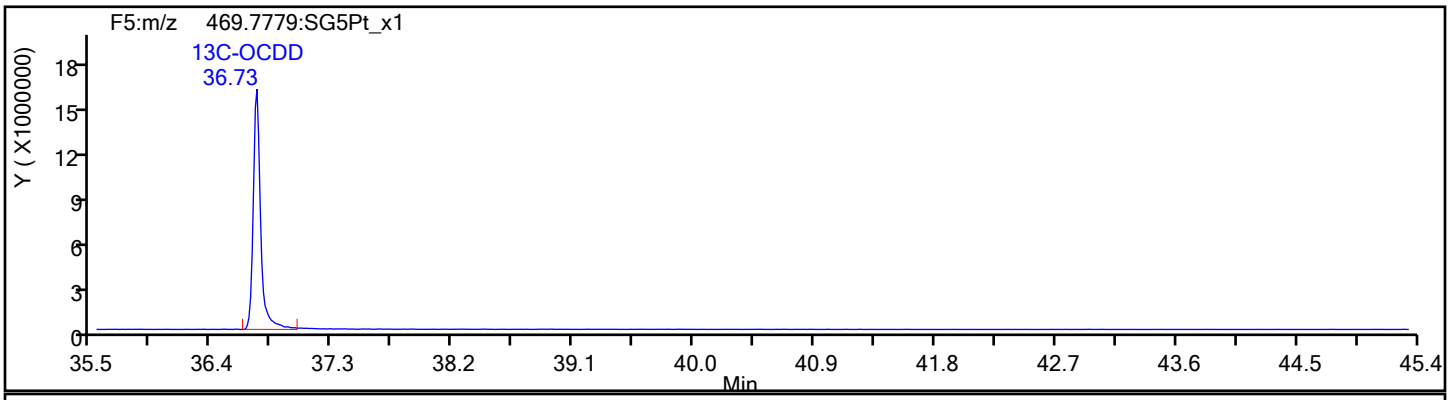
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

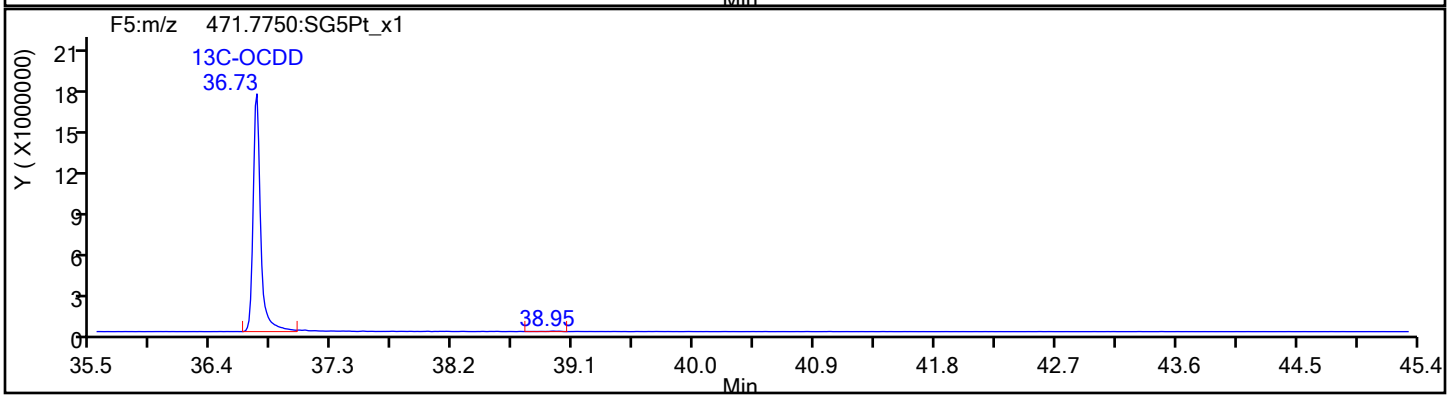
OCDF





OCDF Standards



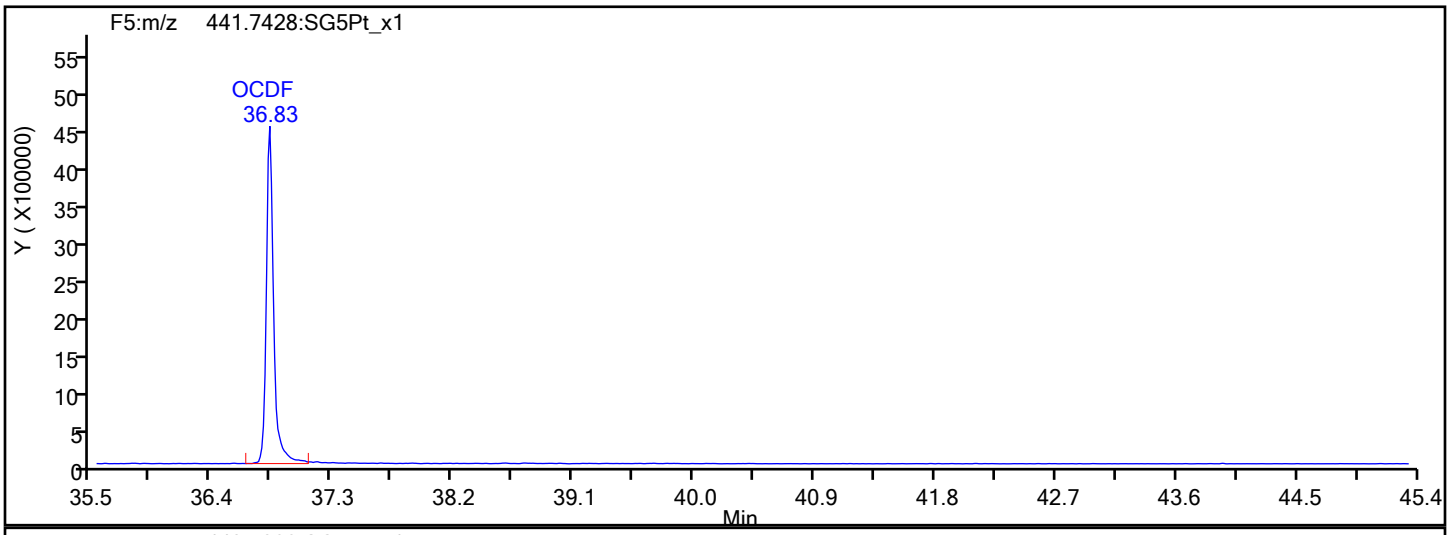


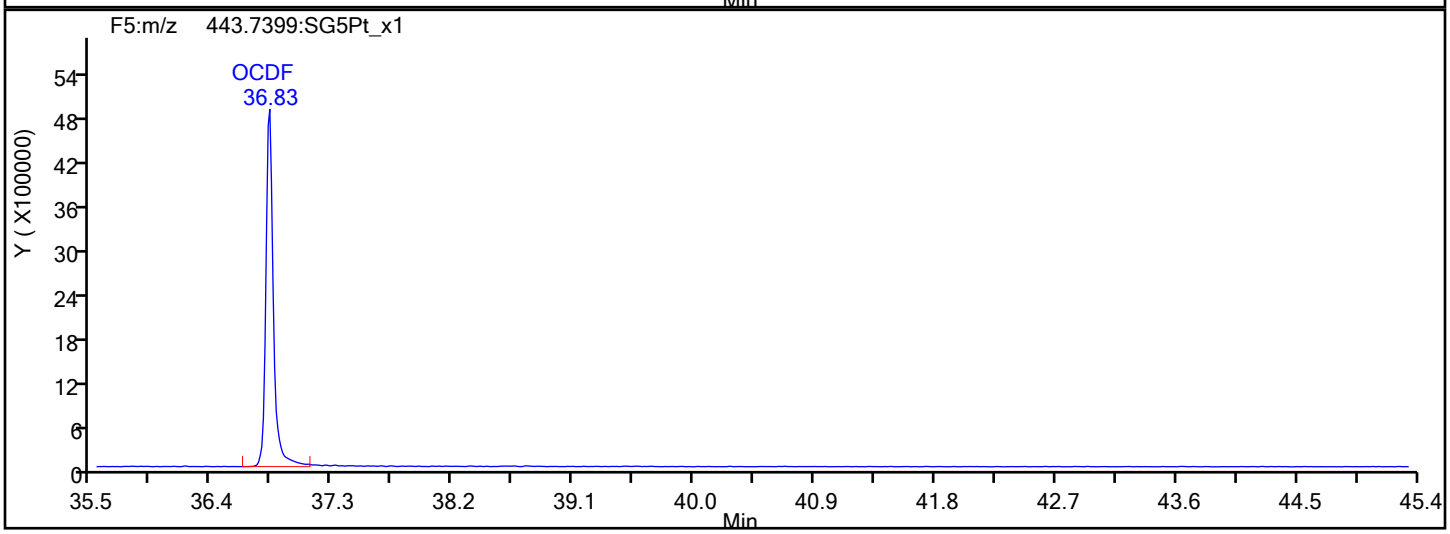
Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

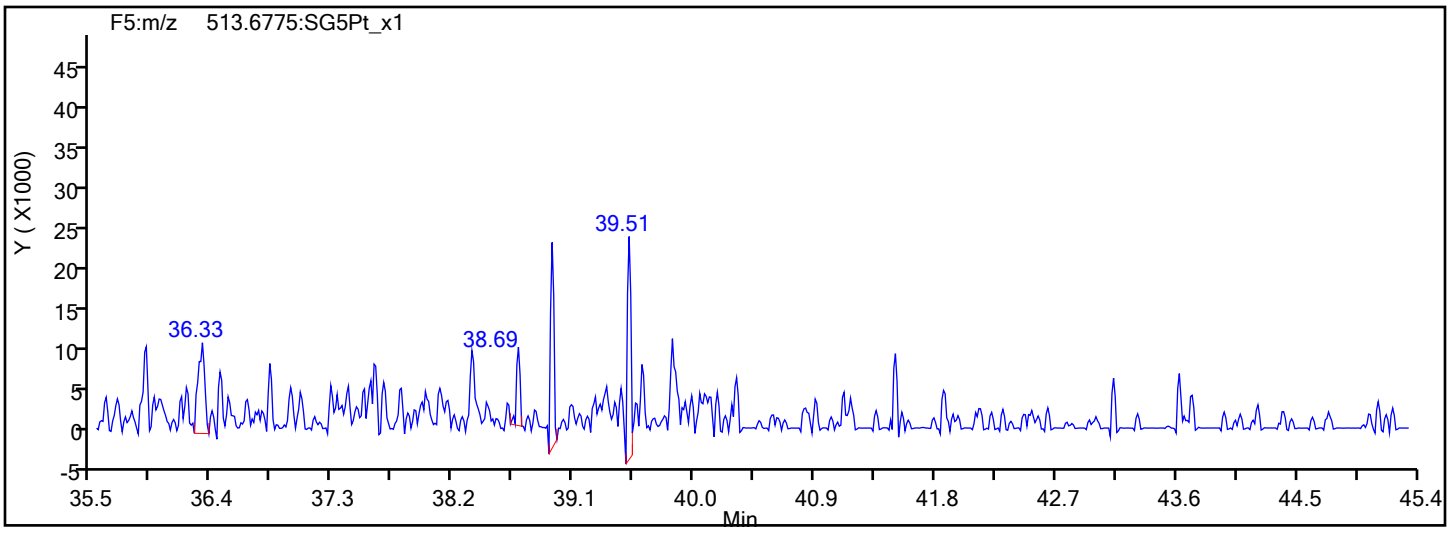
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

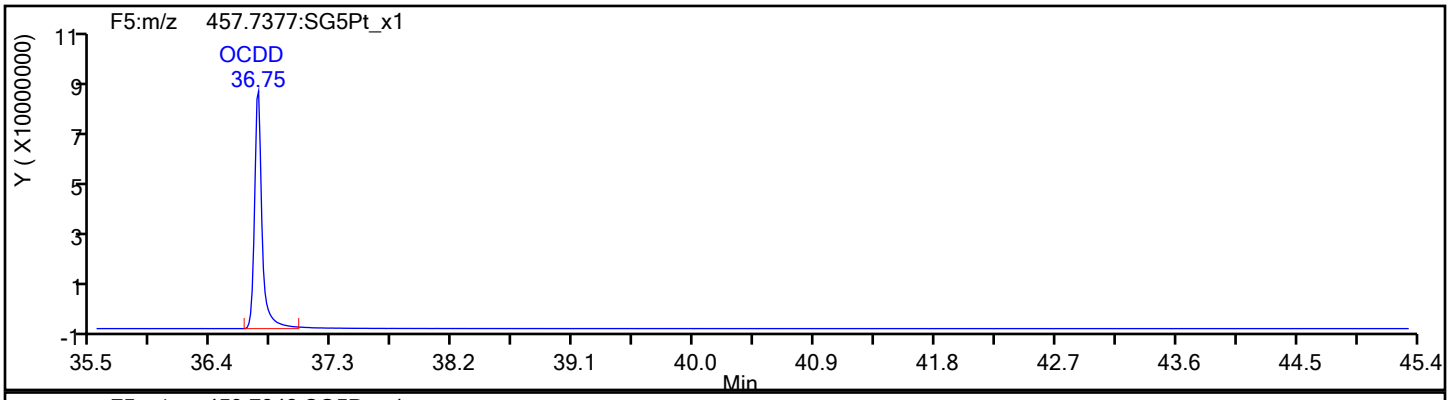


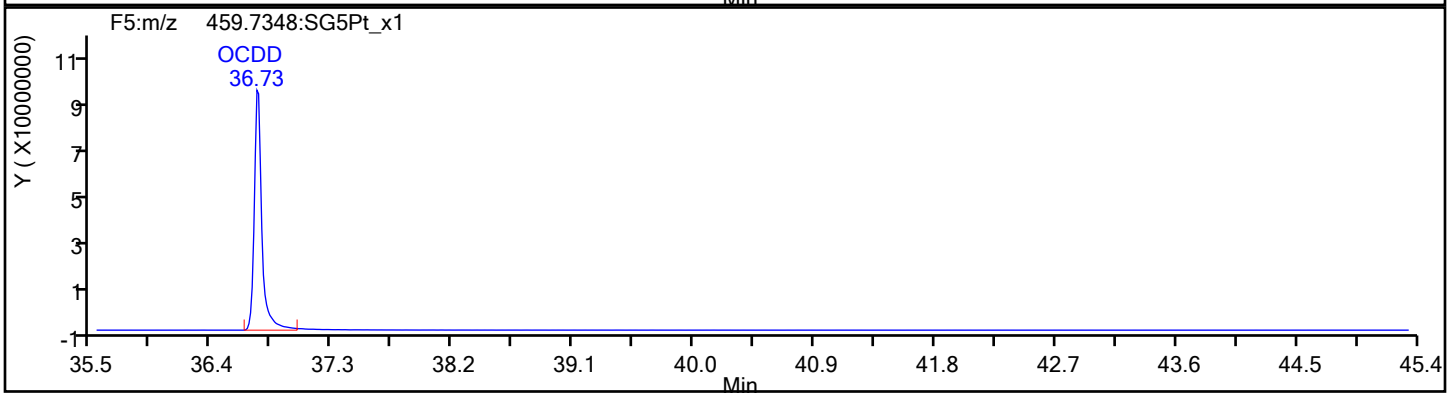
Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

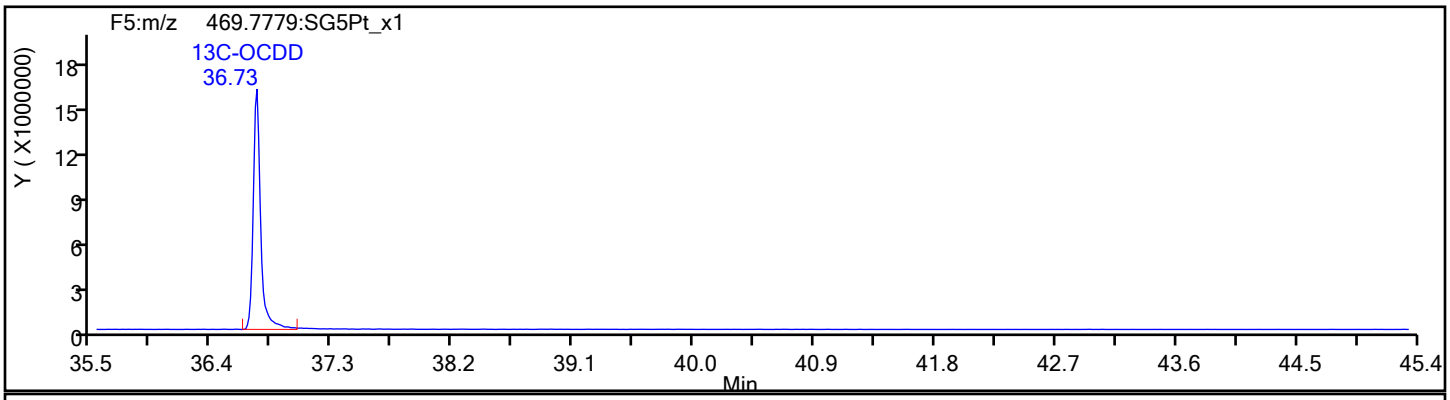
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm

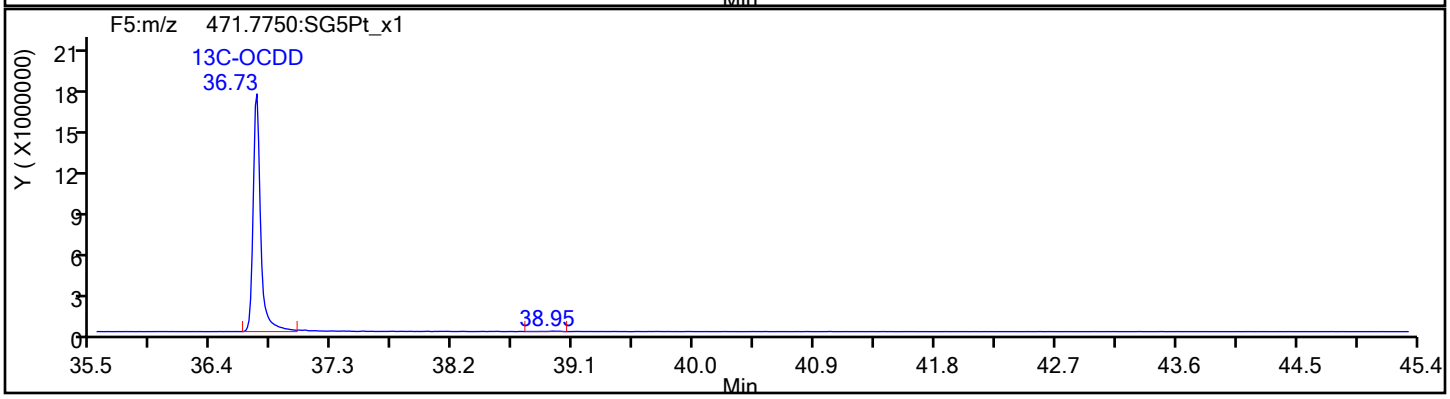
OCDD





OCDD Standards

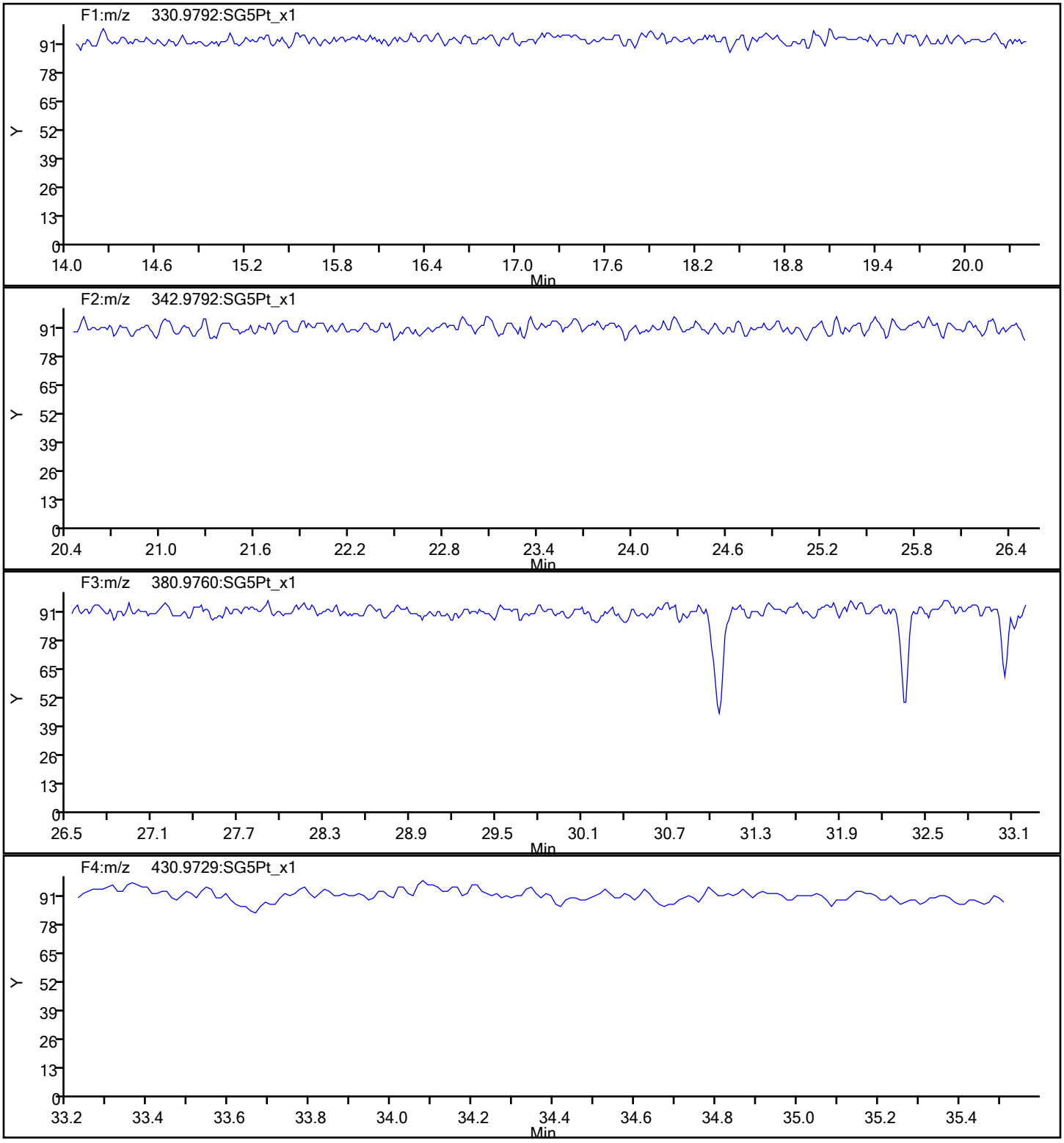




Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

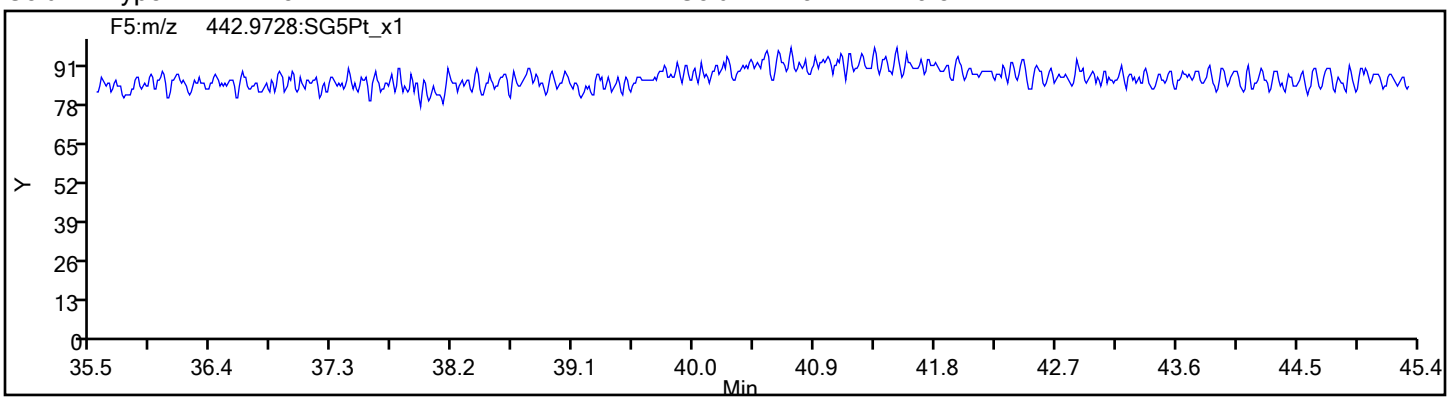
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 22-Dec-2019 13:01:18 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_14.d		
Injection Date:	19-Dec-2019 21:19:13	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346752	Sample Line#:	14
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: 11187072-120919-BN-SJSSA04(4-6) RA Lab Sample ID: 320-56953-8 RA

Matrix: Sediment Lab File ID: 19DE19A11D2_013.d

Analysis Method: 1613B Date Collected: 12/09/2019 16:20

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 9.99(g) Date Analyzed: 12/19/2019 23:52

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: 57.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 346764 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	110		2.3	0.51

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	65		24-169

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	116		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 23:52:49 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-8-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.380	217313866	0.77	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.574	190024781	0.79	1.3379	65.4	65.4	0.2104	0.2104	65.36	
2,3,7,8-TCDF	16.601	36097169	0.80	0.8389	22.6	22.6	0.1092	0.1092		
D 13C-2,3,7,8-TCDD	15.133	120179347	0.79	0.9388	58.9	58.9	0.7470	0.7470	58.91	
2,3,7,8-TCDD	15.161	10021040	0.79	1.1538	7.227	7.227	0.0930	0.0930		
$ 37Cl4-2,3,7,8-TCDD	15.161	118878874		1.1816	46.3	46.3	0.0670	0.0670	116	
S Total 2378-Chlorinated							0.000100	0.000100		

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d
Lims ID: 320-56953-A-8-A
Client ID: 11187072-120919-BN-SJSSA04(4-6)
Sample Type: Client
Inject. Date: 19-Dec-2019 23:52:49 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-56953-A-8-A
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:36:08 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:35:45

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.380	15.376	0		94541250	20012506	67933	169832	295		
333.9339	15.394	15.376	1		122772616	26245860	61835	154587	424	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.574	16.556	1	1.078	83659672	15665208	27832	69580	563		
317.9389	16.574	16.556	1	1.078	106365109	20268997	24249	60622	836	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.601	16.570	2	1.002	15987336	3169364	5402	13505	587		
305.8987	16.601	16.570	2	1.002	20109833	3888926	7762	19405	501	0.80(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.133	15.116	1	0.984	53132123	11524141	67933	169832	170		
333.9339	15.133	15.116	1	0.984	67047224	14599248	61835	154587	236	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.161	15.143	1	1.002	4429735	951643	7061	17652	135		
321.8936	15.161	15.143	1	1.002	5591305	1158449	4149	10372	279	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.161	15.143	1	0.986	118878874	24821405	14656	36640	1694		

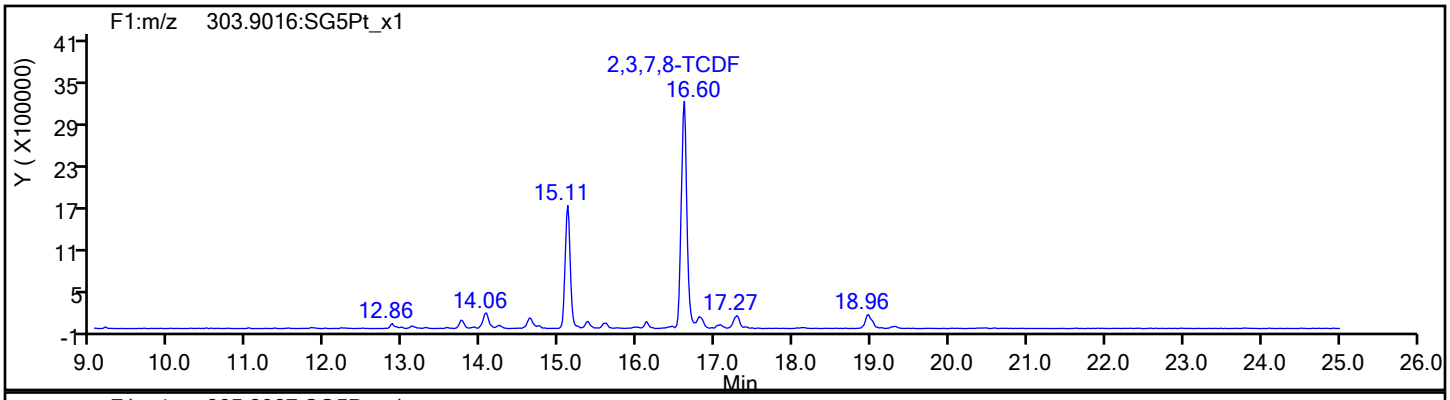
Total 2378-Chlorinated Dioxins & Furans
0.0 0

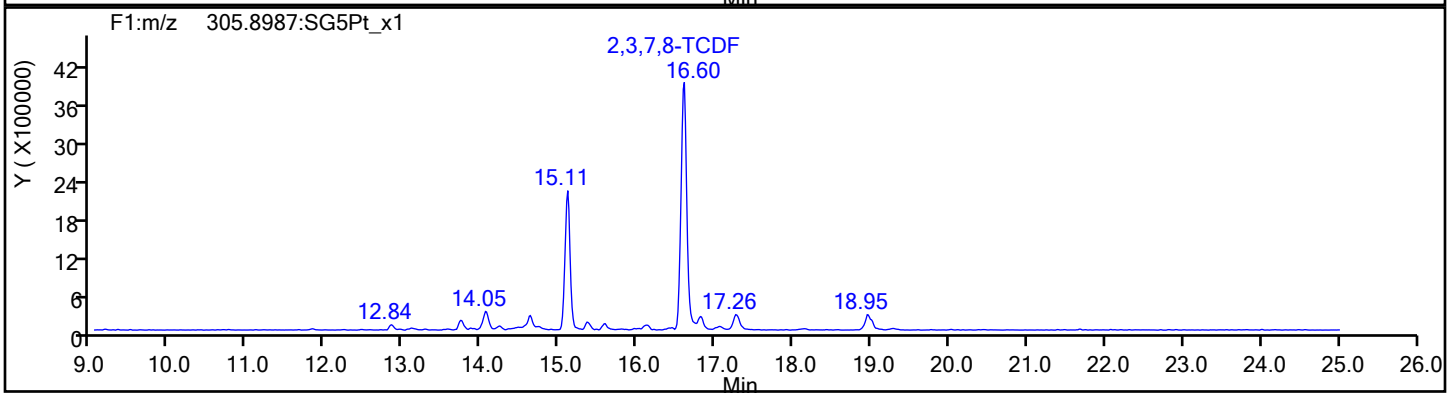
Report Date: 20-Dec-2019 14:38:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

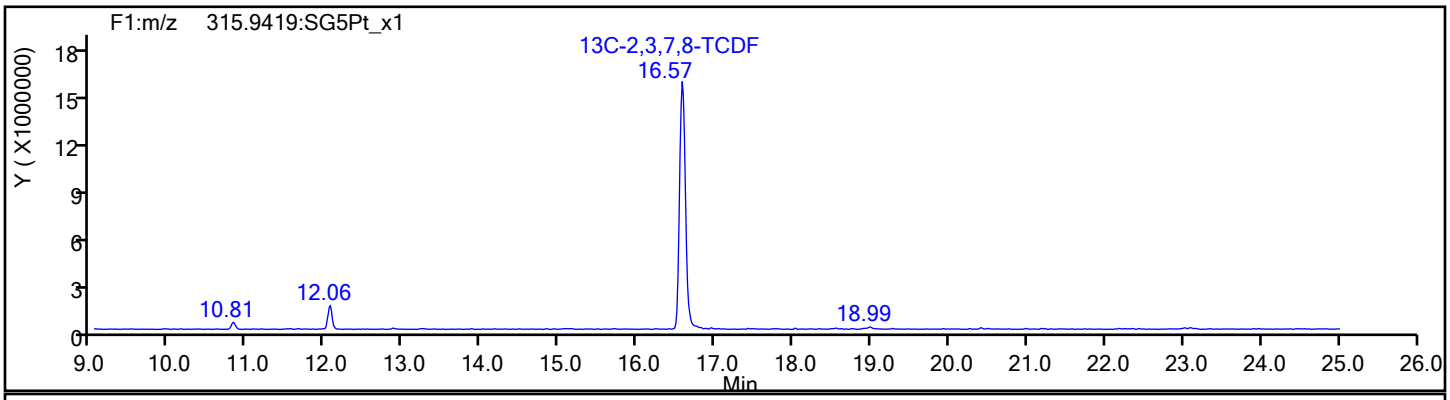
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d		
Injection Date:	19-Dec-2019 23:52:49	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346764	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

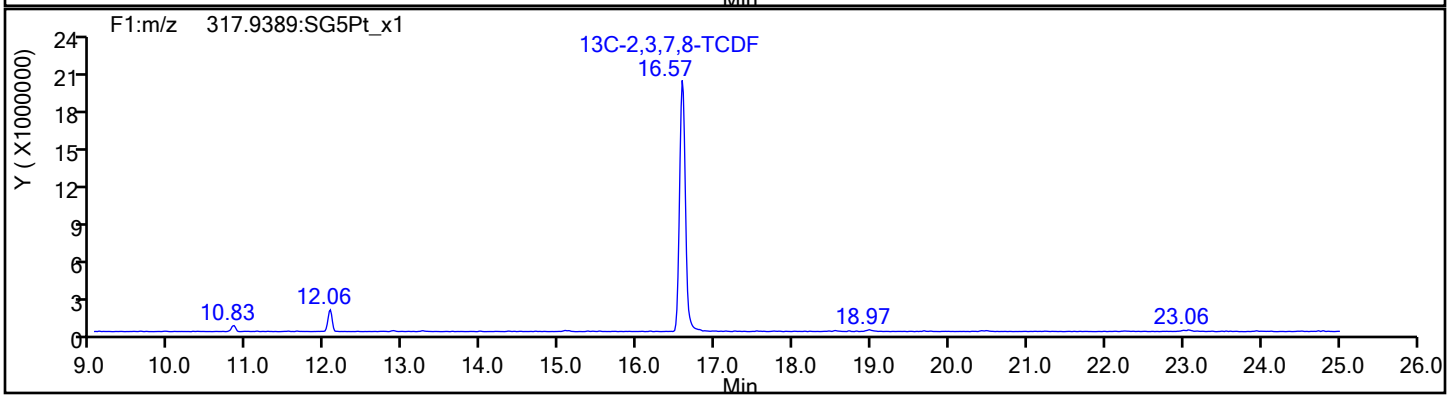
TCDF





TCDF Standards



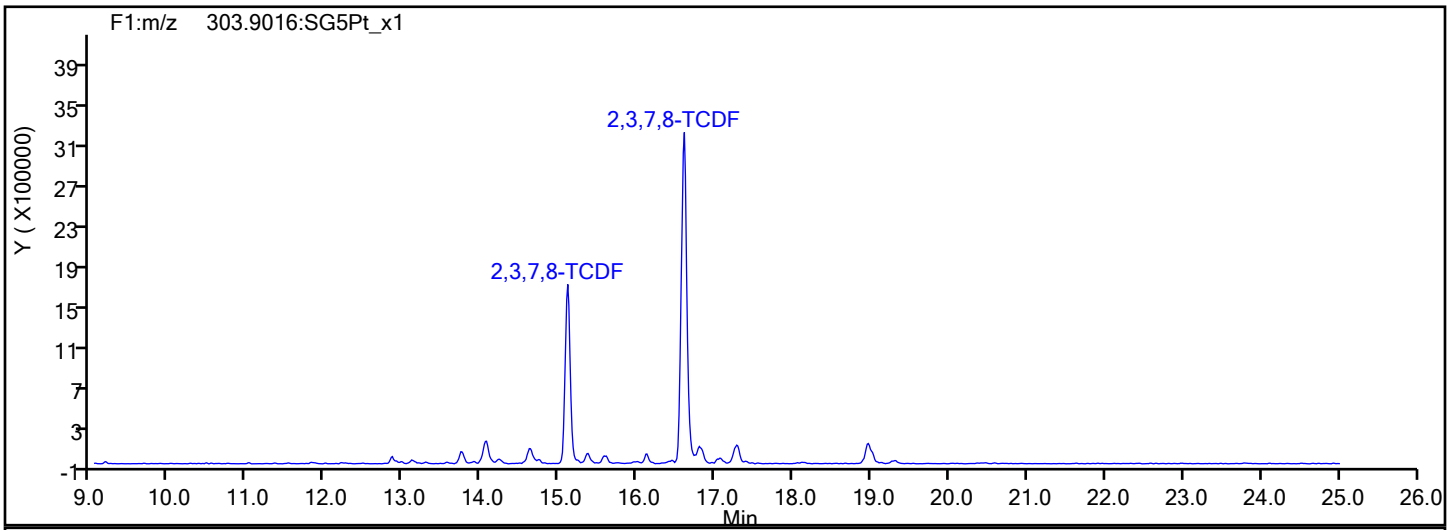


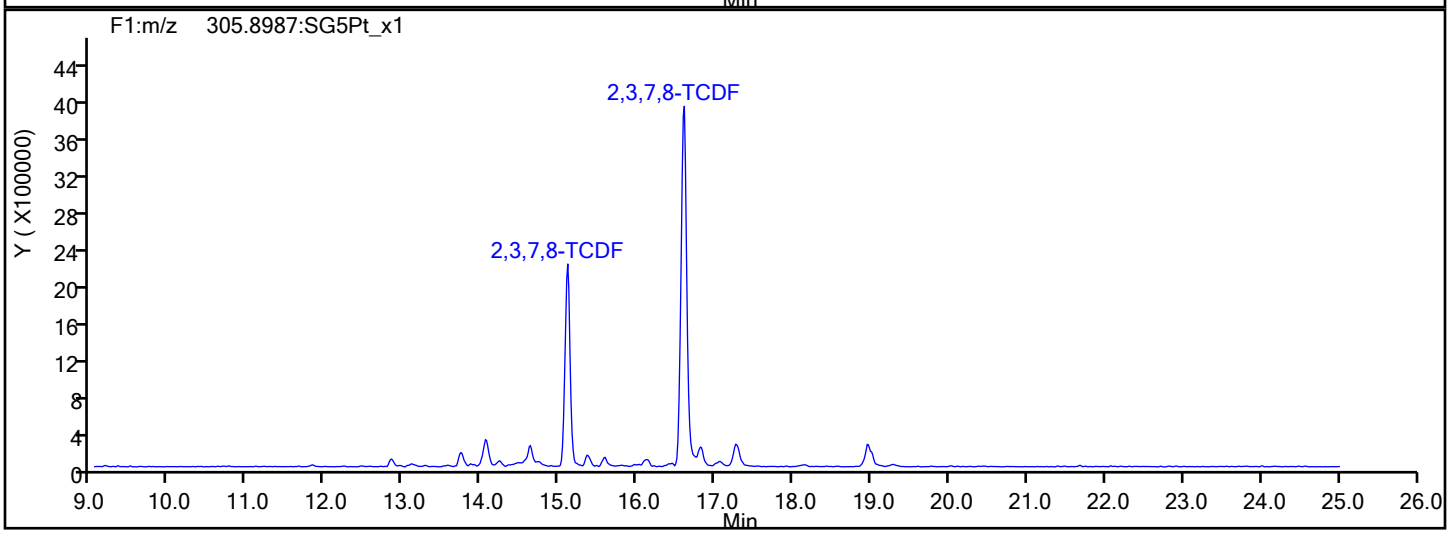
Report Date: 20-Dec-2019 14:38:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

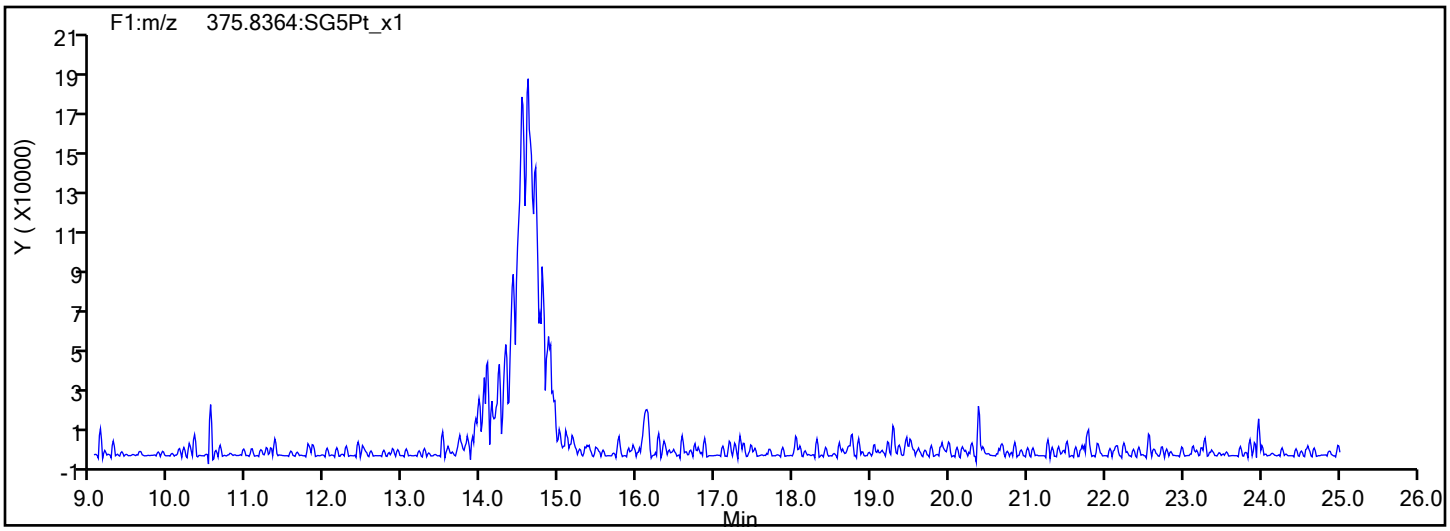
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d		
Injection Date:	19-Dec-2019 23:52:49	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346764	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

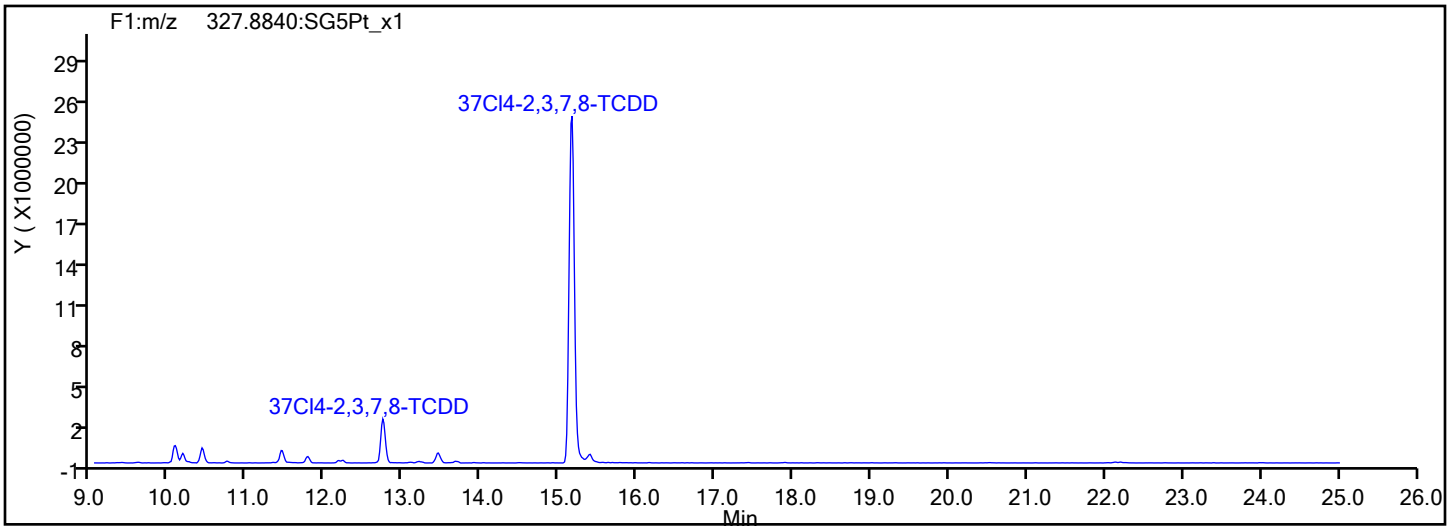


Report Date: 20-Dec-2019 14:38:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

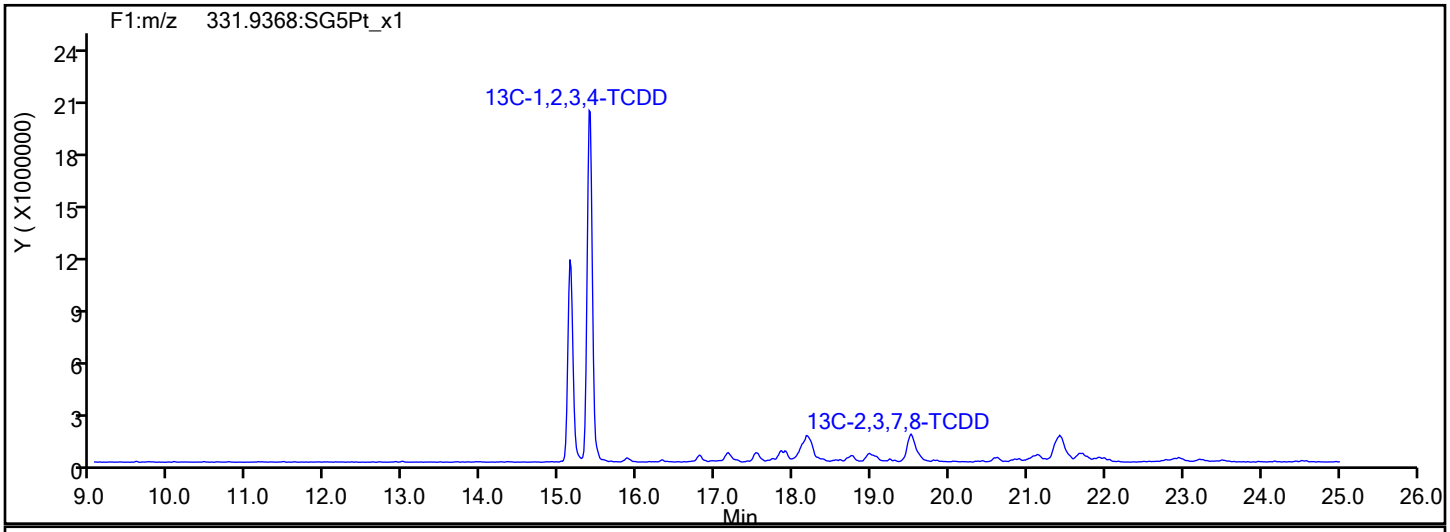
Eurofins TestAmerica, Sacramento

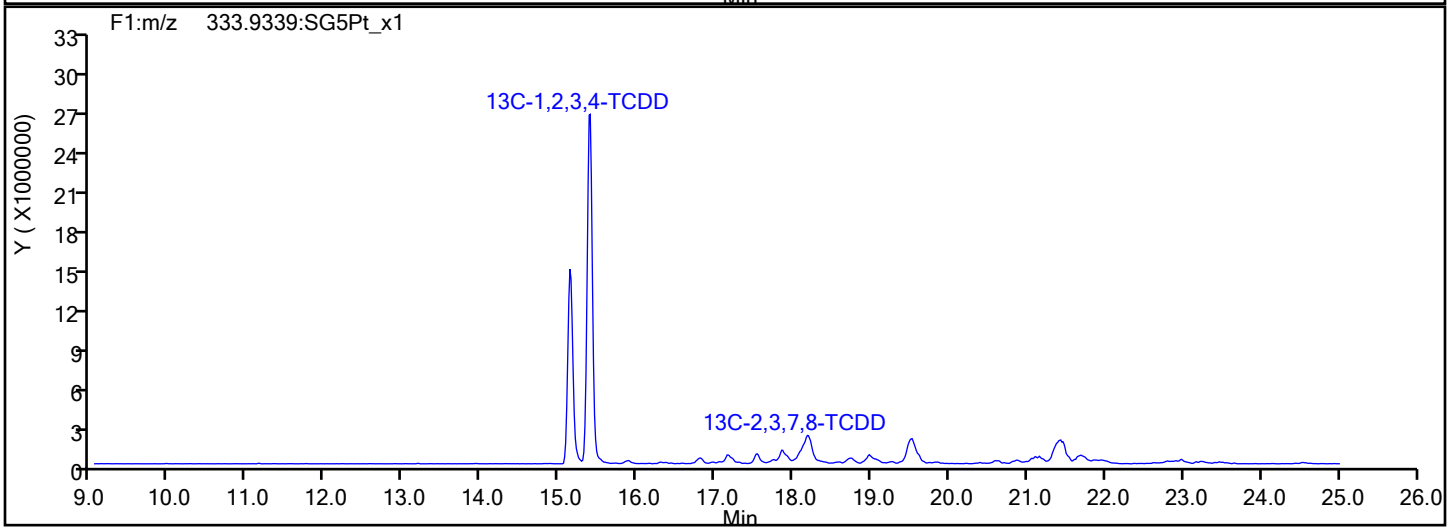
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d		
Injection Date:	19-Dec-2019 23:52:49	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346764	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

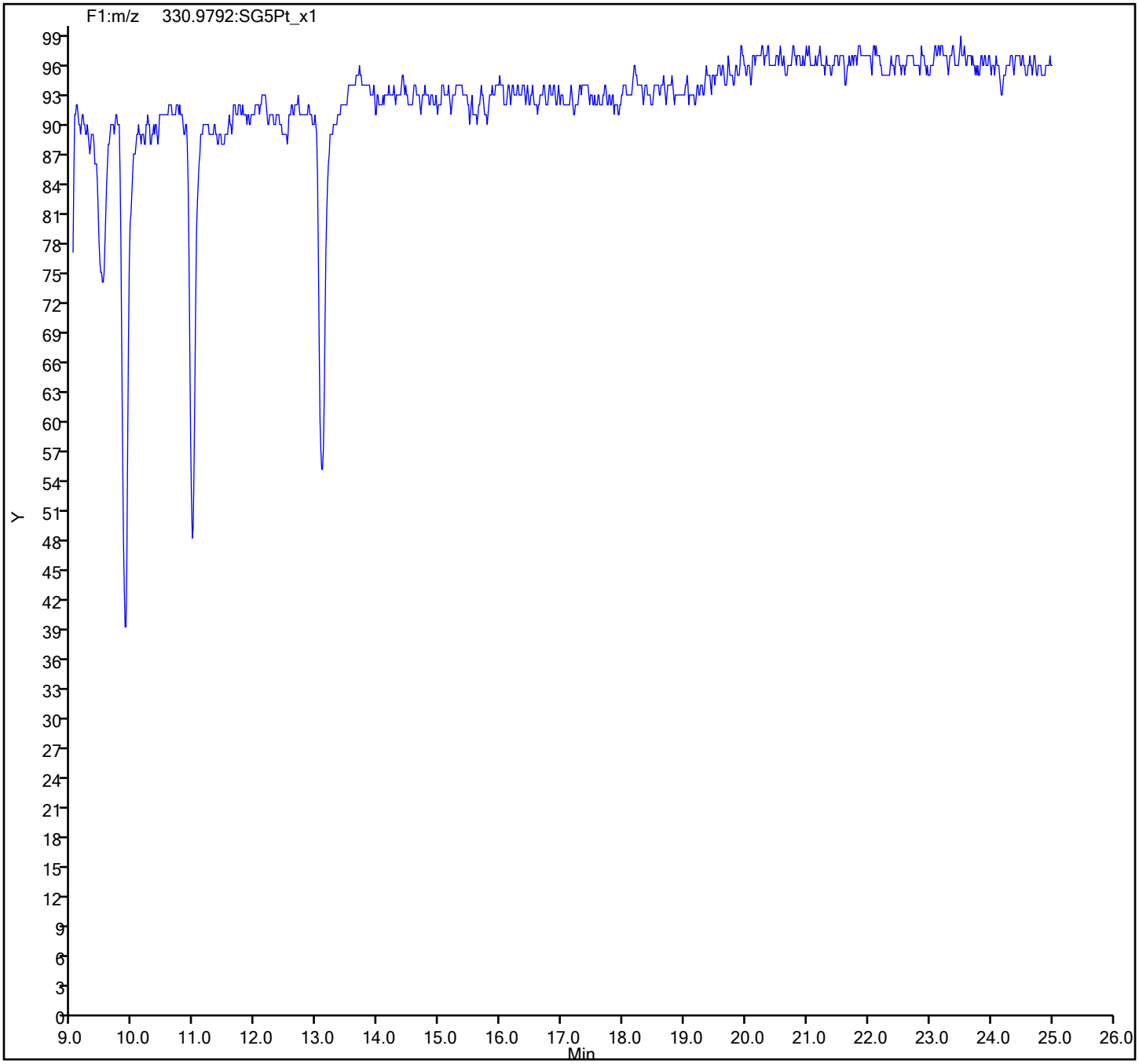




Report Date: 20-Dec-2019 14:38:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_013.d		
Injection Date:	19-Dec-2019 23:52:49	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:	11187072-120919-BN-SJSSA04(4-6)		
Worklist#:	346764	Sample Line#:	13
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 312067

SDG No.:

Instrument ID: 11D2 GC Column: DB-225 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/02/2019 02:52 Calibration End Date: 08/02/2019 05:25 Calibration ID: 46494

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-312067/3	02AU1911D2_003.d
Level 2	IC 320-312067/4	02AU1911D2_004.d
Level 3	IC 320-312067/5	02AU1911D2_005.d
Level 4	IC 320-312067/6	02AU1911D2_006.d
Level 5	IC 320-312067/7	02AU1911D2_007.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDD	1.4072	1.1517	0.9928	1.1253	1.0921	AveID		1.1538				13.3		20.0			
2,3,7,8-TCDF	0.9508	0.8634	0.7802	0.8060	0.7939	AveID		0.8389				8.4		20.0			
13C-2,3,7,8-TCDD	0.9860	0.9016	0.9603	0.9300	0.9162	Ave		0.9388				3.6		35.0			
13C-2,3,7,8-TCDF	1.4126	1.2992	1.3548	1.2560	1.3671	Ave		1.3379				4.6		35.0			
37Cl4-2,3,7,8-TCDD	1.2464	1.0504	1.1674	1.2313	1.2128	Ave		1.1816				6.7					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 312067

SDG No.:

Instrument ID: 11D2 GC Column: DB-225 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/02/2019 02:52 Calibration End Date: 08/02/2019 05:25 Calibration ID: 46494

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-312067/3	02AU1911D2_003.d
Level 2	IC 320-312067/4	02AU1911D2_004.d
Level 3	IC 320-312067/5	02AU1911D2_005.d
Level 4	IC 320-312067/6	02AU1911D2_006.d
Level 5	IC 320-312067/7	02AU1911D2_007.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDD		AveID	766838	2408989	10136940	48146783	221171643	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDF		AveID	742351	2602621	11238394	46575552	239921851	0.500	2.00	10.0	40.0	200
13C-2,3,7,8-TCDD	13CTC	Ave	108987233	104587968	102100937	106968299	101263855	100	100	100	100	100
13C-2,3,7,8-TCDF	13CTC	Ave	156147949	150712836	144041178	144459393	151101344	100	100	100	100	100
37Cl4-2,3,7,8-TCDD	13CTC	Ave	688870	2436945	9929024	56650769	268090229	0.500	2.00	8.00	40.0	200

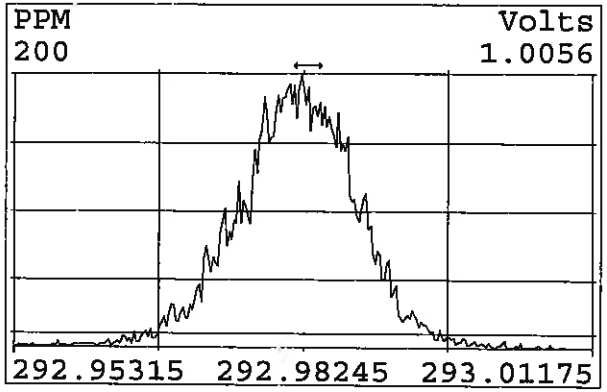
Curve Type Legend:

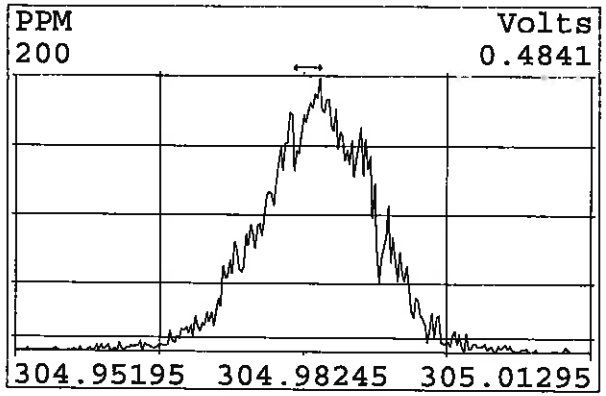
Ave = Average ISTD
AveID = Average isotope dilution

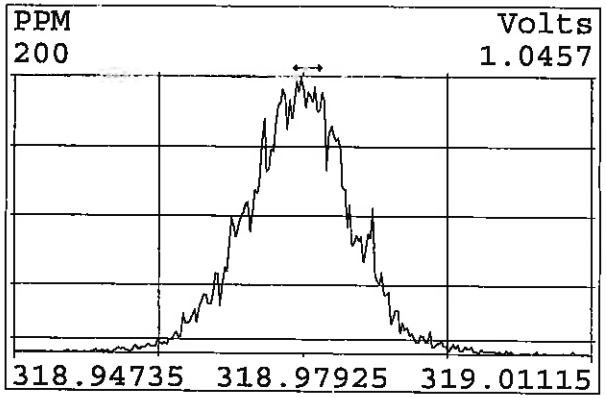
Data file	Smp	Work Order	Sample ID	FV-uL	Method/Matrix	Box	Size	U
02AU1911D2	1	CPS 080219	CPS HRDXNCP_00038		Dioxin		1.00000	
02AU1911D2	2	SB 080219	SB Solvent Blank C-14				1.00000	
02AU1911D2	3	IC 080219	CS-2 HRDXNL2_00027		Dioxin		1.00000	
02AU1911D2	4	IC 080219A	CS-3 HRDXNL3_00025		Dioxin		1.00000	
02AU1911D2	5	IC 080219B	CS-4 HRDXNL4_00084		Dioxin		1.00000	
02AU1911D2	6	IC 080219C	CS-5 HRDXNL5_00028		Dioxin		1.00000	
02AU1911D2	7	IC 080219D	CS-6 HRDXNL6_00024		Dioxin		1.00000	
02AU1911D2	8	ICV 080219	ICV HRDXNIC_00042		Dioxin		1.00000	
02AU1911D2	9						1.00000	
02AU1911D2	10						1.00000	
02AU1911D2	11						1.00000	
02AU1911D2	12						1.00000	
02AU1911D2	13						1.00000	
02AU1911D2	14						1.00000	
02AU1911D2	15						1.00000	
02AU1911D2	16						1.00000	
02AU1911D2	17		ALM 08-02-19				1.00000	
02AU1911D2	18						1.00000	

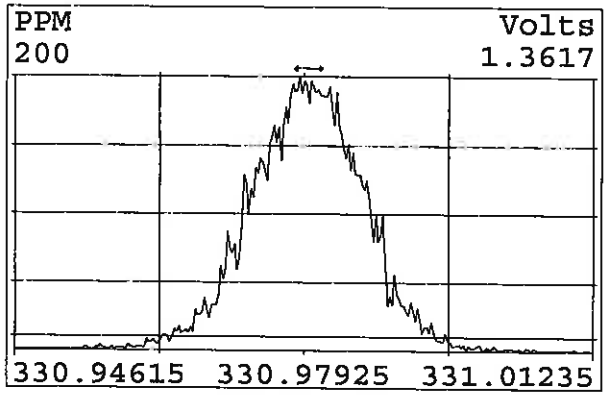
Logfile checked
08/02/19 SMA

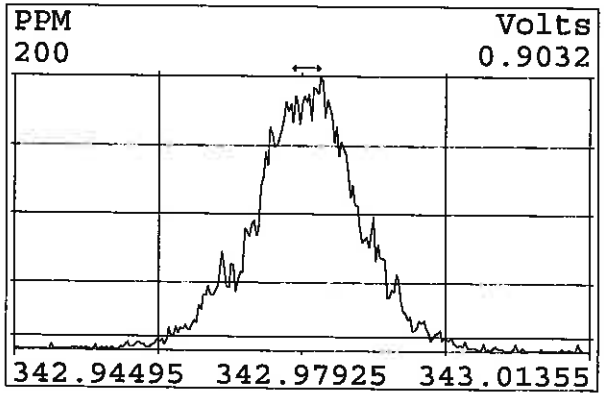
Peak Locate Examination: 2-AUG-2019:01:33 File:02AU1911D2
Experiment:DB225RES Function:1 Reference:PFK

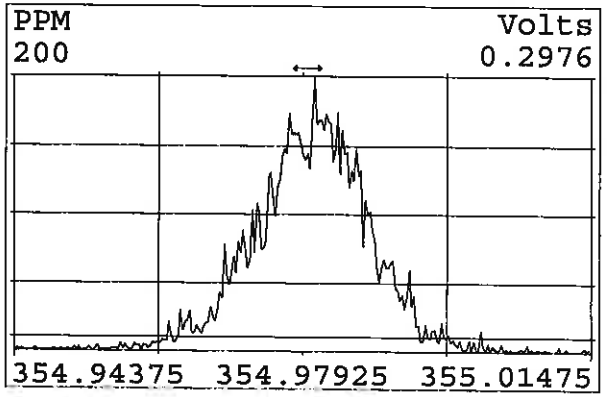


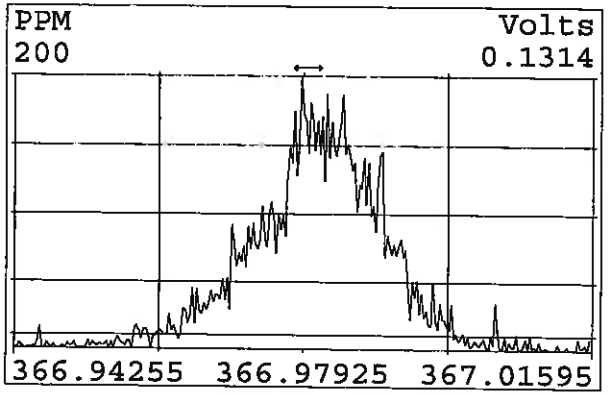


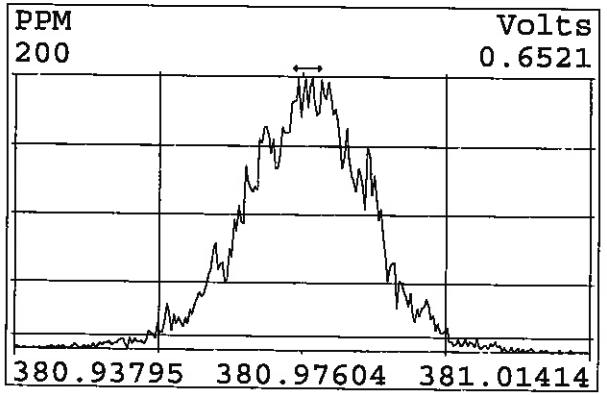




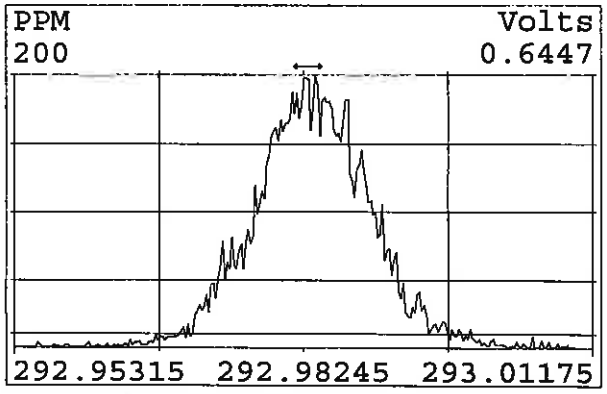


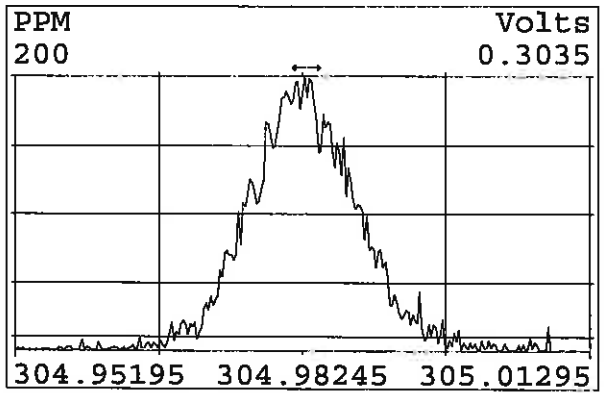


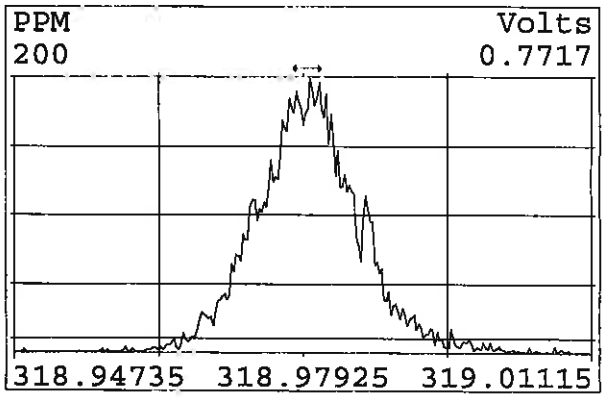


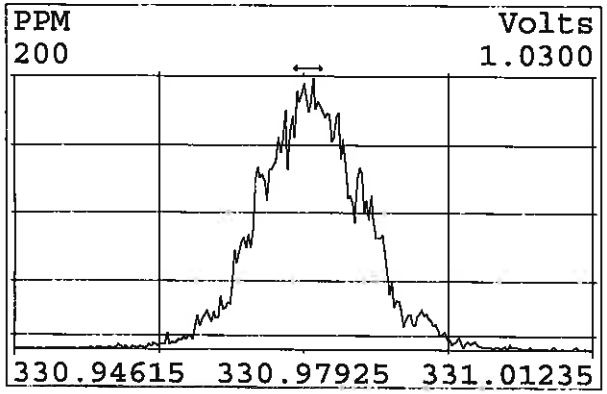


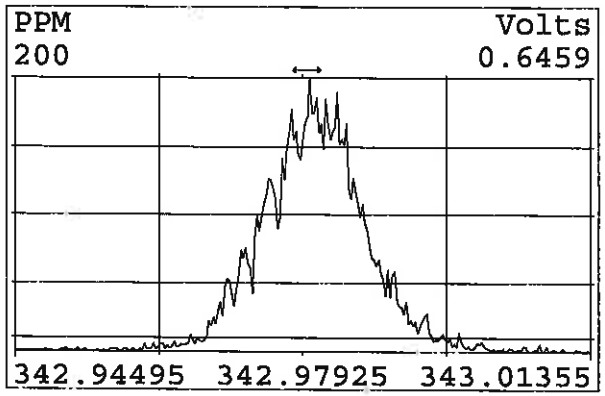
Peak Locate Examination: 2-AUG-2019:07:38 File:RESCHECK11D2
Experiment:DB225RES Function:1 Reference:PFK

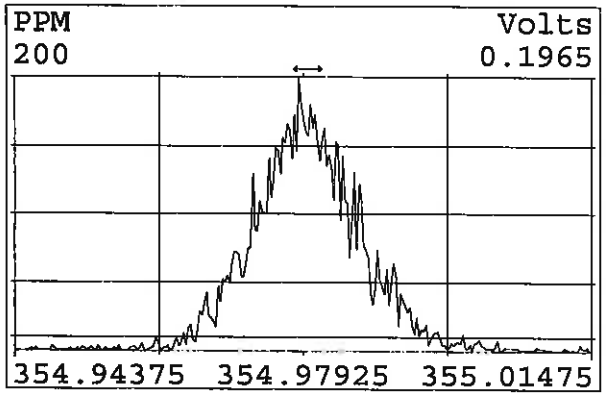


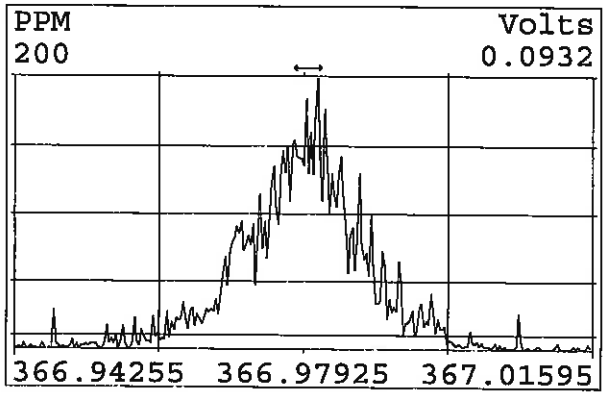


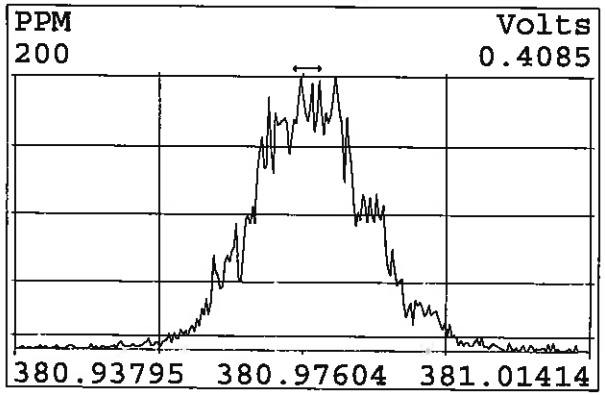












Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Aug-2019 02:52:03 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:46 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:34

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.424	110538697	0.80	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.591	156147949	0.76	1.3379	105.6	105.6	0.5565	0.5565	106	
2,3,7,8-TCDF	16.618	742351	0.68	0.8389	0.5667	0.5667	0.0601	0.0601	113	
D 13C-2,3,7,8-TCDD	15.150	108987233	0.78	0.9388	105.0	105.0	0.3029	0.3029	105	
2,3,7,8-TCDD	15.164	766838	0.66	1.1538	0.6098	0.6098	0.1272	0.1272	122	n
$ 37Cl4-2,3,7,8-TCDD	15.177	688870		1.1816	0.5274	0.5274	0.0799	0.0799	105	
S Total 2378-Chlorinated							0.000100	0.000100		

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

Reagents:

HRDXNL2_00027 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Aug-2019 02:52:03 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-2 HRDXNL2_00027
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:46 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:34

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.424	15.416	0		49211451	11686880	18543	46357	630		
333.9339	15.424	15.416	0		61327246	14873725	11665	29162	1275	0.80(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.591	16.580	1	1.076	67180120	14400770	53937	134842	267		
317.9389	16.591	16.580	1	1.076	88967829	19171242	25172	62930	762	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.618	16.599	1	1.002	300768	58292	2710	6775	22		
305.8987	16.604	16.599	0	1.001	441583	80440	4062	10155	20	0.68(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.150	15.136	1	0.982	47916340	11905033	18543	46357	642		
333.9339	15.150	15.136	1	0.982	61070893	14985948	11665	29162	1285	0.78(0.65-0.89)	
2,3,7,8-TCDD											n
319.8965	15.164	15.156	0	1.001	304053	63475	6504	16260	10		
321.8936	15.177	15.156	1	1.002	462785	92174	9277	23192	10	0.66(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.177	15.158	1	0.984	688870	148959	10036	25090	15		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

QC Flag Legend

Processing Flags
n - Failed Sig-To-Noise Test

Reagents:

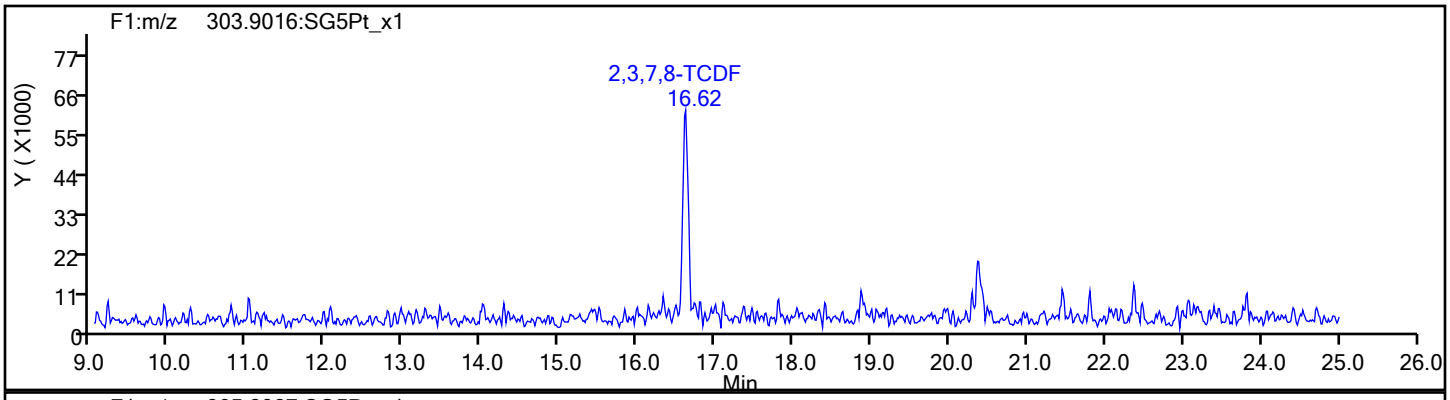
HRDXNL2_00027 Amount Added: 1.00 Units: mL

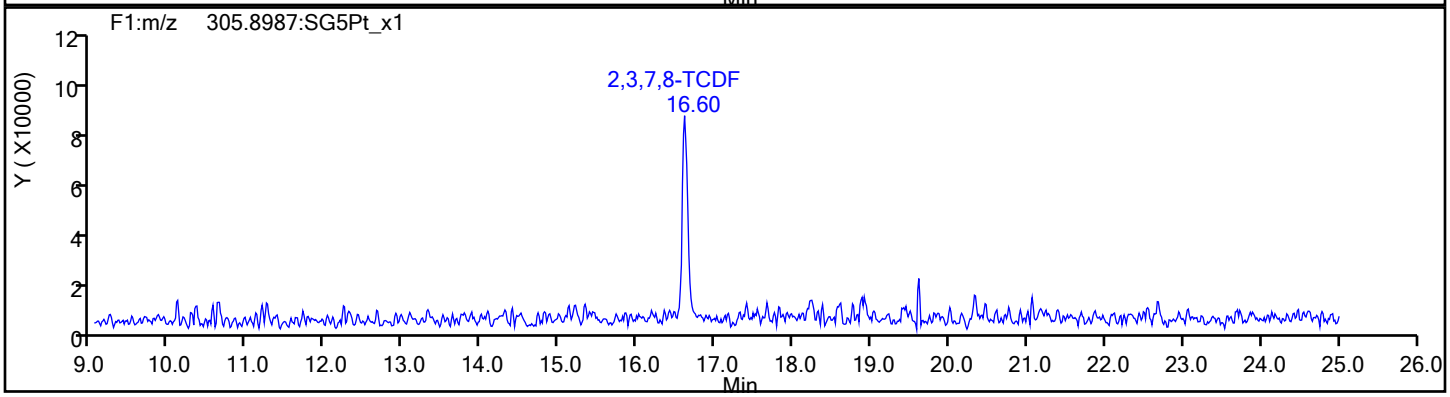
Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

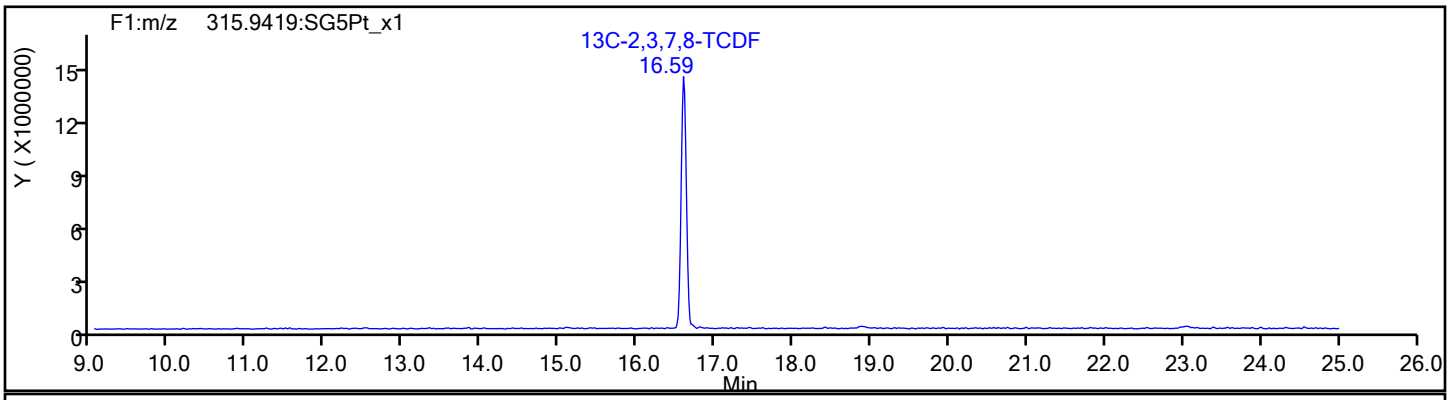
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

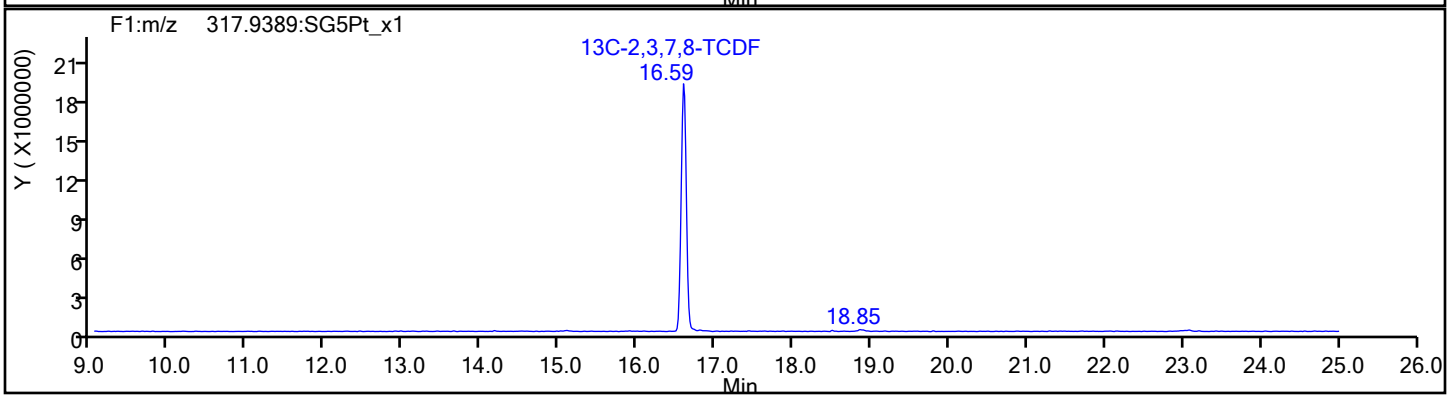
TCDF





TCDF Standards





Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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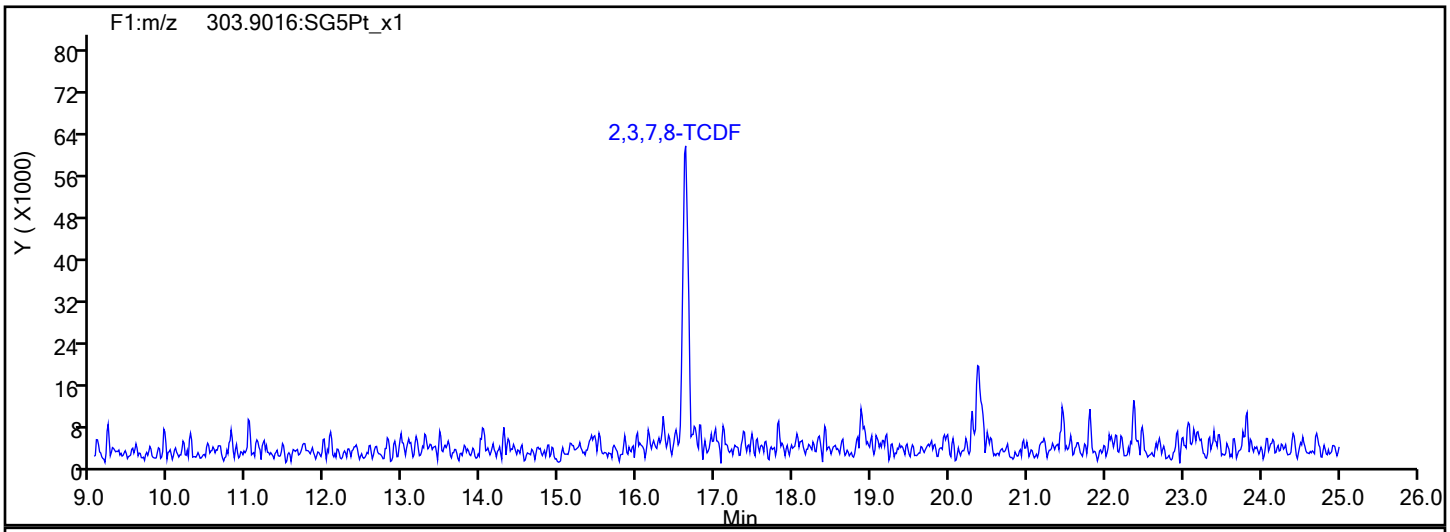
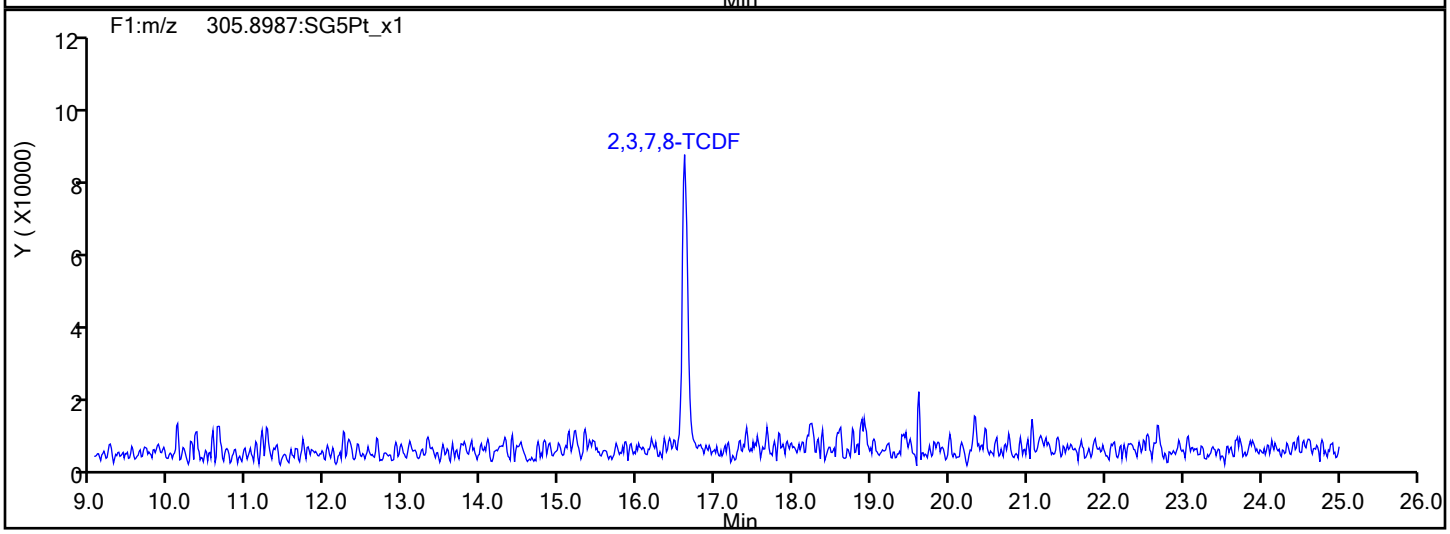
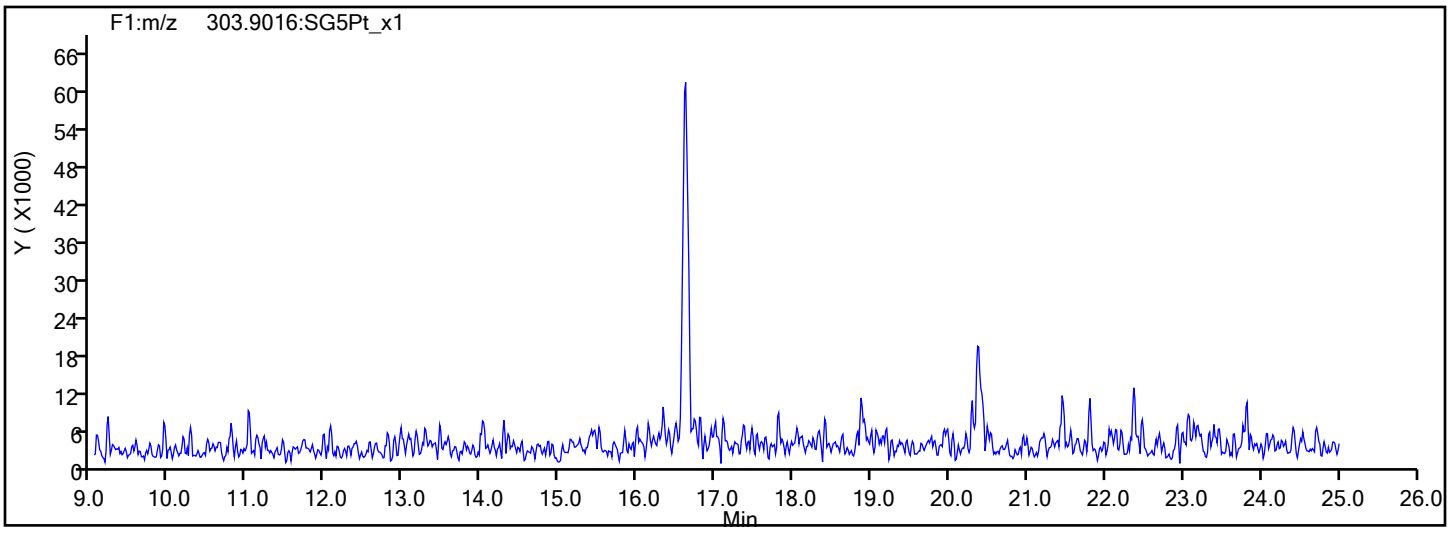
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

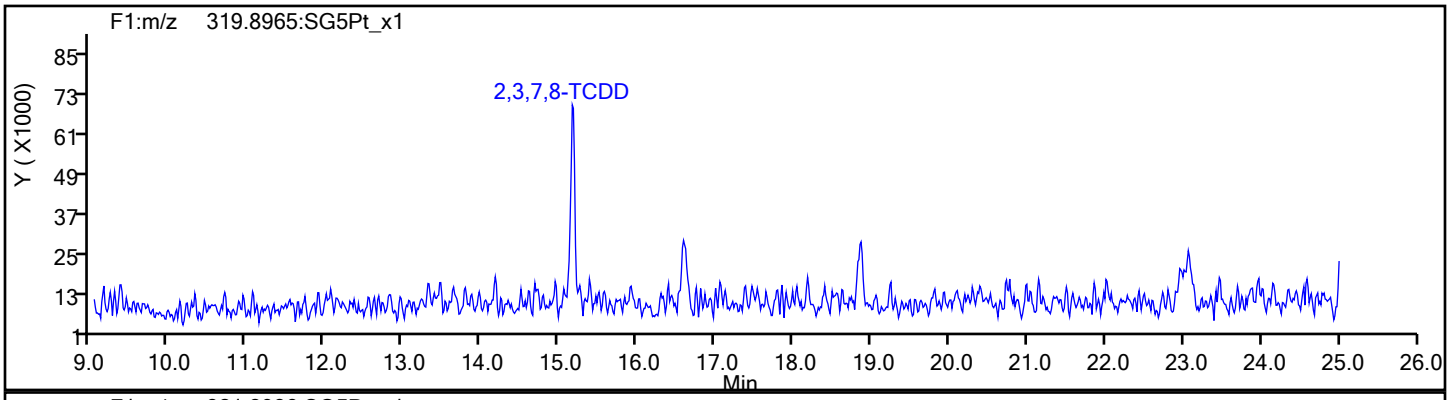


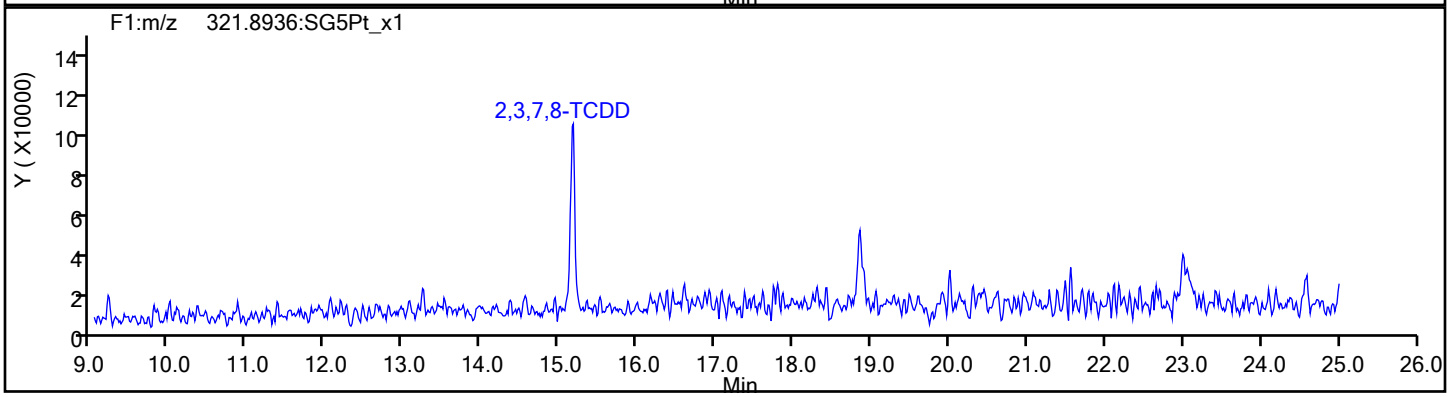
Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

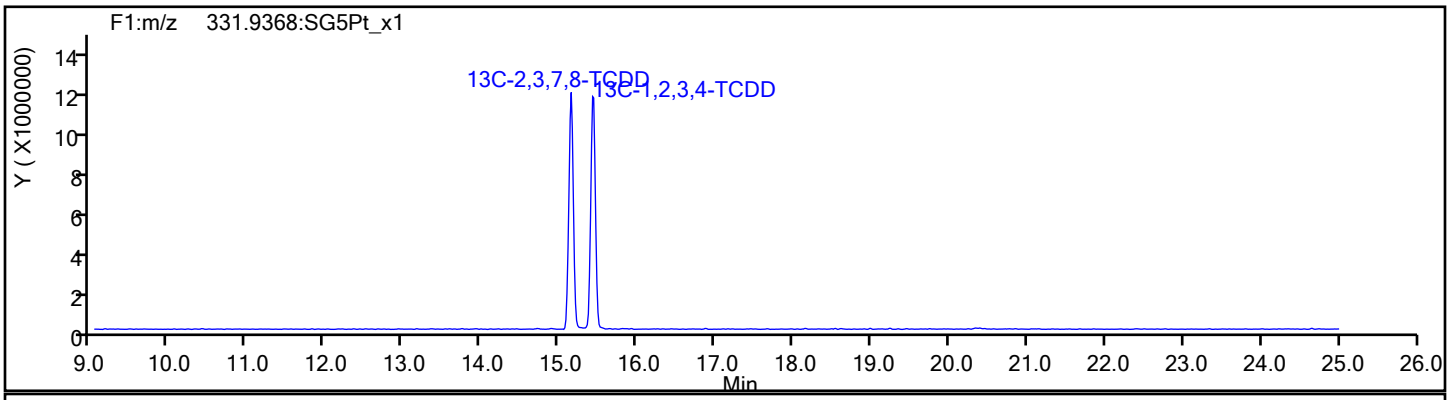
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

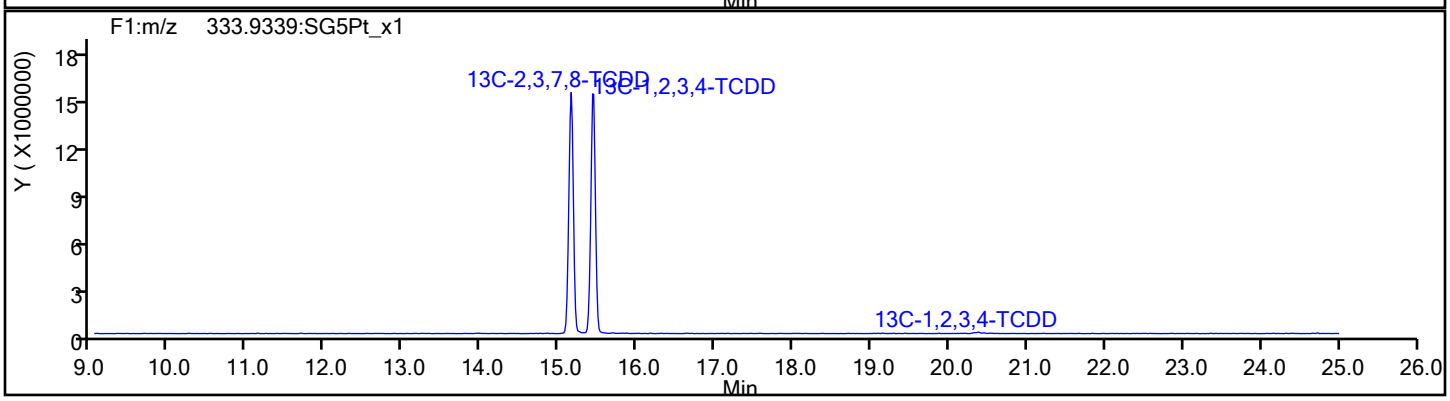
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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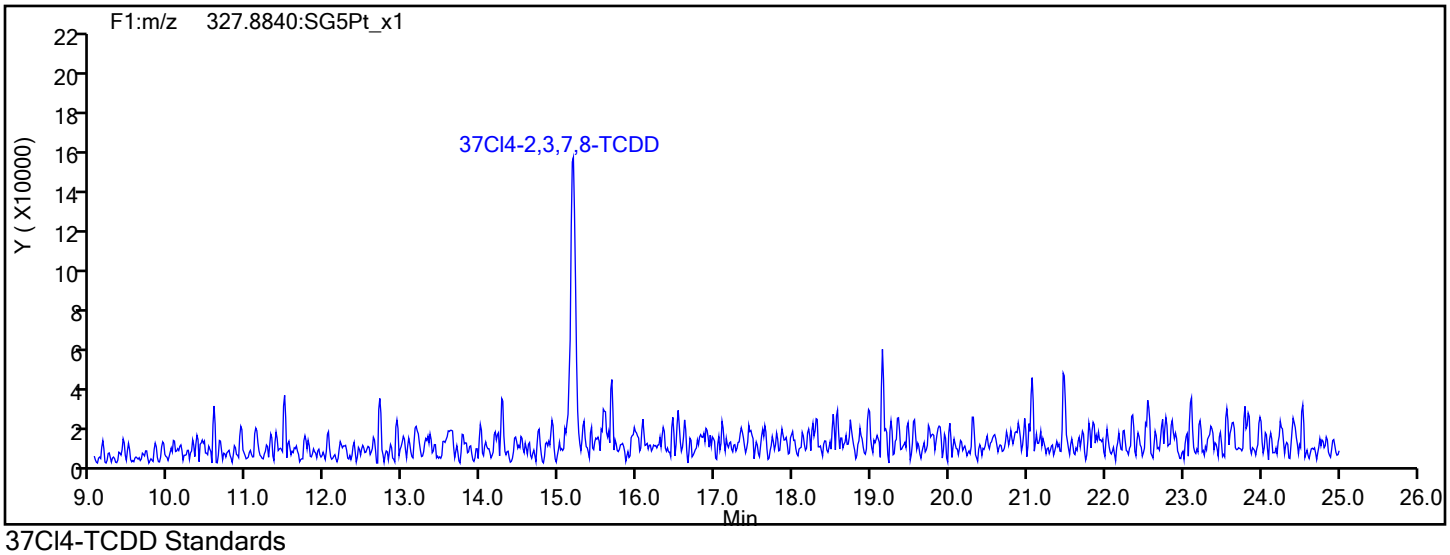
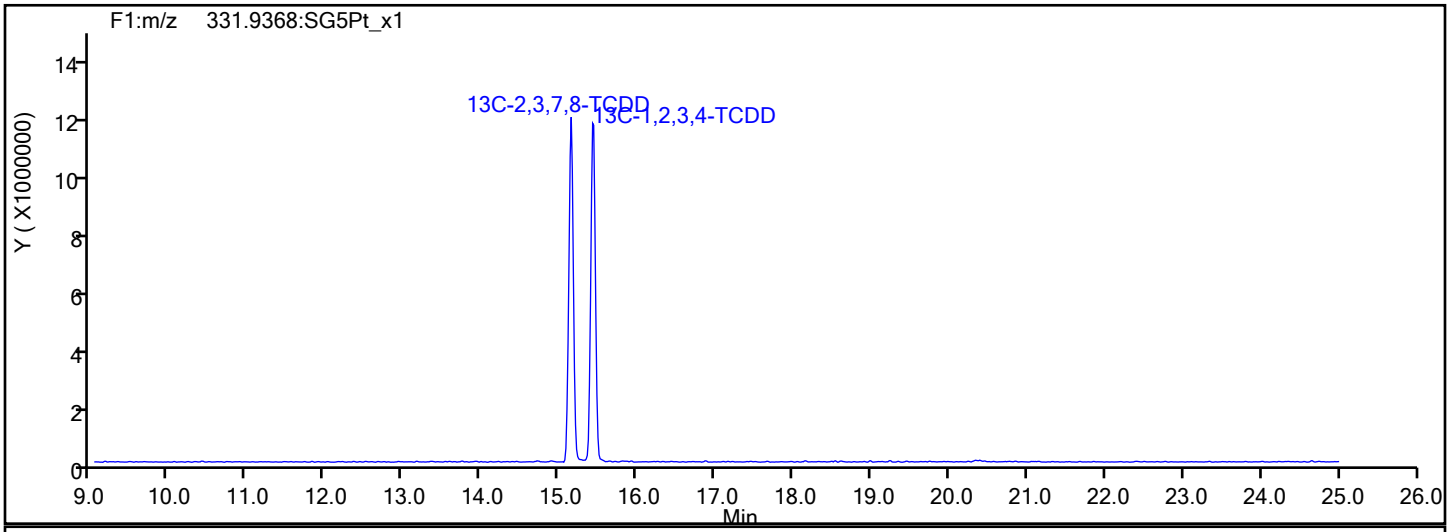
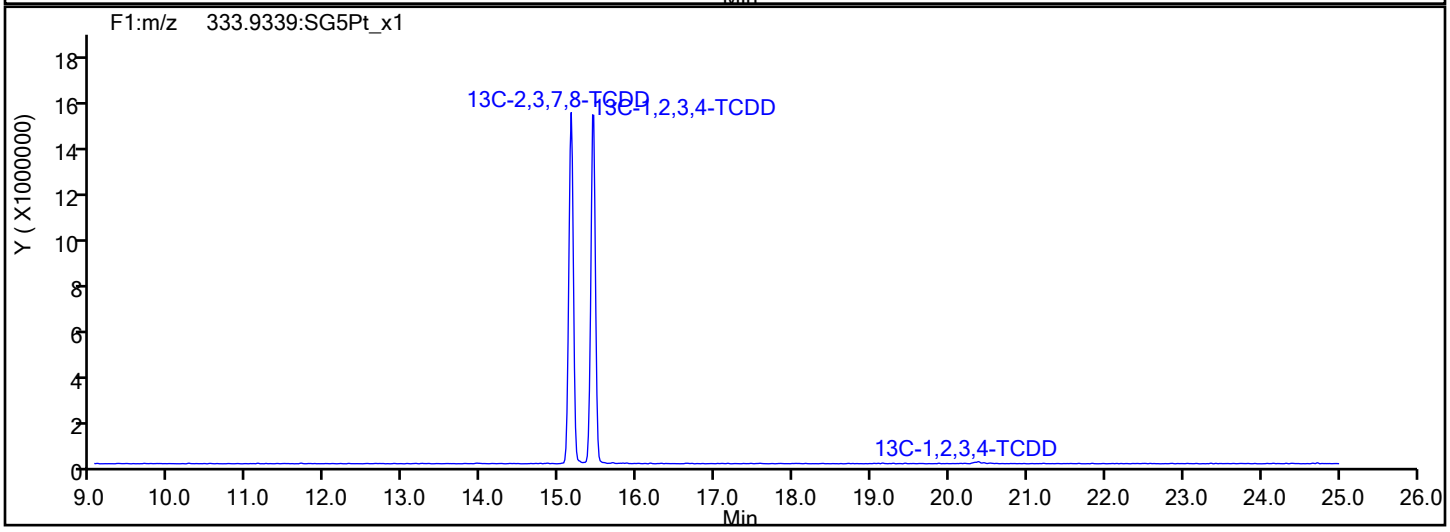
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

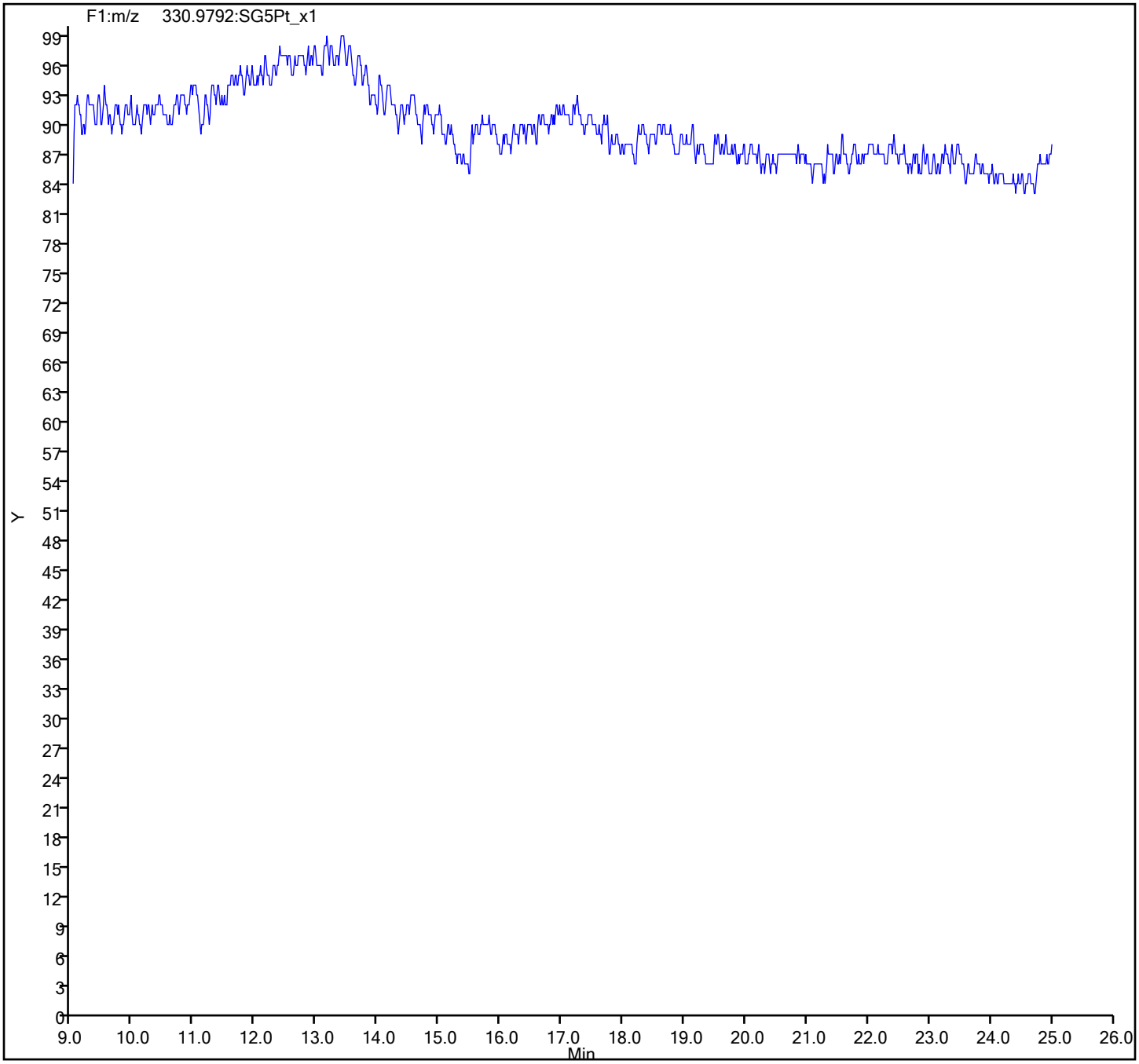




Report Date: 02-Aug-2019 11:50:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_003.d		
Injection Date:	02-Aug-2019 02:52:03	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	3
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Aug-2019 03:30:21 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:51:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:45

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.422	116003371	0.79	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.588	150712836	0.76	1.3379	97.1	97.1	0.5017	0.5017	97.11	
2,3,7,8-TCDF	16.602	2602621	0.77	0.8389	2.059	2.059	0.0697	0.0697	103	
D 13C-2,3,7,8-TCDD	15.134	104587968	0.77	0.9388	96.0	96.0	0.2954	0.2954	96.04	
2,3,7,8-TCDD	15.161	2408989	0.76	1.1538	1.996	1.996	0.1402	0.1402	99.81	
$ 37Cl4-2,3,7,8-TCDD	15.161	2436945		1.1816	1.778	1.778	0.0697	0.0697	88.89	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL3_00025 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Aug-2019 03:30:21 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-3 HRDXNL3_00025
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:51:18 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:43:45

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.422	15.416	0		51108109	12518707	19618	49045	638		
333.9339	15.422	15.416	0		64895262	16017022	12040	30100	1330	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.588	16.580	0	1.076	65303459	13590544	55233	138082	246		
317.9389	16.588	16.580	0	1.076	85409377	18139250	21388	53470	848	0.76(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.602	16.599	0	1.001	1128784	210338	2933	7332	72		
305.8987	16.602	16.599	0	1.001	1473837	306111	4488	11220	68	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.134	15.136	0	0.981	45657518	11153304	19618	49045	569		
333.9339	15.134	15.136	0	0.981	58930450	14086226	12040	30100	1170	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.161	15.156	0	1.002	1042745	248740	6492	16230	38		
321.8936	15.161	15.156	0	1.002	1366244	315049	9844	24610	32	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.161	15.158	0	0.983	2436945	572005	9406	23515	61		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

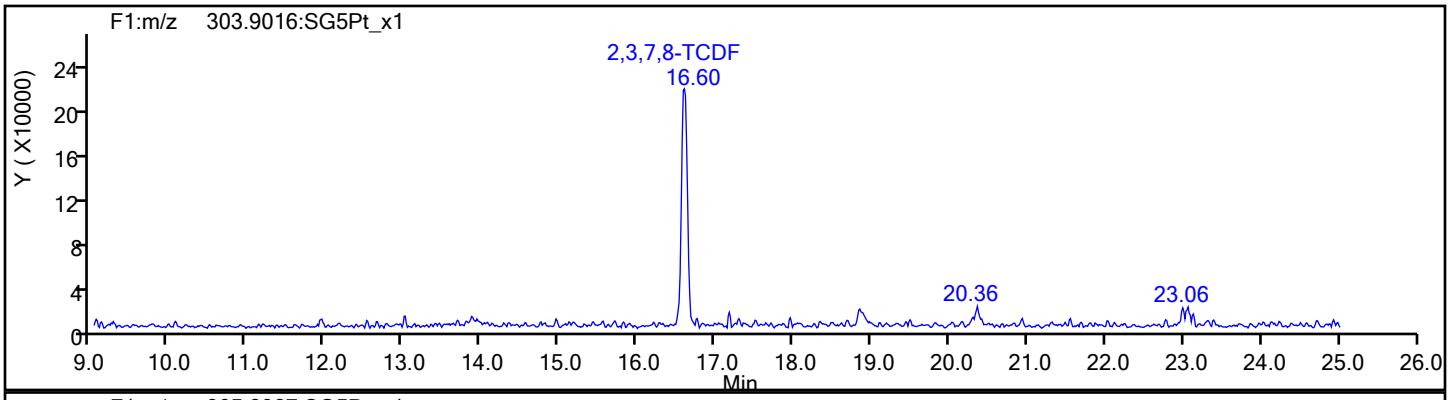
HRDXNL3_00025 Amount Added: 1.00 Units: mL

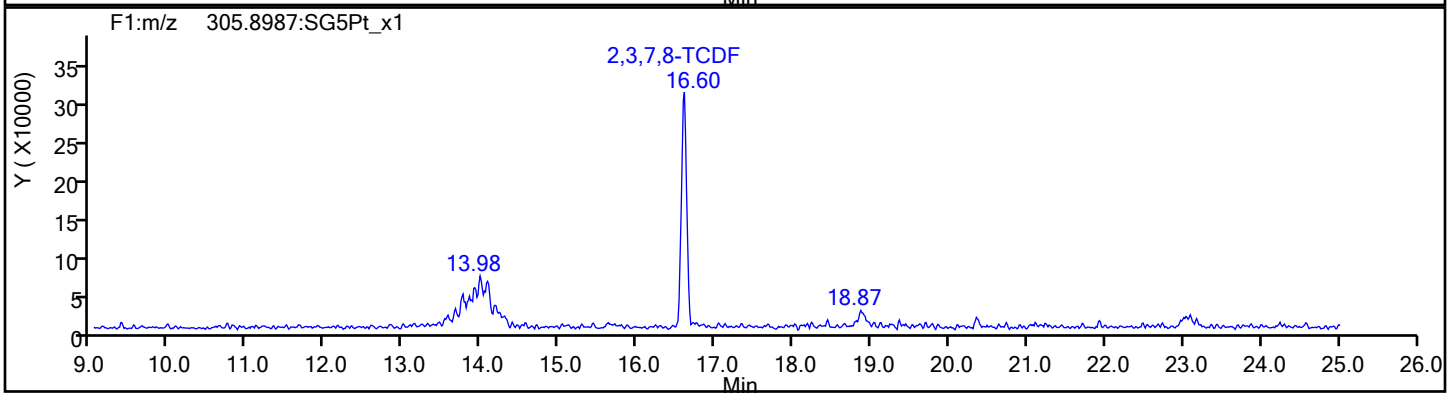
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

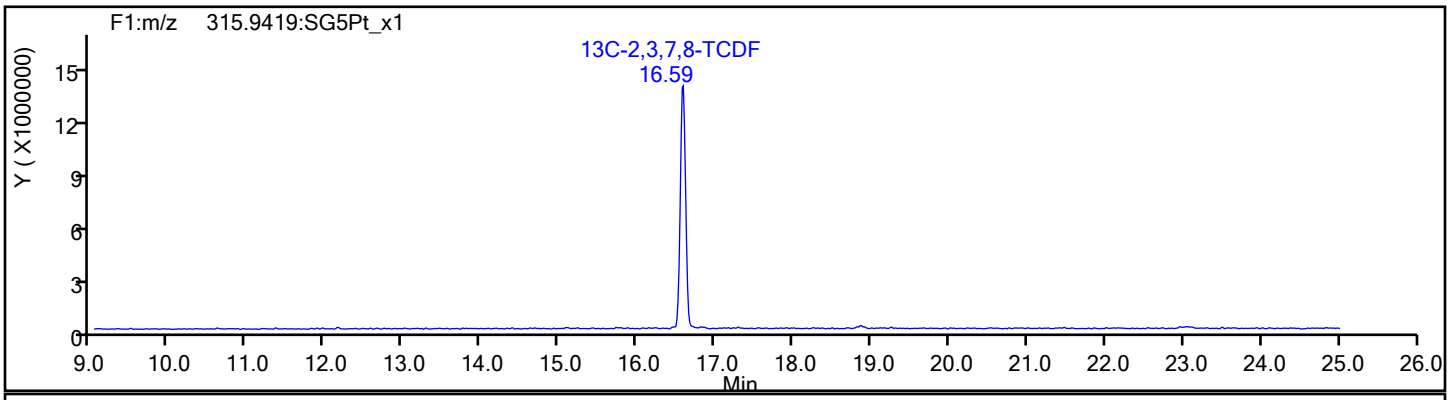
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

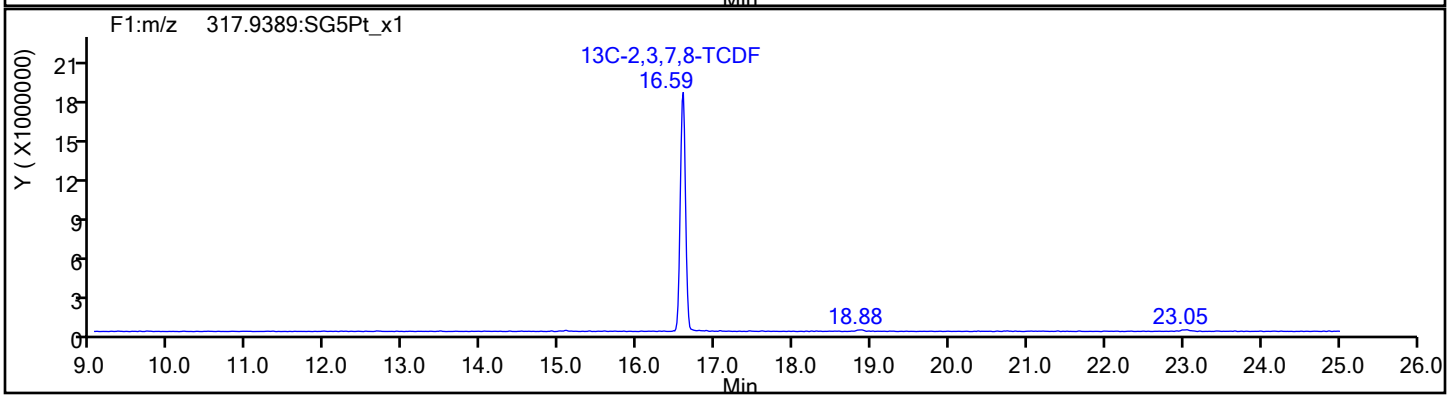
TCDF





TCDF Standards



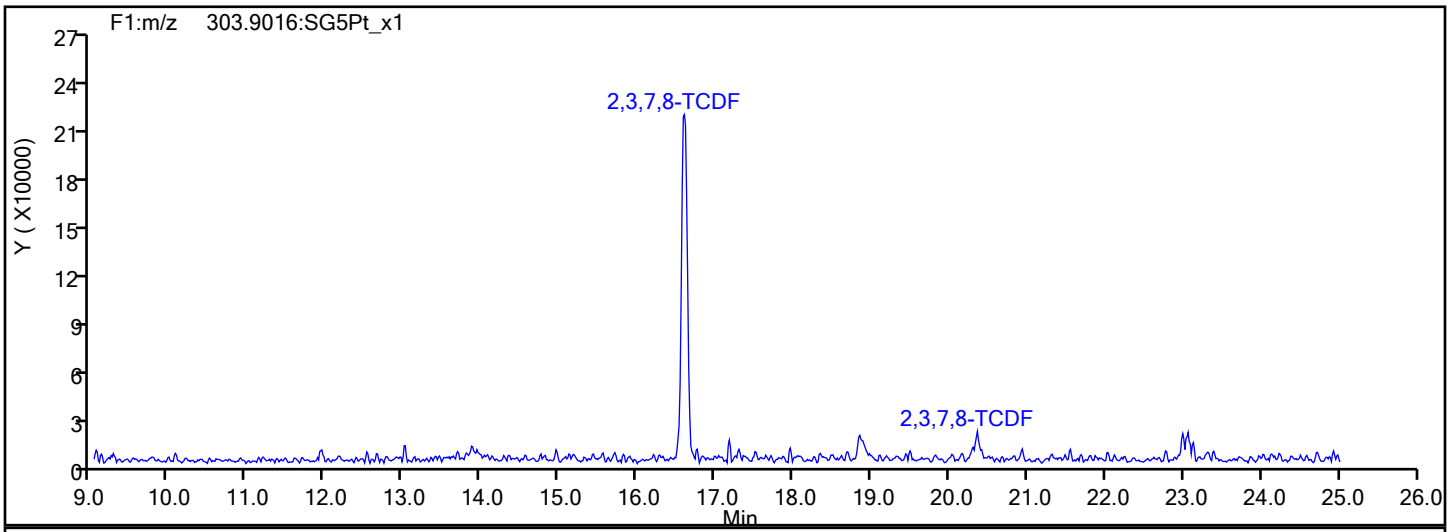


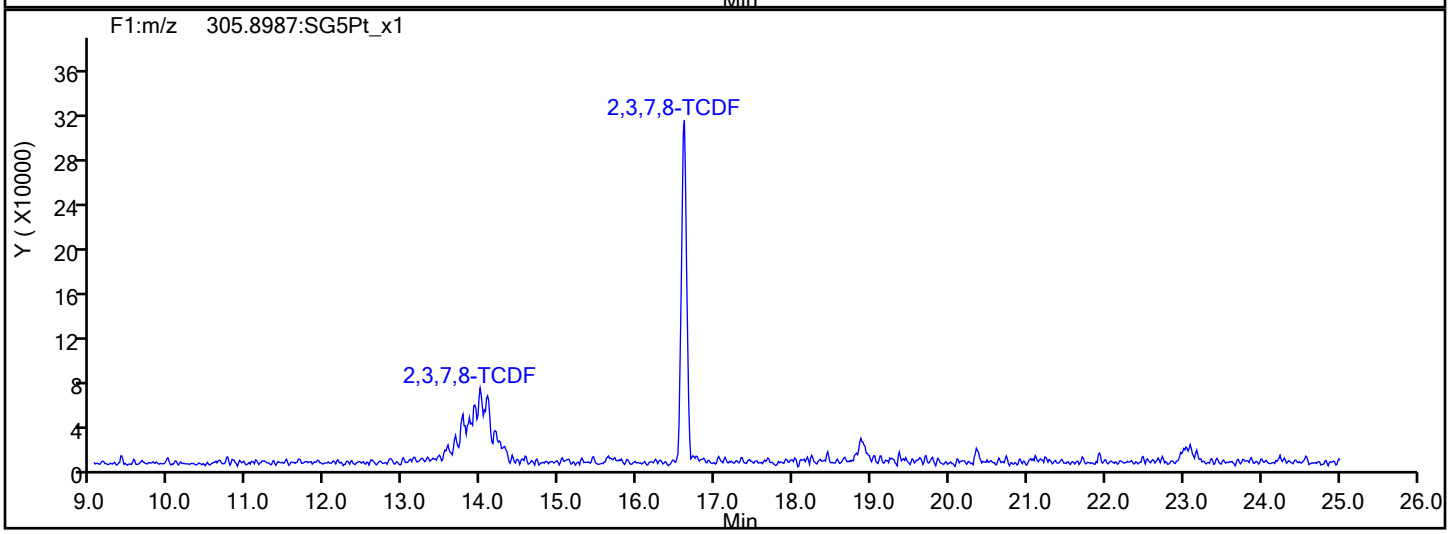
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

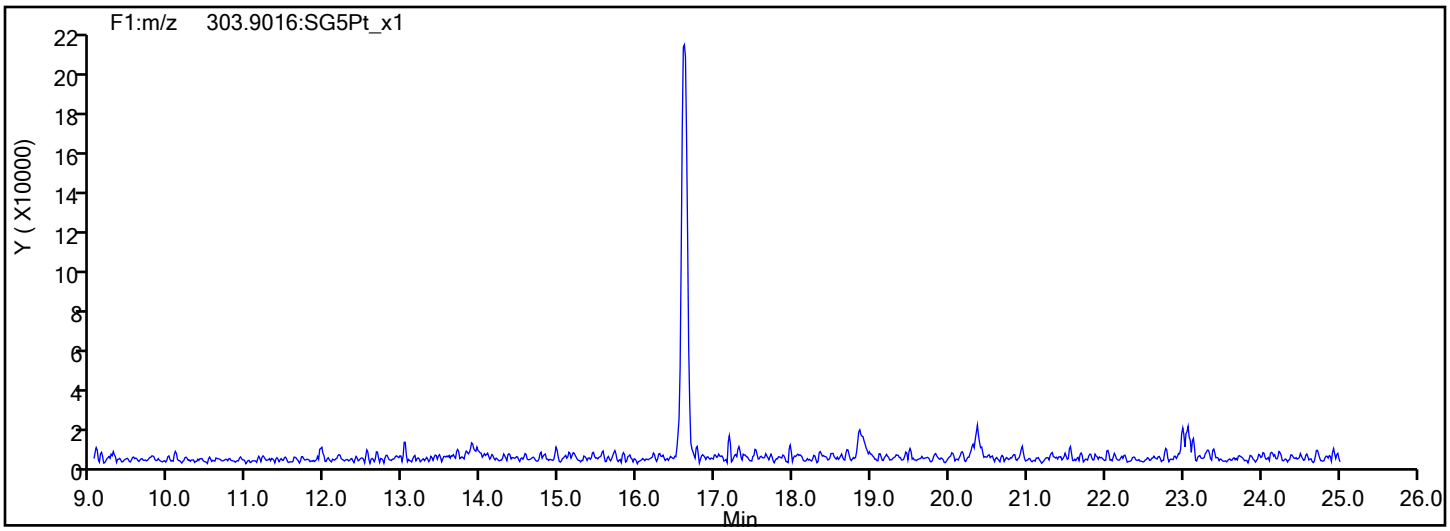
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

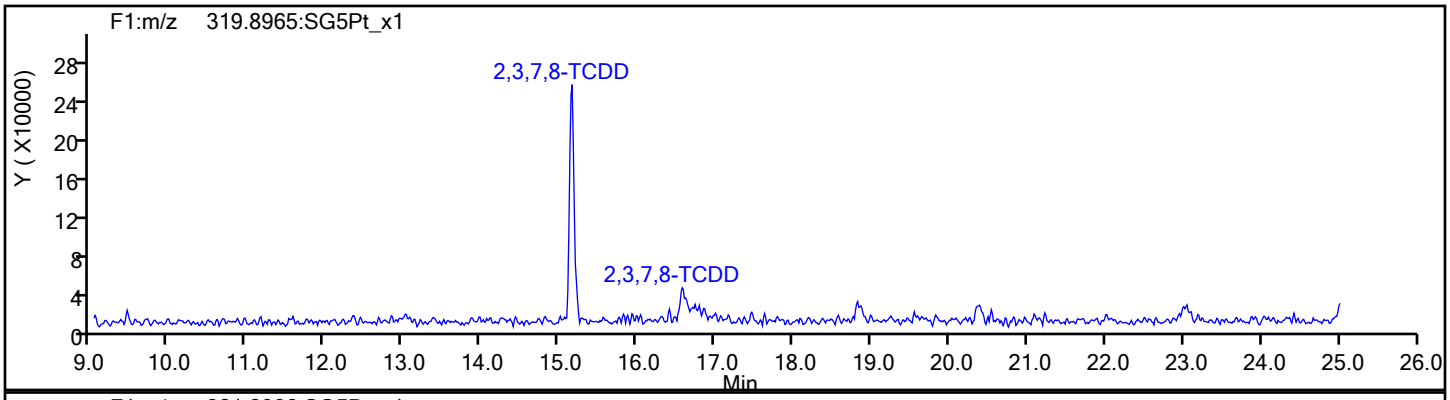


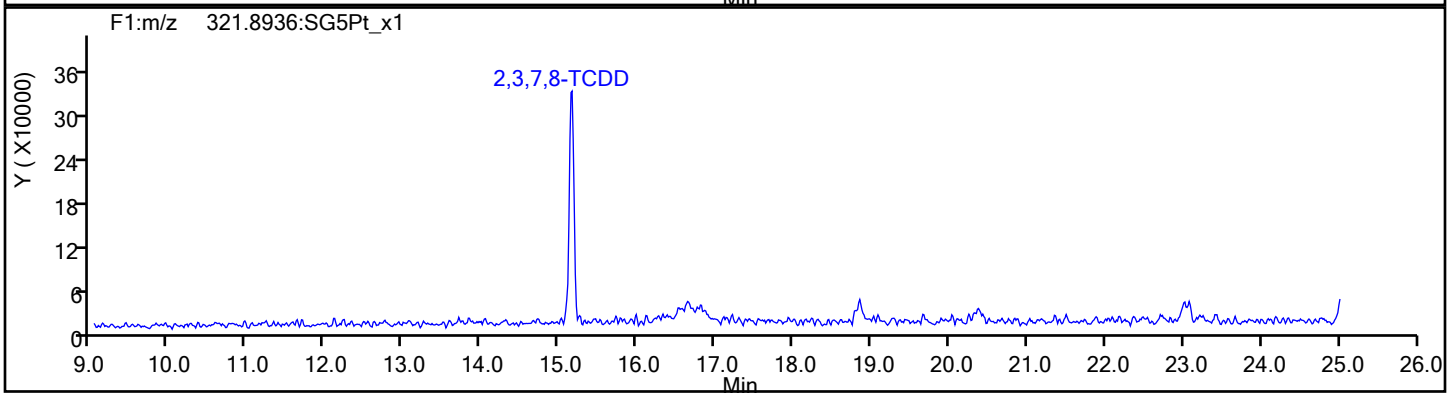
Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

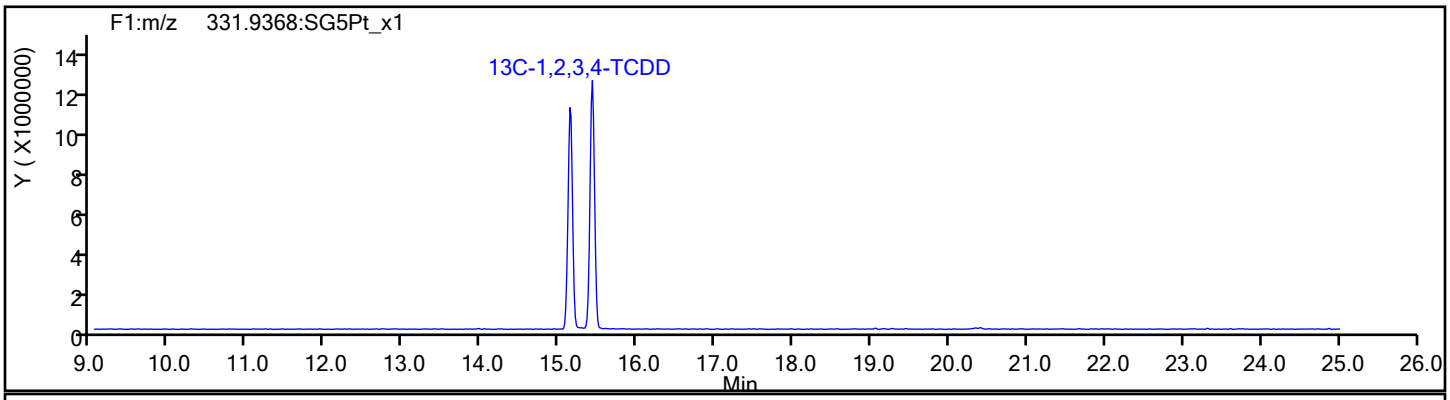
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

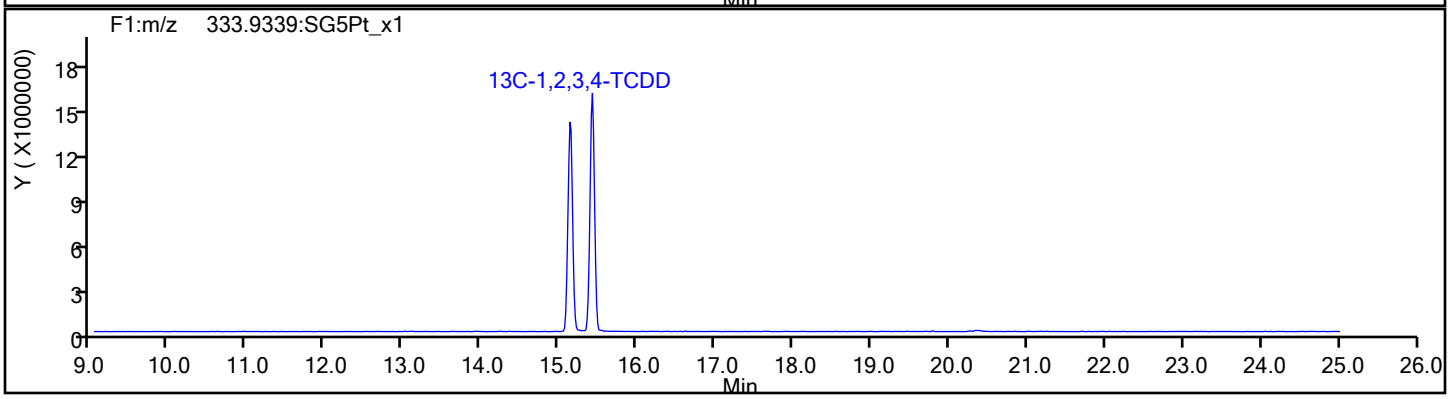
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:51:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

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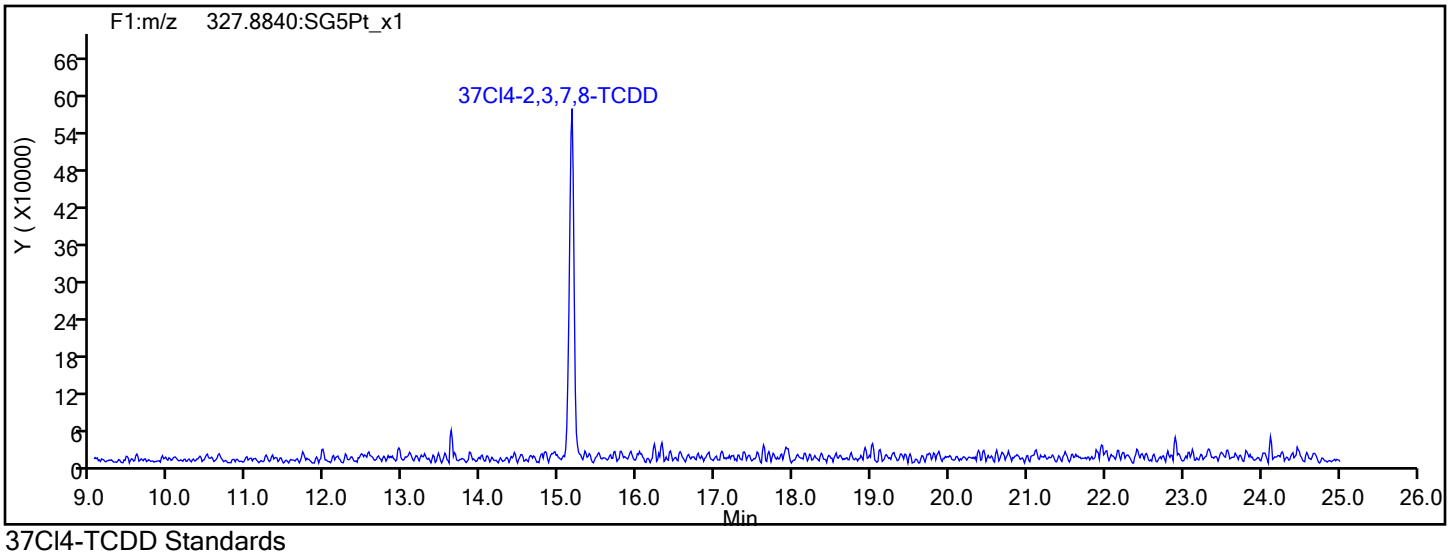
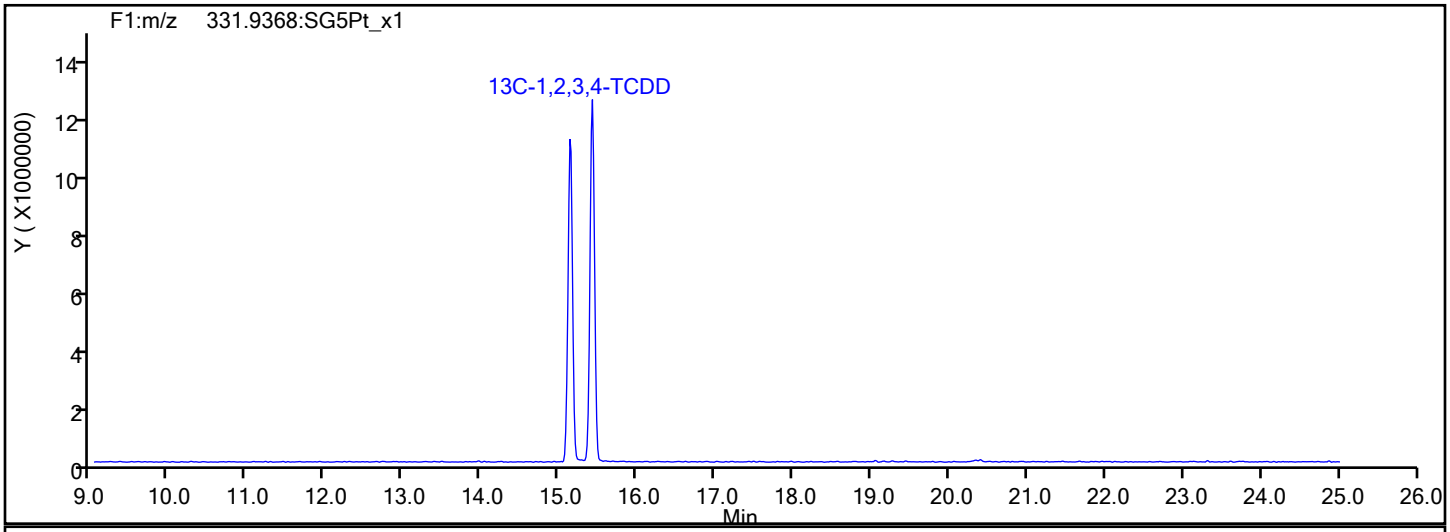
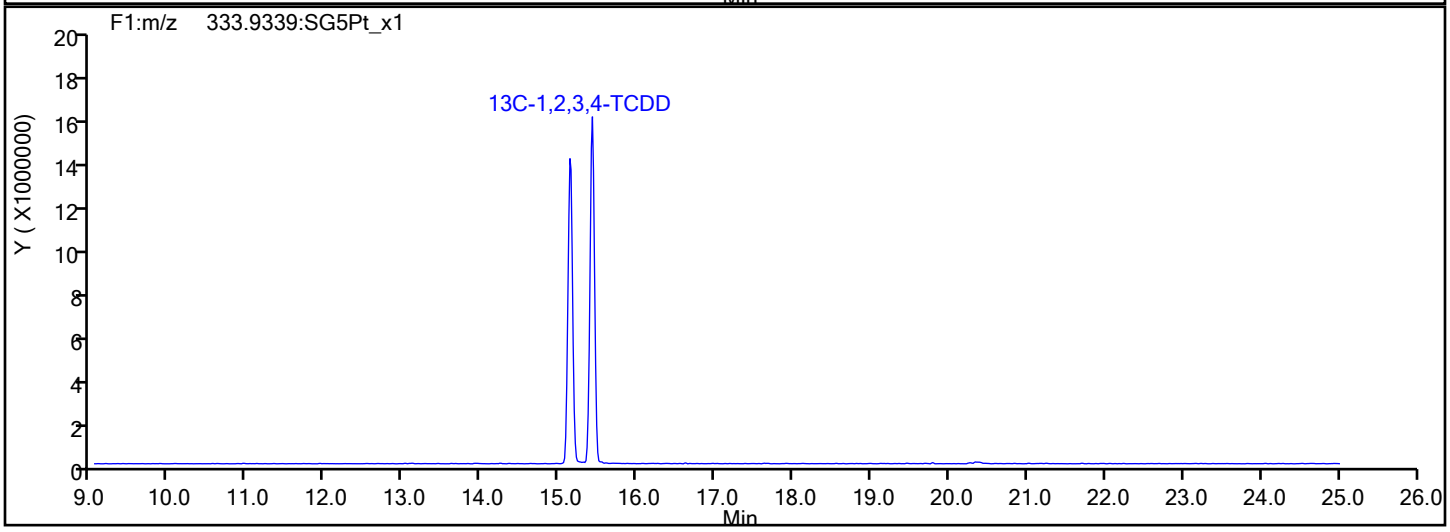
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

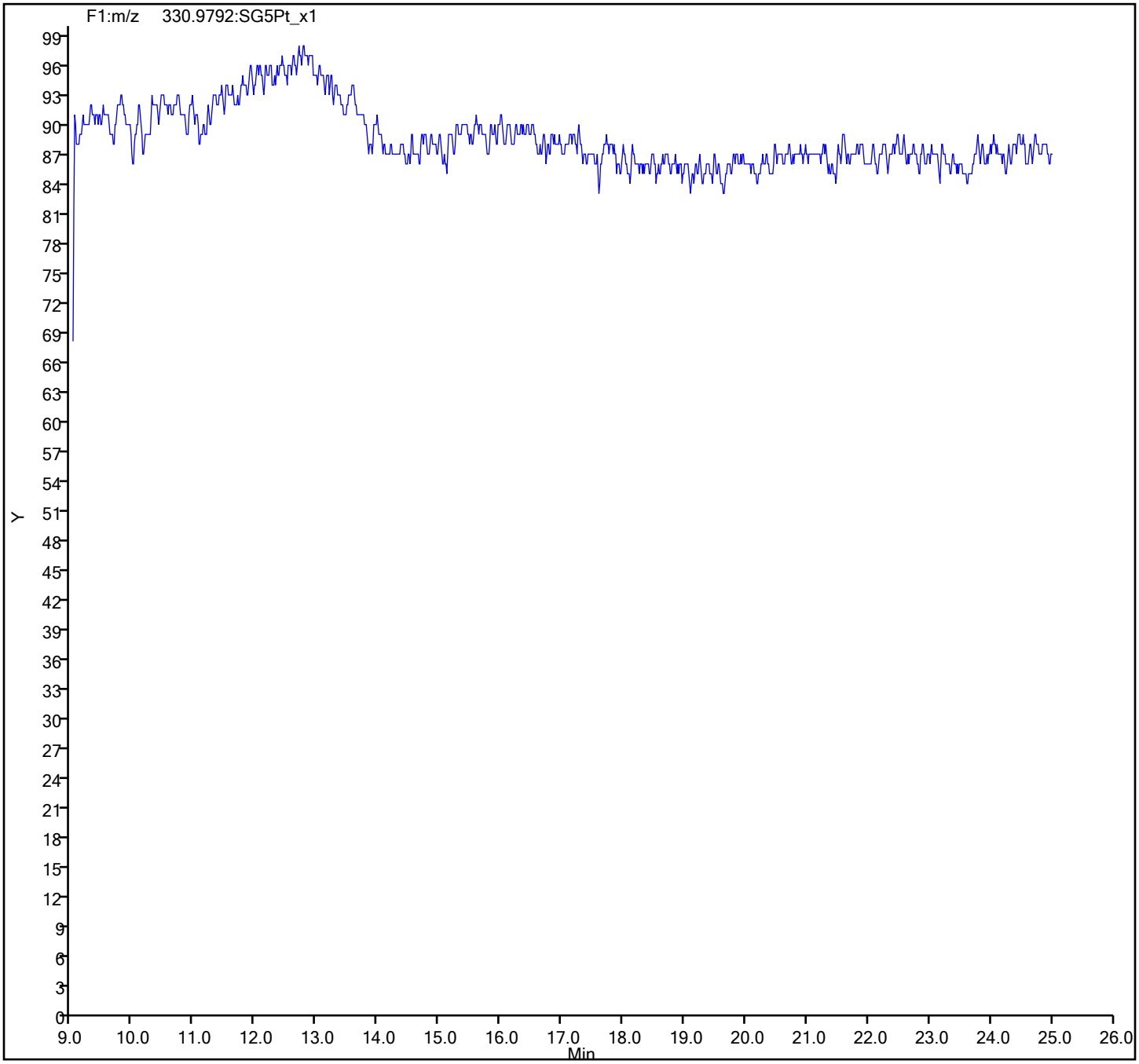




Report Date: 02-Aug-2019 11:51:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_004.d		
Injection Date:	02-Aug-2019 03:30:21	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	4
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Aug-2019 04:08:39 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00084
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:13 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 11:50:13

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.424	106319859	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.591	144041178	0.79	1.3379	101.3	101.3	0.5534	0.5534	101	
2,3,7,8-TCDF	16.604	11238394	0.76	0.8389	9.301	9.301	0.0827	0.0827	93.01	
D 13C-2,3,7,8-TCDD	15.136	102100937	0.77	0.9388	102.3	102.3	0.2809	0.2809	102	
2,3,7,8-TCDD	15.164	10136940	0.76	1.1538	8.605	8.605	0.1498	0.1498	86.05	
$ 37Cl4-2,3,7,8-TCDD	15.164	9929024		1.1816	7.903	7.903	0.1068	0.1068	98.79	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL4_00084 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:50:36 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Aug-2019 04:08:39 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-4 HRDXNL4_00084
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:50:13 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 11:50:13

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.424	15.416	0		46708197	10977681	16216	40540	677		
333.9339	15.424	15.416	0		59611662	14687691	10856	27140	1353	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.591	16.580	1	1.076	63548576	13720043	50935	127337	269		
317.9389	16.591	16.580	1	1.076	80492602	17728003	25076	62690	707	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.604	16.599	0	1.001	4865871	1034824	3394	8485	305		
305.8987	16.604	16.599	0	1.001	6372523	1366111	5328	13320	256	0.76(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.136	15.136	0	0.981	44311856	10806558	16216	40540	666		
333.9339	15.136	15.136	0	0.981	57789081	13912119	10856	27140	1282	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.164	15.156	0	1.002	4381105	1087501	6755	16887	161		
321.8936	15.164	15.156	0	1.002	5755835	1373692	10330	25825	133	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.164	15.158	0	0.983	9929024	2303011	12961	32402	178		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

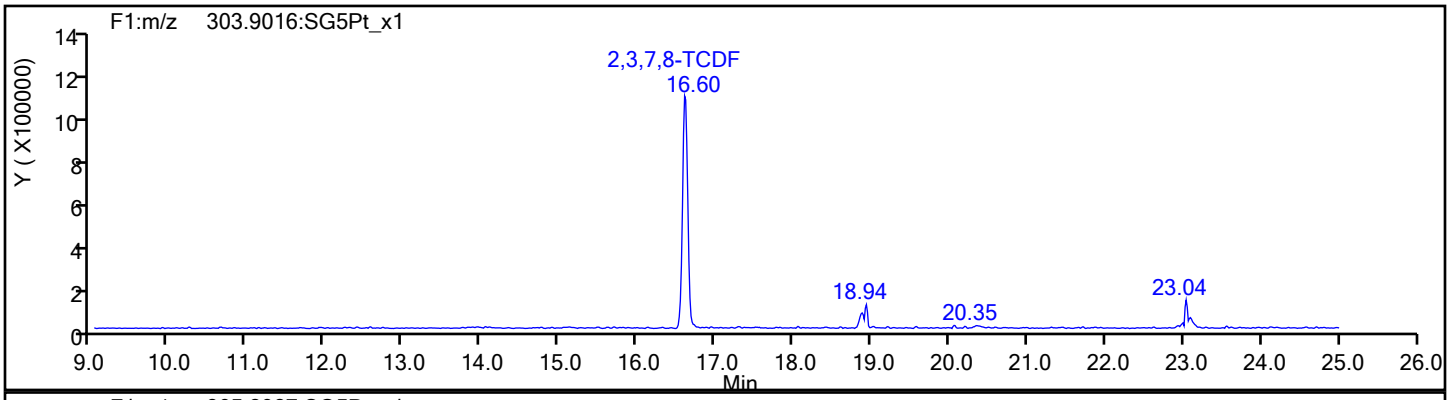
HRDXNL4_00084 Amount Added: 1.00 Units: mL

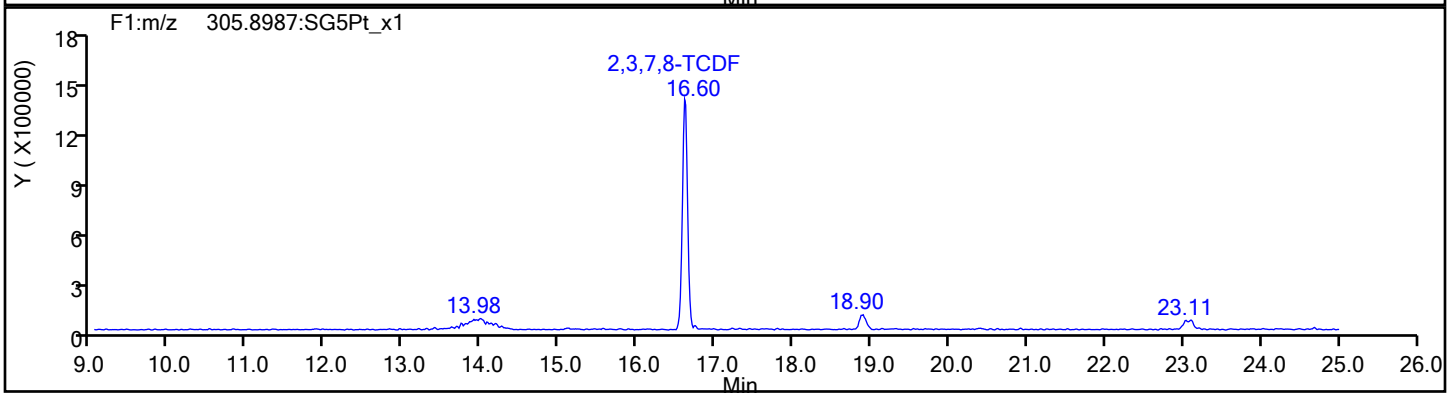
Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

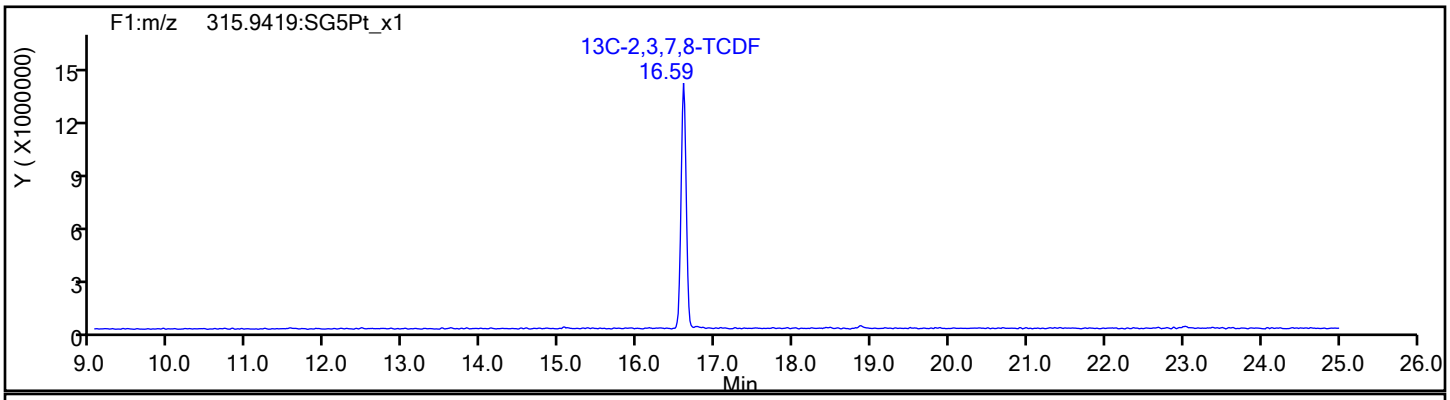
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

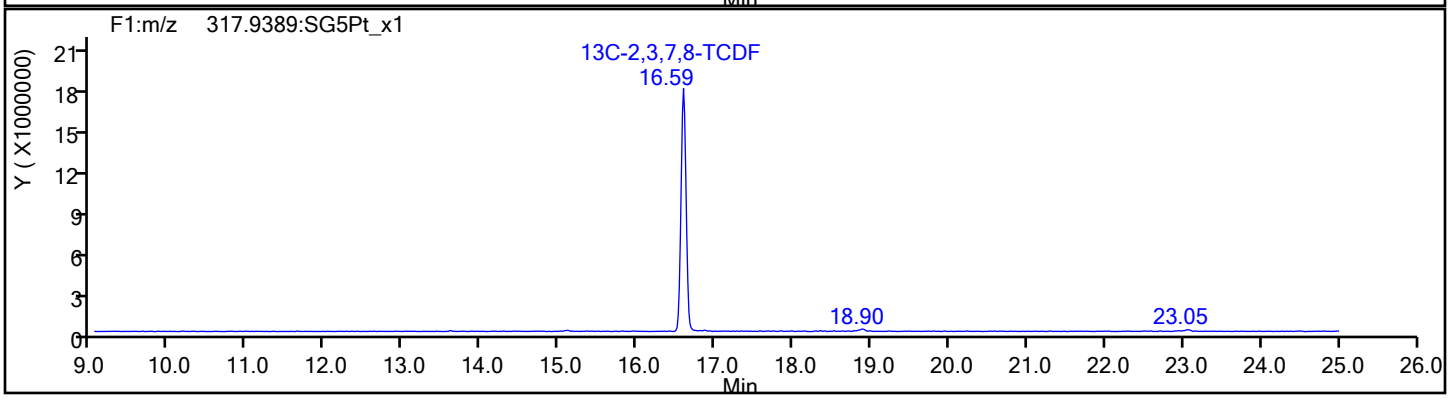
TCDF





TCDF Standards



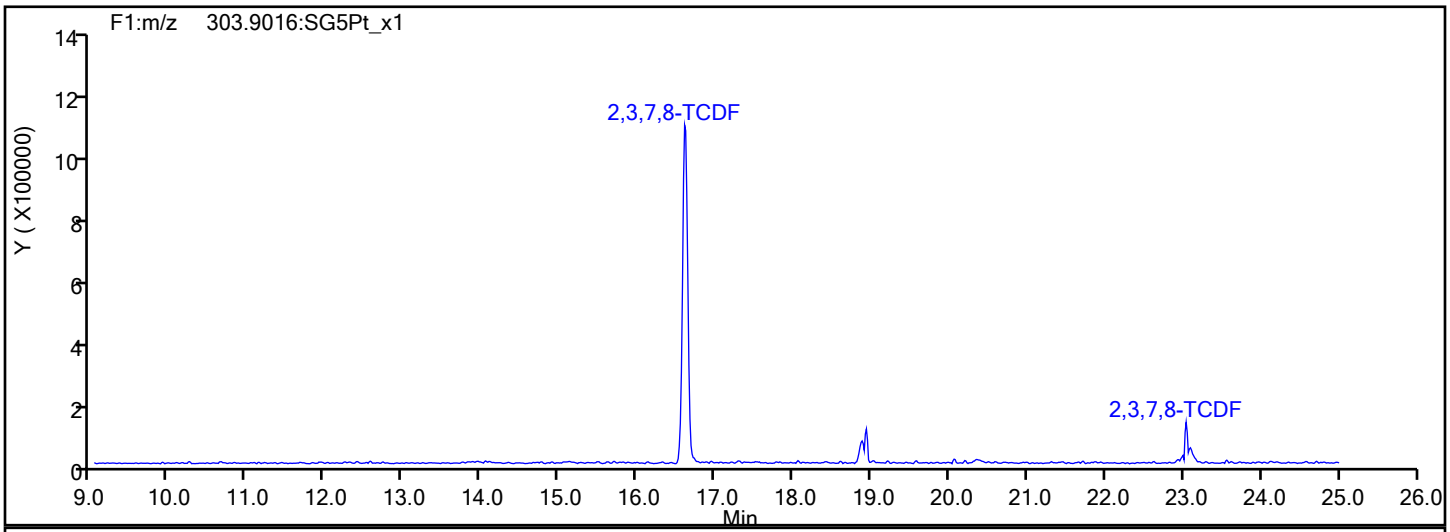


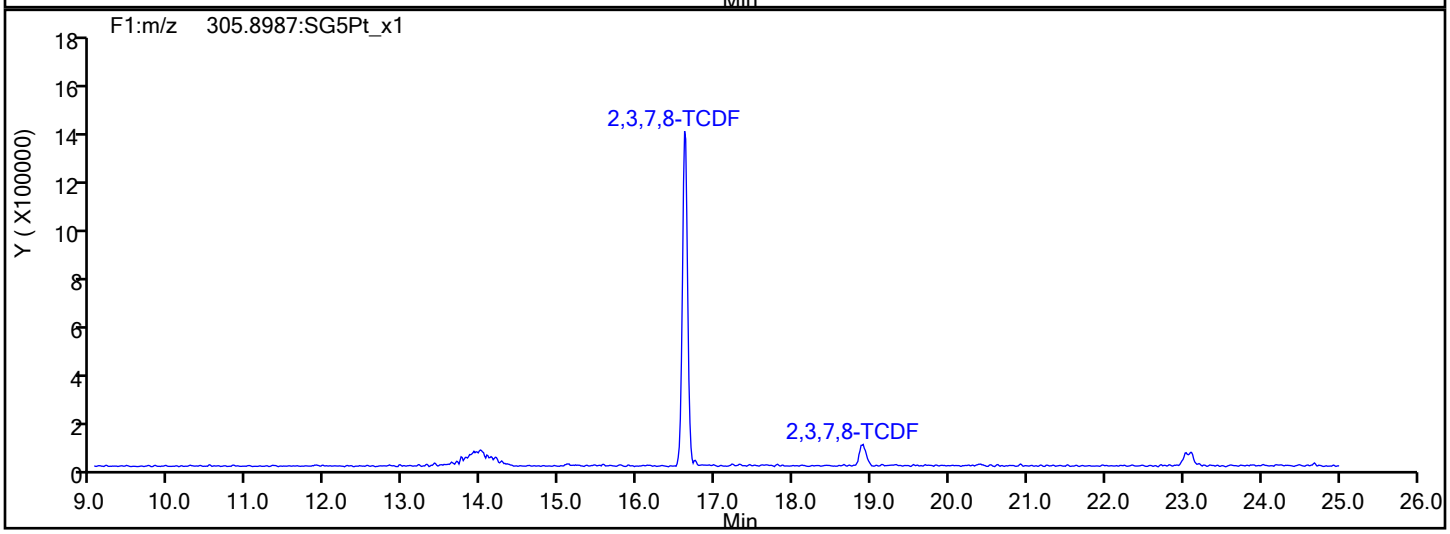
Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

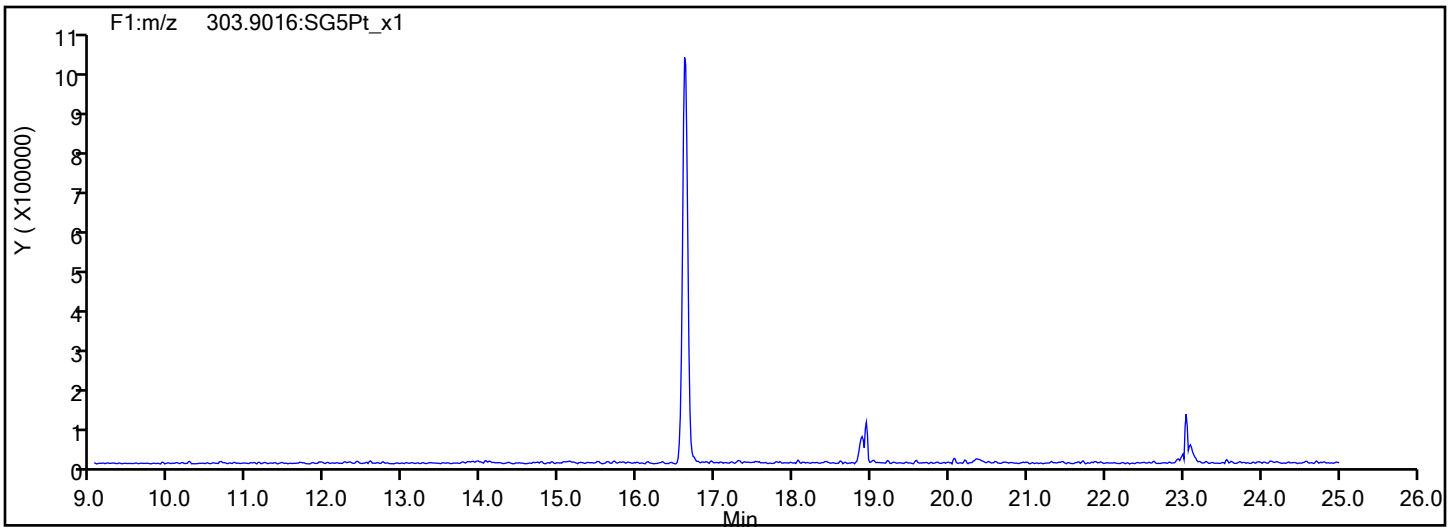
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d

Injection Date: 02-Aug-2019 04:08:39 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

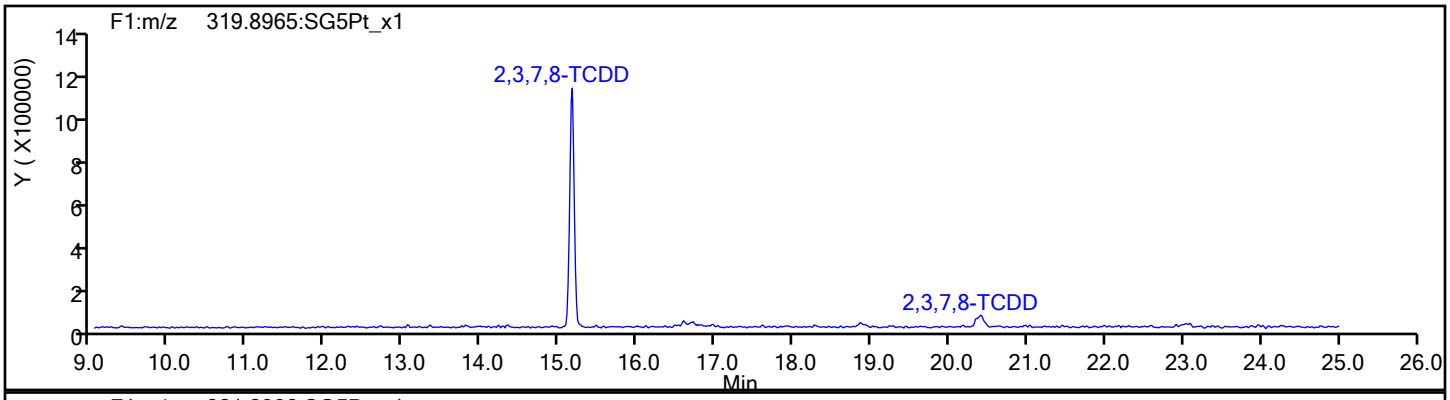
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

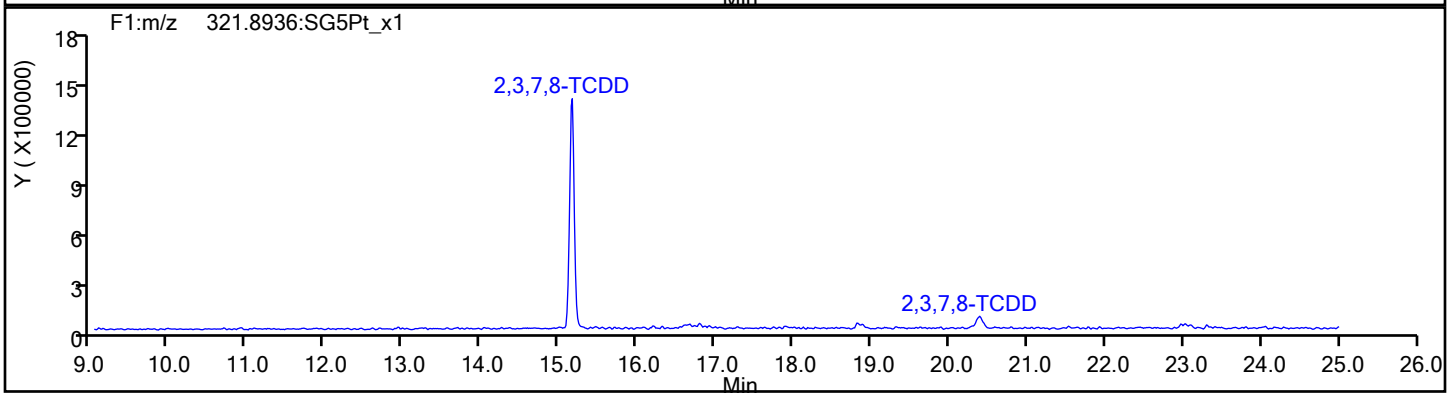
Client ID:

Worklist#: 312067 Sample Line#: 5

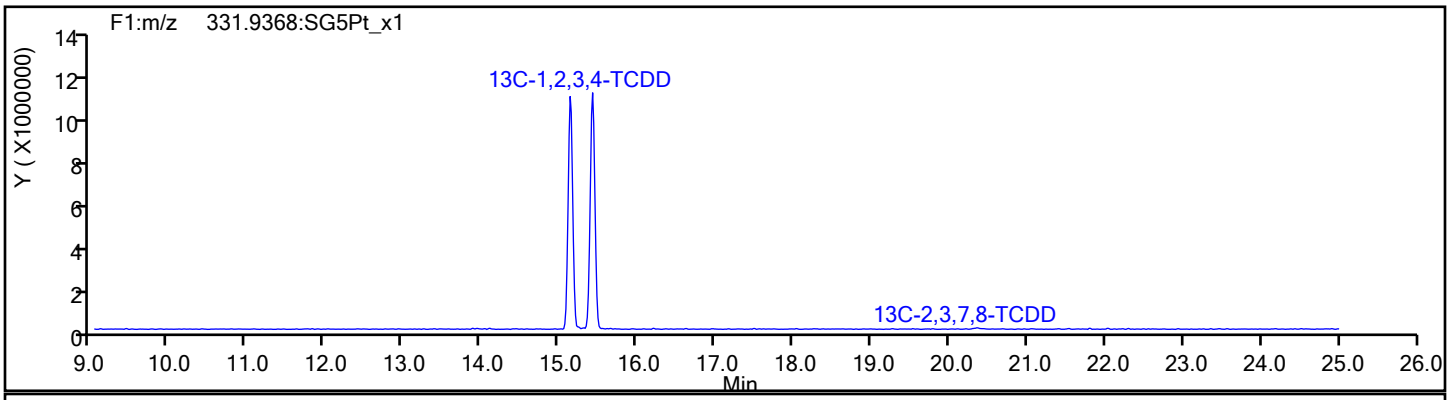
Column Type: DB-225 Column Dia: 0.32 mm

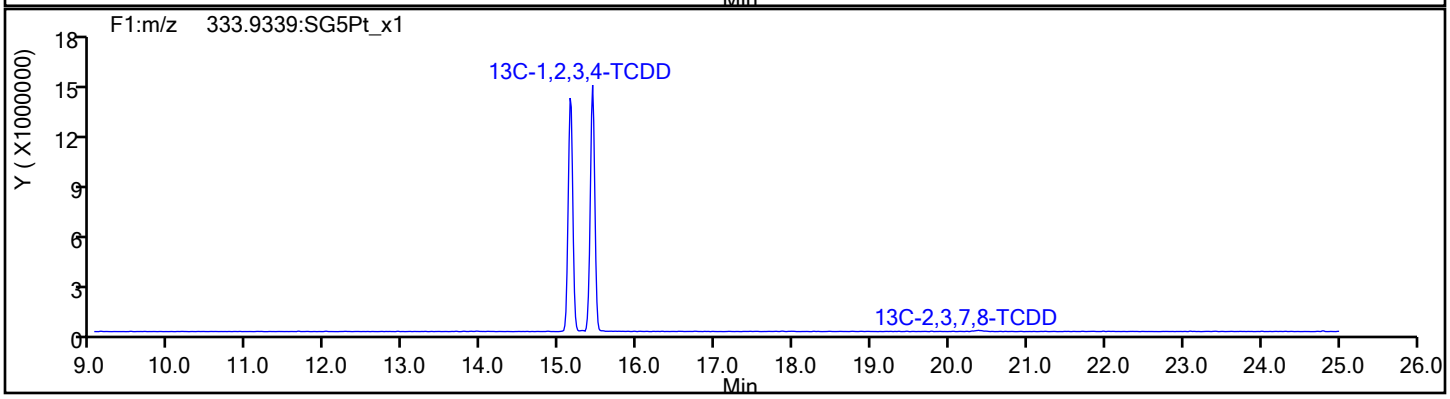
TCDD





TCDD Standards



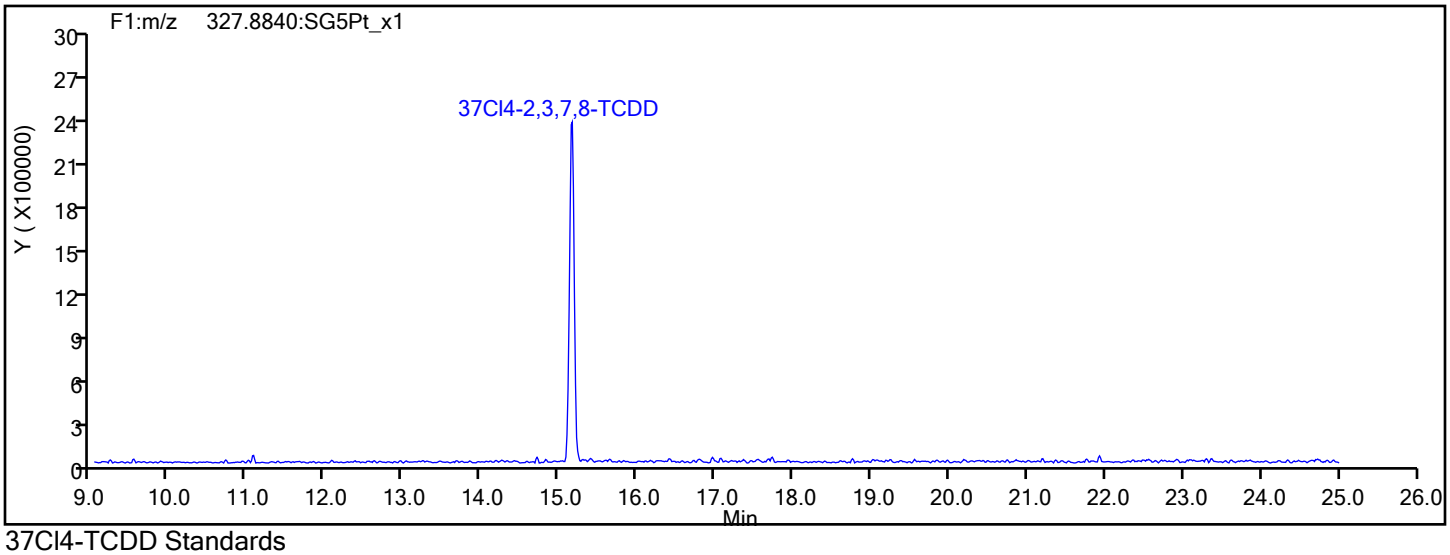


Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

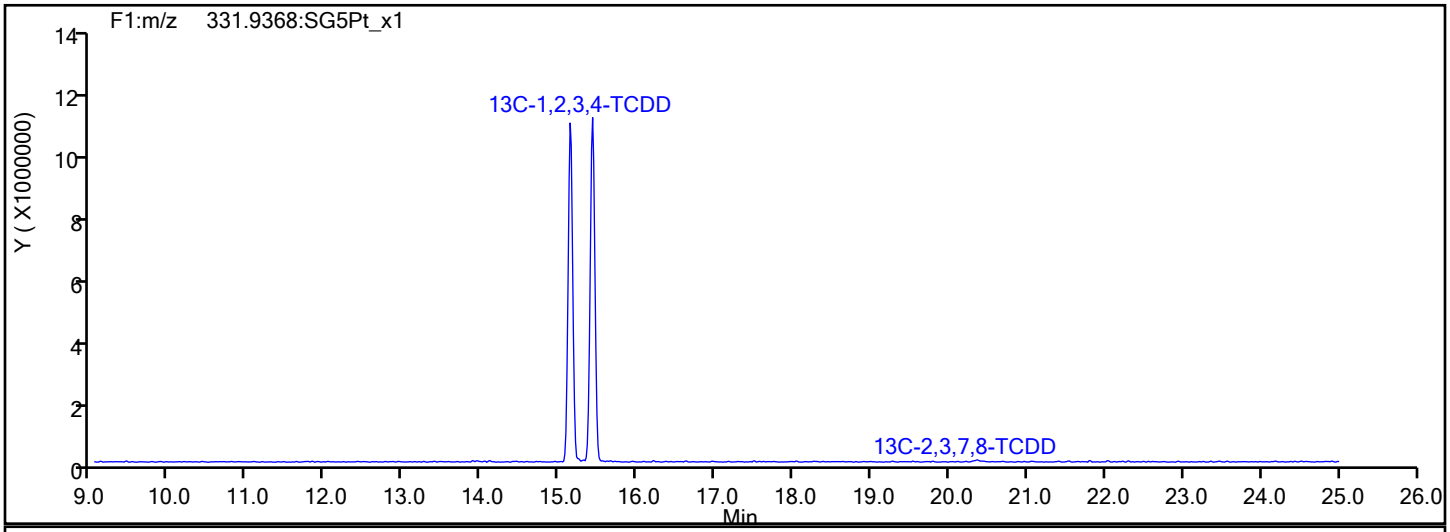
Eurofins TestAmerica, Sacramento

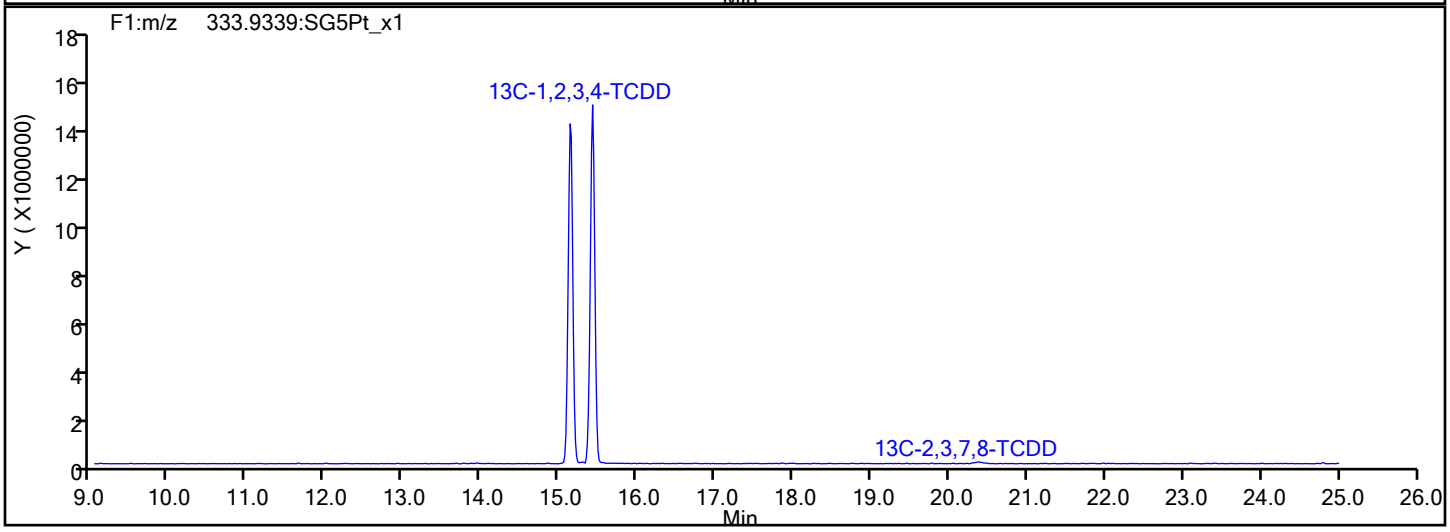
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

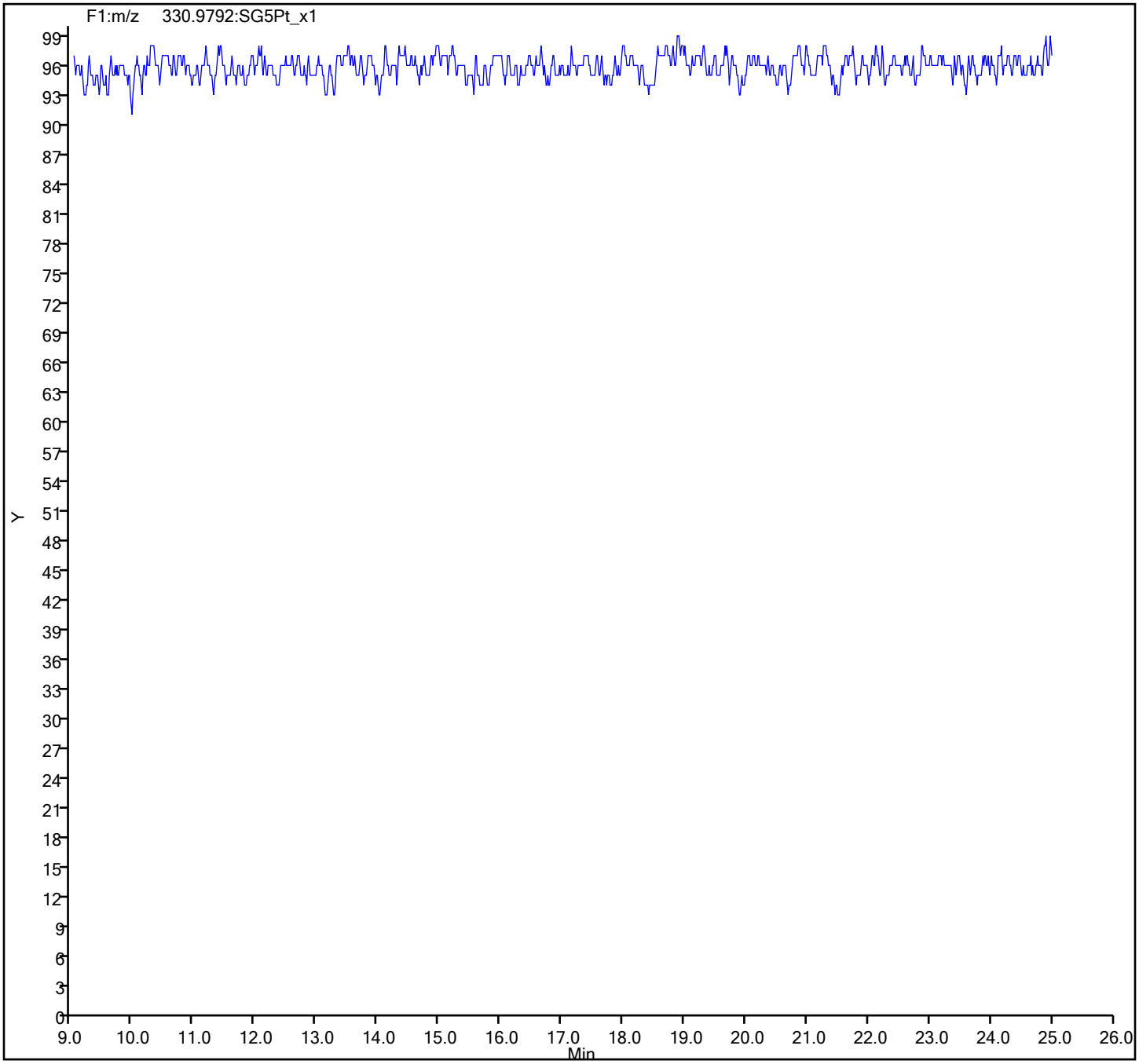




Report Date: 02-Aug-2019 11:50:37 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_005.d		
Injection Date:	02-Aug-2019 04:08:39	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	5
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Aug-2019 04:46:57 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:00 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:08

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.407	115018689	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.573	144459393	0.77	1.3379	93.9	93.9	0.5274	0.5274	93.87	
2,3,7,8-TCDF	16.586	46575552	0.77	0.8389	38.4	38.4	0.1167	0.1167	96.08	
D 13C-2,3,7,8-TCDD	15.132	106968299	0.77	0.9388	99.1	99.1	0.2830	0.2830	99.06	
2,3,7,8-TCDD	15.146	48146783	0.76	1.1538	39.0	39.0	0.1640	0.1640	97.53	
$ 37Cl4-2,3,7,8-TCDD	15.146	56650769		1.1816	41.7	41.7	0.0894	0.0894	104	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Aug-2019 04:46:57 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-5 HRDXNL5_00028
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:00 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:08

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.407	15.416	-1		50351038	12128425	19106	47765	635		
333.9339	15.407	15.416	-1		64667651	15935590	10721	26802	1486	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.573	16.580	0	1.076	62832695	14048507	53452	133630	263		
317.9389	16.573	16.580	0	1.076	81626698	17801662	25764	64410	691	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.586	16.599	-1	1.001	20335382	4486199	5024	12560	893		
305.8987	16.586	16.599	-1	1.001	26240170	5630982	7452	18630	756	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.132	15.136	0	0.982	46501097	11086056	19106	47765	580		
333.9339	15.118	15.136	-1	0.981	60467202	14396233	10721	26802	1343	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.146	15.156	-1	1.001	20863773	5196689	8344	20860	623		
321.8936	15.146	15.156	-1	1.001	27283010	6610856	10939	27347	604	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.146	15.158	-1	0.983	56650769	13763841	11857	29642	1161		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

Reagents:

HRDXNL5_00028 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d

Injection Date: 02-Aug-2019 04:46:57 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

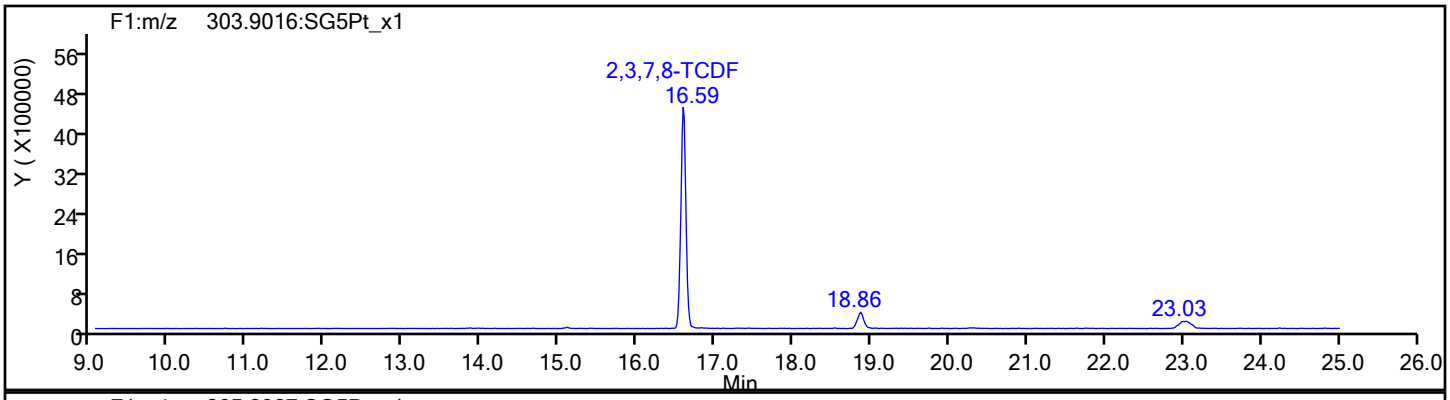
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

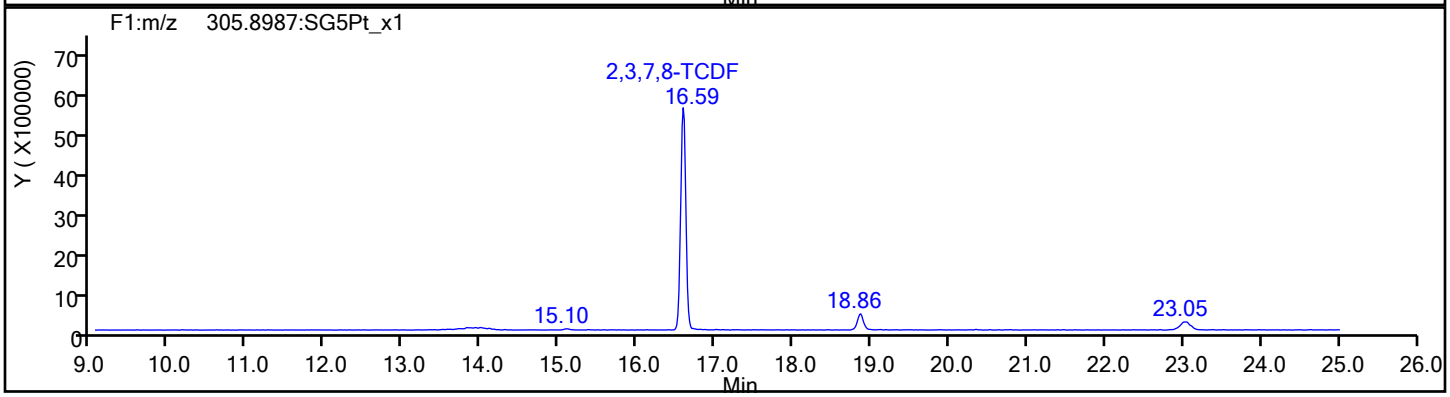
Client ID:

Worklist#: 312067 Sample Line#: 6

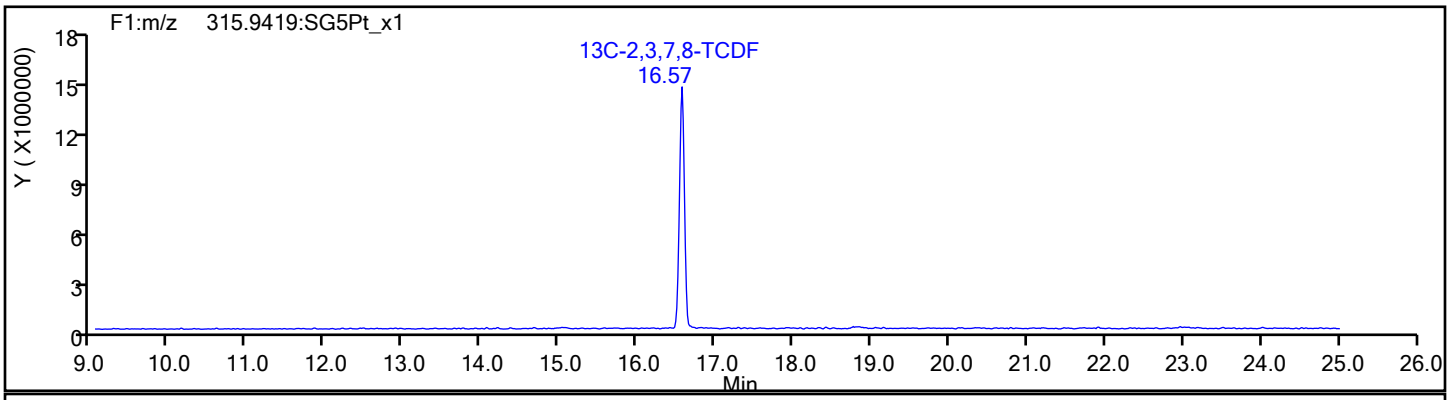
Column Type: DB-225 Column Dia: 0.32 mm

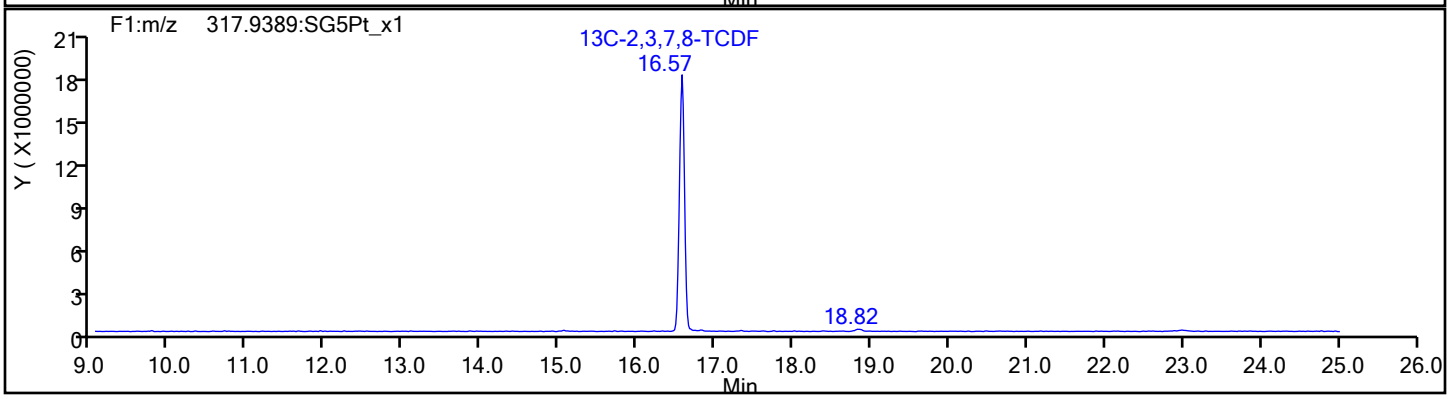
TCDF





TCDF Standards



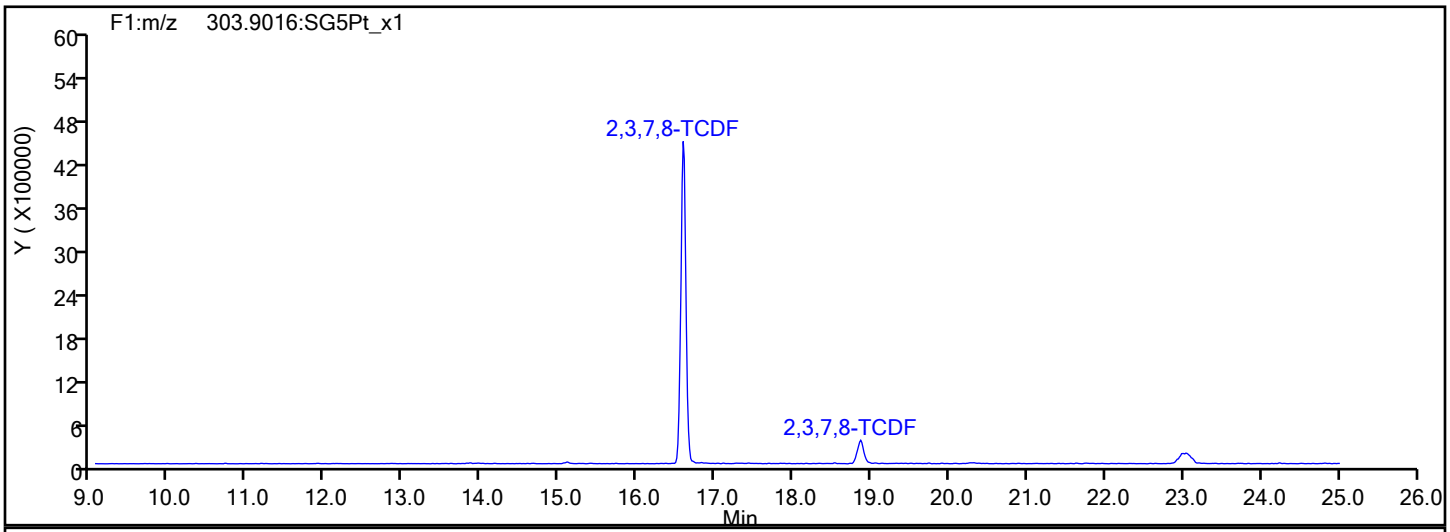


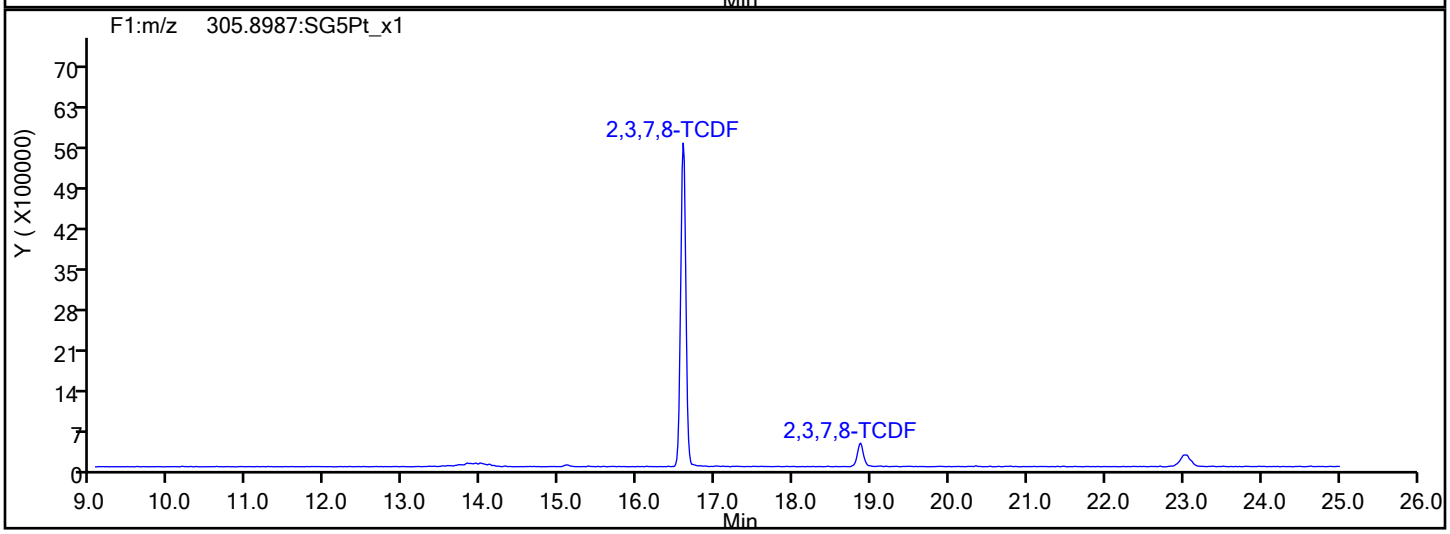
Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

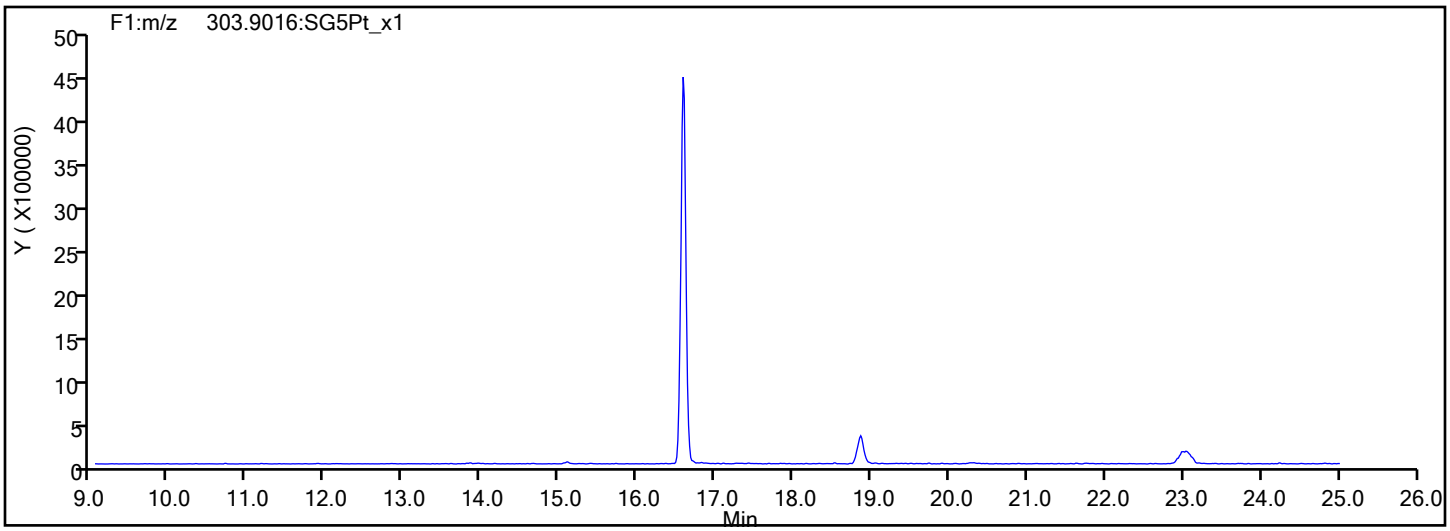
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

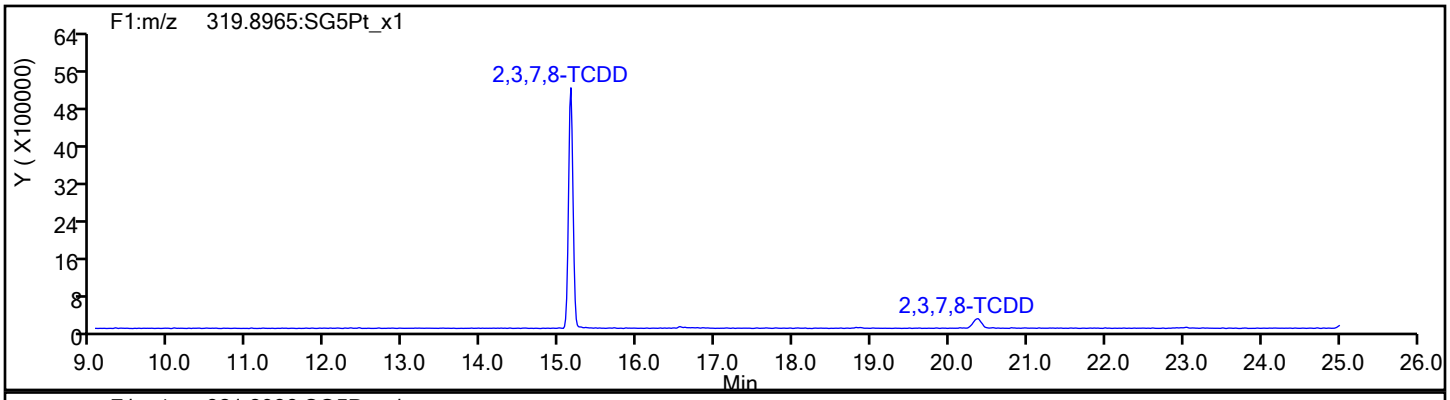


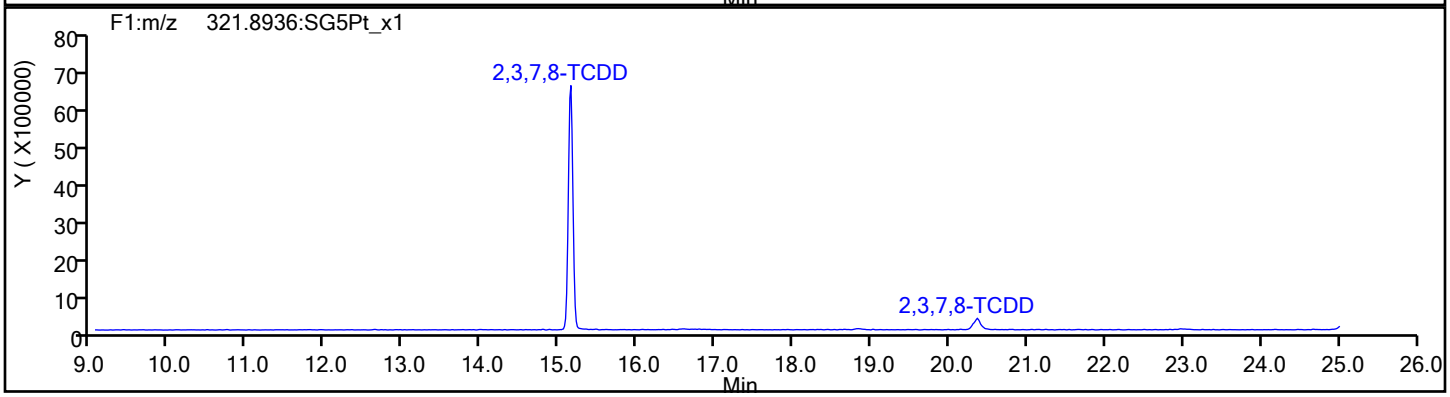
Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

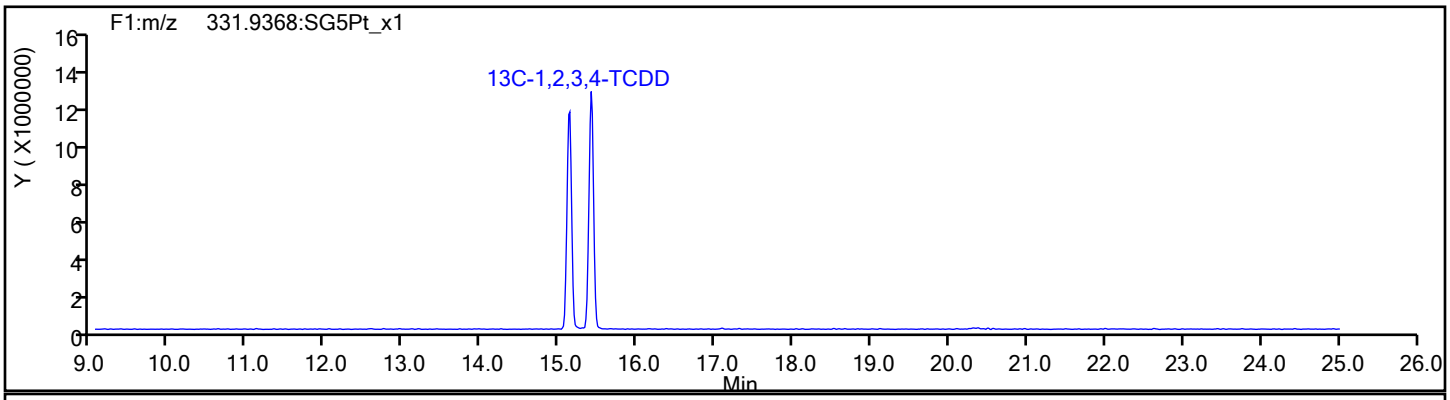
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm

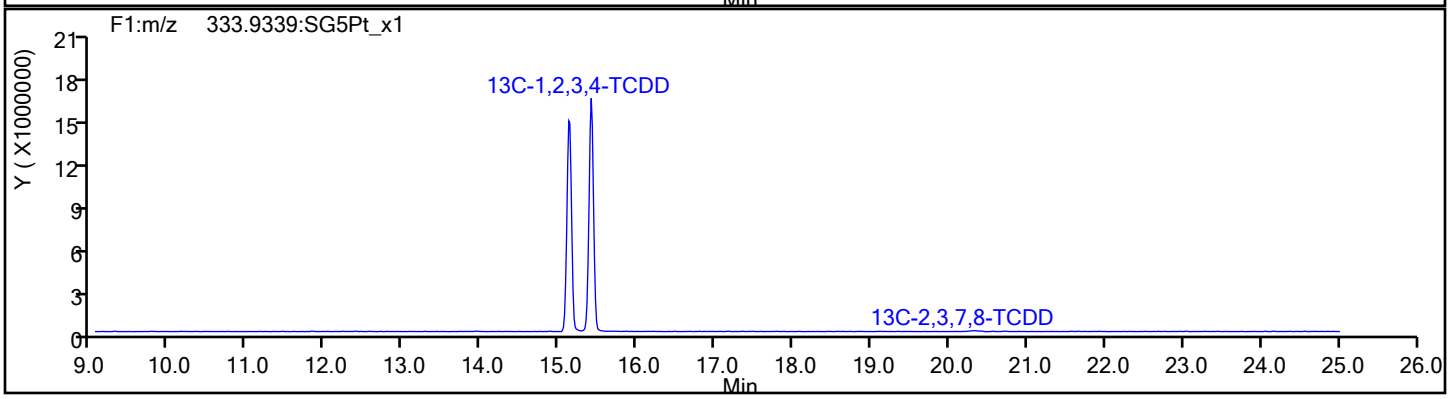
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:52:18 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d

Injection Date: 02-Aug-2019 04:46:57 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

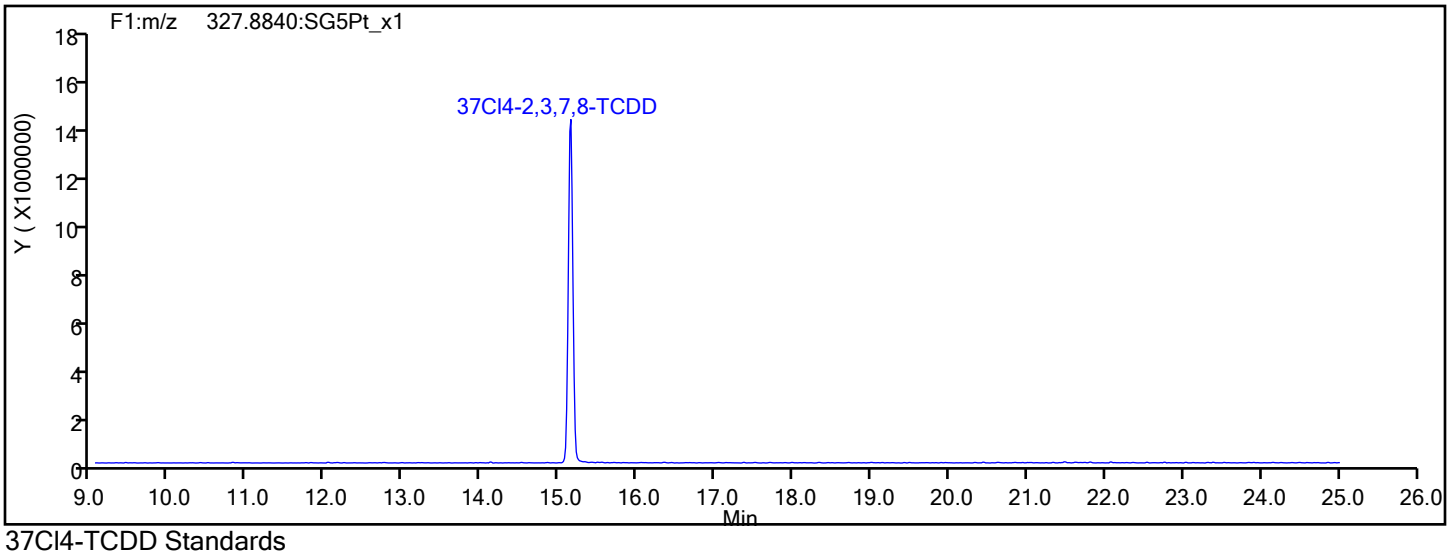
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

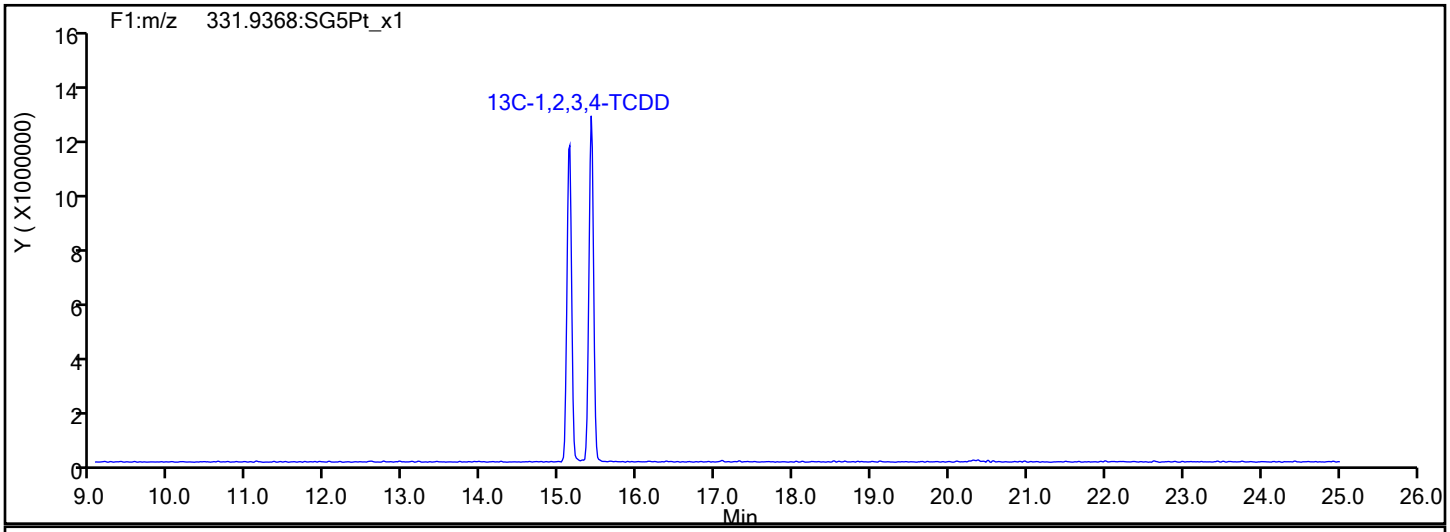
Worklist#: 312067 Sample Line#: 6

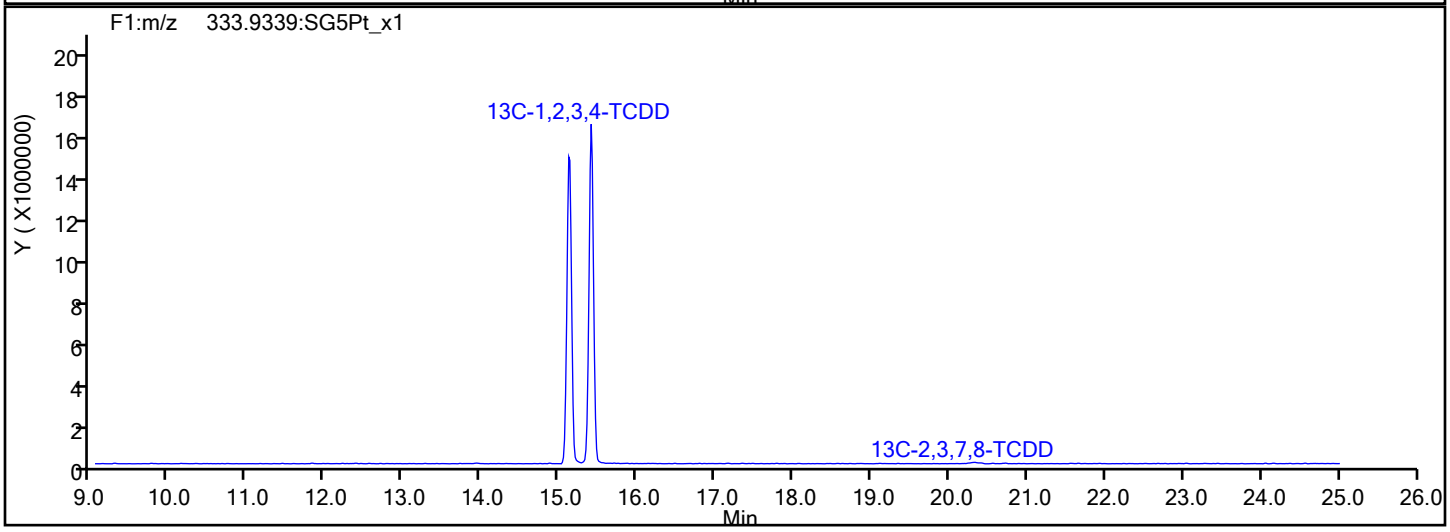
Column Type: DB-225 Column Dia: 0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

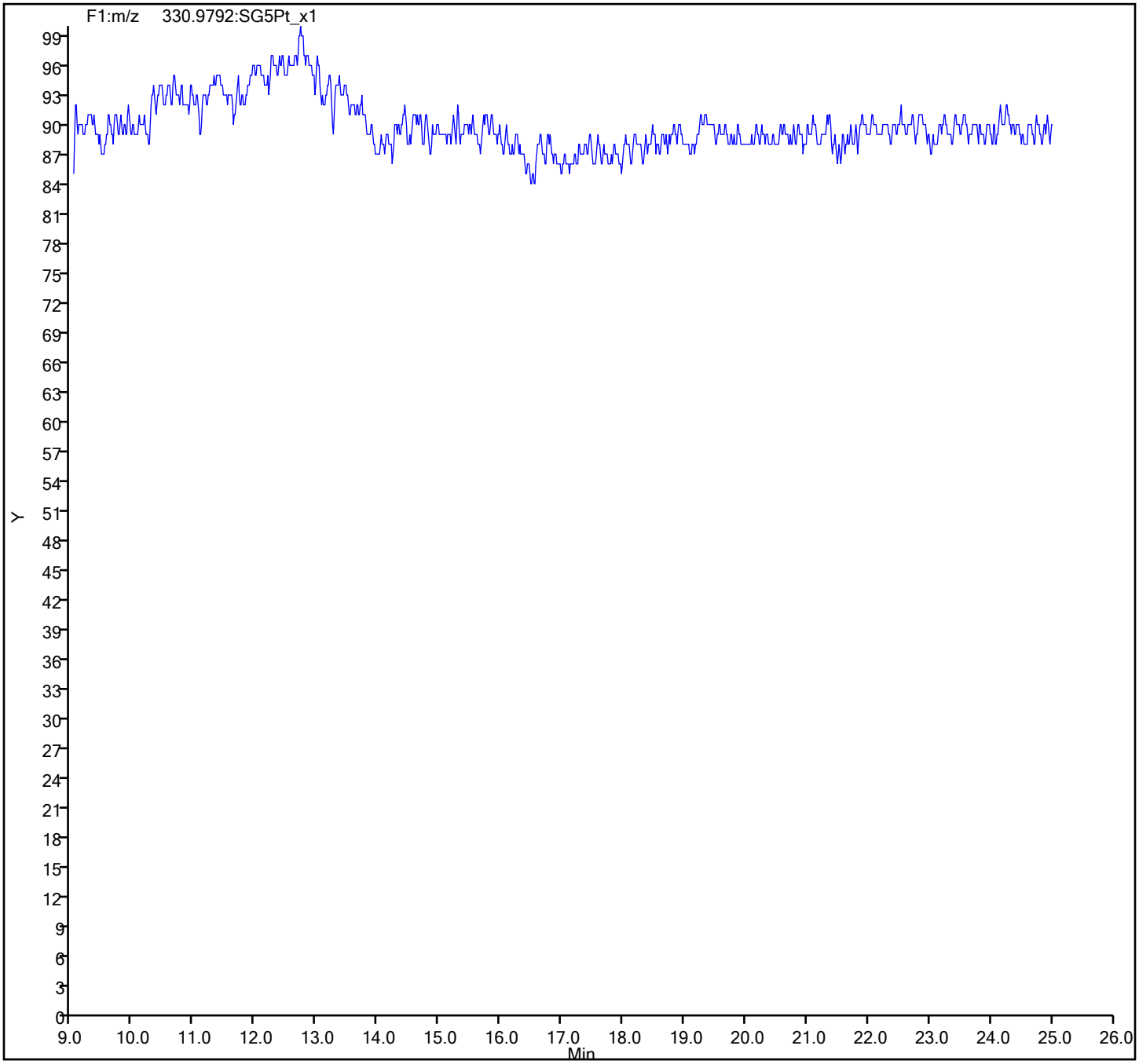




Report Date: 02-Aug-2019 11:52:19 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_006.d		
Injection Date:	02-Aug-2019 04:46:57	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	6
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Aug-2019 05:25:19 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:36 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:20

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.404	110526038	0.77	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.556	151101344	0.75	1.3379	102.2	102.2	0.5415	0.5415	102	
2,3,7,8-TCDF	16.584	239921851	0.78	0.8389	189.3	189.3	0.1707	0.1707	94.64	
D 13C-2,3,7,8-TCDD	15.130	101263855	0.79	0.9388	97.6	97.6	0.2909	0.2909	97.59	
2,3,7,8-TCDD	15.143	221171643	0.78	1.1538	189.3	189.3	0.2031	0.2031	94.65	
$ 37Cl4-2,3,7,8-TCDD	15.143	268090229		1.1816	205.3	205.3	0.1091	0.1091	103	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL6_00024 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Aug-2019 05:25:19 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CS-6 HRDXNL6_00024
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:52:36 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:44:20

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.404	15.416	-1		48112289	11729044	18185	45462	645		
333.9339	15.404	15.416	-1		62413749	15576756	11642	29105	1338	0.77(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.556	16.580	-1	1.075	64986610	14150118	57009	142522	248		
317.9389	16.556	16.580	-1	1.075	86114734	18279234	22119	55297	826	0.75(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.584	16.599	-1	1.002	104966823	22470376	8972	22430	2505		
305.8987	16.584	16.599	-1	1.002	134955028	28495262	9607	24017	2966	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.130	15.136	0	0.982	44673635	10986883	18185	45462	604		
333.9339	15.130	15.136	0	0.982	56590220	13637893	11642	29105	1171	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.143	15.156	-1	1.001	96586623	23829881	9066	22665	2628		
321.8936	15.143	15.156	-1	1.001	124585020	30700236	14012	35030	2191	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.143	15.158	-1	0.983	268090229	64785114	14075	35187	4603		

Total 2378-Chlorinated Dioxins & Furans
0.0 0

Reagents:

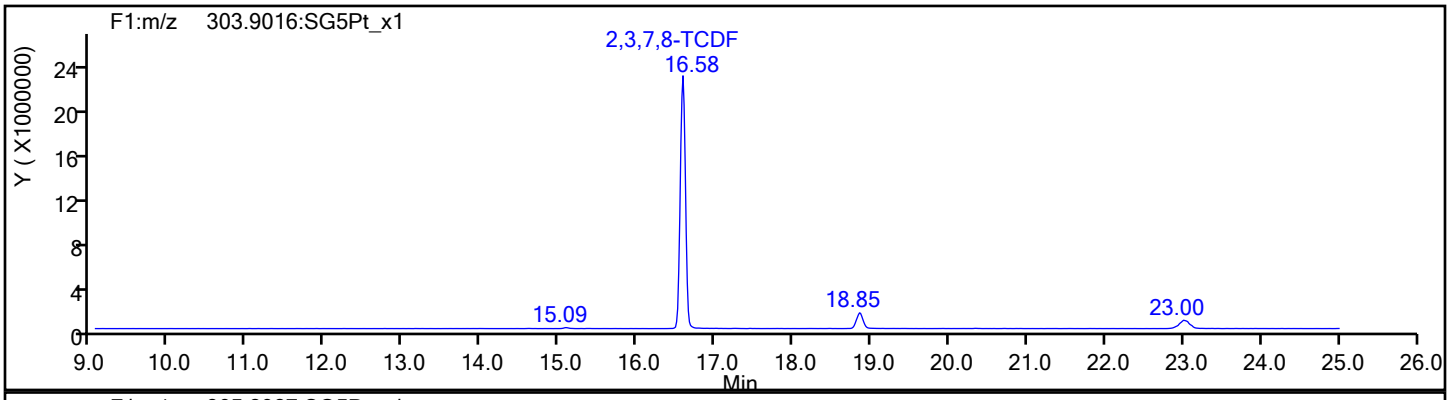
HRDXNL6_00024 Amount Added: 1.00 Units: mL

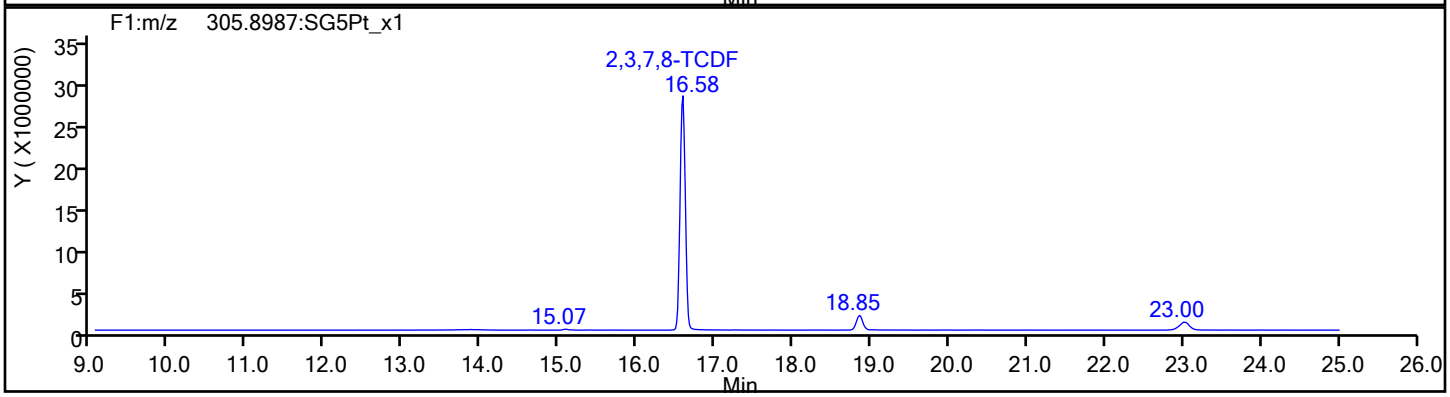
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

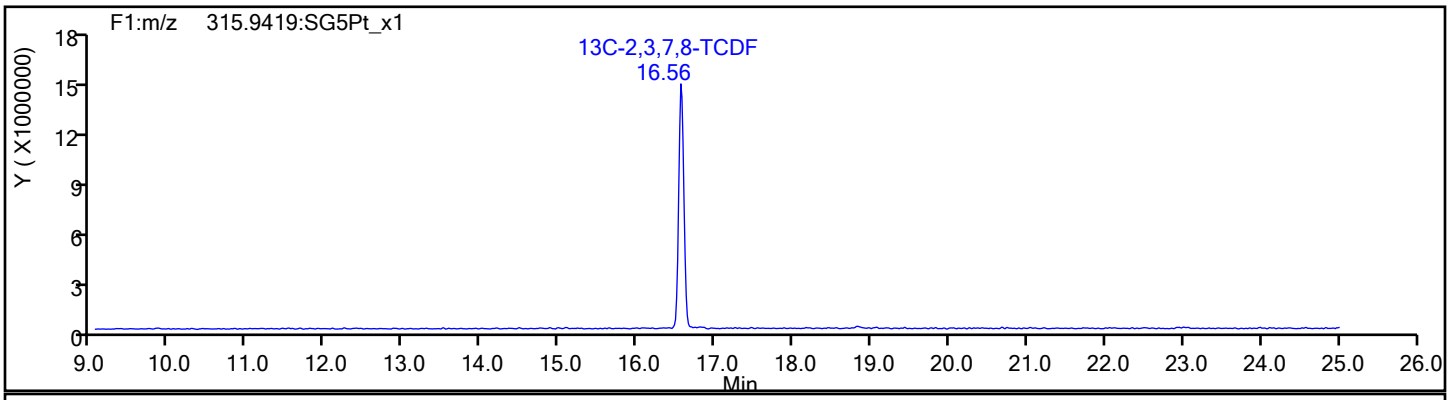
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

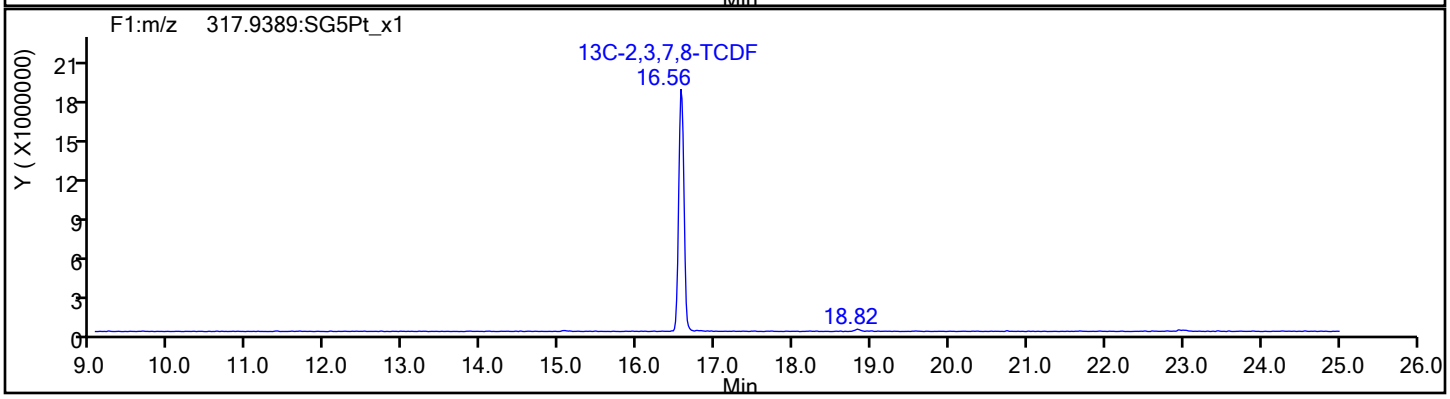
TCDF





TCDF Standards



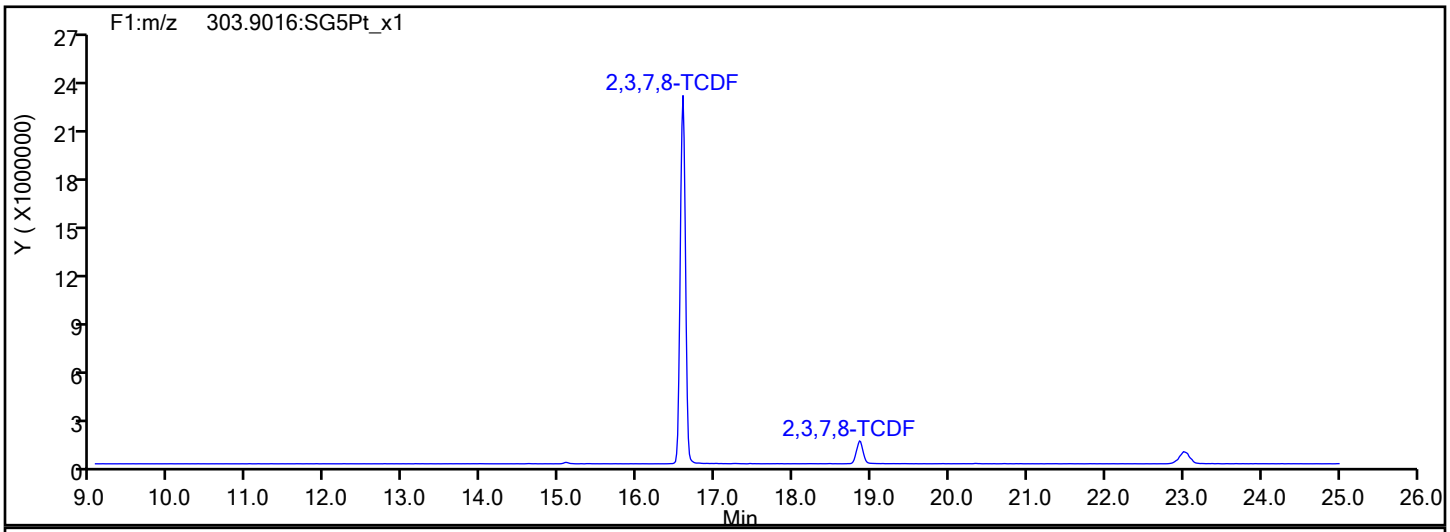


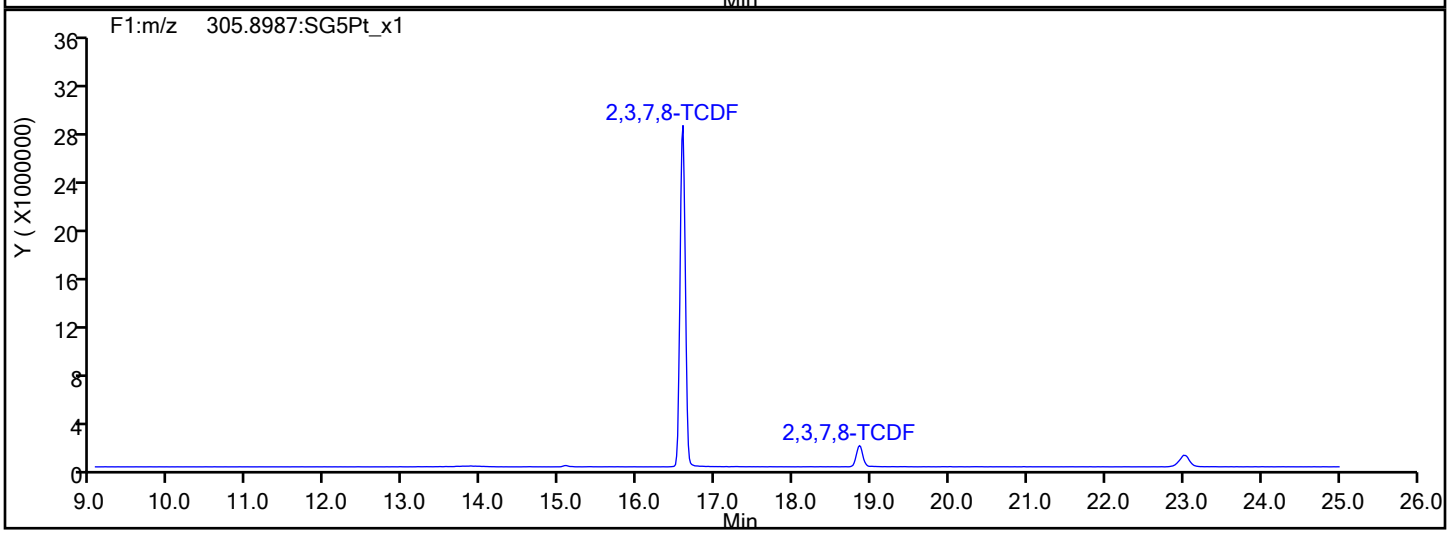
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

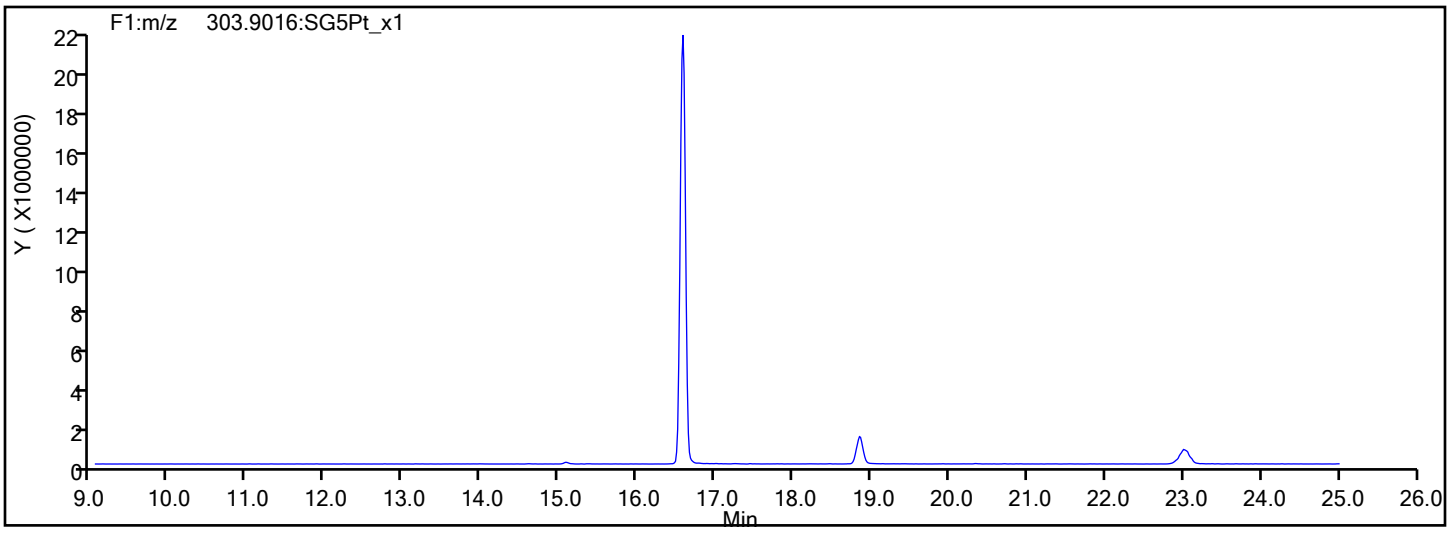
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

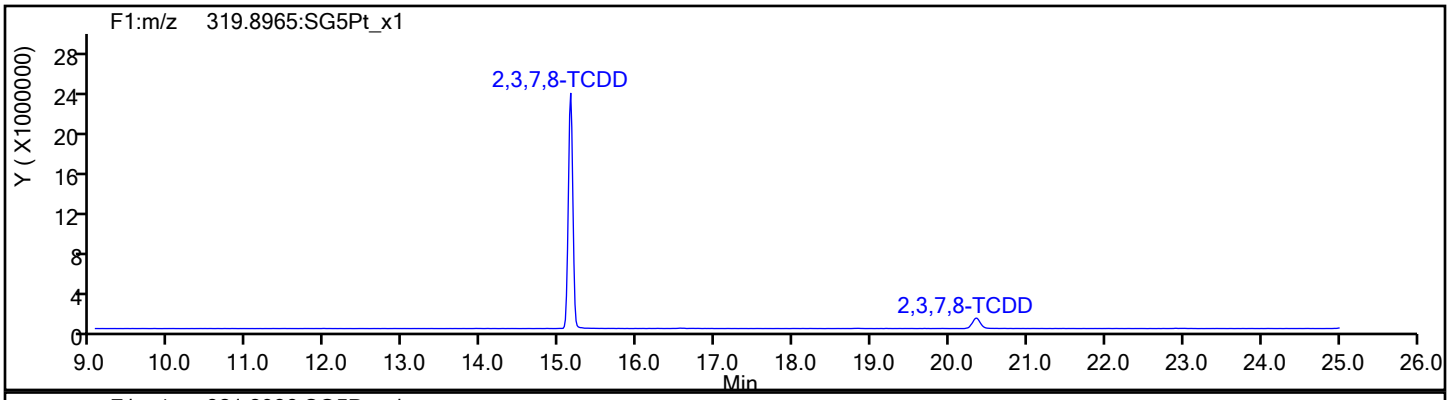


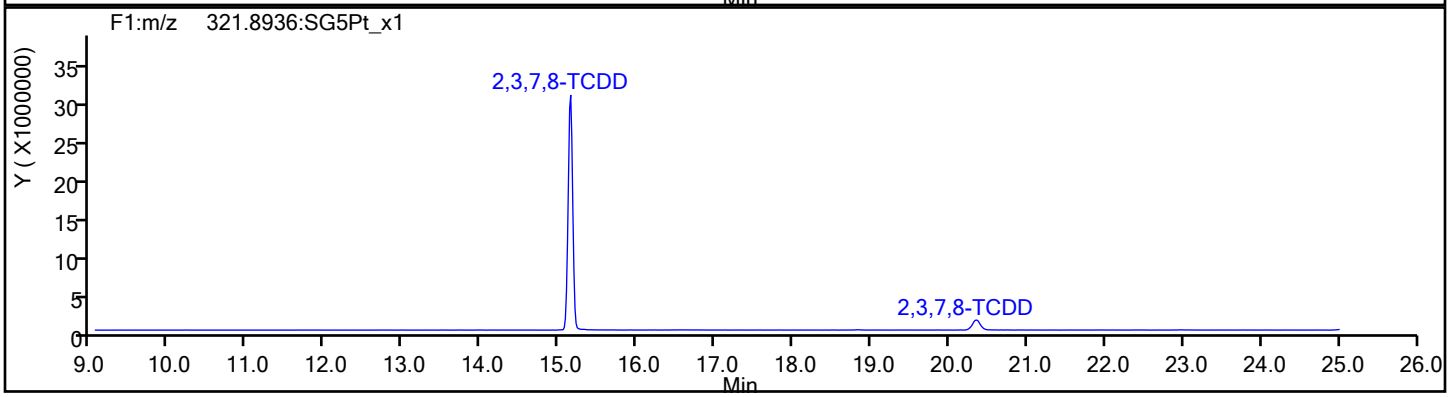
Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

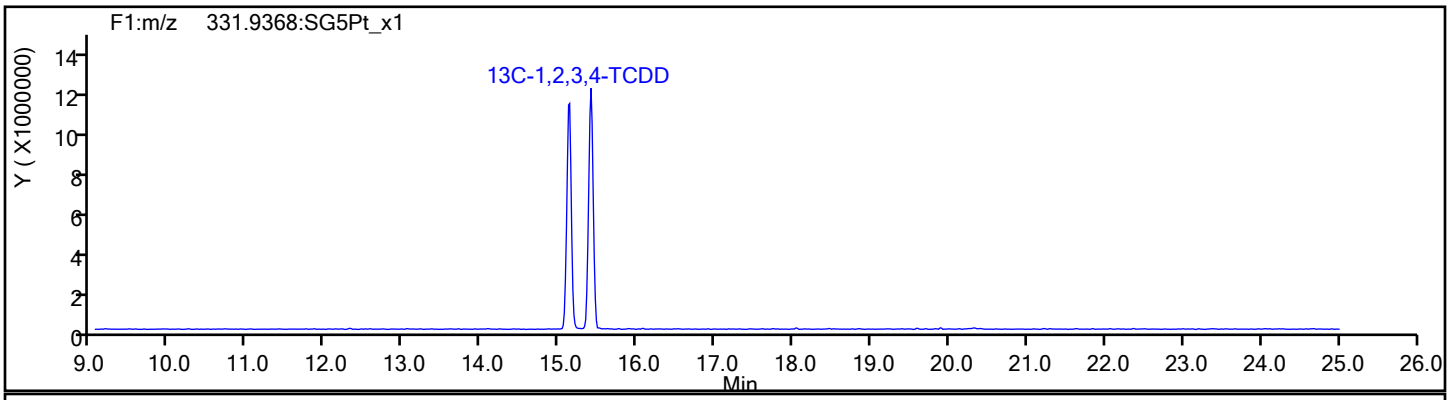
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm

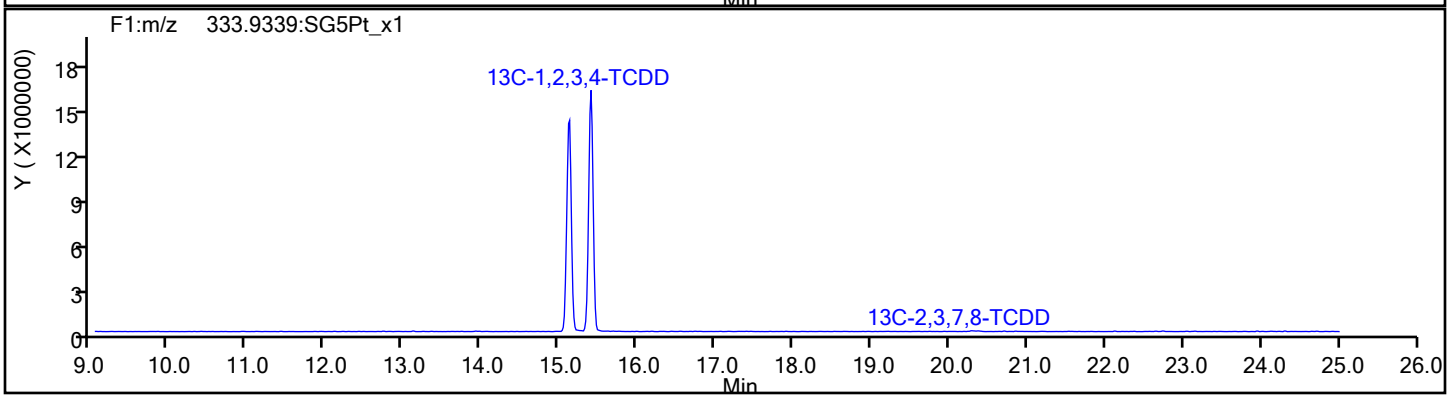
TCDD





TCDD Standards





Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Injection Date: 02-Aug-2019 05:25:19 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

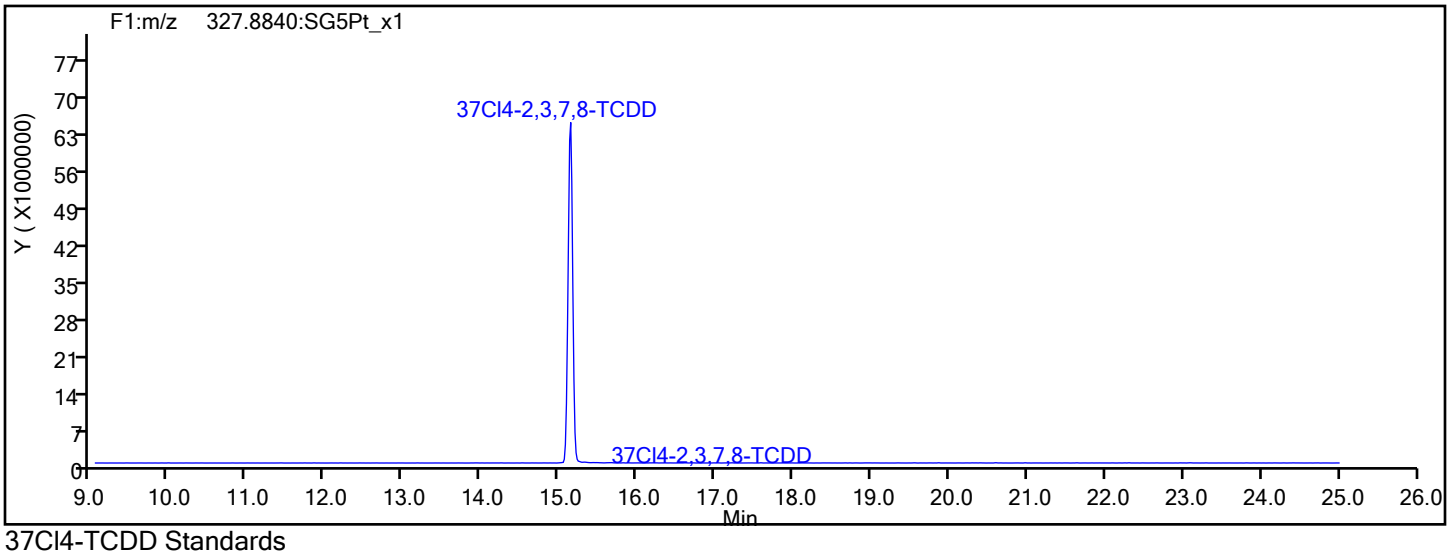
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

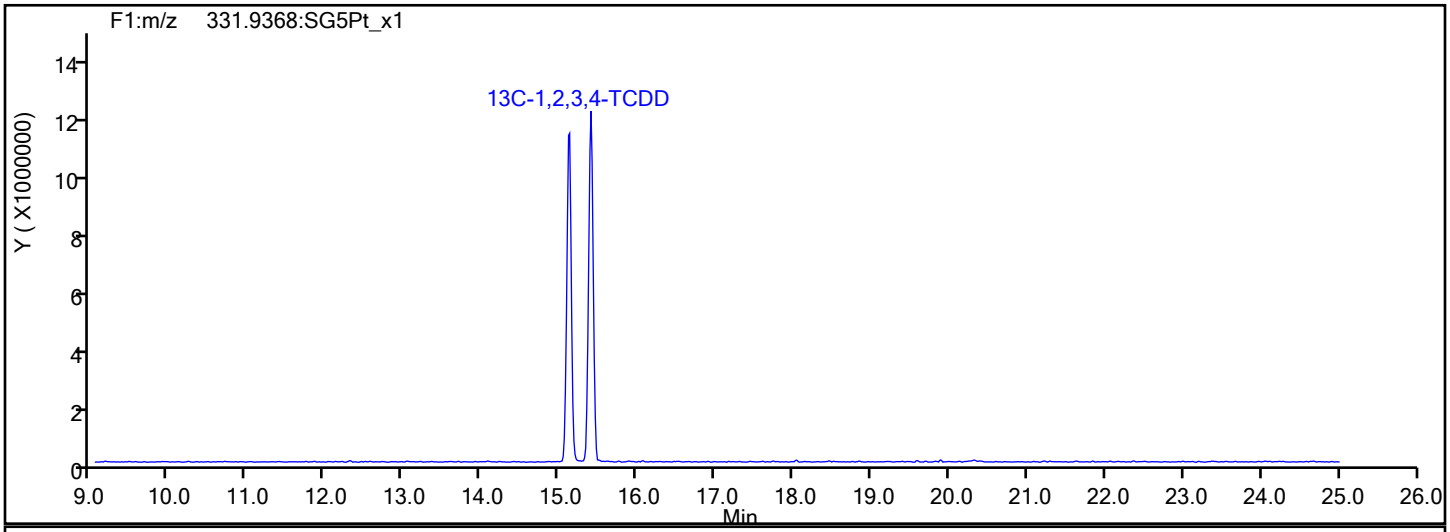
Worklist#: 312067 Sample Line#: 7

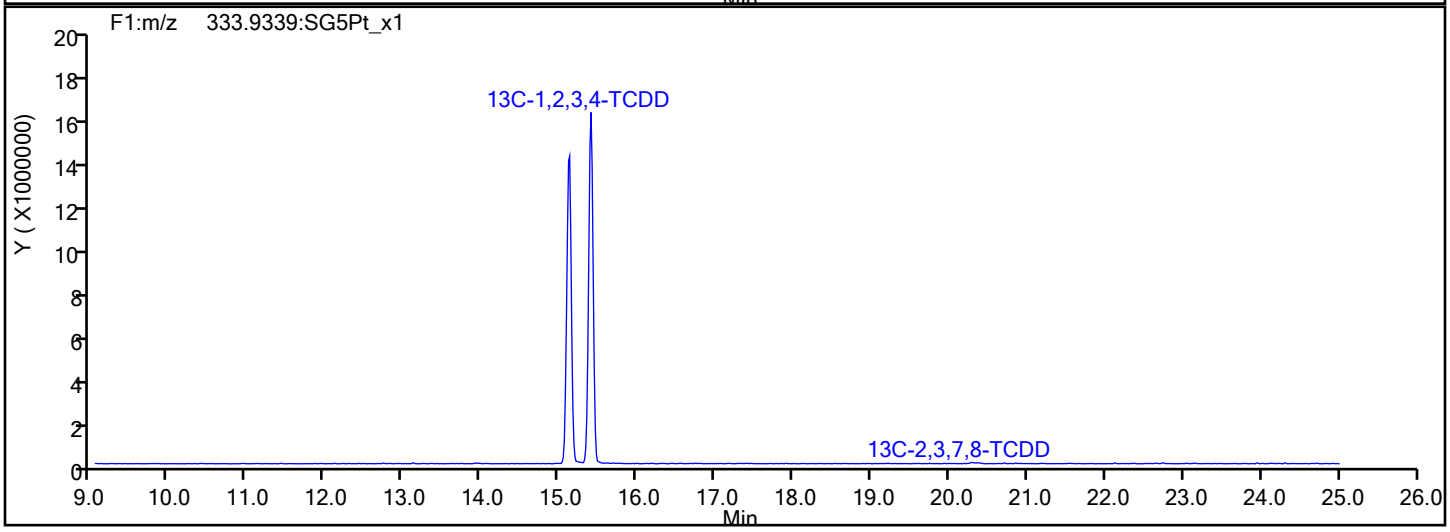
Column Type: DB-225 Column Dia: 0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

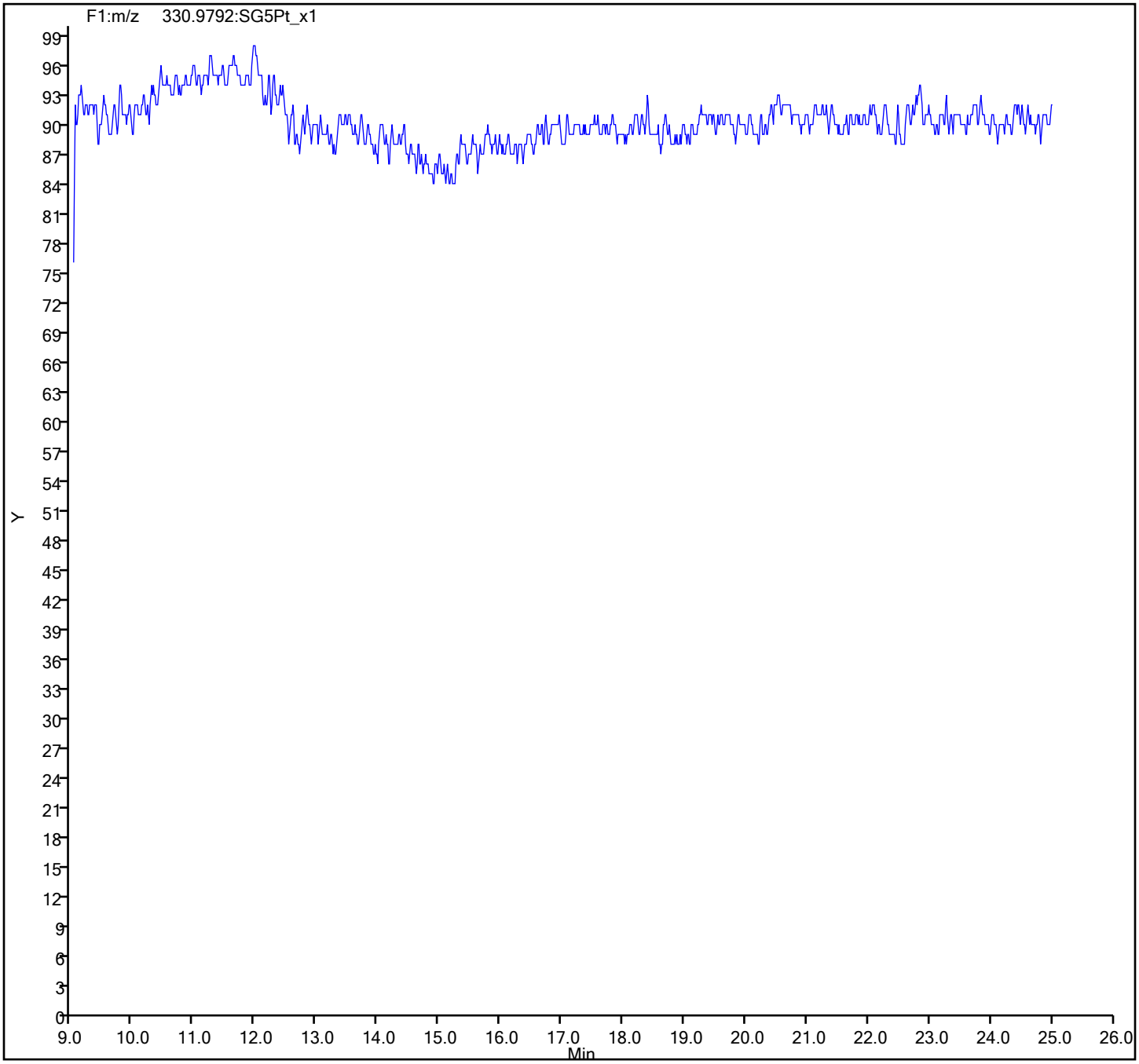




Report Date: 02-Aug-2019 11:52:57 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d		
Injection Date:	02-Aug-2019 05:25:19	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	7
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 345037

SDG No.:

Instrument ID: 3D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2019 11:28 Calibration End Date: 12/12/2019 14:39 Calibration ID: 48401

Calibration Files:

LEVEL:	LAB SAMPLE ID:	EPA SAMPLE NO:	LAB FILE ID:
Level 1	IC 320-345037/3	L2	12DE193D5_3.d
Level 2	IC 320-345037/4	L3	12DE193D5_4.d
Level 3	IC 320-345037/5	L4	12DE193D5_5.d
Level 4	IC 320-345037/6	L5	12DE193D5_6.d
Level 5	IC 320-345037/7	L6	12DE193D5_7.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDF	0.7733	0.9283	0.9752	1.0509	1.0232	AveID		0.9502				11.5		20.0			
2,3,7,8-TCDD	0.8866	1.0677	1.0581	1.1092	1.1170	AveID		1.0477				8.9		20.0			
1,2,3,7,8-PeCDF	0.8736	1.1020	1.0451	1.0906	1.0398	AveID		1.0302				8.9		20.0			
2,3,4,7,8-PeCDF	0.8948	1.1141	0.9855	1.1344	1.0759	AveID		1.0410				9.6		20.0			
1,2,3,7,8-PeCDD	0.9736	1.1578	1.1149	1.1160	1.0652	AveID		1.0855				6.5		20.0			
1,2,3,4,7,8-HxCDF	0.9727	1.2028	1.1378	1.2189	1.2038	AveID		1.1472				8.9		20.0			
1,2,3,6,7,8-HxCDF	0.9782	1.2008	1.1729	1.2146	1.1586	AveID		1.1450				8.4		20.0			
2,3,4,6,7,8-HxCDF	1.0083	1.2303	1.2055	1.2332	1.1857	AveID		1.1726				8.0		20.0			
1,2,3,4,7,8-HxCDD	0.9769	1.1694	1.0703	1.1689	1.0815	AveID		1.0934				7.3		20.0			
1,2,3,6,7,8-HxCDD	0.8928	1.1393	1.0733	1.0530	1.0561	AveID		1.0429				8.7		20.0			
1,2,3,7,8,9-HxCDD	1.1190	1.2983	1.2307	1.2270	1.1617	AveID		1.2073				5.7		20.0			
1,2,3,7,8,9-HxCDF	1.0099	1.2240	1.2032	1.2271	1.1941	AveID		1.1717				7.8		20.0			
1,2,3,4,6,7,8-HpCDF	1.2679	1.5610	1.4386	1.6231	1.5111	AveID		1.4804				9.2		20.0			
1,2,3,4,6,7,8-HpCDD	0.9486	1.0921	1.0633	1.0950	1.0688	AveID		1.0535				5.7		20.0			
1,2,3,4,7,8,9-HpCDF	1.1475	1.3140	1.2683	1.3777	1.3590	AveID		1.2933				7.1		20.0			
OCDD	1.0920	1.2499	1.1141	1.1447	1.0802	AveID		1.1362				6.0		20.0			
OCDF	1.2883	1.5239	1.3341	1.4689	1.3572	AveID		1.3945				7.0		20.0			
13C-2,3,7,8-TCDF	1.4149	1.3615	1.4301	1.4025	1.4697	Ave		1.4157				2.8		35.0			
13C-2,3,7,8-TCDD	0.9639	0.9558	0.9685	0.9943	0.9929	Ave		0.9751				1.8		35.0			
13C-1,2,3,7,8-PeCDF	1.1504	1.1299	1.1699	1.1868	1.2560	Ave		1.1786				4.1		35.0			
13C-2,3,4,7,8-PeCDF	1.1012	1.0905	1.1528	1.1309	1.1785	Ave		1.1308				3.2		35.0			
13C-1,2,3,7,8-PeCDD	0.7490	0.7273	0.7283	0.7794	0.8019	Ave		0.7572				4.3		35.0			
13C-1,2,3,4,7,8-HxCDF	1.0651	1.1051	1.1007	1.1073	1.1431	Ave		1.1043				2.5		35.0			
13C-1,2,3,6,7,8-HxCDF	1.1269	1.1509	1.1084	1.1531	1.1960	Ave		1.1470				2.9		35.0			
13C-2,3,4,6,7,8-HxCDF	1.0491	1.0900	1.0279	1.1014	1.1159	Ave		1.0769				3.4		35.0			
13C-1,2,3,4,7,8-HxCDD	0.7651	0.8011	0.7923	0.7924	0.8302	Ave		0.7962				2.9		35.0			
13C-1,2,3,6,7,8-HxCDD	0.8463	0.8650	0.8355	0.9041	0.9091	Ave		0.8720				3.8		35.0			
13C-1,2,3,7,8,9-HxCDF	0.9635	1.0187	0.9696	1.0318	1.0740	Ave		1.0115				4.5		35.0			
13C-1,2,3,4,6,7,8-HpCDF	0.7007	0.7750	0.7261	0.7657	0.8206	Ave		0.7577				6.1		35.0			
13C-1,2,3,4,6,7,8-HpCDD	0.6455	0.7147	0.6645	0.7528	0.7517	Ave		0.7058				7.0		35.0			
13C-1,2,3,4,7,8,9-HpCDF	0.6248	0.6970	0.6631	0.7301	0.7557	Ave		0.6941				7.5		35.0			
13C-OCDD	0.4116	0.4270	0.4351	0.4924	0.5352	Ave		0.4603				11.3		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 345037

SDG No.:

Instrument ID: 3D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2019 11:28 Calibration End Date: 12/12/2019 14:39 Calibration ID: 48401

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
37Cl4-2,3,7,8-TCDD	1.2285	1.2329	1.5190	1.3729	1.3866	Ave		1.3480				9.0					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 345037

SDG No.:

Instrument ID: 3D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2019 11:28 Calibration End Date: 12/12/2019 14:39 Calibration ID: 48401

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-345037/3	12DE193D5_3.d
Level 2	IC 320-345037/4	12DE193D5_4.d
Level 3	IC 320-345037/5	12DE193D5_5.d
Level 4	IC 320-345037/6	12DE193D5_6.d
Level 5	IC 320-345037/7	12DE193D5_7.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDF		AveID	1274172	5903543	32091889	132413553	567933884	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDD		AveID	995222	4766996	23580601	99082308	418876400	0.500	2.00	10.0	40.0	200
1,2,3,7,8-PeCDF		AveID	5851206	29080170	140673612	581363087	2466178873	2.50	10.0	50.0	200	1000
2,3,4,7,8-PeCDF		AveID	5737636	28373728	130713898	576277220	2394358497	2.50	10.0	50.0	200	1000
1,2,3,7,8-PeCDD		AveID	4246020	19667667	93429816	390728173	1612908693	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF		AveID	5545989	27852640	137734608	570996325	2563115775	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF		AveID	5900625	28957236	142961587	592549839	2581265503	2.50	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF		AveID	5662489	28098536	136271106	574663111	2464596807	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD		AveID	4000505	19629316	93254778	391874961	1672379041	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD		AveID	4044419	20651010	98614866	402773504	1788364825	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD		AveID	4825859	22661690	110159416	440337374	1881769266	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF		AveID	5208722	26126431	128293546	535635876	2388744572	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF		AveID	4755914	25350445	114883210	525836756	2309957389	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD		AveID	3277321	16353697	77704317	348725265	1496594886	2.50	10.0	50.0	200	1000
1,2,3,4,7,8,9-HpCDF		AveID	3837855	19189830	92482689	425539186	1913174732	2.50	10.0	50.0	200	1000
OCDD		AveID	4811448	22367401	106623239	476901861	2153864314	5.00	20.0	100	400	2000
OCDF		AveID	5676582	27270567	127683858	611942959	2706173170	5.00	20.0	100	400	2000
13C-2,3,7,8-TCDF	13CTC	Ave	329541553	317966293	329077583	314996891	277528864	100	100	100	100	100
13C-2,3,7,8-TCDD	13CTC	Ave	224505471	223228422	222854376	223322673	187504800	100	100	100	100	100
13C-1,2,3,7,8-PeCDF	13CTC	Ave	267927119	263888884	269197886	266542876	237179506	100	100	100	100	100
13C-2,3,4,7,8-PeCDF	13CTC	Ave	256478177	254672733	265262610	253995484	222542126	100	100	100	100	100
13C-1,2,3,7,8-PeCDD	13CTC	Ave	174446593	169864186	167599127	175058491	151420854	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDF	13CHx	Ave	228057392	231563640	242099177	234227258	212926355	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDF	13CHx	Ave	241275292	241149788	243784643	243919748	222786807	100	100	100	100	100
13C-2,3,4,6,7,8-HxCDF	13CHx	Ave	224637565	228396958	226090409	232992892	207860074	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDD	13CHx	Ave	163808128	167853325	174266733	167631105	154639045	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDD	13CHx	Ave	181206025	181254882	183758146	191249218	169339469	100	100	100	100	100
13C-1,2,3,7,8,9-HxCDF	13CHx	Ave	206305806	213447196	213252409	218257445	200052961	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDF	13CHx	Ave	150037410	162401122	159712904	161981056	152865078	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDD	13CHx	Ave	138203122	149748569	146156878	159237326	140028109	100	100	100	100	100
13C-1,2,3,4,7,8,9-HpCDF	13CHx	Ave	133781139	146041140	145840544	154442339	140774596	100	100	100	100	100
13C-OCDD	13CHx	Ave	176245574	178956155	191409180	208300311	199399104	200	200	200	200	200
37Cl4-2,3,7,8-TCDD	13CTC	Ave	1430622	5758902	34952681	123340927	523686187	0.500	2.00	10.0	40.0	200

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1 Analy Batch No.: 345037

SDG No.:

Instrument ID: 3D5 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2019 11:28 Calibration End Date: 12/12/2019 14:39 Calibration ID: 48401

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

	File Name	File Text	Sample ID	Bottle	Method/Matrix	Box #	User	Sample Size
1	12DE193D5_1	WDM HRDXNCP_00040	WDM 121219	Tray1:1	DXN		KSS	1.000000
2	12DE193D5_2	SB Solvent Blank C-14	SB 121219	Tray1:3			KSS	1.000000
3	12DE193D5_3	IC HRDXNL2_00027	IC 121219	Tray1:4	DXN	ICAL	KSS	1.000000
4	12DE193D5_4	IC HRDXNL3_00025	IC 121219A	Tray1:5	DXN	ICAL	KSS	1.000000
5	12DE193D5_5	IC HRDXNL4_00086	IC 121219B	Tray1:2	DXN	ICAL	KSS	1.000000
6	12DE193D5_6	IC HRDXNL5_00028	IC 121219C	Tray1:6	DXN	ICAL	KSS	1.000000
7	12DE193D5_7	IC HRDXNL6_00024	IC 121219D	Tray1:7	DXN	ICAL	KSS	1.000000
8	12DE193D5_8	SB Solvent Blank C-14	SB 121219A	Tray1:3			KSS	1.000000
9	12DE193D5_9	ICV HRDXNIC_00042	ICV 121219	Tray1:9	DXN	ICAL	KSS	1.000000

logfile checked
12-12-19 ALM

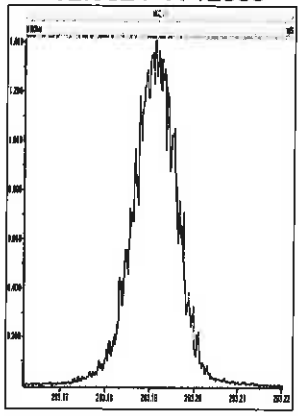
Units	MS File	Inlet File	Inject Volume	Sample Type	Conc A	Conc B	Conc C	Conc D	Conc E	Conc F
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---	---	---
	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---	---	---
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	0.5	2.5	5	100	200	0.25
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	2	10	20	100	200	1
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	10	50	100	100	200	5
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	40	200	400	100	200	20
---	Dioxin3D5	dioxinnogc	2.000000	Analyte	200	1000	2000	100	200	100
	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---	---	---
	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---	---	---

Conc G	Process	Process Options	Action On Error	s5
---	FBAT_ML_FileMover	---	---	C:\CHROM
---	FBAT_ML_FileMover	---	---	C:\CHROM
100	FBAT_ML_FileMover	---	---	C:\CHROM
100	FBAT_ML_FileMover	---	---	C:\CHROM
100	FBAT_ML_FileMover	---	---	C:\CHROM
100	FBAT_ML_FileMover	---	---	C:\CHROM
100	ResolutionCheck	C:\MassLynx\Autospec\dioxinendres.dat	Ignore Error	---
---	FBAT_ML_FileMover	---	---	C:\CHROM
---	ResolutionCheck	C:\MassLynx\Autospec\dioxinendres.dat	Ignore Error	---

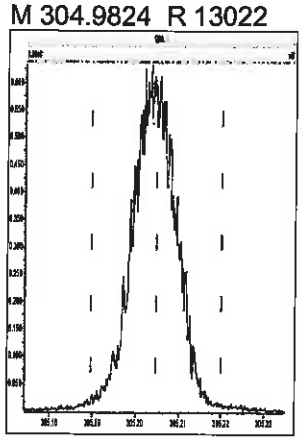
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Thursday, December 12, 2019 09:42:14 Pacific Standard Time

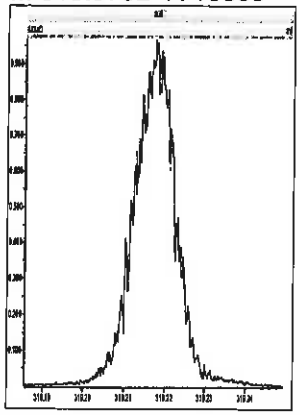
M 292.9824 R 12889



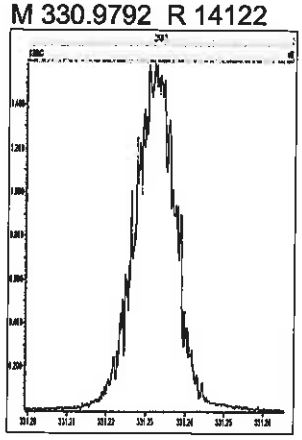
M 304.9824 R 13022



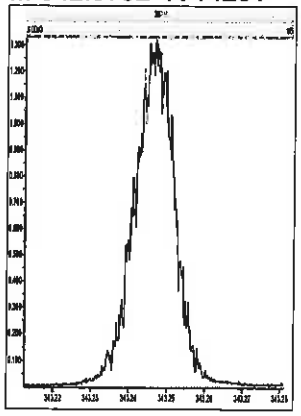
M 318.9792 R 13369



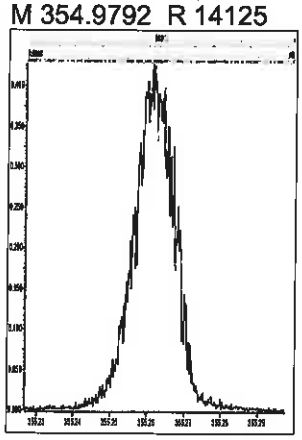
M 330.9792 R 14122



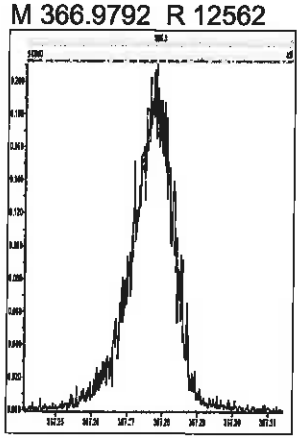
M 342.9792 R 14201



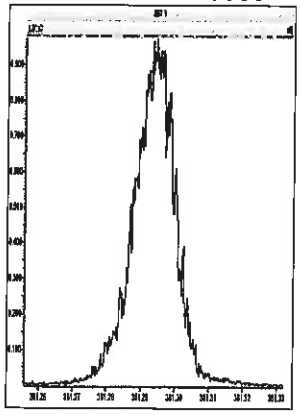
M 354.9792 R 14125



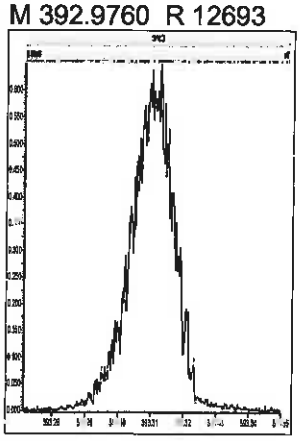
M 366.9792 R 12562



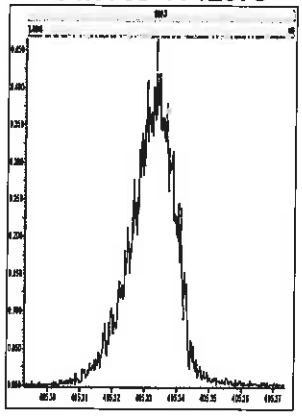
M 380.9760 R 13368



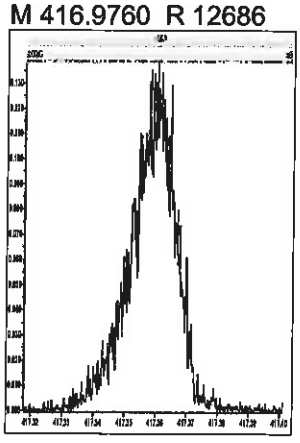
M 392.9760 R 12693



M 404.9760 R 12078



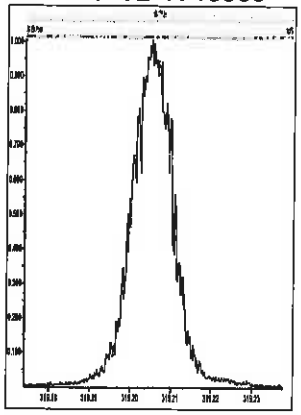
M 416.9760 R 12686



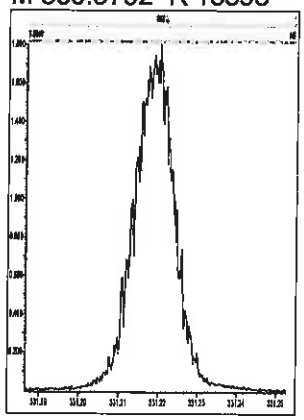
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Thursday, December 12, 2019 09:42:39 Pacific Standard Time

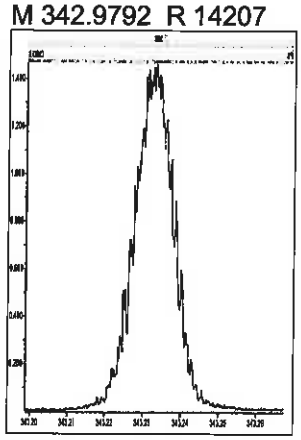
M 318.9792 R 13888



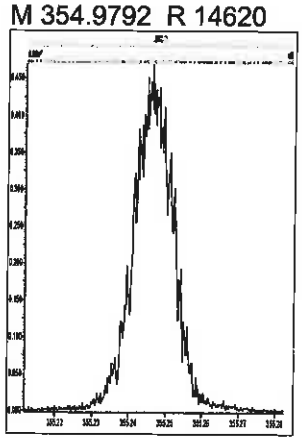
M 330.9792 R 13893



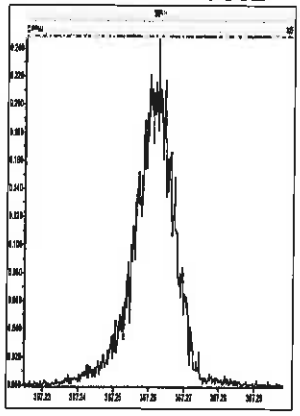
M 342.9792 R 14207



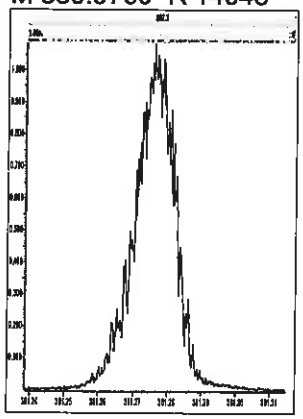
M 354.9792 R 14620



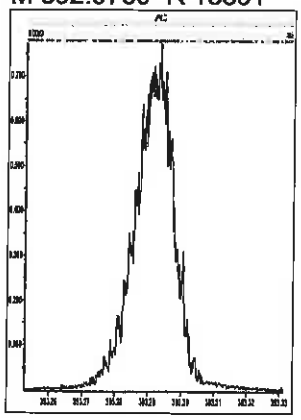
M 366.9792 R 12952



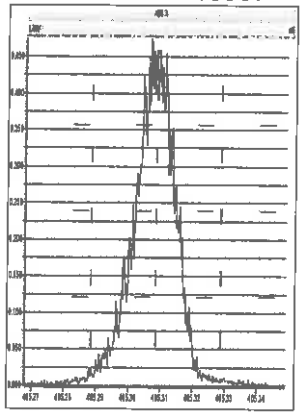
M 380.9760 R 14043



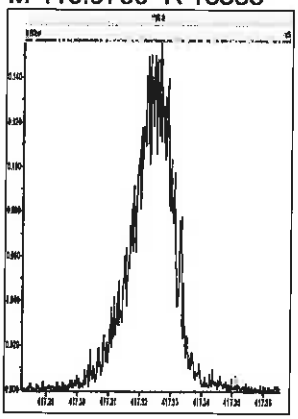
M 392.9760 R 13891



M 404.9760 R 13967



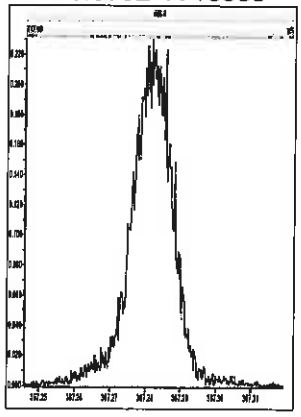
M 416.9760 R 13888



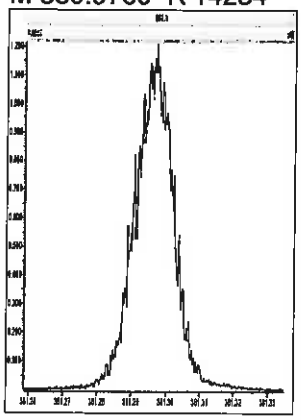
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Thursday, December 12, 2019 09:43:04 Pacific Standard Time

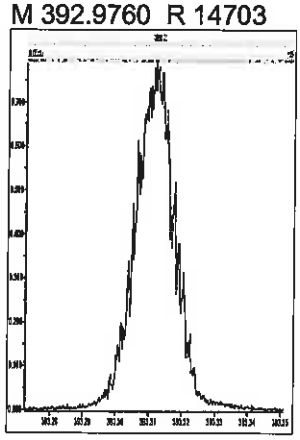
M 366.9792 R 13888



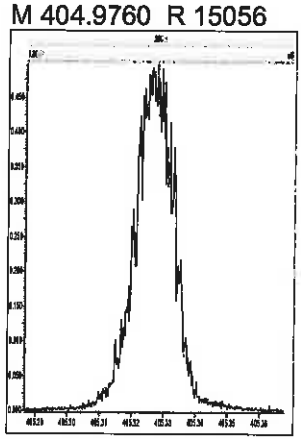
M 380.9760 R 14284



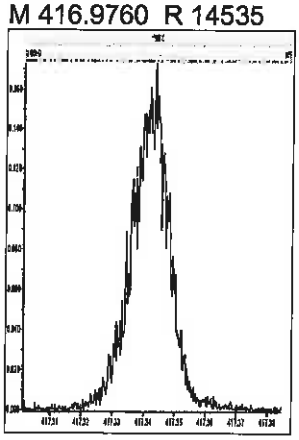
M 392.9760 R 14703



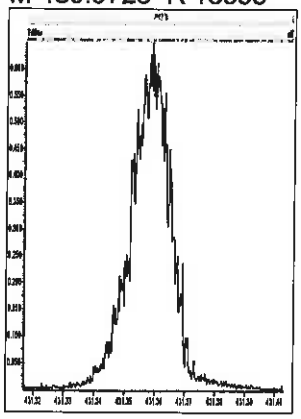
M 404.9760 R 15056



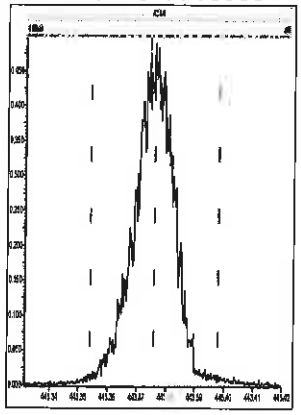
M 416.9760 R 14535



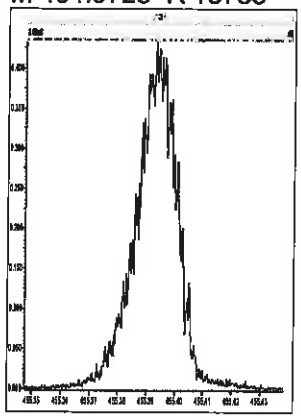
M 430.9728 R 13368



M 442.9728 R 13969



M 454.9728 R 13738



File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

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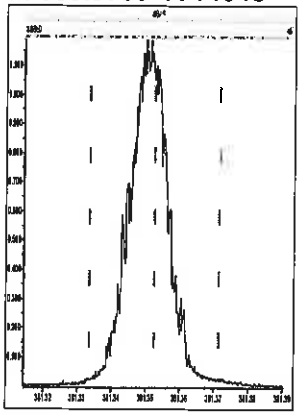
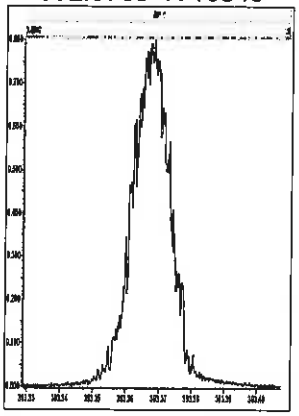
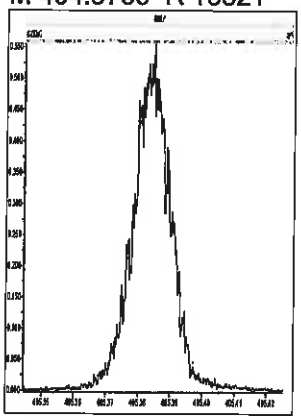
M 380.9760 R 14046



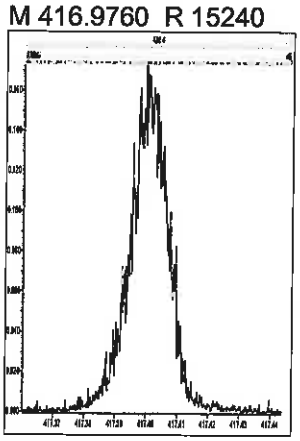
M 392.9760 R 16346



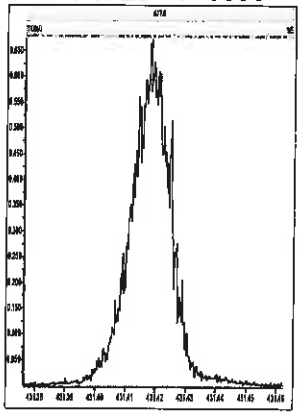
M 404.9760 R 15821



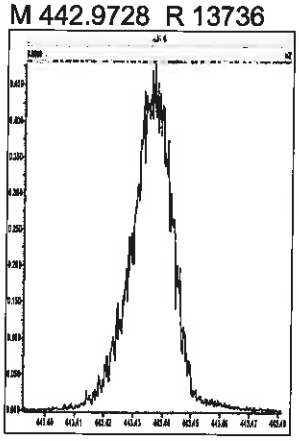
M 416.9760 R 15240



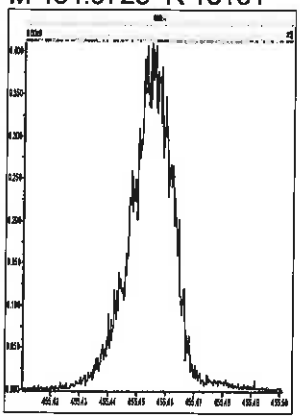
M 430.9728 R 13890



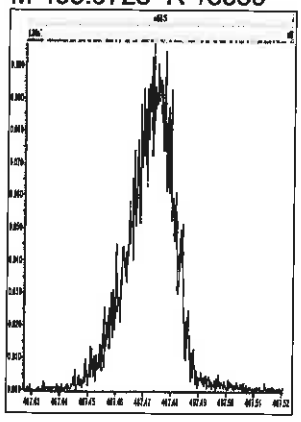
M 442.9728 R 13736



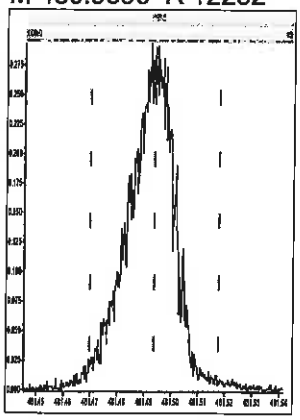
M 454.9728 R 13161



M 466.9728 R 13659



M 480.9696 R 12252



File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

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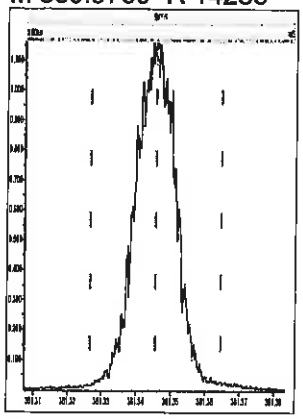
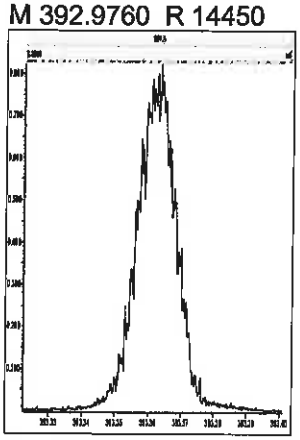
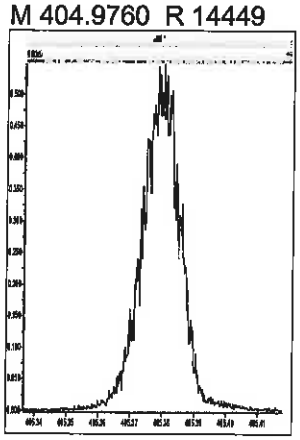
M 380.9760 R 14286



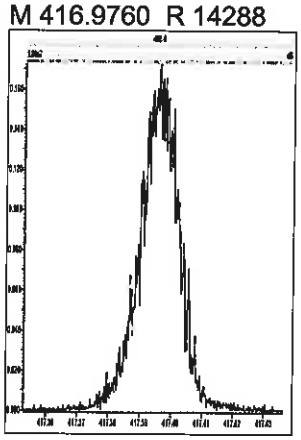
M 392.9760 R 14450



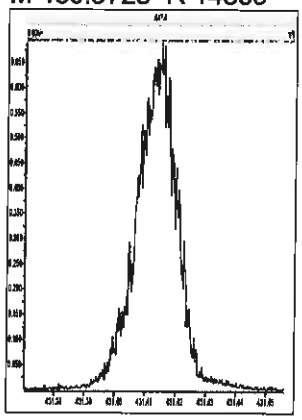
M 404.9760 R 14449



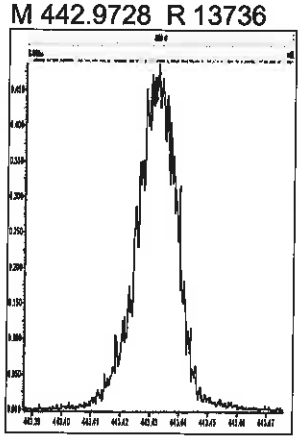
M 416.9760 R 14288



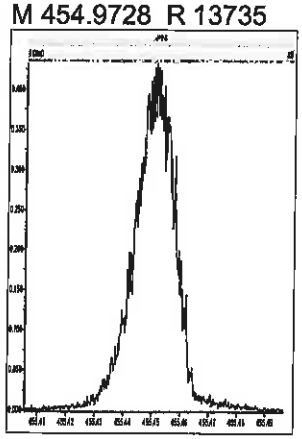
M 430.9728 R 14369



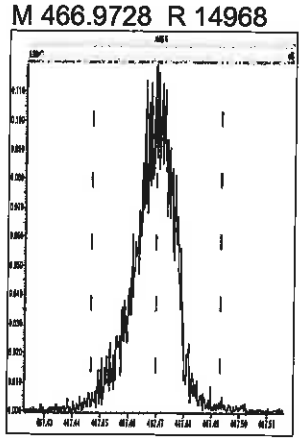
M 442.9728 R 13736



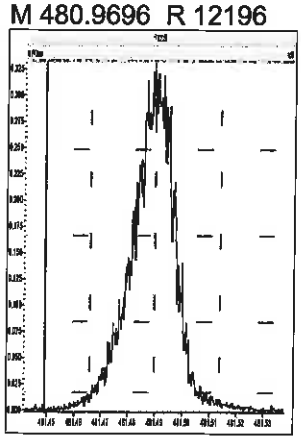
M 454.9728 R 13735



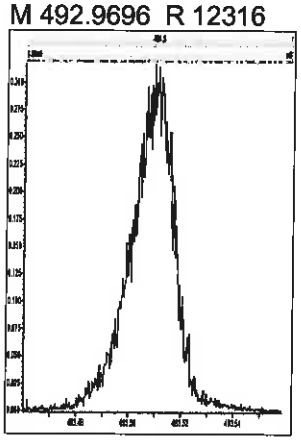
M 466.9728 R 14968



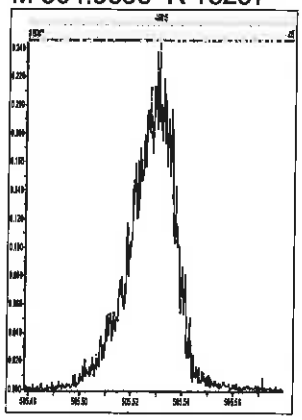
M 480.9696 R 12196



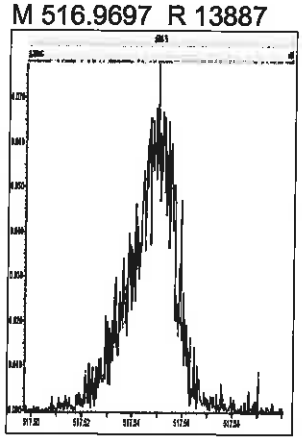
M 492.9696 R 12316



M 504.9696 R 13297



M 516.9697 R 13887



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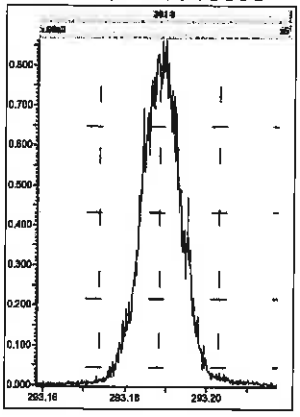
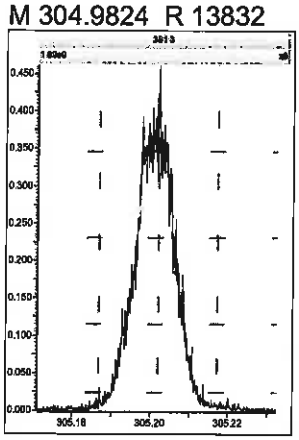
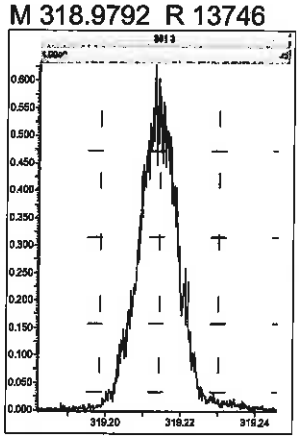
M 292.9824 R 13393



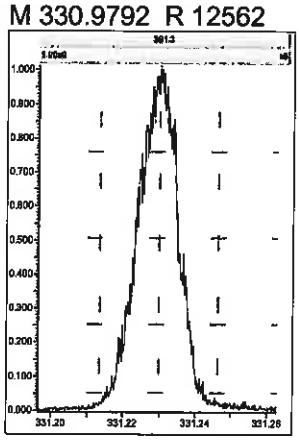
M 304.9824 R 13832



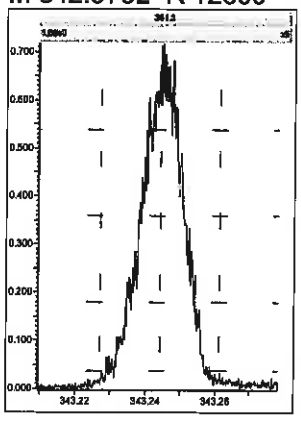
M 318.9792 R 13746



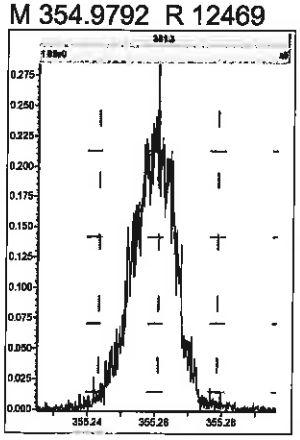
M 330.9792 R 12562



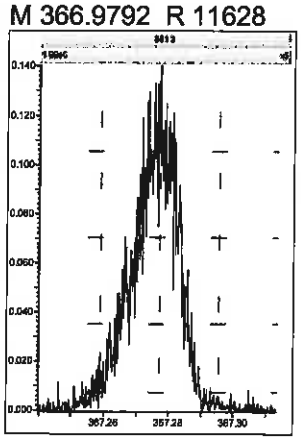
M 342.9792 R 12600



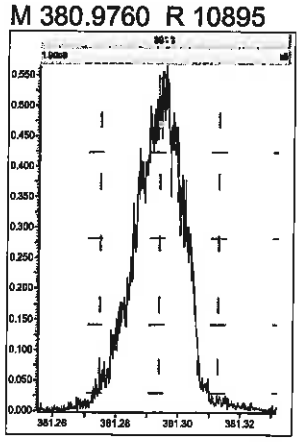
M 354.9792 R 12469



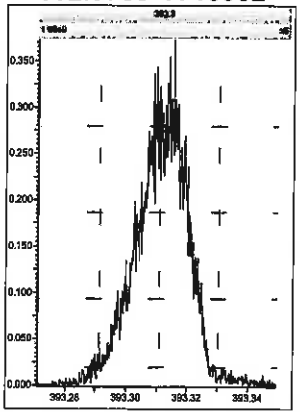
M 366.9792 R 11628



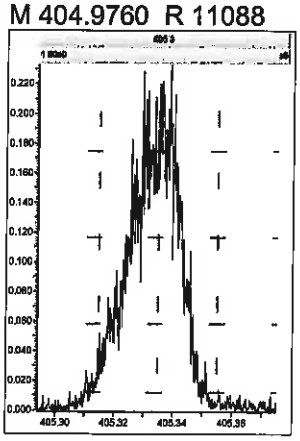
M 380.9760 R 10895



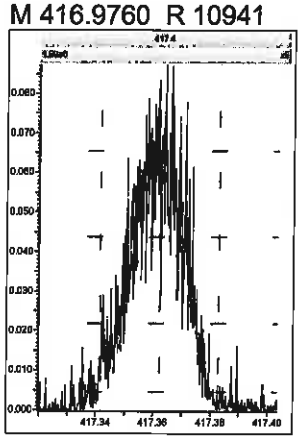
M 392.9760 R 10952



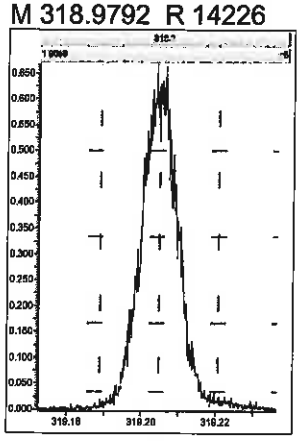
M 404.9760 R 11088



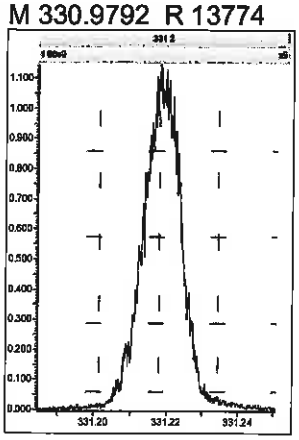
M 416.9760 R 10941



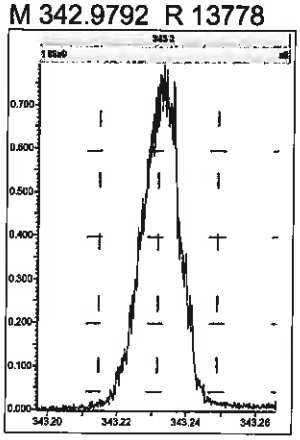
M 318.9792 R 14226



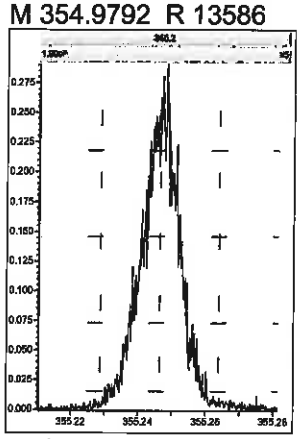
M 330.9792 R 13774



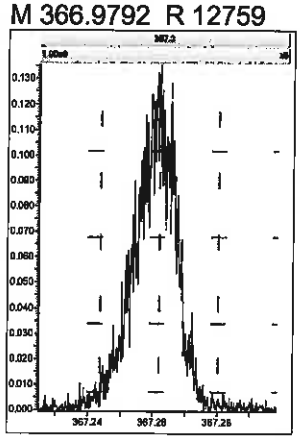
M 342.9792 R 13778



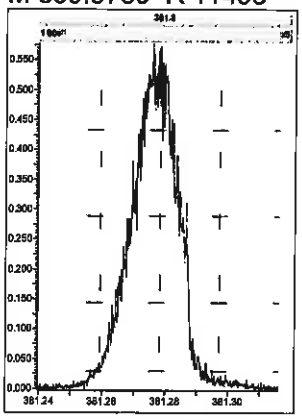
M 354.9792 R 13586



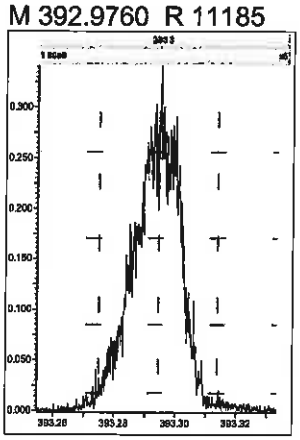
M 366.9792 R 12759



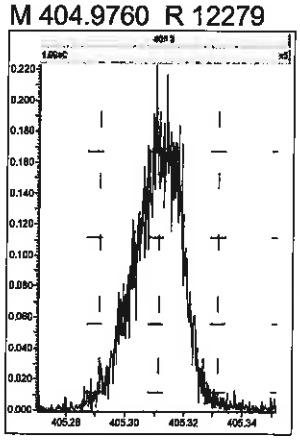
M 380.9760 R 11493



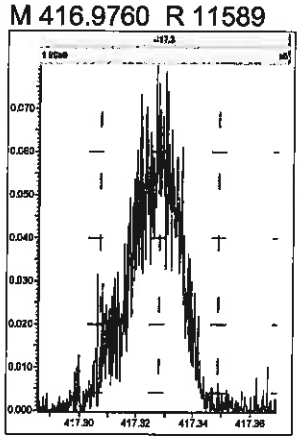
M 392.9760 R 11185



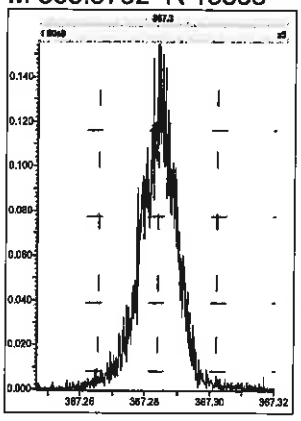
M 404.9760 R 12279



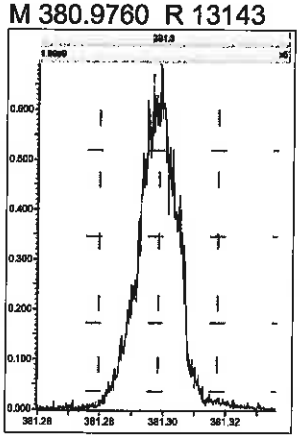
M 416.9760 R 11589



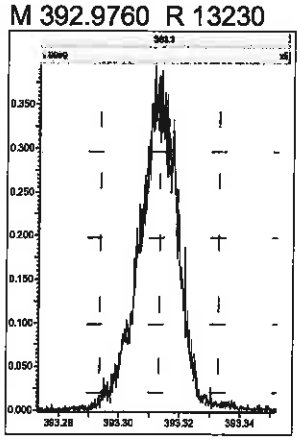
M 366.9792 R 13858



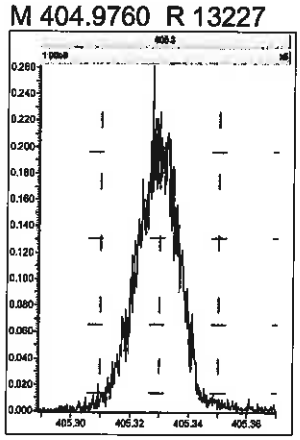
M 380.9760 R 13143



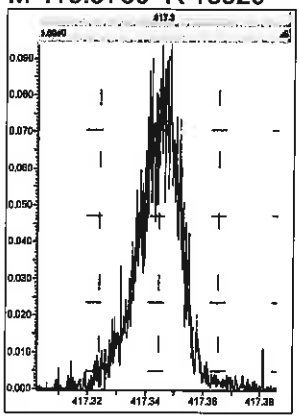
M 392.9760 R 13230



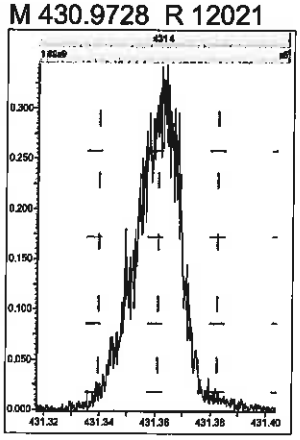
M 404.9760 R 13227



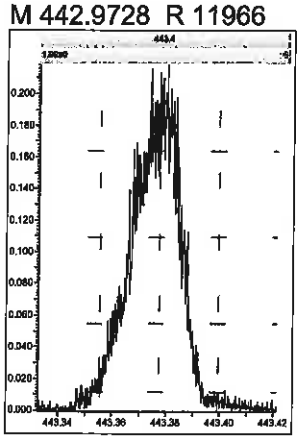
M 416.9760 R 13020



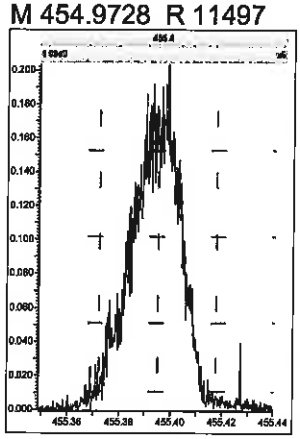
M 430.9728 R 12021



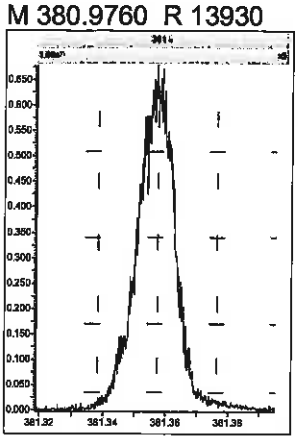
M 442.9728 R 11966



M 454.9728 R 11497



M 380.9760 R 13930



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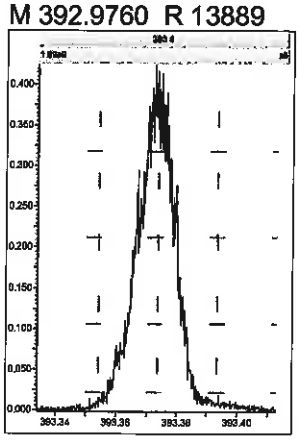

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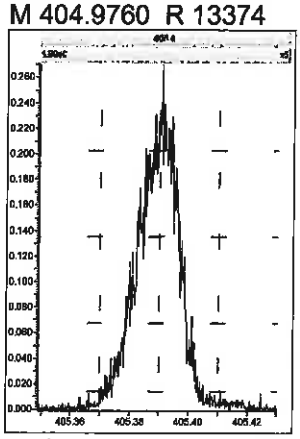

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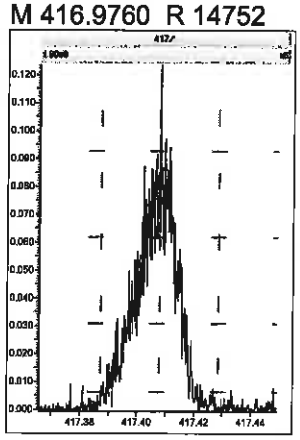
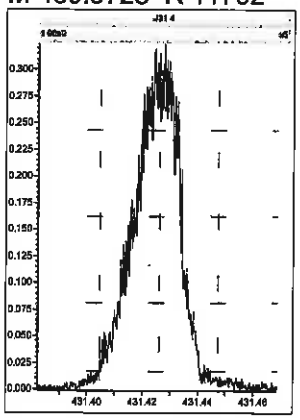
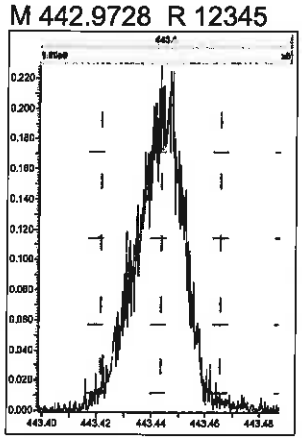


M 430.9728 R 11792



M 442.9728 R 12345



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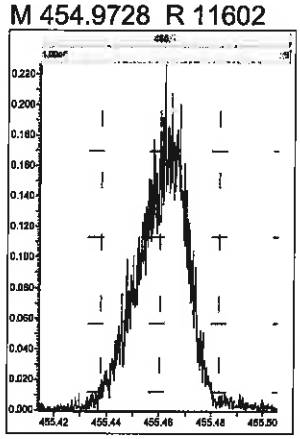

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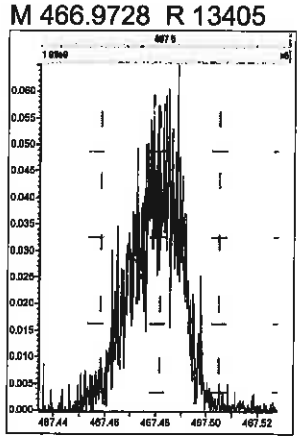
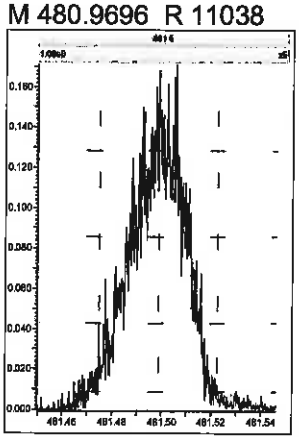


M 480.9696 R 11038



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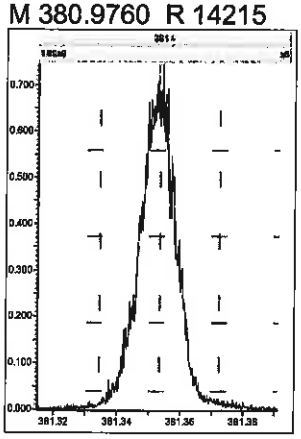

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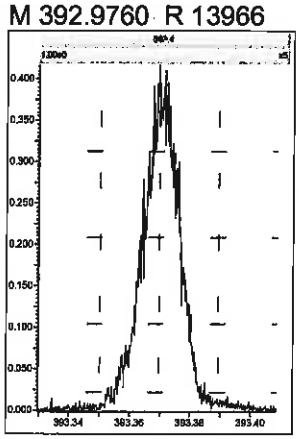

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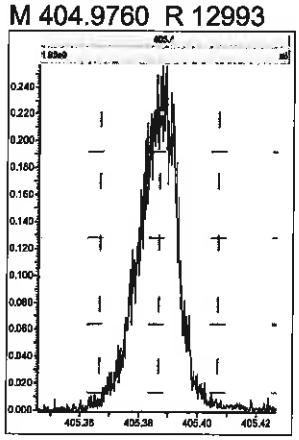

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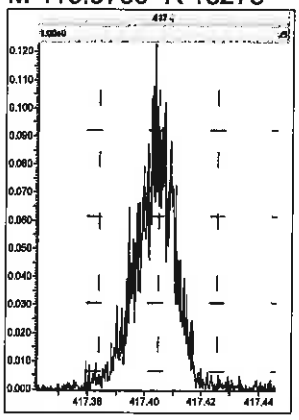

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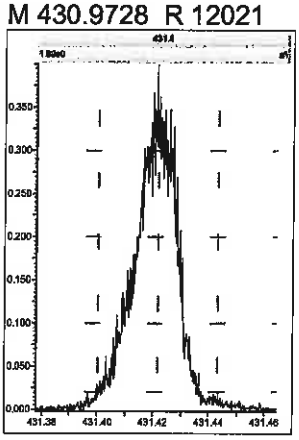

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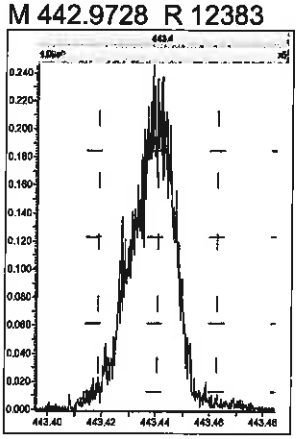
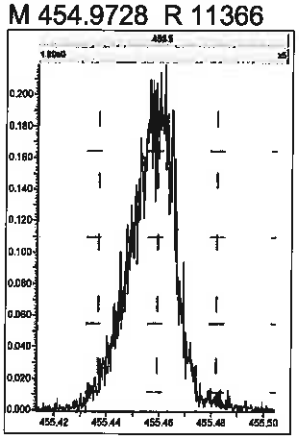


M 454.9728 R 11366



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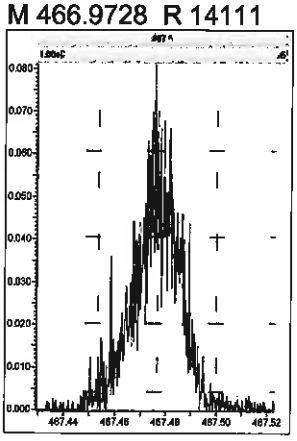

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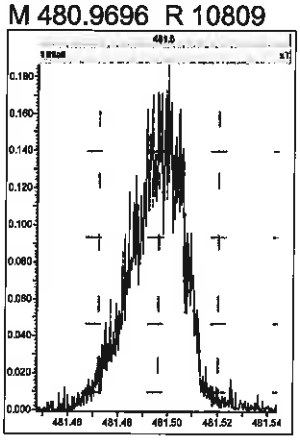

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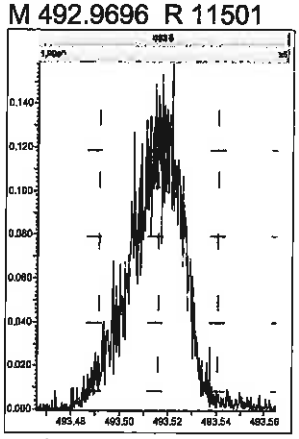
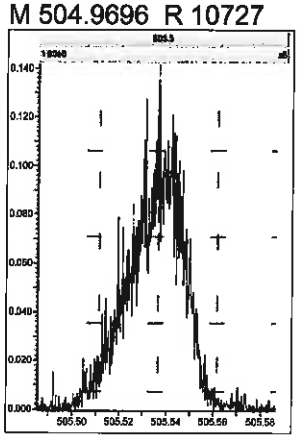


M 504.9696 R 10727



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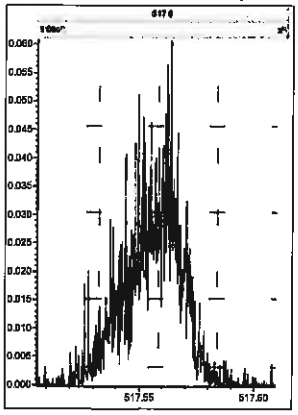

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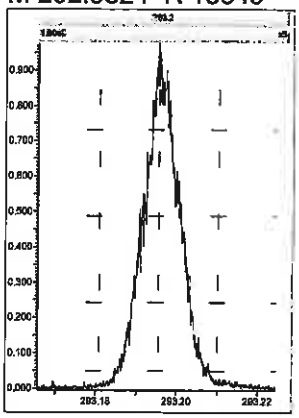

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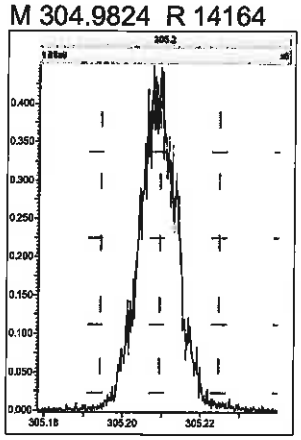
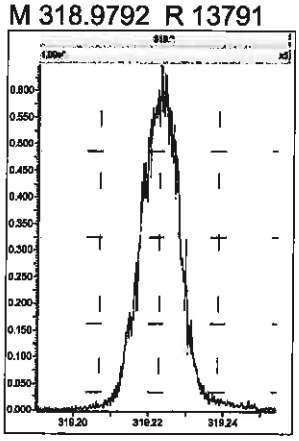
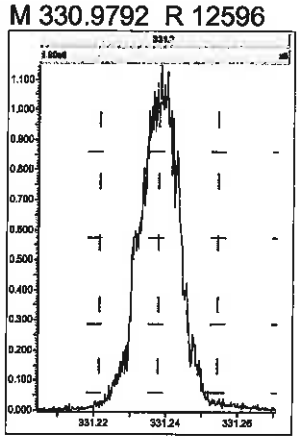


M 318.9792 R 13791



M 330.9792 R 12596



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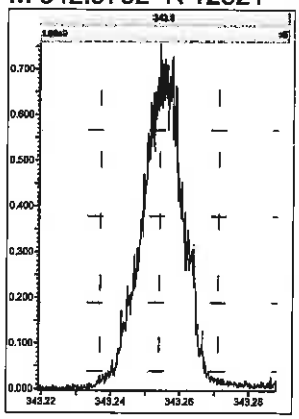

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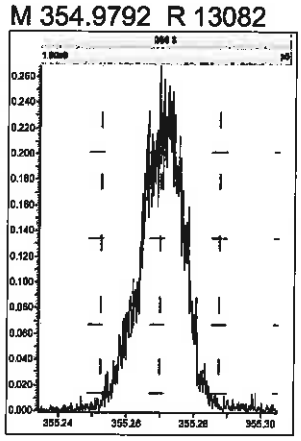

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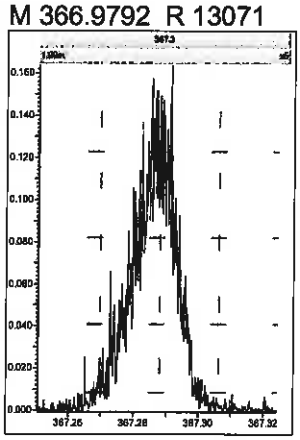

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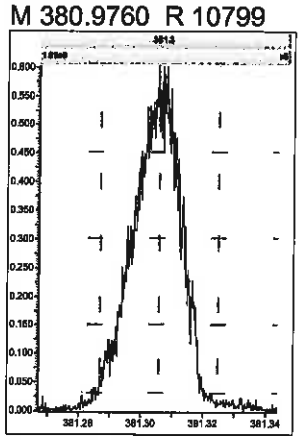

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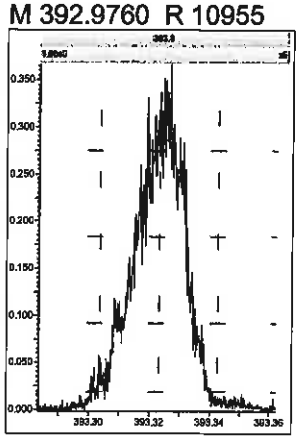
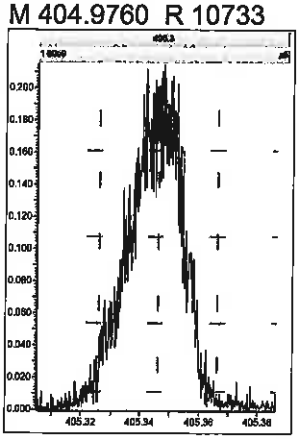


M 404.9760 R 10733



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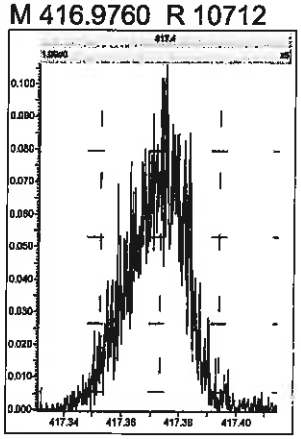

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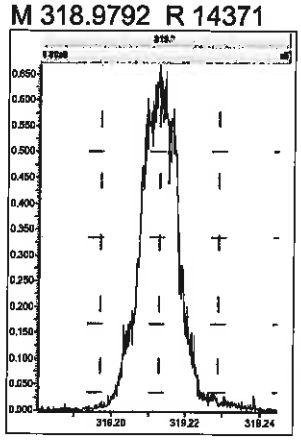

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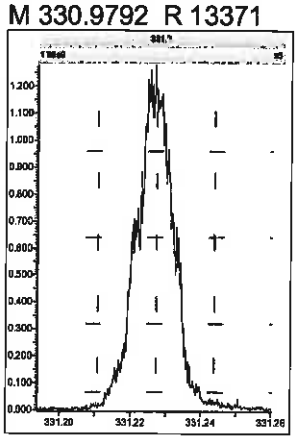

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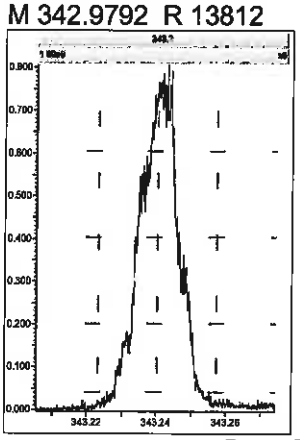

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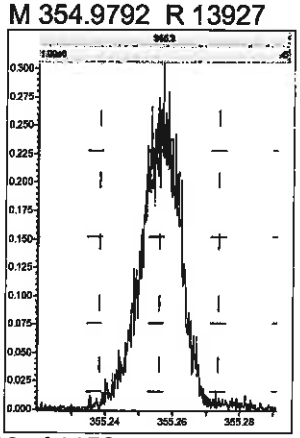

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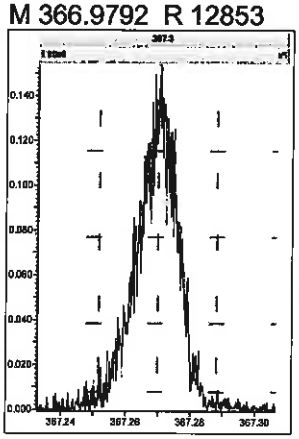

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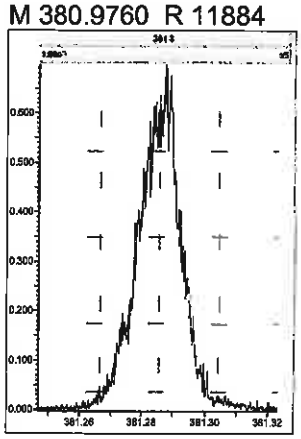

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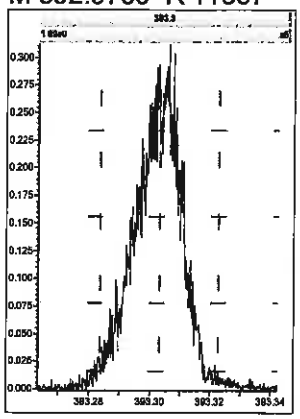

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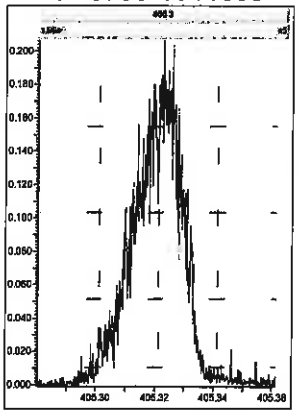

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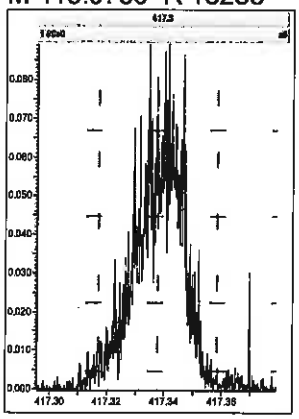

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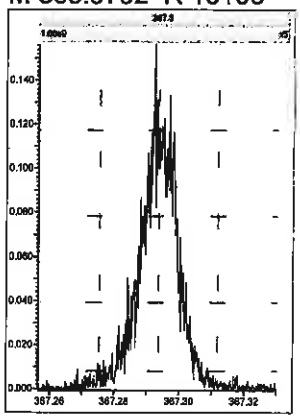

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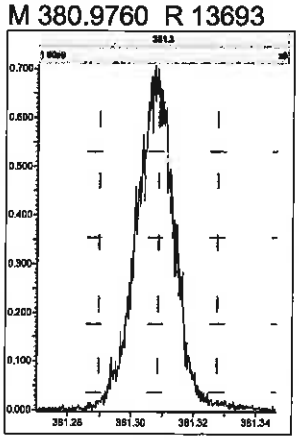

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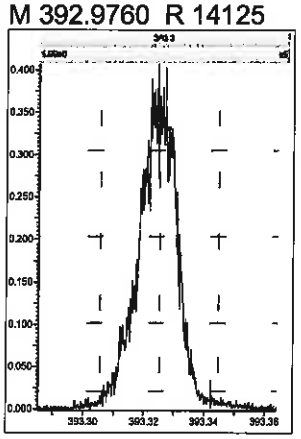

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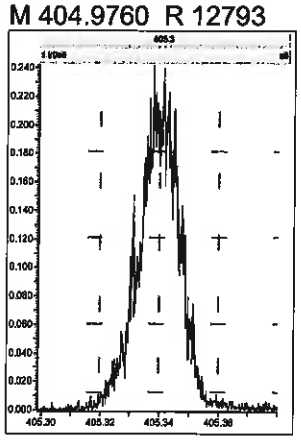

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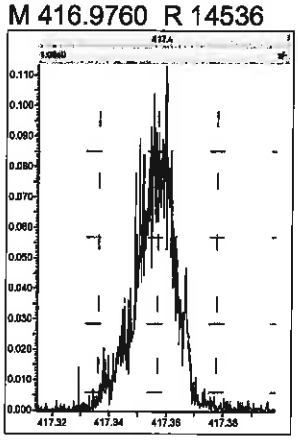

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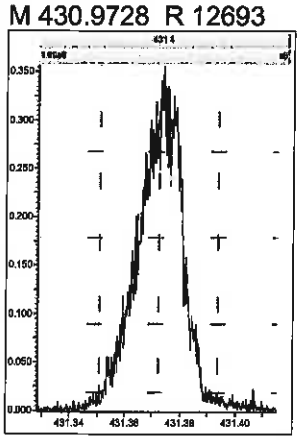
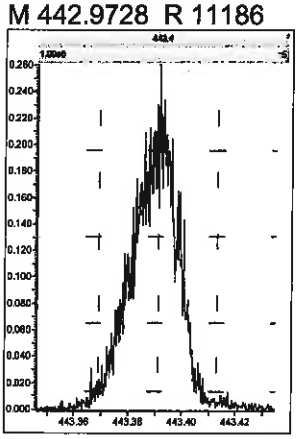


M 442.9728 R 11186



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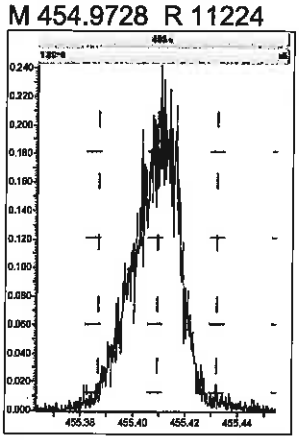

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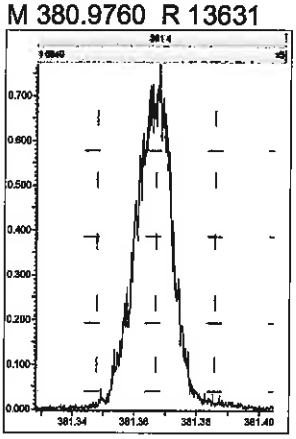

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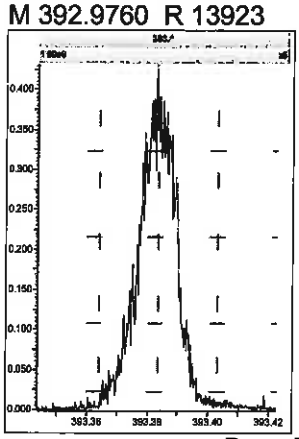

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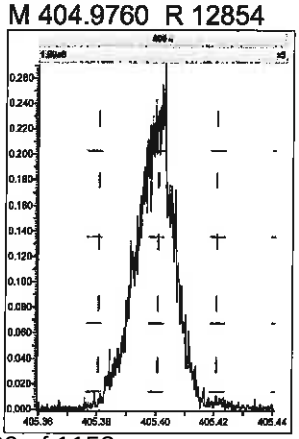

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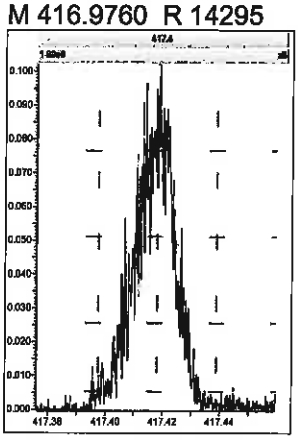

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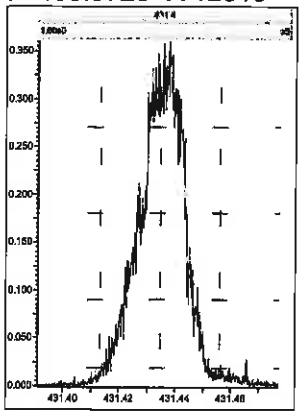
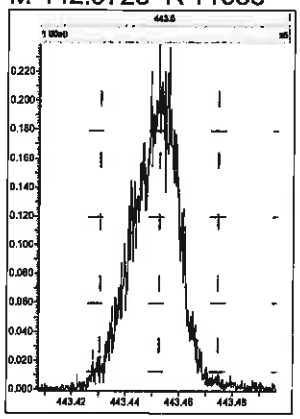
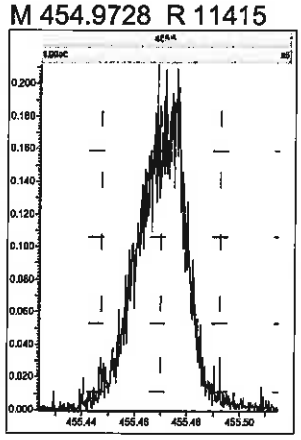


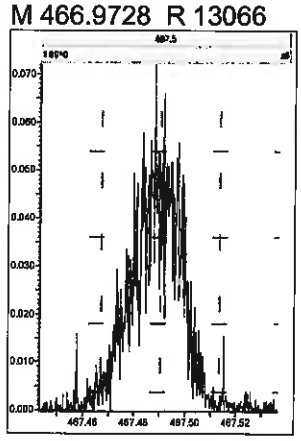
M 442.9728 R 11688



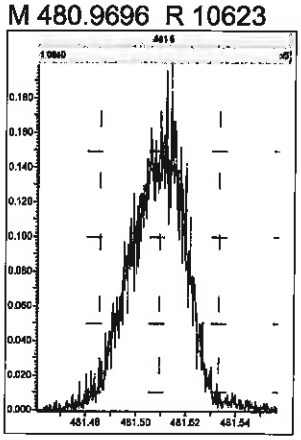
M 454.9728 R 11415



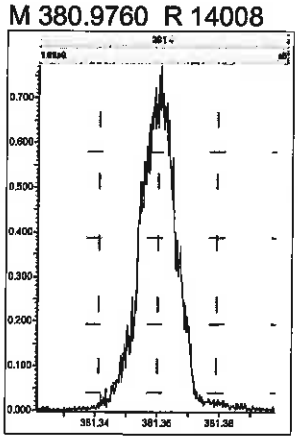
M 466.9728 R 13066



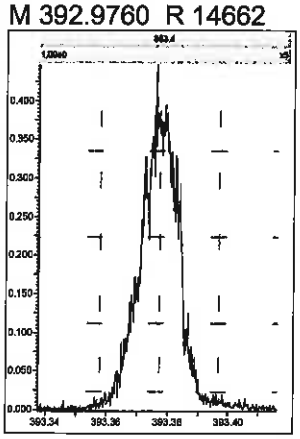
M 480.9696 R 10623



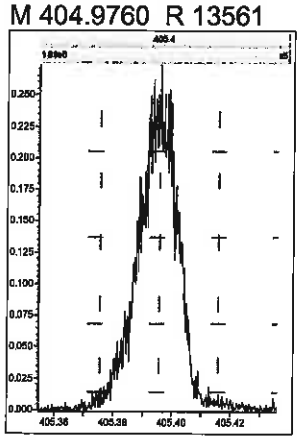
M 380.9760 R 14008



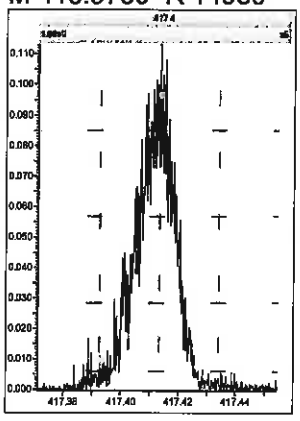
M 392.9760 R 14662



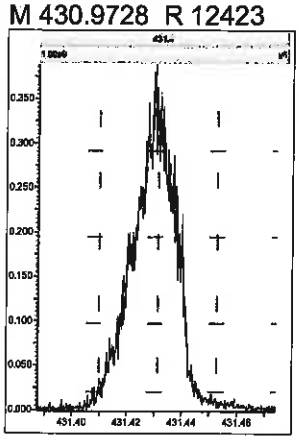
M 404.9760 R 13561



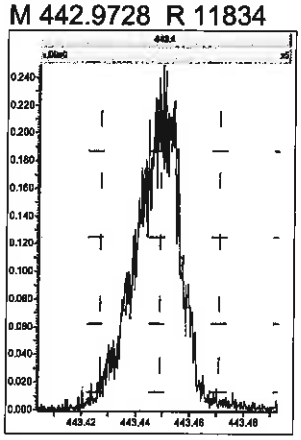
M 416.9760 R 14060



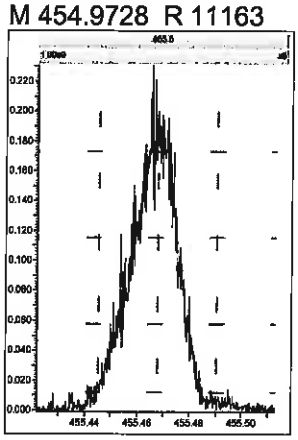
M 430.9728 R 12423



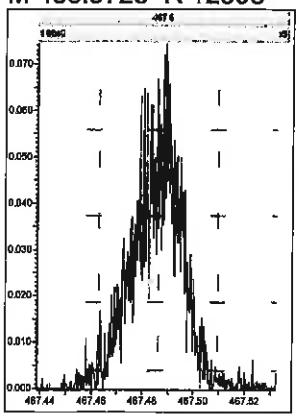
M 442.9728 R 11834



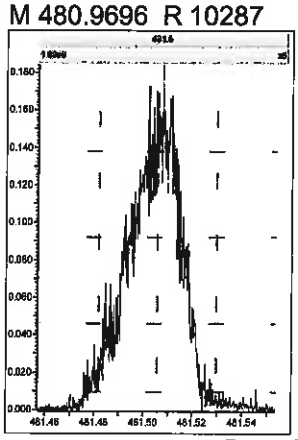
M 454.9728 R 11163



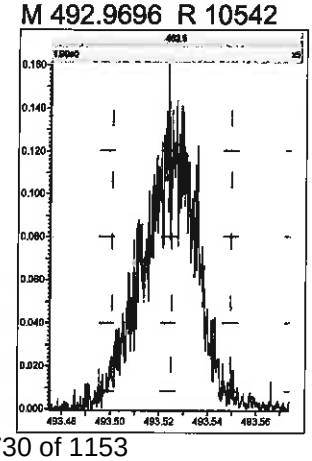
M 466.9728 R 12603



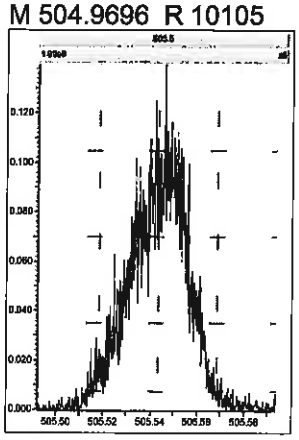
M 480.9696 R 10287



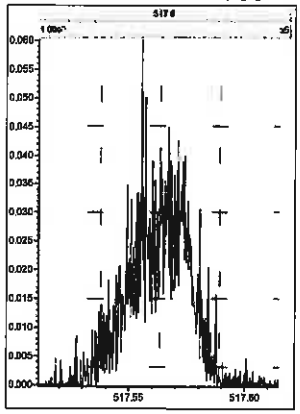
M 492.9696 R 10542



M 504.9696 R 10105



M 516.9697 R 11908



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d
Lims ID: IC 2
Client ID: L2
Sample Type: IC Calib Level: 2
Inject. Date: 12-Dec-2019 11:28:54 ALS Bottle#: 4 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219 IC HRDXNL2_00027
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:35:12

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.672	232904111	0.79	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.173	329541553	0.77	1.4157	99.9	99.9	0.2093	0.2093	99.94	
2,3,7,8-TCDF	17.173	1274172	0.88	0.9502	0.4069	0.4069	0.0250	0.0250	81.38	
S Total TCDF					0.4069	0.4069	0.0250	0.0250		
D 13C-2,3,7,8-TCDD	17.854	224505471	0.79	0.9751	98.9	98.9	0.1651	0.1651	98.86	
2,3,7,8-TCDD	17.869	995222	0.78	1.0477	0.4231	0.4231	0.0273	0.0273	84.62	
$ 37Cl4-2,3,7,8-TCDD	17.869	1430622		1.3480	0.4557	0.4557	0.0167	0.0167	91.14	
S Total TCDD					0.4231	0.4231	0.0273	0.0273		
D 13C-1,2,3,7,8-PeCDF	22.114	267927119	1.60	1.1786	97.6	97.6	0.2528	0.2528	97.61	
1,2,3,7,8-PeCDF	22.141	5851206	1.59	1.0302	2.120	2.120	0.0436	0.0436	84.79	
D 13C-2,3,4,7,8-PeCDF	23.437	256478177	1.60	1.1308	97.4	97.4	0.2635	0.2635	97.39	
2,3,4,7,8-PeCDF	23.464	5737636	1.64	1.0410	2.149	2.149	0.0481	0.0481	85.96	
S Total PeCDF					4.269	4.269	0.0458	0.0458		
D 13C-1,2,3,7,8-PeCDD	24.146	174446593	1.59	0.7572	98.9	98.9	0.1508	0.1508	98.92	
1,2,3,7,8-PeCDD	24.159	4246020	1.69	1.0855	2.242	2.242	0.0566	0.0566	89.69	
S Total PeCDD					2.242	2.242	0.0566	0.0566		
D 13C-1,2,3,4,7,8-HxCDF	30.273	228057392	0.51	1.1043	96.5	96.5	0.2688	0.2688	96.46	
1,2,3,4,7,8-HxCDF	30.313	5545989	1.17	1.1472	2.120	2.120	0.0312	0.0312	84.79	
D 13C-1,2,3,6,7,8-HxCDF	30.473	241275292	0.51	1.1470	98.2	98.2	0.2588	0.2588	98.24	
1,2,3,6,7,8-HxCDF	30.499	5900625	1.17	1.1450	2.136	2.136	0.0296	0.0296	85.43	
D 13C-2,3,4,6,7,8-HxCDF	31.365	224637565	0.53	1.0769	97.4	97.4	0.2757	0.2757	97.43	
2,3,4,6,7,8-HxCDF	31.378	5662489	1.16	1.1726	2.150	2.150	0.0226	0.0226	85.99	
D 13C-1,2,3,7,8,9-HxCDF	32.204	206305806	0.52	1.0115	95.3	95.3	0.2935	0.2935	95.26	
1,2,3,7,8,9-HxCDF	32.217	5208722	1.21	1.1717	2.155	2.155	0.0235	0.0235	86.19	
S Total HxCDF					8.560	8.560	0.0267	0.0267		
* 13C-1,2,3,7,8,9-HxCDD	32.004	214114257	1.24	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.565	163808128	1.29	0.7962	96.1	96.1	0.2305	0.2305	96.09	
1,2,3,4,7,8-HxCDD	31.578	4000505	1.21	1.0934	2.234	2.234	0.0334	0.0334	89.34	
D 13C-1,2,3,6,7,8-HxCDD	31.671	181206025	1.27	0.8720	97.1	97.1	0.2105	0.2105	97.05	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.684	4044419	1.22	1.0429	2.140	2.140	0.0318	0.0318	85.61	
1,2,3,7,8,9-HxCDD	32.031	4825859	1.15	1.2073	2.317	2.317	0.0288	0.0288	92.68	
S Total HxCDD					6.691	6.691	0.0314	0.0314		
D 13C-1,2,3,4,6,7,8-HpCDF	33.652	150037410	0.44	0.7577	92.5	92.5	1.159	1.159	92.49	
1,2,3,4,6,7,8-HpCDF	33.664	4755914	1.18	1.4804	2.141	2.141	0.0490	0.0490	85.65	
D 13C-1,2,3,4,7,8,9-HpCDF	34.734	133781139	0.44	0.6941	90.0	90.0	1.265	1.265	90.01	
1,2,3,4,7,8,9-HpCDF	34.746	3837855	1.11	1.2933	2.218	2.218	0.0660	0.0660	88.73	
S Total HpCDF					4.359	4.359	0.0575	0.0575		
D 13C-1,2,3,4,6,7,8-HpCDD	34.442	138203122	1.05	0.7058	91.4	91.4	0.4508	0.4508	91.45	
1,2,3,4,6,7,8-HpCDD	34.454	3277321	0.97	1.0535	2.251	2.251	0.0263	0.0263	90.03	
S Total HpCDD					2.251	2.251	0.0263	0.0263		
D 13C-OCDD	36.770	176245574	0.88	0.4603	178.8	178.8	0.1805	0.1805	89.42	
OCDF	36.877	5676582	0.95	1.3945	4.619	4.619	0.0557	0.0557	92.39	
OCDD	36.782	4811448	0.89	1.1362	4.806	4.806	0.0425	0.0425	96.11	

Reagents:

HRDXNL2_00027 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d
Lims ID: IC 2
Client ID: L2
Sample Type: IC Calib Level: 2
Inject. Date: 12-Dec-2019 11:28:54 ALS Bottle#: 4 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219 IC HRDXNL2_00027
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:35:12

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.672	17.666	0		102601529	26223424	24034	60085	1091		
333.9339	17.672	17.666	0		130302582	32981144	14096	35240	2340	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.173	17.164	1	0.972	143162383	35138724	33977	84942	1034		
317.9389	17.158	17.164	0	0.971	186379170	44913079	36197	90492	1241	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.173	17.176	0	1.000	597494	161938	2758	6895	59		
305.8987	17.173	17.176	0	1.000	676678	155092	4856	12140	32	0.88(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.854	17.854	0	1.010	98843345	22651530	24034	60085	942		
333.9339	17.854	17.854	0	1.010	125662126	29074532	14096	35240	2063	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.869	17.872	0	1.001	435714	109775	4000	10000	27		
321.8936	17.884	17.872	1	1.002	559508	133812	1921	4802	70	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.869	17.872	0	1.011	1430622	305157	5346	13365	57		
13C-1,2,3,7,8-PeCDF											
351.9000	22.114	22.103	1	1.251	164768205	29211398	41861	104652	698		
353.8970	22.114	22.103	1	1.251	103158914	18407331	28706	71765	641	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.141	22.130	1	1.001	3594154	634928	2668	6670	238		
341.8567	22.127	22.130	0	1.001	2257052	386507	5878	14695	66	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.437	23.426	1	1.326	157892502	26441421	41861	104652	632		
353.8970	23.437	23.426	1	1.326	98585675	16252239	28706	71765	566	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.464	23.450	1	1.001	3563135	595769	2668	6670	223		
341.8567	23.450	23.450	0	1.001	2174501	346430	5878	14695	59	1.64(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.146	24.137	0	1.366	107170547	17008758	16296	40740	1044		
369.8919	24.146	24.137	0	1.366	67276046	10989017	10745	26862	1023	1.59(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.159	24.162	0	1.001	2665340	393517	5091	12727	77		
357.8516	24.159	24.162	0	1.001	1580680	244694	1792	4480	137	1.69(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.273	30.270	0	0.946	77253554	14027029	22263	55657	630		
385.8610	30.273	30.270	0	0.946	150803838	27508910	43796	109490	628	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.313	30.300	1	1.001	2986669	520795	3356	8390	155		
375.8178	30.300	30.300	0	1.001	2559320	449115	2585	6462	174	1.17(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.473	30.473	0	0.952	81506617	14891702	22263	55657	669		
385.8610	30.473	30.473	0	0.952	159768675	28934549	43796	109490	661	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.499	30.497	0	1.001	3180012	591716	3356	8390	176		
375.8178	30.499	30.497	0	1.001	2720613	514140	2585	6462	199	1.17(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.365	31.357	0	0.980	77774082	19640762	22263	55657	882		
385.8610	31.365	31.357	0	0.980	146863483	36420034	43796	109490	832	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.378	31.375	0	1.000	3034914	784754	3356	8390	234		
375.8178	31.378	31.375	0	1.000	2627575	661174	2585	6462	256	1.16(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.204	32.196	0	1.006	70786307	18972528	22263	55657	852		
385.8610	32.204	32.196	0	1.006	135519499	35003127	43796	109490	799	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.217	32.209	0	1.000	2853990	754034	3356	8390	225		
375.8178	32.217	32.209	0	1.000	2354732	581418	2585	6462	225	1.21(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.004	32.004	0		118740246	30809175	21848	54620	1410		
403.8529	32.004	32.004	0		95374011	24823233	19000	47500	1306	1.24(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.565	31.557	0	0.986	92162296	24211600	21848	54620	1108		
403.8529	31.551	31.557	0	0.986	71645832	19161827	19000	47500	1009	1.29(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.578	31.570	0	1.000	2187039	559529	2526	6315	222		
391.8127	31.578	31.570	0	1.000	1813466	500239	3818	9545	131	1.21(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.671	31.666	0	0.990	101462065	26895597	21848	54620	1231		
403.8529	31.671	31.666	0	0.990	79743960	20856177	19000	47500	1098	1.27(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.684	31.682	0	1.000	2220379	596423	2526	6315	236		
391.8127	31.684	31.682	0	1.000	1824040	520180	3818	9545	136	1.22(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.031	32.023	0	1.015	2583152	723772	2526	6315	287		
391.8127	32.031	32.023	0	1.015	2242707	565938	3818	9545	148	1.15(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.652	33.647	0	1.051	46052027	15310112	59871	149677	256		
419.8220	33.652	33.647	0	1.051	103985383	34503747	135580	338950	254	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.664	33.659	0	1.000	2571421	950159	10708	26770	89		
409.7789	33.664	33.659	0	1.000	2184493	818813	3748	9370	218	1.18(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.734	34.726	0	1.085	40988902	13212969	59871	149677	221		
419.8220	34.734	34.726	0	1.085	92792237	29102895	135580	338950	215	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.746	34.736	1	1.000	2022434	643925	10708	26770	60		
409.7789	34.746	34.736	1	1.000	1815421	576272	3748	9370	154	1.11(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.442	34.437	0	1.076	70840109	23993001	34698	86745	691		
437.8140	34.442	34.437	0	1.076	67363013	22937398	36110	90275	635	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.454	34.449	0	1.000	1617099	515334	2601	6502	198		
425.7737	34.454	34.449	0	1.000	1660222	560602	2601	6502	216	0.97(0.88-1.20)	
13C-OCDD											
469.7779	36.770	36.767	0	1.149	82535262	22666516	9705	24262	2336		
471.7750	36.770	36.767	0	1.149	93710312	26260117	8785	21962	2989	0.88(0.76-1.02)	
OCDF											
441.7428	36.877	36.870	0	1.003	2759791	781017	2559	6397	305		
443.7399	36.877	36.870	0	1.003	2916791	820491	5045	12612	163	0.95(0.76-1.02)	
OCDD											
457.7377	36.782	36.779	0	1.000	2266337	646718	2724	6810	237		
459.7348	36.782	36.779	0	1.000	2545111	730372	2001	5002	365	0.89(0.76-1.02)	

Reagents:

HRDXNL2_00027 Amount Added: 2.00 Units: uL

Report Date: 12-Dec-2019 15:54:09 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
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Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
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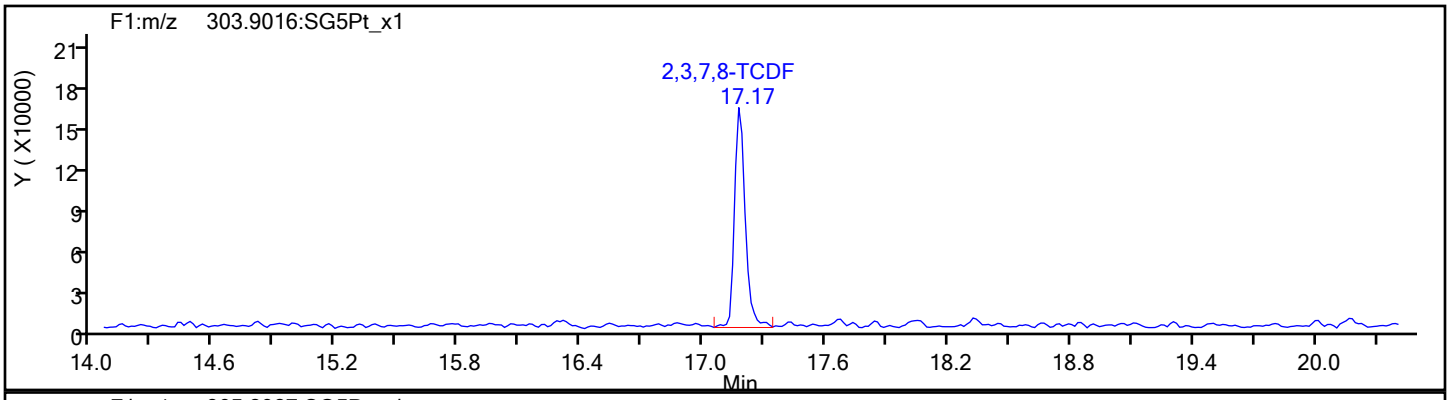
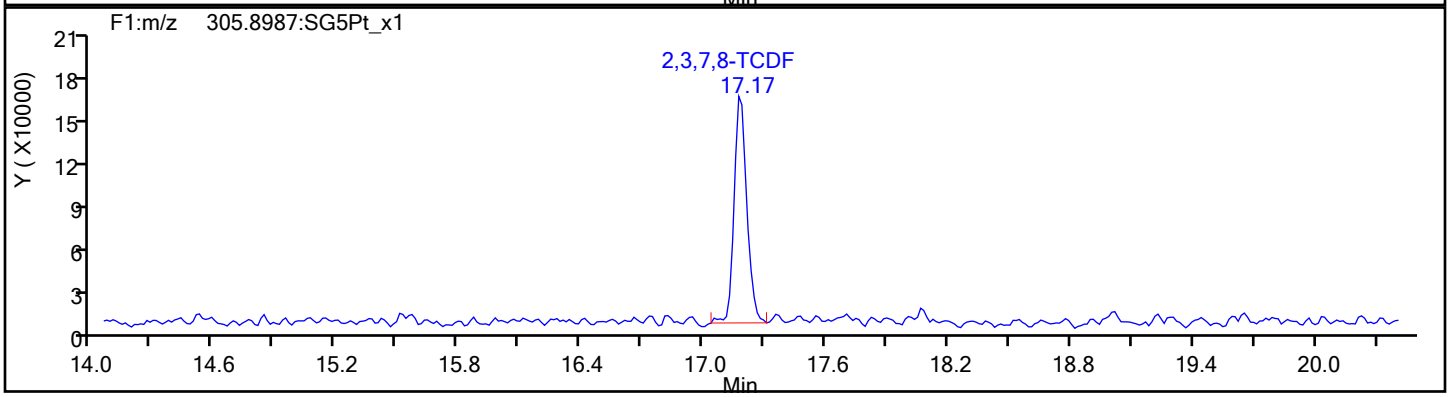
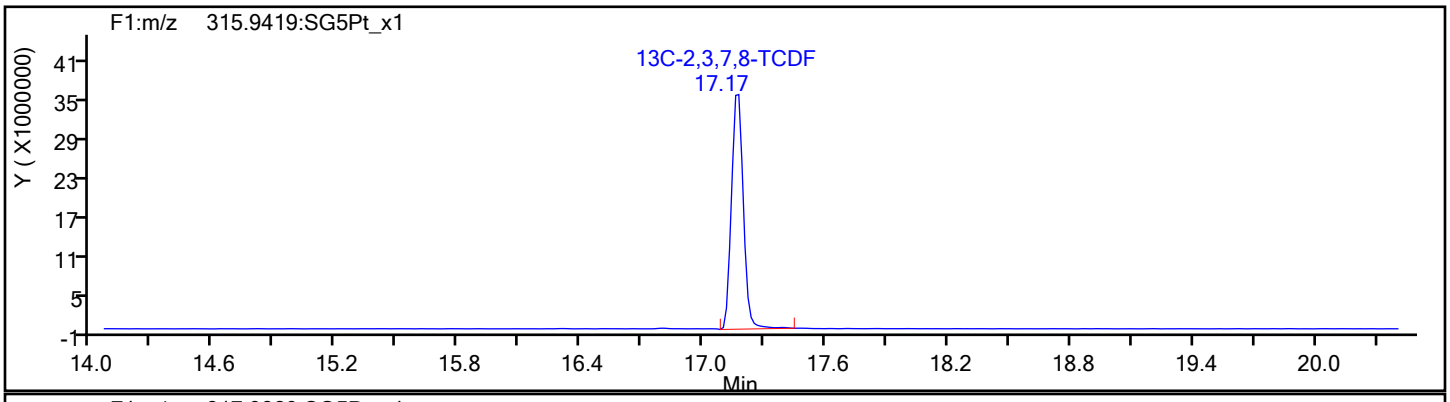
Column Type:	DB-5	Column Dia:	0.32 mm

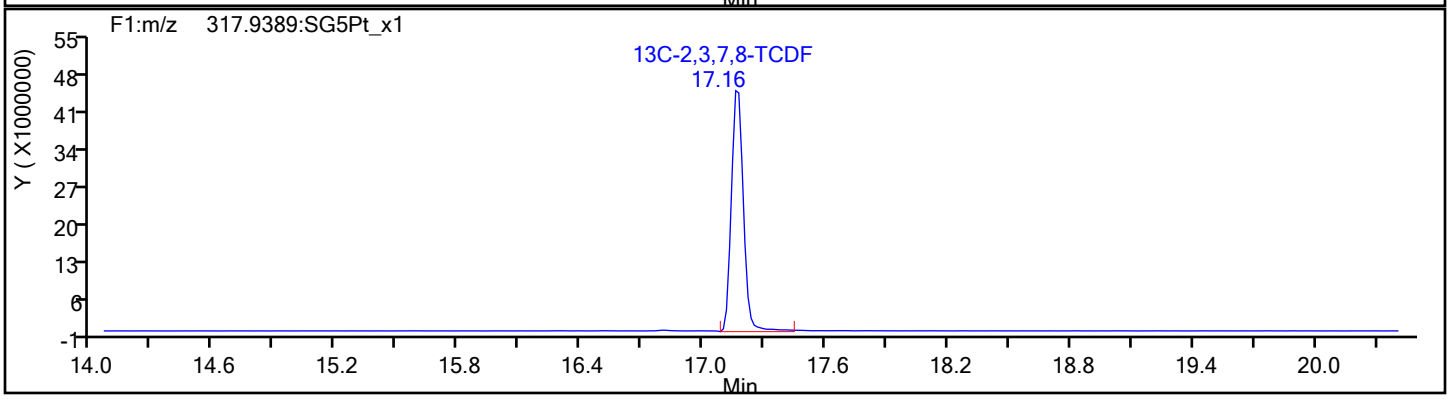
TCDF





TCDF Standards





Report Date: 12-Dec-2019 15:54:09 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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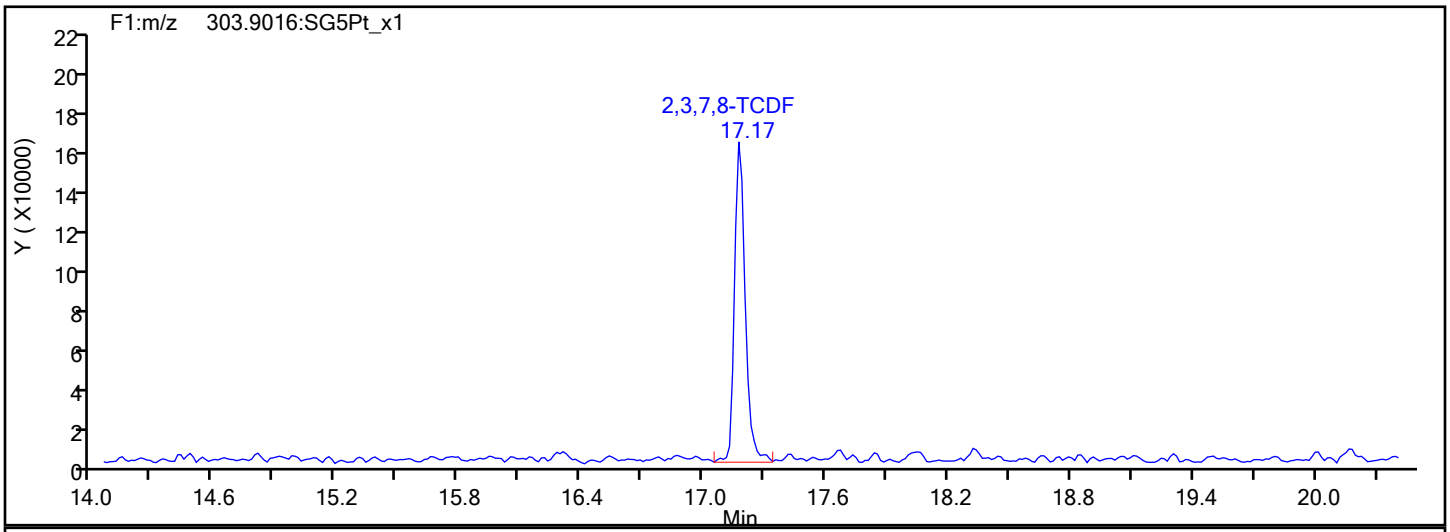
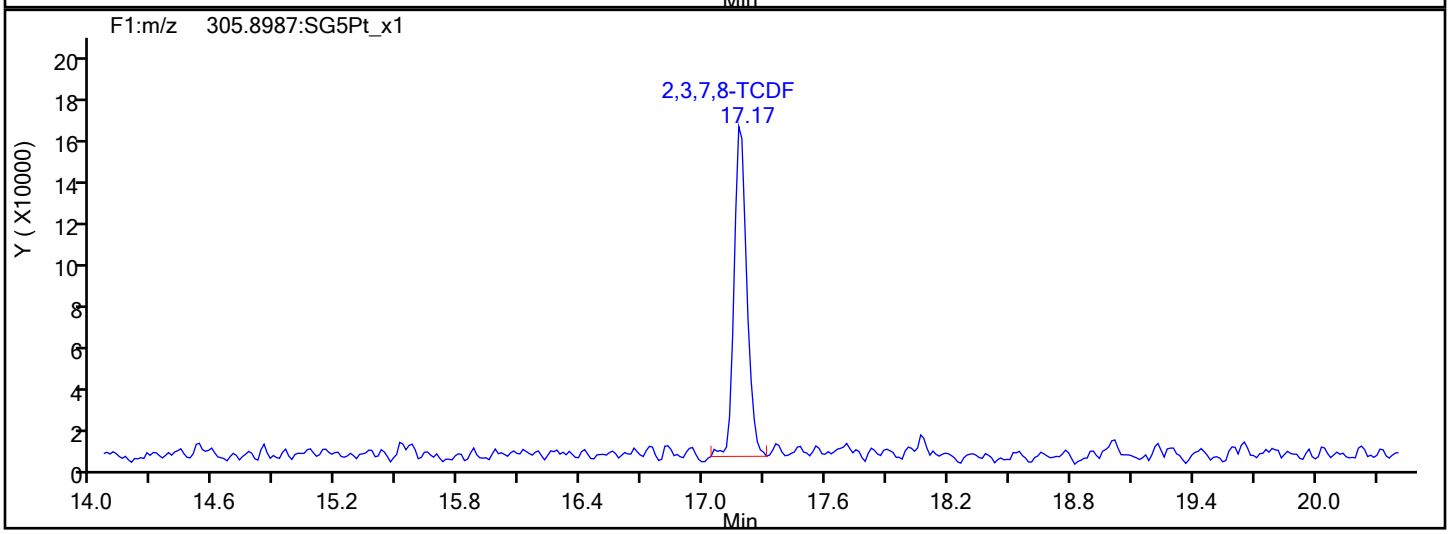
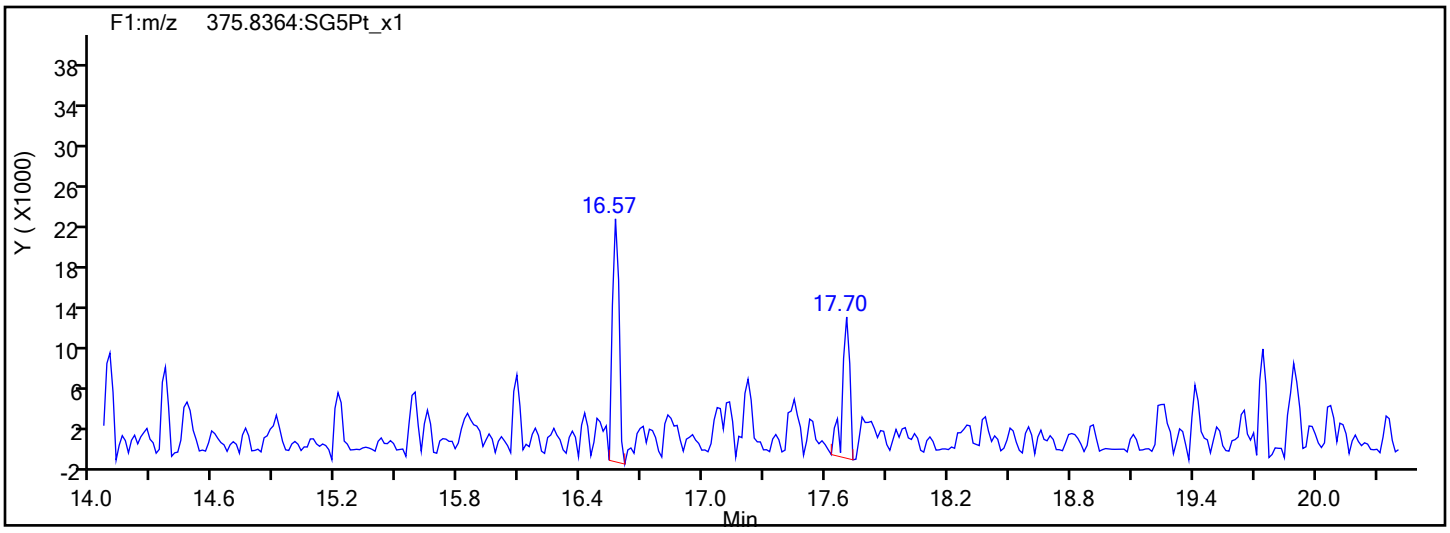
TCDF





TCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Client ID:	L2		
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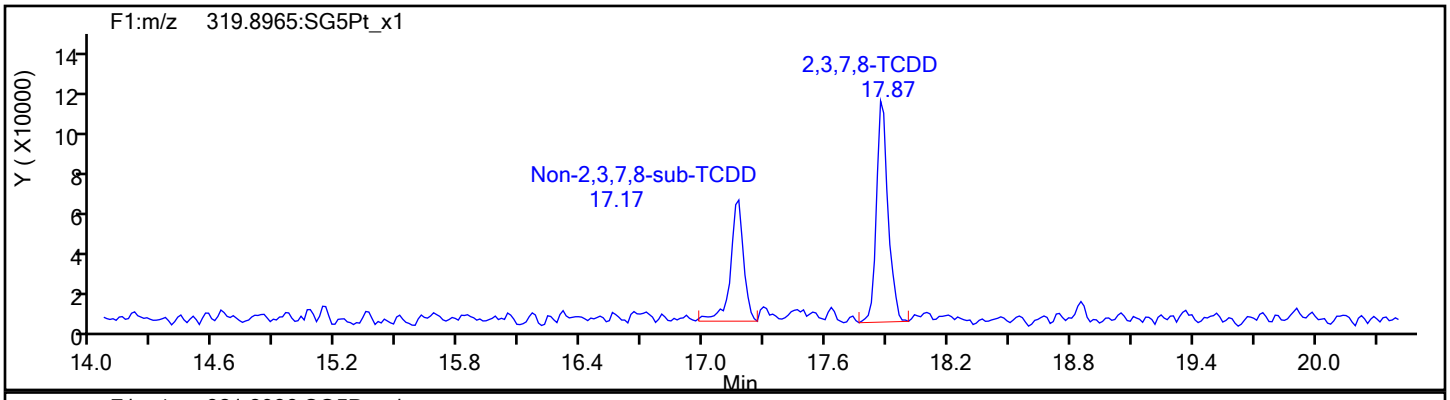
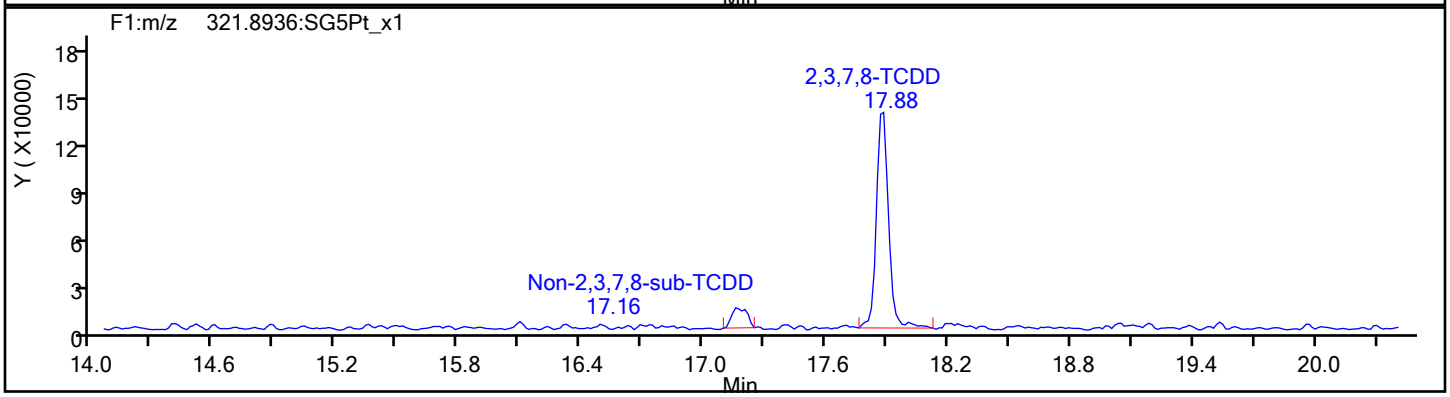
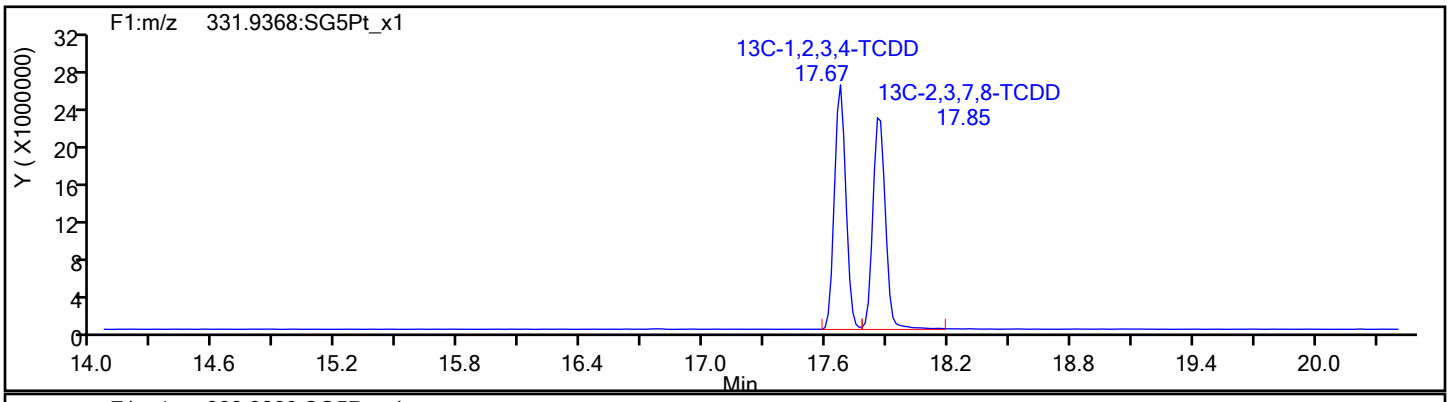
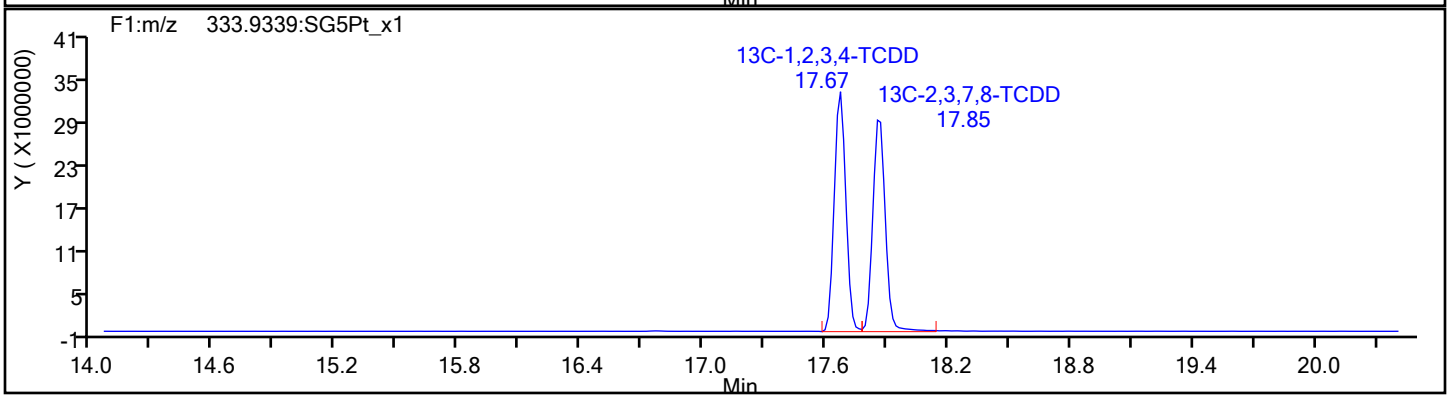
TCDD





TCDD Standards





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Eurofins TestAmerica, Sacramento

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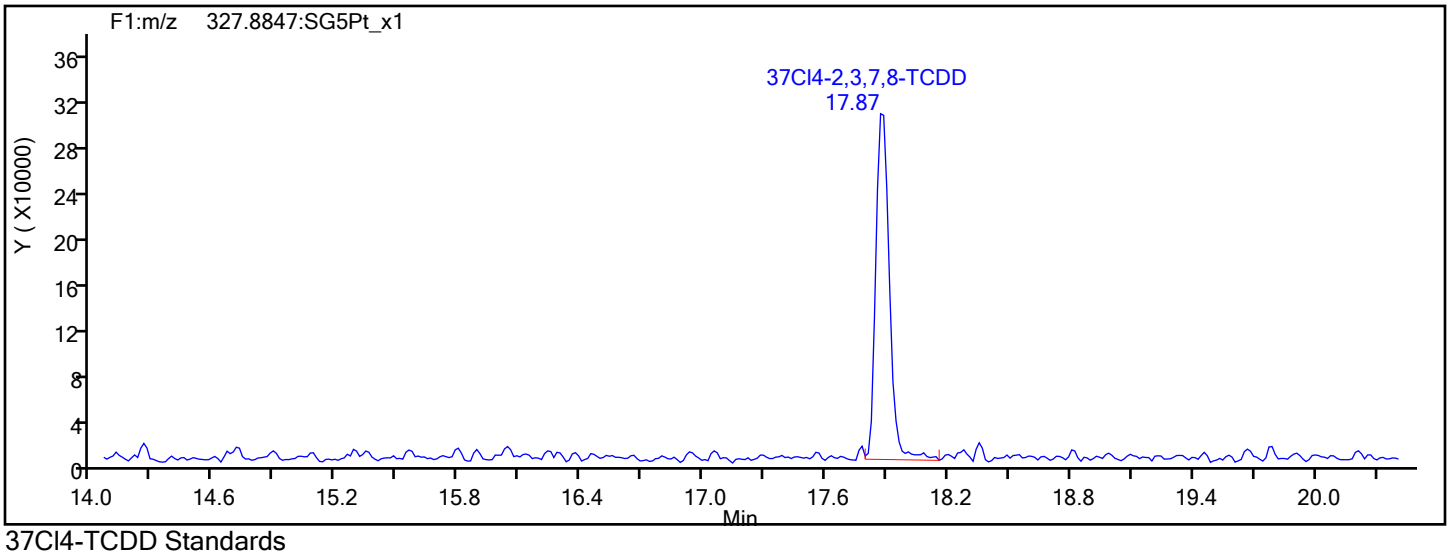
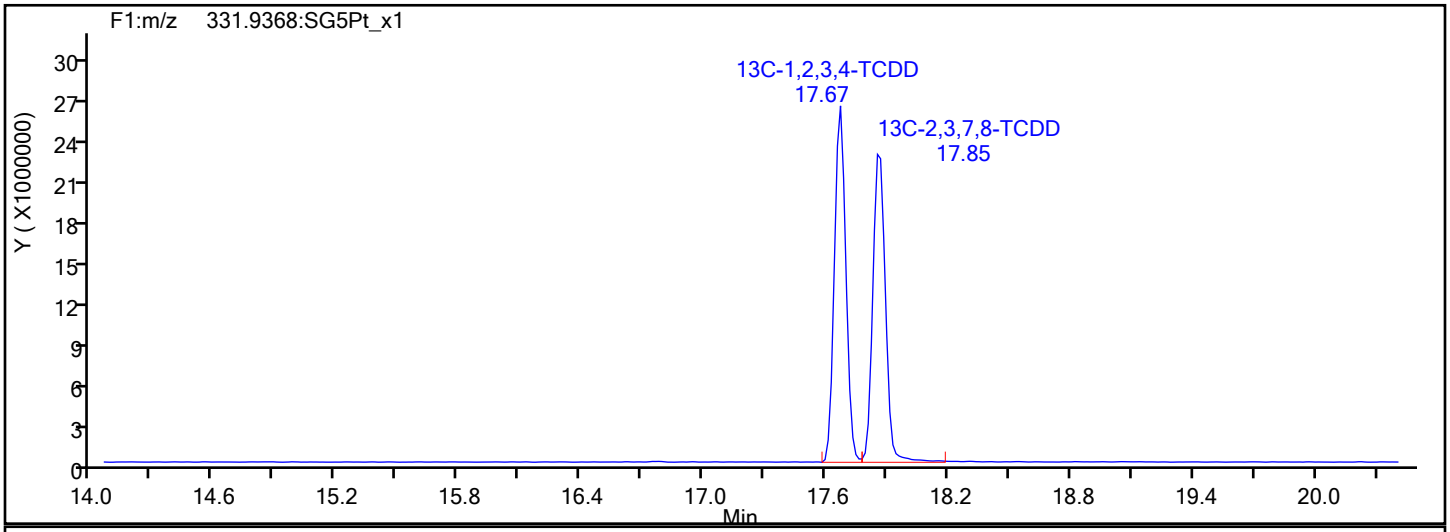
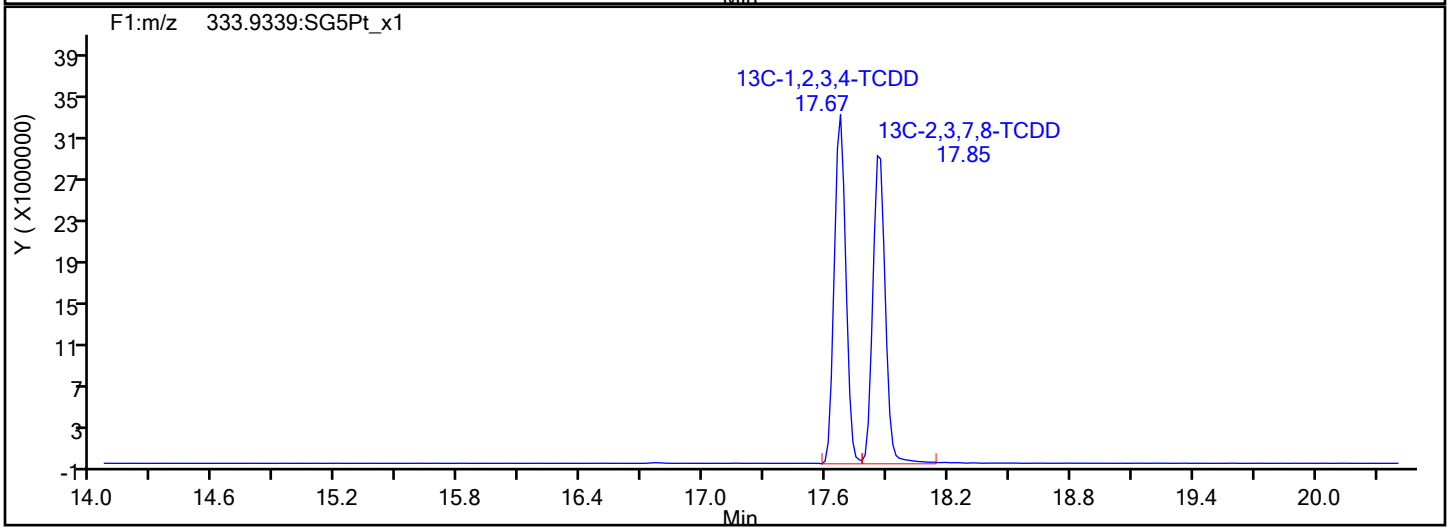
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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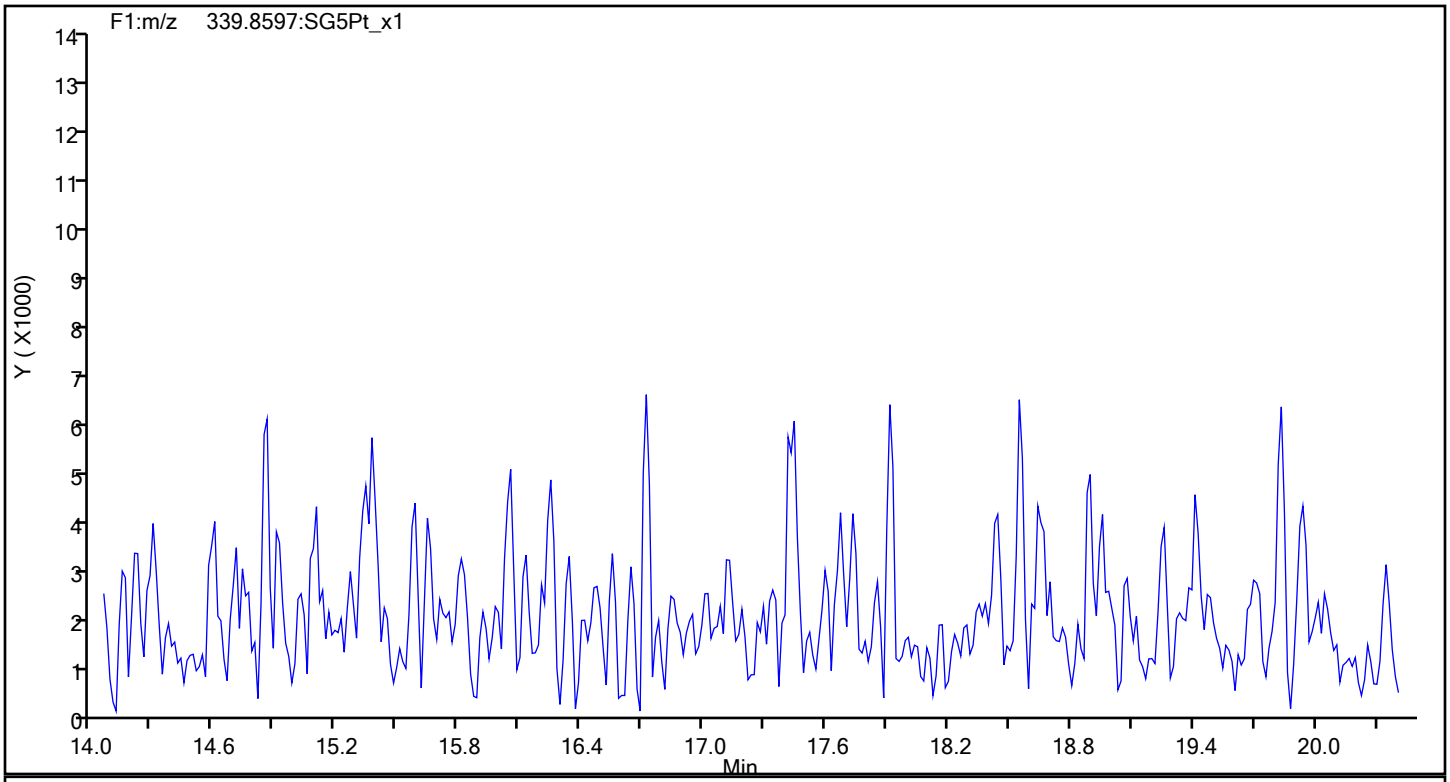
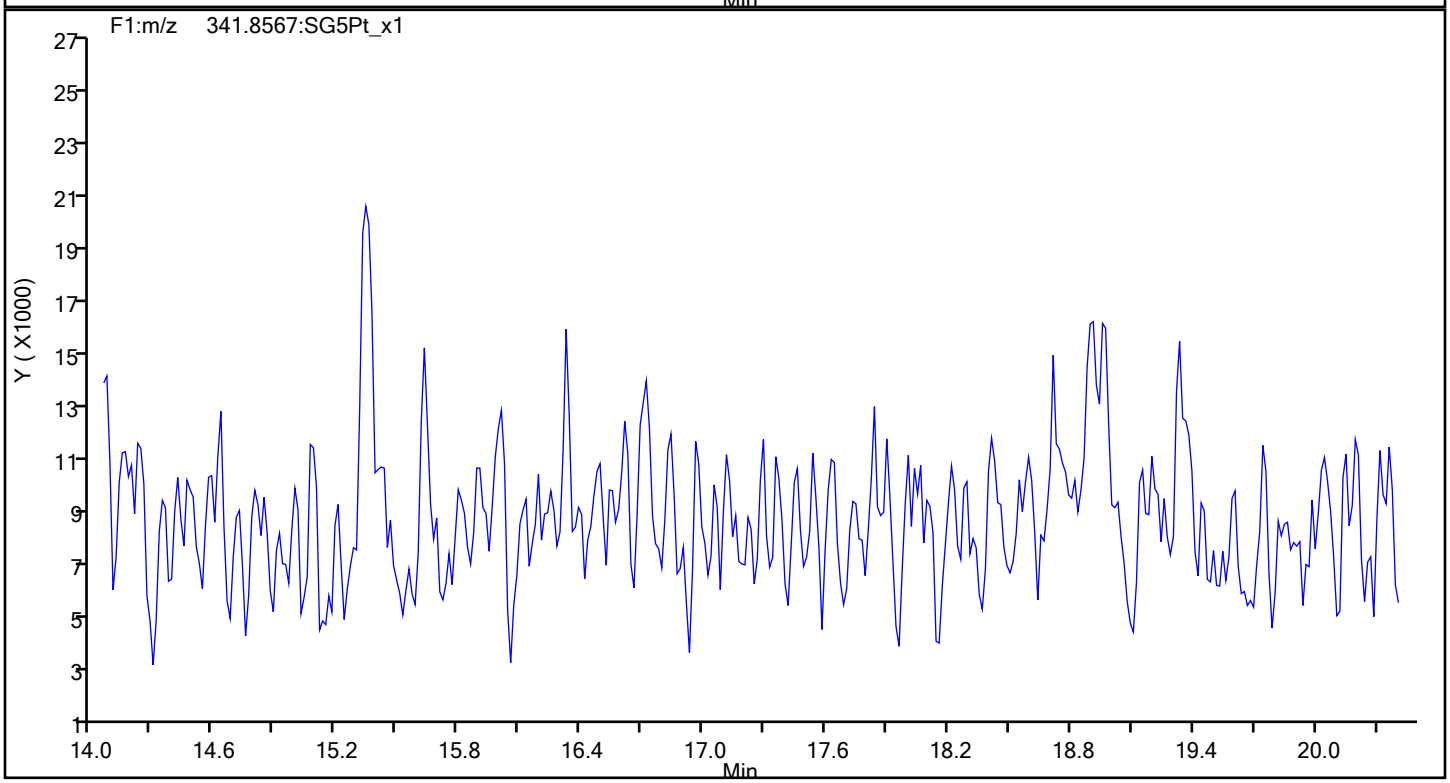
F1 PeCDFs





Eurofins TestAmerica, Sacramento

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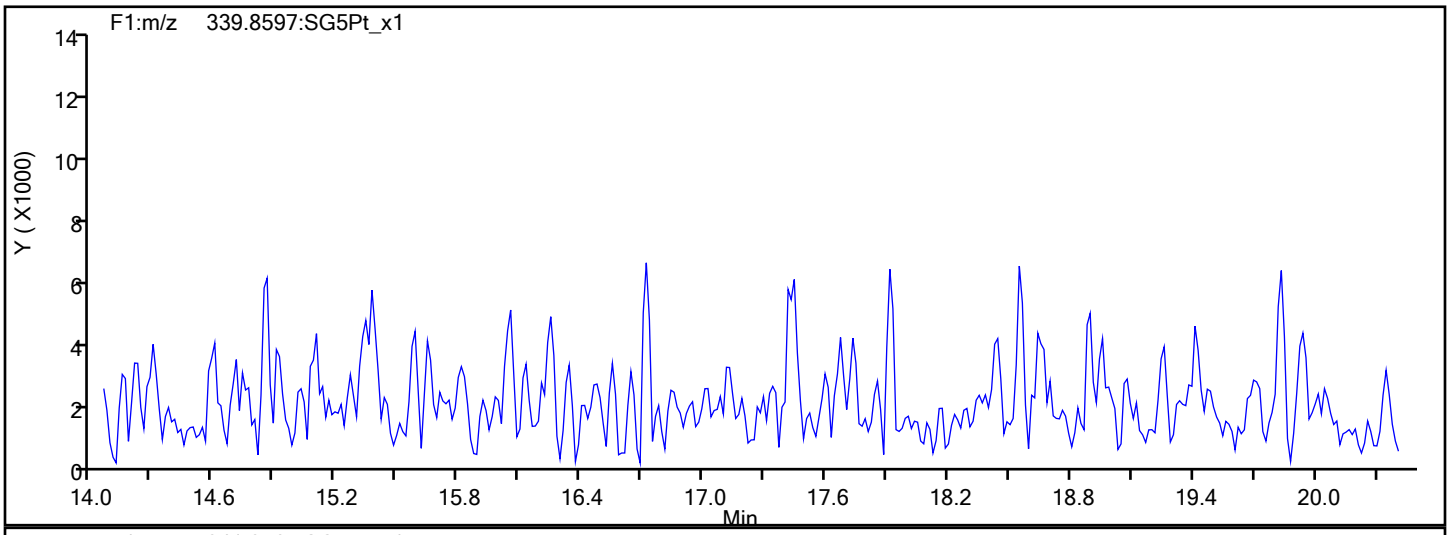
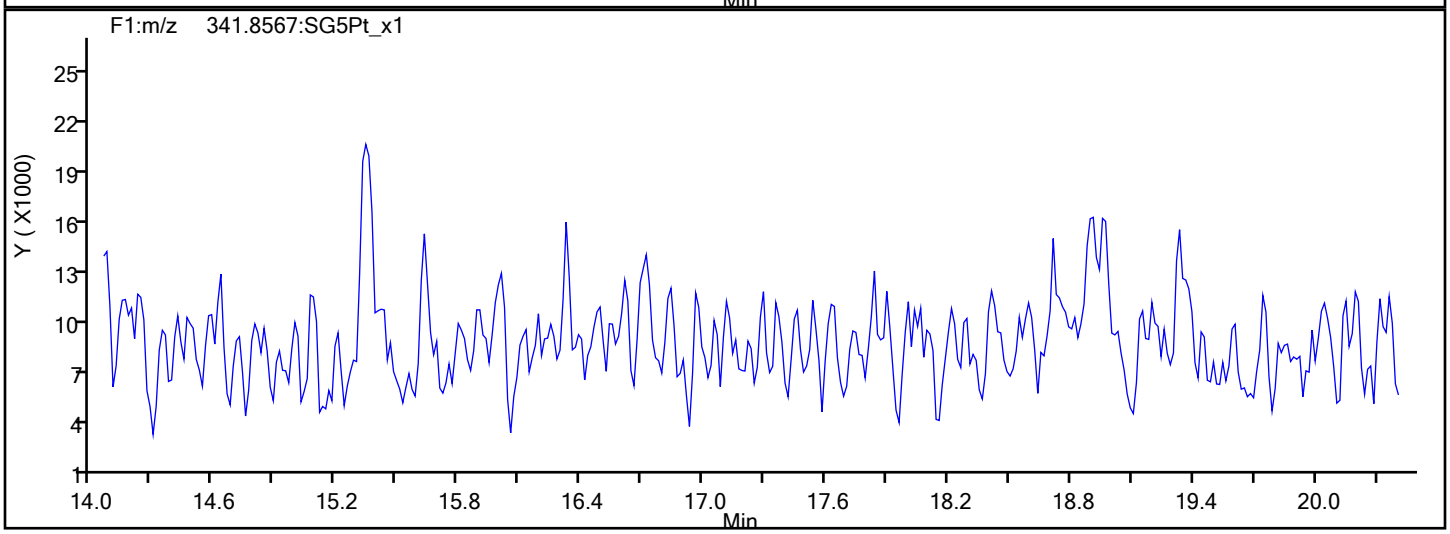
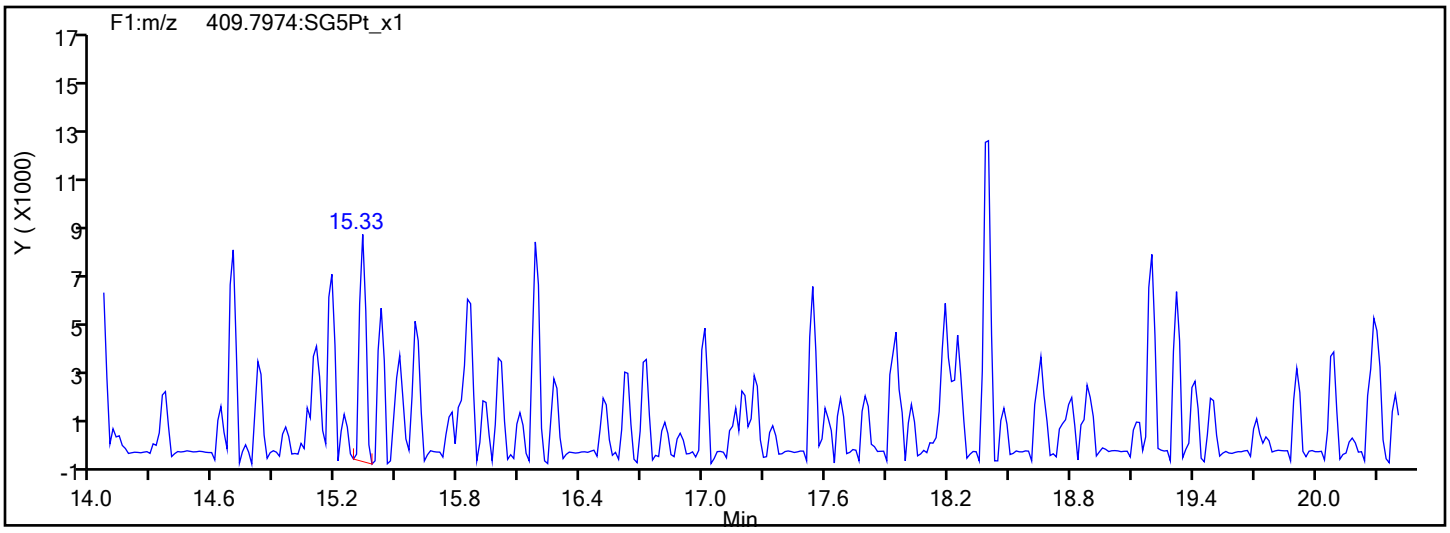
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 12-Dec-2019 15:54:09 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
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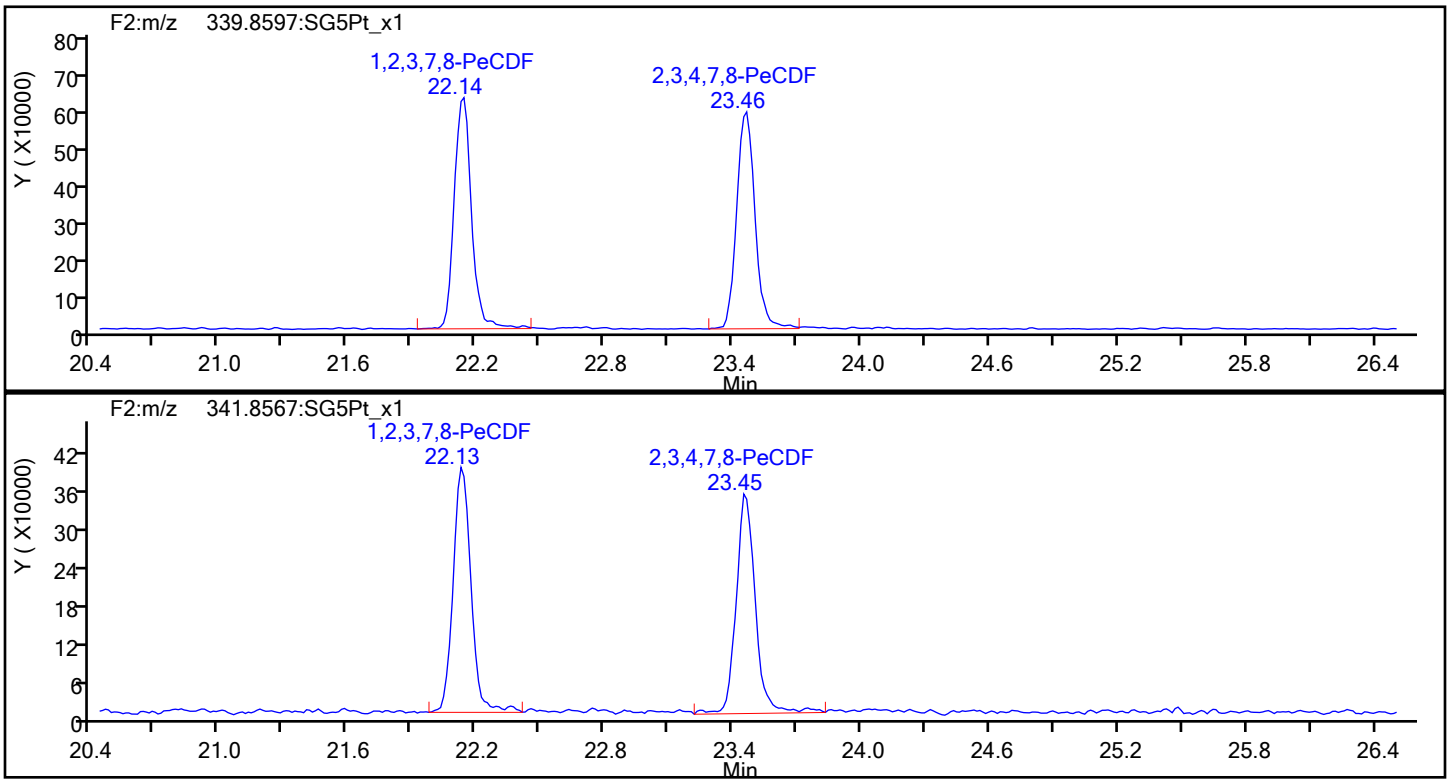
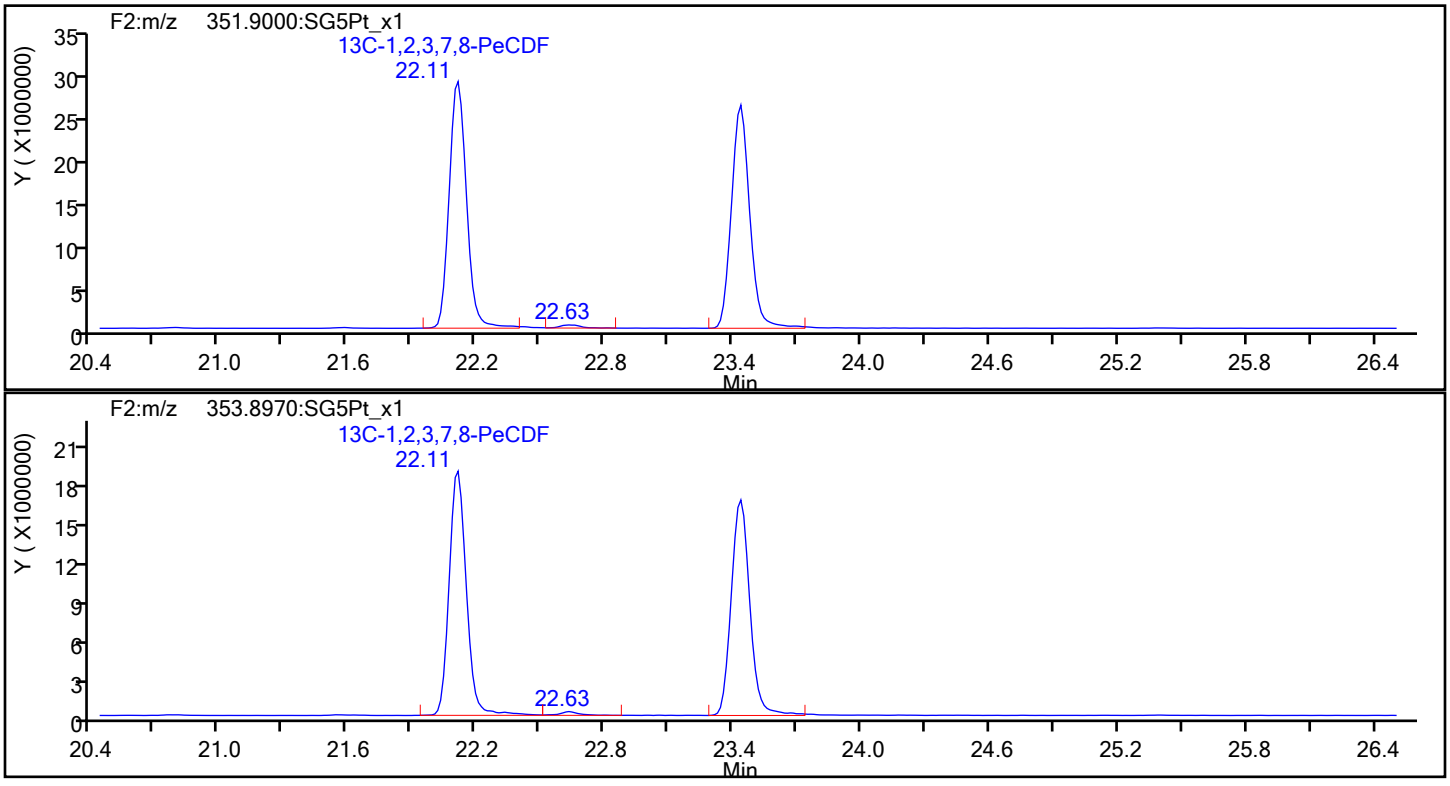
PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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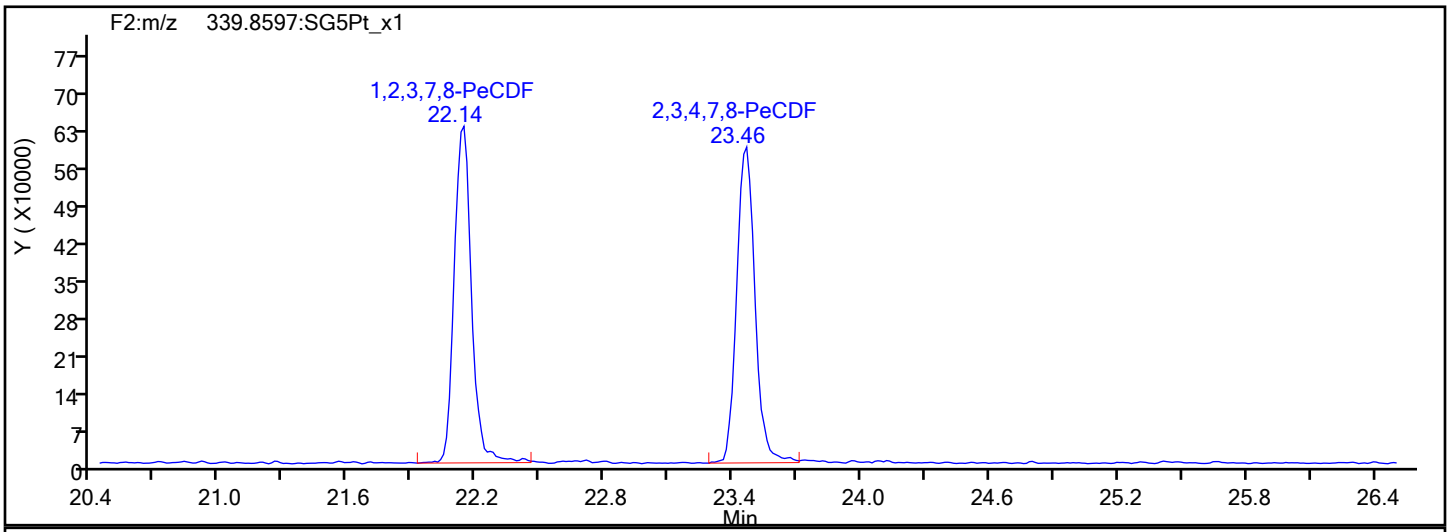
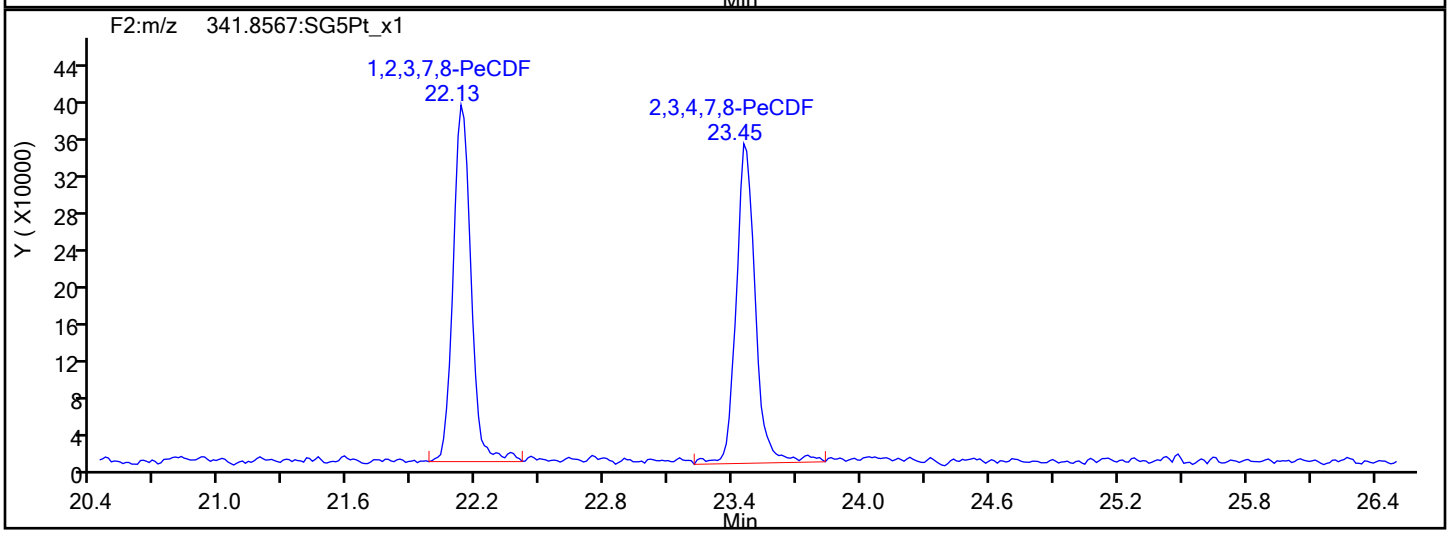
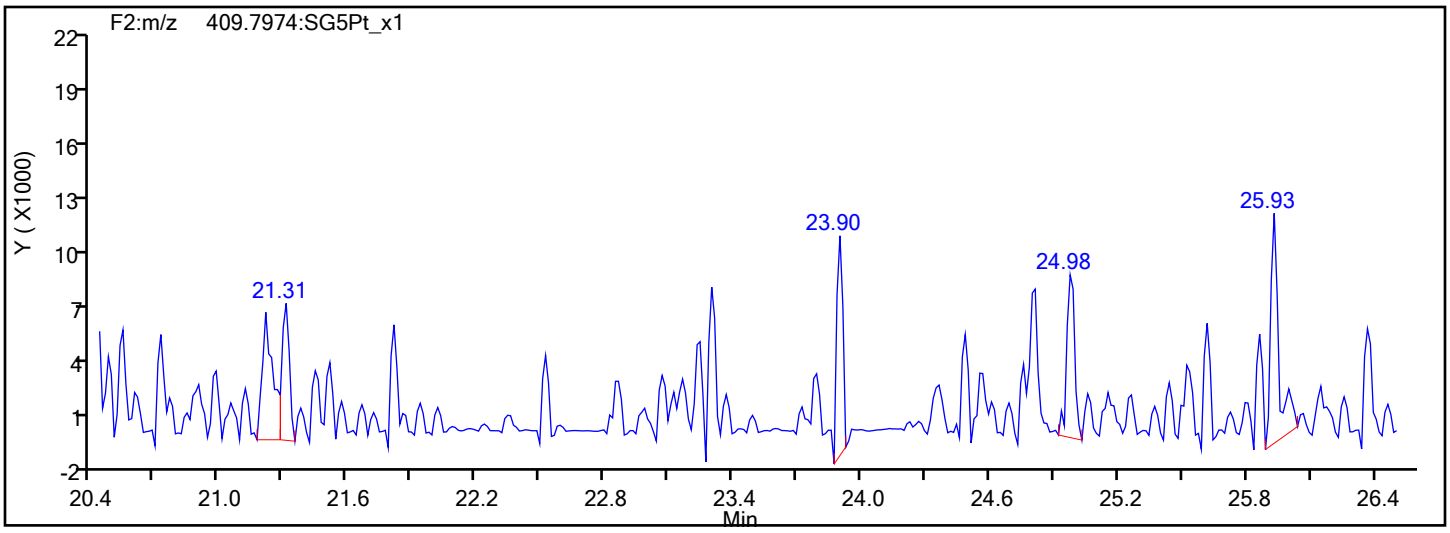
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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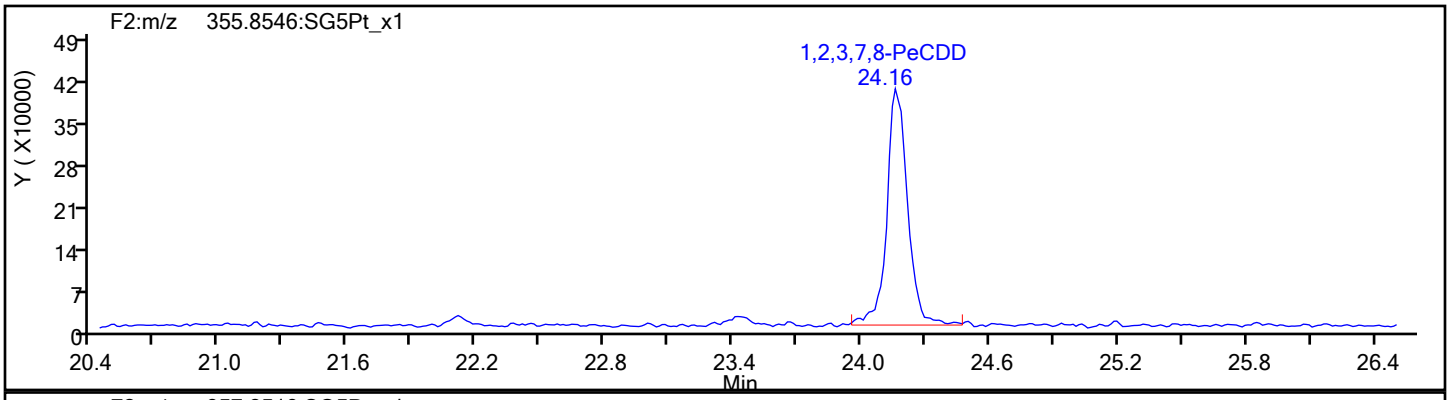
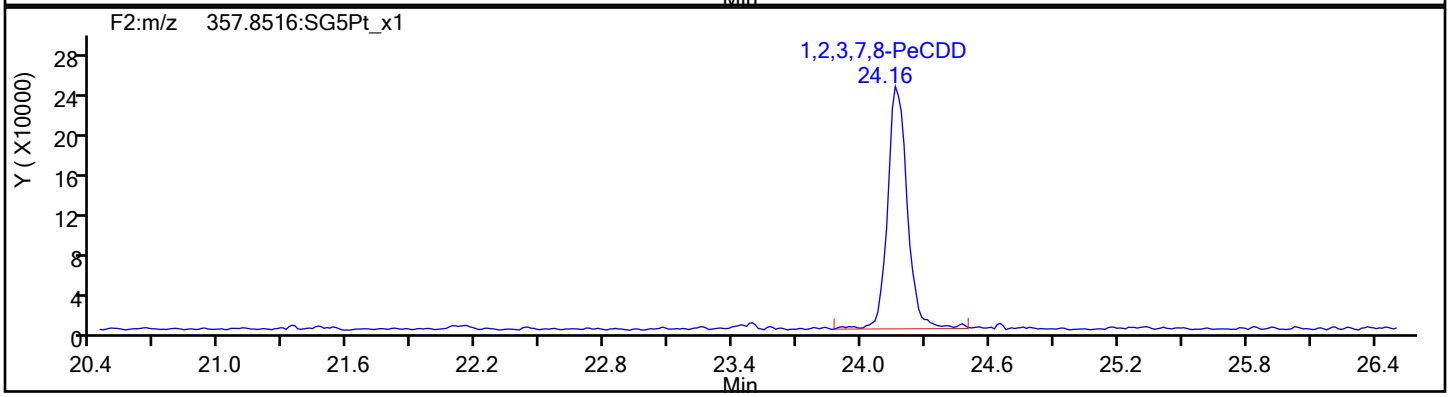
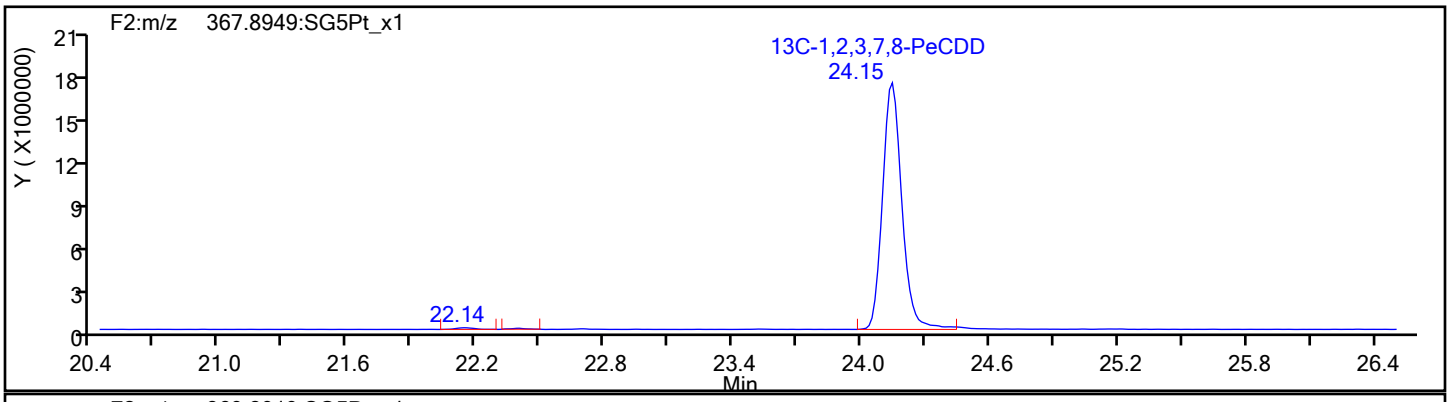
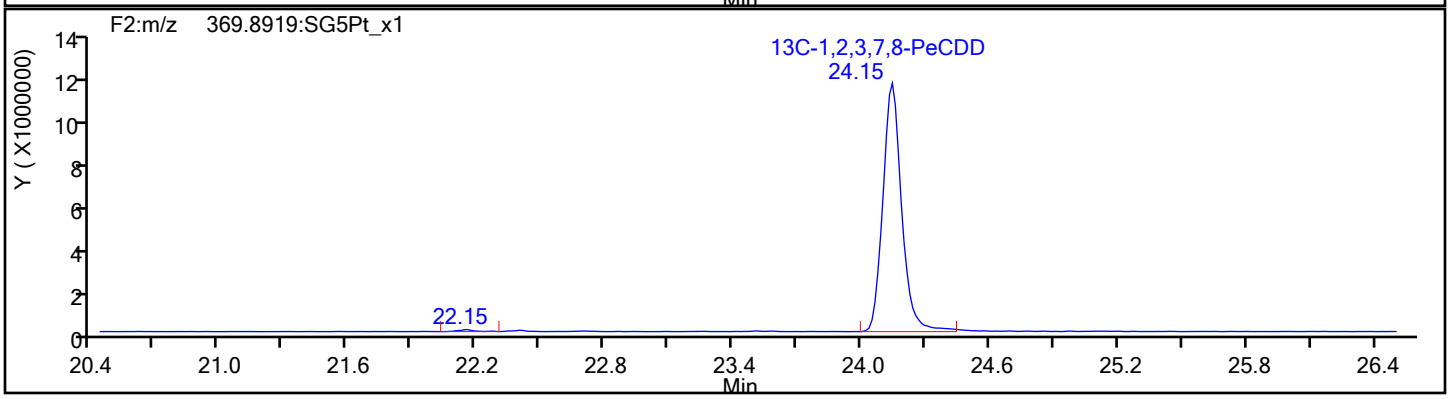
PeCDD





PeCDD Standards





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Instrument ID:	3D5	Operator ID:	KSS
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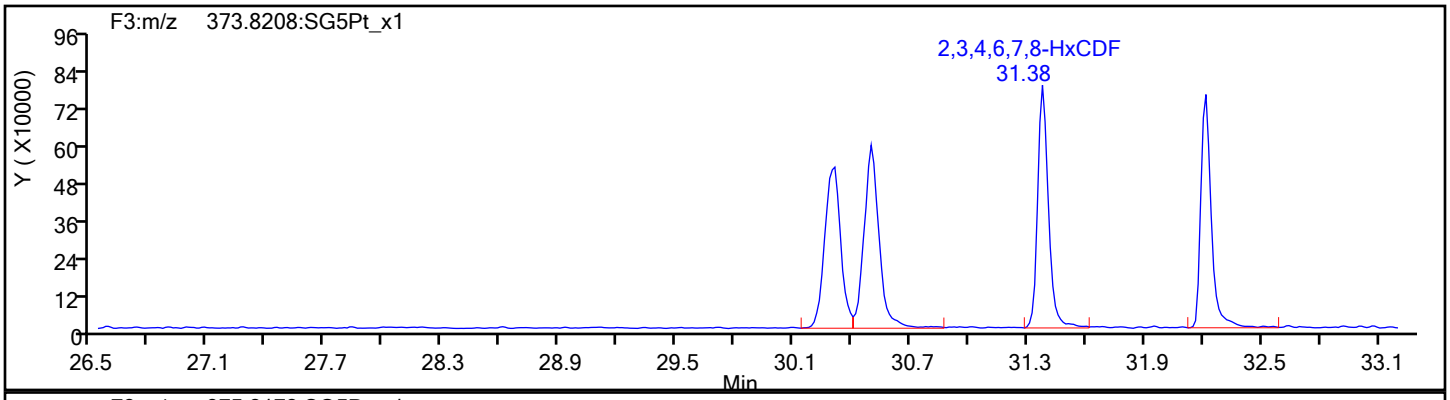
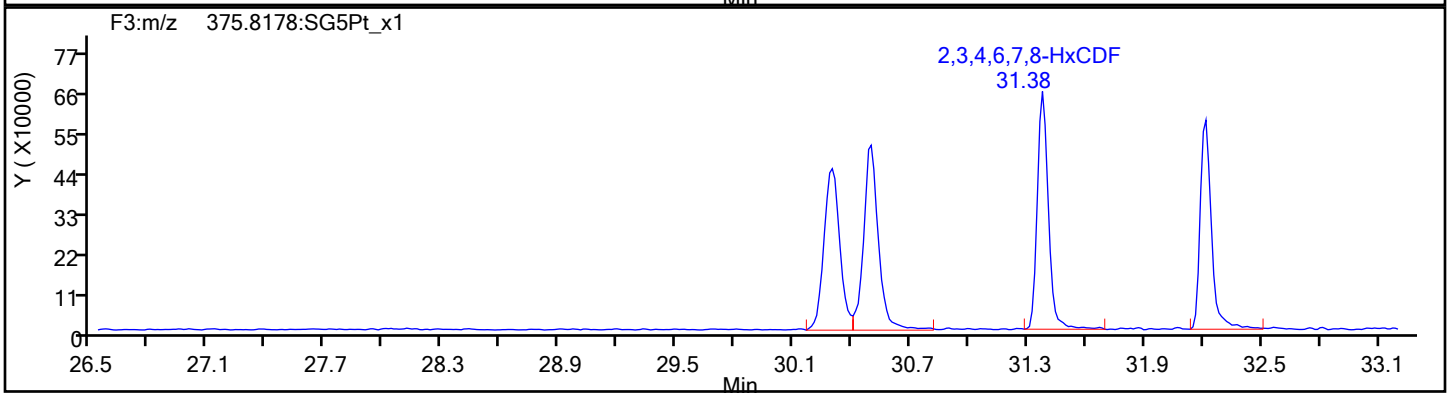
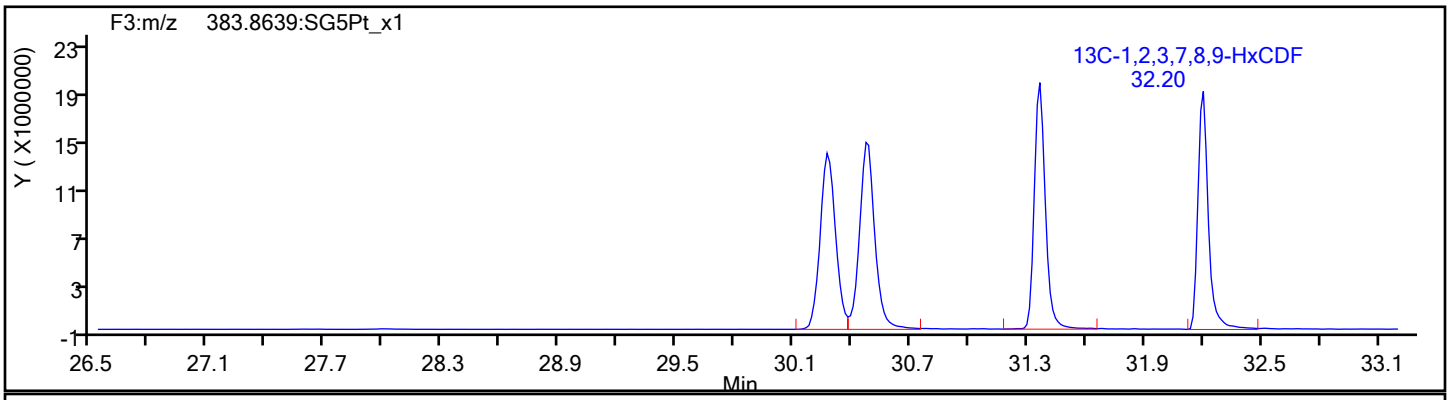
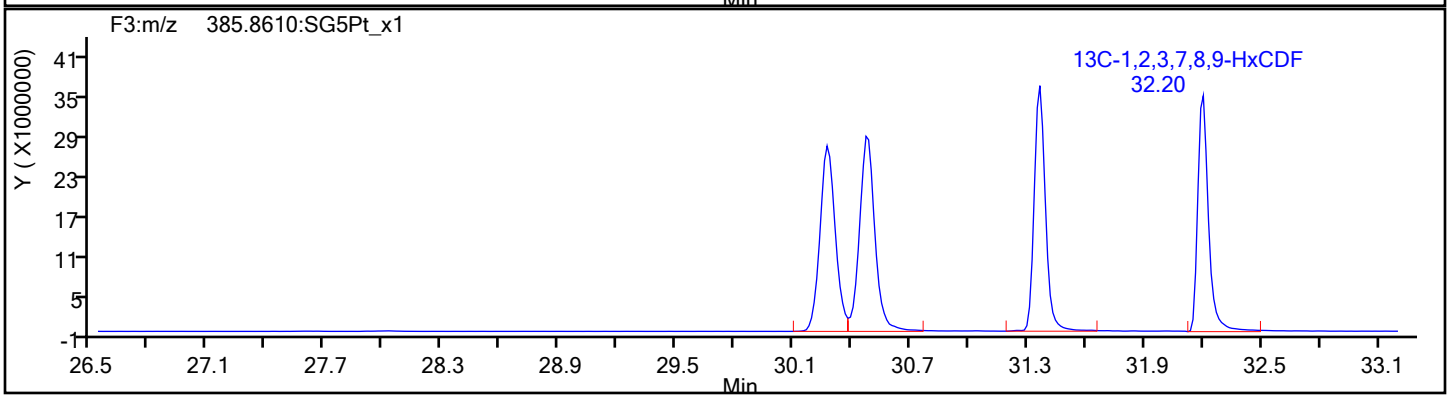
HxCDF





HxCDF Standards





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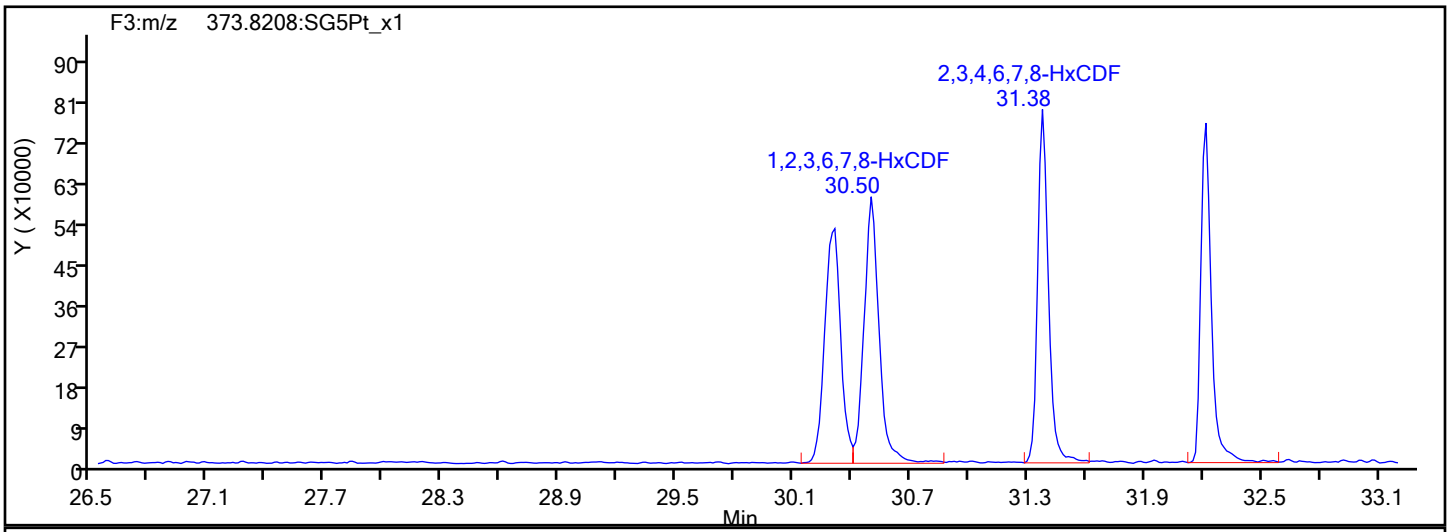
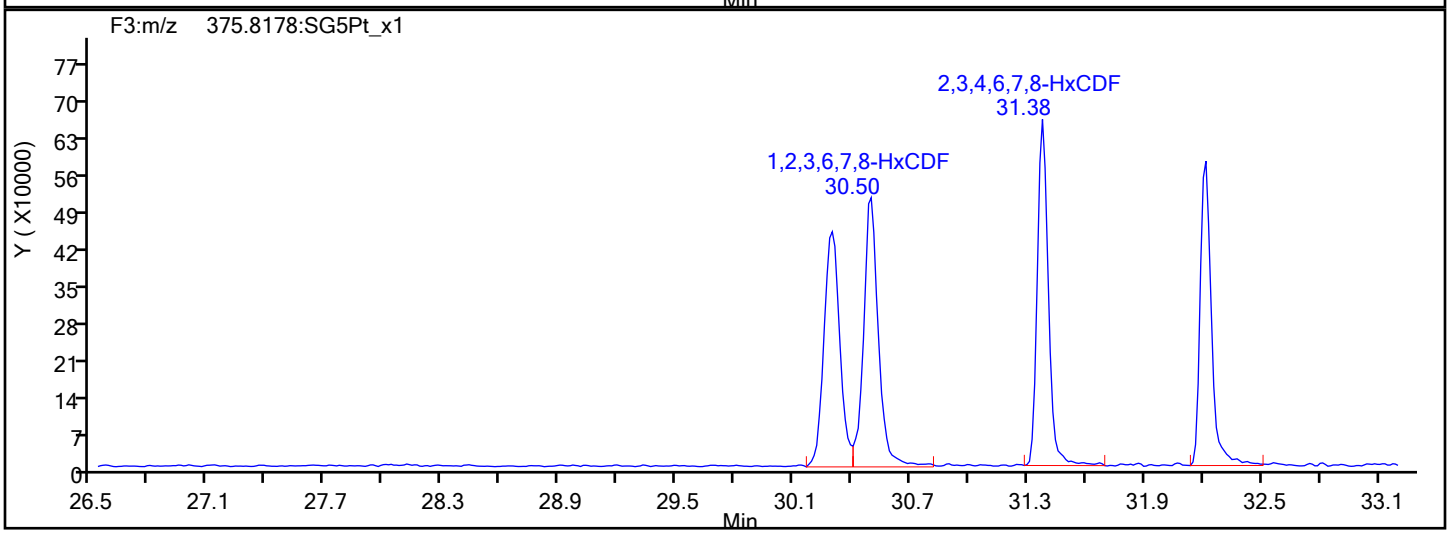
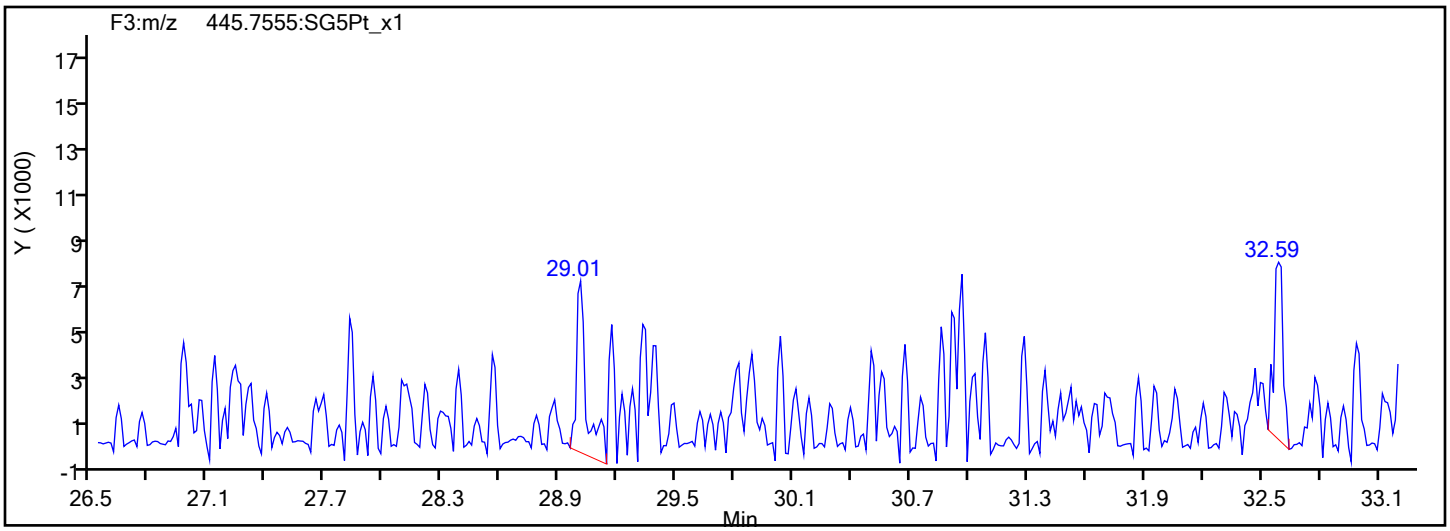
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass

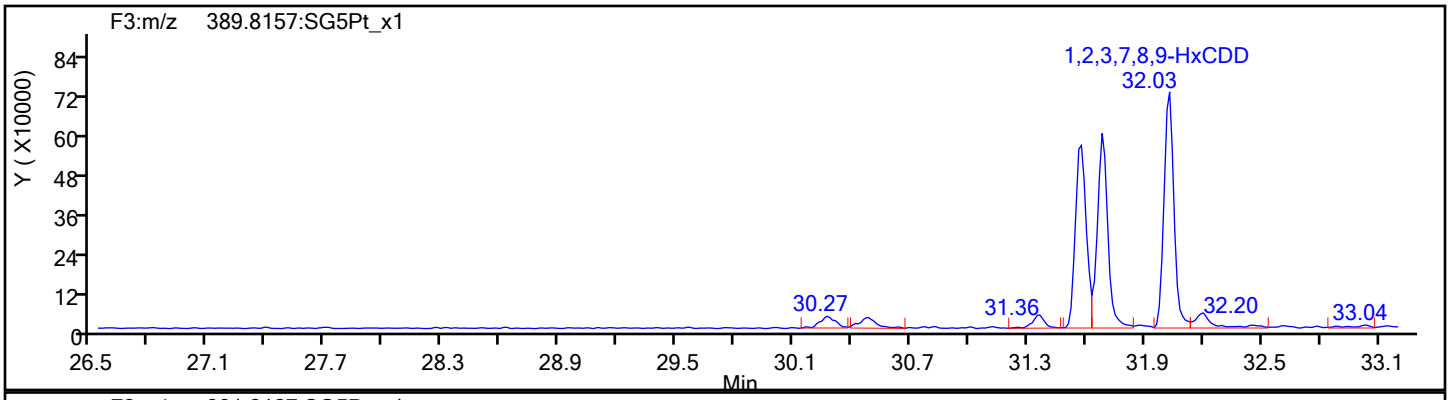


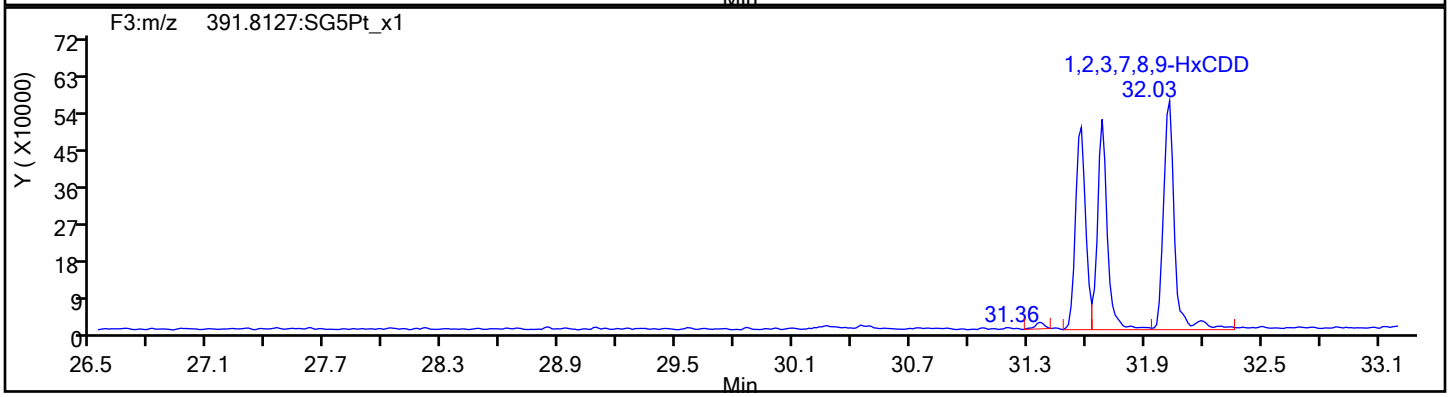
Report Date: 12-Dec-2019 15:54:09 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

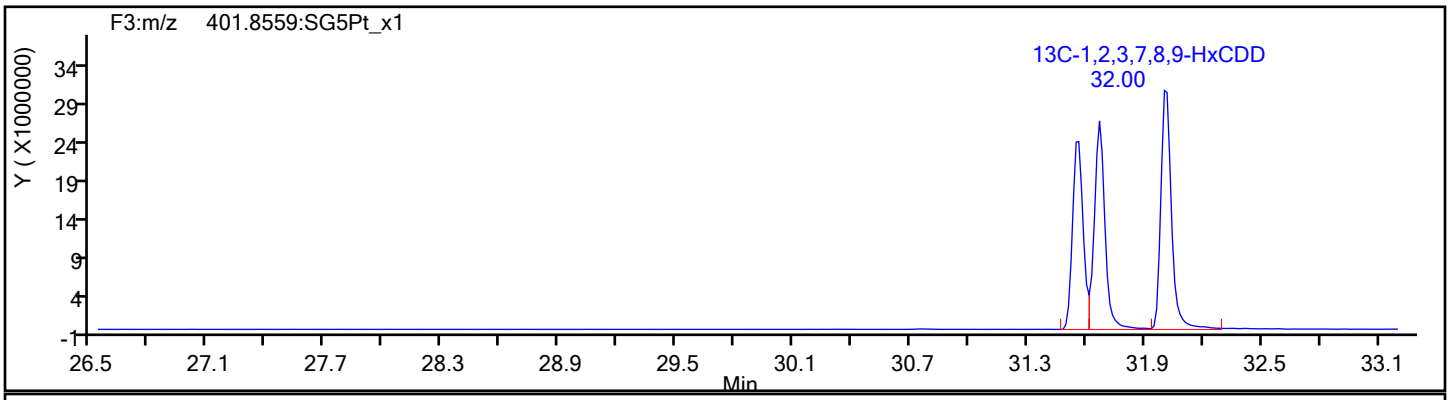
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

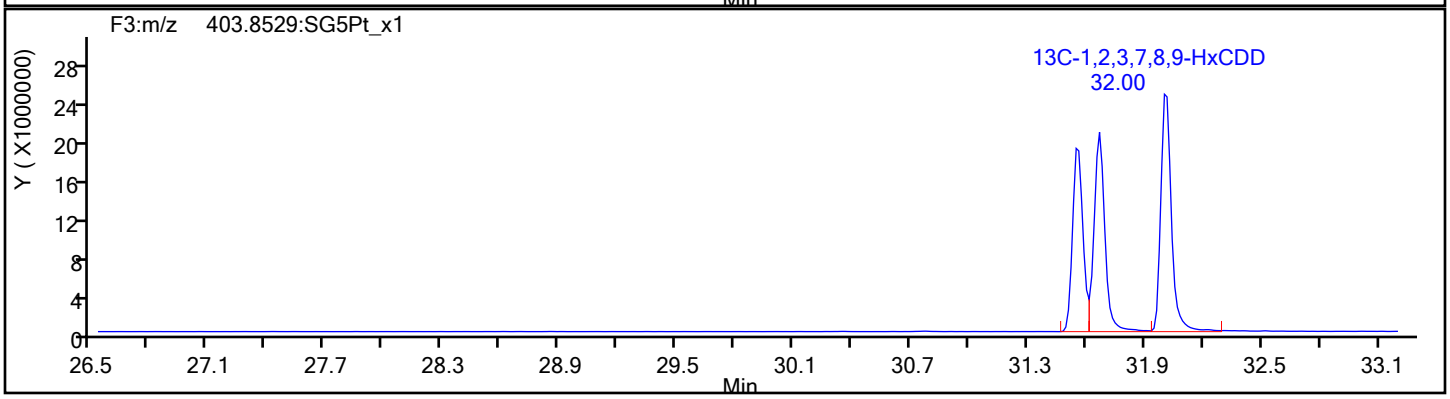
HxCDD





HxCDD Standards



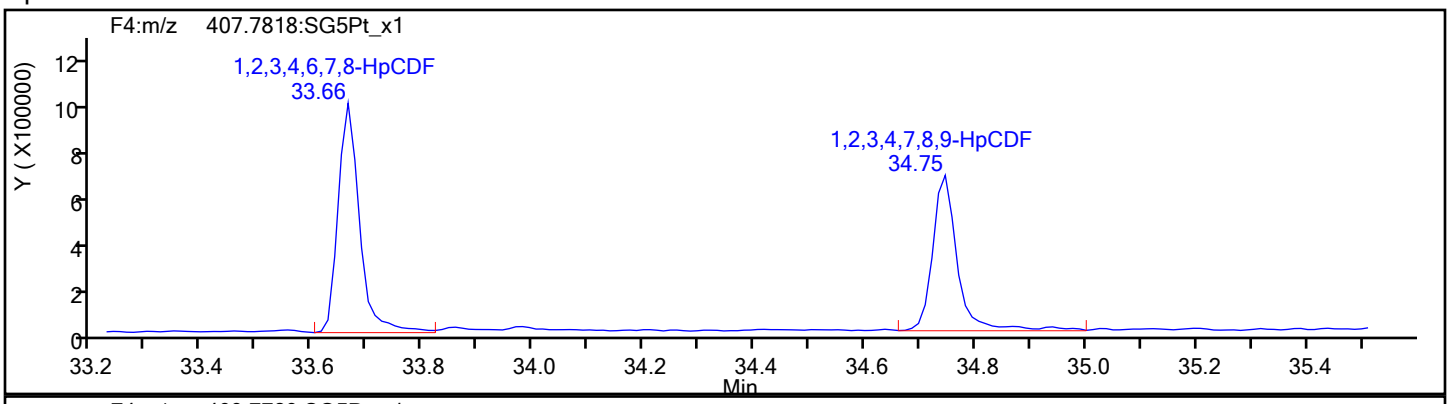


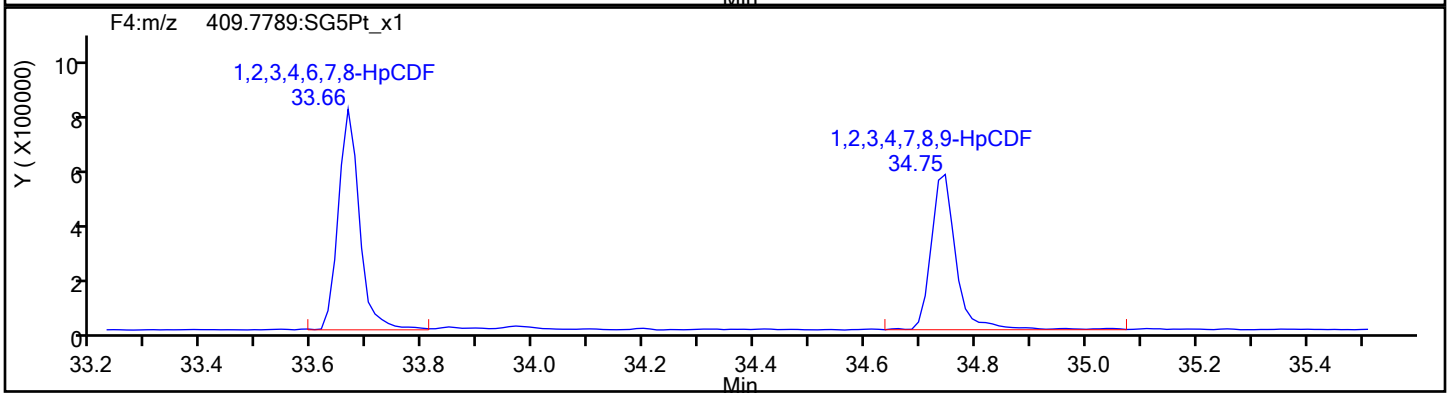
Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

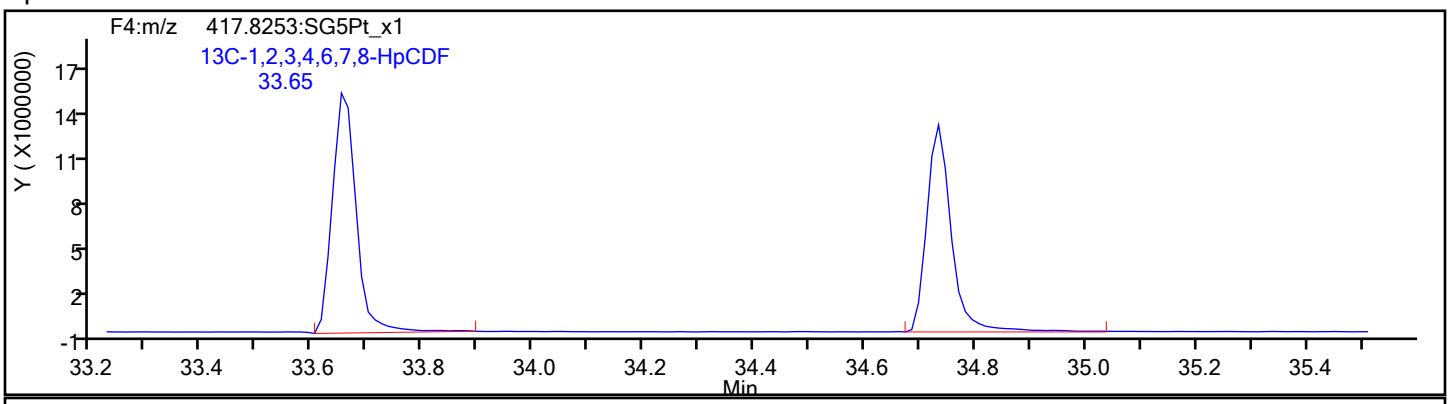
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

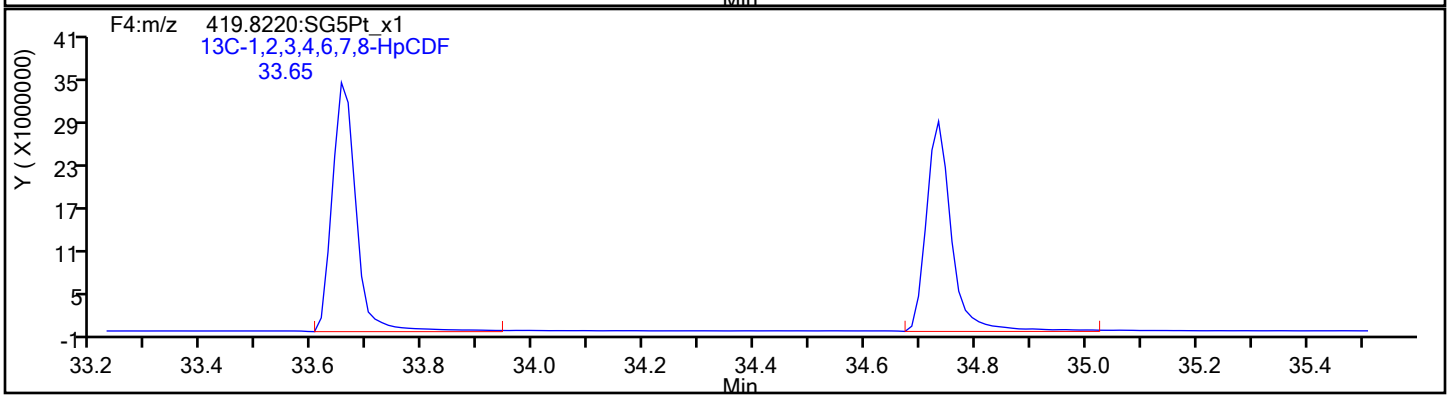
HpCDF





HpCDF Standards

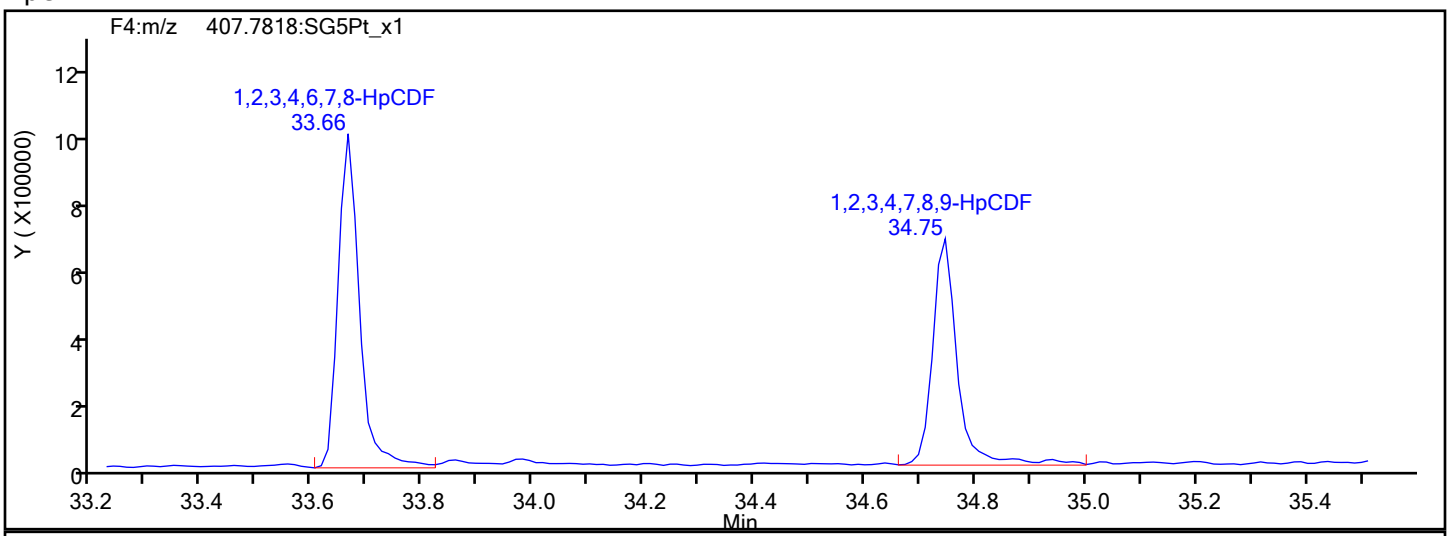


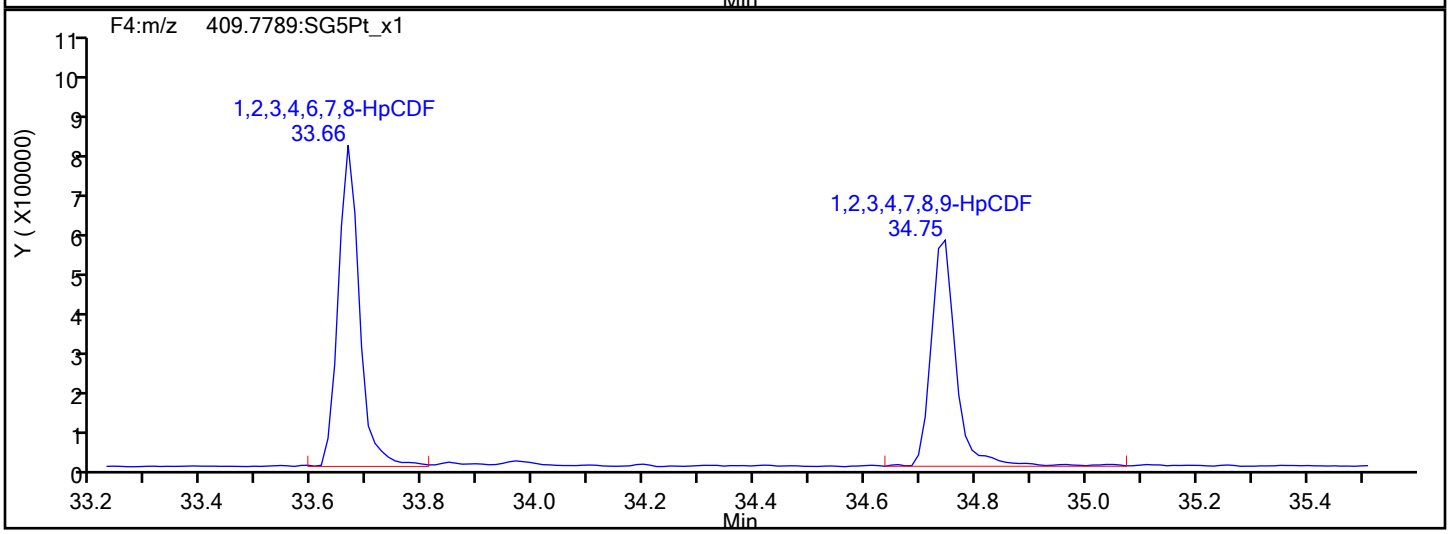


Eurofins TestAmerica, Sacramento

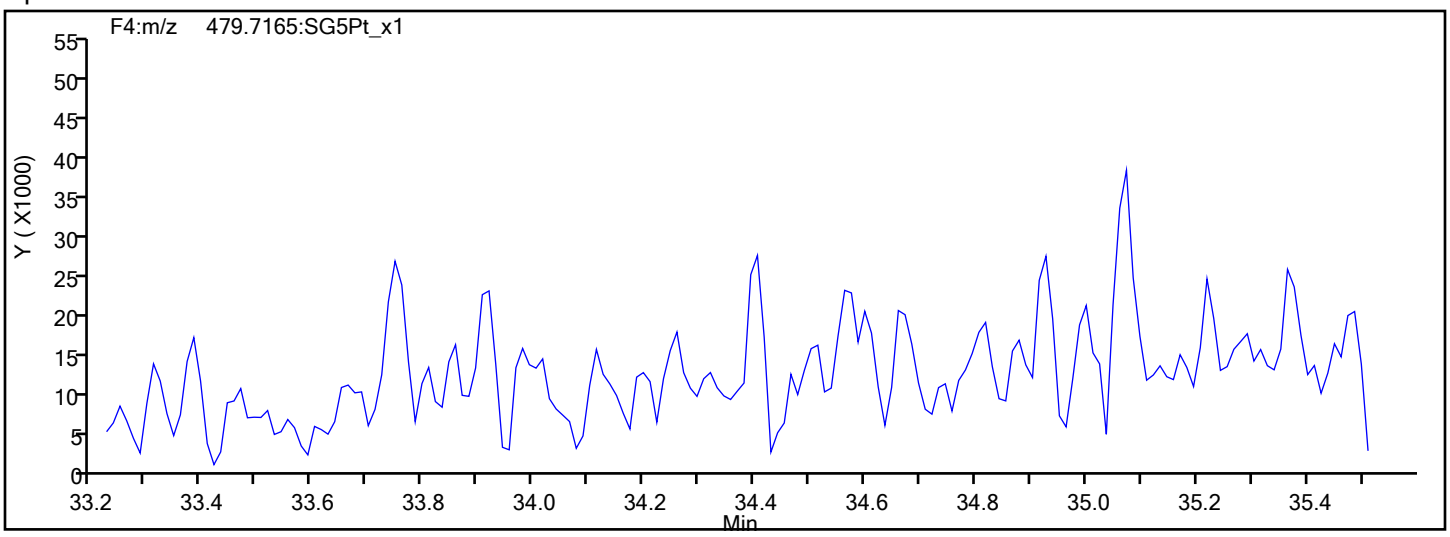
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



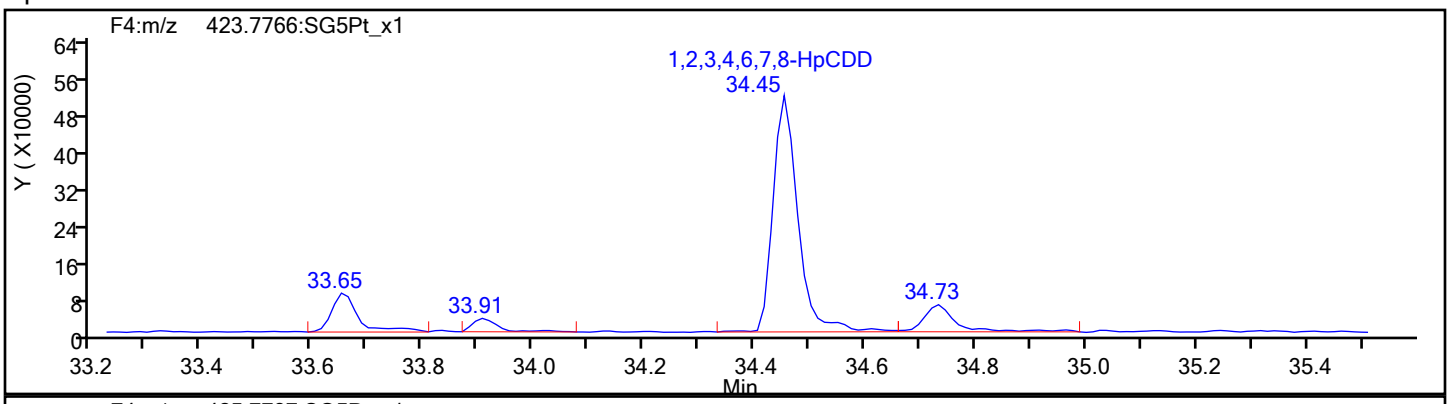
Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

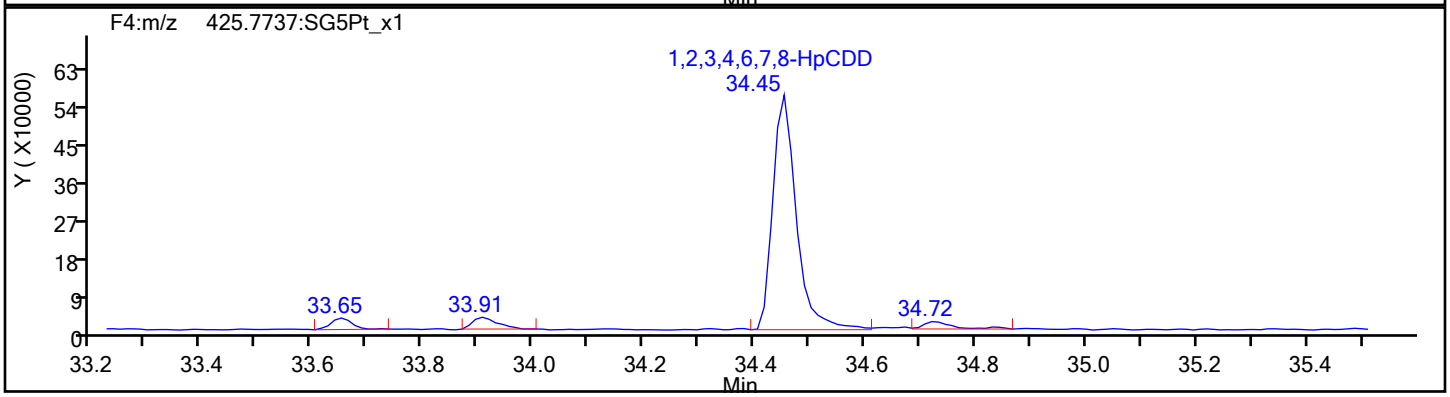
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d

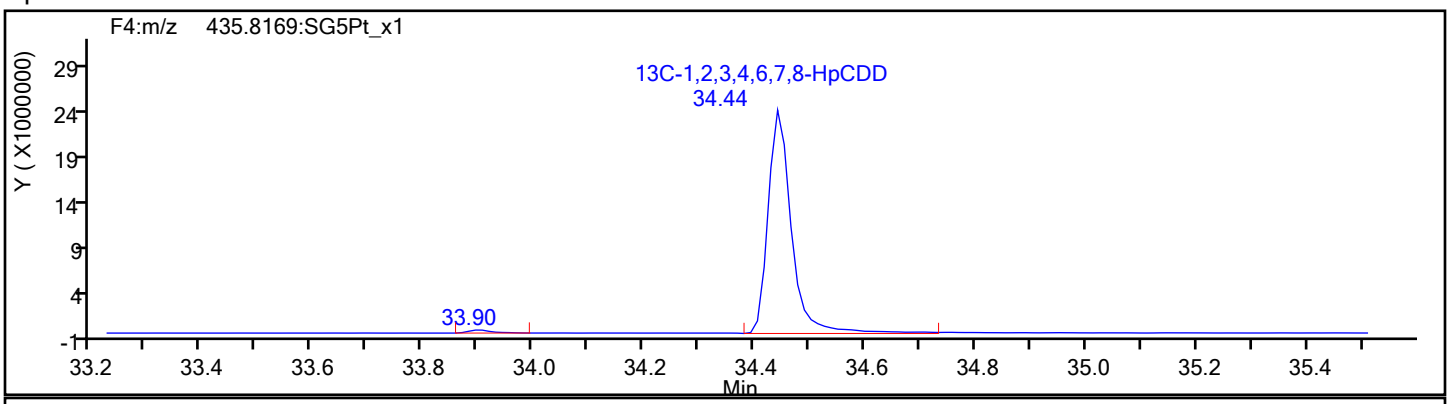
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

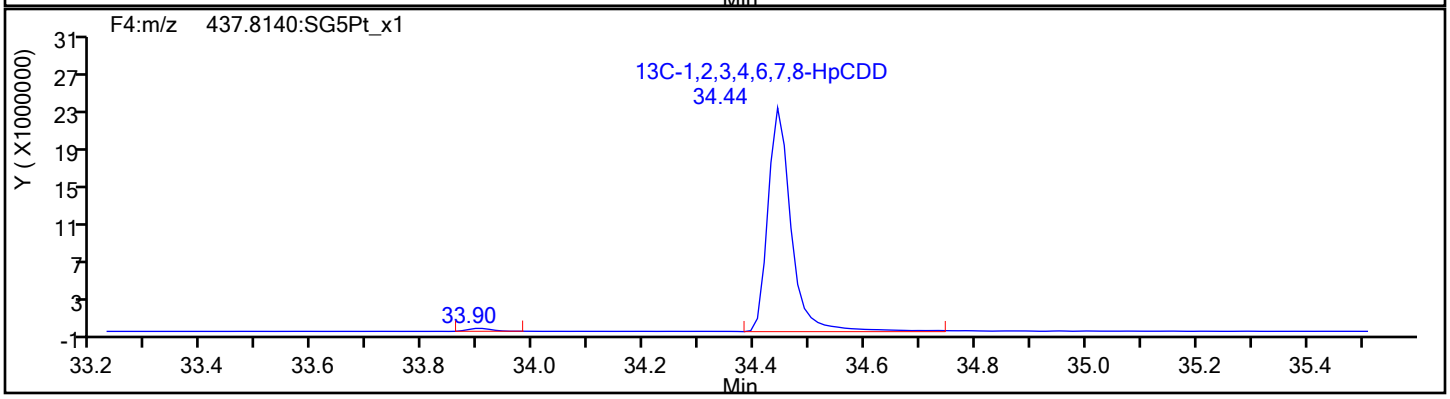
HpCDD





HpCDD Standards



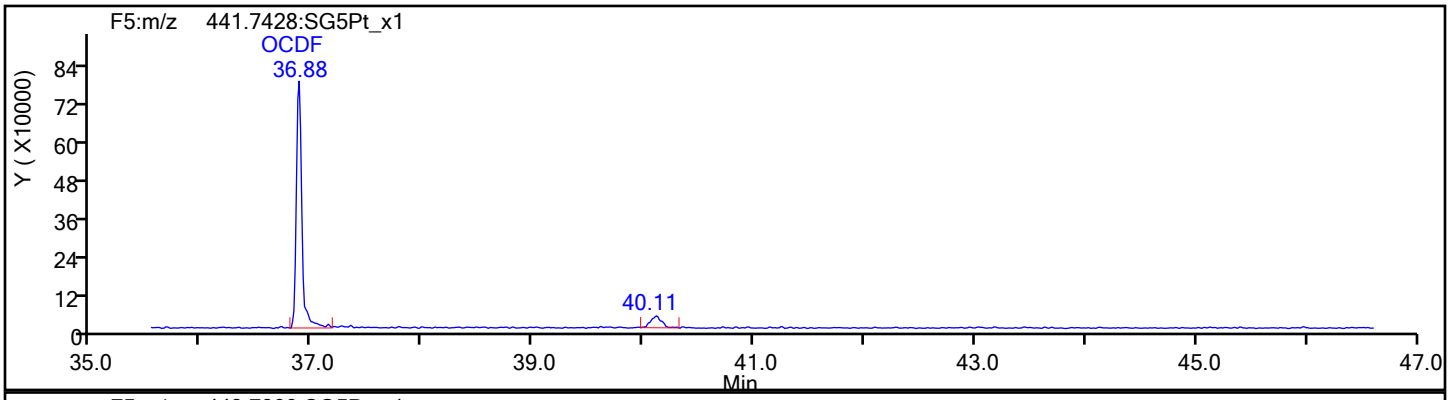


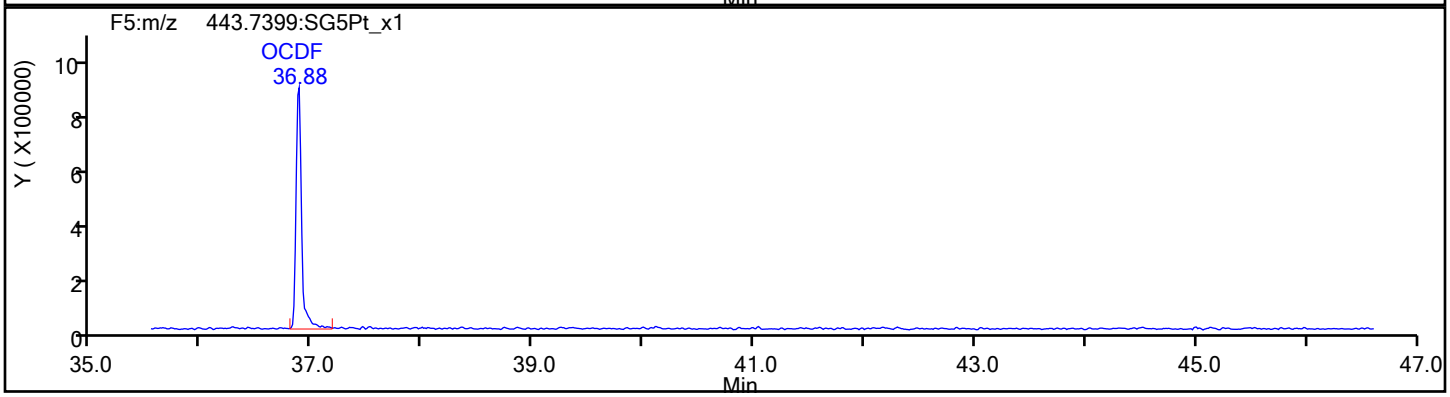
Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

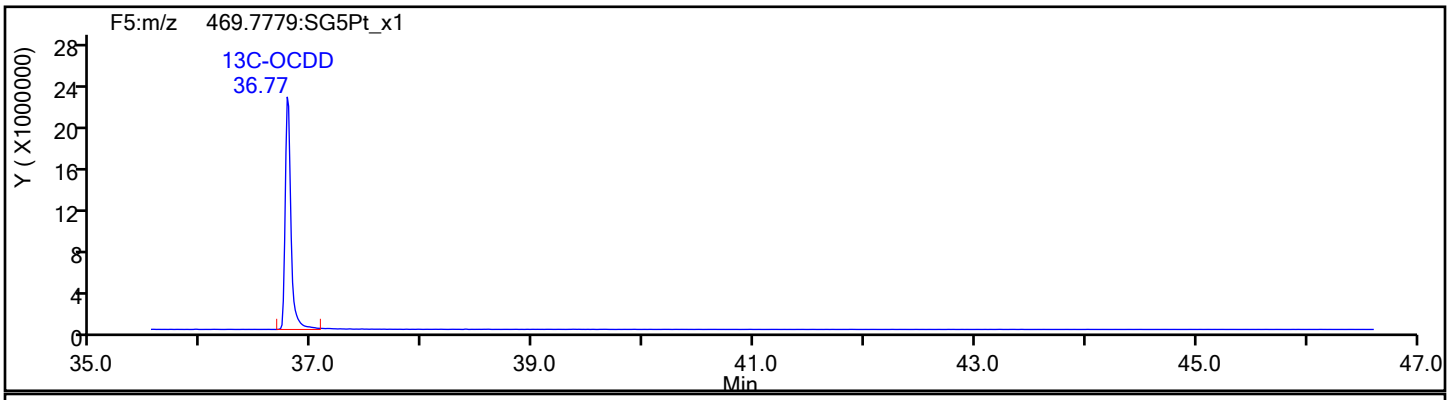
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

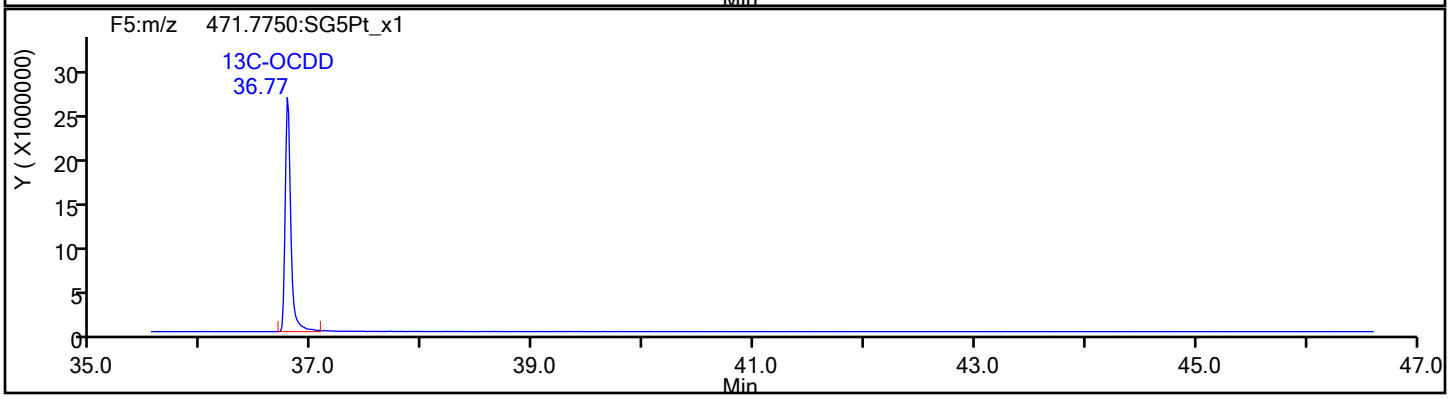
OCDF





OCDF Standards



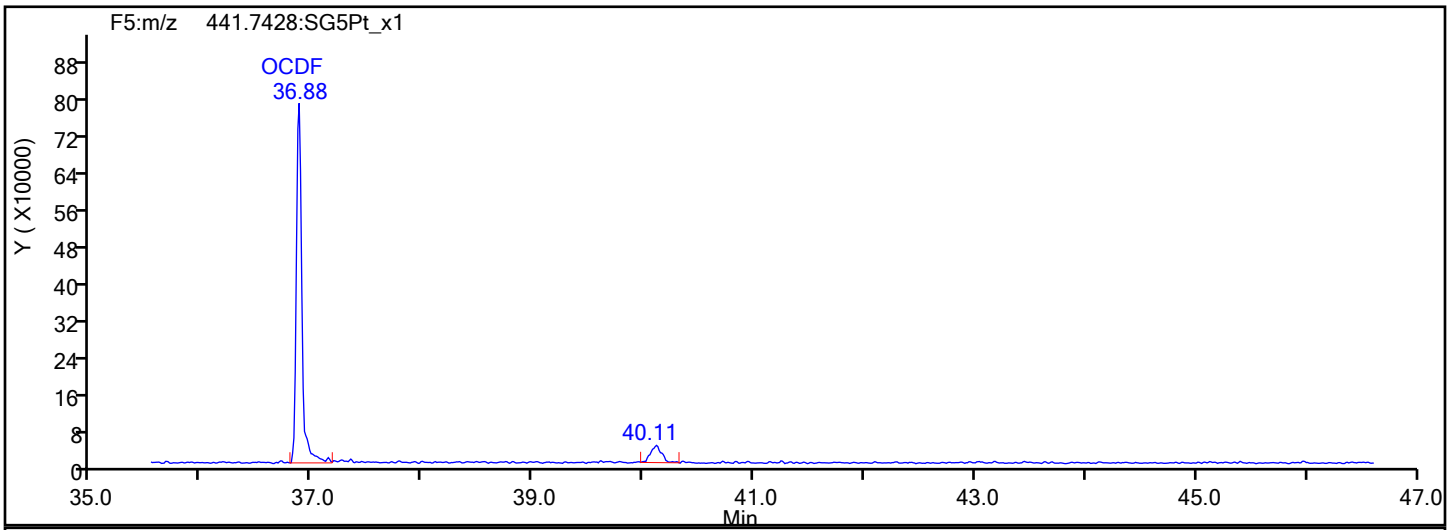


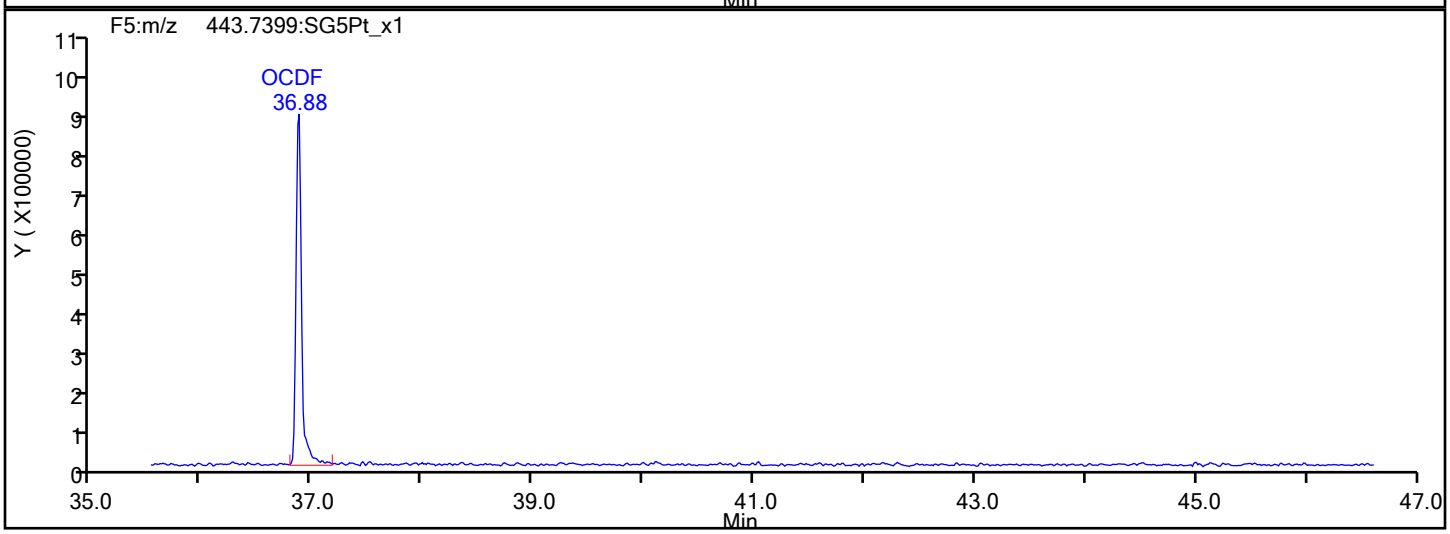
Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

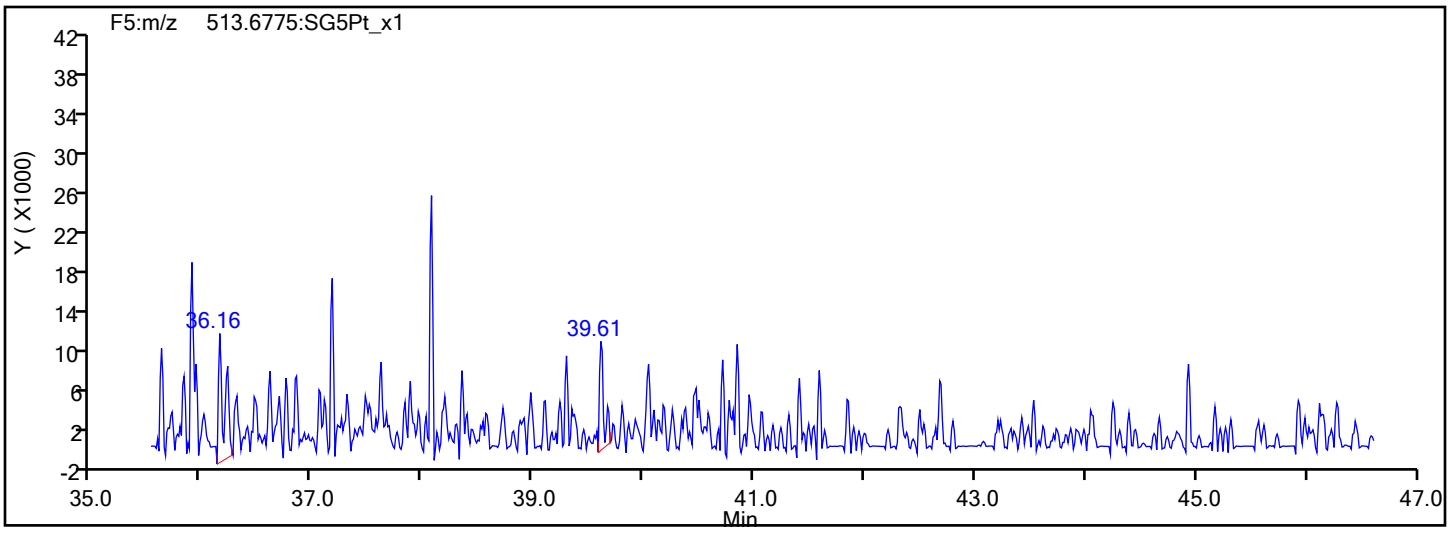
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

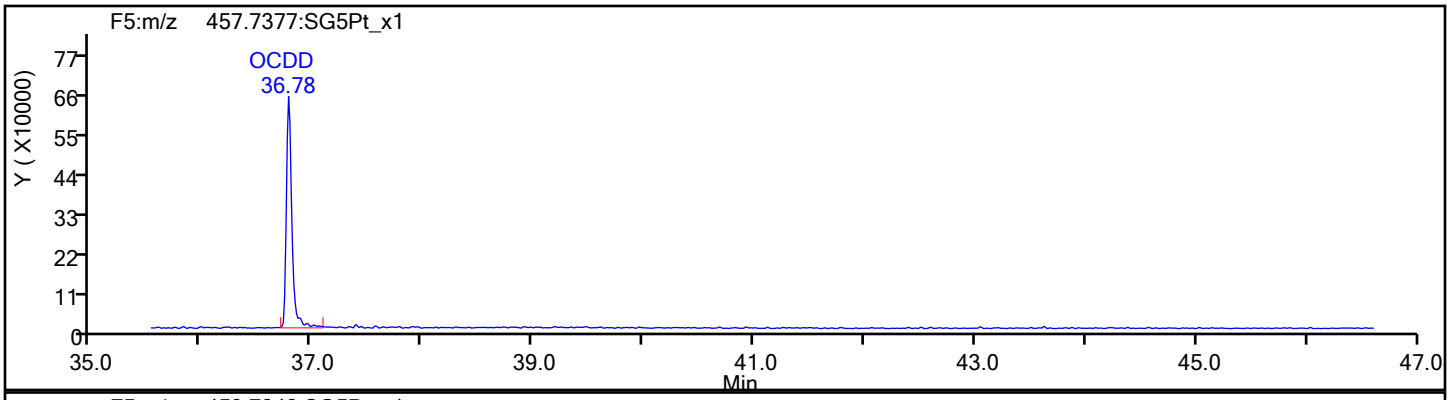


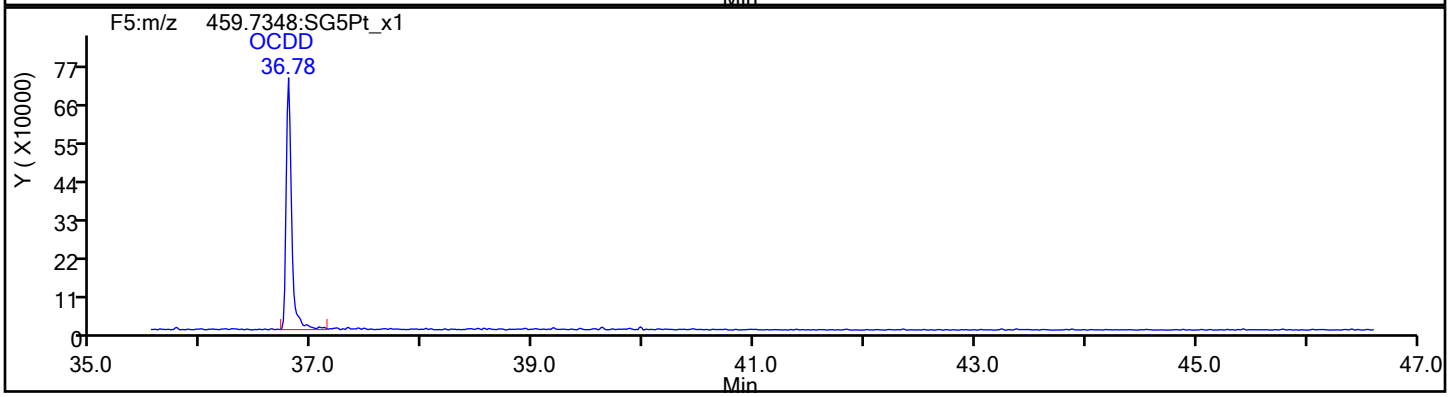
Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

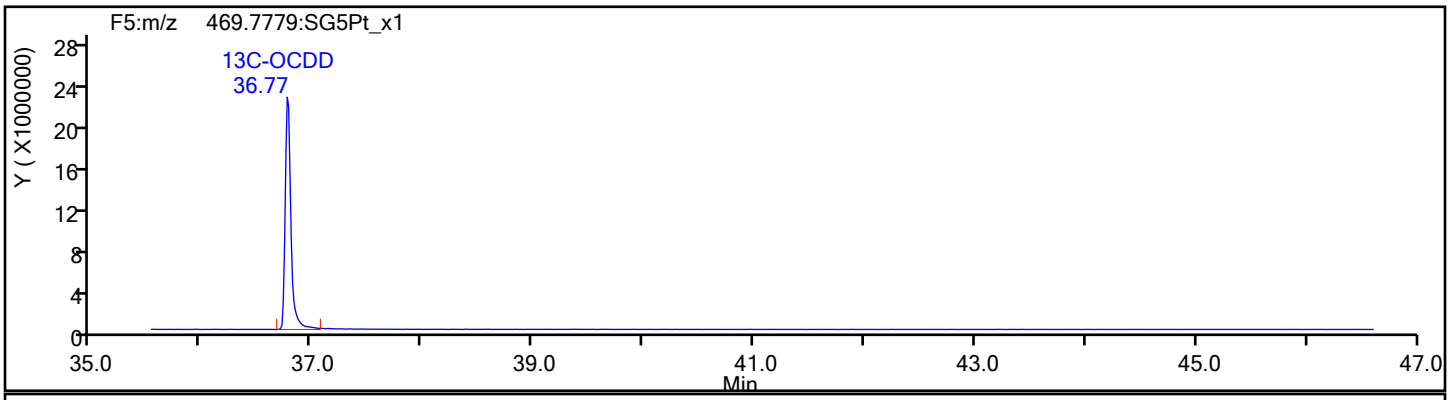
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm

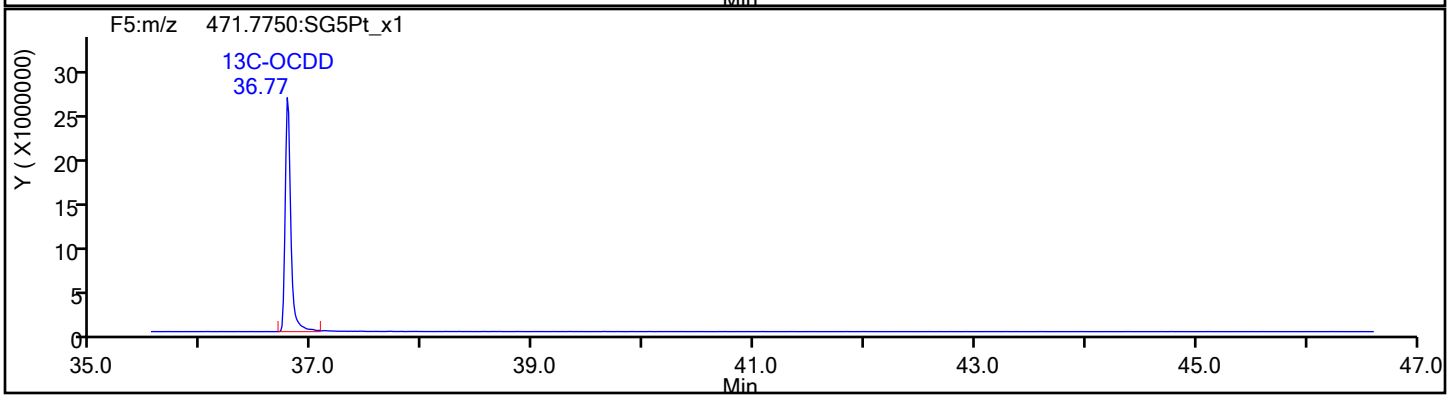
OCDD





OCDD Standards

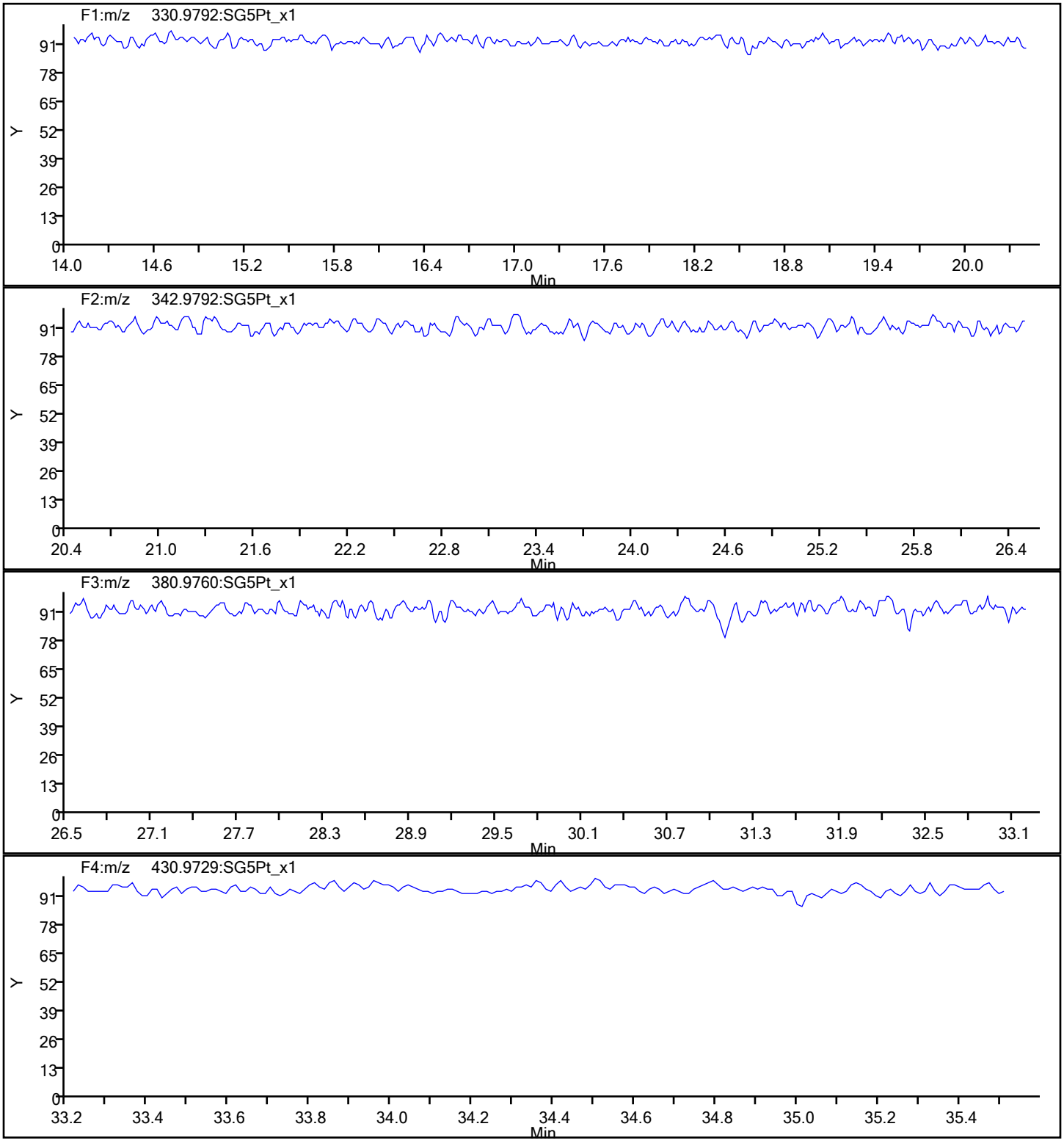




Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

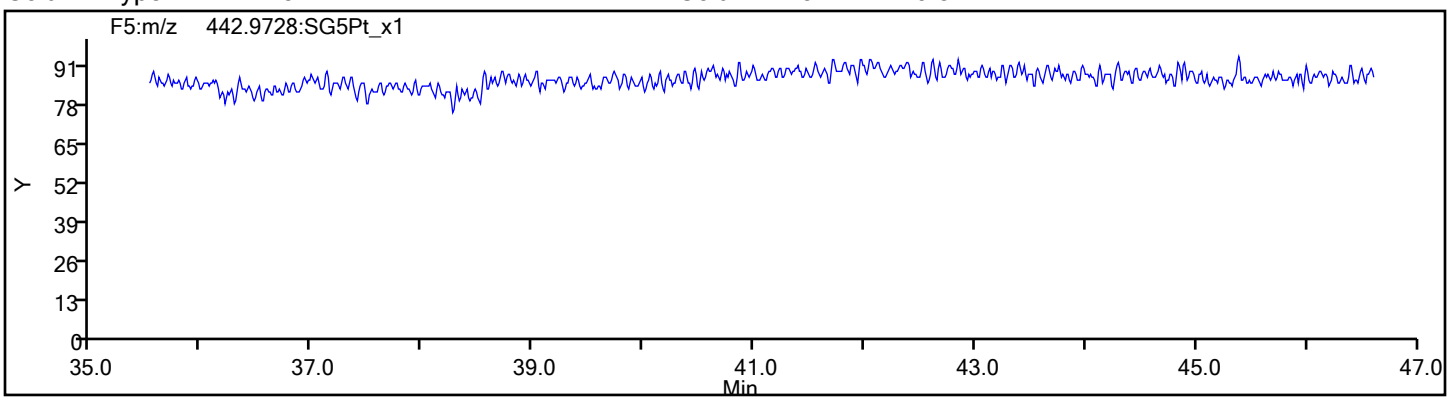
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 12-Dec-2019 15:54:10 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_3.d		
Injection Date:	12-Dec-2019 11:28:54	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L2		
Worklist#:	345037	Sample Line#:	3
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d
Lims ID: IC 3
Client ID: L3
Sample Type: IC Calib Level: 3
Inject. Date: 12-Dec-2019 12:16:27 ALS Bottle#: 5 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219A IC HRDXNL3_00025
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:15 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:36:49

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.657	233547342	0.81	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.158	317966293	0.80	1.4157	96.2	96.2	0.1604	0.1604	96.17	
2,3,7,8-TCDF	17.173	5903543	0.75	0.9502	1.954	1.954	0.0287	0.0287	97.70	
S Total TCDF					1.954	1.954	0.0287	0.0287		
D 13C-2,3,7,8-TCDD	17.839	223228422	0.77	0.9751	98.0	98.0	0.2185	0.2185	98.02	
2,3,7,8-TCDD	17.869	4766996	0.72	1.0477	2.038	2.038	0.0287	0.0287	102	
$ 37Cl4-2,3,7,8-TCDD	17.869	5758902		1.3480	1.829	1.829	0.0169	0.0169	91.46	
S Total TCDD					2.038	2.038	0.0287	0.0287		
D 13C-1,2,3,7,8-PeCDF	22.086	263888884	1.59	1.1786	95.9	95.9	0.2594	0.2594	95.87	
1,2,3,7,8-PeCDF	22.114	29080170	1.67	1.0302	10.7	10.7	0.0686	0.0686	107	
D 13C-2,3,4,7,8-PeCDF	23.409	254672733	1.58	1.1308	96.4	96.4	0.2703	0.2703	96.44	a
2,3,4,7,8-PeCDF	23.436	28373728	1.51	1.0410	10.7	10.7	0.0747	0.0747	107	
S Total PeCDF					21.4	21.4	0.0717	0.0717		
D 13C-1,2,3,7,8-PeCDD	24.132	169864186	1.60	0.7572	96.1	96.1	0.1493	0.1493	96.05	
1,2,3,7,8-PeCDD	24.159	19667667	1.64	1.0855	10.7	10.7	0.0671	0.0671	107	
S Total PeCDD					10.7	10.7	0.0671	0.0671		
D 13C-1,2,3,4,7,8-HxCDF	30.260	231563640	0.52	1.1043	100.1	100.1	0.2612	0.2612	100	
1,2,3,4,7,8-HxCDF	30.286	27852640	1.19	1.1472	10.5	10.5	0.0609	0.0609	105	
D 13C-1,2,3,6,7,8-HxCDF	30.459	241149788	0.53	1.1470	100.3	100.3	0.2514	0.2514	100	
1,2,3,6,7,8-HxCDF	30.486	28957236	1.21	1.1450	10.5	10.5	0.0577	0.0577	105	
D 13C-2,3,4,6,7,8-HxCDF	31.351	228396958	0.51	1.0769	101.2	101.2	0.2678	0.2678	101	
2,3,4,6,7,8-HxCDF	31.365	28098536	1.18	1.1726	10.5	10.5	0.0444	0.0444	105	
D 13C-1,2,3,7,8,9-HxCDF	32.190	213447196	0.52	1.0115	100.7	100.7	0.2851	0.2851	101	
1,2,3,7,8,9-HxCDF	32.203	26126431	1.27	1.1717	10.4	10.4	0.0440	0.0440	104	
S Total HxCDF					41.9	41.9	0.0517	0.0517		
* 13C-1,2,3,7,8,9-HxCDD	31.990	209536560	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.551	167853325	1.27	0.7962	100.6	100.6	0.2289	0.2289	101	a
1,2,3,4,7,8-HxCDD	31.565	19629316	1.28	1.0934	10.7	10.7	0.0733	0.0733	107	
D 13C-1,2,3,6,7,8-HxCDD	31.658	181254882	1.28	0.8720	99.2	99.2	0.2090	0.2090	99.20	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.671	20651010	1.24	1.0429	10.9	10.9	0.0731	0.0731	109	
1,2,3,7,8,9-HxCDD	32.017	22661690	1.27	1.2073	10.8	10.8	0.0647	0.0647	108	
S Total HxCDD					32.4	32.4	0.0704	0.0704		
D 13C-1,2,3,4,6,7,8-HpCDF	33.640	162401122	0.42	0.7577	102.3	102.3	0.7492	0.7492	102	
1,2,3,4,6,7,8-HpCDF	33.652	25350445	1.02	1.4804	10.5	10.5	0.0845	0.0845	105	
D 13C-1,2,3,4,7,8,9-HpCDF	34.721	146041140	0.45	0.6941	100.4	100.4	0.8178	0.8178	100	a
1,2,3,4,7,8,9-HpCDF	34.721	19189830	1.03	1.2933	10.2	10.2	0.1196	0.1196	102	
S Total HpCDF					20.7	20.7	0.1020	0.1020		
D 13C-1,2,3,4,6,7,8-HpCDD	34.430	149748569	1.07	0.7058	101.3	101.3	0.5362	0.5362	101	
1,2,3,4,6,7,8-HpCDD	34.442	16353697	1.05	1.0535	10.4	10.4	0.0807	0.0807	104	
S Total HpCDD					10.4	10.4	0.0807	0.0807		
D 13C-OCDD	36.758	178956155	0.91	0.4603	185.6	185.6	0.1540	0.1540	92.78	
OCDF	36.866	27270567	0.91	1.3945	21.9	21.9	0.0615	0.0615	109	
OCDD	36.770	22367401	0.90	1.1362	22.0	22.0	0.0537	0.0537	110	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL3_00025 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d
Lims ID: IC 3
Client ID: L3
Sample Type: IC Calib Level: 3
Inject. Date: 12-Dec-2019 12:16:27 ALS Bottle#: 5 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219A IC HRDXNL3_00025
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:15 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:36:49

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.657	17.666	-1		104662717	26747295	22496	56240	1189		
333.9339	17.657	17.666	-1		128884625	32879364	28326	70815	1161	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.158	17.164	0	0.972	141397908	33164820	26286	65715	1262		
317.9389	17.158	17.164	0	0.972	176568385	41354591	27869	69672	1484	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.173	17.176	0	1.001	2535723	667276	3116	7790	214		
305.8987	17.173	17.176	0	1.001	3367820	860456	5012	12530	172	0.75(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.839	17.854	-1	1.010	96904646	22067106	22496	56240	981		
333.9339	17.839	17.854	-1	1.010	126323776	29552129	28326	70815	1043	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.869	17.872	0	1.002	1996583	458998	4079	10197	113		
321.8936	17.869	17.872	0	1.002	2770413	702094	2125	5312	330	0.72(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.869	17.872	0	1.012	5758902	1359398	5441	13602	250		
13C-1,2,3,7,8-PeCDF											
351.9000	22.086	22.103	-1	1.251	162011430	29168116	44703	111757	652		
353.8970	22.086	22.103	-1	1.251	101877454	17995974	28209	70522	638	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.114	22.130	-1	1.001	18199461	3342738	5528	13820	605		
341.8567	22.114	22.130	-1	1.001	10880709	1959223	7807	19517	251	1.67(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											a
351.9000	23.409	23.426	-1	1.326	155851342	26185405	44703	111757	586		a
353.8970	23.423	23.426	0	1.327	98821391	16678843	28209	70522	591	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.436	23.450	-1	1.001	17090087	3030493	5528	13820	548		
341.8567	23.436	23.450	-1	1.001	11283641	1898405	7807	19517	243	1.51(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.132	24.137	0	1.367	104622747	16323037	16102	40255	1014		
369.8919	24.132	24.137	0	1.367	65241439	10221375	10855	27137	942	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.159	24.162	0	1.001	12203730	1938062	5168	12920	375		
357.8516	24.146	24.162	-1	1.001	7463937	1235624	2570	6425	481	1.64(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.260	30.270	-1	0.946	79653125	13936170	21408	53520	651		
385.8610	30.260	30.270	-1	0.946	151910515	26566208	41154	102885	646	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.286	30.300	-1	1.001	15123024	2754138	6329	15822	435		
375.8178	30.286	30.300	-1	1.001	12729616	2240803	4992	12480	449	1.19(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.459	30.473	-1	0.952	84009479	14851340	21408	53520	694		
385.8610	30.459	30.473	-1	0.952	157140309	27991883	41154	102885	680	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.486	30.497	-1	1.001	15835206	2829861	6329	15822	447		
375.8178	30.486	30.497	-1	1.001	13122030	2485303	4992	12480	498	1.21(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.351	31.357	0	0.980	77515211	18074944	21408	53520	844		
385.8610	31.351	31.357	0	0.980	150881747	36268746	41154	102885	881	0.51(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.365	31.375	-1	1.000	15198110	3769186	6329	15822	596		
375.8178	31.365	31.375	-1	1.000	12900426	3247170	4992	12480	650	1.18(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.190	32.196	0	1.006	73446813	19093412	21408	53520	892		
385.8610	32.190	32.196	0	1.006	140000383	35859683	41154	102885	871	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.203	32.209	0	1.000	14635281	4045617	6329	15822	639		
375.8178	32.203	32.209	0	1.000	11491150	3054590	4992	12480	612	1.27(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.990	32.004	-1		117929616	30467986	20414	51035	1493		
403.8529	31.990	32.004	-1		91606944	23762720	19117	47792	1243	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											a
401.8559	31.551	31.557	0	0.986	93982258	24855119	20414	51035	1218		a
403.8529	31.538	31.557	-1	0.986	73871067	19150014	19117	47792	1002	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.565	31.570	0	1.000	11001177	3028965	8713	21782	348		
391.8127	31.565	31.570	0	1.000	8628139	2291510	5398	13495	425	1.28(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.658	31.666	0	0.990	101608718	25876318	20414	51035	1268		
403.8529	31.658	31.666	0	0.990	79646164	20425256	19117	47792	1068	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.671	31.682	-1	1.000	11440593	3016792	8713	21782	346		
391.8127	31.671	31.682	-1	1.000	9210417	2335920	5398	13495	433	1.24(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.017	32.023	0	1.015	12668415	3326529	8713	21782	382		
391.8127	32.004	32.023	-1	1.014	9993275	2630549	5398	13495	487	1.27(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.640	33.647	0	1.052	47679327	16977900	44531	111327	381		
419.8220	33.640	33.647	0	1.052	114721795	39636130	78601	196502	504	0.42(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.652	33.659	0	1.000	12772687	4580630	16196	40490	283		
409.7789	33.652	33.659	0	1.000	12577758	4538391	12118	30295	375	1.02(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											a
417.8253	34.721	34.726	0	1.085	45238008	14292822	44531	111327	321		a
419.8220	34.721	34.726	0	1.085	100803132	31457091	78601	196502	400	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.721	34.736	-1	1.000	9741829	2988285	16196	40490	185		
409.7789	34.721	34.736	-1	1.000	9448001	3019813	12118	30295	249	1.03(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.430	34.437	0	1.076	77355572	25448372	44231	110577	575		
437.8140	34.430	34.437	0	1.076	72392997	23906285	37864	94660	631	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.442	34.449	0	1.000	8362316	2927448	10490	26225	279		
425.7737	34.442	34.449	0	1.000	7991381	2681537	6303	15757	425	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.758	36.767	-1	1.149	85394423	24155307	8629	21572	2799		
471.7750	36.758	36.767	-1	1.149	93561732	25728540	6744	16860	3815	0.91(0.76-1.02)	
OCDF											
441.7428	36.866	36.870	0	1.003	13003258	3649120	3679	9197	992		
443.7399	36.854	36.870	-1	1.003	14267309	3989890	4872	12180	819	0.91(0.76-1.02)	
OCDD											
457.7377	36.770	36.779	-1	1.000	10610136	3037425	3003	7507	1011		
459.7348	36.770	36.779	-1	1.000	11757265	3345664	3079	7697	1087	0.90(0.76-1.02)	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL3_00025 Amount Added: 2.00 Units: uL

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

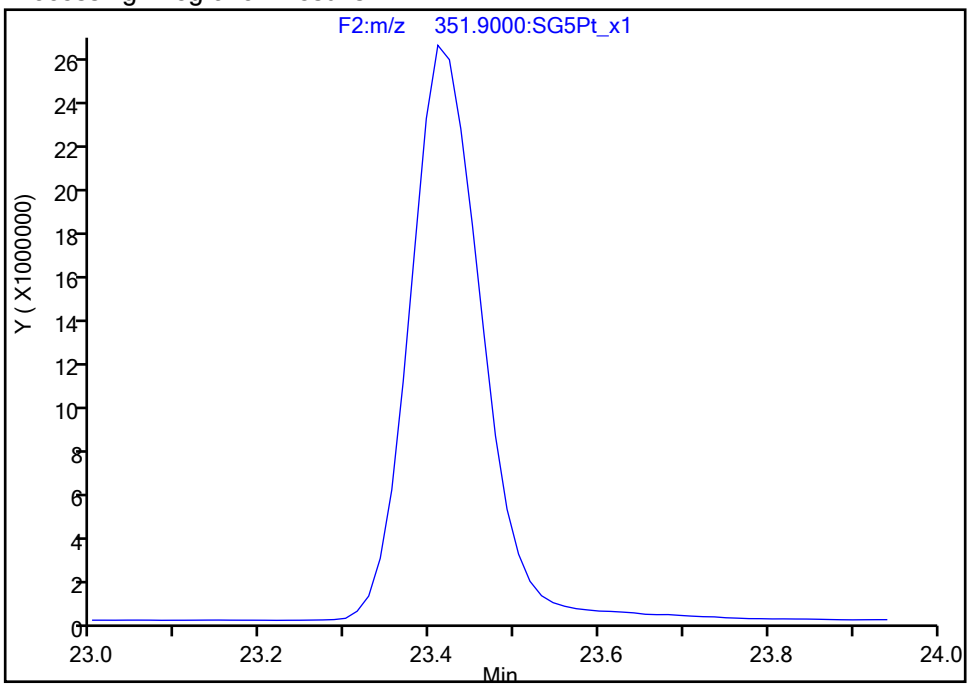
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d				
Injection Date:	12-Dec-2019 12:16:27	Instrument ID:	3D5		
Lims ID:	IC 3				
Client ID:	L3				
Operator ID:	KSS	ALS Bottle#:	5	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

13C-2,3,4,7,8-PeCDF, CAS: 116843-02-8

Signal: 1

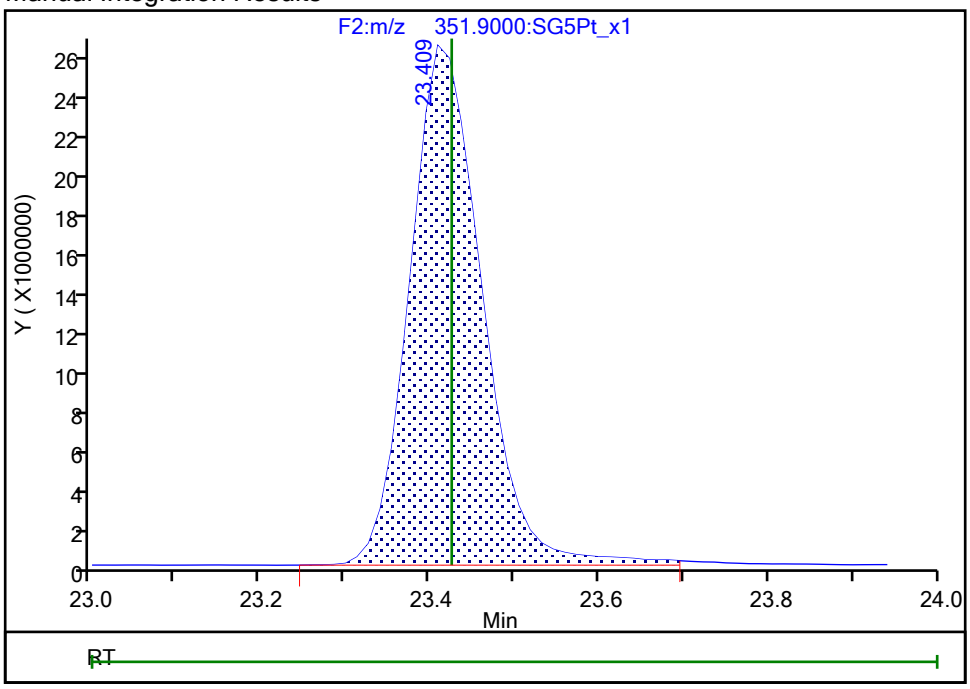
Not Detected
Expected RT: 23.43

Processing Integration Results



Manual Integration Results

RT: 23.41
Area: 155851342
Amount: 96.435079
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 13:35:45
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

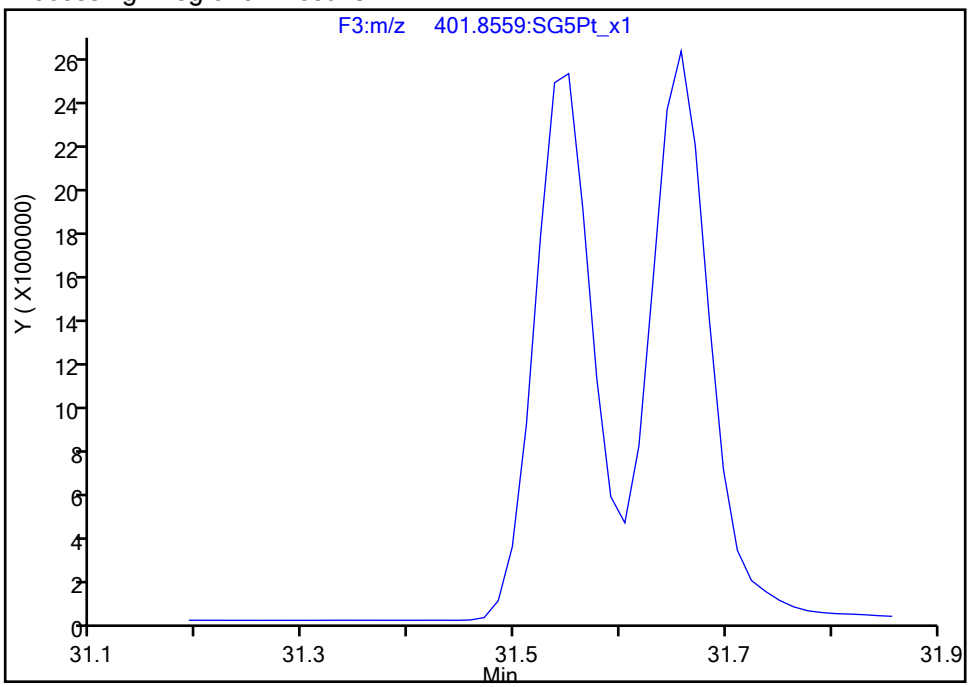
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d				
Injection Date:	12-Dec-2019 12:16:27	Instrument ID:	3D5		
Lims ID:	IC 3				
Client ID:	L3				
Operator ID:	KSS	ALS Bottle#:	5	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

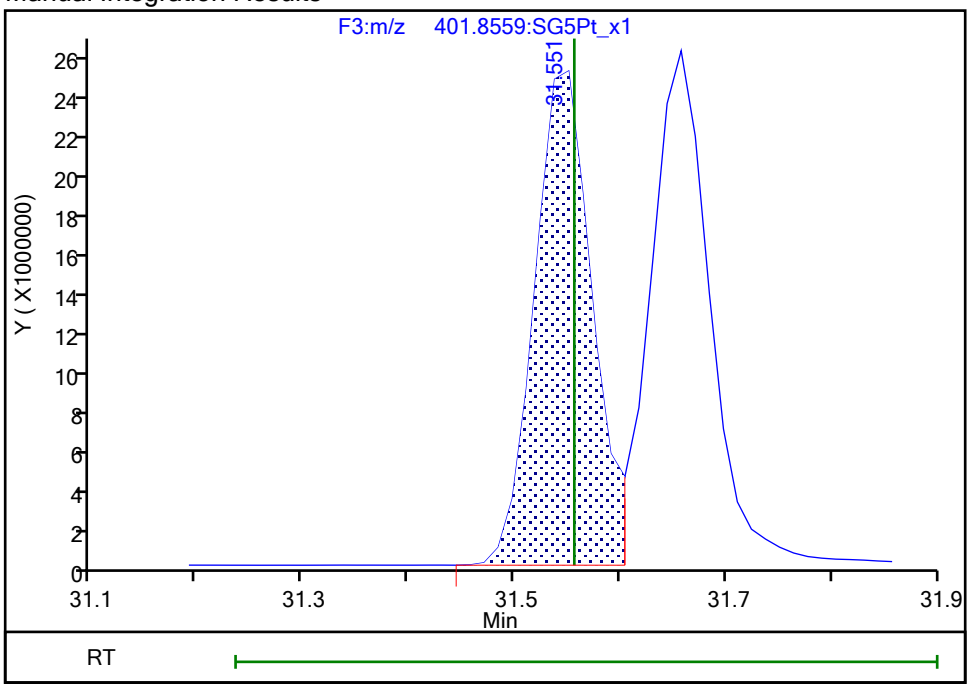
Not Detected
Expected RT: 31.56

Processing Integration Results



Manual Integration Results

RT: 31.55
Area: 93982258
Amount: 100.6108
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 13:36:09
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

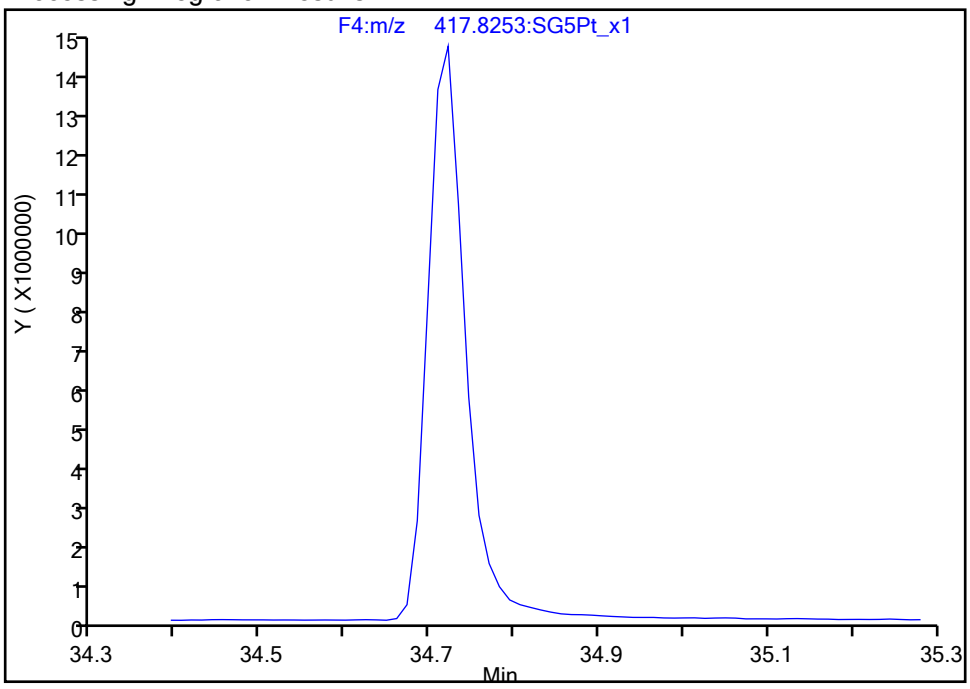
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d				
Injection Date:	12-Dec-2019 12:16:27	Instrument ID:	3D5		
Lims ID:	IC 3				
Client ID:	L3				
Operator ID:	KSS	ALS Bottle#:	5	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 1

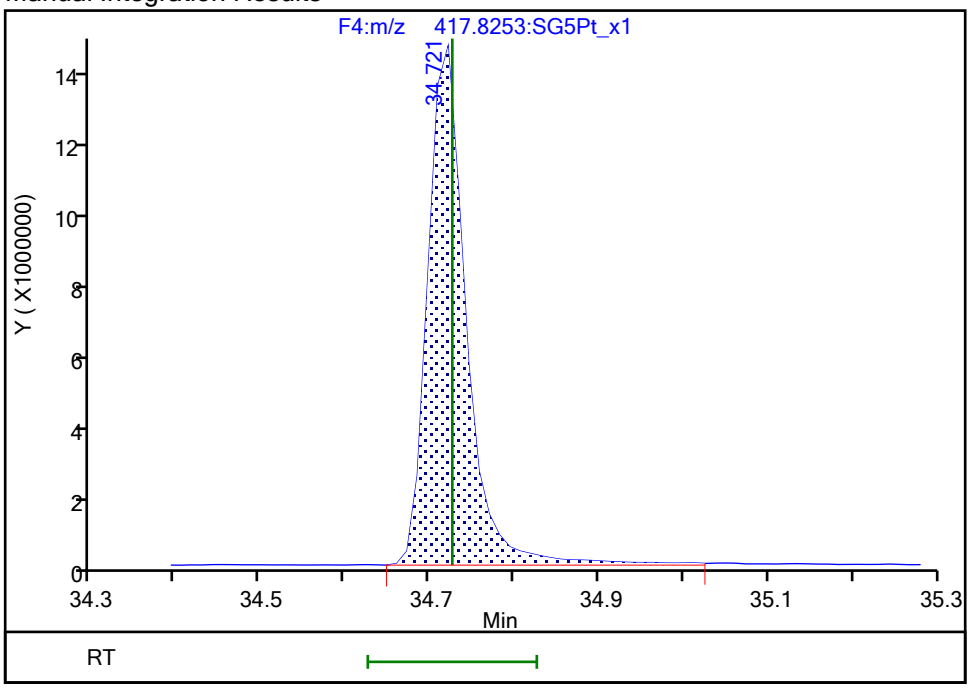
Not Detected
Expected RT: 34.73

Processing Integration Results



Manual Integration Results

RT: 34.72
Area: 45238008
Amount: 100.4087
Amount Units: pg/ul



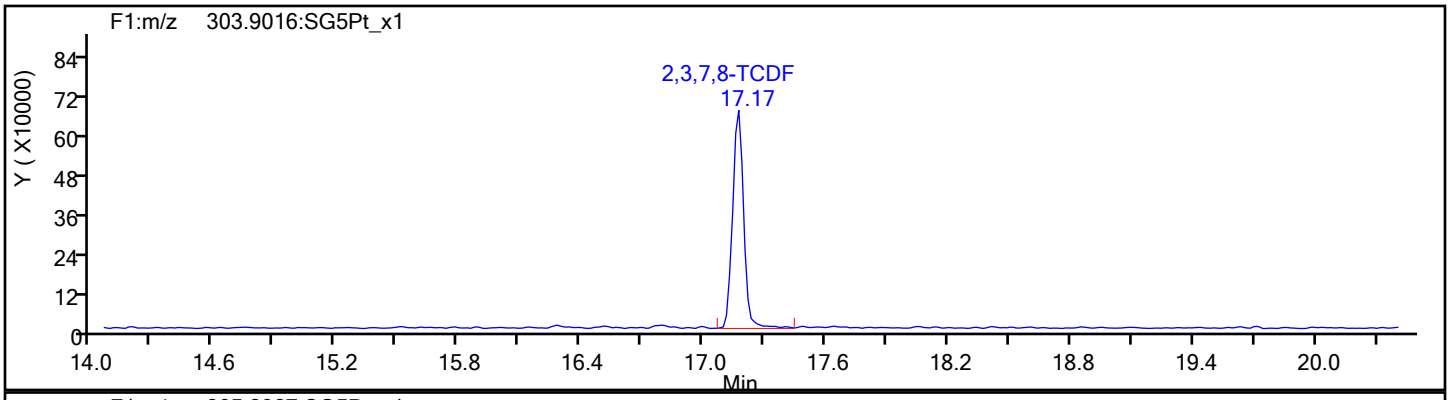
Reviewer: stephensk, 12-Dec-2019 13:36:34
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

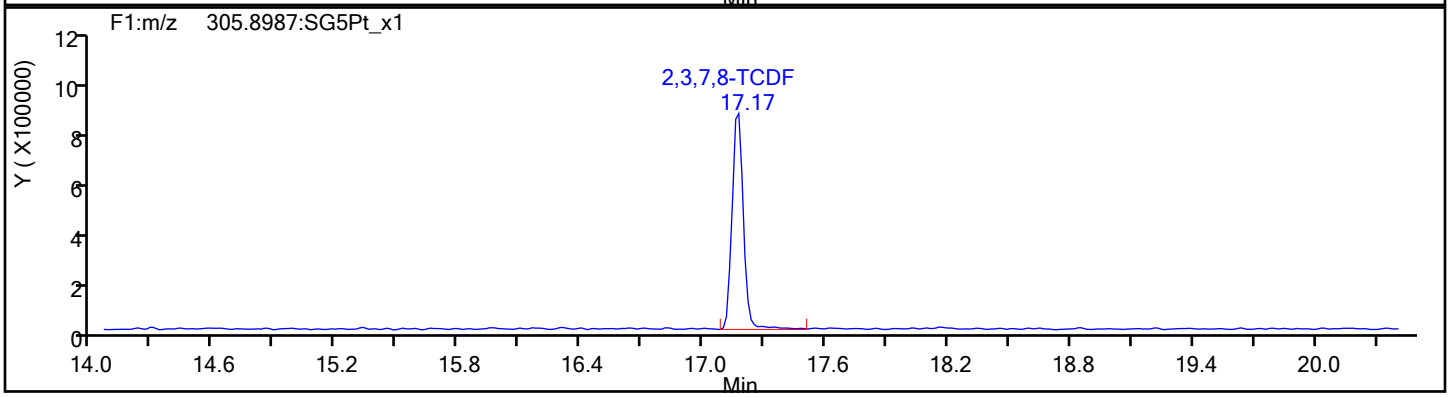
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

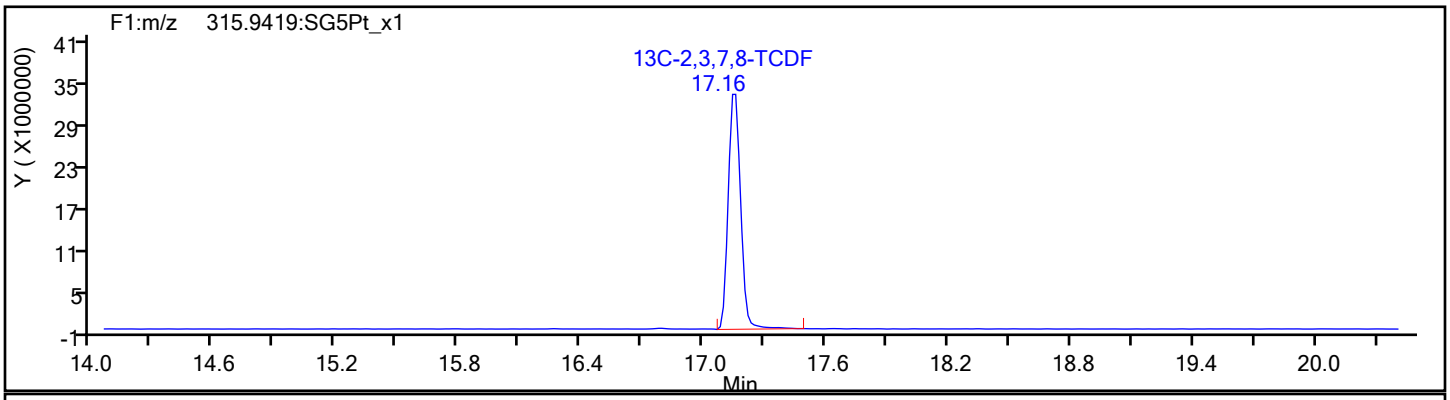
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

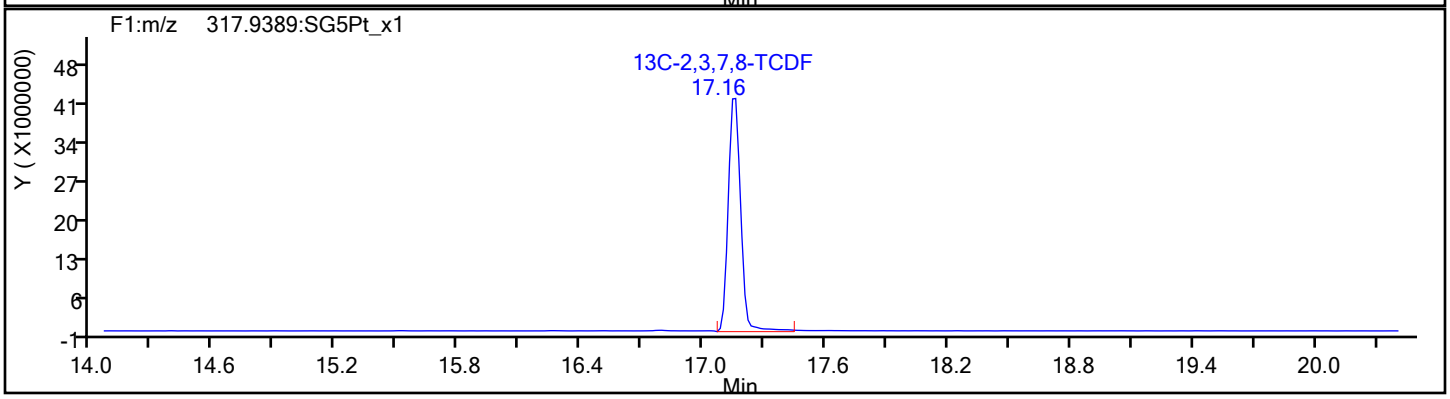
TCDF





TCDF Standards



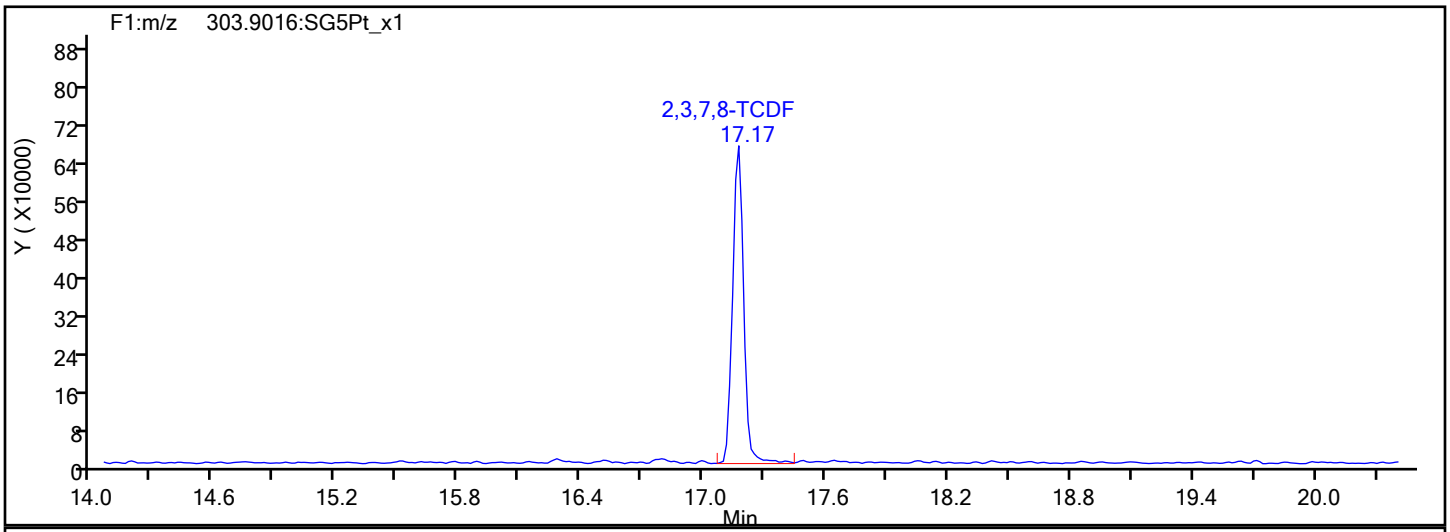


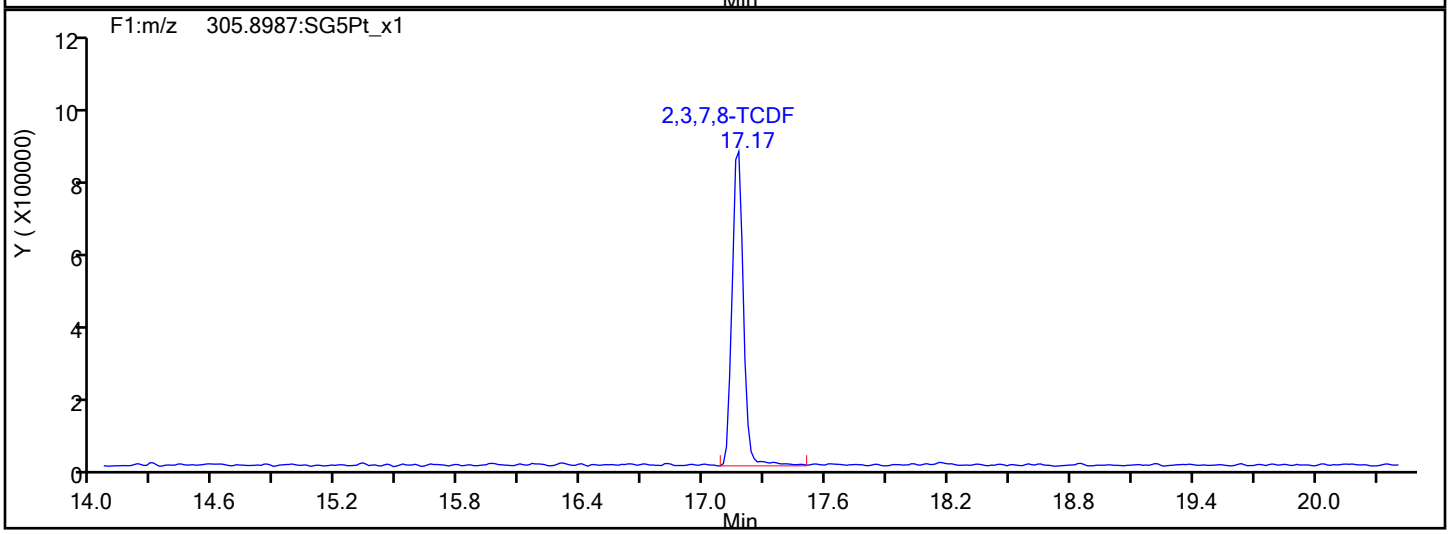
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

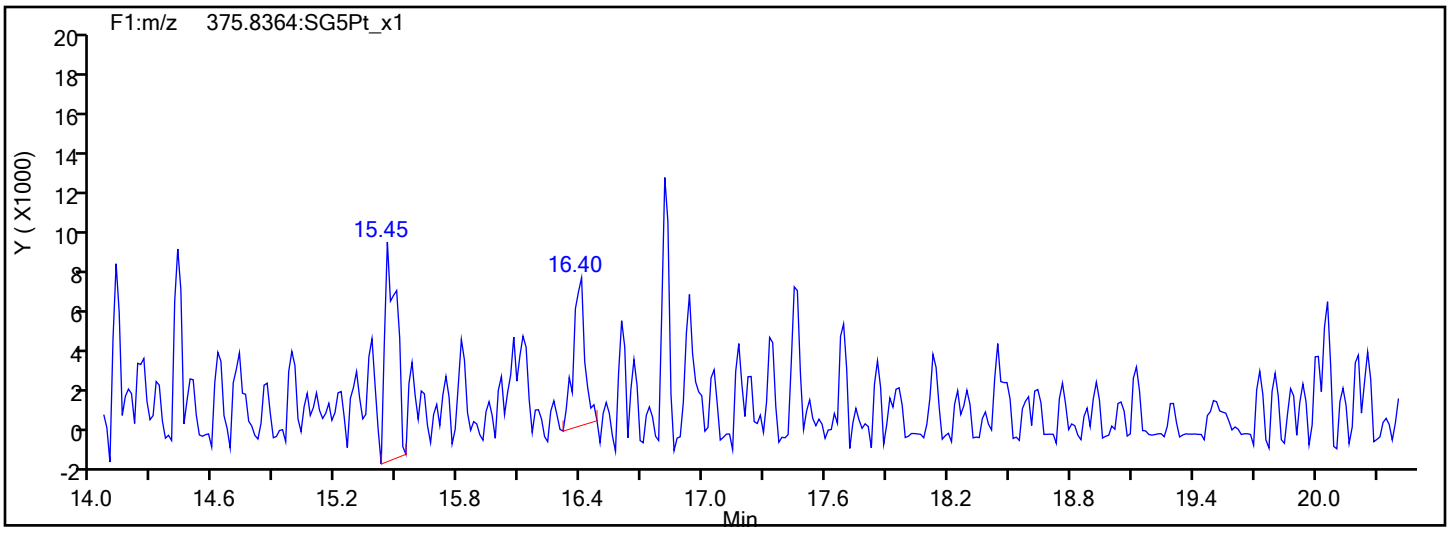
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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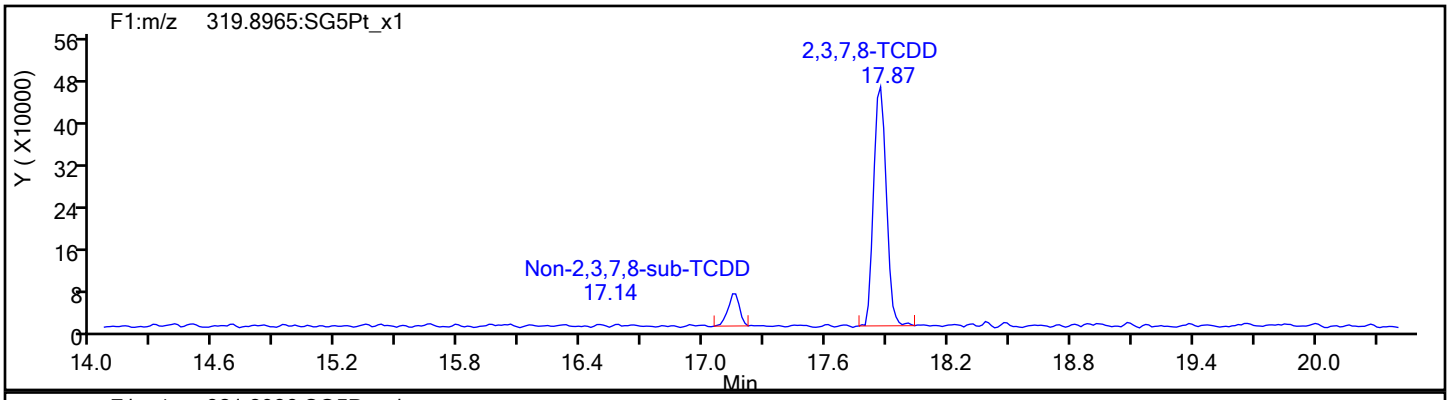
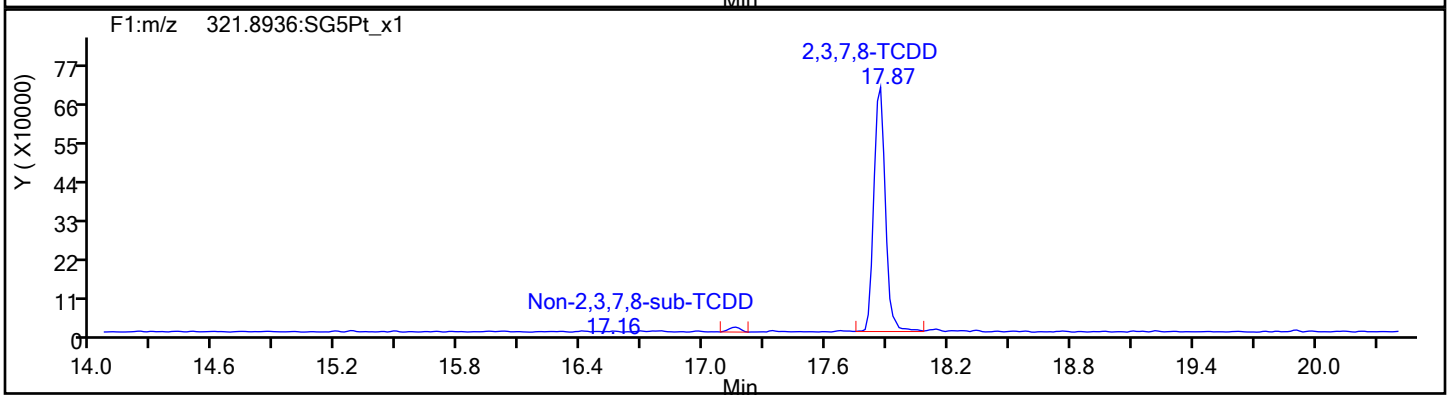
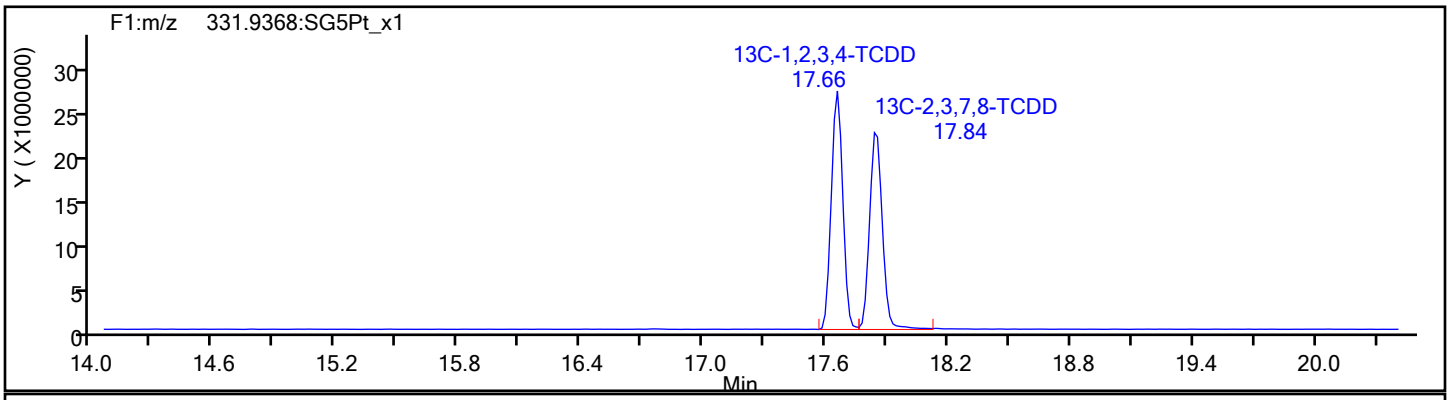
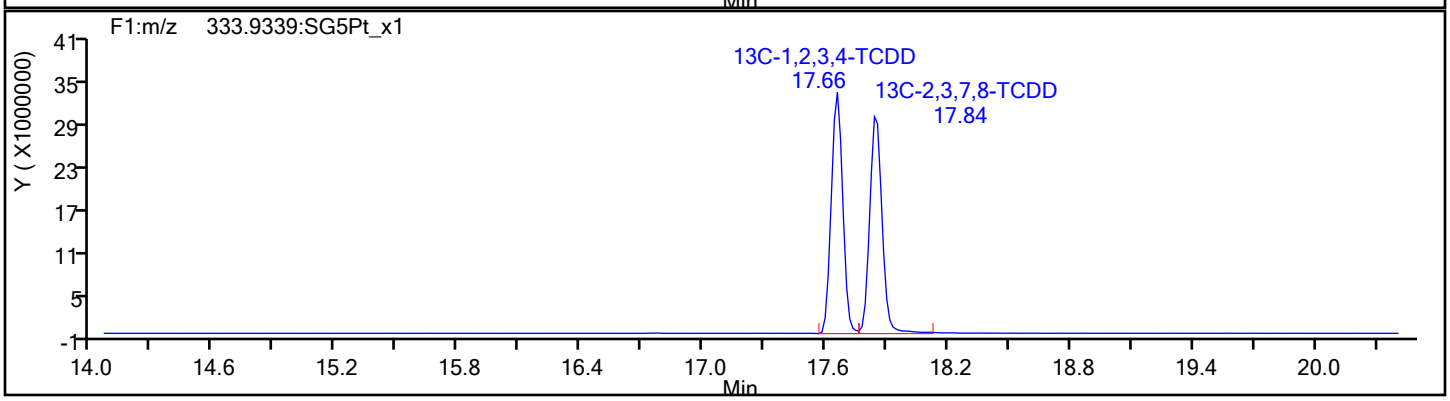
TCDD





TCDD Standards





Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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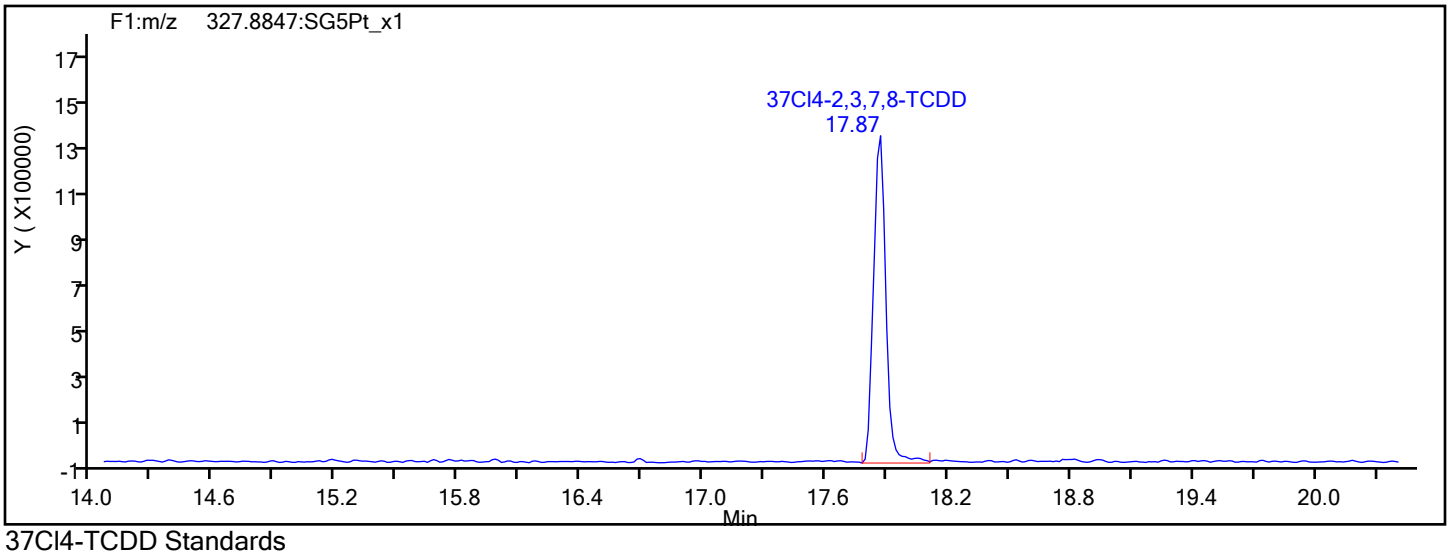
37Cl4-TCDD



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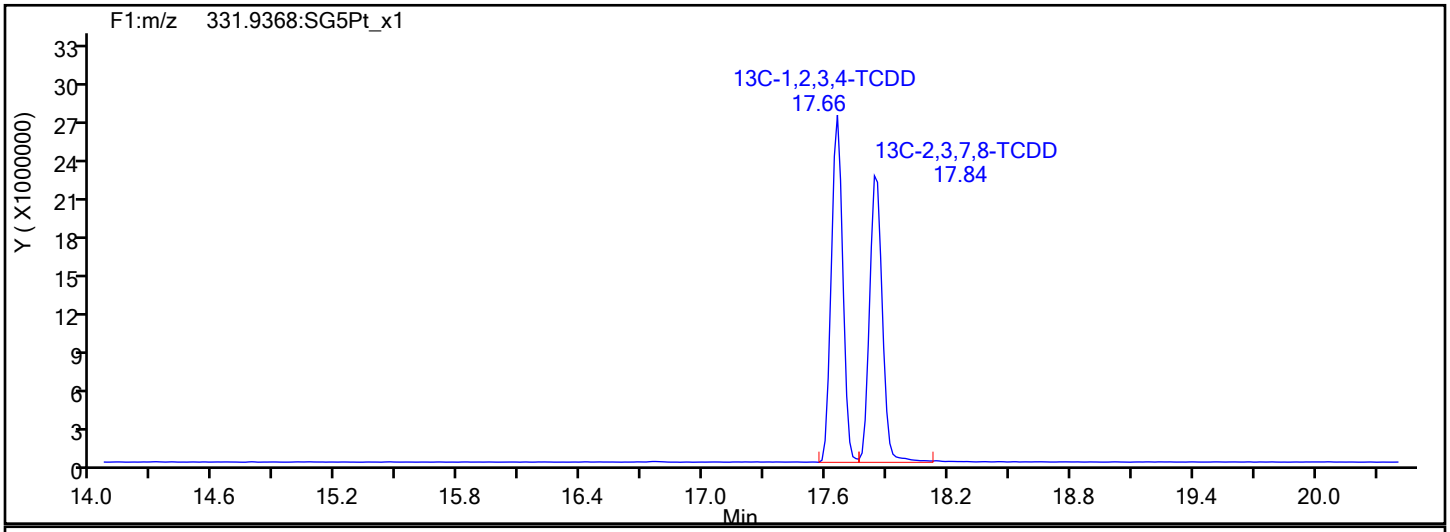

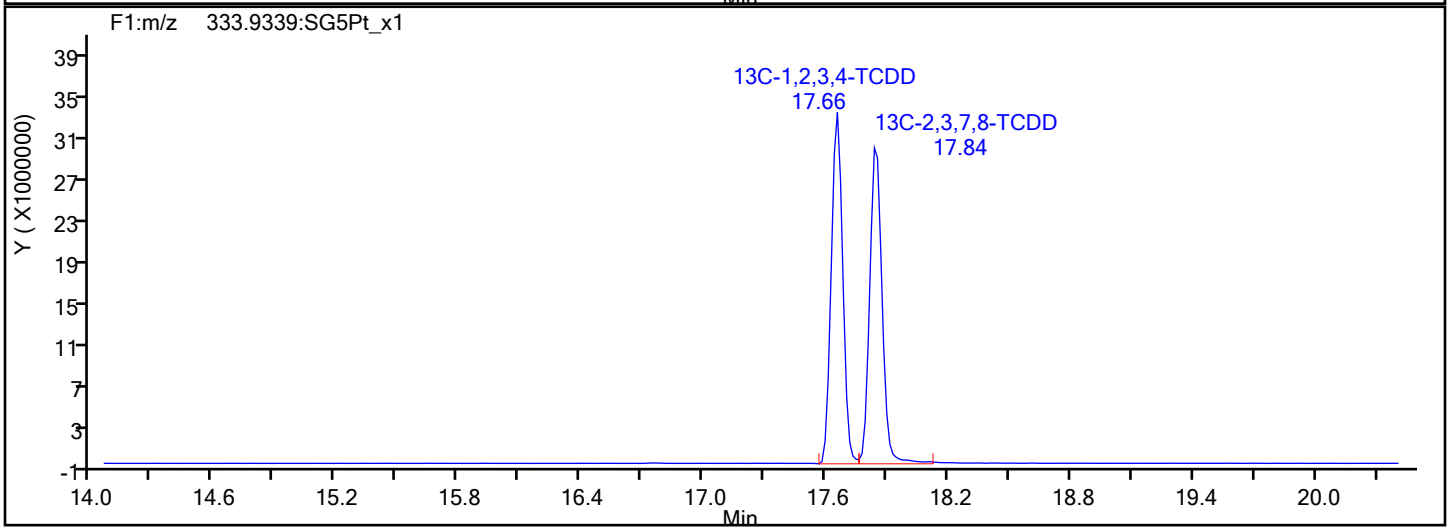

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Eurofins TestAmerica, Sacramento

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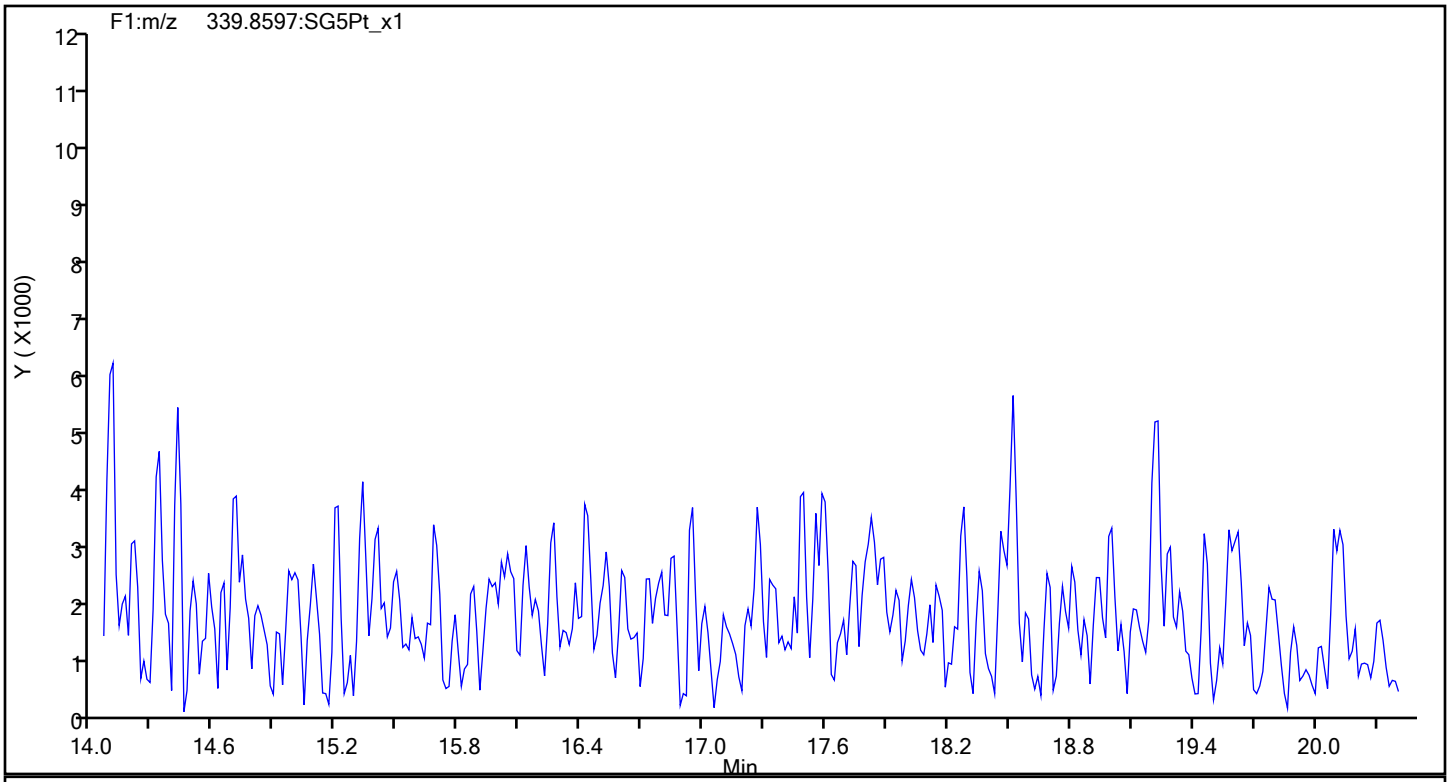
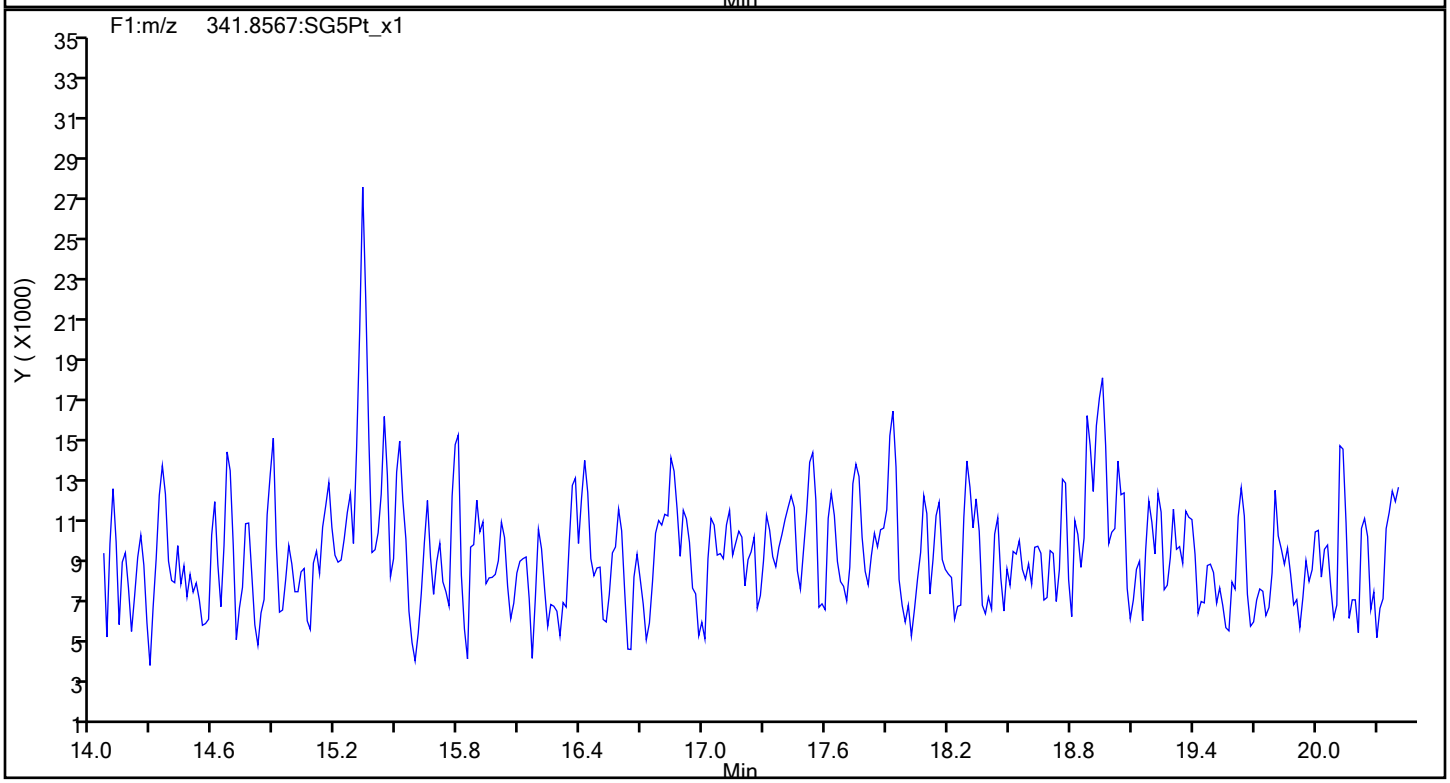
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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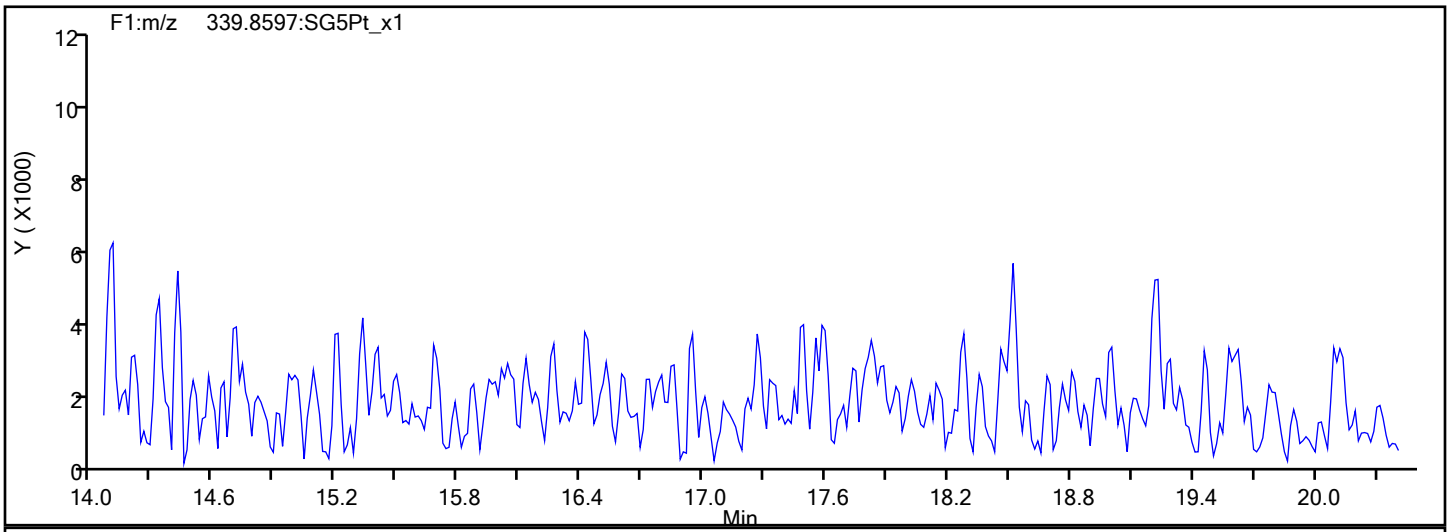
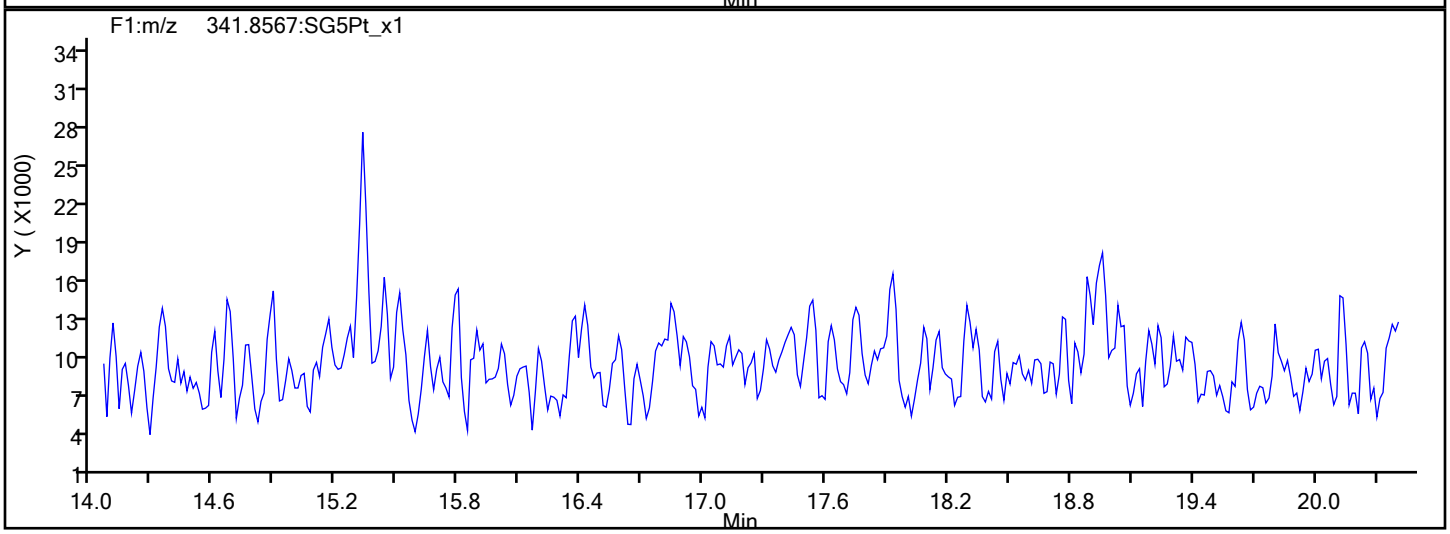
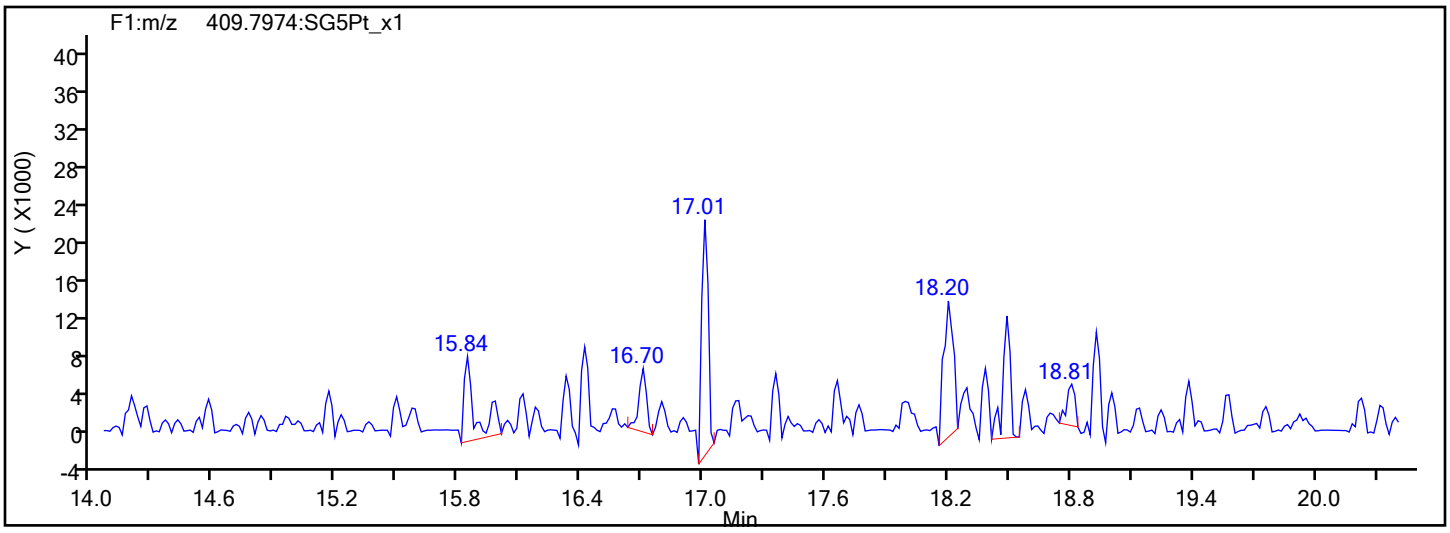
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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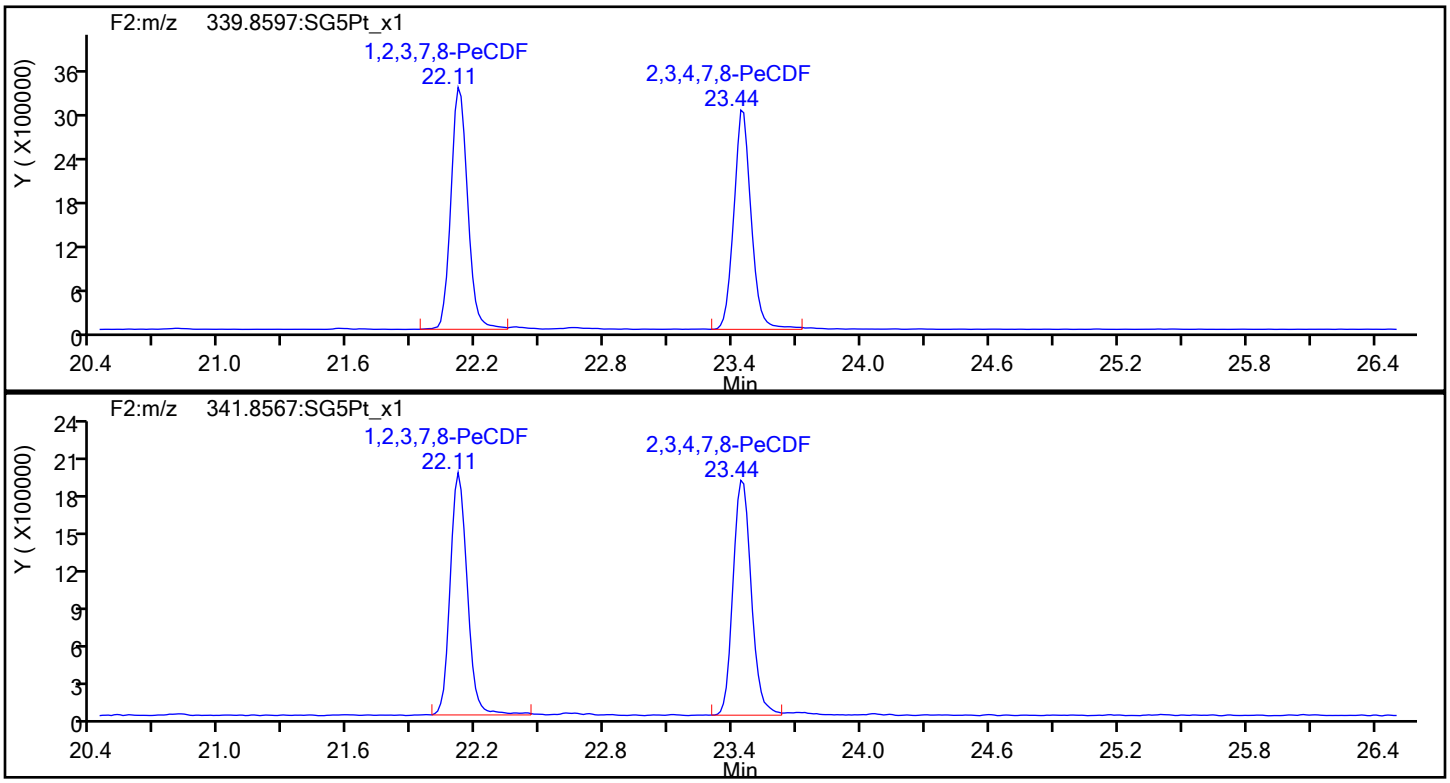
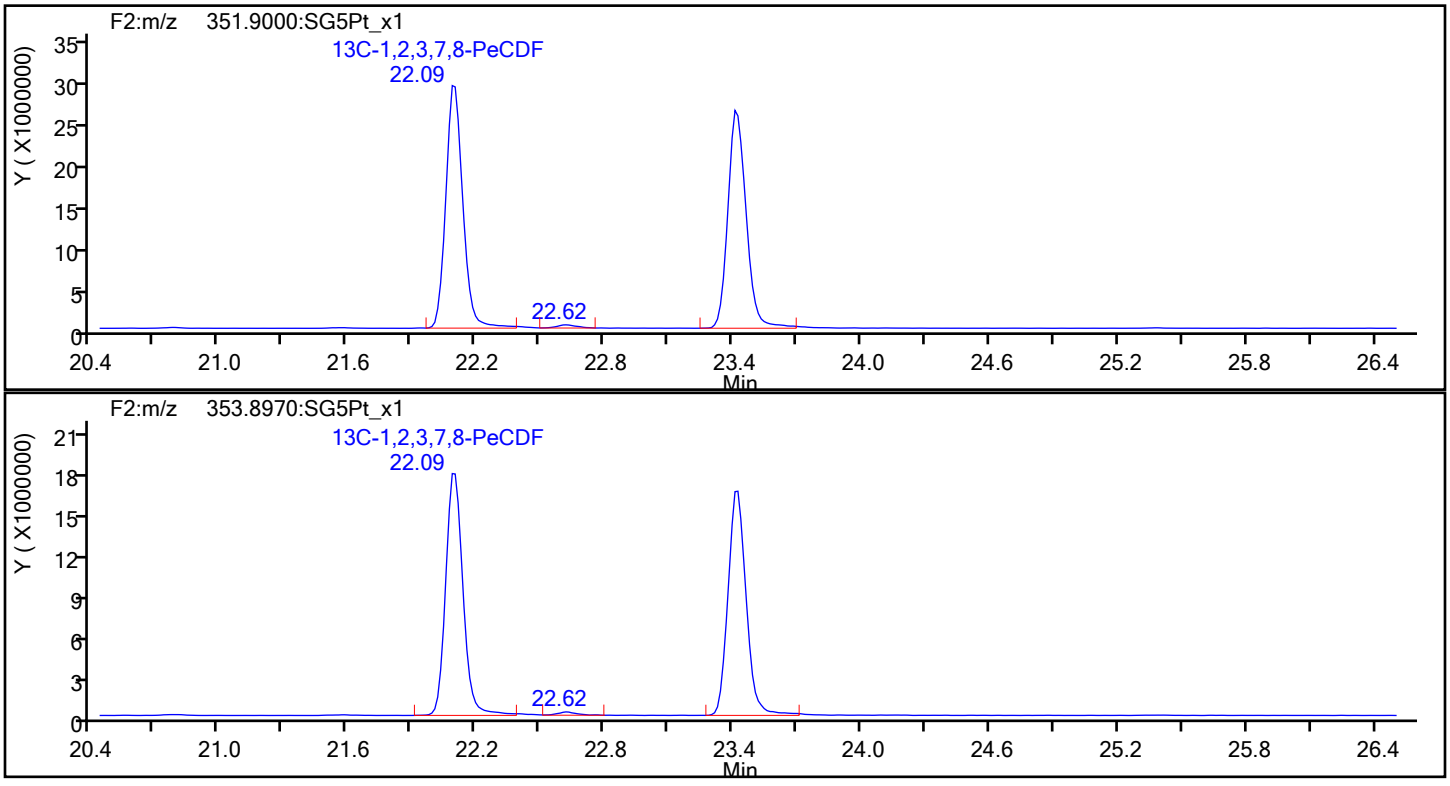
PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

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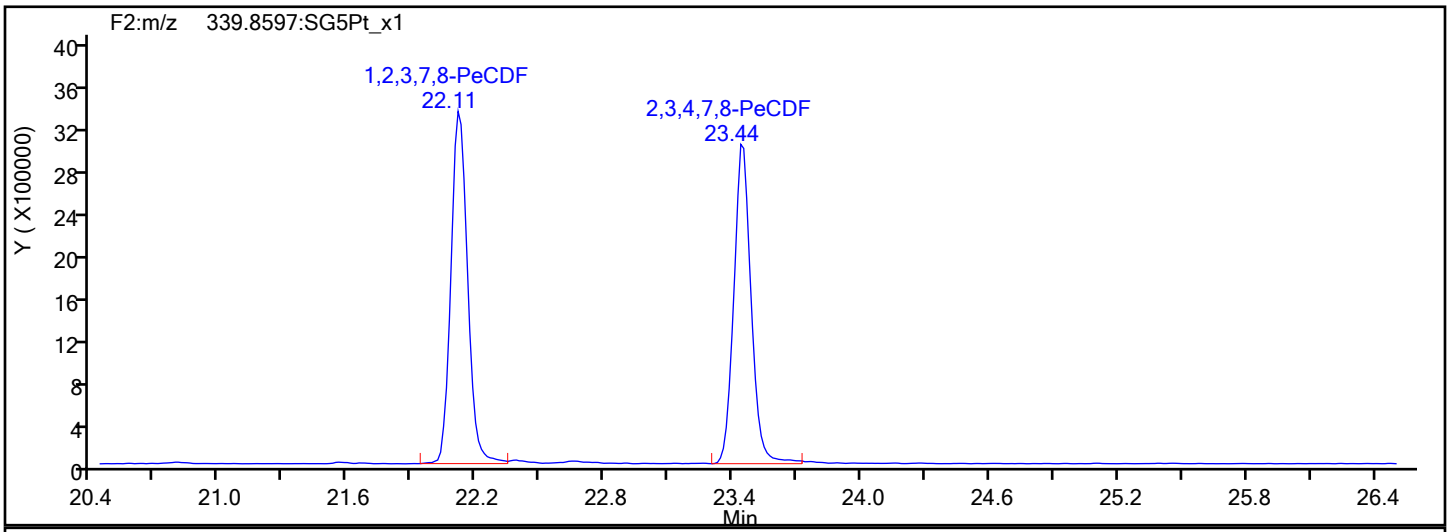
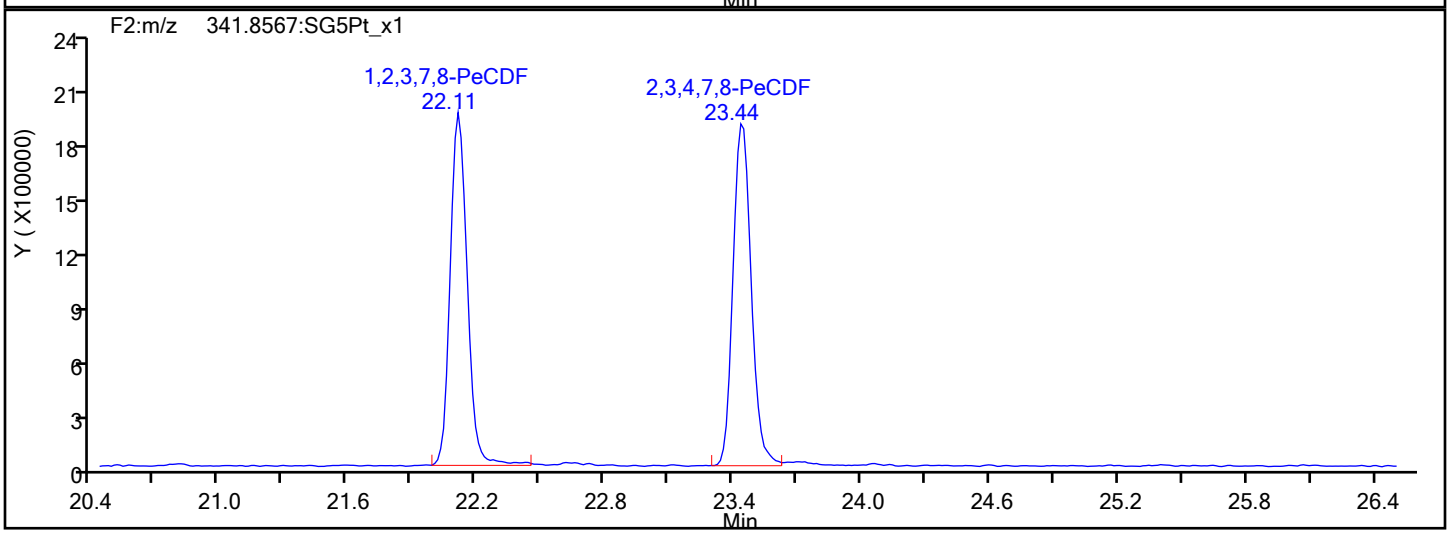
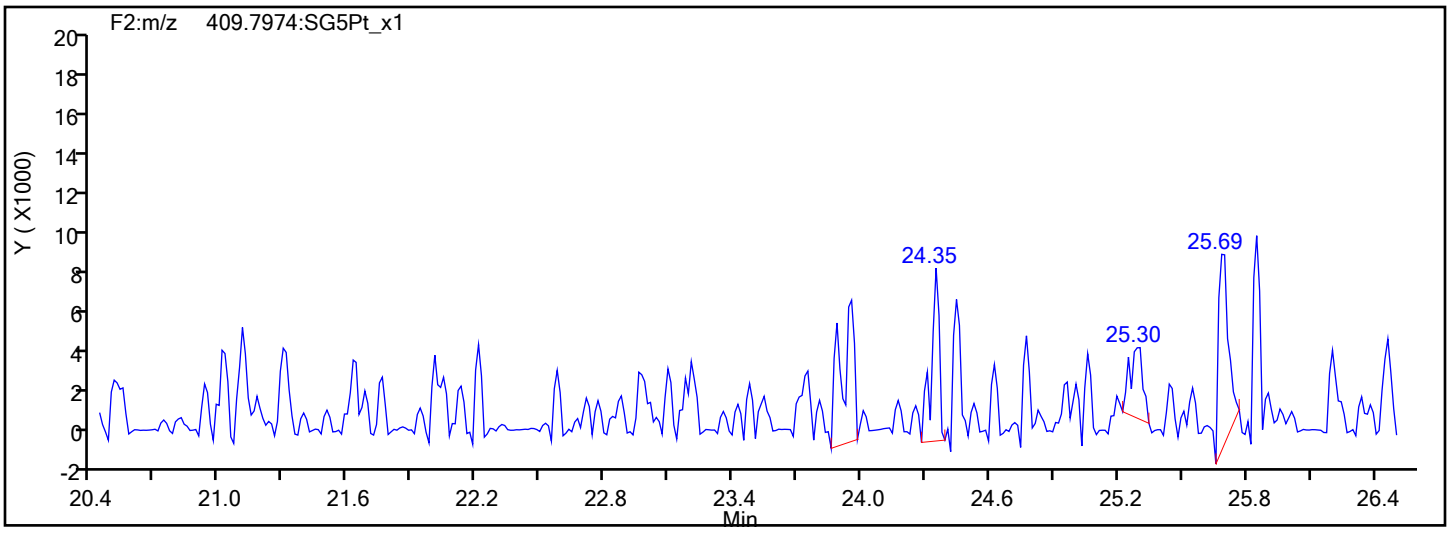
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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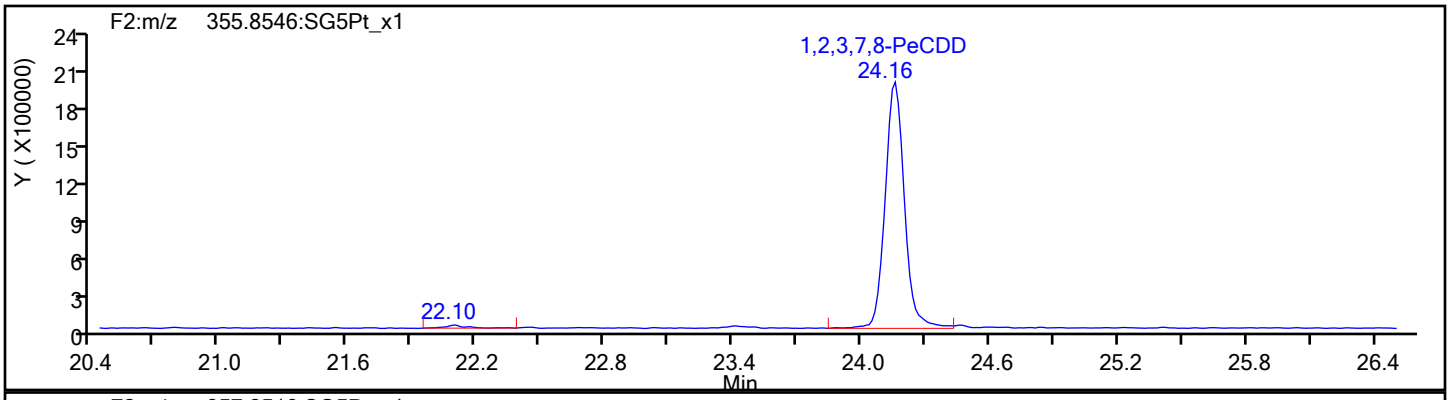
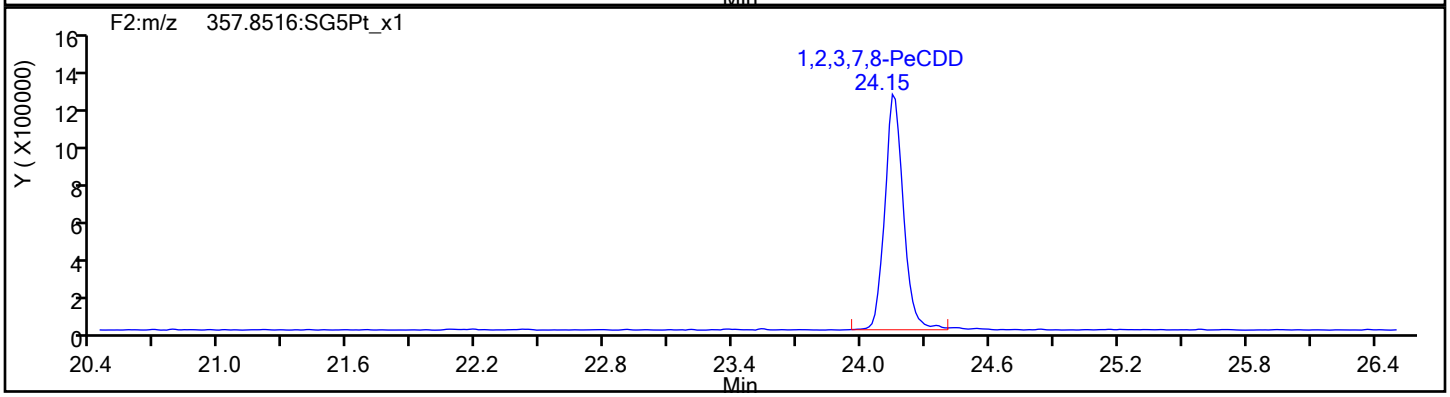
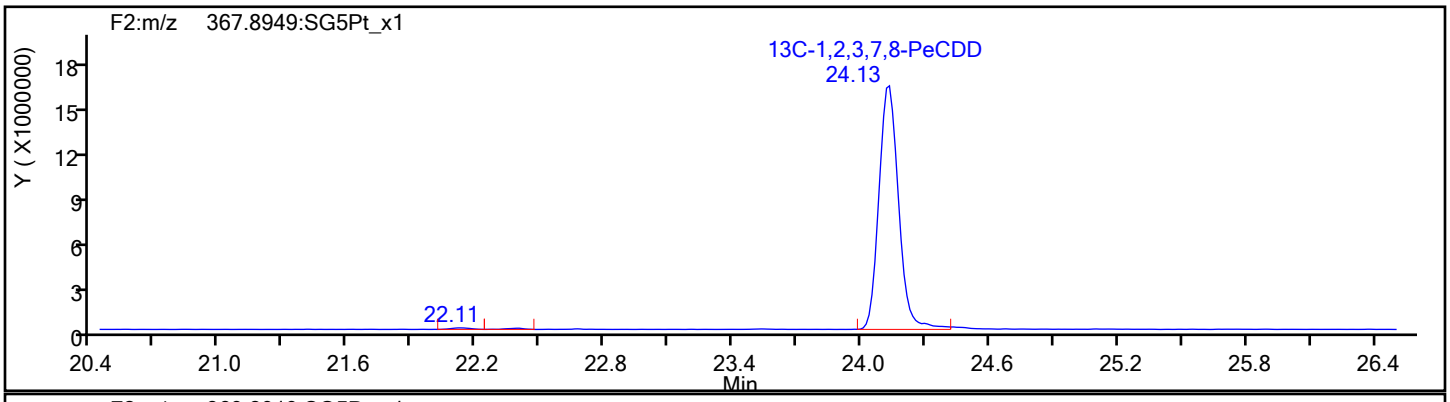
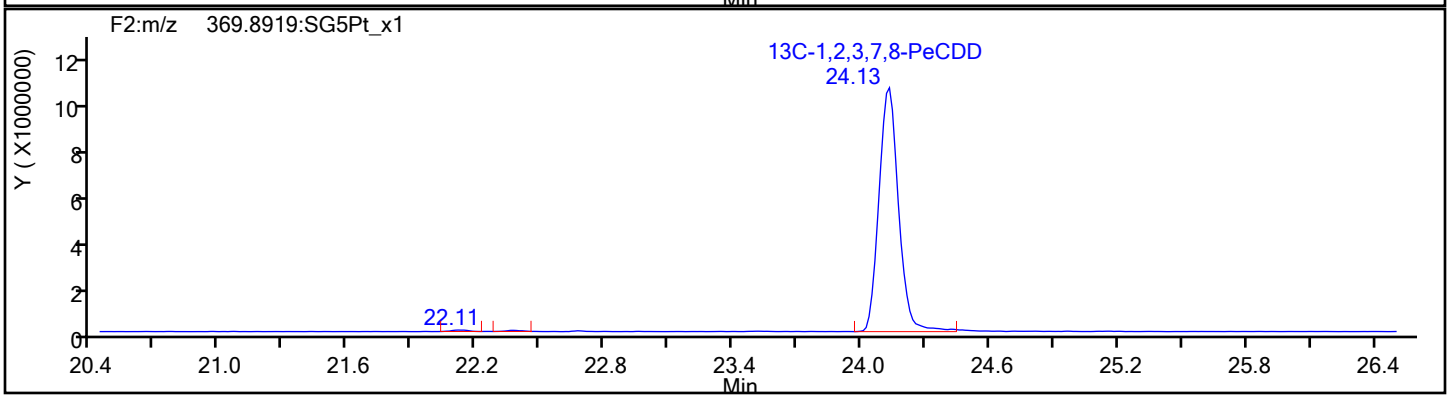




PeCDD Standards





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Eurofins TestAmerica, Sacramento

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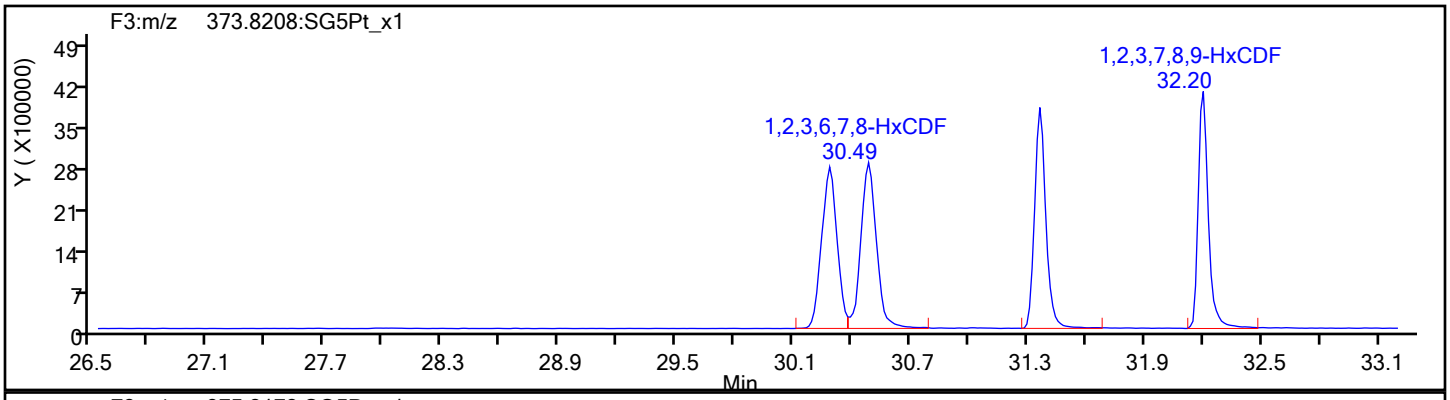
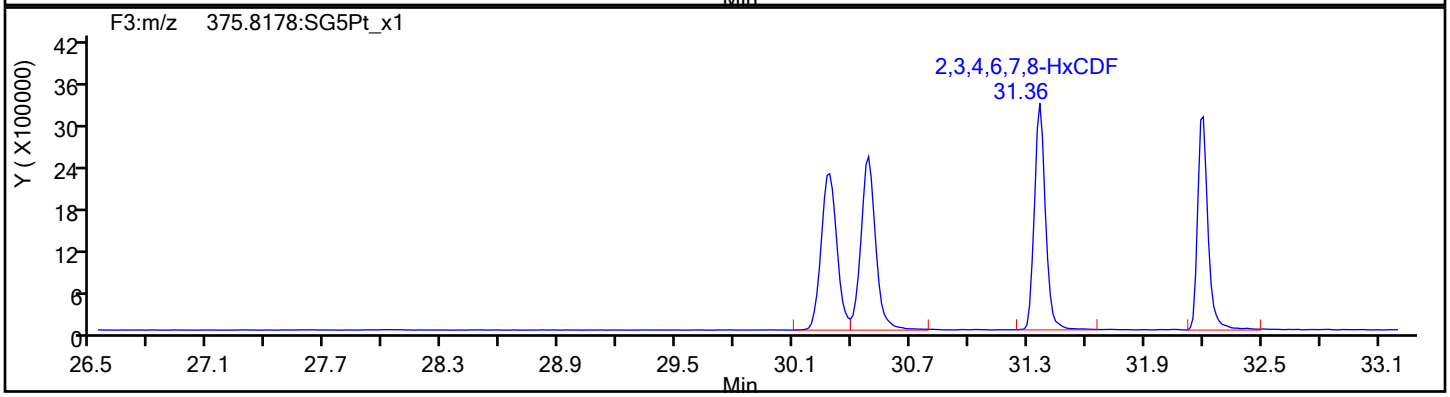
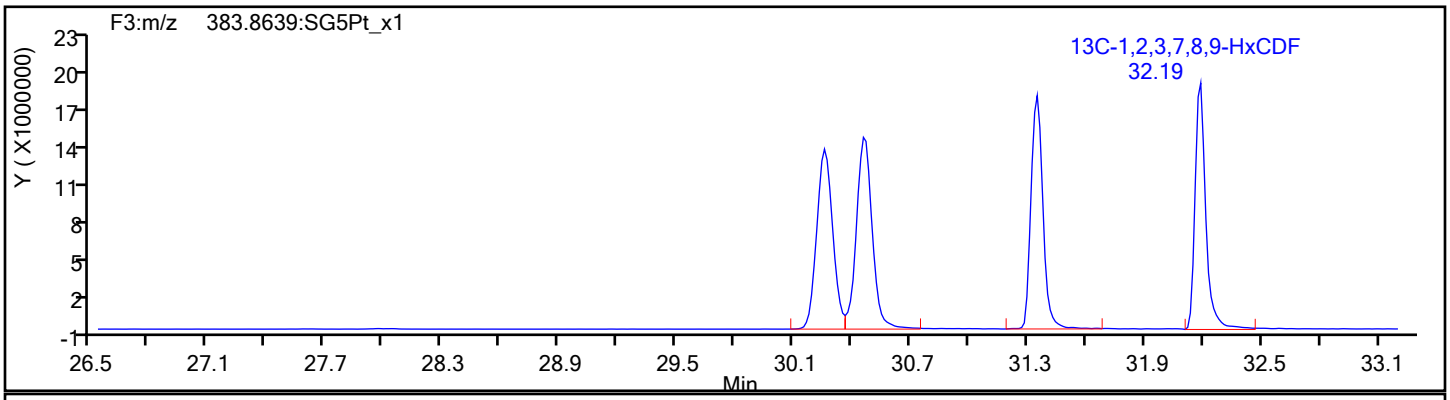
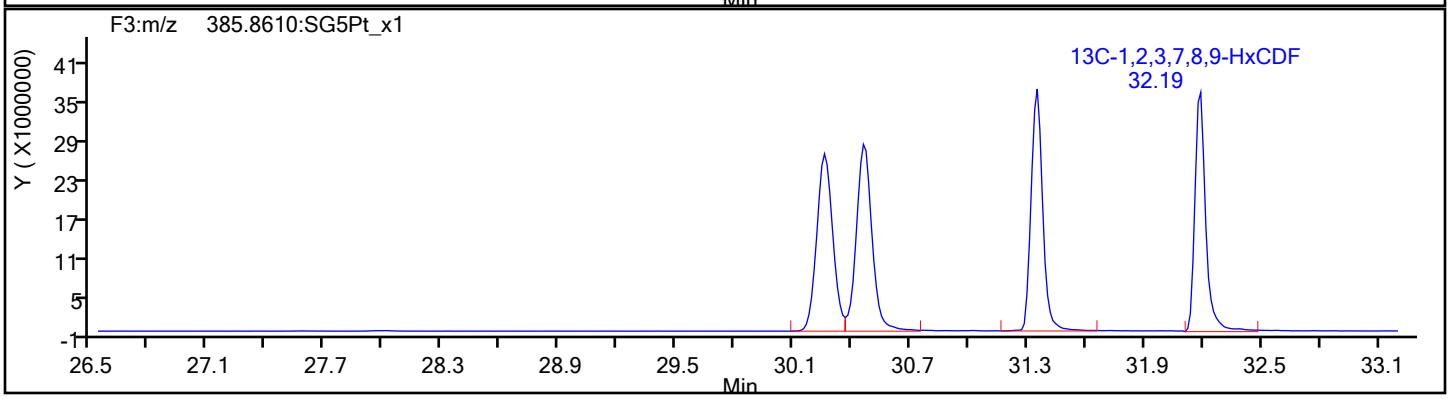
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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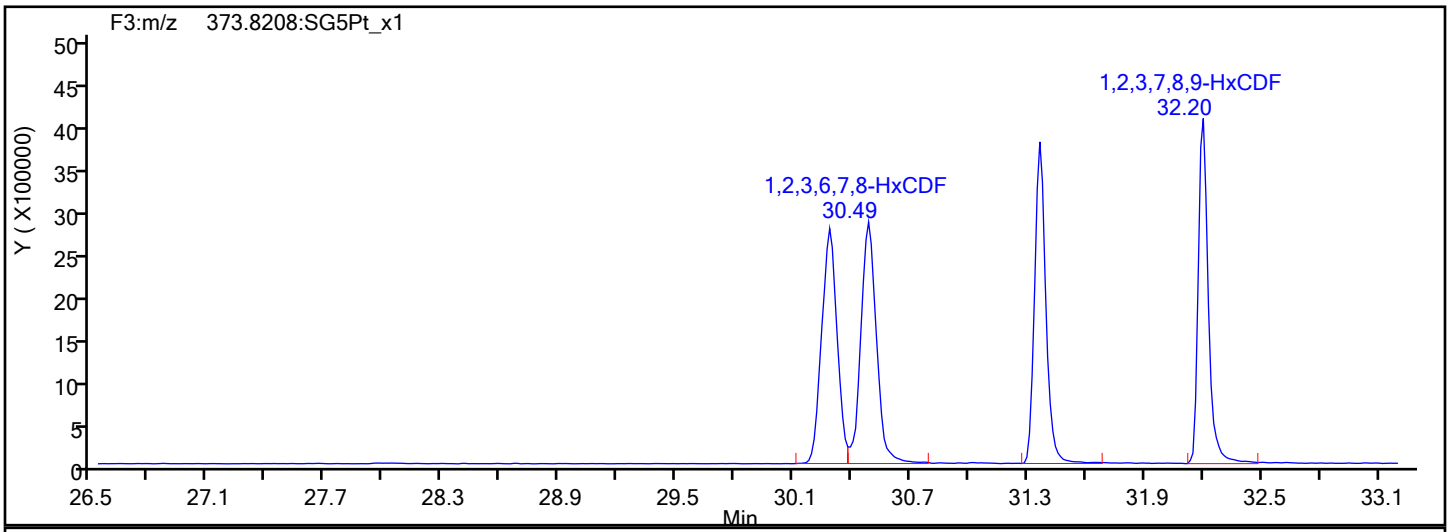
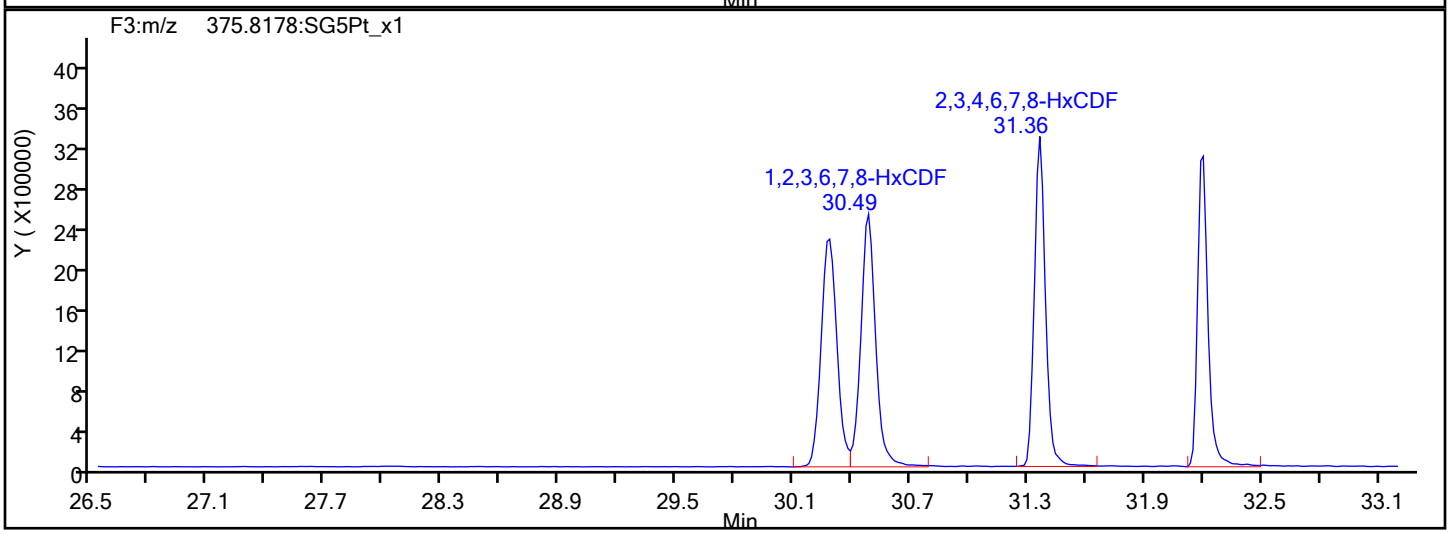
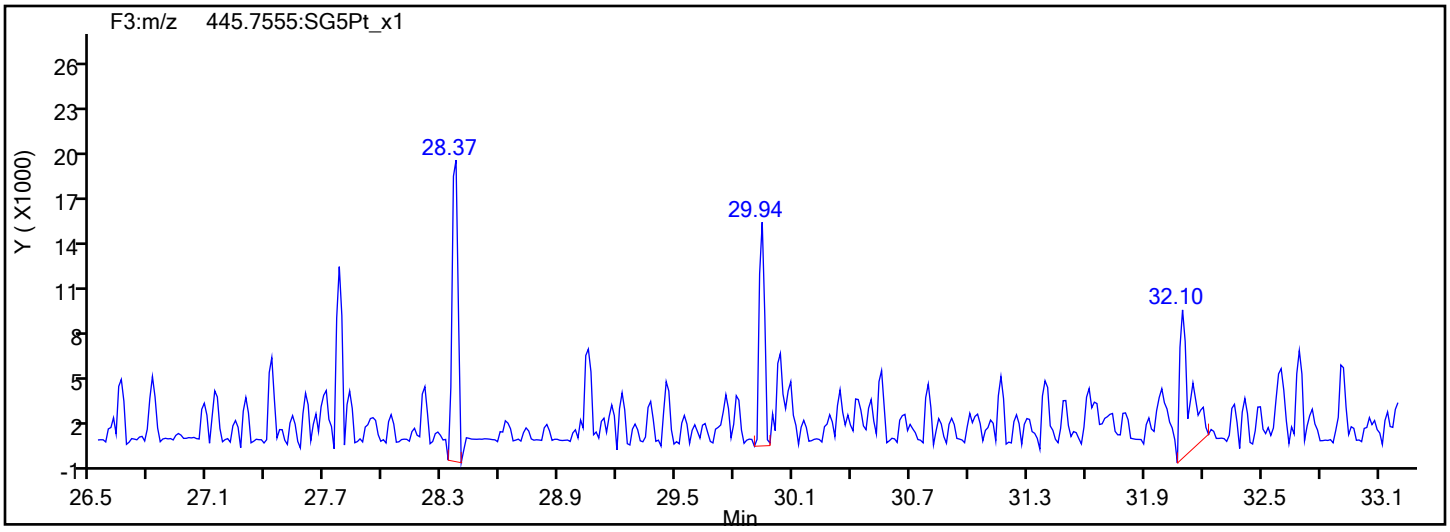




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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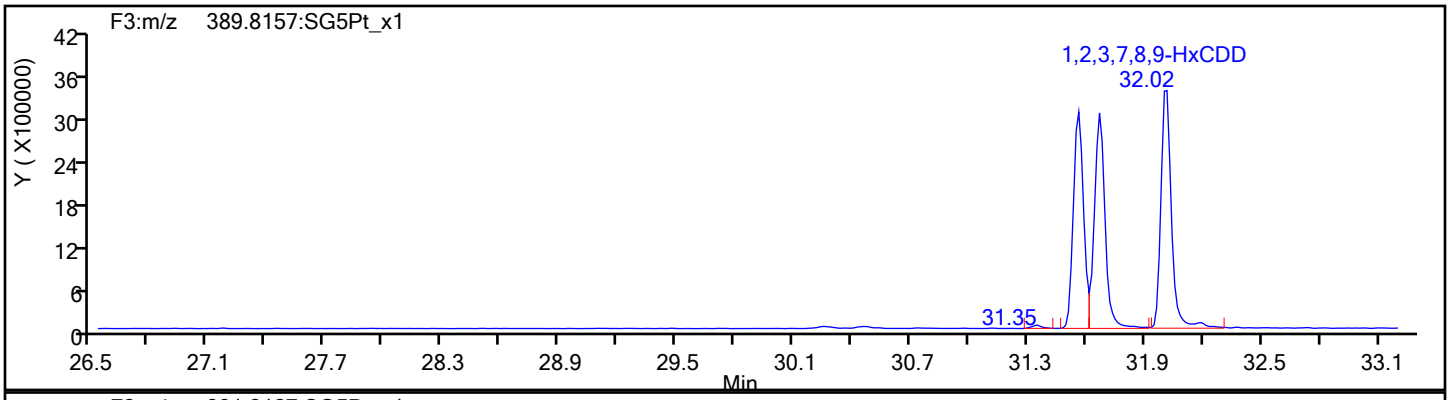
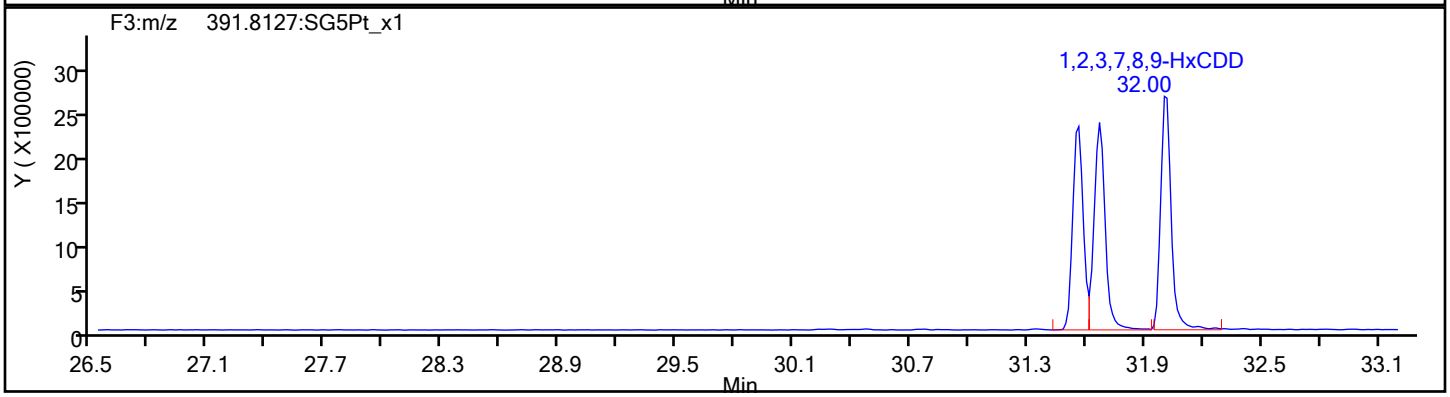
HxCDD





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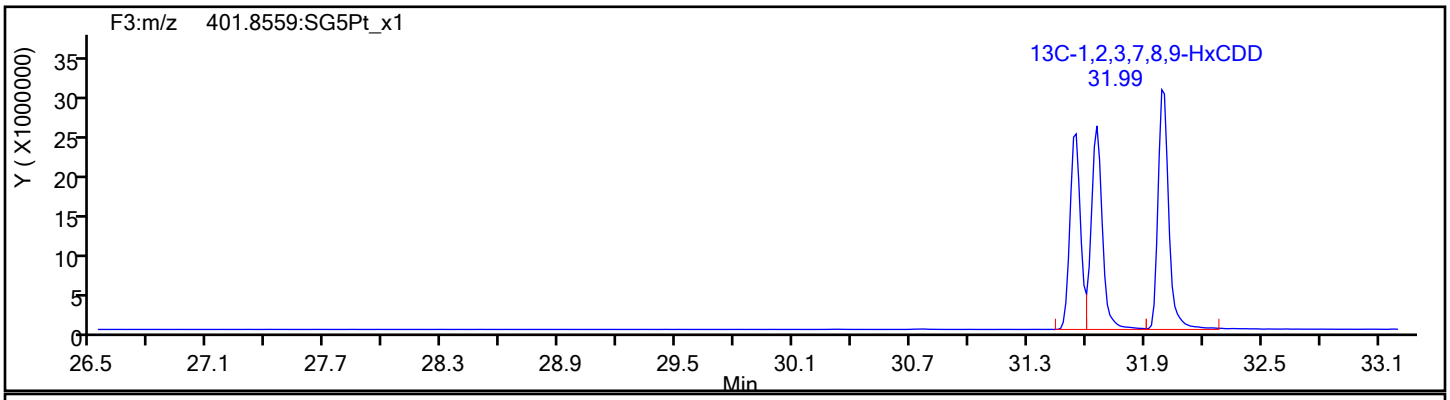

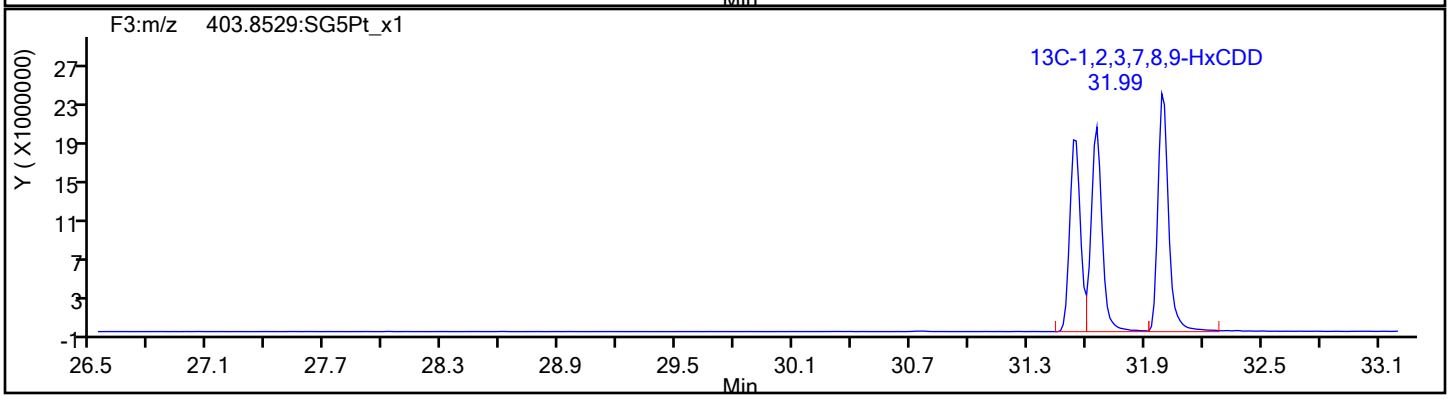

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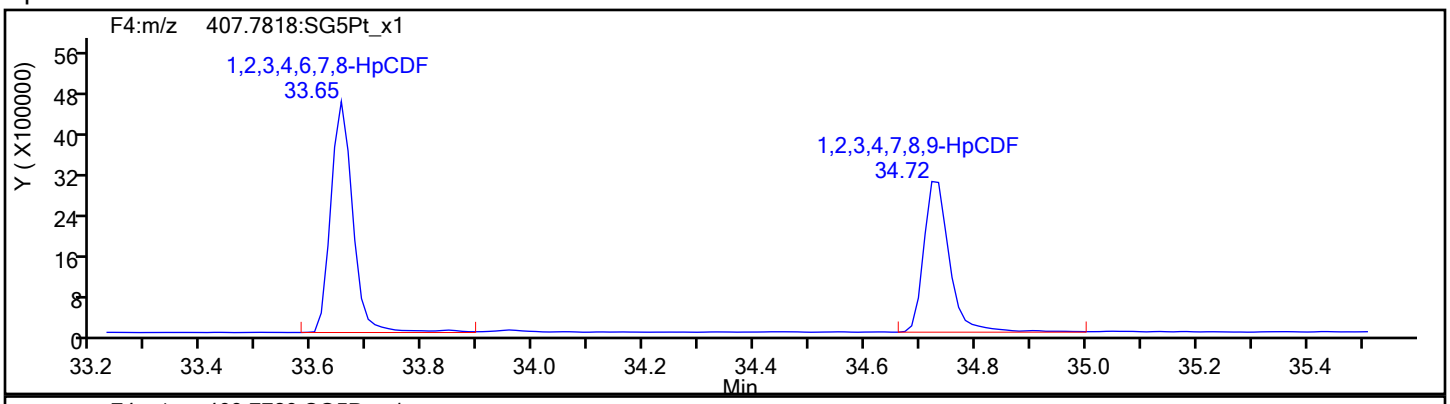
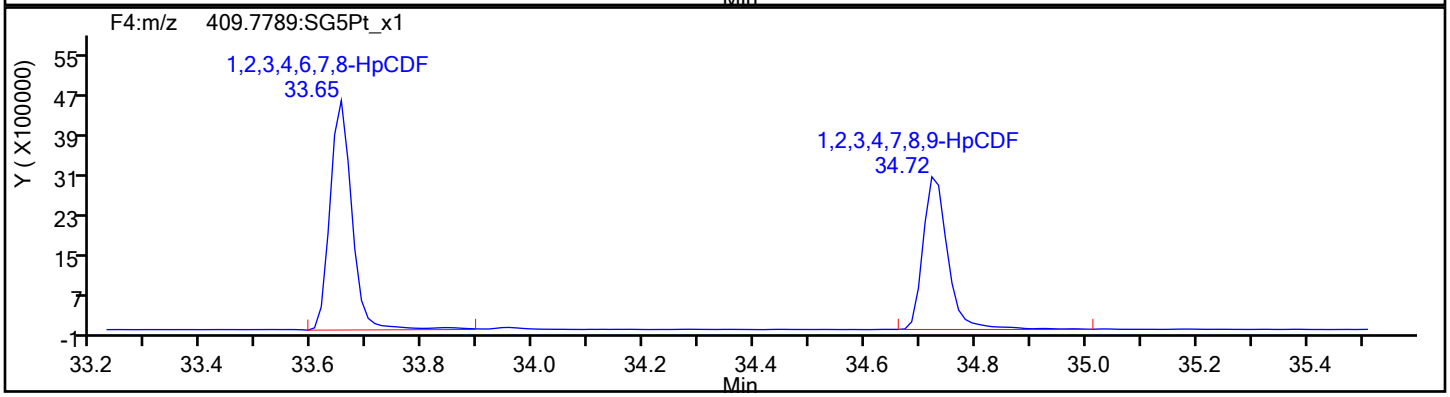
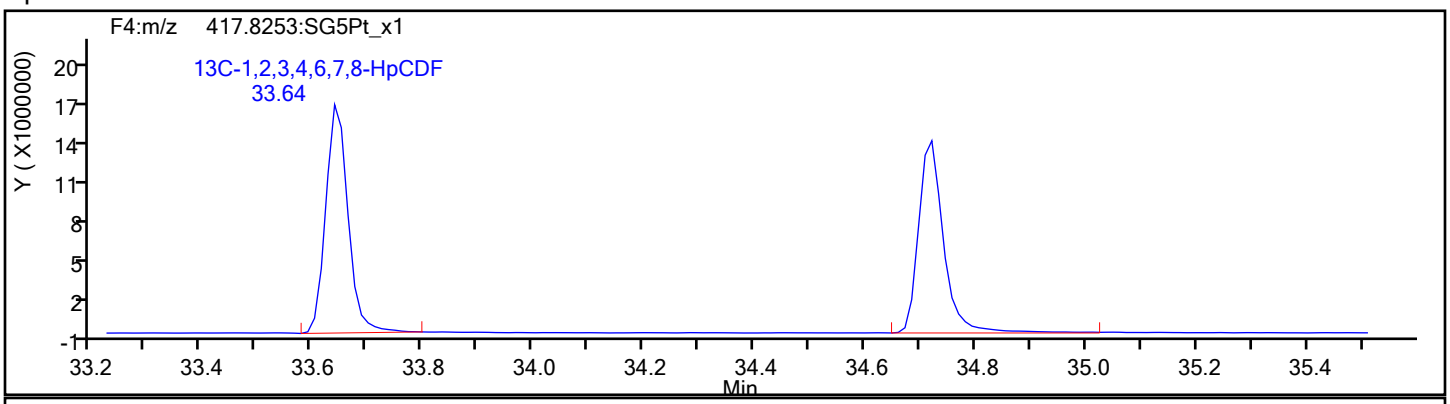
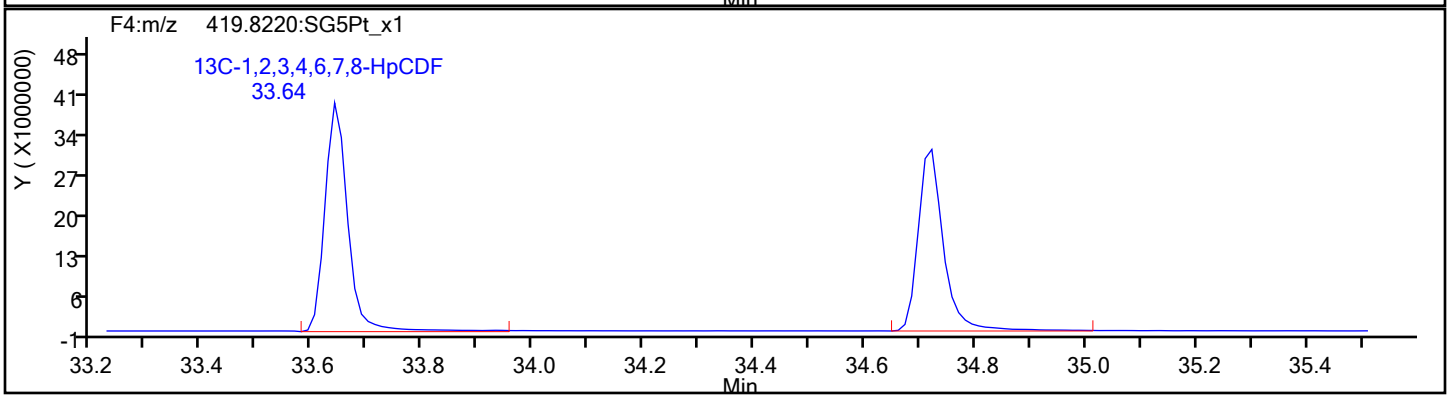
HpCDF





HpCDF Standards





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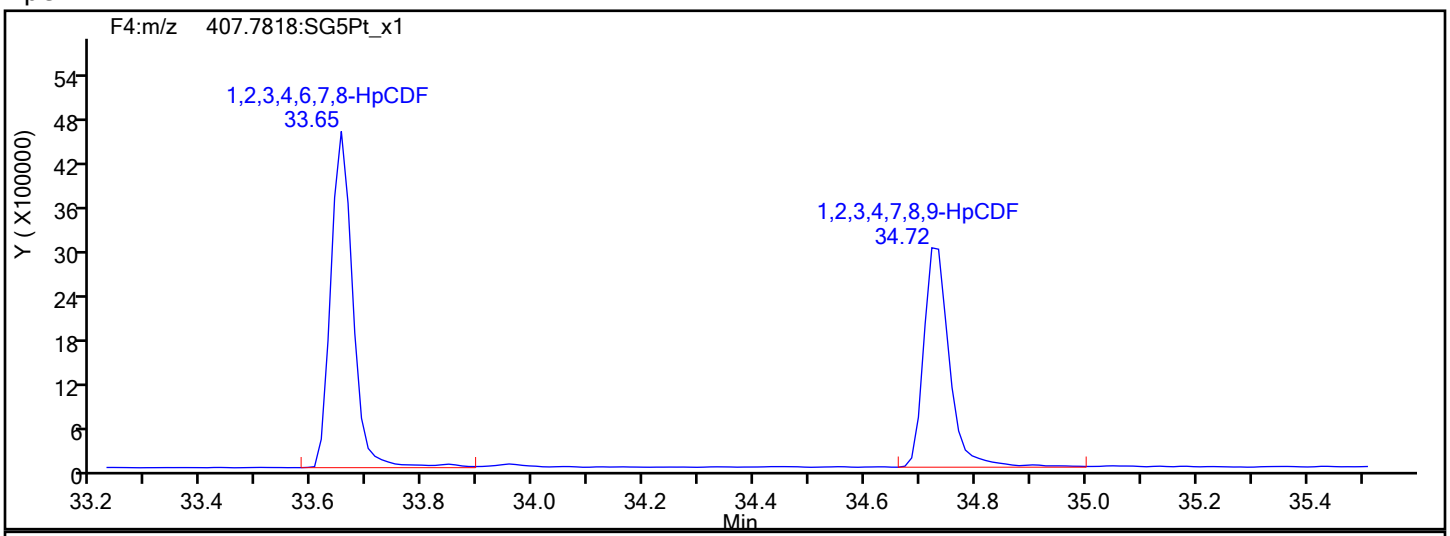
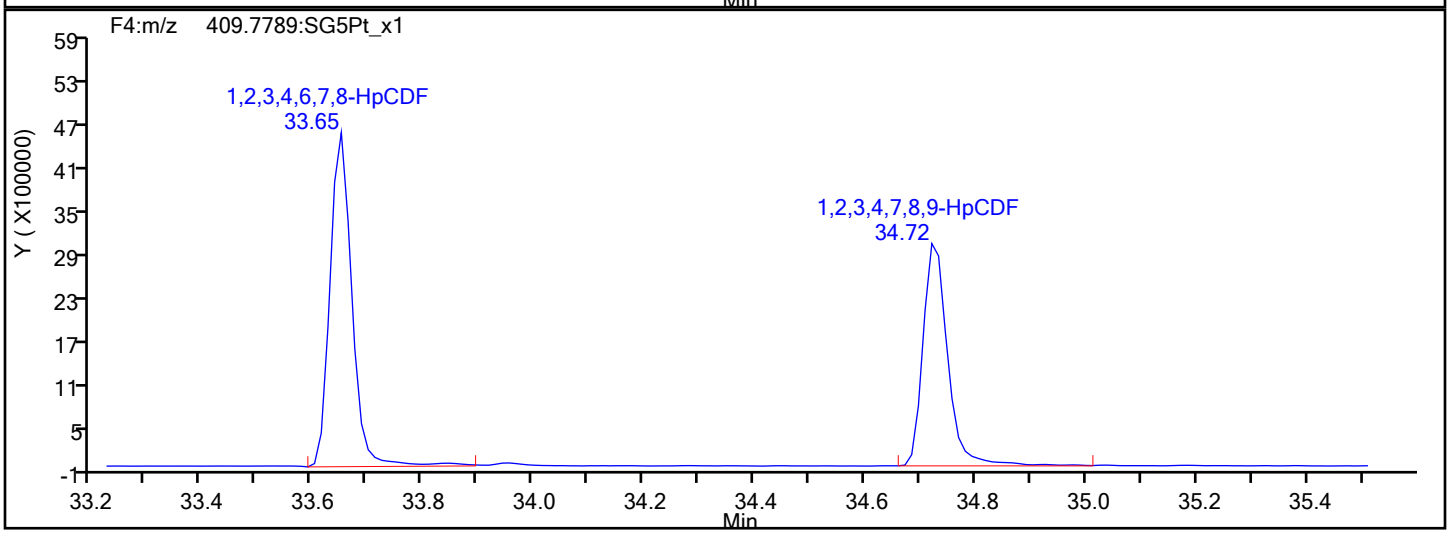
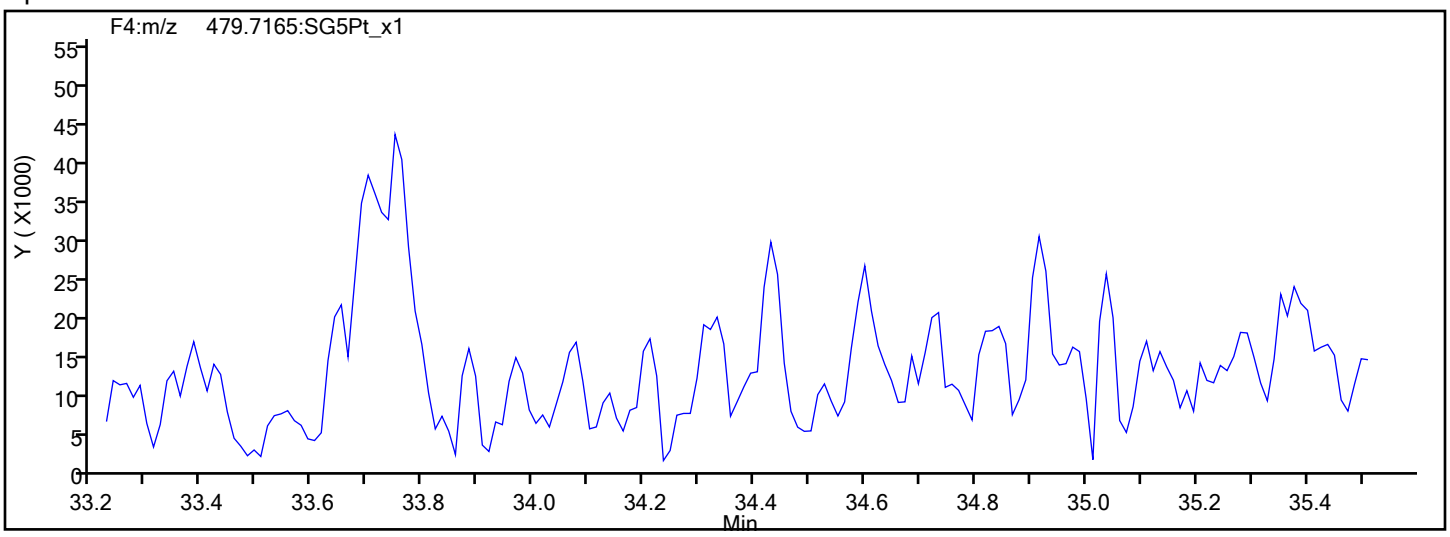




HpCDF Interference Mass

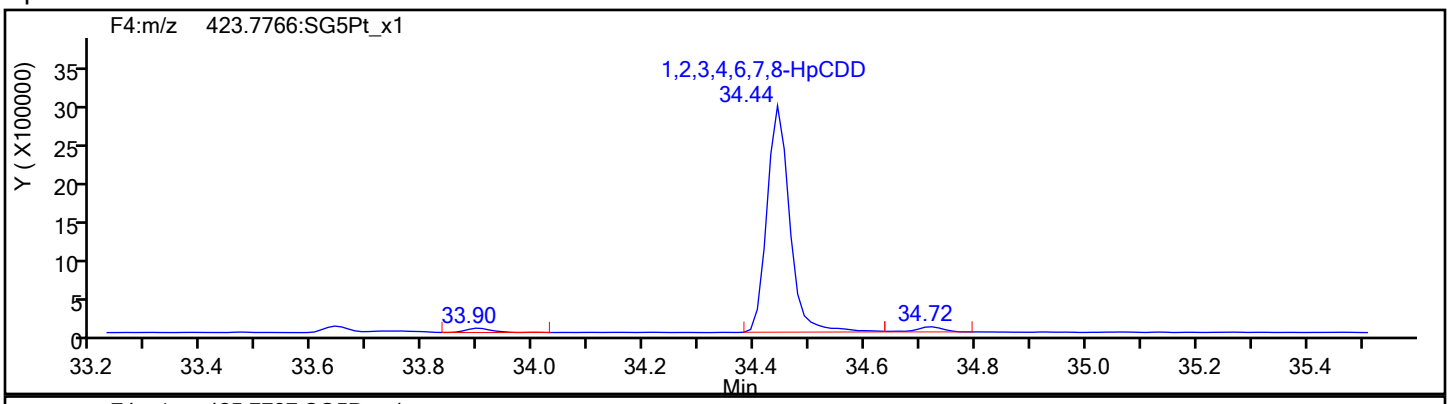


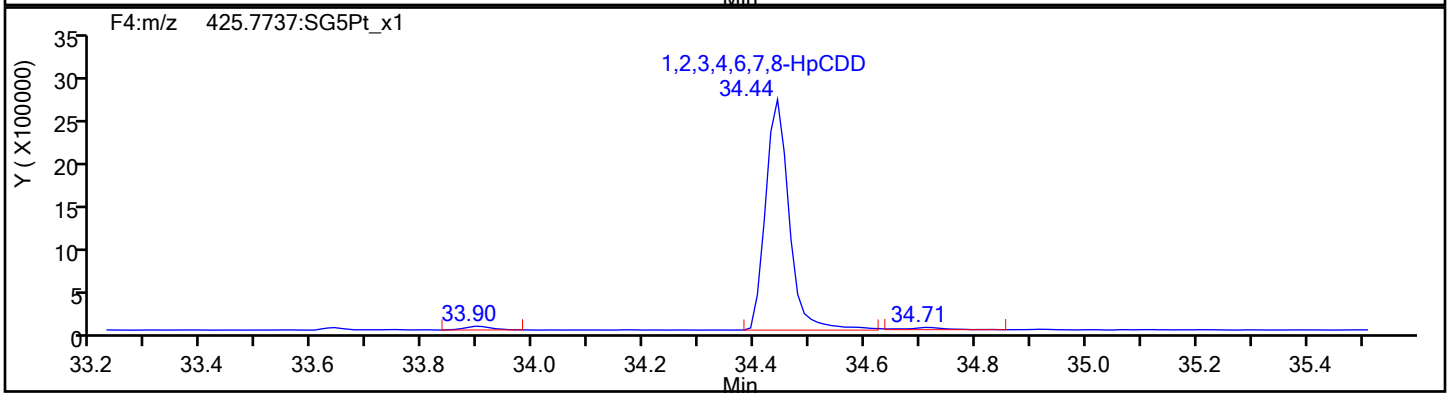
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

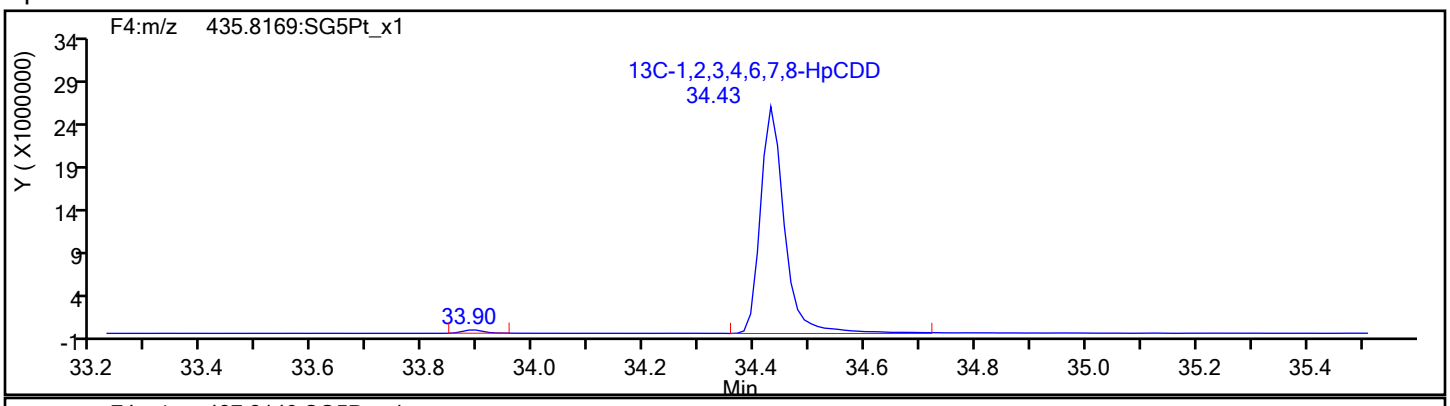
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

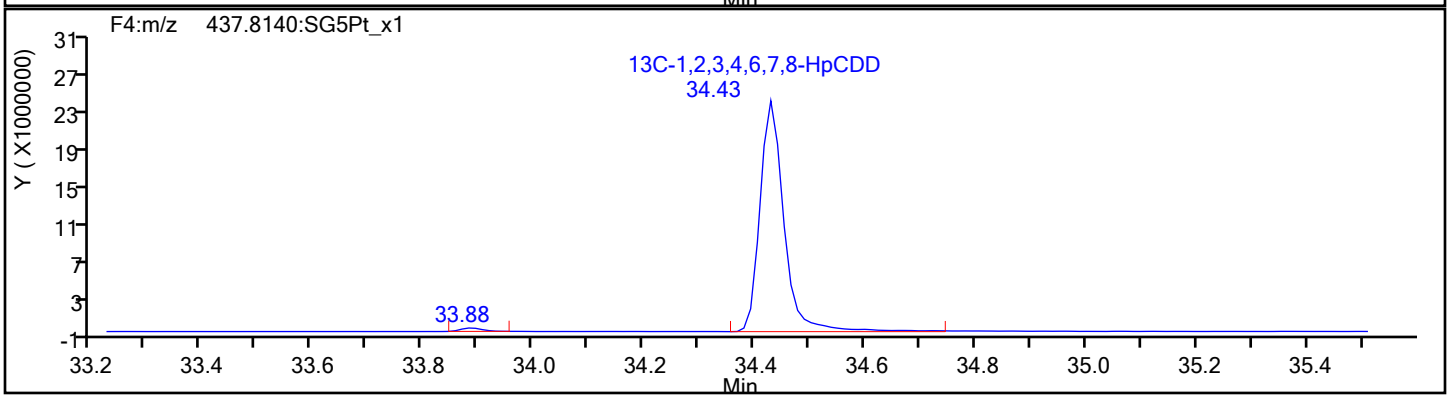
HpCDD





HpCDD Standards



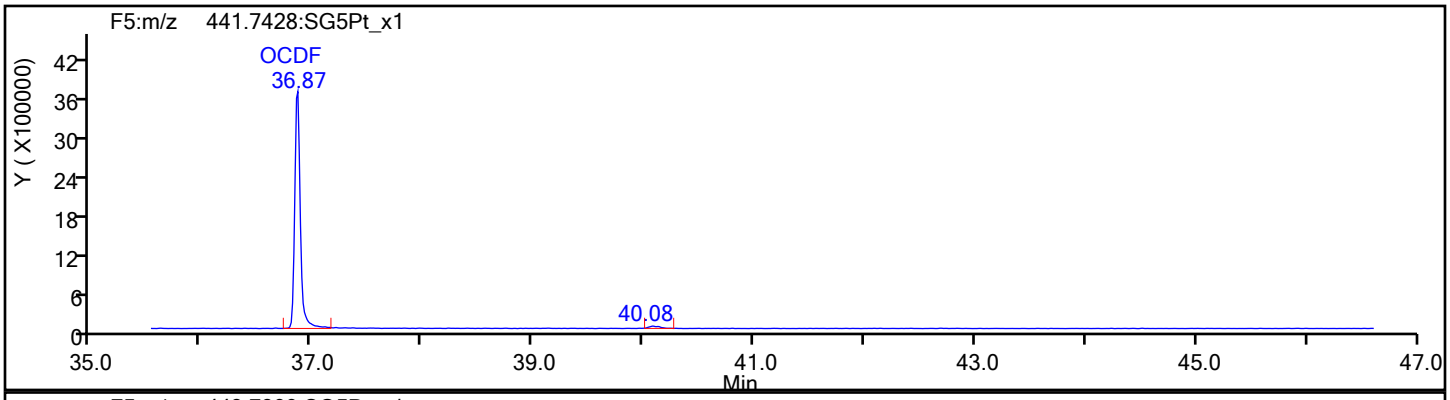


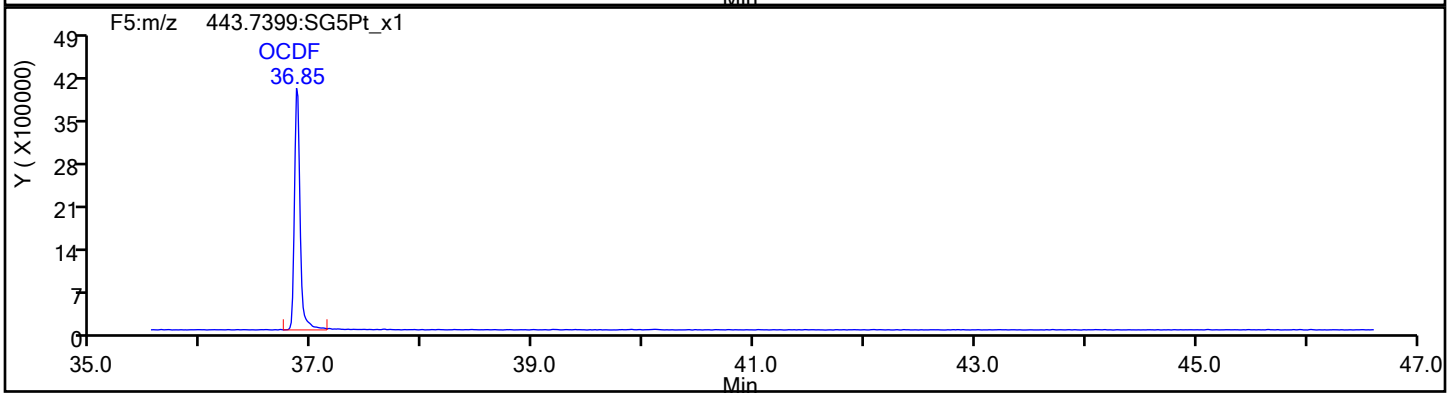
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

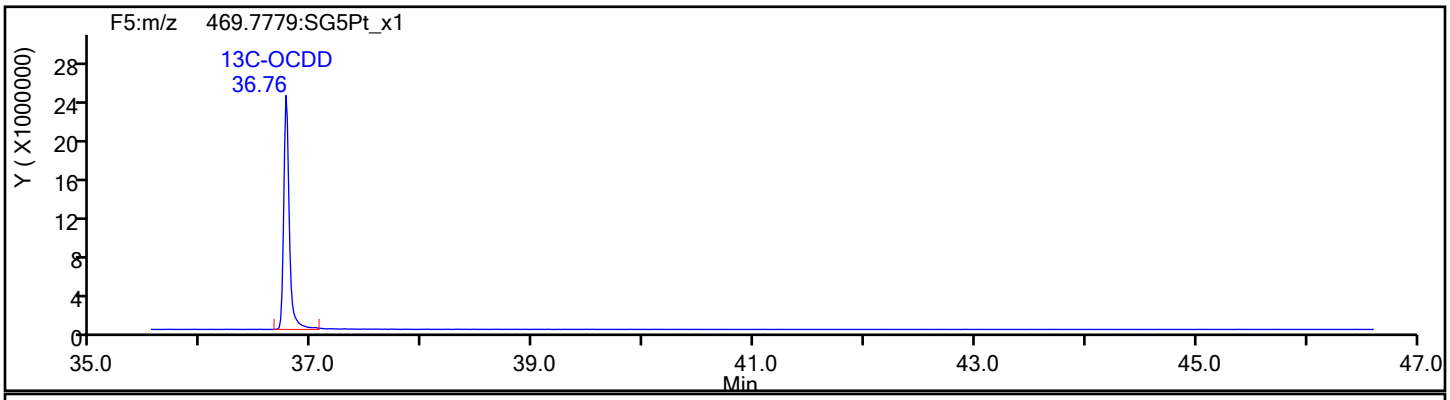
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

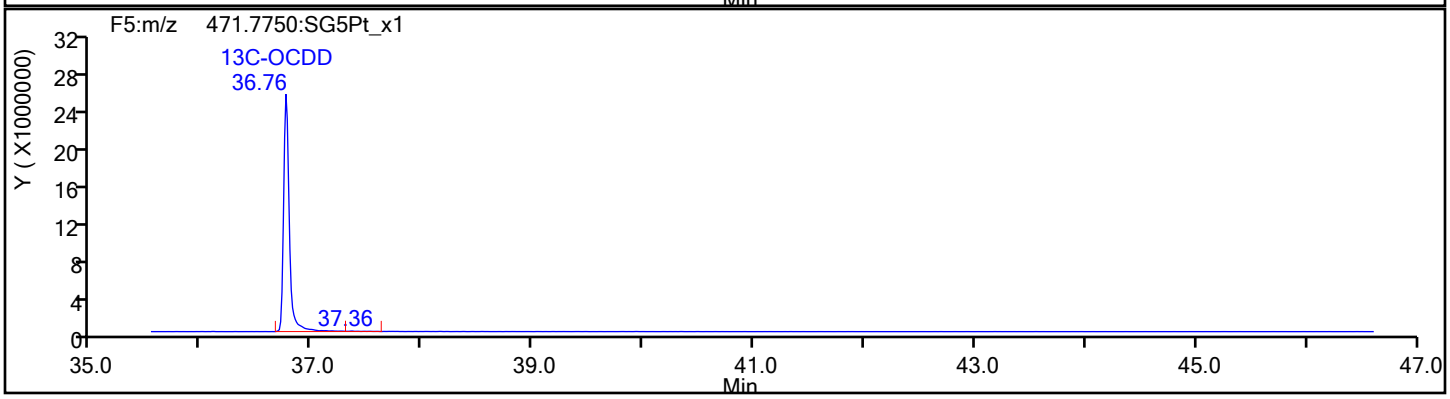
OCDF





OCDF Standards



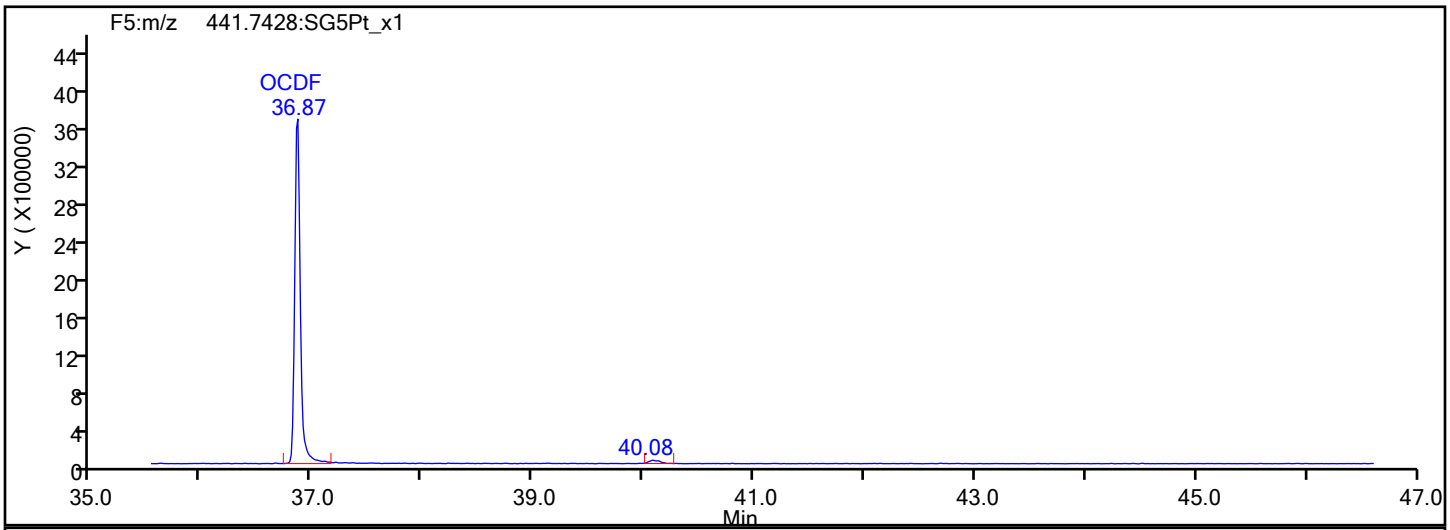


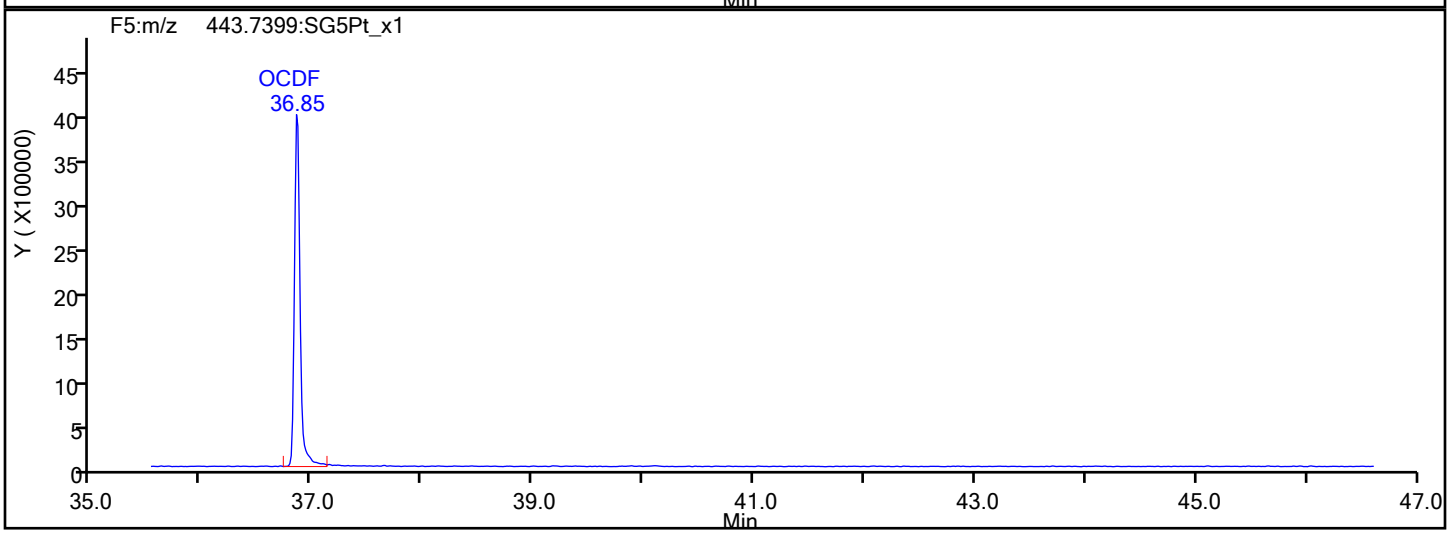
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

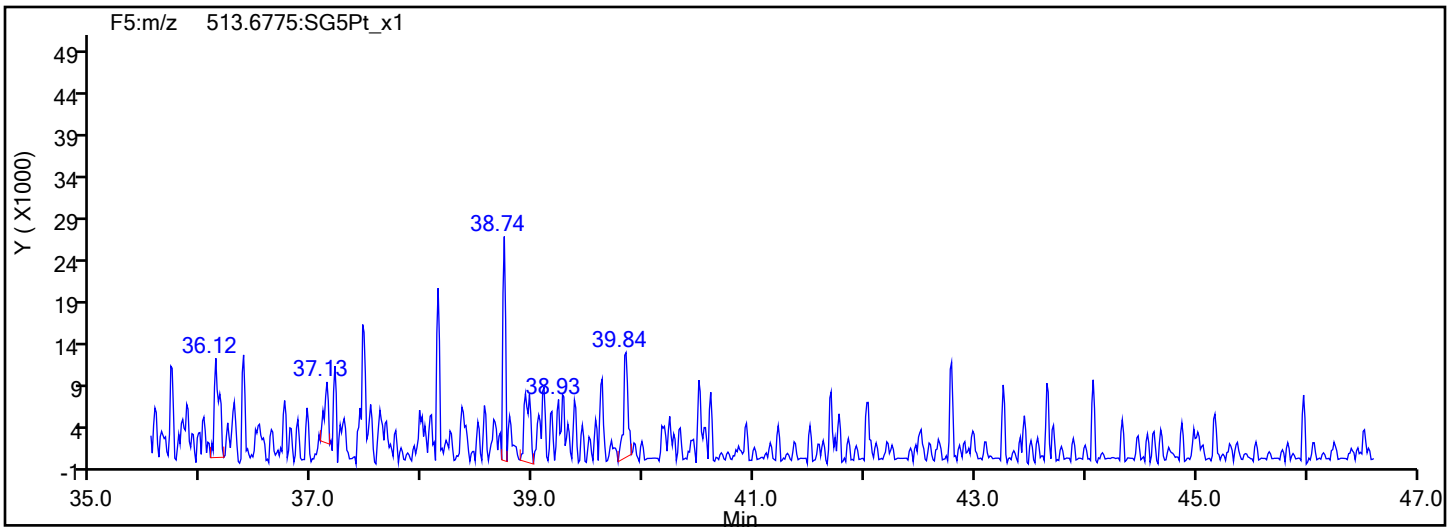
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

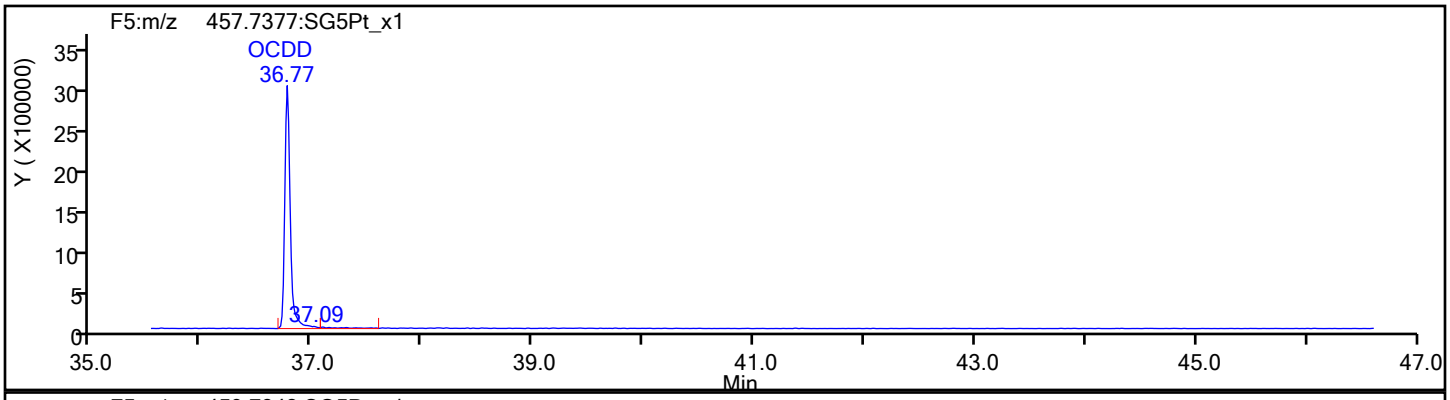


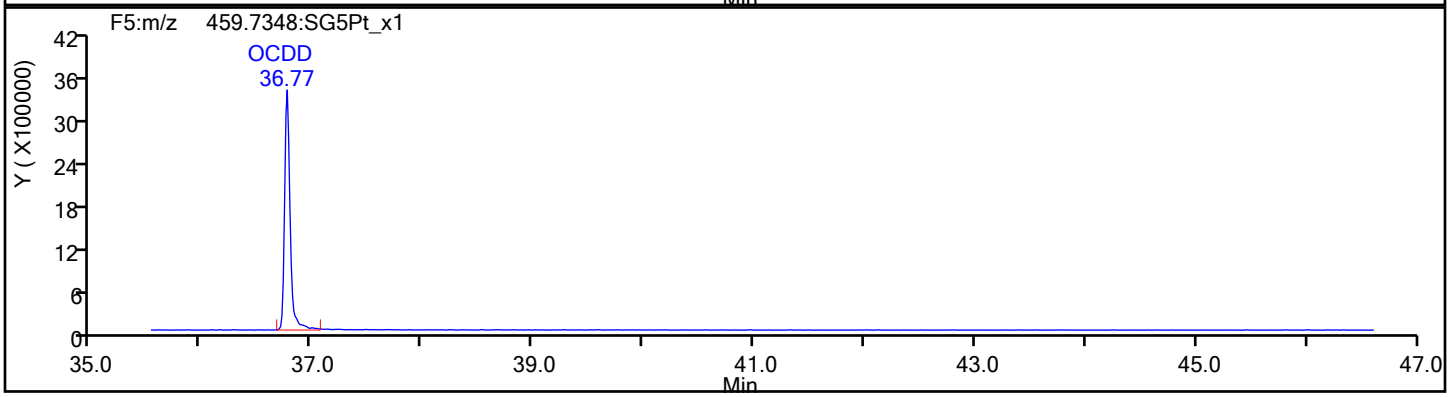
Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

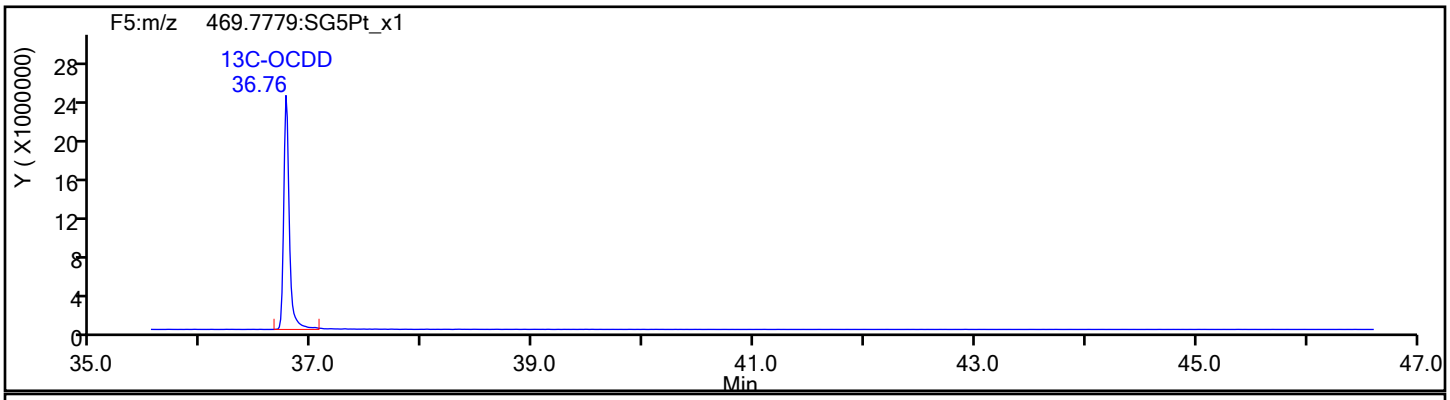
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

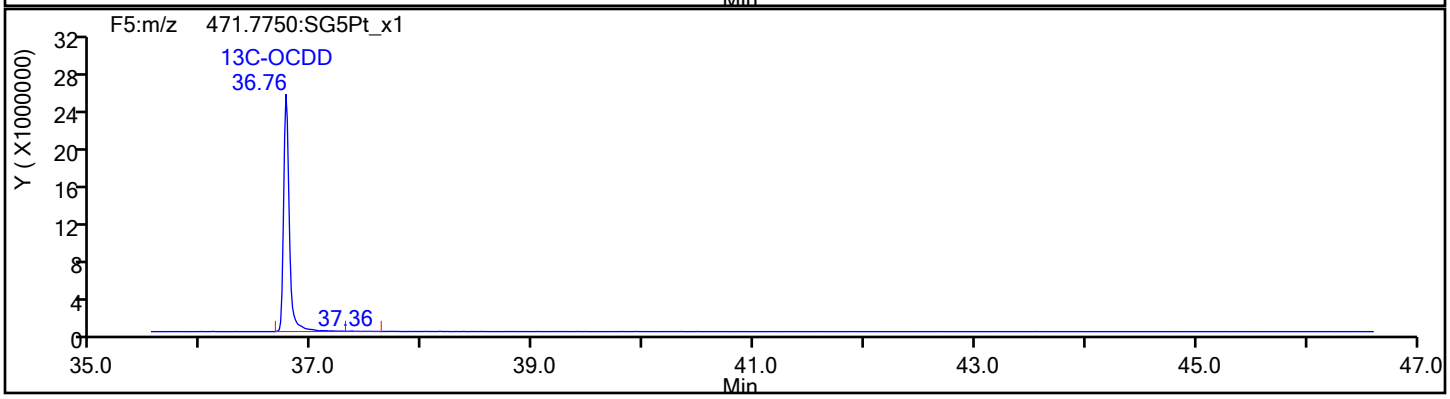
OCDD





OCDD Standards

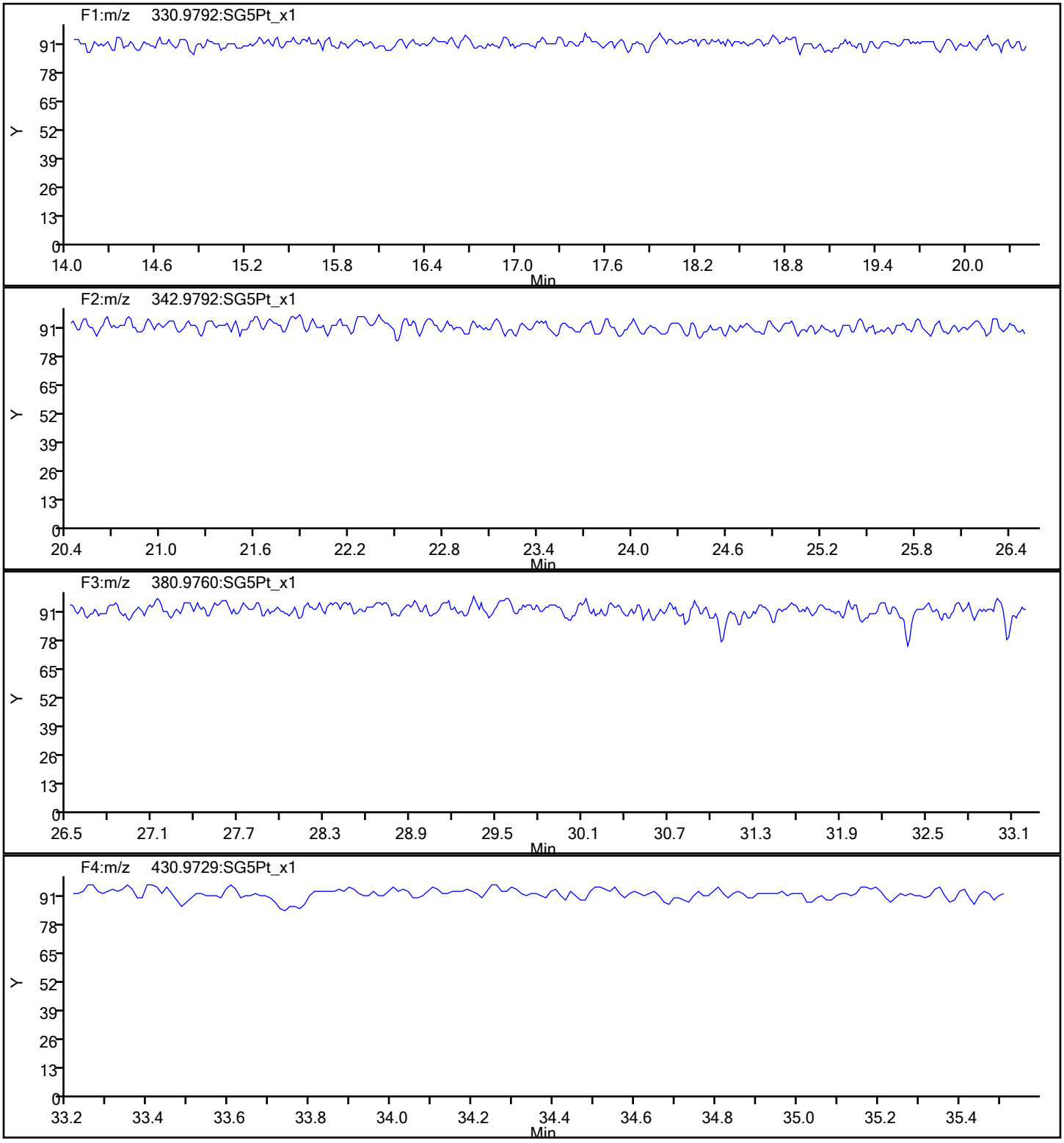




Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

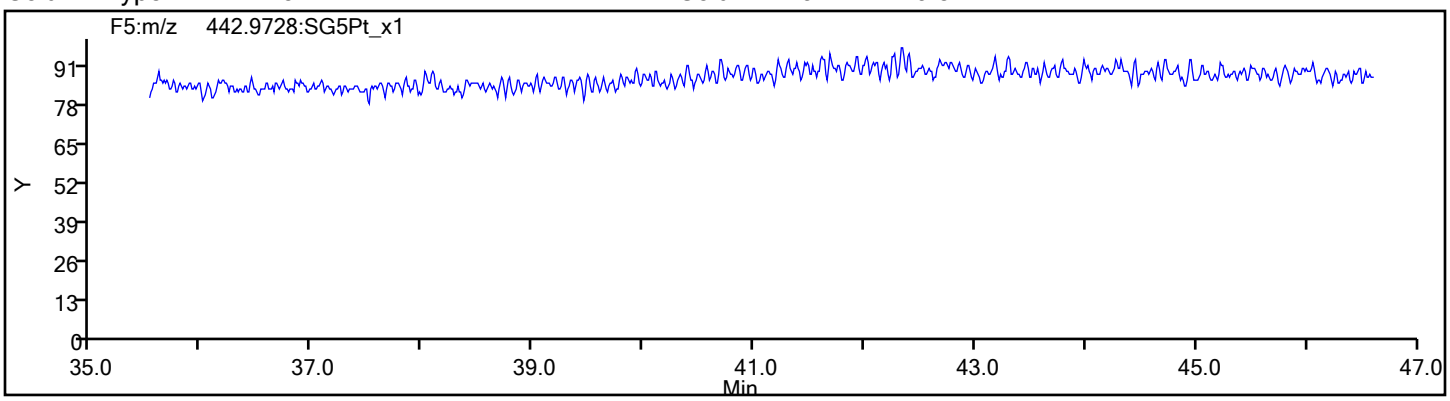
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 12-Dec-2019 15:54:17 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_4.d		
Injection Date:	12-Dec-2019 12:16:27	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L3		
Worklist#:	345037	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d
Lims ID: IC 4
Client ID: L4
Sample Type: IC Calib Level: 4
Inject. Date: 12-Dec-2019 13:04:00 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219B IC HRDXNL4_00086
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:24 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 14:41:14

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.672	230108476	0.78	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.173	329077583	0.82	1.4157	101.0	101.0	0.1434	0.1434	101	
2,3,7,8-TCDF	17.188	32091889	0.79	0.9502	10.3	10.3	0.0363	0.0363	103	
S Total TCDF					10.3	10.3	0.0363	0.0363		
D 13C-2,3,7,8-TCDD	17.869	222854376	0.80	0.9751	99.3	99.3	0.2013	0.2013	99.32	
2,3,7,8-TCDD	17.884	23580601	0.81	1.0477	10.1	10.1	0.0328	0.0328	101	
$ 37Cl4-2,3,7,8-TCDD	17.884	34952681		1.3480	11.3	11.3	0.0222	0.0222	113	
S Total TCDD					10.1	10.1	0.0328	0.0328		
D 13C-1,2,3,7,8-PeCDF	22.114	269197886	1.59	1.1786	99.3	99.3	0.2470	0.2470	99.26	
1,2,3,7,8-PeCDF	22.141	140673612	1.59	1.0302	50.7	50.7	0.1695	0.1695	101	
D 13C-2,3,4,7,8-PeCDF	23.437	265262610	1.60	1.1308	101.9	101.9	0.2575	0.2575	102	
2,3,4,7,8-PeCDF	23.450	130713898	1.53	1.0410	47.3	47.3	0.1817	0.1817	94.68	
S Total PeCDF					98.1	98.1	0.1756	0.1756		
D 13C-1,2,3,7,8-PeCDD	24.146	167599127	1.60	0.7572	96.2	96.2	0.1540	0.1540	96.19	
1,2,3,7,8-PeCDD	24.173	93429816	1.57	1.0855	51.4	51.4	0.1277	0.1277	103	
S Total PeCDD					51.4	51.4	0.1277	0.1277		
D 13C-1,2,3,4,7,8-HxCDF	30.273	242099177	0.51	1.1043	99.7	99.7	0.2432	0.2432	99.68	
1,2,3,4,7,8-HxCDF	30.299	137734608	1.20	1.1472	49.6	49.6	0.1763	0.1763	99.18	
D 13C-1,2,3,6,7,8-HxCDF	30.486	243784643	0.51	1.1470	96.6	96.6	0.2342	0.2342	96.63	
1,2,3,6,7,8-HxCDF	30.499	142961587	1.23	1.1450	51.2	51.2	0.1730	0.1730	102	
D 13C-2,3,4,6,7,8-HxCDF	31.365	226090409	0.54	1.0769	95.5	95.5	0.2494	0.2494	95.45	
2,3,4,6,7,8-HxCDF	31.378	136271106	1.23	1.1726	51.4	51.4	0.1322	0.1322	103	
D 13C-1,2,3,7,8,9-HxCDF	32.204	213252409	0.51	1.0115	95.9	95.9	0.2656	0.2656	95.85	
1,2,3,7,8,9-HxCDF	32.217	128293546	1.22	1.1717	51.3	51.3	0.1275	0.1275	103	
S Total HxCDF					203.6	203.6	0.1523	0.1523		
* 13C-1,2,3,7,8,9-HxCDD	32.017	219948678	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.565	174266733	1.28	0.7962	99.5	99.5	0.2058	0.2058	99.51	
1,2,3,4,7,8-HxCDD	31.578	93254778	1.29	1.0934	48.9	48.9	0.1071	0.1071	97.88	
D 13C-1,2,3,6,7,8-HxCDD	31.671	183758146	1.29	0.8720	95.8	95.8	0.1879	0.1879	95.81	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.684	98614866	1.28	1.0429	51.5	51.5	0.1127	0.1127	103	
1,2,3,7,8,9-HxCDD	32.030	110159416	1.25	1.2073	51.0	51.0	0.0972	0.0972	102	
S Total HxCDD					151.4	151.4	0.1056	0.1056		
D 13C-1,2,3,4,6,7,8-HpCDF	33.652	159712904	0.44	0.7577	95.8	95.8	1.031	1.031	95.84	
1,2,3,4,6,7,8-HpCDF	33.664	114883210	1.05	1.4804	48.6	48.6	0.4672	0.4672	97.18	
D 13C-1,2,3,4,7,8,9-HpCDF	34.734	145840544	0.44	0.6941	95.5	95.5	1.125	1.125	95.52	
1,2,3,4,7,8,9-HpCDF	34.746	92482689	1.14	1.2933	49.0	49.0	0.6351	0.6351	98.07	
S Total HpCDF					97.6	97.6	0.5512	0.5512		
D 13C-1,2,3,4,6,7,8-HpCDD	34.442	146156878	1.07	0.7058	94.1	94.1	0.6652	0.6652	94.15	
1,2,3,4,6,7,8-HpCDD	34.454	77704317	1.06	1.0535	50.5	50.5	0.3333	0.3333	101	
S Total HpCDD					50.5	50.5	0.3333	0.3333		
D 13C-OCDD	36.770	191409180	0.93	0.4603	189.1	189.1	0.1713	0.1713	94.54	
OCDF	36.877	127683858	0.91	1.3945	95.7	95.7	0.0845	0.0845	95.67	
OCDD	36.782	106623239	0.90	1.1362	98.1	98.1	0.0768	0.0768	98.06	

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d
Lims ID: IC 4
Client ID: L4
Sample Type: IC Calib Level: 4
Inject. Date: 12-Dec-2019 13:04:00 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219B IC HRDXNL4_00086
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:24 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 14:41:14

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.672	17.666	0		100646493	26054224	25756	64390	1012		
333.9339	17.672	17.666	0		129461983	33352164	20891	52227	1596	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.173	17.164	1	0.972	148097005	37302247	26680	66700	1398		
317.9389	17.173	17.164	1	0.972	180980578	44947883	21559	53897	2085	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.188	17.176	1	1.001	14195019	3703043	5026	12565	737		
305.8987	17.188	17.176	1	1.001	17896870	4565831	6334	15835	721	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.869	17.854	1	1.011	99038720	23452241	25756	64390	911		
333.9339	17.869	17.854	1	1.011	123815656	28590510	20891	52227	1369	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.884	17.872	1	1.001	10569215	2553534	4609	11522	554		
321.8936	17.884	17.872	1	1.001	13011386	3080359	2541	6352	1212	0.81(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.884	17.872	1	1.012	34952681	8297944	7115	17787	1166		
13C-1,2,3,7,8-PeCDF											
351.9000	22.114	22.103	1	1.251	165287075	30019770	40905	102262	734		
353.8970	22.114	22.103	1	1.251	103910811	18863812	28281	70702	667	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.141	22.130	1	1.001	86311912	15620236	18085	45212	864		
341.8567	22.127	22.130	0	1.001	54361700	9970298	16064	40160	621	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											
351.9000	23.437	23.426	1	1.326	163093024	27685229	40905	102262	677		
353.8970	23.437	23.426	1	1.326	102169586	17441677	28281	70702	617	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.450	23.450	0	1.001	78965684	12640006	18085	45212	699		
341.8567	23.464	23.450	1	1.001	51748214	8335290	16064	40160	519	1.53(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.146	24.137	0	1.366	103252705	16542346	16807	42017	984		
369.8919	24.146	24.137	0	1.366	64346422	10277195	10896	27240	943	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.173	24.162	1	1.001	57119994	9304403	9790	24475	950		
357.8516	24.173	24.162	1	1.001	36309822	5917276	5080	12700	1165	1.57(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.273	30.270	0	0.946	82296238	14406879	22532	56330	639		
385.8610	30.273	30.270	0	0.946	159802939	28643839	41418	103545	692	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.299	30.300	0	1.001	75239346	13462429	18834	47085	715		
375.8178	30.299	30.300	0	1.001	62495262	11173585	16002	40005	698	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.486	30.473	1	0.952	82485356	14921046	22532	56330	662		
385.8610	30.486	30.473	1	0.952	161299287	29038923	41418	103545	701	0.51(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.499	30.497	0	1.000	78848595	14484100	18834	47085	769		
375.8178	30.499	30.497	0	1.000	64112992	11951221	16002	40005	747	1.23(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.365	31.357	0	0.980	78892516	19703531	22532	56330	874		
385.8610	31.365	31.357	0	0.980	147197893	36465715	41418	103545	880	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.378	31.375	0	1.000	75096482	19315307	18834	47085	1026		
375.8178	31.378	31.375	0	1.000	61174624	15153830	16002	40005	947	1.23(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.204	32.196	0	1.006	71691344	19663388	22532	56330	873		
385.8610	32.204	32.196	0	1.006	141561065	38629634	41418	103545	933	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.217	32.209	0	1.000	70626531	19376007	18834	47085	1029		
375.8178	32.217	32.209	0	1.000	57667015	15830229	16002	40005	989	1.22(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.017	32.004	1		123883759	33584704	21780	54450	1542		
403.8529	32.017	32.004	1		96064919	25935284	17229	43072	1505	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.565	31.557	0	0.986	97992334	26849414	21780	54450	1233		
403.8529	31.565	31.557	0	0.986	76274399	20962976	17229	43072	1217	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.578	31.570	0	1.000	52536003	14668722	12137	30342	1209		
391.8127	31.578	31.570	0	1.000	40718775	11337787	10249	25622	1106	1.29(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.671	31.666	0	0.989	103381913	26694519	21780	54450	1226		
403.8529	31.671	31.666	0	0.989	80376233	20910507	17229	43072	1214	1.29(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.684	31.682	0	1.000	55419441	14148502	12137	30342	1166		
391.8127	31.684	31.682	0	1.000	43195425	11159771	10249	25622	1089	1.28(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.030	32.023	0	1.015	61189359	16622466	12137	30342	1370		
391.8127	32.030	32.023	0	1.015	48970057	13234369	10249	25622	1291	1.25(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.652	33.647	0	1.051	48689452	17719541	49975	124937	355		
419.8220	33.652	33.647	0	1.051	111023452	38611583	135949	339872	284	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.664	33.659	0	1.000	58935767	21942144	74726	186815	294		
409.7789	33.664	33.659	0	1.000	55947443	21112986	81100	202750	260	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.734	34.726	0	1.085	44614173	14611319	49975	124937	292		
419.8220	34.734	34.726	0	1.085	101226371	32813726	135949	339872	241	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.746	34.736	1	1.000	49189461	15452037	74726	186815	207		
409.7789	34.746	34.736	1	1.000	43293228	14014895	81100	202750	173	1.14(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.442	34.437	0	1.076	75641640	25399742	35620	89050	713		
437.8140	34.442	34.437	0	1.076	70515238	23743066	76163	190407	312	1.07(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.454	34.449	0	1.000	40042499	13531877	45519	113797	297		
425.7737	34.454	34.449	0	1.000	37661818	12776415	23509	58772	543	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.770	36.767	0	1.148	92170386	25778405	10027	25067	2571		
471.7750	36.770	36.767	0	1.148	99238794	27541934	8740	21850	3151	0.93(0.76-1.02)	
OCDF											
441.7428	36.877	36.870	0	1.003	60846957	17590255	5390	13475	3263		
443.7399	36.866	36.870	0	1.003	66836901	18992346	7175	17937	2647	0.91(0.76-1.02)	
OCDD											
457.7377	36.782	36.779	0	1.000	50544978	14413363	4729	11822	3048		
459.7348	36.782	36.779	0	1.000	56078261	16151394	4573	11432	3532	0.90(0.76-1.02)	

Reagents:

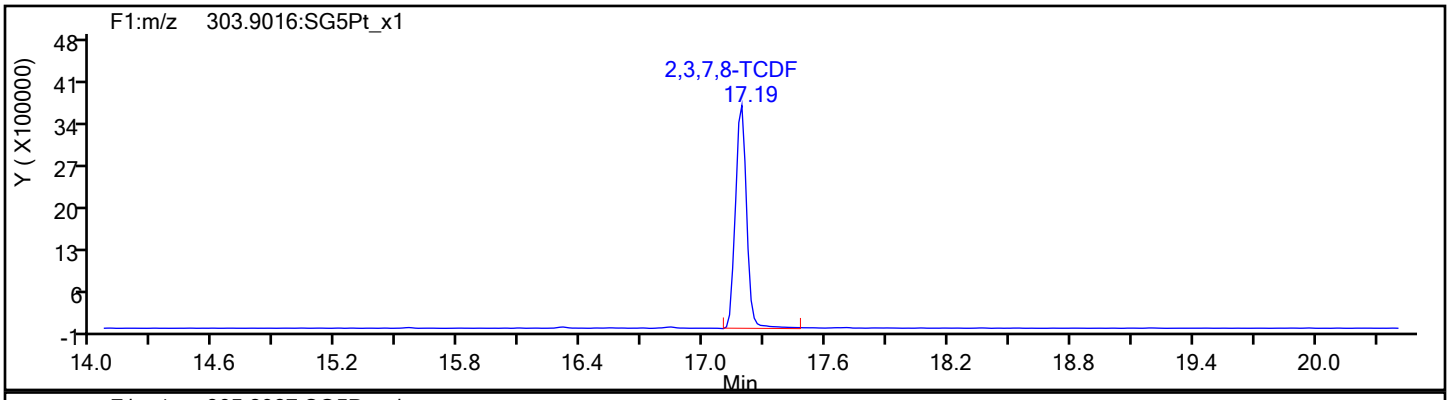
HRDXNL4_00086 Amount Added: 2.00 Units: uL

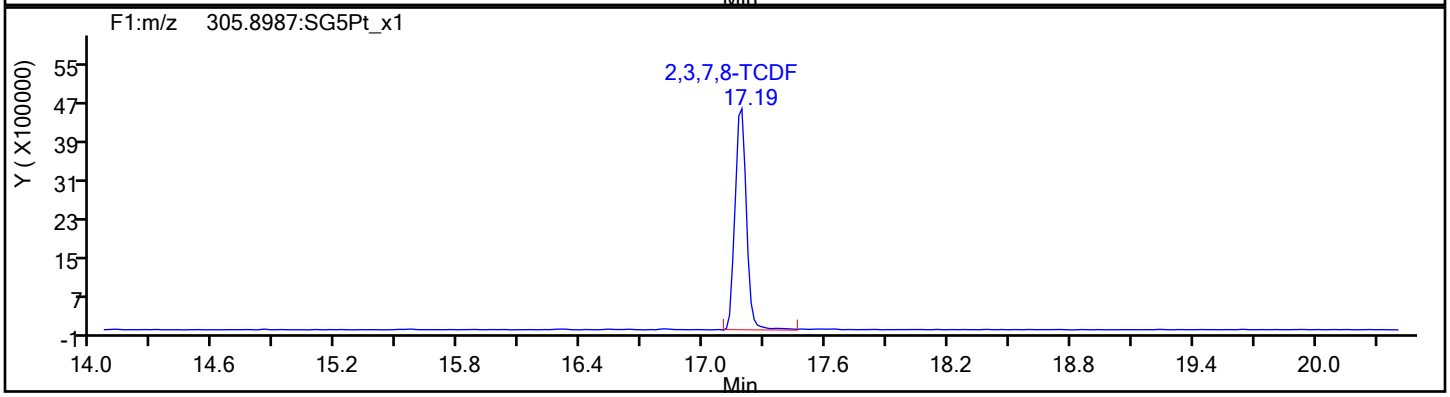
Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

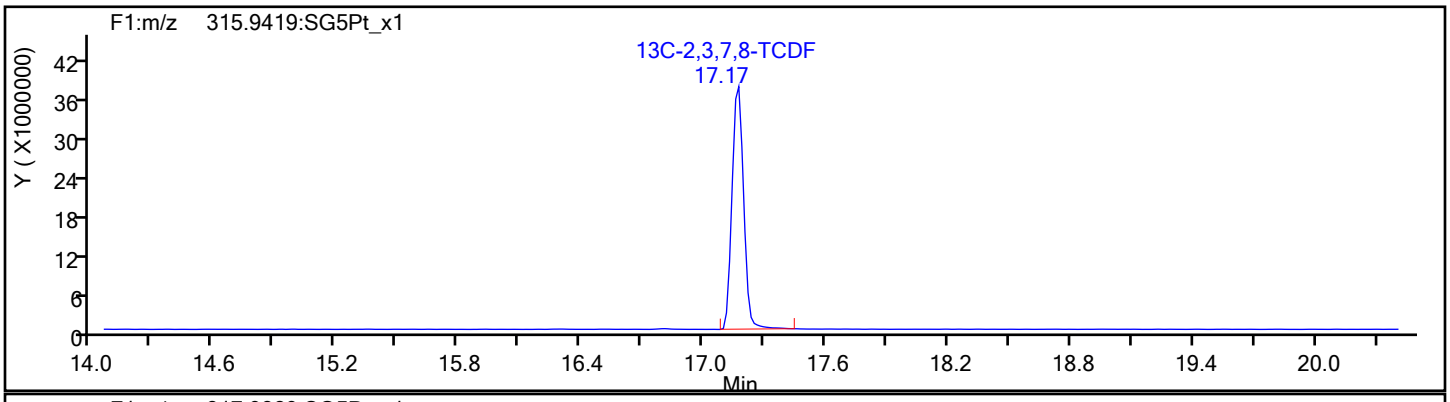
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
Injection Date:	12-Dec-2019 13:04:00	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
Worklist#:	345037	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

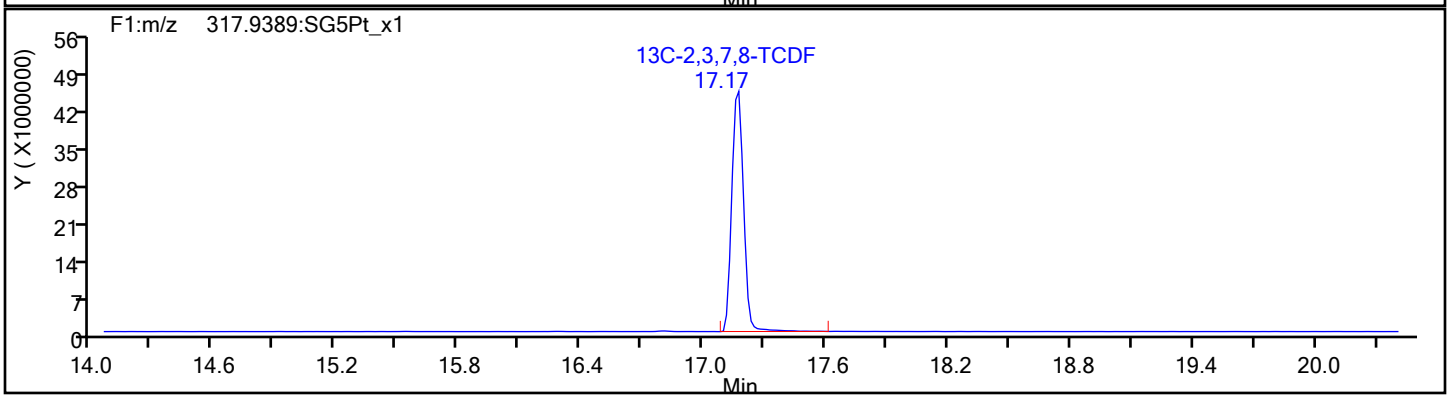
TCDF





TCDF Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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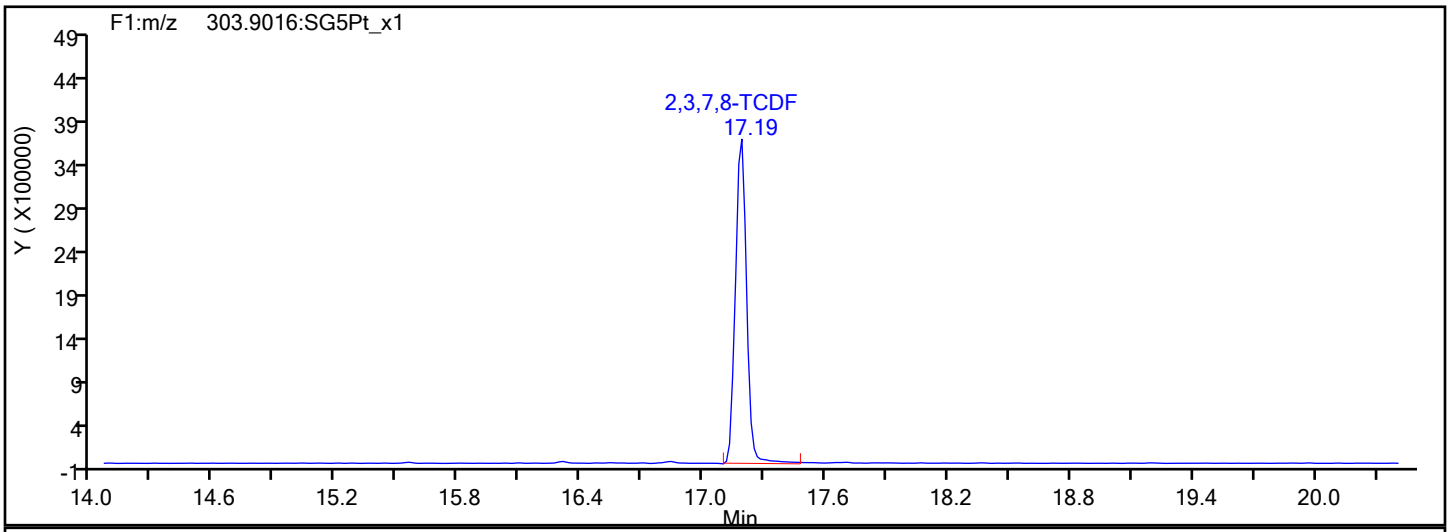
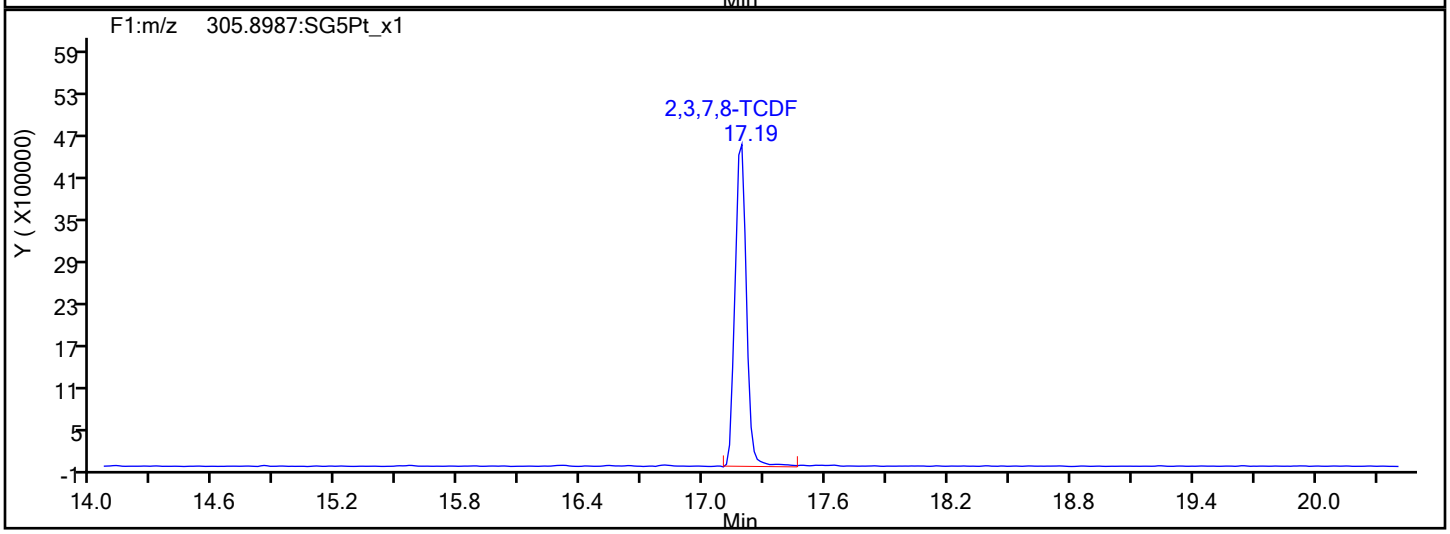
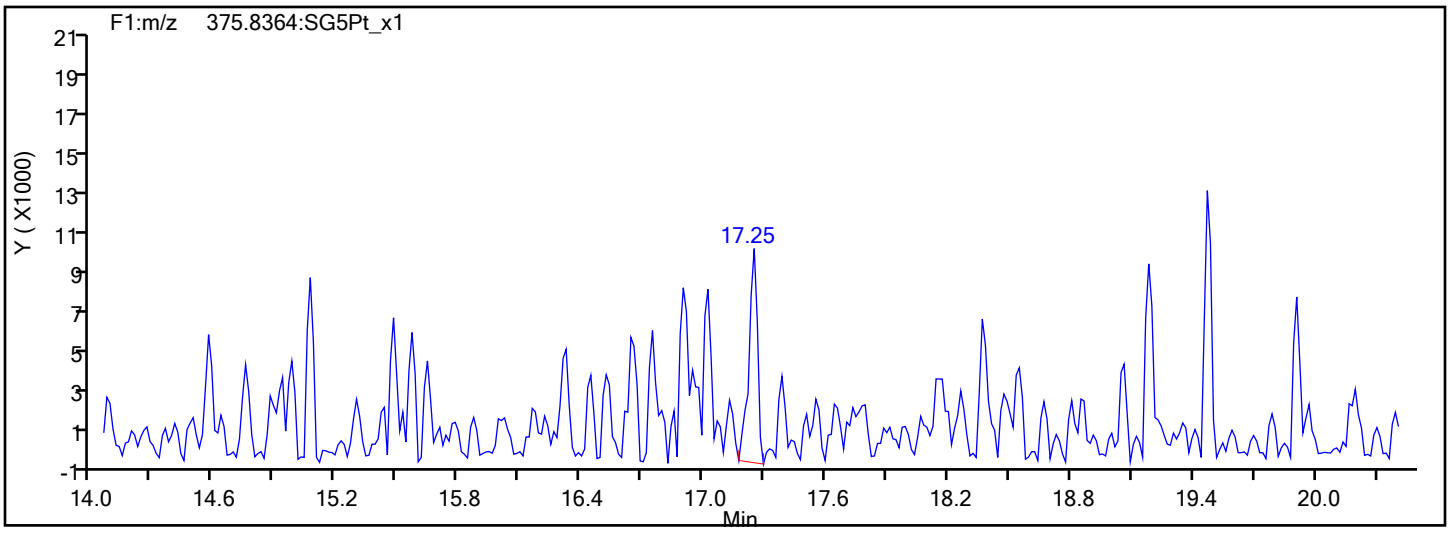
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
Worklist#:	345037	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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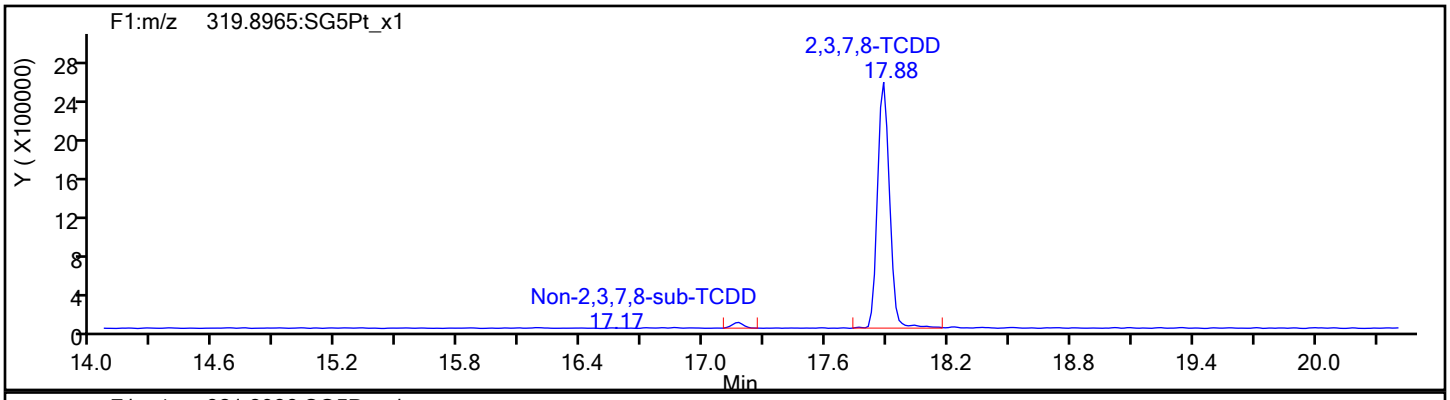
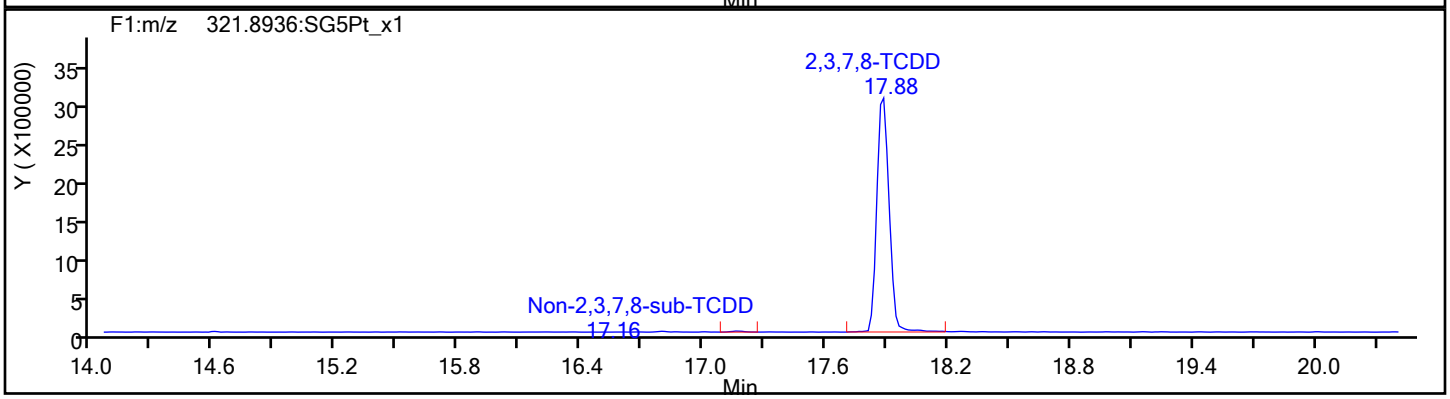
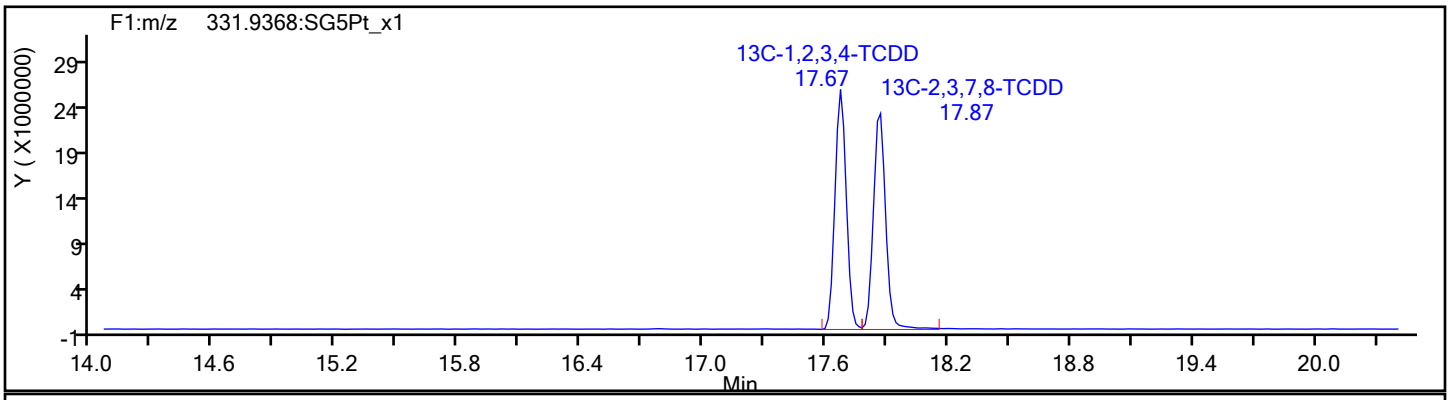
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
Worklist#:	345037	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

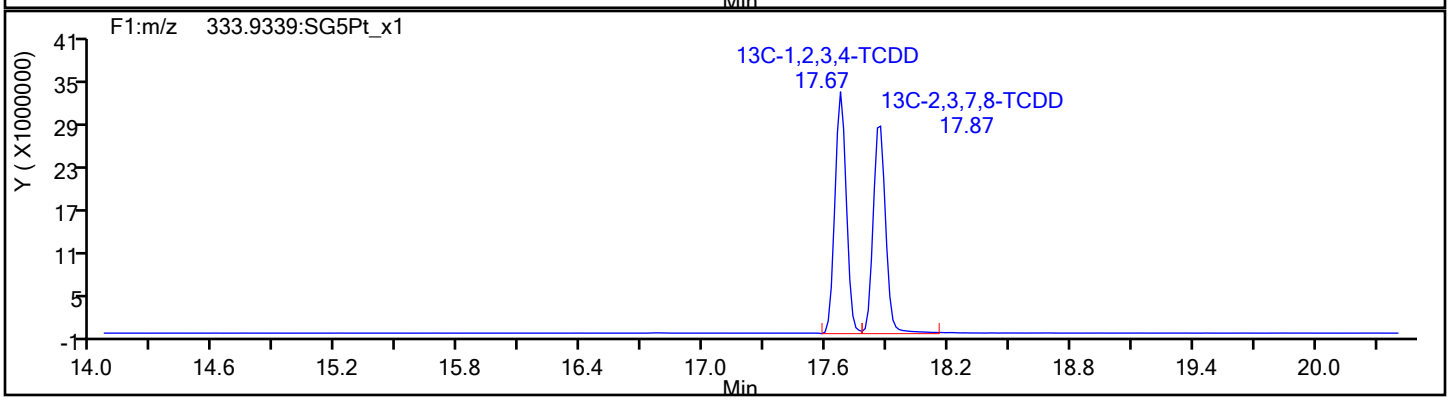
TCDD





TCDD Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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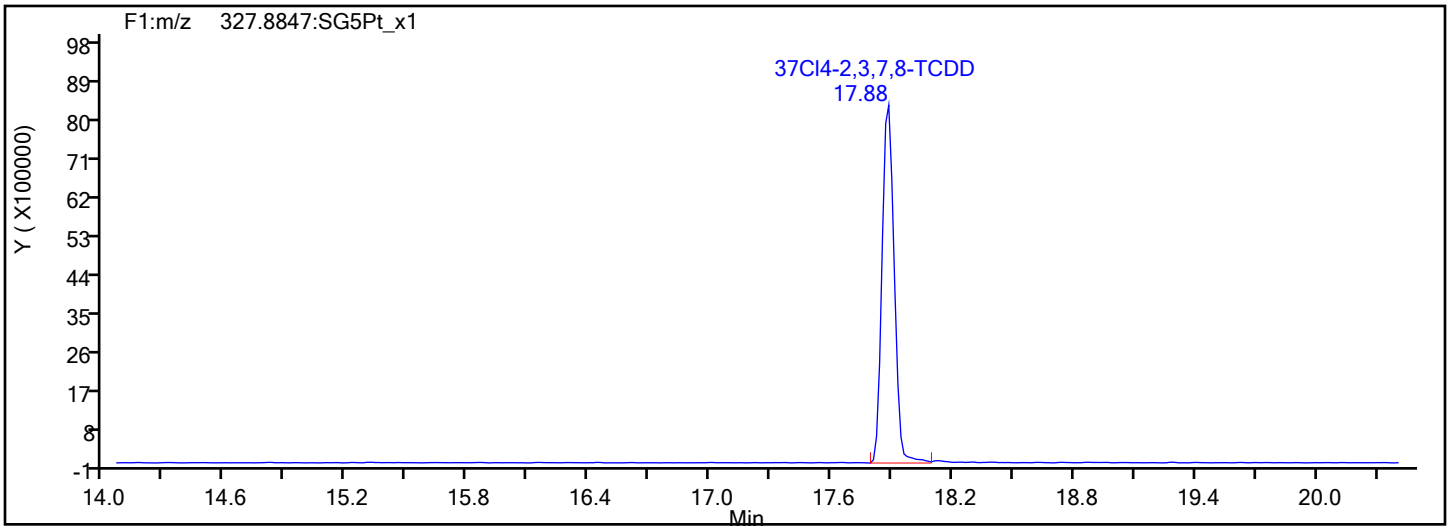
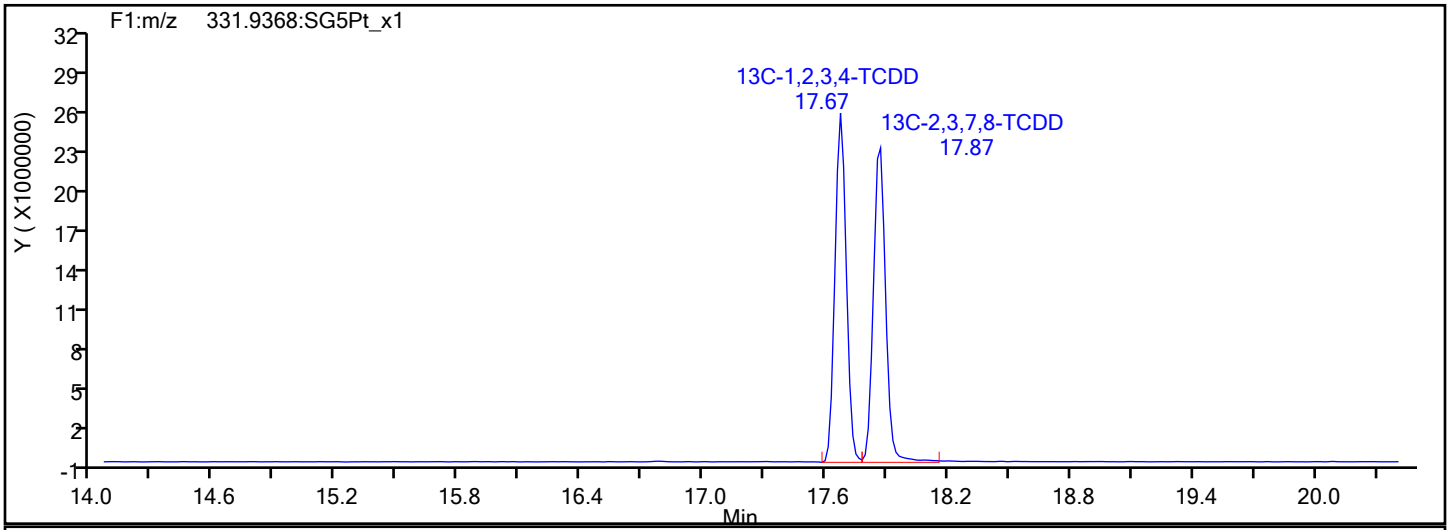
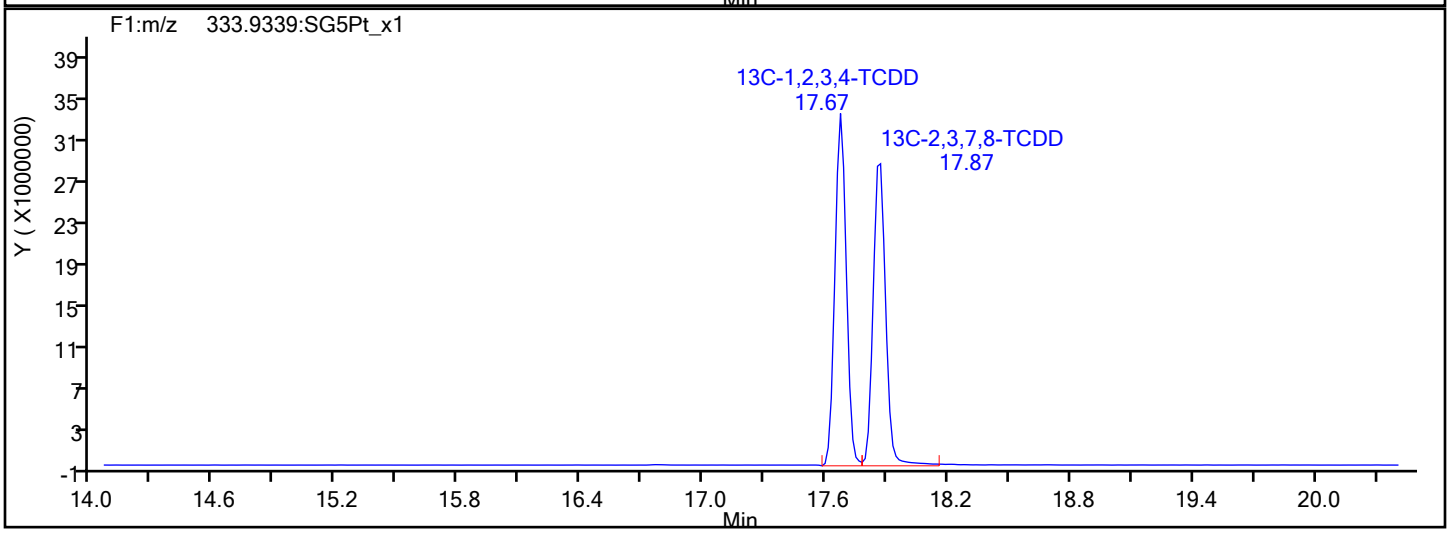
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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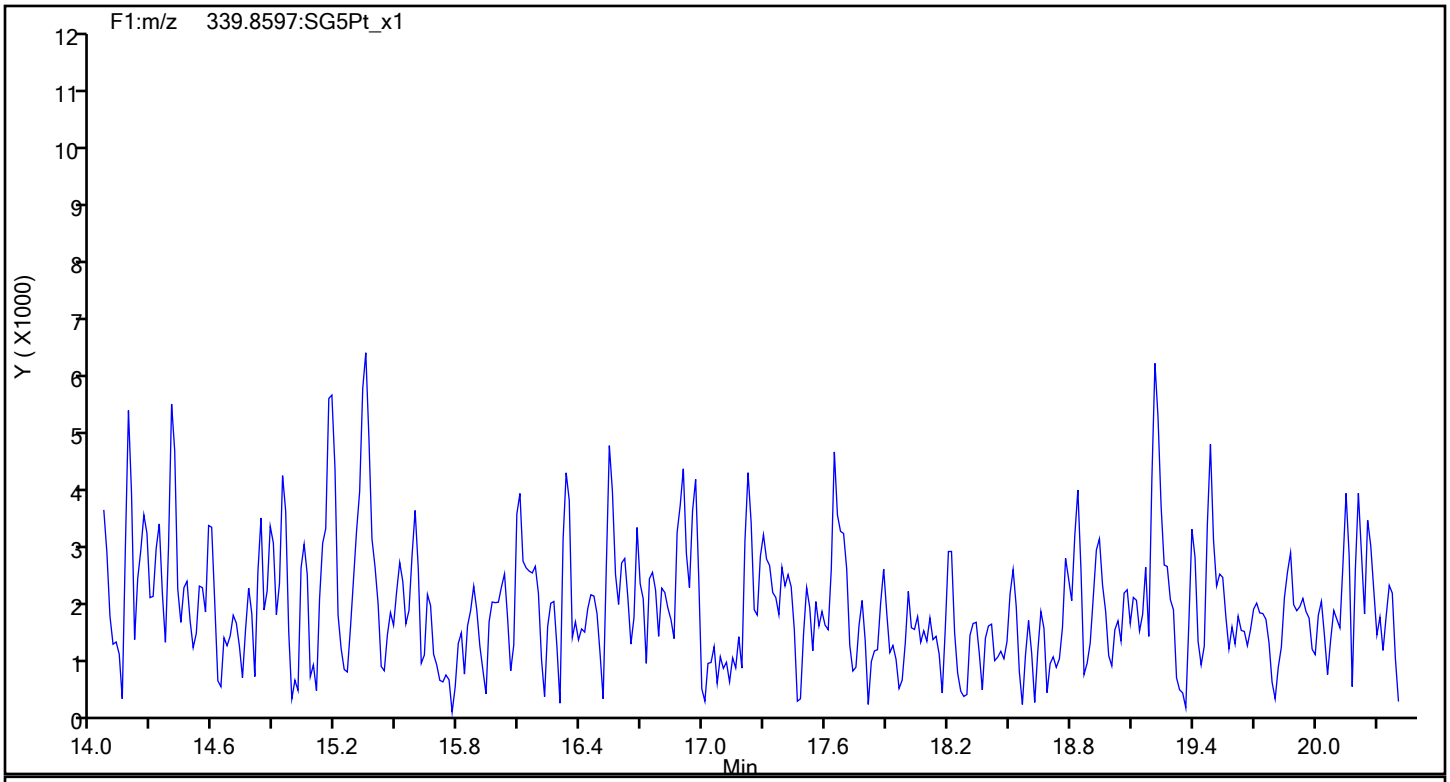
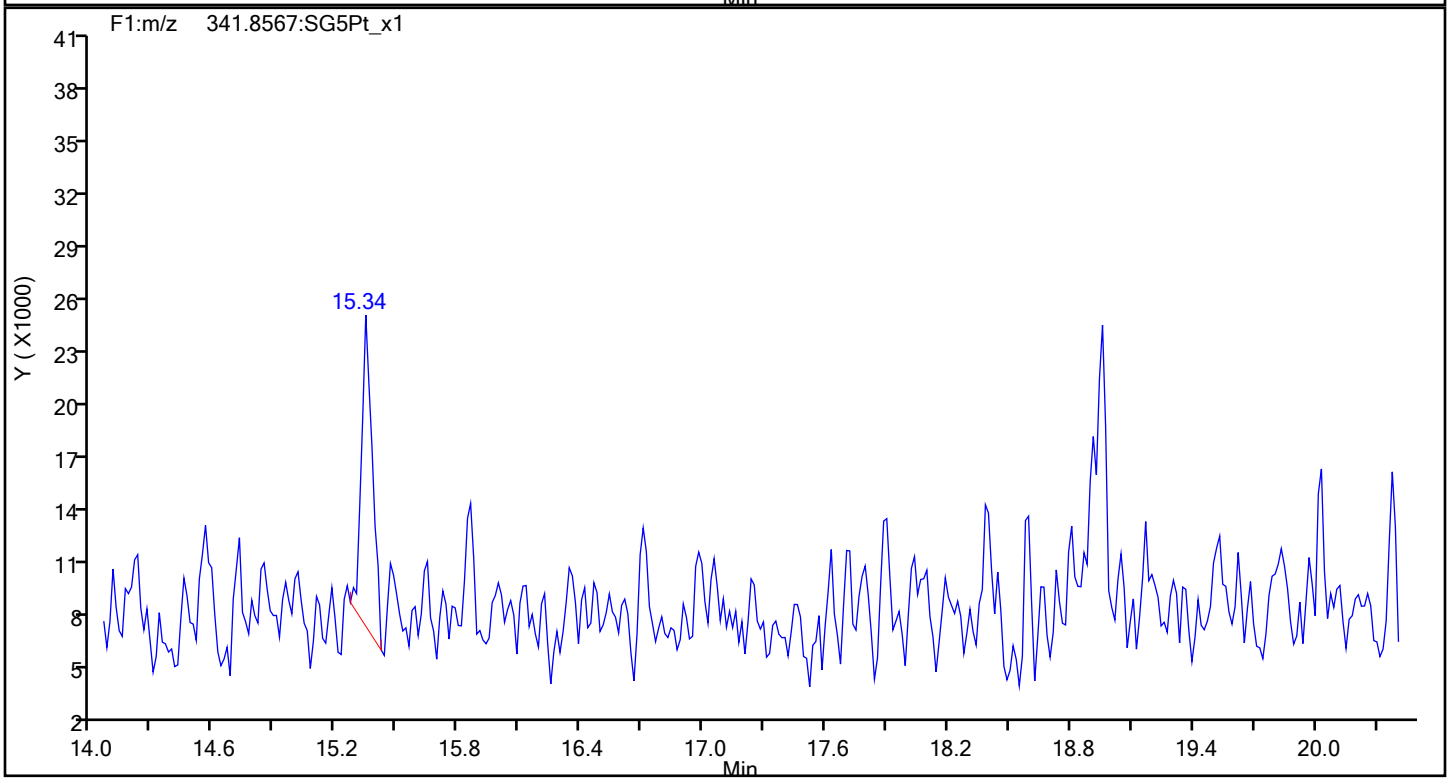
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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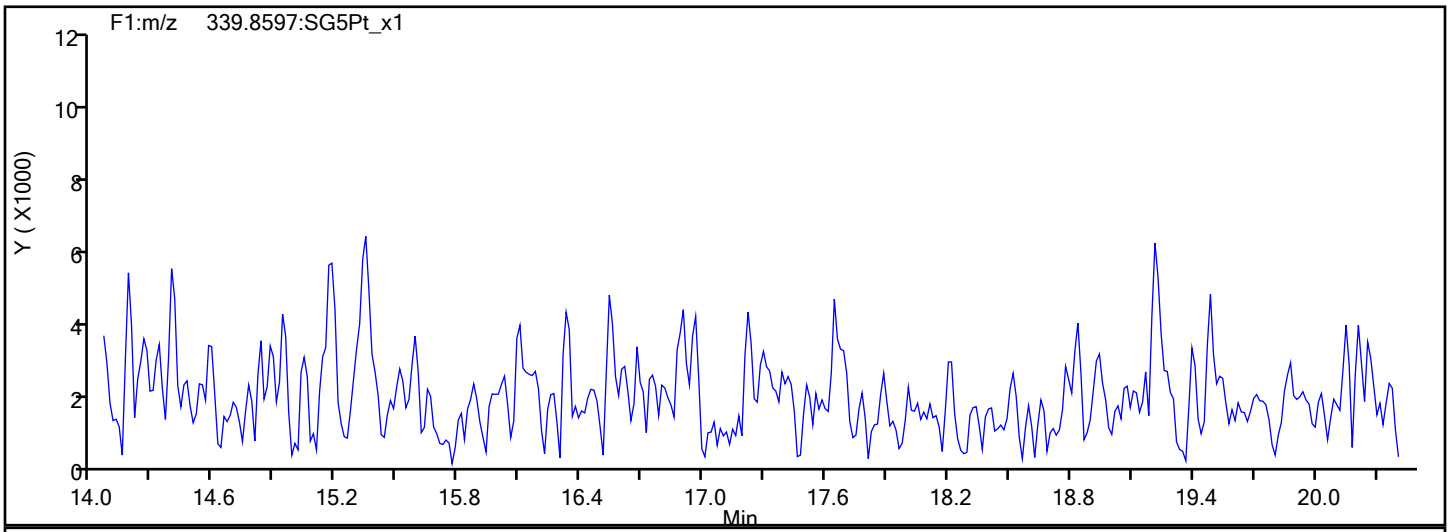
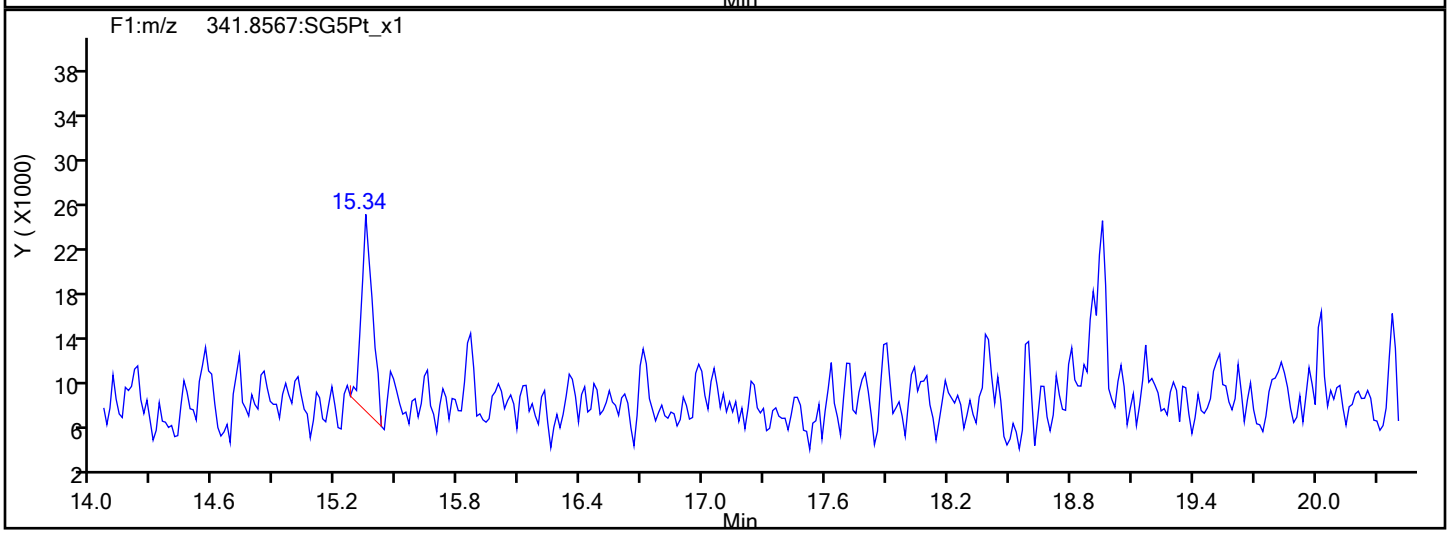
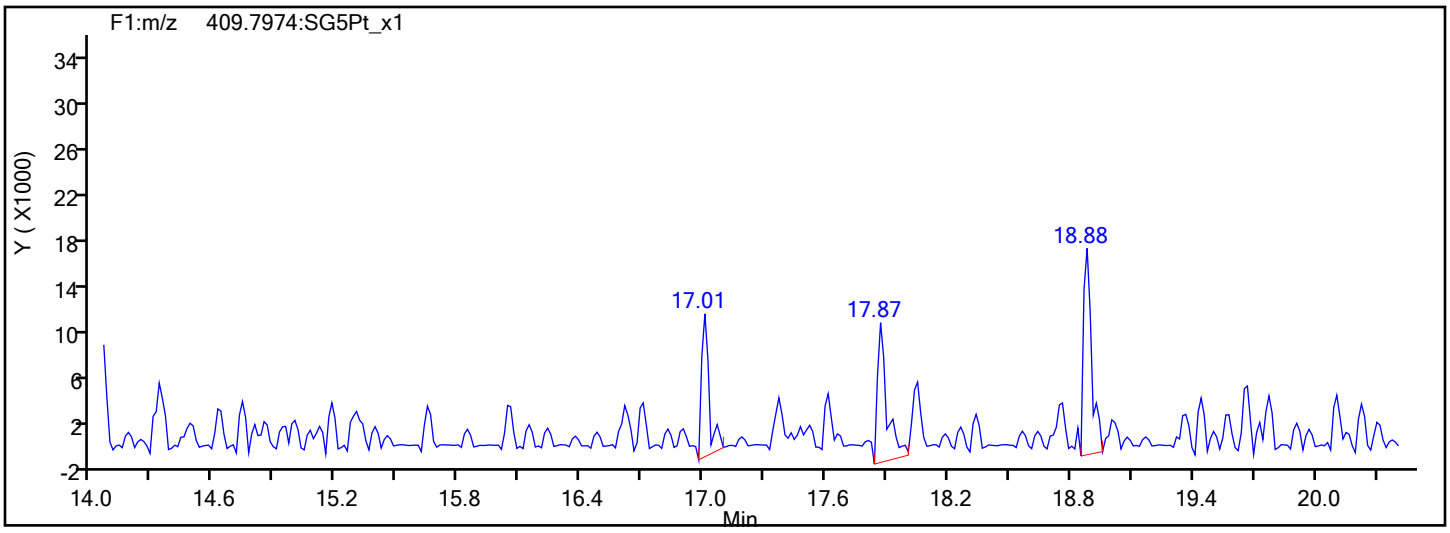
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
Worklist#:	345037	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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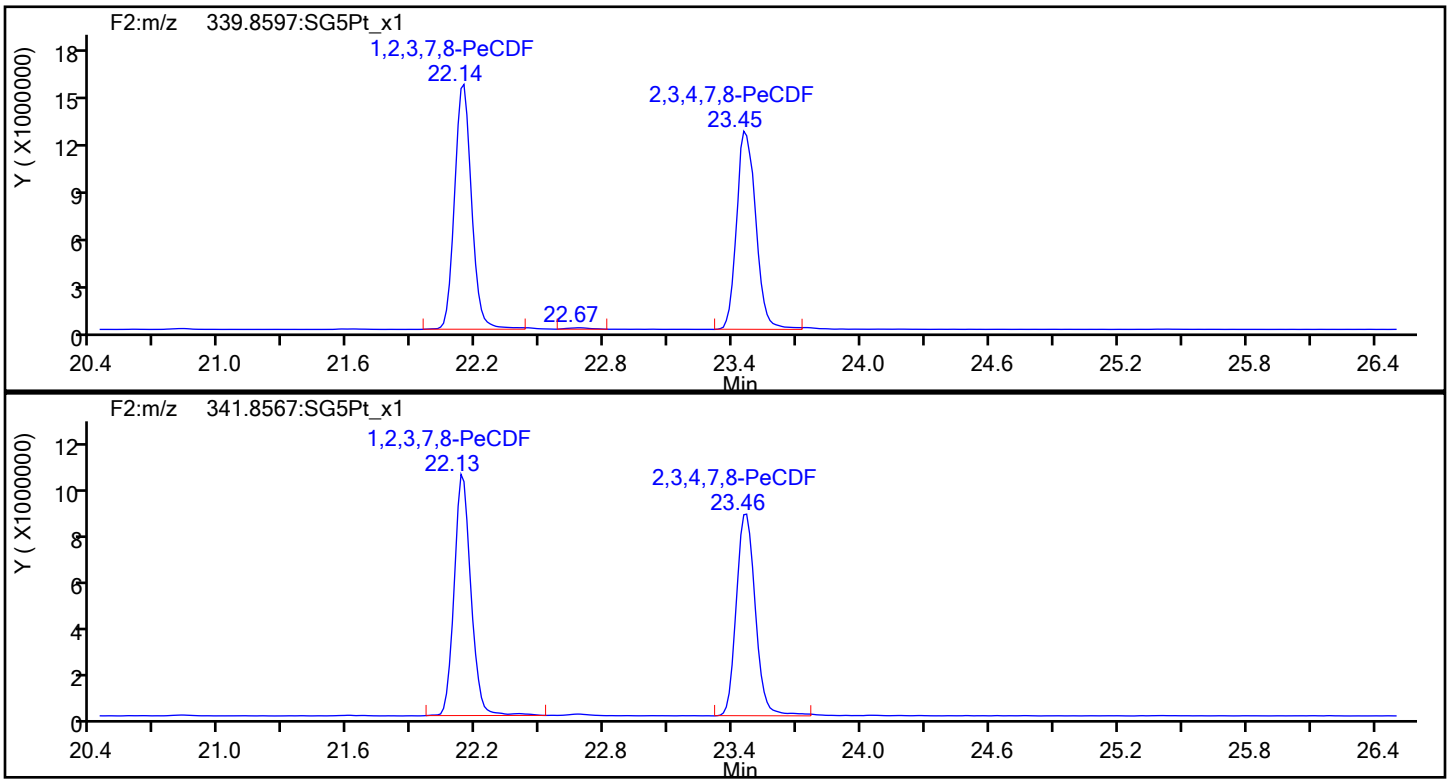
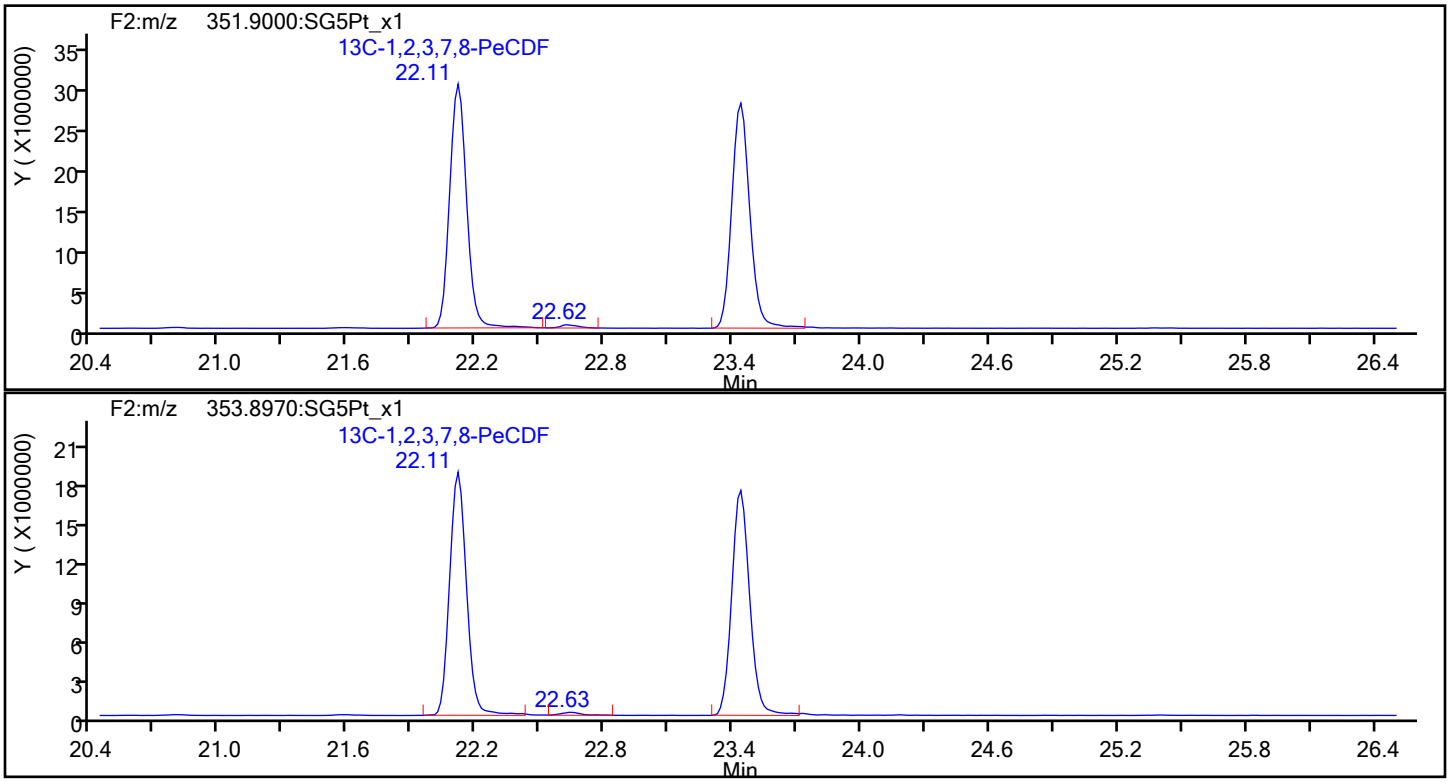
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
Worklist#:	345037	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
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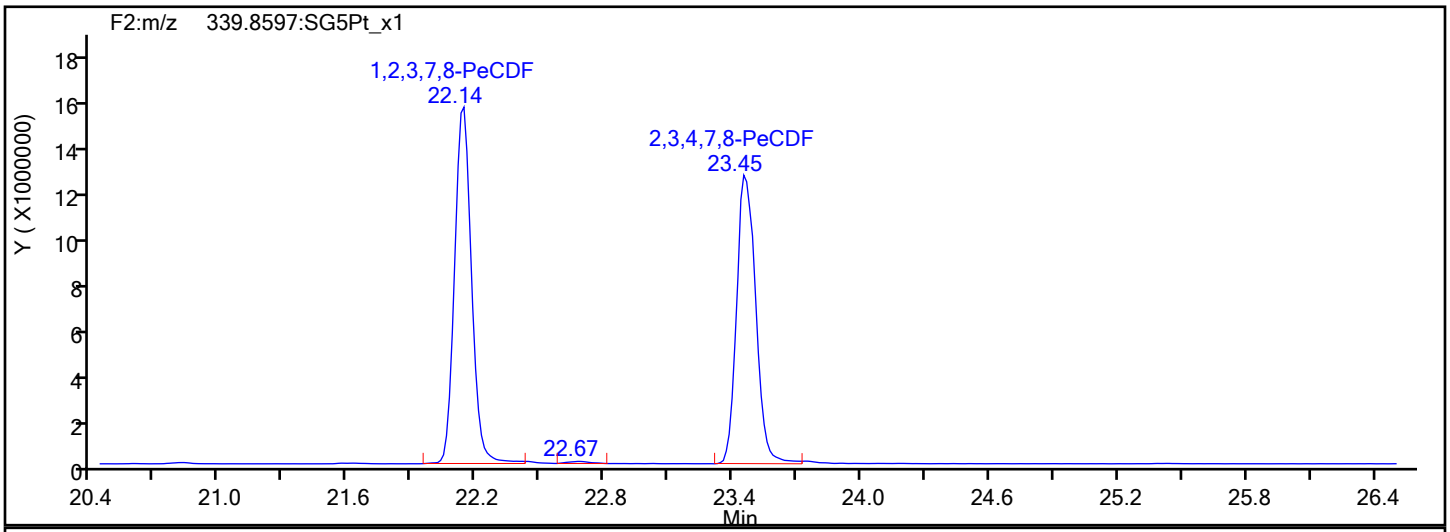
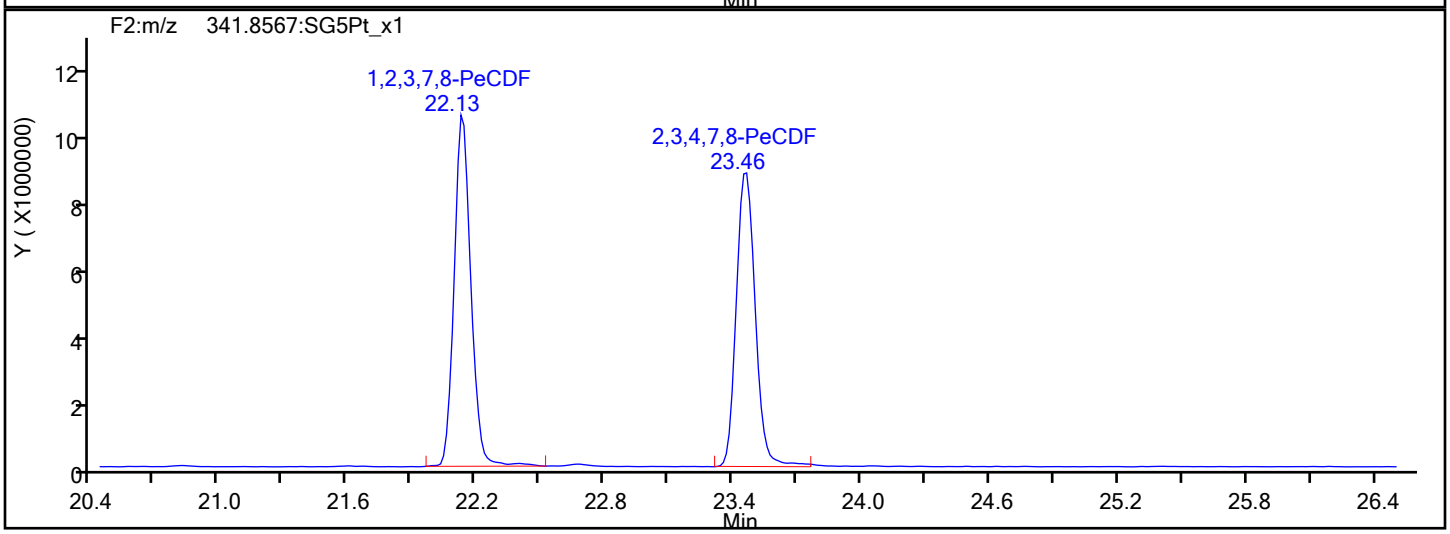
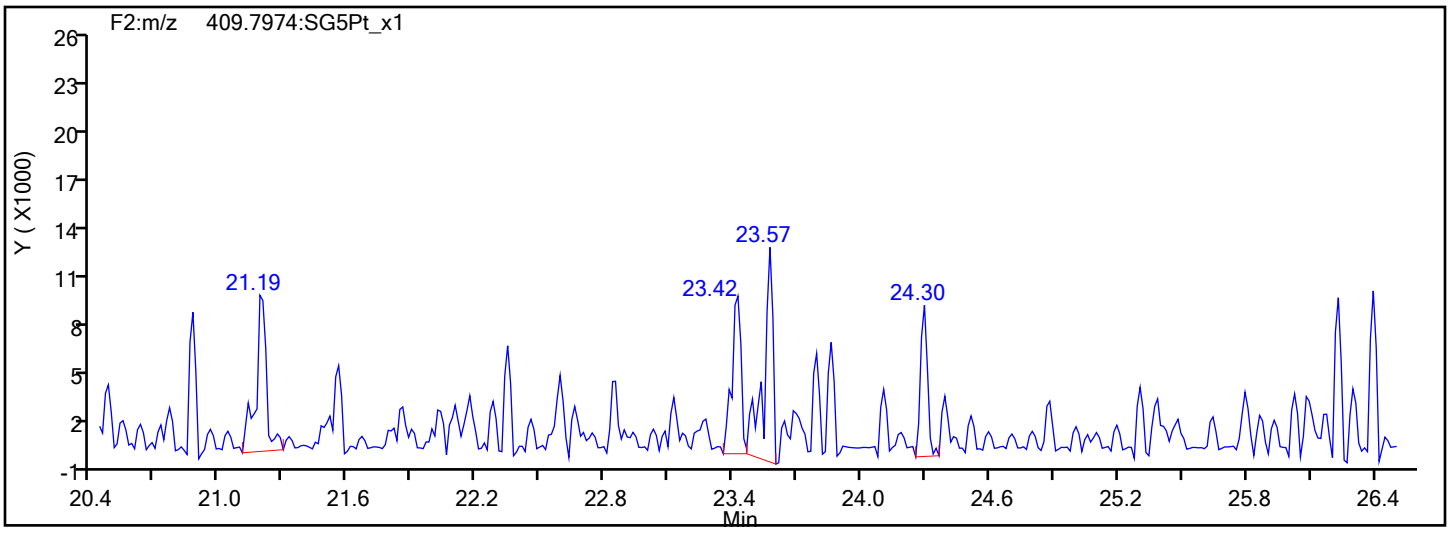
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
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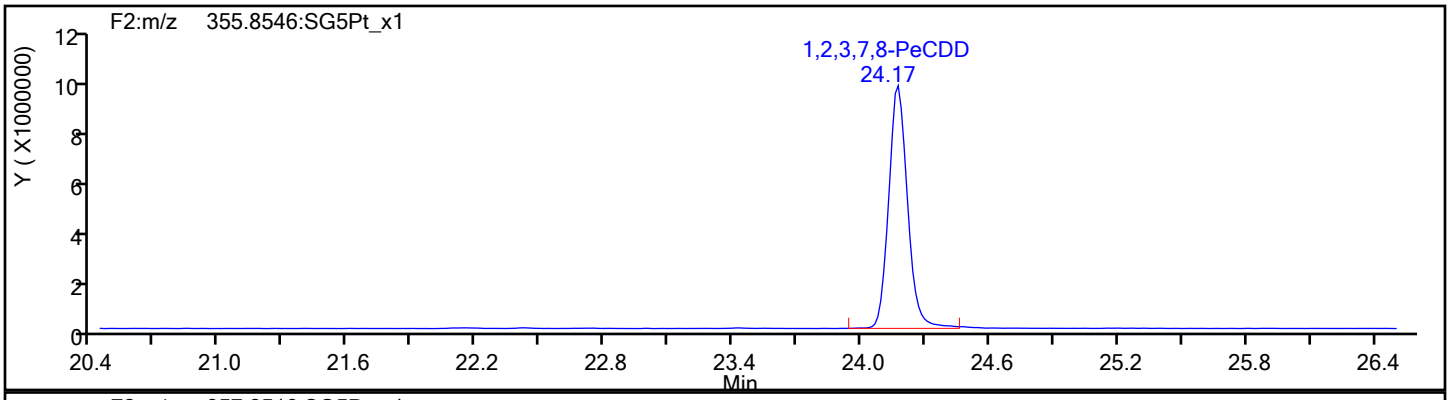
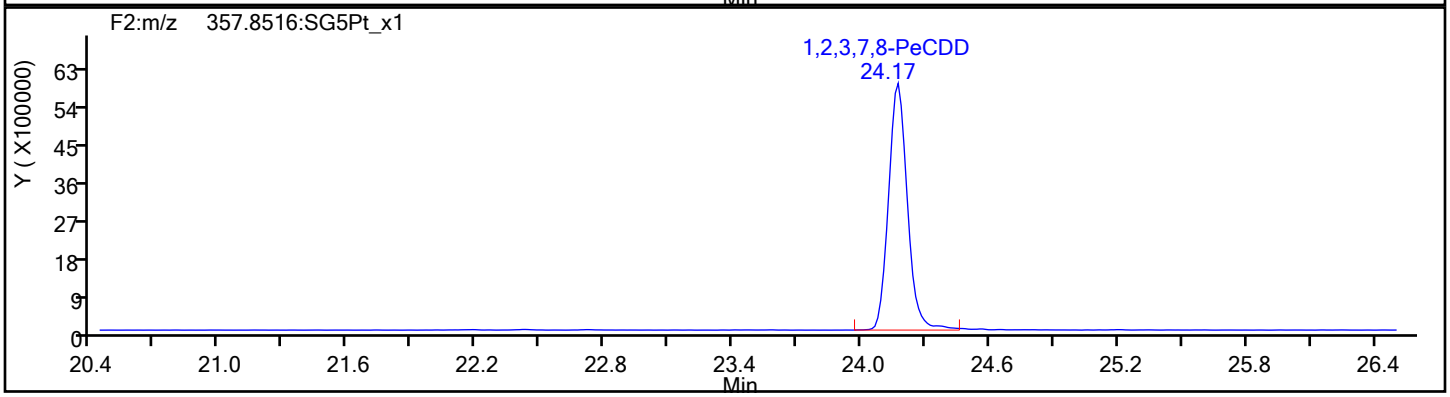
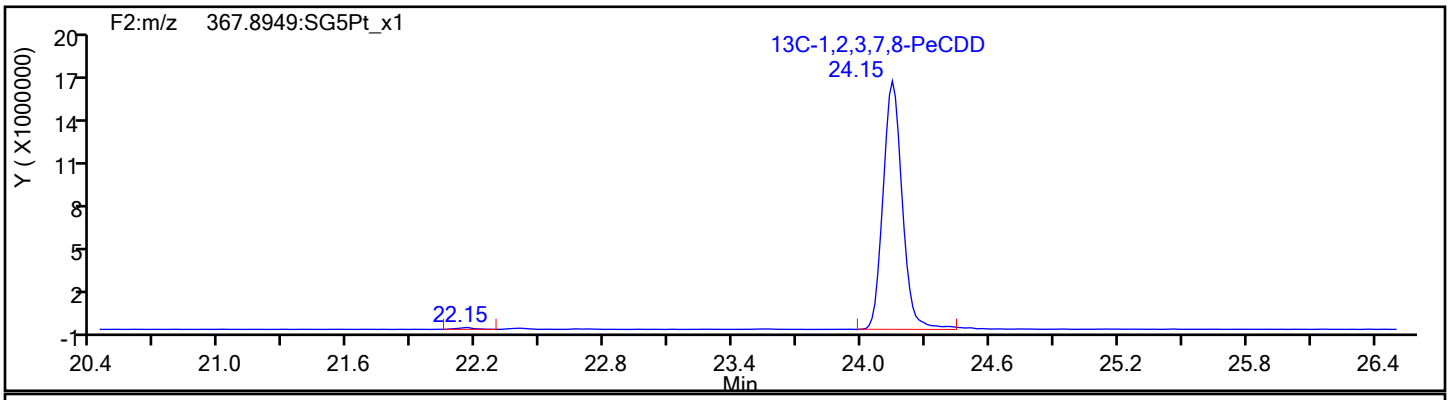
Column Type:	DB-5	Column Dia:	0.32 mm

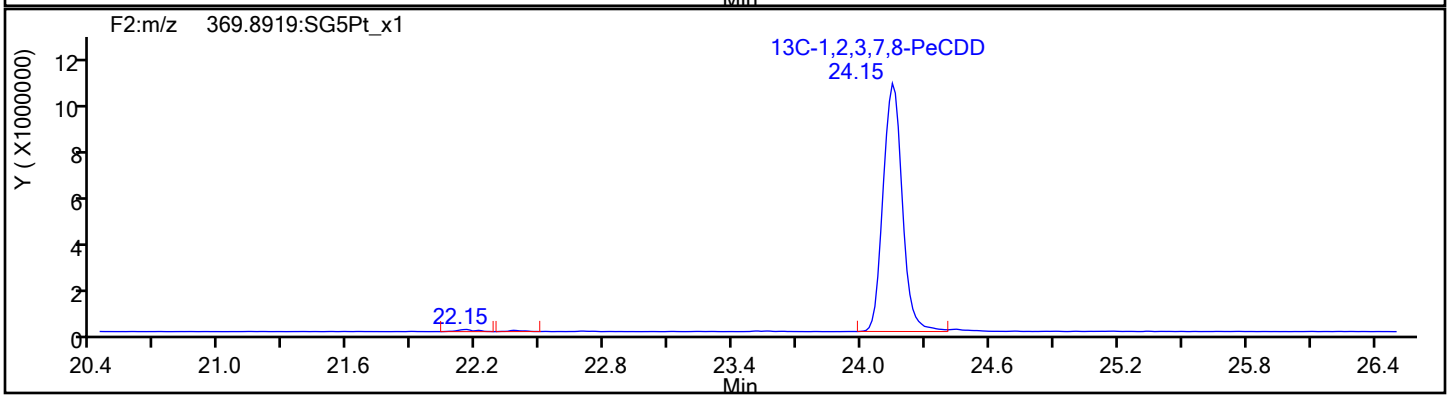
PeCDD





PeCDD Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
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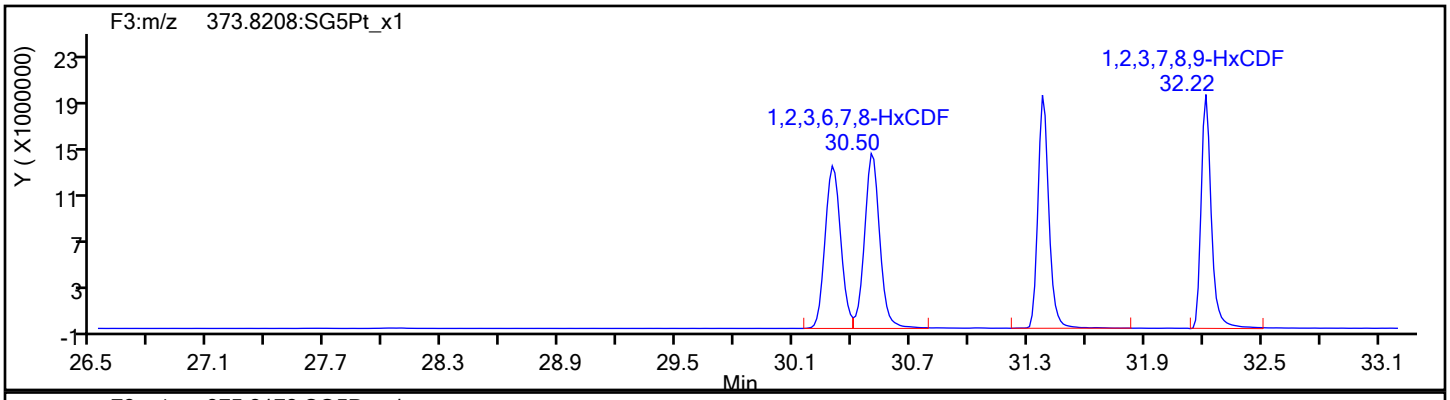
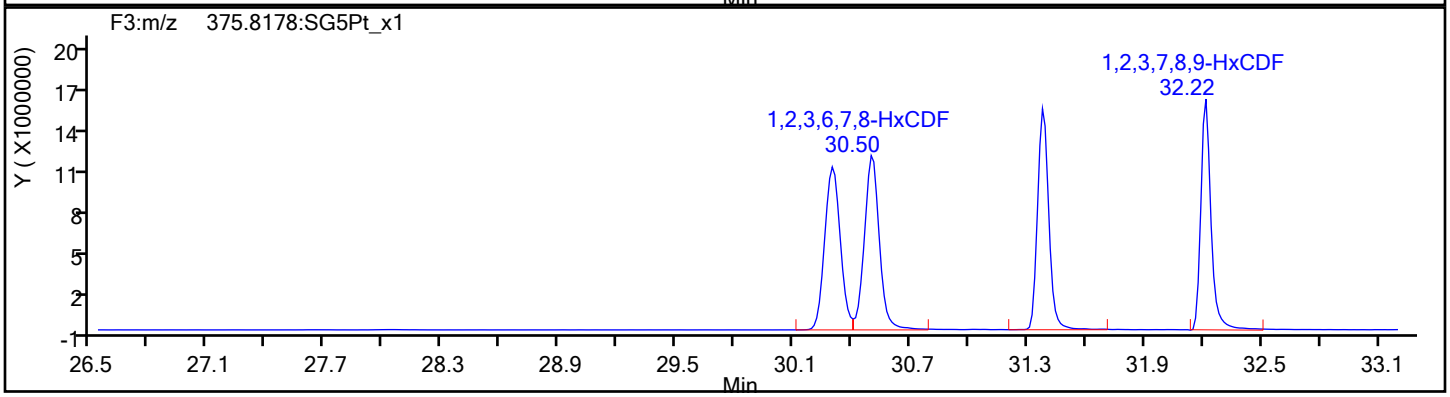
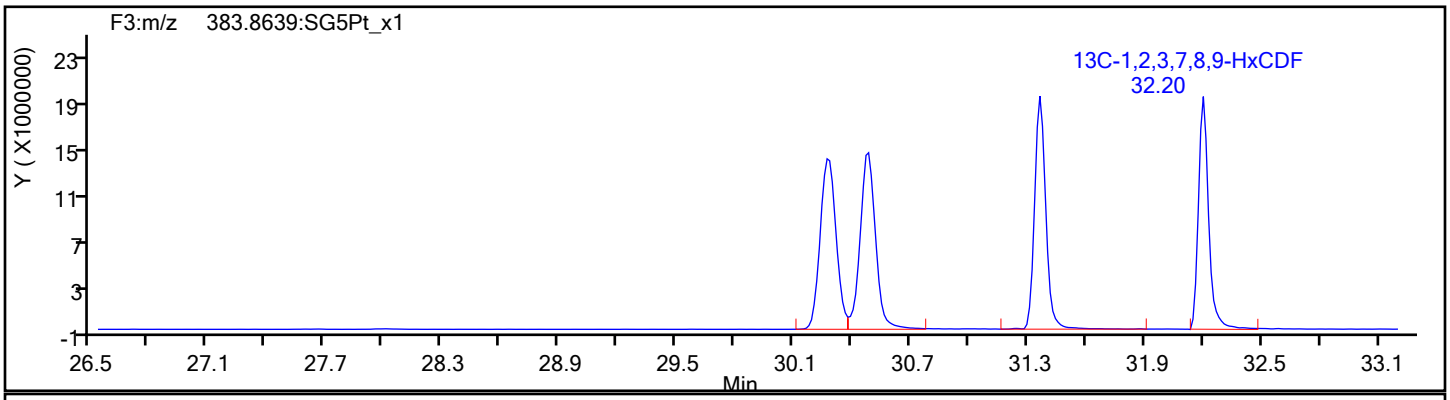
Column Type:	DB-5	Column Dia:	0.32 mm

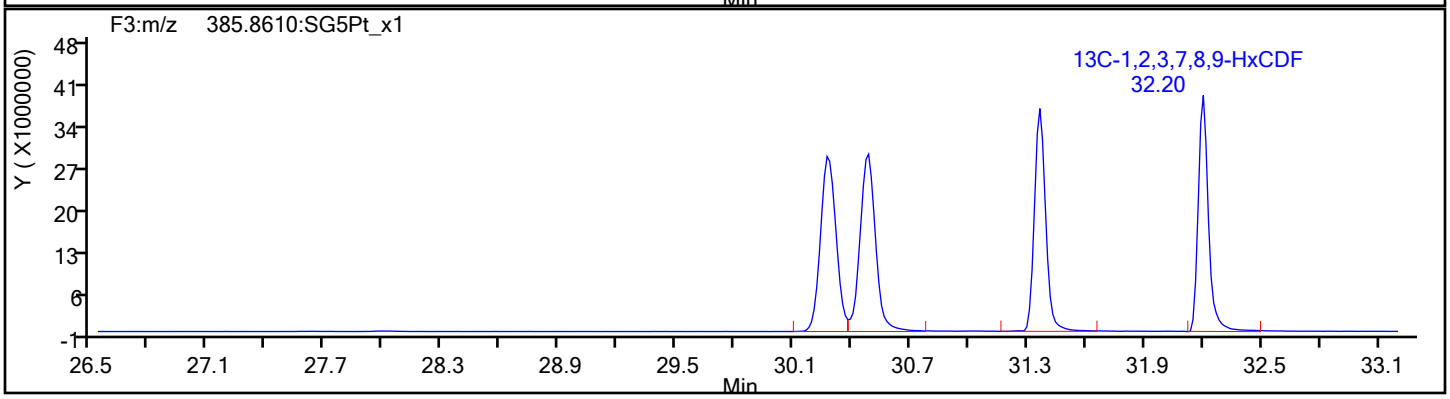
HxCDF





HxCDF Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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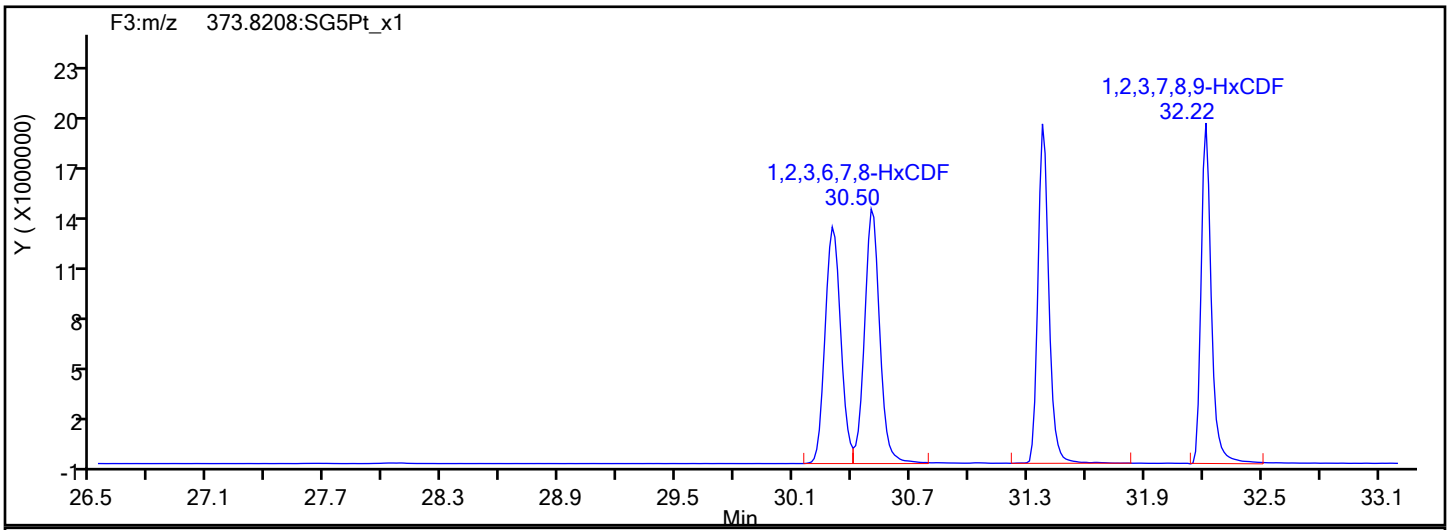
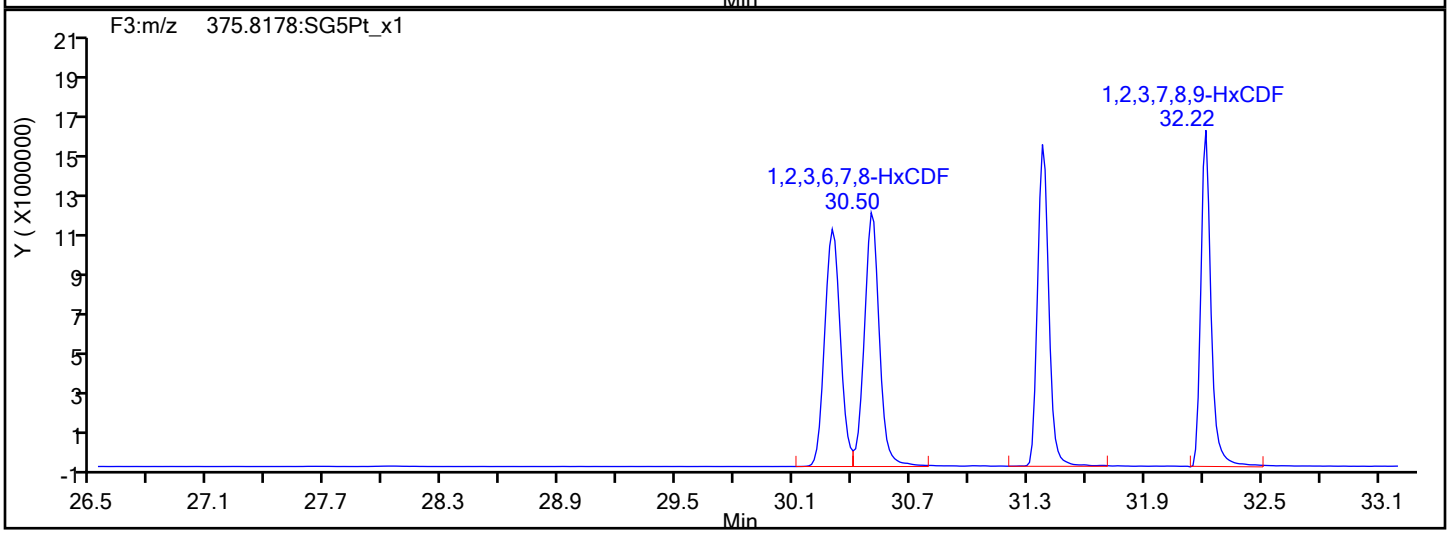
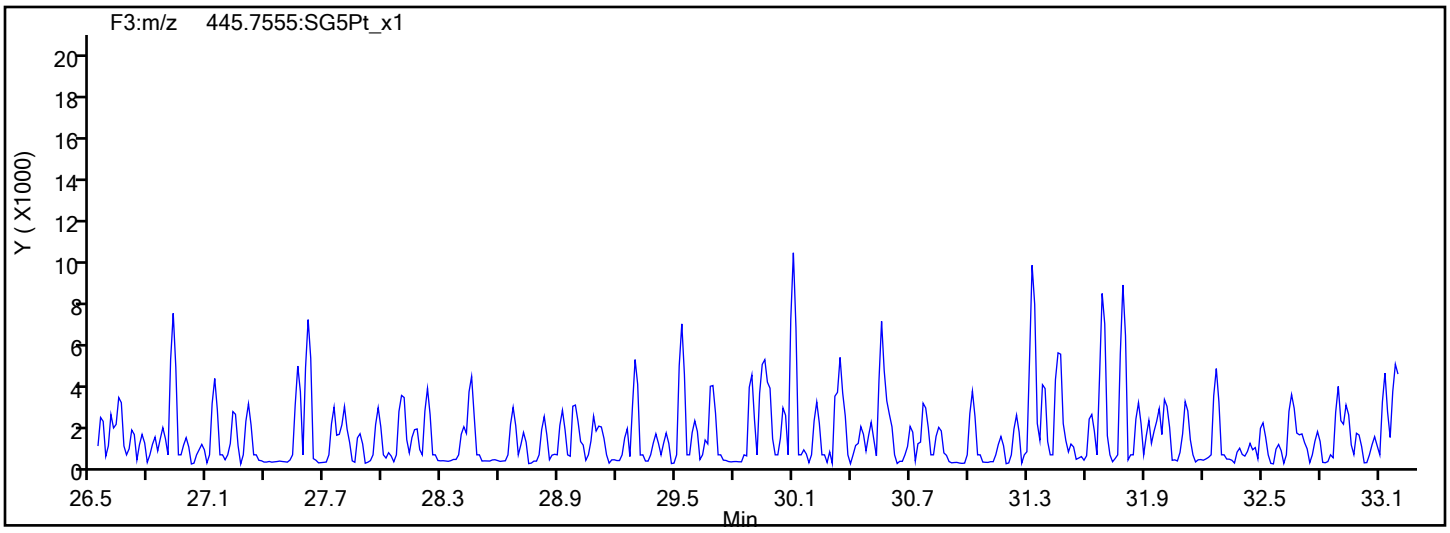
HxCDF





HxCDF Interference Mass



Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_5.d		
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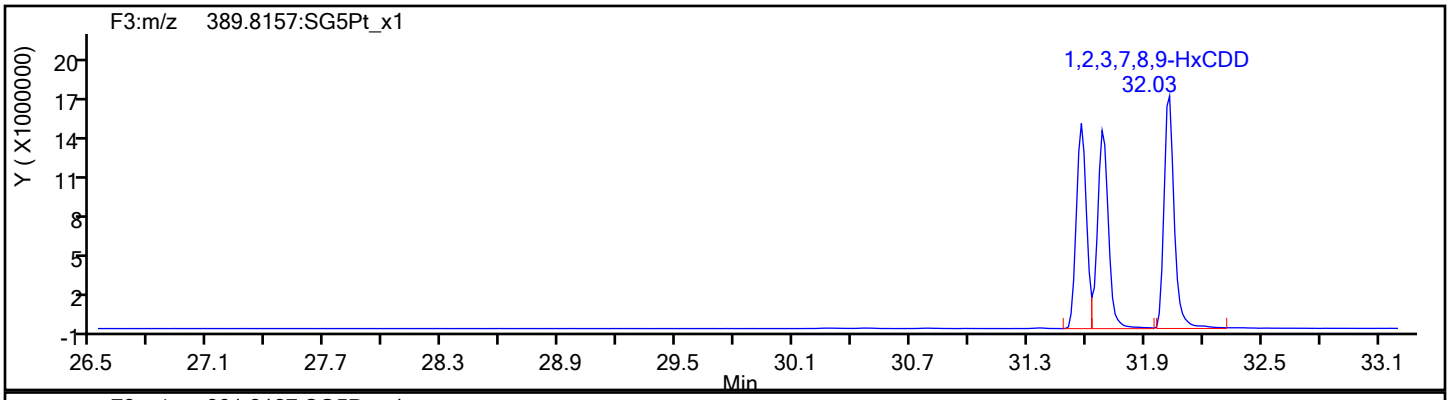
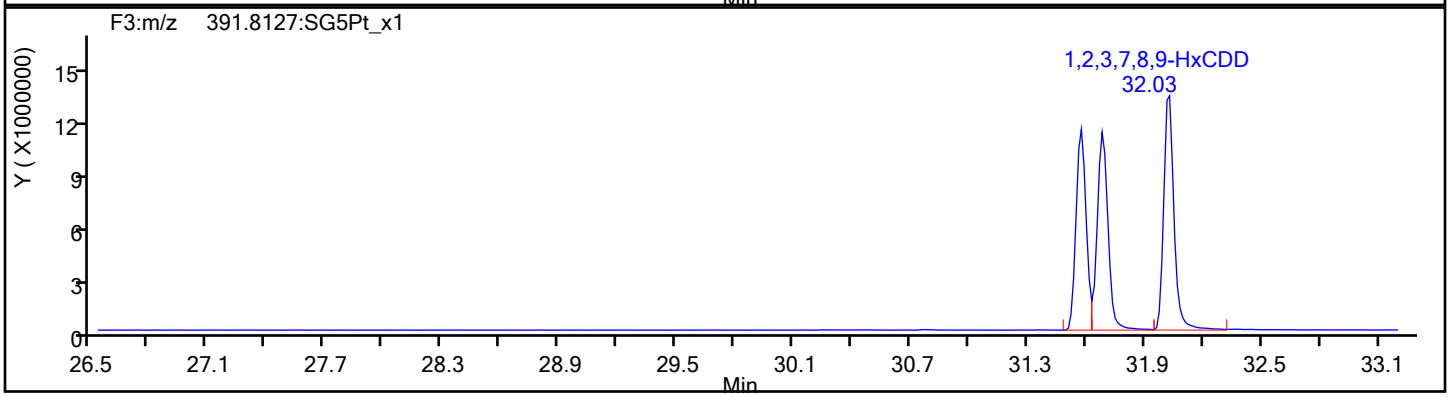
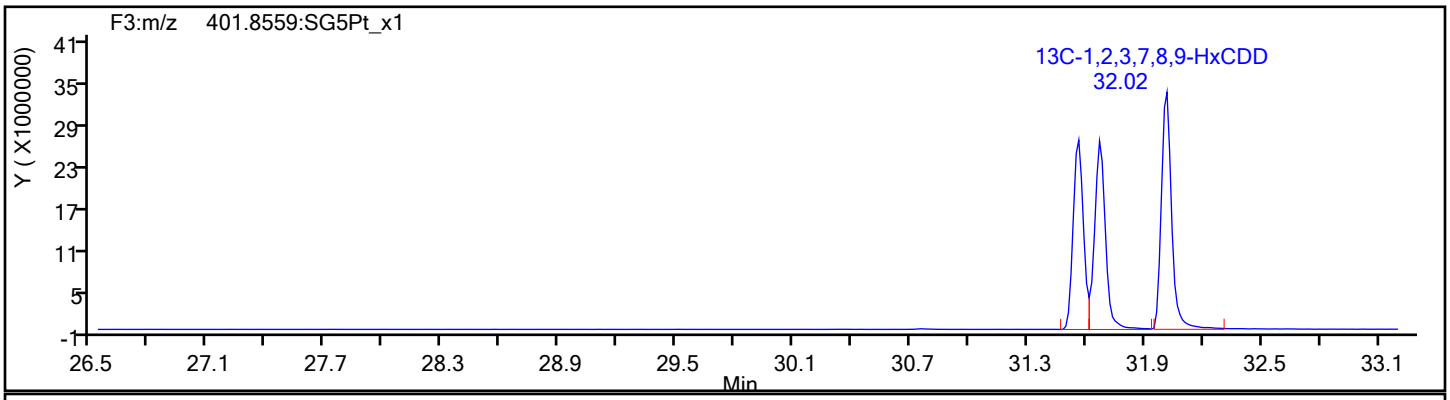
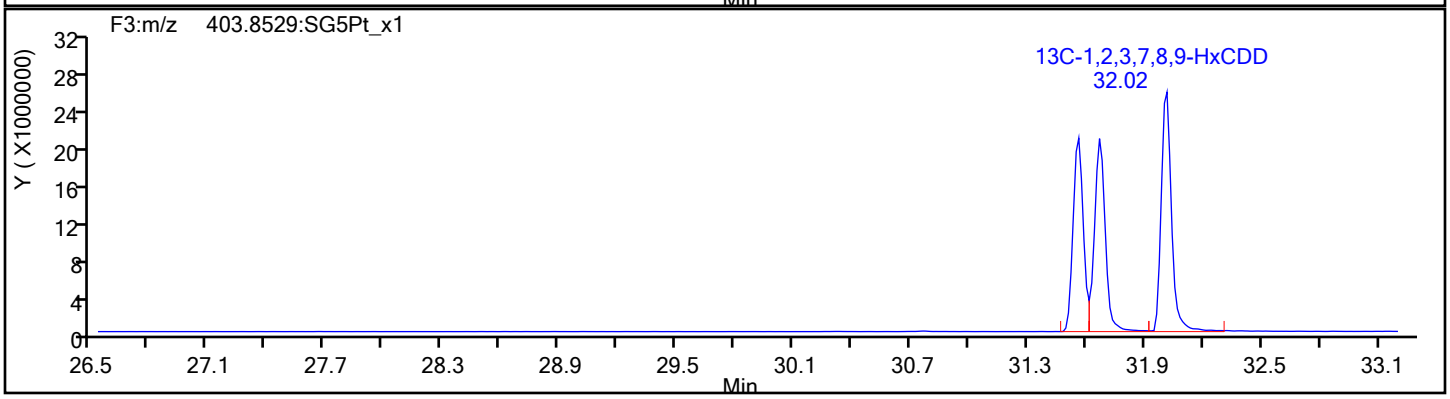
HxCDD





HxCDD Standards





Report Date: 12-Dec-2019 15:54:25 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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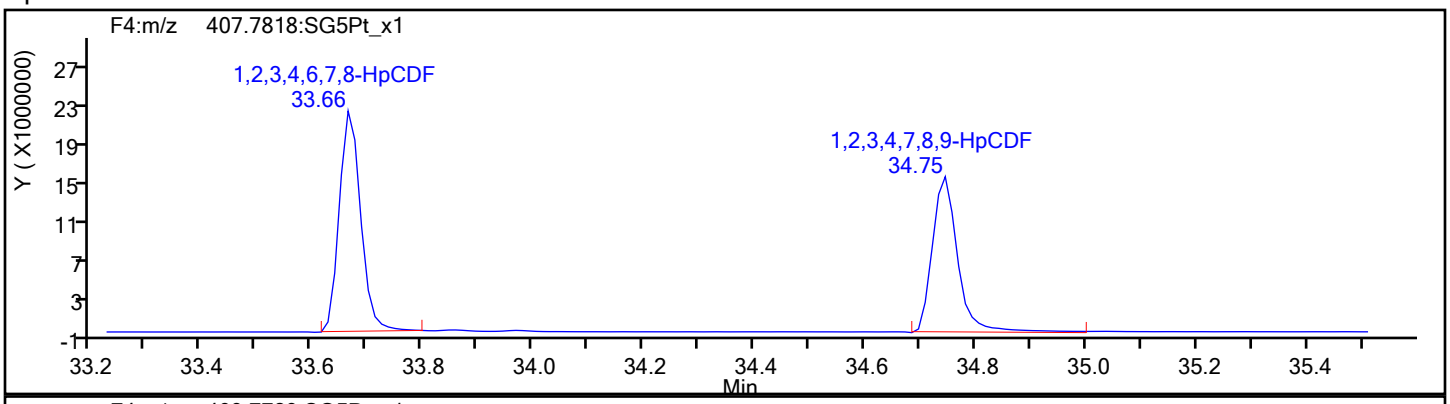
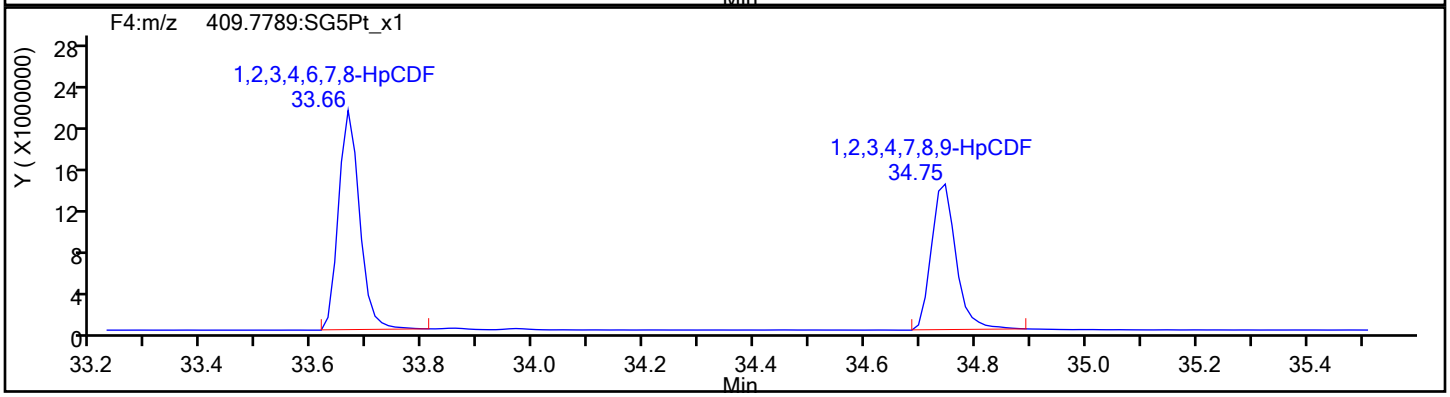
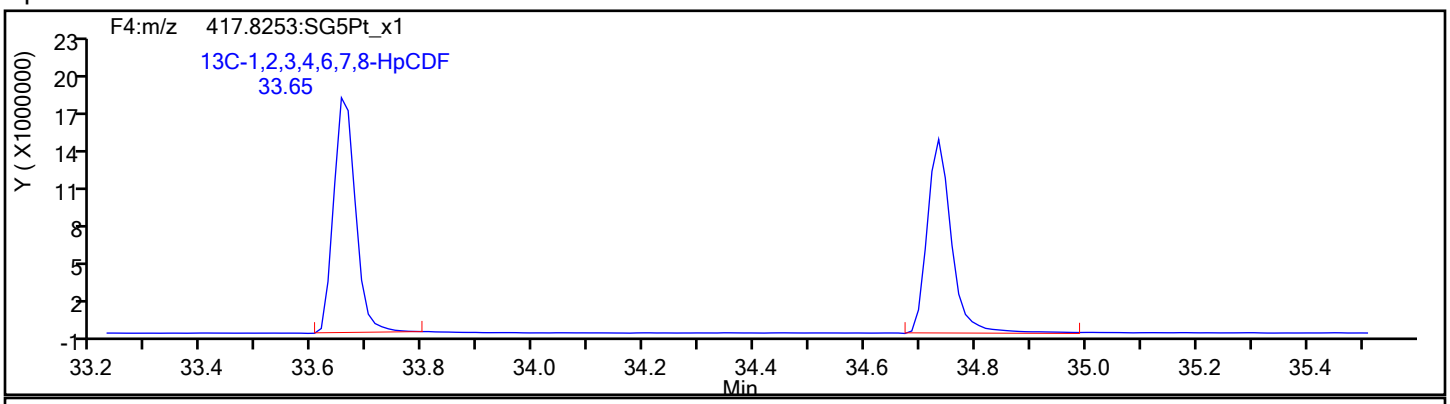
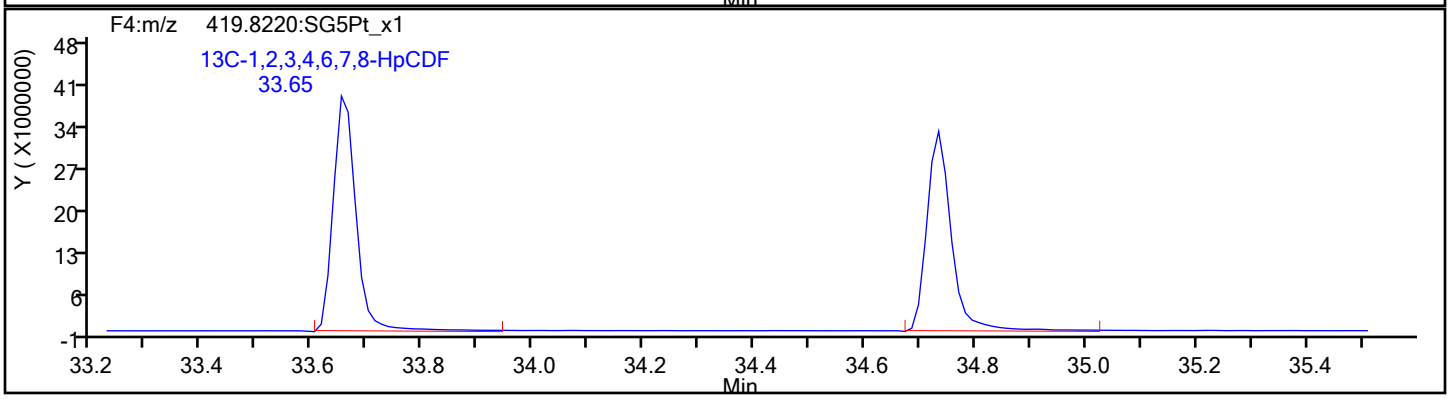
HpCDF





HpCDF Standards





Report Date: 12-Dec-2019 15:54:26 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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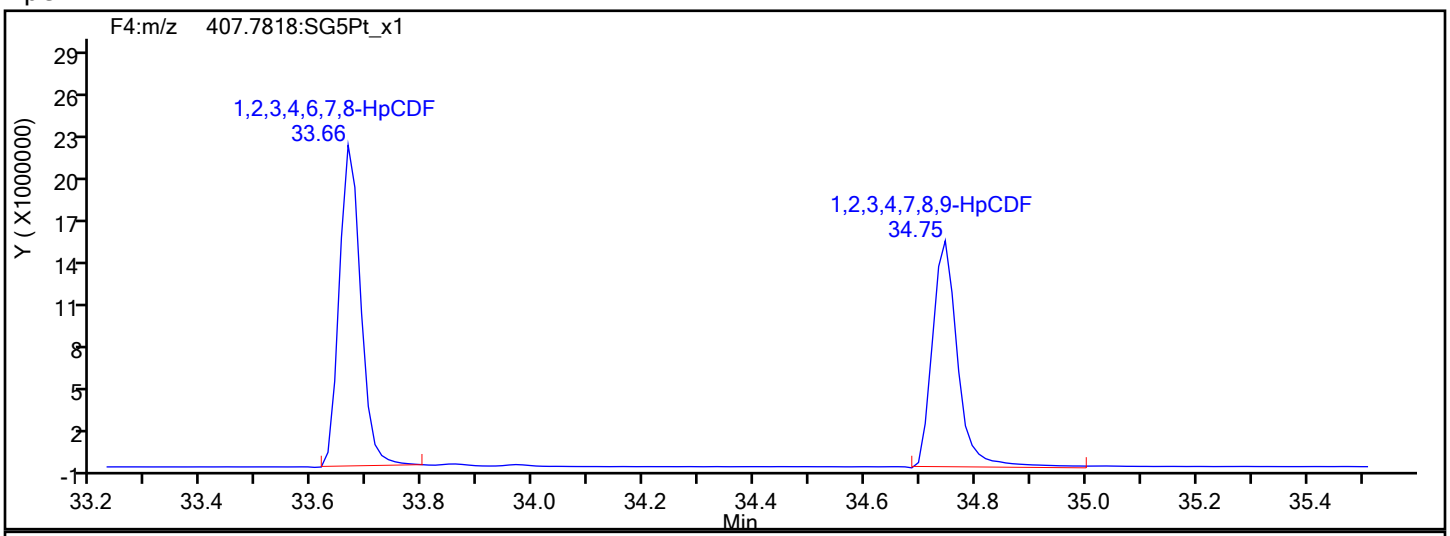
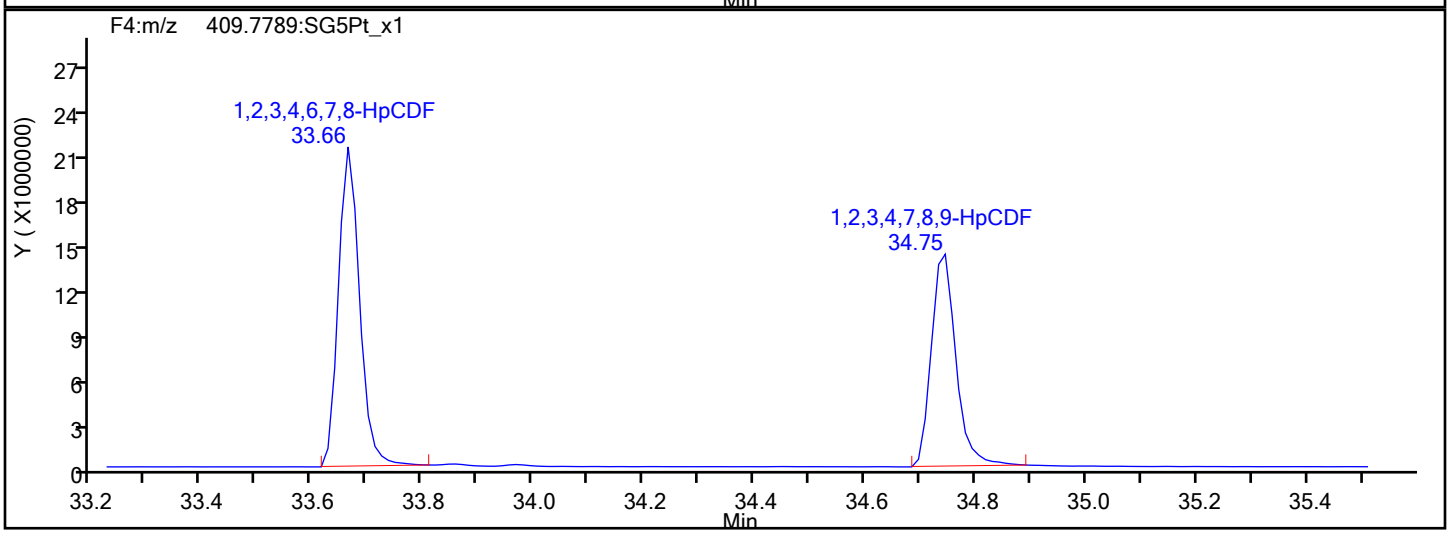
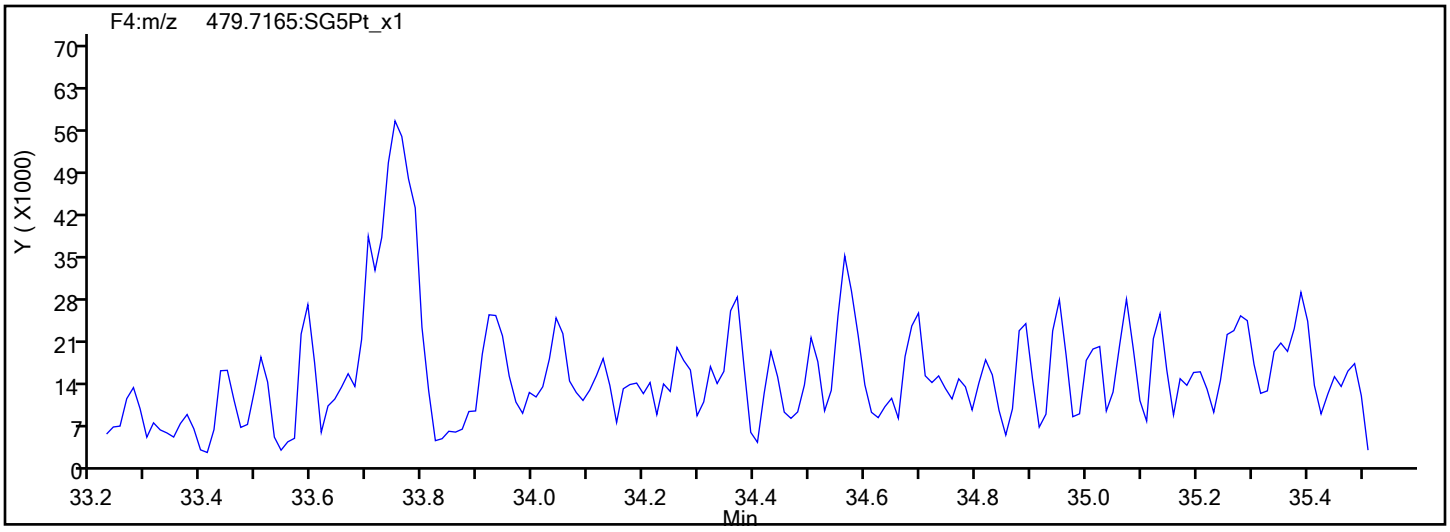
HpCDF





HpCDF Interference Mass



Report Date: 12-Dec-2019 15:54:26 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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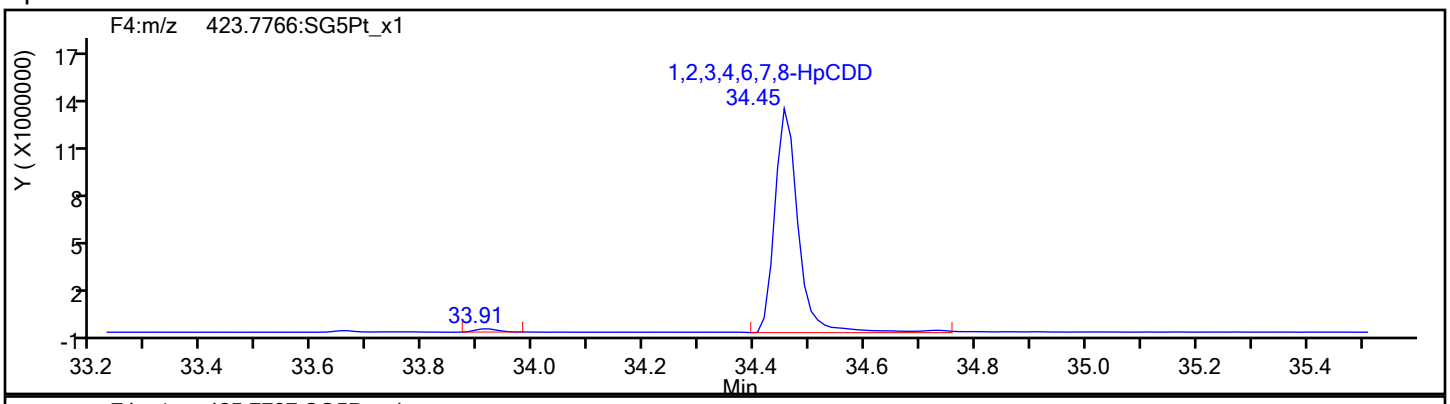
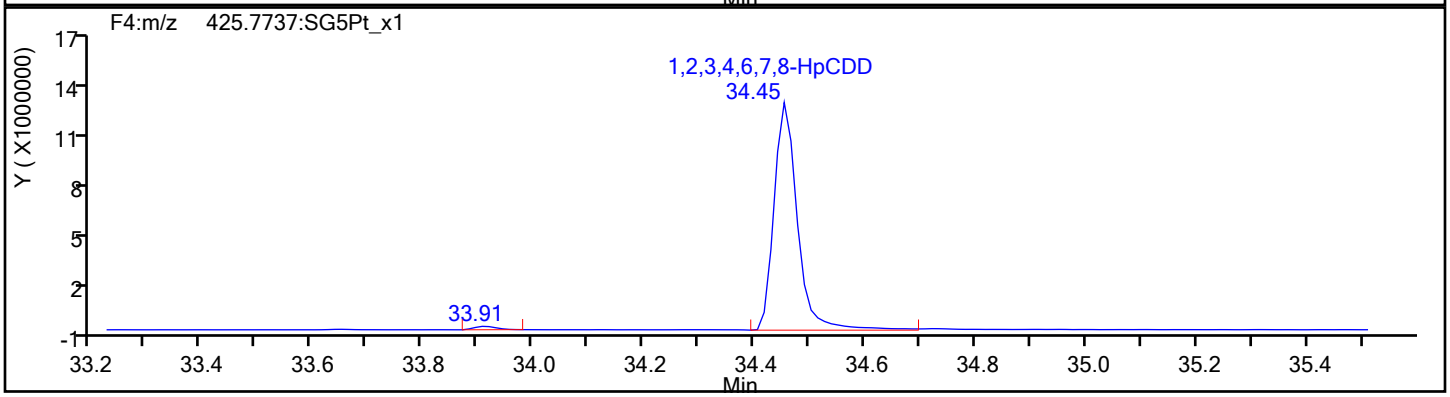
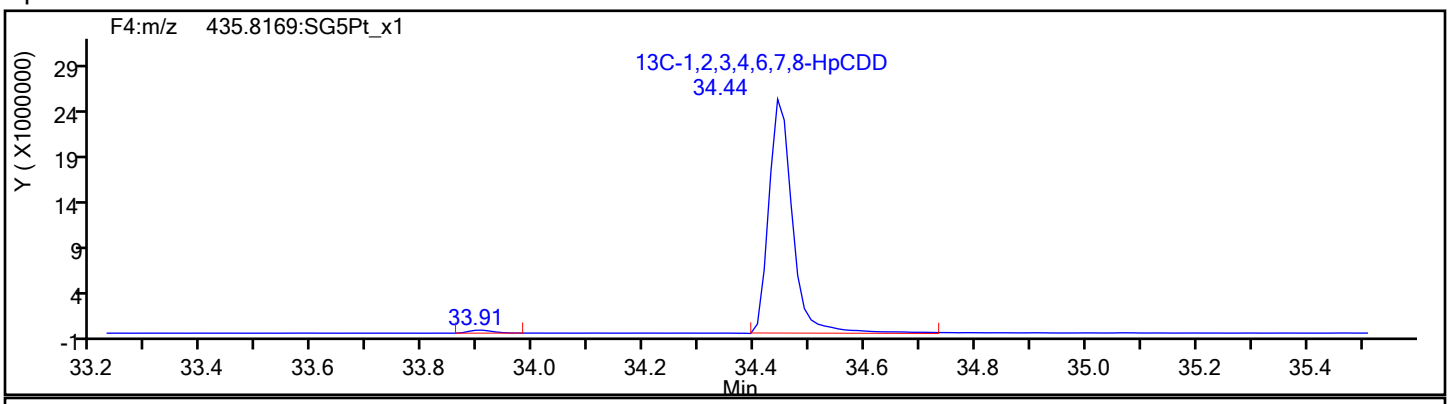
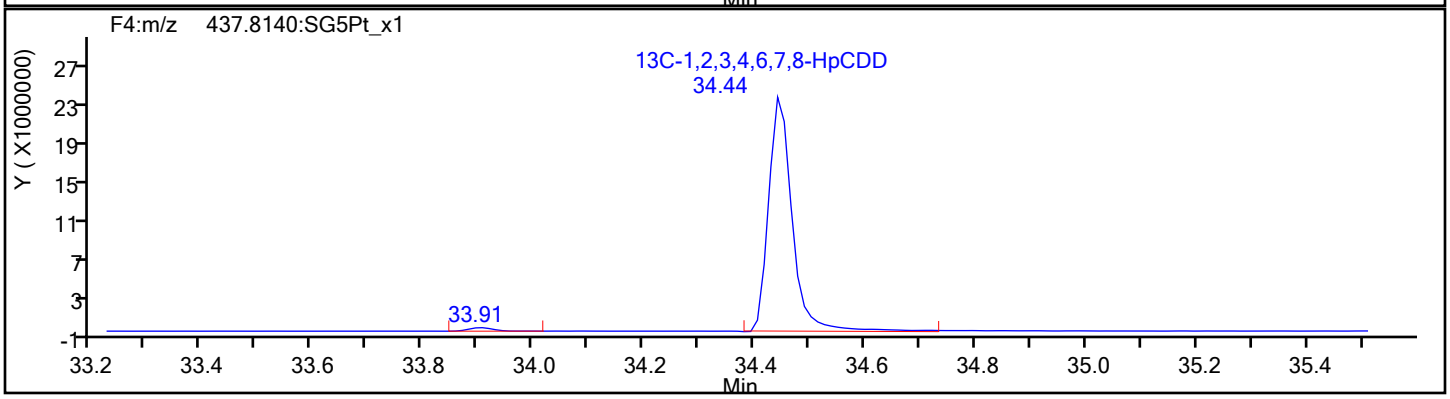
HpCDD





HpCDD Standards





Report Date: 12-Dec-2019 15:54:26 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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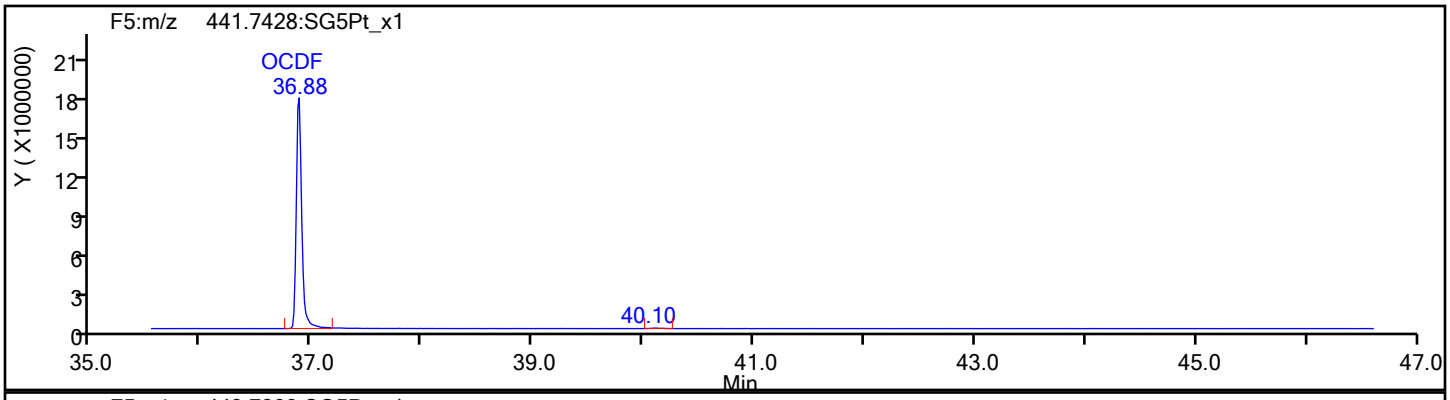
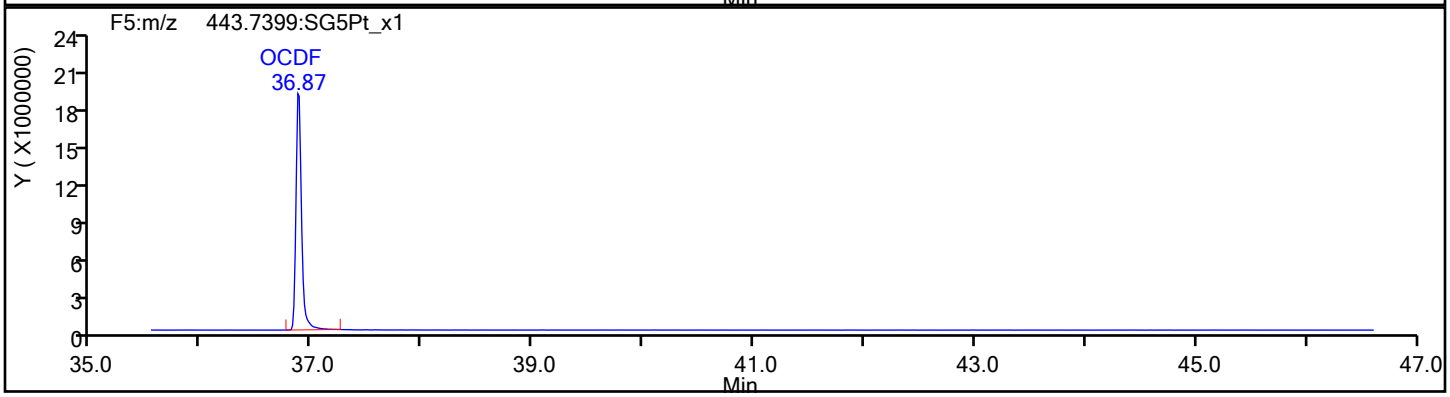
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





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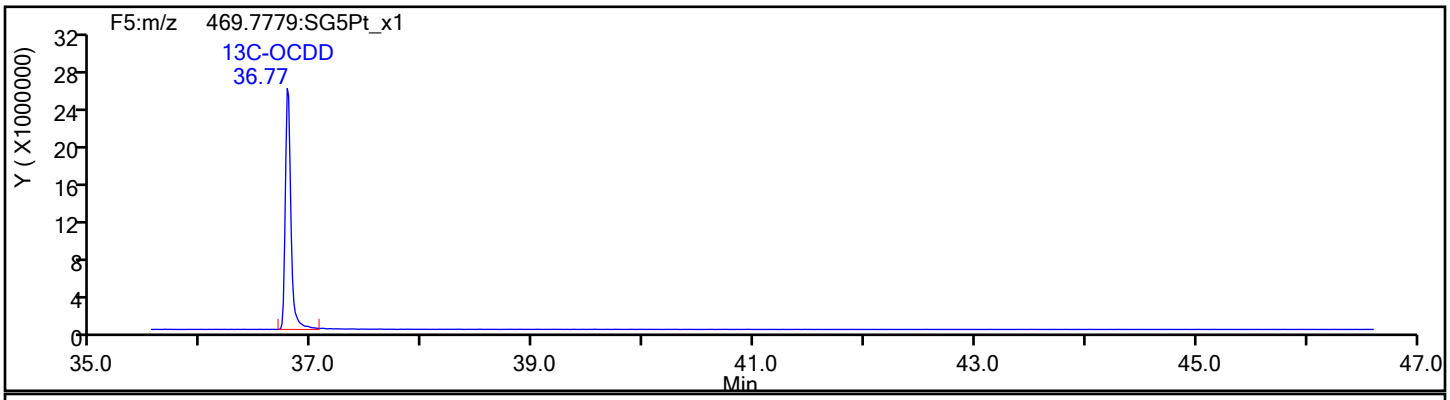

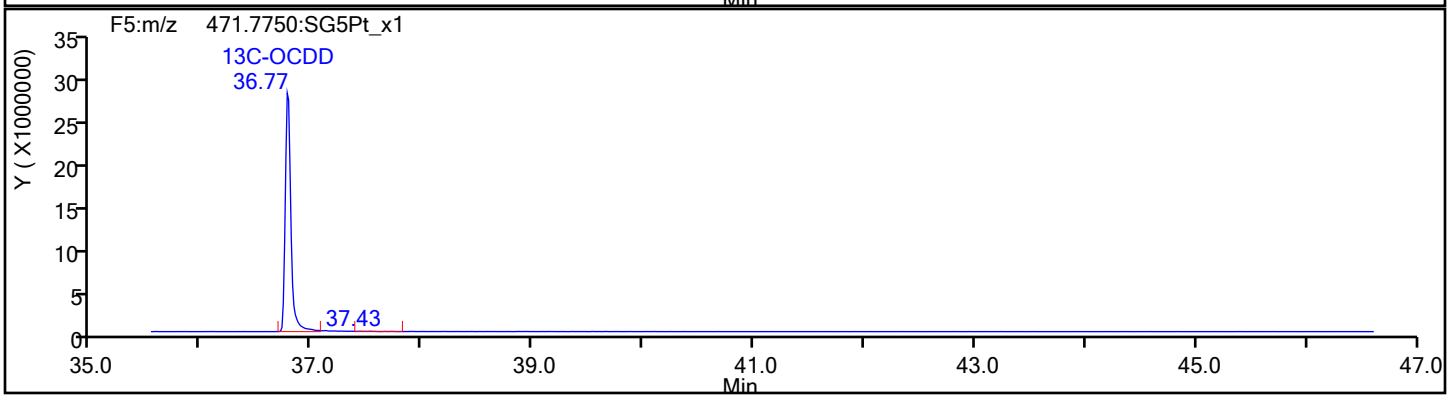

Report Date: 12-Dec-2019 15:54:26 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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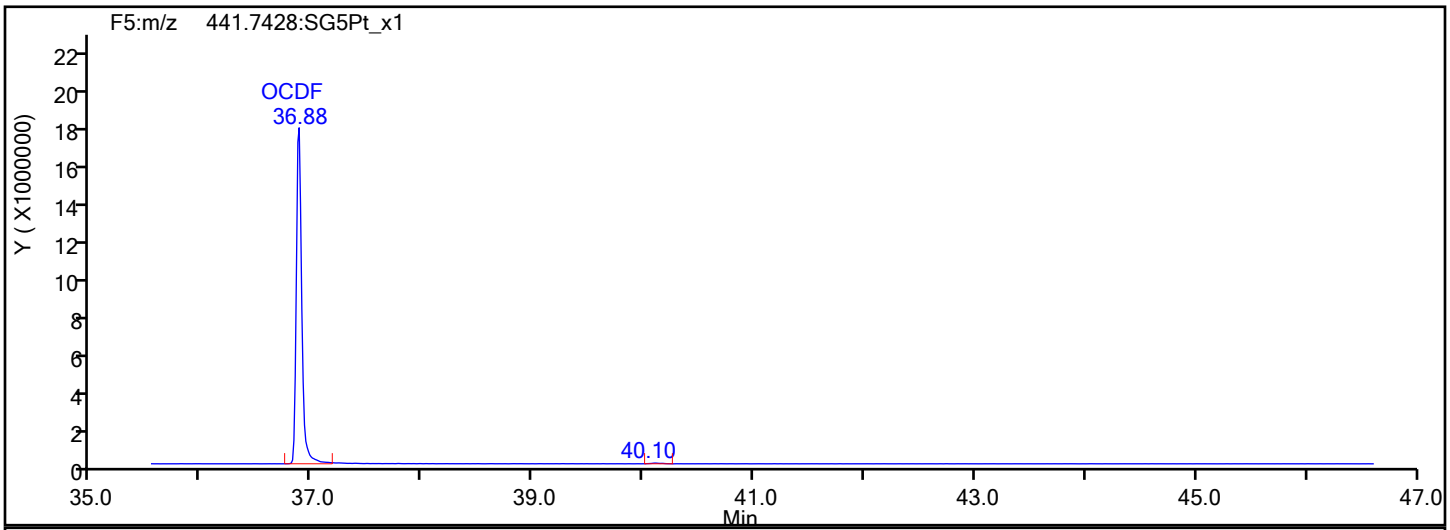
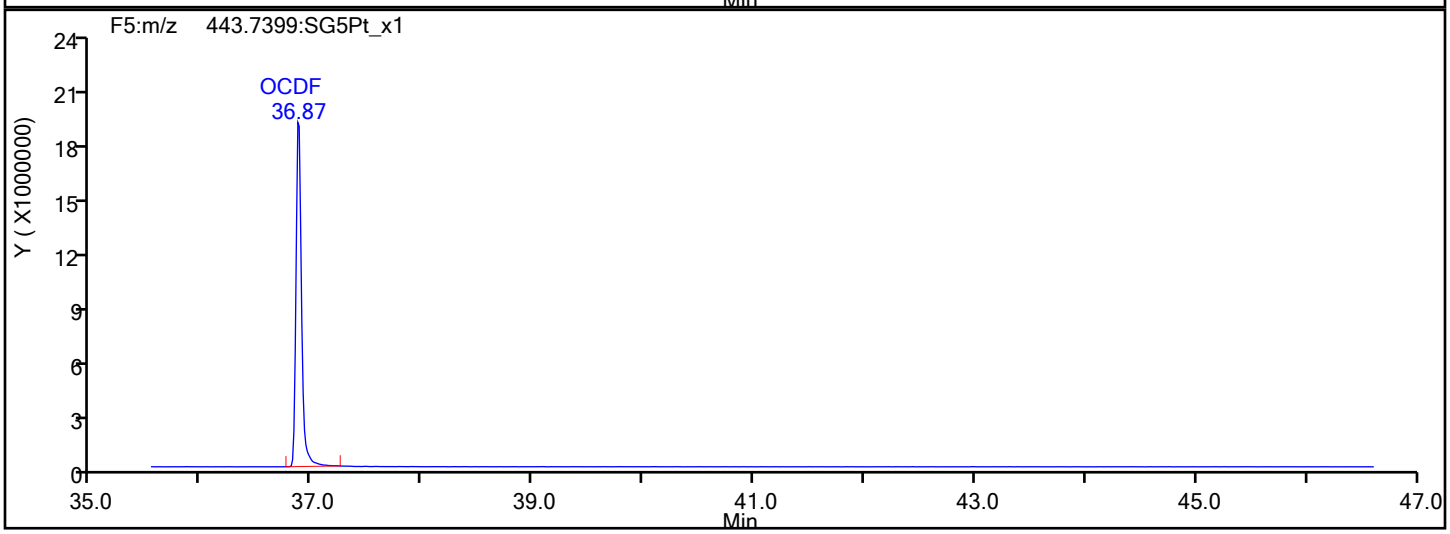
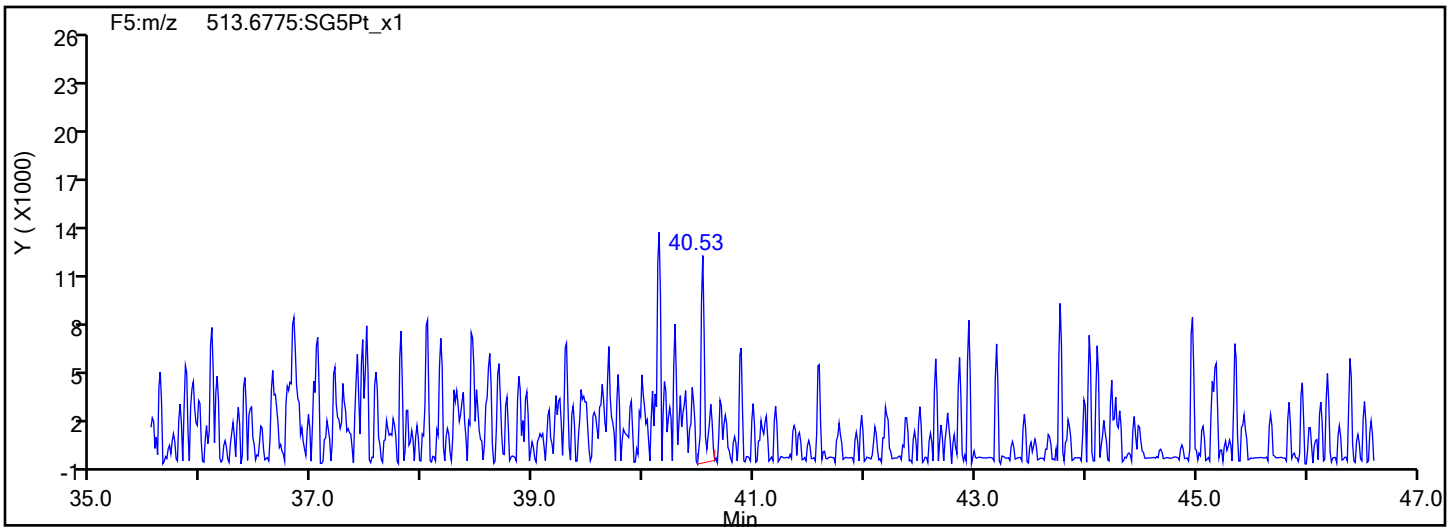
OCDF





OCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
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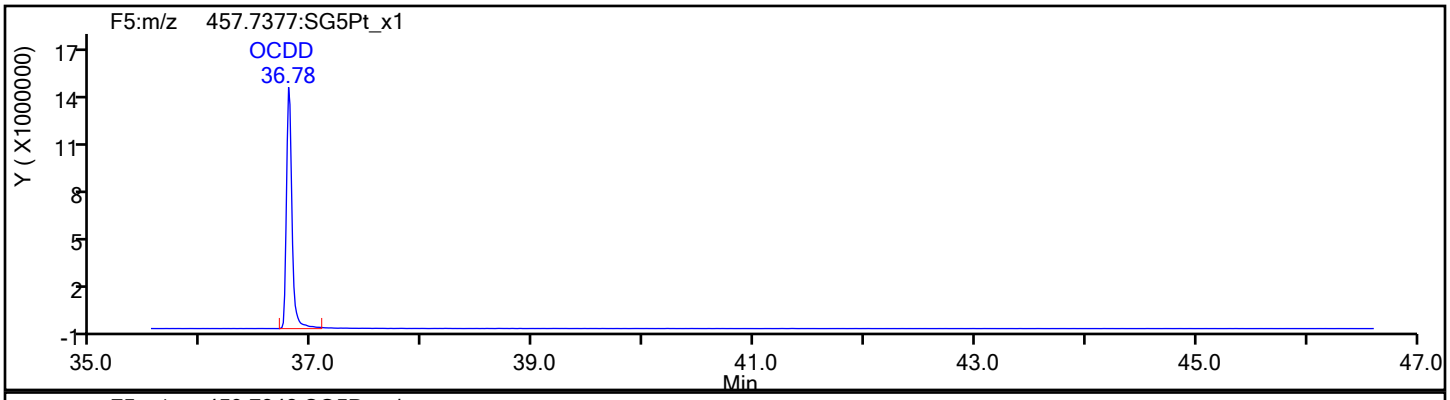
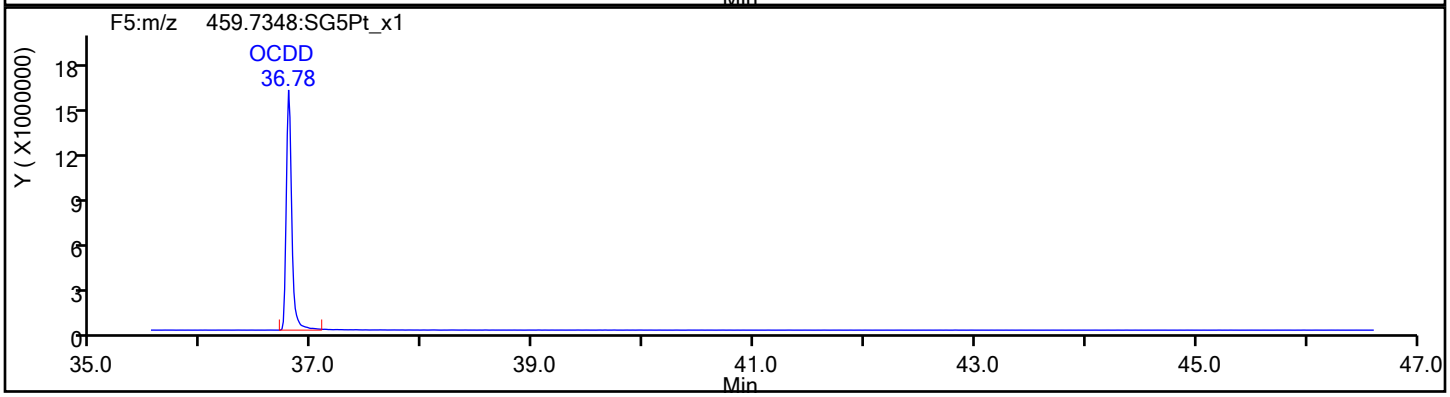
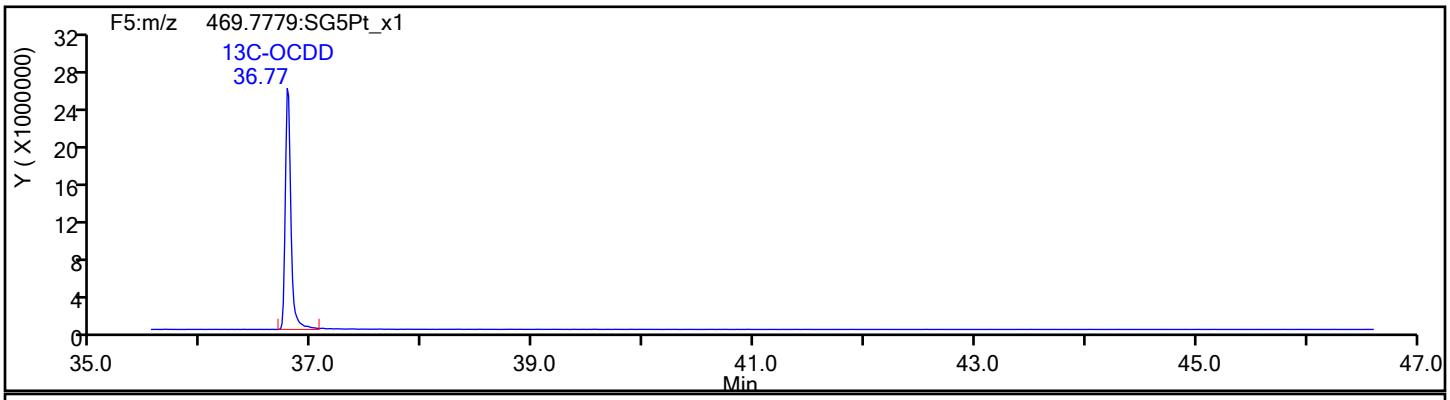
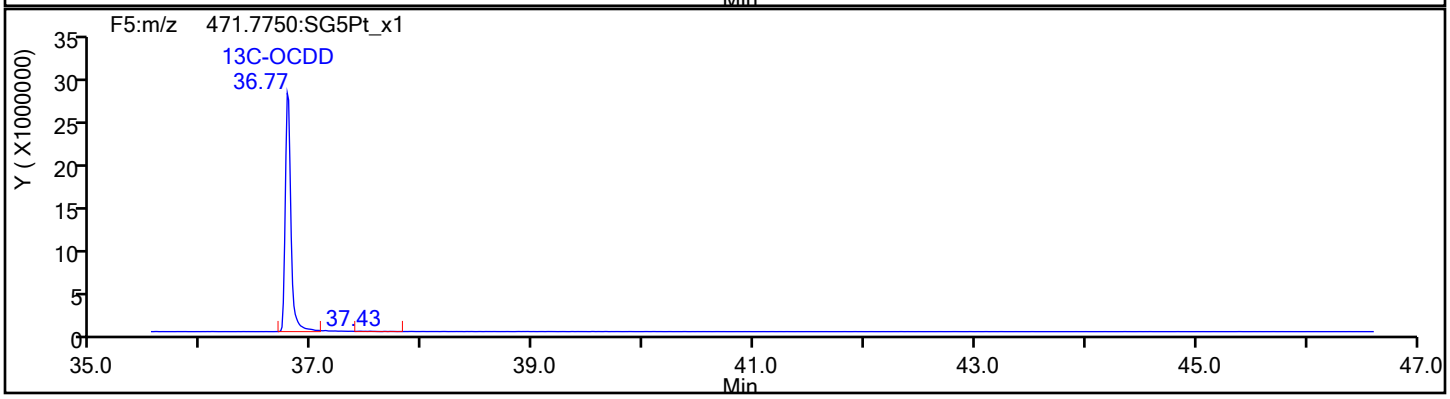
OCDD





OCDD Standards





Report Date: 12-Dec-2019 15:54:26 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L4		
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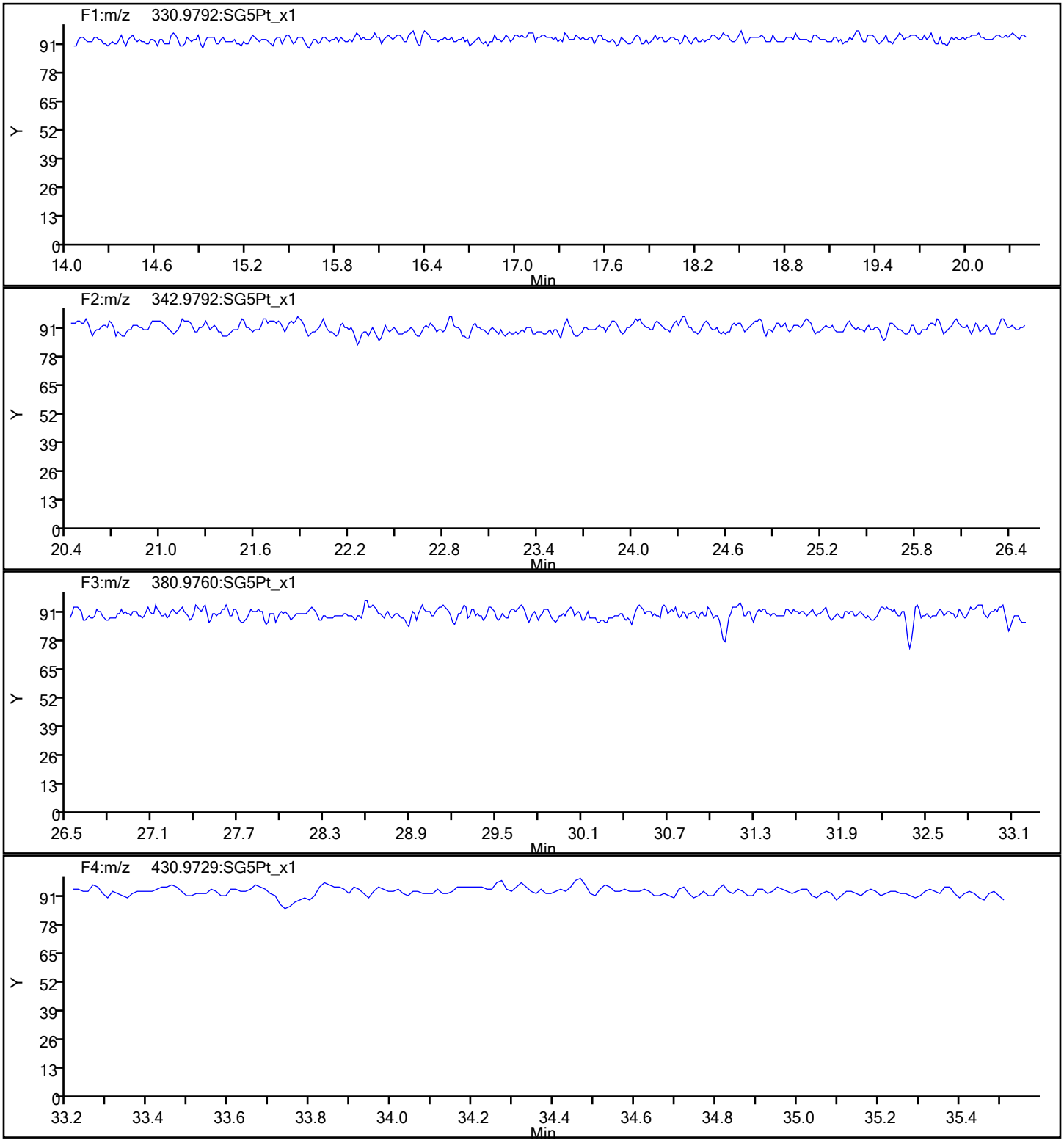
Column Type:	DB-5	Column Dia:	0.32 mm



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Eurofins TestAmerica, Sacramento

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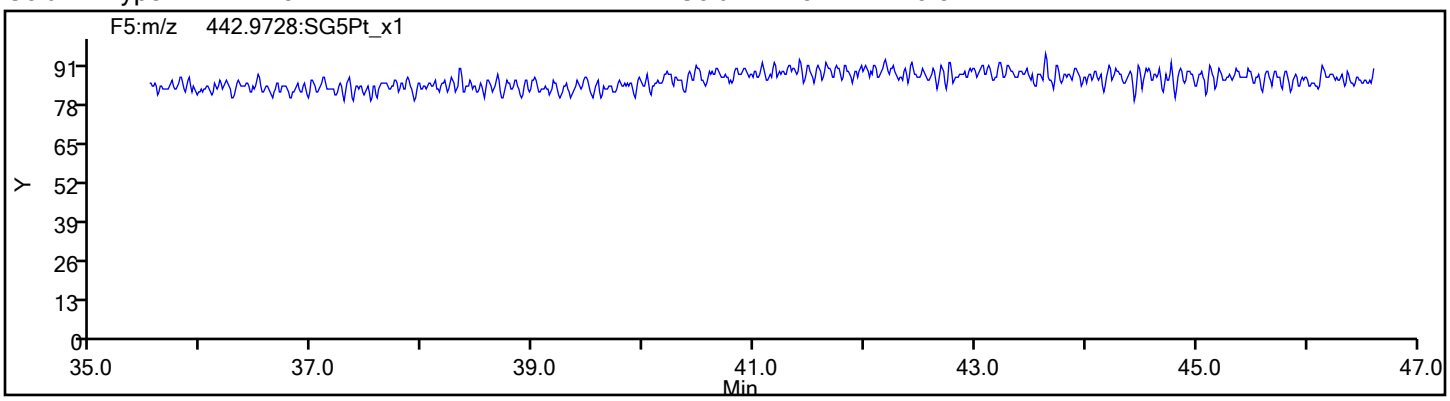


Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d
Lims ID: IC 5
Client ID: L5
Sample Type: IC Calib Level: 5
Inject. Date: 12-Dec-2019 13:51:32 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219C IC HRDXNL5_00028
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:32 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 14:41:50

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.672	224595364	0.78	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.158	314996891	0.81	1.4157	99.1	99.1	0.1628	0.1628	99.07	
2,3,7,8-TCDF	17.173	132413553	0.79	0.9502	44.2	44.2	0.1052	0.1052	111	
S Total TCDF					44.2	44.2	0.1052	0.1052		
D 13C-2,3,7,8-TCDD	17.854	223322673	0.80	0.9751	102.0	102.0	0.2435	0.2435	102	
2,3,7,8-TCDD	17.869	99082308	0.80	1.0477	42.3	42.3	0.0517	0.0517	106	
$ 37Cl4-2,3,7,8-TCDD	17.869	123340927		1.3480	40.7	40.7	0.0568	0.0568	102	
S Total TCDD					42.3	42.3	0.0517	0.0517		
D 13C-1,2,3,7,8-PeCDF	22.100	266542876	1.60	1.1786	100.7	100.7	0.2421	0.2421	101	
1,2,3,7,8-PeCDF	22.127	581363087	1.58	1.0302	211.7	211.7	0.6180	0.6180	106	
D 13C-2,3,4,7,8-PeCDF	23.423	253995484	1.60	1.1308	100.0	100.0	0.2524	0.2524	100	a
2,3,4,7,8-PeCDF	23.450	576277220	1.55	1.0410	218.0	218.0	0.6853	0.6853	109	
S Total PeCDF					429.7	429.7	0.6517	0.6517		
D 13C-1,2,3,7,8-PeCDD	24.132	175058491	1.60	0.7572	102.9	102.9	0.1407	0.1407	103	
1,2,3,7,8-PeCDD	24.159	390728173	1.59	1.0855	205.6	205.6	0.2728	0.2728	103	
S Total PeCDD					205.6	205.6	0.2728	0.2728		
D 13C-1,2,3,4,7,8-HxCDF	30.273	234227258	0.51	1.1043	100.3	100.3	0.3003	0.3003	100	
1,2,3,4,7,8-HxCDF	30.300	570996325	1.21	1.1472	212.5	212.5	0.6662	0.6662	106	
D 13C-1,2,3,6,7,8-HxCDF	30.473	243919748	0.54	1.1470	100.5	100.5	0.2891	0.2891	101	
1,2,3,6,7,8-HxCDF	30.499	592549839	1.27	1.1450	212.2	212.2	0.6189	0.6189	106	
D 13C-2,3,4,6,7,8-HxCDF	31.351	232992892	0.53	1.0769	102.3	102.3	0.3079	0.3079	102	
2,3,4,6,7,8-HxCDF	31.378	574663111	1.24	1.1726	210.3	210.3	0.4726	0.4726	105	
D 13C-1,2,3,7,8,9-HxCDF	32.190	218257445	0.52	1.0115	102.0	102.0	0.3278	0.3278	102	
1,2,3,7,8,9-HxCDF	32.204	535635876	1.21	1.1717	209.5	209.5	0.4483	0.4483	105	
S Total HxCDF					844.5	844.5	0.5515	0.5515		
* 13C-1,2,3,7,8,9-HxCDD	32.004	211535818	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.551	167631105	1.27	0.7962	99.5	99.5	0.1878	0.1878	99.53	a
1,2,3,4,7,8-HxCDD	31.565	391874961	1.25	1.0934	213.8	213.8	0.3654	0.3654	107	
D 13C-1,2,3,6,7,8-HxCDD	31.671	191249218	1.28	0.8720	103.7	103.7	0.1715	0.1715	104	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.684	402773504	1.26	1.0429	201.9	201.9	0.3687	0.3687	101	
1,2,3,7,8,9-HxCDD	32.017	440337374	1.26	1.2073	203.3	203.3	0.3246	0.3246	102	
S Total HxCDD					619.0	619.0	0.3529	0.3529		
D 13C-1,2,3,4,6,7,8-HpCDF	33.652	161981056	0.45	0.7577	101.1	101.1	0.6163	0.6163	101	
1,2,3,4,6,7,8-HpCDF	33.664	525836756	1.01	1.4804	219.3	219.3	1.577	1.577	110	
D 13C-1,2,3,4,7,8,9-HpCDF	34.722	154442339	0.45	0.6941	105.2	105.2	0.6727	0.6727	105	a
1,2,3,4,7,8,9-HpCDF	34.734	425539186	1.06	1.2933	213.0	213.0	2.068	2.068	107	
S Total HpCDF					432.3	432.3	1.823	1.823		
D 13C-1,2,3,4,6,7,8-HpCDD	34.442	159237326	1.08	0.7058	106.7	106.7	0.5432	0.5432	107	
1,2,3,4,6,7,8-HpCDD	34.454	348725265	1.05	1.0535	207.9	207.9	1.074	1.074	104	
S Total HpCDD					207.9	207.9	1.074	1.074		
D 13C-OCDD	36.770	208300311	0.92	0.4603	213.9	213.9	0.1729	0.1729	107	
OCDF	36.866	611942959	0.92	1.3945	421.3	421.3	0.1647	0.1647	105	
OCDD	36.782	476901861	0.90	1.1362	403.0	403.0	0.1660	0.1660	101	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL5_00028 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d
Lims ID: IC 5
Client ID: L5
Sample Type: IC Calib Level: 5
Inject. Date: 12-Dec-2019 13:51:32 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219C IC HRDXNL5_00028
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:32 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 14:41:50

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.672	17.666	0		98666902	24515919	22061	55152	1111		
333.9339	17.657	17.666	-1		125928462	31246645	30891	77227	1012	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.158	17.164	0	0.971	141027224	35995868	31921	79802	1128		
317.9389	17.158	17.164	0	0.971	173969667	43295209	19473	48682	2223	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.173	17.176	0	1.001	58421847	14939787	13152	32880	1136		
305.8987	17.173	17.176	0	1.001	73991706	19209026	18537	46342	1036	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.854	17.854	0	1.010	99307865	24850045	22061	55152	1126		
333.9339	17.854	17.854	0	1.010	124014808	31162735	30891	77227	1009	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.869	17.872	0	1.001	43913881	10690254	7340	18350	1456		
321.8936	17.869	17.872	0	1.001	55168427	13628007	4800	12000	2839	0.80(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.869	17.872	0	1.011	123340927	30294267	17089	42722	1773		
13C-1,2,3,7,8-PeCDF											
351.9000	22.100	22.103	0	1.251	163865860	29956021	36906	92265	812		
353.8970	22.100	22.103	0	1.251	102677016	18751883	26749	66872	701	1.60(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.127	22.130	0	1.001	356370962	66490206	72745	181862	914		
341.8567	22.127	22.130	0	1.001	224992125	40936011	51308	128270	798	1.58(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											a
351.9000	23.423	23.426	0	1.325	156282583	26674373	36906	92265	723		a
353.8970	23.423	23.426	0	1.325	97712901	16797541	26749	66872	628	1.60(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.450	23.450	0	1.001	350354478	57462536	72745	181862	790		
341.8567	23.450	23.450	0	1.001	225922742	37730273	51308	128270	735	1.55(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.132	24.137	0	1.366	107751383	17516576	13542	33855	1294		
369.8919	24.132	24.137	0	1.366	67307108	10994191	10221	25552	1076	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.159	24.162	0	1.001	239758273	39037102	21414	53535	1823		
357.8516	24.159	24.162	0	1.001	150969900	24882755	12353	30882	2014	1.59(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.273	30.270	0	0.946	78644228	14104833	24363	60907	579		
385.8610	30.273	30.270	0	0.946	155583030	28295769	55002	137505	514	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.300	30.300	0	1.001	313081855	56478414	75373	188432	749		
375.8178	30.286	30.300	-1	1.000	257914470	46425640	54242	135605	856	1.21(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.473	30.473	0	0.952	85087686	15906610	24363	60907	653		
385.8610	30.473	30.473	0	0.952	158832062	29820804	55002	137505	542	0.54(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.499	30.497	0	1.001	331562685	60661773	75373	188432	805		
375.8178	30.499	30.497	0	1.001	260987154	47748698	54242	135605	880	1.27(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.351	31.357	0	0.980	81056434	20265978	24363	60907	832		
385.8610	31.351	31.357	0	0.980	151936458	38212025	55002	137505	695	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.378	31.375	0	1.001	317706357	79190734	75373	188432	1051		
375.8178	31.378	31.375	0	1.001	256956754	63014833	54242	135605	1162	1.24(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.190	32.196	0	1.006	74527909	21136572	24363	60907	868		
385.8610	32.190	32.196	0	1.006	143729536	40554765	55002	137505	737	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.204	32.209	0	1.000	292943277	81353735	75373	188432	1079		
375.8178	32.204	32.209	0	1.000	242692599	67884862	54242	135605	1252	1.21(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.004	32.004	0		119156228	33909457	18818	47045	1802		
403.8529	32.004	32.004	0		92379590	25930247	16982	42455	1527	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											a
401.8559	31.551	31.557	0	0.986	93899540	26128579	18818	47045	1388		a
403.8529	31.551	31.557	0	0.986	73731565	20820763	16982	42455	1226	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.565	31.570	0	1.000	218078173	57189299	41171	102927	1389		
391.8127	31.565	31.570	0	1.000	173796788	45825138	33854	84635	1354	1.25(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.671	31.666	0	0.990	107339574	27522450	18818	47045	1463		
403.8529	31.671	31.666	0	0.990	83909644	21260845	16982	42455	1252	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.684	31.682	0	1.000	224582682	60738483	41171	102927	1475		
391.8127	31.684	31.682	0	1.000	178190822	47473358	33854	84635	1402	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.017	32.023	0	1.015	245673103	69976937	41171	102927	1700		
391.8127	32.017	32.023	0	1.015	194664271	55809192	33854	84635	1649	1.26(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.652	33.647	0	1.051	50617005	18038718	30961	77402	583		
419.8220	33.652	33.647	0	1.051	111364051	39847587	80813	202032	493	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.664	33.659	0	1.000	264742118	97611249	262056	655140	372		
409.7789	33.664	33.659	0	1.000	261094638	90622375	278481	696202	325	1.01(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											a
417.8253	34.722	34.726	0	1.085	47887734	15735543	30961	77402	508		a
419.8220	34.722	34.726	0	1.085	106554605	34781659	80813	202032	430	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.734	34.736	0	1.000	218627803	71787981	262056	655140	274		
409.7789	34.734	34.736	0	1.000	206911383	68370612	278481	696202	246	1.06(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.442	34.437	0	1.076	82684782	27916319	55153	137882	506		
437.8140	34.442	34.437	0	1.076	76552544	25864716	36611	91527	706	1.08(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.454	34.449	0	1.000	178857029	60226461	105925	264812	569		
425.7737	34.454	34.449	0	1.000	169868236	55711988	137410	343525	405	1.05(0.88-1.20)	
13C-OCDD											
469.7779	36.770	36.767	0	1.149	99727463	28654535	8561	21402	3347		
471.7750	36.770	36.767	0	1.149	108572848	30945683	10486	26215	2951	0.92(0.76-1.02)	
OCDF											
441.7428	36.866	36.870	0	1.003	293821227	87767807	11843	29607	7411		
443.7399	36.866	36.870	0	1.003	318121732	95847756	15528	38820	6173	0.92(0.76-1.02)	
OCDD											
457.7377	36.782	36.779	0	1.000	225772958	64929459	10884	27210	5966		
459.7348	36.782	36.779	0	1.000	251128903	70952785	11602	29005	6116	0.90(0.76-1.02)	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL5_00028 Amount Added: 2.00 Units: uL

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

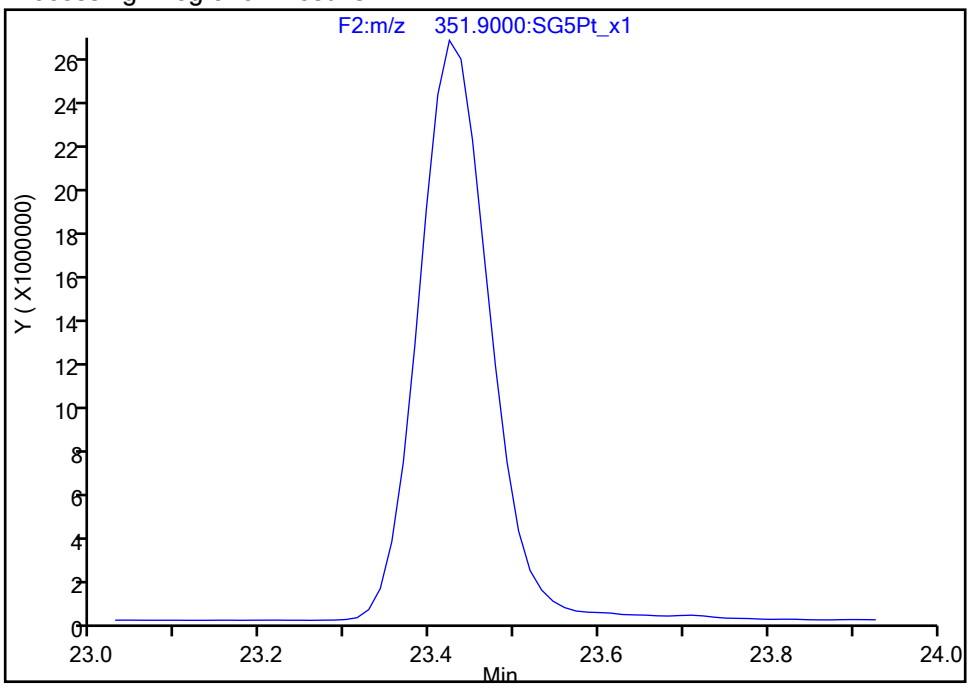
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d				
Injection Date:	12-Dec-2019 13:51:32	Instrument ID:	3D5		
Lims ID:	IC 5				
Client ID:	L5				
Operator ID:	KSS	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

13C-2,3,4,7,8-PeCDF, CAS: 116843-02-8

Signal: 1

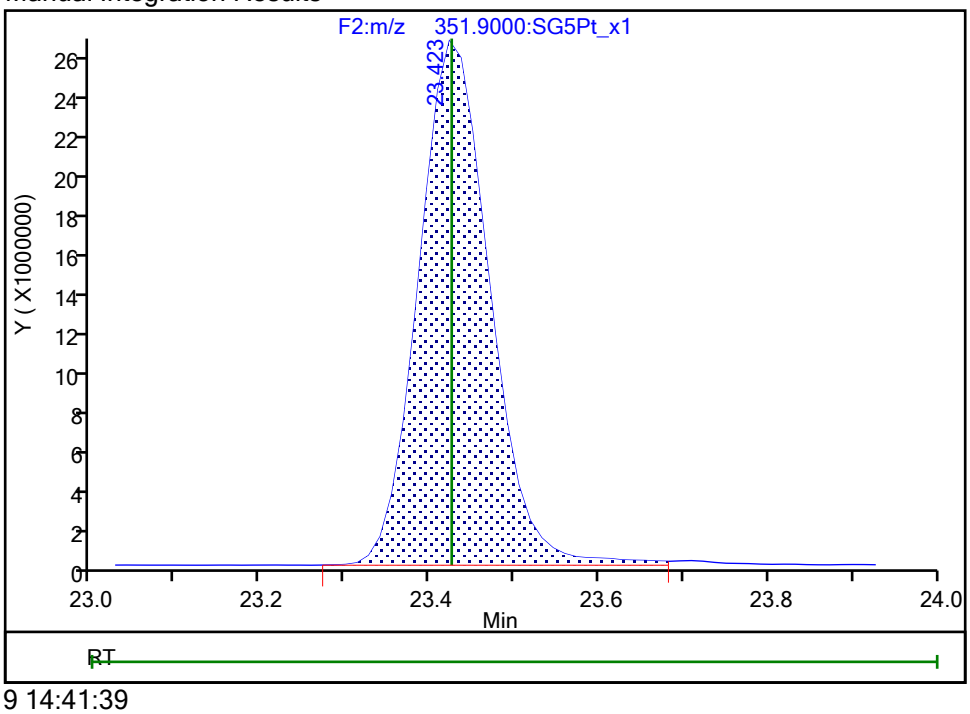
Not Detected
Expected RT: 23.43

Processing Integration Results



Manual Integration Results

RT: 23.42
Area: 156282583
Amount: 100.0121
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 14:41:39
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

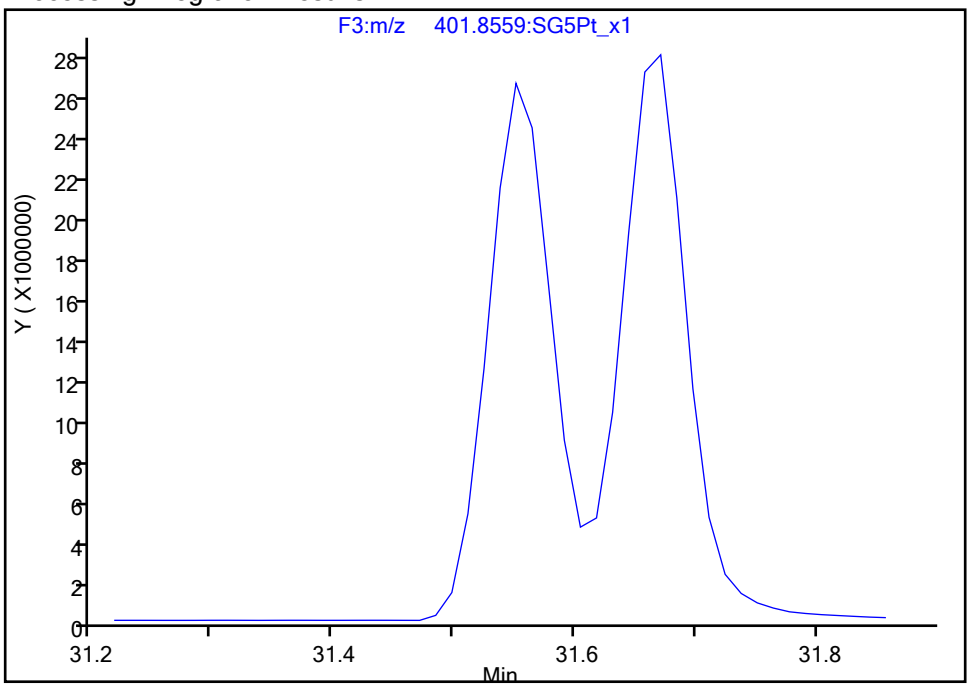
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d				
Injection Date:	12-Dec-2019 13:51:32	Instrument ID:	3D5		
Lims ID:	IC 5				
Client ID:	L5				
Operator ID:	KSS	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

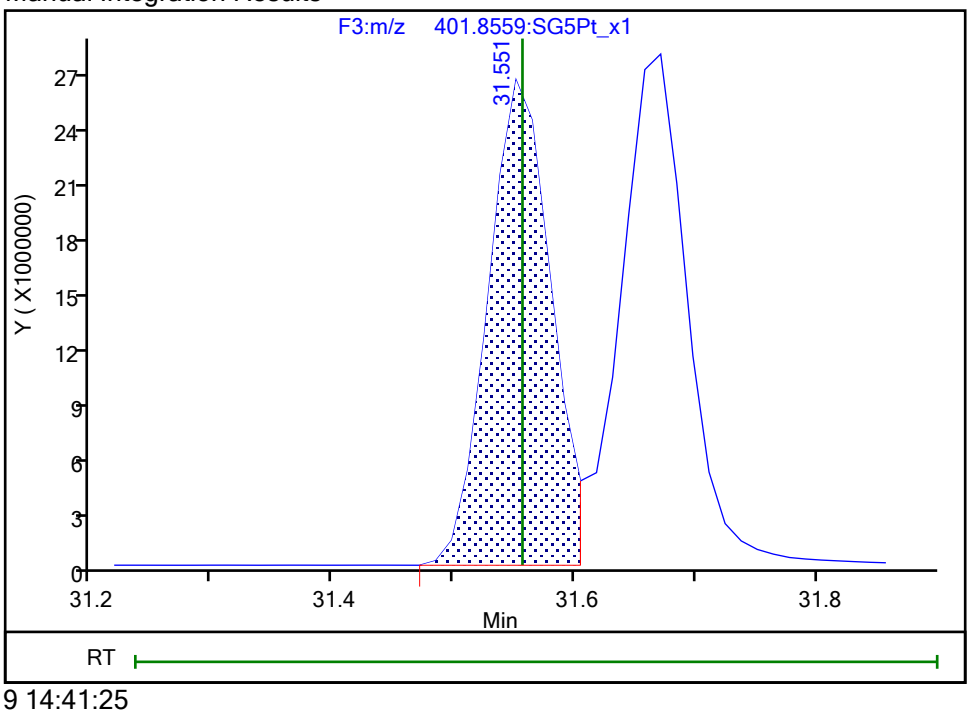
Not Detected
Expected RT: 31.56

Processing Integration Results



Manual Integration Results

RT: 31.55
Area: 93899540
Amount: 99.528000
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 14:41:25
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

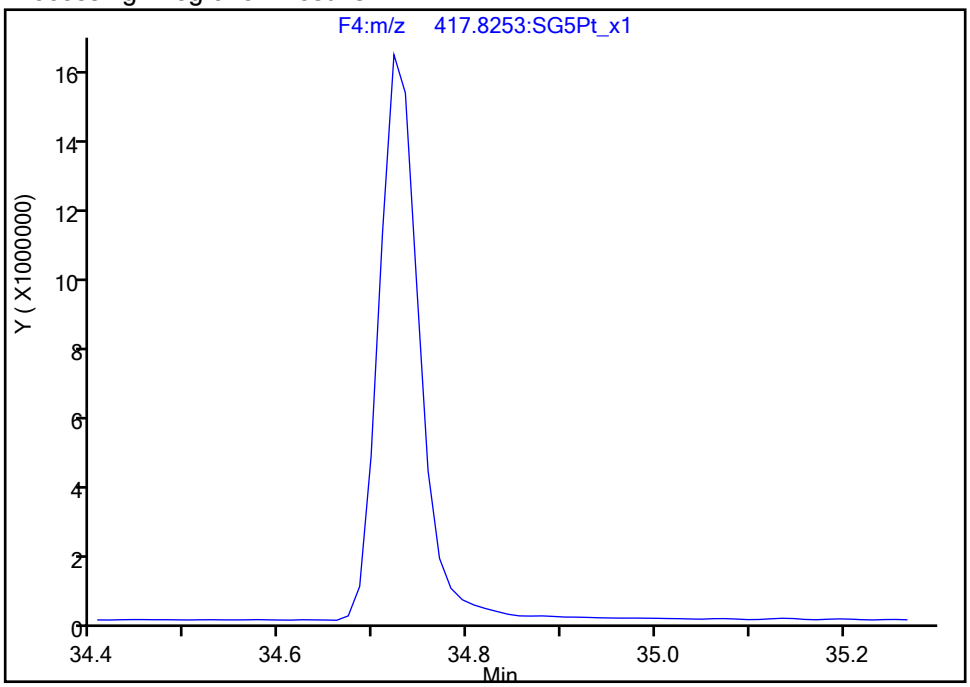
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d				
Injection Date:	12-Dec-2019 13:51:32	Instrument ID:	3D5		
Lims ID:	IC 5				
Client ID:	L5				
Operator ID:	KSS	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 1

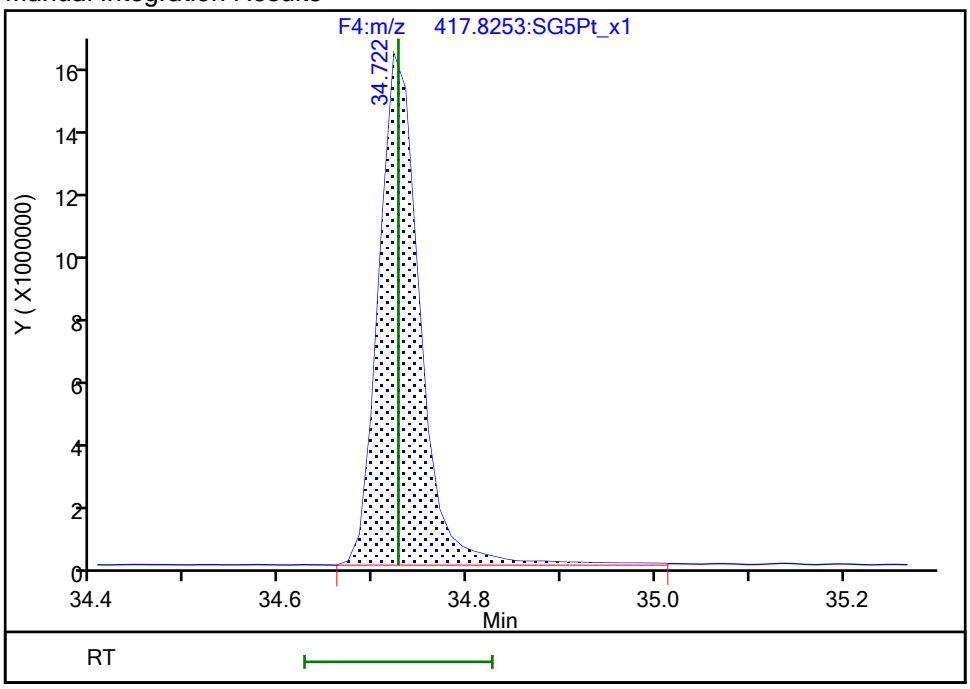
Not Detected
Expected RT: 34.73

Processing Integration Results



Manual Integration Results

RT: 34.72
Area: 47887734
Amount: 105.1812
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 14:41:31
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Report Date: 12-Dec-2019 15:54:33 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d

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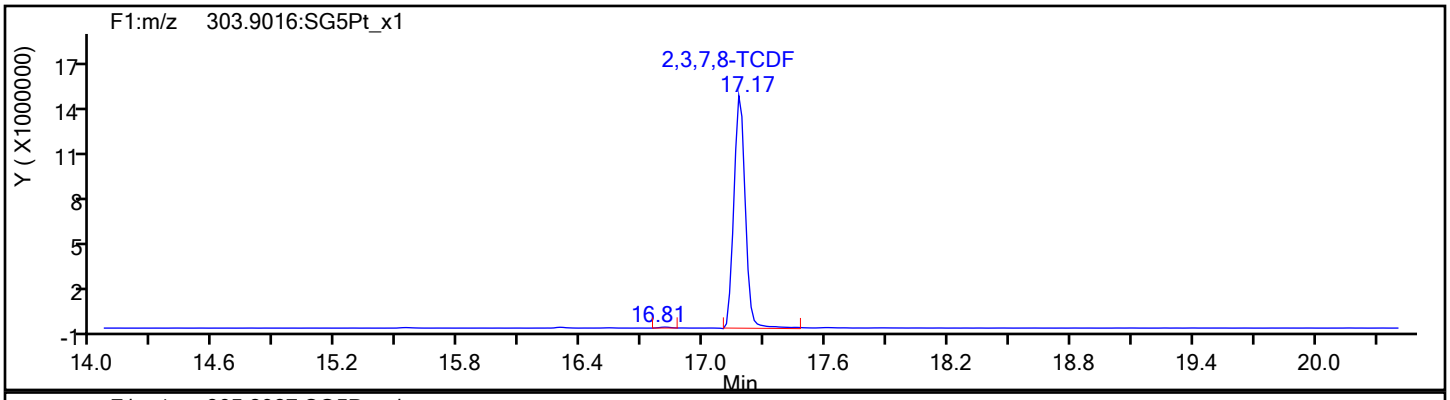
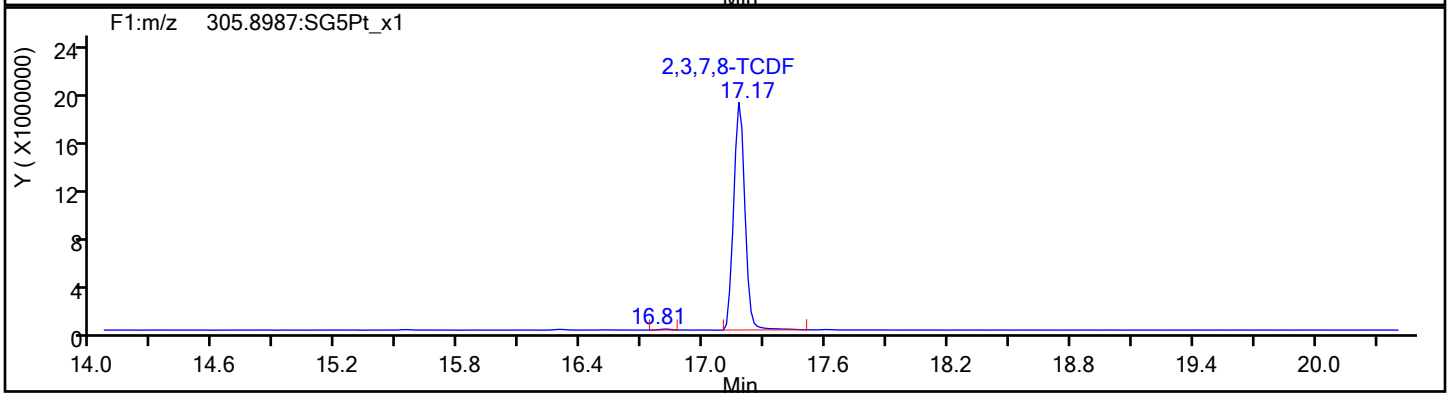
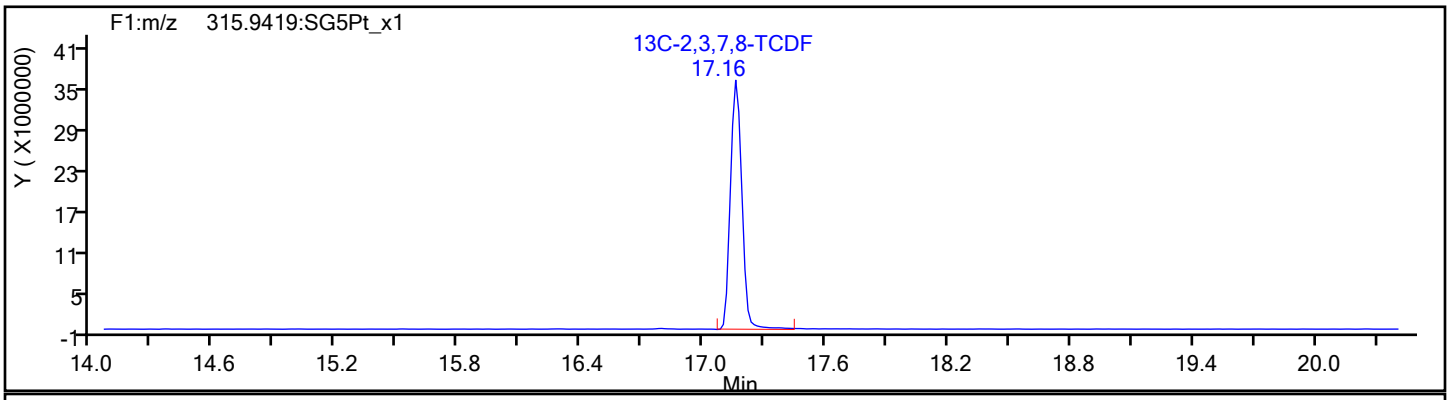
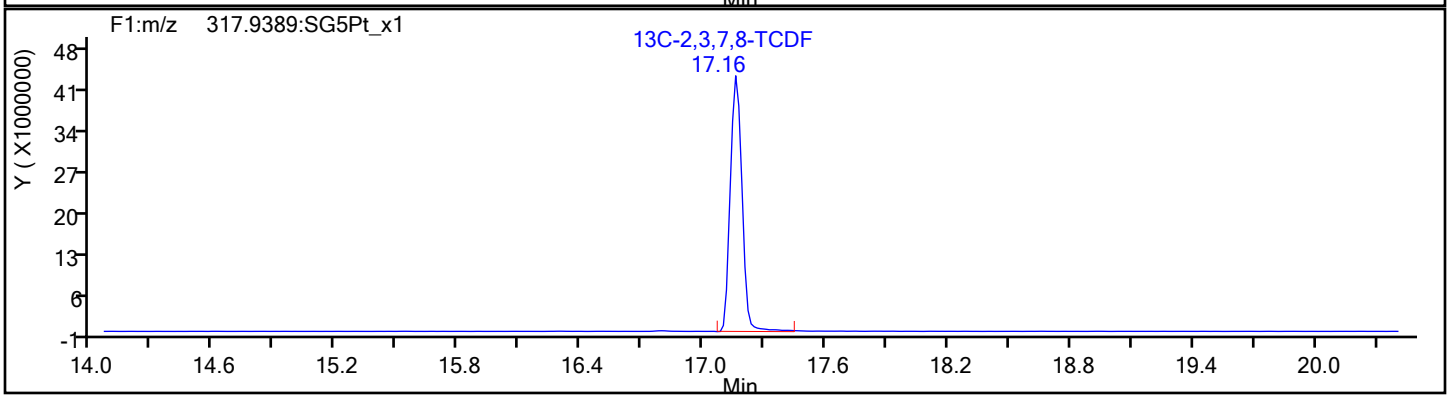
TCDF





TCDF Standards





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Eurofins TestAmerica, Sacramento

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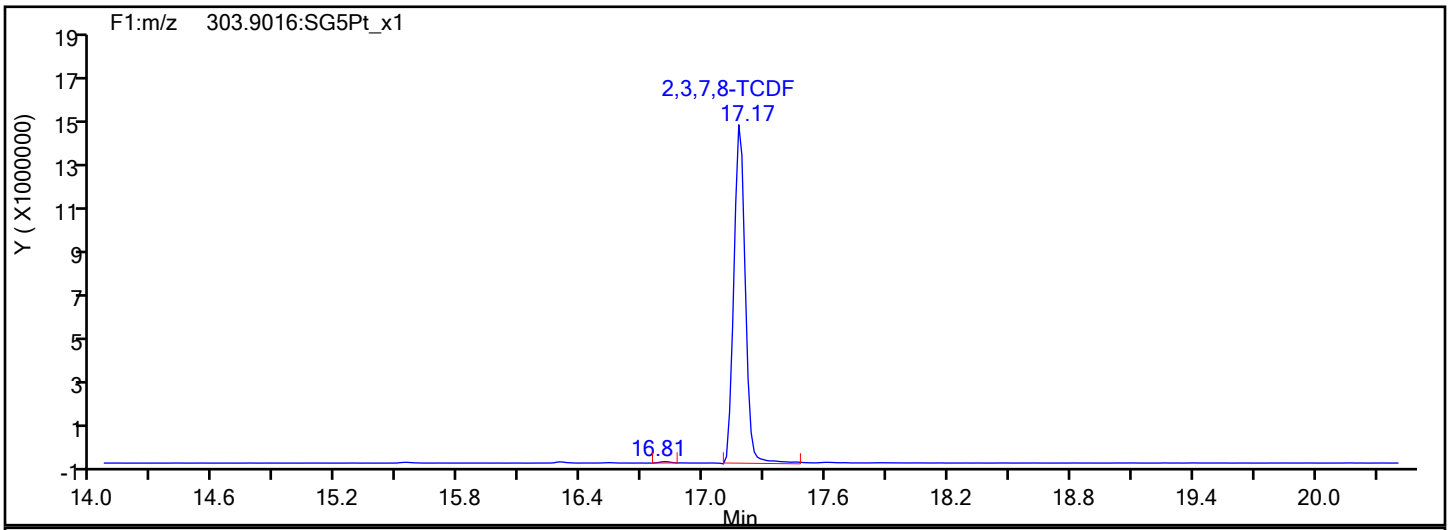
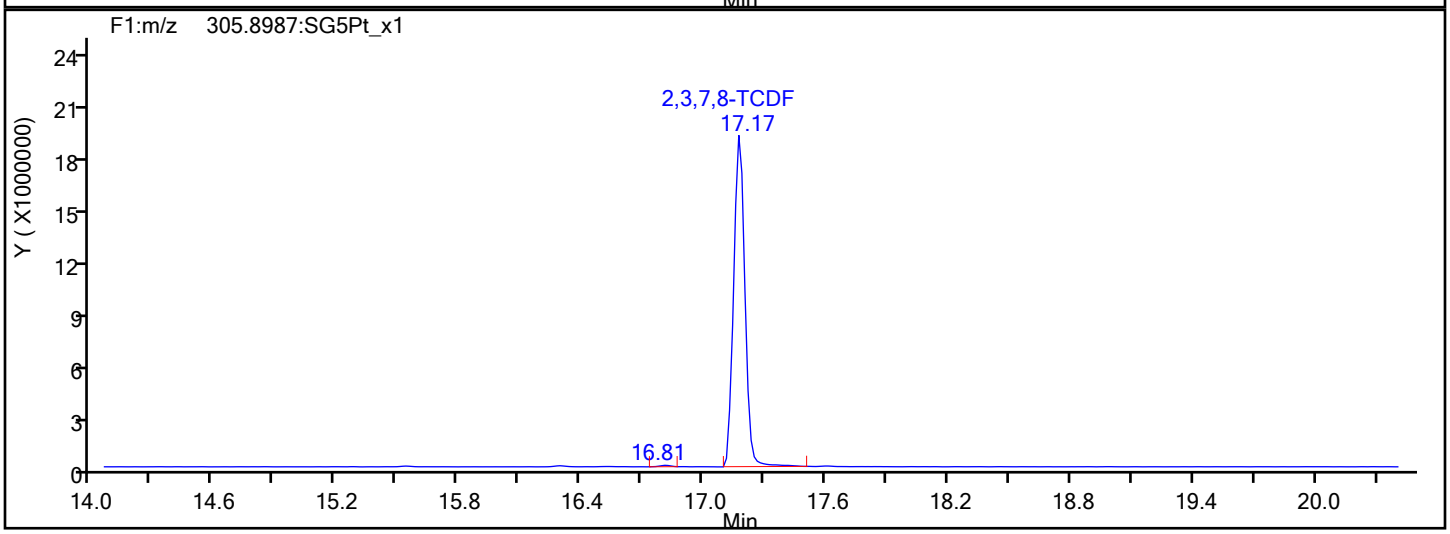
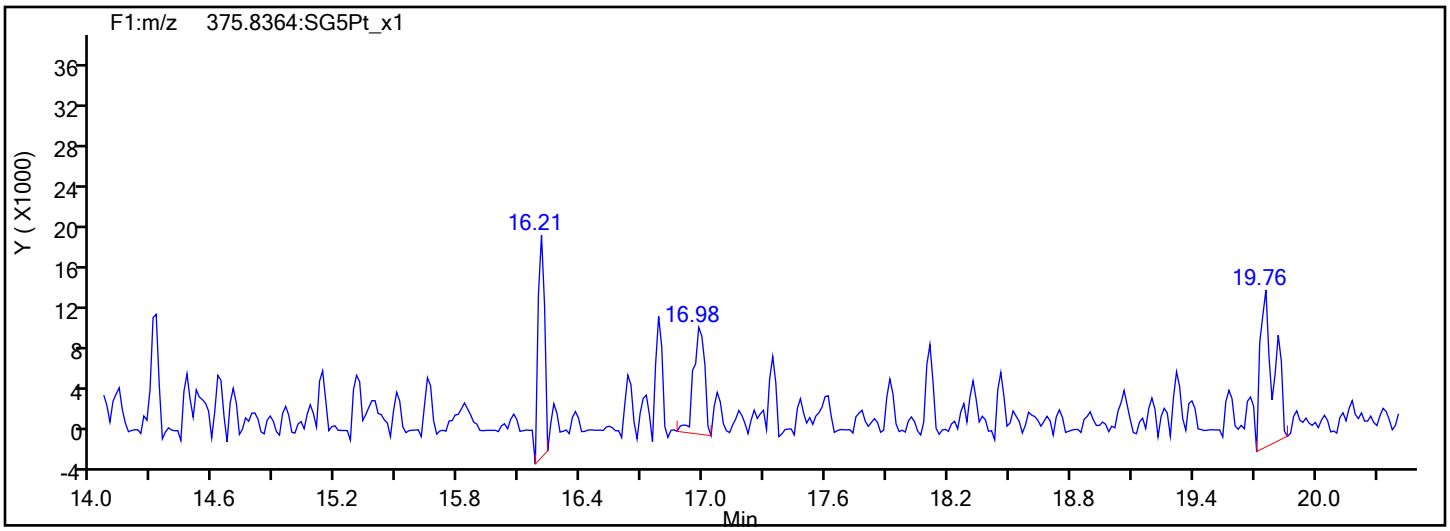




TCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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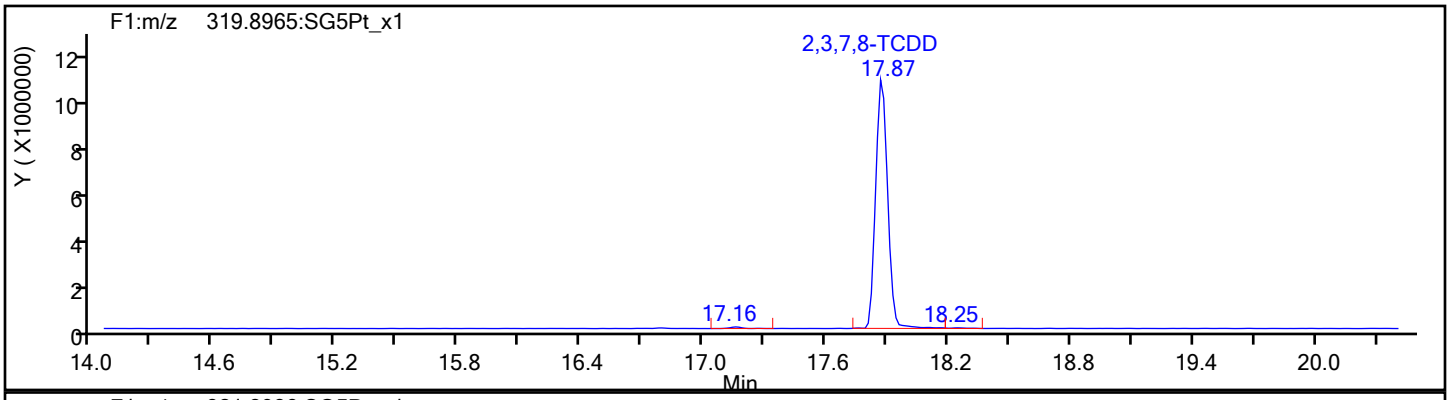

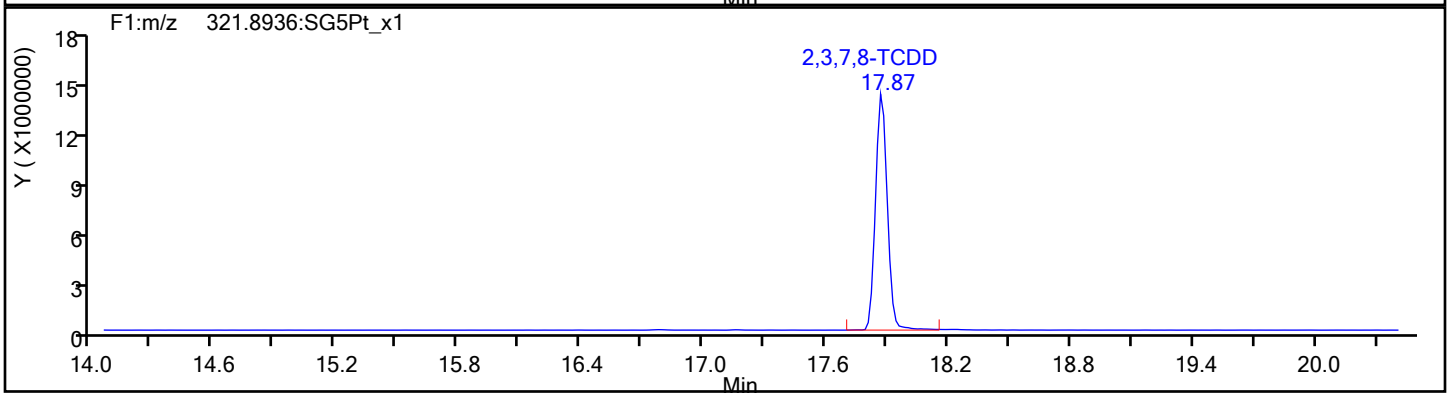

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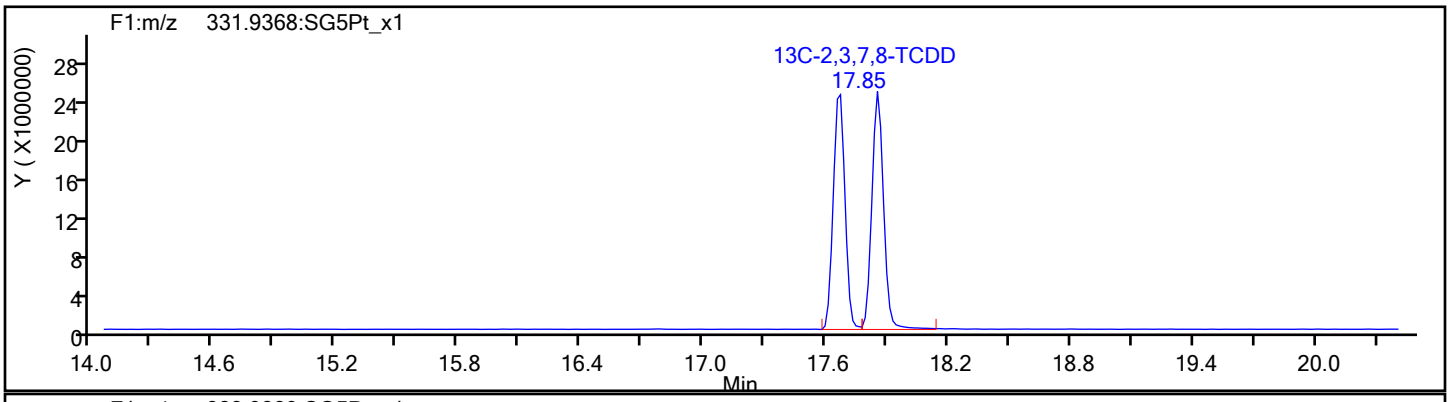

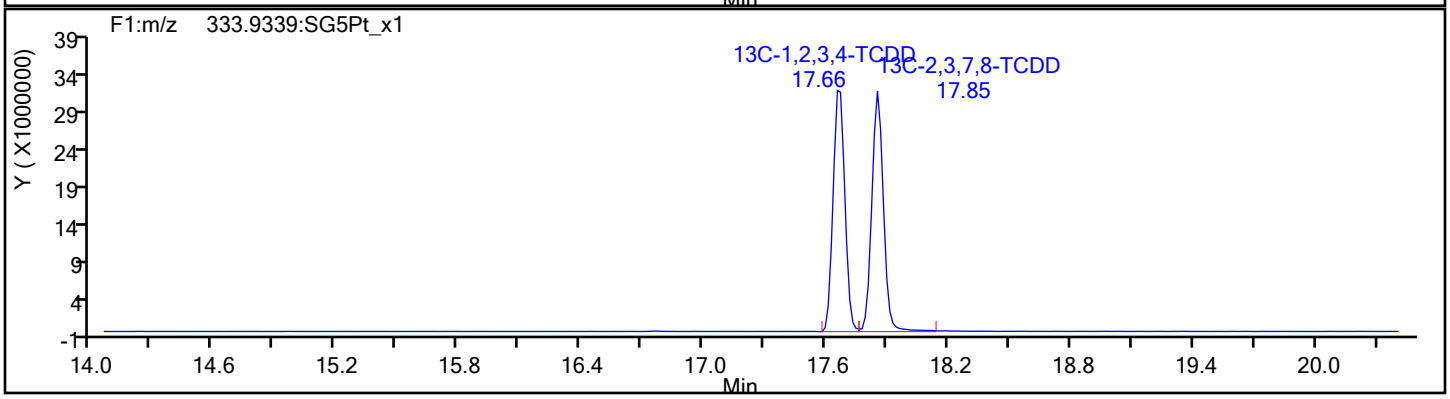

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Eurofins TestAmerica, Sacramento

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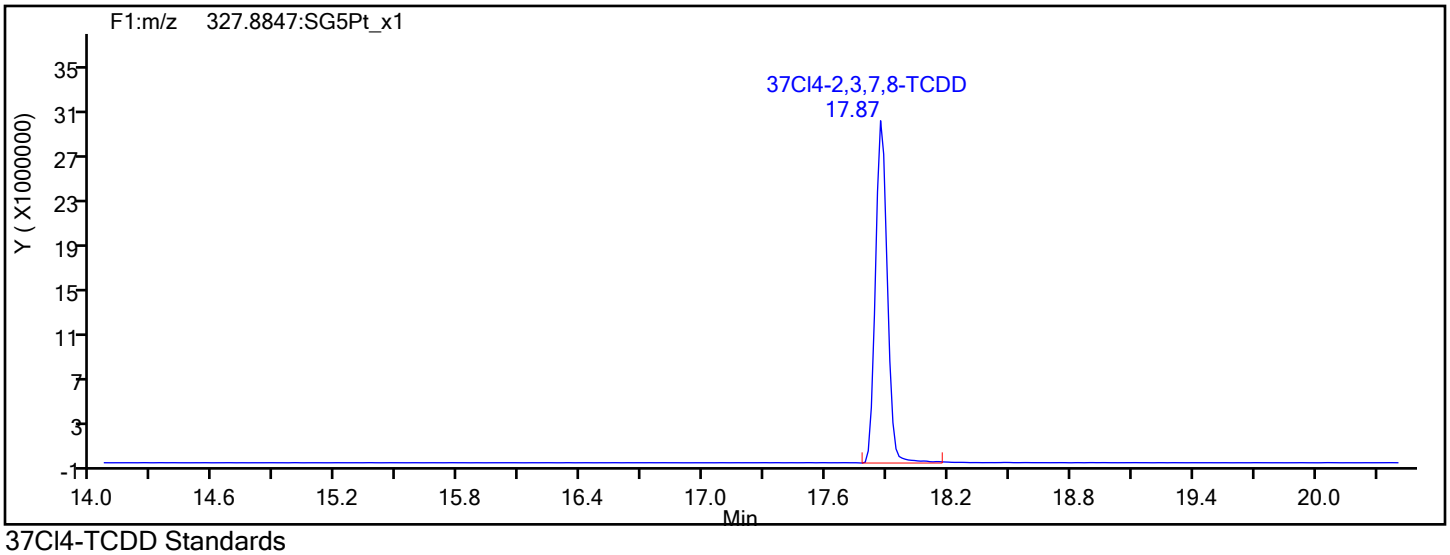
37Cl4-TCDD



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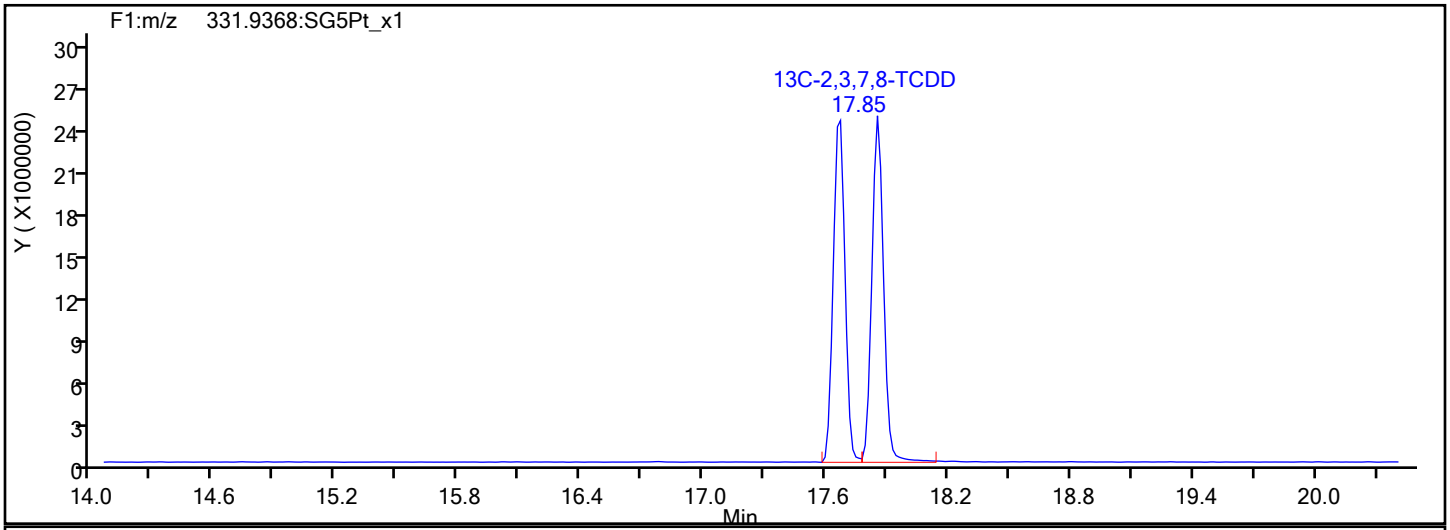

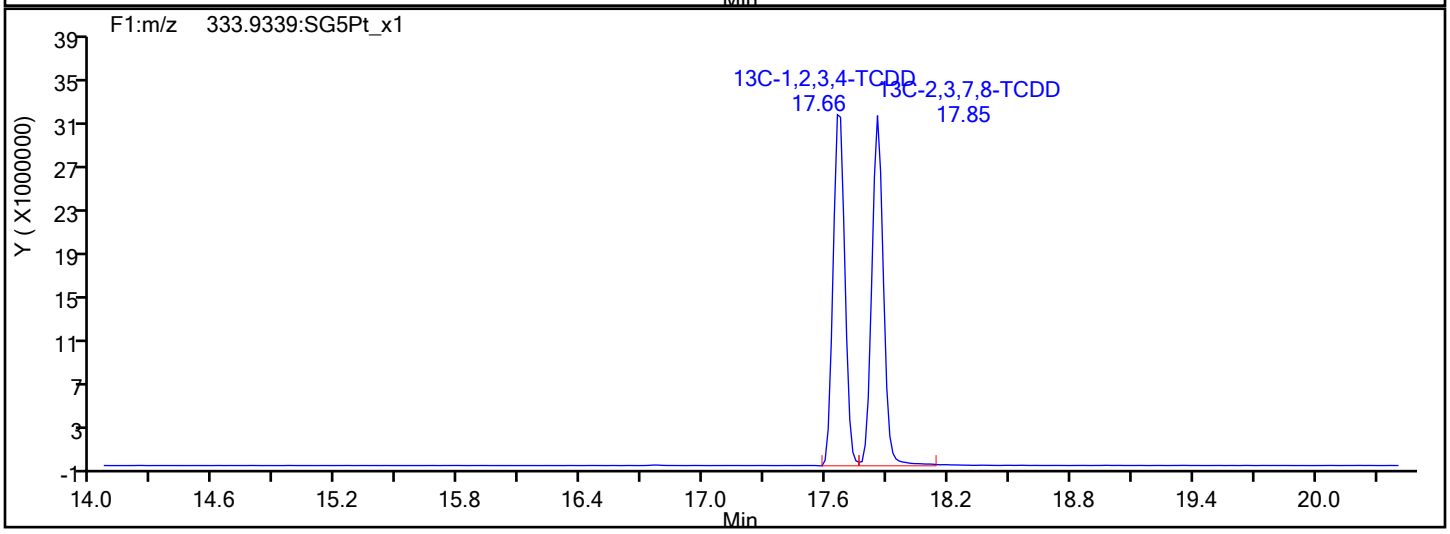

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Eurofins TestAmerica, Sacramento

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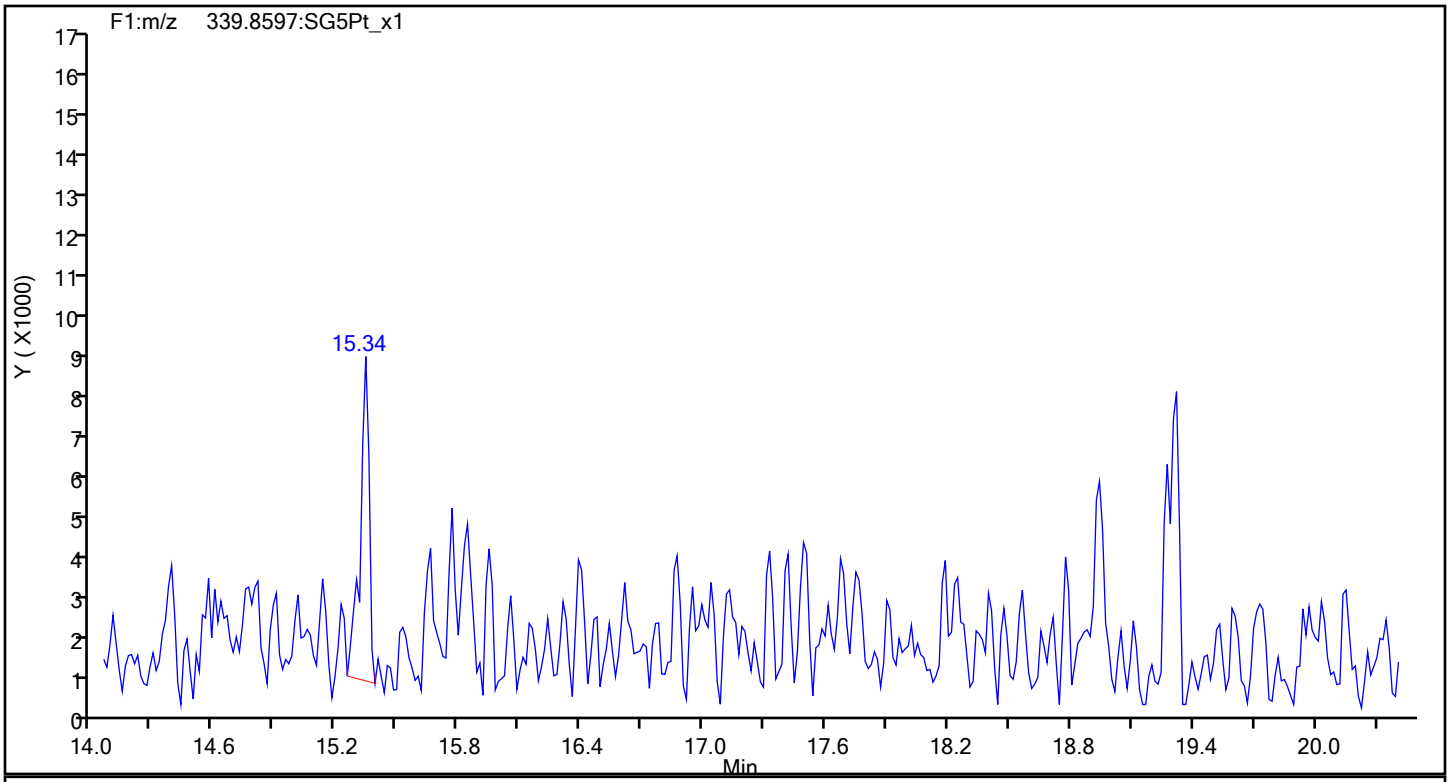
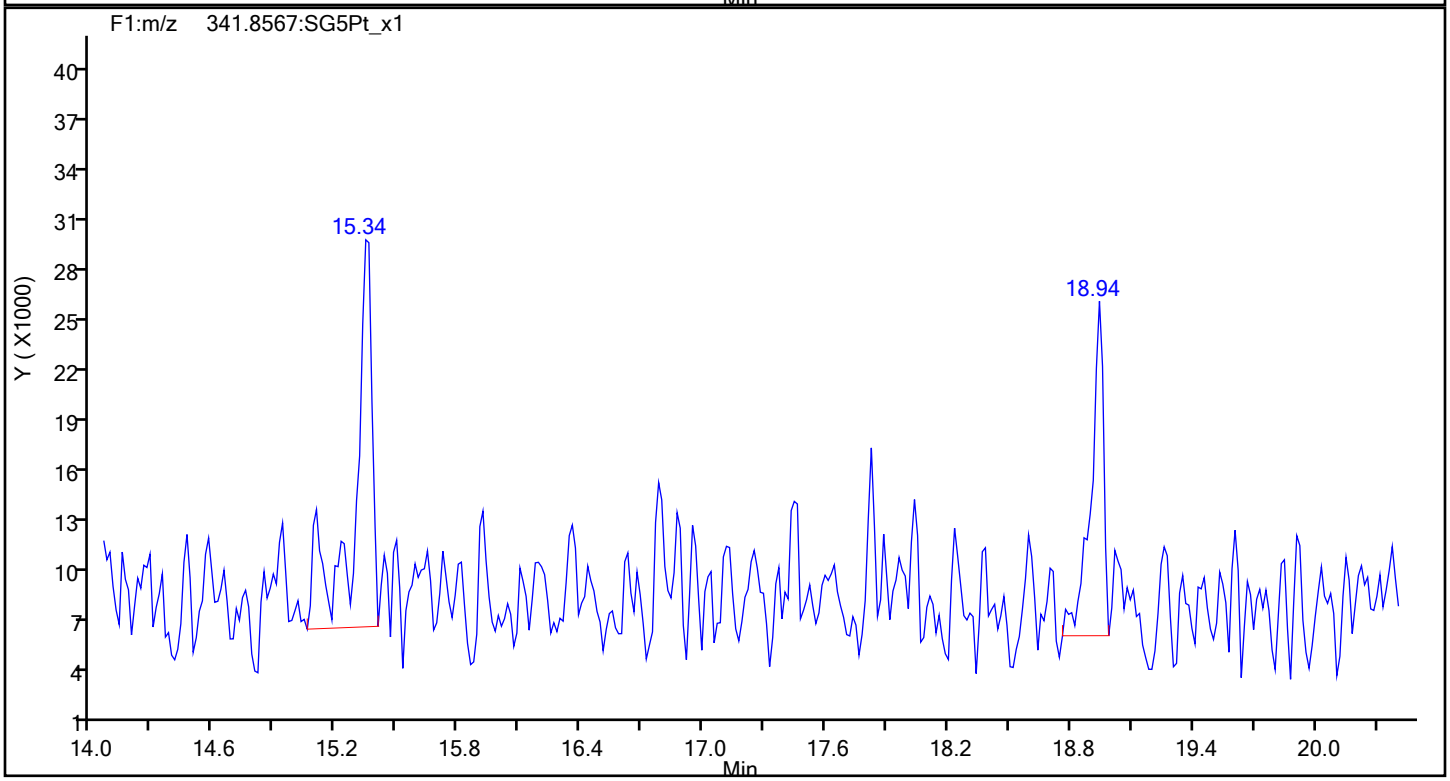
F1 PeCDFs





Eurofins TestAmerica, Sacramento

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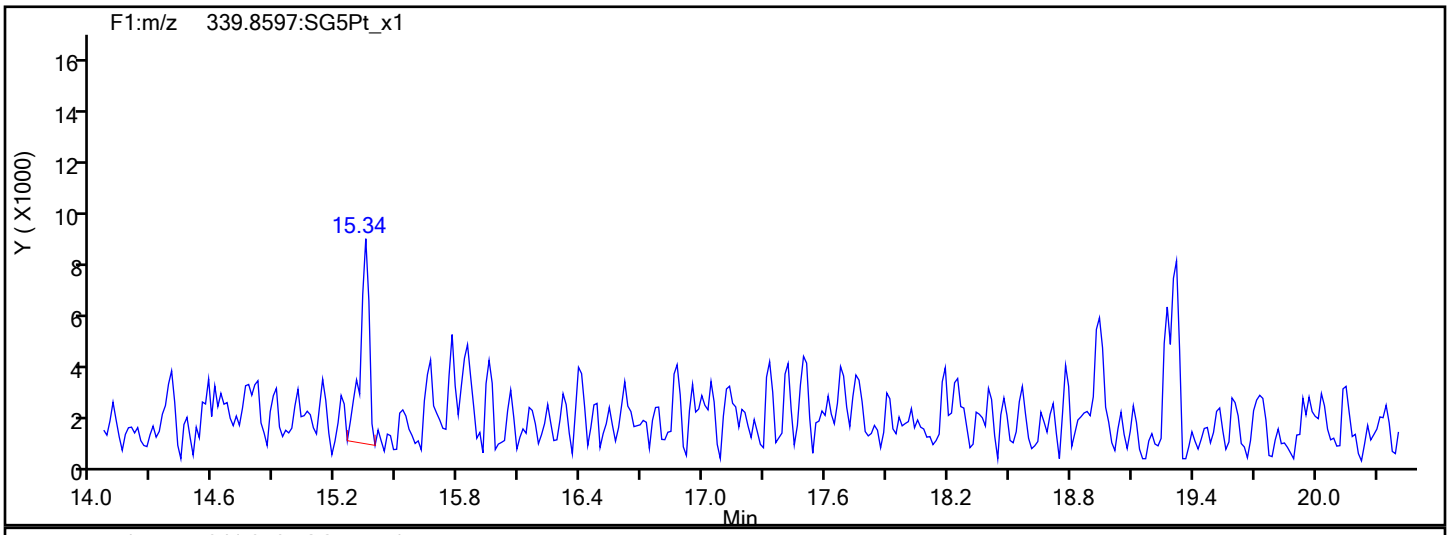

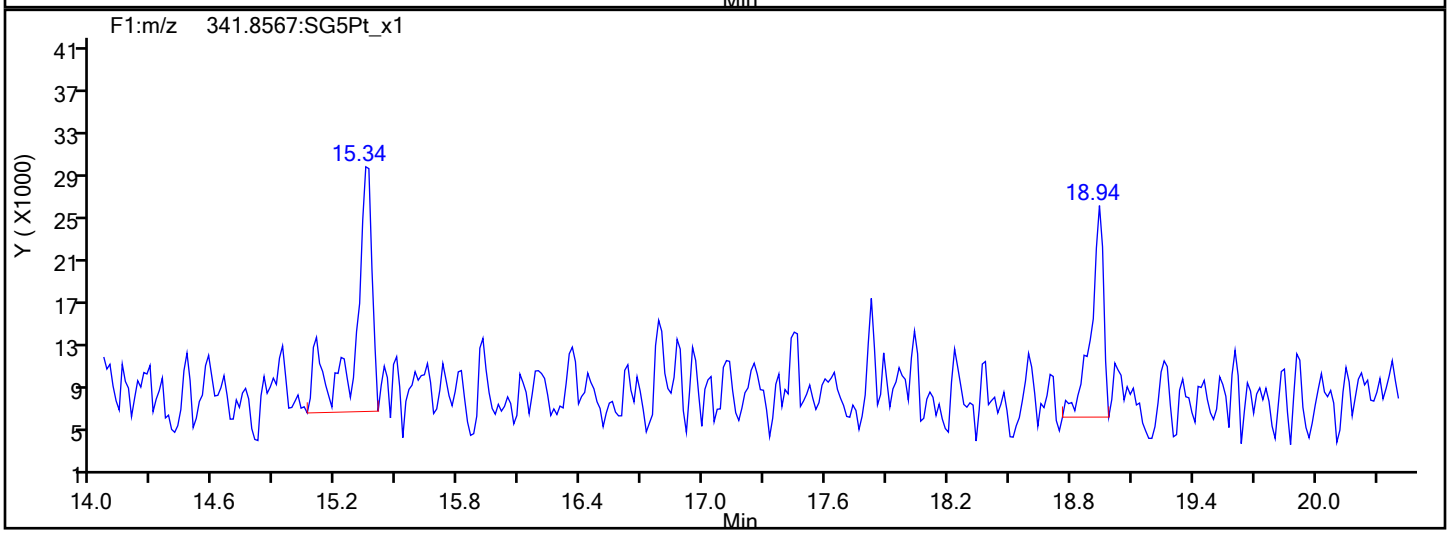

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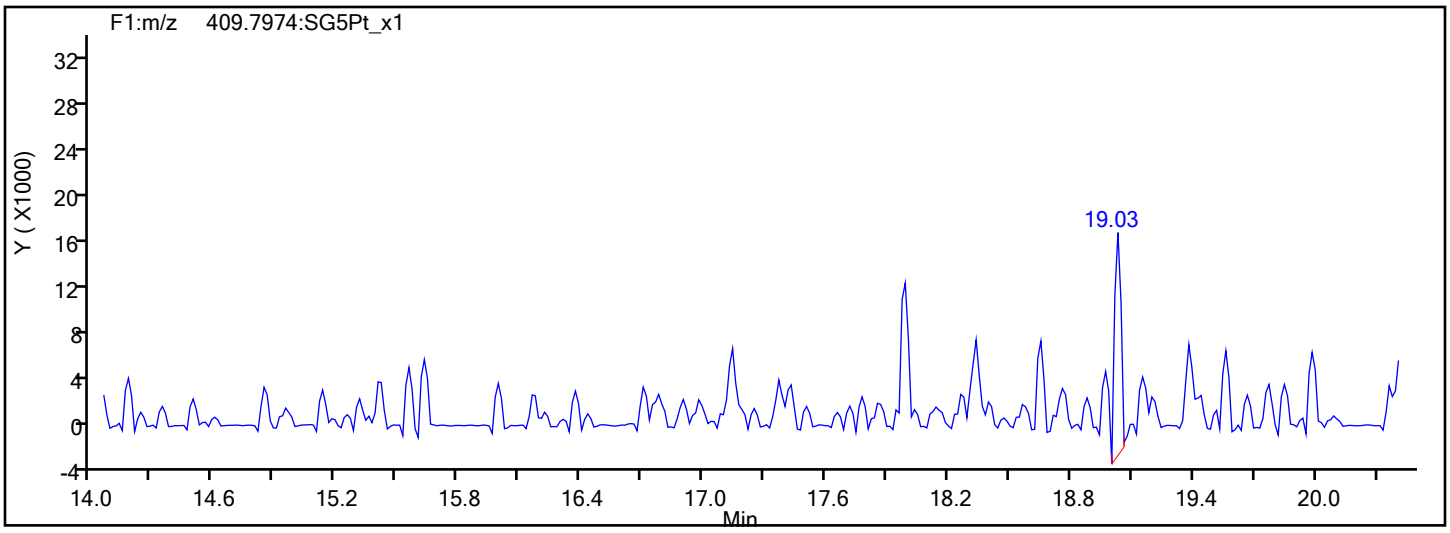

Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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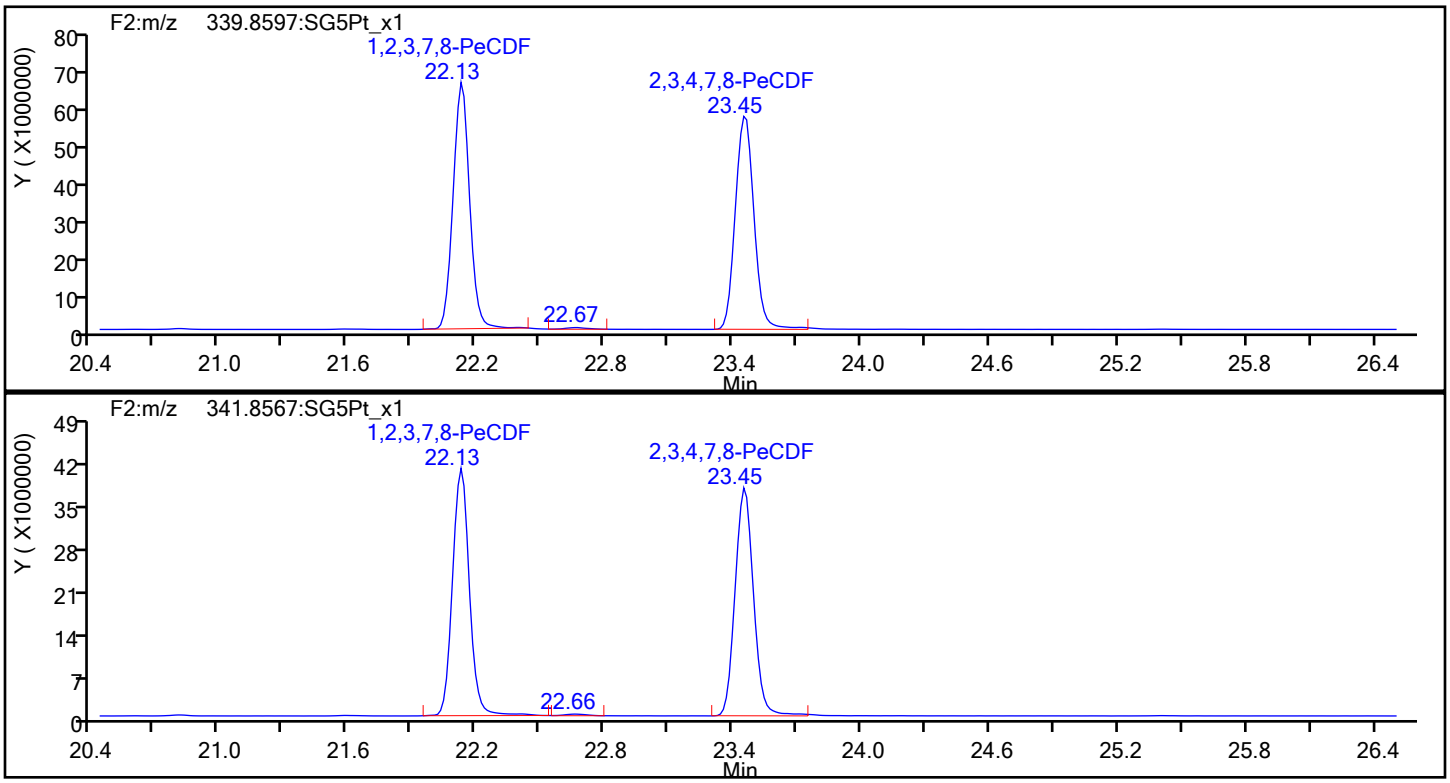
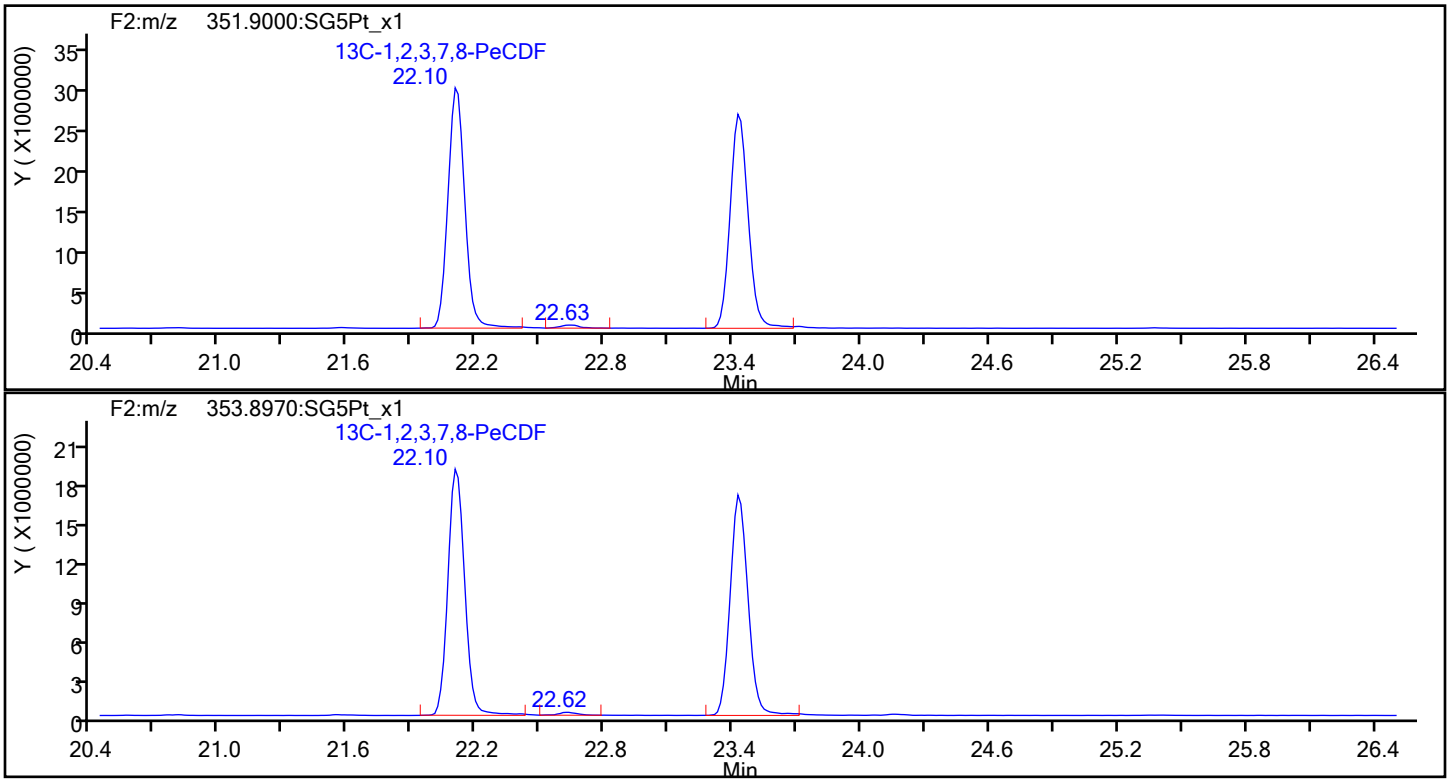
PeCDF



PeCDF Standards



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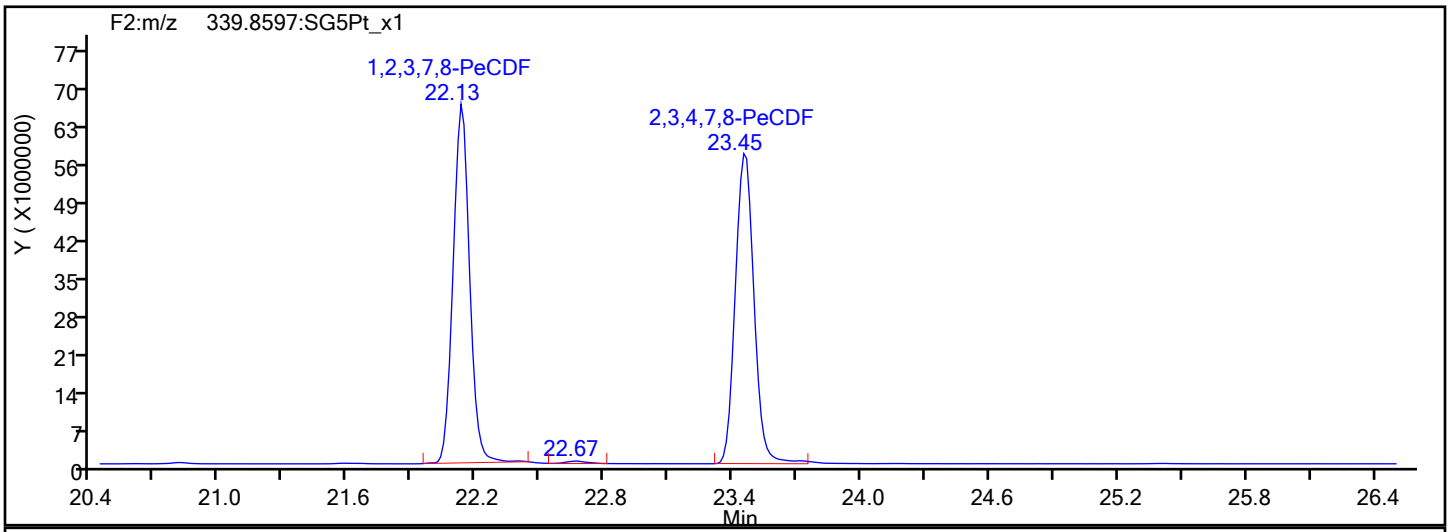
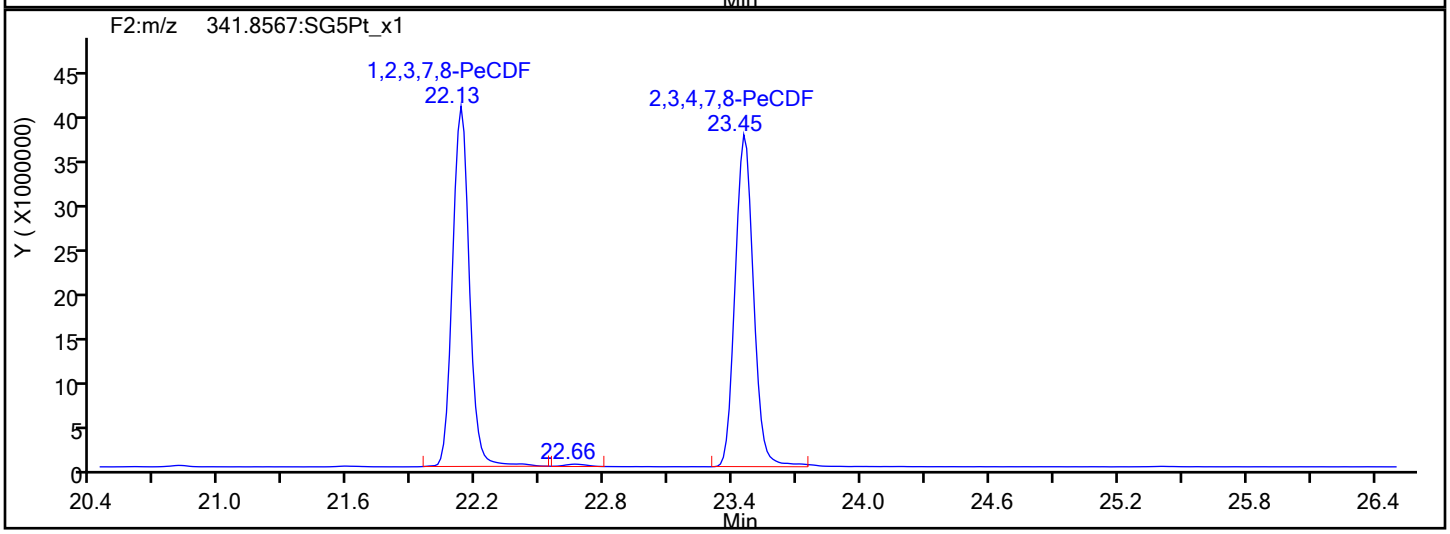
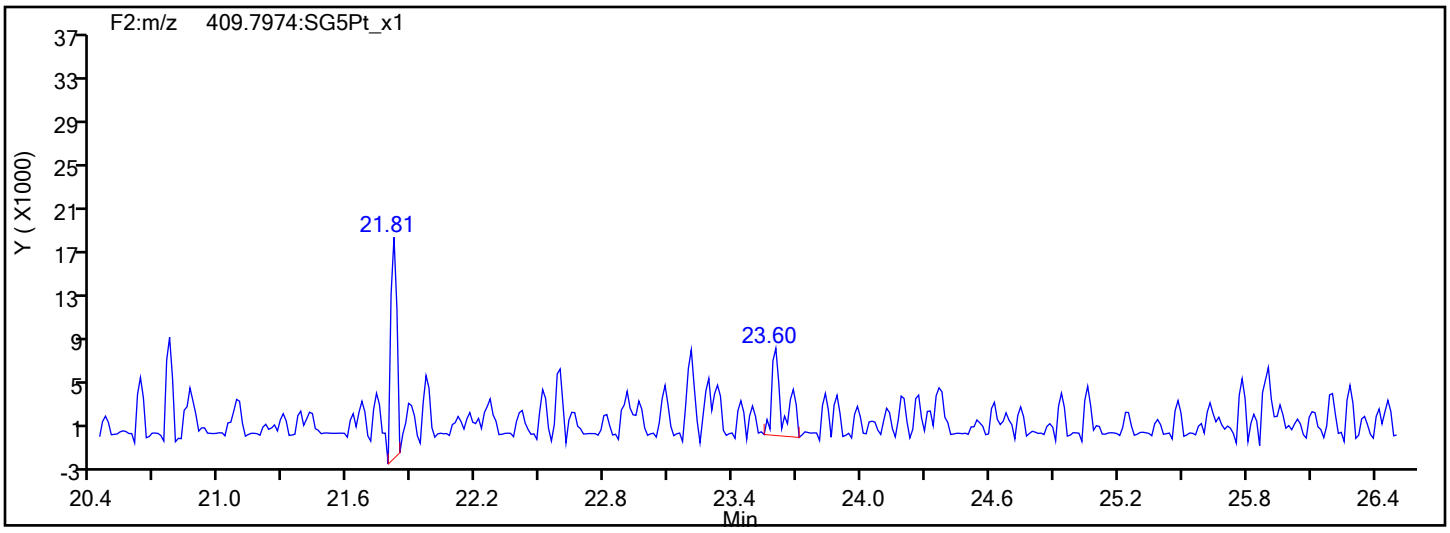




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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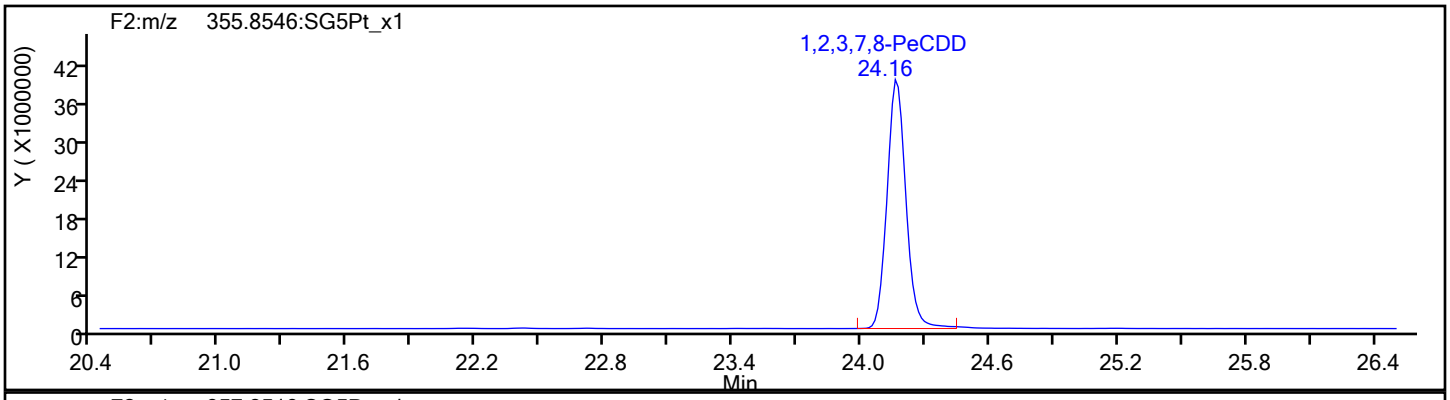
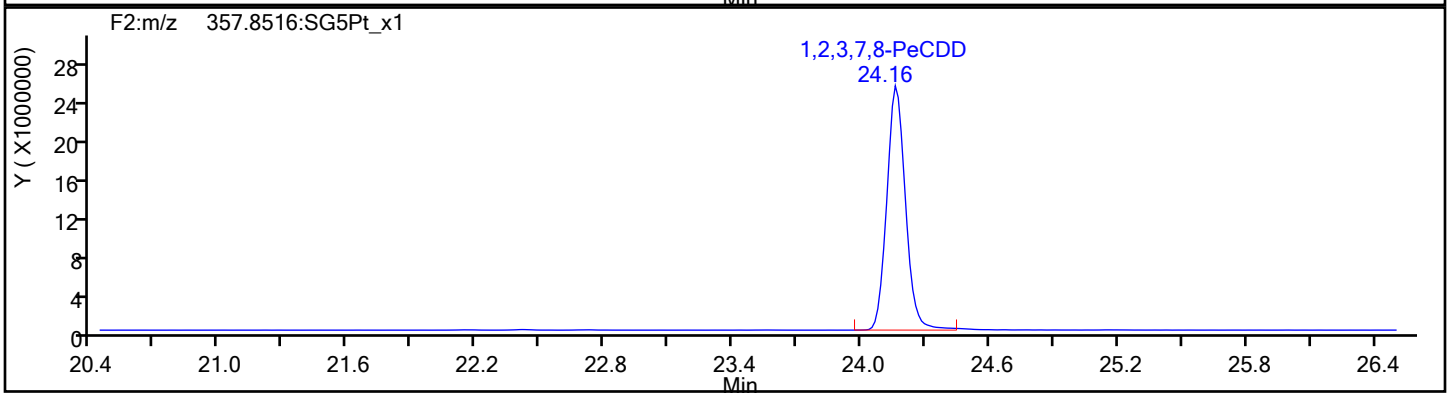
PeCDD





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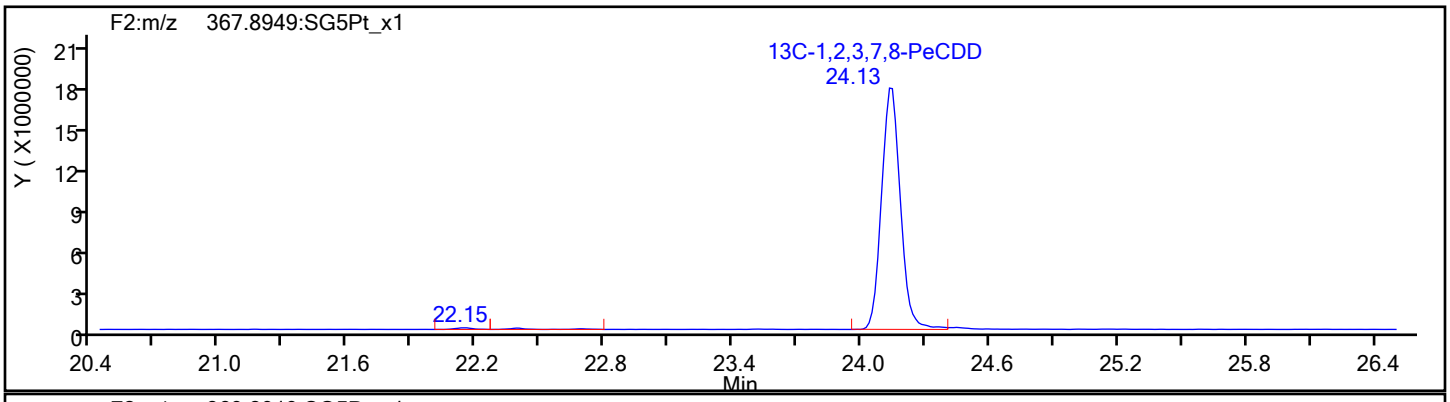

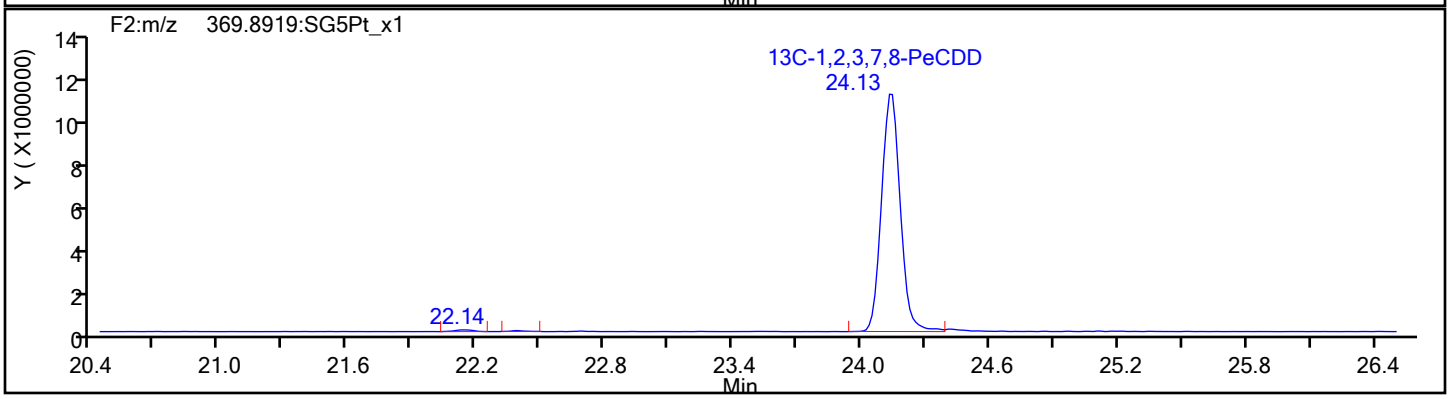

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Eurofins TestAmerica, Sacramento

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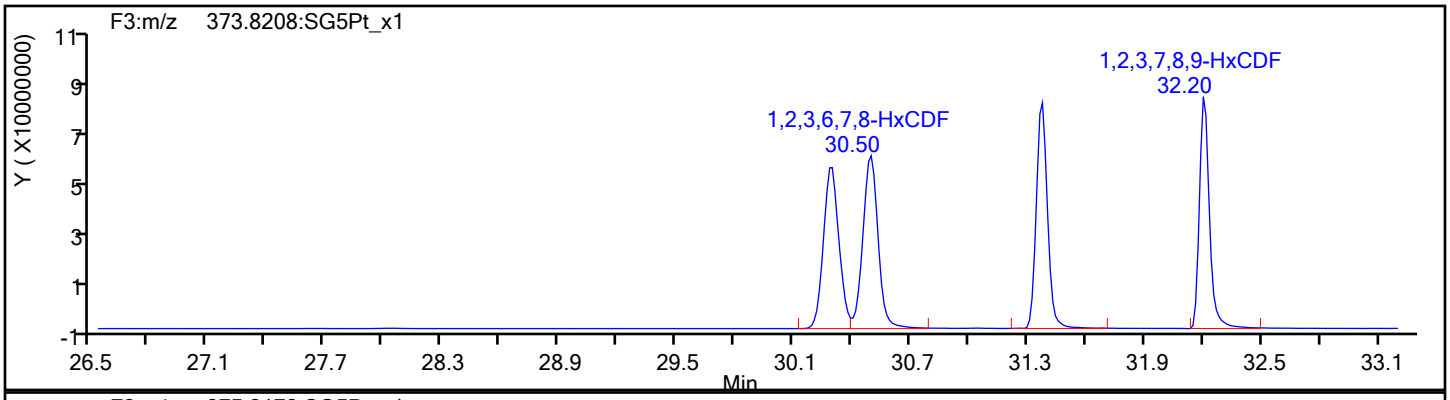

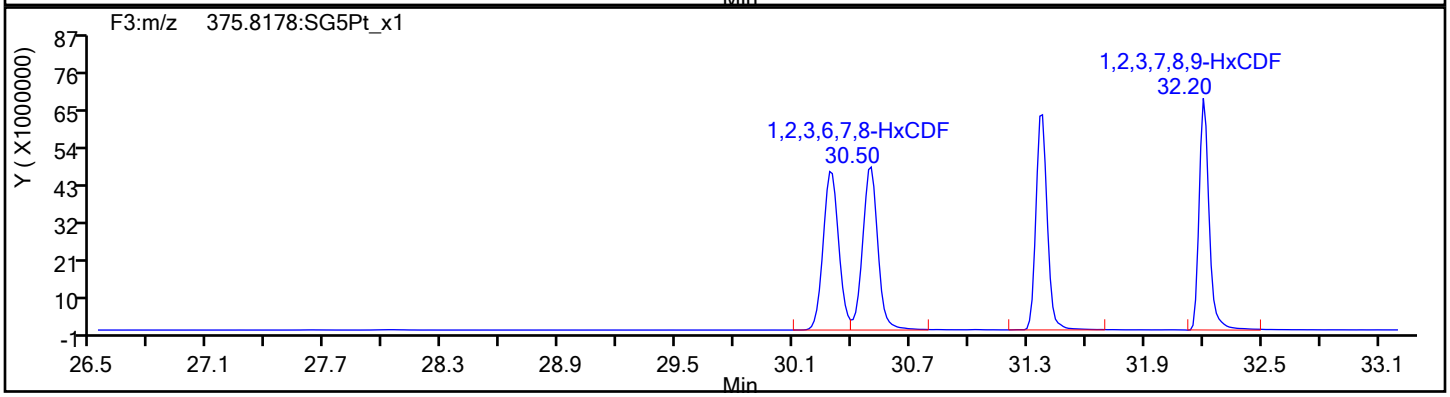

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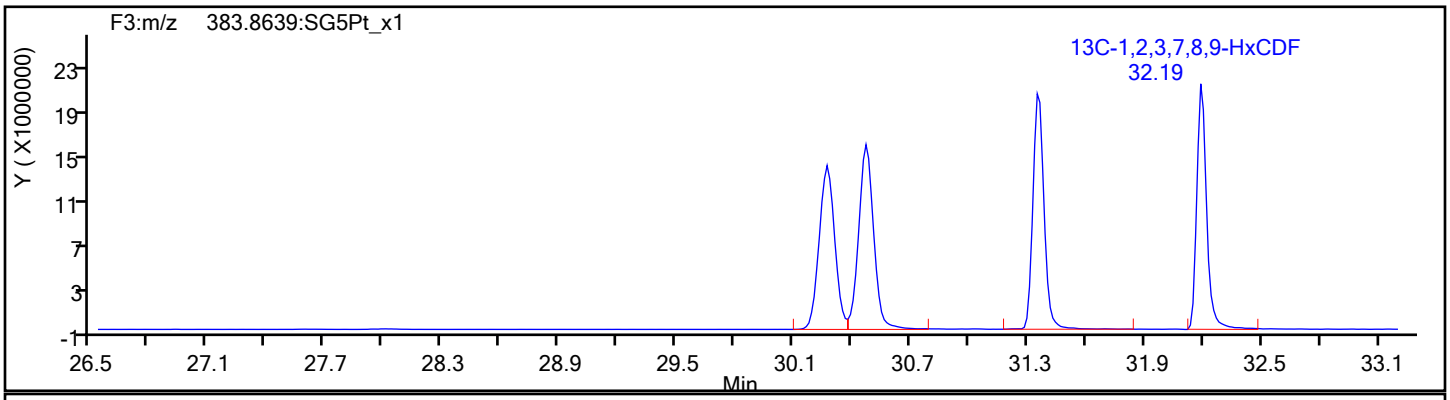

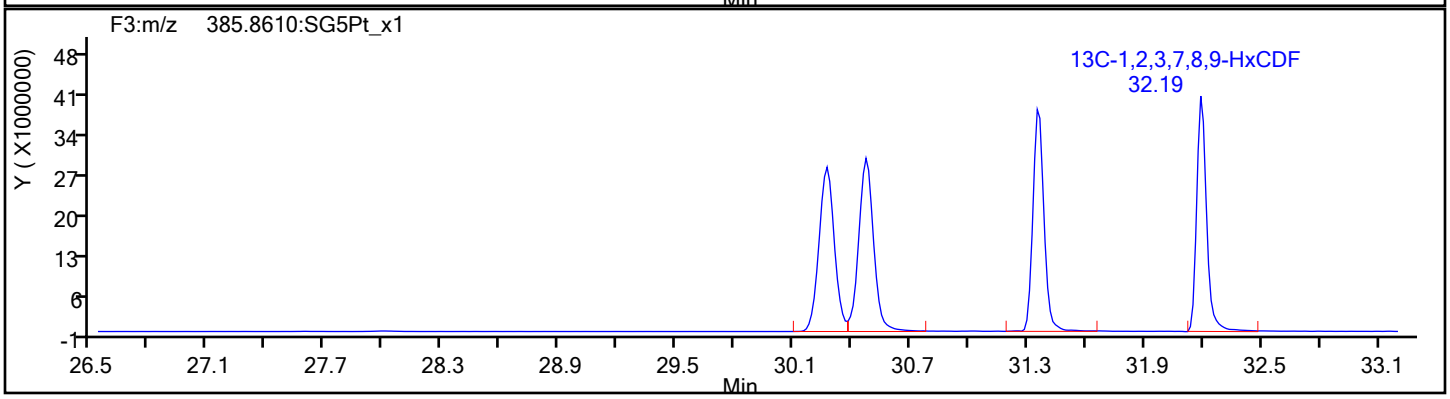

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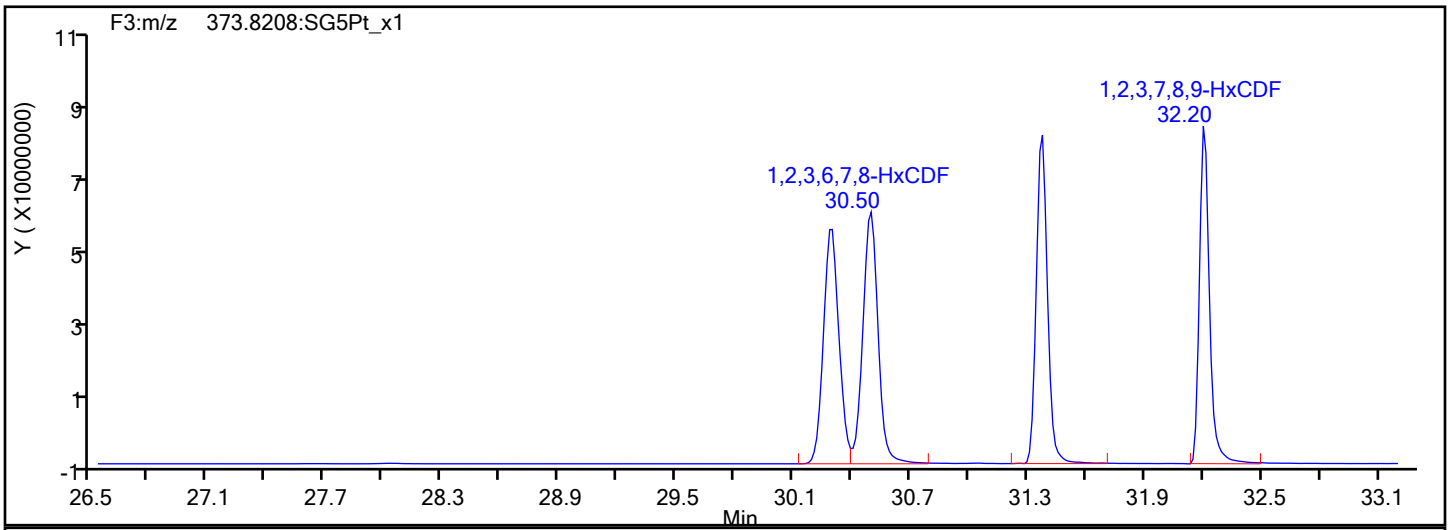
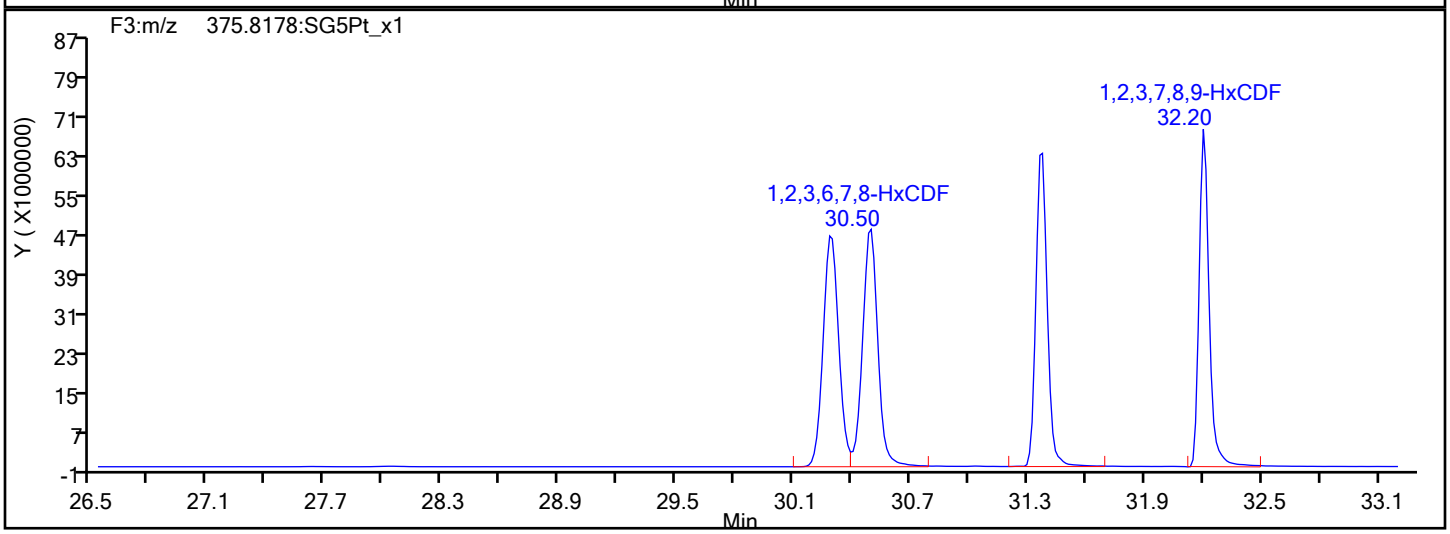
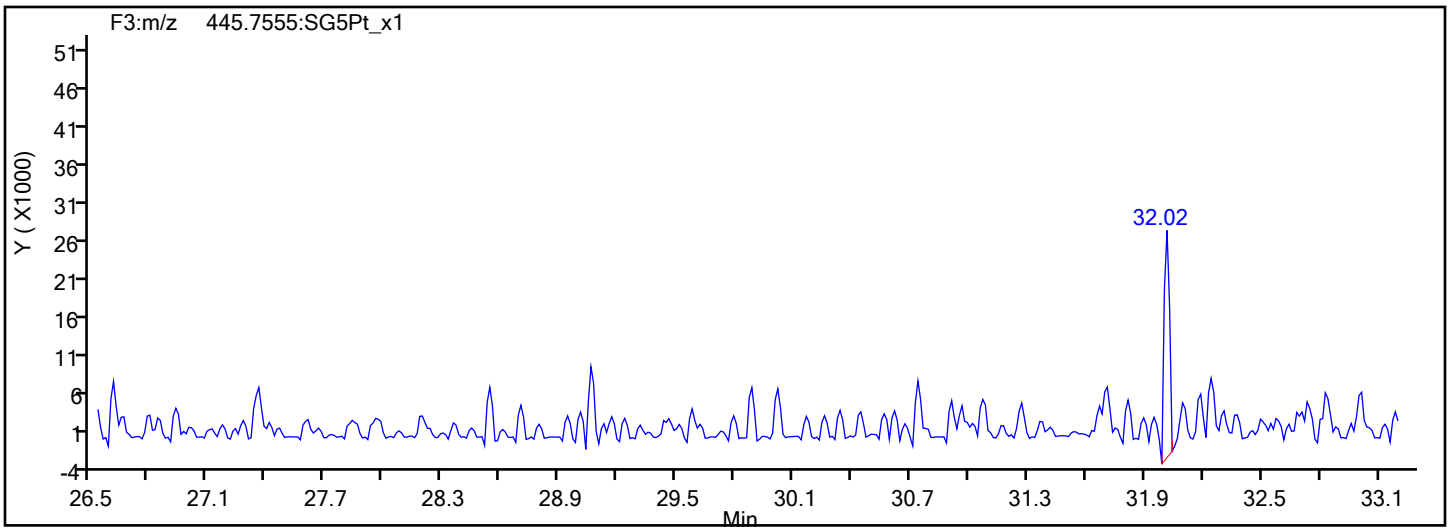




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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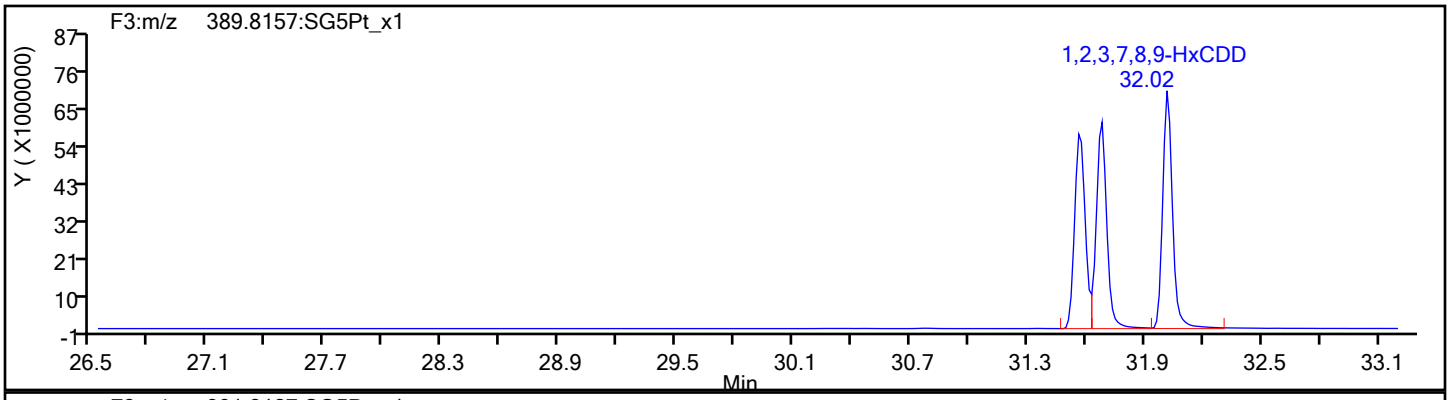
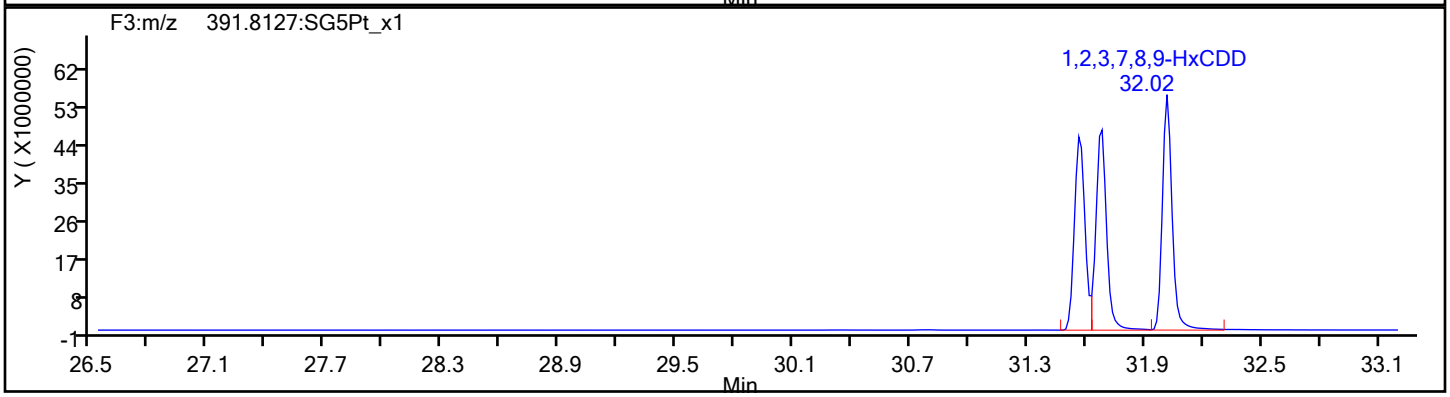
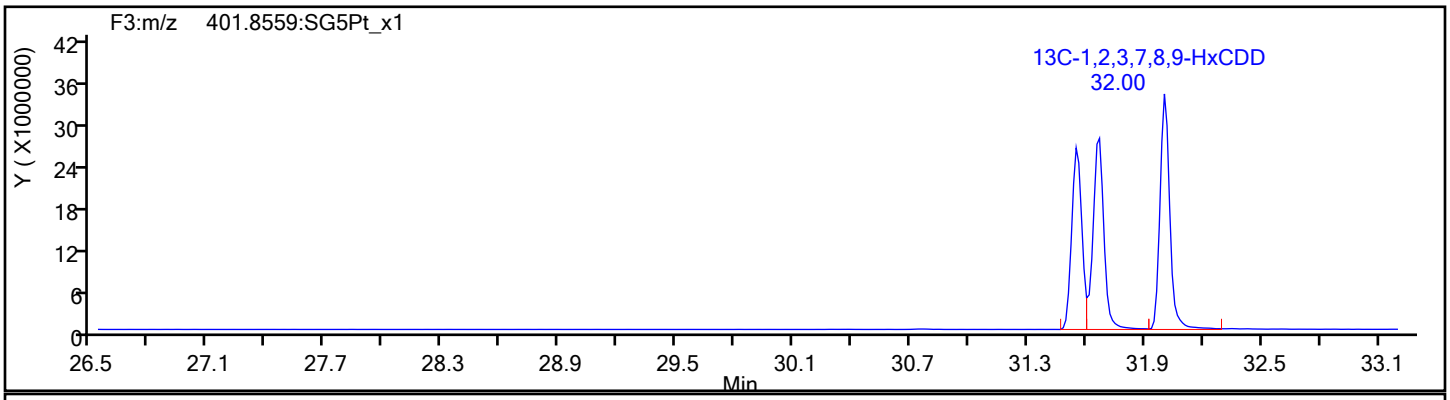
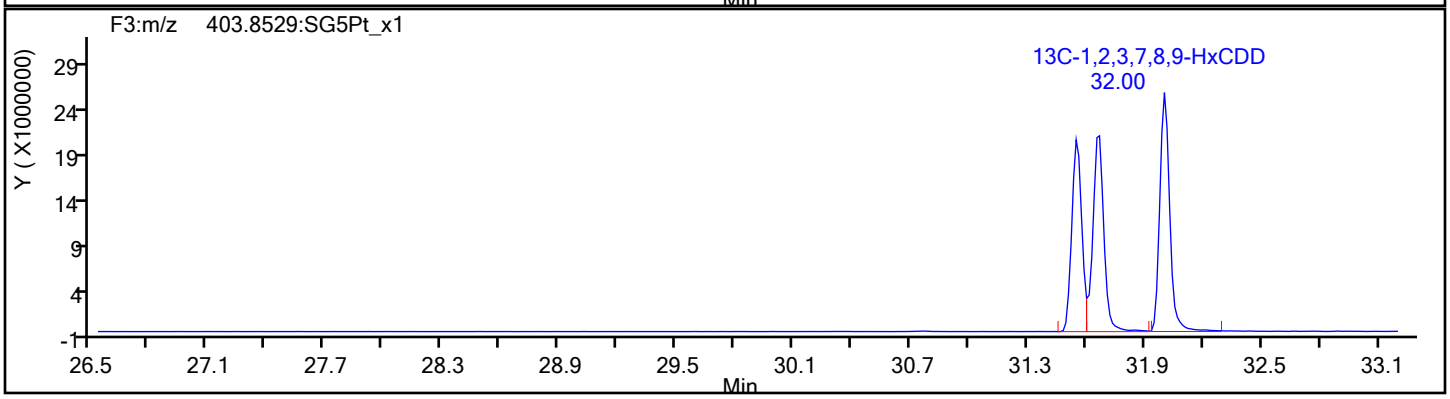




HxCDD Standards





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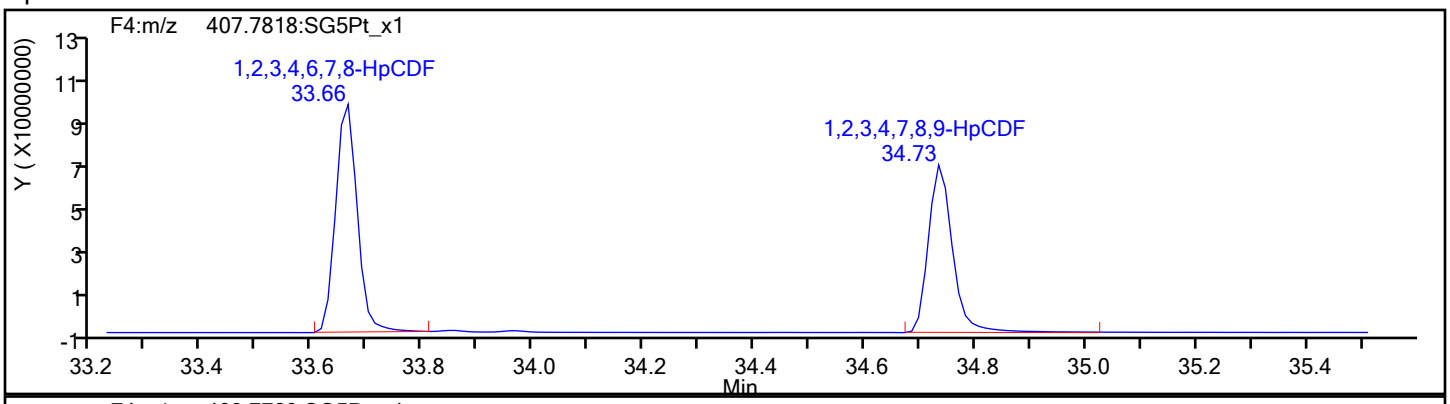
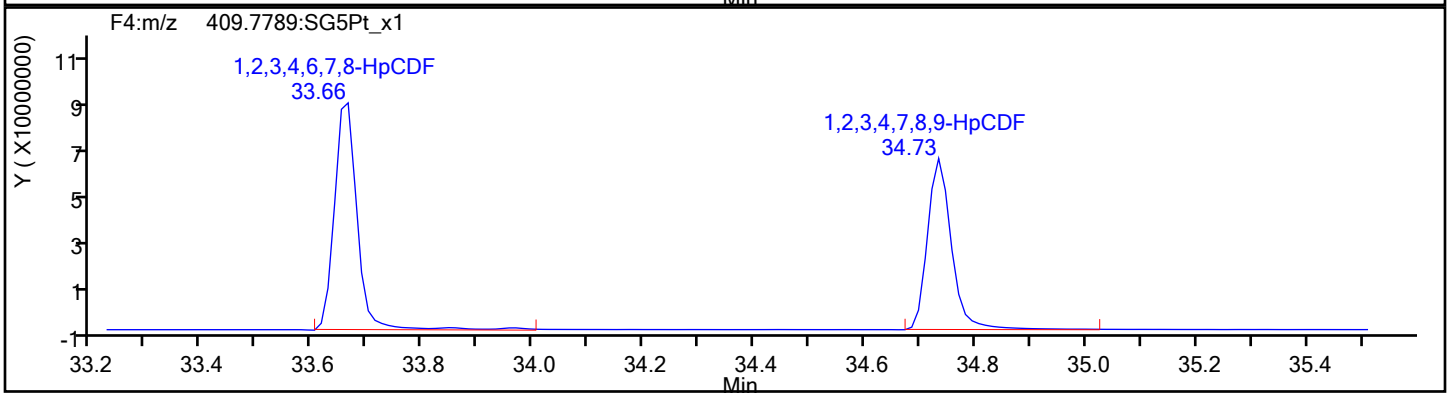
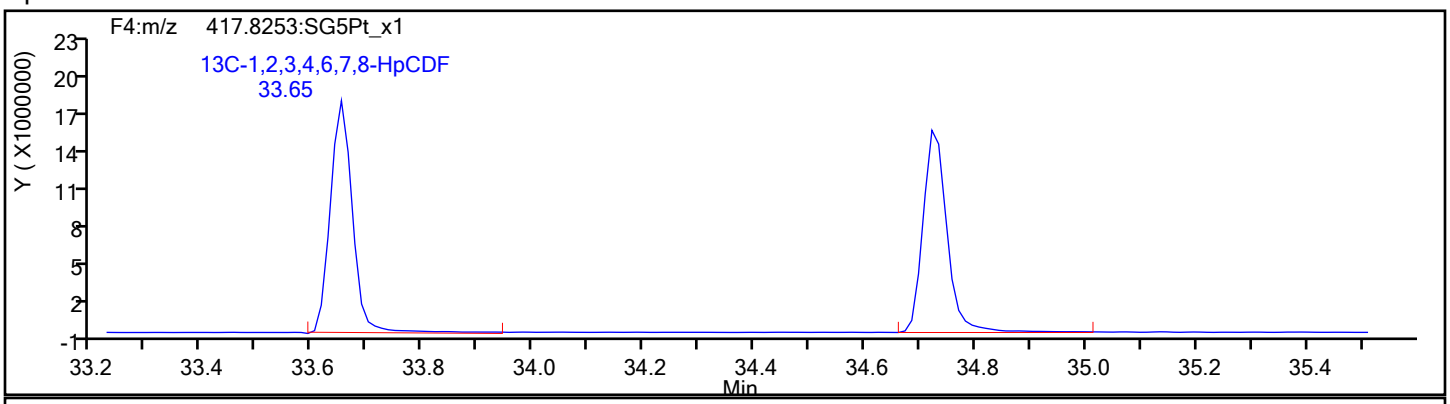
Column Type:	DB-5	Column Dia:	0.32 mm

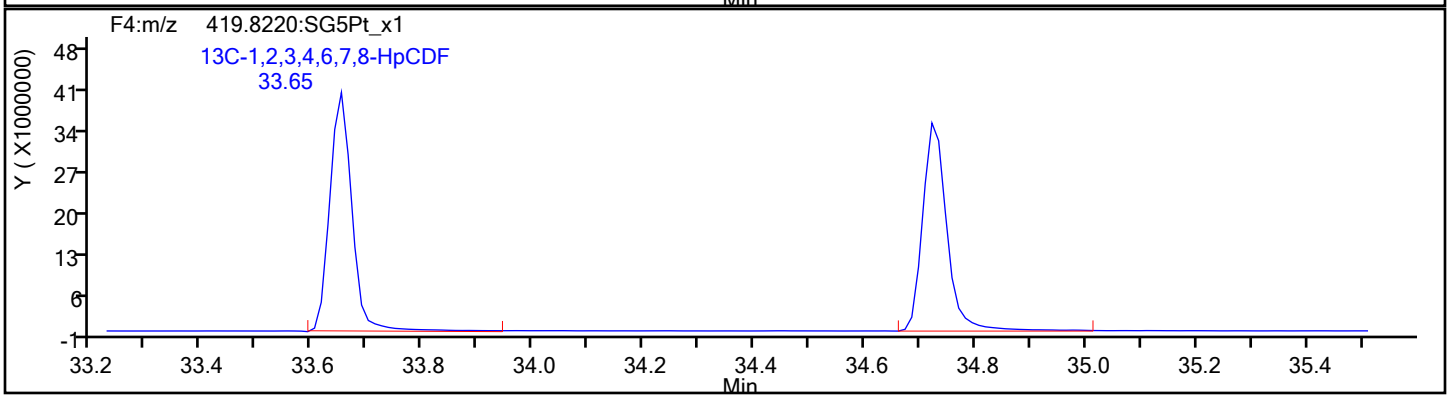
HpCDF





HpCDF Standards



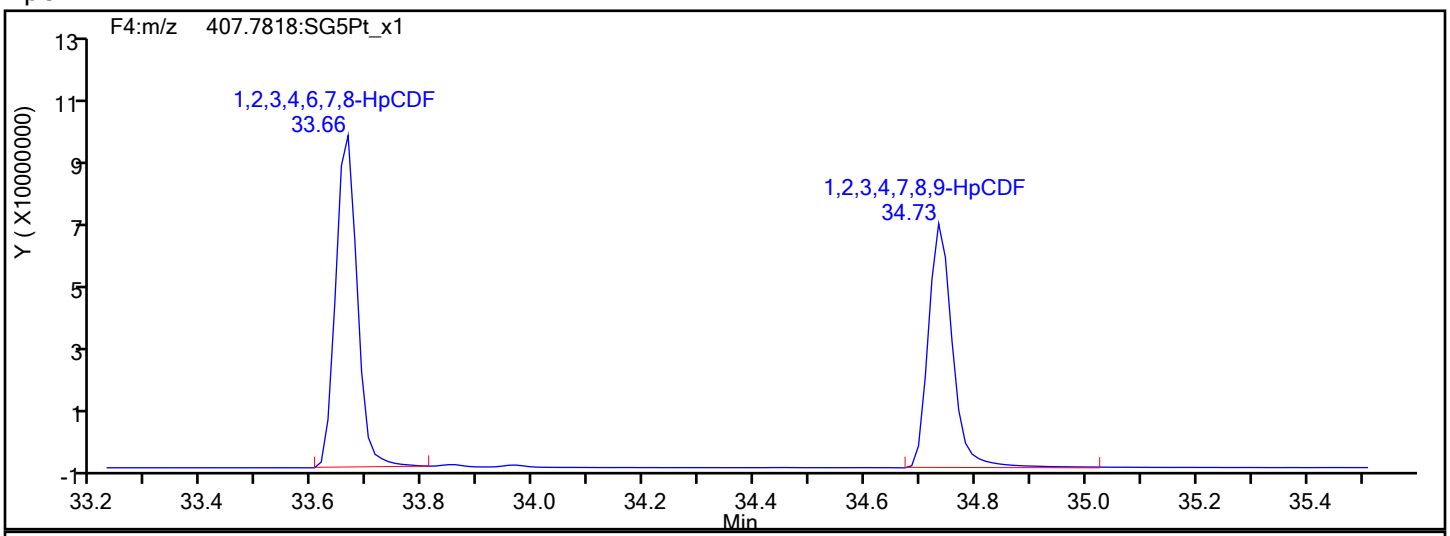


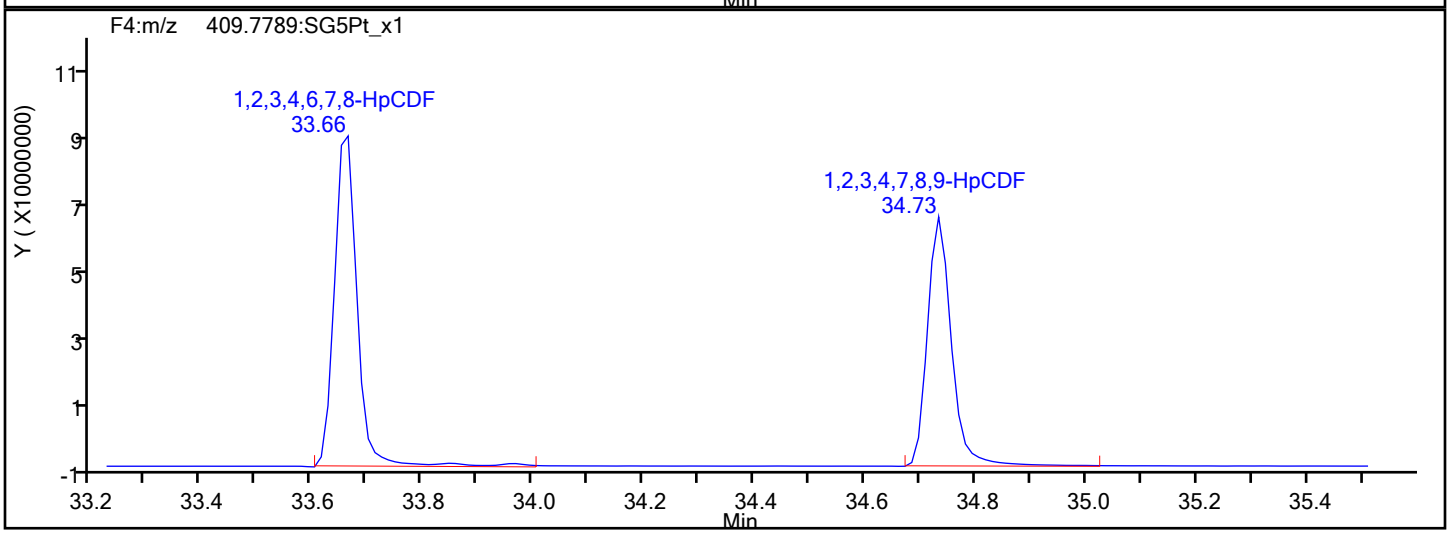
Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

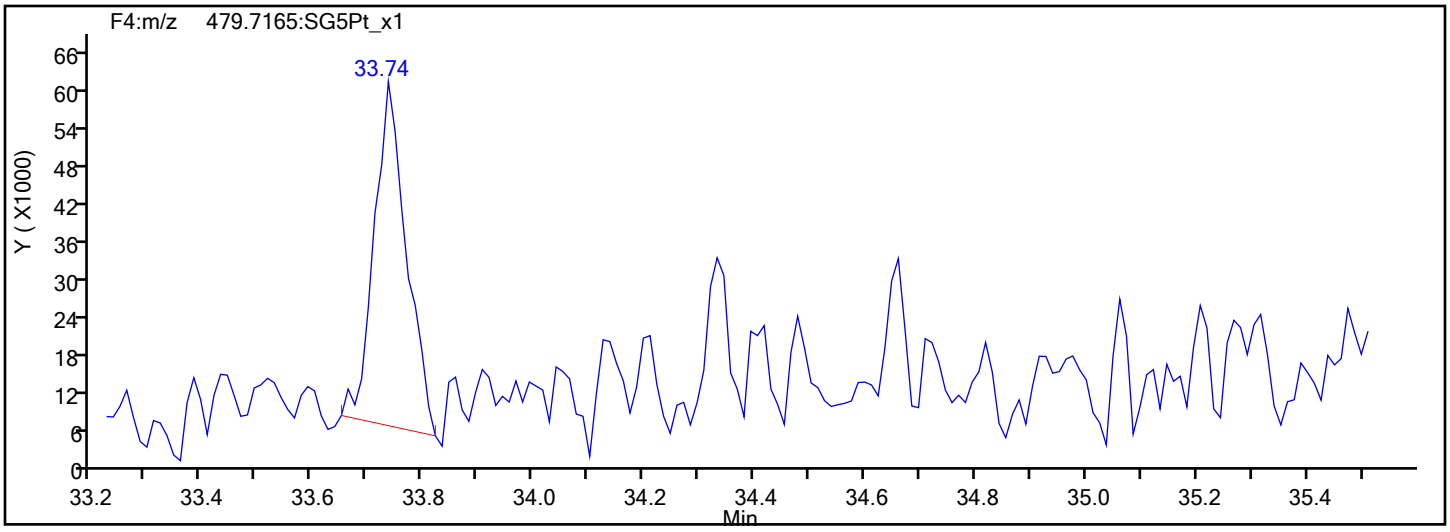
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass



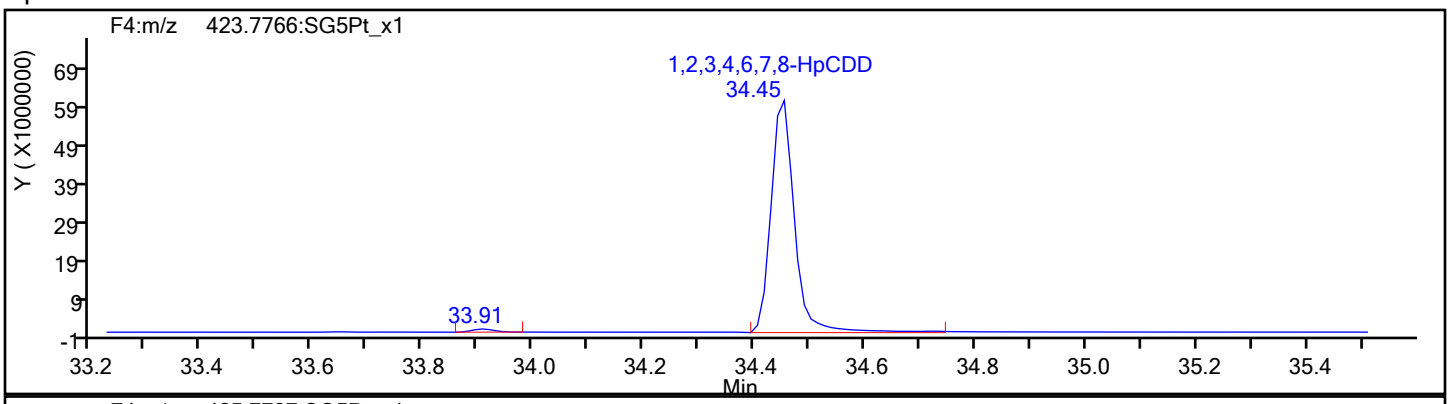
Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

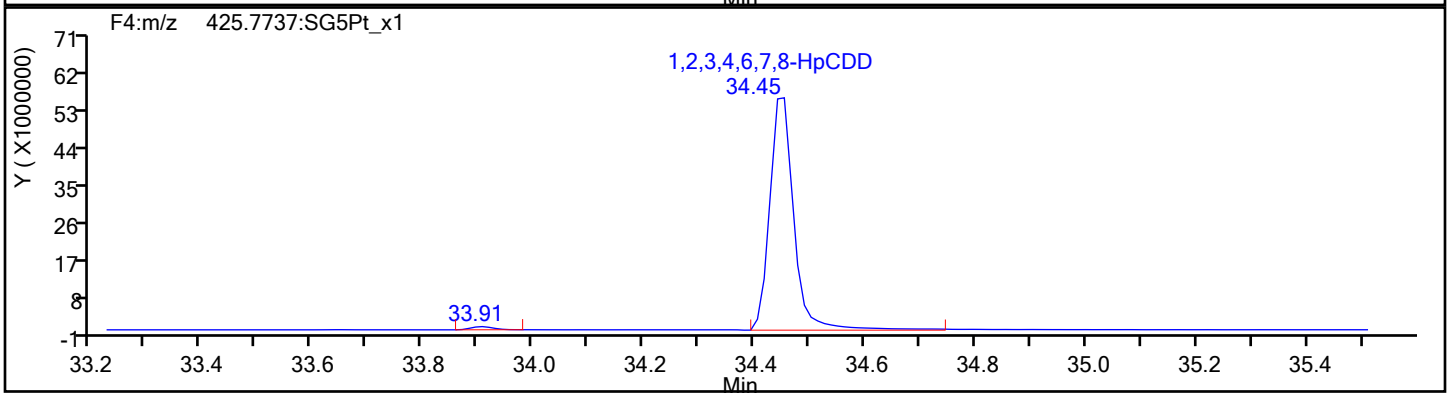
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d

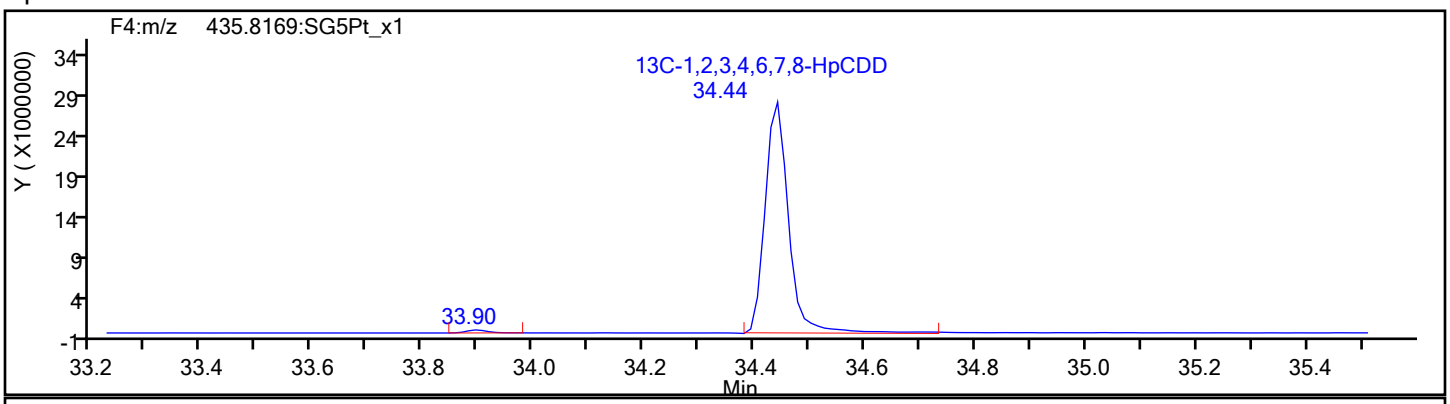
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

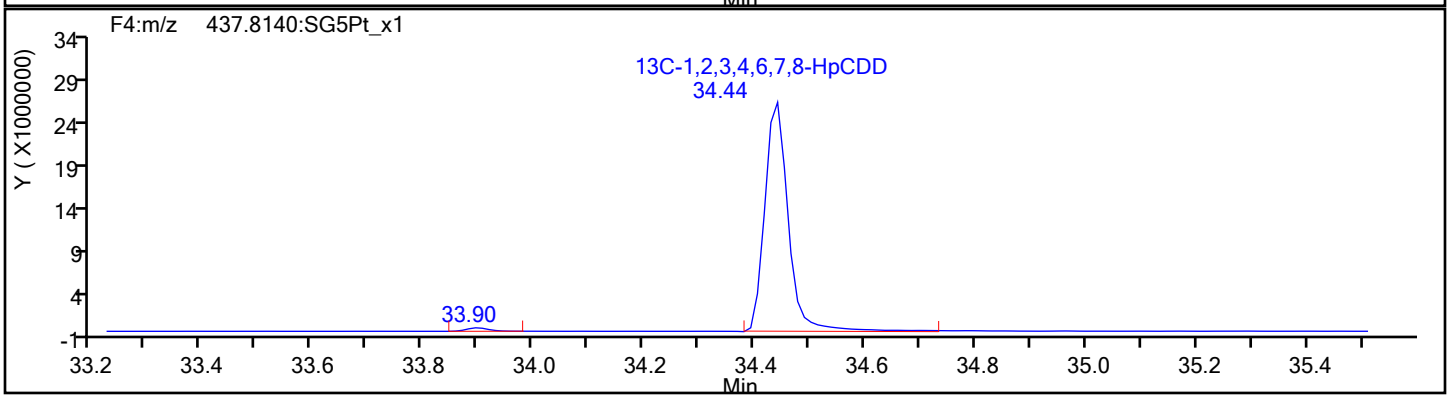
HpCDD





HpCDD Standards



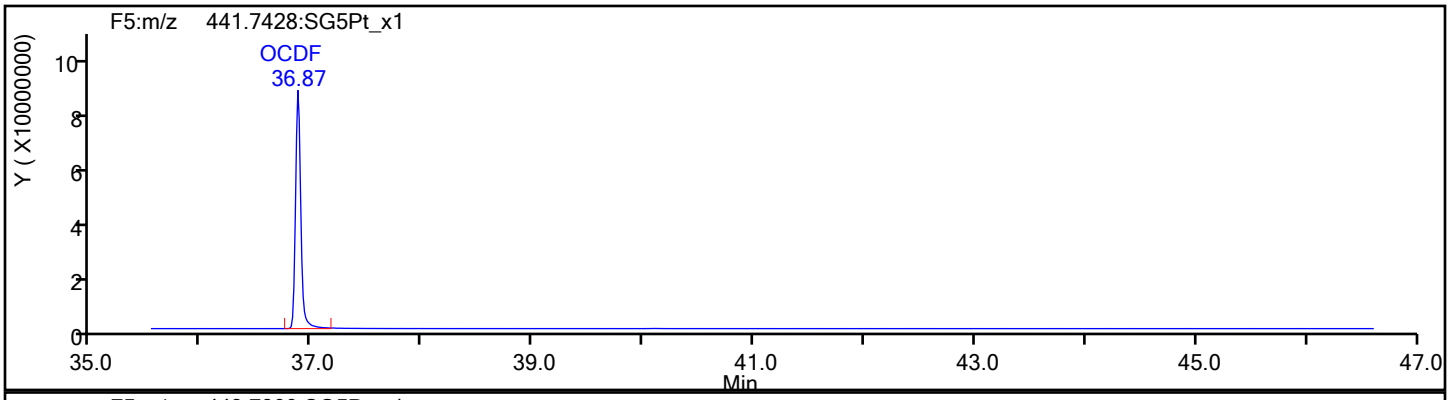


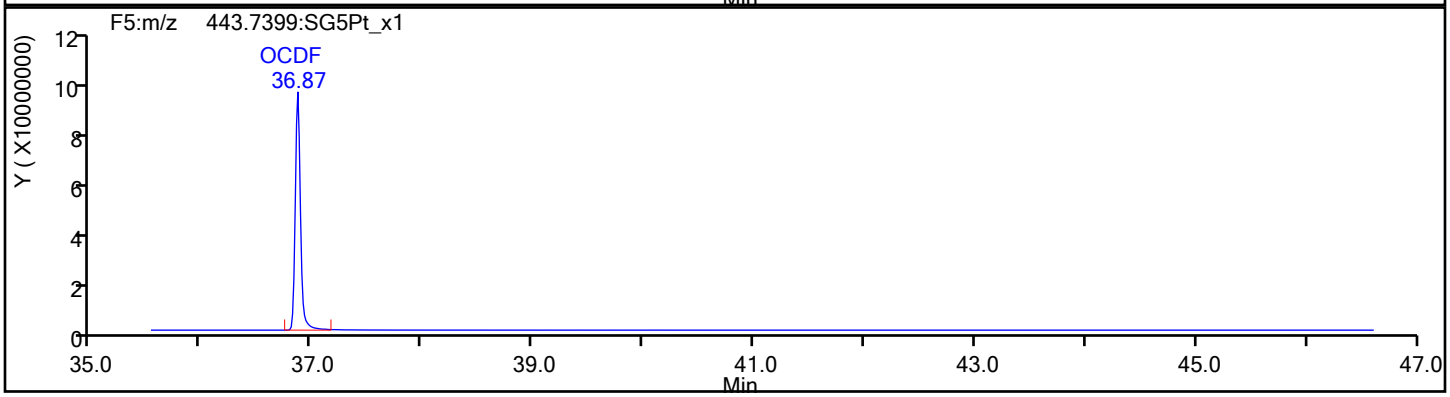
Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

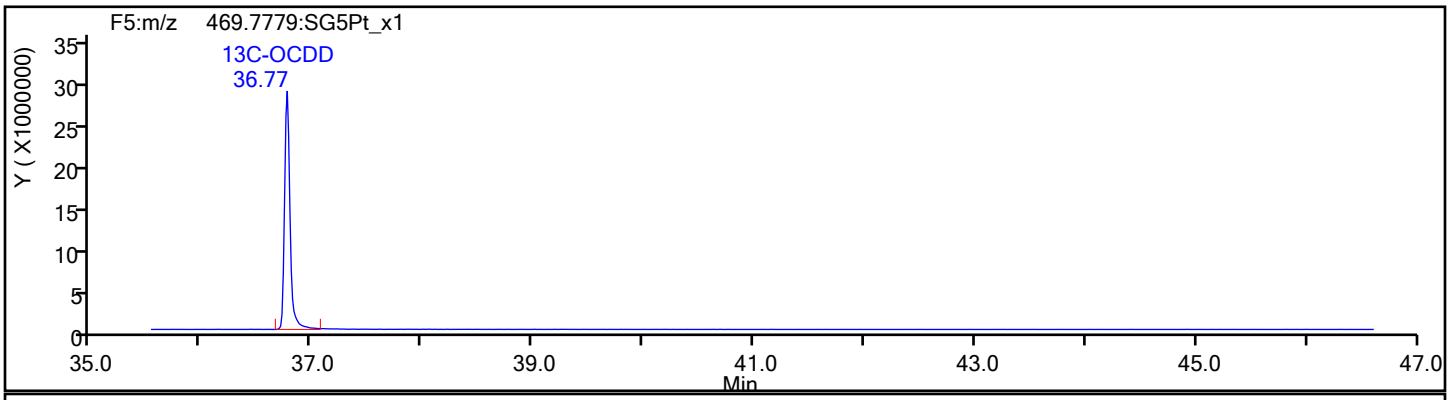
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

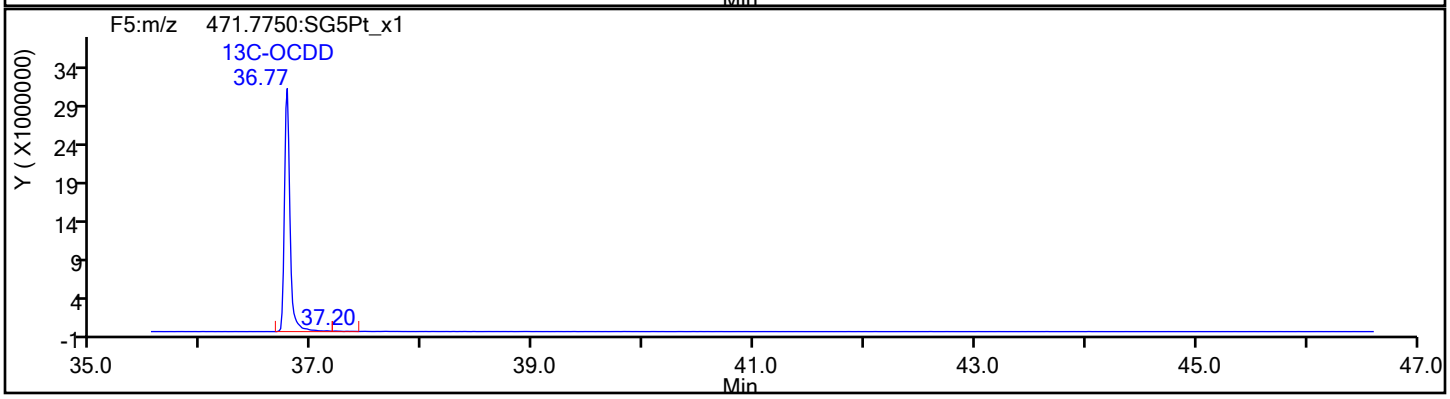
OCDF





OCDF Standards



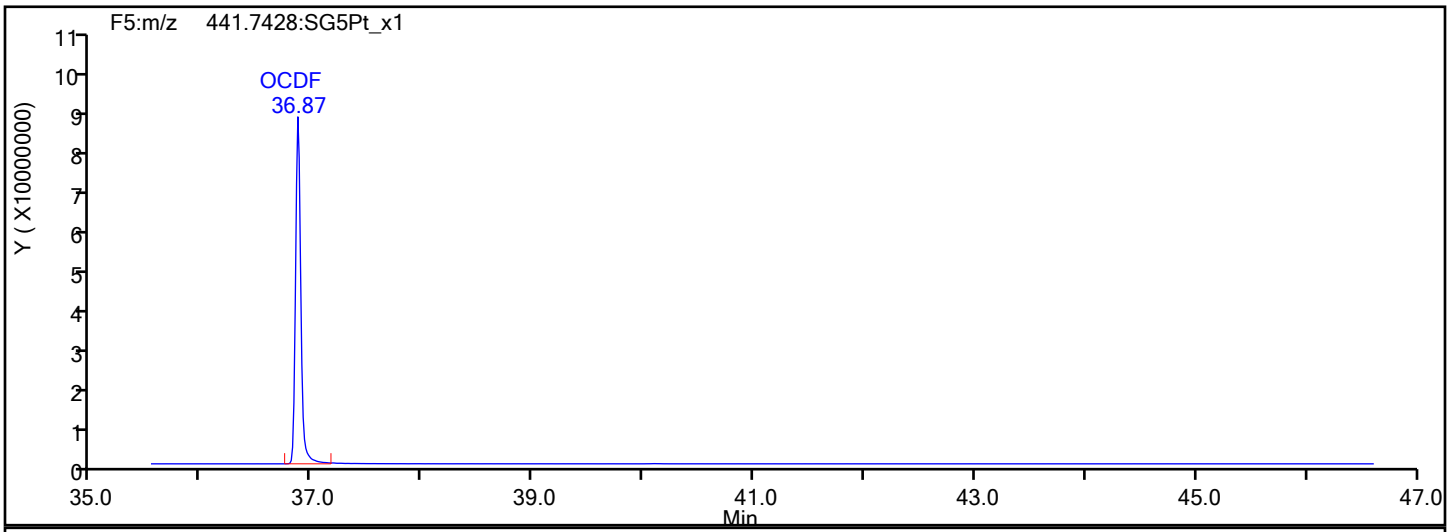


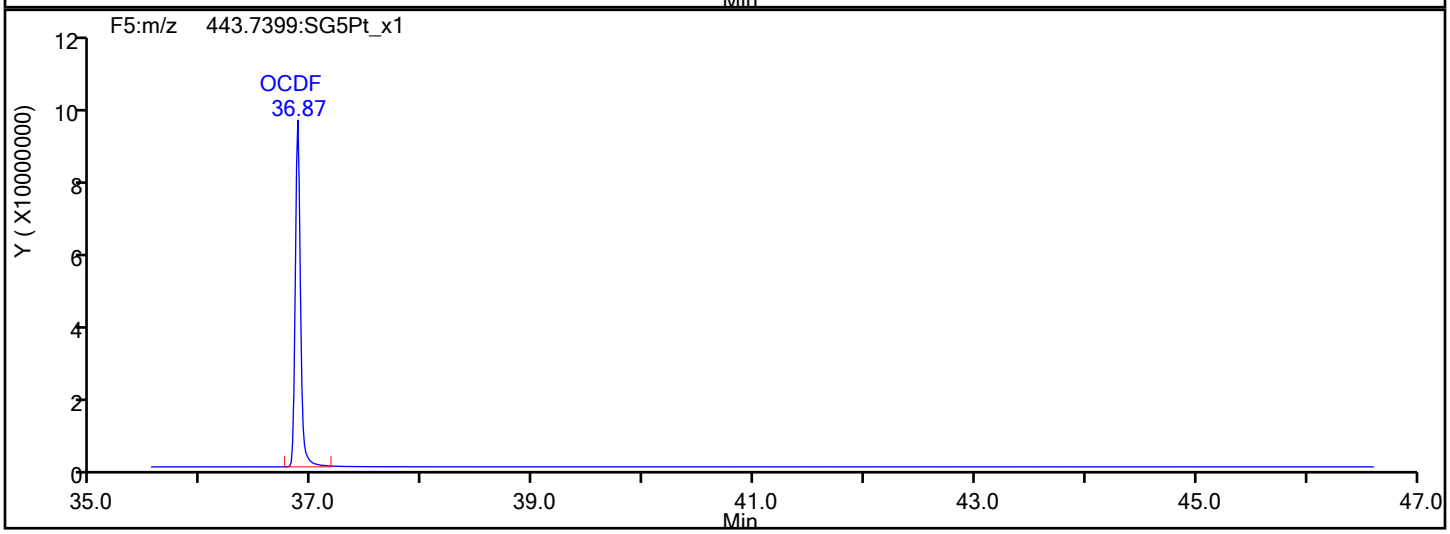
Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

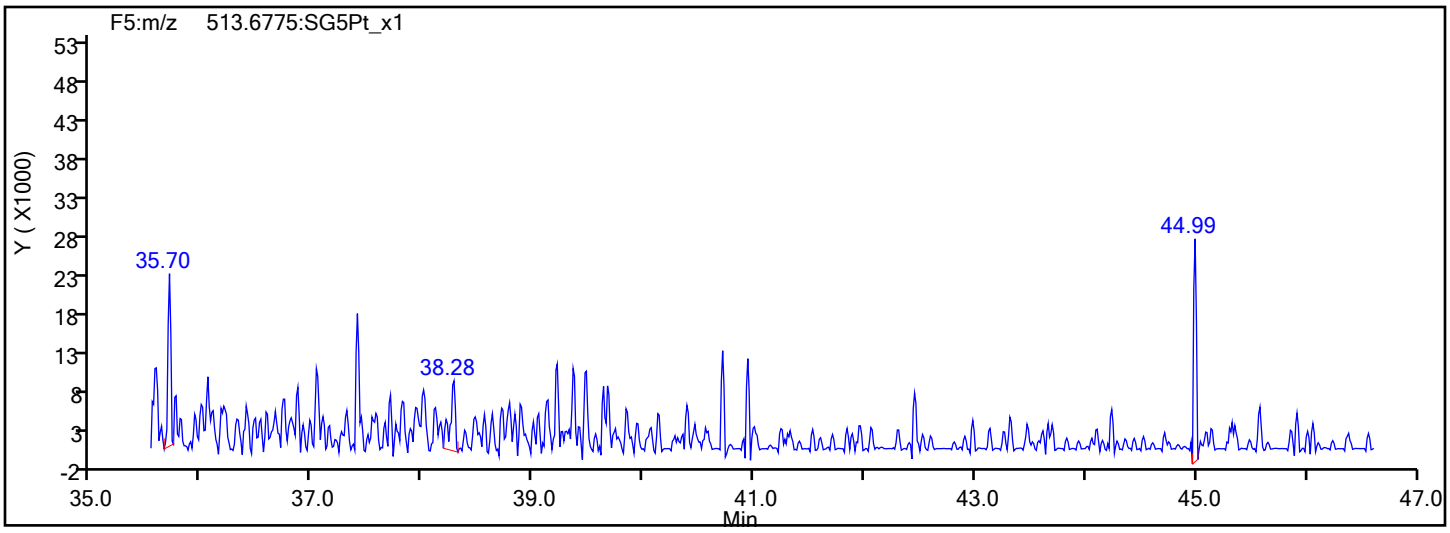
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

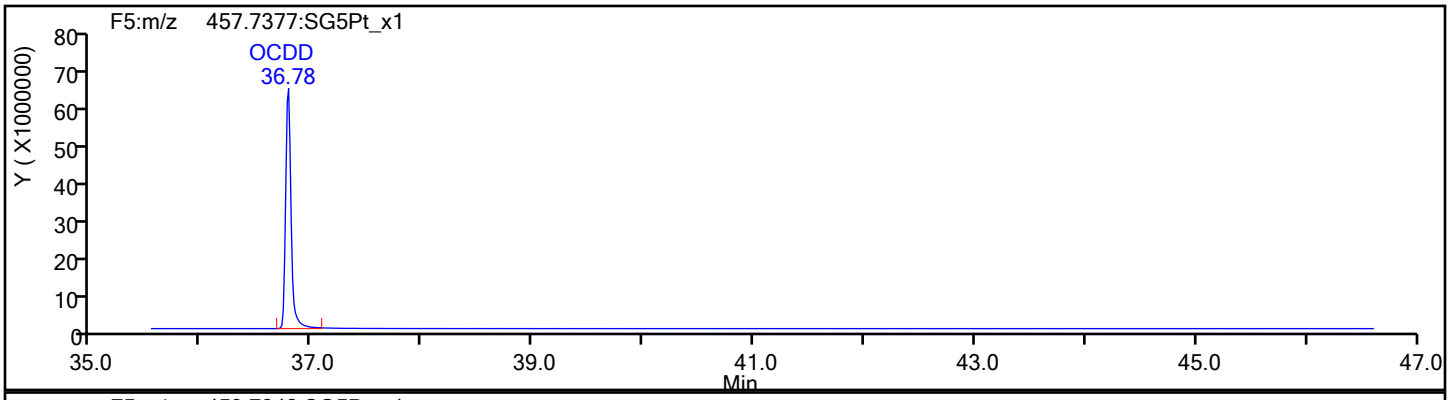


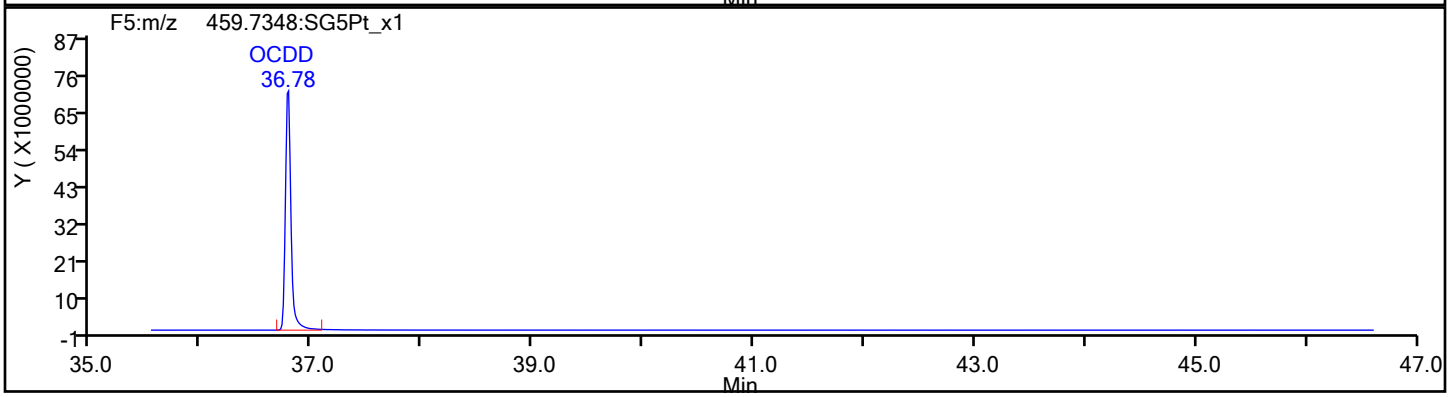
Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

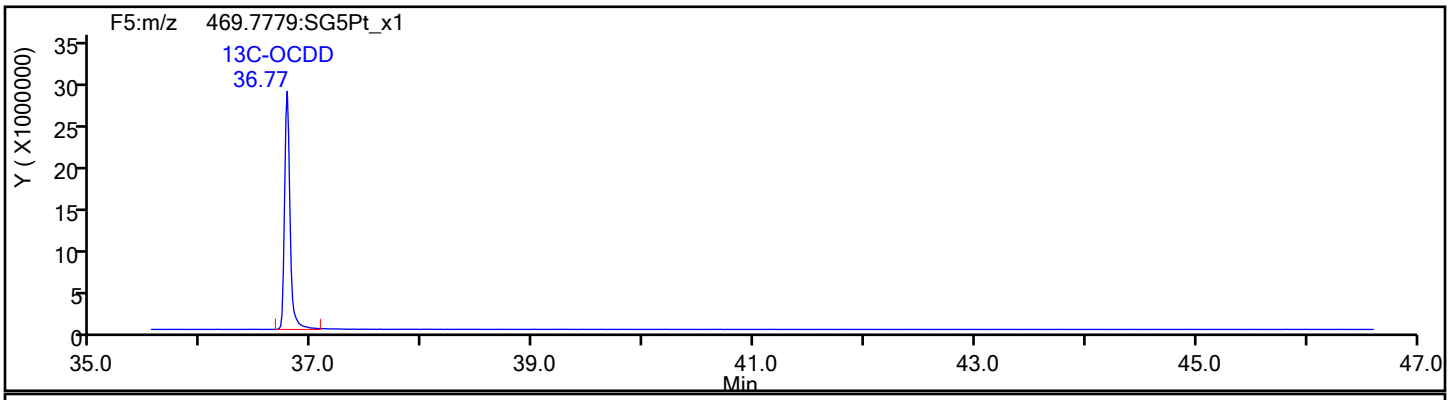
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

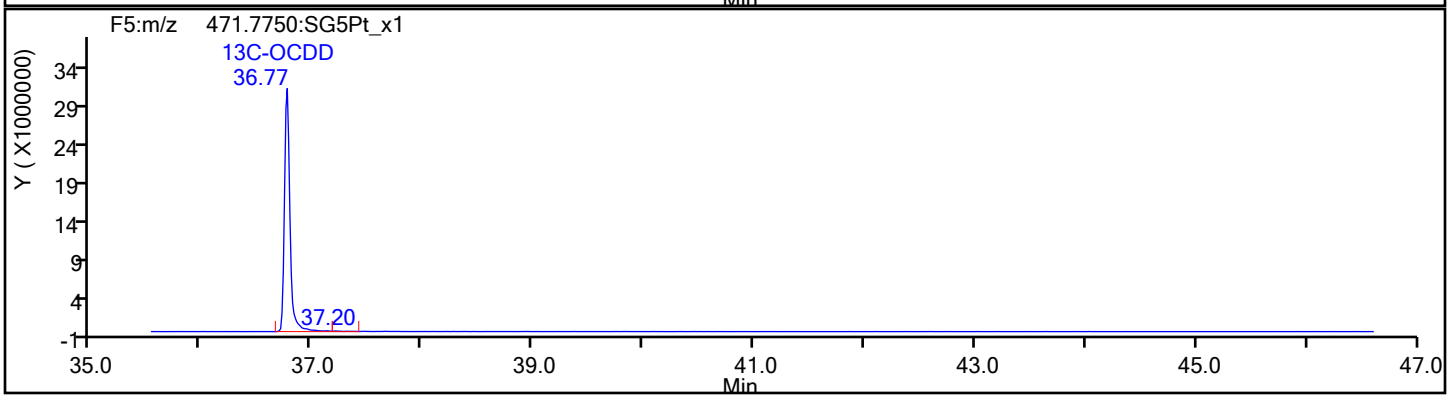
OCDD





OCDD Standards

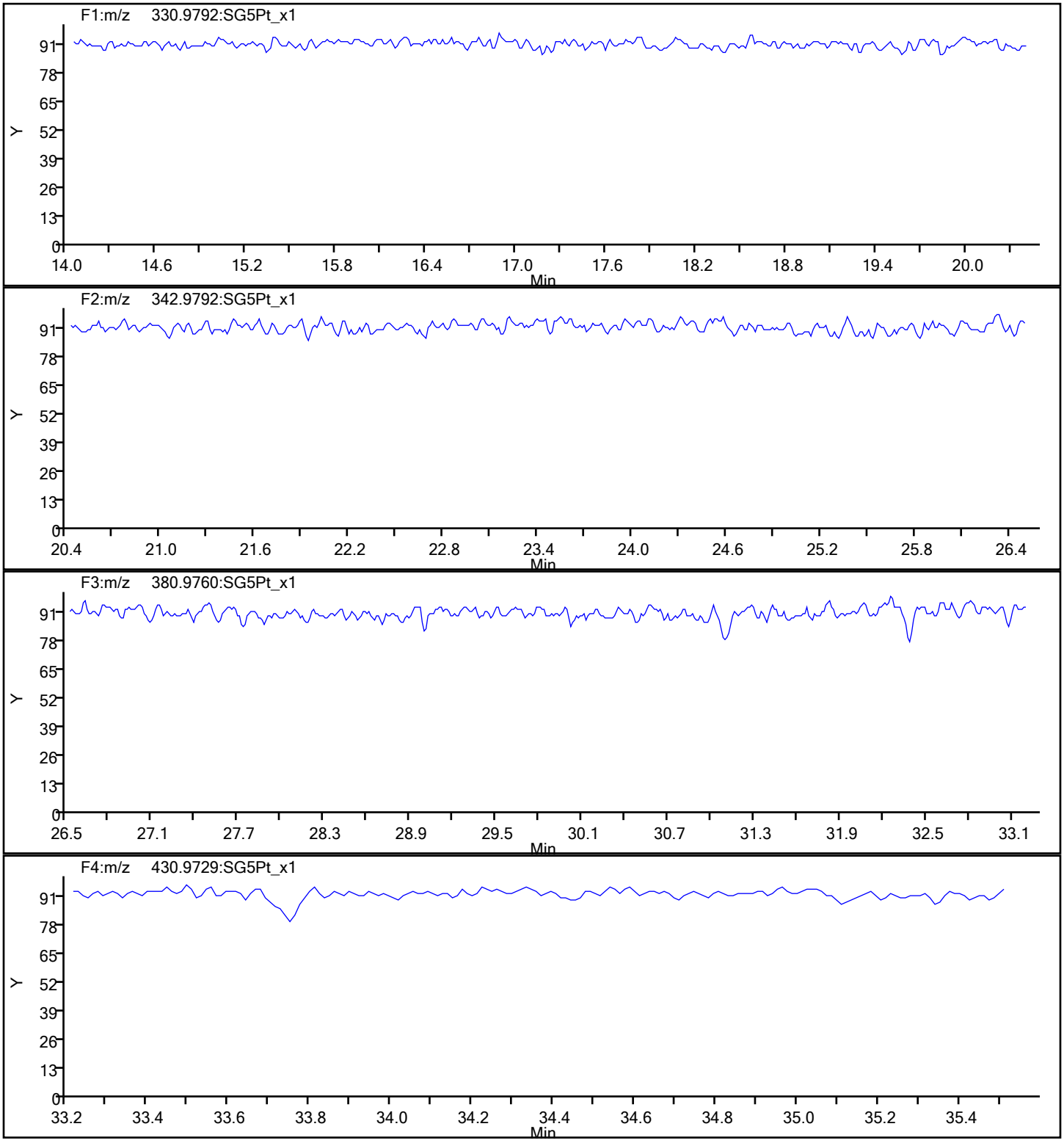




Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

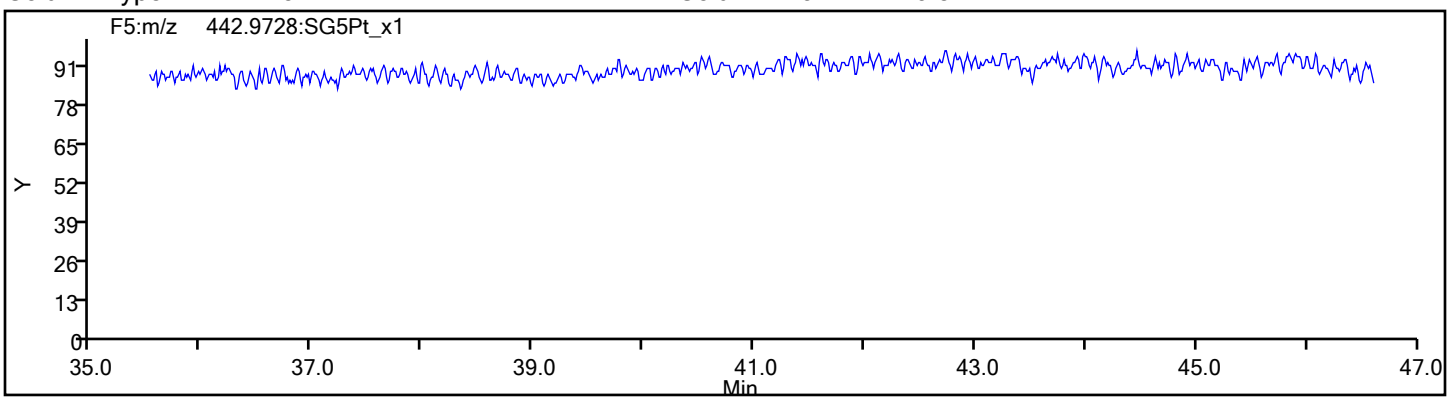
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 12-Dec-2019 15:54:34 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_6.d		
Injection Date:	12-Dec-2019 13:51:32	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L5		
Worklist#:	345037	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d
Lims ID: IC 6
Client ID: L6
Sample Type: IC Calib Level: 6
Inject. Date: 12-Dec-2019 14:39:03 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219D IC HRDXNL6_00024
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:41 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 15:49:44

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.657	188838327	0.79	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.158	277528864	0.78	1.4157	103.8	103.8	0.1674	0.1674	104	
2,3,7,8-TCDF	17.173	567933884	0.79	0.9502	215.4	215.4	0.4520	0.4520	108	
S Total TCDF					215.4	215.4	0.4520	0.4520		
D 13C-2,3,7,8-TCDD	17.854	187504800	0.79	0.9751	101.8	101.8	0.1949	0.1949	102	
2,3,7,8-TCDD	17.869	418876400	0.79	1.0477	213.2	213.2	0.1533	0.1533	107	
$ 37Cl4-2,3,7,8-TCDD	17.869	523686187		1.3480	205.7	205.7	0.4046	0.4046	103	
S Total TCDD					213.2	213.2	0.1533	0.1533		
D 13C-1,2,3,7,8-PeCDF	22.100	237179506	1.59	1.1786	106.6	106.6	0.2447	0.2447	107	
1,2,3,7,8-PeCDF	22.127	2466178873	1.58	1.0302	1009.3	1009.3	2.494	2.494	101	
D 13C-2,3,4,7,8-PeCDF	23.423	222542126	1.58	1.1308	104.2	104.2	0.2551	0.2551	104	a
2,3,4,7,8-PeCDF	23.450	2394358497	1.55	1.0410	1033.6	1033.6	2.898	2.898	103	
S Total PeCDF					2042.9	2042.9	2.696	2.696		
D 13C-1,2,3,7,8-PeCDD	24.132	151420854	1.60	0.7572	105.9	105.9	0.1615	0.1615	106	
1,2,3,7,8-PeCDD	24.159	1612908693	1.58	1.0855	981.3	981.3	1.052	1.052	98.13	
S Total PeCDD					981.3	981.3	1.052	1.052		
D 13C-1,2,3,4,7,8-HxCDF	30.273	212926355	0.53	1.1043	103.5	103.5	0.1858	0.1858	104	
1,2,3,4,7,8-HxCDF	30.299	2563115775	1.26	1.1472	1049.3	1049.3	2.784	2.784	105	
D 13C-1,2,3,6,7,8-HxCDF	30.473	222786807	0.53	1.1470	104.3	104.3	0.1788	0.1788	104	
1,2,3,6,7,8-HxCDF	30.499	2581265503	1.25	1.1450	1011.9	1011.9	2.490	2.490	101	
D 13C-2,3,4,6,7,8-HxCDF	31.351	207860074	0.52	1.0769	103.6	103.6	0.1905	0.1905	104	
2,3,4,6,7,8-HxCDF	31.378	2464596807	1.24	1.1726	1011.2	1011.2	2.007	2.007	101	
D 13C-1,2,3,7,8,9-HxCDF	32.190	200052961	0.52	1.0115	106.2	106.2	0.2028	0.2028	106	
1,2,3,7,8,9-HxCDF	32.204	2388744572	1.24	1.1717	1019.1	1019.1	1.747	1.747	102	
S Total HxCDF					4091.5	4091.5	2.257	2.257		
* 13C-1,2,3,7,8,9-HxCDD	32.004	186277075	1.31	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.551	154639045	1.27	0.7962	104.3	104.3	0.1737	0.1737	104	a
1,2,3,4,7,8-HxCDD	31.565	1672379041	1.27	1.0934	989.1	989.1	1.243	1.243	98.91	
D 13C-1,2,3,6,7,8-HxCDD	31.658	169339469	1.28	0.8720	104.3	104.3	0.1586	0.1586	104	

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,3,6,7,8-HxCDD	31.684	1788364825	1.26	1.0429	1012.6	1012.6	1.235	1.235	101	
1,2,3,7,8,9-HxCDD	32.017	1881769266	1.26	1.2073	962.2	962.2	1.095	1.095	96.22	
S Total HxCDD					2963.9	2963.9	1.191	1.191		
D 13C-1,2,3,4,6,7,8-HpCDF	33.640	152865078	0.44	0.7577	108.3	108.3	0.996	0.996	108	
1,2,3,4,6,7,8-HpCDF	33.652	2309957389	1.05	1.4804	1020.8	1020.8	7.834	7.834	102	
D 13C-1,2,3,4,7,8,9-HpCDF	34.721	140774596	0.45	0.6941	108.9	108.9	1.087	1.087	109	a
1,2,3,4,7,8,9-HpCDF	34.734	1913174732	1.07	1.2933	1050.8	1050.8	10.6	10.6	105	
S Total HpCDF					2071.6	2071.6	9.199	9.199		
D 13C-1,2,3,4,6,7,8-HpCDD	34.430	140028109	1.06	0.7058	106.5	106.5	0.4261	0.4261	107	
1,2,3,4,6,7,8-HpCDD	34.442	1496594886	1.06	1.0535	1014.5	1014.5	3.513	3.513	101	
S Total HpCDD					1014.5	1014.5	3.513	3.513		
D 13C-OCDD	36.770	199399104	0.90	0.4603	232.6	232.6	0.1424	0.1424	116	
OCDF	36.866	2706173170	0.91	1.3945	1946.5	1946.5	0.4617	0.4617	97.32	
OCDD	36.782	2153864314	0.90	1.1362	1901.4	1901.4	0.5913	0.5913	95.07	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL6_00024 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d
Lims ID: IC 6
Client ID: L6
Sample Type: IC Calib Level: 6
Inject. Date: 12-Dec-2019 14:39:03 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC 121219D IC HRDXNL6_00024
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 15:54:41 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 15:49:44

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.657	17.666	-1		83564714	21577386	22000	55000	981		
333.9339	17.657	17.666	-1		105273613	27513016	15318	38295	1796	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.158	17.164	0	0.972	121895716	31329327	22298	55745	1405		
317.9389	17.158	17.164	0	0.972	155633148	39478925	24242	60605	1629	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.173	17.176	0	1.001	250240699	63148791	46539	116347	1357		
305.8987	17.173	17.176	0	1.001	317693185	79789284	75095	187737	1063	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.854	17.854	0	1.011	82790590	20124816	22000	55000	915		
333.9339	17.854	17.854	0	1.011	104714210	25060871	15318	38295	1636	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.869	17.872	0	1.001	184989351	46007272	14533	36332	3166		
321.8936	17.869	17.872	0	1.001	233887049	57402962	14506	36265	3957	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.869	17.872	0	1.012	523686187	127631105	107091	267727	1192		
13C-1,2,3,7,8-PeCDF											
351.9000	22.100	22.103	0	1.252	145535198	27804087	29026	72565	958		
353.8970	22.100	22.103	0	1.252	91644308	17332335	27615	69037	628	1.59(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.127	22.130	0	1.001	1511912726	280981043	283011	707527	993		
341.8567	22.127	22.130	0	1.001	954266147	176189062	180870	452175	974	1.58(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,4,7,8-PeCDF											a
351.9000	23.423	23.426	0	1.327	136268845	23481541	29026	72565	809		a
353.8970	23.423	23.426	0	1.327	86273281	14959019	27615	69037	542	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.450	23.450	0	1.001	1456222017	254944581	283011	707527	901		
341.8567	23.450	23.450	0	1.001	938136480	163300906	180870	452175	903	1.55(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.132	24.137	0	1.367	93280756	15111276	14214	35535	1063		
369.8919	24.132	24.137	0	1.367	58140098	9460564	9797	24492	966	1.60(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.159	24.162	0	1.001	988724157	160523690	68846	172115	2332		
357.8516	24.159	24.162	0	1.001	624184536	102295717	43362	108405	2359	1.58(1.32-1.78)	
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.273	30.270	0	0.946	73575187	13415942	15619	39047	859		
385.8610	30.273	30.270	0	0.946	139351168	24979720	29533	73832	846	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.299	30.300	0	1.001	1428159559	262993927	271530	678825	969		
375.8178	30.286	30.300	-1	1.000	1134956216	208140679	219056	547640	950	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.473	30.473	0	0.952	77296638	14994756	15619	39047	960		
385.8610	30.473	30.473	0	0.952	145490169	28014930	29533	73832	949	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.499	30.497	0	1.001	1432647832	268450864	271530	678825	989		
375.8178	30.486	30.497	-1	1.000	1148617671	215350626	219056	547640	983	1.25(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.351	31.357	0	0.980	71478208	18056132	15619	39047	1156		
385.8610	31.351	31.357	0	0.980	136381866	34065069	29533	73832	1153	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.378	31.375	0	1.001	1366153637	346597380	271530	678825	1276		
375.8178	31.365	31.375	-1	1.000	1098443170	277212218	219056	547640	1265	1.24(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.190	32.196	0	1.006	68790551	20692649	15619	39047	1325		
385.8610	32.190	32.196	0	1.006	131262410	39242010	29533	73832	1329	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.204	32.209	0	1.000	1324529876	395878194	271530	678825	1458		
375.8178	32.204	32.209	0	1.000	1064214696	313784696	219056	547640	1432	1.24(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.004	32.004	0		105532438	31259756	15504	38760	2016		
403.8529	32.004	32.004	0		80744637	23764608	14928	37320	1592	1.31(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											a
401.8559	31.551	31.557	0	0.986	86613004	24369652	15504	38760	1572		a
403.8529	31.551	31.557	0	0.986	68026041	18996198	14928	37320	1273	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.565	31.570	0	1.000	935066782	268480797	131209	328022	2046		
391.8127	31.565	31.570	0	1.000	737312259	211543510	104462	261155	2025	1.27(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.658	31.666	0	0.989	95146559	25619096	15504	38760	1652		
403.8529	31.658	31.666	0	0.989	74192910	20108305	14928	37320	1347	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.684	31.682	0	1.001	996220992	261077237	131209	328022	1990		
391.8127	31.671	31.682	-1	1.000	792143833	209894463	104462	261155	2009	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.017	32.023	0	1.015	1049116210	310668645	131209	328022	2368		
391.8127	32.017	32.023	0	1.015	832653056	244077375	104462	261155	2337	1.26(1.05-1.43)	
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.640	33.647	0	1.051	46733620	17595027	54412	136030	323		
419.8220	33.640	33.647	0	1.051	106131458	39067926	111724	279310	350	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.652	33.659	0	1.000	1183135025	439502144	13054	913263727	337		
409.7789	33.652	33.659	0	1.000	1126822364	423476232	13231	193307797	320	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											a
417.8253	34.721	34.726	0	1.085	43429979	14929393	54412	136030	274		a
419.8220	34.721	34.726	0	1.085	97344617	33174544	111724	279310	297	0.45(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.734	34.736	0	1.000	989548862	337327270	13054	913263727	258		
409.7789	34.734	34.736	0	1.000	923625870	310086210	13231	193307797	234	1.07(0.88-1.20)	
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.430	34.437	0	1.076	72140842	25597315	34784	86960	736		
437.8140	34.430	34.437	0	1.076	67887267	24359367	31415	78537	775	1.06(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.442	34.449	0	1.000	769189585	280356398	363826	909565	771		
425.7737	34.442	34.449	0	1.000	727405301	265970164	375758	939395	708	1.06(0.88-1.20)	
13C-OCDD											
469.7779	36.770	36.767	0	1.149	94611986	29685306	7599	18997	3906		
471.7750	36.770	36.767	0	1.149	104787118	32469541	6829	17072	4755	0.90(0.76-1.02)	
OCDF											
441.7428	36.866	36.870	0	1.003	1292260901	401703074	39115	97787	10270		
443.7399	36.866	36.870	0	1.003	1413912269	436740000	40915	102287	10674	0.91(0.76-1.02)	
OCDD											
457.7377	36.782	36.779	0	1.000	1018958639	313411053	44158	110395	7097		
459.7348	36.770	36.779	-1	1.000	1134905675	349675570	39355	98387	8885	0.90(0.76-1.02)	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

HRDXNL6_00024 Amount Added: 2.00 Units: uL

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

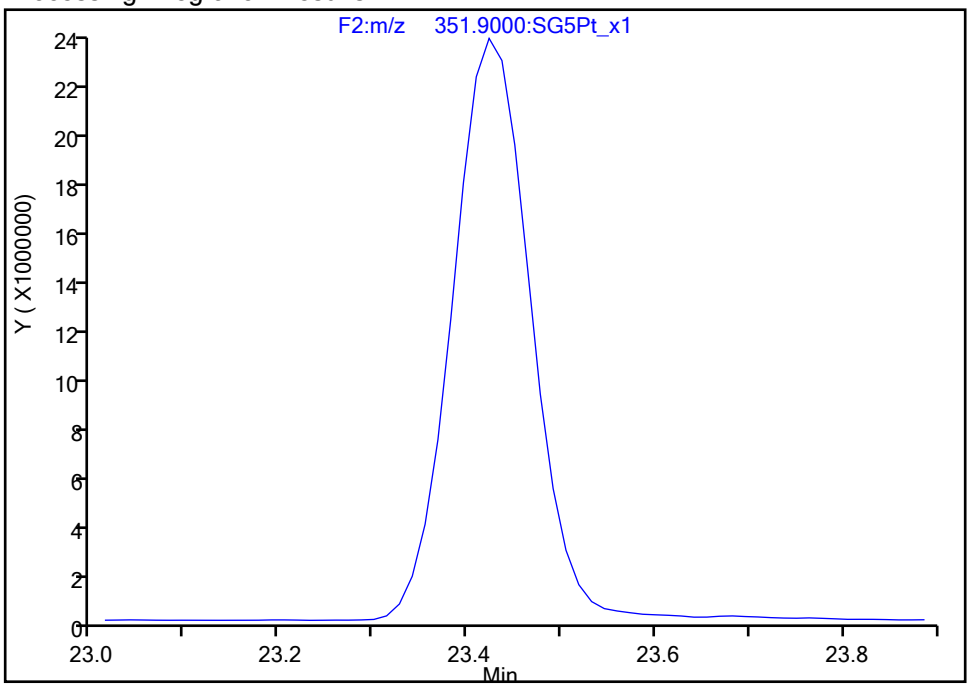
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d				
Injection Date:	12-Dec-2019 14:39:03	Instrument ID:	3D5		
Lims ID:	IC 6				
Client ID:	L6				
Operator ID:	KSS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F2:HRSIR		

13C-2,3,4,7,8-PeCDF, CAS: 116843-02-8

Signal: 1

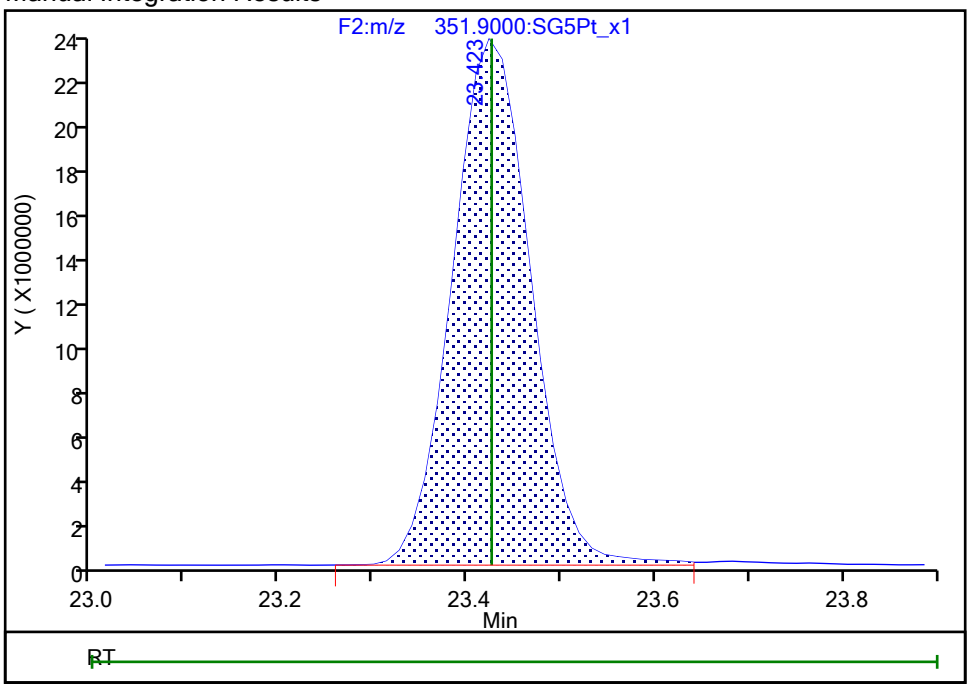
Not Detected
Expected RT: 23.43

Processing Integration Results



Manual Integration Results

RT: 23.42
Area: 136268845
Amount: 104.2196
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 15:48:50
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

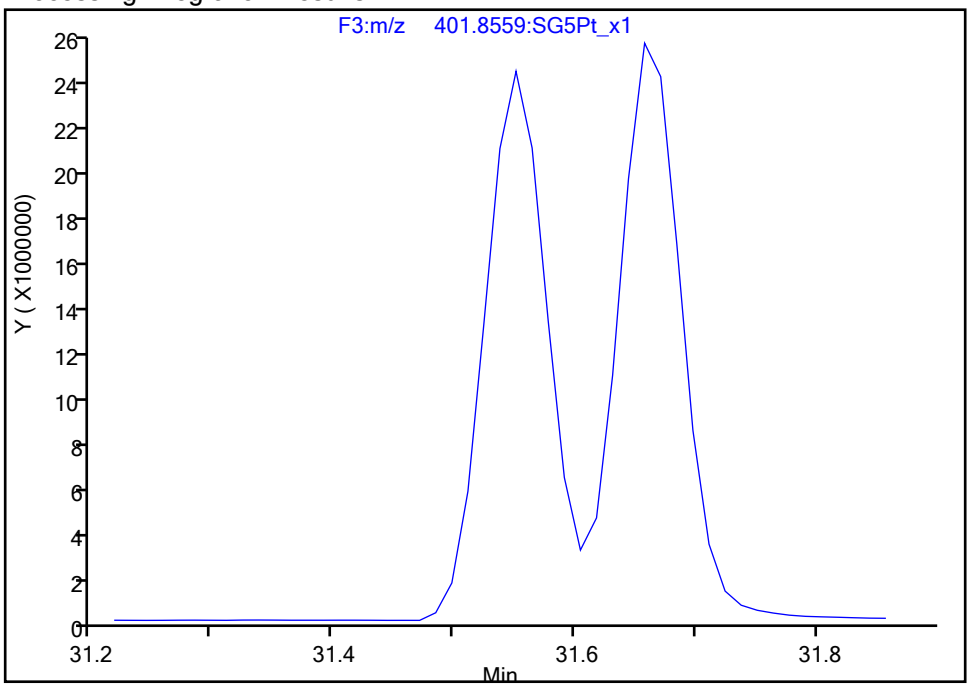
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d				
Injection Date:	12-Dec-2019 14:39:03	Instrument ID:	3D5		
Lims ID:	IC 6				
Client ID:	L6				
Operator ID:	KSS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F3:HRSIR		

13C-1,2,3,4,7,8-HxCDD, CAS: 109719-80-4

Signal: 1

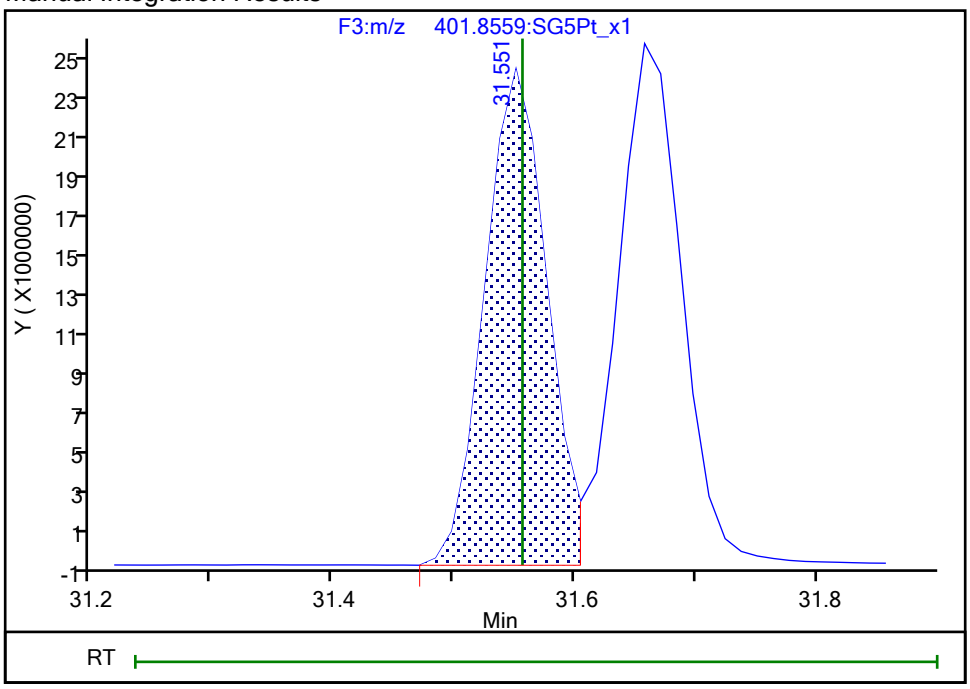
Not Detected
Expected RT: 31.56

Processing Integration Results



Manual Integration Results

RT: 31.55
Area: 86613004
Amount: 104.2640
Amount Units: pg/ul



Reviewer: stephensk, 12-Dec-2019 15:48:56
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

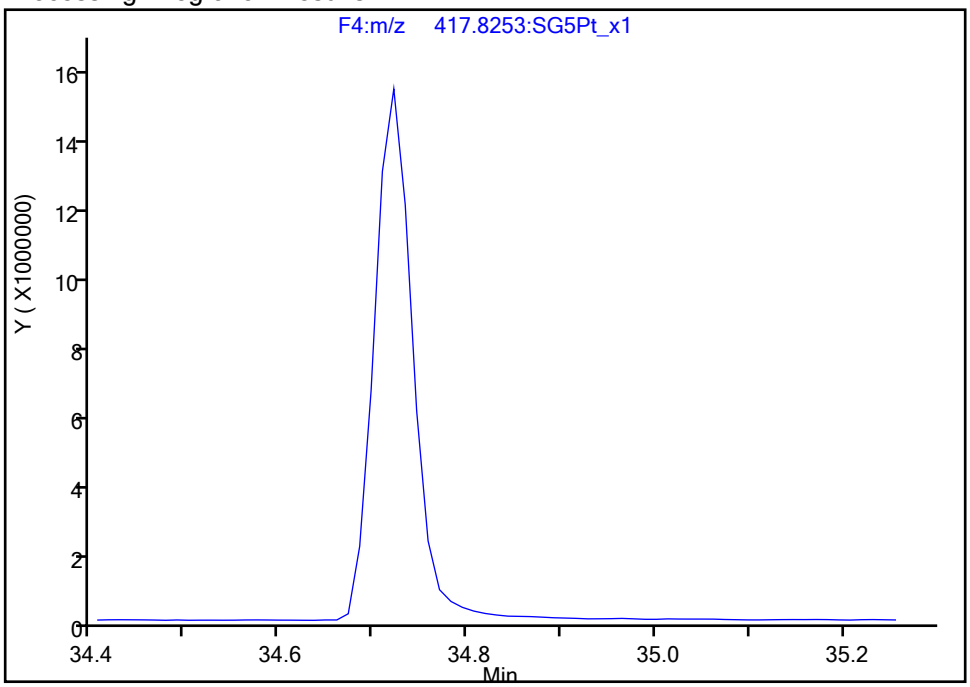
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d				
Injection Date:	12-Dec-2019 14:39:03	Instrument ID:	3D5		
Lims ID:	IC 6				
Client ID:	L6				
Operator ID:	KSS	ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

13C-1,2,3,4,7,8,9-HpCDF, CAS: 109719-94-0

Signal: 1

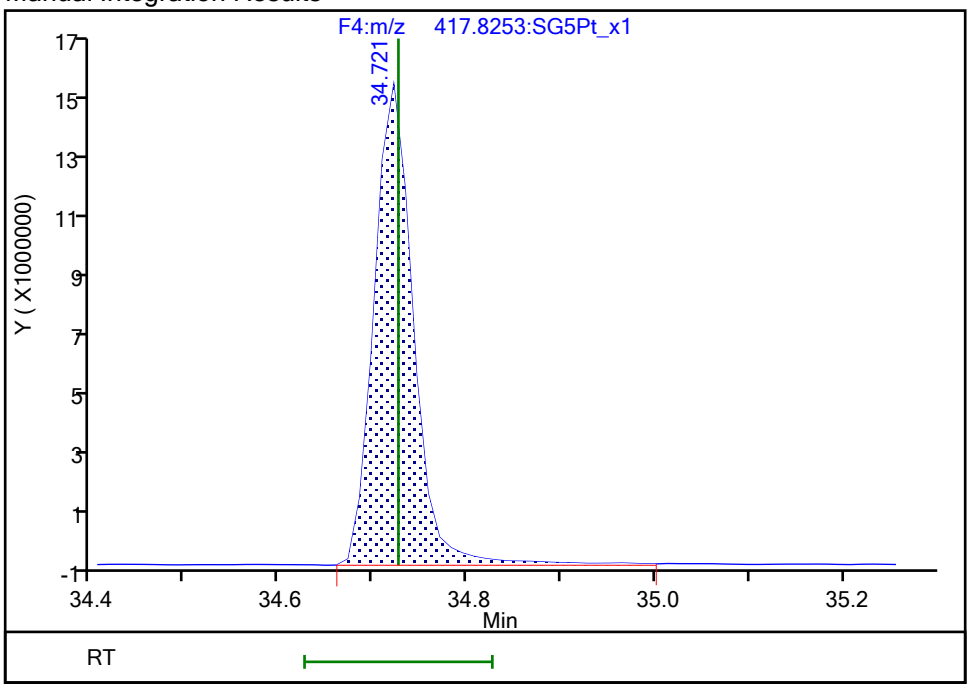
Not Detected
Expected RT: 34.73

Processing Integration Results



Manual Integration Results

RT: 34.72
Area: 43429979
Amount: 108.8731
Amount Units: pg/ul



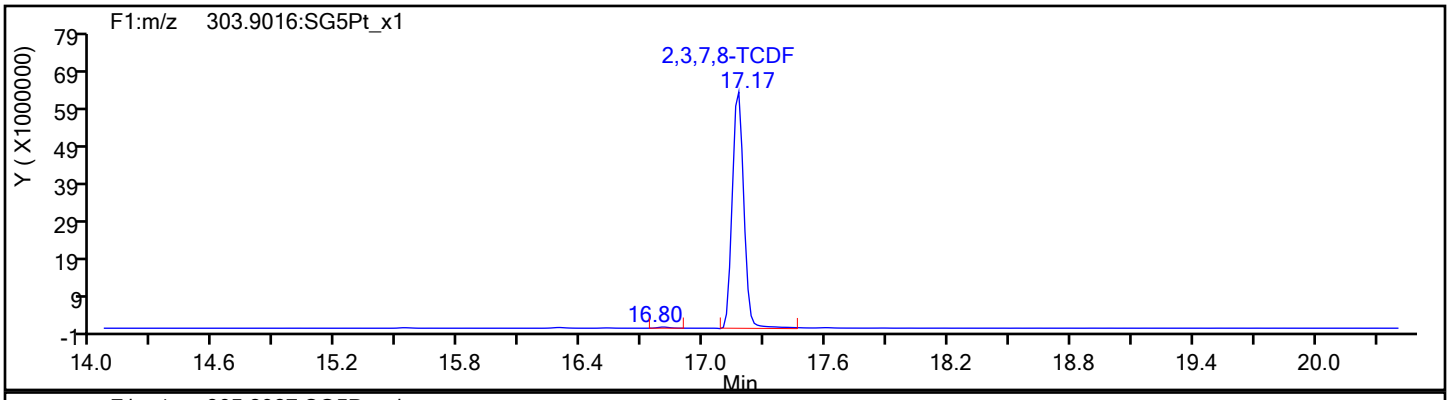
Reviewer: stephensk, 12-Dec-2019 15:49:01
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

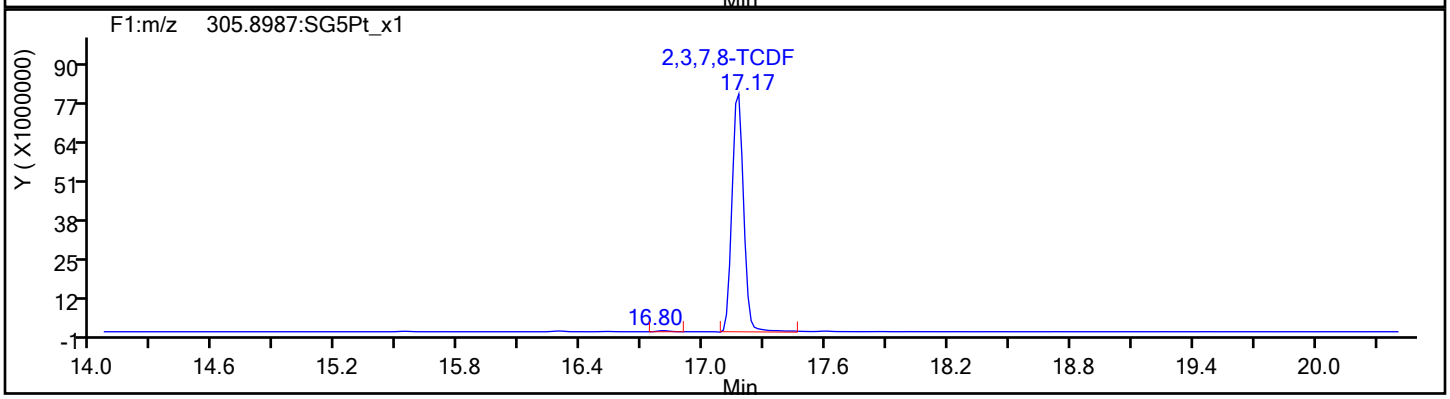
Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

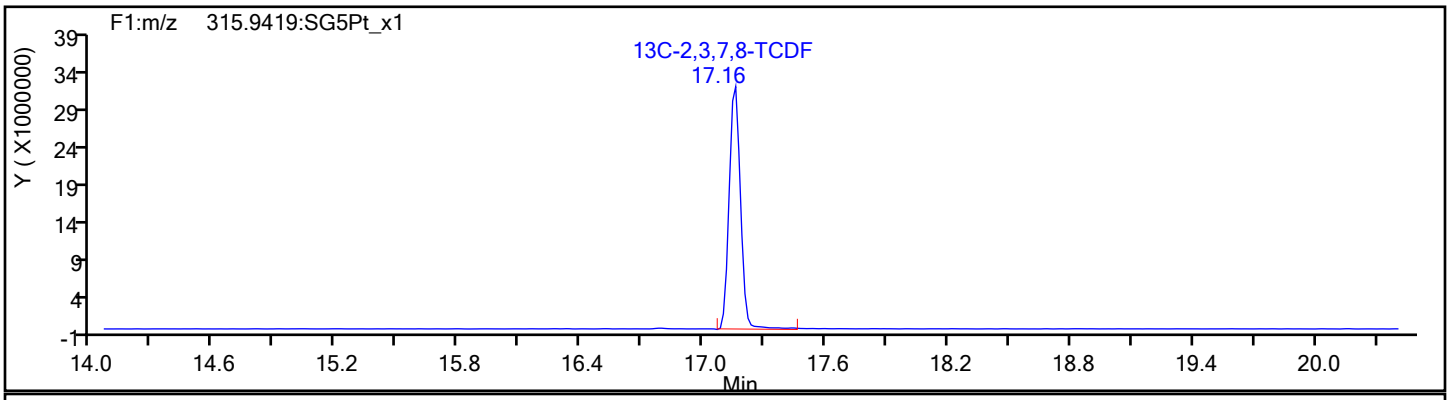
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

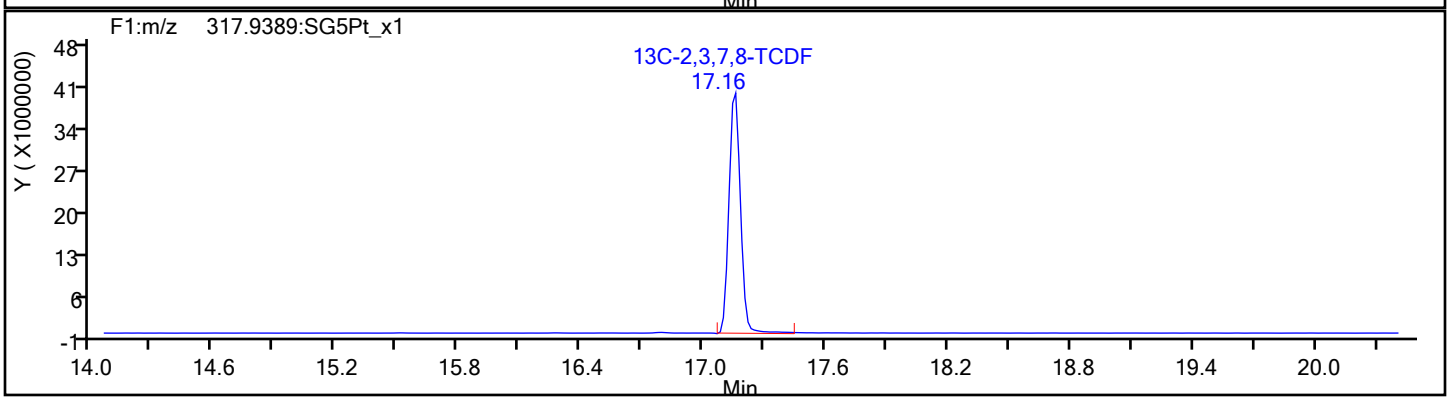
TCDF





TCDF Standards



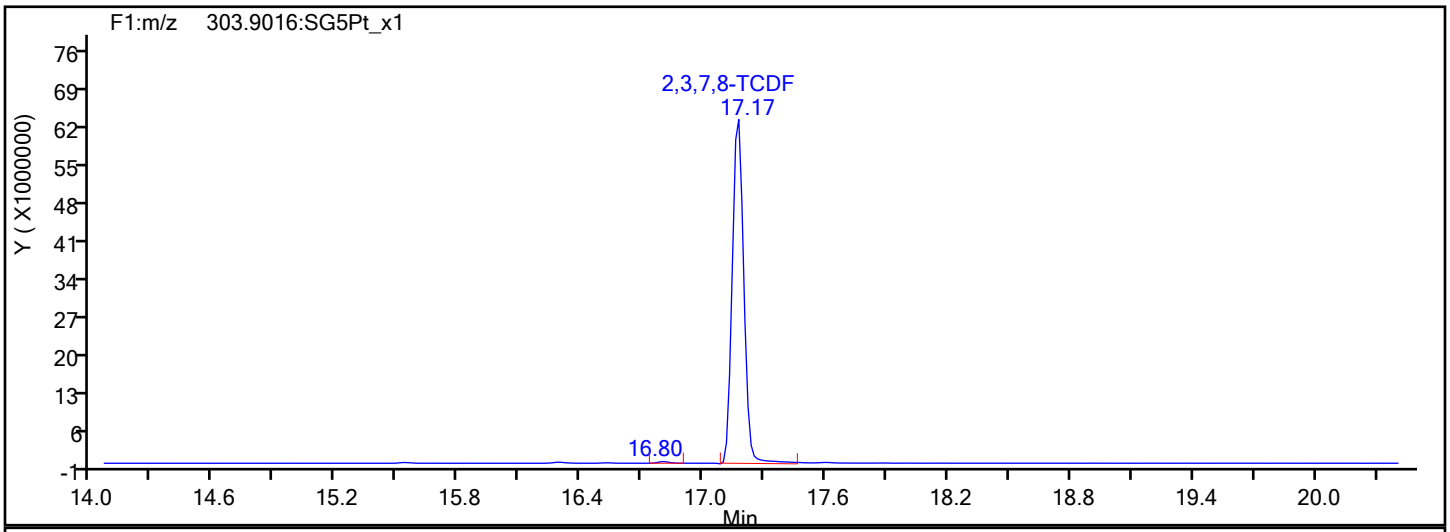


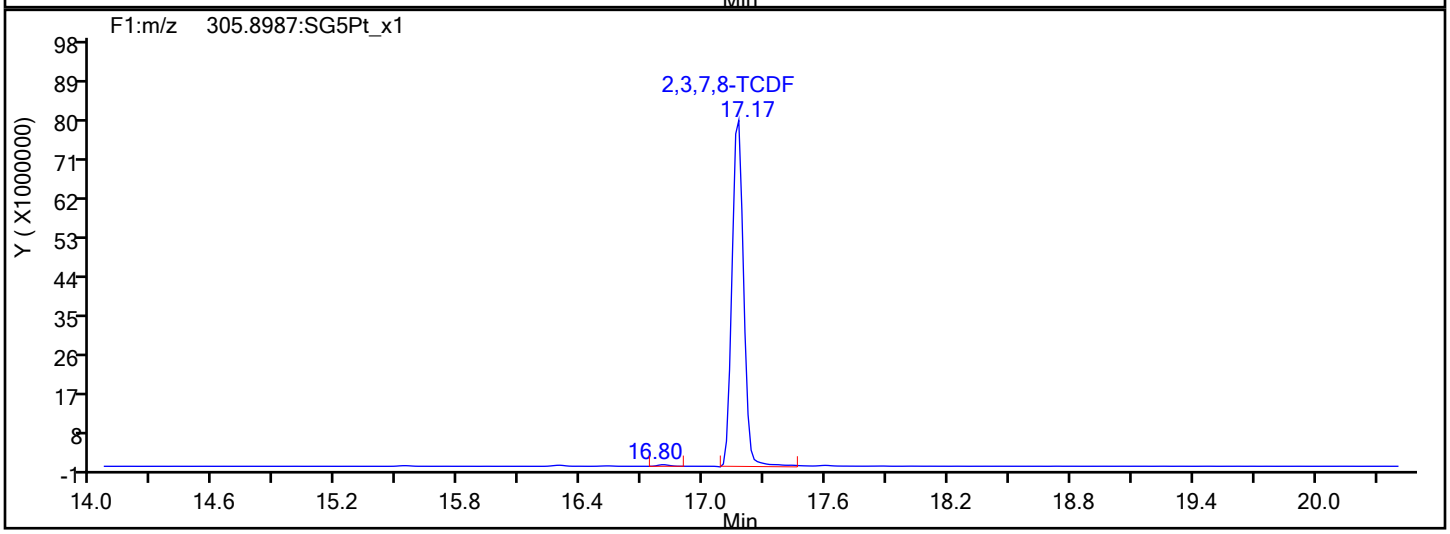
Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

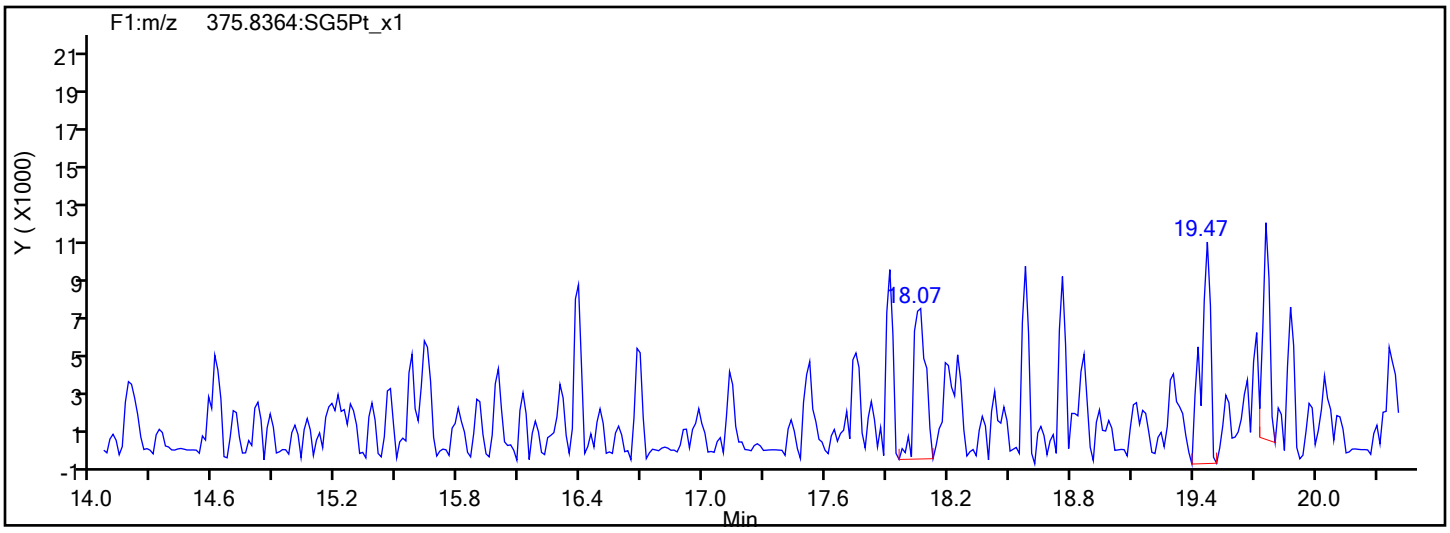
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

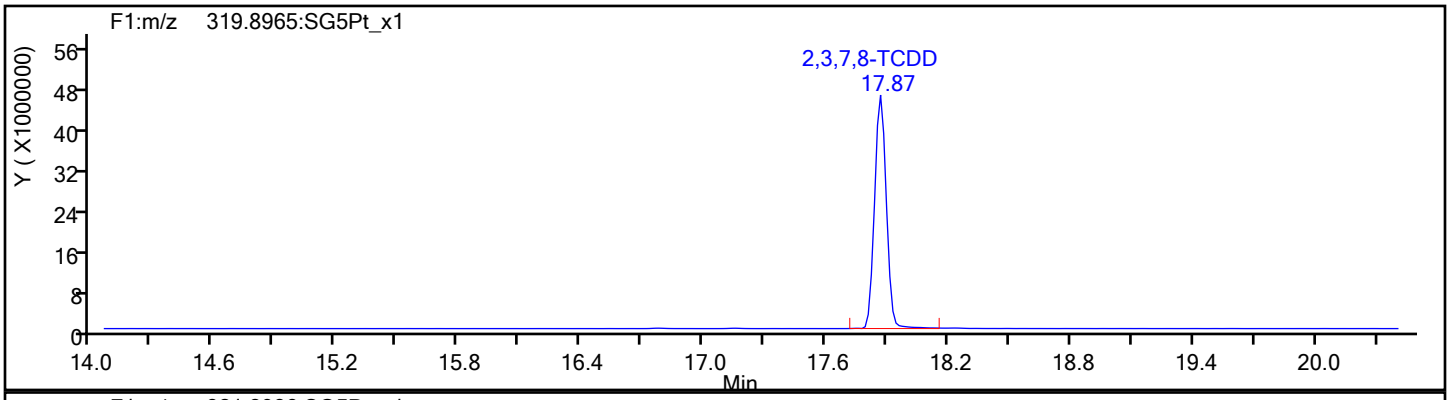


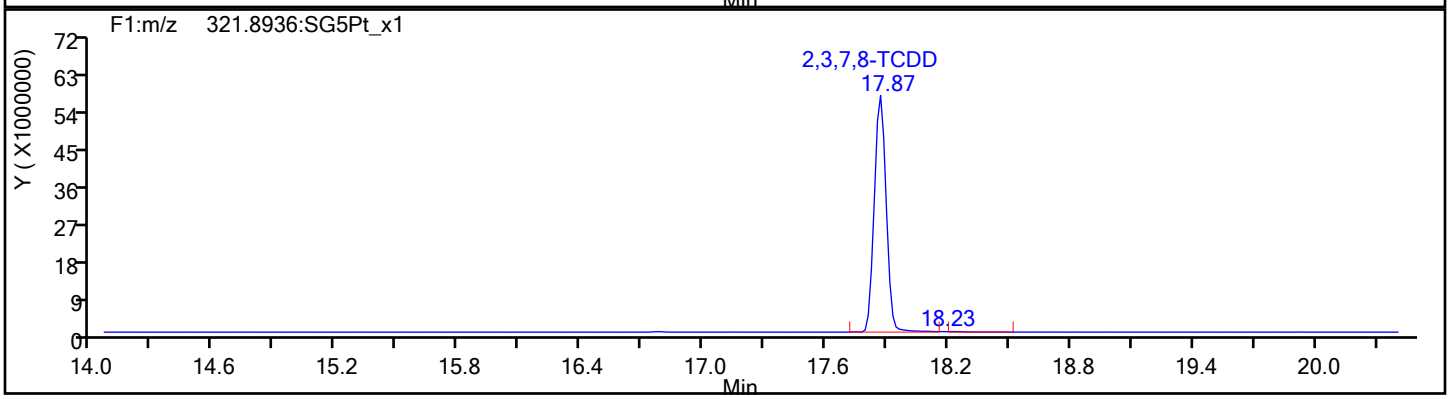
Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

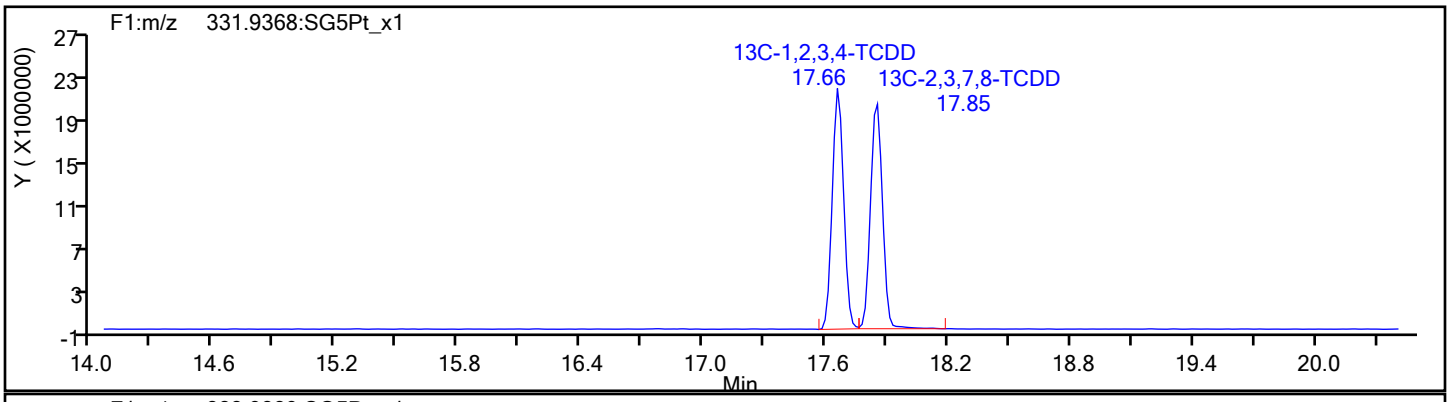
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

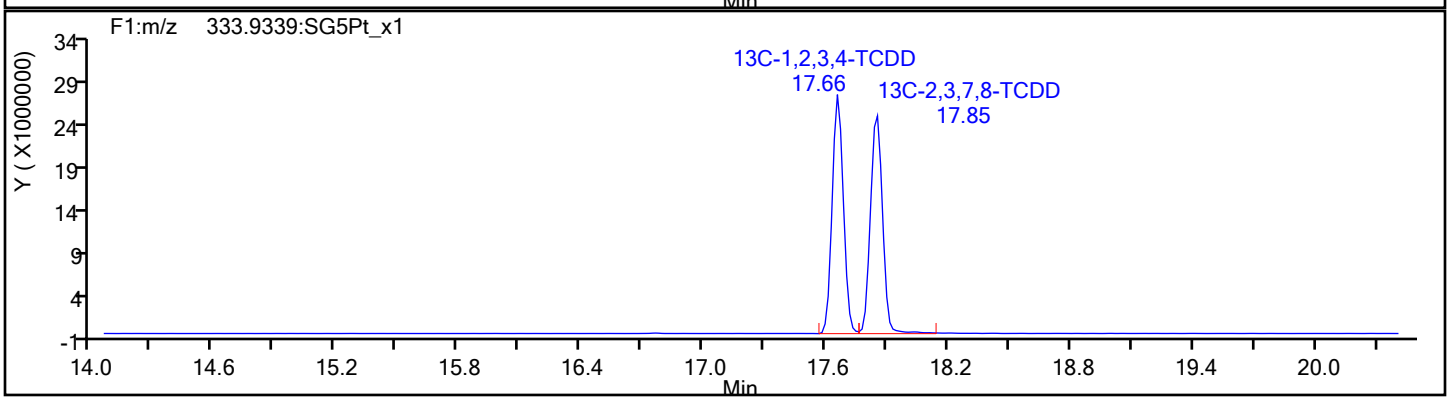
TCDD





TCDD Standards



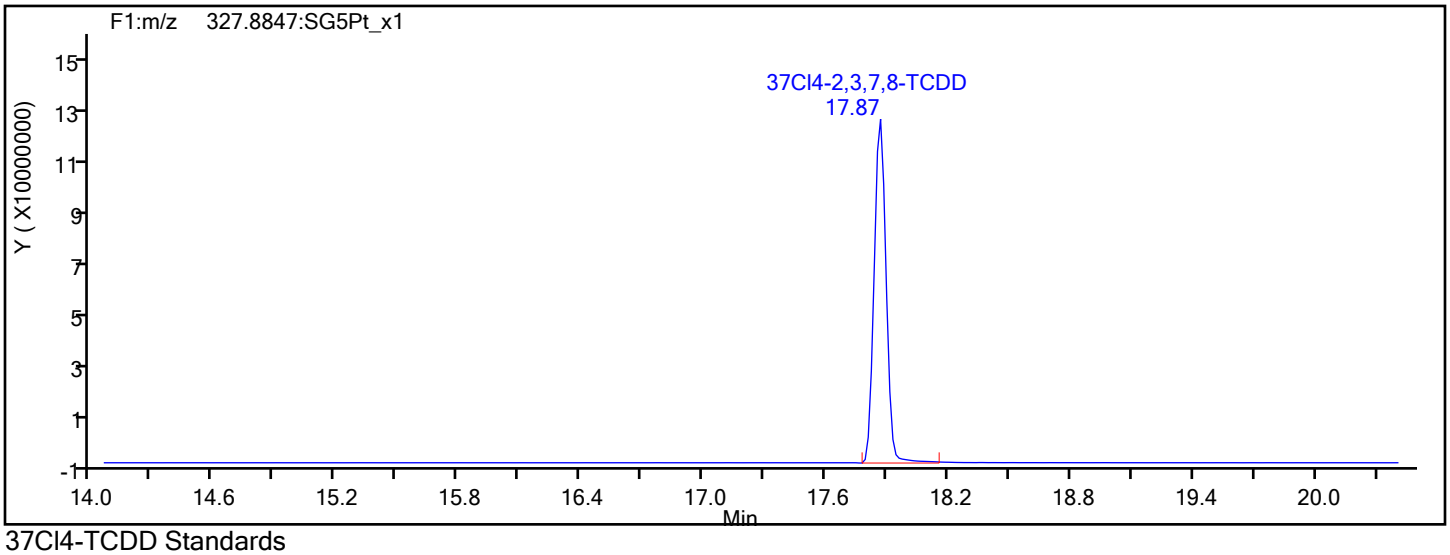


Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

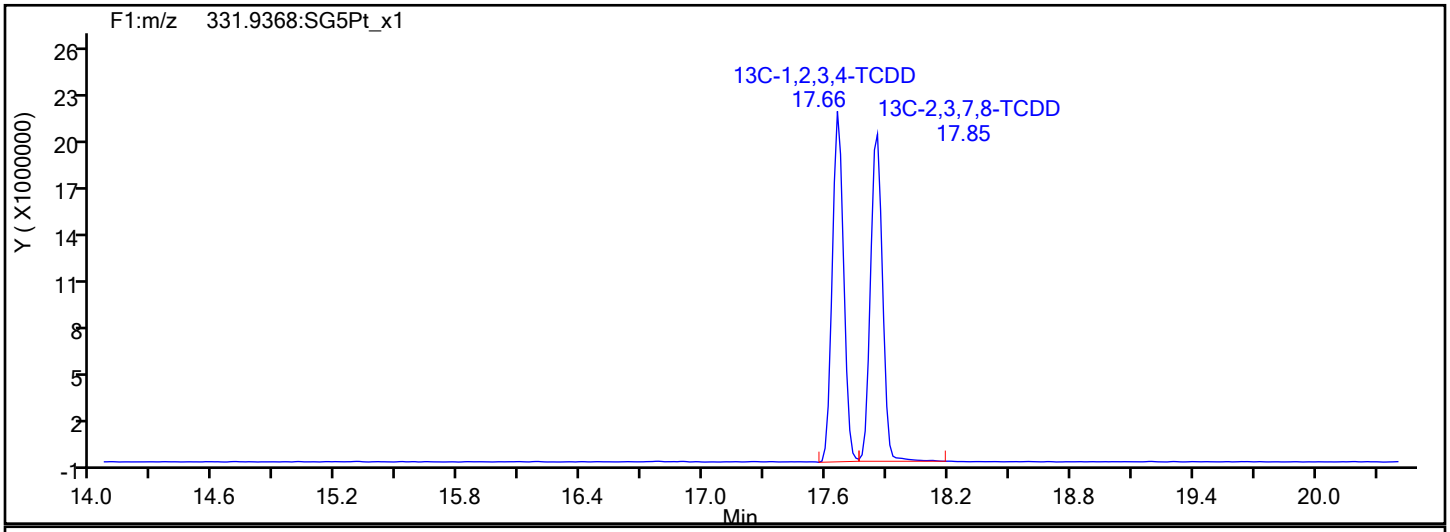
Eurofins TestAmerica, Sacramento

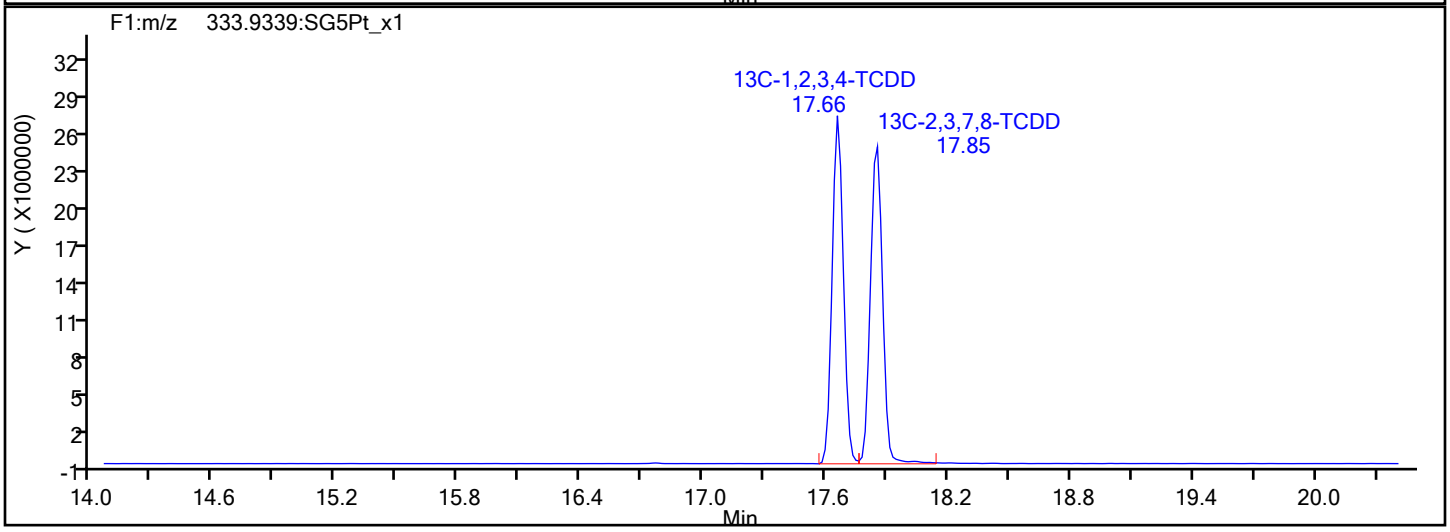
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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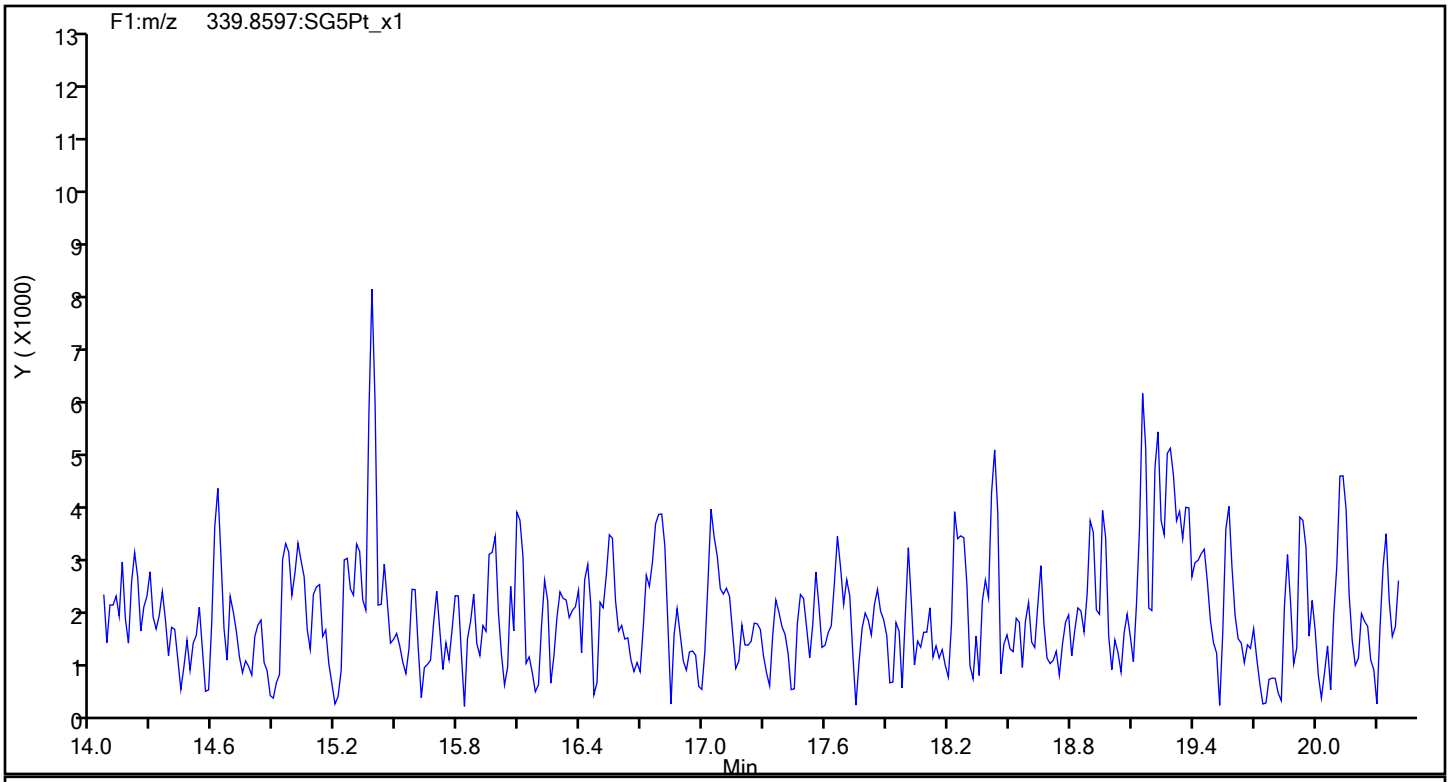

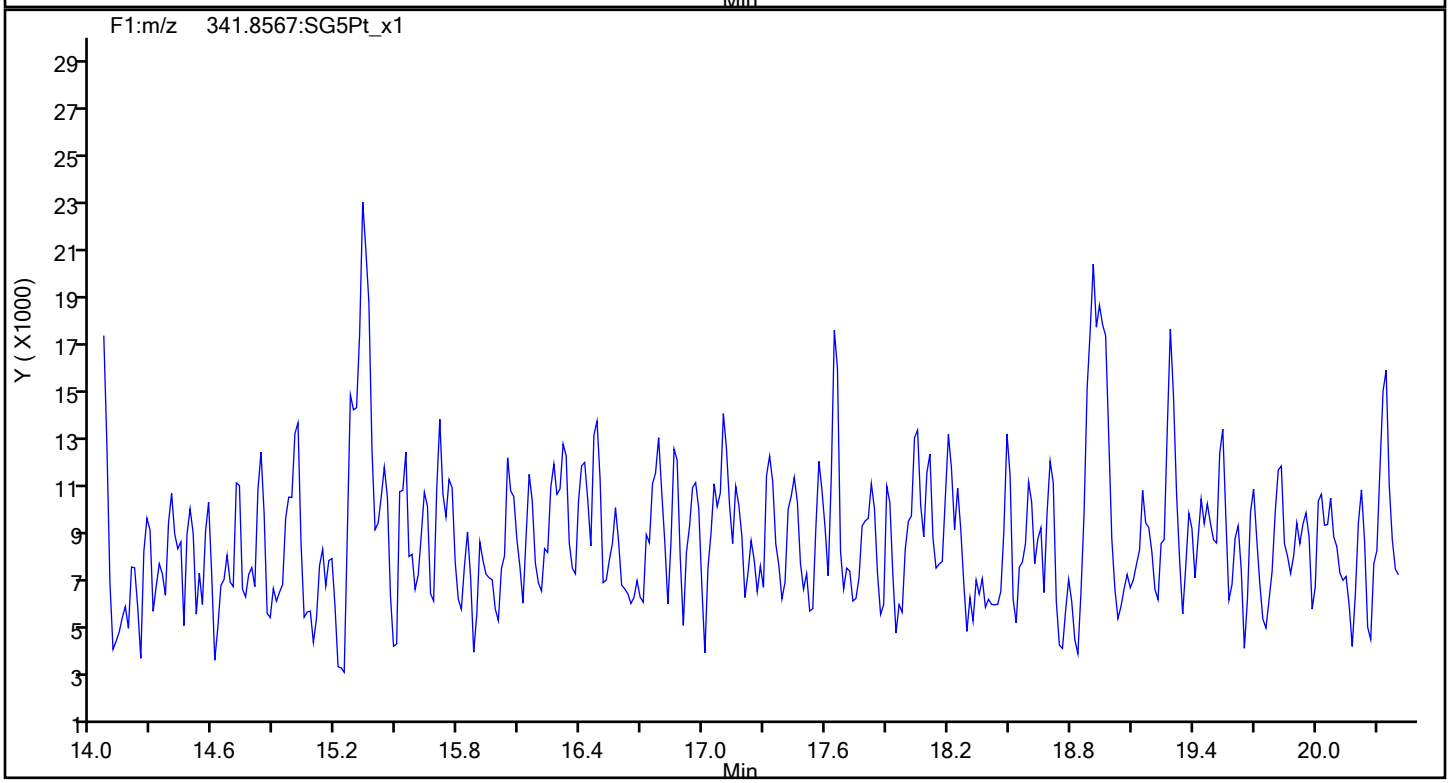

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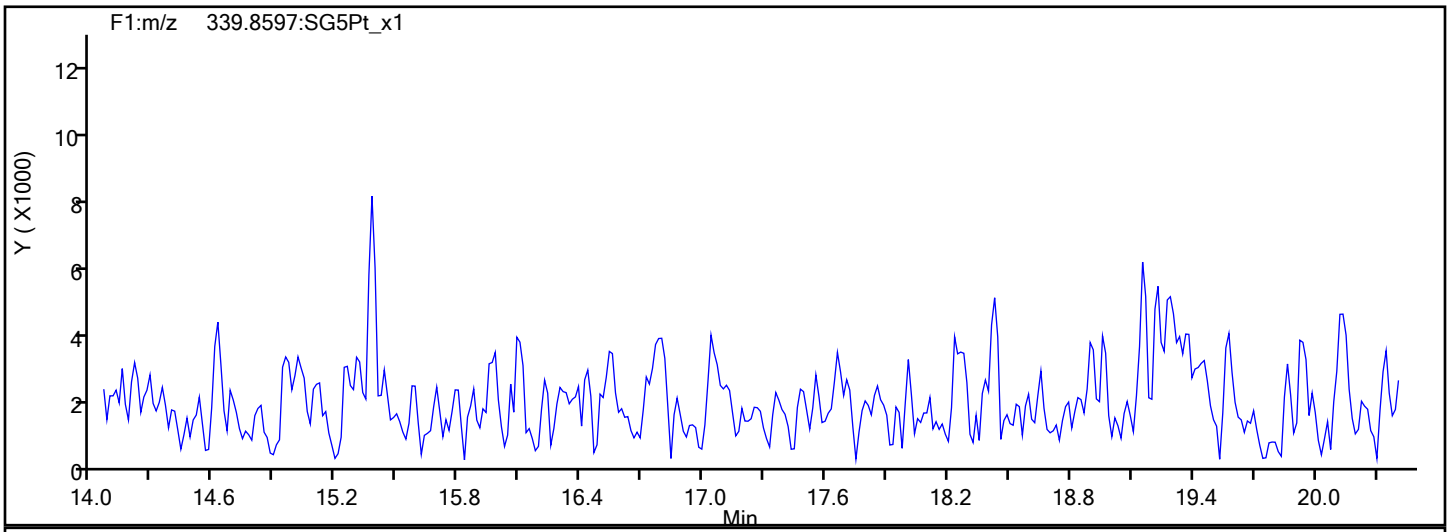

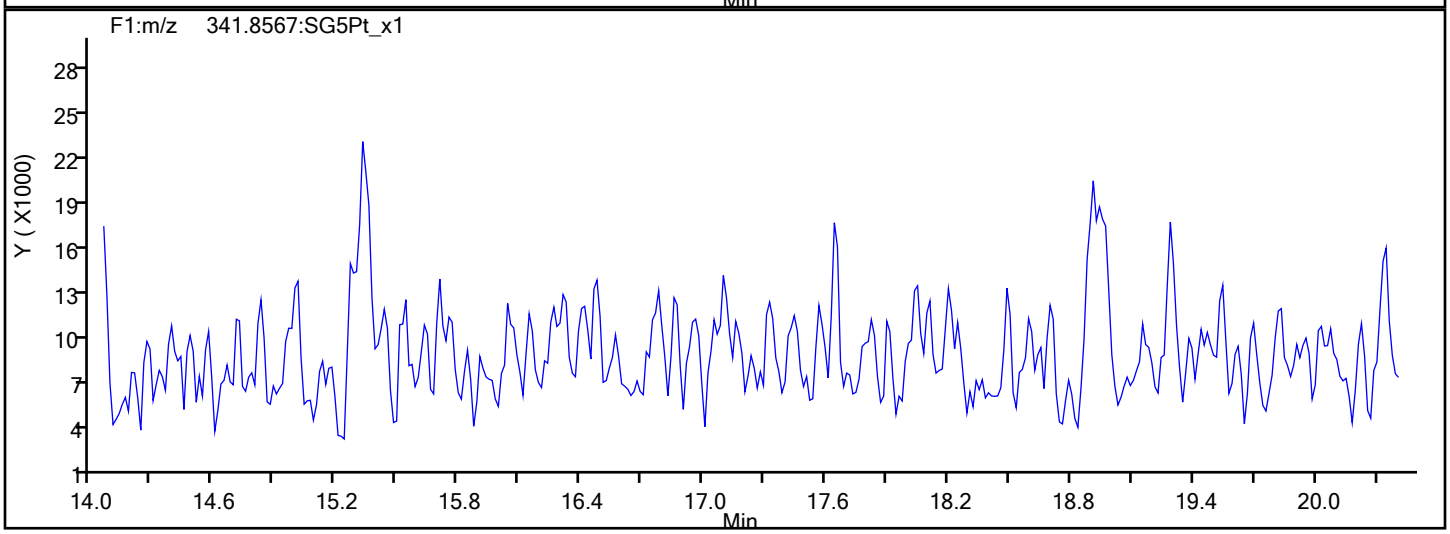

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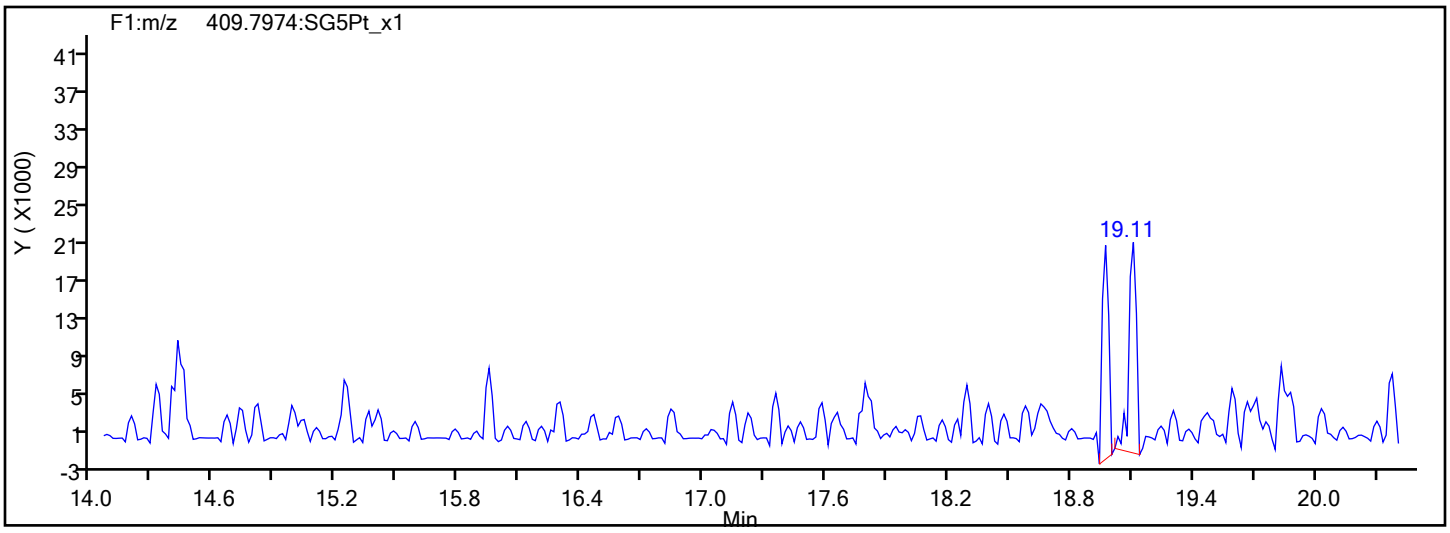

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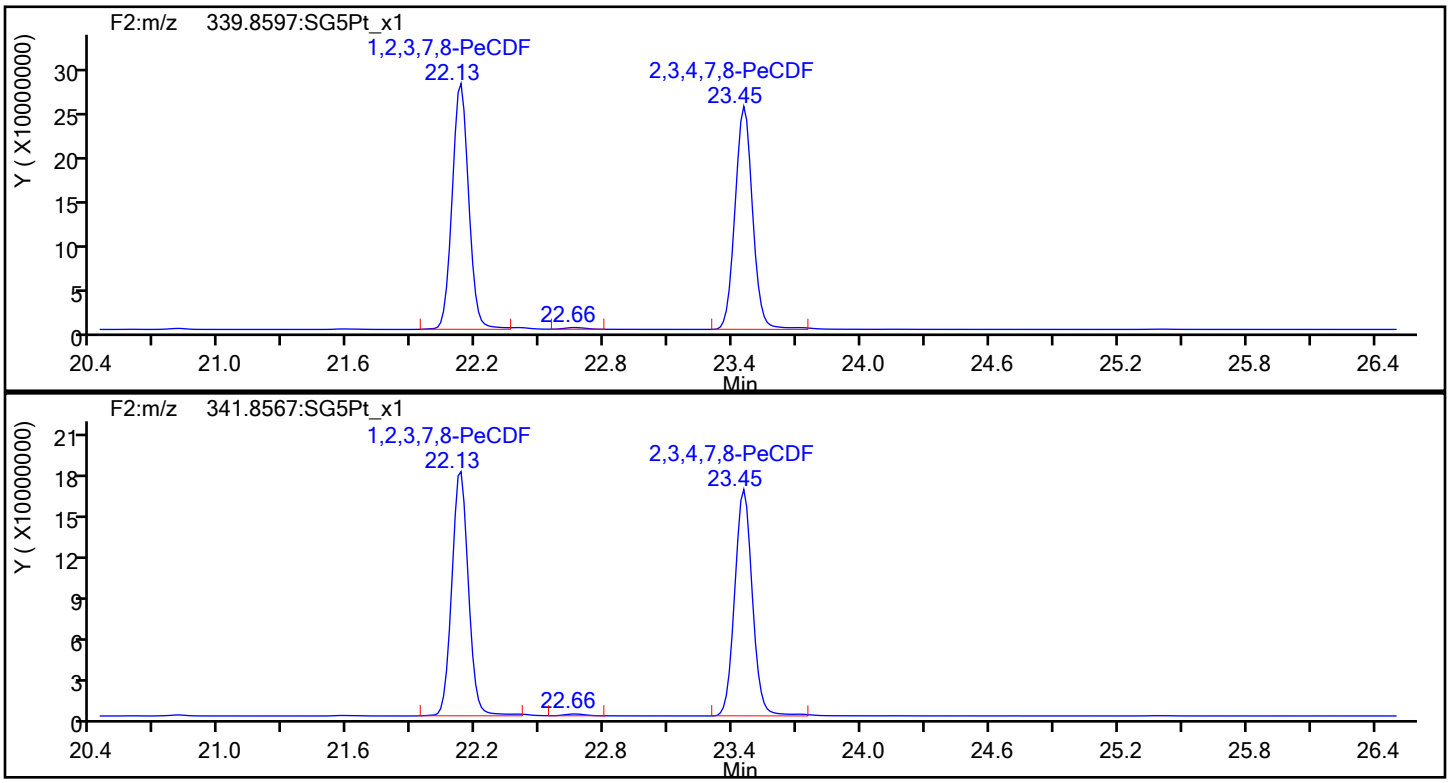
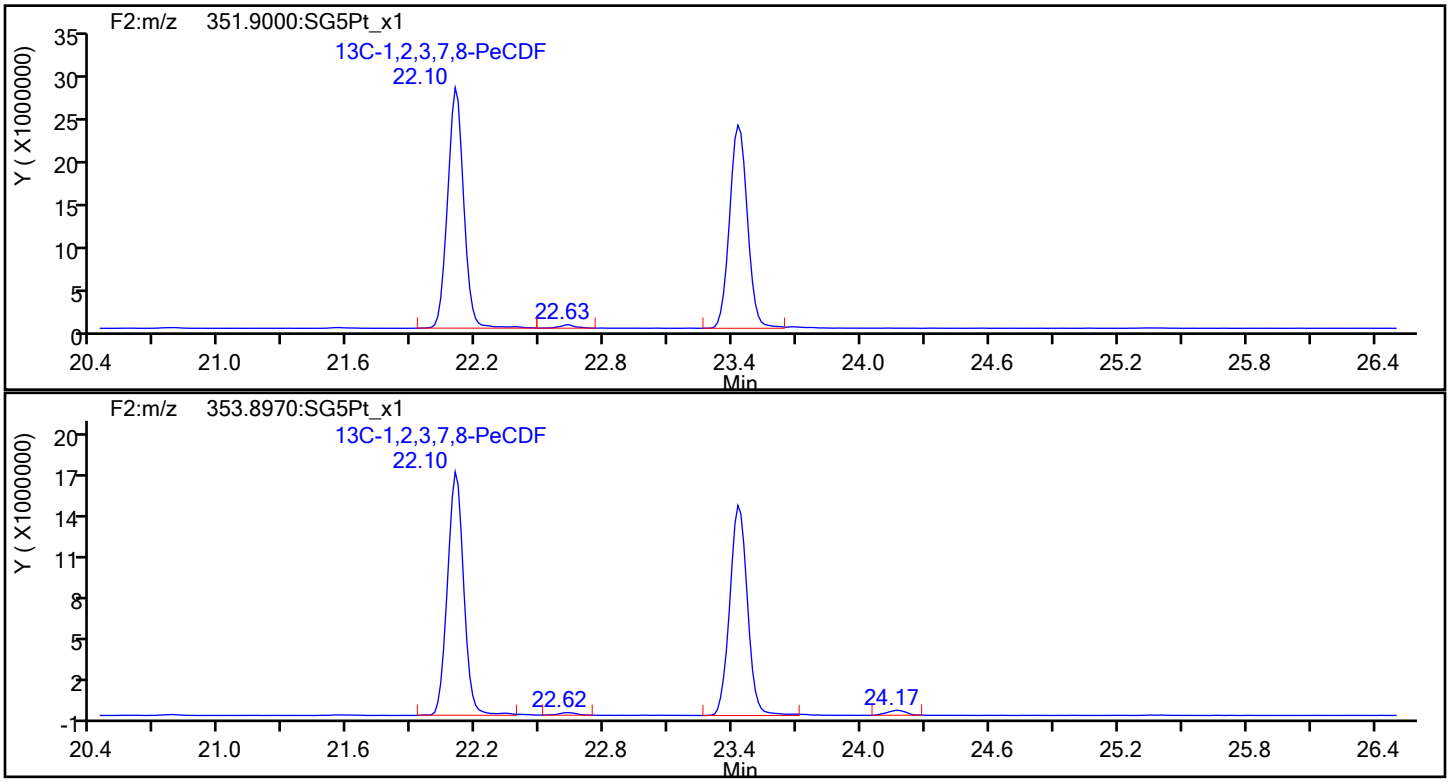


PeCDF Standards



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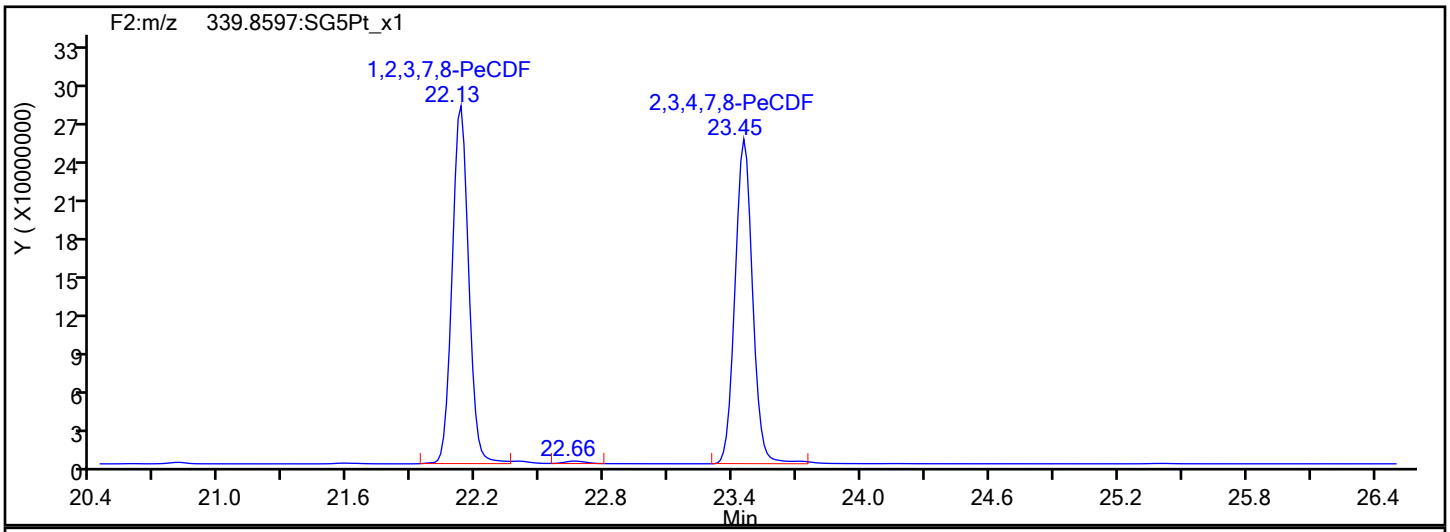
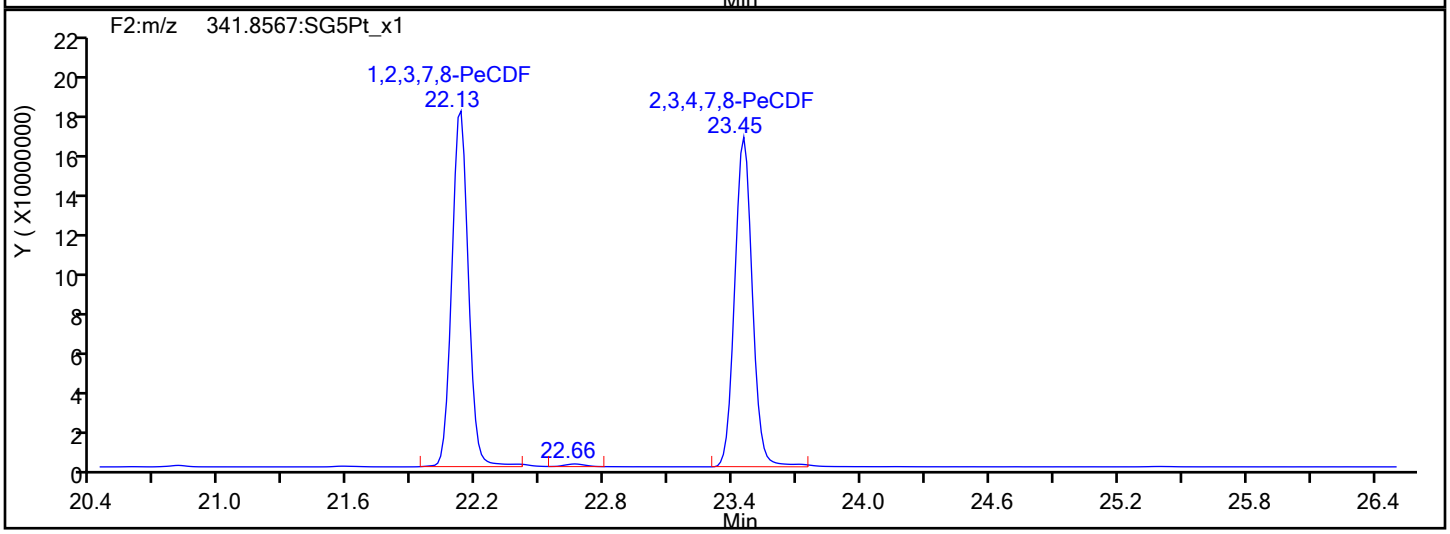
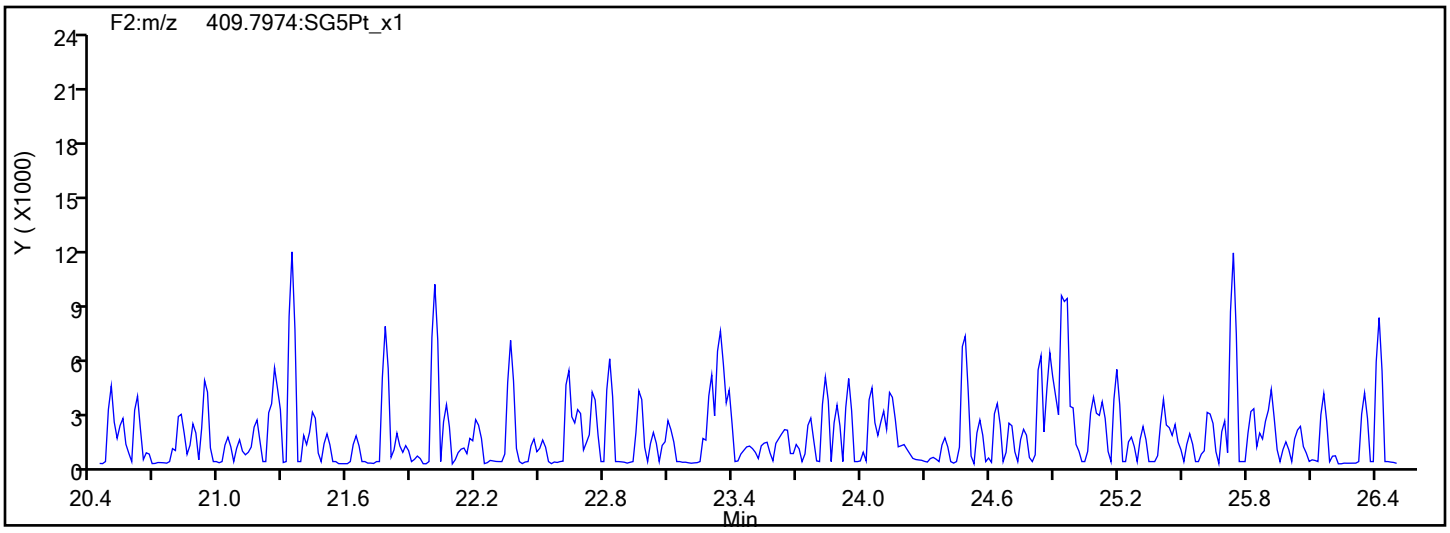




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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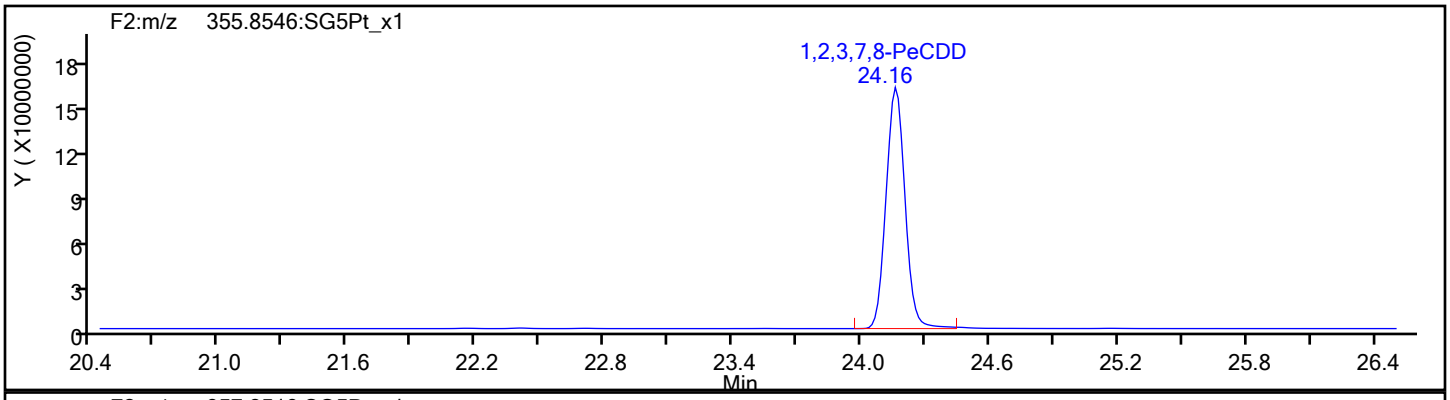

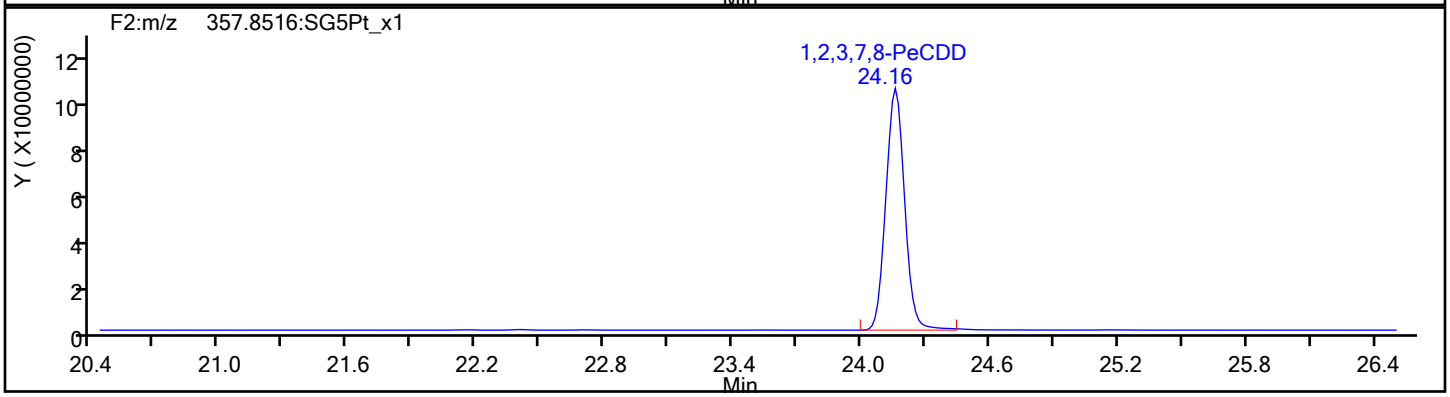

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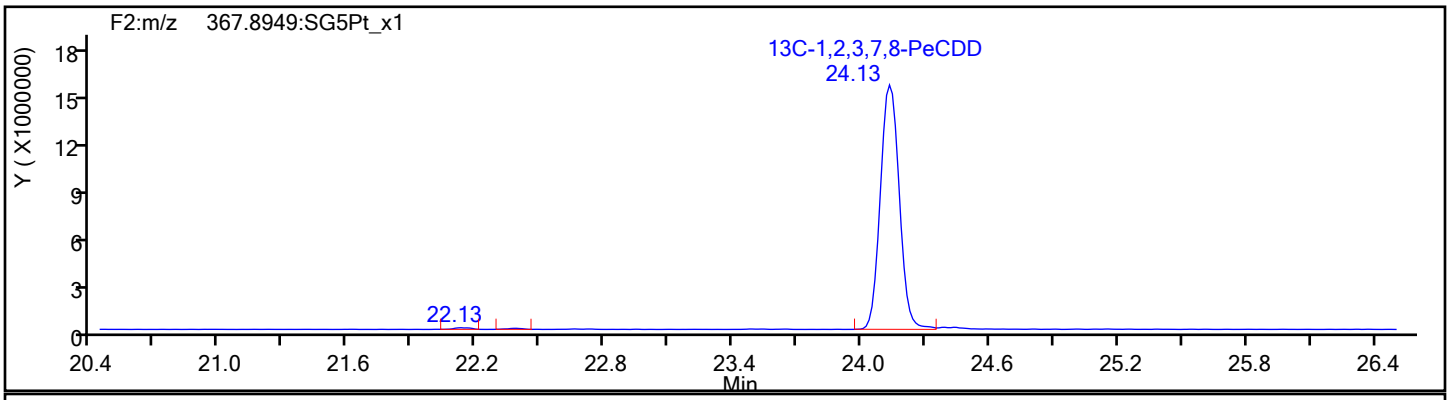

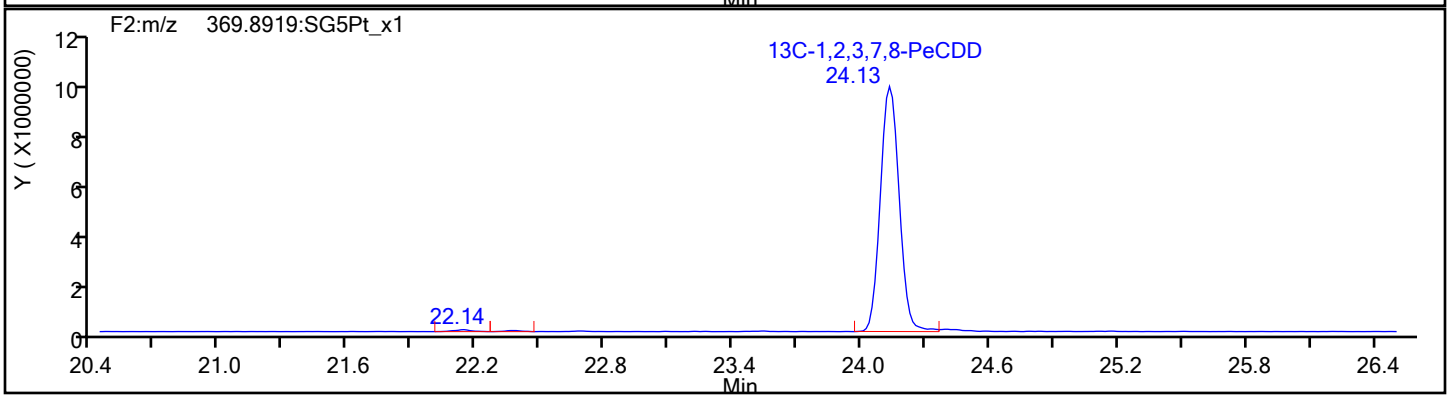

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Eurofins TestAmerica, Sacramento

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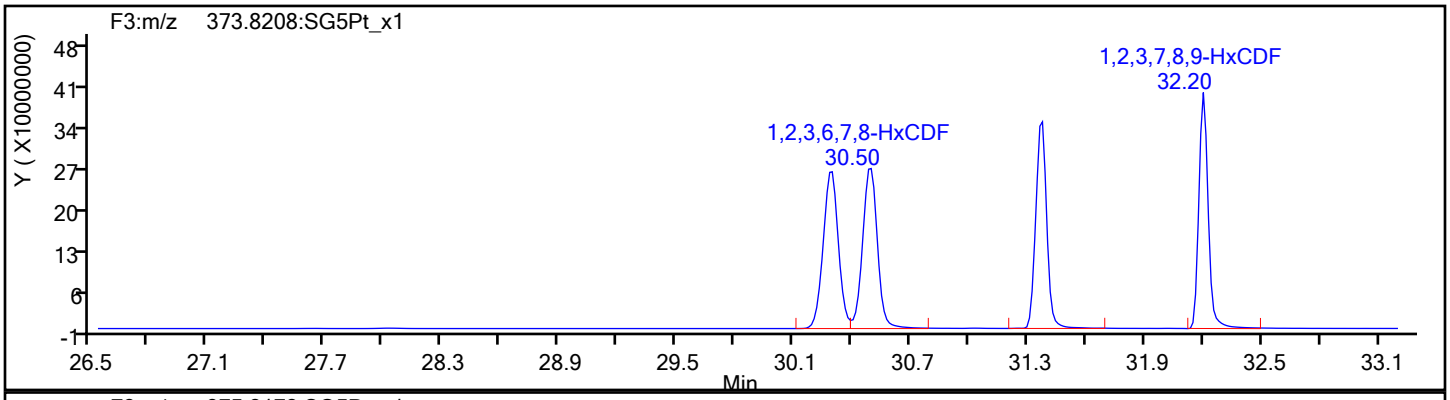
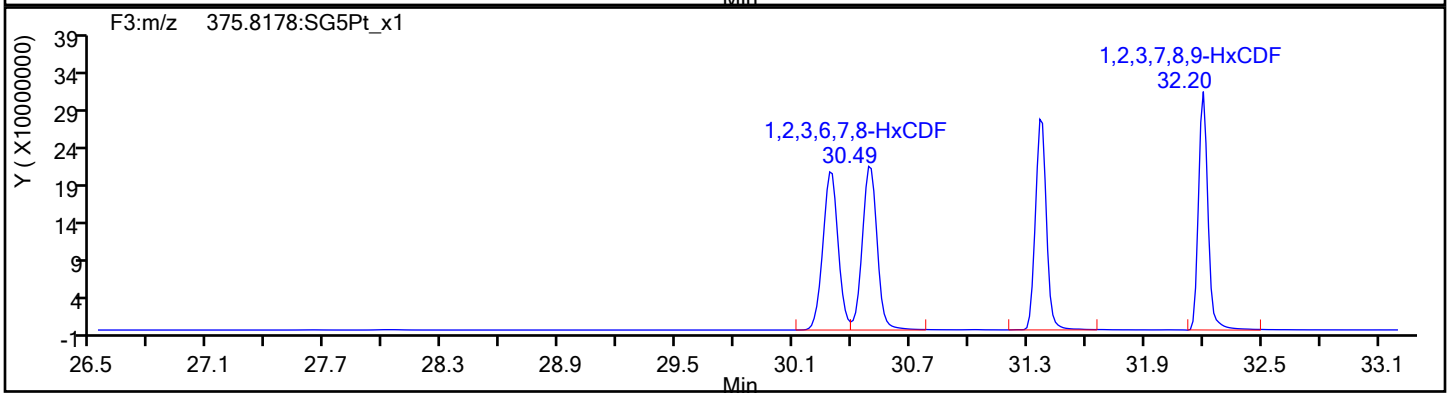
HxCDF





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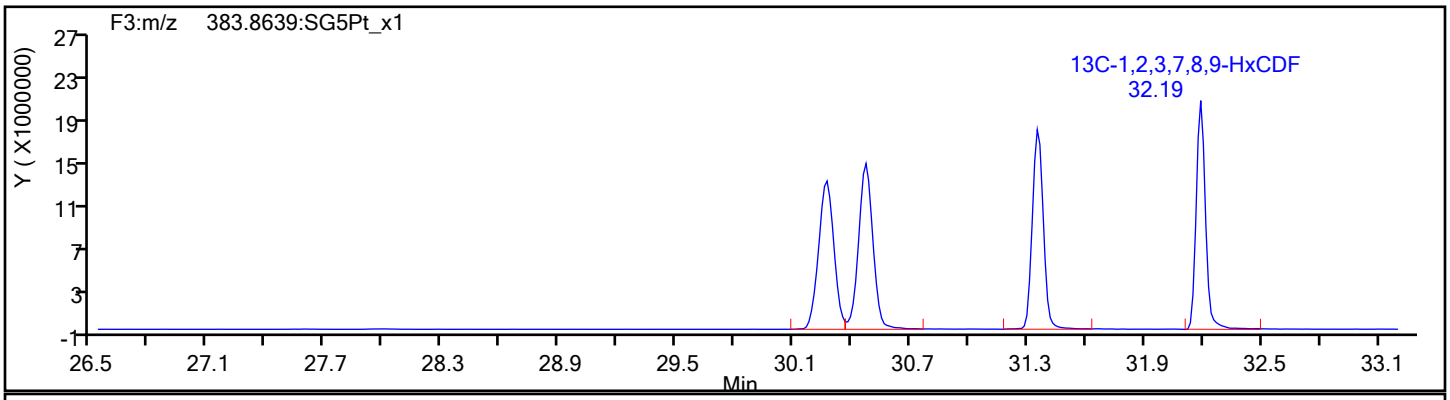

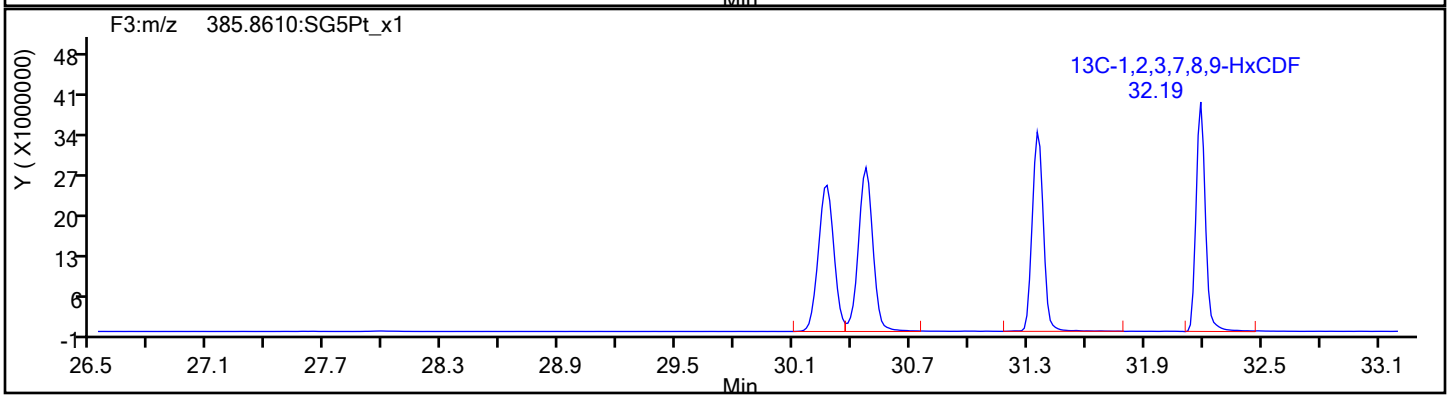

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Eurofins TestAmerica, Sacramento

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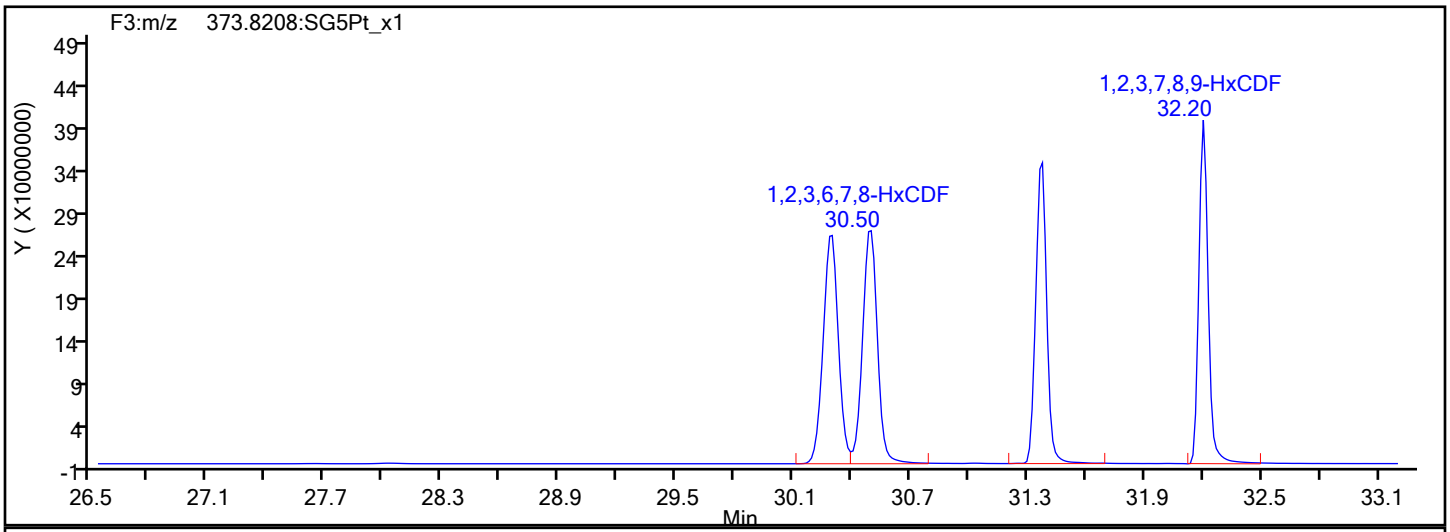
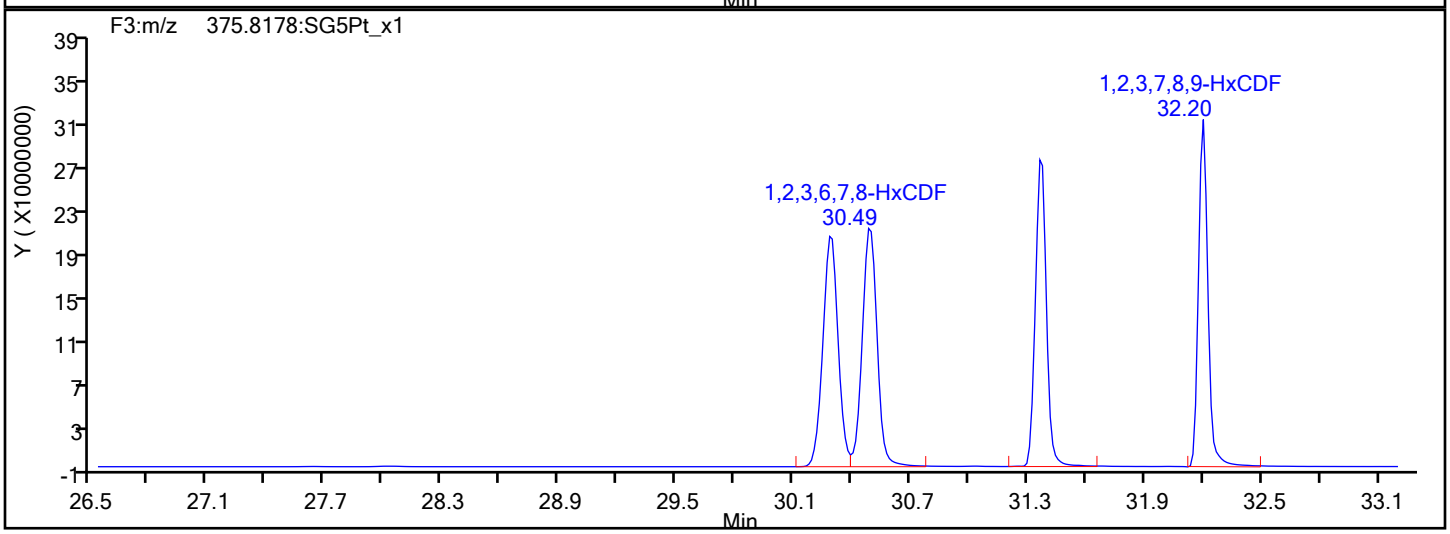
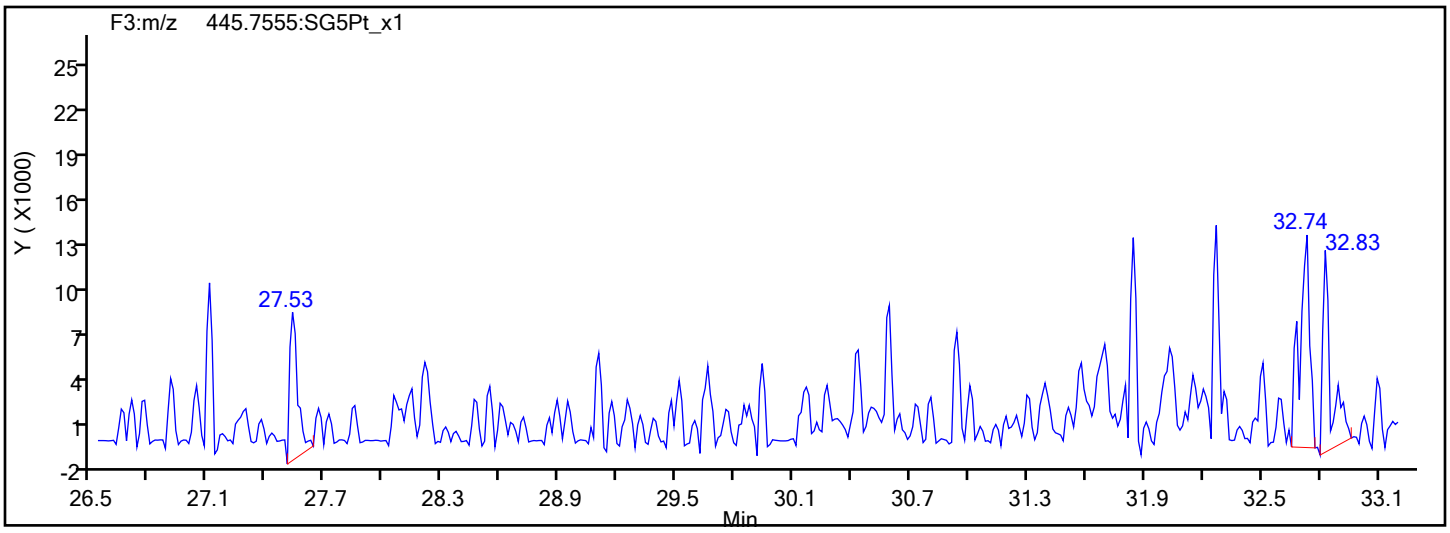




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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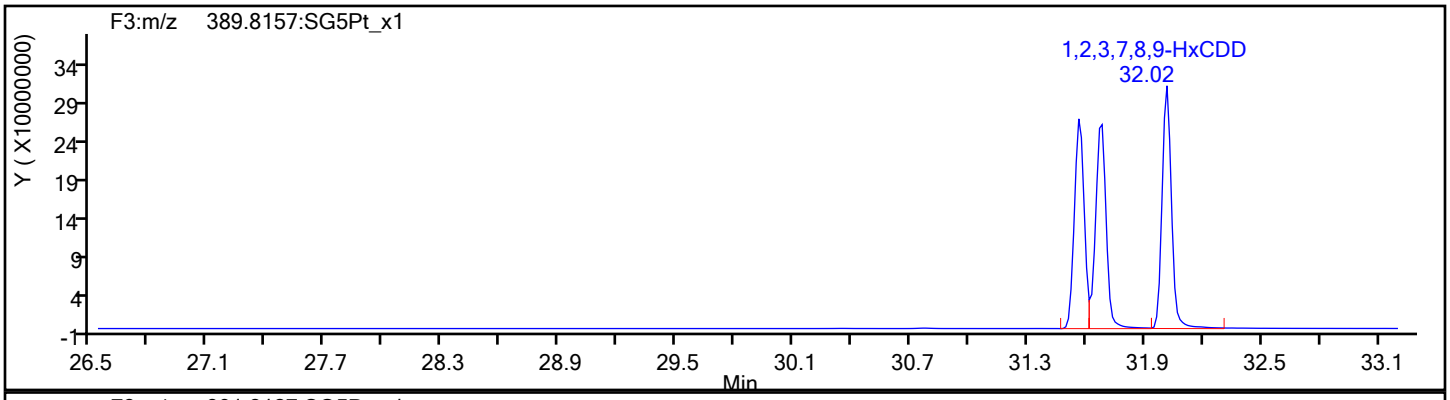
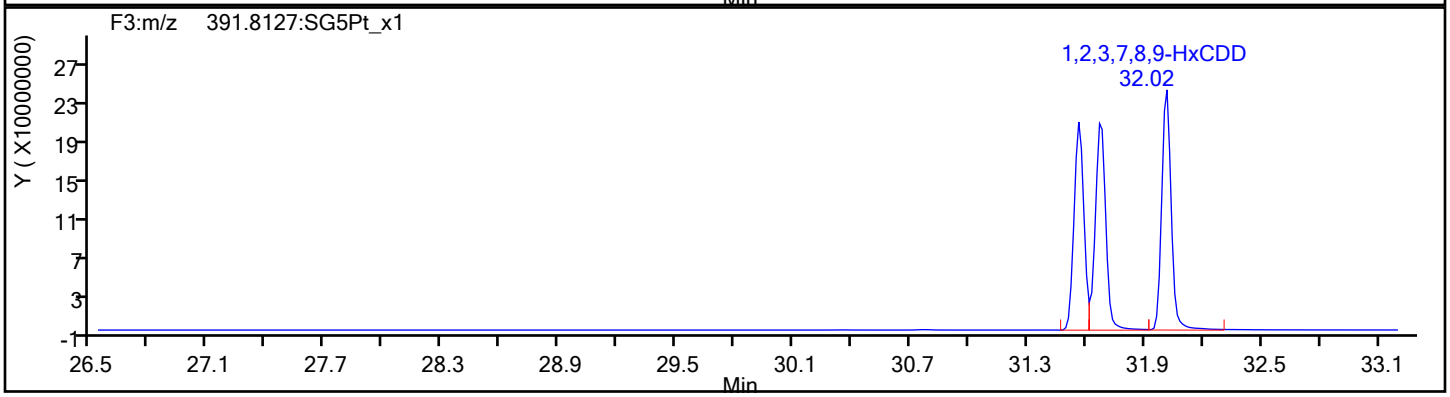
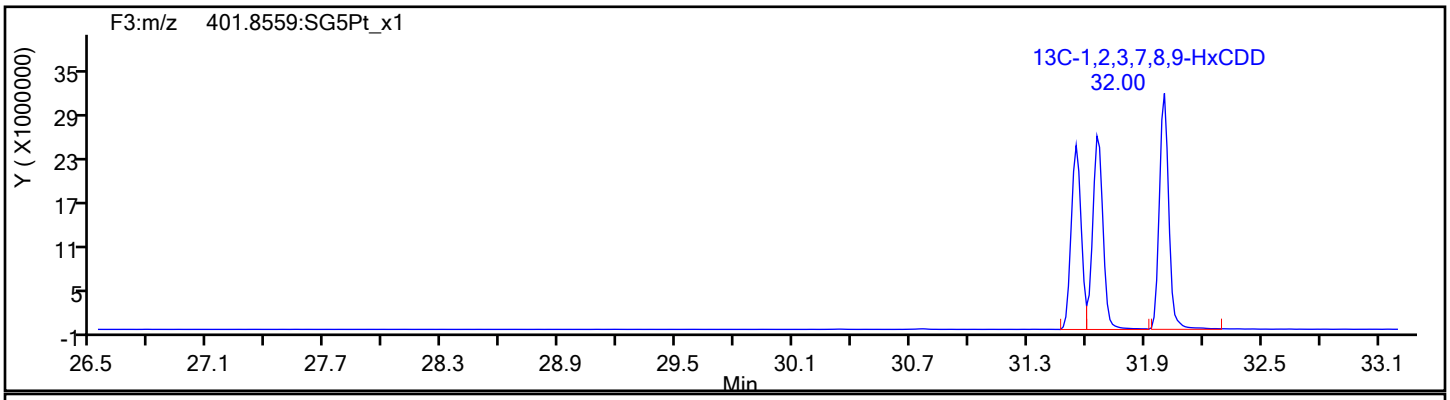
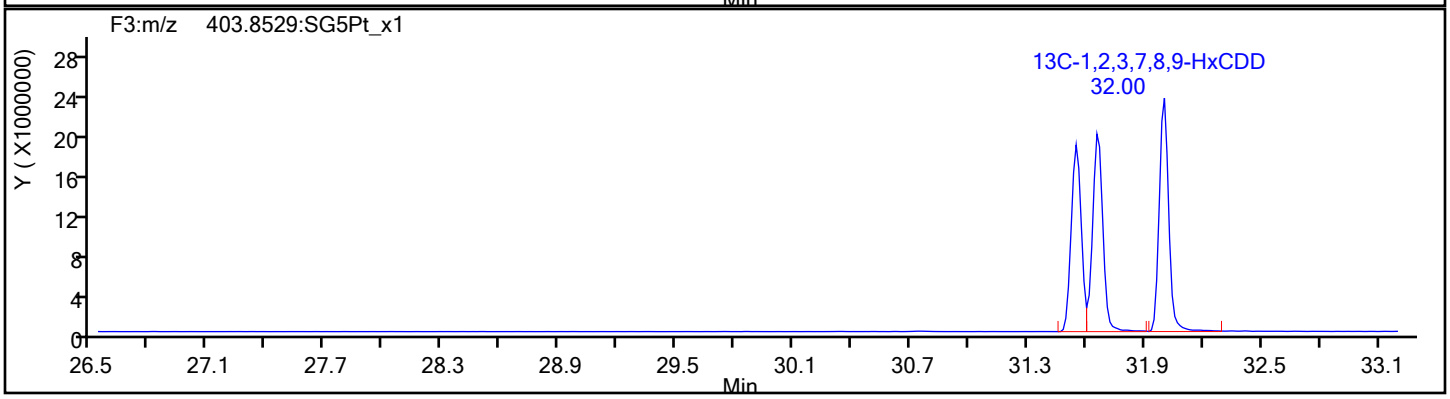




HxCDD Standards





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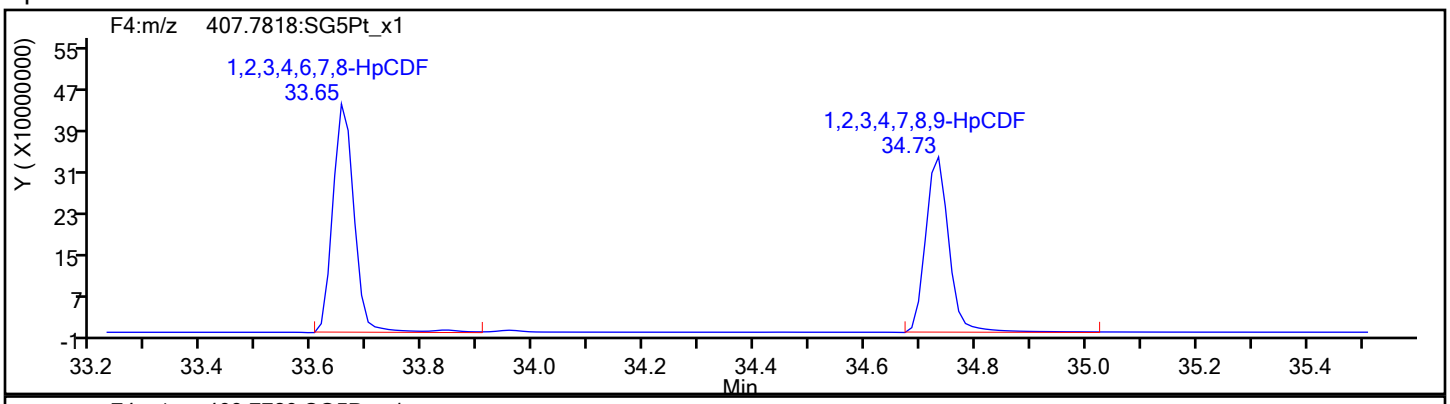

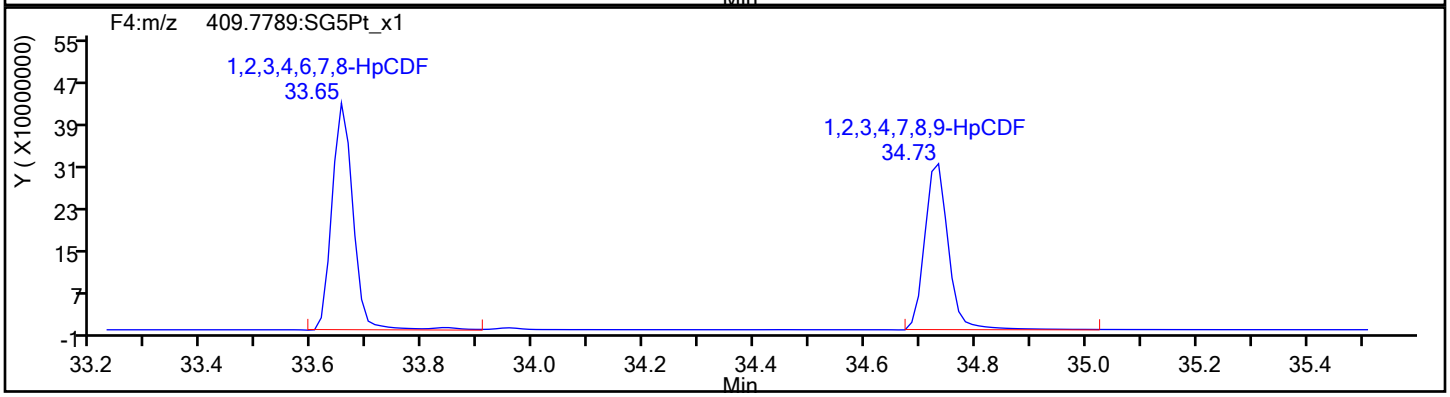

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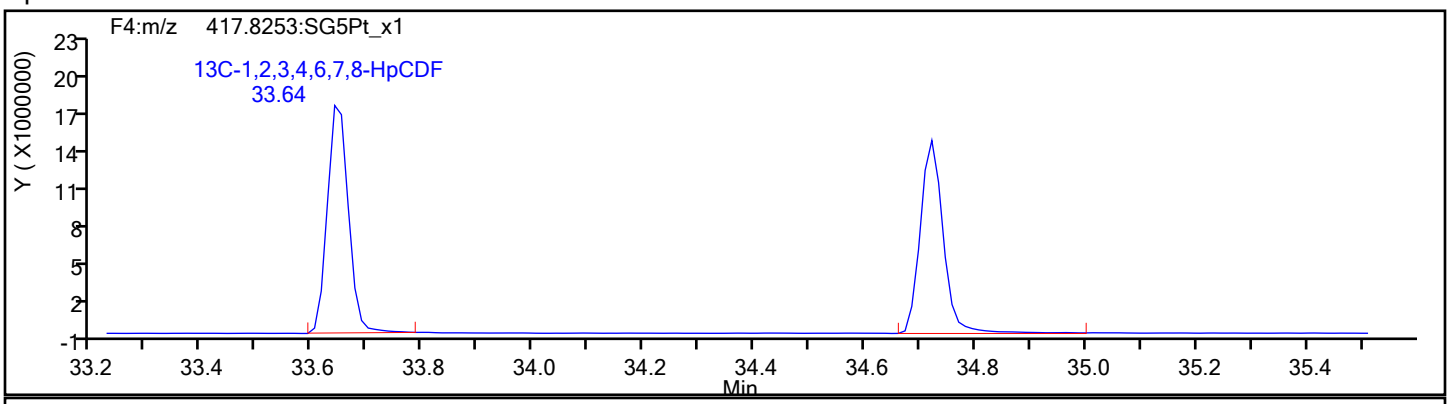

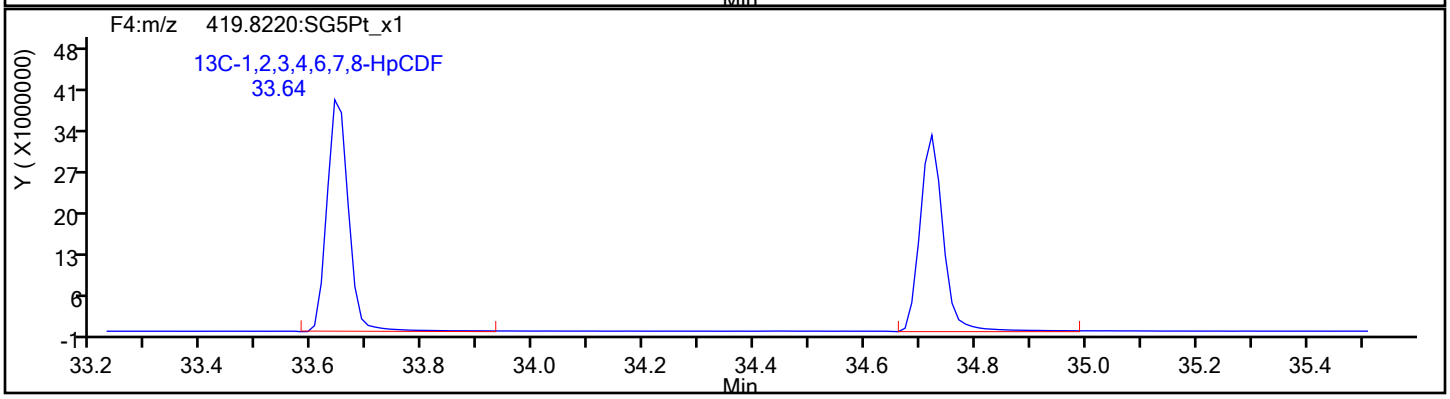

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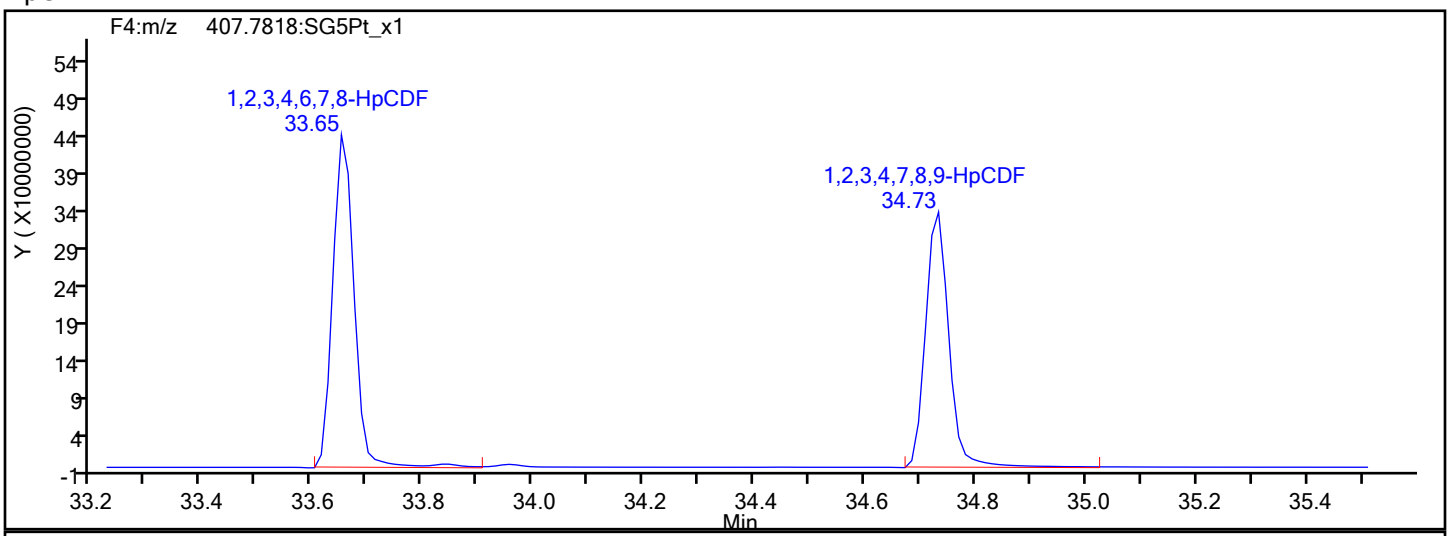
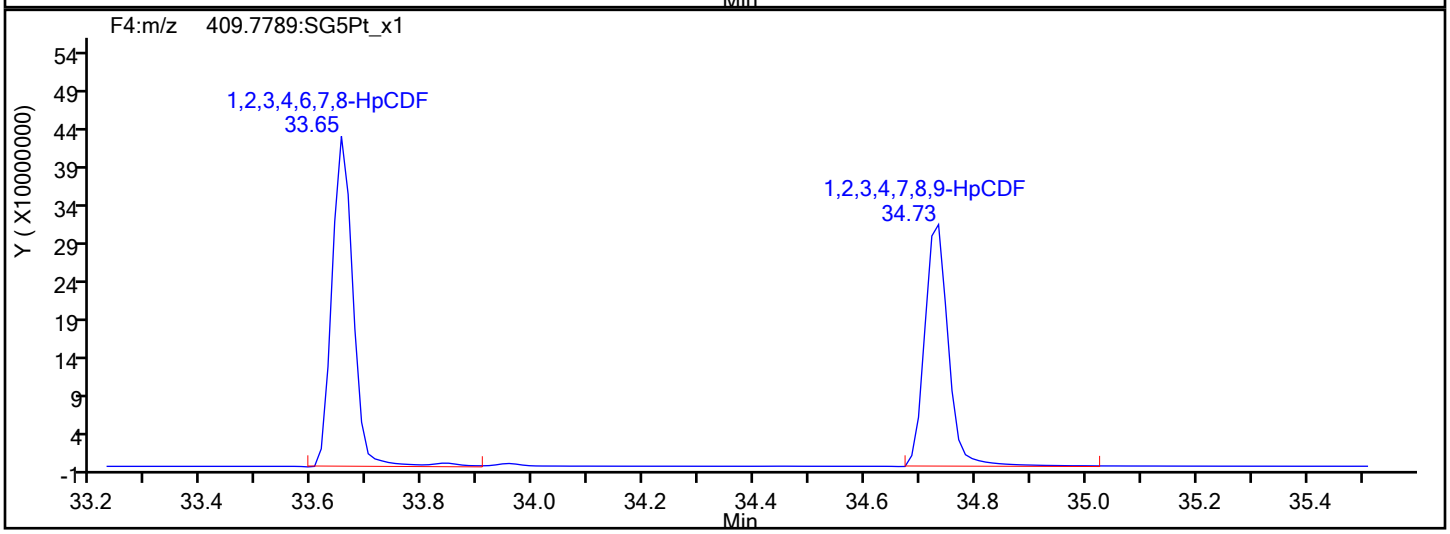
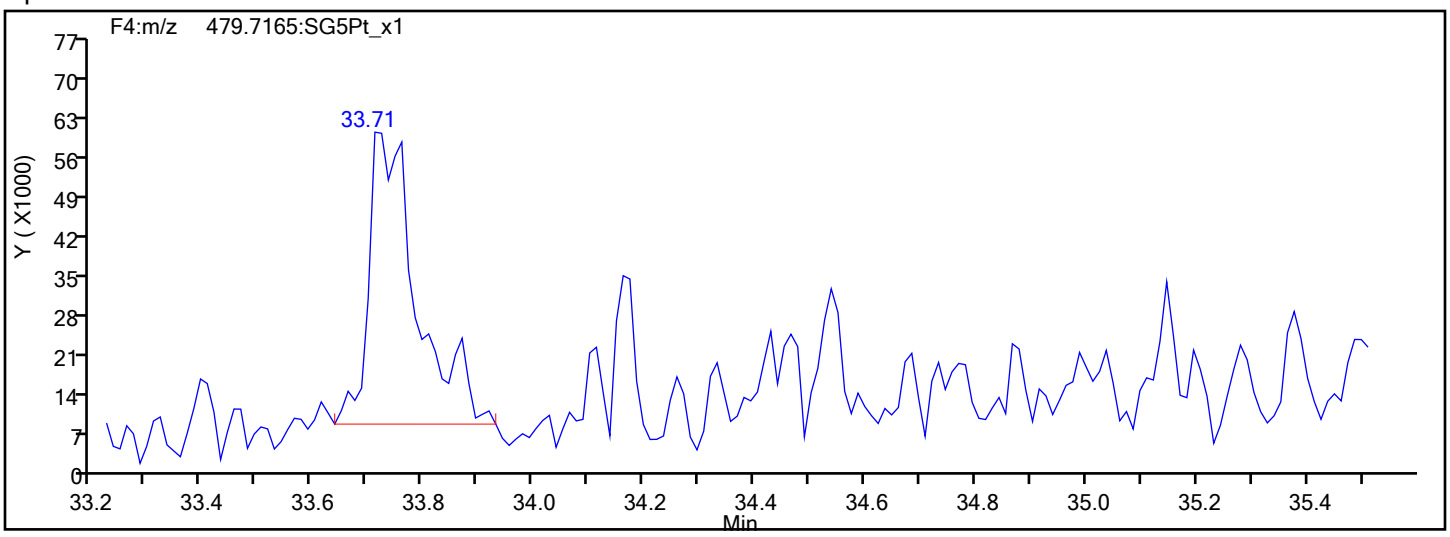




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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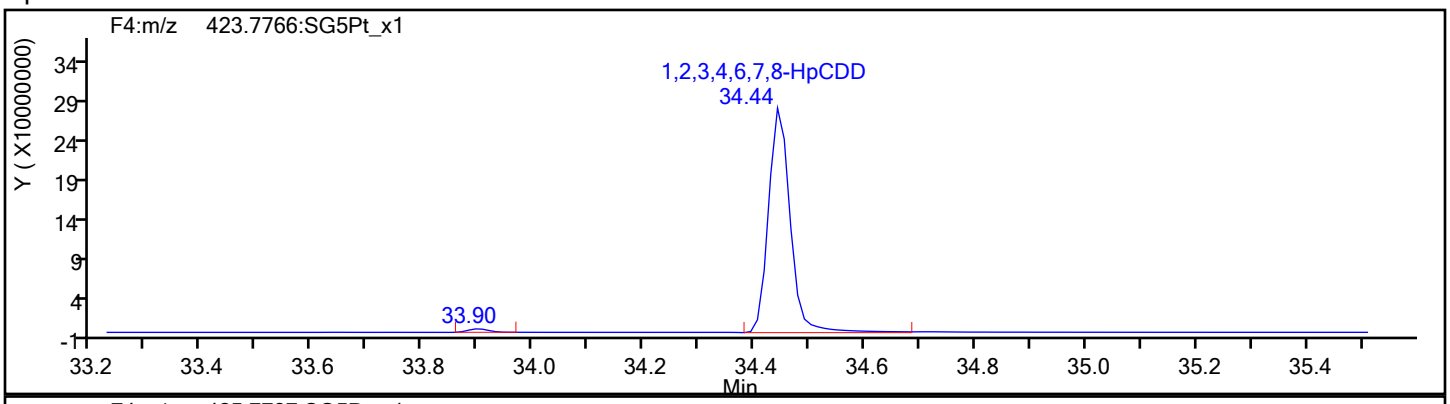

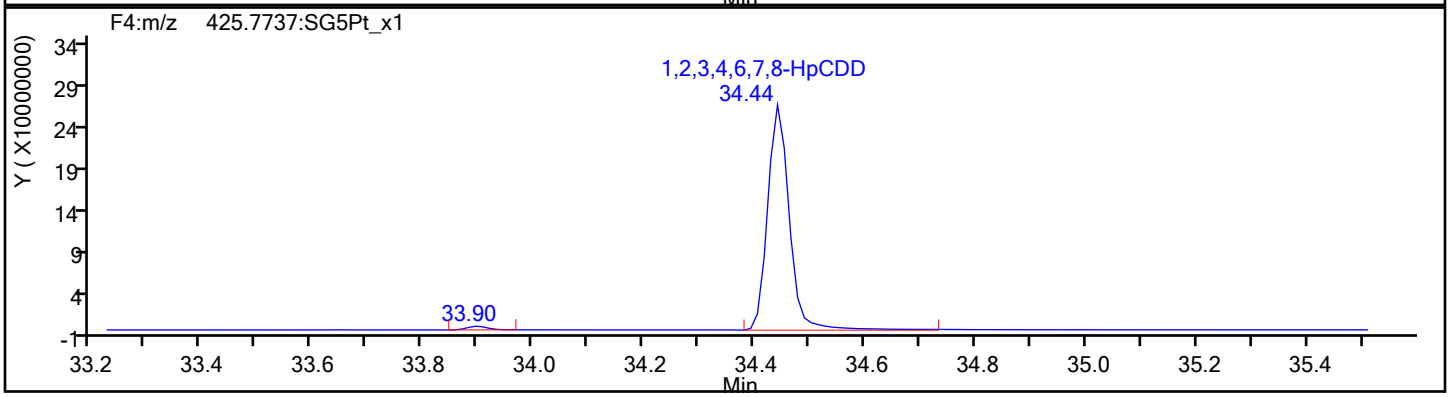

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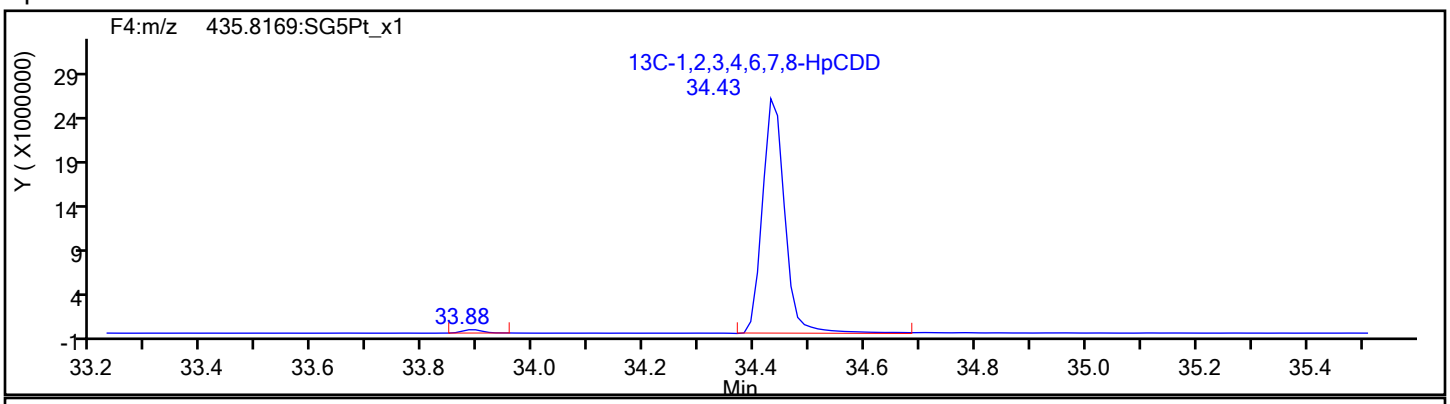

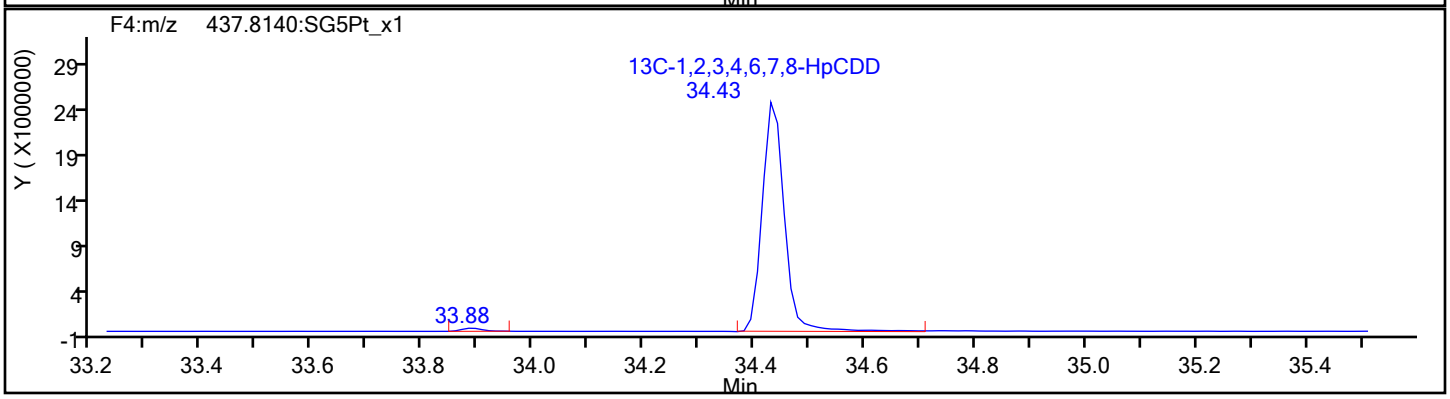

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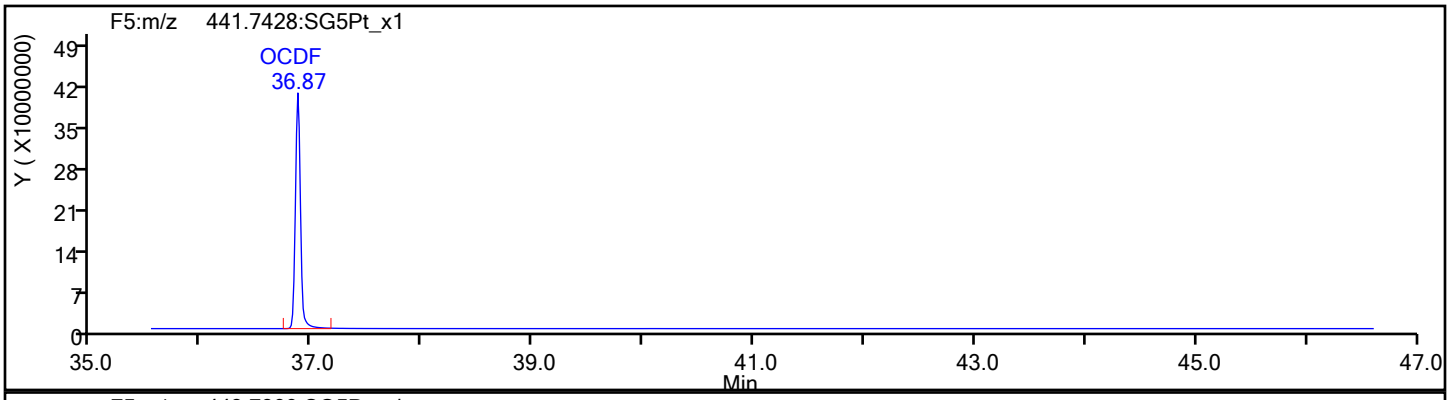
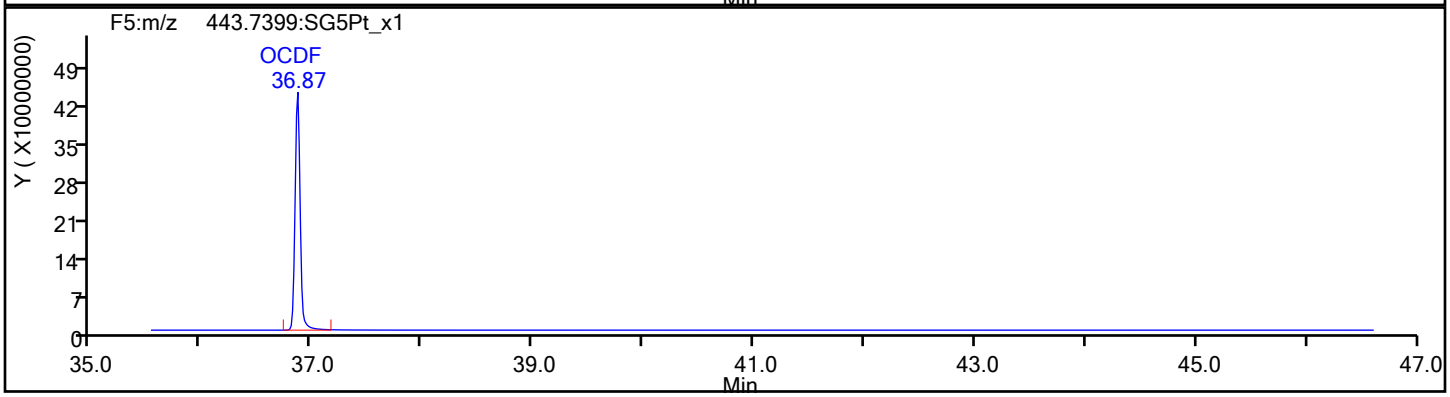
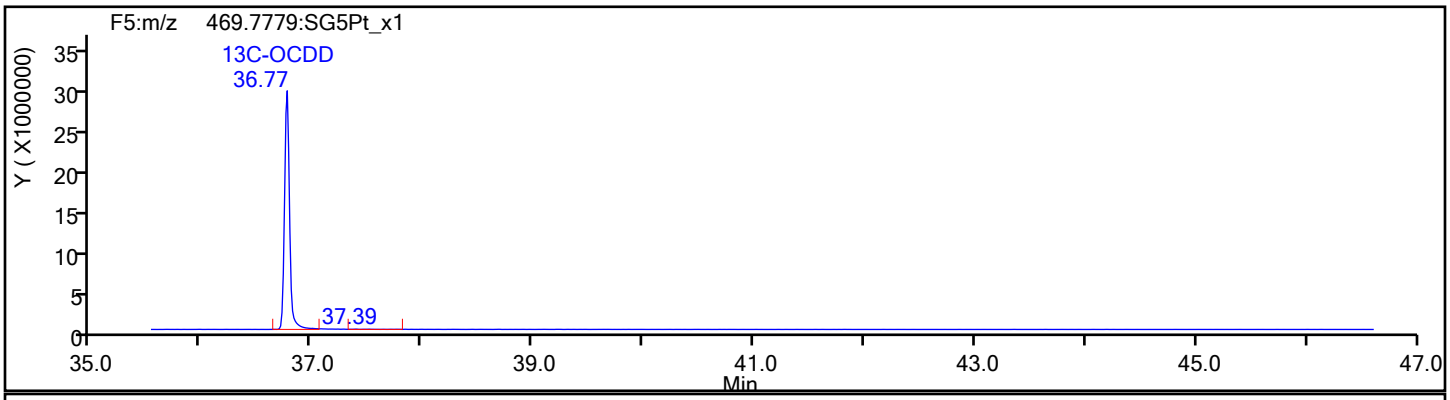
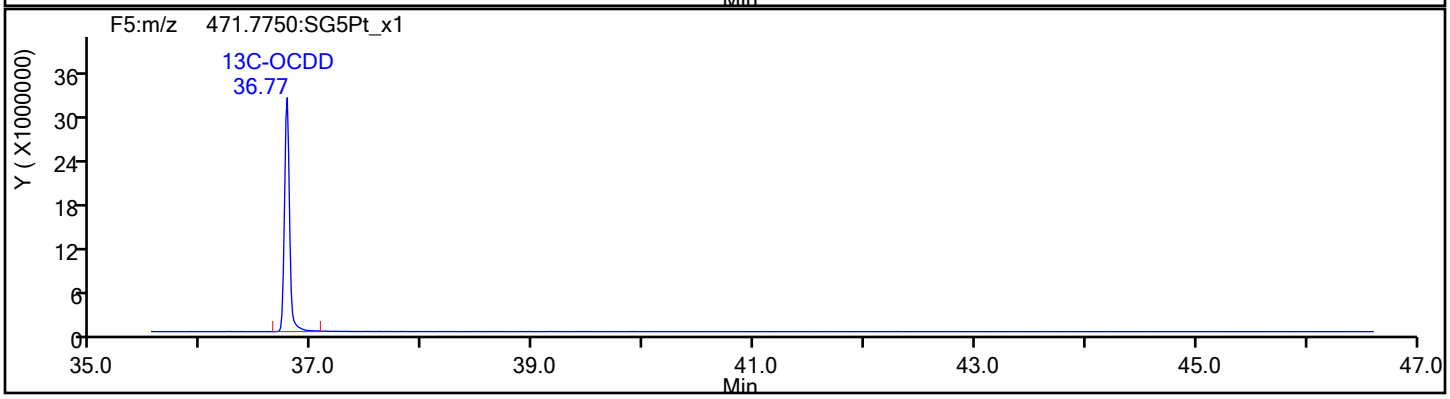




OCDF Standards



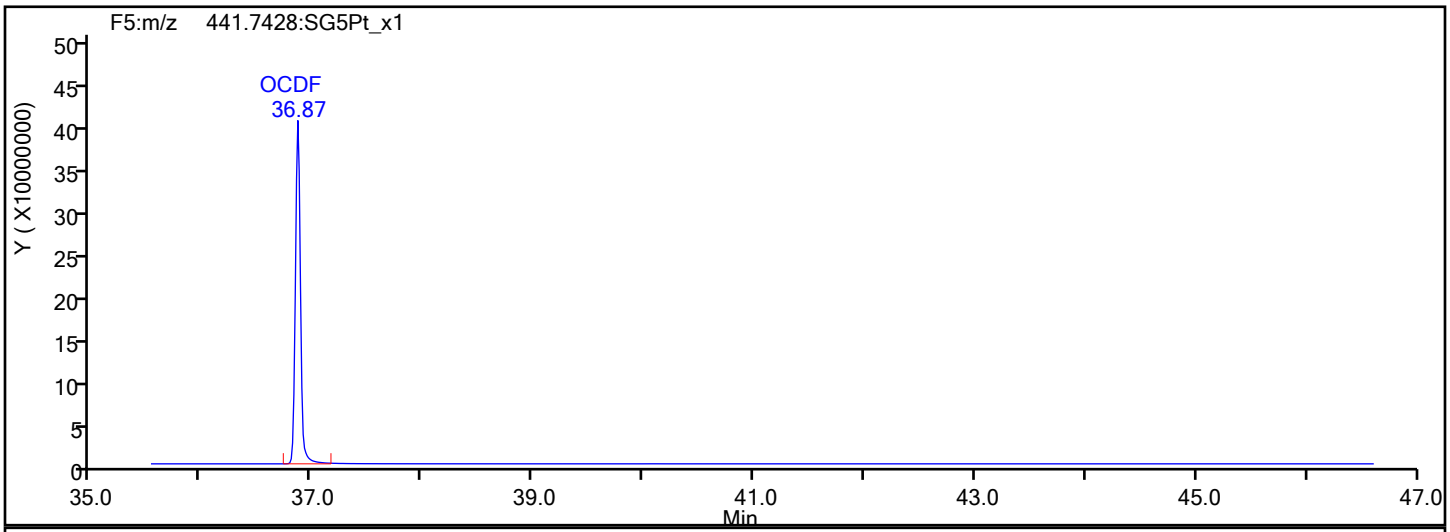


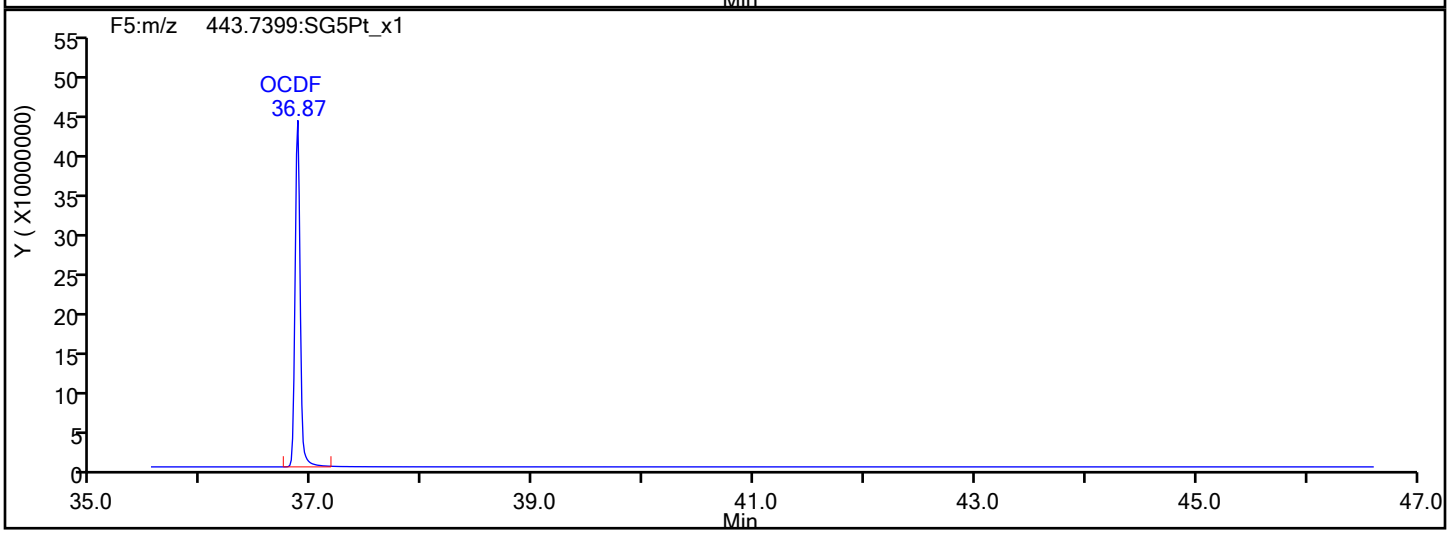
Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

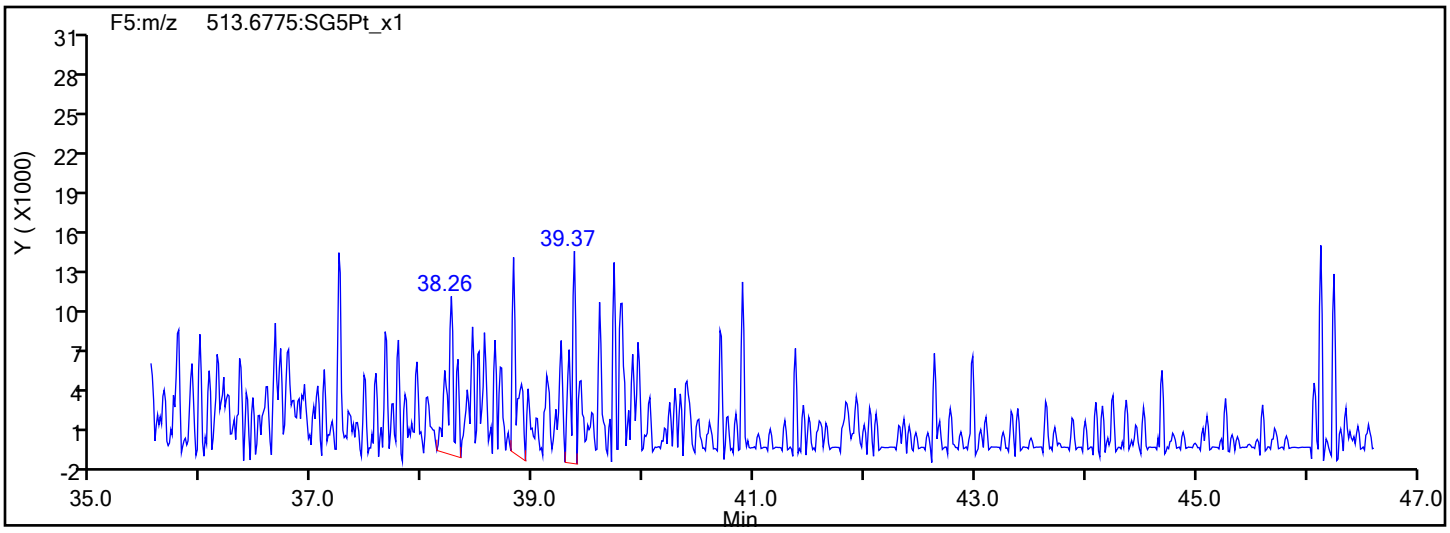
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

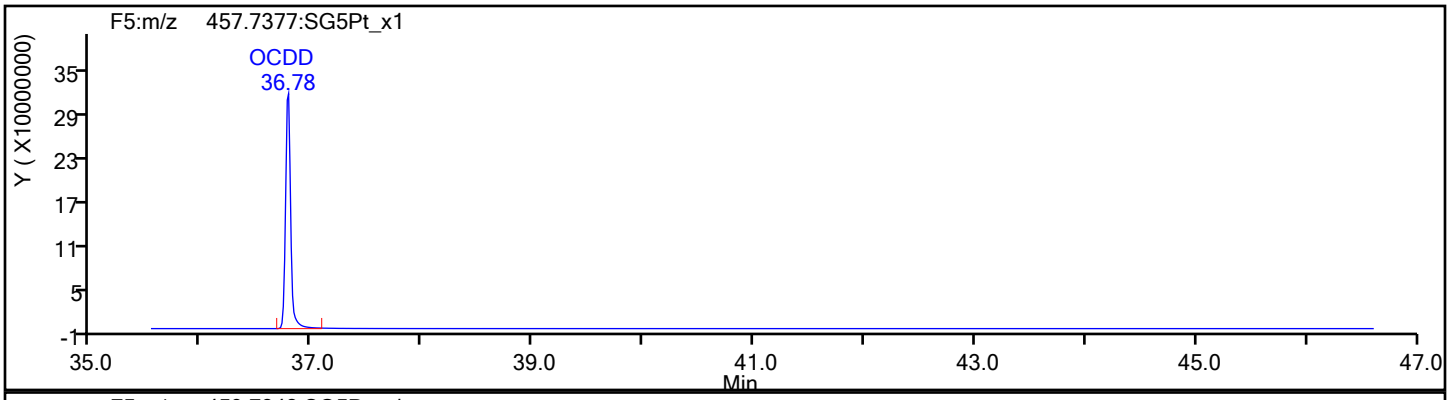


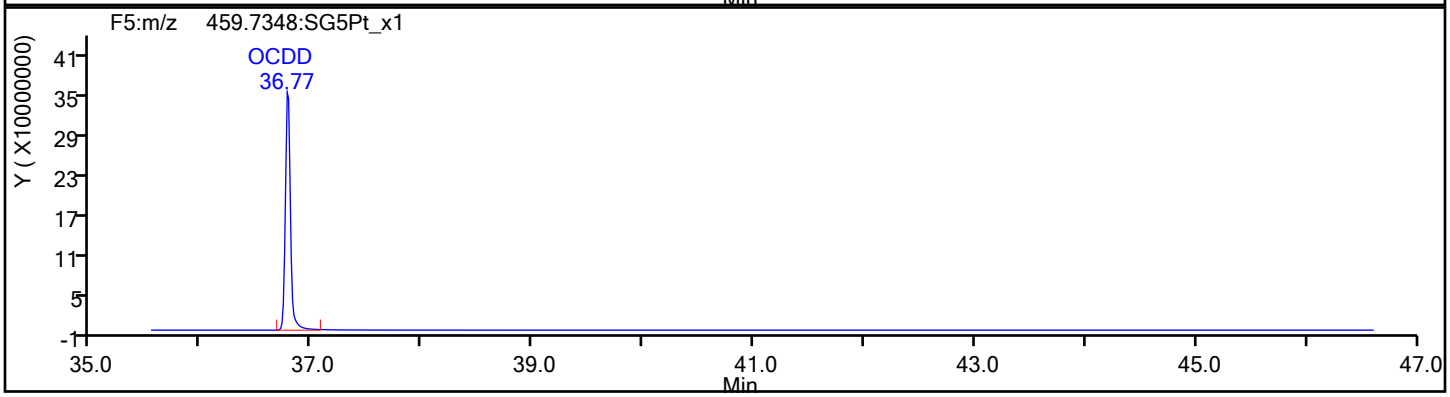
Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

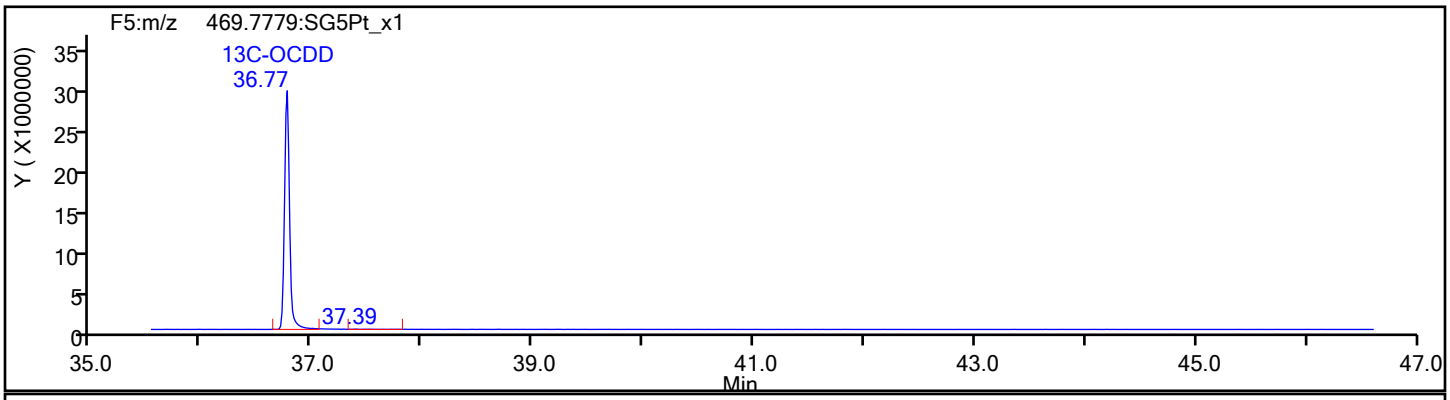
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm

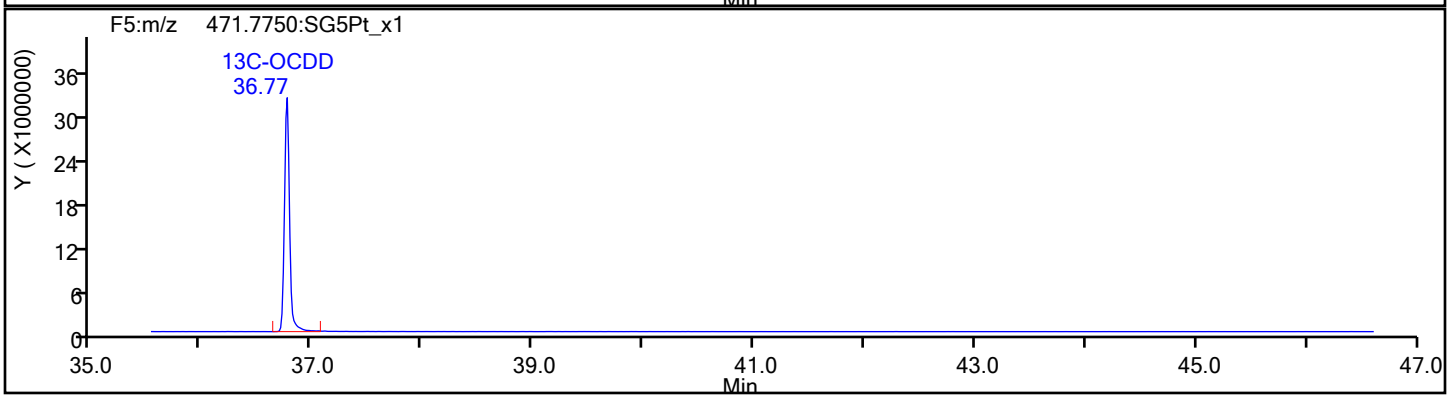
OCDD





OCDD Standards

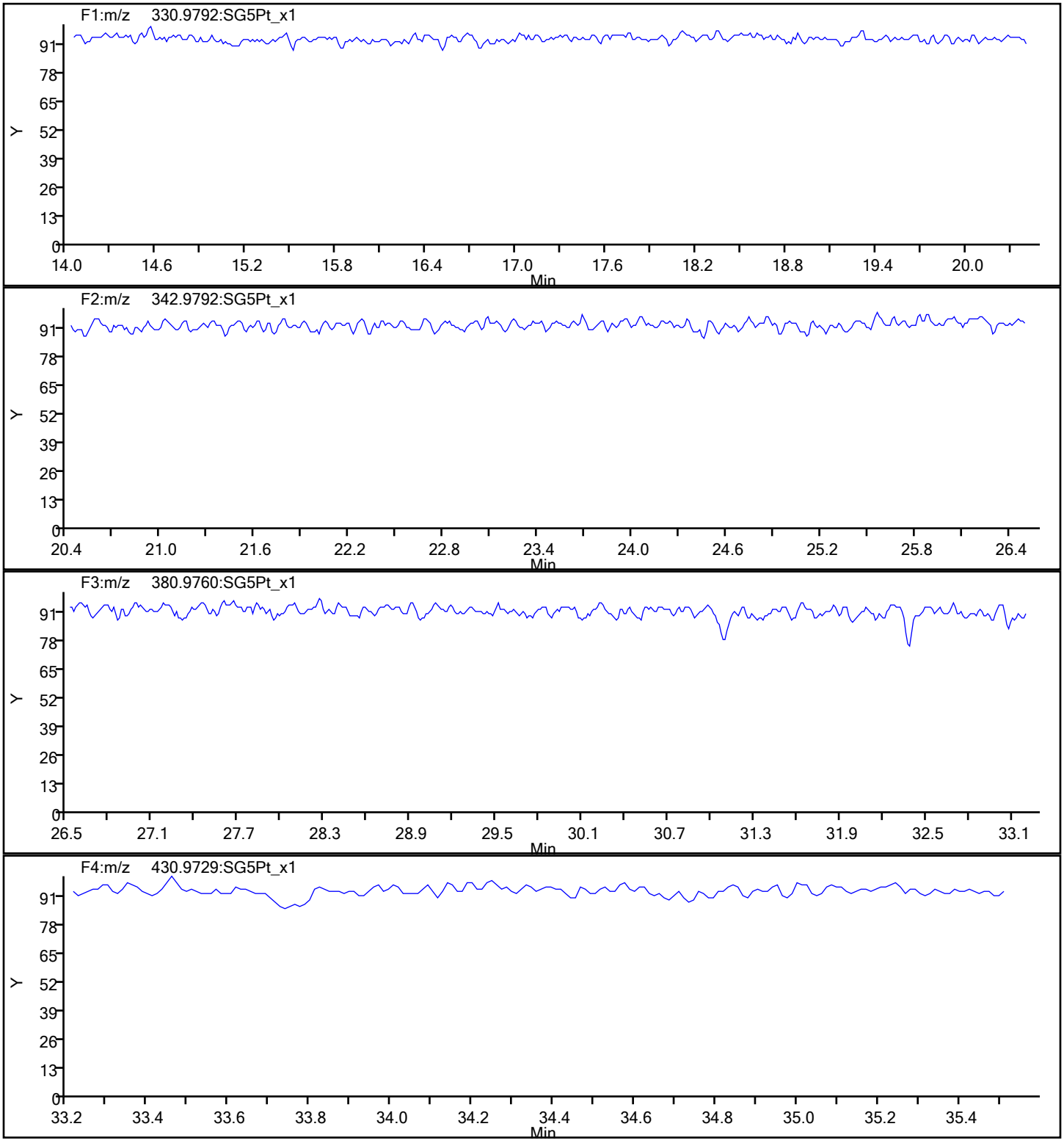




Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

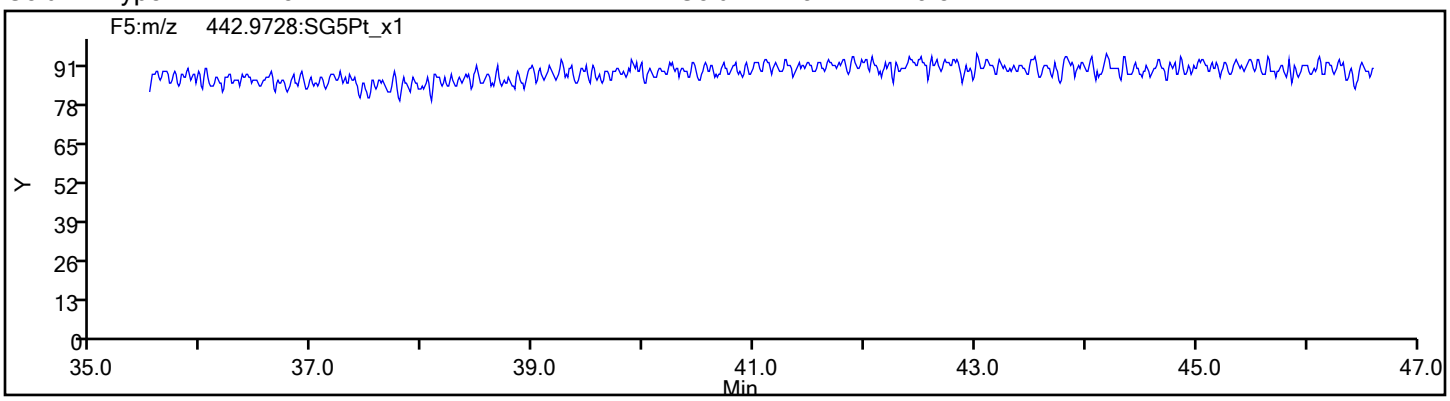
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 12-Dec-2019 15:54:43 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d		
Injection Date:	12-Dec-2019 14:39:03	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	L6		
Worklist#:	345037	Sample Line#:	7
Column Type:	DB-5	Column Dia:	0.32 mm



Calibration / 1,2,3,4,6,7,8-HpCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

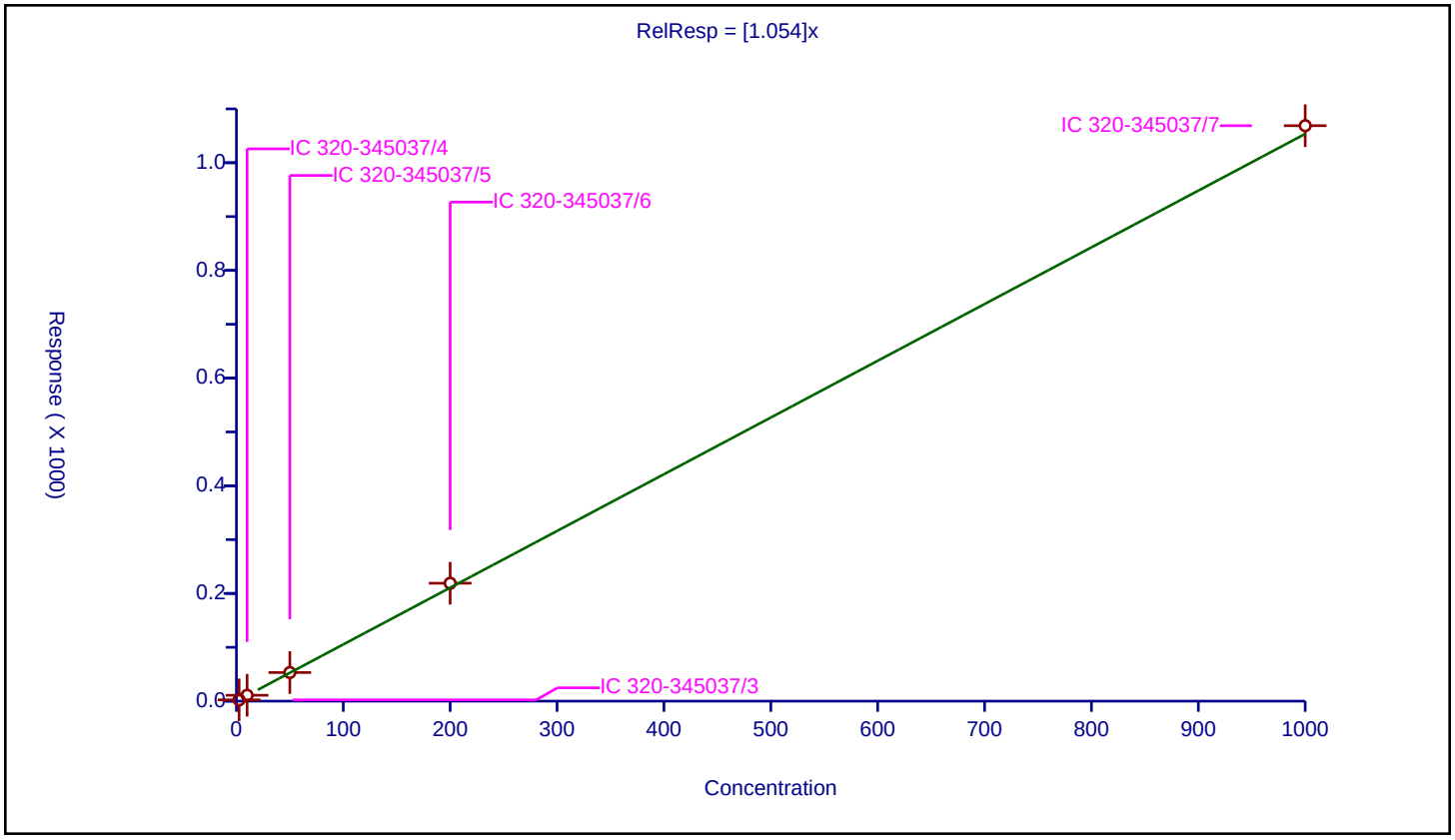
Curve Coefficients

Intercept:	0
Slope:	1.054

Error Coefficients

Standard Error:	769000000
Relative Standard Error:	5.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.37138	100.0	138203122.0	0.948552	Y
2	IC 320-345037/4	10.0	10.92077	100.0	149748569.0	1.092077	Y
3	IC 320-345037/5	50.0	53.165009	100.0	146156878.0	1.0633	Y
4	IC 320-345037/6	200.0	218.997187	100.0	159237326.0	1.094986	Y
5	IC 320-345037/7	1000.0	1068.781759	100.0	140028109.0	1.068782	Y



Calibration / 1,2,3,4,6,7,8-HpCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

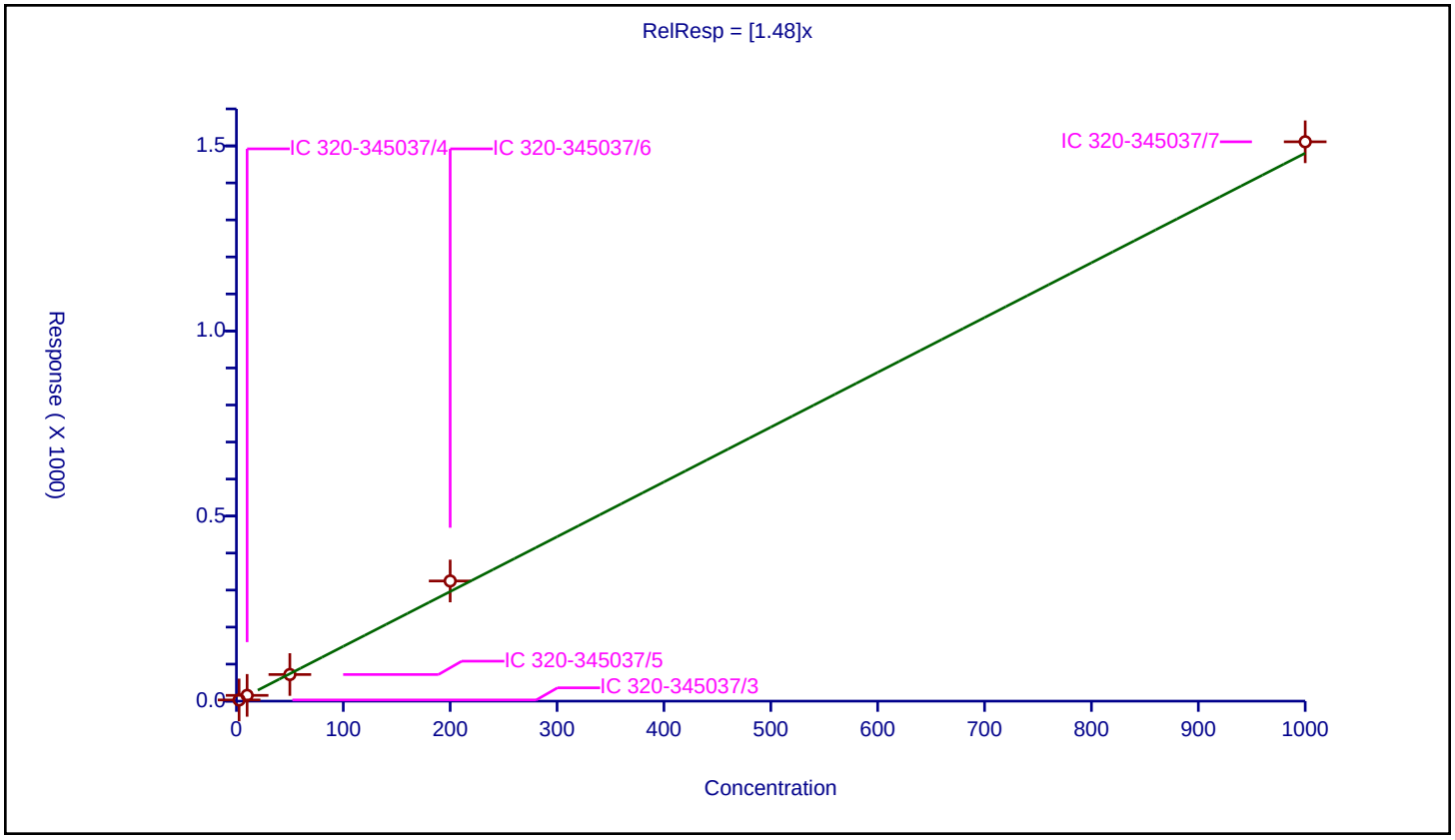
Curve Coefficients

Intercept:	0
Slope:	1.48

Error Coefficients

Standard Error:	1190000000
Relative Standard Error:	9.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	3.169819	100.0	150037410.0	1.267928	Y
2	IC 320-345037/4	10.0	15.609772	100.0	162401122.0	1.560977	Y
3	IC 320-345037/5	50.0	71.931076	100.0	159712904.0	1.438622	Y
4	IC 320-345037/6	200.0	324.628552	100.0	161981056.0	1.623143	Y
5	IC 320-345037/7	1000.0	1511.108632	100.0	152865078.0	1.511109	Y



Calibration / 1,2,3,4,7,8,9-HpCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

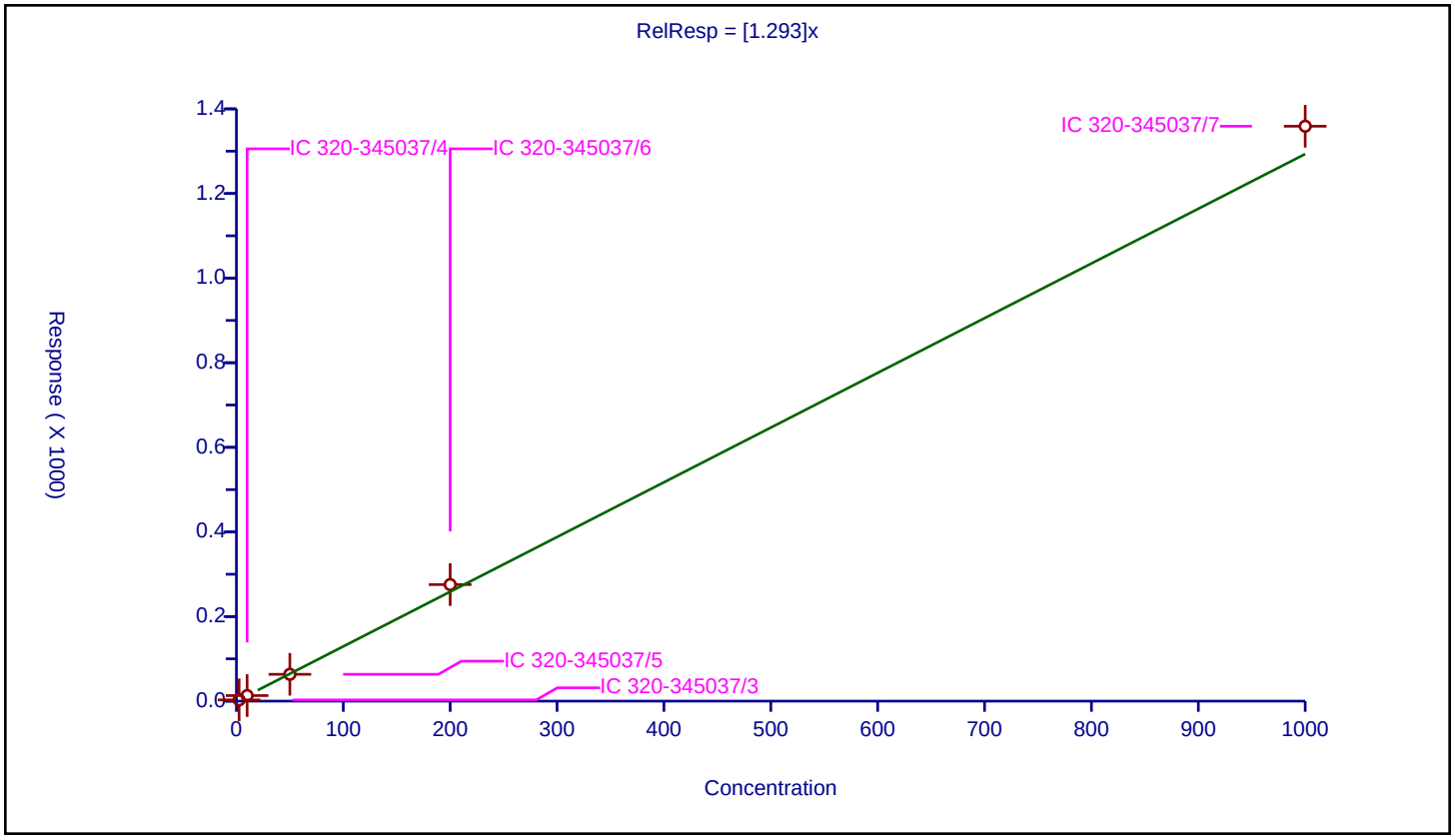
Curve Coefficients

Intercept:	0
Slope:	1.293

Error Coefficients

Standard Error:	981000000
Relative Standard Error:	7.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.868756	100.0	133781139.0	1.147503	Y
2	IC 320-345037/4	10.0	13.140017	100.0	146041140.0	1.314002	Y
3	IC 320-345037/5	50.0	63.413566	100.0	145840544.0	1.268271	Y
4	IC 320-345037/6	200.0	275.532726	100.0	154442339.0	1.377664	Y
5	IC 320-345037/7	1000.0	1359.034077	100.0	140774596.0	1.359034	Y



Calibration / 1,2,3,4,7,8-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

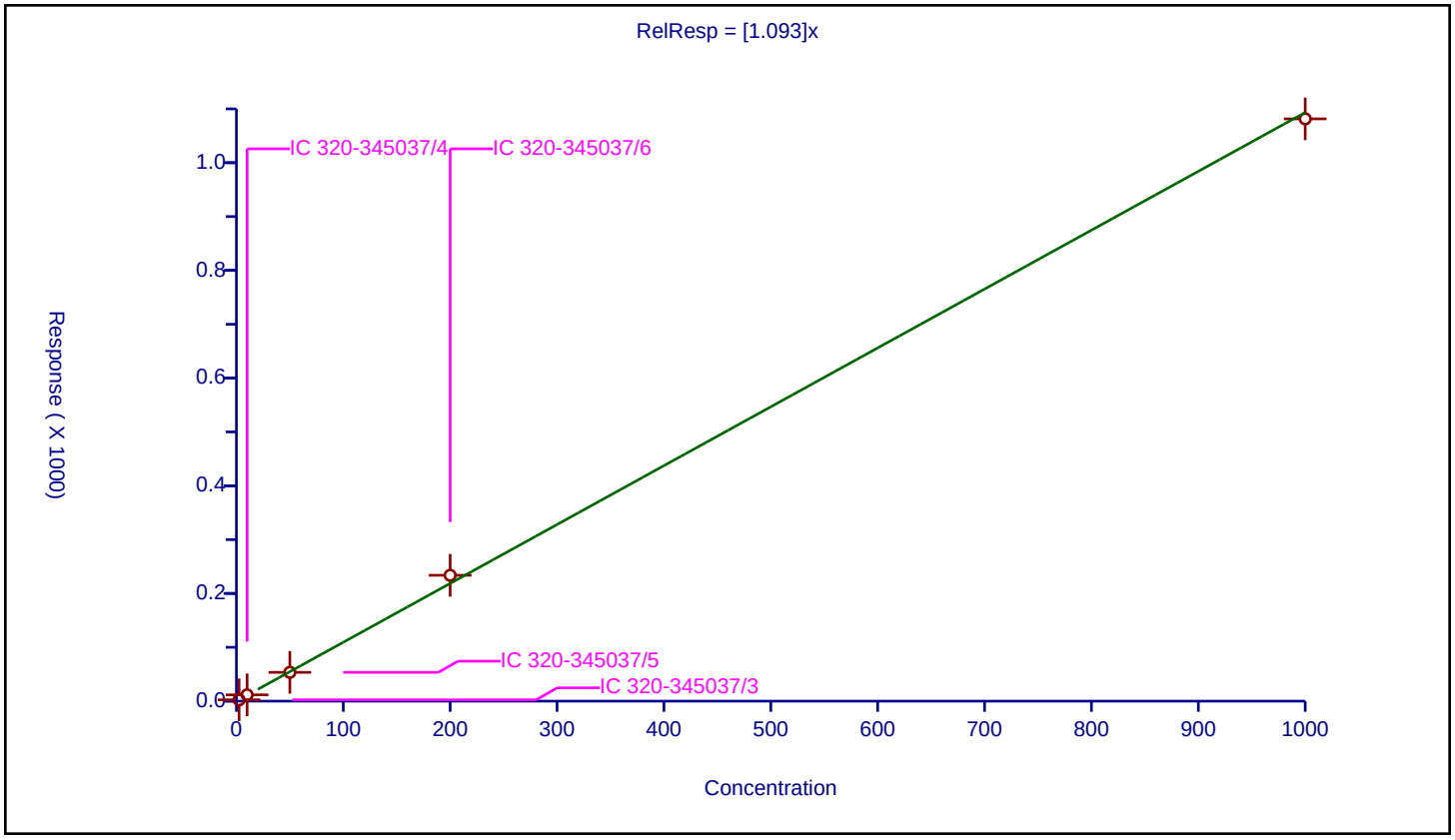
Curve Coefficients

Intercept:	0
Slope:	1.093

Error Coefficients

Standard Error:	860000000
Relative Standard Error:	7.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.44219	100.0	163808128.0	0.976876	Y
2	IC 320-345037/4	10.0	11.694327	100.0	167853325.0	1.169433	Y
3	IC 320-345037/5	50.0	53.512668	100.0	174266733.0	1.070253	Y
4	IC 320-345037/6	200.0	233.772223	100.0	167631105.0	1.168861	Y
5	IC 320-345037/7	1000.0	1081.472691	100.0	154639045.0	1.081473	Y



Calibration / 1,2,3,4,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

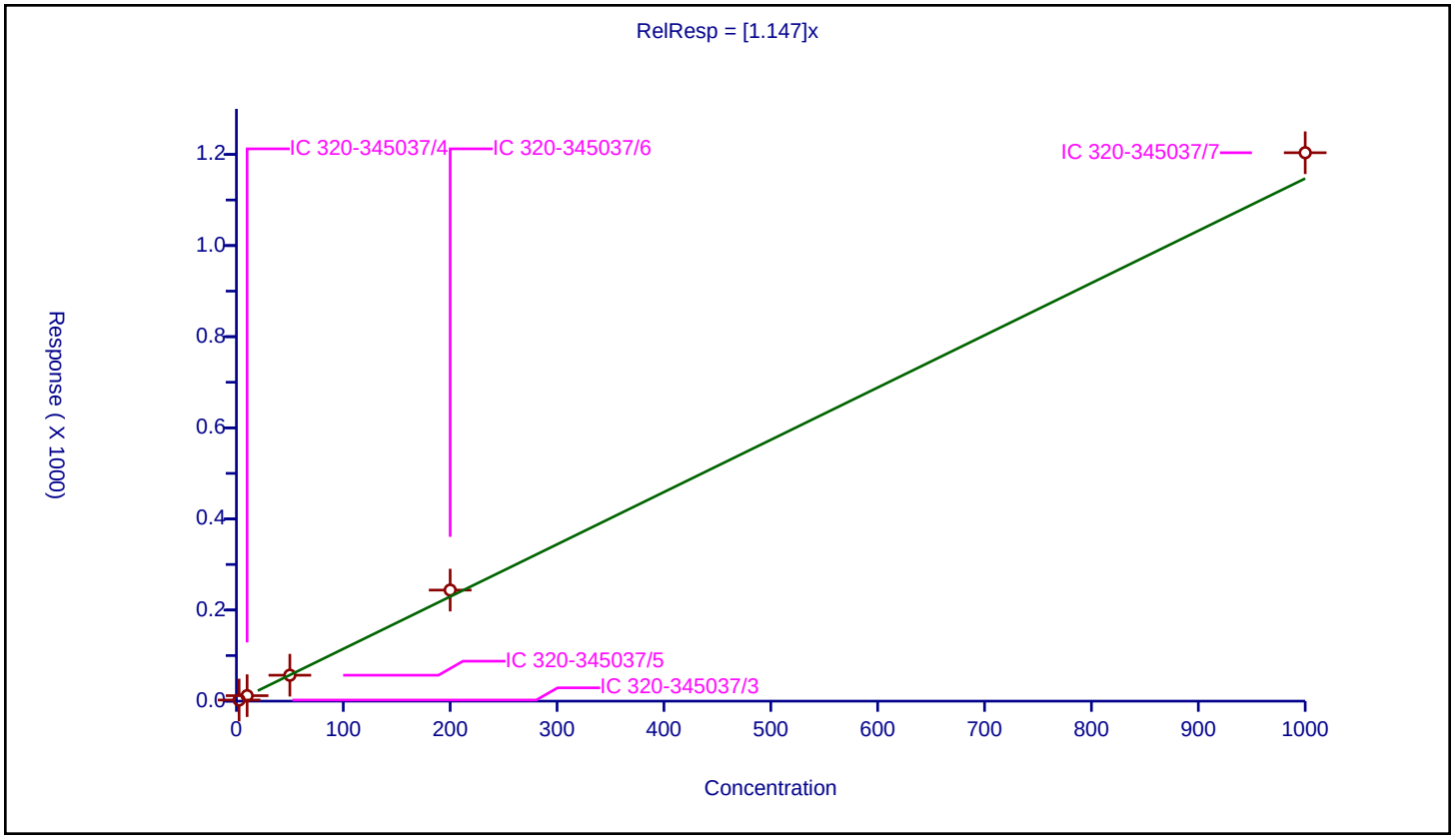
Curve Coefficients

Intercept:	0
Slope:	1.147

Error Coefficients

Standard Error:	1310000000
Relative Standard Error:	8.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.431839	100.0	228057392.0	0.972736	Y
2	IC 320-345037/4	10.0	12.028071	100.0	231563640.0	1.202807	Y
3	IC 320-345037/5	50.0	56.891812	100.0	242099177.0	1.137836	Y
4	IC 320-345037/6	200.0	243.778768	100.0	234227258.0	1.218894	Y
5	IC 320-345037/7	1000.0	1203.75694	100.0	212926355.0	1.203757	Y



Calibration / 1,2,3,6,7,8-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

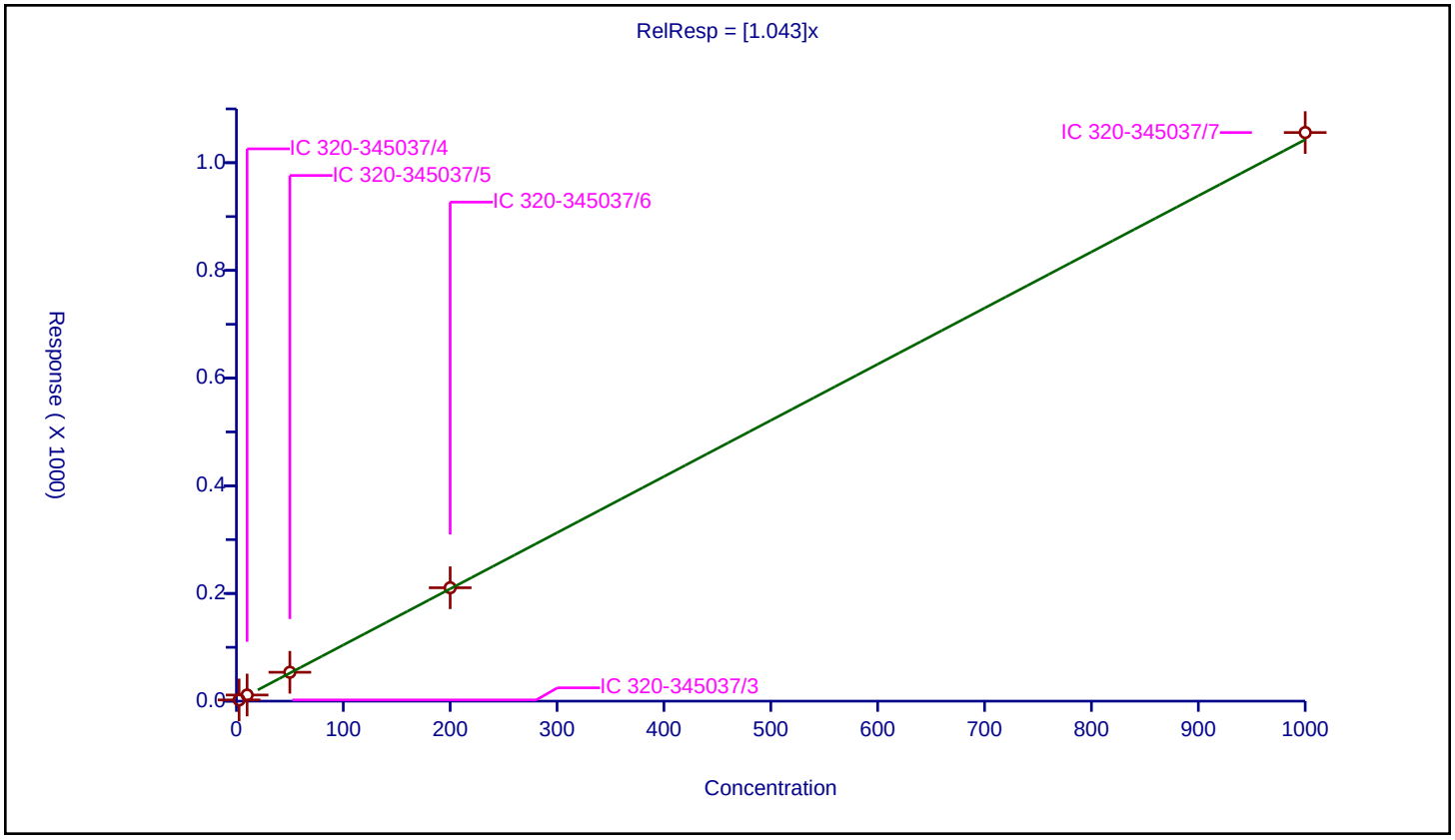
Curve Coefficients

Intercept:	0
Slope:	1.043

Error Coefficients

Standard Error:	918000000
Relative Standard Error:	8.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.231945	100.0	181206025.0	0.892778	Y
2	IC 320-345037/4	10.0	11.393354	100.0	181254882.0	1.139335	Y
3	IC 320-345037/5	50.0	53.665575	100.0	183758146.0	1.073312	Y
4	IC 320-345037/6	200.0	210.601386	100.0	191249218.0	1.053007	Y
5	IC 320-345037/7	1000.0	1056.082693	100.0	169339469.0	1.056083	Y



Calibration / 1,2,3,6,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

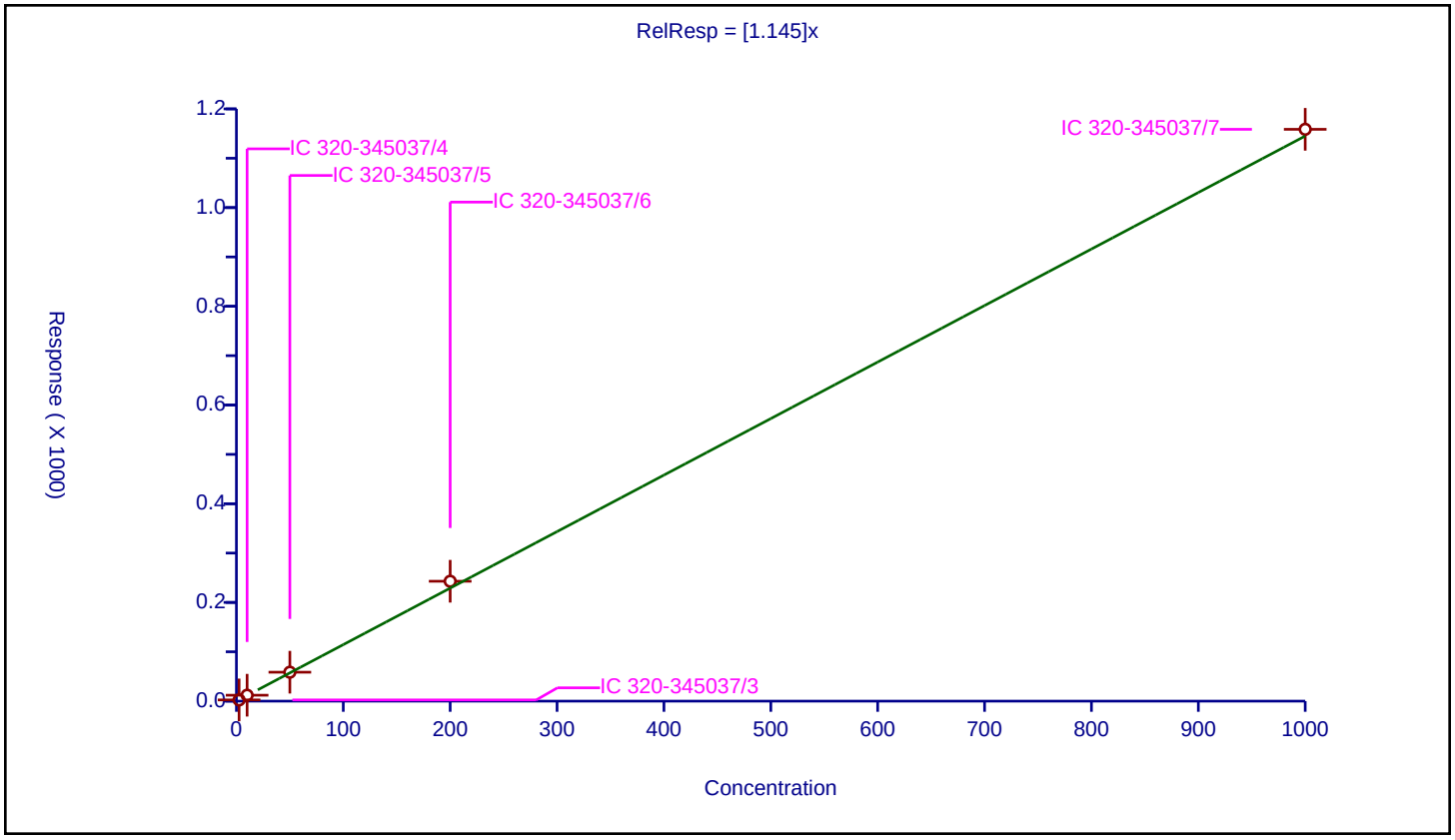
Curve Coefficients

Intercept:	0
Slope:	1.145

Error Coefficients

Standard Error:	1330000000
Relative Standard Error:	8.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.445599	100.0	241275292.0	0.978239	Y
2	IC 320-345037/4	10.0	12.007987	100.0	241149788.0	1.200799	Y
3	IC 320-345037/5	50.0	58.642573	100.0	243784643.0	1.172851	Y
4	IC 320-345037/6	200.0	242.928194	100.0	243919748.0	1.214641	Y
5	IC 320-345037/7	1000.0	1158.625835	100.0	222786807.0	1.158626	Y



Calibration / 1,2,3,7,8,9-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

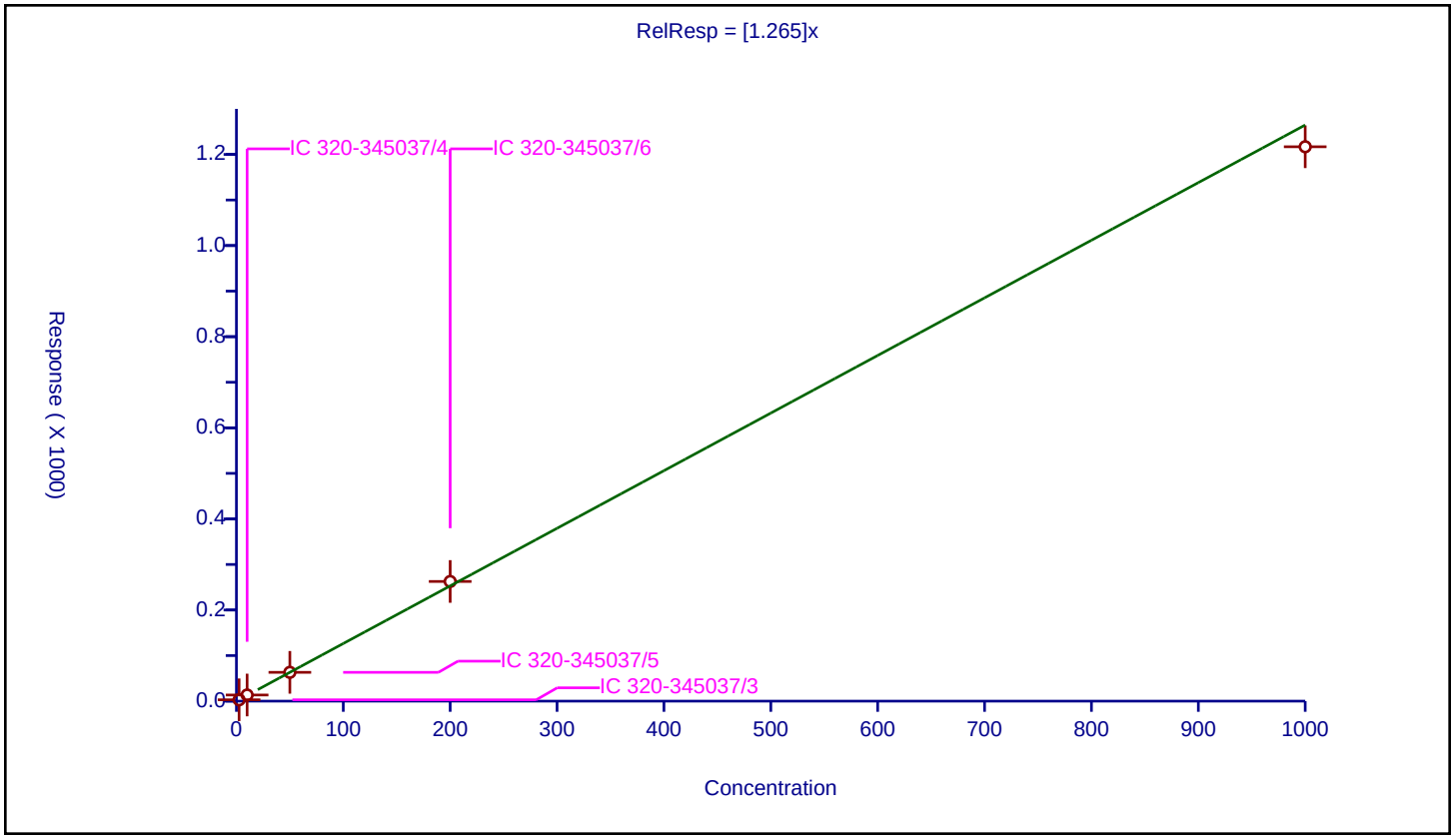
Curve Coefficients

Intercept:	0
Slope:	1.265

Error Coefficients

Standard Error:	968000000
Relative Standard Error:	5.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.946044	100.0	163808128.0	1.178417	Y
2	IC 320-345037/4	10.0	13.500888	100.0	167853325.0	1.350089	Y
3	IC 320-345037/5	50.0	63.213107	100.0	174266733.0	1.264262	Y
4	IC 320-345037/6	200.0	262.682379	100.0	167631105.0	1.313412	Y
5	IC 320-345037/7	1000.0	1216.878484	100.0	154639045.0	1.216878	Y



Calibration / 1,2,3,7,8,9-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

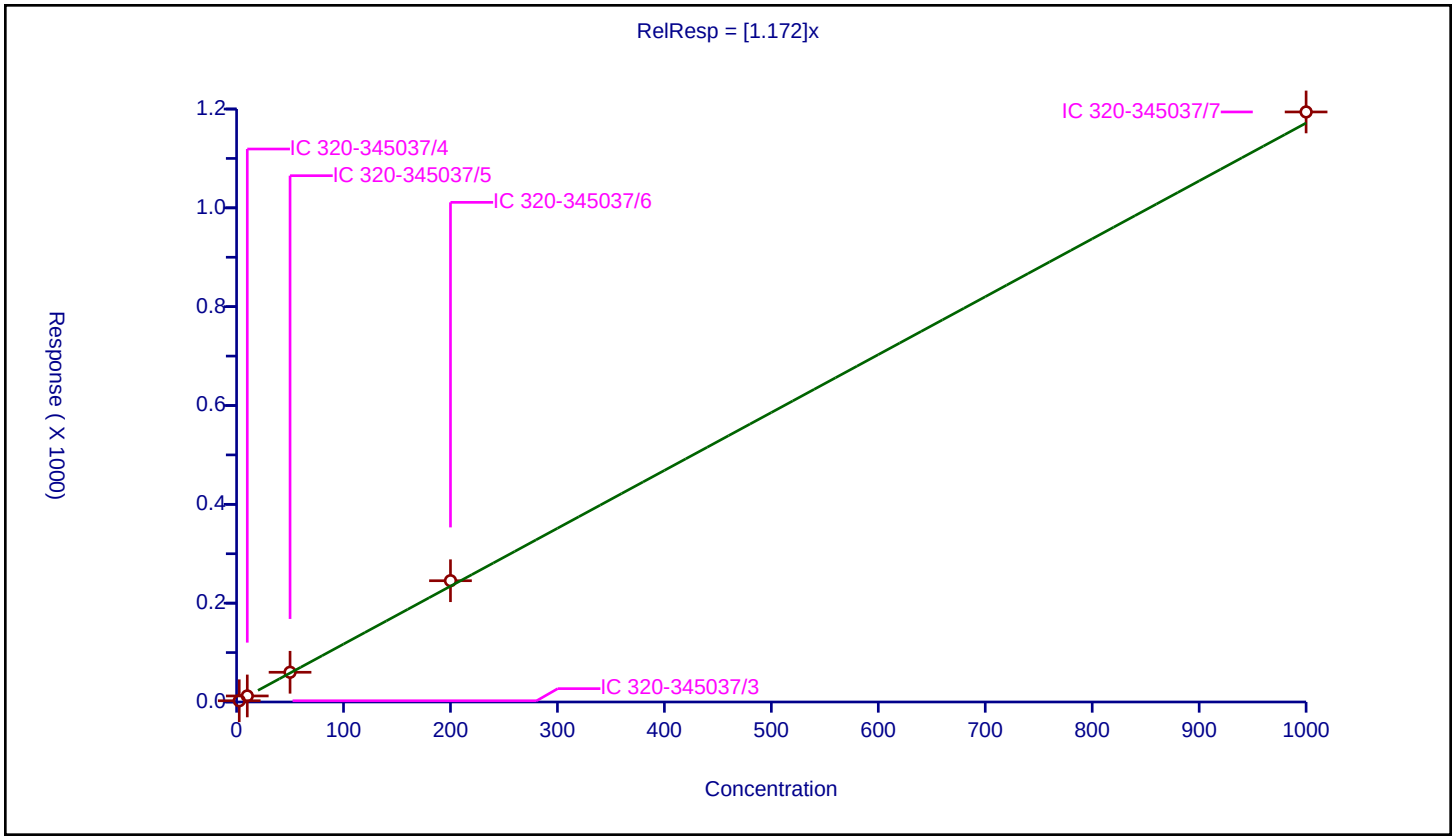
Curve Coefficients

Intercept:	0
Slope:	1.172

Error Coefficients

Standard Error:	1230000000
Relative Standard Error:	7.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.524758	100.0	206305806.0	1.009903	Y
2	IC 320-345037/4	10.0	12.240232	100.0	213447196.0	1.224023	Y
3	IC 320-345037/5	50.0	60.160421	100.0	213252409.0	1.203208	Y
4	IC 320-345037/6	200.0	245.41471	100.0	218257445.0	1.227074	Y
5	IC 320-345037/7	1000.0	1194.056094	100.0	200052961.0	1.194056	Y



Calibration / 1,2,3,7,8-PeCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

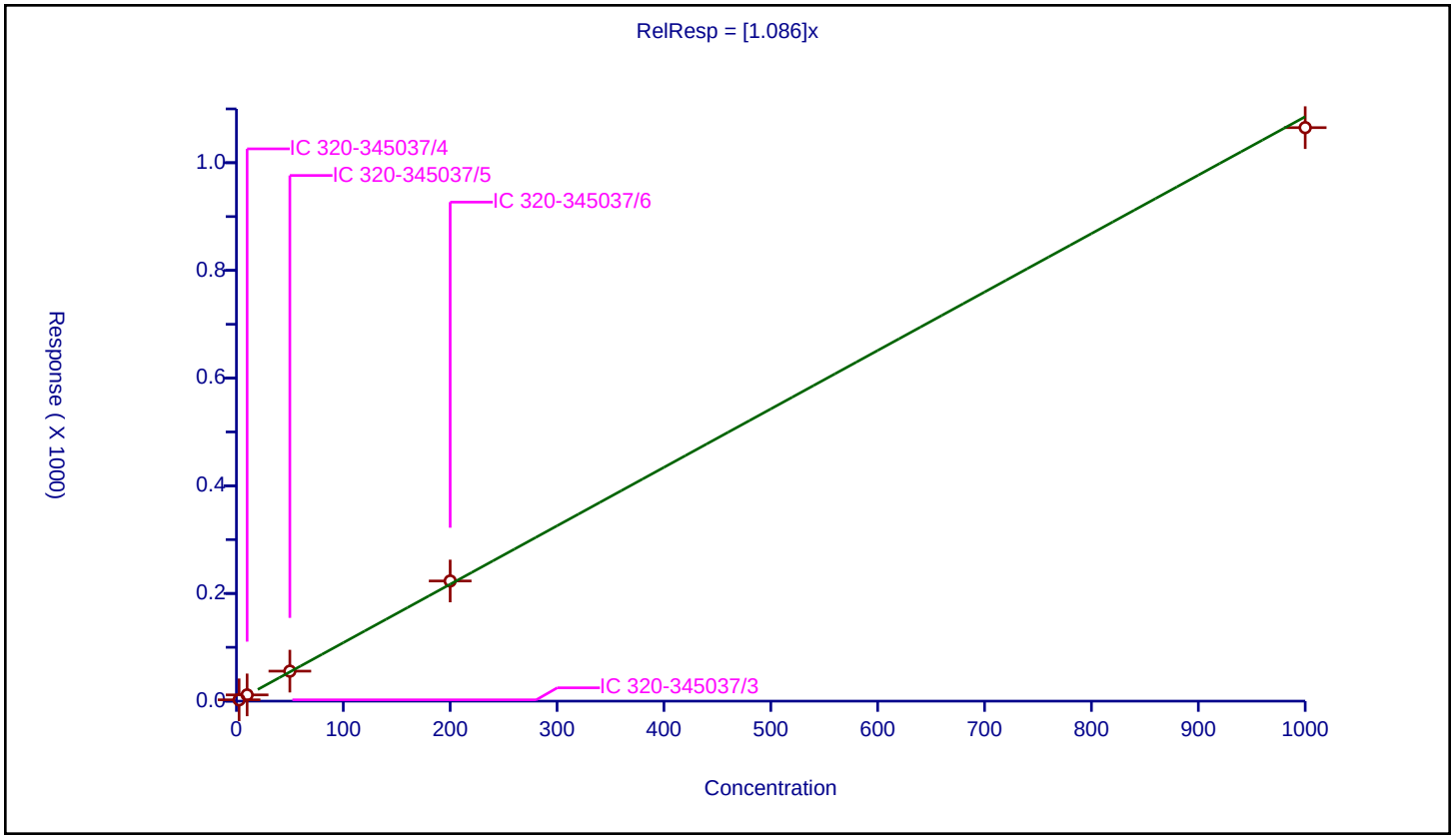
Curve Coefficients

Intercept:	0
Slope:	1.086

Error Coefficients

Standard Error:	831000000
Relative Standard Error:	6.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.433994	100.0	174446593.0	0.973598	Y
2	IC 320-345037/4	10.0	11.578466	100.0	169864186.0	1.157847	Y
3	IC 320-345037/5	50.0	55.746004	100.0	167599127.0	1.11492	Y
4	IC 320-345037/6	200.0	223.198641	100.0	175058491.0	1.115993	Y
5	IC 320-345037/7	1000.0	1065.182668	100.0	151420854.0	1.065183	Y



Calibration / 1,2,3,7,8-PeCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

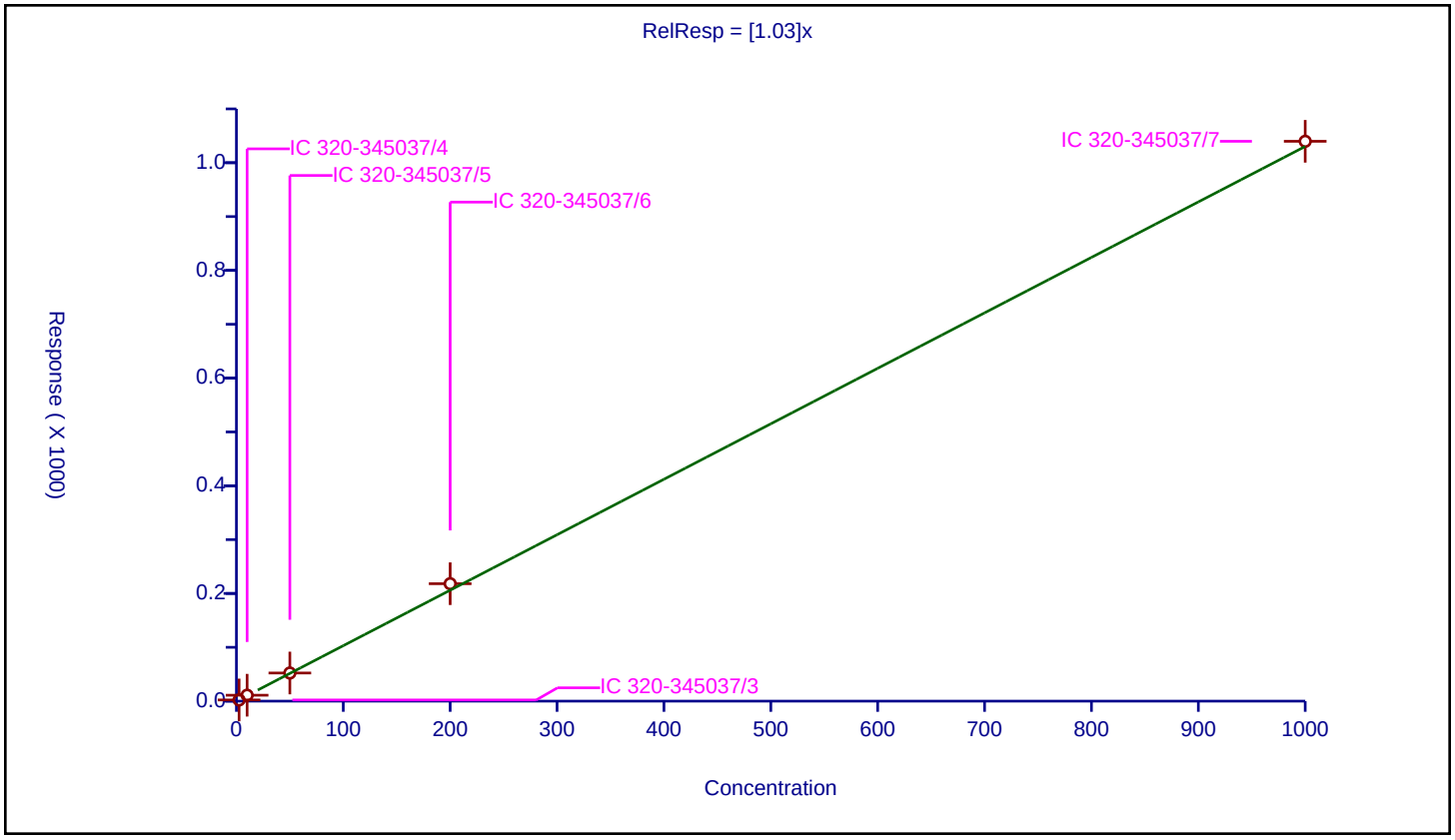
Curve Coefficients

Intercept:	0
Slope:	1.03

Error Coefficients

Standard Error:	1270000000
Relative Standard Error:	8.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.18388	100.0	267927119.0	0.873552	Y
2	IC 320-345037/4	10.0	11.019854	100.0	263888884.0	1.101985	Y
3	IC 320-345037/5	50.0	52.256581	100.0	269197886.0	1.045132	Y
4	IC 320-345037/6	200.0	218.112409	100.0	266542876.0	1.090562	Y
5	IC 320-345037/7	1000.0	1039.794253	100.0	237179506.0	1.039794	Y



Calibration / 2,3,4,6,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

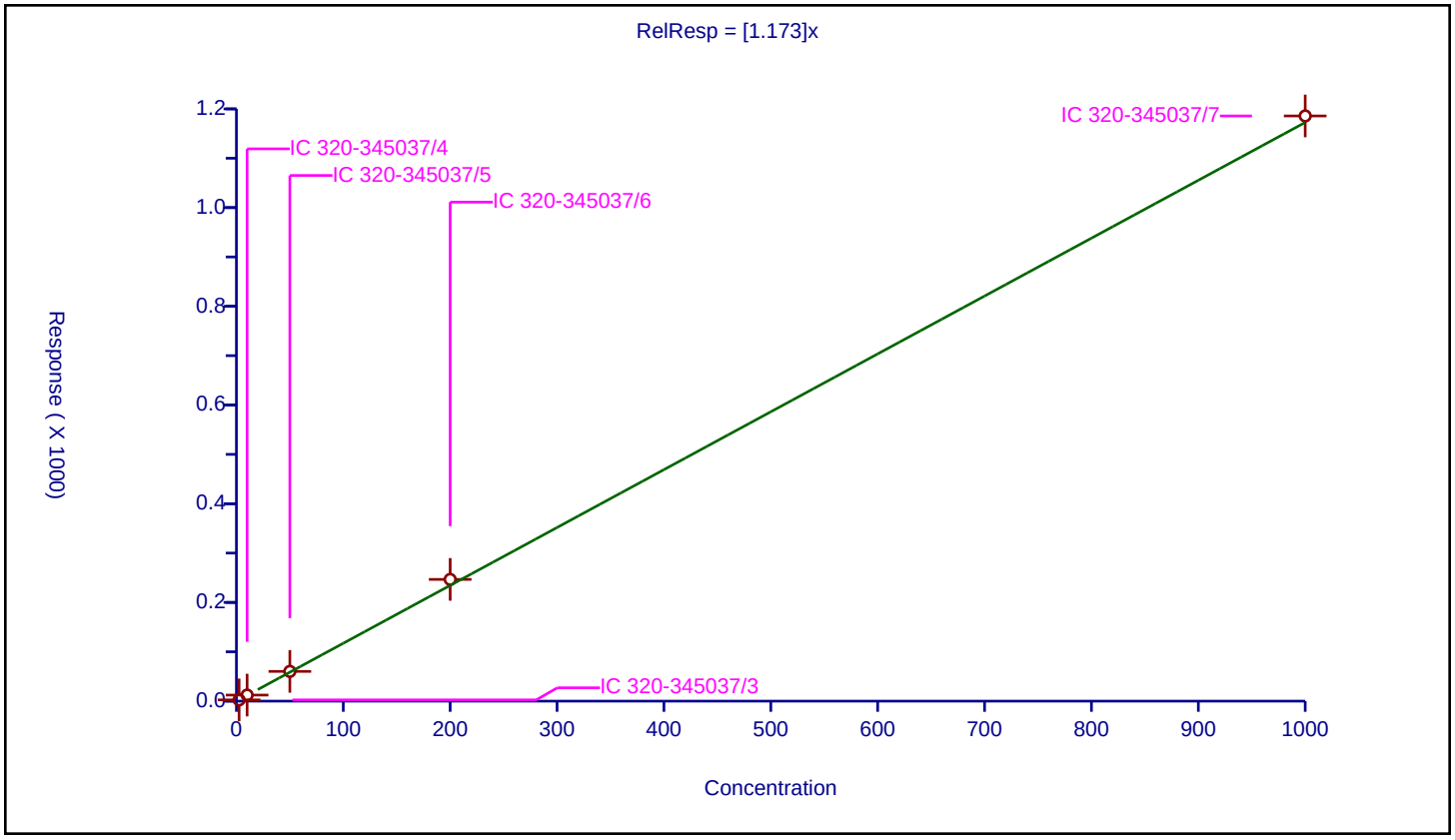
Curve Coefficients

Intercept:	0
Slope:	1.173

Error Coefficients

Standard Error:	1270000000
Relative Standard Error:	8.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.520722	100.0	224637565.0	1.008289	Y
2	IC 320-345037/4	10.0	12.3025	100.0	228396958.0	1.23025	Y
3	IC 320-345037/5	50.0	60.272838	100.0	226090409.0	1.205457	Y
4	IC 320-345037/6	200.0	246.644053	100.0	232992892.0	1.23322	Y
5	IC 320-345037/7	1000.0	1185.699957	100.0	207860074.0	1.1857	Y



Calibration / 2,3,4,7,8-PeCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

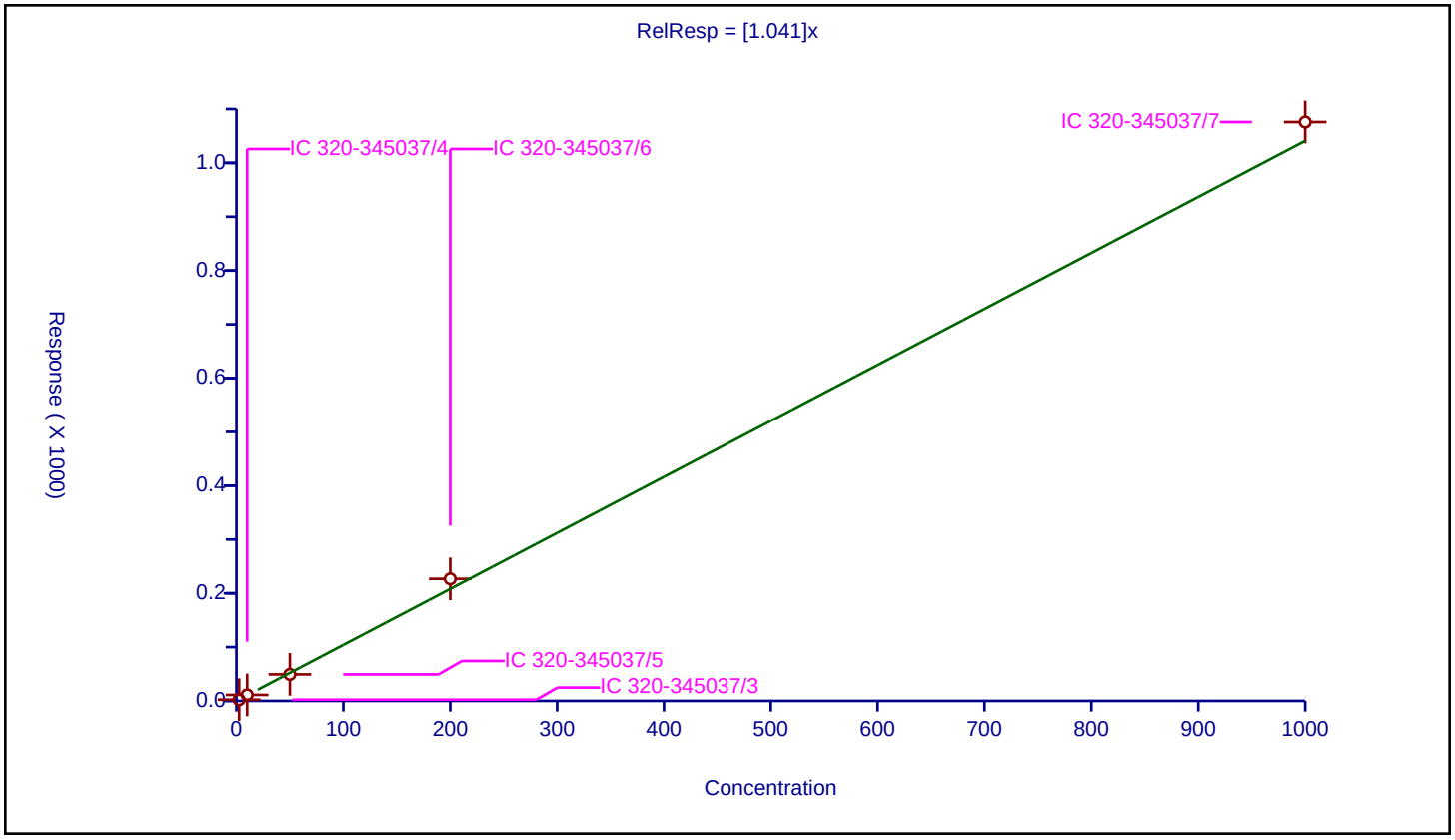
Curve Coefficients

Intercept:	0
Slope:	1.041

Error Coefficients

Standard Error:	1230000000
Relative Standard Error:	9.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	2.5	2.237085	100.0	256478177.0	0.894834	Y
2	IC 320-345037/4	10.0	11.141251	100.0	254672733.0	1.114125	Y
3	IC 320-345037/5	50.0	49.277167	100.0	265262610.0	0.985543	Y
4	IC 320-345037/6	200.0	226.884829	100.0	253995484.0	1.134424	Y
5	IC 320-345037/7	1000.0	1075.912476	100.0	222542126.0	1.075912	Y



Calibration / 2,3,7,8-TCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

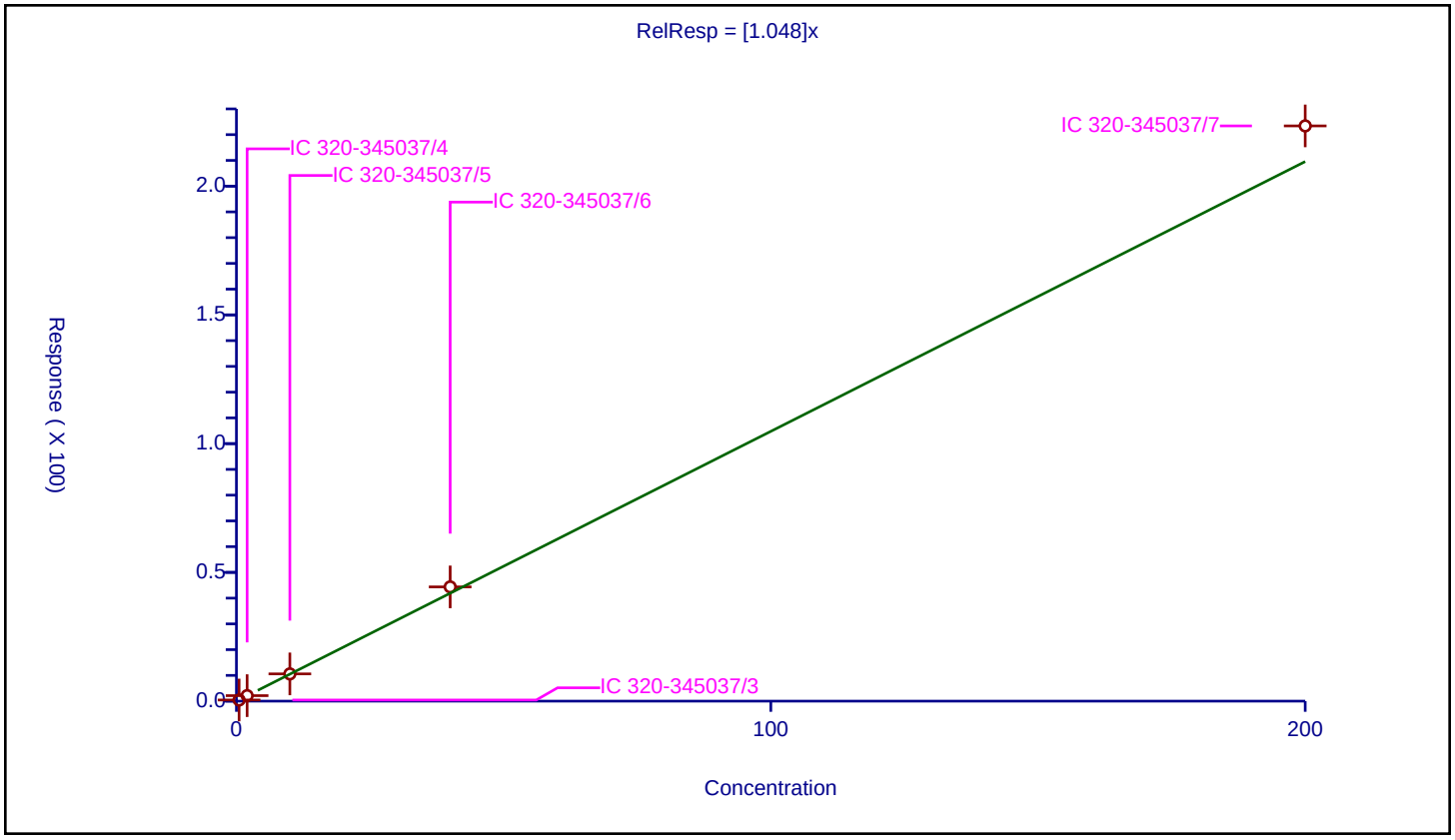
Curve Coefficients

Intercept:	0
Slope:	1.048

Error Coefficients

Standard Error:	216000000
Relative Standard Error:	8.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	0.5	0.443295	100.0	224505471.0	0.88659	Y
2	IC 320-345037/4	2.0	2.135479	100.0	223228422.0	1.067739	Y
3	IC 320-345037/5	10.0	10.58117	100.0	222854376.0	1.058117	Y
4	IC 320-345037/6	40.0	44.36733	100.0	223322673.0	1.109183	Y
5	IC 320-345037/7	200.0	223.395028	100.0	187504800.0	1.116975	Y



Calibration / 2,3,7,8-TCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

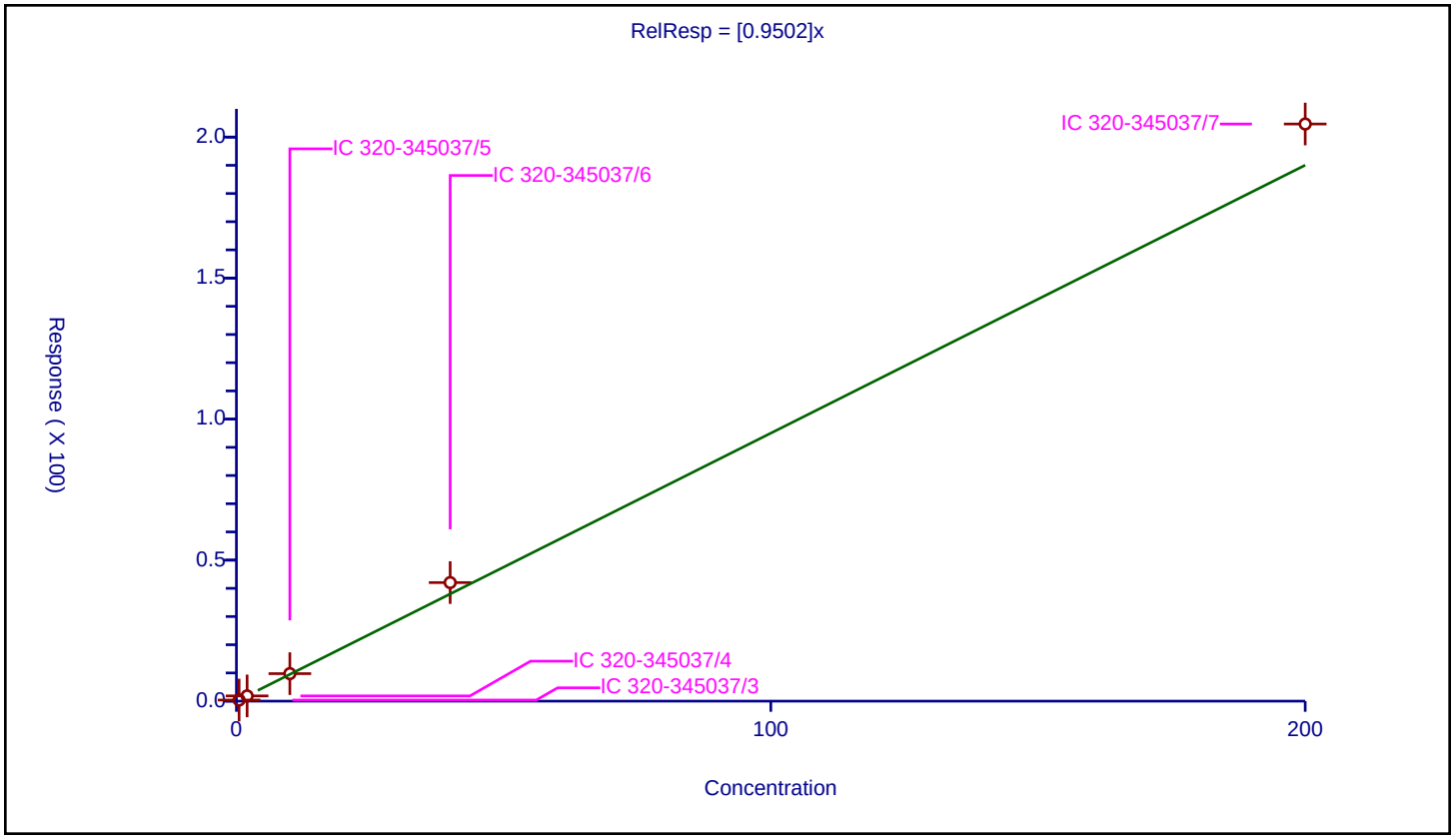
Curve Coefficients

Intercept:	0
Slope:	0.9502

Error Coefficients

Standard Error:	292000000
Relative Standard Error:	11.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.986

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	0.5	0.38665	100.0	329541553.0	0.7733	Y
2	IC 320-345037/4	2.0	1.856657	100.0	317966293.0	0.928328	Y
3	IC 320-345037/5	10.0	9.752074	100.0	329077583.0	0.975207	Y
4	IC 320-345037/6	40.0	42.036463	100.0	314996891.0	1.050912	Y
5	IC 320-345037/7	200.0	204.639574	100.0	277528864.0	1.023198	Y



Calibration / 37Cl4-2,3,7,8-TCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

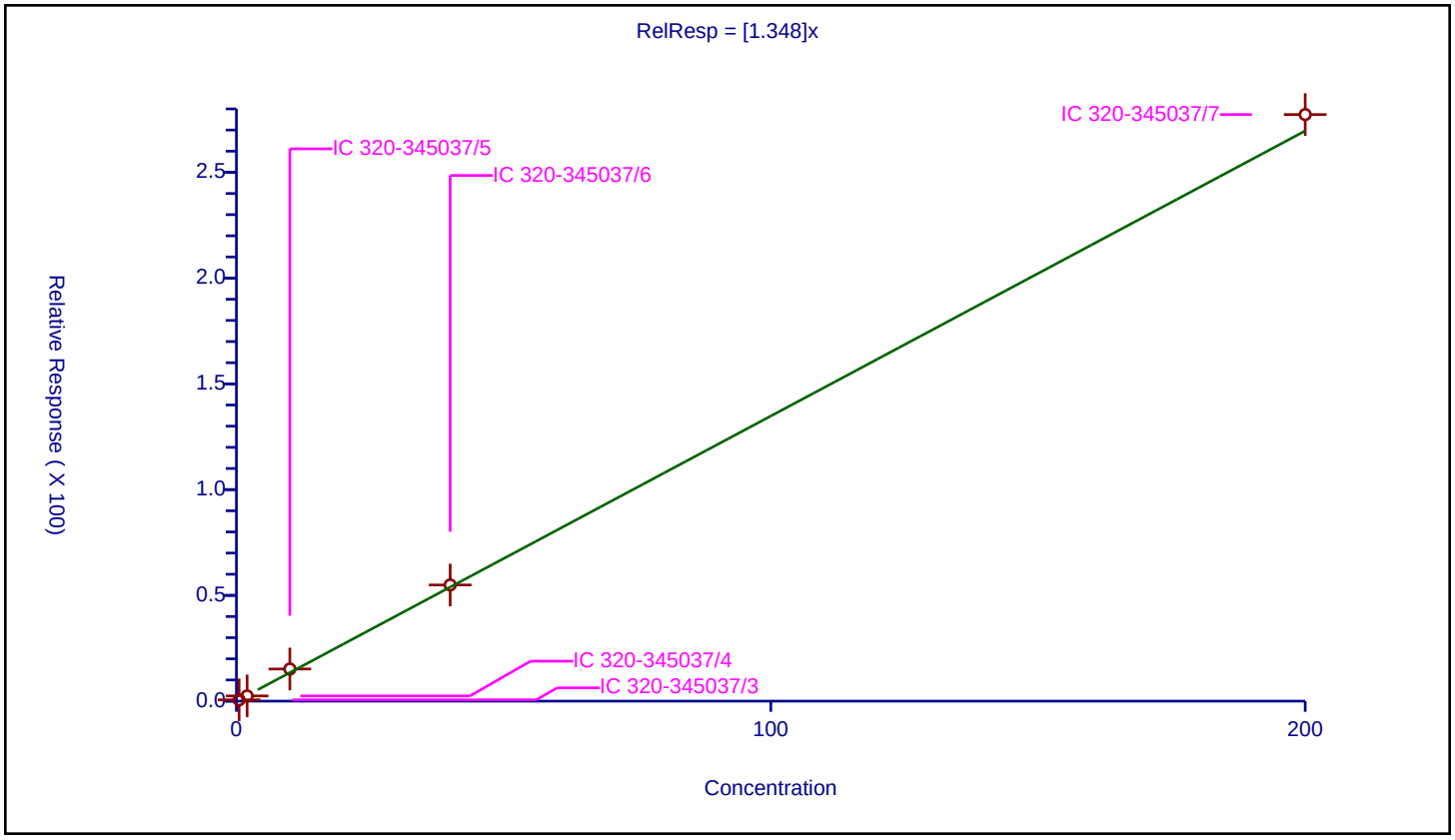
Curve Coefficients

Intercept:	0
Slope:	1.348

Error Coefficients

Standard Error:	270000000
Relative Standard Error:	9.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	0.5	0.614254	100.0	232904111.0	1.228507	Y
2	IC 320-345037/4	2.0	2.465839	100.0	233547342.0	1.23292	Y
3	IC 320-345037/5	10.0	15.189654	100.0	230108476.0	1.518965	Y
4	IC 320-345037/6	40.0	54.916951	100.0	224595364.0	1.372924	Y
5	IC 320-345037/7	200.0	277.319862	100.0	188838327.0	1.386599	Y



Calibration / OCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

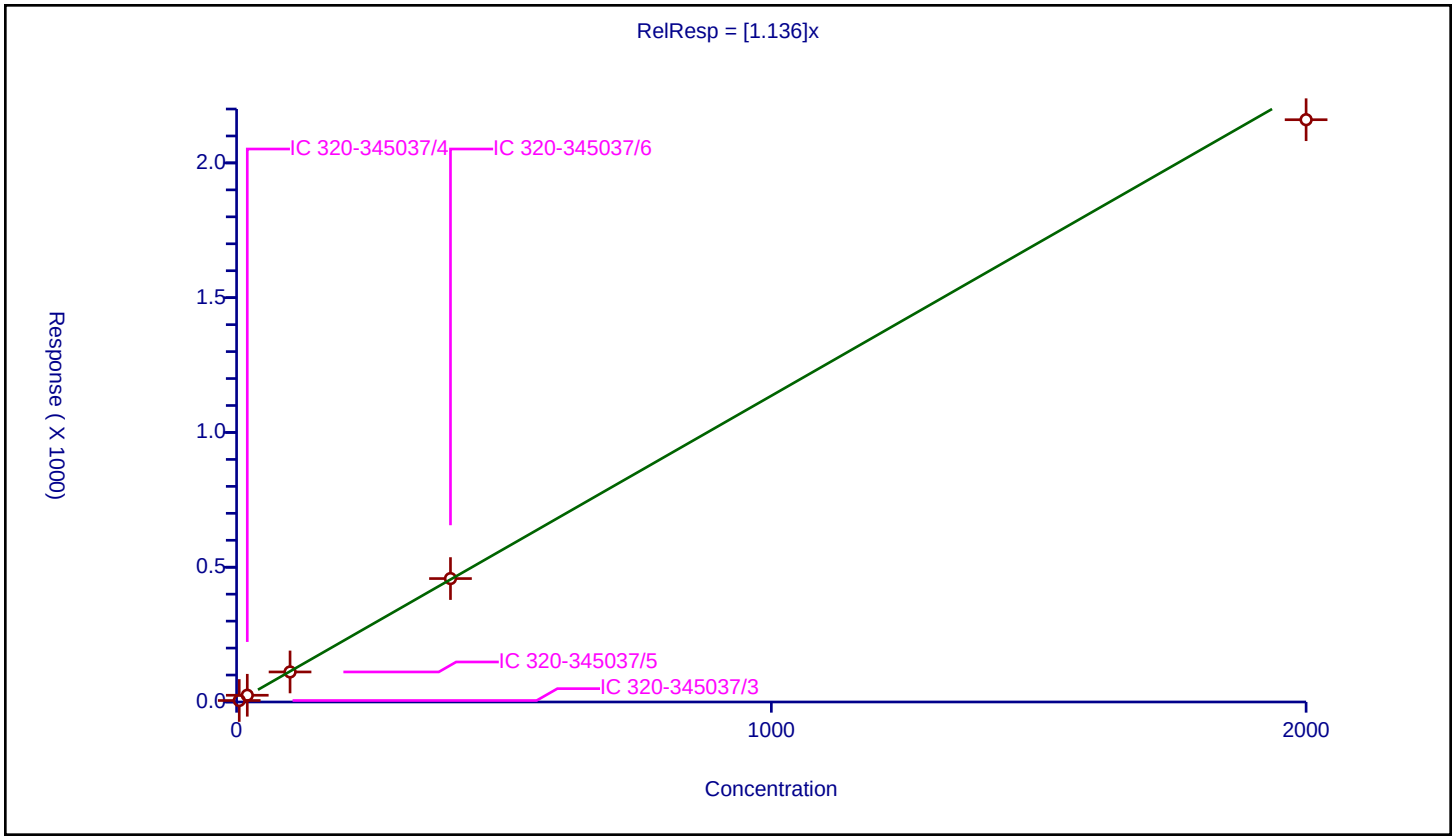
Curve Coefficients

Intercept:	0
Slope:	1.136

Error Coefficients

Standard Error:	1100000000
Relative Standard Error:	6.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	5.0	5.459936	200.0	176245574.0	1.091987	Y
2	IC 320-345037/4	20.0	24.997633	200.0	178956155.0	1.249882	Y
3	IC 320-345037/5	100.0	111.408699	200.0	191409180.0	1.114087	Y
4	IC 320-345037/6	400.0	457.898367	200.0	208300311.0	1.144746	Y
5	IC 320-345037/7	2000.0	2160.355058	200.0	199399104.0	1.080178	Y



Calibration / OCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

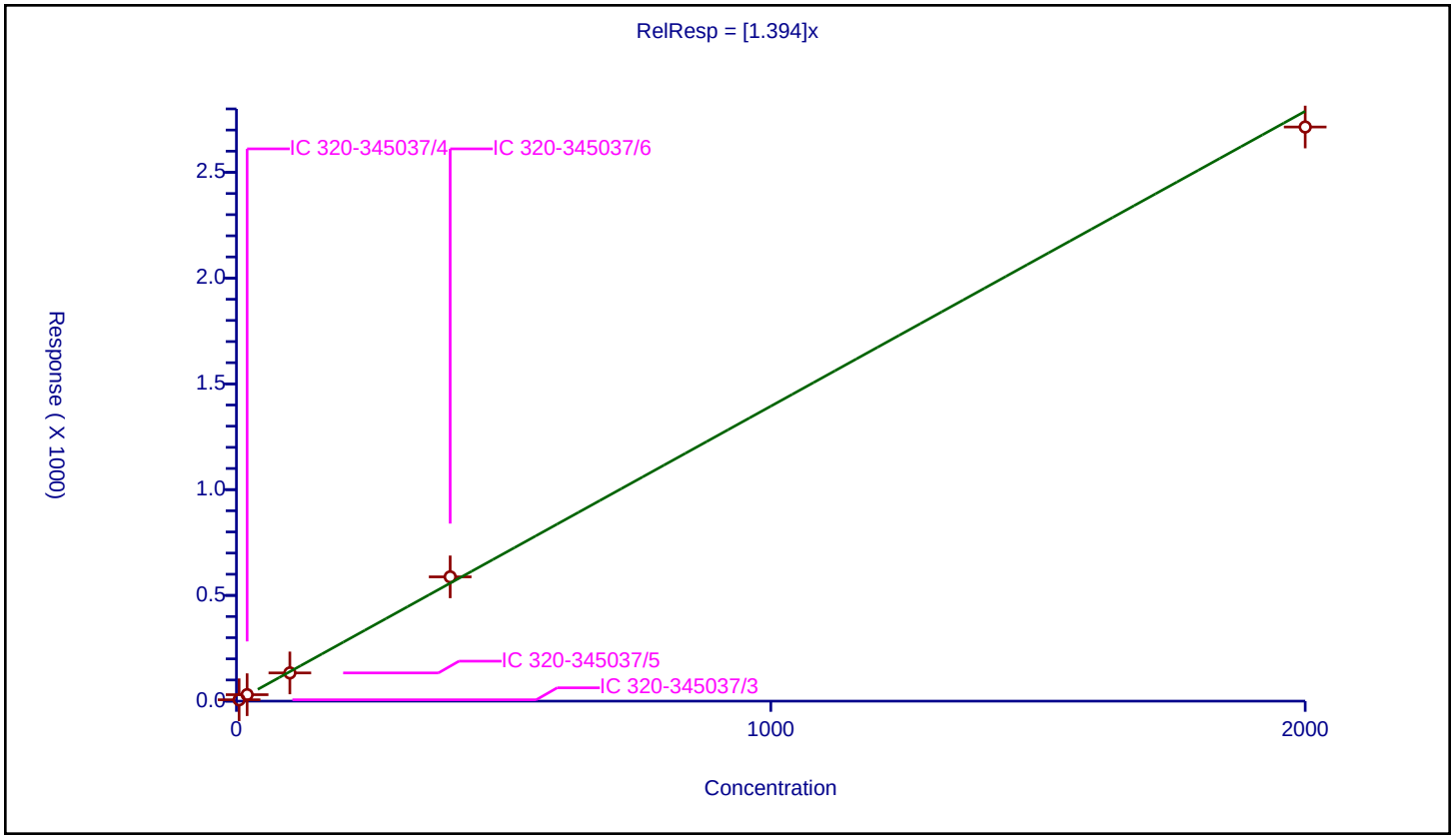
Curve Coefficients

Intercept:	0
Slope:	1.394

Error Coefficients

Standard Error:	1390000000
Relative Standard Error:	7.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-345037/3	5.0	6.441673	200.0	176245574.0	1.288335	Y
2	IC 320-345037/4	20.0	30.477373	200.0	178956155.0	1.523869	Y
3	IC 320-345037/5	100.0	133.41456	200.0	191409180.0	1.334146	Y
4	IC 320-345037/6	400.0	587.558373	200.0	208300311.0	1.468896	Y
5	IC 320-345037/7	2000.0	2714.328315	200.0	199399104.0	1.357164	Y



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID (1): CPS 320-312067/1 Instrument ID (1): 11D2

GC Column (1): DB-225 ID: 0.32(mm) Date Analyzed (1): 08/02/2019 01:35

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	16.64	13

Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d
Injection Date: 02-Aug-2019 01:35:28 Instrument ID: 11D2
Lims ID: CPS
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-225 (0.32 mm)
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

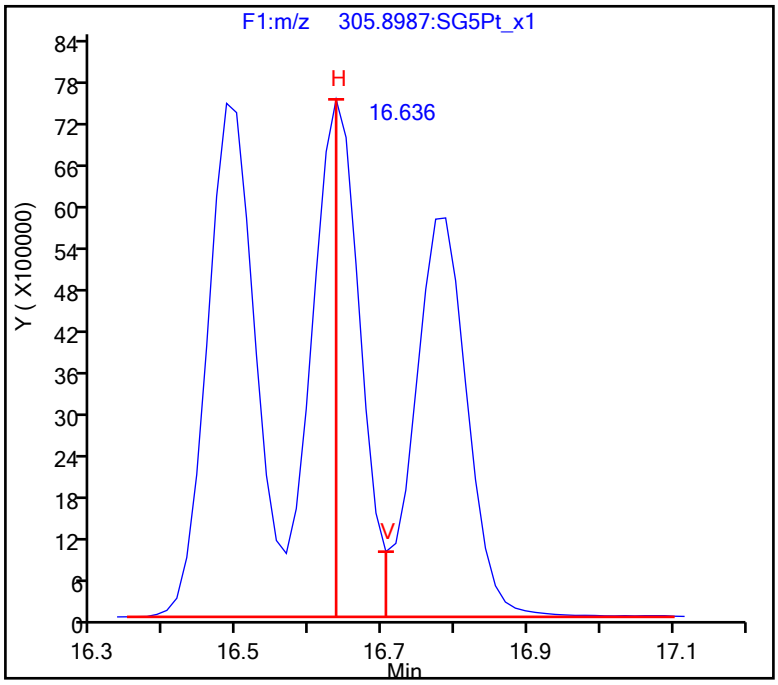
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 944750
H (Peak Height) = 7515097

%R = 13 <= 25
Passed



Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d				
Injection Date:	02-Aug-2019 01:35:28	Instrument ID:	11D2		
Lims ID:	CPS				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		

FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID (1): WDM 320-345037/1 Instrument ID (1): 3D5

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 12/12/2019 09:53

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	17.84	20

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d
Injection Date: 12-Dec-2019 09:53:45 Instrument ID: 3D5
Lims ID: WDM
Client ID:
Operator ID: KSS ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-5 (0.32 mm)
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

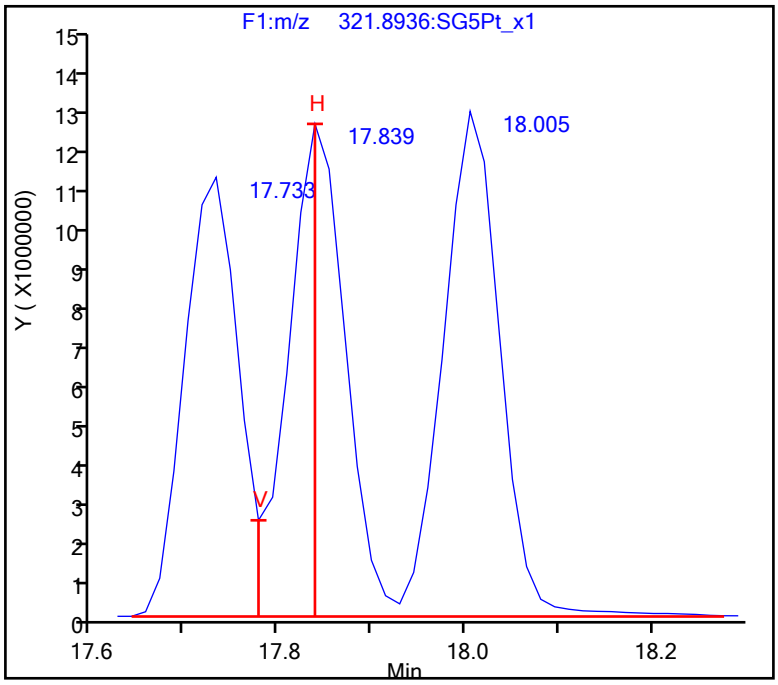
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 2438280
H (Peak Height) = 12393684

%R = 20 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID (1): WDM 320-346752/1 Instrument ID (1): 3D5

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 12/19/2019 11:00

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	17.79	22

Resolution Report

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d
Injection Date: 19-Dec-2019 11:00:56 Instrument ID: 3D5
Lims ID: WDM
Client ID:
Operator ID: AJS ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Column: DB-5 (0.32 mm)
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

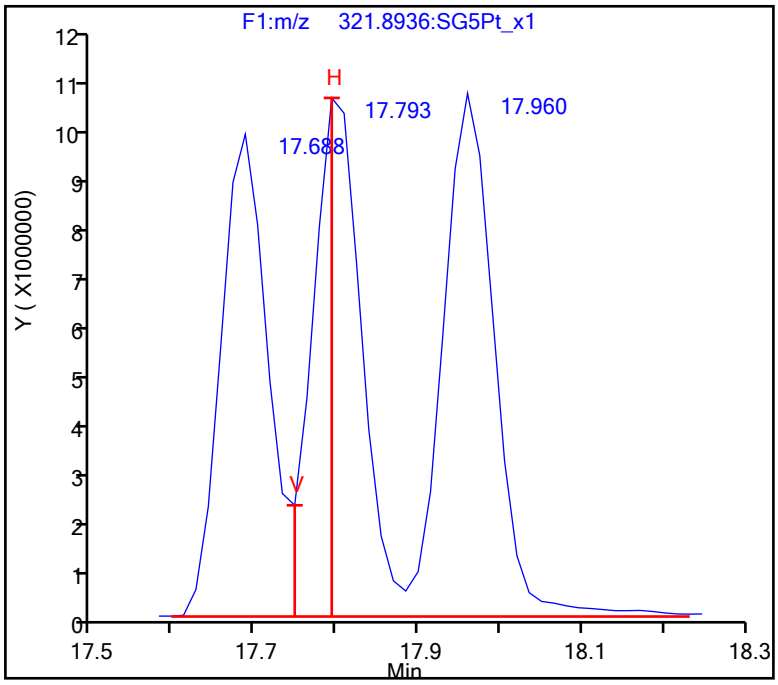
2,3,7,8-TCDD

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 2149341
H (Peak Height) = 9961552

%R = 22 <= 25
Passed



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID (1): CPS 320-346764/1 Instrument ID (1): 11D2

GC Column (1): DB-225 ID: 0.32(mm) Date Analyzed (1): 12/19/2019 16:13

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDF	16.58	20

Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d		
Injection Date:	19-Dec-2019 16:13:15	Instrument ID:	11D2
Lims ID:	CPS		
Client ID:			
Operator ID:		ALS Bottle#:	0 Worklist Smp#: 1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL

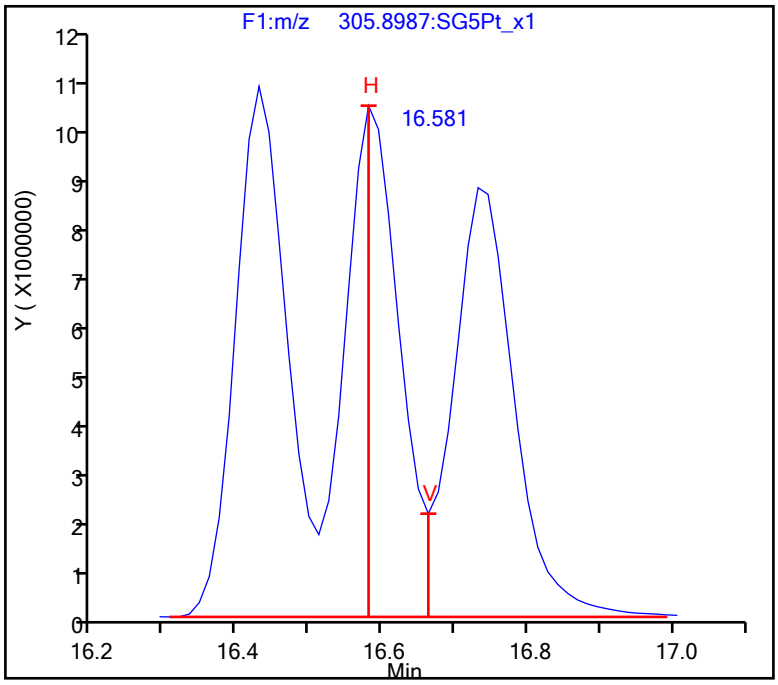
2,3,7,8-TCDF

Isotopic Dilution Dioxin Method

%R = (V / H) * 100

V (Valley Height) = 2077568
H (Peak Height) = 10296165

%R = 20 <= 25
Passed



Resolution Report

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d				
Injection Date:	19-Dec-2019 16:13:15	Instrument ID:	11D2		
Lims ID:	CPS				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	2.0 ul	Column:	DB-225 (0.32 mm)		
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL		

FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID: ICV 320-312067/8 Calibration Date: 08/02/2019 06:03

Instrument ID: 11D2 Calib Start Date: 08/02/2019 02:52

GC Column: DB-225 ID: 0.32(mm) Calib End Date: 08/02/2019 05:25

Lab File ID: 02AU1911D2_008.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.154	1.135		39.4	40.0	98	70-130
2,3,7,8-TCDF	AveID	0.8389	0.7719		36.8	40.0	92	70-130
13C-2,3,7,8-TCDD	Ave	0.9388	0.8798		93.7	100	94	82-121
13C-2,3,7,8-TCDF	Ave	1.338	1.270		94.9	100	95	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.182	1.222		41.4	40.0	103	79-127

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 02-Aug-2019 06:03:41 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist:

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:56:54 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:47:16

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.394	97001968	0.78	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.547	123207943	0.74	1.3379	94.9	94.9	0.6094	0.6094	94.93	
2,3,7,8-TCDF	16.574	38039883	0.78	0.8389	36.8	36.8	0.1052	0.1052	92.01	
D 13C-2,3,7,8-TCDD	15.106	85337698	0.79	0.9388	93.7	93.7	0.3453	0.3453	93.71	
2,3,7,8-TCDD	15.120	38758960	0.76	1.1538	39.4	39.4	0.1979	0.1979	98.41	
$ 37Cl4-2,3,7,8-TCDD	15.120	47417283		1.1816	41.4	41.4	0.1032	0.1032	103	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNIC_00042 Amount Added: 1.00 Units: mL

Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 02-Aug-2019 06:03:41 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV HRDXNIC_00042
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist:

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:56:54 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:47:16

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.394	15.416	-1		42407295	9957761	17234	43085	578		
333.9339	15.394	15.416	-1		54594673	12831179	12314	30785	1042	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.547	16.580	-2	1.075	52595032	11688678	51826	129565	226		
317.9389	16.547	16.580	-2	1.075	70612911	15460441	22495	56237	687	0.74(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.574	16.599	-1	1.002	16681516	3535451	3682	9205	960		
305.8987	16.574	16.599	-1	1.002	21358367	4522824	5899	14747	767	0.78(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.106	15.136	-2	0.981	37657541	9362808	17234	43085	543		
333.9339	15.106	15.136	-2	0.981	47680157	11686095	12314	30785	949	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.120	15.156	-2	1.001	16757833	4095456	8475	21187	483		
321.8936	15.120	15.156	-2	1.001	22001127	5354648	10746	26865	498	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.120	15.158	-2	0.982	47417283	11432123	11111	27777	1029		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

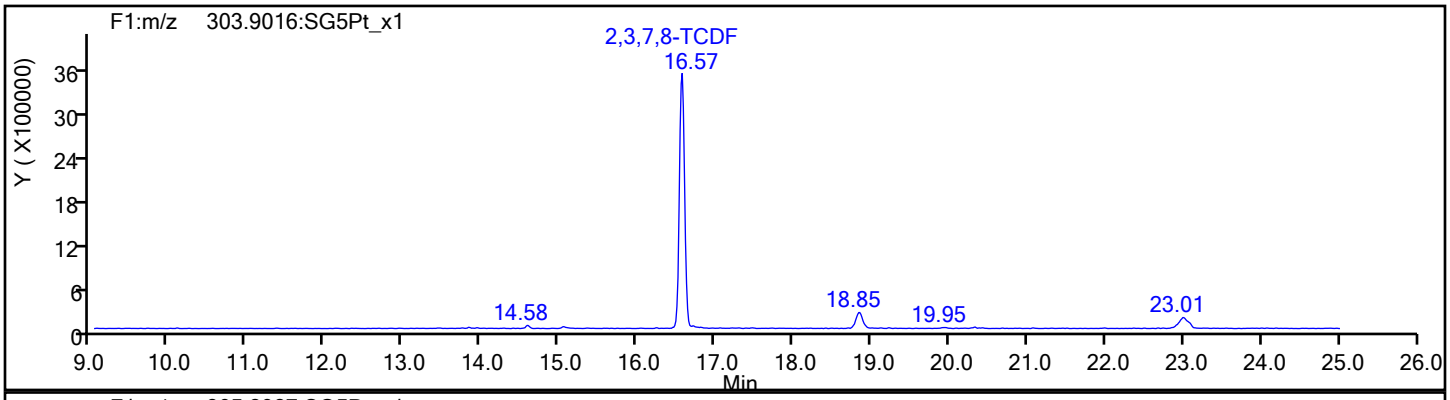
HRDXNIC_00042 Amount Added: 1.00 Units: mL

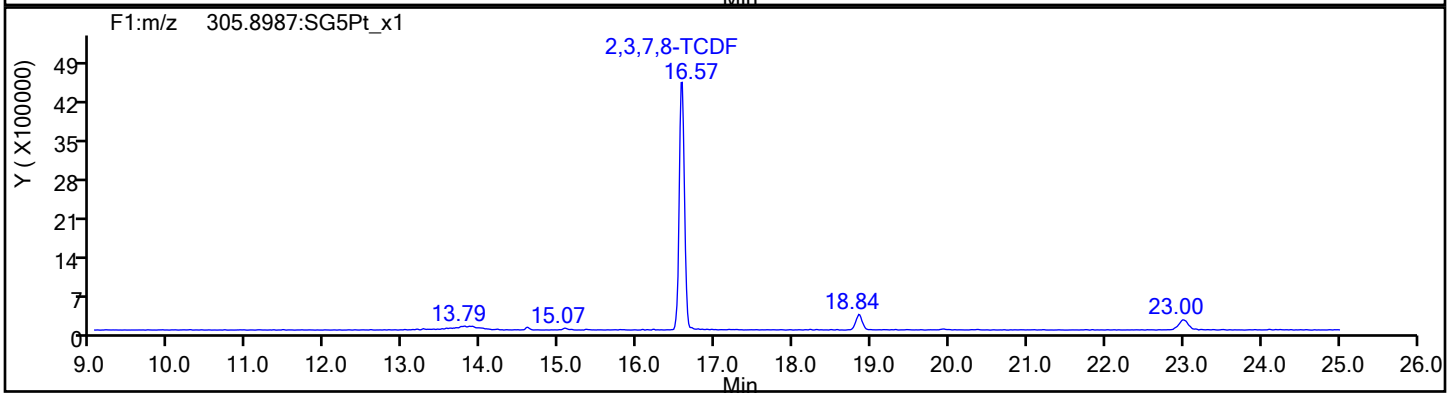
Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

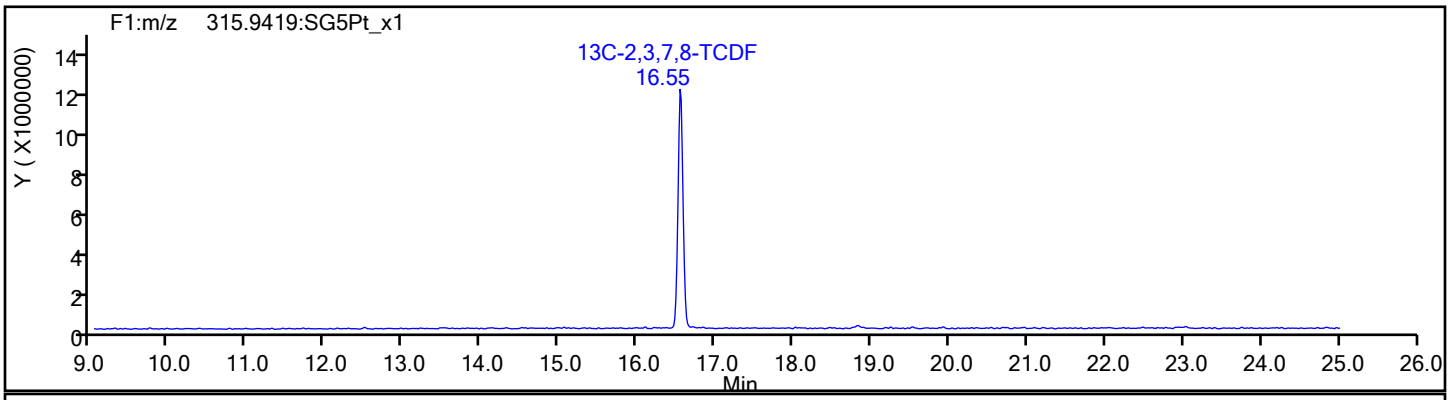
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

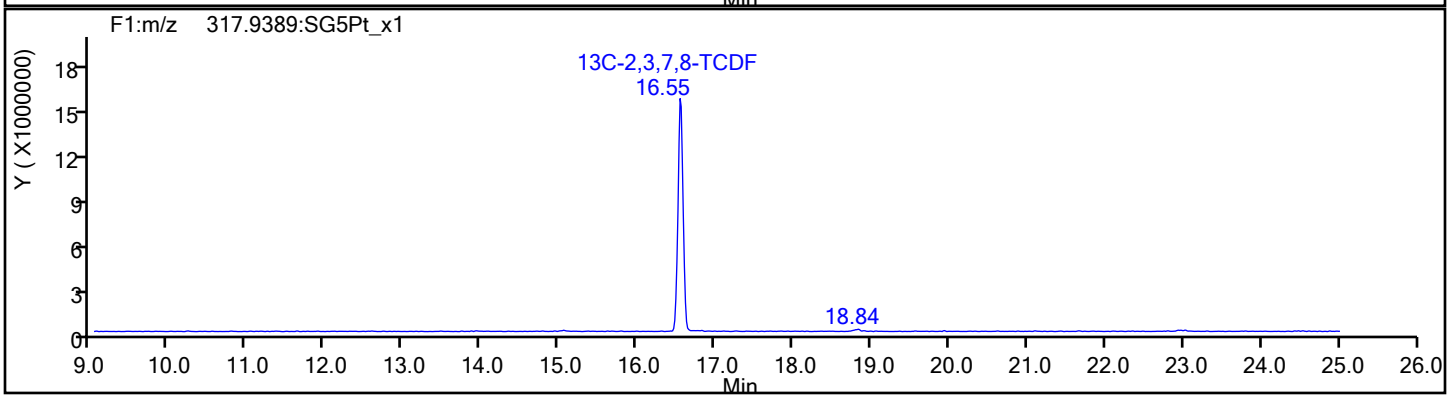
TCDF





TCDF Standards



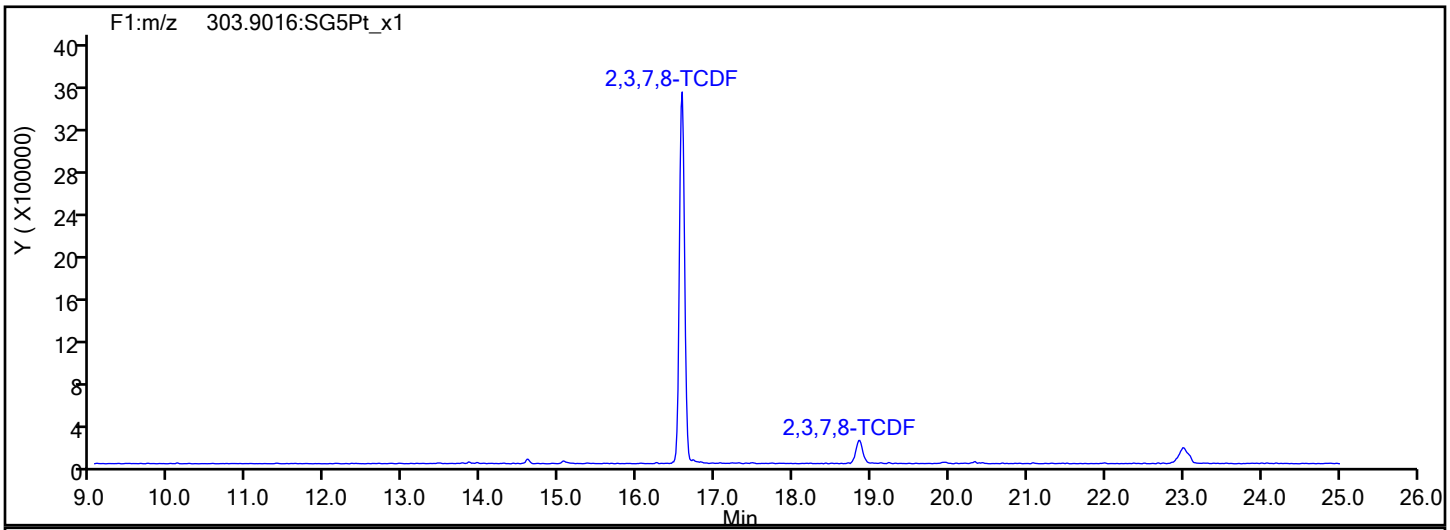


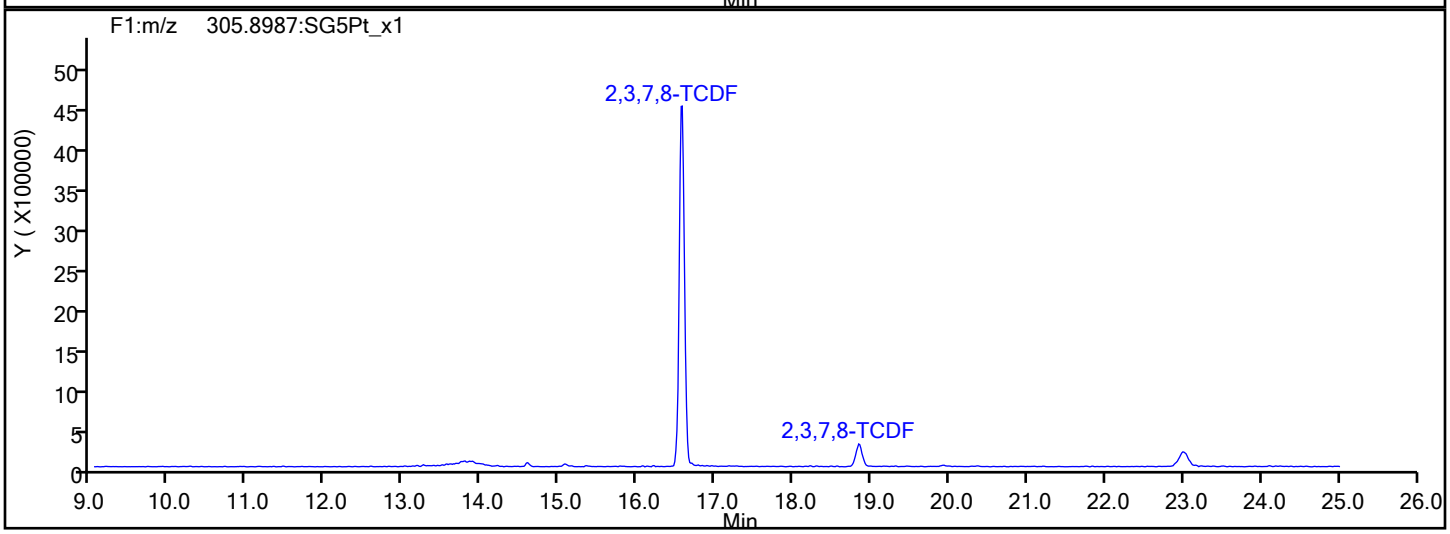
Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

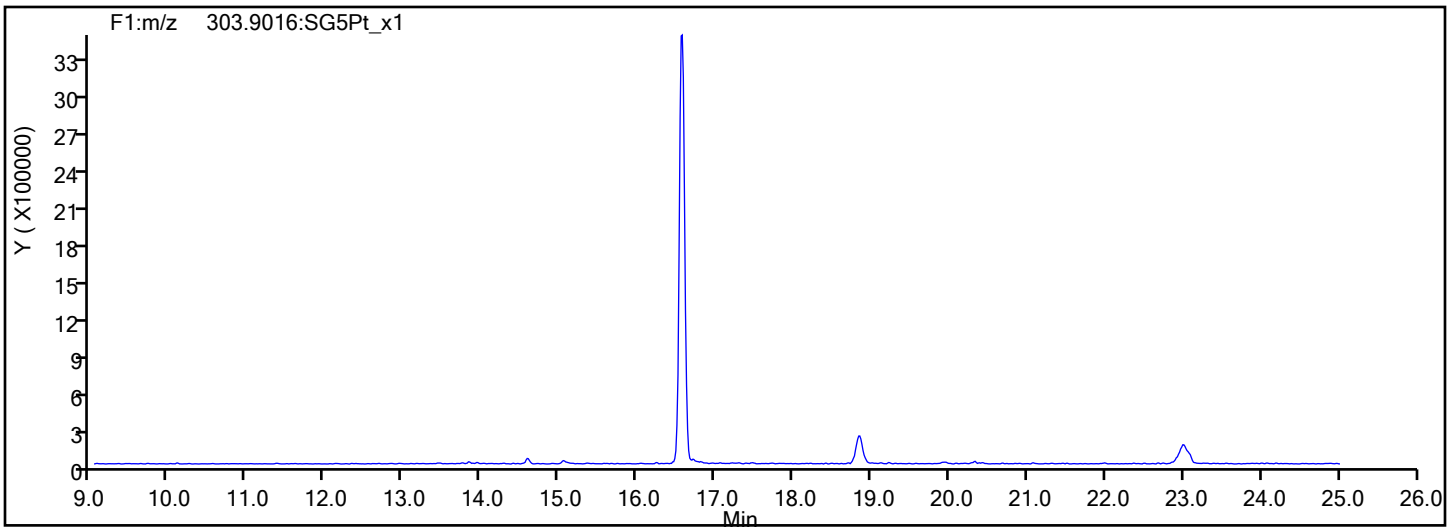
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d

Injection Date: 02-Aug-2019 06:03:41 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

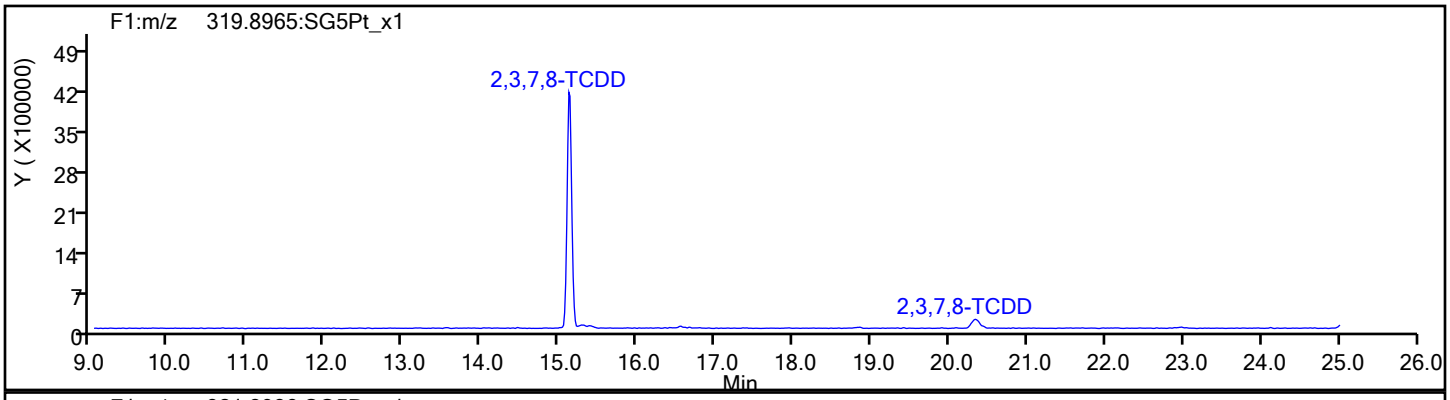
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

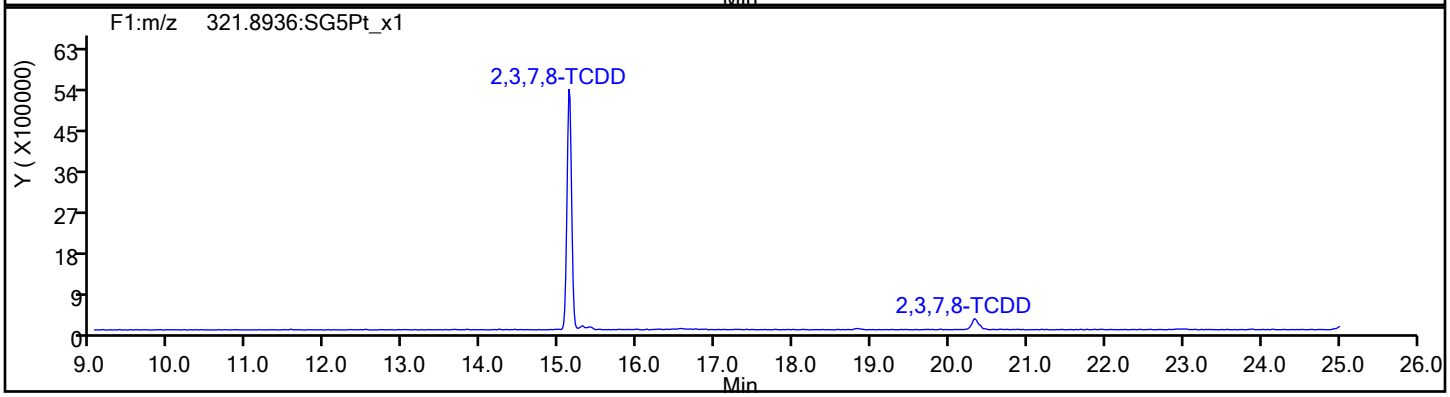
Client ID:

Worklist#: 312067 Sample Line#: 8

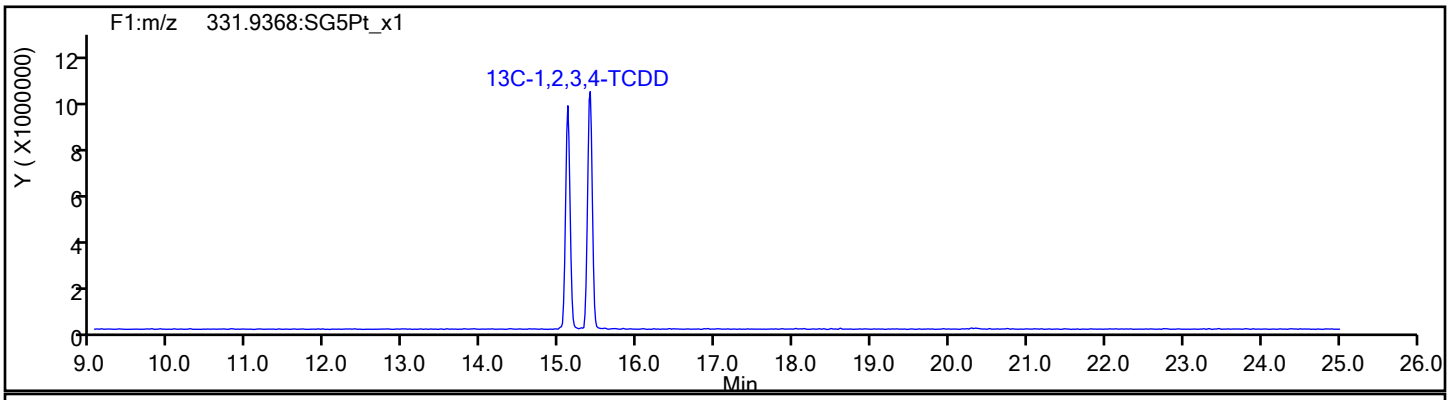
Column Type: DB-225 Column Dia: 0.32 mm

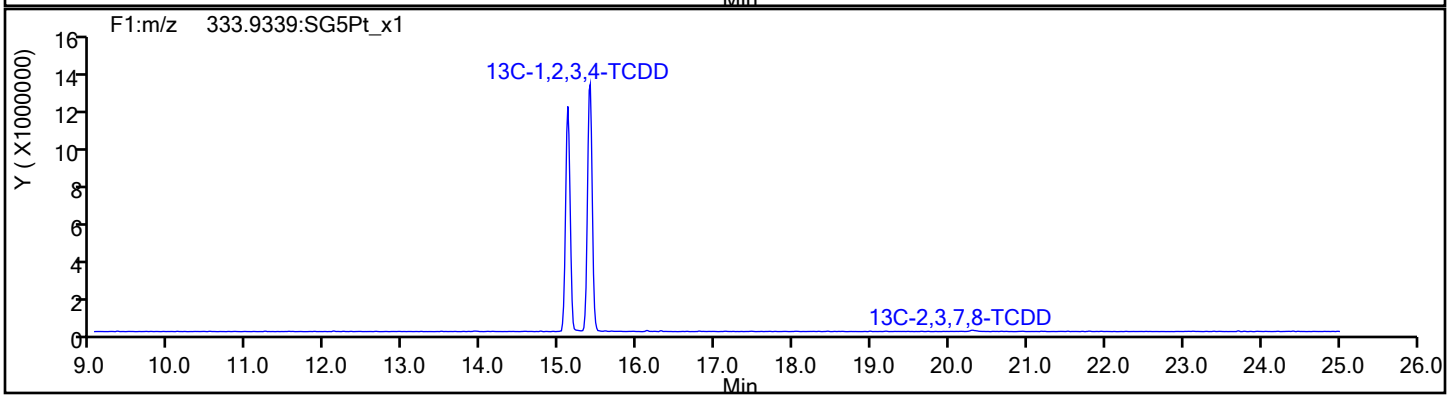
TCDD





TCDD Standards



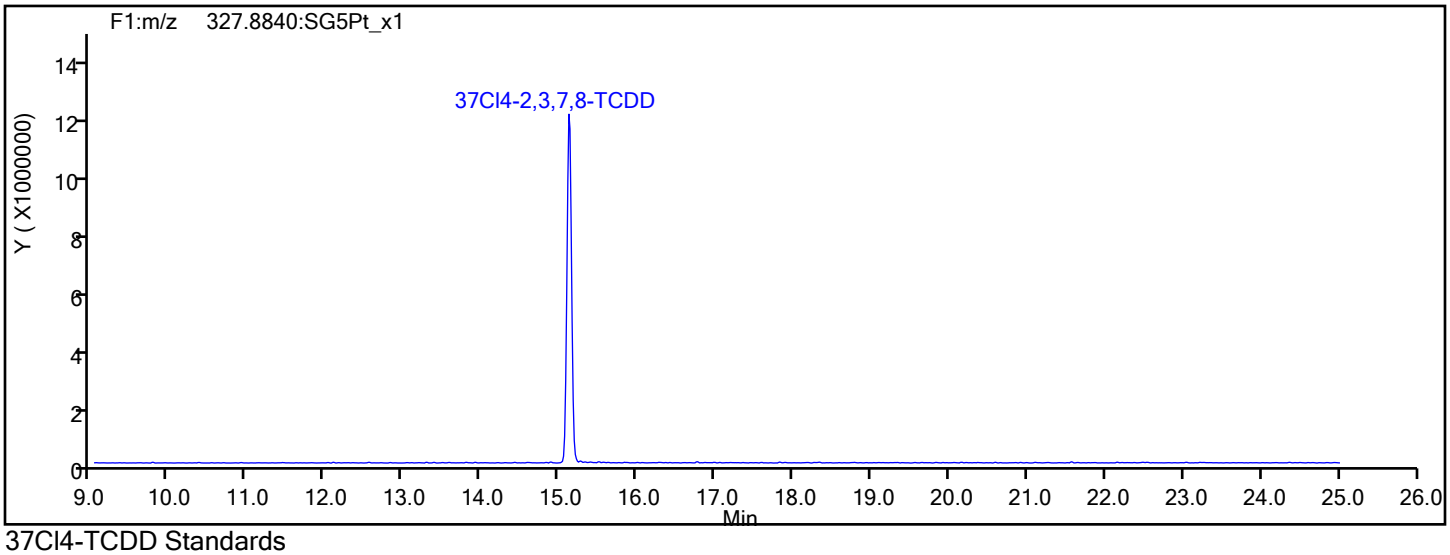


Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

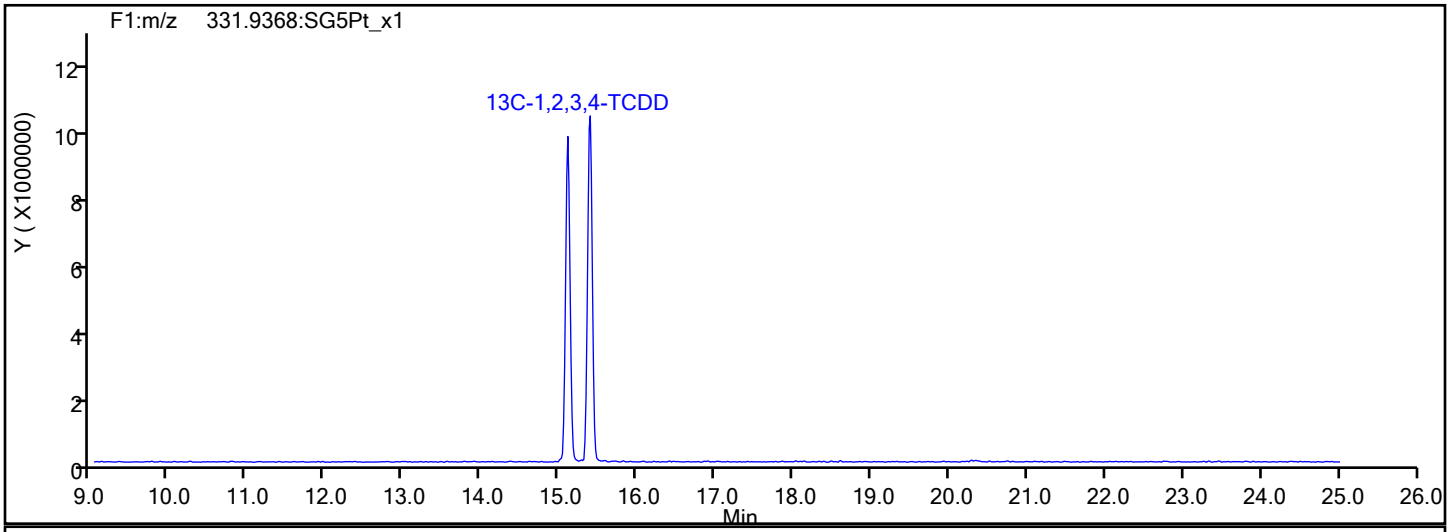
Eurofins TestAmerica, Sacramento

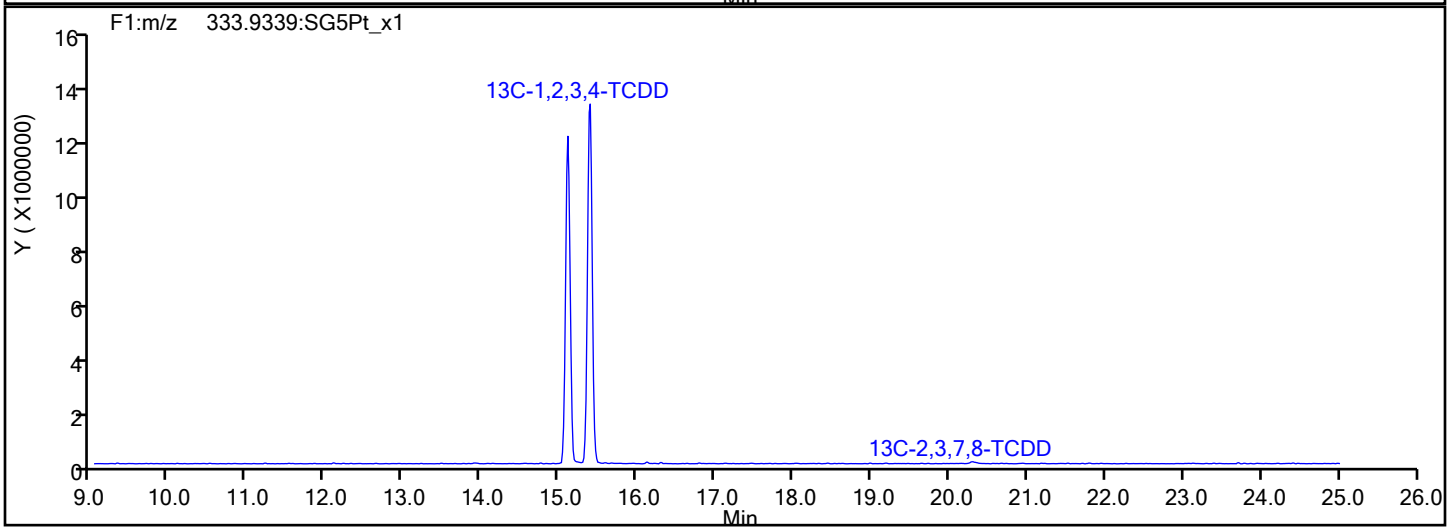
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

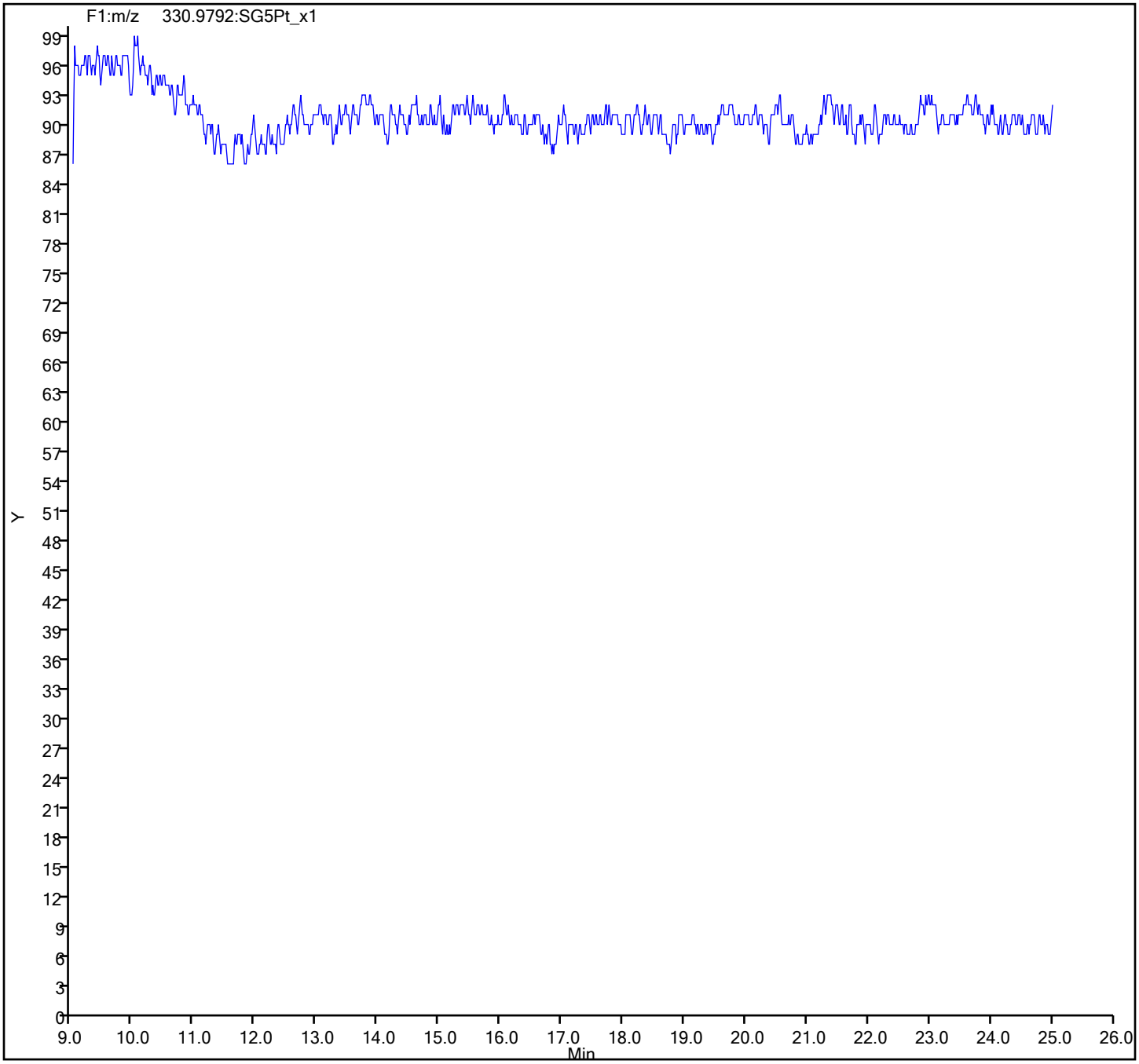




Report Date: 02-Aug-2019 11:57:05 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_008.d		
Injection Date:	02-Aug-2019 06:03:41	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	8
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID: CCV 320-346764/2 Calibration Date: 12/19/2019 16:51

Instrument ID: 11D2 Calib Start Date: 08/02/2019 02:52

GC Column: DB-225 ID: 0.32(mm) Calib End Date: 08/02/2019 05:25

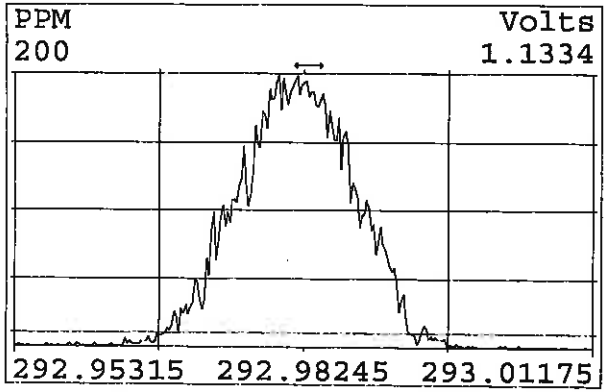
Lab File ID: 19DE19A11D2_002.d Conc. Units: pg/uL

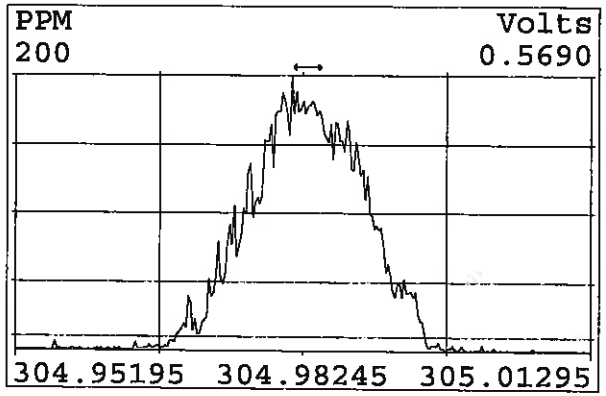
ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDD	AveID	1.154	1.109		9.61	10.0	96	78-129
2,3,7,8-TCDF	AveID	0.8389	0.9595		11.4	10.0	114	84-120
13C-2,3,7,8-TCDD	Ave	0.9388	0.9315		99.2	100	99	82-121
13C-2,3,7,8-TCDF	Ave	1.338	1.467		110	100	110	71-140
37Cl4-2,3,7,8-TCDD	Ave	1.182	1.449		12.3	10.0	123	79-127

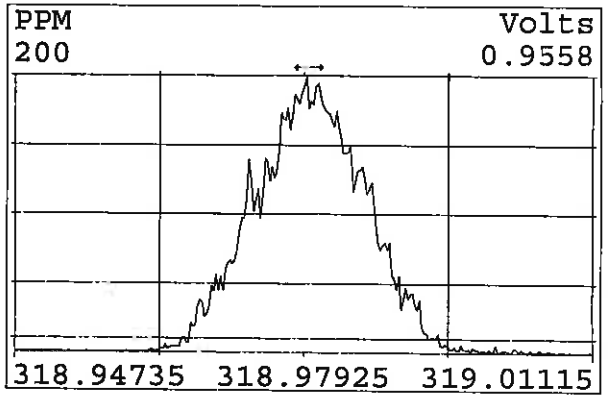
Data file	Smp	Work Order	Sample ID	FV-uL	Method/Matrix	Box	Size	U
19DE19A11D2	1	CPS 121919	CPS HRDXNCP_00040				1.00000	
19DE19A11D2	2	CCV 121919	CCV CS-4 HRDXNL4_00086				1.00000	
19DE19A11D2	3	SB 121919	SB Solvent Blank C-14				1.00000	
19DE19A11D2	4	320-344459	MB 320-344459/1-A	40	8290/Water	63	2.00000	L
19DE19A11D2	5	320-344459	320-55518-A-14-A MDLV 24	40	8290/Water		2.00000	L
19DE19A11D2	6	320-344459	320-55518-A-15-A MDLV 25	40	8290/Water		2.00000	L
19DE19A11D2	7	320-344459	320-55518-A-16-A MDLV 26	40	8290/Water		2.00000	L
19DE19A11D2	8	320-344942	320-56953-A-2-A	20	1613B/Solid	D119	10.00000	g
19DE19A11D2	9	320-344942	320-56953-A-1-A	20	1613B/Solid		10.00000	g
19DE19A11D2	10	320-344942	320-56953-A-5-A	20	1613B/Solid		10.00000	g
19DE19A11D2	11	320-344942	320-56953-A-6-A	20	1613B/Solid		10.00000	g
19DE19A11D2	12	320-344942	320-56953-A-7-A	20	1613B/Solid		10.00000	g
19DE19A11D2	13	320-344942	320-56953-A-8-A	20	1613B/Solid		10.00000	g
19DE19A11D2	14	SB 121919A	SB Solvent Blank C-14				1.00000	
19DE19A11D2	15	CCV 121919A	CCV CS-4 HRDXNL4_00086				1.00000	
19DE19A11D2	16						1.00000	
19DE19A11D2	17						1.00000	
19DE19A11D2	18						1.00000	
19DE19A11D2	19						1.00000	
19DE19A11D2	20						1.00000	
19DE19A11D2	21		AJS, ALM 12-19-19				1.00000	
19DE19A11D2	22						1.00000	

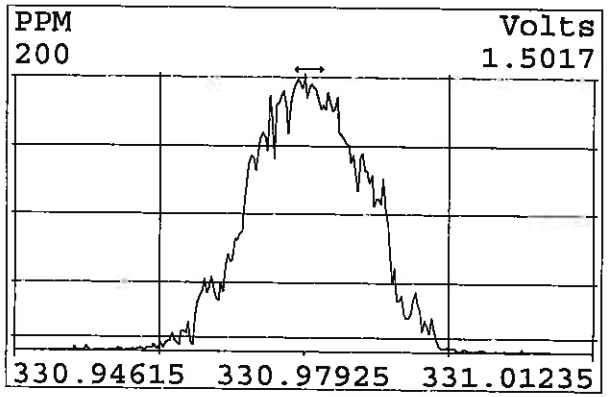
logfile checked
12-20-19 ALM

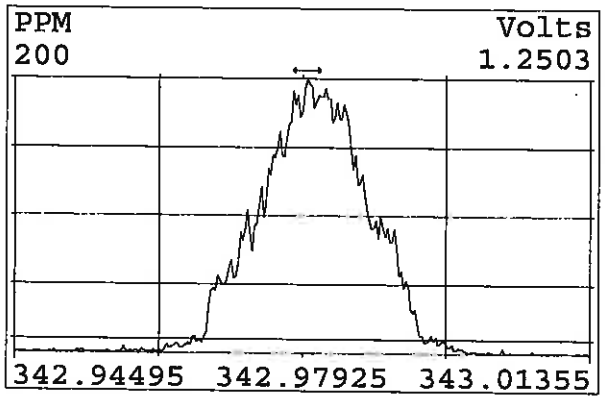
Peak Locate Examination:19-DEC-2019:16:12 File:19DE19A11D2
Experiment:DB225RES Function:1 Reference:PFK

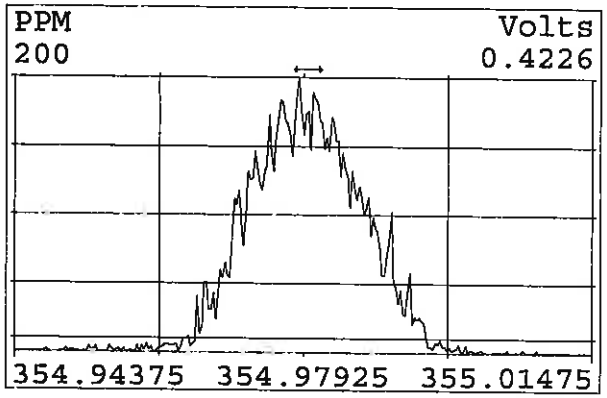


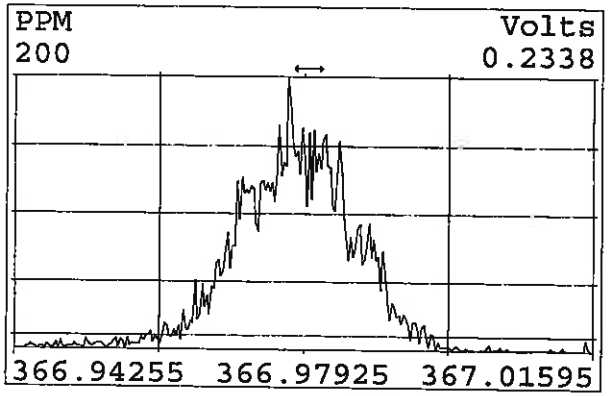


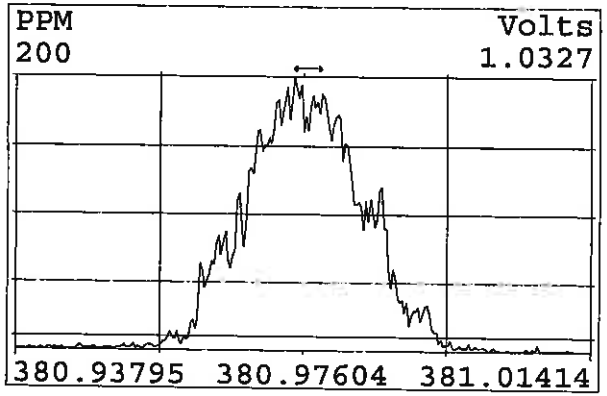




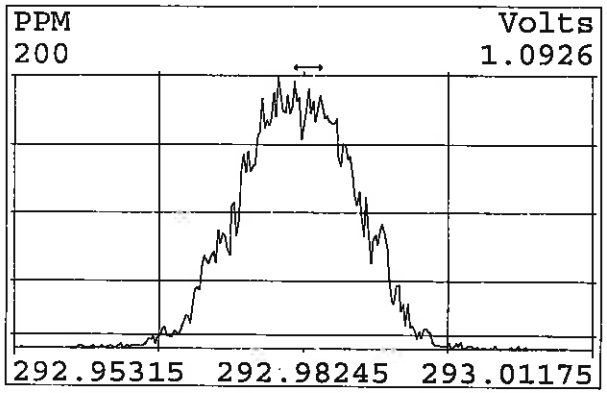


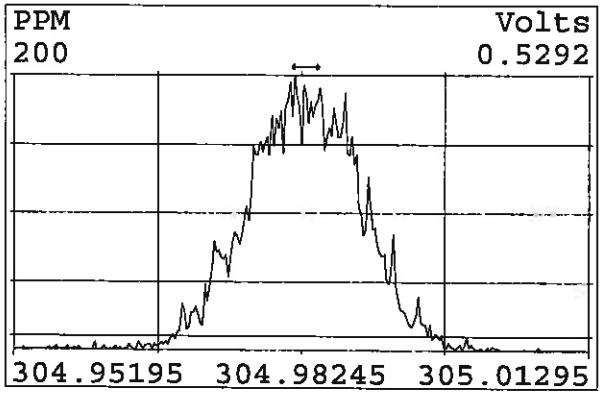


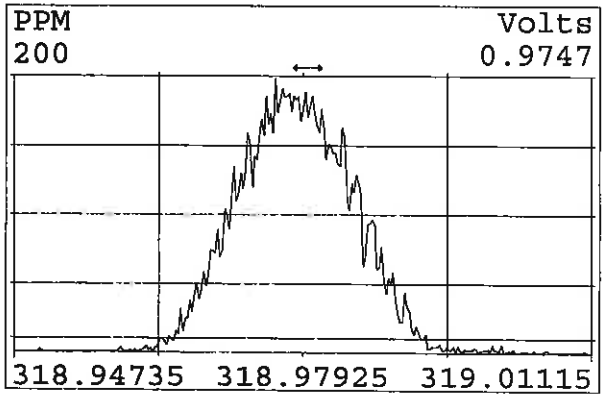


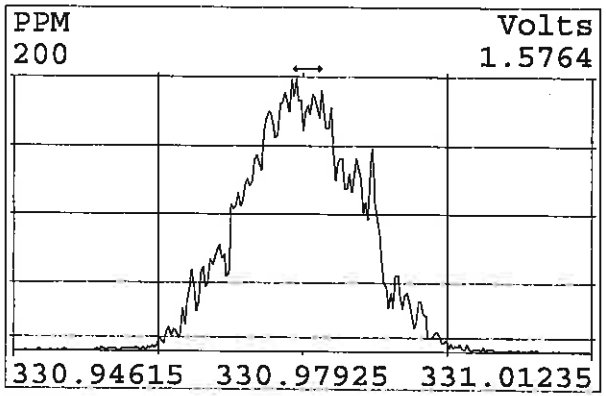


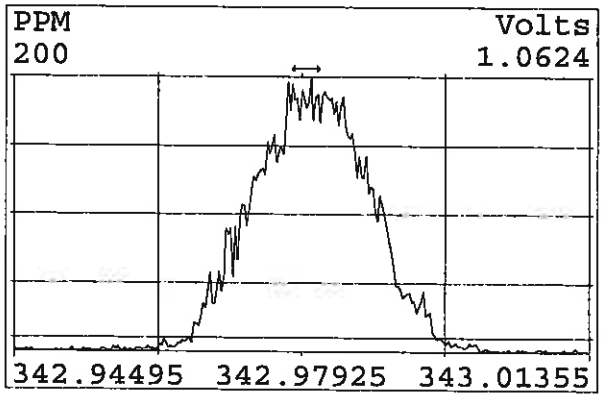
Peak Locate Examination:20-DEC-2019:02:02 File:RESCHK19DE19A11D2
Experiment:DB225RES Function:1 Reference:PFK

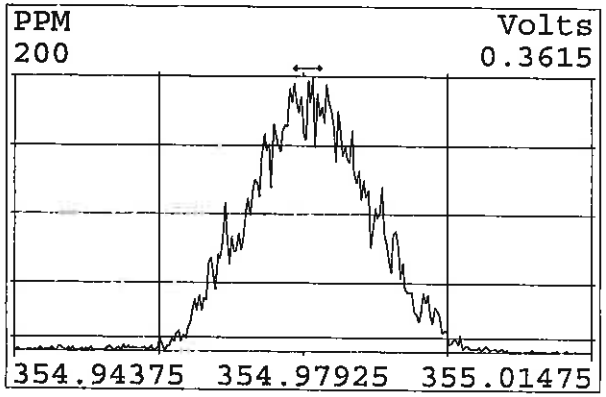


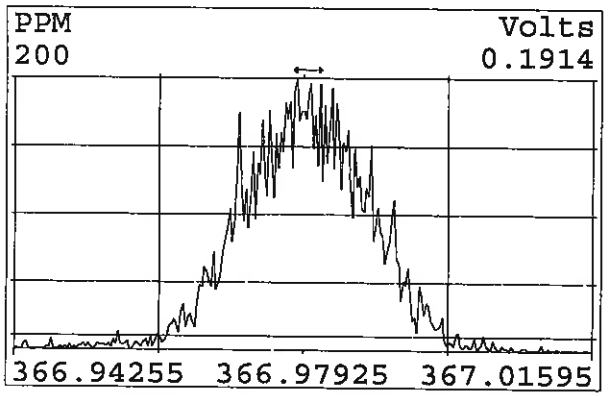


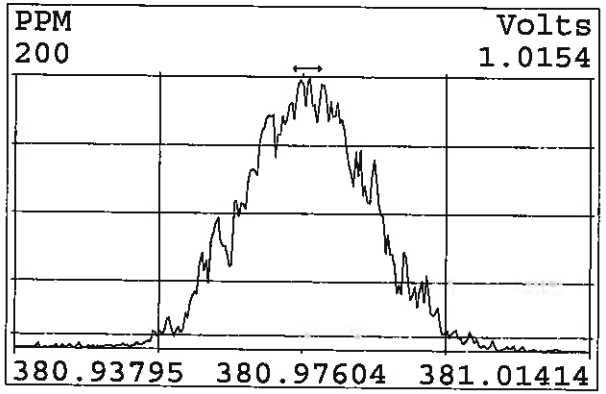












Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 19-Dec-2019 16:51:33 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:38:24 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:32:46

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	15.380	160249532	0.76	1.1E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	16.560	235072809	0.80	1.3379	109.6	109.6	0.3087	0.3087	110	
2,3,7,8-TCDF	16.587	22554934	0.75	0.8389	11.4	11.4	0.0403	0.0403	114	
D 13C-2,3,7,8-TCDD	15.133	149269646	0.77	0.9388	99.2	99.2	0.1882	0.1882	99.22	
2,3,7,8-TCDD	15.147	16551512	0.78	1.1538	9.610	9.610	0.0585	0.0585	96.10	
$ 37Cl4-2,3,7,8-TCDD	15.147	23223580		1.1816	12.3	12.3	0.0426	0.0426	123	
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNL4_00086 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 19-Dec-2019 16:51:33 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV CS-4 HRDXNL4_00086
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2
Sublist: chrom-DXN_DB225_11D2*sub1

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:38:24 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:32:46

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	15.380	15.380	0		69191388	14662624	16853	42132	870		
333.9339	15.380	15.380	0		91058144	19176959	7059	17647	2717	0.76(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	16.560	16.560	0	1.077	104396501	19356058	35644	89110	543		
317.9389	16.560	16.560	0	1.077	130676308	24472749	20271	50677	1207	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.587	16.587	0	1.002	9694758	1836979	2534	6335	725		
305.8987	16.587	16.587	0	1.002	12860176	2468767	3395	8487	727	0.75(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.133	15.133	0	0.984	64803590	13623844	16853	42132	808		
333.9339	15.119	15.133	-1	0.983	84466056	17965064	7059	17647	2545	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.147	15.147	0	1.001	7234284	1524444	4982	12455	306		
321.8936	15.147	15.147	0	1.001	9317228	1972780	3545	8862	556	0.78(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8840	15.147	15.147	0	0.985	23223580	4880955	6809	17022	717		
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

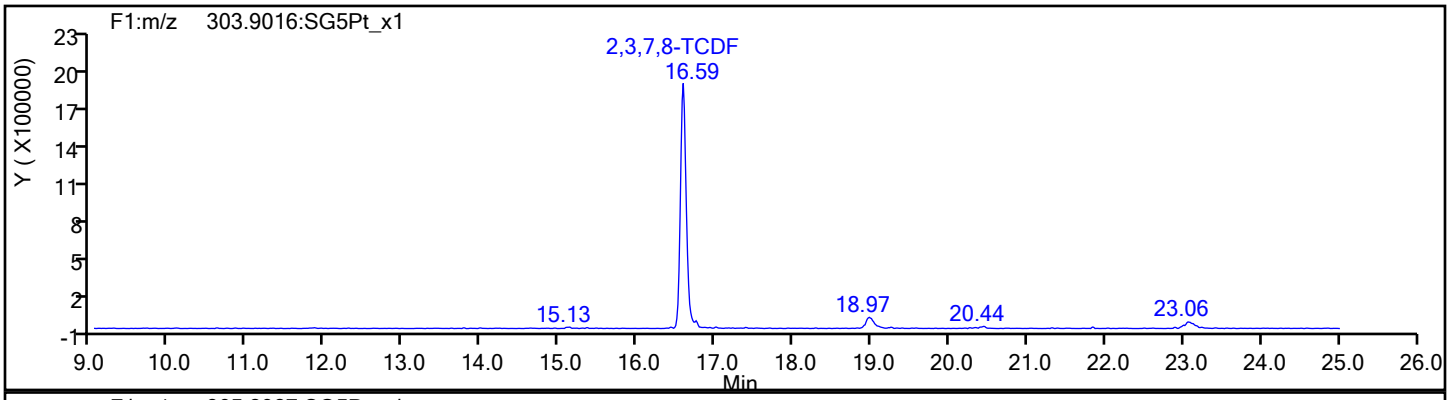
HRDXNL4_00086 Amount Added: 2.00 Units: uL

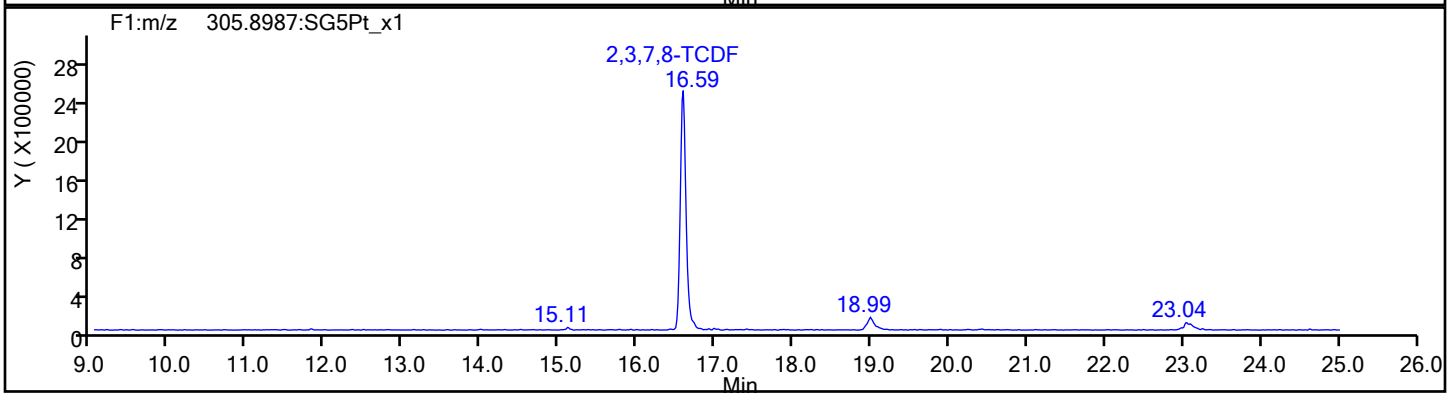
Report Date: 20-Dec-2019 14:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

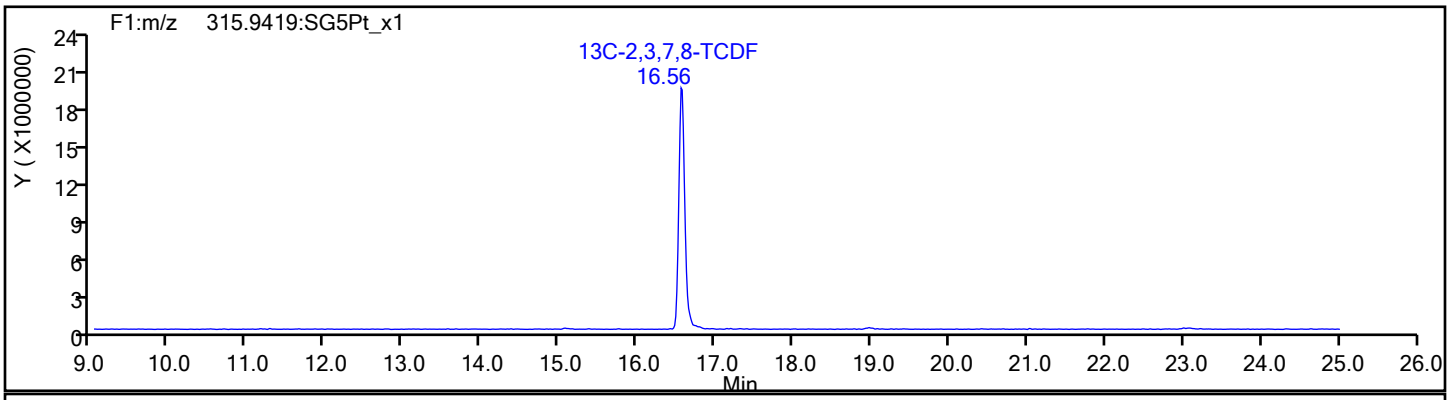
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d		
Injection Date:	19-Dec-2019 16:51:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

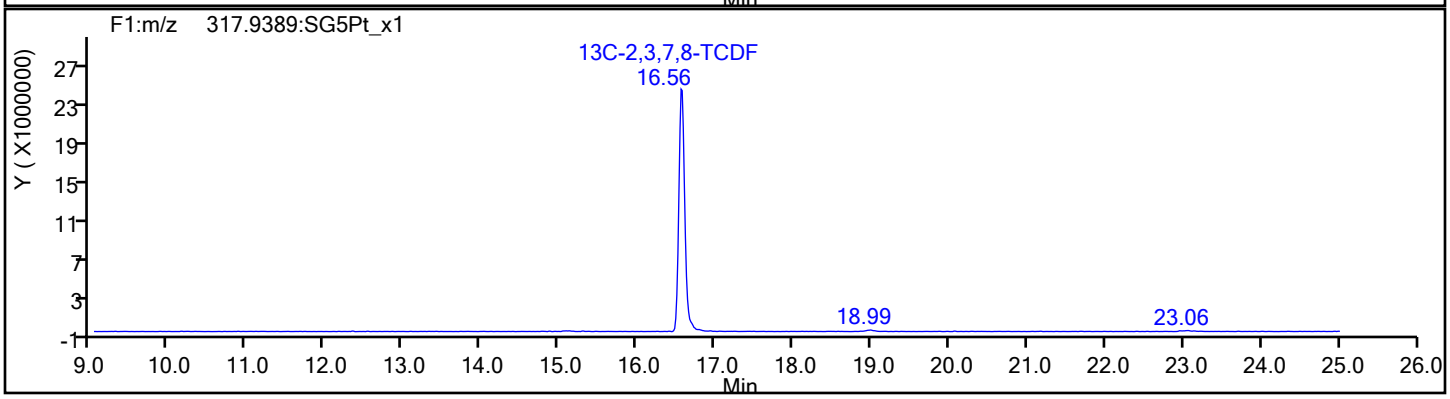
TCDF





TCDF Standards



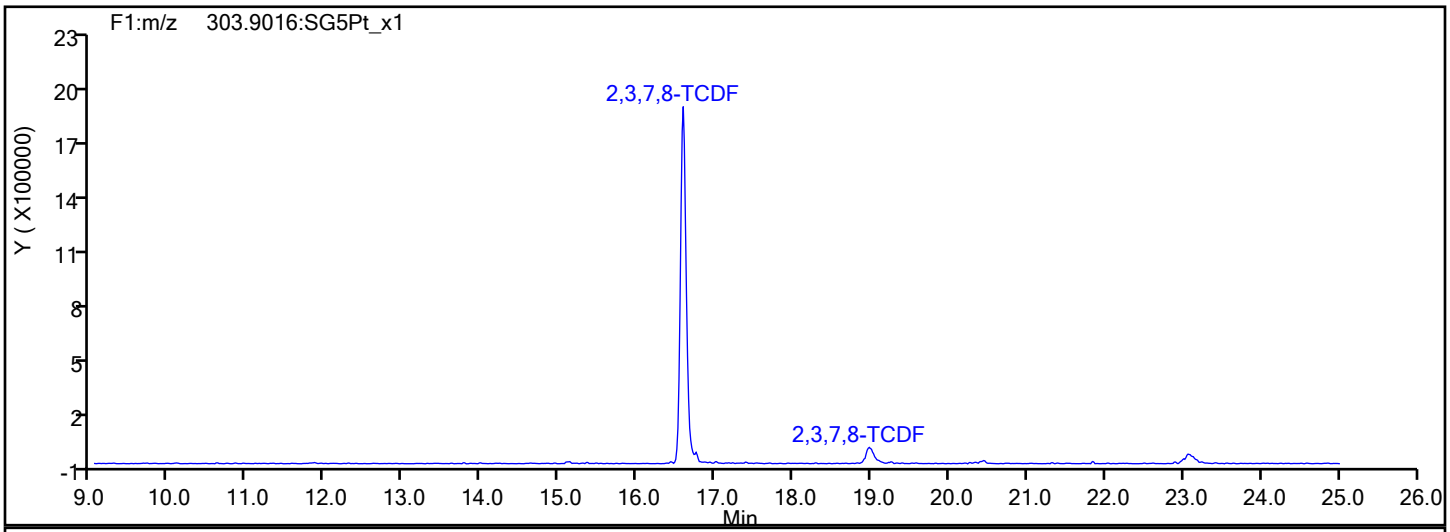


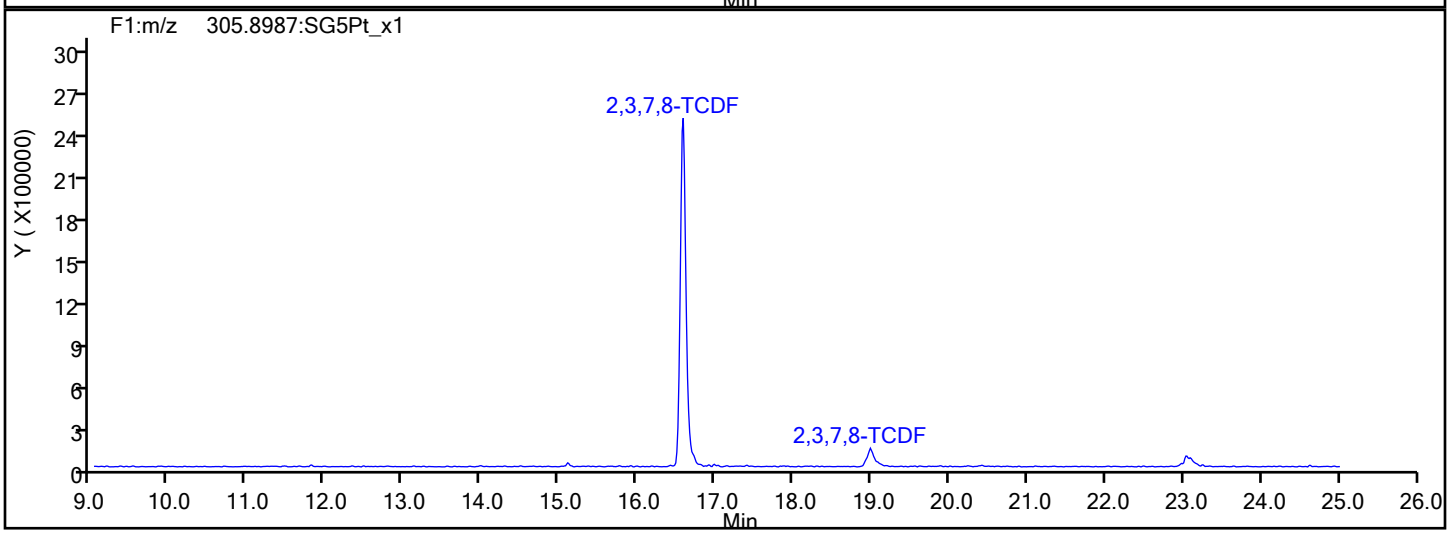
Report Date: 20-Dec-2019 14:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

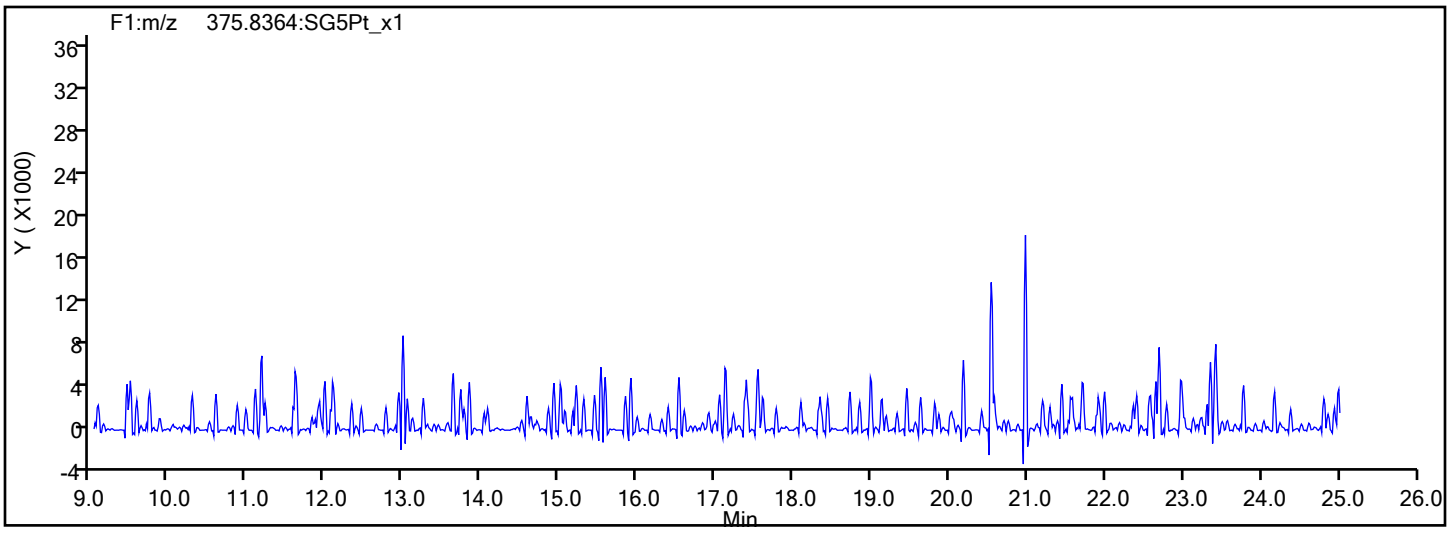
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d		
Injection Date:	19-Dec-2019 16:51:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 20-Dec-2019 14:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d

Injection Date: 19-Dec-2019 16:51:33 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

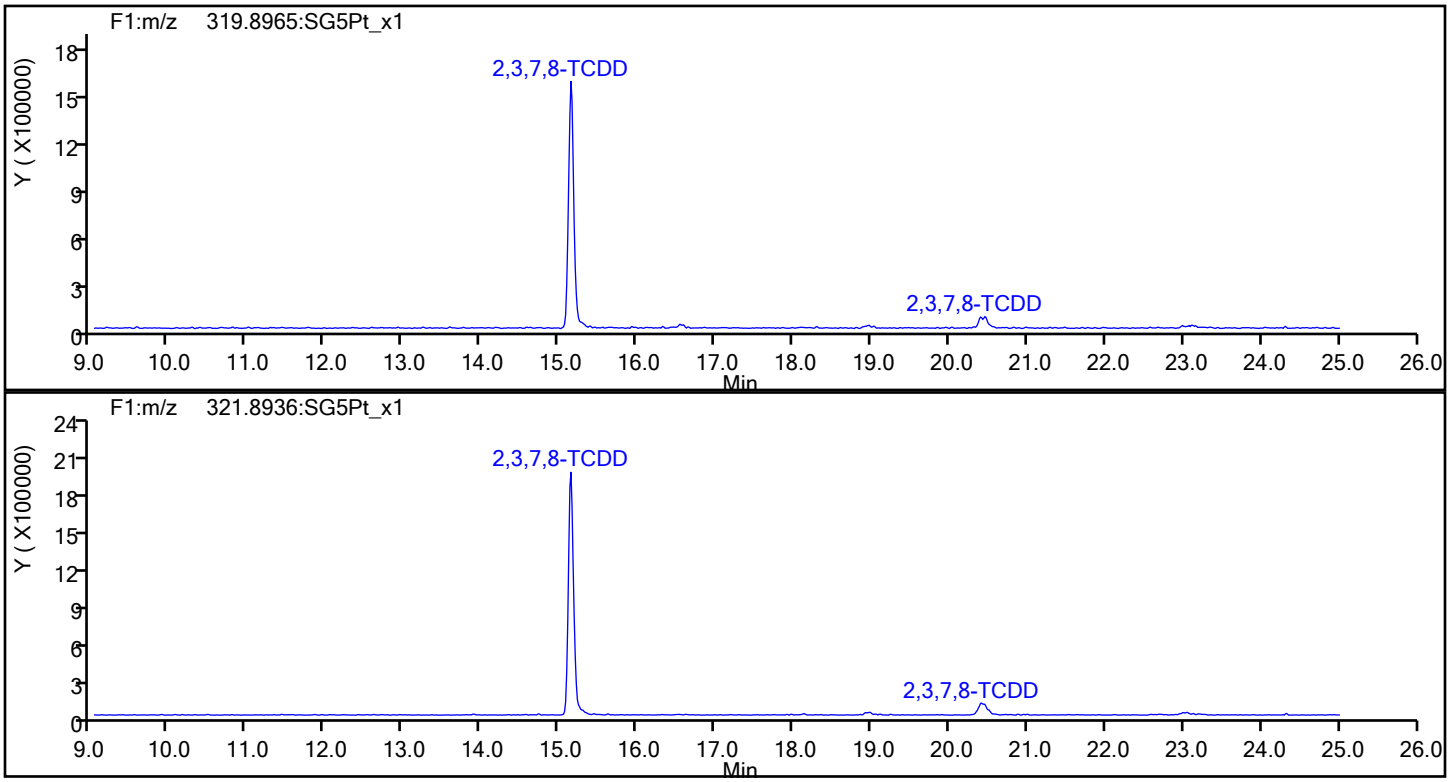
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

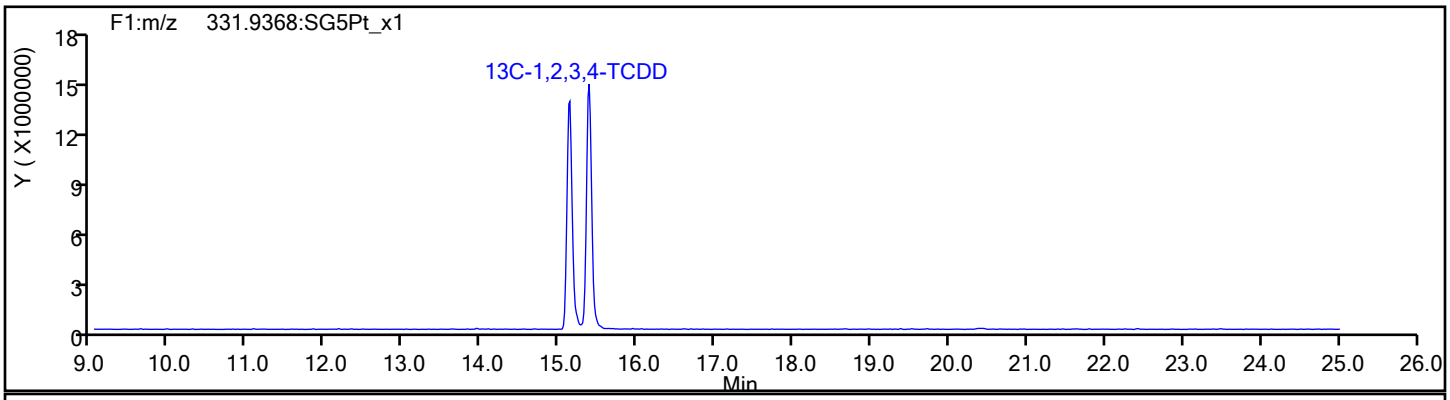
Worklist#: 346764 Sample Line#: 2

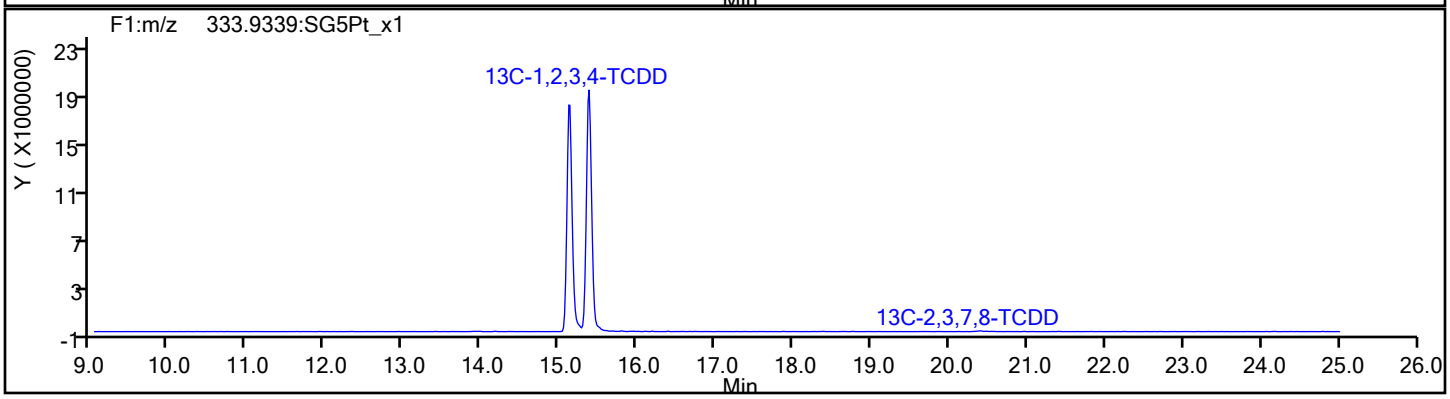
Column Type: DB-225 Column Dia: 0.32 mm

TCDD



TCDD Standards



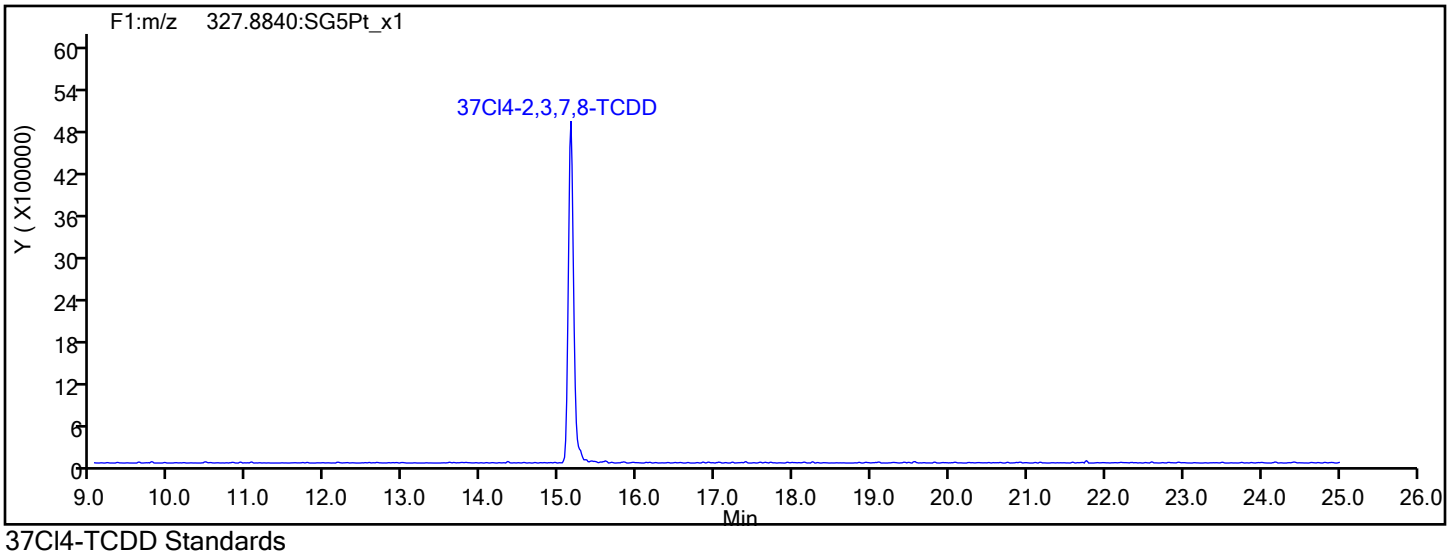


Report Date: 20-Dec-2019 14:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

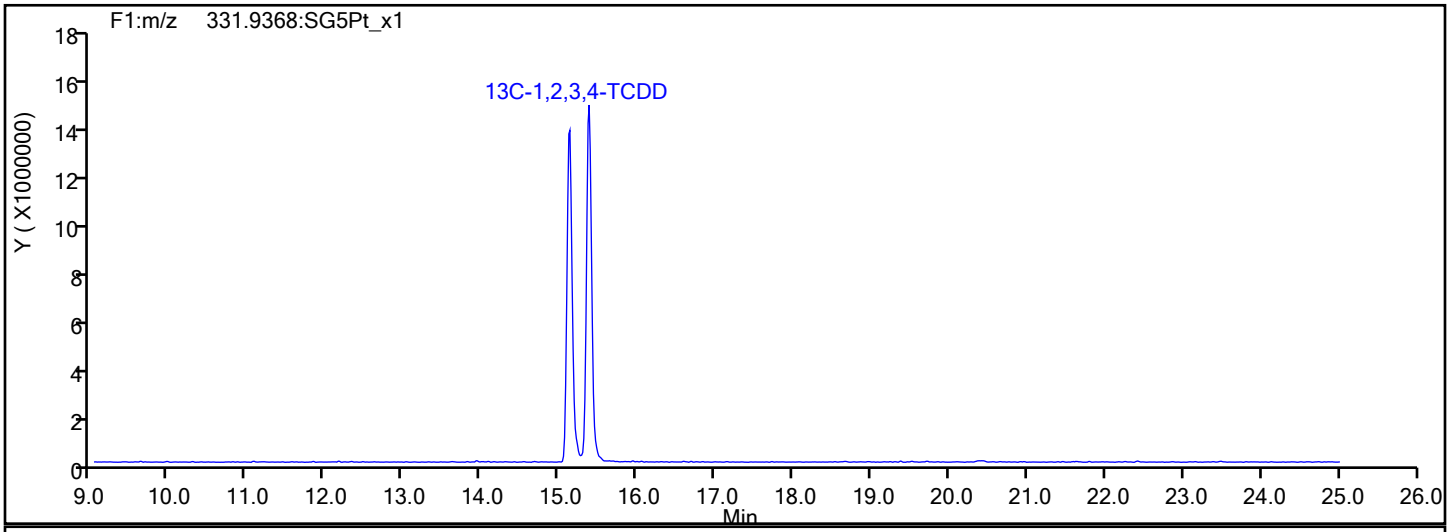
Eurofins TestAmerica, Sacramento

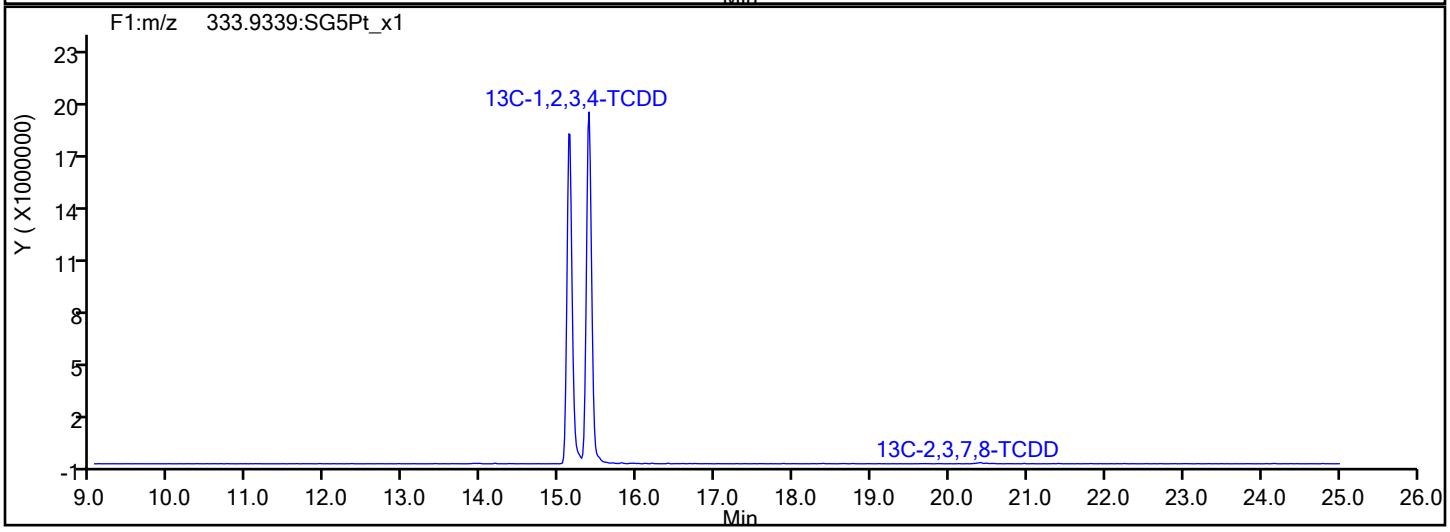
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d		
Injection Date:	19-Dec-2019 16:51:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

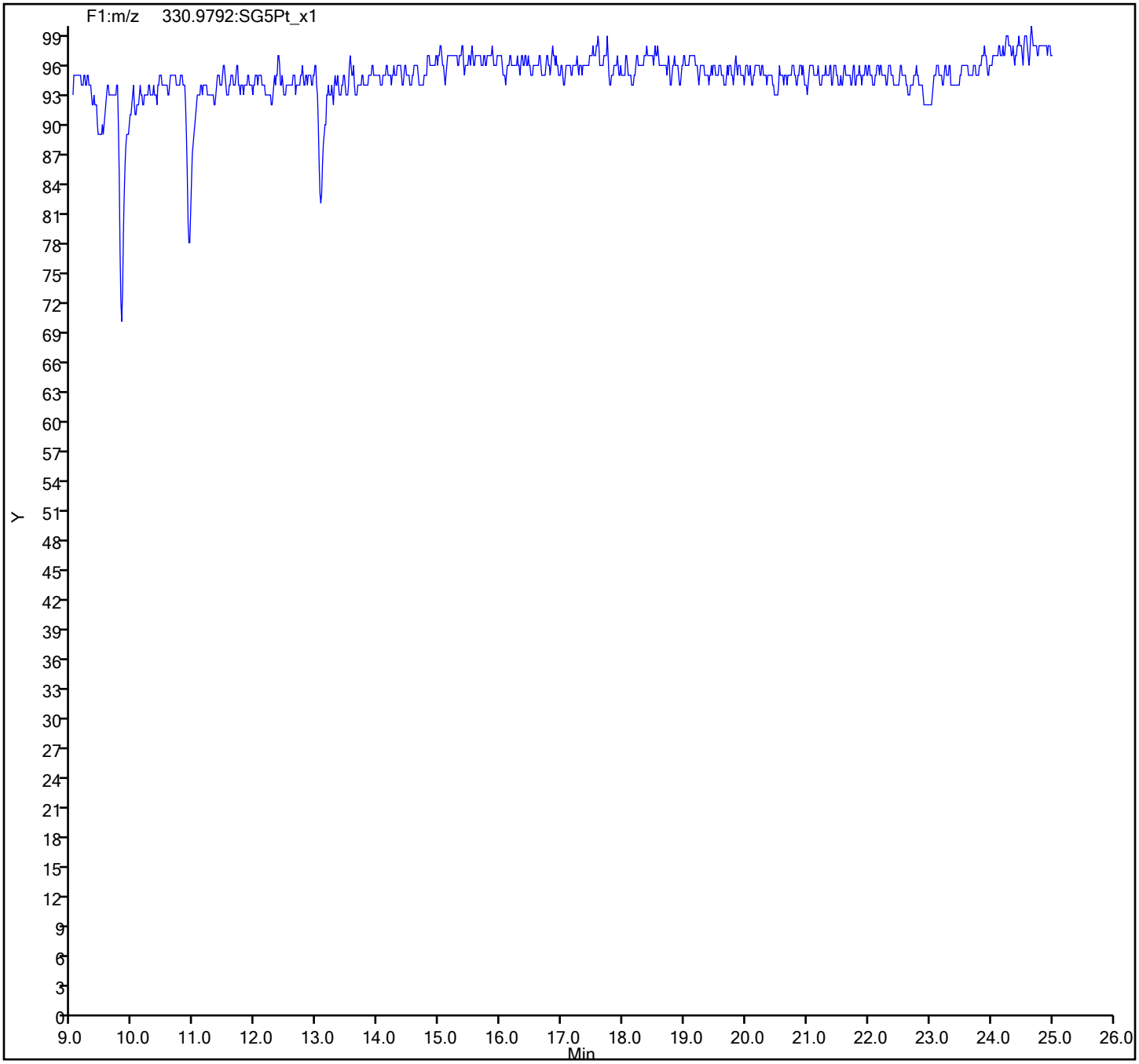




Report Date: 20-Dec-2019 14:38:25 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_002.d		
Injection Date:	19-Dec-2019 16:51:33	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	2
Column Type:	DB-225	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID: ICV 320-345037/9 Calibration Date: 12/12/2019 16:24

Instrument ID: 3D5 Calib Start Date: 12/12/2019 11:28

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 12/12/2019 14:39

Lab File ID: 12DE193D5_9.d Conc. Units: pg/uL

EPA Sample No.: ICV

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	0.9502	1.041		43.8	40.0	110	70-130
2,3,7,8-TCDD	AveID	1.048	1.179		45.0	40.0	113	70-130
1,2,3,7,8-PeCDF	AveID	1.030	1.059		206	200	103	70-130
2,3,4,7,8-PeCDF	AveID	1.041	1.179		226	200	113	70-130
1,2,3,7,8-PeCDD	AveID	1.086	1.044		192	200	96	70-130
1,2,3,4,7,8-HxCDF	AveID	1.147	1.215		212	200	106	70-130
1,2,3,6,7,8-HxCDF	AveID	1.145	1.225		214	200	107	70-130
2,3,4,6,7,8-HxCDF	AveID	1.173	1.282		219	200	109	70-130
1,2,3,4,7,8-HxCDD	AveID	1.093	1.118		204	200	102	70-130
1,2,3,6,7,8-HxCDD	AveID	1.043	1.144		219	200	110	70-130
1,2,3,7,8,9-HxCDD	AveID	1.207	1.171		194	200	97	70-130
1,2,3,7,8,9-HxCDF	AveID	1.172	1.229		210	200	105	70-130
1,2,3,4,6,7,8-HpCDF	AveID	1.480	1.572		212	200	106	70-130
1,2,3,4,6,7,8-HpCDD	AveID	1.054	1.099		209	200	104	70-130
1,2,3,4,7,8,9-HpCDF	AveID	1.293	1.366		211	200	106	70-130
OCDD	AveID	1.136	1.186		418	400	104	70-130
OCDF	AveID	1.394	1.453		417	400	104	70-130
13C-2,3,7,8-TCDF	Ave	1.416	1.376		97.2	100	97	71-140
13C-2,3,7,8-TCDD	Ave	0.9751	0.9535		97.8	100	98	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.179	1.147		97.3	100	97	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.131	1.134		100	100	100	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7572	0.7558		99.8	100	100	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.104	1.115		101	100	101	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.147	1.118		97.5	100	97	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.077	1.051		97.6	100	98	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.7962	0.8195		103	100	103	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.8720	0.8702		99.8	100	100	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.011	0.9661		95.5	100	96	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.7577	0.7715		102	100	102	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.7058	0.7545		107	100	107	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.6941	0.7448		107	100	107	77-129
13C-OCDD	Ave	0.4603	0.4774		207	200	104	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.348	1.357		40.3	40.0	101	79-127

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Sample Type: ICV
Inject. Date: 12-Dec-2019 16:24:09 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV 121219 ICV HRDXNIC_00042
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist:

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 08:02:44 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0302

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.672	270085932	0.79	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.173	371649958	0.82	1.4157	97.2	97.2	0.1394	0.1394	97.20	
2,3,7,8-TCDF	17.188	154755506	0.77	0.9502	43.8	43.8	0.0778	0.0778	110	
A Non-2,3,7,8-sub-TCDF	16.841	1135104	0.87	0.9502	0.3214	0.3214	0.0778	0.3214		
S Total TCDF					44.1	44.1	0.0778	0.0778		
D 13C-2,3,7,8-TCDD	17.869	257527783	0.79	0.9751	97.8	97.8	0.1551	0.1551	97.79	
2,3,7,8-TCDD	17.884	121462424	0.79	1.0477	45.0	45.0	0.0527	0.0527	113	
$ 37Cl4-2,3,7,8-TCDD	17.884	146639981		1.3480	40.3	40.3	0.0787	0.0787	101	
A Non-2,3,7,8-sub-TCDD	17.294	1743442	0.77	1.0477	0.7532	0.6462	0.0527	0.6462		RQ
S Total TCDD					45.8	45.7	0.0527	0.0527		RQ
D 13C-1,2,3,7,8-PeCDF	22.114	309874781	1.58	1.1786	97.3	97.3	0.2252	0.2252	97.35	
1,2,3,7,8-PeCDF	22.141	656505253	1.57	1.0302	205.6	205.6	0.7951	0.7951	103	
D 13C-2,3,4,7,8-PeCDF	23.437	306164012	1.61	1.1308	100.2	100.2	0.2347	0.2347	100	
2,3,4,7,8-PeCDF	23.464	721626753	1.61	1.0410	226.4	226.4	0.8510	0.8510	113	
A F1 PeCDFs	19.797						0.0305	0.0305		
A Non-2,3,7,8-sub-PeCDF	22.906	15330047	1.72	1.0356	4.806	4.806	0.8219	4.806		
S Total PeCDF					436.9	436.9	0.8230	0.8230		
D 13C-1,2,3,7,8-PeCDD	24.146	204118372	1.58	0.7572	99.8	99.8	0.1420	0.1420	99.81	
1,2,3,7,8-PeCDD	24.173	426058756	1.59	1.0855	192.3	192.3	0.2704	0.2704	96.14	
A Non-2,3,7,8-sub-PeCDD	23.055						0.2704	0.2704		
S Total PeCDD					192.3	192.3	0.2704	0.2704		
D 13C-1,2,3,4,7,8-HxCDF	30.273	271260302	0.53	1.1043	100.9	100.9	0.2306	0.2306	101	
1,2,3,4,7,8-HxCDF	30.300	659203064	1.22	1.1472	211.8	211.8	0.6366	0.6366	106	
D 13C-1,2,3,6,7,8-HxCDF	30.473	272013222	0.52	1.1470	97.5	97.5	0.2220	0.2220	97.45	
1,2,3,6,7,8-HxCDF	30.499	666204959	1.26	1.1450	213.9	213.9	0.6235	0.6235	107	
D 13C-2,3,4,6,7,8-HxCDF	31.365	255749967	0.54	1.0769	97.6	97.6	0.2364	0.2364	97.59	
2,3,4,6,7,8-HxCDF	31.378	655580573	1.22	1.1726	218.6	218.6	0.4779	0.4779	109	
D 13C-1,2,3,7,8,9-HxCDF	32.204	235091692	0.52	1.0115	95.5	95.5	0.2517	0.2517	95.51	
1,2,3,7,8,9-HxCDF	32.217	577659417	1.23	1.1717	209.7	209.7	0.4861	0.4861	105	
A Non-2,3,7,8-sub-HxCDF	29.954						0.5469	0.5469		
S Total HxCDF					854.1	854.1	0.5560	0.5560		

Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04
Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	32.004	243345620	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.565	199415534	1.28	0.7962	102.9	102.9	0.2000	0.2000	103	
1,2,3,4,7,8-HxCDD	31.578	445827448	1.25	1.0934	204.5	204.5	0.4135	0.4135	102	
D 13C-1,2,3,6,7,8-HxCDD	31.671	211767568	1.28	0.8720	99.8	99.8	0.1826	0.1826	99.80	
1,2,3,6,7,8-HxCDD	31.684	484510720	1.27	1.0429	219.4	219.4	0.4097	0.4097	110	
1,2,3,7,8,9-HxCDD	32.017	481676148	1.25	1.2073	194.1	194.1	0.3639	0.3639	97.03	
A Non-2,3,7,8-sub-HxCDD	30.606						0.3942	0.3942		
S Total HxCDD					617.9	617.9	0.3957	0.3957		
D 13C-1,2,3,4,6,7,8-HpCDF	33.652	187732796	0.46	0.7577	101.8	101.8	1.433	1.433	102	
1,2,3,4,6,7,8-HpCDF	33.664	590414217	1.05	1.4804	212.4	212.4	1.138	1.138	106	
D 13C-1,2,3,4,7,8,9-HpCDF	34.734	181231378	0.43	0.6941	107.3	107.3	1.564	1.564	107	
1,2,3,4,7,8,9-HpCDF	34.734	495258328	1.05	1.2933	211.3	211.3	1.552	1.552	106	
A Non-2,3,7,8-sub-HpCDF	34.193						1.321	1.321		
S Total HpCDF					423.7	423.7	1.345	1.345		
D 13C-1,2,3,4,6,7,8-HpCDD	34.442	183613445	1.09	0.7058	106.9	106.9	0.4437	0.4437	107	
1,2,3,4,6,7,8-HpCDD	34.454	403758571	1.06	1.0535	208.7	208.7	0.8556	0.8556	104	
A Non-2,3,7,8-sub-HpCDD	34.169	6591915	0.95	1.0535	3.408	3.408	0.8556	3.408		
S Total HpCDD					212.1	212.1	0.8556	0.8556		
D 13C-OCDD	36.770	232322449	0.90	0.4603	207.4	207.4	0.4010	0.4010	104	
OCDF	36.866	674947816	0.91	1.3945	416.7	416.7	0.5045	0.5045	104	
OCDD	36.782	551081986	0.90	1.1362	417.6	417.6	0.5796	0.5796	104	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNIC_00042 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Sample Type: ICV
Inject. Date: 12-Dec-2019 16:24:09 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV 121219 ICV HRDXNIC_00042
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5
Sublist:

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 13-Dec-2019 08:02:44 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0302

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.672	17.657	1		119112558	30773227	22008	55020	1398		
333.9339	17.672	17.657	1		150973374	38610201	19974	49935	1933	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.173	17.128	3	0.972	167566864	42270701	25199	62997	1677		
317.9389	17.173	17.128	3	0.972	204083094	50484076	29557	73892	1708	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.188	17.158	2	1.001	67498189	17335870	12820	32050	1352		
305.8987	17.188	17.158	2	1.001	87257317	22264388	14618	36545	1523	0.77(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.538	16.841	-18	0.963	529102	131768	12820	32050	10		
305.8987	16.538	16.841	-18	0.963	606002	158140	14618	36545	11	0.87(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	17.869	17.823	3	1.011	113833668	27054631	22008	55020	1229		
333.9339	17.869	17.823	3	1.011	143694115	34423261	19974	49935	1723	0.79(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.884	17.839	3	1.001	53786271	13427177	8291	20727	1619		
321.8936	17.884	17.839	3	1.001	67676153	16730882	5299	13247	3157	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.884	17.869	1	1.012	146639981	35503806	29430	73575	1206		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	17.778	17.294	29	0.995	1047305	302600	8291	20727	36		
	Empc Correction				758446	249995	8291	20727	30		
321.8936	17.778	17.294	29	0.995	984996	324670	5299	13247	61	1.06(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	22.114	22.100	1	1.251	189969392	34848954	42106	105265	828		
353.8970	22.114	22.100	1	1.251	119905389	21921524	31540	78850	695	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.141	22.127	1	1.001	401053631	72411616	112425	281062	644		
341.8567	22.141	22.127	1	1.001	255451622	46292478	73577	183942	629	1.57(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.437	23.423	1	1.326	188948891	32328162	42106	105265	768		
353.8970	23.437	23.423	1	1.326	117215121	20163286	31540	78850	639	1.61(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.464	23.450	1	1.001	444775112	75331835	112425	281062	670		
341.8567	23.464	23.450	1	1.001	276851641	46580158	73577	183942	633	1.61(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.797						2026	5065			
341.8567	19.797						4867	12167			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.659	22.906	-15	1.025	9701220	1791183	112425	281062	16		
341.8567	22.659	22.906	-15	1.025	5628827	1014945	73577	183942	14	1.72(1.32-1.78)	
13C-1,2,3,7,8-PeCDD											
367.8949	24.146	24.132	1	1.366	125070440	20673410	17811	44527	1161		
369.8919	24.146	24.132	1	1.366	79047932	12976636	12029	30072	1079	1.58(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.173	24.159	1	1.001	261337003	41660287	24825	62062	1678		
357.8516	24.173	24.159	1	1.001	164721753	26234267	14680	36700	1787	1.59(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	23.055						24825	62062			
357.8516	23.055						14680	36700			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.273	30.273	0	0.946	94377084	16850440	24667	61667	683		
385.8610	30.273	30.273	0	0.946	176883218	32253564	43035	107587	749	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.300	30.299	0	1.001	362541027	67340226	77949	194872	864		
375.8178	30.300	30.299	0	1.001	296662037	54726850	65494	163735	836	1.22(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.473	30.473	0	0.952	93363035	17583506	24667	61667	713		
385.8610	30.473	30.473	0	0.952	178650187	32649082	43035	107587	759	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.499	30.499	0	1.001	370782818	68294614	77949	194872	876		
375.8178	30.499	30.499	0	1.001	295422141	54776049	65494	163735	836	1.26(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.365	31.351	1	0.980	89463419	22749754	24667	61667	922		
385.8610	31.365	31.351	1	0.980	166286548	41238876	43035	107587	958	0.54(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.378	31.378	0	1.000	360017692	92269270	77949	194872	1184		
375.8178	31.378	31.378	0	1.000	295562881	75646415	65494	163735	1155	1.22(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.204	32.190	1	1.006	80327273	21851193	24667	61667	886		
385.8610	32.204	32.190	1	1.006	154764419	41110712	43035	107587	955	0.52(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.217	32.204	1	1.000	318175057	87154137	77949	194872	1118		
375.8178	32.217	32.204	1	1.000	259484360	69530162	65494	163735	1062	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.954						77949	194872			
375.8178	29.954						65494	163735			
13C-1,2,3,7,8,9-HxCDD											
401.8559	32.004	32.004	0		137156162	37414623	23456	58640	1595		
403.8529	32.004	32.004	0		106189458	29059462	18880	47200	1539	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.565	31.551	1	0.986	111978645	30454874	23456	58640	1298		
403.8529	31.565	31.551	1	0.986	87436889	23239407	18880	47200	1231	1.28(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.578	31.565	1	1.000	247740093	68789569	54687	136717	1258		
391.8127	31.578	31.565	1	1.000	198087355	54337126	42423	106057	1281	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.671	31.658	1	0.990	118903305	32064033	23456	58640	1367		
403.8529	31.671	31.658	1	0.990	92864263	24757329	18880	47200	1311	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.684	31.684	0	1.000	270897778	72335351	54687	136717	1323		
391.8127	31.684	31.684	0	1.000	213612942	57126331	42423	106057	1347	1.27(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	32.017	32.017	0	1.014	267452966	73977779	54687	136717	1353		
391.8127	32.017	32.017	0	1.014	214223182	60689549	42423	106057	1431	1.25(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.606						54687	136717			
391.8127	30.606						42423	106057			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.652	33.640	1	1.051	58921143	21697769	90467	226167	240		
419.8220	33.652	33.640	1	1.051	128811653	47591801	198150	495375	240	0.46(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.664	33.652	1	1.000	301741769	112712483	231277	578192	487		
409.7789	33.664	33.652	1	1.000	288672448	106248548	235777	589442	451	1.05(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.734	34.721	1	1.085	54803039	17876401	90467	226167	198		
419.8220	34.734	34.721	1	1.085	126428339	40307650	198150	495375	203	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.734	34.734	0	1.000	253307591	83102110	231277	578192	359		
409.7789	34.734	34.734	0	1.000	241950737	80723141	235777	589442	342	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.193						231277	578192			
409.7789	34.193						235777	589442			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.442	34.430	1	1.076	95572249	33460614	42780	106950	782		
437.8140	34.442	34.430	1	1.076	88041196	31402252	40489	101222	776	1.09(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.454	34.442	1	1.000	207482296	71879897	110330	275825	651		
425.7737	34.454	34.442	1	1.000	196276275	66647376	123534	308835	540	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	33.907	34.169	-16	0.984	3217726	1264627	110330	275825	11		
425.7737	33.907	34.169	-16	0.984	3374189	1232369	123534	308835	10	0.95(0.88-1.20)	
13C-OCDD											
469.7779	36.770	36.770	0	1.149	110263401	31794781	23623	59057	1346		
471.7750	36.770	36.770	0	1.149	122059048	35774867	25447	63617	1406	0.90(0.76-1.02)	
OCDF											
441.7428	36.866	36.866	0	1.003	322035229	94527211	43535	108837	2171		
443.7399	36.866	36.866	0	1.003	352912587	106059231	51530	128825	2058	0.91(0.76-1.02)	
OCDD											
457.7377	36.782	36.782	0	1.000	261007674	77122926	42299	105747	1823		
459.7348	36.782	36.782	0	1.000	290074312	85553254	46691	116727	1832	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

n - Failed Sig-To-Noise Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNIC_00042 Amount Added: 2.00 Units: uL

Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Inject. Date: 12-Dec-2019 16:24:09 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-TCDF, RT: 16.841

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDF	0.950	D 13C-2,3,7,8-TCDF	100.000	371649958	92754777

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.950		100.000	371649958	92754777

Sum the Uncalibrated Results

RT	303.9016 Area	303.9016 Height	305.8987 Area	305.8987 Height	Amount	Ratio	Flags
16.538	529102	131768	606002	158140	0.3214	0.87	
Signal Totals:							
	529102	131768	606002	158140			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	1135104	289908				0.87	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.3214 = (1135104 * 100.000) / (371649958 * 0.950)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Inject. Date: 12-Dec-2019 16:24:09 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-TCDD, RT: 17.294

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	257527783	61477892

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	257527783	61477892

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.778	1047305	302600	984996	324670	0.7532	1.06	RQ
17.778	758446	249995	984996	324670	0.6462		Empc Correction
Signal Totals:	758446	249995	984996	324670			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	2032301	627270				1.06	RQ
	1743442	574665					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.7532 = (2032301 * 100.000) / (257527783 * 1.048)
Empc Amount: 0.6462 = (1743442 * 100.000) / (257527783 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Inject. Date: 12-Dec-2019 16:24:09 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-PeCDF, RT: 22.906

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030	D 13C-1,2,3,7,8-PeCDF	100.000	309874781	56770478
2,3,4,7,8-PeCDF	1.041	D 13C-2,3,4,7,8-PeCDF	100.000	306164012	52491448

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.036		100.000	308019396	54630963

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.659	9701220	1791183	5628827	1014945	4.81	1.72	
Signal Totals:							
	9701220	1791183	5628827	1014945			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	15330047	2806128				1.72	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 4.806 = (15330047 * 100.000) / (308019396 * 1.036)

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d
Lims ID: ICV
Client ID: ICV
Inject. Date: 12-Dec-2019 16:24:09 Dil. Factor: 1.0000
Sample Type: ICV, ICal Verification
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 9
Sublist:

Non-2,3,7,8-sub-HpCDD, RT: 34.169

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	183613445	64862866

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	183613445	64862866

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.907	3217726	1264627	3374189	1232369	3.41	0.95	n
Signal Totals:	3217726	1264627	3374189	1232369			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	6591915	2496996				0.95	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 3.408 = (6591915 * 100.000) / (183613445 * 1.054)

QC Flag Legend

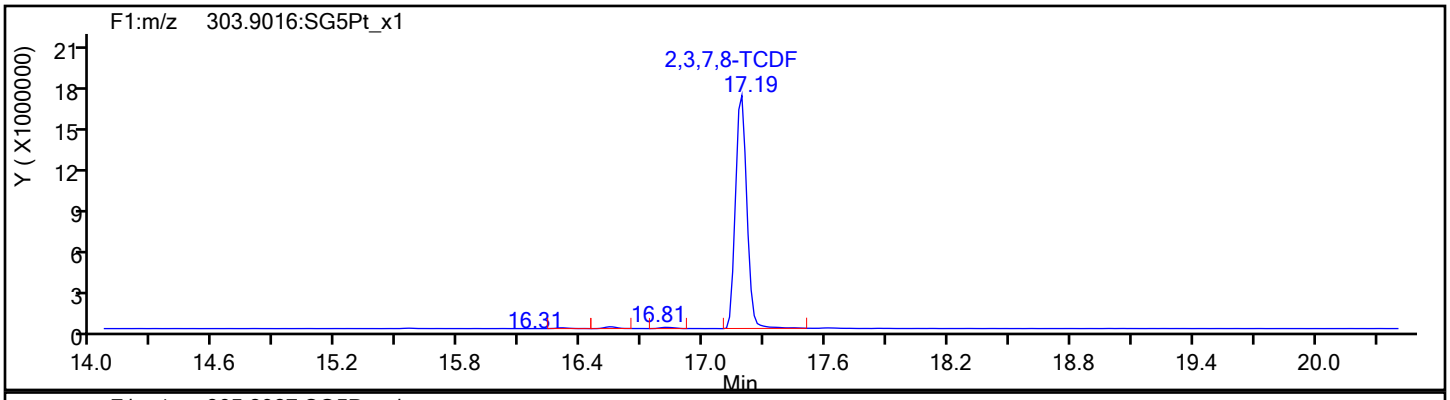
Processing Flags
n - Failed Sig-To-Noise Test

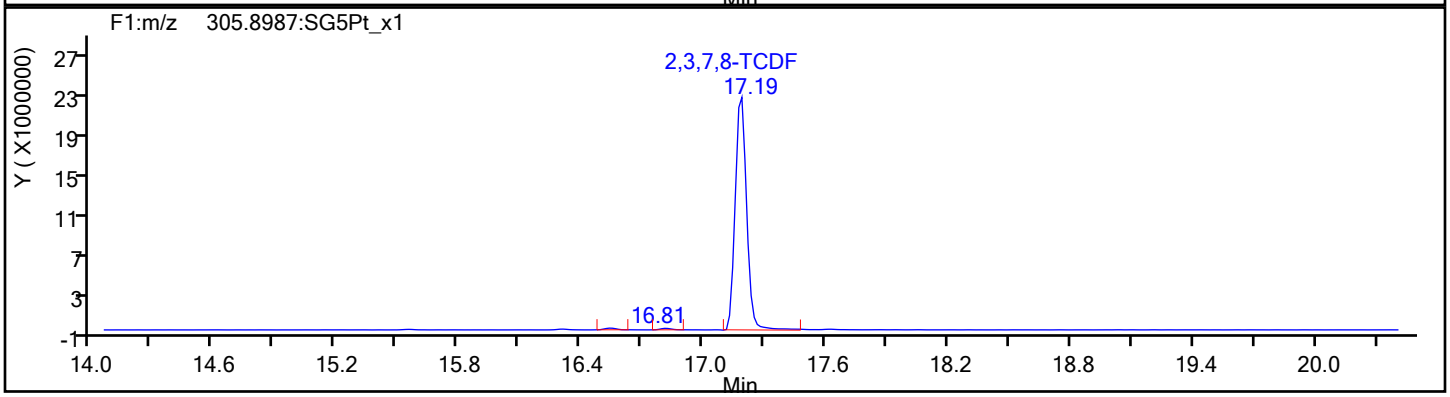
Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

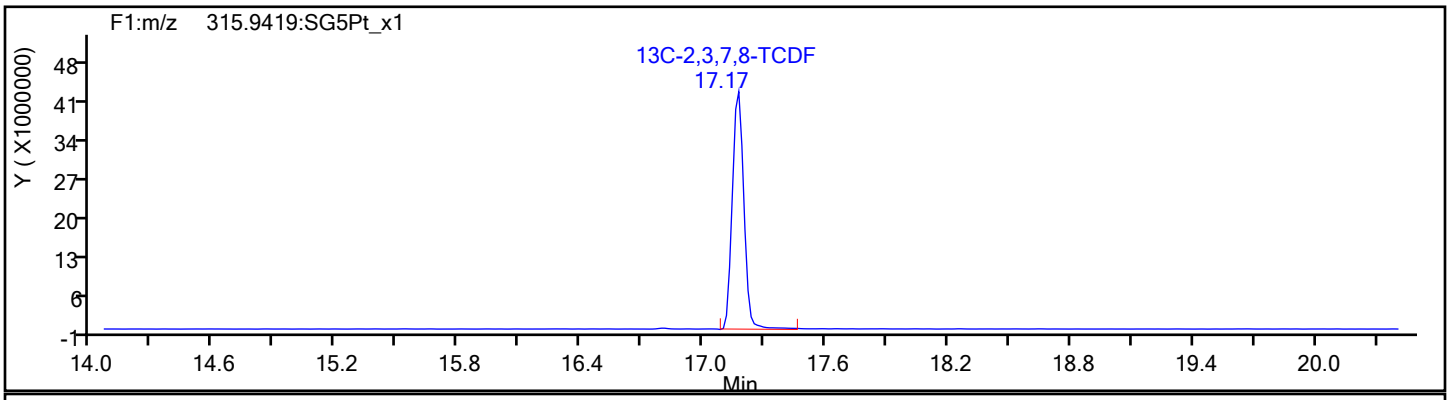
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

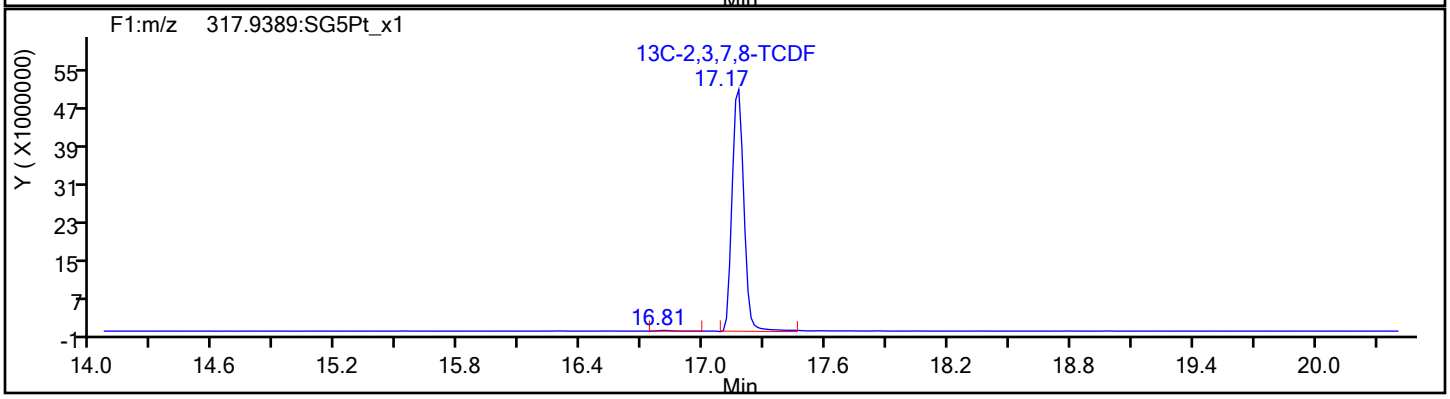
TCDF





TCDF Standards



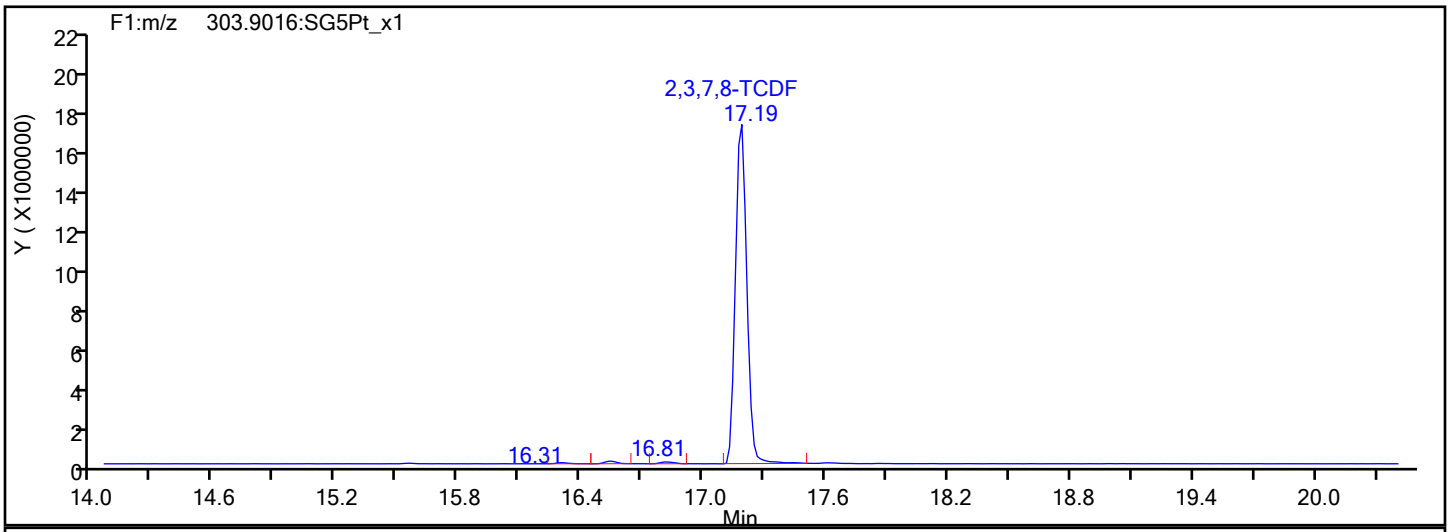


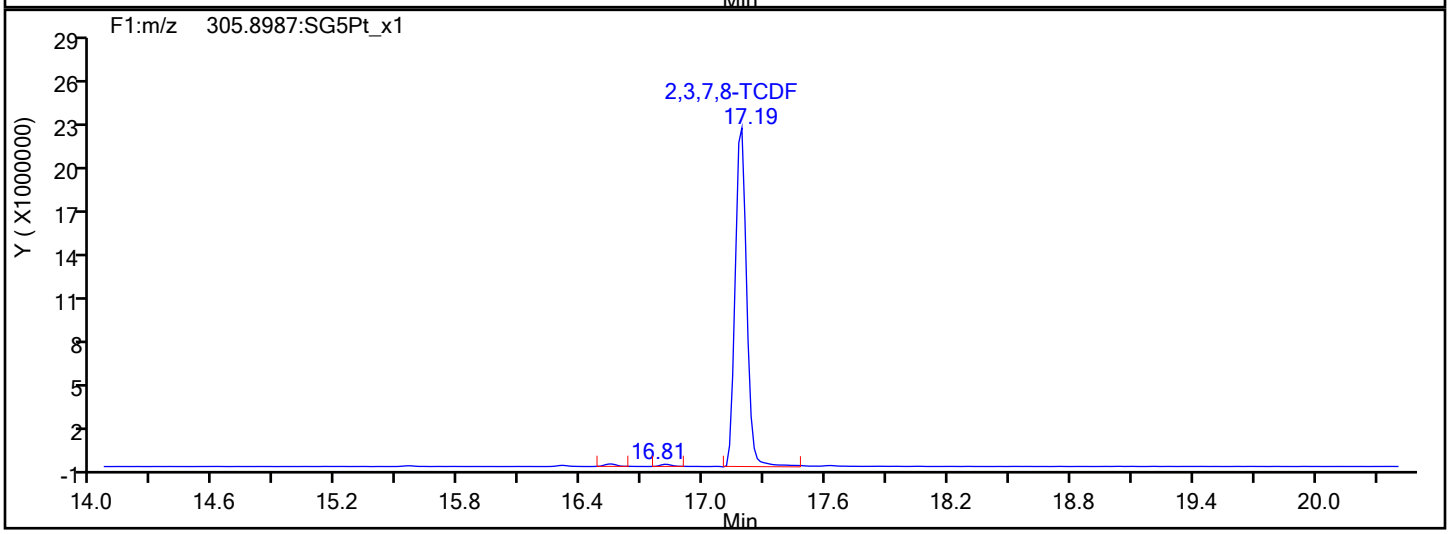
Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

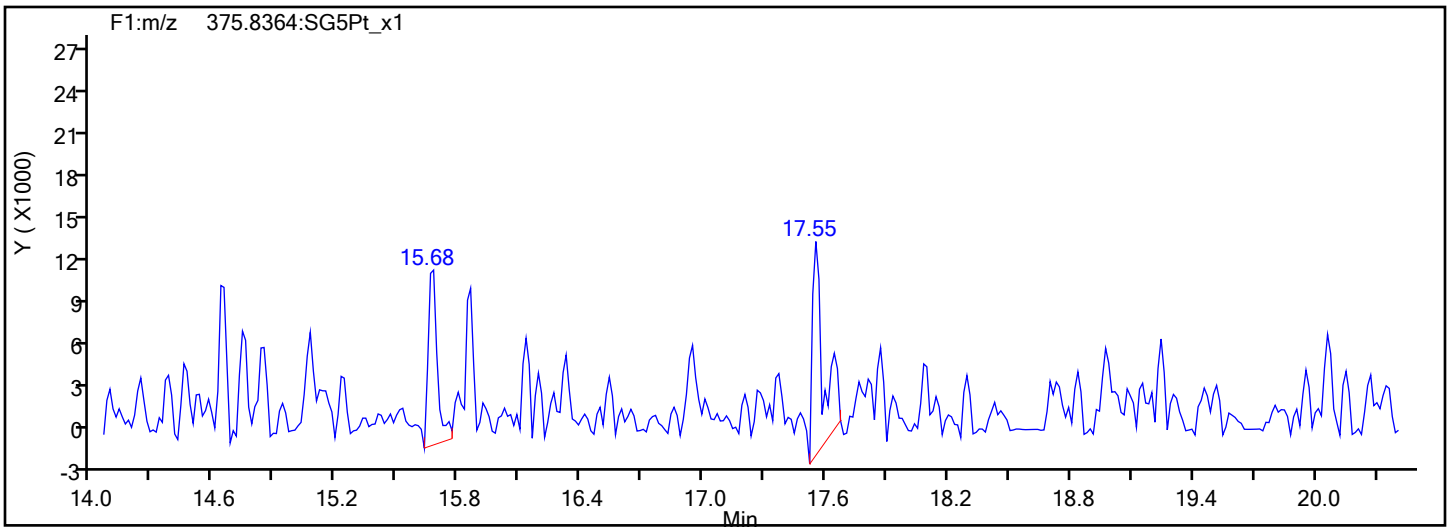
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
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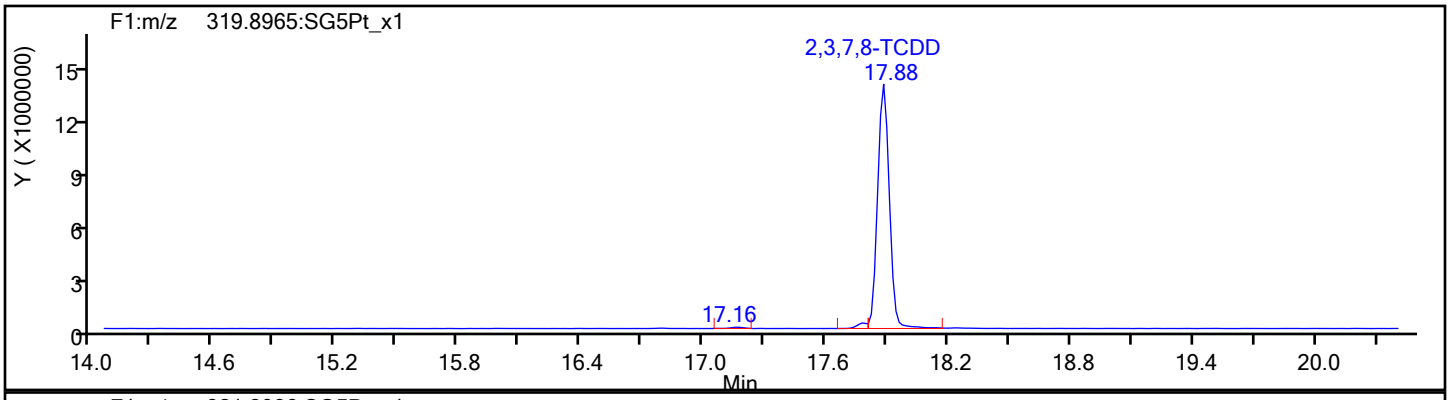
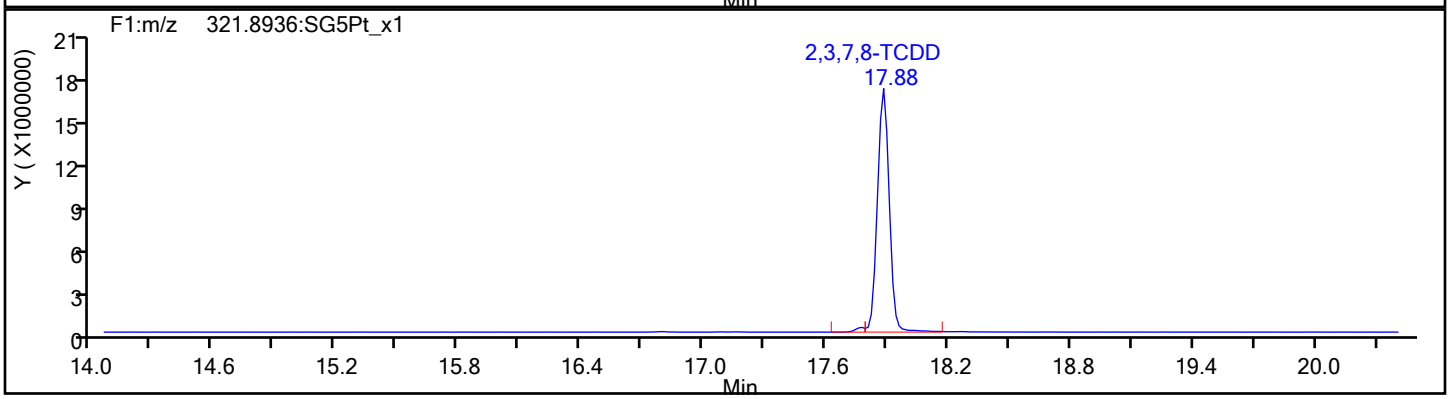
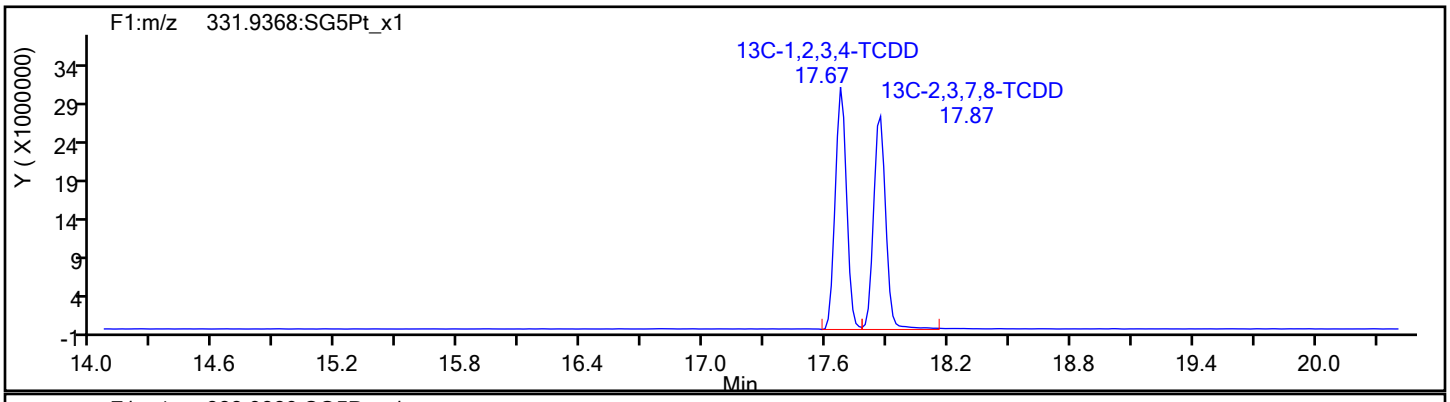
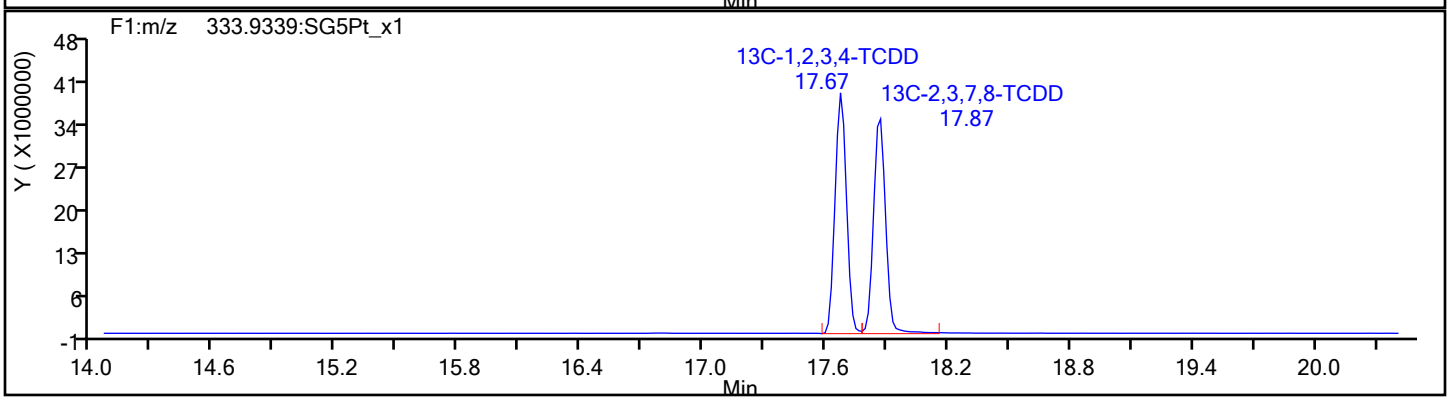
TCDD





TCDD Standards





Report Date: 13-Dec-2019 08:02:46 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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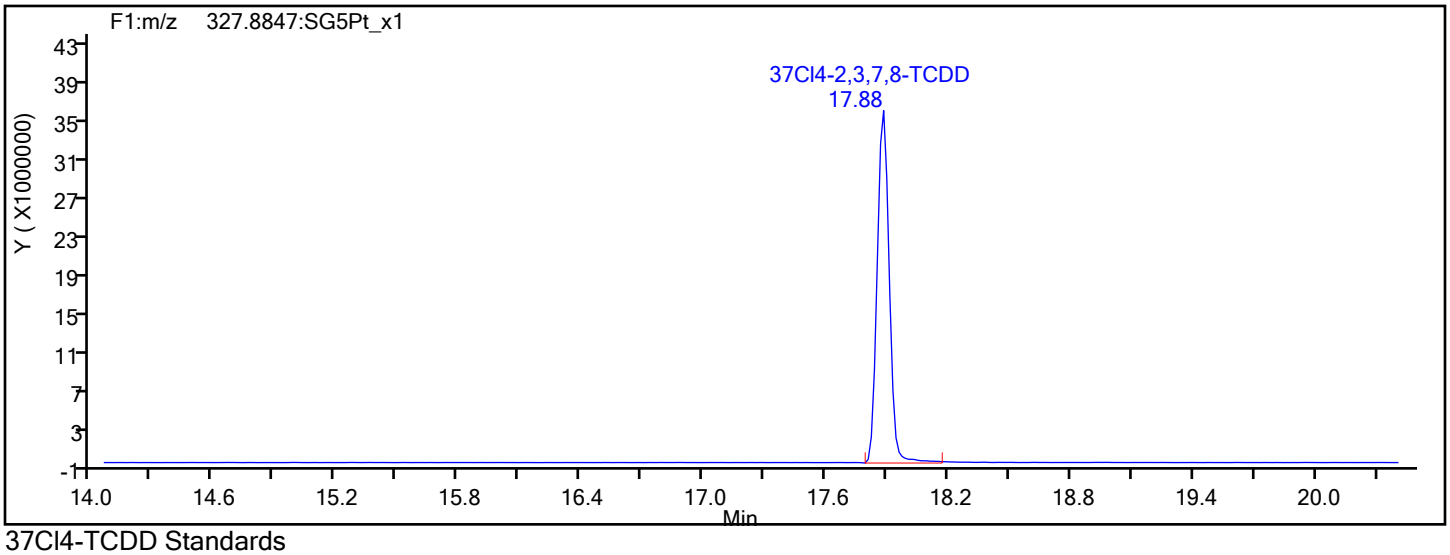
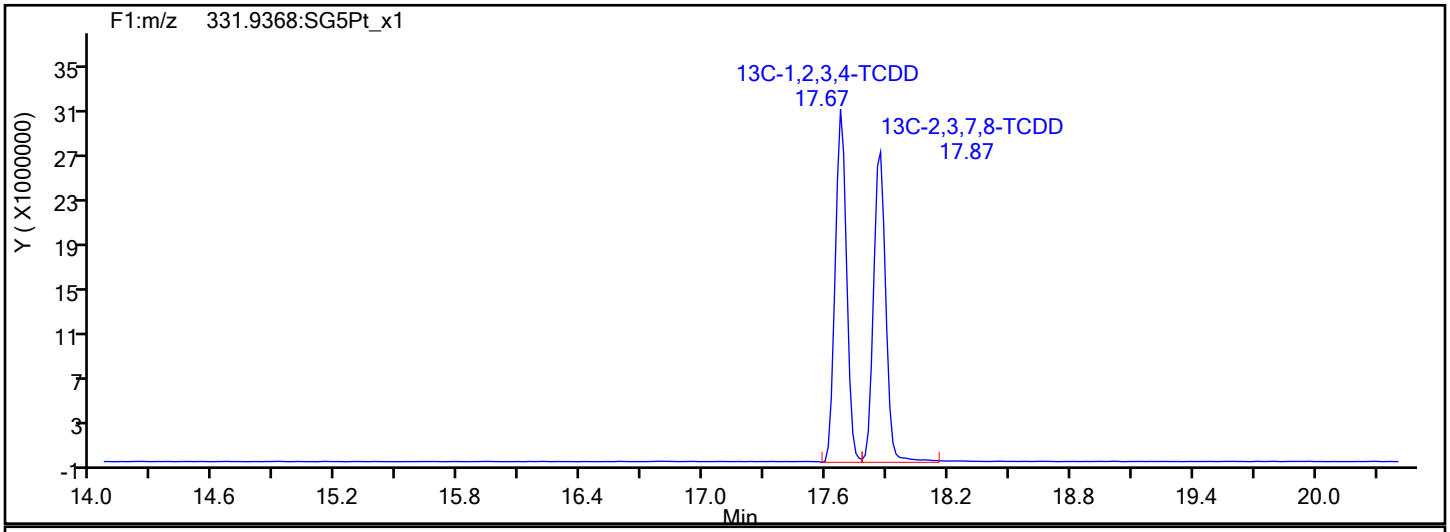
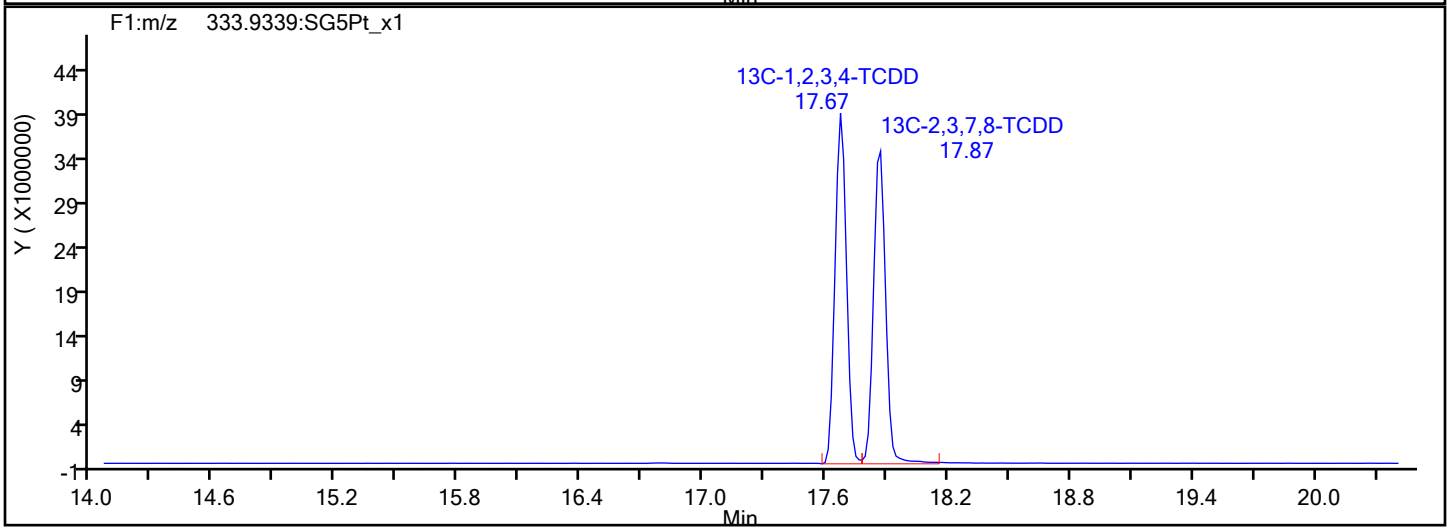
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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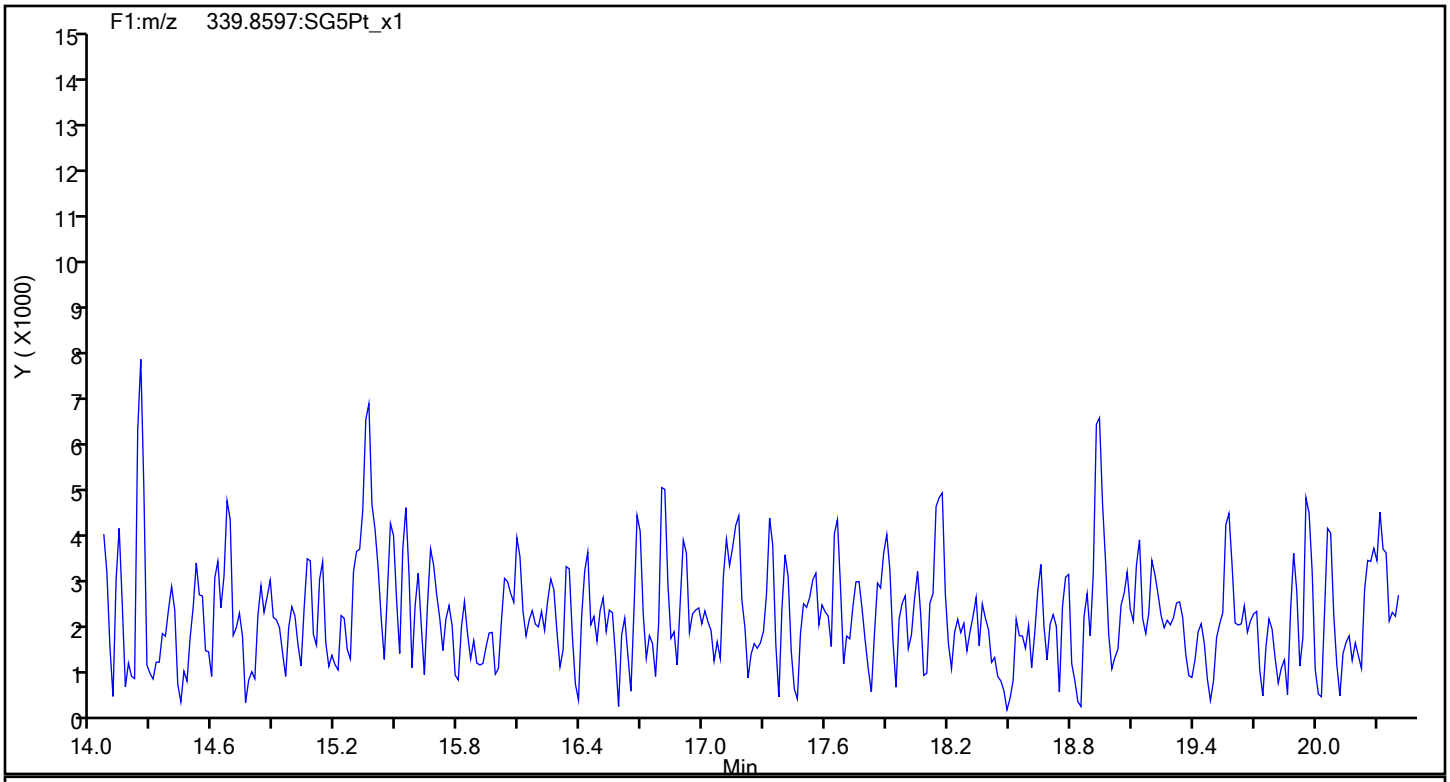
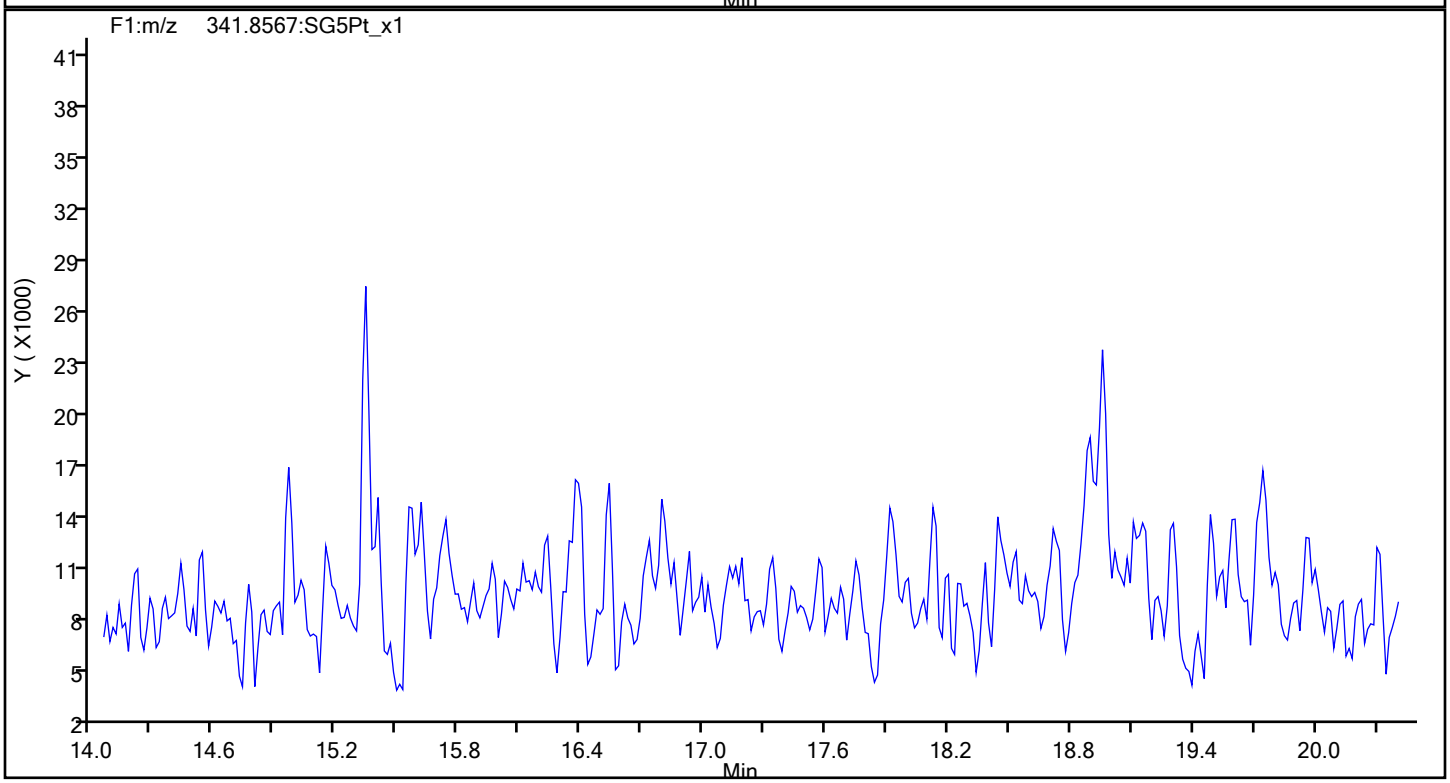
F1 PeCDFs





Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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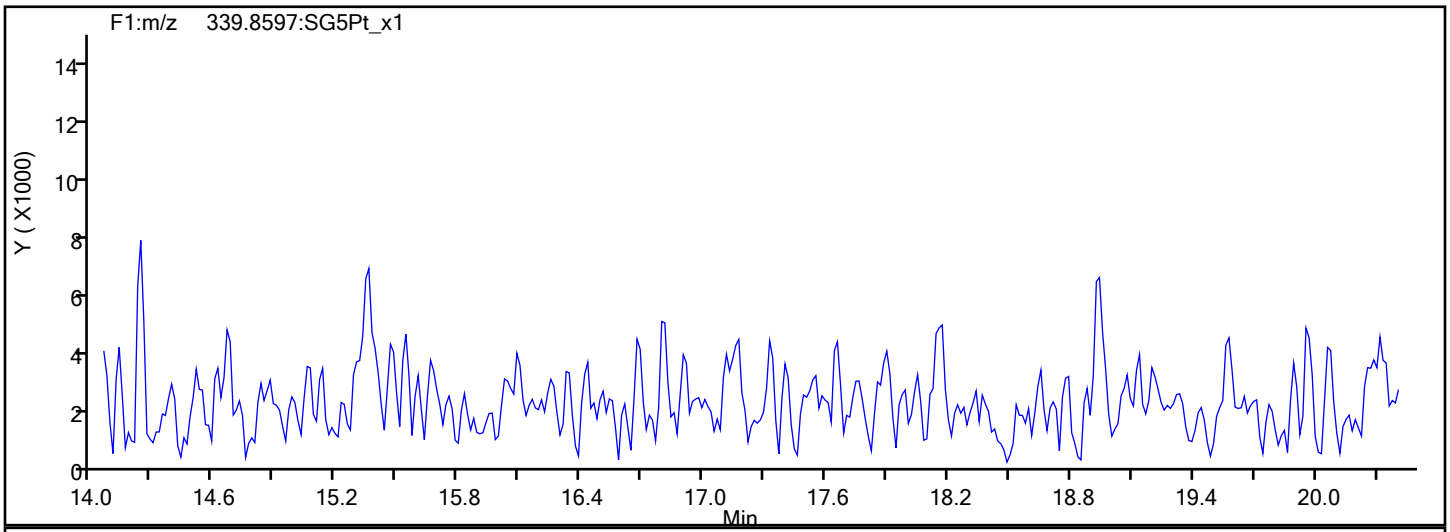
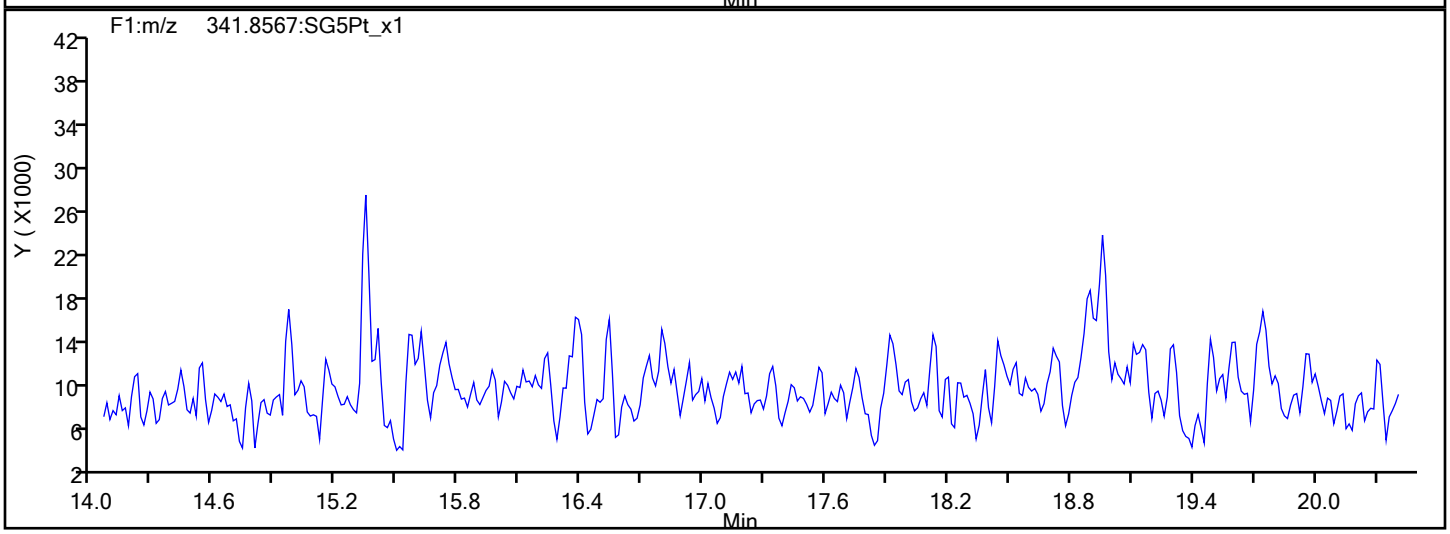
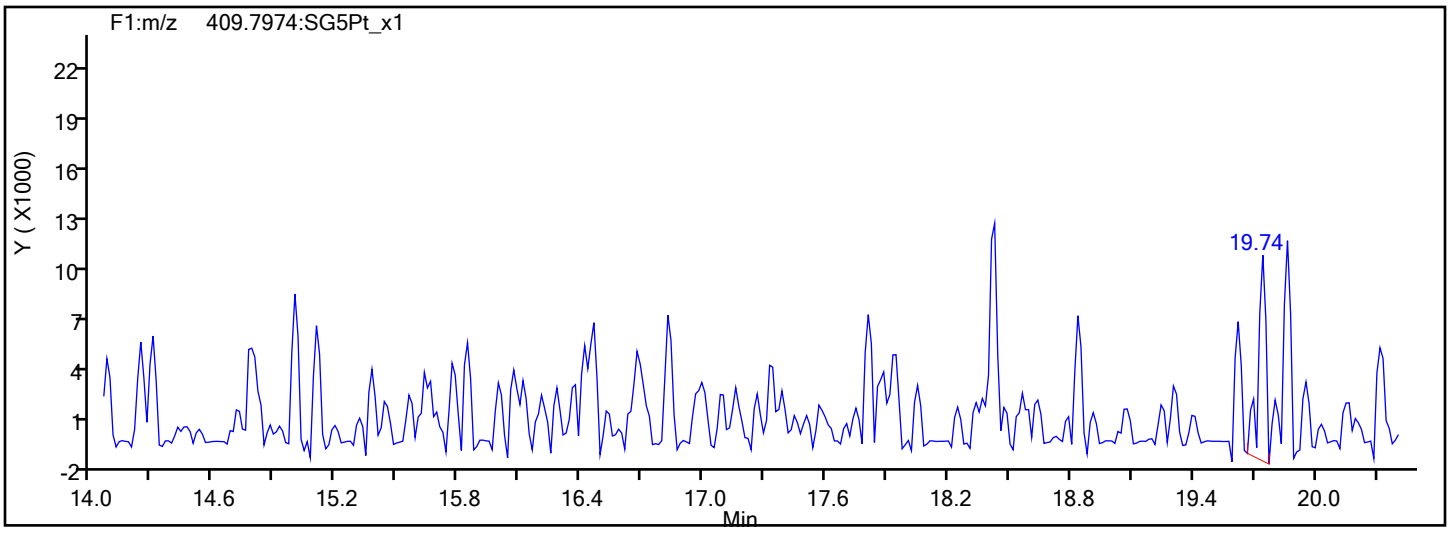
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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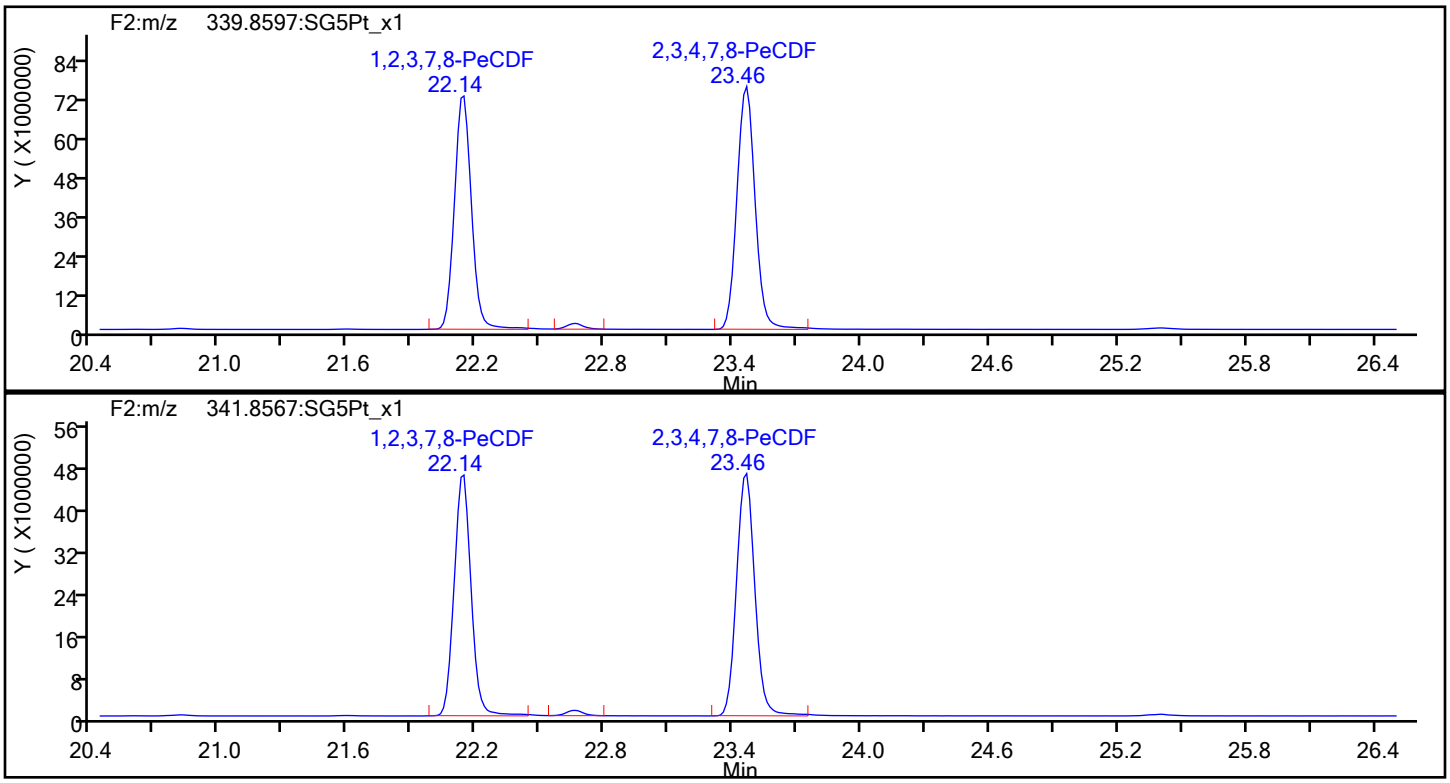
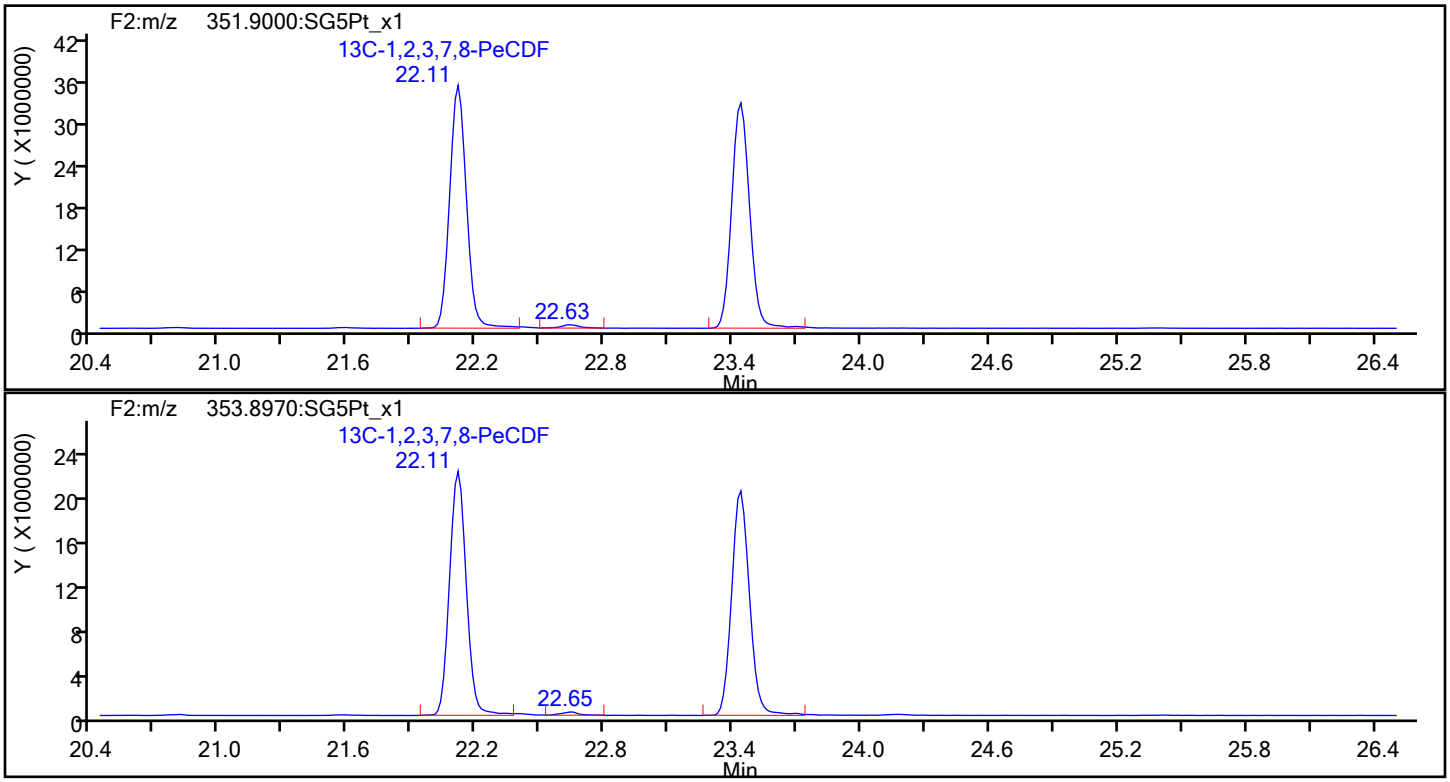
PeCDF



PeCDF Standards



Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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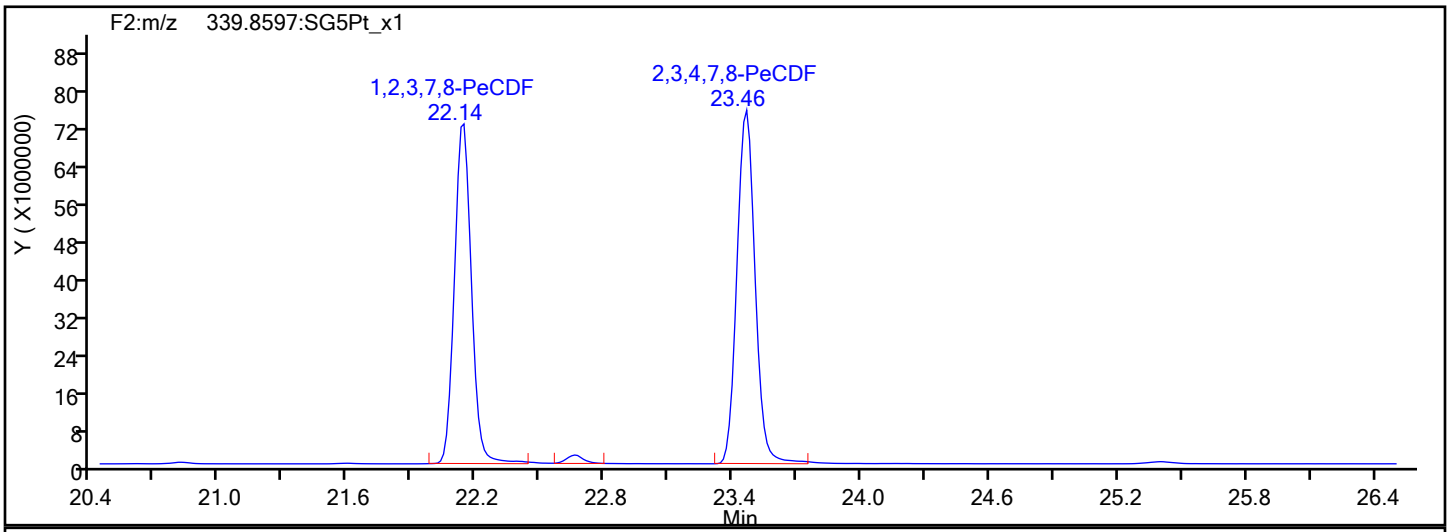
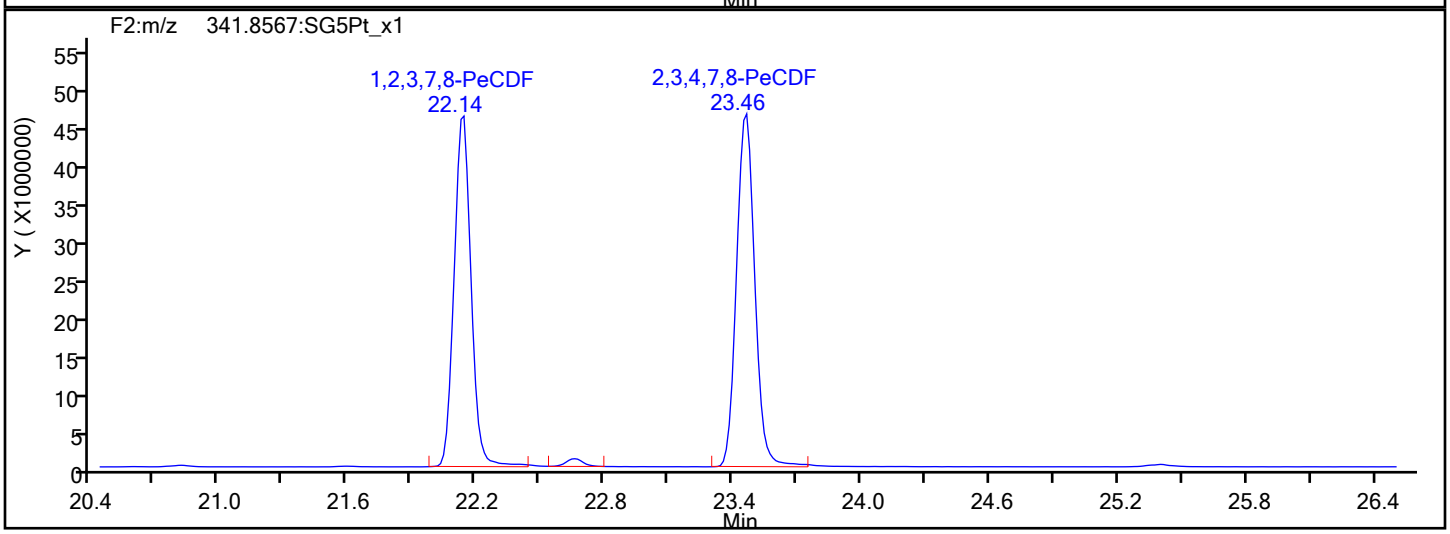
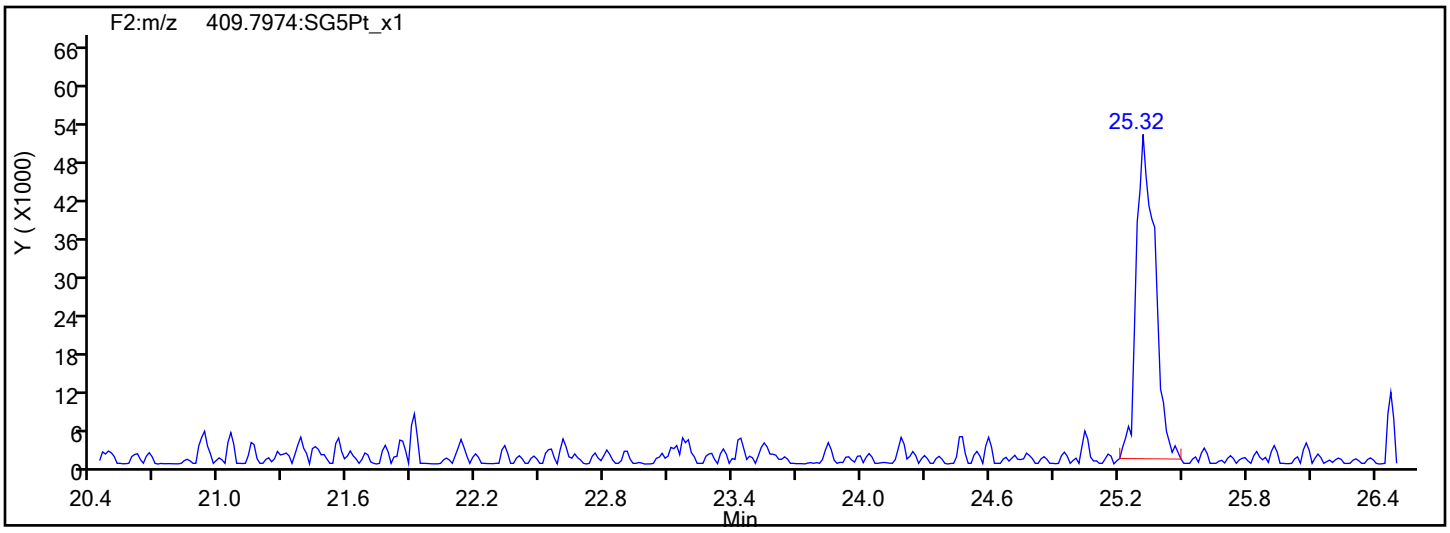
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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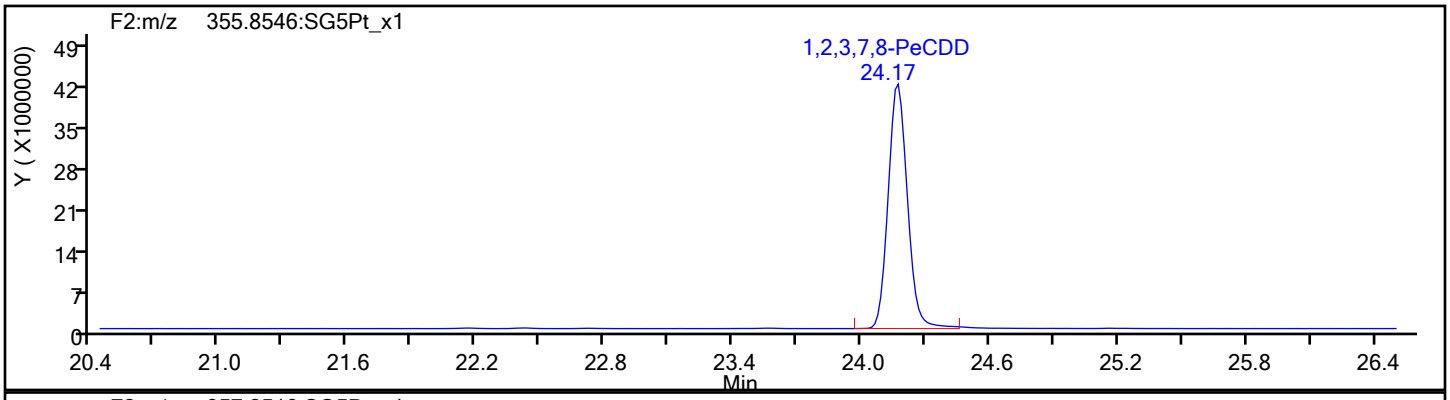
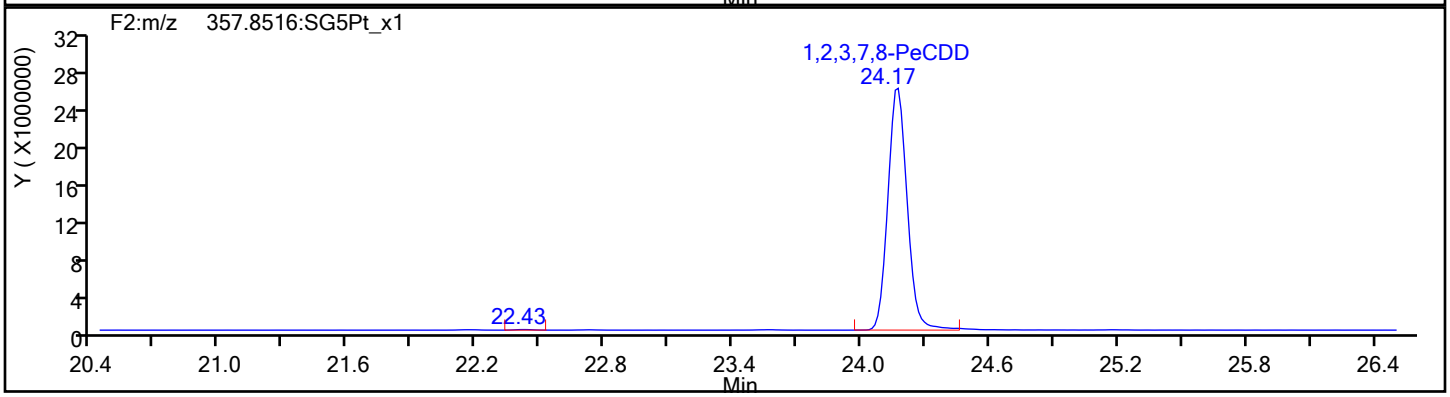
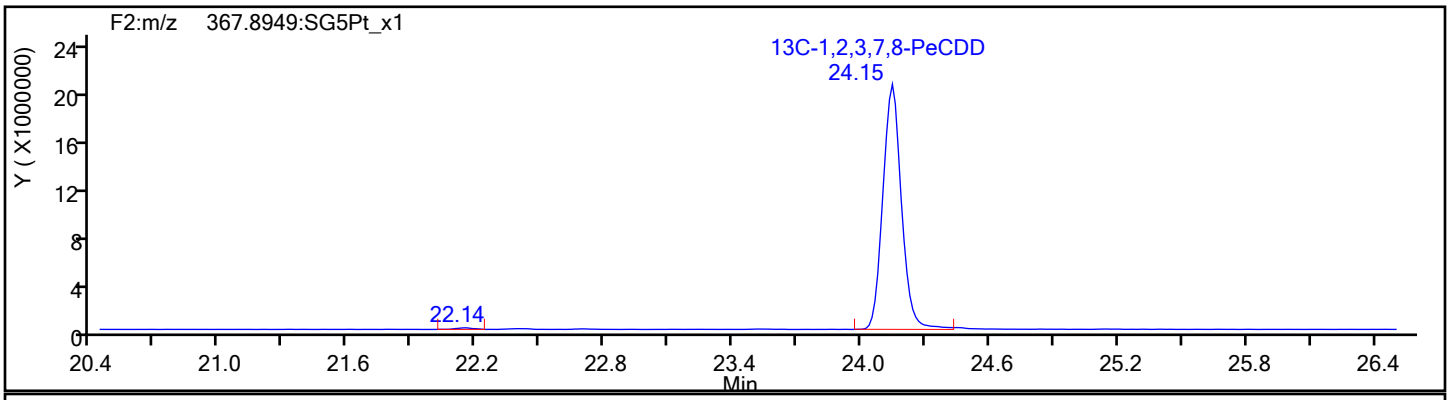
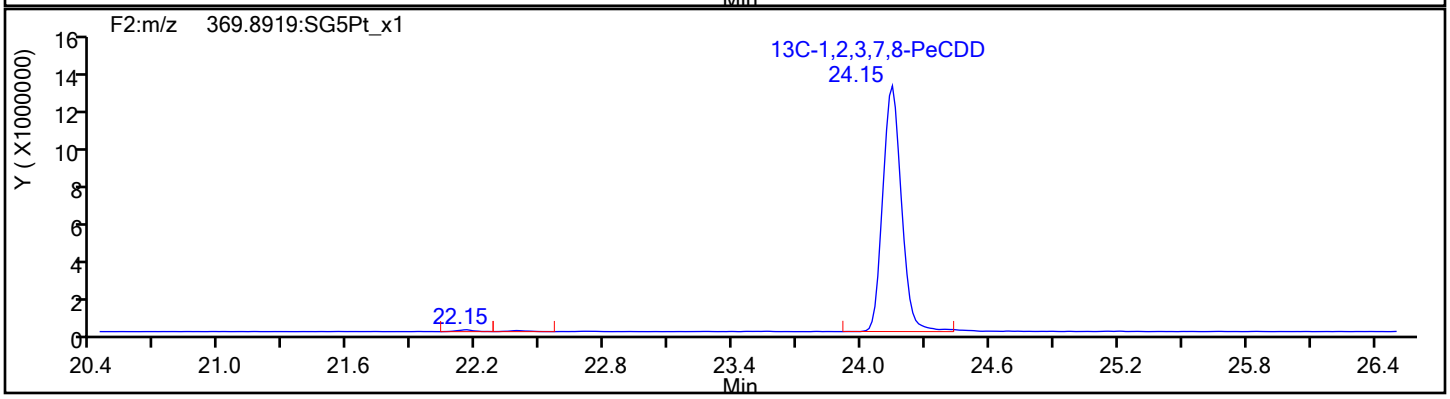
PeCDD





PeCDD Standards





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Eurofins TestAmerica, Sacramento

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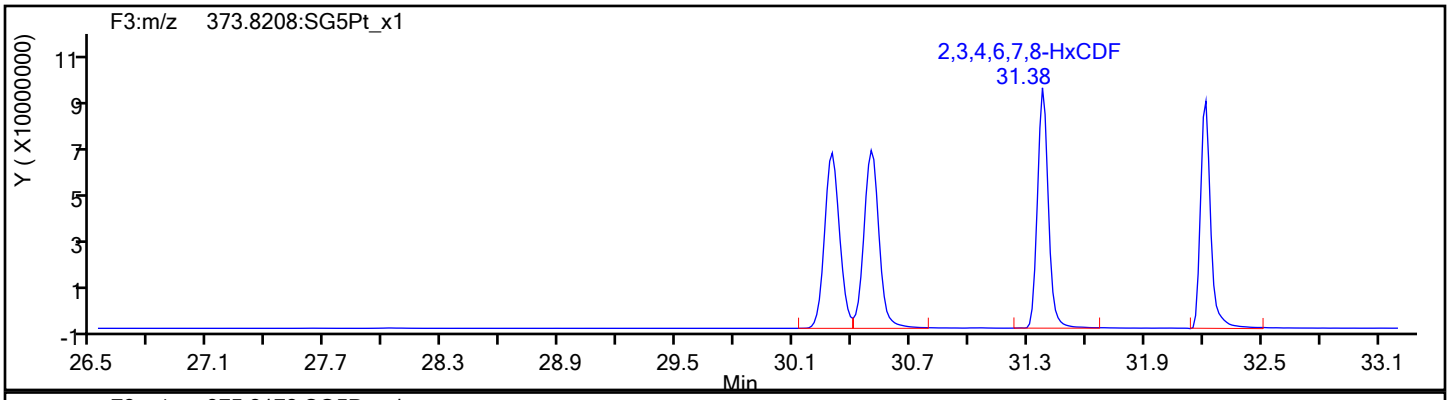
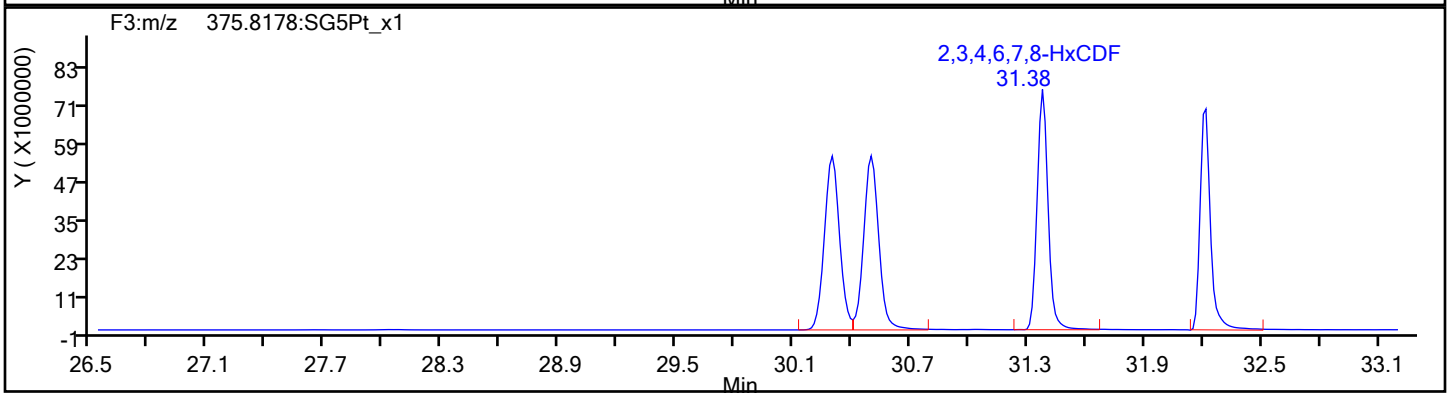
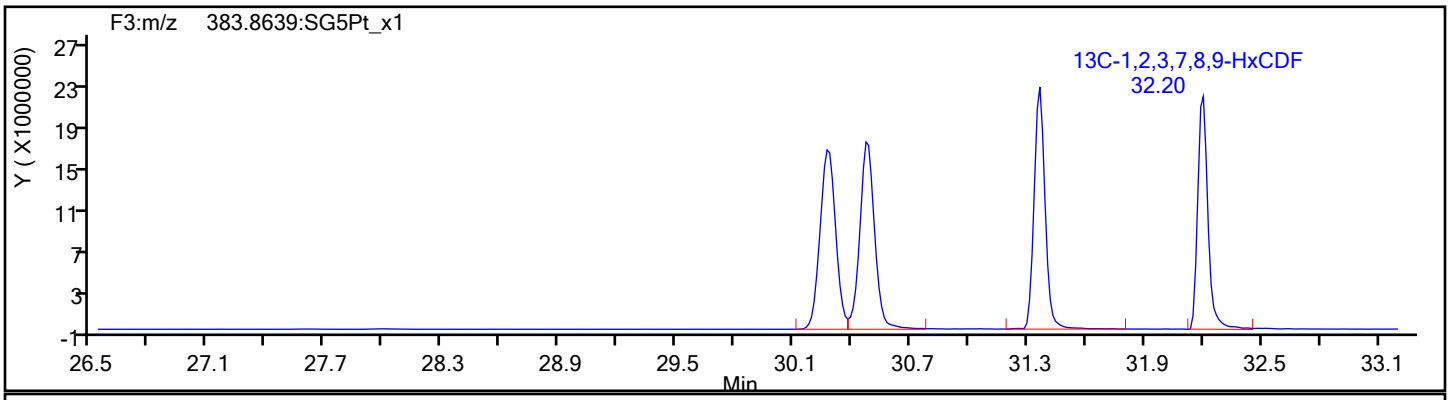
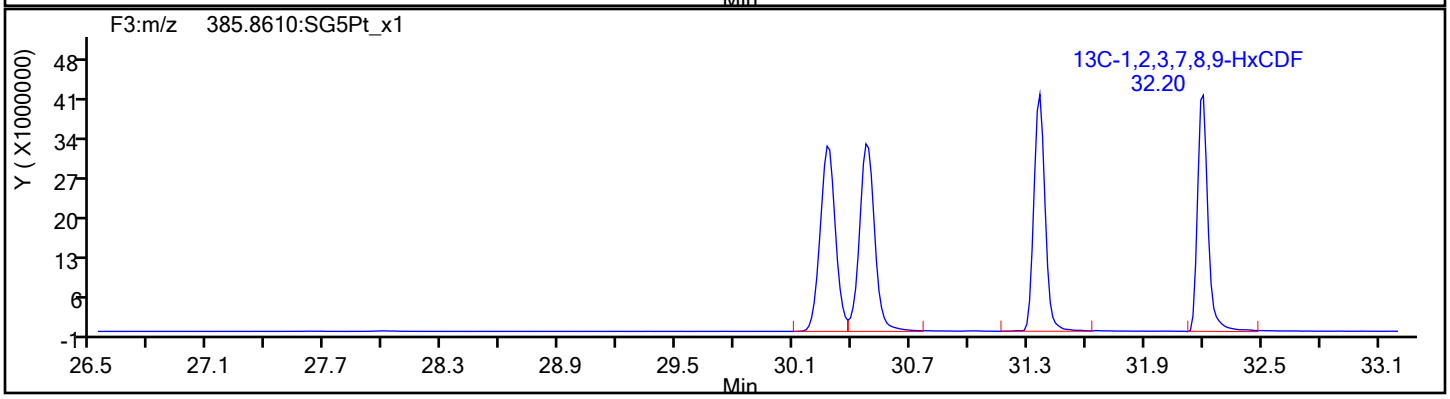
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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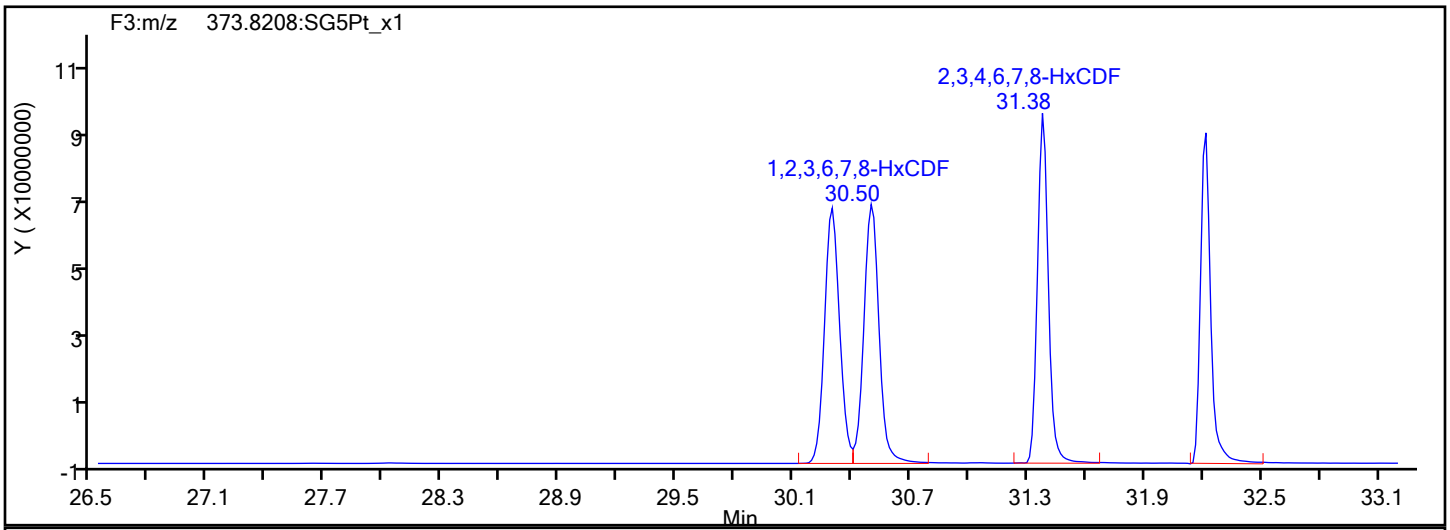
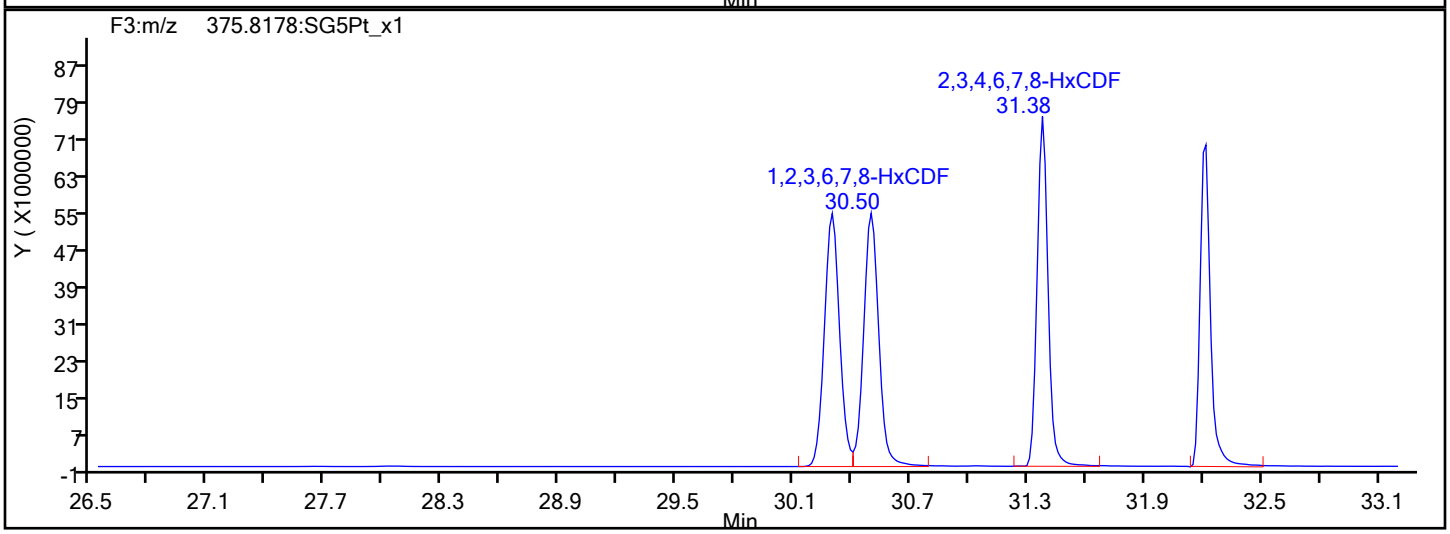
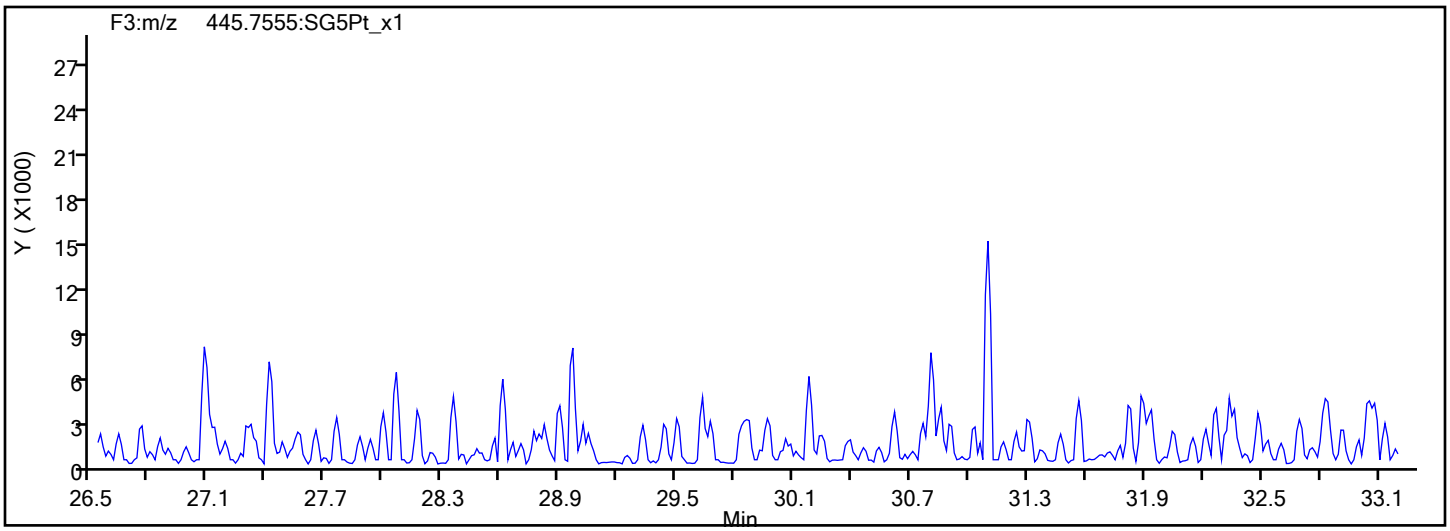




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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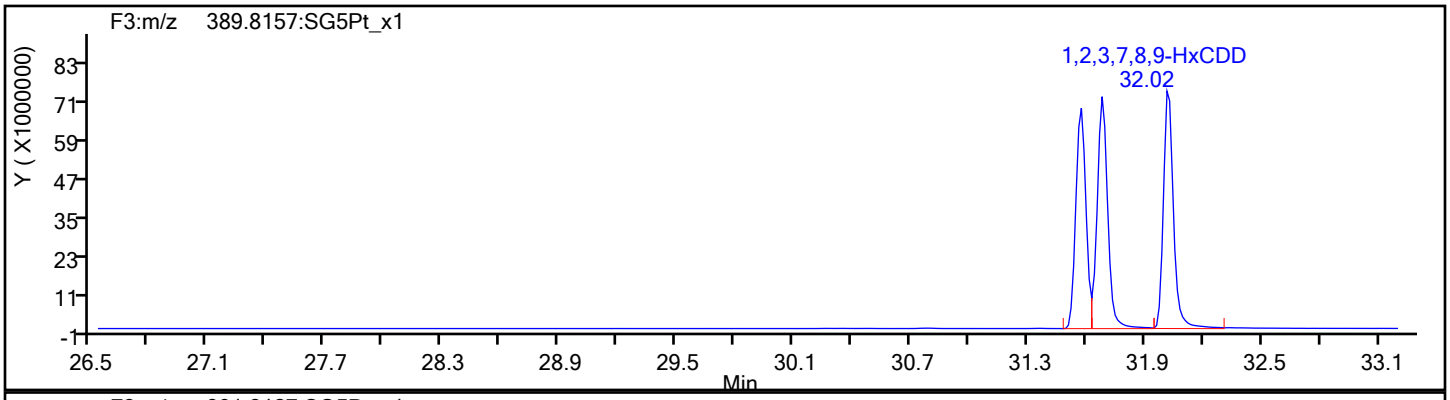
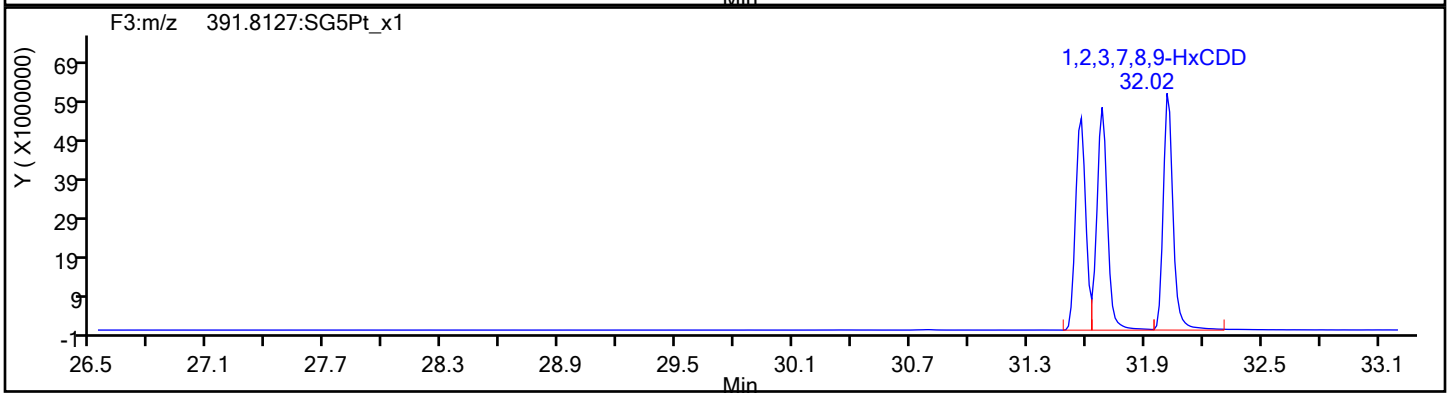
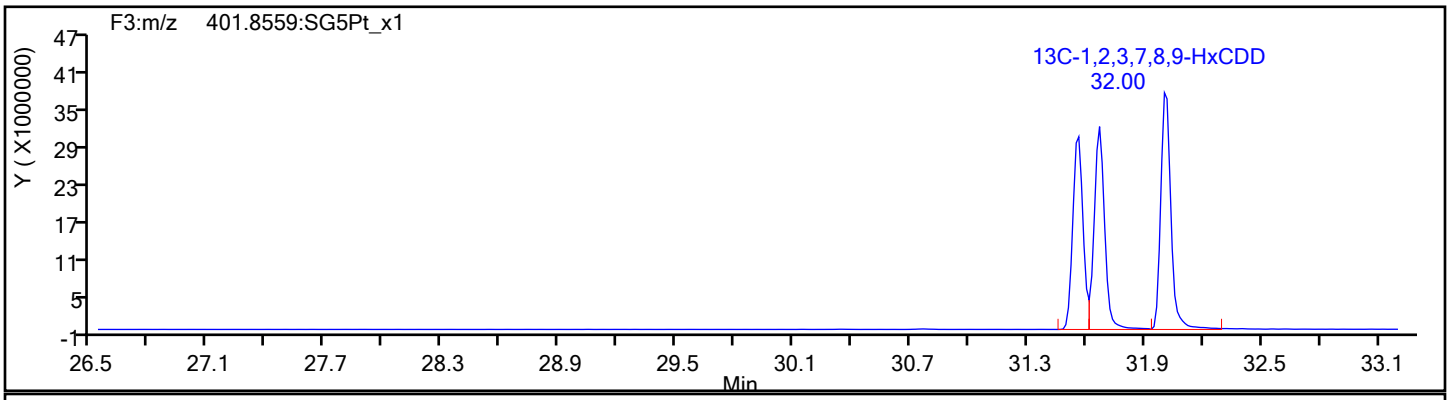
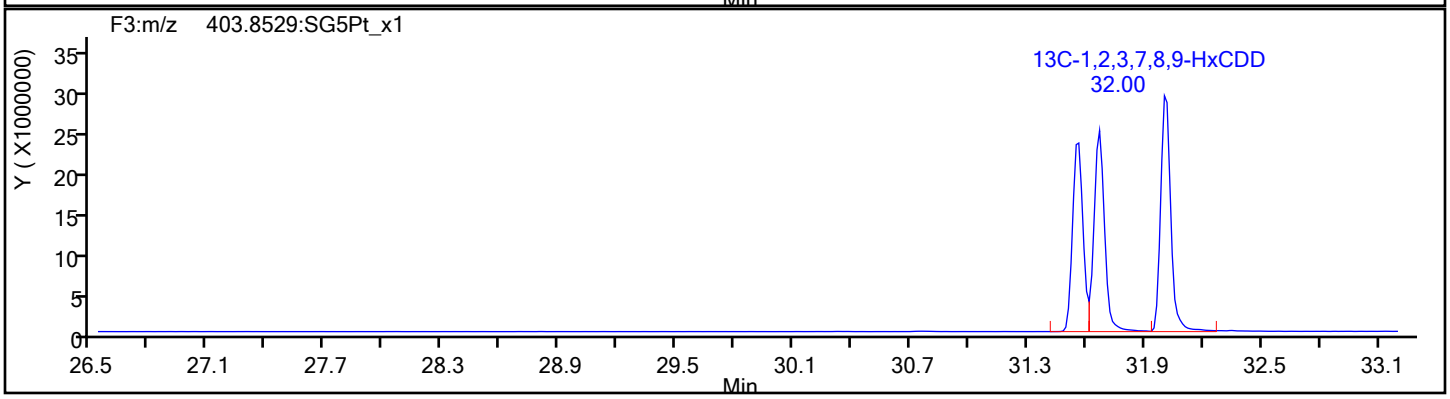
HxCDD





HxCDD Standards





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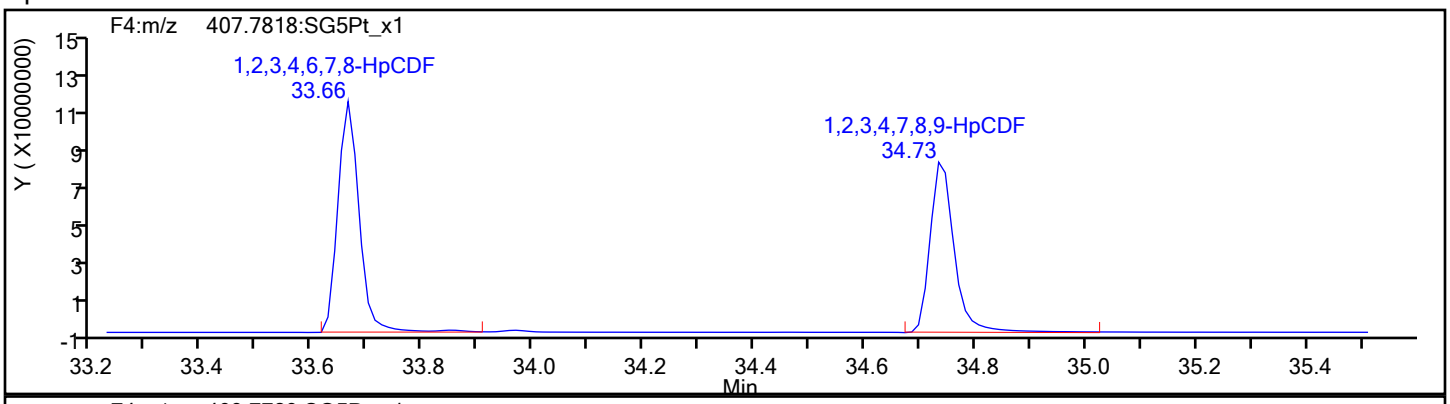
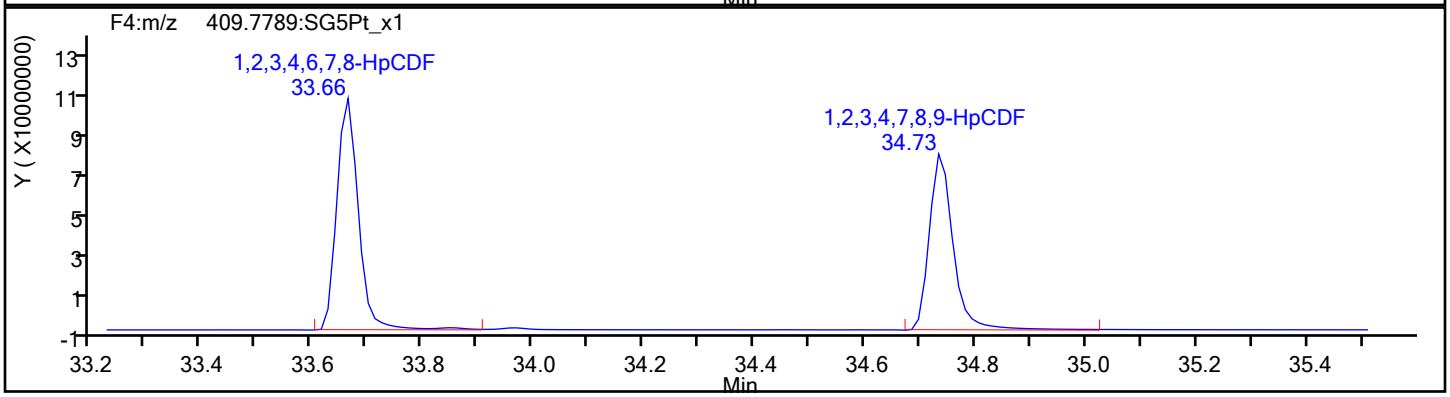
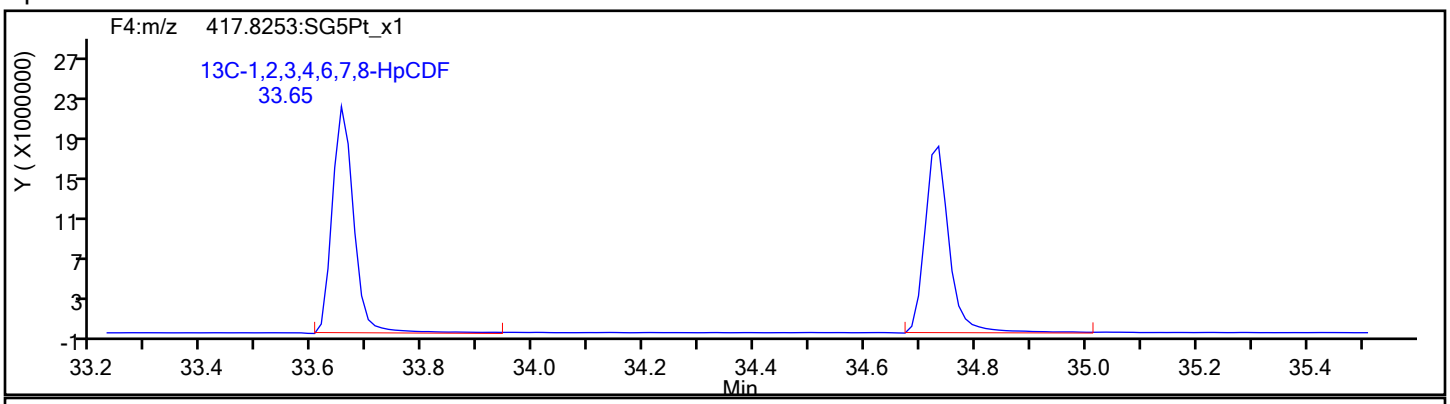
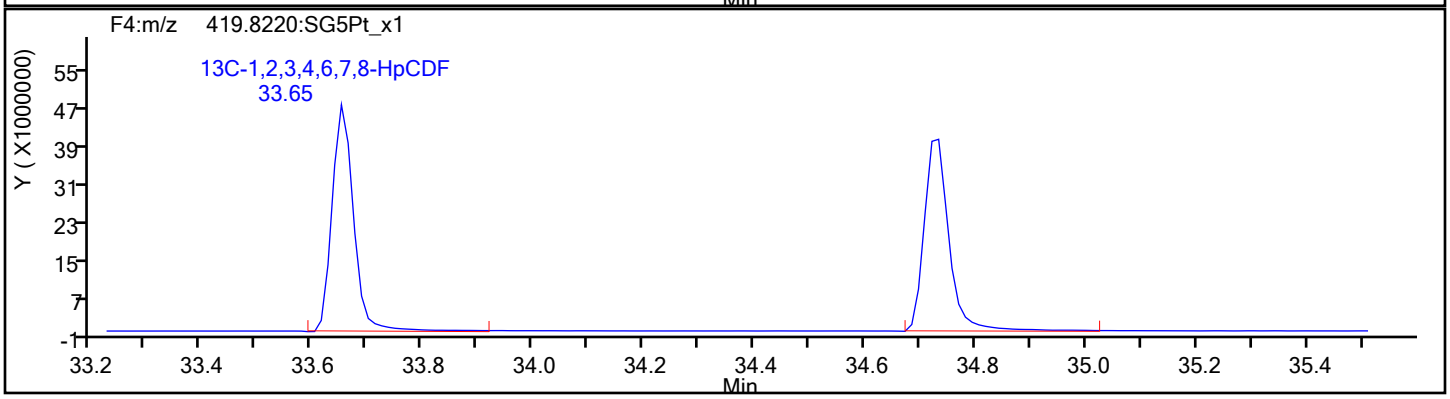
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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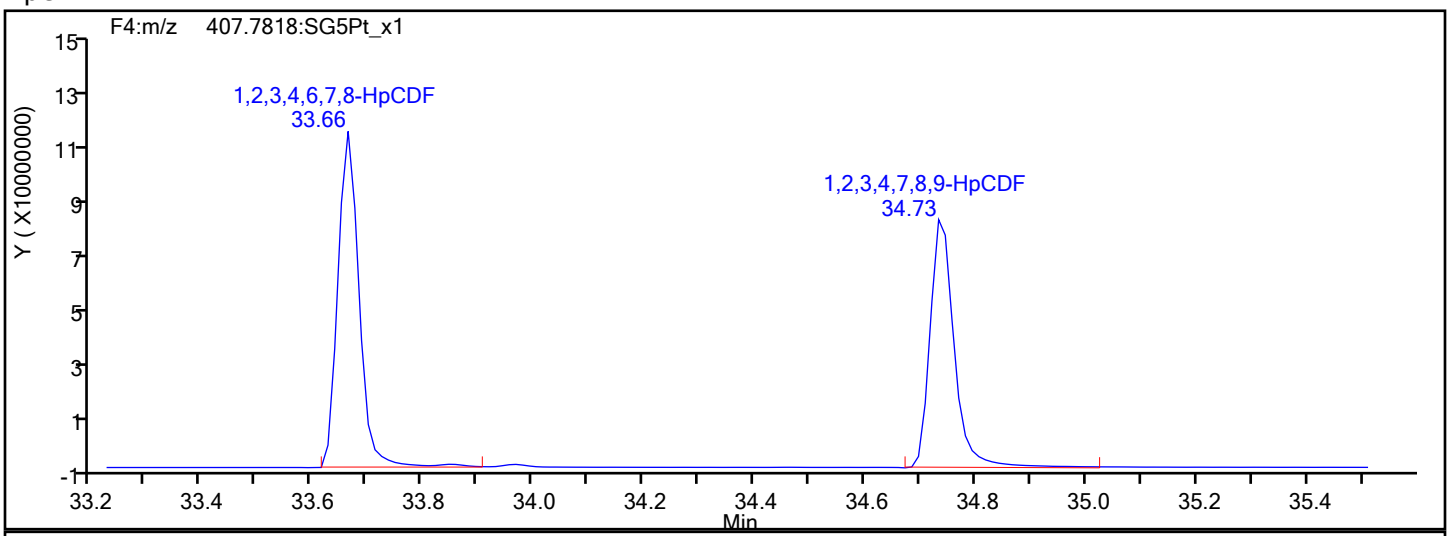
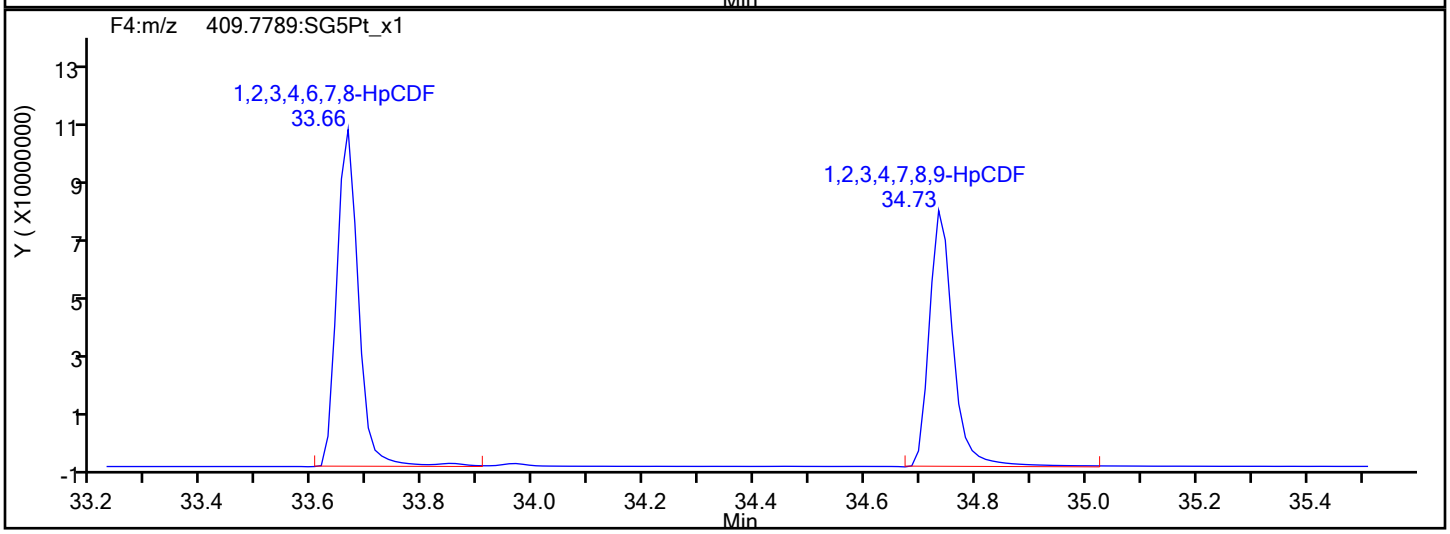
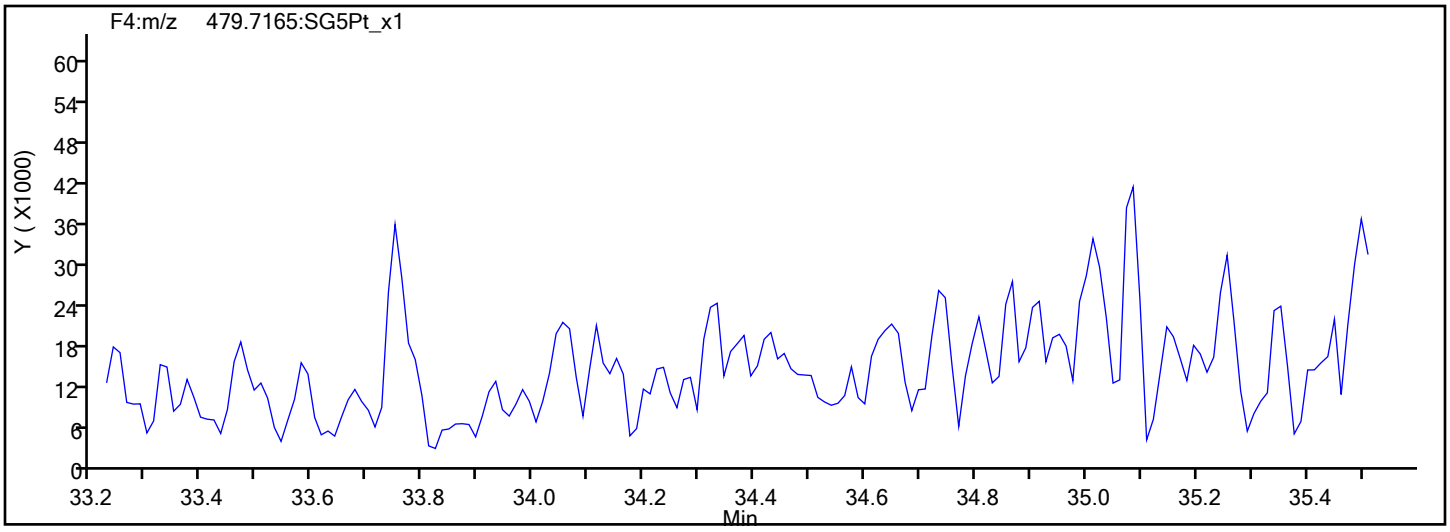
HpCDF





HpCDF Interference Mass

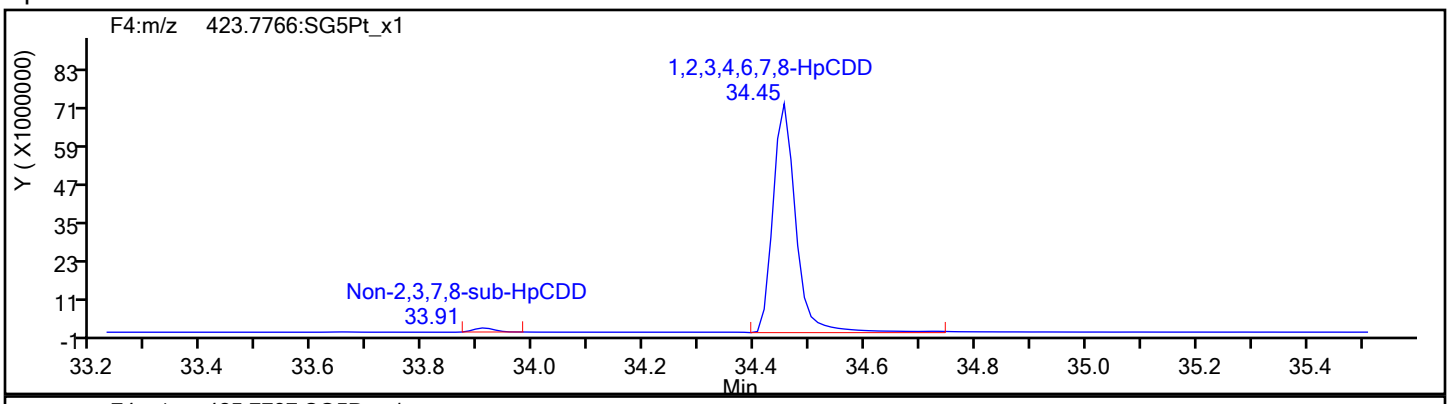


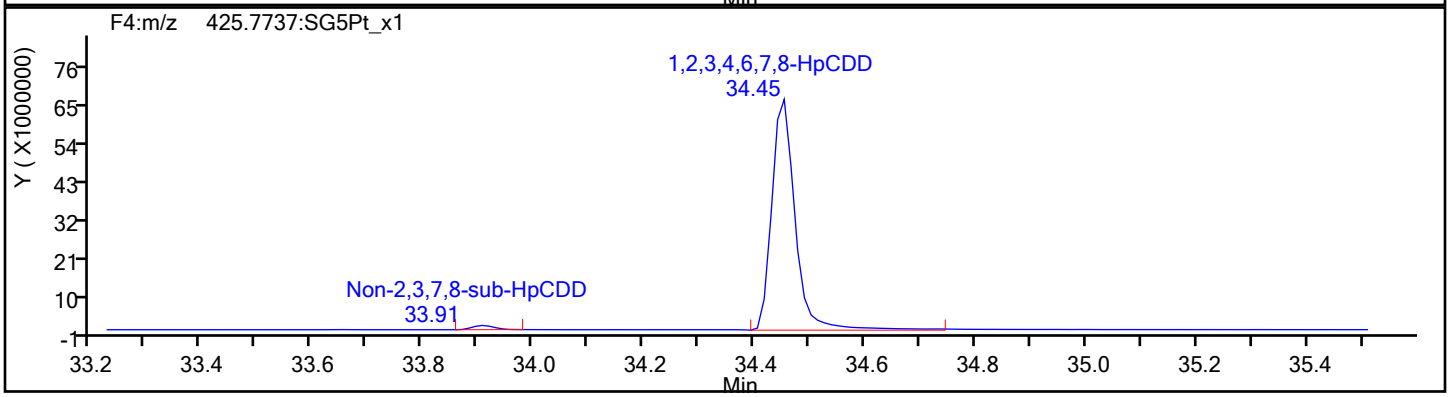
Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

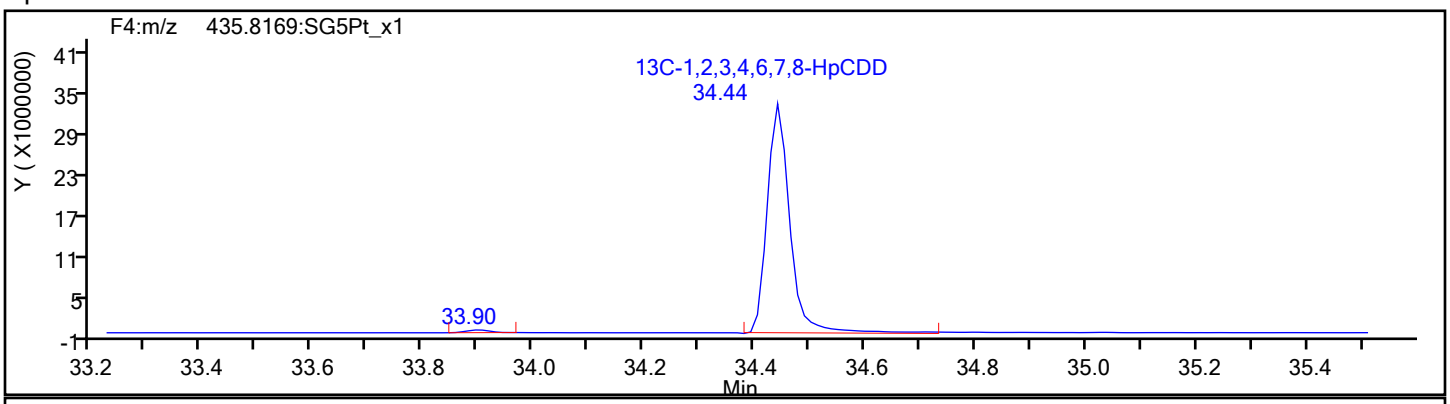
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

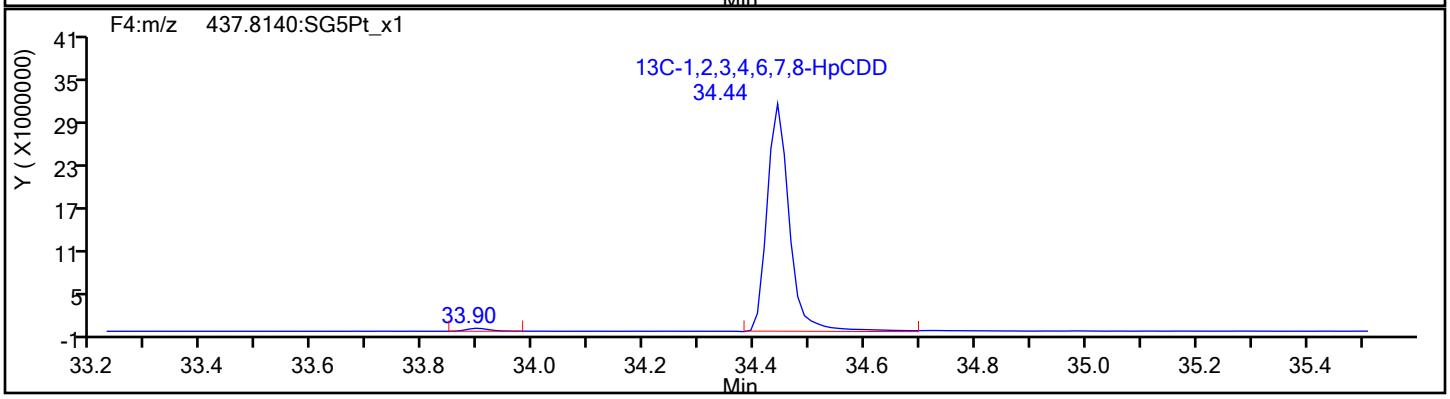
HpCDD





HpCDD Standards



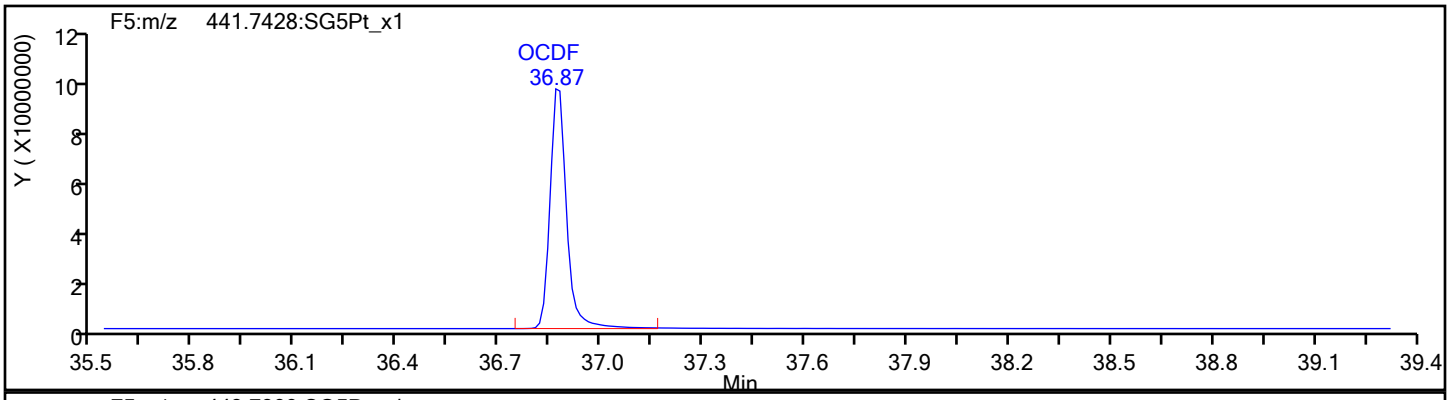


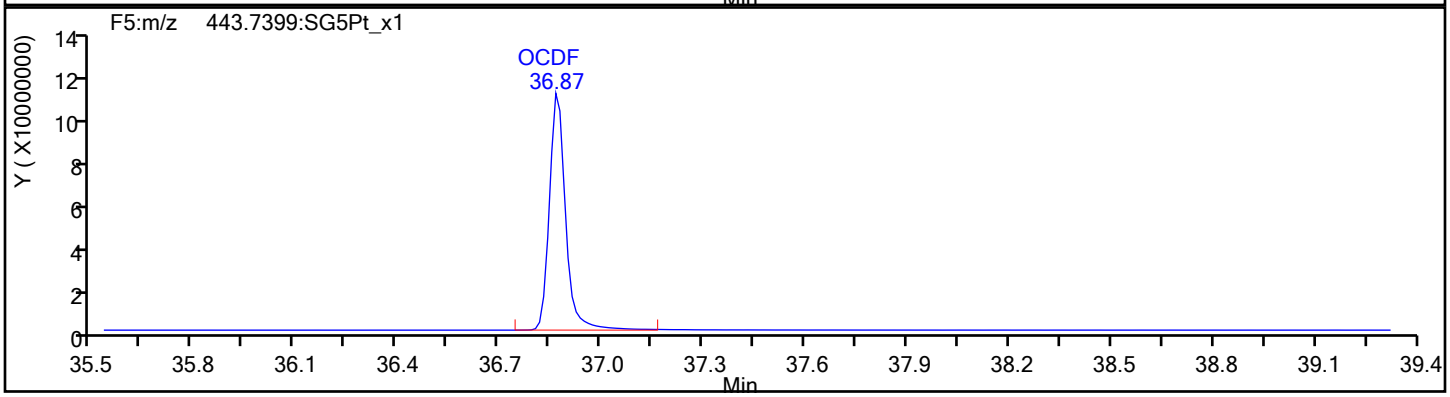
Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

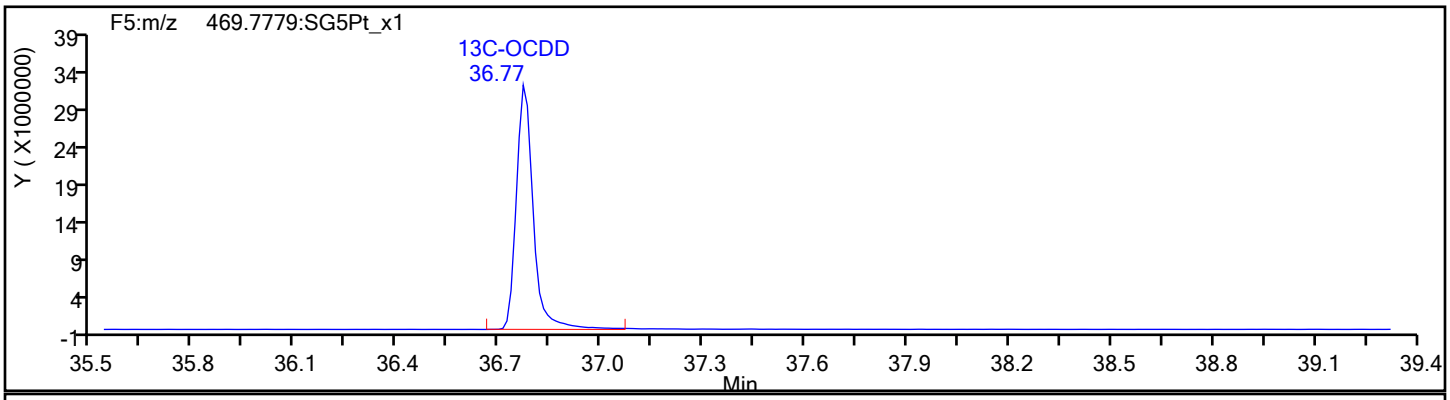
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

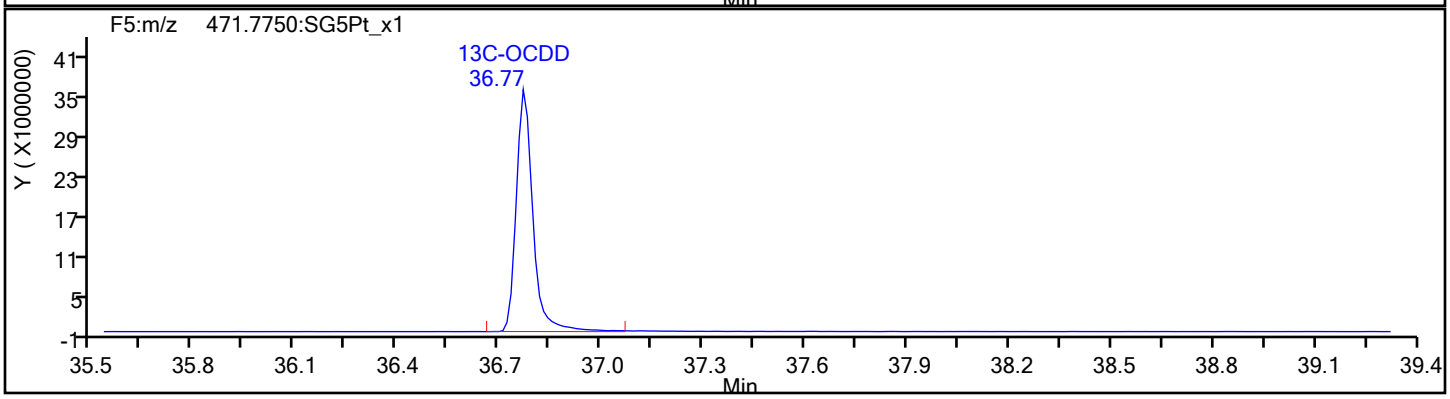
OCDF





OCDF Standards



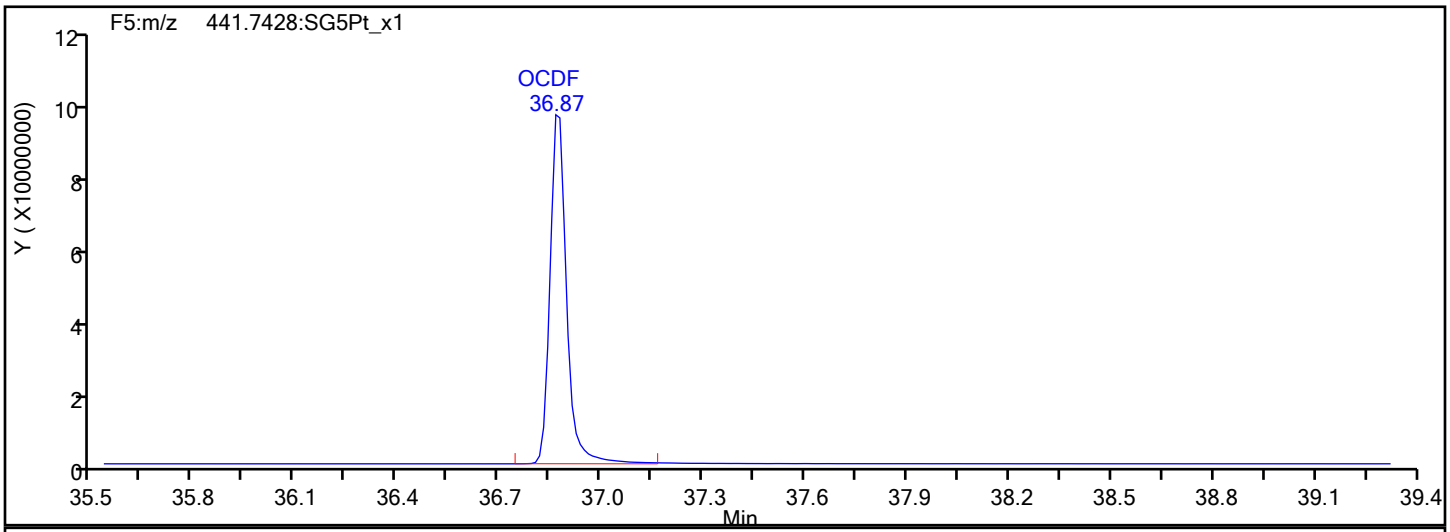


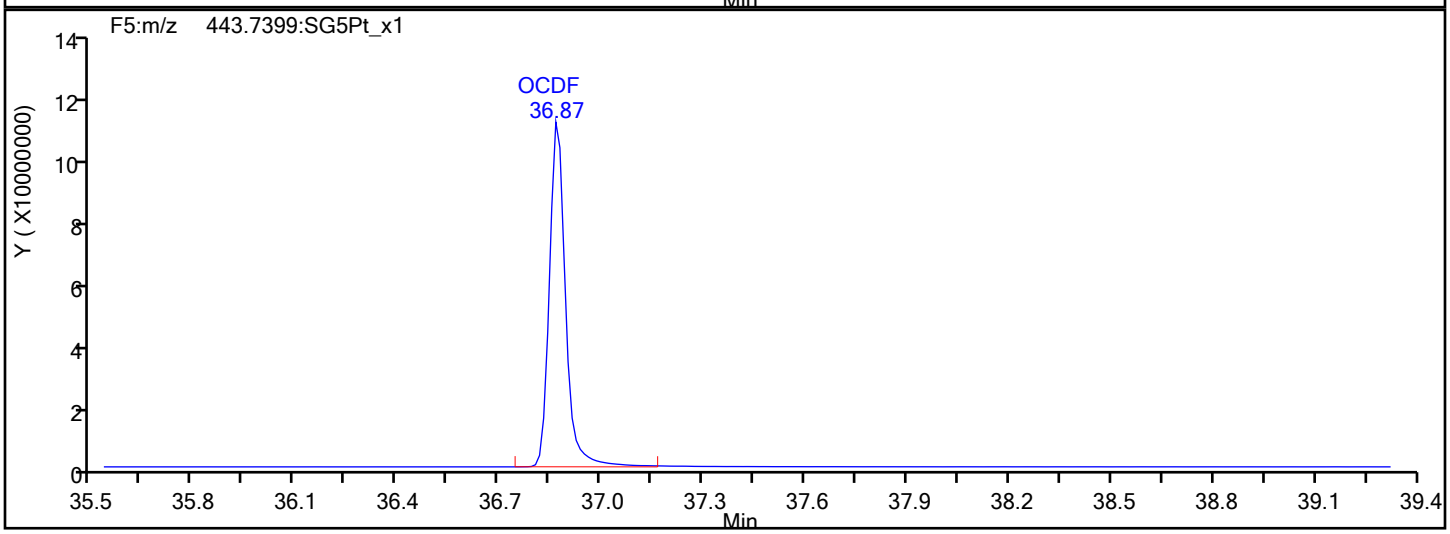
Report Date: 13-Dec-2019 08:02:47 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

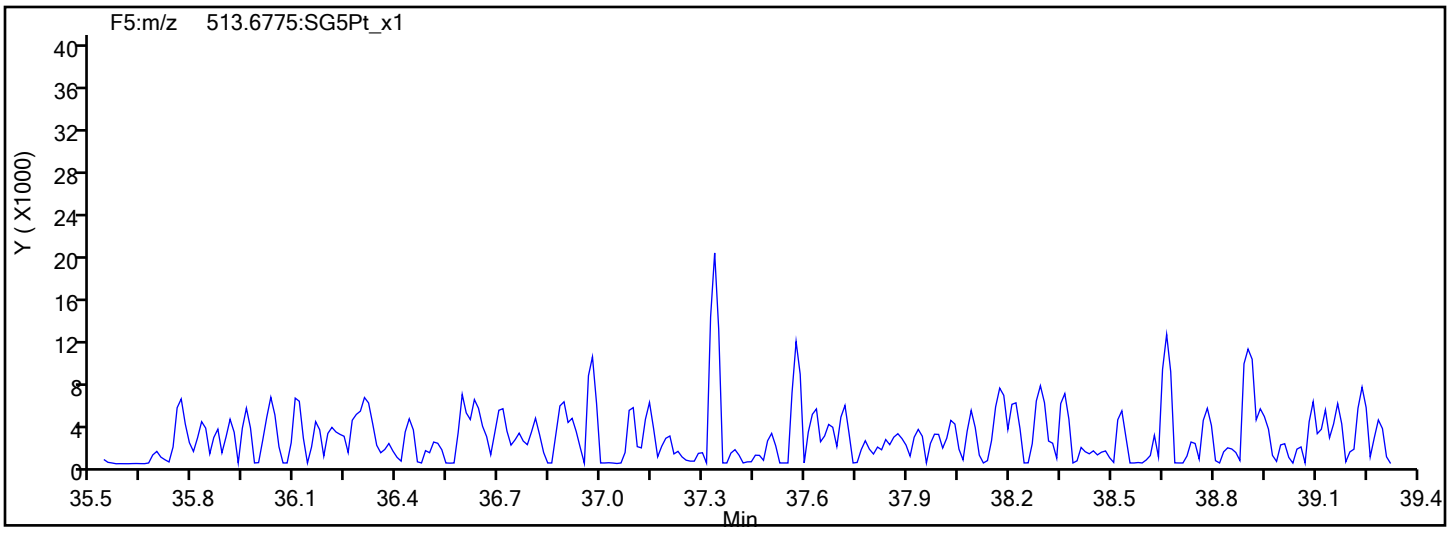
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_9.d		
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass



Report Date: 13-Dec-2019 08:02:48 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm

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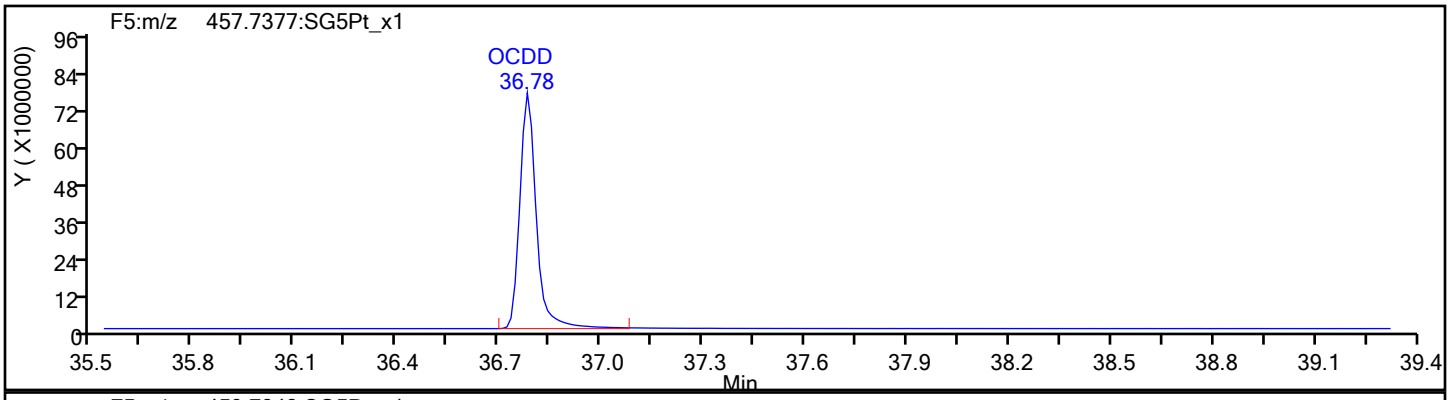
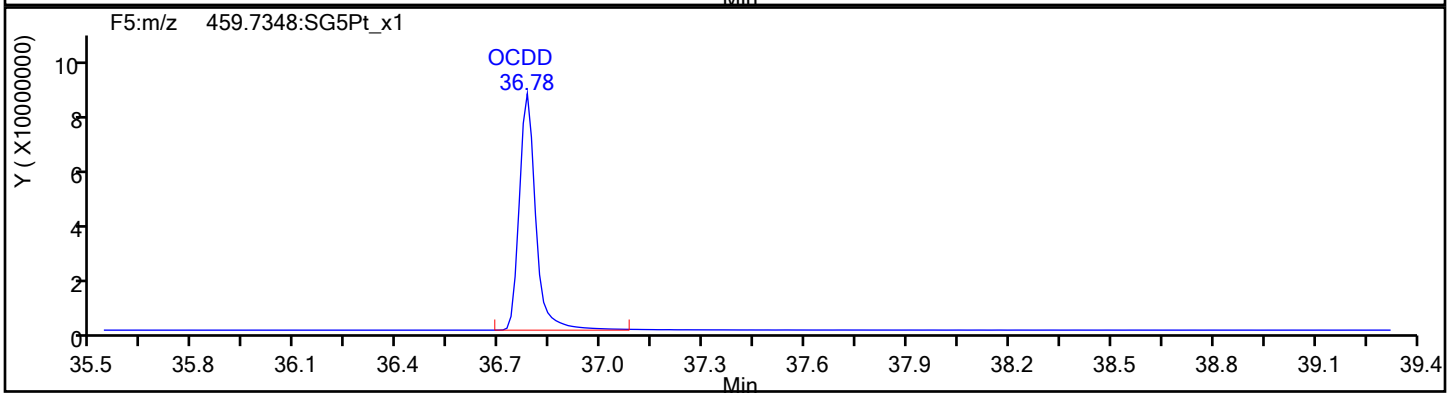
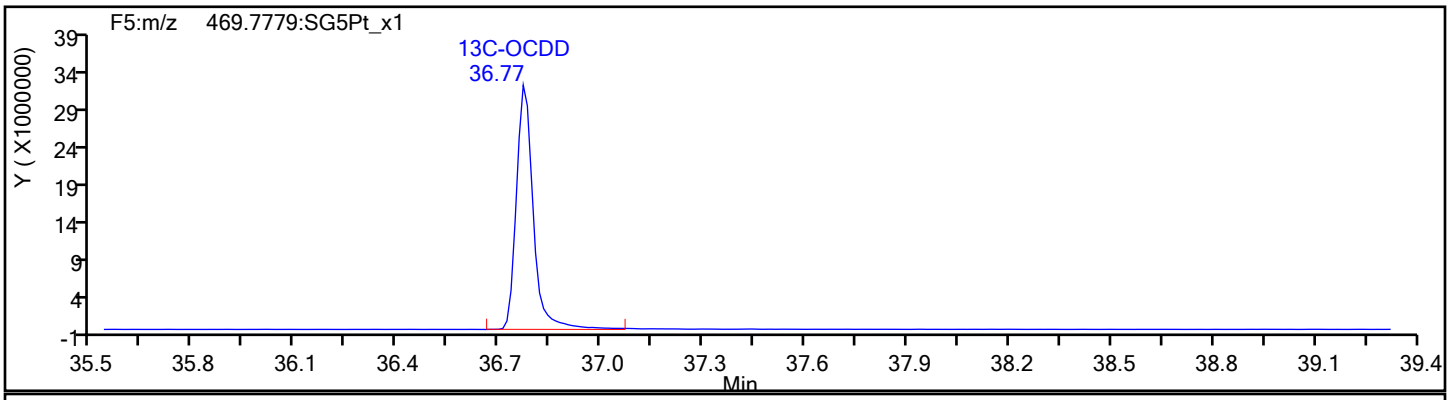
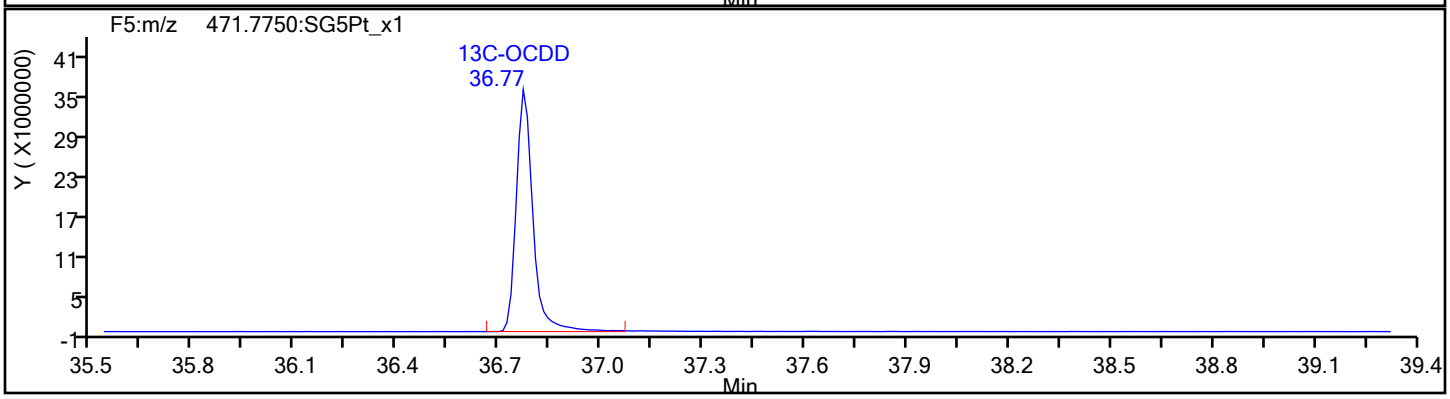




OCDD Standards





Report Date: 13-Dec-2019 08:02:48 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

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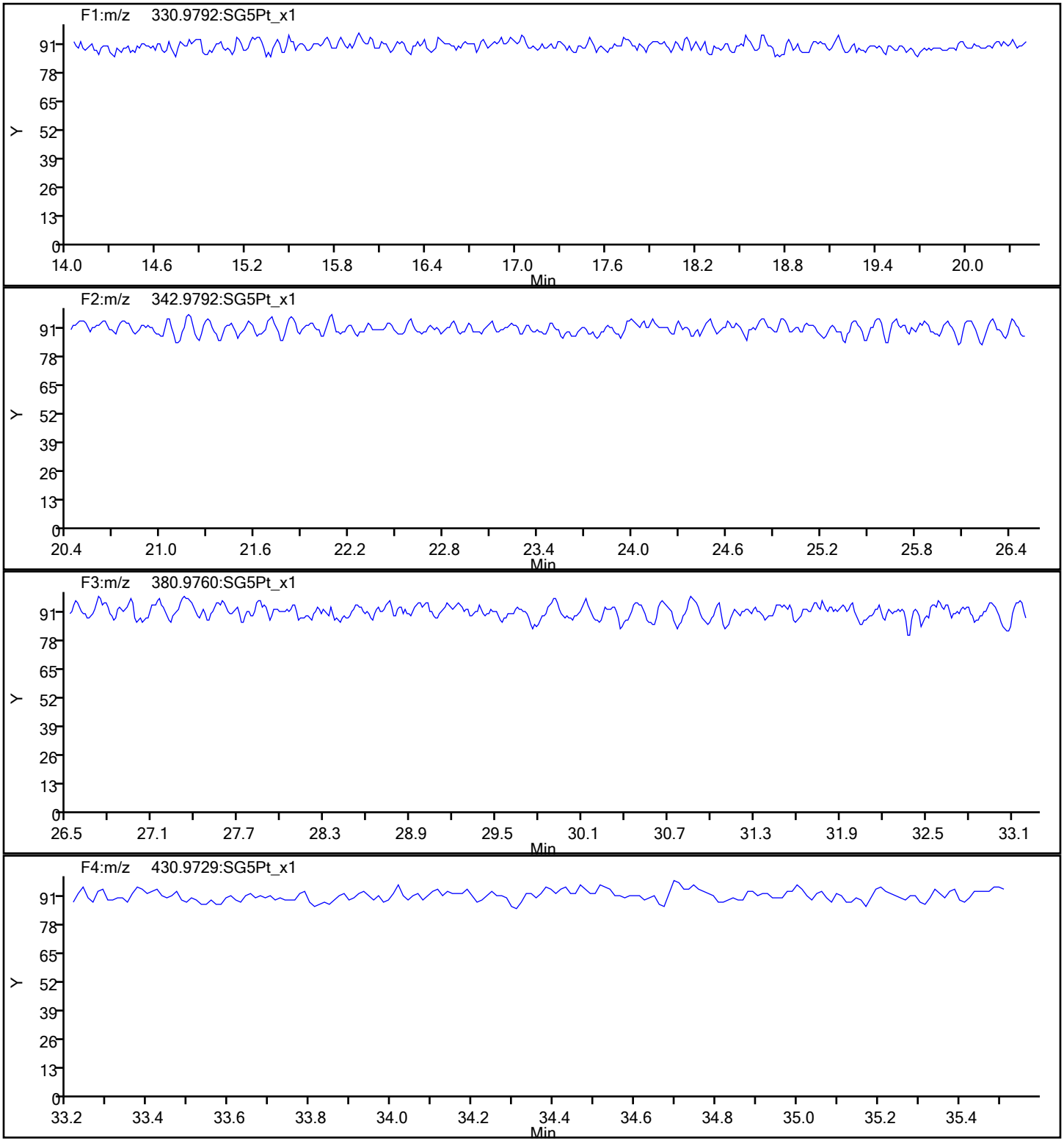
Injection Date:	12-Dec-2019 16:24:09	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:	ICV		
Worklist#:	345037	Sample Line#:	9
Column Type:	DB-5	Column Dia:	0.32 mm



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Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	KSS
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Client ID:	ICV		
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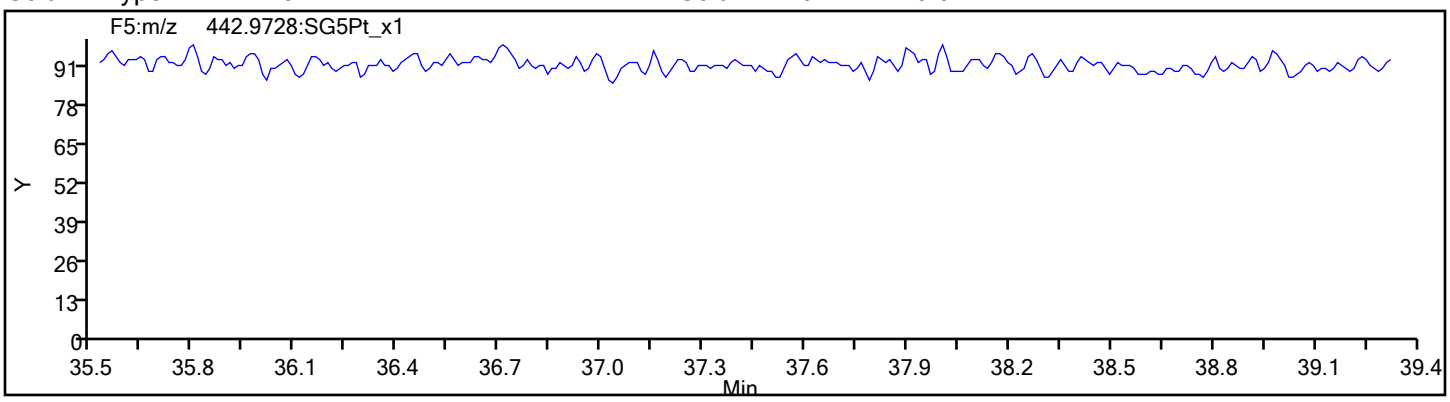
Column Type:	DB-5	Column Dia:	0.32 mm



FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Lab Sample ID: CCV 320-346752/2 Calibration Date: 12/19/2019 11:48

Instrument ID: 3D5 Calib Start Date: 12/12/2019 11:28

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 12/12/2019 14:39

Lab File ID: 19DE193D5_2.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	0.9502	1.039		10.9	10.0	109	84-120
2,3,7,8-TCDD	AveID	1.048	1.016		9.69	10.0	97	78-129
1,2,3,7,8-PeCDF	AveID	1.030	1.029		49.9	50.0	100	82-120
2,3,4,7,8-PeCDF	AveID	1.041	1.015		48.7	50.0	97	82-122
1,2,3,7,8-PeCDD	AveID	1.086	1.073		49.4	50.0	99	78-130
1,2,3,4,7,8-HxCDF	AveID	1.147	1.125		49.0	50.0	98	90-112
1,2,3,6,7,8-HxCDF	AveID	1.145	1.157		50.5	50.0	101	88-114
2,3,4,6,7,8-HxCDF	AveID	1.173	1.191		50.8	50.0	102	88-114
1,2,3,4,7,8-HxCDD	AveID	1.093	1.020		46.6	50.0	93	78-128
1,2,3,6,7,8-HxCDD	AveID	1.043	1.021		48.9	50.0	98	78-128
1,2,3,7,8,9-HxCDD	AveID	1.207	1.177		48.7	50.0	97	82-122
1,2,3,7,8,9-HxCDF	AveID	1.172	1.218		52.0	50.0	104	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.480	1.540		52.0	50.0	104	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.054	1.027		48.7	50.0	97	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.293	1.315		50.8	50.0	102	86-116
OCDD	AveID	1.136	1.084		95.4	100	95	79-126
OCDF	AveID	1.394	1.374		98.6	100	99	63-159
13C-2,3,7,8-TCDF	Ave	1.416	1.407		99.4	100	99	71-140
13C-2,3,7,8-TCDD	Ave	0.9751	0.9453		96.9	100	97	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.179	1.106		93.8	100	94	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.131	1.088		96.2	100	96	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7572	0.6866		90.7	100	91	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.104	1.073		97.2	100	97	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.147	1.111		96.8	100	97	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.077	1.025		95.2	100	95	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.7962	0.7732		97.1	100	97	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	0.8720	0.8719		100	100	100	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.011	0.9079		89.8	100	90	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	0.7577	0.7279		96.1	100	96	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.7058	0.6816		96.6	100	97	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.6941	0.6801		98.0	100	98	77-129
13C-OCDD	Ave	0.4603	0.4599		200	200	100	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.348	1.453		10.8	10.0	108	79-127

Sample List Report **MassLynx 4.1**

Sample List: C:\MassLynx\DATA 2019.PRO\SampleDB\19DE193D5.SPL
Last Modified: Thursday, December 19, 2019 12:51:06 Pacific Standard Time
Printed: Thursday, December 19, 2019 12:51:15 Pacific Standard Time

Page Position (1, 1)

	File Name	File Text	Sample ID	Bottle	Method/Matrix	Box #	User
1	19DE193D5_1	WDM HRDXNCP_00040	WDM 121919	Tray1:1	DXN		AJS
2	19DE193D5_2	CCV HRDXNL4_00086	CCV 121919	Tray1:2	DXN		AJS
3	19DE193D5_3	SB Solvent Blank C-14	SB 121919	Tray1:3			AJS
4	19DE193D5_4	MB 320-344942/1-A	MB 320-344942/1-A	Tray1:4	1613B/Solid	D119	AJS
5	19DE193D5_5	LCS 320-344942/2-A	LCS 320-344942/2-A	Tray1:5	1613B/Solid		AJS
6	19DE193D5_6	LCSD 320-344942/3-A	LCSD 320-344942/3-A	Tray1:6	1613B/Solid		AJS
7	19DE193D5_7	320-56953-A-1-A	320-56953-A-1-A	Tray1:7	1613B/Solid		AJS
8	19DE193D5_8	320-56953-A-2-A	320-56953-A-2-A	Tray1:8	1613B/Solid		AJS
9	19DE193D5_9	320-56953-A-3-A	320-56953-A-3-A	Tray1:9	1613B/Solid		AJS
10	19DE193D5_10	320-56953-A-4-A	320-56953-A-4-A	Tray1:10	1613B/Solid		AJS
11	19DE193D5_11	320-56953-A-5-A	320-56953-A-5-A	Tray1:11	1613B/Solid		AJS
12	19DE193D5_12	320-56953-A-6-A	320-56953-A-6-A	Tray1:12	1613B/Solid		AJS
13	19DE193D5_13	320-56953-A-7-A	320-56953-A-7-A	Tray1:13	1613B/Solid		AJS
14	19DE193D5_14	320-56953-A-8-A	320-56953-A-8-A	Tray1:14	1613B/Solid		AJS
15	19DE193D5_15	SB Solvent Blank C-14	SB 121919A	Tray1:3			AJS
16	19DE193D5_16	CCV HRDXNL4_00086	CCV 121919A	Tray1:2	DXN		AJS
17	19DE193D5_17	WDM HRDXNCP_00040	WDM 121919A	Tray1:1	DXN		AJS
18	19DE193D5_18	SB Solvent Blank C-14	SB 121919B	Tray1:3			AJS

logfile checked
12-19-19 ALM

Sample Size	Units	MS File	Inlet File	Inject Volume	Sample Type	Conc A	Conc B	Conc C	Conc D
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1.000000	---	Dioxin3D5	dioxinnogc	2.000000	Analyte	10	50	100	100
1.000000		Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
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10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
10.000000	g	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
1.000000		Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
1.000000	---	Dioxin3D5	dioxinnogc	2.000000	Analyte	10	50	100	100
1.000000	---	Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---
1.000000		Dioxin3D5	dioxinnogc	2.000000	Analyte	---	---	---	---

Conc E	Conc F	Conc G	Process	Process Options	Action On Error
---	---	---	FBAT_ML_FileMover	---	---
200	5	100	FBAT_ML_FileMover	---	---
---	---	---	FBAT_ML_FileMover	---	---
---	---	---	FBAT_ML_FileMover	---	---
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---	---	---	FBAT_ML_FileMover	---	---
---	---	---	FBAT_ML_FileMover	---	---
---	---	---	ResolutionCheck	C:\MassLynx\Autospec\dioxinendres.dat	Ignore Error
---	---	---	ResolutionCheck	C:\MassLynx\Autospec\dioxinendres.dat	Ignore Error
200	5	100	ResolutionCheck	C:\MassLynx\Autospec\dioxinendres.dat	Ignore Error
---	---	---	FBAT_ML_FileMover	---	---
---	---	---	FBAT_ML_FileMover	---	---

s5

C:\CHROM
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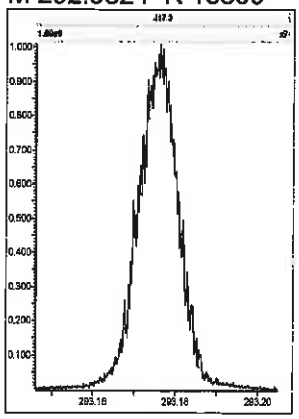
C:\CHROM

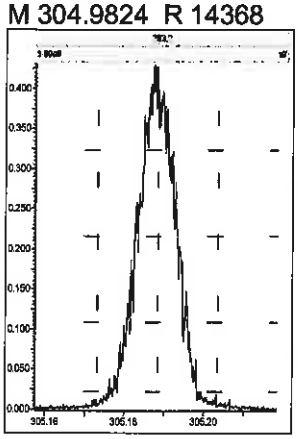
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Thursday, December 19, 2019 10:57:35 Pacific Standard Time

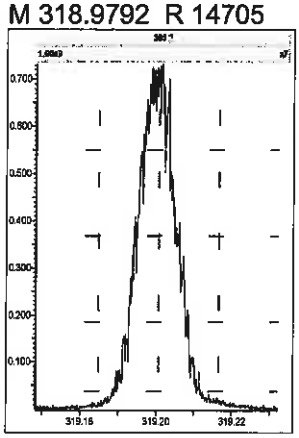
M 292.9824 R 13300



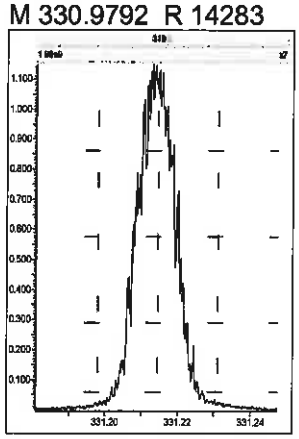
M 304.9824 R 14368



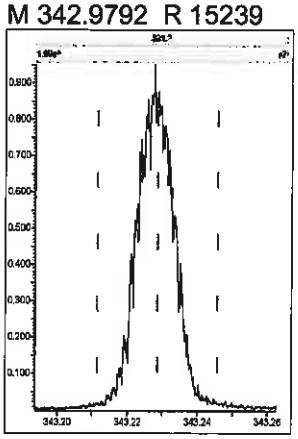
M 318.9792 R 14705



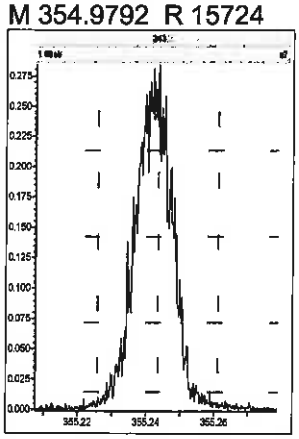
M 330.9792 R 14283



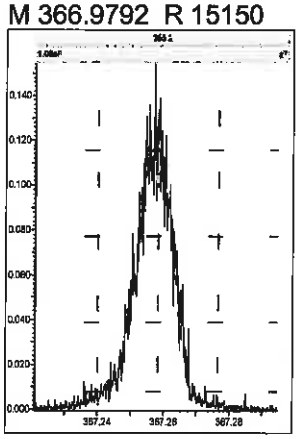
M 342.9792 R 15239



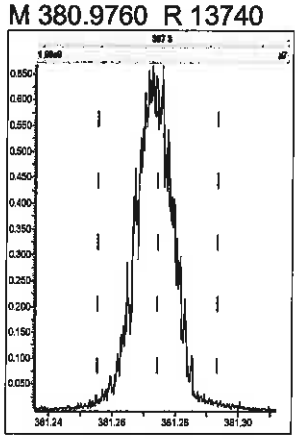
M 354.9792 R 15724



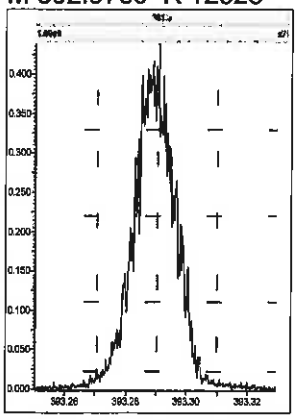
M 366.9792 R 15150



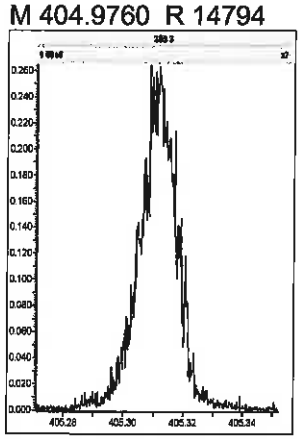
M 380.9760 R 13740



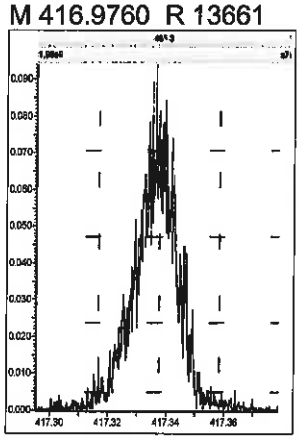
M 392.9760 R 12628



M 404.9760 R 14794



M 416.9760 R 13661



File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

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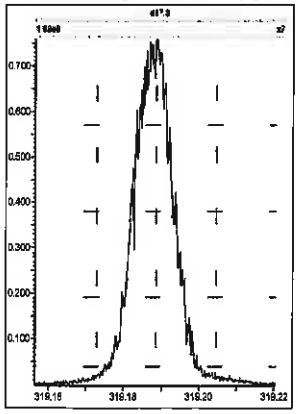
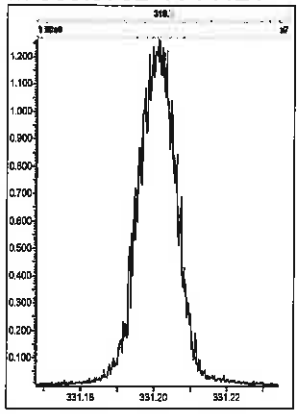
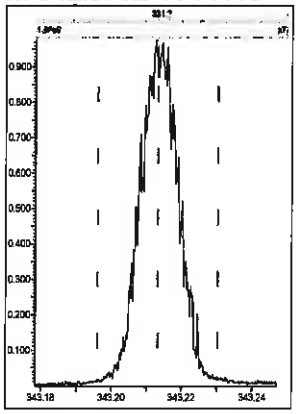
M 318.9792 R 13965



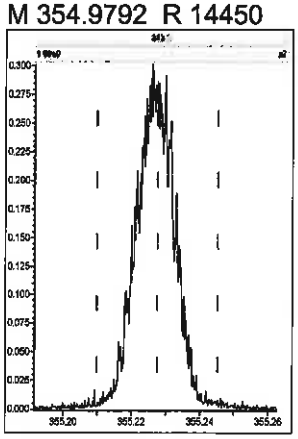
M 330.9792 R 14121



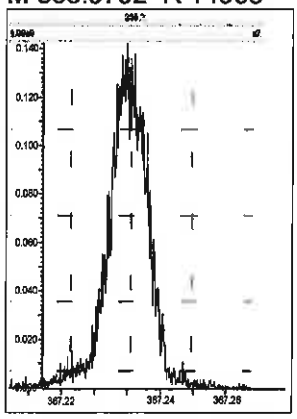
M 342.9792 R 14119



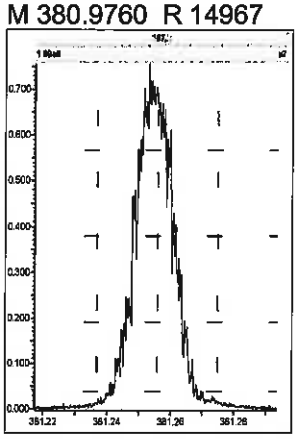
M 354.9792 R 14450



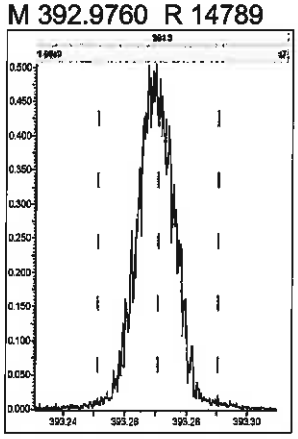
M 366.9792 R 14968



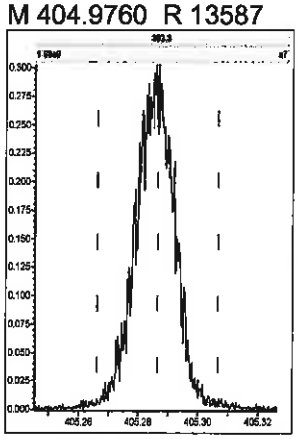
M 380.9760 R 14967



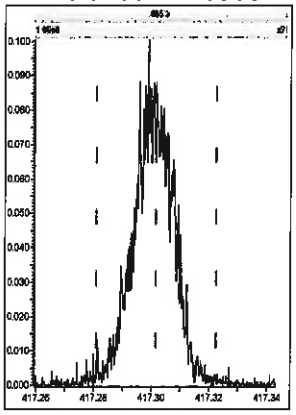
M 392.9760 R 14789



M 404.9760 R 13587



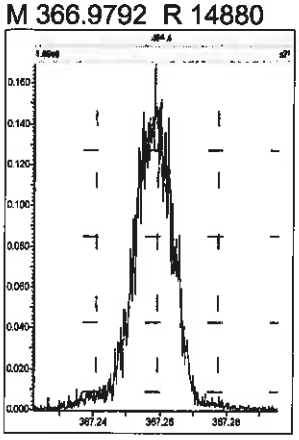
M 416.9760 R 13965



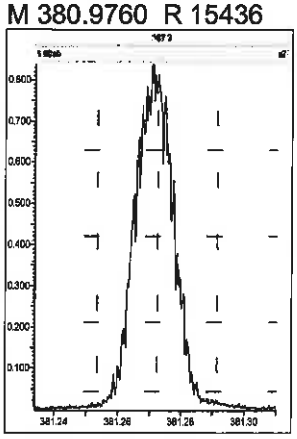
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Thursday, December 19, 2019 10:58:30 Pacific Standard Time

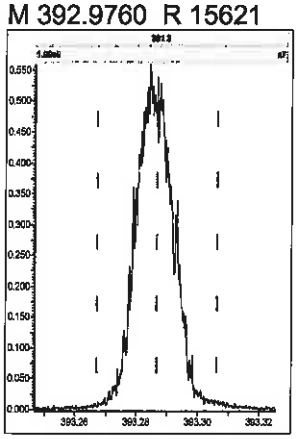
M 366.9792 R 14880



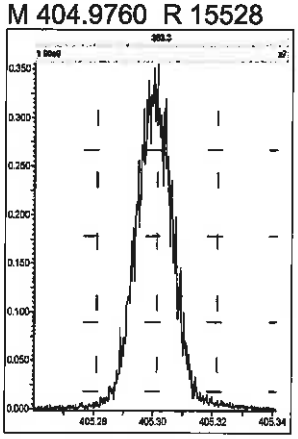
M 380.9760 R 15436



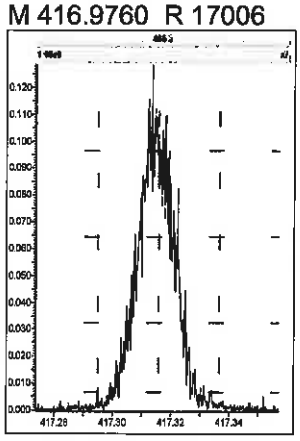
M 392.9760 R 15621



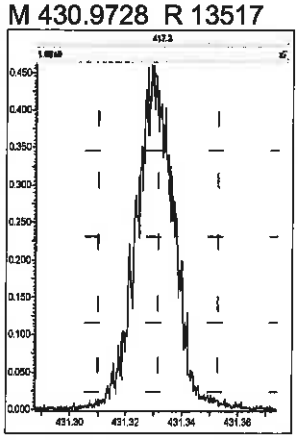
M 404.9760 R 15528



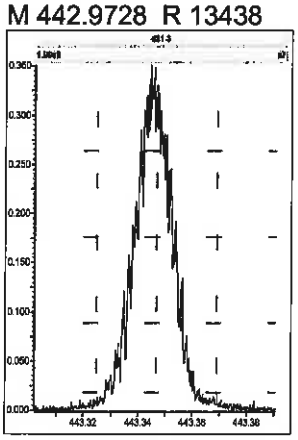
M 416.9760 R 17006



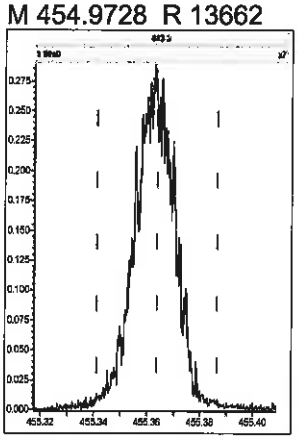
M 430.9728 R 13517



M 442.9728 R 13438



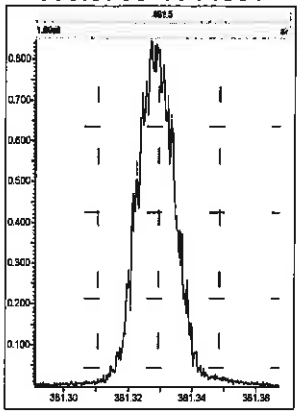
M 454.9728 R 13662



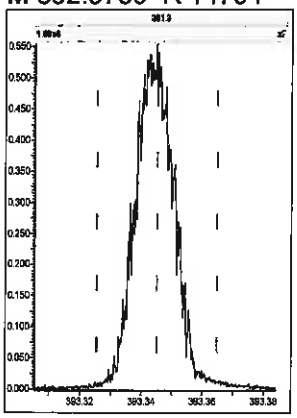
File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Thursday, December 19, 2019 10:58:48 Pacific Standard Time

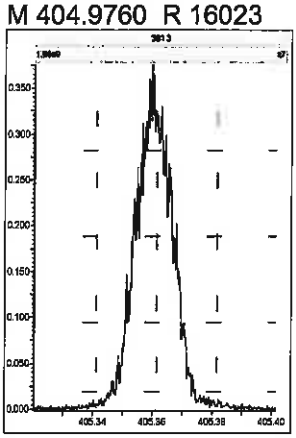
M 380.9760 R 14881



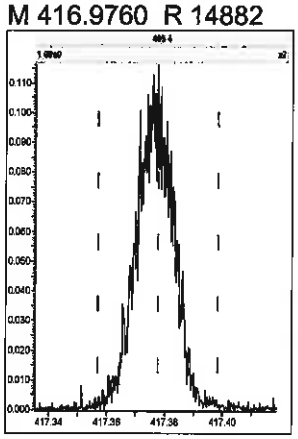
M 392.9760 R 14704



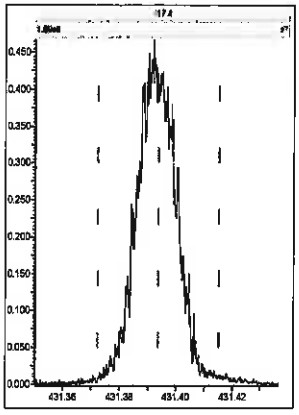
M 404.9760 R 16023



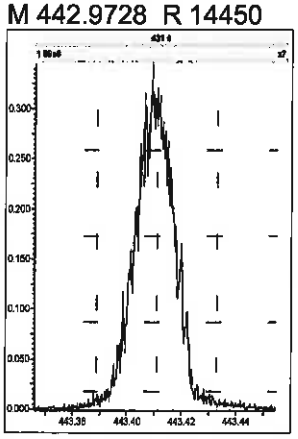
M 416.9760 R 14882



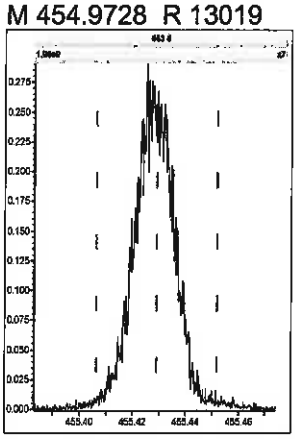
M 430.9728 R 14286



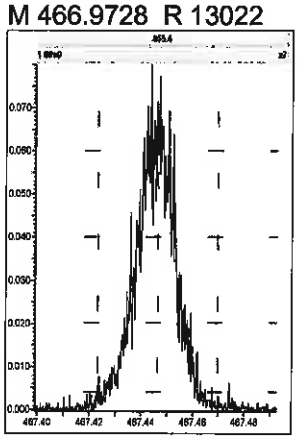
M 442.9728 R 14450



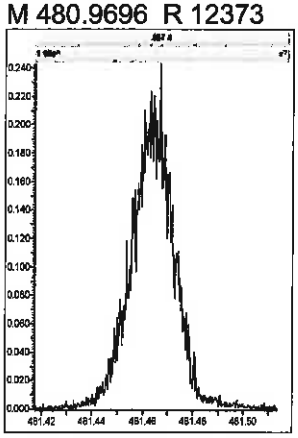
M 454.9728 R 13019



M 466.9728 R 13022



M 480.9696 R 12373



File: Experiment: Dioxin3D5.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

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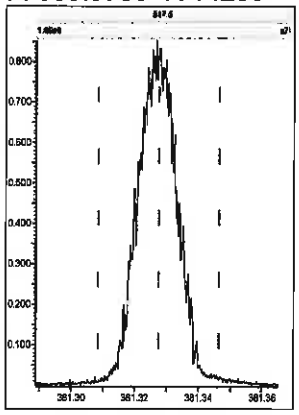
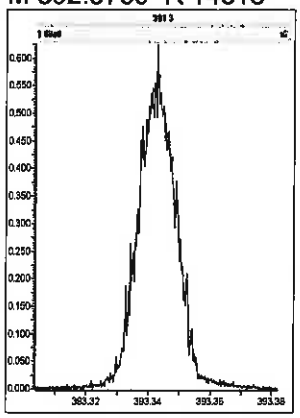
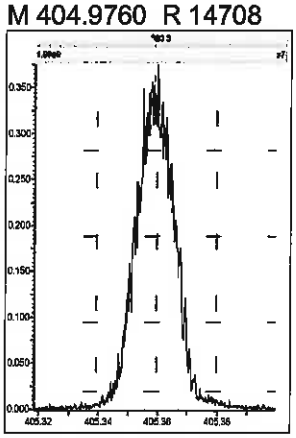
M 380.9760 R 14286



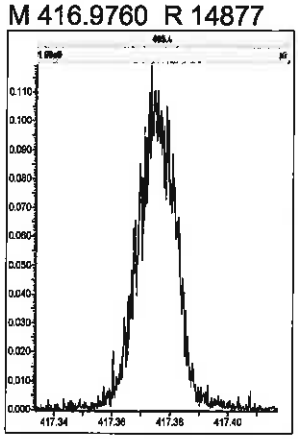
M 392.9760 R 14618



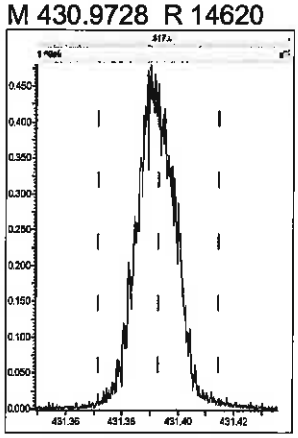
M 404.9760 R 14708



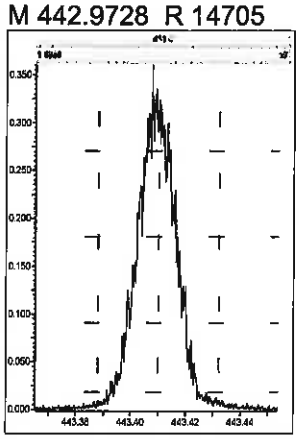
M 416.9760 R 14877



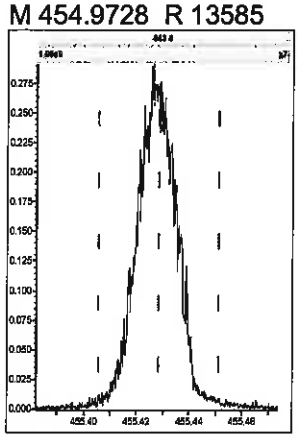
M 430.9728 R 14620



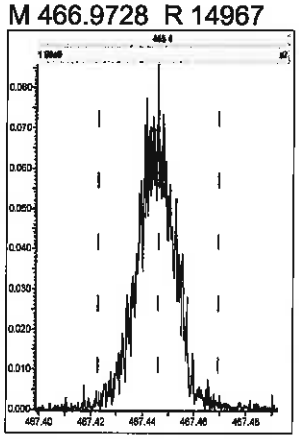
M 442.9728 R 14705



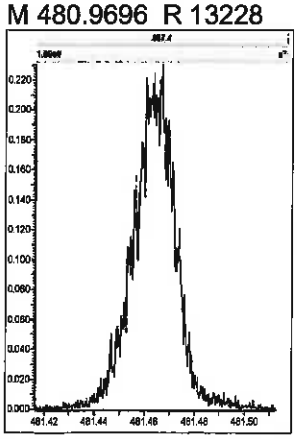
M 454.9728 R 13585



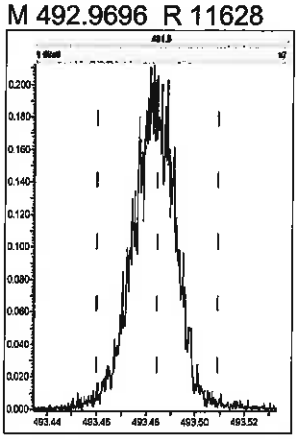
M 466.9728 R 14967



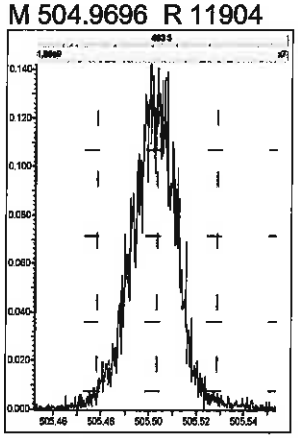
M 480.9696 R 13228



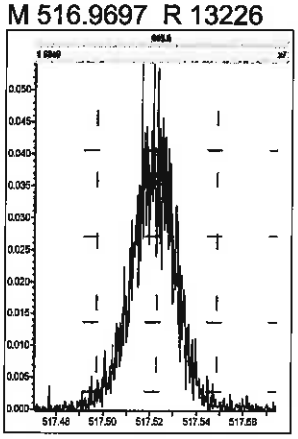
M 492.9696 R 11628



M 504.9696 R 11904



M 516.9697 R 13226



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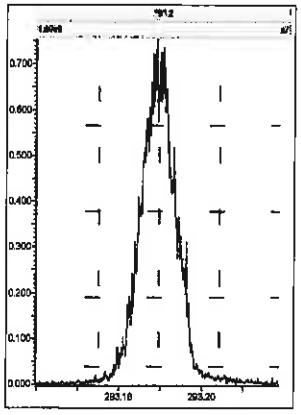
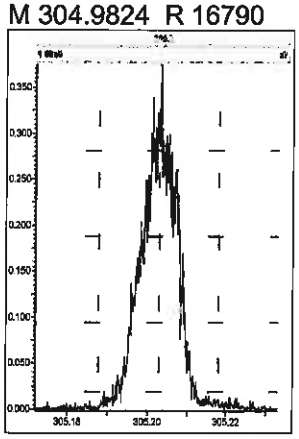
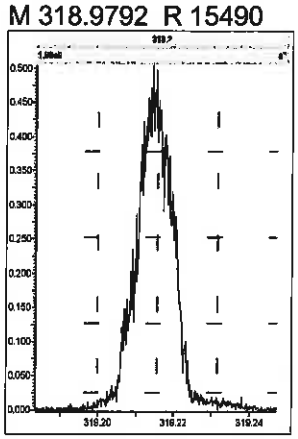
M 292.9824 R 14842



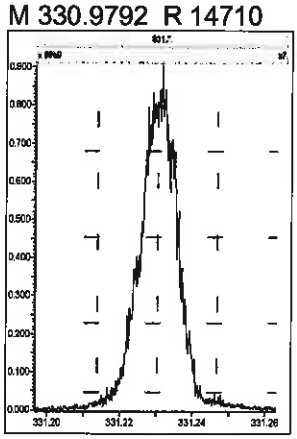
M 304.9824 R 16790



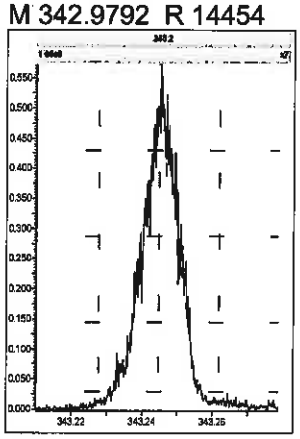
M 318.9792 R 15490



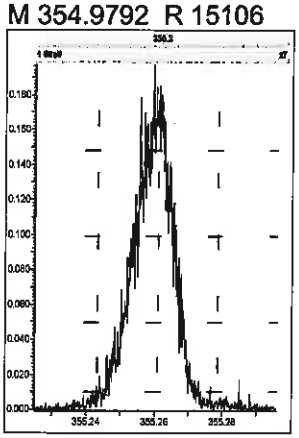
M 330.9792 R 14710



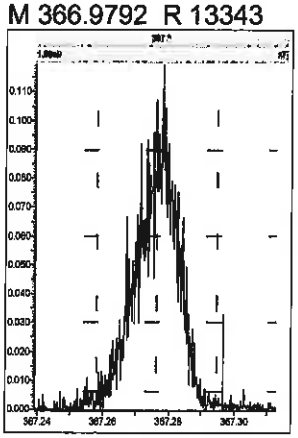
M 342.9792 R 14454



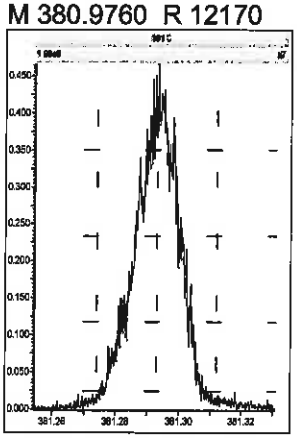
M 354.9792 R 15106



M 366.9792 R 13343



M 380.9760 R 12170



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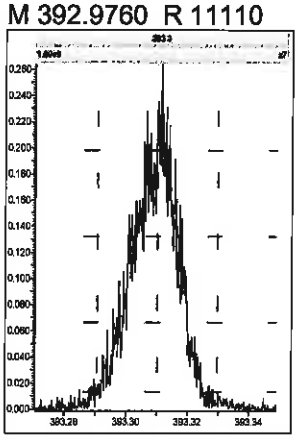
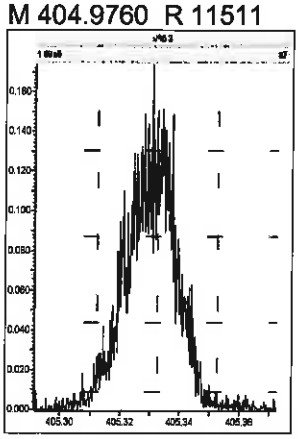
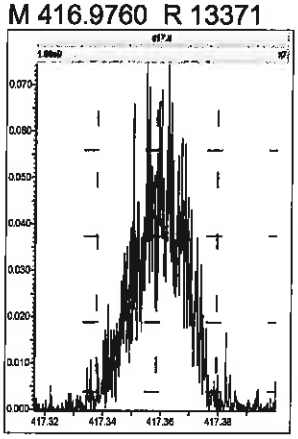


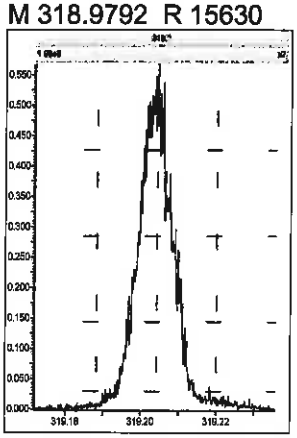
M 404.9760 R 11511



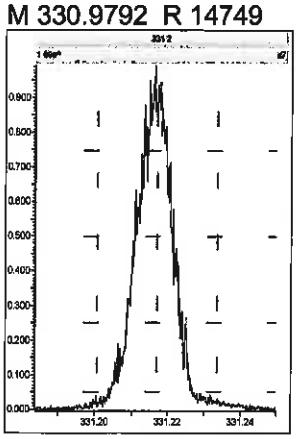
M 416.9760 R 13371



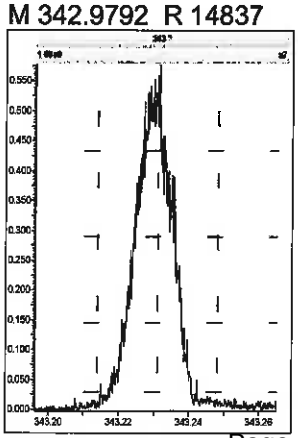
M 318.9792 R 15630



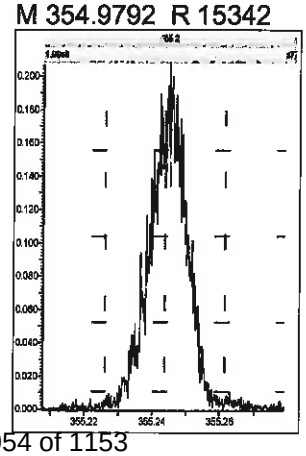
M 330.9792 R 14749



M 342.9792 R 14837



M 354.9792 R 15342



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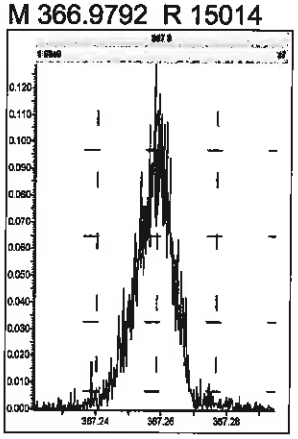
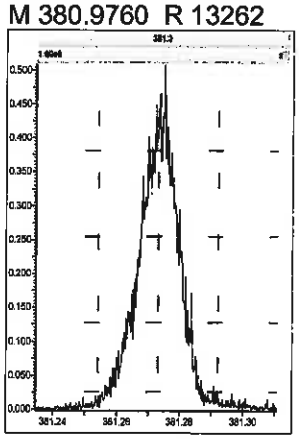
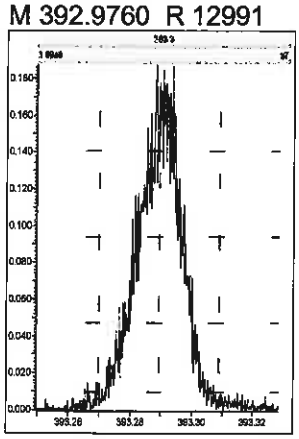


M 380.9760 R 13262



M 392.9760 R 12991



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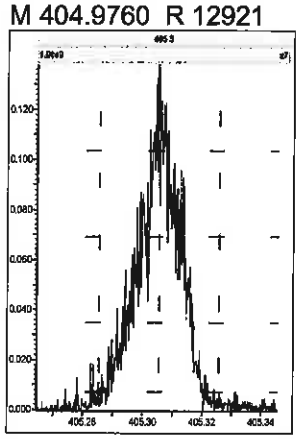

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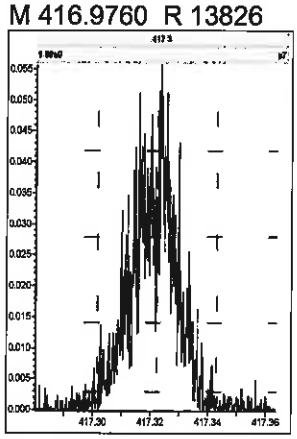

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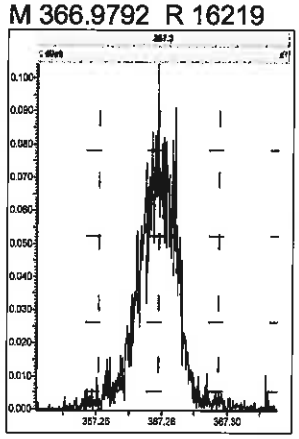

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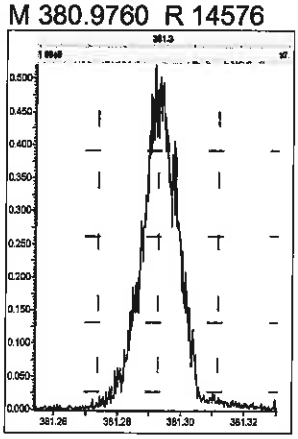
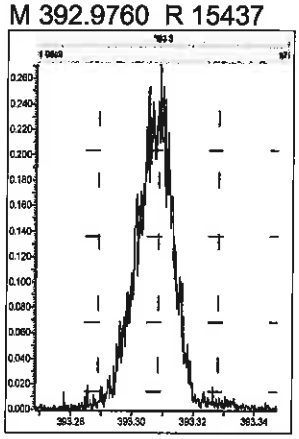
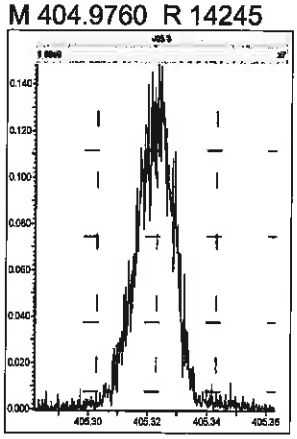


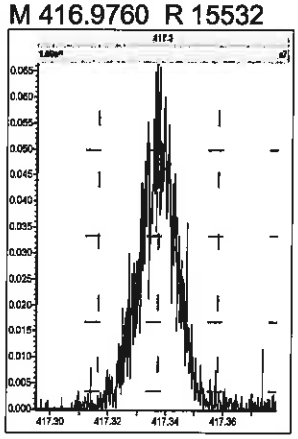
M 392.9760 R 15437



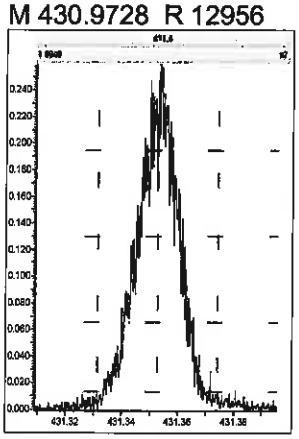
M 404.9760 R 14245



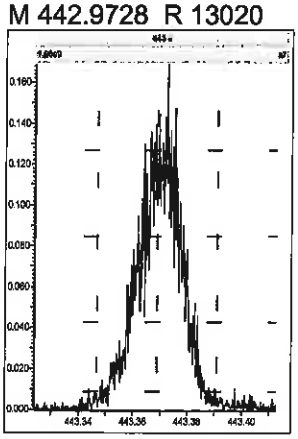
M 416.9760 R 15532



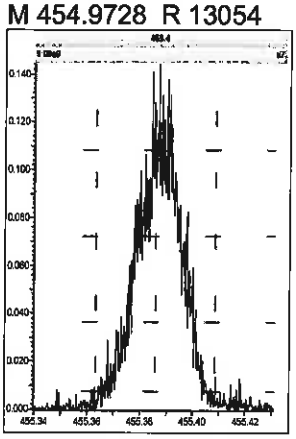
M 430.9728 R 12956



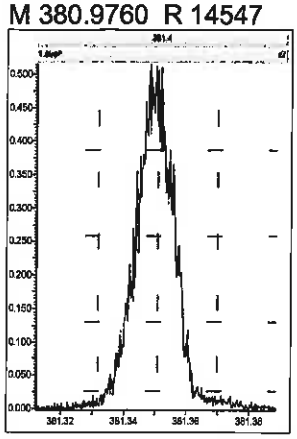
M 442.9728 R 13020



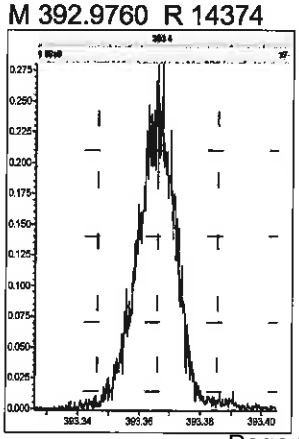
M 454.9728 R 13054



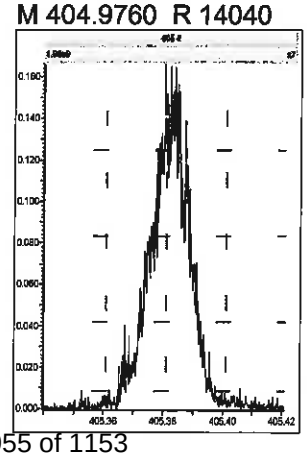
M 380.9760 R 14547



M 392.9760 R 14374



M 404.9760 R 14040



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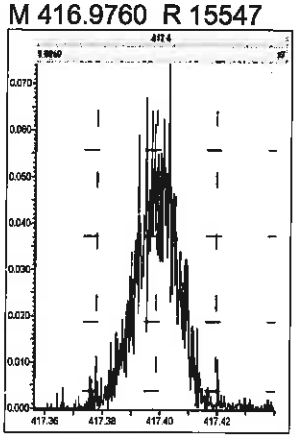
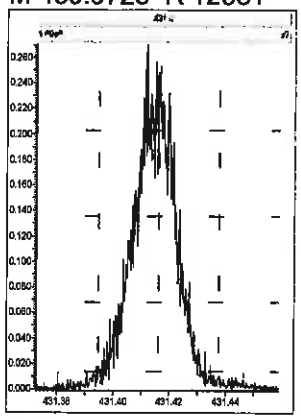
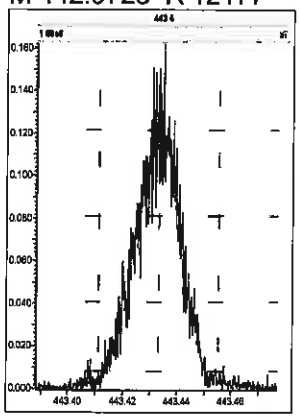


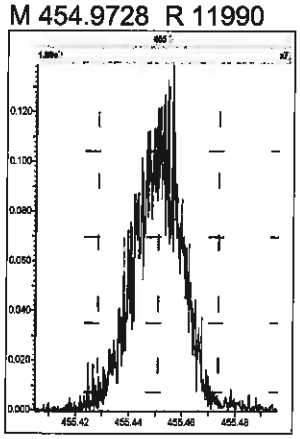
M 430.9728 R 12631



M 442.9728 R 12177



M 454.9728 R 11990



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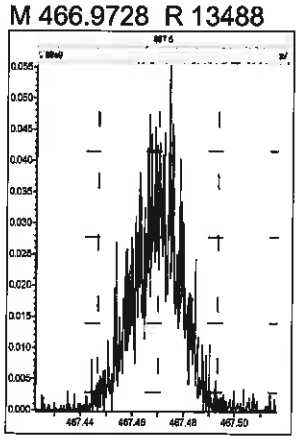
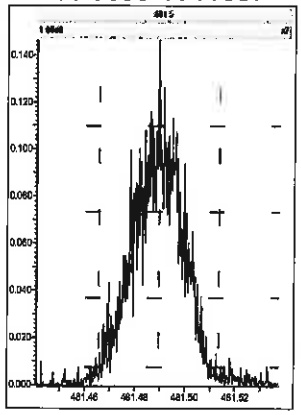
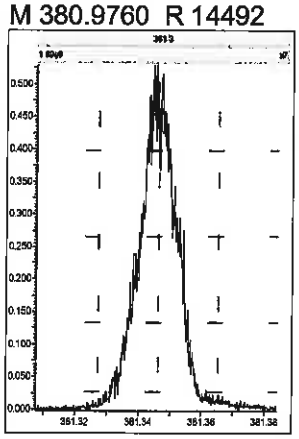


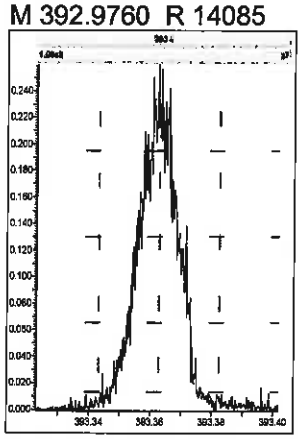
M 480.9696 R 11337



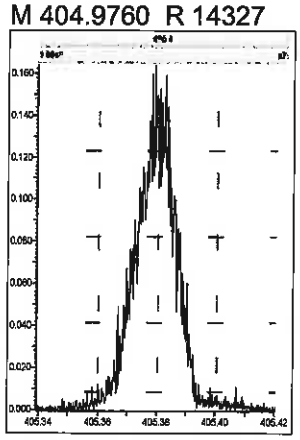
M 380.9760 R 14492



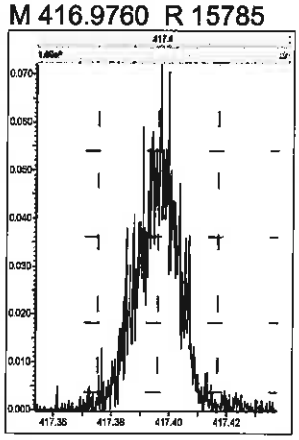
M 392.9760 R 14085



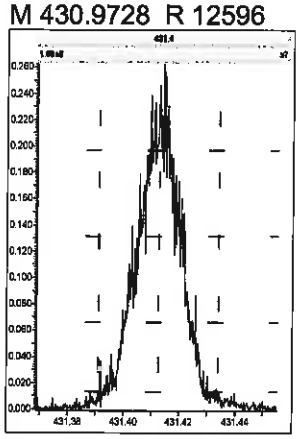
M 404.9760 R 14327



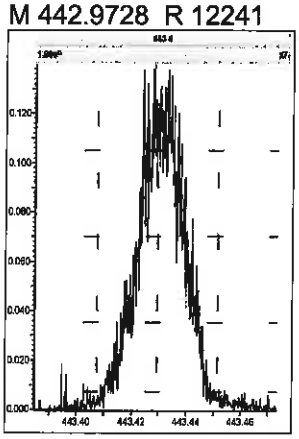
M 416.9760 R 15785



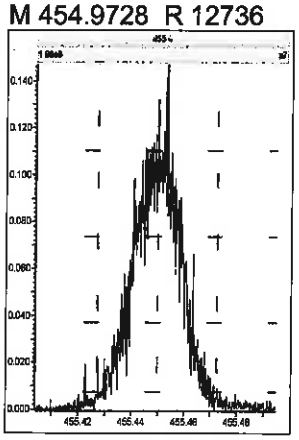
M 430.9728 R 12596



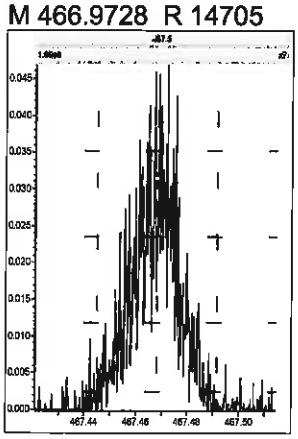
M 442.9728 R 12241



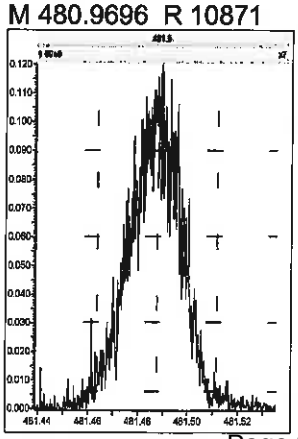
M 454.9728 R 12736



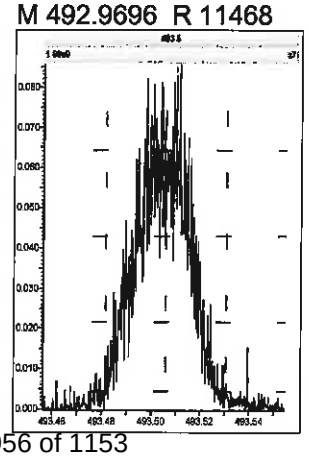
M 466.9728 R 14705



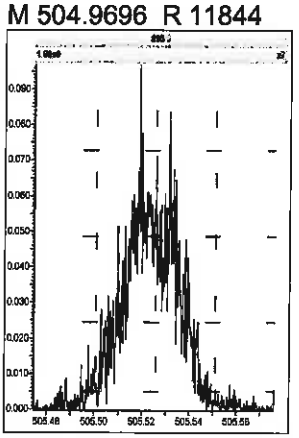
M 480.9696 R 10871



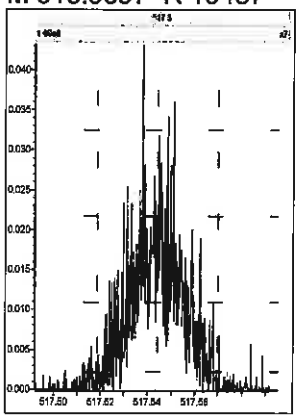
M 492.9696 R 11468



M 504.9696 R 11844



M 516.9697 R 15437



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 19-Dec-2019 11:48:33 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV 121919 CCV HRDXNL4_00086
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 19-Dec-2019 22:35:11 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0306

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.612	190109938	0.79	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.113	267478285	0.82	1.4157	99.4	99.4	0.2202	0.2202	99.38	
2,3,7,8-TCDF	17.128	27801679	0.79	0.9502	10.9	10.9	0.0589	0.0589	109	
A Non-2,3,7,8-sub-TCDF	16.811						0.0589	0.0589		
S Total TCDF					10.9	10.9	0.0589	0.0589		
D 13C-2,3,7,8-TCDD	17.793	179707926	0.80	0.9751	96.9	96.9	0.2878	0.2878	96.94	
2,3,7,8-TCDD	17.823	18250435	0.79	1.0477	9.693	9.693	0.0525	0.0525	96.93	
$ 37Cl4-2,3,7,8-TCDD	17.823	27622912		1.3480	10.8	10.8	0.0287	0.0287	108	
A Non-2,3,7,8-sub-TCDD	17.249						0.0525	0.0525		
S Total TCDD					9.693	9.693	0.0525	0.0525		
D 13C-1,2,3,7,8-PeCDF	22.018	210242866	1.59	1.1786	93.8	93.8	0.2919	0.2919	93.83	
1,2,3,7,8-PeCDF	22.045	108155590	1.58	1.0302	49.9	49.9	0.2270	0.2270	99.87	
D 13C-2,3,4,7,8-PeCDF	23.341	206857901	1.58	1.1308	96.2	96.2	0.3043	0.3043	96.23	
2,3,4,7,8-PeCDF	23.355	104948732	1.60	1.0410	48.7	48.7	0.2421	0.2421	97.48	
A F1 PeCDFs	19.774						0.0436	0.0436		
A Non-2,3,7,8-sub-PeCDF	22.858						0.2343	0.2343		
S Total PeCDF					98.7	98.7	0.2345	0.2345		
D 13C-1,2,3,7,8-PeCDD	24.050	130520869	1.57	0.7572	90.7	90.7	0.1612	0.1612	90.67	
1,2,3,7,8-PeCDD	24.077	70002006	1.63	1.0855	49.4	49.4	0.1281	0.1281	98.82	
A Non-2,3,7,8-sub-PeCDD	22.973						0.1281	0.1281		
S Total PeCDD					49.4	49.4	0.1281	0.1281		
D 13C-1,2,3,4,7,8-HxCDF	30.193	180478007	0.51	1.1043	97.2	97.2	0.4011	0.4011	97.16	
1,2,3,4,7,8-HxCDF	30.206	101537285	1.20	1.1472	49.0	49.0	0.3136	0.3136	98.08	
D 13C-1,2,3,6,7,8-HxCDF	30.406	186859600	0.52	1.1470	96.8	96.8	0.3861	0.3861	96.84	
1,2,3,6,7,8-HxCDF	30.420	108137905	1.25	1.1450	50.5	50.5	0.3072	0.3072	101	
D 13C-2,3,4,6,7,8-HxCDF	31.312	172387115	0.52	1.0769	95.2	95.2	0.4113	0.4113	95.16	
2,3,4,6,7,8-HxCDF	31.325	102623177	1.25	1.1726	50.8	50.8	0.2341	0.2341	102	
D 13C-1,2,3,7,8,9-HxCDF	32.151	152728239	0.52	1.0115	89.8	89.8	0.4379	0.4379	89.76	
1,2,3,7,8,9-HxCDF	32.164	93008869	1.23	1.1717	52.0	52.0	0.2431	0.2431	104	
A Non-2,3,7,8-sub-HxCDF	29.880						0.2701	0.2701		
S Total HxCDF					202.3	202.3	0.2745	0.2745		

Report Date: 19-Dec-2019 22:35:11 Chrom Revision: 2.3 15-Dec-2019 06:20:02
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	168220374	1.30	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	130069847	1.26	0.7962	97.1	97.1	0.3410	0.3410	97.11	
1,2,3,4,7,8-HxCDD	31.525	66325004	1.25	1.0934	46.6	46.6	0.1671	0.1671	93.27	
D 13C-1,2,3,6,7,8-HxCDD	31.618	146663009	1.23	0.8720	100.0	100.0	0.3113	0.3113	99.98	
1,2,3,6,7,8-HxCDD	31.631	74850288	1.25	1.0429	48.9	48.9	0.1666	0.1666	97.87	
1,2,3,7,8,9-HxCDD	31.977	81419387	1.28	1.2073	48.7	48.7	0.1475	0.1475	97.48	
A Non-2,3,7,8-sub-HxCDD	30.519						0.1598	0.1598		
S Total HxCDD					144.3	144.3	0.1604	0.1604		
D 13C-1,2,3,4,6,7,8-HpCDF	33.628	122442013	0.44	0.7577	96.1	96.1	1.337	1.337	96.07	
1,2,3,4,6,7,8-HpCDF	33.628	94303089	1.02	1.4804	52.0	52.0	0.4713	0.4713	104	
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	114408775	0.44	0.6941	98.0	98.0	1.459	1.459	97.98	
1,2,3,4,7,8,9-HpCDF	34.709	75215728	1.06	1.2933	50.8	50.8	0.6327	0.6327	102	
A Non-2,3,7,8-sub-HpCDF	34.169						0.5431	0.5431		
S Total HpCDF					102.9	102.9	0.5520	0.5520		
D 13C-1,2,3,4,6,7,8-HpCDD	34.418	114660451	1.05	0.7058	96.6	96.6	0.5364	0.5364	96.57	
1,2,3,4,6,7,8-HpCDD	34.418	58858835	1.06	1.0535	48.7	48.7	0.2644	0.2644	97.45	
A Non-2,3,7,8-sub-HpCDD	34.144						0.2644	0.2644		
S Total HpCDD					48.7	48.7	0.2644	0.2644		
D 13C-OCDD	36.734	154715041	0.93	0.4603	199.8	199.8	0.2410	0.2410	99.91	
OCDF	36.830	106314575	0.91	1.3945	98.6	98.6	0.1257	0.1257	98.55	
OCDD	36.746	83855466	0.88	1.1362	95.4	95.4	0.1068	0.1068	95.41	

Reagents:

HRDXNL4_00086 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 19-Dec-2019 11:48:33 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV 121919 CCV HRDXNL4_00086
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5
Sublist: chrom-Dioxin_3D5*sub1

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 19-Dec-2019 22:35:11 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0306

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.612	17.612	0		83760359	20678729	25735	64337	804		
333.9339	17.612	17.612	0		106349579	26520078	27244	68110	973	0.79(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.113	17.113	0	0.972	120611411	29155945	33605	84012	868		
317.9389	17.113	17.113	0	0.972	146866874	35220131	25256	63140	1395	0.82(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128	17.128	0	1.001	12287817	3033772	4822	12055	629		
305.8987	17.128	17.128	0	1.001	15513862	3784571	9587	23967	395	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						4822	12055			
305.8987	16.811						9587	23967			
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.010	79967373	18205423	25735	64337	707		
333.9339	17.793	17.793	0	1.010	99740553	23063315	27244	68110	847	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823	17.823	0	1.002	8034482	1966467	5303	13257	371		
321.8936	17.823	17.823	0	1.002	10215953	2401850	3781	9452	635	0.79(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.823	17.823	0	1.012	27622912	6469896	7312	18280	885		
A Non-2,3,7,8-sub-TCDD											
319.8965	17.249						5303	13257			
321.8936	17.249						3781	9452			
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.250	129205635	22789634	39330	98325	579		
353.8970	22.018	22.018	0	1.250	81037231	14458978	25626	64065	564	1.59(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	22.045	22.045	0	1.001	66211895	11535241	19652	49130	587		
341.8567	22.045	22.045	0	1.001	41943695	7562903	15193	37982	498	1.58(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.325	126734306	21167704	39330	98325	538		
353.8970	23.341	23.341	0	1.325	80123595	13402160	25626	64065	523	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355	23.355	0	1.001	64540854	10379068	19652	49130	528		
341.8567	23.368	23.355	1	1.001	40407878	6527944	15193	37982	430	1.60(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.774						1741	4352			
341.8567	19.774						4740	11850			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						19652	49130			
341.8567	22.858						15193	37982			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.366	79808792	12633590	15189	37972	832		
369.8919	24.050	24.050	0	1.366	50712077	8060147	7858	19645	1026	1.57(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077	24.077	0	1.001	43419898	6544403	7043	17607	929		
357.8516	24.077	24.077	0	1.001	26582108	3997276	4471	11177	894	1.63(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.973						7043	17607			
357.8516	22.973						4471	11177			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	61052125	9899331	22800	57000	434		
385.8610	30.193	30.193	0	0.945	119425882	18763424	47944	119860	391	0.51(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206	30.206	0	1.000	55417307	8963753	22924	57310	391		
375.8178	30.220	30.206	1	1.001	46119978	7510333	18323	45807	410	1.20(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	63699121	10076575	22800	57000	442		
385.8610	30.406	30.406	0	0.951	123160479	19237149	47944	119860	401	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.420	30.420	0	1.000	60004066	9943402	22924	57310	434		
375.8178	30.420	30.420	0	1.000	48133839	7883445	18323	45807	430	1.25(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	59224404	13097635	22800	57000	574		
385.8610	31.298	31.312	-1	0.979	113162711	24473454	47944	119860	510	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325	31.325	0	1.000	56961237	12681275	22924	57310	553		
375.8178	31.325	31.325	0	1.000	45661940	10218728	18323	45807	558	1.25(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	52408949	12680722	22800	57000	556		
385.8610	32.151	32.151	0	1.006	100319290	23525333	47944	119860	491	0.52(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	32.164	32.164	0	1.000	51307260	12037347	22924	57310	525		
375.8178	32.164	32.164	0	1.000	41701609	9895769	18323	45807	540	1.23(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						22924	57310			
375.8178	29.880						18323	45807			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		95103871	22619347	22694	56735	997		
403.8529	31.964	31.964	0		73116503	17313706	20669	51672	838	1.30(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	72587586	18037409	22694	56735	795		
403.8529	31.511	31.511	0	0.986	57482261	14134652	20669	51672	684	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.525	31.525	0	1.000	36898520	9412802	13322	33305	707		
391.8127	31.525	31.525	0	1.000	29426484	7335121	10192	25480	720	1.25(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	80895093	18552000	22694	56735	817		
403.8529	31.618	31.618	0	0.989	65767916	15275491	20669	51672	739	1.23(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.631	31.631	0	1.000	41557955	9300694	13322	33305	698		
391.8127	31.631	31.631	0	1.000	33292333	7501361	10192	25480	736	1.25(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.977	31.977	0	1.015	45688751	11020643	13322	33305	827		
391.8127	31.977	31.977	0	1.015	35730636	8648950	10192	25480	849	1.28(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.519						13322	33305			
391.8127	30.519						10192	25480			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.628	33.628	0	1.052	37668161	11814549	64890	162225	182		
419.8220	33.628	33.628	0	1.052	84773852	26406624	96885	242212	273	0.44(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628	33.628	0	1.000	47684098	14784146	55489	138722	266		
409.7789	33.628	33.628	0	1.000	46618991	14777038	51185	127962	289	1.02(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	34798637	9932844	64890	162225	153		
419.8220	34.697	34.697	0	1.086	79610138	22659165	96885	242212	234	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709	34.709	0	1.000	38671039	10915384	55489	138722	197		
409.7789	34.709	34.709	0	1.000	36544689	10363211	51185	127962	202	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						55489	138722			
409.7789	34.169						51185	127962			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.418	34.418	0	1.077	58640381	16636733	31223	78057	533		
437.8140	34.405	34.418	-1	1.076	56020070	16139621	29251	73127	552	1.05(0.88-1.20)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	30246762	8729219	20430	51075	427		
425.7737	34.418	34.418	0	1.000	28612073	8473479	16091	40227	527	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.144						20430	51075			
425.7737	34.144						16091	40227			
13C-OCDD											
469.7779	36.734	36.734	0	1.149	74703905	18569423	8151	20377	2278		
471.7750	36.734	36.734	0	1.149	80011136	19914005	9564	23910	2082	0.93(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	50771614	12510802	6293	15732	1988		
443.7399	36.830	36.830	0	1.003	55542961	13887533	7193	17982	1931	0.91(0.76-1.02)	
OCDD											
457.7377	36.746	36.746	0	1.000	39268844	10102417	5202	13005	1942		
459.7348	36.746	36.746	0	1.000	44586622	11169545	4134	10335	2702	0.88(0.76-1.02)	

Reagents:

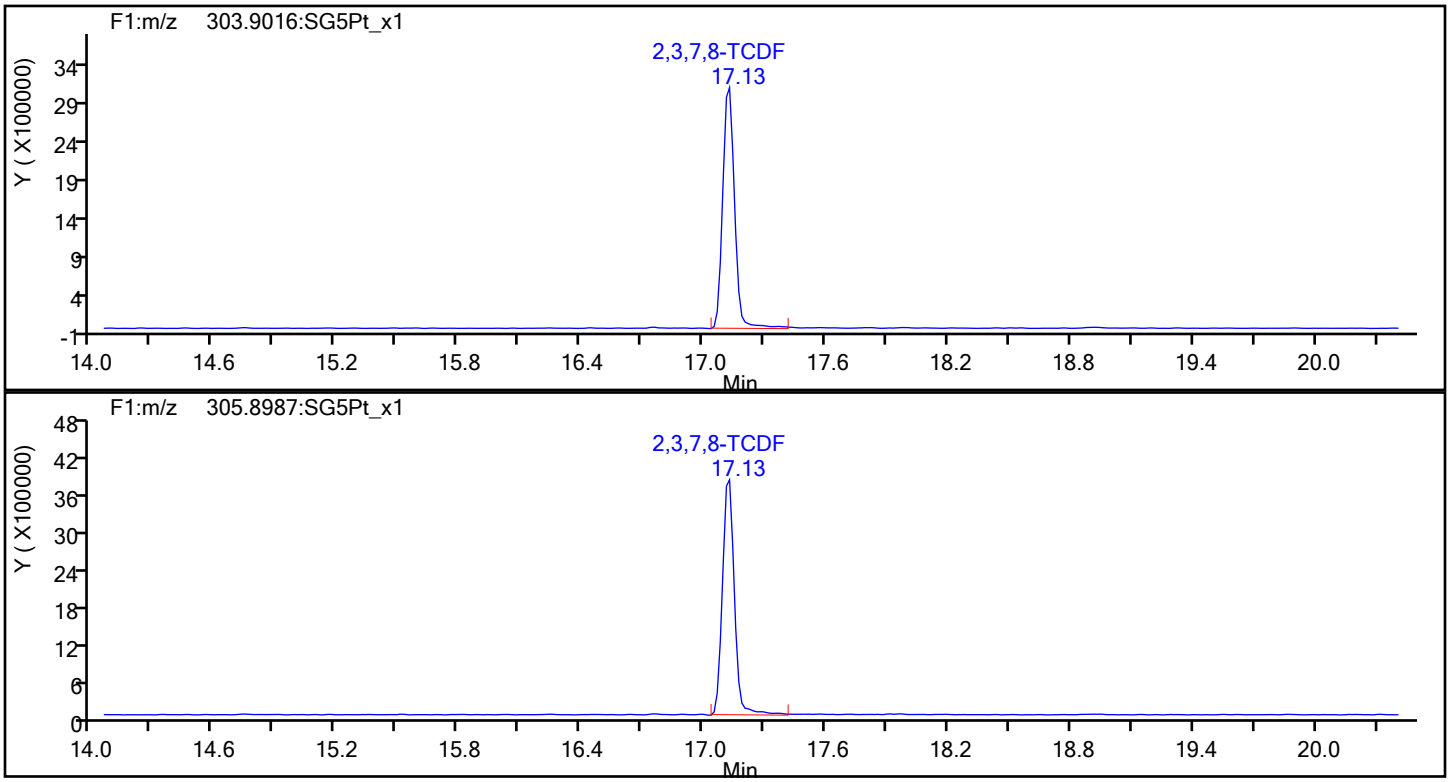
HRDXNL4_00086 Amount Added: 1.00 Units: mL

Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

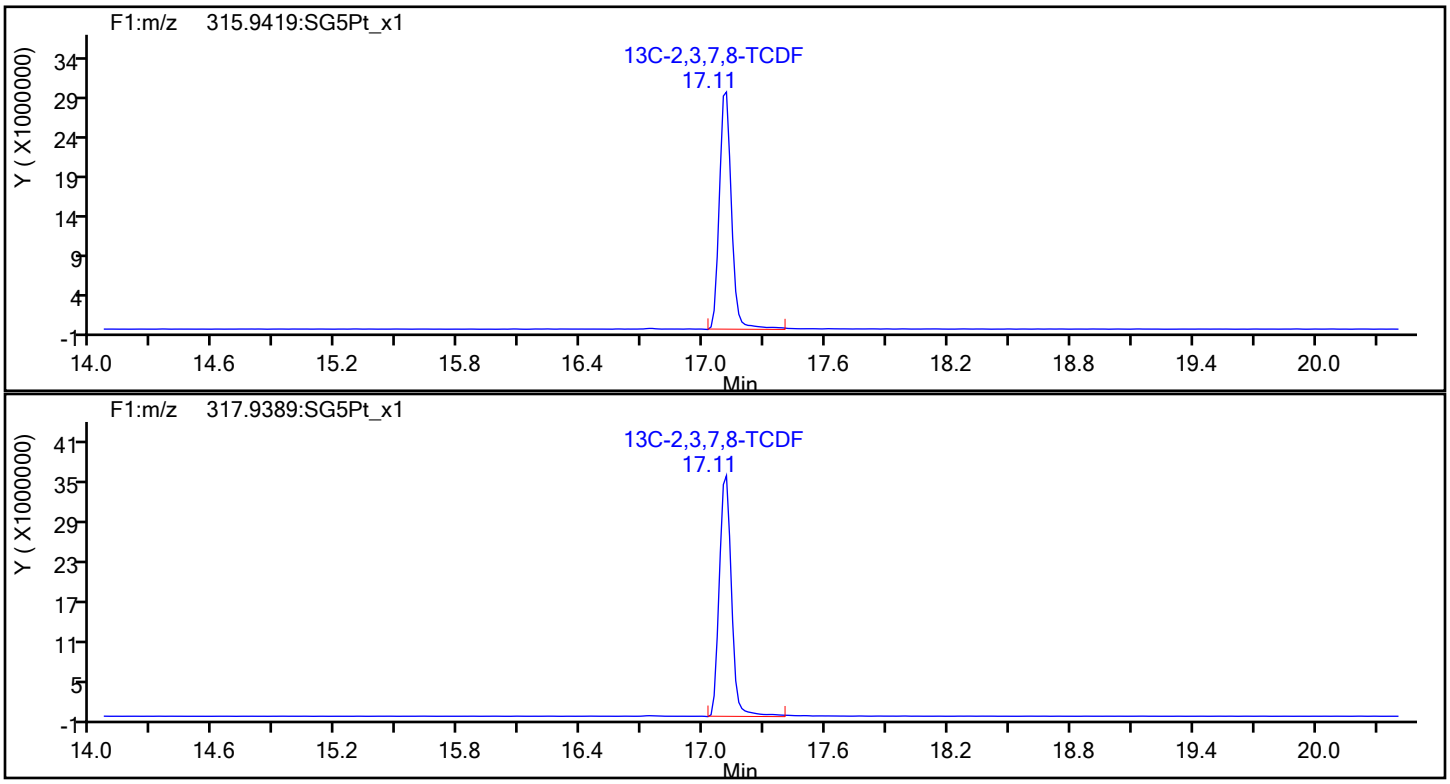
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF



TCDF Standards

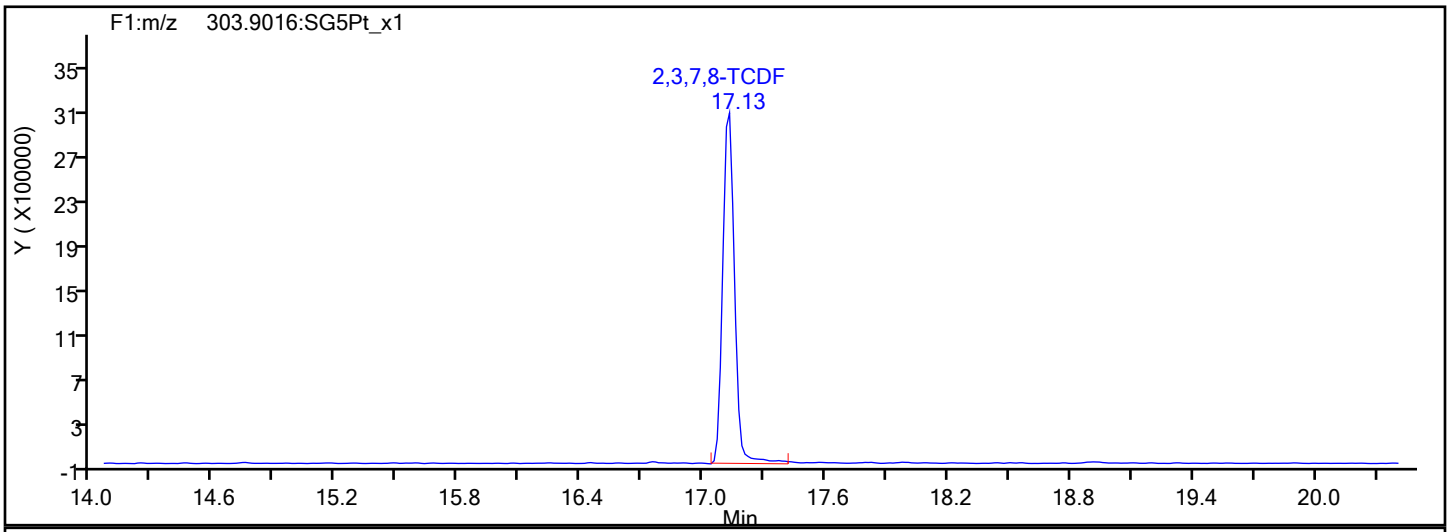


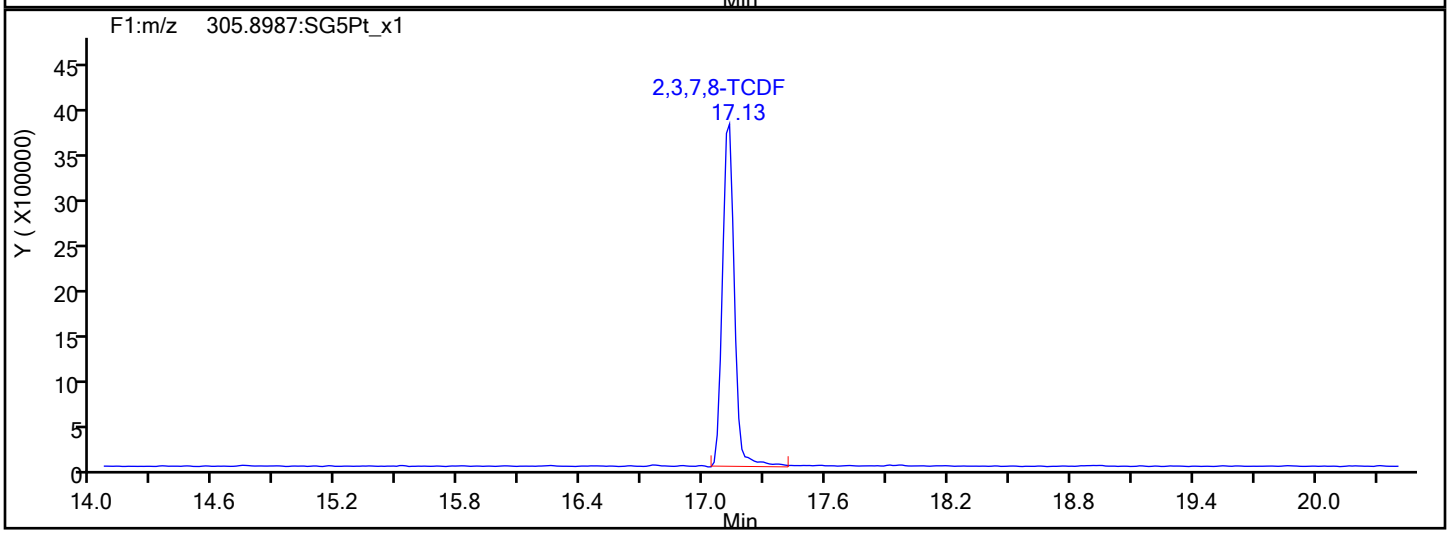
Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

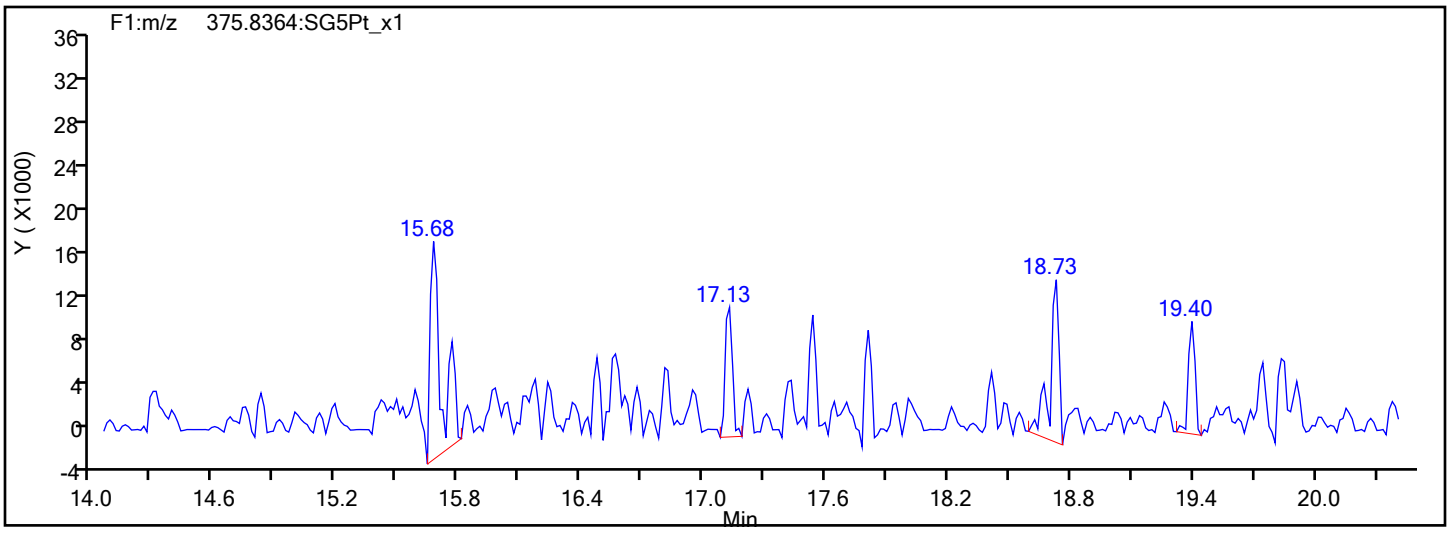
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

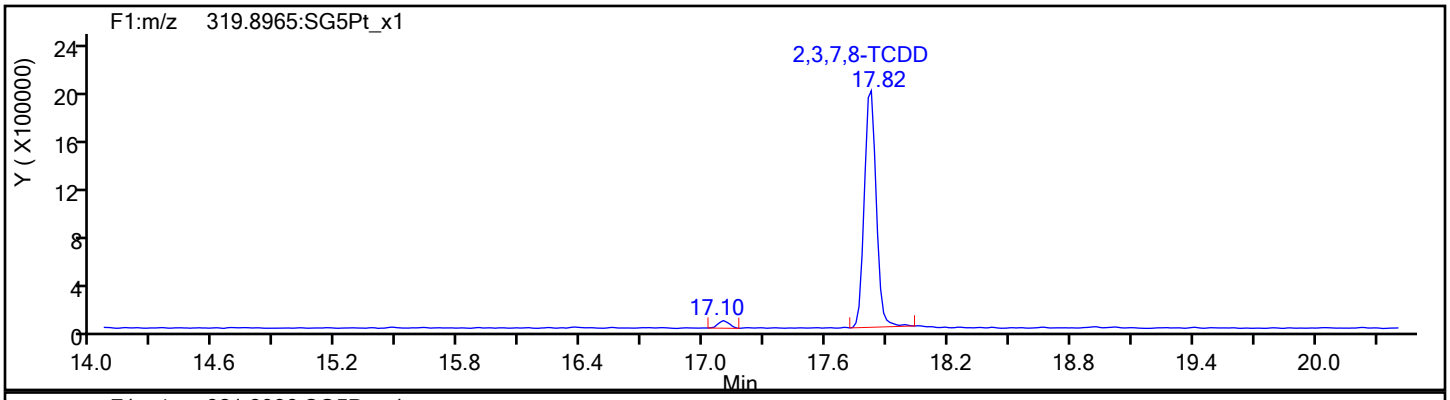


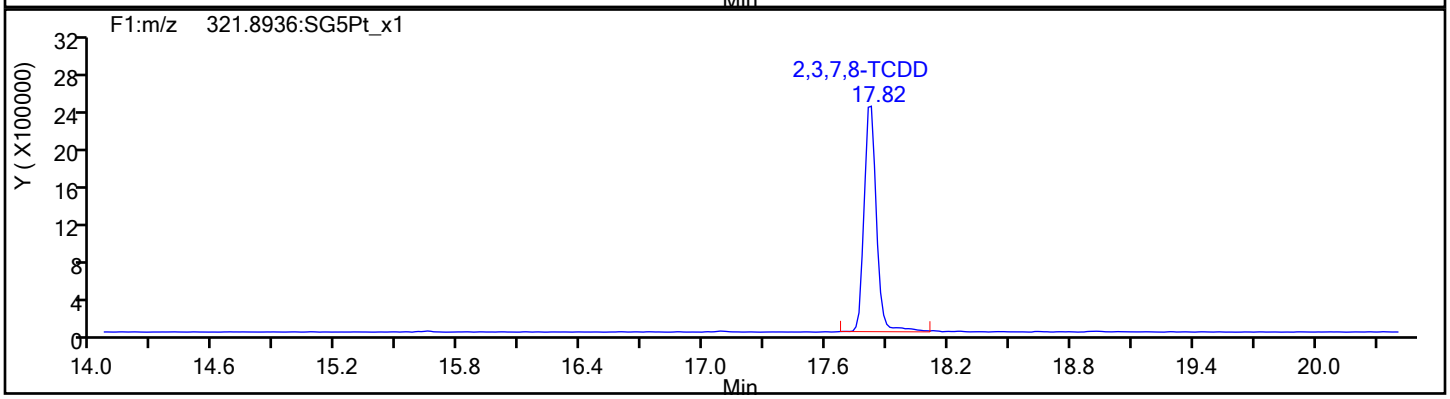
Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

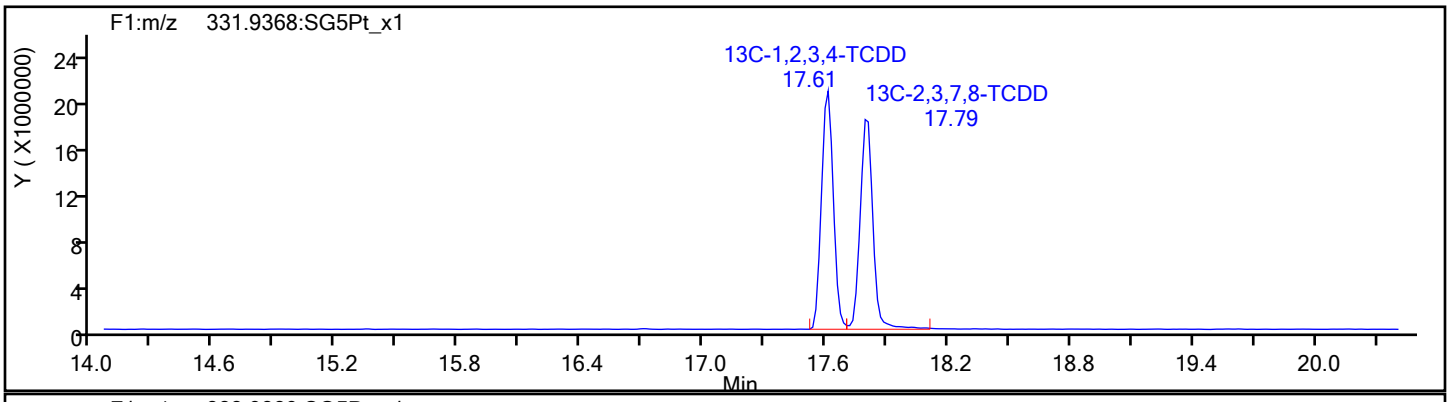
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

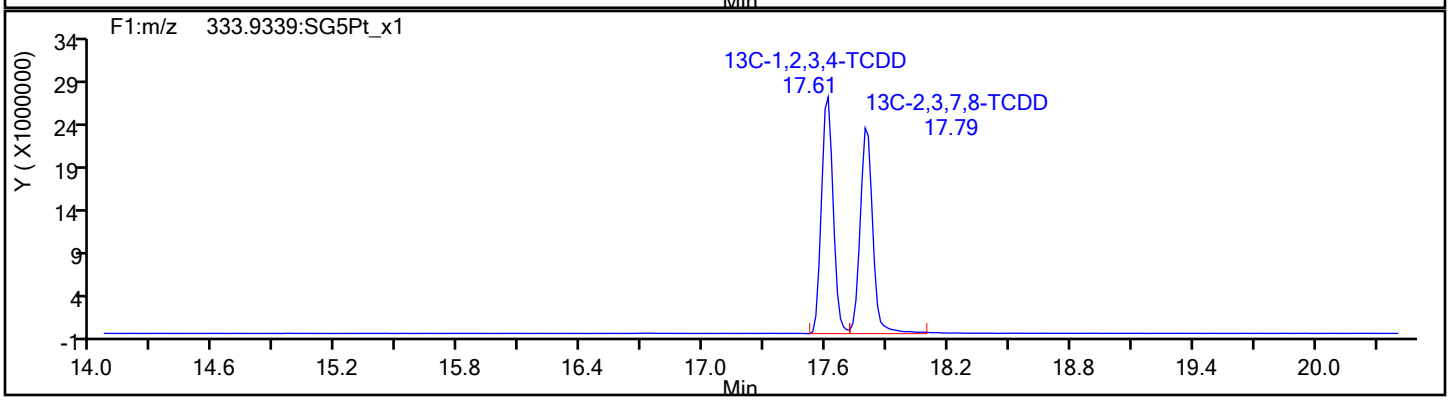
TCDD





TCDD Standards





Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
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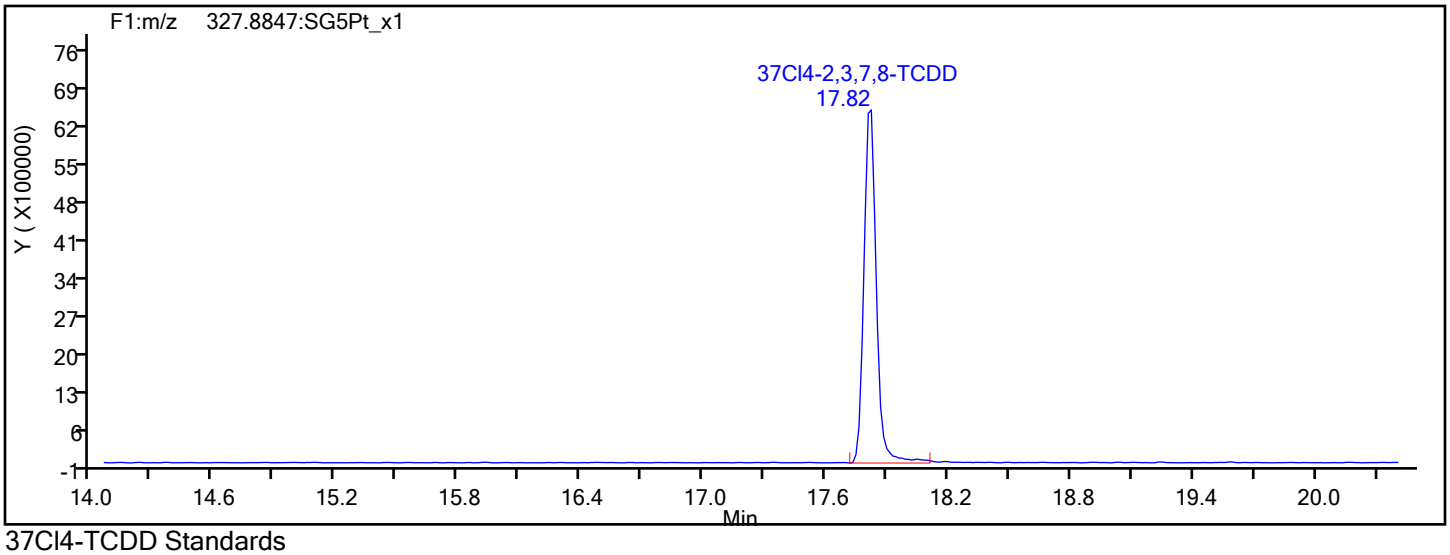
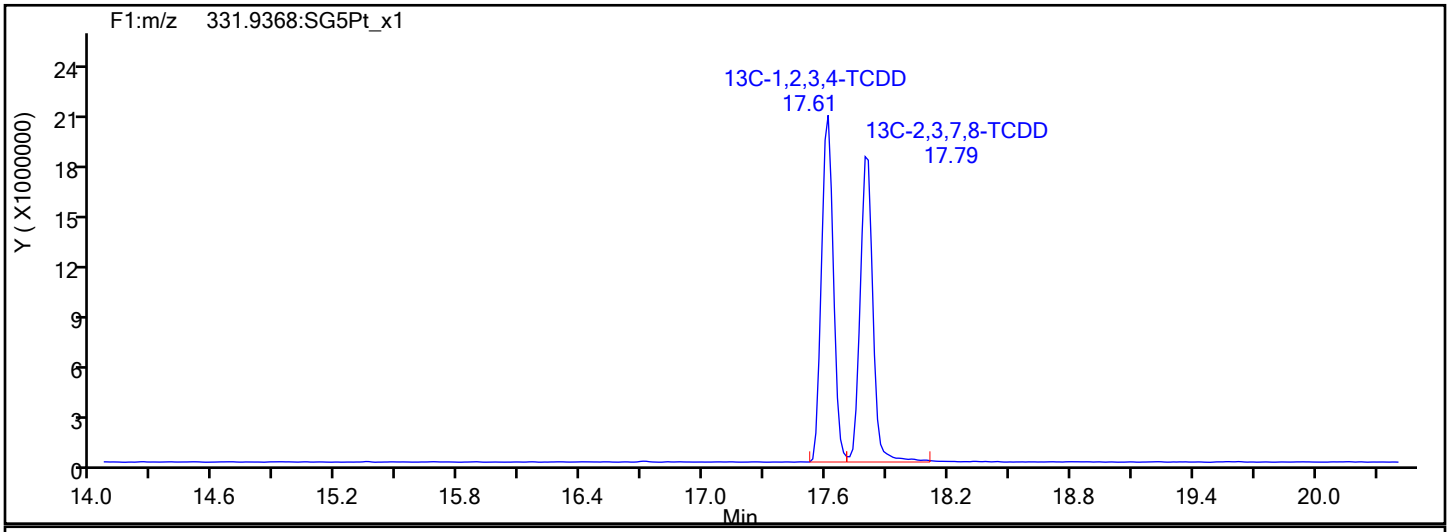
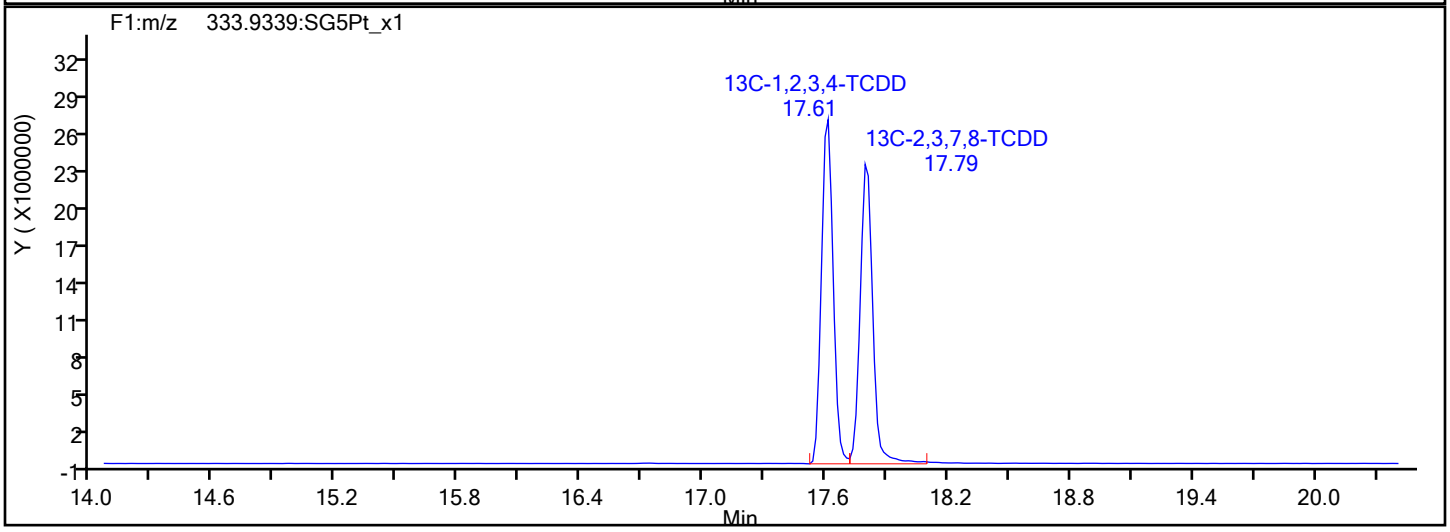
37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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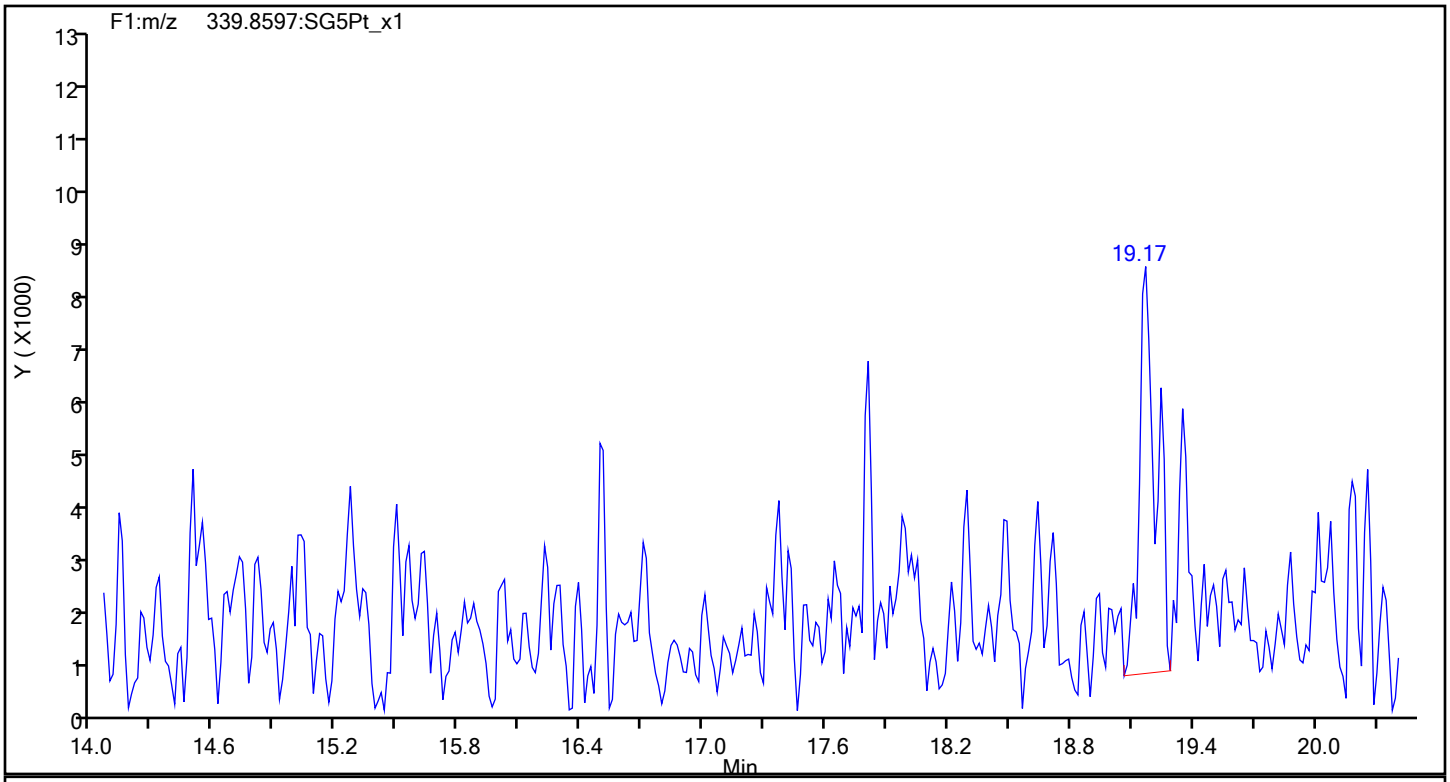
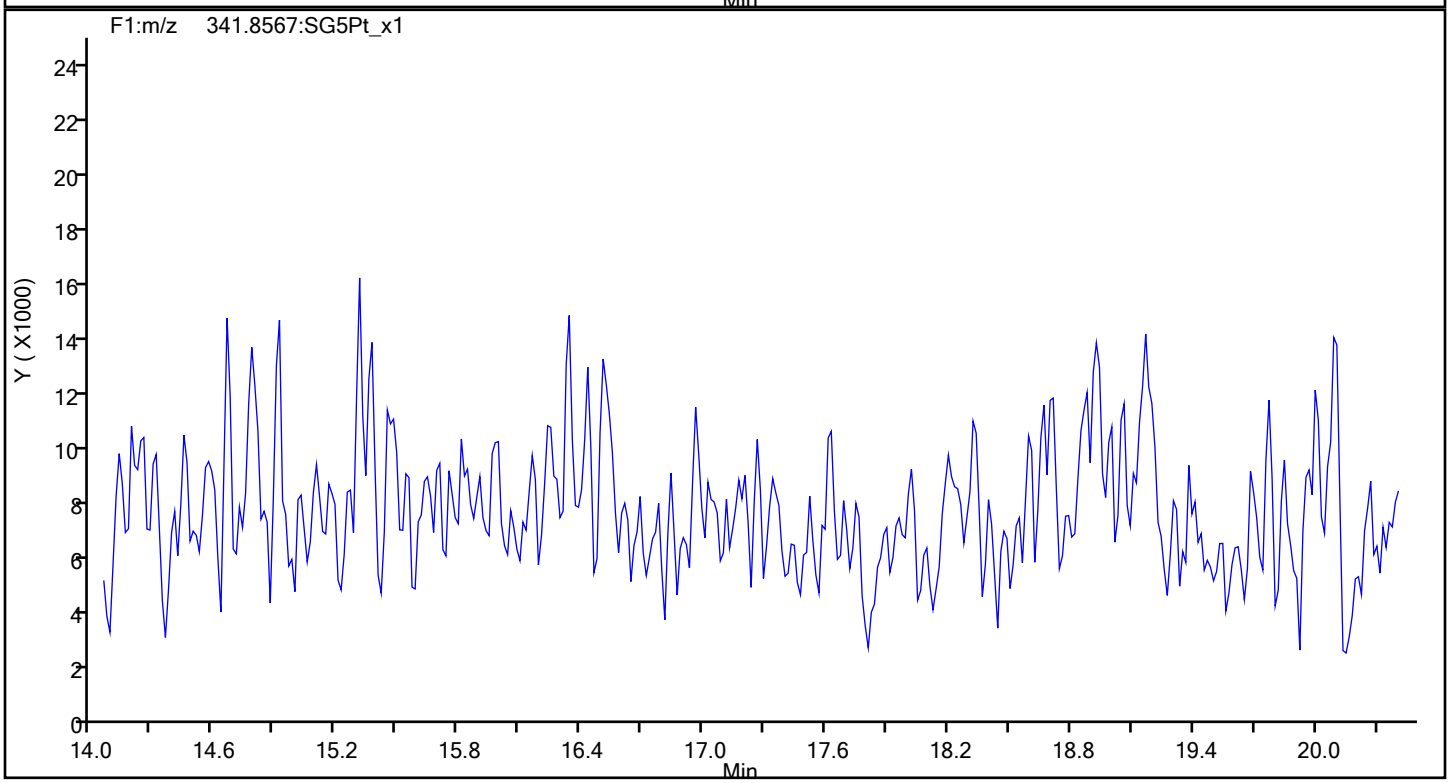
F1 PeCDFs





Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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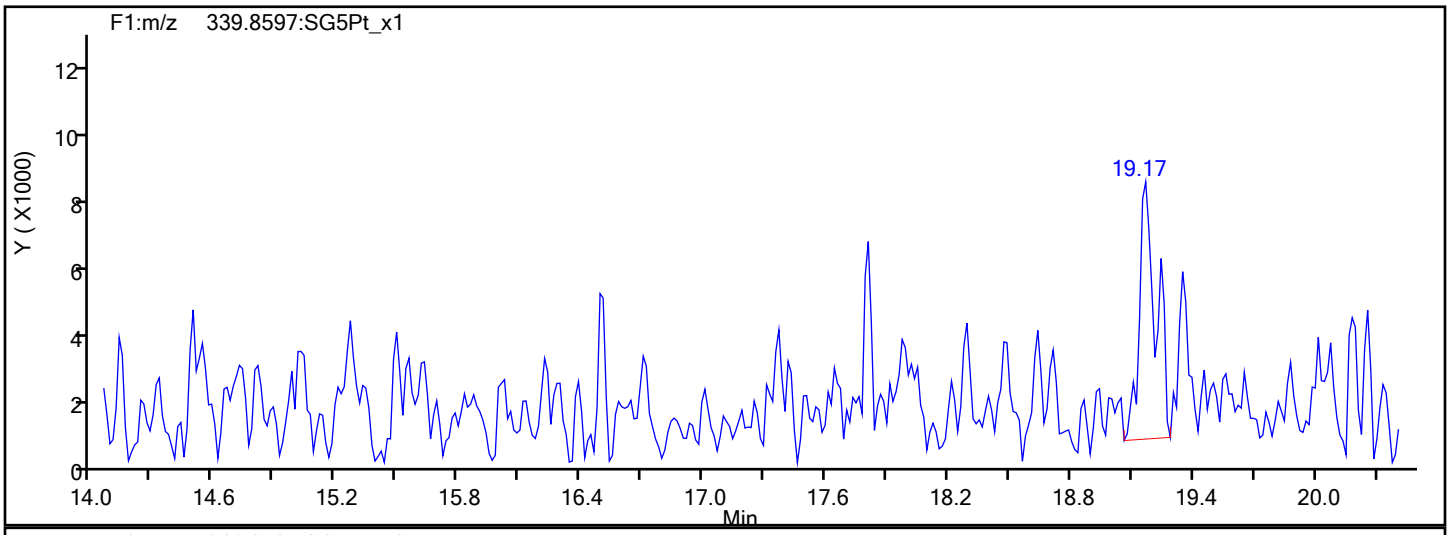
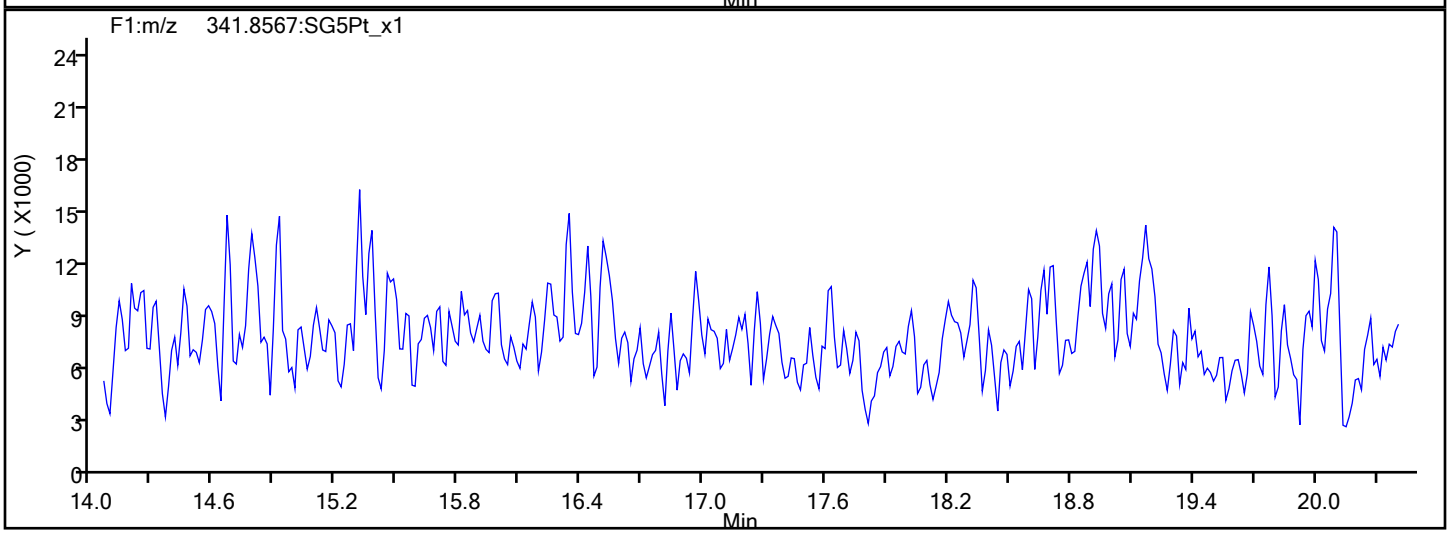
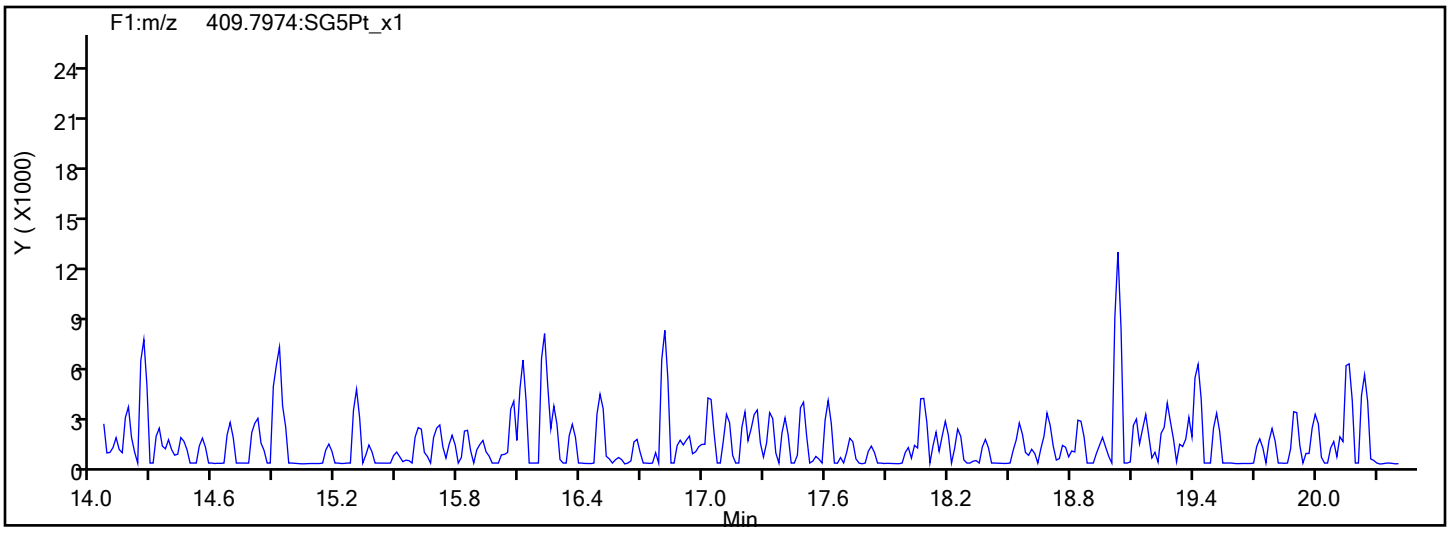




F1 PeCDFs Interference Mass



Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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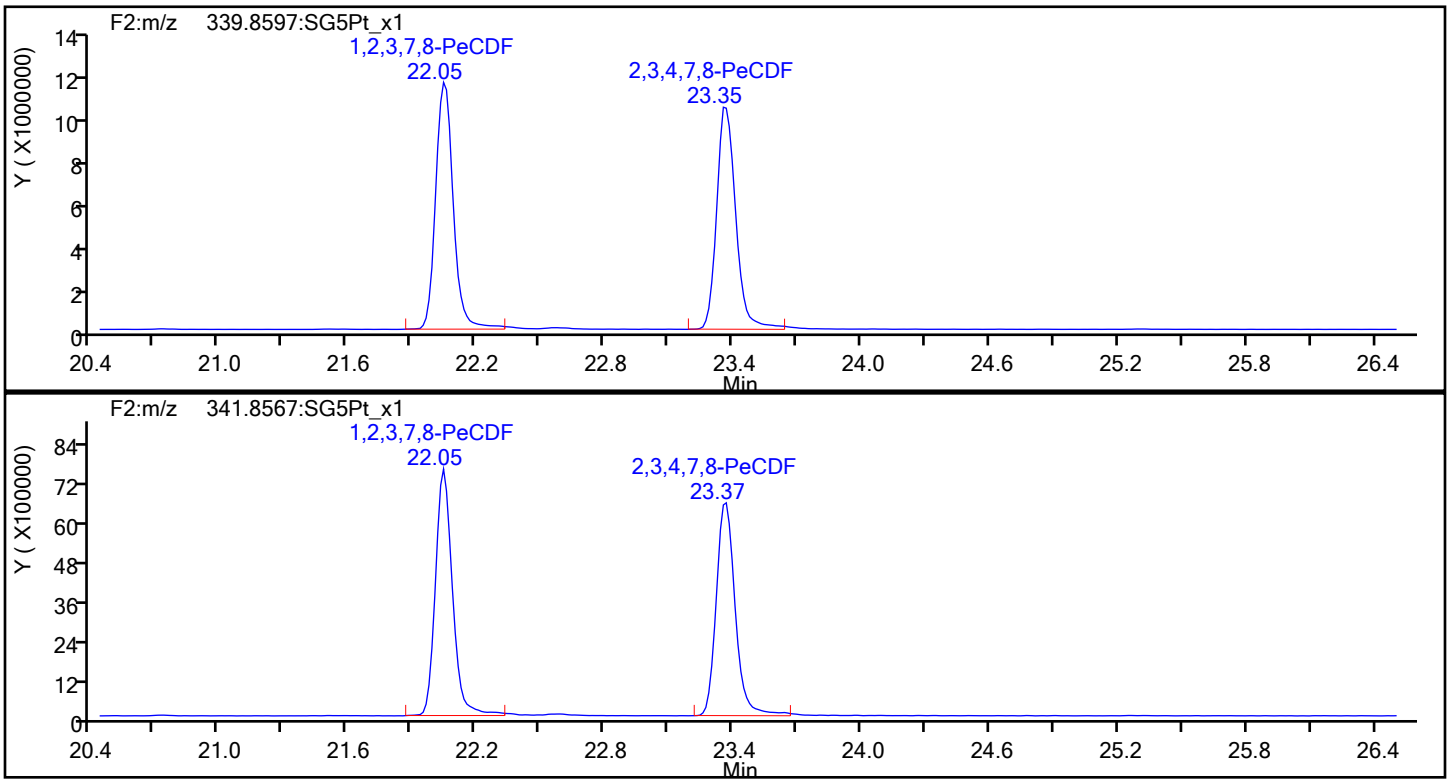
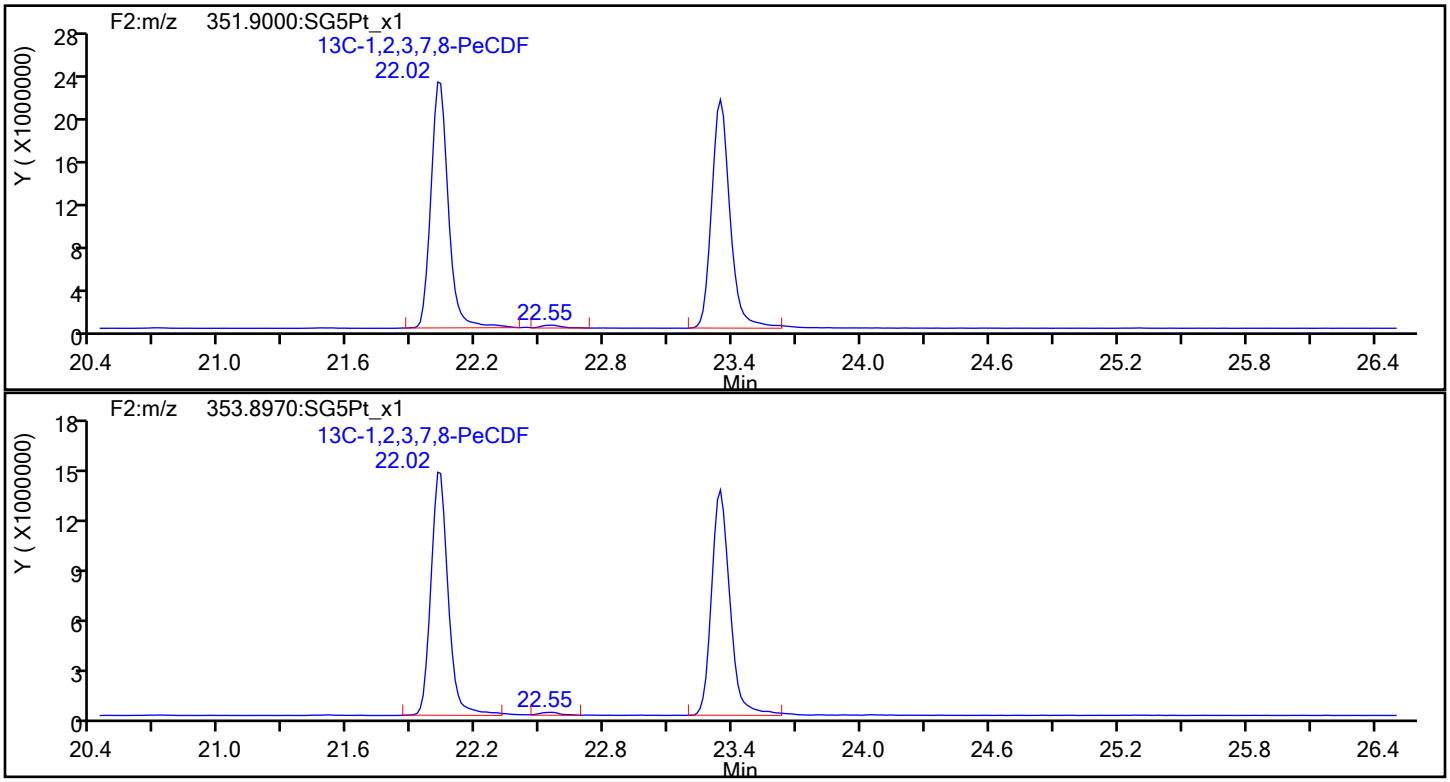
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards



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Eurofins TestAmerica, Sacramento

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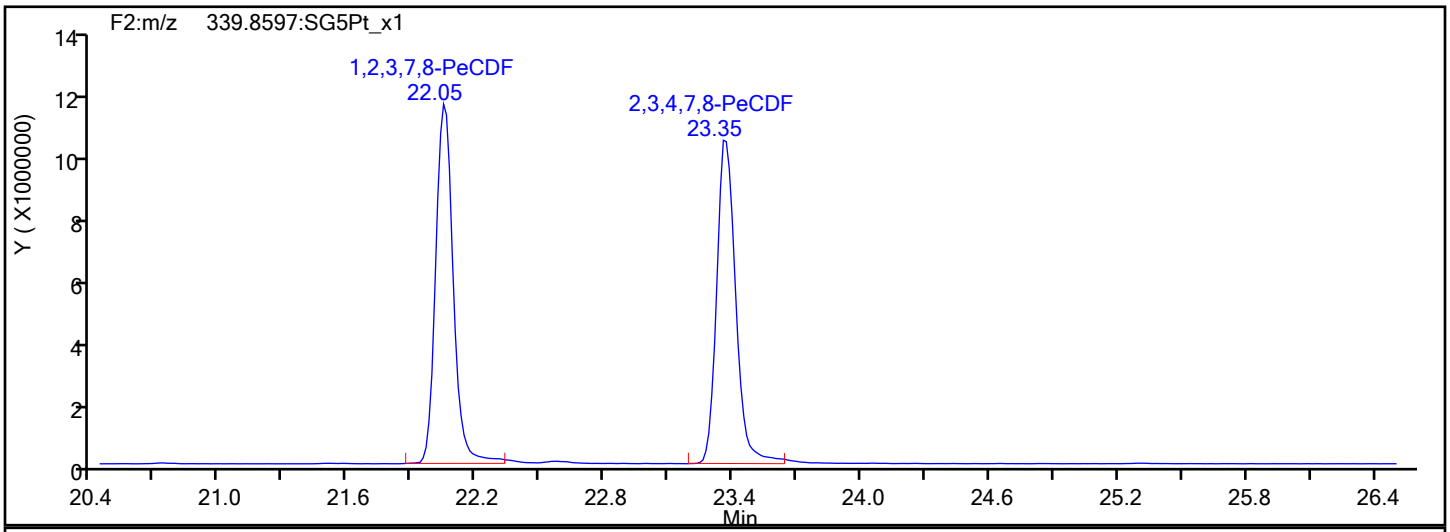
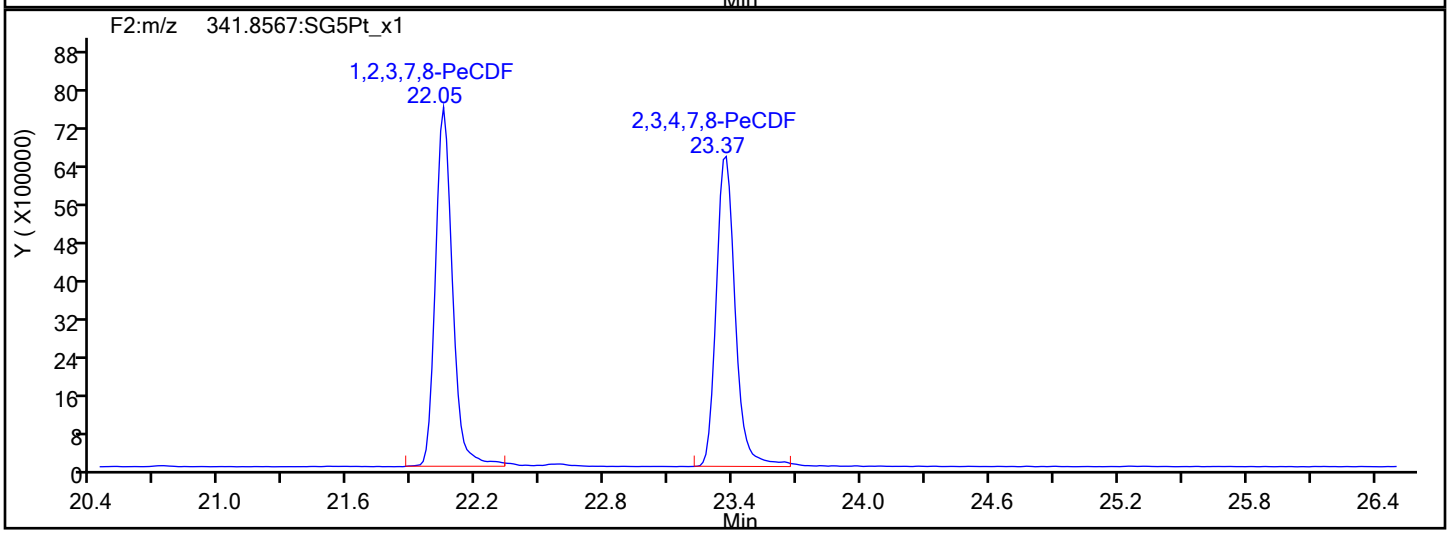
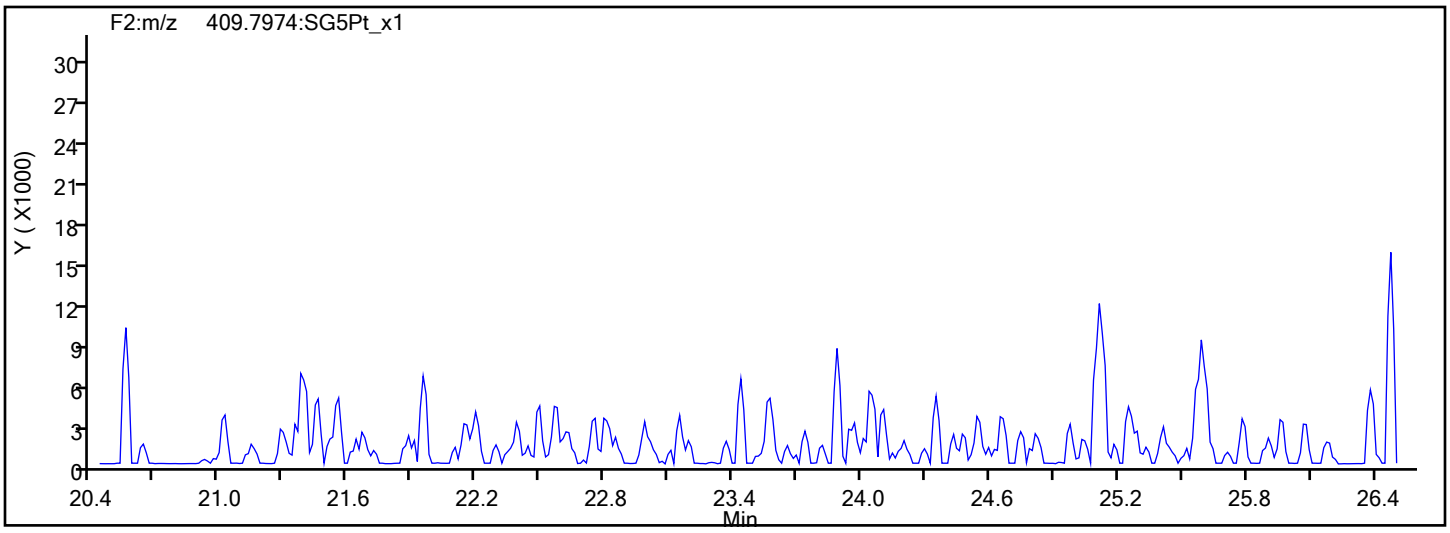
PeCDF





PeCDF Interference Mass



Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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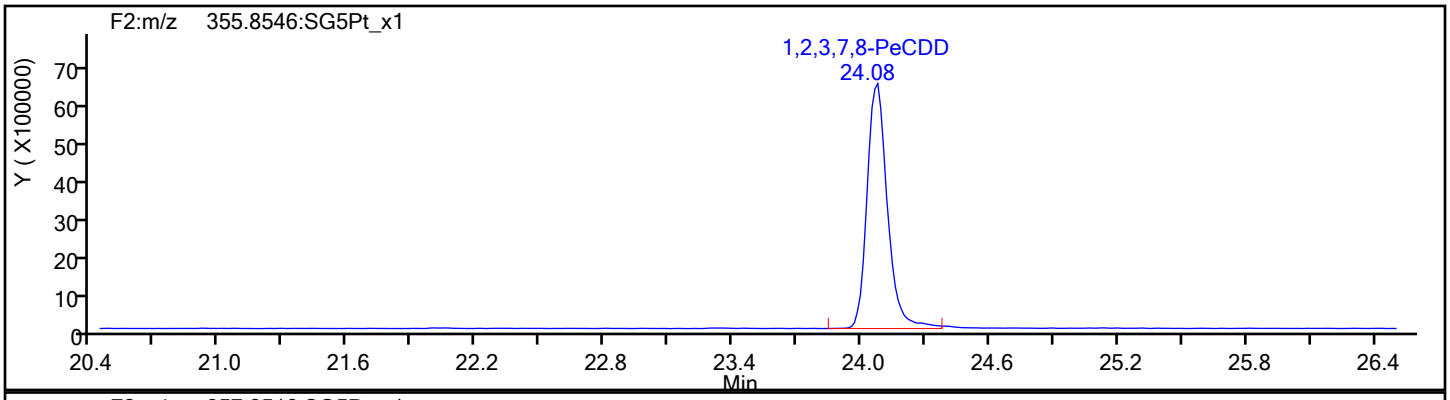
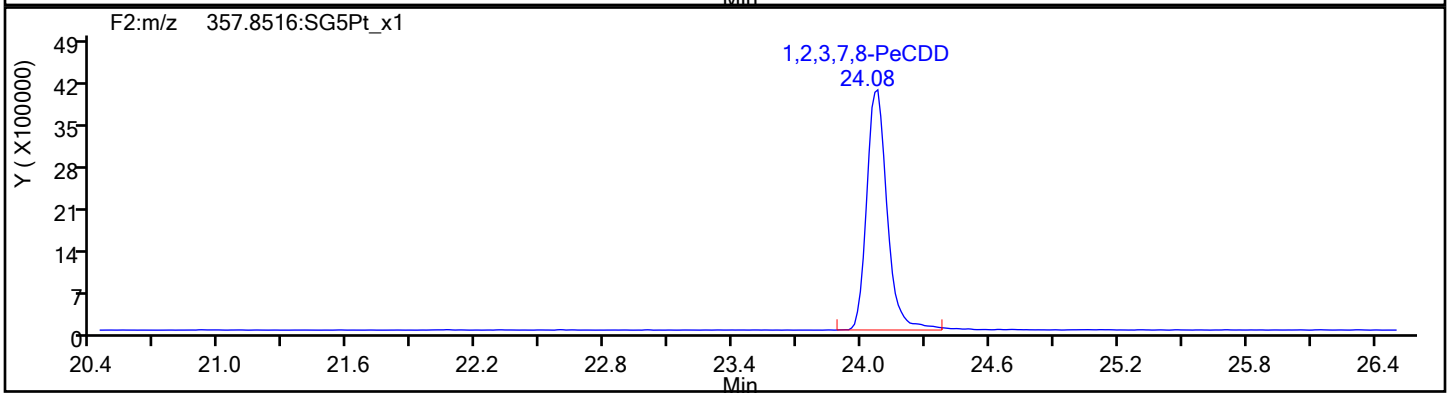
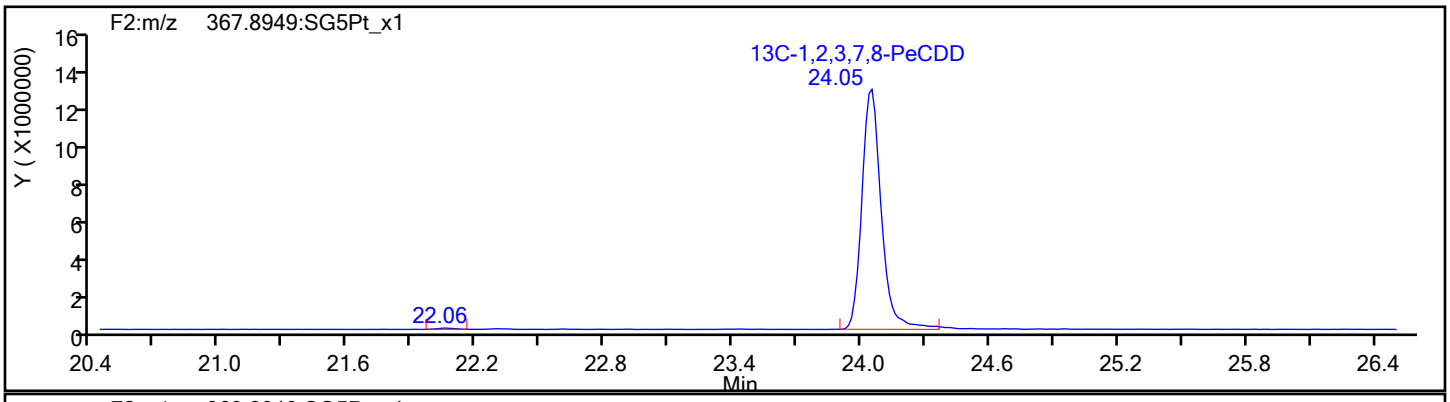
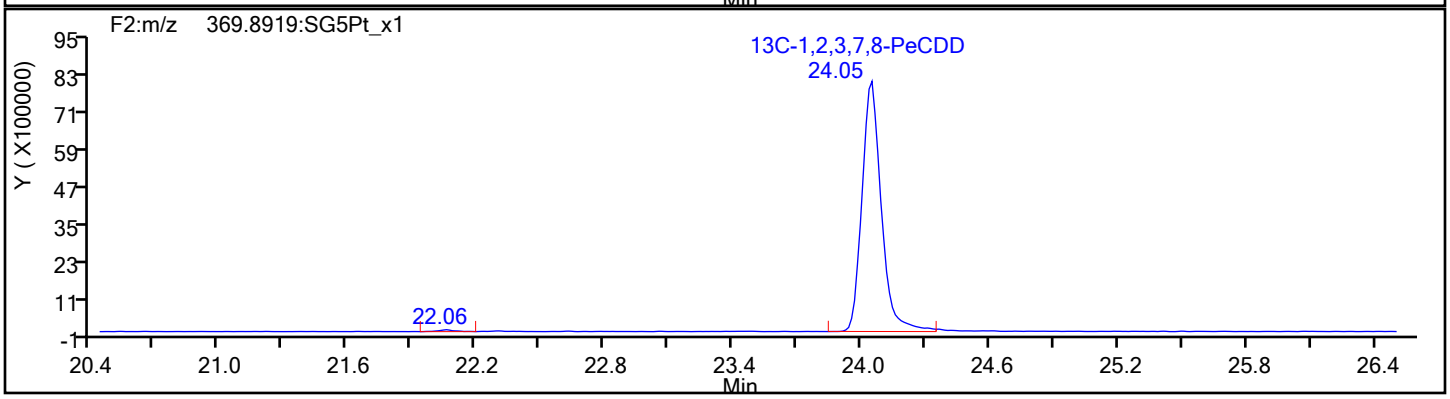
PeCDD





PeCDD Standards





Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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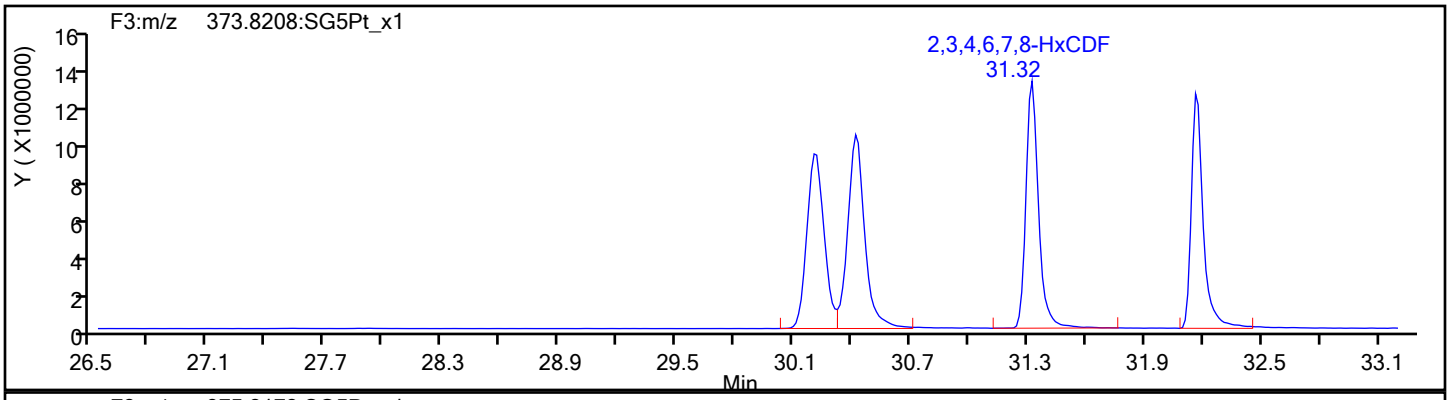
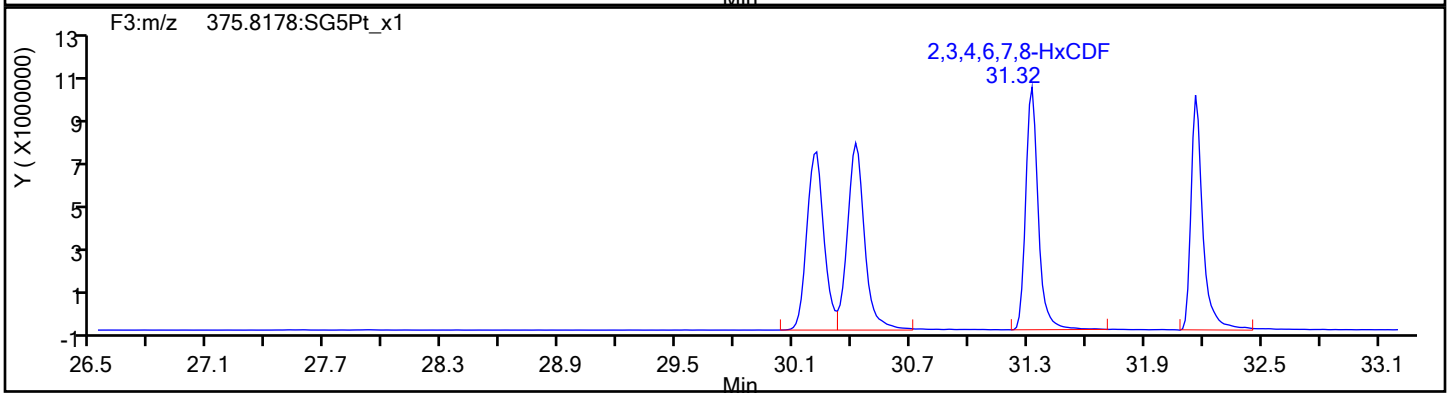
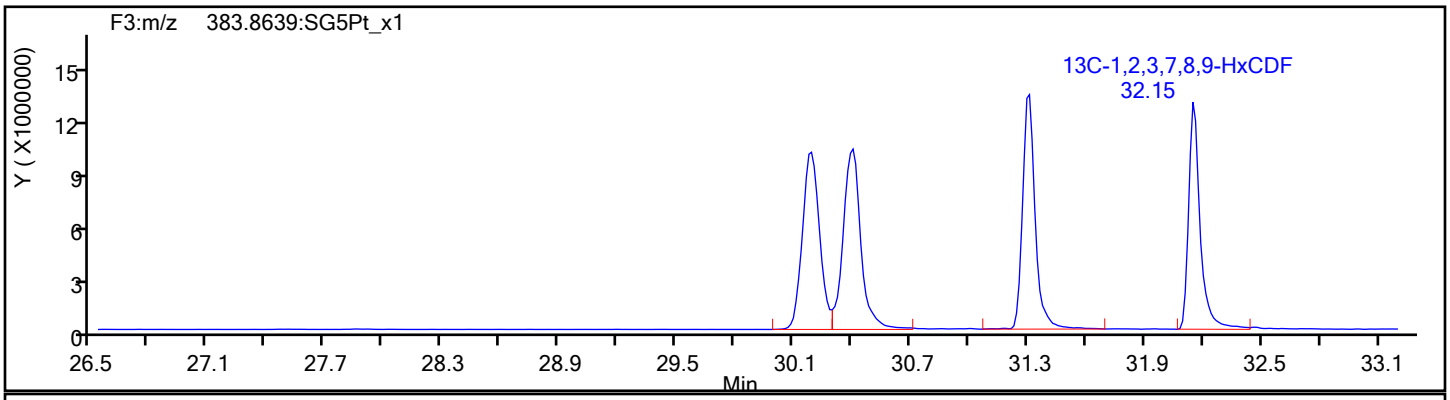
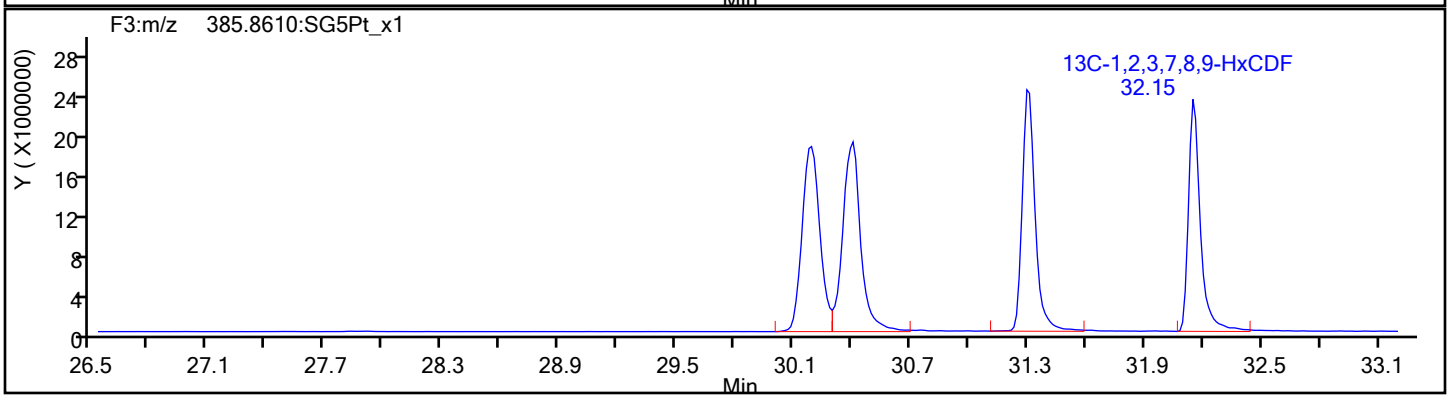
HxCDF





HxCDF Standards





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Eurofins TestAmerica, Sacramento

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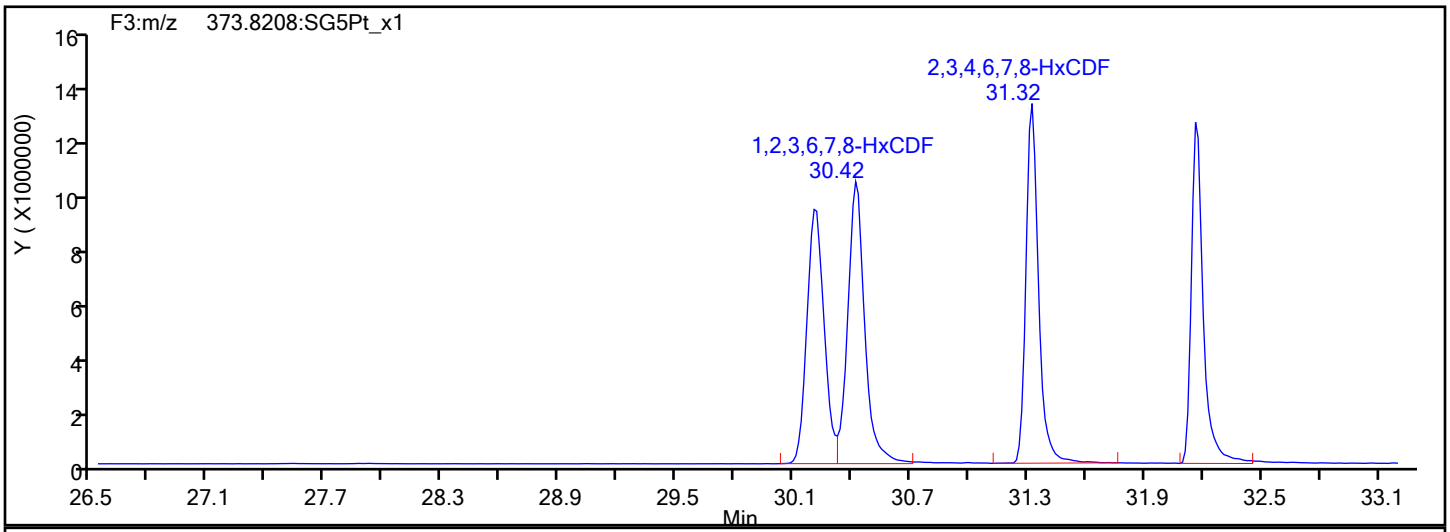
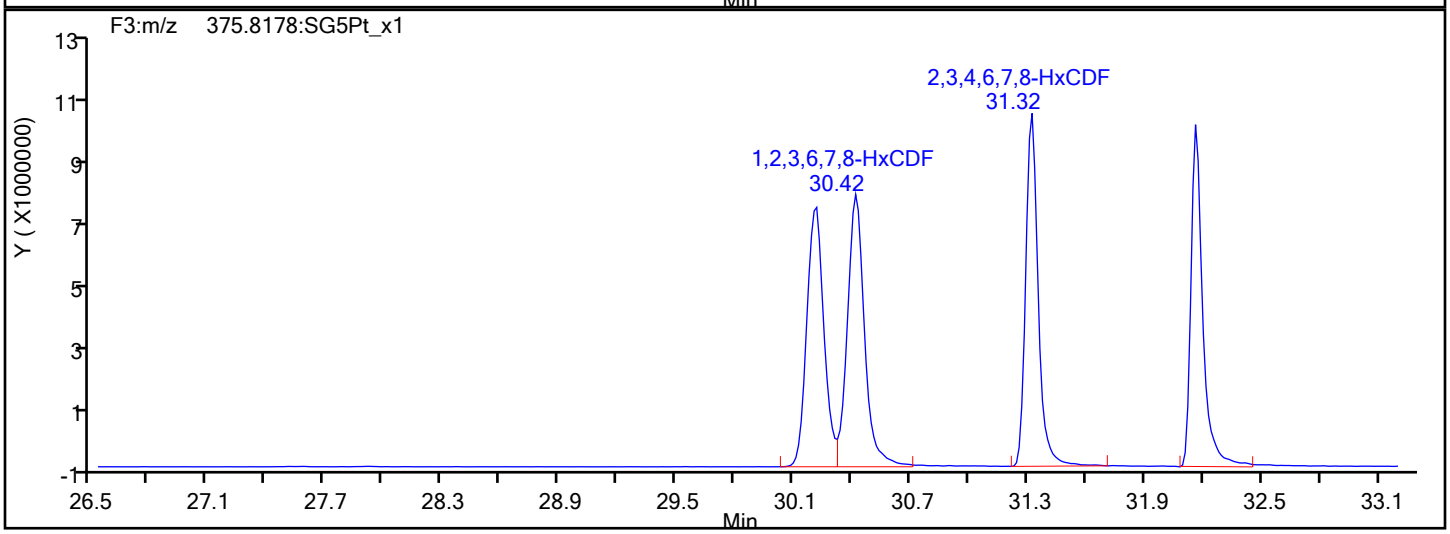
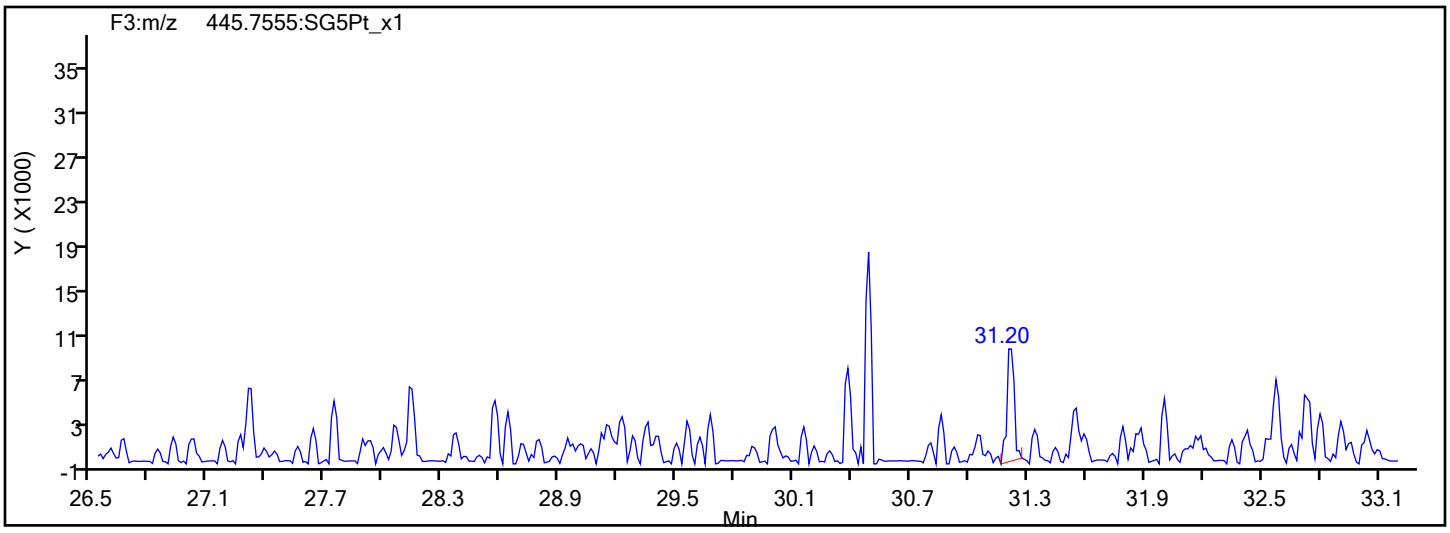




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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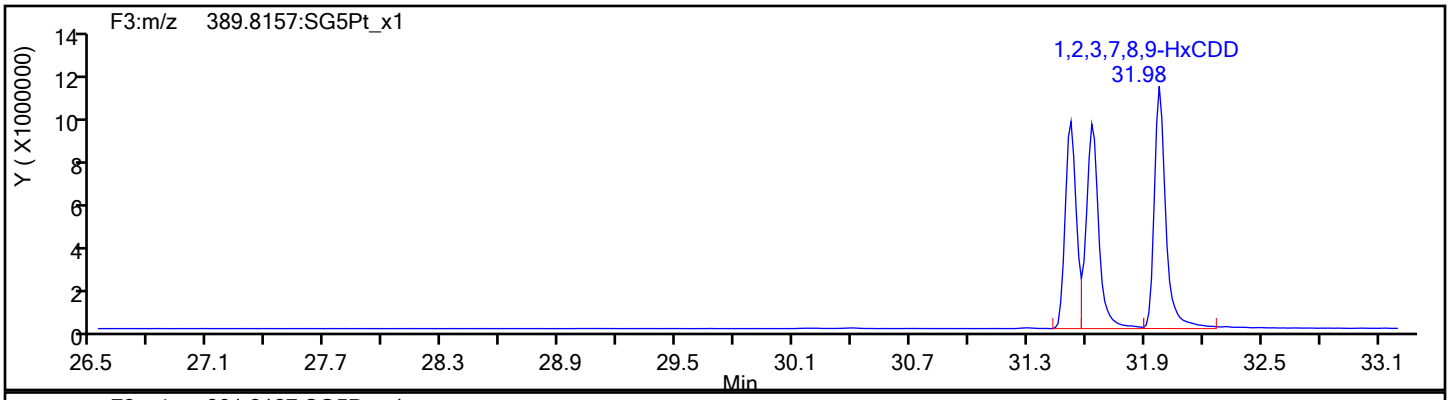
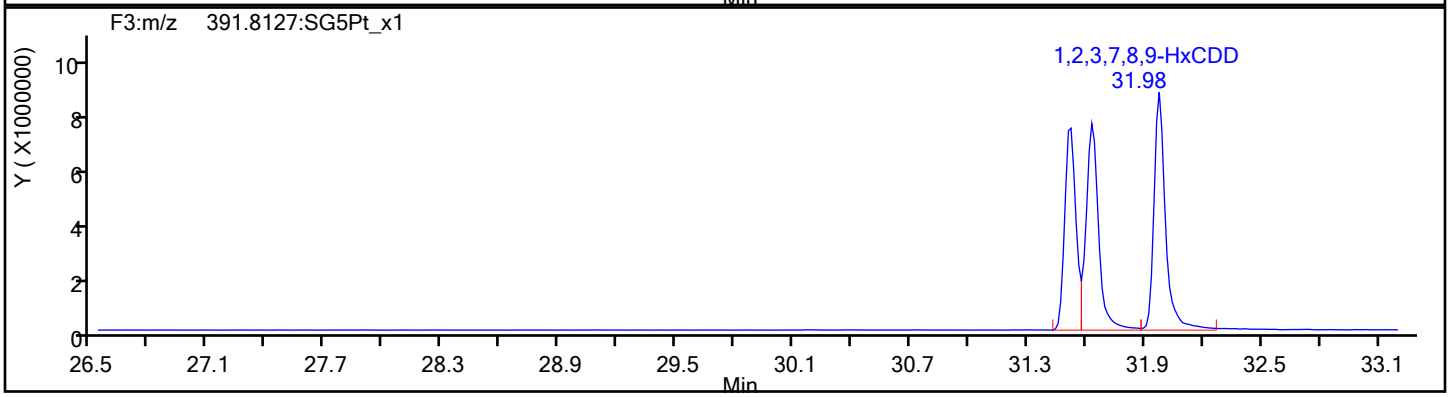
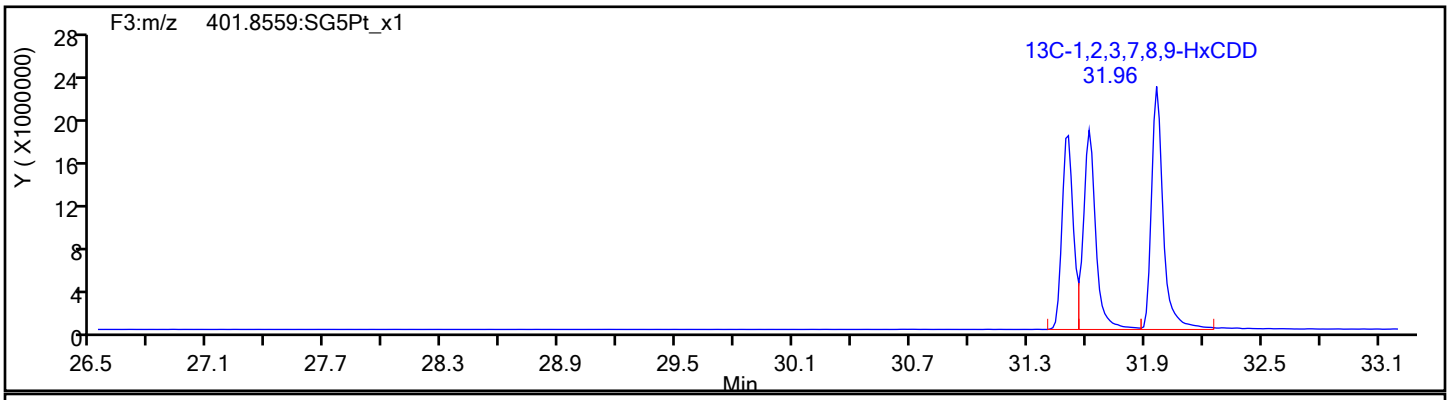
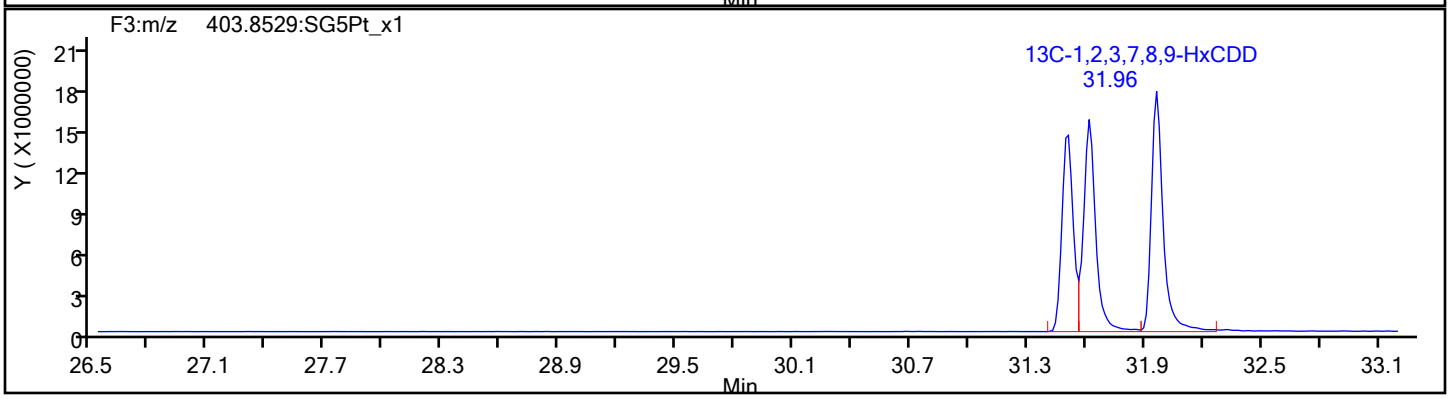
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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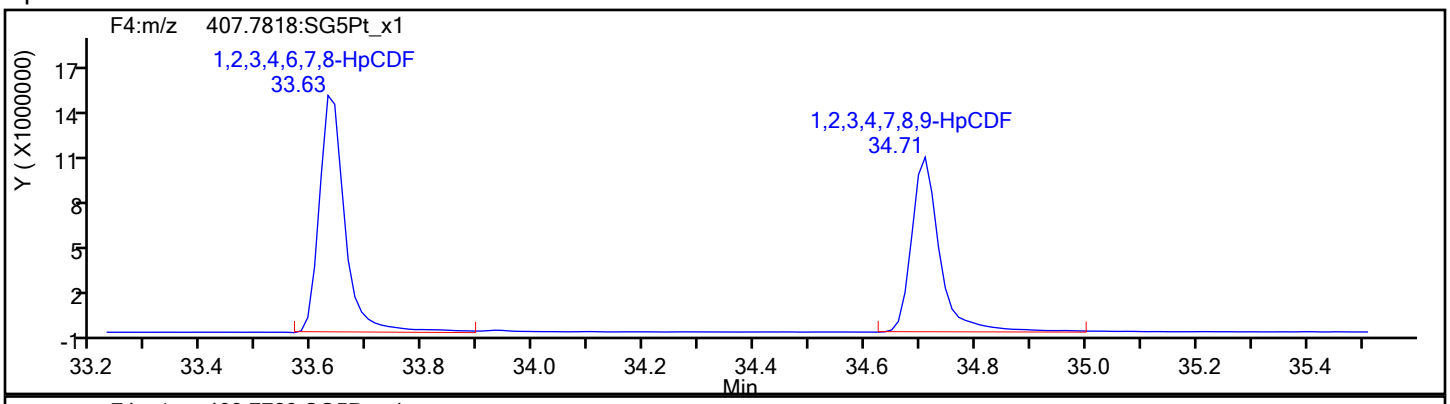
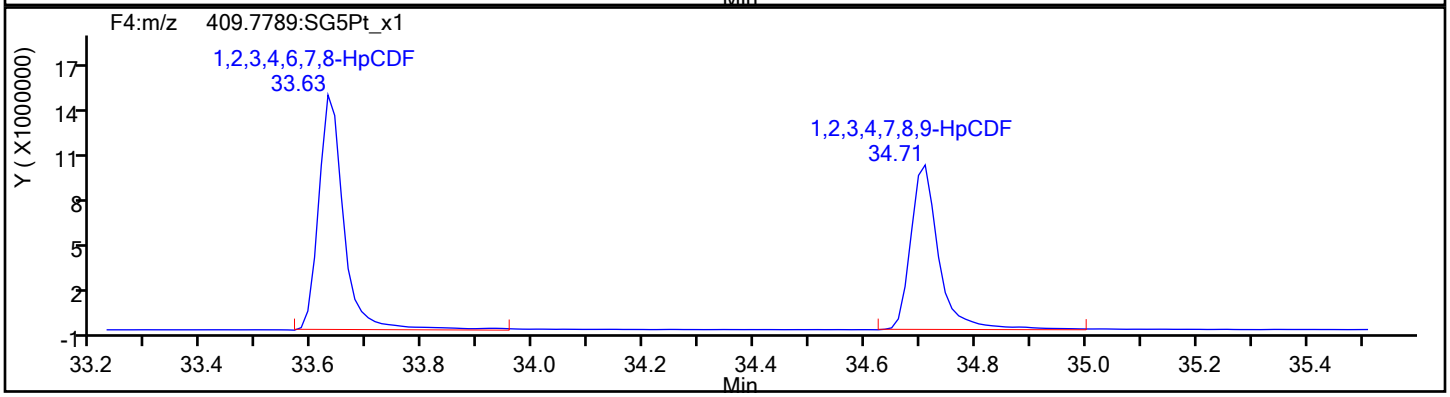
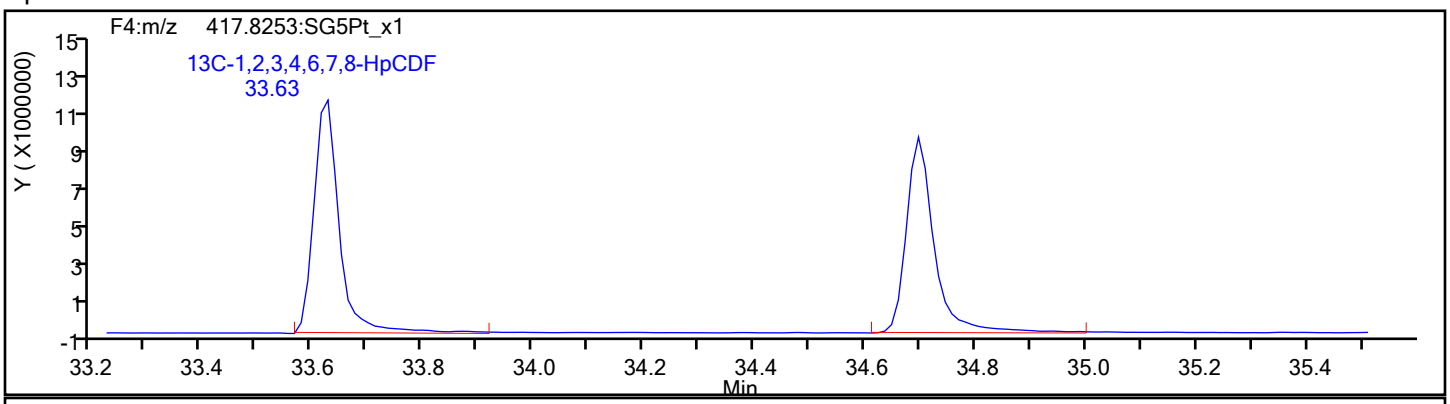
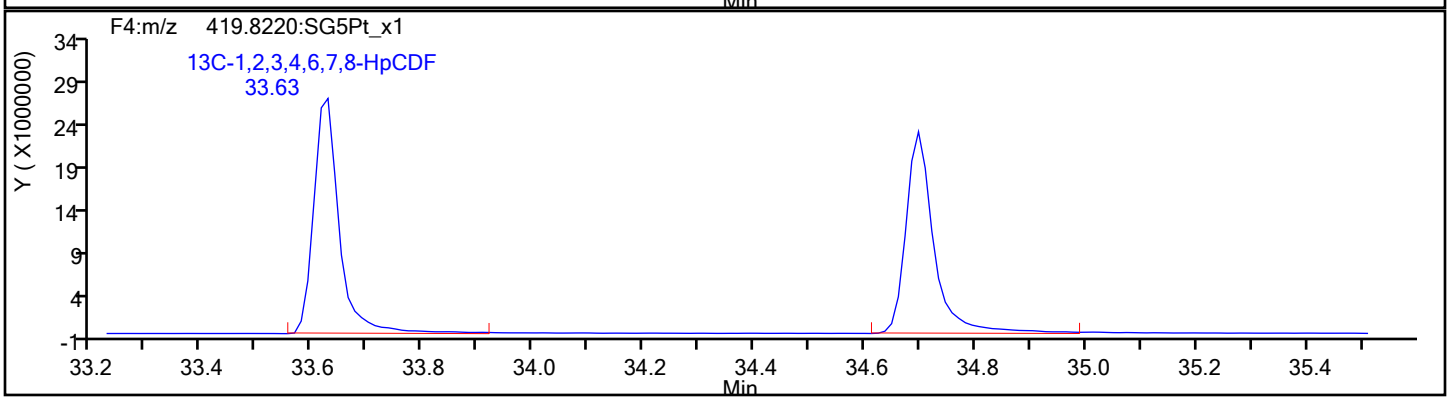
HpCDF





HpCDF Standards





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Eurofins TestAmerica, Sacramento

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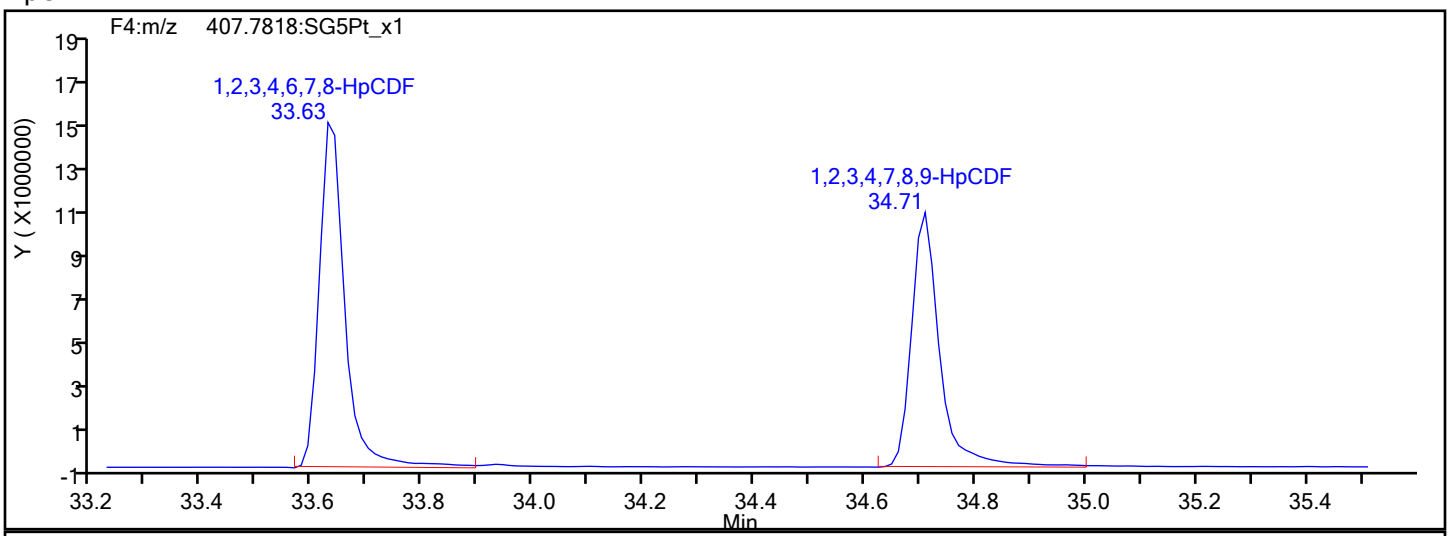
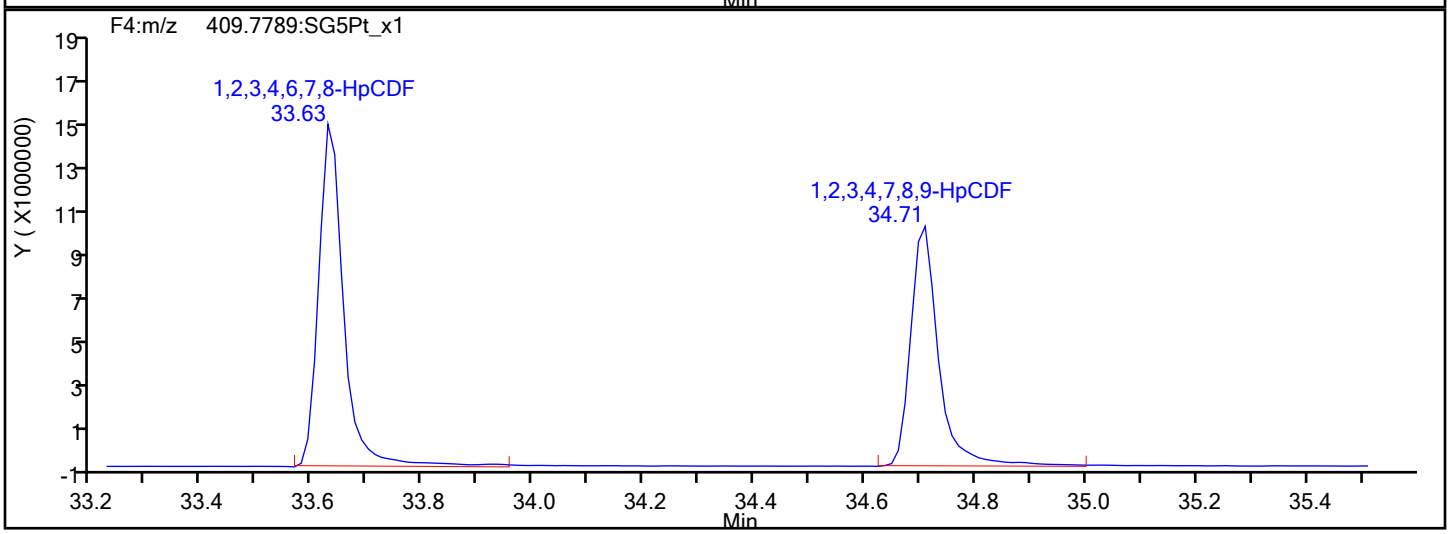
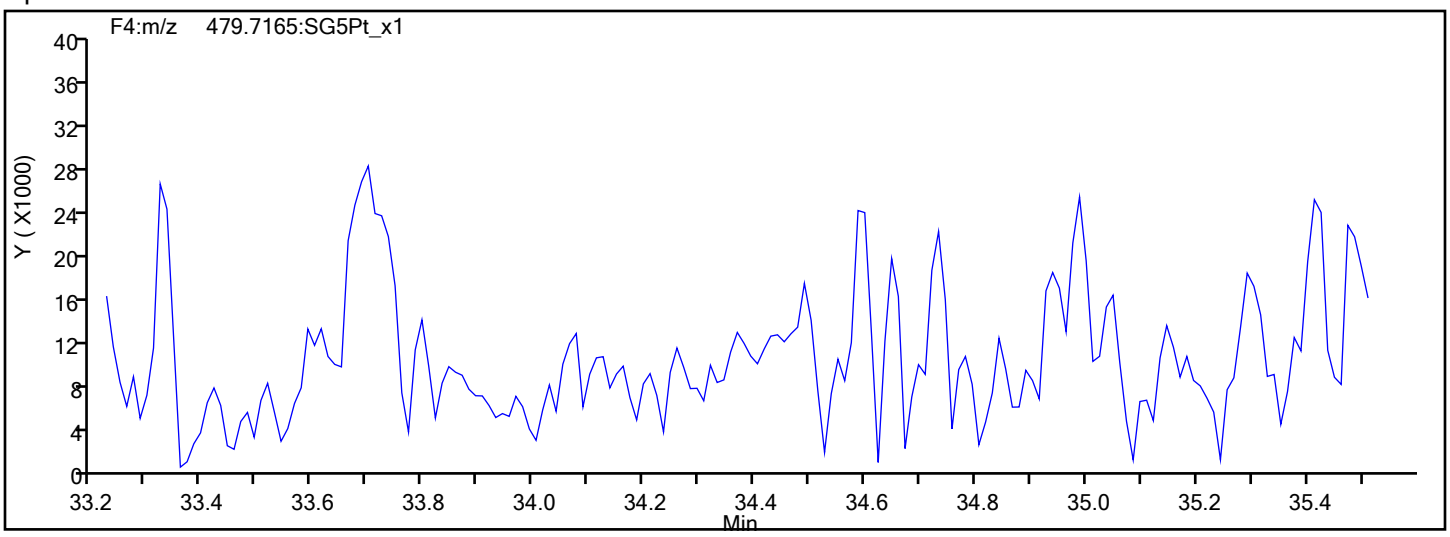
HpCDF





HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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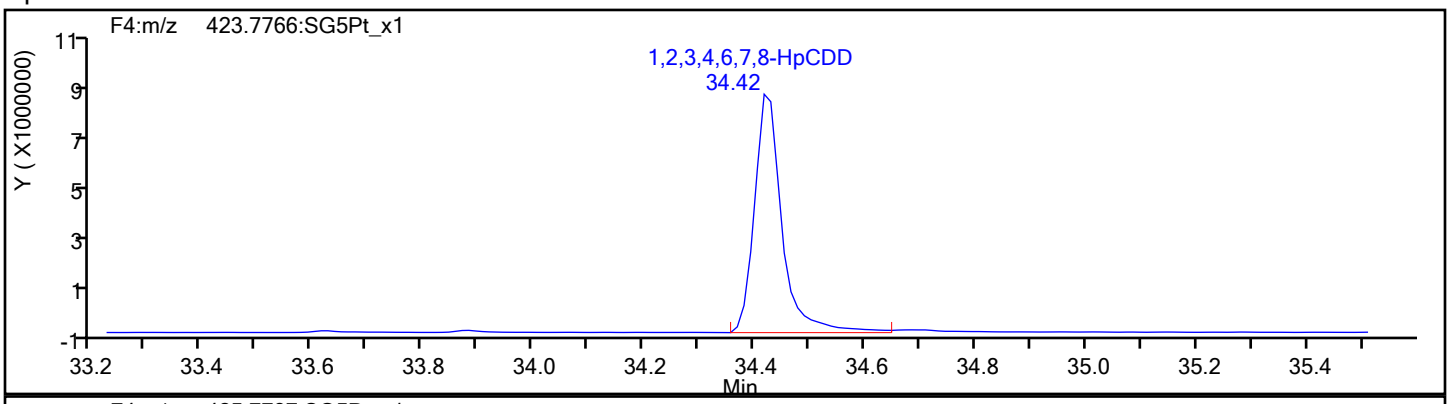
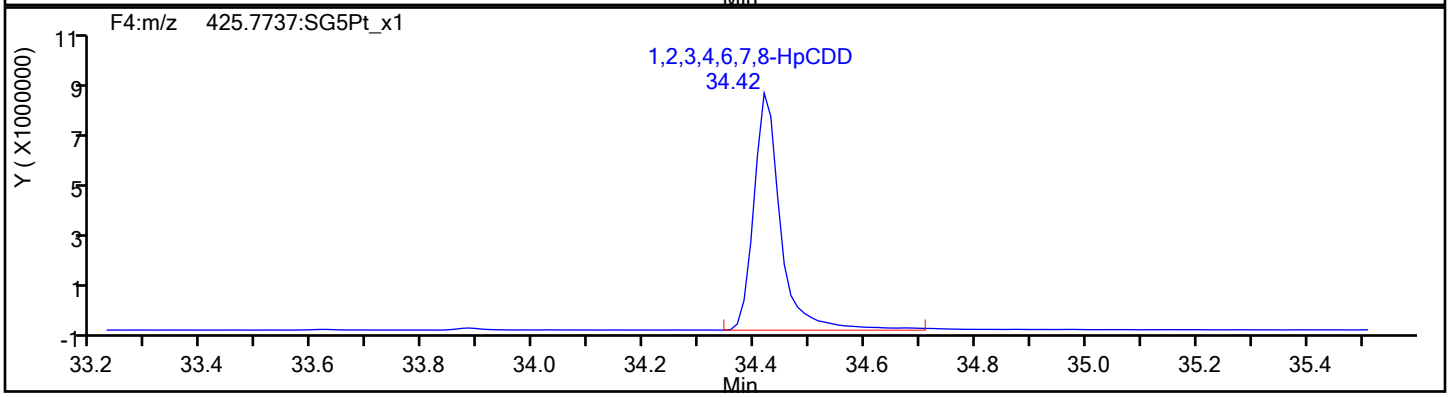
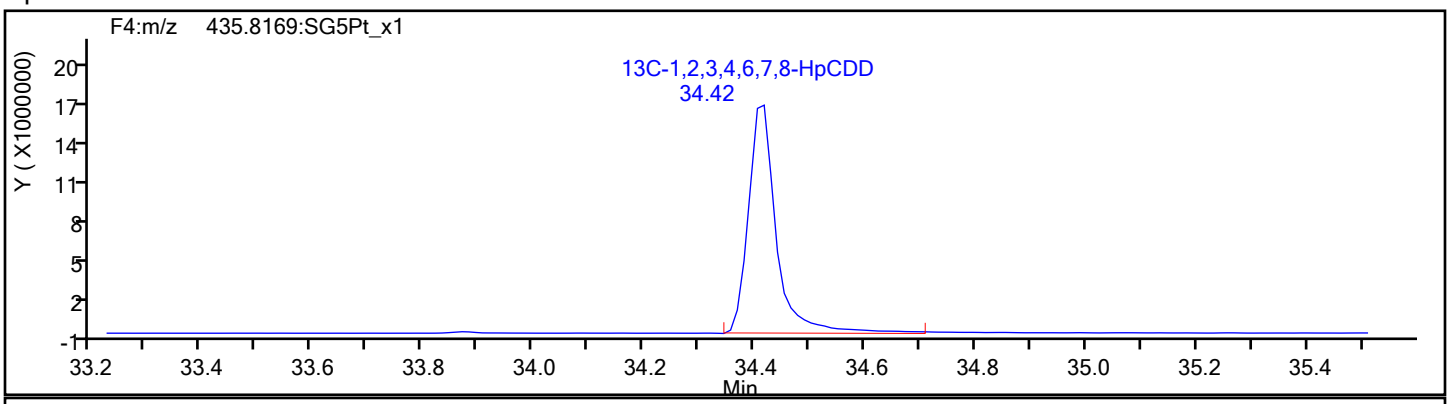
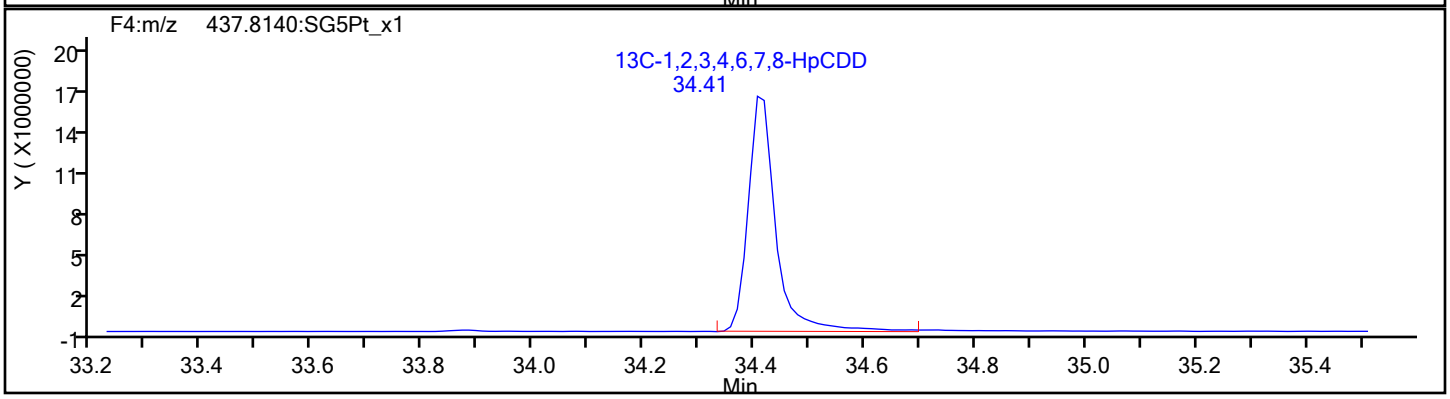
HpCDD





HpCDD Standards





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Eurofins TestAmerica, Sacramento

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Injection Date: 19-Dec-2019 11:48:33 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

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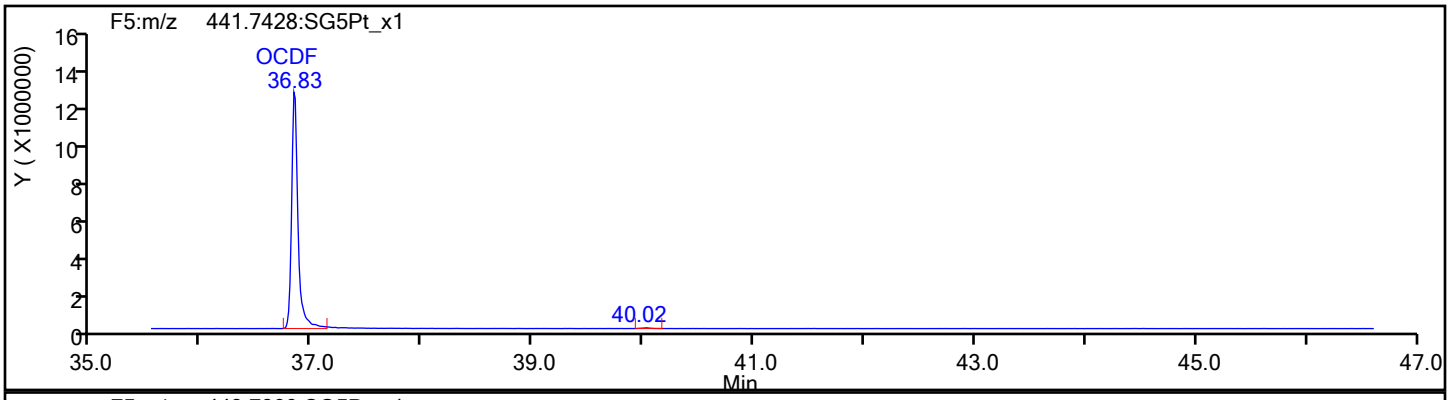
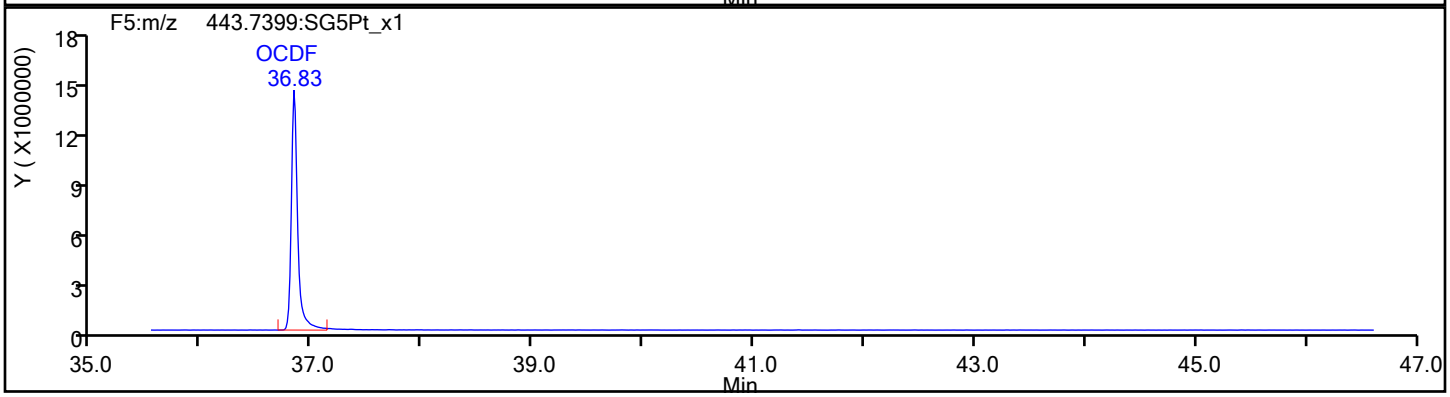
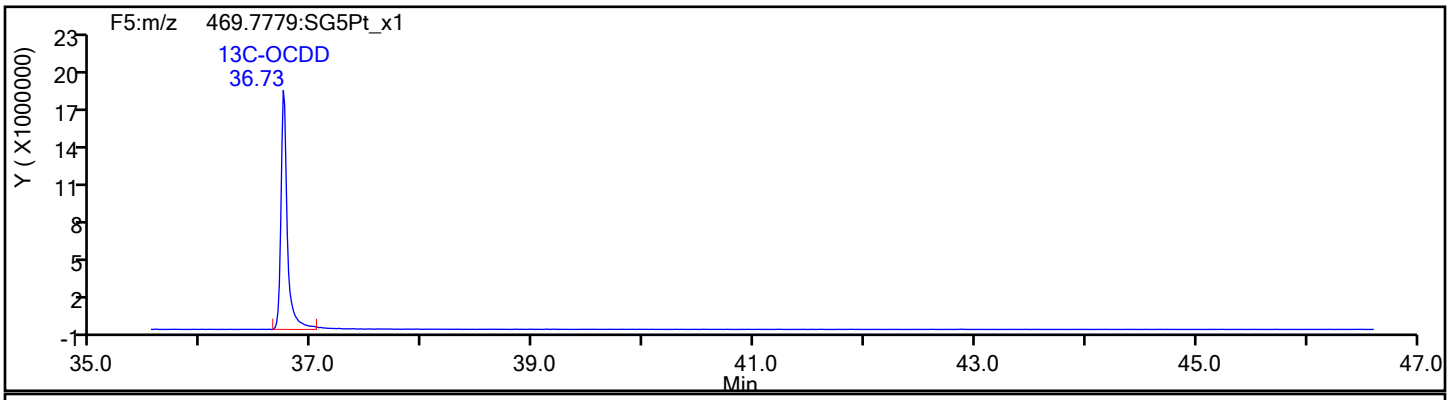
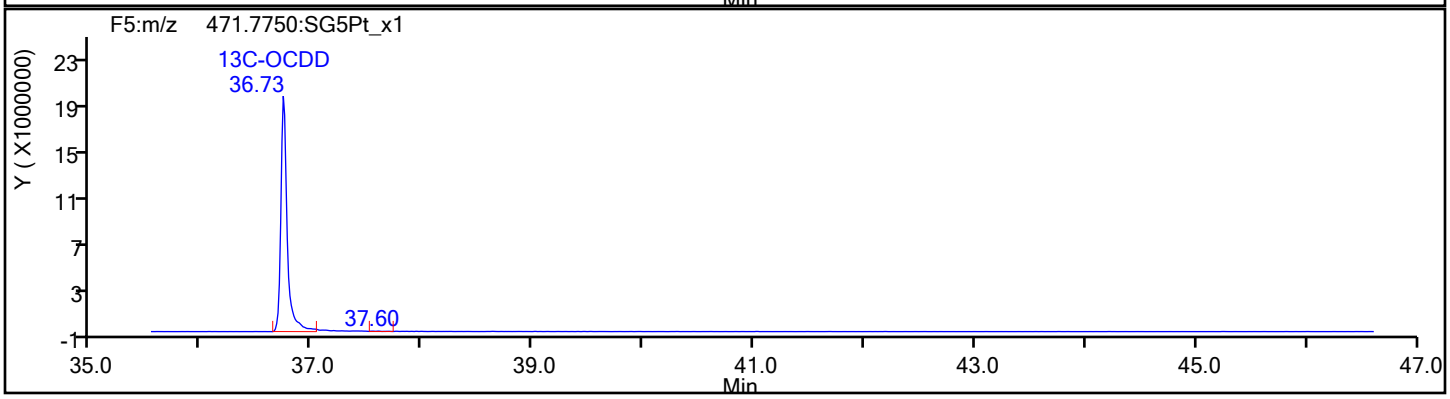
OCDF





OCDF Standards



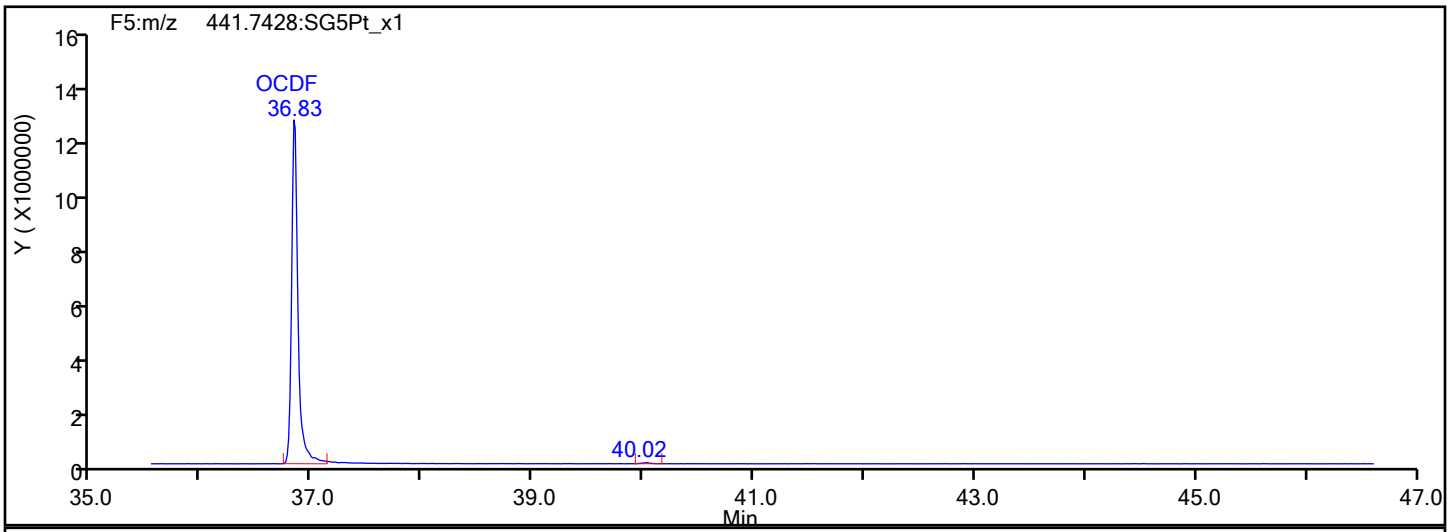


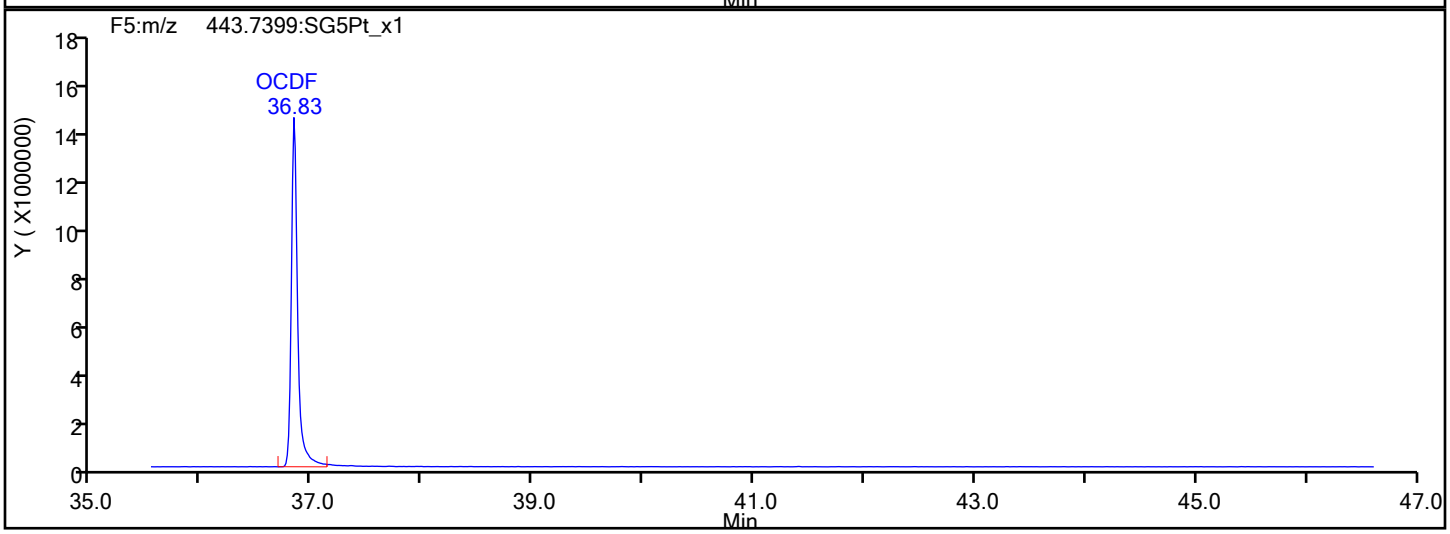
Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

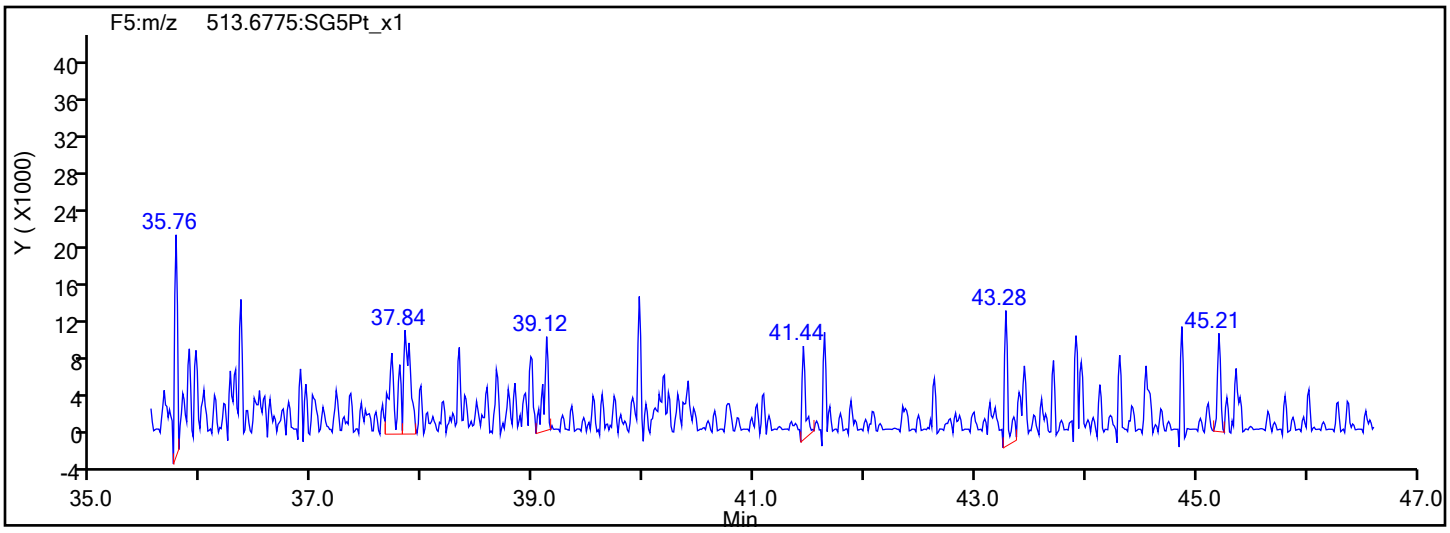
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

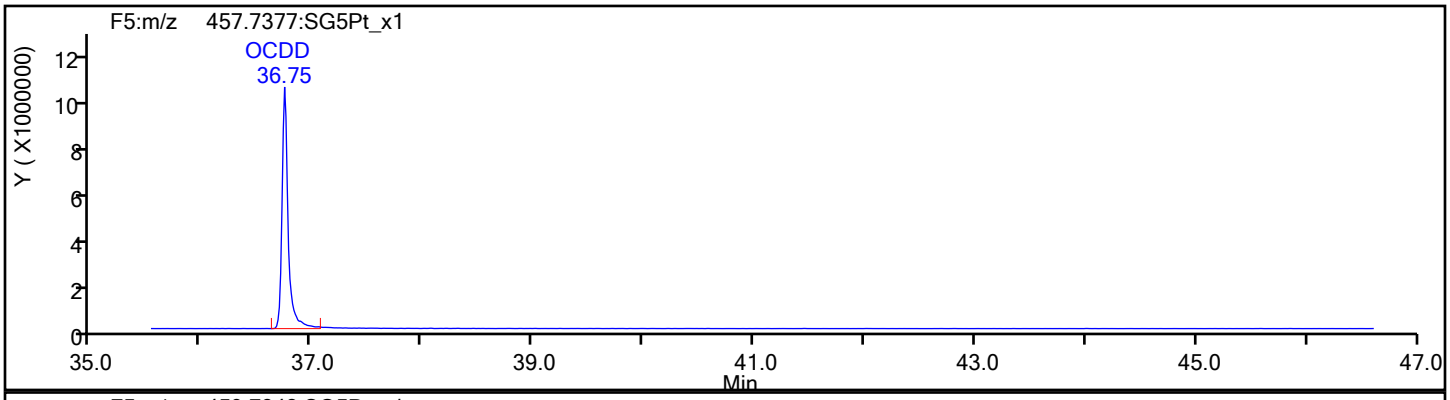


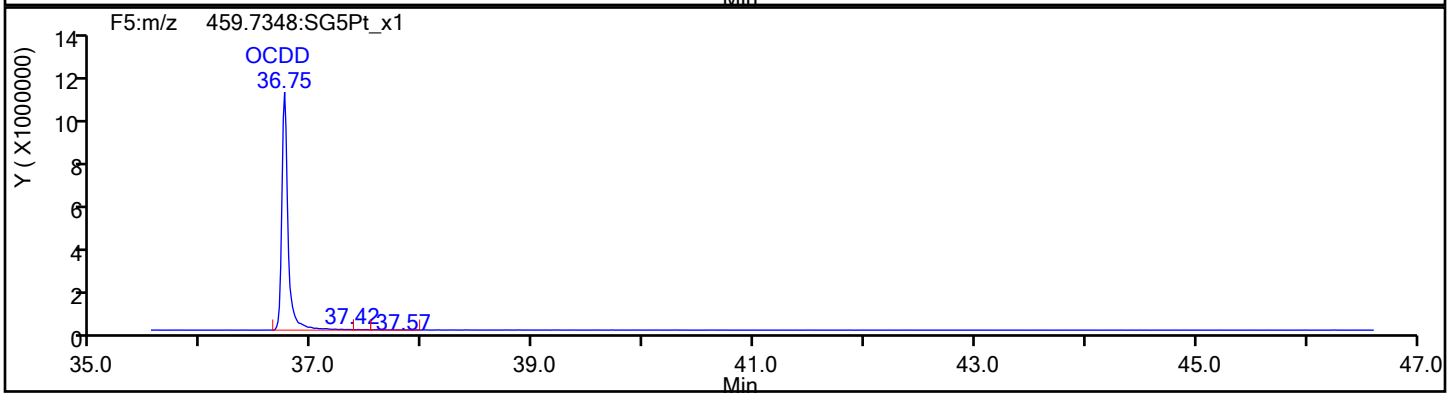
Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

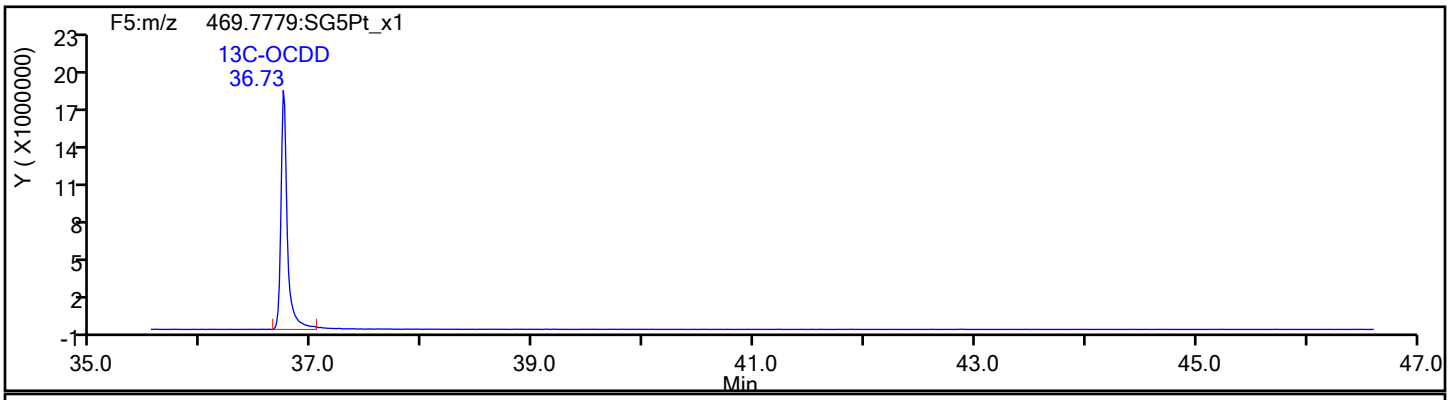
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm

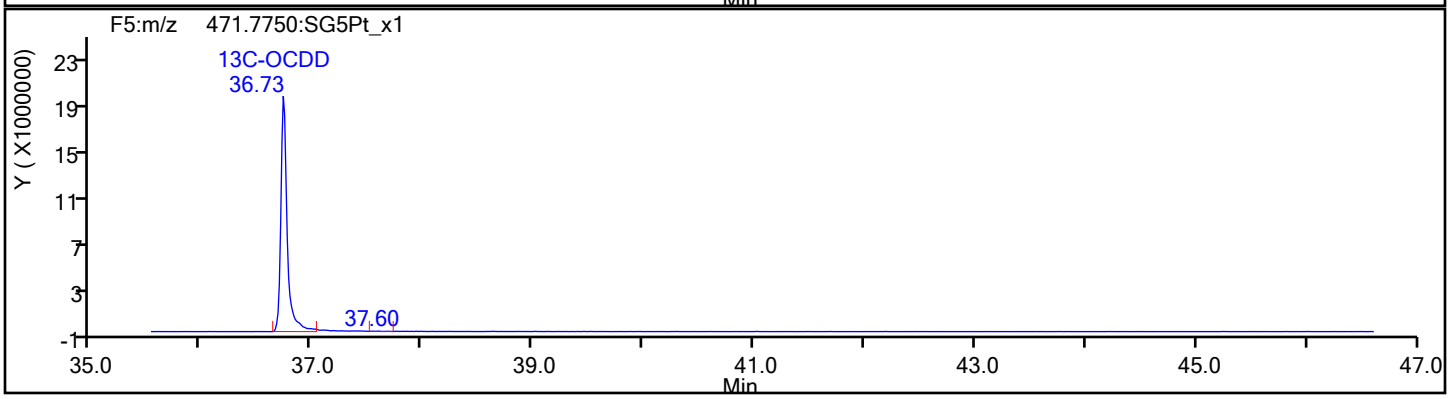
OCDD





OCDD Standards

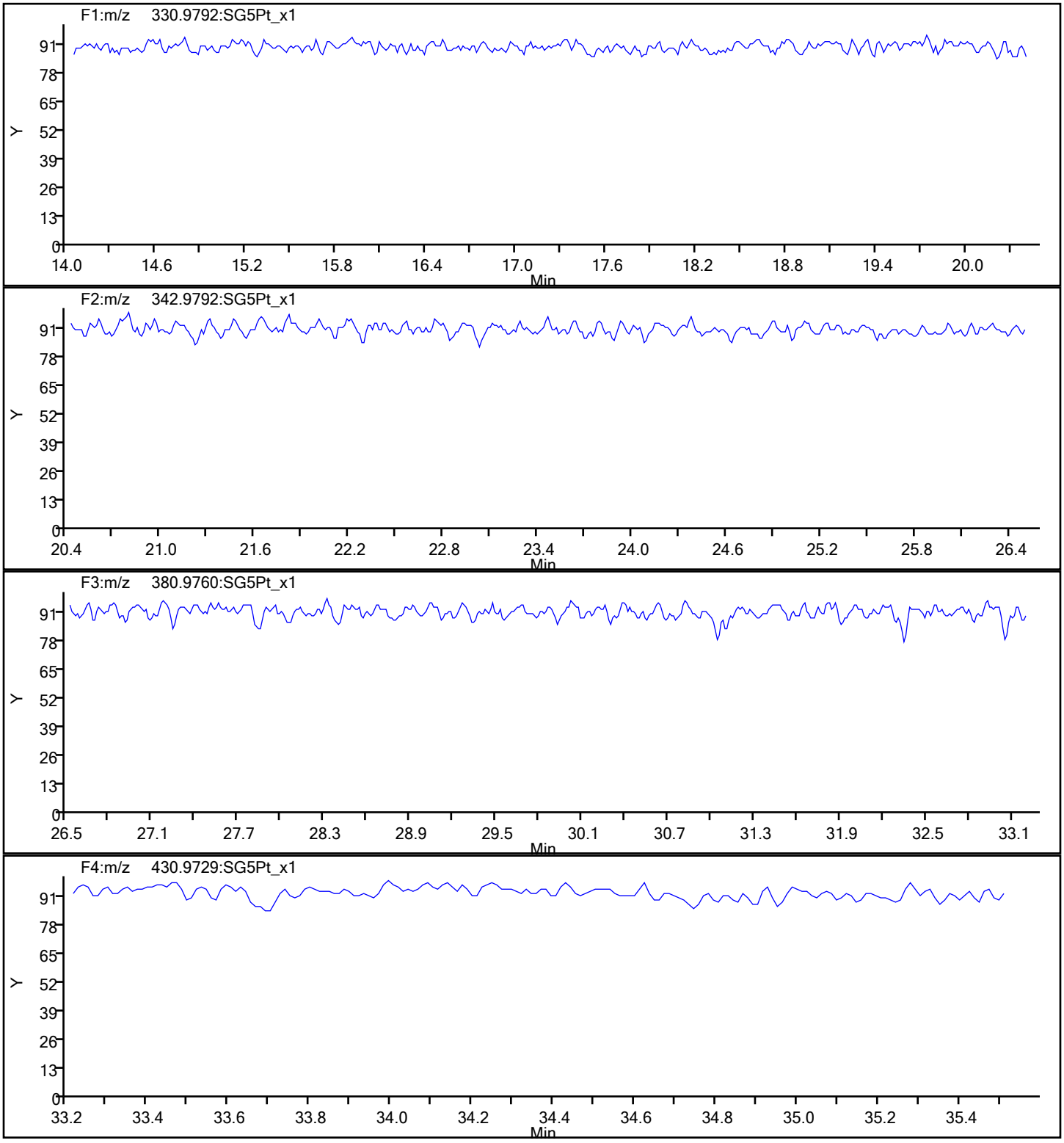




Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

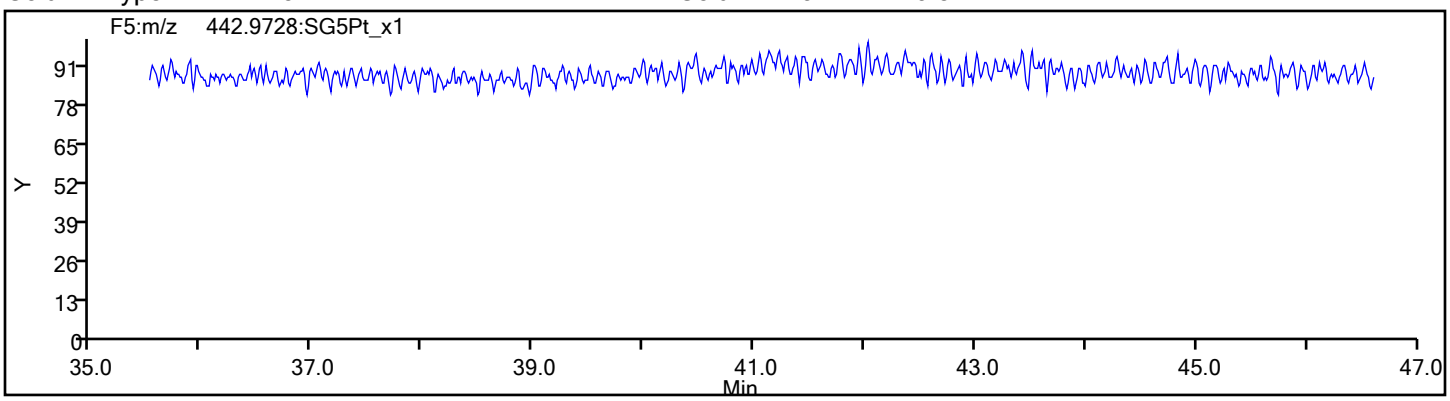
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 19-Dec-2019 22:35:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_2.d		
Injection Date:	19-Dec-2019 11:48:33	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	2
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 02-Aug-2019 01:35:28 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:55:43 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:42:14

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	16.622	61074380	0.81	1.3379					0.00	
2,3,7,8-TCDF	16.636	61037608	0.79	0.8389	47.7	47.7	0.1209	0.1209		
D 13C-2,3,7,8-TCDD	15.154	40433427	0.78	0.9388					0.00	
2,3,7,8-TCDD	15.182	44564745	0.76	1.1538	38.2	38.2	0.1633	0.1633		
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNCP_00038 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 02-Aug-2019 01:35:28 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 02-Aug-2019 11:55:43 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0326

First Level Reviewer: arghestanis Date: 02-Aug-2019 09:42:14

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	16.622	16.580	3	1.000	27419709	5797675	45703	114257	127		
317.9389	16.622	16.580	3	1.000	33654671	7331370	15961	39902	459	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.636	16.599	2	1.001	26963677	5682254	5764	14410	986		
305.8987	16.636	16.599	2	1.001	34073931	7516270	7547	18867	996	0.79(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.154	15.136	1	1.000	17780107	4066450	14178	35445	287		
333.9339	15.154	15.136	1	1.000	22653320	5347910	7990	19975	669	0.78(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.182	15.156	2	1.002	19294731	4574819	7190	17975	636		
321.8936	15.182	15.156	2	1.002	25270014	5985037	10548	26370	567	0.76(0.65-0.89)	
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

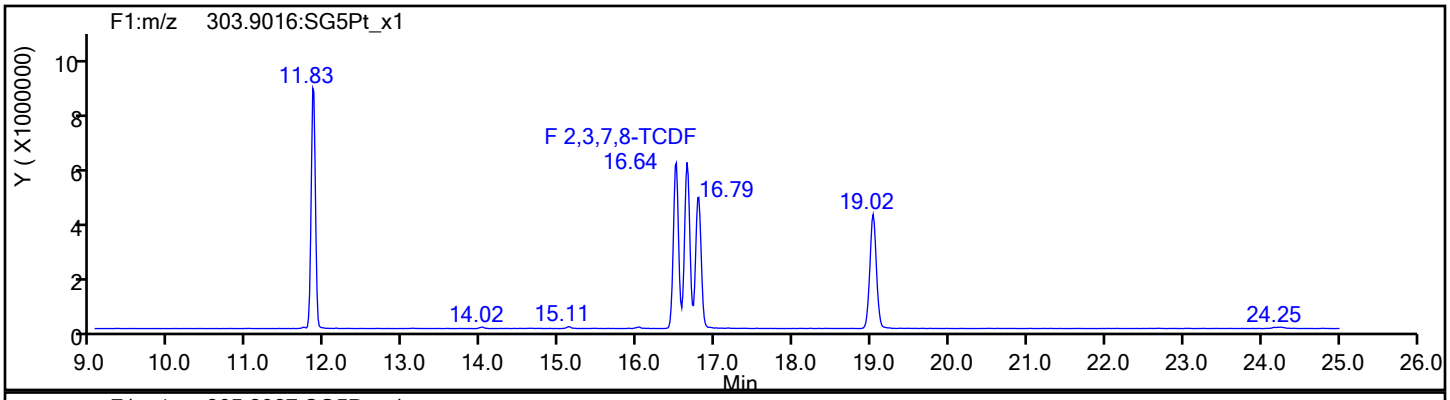
HRDXNCP_00038 Amount Added: 1.00 Units: mL

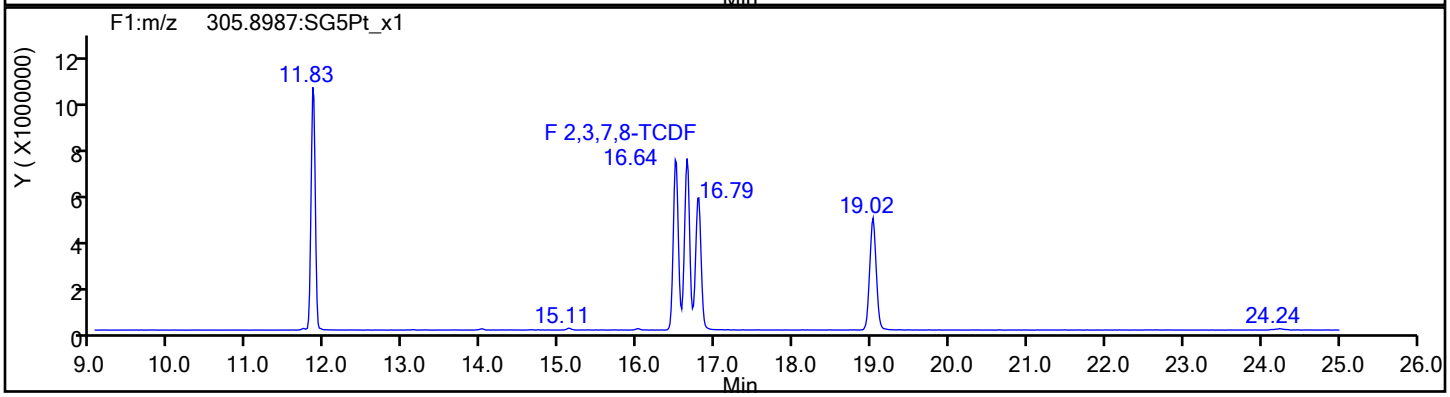
Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

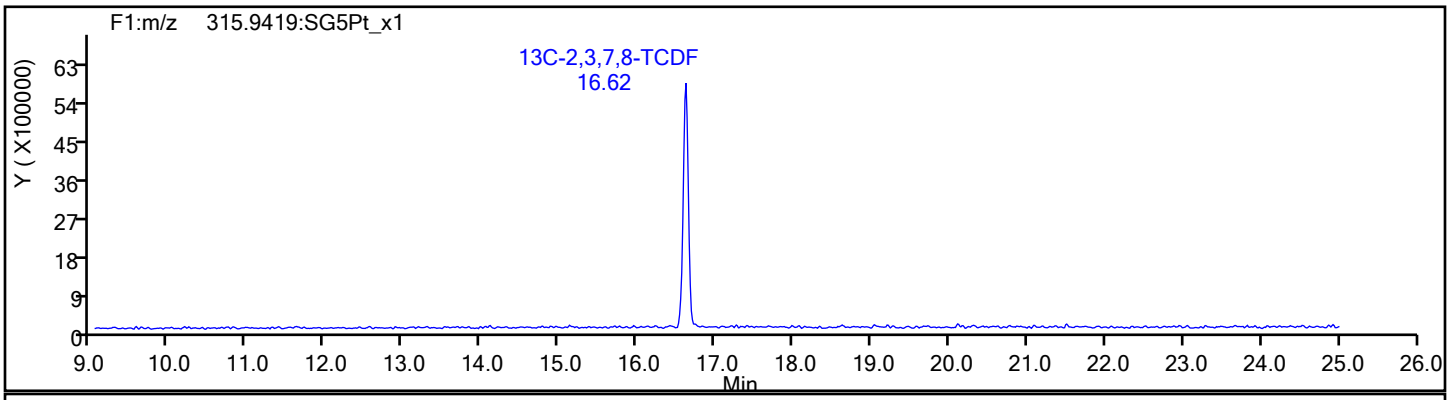
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

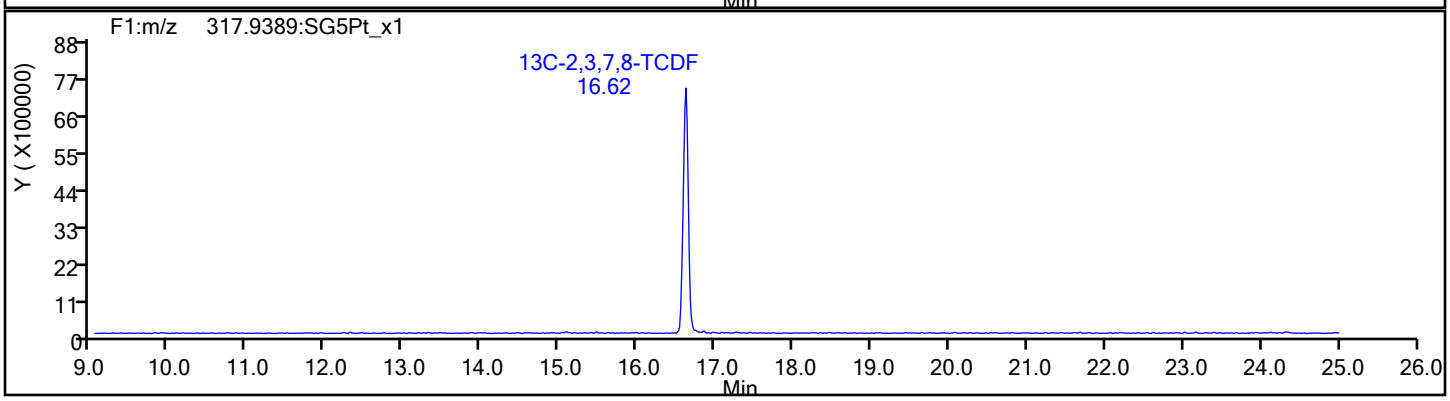
TCDF





TCDF Standards



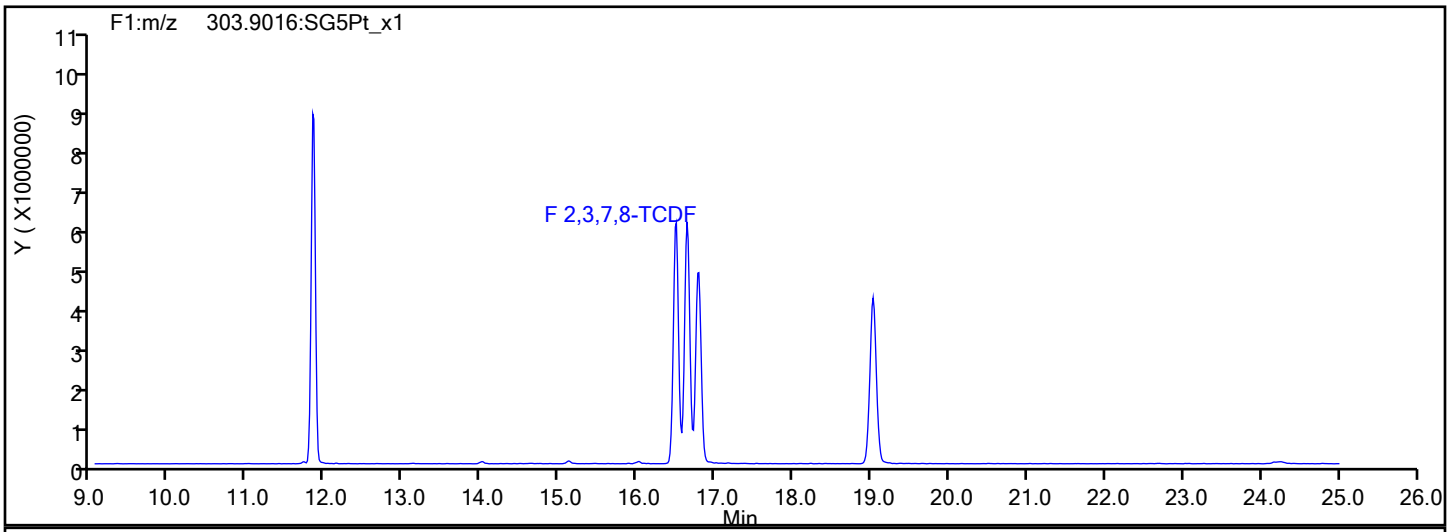


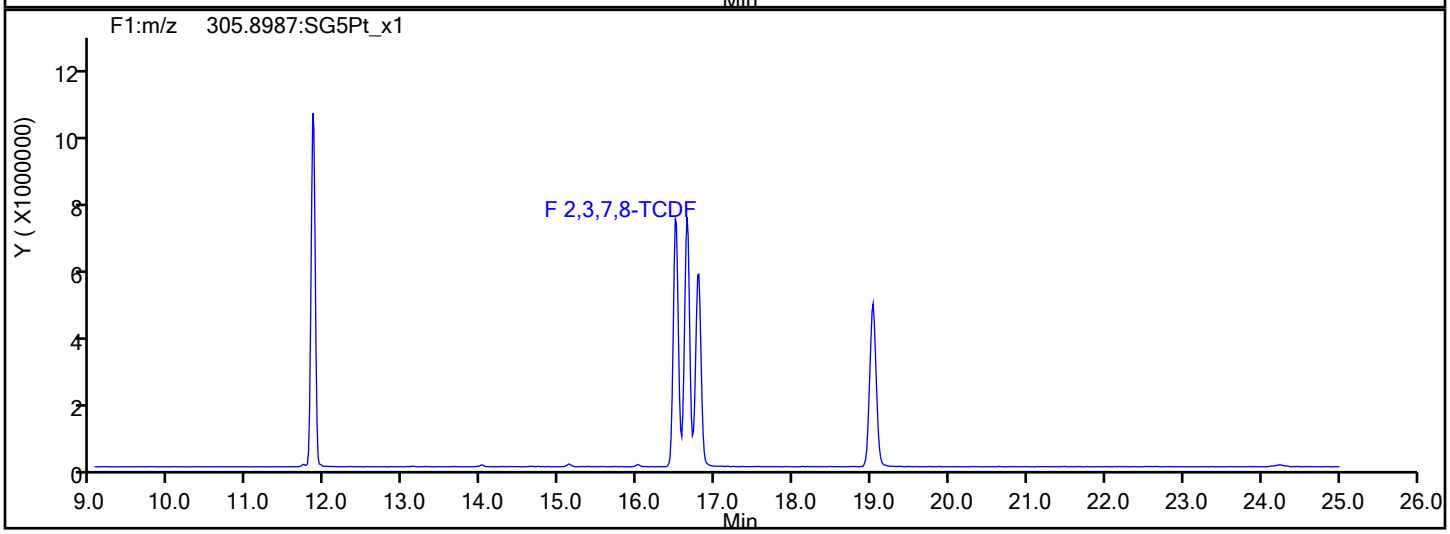
Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

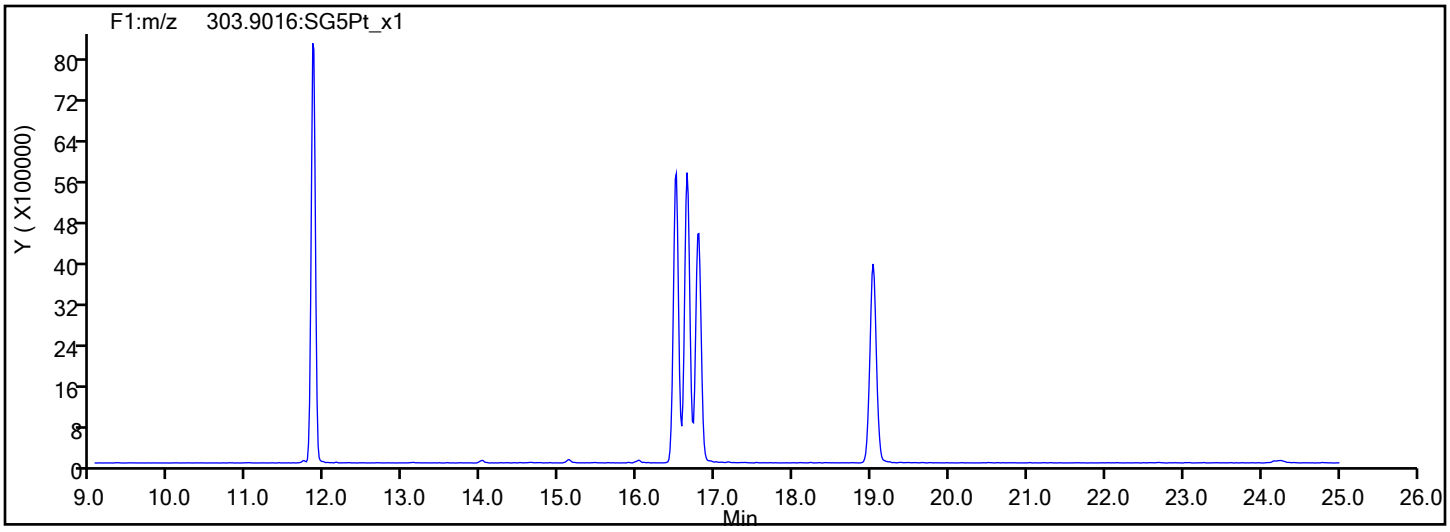
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass

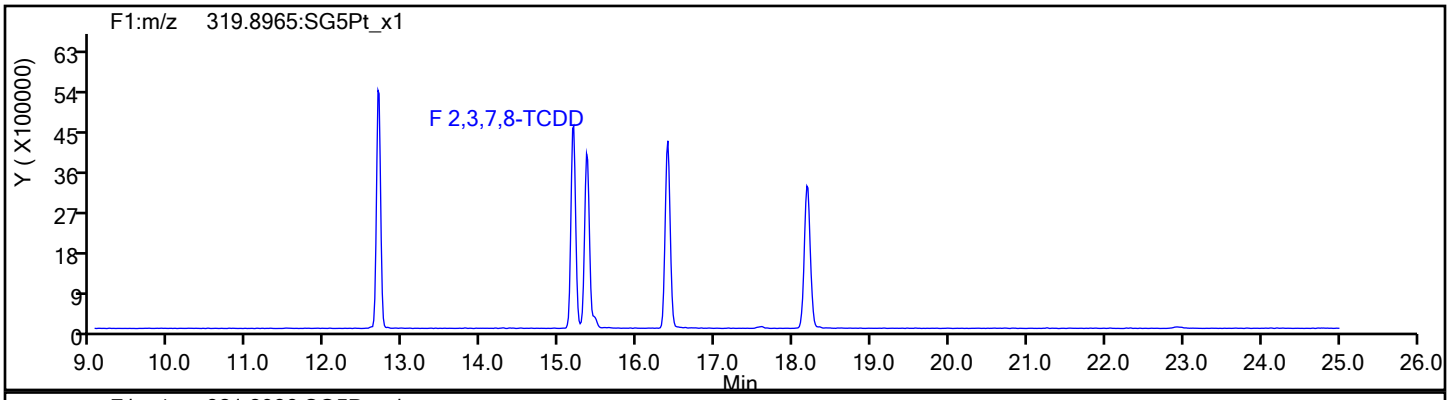


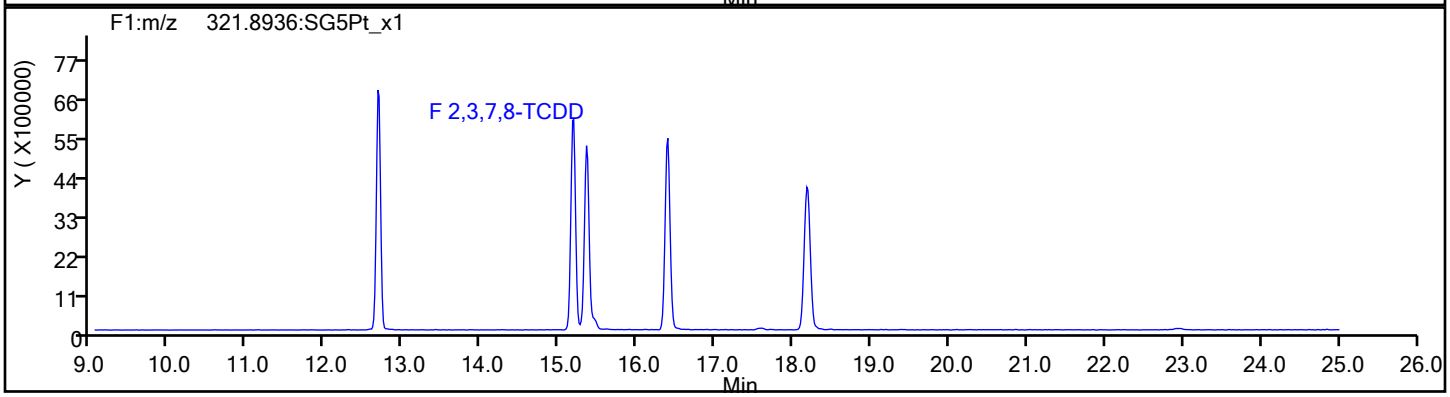
Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

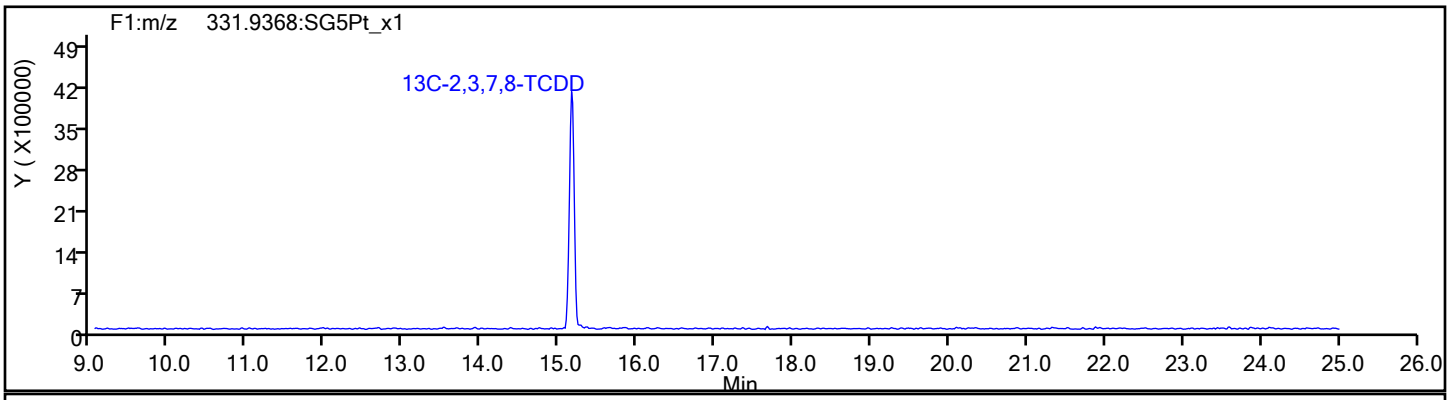
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

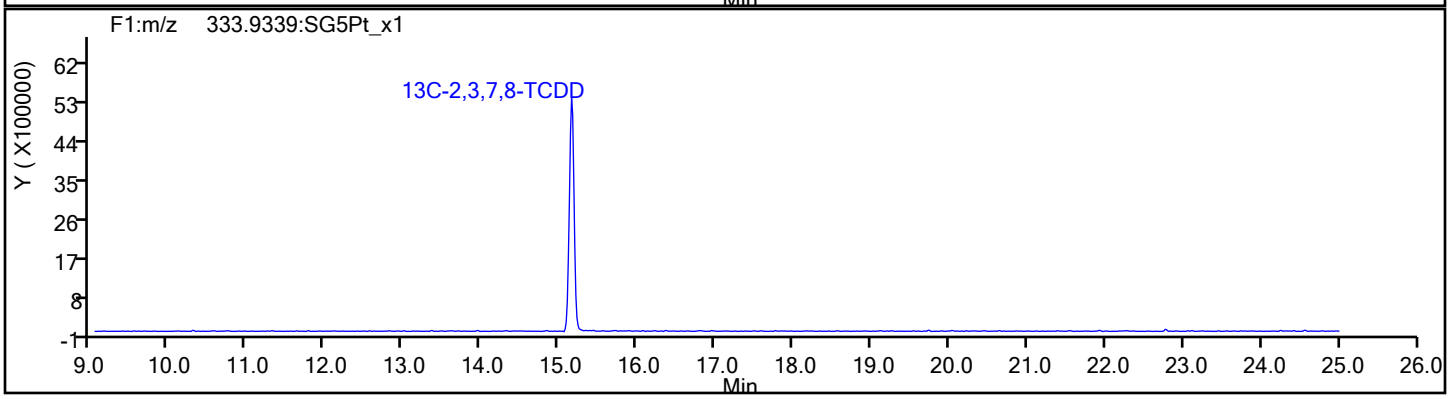
TCDD





TCDD Standards



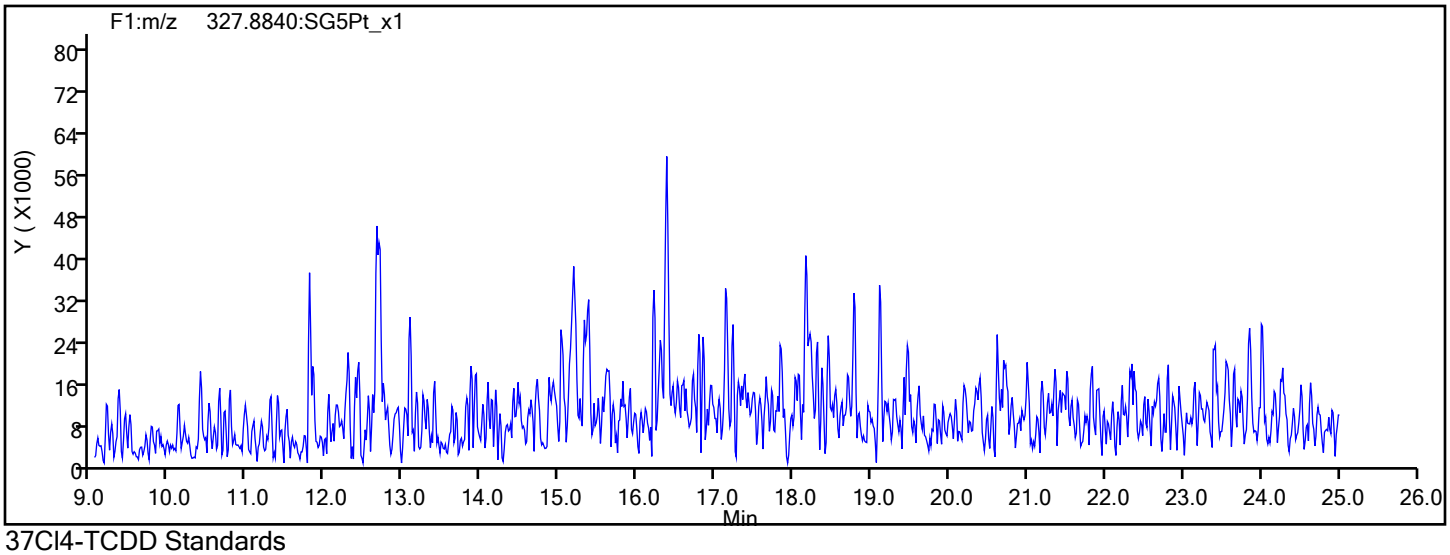


Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

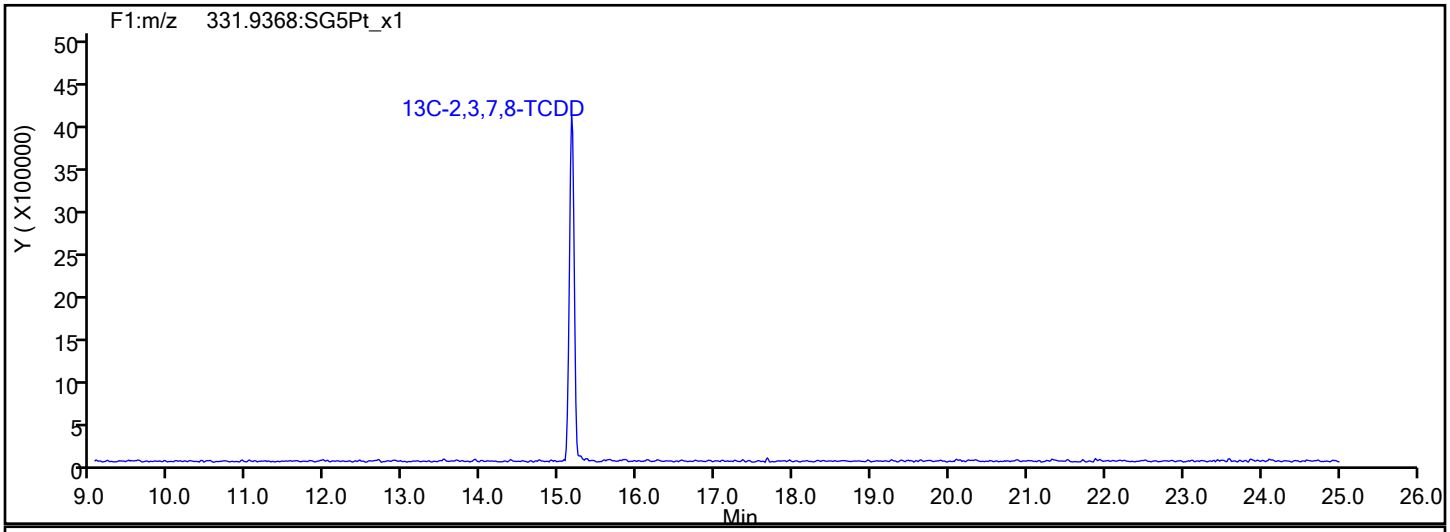
Eurofins TestAmerica, Sacramento

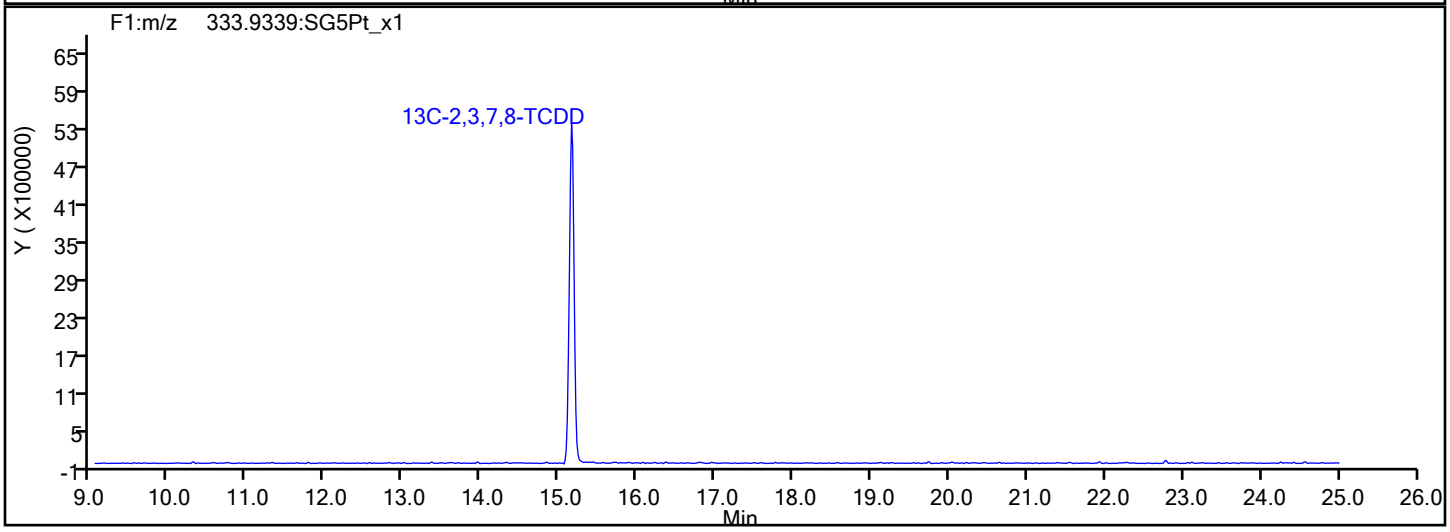
Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

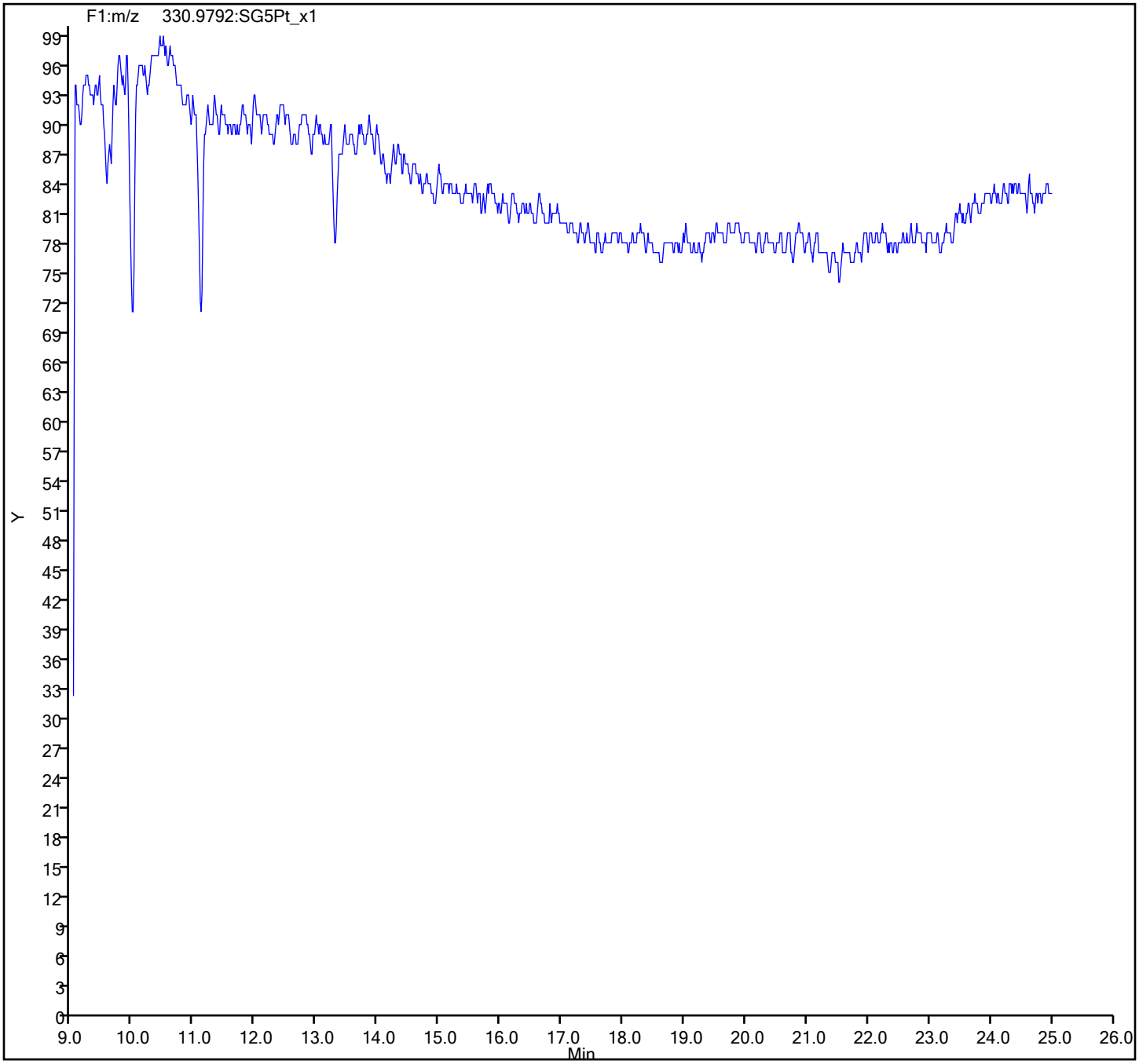




Report Date: 02-Aug-2019 11:55:58 Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_001.d		
Injection Date:	02-Aug-2019 01:35:28	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	312067	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 19-Dec-2019 16:13:15 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:38:26 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:32:35

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	16.567	96525313	0.79	1.3379					0.00	
2,3,7,8-TCDF	16.581	94020698	0.77	0.8389	46.4	46.4	0.0982	0.0982		
D 13C-2,3,7,8-TCDD	15.127	60707877	0.74	0.9388					0.00	
2,3,7,8-TCDD	15.154	67545882	0.79	1.1538	38.6	38.6	0.0899	0.0899		
S Total 2378-Chlorinated							0.000100	0.000100		

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d
Lims ID: CPS
Client ID:
Sample Type: CPS
Inject. Date: 19-Dec-2019 16:13:15 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Misc. Info.: DB225RES
Operator ID: Instrument ID: 11D2

Method: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\DXN_DB225_11D2.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:38:26 Calib Date: 02-Aug-2019 05:25:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\11D2\20190802-80524.b\02AU1911D2_007.d

Column 1 : DB-225 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0340

First Level Reviewer: shardaa Date: 20-Dec-2019 14:32:35

Signal	RT (min.)	Adj RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	16.567	16.567	0	1.000	42486838	8118015	22743	56857	357		
317.9389	16.567	16.567	0	1.000	54038475	10438542	12777	31942	817	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	16.581	16.581	0	1.001	40862758	7756751	6437	16092	1205		
305.8987	16.581	16.581	0	1.001	53157940	10297250	8845	22112	1164	0.77(0.65-0.89)	
13C-2,3,7,8-TCDD											
331.9368	15.127	15.127	0	1.000	25785484	5581253	16044	40110	348		
333.9339	15.127	15.127	0	1.000	34922393	7335742	5050	12625	1453	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	15.154	15.154	0	1.002	29812010	6492502	7088	17720	916		
321.8936	15.154	15.154	0	1.002	37733872	8210678	6305	15762	1302	0.79(0.65-0.89)	
Total 2378-Chlorinated Dioxins & Furans											
		0.0	0								

Reagents:

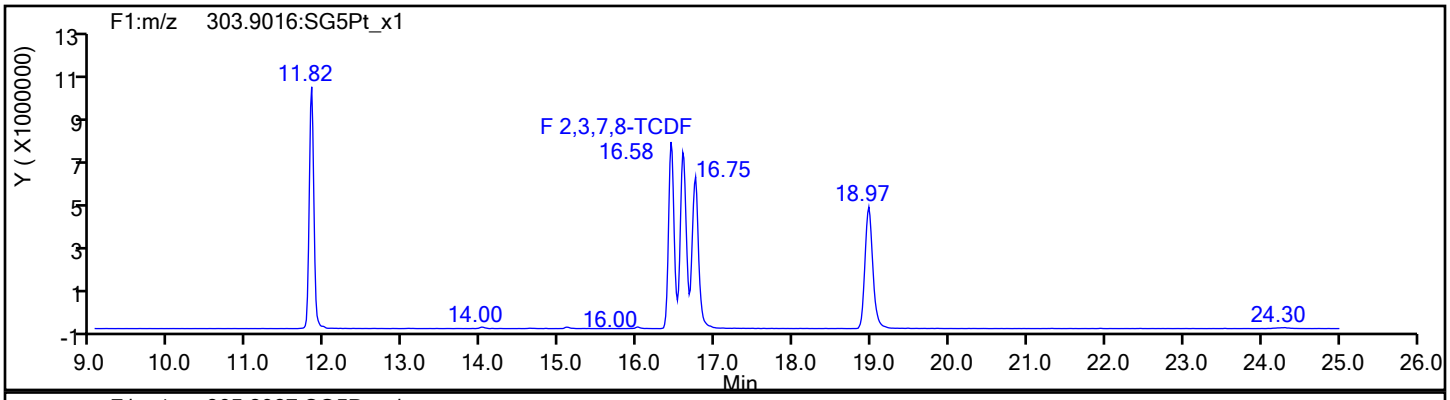
HRDXNCP_00040 Amount Added: 2.00 Units: uL

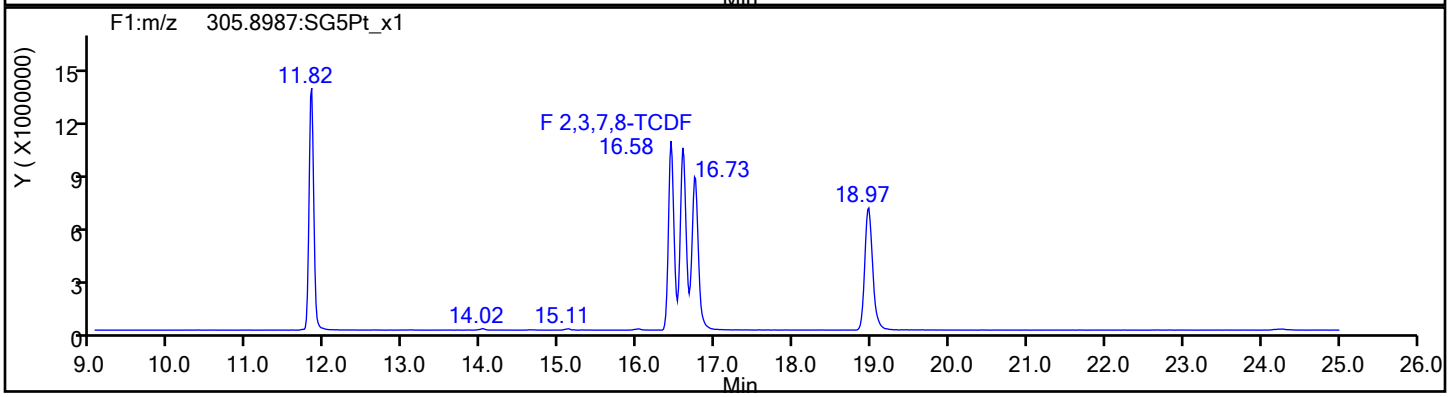
Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

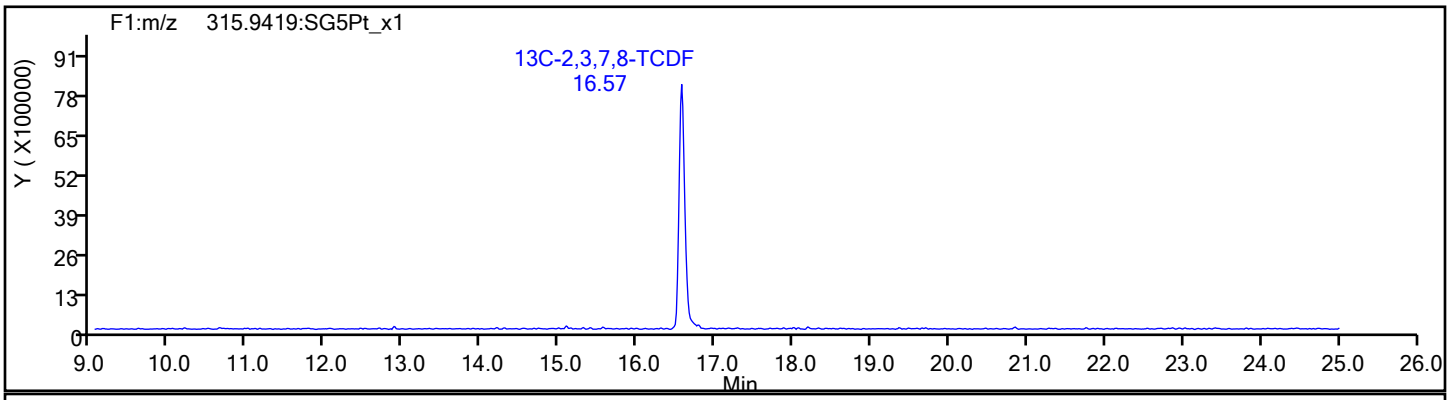
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d		
Injection Date:	19-Dec-2019 16:13:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

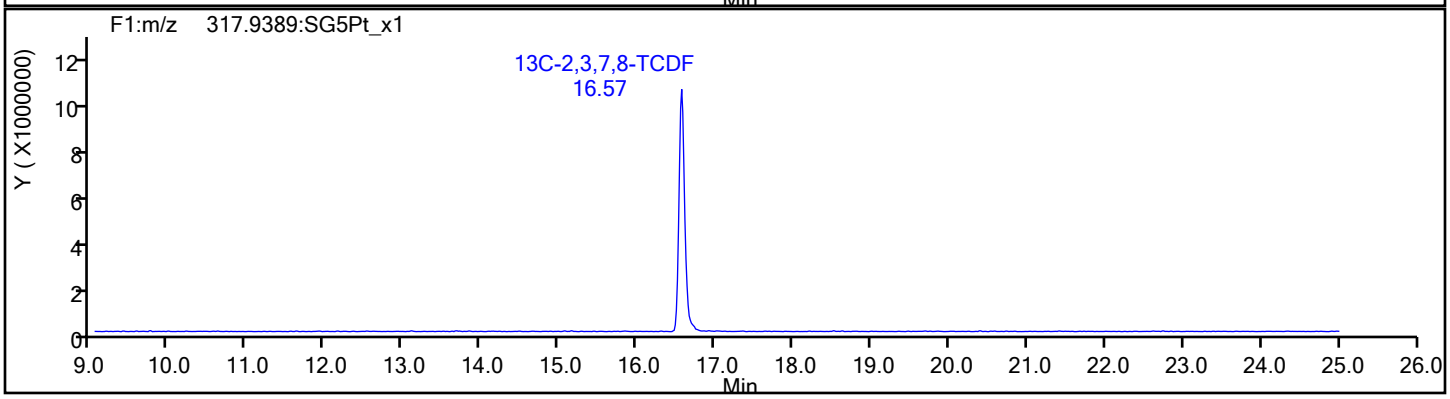
TCDF





TCDF Standards



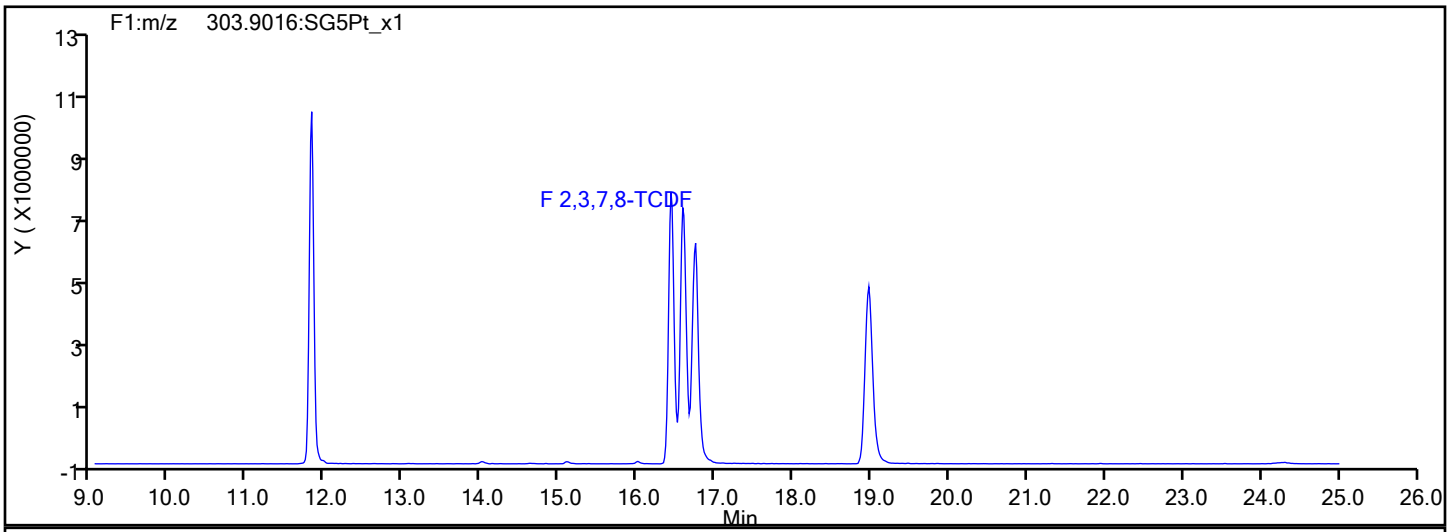


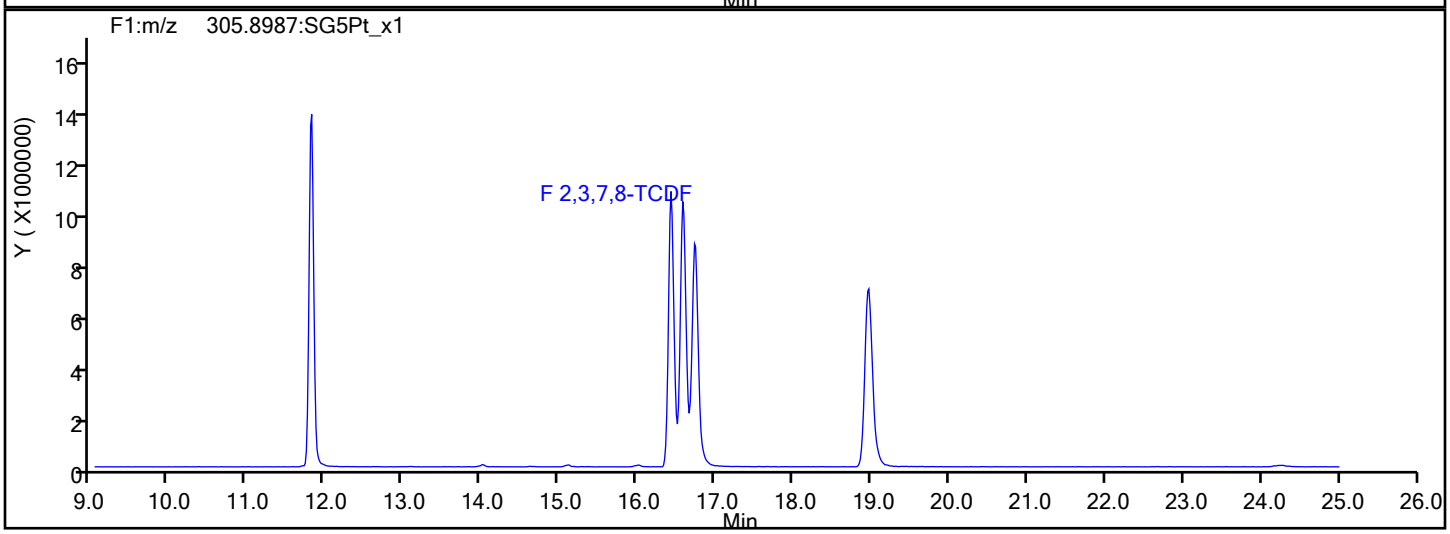
Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

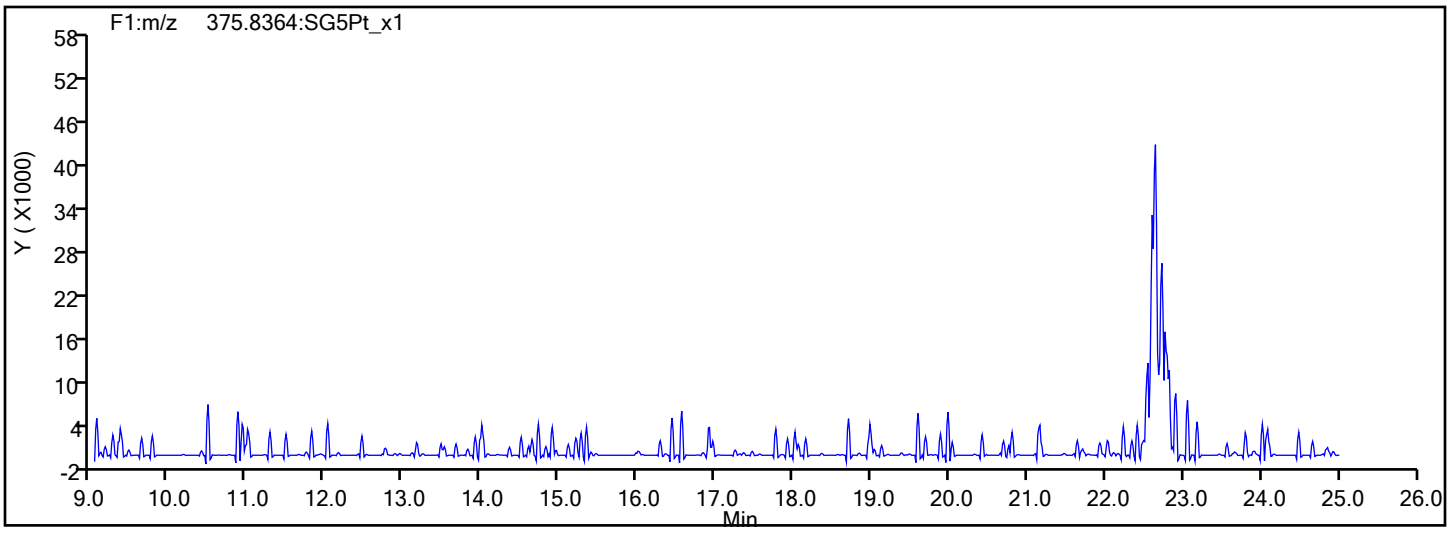
Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d		
Injection Date:	19-Dec-2019 16:13:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



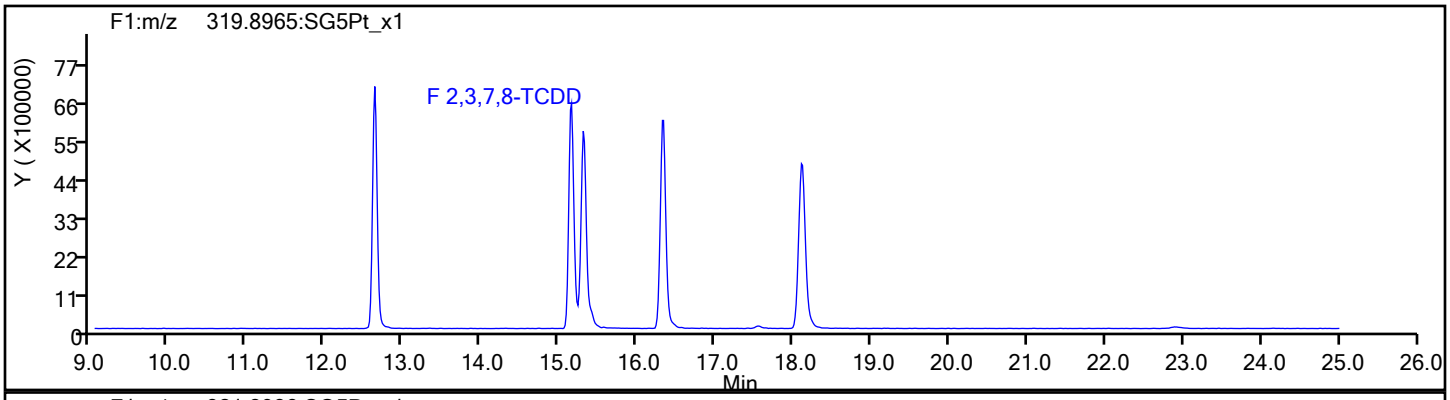
Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

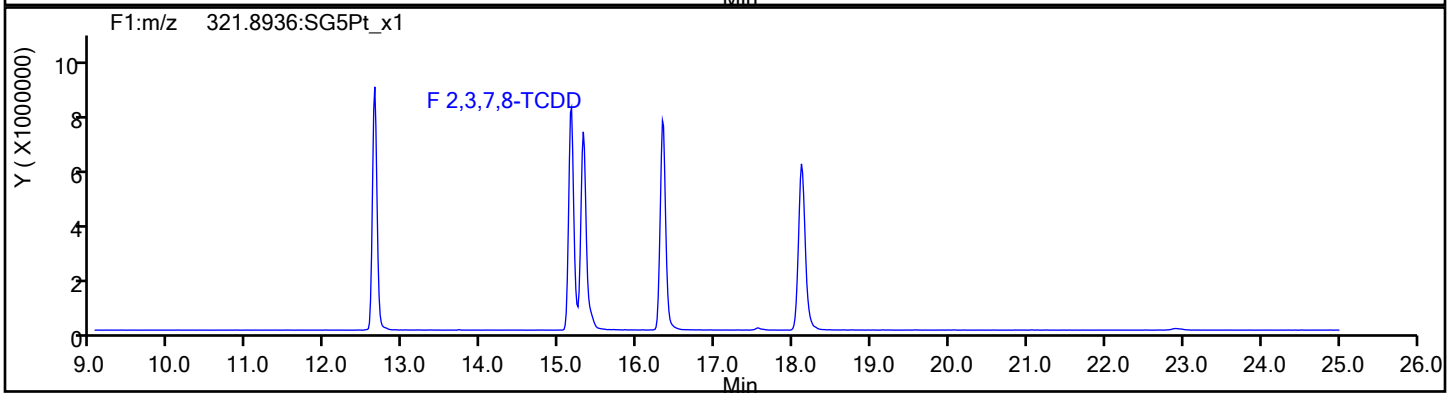
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d

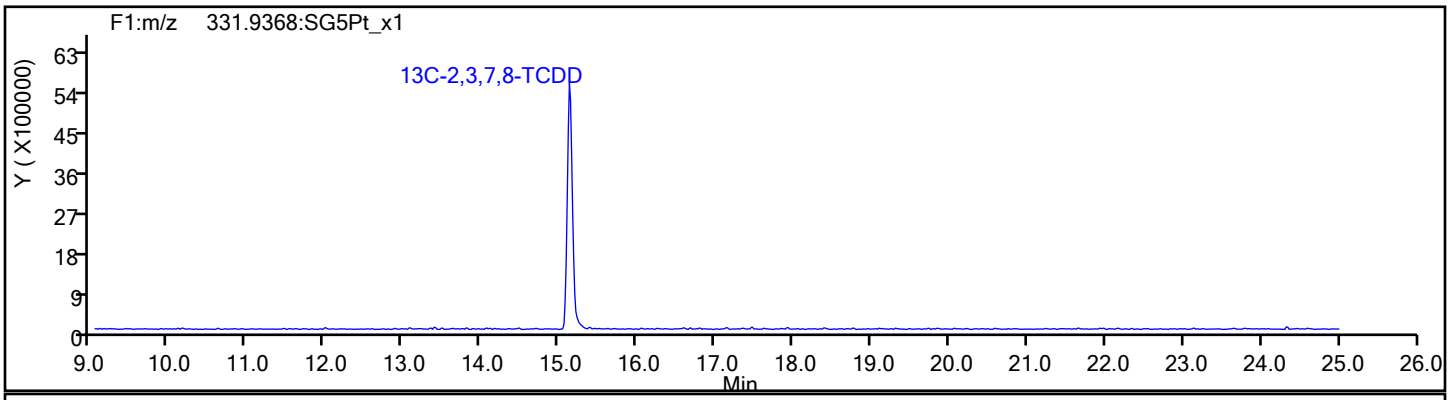
Injection Date:	19-Dec-2019 16:13:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm

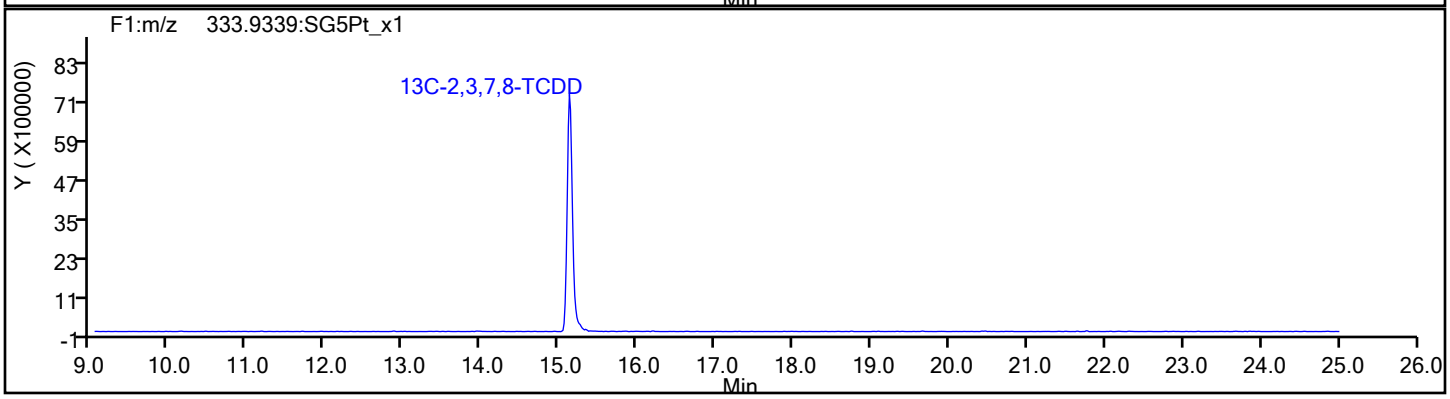
TCDD





TCDD Standards





Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d

Injection Date: 19-Dec-2019 16:13:15 Injection Vol: 2.0 ul

Instrument ID: 11D2 Operator ID:

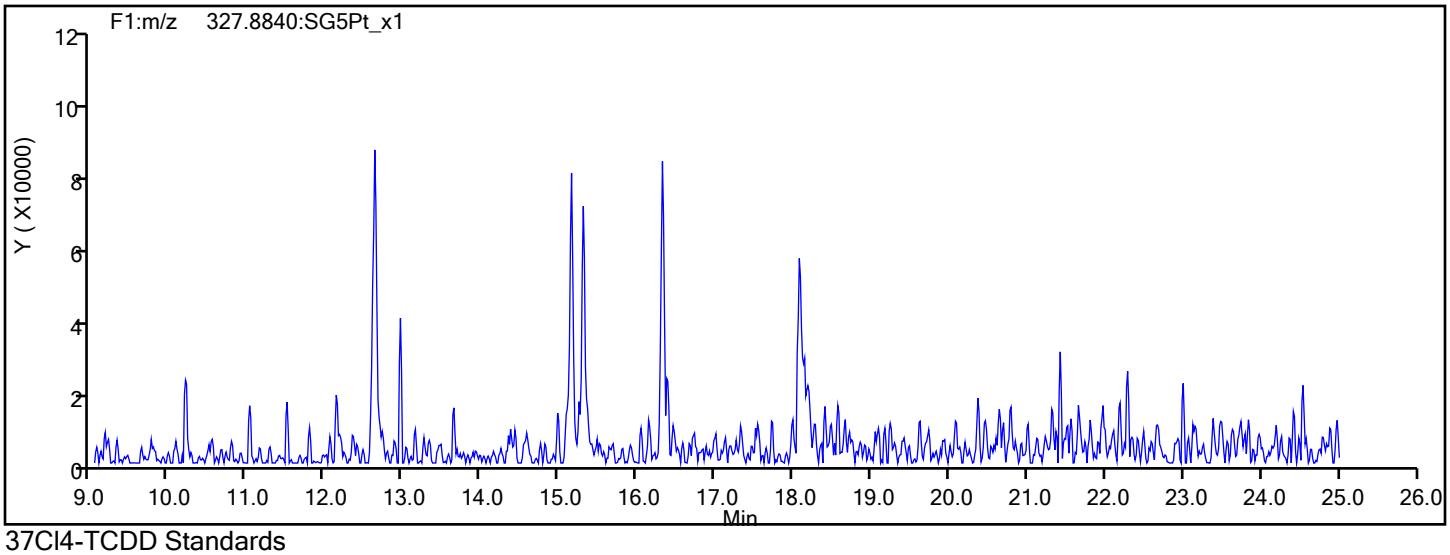
Method: DXN_DB225_11D2 Limit Group: HR - 1613B - ICAL

Client ID:

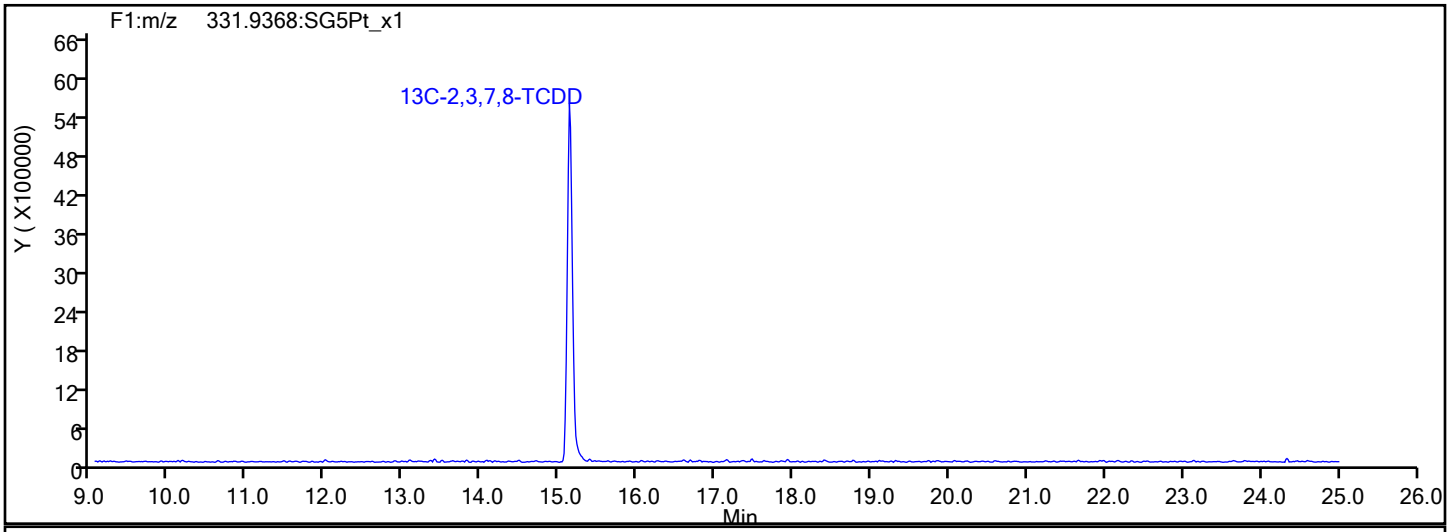
Worklist#: 346764 Sample Line#: 1

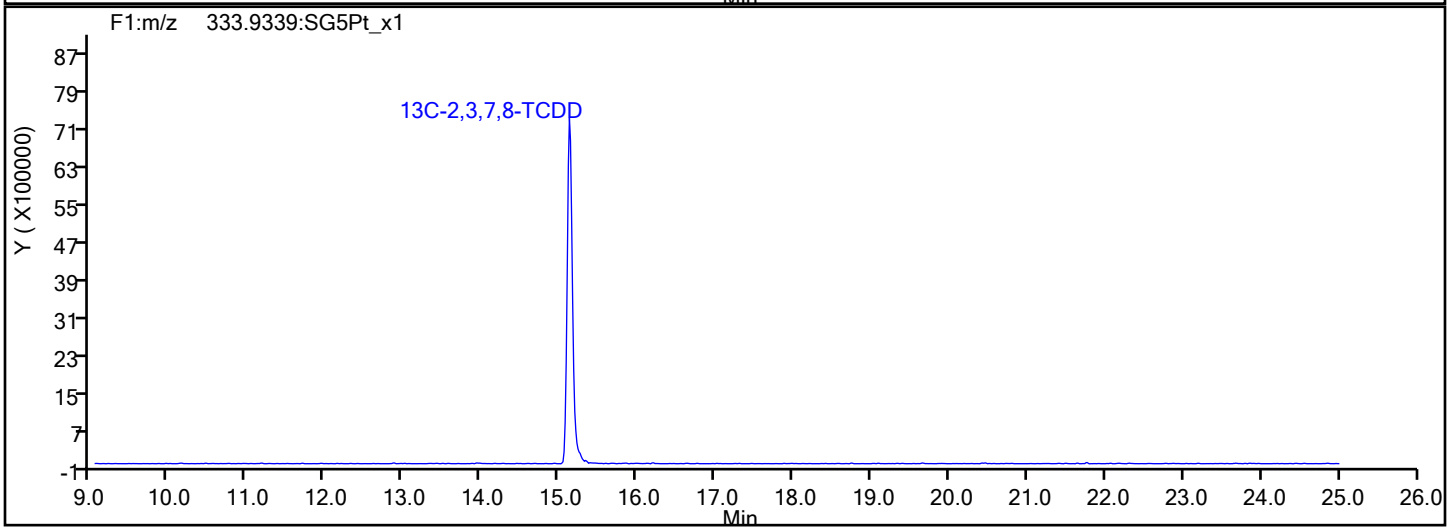
Column Type: DB-225 Column Dia: 0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards

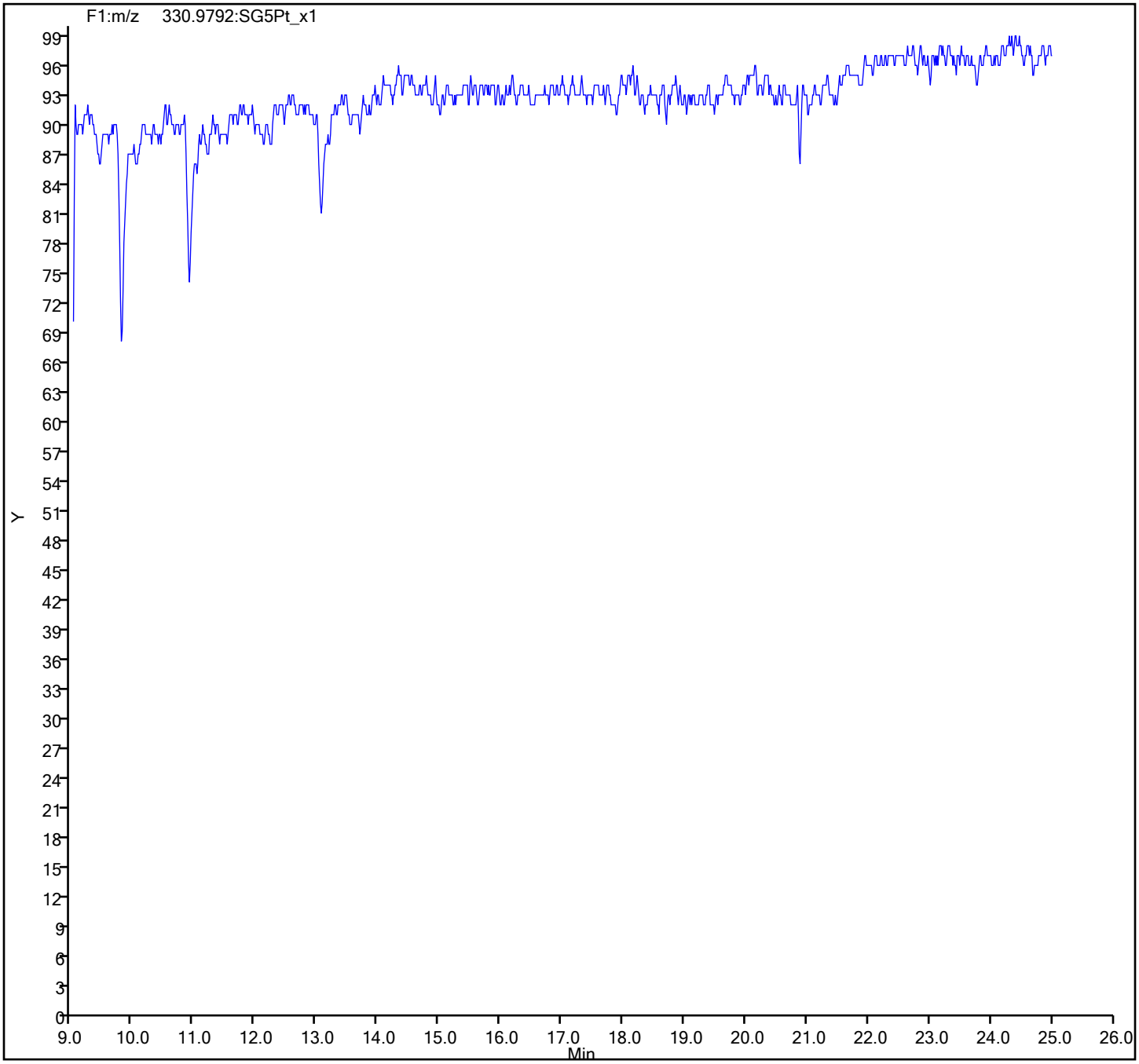




Report Date: 20-Dec-2019 14:38:26 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\11D2\20191219-88591.b\19DE19A11D2_001.d		
Injection Date:	19-Dec-2019 16:13:15	Injection Vol:	2.0 ul
Instrument ID:	11D2	Operator ID:	
Method:	DXN_DB225_11D2	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346764	Sample Line#:	1
Column Type:	DB-225	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 12-Dec-2019 09:53:45 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121219 WDM HRDXNCP_00040
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 16:14:37 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:30:53

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	17.128	127262064	0.77	1.4157					0.00	
2,3,7,8-TCDF	17.158	263129063	0.79	0.9502	87.0	87.0	0.2769	0.2769		
A Non-2,3,7,8-sub-TCDF	16.841						0.2769	0.2769		
S Total TCDF					87.0	87.0	0.2769	0.2769		
D 13C-2,3,7,8-TCDD	17.823	83918301	0.81	0.9751					0.00	
2,3,7,8-TCDD	17.839	96063981	0.84	1.0477	43.7	43.7	0.1837	0.1837		
A Non-2,3,7,8-sub-TCDD	17.294						0.1837	0.1837		
S Total TCDD					43.7	43.7	0.1837	0.1837		
A F1 PeCDFs	19.797						0.0	0.0		
A Non-2,3,7,8-sub-PeCDF	22.906	699418	1.55	0.0000						RQ
S Total PeCDF										RQ
A Non-2,3,7,8-sub-PeCDD	23.055						0.0	0.0		
S Total PeCDD										
A Non-2,3,7,8-sub-HxCDF	29.954						0.0	0.0		
S Total HxCDF										
A Non-2,3,7,8-sub-HxCDD	30.606	975403	1.10	0.0000						
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	33.652	85575299	1.06	1.4804						
1,2,3,4,7,8,9-HpCDF	34.734	66049853	1.05	1.2933						
A Non-2,3,7,8-sub-HpCDF	34.193						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	34.442	56071825	1.05	1.0535						
A Non-2,3,7,8-sub-HpCDD	34.169						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	14.739	152729299	0.79							
1,3,6,8-TCDD	15.646	93181896	0.82							
2,3,4,7-TCDF	17.158	264257783	0.79							
1,2,3,7-TCDD	17.733	79509134	0.81							
1,2,3,9-TCDF	18.005	117218156	0.79							
1,2,3,9-TCDD	18.005	96743759	0.79							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,2,8,9-TCDD	18.942	39950453								
1,2,8,9-TCDF	18.942	121282488	0.80							
1,3,4,6,8-PeCDF	19.215	113228104	1.55							
1,2,4,7,9-PeCDD	20.968	80076952	1.58							
1,2,3,8,9-PeCDD	25.141	77274517	1.55							
1,2,3,8,9-PeCDF	25.359	59233102								
1,2,3,4,6,8-HxCDF	27.610	106714677	1.23							
1,2,4,6,7,9-HxCDD	29.154	76434618	1.28							
1,2,3,4,6,7-HxCDD	31.964	74354267	1.24							
1,2,3,4,8,9-HxCDF	32.297	93711685	1.19							
1,2,3,4,6,7,9-HpCDD	33.895	64380977	1.07							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 12-Dec-2019 09:53:45 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121219 WDM HRDXNCP_00040
Misc. Info.: 12DE193D5
Operator ID: KSS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 12-Dec-2019 16:14:37 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0325

First Level Reviewer: stephensk Date: 12-Dec-2019 13:30:53

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	17.128	17.128	0	1.000	55391571	14476889	26131	65327	554		
317.9389	17.128	17.128	0	1.000	71870493	18784490	16410	41025	1145	0.77(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.158	17.176	-1	1.002	116146866	26302637	39398	98495	668		
305.8987	17.158	17.176	-1	1.002	146982197	32817476	48110	120275	682	0.79(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.841						39398	98495			
305.8987	16.841						48110	120275			
13C-2,3,7,8-TCDD											
331.9368	17.823	17.823	0	1.000	37518186	9279196	19208	48020	483		
333.9339	17.823	17.823	0	1.000	46400115	11326582	8196	20490	1382	0.81(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.839	17.872	-2	1.001	43772044	10422211	17517	43792	595		
321.8936	17.839	17.872	-2	1.001	52291937	12390443	22141	55352	560	0.84(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	17.294						17517	43792			
321.8936	17.294						22141	55352			
A F1 PeCDFs											
339.8597	19.797						5477	13692			
341.8567	19.797						7870	19675			
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	22.128	22.906	-47	1.000	425137	57000	8590	21475	7		
341.8567	22.114	22.906	-47	1.000	338200	46155	8489	21222	5	1.26(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	23.055						11276	28190			
357.8516	23.055						5626	14065			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.954						13878	34695			
375.8178	29.954						12101	30252			
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.766	30.606	10	1.000	511512	109721	13941	34852	8		
391.8127	30.766	30.606	10	1.000	463891	93172	9728	24320	10	1.10(1.05-1.43)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.652	33.659	0	1.000	44070684	15770421	35193	87982	448		
409.7789	33.652	33.659	0	1.000	41504615	14258181	29457	73642	484	1.06(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.734	34.736	0	1.000	33851090	10387359	35193	87982	295		
409.7789	34.734	34.736	0	1.000	32198763	9789877	29457	73642	332	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.193						35193	87982			
409.7789	34.193						29457	73642			
1,2,3,4,6,7,8-HpCDD											
423.7766	34.442	34.449	0	1.000	28661323	9249103	22089	55222	419		
425.7737	34.442	34.449	0	1.000	27410502	8942138	26825	67062	333	1.05(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.169						22089	55222			
425.7737	34.169						26825	67062			
1,3,6,8-TCDF											
303.9016	14.739	14.739	0		67346174	20833360	39398	98495	529		
305.8987	14.739	14.739	0		85383125	26683564	48110	120275	555	0.79(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	15.646	15.646	0		41917759	12260823	17517	43792	700		
321.8936	15.646	15.646	0		51264137	15767472	22141	55352	712	0.82(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	17.158	17.158	0		116632069	26335155	39398	98495	668		
305.8987	17.158	17.158	0		147625714	32857354	48110	120275	683	0.79(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	17.733	17.733	0		35468173	9106870	17517	43792	520		
321.8936	17.733	17.733	0		44040961	11053343	22141	55352	499	0.81(0.65-0.89)	
1,2,3,9-TCDF											
303.9016	18.005	18.005	0		51564633	12704415	39398	98495	322		
305.8987	18.005	18.005	0		65653523	15836881	48110	120275	329	0.79(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	18.005	18.005	0		42573078	10058662	17517	43792	574		
321.8936	18.005	18.005	0		54170681	12706888	22141	55352	574	0.79(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	18.942	18.942	0		39950453	9266410	17517	43792	529		
1,2,8,9-TCDF											
303.9016	18.942	18.942	0		53748413	12558434	39398	98495	319		
305.8987	18.942	18.942	0		67534075	16014900	48110	120275	333	0.80(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	19.215	19.215	0		68807915	15607029	5477	13692	2850		
341.8567	19.215	19.215	0		44420189	10153978	7870	19675	1290	1.55(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,4,7,9-PeCDD											
355.8546	20.968	20.968	0		49021885	8823043	11276	28190	782		
357.8516	20.968	20.968	0		31055067	5580555	5626	14065	992	1.58(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	25.141	25.141	0		46950877	6770234	11276	28190	600		
357.8516	25.141	25.141	0		30323640	4445979	5626	14065	790	1.55(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	25.359	25.359	0		59233102	8224157	8590	21475	957		
1,2,3,4,6,8-HxCDF											
373.8208	27.610	27.610	0		58886748	7619812	13878	34695	549		
375.8178	27.597	27.610	-1		47827929	6267357	12101	30252	518	1.23(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8157	29.154	29.154	0		42845579	5122739	13941	34852	367		
391.8127	29.154	29.154	0		33589039	4084048	9728	24320	420	1.28(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8157	31.964	31.964	0		41163973	11069026	13941	34852	794		
391.8127	31.964	31.964	0		33190294	8796454	9728	24320	904	1.24(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	32.297	32.297	0		50881816	13799129	13878	34695	994		
375.8178	32.284	32.297	-1		42829869	11639611	12101	30252	962	1.19(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7766	33.895	33.895	0		33226407	11501978	22089	55222	521		
425.7737	33.895	33.895	0		31154570	10694340	26825	67062	399	1.07(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 12-Dec-2019 09:53:45 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 22.906

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030				
2,3,4,7,8-PeCDF	1.041				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.128	425137	57000	338200	46155		1.26	R
Signal Totals:							
	425137	57000	338200	46155			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	763337	103155				1.26	RQ
	699418	93774					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (763337 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (699418 * 0.0) / (0 * 0.000)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 12-Dec-2019 09:53:45 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 3D5 Operator: KSS
Lims Batch ID: 345037 Lims Sample ID: 1

Non-2,3,7,8-sub-HxCDD, RT: 30.606

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,7,8-HxCDD	1.093				
1,2,3,6,7,8-HxCDD	1.043				
1,2,3,7,8,9-HxCDD	1.207				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	389.8157 Area	389.8157 Height	391.8127 Area	391.8127 Height	Amount	Ratio	Flags
30.766	511512	109721	463891	93172		1.10	
Signal Totals:							
	511512	109721	463891	93172			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	975403	202893				1.10	

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

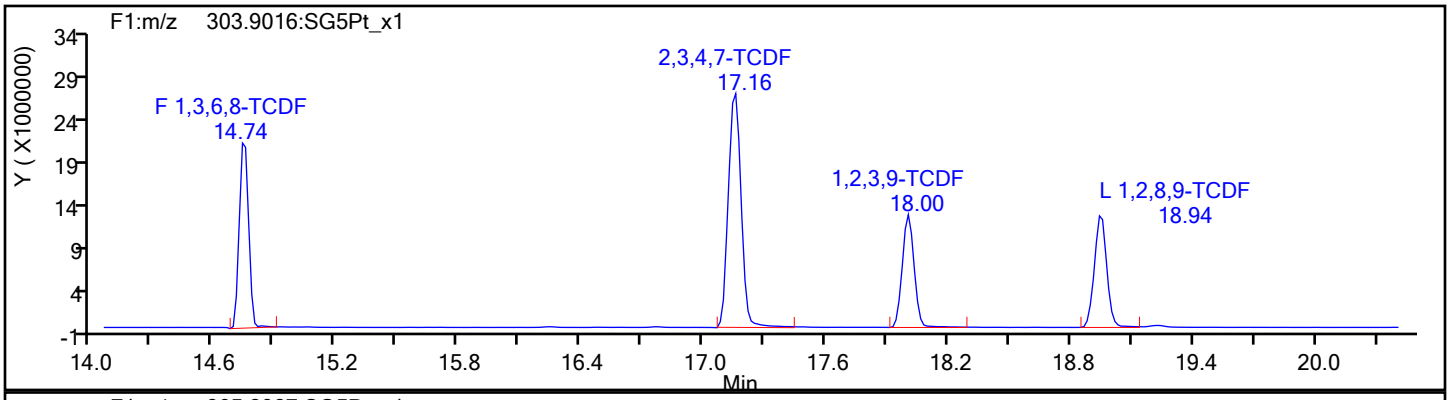
Amount: 0.0 = (975403 * 0.0) / (0 * 0.000)

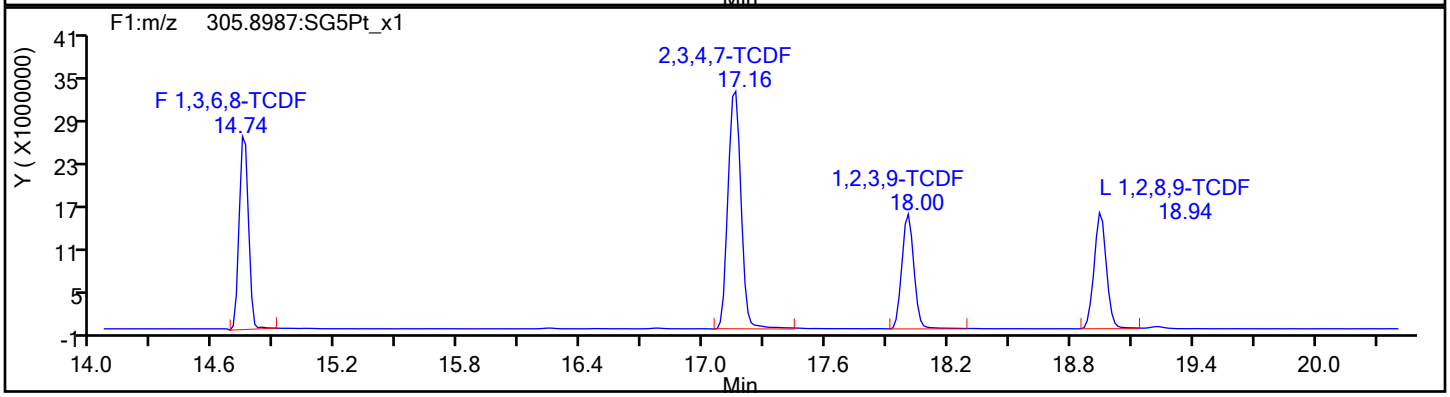
Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

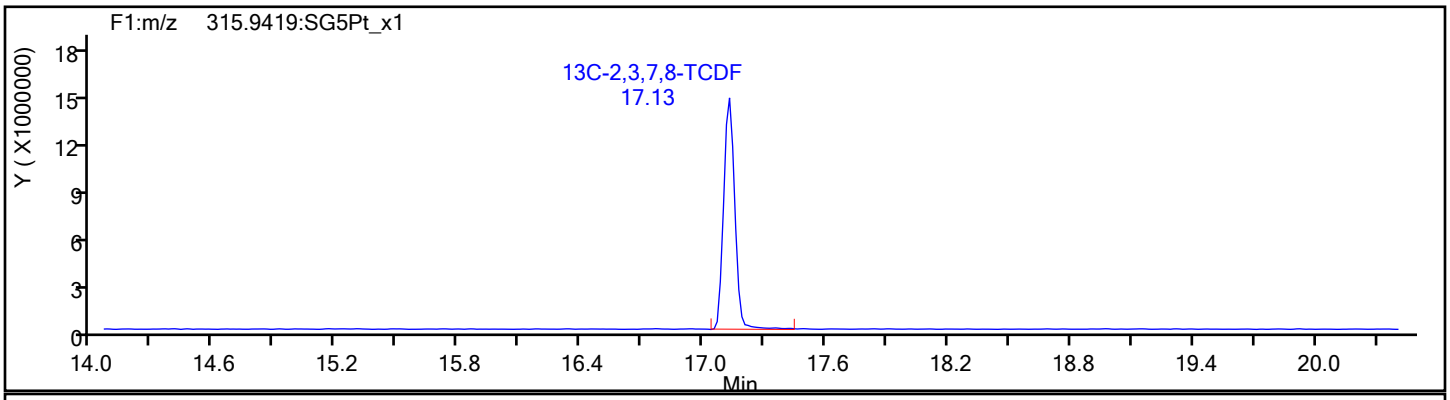
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

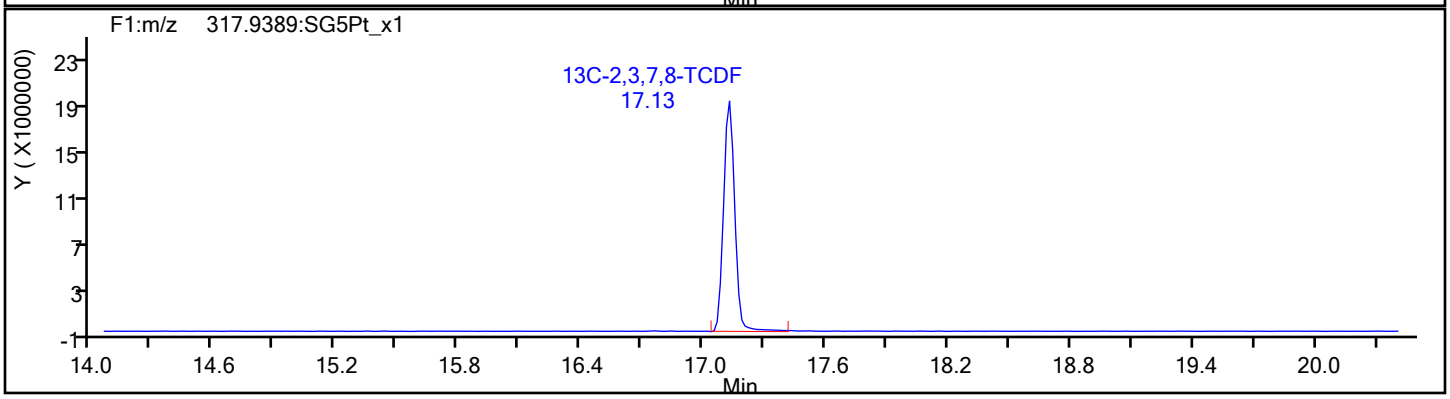
TCDF





TCDF Standards



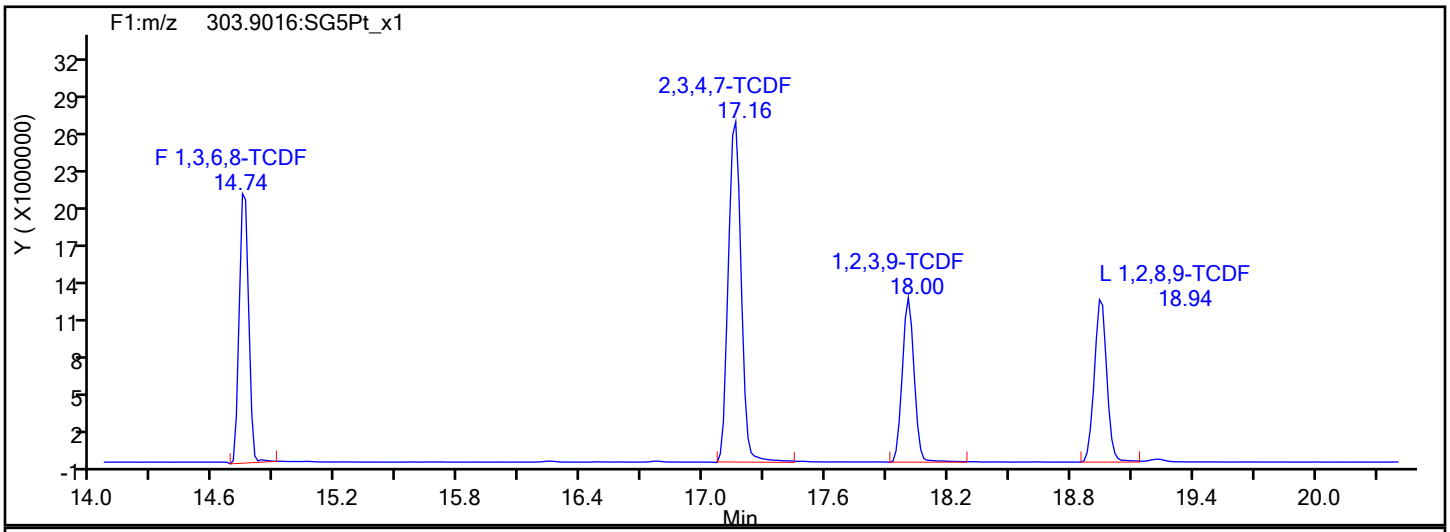


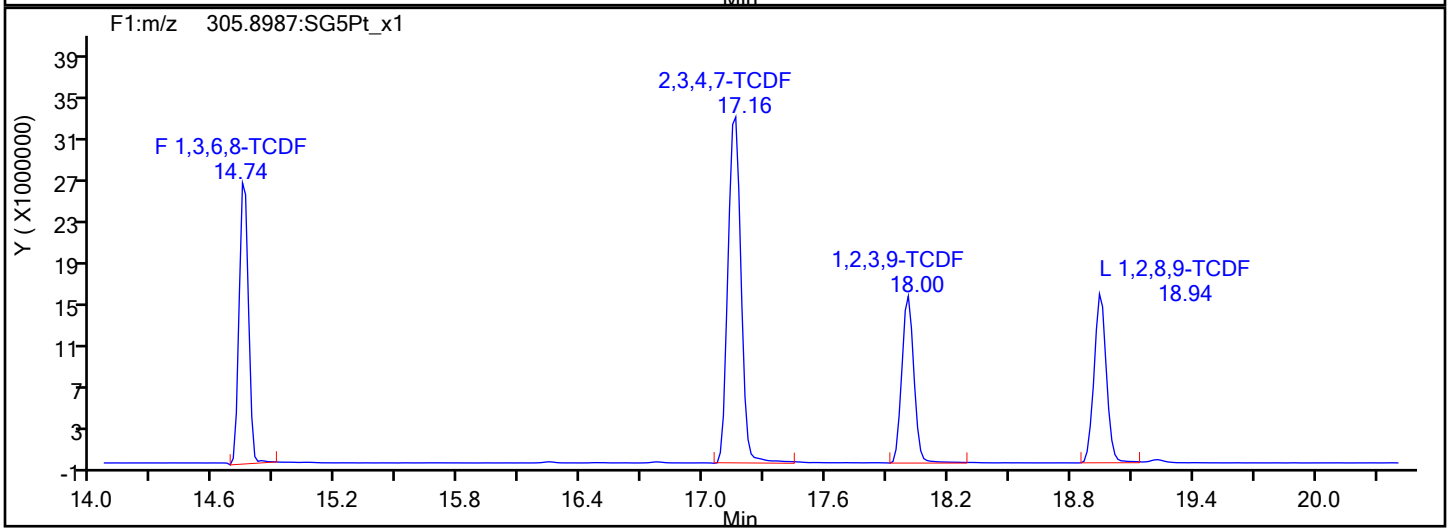
Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

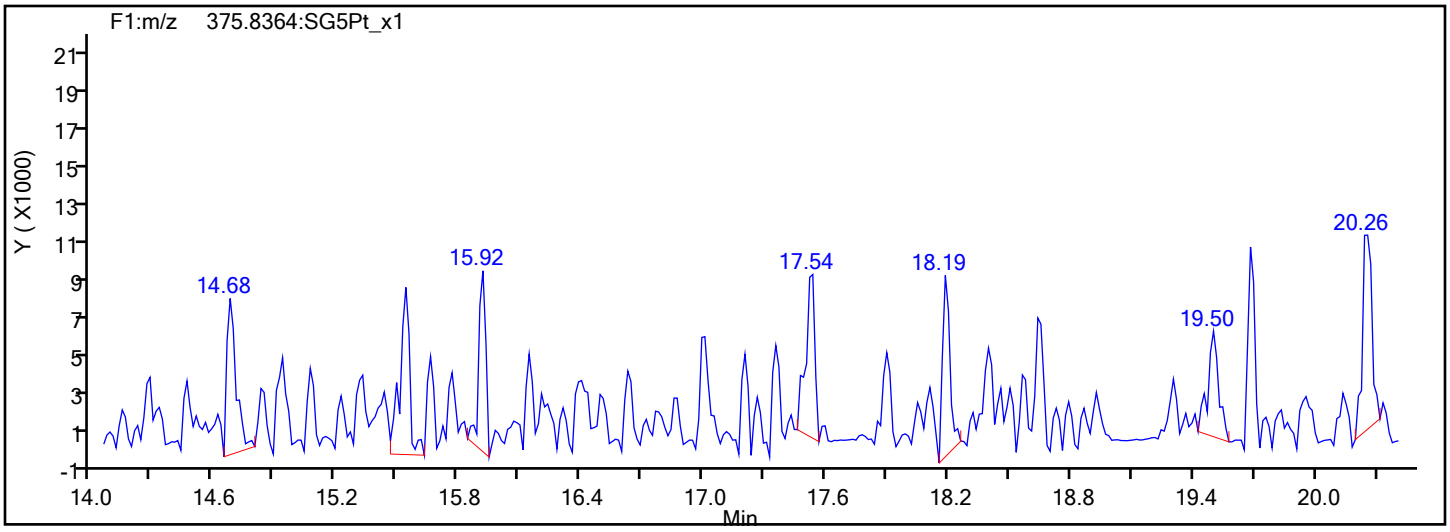
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d

Injection Date: 12-Dec-2019 09:53:45 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: KSS

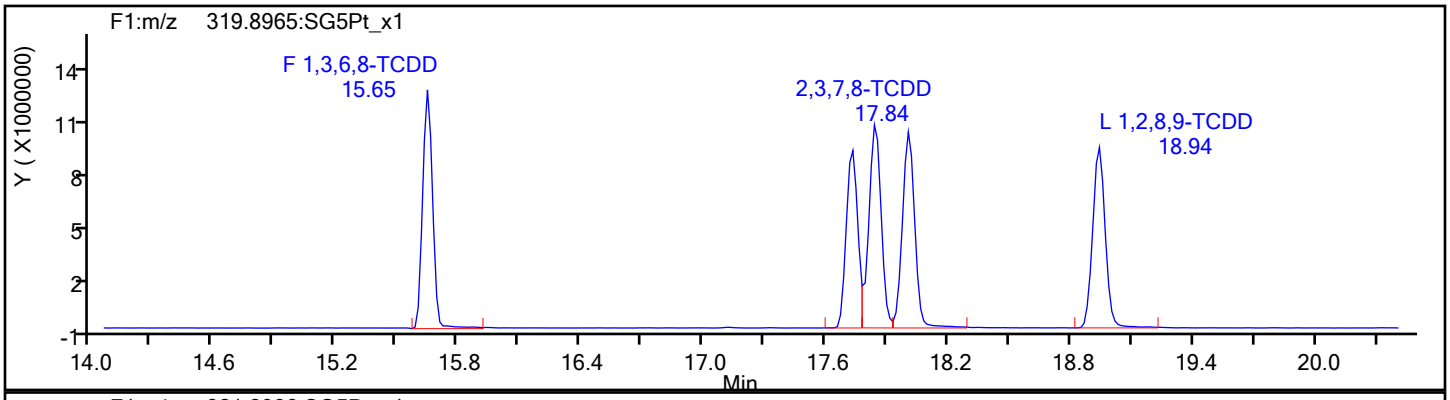
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

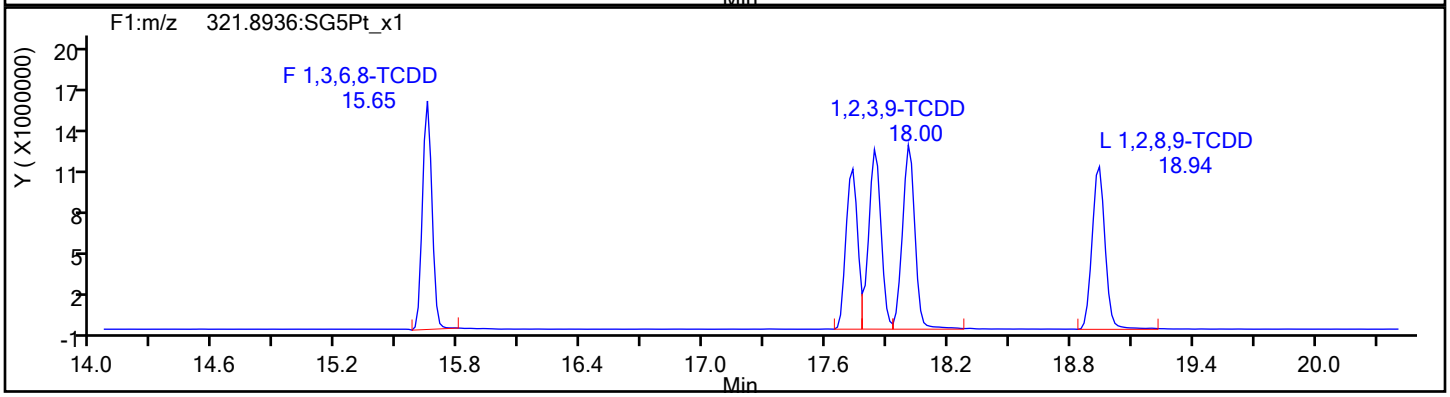
Client ID:

Worklist#: 345037 Sample Line#: 1

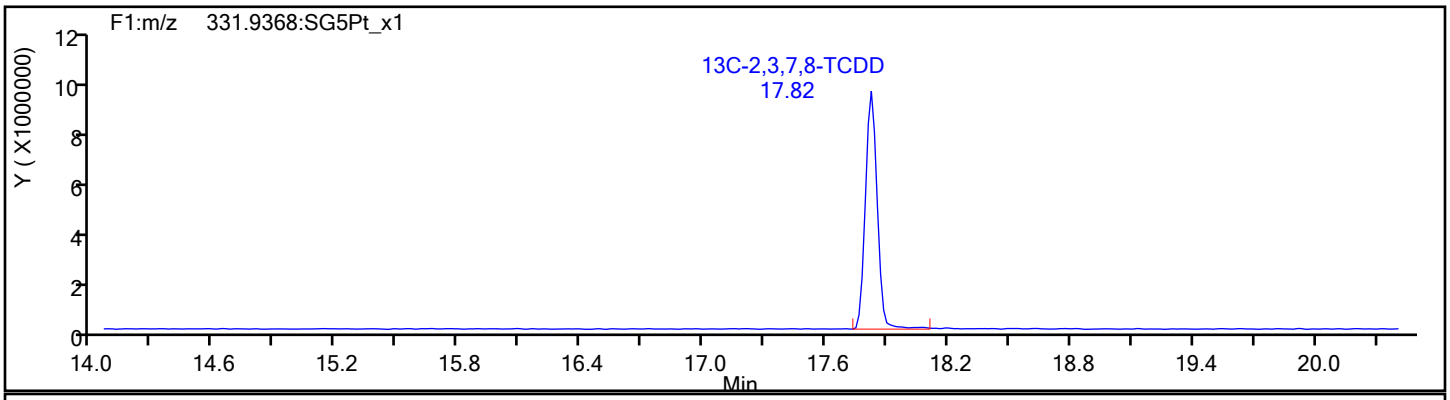
Column Type: DB-5 Column Dia: 0.32 mm

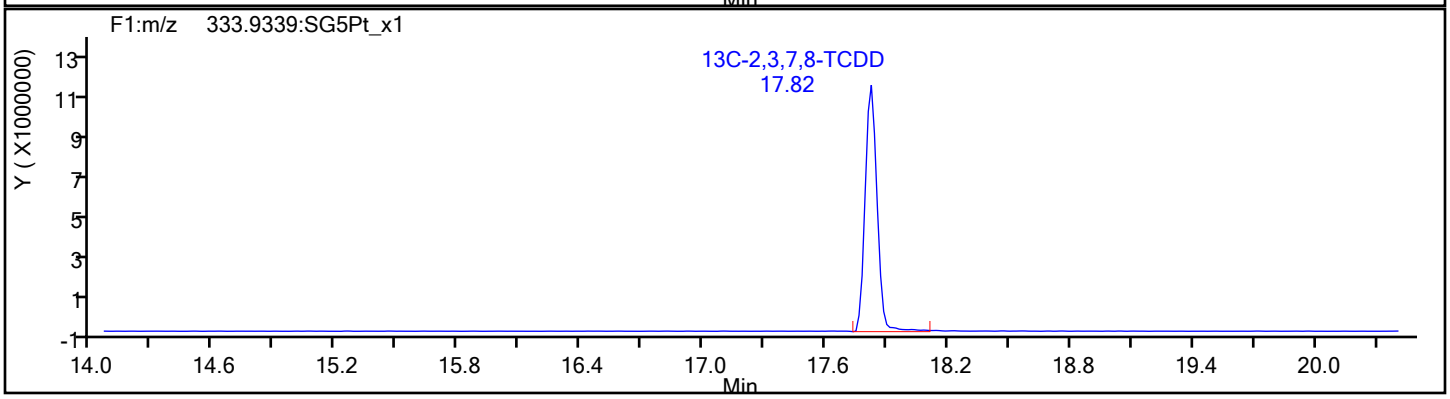
TCDD





TCDD Standards



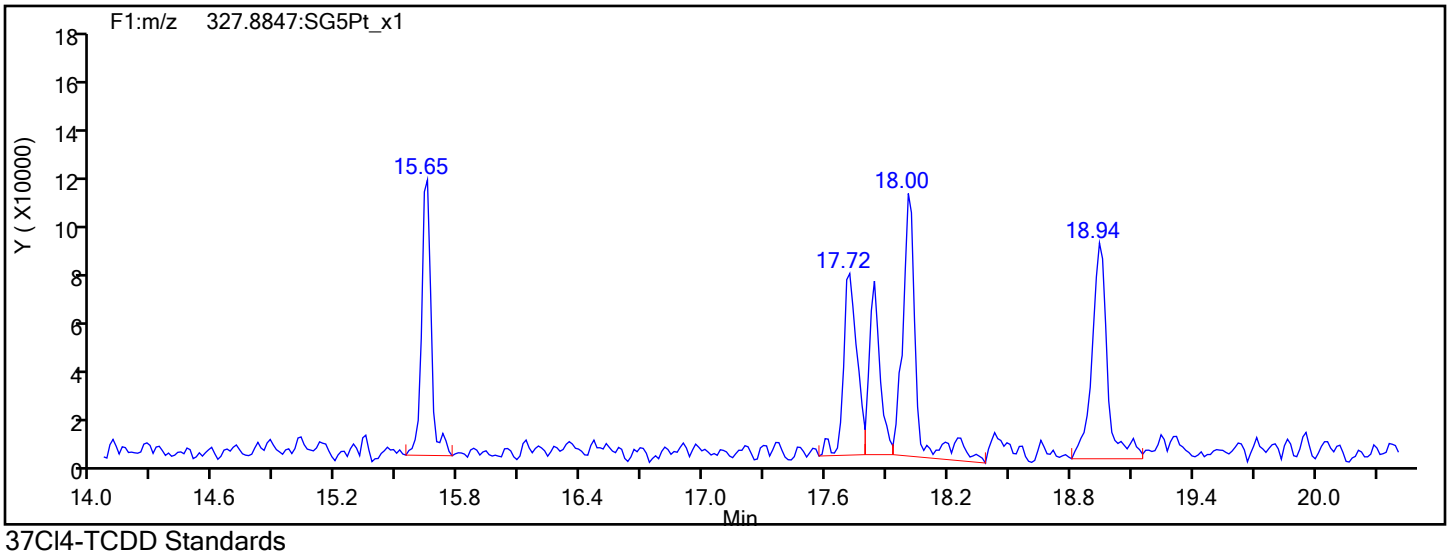


Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

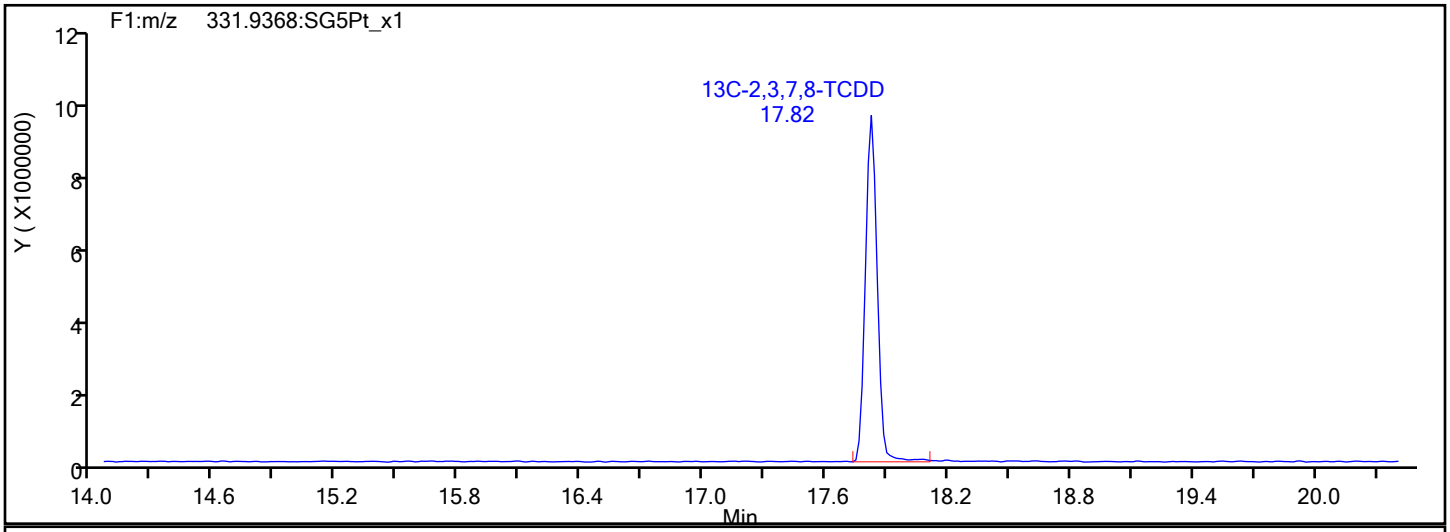
Eurofins TestAmerica, Sacramento

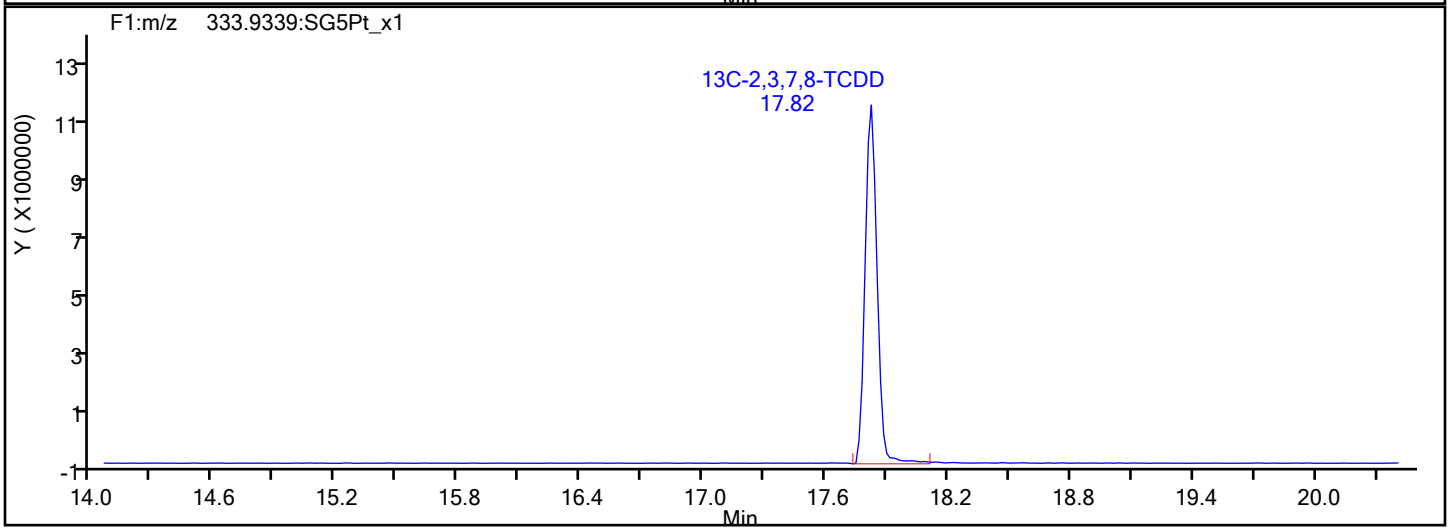
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



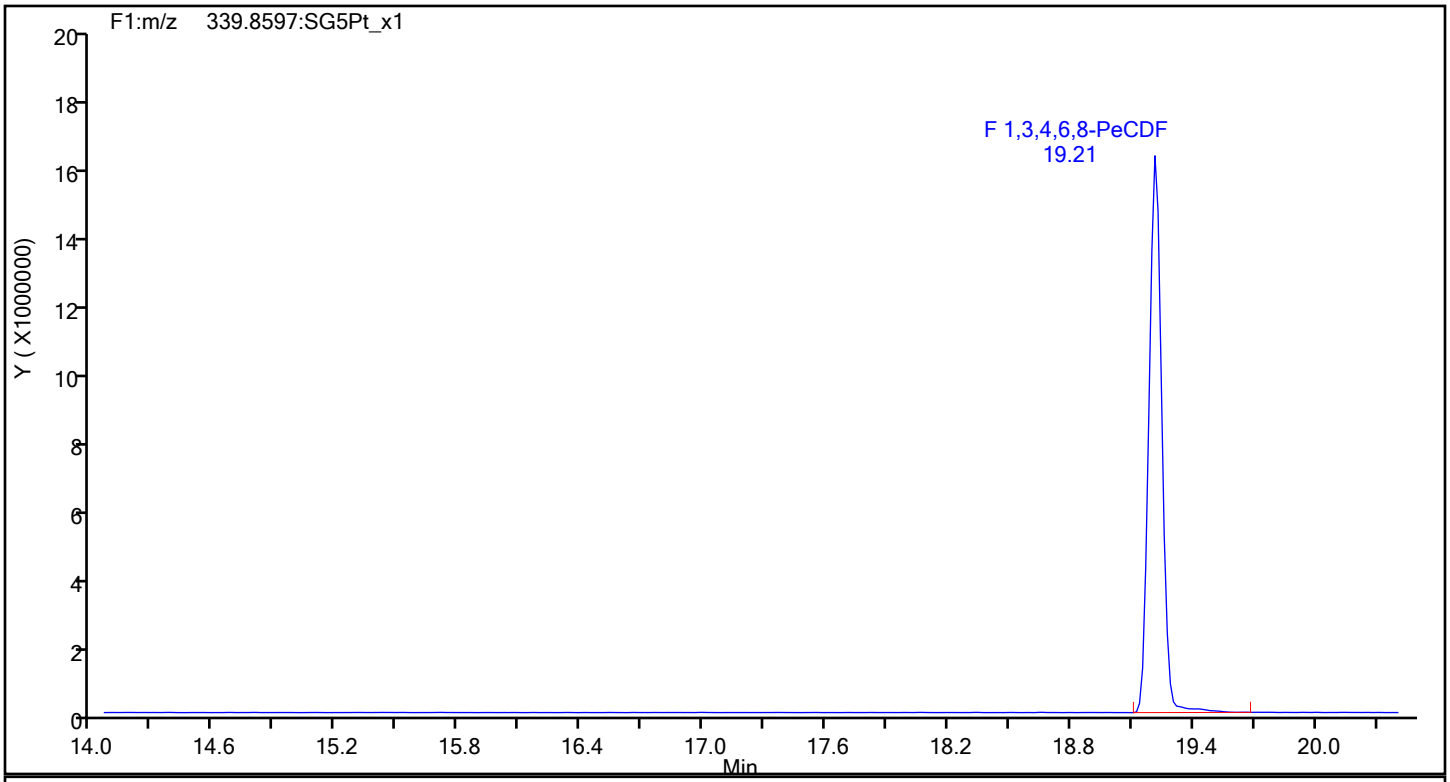


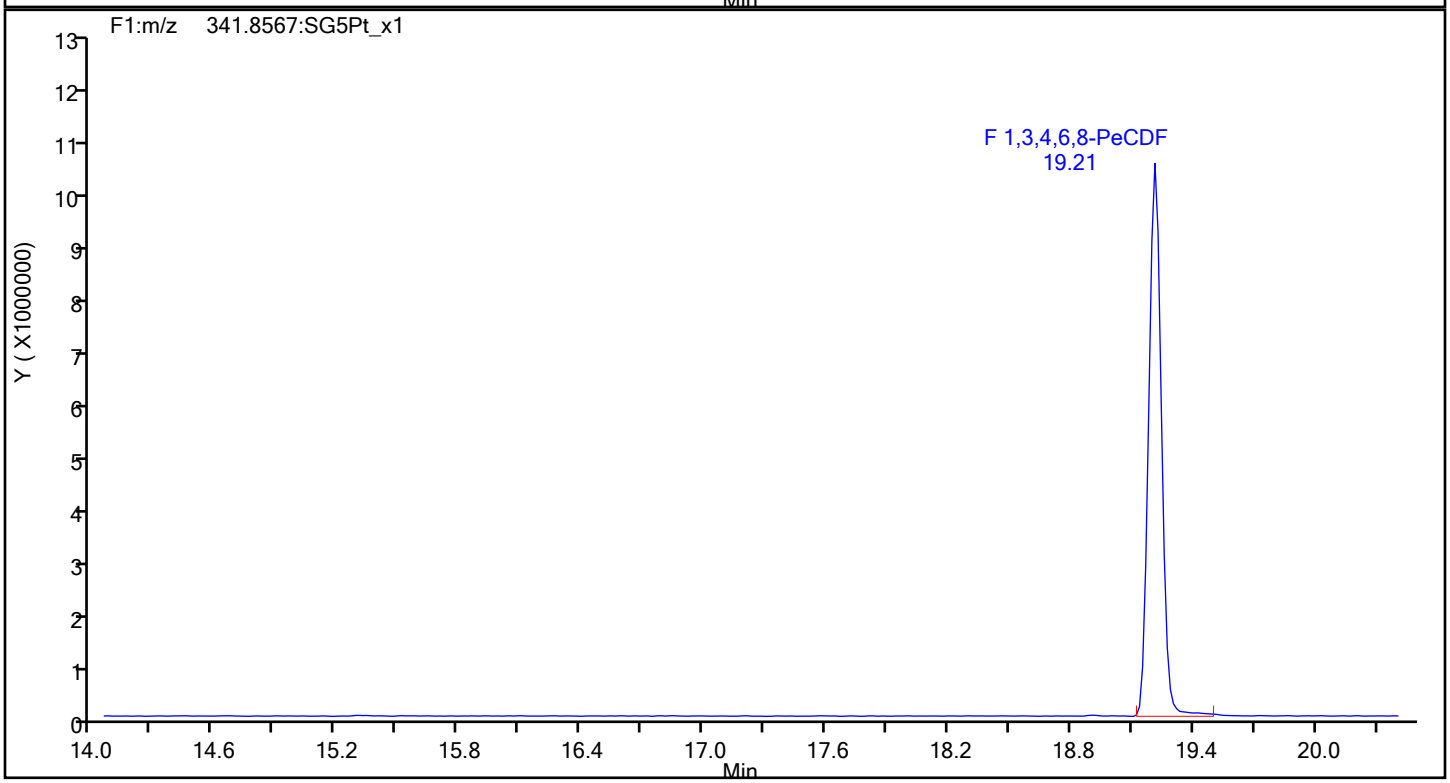
Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs



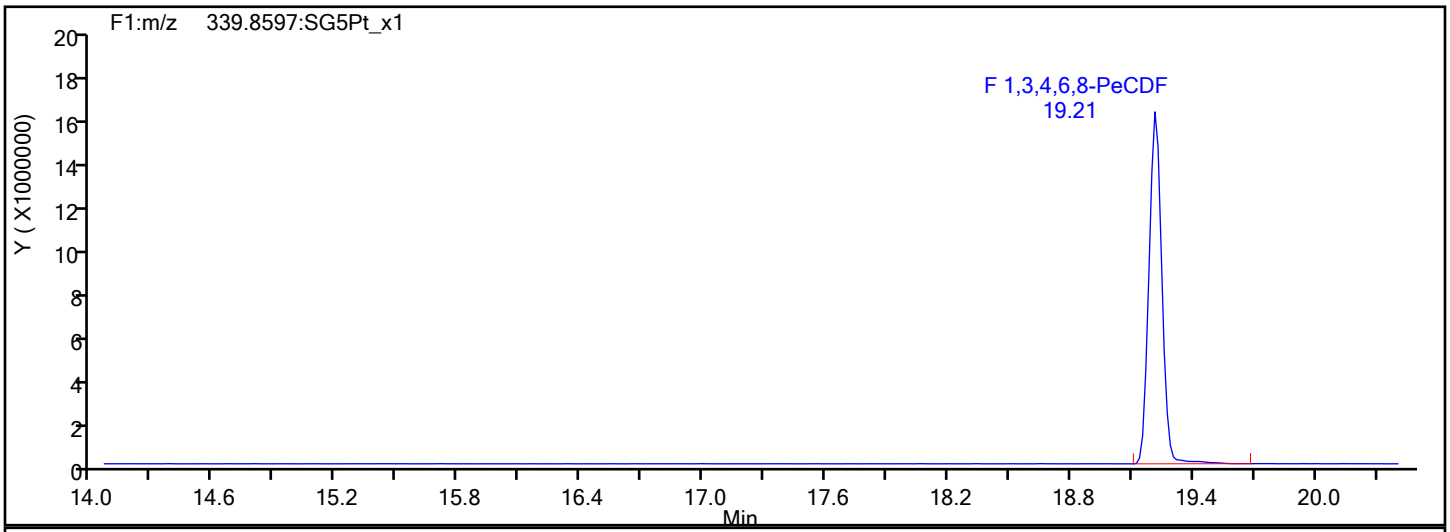


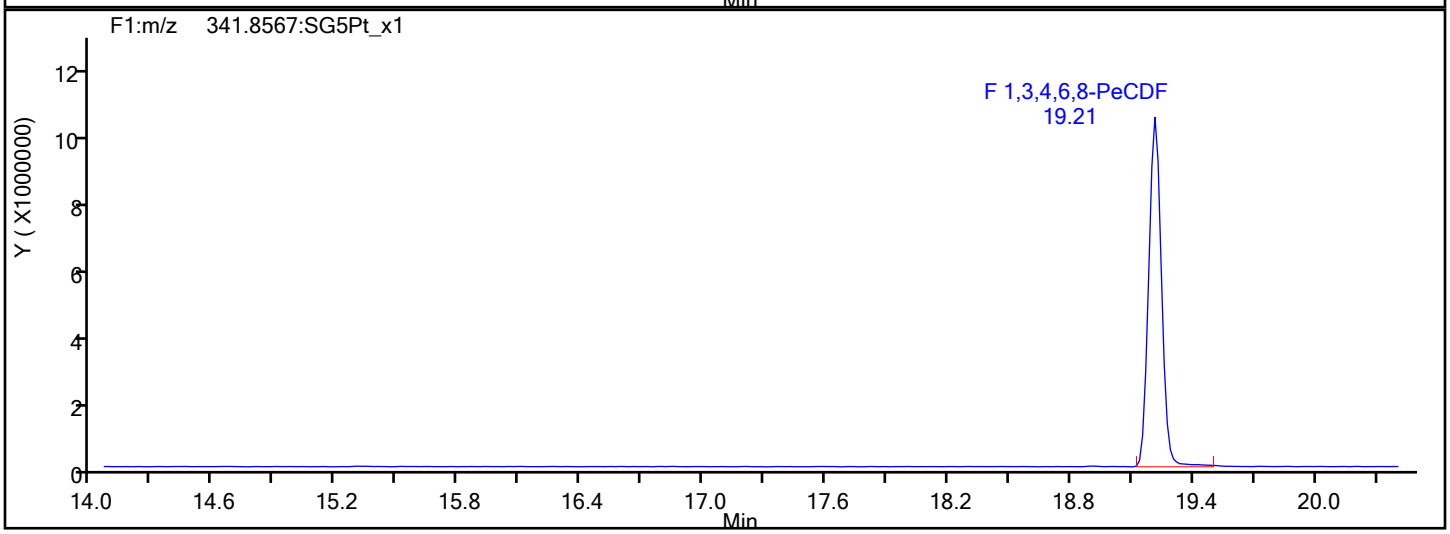
Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

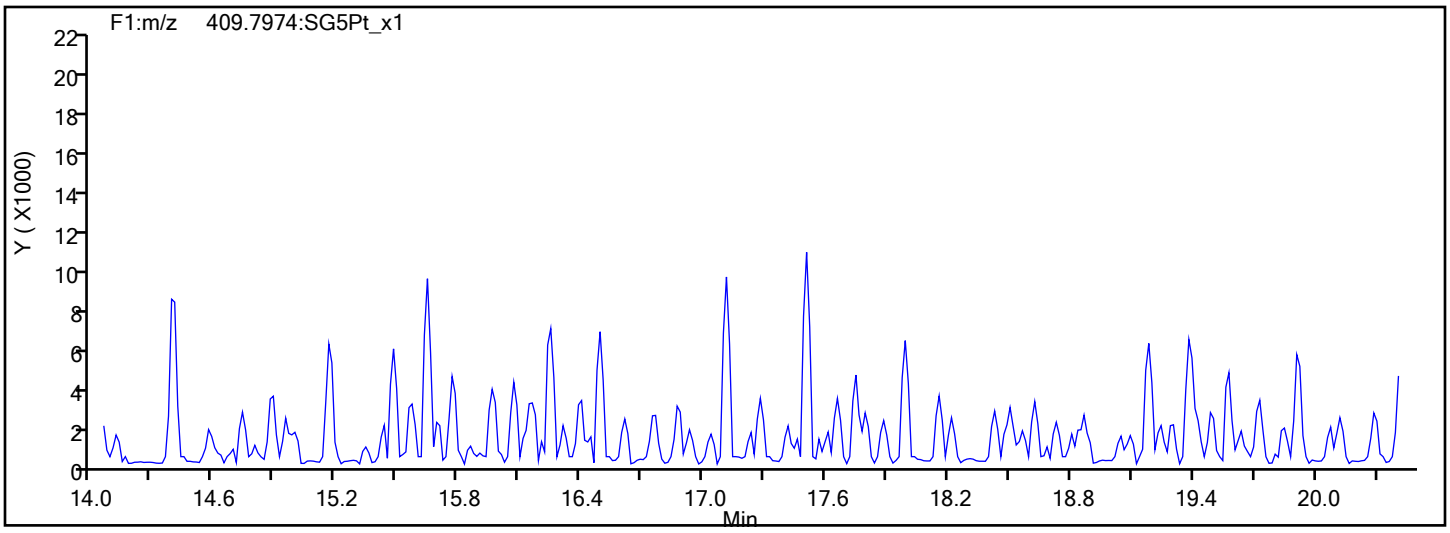
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass

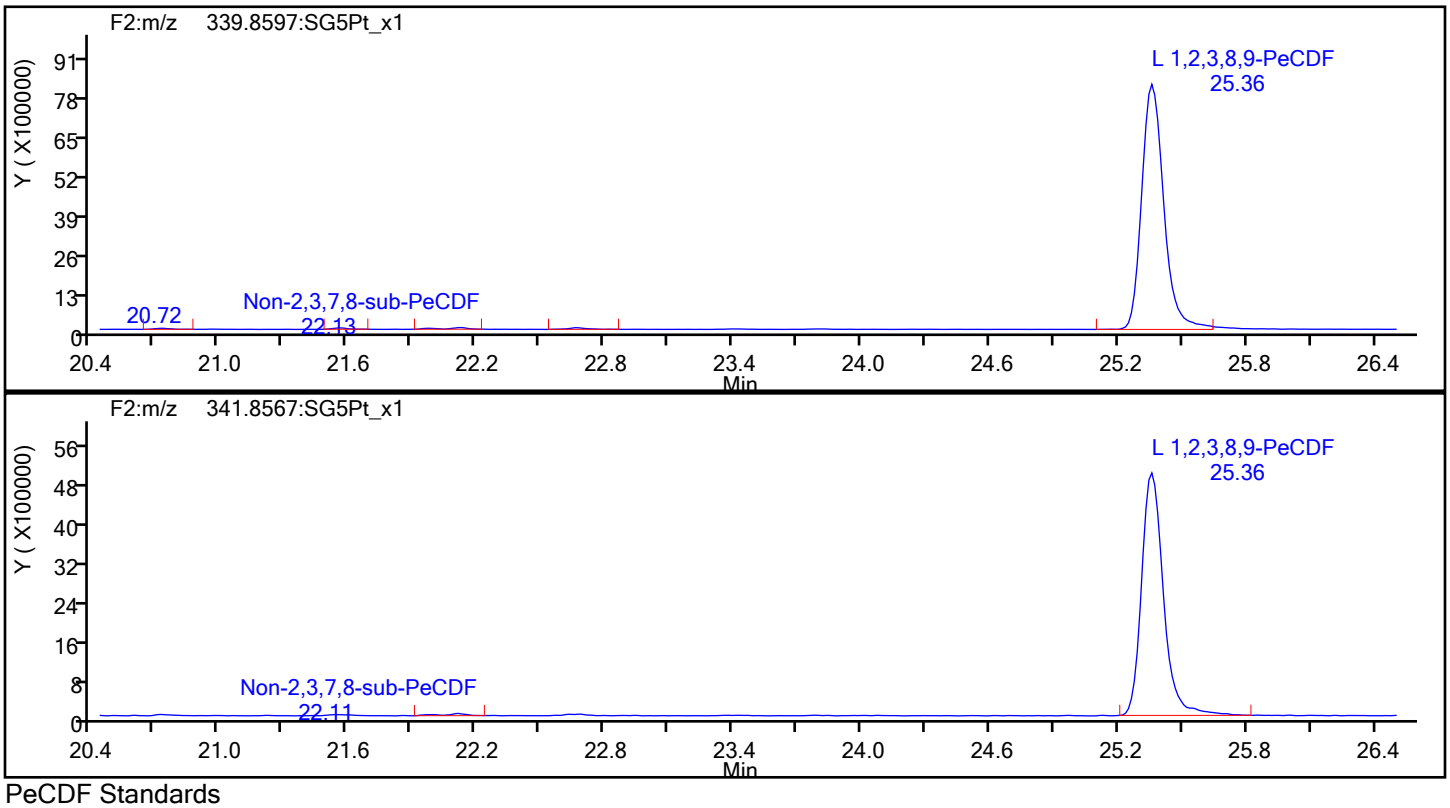


Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

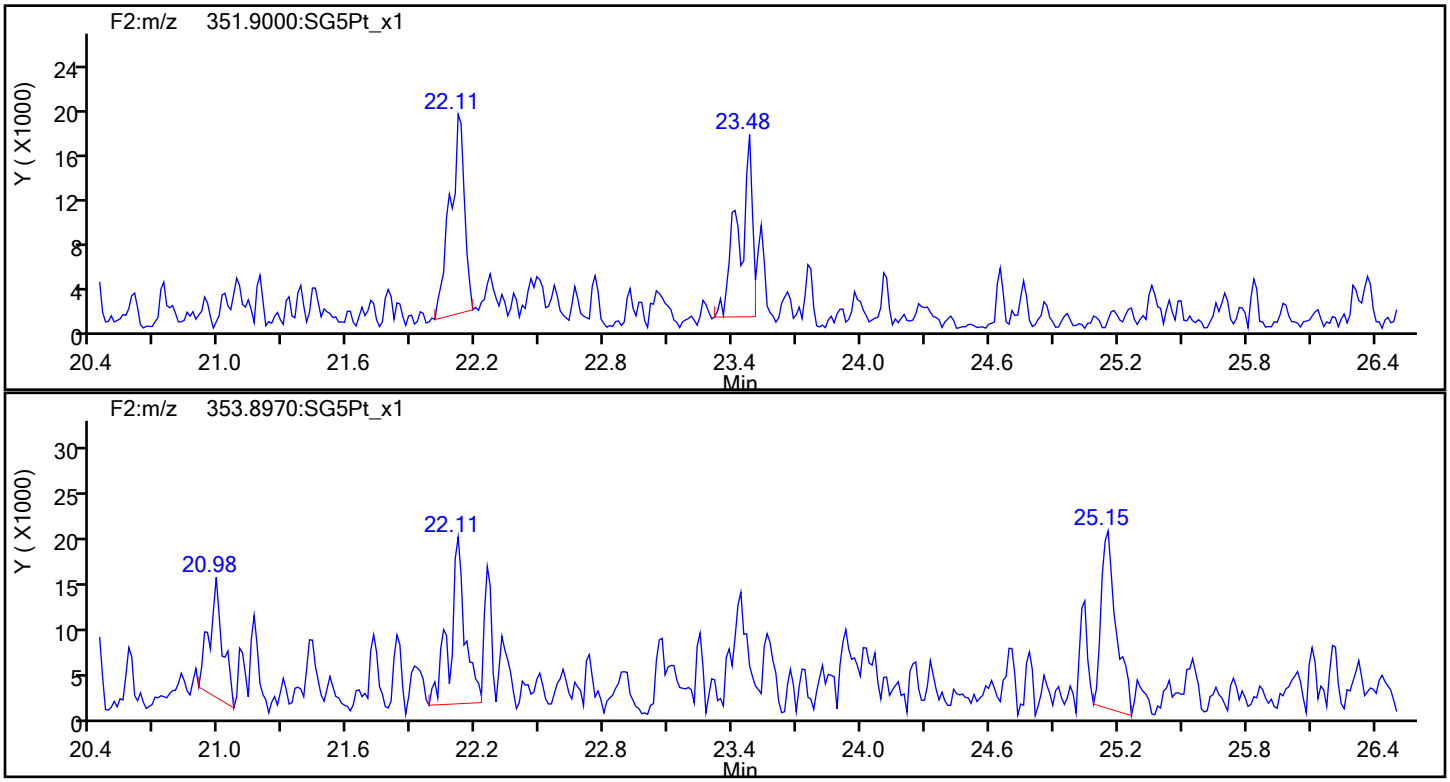
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF



PeCDF Standards

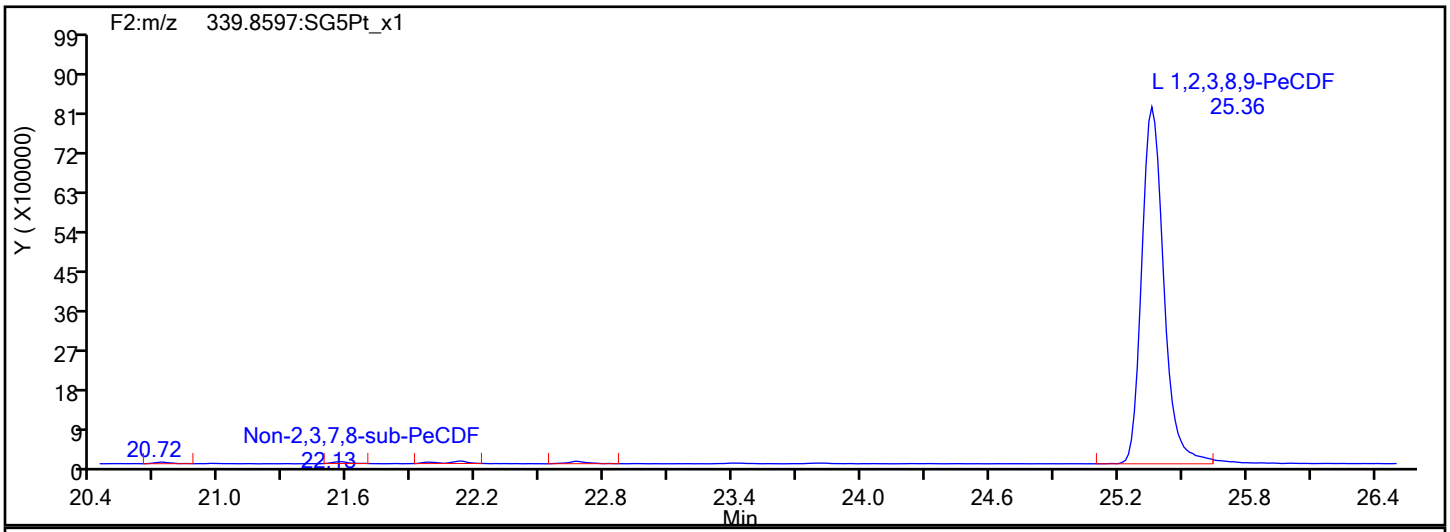


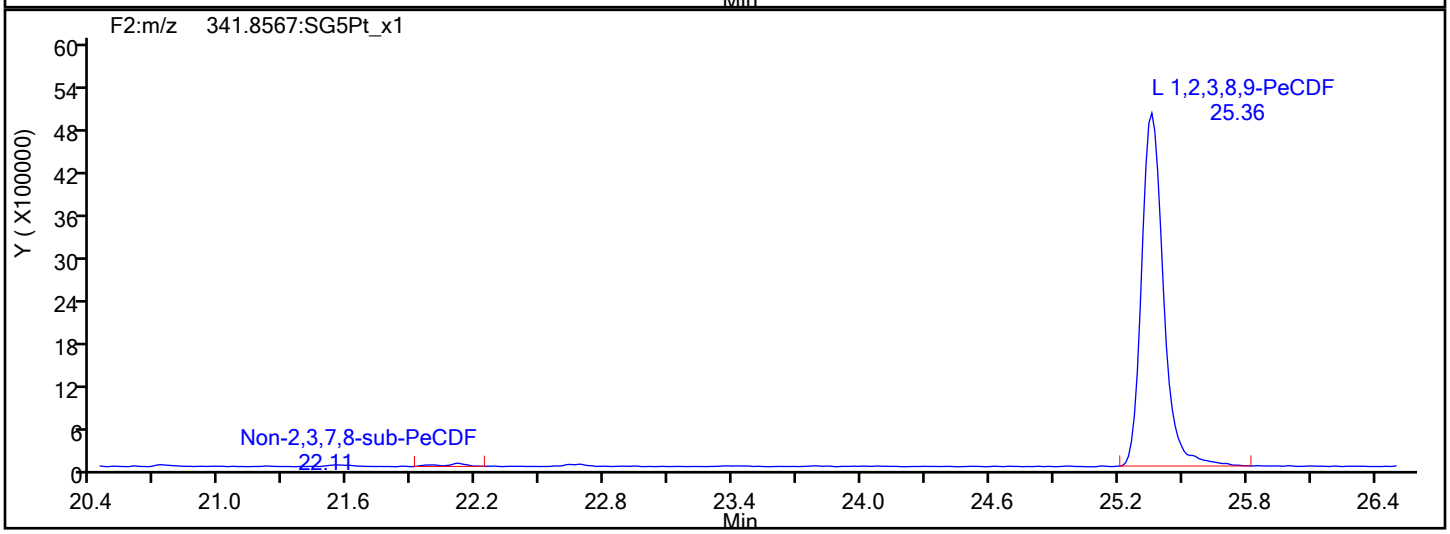
Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

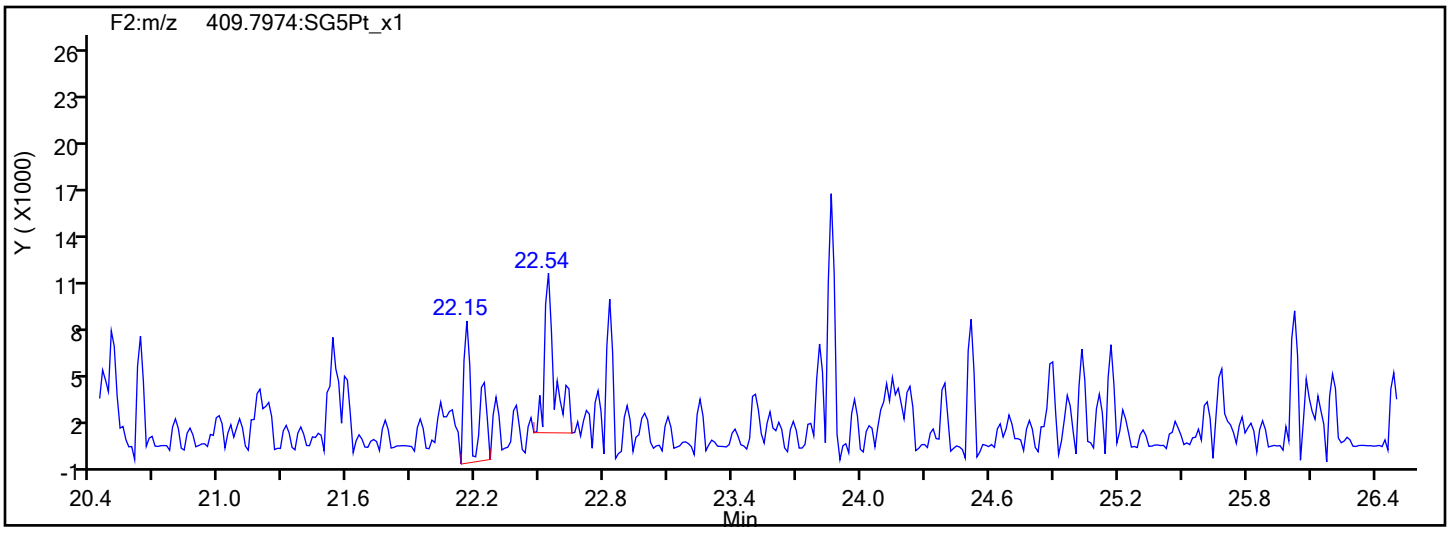
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass

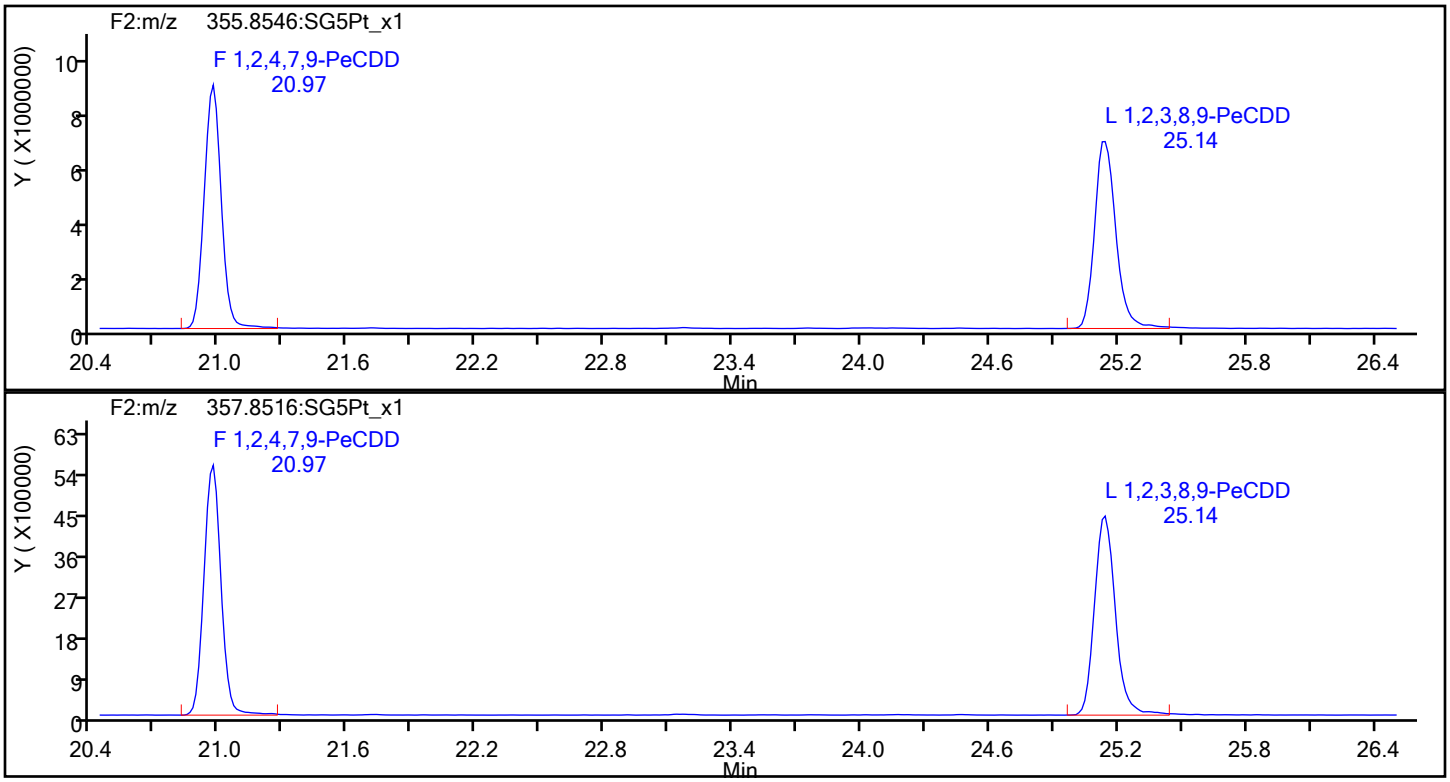


Report Date: 12-Dec-2019 16:14:38 Chrom Revision: 2.3 02-Dec-2019 08:23:04

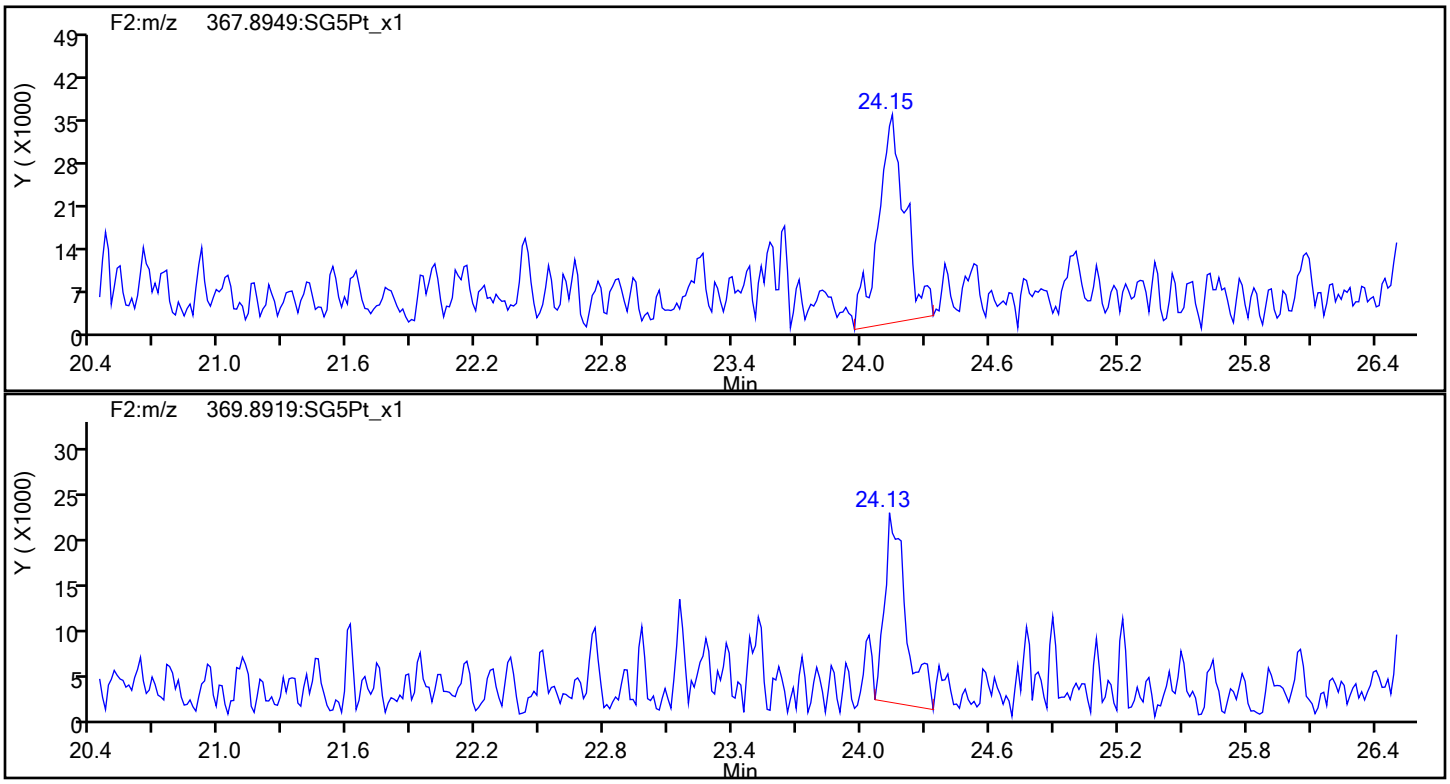
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards



Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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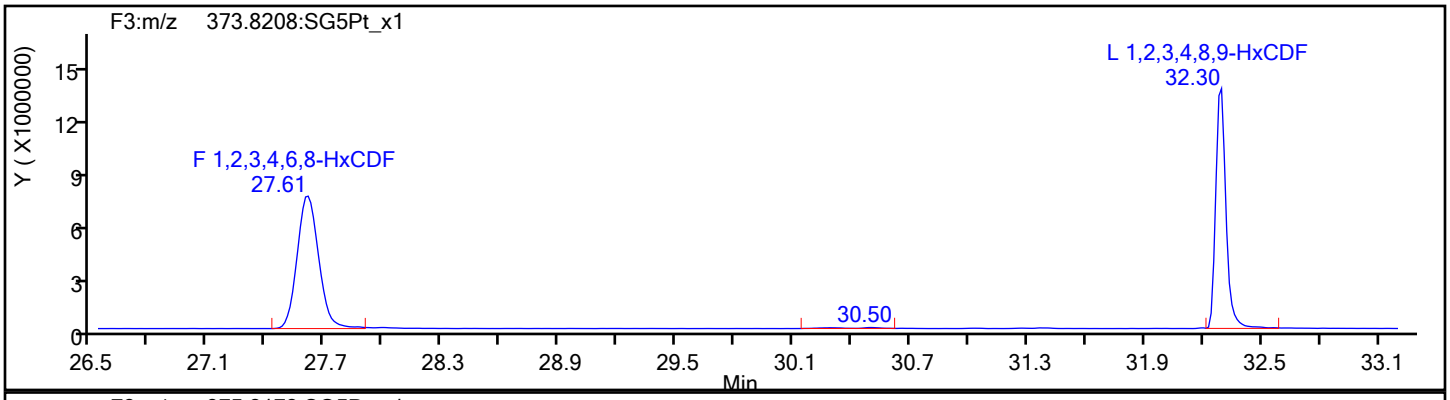
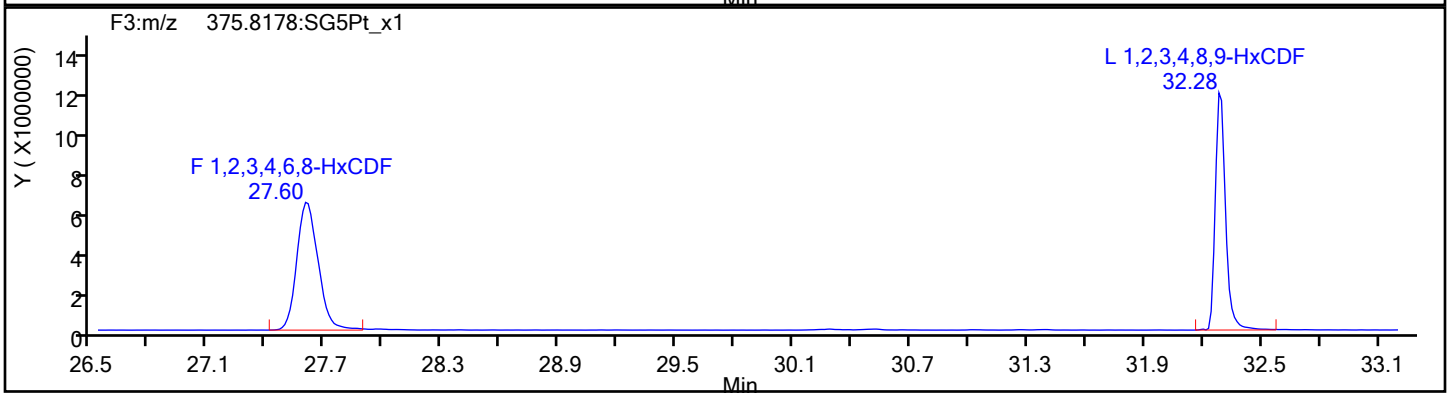
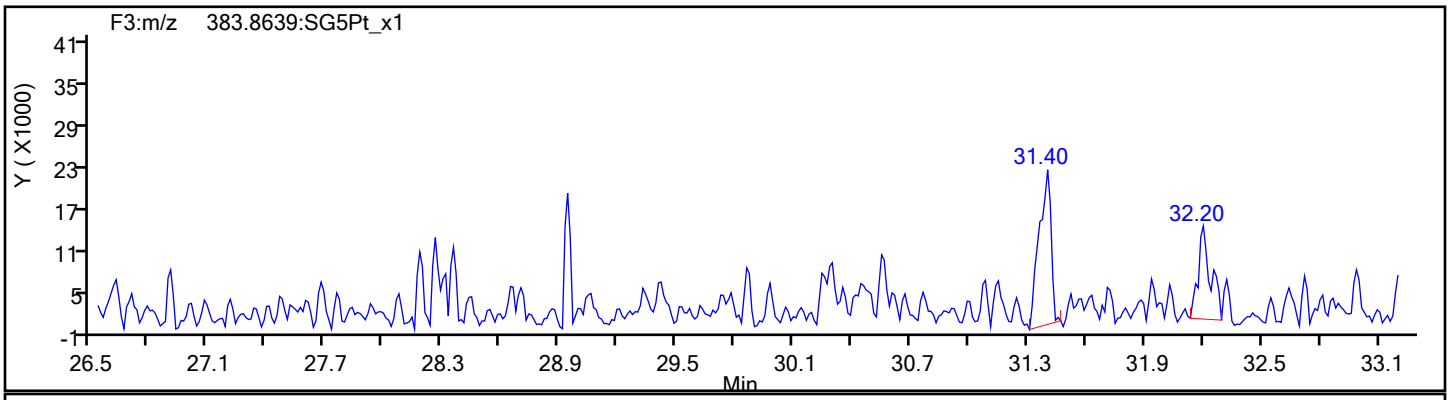
Column Type:	DB-5	Column Dia:	0.32 mm

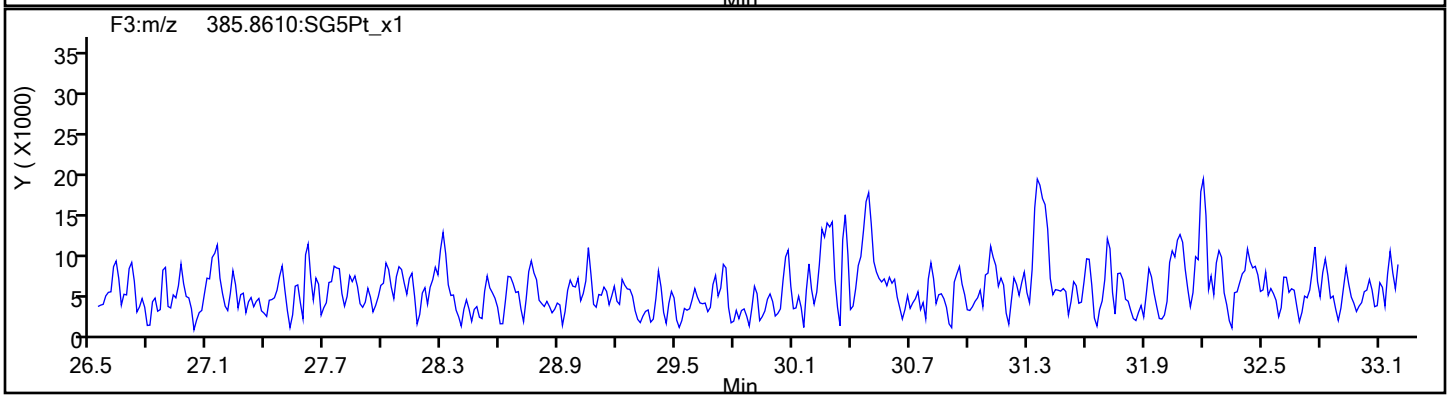
HxCDF





HxCDF Standards





Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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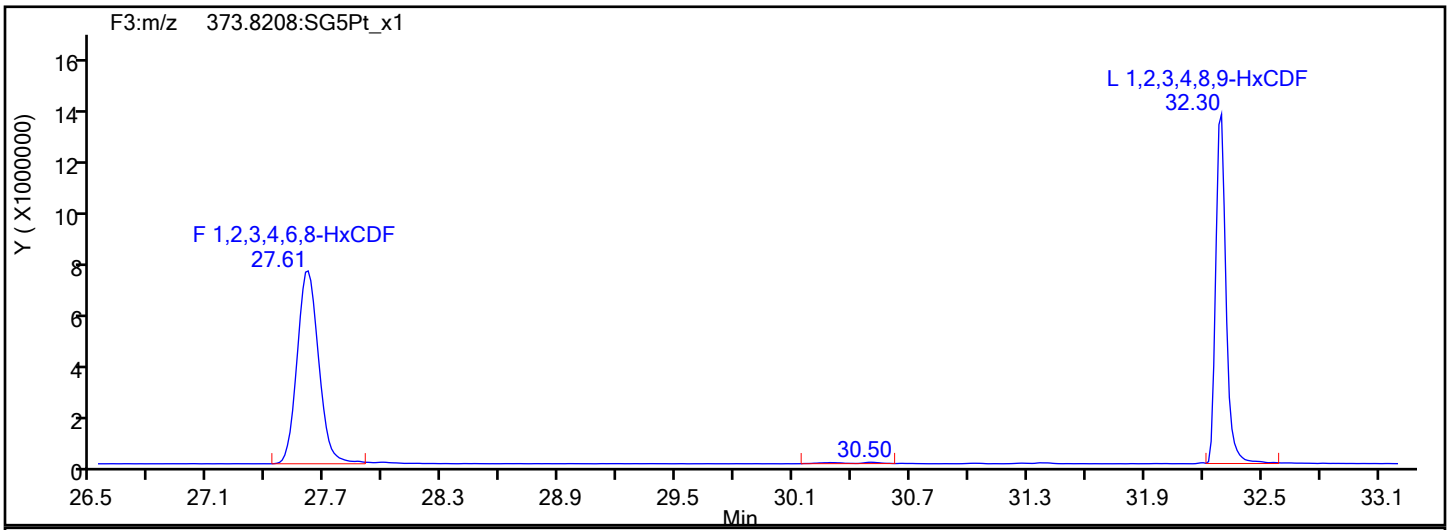
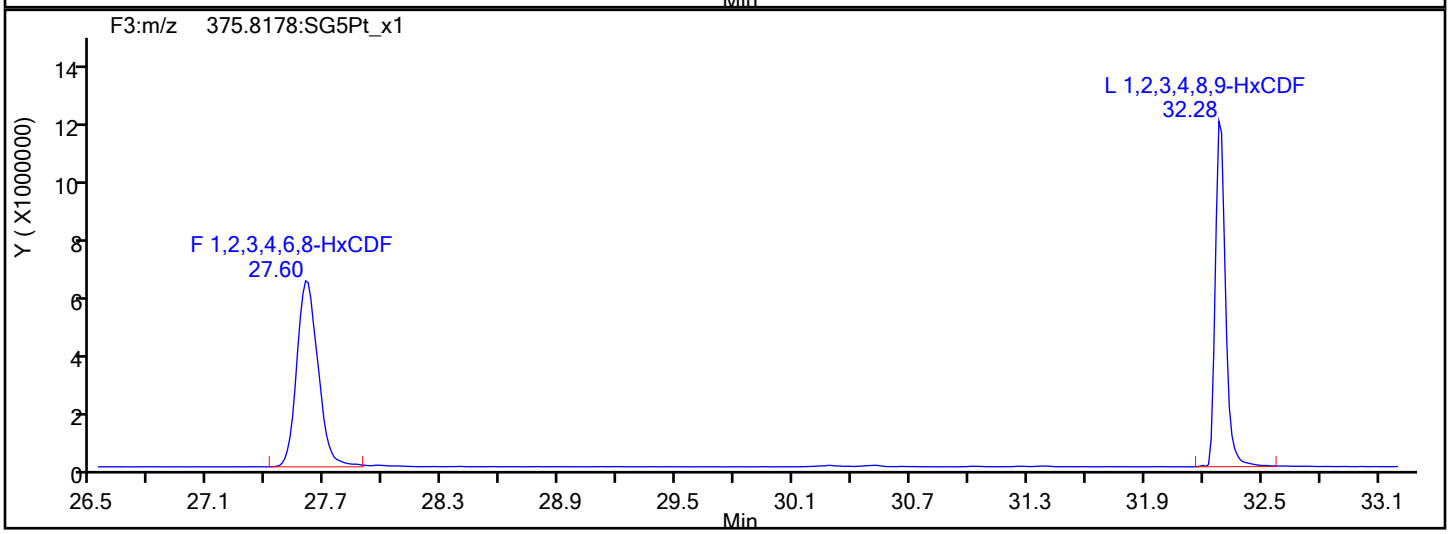
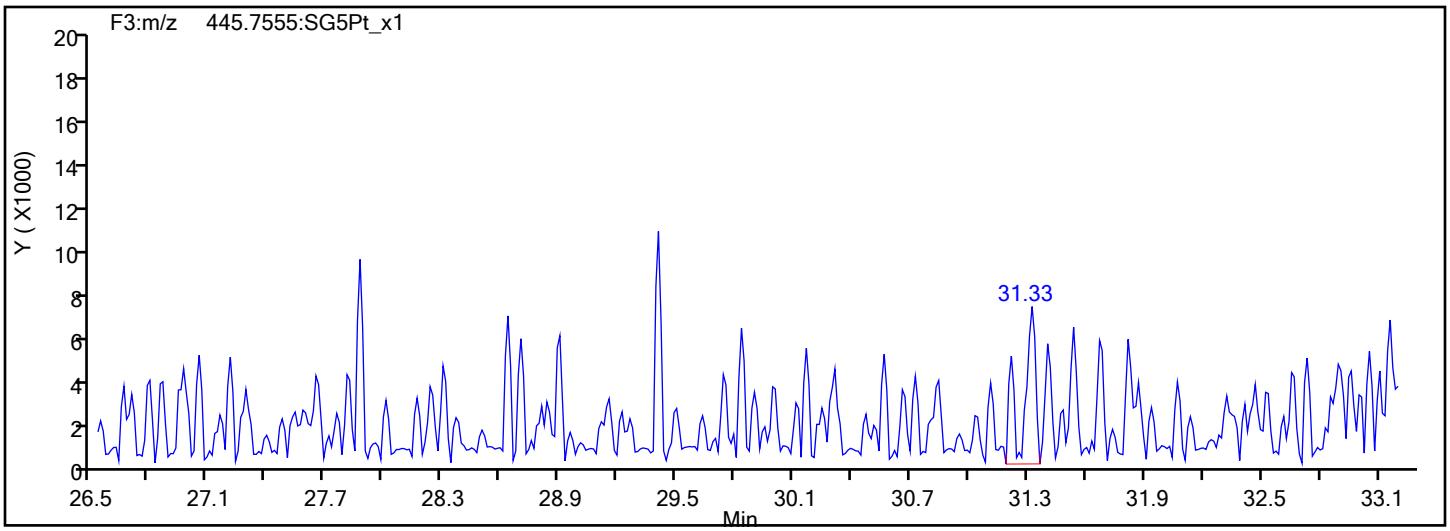
Column Type:	DB-5	Column Dia:	0.32 mm

HxCDF





HxCDF Interference Mass



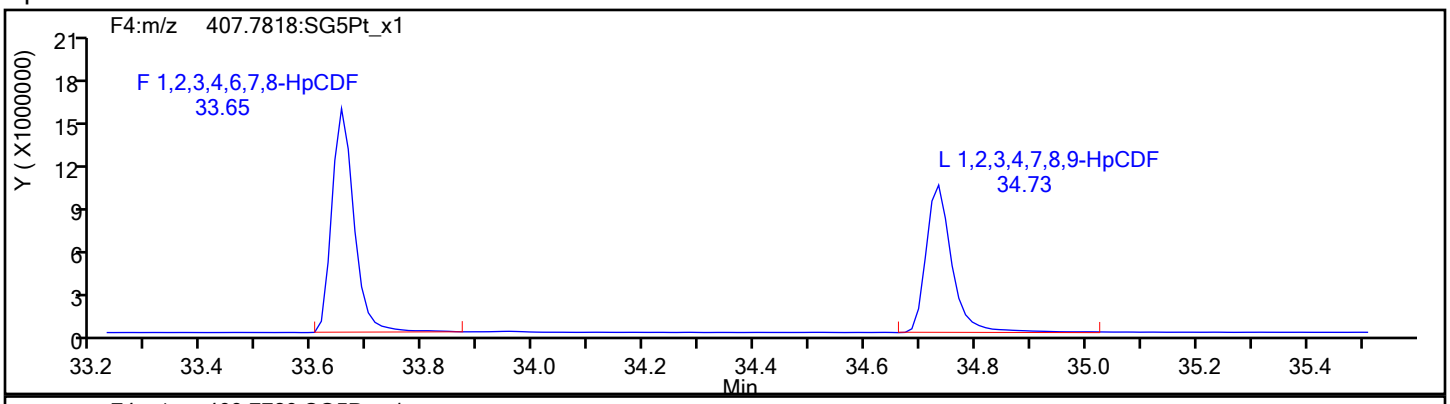
Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

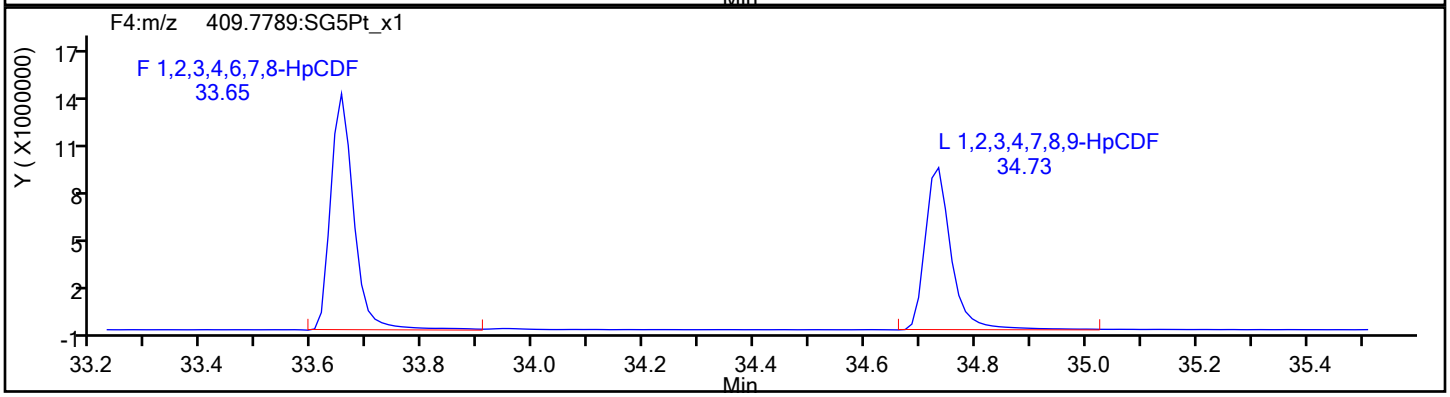
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d

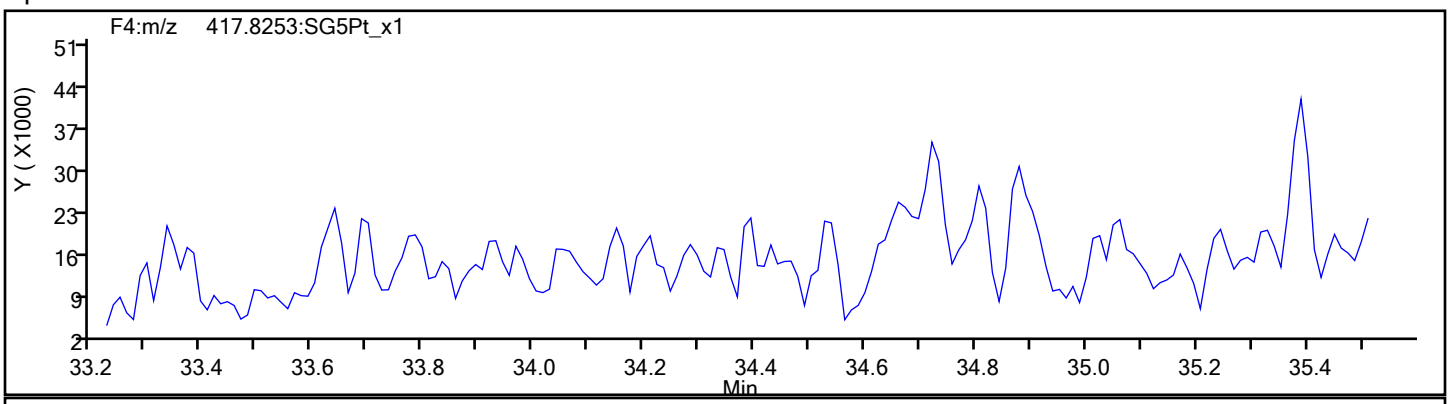
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

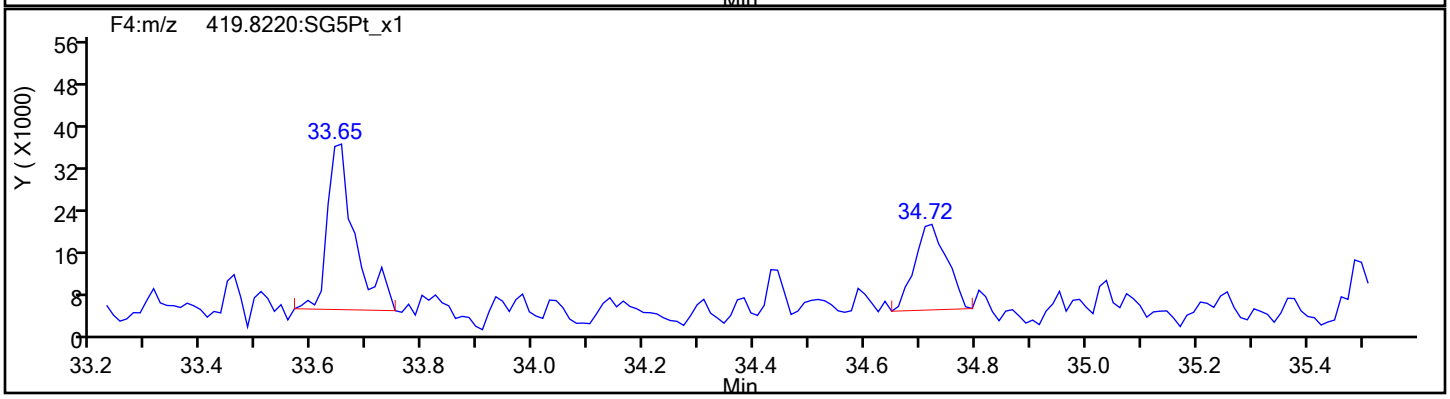
HpCDF





HpCDF Standards



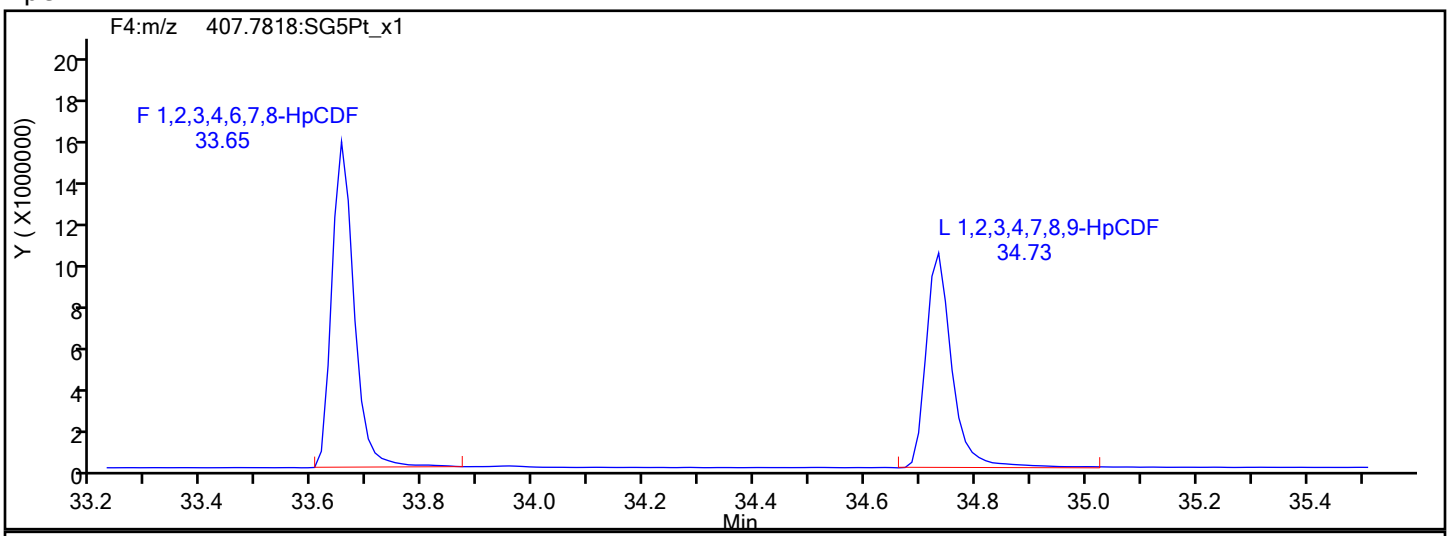


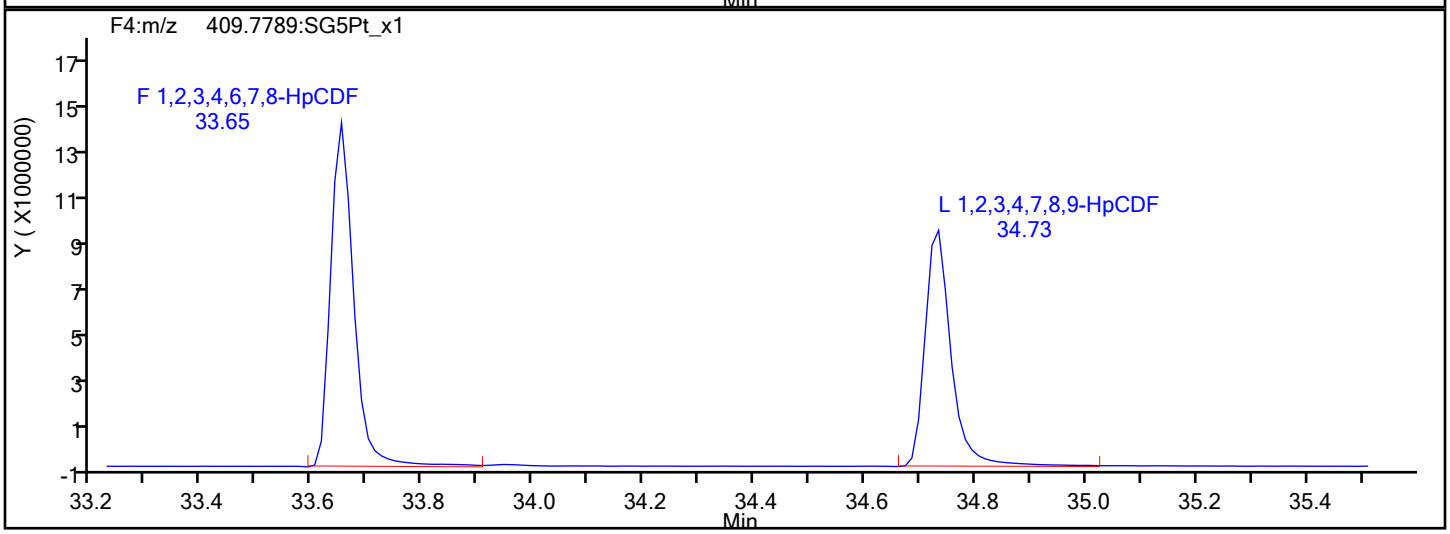
Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

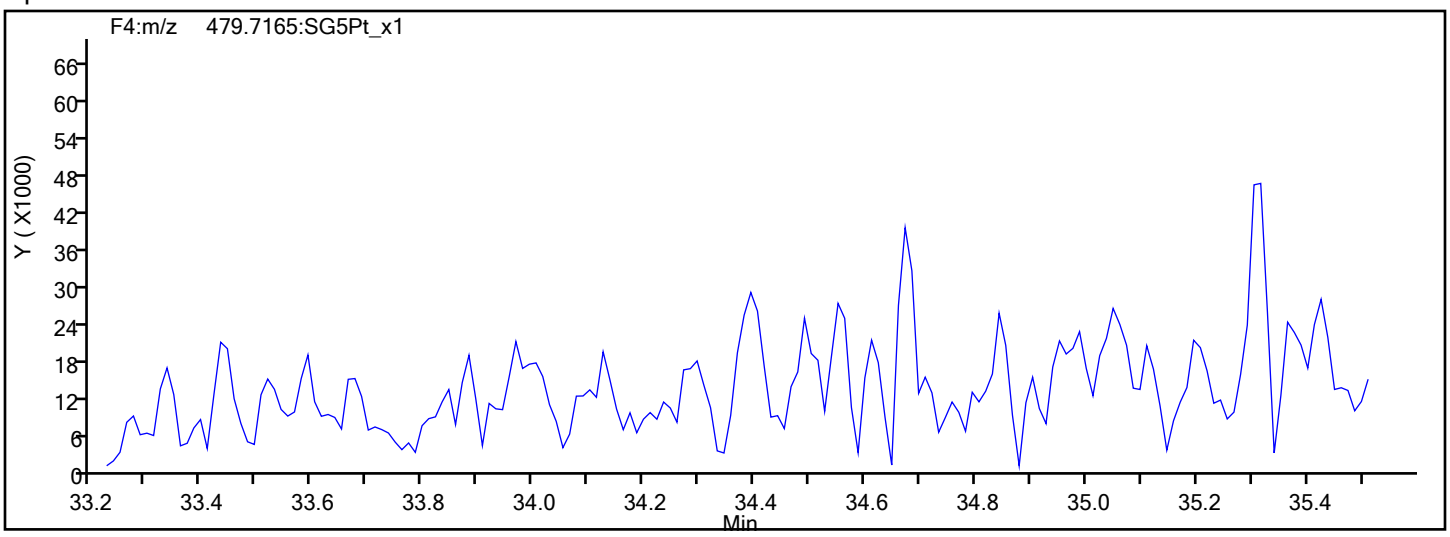
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

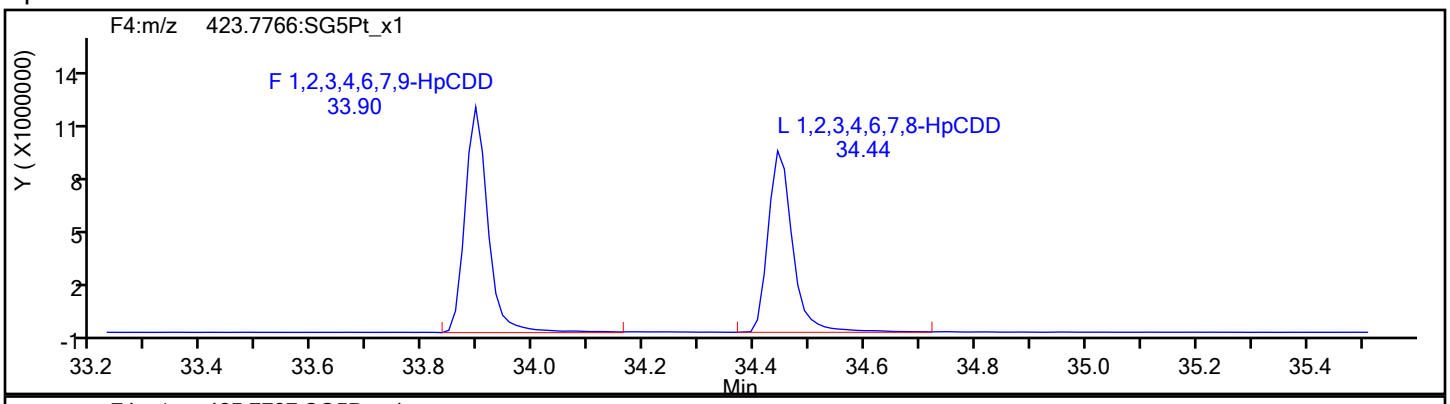


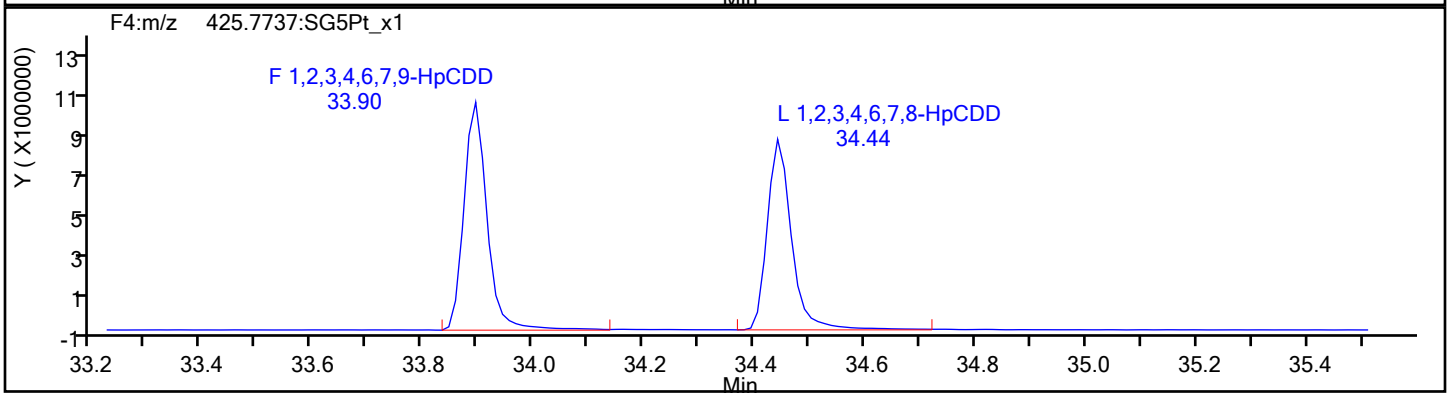
Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

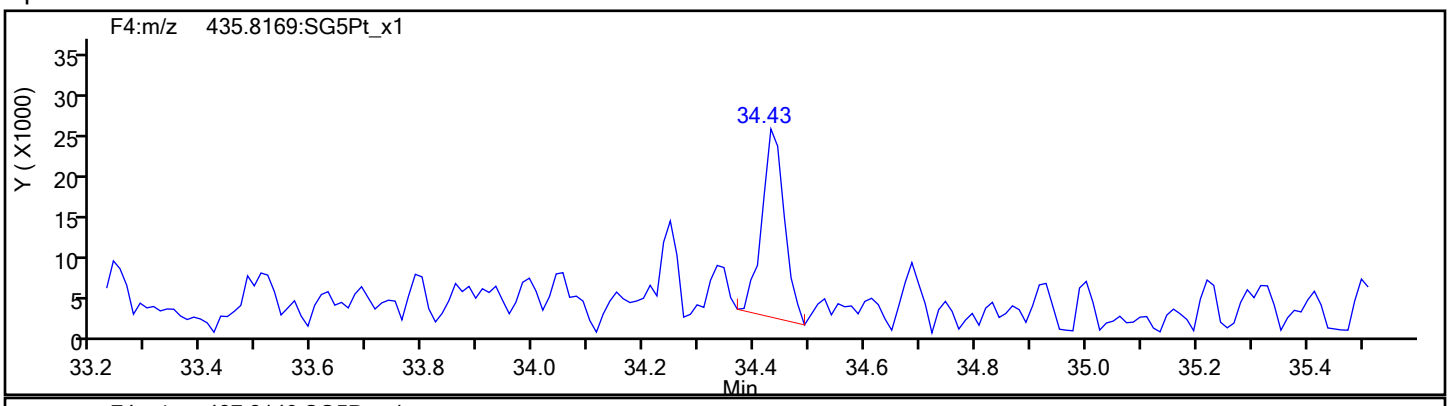
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

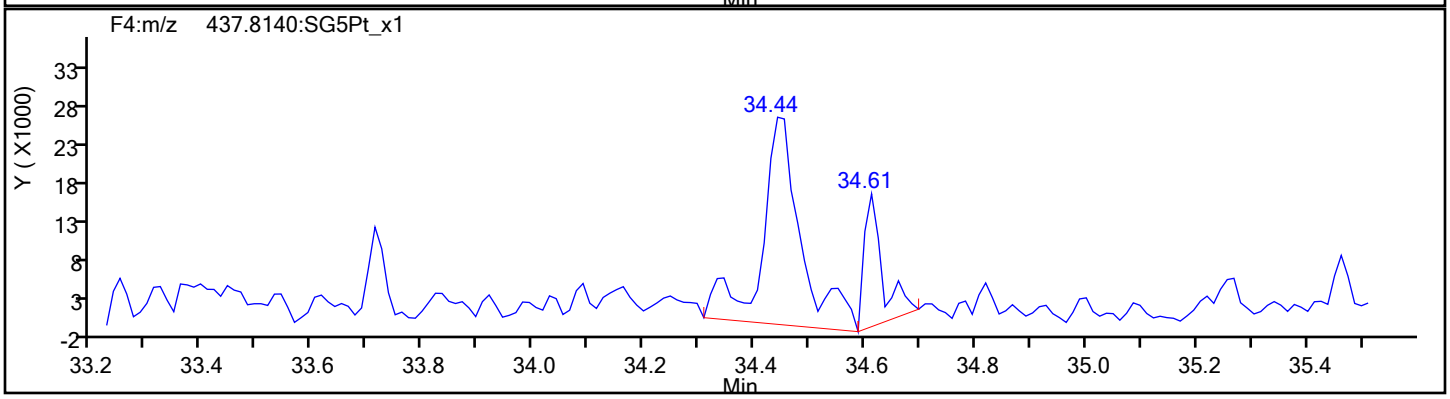
HpCDD





HpCDD Standards

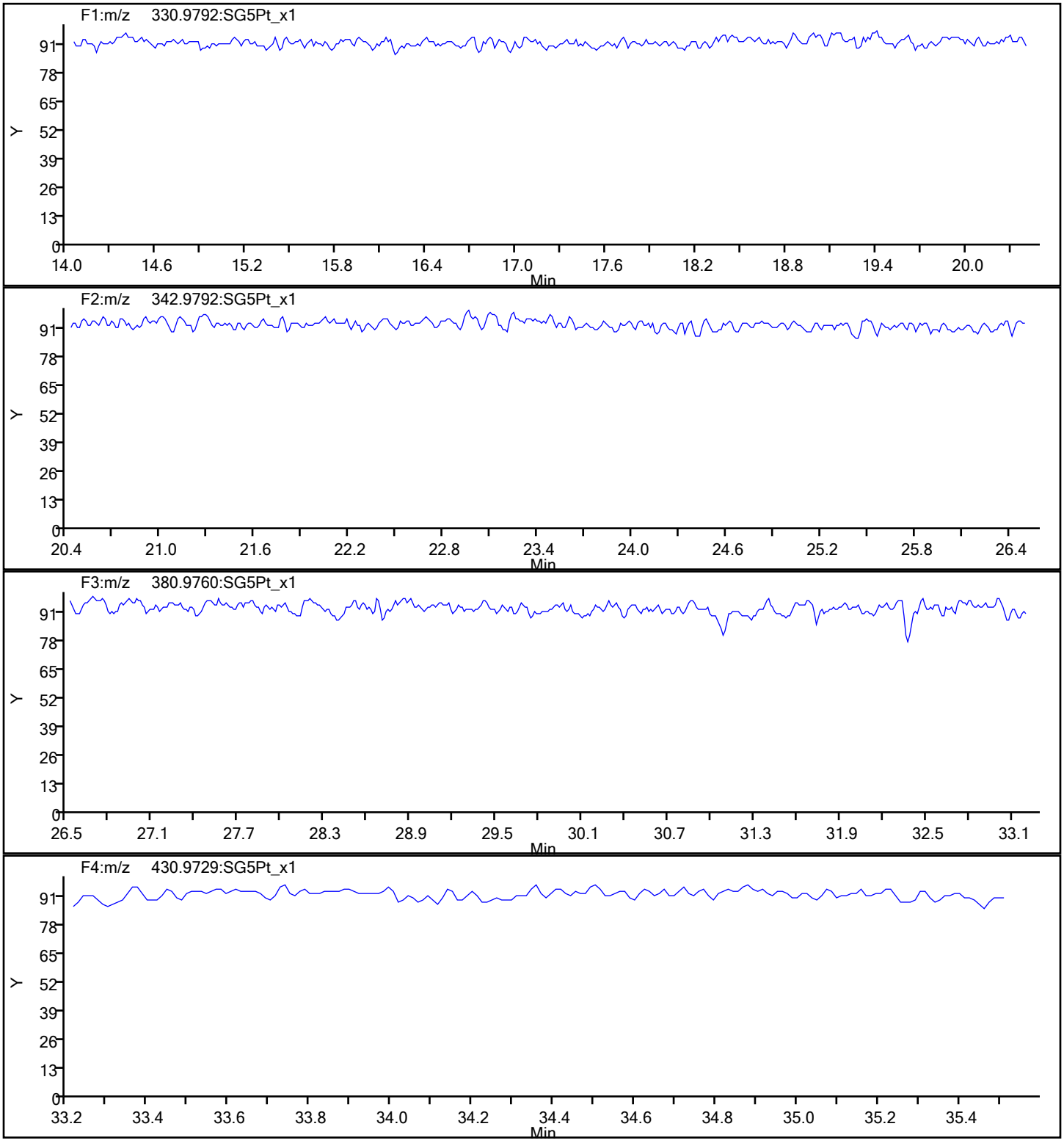




Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

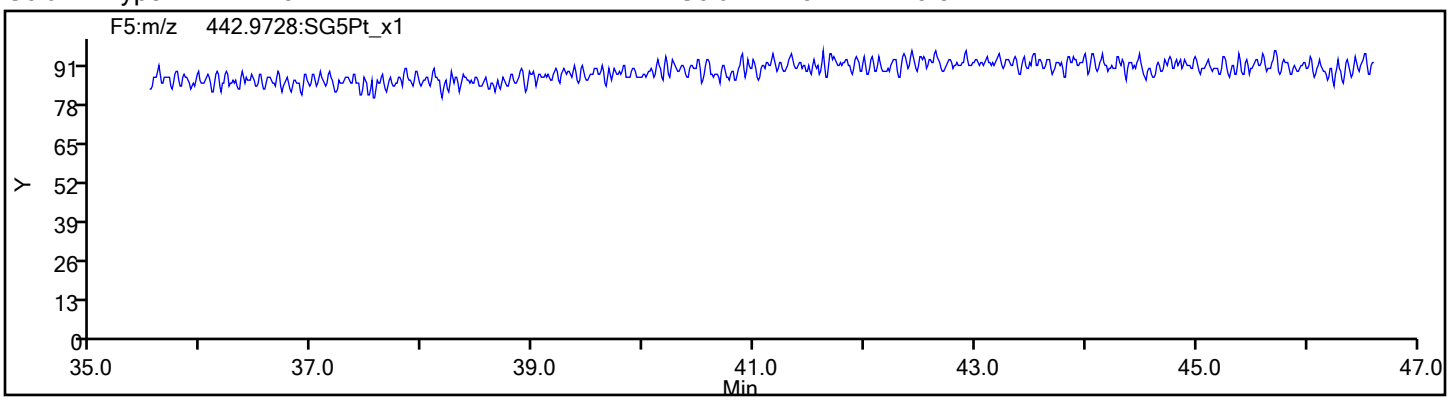
Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 12-Dec-2019 16:14:39 Chrom Revision: 2.3 02-Dec-2019 08:23:04

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_1.d		
Injection Date:	12-Dec-2019 09:53:45	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	KSS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	345037	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 19-Dec-2019 11:00:56 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121919 WDM HRDXNCP_00040
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 19-Dec-2019 22:35:10 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0306

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
D 13C-2,3,7,8-TCDF	17.083	102056337	0.81	1.4157					0.00	
2,3,7,8-TCDF	17.113	225999402	0.80	0.9502	93.2	93.2	0.3558	0.3558		
A Non-2,3,7,8-sub-TCDF	16.811						0.3558	0.3558		
S Total TCDF					93.2	93.2	0.3558	0.3558		
D 13C-2,3,7,8-TCDD	17.778	65013047	0.74	0.9751					0.00	
2,3,7,8-TCDD	17.793	75214742	0.83	1.0477	44.2	44.2	0.2341	0.2341		
A Non-2,3,7,8-sub-TCDD	17.249						0.2341	0.2341		
S Total TCDD					44.2	44.2	0.2341	0.2341		
A F1 PeCDFs	19.774						0.0	0.0		
A Non-2,3,7,8-sub-PeCDF	22.858	410379	1.55	0.0000						RQ
S Total PeCDF										RQ
A Non-2,3,7,8-sub-PeCDD	22.973						0.0	0.0		
S Total PeCDD										
A Non-2,3,7,8-sub-HxCDF	29.880						0.0	0.0		
S Total HxCDF										
A Non-2,3,7,8-sub-HxCDD	30.519						0.0	0.0		
S Total HxCDD										
1,2,3,4,6,7,8-HpCDF	33.628	65839123	1.05	1.4804						
1,2,3,4,7,8,9-HpCDF	34.709	50666073	1.06	1.2933						
A Non-2,3,7,8-sub-HpCDF	34.169						0.0	0.0		
S Total HpCDF										
1,2,3,4,6,7,8-HpCDD	34.418	42581903	1.04	1.0535						
A Non-2,3,7,8-sub-HpCDD	34.144						0.0	0.0		
S Total HpCDD										
1,3,6,8-TCDF	14.724	128369926	0.80							
1,3,6,8-TCDD	15.616	77620620	0.76							
2,3,4,7-TCDF	17.113	225999402	0.80							
1,2,3,7-TCDD	17.688	66832735	0.80							
1,2,3,9-TCDF	17.960	100709920	0.80							
1,2,3,9-TCDD	17.960	81065189	0.82							
1,2,8,9-TCDD	18.882	31054707								
1,2,8,9-TCDF	18.897	101538312	0.79							

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
1,3,4,6,8-PeCDF	19.169	85947233	1.63							
1,2,4,7,9-PeCDD	20.900	61015847	1.59							
1,2,3,8,9-PeCDD	25.046	55065708	1.63							
1,2,3,8,9-PeCDF	25.264	45241963								
1,2,3,4,6,8-HxCDF	27.503	80625082	1.20							
1,2,4,6,7,9-HxCDD	29.048	58898514	1.29							
1,2,3,4,6,7-HxCDD	31.924	59265705	1.26							
1,2,3,4,8,9-HxCDF	32.257	74527189	1.21							
1,2,3,4,6,7,9-HpCDD	33.871	49744921	1.06							

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 19-Dec-2019 11:00:56 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM 121919 WDM HRDXNCP_00040
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 19-Dec-2019 22:35:10 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0306

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-2,3,7,8-TCDF											
315.9419	17.083	17.083	0	1.000	45650472	11185329	19449	48622	575		
317.9389	17.083	17.083	0	1.000	56405865	14153670	17548	43870	807	0.81(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.113	17.113	0	1.002	100323893	22991934	38990	97475	590		
305.8987	17.113	17.113	0	1.002	125675509	28880751	46673	116682	619	0.80(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						38990	97475			
305.8987	16.811						46673	116682			
13C-2,3,7,8-TCDD											
331.9368	17.778	17.778	0	1.000	27634199	6680351	19517	48792	342		
333.9339	17.778	17.778	0	1.000	37378848	8812101	9455	23637	932	0.74(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.793	17.793	0	1.001	34061506	8190606	16628	41570	493		
321.8936	17.793	17.793	0	1.001	41153236	9959164	21371	53427	466	0.83(0.65-0.89)	
A Non-2,3,7,8-sub-TCDD											
319.8965	17.249						16628	41570			
321.8936	17.249						21371	53427			
A F1 PeCDFs											
339.8597	19.774						4930	12325			
341.8567	19.774						6710	16775			
A Non-2,3,7,8-sub-PeCDF											RQ
339.8597	22.032	22.858	-49	1.000	308766	34089	7008	17520	5		
341.8567	22.059	22.858	-48	1.000	160933	27013	7586	18965	4	1.92(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.973						12676	31690			
357.8516	22.973						7286	18215			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						12840	32100			
375.8178	29.880						11073	27682			
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.519						15345	38362			
391.8127	30.519						12393	30982			
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628	33.628	0	1.000	33692741	10989299	38694	96735	284		
409.7789	33.628	33.628	0	1.000	32146382	10380915	51419	128547	202	1.05(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709	34.709	0	1.000	26040858	7343429	38694	96735	190		
409.7789	34.709	34.709	0	1.000	24625215	6729248	51419	128547	131	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						38694	96735			
409.7789	34.169						51419	128547			
1,2,3,4,6,7,8-HpCDD											
423.7766	34.418	34.418	0	1.000	21727808	6541026	30664	76660	213		
425.7737	34.418	34.418	0	1.000	20854095	6335698	27119	67797	234	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.144						30664	76660			
425.7737	34.144						27119	67797			
1,3,6,8-TCDF											
303.9016	14.724	14.724	0		57000410	17670051	38990	97475	453		
305.8987	14.724	14.724	0		71369516	22146238	46673	116682	474	0.80(0.65-0.89)	
1,3,6,8-TCDD											
319.8965	15.616	15.616	0		33619173	9628524	16628	41570	579		
321.8936	15.616	15.616	0		44001447	12420559	21371	53427	581	0.76(0.65-0.89)	
2,3,4,7-TCDF											
303.9016	17.113	17.113	0		100323893	22991934	38990	97475	590		
305.8987	17.113	17.113	0		125675509	28880751	46673	116682	619	0.80(0.65-0.89)	
1,2,3,7-TCDD											
319.8965	17.688	17.688	0		29682430	7362401	16628	41570	443		
321.8936	17.688	17.688	0		37150305	9265736	21371	53427	434	0.80(0.65-0.89)	
1,2,3,9-TCDF											
303.9016	17.960	17.960	0		44616486	10847960	38990	97475	278		
305.8987	17.960	17.960	0		56093434	13696999	46673	116682	293	0.80(0.65-0.89)	
1,2,3,9-TCDD											
319.8965	17.960	17.960	0		36599780	8354440	16628	41570	502		
321.8936	17.960	17.960	0		44465409	10049171	21371	53427	470	0.82(0.65-0.89)	
1,2,8,9-TCDD											
319.8965	18.882	18.882	0		31054707	6663353	16628	41570	401		
1,2,8,9-TCDF											
303.9016	18.897	18.897	0		44921711	10019560	38990	97475	257		
305.8987	18.897	18.897	0		56616601	12641705	46673	116682	271	0.79(0.65-0.89)	
1,3,4,6,8-PeCDF											
339.8597	19.169	19.169	0		53283695	11519435	4930	12325	2337		
341.8567	19.169	19.169	0		32663538	7079856	6710	16775	1055	1.63(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,4,7,9-PeCDD											
355.8546	20.900	20.900	0		37475241	6574386	12676	31690	519		
357.8516	20.900	20.900	0		23540606	4119432	7286	18215	565	1.59(1.32-1.78)	
1,2,3,8,9-PeCDD											
355.8546	25.046	25.046	0		34121553	5021038	12676	31690	396		
357.8516	25.059	25.046	1		20944155	3120247	7286	18215	428	1.63(1.32-1.78)	
1,2,3,8,9-PeCDF											
339.8597	25.264	25.264	0		45241963	6251935	7008	17520	892		
1,2,3,4,6,8-HxCDF											
373.8208	27.503	27.503	0		44041038	5680488	12840	32100	442		
375.8178	27.503	27.503	0		36584044	4774299	11073	27682	431	1.20(1.05-1.43)	
1,2,4,6,7,9-HxCDD											
389.8157	29.048	29.048	0		33151370	3899010	15345	38362	254		
391.8127	29.061	29.048	1		25747144	3033761	12393	30982	245	1.29(1.05-1.43)	
1,2,3,4,6,7-HxCDD											
389.8157	31.924	31.924	0		33000378	8233329	15345	38362	537		
391.8127	31.924	31.924	0		26265327	6547387	12393	30982	528	1.26(1.05-1.43)	
1,2,3,4,8,9-HxCDF											
373.8208	32.257	32.257	0		40787765	10952597	12840	32100	853		
375.8178	32.257	32.257	0		33739424	8872541	11073	27682	801	1.21(1.05-1.43)	
1,2,3,4,6,7,9-HpCDD											
423.7766	33.871	33.871	0		25593371	8208732	30664	76660	268		
425.7737	33.871	33.871	0		24151550	7844228	27119	67797	289	1.06(0.88-1.20)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

HRDXNCP_00040 Amount Added: 2.00 Units: uL

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d
Lims ID: WDM
Client ID:
Inject. Date: 19-Dec-2019 11:00:56 Dil. Factor: 1.0000
Sample Type: WDM, Window Defining Mix
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 1

Non-2,3,7,8-sub-PeCDF, RT: 22.858

Initial Calibration RRF

IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,7,8-PeCDF	1.030				
2,3,4,7,8-PeCDF	1.041				

Averages:

	RRFn		Qis	Ris Area	Ris Height
	0.000		0.0	0	0

Sum the Uncalibrated Results

RT	339.8597 Area	339.8597 Height	341.8567 Area	341.8567 Height	Amount	Ratio	Flags
22.032	308766	34089	160933	27013		1.92	R
Signal Totals:							
	308766	34089	160933	27013			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	469699	61102				1.92	RQ
	410379	68883					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0 = (469699 * 0.0) / (0 * 0.000)
Empc Amount: 0.0 = (410379 * 0.0) / (0 * 0.000)

QC Flag Legend

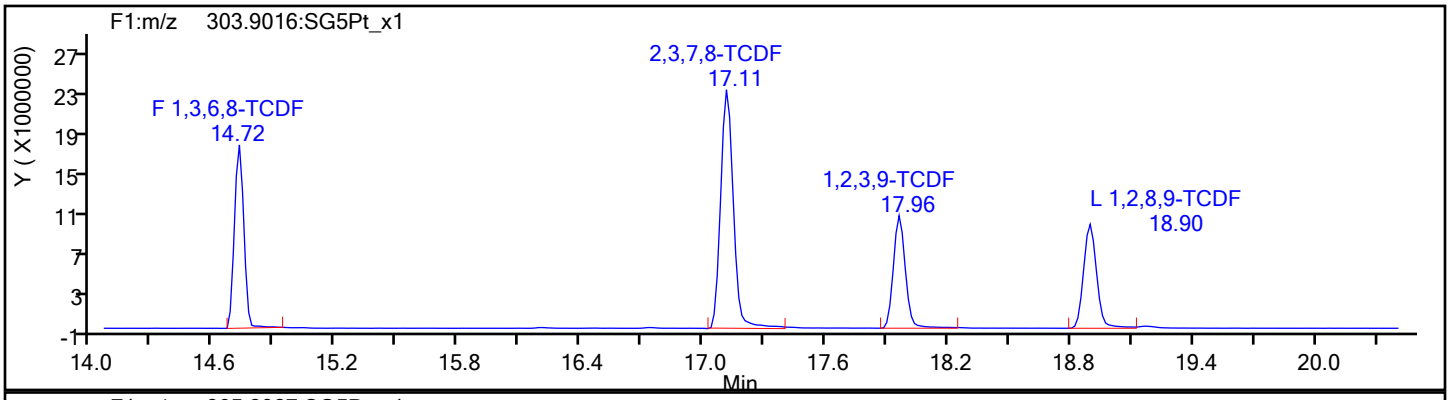
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

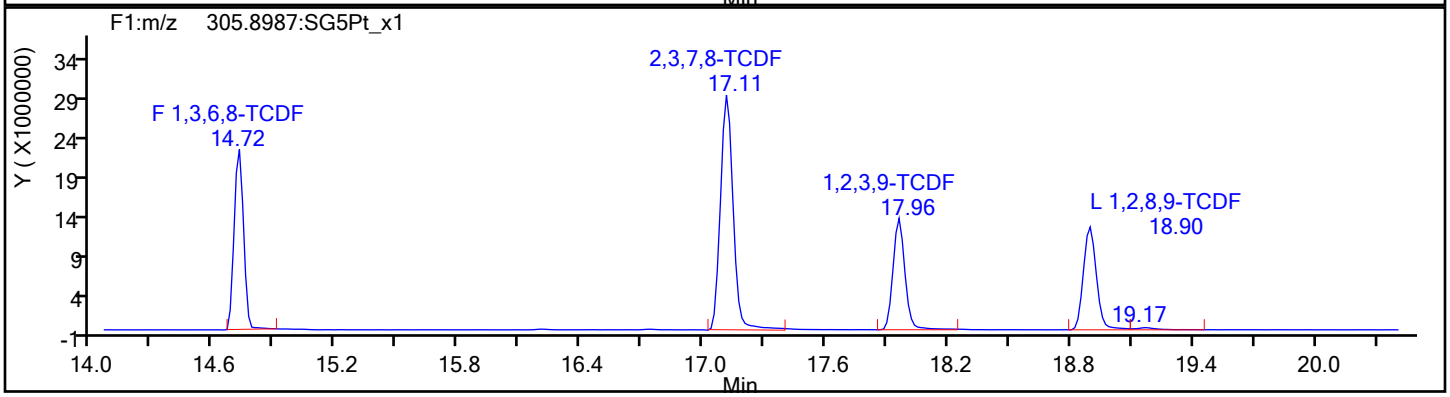
Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

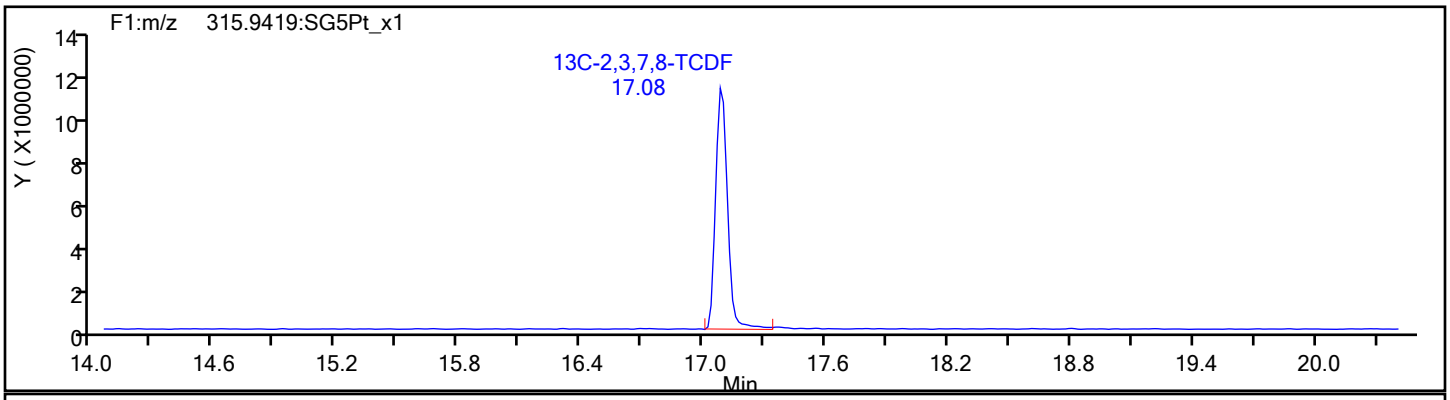
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

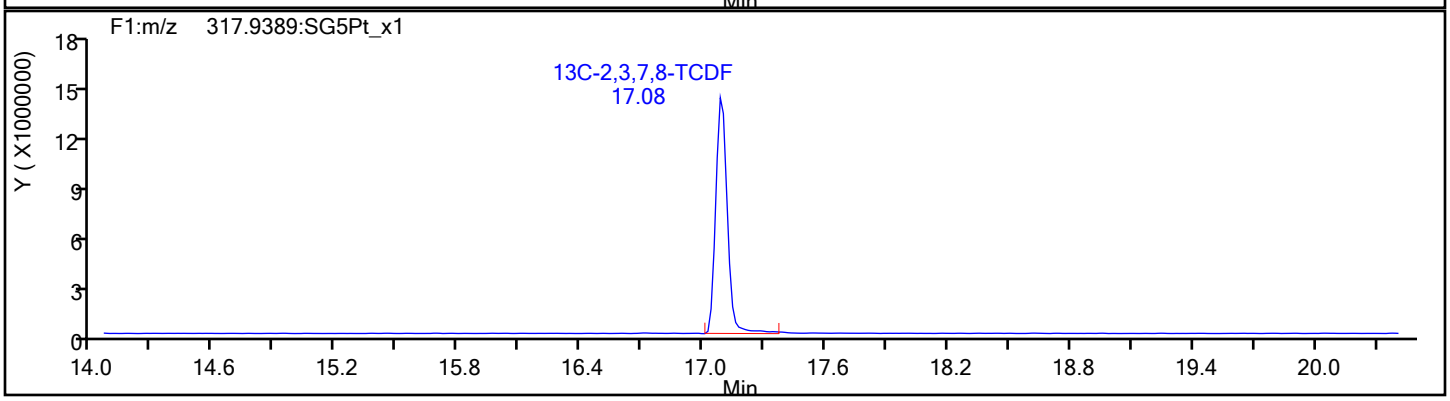
TCDF





TCDF Standards





Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
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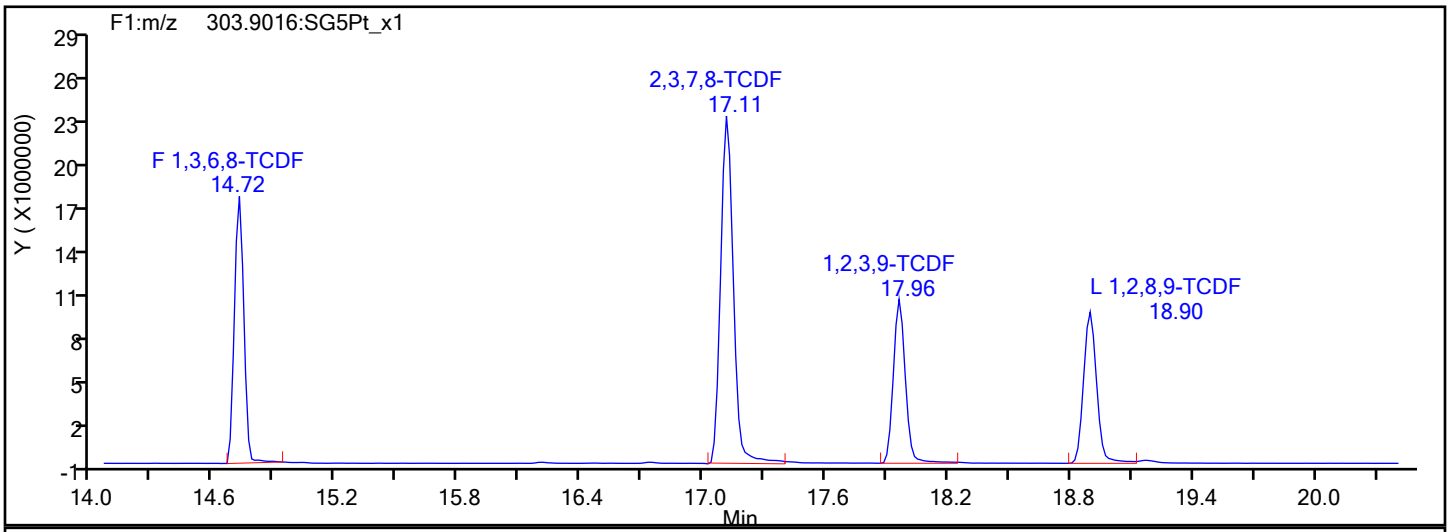
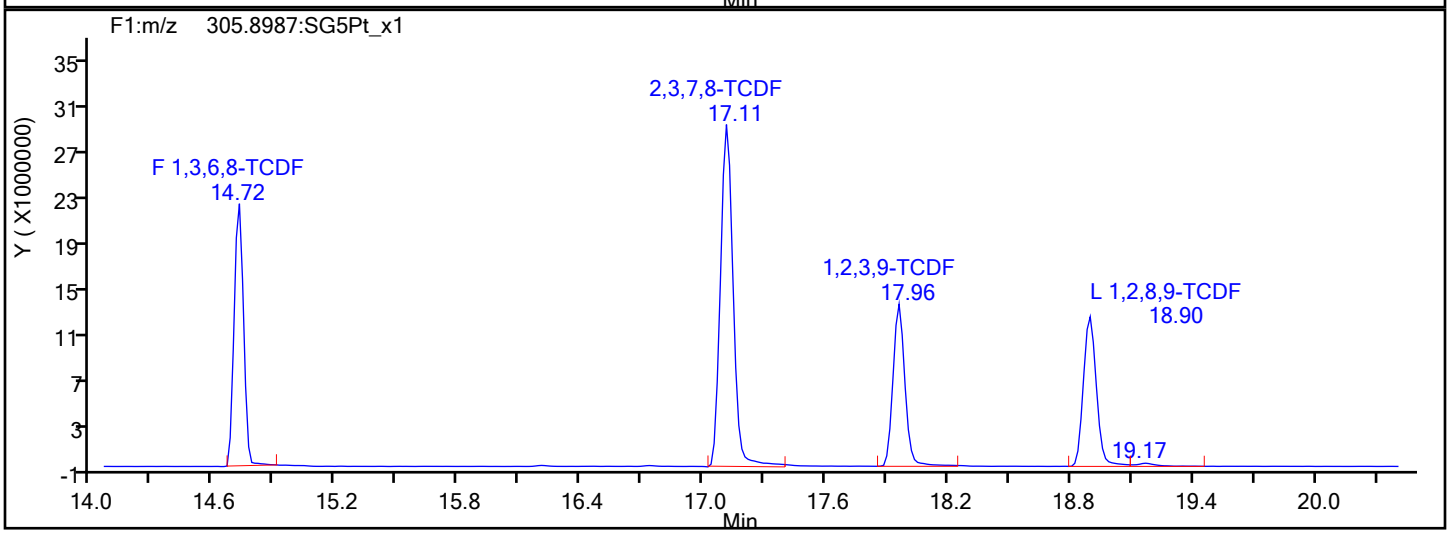
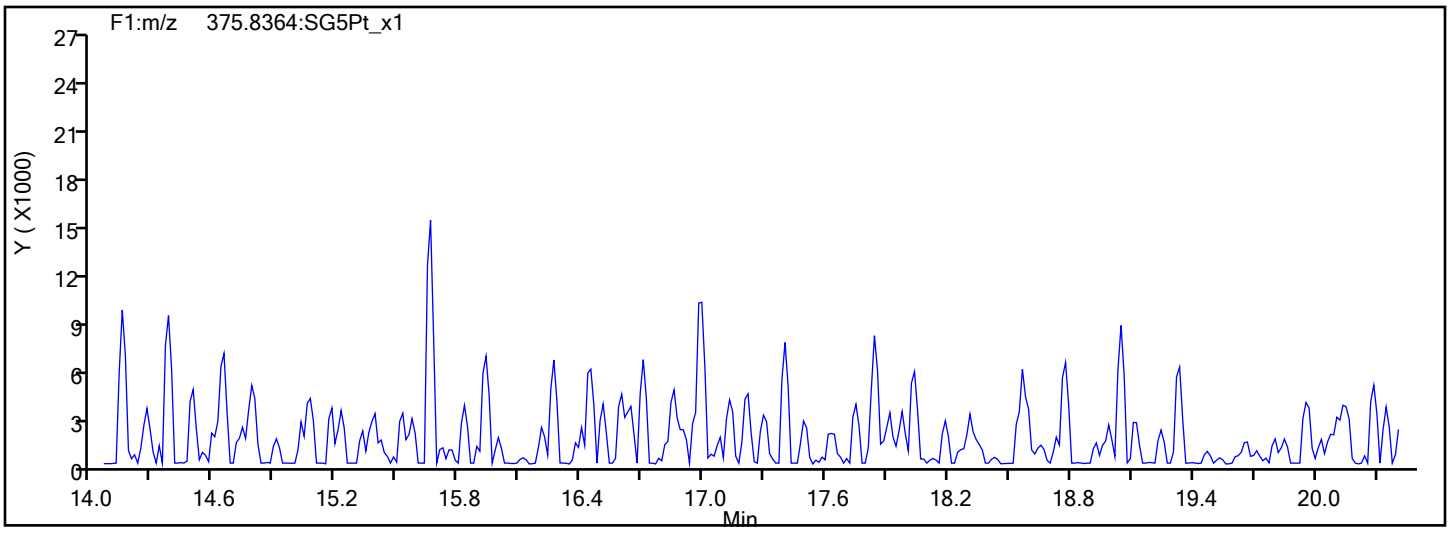
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d

Injection Date: 19-Dec-2019 11:00:56 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

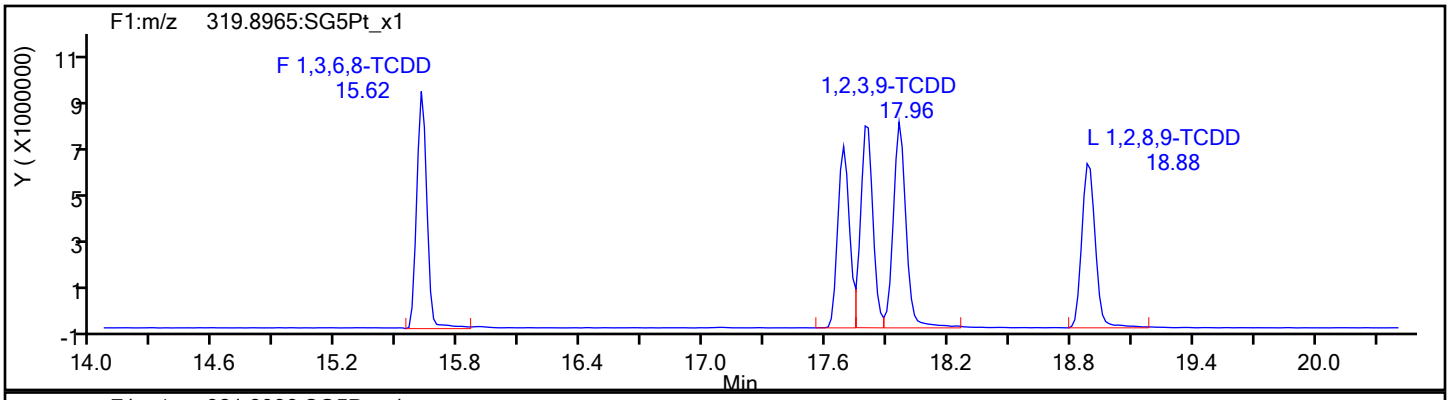
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

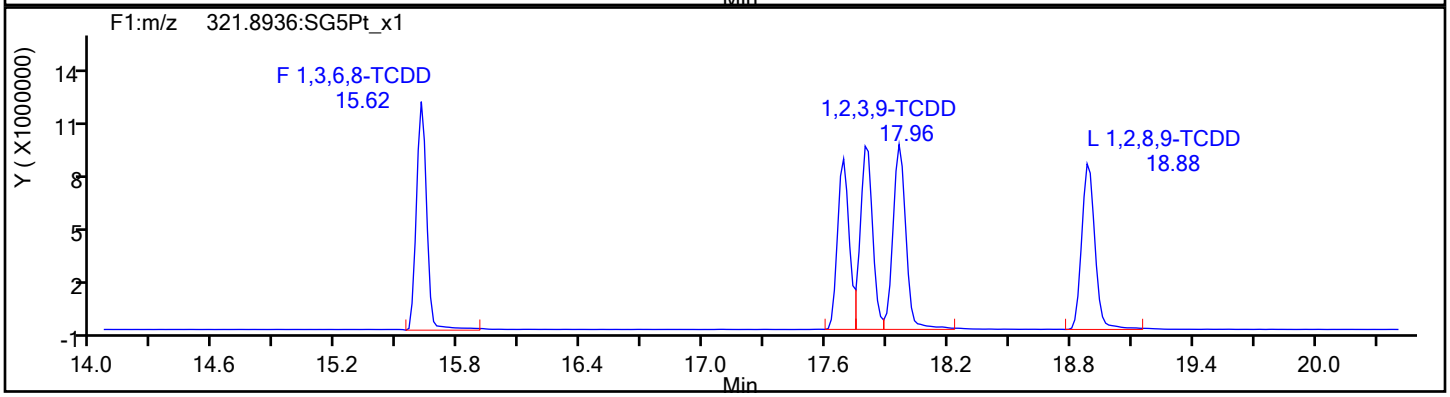
Client ID:

Worklist#: 346752 Sample Line#: 1

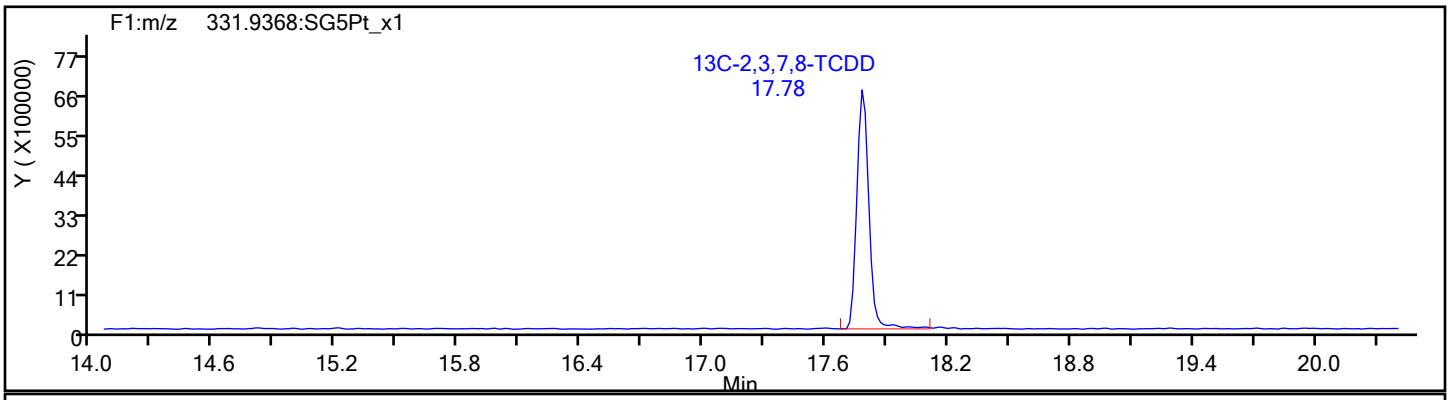
Column Type: DB-5 Column Dia: 0.32 mm

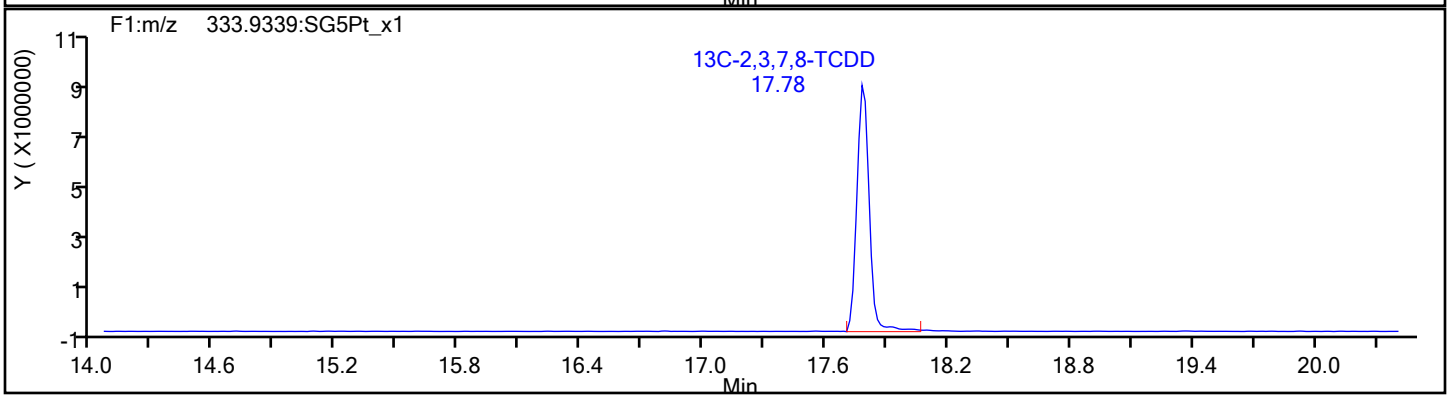
TCDD





TCDD Standards



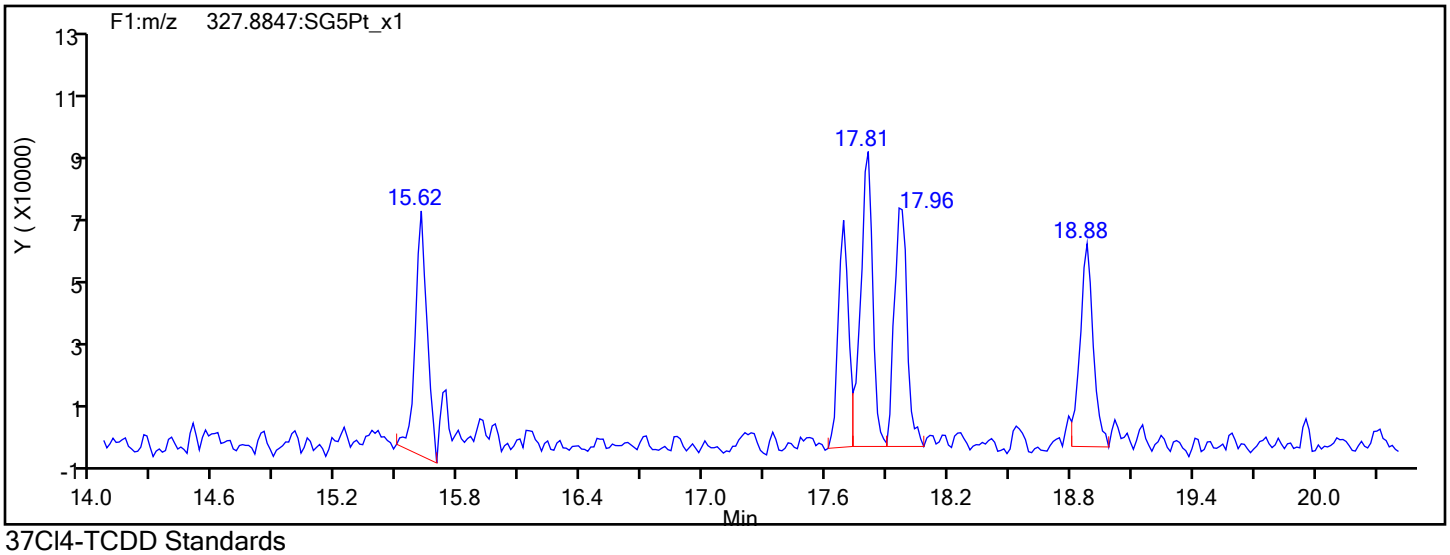


Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

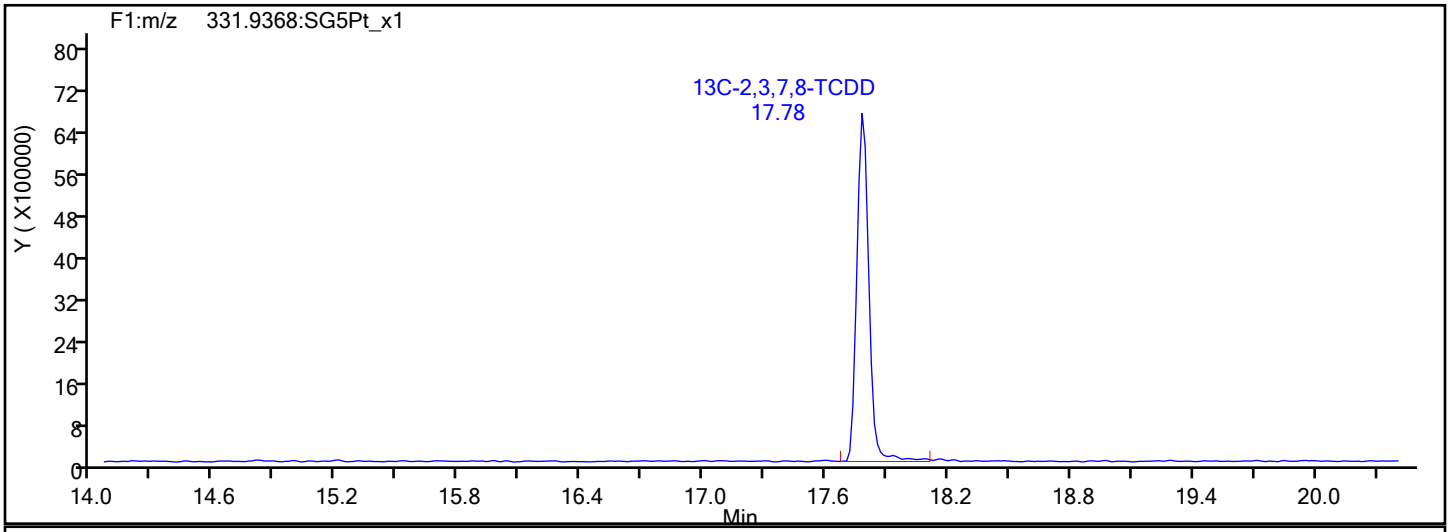
Eurofins TestAmerica, Sacramento

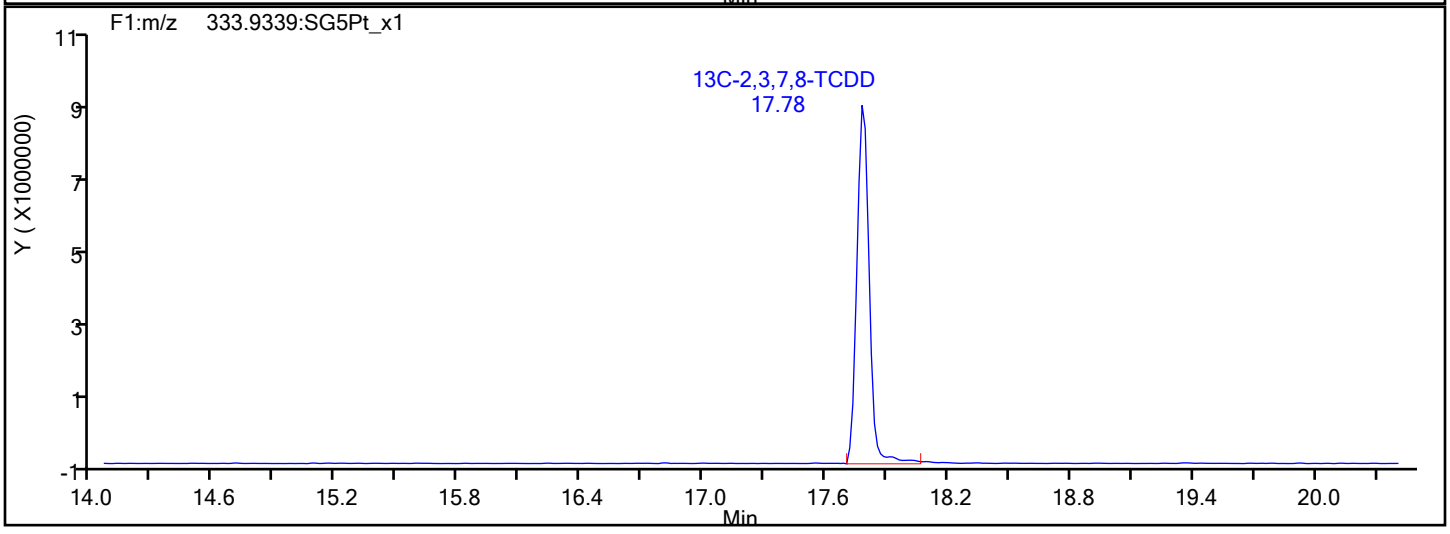
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards





Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
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Client ID:			
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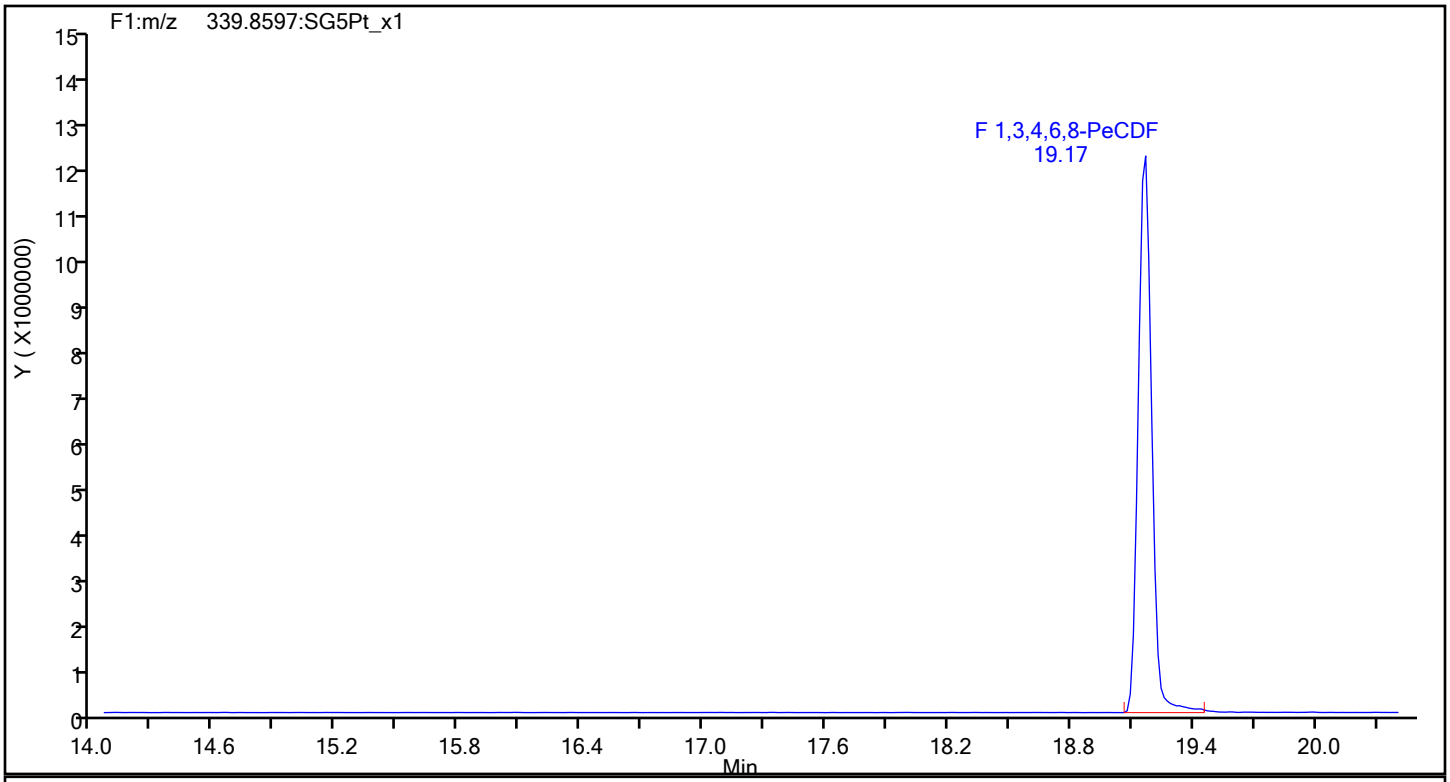
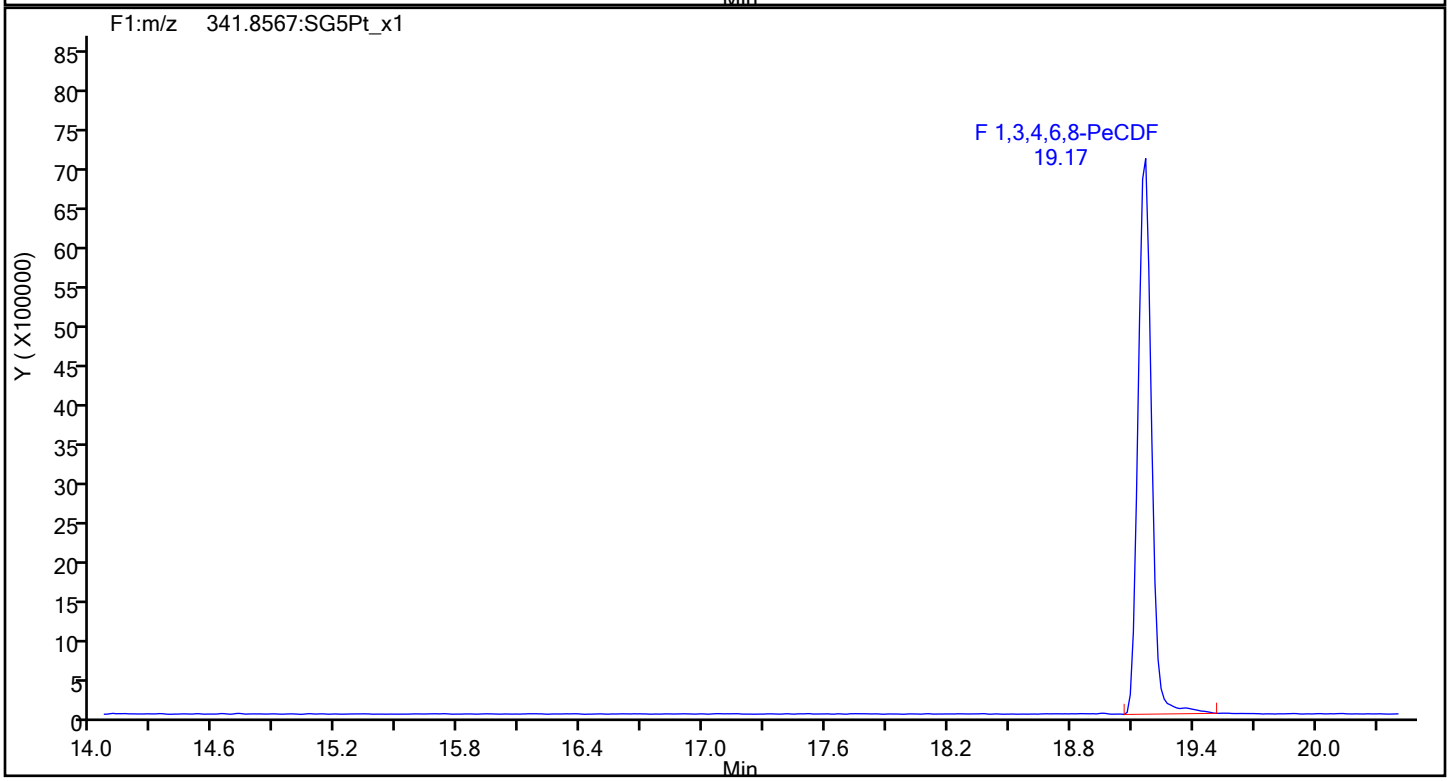
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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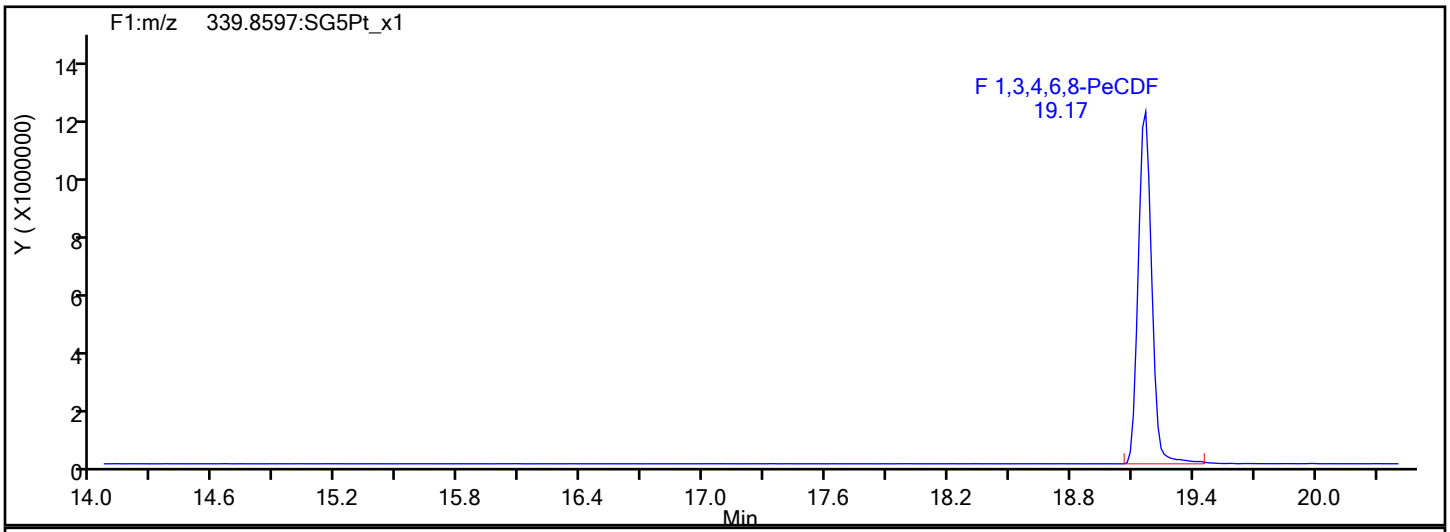
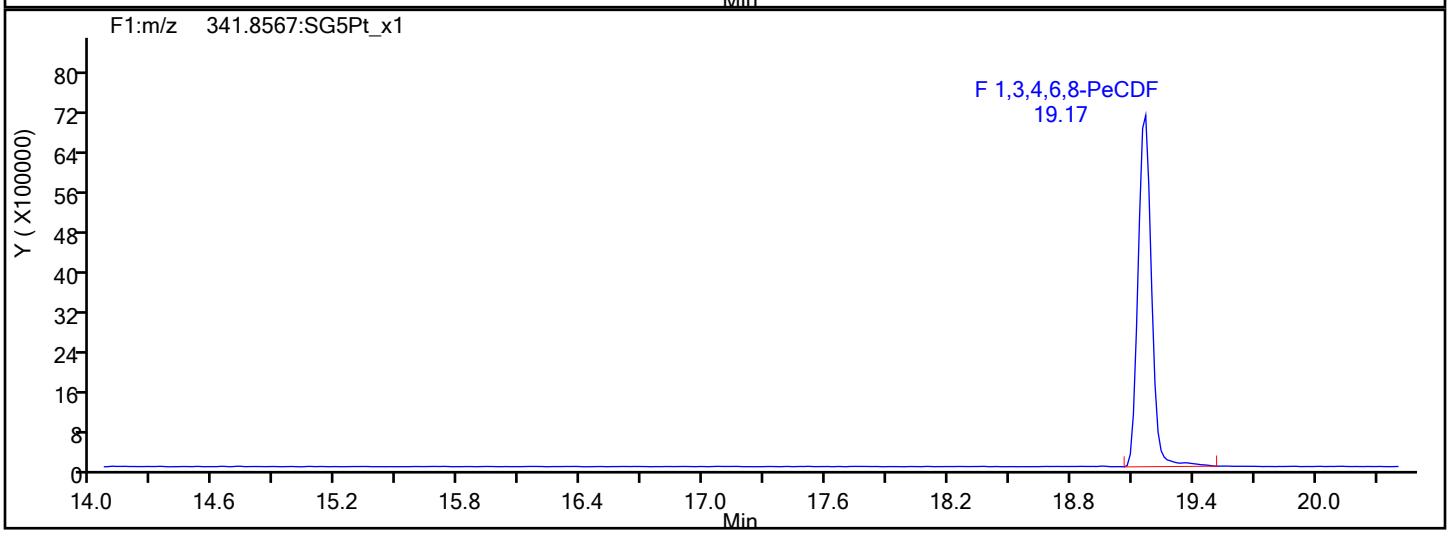
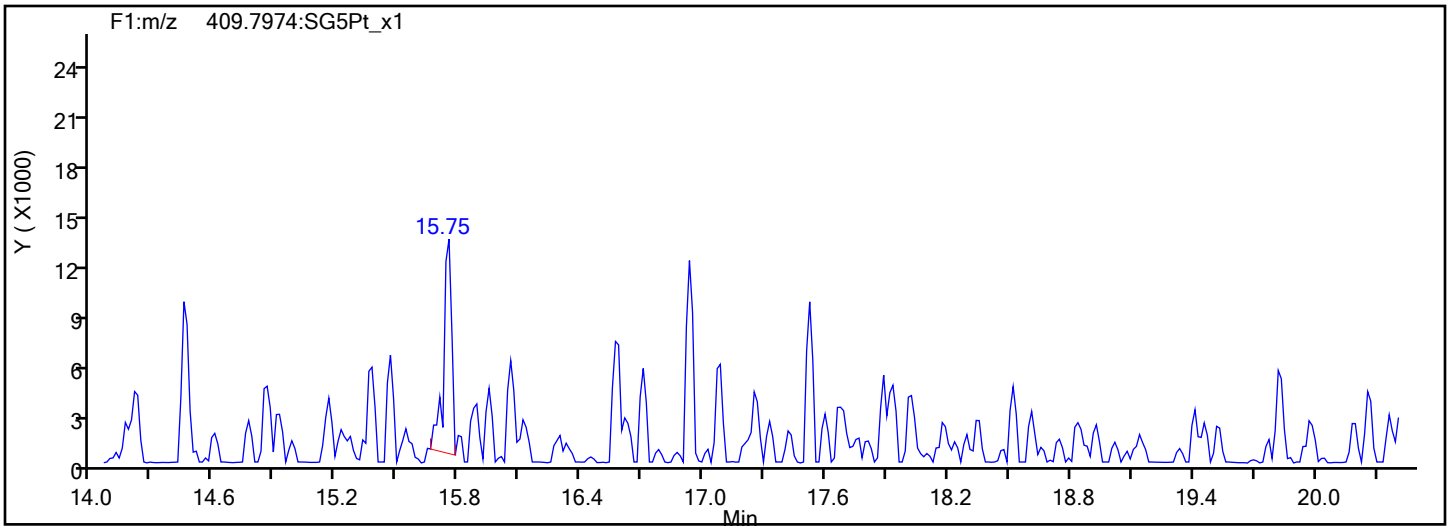
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



Eurofins TestAmerica, Sacramento

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Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
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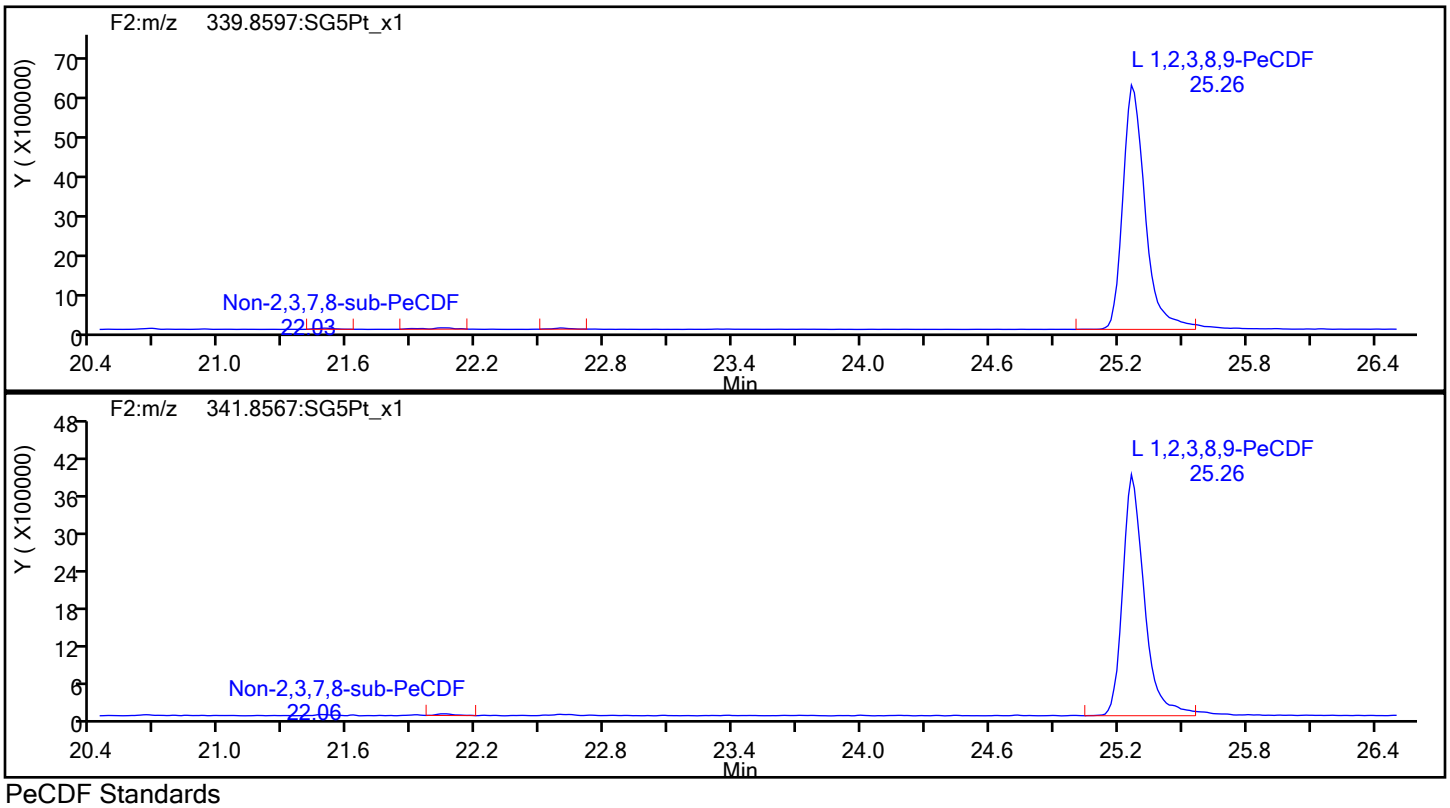
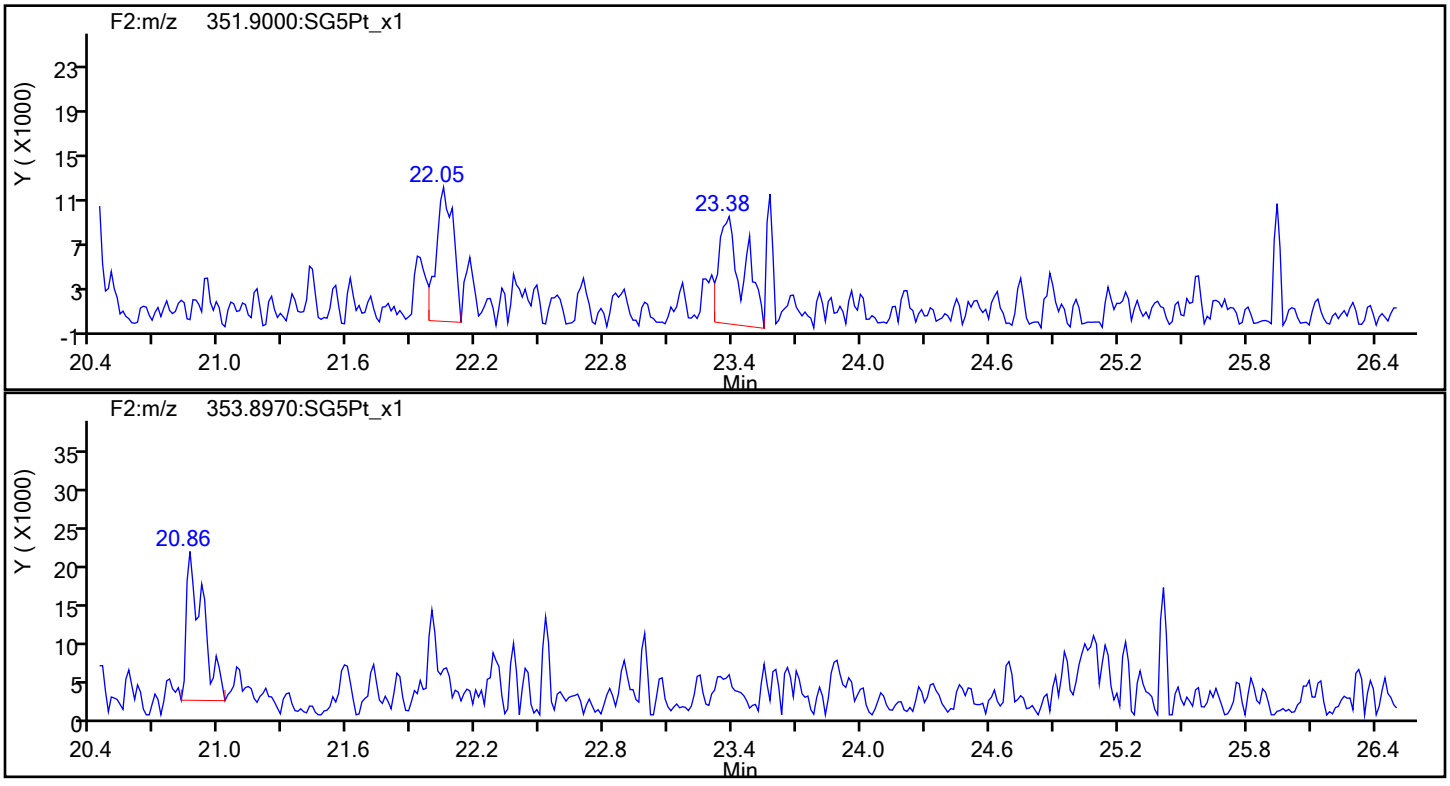
PeCDF



PeCDF Standards



Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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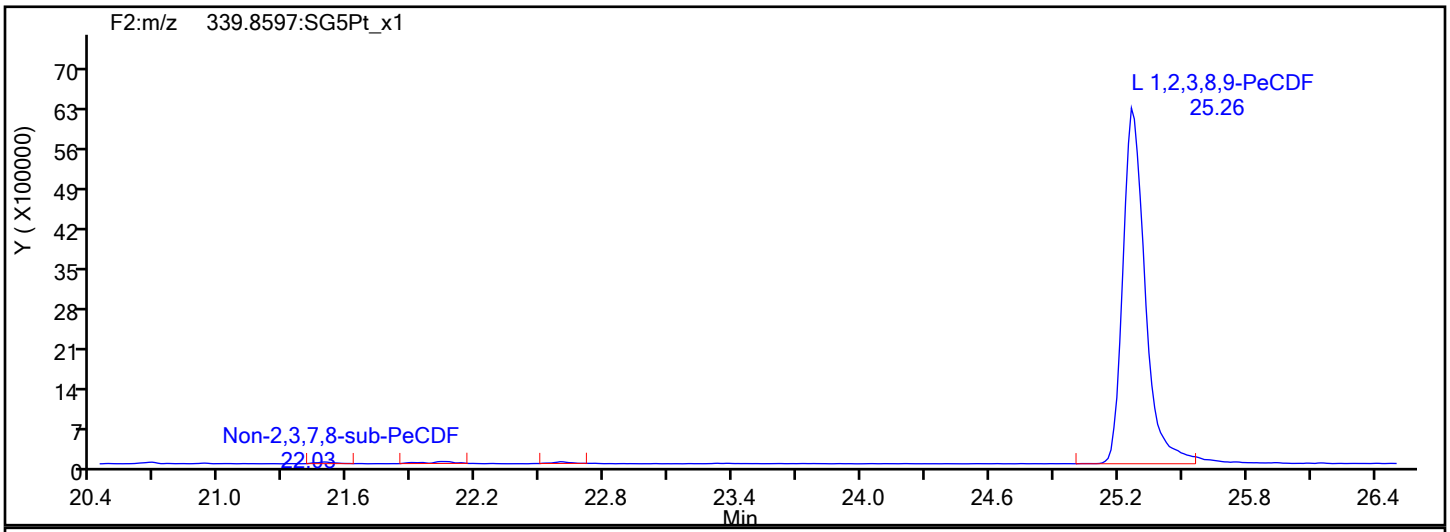
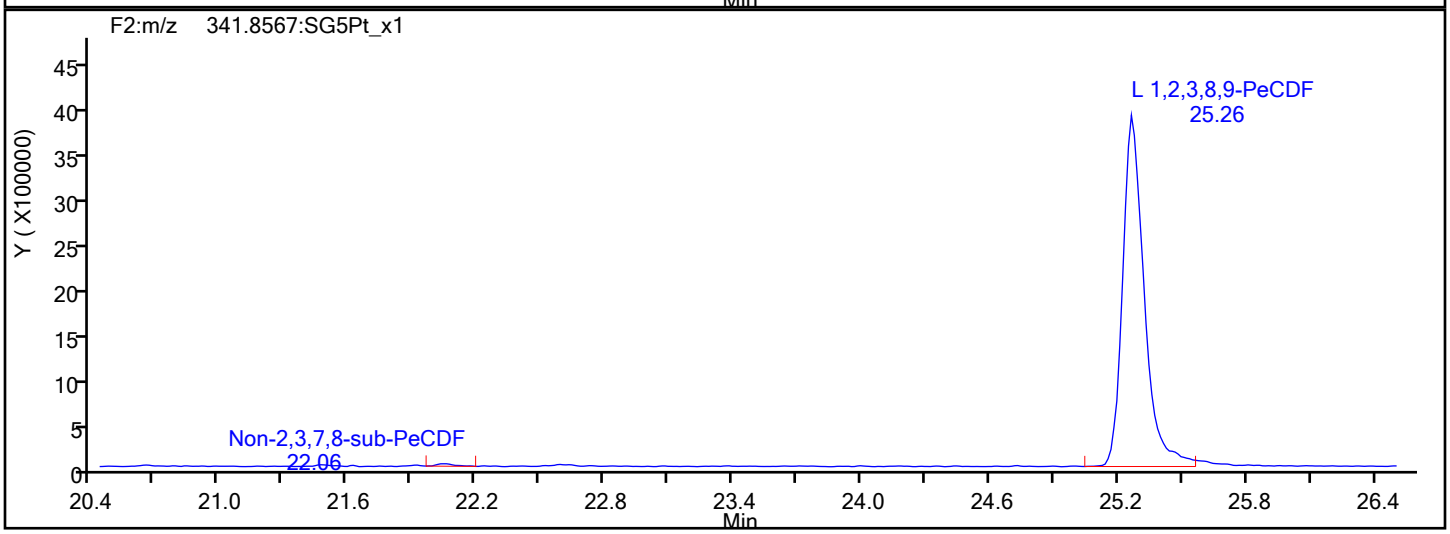
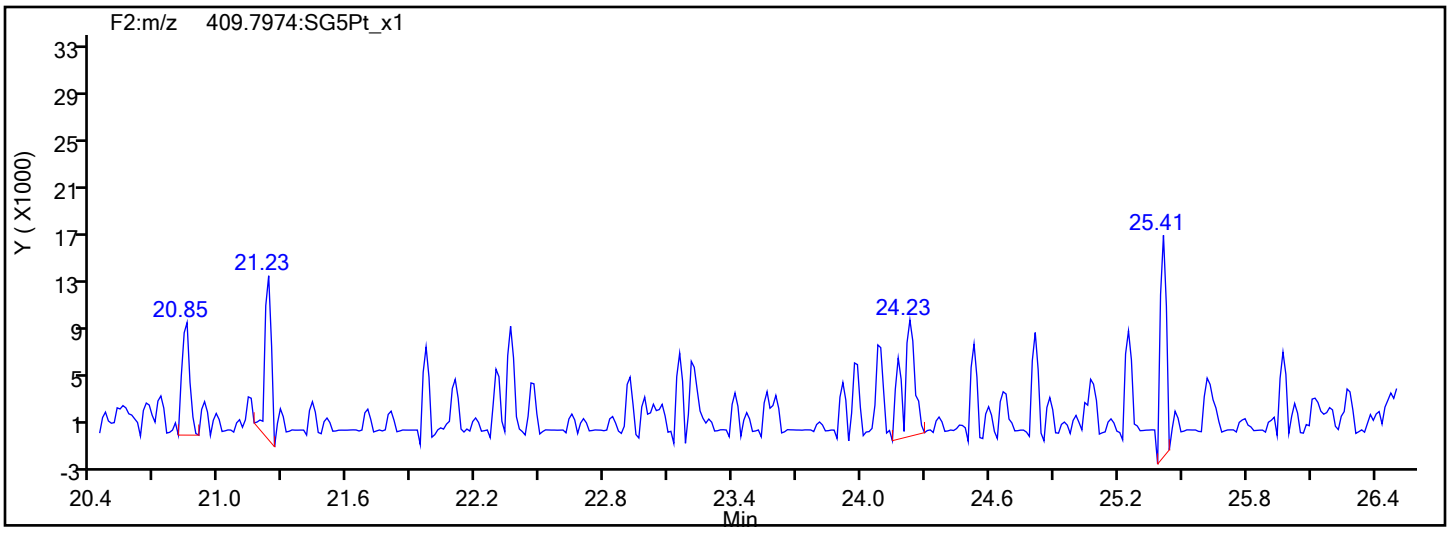
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDF





PeCDF Interference Mass



Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
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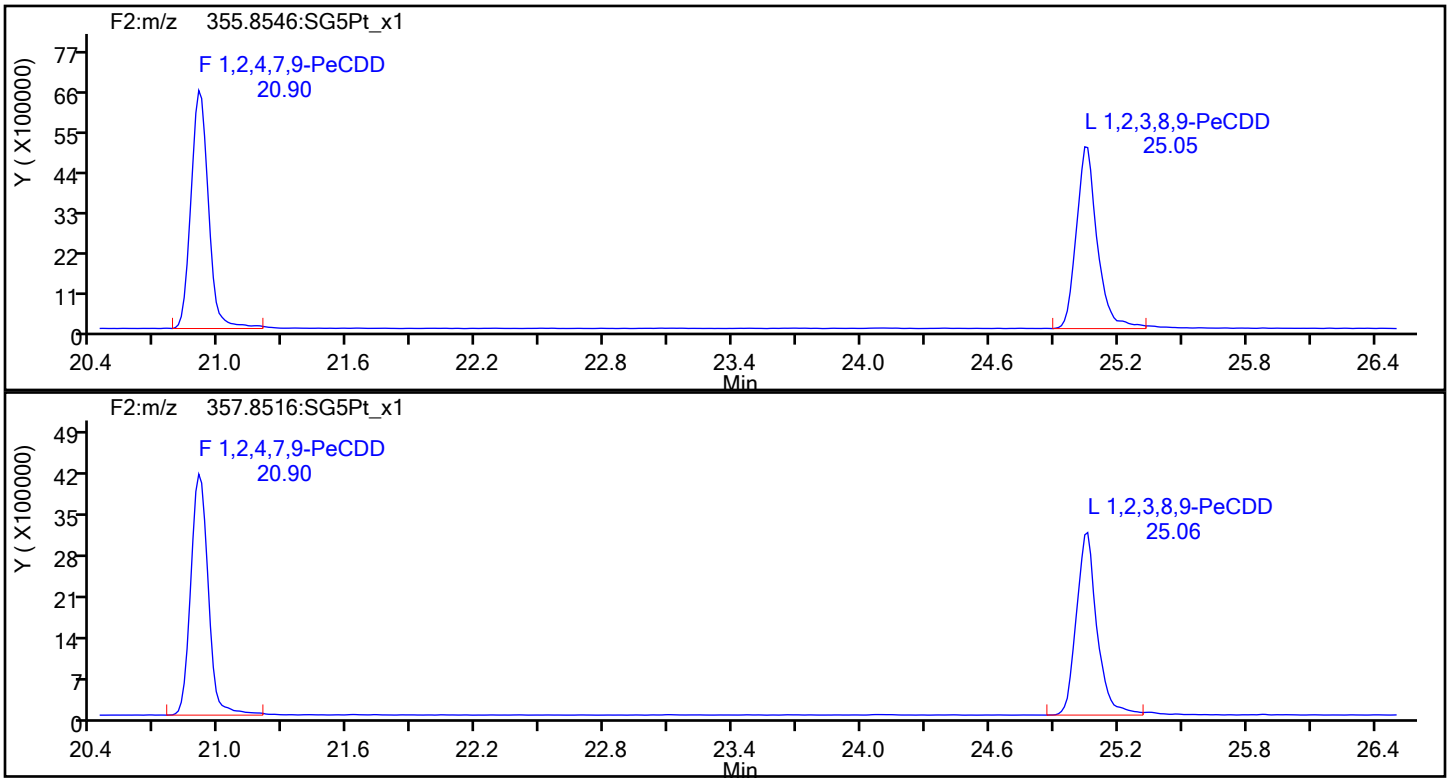
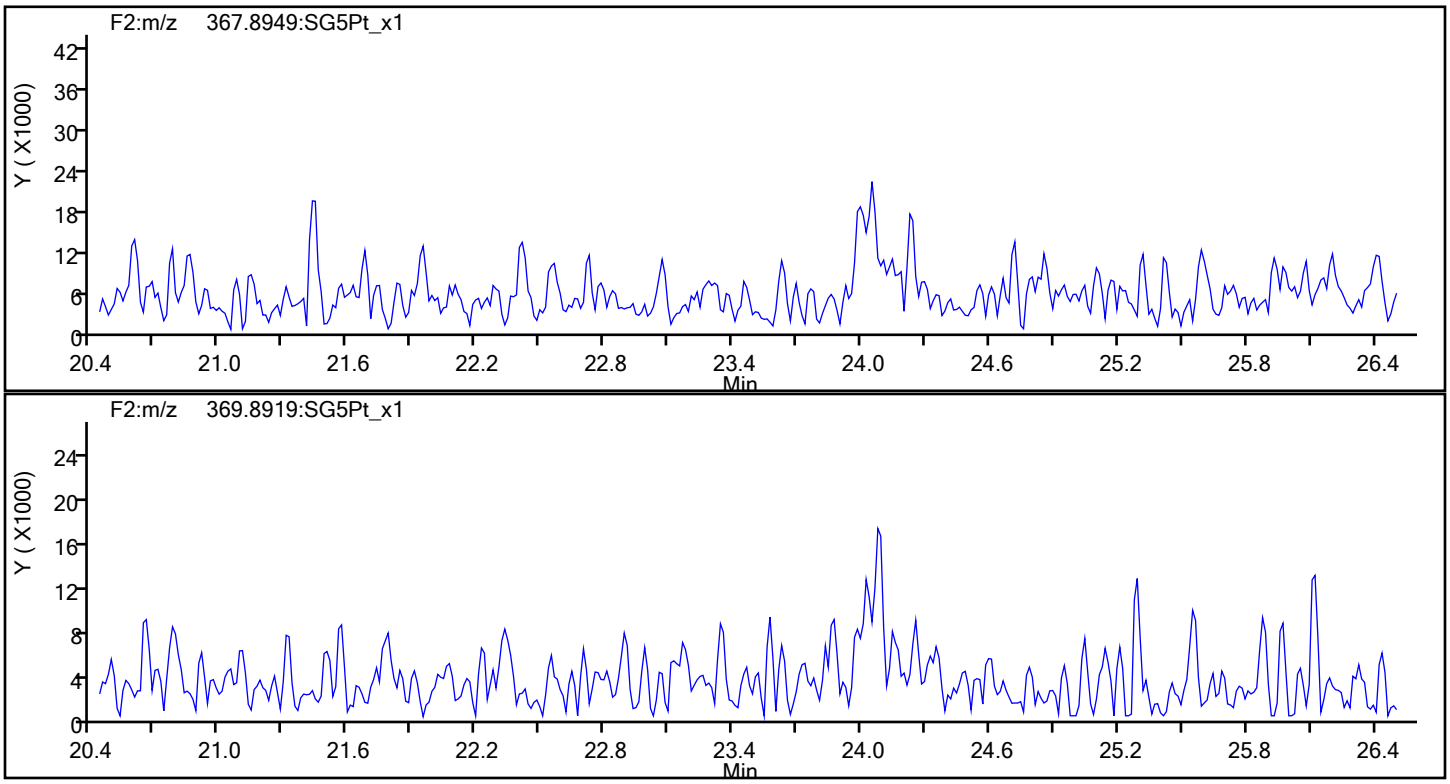
Column Type:	DB-5	Column Dia:	0.32 mm

PeCDD



PeCDD Standards



Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
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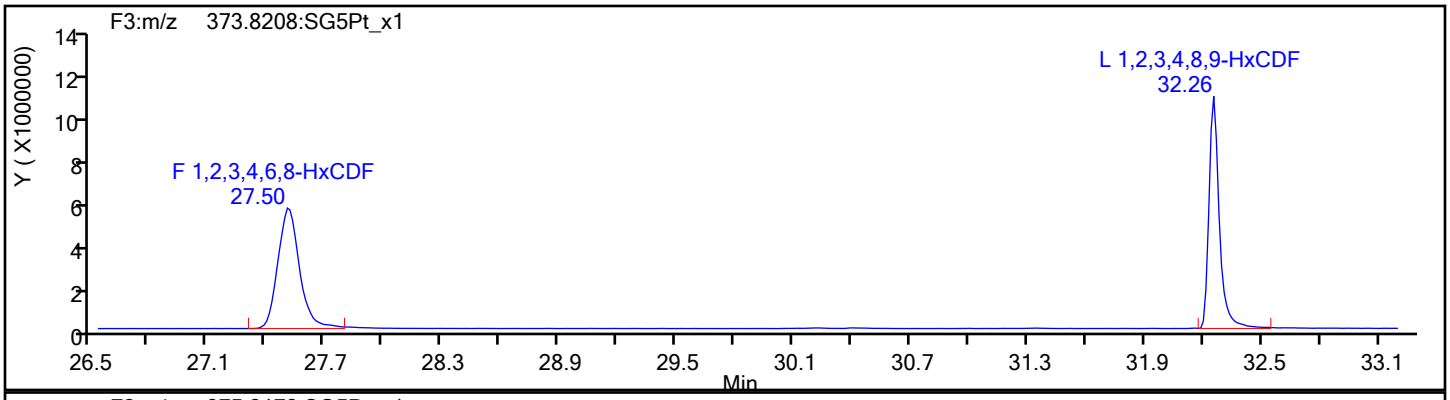
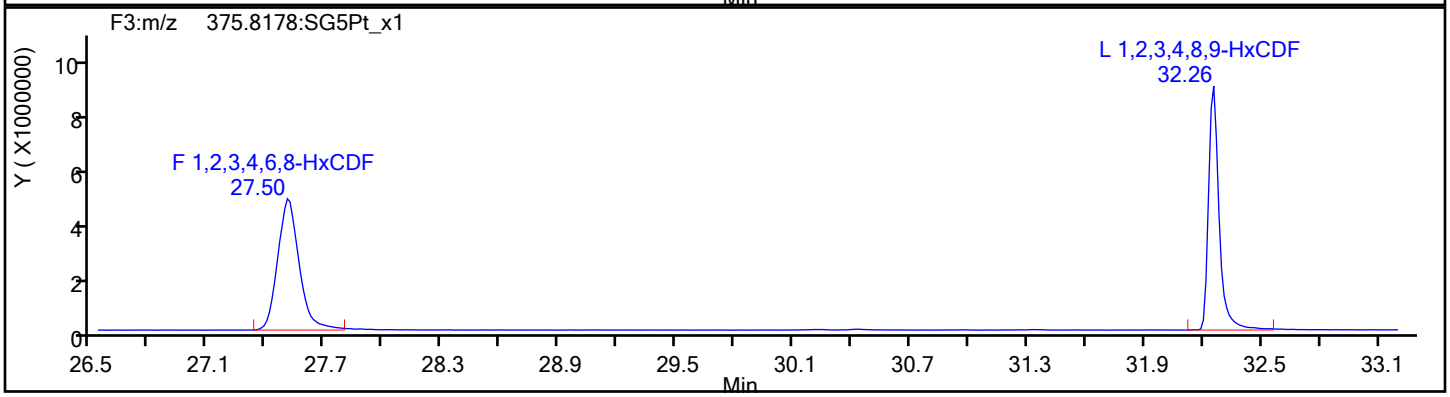
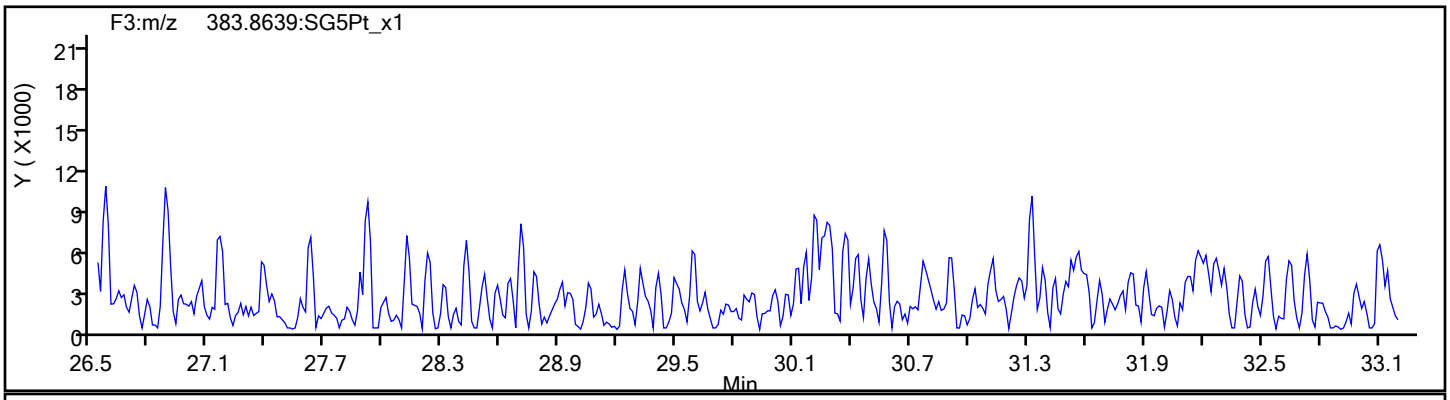
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

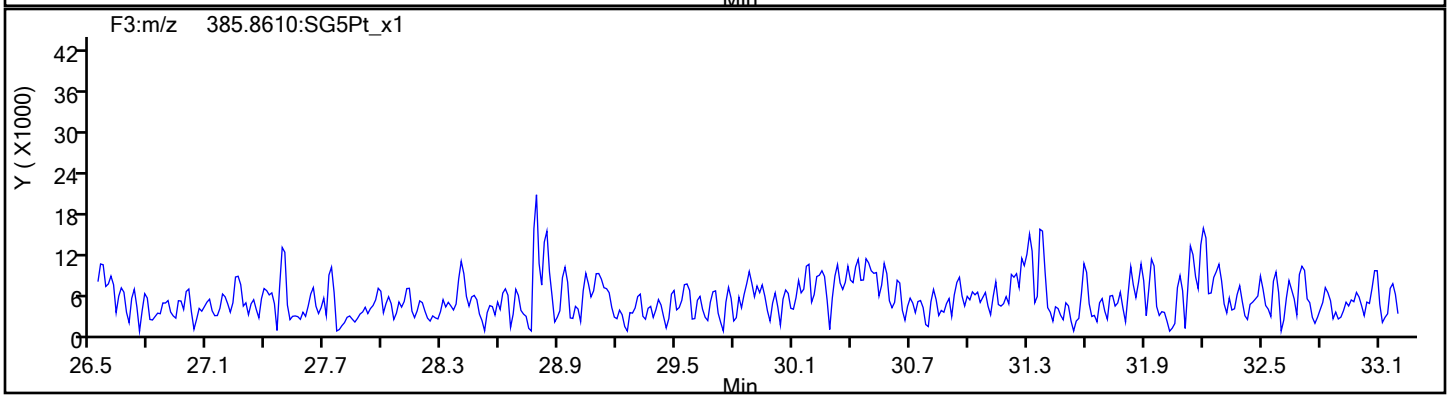
HxCDF





HxCDF Standards





Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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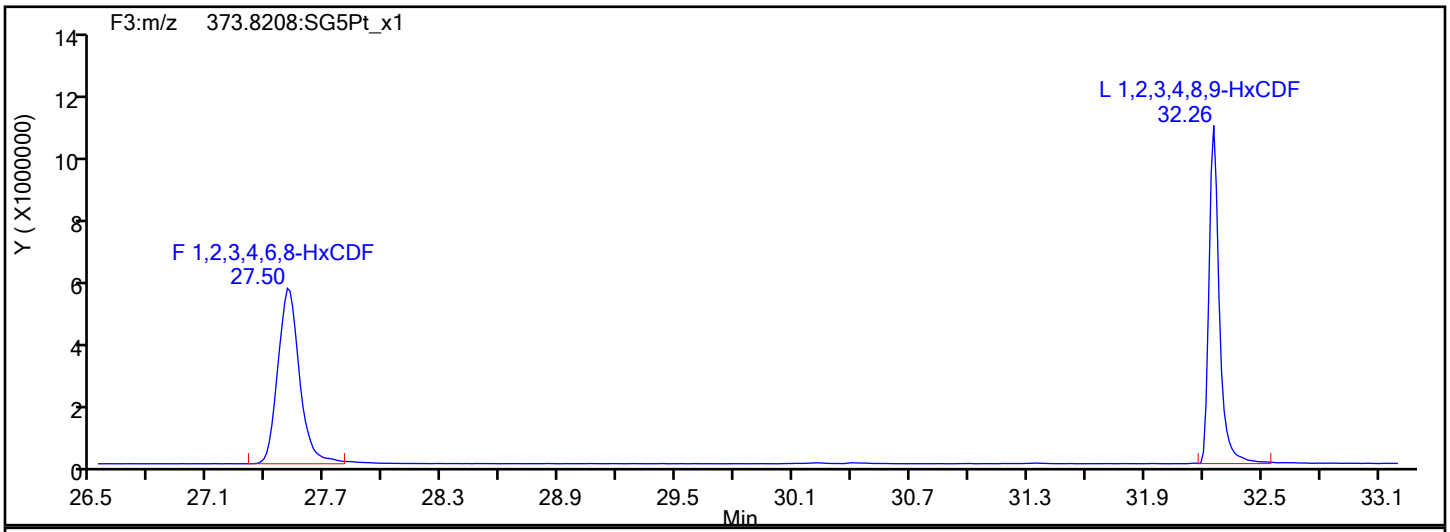
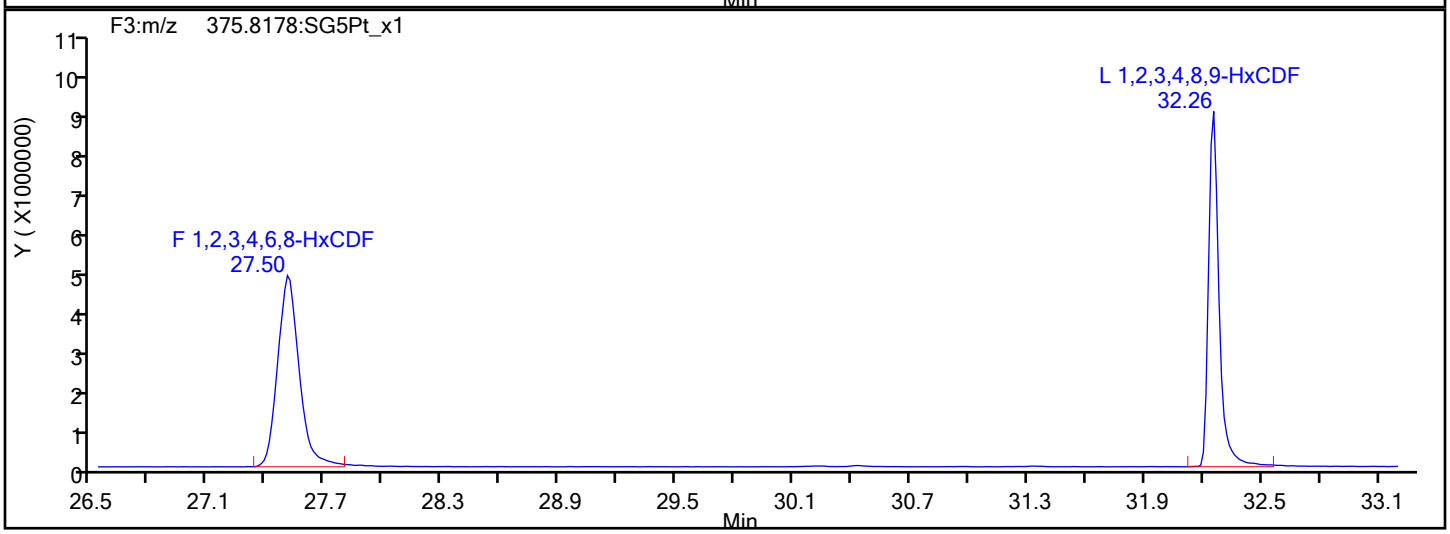
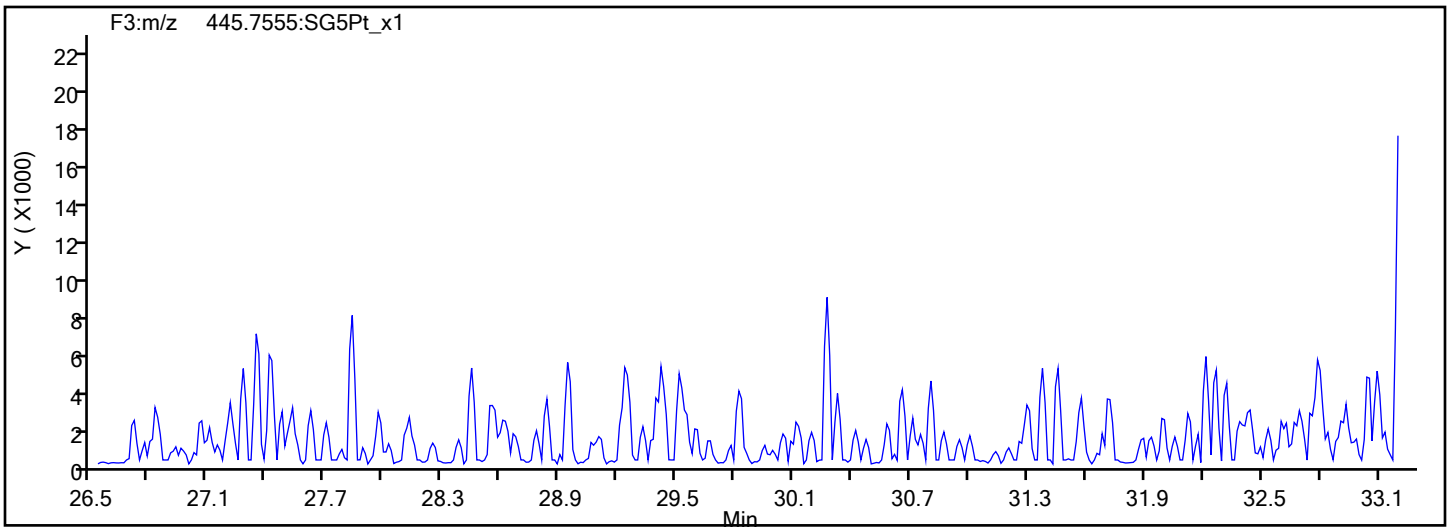
HxCDF





HxCDF Interference Mass

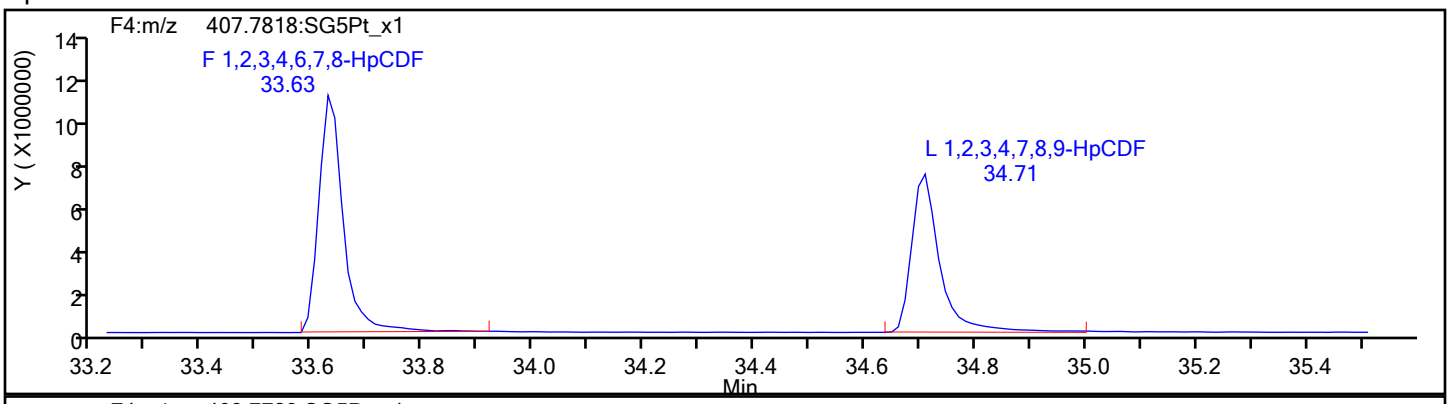


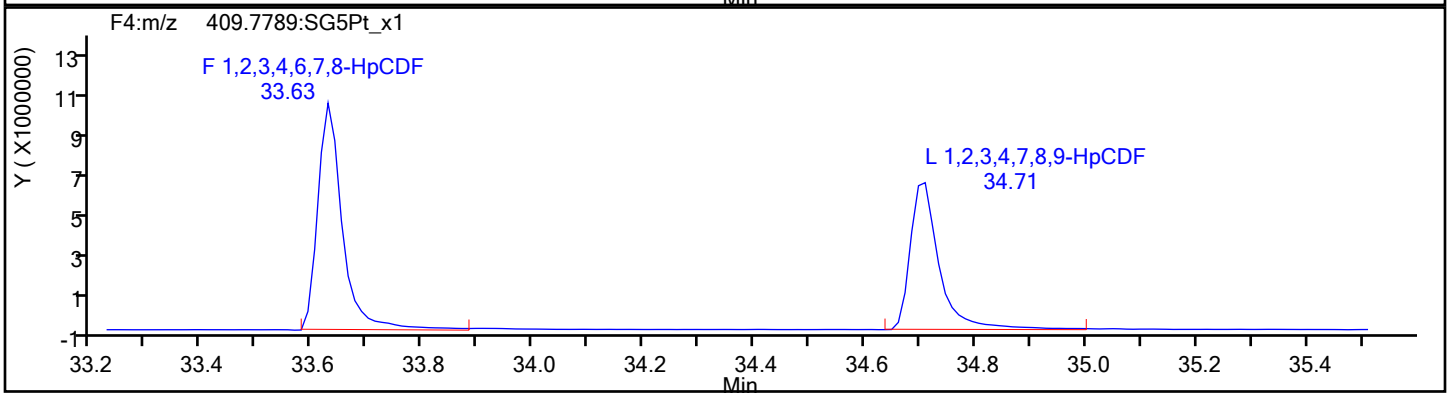
Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

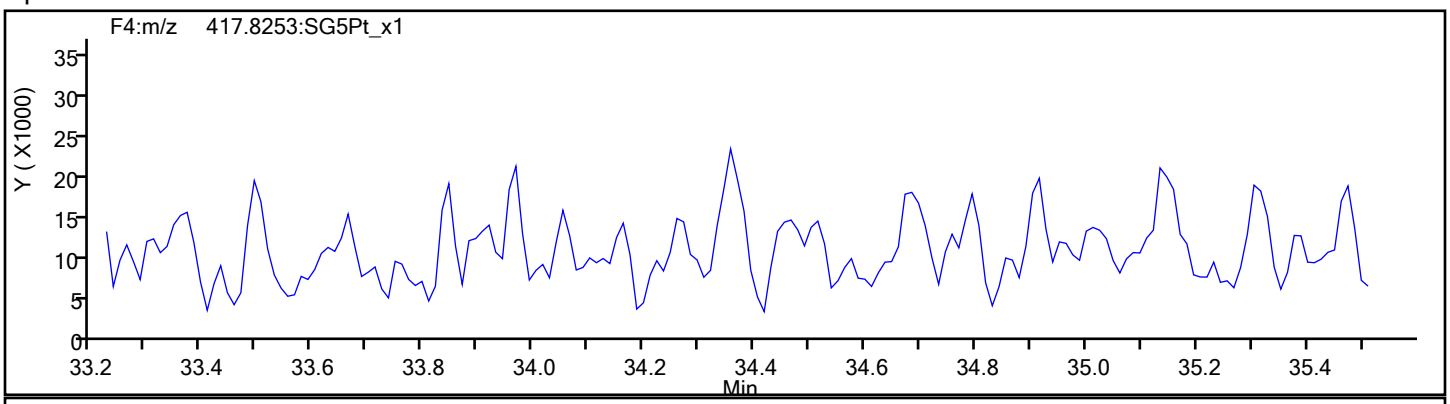
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

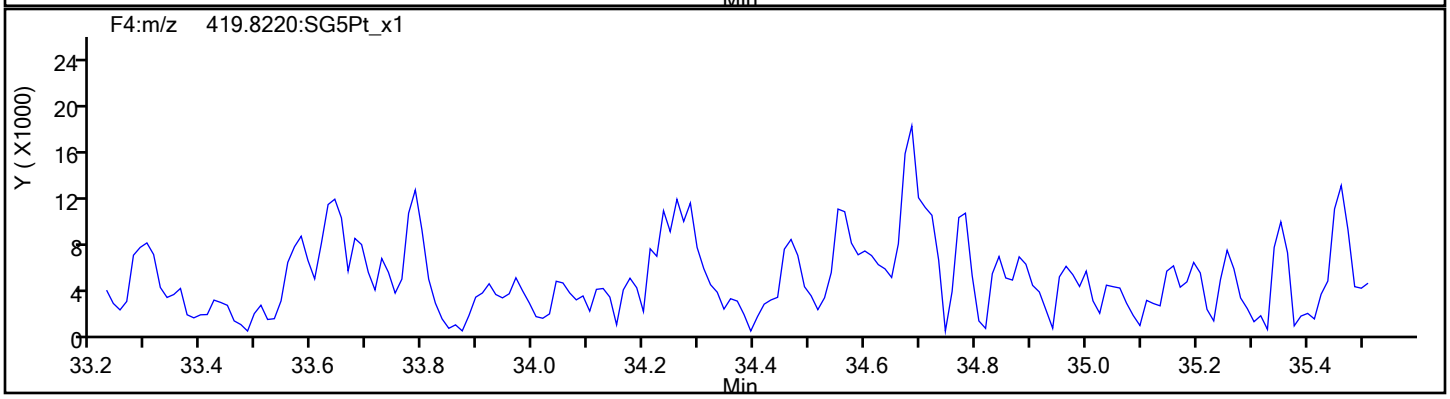
HpCDF





HpCDF Standards



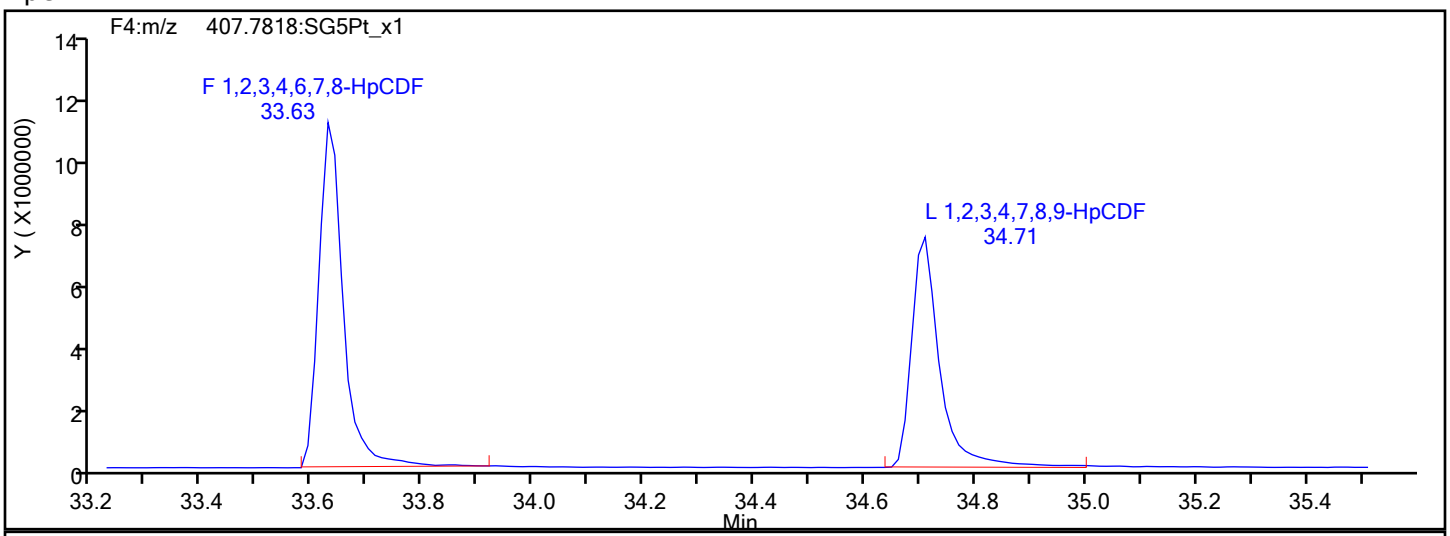


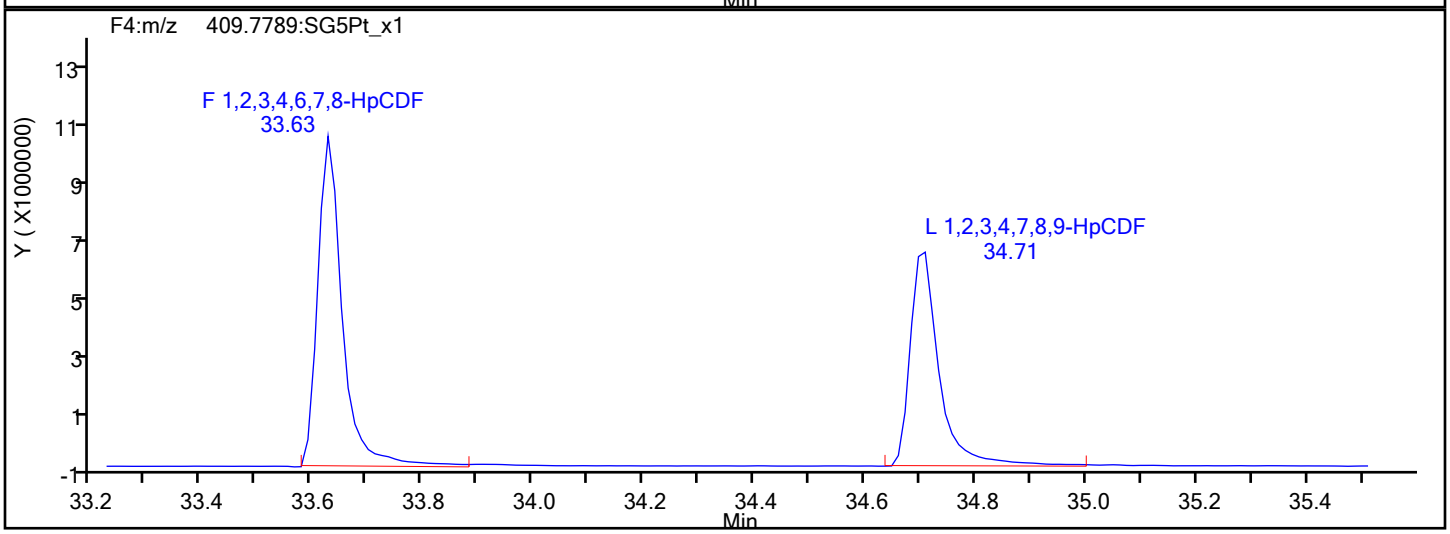
Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

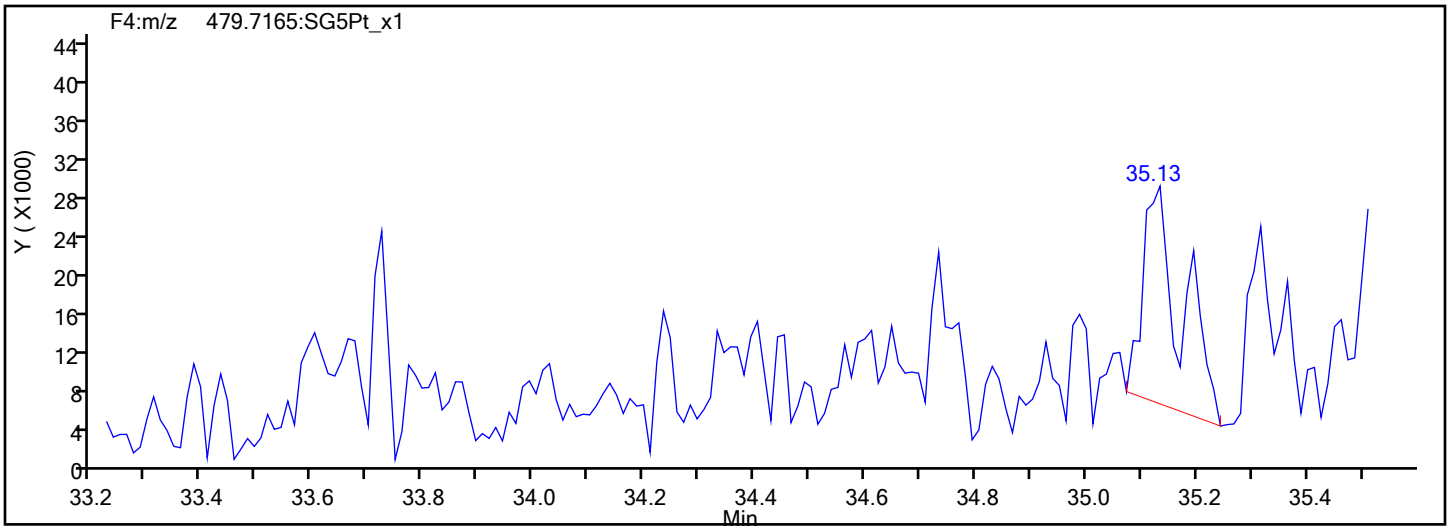
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

HpCDF





HpCDF Interference Mass

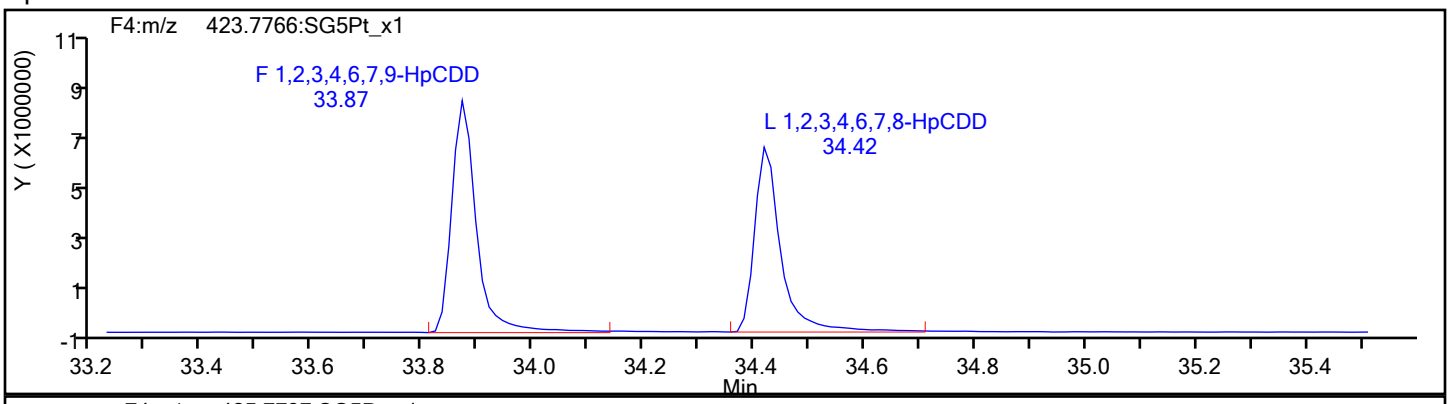


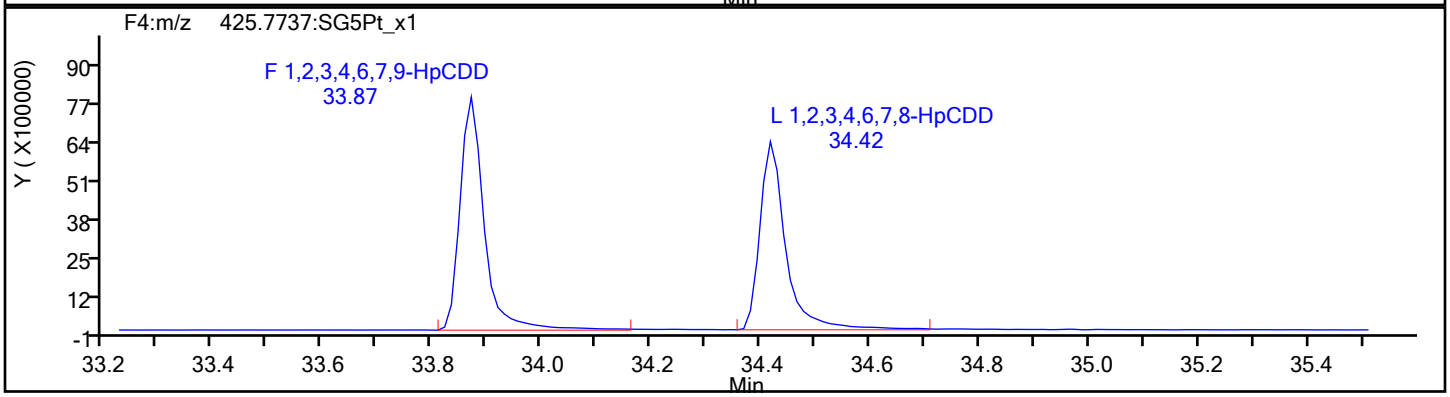
Report Date: 19-Dec-2019 22:35:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

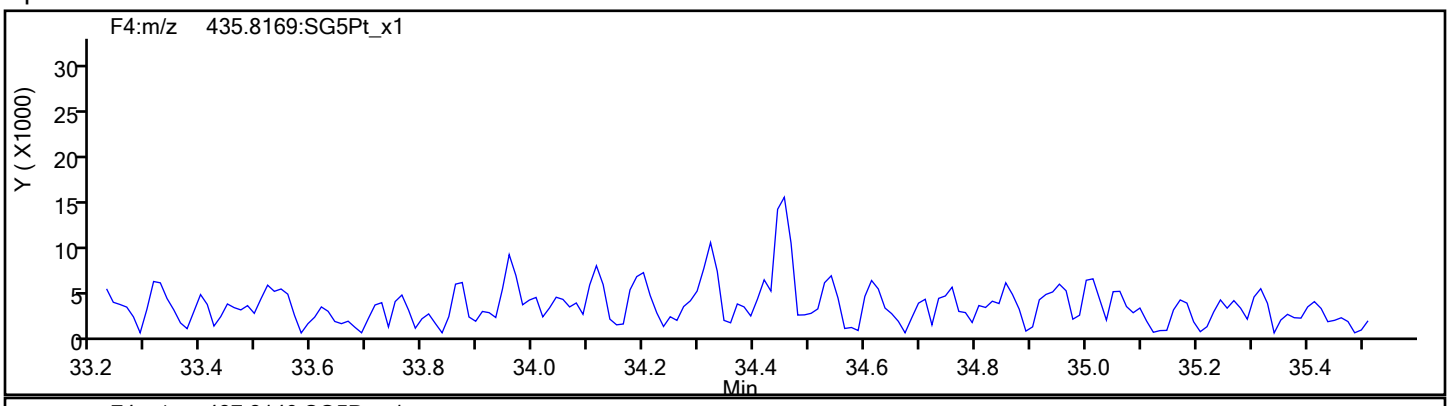
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm

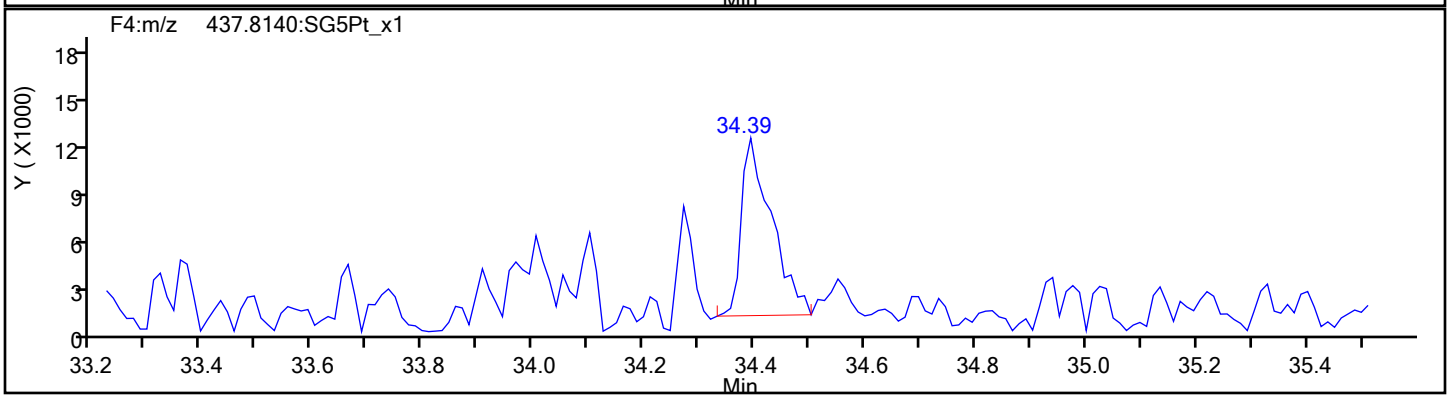
HpCDD





HpCDD Standards

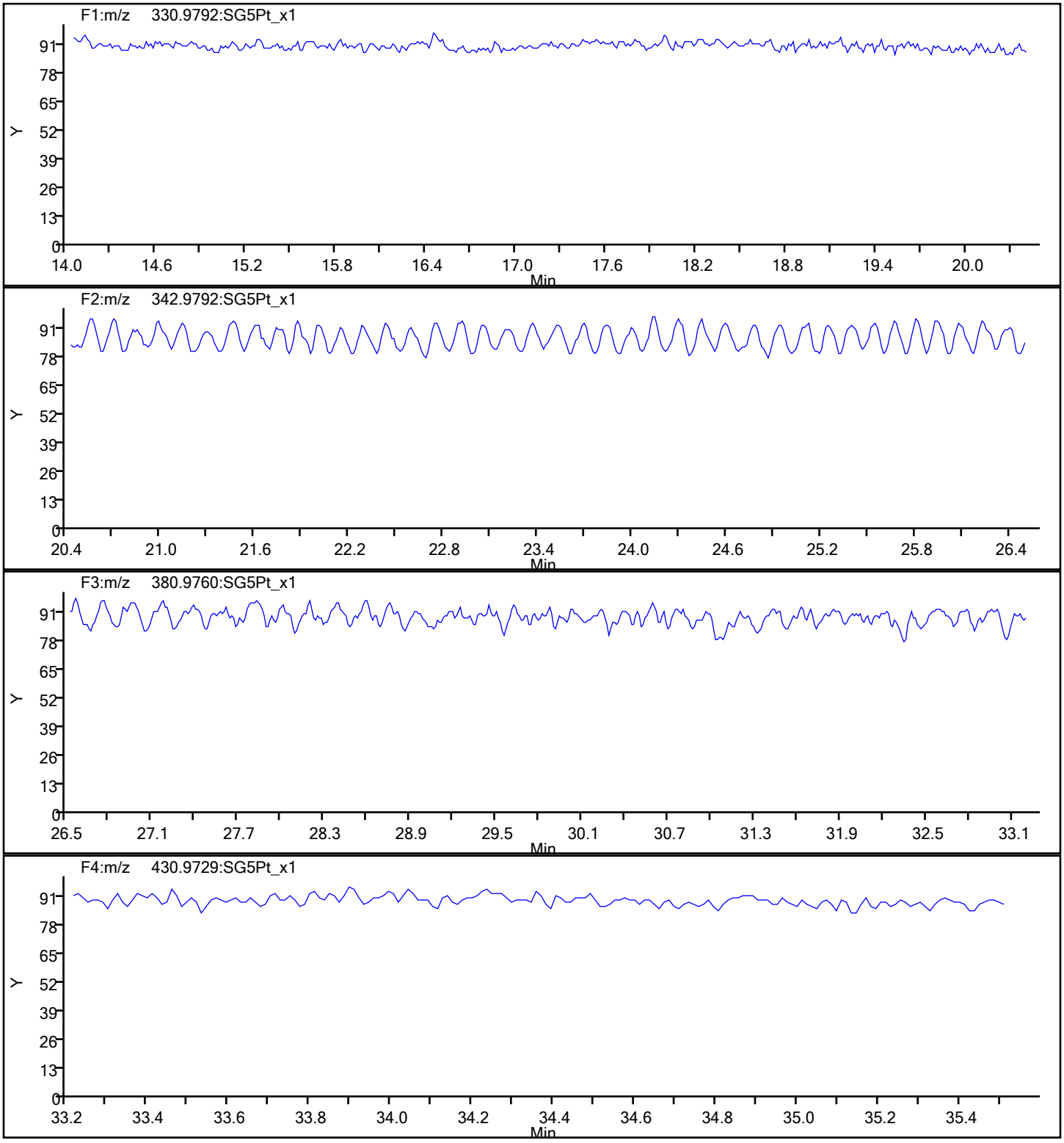




Report Date: 19-Dec-2019 22:35:11 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

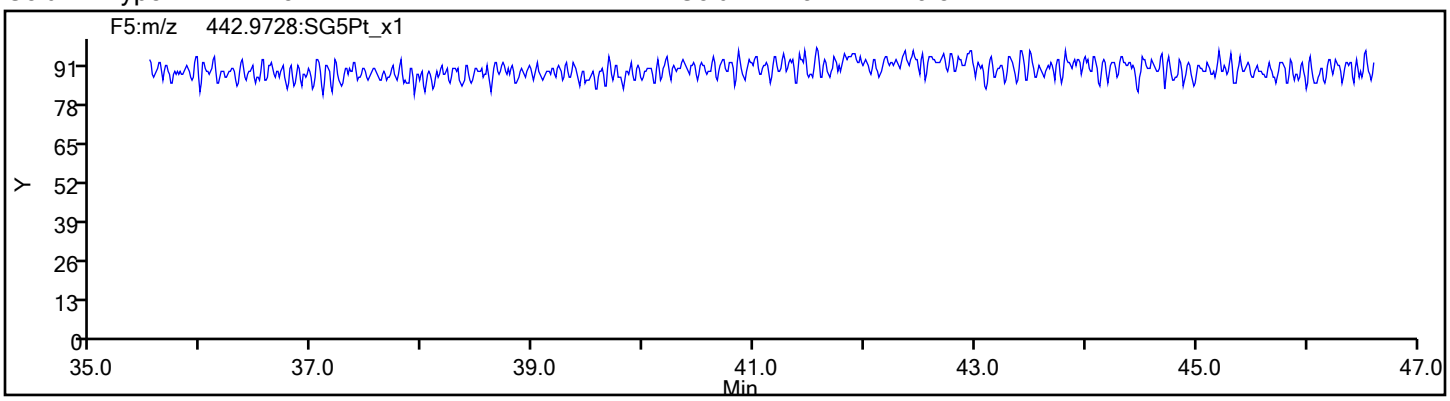
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 19-Dec-2019 22:35:11 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_1.d		
Injection Date:	19-Dec-2019 11:00:56	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	1
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-344942/1-A

Matrix: Sediment Lab File ID: 19DE193D5_4.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 13:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		1.0	0.098
51207-31-9	2,3,7,8-TCDF	ND		1.0	0.078
40321-76-4	1,2,3,7,8-PeCDD	ND		5.0	0.16
57117-41-6	1,2,3,7,8-PeCDF	ND		5.0	0.14
57117-31-4	2,3,4,7,8-PeCDF	ND		5.0	0.14
39227-28-6	1,2,3,4,7,8-HxCDD	ND		5.0	0.11
57653-85-7	1,2,3,6,7,8-HxCDD	ND		5.0	0.11
19408-74-3	1,2,3,7,8,9-HxCDD	ND		5.0	0.096
70648-26-9	1,2,3,4,7,8-HxCDF	ND		5.0	0.089
57117-44-9	1,2,3,6,7,8-HxCDF	ND		5.0	0.088
72918-21-9	1,2,3,7,8,9-HxCDF	ND		5.0	0.071
60851-34-5	2,3,4,6,7,8-HxCDF	ND		5.0	0.070
35822-46-9	1,2,3,4,6,7,8-HpCDD	0.458	J	5.0	0.076
67562-39-4	1,2,3,4,6,7,8-HpCDF	0.287	J	5.0	0.11
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.344	J	5.0	0.14
3268-87-9	OCDD	2.41	J	10	0.11
39001-02-0	OCDF	1.80	J	10	0.15
41903-57-5	Total TCDD	ND		1.0	0.098
30402-14-3	Total TCDF	ND		1.0	0.078
36088-22-9	Total PeCDD	ND		5.0	0.16
30402-15-4	Total PeCDF	ND		5.0	0.14
34465-46-8	Total HxCDD	ND		5.0	0.11
55684-94-1	Total HxCDF	ND		5.0	0.089
37871-00-4	Total HpCDD	0.593	J	5.0	0.076
38998-75-3	Total HpCDF	0.631	J	5.0	0.12

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-344942/1-A

Matrix: Sediment Lab File ID: 19DE193D5_4.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 13:23

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	60		25-164
89059-46-1	13C-2,3,7,8-TCDF	60		24-169
109719-79-1	13C-1,2,3,7,8-PeCDD	61		25-181
109719-77-9	13C-1,2,3,7,8-PeCDF	57		24-185
116843-02-8	13C-2,3,4,7,8-PeCDF	62		21-178
109719-80-4	13C-1,2,3,4,7,8-HxCDD	65		32-141
109719-81-5	13C-1,2,3,6,7,8-HxCDD	65		28-130
114423-98-2	13C-1,2,3,4,7,8-HxCDF	64		26-152
116843-03-9	13C-1,2,3,6,7,8-HxCDF	63		26-123
116843-04-0	13C-1,2,3,7,8,9-HxCDF	57		29-147
116843-05-1	13C-2,3,4,6,7,8-HxCDF	60		28-136
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	61		23-140
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	61		28-143
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	65		26-138
114423-97-1	13C-OCDD	64		17-157

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	100		35-197

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Lims ID: MB 320-344942/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Dec-2019 13:23:46 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-344942/1-A MB 320-344942/1-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:12:08

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.597	208024630	0.78	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.098	177530565	0.80	1.4157	60.3	60.3	0.1798	0.1798	60.28	
2,3,7,8-TCDF	17.128						0.0391	0.0391		
A Non-2,3,7,8-sub-TCDF	16.811						0.0391	0.0391		
S Total TCDF							0.0391	0.0391		
D 13C-2,3,7,8-TCDD	17.793	121146975	0.77	0.9751	59.7	59.7	0.2669	0.2669	59.72	
2,3,7,8-TCDD	17.823						0.0491	0.0491		
$ 37Cl4-2,3,7,8-TCDD	17.809	112067664		1.3480	40.0	40.0	0.0488	0.0488	99.91	
A Non-2,3,7,8-sub-TCDD	17.249	54319	0.77	1.0477	0.1621	0.0428	0.0491	0.0491		RQ
S Total TCDD					0.1621	0.0428	0.0491	0.0491		RQ
D 13C-1,2,3,7,8-PeCDF	22.018	140190739	1.58	1.1786	57.2	57.2	0.1992	0.1992	57.18	
1,2,3,7,8-PeCDF	22.045						0.0688	0.0688		
D 13C-2,3,4,7,8-PeCDF	23.341	145449510	1.58	1.1308	61.8	61.8	0.2076	0.2076	61.83	
2,3,4,7,8-PeCDF	23.355						0.0714	0.0714		
A F1 PeCDFs	19.774						0.0631	0.0631		
A Non-2,3,7,8-sub-PeCDF	22.858						0.0701	0.0701		
S Total PeCDF							0.0714	0.0714		
D 13C-1,2,3,7,8-PeCDD	24.050	96066755	1.65	0.7572	61.0	61.0	0.1110	0.1110	60.99	
1,2,3,7,8-PeCDD	24.077						0.0788	0.0788		
A Non-2,3,7,8-sub-PeCDD	22.973						0.0788	0.0788		
S Total PeCDD							0.0788	0.0788		
D 13C-1,2,3,4,7,8-HxCDF	30.193	132542629	0.53	1.1043	63.9	63.9	0.2761	0.2761	63.93	
1,2,3,4,7,8-HxCDF	30.206						0.0443	0.0443		
D 13C-1,2,3,6,7,8-HxCDF	30.406	135386439	0.52	1.1470	62.9	62.9	0.2658	0.2658	62.86	
1,2,3,6,7,8-HxCDF	30.420						0.0440	0.0440		
D 13C-2,3,4,6,7,8-HxCDF	31.298	121853305	0.52	1.0769	60.3	60.3	0.2832	0.2832	60.27	
2,3,4,6,7,8-HxCDF	31.325						0.0348	0.0348		
D 13C-1,2,3,7,8,9-HxCDF	32.151	107551124	0.53	1.0115	56.6	56.6	0.3015	0.3015	56.63	
1,2,3,7,8,9-HxCDF	32.164						0.0356	0.0356		
A Non-2,3,7,8-sub-HxCDF	29.880						0.0392	0.0392		
S Total HxCDF							0.0443	0.0443		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	187758460	1.29	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	96890777	1.27	0.7962	64.8	64.8	0.3181	0.3181	64.81	
1,2,3,4,7,8-HxCDD	31.525						0.0535	0.0535		
D 13C-1,2,3,6,7,8-HxCDD	31.618	106215395	1.30	0.8720	64.9	64.9	0.2904	0.2904	64.87	
1,2,3,6,7,8-HxCDD	31.631						0.0550	0.0550		
1,2,3,7,8,9-HxCDD	31.977						0.0480	0.0480		
A Non-2,3,7,8-sub-HxCDD	30.519						0.0520	0.0520		
S Total HxCDD							0.0550	0.0550		
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	86085651	0.43	0.7577	60.5	60.5	0.8267	0.8267	60.51	
1,2,3,4,6,7,8-HpCDF	33.640	182769	1.04	1.4804	0.1434	0.1434	0.0536	0.0536		M
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	85177597	0.44	0.6941	65.4	65.4	0.9023	0.9023	65.36	
1,2,3,4,7,8,9-HpCDF	34.697	189375	1.14	1.2933	0.1719	0.1719	0.0694	0.0694		M
A Non-2,3,7,8-sub-HpCDF	34.169						0.0607	0.0607		
S Total HpCDF					0.3153	0.3153	0.0615	0.0615		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	80944747	1.12	0.7058	61.1	61.1	0.3865	0.3865	61.08	
1,2,3,4,6,7,8-HpCDD	34.418	195355	0.98	1.0535	0.2291	0.2291	0.0380	0.0380		M
A Non-2,3,7,8-sub-HpCDD	34.144	57566	1.04	1.0535	0.0757	0.0675	0.0380	0.0675		RQM
S Total HpCDD					0.3048	0.2966	0.0380	0.0380		RQ
D 13C-OCDD	36.734	110152626	0.91	0.4603	127.5	127.5	0.1794	0.1794	63.73	
OCDF	36.830	692902	0.81	1.3945	0.9022	0.9022	0.0751	0.0751		
OCDD	36.746	754356	0.83	1.1362	1.205	1.205	0.0526	0.0526		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- Q - EMPC-Estimated Max. Possible Conc.

Review Flags
- M - Manually Integrated

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Lims ID: MB 320-344942/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Dec-2019 13:23:46 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-344942/1-A MB 320-344942/1-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:12:08

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.597	17.612	-1		91437219	22509727	22599	56497	996		
333.9339	17.597	17.612	-1		116587411	28167841	30149	75372	934	0.78(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.098	17.113	-1	0.972	78933312	19455051	24495	61237	794		
317.9389	17.098	17.113	-1	0.972	98597253	24874660	27092	67730	918	0.80(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128						2392	5980			
305.8987	17.128						4190	10475			
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						2392	5980			
305.8987	16.811						4190	10475			
13C-2,3,7,8-TCDD											
331.9368	17.793	17.793	0	1.011	52611153	12438168	22599	56497	550		
333.9339	17.793	17.793	0	1.011	68535822	16525849	30149	75372	548	0.77(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823						4298	10745			
321.8936	17.823						1667	4167			
37Cl4-2,3,7,8-TCDD											
327.8847	17.809	17.823	-1	1.012	112067664	27588218	13333	33332	2069		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	17.098	17.249	-9	0.961	175022	38298	4298	10745	9		
	Empc Correction				23630	4975	4298	10745	1		
321.8936	17.098	17.249	-9	0.961	30689	6462	1667	4167	4	5.70(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.251	85769267	14768351	28432	71080	519		
353.8970	22.018	22.018	0	1.251	54421472	9616492	19152	47880	502	1.58(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.045						1653	4132			
341.8567	22.045						5263	13157			
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.326	88977918	14275055	28432	71080	502		
353.8970	23.341	23.341	0	1.326	56471592	8975163	19152	47880	469	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355						1653	4132			
341.8567	23.355						5263	13157			
A F1 PeCDFs											
339.8597	19.774						1414	3535			
341.8567	19.774						4810	12025			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						1653	4132			
341.8567	22.858						5263	13157			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.367	59805327	8883939	9267	23167	959		
369.8919	24.050	24.050	0	1.367	36261428	5512876	7772	19430	709	1.65(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077						3526	8815			
357.8516	24.077						1401	3502			
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.973						3526	8815			
357.8516	22.973						1401	3502			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	46178846	7541412	18251	45627	413		
385.8610	30.193	30.193	0	0.945	86363783	13976936	36665	91662	381	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.206						2519	6297			
375.8178	30.206						1853	4632			
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	46149173	7283129	18251	45627	399		
385.8610	30.393	30.406	-1	0.951	89237266	14393166	36665	91662	393	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.420						2519	6297			
375.8178	30.420						1853	4632			
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.298	31.312	-1	0.979	41647365	9154418	18251	45627	502		
385.8610	31.312	31.312	0	0.980	80205940	17597489	36665	91662	480	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325						2519	6297			
375.8178	31.325						1853	4632			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.151	32.151	0	1.006	37071623	9057093	18251	45627	496		
385.8610	32.151	32.151	0	1.006	70479501	17114569	36665	91662	467	0.53(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.164						2519	6297			
375.8178	32.164						1853	4632			
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						2519	6297			
375.8178	29.880						1853	4632			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		105922229	25450136	23234	58085	1095		
403.8529	31.964	31.964	0		81836231	19575033	22374	55935	875	1.29(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	54169095	13394792	23234	58085	577		
403.8529	31.511	31.511	0	0.986	42721682	10616220	22374	55935	474	1.27(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.525						2006	5015			
391.8127	31.525						3614	9035			
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	59953695	14037428	23234	58085	604		
403.8529	31.618	31.618	0	0.989	46261700	10456669	22374	55935	467	1.30(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.631						2006	5015			
391.8127	31.631						3614	9035			
1,2,3,7,8,9-HxCDD											
389.8157	31.977						2006	5015			
391.8127	31.977						3614	9035			
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.519						2006	5015			
391.8127	30.519						3614	9035			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	25973825	8363723	37517	93792	223		
419.8220	33.616	33.628	-1	1.052	60111826	19160094	75289	188222	254	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											M
407.7818	33.640	33.628	1	1.001	93184	28672	6350	15875	5		M
409.7789	33.628	33.628	0	1.000	89585	27020	2379	5947	11	1.04(0.88-1.20)	M
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	25836587	7383025	37517	93792	197		
419.8220	34.697	34.697	0	1.086	59341010	16947236	75289	188222	225	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											M
407.7818	34.697	34.709	-1	1.000	100842	27440	6350	15875	4		M
409.7789	34.697	34.709	-1	1.000	88533	25489	2379	5947	11	1.14(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						6350	15875			
409.7789	34.169						2379	5947			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.076	42696754	12724846	26554	66385	479		
437.8140	34.405	34.418	-1	1.076	38247993	11512702	22583	56457	510	1.12(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											M
423.7766	34.418	34.418	0	1.000	96702	27150	2064	5160	13		
425.7737	34.418	34.418	0	1.000	98653	27216	1820	4550	15	0.98(0.88-1.20)	M
A Non-2,3,7,8-sub-HpCDD											RQM
423.7766	33.871	34.144	-16	0.984	36322	12655	2064	5160	6		M
	Empc Correction				29347	9237	2064	5160	4		
425.7737	33.871	34.144	-16	0.984	28219	8882	1820	4550	5	1.29(0.88-1.20)	M
13C-OCDD											
469.7779	36.734	36.734	0	1.149	52630527	13346096	7004	17510	1905		
471.7750	36.734	36.734	0	1.149	57522099	14893745	7866	19665	1893	0.91(0.76-1.02)	
OCDF											
441.7428	36.830	36.830	0	1.003	310234	78339	2141	5352	37		
443.7399	36.830	36.830	0	1.003	382668	82040	3778	9445	22	0.81(0.76-1.02)	
OCDD											
457.7377	36.746	36.746	0	1.000	342645	92369	1898	4745	49		
459.7348	36.746	36.746	0	1.000	411711	98714	1477	3692	67	0.83(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Review Flags

M - Manually Integrated

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Lims ID: MB 320-344942/1-A
Client ID:
Inject. Date: 19-Dec-2019 13:23:46 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 4

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	121146975	28964017

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	121146975	28964017

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.098	175022	38298	30689	6462	0.1621	5.70	RQ
17.098	23630	4975	30689	6462	0.0428		Empc Correction
Signal Totals:							
	23630	4975	30689	6462			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	205711	44760				5.70	RQ
	54319	11437					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1621 = (205711 * 100.000) / (121146975 * 1.048)
Empc Amount: 0.0428 = (54319 * 100.000) / (121146975 * 1.048)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Lims ID: MB 320-344942/1-A
Client ID:
Inject. Date: 19-Dec-2019 13:23:46 Dil. Factor: 1.0000
Sample Type: MB, Method Blank
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 4

Non-2,3,7,8-sub-HpCDD, RT: 34.144

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
1,2,3,4,6,7,8-HpCDD	1.054	D 13C-1,2,3,4,6,7,8-HpCDD	100.000	80944747	24237548

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.054		100.000	80944747	24237548

Sum the Uncalibrated Results

RT	423.7766 Area	423.7766 Height	425.7737 Area	425.7737 Height	Amount	Ratio	Flags
33.871	36322	12655	28219	8882	0.0757	1.29	RQM
33.871	29347	9237	28219	8882	0.0675		Empc Correction
Signal Totals:							
	29347	9237	28219	8882			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	64541	21537				1.29	RQM
	57566	18119					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.0757 = (64541 * 100.000) / (80944747 * 1.054)
Empc Amount: 0.0675 = (57566 * 100.000) / (80944747 * 1.054)

QC Flag Legend

Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

Review Flags
M - Manually Integrated

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

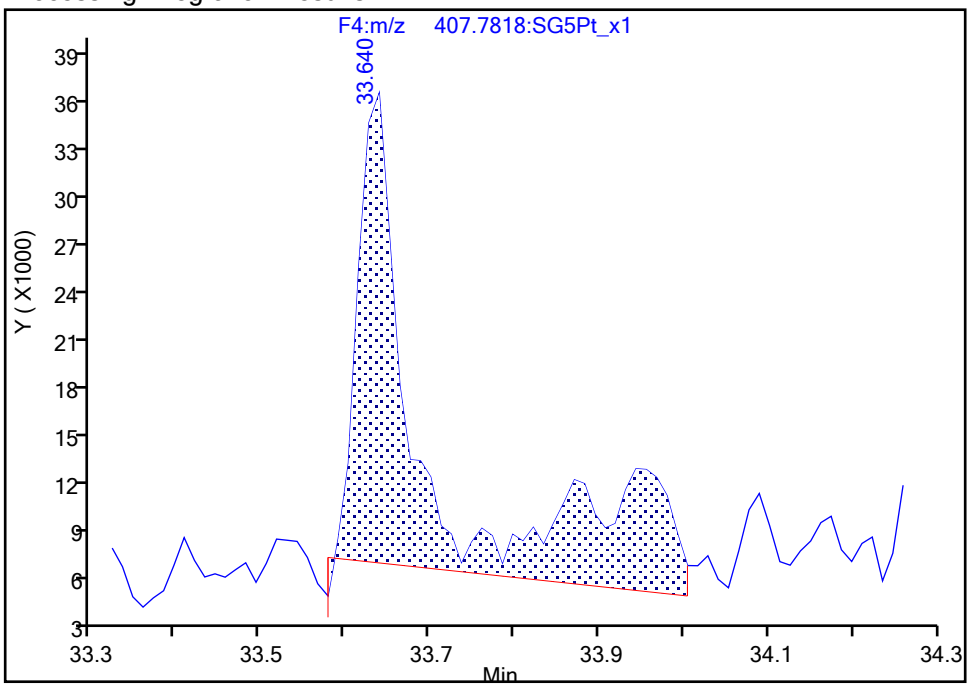
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Injection Date: 19-Dec-2019 13:23:46 Instrument ID: 3D5
Lims ID: MB 320-344942/1-A
Client ID:
Operator ID: AJS ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F4:HRSIR

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 1

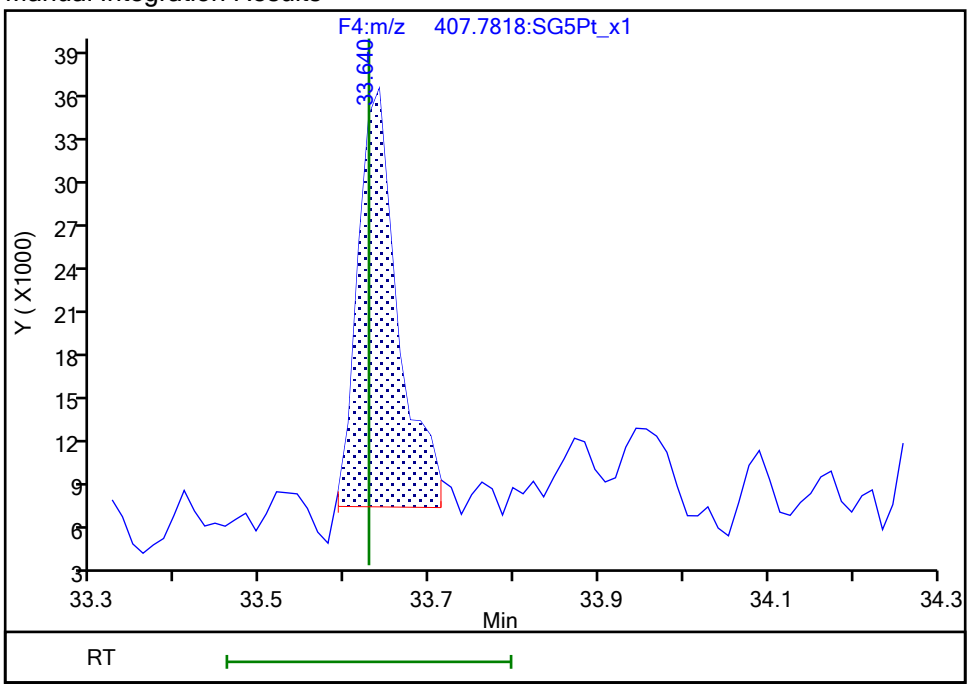
Processing Integration Results

RT: 33.64
Area: 165794
Amount: 0.247030
Amount Units: pg/ul



Manual Integration Results

RT: 33.64
Area: 93184
Amount: 0.143419
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:10:59
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

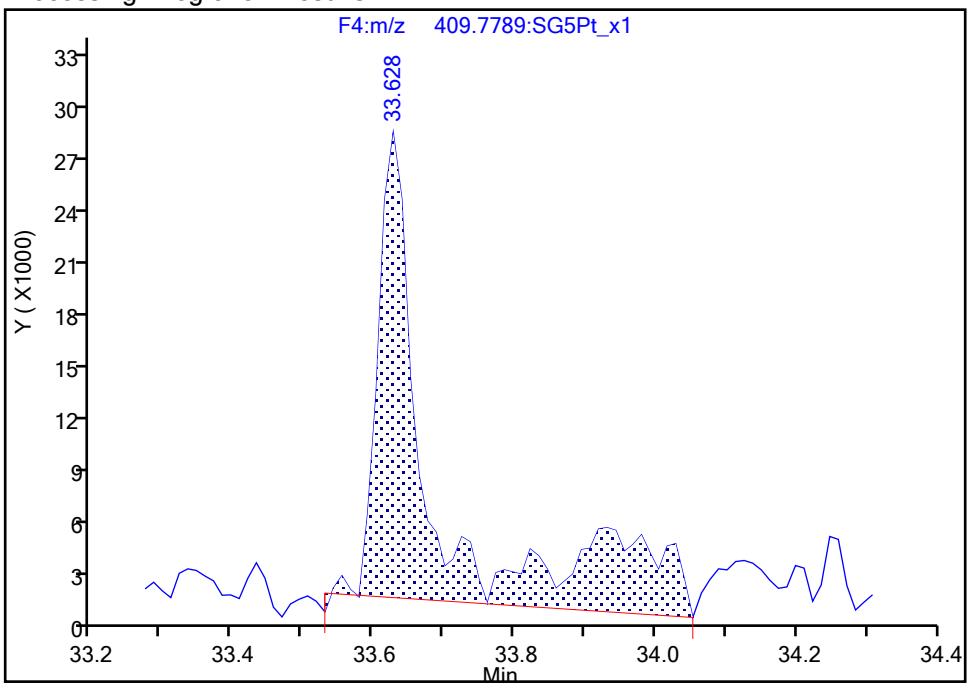
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Injection Date: 19-Dec-2019 13:23:46 Instrument ID: 3D5
Lims ID: MB 320-344942/1-A
Client ID:
Operator ID: AJS ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F4:HRSIR

1,2,3,4,6,7,8-HpCDF, CAS: 67562-39-4

Signal: 2

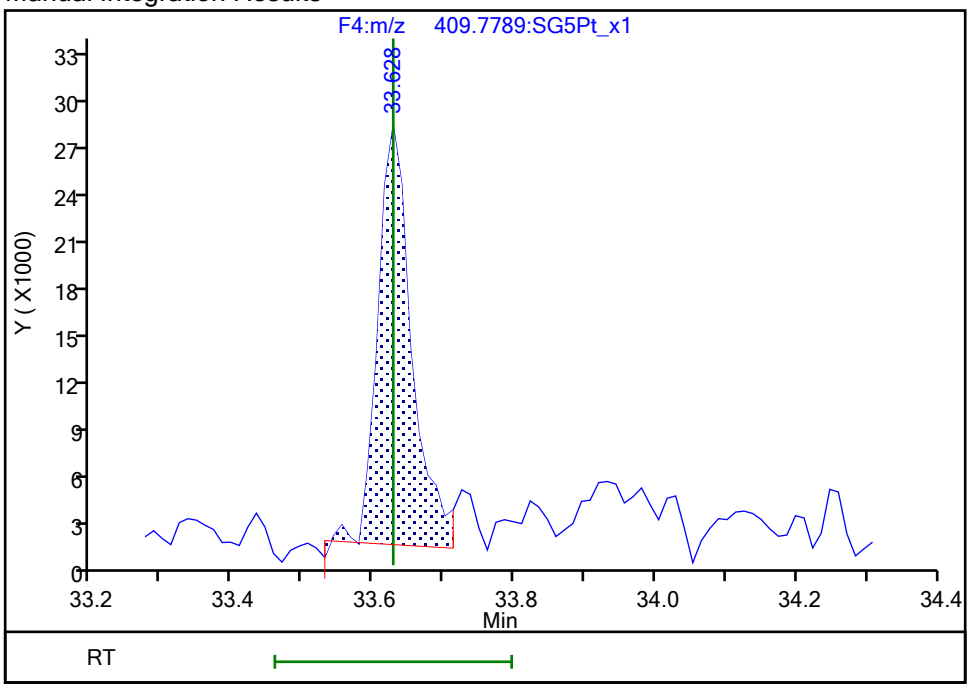
Processing Integration Results

RT: 33.63
Area: 149015
Amount: 0.247030
Amount Units: pg/ul



Manual Integration Results

RT: 33.63
Area: 89585
Amount: 0.143419
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:11:01
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

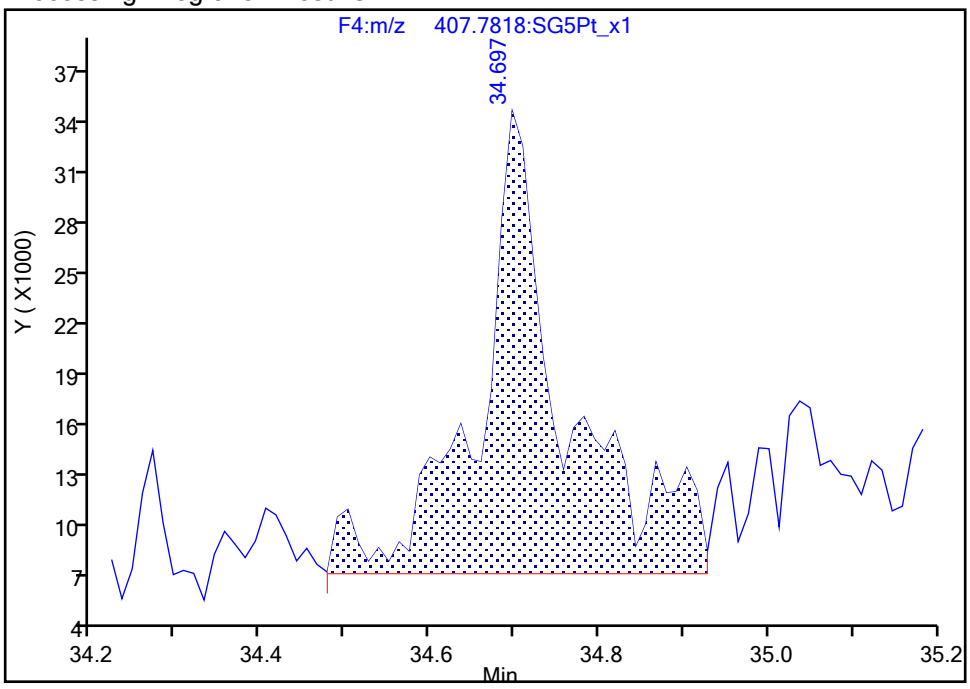
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d				
Injection Date:	19-Dec-2019 13:23:46	Instrument ID:	3D5		
Lims ID:	MB 320-344942/1-A				
Client ID:					
Operator ID:	AJS	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 1

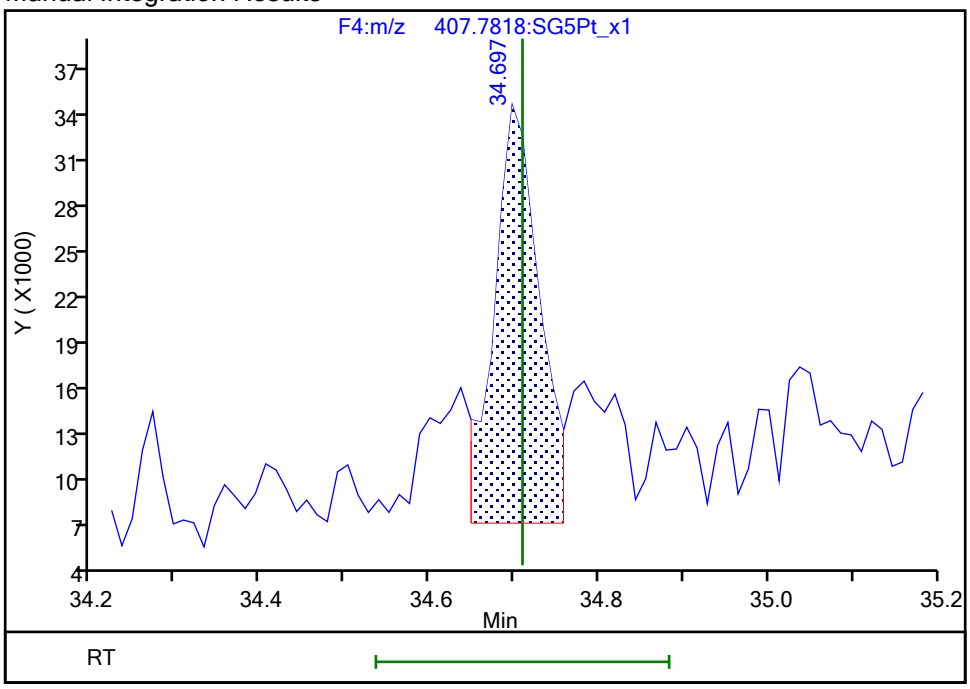
Processing Integration Results

RT: 34.70
Area: 201497
Amount: 0.271129
Amount Units: pg/ul



Manual Integration Results

RT: 34.70
Area: 100842
Amount: 0.171909
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:11:18

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

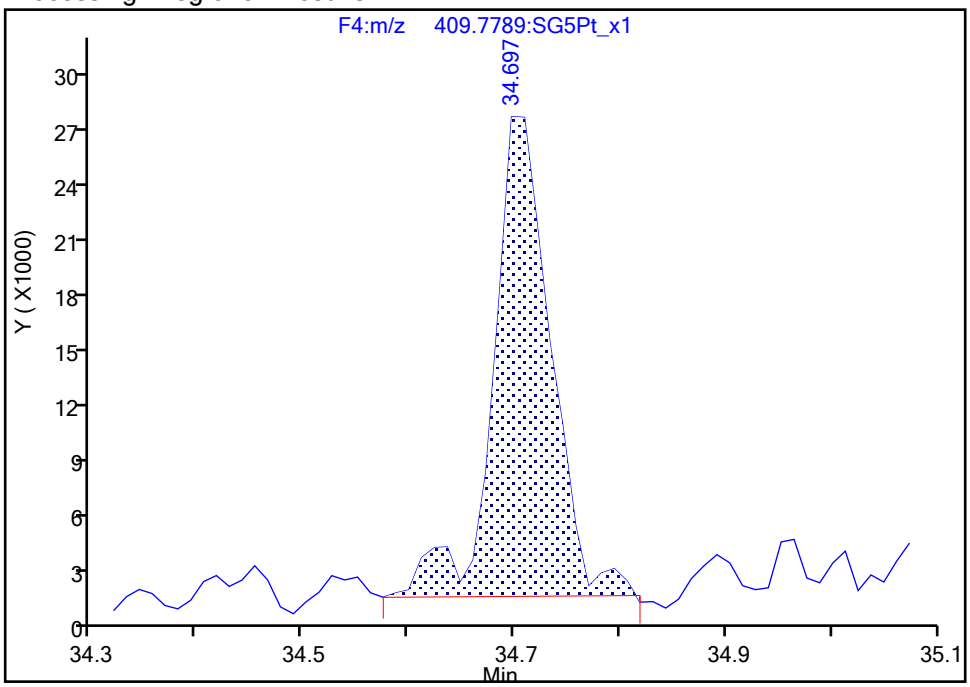
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Injection Date: 19-Dec-2019 13:23:46 Instrument ID: 3D5
Lims ID: MB 320-344942/1-A
Client ID:
Operator ID: AJS ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F4:HRSIR

1,2,3,4,7,8,9-HpCDF, CAS: 55673-89-7

Signal: 2

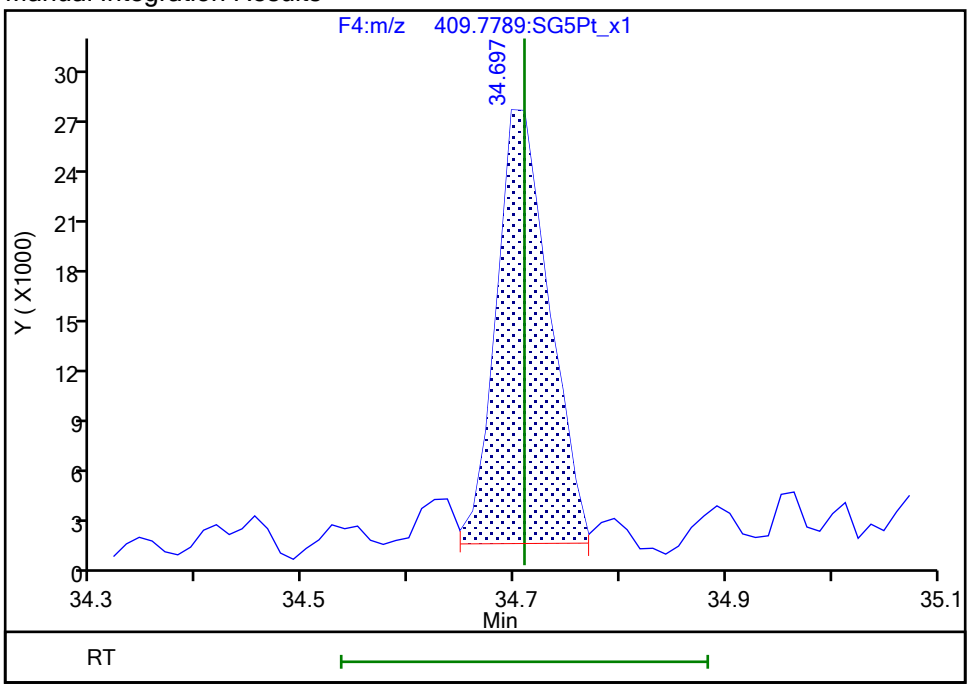
Processing Integration Results

RT: 34.70
Area: 97178
Amount: 0.271129
Amount Units: pg/ul



Manual Integration Results

RT: 34.70
Area: 88533
Amount: 0.171909
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:11:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

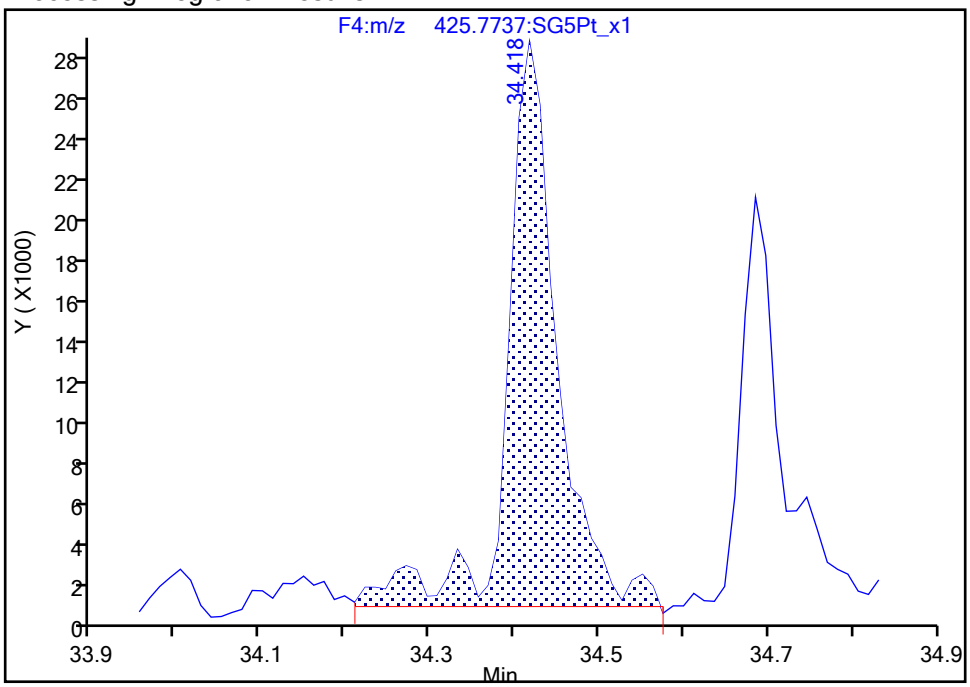
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Injection Date: 19-Dec-2019 13:23:46 Instrument ID: 3D5
Lims ID: MB 320-344942/1-A
Client ID:
Operator ID: AJS ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL
Column: DB-5 (0.32 mm) Detector F4:HRSIR

1,2,3,4,6,7,8-HpCDD, CAS: 35822-46-9

Signal: 2

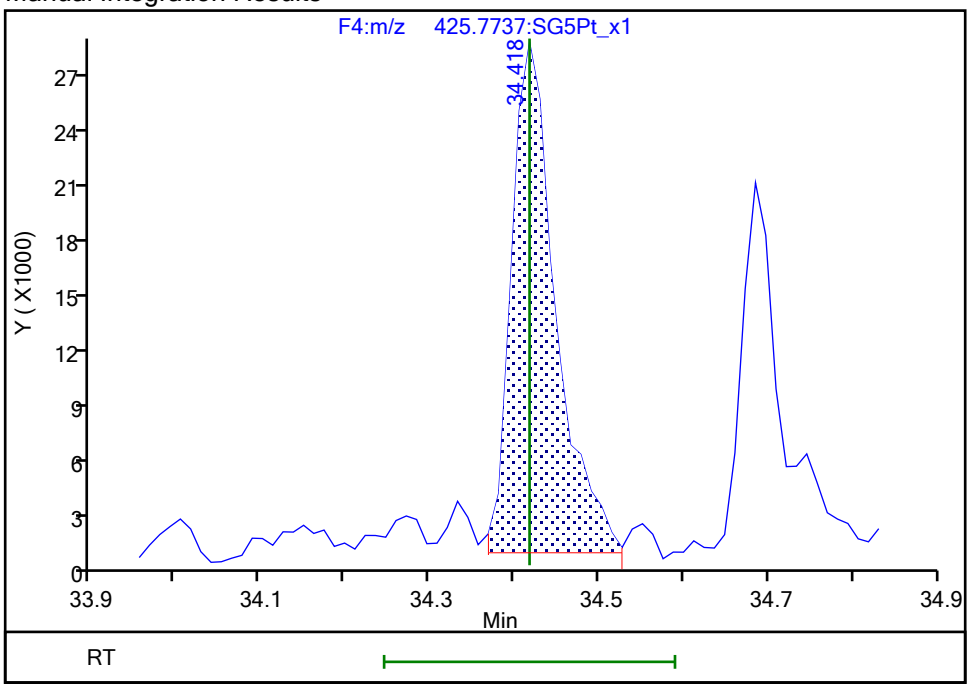
Processing Integration Results

RT: 34.42
Area: 113196
Amount: 0.246132
Amount Units: pg/ul



Manual Integration Results

RT: 34.42
Area: 98653
Amount: 0.229079
Amount Units: pg/ul



Reviewer: dadunj, 20-Dec-2019 14:11:29
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

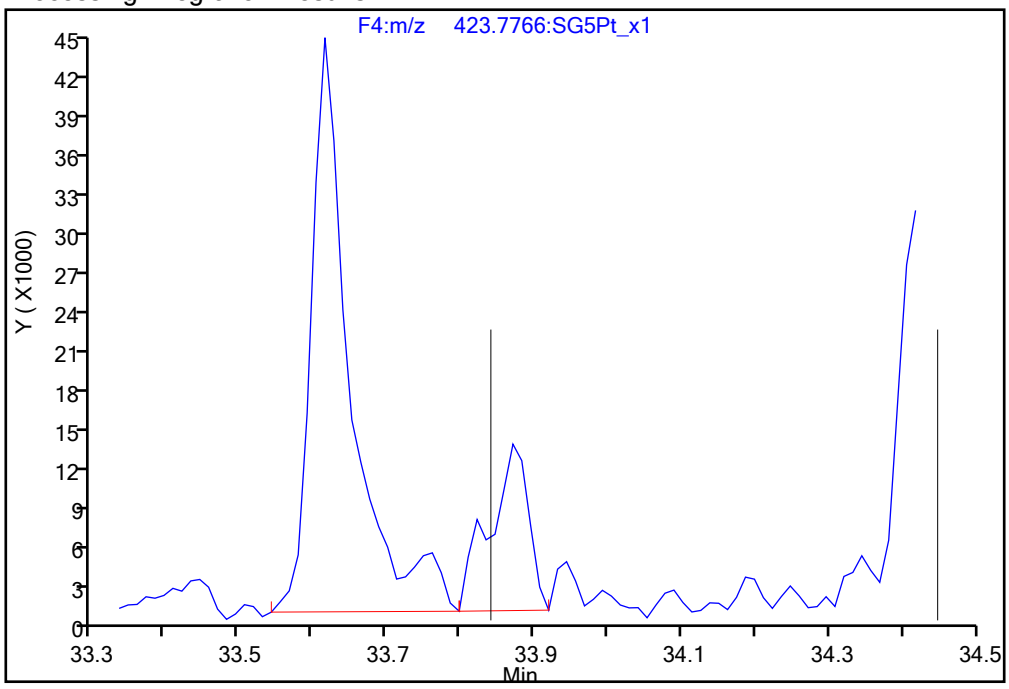
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d				
Injection Date:	19-Dec-2019 13:23:46	Instrument ID:	3D5		
Lims ID:	MB 320-344942/1-A				
Client ID:					
Operator ID:	AJS	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDD, Signal: 1, m/z: 423.7766, RT: (33.84- 34.45)

Signal: 1

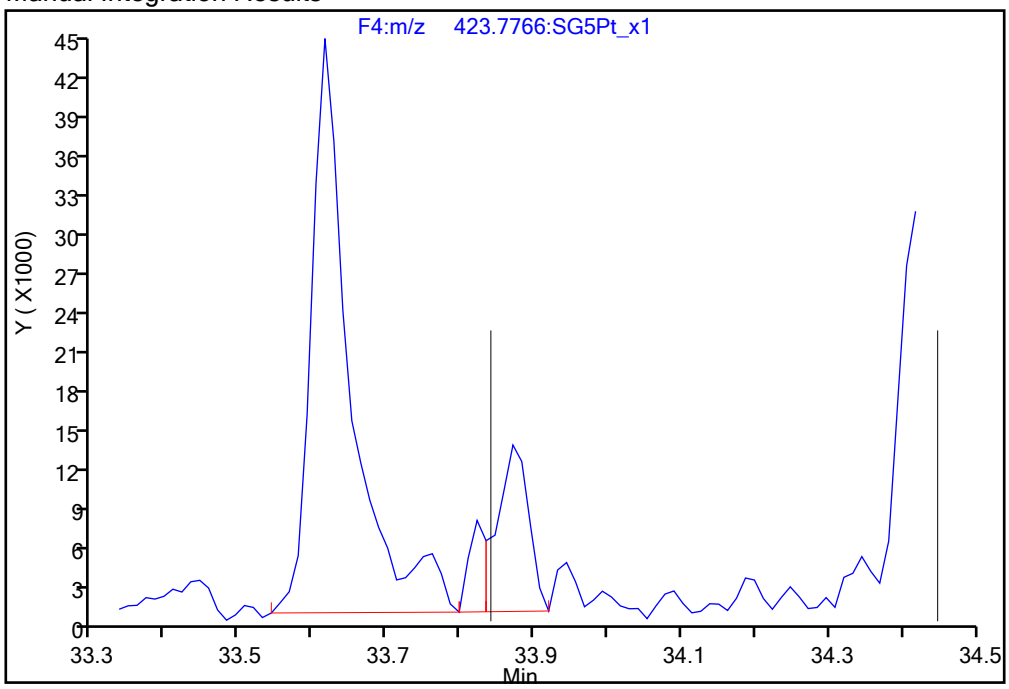
Processing Integration Results

RT = 33.871 Area = 46361



Manual Integration Results

RT = 33.871 Area = 36322 M



Reviewer: dadunj, 20-Dec-2019 14:11:33

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Sacramento

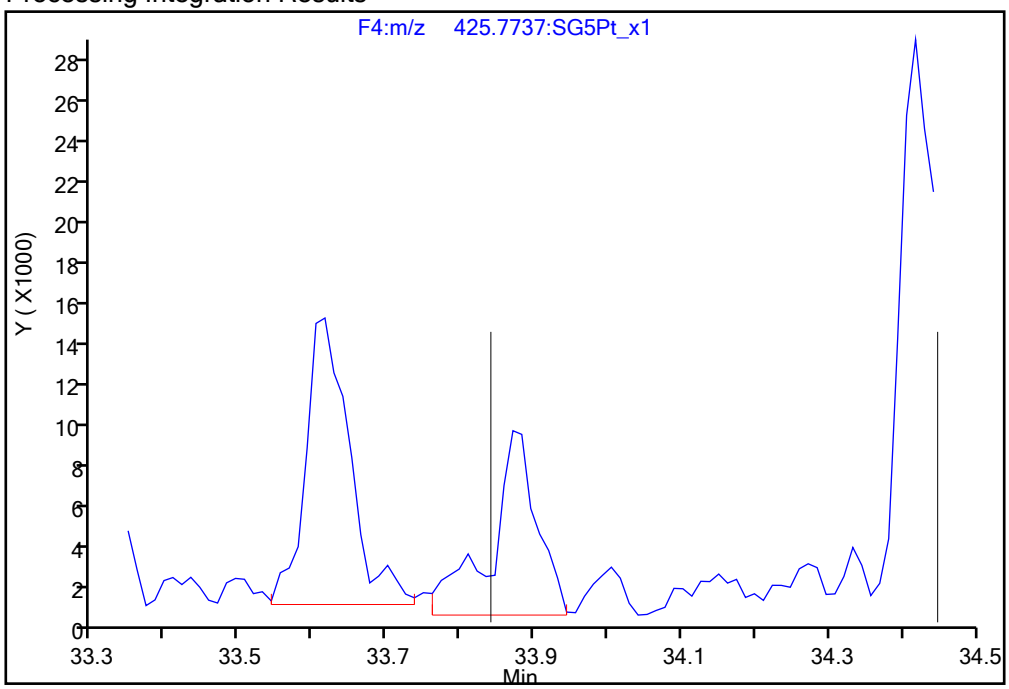
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d				
Injection Date:	19-Dec-2019 13:23:46	Instrument ID:	3D5		
Lims ID:	MB 320-344942/1-A				
Client ID:					
Operator ID:	AJS	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL		
Column:	DB-5 (0.32 mm)	Detector	F4:HRSIR		

Non-2,3,7,8-sub-HpCDD, Signal: 2, m/z: 425.7737, RT: (33.84- 34.45)

Signal: 2

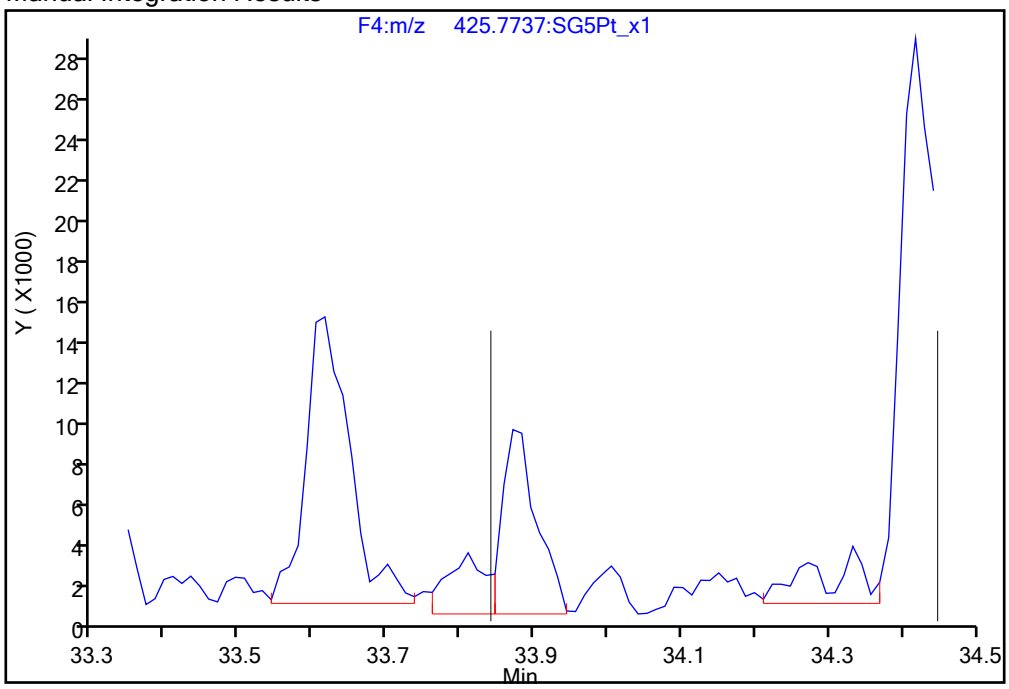
Processing Integration Results

RT = 33.871 Area = 38602



Manual Integration Results

RT = 33.871 Area = 28219 M



Reviewer: dadunj, 20-Dec-2019 14:11:32

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Report Date: 20-Dec-2019 14:12:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d

Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
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Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
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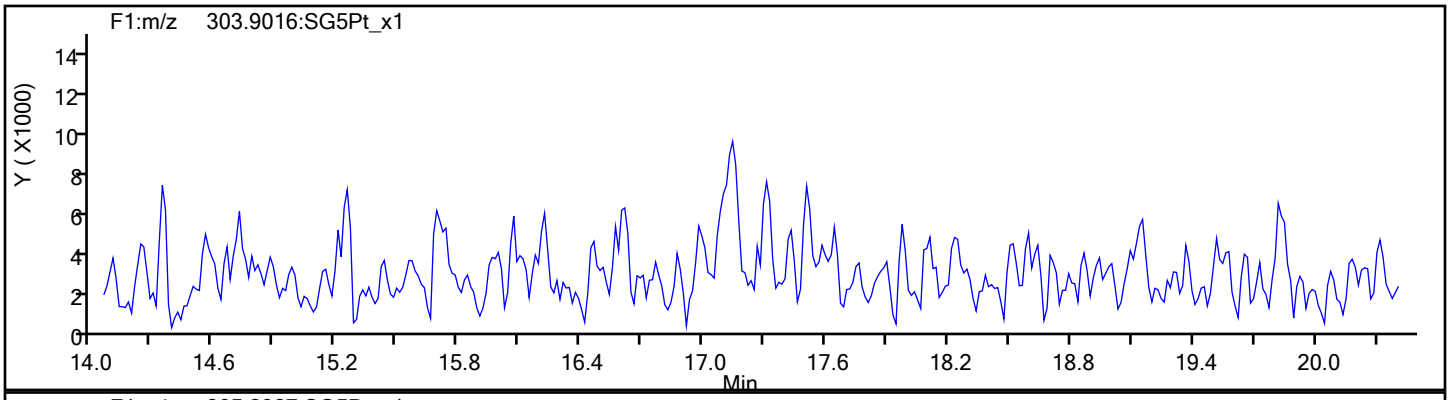
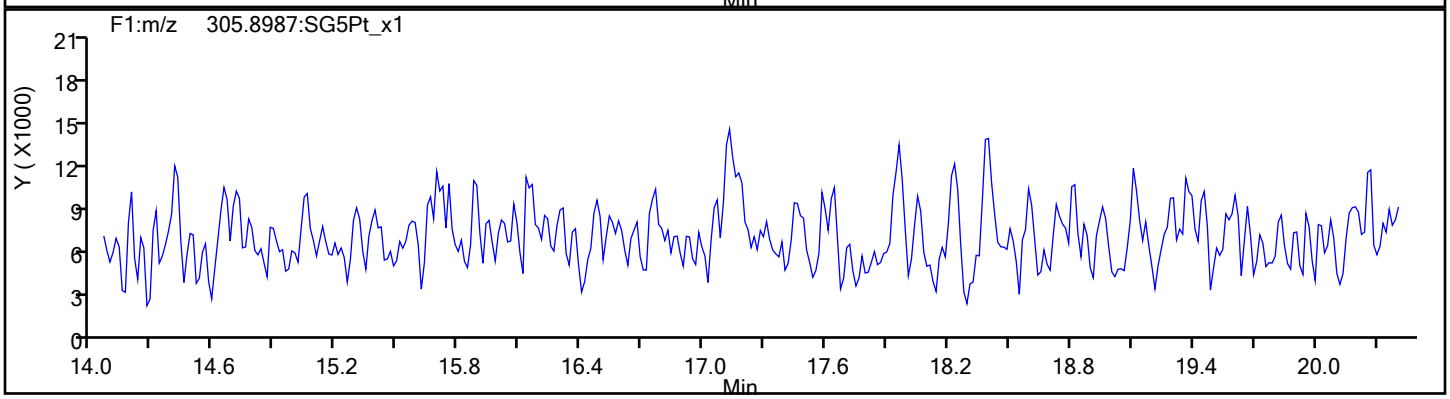
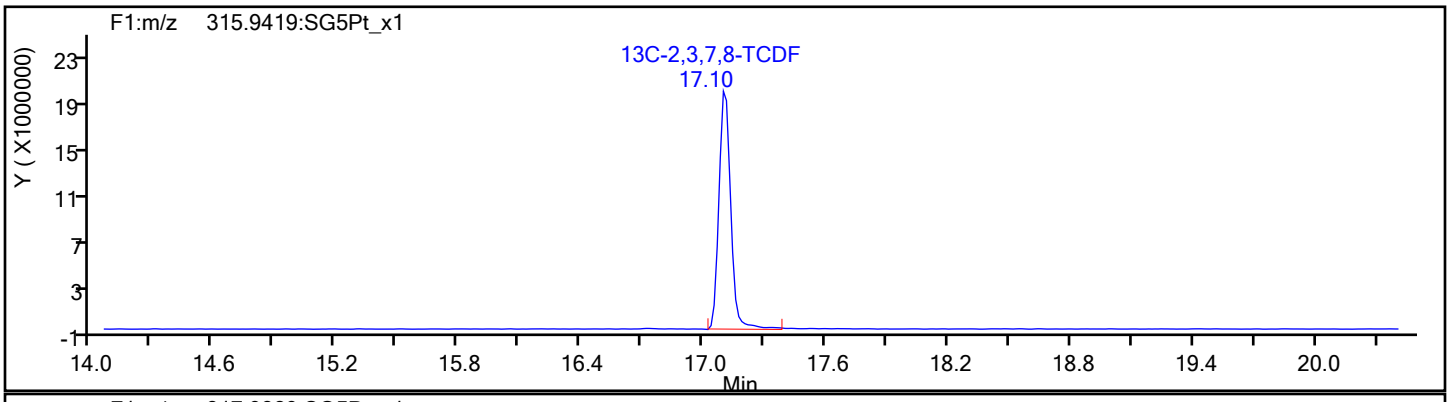
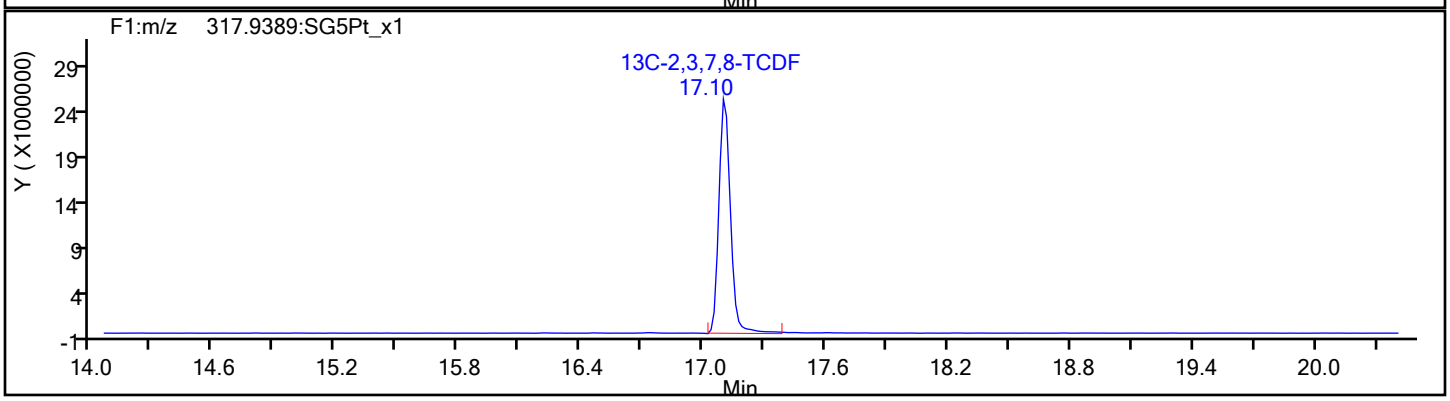
TCDF





TCDF Standards





Report Date: 20-Dec-2019 14:12:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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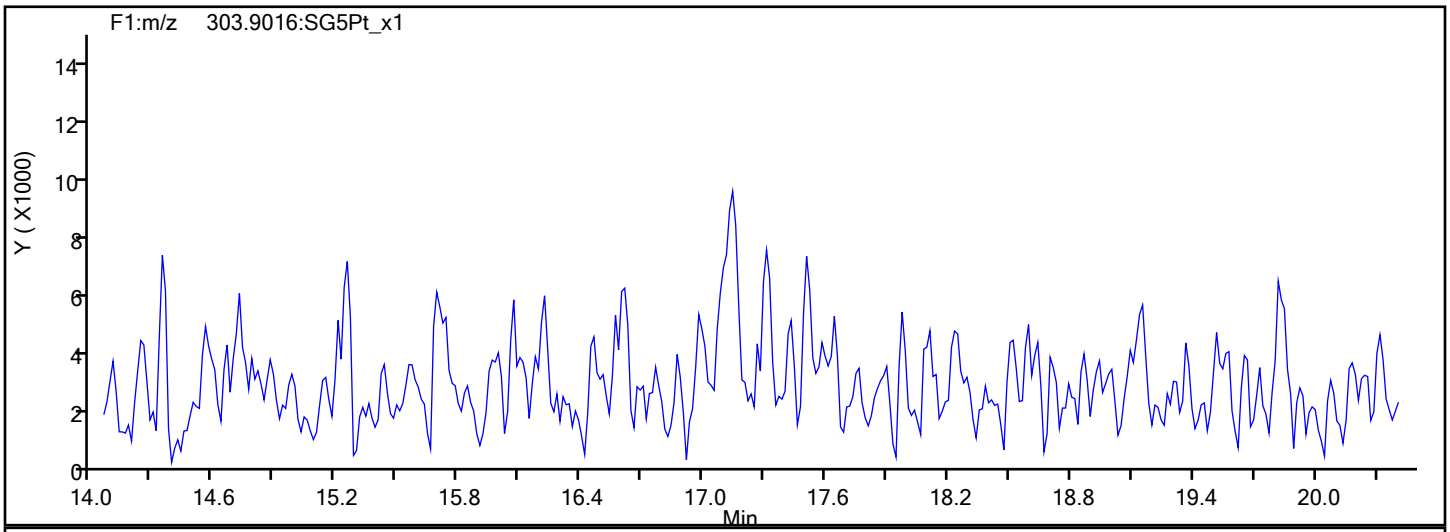
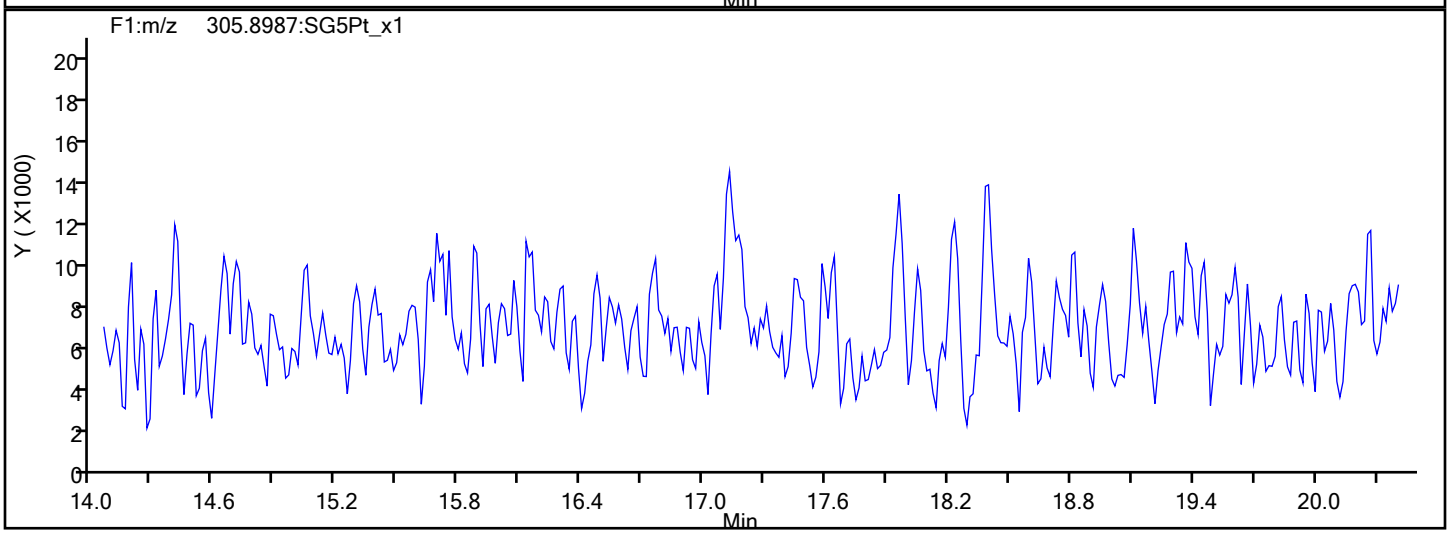
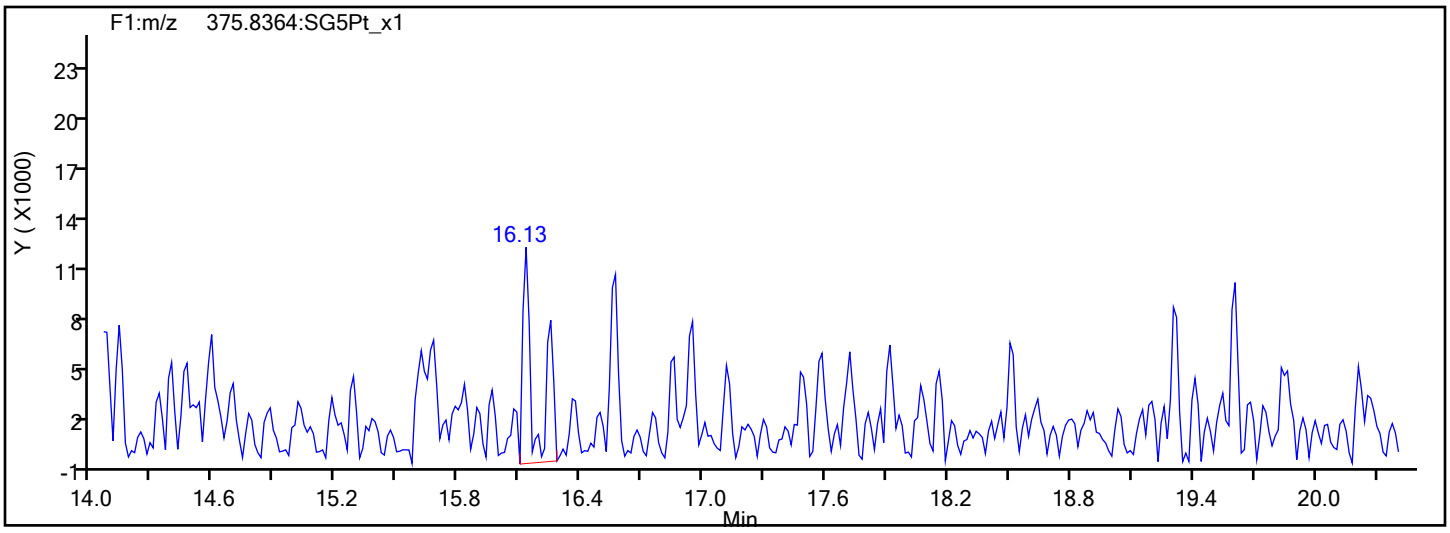
TCDF





TCDF Interference Mass



Report Date: 20-Dec-2019 14:12:09 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d

Injection Date: 19-Dec-2019 13:23:46 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

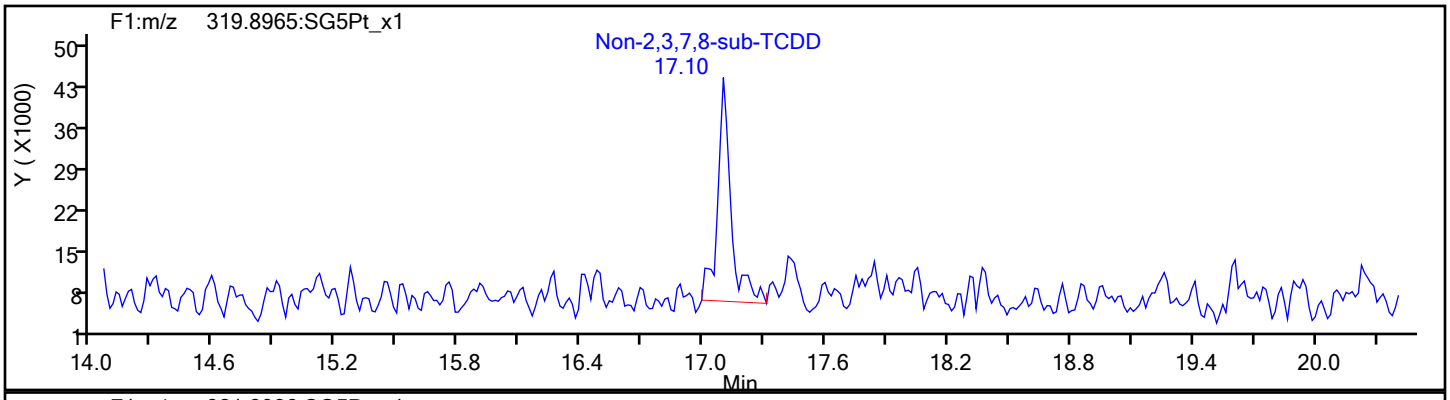
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

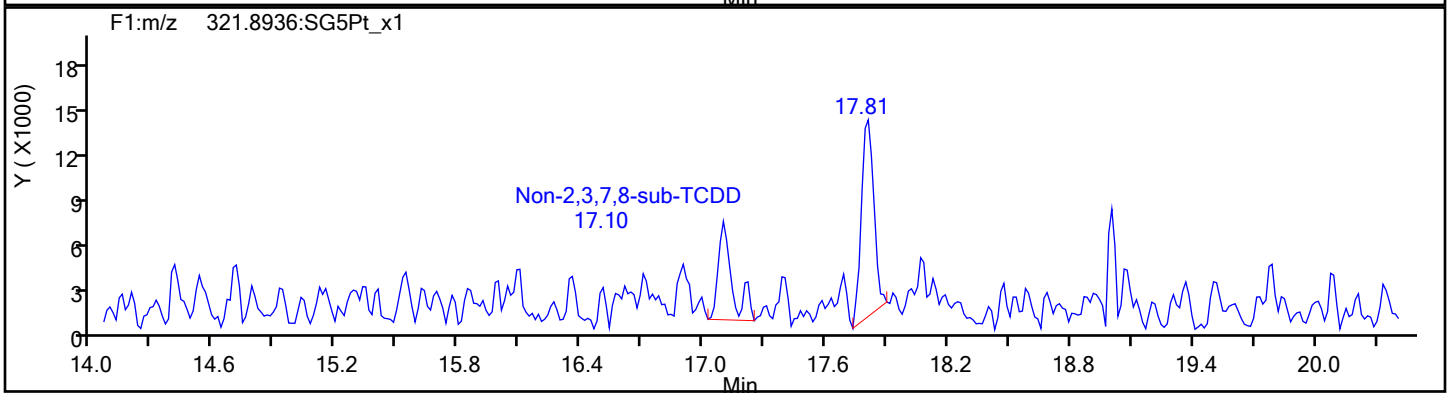
Client ID:

Worklist#: 346752 Sample Line#: 4

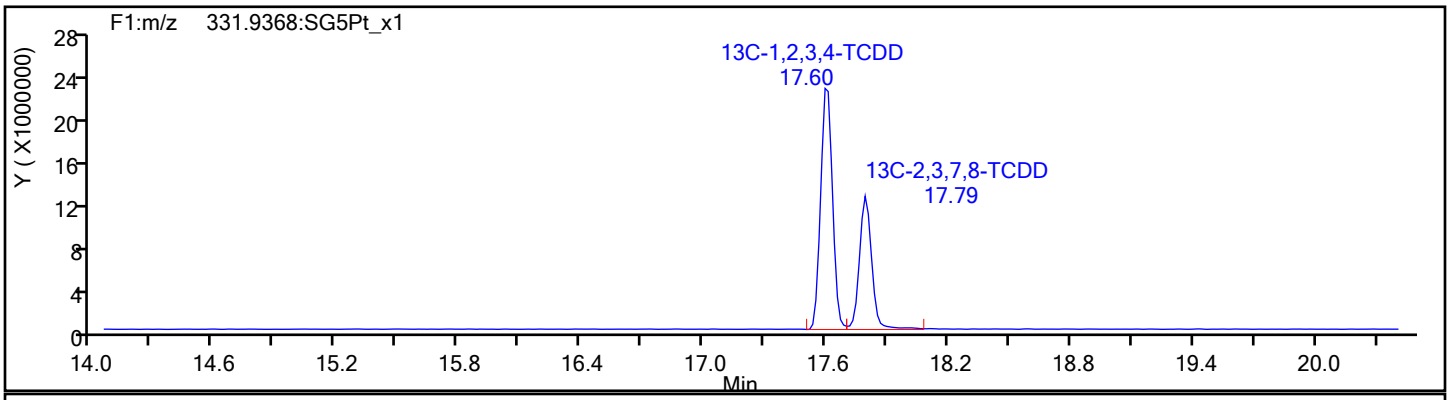
Column Type: DB-5 Column Dia: 0.32 mm

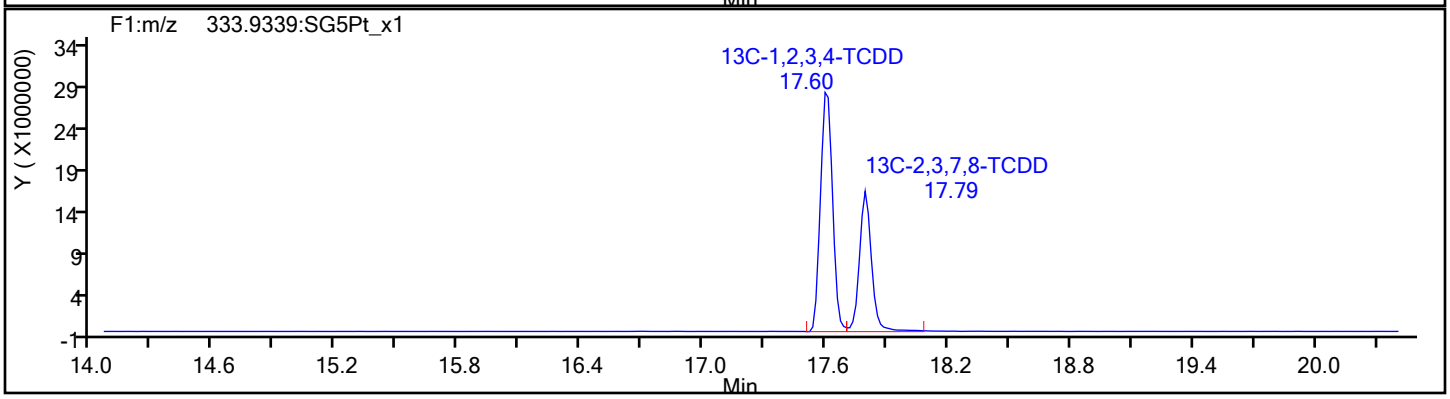
TCDD





TCDD Standards





Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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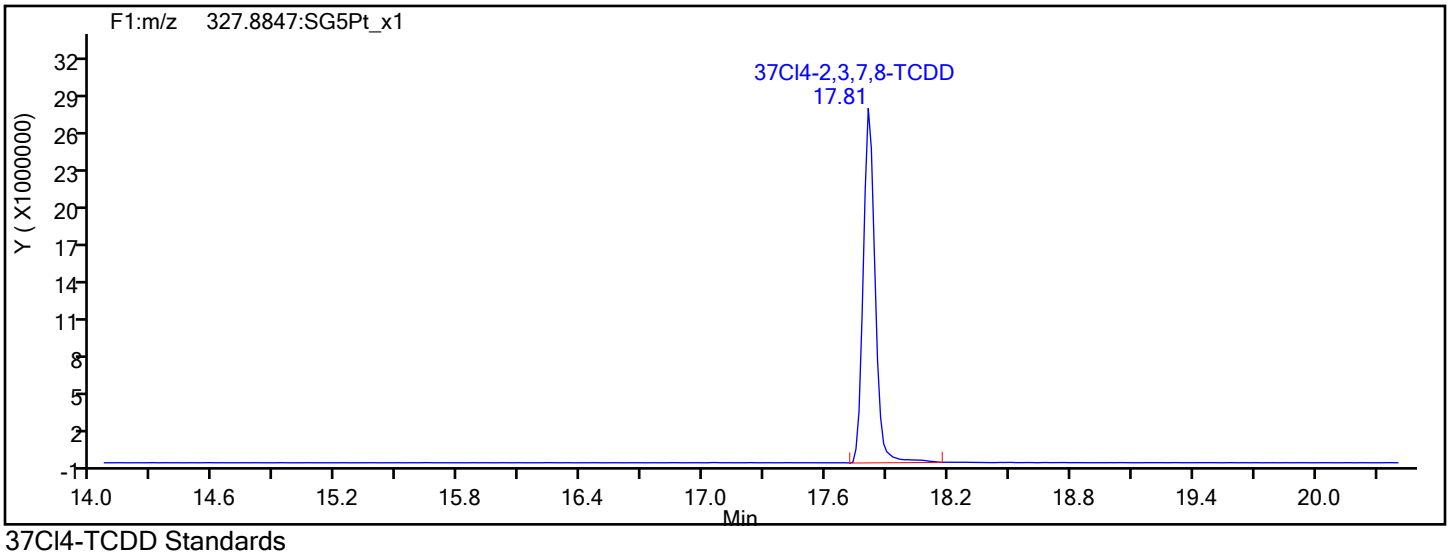
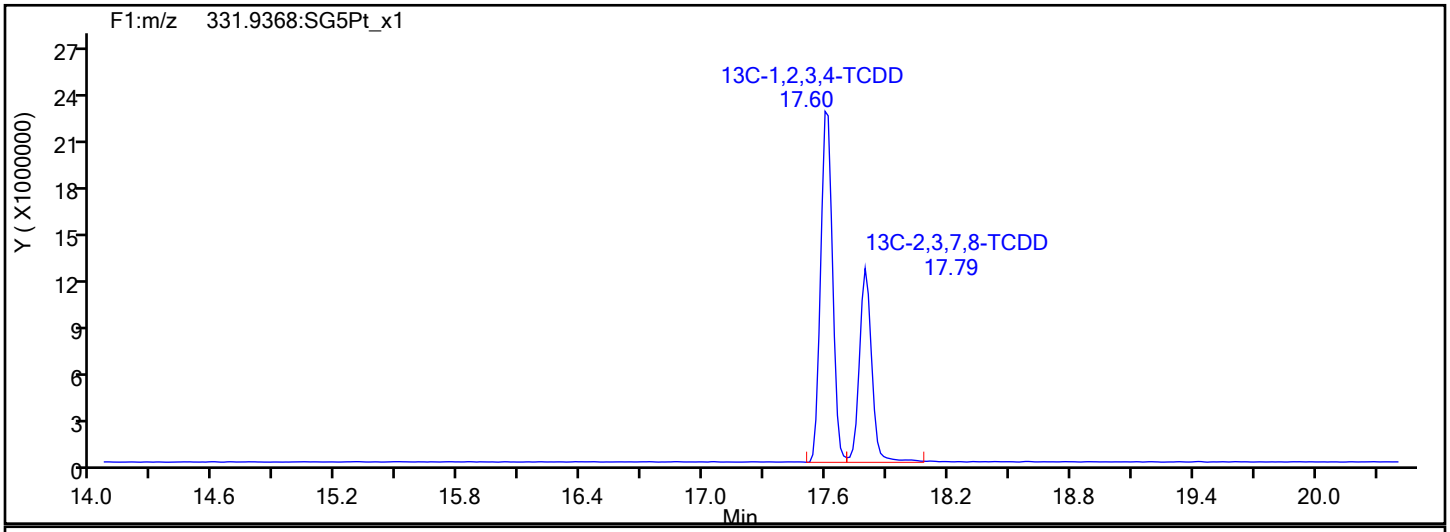
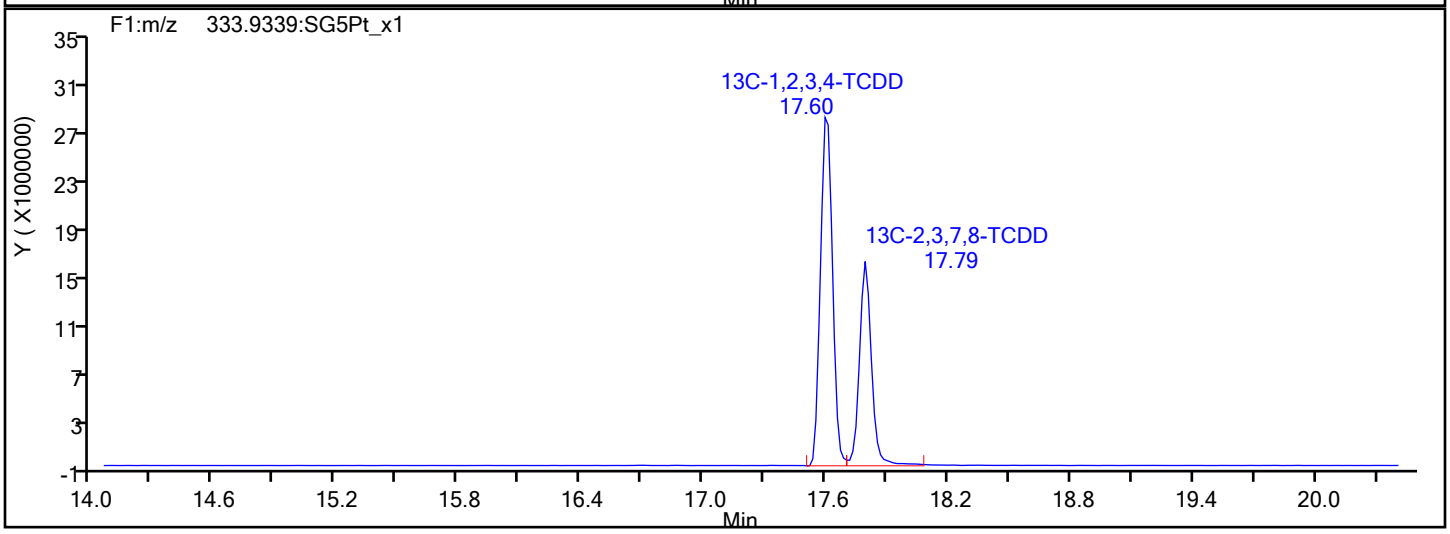
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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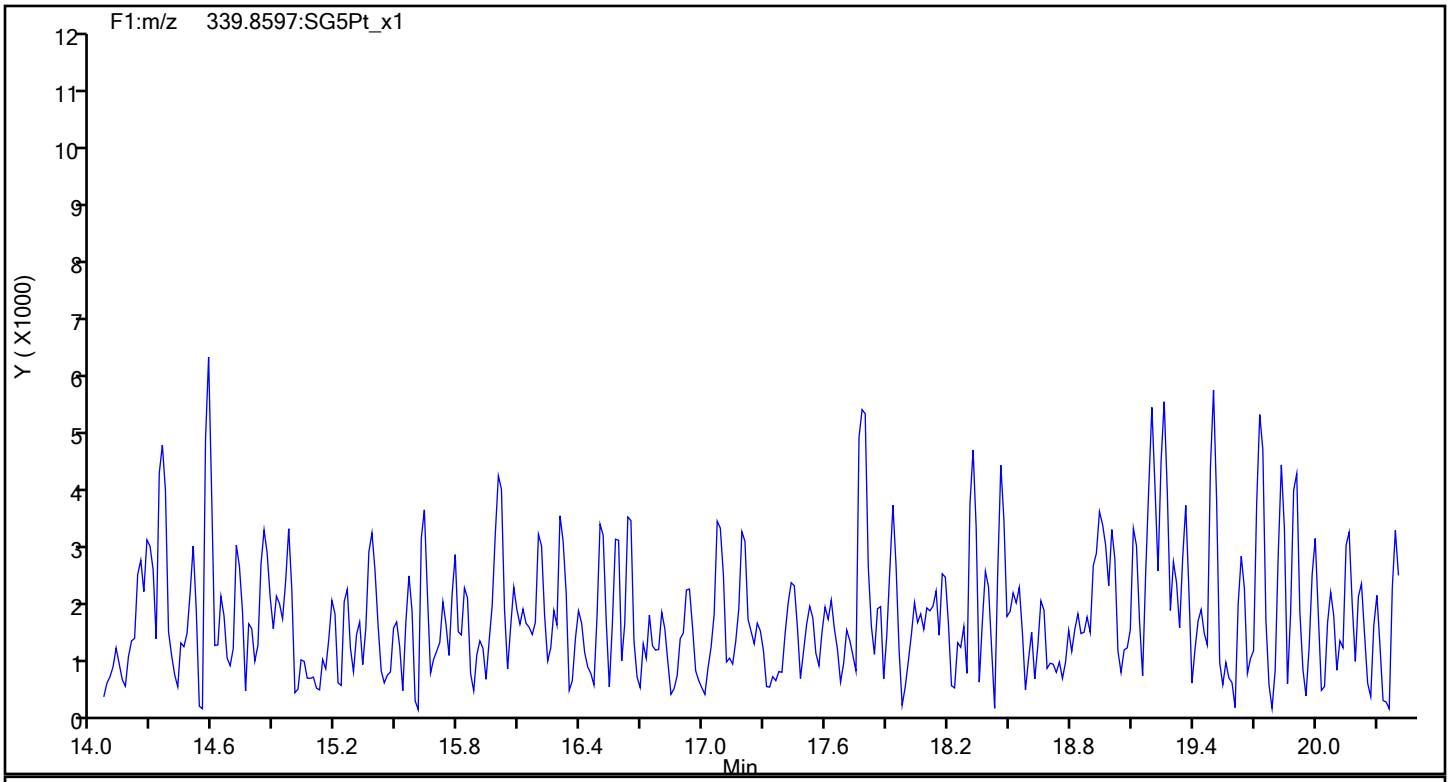
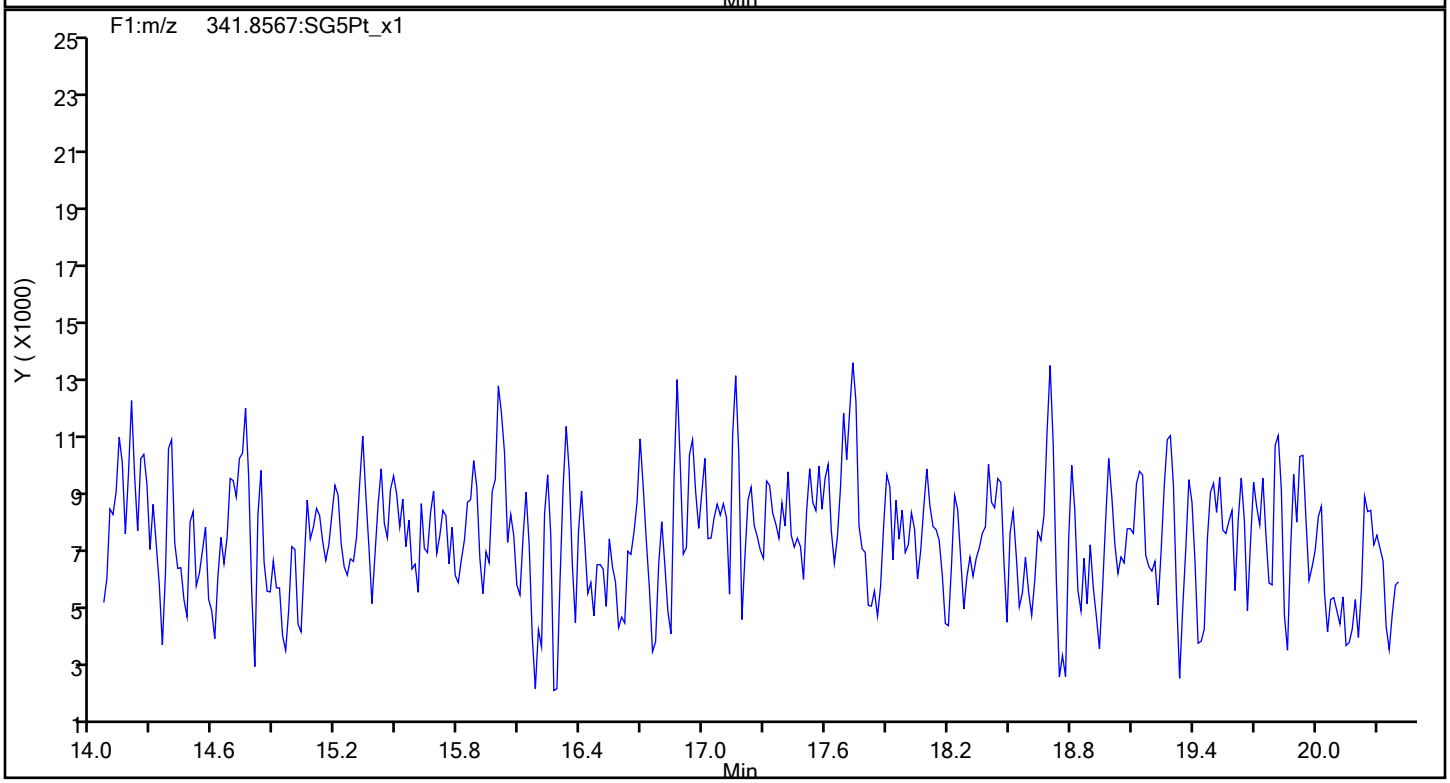
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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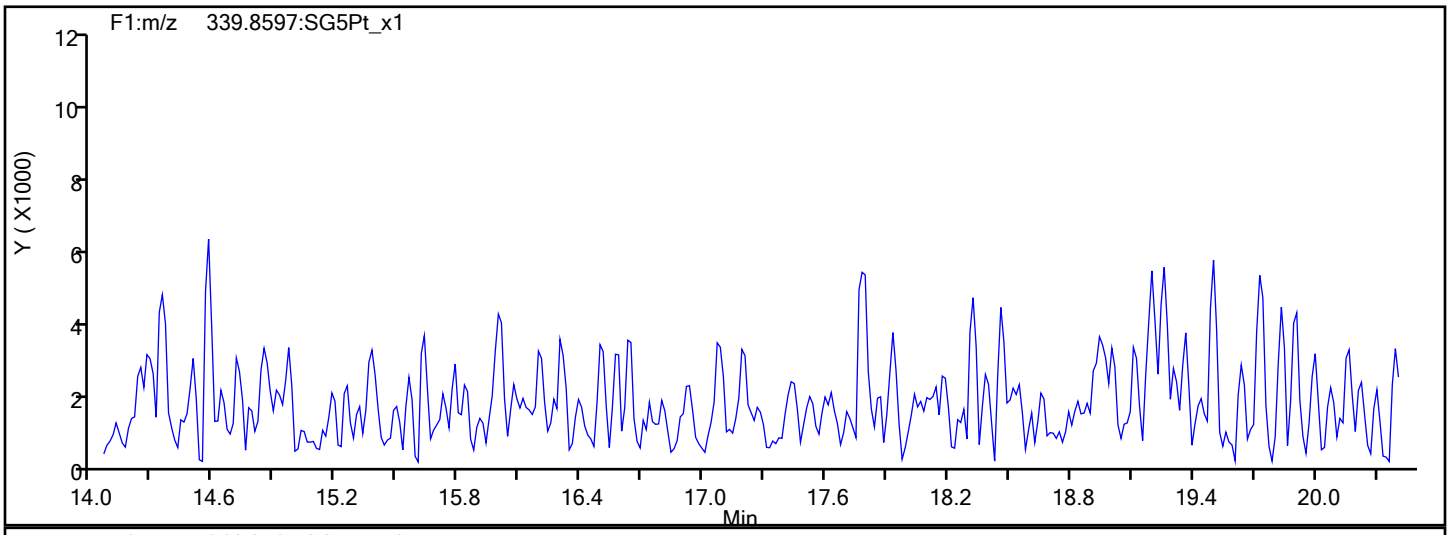
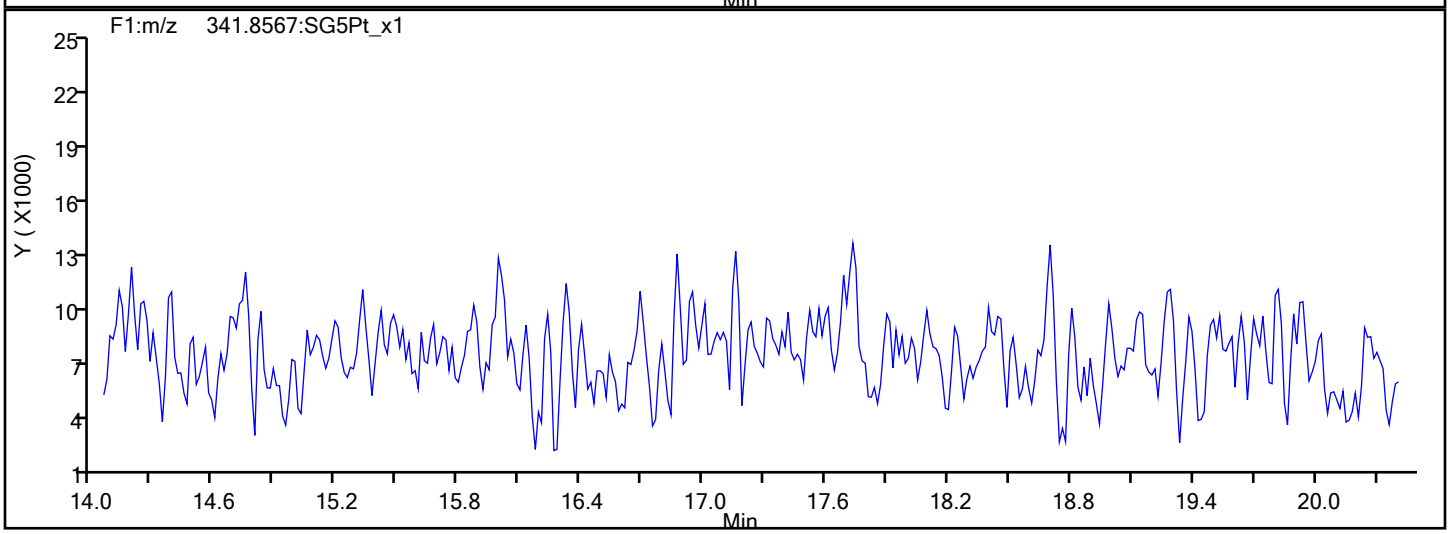
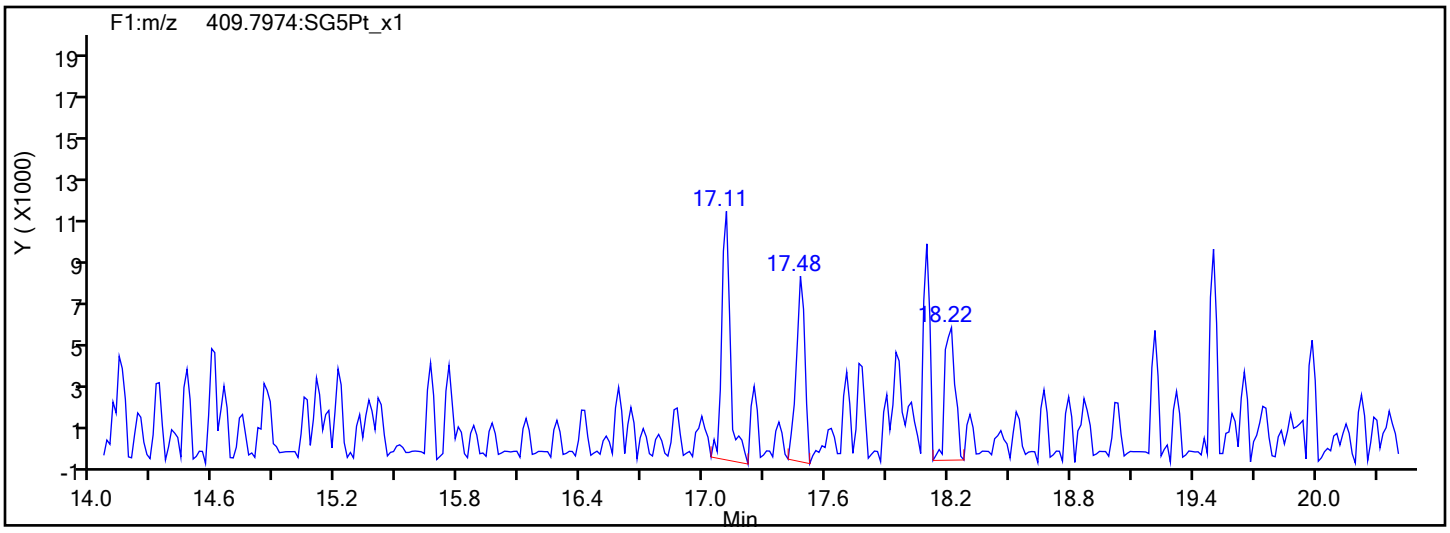
F1 PeCDFs





F1 PeCDFs Interference Mass



Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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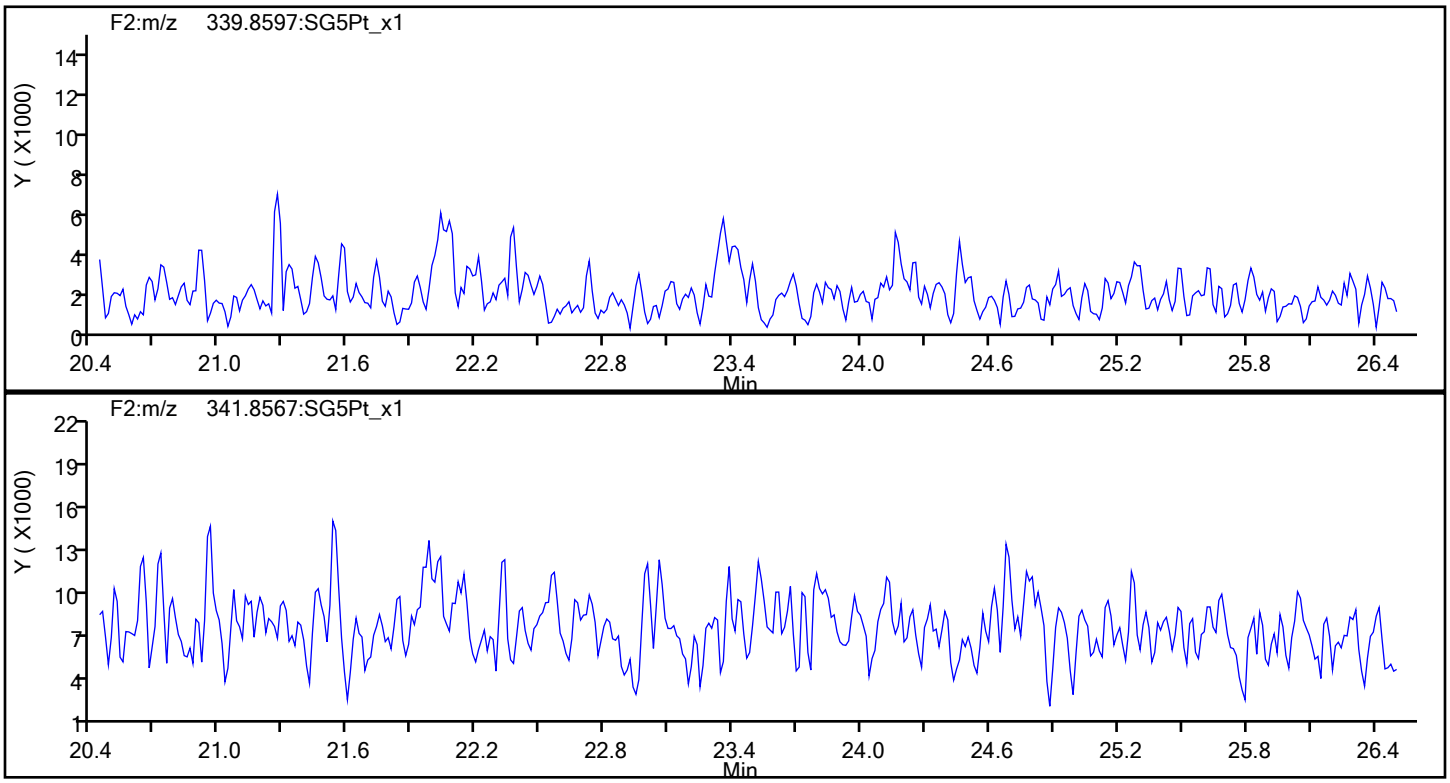
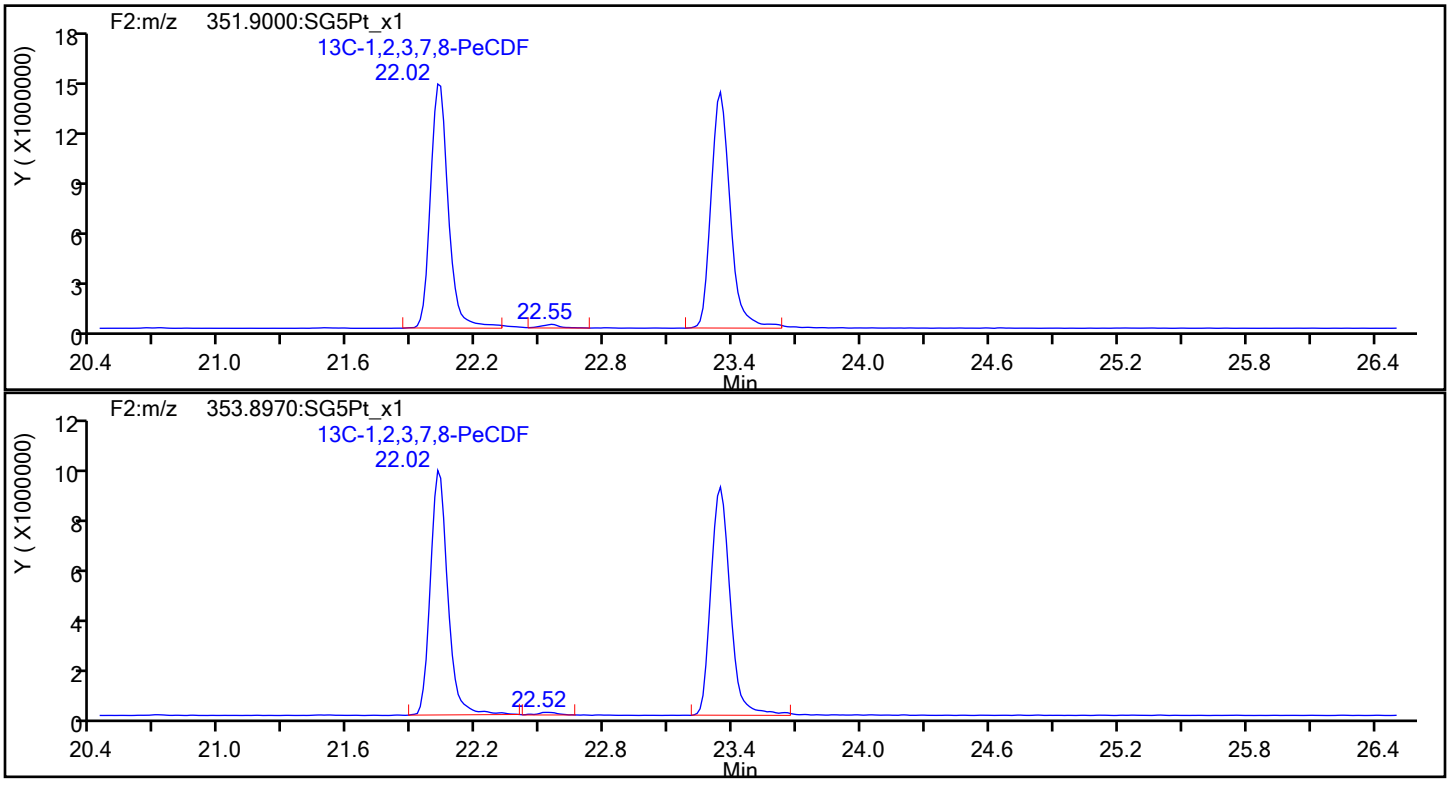
PeCDF



PeCDF Standards



Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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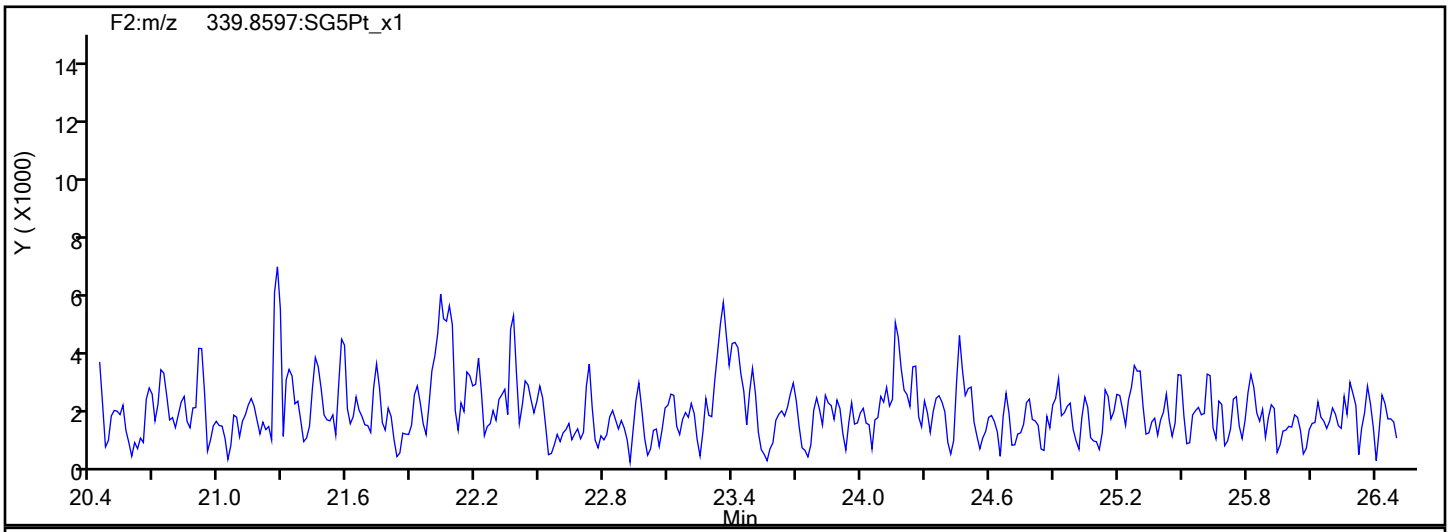
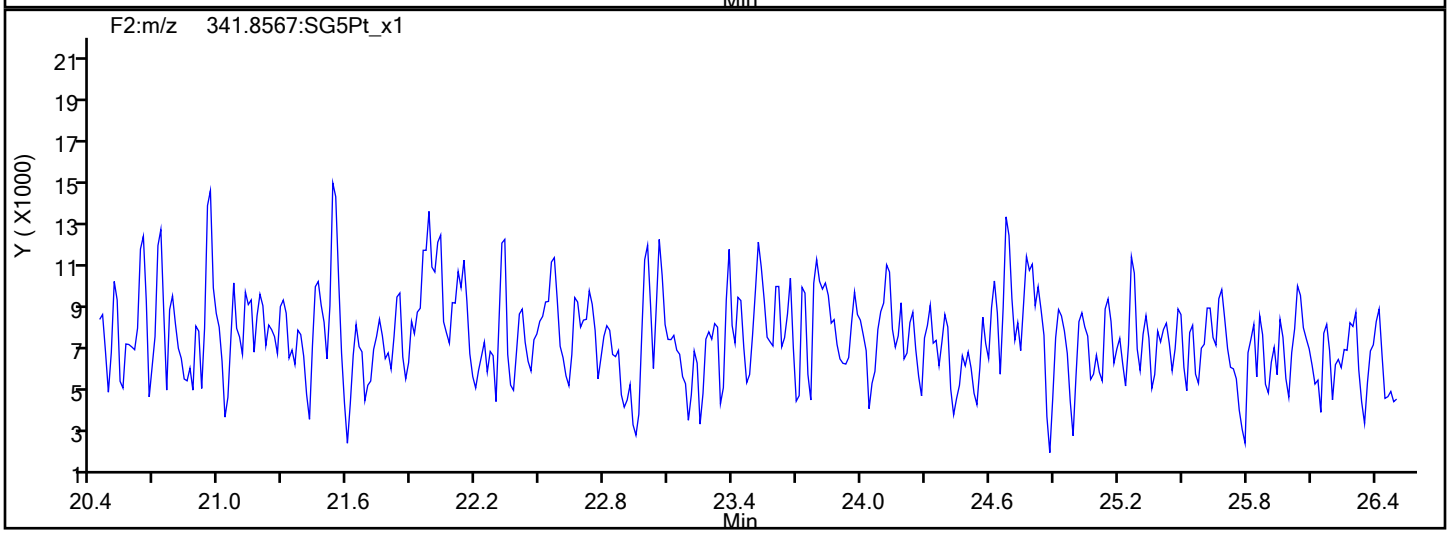
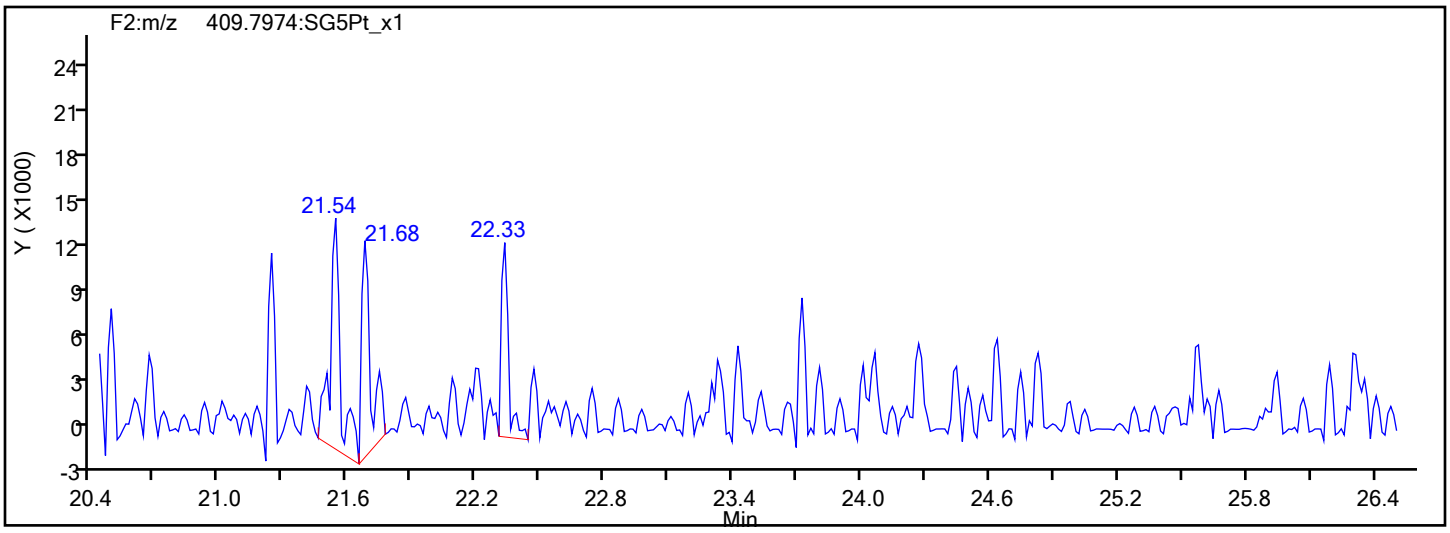
PeCDF





PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Instrument ID: 3D5 Operator ID: AJS

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Client ID:

Worklist#: 346752 Sample Line#: 4

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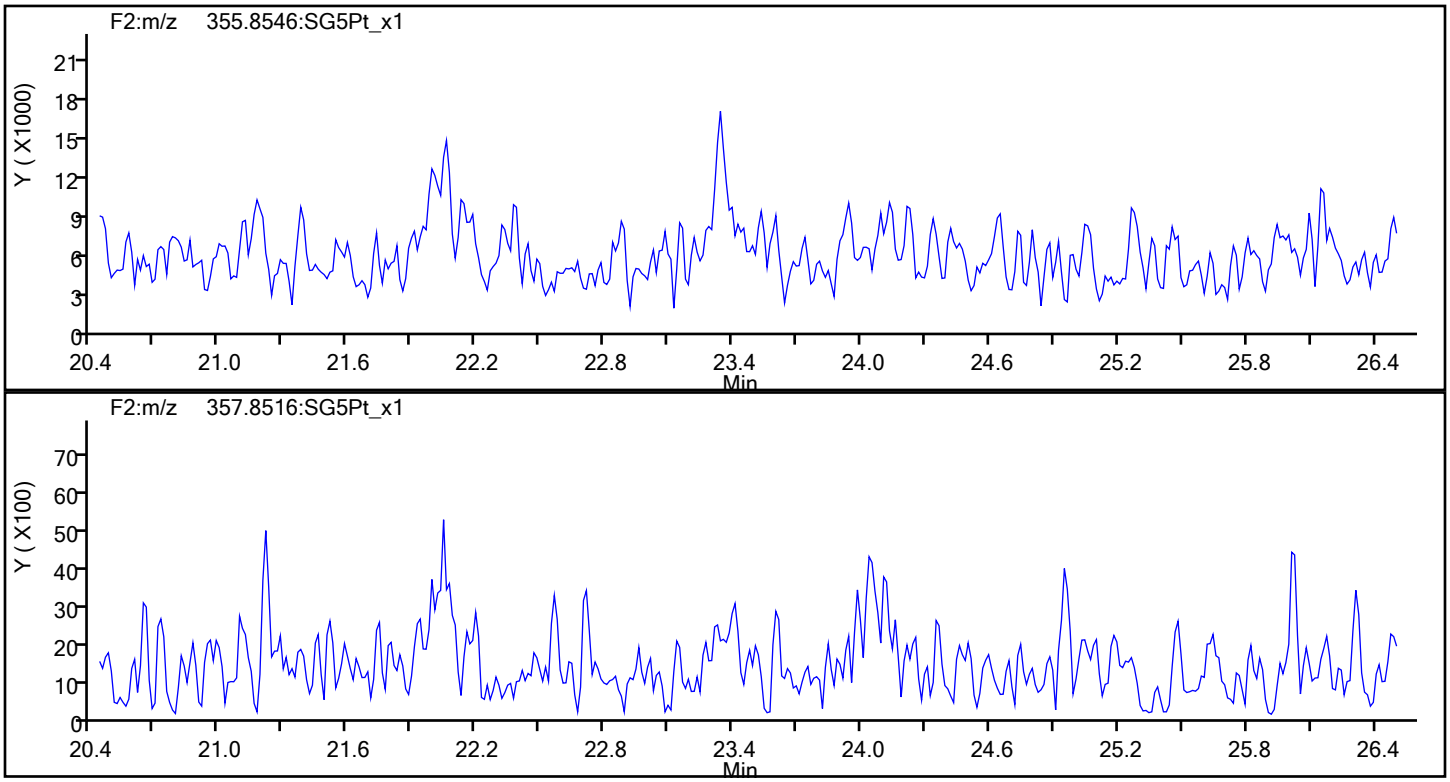

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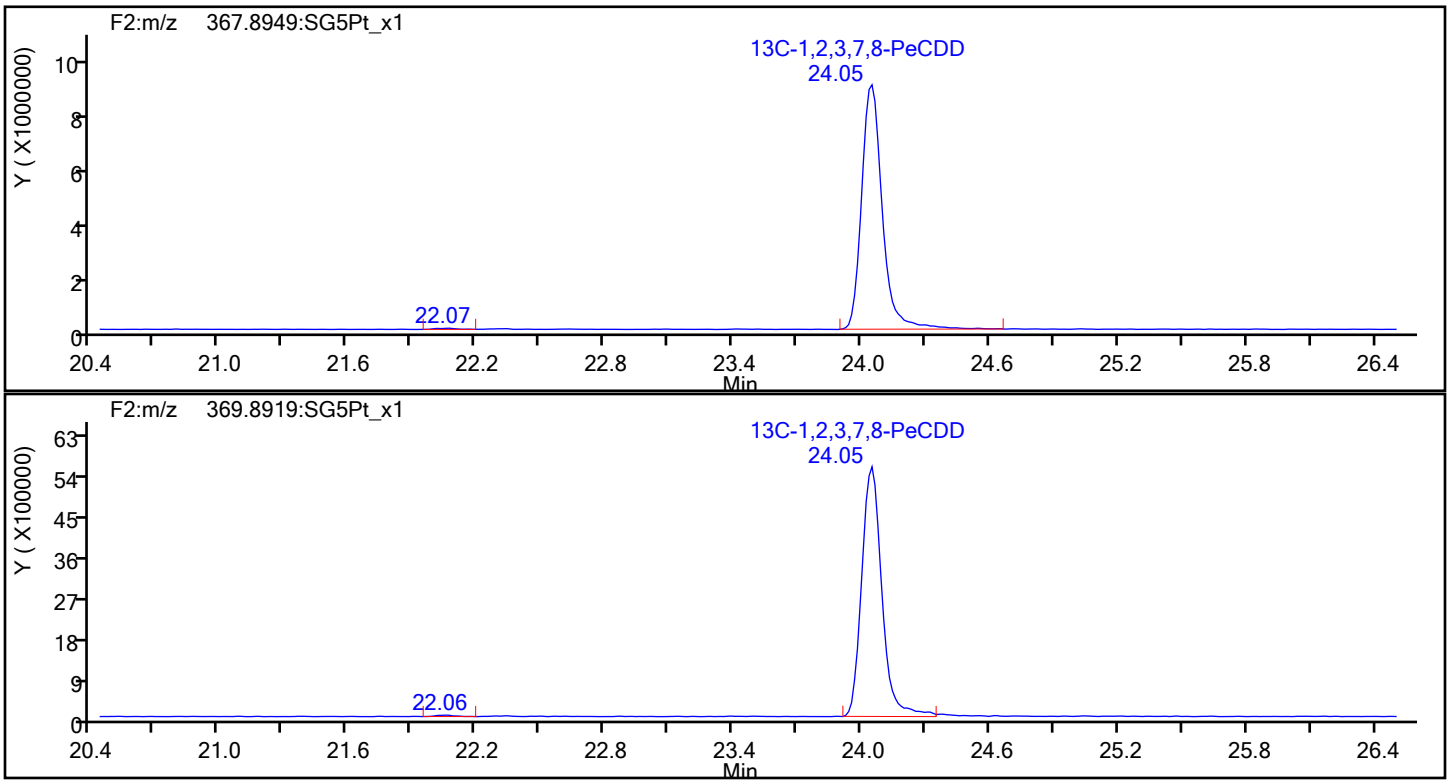

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Eurofins TestAmerica, Sacramento

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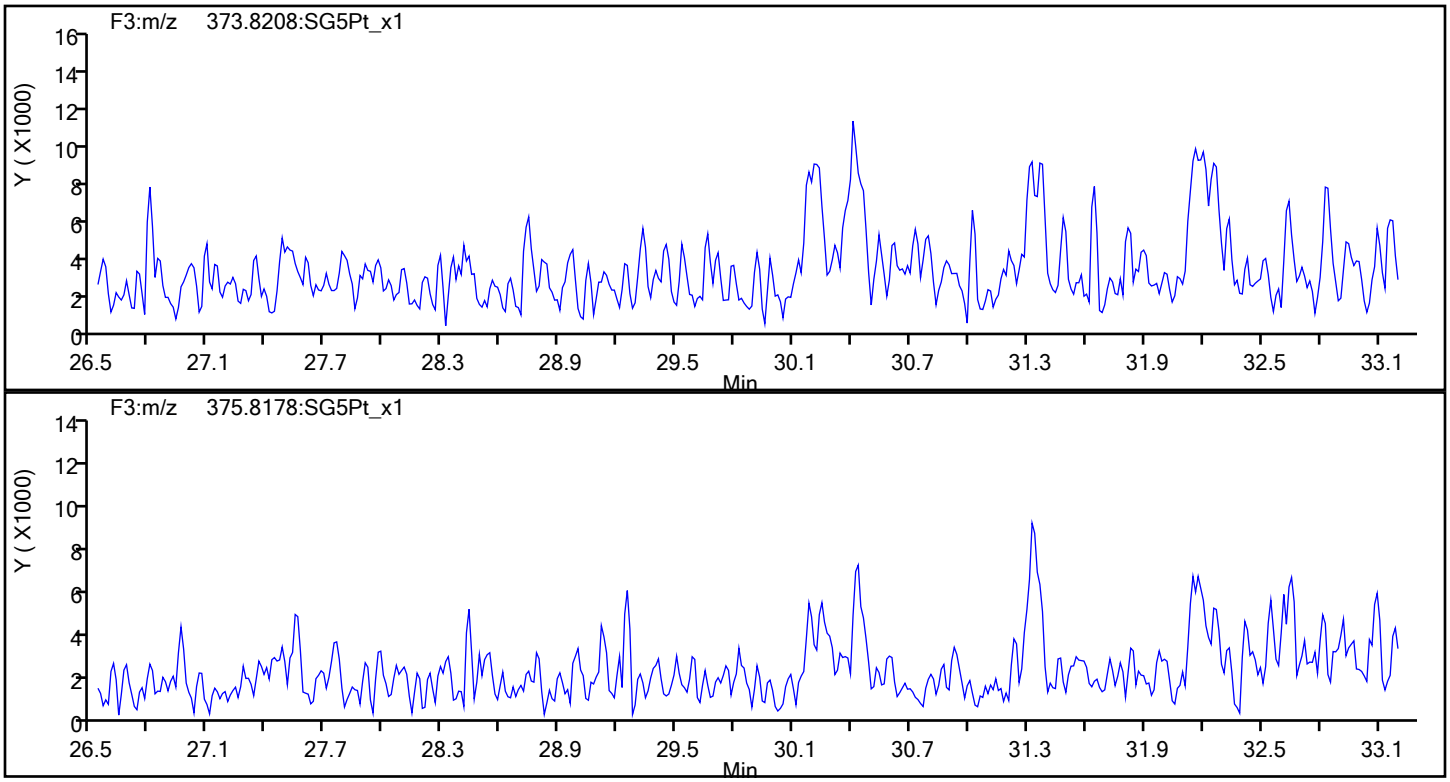
HxCDF



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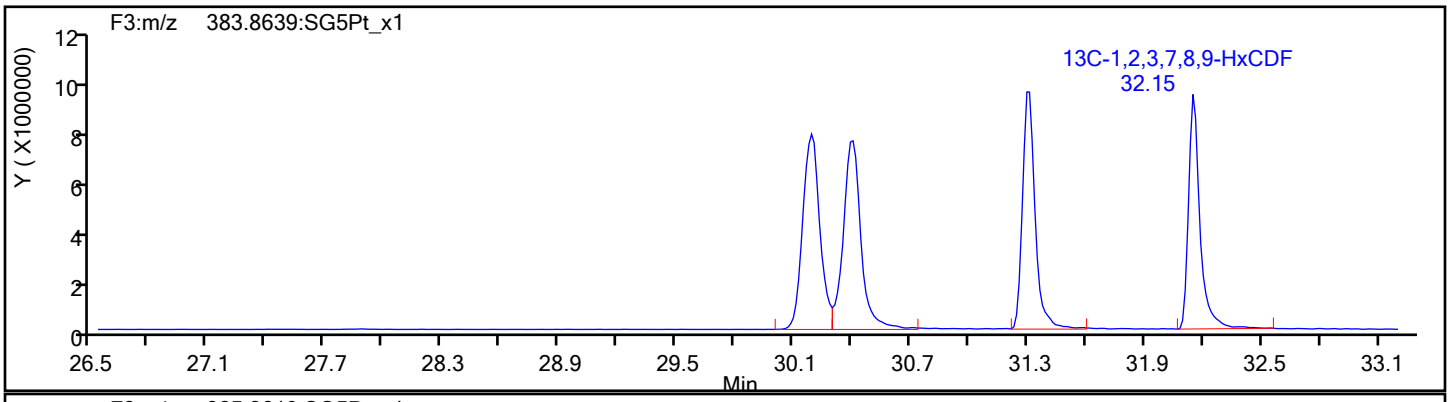

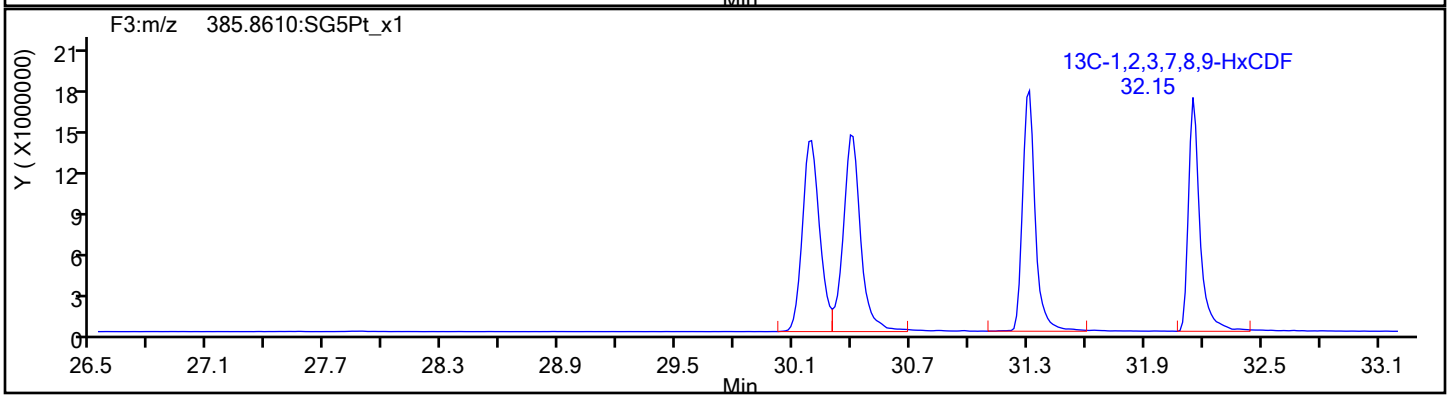

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Eurofins TestAmerica, Sacramento

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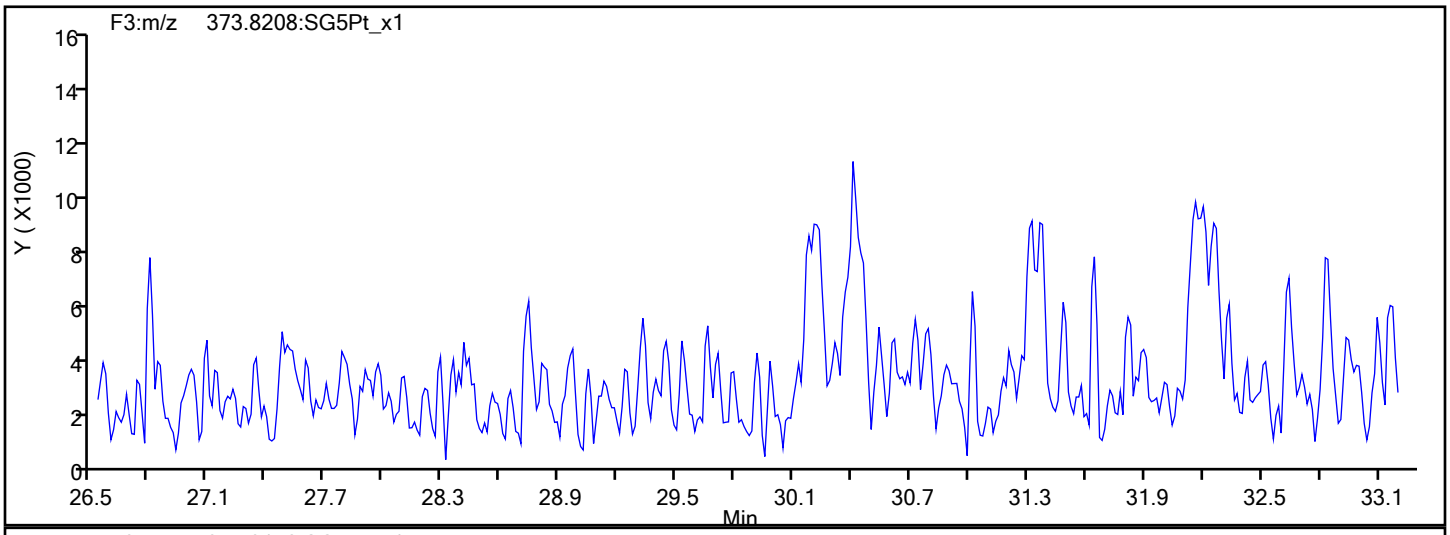
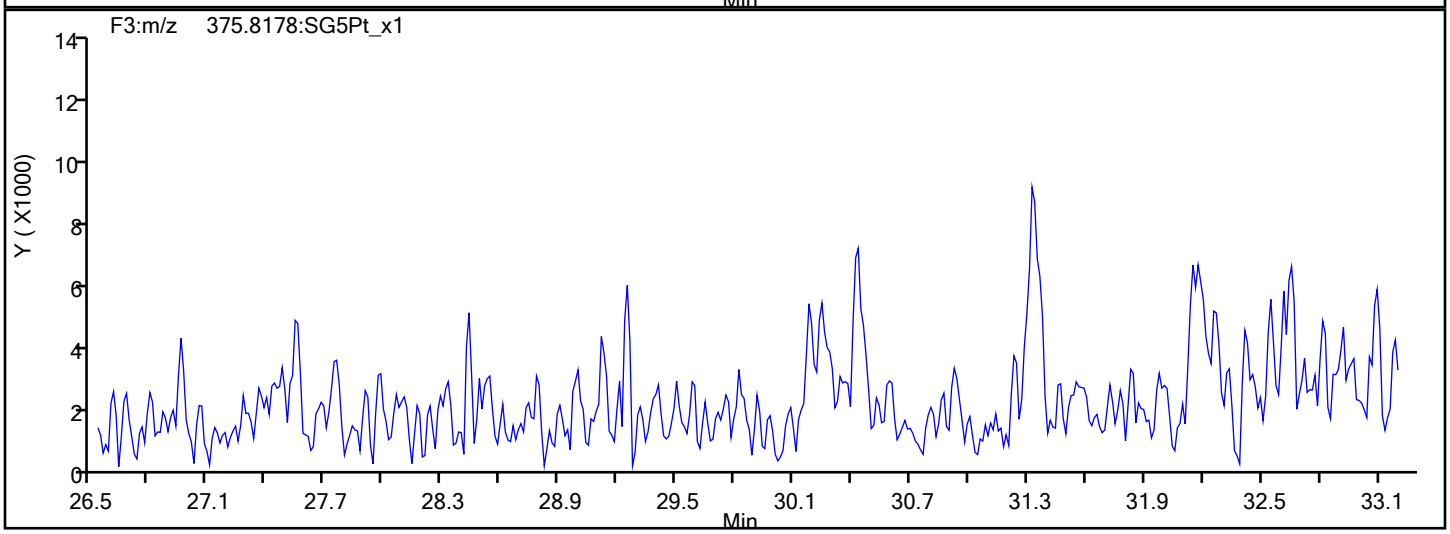
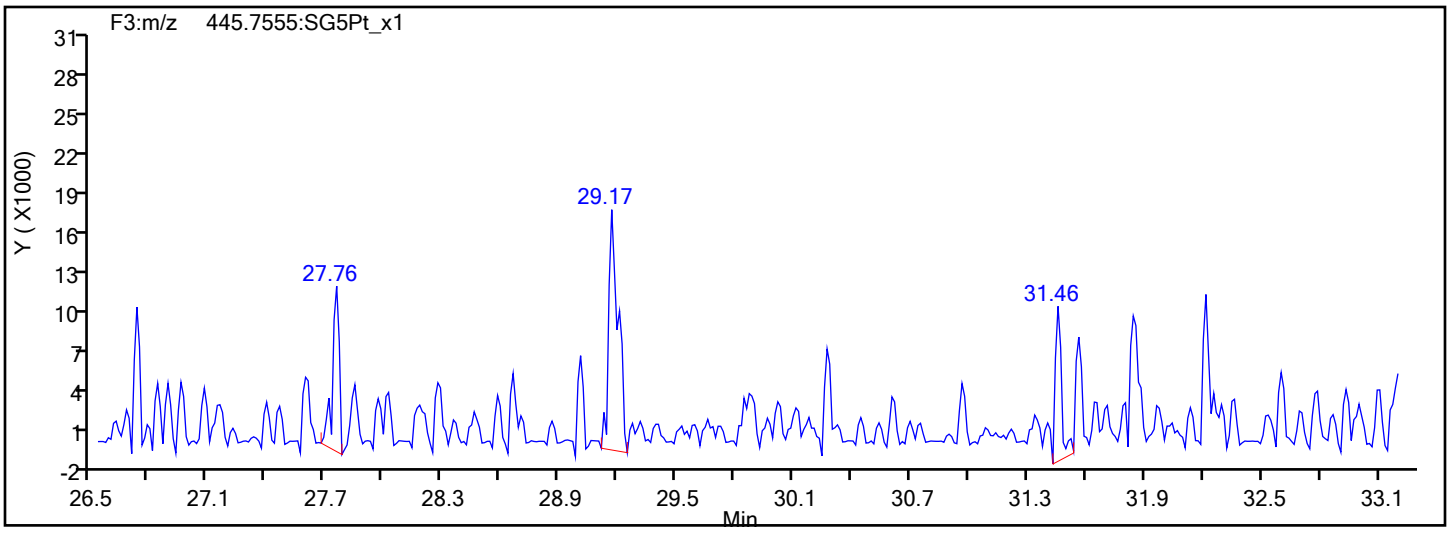




HxCDF Interference Mass



Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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Injection Date: 19-Dec-2019 13:23:46 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

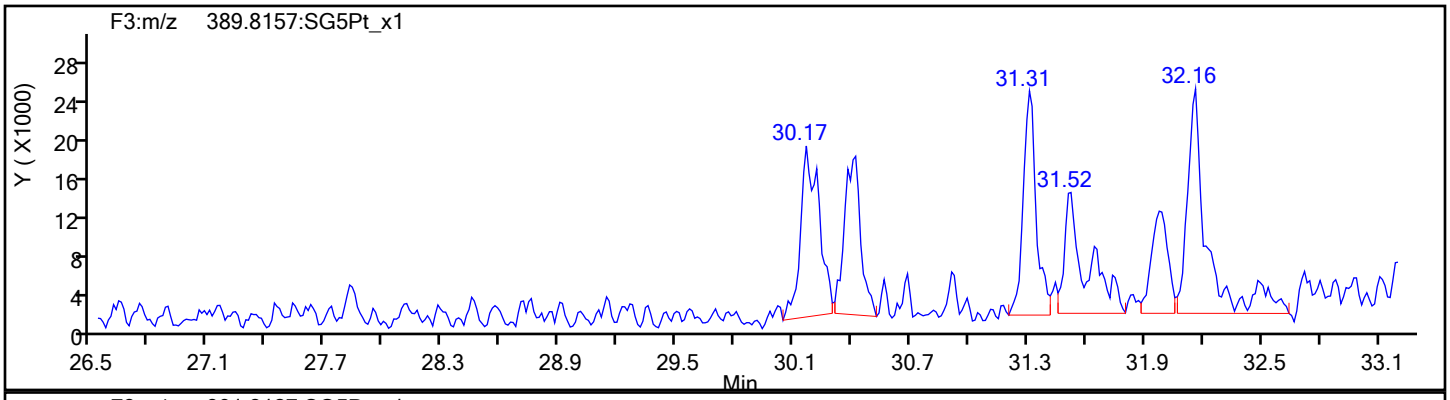
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

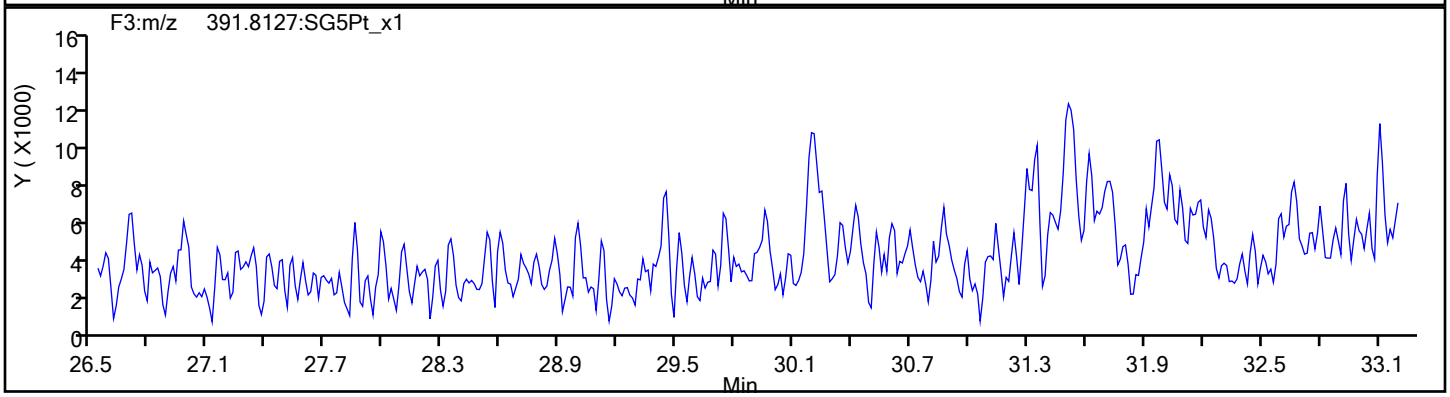
Client ID:

Worklist#: 346752 Sample Line#: 4

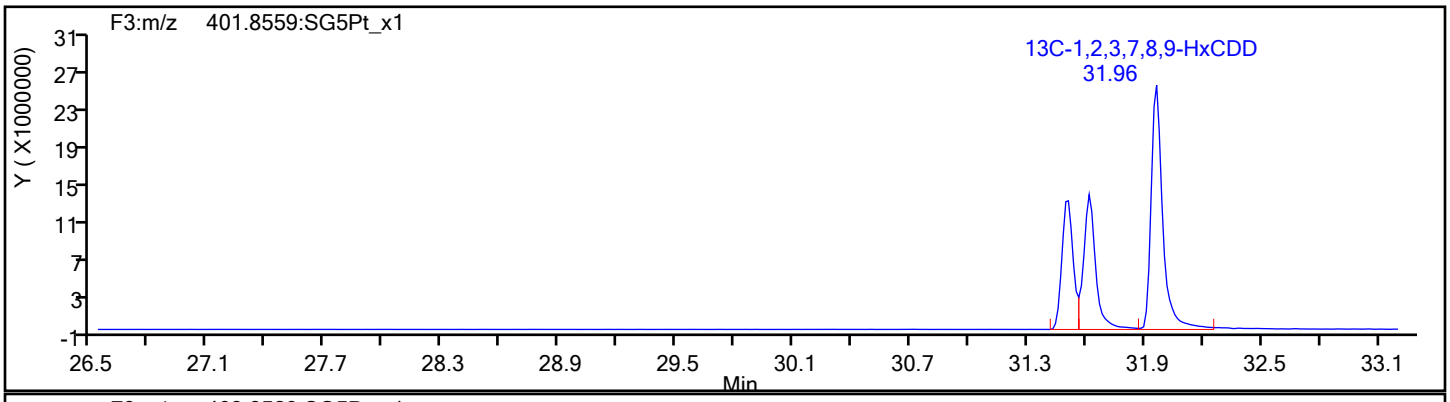
Column Type: DB-5 Column Dia: 0.32 mm

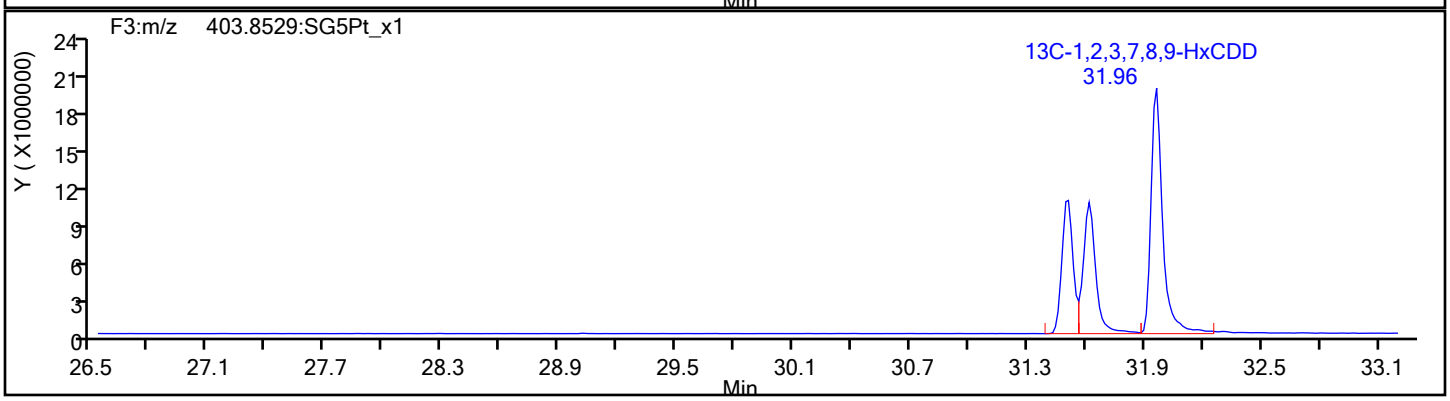
HxCDD





HxCDD Standards





Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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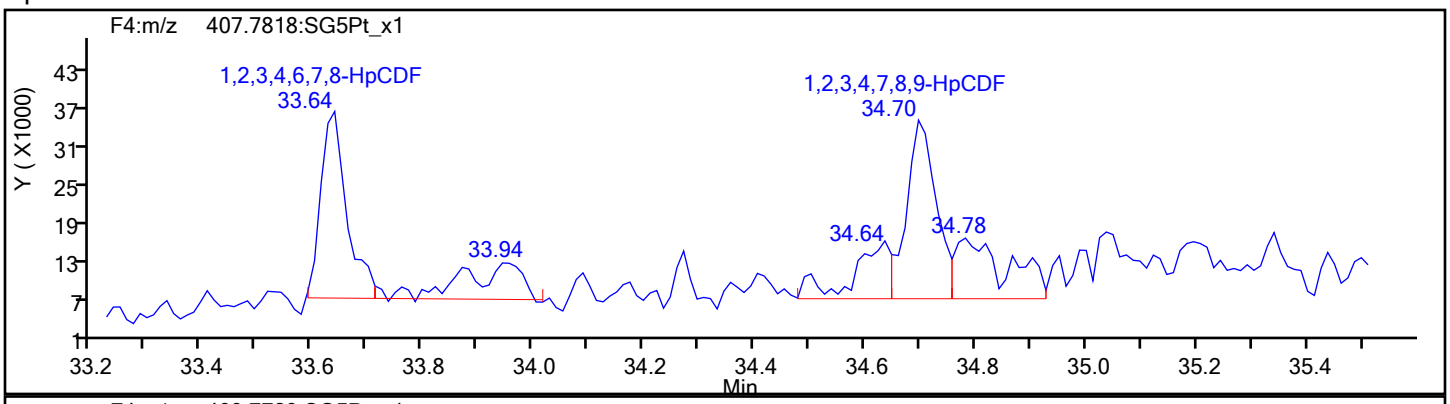
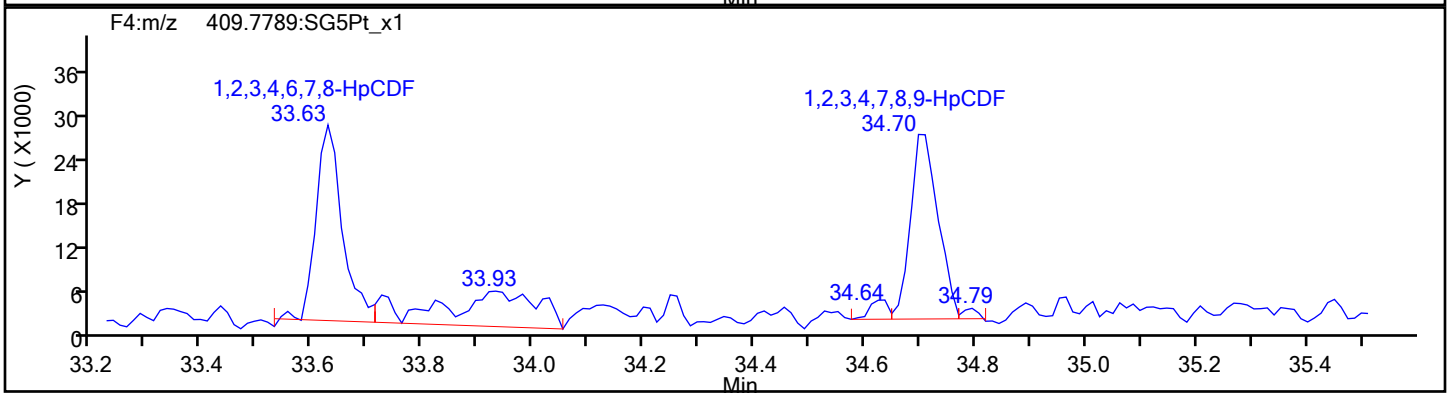
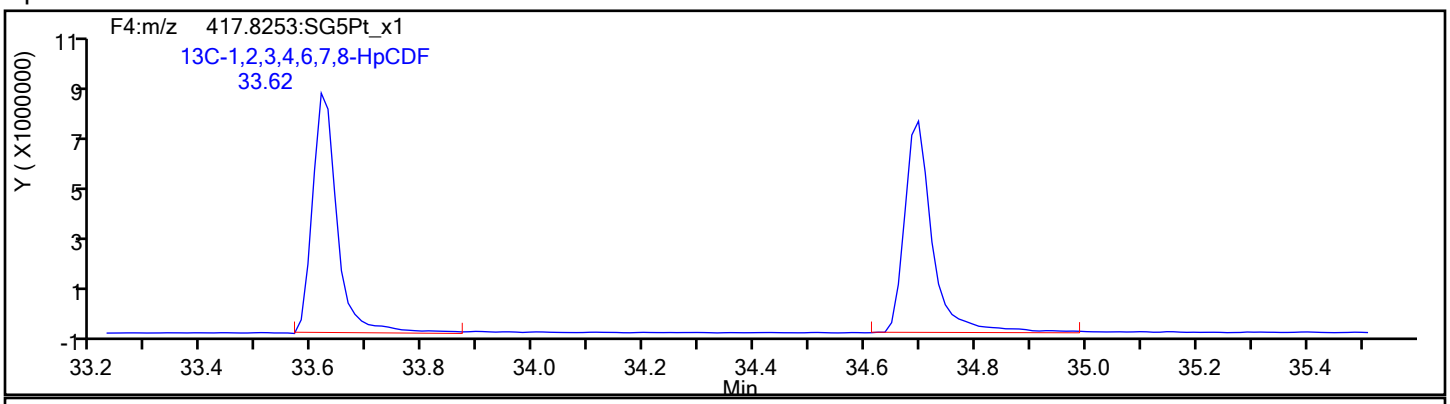
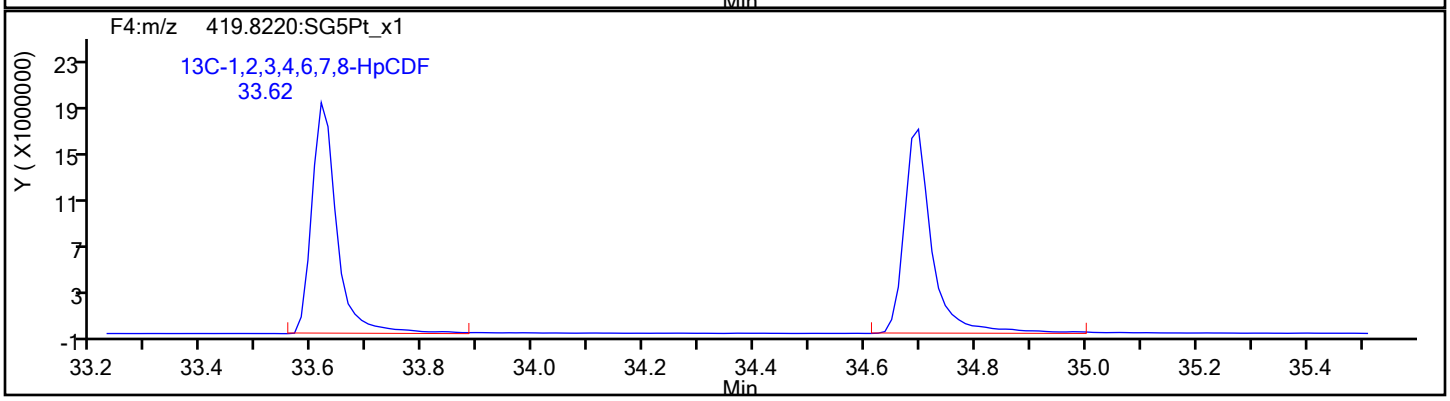
HpCDF





HpCDF Standards



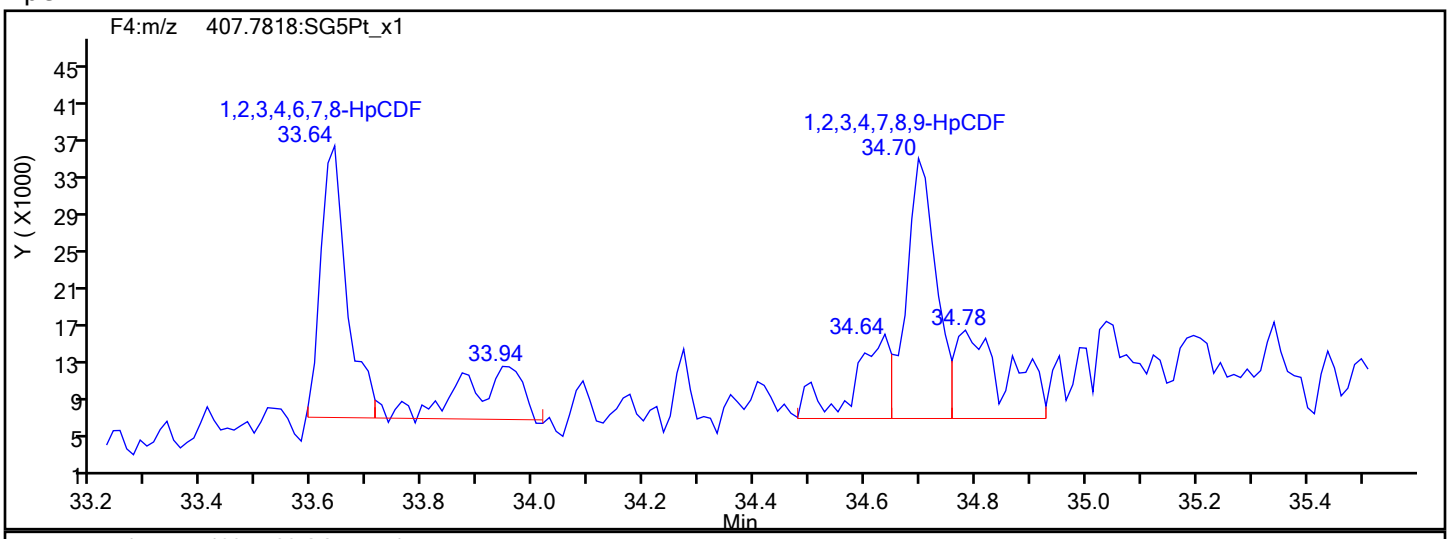


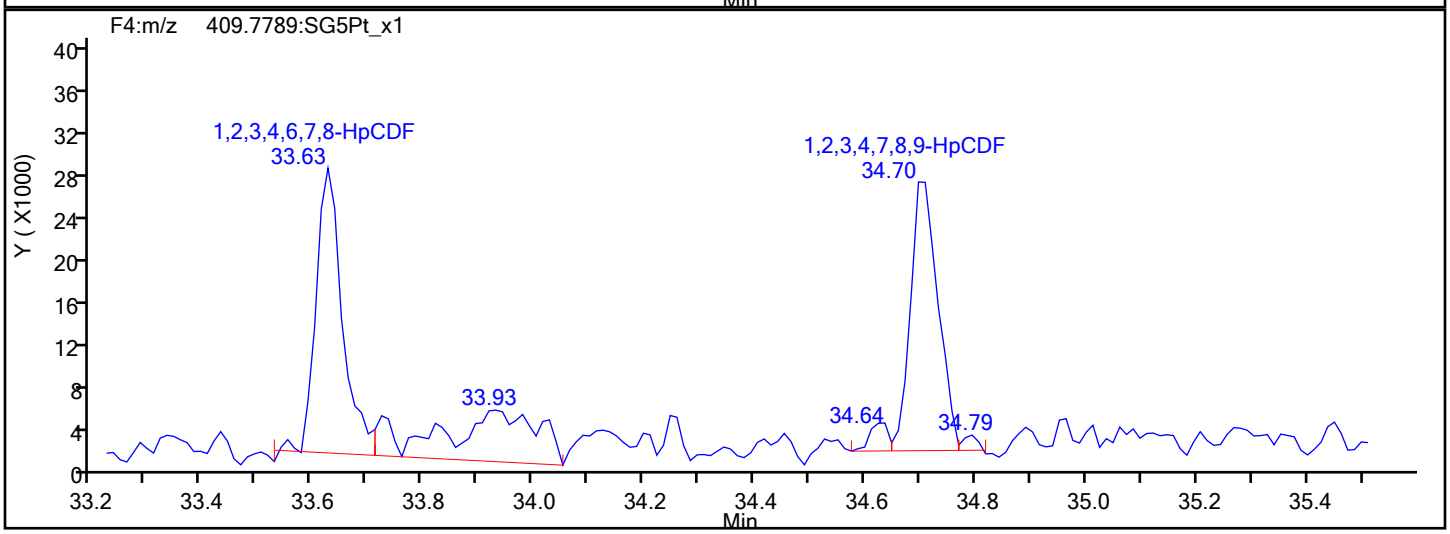
Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

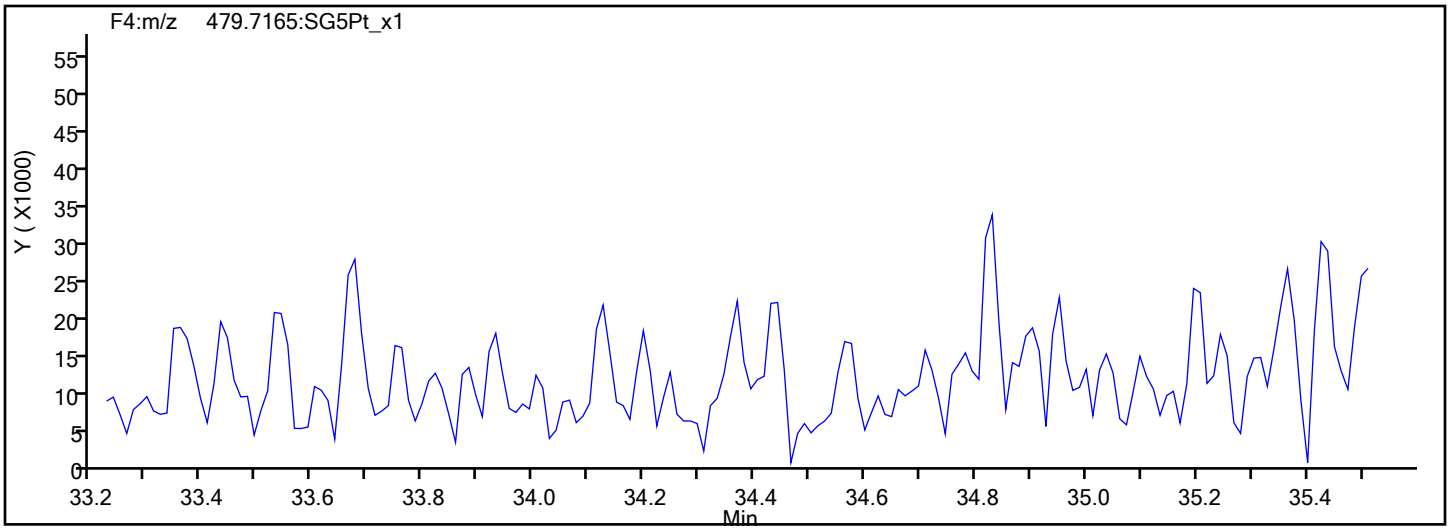
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d
Injection Date: 19-Dec-2019 13:23:46 Injection Vol: 2.0 ul
Instrument ID: 3D5 Operator ID: AJS
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL
Client ID:
Worklist#: 346752 Sample Line#: 4
Column Type: DB-5 Column Dia: 0.32 mm

HpCDF





HpCDF Interference Mass



Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d

Injection Date: 19-Dec-2019 13:23:46 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

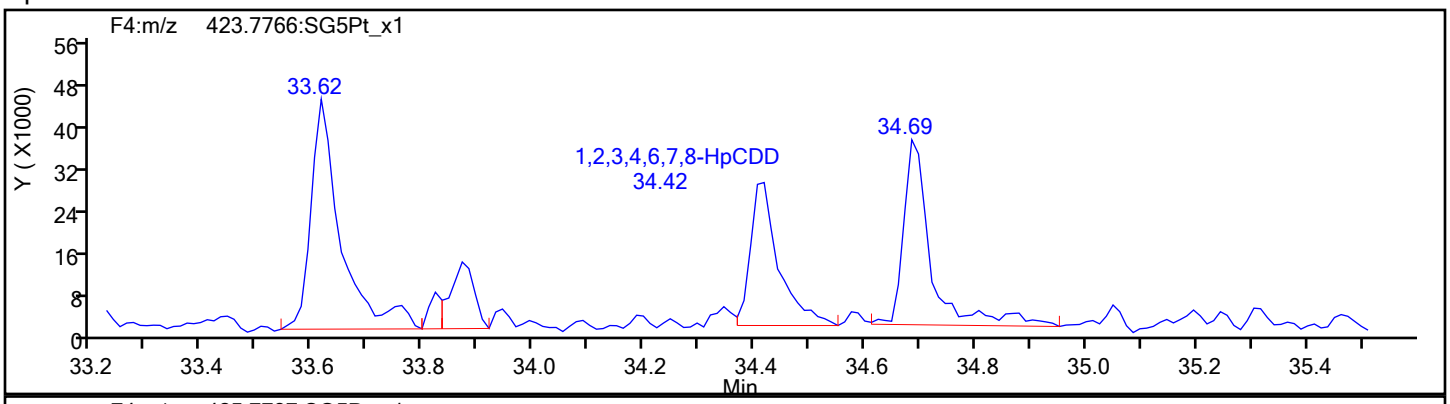
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

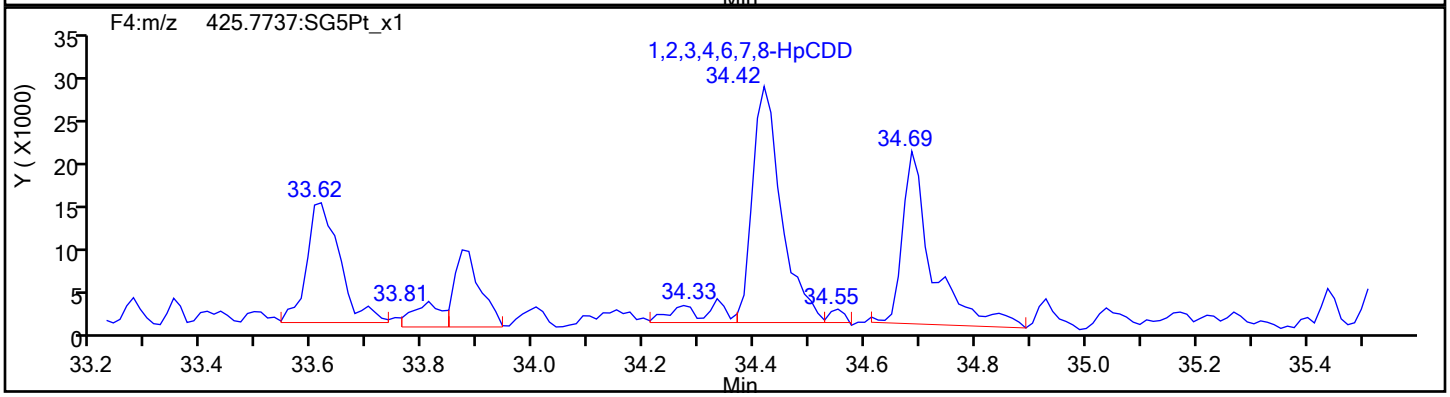
Client ID:

Worklist#: 346752 Sample Line#: 4

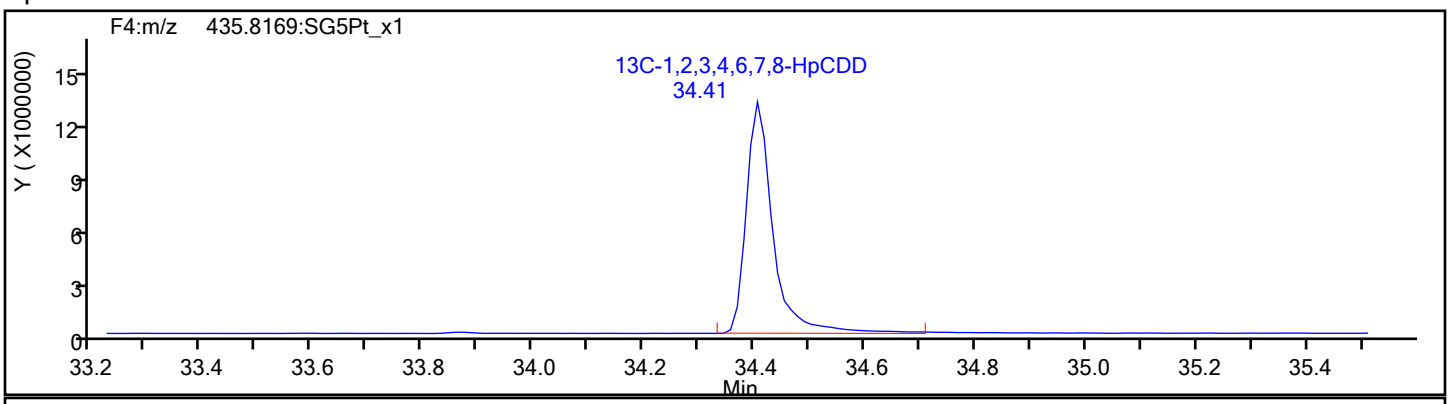
Column Type: DB-5 Column Dia: 0.32 mm

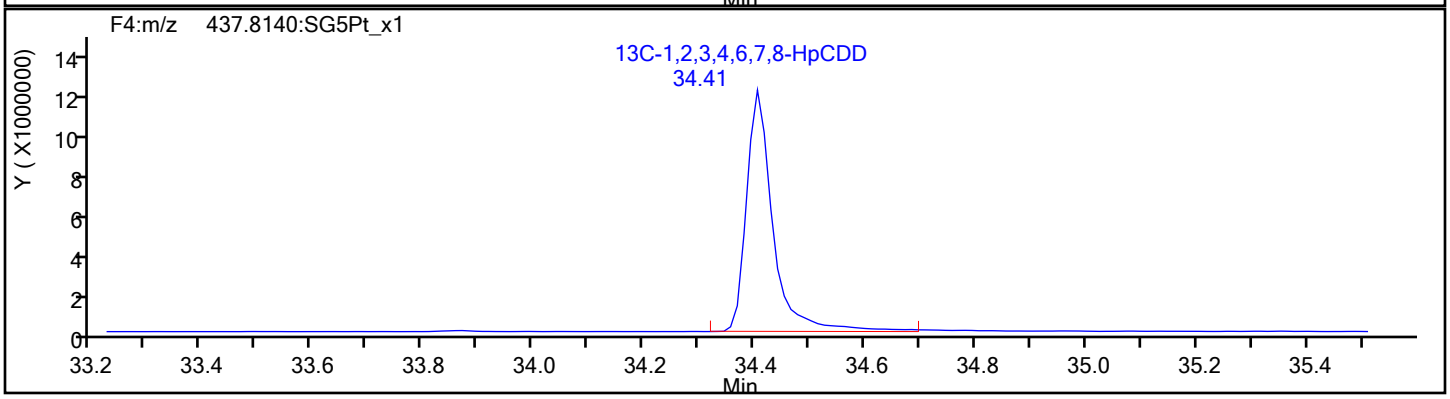
HpCDD





HpCDD Standards





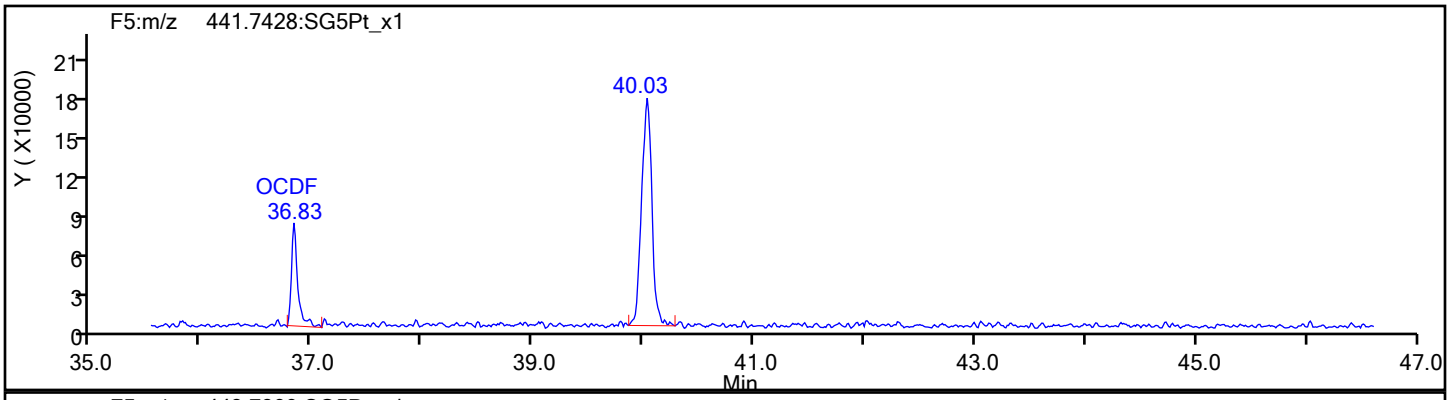
Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

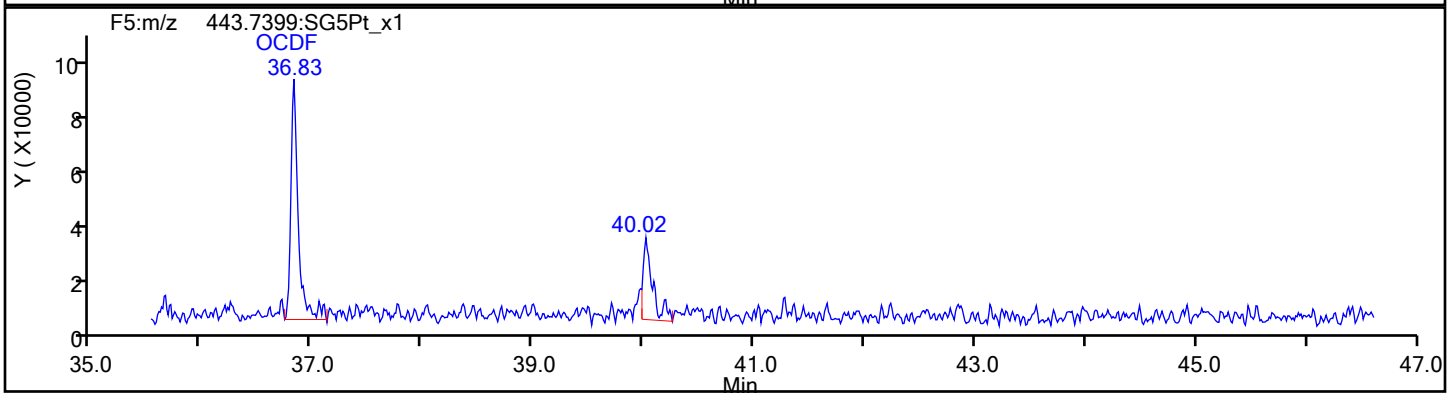
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d

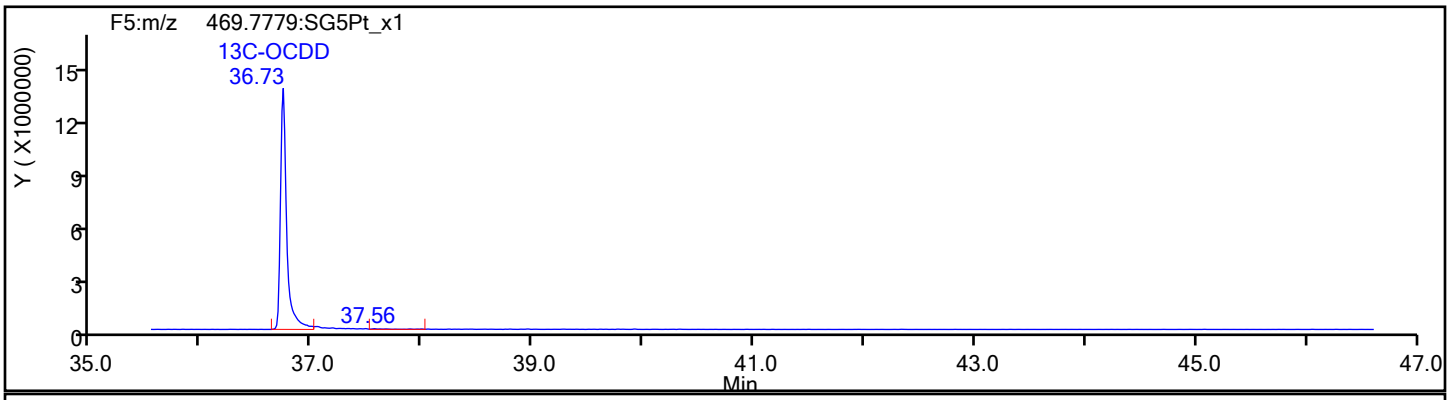
Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

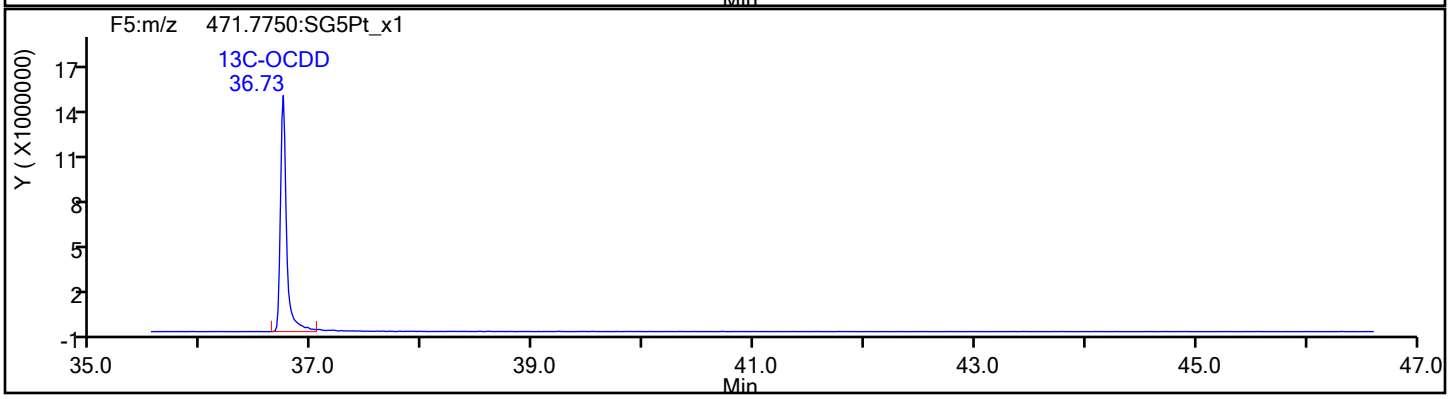
OCDF





OCDF Standards



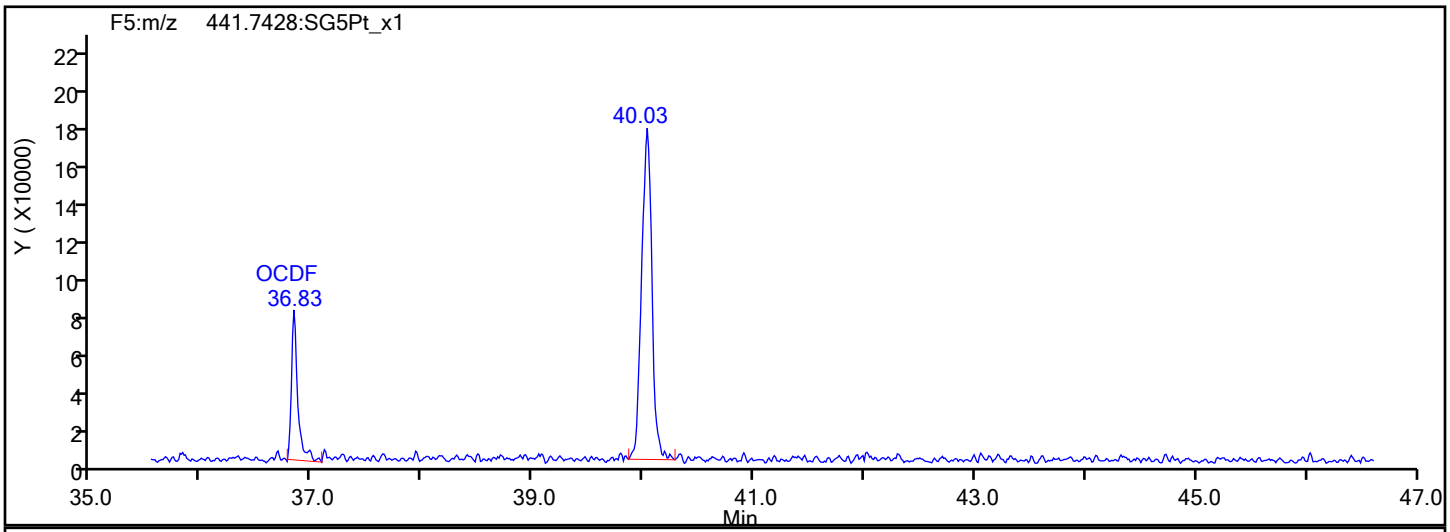


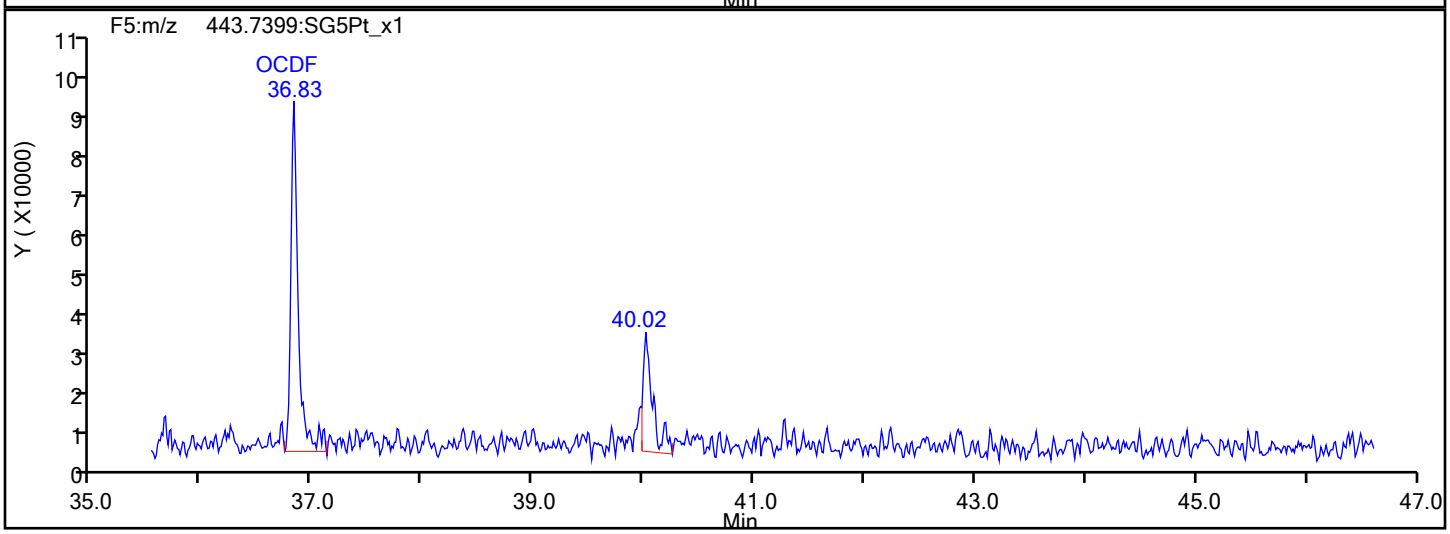
Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

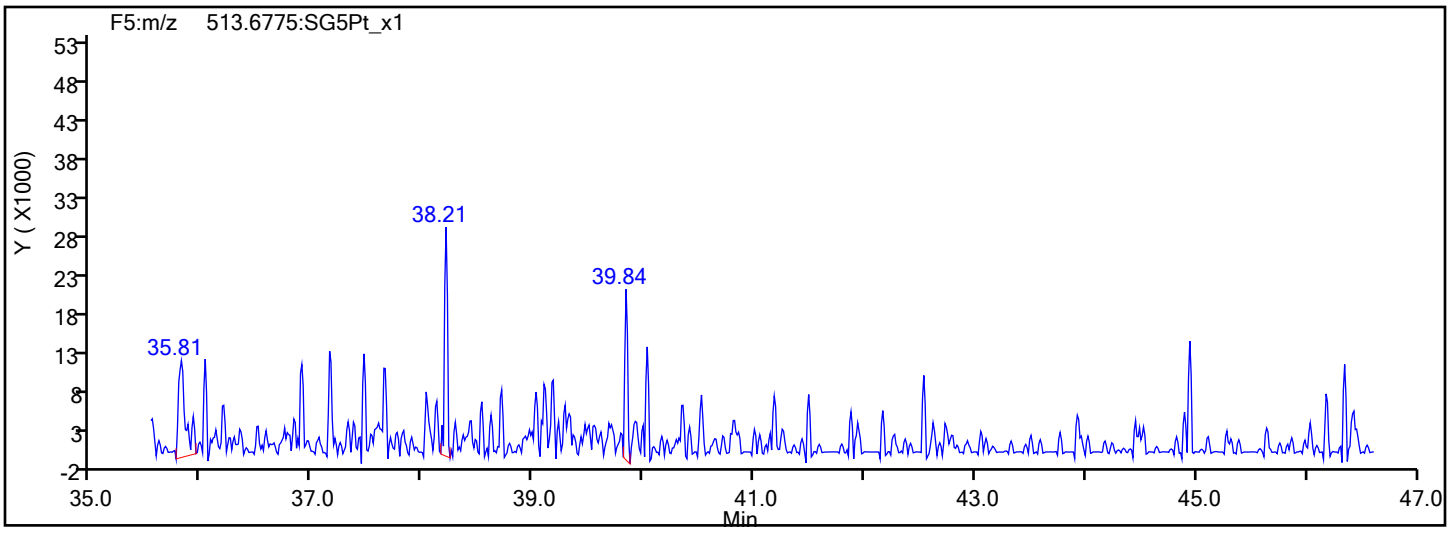
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d		
Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass



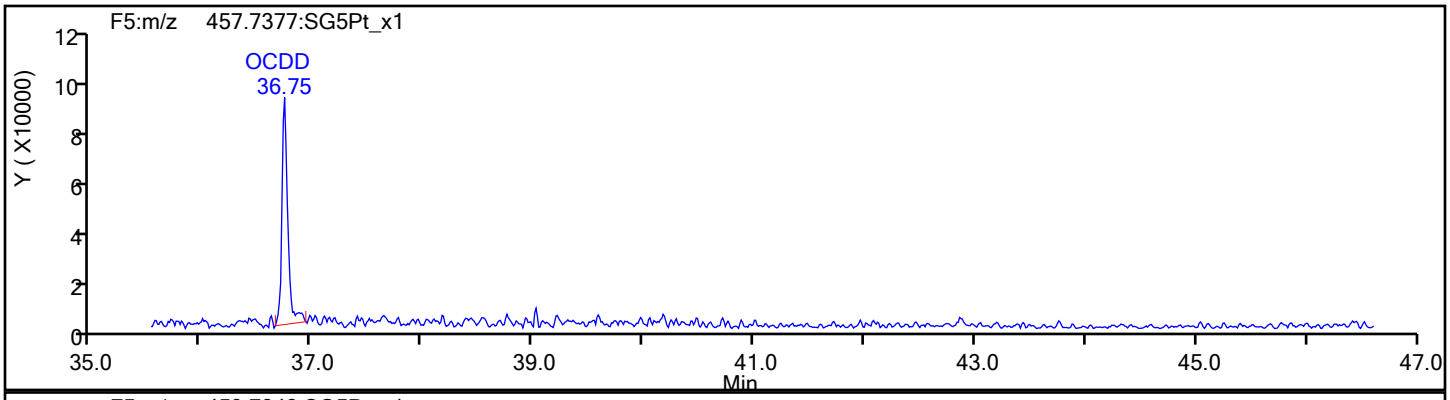
Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

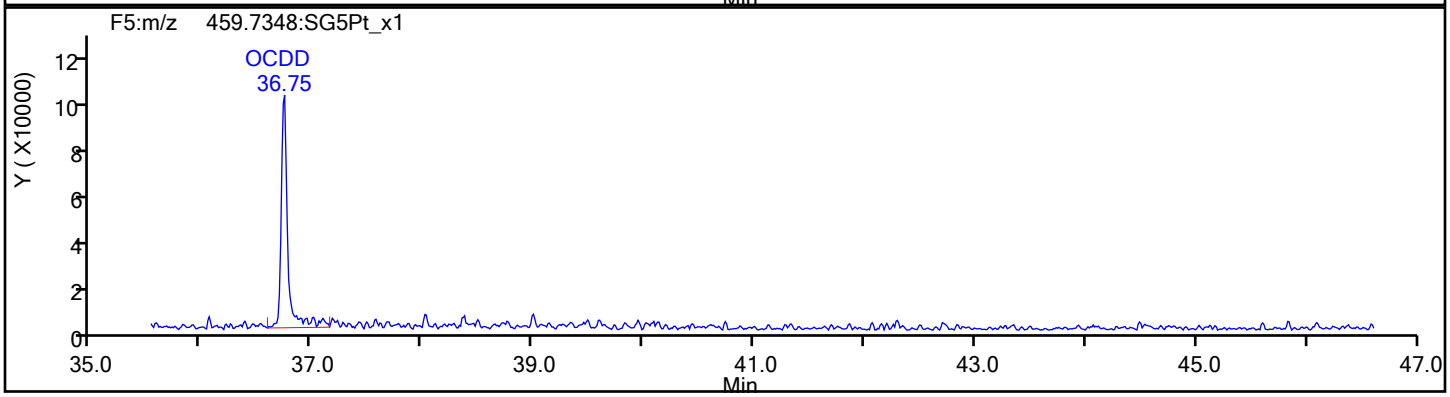
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d

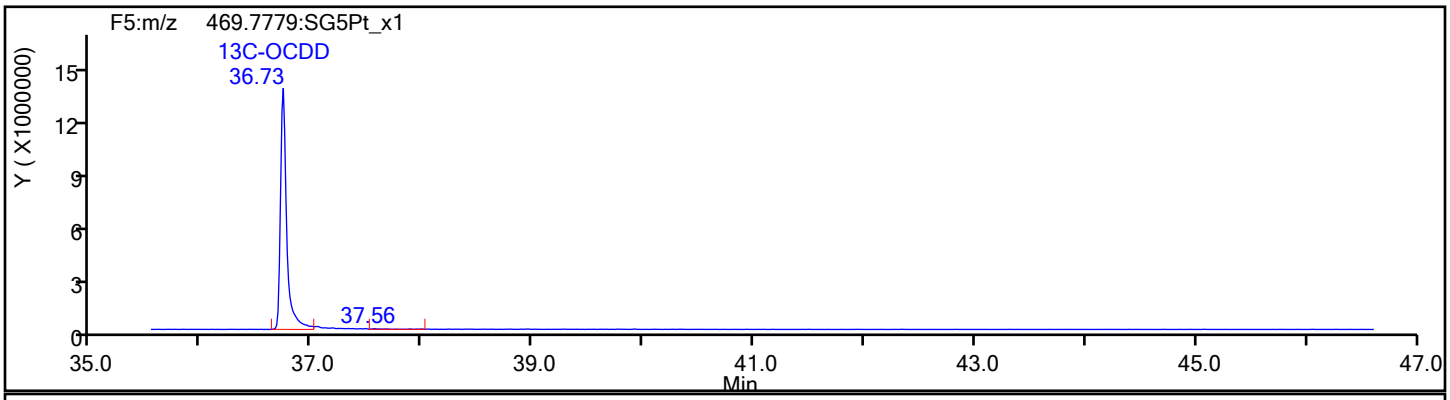
Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm

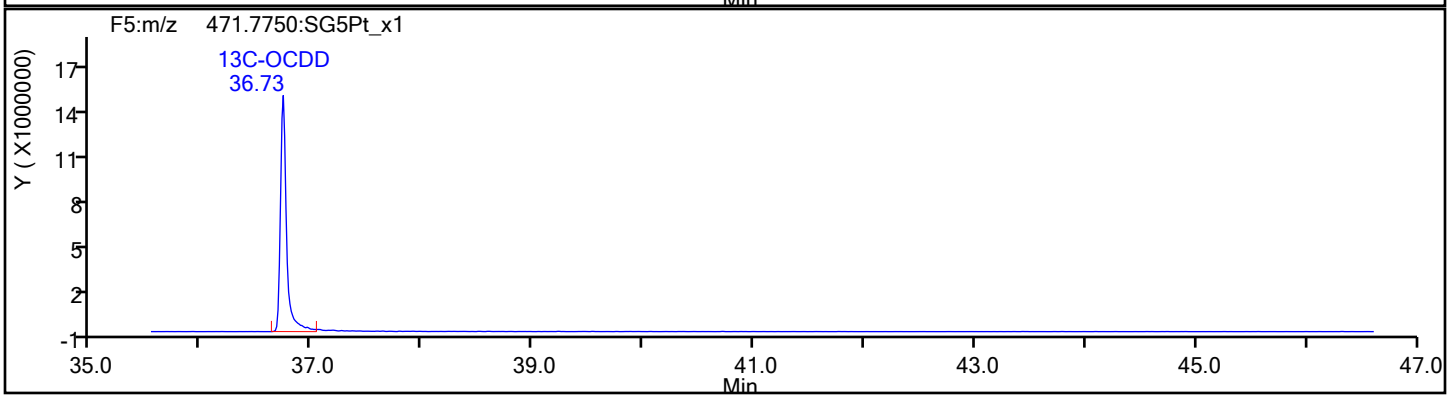
OCDD





OCDD Standards

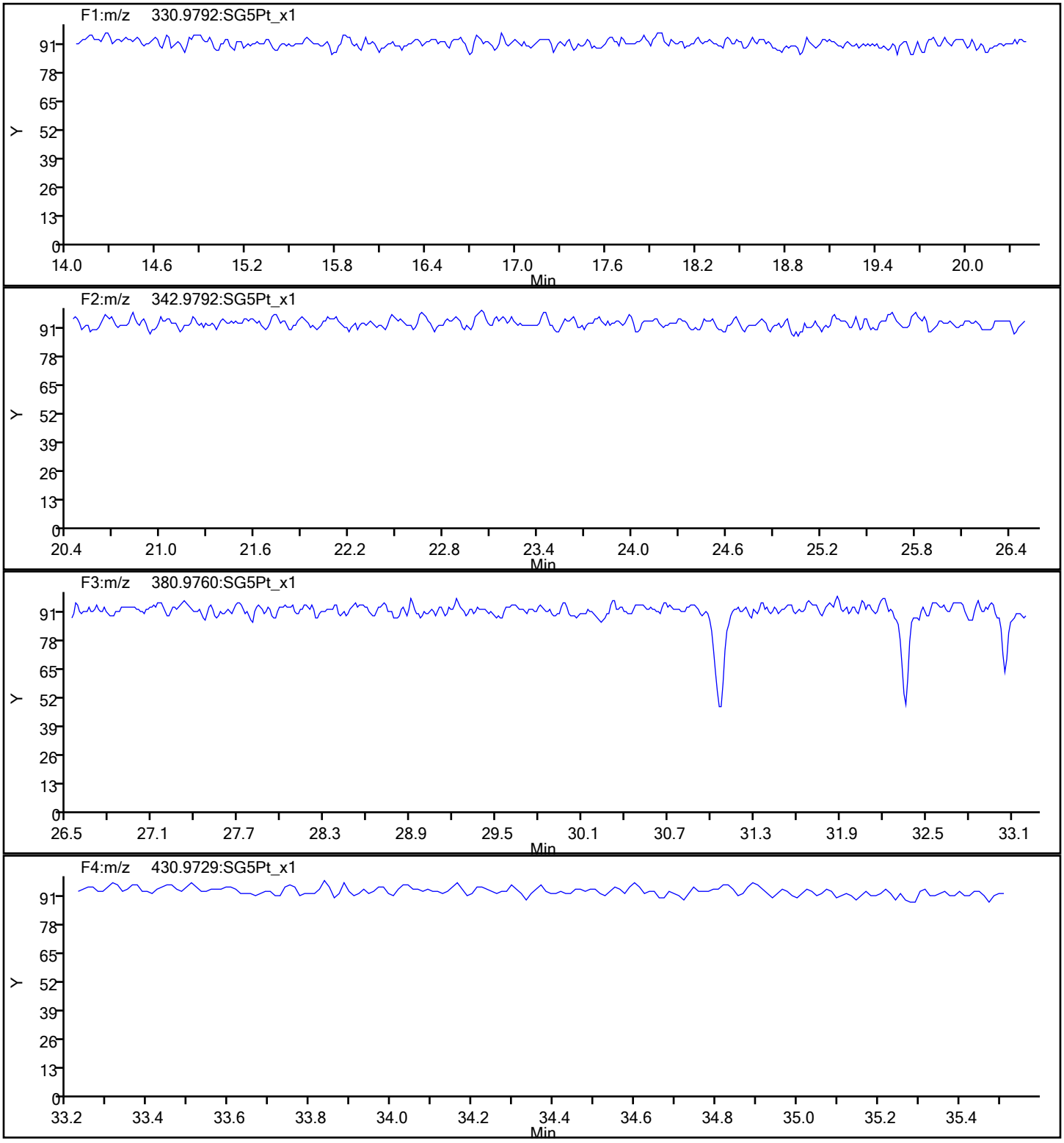




Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

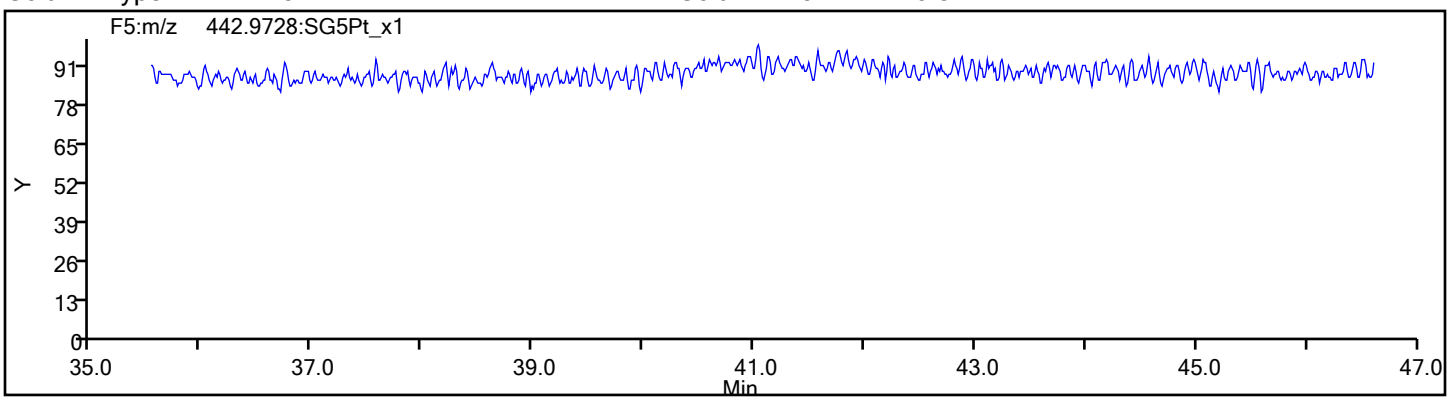
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d		
Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:12:10 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_4.d		
Injection Date:	19-Dec-2019 13:23:46	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	4
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-344942/2-A

Matrix: Sediment Lab File ID: 19DE193D5_5.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 14:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	20.7		1.0	0.16
51207-31-9	2,3,7,8-TCDF	22.0		1.0	0.14
40321-76-4	1,2,3,7,8-PeCDD	99.6		5.0	0.30
57117-41-6	1,2,3,7,8-PeCDF	104		5.0	0.58
57117-31-4	2,3,4,7,8-PeCDF	98.8		5.0	0.60
39227-28-6	1,2,3,4,7,8-HxCDD	95.3		5.0	0.35
57653-85-7	1,2,3,6,7,8-HxCDD	105		5.0	0.37
19408-74-3	1,2,3,7,8,9-HxCDD	98.0		5.0	0.32
70648-26-9	1,2,3,4,7,8-HxCDF	101		5.0	0.66
57117-44-9	1,2,3,6,7,8-HxCDF	107		5.0	0.66
72918-21-9	1,2,3,7,8,9-HxCDF	110		5.0	0.52
60851-34-5	2,3,4,6,7,8-HxCDF	108		5.0	0.51
35822-46-9	1,2,3,4,6,7,8-HpCDD	101		5.0	0.66
67562-39-4	1,2,3,4,6,7,8-HpCDF	105		5.0	1.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	103		5.0	1.4
3268-87-9	OCDD	186		10	0.30
39001-02-0	OCDF	208		10	0.39
41903-57-5	Total TCDD	20.7		1.0	0.16
30402-14-3	Total TCDF	22.0		1.0	0.14
36088-22-9	Total PeCDD	99.6		5.0	0.30
30402-15-4	Total PeCDF	203		5.0	0.59
34465-46-8	Total HxCDD	298		5.0	0.35
55684-94-1	Total HxCDF	427		5.0	0.59
37871-00-4	Total HpCDD	101		5.0	0.66
38998-75-3	Total HpCDF	208		5.0	1.3

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-344942/2-A

Matrix: Sediment Lab File ID: 19DE193D5_5.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 14:11

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	67		20-175
89059-46-1	13C-2,3,7,8-TCDF	68		22-152
109719-79-1	13C-1,2,3,7,8-PeCDD	66		21-227
109719-77-9	13C-1,2,3,7,8-PeCDF	66		21-192
116843-02-8	13C-2,3,4,7,8-PeCDF	71		13-328
109719-80-4	13C-1,2,3,4,7,8-HxCDD	74		21-193
109719-81-5	13C-1,2,3,6,7,8-HxCDD	73		25-163
114423-98-2	13C-1,2,3,4,7,8-HxCDF	72		19-202
116843-03-9	13C-1,2,3,6,7,8-HxCDF	72		21-159
116843-04-0	13C-1,2,3,7,8,9-HxCDF	65		17-205
116843-05-1	13C-2,3,4,6,7,8-HxCDF	69		22-176
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	71		26-166
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	71		21-158
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	73		20-186
114423-97-1	13C-OCDD	70		13-199

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	106		31-191

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d
Lims ID: LCS 320-344942/2-A
Client ID:
Sample Type: LCS
Inject. Date: 19-Dec-2019 14:11:22 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-344942/2-A LCS 320-344942/2-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: shardaa Date: 19-Dec-2019 16:34:22

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.597	165045237	0.81	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.098	158256935	0.78	1.4157	67.7	67.7	0.1799	0.1799	67.73	
2,3,7,8-TCDF	17.113	16556854	0.78	0.9502	11.0	11.0	0.0677	0.0677	110	
A Non-2,3,7,8-sub-TCDF	16.811						0.0677	0.0677		
S Total TCDF					11.0	11.0	0.0677	0.0677		
D 13C-2,3,7,8-TCDD	17.778	108470427	0.80	0.9751	67.4	67.4	0.1898	0.1898	67.40	
2,3,7,8-TCDD	17.808	11784345	0.76	1.0477	10.4	10.4	0.0799	0.0799	104	
$ 37Cl4-2,3,7,8-TCDD	17.808	94135698		1.3480	42.3	42.3	0.0804	0.0804	106	
A Non-2,3,7,8-sub-TCDD	17.249						0.0799	0.0799		
S Total TCDD					10.4	10.4	0.0799	0.0799		
D 13C-1,2,3,7,8-PeCDF	22.018	128191945	1.56	1.1786	65.9	65.9	0.2260	0.2260	65.90	
1,2,3,7,8-PeCDF	22.045	68766531	1.62	1.0302	52.1	52.1	0.2912	0.2912	104	
D 13C-2,3,4,7,8-PeCDF	23.341	133233815	1.57	1.1308	71.4	71.4	0.2356	0.2356	71.39	
2,3,4,7,8-PeCDF	23.355	68534834	1.58	1.0410	49.4	49.4	0.3022	0.3022	98.83	
A F1 PeCDFs	19.774						0.0743	0.0743		
A Non-2,3,7,8-sub-PeCDF	22.858						0.2966	0.2966		
S Total PeCDF					101.5	101.5	0.2967	0.2967		
D 13C-1,2,3,7,8-PeCDD	24.050	82797622	1.56	0.7572	66.3	66.3	0.1092	0.1092	66.25	
1,2,3,7,8-PeCDD	24.077	44741092	1.61	1.0855	49.8	49.8	0.1516	0.1516	99.56	
A Non-2,3,7,8-sub-PeCDD	22.973						0.1516	0.1516		
S Total PeCDD					49.8	49.8	0.1516	0.1516		
D 13C-1,2,3,4,7,8-HxCDF	30.193	117417067	0.53	1.1043	71.9	71.9	0.3117	0.3117	71.91	
1,2,3,4,7,8-HxCDF	30.220	68349545	1.27	1.1472	50.7	50.7	0.3324	0.3324	101	
D 13C-1,2,3,6,7,8-HxCDF	30.393	121288946	0.53	1.1470	71.5	71.5	0.3000	0.3000	71.51	
1,2,3,6,7,8-HxCDF	30.419	74324210	1.29	1.1450	53.5	53.5	0.3276	0.3276	107	
D 13C-2,3,4,6,7,8-HxCDF	31.298	110280631	0.52	1.0769	69.3	69.3	0.3196	0.3196	69.25	
2,3,4,6,7,8-HxCDF	31.325	69840316	1.24	1.1726	54.0	54.0	0.2533	0.2533	108	
D 13C-1,2,3,7,8,9-HxCDF	32.150	97507110	0.54	1.0115	65.2	65.2	0.3402	0.3402	65.19	
1,2,3,7,8,9-HxCDF	32.164	62992108	1.26	1.1717	55.1	55.1	0.2611	0.2611	110	
A Non-2,3,7,8-sub-HxCDF	29.880						0.2894	0.2894		
S Total HxCDF					213.4	213.4	0.2936	0.2936		

Report Date: 20-Dec-2019 14:12:43 Chrom Revision: 2.3 15-Dec-2019 06:20:02
Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	147874538	1.32	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.498	87051271	1.26	0.7962	73.9	73.9	0.3438	0.3438	73.94	
1,2,3,4,7,8-HxCDD	31.524	45356047	1.26	1.0934	47.7	47.7	0.1754	0.1754	95.31	
D 13C-1,2,3,6,7,8-HxCDD	31.618	94602804	1.28	0.8720	73.4	73.4	0.3139	0.3139	73.37	
1,2,3,6,7,8-HxCDD	31.631	51749050	1.26	1.0429	52.5	52.5	0.1863	0.1863	105	
1,2,3,7,8,9-HxCDD	31.977	53716310	1.26	1.2073	49.0	49.0	0.1599	0.1599	97.97	
A Non-2,3,7,8-sub-HxCDD	30.519						0.1732	0.1732		
S Total HxCDD					149.1	149.1	0.1738	0.1738		
D 13C-1,2,3,4,6,7,8-HpCDF	33.616	79073738	0.45	0.7577	70.6	70.6	0.9625	0.9625	70.58	
1,2,3,4,6,7,8-HpCDF	33.628	61511067	1.04	1.4804	52.5	52.5	0.5525	0.5525	105	
D 13C-1,2,3,4,7,8,9-HpCDF	34.685	75387537	0.43	0.6941	73.4	73.4	1.051	1.051	73.44	
1,2,3,4,7,8,9-HpCDF	34.697	50357598	1.04	1.2933	51.6	51.6	0.7244	0.7244	103	
A Non-2,3,7,8-sub-HpCDF	34.169						0.6298	0.6298		
S Total HpCDF					104.2	104.2	0.6385	0.6385		
D 13C-1,2,3,4,6,7,8-HpCDD	34.405	73648106	1.07	0.7058	70.6	70.6	0.4638	0.4638	70.56	
1,2,3,4,6,7,8-HpCDD	34.417	39005031	1.06	1.0535	50.3	50.3	0.3290	0.3290	101	
A Non-2,3,7,8-sub-HpCDD	34.144						0.3290	0.3290		
S Total HpCDD					50.3	50.3	0.3290	0.3290		
D 13C-OCDD	36.722	95137218	0.92	0.4603	139.8	139.8	0.2306	0.2306	69.89	
OCDF	36.829	68853913	0.90	1.3945	103.8	103.8	0.1969	0.1969	104	
OCDD	36.734	50218090	0.89	1.1362	92.9	92.9	0.1501	0.1501	92.92	

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d
Lims ID: LCS 320-344942/2-A
Client ID:
Sample Type: LCS
Inject. Date: 19-Dec-2019 14:11:22 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-344942/2-A LCS 320-344942/2-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: shardaa Date: 19-Dec-2019 16:34:22

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.597	17.612	-1		73786892	18933490	18688	46720	1013		
333.9339	17.597	17.612	-1		91258345	22838806	12240	30600	1866	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.098	17.113	-1	0.972	69525401	16826403	20904	52260	805		
317.9389	17.098	17.113	-1	0.972	88731534	21004701	21644	54110	970	0.78(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.113	17.128	-1	1.001	7255655	1742715	3410	8525	511		
305.8987	17.113	17.128	-1	1.001	9301199	2267723	6329	15822	358	0.78(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						3410	8525			
305.8987	16.811						6329	15822			
13C-2,3,7,8-TCDD											
331.9368	17.778	17.793	-1	1.010	48356861	10774374	18688	46720	577		
333.9339	17.793	17.793	0	1.011	60113566	13181199	12240	30600	1077	0.80(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.808	17.823	-1	1.002	5077797	1275878	5211	13027	245		
321.8936	17.808	17.823	-1	1.002	6706548	1589136	2811	7027	565	0.76(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.808	17.823	-1	1.012	94135698	21958437	18104	45260	1213		
A Non-2,3,7,8-sub-TCDD											
319.8965	17.249						5211	13027			
321.8936	17.249						2811	7027			
13C-1,2,3,7,8-PeCDF											
351.9000	22.018	22.018	0	1.251	78211090	13737776	26964	67410	509		
353.8970	22.018	22.018	0	1.251	49980855	8690552	17542	43855	495	1.56(1.32-1.78)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8-PeCDF											
339.8597	22.045	22.045	0	1.001	42483128	7586894	14368	35920	528		
341.8567	22.045	22.045	0	1.001	26283403	4585922	12548	31370	365	1.62(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.326	81355631	13121773	26964	67410	487		
353.8970	23.341	23.341	0	1.326	51878184	8271974	17542	43855	472	1.57(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.355	23.355	0	1.001	41930113	6744595	14368	35920	469		
341.8567	23.368	23.355	1	1.001	26604721	4226907	12548	31370	337	1.58(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.774						1537	3842			
341.8567	19.774						5211	13027			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						14368	35920			
341.8567	22.858						12548	31370			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.367	50458354	7526619	7656	19140	983		
369.8919	24.050	24.050	0	1.367	32339268	4938941	6163	15407	801	1.56(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077	24.077	0	1.001	27592287	4349331	6007	15017	724		
357.8516	24.077	24.077	0	1.001	17148805	2676196	2201	5502	1216	1.61(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.973						6007	15017			
357.8516	22.973						2201	5502			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	40761790	6565344	16509	41272	398		
385.8610	30.193	30.193	0	0.945	76655277	12479314	31189	77972	400	0.53(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.220	30.206	1	1.001	38229403	6410459	16093	40232	398		
375.8178	30.206	30.206	0	1.000	30120142	5012147	12954	32385	387	1.27(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.393	30.406	-1	0.951	42101273	6704854	16509	41272	406		
385.8610	30.393	30.406	-1	0.951	79187673	12654193	31189	77972	406	0.53(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.419	30.420	0	1.001	41880983	6736349	16093	40232	419		
375.8178	30.419	30.420	0	1.001	32443227	5153556	12954	32385	398	1.29(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.298	31.312	-1	0.979	37920541	8435876	16509	41272	511		
385.8610	31.298	31.312	-1	0.979	72360090	16014119	31189	77972	513	0.52(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325	31.325	0	1.001	38697553	8697185	16093	40232	540		
375.8178	31.325	31.325	0	1.001	31142763	6786740	12954	32385	524	1.24(1.05-1.43)	
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.150	32.151	0	1.006	34035961	8266623	16509	41272	501		
385.8610	32.150	32.151	0	1.006	63471149	15466816	31189	77972	496	0.54(0.43-0.59)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,7,8,9-HxCDF											
373.8208	32.164	32.164	0	1.000	35163005	8544035	16093	40232	531		
375.8178	32.164	32.164	0	1.000	27829103	6627657	12954	32385	512	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						16093	40232			
375.8178	29.880						12954	32385			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		84082746	19776455	19783	49457	1000		
403.8529	31.964	31.964	0		63791792	14871966	18150	45375	819	1.32(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.498	31.511	-1	0.985	48455617	12224843	19783	49457	618		
403.8529	31.498	31.511	-1	0.985	38595654	9718193	18150	45375	535	1.26(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.524	31.525	0	1.001	25317947	6302112	9546	23865	660		
391.8127	31.511	31.525	-1	1.000	20038100	5010087	7286	18215	688	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	53142666	12058652	19783	49457	610		
403.8529	31.618	31.618	0	0.989	41460138	9603879	18150	45375	529	1.28(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.631	31.631	0	1.000	28886595	6471086	9546	23865	678		
391.8127	31.631	31.631	0	1.000	22862455	5218364	7286	18215	716	1.26(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.977	31.977	0	1.015	29990521	7203161	9546	23865	755		
391.8127	31.977	31.977	0	1.015	23725789	5671831	7286	18215	778	1.26(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.519						9546	23865			
391.8127	30.519						7286	18215			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.616	33.628	-1	1.052	24434473	8191886	32687	81717	251		
419.8220	33.616	33.628	-1	1.052	54639265	17543905	68378	170945	257	0.45(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.628	33.628	0	1.000	31340917	10134215	41540	103850	244		
409.7789	33.628	33.628	0	1.000	30170150	9664075	42662	106655	227	1.04(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.685	34.697	-1	1.085	22622343	6737155	32687	81717	206		
419.8220	34.685	34.697	-1	1.085	52765194	15731103	68378	170945	230	0.43(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.697	34.709	-1	1.000	25718370	7646211	41540	103850	184		
409.7789	34.697	34.709	-1	1.000	24639228	7352502	42662	106655	172	1.04(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						41540	103850			
409.7789	34.169						42662	106655			
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.405	34.418	-1	1.076	38033993	11303580	25556	63890	442		
437.8140	34.405	34.418	-1	1.076	35614113	10918145	19817	49542	551	1.07(0.88-1.20)	

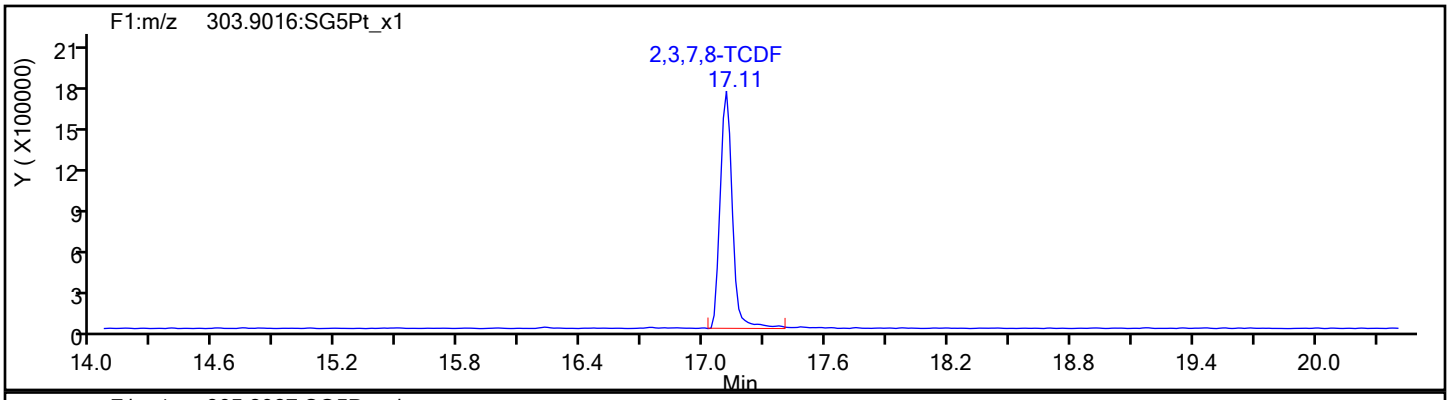
Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
1,2,3,4,6,7,8-HpCDD											
423.7766	34.417	34.418	0	1.000	20067033	6048356	18096	45240	334		
425.7737	34.405	34.418	-1	1.000	18937998	5495470	12710	31775	432	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.144						18096	45240			
425.7737	34.144						12710	31775			
13C-OCDD											
469.7779	36.722	36.734	-1	1.149	45703771	11311065	6858	17145	1649		
471.7750	36.722	36.734	-1	1.149	49433447	12498691	7849	19622	1592	0.92(0.76-1.02)	
OCDF											
441.7428	36.829	36.830	0	1.003	32639783	8465547	7004	17510	1209		
443.7399	36.829	36.830	0	1.003	36214130	9076475	6069	15172	1496	0.90(0.76-1.02)	
OCDD											
457.7377	36.734	36.746	-1	1.000	23667951	6101068	3661	9152	1667		
459.7348	36.734	36.746	-1	1.000	26550139	6970400	4461	11152	1563	0.89(0.76-1.02)	

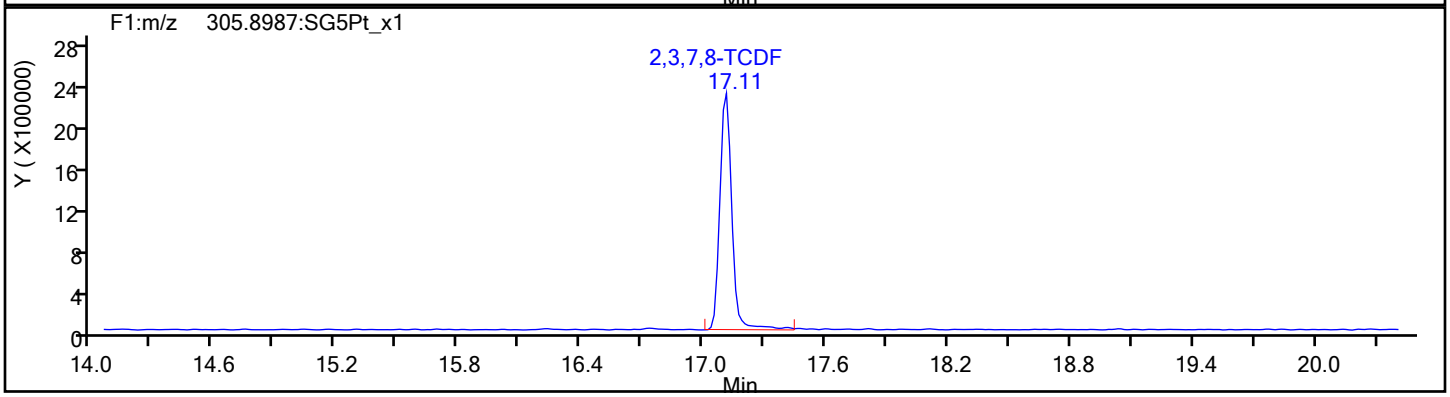
Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

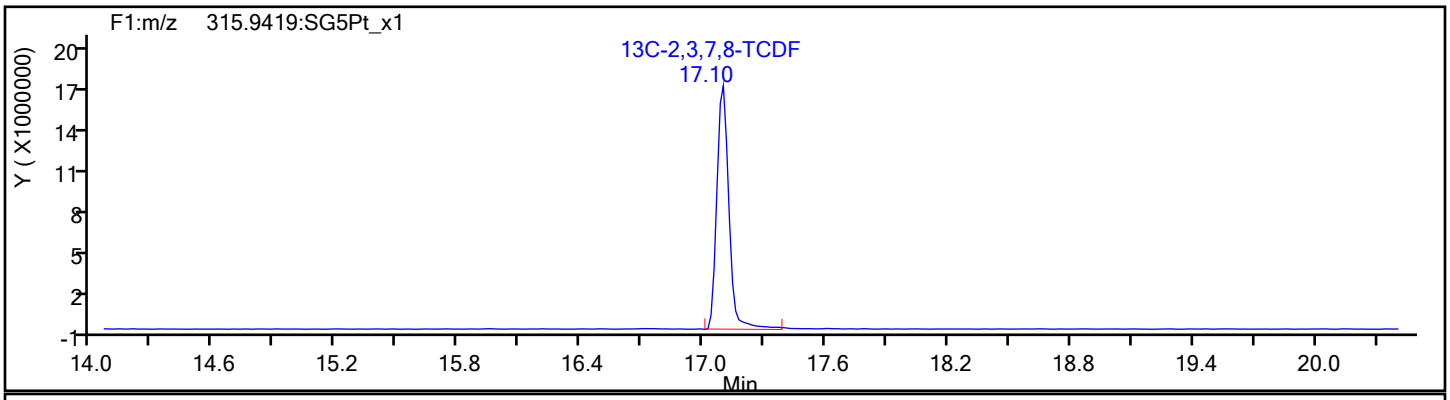
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

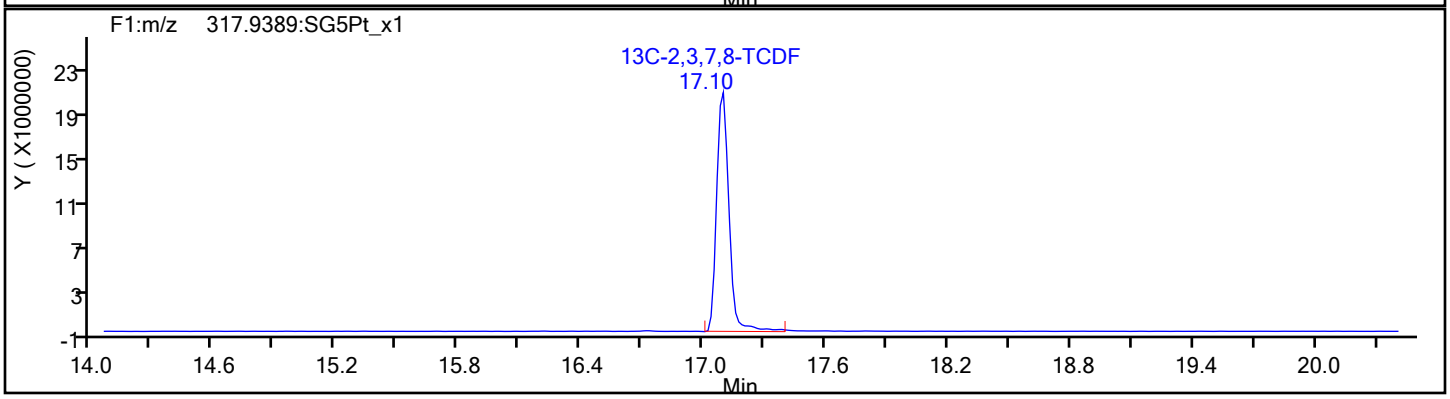
TCDF





TCDF Standards



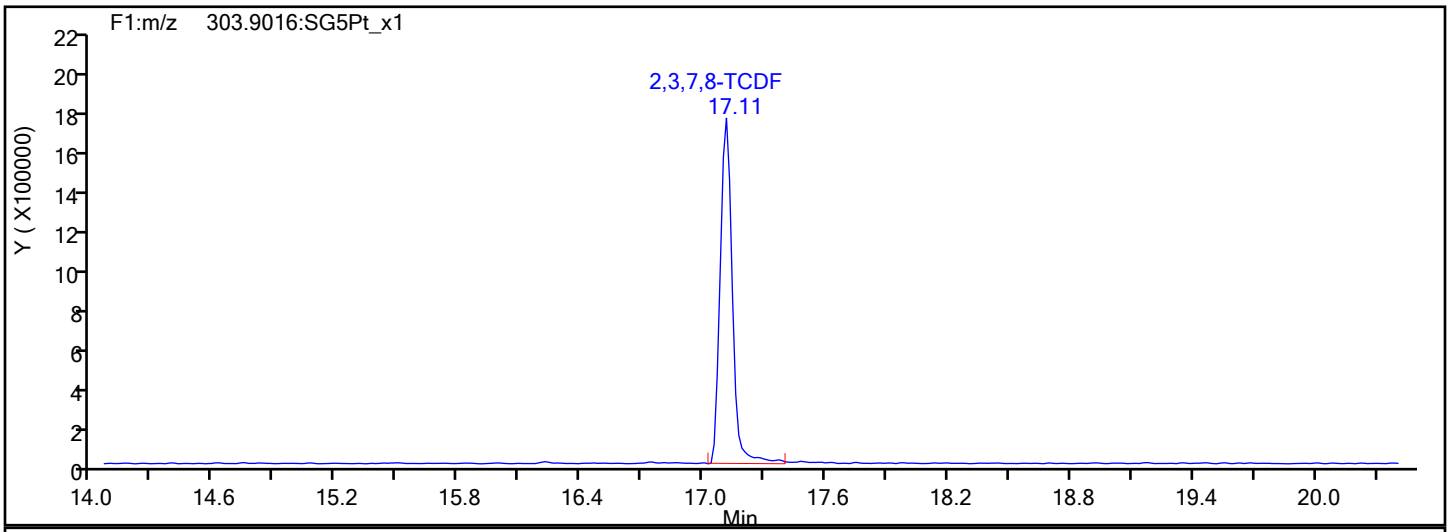


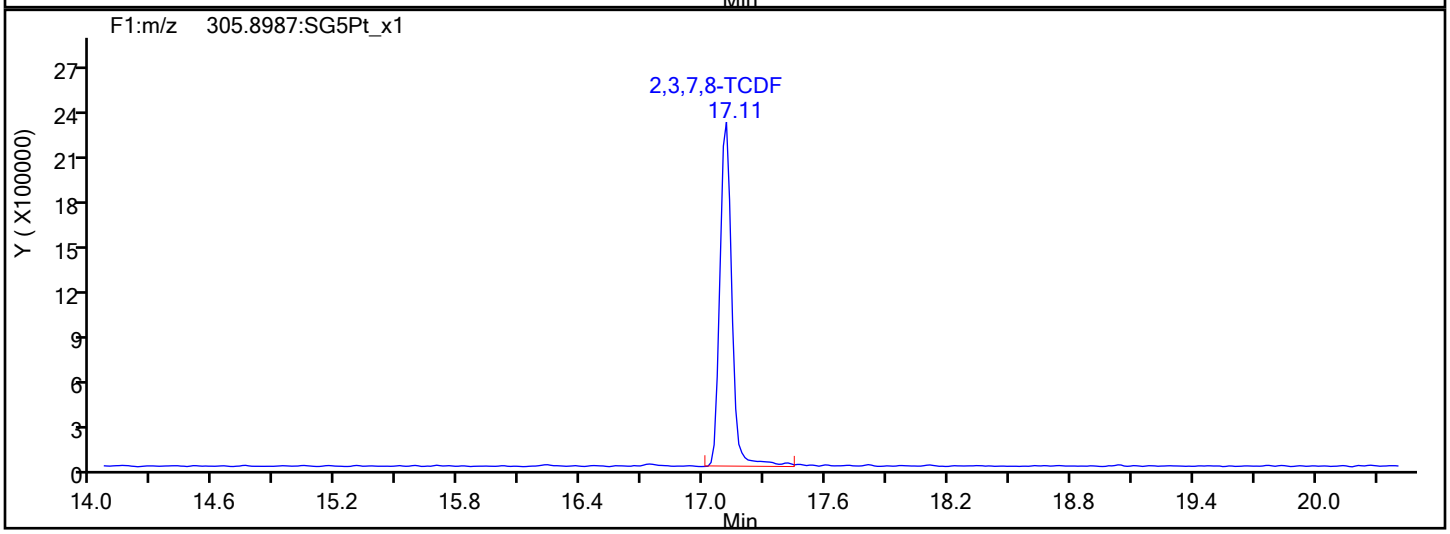
Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

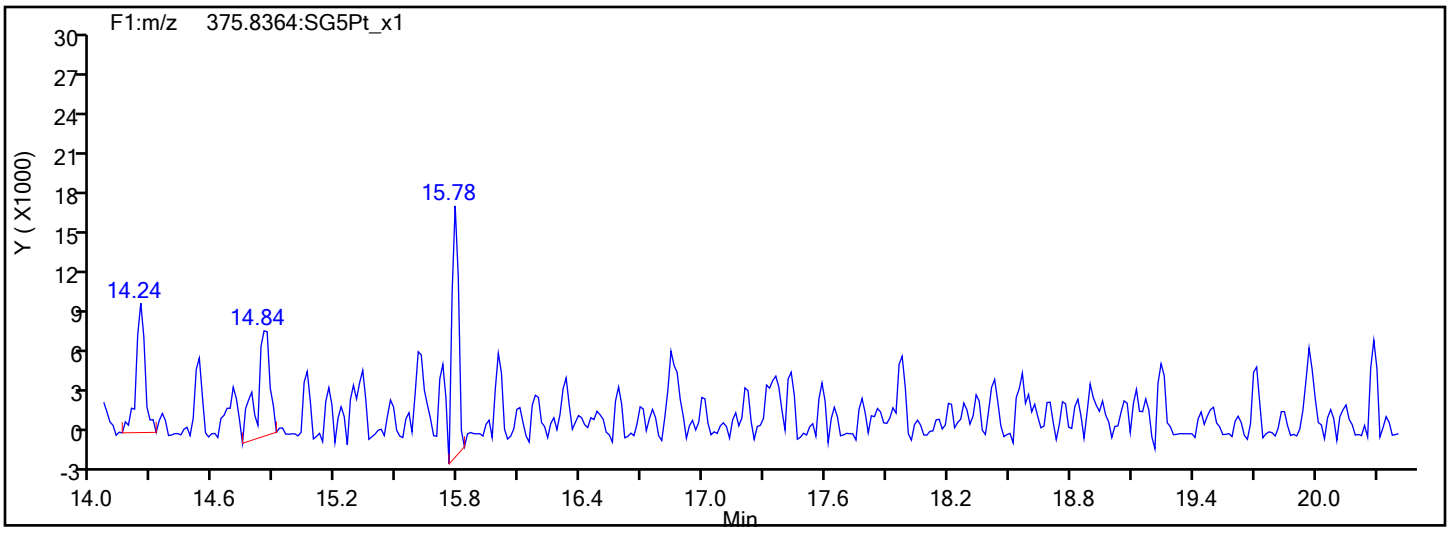
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d

Injection Date: 19-Dec-2019 14:11:22 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

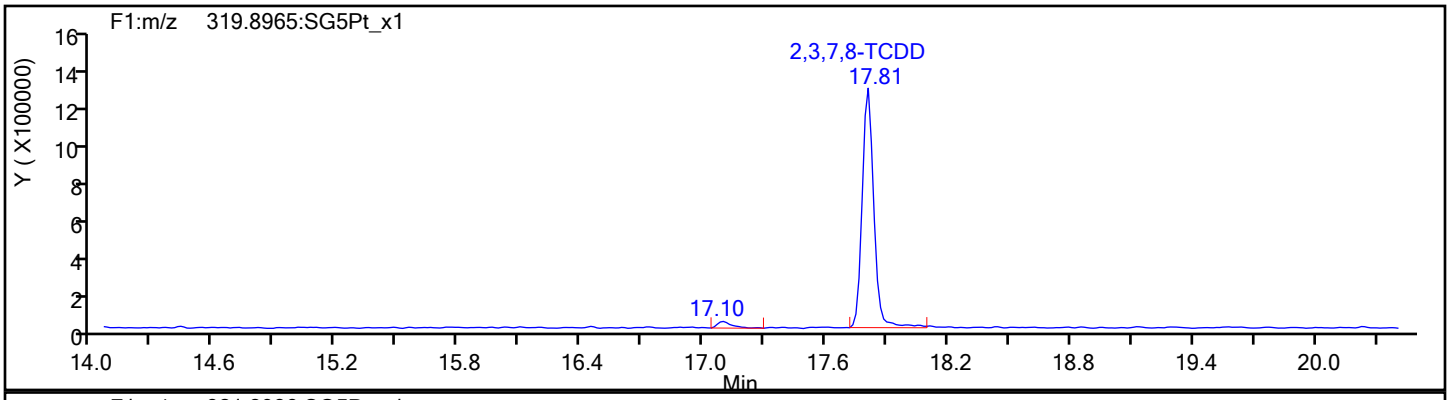
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

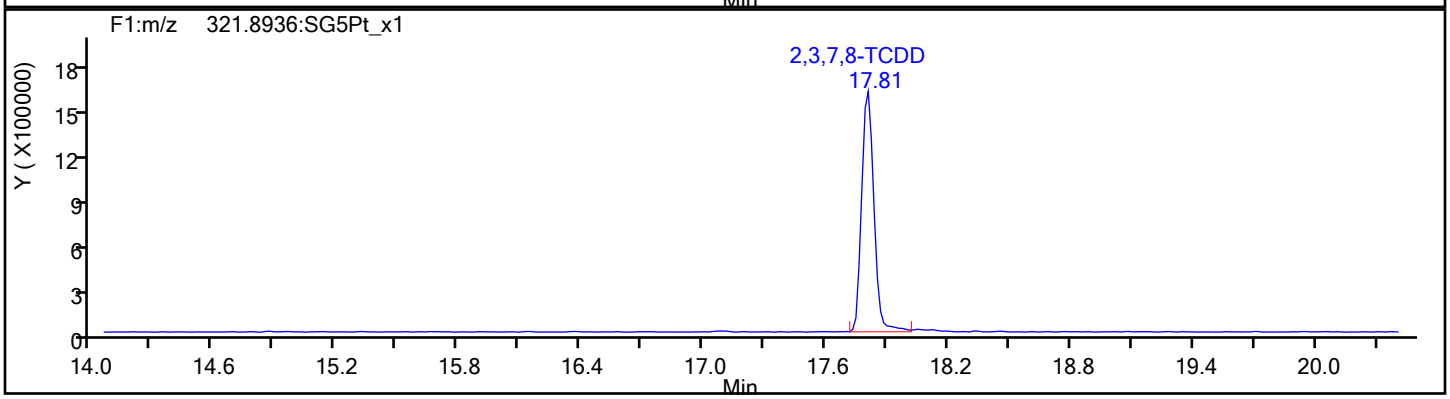
Client ID:

Worklist#: 346752 Sample Line#: 5

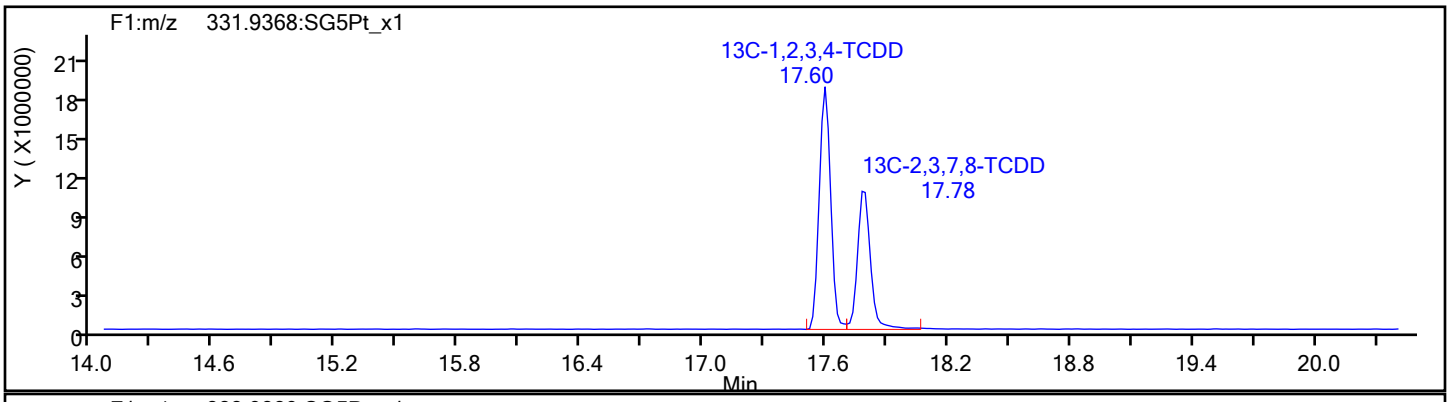
Column Type: DB-5 Column Dia: 0.32 mm

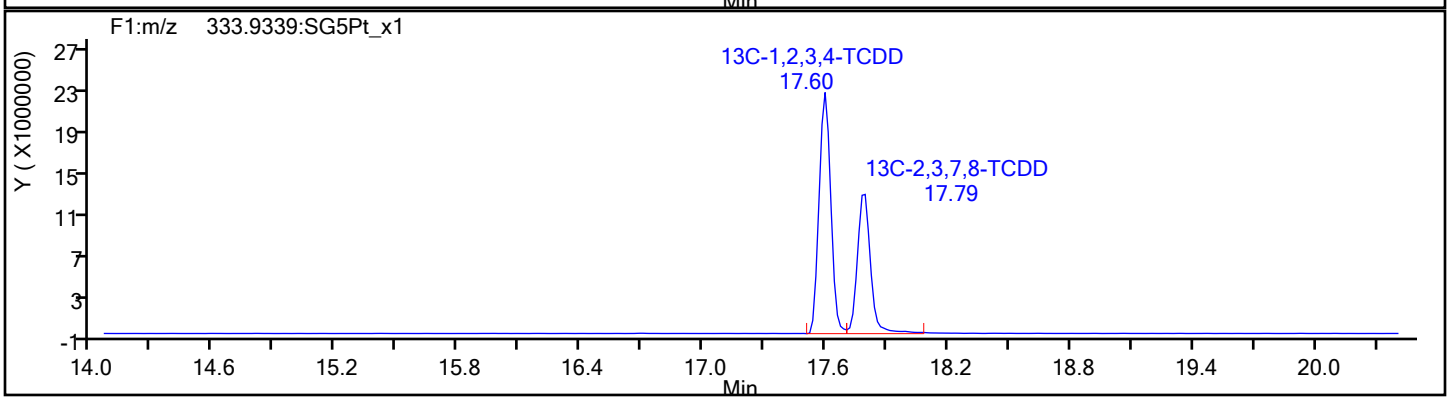
TCDD





TCDD Standards





Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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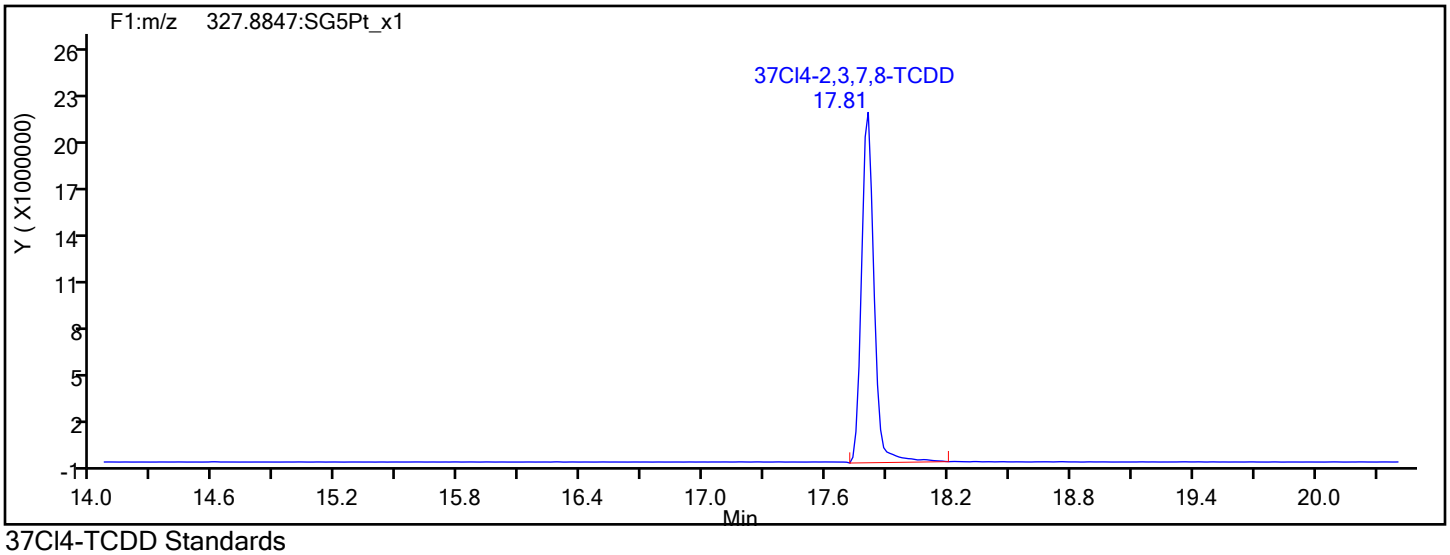
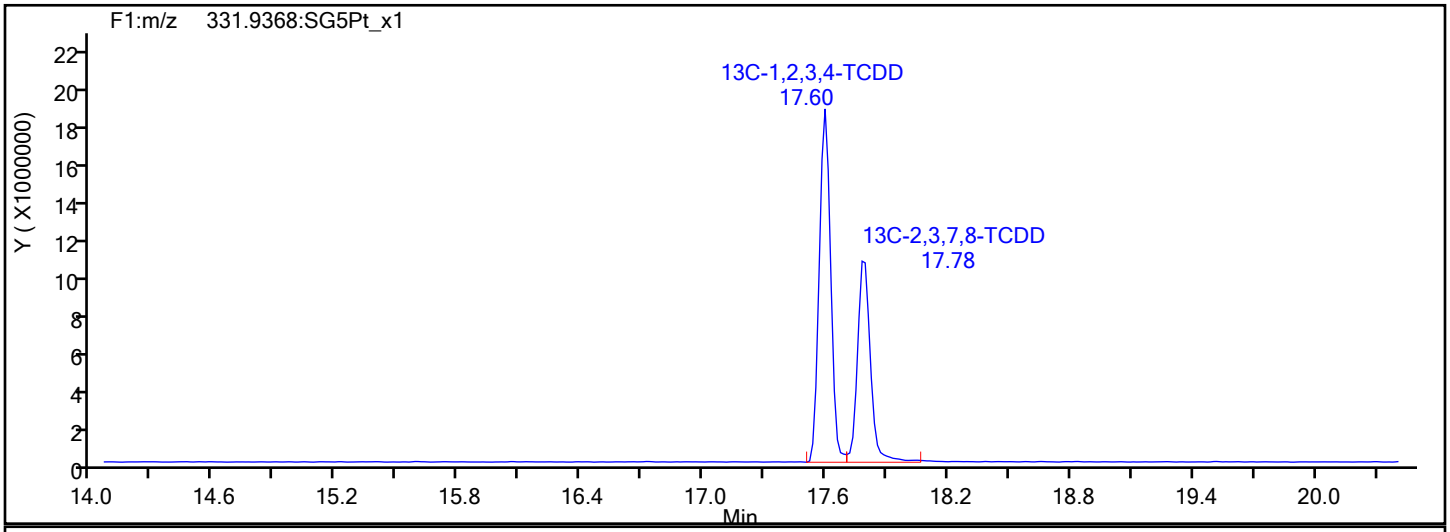
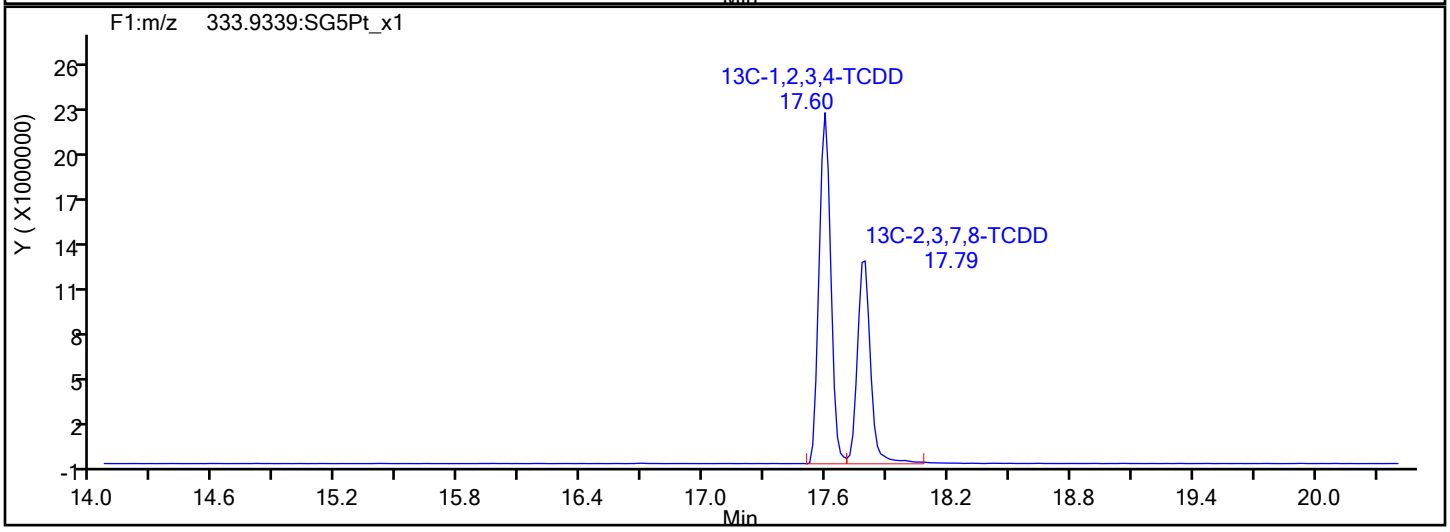
37Cl4-TCDD



37Cl4-TCDD Standards





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Eurofins TestAmerica, Sacramento

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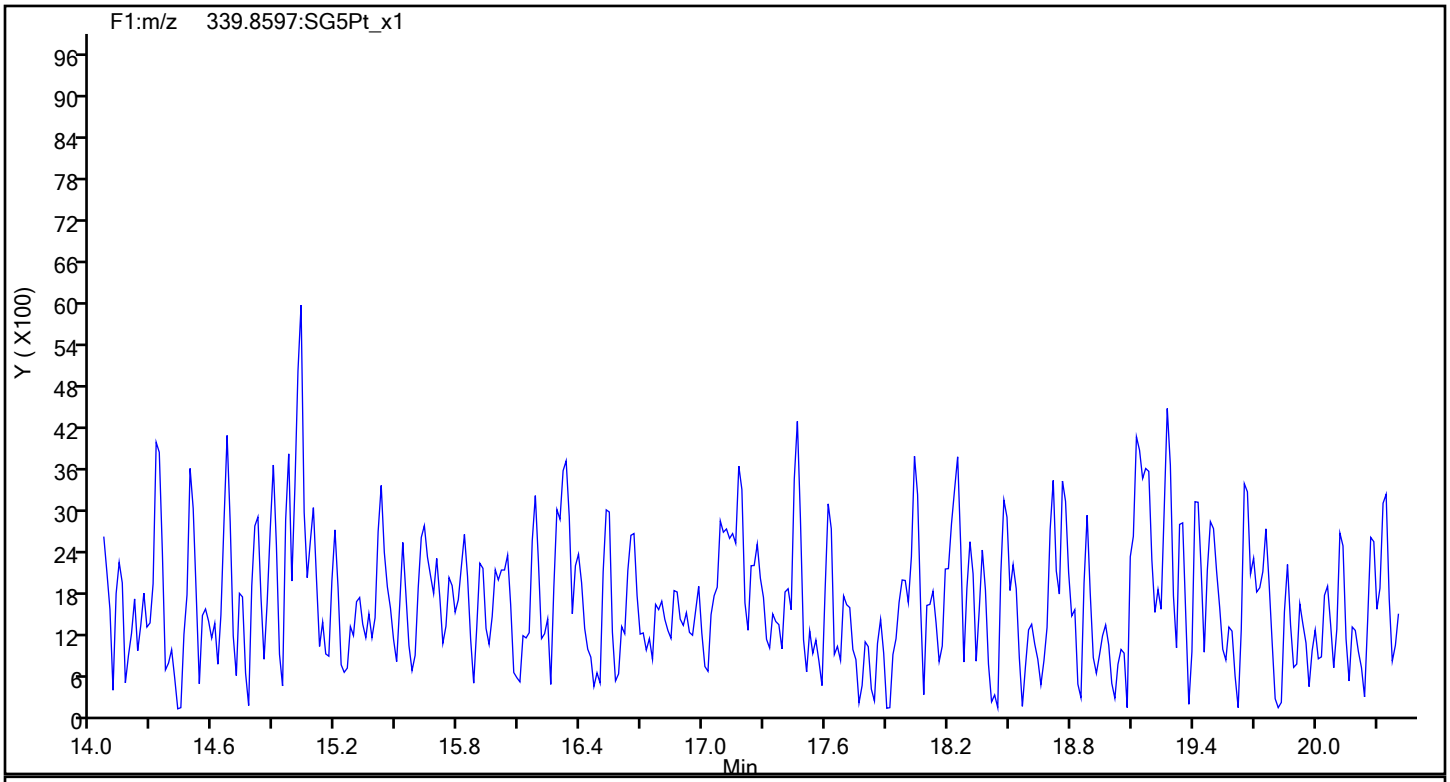
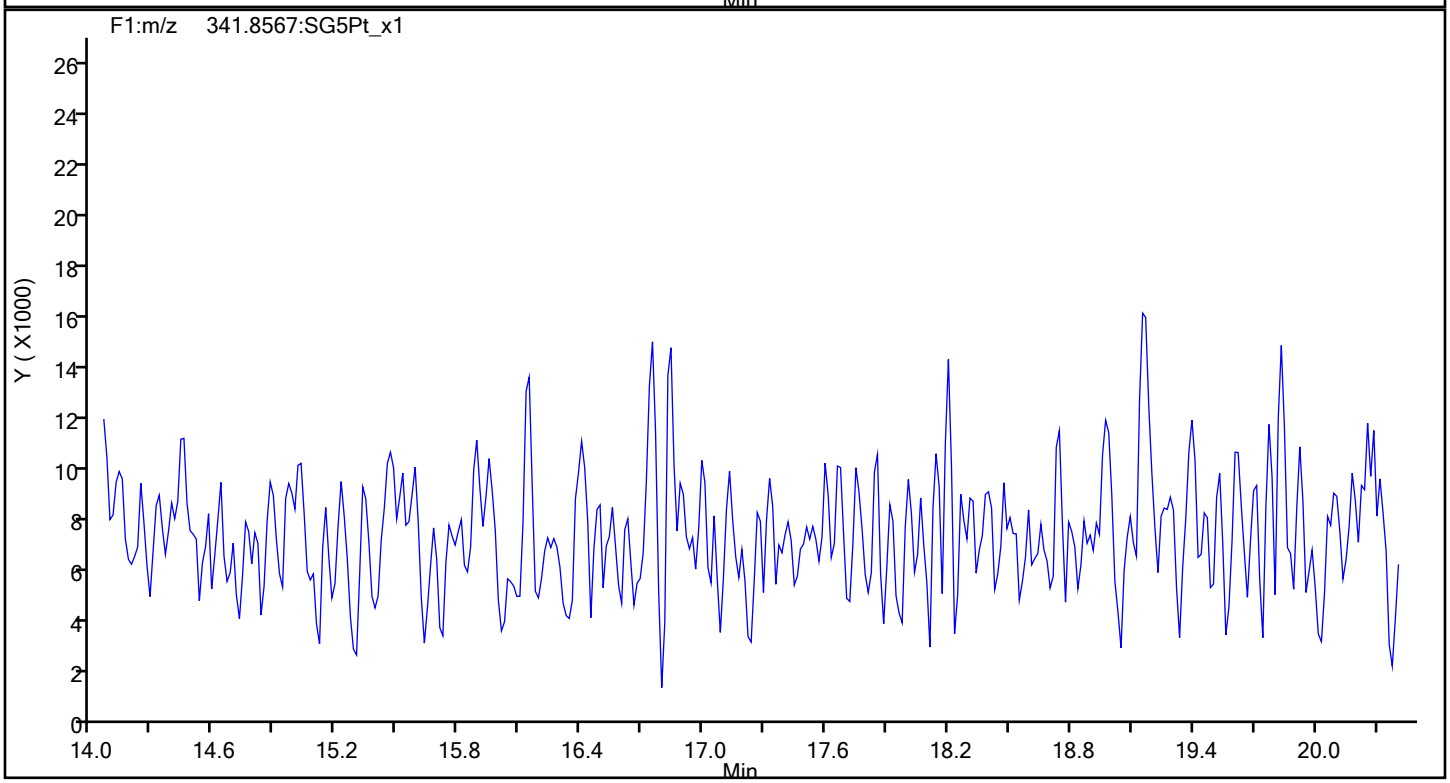
F1 PeCDFs





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Eurofins TestAmerica, Sacramento

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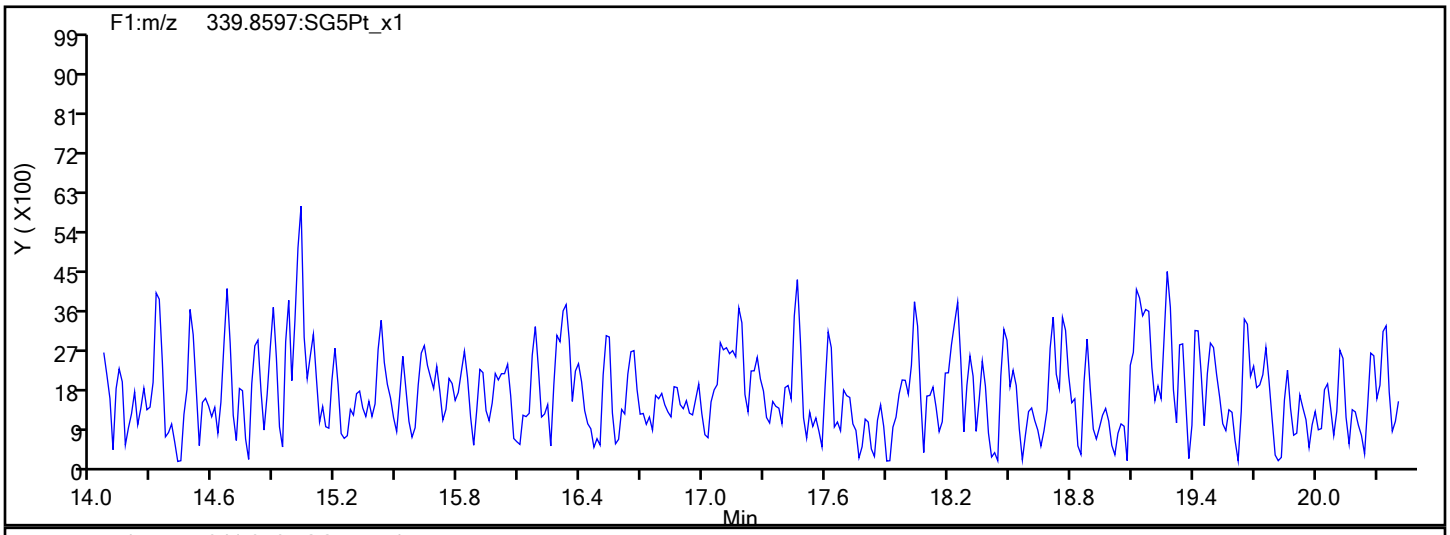
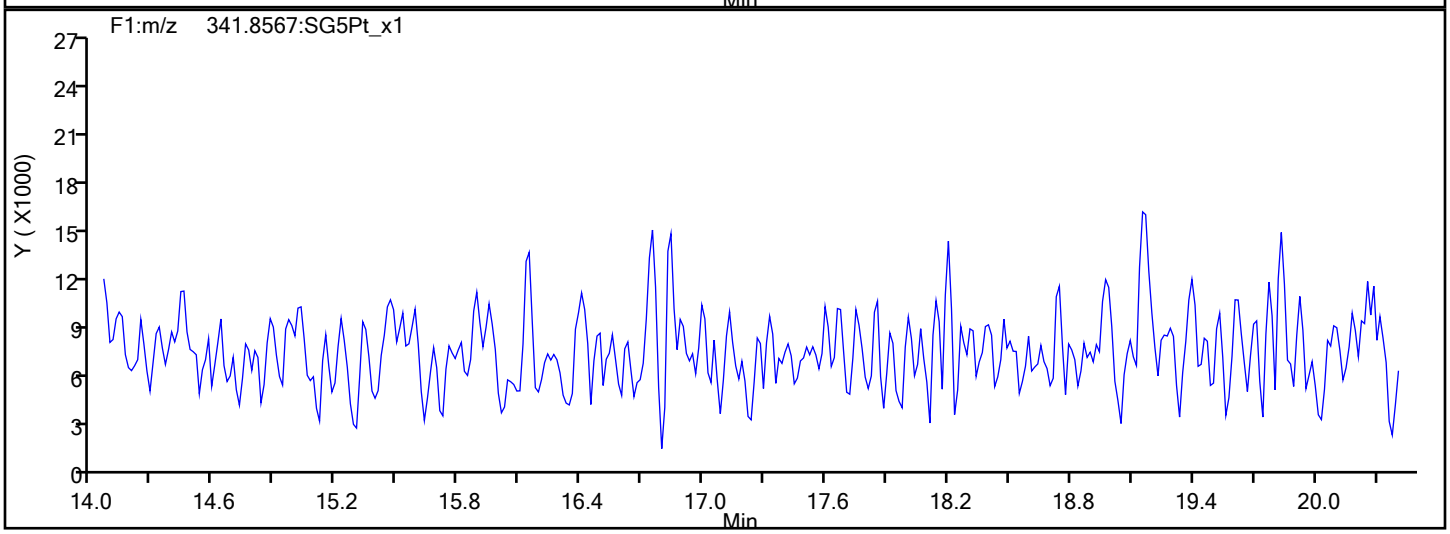
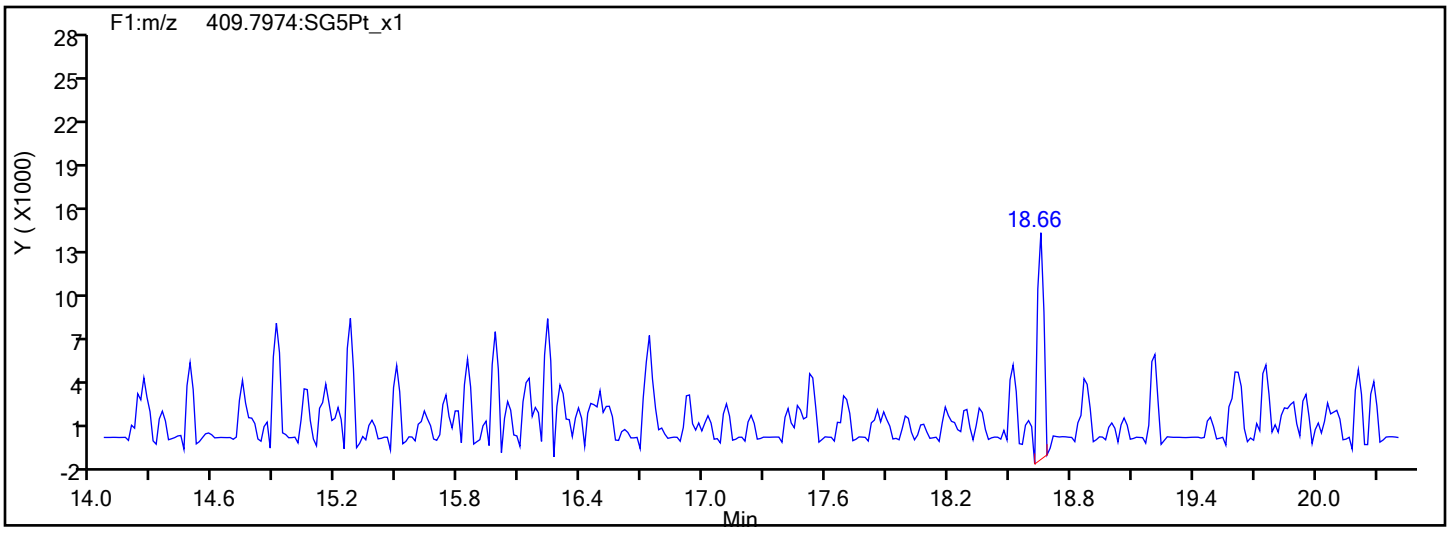
F1 PeCDFs





F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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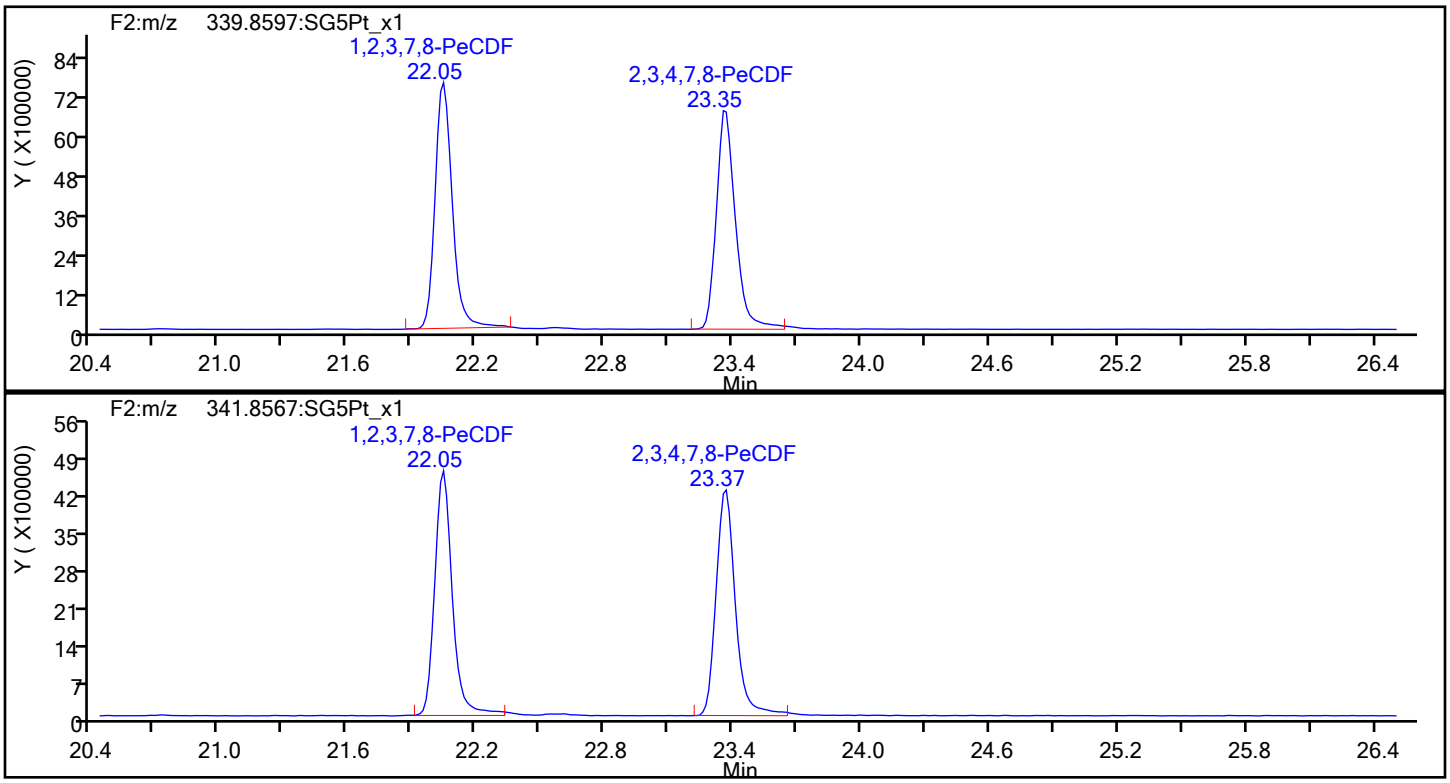
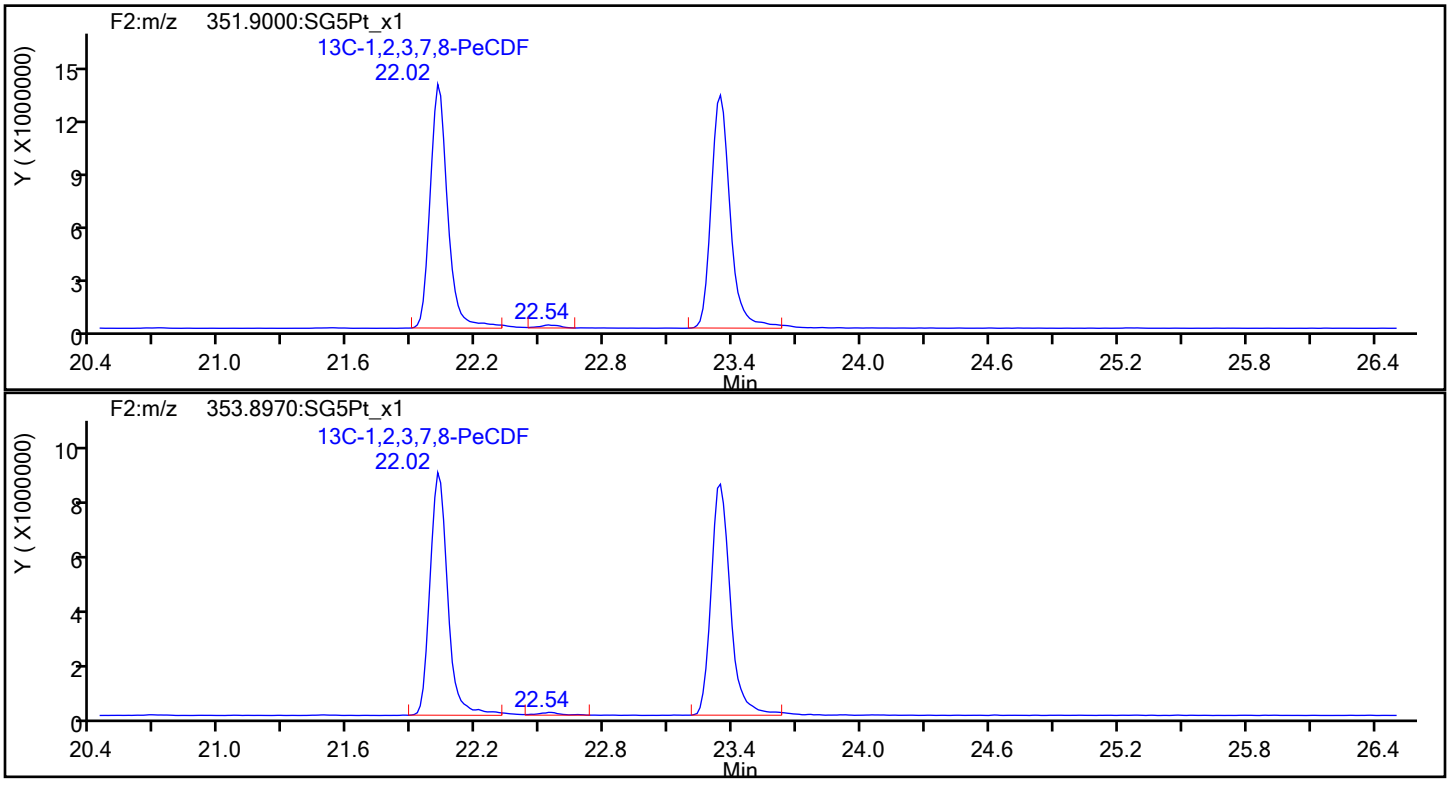


PeCDF Standards



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Eurofins TestAmerica, Sacramento

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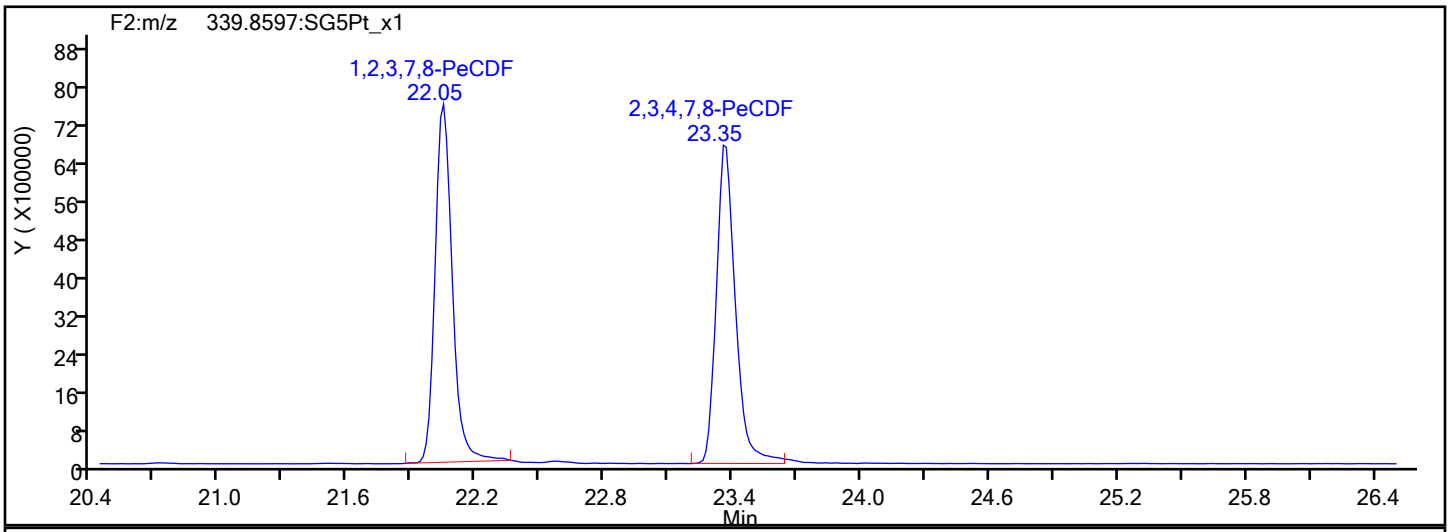
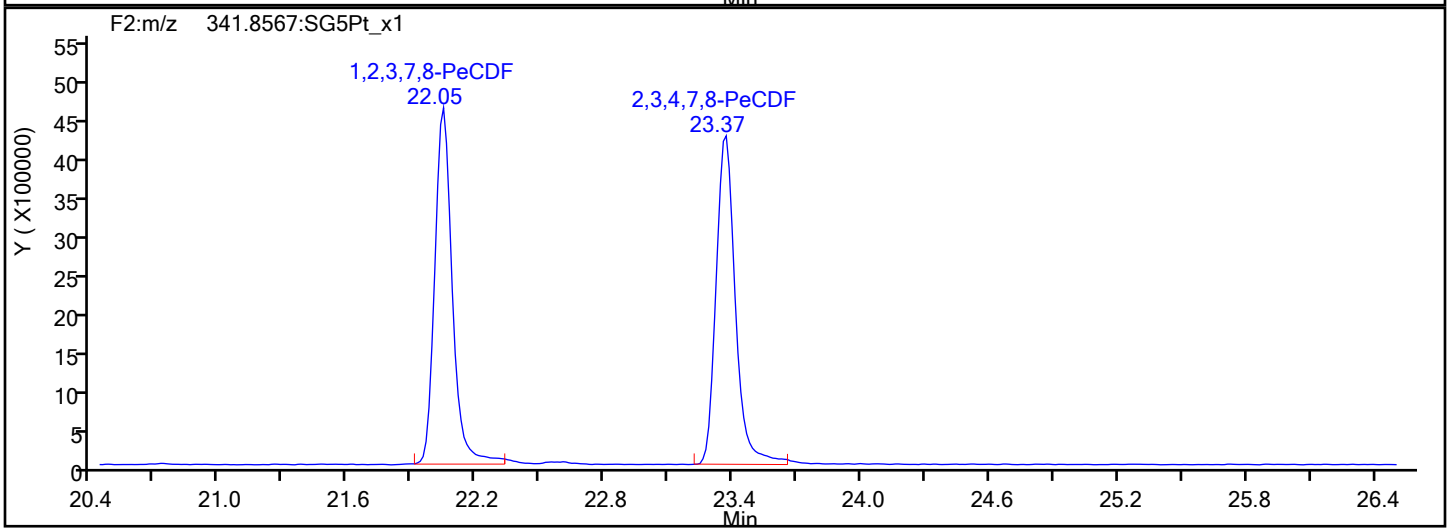
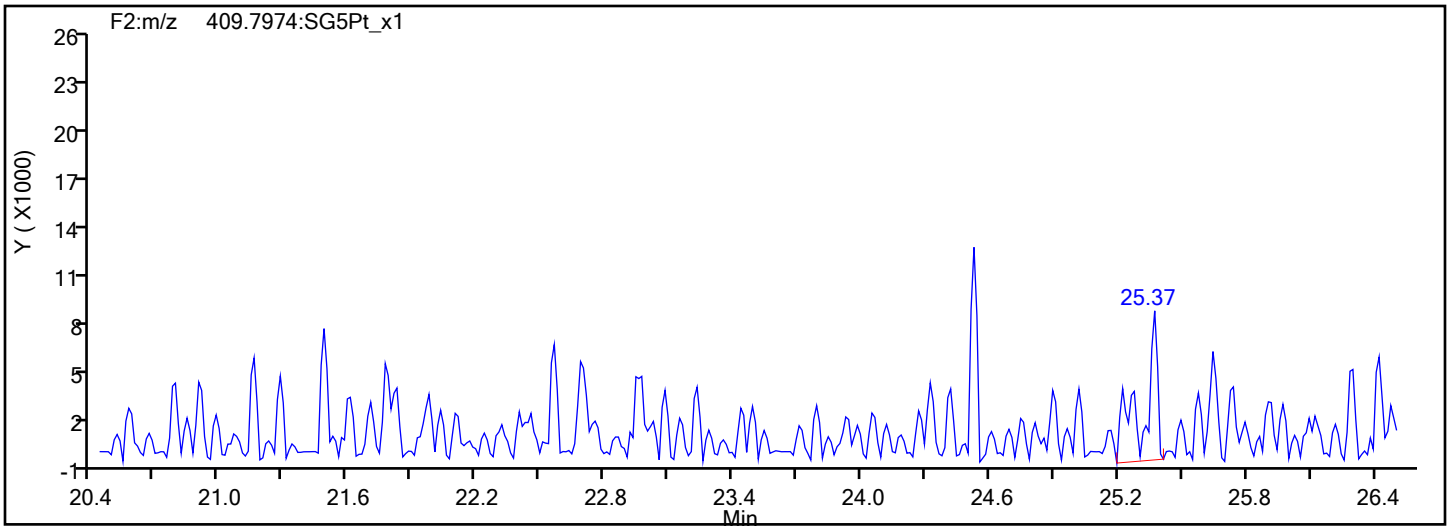




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Injection Date: 19-Dec-2019 14:11:22 Injection Vol: 2.0 ul

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Client ID:

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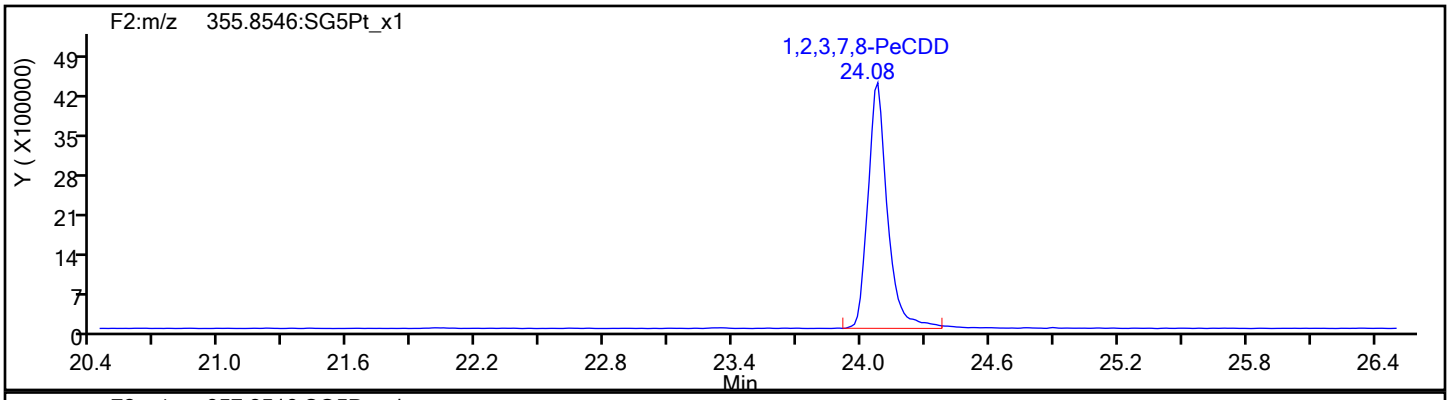

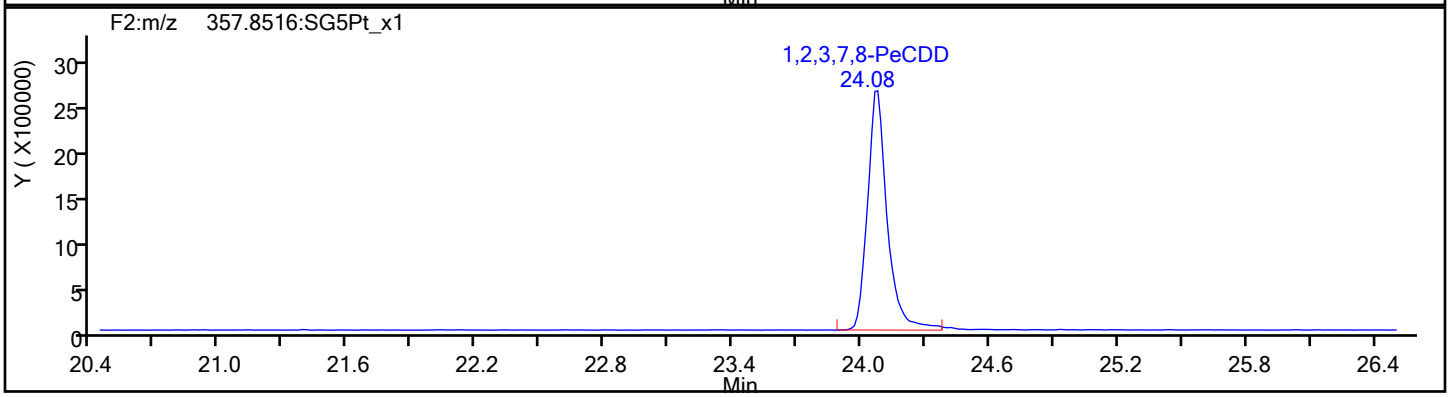

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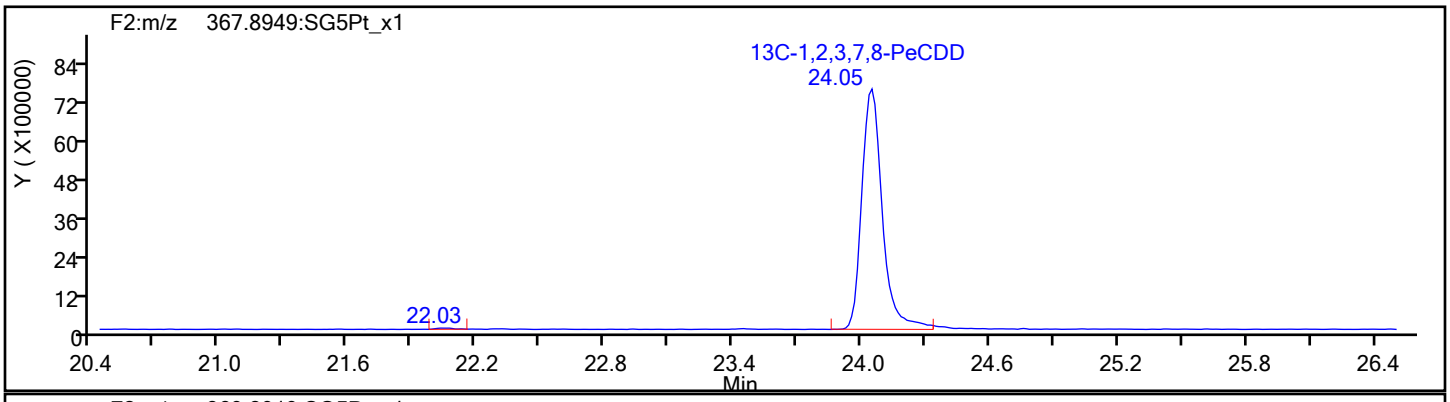

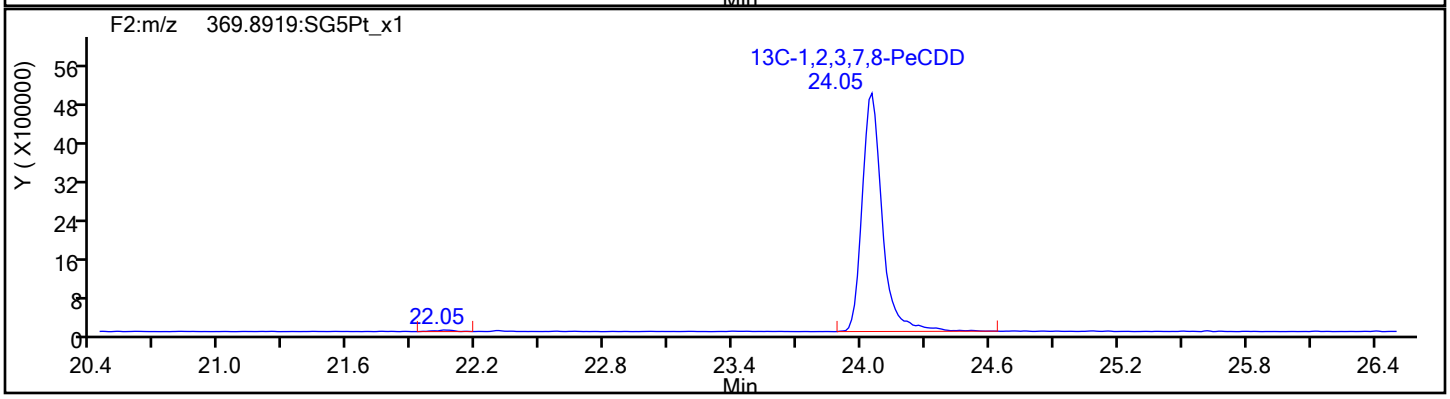

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Eurofins TestAmerica, Sacramento

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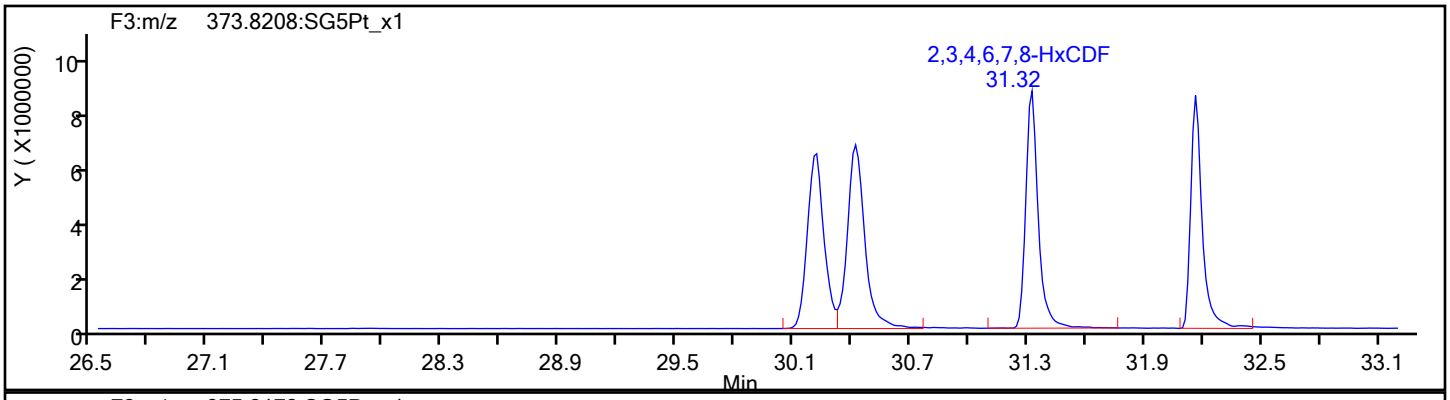
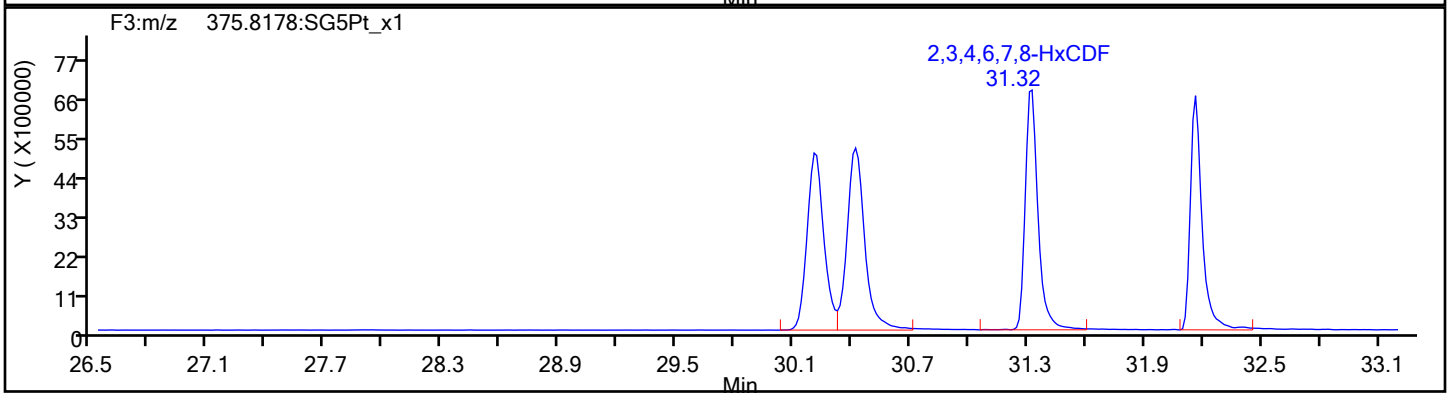
HxCDF





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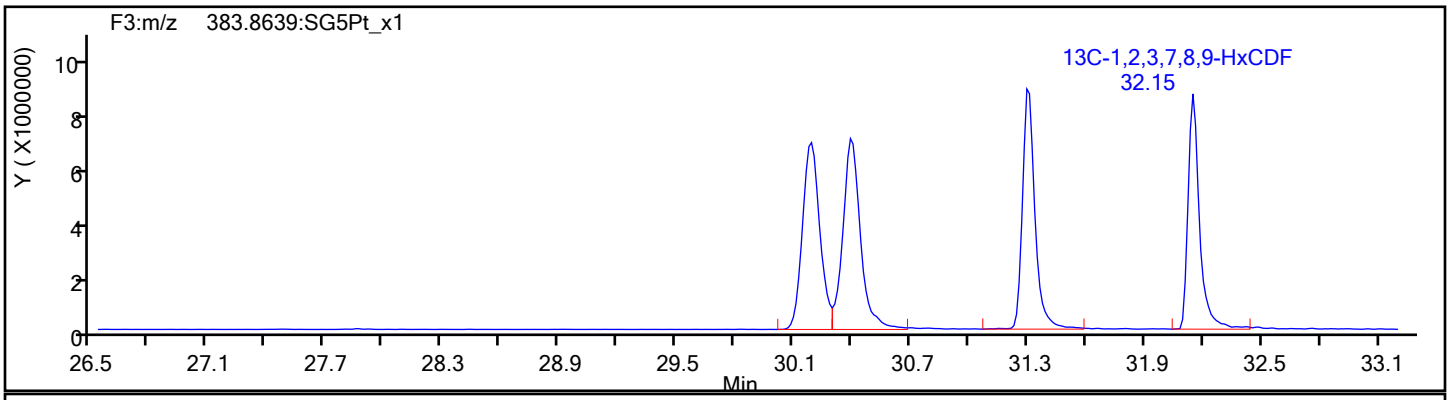

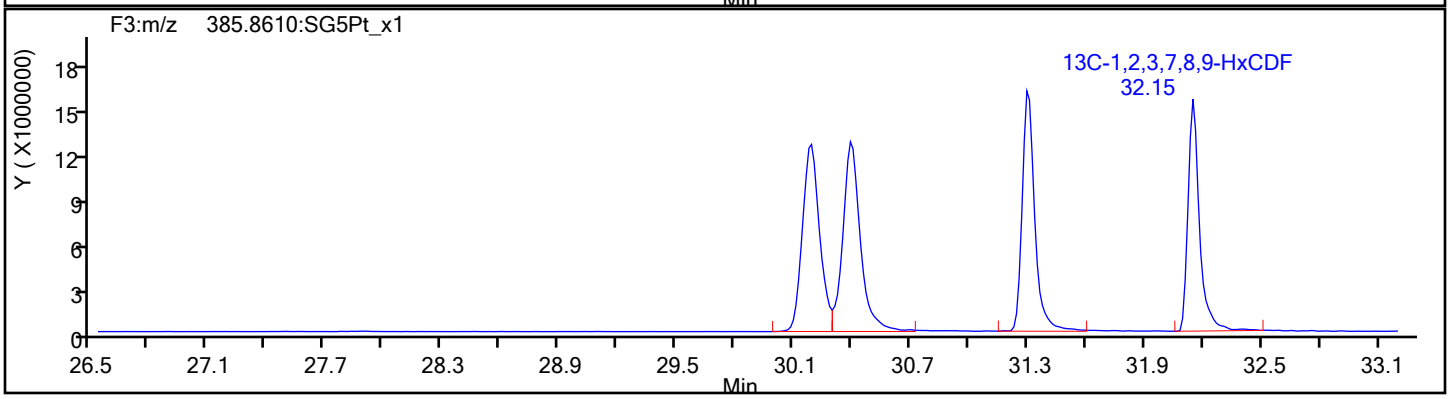

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Eurofins TestAmerica, Sacramento

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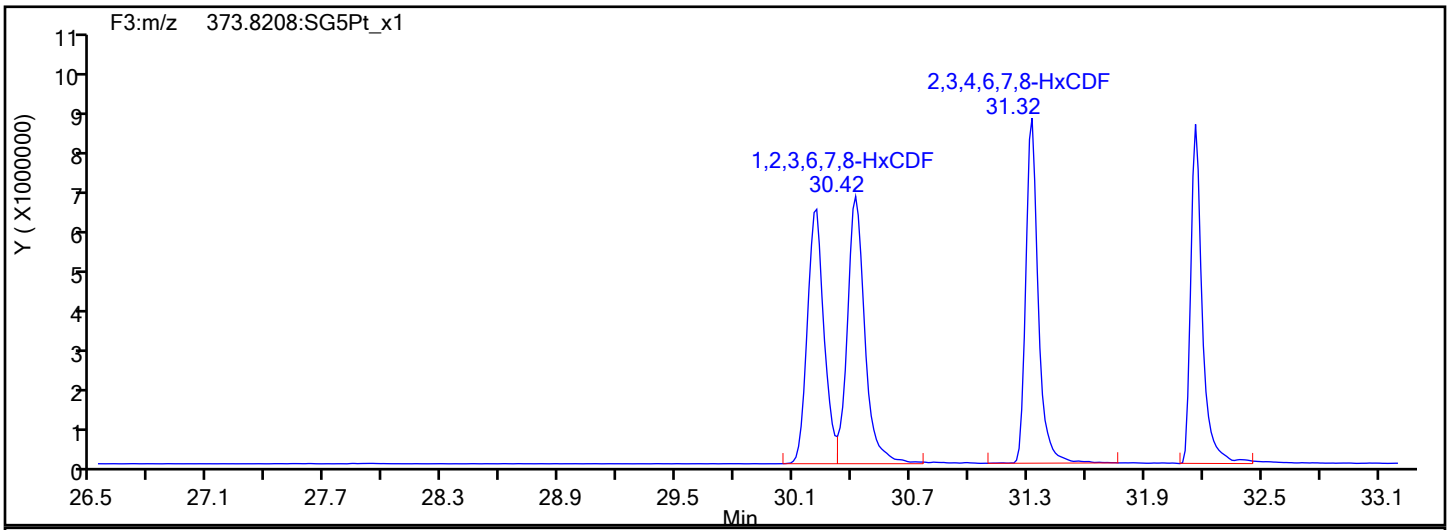
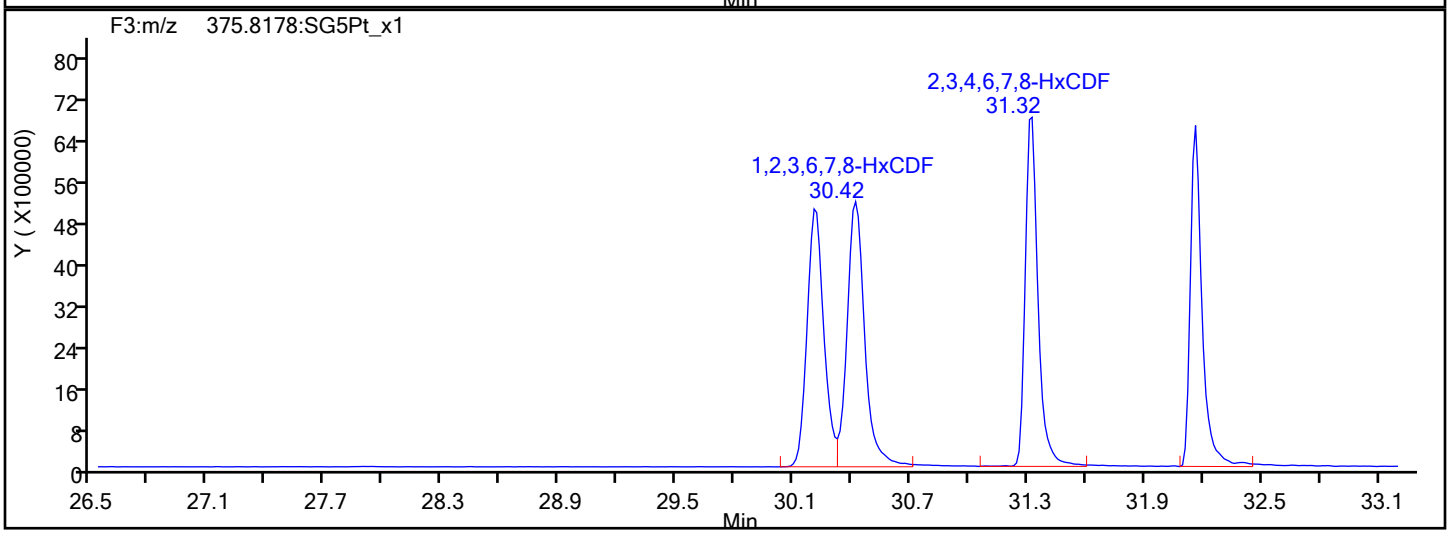
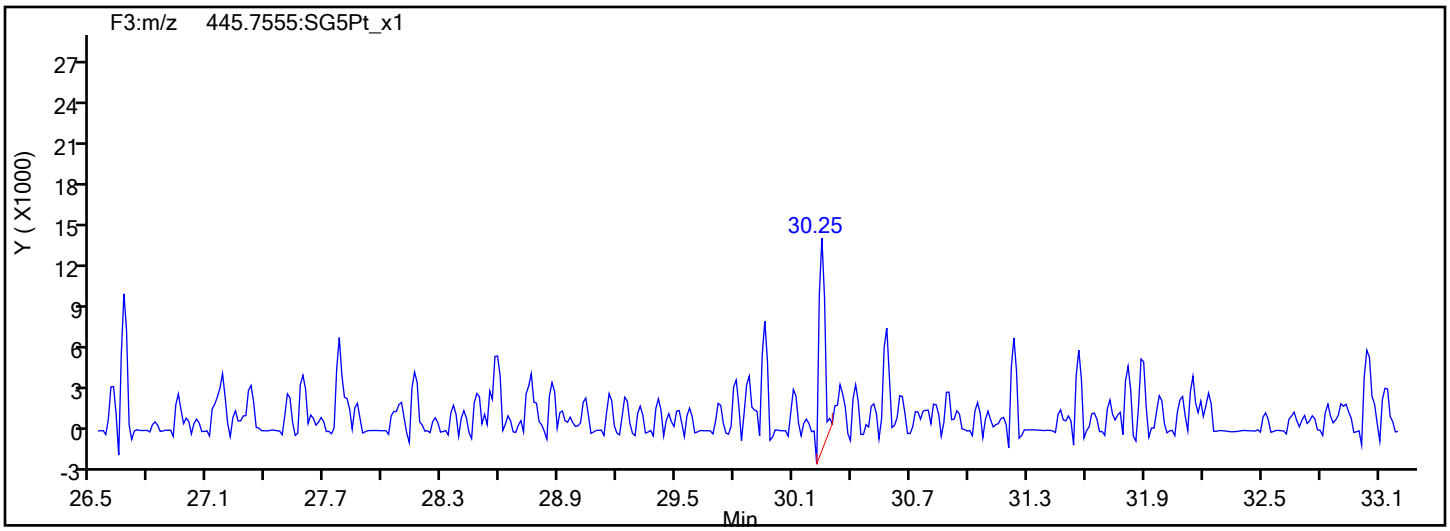




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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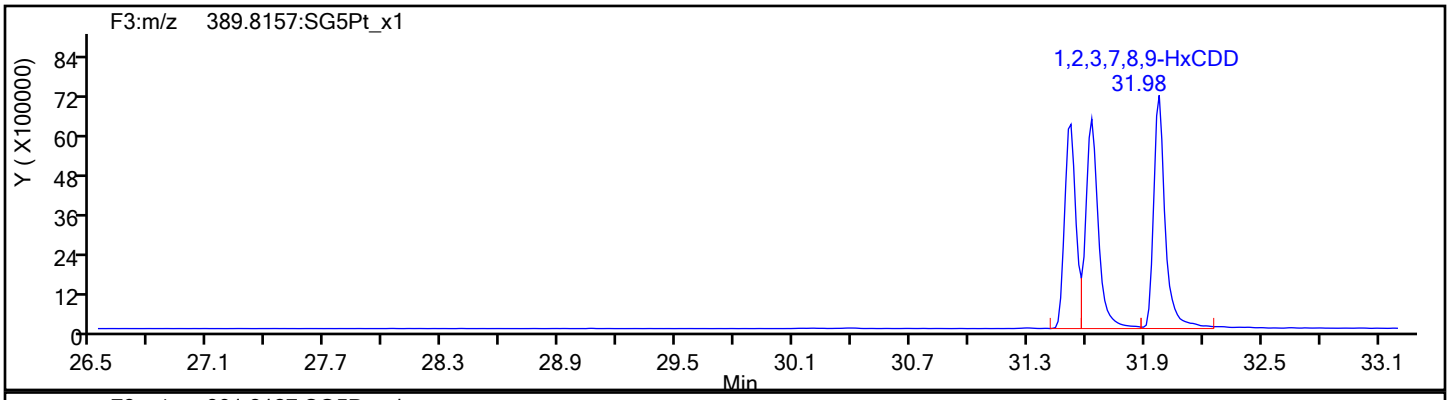
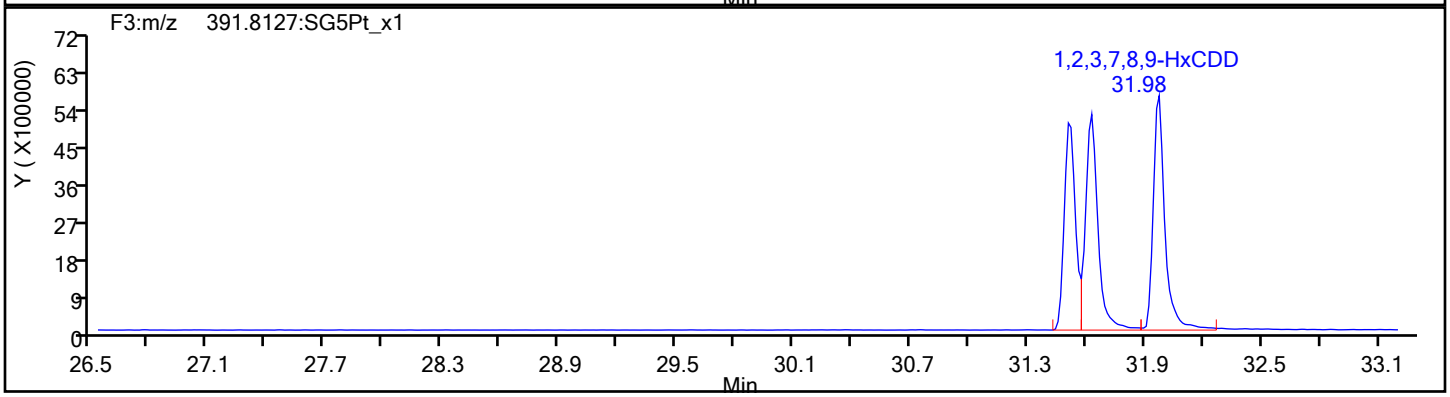
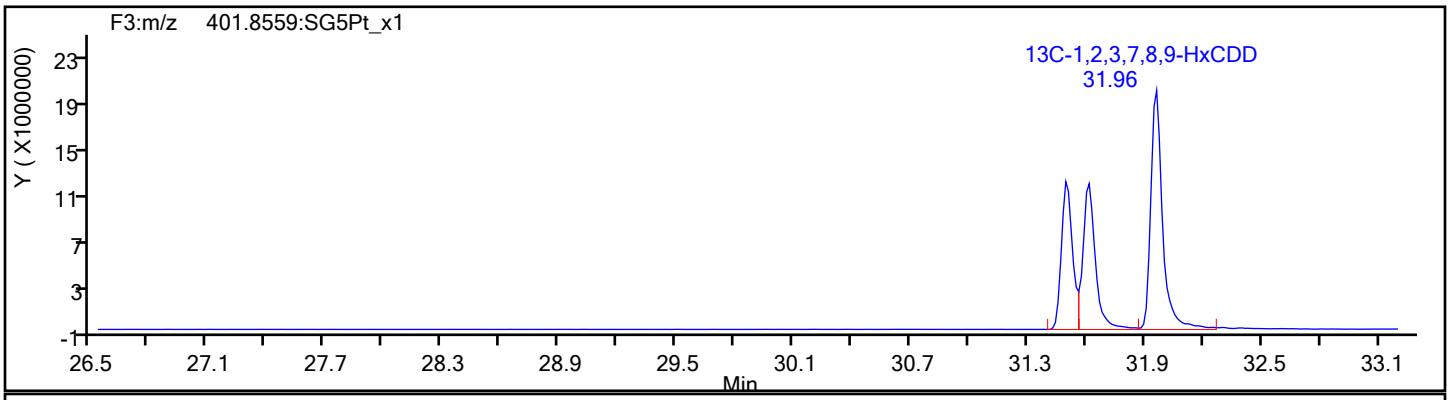
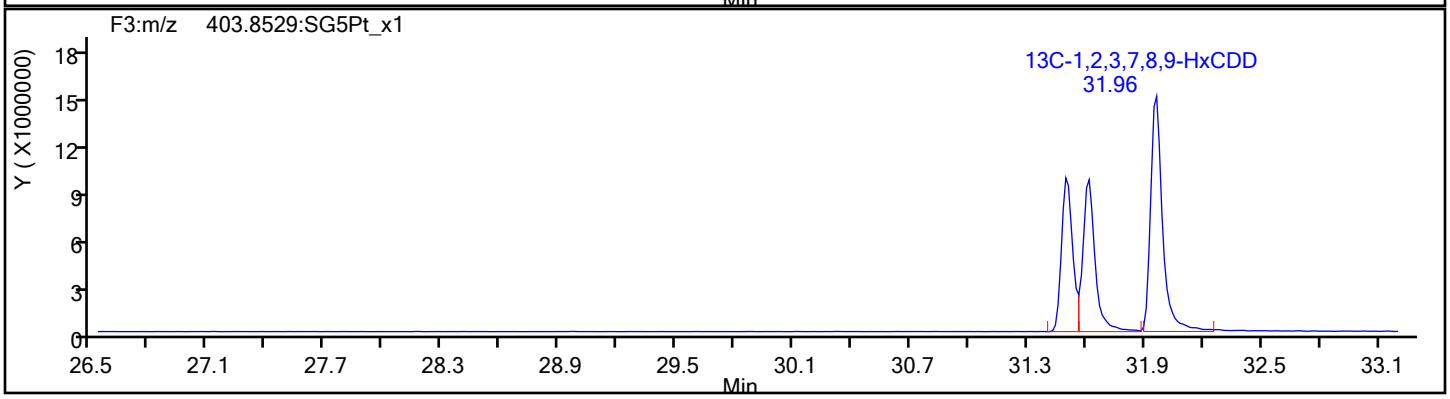




HxCDD Standards





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Eurofins TestAmerica, Sacramento

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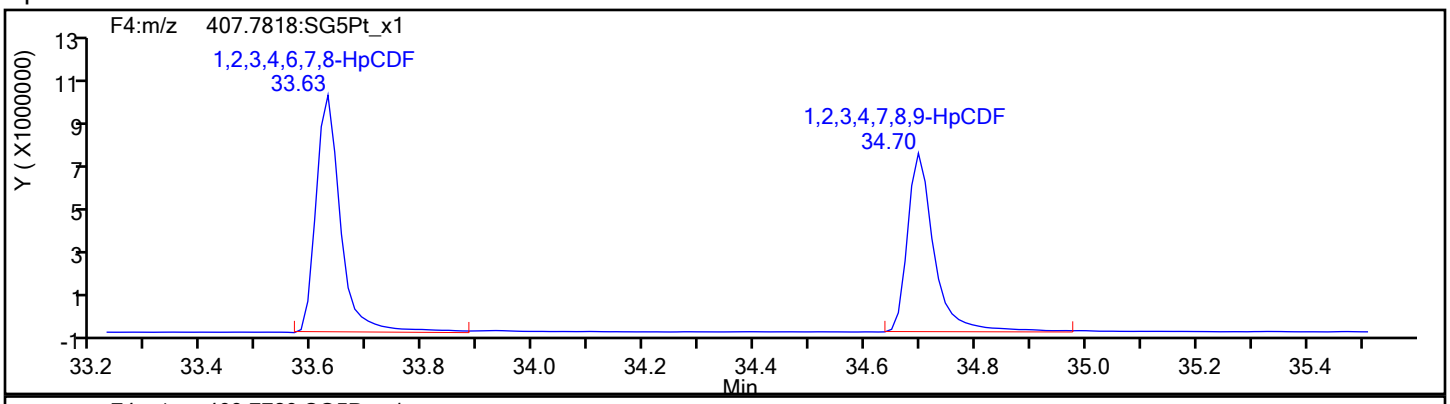
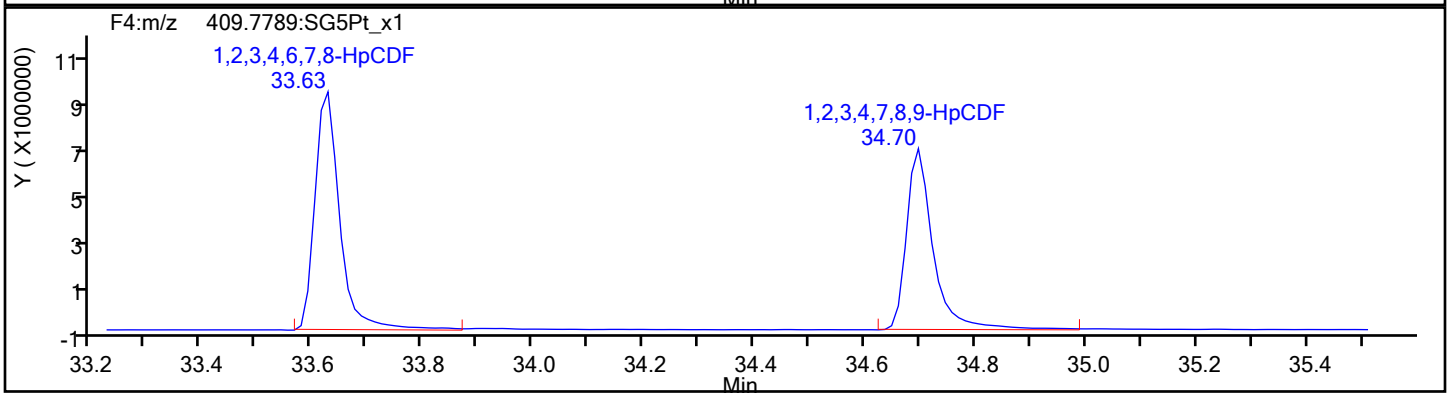
HpCDF





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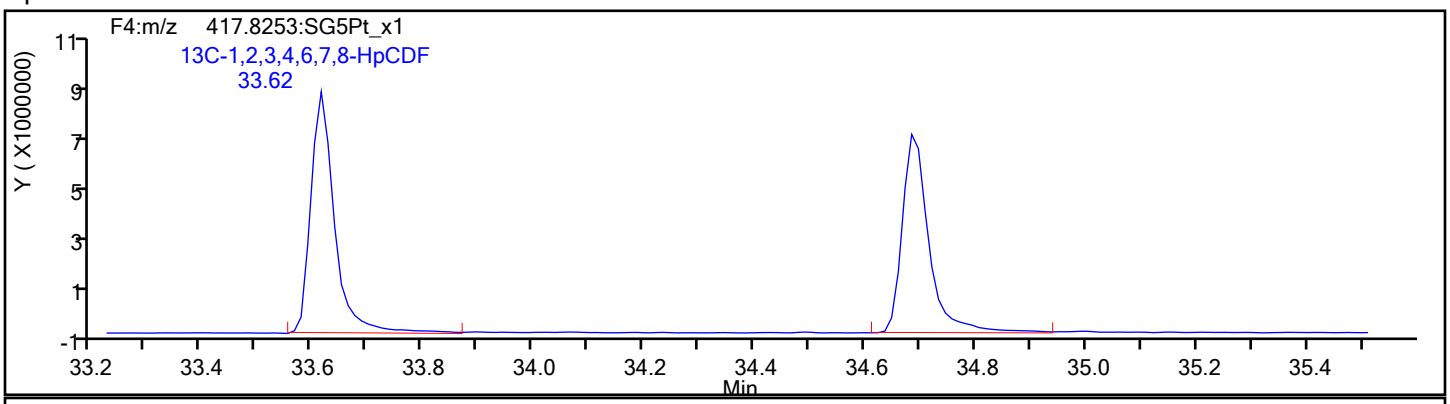

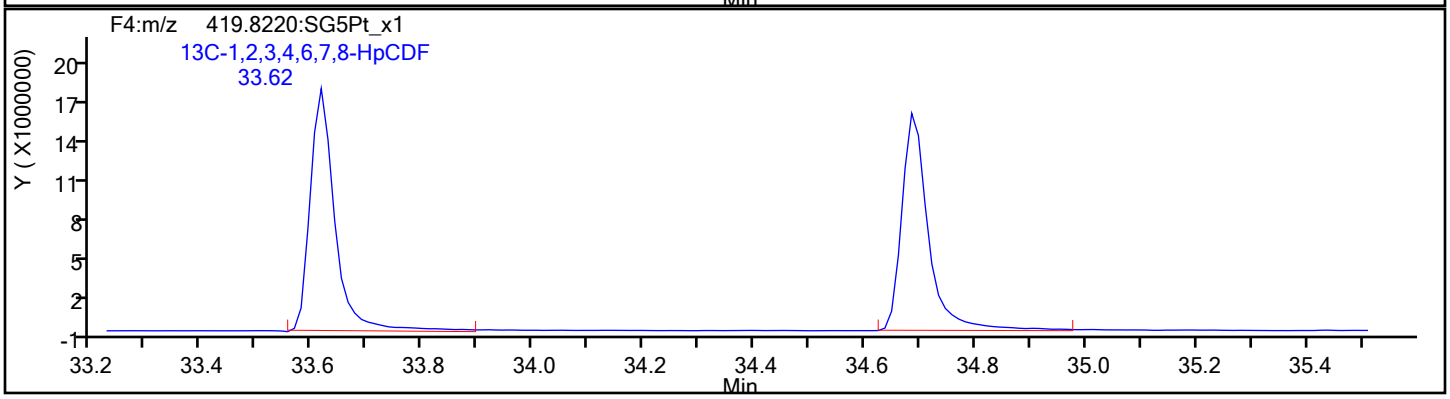

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Eurofins TestAmerica, Sacramento

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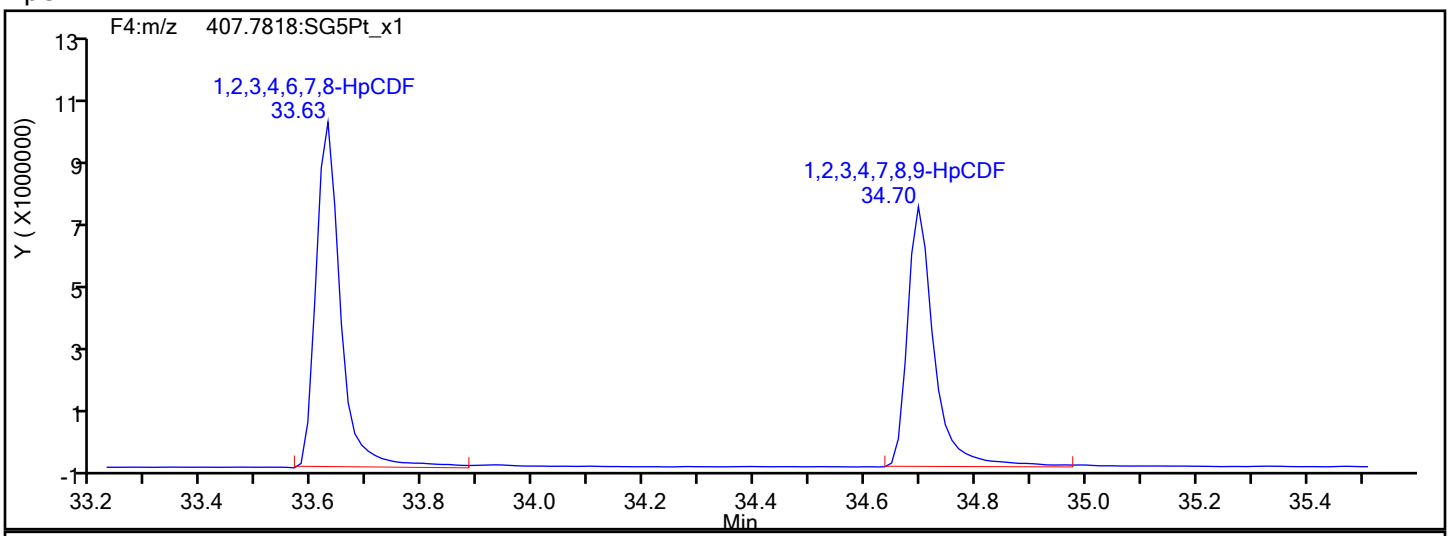
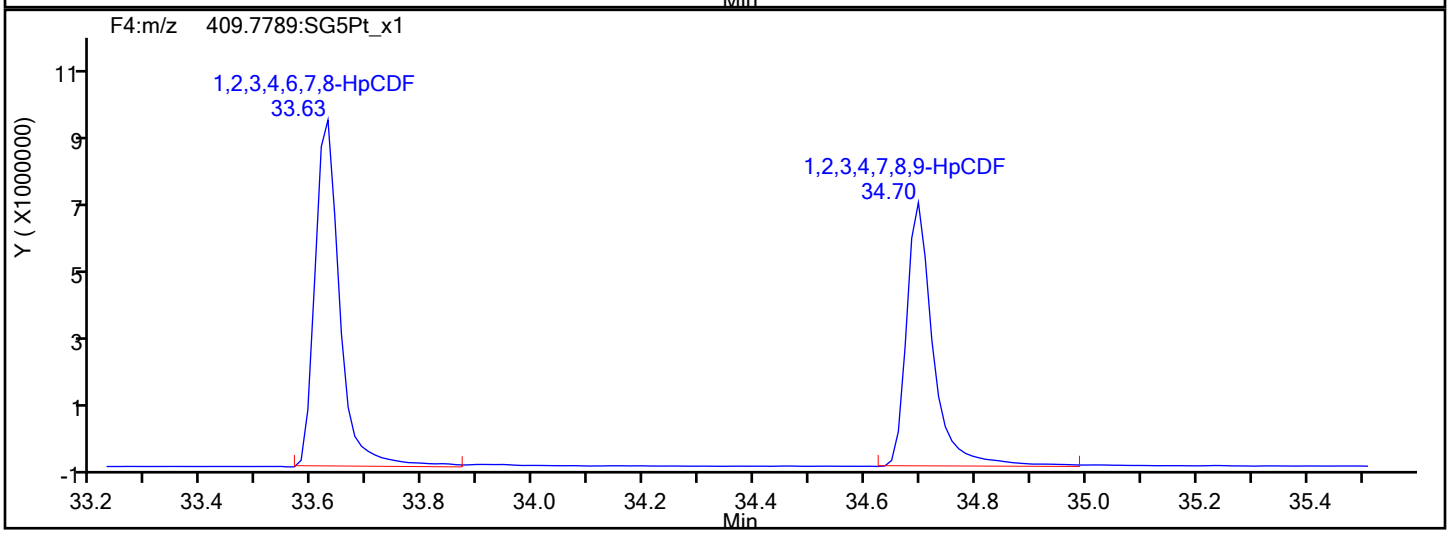
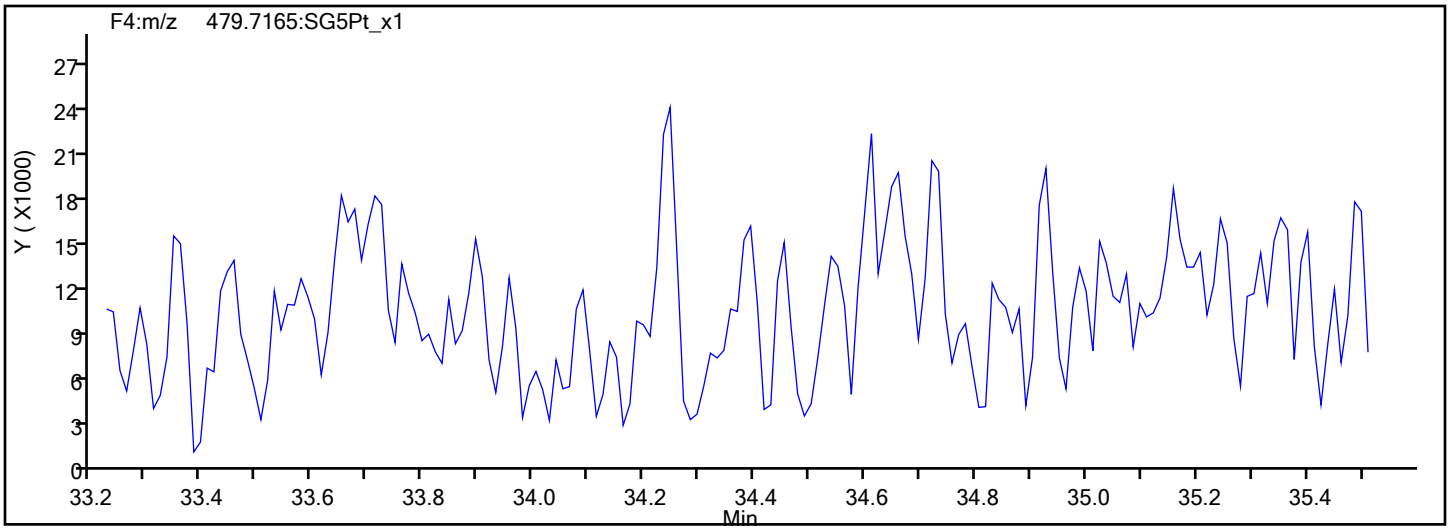




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Injection Date: 19-Dec-2019 14:11:22 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

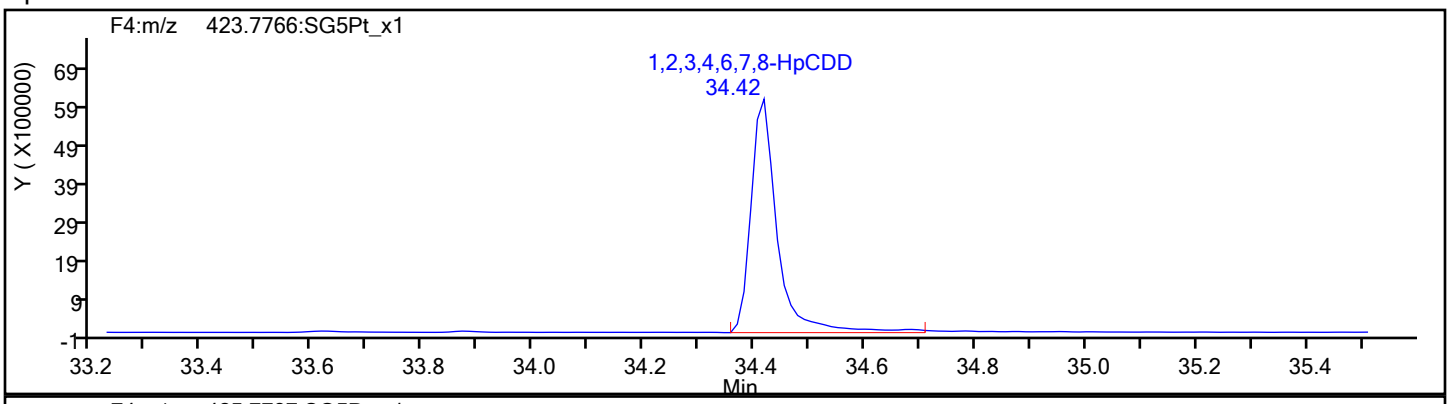
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

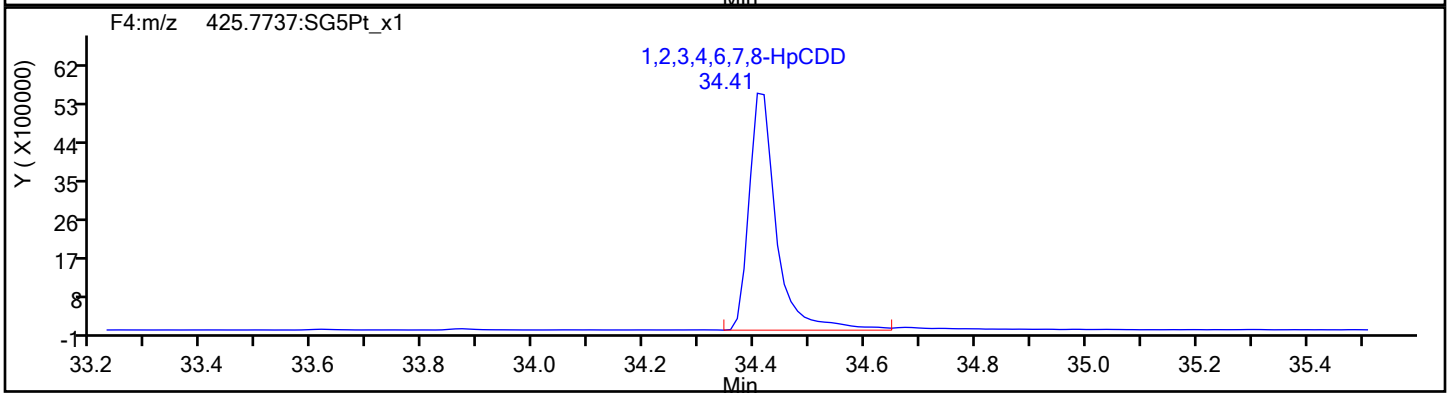
Client ID:

Worklist#: 346752 Sample Line#: 5

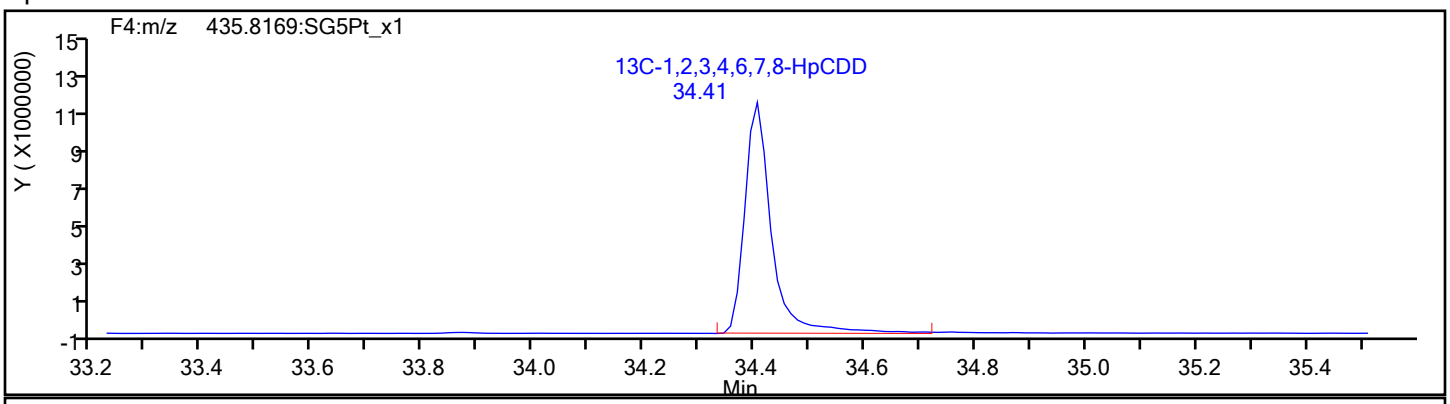
Column Type: DB-5 Column Dia: 0.32 mm

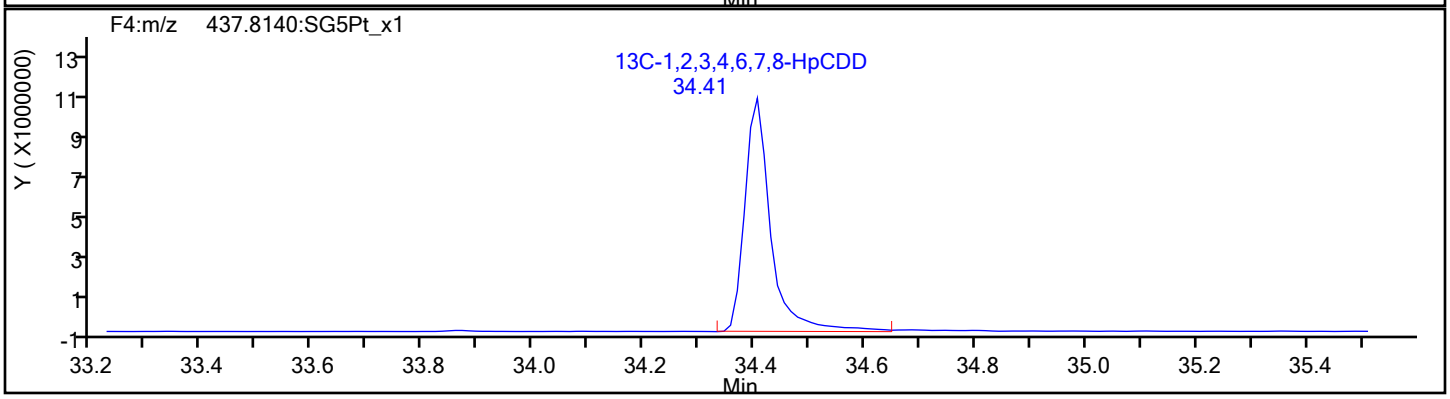
HpCDD





HpCDD Standards





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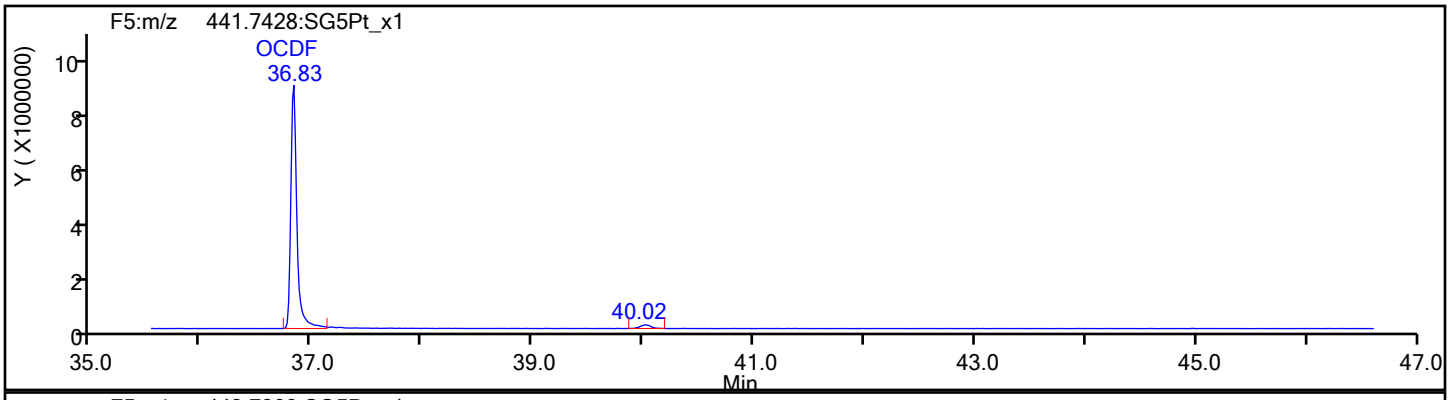
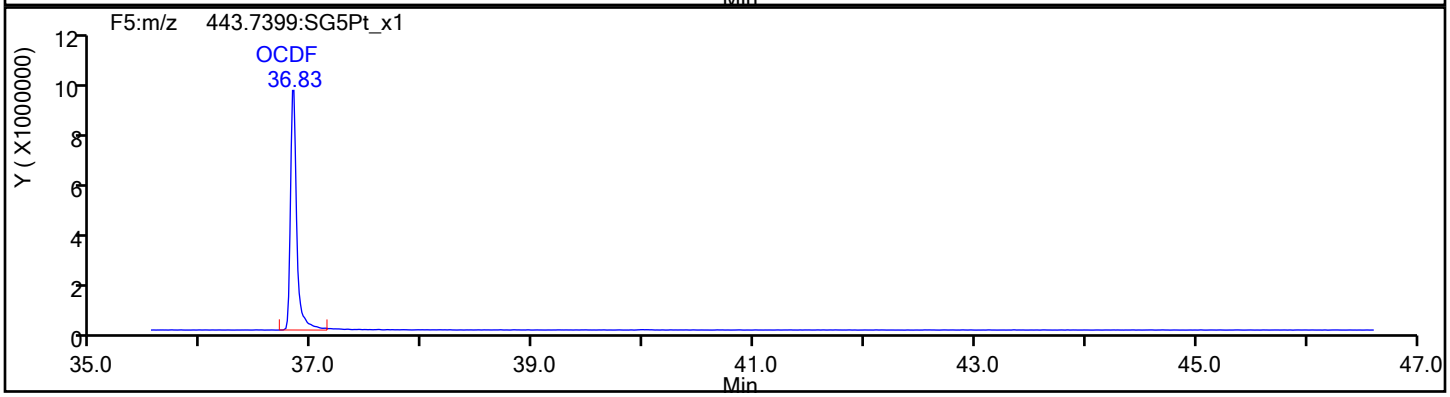
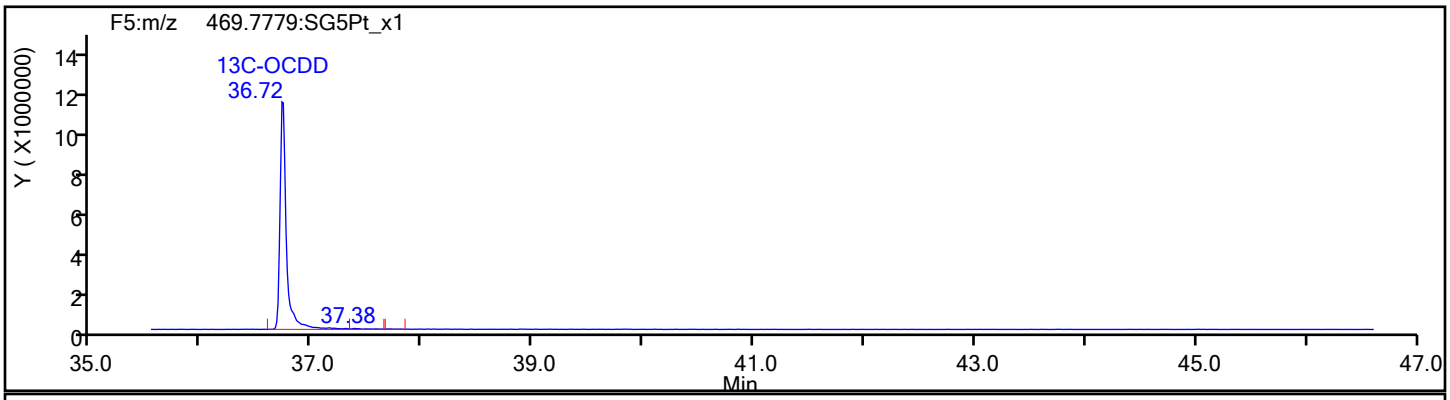
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

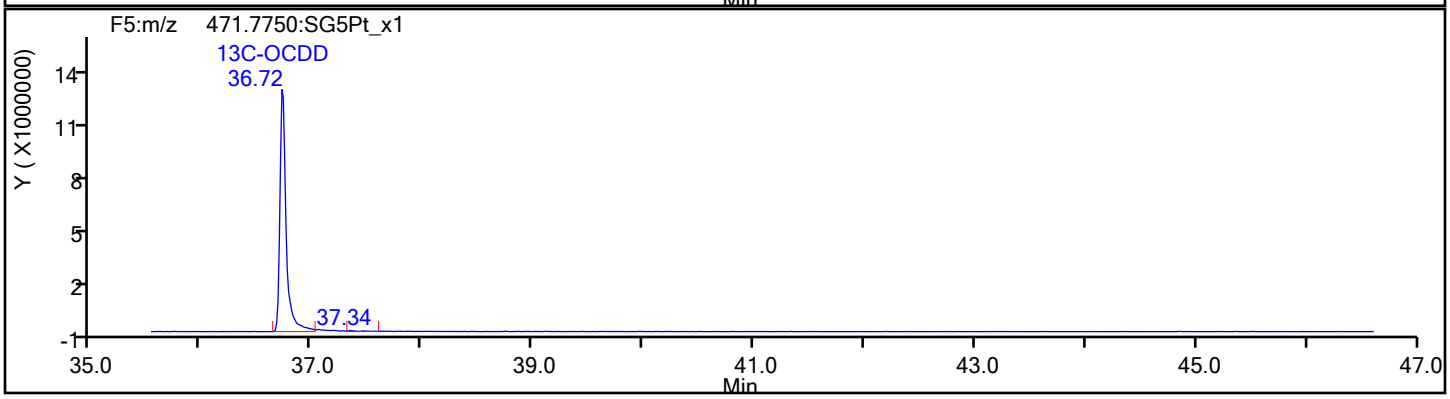
OCDF





OCDF Standards



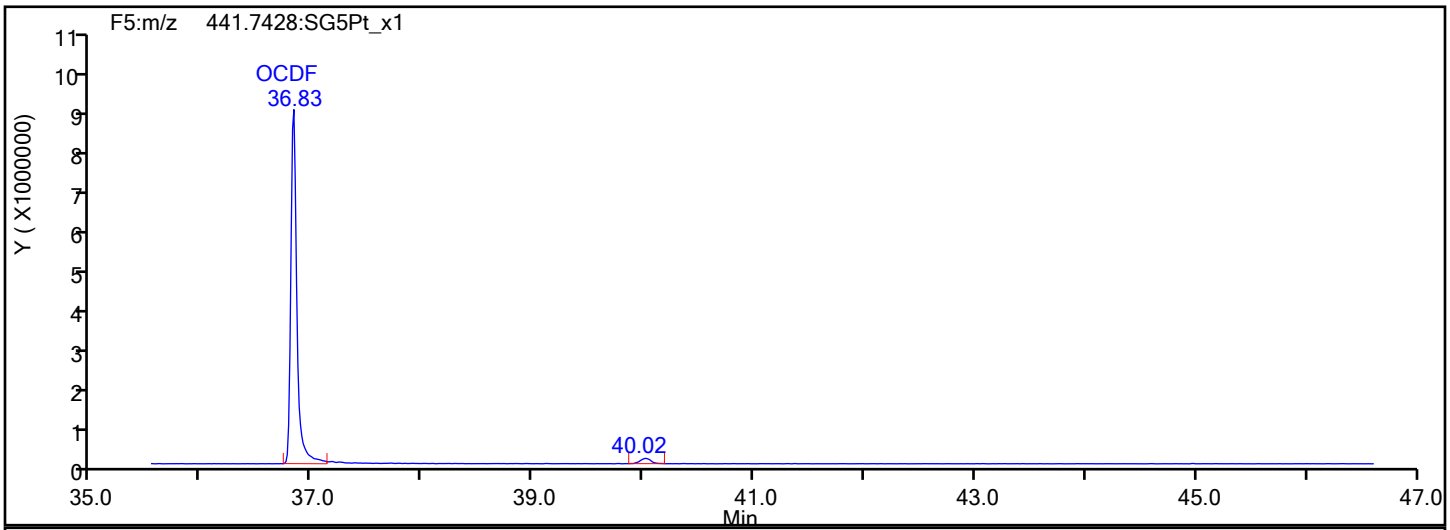


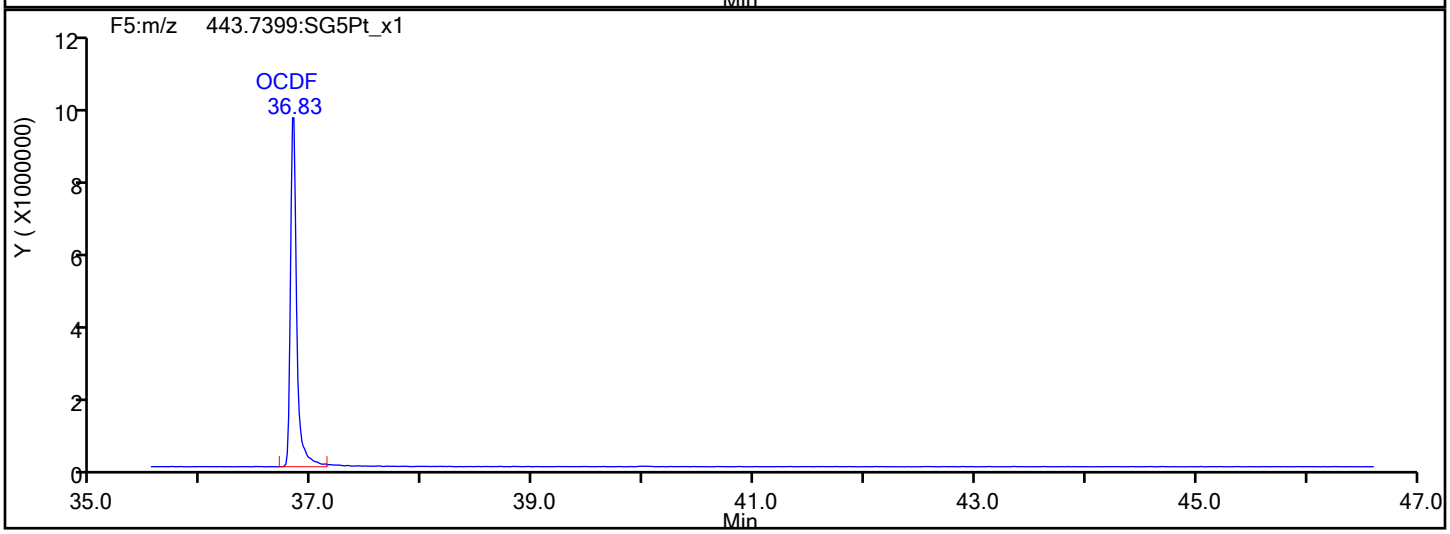
Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

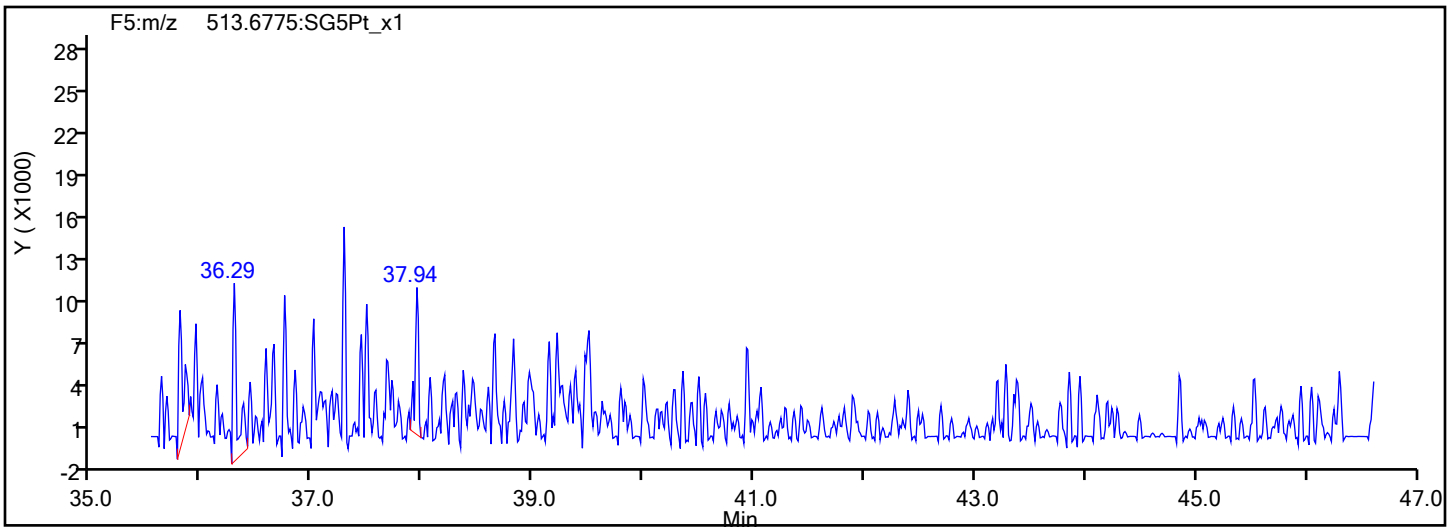
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

OCDF





OCDF Interference Mass

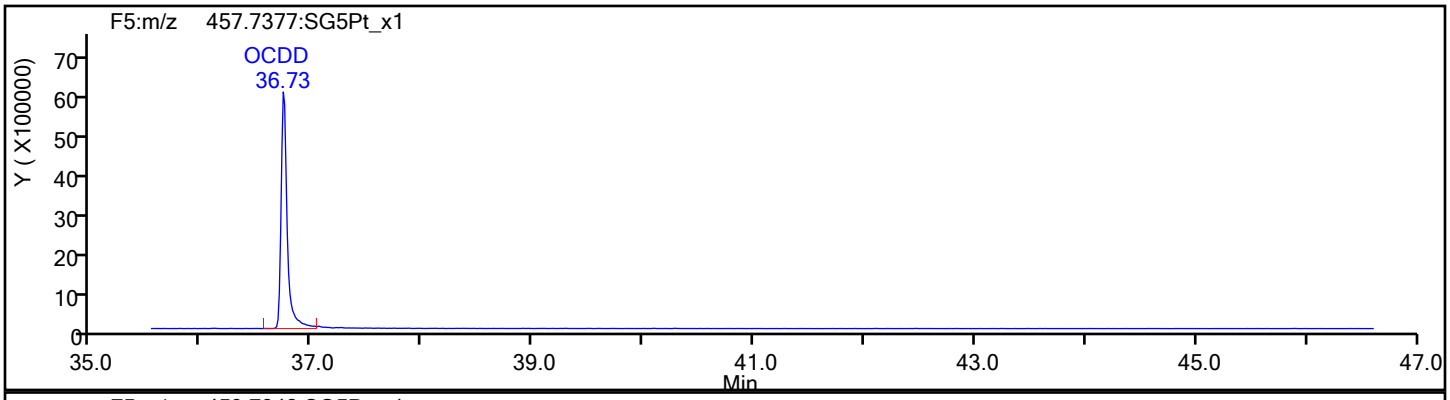


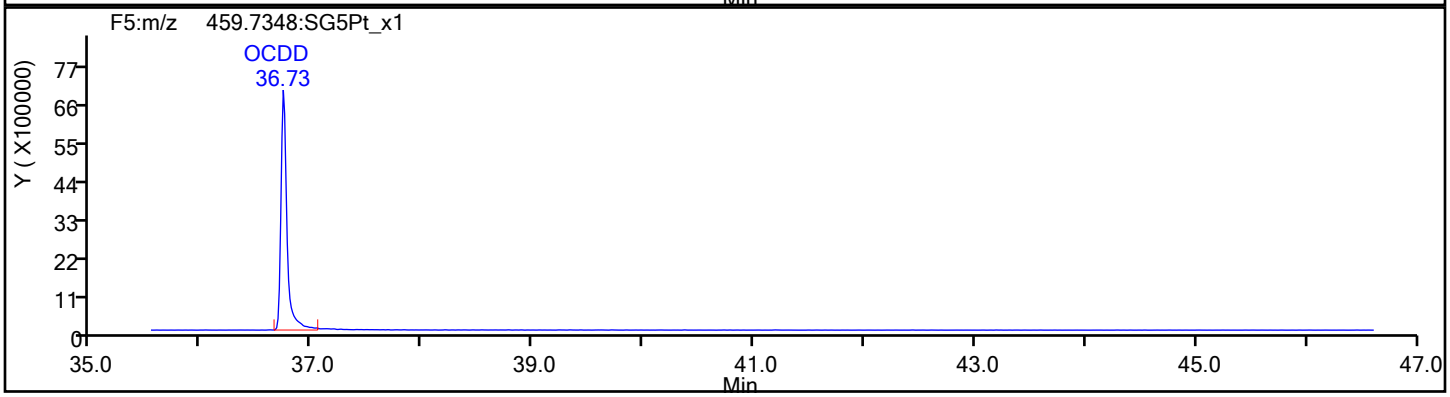
Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

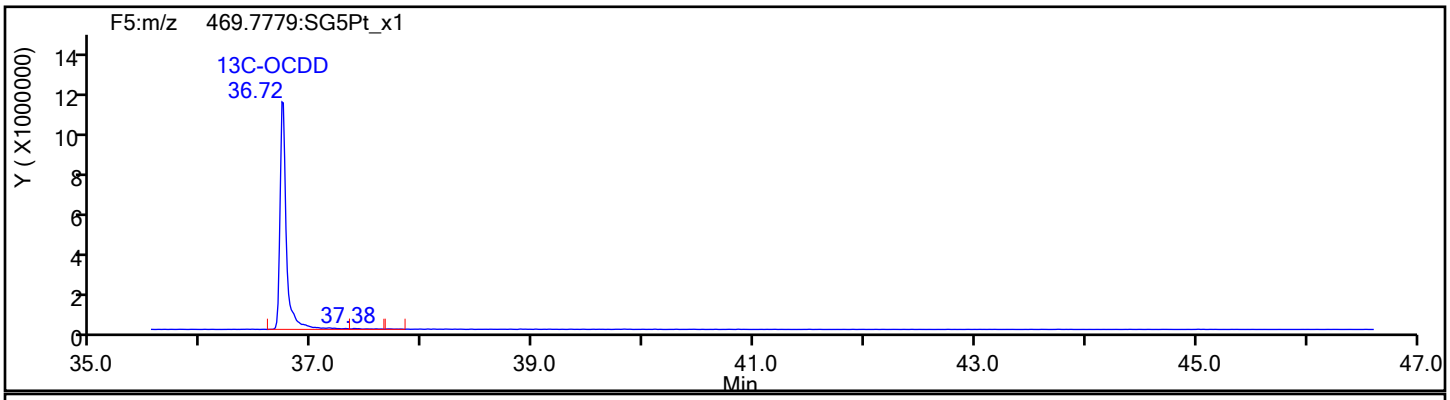
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm

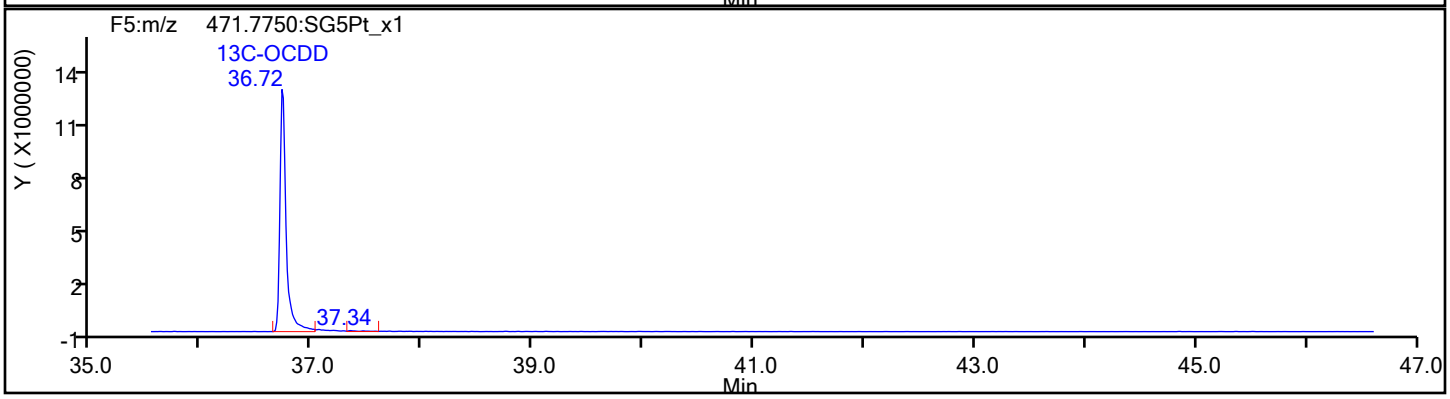
OCDD





OCDD Standards

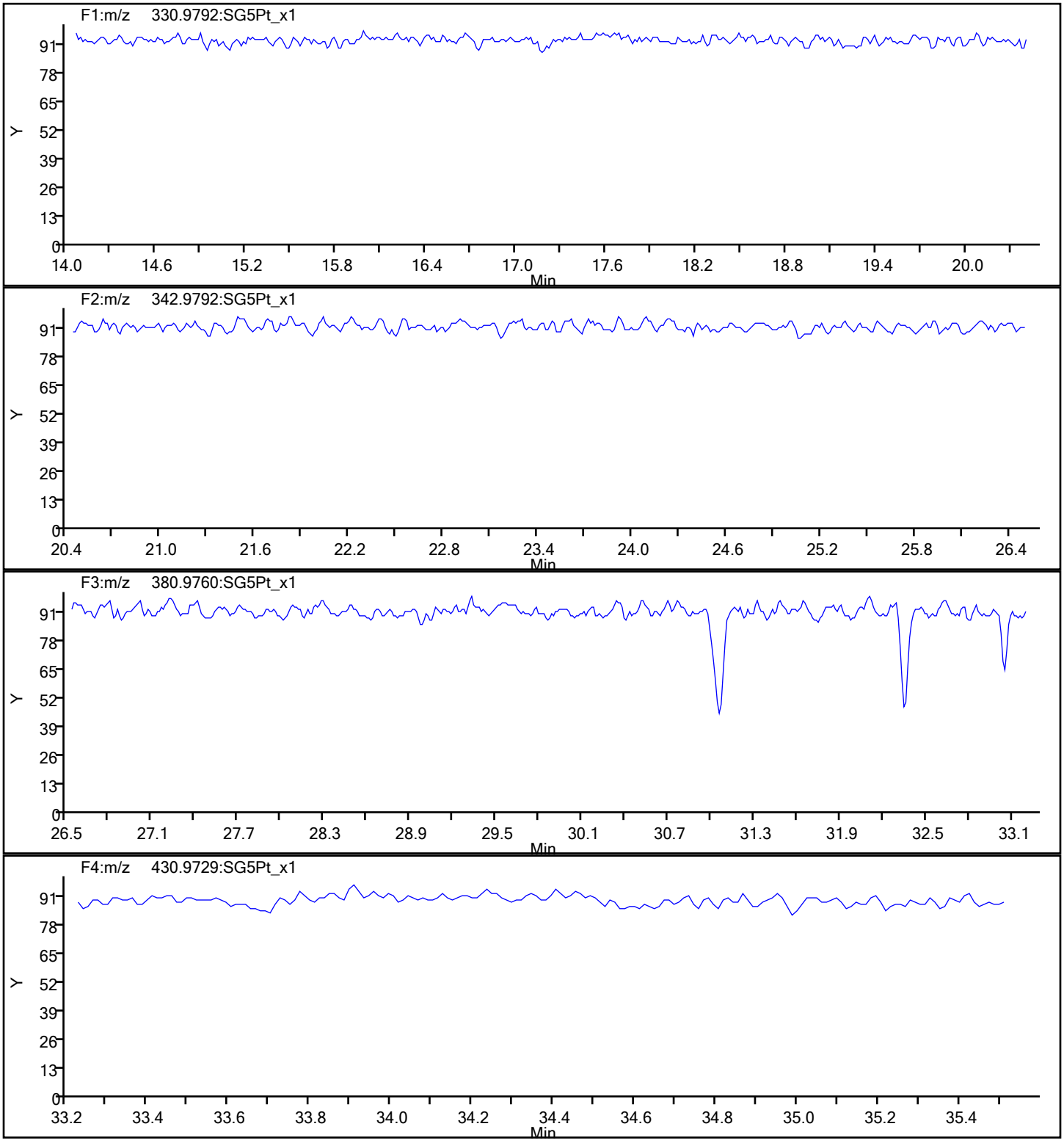




Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

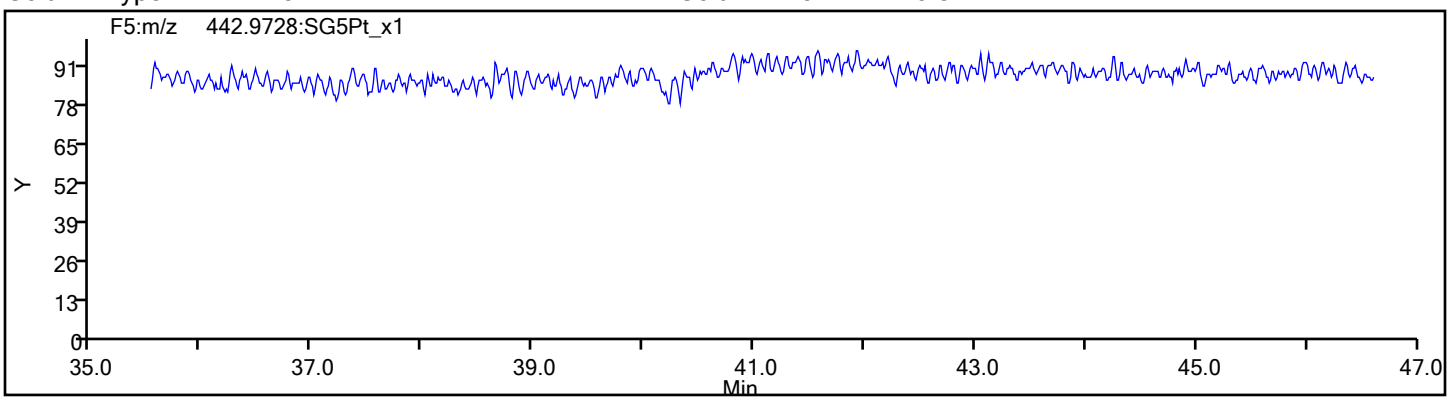
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:12:44 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_5.d		
Injection Date:	19-Dec-2019 14:11:22	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	5
Column Type:	DB-5	Column Dia:	0.32 mm



FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-344942/3-A

Matrix: Sediment Lab File ID: 19DE193D5_6.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 14:58

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	19.5		1.0	0.14
51207-31-9	2,3,7,8-TCDF	21.1		1.0	0.12
40321-76-4	1,2,3,7,8-PeCDD	100		5.0	0.28
57117-41-6	1,2,3,7,8-PeCDF	102		5.0	0.51
57117-31-4	2,3,4,7,8-PeCDF	97.9		5.0	0.56
39227-28-6	1,2,3,4,7,8-HxCDD	96.9		5.0	0.35
57653-85-7	1,2,3,6,7,8-HxCDD	101		5.0	0.37
19408-74-3	1,2,3,7,8,9-HxCDD	96.3		5.0	0.32
70648-26-9	1,2,3,4,7,8-HxCDF	98.3		5.0	0.65
57117-44-9	1,2,3,6,7,8-HxCDF	105		5.0	0.68
72918-21-9	1,2,3,7,8,9-HxCDF	106		5.0	0.52
60851-34-5	2,3,4,6,7,8-HxCDF	106		5.0	0.50
35822-46-9	1,2,3,4,6,7,8-HpCDD	99.1		5.0	0.56
67562-39-4	1,2,3,4,6,7,8-HpCDF	107		5.0	1.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	99.8		5.0	1.3
3268-87-9	OCDD	199		10	0.28
39001-02-0	OCDF	199		10	0.37
41903-57-5	Total TCDD	19.6		1.0	0.14
30402-14-3	Total TCDF	21.1		1.0	0.12
36088-22-9	Total PeCDD	100		5.0	0.28
30402-15-4	Total PeCDF	200		5.0	0.53
34465-46-8	Total HxCDD	294		5.0	0.34
55684-94-1	Total HxCDF	415		5.0	0.59
37871-00-4	Total HpCDD	99.1		5.0	0.56
38998-75-3	Total HpCDF	207		5.0	1.2

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-344942/3-A

Matrix: Sediment Lab File ID: 19DE193D5_6.d

Analysis Method: 1613B Date Collected:

Extract. Method: HRMS-Sox Date Extracted: 12/12/2019 08:56

Sample wt/vol: 10(g) Date Analyzed: 12/19/2019 14:58

Con. Extract Vol.: 20(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 346752 Units: pg/g

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	55		20-175
89059-46-1	13C-2,3,7,8-TCDF	53		22-152
109719-79-1	13C-1,2,3,7,8-PeCDD	53		21-227
109719-77-9	13C-1,2,3,7,8-PeCDF	53		21-192
116843-02-8	13C-2,3,4,7,8-PeCDF	55		13-328
109719-80-4	13C-1,2,3,4,7,8-HxCDD	57		21-193
109719-81-5	13C-1,2,3,6,7,8-HxCDD	59		25-163
114423-98-2	13C-1,2,3,4,7,8-HxCDF	57		19-202
116843-03-9	13C-1,2,3,6,7,8-HxCDF	55		21-159
116843-04-0	13C-1,2,3,7,8,9-HxCDF	54		17-205
116843-05-1	13C-2,3,4,6,7,8-HxCDF	56		22-176
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	58		26-166
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	56		21-158
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	61		20-186
114423-97-1	13C-OCDD	63		13-199

CAS NO.	SURROGATE	%REC	Q	LIMITS
85508-50-5	37Cl4-2,3,7,8-TCDD	88		31-191

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d
Lims ID: LCSD 320-344942/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 19-Dec-2019 14:58:55 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-344942/3-A LCSD 320-344942/3-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:13:11

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,4-TCDD	17.612	197390645	0.81	2.2E+06	100.0	100.0				
D 13C-2,3,7,8-TCDF	17.113	147232782	0.79	1.4157	52.7	52.7	0.1274	0.1274	52.69	
2,3,7,8-TCDF	17.128	14784744	0.76	0.9502	10.6	10.6	0.0618	0.0618	106	
A Non-2,3,7,8-sub-TCDF	16.811						0.0618	0.0618		
S Total TCDF					10.6	10.6	0.0618	0.0618		
D 13C-2,3,7,8-TCDD	17.808	105414185	0.83	0.9751	54.8	54.8	0.1821	0.1821	54.77	
2,3,7,8-TCDD	17.823	10764672	0.77	1.0477	9.747	9.747	0.0701	0.0701	97.47	
$ 37Cl4-2,3,7,8-TCDD	17.823	94159737		1.3480	35.4	35.4	0.0388	0.0388	88.47	
A Non-2,3,7,8-sub-TCDD	17.249	73495	0.77	1.0477	0.1600	0.0665	0.0701	0.0701	0.00	RQ
S Total TCDD					9.907	9.813	0.0701	0.0701		RQ
D 13C-1,2,3,7,8-PeCDF	22.032	123463865	1.57	1.1786	53.1	53.1	0.1530	0.1530	53.07	
1,2,3,7,8-PeCDF	22.045	64885113	1.52	1.0302	51.0	51.0	0.2535	0.2535	102	
D 13C-2,3,4,7,8-PeCDF	23.341	122204369	1.58	1.1308	54.8	54.8	0.1594	0.1594	54.75	
2,3,4,7,8-PeCDF	23.368	62293973	1.58	1.0410	49.0	49.0	0.2793	0.2793	97.94	
A F1 PeCDFs	19.774						0.0666	0.0666		
A Non-2,3,7,8-sub-PeCDF	22.858						0.2657	0.2657		
S Total PeCDF					100.0	100.0	0.2664	0.2664		
D 13C-1,2,3,7,8-PeCDD	24.050	78570832	1.66	0.7572	52.6	52.6	0.1045	0.1045	52.57	
1,2,3,7,8-PeCDD	24.077	42660180	1.61	1.0855	50.0	50.0	0.1418	0.1418	100	
A Non-2,3,7,8-sub-PeCDD	22.973						0.1418	0.1418		
S Total PeCDD					50.0	50.0	0.1418	0.1418		
D 13C-1,2,3,4,7,8-HxCDF	30.193	110224479	0.52	1.1043	56.5	56.5	0.2422	0.2422	56.54	
1,2,3,4,7,8-HxCDF	30.220	62152353	1.26	1.1472	49.2	49.2	0.3245	0.3245	98.30	
D 13C-1,2,3,6,7,8-HxCDF	30.406	110459091	0.52	1.1470	54.5	54.5	0.2331	0.2331	54.54	
1,2,3,6,7,8-HxCDF	30.433	66424416	1.22	1.1450	52.5	52.5	0.3399	0.3399	105	
D 13C-2,3,4,6,7,8-HxCDF	31.312	106274418	0.53	1.0769	55.9	55.9	0.2483	0.2483	55.90	
2,3,4,6,7,8-HxCDF	31.325	66238315	1.23	1.1726	53.2	53.2	0.2508	0.2508	106	
D 13C-1,2,3,7,8,9-HxCDF	32.164	95872464	0.51	1.0115	53.7	53.7	0.2644	0.2644	53.68	
1,2,3,7,8,9-HxCDF	32.177	59318794	1.22	1.1717	52.8	52.8	0.2602	0.2602	106	
A Non-2,3,7,8-sub-HxCDF	29.880						0.2891	0.2891		
S Total HxCDF					207.6	207.6	0.2938	0.2938		

Compound	RT (min.)	Area	Ratio	Ical RRF	Amount pg/ul	EMPC pg/ul	Noise EDL	Final EDL	%Rec	Flags
* 13C-1,2,3,7,8,9-HxCDD	31.964	176553833	1.26	2.1E+06	100.0	100.0				
D 13C-1,2,3,4,7,8-HxCDD	31.511	79561369	1.30	0.7962	56.6	56.6	0.2619	0.2619	56.60	
1,2,3,4,7,8-HxCDD	31.524	42125761	1.32	1.0934	48.4	48.4	0.1736	0.1736	96.85	
D 13C-1,2,3,6,7,8-HxCDD	31.618	90582895	1.23	0.8720	58.8	58.8	0.2392	0.2392	58.84	
1,2,3,6,7,8-HxCDD	31.644	47827450	1.20	1.0429	50.6	50.6	0.1842	0.1842	101	
1,2,3,7,8,9-HxCDD	31.977	49472664	1.27	1.2073	48.2	48.2	0.1582	0.1582	96.33	
A Non-2,3,7,8-sub-HxCDD	30.519						0.1713	0.1713		
S Total HxCDD					147.2	147.2	0.1720	0.1720		
D 13C-1,2,3,4,6,7,8-HpCDF	33.628	74985936	0.43	0.7577	56.1	56.1	0.7785	0.7785	56.06	
1,2,3,4,6,7,8-HpCDF	33.640	59657095	1.09	1.4804	53.7	53.7	0.5108	0.5108	107	
D 13C-1,2,3,4,7,8,9-HpCDF	34.697	74194716	0.44	0.6941	60.5	60.5	0.8498	0.8498	60.54	
1,2,3,4,7,8,9-HpCDF	34.709	47899498	1.06	1.2933	49.9	49.9	0.6510	0.6510	99.84	
A Non-2,3,7,8-sub-HpCDF	34.169						0.5745	0.5745		
S Total HpCDF					103.7	103.7	0.5809	0.5809		
D 13C-1,2,3,4,6,7,8-HpCDD	34.417	72701056	1.05	0.7058	58.3	58.3	0.3118	0.3118	58.34	
1,2,3,4,6,7,8-HpCDD	34.430	37960972	1.01	1.0535	49.6	49.6	0.2789	0.2789	99.12	
A Non-2,3,7,8-sub-HpCDD	34.144						0.2789	0.2789		
S Total HpCDD					49.6	49.6	0.2789	0.2789		
D 13C-OCDD	36.734	102150959	0.88	0.4603	125.7	125.7	0.2398	0.2398	62.85	
OCDF	36.841	70763766	0.92	1.3945	99.4	99.4	0.1845	0.1845	99.35	
OCDD	36.746	57640392	0.90	1.1362	99.3	99.3	0.1395	0.1395	99.33	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Worksheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d
Lims ID: LCSD 320-344942/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 19-Dec-2019 14:58:55 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-344942/3-A LCSD 320-344942/3-A
Misc. Info.: 19DE193D5
Operator ID: AJS Instrument ID: 3D5

Method: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\Dioxin_3D5.m
Limit Group: HR - 1613B - ICAL
Last Update: 20-Dec-2019 14:12:08 Calib Date: 12-Dec-2019 14:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\3D5\20191212-88180.b\12DE193D5_7.d

Column 1 : DB-5 (0.32 mm) Det: F1:HRSIR
Process Host: CTX0336

First Level Reviewer: dadunj Date: 20-Dec-2019 14:13:11

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4-TCDD											
331.9368	17.612	17.612	0		88579343	22614083	22659	56647	998		
333.9339	17.612	17.612	0		108811302	28018684	13295	33237	2107	0.81(0.65-0.89)	
13C-2,3,7,8-TCDF											
315.9419	17.113	17.113	0	0.972	64921474	16560523	19784	49460	837		
317.9389	17.113	17.113	0	0.972	82311308	20677123	16755	41887	1234	0.79(0.65-0.89)	
2,3,7,8-TCDF											
303.9016	17.128	17.128	0	1.001	6382614	1676261	3156	7890	531		
305.8987	17.128	17.128	0	1.001	8402130	2165228	5584	13960	388	0.76(0.65-0.89)	
A Non-2,3,7,8-sub-TCDF											
303.9016	16.811						3156	7890			
305.8987	16.811						5584	13960			
13C-2,3,7,8-TCDD											
331.9368	17.808	17.793	1	1.011	47654227	10436429	22659	56647	461		
333.9339	17.808	17.793	1	1.011	57759958	13546407	13295	33237	1019	0.83(0.65-0.89)	
2,3,7,8-TCDD											
319.8965	17.823	17.823	0	1.001	4682450	1142317	4594	11485	249		
321.8936	17.823	17.823	0	1.001	6082222	1451236	2449	6122	593	0.77(0.65-0.89)	
37Cl4-2,3,7,8-TCDD											
327.8847	17.823	17.823	0	1.012	94159737	22269302	10591	26477	2103		
A Non-2,3,7,8-sub-TCDD											RQ
319.8965	17.113	17.249	-8	0.961	135158	31654	4594	11485	7		
	Empc Correction				31972	9025	4594	11485	2		
321.8936	17.113	17.249	-8	0.961	41523	11722	2449	6122	5	3.26(0.65-0.89)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8-PeCDF											
351.9000	22.032	22.018	1	1.251	75495163	13647282	22350	55875	611		
353.8970	22.032	22.018	1	1.251	47968702	8895405	14161	35402	628	1.57(1.32-1.78)	
1,2,3,7,8-PeCDF											
339.8597	22.045	22.045	0	1.001	39127170	7007921	12761	31902	549		
341.8567	22.045	22.045	0	1.001	25757943	4642461	10787	26967	430	1.52(1.32-1.78)	
13C-2,3,4,7,8-PeCDF											
351.9000	23.341	23.341	0	1.325	74819111	12247164	22350	55875	548		
353.8970	23.341	23.341	0	1.325	47385258	8000160	14161	35402	565	1.58(1.32-1.78)	
2,3,4,7,8-PeCDF											
339.8597	23.368	23.355	1	1.001	38157377	6345361	12761	31902	497		
341.8567	23.368	23.355	1	1.001	24136596	3980792	10787	26967	369	1.58(1.32-1.78)	
A F1 PeCDFs											
339.8597	19.774						1522	3805			
341.8567	19.774						4382	10955			
A Non-2,3,7,8-sub-PeCDF											
339.8597	22.858						12761	31902			
341.8567	22.858						10787	26967			
13C-1,2,3,7,8-PeCDD											
367.8949	24.050	24.050	0	1.366	49005605	7723528	10384	25960	744		
369.8919	24.050	24.050	0	1.366	29565227	4724095	5643	14107	837	1.66(1.32-1.78)	
1,2,3,7,8-PeCDD											
355.8546	24.077	24.077	0	1.001	26317395	3936756	5239	13097	751		
357.8516	24.077	24.077	0	1.001	16342785	2543889	2424	6060	1049	1.61(1.32-1.78)	
A Non-2,3,7,8-sub-PeCDD											
355.8546	22.973						5239	13097			
357.8516	22.973						2424	6060			
13C-1,2,3,4,7,8-HxCDF											
383.8639	30.193	30.193	0	0.945	37848906	6454778	15658	39145	412		
385.8610	30.193	30.193	0	0.945	72375573	12577718	30320	75800	415	0.52(0.43-0.59)	
1,2,3,4,7,8-HxCDF											
373.8208	30.220	30.206	1	1.001	34637023	5879717	15423	38557	381		
375.8178	30.206	30.206	0	1.000	27515330	4622324	12915	32287	358	1.26(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDF											
383.8639	30.406	30.406	0	0.951	37663766	6389667	15658	39145	408		
385.8610	30.406	30.406	0	0.951	72795325	11813907	30320	75800	390	0.52(0.43-0.59)	
1,2,3,6,7,8-HxCDF											
373.8208	30.433	30.420	1	1.001	36446709	6221122	15423	38557	403		
375.8178	30.419	30.420	0	1.000	29977707	4983779	12915	32287	386	1.22(1.05-1.43)	
13C-2,3,4,6,7,8-HxCDF											
383.8639	31.312	31.312	0	0.980	36732487	8435137	15658	39145	539		
385.8610	31.312	31.312	0	0.980	69541931	15653020	30320	75800	516	0.53(0.43-0.59)	
2,3,4,6,7,8-HxCDF											
373.8208	31.325	31.325	0	1.000	36480702	8201920	15423	38557	532		
375.8178	31.325	31.325	0	1.000	29757613	6832862	12915	32287	529	1.23(1.05-1.43)	

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,7,8,9-HxCDF											
383.8639	32.164	32.151	1	1.006	32577141	8065312	15658	39145	515		
385.8610	32.164	32.151	1	1.006	63295323	15176127	30320	75800	501	0.51(0.43-0.59)	
1,2,3,7,8,9-HxCDF											
373.8208	32.177	32.164	1	1.000	32627180	7953987	15423	38557	516		
375.8178	32.177	32.164	1	1.000	26691614	6297250	12915	32287	488	1.22(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDF											
373.8208	29.880						15423	38557			
375.8178	29.880						12915	32287			
13C-1,2,3,7,8,9-HxCDD											
401.8559	31.964	31.964	0		98530363	24166405	18924	47310	1277		
403.8529	31.964	31.964	0		78023470	18819432	16933	42332	1111	1.26(1.05-1.43)	
13C-1,2,3,4,7,8-HxCDD											
401.8559	31.511	31.511	0	0.986	45010407	11865407	18924	47310	627		
403.8529	31.511	31.511	0	0.986	34550962	9200802	16933	42332	543	1.30(1.05-1.43)	
1,2,3,4,7,8-HxCDD											
389.8157	31.524	31.525	0	1.000	23975553	6176852	8848	22120	698		
391.8127	31.524	31.525	0	1.000	18150208	4847925	7149	17872	678	1.32(1.05-1.43)	
13C-1,2,3,6,7,8-HxCDD											
401.8559	31.618	31.618	0	0.989	49936916	11457976	18924	47310	605		
403.8529	31.618	31.618	0	0.989	40645979	9365006	16933	42332	553	1.23(1.05-1.43)	
1,2,3,6,7,8-HxCDD											
389.8157	31.644	31.631	1	1.001	26082170	6073619	8848	22120	686		
391.8127	31.631	31.631	0	1.000	21745280	4956543	7149	17872	693	1.20(1.05-1.43)	
1,2,3,7,8,9-HxCDD											
389.8157	31.977	31.977	0	1.015	27664015	6655351	8848	22120	752		
391.8127	31.977	31.977	0	1.015	21808649	5339979	7149	17872	747	1.27(1.05-1.43)	
A Non-2,3,7,8-sub-HxCDD											
389.8157	30.519						8848	22120			
391.8127	30.519						7149	17872			
13C-1,2,3,4,6,7,8-HpCDF											
417.8253	33.628	33.628	0	1.052	22636903	7583494	32952	82380	230		
419.8220	33.628	33.628	0	1.052	52349033	16990598	68471	171177	248	0.43(0.37-0.51)	
1,2,3,4,6,7,8-HpCDF											
407.7818	33.640	33.628	1	1.000	31087725	9926922	42779	106947	232		
409.7789	33.640	33.628	1	1.000	28569370	9130429	31555	78887	289	1.09(0.88-1.20)	
13C-1,2,3,4,7,8,9-HpCDF											
417.8253	34.697	34.697	0	1.086	22828469	6756021	32952	82380	205		
419.8220	34.697	34.697	0	1.086	51366247	15316506	68471	171177	224	0.44(0.37-0.51)	
1,2,3,4,7,8,9-HpCDF											
407.7818	34.709	34.709	0	1.000	24593469	7309397	42779	106947	171		
409.7789	34.709	34.709	0	1.000	23306029	6899678	31555	78887	219	1.06(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDF											
407.7818	34.169						42779	106947			
409.7789	34.169						31555	78887			

Signal	RT (min.)	Exp RT (min.)	Sec.	REL RT	Area	Height	Avg Noise	EDL Height	S/N	Ratio(Limits)	Flags
13C-1,2,3,4,6,7,8-HpCDD											
435.8169	34.417	34.418	0	1.077	37232209	11453624	18632	46580	615		
437.8140	34.417	34.418	0	1.077	35468847	10658709	19210	48025	555	1.05(0.88-1.20)	
1,2,3,4,6,7,8-HpCDD											
423.7766	34.430	34.418	1	1.000	19118691	5756890	13734	34335	419		
425.7737	34.430	34.418	1	1.000	18842281	5554312	12257	30642	453	1.01(0.88-1.20)	
A Non-2,3,7,8-sub-HpCDD											
423.7766	34.144						13734	34335			
425.7737	34.144						12257	30642			
13C-OCDD											
469.7779	36.734	36.734	0	1.149	47862822	12120977	10098	25245	1200		
471.7750	36.734	36.734	0	1.149	54288137	13852867	8877	22192	1561	0.88(0.76-1.02)	
OCDF											
441.7428	36.841	36.830	1	1.003	33835860	8929931	5570	13925	1603		
443.7399	36.829	36.830	0	1.003	36927906	9661922	7792	19480	1240	0.92(0.76-1.02)	
OCDD											
457.7377	36.746	36.746	0	1.000	27244761	7266725	4359	10897	1667		
459.7348	36.746	36.746	0	1.000	30395631	8155348	3872	9680	2106	0.90(0.76-1.02)	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Q - EMPC-Estimated Max. Possible Conc.

Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

AreaSum WorkSheet Report

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d
Lims ID: LCSD 320-344942/3-A
Client ID:
Inject. Date: 19-Dec-2019 14:58:55 Dil. Factor: 1.0000
Sample Type: LCSD, LCS Duplicate
Instrument ID: 3D5 Operator: AJS
Lims Batch ID: 346752 Lims Sample ID: 6

Non-2,3,7,8-sub-TCDD, RT: 17.249

Initial Calibration RRF IsoDil Std Amount Added and Responses

Target Compound	RRF	Iso Dil Std Compound	Amount pg/ul	Area	Height
2,3,7,8-TCDD	1.048	D 13C-2,3,7,8-TCDD	100.000	105414185	23982836

Averages:

	RRFn		Qis	Ris Area	Ris Height
	1.048		100.000	105414185	23982836

Sum the Uncalibrated Results

RT	319.8965 Area	319.8965 Height	321.8936 Area	321.8936 Height	Amount	Ratio	Flags
17.113	135158	31654	41523	11722	0.1600	3.26	RQ
17.113	31972	9025	41523	11722	0.0665		Empc Correction
Signal Totals:							
	31972	9025	41523	11722			

Total Responses:

	Rx Area	Rx Height			Amount	Ratio	Flags
	176681	43376				3.26	RQ
	73495	20747					Empc Correction

On-Column Amount = (Rx * Qis) / (Ris * RRFn)
Quant By: Area

Amount: 0.1600 = (176681 * 100.000) / (105414185 * 1.048)
Empc Amount: 0.0665 = (73495 * 100.000) / (105414185 * 1.048)

QC Flag Legend

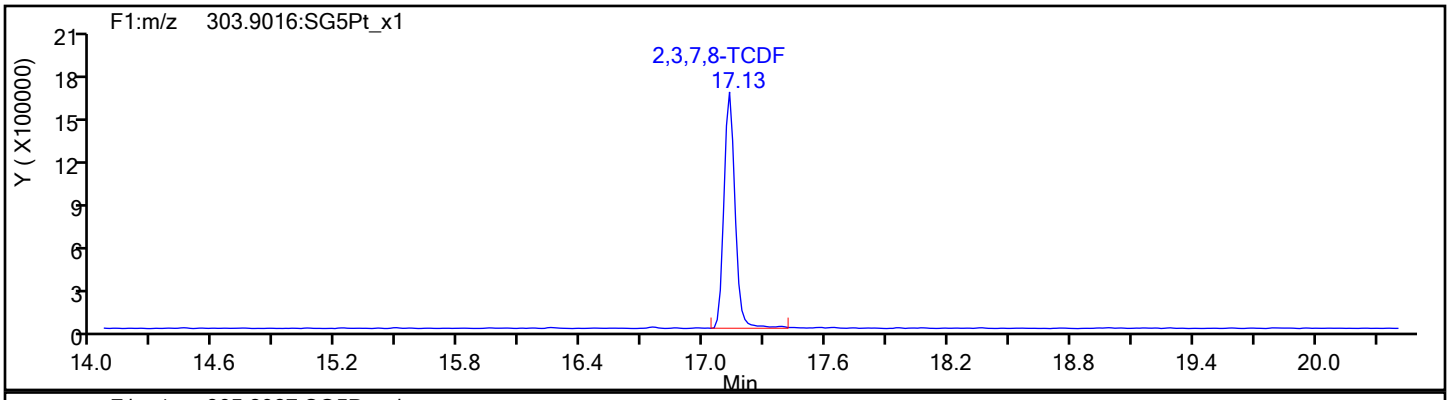
Processing Flags
R - Failed Signal Ratio Test
Q - EMPC-Estimated Max. Possible Conc.

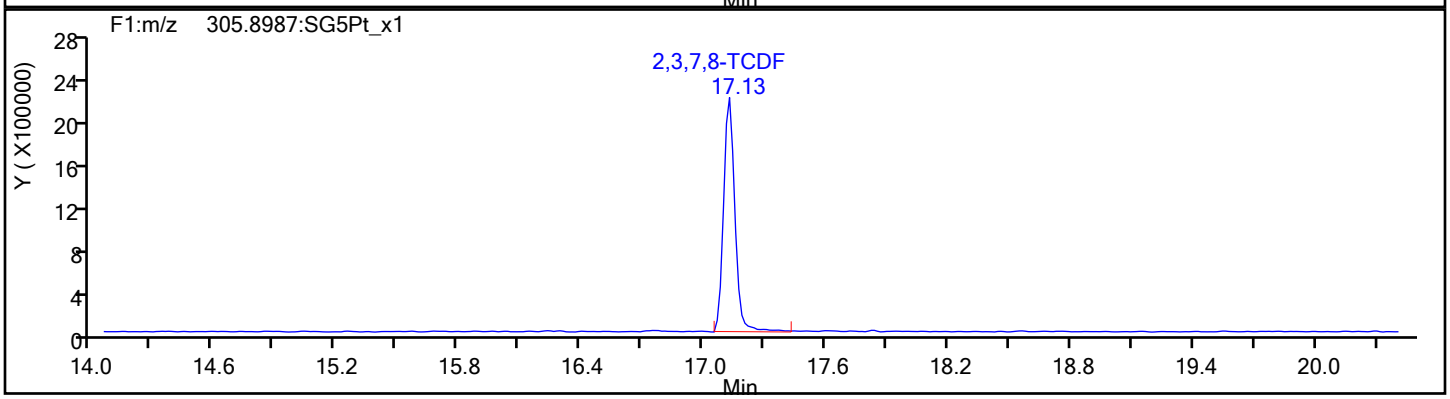
Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

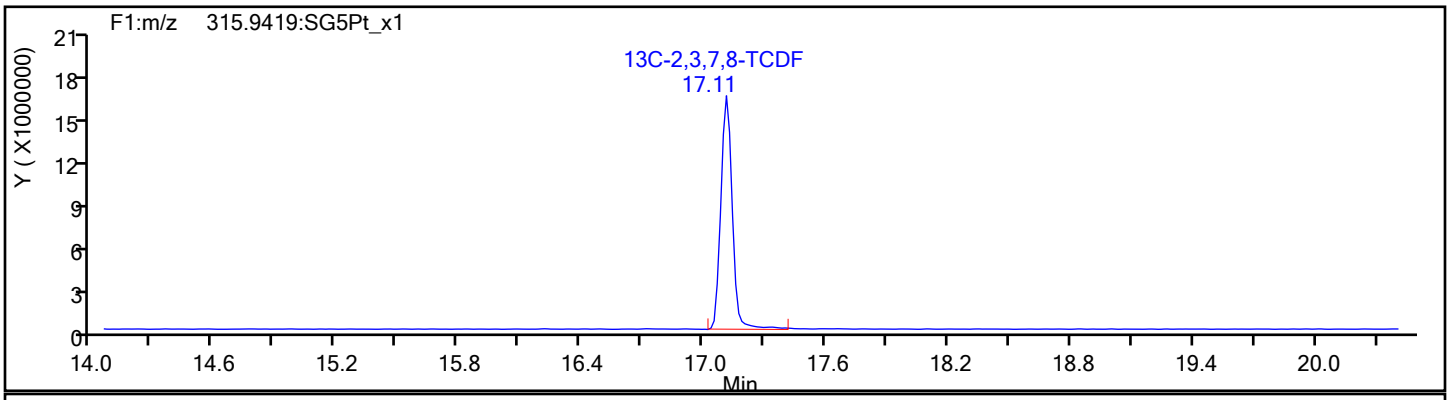
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

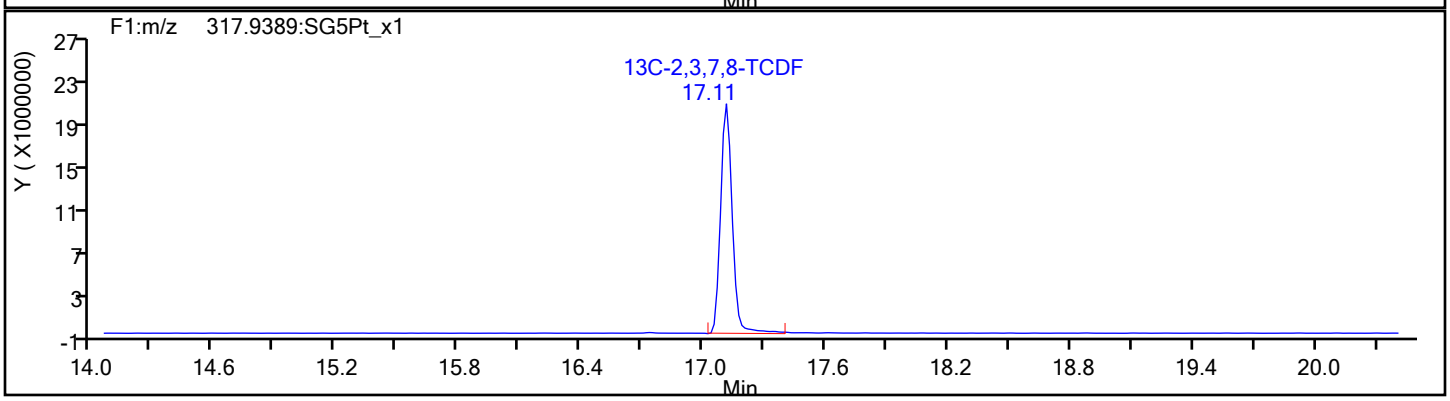
TCDF





TCDF Standards



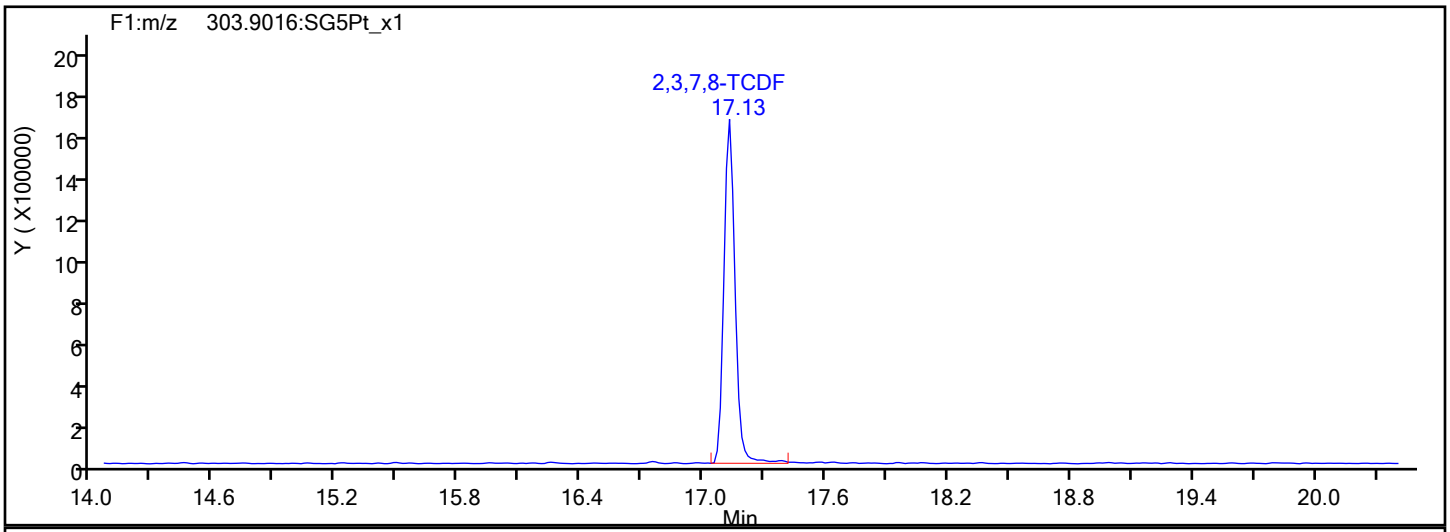


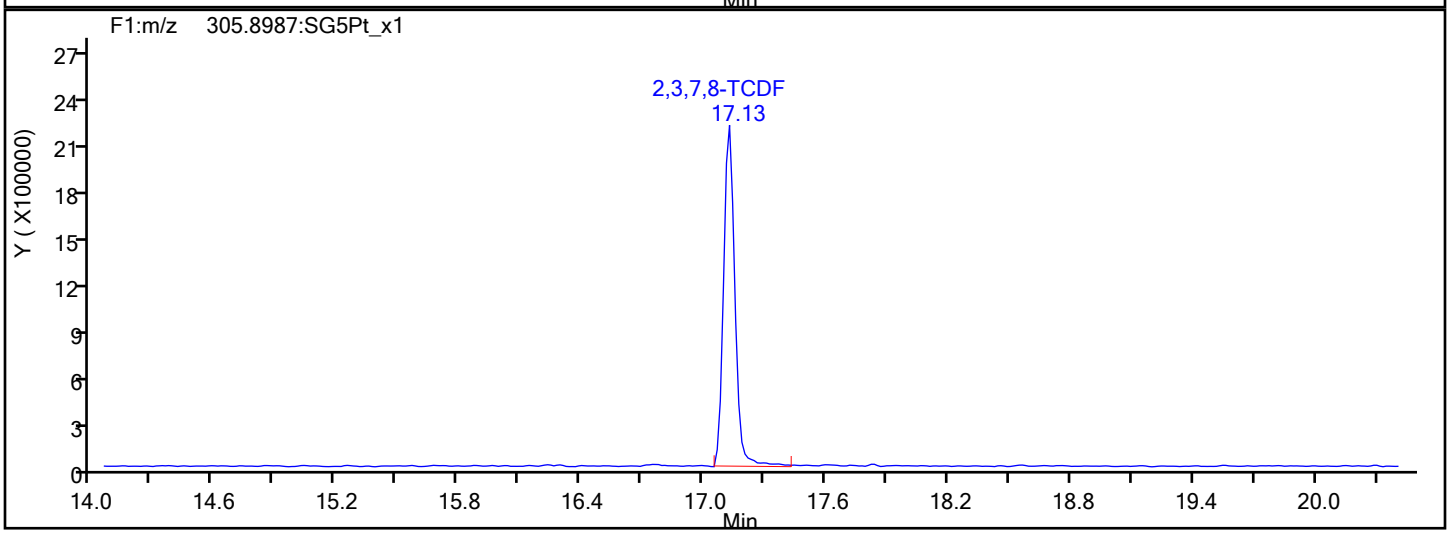
Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

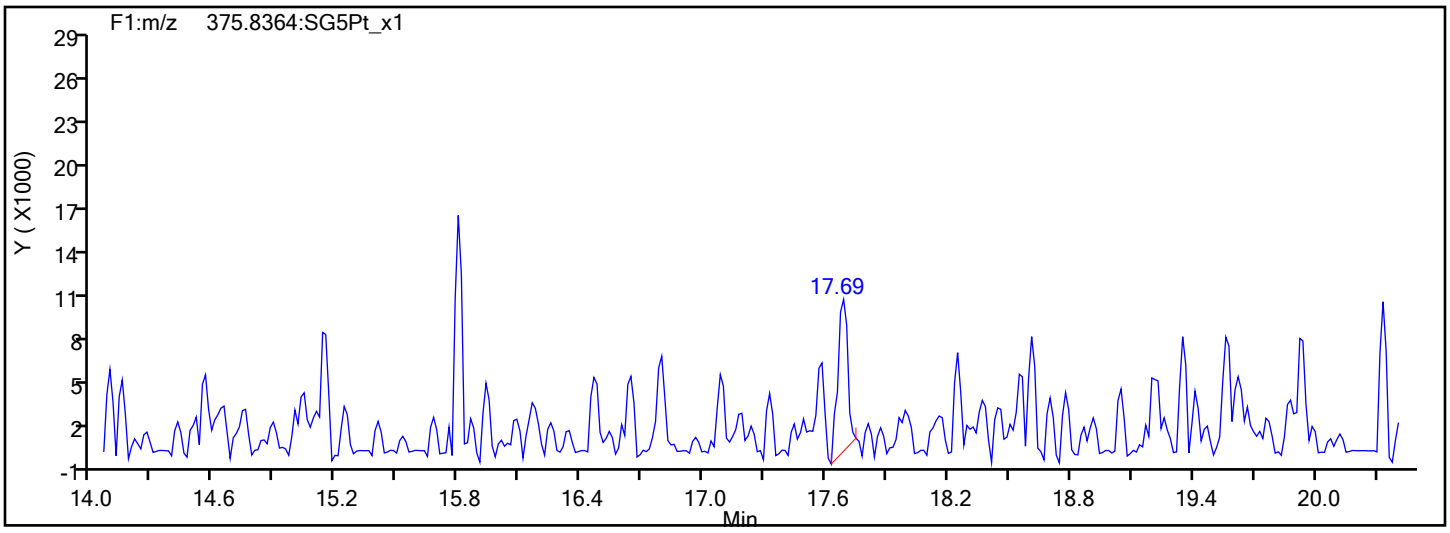
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

TCDF





TCDF Interference Mass



Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d

Injection Date: 19-Dec-2019 14:58:55 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

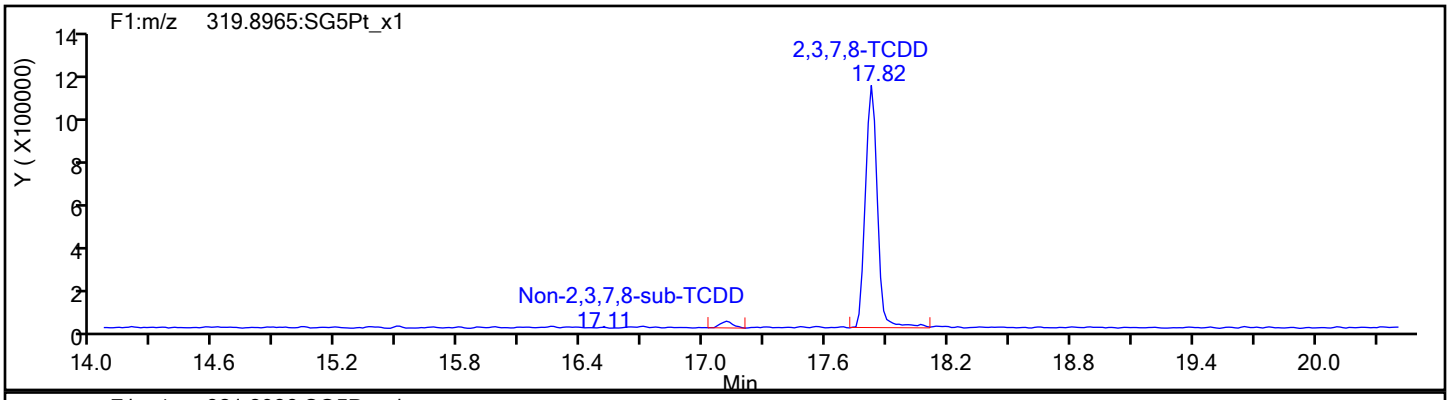
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

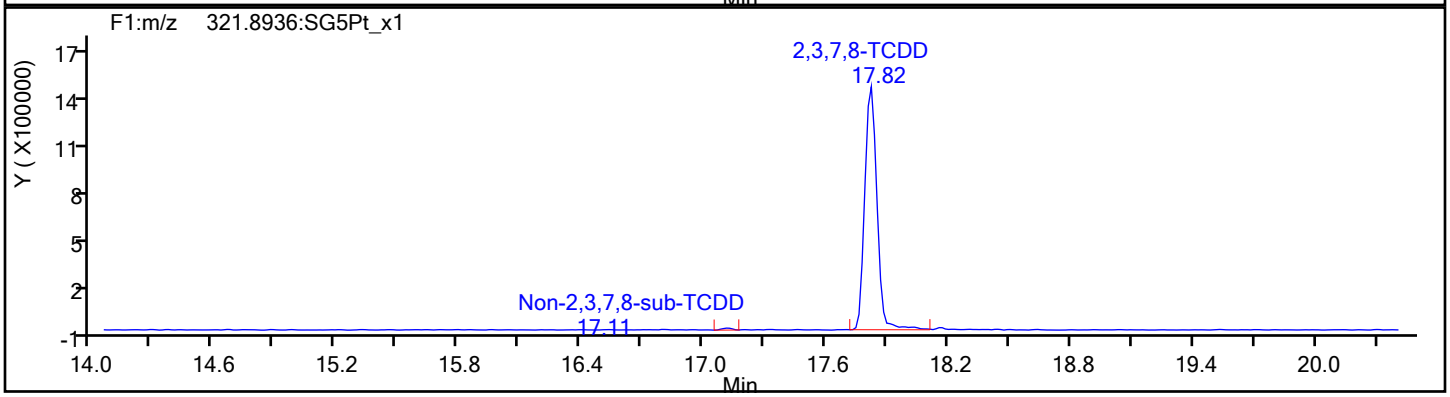
Client ID:

Worklist#: 346752 Sample Line#: 6

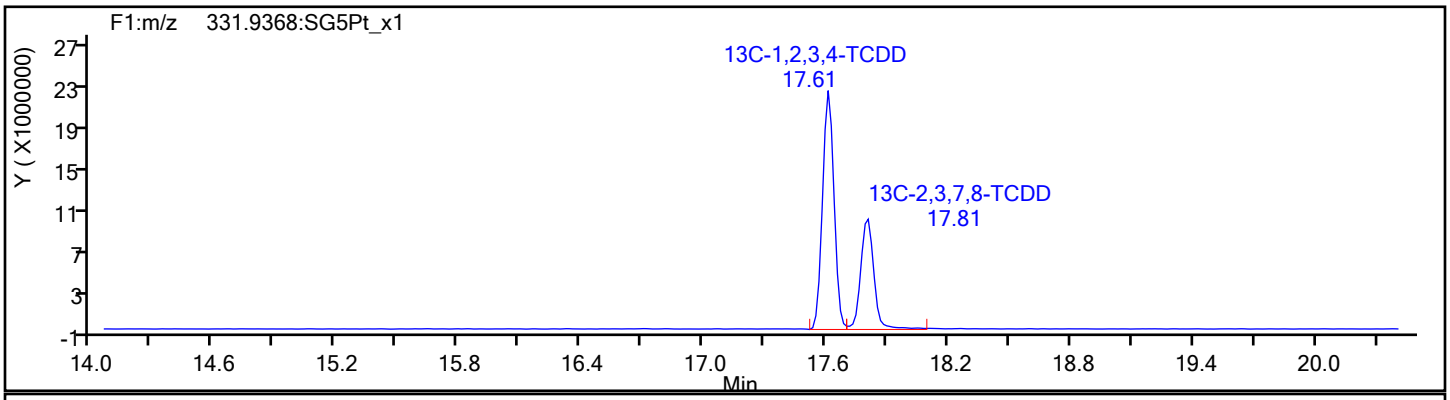
Column Type: DB-5 Column Dia: 0.32 mm

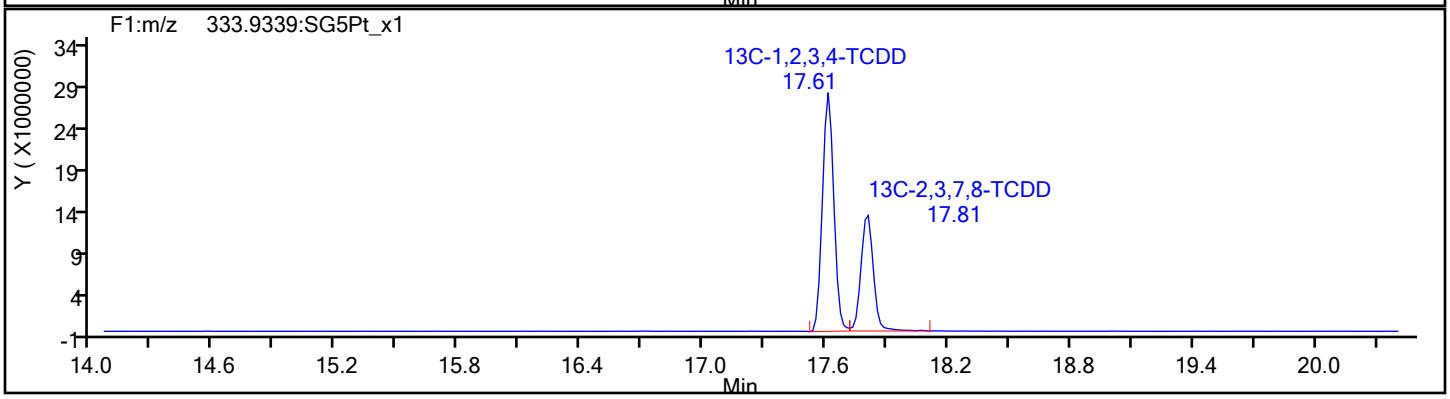
TCDD





TCDD Standards



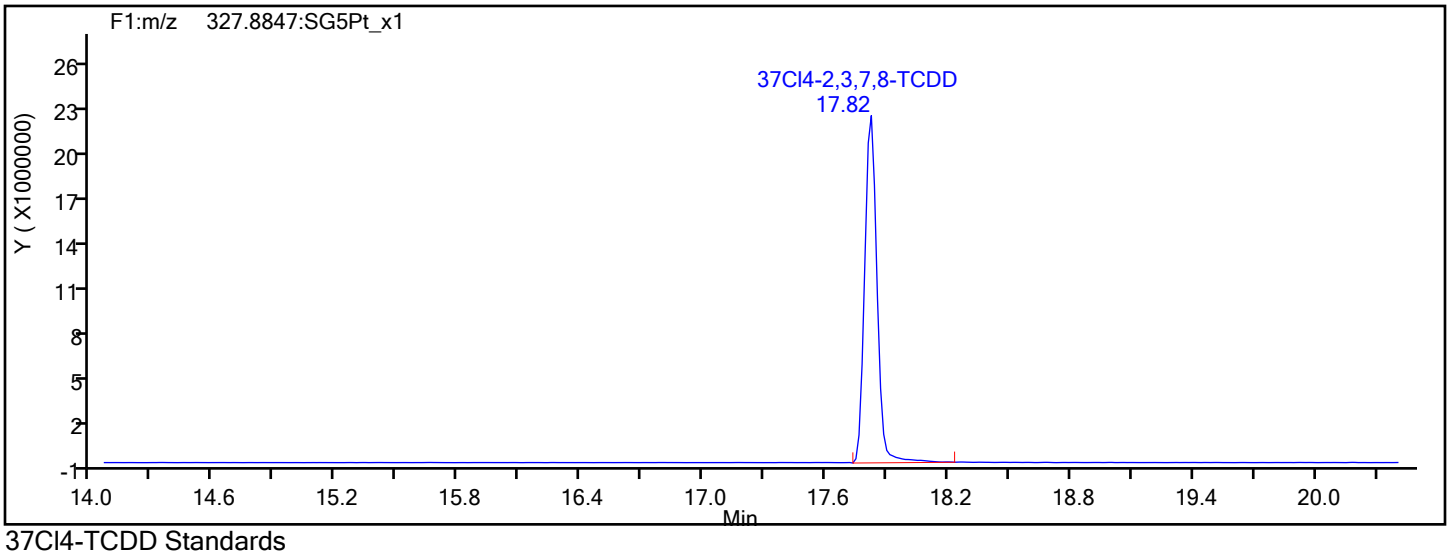


Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

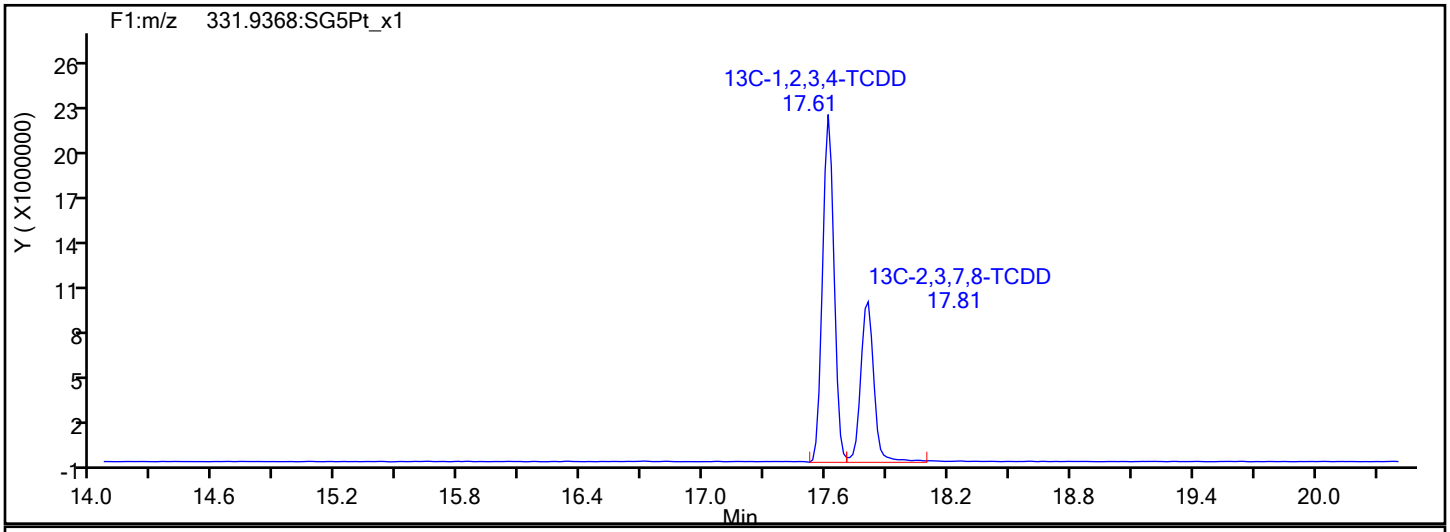
Eurofins TestAmerica, Sacramento

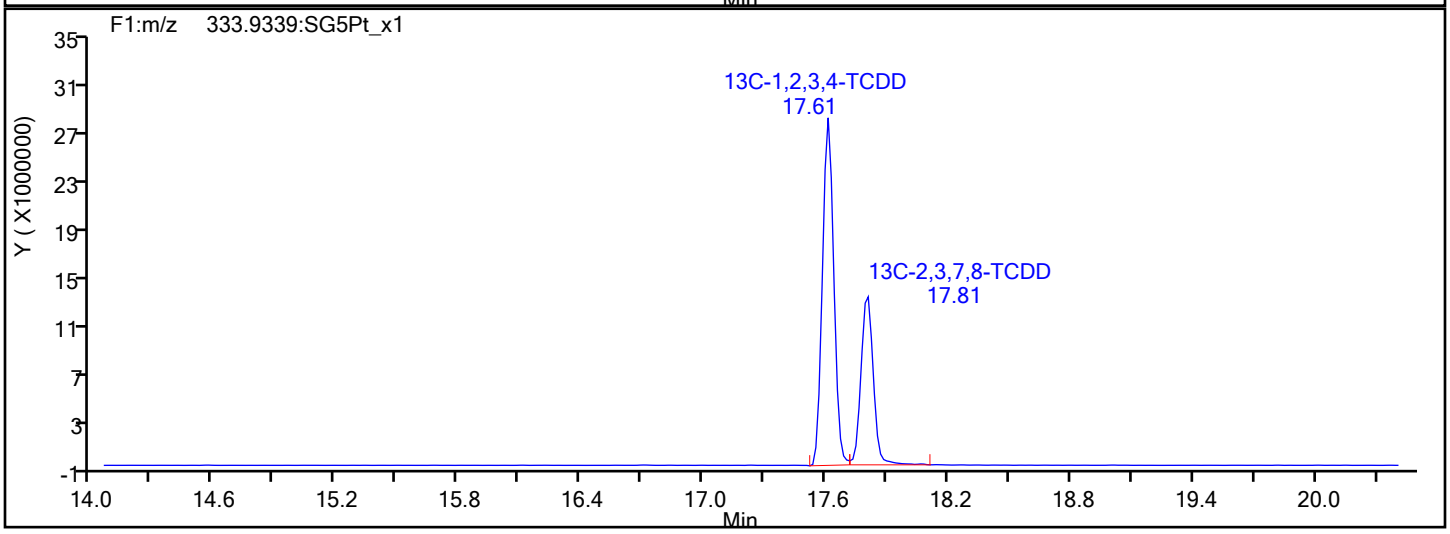
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

37Cl4-TCDD



37Cl4-TCDD Standards



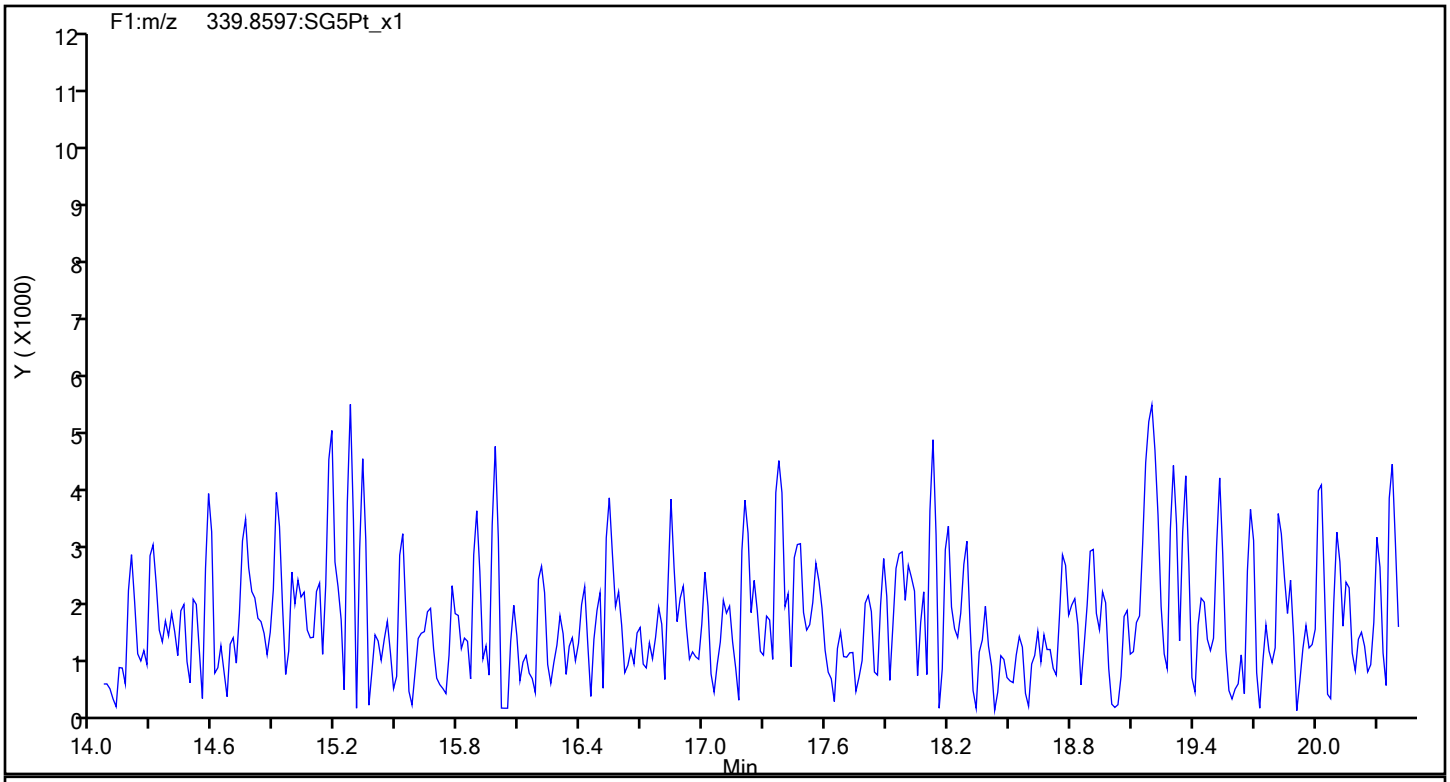


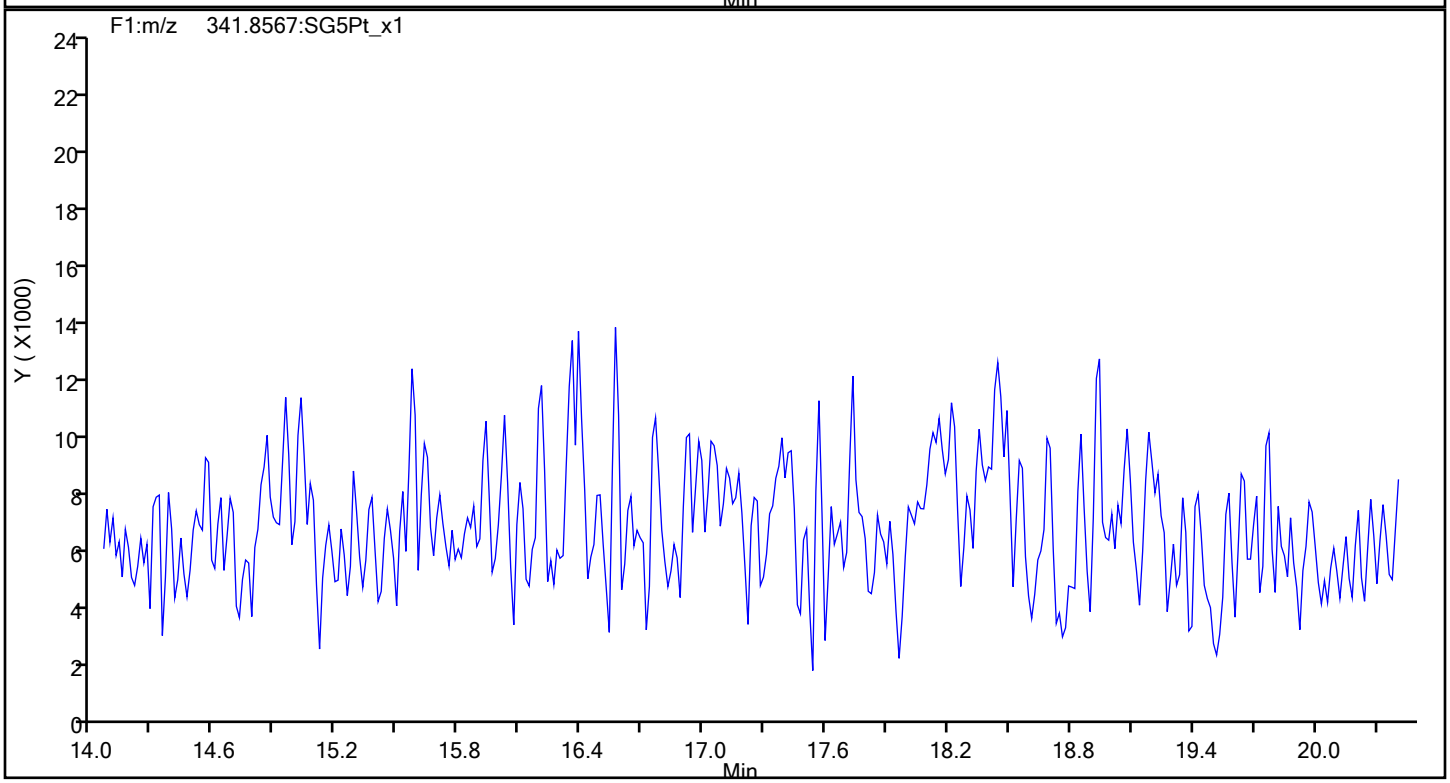
Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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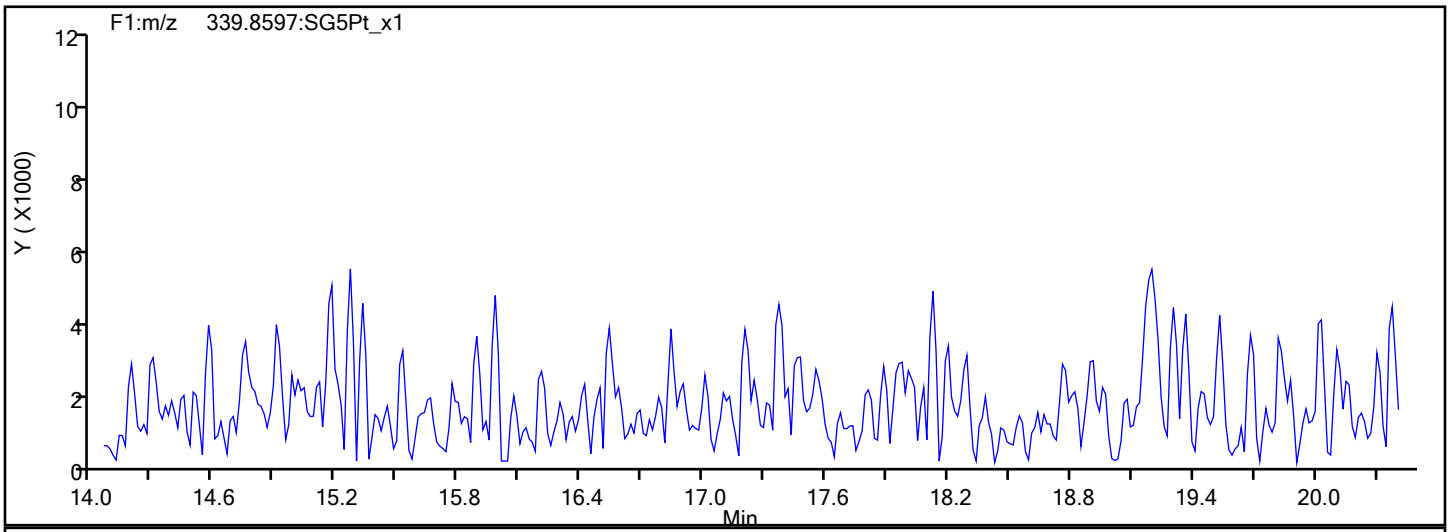
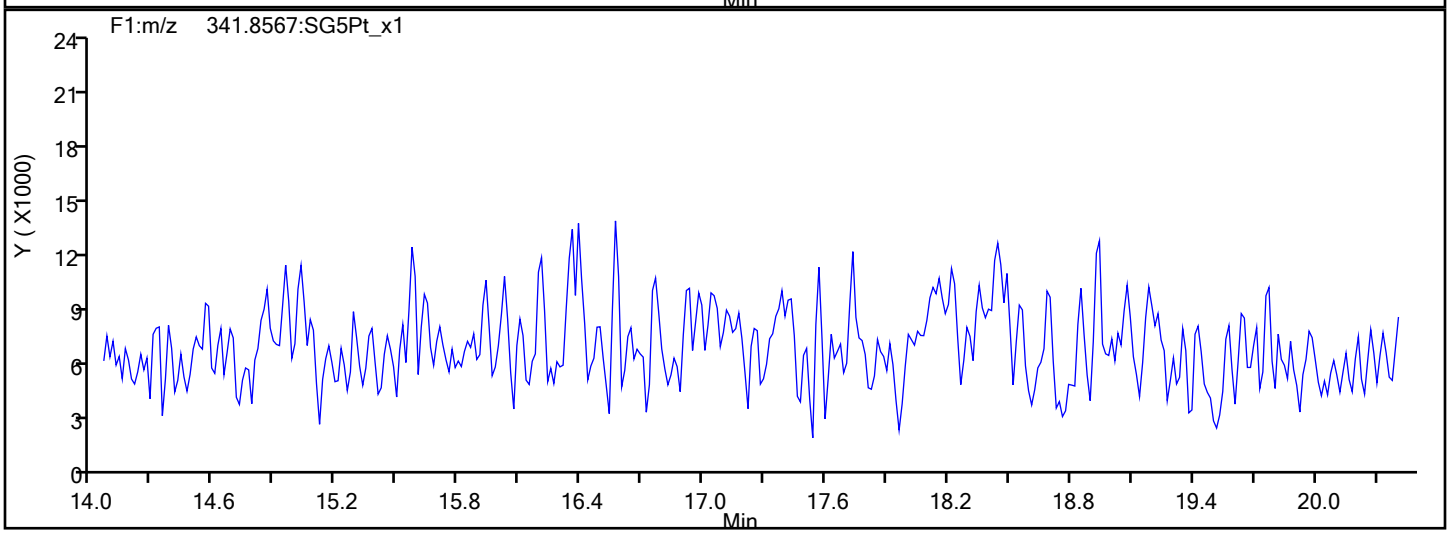
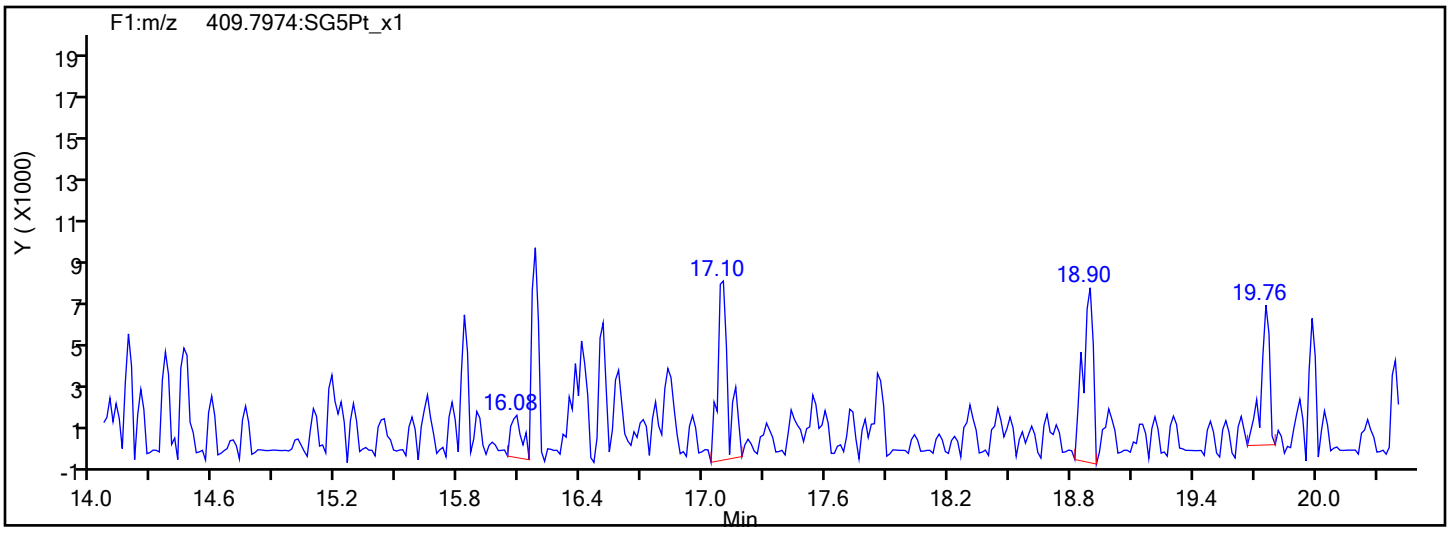
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

F1 PeCDFs





F1 PeCDFs Interference Mass



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Eurofins TestAmerica, Sacramento

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Column Type:	DB-5	Column Dia:	0.32 mm

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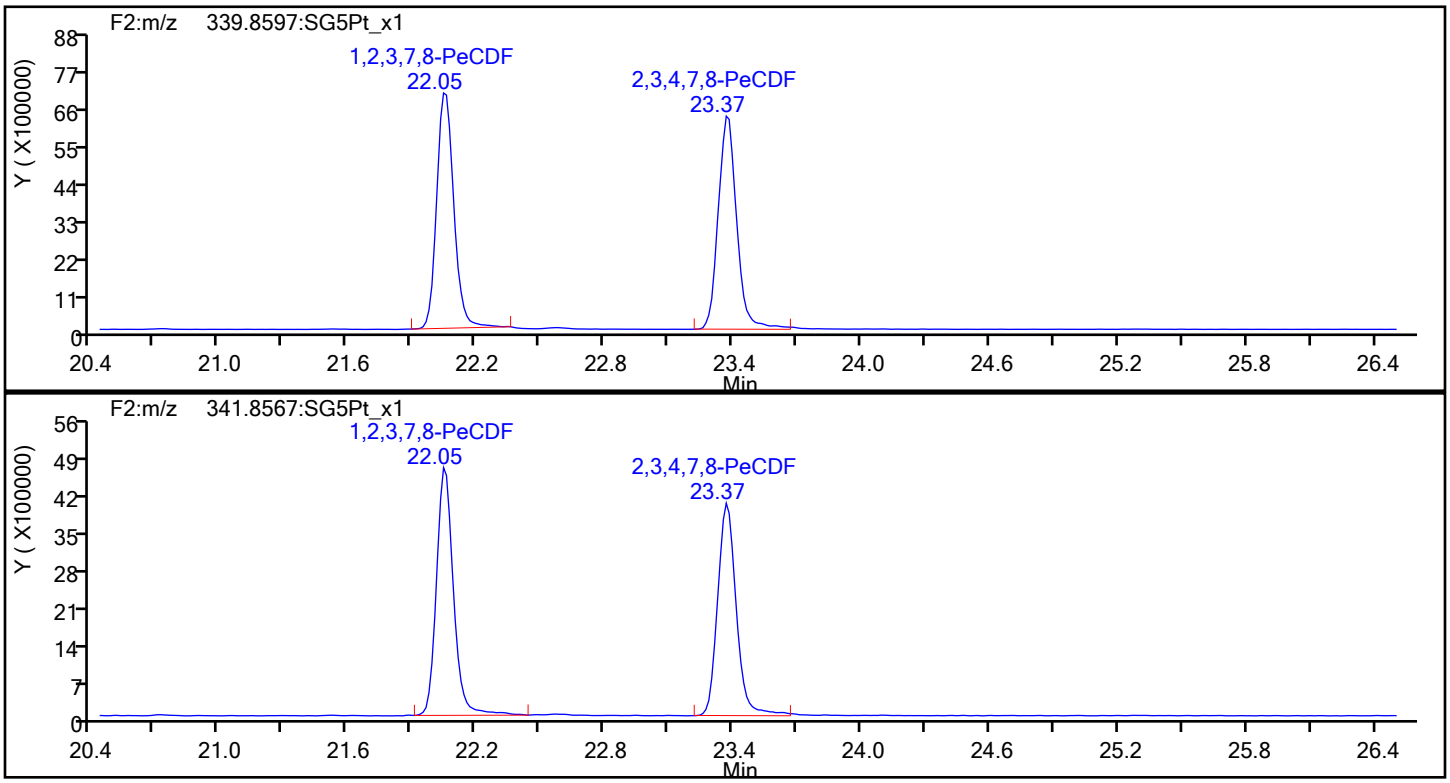
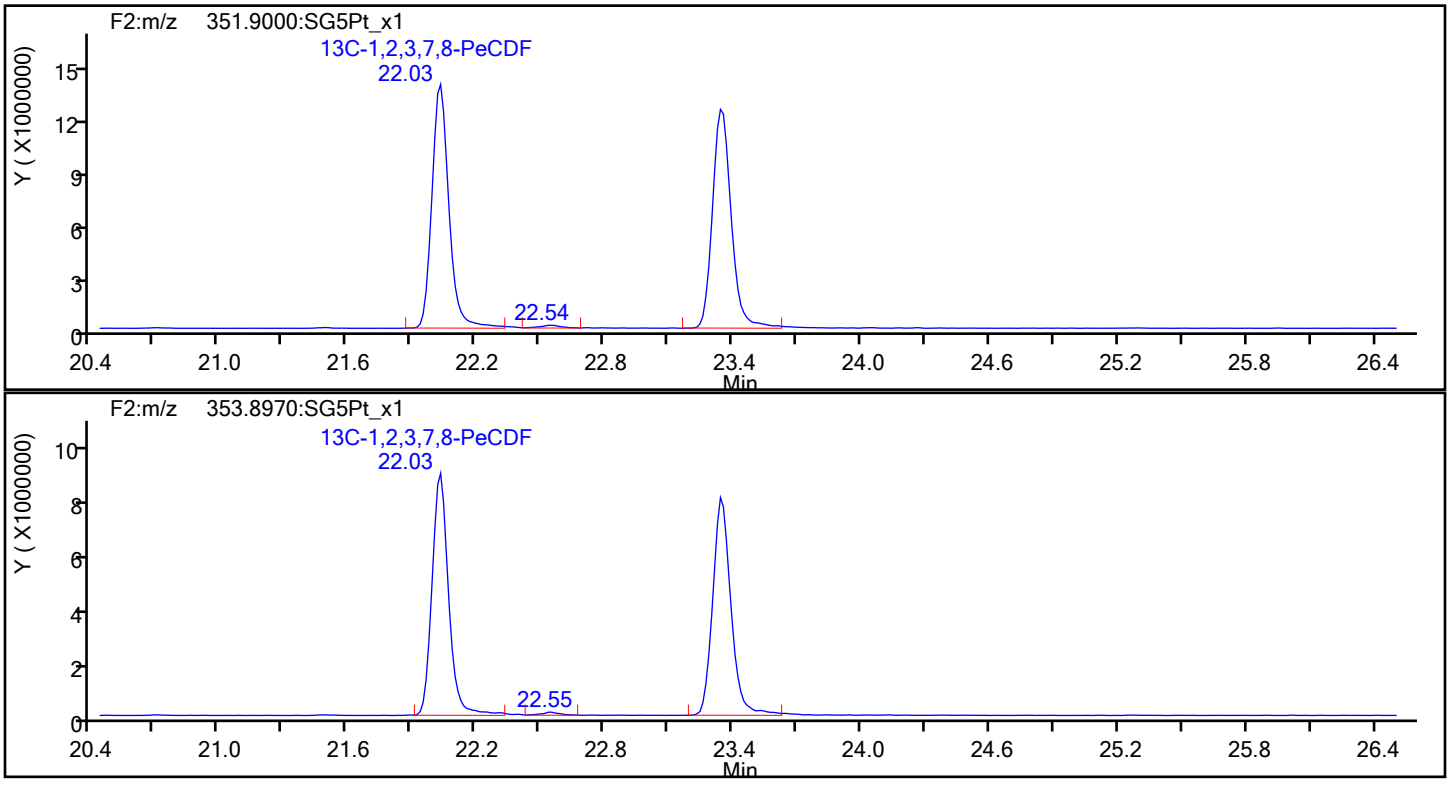


PeCDF Standards



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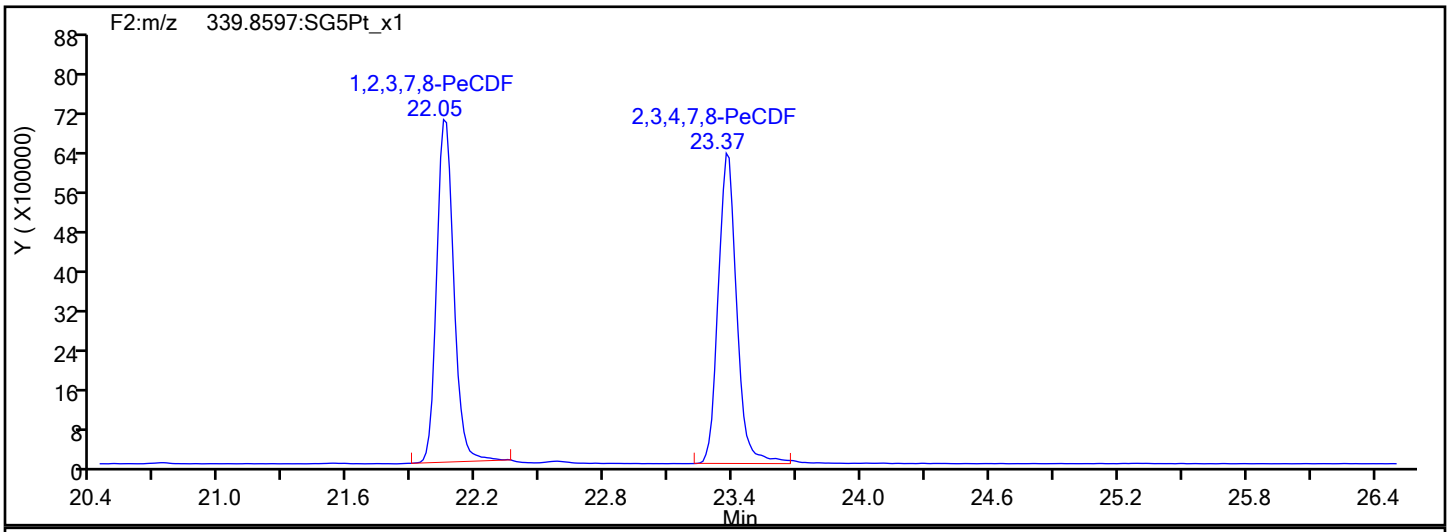
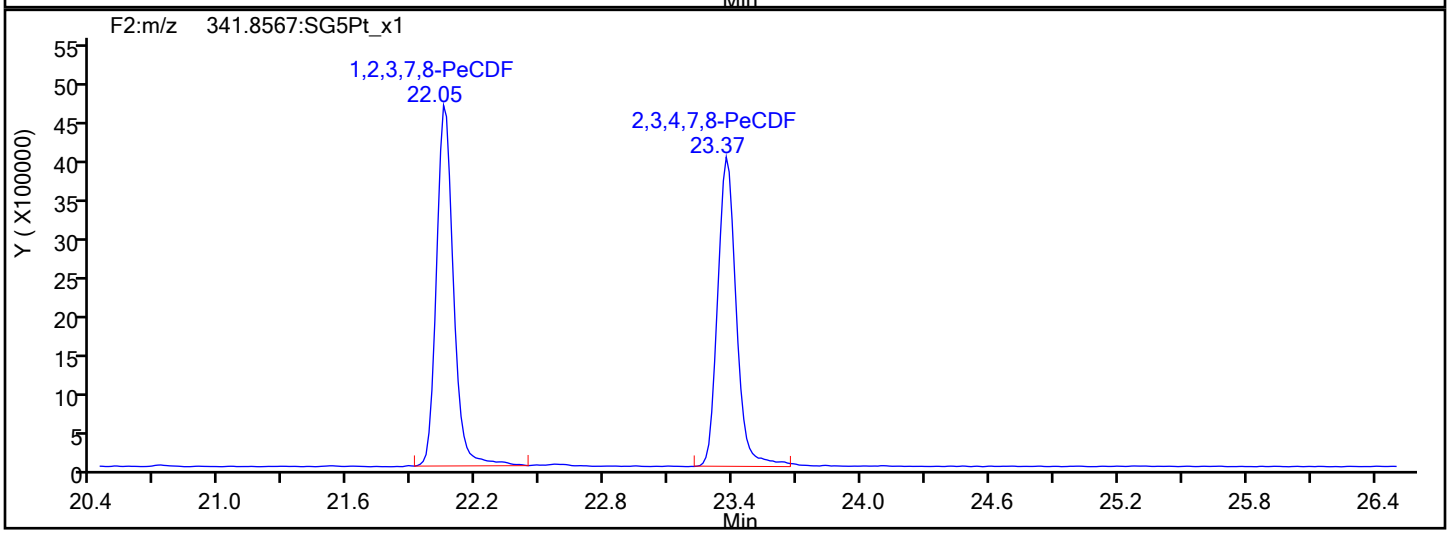
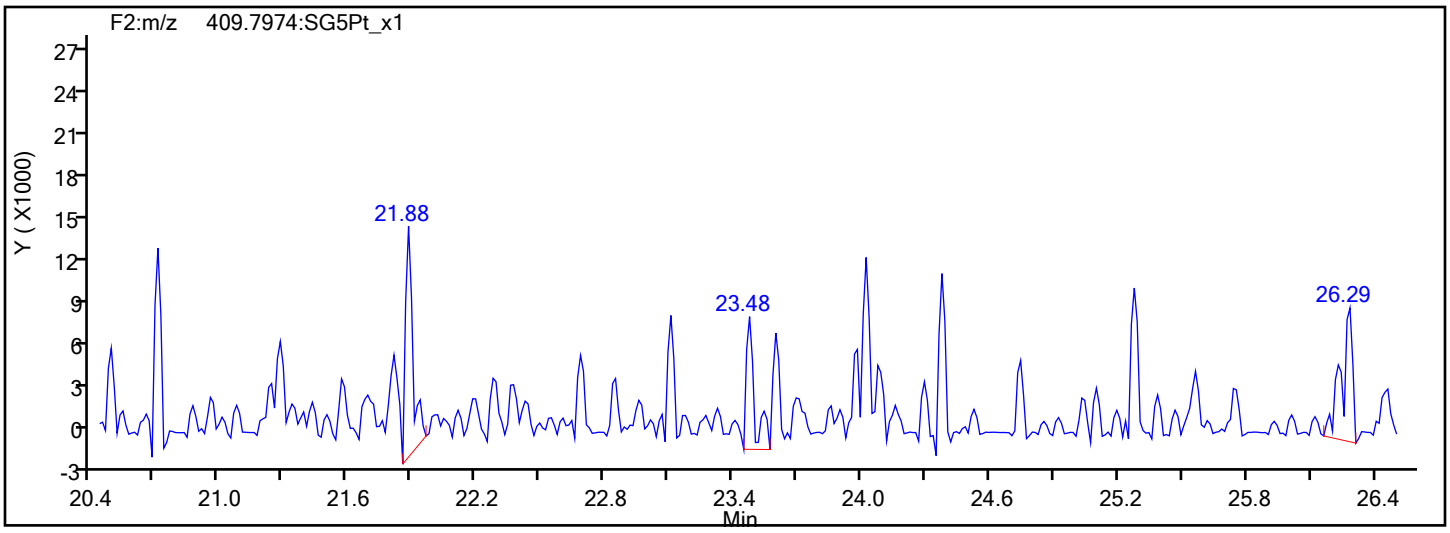




PeCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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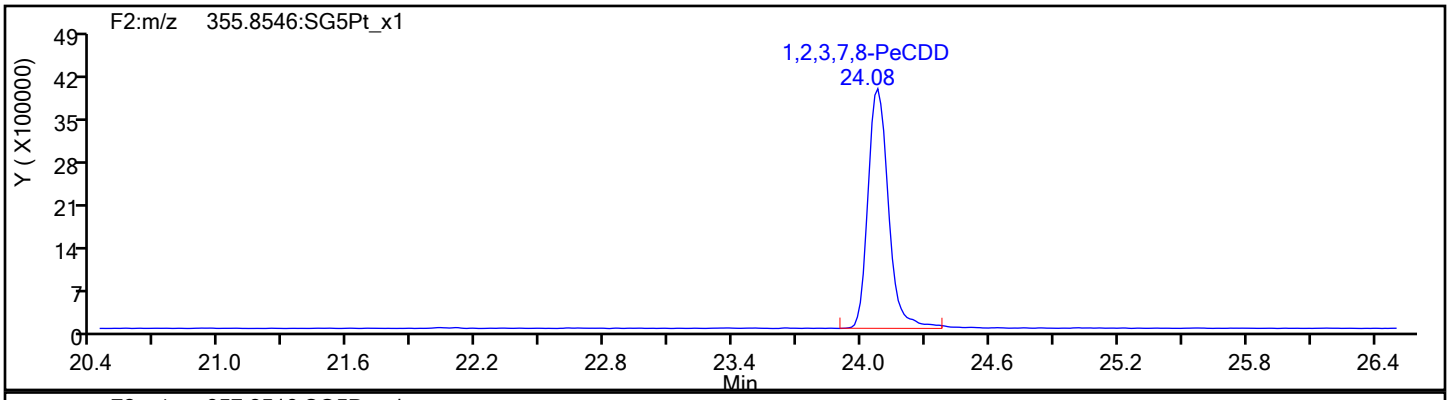

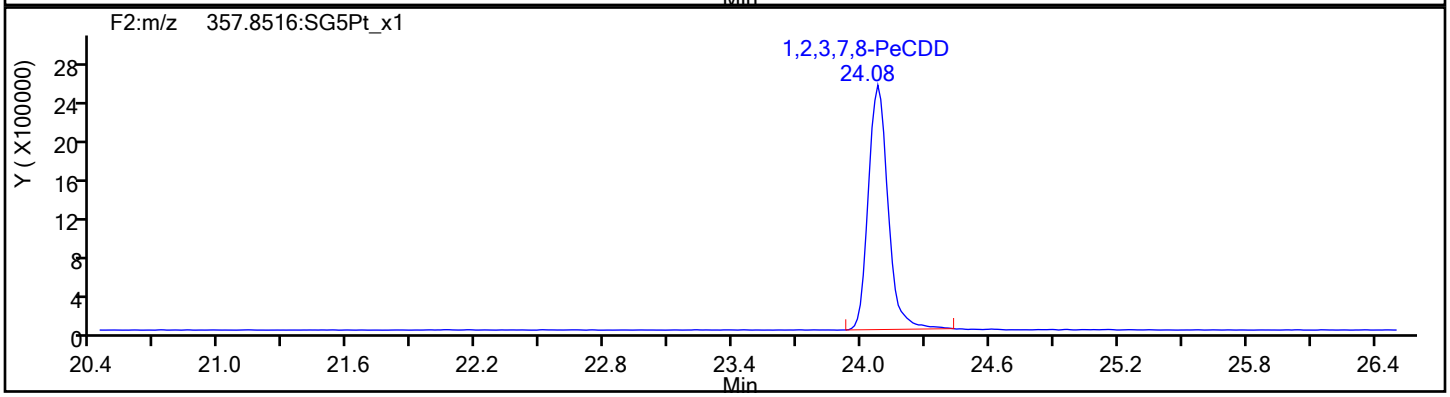

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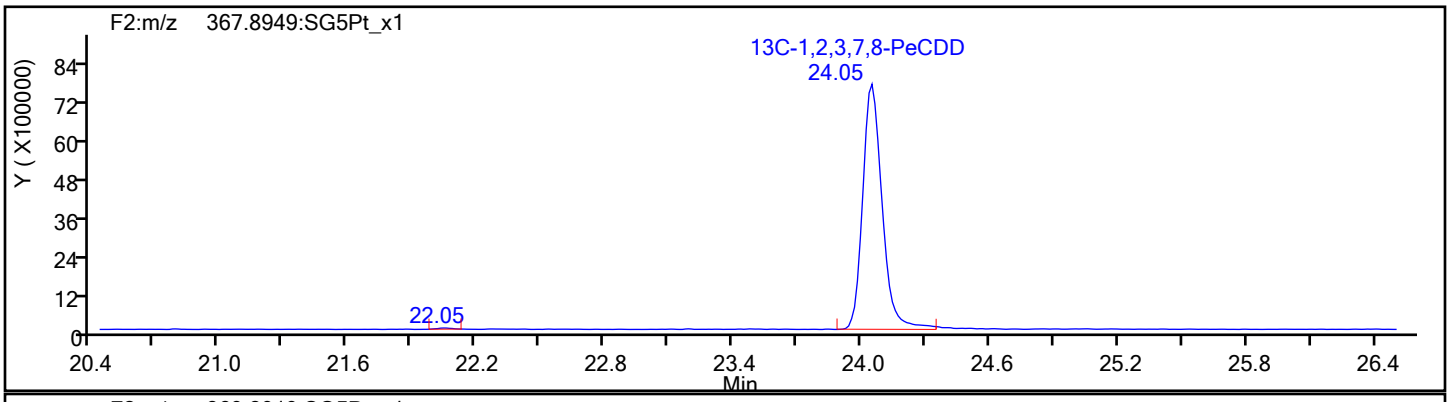
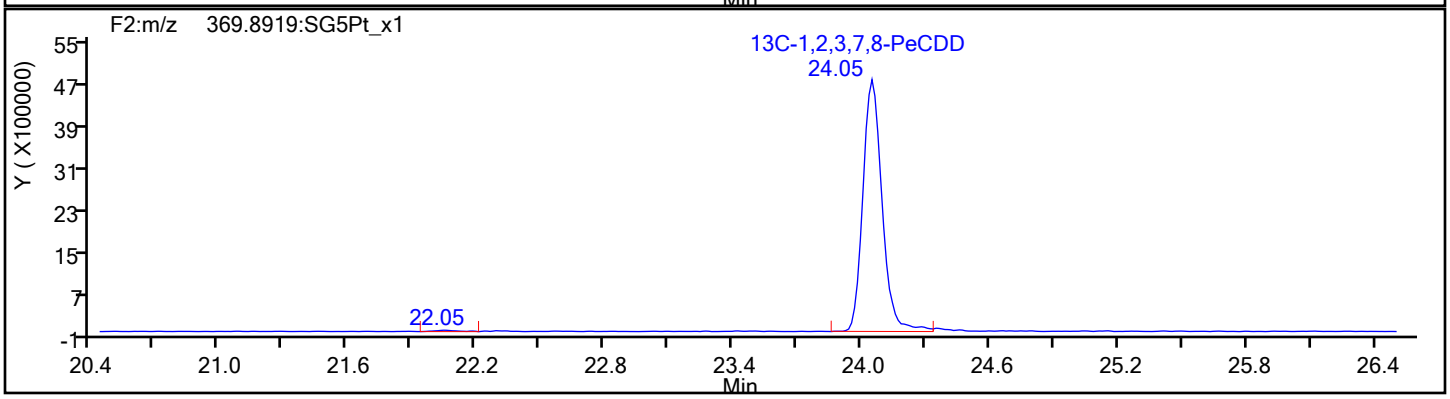




Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d

Injection Date: 19-Dec-2019 14:58:55 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

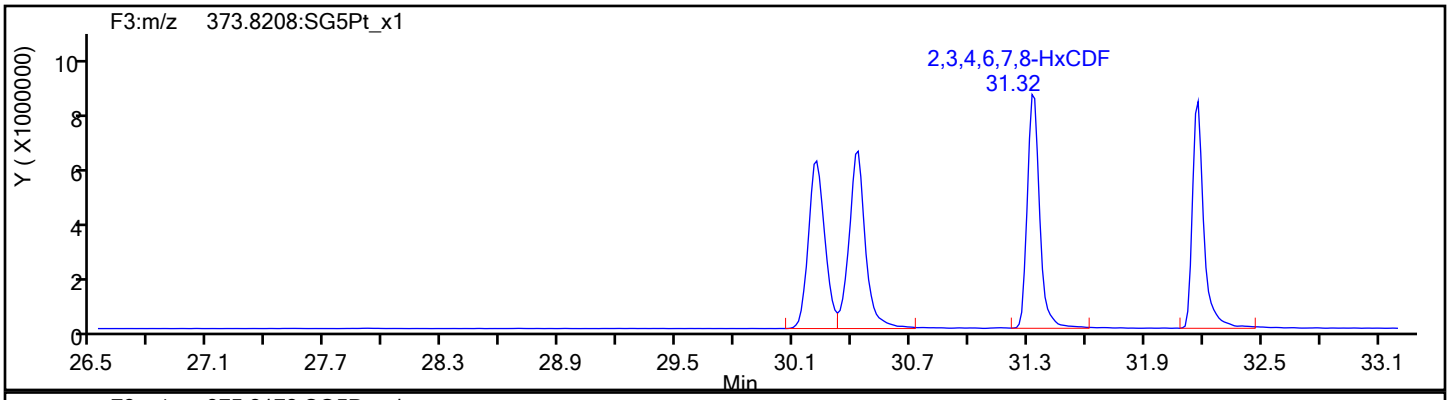
Method: Dioxin_3D5 Limit Group: HR - 1613B - ICAL

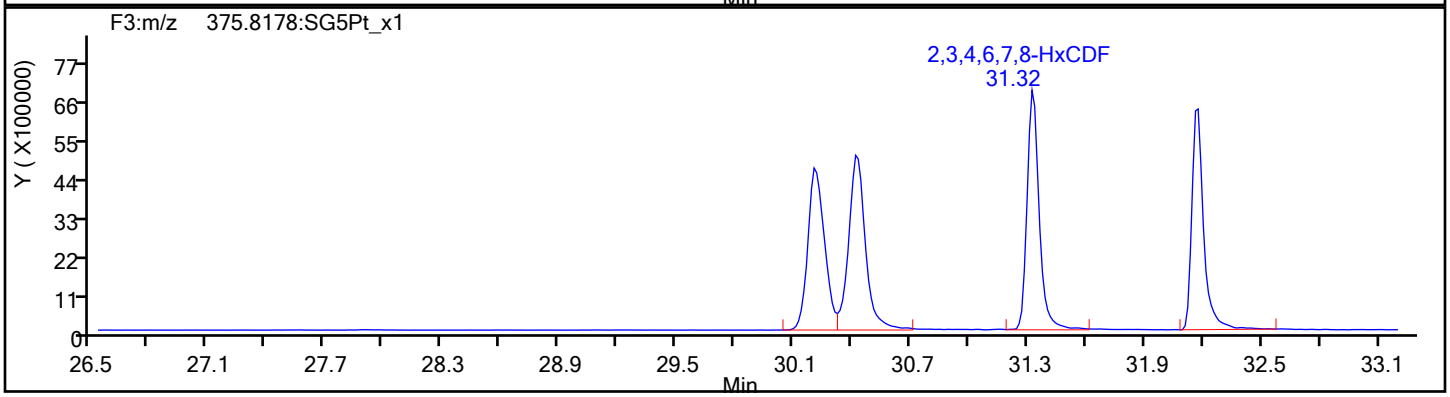
Client ID:

Worklist#: 346752 Sample Line#: 6

Column Type: DB-5 Column Dia: 0.32 mm

HxCDF





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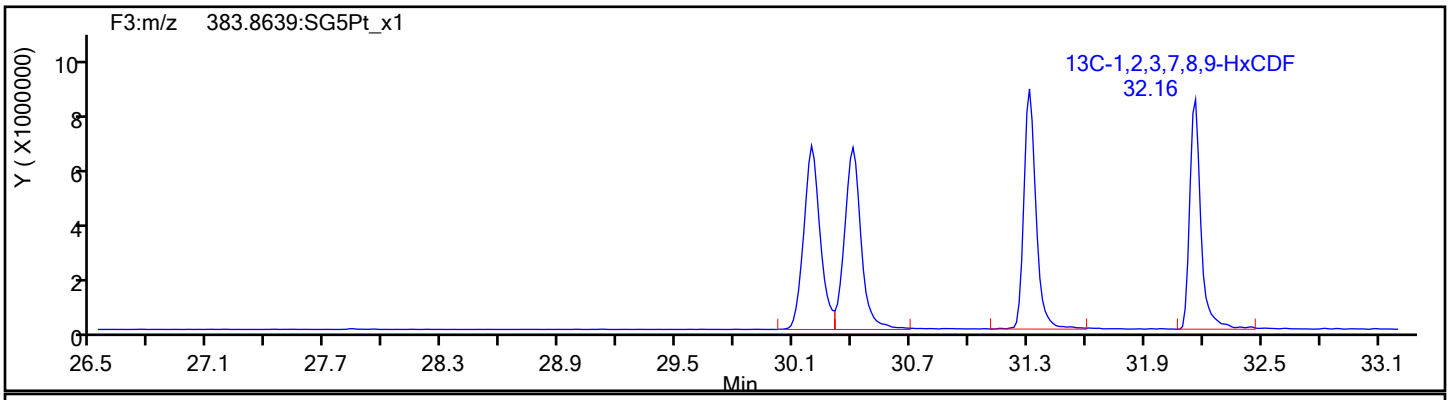

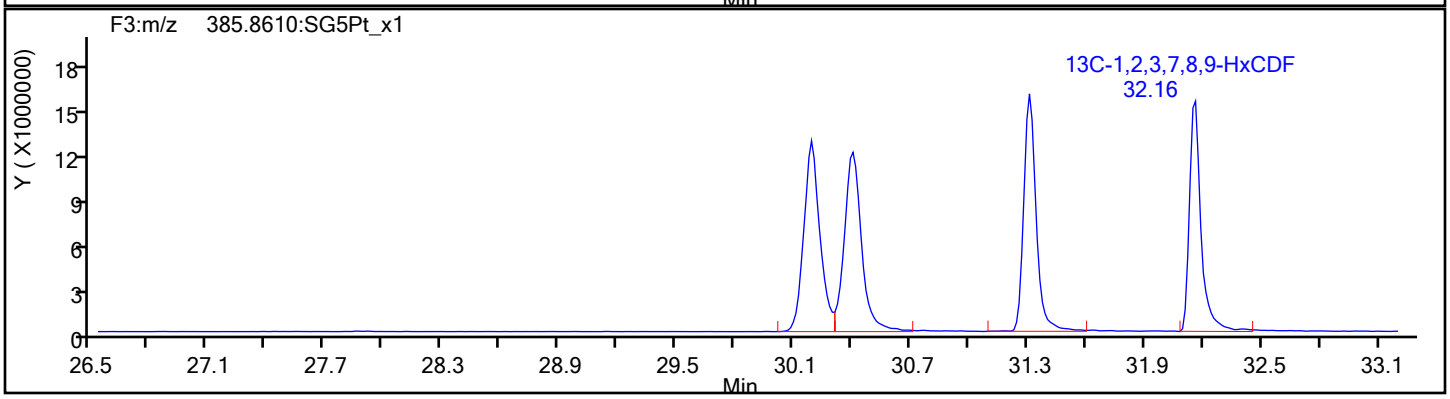

Report Date: 20-Dec-2019 14:13:12 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

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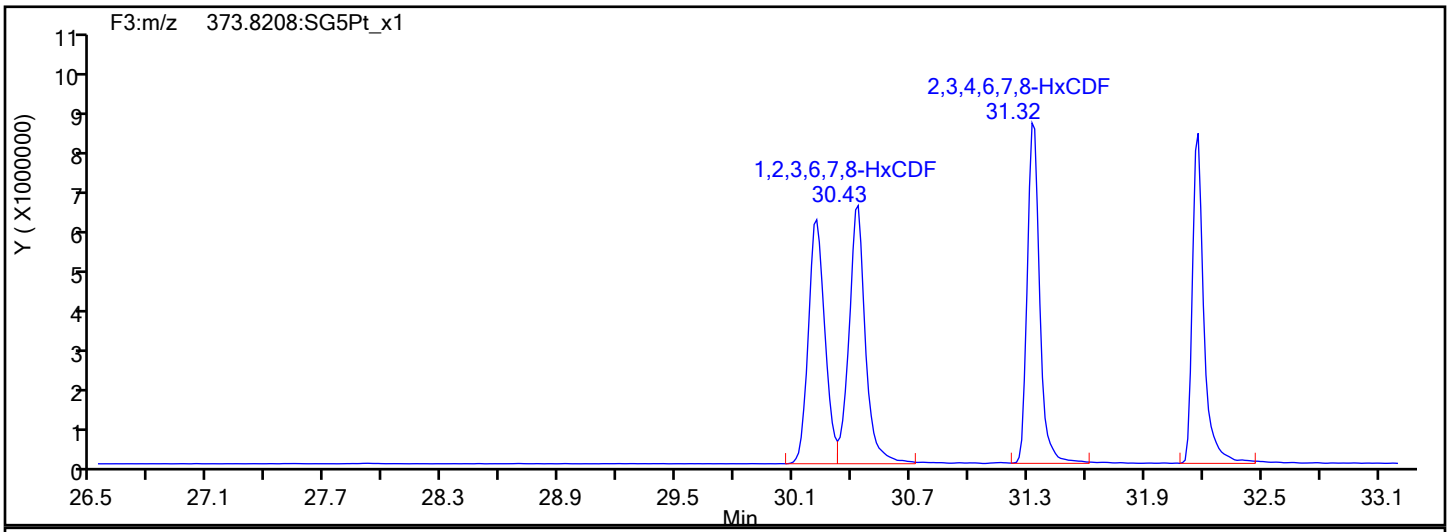
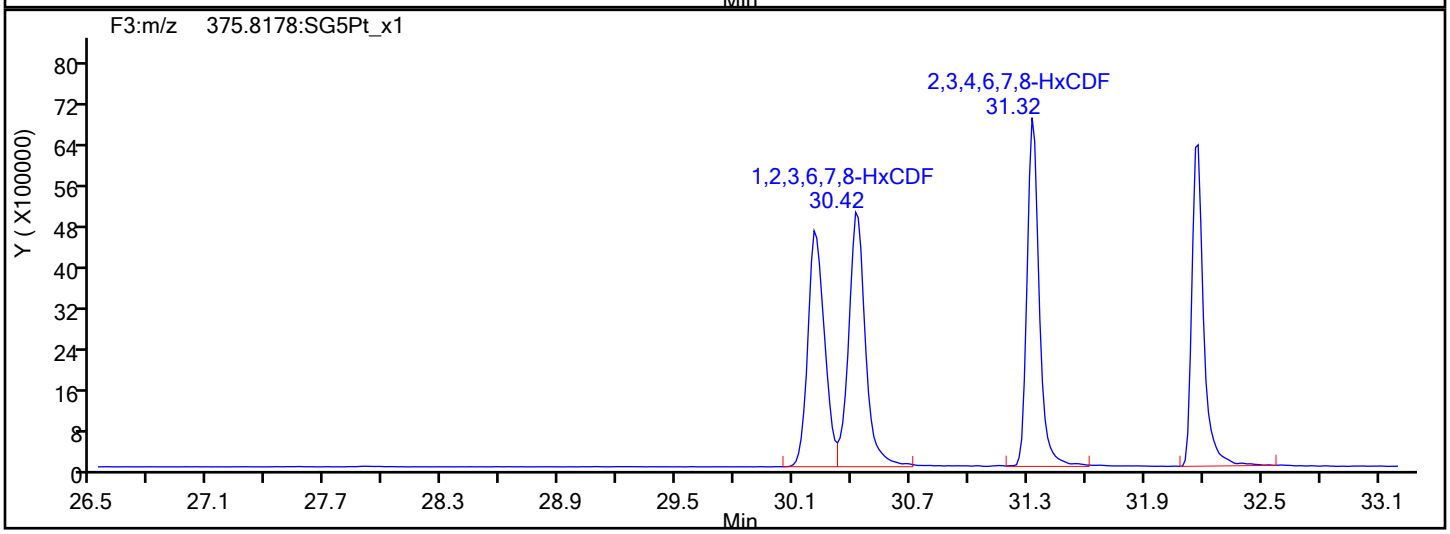
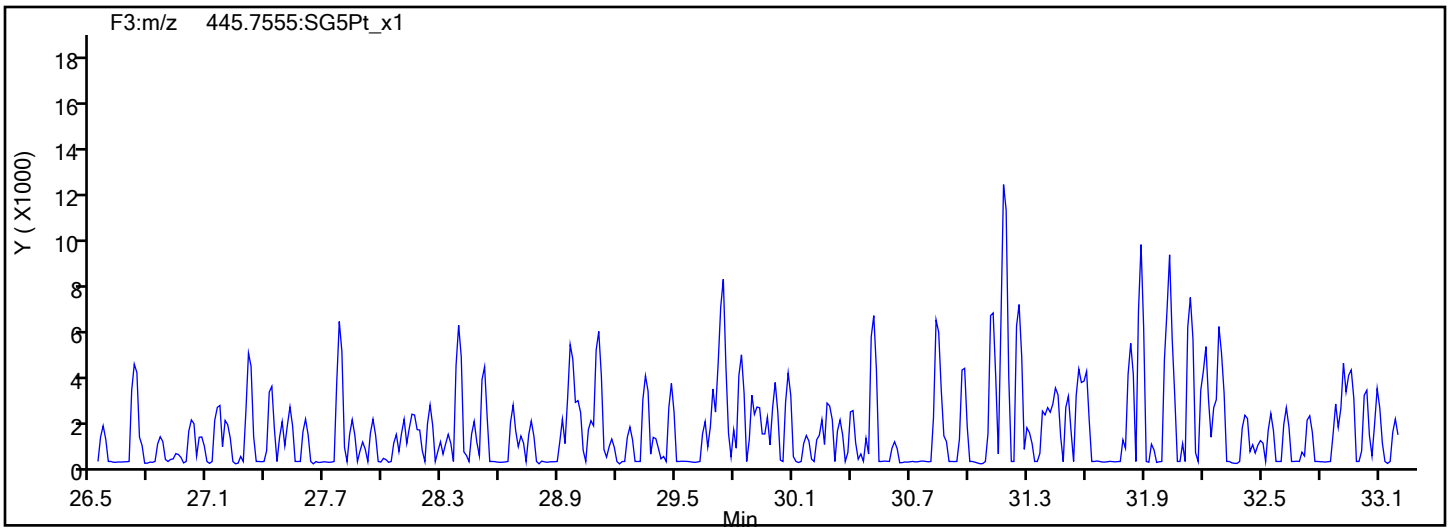




HxCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Client ID:

Worklist#: 346752 Sample Line#: 6

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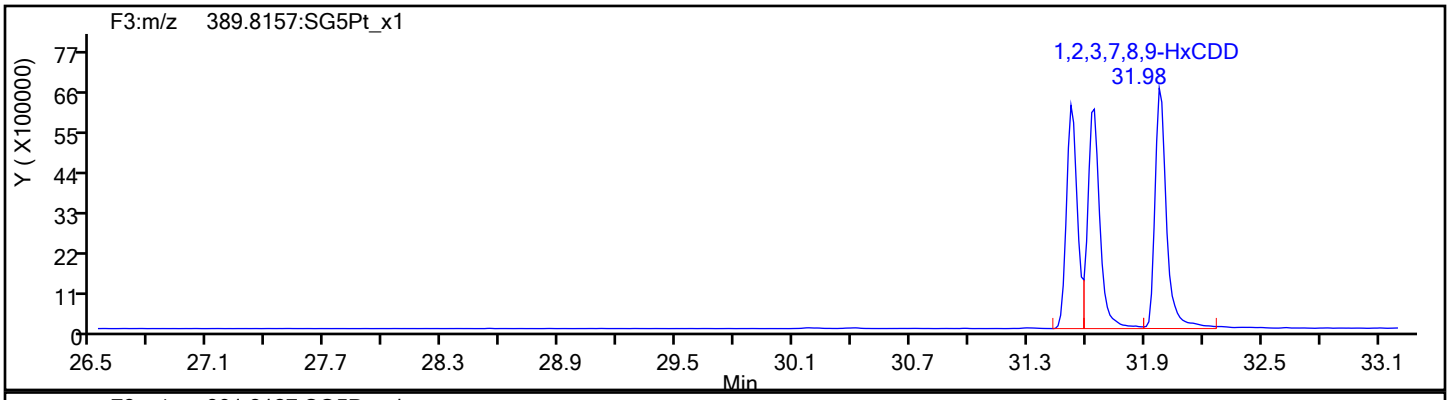
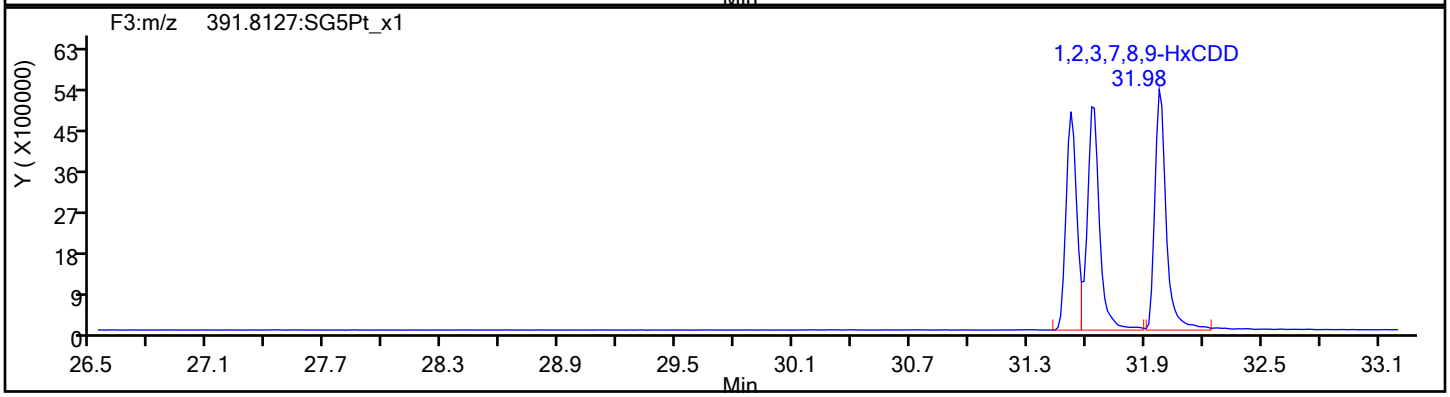
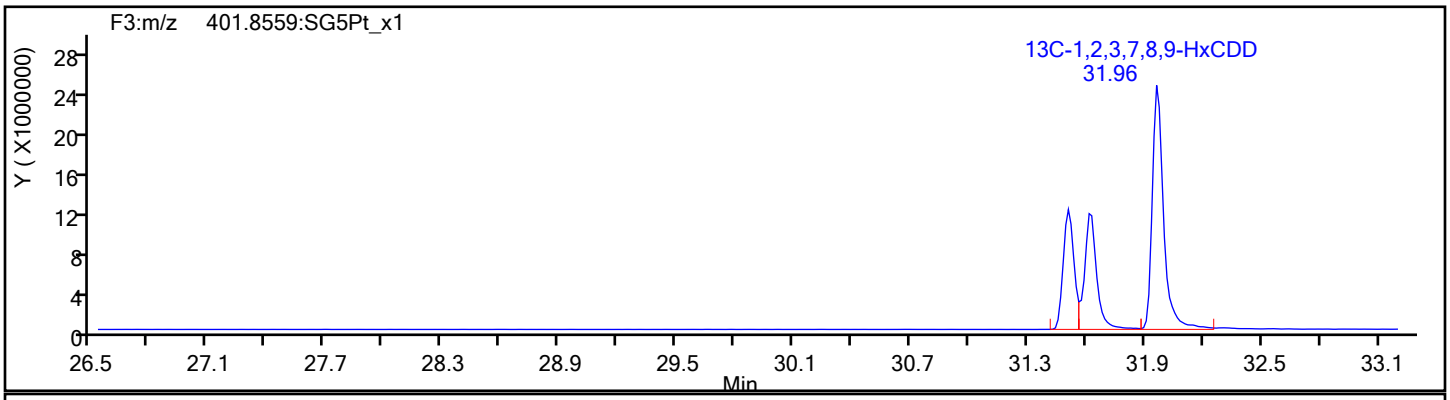
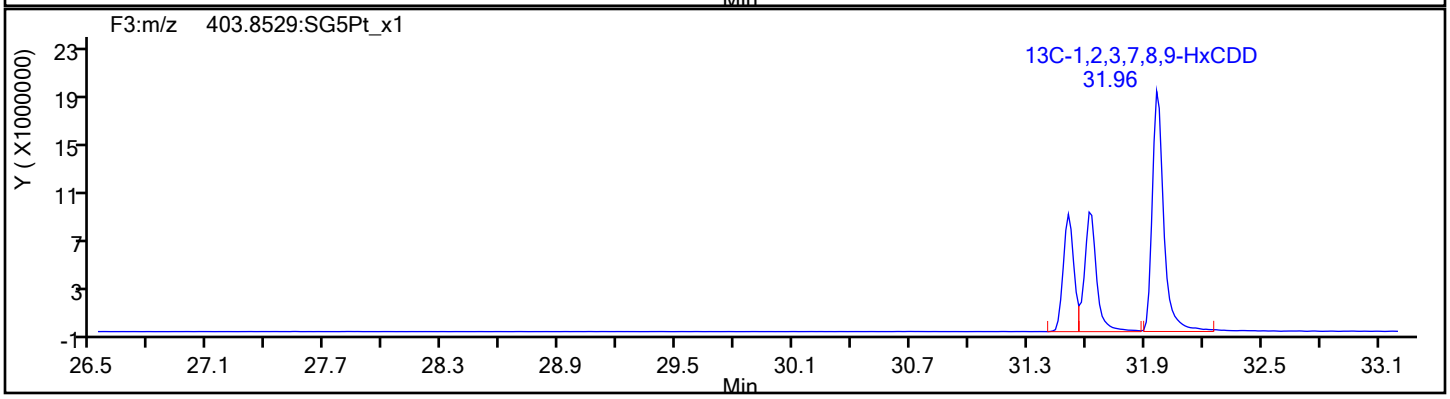
HxCDD





HxCDD Standards





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Eurofins TestAmerica, Sacramento

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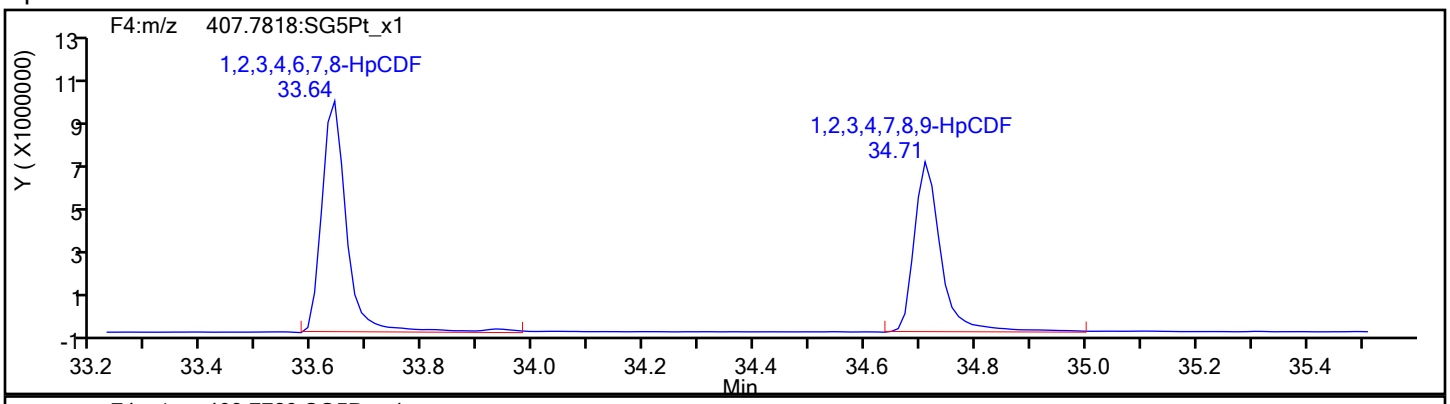
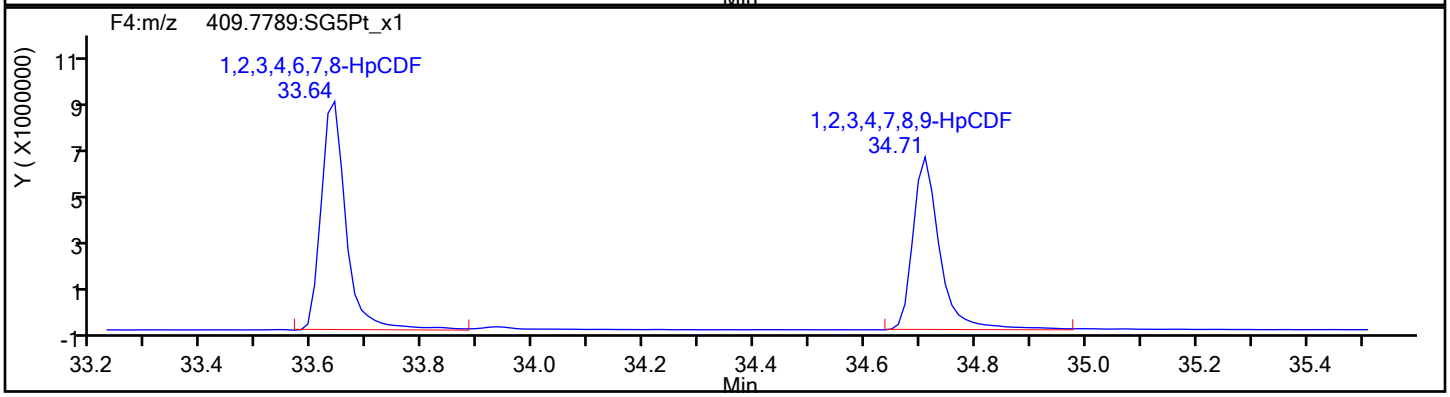
HpCDF





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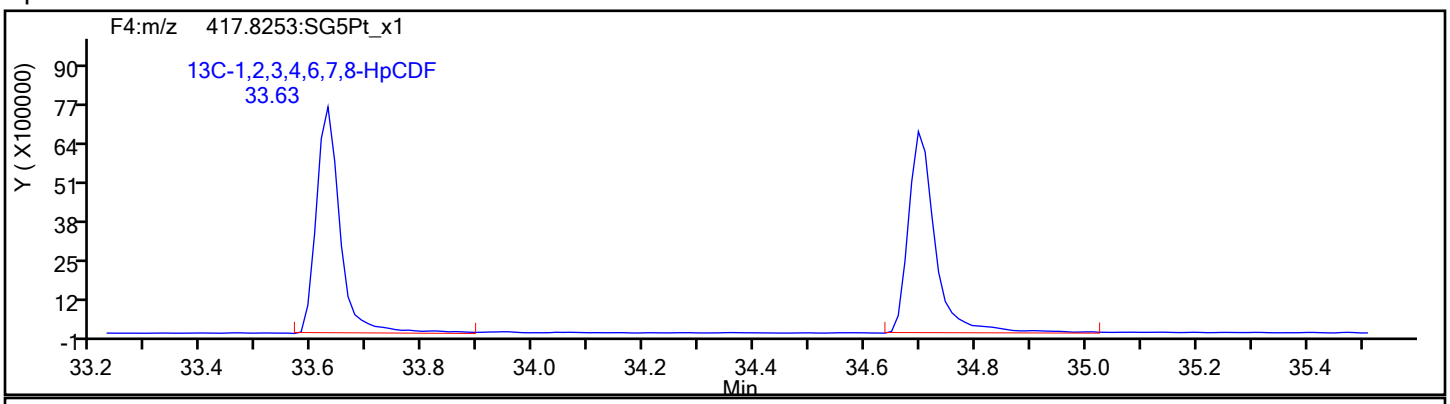

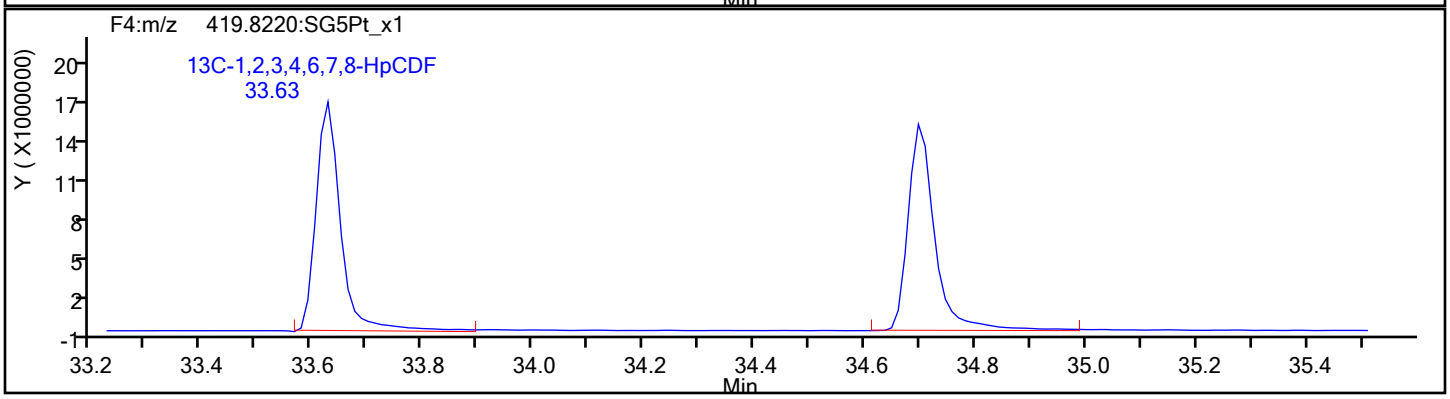

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Eurofins TestAmerica, Sacramento

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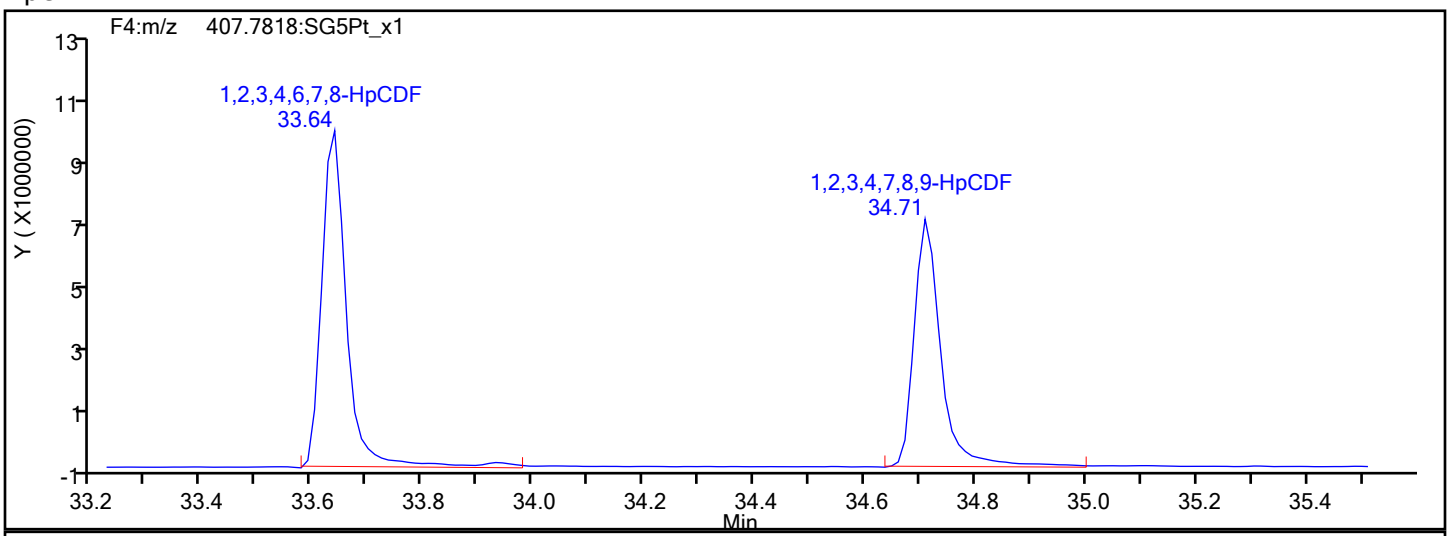
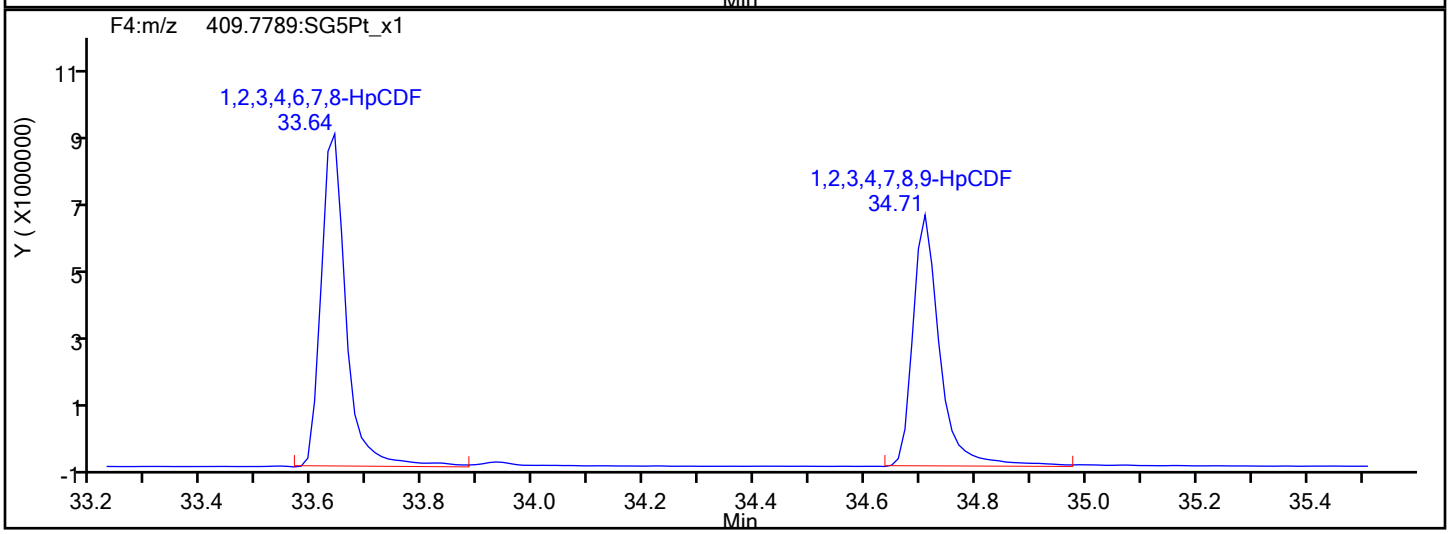
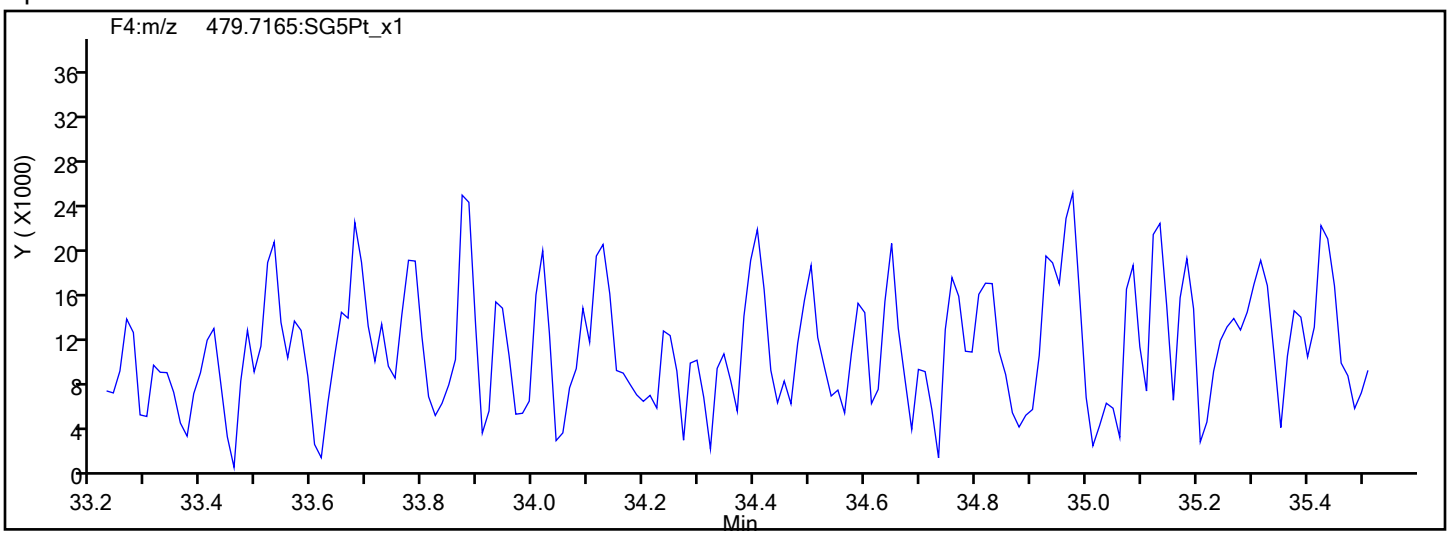




HpCDF Interference Mass



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Eurofins TestAmerica, Sacramento

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Injection Date: 19-Dec-2019 14:58:55 Injection Vol: 2.0 ul

Instrument ID: 3D5 Operator ID: AJS

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Client ID:

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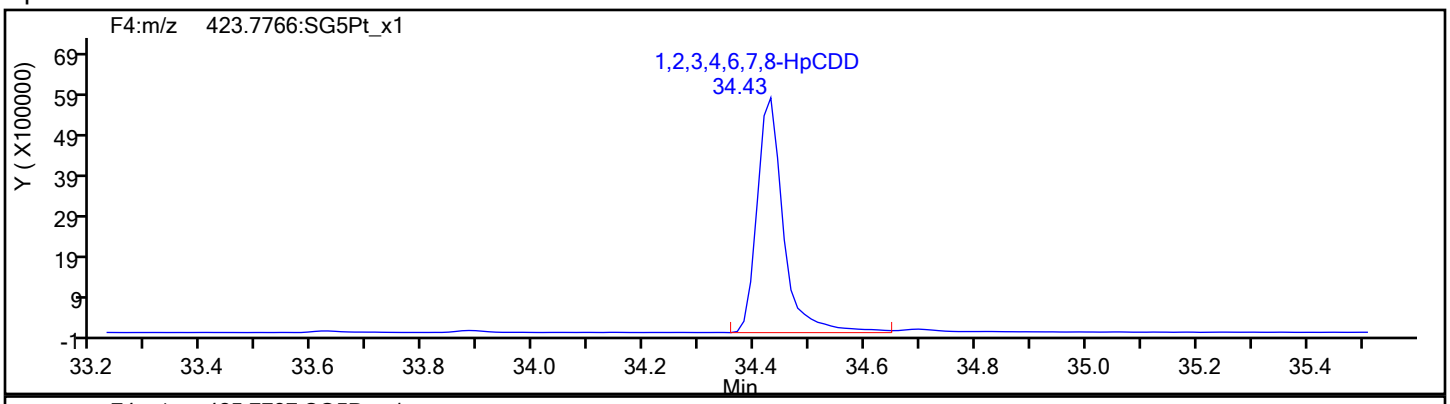
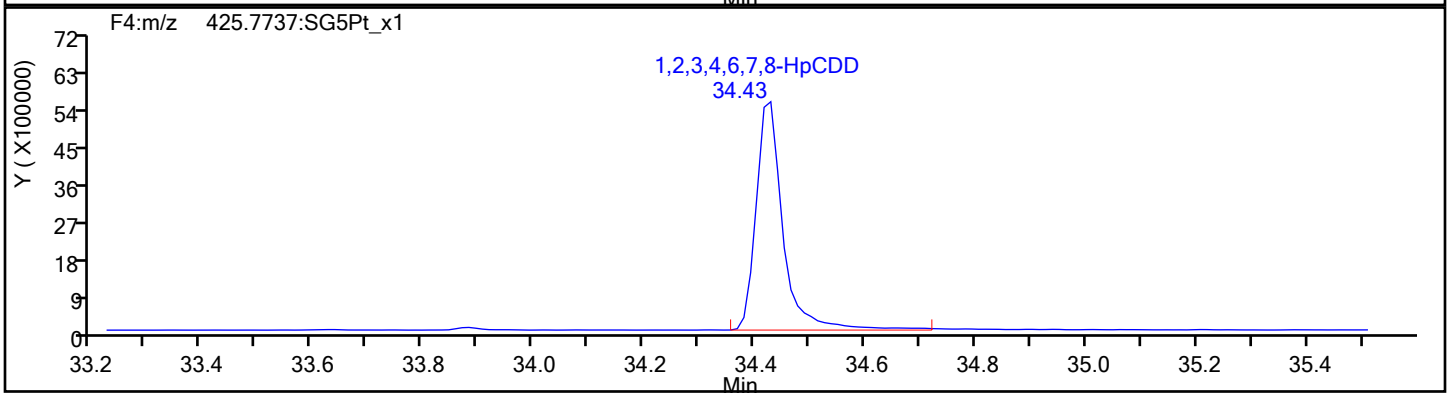
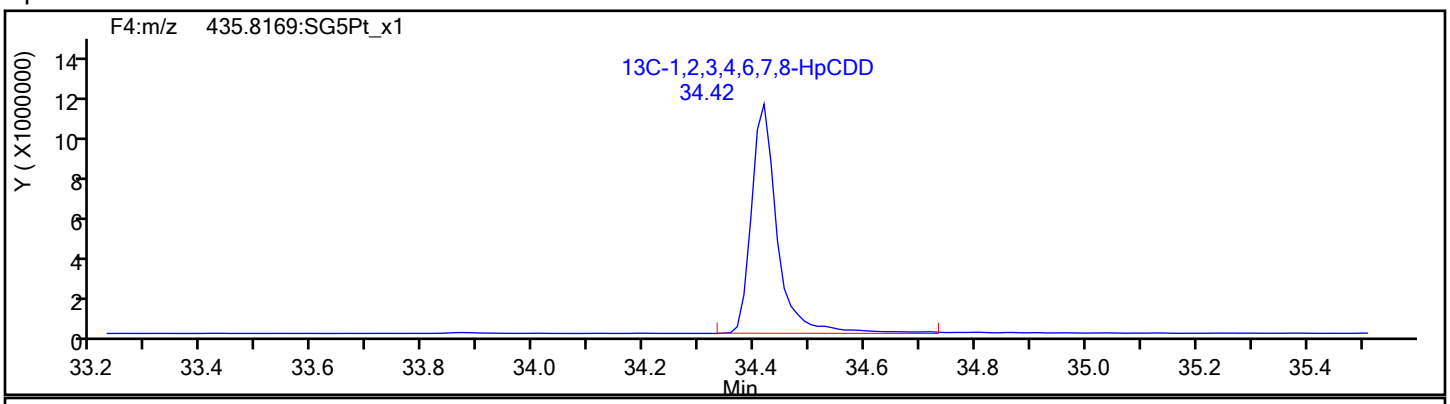
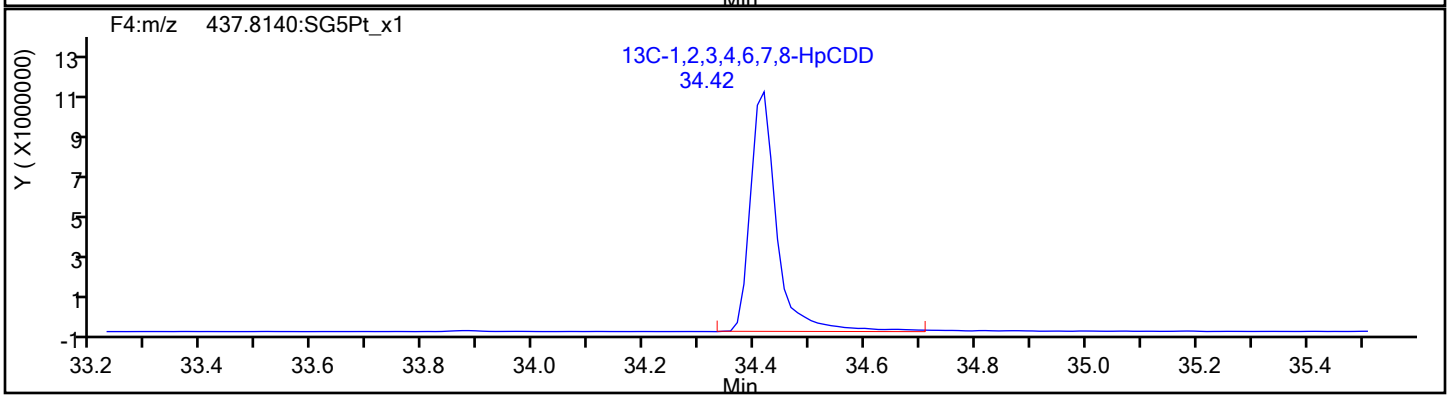
HpCDD





HpCDD Standards





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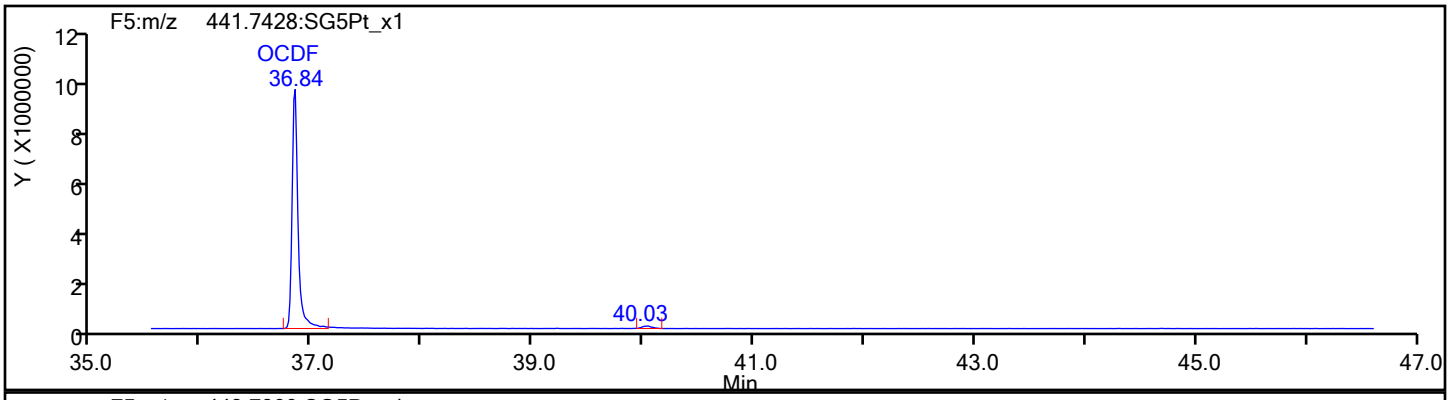
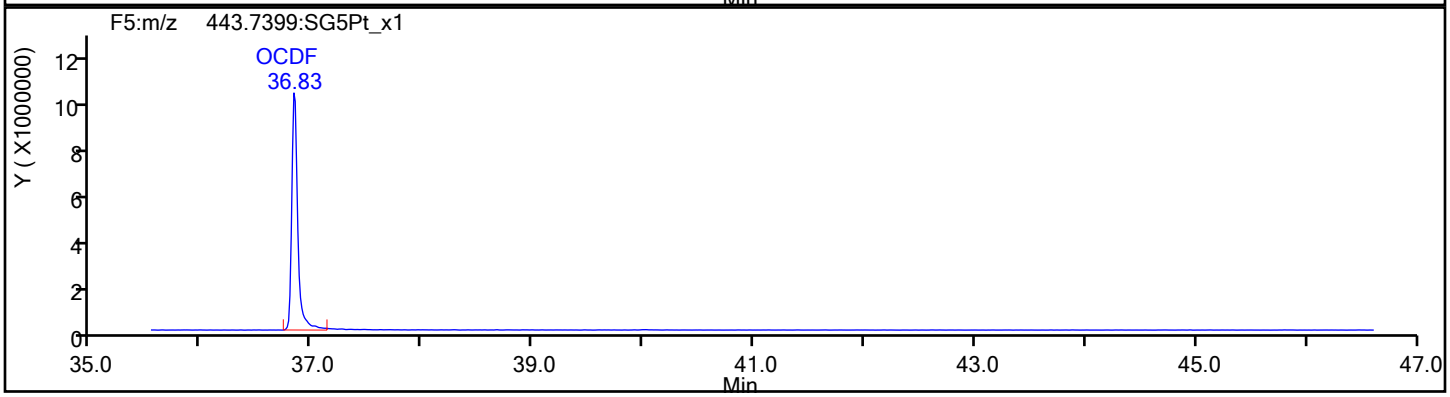
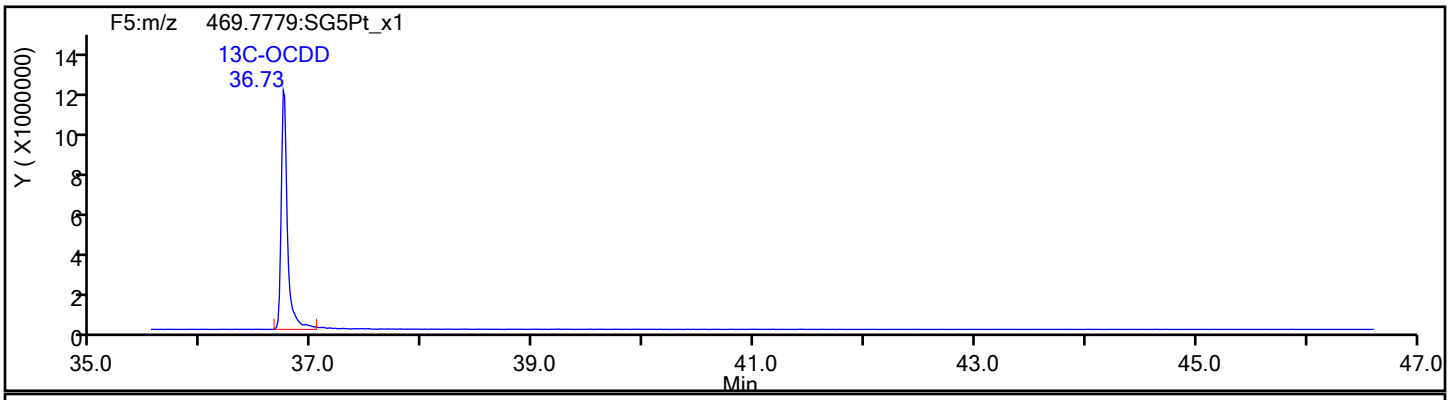
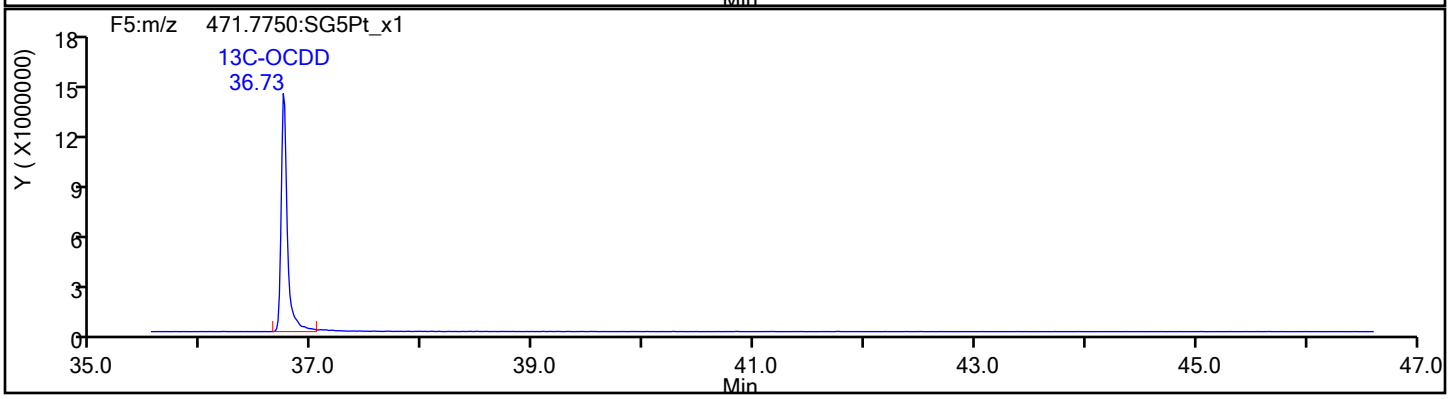
OCDF





OCDF Standards





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Eurofins TestAmerica, Sacramento

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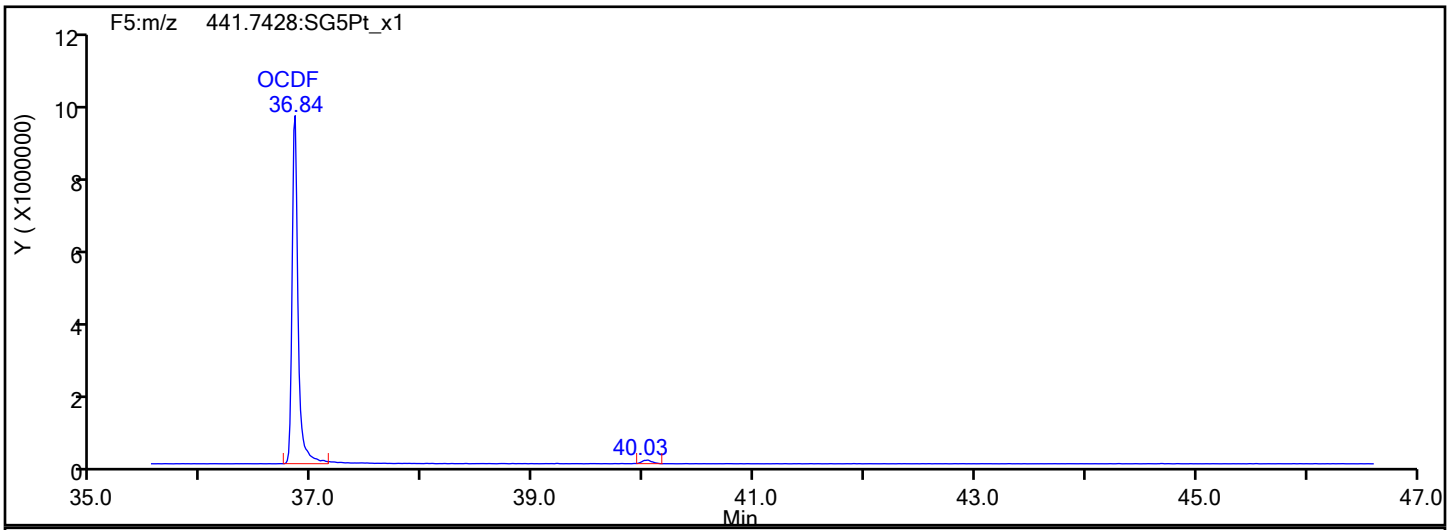
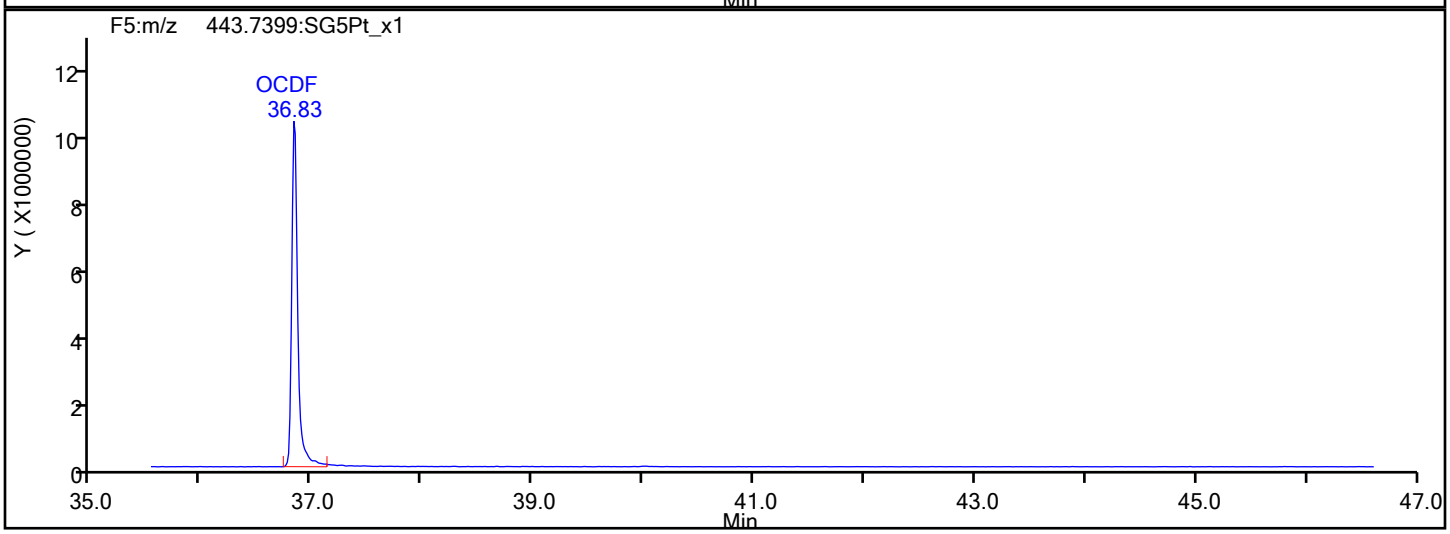
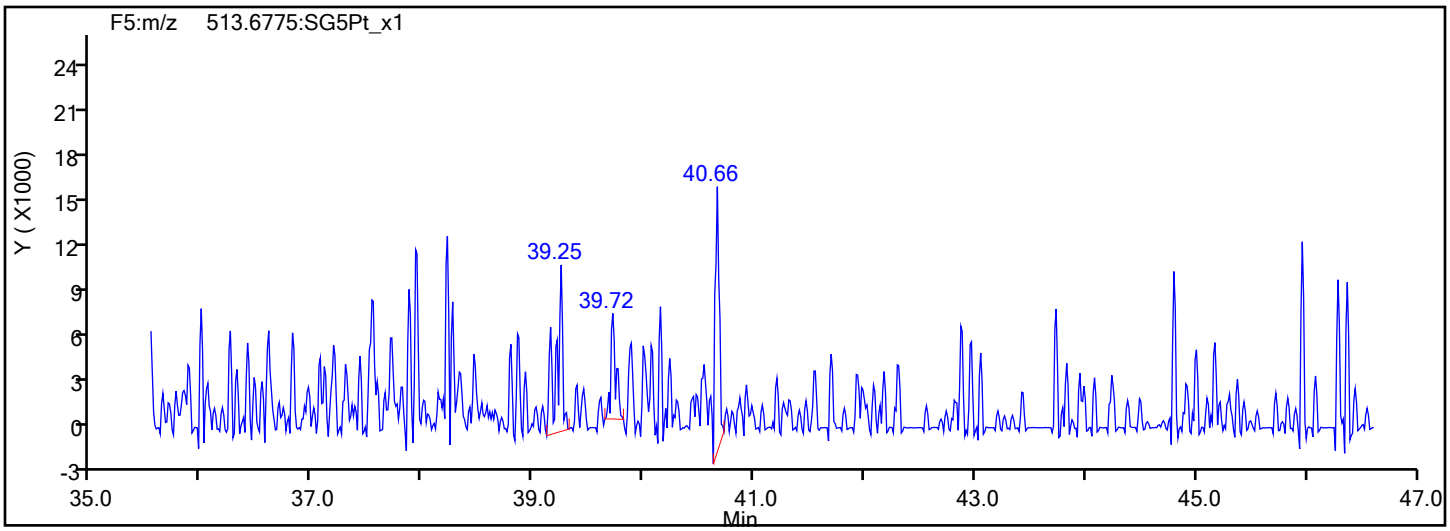
OCDF





OCDF Interference Mass

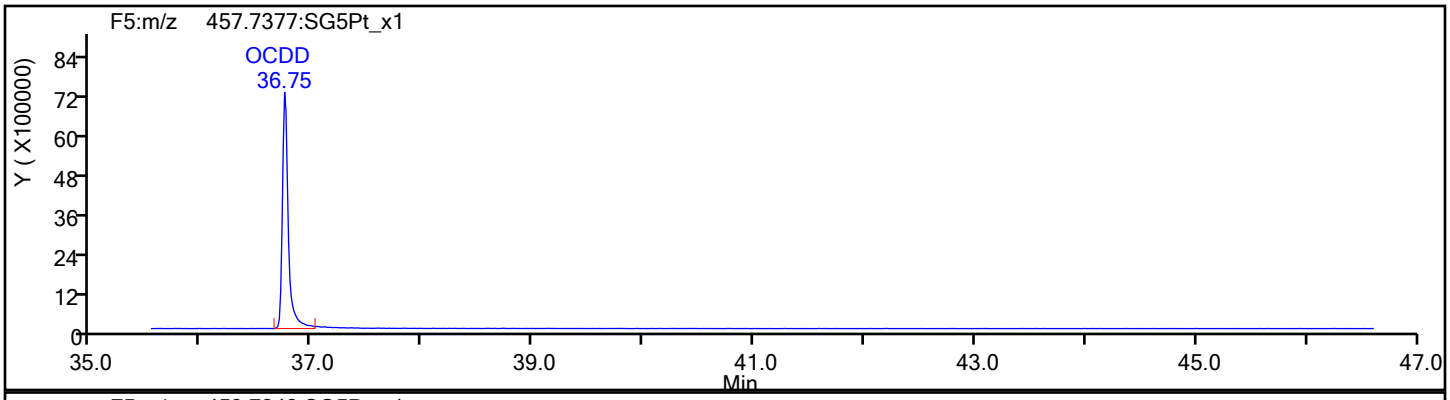


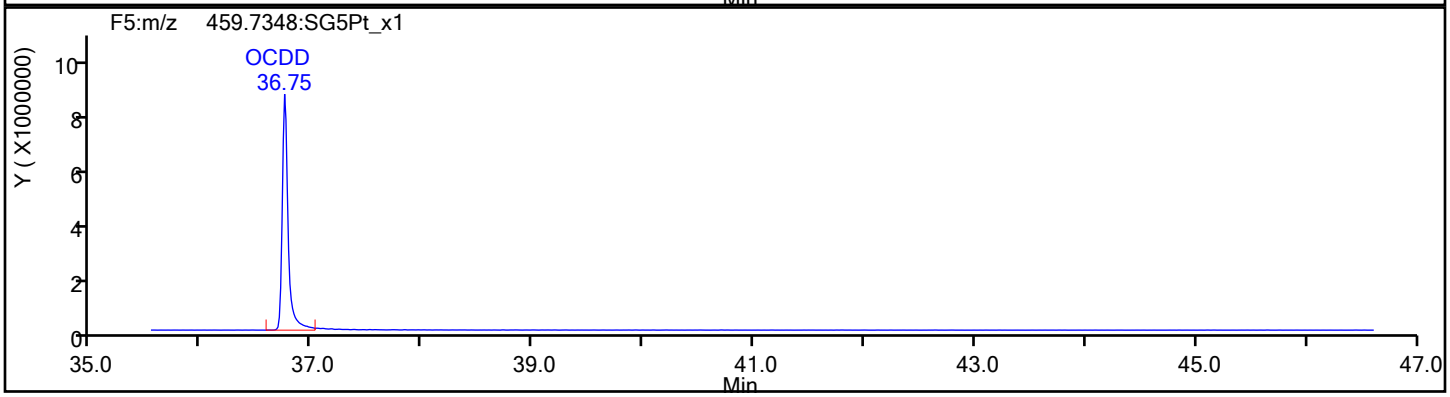
Report Date: 20-Dec-2019 14:13:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

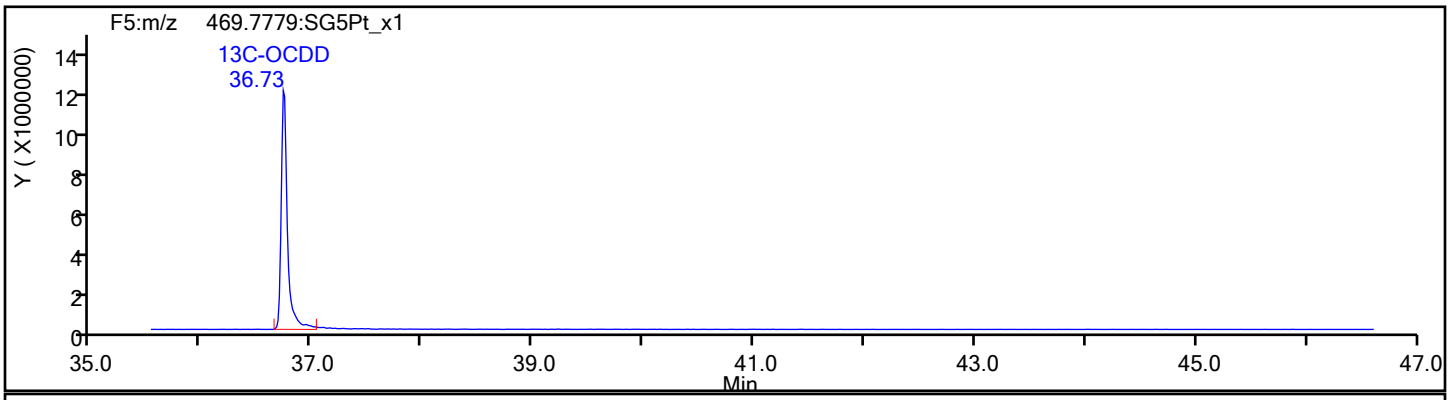
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm

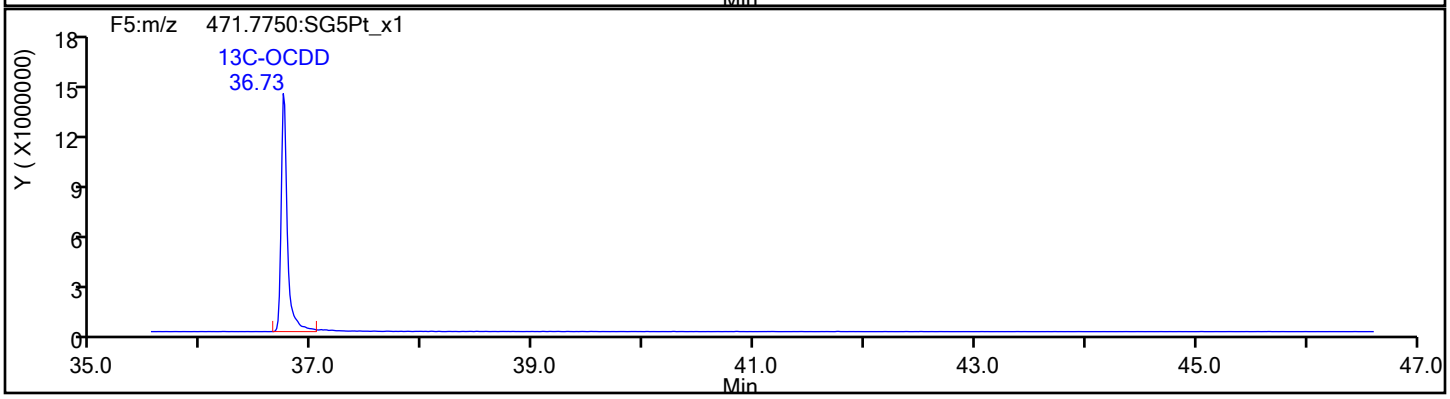
OCDD





OCDD Standards

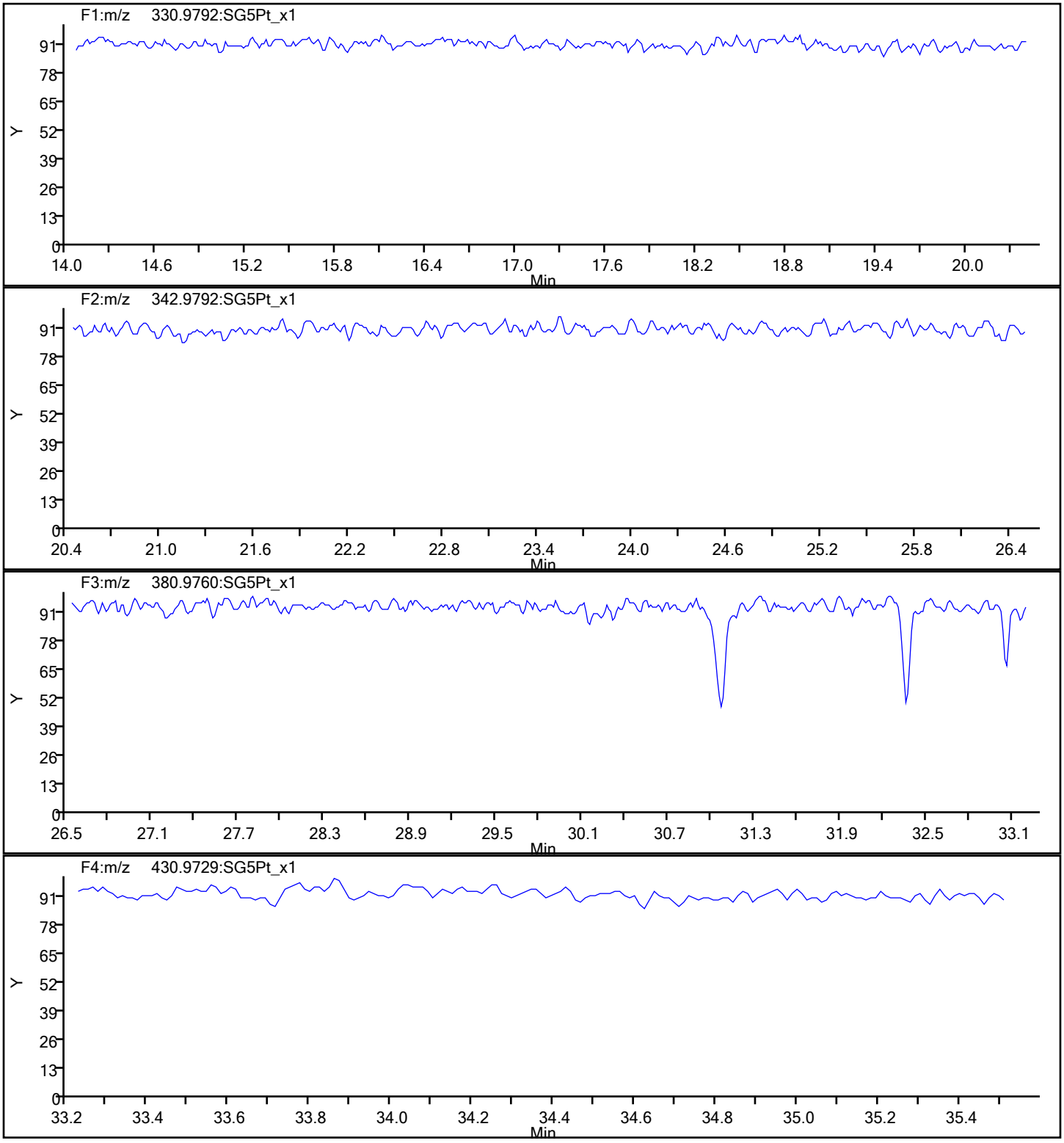




Report Date: 20-Dec-2019 14:13:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

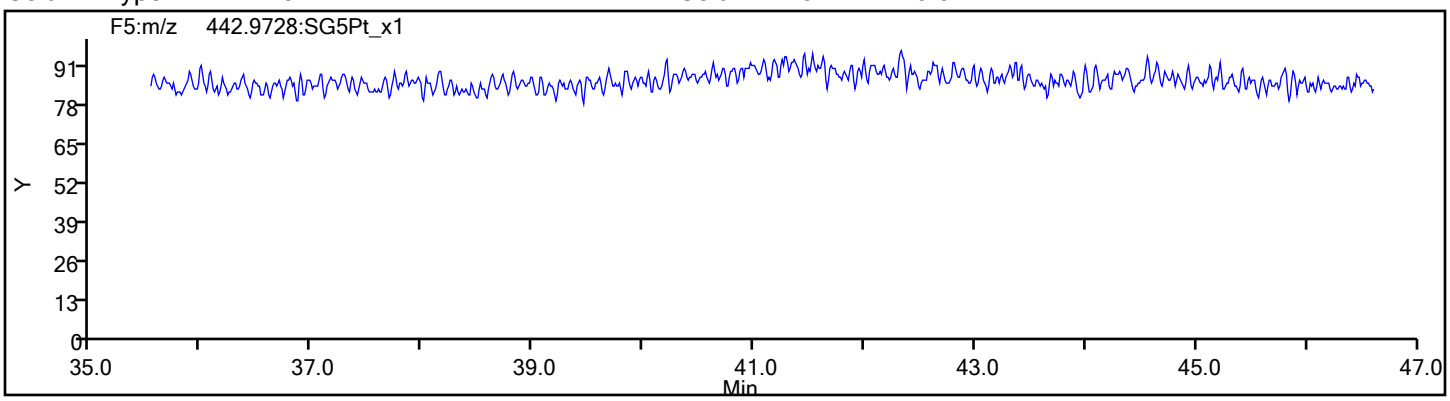
Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm



Report Date: 20-Dec-2019 14:13:13 Chrom Revision: 2.3 15-Dec-2019 06:20:02

Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\3D5\20191219-88588.b\19DE193D5_6.d		
Injection Date:	19-Dec-2019 14:58:55	Injection Vol:	2.0 ul
Instrument ID:	3D5	Operator ID:	AJS
Method:	Dioxin_3D5	Limit Group:	HR - 1613B - ICAL
Client ID:			
Worklist#:	346752	Sample Line#:	6
Column Type:	DB-5	Column Dia:	0.32 mm



DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Instrument ID: 11D2 Start Date: 08/02/2019 01:35

Analysis Batch Number: 312067 End Date: 08/02/2019 06:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 320-312067/1		08/02/2019 01:35	1	02AU1911D2_001.d	DB-225 0.32(mm)
IC 320-312067/3		08/02/2019 02:52	1	02AU1911D2_003.d	DB-225 0.32(mm)
IC 320-312067/4		08/02/2019 03:30	1	02AU1911D2_004.d	DB-225 0.32(mm)
IC 320-312067/5		08/02/2019 04:08	1	02AU1911D2_005.d	DB-225 0.32(mm)
IC 320-312067/6		08/02/2019 04:46	1	02AU1911D2_006.d	DB-225 0.32(mm)
IC 320-312067/7		08/02/2019 05:25	1	02AU1911D2_007.d	DB-225 0.32(mm)
ICV 320-312067/8		08/02/2019 06:03	1	02AU1911D2_008.d	DB-225 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Start Date: 12/12/2019 09:53

Analysis Batch Number: 345037 End Date: 12/12/2019 16:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-345037/1		12/12/2019 09:53	1	12DE193D5_1.d	DB-5 0.32(mm)
IC 320-345037/3		12/12/2019 11:28	1	12DE193D5_3.d	DB-5 0.32(mm)
IC 320-345037/4		12/12/2019 12:16	1	12DE193D5_4.d	DB-5 0.32(mm)
IC 320-345037/5		12/12/2019 13:04	1	12DE193D5_5.d	DB-5 0.32(mm)
IC 320-345037/6		12/12/2019 13:51	1	12DE193D5_6.d	DB-5 0.32(mm)
IC 320-345037/7		12/12/2019 14:39	1	12DE193D5_7.d	DB-5 0.32(mm)
ICV 320-345037/9		12/12/2019 16:24	1	12DE193D5_9.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Instrument ID: 3D5 Start Date: 12/19/2019 11:00

Analysis Batch Number: 346752 End Date: 12/19/2019 21:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-346752/1		12/19/2019 11:00	1	19DE193D5_1.d	DB-5 0.32(mm)
CCV 320-346752/2		12/19/2019 11:48	1	19DE193D5_2.d	DB-5 0.32(mm)
MB 320-344942/1-A		12/19/2019 13:23	1	19DE193D5_4.d	DB-5 0.32(mm)
LCS 320-344942/2-A		12/19/2019 14:11	1	19DE193D5_5.d	DB-5 0.32(mm)
LCSD 320-344942/3-A		12/19/2019 14:58	1	19DE193D5_6.d	DB-5 0.32(mm)
320-56953-1		12/19/2019 15:46	1	19DE193D5_7.d	DB-5 0.32(mm)
320-56953-2		12/19/2019 16:33	1	19DE193D5_8.d	DB-5 0.32(mm)
320-56953-3		12/19/2019 17:21	1	19DE193D5_9.d	DB-5 0.32(mm)
320-56953-4		12/19/2019 18:09	1	19DE193D5_10.d	DB-5 0.32(mm)
320-56953-5		12/19/2019 18:56	1	19DE193D5_11.d	DB-5 0.32(mm)
320-56953-6		12/19/2019 19:44	1	19DE193D5_12.d	DB-5 0.32(mm)
320-56953-7		12/19/2019 20:31	1	19DE193D5_13.d	DB-5 0.32(mm)
320-56953-8		12/19/2019 21:19	1	19DE193D5_14.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Instrument ID: 11D2 Start Date: 12/19/2019 16:13

Analysis Batch Number: 346764 End Date: 12/19/2019 23:52

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CPS 320-346764/1		12/19/2019 16:13	1	19DE19A11D2_001.d	DB-225 0.32(mm)
CCV 320-346764/2		12/19/2019 16:51	1	19DE19A11D2_002.d	DB-225 0.32(mm)
320-56953-2 RA		12/19/2019 20:41	1	19DE19A11D2_008.d	DB-225 0.32(mm)
320-56953-1 RA		12/19/2019 21:19	1	19DE19A11D2_009.d	DB-225 0.32(mm)
320-56953-5 RA		12/19/2019 21:57	1	19DE19A11D2_010.d	DB-225 0.32(mm)
320-56953-6 RA		12/19/2019 22:36	1	19DE19A11D2_011.d	DB-225 0.32(mm)
320-56953-7 RA		12/19/2019 23:14	1	19DE19A11D2_012.d	DB-225 0.32(mm)
320-56953-8 RA		12/19/2019 23:52	1	19DE19A11D2_013.d	DB-225 0.32(mm)

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56953-1

SDG No.:

Batch Number: 344942 Batch Start Date: 12/12/19 08:56 Batch Analyst: Hubbard, Justin M

Batch Method: HRMS-Sox Batch End Date: 12/19/19 09:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ExtractionID	RotoVapID	HRDXNIDA 00406	HRDXNIS 00121
MB 320-344942/1		HRMS-Sox, 1613B		10 g	20 uL	G1	1	1 mL	20 uL
LCS 320-344942/2		HRMS-Sox, 1613B		10 g	20 uL	2	3	1 mL	20 uL
LCSD 320-344942/3		HRMS-Sox, 1613B		10 g	20 uL	3	1	1 mL	20 uL
320-56953-A-1	11187072-120919-BN-SJSSA07(0-1)	HRMS-Sox, 1613B	T	10.31 g	20 uL	4	3	1 mL	20 uL
320-56953-A-2	11187072-120919-BN-SJSSA07(1-2)	HRMS-Sox, 1613B	T	10.25 g	20 uL	5	1	1 mL	20 uL
320-56953-A-3	11187072-120919-BN-SJSSA07(2-4)	HRMS-Sox, 1613B	T	10.17 g	20 uL	6	3	1 mL	20 uL
320-56953-A-4	11187072-120919-BN-SJSSA07(4-6)	HRMS-Sox, 1613B	T	10.12 g	20 uL	H1	1	1 mL	20 uL
320-56953-A-5	11187072-120919-BN-SJSSA04(0-1)	HRMS-Sox, 1613B	T	10.09 g	20 uL	2	3	1 mL	20 uL
320-56953-A-6	11187072-120919-BN-SJSSA04(1-2)	HRMS-Sox, 1613B	T	10.10 g	20 uL	3	1	1 mL	20 uL
320-56953-A-7	11187072-120919-BN-SJSSA04(2-4)	HRMS-Sox, 1613B	T	10.22 g	20 uL	4	3	1 mL	20 uL
320-56953-A-8	11187072-120919-BN-SJSSA04(4-6)	HRMS-Sox, 1613B	T	9.99 g	20 uL	5	1	1 mL	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNSU 00223	HRDXNTA 00117				
MB 320-344942/1		HRMS-Sox, 1613B		1 mL					
LCS 320-344942/2		HRMS-Sox, 1613B		1 mL	50 uL				
LCSD 320-344942/3		HRMS-Sox, 1613B		1 mL	50 uL				
320-56953-A-1	11187072-120919-BN-SJSSA07(0-1)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-2	11187072-120919-BN-SJSSA07(1-2)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-3	11187072-120919-BN-SJSSA07(2-4)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-4	11187072-120919-BN-SJSSA07(4-6)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-5	11187072-120919-BN-SJSSA04(0-1)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-6	11187072-120919-BN-SJSSA04(1-2)	HRMS-Sox, 1613B	T	1 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56953-1

SDG No.:

Batch Number: 344942 Batch Start Date: 12/12/19 08:56 Batch Analyst: Hubbard, Justin M

Batch Method: HRMS-Sox Batch End Date: 12/19/19 09:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNSU 00223	HRDXNTA 00117				
320-56953-A-7	11187072-120919-BN-SJSSA04(2-4)	HRMS-Sox, 1613B	T	1 mL					
320-56953-A-8	11187072-120919-BN-SJSSA04(4-6)	HRMS-Sox, 1613B	T	1 mL					

Batch Notes	
20% DCM:Hexane ID	1801131 mL
65% DCM:Hexane ID	1813089 mL
Acid Silica Gel ID	1840605
Acid Alumina ID	18X
Balance ID	QA-070
C14 ID	STBJ0716
Hexane ID	1846023 mL
IFB Clean Up	GLB 12-*18-19
Na2SO4 ID	0000228308
Analyst ID - IDA Reagent Drop	FC 12/12/19 HD05018 HRDXNIDA_00406 B-2/4
Analyst ID - IDA Reagent Drop Witness	JH 12/12/19
Analyst ID - IS Reagent Drop	GLB 12-19-19 20uL HRDXNIS00121 B 2/4 DB15270
Analyst ID - IS Reagent Drop Witness	JH 12-19-19
Analyst ID - SU Reagent Drop	GLB 12-18-19 1.0mL HRDXNSU00223 B 2/3 HDO5O18
Analyst ID - SU Reagent Drop Witness	TGL 12-18-19
Analyst ID - TA Reagent Drop	FC 12/12/19 DB05018 HRDXNTA_00117 B-7/10
Analyst ID - TA Reagent Drop Witness	JH 12/12/19
Silica Gel ID	1839057
Soxhlet/Soxtherm End	14:00 JH 12-12-19
Soxhlet/Soxtherm Start	11:00 JH 12-12-19
Storage Box ID	DXN 119
Toluene ID	0000227961 mL

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacramento Job Number: 320-56953-1

SDG No.:

Project: San Jacinto River Waste Pits Superfund

Client Sample ID	Lab Sample ID
11187072-120919-BN-SJSSA07(0-1)	320-56953-1
11187072-120919-BN-SJSSA07(1-2)	320-56953-2
11187072-120919-BN-SJSSA07(2-4)	320-56953-3
11187072-120919-BN-SJSSA07(4-6)	320-56953-4
11187072-120919-BN-SJSSA04(0-1)	320-56953-5
11187072-120919-BN-SJSSA04(1-2)	320-56953-6
11187072-120919-BN-SJSSA04(2-4)	320-56953-7
11187072-120919-BN-SJSSA04(4-6)	320-56953-8

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacrament Job Number: 320-56953-1

SDG Number:

Matrix: Sediment Instrument ID: NOEQUIP

Method: D 2216 MDL Date: 01/01/2017 12:44

Analyte	Wavelength/ Mass	RL (%)	MDL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacrament Job Number: 320-56953-1

SDG Number:

Matrix: Sediment Instrument ID: NOEQUIP

Method: D 2216 XMDL Date: 01/01/2017 12:46

Analyte	Wavelength/ Mass	XRL (%)	XMDL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-56953-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 12/12/2019 12:52 End Date: 12/12/2019 12:52

Lab Sample Id	D/F	Type	Time	Analytes																									
				% Sol	Moist																								
320-56953-1	1	T	12:52	X	X																								
320-56953-1 DU	1	T	12:52	X	X																								
320-56953-2	1	T	12:52	X	X																								
320-56953-3	1	T	12:52	X	X																								
320-56953-4	1	T	12:52	X	X																								
320-56953-5	1	T	12:52	X	X																								
320-56953-6	1	T	12:52	X	X																								
320-56953-7	1	T	12:52	X	X																								
320-56953-8	1	T	12:52	X	X																								
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										
ZZZZZZ			12:52																										

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-56953-1

SDG No.:

Batch Number: 344997 Batch Start Date: 12/12/19 12:52 Batch Analyst: Alan, Alex

Batch Method: D 2216 Batch End Date: 12/13/19 09:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-56953-A-1	11187072-120919-BN-SJSSA07(0-1)	D 2216	T	1	1.04 g	9.95 g	4.91 g		
320-56953-A-1 DU	11187072-120919-BN-SJSSA07(0-1)	D 2216	T	2	1.04 g	8.93 g	4.47 g		
320-56953-A-2	11187072-120919-BN-SJSSA07(1-2)	D 2216	T	3	1.02 g	14.69 g	9.83 g		
320-56953-A-3	11187072-120919-BN-SJSSA07(2-4)	D 2216	T	4	0.99 g	14.40 g	11.95 g		
320-56953-A-4	11187072-120919-BN-SJSSA07(4-6)	D 2216	T	5	1.03 g	11.86 g	7.10 g		
320-56953-A-5	11187072-120919-BN-SJSSA04(0-1)	D 2216	T	6	1.00 g	11.80 g	5.49 g		
320-56953-A-6	11187072-120919-BN-SJSSA04(1-2)	D 2216	T	7	0.99 g	12.62 g	6.90 g		
320-56953-A-7	11187072-120919-BN-SJSSA04(2-4)	D 2216	T	8	1.00 g	10.03 g	5.16 g		
320-56953-A-8	11187072-120919-BN-SJSSA04(4-6)	D 2216	T	9	1.02 g	9.28 g	4.54 g		

Batch Notes	
Balance ID	QA-068
Date and Time Samples in Desiccator	12/13/2019 08:28
Date and Time Samples out of Desiccator	12/13/2019 09:23
Date samples were placed in the oven	12/12/2019
Oven Temp In	111 Degrees C
Time samples were place in the oven	12:52
Date samples were removed from oven	12/13/2019
Oven Temp Out	113 Degrees C
Time Samples were removed from oven	08:28
Oven ID	Soil prep #1
Thermometer ID	151969626

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95606-1500
Phone (916) 373-5600 Fax (303) 467-7248

Chain of Custody Record

eurofins

Client Information	Sampler: Breanna North	Lab PM: Gamber, Carrie L	Carrier Tracking No(s):	COC No: 180-54151-11295.10
Client Contact: Janie Smith	Phone: 501-454-9966	E-Mail: carrie.gamber@testamericainc.com		Page: Page ~~10 of 10~~ 1 of 1
Company: GHD Services Inc.				Job #:
Address: 5551 Corporate Boulevard Suite 200	Due Date Requested:			
City: Baton Rouge	TAT Requested (days): 10 day TAT			
State, Zip: LA, 70808				
Phone: 225-292-9007(Tel)	PO #: Purchase Order Requested			
Email: janie.smith@ghd.com	WO #:			
Project Name: San Jacinto River Waste Pits Superfund S	Project #: 18020662			
Site: Sand Separation Area	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Dioxins / Furans	Moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
111187072-120919-BN-SJSSA07(0-1)	12-9-19	1535	G	S	N	N	X	X		
111187072-120919-BN-SJSSA07(1-2)	12-9-19	1535	G	S	N	N	X	X		
111187072-120919-BN-SJSSA07(2-4)	12-9-19	1540	G	S	N	N	X	X		
111187072-120919-BN-SJSSA07(4-6)	12-9-19	1540	G	S	N	N	X	X		
111187072-120919-BN-SJSSA04(0-1)	12-9-19	1615	G	S	N	N	X	X		
111187072-120919-BN-SJSSA04(1-2)	12-9-19	1615	G	S	N	N	X	X		
111187072-120919-BN-SJSSA04(2-4)	12-9-19	1620	G	S	N	N	X	X		
111187072-120919-BN-SJSSA04(4-6)	12-9-19	1620	G	S	N	N	X	X		

320-56953 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
X Breanna North	X 12/10/19 1:20	X GHD		12-10-19 120	SAS
Relinquished by:	Date/Time: 12-10-19 120	Company SAS	Received by:	Date/Time: 12/11/19 930	Company eta SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 5.6

Ver: 01/16/2019

eurofins | Environment Testing TestAmerica

Sacramento
Sample Receiving Notes

320-56953 Field Sheet

Tracking # :* 2908 4944

Job:

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: * First 4 digits of tracking # are not legible. MAN 12/11/19

Therm. ID: IR Stem Corr. Factor: (+/-) 0 °C

Ice ✓ Wet ✓ Gel Other

Cooler Custody Seal: -

Cooler ID: -

Temp Observed: 5.6 °C Corrected: 5.6 °C

From: Temp Blank ☐ Sample ☑

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: MAN Date: 12/11/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
NCM Filed	☐	☐	☑

Initials: PK Date: PK 12/11/19 ~~12/0~~ 12/11/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")


Environment Testing
TestAmerica
SHIP DATE: 10DEC19
ACTWGT: 10.00 LB MAN
CAD: 0758523/CAFE3211
BILL RECIPIENT
NG/RECEIVING
ERICA LABORATORIES
ERSIDE PARKWAY
SACRAMENTO CA 95605
REF:
DEPT:
FedEx
Express
WED - 11 DEC 10:30A
PRIORITY OVERNIGHT
2908 4944
95605
CA-US SMF
BLUA

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 320-56953-1

Login Number: 56953
List Number: 1
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85486

GHD Services

January 30, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85486
GH001-3EJACINTO-19

01/31/2020 12:48

Sample Receipt

The following sample(s) were received on December 16, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120419-SS-SJSSA08 (0-2.5 CM)	L85486-1	
11187072-120419-SS-SJSSA08 (7.5-10 CM)	L85486-2	
11187072-120419-SS-SJSSA08 (15-17.5 CM)	L85486-3	
11187072-120419-SS-SJSSA08 (22.5-25 CM)	L85486-4	
11187072-120419-SS-SJSSA08 (30-32.5 CM)	L85486-5	
11187072-120419-SS-SJSSA08 (37.5-40 CM)	L85486-6	
11187072-120419-SS-SJSSA08 (45-47.5 CM)	L85486-7	
11187072-120419-SS-SJSSA08 (52.5-55 CM)	L85486-8	
11187072-120419-SS-SJSSA08 (60-62.5 CM)	L85486-9	
11187072-120419-SS-SJSSA08 (70-72.5 CM)	L85486-10	
11187072-120419-SS-SJSSA08 (80-82.5 CM)	L85486-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
BROWN ENGINEERING, INC.
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2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85486
GH001-3EJACINTO-19

01/31/2020 12:48

Special Considerations

Lead 210 L85486-3 through 11

The method blank for workgroup WG32943 was slightly above the MDC of 4.06E-01 pCi/total with an activity/uncertainty of 4.28E-01 +/- 2.57E-01 pCi/total. Since all other quality control results for this workgroup met the required criteria, the data is reported for consideration of acceptability. If determined that the data associated with this workgroup is unacceptable, please let us know and we will reanalyze all associated samples.

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32657.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
55	L85493-1	WG32657-1

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85486
GH001-3EJACINTO-19

01/31/2020 12:48

PB-210

Quality Control

Quality control sample(s) analyzed as WG32861,WG32943. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Blank Samples	WG32943-1	Failed

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #	
11187072-120719-SS-SJSSA01 (15-17.5 CM)	L85479-3	WG32943-3	Failed
11187072-120919-BN-SJSSA07 (52.5-55 CM)	L85485-8	WG32861-3	

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/30/20 18:22

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85486

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120419-SS-SJSSA08 (0-2.5 CM)** Collect Start: 12/04/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 27.48
LIMS Number: L85486-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	5.66E-02	4.75E-02	**7.60E-02**	pCi/gDry		6.0856	g dry	12/04/19 15:50	01/16/20	800	M	U			
CS-137	2007	3.71E-03	4.74E-02	**7.90E-02**	pCi/g Dry		174.15	g dry	12/04/19 15:50	01/03/20	4084	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (7.5-10 CM)** Collect Start: 12/04/2019 15:52 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 42.97
LIMS Number: L85486-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-4.11E-02	4.50E-02	**7.58E-02**	pCi/gDry		6.125	g dry	12/04/19 15:52	01/16/20	800	M	U			
CS-137	2007	-3.56E-03	2.74E-02	**4.29E-02**	pCi/g Dry		366.72	g dry	12/04/19 15:52	01/03/20	4103	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (15-17.5 CM)** Collect Start: 12/04/2019 15:54 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 35.02
LIMS Number: L85486-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	3.01E-02	4.22E-02	**6.83E-02**	pCi/gDry		6.5832	g dry	12/04/19 15:54	01/27/20	800	M	U			
CS-137	2007	-5.67E-03	4.25E-02	**6.69E-02**	pCi/g Dry		169.41	g dry	12/04/19 15:54	01/03/20	4121	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85486

GHD Services, Inc.
GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120419-SS-SJSSA08 (22.5-25 CM)** Collect Start: 12/04/2019 15:56 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.26
LIMS Number: L85486-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-4.84E-02	4.93E-02	**8.30E-02**	pCi/gDry		6.0107	g dry	12/04/19 15:56	01/27/20	800	M	U			
CS-137	2007	4.66E-02	4.82E-02	**9.05E-02**	pCi/g Dry		175.25	g dry	12/04/19 15:56	01/03/20	3711	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (30-32.5 CM)** Collect Start: 12/04/2019 15:58 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 20.88
LIMS Number: L85486-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-3.37E-02	4.05E-02	**6.81E-02**	pCi/gDry		6.0199	g dry	12/04/19 15:58	01/27/20	800	M	U			
CS-137	2007	-1.46E-02	2.88E-02	**4.99E-02**	pCi/g Dry		391.12	g dry	12/04/19 15:58	01/16/20	4419	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (37.5-40 CM)** Collect Start: 12/04/2019 16:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 45.18
LIMS Number: L85486-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.11E-01**	5.67E-02	7.20E-02	pCi/gDry		6.6994	g dry	12/04/19 16:00	01/27/20	800	M	+			
CS-137	2007	7.29E-02	7.80E-02	**1.45E-01**	pCi/g Dry		119.97	g dry	12/04/19 16:00	01/16/20	3600	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/30/20 18:22

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85486

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120419-SS-SJSSA08 (45-47.5 CM)** Collect Start: 12/04/2019 16:02 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 45.54
LIMS Number: L85486-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.33E-01**	6.41E-02	7.75E-02	pCi/gDry		6.0108	g dry	12/04/19 16:02	01/27/20	800	M	+			
CS-137	2007	-1.12E-02	1.09E-01	**1.77E-01**	pCi/g Dry		86.38	g dry	12/04/19 16:02	01/16/20	4183	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (52.5-55 CM)** Collect Start: 12/04/2019 16:04 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 47.99
LIMS Number: L85486-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.40E-01**	6.71E-02	9.37E-02	pCi/gDry		6.2164	g dry	12/04/19 16:04	01/27/20	800	M	+			
CS-137	2007	7.35E-02	8.32E-02	**1.57E-01**	pCi/g Dry		98.79	g dry	12/04/19 16:04	01/16/20	3600	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (60-62.5 CM)** Collect Start: 12/04/2019 16:06 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 48.48
LIMS Number: L85486-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.94E-01**	4.91E-02	6.96E-02	pCi/gDry		6.0934	g dry	12/04/19 16:06	01/27/20	800	M	+			
CS-137	2007	-8.61E-03	9.59E-02	**1.58E-01**	pCi/g Dry		46.98	g dry	12/04/19 16:06	01/16/20	4219	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/30/20 18:22

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85486

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120419-SS-SJSSA08 (70-72.5 CM)** Collect Start: 12/04/2019 16:08 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 47.74
LIMS Number: L85486-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.96E-01**	5.31E-02	6.59E-02	pCi/gDry		6.0605	g dry	12/04/19 16:08	01/27/20	800	M	+			
CS-137	2007	9.31E-02	9.75E-02	**1.83E-01**	pCi/g Dry		51.85	g dry	12/04/19 16:08	01/16/20	4315	Sec	U		No	

Sample ID: **11187072-120419-SS-SJSSA08 (80-82.5 CM)** Collect Start: 12/04/2019 16:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 47.77
LIMS Number: L85486-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.24E-01**	5.36E-02	6.93E-02	pCi/gDry		6.1933	g dry	12/04/19 16:10	01/27/20	800	M	+			
CS-137	2007	6.50E-04	1.08E-01	**1.83E-01**	pCi/g Dry		57.58	g dry	12/04/19 16:10	01/16/20	3770	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85486

GH001-3EJACINTO-19

01/31/2020 09:04

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32657-1	K-40	M	12/18/2019 13:04	1.273E+03	1.418E+03	pCi/L	10.8	<30	+	P
L85493-1										

GAMMA

Associated Samples for WG32657

Sample #	Client ID
L85486-1	11187072-120419-SS-SJSSA08 (0-2.5 CM)
L85486-2	11187072-120419-SS-SJSSA08 (7.5-10 CM)
L85486-3	11187072-120419-SS-SJSSA08 (15-17.5 CM)
L85486-4	11187072-120419-SS-SJSSA08 (22.5-25 CM)
L85486-5	11187072-120419-SS-SJSSA08 (30-32.5 CM)
L85486-6	11187072-120419-SS-SJSSA08 (37.5-40 CM)
L85486-7	11187072-120419-SS-SJSSA08 (45-47.5 CM)
L85486-8	11187072-120419-SS-SJSSA08 (52.5-55 CM)
L85486-9	11187072-120419-SS-SJSSA08 (60-62.5 CM)
L85486-10	11187072-120419-SS-SJSSA08 (70-72.5 CM)
L85486-11	11187072-120419-SS-SJSSA08 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85486

GH001-3EJACINTO-19

01/31/2020 09:04

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32861-1	PB-210	WO	01/17/2020 00:04	< 4.100E-01	pCi/Total	U	P
WG32943-1	PB-210	WO	01/27/2020 23:27	4.280E-01	pCi/Total	+	F

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-2	PB-210	WO	01/16/2020 17:03	3.18E+02	3.150E+02	pCi/Total	99.2	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									
WG32943-2	PB-210	WO	01/27/2020 16:15	3.18E+02	2.450E+02	pCi/Total	77.2	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32861-3 L85485-8	PB-210	S	01/17/2020 00:04	< 8.080E-02	< 7.540E-02	pCi/gDry		<50	**	NE
WG32943-3 L85479-3	PB-210	S	01/27/2020 23:27	5.000E-01	7.030E-01	pCi/gDry	33.8	<50	+	P

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85486

GH001-3EJACINTO-19

01/31/2020 09:04

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-4	PB-210	S	01/16/2020 17:03	2.17E+01	8.150E-02	2.000E+01	pCi/gDry	92.0	60-140	+	P
L85485-9											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32943-4	PB-210	S	01/27/2020 16:15	2.13E+01	6.350E-01	1.970E+01	pCi/gDry	89.7	60-140	+	P
L85479-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32861-5	PB-210	S	01/16/2020 17:03	2.11E+01	2.280E+01	107.7	pCi/gDry	15.7	<30	+	P
WG32861-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32943-5	PB-210	S	01/27/2020 16:15	1.96E+01	1.600E+01	81.5	pCi/gDry		<30	+	
L85479-5											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85486

GH001-3EJACINTO-19

01/31/2020 09:04

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Associated Samples for WG32861

Sample #	Client ID
L85486-1	11187072-120419-SS-SJSSA08 (0-2.5 CM)
L85486-2	11187072-120419-SS-SJSSA08 (7.5-10 CM)

PB-210

Associated Samples for WG32943

Sample #	Client ID
L85486-3	11187072-120419-SS-SJSSA08 (15-17.5 CM)
L85486-4	11187072-120419-SS-SJSSA08 (22.5-25 CM)
L85486-5	11187072-120419-SS-SJSSA08 (30-32.5 CM)
L85486-6	11187072-120419-SS-SJSSA08 (37.5-40 CM)
L85486-7	11187072-120419-SS-SJSSA08 (45-47.5 CM)
L85486-8	11187072-120419-SS-SJSSA08 (52.5-55 CM)
L85486-9	11187072-120419-SS-SJSSA08 (60-62.5 CM)
L85486-10	11187072-120419-SS-SJSSA08 (70-72.5 CM)
L85486-11	11187072-120419-SS-SJSSA08 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

L85486

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Page _____ of _____

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:

P - 10CFR61, 10CFR50, Other high level: _____

Turn-around-time 10 days

Hazardous Material in Shipment Yes_____* No_____

Lims# _____

(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start	Collection Date/Time Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120419-SS-SJSSA08 (0-2.5 cm)	Soil		12/4/2019 1550		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (7.5-10 cm)	Soil		12/4/2019 1552		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (15-17.5 cm)	Soil		12/4/2019 1554		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (22.5-25 cm)	Soil		12/4/2019 1556		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (30-32.5 cm)	Soil		12/4/2019 1558		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (37.5-40 cm)	Soil		12/4/2019 1600		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (45-47.5 cm)	Soil		12/4/2019 1602		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (52.5-55 cm)	Soil		12/4/2019 1604		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (60-62.5 cm)	Soil		12/4/2019 1606		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (70-72.5 cm)	Soil		12/4/2019 1608		16 oz	1	S	Isotopes
	11187072-120419-SS-SJSSA08 (80-82.5 cm)	Soil		12/4/2019 1610		16 oz	1	S	Isotopes
									** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N. Groves	Date: 12-11-19 1020	Relinquished by:	Date:	Relinquished by:	Date:
Received by: [signature]	Date: 12-16-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 14:28

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

SR #: SR64450

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 LIMS #L85486

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85486

****

L85486-1 S 11187072-120419-SS-SJSSA08 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/17/19
Aliquot	GELI	SMC	12/17/19
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	L854	01/03/20
Count Room	PB-210	KOJ	01/16/20

****

L85486-2 S 11187072-120419-SS-SJSSA08 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/17/19
Aliquot	GELI	SMC	12/17/19
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/16/20

****

L85486-3 S 11187072-120419-SS-SJSSA08 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/17/19
Aliquot	GELI	SMC	12/17/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85486-4 S 11187072-120419-SS-SJSSA08 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/17/19
Aliquot	GELI	SMC	12/17/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85486-5 S 11187072-120419-SS-SJSSA08 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/17/19
Aliquot	GELI	SMC	12/17/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		

L85486

L85486-5	**S**	**11187072-120419-SS-SJSSA08 (30-32.5 CM)**		
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-6	**S**	**11187072-120419-SS-SJSSA08 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-7	**S**	**11187072-120419-SS-SJSSA08 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-8	**S**	**11187072-120419-SS-SJSSA08 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-9	**S**	**11187072-120419-SS-SJSSA08 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-10	**S**	**11187072-120419-SS-SJSSA08 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85486

L85486-10	**S**	**11187072-120419-SS-SJSSA08 (70-72.5 CM)**		
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

****

L85486-11	**S**	**11187072-120419-SS-SJSSA08 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/17/19
Aliquot	GELI		SMC	12/17/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		SMC	01/16/20
Count Room	PB-210		MSA	01/27/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-DEC-2019 12:49:23.43
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-NOV-2019 14:51:44.52

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG112719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD

Smple Date: 27-NOV-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.43
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.11	1224	4615	0.95	126.52	123	7	5.67E-03	9.7	6.02E-01
2	2	72.66	1453	4089	0.99	145.58	142	11	6.73E-03	7.4	1.51E+00
3	2	74.81	2958	3272	0.92	149.88	142	11	1.37E-02	3.5	
4	1	84.59	1591	5670	1.31	169.41	165	9	7.37E-03	8.8	1.49E+01
5	1	87.26	517	3413	0.79	174.73	173	6	2.39E-03	18.4	1.82E+00
6	1	92.44	3483	5481	1.06	185.09	181	10	1.61E-02	4.3	1.88E+00
7	1	139.84	472	3677	1.14	279.75	277	7	2.18E-03	21.8	1.05E+00
8	1	143.64	500	4282	0.90	287.33	284	8	2.31E-03	23.0	5.67E-01
9	1	185.56	2643	4550	1.07	371.08	367	9	1.22E-02	5.0	2.72E+00
10	1	238.46	1357	3081	0.97	476.73	473	7	6.28E-03	7.3	5.90E-01
11	1	295.04	676	3015	1.16	589.78	585	9	3.13E-03	15.1	7.72E-01
12	1	338.23	300	2075	1.07	676.08	673	7	1.39E-03	25.7	1.03E+00
13	1	351.83	1106	2809	1.15	703.25	699	10	5.12E-03	9.4	1.03E+00
14	1	510.87	7264	3592	2.75	1021.09	1012	20	3.36E-02	2.3	3.58E+00
15	1	583.11	723	1616	1.58	1165.50	1160	11	3.35E-03	11.4	5.52E-01
16	1	609.25	966	2236	1.14	1217.77	1211	12	4.47E-03	10.3	2.10E+00
17	1	802.84	240	1119	1.52	1604.90	1600	11	1.11E-03	27.6	4.96E-01
18	1	846.57	406	1047	1.61	1692.38	1688	10	1.88E-03	15.7	7.68E-01
19	1	911.23	560	1028	1.53	1821.73	1815	14	2.59E-03	12.9	8.03E-01
20	1	969.14	400	775	1.91	1937.59	1933	11	1.85E-03	14.4	3.50E+00
21	1	1001.00	213	823	2.10	2001.35	1995	12	9.87E-04	28.0	1.85E+00
22	1	1120.51	267	814	1.62	2240.52	2235	13	1.24E-03	23.1	2.12E+00
23	1	1460.87	2523	464	2.00	2922.05	2914	16	1.17E-02	2.8	1.44E+00
24	1	1764.64	572	230	2.51	3530.73	3523	15	2.65E-03	7.2	1.59E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.11%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	0.09%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	147.8	-5.28%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.3	-1.22%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	246.7	0.28%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	393.4	-3.16%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.9	-0.44%

Eff. Name: **01S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:07:13.99
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

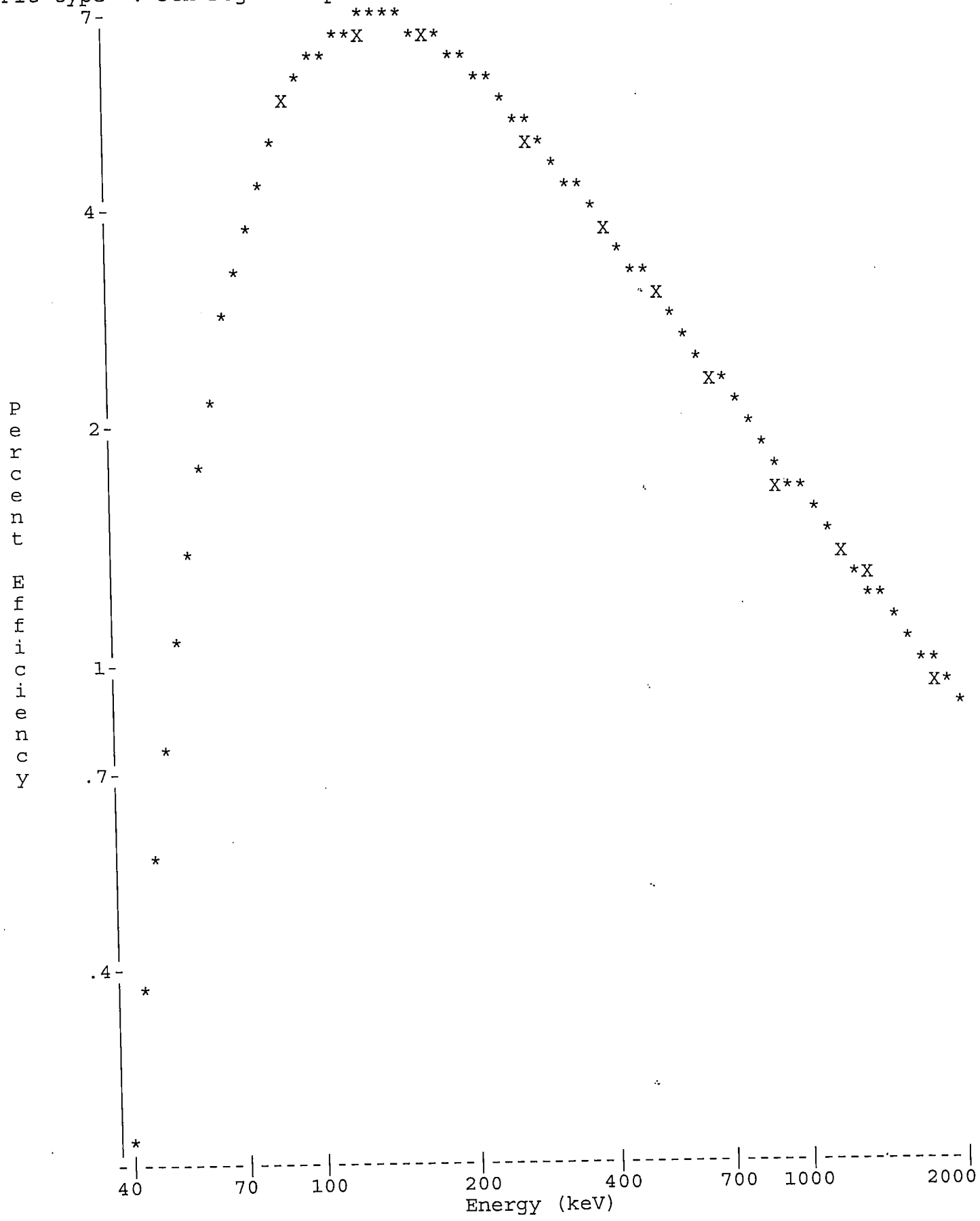
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:07
Detector :
Fit type : 5th Degree Empirical
Geometry : 01S50121819



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:08:12.65
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17271	3.72*	5.417E+00	7.463E+02	1.007E+03	2.51
03-CO57	122.06	16346	85.51*	6.949E+00	2.396E+01	3.996E+01	2.56
04-CE139	165.85	11692	80.35*	6.800E+00	1.864E+01	5.101E+01	2.93
05-HG203	279.20	3520	81.46*	4.980E+00	7.558E+00	1.478E+02	7.01
06-SN113	391.69	15884	64.90*	3.773E+00	5.649E+01	1.883E+02	2.25
07-SR85	513.99	9867	99.27*	2.975E+00	2.909E+01	2.467E+02	3.24
08-CS137	661.65	40004	85.12*	2.370E+00	1.727E+02	1.749E+02	1.21
09-Y88	898.02	20588	93.40*	1.790E+00	1.073E+02	3.934E+02	1.78
10-CO60	1173.22	30476	100.00	1.401E+00	1.895E+02	2.036E+02	1.30
	1332.49	27605	100.00*	1.251E+00	1.922E+02	2.066E+02	1.24
12-Y88	1836.01	12120	99.38*	9.693E-01	1.096E+02	4.019E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S50121819

Acquisition date : 18-DEC-2019 09:33:10

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.922E+02	2.066E+02	0.026E+02	1.24	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
	Total Activity :		1.464E+03	2.857E+03			

Grand Total Activity : 1.464E+03 2.857E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S50121819
Acquisition date : 18-DEC-2019 09:33:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	920	5096	0.99	93.48	90	8	8.01E-02	27.7	6.67E-01	
1	136.44	2036	4705	0.94	273.16	269	9	1.77E-01	12.9	7.04E+00	
1	255.14	930	3804	1.39	510.25	506	9	8.10E-02	24.8	5.33E+00	
1	813.78	308	1377	1.86	1626.23	1622	9	2.68E-02	44.7	1.96E+00	
6	1325.32	486	646	3.46	2648.36	2639	32	4.24E-02	27.2	1.26E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.909E+02	2.051E+02	0.018E+02	0.90	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.462E+03	2.856E+03			

Grand Total Activity : 1.462E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.526E+01	1.648E+01	0.000E+00	61.105
03-CO57	3.996E+01	1.023E+00	6.263E-01	0.000E+00	63.800
04-CE139	5.101E+01	1.497E+00	1.120E+00	0.000E+00	45.534
05-HG203	1.478E+02	1.036E+01	1.028E+01	0.000E+00	14.375
06-SN113	1.883E+02	4.237E+00	2.782E+00	0.000E+00	67.691

07-SR85	2.467E+02	7.990E+00	5.565E+00	0.000E+00	44.324
08-CS137	1.749E+02	2.112E+00	9.060E-01	0.000E+00	193.016
09-Y88	3.934E+02	7.009E+00	3.818E+00	0.000E+00	103.035
10-CO60	2.051E+02	1.841E+00	7.669E-01	0.000E+00	267.488
12-Y88	4.019E+02	7.900E+00	1.919E+00	0.000E+00	209.476

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	1.656E+00		1.724E+00	2.796E+00	0.000E+00	0.592

```
A,01S50121819     ,12/26/2019 12:08,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,01S50121819     ,CALIBRATION          ,12/26/2019 12:07,01S50121819
C,02-CD109,YES,   1.007E+03,   2.526E+01,   1.648E+01,,    61.105
C,03-CO57 ,YES,   3.996E+01,   1.023E+00,   6.263E-01,,    63.800
C,04-CE139,YES,   5.101E+01,   1.497E+00,   1.120E+00,,    45.534
C,05-HG203,YES,   1.478E+02,   1.036E+01,   1.028E+01,,    14.375
C,06-SN113,YES,   1.883E+02,   4.237E+00,   2.782E+00,,    67.691
C,07-SR85 ,YES,   2.467E+02,   7.990E+00,   5.565E+00,,    44.324
C,08-CS137,YES,   1.749E+02,   2.112E+00,   9.060E-01,,   193.016
C,09-Y88  ,YES,   3.934E+02,   7.009E+00,   3.818E+00,,   103.035
C,10-CO60 ,YES,   2.051E+02,   1.841E+00,   7.669E-01,,   267.488
C,12-Y88  ,YES,   4.019E+02,   7.900E+00,   1.919E+00,,   209.476
C,01-AM241,NO ,   1.656E+00,   1.724E+00,   2.796E+00,,     0.592
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.8	2.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.8	-2.36%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.5	-4.19%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	189.5	-0.59%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	249.3	1.33%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	172.6	0.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	389.9	-4.02%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	206.5	1.51%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.5	-0.79%

Eff. Name: **02S50121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:34:12.23
CBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:38.48

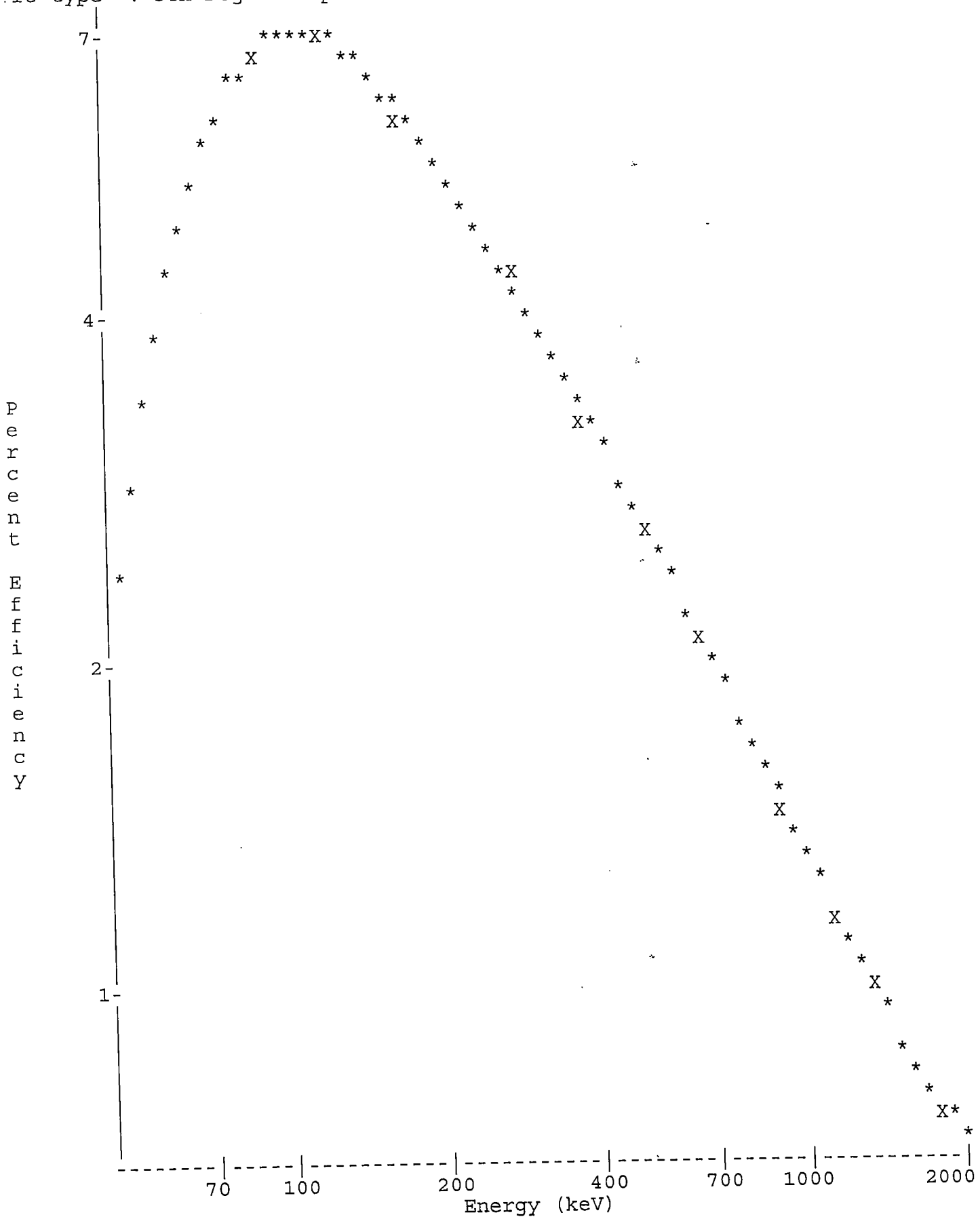
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S50121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S50121719
BKGFILE : 02BG112719MT
Real Time : 0 05:00:53.52
Live time : 0 05:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01	33739	10640	0.87	160.81	6.78E+00	1.87E+00	0.8	
2	0	122.06	26574	9111	1.01	229.28	7.04E+00	1.48E+00	0.9	
3	0	136.50	3187	6726	1.02	258.33	6.83E+00	1.77E-01	5.0	
4	0	165.88	16463	7188	1.07	317.43	6.24E+00	9.15E-01	1.2	
5	0	255.19	1188	5182	1.29	497.09	4.66E+00	6.60E-02	11.3	
6	0	279.16	4916	6510	1.14	545.30	4.35E+00	2.73E-01	3.6	
7	0	391.72	21875	5812	1.20	771.76	3.28E+00	1.22E+00	1.0	
8	0	513.99	13635	5384	1.35	1017.73	2.58E+00	7.58E-01	1.5	
9	0	661.68	53170	4564	1.45	1314.88	2.04E+00	2.95E+00	0.5	
10	0	814.04	559	1998	1.28	1621.46	1.66E+00	3.11E-02	15.5	
11	0	898.05	27096	3800	1.60	1790.51	1.51E+00	1.51E+00	0.8	
12	0	1173.18	40153	2169	1.84	2344.20	1.16E+00	2.23E+00	0.6	
13	0	1332.47	35543	1402	1.93	2664.80	1.03E+00	1.97E+00	0.6	
14	0	1836.01	15612	471	2.30	3678.43	7.96E-01	8.67E-01	0.9	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 26-DEC-2019 15:34
Detector :
Fit type : 5th Degree Empirical
Geometry : 02S50121719



nalyst:

'AX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:35:14.13
'BE02 51-TP42214B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:38.48

,IMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S50121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S50121719
BKGFILE : 02BG112719MT
Real Time : 0 05:00:53.52
Live time : 0 05:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01*	33711	10640	0.87	160.81	6.78E+00	1.87E+00	0.8	
2	0	122.06	26574	9111	1.01	229.28	7.04E+00	1.48E+00	0.9	
3	0	136.50	3187	6726	1.02	258.33	6.83E+00	1.77E-01	5.0	
4	0	165.88	16463	7188	1.07	317.43	6.24E+00	9.15E-01	1.2	
5	0	255.19	1188	5182	1.29	497.09	4.66E+00	6.60E-02	11.3	
6	0	279.16	4916	6510	1.14	545.30	4.35E+00	2.73E-01	3.6	
7	0	391.72	21875	5812	1.20	771.76	3.28E+00	1.22E+00	1.0	
8	0	513.99	13635	5384	1.35	1017.73	2.58E+00	7.58E-01	1.5	
9	0	661.68	53170	4564	1.45	1314.88	2.04E+00	2.95E+00	0.5	
10	0	814.04	559	1998	1.28	1621.46	1.66E+00	3.11E-02	15.5	
11	0	898.05	27096	3800	1.60	1790.51	1.51E+00	1.51E+00	0.8	
12	0	1173.18	40153	2169	1.84	2344.20	1.16E+00	2.23E+00	0.6	
13	0	1332.47	35543	1402	1.93	2664.80	1.03E+00	1.97E+00	0.6	
14	0	1836.01	15612	471	2.30	3678.43	7.96E-01	8.67E-01	0.9	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	33711	3.72*	6.779E+00	7.427E+02	1.001E+03	1.59
03-CO57	122.06	26574	85.51*	7.044E+00	2.451E+01	4.082E+01	1.86
04-CE139	165.85	16463	80.35*	6.241E+00	1.824E+01	4.976E+01	2.48
05-HG203	279.20	4916	81.46*	4.346E+00	7.714E+00	1.495E+02	7.16
06-SN113	391.69	21875	64.90*	3.282E+00	5.706E+01	1.895E+02	1.97
07-SR85	513.99	13635	99.27*	2.579E+00	2.959E+01	2.493E+02	2.91
08-CS137	661.65	53170	85.12*	2.036E+00	1.705E+02	1.726E+02	1.03
09-Y88	898.02	27096	93.40*	1.510E+00	1.067E+02	3.899E+02	1.57
10-CO60	1173.22	40153	100.00	1.161E+00	1.922E+02	2.065E+02	1.15
	1332.49	35543	100.00*	1.029E+00	1.918E+02	2.061E+02	1.17
12-Y88	1836.01	15612	99.38*	7.961E-01	1.096E+02	4.005E+02	1.76

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02S50121719
Acquisition date : 17-DEC-2019 17:50:38

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.427E+02	1.001E+03	0.016E+03	1.59	
03-CO57	270.90D	1.67	2.451E+01	4.082E+01	0.076E+01	1.86	
04-CE139	137.66D	2.73	1.824E+01	4.976E+01	0.123E+01	2.48	
05-HG203	46.61D	19.4	7.714E+00	1.495E+02	0.107E+02	7.16	
06-SN113	115.10D	3.32	5.706E+01	1.895E+02	0.037E+02	1.97	
07-SR85	64.84D	8.42	2.959E+01	2.493E+02	0.072E+02	2.91	
08-CS137	30.17Y	1.01	1.705E+02	1.726E+02	0.018E+02	1.03	
09-Y88	106.65D	3.65	1.067E+02	3.899E+02	0.061E+02	1.57	
10-CO60	5.27Y	1.07	1.918E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.65	1.096E+02	4.005E+02	0.071E+02	1.76	
	Total Activity :		1.458E+03	2.849E+03			

Grand Total Activity : 1.458E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02S50121719 Acquisition date : 17-DEC-2019 17:50:38

:t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	136.50	3187	6726	1.02	258.33	254	9	1.77E-01	9.9	6.83E+00	
0	255.19	1188	5182	1.29	497.09	493	9	6.60E-02	22.6	4.66E+00	
0	814.04	559	1998	1.28	1621.46	1617	10	3.11E-02	31.1	1.66E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.427E+02	1.001E+03	0.016E+03	1.59	
03-CO57	270.90D	1.67	2.451E+01	4.082E+01	0.076E+01	1.86	
04-CE139	137.66D	2.73	1.824E+01	4.976E+01	0.123E+01	2.48	
05-HG203	46.61D	19.4	7.714E+00	1.495E+02	0.107E+02	7.16	
06-SN113	115.10D	3.32	5.706E+01	1.895E+02	0.037E+02	1.97	
07-SR85	64.84D	8.42	2.959E+01	2.493E+02	0.072E+02	2.91	
08-CS137	30.17Y	1.01	1.705E+02	1.726E+02	0.018E+02	1.03	
09-Y88	106.65D	3.65	1.067E+02	3.899E+02	0.061E+02	1.57	
10-CO60	5.27Y	1.07	1.920E+02	2.063E+02	0.017E+02	0.82	
12-Y88	106.65D	3.65	1.096E+02	4.005E+02	0.071E+02	1.76	
			---------	---------			
	Total Activity :		1.459E+03	2.849E+03			

Grand Total Activity : 1.459E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.589E+01	1.036E+01	0.000E+00	96.634
03-CO57	4.082E+01	7.585E-01	4.870E-01	0.000E+00	83.813
04-CE139	4.976E+01	1.234E+00	9.337E-01	0.000E+00	53.297
05-HG203	1.495E+02	1.070E+01	8.847E+00	0.000E+00	16.903
06-SN113	1.895E+02	3.740E+00	2.361E+00	0.000E+00	80.281
07-SR85	2.493E+02	7.243E+00	4.541E+00	0.000E+00	54.899
08-CS137	1.726E+02	1.776E+00	7.786E-01	0.000E+00	221.705

)9-Y88	3.899E+02	6.109E+00	3.387E+00	0.000E+00	115.122
.0-CO60	2.063E+02	1.694E+00	8.674E-01	0.000E+00	237.862
.2-Y88	4.005E+02	7.065E+00	1.781E+00	0.000E+00	224.894

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
)1-AM241	-9.375E-02		7.175E-01	1.122E+00	0.000E+00	-0.084

```
,02S50121719      ,12/26/2019 15:35,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
,02S50121719      ,CALIBRATION          ,12/26/2019 15:34,02S50121719
,02-CD109,YES,    1.001E+03,   1.589E+01,   1.036E+01,,    96.634
,03-CO57 ,YES,    4.082E+01,   7.585E-01,   4.870E-01,,    83.813
,04-CE139,YES,    4.976E+01,   1.234E+00,   9.337E-01,,    53.297
,05-HG203,YES,    1.495E+02,   1.070E+01,   8.847E+00,,    16.903
,06-SN113,YES,    1.895E+02,   3.740E+00,   2.361E+00,,    80.281
,07-SR85 ,YES,    2.493E+02,   7.243E+00,   4.541E+00,,    54.899
,08-CS137,YES,    1.726E+02,   1.776E+00,   7.786E-01,,   221.705
,09-Y88  ,YES,    3.899E+02,   6.109E+00,   3.387E+00,,   115.122
,10-CO60 ,YES,    2.063E+02,   1.694E+00,   8.674E-01,,   237.862
,12-Y88  ,YES,    4.005E+02,   7.065E+00,   1.781E+00,,   224.894
,01-AM241,NO ,   -9.375E-02,   7.175E-01,   1.122E+00,,    -0.084
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	1.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.5	-0.85%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.4	-6.18%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.8	2.19%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.1	1.45%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.3	-1.95%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **02FS101619**

Analyst: KOJ

Sec. Review: Analyst:

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/AX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:22:11.24
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

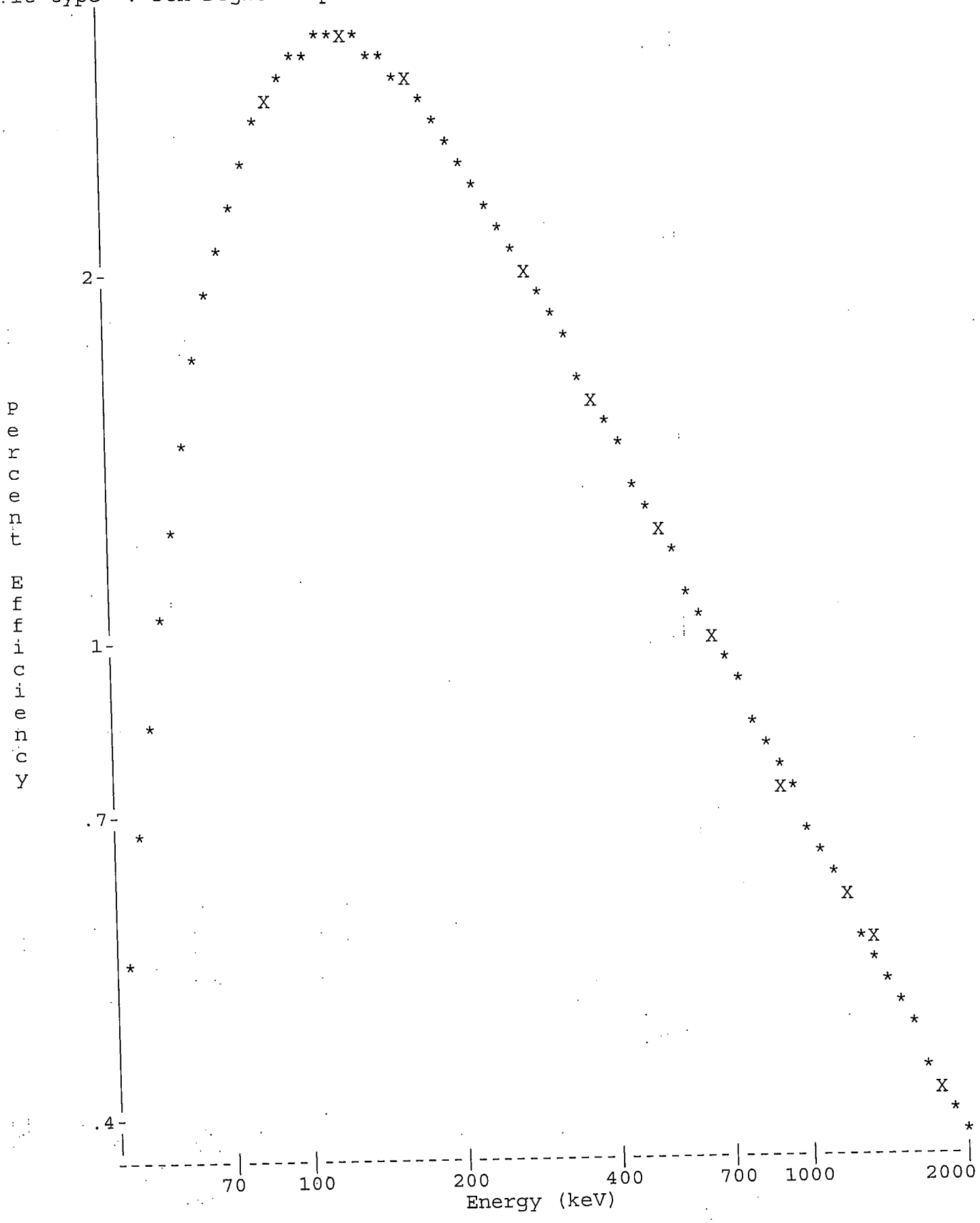
LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83	564	8430	0.76	130.32	2.27E+00	1.57E-02	24.5	
3	0	74.91	934	9437	0.89	134.50	2.36E+00	2.60E-02	16.8	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 23-OCT-2019 11:22
Detector :
Fit type : 5th Degree Empirical
Geometry : 02FS101619



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:24:19.51
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83*	367	8430	0.76	130.32	2.27E+00	1.02E-02	37.9	
3	0	74.91*	566	9437	0.89	134.50	2.36E+00	1.57E-02	27.9	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	30520	3.72*	2.787E+00	8.177E+02	1.004E+03	1.92
03-CO57	122.06	27203	85.51*	3.115E+00	2.837E+01	4.032E+01	1.88
04-CE139	165.85	21006	80.35*	2.871E+00	2.530E+01	5.053E+01	2.37
05-HG203	279.20	11312	81.46*	2.033E+00	1.897E+01	1.464E+02	3.53
06-SN113	391.69	30582	64.90*	1.537E+00	8.514E+01	1.948E+02	1.64
07-SR85	513.99	24029	99.27*	1.218E+00	5.519E+01	2.398E+02	1.88
08-CS137	661.65	51844	85.12*	9.804E-01	1.726E+02	1.741E+02	1.10
09-Y88	898.02	41334	93.40*	7.538E-01	1.631E+02	3.983E+02	1.27
10-CO60	1173.22	41920	100.00	5.995E-01	1.943E+02	2.041E+02	1.14
	1332.49	37860	100.00*	5.380E-01	1.955E+02	2.054E+02	1.16
12-Y88	1836.01	24340	99.38*	4.130E-01	1.647E+02	4.024E+02	1.38

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02FS101619

Acquisition date : 16-OCT-2019 16:42:09

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.955E+02	2.054E+02	0.024E+02	1.16	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02FS101619
Acquisition date : 16-OCT-2019 16:42:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.42	5517	12304	0.97	77.18	73	9	1.53E-01	7.8	7.25E-01	
0	72.83	367	8430	0.76	130.32	128	5	1.02E-02	75.8	2.27E+00	
0	74.91	566	9437	0.89	134.50	133	6	1.57E-02	55.8	2.36E+00	
0	136.42	3307	10852	1.02	258.29	254	9	9.19E-02	11.9	3.07E+00	
0	255.20	1294	6301	1.06	497.31	494	7	3.60E-02	21.1	2.18E+00	
0	813.91	535	3063	1.25	1621.81	1617	11	1.49E-02	40.9	8.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.949E+02	2.047E+02	0.017E+02	0.81	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.931E+01	1.399E+01	0.000E+00	71.812
03-CO57	4.032E+01	7.596E-01	5.940E-01	0.000E+00	67.880
04-CE139	5.053E+01	1.199E+00	9.364E-01	0.000E+00	53.956
05-HG203	1.464E+02	5.164E+00	4.514E+00	0.000E+00	32.428

)6-SN113	1.948E+02	3.201E+00	1.997E+00	0.000E+00	97.501
)7-SR85	2.398E+02	4.518E+00	3.114E+00	0.000E+00	76.999
)8-CS137	1.741E+02	1.913E+00	9.420E-01	0.000E+00	184.792
)9-Y88	3.983E+02	5.073E+00	2.457E+00	0.000E+00	162.132
10-CO60	2.047E+02	1.662E+00	9.297E-01	0.000E+00	220.224
12-Y88	4.024E+02	5.538E+00	1.349E+00	0.000E+00	298.263

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.202E-01		1.166E+00	1.825E+00	0.000E+00	-0.175

```
A,02FS101619       ,10/23/2019 11:24,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,02FS101619       ,CALIBRATION          ,10/23/2019 11:22,02FS101619
C,02-CD109,YES,   1.004E+03,   1.931E+01,   1.399E+01,,    71.812
C,03-CO57 ,YES,   4.032E+01,   7.596E-01,   5.940E-01,,    67.880
C,04-CE139,YES,   5.053E+01,   1.199E+00,   9.364E-01,,    53.956
C,05-HG203,YES,   1.464E+02,   5.164E+00,   4.514E+00,,    32.428
C,06-SN113,YES,   1.948E+02,   3.201E+00,   1.997E+00,,    97.501
C,07-SR85 ,YES,   2.398E+02,   4.518E+00,   3.114E+00,,    76.999
C,08-CS137,YES,   1.741E+02,   1.913E+00,   9.420E-01,,   184.792
C,09-Y88  ,YES,   3.983E+02,   5.073E+00,   2.457E+00,,   162.132
C,10-CO60 ,YES,   2.047E+02,   1.662E+00,   9.297E-01,,   220.224
C,12-Y88  ,YES,   4.024E+02,   5.538E+00,   1.349E+00,,   298.263
C,01-AM241,NO ,  -3.202E-01,   1.166E+00,   1.825E+00,,    -0.175
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

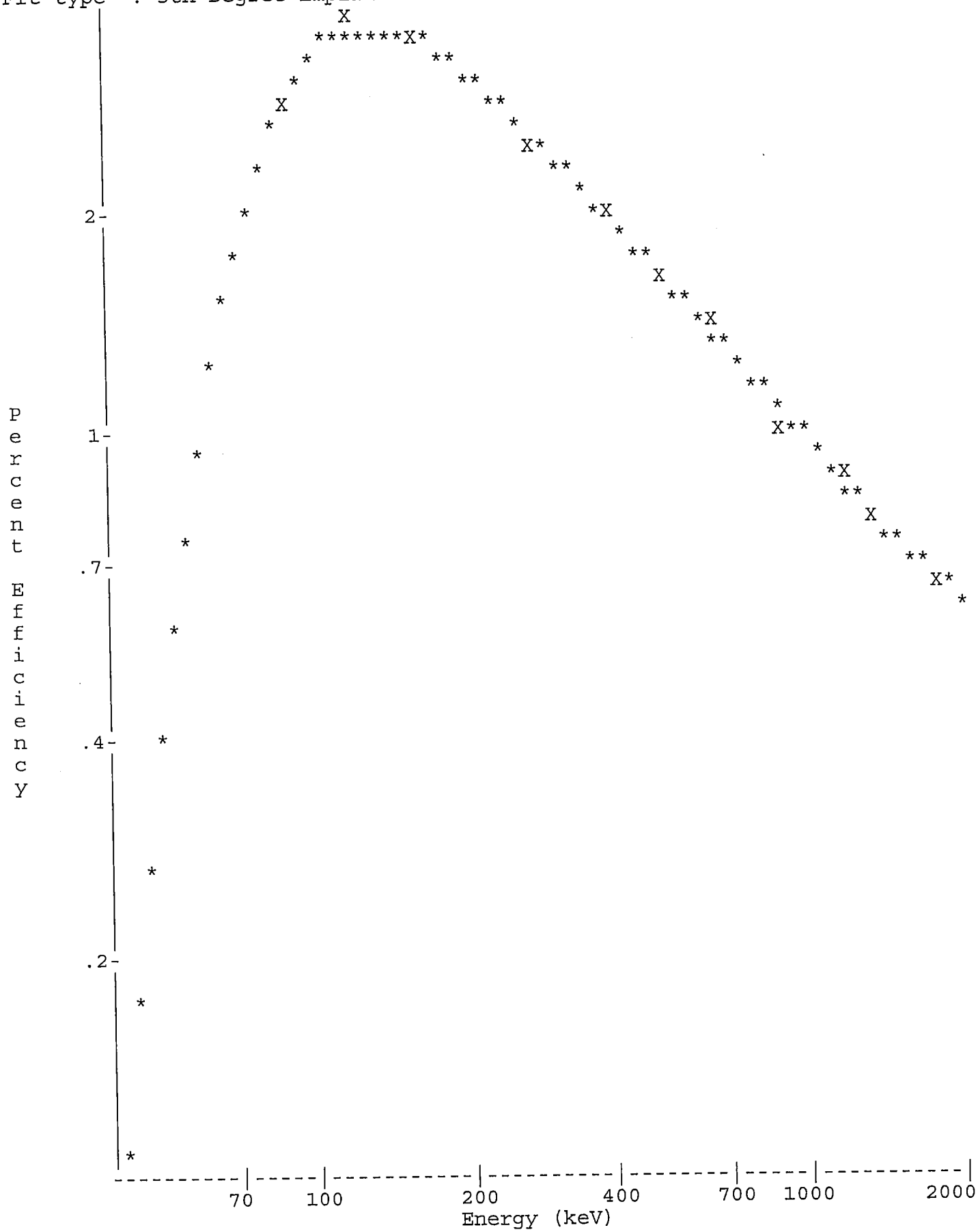
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Geometry : 07S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity :	1.463E+03	2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.462E+03	2.853E+03			
	Grand Total Activity :		1.462E+03	2.853E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,   1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,   4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,   5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,   1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,   1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,   2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,   1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,   3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,   2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,   4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,   2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

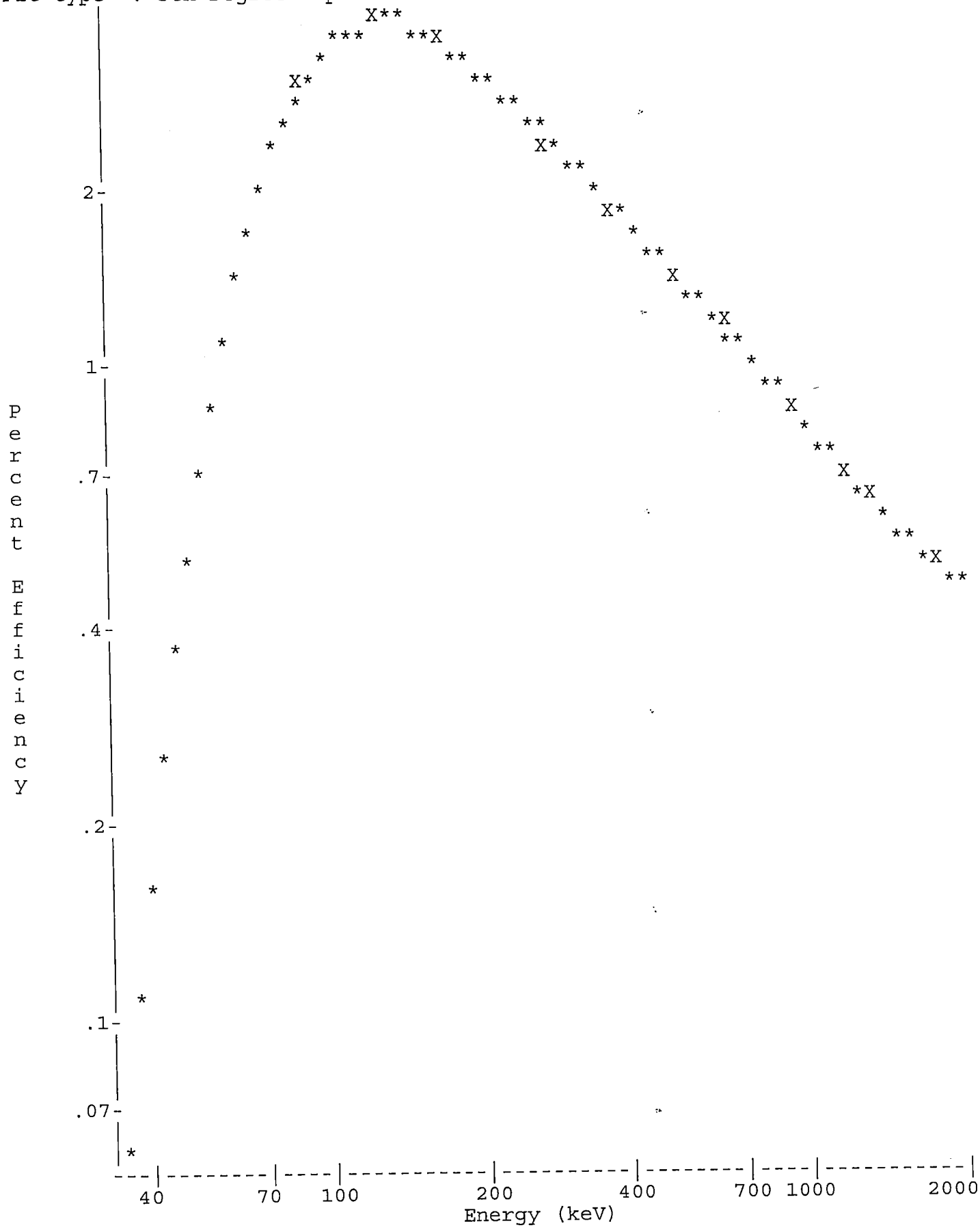
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

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A,08S100121819    ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819    ,CALIBRATION         ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
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E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Pb-210	22.26Y	46.6	72.1		4.18%	762.12	31.86	812.7	6.64%
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1018.0	1.13%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.21%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.93%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	153.3	-1.76%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	195.6	2.61%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	227.1	-7.69%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.2	1.51%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	401.7	-1.11%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.1	0.82%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.7	0.00%

Eff. Name: **11FS112019**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-DEC-2019 10:03:09.96
TBE11 31-TP20610B HpGe ******* Aquisition Date/Time: 20-NOV-2019 16:10:13.65

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML CALIBRATION REF DATE 06

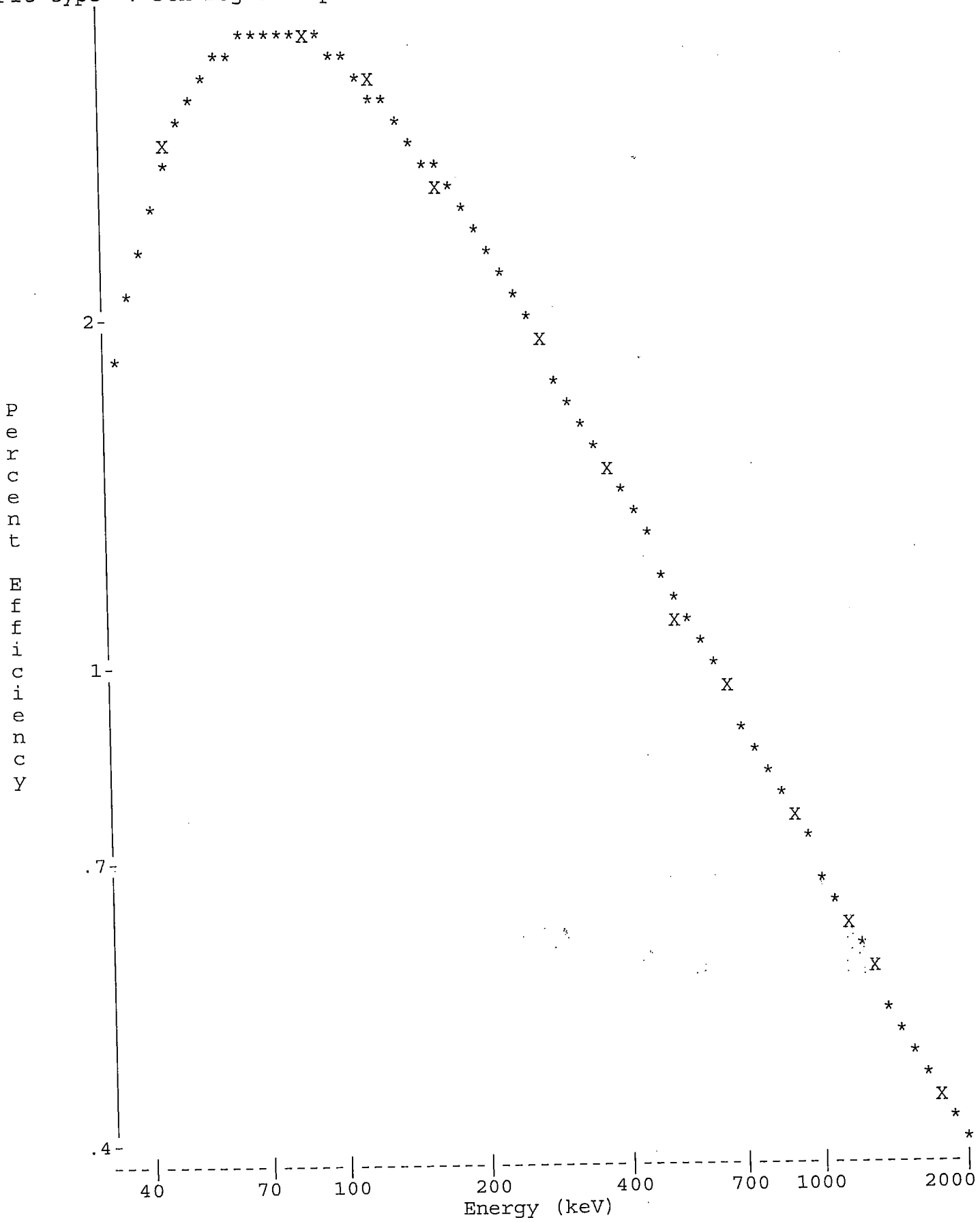
Sample ID : 11FS112019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11FS112019
BKGFILE : NOBKG
Real Time : 0 17:27:37.32
Live time : 0 17:25:38.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.46	55308	30134	1.40	91.95	2.70E+00	8.82E-01	0.8	
2	2	66.76	1421	19562	1.56	132.54	3.36E+00	2.27E-02	18.2	1.97E+01
3	2	72.75	4981	17904	1.31	144.54	3.41E+00	7.94E-02	5.0	
4	2	74.99	6576	22644	1.58	149.01	3.42E+00	1.05E-01	4.6	
5	8	84.78	6815	37279	2.85	168.60	3.40E+00	1.09E-01	7.3	6.12E+00
6	8	88.03	62143	15824	1.37	175.10	3.39E+00	9.91E-01	0.5	
7	0	122.05	42225	21536	1.46	243.16	3.06E+00	6.73E-01	0.9	
8	0	136.48	5504	17871	1.42	272.02	2.90E+00	8.77E-02	4.9	
9	0	165.86	27215	19016	1.48	330.79	2.60E+00	4.34E-01	1.2	
10	0	255.12	1804	11318	1.52	509.34	1.96E+00	2.88E-02	10.9	
11	0	279.24	11055	13391	1.58	557.59	1.84E+00	1.76E-01	2.3	
12	0	351.85	497	8484	1.27	702.83	1.55E+00	7.92E-03	33.8	
13	0	391.73	40260	12202	1.65	782.60	1.43E+00	6.42E-01	0.8	
14	8	511.74	4444	8595	3.63	1022.64	1.16E+00	7.08E-02	5.4	2.00E+00
15	8	514.08	25932	6860	1.67	1027.32	1.16E+00	4.13E-01	0.9	
16	0	609.20	627	5337	1.51	1217.58	1.02E+00	9.99E-03	22.2	
17	0	661.64	87500	11111	1.87	1322.47	9.51E-01	1.39E+00	0.4	
18	0	813.84	890	4381	1.85	1626.89	8.06E-01	1.42E-02	14.8	
19	0	897.99	57091	8621	2.05	1795.19	7.44E-01	9.10E-01	0.6	
20	0	1173.18	72596	5046	2.21	2345.56	6.00E-01	1.16E+00	0.5	
21	3	1325.68	1372	2091	3.13	2650.56	5.45E-01	2.19E-02	9.0	7.80E+01
22	3	1332.48	66358	1656	2.59	2664.16	5.43E-01	1.06E+00	0.4	
23	0	1836.00	35064	956	2.69	3671.06	4.27E-01	5.59E-01	0.6	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 4-DEC-2019 10:03:
Detector :
Fit type : 5th Degree Empirical

Geometry : 11FS112019



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-DEC-2019 10:04:41.40
TBE11 31-TP20610B HpGe ******* Aquisition Date/Time: 20-NOV-2019 16:10:13.65

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML CALIBRATION REF DATE 06

Sample ID : 11FS112019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION_PB

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11FS112019
BKGFILE : NOBKG
Real Time : 0 17:27:37.32
Live time : 0 17:25:38.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.46	55308	30134	1.40	91.95	2.70E+00	8.82E-01	0.8	
2	2	66.76	1421	19562	1.56	132.54	3.36E+00	2.27E-02	18.2	1.97E+01
3	2	72.75	4981	17904	1.31	144.54	3.41E+00	7.94E-02	5.0	
4	2	74.99	6576	22644	1.58	149.01	3.42E+00	1.05E-01	4.6	
5	8	84.78	6815	37279	2.85	168.60	3.40E+00	1.09E-01	7.3	6.12E+00
6	8	88.03	62143	15824	1.37	175.10	3.39E+00	9.91E-01	0.5	
7	0	122.05	42225	21536	1.46	243.16	3.06E+00	6.73E-01	0.9	
8	0	136.48	5504	17871	1.42	272.02	2.90E+00	8.77E-02	4.9	
9	0	165.86	27215	19016	1.48	330.79	2.60E+00	4.34E-01	1.2	
10	0	255.12	1804	11318	1.52	509.34	1.96E+00	2.88E-02	10.9	
11	0	279.24	11055	13391	1.58	557.59	1.84E+00	1.76E-01	2.3	
12	0	351.85	497	8484	1.27	702.83	1.55E+00	7.92E-03	33.8	
13	0	391.73	40260	12202	1.65	782.60	1.43E+00	6.42E-01	0.8	
14	8	511.74	4444	8595	3.63	1022.64	1.16E+00	7.08E-02	5.4	2.00E+00
15	8	514.08	25932	6860	1.67	1027.32	1.16E+00	4.13E-01	0.9	
16	0	609.20	627	5337	1.51	1217.58	1.02E+00	9.99E-03	22.2	
17	0	661.64	87500	11111	1.87	1322.47	9.51E-01	1.39E+00	0.4	
18	0	813.84	890	4381	1.85	1626.89	8.06E-01	1.42E-02	14.8	
19	0	897.99	57091	8621	2.05	1795.19	7.44E-01	9.10E-01	0.6	
20	0	1173.18	72596	5046	2.21	2345.56	6.00E-01	1.16E+00	0.5	
21	3	1325.68	1372	2091	3.13	2650.56	5.45E-01	2.19E-02	9.0	7.80E+01
22	3	1332.48	66358	1656	2.59	2664.16	5.43E-01	1.06E+00	0.4	
23	0	1836.00	35064	956	2.69	3671.06	4.27E-01	5.59E-01	0.6	

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
03-PB210	46.50	55308	4.05*	2.703E+00	8.053E+02	8.172E+02	1.59
04-CD109	88.03	62143	3.72*	3.387E+00	7.860E+02	1.018E+03	1.08
05-CO57	122.06	42225	85.51*	3.060E+00	2.572E+01	4.000E+01	1.70
06-CE139	165.85	27215	80.35*	2.602E+00	2.075E+01	4.947E+01	2.36
07-HG203	279.20	11055	81.46*	1.835E+00	1.179E+01	1.533E+02	4.60
08-SN113	391.69	40260	64.90*	1.429E+00	6.921E+01	1.956E+02	1.56
09-SR85	513.99	25932	99.27*	1.160E+00	3.591E+01	2.271E+02	1.77
10-CS137	661.65	87500	85.12*	9.508E-01	1.723E+02	1.742E+02	0.89
11-Y88	898.02	57091	93.40*	7.443E-01	1.309E+02	4.017E+02	1.14

12-CO60	1173.22	72596	100.00	6.004E-01	1.927E+02	2.051E+02	0.91
	1332.49	66358	100.00*	5.429E-01	1.948E+02	2.073E+02	0.82
14-Y88	1836.01	35064	99.38*	4.275E-01	1.315E+02	4.037E+02	1.16

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11FS112019

Acquisition date : 20-NOV-2019 16:10:13

Total number of lines in spectrum	23	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	12	52.17%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
03-PB210	22.26Y	1.01	8.053E+02	8.172E+02	0.130E+02	1.59	
04-CD109	462.90D	1.29	7.860E+02	1.018E+03	0.011E+03	1.08	
05-CO57	270.90D	1.55	2.572E+01	4.000E+01	0.068E+01	1.70	
06-CE139	137.66D	2.38	2.075E+01	4.947E+01	0.117E+01	2.36	
07-HG203	46.61D	13.0	1.179E+01	1.533E+02	0.071E+02	4.60	
08-SN113	115.10D	2.83	6.921E+01	1.956E+02	0.030E+02	1.56	
09-SR85	64.84D	6.32	3.591E+01	2.271E+02	0.040E+02	1.77	
10-CS137	30.17Y	1.01	1.723E+02	1.742E+02	0.015E+02	0.89	
11-Y88	106.65D	3.07	1.309E+02	4.017E+02	0.046E+02	1.14	
12-CO60	5.27Y	1.06	1.948E+02	2.073E+02	0.017E+02	0.82	
14-Y88	106.65D	3.07	1.315E+02	4.037E+02	0.047E+02	1.16	
	Total Activity :		2.384E+03	3.687E+03			
	Grand Total Activity :		2.384E+03	3.687E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11FS112019

Acquisition date : 20-NOV-2019 16:10:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	66.76	1421	19562	1.56	132.54	128	30	2.27E-02	36.3	3.36E+00	
2	72.75	4981	17904	1.31	144.54	128	30	7.94E-02	10.0	3.41E+00	
2	74.99	6576	22644	1.58	149.01	128	30	1.05E-01	9.1	3.42E+00	
8	84.78	6815	37279	2.85	168.60	160	22	1.09E-01	14.6	3.40E+00	
0	136.48	5504	17871	1.42	272.02	267	11	8.77E-02	9.8	2.90E+00	
0	255.12	1804	11318	1.52	509.34	505	9	2.88E-02	21.8	1.96E+00	
0	351.85	497	8484	1.27	702.83	700	9	7.92E-03	67.5	1.55E+00	
8	511.74	4444	8595	3.63	1022.64	1017	18	7.08E-02	10.9	1.16E+00	
0	609.20	627	5337	1.51	1217.58	1213	10	9.99E-03	44.3	1.02E+00	
0	813.84	890	4381	1.85	1626.89	1622	11	1.42E-02	29.6	8.06E-01	
3	1325.68	1372	2091	3.13	2650.56	2640	34	2.19E-02	18.1	5.45E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	23	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	12	52.17%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
03-PB210	22.26Y	1.01	8.053E+02	8.172E+02	0.130E+02	1.59	
04-CD109	462.90D	1.29	7.860E+02	1.018E+03	0.011E+03	1.08	
05-CO57	270.90D	1.55	2.572E+01	4.000E+01	0.068E+01	1.70	
06-CE139	137.66D	2.38	2.075E+01	4.947E+01	0.117E+01	2.36	
07-HG203	46.61D	13.0	1.179E+01	1.533E+02	0.071E+02	4.60	
08-SN113	115.10D	2.83	6.921E+01	1.956E+02	0.030E+02	1.56	
09-SR85	64.84D	6.32	3.591E+01	2.271E+02	0.040E+02	1.77	
10-CS137	30.17Y	1.01	1.723E+02	1.742E+02	0.015E+02	0.89	
11-Y88	106.65D	3.07	1.309E+02	4.017E+02	0.046E+02	1.14	
12-CO60	5.27Y	1.06	1.939E+02	2.063E+02	0.013E+02	0.61	
14-Y88	106.65D	3.07	1.315E+02	4.037E+02	0.047E+02	1.16	
			---------	---------			
	Total Activity :		2.383E+03	3.686E+03			

Grand Total Activity : 2.383E+03 3.686E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Activity	Act error	MDA	MDA error	Act/MDA

Nuclide	(BQ/TOTAL)		(BQ/TOTAL)		
03-PB210	8.172E+02	1.300E+01	8.917E+00	0.000E+00	91.648
04-CD109	1.018E+03	1.100E+01	9.847E+00	0.000E+00	103.354
05-CO57	4.000E+01	6.807E-01	5.481E-01	0.000E+00	72.984
06-CE139	4.947E+01	1.169E+00	9.969E-01	0.000E+00	49.618
07-HG203	1.533E+02	7.059E+00	6.771E+00	0.000E+00	22.647
08-SN113	1.956E+02	3.046E+00	2.145E+00	0.000E+00	91.207
09-SR85	2.271E+02	4.030E+00	3.485E+00	0.000E+00	65.162
10-CS137	1.742E+02	1.549E+00	7.599E-01	0.000E+00	229.241
11-Y88	4.017E+02	4.596E+00	2.531E+00	0.000E+00	158.757
12-CO60	2.063E+02	1.256E+00	5.563E-01	0.000E+00	370.833
14-Y88	4.037E+02	4.693E+00	1.166E+00	0.000E+00	346.327

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-CO57	1.905E+04		3.284E+02	6.422E+02	0.000E+00	29.666
02-CE139	2.347E+01		5.018E+00	8.646E+00	0.000E+00	2.714

```
A,11FS112019       ,12/04/2019 10:04,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,11FS112019       ,CALIBRATION_PB      ,12/04/2019 10:03,11FS112019
C,03-PB210,YES,   8.172E+02,   1.300E+01,   8.917E+00,,   91.648
C,04-CD109,YES,   1.018E+03,   1.100E+01,   9.847E+00,,  103.354
C,05-CO57 ,YES,   4.000E+01,   6.807E-01,   5.481E-01,,   72.984
C,06-CE139,YES,   4.947E+01,   1.169E+00,   9.969E-01,,   49.618
C,07-HG203,YES,   1.533E+02,   7.059E+00,   6.771E+00,,   22.647
C,08-SN113,YES,   1.956E+02,   3.046E+00,   2.145E+00,,   91.207
C,09-SR85 ,YES,   2.271E+02,   4.030E+00,   3.485E+00,,   65.162
C,10-CS137,YES,   1.742E+02,   1.549E+00,   7.599E-01,,  229.241
C,11-Y88  ,YES,   4.017E+02,   4.596E+00,   2.531E+00,,  158.757
C,12-CO60 ,YES,   2.063E+02,   1.256E+00,   5.563E-01,,  370.833
C,14-Y88  ,YES,   4.037E+02,   4.693E+00,   1.166E+00,,  346.327
C,01-CO57 ,NO ,   1.905E+04,   3.284E+02,   6.422E+02,,   29.666
C,02-CE139,NO ,   2.347E+01,   5.018E+00,   8.646E+00,,    2.714
```

E & Z 1921-50-1 Mixed Gamma
4/1/17 12:00 PM

3.5 Liter Marinelli

		Orig. Wt	5.1827	Volume	50				
		Wt Used	4.2308	Aliquot	7.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Am-241	432.2y	59.5	378.3		35.90%	624.15	224.07	607.0	-2.75%
Cd-109	462.9d	88.0	521.3		3.72%	8300.33	308.77	8620.0	3.85%
Co-57	271.8d	122.1	473.5		85.51%	327.98	280.46	316.0	-3.65%
Ce-139	137.64d	165.9	562.6		80.35%	414.73	333.23	416.0	0.31%
Hg-203	46.6d	279.2	1735		77.30%	1329.45	1027.66		
Sn-113	115.09d	391.7	1711		64.90%	1561.55	1013.45	1638.0	4.90%
Sr-85	64.849	514.0	3383		98.40%	2036.37	2003.79		
Cs-137	30.17y	661.6	2077		85.12%	1445.29	1230.23	1424.0	-1.47%
Y-88	106.65d	898.0	5241		93.40%	3323.67	3104.31	3206.0	-3.54%
Co-60	5.27y	1173.2	2889		100.00%	1711.19	1711.19	1723.0	0.69%
Co-60	5.27y	1332.5	2892		100.00%	1712.97	1712.97	1745.0	1.87%
Y-88	106.65d	1836.0	5542		99.38%	3303.07	3282.59	3258.0	-1.36%

Eff. Name: **1335L032619**

Analyst: KOJ

KOJ 4/3/19

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-APR-2019 09:54:27.76
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-MAR-2019 09:13:44.29

LIMS No., Customer Name, Client ID: 3.5L MARINELLI E&Z 1921-50-1

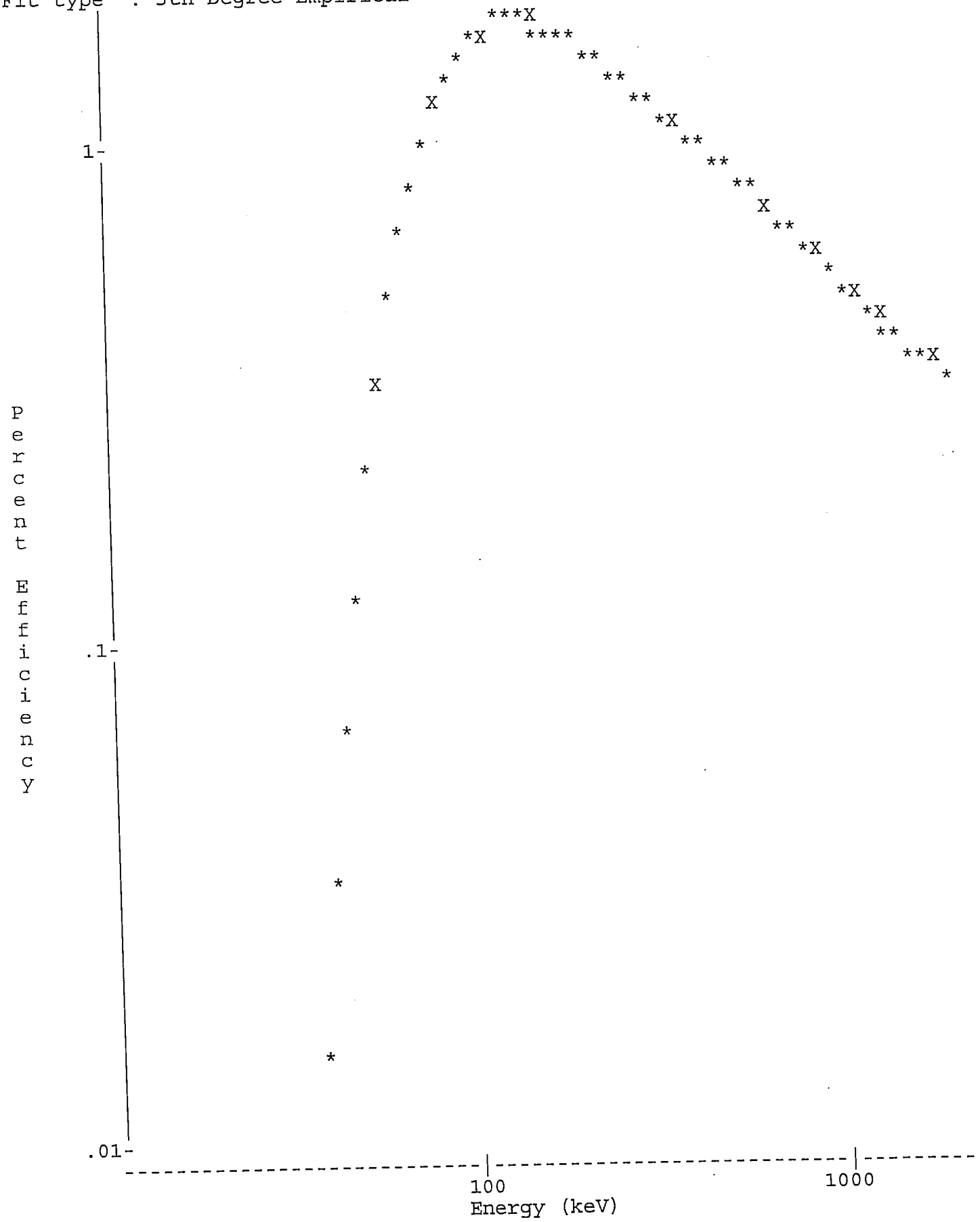
Sample ID : 1335L032619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 5.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-APR-2017 12:00:00.0
Geometry : 1335L032619
BKGFILE : NOBKG
Real Time : 1 04:06:59.61
Live time : 1 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	8	58.43	6286	123360	1.76	116.87	2.90E-01	6.24E-02	10.9	2.38E+01
2	8	59.58	70520	67284	0.86	119.17	3.22E-01	7.00E-01	0.7	
3	2	72.88	4212	86152	1.03	145.73	7.46E-01	4.18E-02	11.1	9.01E-01
4	2	74.99	8616	86106	0.97	149.96	8.16E-01	8.55E-02	5.5	
5	10	85.50	11981	180599	2.27	170.95	1.14E+00	1.19E-01	7.6	2.72E+01
6	10	88.06	131831	87449	0.93	176.06	1.20E+00	1.31E+00	0.5	
7	1	92.69	1633	97921	0.88	185.32	1.32E+00	1.62E-02	31.9	9.98E-01
8	1	122.06	72982	134052	0.93	244.02	1.71E+00	7.24E-01	1.0	1.46E+00
9	1	136.43	9557	100148	0.98	272.73	1.76E+00	9.48E-02	5.6	8.09E-01
10	1	165.82	15173	103275	0.96	331.47	1.73E+00	1.51E-01	3.8	9.83E-01
11	1	186.32	1491	79655	1.15	372.44	1.66E+00	1.48E-02	30.0	6.43E+00
12	1	310.46	1609	56054	1.42	620.58	1.25E+00	1.60E-02	24.5	1.66E+00
13	1	391.69	14680	59337	1.22	782.97	1.08E+00	1.46E-01	3.1	1.09E+00
14	1	510.74	1860	34882	1.43	1021.03	9.02E-01	1.85E-02	16.8	3.07E+00
15	1	661.53	877619	59016	1.38	1322.63	7.52E-01	8.71E+00	0.1	2.35E+01
16	1	821.66	1527	27499	1.72	1642.99	6.38E-01	1.51E-02	19.8	8.72E-01
17	1	897.96	16170	43048	1.53	1795.68	5.94E-01	1.60E-01	2.7	1.62E+00
18	1	1173.32	639060	32178	1.72	2346.88	4.78E-01	6.34E+00	0.1	2.91E+01
19	1	1332.59	584766	12500	1.81	2665.84	4.32E-01	5.80E+00	0.1	3.26E+01
20	1	1460.91	1202	1730	1.83	2922.88	4.03E-01	1.19E-02	7.5	1.43E+00
21	1	1764.40	305	800	2.16	3531.04	3.58E-01	3.03E-03	19.5	1.21E+00
22	1	1835.94	10354	1247	2.08	3674.45	3.52E-01	1.03E-01	1.3	1.63E+00
23	1	1951.25	171	555	2.10	3905.66	3.44E-01	1.70E-03	26.9	2.30E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 3-APR-2019 09:54:
Detector :
Fit type : 5th Degree Empirical

Geometry : 1335L032619



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-APR-2019 09:57:28.97
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-MAR-2019 09:13:44.29

LIMS No., Customer Name, Client ID: 3.5L MARINELLI E&Z 1921-50-1

Sample ID : 1335L032619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 5.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-APR-2017 12:00:00.0
Geometry : 1335L032619
BKGFILE : 13BG032919MT
Real Time : 1 04:06:59.61
Live time : 1 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	8	58.43	6286	123360	1.76	116.87	2.90E-01	6.24E-02	10.9	2.38E+01
2	8	59.58	70520	67284	0.86	119.17	3.22E-01	7.00E-01	0.7	
3	2	72.88*	3660	86152	1.03	145.73	7.46E-01	3.63E-02	12.9	9.01E-01
4	2	74.99*	7332	86106	0.97	149.96	8.16E-01	7.27E-02	6.5	
5	10	85.50*	11160	180599	2.27	170.95	1.14E+00	1.11E-01	8.1	2.72E+01
6	10	88.06*	131476	87449	0.93	176.06	1.20E+00	1.30E+00	0.5	
7	1	92.69*	56	97921	0.88	185.32	1.32E+00	5.52E-04	942.6	9.98E-01
8	1	122.06	72982	134052	0.93	244.02	1.71E+00	7.24E-01	1.0	1.46E+00
9	1	136.43	9557	100148	0.98	272.73	1.76E+00	9.48E-02	5.6	8.09E-01
10	1	165.82	15173	103275	0.96	331.47	1.73E+00	1.51E-01	3.8	9.83E-01
11	1	186.32*	325	79655	1.15	372.44	1.66E+00	3.22E-03	138.7	6.43E+00
12	1	310.46	1609	56054	1.42	620.58	1.25E+00	1.60E-02	24.5	1.66E+00
13	1	391.69	14680	59337	1.22	782.97	1.08E+00	1.46E-01	3.1	1.09E+00
14	1	661.53*	877571	59016	1.38	1322.63	7.52E-01	8.71E+00	0.1	2.35E+01
15	1	821.66	1527	27499	1.72	1642.99	6.38E-01	1.51E-02	19.8	8.72E-01
16	1	897.96	16170	43048	1.53	1795.68	5.94E-01	1.60E-01	2.7	1.62E+00
17	1	1173.32	639060	32178	1.72	2346.88	4.78E-01	6.34E+00	0.1	2.91E+01
18	1	1332.59	584766	12500	1.81	2665.84	4.32E-01	5.80E+00	0.1	3.26E+01
19	1	1460.91*	41	1730	1.83	2922.88	4.03E-01	4.11E-04	230.0	1.43E+00
20	1	1764.40*	117	800	2.16	3531.04	3.58E-01	1.16E-03	53.9	1.21E+00
21	1	1835.94	10354	1247	2.08	3674.45	3.52E-01	1.03E-01	1.3	1.63E+00
22	1	1951.25	171	555	2.10	3905.66	3.44E-01	1.70E-03	26.9	2.30E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
01-AM241	59.54	70520	35.90*	3.222E-01	6.049E+02	6.068E+02	1.34
02-CD109	88.03	131476	3.72*	1.204E+00	2.913E+03	8.620E+03	0.91
03-CO57	122.06	72982	85.51*	1.709E+00	4.954E+01	3.162E+02	1.96
04-CE139	165.85	15173	80.35*	1.727E+00	1.085E+01	4.165E+02	7.52
06-SN113	391.69	14680	64.90*	1.075E+00	2.087E+01	1.638E+03	6.21
08-CS137	661.65	877571	85.12*	7.516E-01	1.361E+03	1.424E+03	0.25
09-Y88	898.02	16170	93.40*	5.941E-01	2.891E+01	3.206E+03	5.37
10-CO60	1173.22	639060	100.00	4.776E-01	1.327E+03	1.723E+03	0.28

Summary of Nuclide Activity
Sample ID : 1335L032619

Acquisition date : 26-MAR-2019 09:13:44

Total number of lines in spectrum	22	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	10	45.45%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
01-AM241	432.70Y	1.00	6.049E+02	6.068E+02	0.082E+02	1.34	
02-CD109	462.90D	2.96	2.913E+03	8.620E+03	0.078E+03	0.91	
03-CO57	270.90D	6.38	4.954E+01	3.162E+02	0.062E+02	1.96	
04-CE139	137.66D	38.4	1.085E+01	4.165E+02	0.313E+02	7.52	
06-SN113	115.10D	78.5	2.087E+01	1.638E+03	0.102E+03	6.21	
08-CS137	30.17Y	1.05	1.361E+03	1.424E+03	0.004E+03	0.25	
09-Y88	106.65D	111.	2.891E+01	3.206E+03	0.172E+03	5.37	
10-CO60	5.27Y	1.30	1.344E+03	1.745E+03	0.005E+03	0.28	
12-Y88	106.65D	111.	2.939E+01	3.258E+03	0.082E+03	2.51	
			---------	---------			
	Total Activity :		6.363E+03	2.123E+04			

Grand Total Activity : 6.363E+03 2.123E+04

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 1335L032619 Acquisition date : 26-MAR-2019 09:13:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
8	58.43	6286	123360	1.76	116.87	113	10	6.24E-02	21.8	2.90E-01	
2	72.88	3660	86152	1.03	145.73	143	11	3.63E-02	25.7	7.46E-01	
2	74.99	7332	86106	0.97	149.96	143	11	7.27E-02	13.0	8.16E-01	
10	85.50	11160	180599	2.27	170.95	165	16	1.11E-01	16.3	1.14E+00	
1	92.69	56	97921	0.88	185.32	183	7	5.52E-04	****	1.32E+00	
1	136.43	9557	100148	0.98	272.73	270	7	9.48E-02	11.2	1.76E+00	
1	186.32	325	79655	1.15	372.44	370	6	3.22E-03	****	1.66E+00	
1	310.46	1609	56054	1.42	620.58	618	7	1.60E-02	49.1	1.25E+00	
1	821.66	1527	27499	1.72	1642.99	1639	9	1.51E-02	39.5	6.38E-01	
1	1460.91	41	1730	1.83	2922.88	2917	12	4.11E-04	****	4.03E-01	
1	1764.40	117	800	2.16	3531.04	3527	12	1.16E-03	****	3.58E-01	
1	1951.25	171	555	2.10	3905.66	3901	10	1.70E-03	53.8	3.44E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	22	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	10	45.45%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
01-AM241	432.70Y	1.00	6.049E+02	6.068E+02	0.082E+02	1.34	
02-CD109	462.90D	2.96	2.913E+03	8.620E+03	0.078E+03	0.91	
03-CO57	270.90D	6.38	4.954E+01	3.162E+02	0.062E+02	1.96	
04-CE139	137.66D	38.4	1.085E+01	4.165E+02	0.313E+02	7.52	
06-SN113	115.10D	78.5	2.087E+01	1.638E+03	0.102E+03	6.21	
08-CS137	30.17Y	1.05	1.361E+03	1.424E+03	0.004E+03	0.25	
09-Y88	106.65D	111.	2.891E+01	3.206E+03	0.172E+03	5.37	
10-CO60	5.27Y	1.30	1.344E+03	1.745E+03	0.005E+03	0.28	
12-Y88	106.65D	111.	2.939E+01	3.258E+03	0.082E+03	2.51	
			---------	---------			
	Total Activity :		6.363E+03	2.123E+04			

Grand Total Activity : 6.363E+03 2.123E+04

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.068E+02	8.159E+00	1.030E+01	0.000E+00	58.899
02-CD109	8.620E+03	7.843E+01	8.516E+01	0.000E+00	101.225
03-CO57	3.162E+02	6.188E+00	5.825E+00	0.000E+00	54.282
04-CE139	4.165E+02	3.131E+01	3.557E+01	0.000E+00	11.708

06-SN113	1.638E+03	1.017E+02	1.149E+02	0.000E+00	14.246
08-CS137	1.424E+03	3.524E+00	1.321E+00	0.000E+00	1077.910
09-Y88	3.206E+03	1.720E+02	1.702E+02	0.000E+00	18.841
10-CO60	1.745E+03	4.862E+00	1.087E+00	0.000E+00	1605.295
12-Y88	3.258E+03	8.192E+01	4.289E+01	0.000E+00	75.968

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
05-HG203	-6.254E+03		3.181E+04	5.066E+04	0.000E+00	-0.123
07-SR85	-4.464E+03		1.442E+03	2.346E+03	0.000E+00	-1.903

```
A,1335L032619      ,04/03/2019 09:57,04/01/2017 12:00,   1.000E+00,3.5L MARINELLI
B,1335L032619      ,CALIBRATION          ,04/03/2019 09:54,1335L032619
C,01-AM241,YES,   6.068E+02,   8.159E+00,   1.030E+01,,   58.899
C,02-CD109,YES,   8.620E+03,   7.843E+01,   8.516E+01,,  101.225
C,03-CO57 ,YES,   3.162E+02,   6.188E+00,   5.825E+00,,   54.282
C,04-CE139,YES,   4.165E+02,   3.131E+01,   3.557E+01,,   11.708
C,06-SN113,YES,   1.638E+03,   1.017E+02,   1.149E+02,,   14.246
C,08-CS137,YES,   1.424E+03,   3.524E+00,   1.321E+00,, 1077.910
C,09-Y88  ,YES,   3.206E+03,   1.720E+02,   1.702E+02,,   18.841
C,10-CO60 ,YES,   1.745E+03,   4.862E+00,   1.087E+00,, 1605.295
C,12-Y88  ,YES,   3.258E+03,   8.192E+01,   4.289E+01,,   75.968
C,05-HG203,NO ,  -6.254E+03,   3.181E+04,   5.066E+04,,   -0.123
C,07-SR85 ,NO ,  -4.464E+03,   1.442E+03,   2.346E+03,,   -1.903
```

	1332.49	584766	100.00*	4.316E-01	1.344E+03	1.745E+03	0.28
12-Y88	1836.01	10354	99.38*	3.517E-01	2.939E+01	3.258E+03	2.51

Flag: "*" = Keyline

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.38%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.2	-4.39%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.5	-0.07%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	397.7	-2.10%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.9	0.62%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.8	-0.22%

Eff. Name: **13S50122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:37:26.43
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

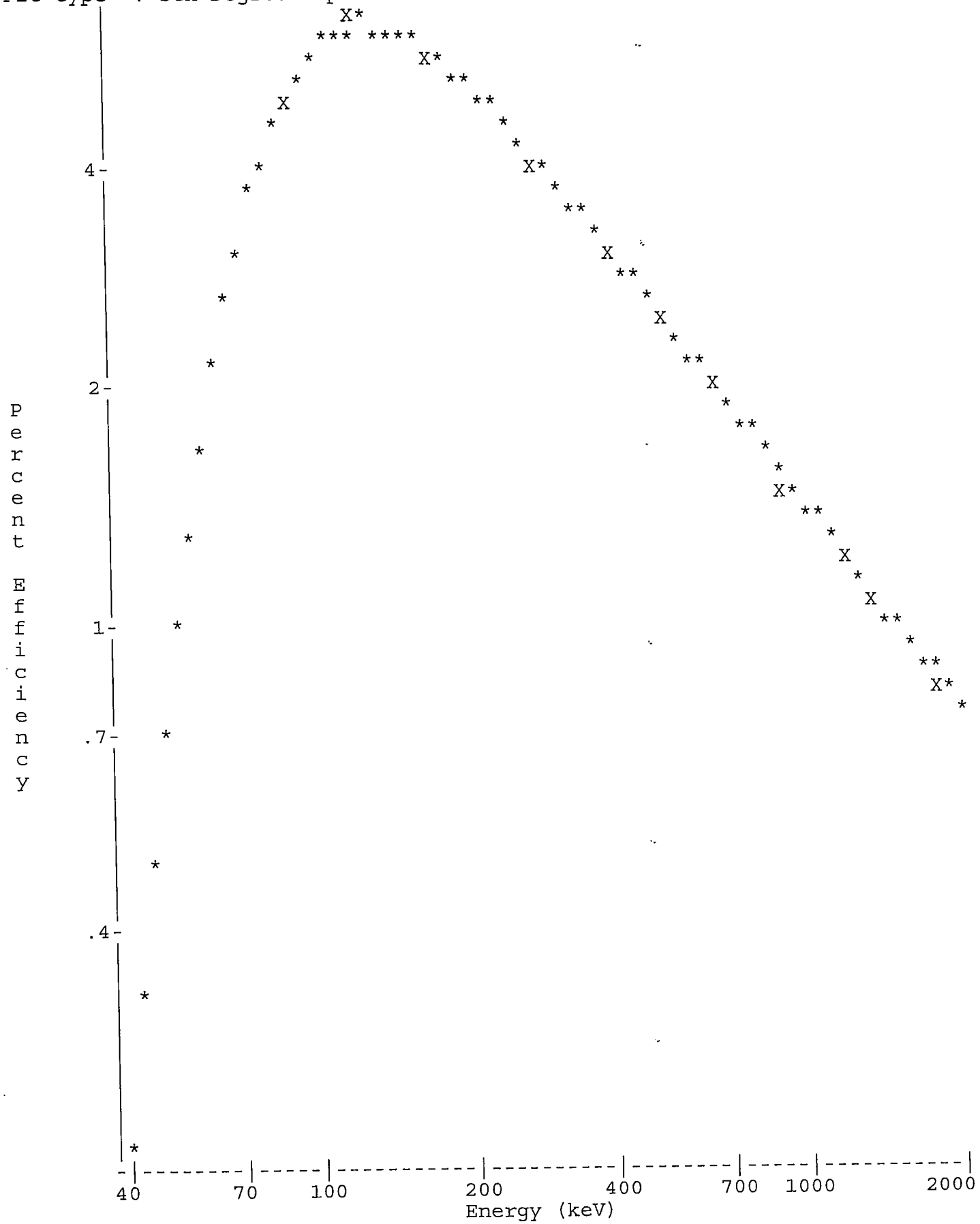
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09	17288	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 26-DEC-2019 12:37
Detector :
Geometry : 13S50122019
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:38:31.00
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09*	17258	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17258	3.72*	4.962E+00	7.420E+02	1.004E+03	2.50
03-CO57	122.06	15662	85.51*	6.091E+00	2.387E+01	4.002E+01	2.41
04-CE139	165.85	10655	80.35*	5.732E+00	1.836E+01	5.077E+01	3.32
05-HG203	279.20	3091	81.46*	4.070E+00	7.398E+00	1.492E+02	7.85
06-SN113	391.69	14314	64.90*	3.101E+00	5.644E+01	1.905E+02	2.51
07-SR85	513.99	8581	99.27*	2.479E+00	2.767E+01	2.398E+02	3.49
08-CS137	661.65	37318	85.12*	2.004E+00	1.736E+02	1.759E+02	1.24
09-Y88	898.02	19331	93.40*	1.535E+00	1.070E+02	3.977E+02	1.77
10-CO60	1173.22	28896	100.00	1.208E+00	1.898E+02	2.041E+02	1.34
	1332.49	25910	100.00*	1.079E+00	1.905E+02	2.049E+02	1.35
12-Y88	1836.01	11314	99.38*	8.338E-01	1.084E+02	4.028E+02	2.03

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S50122019 Acquisition date : 20-DEC-2019 10:22:33

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.905E+02	2.049E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
			---------	---------			
	Total Activity :		1.455E+03	2.856E+03			

Grand Total Activity : 1.455E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S50122019 Acquisition date : 20-DEC-2019 10:22:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.58	1425	5698	1.09	93.19	89	9	1.13E-01	19.8	5.94E-01	
1	136.46	1921	4498	0.98	272.76	268	9	1.52E-01	13.4	6.08E+00	
1	255.08	790	3264	1.12	509.78	506	8	6.27E-02	26.0	4.36E+00	
1	813.79	347	1406	1.61	1626.95	1623	9	2.75E-02	40.5	1.67E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.902E+02	2.045E+02	0.019E+02	0.95	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
			---------	---------			
	Total Activity :		1.455E+03	2.855E+03			

Grand Total Activity : 1.455E+03 2.855E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	2.508E+01	1.634E+01	0.000E+00	61.461
03-CO57	4.002E+01	9.649E-01	6.597E-01	0.000E+00	60.658
04-CE139	5.077E+01	1.688E+00	1.174E+00	0.000E+00	43.250
05-HG203	1.492E+02	1.171E+01	1.177E+01	0.000E+00	12.672
06-SN113	1.905E+02	4.790E+00	3.019E+00	0.000E+00	63.113
07-SR85	2.398E+02	8.369E+00	6.343E+00	0.000E+00	37.808
08-CS137	1.759E+02	2.176E+00	9.851E-01	0.000E+00	178.514
09-Y88	3.977E+02	7.037E+00	4.082E+00	0.000E+00	97.440
10-CO60	2.045E+02	1.950E+00	9.557E-01	0.000E+00	214.000
12-Y88	4.028E+02	8.185E+00	2.205E+00	0.000E+00	182.657

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.681E-02		1.711E+00	2.719E+00	0.000E+00	0.025

```
A,13S50122019     ,12/26/2019 12:38,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,13S50122019     ,CALIBRATION         ,12/26/2019 12:37,13S50122019
C,02-CD109,YES,   1.004E+03,   2.508E+01,   1.634E+01,,   61.461
C,03-CO57 ,YES,   4.002E+01,   9.649E-01,   6.597E-01,,   60.658
C,04-CE139,YES,   5.077E+01,   1.688E+00,   1.174E+00,,   43.250
C,05-HG203,YES,   1.492E+02,   1.171E+01,   1.177E+01,,   12.672
C,06-SN113,YES,   1.905E+02,   4.790E+00,   3.019E+00,,   63.113
C,07-SR85 ,YES,   2.398E+02,   8.369E+00,   6.343E+00,,   37.808
C,08-CS137,YES,   1.759E+02,   2.176E+00,   9.851E-01,,  178.514
C,09-Y88  ,YES,   3.977E+02,   7.037E+00,   4.082E+00,,   97.440
C,10-CO60 ,YES,   2.045E+02,   1.950E+00,   9.557E-01,,  214.000
C,12-Y88  ,YES,   4.028E+02,   8.185E+00,   2.205E+00,,  182.657
C,01-AM241,NO ,   6.681E-02,   1.711E+00,   2.719E+00,,    0.025
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.59%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.95%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	150.0	-3.87%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.0	-2.85%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.2	-2.96%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.5	1.02%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.7	0.52%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **14S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:24:05.41
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

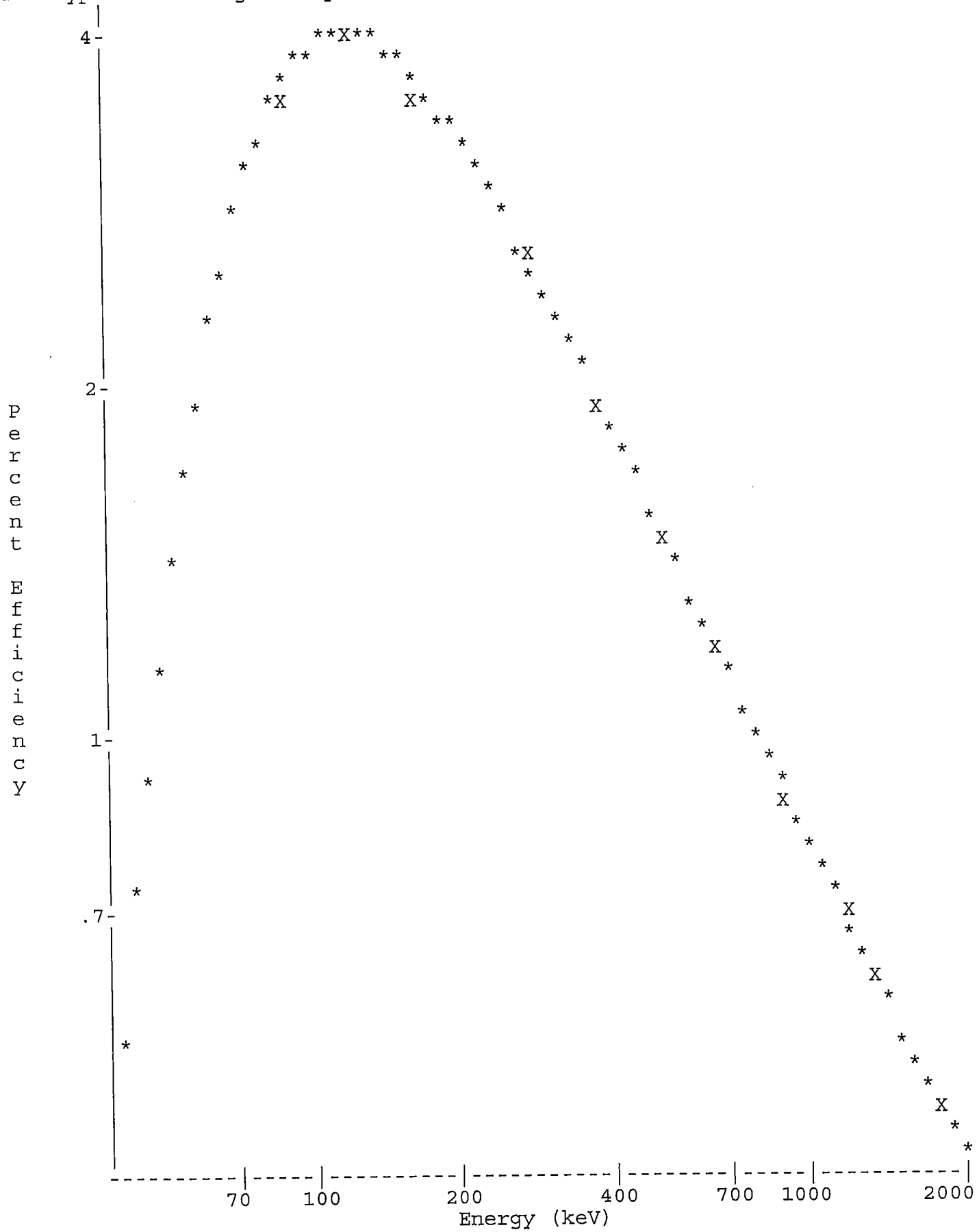
Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04	32058	12538	0.83	172.85	3.58E+00	9.89E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:24
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S100121919



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:25:19.21
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04*	31996	12538	0.83	172.85	3.58E+00	9.88E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	31996	3.72*	3.583E+00	7.409E+02	1.002E+03	1.73
03-CO57	122.06	26983	85.51*	4.020E+00	2.422E+01	4.055E+01	1.86
04-CE139	165.85	17412	80.35*	3.689E+00	1.813E+01	4.997E+01	2.69
05-HG203	279.20	5080	81.46*	2.562E+00	7.514E+00	1.500E+02	6.17
06-SN113	391.69	22811	64.90*	1.900E+00	5.709E+01	1.919E+02	1.95
07-SR85	513.99	13219	99.27*	1.480E+00	2.778E+01	2.390E+02	2.65
08-CS137	661.65	56112	85.12*	1.170E+00	1.739E+02	1.761E+02	1.00
09-Y88	898.02	28414	93.40*	8.814E-01	1.065E+02	3.942E+02	1.67
10-CO60	1173.22	42734	100.00	6.902E-01	1.911E+02	2.055E+02	1.12
	1332.49	37990	100.00*	6.159E-01	1.904E+02	2.047E+02	1.12
12-Y88	1836.01	16457	99.38*	4.701E-01	1.087E+02	4.024E+02	1.68

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.904E+02	2.047E+02	0.023E+02	1.12	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.455E+03	2.850E+03			

Grand Total Activity : 1.455E+03 2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.59	4343	10904	0.86	89.98	85	10	1.34E-01	9.5	8.97E-01	
1	136.46	3364	8189	0.88	269.65	266	9	1.04E-01	10.3	3.96E+00	
1	255.15	1158	6685	1.01	506.97	503	9	3.58E-02	26.1	2.76E+00	
1	814.14	447	2399	1.31	1624.80	1621	9	1.38E-02	40.6	9.65E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.907E+02	2.051E+02	0.016E+02	0.79	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
	Total Activity :		1.456E+03	2.851E+03			

Grand Total Activity : 1.456E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	1.735E+01	1.123E+01	0.000E+00	89.212
03-CO57	4.055E+01	7.526E-01	4.988E-01	0.000E+00	81.300
04-CE139	4.997E+01	1.344E+00	9.308E-01	0.000E+00	53.682
05-HG203	1.500E+02	9.263E+00	8.996E+00	0.000E+00	16.675
06-SN113	1.919E+02	3.750E+00	2.454E+00	0.000E+00	78.204
07-SR85	2.390E+02	6.325E+00	5.015E+00	0.000E+00	47.655

08-CS137	1.761E+02	1.758E+00	7.913E-01	0.000E+00	222.526
09-Y88	3.942E+02	6.575E+00	3.397E+00	0.000E+00	116.066
10-CO60	2.051E+02	1.624E+00	8.097E-01	0.000E+00	253.272
12-Y88	4.024E+02	6.761E+00	1.762E+00	0.000E+00	228.349

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.911E-03		8.383E-01	1.367E+00	0.000E+00	0.005

```
A,14S100121919    ,12/26/2019 10:25,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,14S100121919    ,CALIBRATION          ,12/26/2019 10:24,14S100121919
C,02-CD109,YES,   1.002E+03,   1.735E+01,   1.123E+01,,    89.212
C,03-CO57 ,YES,   4.055E+01,   7.526E-01,   4.988E-01,,    81.300
C,04-CE139,YES,   4.997E+01,   1.344E+00,   9.308E-01,,    53.682
C,05-HG203,YES,   1.500E+02,   9.263E+00,   8.996E+00,,    16.675
C,06-SN113,YES,   1.919E+02,   3.750E+00,   2.454E+00,,    78.204
C,07-SR85 ,YES,   2.390E+02,   6.325E+00,   5.015E+00,,    47.655
C,08-CS137,YES,   1.761E+02,   1.758E+00,   7.913E-01,,   222.526
C,09-Y88  ,YES,   3.942E+02,   6.575E+00,   3.397E+00,,   116.066
C,10-CO60 ,YES,   2.051E+02,   1.624E+00,   8.097E-01,,   253.272
C,12-Y88  ,YES,   4.024E+02,   6.761E+00,   1.762E+00,,   228.349
C,01-AM241,NO ,   6.911E-03,   8.383E-01,   1.367E+00,,     0.005
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

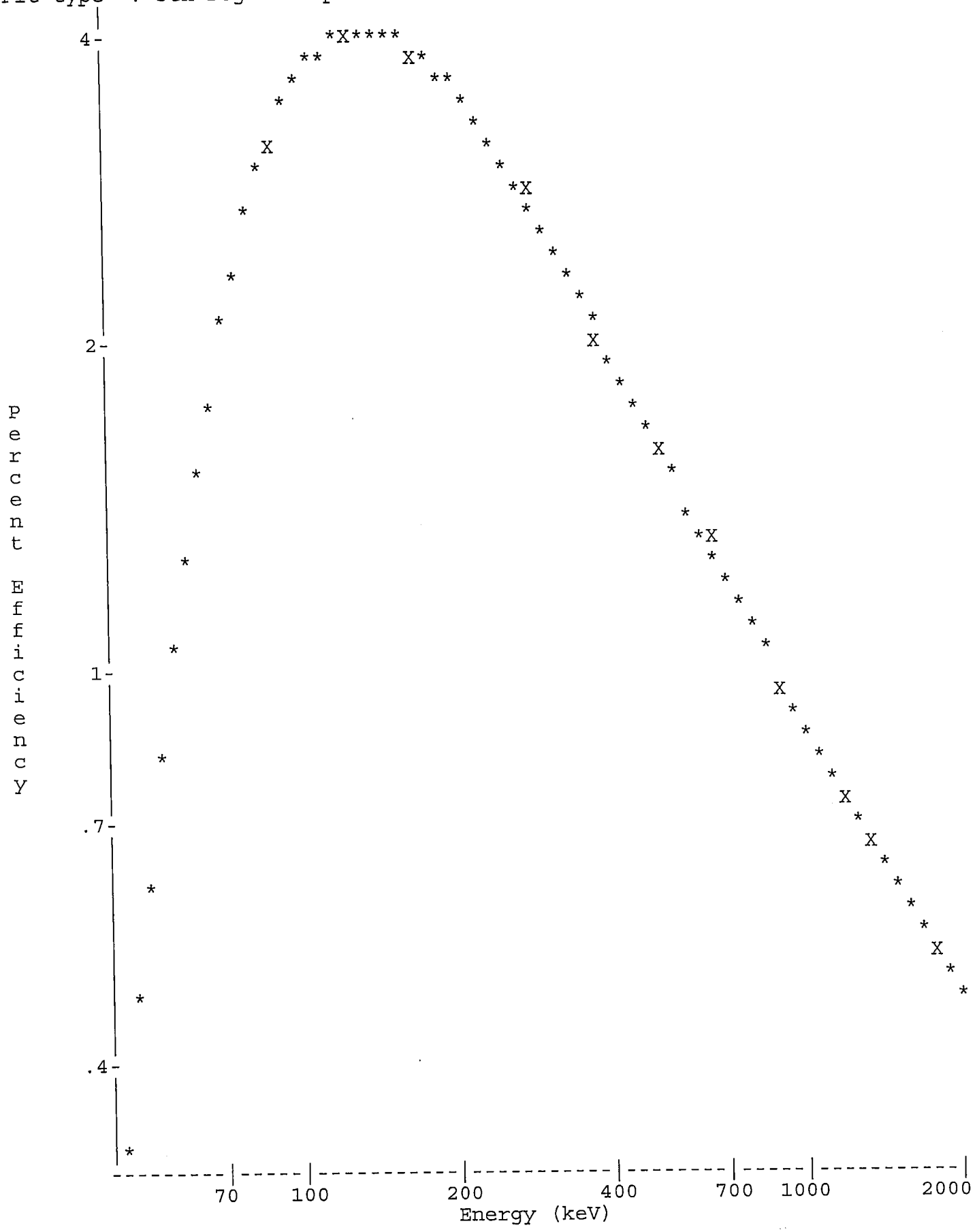
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity :	1.465E+03	2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

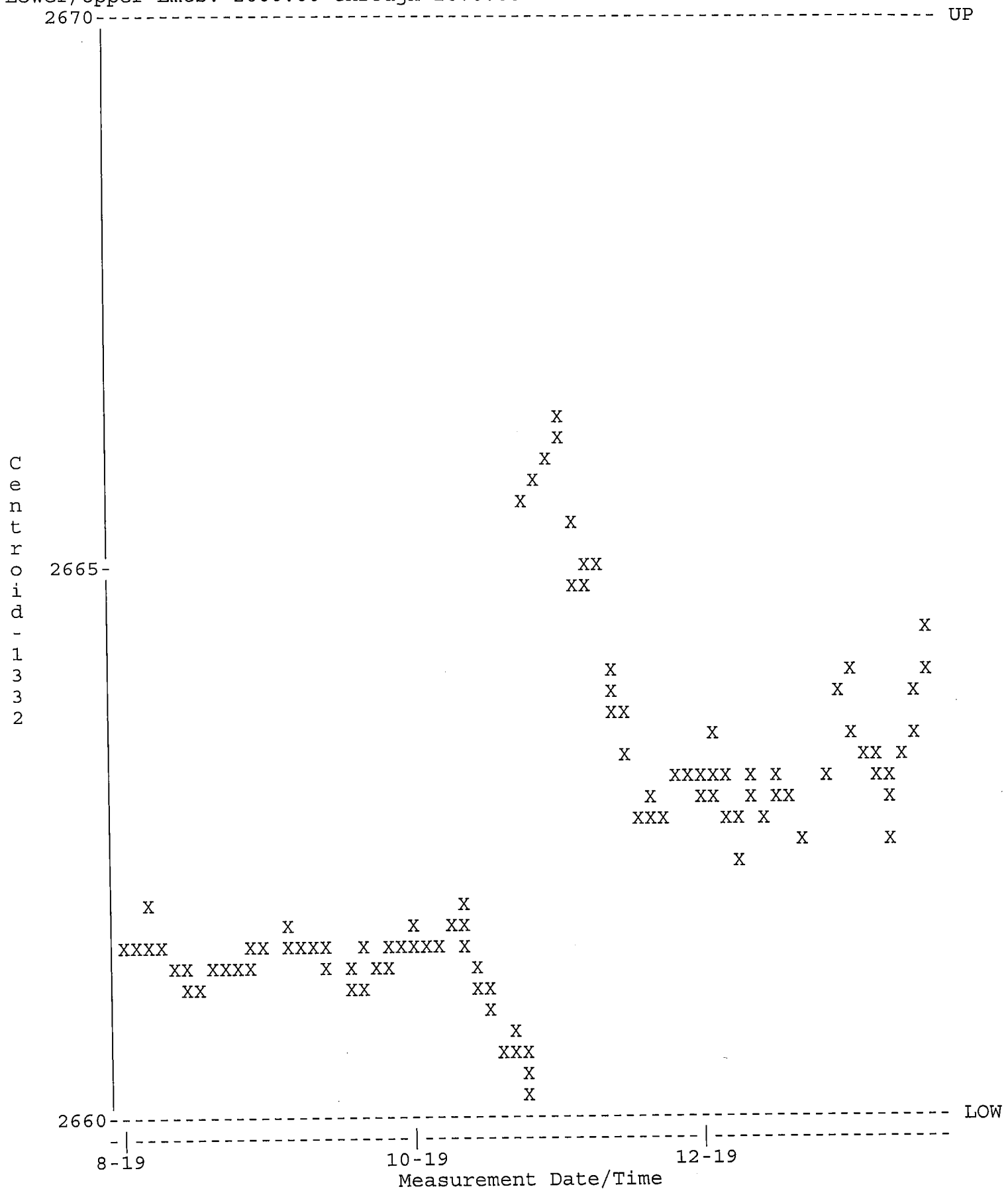
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION          ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,   -0.138
```

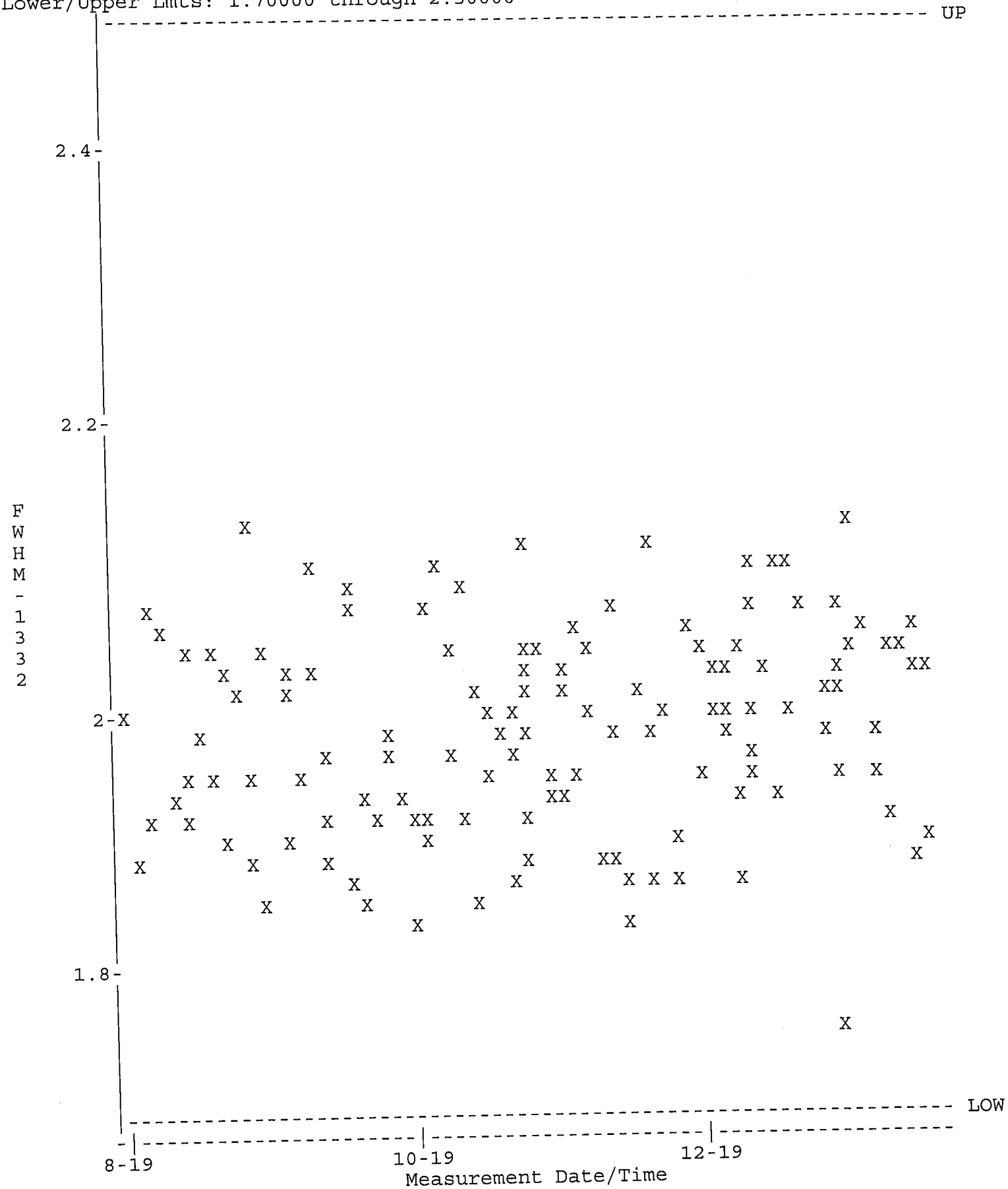
GAMMA SPECTROSCOPY

Daily Source and Background Checks

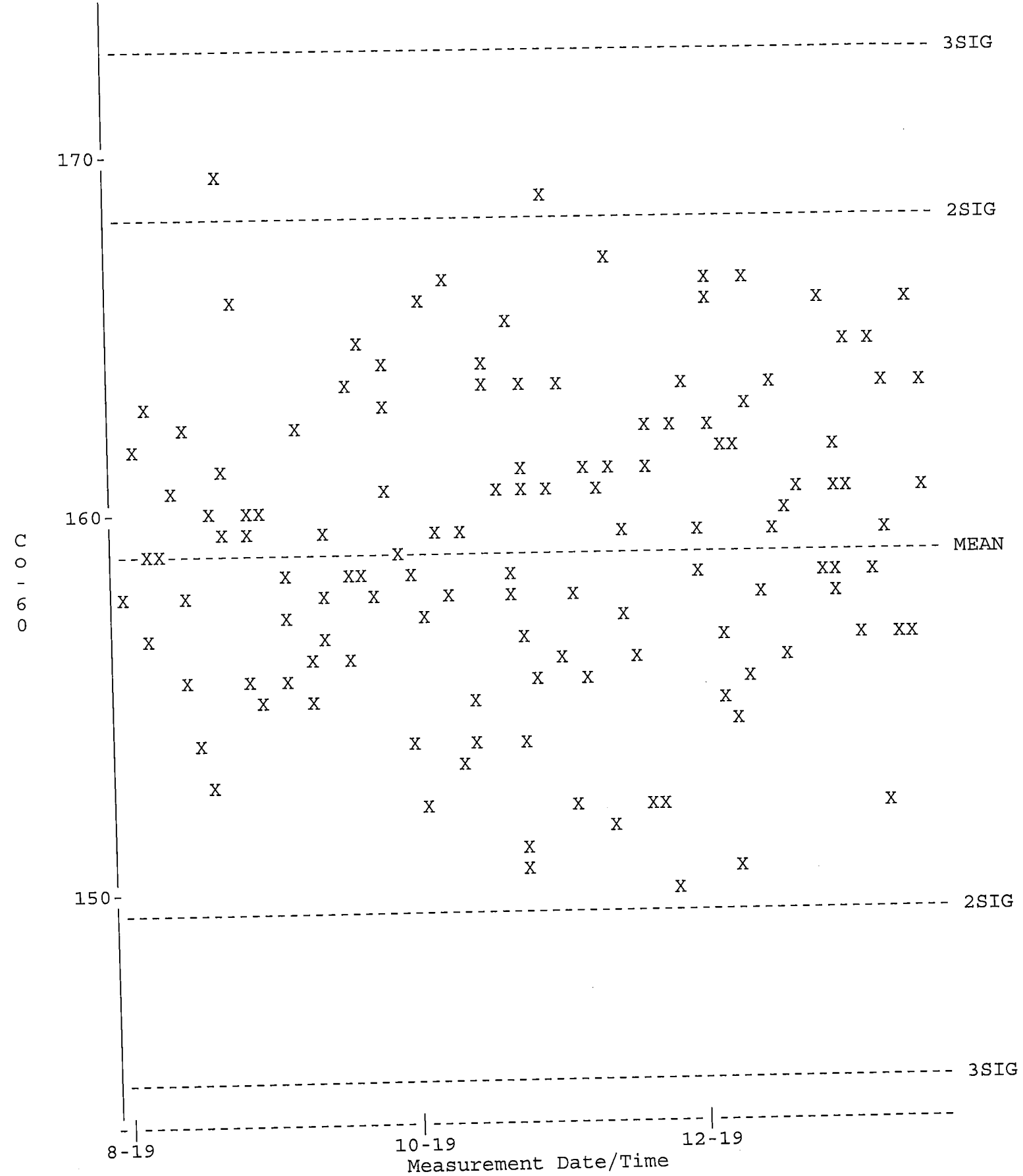
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



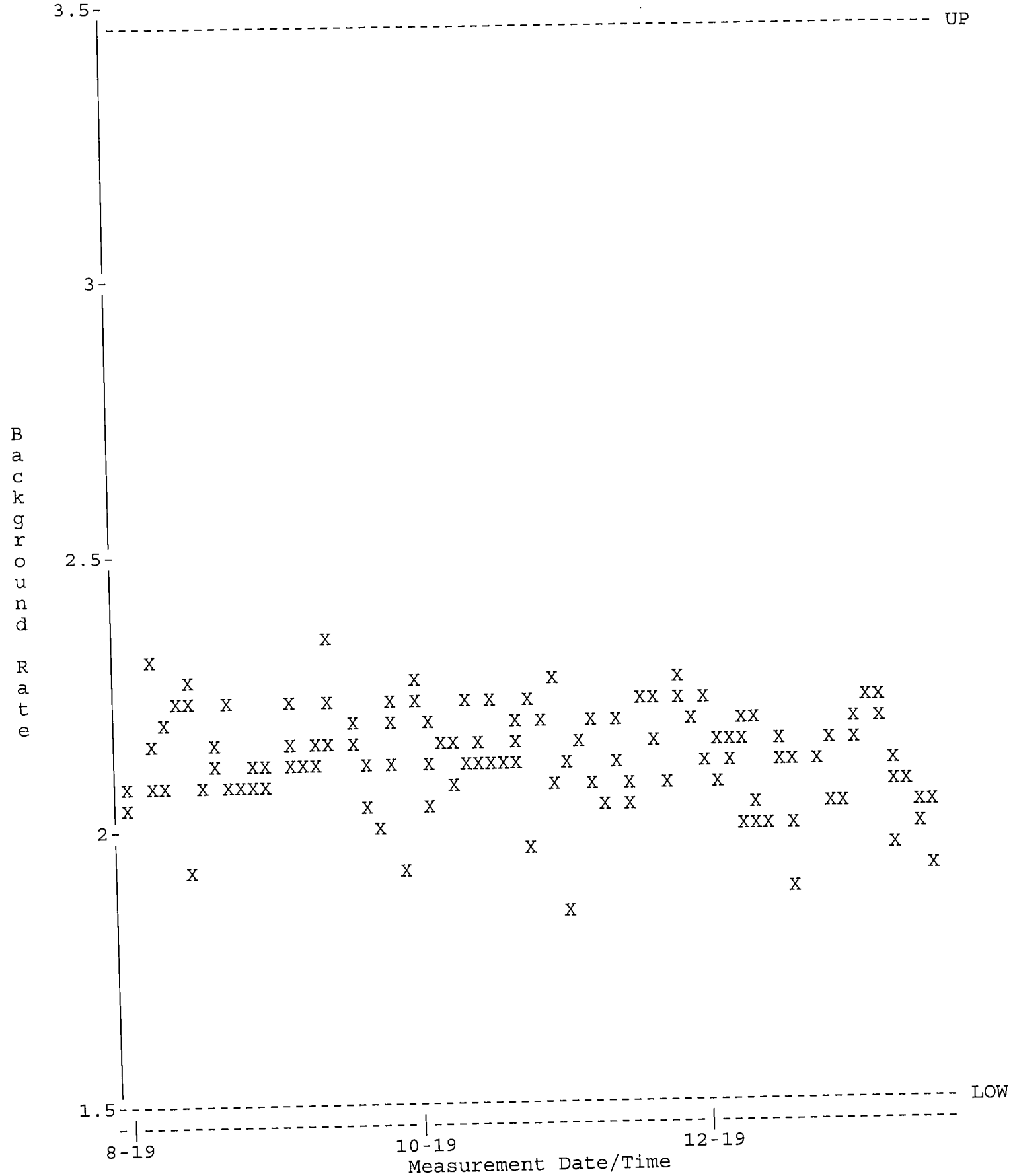
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



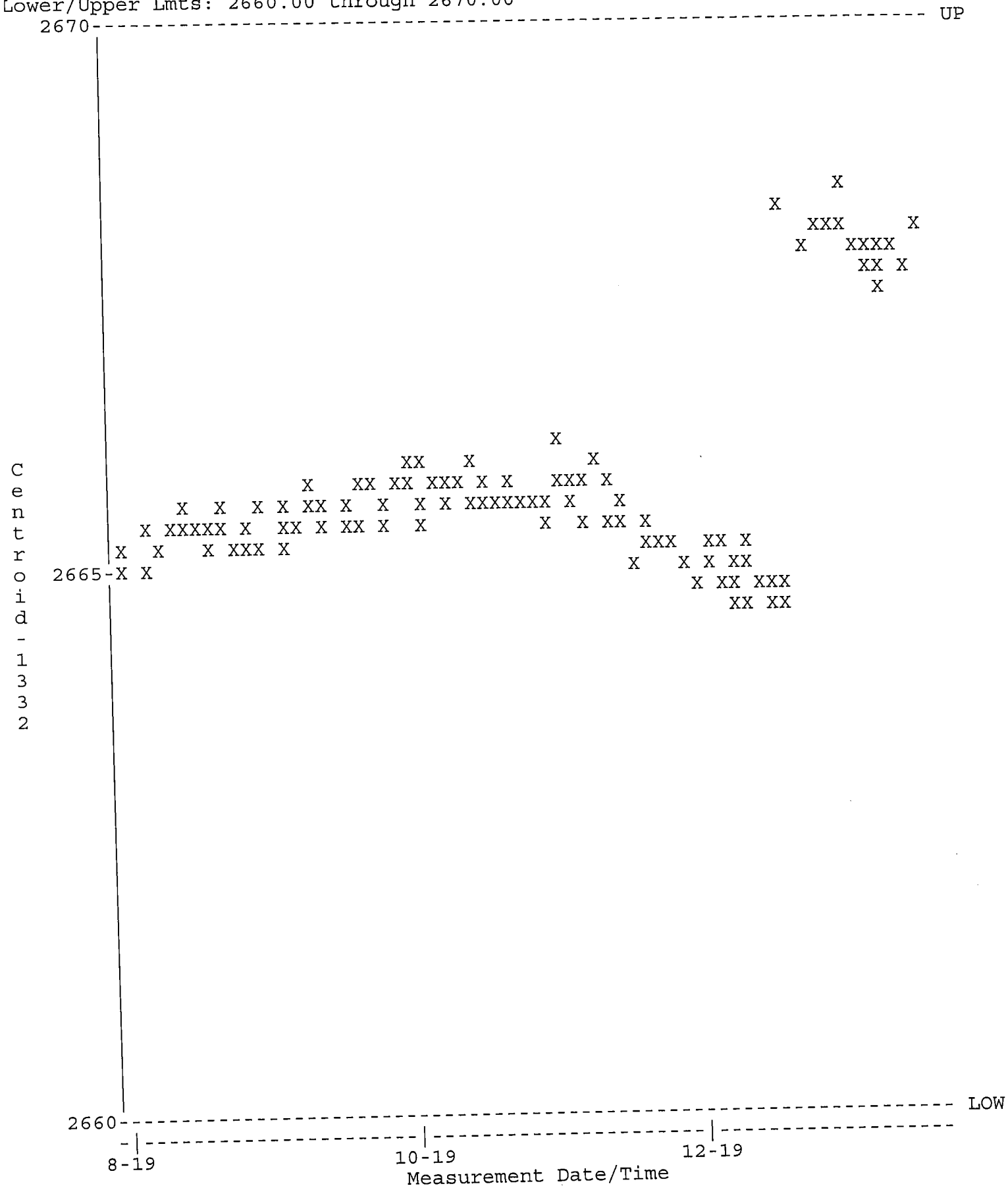
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



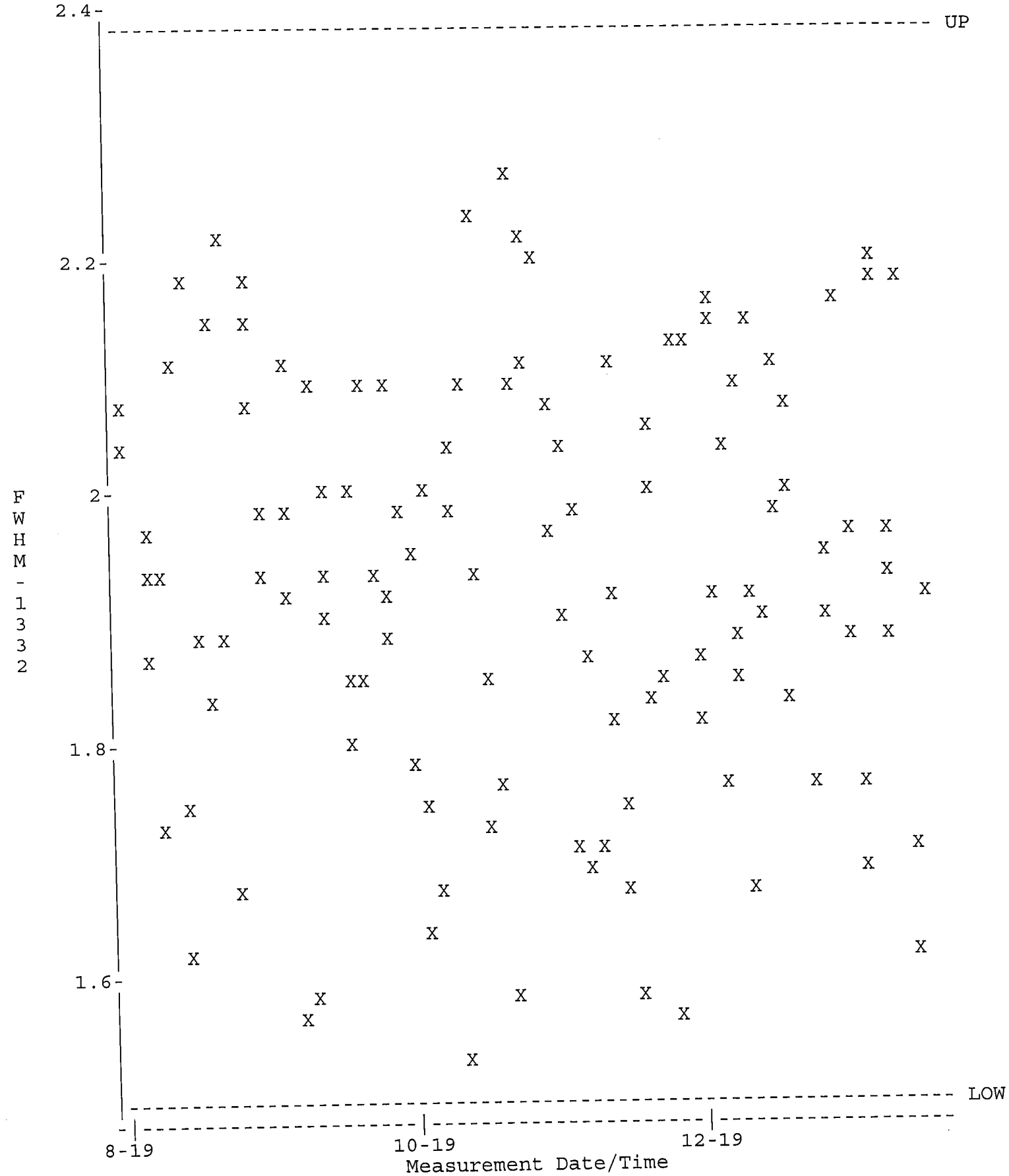
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



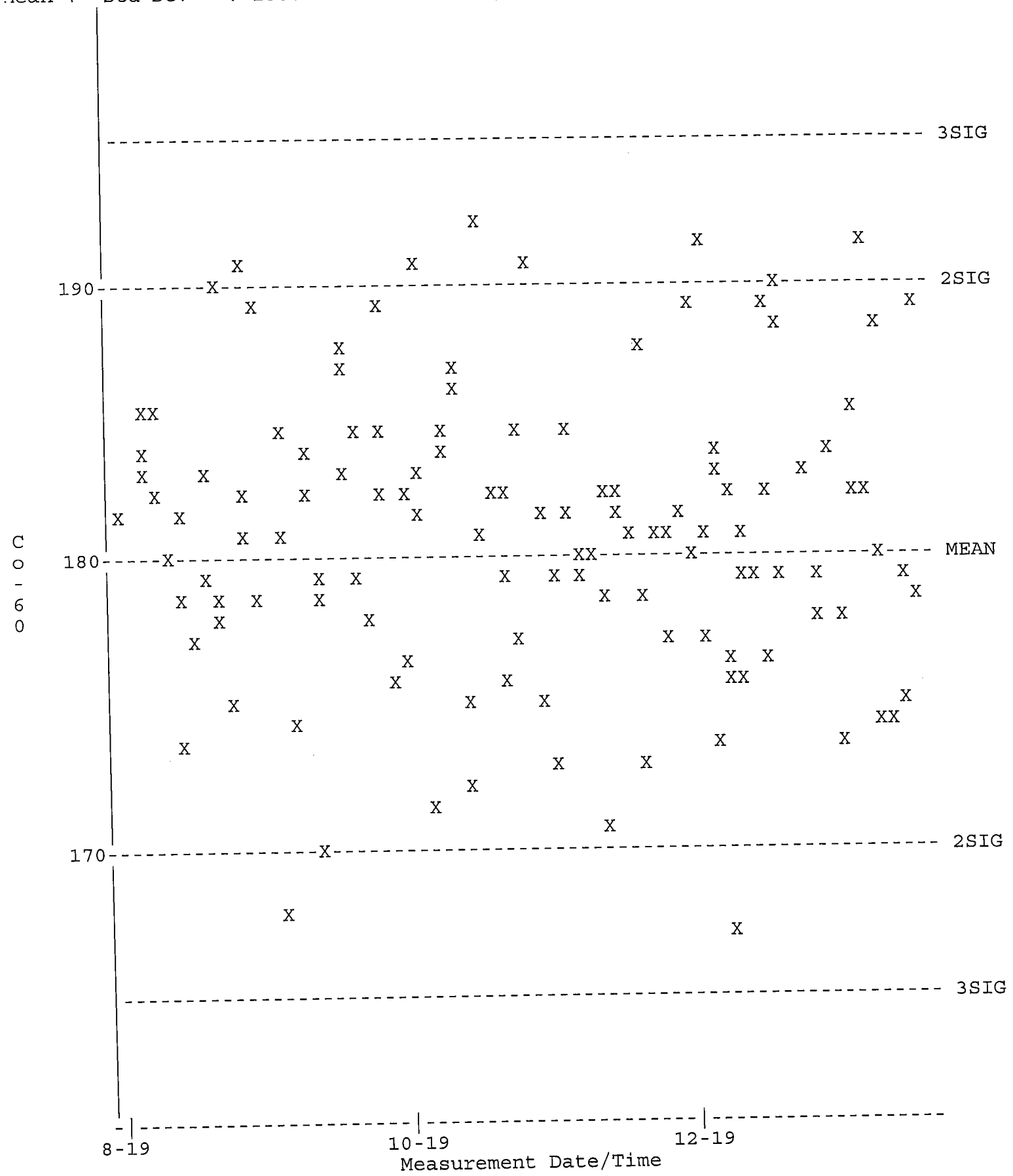
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



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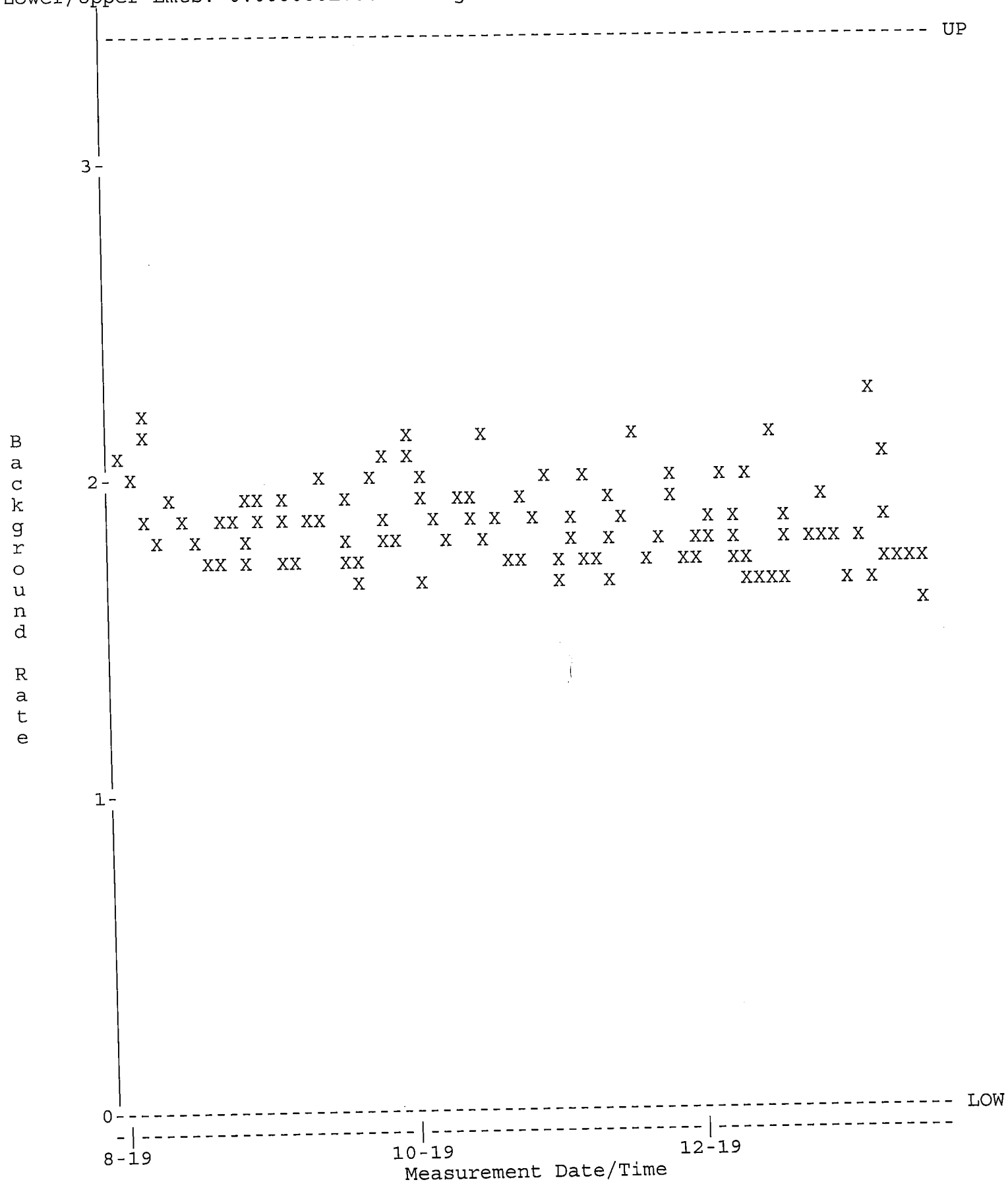
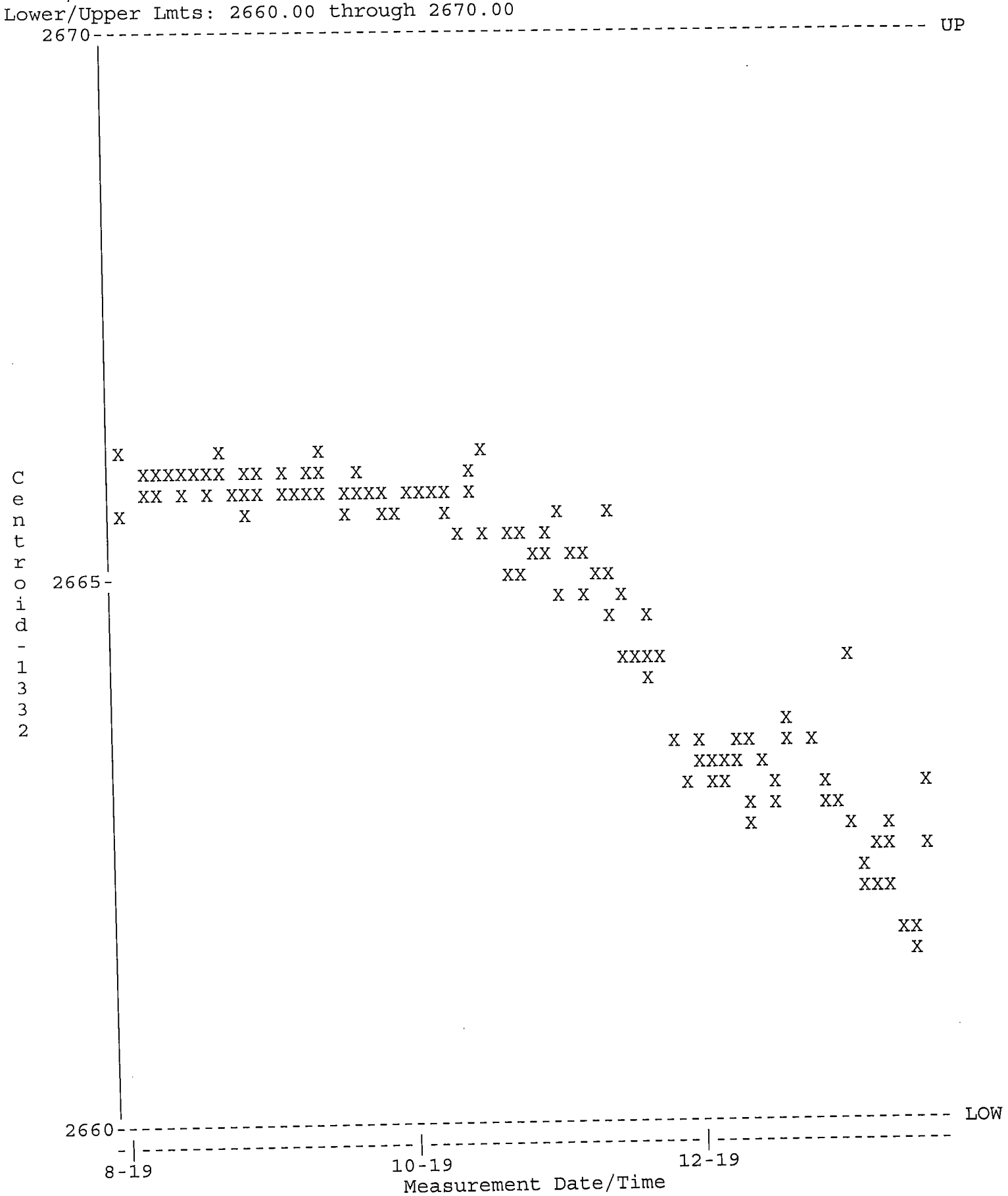
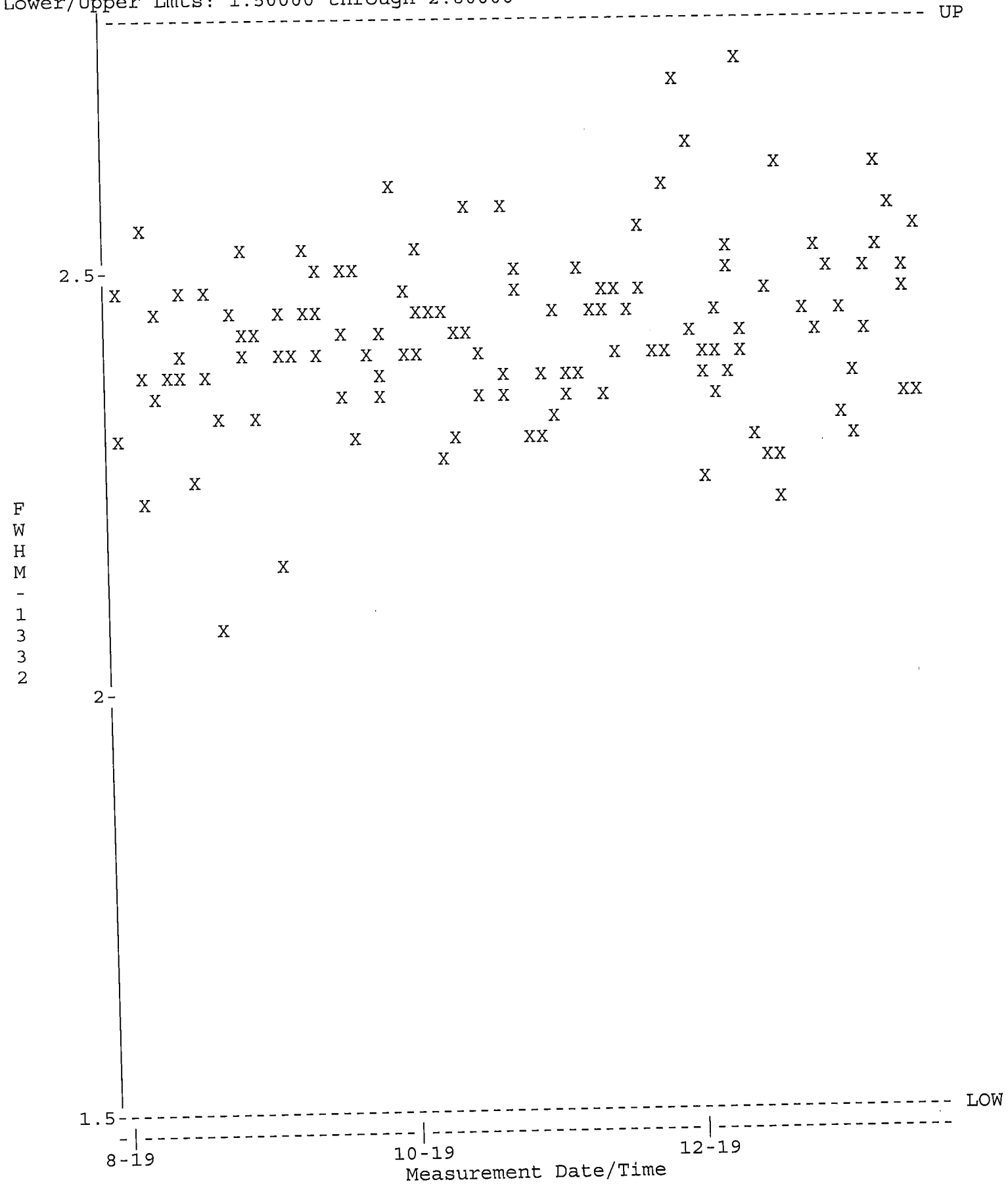
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



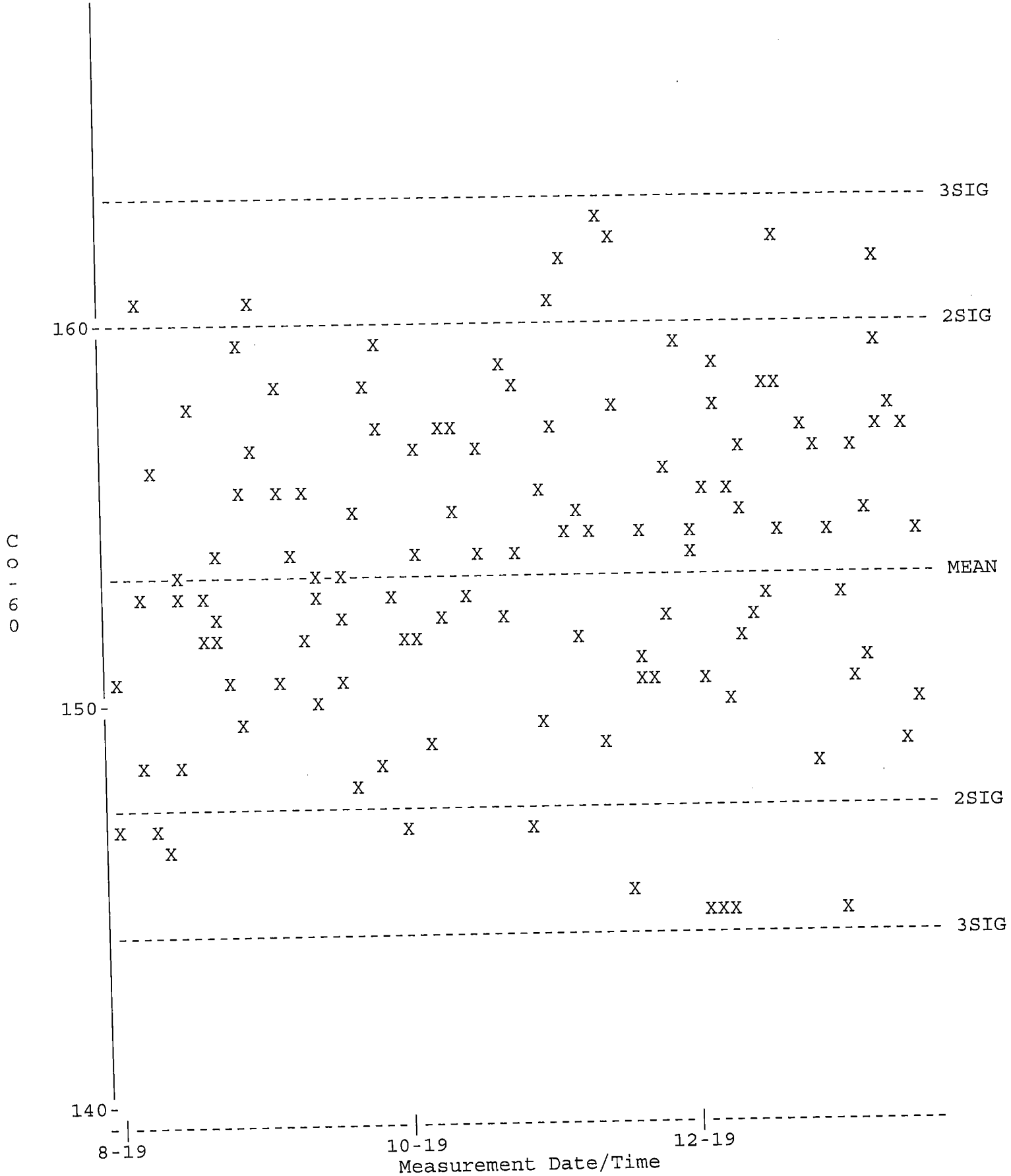
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



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Parameter Name : BACKRATE (Background Rate)
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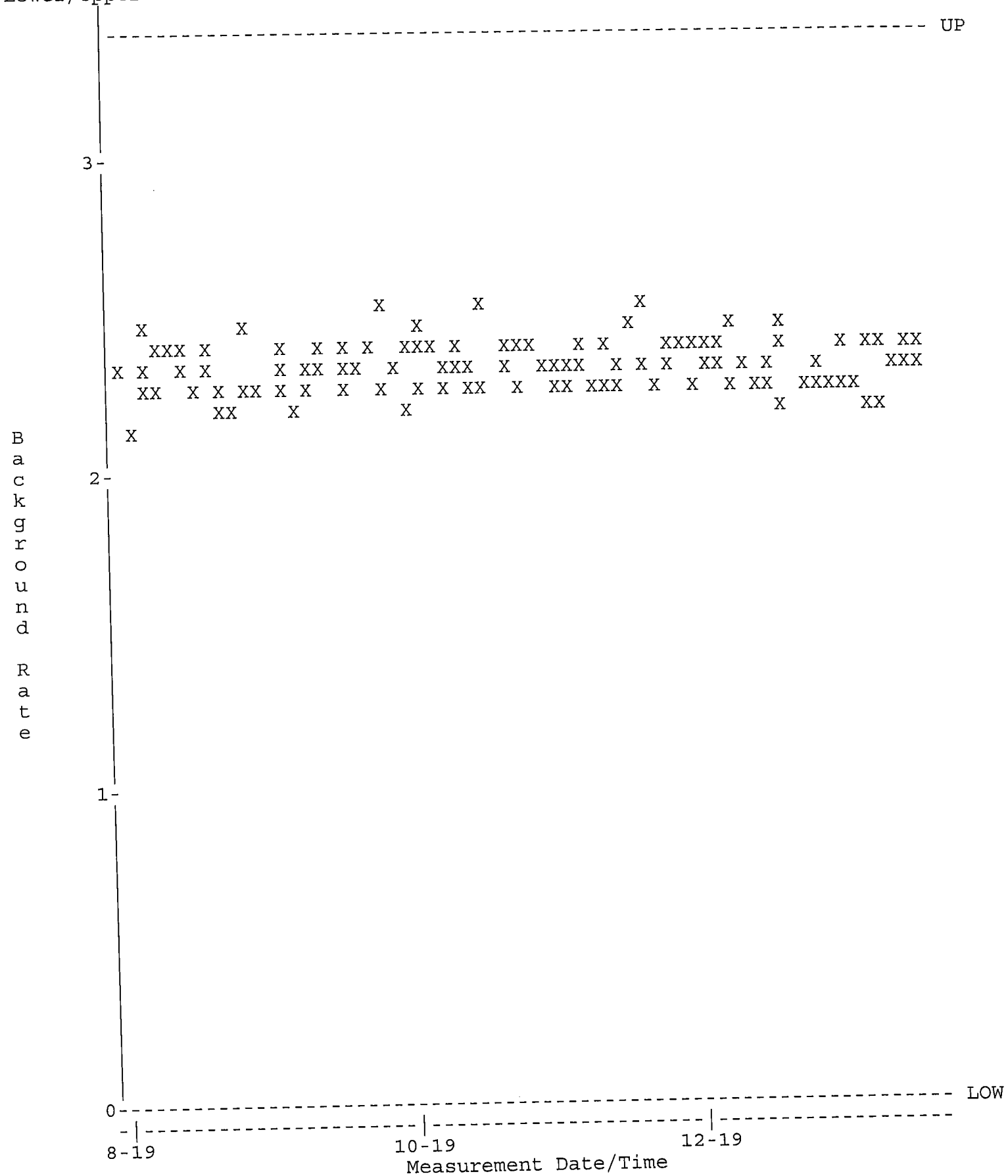
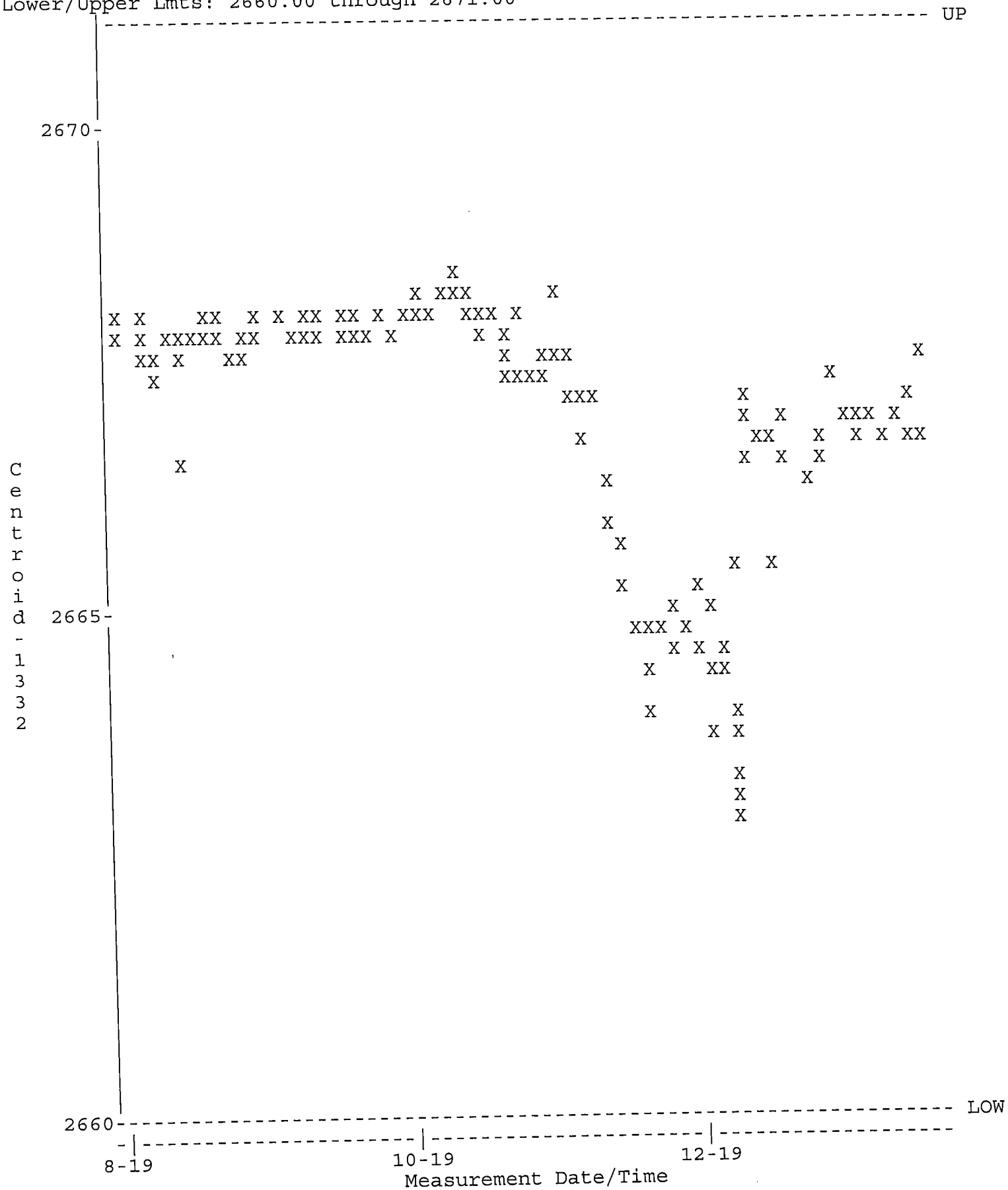
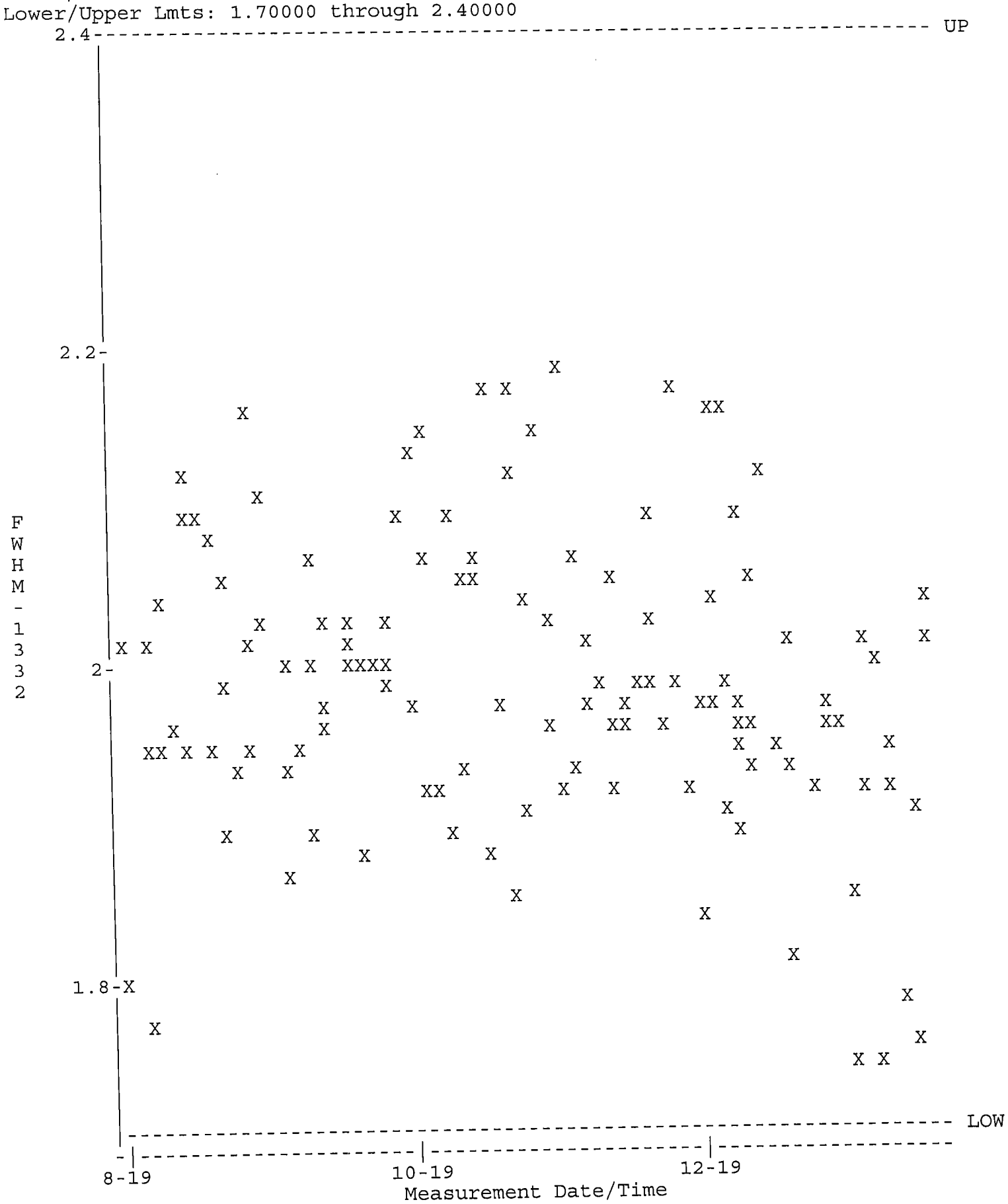
Lower/Upper Lmts: 0.000000E+00 through 3.50000



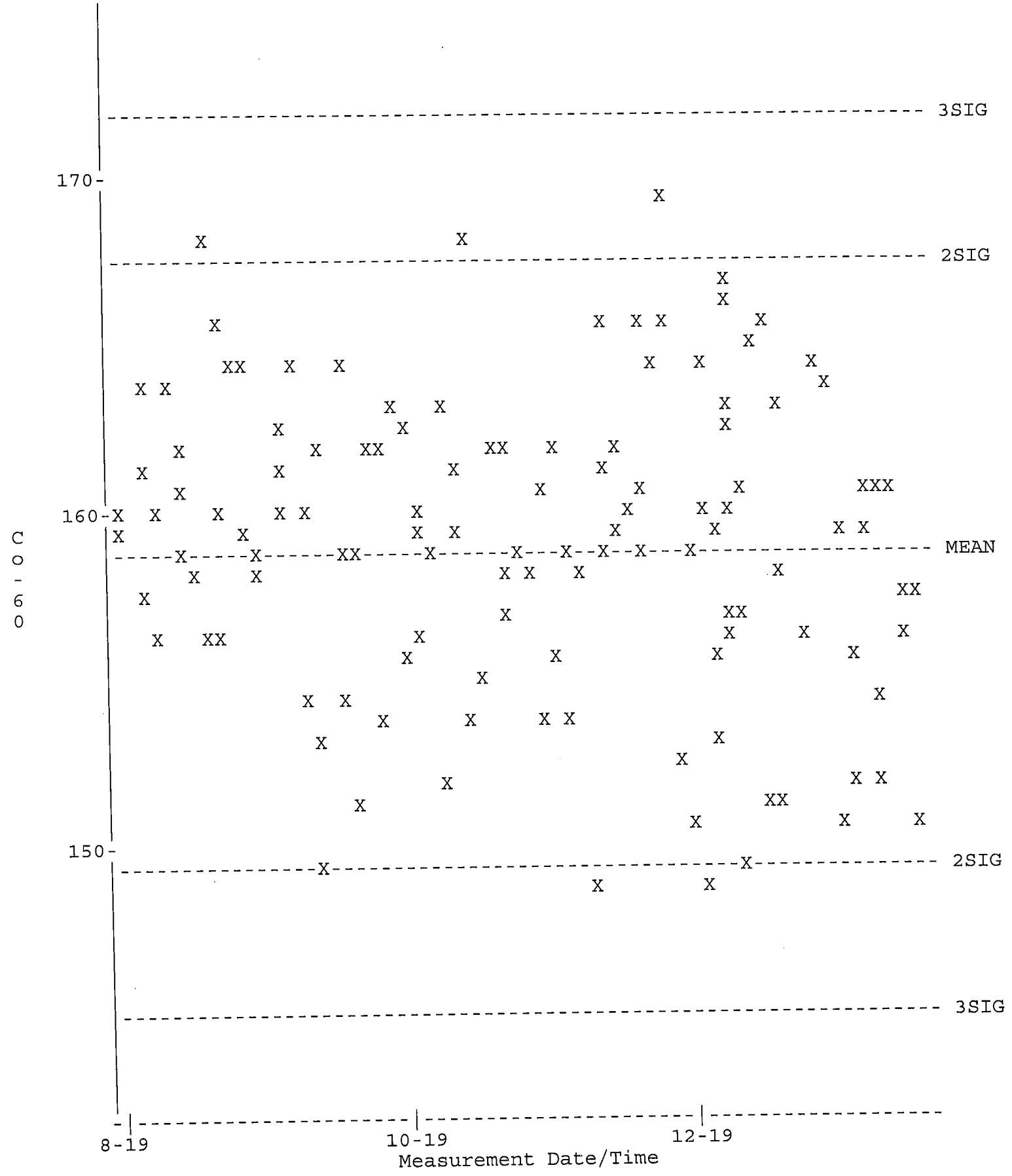
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



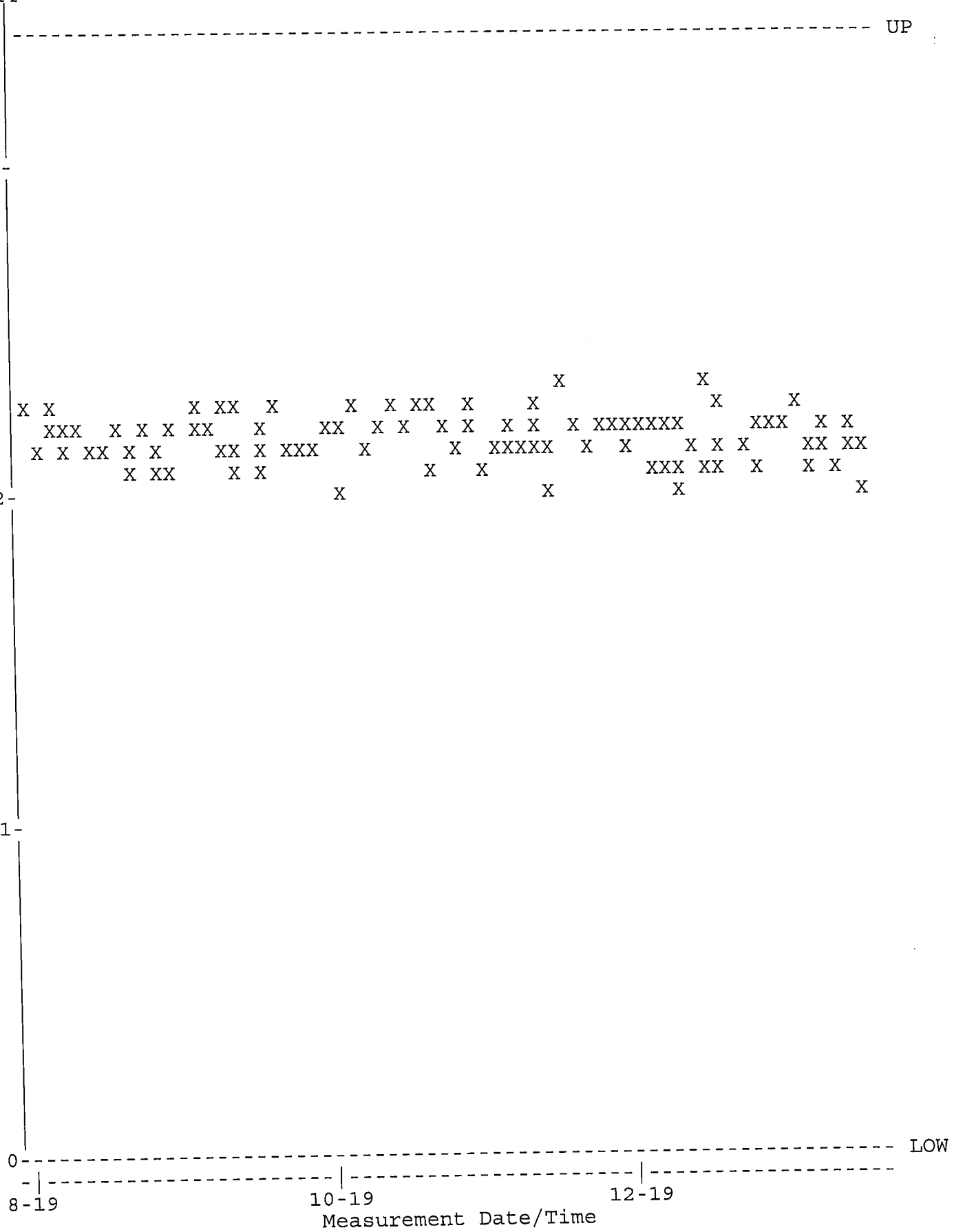
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



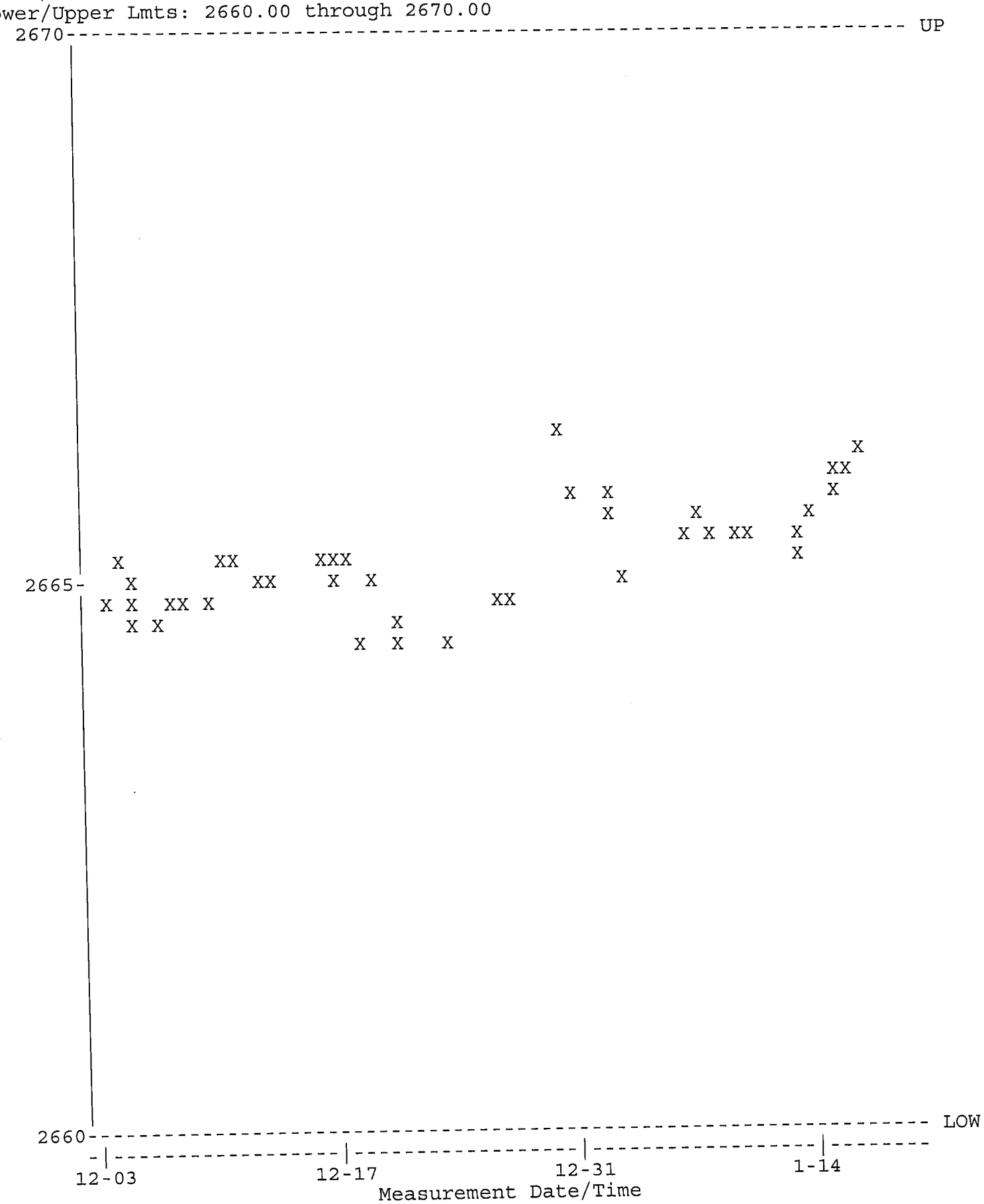
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



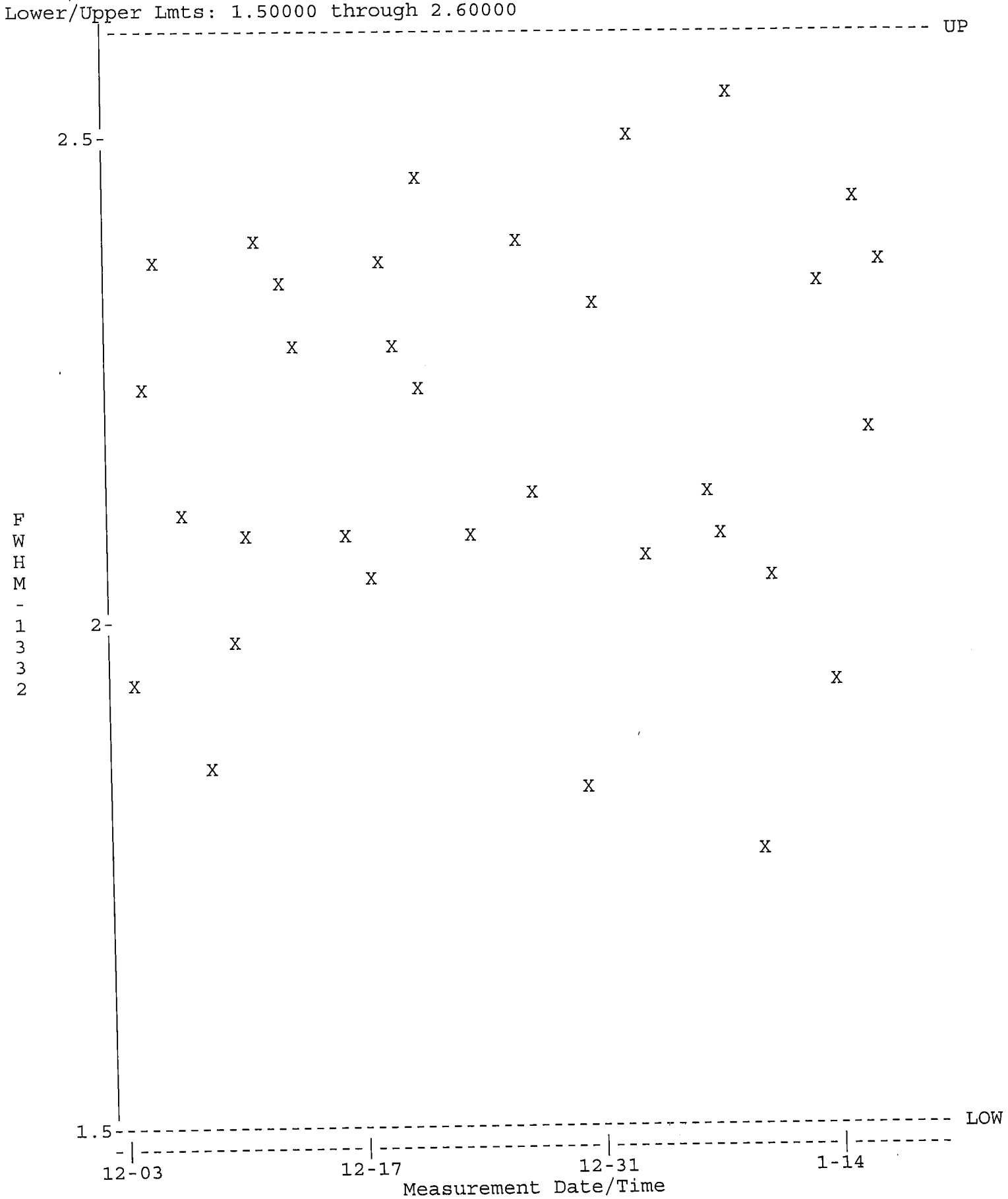
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



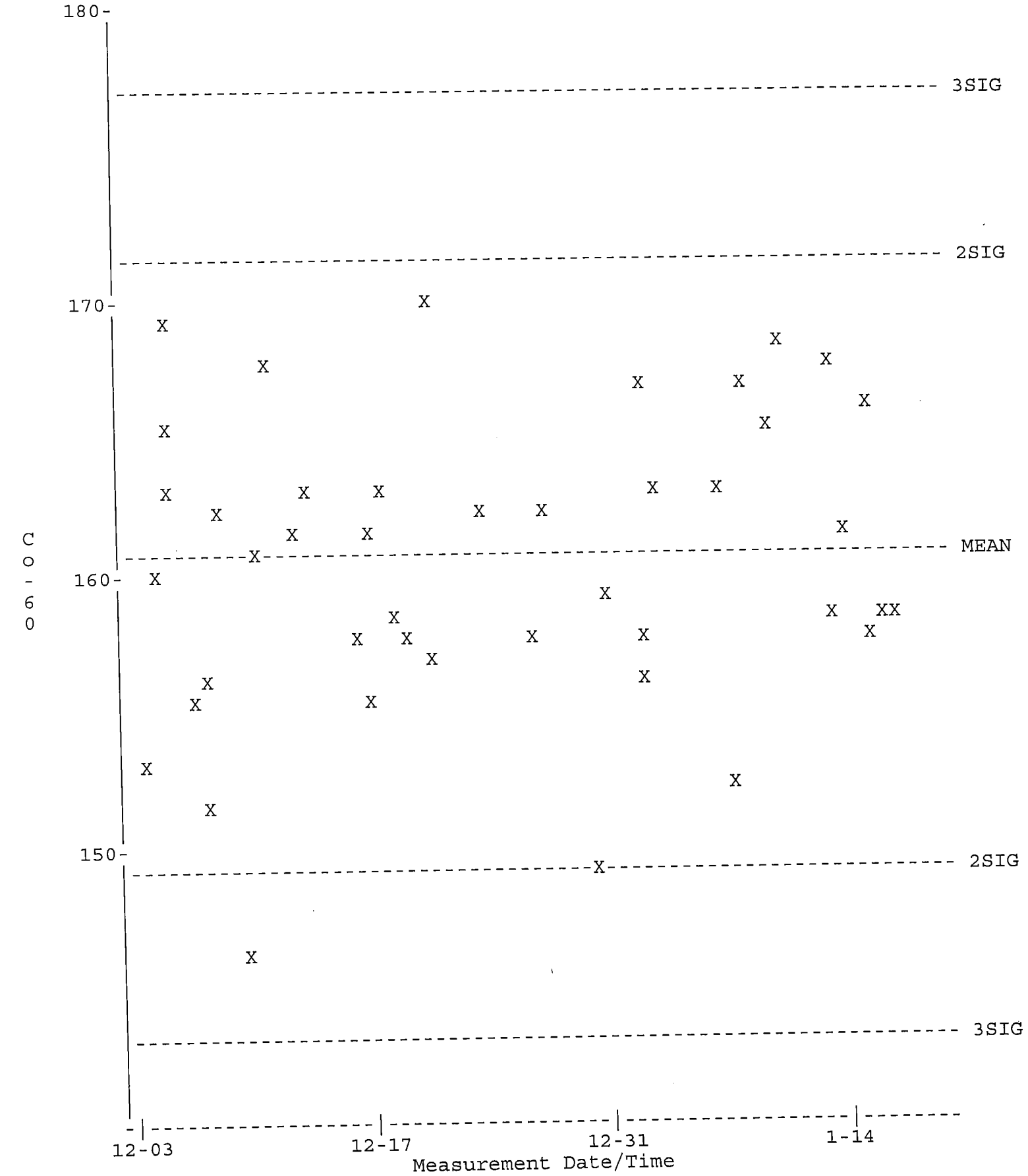
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



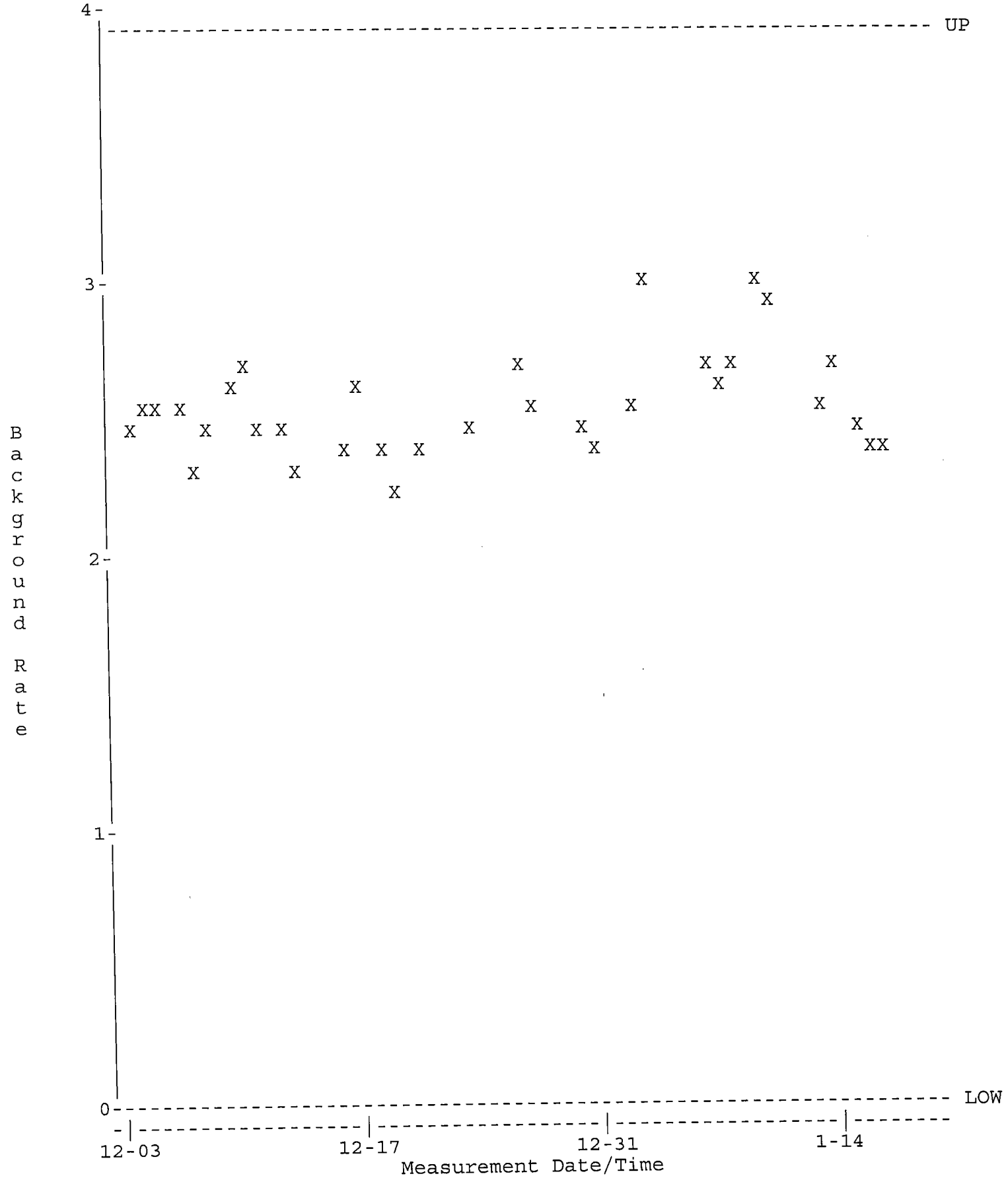
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



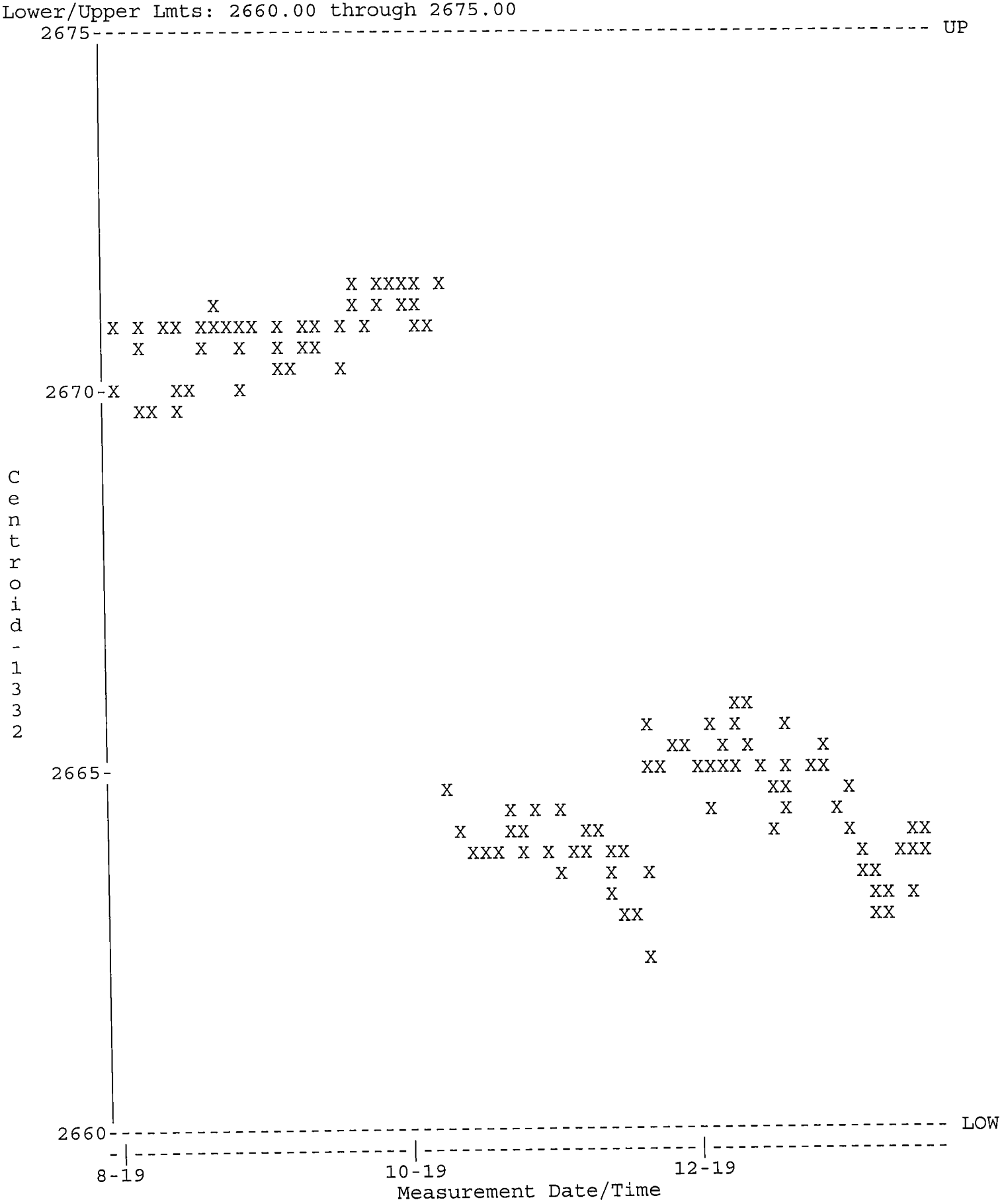
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



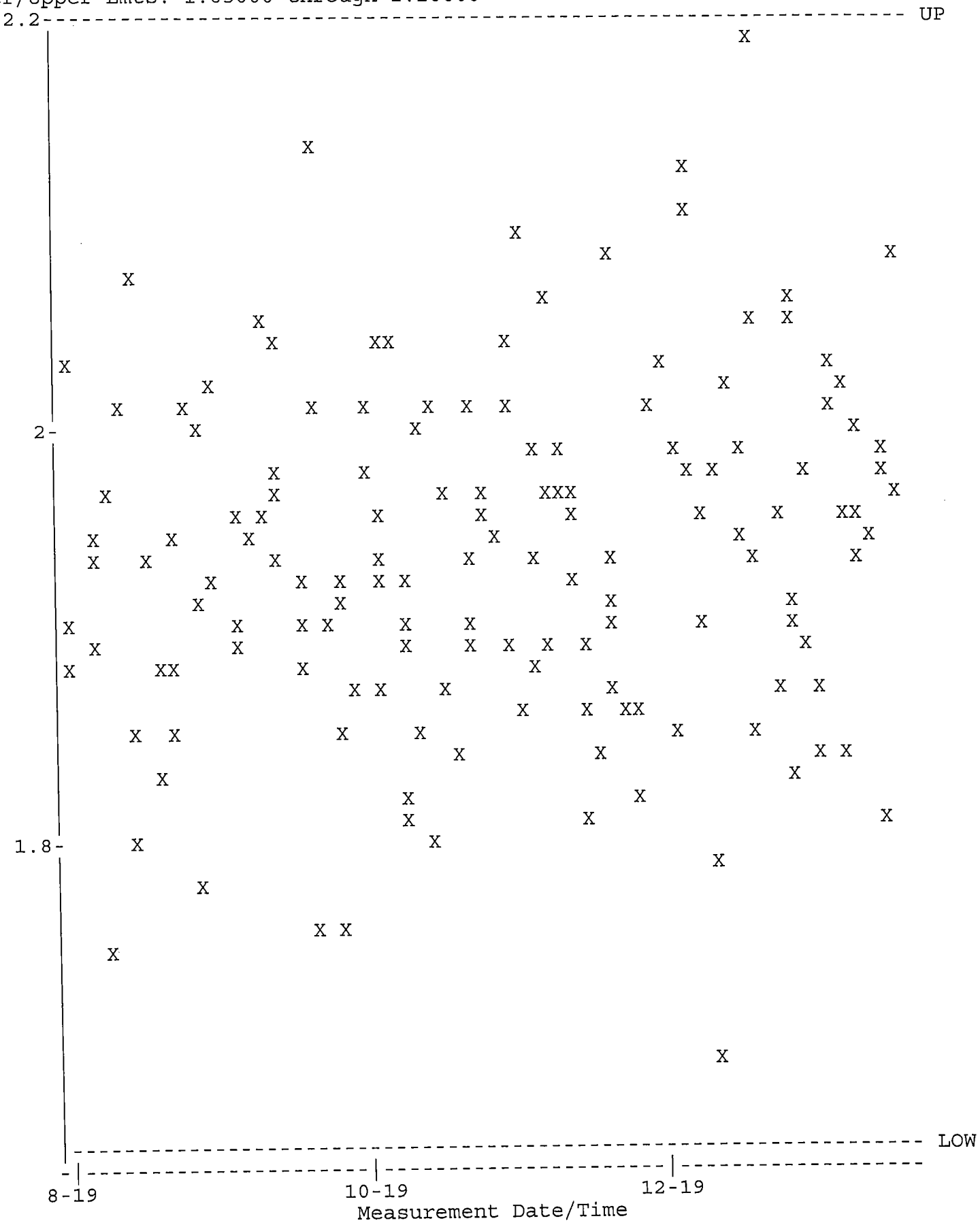
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



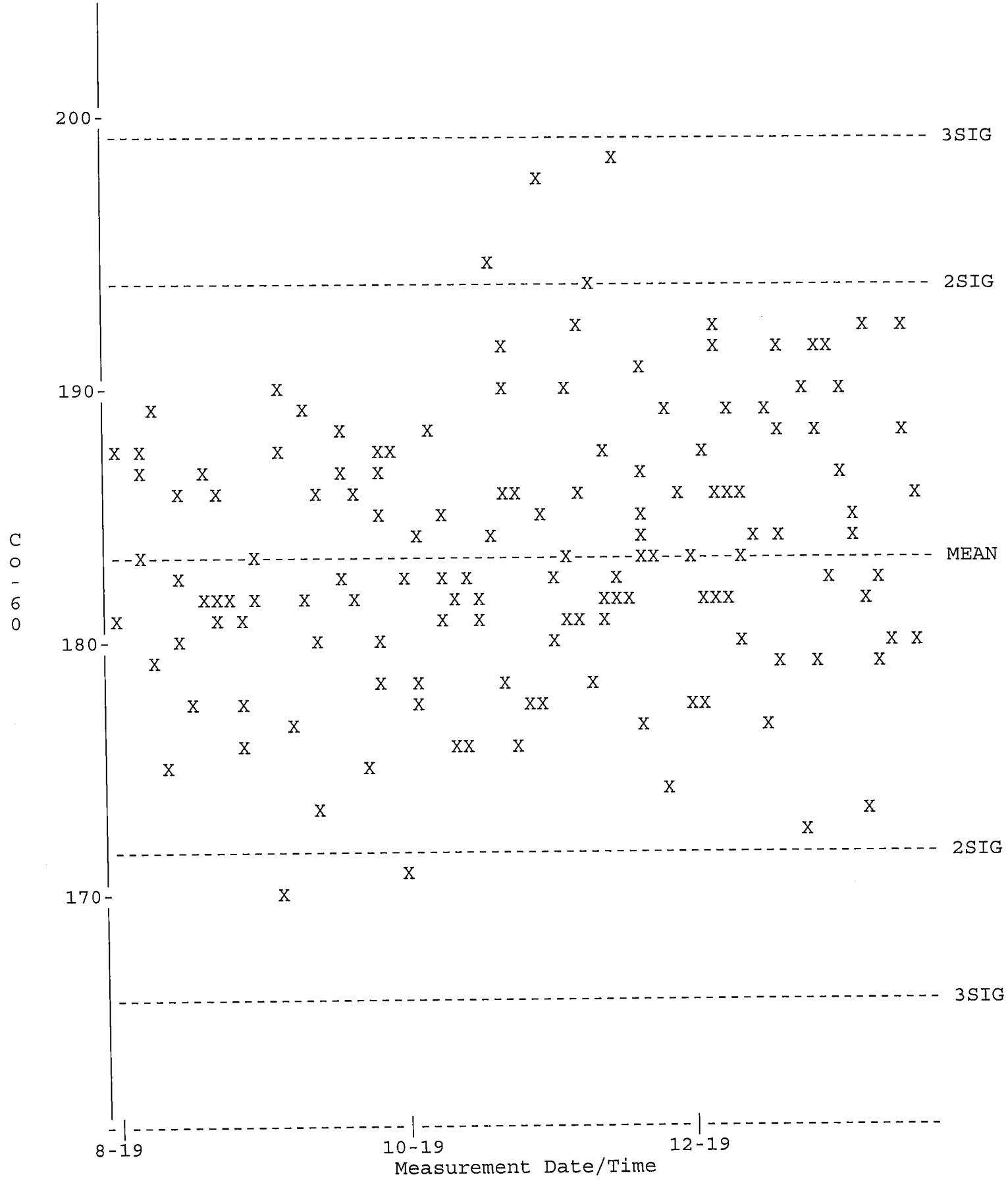
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



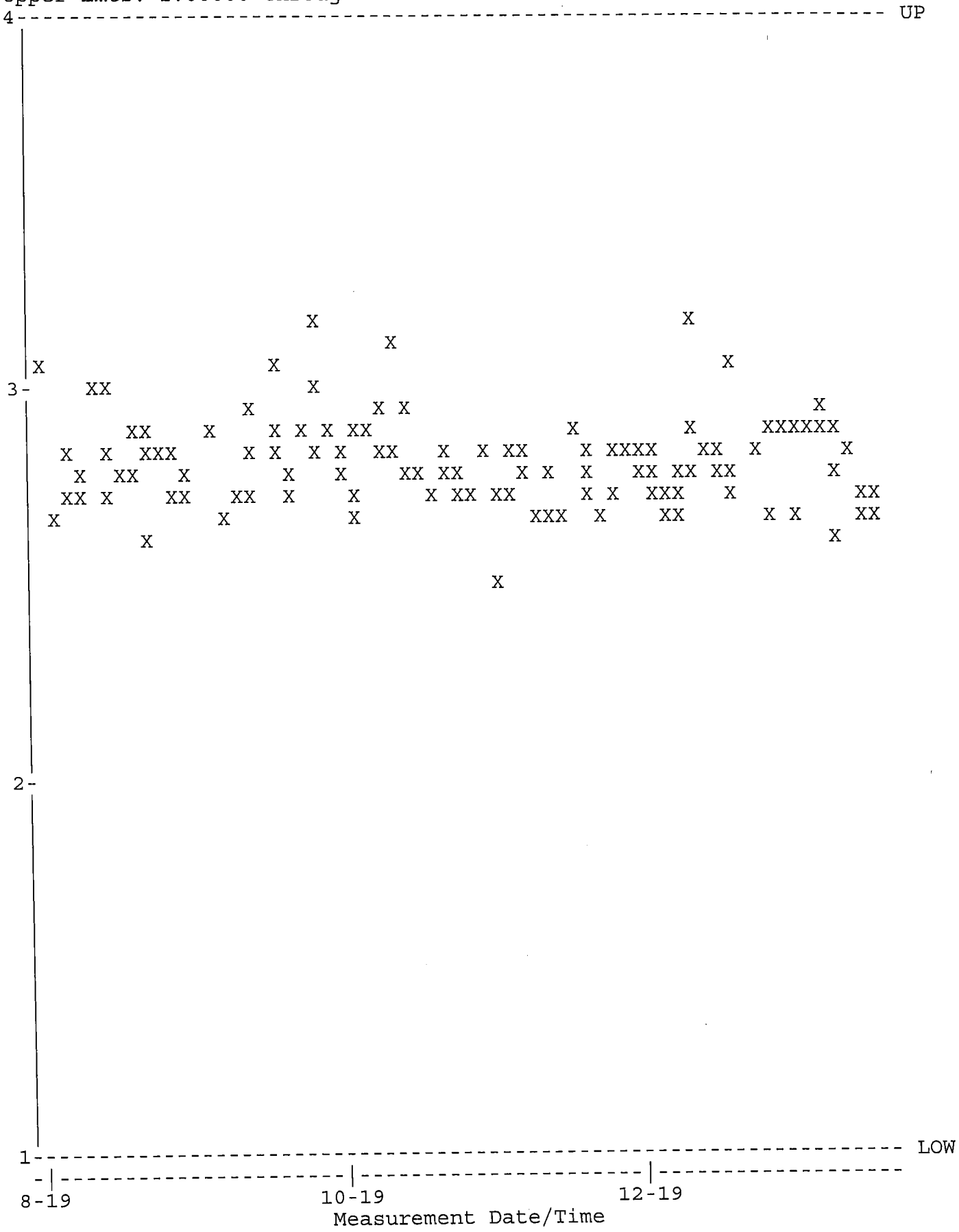
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



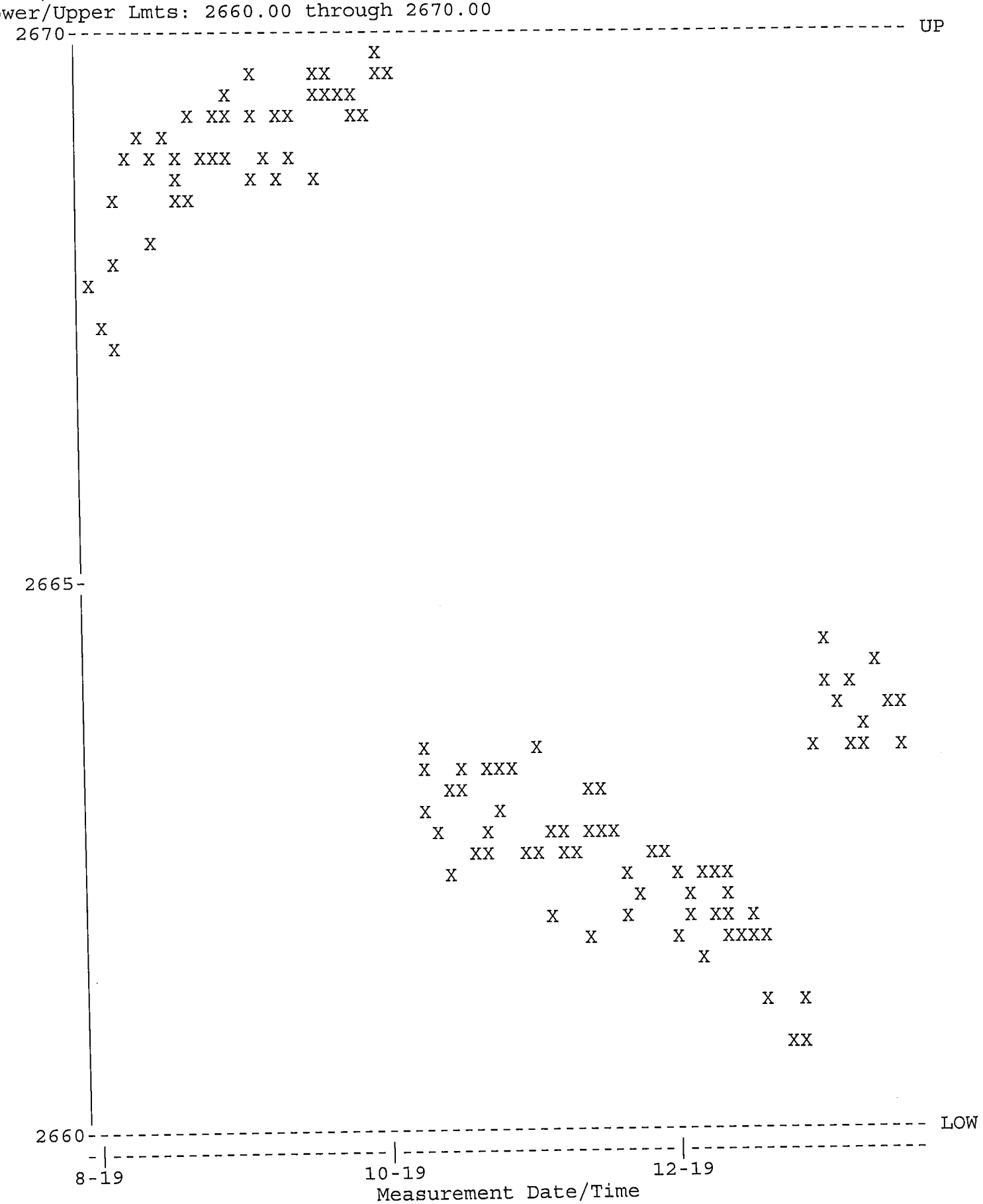
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



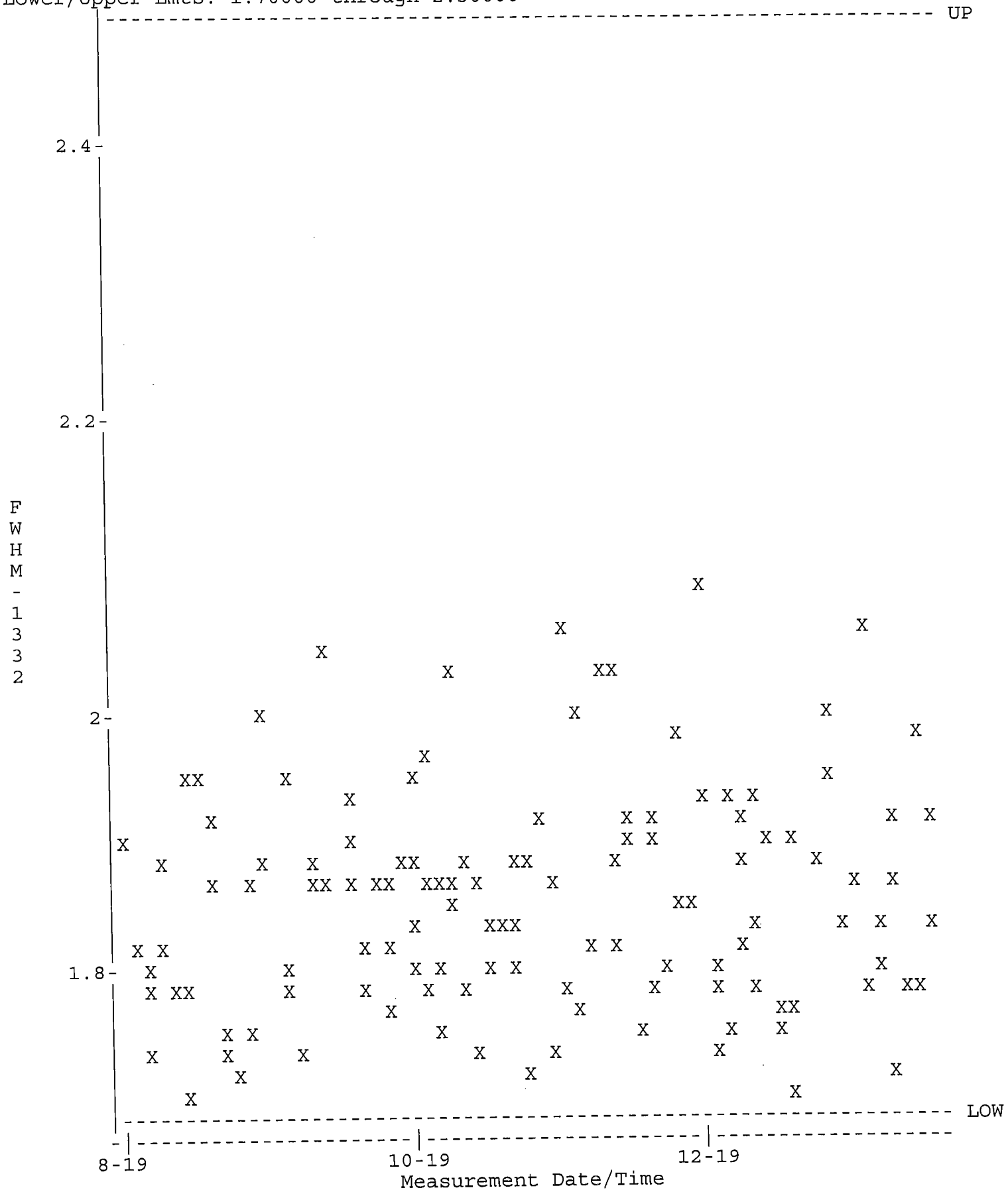
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



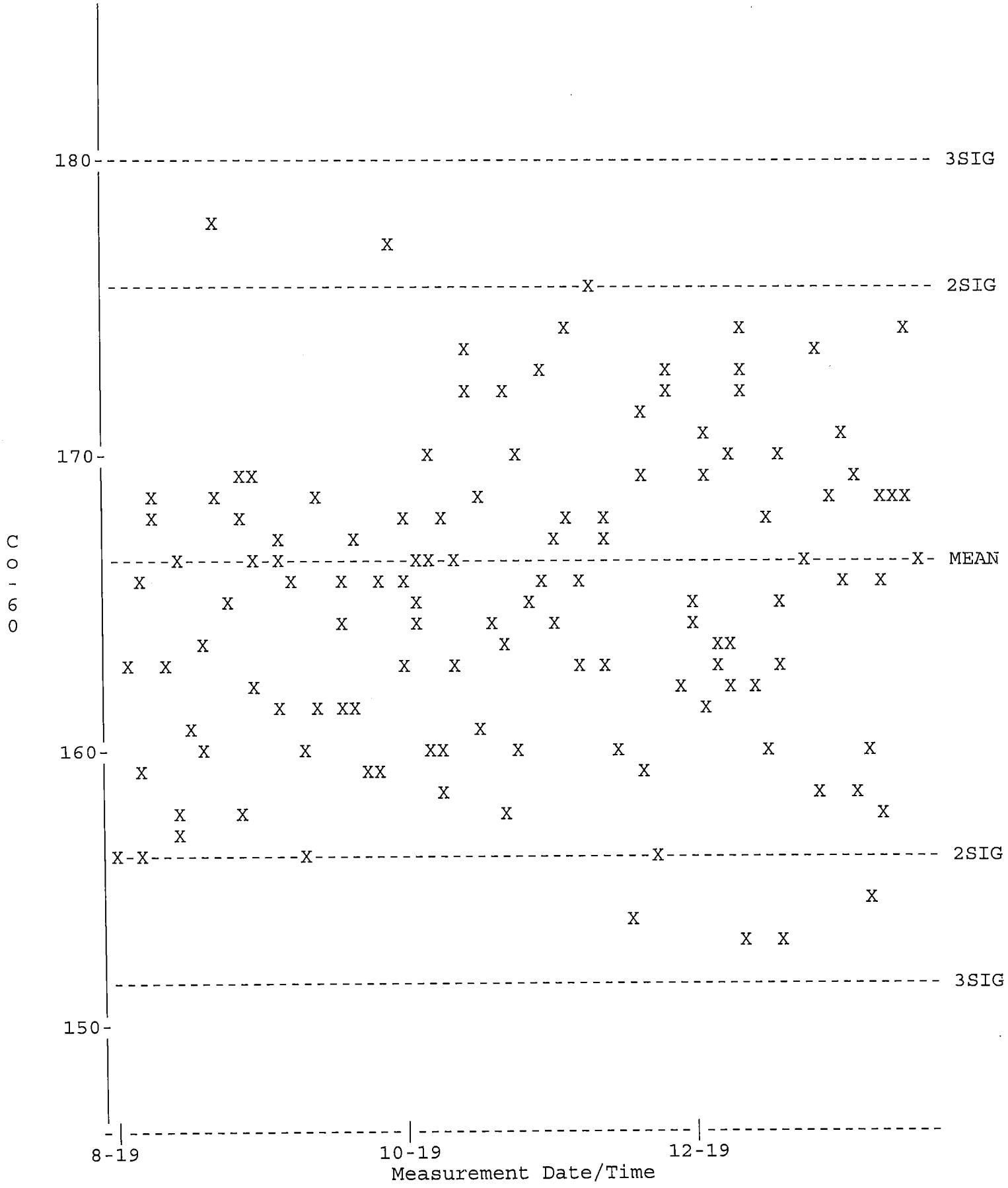
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



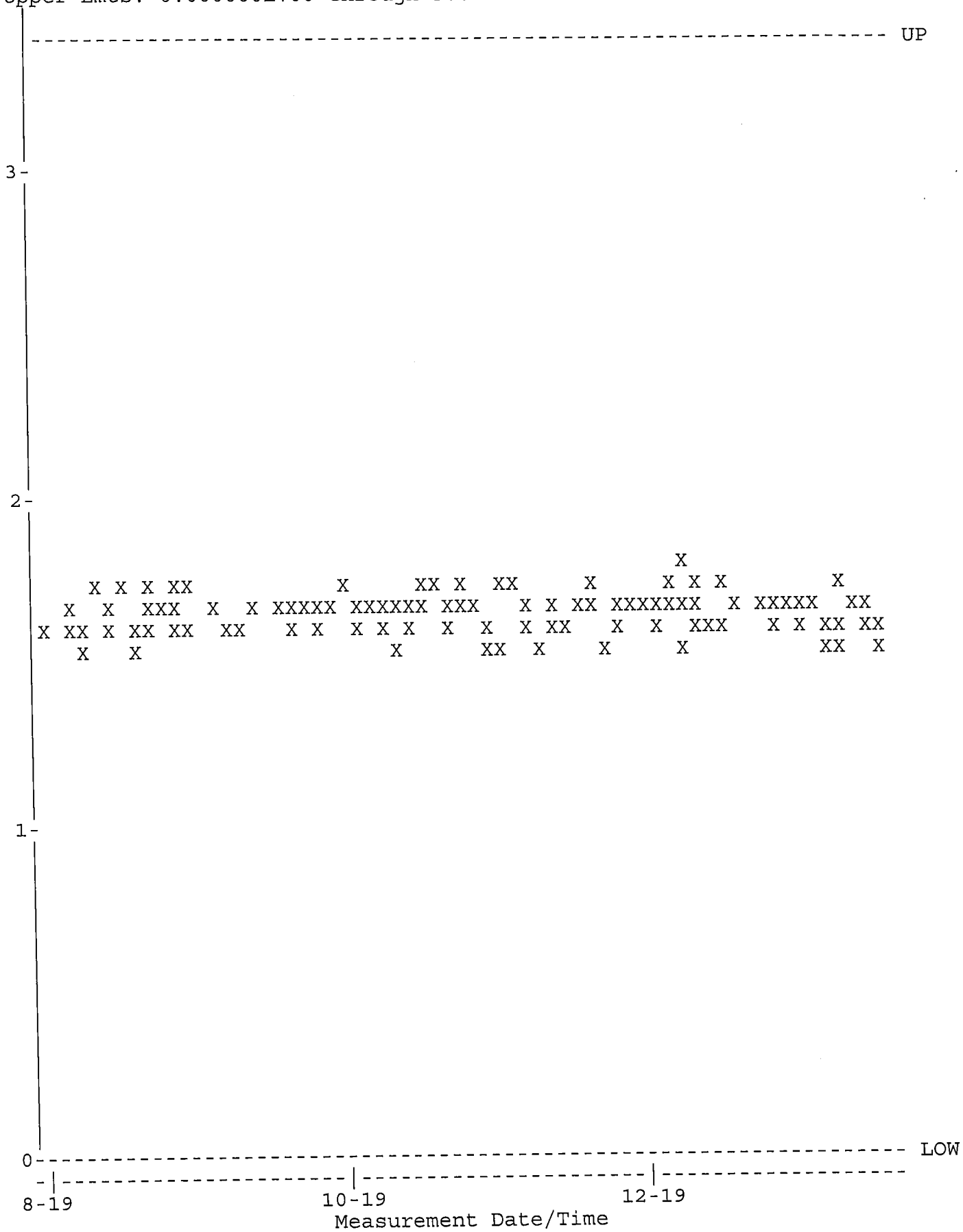
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



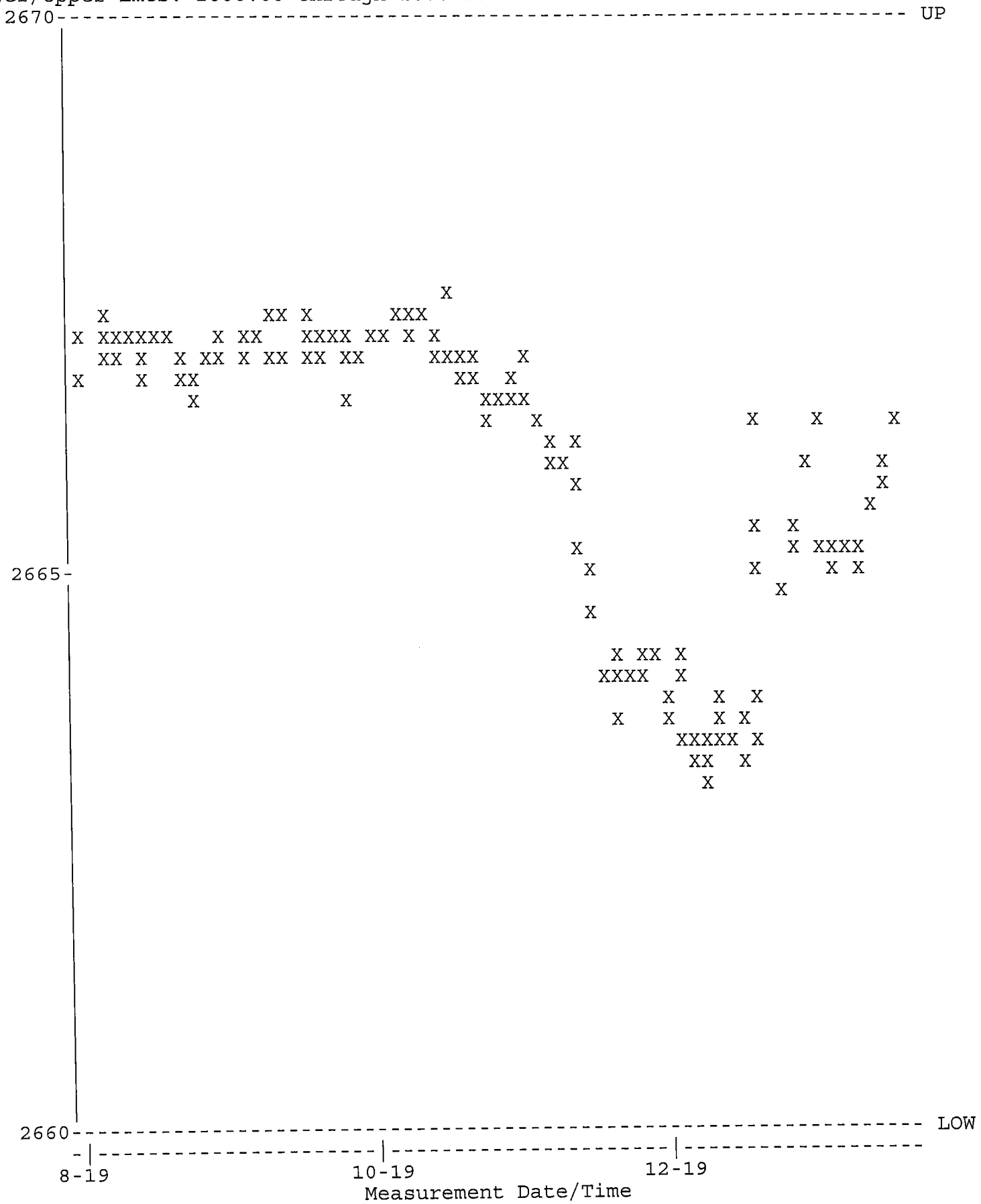
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



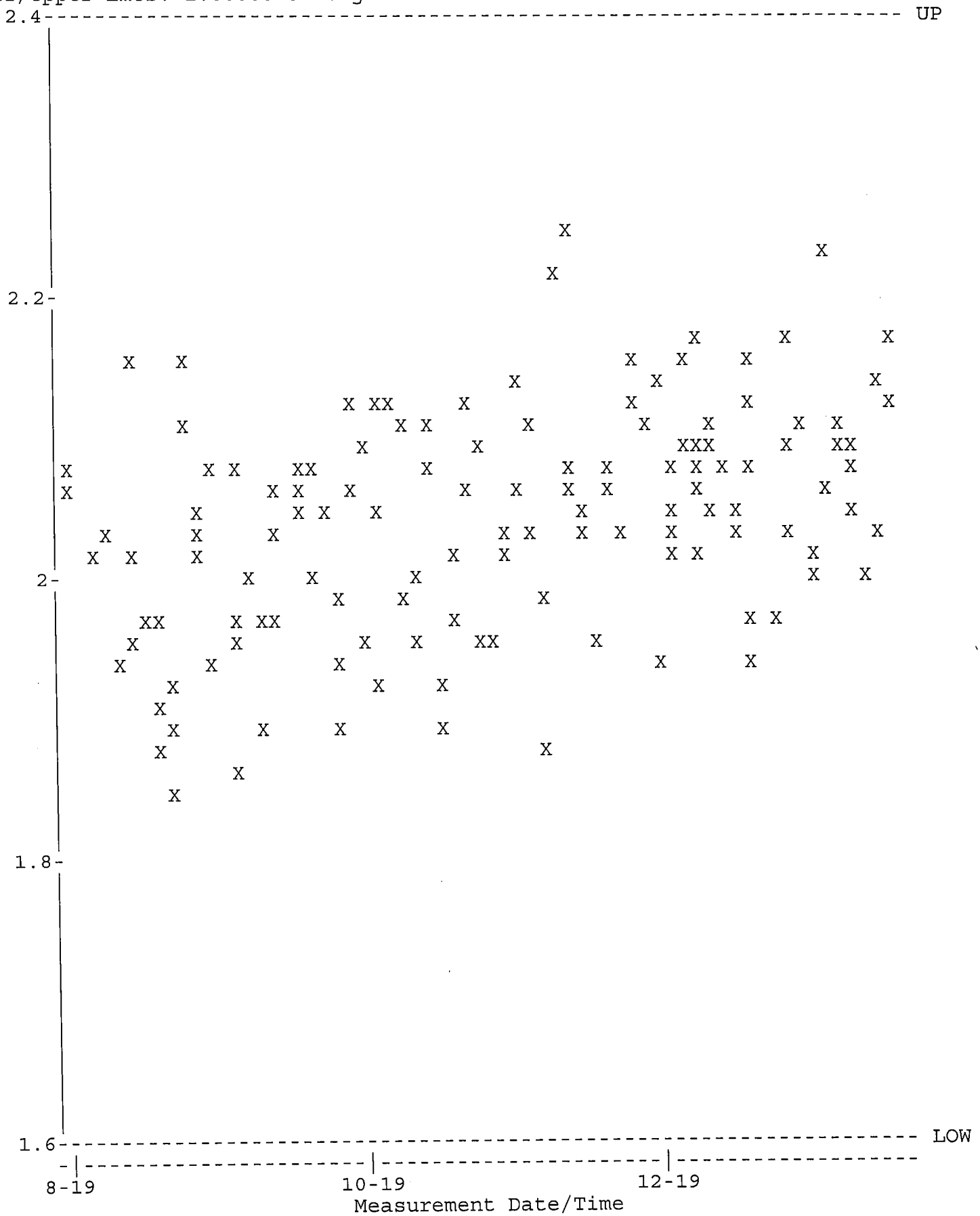
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



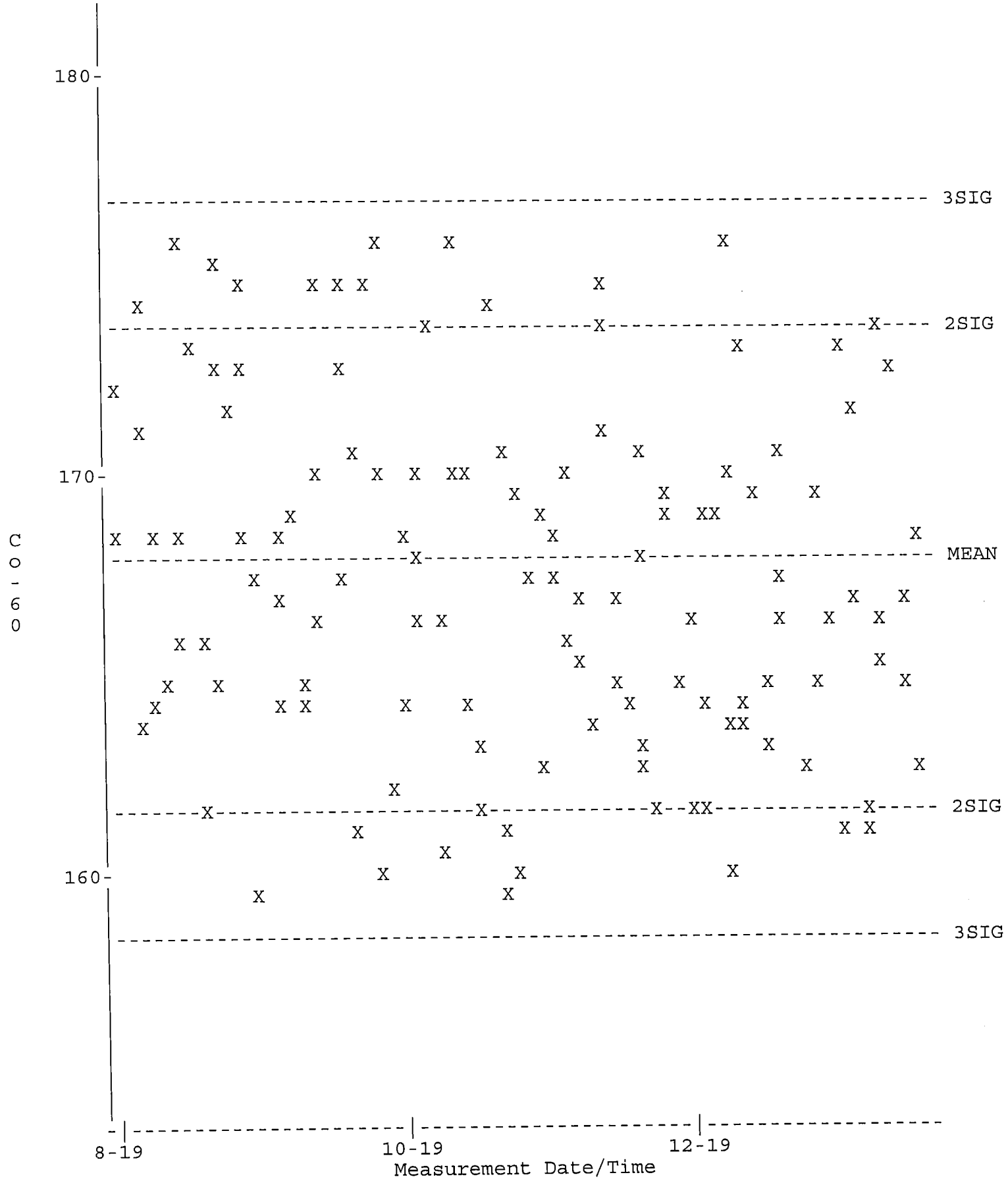
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



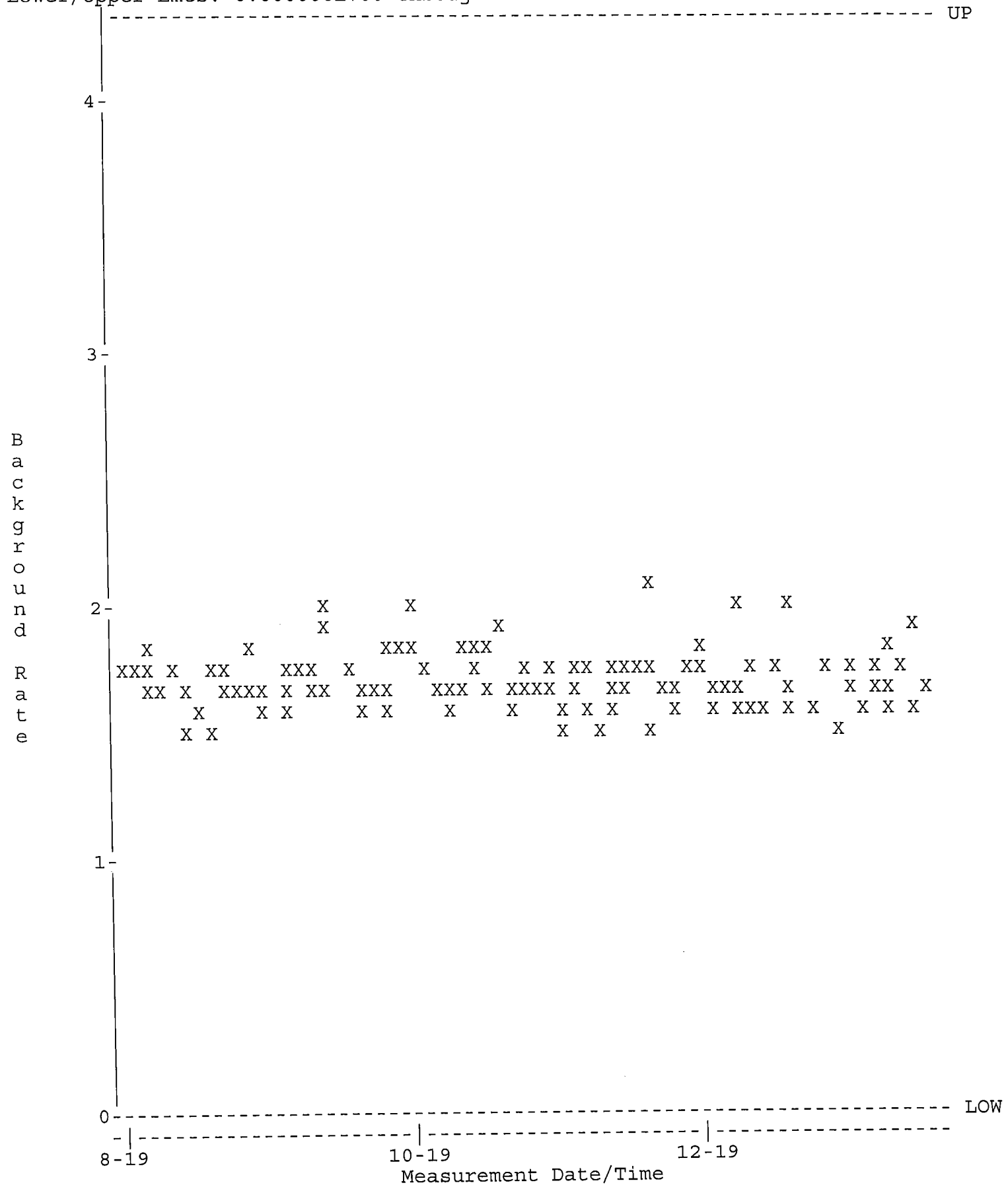
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:34:46.31
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 3-JAN-2020 14:26:35.42

LIMS No., Customer Name, Client ID: L85486-1 S TEXAS

Sample ID : 08L85486-1
Sample Type : S
Quantity : 1.74150E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 4-DEC-2019 15:50:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:08:04.49
Live time : 0 01:08:03.74

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.33*	61	87	1.21	483.57	2.70E+00	1.48E-02	32.0	1.65E+00
2	1	294.80*	51	51	2.23	596.26	2.29E+00	1.25E-02	33.9	9.54E-01
3	1	351.23*	62	40	1.54	708.87	1.98E+00	1.53E-02	26.1	1.89E+00
4	1	608.79*	47	27	1.49	1222.83	1.24E+00	1.16E-02	28.8	7.09E-01
5	1	1460.25*	53	3	2.07	2921.60	5.83E-01	1.30E-02	18.7	5.83E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85486-1 Acquisition date : 3-JAN-2020 14:26:35

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85486-1 Acquisition date : 3-JAN-2020 14:26:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.33	61	87	1.21	483.57	479	9	1.48E-02	64.1	2.70E+00	
1	294.80	51	51	2.23	596.26	590	13	1.25E-02	67.7	2.29E+00	
1	351.23	62	40	1.54	708.87	703	13	1.53E-02	52.1	1.98E+00	
1	608.79	47	27	1.49	1222.83	1216	12	1.16E-02	57.5	1.24E+00	
1	1460.25	53	3	2.07	2921.60	2915	12	1.30E-02	37.3	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.707E-03		4.740E-02	7.898E-02	0.000E+00	0.047

```
A,08L85486-1       ,01/03/2020 15:34,12/04/2019 15:50,   1.741E+02,L85486-1 S TEX
B,08L85486-1       ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137  ,NO ,   3.707E-03,   4.740E-02,   7.898E-02,,    0.047
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:35:04.43
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:37.38

LIMS No., Customer Name, Client ID: L85486-2 S TEXAS

Sample ID	: 02L85486-2	Smple Date:	4-DEC-2019 15:52:00.0
Sample Type	: S	Geometry	: 02FS101619
Quantity	: 3.66720E+02 g Dry	BKGFILE	: 02BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:08:23.28
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:08:22.61
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.36*	81	101	1.00	463.92	2.29E+00	1.97E-02	24.8	
2	0	295.15*	42	66	1.14	578.31	1.95E+00	1.03E-02	41.8	
3	0	352.09*	97	40	1.30	693.02	1.68E+00	2.38E-02	17.7	
4	0	583.24*	27	27	0.67	1158.68	1.09E+00	6.49E-03	42.7	
5	0	609.36*	72	37	2.02	1211.31	1.05E+00	1.76E-02	21.3	
6	0	1460.11*	96	3	2.22	2925.60	4.98E-01	2.33E-02	11.5	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85486-2 Acquisition date : 3-JAN-2020 14:26:37

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85486-2 Acquisition date : 3-JAN-2020 14:26:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.36	81	101	1.00	463.92	459	9	1.97E-02	49.7	2.29E+00	
0	295.15	42	66	1.14	578.31	574	11	1.03E-02	83.5	1.95E+00	
0	352.09	97	40	1.30	693.02	687	13	2.38E-02	35.5	1.68E+00	
0	583.24	27	27	0.67	1158.68	1153	10	6.49E-03	85.4	1.09E+00	
0	609.36	72	37	2.02	1211.31	1204	12	1.76E-02	42.6	1.05E+00	
0	1460.11	96	3	2.22	2925.60	2920	12	2.33E-02	23.1	4.98E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.556E-03		2.742E-02	4.290E-02	0.000E+00	-0.083

```
A,02L85486-2       ,01/03/2020 15:35,12/04/2019 15:52,   3.667E+02,L85486-2 S TEX
B,02L85486-2       ,HUDSON              ,12/27/2019 09:41,02FS101619
C,CS-137   ,NO ,   -3.556E-03,   2.742E-02,   4.290E-02,,   -0.083
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:35:33.44
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:38.11

LIMS No., Customer Name, Client ID: L85486-3 S TEXAS

Sample ID : 14L85486-3
Sample Type : S
Quantity : 1.69410E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 4-DEC-2019 15:54:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:08:41.88
Live time : 0 01:08:41.11

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	351.88*	34	40	1.34	701.13	2.09E+00	8.29E-03	42.1	1.53E+00
2	1	609.32*	37	9	1.29	1216.21	1.26E+00	8.89E-03	25.3	1.35E+00
3	1	1461.04*	39	0	1.75	2920.98	5.68E-01	9.49E-03	20.3	1.24E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85486-3 Acquisition date : 3-JAN-2020 14:26:38

Total number of lines in spectrum	3	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85486-3 Acquisition date : 3-JAN-2020 14:26:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	351.88	34	40	1.34	701.13	696	11	8.29E-03	84.1	2.09E+00	
1	609.32	37	9	1.29	1216.21	1211	9	8.89E-03	50.6	1.26E+00	
1	1461.04	39	0	1.75	2920.98	2915	11	9.49E-03	40.5	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 3
Number of unidentified lines 3
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-5.666E-03		4.252E-02	6.693E-02	0.000E+00	-0.085

```
A,14L85486-3       ,01/03/2020 15:35,12/04/2019 15:54,   1.694E+02,L85486-3 S TEX
B,14L85486-3       ,HUDSON              ,12/30/2019 12:20,14S100121919
C,CS-137   ,NO ,   -5.666E-03,   4.252E-02,   6.693E-02,,   -0.085
```

Analyst: KBO

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:01:54.30
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:50.04

LIMS No., Customer Name, Client ID: L85486-4 S TEXAS

Sample ID	: 07L85486-4	Smple Date	: 4-DEC-2019 15:56:00.0
Sample Type	: S	Geometry	: 07S100121819
Quantity	: 1.75250E+02 g Dry	BKGFILE	: 07BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:01:51.29
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:01:50.82
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	1460.52*	66	5	2.92	2918.81	7.40E-01	1.78E-02	17.4	1.16E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85486-4 Acquisition date : 3-JAN-2020 15:59:50

Total number of lines in spectrum	1	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85486-4 Acquisition date : 3-JAN-2020 15:59:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	1460.52	66	5	2.92	2918.81	2909	17	1.78E-02	34.7	7.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 1
Number of unidentified lines 1
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	4.660E-02		4.816E-02	9.049E-02	0.000E+00	0.515

```
A,07L85486-4       ,01/03/2020 17:01,12/04/2019 15:56,   1.753E+02,L85486-4 S TEX
B,07L85486-4       ,HUDSON              ,12/26/2019 10:37,07S100121819
C,CS-137   ,NO ,   4.660E-02,   4.816E-02,   9.049E-02,,    0.515
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:00:01.32
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 16-JAN-2020 12:46:10.88

LIMS No., Customer Name, Client ID: L85486-5 S TEXAS

Sample ID	: 11L85486-5		Smple Date: 4-DEC-2019 15:58:00.0
Sample Type	: S		Geometry : 11FS112019
Quantity	: 3.91120E+02 g Dry		BKGFILE : 11BG122719MT
Start Channel	: 80	Energy Tol : 2.00000	Real Time : 0 01:13:40.83
End Channel	: 4090	Pk Srch Sens: 9.00000	Live time : 0 01:13:38.83
MDA Multiple	: 4.6600	Library Used: HUDSON	

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	74.94*	88	210	1.58	149.06	3.42E+00	1.99E-02	36.2	2.81E+00
2	2	77.14	126	176	1.40	153.47	3.42E+00	2.86E-02	22.8	
3	0	238.27*	122	148	1.36	475.87	2.05E+00	2.77E-02	21.5	
4	0	352.17*	98	67	1.56	703.77	1.55E+00	2.21E-02	22.0	
5	0	511.56*	3	55	2.80	1022.67	1.16E+00	5.78E-04	830.7	
6	0	583.20*	50	32	1.23	1166.00	1.05E+00	1.12E-02	28.6	
7	0	609.39*	92	40	1.23	1218.40	1.01E+00	2.08E-02	18.6	
8	0	1460.87*	93	18	2.15	2921.88	5.06E-01	2.10E-02	16.4	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85486-5 Acquisition date : 16-JAN-2020 12:46:10

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85486-5 Acquisition date : 16-JAN-2020 12:46:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.94	88	210	1.58	149.06	141	18	1.99E-02	72.5	3.42E+00	
2	77.14	126	176	1.40	153.47	141	18	2.86E-02	45.6	3.42E+00	
0	238.27	122	148	1.36	475.87	471	11	2.77E-02	43.1	2.05E+00	
0	352.17	98	67	1.56	703.77	698	14	2.21E-02	43.9	1.55E+00	
0	511.56	3	55	2.80	1022.67	1015	16	5.78E-04	****	1.16E+00	
0	583.20	50	32	1.23	1166.00	1159	13	1.12E-02	57.2	1.05E+00	
0	609.39	92	40	1.23	1218.40	1212	13	2.08E-02	37.3	1.01E+00	
0	1460.87	93	18	2.15	2921.88	2913	19	2.10E-02	32.7	5.06E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.460E-02		2.875E-02	4.994E-02	0.000E+00	-0.292

```
A,11L85486-5      ,01/16/2020 14:00,12/04/2019 15:58,   3.911E+02,L85486-5 S TEX
B,11L85486-5      ,HUDSON           ,12/26/2019 12:27,11FS112019
C,CS-137  ,NO ,  -1.460E-02,   2.875E-02,   4.994E-02,,   -0.292
```

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 15:07:24.45
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 16-JAN-2020 14:07:13.66

LIMS No., Customer Name, Client ID: L85486-6 S TEXAS

Sample ID : 14L85486-6
Sample Type : S
Quantity : 1.19970E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 4-DEC-2019 16:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:00:00.74
Live time : 0 01:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.57*	172	40	1.04	474.44	2.91E+00	4.77E-02	10.6	3.26E+00
2	1	295.06*	51	41	1.68	587.45	2.44E+00	1.43E-02	28.6	8.87E-01
3	1	338.31	35	29	1.87	673.98	2.17E+00	9.64E-03	33.1	7.31E+00
4	1	351.78*	80	27	1.38	700.92	2.09E+00	2.22E-02	17.3	1.88E+00
5	1	511.05*	27	27	2.99	1019.58	1.49E+00	7.58E-03	61.6	8.60E-01
6	1	583.18	58	15	1.41	1163.92	1.32E+00	1.61E-02	18.9	8.43E-01
7	1	609.88*	52	15	2.05	1217.35	1.26E+00	1.44E-02	22.0	1.70E+00
8	1	911.52	41	4	2.81	1820.98	8.69E-01	1.13E-02	19.7	1.57E+00
9	1	1461.25*	62	3	2.02	2921.40	5.68E-01	1.73E-02	15.1	1.11E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85486-6 Acquisition date : 16-JAN-2020 14:07:13

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85486-6 Acquisition date : 16-JAN-2020 14:07:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.57	172	40	1.04	474.44	469	9	4.77E-02	21.2	2.91E+00	
1	295.06	51	41	1.68	587.45	583	11	1.43E-02	57.1	2.44E+00	
1	338.31	35	29	1.87	673.98	670	10	9.64E-03	66.2	2.17E+00	
1	351.78	80	27	1.38	700.92	696	9	2.22E-02	34.6	2.09E+00	
1	511.05	27	27	2.99	1019.58	1012	21	7.58E-03	****	1.49E+00	
1	583.18	58	15	1.41	1163.92	1161	10	1.61E-02	37.7	1.32E+00	
1	609.88	52	15	2.05	1217.35	1212	11	1.44E-02	43.9	1.26E+00	
1	911.52	41	4	2.81	1820.98	1815	15	1.13E-02	39.4	8.69E-01	
1	1461.25	62	3	2.02	2921.40	2915	12	1.73E-02	30.2	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	7.288E-02		7.804E-02	1.452E-01	0.000E+00	0.502

```
A,14L85486-6      ,01/16/2020 15:07,12/04/2019 16:00,   1.200E+02,L85486-6 S TEX
B,14L85486-6      ,HUDSON             ,12/30/2019 12:20,14S100121919
C,CS-137  ,NO ,   7.288E-02,   7.804E-02,   1.452E-01,,    0.502
```

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:56:06.65
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 16-JAN-2020 13:46:14.79

LIMS No., Customer Name, Client ID: L85486-7 S TEXAS

Sample ID : 08L85486-7
Sample Type : S
Quantity : 8.63800E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 4-DEC-2019 16:02:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:09:43.91
Live time : 0 01:09:43.07

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.78*	105	115	1.38	484.47	2.69E+00	2.50E-02	21.6	8.30E-01
2	1	295.40*	56	46	1.60	597.46	2.29E+00	1.34E-02	28.0	1.40E+00
3	1	352.08*	102	41	1.96	710.57	1.98E+00	2.44E-02	16.8	1.31E+00
4	1	609.51*	72	18	1.59	1224.26	1.24E+00	1.72E-02	18.4	1.70E+00
5	1	1461.20*	71	13	2.14	2923.49	5.83E-01	1.70E-02	18.0	6.57E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85486-7 Acquisition date : 16-JAN-2020 13:46:14

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85486-7 Acquisition date : 16-JAN-2020 13:46:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.78	105	115	1.38	484.47	480	9	2.50E-02	43.3	2.69E+00	
1	295.40	56	46	1.60	597.46	593	10	1.34E-02	55.9	2.29E+00	
1	352.08	102	41	1.96	710.57	705	11	2.44E-02	33.6	1.98E+00	
1	609.51	72	18	1.59	1224.26	1218	11	1.72E-02	36.9	1.24E+00	
1	1461.20	71	13	2.14	2923.49	2917	14	1.70E-02	36.0	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.116E-02		1.092E-01	1.771E-01	0.000E+00	-0.063

```
A,08L85486-7       ,01/16/2020 14:56,12/04/2019 16:02,   8.638E+01,L85486-7 S TEX
B,08L85486-7       ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,  -1.116E-02,   1.092E-01,   1.771E-01,,   -0.063
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 15:07:22.26
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 16-JAN-2020 14:07:14.71

LIMS No., Customer Name, Client ID: L85486-8 S TEXAS

Sample ID : 15L85486-8 Smple Date: 4-DEC-2019 16:04:00.0
Sample Type : S Geometry : 15S100121719
Quantity : 9.87900E+01 g Dry BKGFILE : 15BG122719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 01:00:00.39
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 01:00:00.00
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.63*	55	45	1.66	366.53	3.74E+00	1.53E-02	26.1	2.12E+00
2	1	238.37*	144	104	1.25	472.25	3.18E+00	4.00E-02	16.0	2.71E+00
3	1	295.62*	41	35	1.75	587.00	2.67E+00	1.14E-02	35.6	3.48E+00
4	1	351.82*	61	34	1.33	699.66	2.28E+00	1.68E-02	25.8	8.25E-01
5	1	511.17*	3	44	2.72	1019.10	1.60E+00	9.32E-04	523.7	1.31E+00
6	1	583.22*	50	16	1.70	1163.53	1.41E+00	1.39E-02	22.4	6.34E-01
7	1	609.55*	45	19	1.66	1216.31	1.35E+00	1.24E-02	26.1	1.36E+00
8	1	911.58*	23	16	2.25	1821.72	9.28E-01	6.40E-03	42.8	1.52E+00
9	1	968.98	34	3	2.06	1936.78	8.78E-01	9.37E-03	19.6	4.01E-01
10	1	1461.02*	76	4	2.10	2923.04	6.13E-01	2.11E-02	13.8	8.26E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85486-8 Acquisition date : 16-JAN-2020 14:07:14

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85486-8 Acquisition date : 16-JAN-2020 14:07:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.63	55	45	1.66	366.53	363	8	1.53E-02	52.2	3.74E+00	
1	238.37	144	104	1.25	472.25	468	11	4.00E-02	32.0	3.18E+00	
1	295.62	41	35	1.75	587.00	582	11	1.14E-02	71.1	2.67E+00	
1	351.82	61	34	1.33	699.66	692	13	1.68E-02	51.5	2.28E+00	
1	511.17	3	44	2.72	1019.10	1013	14	9.32E-04	****	1.60E+00	
1	583.22	50	16	1.70	1163.53	1157	13	1.39E-02	44.8	1.41E+00	
1	609.55	45	19	1.66	1216.31	1209	12	1.24E-02	52.3	1.35E+00	
1	911.58	23	16	2.25	1821.72	1816	13	6.40E-03	85.6	9.28E-01	
1	968.98	34	3	2.06	1936.78	1933	11	9.37E-03	39.1	8.78E-01	
1	1461.02	76	4	2.10	2923.04	2915	16	2.11E-02	27.6	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	7.354E-02		8.324E-02	1.565E-01	0.000E+00	0.470

```
A,15L85486-8       ,01/16/2020 15:07,12/04/2019 16:04,   9.879E+01,L85486-8 S TEX
B,15L85486-8       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137  ,NO ,   7.354E-02,   8.324E-02,   1.565E-01,,    0.470
```

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:57:11.37
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 16-JAN-2020 13:46:38.98

LIMS No., Customer Name, Client ID: L85486-9 S TEXAS

Sample ID : 01L85486-9
Sample Type : S
Quantity : 4.69800E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 4-DEC-2019 16:06:00.0
Geometry : 01S50121819
BKGFILE : 01BG122719MT
Real Time : 0 01:10:20.01
Live time : 0 01:10:19.39

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.43*	147	94	1.15	477.01	5.59E+00	3.49E-02	14.6	2.82E+00
2	1	295.22*	73	39	1.26	590.50	4.77E+00	1.74E-02	21.0	1.68E+00
3	1	352.11*	78	55	1.65	704.20	4.13E+00	1.84E-02	23.9	2.90E+00
4	1	511.02*	29	93	3.17	1021.79	2.99E+00	6.79E-03	97.2	1.44E+00
5	1	583.02*	60	24	1.96	1165.70	2.66E+00	1.43E-02	22.8	4.74E-01
6	1	609.02*	96	33	1.54	1217.65	2.56E+00	2.28E-02	16.7	1.24E+00
7	1	910.78*	29	12	1.32	1820.81	1.77E+00	6.88E-03	33.1	1.15E+00
8	1	1460.03*	79	7	2.39	2918.74	1.16E+00	1.88E-02	13.9	5.40E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85486-9 Acquisition date : 16-JAN-2020 13:46:38

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85486-9 Acquisition date : 16-JAN-2020 13:46:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.43	147	94	1.15	477.01	472	9	3.49E-02	29.3	5.59E+00	
1	295.22	73	39	1.26	590.50	588	9	1.74E-02	42.1	4.77E+00	
1	352.11	78	55	1.65	704.20	699	12	1.84E-02	47.8	4.13E+00	
1	511.02	29	93	3.17	1021.79	1013	21	6.79E-03	****	2.99E+00	
1	583.02	60	24	1.96	1165.70	1159	16	1.43E-02	45.5	2.66E+00	
1	609.02	96	33	1.54	1217.65	1211	13	2.28E-02	33.4	2.56E+00	
1	910.78	29	12	1.32	1820.81	1815	12	6.88E-03	66.1	1.77E+00	
1	1460.03	79	7	2.39	2918.74	2912	12	1.88E-02	27.7	1.16E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-8.611E-03		9.590E-02	1.584E-01	0.000E+00	-0.054

```
A,01L85486-9       ,01/16/2020 14:57,12/04/2019 16:06,   4.698E+01,L85486-9 S TEX
B,01L85486-9       ,HUDSON              ,12/30/2019 11:02,01S50121819
C,CS-137  ,NO ,  -8.611E-03,   9.590E-02,   1.584E-01,,   -0.054
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:58:18.97
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-JAN-2020 13:46:14.54

LIMS No., Customer Name, Client ID: L85486-10 S TEXAS

Sample ID : 02L85486-10
Sample Type : S
Quantity : 5.18500E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 4-DEC-2019 16:08:00.0
Geometry : 02S50121719
BKGFILE : 02BG122719MT
Real Time : 0 01:11:55.14
Live time : 0 01:11:54.50
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	74.89*	83	80	1.04	134.58	6.00E+00	1.93E-02	22.0	2.60E+00
2	2	77.14	97	92	1.20	139.11	6.18E+00	2.25E-02	20.6	
3	0	238.58*	153	85	1.01	464.27	4.91E+00	3.55E-02	14.1	
4	0	295.33*	37	64	0.69	578.57	4.15E+00	8.55E-03	45.8	
5	0	338.88	31	43	1.07	666.28	3.71E+00	7.26E-03	38.6	
6	0	352.20*	41	53	1.07	693.10	3.59E+00	9.52E-03	40.0	
7	0	582.89*	54	21	1.35	1157.76	2.30E+00	1.26E-02	22.2	
8	0	609.15*	55	19	0.83	1210.67	2.20E+00	1.28E-02	23.3	
9	0	911.33*	21	20	0.75	1819.34	1.49E+00	4.78E-03	50.9	
10	0	1460.67*	56	10	1.27	2925.97	9.48E-01	1.29E-02	19.4	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85486-10 Acquisition date : 16-JAN-2020 13:46:14

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.89	83	80	1.04	134.58	127	17	1.93E-02	44.0	6.00E+00	
2	77.14	97	92	1.20	139.11	127	17	2.25E-02	41.2	6.18E+00	
0	238.58	153	85	1.01	464.27	458	10	3.55E-02	28.2	4.91E+00	
0	295.33	37	64	0.69	578.57	574	10	8.55E-03	91.5	4.15E+00	
0	338.88	31	43	1.07	666.28	661	8	7.26E-03	77.2	3.71E+00	
0	352.20	41	53	1.07	693.10	688	11	9.52E-03	80.0	3.59E+00	
0	582.89	54	21	1.35	1157.76	1151	12	1.26E-02	44.5	2.30E+00	
0	609.15	55	19	0.83	1210.67	1204	15	1.28E-02	46.6	2.20E+00	
0	911.33	21	20	0.75	1819.34	1811	13	4.78E-03	****	1.49E+00	
0	1460.67	56	10	1.27	2925.97	2919	14	1.29E-02	38.9	9.48E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	9.305E-02		9.753E-02	1.831E-01	0.000E+00	0.508

A,02L85486-10 ,01/16/2020 14:58,12/04/2019 16:08, 5.185E+01,L85486-10 S TE
B,02L85486-10 ,HUDSON ,01/15/2020 08:15,02S50121719
C,CS-137 ,NO , 9.305E-02, 9.753E-02, 1.831E-01,, 0.508

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 15:10:23.41
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 16-JAN-2020 14:07:16.30

LIMS No., Customer Name, Client ID: L85486-11 S TEXAS

Sample ID : 13L85486-11
Sample Type : S
Quantity : 5.75800E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 4-DEC-2019 16:10:00.0
Geometry : 13S50122019
BKGFILE : 13BG122719MT
Real Time : 0 01:02:51.33
Live time : 0 01:02:50.24

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.76*	2	112	1.35	371.00	5.41E+00	5.39E-04	*****	2.65E+00
2	1	238.54*	126	107	1.05	476.37	4.58E+00	3.33E-02	18.2	9.13E-01
3	1	295.13*	41	47	1.63	589.36	3.90E+00	1.07E-02	36.5	3.00E+00
4	1	351.94*	73	52	1.29	702.81	3.38E+00	1.93E-02	25.0	8.80E-01
5	1	583.30*	29	41	1.74	1165.03	2.23E+00	7.65E-03	46.7	1.58E+00
6	1	608.90*	74	20	2.79	1216.19	2.15E+00	1.95E-02	19.3	2.41E+00
7	1	1460.58*	75	0	2.32	2920.35	9.97E-01	1.99E-02	14.9	1.65E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85486-11 Acquisition date : 16-JAN-2020 14:07:16

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85486-11 Acquisition date : 16-JAN-2020 14:07:16

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.76	2	112	1.35	371.00	366	10	5.39E-04	****	5.41E+00	
1	238.54	126	107	1.05	476.37	471	10	3.33E-02	36.3	4.58E+00	
1	295.13	41	47	1.63	589.36	585	9	1.07E-02	72.9	3.90E+00	
1	351.94	73	52	1.29	702.81	696	12	1.93E-02	50.0	3.38E+00	
1	583.30	29	41	1.74	1165.03	1160	10	7.65E-03	93.3	2.23E+00	
1	608.90	74	20	2.79	1216.19	1209	14	1.95E-02	38.6	2.15E+00	
1	1460.58	75	0	2.32	2920.35	2915	11	1.99E-02	29.8	9.97E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	6.503E-04		1.084E-01	1.830E-01	0.000E+00	0.004

```
A,13L85486-11     ,01/16/2020 15:10,12/04/2019 16:10,   5.758E+01,L85486-11 S TE
B,13L85486-11     ,HUDSON              ,01/15/2020 08:42,13S50122019
C,CS-137  ,NO ,   6.503E-04,   1.084E-01,   1.830E-01,,    0.004
```

Analyst: SR

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 18-DEC-2019 14:23:40.93
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 18-DEC-2019 13:04:46.49

LIMS No., Customer Name, Client ID: WG32657-1 M FITZ NMP REMP

Sample ID : 13WG32657-1
Sample Type : M
Quantity : 3.80969E+00 L
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 16-DEC-2019 06:20:00.
Geometry : 1335L032619
BKGFILE : 13BG112719MT
Real Time : 0 01:18:44.26
Live time : 0 01:18:42.71

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	1460.79*	406	8	1.91	2921.26	4.03E-01	8.59E-02	5.6	1.49E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/L	Decay Corr pCi/L	2-Sigma %Error
K-40	1460.81	406	10.67*	4.030E-01	1.418E+03	1.418E+03	11.11

Flag: "*" = Keyline

Sample ID : 13WG32657-1
Acquisition date : 18-DEC-2019 13:04:46

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type : natural

Nuclide	Hlife	Decay	Uncorrected pCi/L	Decay Corr pCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	1.418E+03	1.418E+03	0.158E+03	11.11	
	Total Activity :		1.418E+03	1.418E+03			
	Grand Total Activity :		1.418E+03	1.418E+03			

Flags: "K" = Keyline not found
"M" = Manually accepted
"E" = Manually edited
"A" = Nuclide specific abn. limit

Sample ID : 13WG32657-1 Acquisition date : 18-DEC-2019 13:04:46

None

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type : natural

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/L	Wtd Mean Decay Corr pCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	1.418E+03	1.418E+03	0.158E+03	11.11	
Total Activity :			1.418E+03	1.418E+03			
Grand Total Activity :			1.418E+03	1.418E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	1.418E+03	1.576E+02	6.632E+01	0.000E+00	21.380

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-1.720E+01		3.101E+01	4.765E+01	0.000E+00	-0.361
NA-22	4.161E-01		4.315E+00	7.314E+00	0.000E+00	0.057
NA-24	8.038E+00		5.477E+01	9.312E+01	0.000E+00	0.086
CR-51	-2.077E+00		3.017E+01	5.039E+01	0.000E+00	-0.041
MN-54	2.197E+00		3.863E+00	6.820E+00	0.000E+00	0.322
CO-56	2.861E+00		4.032E+00	7.513E+00	0.000E+00	0.381
CO-57	-3.312E-01		3.504E+00	5.767E+00	0.000E+00	-0.057
CO-58	-1.893E+00		3.546E+00	5.457E+00	0.000E+00	-0.347
FE-59	-7.589E+00		8.546E+00	1.203E+01	0.000E+00	-0.631
CO-60	-1.745E+00		4.474E+00	7.008E+00	0.000E+00	-0.249
ZN-65	-2.797E+00		9.076E+00	1.401E+01	0.000E+00	-0.200
SE-75	3.964E+00		4.956E+00	8.359E+00	0.000E+00	0.474

Y-88	-1.167E+00	3.832E+00	5.725E+00	0.000E+00	-0.204
NB-94	7.624E-01	3.694E+00	6.257E+00	0.000E+00	0.122
NB-95	1.940E+00	4.012E+00	7.027E+00	0.000E+00	0.276
ZR-95	9.220E-01	5.790E+00	9.860E+00	0.000E+00	0.094
ZRNB-95	1.940E+00	4.012E+00	7.027E+00	0.000E+00	0.276
MO-99	1.274E+01	4.647E+01	8.021E+01	0.000E+00	0.159
RU-103	-1.855E+00	3.830E+00	5.918E+00	0.000E+00	-0.313
RU-106	6.625E+00	3.305E+01	5.429E+01	0.000E+00	0.122
AG-110m	4.855E-04	3.681E+00	6.205E+00	0.000E+00	0.000
SN-113	-3.795E-01	4.474E+00	7.353E+00	0.000E+00	-0.052
SB-124	-4.907E-02	3.567E+00	5.715E+00	0.000E+00	-0.009
SB-125	2.045E+00	9.753E+00	1.641E+01	0.000E+00	0.125
TE-129M	2.561E+01	4.093E+01	7.132E+01	0.000E+00	0.359
I-131	1.010E-01	4.438E+00	7.404E+00	0.000E+00	0.014
TE-132	2.648E+00	5.215E+00	8.655E+00	0.000E+00	0.306
BA-133	-2.806E+00	4.707E+00	7.427E+00	0.000E+00	-0.378
CS-134	1.270E+00	4.014E+00	6.935E+00	0.000E+00	0.183
CS-136	-2.880E+00	3.973E+00	5.937E+00	0.000E+00	-0.485
CS-137	-3.091E-04	3.994E+00	6.730E+00	0.000E+00	0.000
CE-139	-2.759E+00	3.766E+00	5.851E+00	0.000E+00	-0.472
BA-140	2.307E+00	1.315E+01	2.176E+01	0.000E+00	0.106
BALA140	-6.830E-01	4.085E+00	6.431E+00	0.000E+00	-0.106
LA-140	-6.830E-01	4.085E+00	6.431E+00	0.000E+00	-0.106
CE-141	-7.701E+00	6.263E+00	9.576E+00	0.000E+00	-0.804
CE-144	-8.748E+00	2.733E+01	4.418E+01	0.000E+00	-0.198
EU-152	-5.258E+00	1.002E+01	1.594E+01	0.000E+00	-0.330
EU-154	-2.181E+00	7.274E+00	1.182E+01	0.000E+00	-0.184
RA-226	-9.602E+01	9.501E+01	1.577E+02	0.000E+00	-0.609
AC-228	-1.640E+00	1.536E+01	2.667E+01	0.000E+00	-0.062
TH-228	5.142E+00	7.461E+00	1.305E+01	0.000E+00	0.394
TH-232	-1.639E+00	1.535E+01	2.665E+01	0.000E+00	-0.062

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
U-235	1.488E+01		2.679E+01	4.578E+01	0.000E+00	0.325
U-238	-8.103E+01		4.978E+02	8.137E+02	0.000E+00	-0.100
NP-239	-6.318E+00		2.707E+01	4.449E+01	0.000E+00	-0.142
AM-241	-1.357E+01		3.995E+01	6.692E+01	0.000E+00	-0.203

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A,13WG32657-1     ,12/18/2019 14:23,12/16/2019 06:20,   3.810E+00,WG32657-1 M FI
B,13WG32657-1     ,LIBD                ,12/18/2019 09:28,1335L032619
C,K-40     ,YES,   1.418E+03,   1.576E+02,   6.632E+01,,    21.380
C,BE-7     ,NO ,  -1.720E+01,   3.101E+01,   4.765E+01,,    -0.361
C,NA-22    ,NO ,   4.161E-01,   4.315E+00,   7.314E+00,,     0.057
C,NA-24    ,NO ,   8.038E+00,   5.477E+01,   9.312E+01,,     0.086
C,CR-51    ,NO ,  -2.077E+00,   3.017E+01,   5.039E+01,,    -0.041
C,MN-54    ,NO ,   2.197E+00,   3.863E+00,   6.820E+00,,     0.322
C,CO-56    ,NO ,   2.861E+00,   4.032E+00,   7.513E+00,,     0.381
C,CO-57    ,NO ,  -3.312E-01,   3.504E+00,   5.767E+00,,    -0.057
C,CO-58    ,NO ,  -1.893E+00,   3.546E+00,   5.457E+00,,    -0.347
C,FE-59    ,NO ,  -7.589E+00,   8.546E+00,   1.203E+01,,    -0.631
C,CO-60    ,NO ,  -1.745E+00,   4.474E+00,   7.008E+00,,    -0.249
C,ZN-65    ,NO ,  -2.797E+00,   9.076E+00,   1.401E+01,,    -0.200
C,SE-75    ,NO ,   3.964E+00,   4.956E+00,   8.359E+00,,     0.474
C,Y-88     ,NO ,  -1.167E+00,   3.832E+00,   5.725E+00,,    -0.204
C,NB-94    ,NO ,   7.624E-01,   3.694E+00,   6.257E+00,,     0.122
C,NB-95    ,NO ,   1.940E+00,   4.012E+00,   7.027E+00,,     0.276
C,ZR-95    ,NO ,   9.220E-01,   5.790E+00,   9.860E+00,,     0.094
C,ZRNB-95  ,NO ,   1.940E+00,   4.012E+00,   7.027E+00,,     0.276
C,MO-99    ,NO ,   1.274E+01,   4.647E+01,   8.021E+01,,     0.159
C,RU-103   ,NO ,  -1.855E+00,   3.830E+00,   5.918E+00,,    -0.313
C,RU-106   ,NO ,   6.625E+00,   3.305E+01,   5.429E+01,,     0.122
C,AG-110m  ,NO ,   4.855E-04,   3.681E+00,   6.205E+00,,     0.000
C,SN-113   ,NO ,  -3.795E-01,   4.474E+00,   7.353E+00,,    -0.052
C,SB-124   ,NO ,  -4.907E-02,   3.567E+00,   5.715E+00,,    -0.009
C,SB-125   ,NO ,   2.045E+00,   9.753E+00,   1.641E+01,,     0.125
C,TE-129M  ,NO ,   2.561E+01,   4.093E+01,   7.132E+01,,     0.359
C,I-131    ,NO ,   1.010E-01,   4.438E+00,   7.404E+00,,     0.014
C,TE-132   ,NO ,   2.648E+00,   5.215E+00,   8.655E+00,,     0.306
C,BA-133   ,NO ,  -2.806E+00,   4.707E+00,   7.427E+00,,    -0.378
C,CS-134   ,NO ,   1.270E+00,   4.014E+00,   6.935E+00,,     0.183
C,CS-136   ,NO ,  -2.880E+00,   3.973E+00,   5.937E+00,,    -0.485
C,CS-137   ,NO ,  -3.091E-04,   3.994E+00,   6.730E+00,,     0.000
C,CE-139   ,NO ,  -2.759E+00,   3.766E+00,   5.851E+00,,    -0.472
C,BA-140   ,NO ,   2.307E+00,   1.315E+01,   2.176E+01,,     0.106
C,BALA140  ,NO ,  -6.830E-01,   4.085E+00,   6.431E+00,,    -0.106
C,LA-140   ,NO ,  -6.830E-01,   4.085E+00,   6.431E+00,,    -0.106
C,CE-141   ,NO ,  -7.701E+00,   6.263E+00,   9.576E+00,,    -0.804
C,CE-144   ,NO ,  -8.748E+00,   2.733E+01,   4.418E+01,,    -0.198
C,EU-152   ,NO ,  -5.258E+00,   1.002E+01,   1.594E+01,,    -0.330
C,EU-154   ,NO ,  -2.181E+00,   7.274E+00,   1.182E+01,,    -0.184
C,RA-226   ,NO ,  -9.602E+01,   9.501E+01,   1.577E+02,,    -0.609
C,AC-228   ,NO ,  -1.640E+00,   1.536E+01,   2.667E+01,,    -0.062
C,TH-228   ,NO ,   5.142E+00,   7.461E+00,   1.305E+01,,     0.394
C,TH-232   ,NO ,  -1.639E+00,   1.535E+01,   2.665E+01,,    -0.062
C,U-235    ,NO ,   1.488E+01,   2.679E+01,   4.578E+01,,     0.325
C,U-238    ,NO ,  -8.103E+01,   4.978E+02,   8.137E+02,,    -0.100
C,NP-239   ,NO ,  -6.318E+00,   2.707E+01,   4.449E+01,,    -0.142
C,AM-241   ,NO ,  -1.357E+01,   3.995E+01,   6.692E+01,,    -0.203
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GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85486

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32657-1	M	DUP	GELI	3809.69 ml	12/17/19	SMC	BALANCE 8							WG32657
L85486-1	S		GELI	174.15 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-2	S		GELI	366.72 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-3	S		GELI	169.41 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-4	S		GELI	175.25 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-5	S		GELI	391.12 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-6	S		GELI	119.97 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-7	S		GELI	86.38 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-8	S		GELI	98.79 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-9	S		GELI	46.98 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-10	S		GELI	51.85 g dry	12/17/19	SMC	BALANCE 8							WG32657
L85486-11	S		GELI	57.58 g dry	12/17/19	SMC	BALANCE 8							WG32657

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.08
1000.00	1000.10

Check Date: 17-DEC-19

Analyst: SMC

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
GELI	BALANCE 8	17-DEC-19
NONE	BALANCE 8	17-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME
	pCi/ml	BI YIELD	
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

Standards Prepared by: [signature] 2/21/15

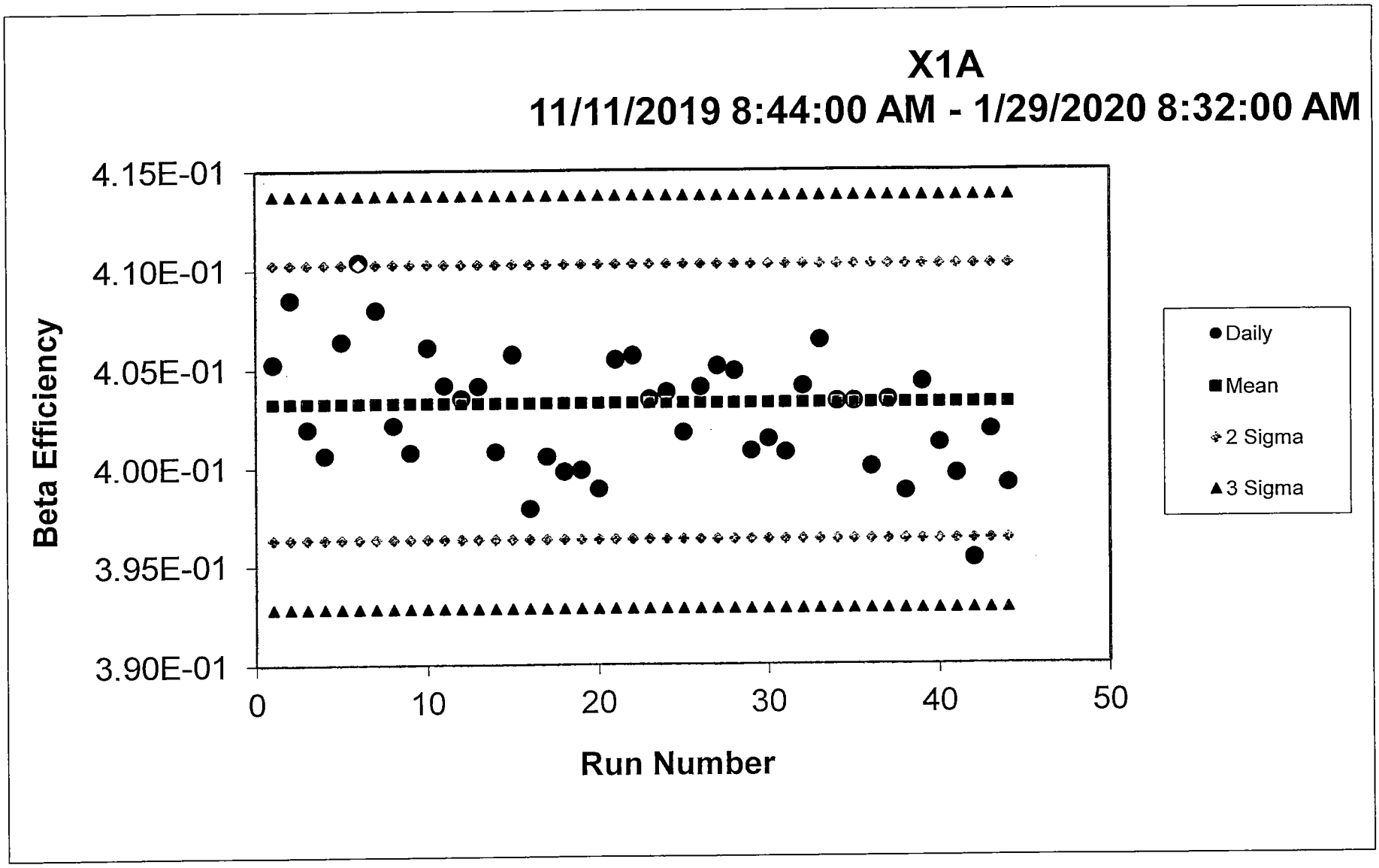
Calibration by: Keith Jett 2/21/15

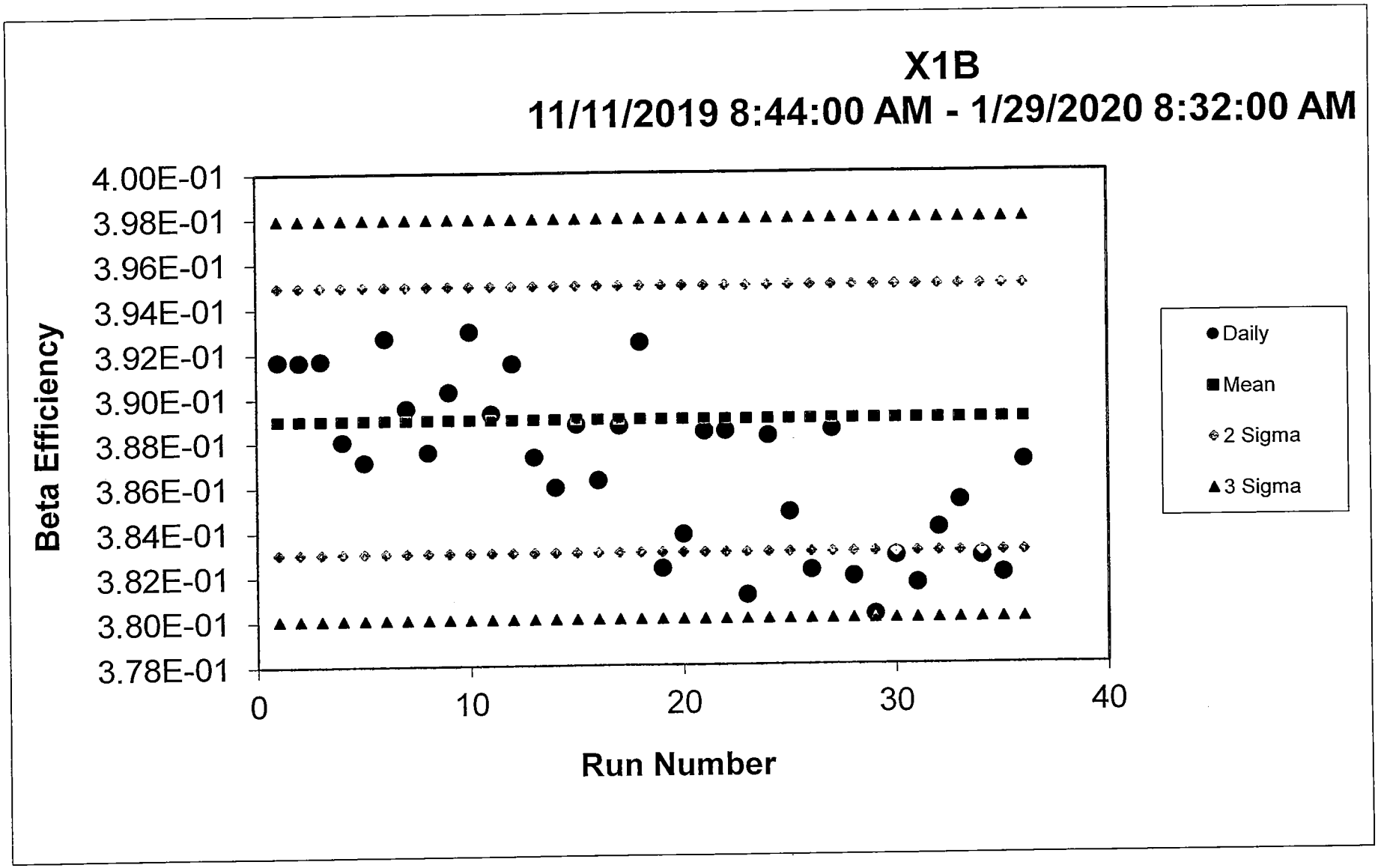
Y COUNTER PB-210/BI-210 CALIBRATION											
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

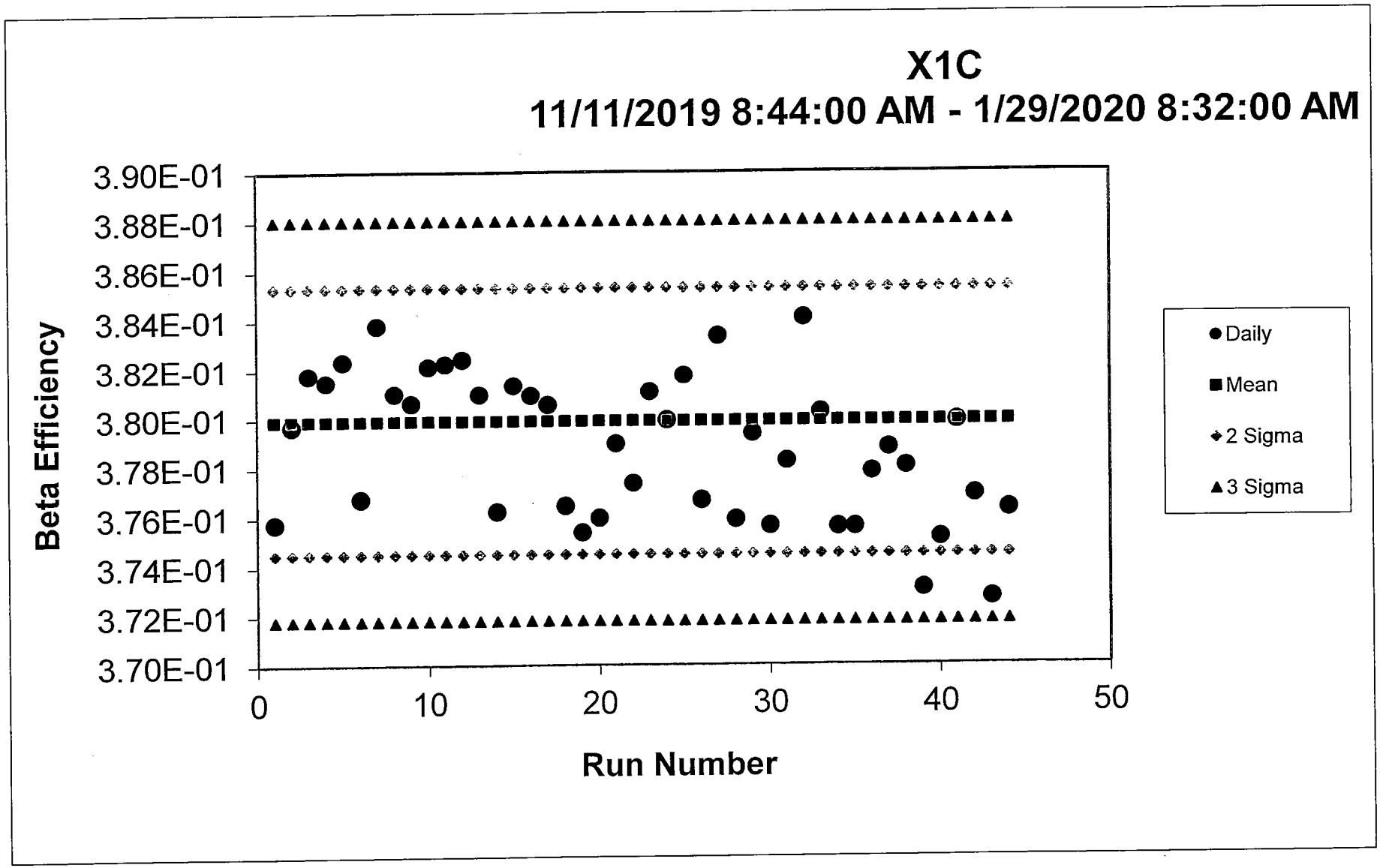
210PB-061014	Activity		MILK DATE/TIME		Standards Prepared by:		2/21/15
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55		Calibration by: Keith Jett		2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

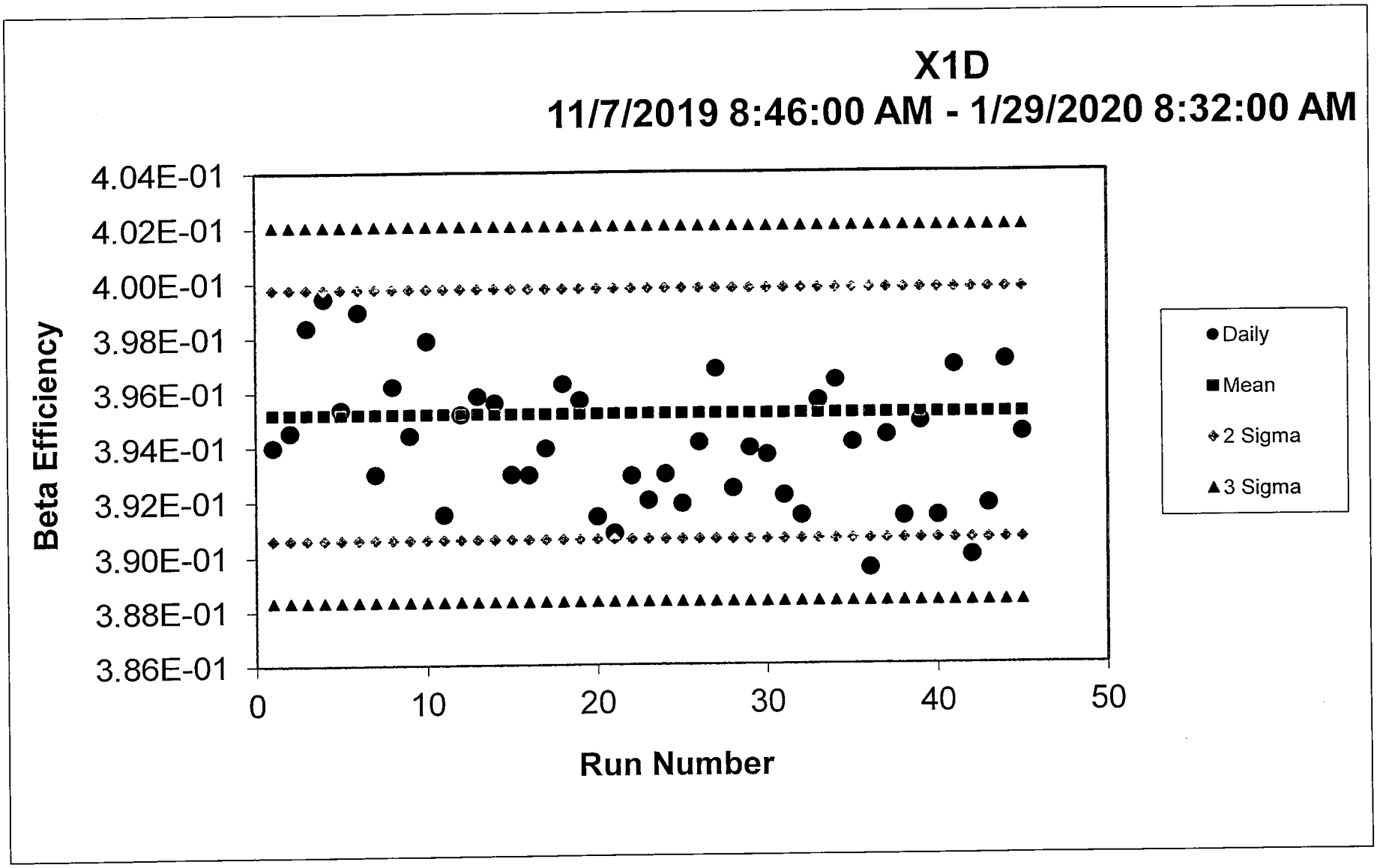
LEAD 210

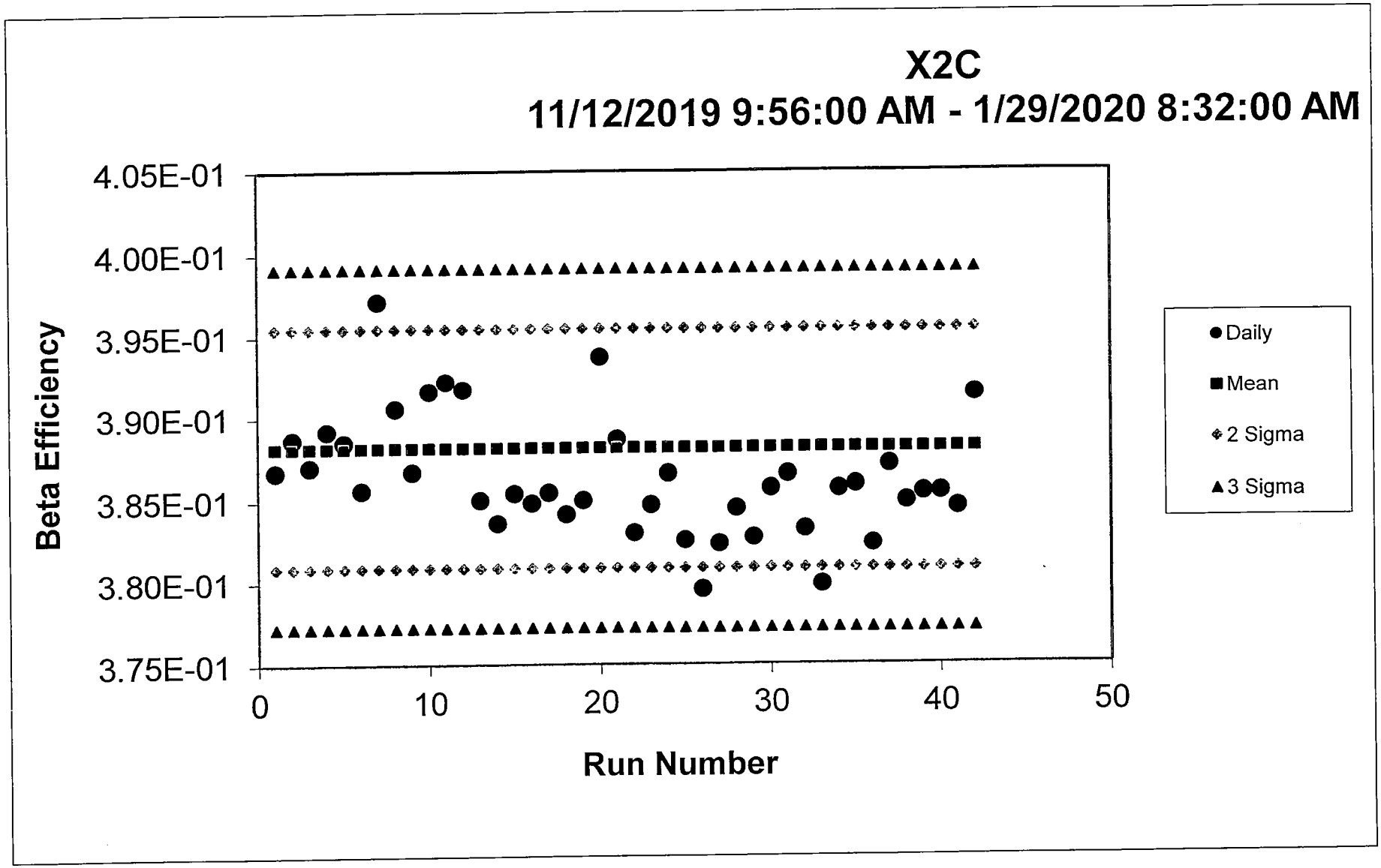
Daily Source and Background Checks

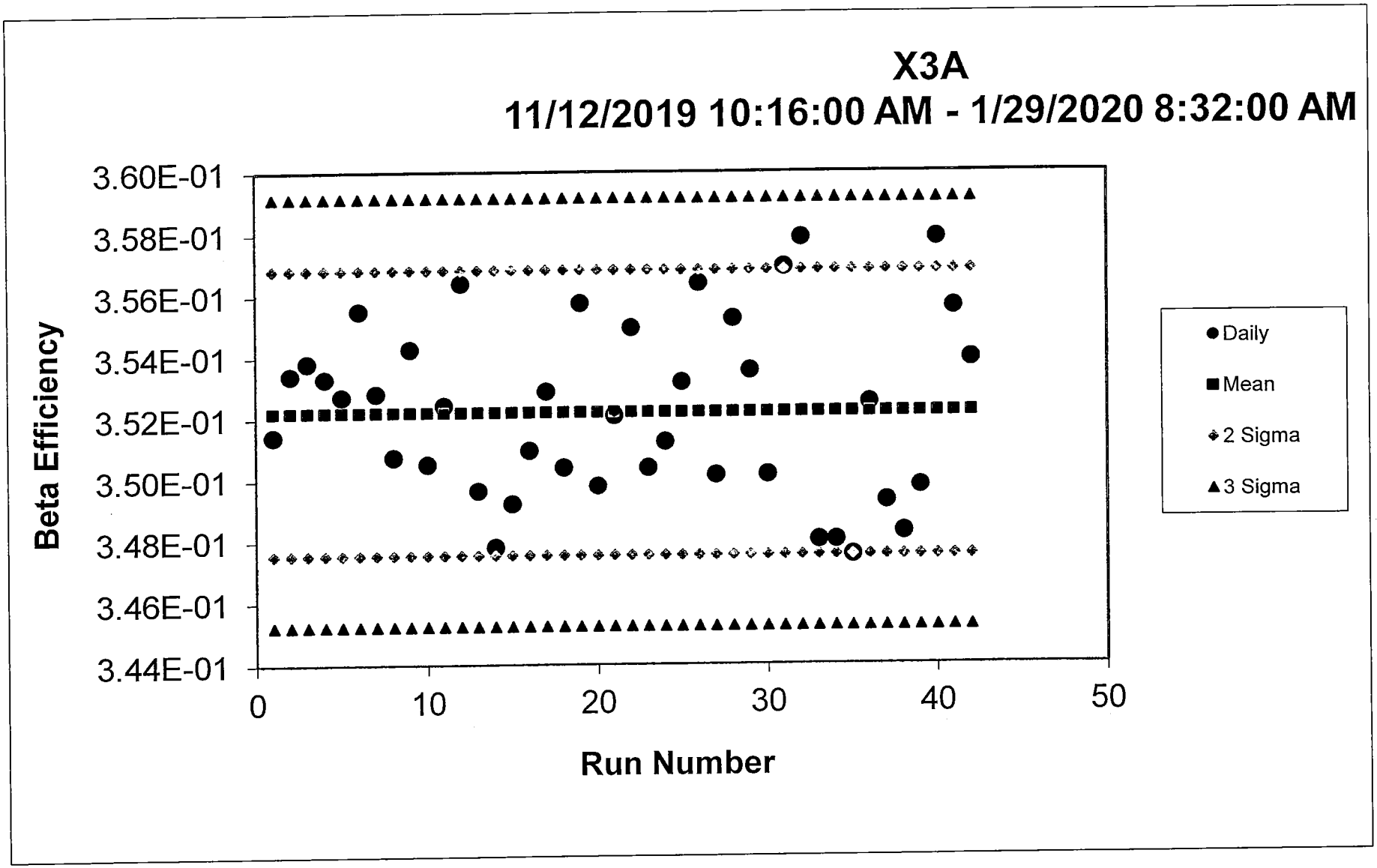

X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

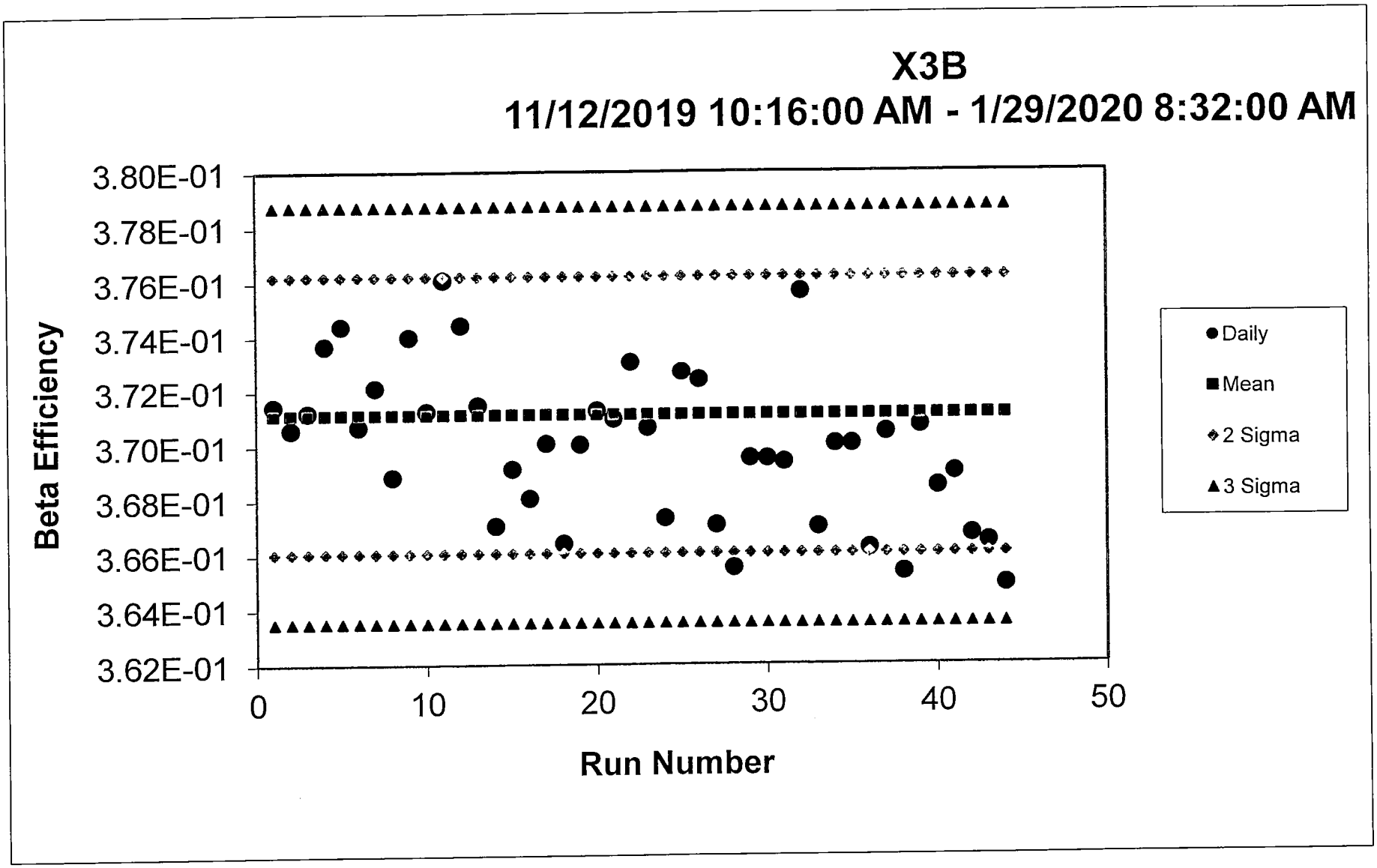

X1B
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma

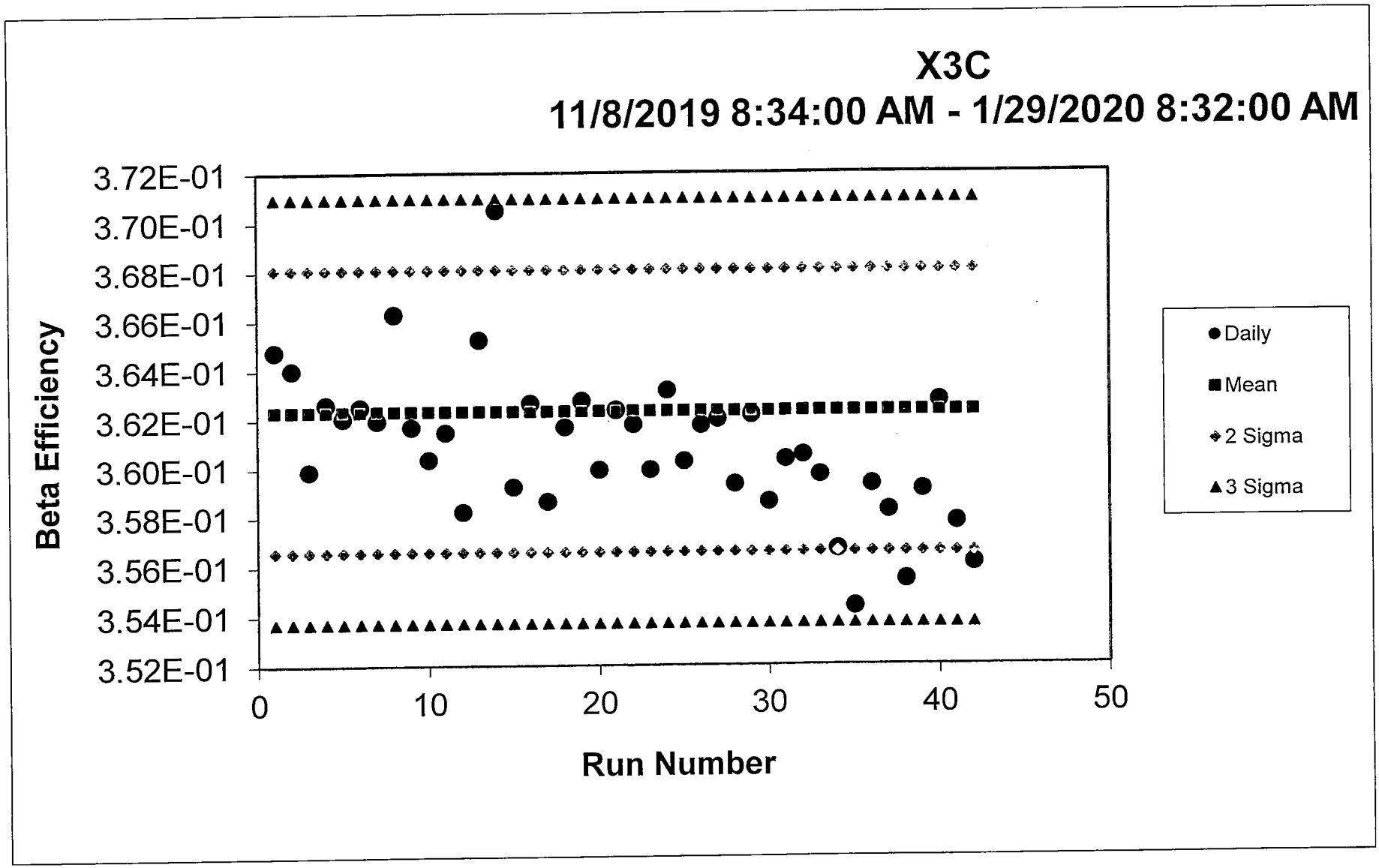

X1C
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1D
11/7/2019 8:46:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.04E-01
4.02E-01
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X2C
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.05E-01
4.00E-01
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X3A
11/12/2019 10:16:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.60E-01
3.58E-01
3.56E-01
3.54E-01
3.52E-01
3.50E-01
3.48E-01
3.46E-01
3.44E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X3B
11/12/2019 10:16:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X3C
11/8/2019 8:34:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
3.58E-01
3.56E-01
3.54E-01
3.52E-01
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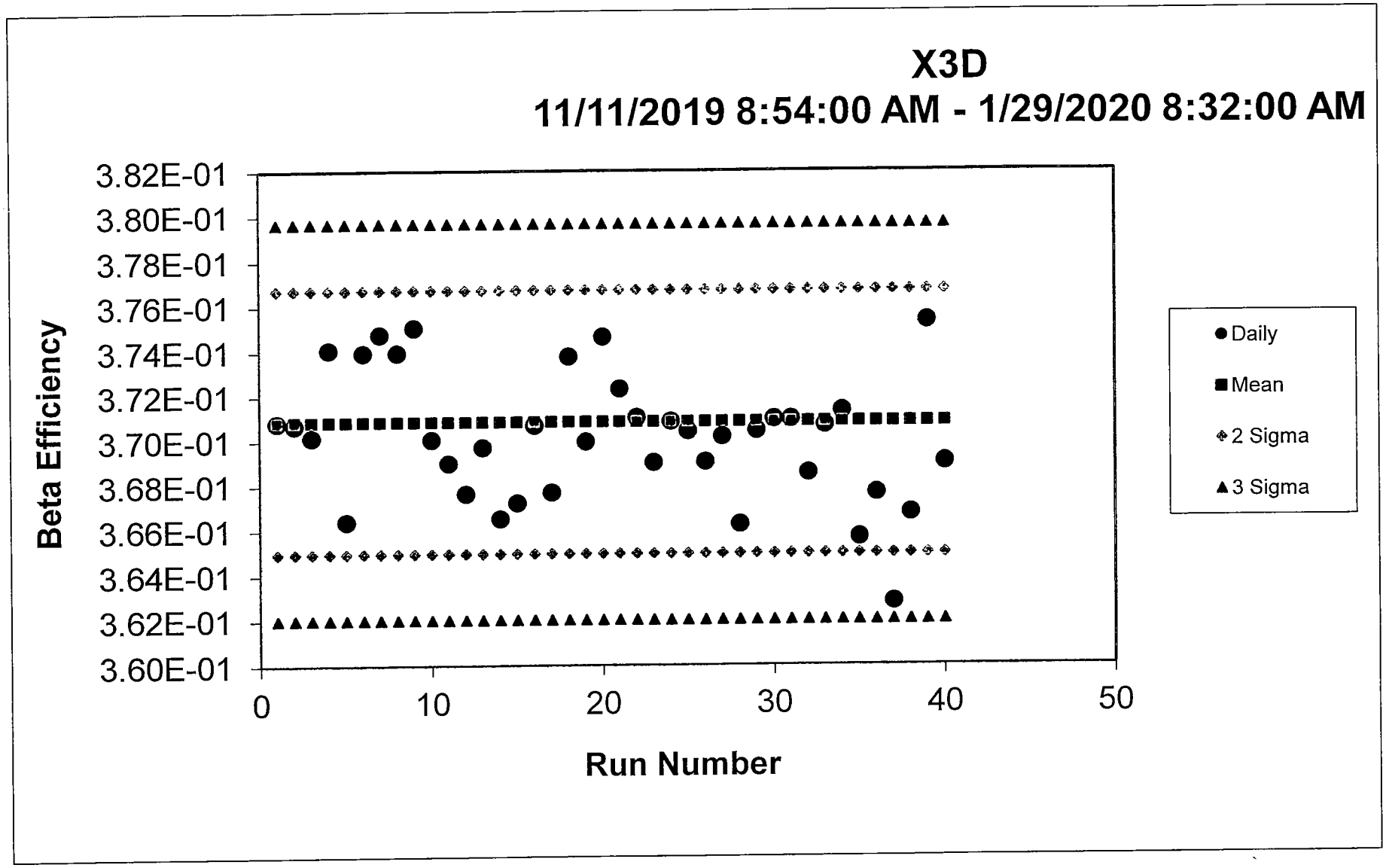
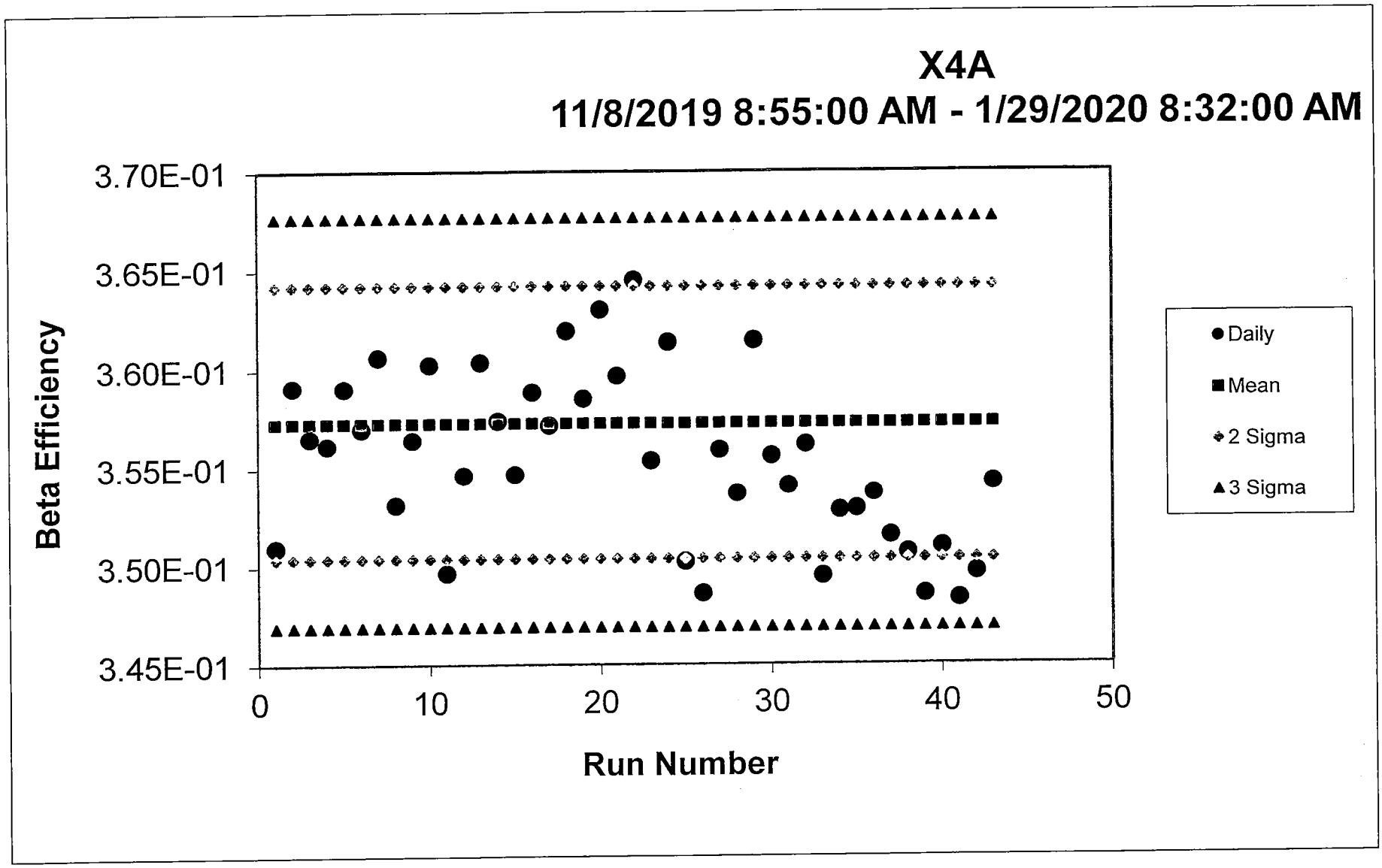
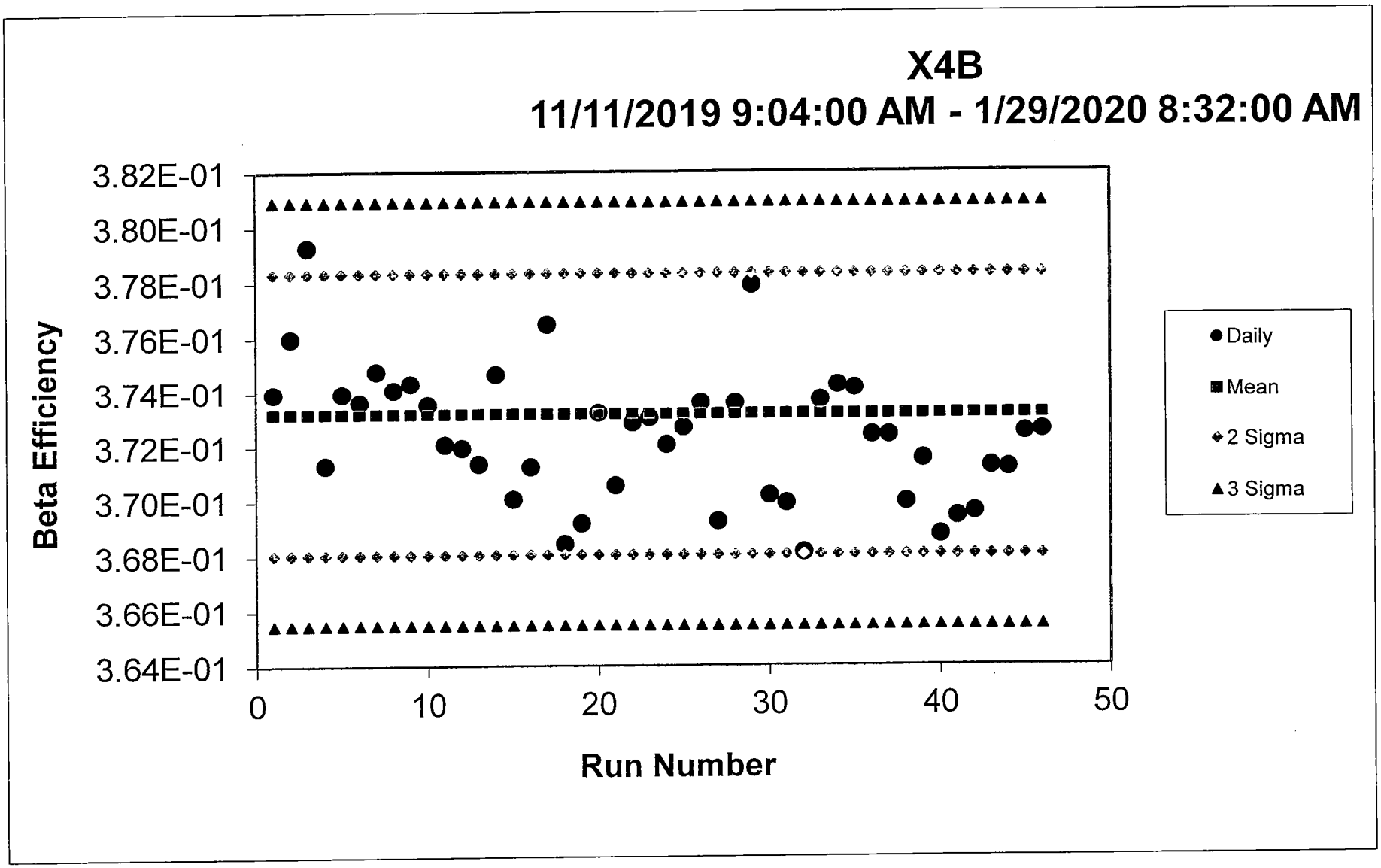
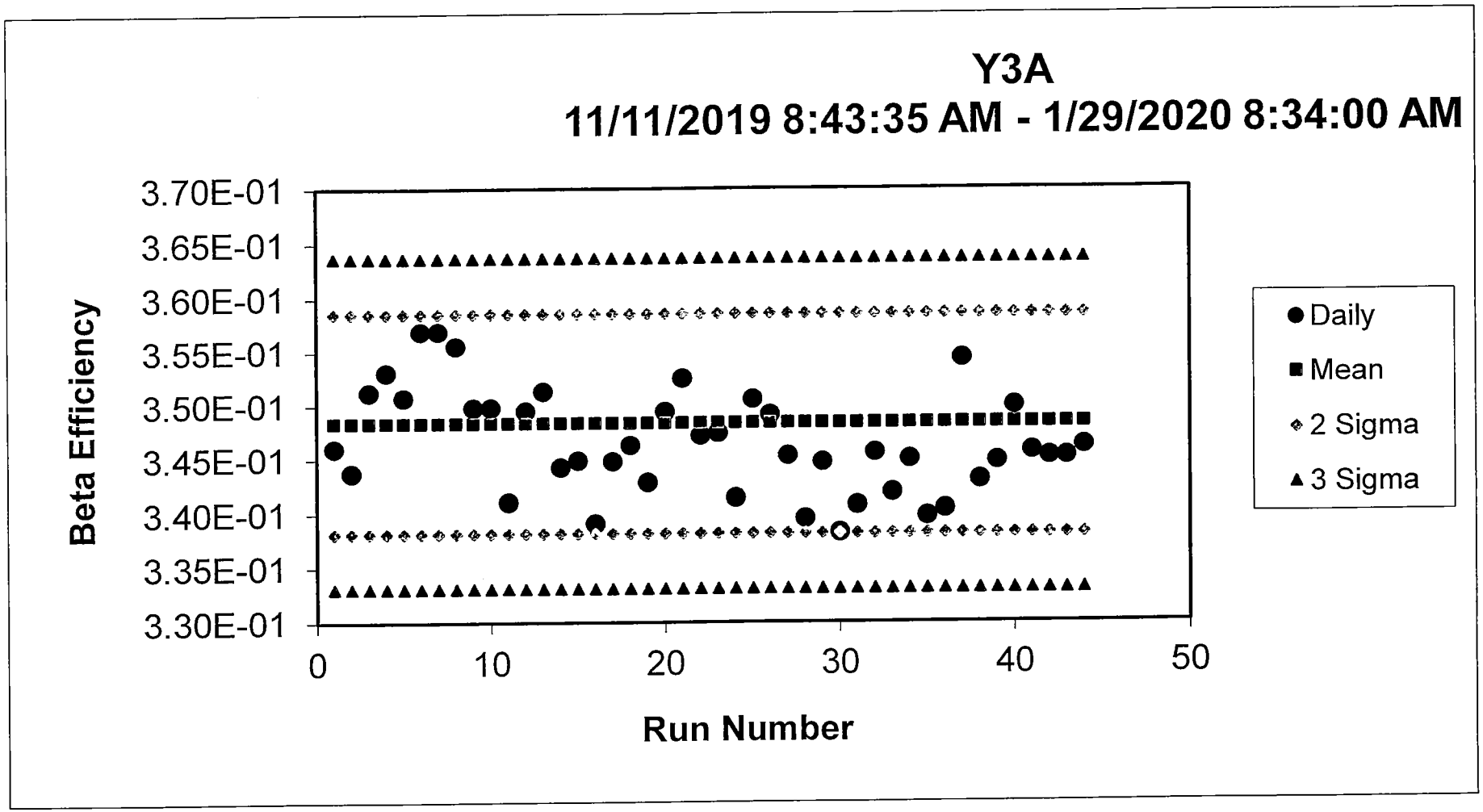
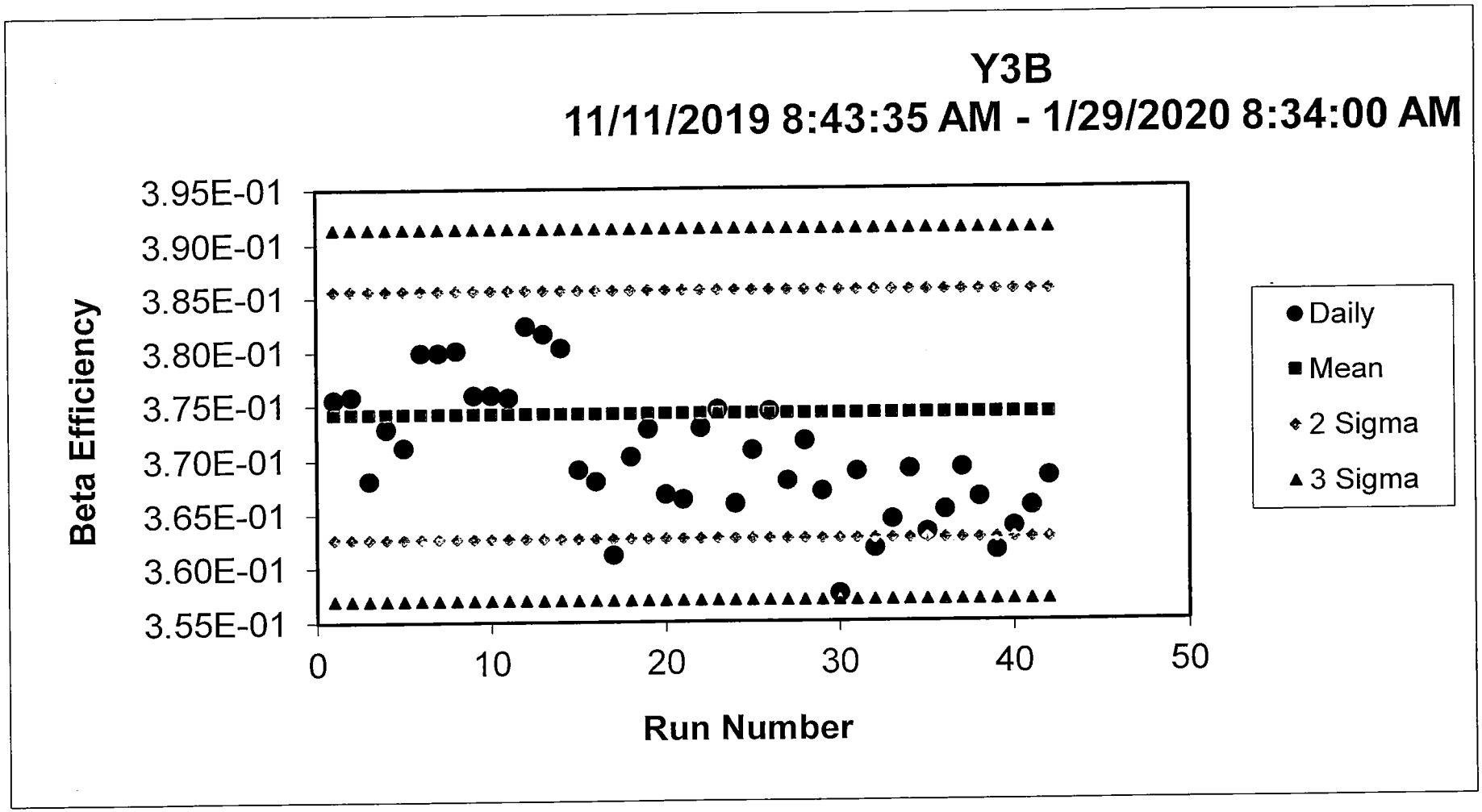
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

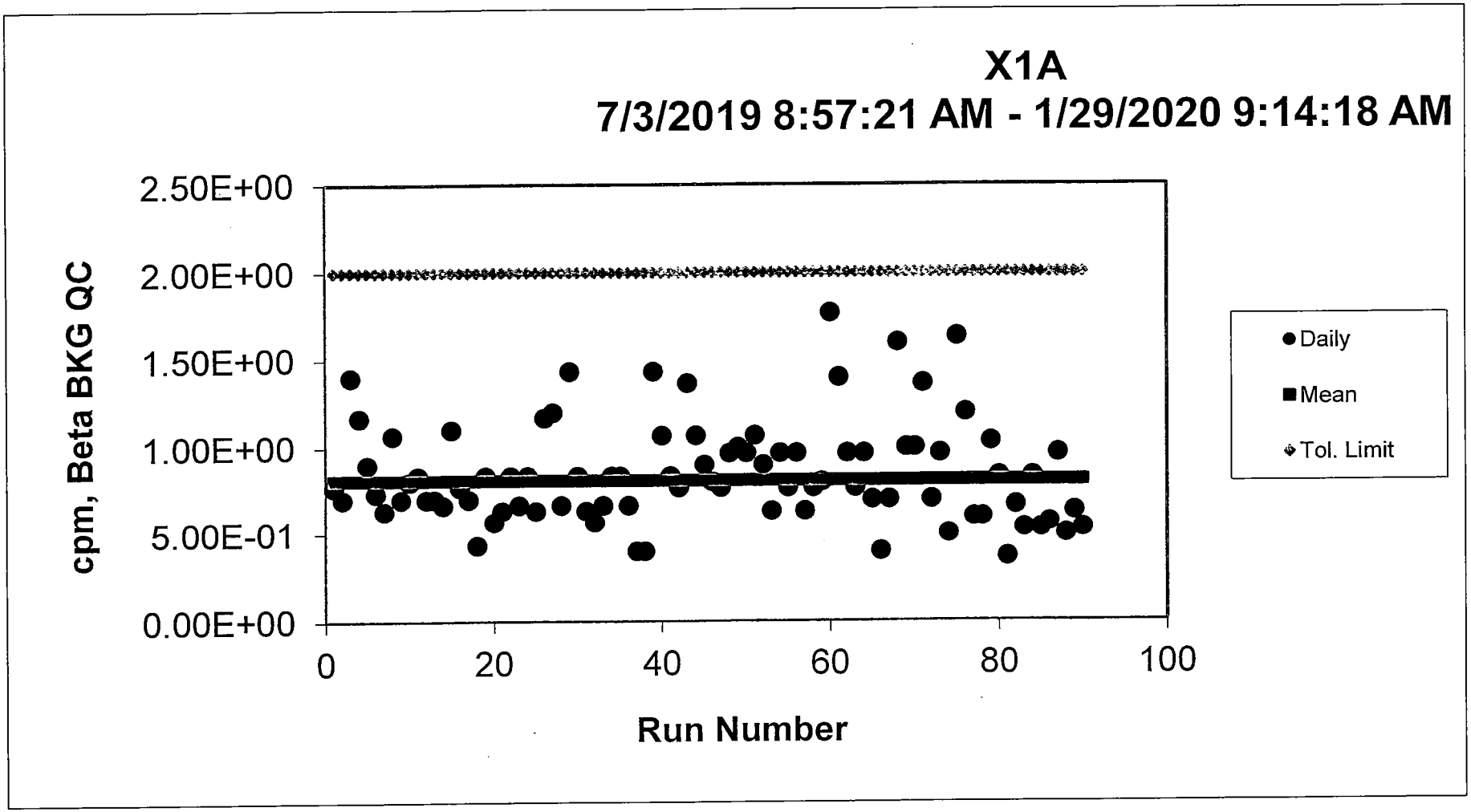

X3D
11/11/2019 8:54:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

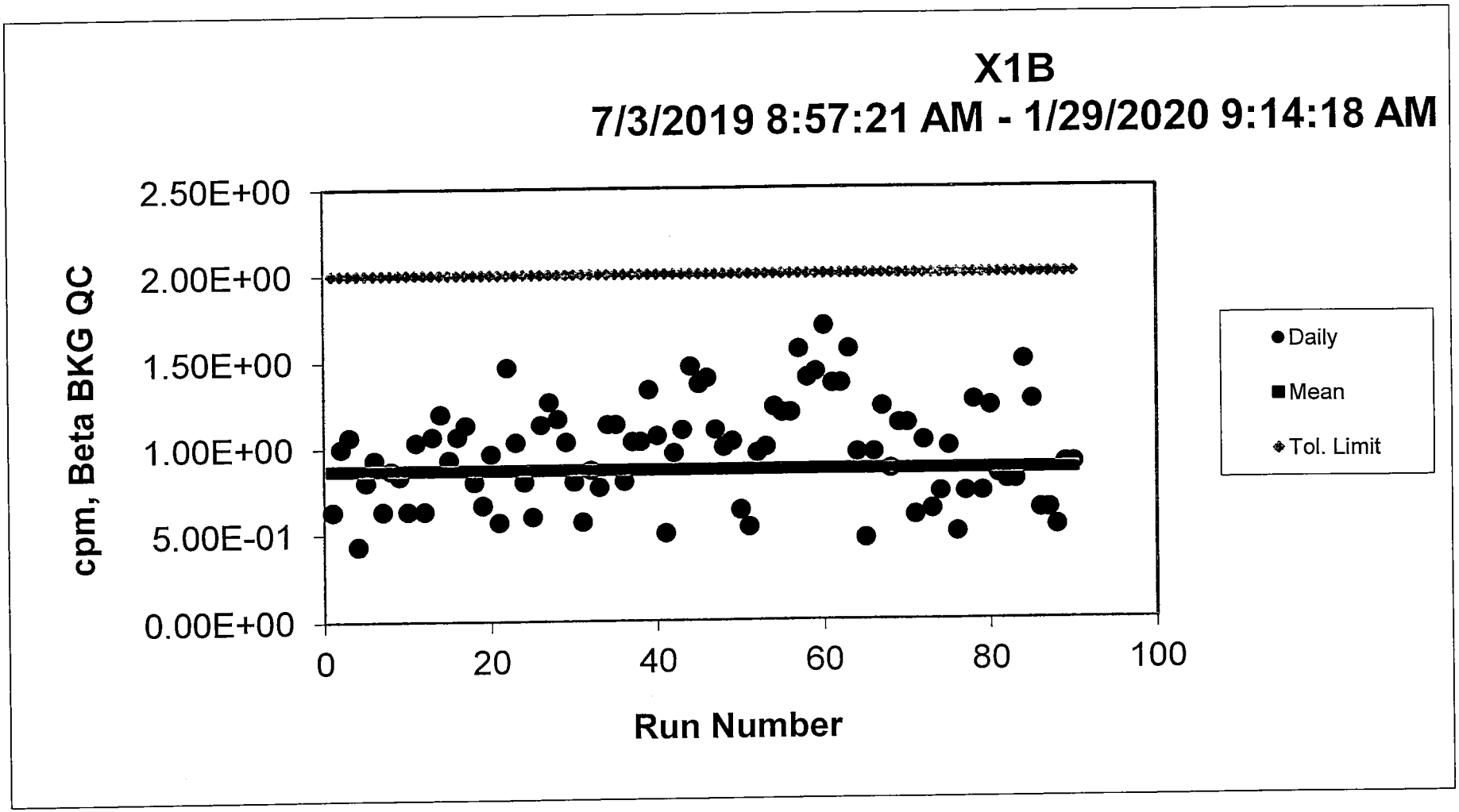

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

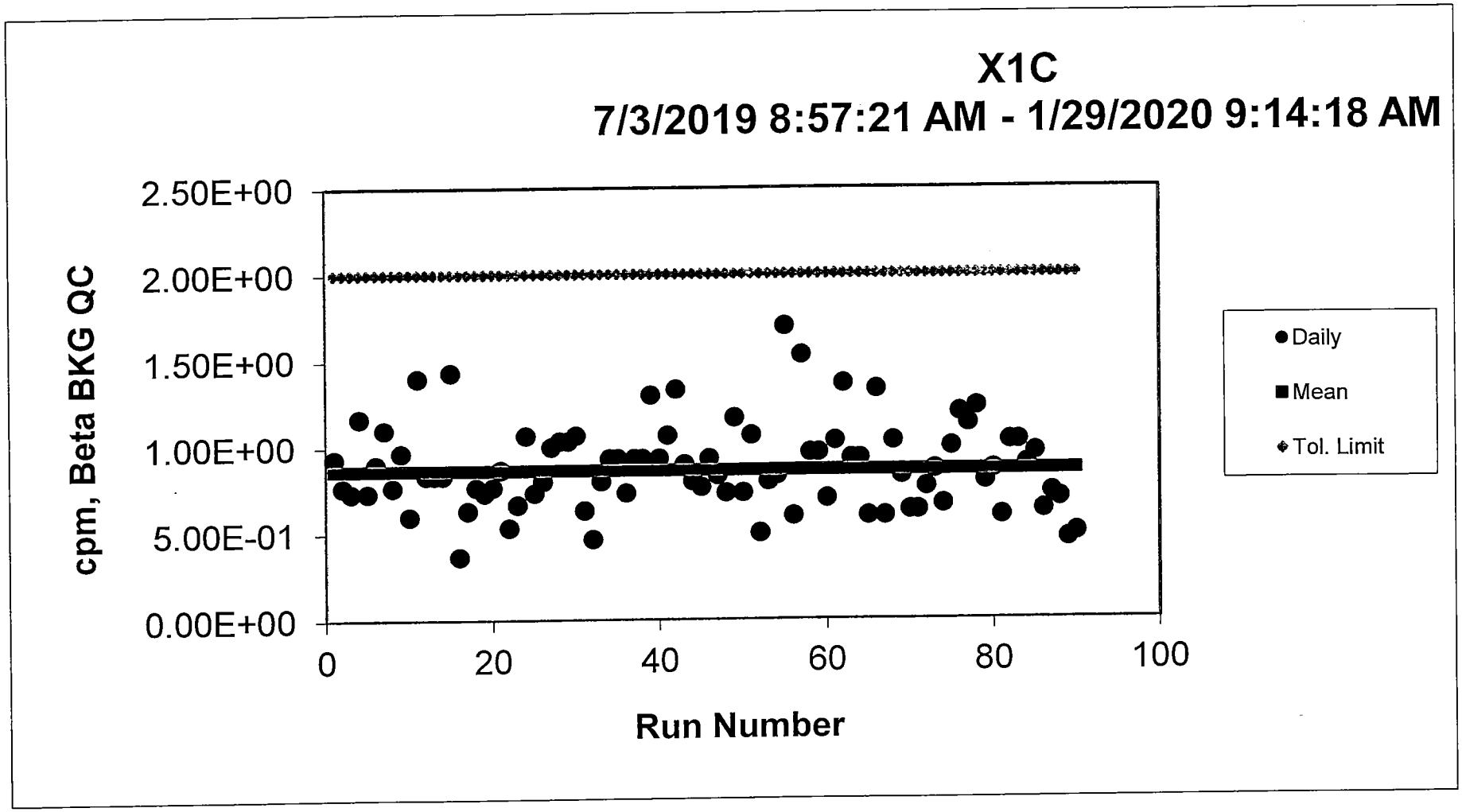

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

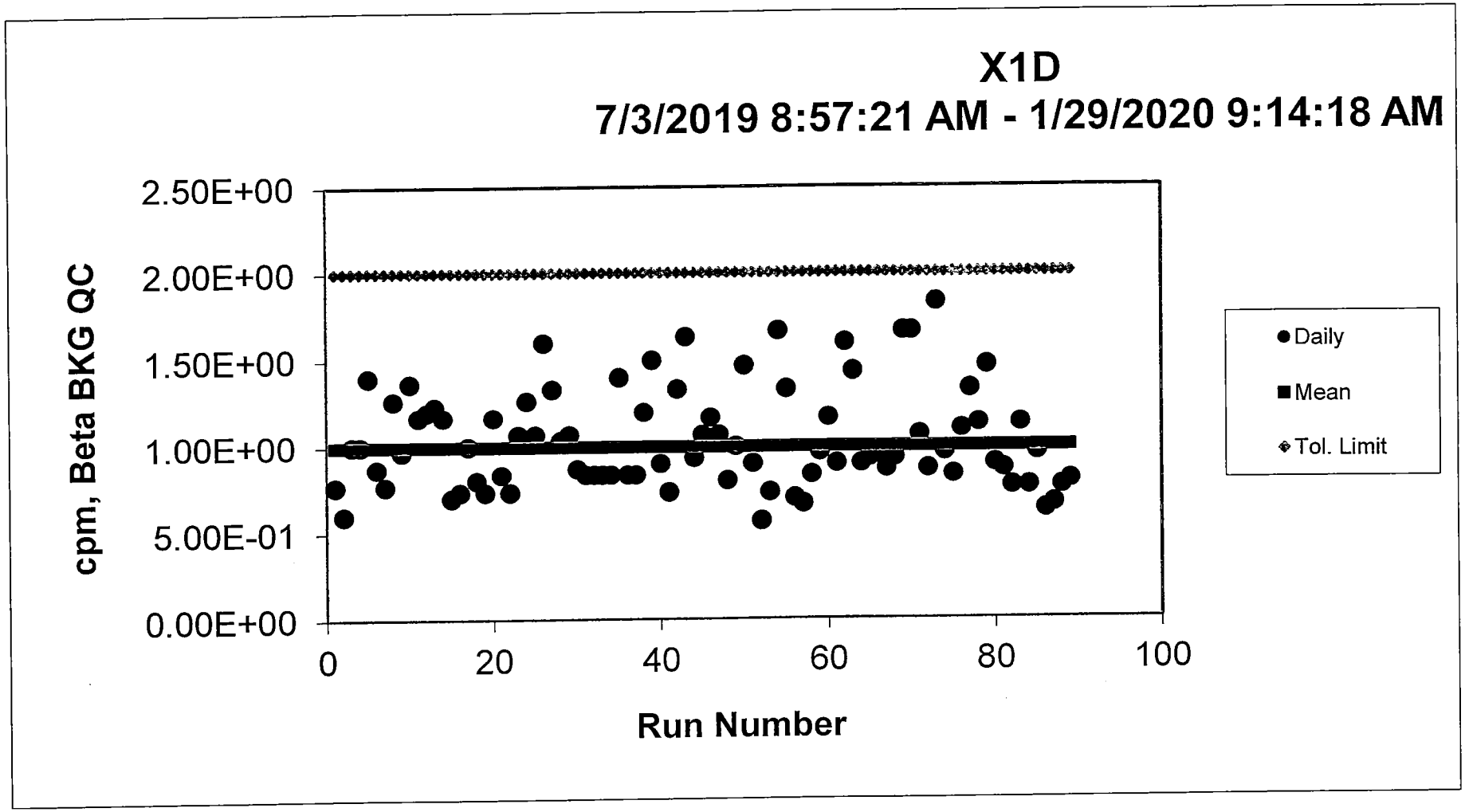

Y3A
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
3.40E-01
3.35E-01
3.30E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y3B
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X1C
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X1D
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
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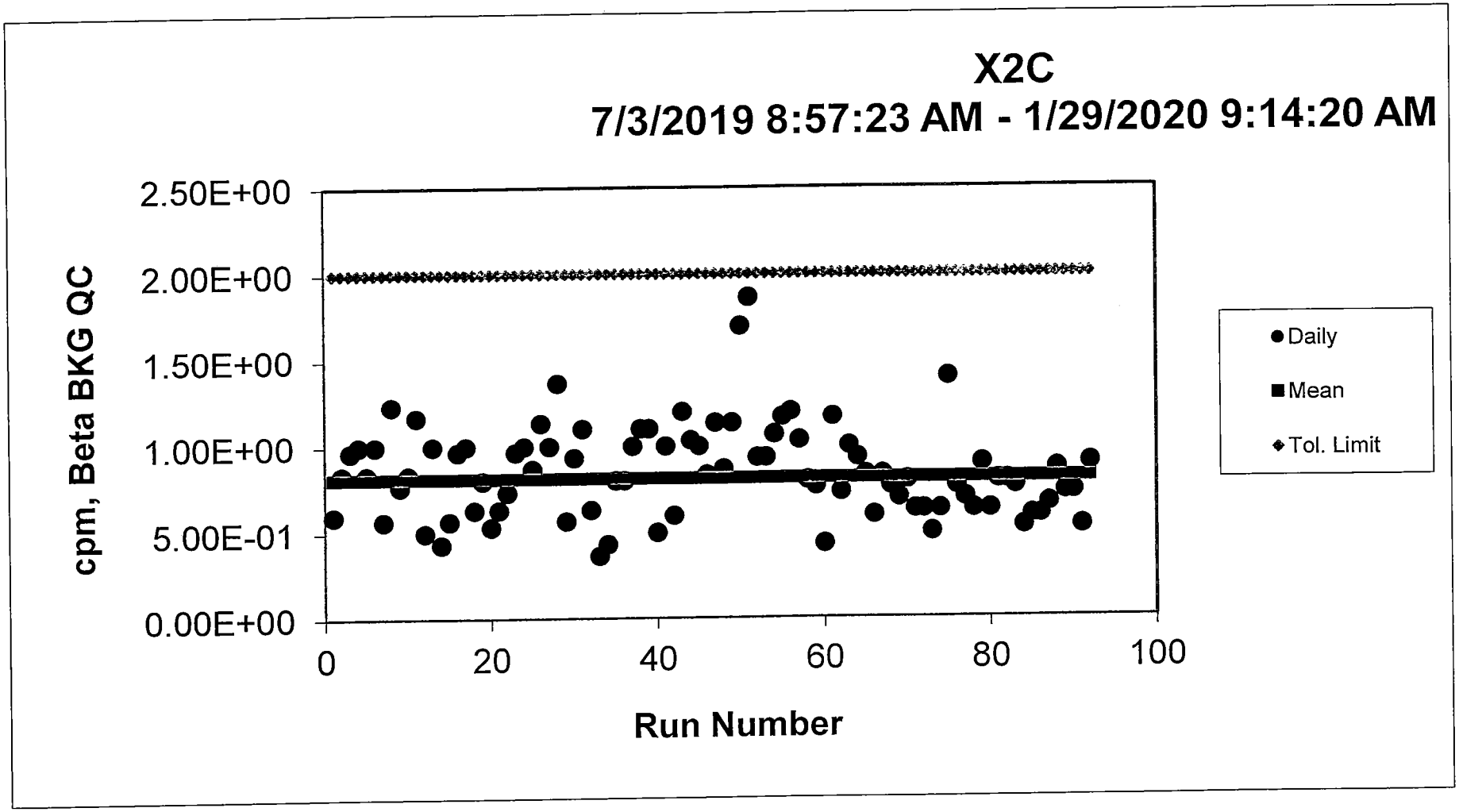
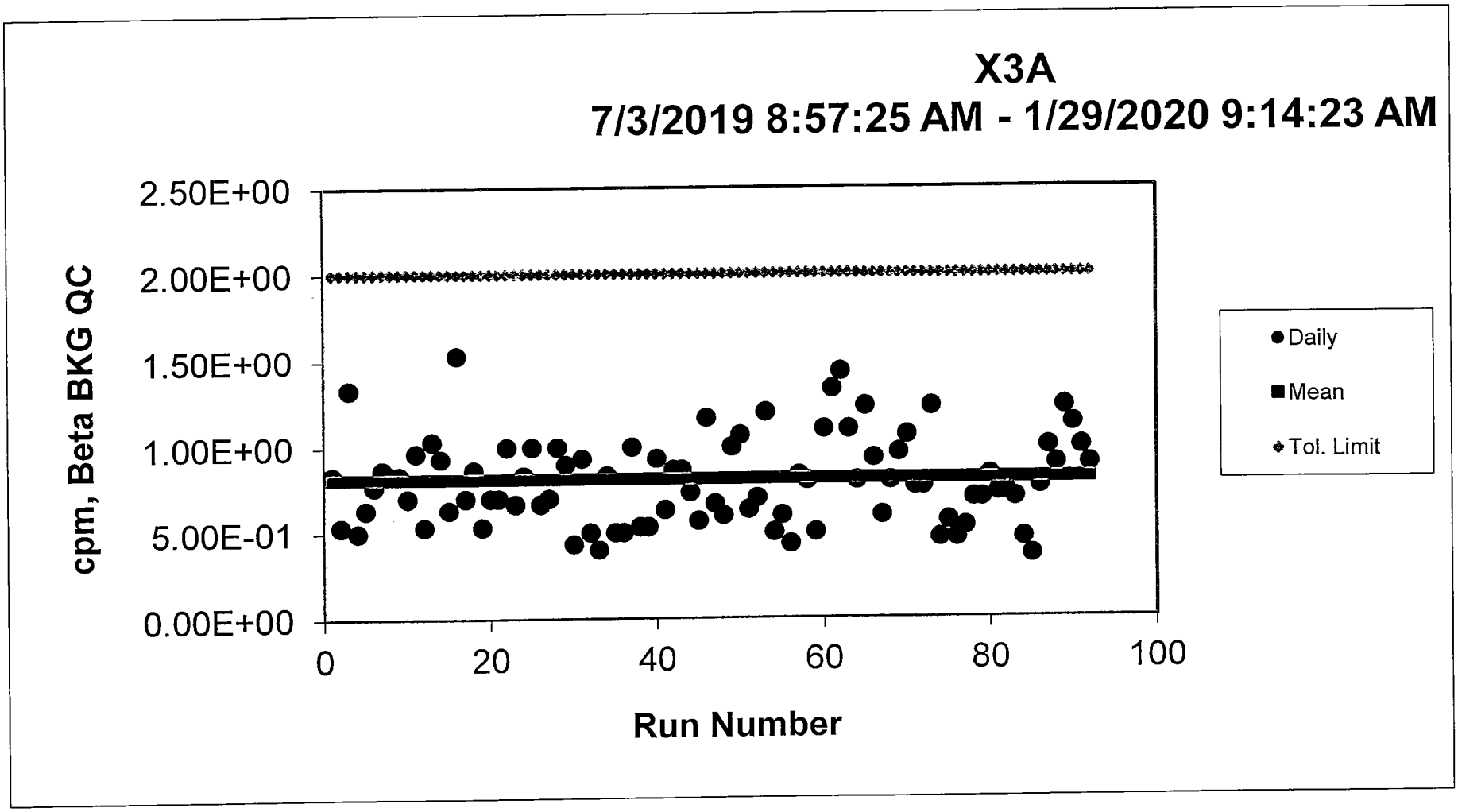
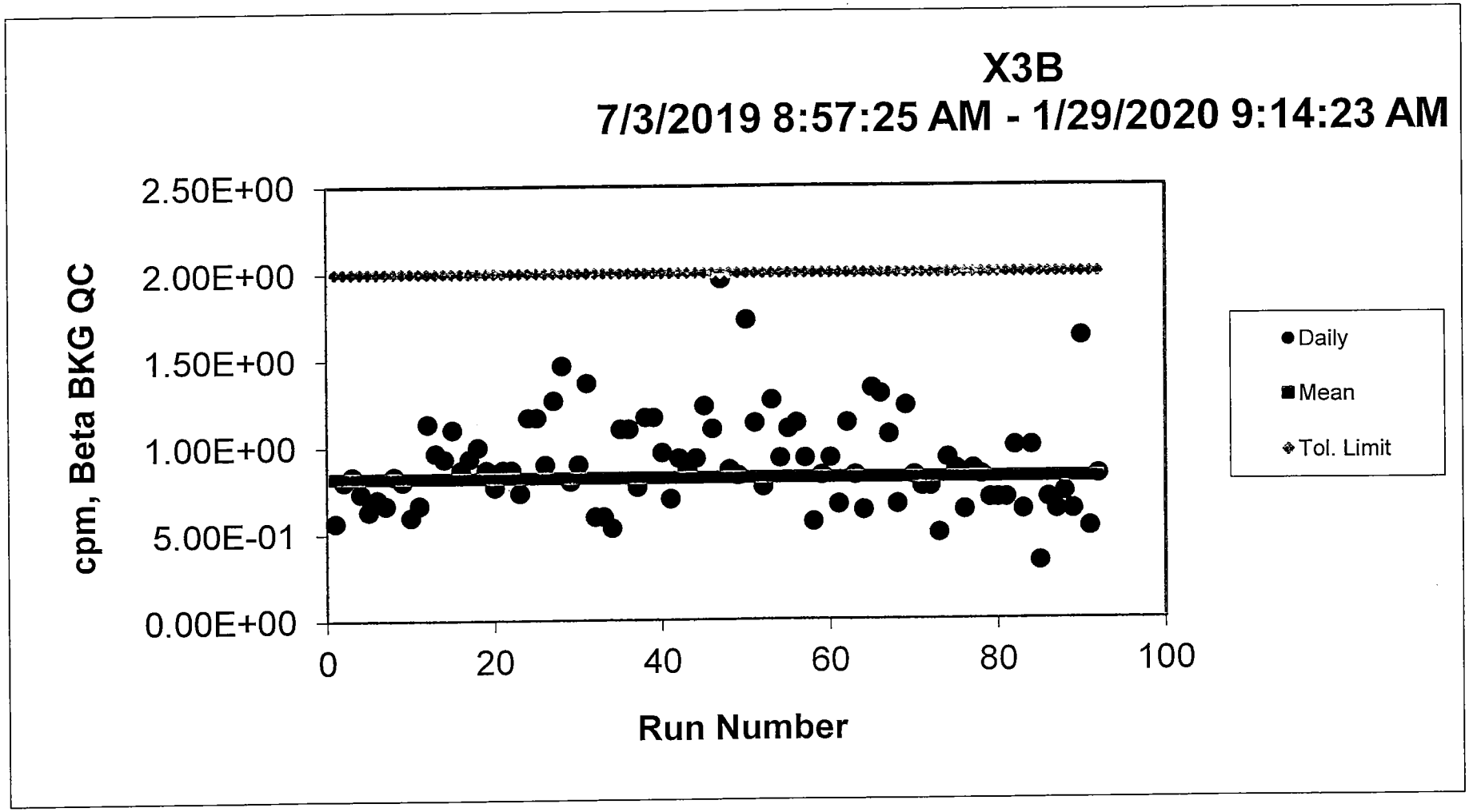
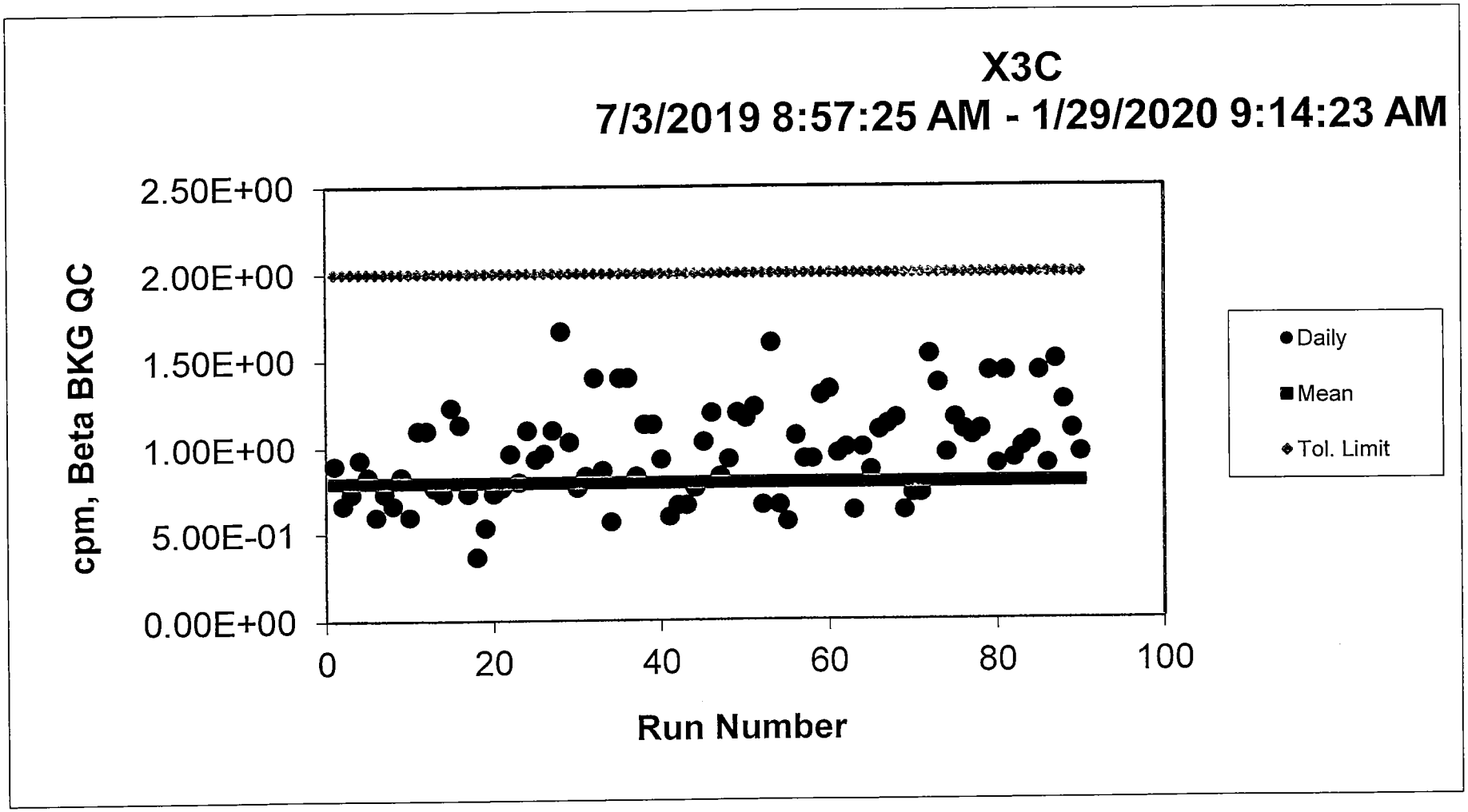
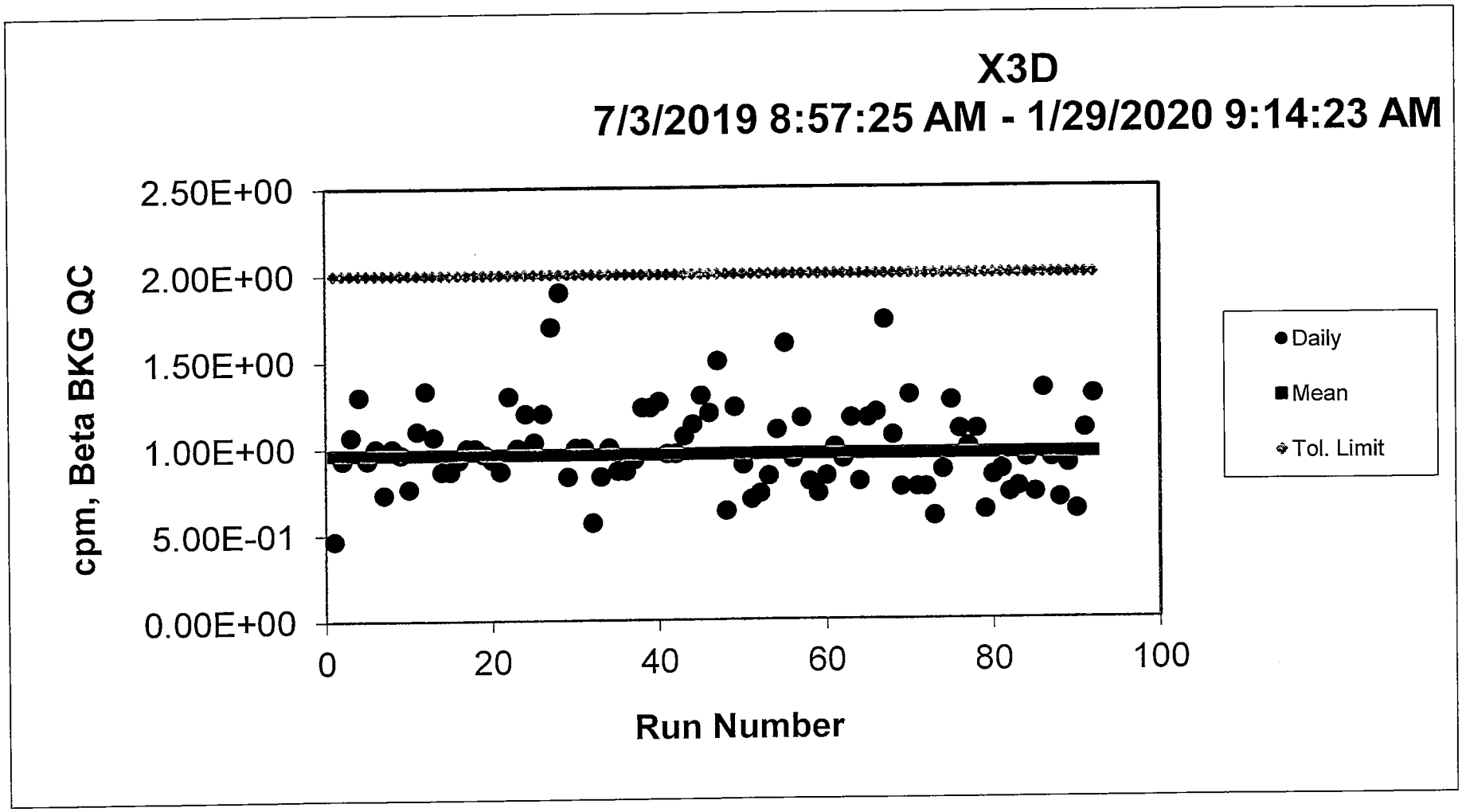
60
80
100
Run Number
Daily
Mean
Tol. Limit

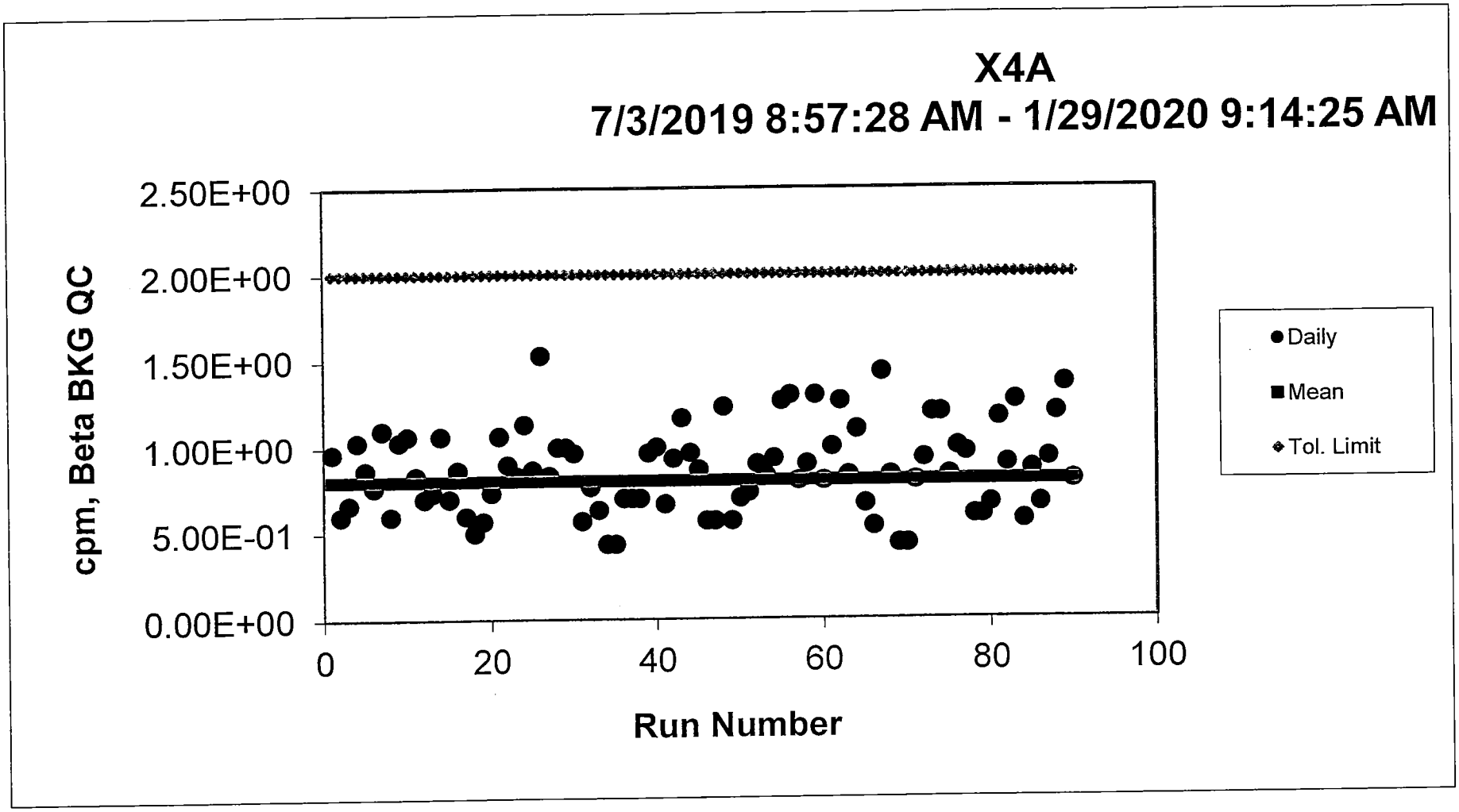

X2C
7/3/2019 8:57:23 AM - 1/29/2020 9:14:20 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3A
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3B
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3C
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3D
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
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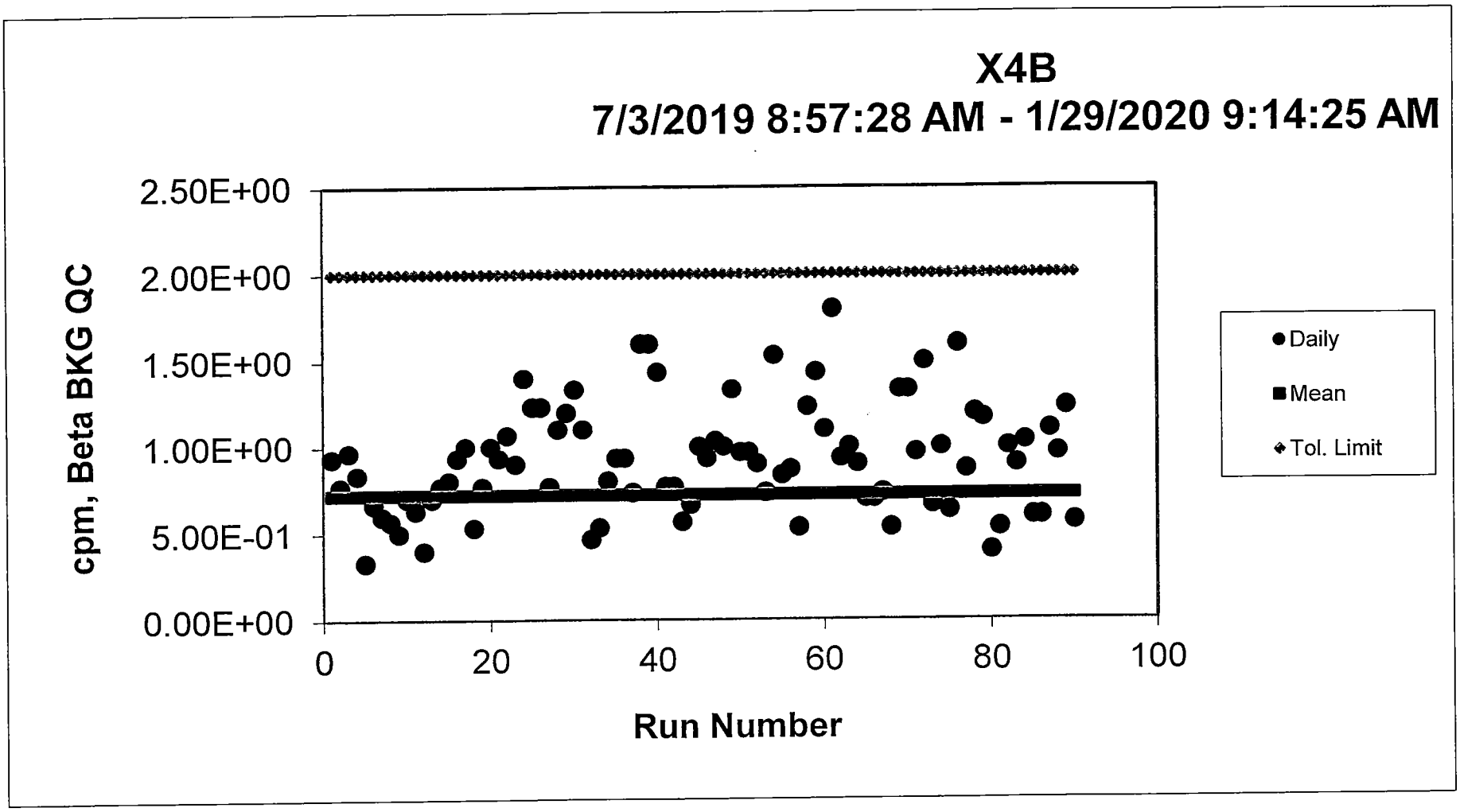
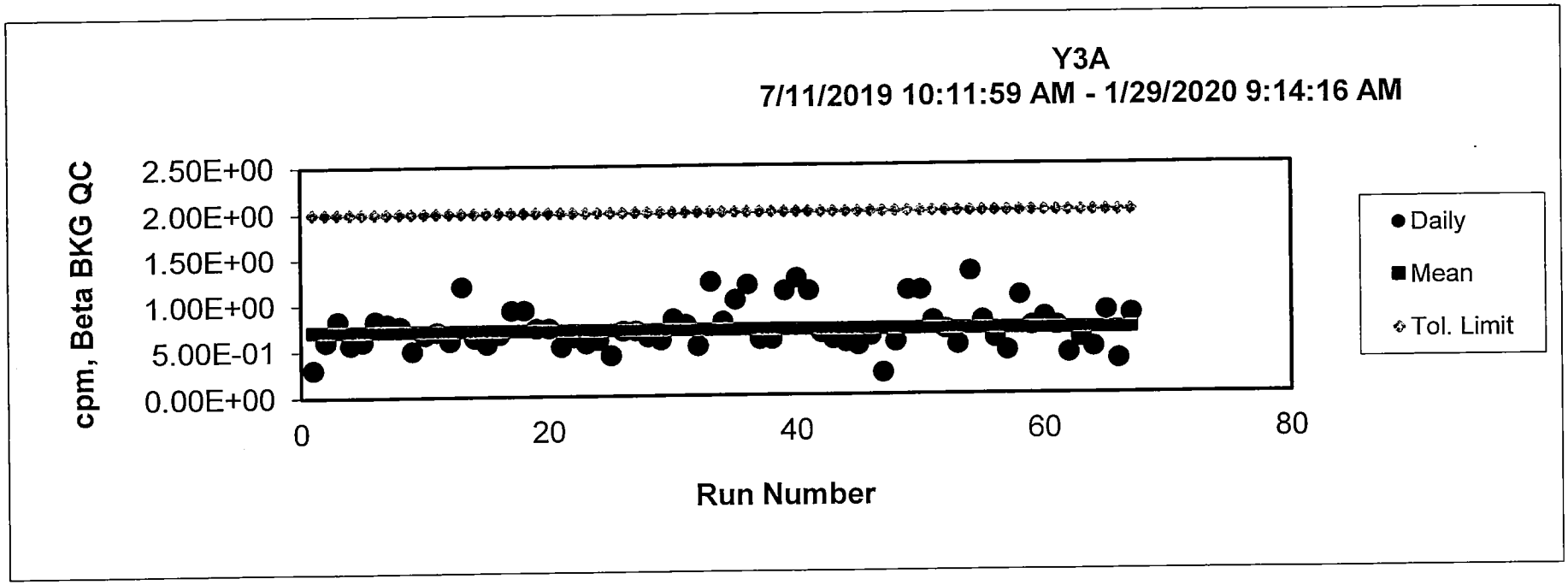
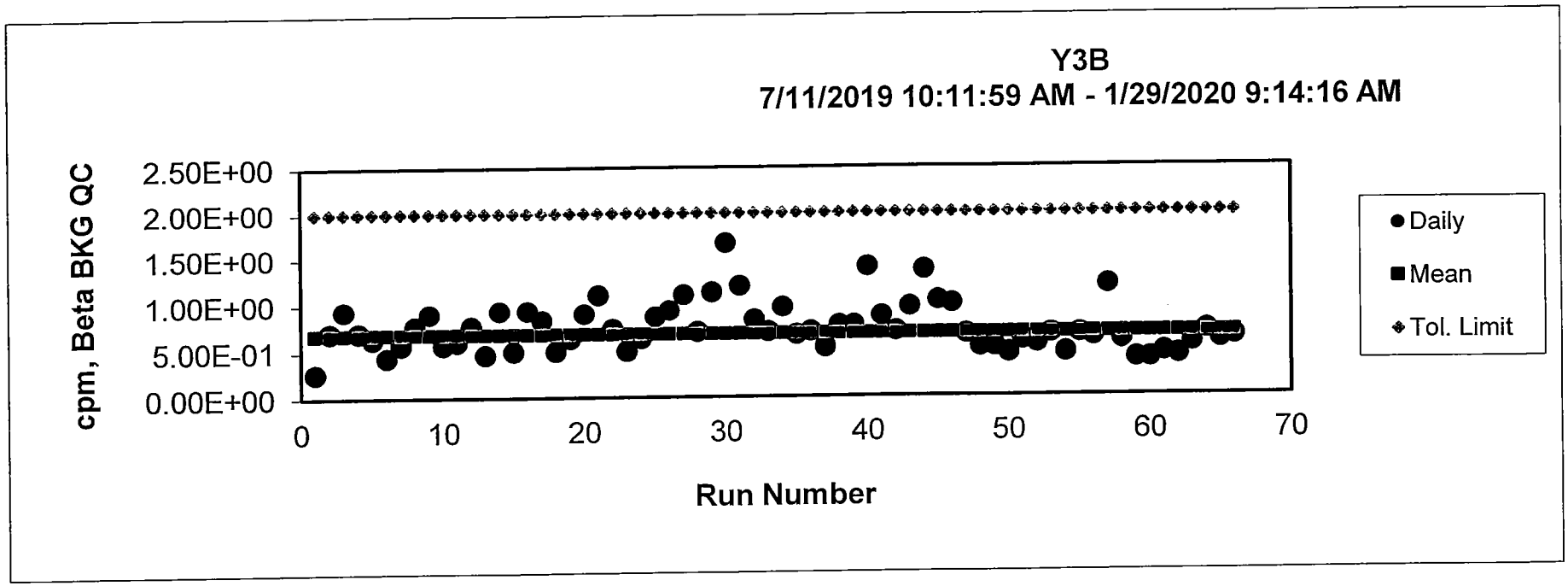
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


Y3A
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3B
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32861

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	58.29%	518.8
recovery 2	62.51%	556.3
Average	60.40%	
2 sigma	5.96	
RPD for highest and lowest	6.98	
< 30	yes	

Analyst: [signature]

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:52.41
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.00

LIMS No., Customer Name, Client ID: L85485-6

Sample ID : 13L85485-6BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1325MM091319
BKGFILE : 13BG122719MT
Real Time : 0 01:40:02.74
Live time : 0 01:40:00.00
Peak Evaluation - Identified and Unidentfied

[signature]

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.86*	2284	506	1.06	145.65	9.78E+00	3.81E-01	2.6	4.83E+00
2	2	75.02*	4138	386	0.97	149.98	1.06E+01	6.90E-01	1.8	
3	3	84.85*	1843	352	1.10	169.60	1.36E+01	3.07E-01	2.9	3.03E+00
4	3	87.50*	604	305	1.20	174.87	1.43E+01	1.01E-01	7.0	
5	1	569.79	6425	292	1.31	1138.04	6.29E+00	1.07E+00	1.4	1.10E+00
6	1	1063.87	2737	61	1.73	2126.06	3.19E+00	4.56E-01	2.0	1.48E+00
7	1	1461.10*	0	40	2.28	2921.38	2.29E+00	2.85E-05*****		7.36E-01
8	1	1633.17	272	7	2.05	3266.16	2.08E+00	4.53E-02	6.5	8.55E-01
9	1	1769.83	153	16	2.30	3540.13	1.97E+00	2.55E-02	9.8	1.34E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2737	74.50*	3.188E+00	5.192E+02	5.192E+02	4.03
	1770.24	153	6.87	1.967E+00	5.094E+02	5.094E+02	19.57

Flag: "*" = Keyline

$$\frac{518.8\ pCi}{890.5} = 0.5826$$

Sample ID : 13L85485-6BI207 Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.192E+02	5.192E+02	0.209E+02	4.03	
	Total Activity :		5.192E+02	5.192E+02			
	Grand Total Activity :		5.192E+02	5.192E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85485-6BI207 Acquisition date : 17-JAN-2020 08:49:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.86	2284	506	1.06	145.65	139	19	3.81E-01	5.2	9.78E+00	
2	75.02	4138	386	0.97	149.98	139	19	6.90E-01	3.6	1.06E+01	
3	84.85	1843	352	1.10	169.60	163	28	3.07E-01	5.8	1.36E+01	
3	87.50	604	305	1.20	174.87	163	28	1.01E-01	14.0	1.43E+01	
1	569.79	6425	292	1.31	1138.04	1130	16	1.07E+00	2.8	6.29E+00	
1	1461.10	0	40	2.28	2921.38	2912	16	2.85E-05	****	2.29E+00	
1	1633.17	272	7	2.05	3266.16	3258	14	4.53E-02	12.9	2.08E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.188E+02	5.188E+02	0.205E+02	3.94	
	Total Activity :		5.188E+02	5.188E+02			
Grand Total Activity :			5.188E+02	5.188E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.188E+02	2.046E+01	6.886E+00	0.000E+00	75.337

```
A,13L85485-6BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-6
B,13L85485-6BI207 ,BI207              ,01/15/2020 08:42,1325MM091319
C,BI-207  ,YES,   5.188E+02,   2.046E+01,   6.886E+00,,   75.337
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:47.89
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.63

LIMS No., Customer Name, Client ID: L85485-7

Sample ID : 14L85485-7BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1425MM101619
BKGFILE : 14BG122719MT
Real Time : 0 01:40:03.35
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.67*	3242	567	0.92	142.59	1.27E+01	5.40E-01	2.1	2.26E+00
2	4	74.84*	5777	357	0.91	146.92	1.35E+01	9.63E-01	1.4	
3	5	84.63*	2427	379	1.09	166.51	1.69E+01	4.04E-01	2.4	2.38E+00
4	5	87.21	727	254	0.98	171.67	1.76E+01	1.21E-01	5.2	
5	1	569.55	6686	218	1.29	1136.65	6.14E+00	1.11E+00	1.3	1.83E+00
6	1	1063.55	2748	104	1.61	2125.26	3.00E+00	4.58E-01	2.1	1.24E+00
7	1	1633.09	281	6	1.95	3265.47	1.91E+00	4.68E-02	6.3	1.66E+00
8	1	1770.11	161	8	1.90	3539.85	1.80E+00	2.69E-02	8.8	9.45E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2748	74.50*	2.996E+00	5.547E+02	5.547E+02	4.18
	1770.24	161	6.87	1.799E+00	5.878E+02	5.879E+02	17.63

Flag: "*" = Keyline

$$\frac{556.3\ pCi}{890.5} = 0.6247$$

Sample ID : 14L85485-7BI207 Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.547E+02	5.547E+02	0.232E+02	4.18	
			---------	---------			
	Total Activity :		5.547E+02	5.547E+02			
	Grand Total Activity :		5.547E+02	5.547E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.67	3242	567	0.92	142.59	137	21	5.40E-01	4.2	1.27E+01	
4	74.84	5777	357	0.91	146.92	137	21	9.63E-01	2.9	1.35E+01	
5	84.63	2427	379	1.09	166.51	161	15	4.04E-01	4.9	1.69E+01	
5	87.21	727	254	0.98	171.67	161	15	1.21E-01	10.5	1.76E+01	
1	569.55	6686	218	1.29	1136.65	1130	14	1.11E+00	2.6	6.14E+00	
1	1633.09	281	6	1.95	3265.47	3259	12	4.68E-02	12.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.563E+02	5.563E+02	0.226E+02	4.06	
	Total Activity :		5.563E+02	5.563E+02			
Grand Total Activity :			5.563E+02	5.563E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.563E+02	2.261E+01	7.072E+00	0.000E+00	78.661

```
A,14L85485-7BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-7
B,14L85485-7BI207 ,BI207                ,12/30/2019 12:20,1425MM101619
C,BI-207  ,YES,   5.563E+02,   2.261E+01,   7.072E+00,,   78.661
```

Pb-210 Recovery

Work Group

WG32943

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	64.93%	577.9
recovery 2	58.69%	522.3
recovery 3	60.21%	535.9
Average	61.28%	
2 sigma	6.51	
RPD for highest and lowest	10.11	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:21:38.82
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 28-JAN-2020 08:41:25.24

LIMS No., Customer Name, Client ID: l85486-3BI207 GAMMA COUNT

Sample ID : 14L85486-3BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 1425MM101619
BKGFILE : 14BG122719MT
Real Time : 0 01:40:03.47
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.68*	3371	570	0.93	142.61	1.27E+01	5.62E-01	2.1	5.39E+00
2	4	74.84*	5797	358	0.89	146.94	1.35E+01	9.66E-01	1.4	
3	4	84.68*	2470	376	1.09	166.62	1.69E+01	4.12E-01	2.4	5.02E-01
4	4	87.26	883	237	1.04	171.78	1.76E+01	1.47E-01	4.6	
5	1	569.65	6874	268	1.31	1136.84	6.14E+00	1.15E+00	1.3	1.90E+00
6	1	1063.71	2846	69	1.63	2125.57	3.00E+00	4.74E-01	2.0	1.71E+00
7	1	1633.41	266	29	1.89	3266.10	1.91E+00	4.44E-02	7.4	1.22E+00
8	1	1770.35	176	0	2.17	3540.32	1.80E+00	2.93E-02	7.6	1.40E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2846	74.50*	2.995E+00	5.745E+02	5.745E+02	3.98
	1770.24	176	6.87	1.799E+00	6.400E+02	6.400E+02	15.28

Flag: "*" = Keyline

Sample ID : 14L85486-3BI207 Acquisition date : 28-JAN-2020 08:41:25

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.745E+02	5.745E+02	0.229E+02	3.98	
	Total Activity :		5.745E+02	5.745E+02			
	Grand Total Activity :		5.745E+02	5.745E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85486-3BI207 Acquisition date : 28-JAN-2020 08:41:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.68	3371	570	0.93	142.61	137	19	5.62E-01	4.1	1.27E+01	
4	74.84	5797	358	0.89	146.94	137	19	9.66E-01	2.9	1.35E+01	
4	84.68	2470	376	1.09	166.62	161	16	4.12E-01	4.8	1.69E+01	
4	87.26	883	237	1.04	171.78	161	16	1.47E-01	9.1	1.76E+01	
1	569.65	6874	268	1.31	1136.84	1129	16	1.15E+00	2.6	6.14E+00	
1	1633.41	266	29	1.89	3266.10	3256	16	4.44E-02	14.8	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.779E+02	5.779E+02	0.223E+02	3.85	
	Total Activity :		5.779E+02	5.779E+02			
Grand Total Activity :			5.779E+02	5.779E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.779E+02	2.226E+01	7.320E+00	0.000E+00	78.946

```
A,14L85486-3BI207 ,01/28/2020 10:21,01/28/2020 00:00,   1.000E+00,l85486-3BI207
B,14L85486-3BI207 ,BI207                ,12/30/2019 12:20,1425MM101619
C,BI-207  ,YES,   5.779E+02,   2.226E+01,   7.320E+00,,   78.946
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:21:49.46
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 28-JAN-2020 08:41:26.50

LIMS No., Customer Name, Client ID: L85486-4BI207 GAMMA COUNT

Sample ID : 13L85486-4BI207
Sample Type : pCi
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentfied

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 1325MM091319
BKGFILE : 13BG122719MT
Real Time : 0 01:40:02.82
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.87*	2216	600	1.02	145.66	9.79E+00	3.69E-01	2.8	2.94E+00
2	3	75.01*	3904	512	0.96	149.94	1.05E+01	6.51E-01	1.9	
3	3	84.83*	1780	387	1.17	169.53	1.36E+01	2.97E-01	3.0	1.98E+00
4	3	87.40*	580	321	1.23	174.66	1.43E+01	9.66E-02	7.3	
5	1	569.76	6175	203	1.35	1137.71	6.29E+00	1.03E+00	1.4	1.91E+00
6	1	1063.81	2736	69	1.72	2125.45	3.19E+00	4.56E-01	2.0	9.98E-01
7	1	1460.72*	8	15	1.92	2919.93	2.29E+00	1.32E-03	62.4	8.76E-01
8	1	1633.24	268	35	1.85	3265.53	2.08E+00	4.47E-02	8.2	5.12E-01
9	1	1769.95	176	3	2.17	3539.51	1.97E+00	2.93E-02	7.8	3.97E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2736	74.50*	3.188E+00	5.188E+02	5.189E+02	4.10
	1770.24	176	6.87	1.967E+00	5.861E+02	5.861E+02	15.59

Flag: "*" = Keyline

Sample ID : 13L85486-4BI207 Acquisition date : 28-JAN-2020 08:41:26

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.188E+02	5.189E+02	0.213E+02	4.10	
			---------	---------			
	Total Activity :		5.188E+02	5.189E+02			
	Grand Total Activity :		5.188E+02	5.189E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85486-4BI207 Acquisition date : 28-JAN-2020 08:41:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.87	2216	600	1.02	145.66	140	16	3.69E-01	5.6	9.79E+00	
3	75.01	3904	512	0.96	149.94	140	16	6.51E-01	3.8	1.05E+01	
3	84.83	1780	387	1.17	169.53	164	17	2.97E-01	6.0	1.36E+01	
3	87.40	580	321	1.23	174.66	164	17	9.66E-02	14.7	1.43E+01	
1	569.76	6175	203	1.35	1137.71	1131	14	1.03E+00	2.7	6.29E+00	
1	1460.72	8	15	1.92	2919.93	2913	15	1.32E-03	****	2.29E+00	
1	1633.24	268	35	1.85	3265.53	3256	20	4.47E-02	16.5	2.08E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.223E+02	5.223E+02	0.207E+02	3.96	
	Total Activity :		5.223E+02	5.223E+02			
Grand Total Activity :			5.223E+02	5.223E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.223E+02	2.070E+01	6.783E+00	0.000E+00	77.002

```
A,13L85486-4BI207 ,01/28/2020 10:21,01/28/2020 00:00,   1.000E+00,L85486-4BI207
B,13L85486-4BI207 ,BI207               ,01/23/2020 09:03,1325MM091319
C,BI-207  ,YES,   5.223E+02,   2.070E+01,   6.783E+00,,   77.002
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:20:45.85
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 28-JAN-2020 08:40:25.29

LIMS No., Customer Name, Client ID: L85486-5BI207 GAMMA COUNT

Sample ID : 08L85486-5BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.73
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.71	2217	661	1.31	152.49	9.13E+00	3.70E-01	3.3	2.81E+00
2	2	74.90*	3899	517	1.25	156.86	9.92E+00	6.50E-01	2.1	
3	2	84.76*	1834	431	1.45	176.55	1.31E+01	3.06E-01	3.1	1.27E+00
4	2	87.36	649	339	1.44	181.75	1.38E+01	1.08E-01	8.2	
5	1	569.39	6064	264	1.49	1144.25	5.93E+00	1.01E+00	1.4	1.01E+00
6	1	1063.09	2602	71	1.77	2129.54	2.95E+00	4.34E-01	2.1	1.00E+00
7	1	1459.92*	3	24	1.31	2921.11	2.10E+00	5.11E-04	56.5	1.02E+00
8	1	1632.82	272	0	2.02	3265.90	1.91E+00	4.54E-02	6.2	1.46E+00
9	1	1769.62	166	4	2.10	3538.64	1.80E+00	2.76E-02	8.4	9.67E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2602	74.50*	2.954E+00	5.326E+02	5.326E+02	4.23
	1770.24	166	6.87	1.802E+00	6.025E+02	6.025E+02	16.78

Flag: "*" = Keyline

Sample ID : 08L85486-5BI207 Acquisition date : 28-JAN-2020 08:40:25

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.326E+02	5.326E+02	0.226E+02	4.23	
	Total Activity :		5.326E+02	5.326E+02			
	Grand Total Activity :		5.326E+02	5.326E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85486-5BI207 Acquisition date : 28-JAN-2020 08:40:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.71	2217	661	1.31	152.49	147	19	3.70E-01	6.6	9.13E+00	
2	74.90	3899	517	1.25	156.86	147	19	6.50E-01	4.2	9.92E+00	
2	84.76	1834	431	1.45	176.55	169	20	3.06E-01	6.3	1.31E+01	
2	87.36	649	339	1.44	181.75	169	20	1.08E-01	16.5	1.38E+01	
1	569.39	6064	264	1.49	1144.25	1135	17	1.01E+00	2.9	5.93E+00	
1	1459.92	3	24	1.31	2921.11	2914	17	5.11E-04	****	2.10E+00	
1	1632.82	272	0	2.02	3265.90	3258	16	4.54E-02	12.4	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.359E+02	5.359E+02	0.220E+02	4.11	
	Total Activity :		5.359E+02	5.359E+02			
Grand Total Activity :			5.359E+02	5.359E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.359E+02	2.201E+01	6.565E+00	0.000E+00	81.637

```
A,08L85486-5BI207 ,01/28/2020 10:20,01/28/2020 00:00,   1.000E+00,L85486-5BI207
B,08L85486-5BI207 ,BI207                ,01/21/2020 08:55,0825MM092019
C,BI-207  ,YES,   5.359E+02,   2.201E+01,   6.565E+00,,   81.637
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/30/20 18:30

Work Order: **L85486** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85486-1		PB-210	04-dec-19 15:50	6.0856 g dry		01-16-20 12:15	.0504	75.45	01-16-20 23:48	Y3A	877	800 M	780	800 M	.271	.969	KSC
11187072-120419-SS-SJSSA08 (0-2.5 CM) Activity: 5.66E-02 Error: 4.75E-02 MDC: **7.60E-02** pCi/gDry							L85486-1		PB-210								
L85486-2		PB-210	04-dec-19 15:52	6.125 g dry		01-16-20 12:15	.0411	61.53	01-16-20 23:48	Y3B	807	800 M	882	800 M	.287	.969	KSC
11187072-120419-SS-SJSSA08 (7.5-10 CM) Activity: -4.11E-02 Error: 4.50E-02 MDC: **7.58E-02** pCi/gDry							L85486-2		PB-210								
L85486-3		PB-210	04-dec-19 15:54	6.5832 g dry		01-27-20 10:40	.0382	57.19	01-27-20 23:27	X1C	829	800 M	772	800 M	.275	.961	CJF
11187072-120419-SS-SJSSA08 (15-17.5 CM) Activity: 3.01E-02 Error: 4.22E-02 MDC: **6.83E-02** pCi/gDry							L85486-3		PB-210								
L85486-4		PB-210	04-dec-19 15:56	6.0107 g dry		01-27-20 10:40	.0424	63.47	01-27-20 23:27	X1D	917	800 M	1003	800 M	.283	.961	CJF
11187072-120419-SS-SJSSA08 (22.5-25 CM) Activity: -4.84E-02 Error: 4.93E-02 MDC: **8.30E-02** pCi/gDry							L85486-4		PB-210								
L85486-5		PB-210	04-dec-19 15:58	6.0199 g dry		01-27-20 10:40	.0421	63.02	01-27-20 23:27	X2C	756	800 M	822	800 M	.312	.961	CJF
11187072-120419-SS-SJSSA08 (30-32.5 CM) Activity: -3.37E-02 Error: 4.05E-02 MDC: **6.81E-02** pCi/gDry							L85486-5		PB-210								
L85486-6		PB-210	04-dec-19 16:00	6.6994 g dry		01-27-20 10:40	.0427	63.92	01-27-20 23:27	X3A	1973	800 M	832	800 M	.267	.961	CJF
11187072-120419-SS-SJSSA08 (37.5-40 CM) Activity: **6.11E-01** Error: 5.67E-02 MDC: 7.20E-02 pCi/gDry							**L85486-6**		**PB-210**								
L85486-7		PB-210	04-dec-19 16:02	6.0108 g dry		01-27-20 10:40	.0436	65.27	01-27-20 23:27	X3B	2329	800 M	860	800 M	.281	.961	CJF
11187072-120419-SS-SJSSA08 (45-47.5 CM) Activity: **8.33E-01** Error: 6.41E-02 MDC: 7.75E-02 pCi/gDry							**L85486-7**		**PB-210**								
L85486-8		PB-210	04-dec-19 16:04	6.2164 g dry		01-27-20 10:40	.0378	56.59	01-27-20 23:27	X3C	2101	800 M	1179	800 M	.263	.961	CJF
11187072-120419-SS-SJSSA08 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/30/20 18:30

Work Order: **L85486**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85486-8	PB-210	04-dec-19 16:04	6.2164 g dry	01-27-20 10:40	.0378	56.59	01-27-20 23:27	X3C	2101	800 M	1179	800 M	.263	.961	CJF
11187072-120419-SS-SJSSA08 (52.5-55 CM) Activity: **5.40E-01** Error: 6.71E-02 MDC: 9.37E-02 pCi/gDry				**L85486-8**			**PB-210**								
L85486-9	PB-210	04-dec-19 16:06	6.0934 g dry	01-27-20 10:40	.0245	36.68	01-27-20 23:27	X3D	1326	800 M	777	800 M	.293	.961	CJF
11187072-120419-SS-SJSSA08 (60-62.5 CM) Activity: **2.94E-01** Error: 4.91E-02 MDC: 6.96E-02 pCi/gDry				**L85486-9**			**PB-210**								
L85486-10	PB-210	04-dec-19 16:08	6.0605 g dry	01-27-20 10:40	.0419	62.72	01-27-20 23:27	X4A	1937	800 M	769	800 M	.309	.961	CJF
11187072-120419-SS-SJSSA08 (70-72.5 CM) Activity: **5.96E-01** Error: 5.31E-02 MDC: 6.59E-02 pCi/gDry				**L85486-10**			**PB-210**								
L85486-11	PB-210	04-dec-19 16:10	6.1933 g dry	01-27-20 10:40	.0375	56.14	01-27-20 23:27	X4B	1799	800 M	802	800 M	.294	.961	CJF
11187072-120419-SS-SJSSA08 (80-82.5 CM) Activity: **5.24E-01** Error: 5.36E-02 MDC: 6.93E-02 pCi/gDry				**L85486-11**			**PB-210**								

Raw Data Sheet (rawdata)

01/30/20 18:31

Work Order: **WG32861** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

KS 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32861-1		PB-210	16-jan-20 00:00	100 %		01-16-20 12:15	.0552	82.63	01-17-20 00:04	X1A	720	800 M	811	800 M	.311	.971	KSC
Blank Samples																	
Activity: -2.81E-01	Error: 2.42E-01		MDC: **4.10E-01**	pCi/Total		WG32861-1			PB-210								
WG32861-2		PB-210	01-jul-91 12:00	100 %		01-16-20 12:15	.0562	84.13	01-16-20 17:03	X1A	806	15 M	811	800 M	.311	.401	KSC
Laboratory Control Samples																	
Activity: **3.15E+02**	Error: 2.27E+01		MDC: 7.25E+00	pCi/Total		**WG32861-2**			**PB-210**								
WG32861-3		PB-210	09-dec-19 15:20	6.0209 g dry		01-16-20 12:15	.0553	82.78	01-17-20 00:04	X1B	1014	800 M	892	800 M	.296	.968	KSC
11187072-120919-BN-SJSSA07 (52.5-55 CM)																	
Activity: 6.61E-02	Error: 4.73E-02		MDC: **7.54E-02**	pCi/gDry		WG32861-3			PB-210								
WG32861-4		PB-210	09-dec-19 15:25	6.0423 g dry		01-16-20 12:15	.0658	98.5	01-16-20 17:03	X1B	715	15 M	892	800 M	.296	.97	KSC
11187072-120919-BN-SJSSA07 (60-62.5 CM)																	
Activity: **2.00E+01**	Error: 1.54E+00		MDC: 5.47E-01	pCi/gDry		**WG32861-4**			**PB-210**								
WG32861-5		PB-210	09-dec-19 15:25	6.2017 g dry		01-16-20 12:15	.0654	97.9	01-16-20 17:03	X1C	775	15 M	772	800 M	.275	.97	KSC
MS																	
Activity: **2.28E+01**	Error: 1.67E+00		MDC: 5.32E-01	pCi/gDry		**WG32861-5**			**PB-210**								

Raw Data Sheet (rawdata)

TBE-RDS03 — 01/30/20 18:32 —

Work Order: **WG32943** — Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** — Project: **TE511-LABQC**

KT 1/31/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32943-1		PB-210	27-jan-20 00:00	100 %		01-27-20 10:40	.0327	48.95	01-27-20 23:27	X1A	951	800 M	811	800 M	.311	.965	CJF
Blank Samples																	
Activity: **4.28E-01**	Error: 2.57E-01	MDC: 4.06E-01	pCi/Total			**WG32943-1**			**PB-210**								
WG32943-2		PB-210	01-jul-91 12:00	100 %		01-27-20 10:40	.0354	52.99	01-27-20 16:15	X4A	632	15 M	769	800 M	.309	.399	CJF
Laboratory Control Samples																	
Activity: **2.45E+02**	Error: 2.00E+01	MDC: 7.03E+00	pCi/Total			**WG32943-2**			**PB-210**								
WG32943-3		PB-210	07-dec-19 15:34	6.2216 g dry		01-27-20 10:40	.0469	70.21	01-27-20 23:27	X1B	2244	800 M	892	800 M	.296	.961	CJF
11187072-120719-SS-SJSSA01 (15-17.5 CM)																	
Activity: **7.03E-01**	Error: 5.82E-02	MDC: 7.23E-02	pCi/gDry			**WG32943-3**			**PB-210**								
WG32943-4		PB-210	07-dec-19 15:36	6.1587 g dry		01-27-20 10:40	.0428	64.07	01-27-20 16:15	X4B	715	15 M	802	800 M	.294	.965	CJF
11187072-120719-SS-S																	
Activity: **1.97E+01**	Error: 1.50E+00	MDC: 5.07E-01	pCi/gDry			**WG32943-4**			**PB-210**								
WG32943-5		PB-210	07-dec-19 15:38	6.6687 g dry		01-27-20 10:40	.0383	57.34	01-27-20 16:15	X4C	594	15 M	749	800 M	.276	.965	CJF
11187072-120719-SS-S																	
Activity: **1.60E+01**	Error: 1.34E+00	MDC: 4.82E-01	pCi/gDry			**WG32943-5**			**PB-210**								

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32943-1	951	4.66	800.00	01/27/2020 23:27		1.0000	%	pCi	PB-210	0.311	4.28E-01	2.57E-01	4.06E-01	Total	0.613	0.9653	811.	800.0	
WG32943-3	2244	4.66	800.00	01/27/2020 23:27		6.2216	g	pCi	PB-210	0.296	7.03E-01	5.82E-02	7.23E-02	g Dry	0.613	0.9612	892.	800.0	
L85486-3	829	4.66	800.00	01/27/2020 23:27		6.5832	g	pCi	PB-210	0.275	3.01E-02	4.22E-02	6.83E-02	g Dry	0.613	0.9609	772.	800.0	
L85486-4	917	4.66	800.00	01/27/2020 23:27		6.0107	g	pCi	PB-210	0.283	-4.84E-02	4.93E-02	8.30E-02	g Dry	0.613	0.9609	1003.	800.0	
L85486-5	756	4.66	800.00	01/27/2020 23:27		6.0199	g	pCi	PB-210	0.312	-3.37E-02	4.05E-02	6.81E-02	g Dry	0.613	0.9609	822.	800.0	
L85486-6	1973	4.66	800.00	01/27/2020 23:27		6.6994	g	pCi	PB-210	0.267	6.11E-01	5.67E-02	7.20E-02	g Dry	0.613	0.9609	832.	800.0	
L85486-7	2329	4.66	800.00	01/27/2020 23:27		6.0108	g	pCi	PB-210	0.281	8.33E-01	6.41E-02	7.75E-02	g Dry	0.613	0.9609	860.	800.0	
L85486-8	2101	4.66	800.00	01/27/2020 23:27		6.2164	g	pCi	PB-210	0.263	5.40E-01	6.71E-02	9.37E-02	g Dry	0.613	0.9609	1179.	800.0	
L85486-9	1326	4.66	800.00	01/27/2020 23:27		6.0934	g	pCi	PB-210	0.293	2.94E-01	4.91E-02	6.96E-02	g Dry	0.613	0.9609	777.	800.0	
L85486-10	1937	4.66	800.00	01/27/2020 23:27		6.0605	g	pCi	PB-210	0.309	5.96E-01	5.31E-02	6.59E-02	g Dry	0.613	0.9609	769.	800.0	
L85486-11	1799	4.66	800.00	01/27/2020 23:27		6.1933	g	pCi	PB-210	0.294	5.24E-01	5.36E-02	6.93E-02	g Dry	0.613	0.9609	802.	800.0	
L85479-1	2096	4.66	800.00	01/27/2020 23:27		6.5413	g	pCi	PB-210	0.276	7.13E-01	5.64E-02	6.75E-02	g Dry	0.613	0.9612	749.	800.0	
L85479-2	2083	4.66	800.00	01/27/2020 23:27		6.1145	g	pCi	PB-210	0.286	6.94E-01	5.88E-02	7.26E-02	g Dry	0.613	0.9612	813.	800.0	

11/30/20
Reviewed Date

1/30/20

Data Filename: X012720N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32943-1	41	951	1/27/2020 23:27	800 800MIN	1580
1 b	b wg32943-3	50	2244	1/27/2020 23:27	800 800MIN	1580
1 c	b l85486-3	30	829	1/27/2020 23:27	800 800MIN	1580
1 d	b l85486-4	32	917	1/27/2020 23:27	800 800MIN	1580
2 a		15	2214	1/27/2020 23:27	800 800MIN	1580
2 b		32	650	1/27/2020 23:27	800 800MIN	1580
2 c	b l85486-5	25	756	1/27/2020 23:27	800 800MIN	1580
2 d		21	621	1/27/2020 23:27	800 800MIN	1580
3 a	b l85486-6	27	1973	1/27/2020 23:27	800 800MIN	1580
3 b	b l85486-7	30	2329	1/27/2020 23:27	800 800MIN	1580
3 c	b l85486-8	25	2101	1/27/2020 23:27	800 800MIN	1580
3 d	b l85486-9	49	1326	1/27/2020 23:27	800 800MIN	1580
4 a	b l85486-10	38	1937	1/27/2020 23:27	800 800MIN	1580
4 b	b l85486-11	35	1799	1/27/2020 23:27	800 800MIN	1580
4 c	b l85479-1	40	2096	1/27/2020 23:27	800 800MIN	1580
4 d	b l85479-2	38	2083	1/27/2020 23:27	800 800MIN	1580

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85487-5	935	4.66	800.00	01/16/2020 23:48		6.0556	g	pCi	PB-210	0.305	7.55E-02	4.32E-02	6.82E-02	g Dry	0.604	0.9690	790.	800.0	
L85487-6	908	4.66	800.00	01/16/2020 23:48		6.1243	g	pCi	PB-210	0.292	5.33E-02	4.46E-02	7.14E-02	g Dry	0.604	0.9690	809.	800.0	
L85487-7	961	4.66	800.00	01/16/2020 23:48		6.0578	g	pCi	PB-210	0.278	1.20E-01	4.73E-02	7.30E-02	g Dry	0.604	0.9690	751.	800.0	
L85487-8	980	4.66	800.00	01/16/2020 23:48		6.2478	g	pCi	PB-210	0.286	-1.89E-02	4.81E-02	8.00E-02	g Dry	0.604	0.9690	1015.	800.0	
L85487-9	788	4.66	800.00	01/16/2020 23:48		6.1753	g	pCi	PB-210	0.263	3.80E-02	4.61E-02	7.44E-02	g Dry	0.604	0.9690	724.	800.0	
L85487-10	1006	4.66	800.00	01/16/2020 23:48		6.0066	g	pCi	PB-210	0.306	8.16E-02	4.51E-02	7.11E-02	g Dry	0.604	0.9690	850.	800.0	
L85487-11	842	4.66	800.00	01/16/2020 23:48		6.0438	g	pCi	PB-210	0.295	1.05E-01	4.17E-02	6.40E-02	g Dry	0.604	0.9690	647.	800.0	
L85486-1	877	4.66	800.00	01/16/2020 23:48		6.0856	g	pCi	PB-210	0.271	5.66E-02	4.75E-02	7.60E-02	g Dry	0.604	0.9687	780.	800.0	
L85486-2	807	4.66	800.00	01/16/2020 23:48		6.1250	g	pCi	PB-210	0.287	-4.11E-02	4.50E-02	7.58E-02	g Dry	0.604	0.9687	882.	800.0	

11/17/20
Reviewed Date

Data Filename: Y011620N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

MDF 1/17/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85487-5	27	935	1/16/2020 23:48	800 800MIN	1650
1 b	b l85487-6	19	908	1/16/2020 23:48	800 800MIN	1650
1 c	b l85487-7	40	961	1/16/2020 23:48	800 800MIN	1650
1 d	b l85487-8	39	980	1/16/2020 23:48	800 800MIN	1650
2 a	b l85487-9	29	788	1/16/2020 23:48	800 800MIN	1650
2 b		11	912	1/16/2020 23:48	800 800MIN	1650
2 c	b l85487-10	27	1006	1/16/2020 23:48	800 800MIN	1650
2 d	b l85487-11	21	842	1/16/2020 23:48	800 800MIN	1650
3 a	b l85486-1	22	877	1/16/2020 23:48	800 800MIN	1650
3 b	b l85486-2	25	807	1/16/2020 23:48	800 800MIN	1650
3 c		16	584	1/16/2020 23:48	800 800MIN	1650
3 d		7	1065	1/16/2020 23:48	800 800MIN	1650
4 a		0	0	1/16/2020 23:48	800 800MIN	1650
4 b		0	0	1/16/2020 23:48	800 800MIN	1650
4 c		0	0	1/16/2020 23:48	800 800MIN	1650
4 d		0	0	1/16/2020 23:48	800 800MIN	1650

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32943-2	632	4.66	15.00	01/27/2020 16:15		1.0000	%	pCi	PB-210	0.309	2.45E+02	2.00E+01	7.03E+00	Total	0.613	0.3987	769.	800.0	
WG32943-4	715	4.66	15.00	01/27/2020 16:15		6.1587	g	pCi	PB-210	0.294	1.97E+01	1.50E+00	5.07E-01	g Dry	0.613	0.9648	802.	800.0	
WG32943-5	594	4.66	15.00	01/27/2020 16:15		6.6687	g	pCi	PB-210	0.276	1.60E+01	1.34E+00	4.82E-01	g Dry	0.613	0.9648	749.	800.0	

Reviewed 1/28/20 Date

Data Filename: X012720AS.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/27/2020 16:15	15 15MIN	1580
1 b				1/27/2020 16:15	15 15MIN	1580
1 c				1/27/2020 16:15	15 15MIN	1580
1 d				1/27/2020 16:15	15 15MIN	1580
2 a				1/27/2020 16:15	15 15MIN	1580
2 b				1/27/2020 16:15	15 15MIN	1580
2 c				1/27/2020 16:15	15 15MIN	1580
2 d				1/27/2020 16:15	15 15MIN	1580
3 a				1/27/2020 16:15	15 15MIN	1580
3 b				1/27/2020 16:15	15 15MIN	1580
3 c				1/27/2020 16:15	15 15MIN	1580
3 d				1/27/2020 16:15	15 15MIN	1580
4 a	b wg32943-2	4	632	1/27/2020 16:15	15 15MIN	1580
4 b	b wg32943-4	4	715	1/27/2020 16:15	15 15MIN	1580
4 c	b wg32943-5	0	594	1/27/2020 16:15	15 15MIN	1580
4 d		0	15	1/27/2020 16:15	15 15MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-1	720	4.66	800.00	01/17/2020 00:04		1.0000	%	pCi	PB-210	0.311	-2.81E-01	2.42E-01	4.10E-01	Total	0.604	0.9707	811.	800.0	
WG32861-3	1014	4.66	800.00	01/17/2020 00:04		6.0209	g	pCi	PB-210	0.296	6.61E-02	4.73E-02	7.54E-02	g Dry	0.604	0.9676	892.	800.0	
L85485-5	1895	4.66	800.00	01/17/2020 00:04		6.0068	g	pCi	PB-210	0.275	6.55E-01	6.02E-02	7.55E-02	g Dry	0.604	0.9676	772.	800.0	
L85485-6	1283	4.66	800.00	01/17/2020 00:04		6.1186	g	pCi	PB-210	0.283	1.56E-01	5.33E-02	8.23E-02	g Dry	0.604	0.9676	1003.	800.0	
L85485-7	895	4.66	800.00	01/17/2020 00:04		6.0611	g	pCi	PB-210	0.312	3.73E-02	4.23E-02	6.82E-02	g Dry	0.604	0.9676	822.	800.0	
L85485-8	911	4.66	800.00	01/17/2020 00:04		6.0152	g	pCi	PB-210	0.267	4.75E-02	5.02E-02	8.08E-02	g Dry	0.604	0.9676	832.	800.0	
L85485-9	1011	4.66	800.00	01/17/2020 00:04		6.3645	g	pCi	PB-210	0.281	8.15E-02	4.67E-02	7.38E-02	g Dry	0.604	0.9676	860.	800.0	
L85485-10	1173	4.66	800.00	01/17/2020 00:04		6.0648	g	pCi	PB-210	0.263	-3.63E-03	5.87E-02	9.69E-02	g Dry	0.604	0.9676	1179.	800.0	
L85485-11	1149	4.66	800.00	01/17/2020 00:04		6.1694	g	pCi	PB-210	0.293	1.98E-01	4.68E-02	6.93E-02	g Dry	0.604	0.9676	777.	800.0	
L85487-1	953	4.66	800.00	01/17/2020 00:04		6.0382	g	pCi	PB-210	0.309	9.50E-02	4.28E-02	6.67E-02	g Dry	0.604	0.9675	769.	800.0	
L85487-2	916	4.66	800.00	01/17/2020 00:04		6.0298	g	pCi	PB-210	0.294	6.20E-02	4.51E-02	7.18E-02	g Dry	0.604	0.9675	802.	800.0	
L85487-3	918	4.66	800.00	01/17/2020 00:04		6.1019	g	pCi	PB-210	0.276	9.67E-02	4.67E-02	7.30E-02	g Dry	0.604	0.9675	749.	800.0	
L85487-4	927	4.66	800.00	01/17/2020 00:04		6.1182	g	pCi	PB-210	0.286	6.28E-02	4.59E-02	7.32E-02	g Dry	0.604	0.9675	813.	800.0	

11/17/20
Reviewed Date

KOL 1/17/20

Data Filename: X011620N.xls

MDAF*: 2.71 = 2.71/Sample Count Time.+ Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-1	30	720	1/17/2020 0:04	800 800MIN	1580
1 b	b wg32861-3	44	1014	1/17/2020 0:04	800 800MIN	1580
1 c	b l85485-5	37	1895	1/17/2020 0:04	800 800MIN	1580
1 d	b l85485-6	38	1283	1/17/2020 0:04	800 800MIN	1580
2 a		15	2126	1/17/2020 0:04	800 800MIN	1580
2 b		27	558	1/17/2020 0:04	800 800MIN	1580
2 c	b l85485-7	18	895	1/17/2020 0:04	800 800MIN	1580
2 d		14	569	1/17/2020 0:04	800 800MIN	1580
3 a	b l85485-8	26	911	1/17/2020 0:04	800 800MIN	1580
3 b	b l85485-9	26	1011	1/17/2020 0:04	800 800MIN	1580
3 c	b l85485-10	27	1173	1/17/2020 0:04	800 800MIN	1580
3 d	b l85485-11	27	1149	1/17/2020 0:04	800 800MIN	1580
4 a	b l85487-1	43	953	1/17/2020 0:04	800 800MIN	1580
4 b	b l85487-2	25	916	1/17/2020 0:04	800 800MIN	1580
4 c	b l85487-3	30	918	1/17/2020 0:04	800 800MIN	1580
4 d	b l85487-4	30	927	1/17/2020 0:04	800 800MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-2	806	4.66	15.00	01/16/2020 17:03		1.0000	%	pCi	PB-210	0.311	3.15E+02	2.27E+01	7.25E+00	Total	0.604	0.4008	811.	800.0	
WG32861-4	715	4.66	15.00	01/16/2020 17:03		6.0423	g	pCi	PB-210	0.296	2.00E+01	1.54E+00	5.47E-01	g Dry	0.604	0.9703	892.	800.0	
WG32861-5	775	4.66	15.00	01/16/2020 17:03		6.2017	g	pCi	PB-210	0.275	2.28E+01	1.67E+00	5.32E-01	g Dry	0.604	0.9703	772.	800.0	

1/17/20
Reviewed Date

Data Filename: X011620F.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/17/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-2	7	806	1/16/2020 17:03	15 15MIN	1580
1 b	b wg32861-4	3	715	1/17/2020 17:03	15 15MIN	1580
1 c	b wg32861-5	2	775	1/18/2020 17:03	15 15MIN	1580
1 d		1	20	1/19/2020 17:03	15 15MIN	1580
2 a		0	52	1/20/2020 17:03	15 15MIN	1580
2 b		1	10	1/21/2020 17:03	15 15MIN	1580
2 c		0	11	1/22/2020 17:03	15 15MIN	1580
2 d		0	9	1/23/2020 17:03	15 15MIN	1580
3 a		0	10	1/24/2020 17:03	15 15MIN	1580
3 b		0	912	1/25/2020 17:03	15 15MIN	1580
3 c		0	15	1/26/2020 17:03	15 15MIN	1580
3 d		0	16	1/27/2020 17:03	15 15MIN	1580
4 a		1	10	1/28/2020 17:03	15 15MIN	1580
4 b		0	16	1/29/2020 17:03	15 15MIN	1580
4 c		0	15	1/30/2020 17:03	15 15MIN	1580
4 d		0	17	1/31/2020 17:03	15 15MIN	1580

LEAD 210

Prep and Run Logs

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32861-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32861-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32861-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02
WG32943-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32943-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32943-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32861-1	WO	BLK	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0353	BALANCE 7	.0905	BALANCE 7	.0552	01/16/20	WG32861
WG32861-2	WO	LCS	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0356	BALANCE 7	.0918	BALANCE 7	.0562	01/16/20	WG32861
WG32861-3	S	DUP	PB-210	6.0209 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0348	BALANCE 7	.0901	BALANCE 7	.0553	01/16/20	WG32861
WG32861-4	S	MS	PB-210	6.0423 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0350	BALANCE 7	.1008	BALANCE 7	.0658	01/16/20	WG32861
WG32861-5	S	MSD	PB-210	6.2017 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0341	BALANCE 7	.0995	BALANCE 7	.0654	01/16/20	WG32861
WG32943-1	WO	BLK	PB-210	100 %	01/27/20	CJF		.0312	BALANCE 7	.0639	BALANCE 10	.0327	01/27/20	WG32943
WG32943-2	WO	LCS	PB-210	100 %	01/27/20	CJF		.0317	BALANCE 7	.0671	BALANCE 10	.0354	01/27/20	WG32943
WG32943-3	S	DUP	PB-210	6.2216 g dry	01/27/20	CJF	BALANCE 7	.0319	BALANCE 7	.0788	BALANCE 10	.0469	01/27/20	WG32943
WG32943-4	S	MS	PB-210	6.1587 g dry	01/27/20	CJF	BALANCE 7	.0312	BALANCE 7	.0740	BALANCE 10	.0428	01/27/20	WG32943
WG32943-5	S	MSD	PB-210	6.6687 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0693	BALANCE 10	.0383	01/27/20	WG32943
L85486-1	S		PB-210	6.0856 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0344	BALANCE 7	.0848	BALANCE 7	.0504	01/16/20	WG32861
L85486-2	S		PB-210	6.125 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0342	BALANCE 7	.0753	BALANCE 7	.0411	01/16/20	WG32861
L85486-3	S		PB-210	6.5832 g dry	01/27/20	CJF	BALANCE 7	.0309	BALANCE 7	.0691	BALANCE 10	.0382	01/27/20	WG32943
L85486-4	S		PB-210	6.0107 g dry	01/27/20	CJF	BALANCE 7	.0311	BALANCE 7	.0735	BALANCE 10	.0424	01/27/20	WG32943
L85486-5	S		PB-210	6.0199 g dry	01/27/20	CJF	BALANCE 7	.0311	BALANCE 7	.0732	BALANCE 10	.0421	01/27/20	WG32943
L85486-6	S		PB-210	6.6994 g dry	01/27/20	CJF	BALANCE 7	.0308	BALANCE 7	.0735	BALANCE 10	.0427	01/27/20	WG32943
L85486-7	S		PB-210	6.0108 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0746	BALANCE 10	.0436	01/27/20	WG32943

PB-210

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
L85486-8	S		PB-210	6.2164 g dry	01/27/20	CJF	BALANCE 7	.0308	BALANCE 7	.0686	BALANCE 10	.0378	01/27/20	WG32943
L85486-9	S		PB-210	6.0934 g dry	01/27/20	CJF	BALANCE 7	.0306	BALANCE 7	.0551	BALANCE 10	.0245	01/27/20	WG32943
L85486-10	S		PB-210	6.0605 g dry	01/27/20	CJF	BALANCE 7	.0306	BALANCE 7	.0725	BALANCE 10	.0419	01/27/20	WG32943
L85486-11	S		PB-210	6.1933 g dry	01/27/20	CJF	BALANCE 7	.0307	BALANCE 7	.0682	BALANCE 10	.0375	01/27/20	WG32943

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 16-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 16-JAN-20

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	.9999
100.0000	100.0011

Check Date: 27-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 27-JAN-20

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0001
100.0000	99.9999

Check Date: 27-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 27-JAN-20

Daily Pipette Tolerance Check
for: L85486

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5043
1	1.0031

Check Date: 16-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	16-JAN-20

Daily Pipette Tolerance Check
for: L85486

Instrument: PIPETTE 13
Model: WHEATON ACURA 821
Serial #: 10031686
Description: ADJ VOLUME .2-1

Known	Result
.5	.5023
1	1.0044

Check Date: 27-JAN-20
Analyst: CJF
Balance: BALANCE 10
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIPETTE 13	27-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ

Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

NAMAS
CALIBRATION
No. 0146

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI 19-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan Ogilvie
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85486

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85486-1	11187072-120419-SS-SJSSA08 (0-2.5 CM)	95.44	658.72	503.91	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	27.48
L85486-2	11187072-120419-SS-SJSSA08 (7.5-10 CM)	95.85	786.29	489.62	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	42.97
L85486-3	11187072-120419-SS-SJSSA08 (15-17.5 CM)	96.07	634.23	445.76	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	35.02
L85486-4	11187072-120419-SS-SJSSA08 (22.5-25 CM)	96.3	523.76	449.97	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	17.26
L85486-5	11187072-120419-SS-SJSSA08 (30-32.5 CM)	95.93	646.99	531.91	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	20.88
L85486-6	11187072-120419-SS-SJSSA08 (37.5-40 CM)	96.31	578.6	360.7	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	45.18
L85486-7	11187072-120419-SS-SJSSA08 (45-47.5 CM)	96.43	581.65	360.67	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	45.54
L85486-8	11187072-120419-SS-SJSSA08 (52.5-55 CM)	96.05	584.82	350.26	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	47.99
L85486-9	11187072-120419-SS-SJSSA08 (60-62.5 CM)	95.99	540.94	325.23	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	48.48
L85486-10	11187072-120419-SS-SJSSA08 (70-72.5 CM)	95.52	590.85	354.39	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	47.74
L85486-11	11187072-120419-SS-SJSSA08 (80-82.5 CM)	96.32	619.31	369.47	BALANCE 8	12/17/19	BALANCE 8	12/19/19	KBA	47.77

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.08
1000.00	1000.10

Check Date: 17-DEC-19

Analyst: SMC

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
GELI	BALANCE 8	17-DEC-19
NONE	BALANCE 8	17-DEC-19

Daily Balance Tolerance Check Reports

for : L85486

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.01
1000.00	1000.12

Check Date: 19-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	19-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85481

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85481
GH001-3EJACINTO-19

01/31/2020 11:28

Sample Receipt

The following sample(s) were received on December 16, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120619-SS-SJSSA03 (0-2.5 CM)	L85481-1	
11187072-120619-SS-SJSSA03 (7.5-10 CM)	L85481-2	
11187072-120619-SS-SJSSA03 (15-17.5 CM)	L85481-3	
11187072-120619-SS-SJSSA03 (22.5-25 CM)	L85481-4	
11187072-120619-SS-SJSSA03 (30-32.5 CM)	L85481-5	
11187072-120619-SS-SJSSA03 (37.5-40 CM)	L85481-6	
11187072-120619-SS-SJSSA03 (45-47.5 CM)	L85481-7	
11187072-120619-SS-SJSSA03 (52.5-55 CM)	L85481-8	
11187072-120619-SS-SJSSA03 (60-62.5 CM)	L85481-9	
11187072-120619-SS-SJSSA03 (70-72.5 CM)	L85481-10	
11187072-120619-SS-SJSSA03 (80-82.5 CM)	L85481-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
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Knoxville, TN 37931-3133

Case Narrative - L85481
GH001-3EJACINTO-19

01/31/2020 11:28

Special Considerations

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32723,WG32733.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120719-SS-SJSSA02 (80-82.5 CM)	L85480-11	WG32723-1
11187072-120619-SS-SJSSA03 (80-82.5 CM)	L85481-11	WG32733-1

PB-210

Quality Control

Quality control sample(s) analyzed as WG32842,WG32932. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120719-SS-SJSSA02 (70-72.5 CM)	L85480-10	WG32842-3
11187072-120819-BN-SJSSA05 (30-32.5 CM)	L85483-5	WG32932-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

TELEDYNE
BROWN ENGINEERING, INC.
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2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85481
GH001-3EJACINTO-19

01/31/2020 11:28

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 11:52

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85481

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA03 (0-2.5 CM)** Collect Start: 12/06/2019 12:40 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 44.74
LIMS Number: L85481-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.87E-01**	5.02E-02	6.51E-02	pCi/gDry		6.2388	g dry	12/06/19 12:40	01/15/20	800	M	+			
CS-137	2007	2.26E-02	5.46E-02	**9.55E-02**	pCi/g Dry		143.46	g dry	12/06/19 12:40	12/30/19	4299	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (7.5-10 CM)** Collect Start: 12/06/2019 12:42 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 40.12
LIMS Number: L85481-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.16E-01**	5.12E-02	6.53E-02	pCi/gDry		6.2957	g dry	12/06/19 12:42	01/15/20	800	M	+			
CS-137	2007	-3.28E-02	7.54E-02	**1.19E-01**	pCi/g Dry		111.42	g dry	12/06/19 12:42	12/31/19	4100	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (15-17.5 CM)** Collect Start: 12/06/2019 12:44 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 36.15
LIMS Number: L85481-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.78E-01**	5.11E-02	7.47E-02	pCi/gDry		6.2159	g dry	12/06/19 12:44	01/15/20	800	M	+			
CS-137	2007	-2.46E-02	6.43E-02	**9.88E-02**	pCi/g Dry		231.82	g dry	12/06/19 12:44	12/31/19	4134	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85481

GHD Services, Inc.
GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA03 (22.5-25 CM)** Collect Start: 12/06/2019 12:46 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 35.38
LIMS Number: L85481-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.02E-01**	4.98E-02	7.00E-02	pCi/gDry		6.0949	g dry	12/06/19 12:46	01/15/20	800	M	+			
CS-137	2007	1.26E-02	4.44E-02	**7.31E-02**	pCi/g Dry		131.63	g dry	12/06/19 12:46	12/31/19	10800	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (30-32.5 CM)** Collect Start: 12/06/2019 12:48 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 33.22
LIMS Number: L85481-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.47E-01**	4.71E-02	6.00E-02	pCi/gDry		6.1007	g dry	12/06/19 12:48	01/15/20	800	M	+			
CS-137	2007	-3.24E-02	4.30E-02	**6.65E-02**	pCi/g Dry		134.25	g dry	12/06/19 12:48	12/31/19	10800	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (37.5-40 CM)** Collect Start: 12/06/2019 12:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 33.5
LIMS Number: L85481-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.61E-01**	4.47E-02	6.40E-02	pCi/gDry		6.1933	g dry	12/06/19 12:50	01/15/20	800	M	+			
CS-137	2007	1.60E-02	4.76E-02	**8.15E-02**	pCi/g Dry		262.75	g dry	12/06/19 12:50	12/31/19	4171	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 11:52

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85481

GHD Services, Inc.

Janie Smith

GH001-3EJACINTO-19

Sample ID: **11187072-120619-SS-SJSSA03 (45-47.5 CM)** Collect Start: 12/06/2019 12:52 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 35.59
LIMS Number: L85481-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.52E-01**	4.69E-02	5.93E-02	pCi/gDry		6.0598	g dry	12/06/19 12:52	01/15/20	800	M	+			
CS-137	2007	-8.44E-03	5.18E-02	**8.21E-02**	pCi/g Dry		278.68	g dry	12/06/19 12:52	12/31/19	4260	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (52.5-55 CM)** Collect Start: 12/06/2019 12:54 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 31.66
LIMS Number: L85481-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.86E-01**	4.98E-02	7.10E-02	pCi/gDry		6.0445	g dry	12/06/19 12:54	01/15/20	800	M	+			
CS-137	2007	2.91E-02	5.40E-02	**9.40E-02**	pCi/g Dry		280.35	g dry	12/06/19 12:54	12/31/19	4292	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (60-62.5 CM)** Collect Start: 12/06/2019 12:56 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 37.89
LIMS Number: L85481-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	5.63E-02	4.35E-02	**6.95E-02**	pCi/gDry		6.1958	g dry	12/06/19 12:56	01/15/20	800	M	U			
CS-137	2007	4.83E-03	3.92E-02	**6.39E-02**	pCi/g Dry		303.22	g dry	12/06/19 12:56	12/31/19	4322	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 11:52

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85481

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA03 (70-72.5 CM)** Collect Start: 12/06/2019 12:58 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 45.07
LIMS Number: L85481-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.02E-01**	4.89E-02	6.54E-02	pCi/gDry		6.6059	g dry	12/06/19 12:58	01/24/20	800	M	+			
CS-137	2007	-7.34E-03	3.24E-02	**5.21E-02**	pCi/g Dry		326.27	g dry	12/06/19 12:58	12/31/19	5395	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA03 (80-82.5 CM)** Collect Start: 12/06/2019 13:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 36.26
LIMS Number: L85481-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.76E-01**	5.50E-02	7.48E-02	pCi/gDry		6.413	g dry	12/06/19 13:00	01/24/20	800	M	+			
CS-137	2007	-1.83E-02	4.09E-02	**6.43E-02**	pCi/g Dry		339.54	g dry	12/06/19 13:00	12/31/19	5431	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85481

GH001-3EJACINTO-19

01/31/2020 10:00

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32723-1 L85480-11	All non-detects.	S						<50	U	NE
WG32733-1 L85481-11	All non-detects.	S						<50	U	NE

GAMMA

Associated Samples for WG32723

Sample #	Client ID
L85481-1	11187072-120619-SS-SJSSA03 (0-2.5 CM)
L85481-2	11187072-120619-SS-SJSSA03 (7.5-10 CM)
L85481-3	11187072-120619-SS-SJSSA03 (15-17.5 CM)
L85481-4	11187072-120619-SS-SJSSA03 (22.5-25 CM)
L85481-5	11187072-120619-SS-SJSSA03 (30-32.5 CM)
L85481-6	11187072-120619-SS-SJSSA03 (37.5-40 CM)
L85481-7	11187072-120619-SS-SJSSA03 (45-47.5 CM)
L85481-8	11187072-120619-SS-SJSSA03 (52.5-55 CM)
L85481-9	11187072-120619-SS-SJSSA03 (60-62.5 CM)

GAMMA

Associated Samples for WG32733

Sample #	Client ID
L85481-10	11187072-120619-SS-SJSSA03 (70-72.5 CM)
L85481-11	11187072-120619-SS-SJSSA03 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85481

GH001-3EJACINTO-19

01/31/2020 10:00

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32842-1	PB-210	WO	01/15/2020 23:40	< 3.800E-01	pCi/Total	U	P
WG32932-1	PB-210	WO	01/24/2020 22:42	< 3.900E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32842-2	PB-210	WO	01/15/2020 16:28	3.18E+02	2.680E+02	pCi/Total	84.4	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									
WG32932-2	PB-210	WO	01/24/2020 15:45	3.18E+02	2.580E+02	pCi/Total	81.3	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32842-3 L85480-10	PB-210	S	01/15/2020 23:40	3.800E-01	3.060E-01	pCi/gDry		<50	*	NE
WG32932-3 L85483-5	PB-210	S	01/28/2020 22:45	1.810E-01	5.970E-01	pCi/gDry		<50	*	NE

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85481

GH001-3EJACINTO-19

01/31/2020 10:00

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32842-4	PB-210	S	01/15/2020 16:28	2.09E+01	3.310E-01	2.070E+01	pCi/gDry	97.3	60-140	+	P
L85480-9											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32932-4	PB-210	S	01/24/2020 15:45	2.11E+01	2.590E-01	2.110E+01	pCi/gDry	98.7	60-140	+	P
L85483-2											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32842-5	PB-210	S	01/15/2020 16:28	2.02E+01	2.070E+01	100.7	pCi/gDry	3.4	<30	+	P
WG32842-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32932-5	PB-210	S	01/24/2020 15:45	2.14E+01	1.800E+01	82.9	pCi/gDry	17.4	<30	+	P
WG32932-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

PB-210

Associated Samples for WG32842

Sample #	Client ID
L85481-1	11187072-120619-SS-SJSSA03 (0-2.5 CM)
L85481-2	11187072-120619-SS-SJSSA03 (7.5-10 CM)
L85481-3	11187072-120619-SS-SJSSA03 (15-17.5 CM)
L85481-4	11187072-120619-SS-SJSSA03 (22.5-25 CM)
L85481-5	11187072-120619-SS-SJSSA03 (30-32.5 CM)
L85481-6	11187072-120619-SS-SJSSA03 (37.5-40 CM)
L85481-7	11187072-120619-SS-SJSSA03 (45-47.5 CM)
L85481-8	11187072-120619-SS-SJSSA03 (52.5-55 CM)
L85481-9	11187072-120619-SS-SJSSA03 (60-62.5 CM)

PB-210

Associated Samples for WG32932

Sample #	Client ID
L85481-10	11187072-120619-SS-SJSSA03 (70-72.5 CM)
L85481-11	11187072-120619-SS-SJSSA03 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

L85480 L85481
LT 12/16/19

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Page _____ of _____

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:
P - 10CFR61, 10CFR50, Other high level: _____
Turn-around-time 10 days
Hazardous Material in Shipment Yes_____* No_____

Lims# _____
(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start	Collection Date/Time Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120619-SS-SJSSA03 (0-2.5 cm)	Soil		12/6/2019 1240		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (7.5-10 cm)	Soil		12/6/2019 1242		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (15-17.5 cm)	Soil		12/6/2019 1244		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (22.5-25 cm)	Soil		12/6/2019 1246		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (30-32.5 cm)	Soil		12/6/2019 1248		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (37.5-40 cm)	Soil		12/6/2019 1250		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (45-47.5 cm)	Soil		12/6/2019 1252		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (52.5-55 cm)	Soil		12/6/2019 1254		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (60-62.5 cm)	Soil		12/6/2019 1256		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (70-72.5 cm)	Soil		12/6/2019 1258		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA03 (80-82.5 cm)	Soil		12/6/2019 1300		16 oz	1	S	Isotopes
									** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N. Groves	Date: 12-11-19 1000	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Ky Logg	Date: 12-16-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 11:55

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

SR #: SR64445

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 **LIMS #L85481**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85481

****

L85481-1 S 11187072-120619-SS-SJSSA03 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	12/30/19
Aliquot	PB-210	CJF	01/14/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/30/19
Count Room	PB-210	KOJ	01/15/20

****

L85481-2 S 11187072-120619-SS-SJSSA03 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	12/30/19
Aliquot	PB-210	CJF	01/14/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/15/20

****

L85481-3 S 11187072-120619-SS-SJSSA03 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	12/30/19
Aliquot	PB-210	CJF	01/14/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/15/20

****

L85481-4 S 11187072-120619-SS-SJSSA03 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	12/30/19
Aliquot	PB-210	CJF	01/14/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/15/20

****

L85481-5 S 11187072-120619-SS-SJSSA03 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	12/30/19
Aliquot	PB-210	CJF	01/14/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85481

L85481-5	**S**	**11187072-120619-SS-SJSSA03 (30-32.5 CM)**		
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/15/20

****

L85481-6	**S**	**11187072-120619-SS-SJSSA03 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	12/30/19
Aliquot	PB-210		CJF	01/14/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/15/20

****

L85481-7	**S**	**11187072-120619-SS-SJSSA03 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	12/30/19
Aliquot	PB-210		CJF	01/14/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/15/20

****

L85481-8	**S**	**11187072-120619-SS-SJSSA03 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	12/30/19
Aliquot	PB-210		CJF	01/14/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/15/20

****

L85481-9	**S**	**11187072-120619-SS-SJSSA03 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	12/30/19
Aliquot	PB-210		CJF	01/14/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/15/20

****

L85481-10	**S**	**11187072-120619-SS-SJSSA03 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85481

L85481-10	**S**	**11187072-120619-SS-SJSSA03 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		MSA	01/24/20

****

L85481-11	**S**	**11187072-120619-SS-SJSSA03 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		MSA	01/24/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

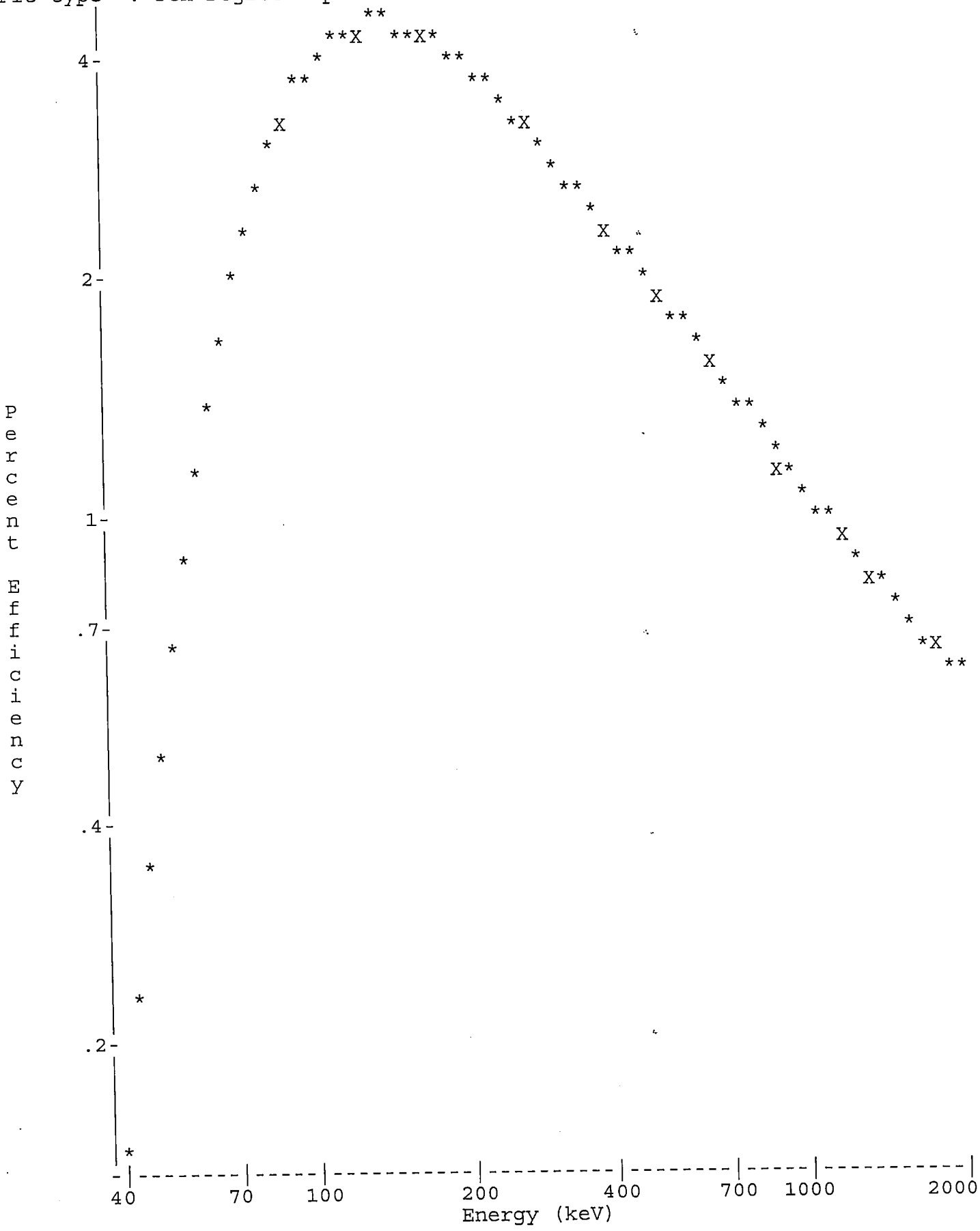
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Geometry : 01S100122019
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION          ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	1.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.5	-0.85%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.4	-6.18%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.8	2.19%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.1	1.45%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.3	-1.95%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **02FS101619**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:22:11.24
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

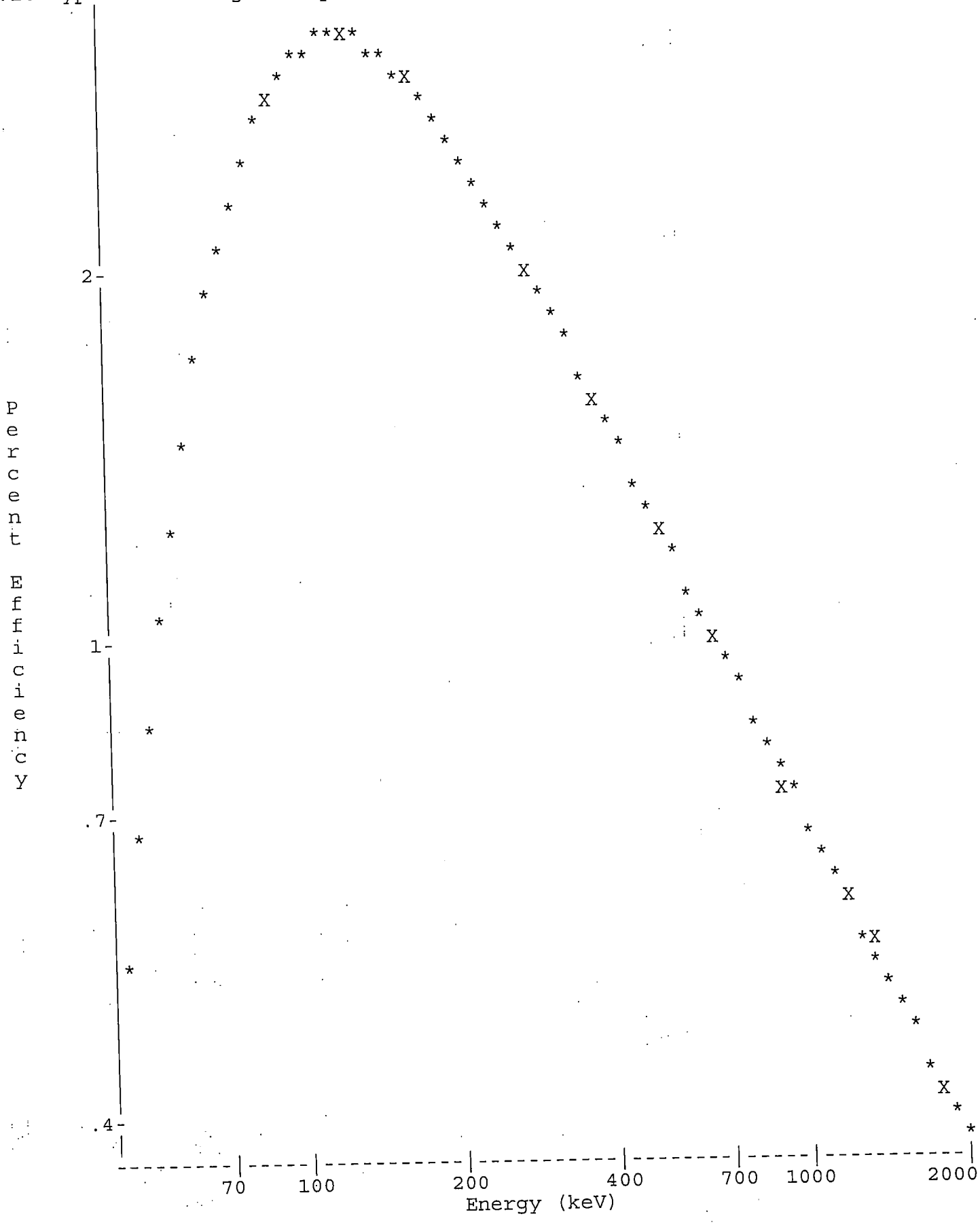
LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83	564	8430	0.76	130.32	2.27E+00	1.57E-02	24.5	
3	0	74.91	934	9437	0.89	134.50	2.36E+00	2.60E-02	16.8	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 23-OCT-2019 11:22
Detector :
Fit type : 5th Degree Empirical
Geometry : 02FS101619



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:24:19.51
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83*	367	8430	0.76	130.32	2.27E+00	1.02E-02	37.9	
3	0	74.91*	566	9437	0.89	134.50	2.36E+00	1.57E-02	27.9	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	30520	3.72*	2.787E+00	8.177E+02	1.004E+03	1.92
03-CO57	122.06	27203	85.51*	3.115E+00	2.837E+01	4.032E+01	1.88
04-CE139	165.85	21006	80.35*	2.871E+00	2.530E+01	5.053E+01	2.37
05-HG203	279.20	11312	81.46*	2.033E+00	1.897E+01	1.464E+02	3.53
06-SN113	391.69	30582	64.90*	1.537E+00	8.514E+01	1.948E+02	1.64
07-SR85	513.99	24029	99.27*	1.218E+00	5.519E+01	2.398E+02	1.88
08-CS137	661.65	51844	85.12*	9.804E-01	1.726E+02	1.741E+02	1.10
09-Y88	898.02	41334	93.40*	7.538E-01	1.631E+02	3.983E+02	1.27
10-CO60	1173.22	41920	100.00	5.995E-01	1.943E+02	2.041E+02	1.14
	1332.49	37860	100.00*	5.380E-01	1.955E+02	2.054E+02	1.16
12-Y88	1836.01	24340	99.38*	4.130E-01	1.647E+02	4.024E+02	1.38

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02FS101619

Acquisition date : 16-OCT-2019 16:42:09

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.955E+02	2.054E+02	0.024E+02	1.16	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02FS101619
Acquisition date : 16-OCT-2019 16:42:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.42	5517	12304	0.97	77.18	73	9	1.53E-01	7.8	7.25E-01	
0	72.83	367	8430	0.76	130.32	128	5	1.02E-02	75.8	2.27E+00	
0	74.91	566	9437	0.89	134.50	133	6	1.57E-02	55.8	2.36E+00	
0	136.42	3307	10852	1.02	258.29	254	9	9.19E-02	11.9	3.07E+00	
0	255.20	1294	6301	1.06	497.31	494	7	3.60E-02	21.1	2.18E+00	
0	813.91	535	3063	1.25	1621.81	1617	11	1.49E-02	40.9	8.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.949E+02	2.047E+02	0.017E+02	0.81	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.931E+01	1.399E+01	0.000E+00	71.812
03-CO57	4.032E+01	7.596E-01	5.940E-01	0.000E+00	67.880
04-CE139	5.053E+01	1.199E+00	9.364E-01	0.000E+00	53.956
05-HG203	1.464E+02	5.164E+00	4.514E+00	0.000E+00	32.428

)6-SN113	1.948E+02	3.201E+00	1.997E+00	0.000E+00	97.501
)7-SR85	2.398E+02	4.518E+00	3.114E+00	0.000E+00	76.999
)8-CS137	1.741E+02	1.913E+00	9.420E-01	0.000E+00	184.792
)9-Y88	3.983E+02	5.073E+00	2.457E+00	0.000E+00	162.132
10-CO60	2.047E+02	1.662E+00	9.297E-01	0.000E+00	220.224
12-Y88	4.024E+02	5.538E+00	1.349E+00	0.000E+00	298.263

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.202E-01		1.166E+00	1.825E+00	0.000E+00	-0.175

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A,02FS101619       ,10/23/2019 11:24,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,02FS101619       ,CALIBRATION          ,10/23/2019 11:22,02FS101619
C,02-CD109,YES,   1.004E+03,   1.931E+01,   1.399E+01,,    71.812
C,03-CO57 ,YES,   4.032E+01,   7.596E-01,   5.940E-01,,    67.880
C,04-CE139,YES,   5.053E+01,   1.199E+00,   9.364E-01,,    53.956
C,05-HG203,YES,   1.464E+02,   5.164E+00,   4.514E+00,,    32.428
C,06-SN113,YES,   1.948E+02,   3.201E+00,   1.997E+00,,    97.501
C,07-SR85 ,YES,   2.398E+02,   4.518E+00,   3.114E+00,,    76.999
C,08-CS137,YES,   1.741E+02,   1.913E+00,   9.420E-01,,   184.792
C,09-Y88  ,YES,   3.983E+02,   5.073E+00,   2.457E+00,,   162.132
C,10-CO60 ,YES,   2.047E+02,   1.662E+00,   9.297E-01,,   220.224
C,12-Y88  ,YES,   4.024E+02,   5.538E+00,   1.349E+00,,   298.263
C,01-AM241,NO ,  -3.202E-01,   1.166E+00,   1.825E+00,,    -0.175
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

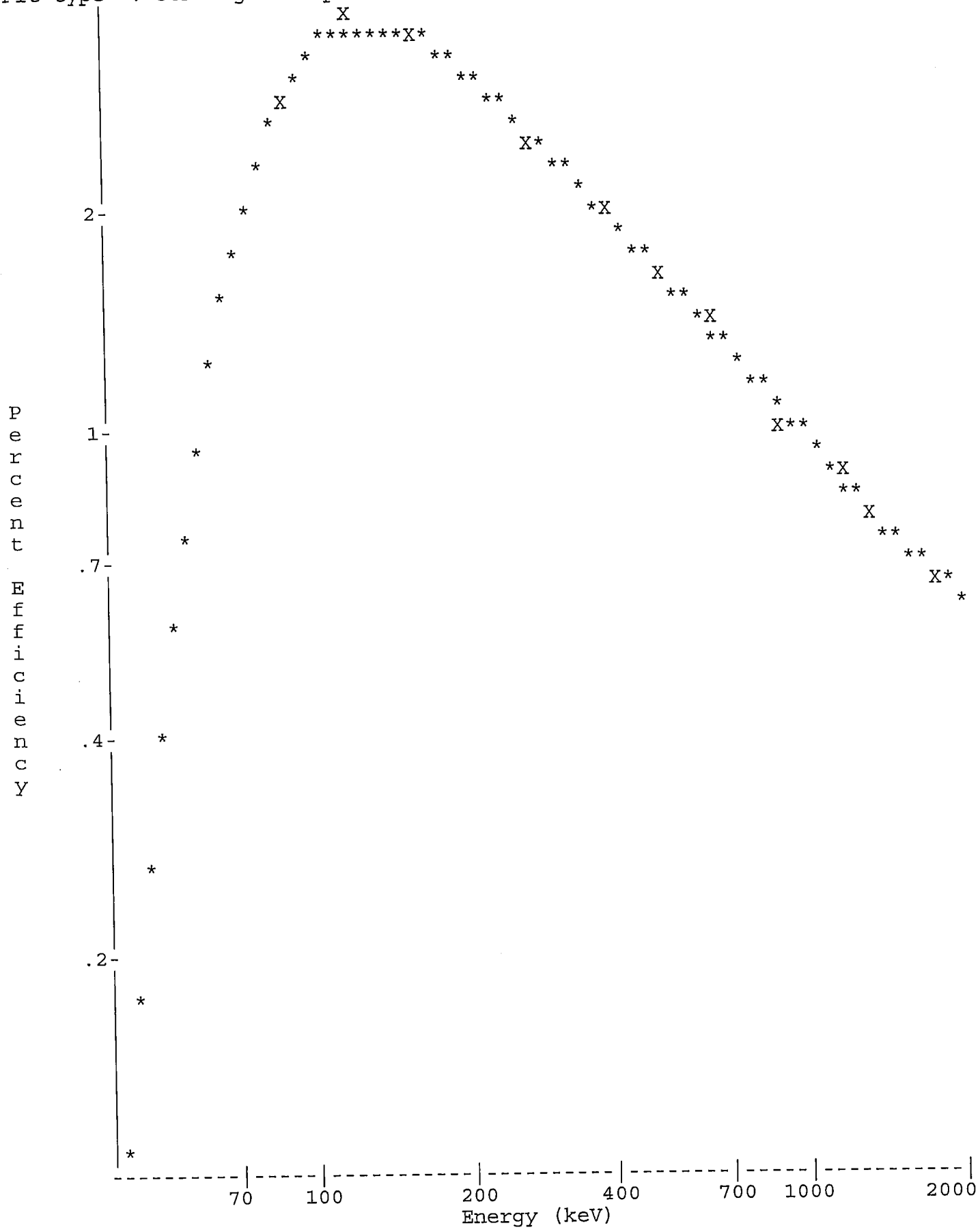
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Geometry : 07S100121819
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity : 1.463E+03 2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
	Total Activity :		1.462E+03	2.853E+03			

Grand Total Activity : 1.462E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,  1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,  4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,  5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,  1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,  1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,  2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,  1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,  3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,  2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,  4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,  2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1008.0	0.14%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.34%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.38%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.3	-4.96%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.2	0.30%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.7	1.80%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	401.4	-1.19%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.5	-0.45%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.0	-0.17%

Eff. Name: **08FS082119**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 08:55:06.66
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 21-AUG-2019 18:04:47.31

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

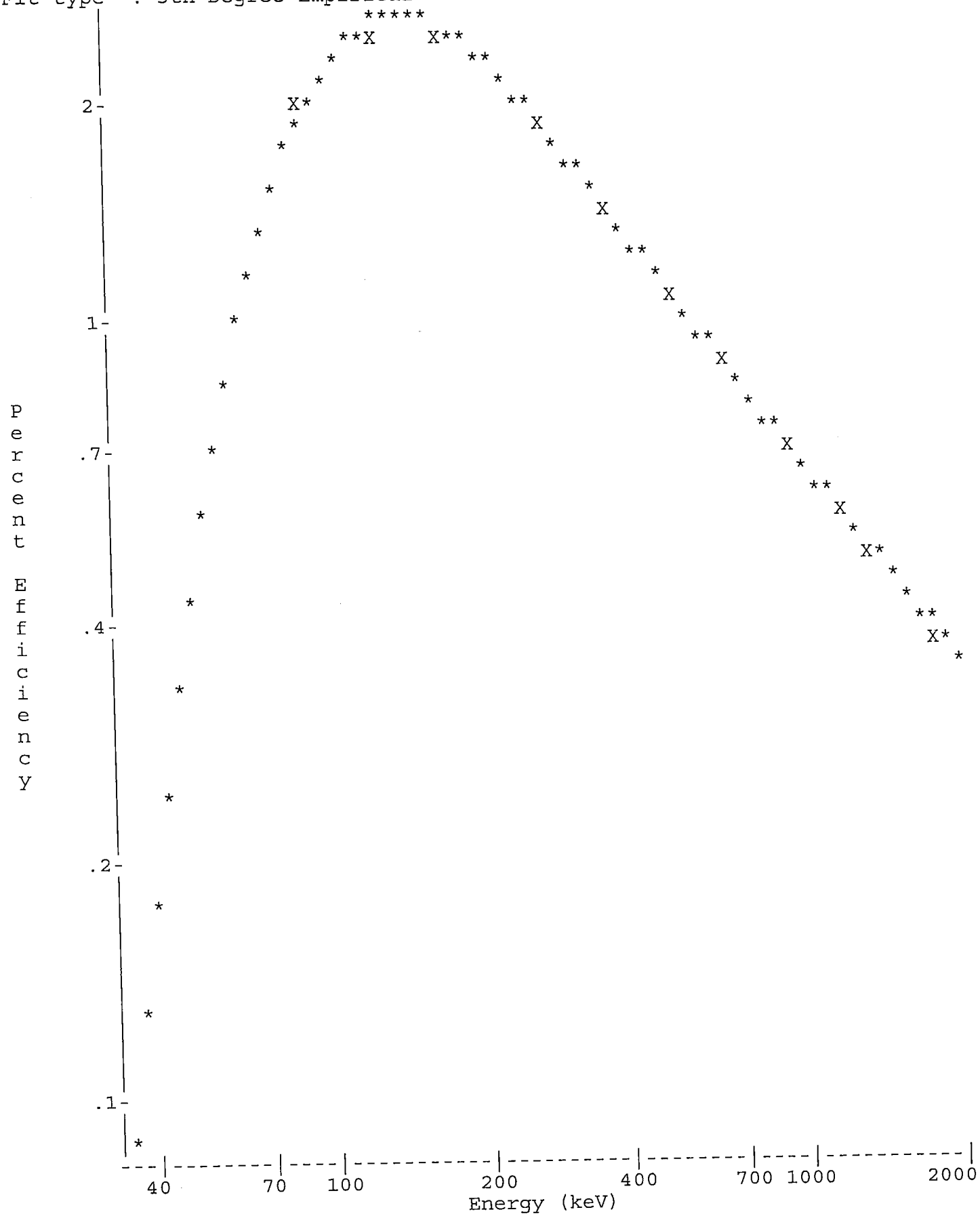
Sample ID : 08FS082119
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08FS082119
BKGFILE : 08BG080219MT
Real Time : 0 08:01:01.12
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.12	1063	9567	1.41	100.32	3.37E-01	3.69E-02	16.2	7.09E-01
2	5	72.64	912	6888	0.78	153.26	1.43E+00	3.17E-02	14.0	2.85E+00
3	5	74.79	995	9297	1.18	157.55	1.52E+00	3.46E-02	16.6	
4	1	87.93	18629	14860	1.21	183.77	1.95E+00	6.47E-01	1.5	1.30E+00
5	1	122.04	19918	14987	1.22	251.87	2.49E+00	6.92E-01	1.4	5.18E-01
6	1	136.48	2499	11723	1.24	280.69	2.54E+00	8.68E-02	8.4	5.49E-01
7	1	165.89	19327	13241	1.31	339.42	2.48E+00	6.71E-01	1.4	9.99E-01
8	1	255.22	1649	8731	1.63	517.72	1.98E+00	5.73E-02	10.9	2.70E+00
9	1	279.25	19222	10812	1.40	565.70	1.85E+00	6.67E-01	1.4	2.45E+00
10	1	391.75	30813	7163	1.46	790.26	1.41E+00	1.07E+00	0.8	1.05E+00
11	1	514.03	32148	6647	1.53	1034.34	1.11E+00	1.12E+00	0.8	7.50E-01
12	1	661.65	38325	5757	1.62	1328.99	8.99E-01	1.33E+00	0.7	8.85E-01
13	1	813.99	822	3049	1.94	1633.04	7.58E-01	2.85E-02	14.3	7.21E-01
14	1	898.01	44495	4191	1.77	1800.73	7.00E-01	1.54E+00	0.6	2.49E+00
15	1	1173.18	32041	2259	1.90	2349.91	5.66E-01	1.11E+00	0.7	9.03E-01
16	1	1324.89	839	1616	2.70	2652.68	5.14E-01	2.91E-02	11.5	5.53E-01
17	1	1332.45	29455	1243	2.01	2667.76	5.12E-01	1.02E+00	0.6	2.22E+00
18	1	1460.65	170	878	1.47	2923.58	4.77E-01	5.91E-03	33.4	7.48E-01
19	1	1836.03	27069	460	2.26	3672.65	3.98E-01	9.40E-01	0.6	1.41E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 19-SEP-2019 08:55
Detector :
Fit type : 5th Degree Empirical

Geometry : 08FS082119



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 08:56:35.43
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 21-AUG-2019 18:04:47.31

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 08FS082119
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08FS082119
BKGFILE : 08BG080219MT
Real Time : 0 08:01:01.12
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.12	1063	9567	1.41	100.32	3.37E-01	3.69E-02	16.2	7.09E-01
2	5	72.64*	698	6888	0.78	153.26	1.43E+00	2.42E-02	18.6	2.85E+00
3	5	74.79*	669	9297	1.18	157.55	1.52E+00	2.32E-02	24.8	
4	1	87.93	18629	14860	1.21	183.77	1.95E+00	6.47E-01	1.5	1.30E+00
5	1	122.04	19918	14987	1.22	251.87	2.49E+00	6.92E-01	1.4	5.18E-01
6	1	136.48	2499	11723	1.24	280.69	2.54E+00	8.68E-02	8.4	5.49E-01
7	1	165.89	19327	13241	1.31	339.42	2.48E+00	6.71E-01	1.4	9.99E-01
8	1	255.22	1649	8731	1.63	517.72	1.98E+00	5.73E-02	10.9	2.70E+00
9	1	279.25	19222	10812	1.40	565.70	1.85E+00	6.67E-01	1.4	2.45E+00
10	1	391.75	30813	7163	1.46	790.26	1.41E+00	1.07E+00	0.8	1.05E+00
11	1	514.03	32148	6647	1.53	1034.34	1.11E+00	1.12E+00	0.8	7.50E-01
12	1	661.65	38325	5757	1.62	1328.99	8.99E-01	1.33E+00	0.7	8.85E-01
13	1	813.99	822	3049	1.94	1633.04	7.58E-01	2.85E-02	14.3	7.21E-01
14	1	898.01	44495	4191	1.77	1800.73	7.00E-01	1.54E+00	0.6	2.49E+00
15	1	1173.18	32041	2259	1.90	2349.91	5.66E-01	1.11E+00	0.7	9.03E-01
16	1	1324.89	839	1616	2.70	2652.68	5.14E-01	2.91E-02	11.5	5.53E-01
17	1	1332.45	29455	1243	2.01	2667.76	5.12E-01	1.02E+00	0.6	2.22E+00
18	1	1836.03	27069	460	2.26	3672.65	3.98E-01	9.40E-01	0.6	1.41E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	18629	3.72*	1.949E+00	8.920E+02	1.008E+03	2.95
03-CO57	122.06	19918	85.51*	2.487E+00	3.252E+01	4.005E+01	2.84
04-CE139	165.85	19327	80.35*	2.479E+00	3.369E+01	5.077E+01	2.79
05-HG203	279.20	19222	81.46*	1.854E+00	4.420E+01	1.483E+02	2.72
06-SN113	391.69	30813	64.90*	1.408E+00	1.171E+02	1.912E+02	1.61
07-SR85	513.99	32148	99.27*	1.115E+00	1.009E+02	2.408E+02	1.55
08-CS137	661.65	38325	85.12*	8.994E-01	1.738E+02	1.747E+02	1.34
09-Y88	898.02	44495	93.40*	6.995E-01	2.365E+02	4.014E+02	1.15
10-CO60	1173.22	32041	100.00	5.658E-01	1.966E+02	2.025E+02	1.32
	1332.49	29455	100.00*	5.122E-01	1.997E+02	2.056E+02	1.27
12-Y88	1836.01	27069	99.38*	3.984E-01	2.374E+02	4.030E+02	1.28

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 08FS082119

Acquisition date : 21-AUG-2019 18:04:47

Total number of lines in spectrum 18
Number of unidentified lines 7
Number of lines tentatively identified by NID 11 61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.920E+02	1.008E+03	0.030E+03	2.95	
03-CO57	270.90D	1.23	3.252E+01	4.005E+01	0.114E+01	2.84	
04-CE139	137.66D	1.51	3.369E+01	5.077E+01	0.141E+01	2.79	
05-HG203	46.61D	3.36	4.420E+01	1.483E+02	0.040E+02	2.72	
06-SN113	115.10D	1.63	1.171E+02	1.912E+02	0.031E+02	1.61	
07-SR85	64.84D	2.39	1.009E+02	2.408E+02	0.037E+02	1.55	
08-CS137	30.17Y	1.01	1.738E+02	1.747E+02	0.023E+02	1.34	
09-Y88	106.65D	1.70	2.365E+02	4.014E+02	0.046E+02	1.15	
10-CO60	5.27Y	1.03	1.997E+02	2.056E+02	0.026E+02	1.27	
12-Y88	106.65D	1.70	2.374E+02	4.030E+02	0.052E+02	1.28	
			---------	---------			
	Total Activity :		2.068E+03	2.864E+03			

Grand Total Activity : 2.068E+03 2.864E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08FS082119
Acquisition date : 21-AUG-2019 18:04:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.12	1063	9567	1.41	100.32	97	8	3.69E-02	32.5	3.37E-01	
5	72.64	698	6888	0.78	153.26	150	11	2.42E-02	37.1	1.43E+00	
5	74.79	669	9297	1.18	157.55	150	11	2.32E-02	49.6	1.52E+00	
1	136.48	2499	11723	1.24	280.69	276	10	8.68E-02	16.7	2.54E+00	
1	255.22	1649	8731	1.63	517.72	514	10	5.73E-02	21.8	1.98E+00	
1	813.99	822	3049	1.94	1633.04	1626	13	2.85E-02	28.6	7.58E-01	
1	1324.89	839	1616	2.70	2652.68	2643	17	2.91E-02	23.1	5.14E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.920E+02	1.008E+03	0.030E+03	2.95	
03-CO57	270.90D	1.23	3.252E+01	4.005E+01	0.114E+01	2.84	
04-CE139	137.66D	1.51	3.369E+01	5.077E+01	0.141E+01	2.79	
05-HG203	46.61D	3.36	4.420E+01	1.483E+02	0.040E+02	2.72	
06-SN113	115.10D	1.63	1.171E+02	1.912E+02	0.031E+02	1.61	
07-SR85	64.84D	2.39	1.009E+02	2.408E+02	0.037E+02	1.55	
08-CS137	30.17Y	1.01	1.738E+02	1.747E+02	0.023E+02	1.34	
09-Y88	106.65D	1.70	2.365E+02	4.014E+02	0.046E+02	1.15	
10-CO60	5.27Y	1.03	1.982E+02	2.041E+02	0.019E+02	0.92	
12-Y88	106.65D	1.70	2.374E+02	4.030E+02	0.052E+02	1.28	
	Total Activity :		2.066E+03	2.862E+03			

Grand Total Activity : 2.066E+03 2.862E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.008E+03	2.969E+01	2.497E+01	0.000E+00	40.348
03-CO57	4.005E+01	1.139E+00	8.926E-01	0.000E+00	44.875
04-CE139	5.077E+01	1.414E+00	1.124E+00	0.000E+00	45.158

05-HG203	1.483E+02	4.034E+00	2.914E+00	0.000E+00	50.904
06-SN113	1.912E+02	3.074E+00	2.067E+00	0.000E+00	92.499
07-SR85	2.408E+02	3.722E+00	2.366E+00	0.000E+00	101.805
08-CS137	1.747E+02	2.341E+00	1.324E+00	0.000E+00	131.994
09-Y88	4.014E+02	4.622E+00	2.209E+00	0.000E+00	181.726
10-CO60	2.041E+02	1.870E+00	1.036E+00	0.000E+00	196.948
12-Y88	4.030E+02	5.172E+00	1.117E+00	0.000E+00	360.898

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-1.481E+00		2.830E+00	4.513E+00	0.000E+00	-0.328

```
A,08FS082119      ,09/19/2019 08:56,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,08FS082119      ,CALIBRATION         ,09/19/2019 08:55,08FS082119
C,02-CD109,YES,   1.008E+03,   2.969E+01,   2.497E+01,,   40.348
C,03-CO57 ,YES,   4.005E+01,   1.139E+00,   8.926E-01,,   44.875
C,04-CE139,YES,   5.077E+01,   1.414E+00,   1.124E+00,,   45.158
C,05-HG203,YES,   1.483E+02,   4.034E+00,   2.914E+00,,   50.904
C,06-SN113,YES,   1.912E+02,   3.074E+00,   2.067E+00,,   92.499
C,07-SR85 ,YES,   2.408E+02,   3.722E+00,   2.366E+00,,  101.805
C,08-CS137,YES,   1.747E+02,   2.341E+00,   1.324E+00,,  131.994
C,09-Y88  ,YES,   4.014E+02,   4.622E+00,   2.209E+00,,  181.726
C,10-CO60 ,YES,   2.041E+02,   1.870E+00,   1.036E+00,,  196.948
C,12-Y88  ,YES,   4.030E+02,   5.172E+00,   1.117E+00,,  360.898
C,01-AM241,NO ,  -1.481E+00,   2.830E+00,   4.513E+00,,   -0.328
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.04%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.1	0.23%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	147.8	-5.28%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.8	-0.96%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	246.3	0.11%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.4	-1.92%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.7	-0.36%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.4	1.35%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **13FS082019**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-AUG-2019 10:16:42.98
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-AUG-2019 08:54:14.90

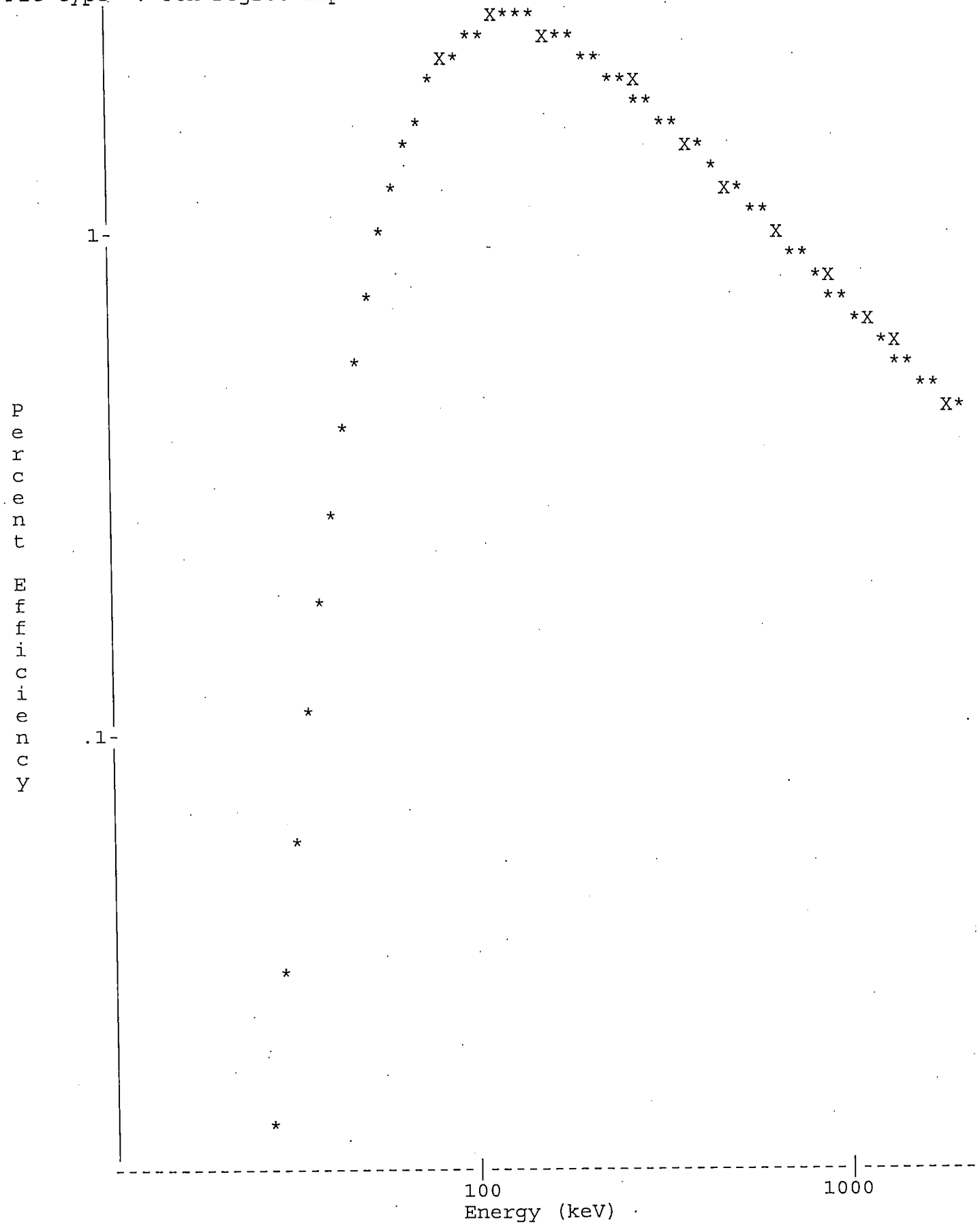
LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID	: 13FS082019			Smple Date	: 1-JUN-2019 12:00:00.0
Sample Type	: STD			Geometry	: 13FS082019
Quantity	: 1.00000E+00 TOTAL			BKGFILE	: 13BG080219MT
Start Channel	: 25	Energy Tol	: 2.00000	Real Time	: 0 04:30:28.32
End Channel	: 4090	Pk Srch Sens	: 7.00000	Live time	: 0 04:30:00.00
MDA Multiple	: 4.6600	Library Used	: CALIBRATION		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.63	952	5532	1.58	93.52	3.82E-01	5.88E-02	13.9	2.84E+00
2	1	75.09	636	4877	0.76	150.48	1.70E+00	3.93E-02	17.7	2.63E+00
3	3	84.98	682	5836	1.13	170.29	2.05E+00	4.21E-02	18.6	4.81E+00
4	3	88.10	11529	4415	0.95	176.52	2.14E+00	7.12E-01	1.3	
5	1	122.09	11819	7154	0.96	244.58	2.62E+00	7.30E-01	1.6	1.92E+00
6	1	136.48	1523	5514	0.91	273.40	2.65E+00	9.40E-02	8.8	3.51E-01
7	1	165.85	11357	6444	1.00	332.19	2.55E+00	7.01E-01	1.6	9.75E-01
8	1	255.20	848	4560	1.19	511.12	2.05E+00	5.24E-02	14.8	7.49E-01
9	1	279.16	11437	5054	1.10	559.11	1.93E+00	7.06E-01	1.5	1.95E+00
10	1	391.69	18429	4007	1.20	784.50	1.50E+00	1.14E+00	1.0	6.11E-01
11	1	513.96	20517	4034	1.26	1029.44	1.22E+00	1.27E+00	1.0	7.97E-01
12	1	661.54	23771	3194	1.40	1325.16	9.98E-01	1.47E+00	0.8	2.51E+00
13	1	813.68	554	1450	1.71	1630.11	8.48E-01	3.42E-02	13.9	4.50E-01
14	1	897.97	28112	2268	1.58	1799.11	7.84E-01	1.74E+00	0.7	1.58E+00
15	1	1173.32	20296	1360	1.76	2351.31	6.36E-01	1.25E+00	0.8	1.18E+00
16	1	1324.80	530	925	2.58	2655.22	5.80E-01	3.27E-02	13.6	2.03E+00
17	1	1332.60	18766	897	1.86	2670.86	5.78E-01	1.16E+00	0.8	3.05E+00
18	1	1460.97	204	565	1.45	2928.48	5.40E-01	1.26E-02	22.7	1.03E+00
19	1	1835.93	17820	322	2.21	3681.29	4.63E-01	1.10E+00	0.8	2.41E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 21-AUG-2019 10:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 13FS082019



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-AUG-2019 10:19:15.10
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-AUG-2019 08:54:14.90

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 13FS082019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13FS082019
BKGFILE : 13BG080219MT
Real Time : 0 04:30:28.32
Live time : 0 04:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.63	952	5532	1.58	93.52	3.82E-01	5.88E-02	13.9	2.84E+00
2	1	75.09*	424	4877	0.76	150.48	1.70E+00	2.62E-02	26.7	2.63E+00
3	3	84.98*	537	5836	1.13	170.29	2.05E+00	3.31E-02	23.6	4.81E+00
4	3	88.10*	11469	4415	0.95	176.52	2.14E+00	7.08E-01	1.3	
5	1	122.09	11819	7154	0.96	244.58	2.62E+00	7.30E-01	1.6	1.92E+00
6	1	136.48	1523	5514	0.91	273.40	2.65E+00	9.40E-02	8.8	3.51E-01
7	1	165.85	11357	6444	1.00	332.19	2.55E+00	7.01E-01	1.6	9.75E-01
8	1	255.20	848	4560	1.19	511.12	2.05E+00	5.24E-02	14.8	7.49E-01
9	1	279.16	11437	5054	1.10	559.11	1.93E+00	7.06E-01	1.5	1.95E+00
10	1	391.69	18429	4007	1.20	784.50	1.50E+00	1.14E+00	1.0	6.11E-01
11	1	513.96	20517	4034	1.26	1029.44	1.22E+00	1.27E+00	1.0	7.97E-01
12	1	661.54	23771	3194	1.40	1325.16	9.98E-01	1.47E+00	0.8	2.51E+00
13	1	813.68	554	1450	1.71	1630.11	8.48E-01	3.42E-02	13.9	4.50E-01
14	1	897.97	28112	2268	1.58	1799.11	7.84E-01	1.74E+00	0.7	1.58E+00
15	1	1173.32	20296	1360	1.76	2351.31	6.36E-01	1.25E+00	0.8	1.18E+00
16	1	1324.80	530	925	2.58	2655.22	5.80E-01	3.27E-02	13.6	2.03E+00
17	1	1332.60	18766	897	1.86	2670.86	5.78E-01	1.16E+00	0.8	3.05E+00
18	1	1460.97*	9	565	1.45	2928.48	5.40E-01	5.56E-04	518.0	1.03E+00
19	1	1835.93	17820	322	2.21	3681.29	4.63E-01	1.10E+00	0.8	2.41E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	11469	3.72*	2.143E+00	8.879E+02	1.001E+03	2.64
03-CO57	122.06	11819	85.51*	2.624E+00	3.251E+01	3.990E+01	3.25
04-CE139	165.85	11357	80.35*	2.555E+00	3.415E+01	5.108E+01	3.25
05-HG203	279.20	11437	81.46*	1.926E+00	4.500E+01	1.478E+02	3.06
06-SN113	391.69	18429	64.90*	1.503E+00	1.167E+02	1.888E+02	2.02
07-SR85	513.99	20517	99.27*	1.218E+00	1.048E+02	2.463E+02	1.91
08-CS137	661.65	23771	85.12*	9.985E-01	1.726E+02	1.735E+02	1.65
09-Y88	898.02	28112	93.40*	7.842E-01	2.369E+02	3.984E+02	1.40
10-CO60	1173.22	20296	100.00	6.362E-01	1.969E+02	2.027E+02	1.64
	1332.49	18766	100.00*	5.776E-01	2.006E+02	2.064E+02	1.62
12-Y88	1836.01	17820	99.38*	4.625E-01	2.393E+02	4.024E+02	1.59

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13FS082019

Acquisition date : 20-AUG-2019 08:54:14

Total number of lines in spectrum	19	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	11	57.89%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.879E+02	1.001E+03	0.026E+03	2.64	
03-CO57	270.90D	1.23	3.251E+01	3.990E+01	0.130E+01	3.25	
04-CE139	137.66D	1.50	3.415E+01	5.108E+01	0.166E+01	3.25	
05-HG203	46.61D	3.28	4.500E+01	1.478E+02	0.045E+02	3.06	
06-SN113	115.10D	1.62	1.167E+02	1.888E+02	0.038E+02	2.02	
07-SR85	64.84D	2.35	1.048E+02	2.463E+02	0.047E+02	1.91	
08-CS137	30.17Y	1.01	1.726E+02	1.735E+02	0.029E+02	1.65	
09-Y88	106.65D	1.68	2.369E+02	3.984E+02	0.056E+02	1.40	
10-CO60	5.27Y	1.03	2.006E+02	2.064E+02	0.033E+02	1.62	
12-Y88	106.65D	1.68	2.393E+02	4.024E+02	0.064E+02	1.59	
			---------	---------			
	Total Activity :		2.071E+03	2.856E+03			

Grand Total Activity : 2.071E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13FS082019 Acquisition date : 20-AUG-2019 08:54:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.63	952	5532	1.58	93.52	90	8	5.88E-02	27.7	3.82E-01	
1	75.09	424	4877	0.76	150.48	149	6	2.62E-02	53.4	1.70E+00	
3	84.98	537	5836	1.13	170.29	167	17	3.31E-02	47.3	2.05E+00	
1	136.48	1523	5514	0.91	273.40	269	8	9.40E-02	17.7	2.65E+00	
1	255.20	848	4560	1.19	511.12	507	9	5.24E-02	29.5	2.05E+00	
1	813.68	554	1450	1.71	1630.11	1625	11	3.42E-02	27.9	8.48E-01	
1	1324.80	530	925	2.58	2655.22	2647	16	3.27E-02	27.1	5.80E-01	
1	1460.97	9	565	1.45	2928.48	2924	10	5.56E-04	****	5.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	19	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	11	57.89%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.879E+02	1.001E+03	0.026E+03	2.64	
03-CO57	270.90D	1.23	3.251E+01	3.990E+01	0.130E+01	3.25	
04-CE139	137.66D	1.50	3.415E+01	5.108E+01	0.166E+01	3.25	
05-HG203	46.61D	3.28	4.500E+01	1.478E+02	0.045E+02	3.06	
06-SN113	115.10D	1.62	1.167E+02	1.888E+02	0.038E+02	2.02	
07-SR85	64.84D	2.35	1.048E+02	2.463E+02	0.047E+02	1.91	
08-CS137	30.17Y	1.01	1.726E+02	1.735E+02	0.029E+02	1.65	
09-Y88	106.65D	1.68	2.369E+02	3.984E+02	0.056E+02	1.40	
10-CO60	5.27Y	1.03	1.987E+02	2.045E+02	0.024E+02	1.15	
12-Y88	106.65D	1.68	2.393E+02	4.024E+02	0.064E+02	1.59	
	Total Activity :		2.069E+03	2.854E+03			

Grand Total Activity : 2.069E+03 2.854E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	2.641E+01	2.624E+01	0.000E+00	38.148
03-CO57	3.990E+01	1.298E+00	9.884E-01	0.000E+00	40.365
04-CE139	5.108E+01	1.660E+00	1.303E+00	0.000E+00	39.206
05-HG203	1.478E+02	4.520E+00	3.390E+00	0.000E+00	43.597
06-SN113	1.888E+02	3.813E+00	2.383E+00	0.000E+00	79.237
07-SR85	2.463E+02	4.698E+00	2.782E+00	0.000E+00	88.540
08-CS137	1.735E+02	2.860E+00	1.539E+00	0.000E+00	112.780

09-Y88	3.984E+02	5.561E+00	2.634E+00	0.000E+00	151.268
10-CO60	2.045E+02	2.354E+00	1.275E+00	0.000E+00	160.438
12-Y88	4.024E+02	6.399E+00	1.374E+00	0.000E+00	292.959

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-8.058E-01		2.990E+00	4.682E+00	0.000E+00	-0.172

```
A,13FS082019      ,08/21/2019 10:19,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,13FS082019      ,CALIBRATION         ,08/21/2019 10:16,13FS082019
C,02-CD109,YES,   1.001E+03,   2.641E+01,   2.624E+01,,   38.148
C,03-CO57 ,YES,   3.990E+01,   1.298E+00,   9.884E-01,,   40.365
C,04-CE139,YES,   5.108E+01,   1.660E+00,   1.303E+00,,   39.206
C,05-HG203,YES,   1.478E+02,   4.520E+00,   3.390E+00,,   43.597
C,06-SN113,YES,   1.888E+02,   3.813E+00,   2.383E+00,,   79.237
C,07-SR85 ,YES,   2.463E+02,   4.698E+00,   2.782E+00,,   88.540
C,08-CS137,YES,   1.735E+02,   2.860E+00,   1.539E+00,,  112.780
C,09-Y88  ,YES,   3.984E+02,   5.561E+00,   2.634E+00,,  151.268
C,10-CO60 ,YES,   2.045E+02,   2.354E+00,   1.275E+00,,  160.438
C,12-Y88  ,YES,   4.024E+02,   6.399E+00,   1.374E+00,,  292.959
C,01-AM241,NO ,  -8.058E-01,   2.990E+00,   4.682E+00,,   -0.172
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

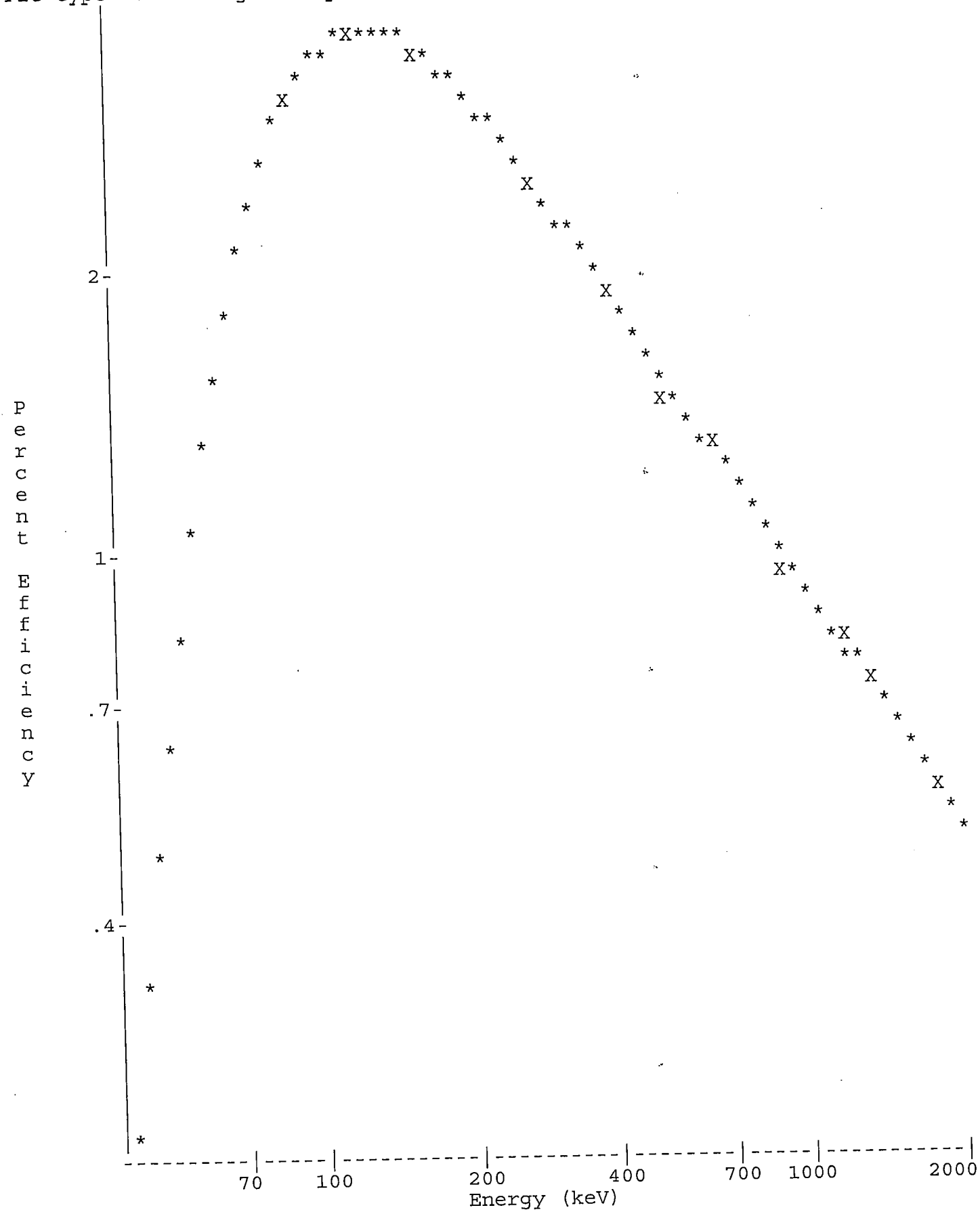
Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Fit type : 5th Degree Empirical

Geometry : 13S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,    1.001E+03,    1.649E+01,    1.349E+01,,    74.206
C,03-CO57 ,YES,    4.016E+01,    9.167E-01,    6.087E-01,,    65.978
C,04-CE139,YES,    5.064E+01,    1.454E+00,    1.122E+00,,    45.151
C,05-HG203,YES,    1.465E+02,    1.200E+01,    1.135E+01,,    12.914
C,06-SN113,YES,    1.946E+02,    4.137E+00,    2.774E+00,,    70.169
C,07-SR85 ,YES,    2.340E+02,    7.150E+00,    6.009E+00,,    38.945
C,08-CS137,YES,    1.774E+02,    1.808E+00,    8.215E-01,,   215.917
C,09-Y88  ,YES,    3.981E+02,    6.404E+00,    3.602E+00,,   110.531
C,10-CO60 ,YES,    2.044E+02,    1.570E+00,    6.527E-01,,   313.158
C,12-Y88  ,YES,    4.024E+02,    6.717E+00,    1.716E+00,,   234.561
C,01-AM241,NO ,    3.682E-02,    1.283E+00,    2.034E+00,,     0.018
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.03%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.2	-5.03%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.3	0.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.4	2.21%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.9	-1.31%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.5	0.04%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.4	0.37%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.3	-0.10%

Eff. Name: **14FS092319**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:28:32.55
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

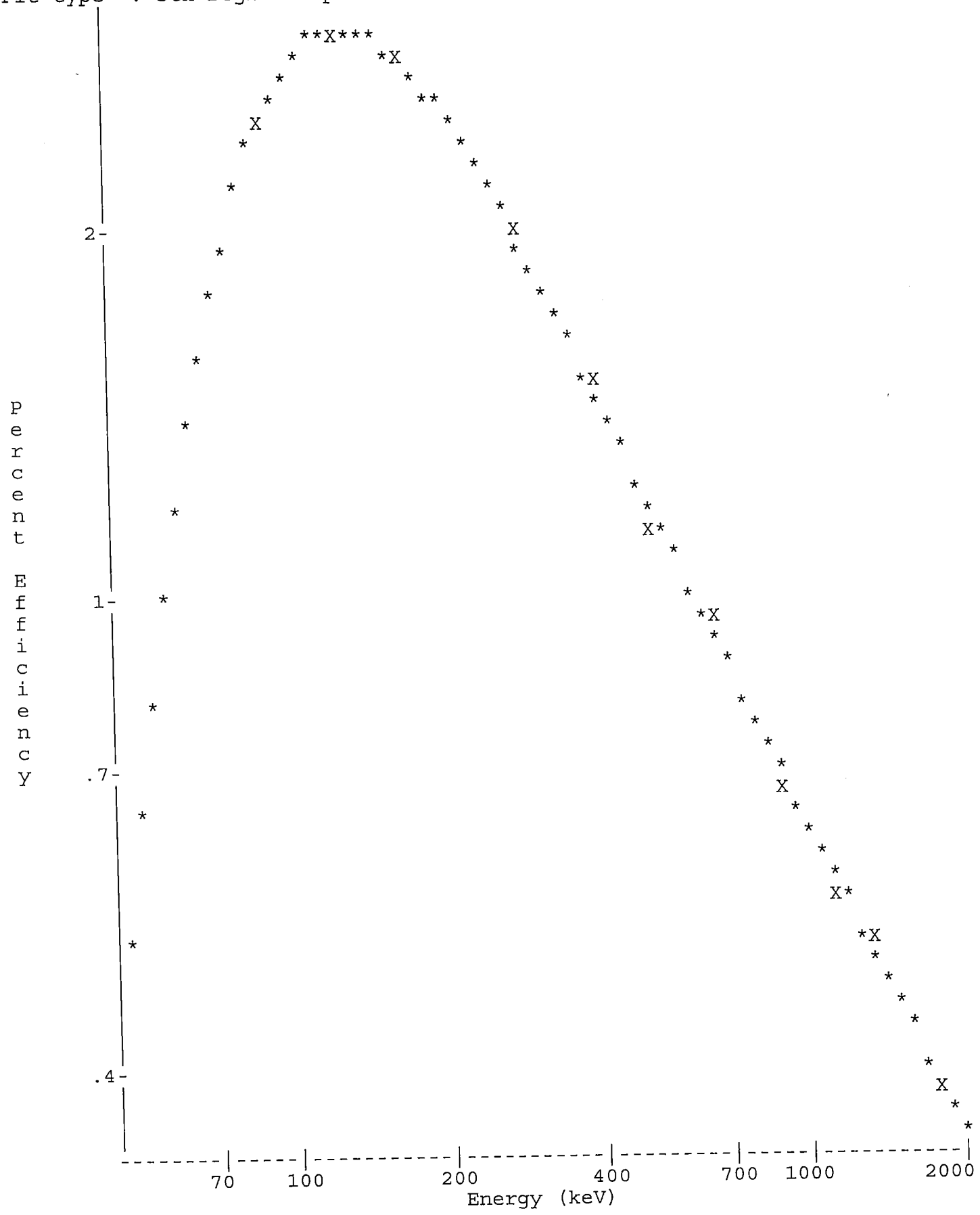
Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88	930	7993	0.67	142.98	1.91E+00	3.23E-02	15.5	3.92E+00
2	1	88.04	22566	11237	0.84	173.39	2.48E+00	7.84E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 24-SEP-2019 09:28
Detector :
Fit type : 5th Degree Empirical

Geometry : 14FS092319



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:29:25.42
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88*	833	7993	0.67	142.98	1.91E+00	2.89E-02	17.4	3.92E+00
2	1	88.04*	22524	11237	0.84	173.39	2.48E+00	7.82E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22524	3.72*	2.482E+00	8.470E+02	1.005E+03	2.17
03-CO57	122.06	21617	85.51*	2.947E+00	2.979E+01	3.991E+01	2.43
04-CE139	165.85	18496	80.35*	2.790E+00	2.865E+01	5.095E+01	2.36
05-HG203	279.20	12600	81.46*	1.983E+00	2.708E+01	1.482E+02	3.26
06-SN113	391.69	26599	64.90*	1.481E+00	9.608E+01	1.913E+02	1.71
07-SR85	513.99	23420	99.27*	1.160E+00	7.064E+01	2.397E+02	1.69
08-CS137	661.65	39429	85.12*	9.236E-01	1.741E+02	1.754E+02	1.28
09-Y88	898.02	36083	93.40*	7.034E-01	1.907E+02	4.009E+02	1.30
10-CO60	1173.22	31293	100.00	5.564E-01	1.953E+02	2.035E+02	1.31
	1332.49	28155	100.00*	4.985E-01	1.961E+02	2.044E+02	1.36
12-Y88	1836.01	20920	99.38*	3.810E-01	1.918E+02	4.033E+02	1.47

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14FS092319 Acquisition date : 23-SEP-2019 15:30:35

Total number of lines in spectrum 16
Number of unidentified lines 5
Number of lines tentatively identified by NID 11 68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.961E+02	2.044E+02	0.028E+02	1.36	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14FS092319
Acquisition date : 23-SEP-2019 15:30:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	72.88	833	7993	0.67	142.98	140	6	2.89E-02	34.7	1.91E+00	
1	136.48	2593	8436	0.91	270.51	267	8	9.00E-02	12.9	2.94E+00	
1	255.02	1548	6283	1.29	508.23	504	8	5.37E-02	18.4	2.13E+00	
1	813.99	785	2402	1.87	1629.33	1623	11	2.73E-02	25.1	7.67E-01	
1	1324.77	739	1286	2.84	2654.08	2646	15	2.56E-02	22.4	5.01E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.957E+02	2.039E+02	0.019E+02	0.95	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.182E+01	1.629E+01	0.000E+00	61.714
03-CO57	3.991E+01	9.700E-01	6.523E-01	0.000E+00	61.183
04-CE139	5.095E+01	1.203E+00	9.498E-01	0.000E+00	53.639
05-HG203	1.482E+02	4.830E+00	3.642E+00	0.000E+00	40.696
06-SN113	1.913E+02	3.264E+00	2.022E+00	0.000E+00	94.570

07-SR85	2.397E+02	4.057E+00	2.935E+00	0.000E+00	81.684
08-CS137	1.754E+02	2.249E+00	1.116E+00	0.000E+00	157.102
09-Y88	4.009E+02	5.192E+00	2.528E+00	0.000E+00	158.546
10-CO60	2.039E+02	1.928E+00	9.329E-01	0.000E+00	218.563
12-Y88	4.033E+02	5.932E+00	1.447E+00	0.000E+00	278.709

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	9.143E-01		1.537E+00	2.519E+00	0.000E+00	0.363

```
A,14FS092319       ,09/24/2019 09:29,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,14FS092319       ,CALIBRATION          ,09/24/2019 09:28,14FS092319
C,02-CD109,YES,    1.005E+03,   2.182E+01,   1.629E+01,,    61.714
C,03-CO57 ,YES,    3.991E+01,   9.700E-01,   6.523E-01,,    61.183
C,04-CE139,YES,    5.095E+01,   1.203E+00,   9.498E-01,,    53.639
C,05-HG203,YES,    1.482E+02,   4.830E+00,   3.642E+00,,    40.696
C,06-SN113,YES,    1.913E+02,   3.264E+00,   2.022E+00,,    94.570
C,07-SR85 ,YES,    2.397E+02,   4.057E+00,   2.935E+00,,    81.684
C,08-CS137,YES,    1.754E+02,   2.249E+00,   1.116E+00,,   157.102
C,09-Y88  ,YES,    4.009E+02,   5.192E+00,   2.528E+00,,   158.546
C,10-CO60 ,YES,    2.039E+02,   1.928E+00,   9.329E-01,,   218.563
C,12-Y88  ,YES,    4.033E+02,   5.932E+00,   1.447E+00,,   278.709
C,01-AM241,NO ,    9.143E-01,   1.537E+00,   2.519E+00,,     0.363
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.11%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.1	0.33%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	192.6	1.04%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	242.2	-1.55%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.2	2.09%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.7	-2.84%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.3	0.43%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.9	1.11%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.2	-0.37%

Eff. Name: **15FS082219**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 10:37:18.65
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 22-AUG-2019 11:17:01.43

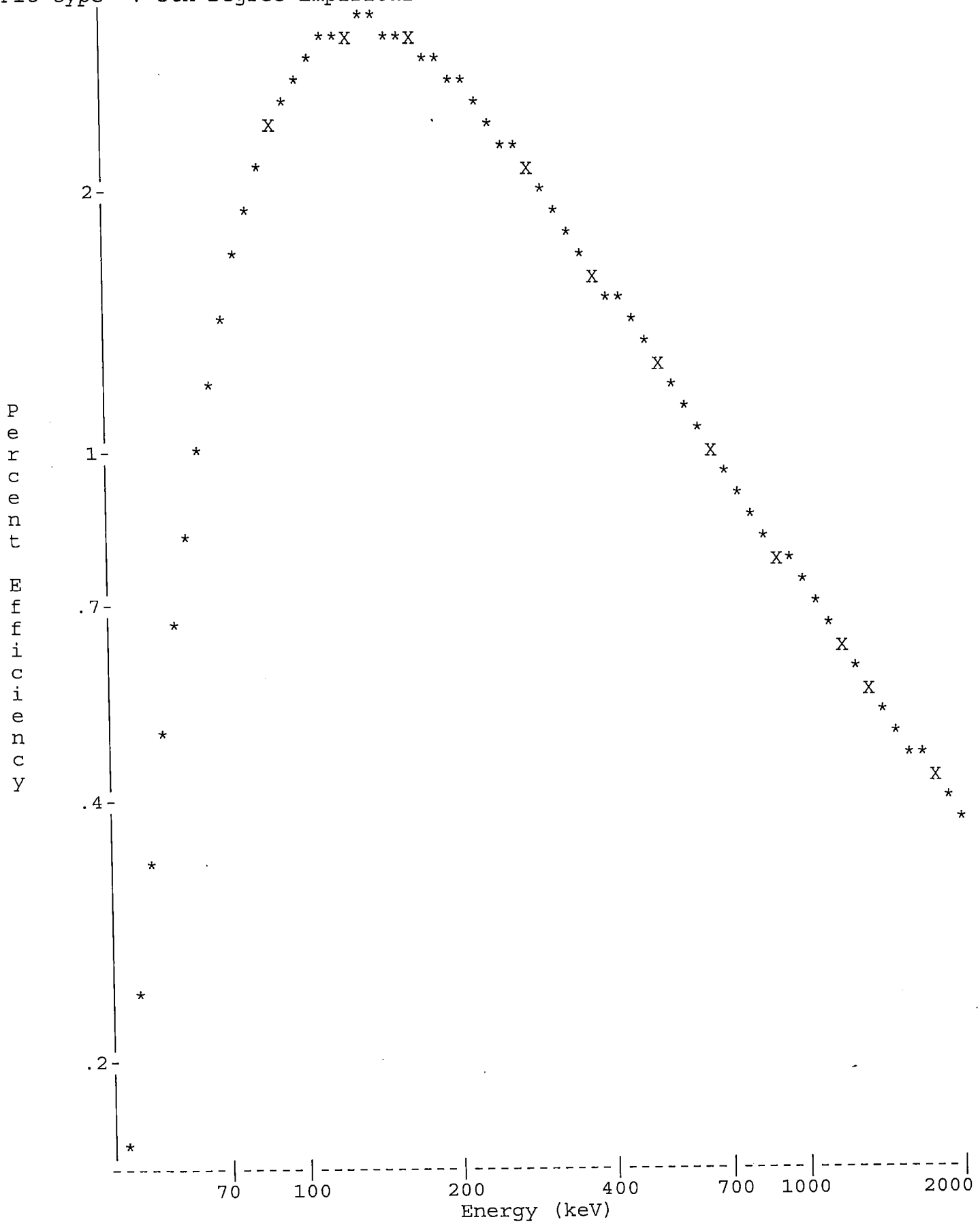
LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 15FS082219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15FS082219
BKGFILE : 15BG080219MT
Real Time : 0 04:00:26.59
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.49	530	4425	0.84	87.54	2.80E-01	3.68E-02	20.4	5.45E-01
2	1	72.87	490	5274	0.80	140.47	1.71E+00	3.40E-02	23.7	5.38E+00
3	1	88.05	11550	7152	0.97	170.91	2.42E+00	8.02E-01	1.6	1.79E+00
4	1	122.07	12365	6461	0.98	239.15	3.10E+00	8.59E-01	1.5	2.58E+00
5	1	136.43	1709	6035	1.15	267.94	3.13E+00	1.19E-01	8.5	1.38E+00
6	1	165.85	11743	7142	1.02	326.95	3.00E+00	8.15E-01	1.7	7.14E-01
7	1	255.10	912	4452	1.14	505.96	2.31E+00	6.34E-02	13.6	1.13E+00
8	1	279.17	10900	5330	1.13	554.24	2.16E+00	7.57E-01	1.6	1.90E+00
9	1	391.68	17847	3174	1.21	779.88	1.62E+00	1.24E+00	1.0	1.88E+00
10	1	513.98	18460	3433	1.30	1025.16	1.28E+00	1.28E+00	1.0	7.94E-01
11	1	661.64	21884	3122	1.46	1321.28	1.02E+00	1.52E+00	0.9	2.26E+00
12	1	813.95	439	1392	1.47	1626.70	8.51E-01	3.05E-02	17.2	7.19E-01
13	1	898.03	24259	2289	1.64	1795.31	7.79E-01	1.68E+00	0.8	1.76E+00
14	1	1173.23	17504	1380	1.85	2347.12	6.13E-01	1.22E+00	0.9	2.05E+00
15	1	1324.62	451	768	2.88	2650.65	5.51E-01	3.13E-02	13.9	2.14E+00
16	1	1332.51	15774	936	1.99	2666.46	5.48E-01	1.10E+00	0.9	1.32E+00
17	1	1835.99	14288	332	2.36	3675.81	4.23E-01	9.92E-01	0.9	2.31E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 19-SEP-2019 10:37
Detector :
Geometry : 15FS082219
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 10:38:48.29
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 22-AUG-2019 11:17:01.43

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 15FS082219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15FS082219
BKGFILE : 15BG080219MT
Real Time : 0 04:00:26.59
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.49	530	4425	0.84	87.54	2.80E-01	3.68E-02	20.4	5.45E-01
2	1	72.87*	408	5274	0.80	140.47	1.71E+00	2.83E-02	28.5	5.38E+00
3	1	88.05*	11513	7152	0.97	170.91	2.42E+00	7.99E-01	1.6	1.79E+00
4	1	122.07	12365	6461	0.98	239.15	3.10E+00	8.59E-01	1.5	2.58E+00
5	1	136.43	1709	6035	1.15	267.94	3.13E+00	1.19E-01	8.5	1.38E+00
6	1	165.85	11743	7142	1.02	326.95	3.00E+00	8.15E-01	1.7	7.14E-01
7	1	255.10	912	4452	1.14	505.96	2.31E+00	6.34E-02	13.6	1.13E+00
8	1	279.17	10900	5330	1.13	554.24	2.16E+00	7.57E-01	1.6	1.90E+00
9	1	391.68	17847	3174	1.21	779.88	1.62E+00	1.24E+00	1.0	1.88E+00
10	1	513.98	18460	3433	1.30	1025.16	1.28E+00	1.28E+00	1.0	7.94E-01
11	1	661.64	21884	3122	1.46	1321.28	1.02E+00	1.52E+00	0.9	2.26E+00
12	1	813.95	439	1392	1.47	1626.70	8.51E-01	3.05E-02	17.2	7.19E-01
13	1	898.03	24259	2289	1.64	1795.31	7.79E-01	1.68E+00	0.8	1.76E+00
14	1	1173.23	17504	1380	1.85	2347.12	6.13E-01	1.22E+00	0.9	2.05E+00
15	1	1324.62	451	768	2.88	2650.65	5.51E-01	3.13E-02	13.9	2.14E+00
16	1	1332.51	15774	936	1.99	2666.46	5.48E-01	1.10E+00	0.9	1.32E+00
17	1	1835.99	14288	332	2.36	3675.81	4.23E-01	9.92E-01	0.9	2.31E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	11513	3.72*	2.424E+00	8.865E+02	1.002E+03	3.26
03-CO57	122.06	12365	85.51*	3.100E+00	3.240E+01	3.996E+01	2.96
04-CE139	165.85	11743	80.35*	3.000E+00	3.382E+01	5.113E+01	3.35
05-HG203	279.20	10900	81.46*	2.157E+00	4.308E+01	1.459E+02	3.30
06-SN113	391.69	17847	64.90*	1.625E+00	1.175E+02	1.926E+02	1.94
07-SR85	513.99	18460	99.27*	1.282E+00	1.008E+02	2.422E+02	1.96
08-CS137	661.65	21884	85.12*	1.024E+00	1.743E+02	1.752E+02	1.76
09-Y88	898.02	24259	93.40*	7.789E-01	2.316E+02	3.947E+02	1.55
10-CO60	1173.22	17504	100.00	6.127E-01	1.984E+02	2.043E+02	1.84
	1332.49	15774	100.00*	5.478E-01	1.999E+02	2.059E+02	1.83
12-Y88	1836.01	14288	99.38*	4.231E-01	2.360E+02	4.022E+02	1.82

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15FS082219

Acquisition date : 22-AUG-2019 11:17:01

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.865E+02	1.002E+03	0.033E+03	3.26	
03-CO57	270.90D	1.23	3.240E+01	3.996E+01	0.118E+01	2.96	
04-CE139	137.66D	1.51	3.382E+01	5.113E+01	0.171E+01	3.35	
05-HG203	46.61D	3.39	4.308E+01	1.459E+02	0.048E+02	3.30	
06-SN113	115.10D	1.64	1.175E+02	1.926E+02	0.037E+02	1.94	
07-SR85	64.84D	2.40	1.008E+02	2.422E+02	0.047E+02	1.96	
08-CS137	30.17Y	1.01	1.743E+02	1.752E+02	0.031E+02	1.76	
09-Y88	106.65D	1.70	2.316E+02	3.947E+02	0.061E+02	1.55	
10-CO60	5.27Y	1.03	1.999E+02	2.059E+02	0.038E+02	1.83	
12-Y88	106.65D	1.70	2.360E+02	4.022E+02	0.073E+02	1.82	
			---------	---------			
	Total Activity :		2.056E+03	2.852E+03			

Grand Total Activity :	2.056E+03	2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15FS082219
Acquisition date : 22-AUG-2019 11:17:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.49	530	4425	0.84	87.54	86	6	3.68E-02	40.7	2.80E-01	
1	72.87	408	5274	0.80	140.47	138	6	2.83E-02	56.9	1.71E+00	
1	136.43	1709	6035	1.15	267.94	264	9	1.19E-01	17.1	3.13E+00	
1	255.10	912	4452	1.14	505.96	502	9	6.34E-02	27.2	2.31E+00	
1	813.95	439	1392	1.47	1626.70	1621	11	3.05E-02	34.3	8.51E-01	
1	1324.62	451	768	2.88	2650.65	2644	14	3.13E-02	27.8	5.51E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.865E+02	1.002E+03	0.033E+03	3.26	
03-CO57	270.90D	1.23	3.240E+01	3.996E+01	0.118E+01	2.96	
04-CE139	137.66D	1.51	3.382E+01	5.113E+01	0.171E+01	3.35	
05-HG203	46.61D	3.39	4.308E+01	1.459E+02	0.048E+02	3.30	
06-SN113	115.10D	1.64	1.175E+02	1.926E+02	0.037E+02	1.94	
07-SR85	64.84D	2.40	1.008E+02	2.422E+02	0.047E+02	1.96	
08-CS137	30.17Y	1.01	1.743E+02	1.752E+02	0.031E+02	1.76	
09-Y88	106.65D	1.70	2.316E+02	3.947E+02	0.061E+02	1.55	
10-CO60	5.27Y	1.03	1.992E+02	2.051E+02	0.027E+02	1.30	
12-Y88	106.65D	1.70	2.360E+02	4.022E+02	0.073E+02	1.82	
	Total Activity :		2.055E+03	2.852E+03			

Grand Total Activity : 2.055E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	3.266E+01	2.699E+01	0.000E+00	37.141
03-CO57	3.996E+01	1.181E+00	9.508E-01	0.000E+00	42.033
04-CE139	5.113E+01	1.714E+00	1.284E+00	0.000E+00	39.821
05-HG203	1.459E+02	4.816E+00	3.439E+00	0.000E+00	42.437

06-SN113	1.926E+02	3.740E+00	2.415E+00	0.000E+00	79.766
07-SR85	2.422E+02	4.740E+00	2.989E+00	0.000E+00	81.055
08-CS137	1.752E+02	3.077E+00	1.634E+00	0.000E+00	107.208
09-Y88	3.947E+02	6.112E+00	2.971E+00	0.000E+00	132.878
10-CO60	2.051E+02	2.659E+00	1.436E+00	0.000E+00	142.848
12-Y88	4.022E+02	7.314E+00	1.675E+00	0.000E+00	240.199

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	1.342E+00		3.579E+00	5.660E+00	0.000E+00	0.237

```
A,15FS082219      ,09/19/2019 10:38,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,15FS082219      ,CALIBRATION         ,09/19/2019 10:37,15FS082219
C,02-CD109,YES,   1.002E+03,   3.266E+01,   2.699E+01,,   37.141
C,03-CO57 ,YES,   3.996E+01,   1.181E+00,   9.508E-01,,   42.033
C,04-CE139,YES,   5.113E+01,   1.714E+00,   1.284E+00,,   39.821
C,05-HG203,YES,   1.459E+02,   4.816E+00,   3.439E+00,,   42.437
C,06-SN113,YES,   1.926E+02,   3.740E+00,   2.415E+00,,   79.766
C,07-SR85 ,YES,   2.422E+02,   4.740E+00,   2.989E+00,,   81.055
C,08-CS137,YES,   1.752E+02,   3.077E+00,   1.634E+00,,  107.208
C,09-Y88  ,YES,   3.947E+02,   6.112E+00,   2.971E+00,,  132.878
C,10-CO60 ,YES,   2.051E+02,   2.659E+00,   1.436E+00,,  142.848
C,12-Y88  ,YES,   4.022E+02,   7.314E+00,   1.675E+00,,  240.199
C,01-AM241,NO ,   1.342E+00,   3.579E+00,   5.660E+00,,    0.237
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

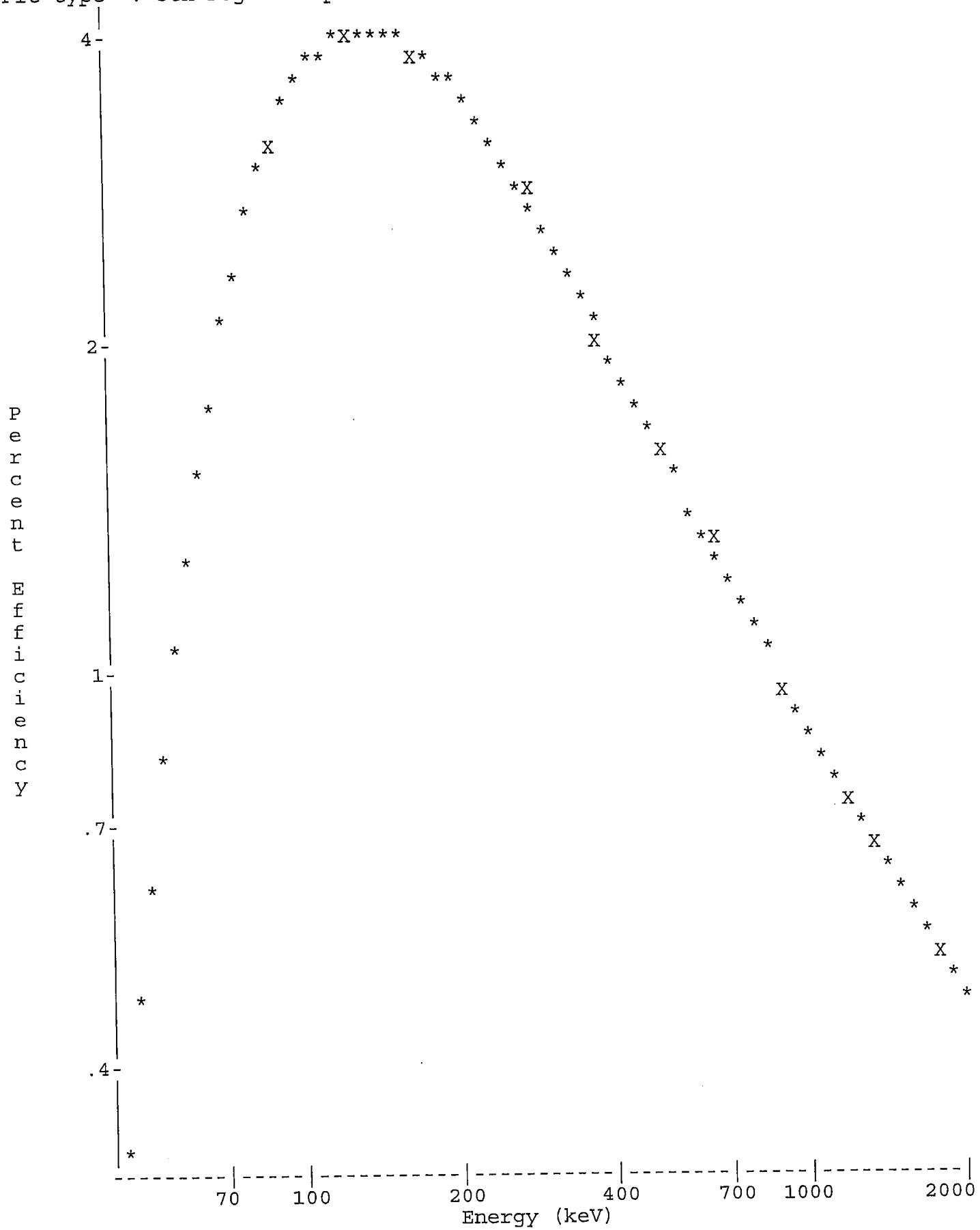
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity : 1.465E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

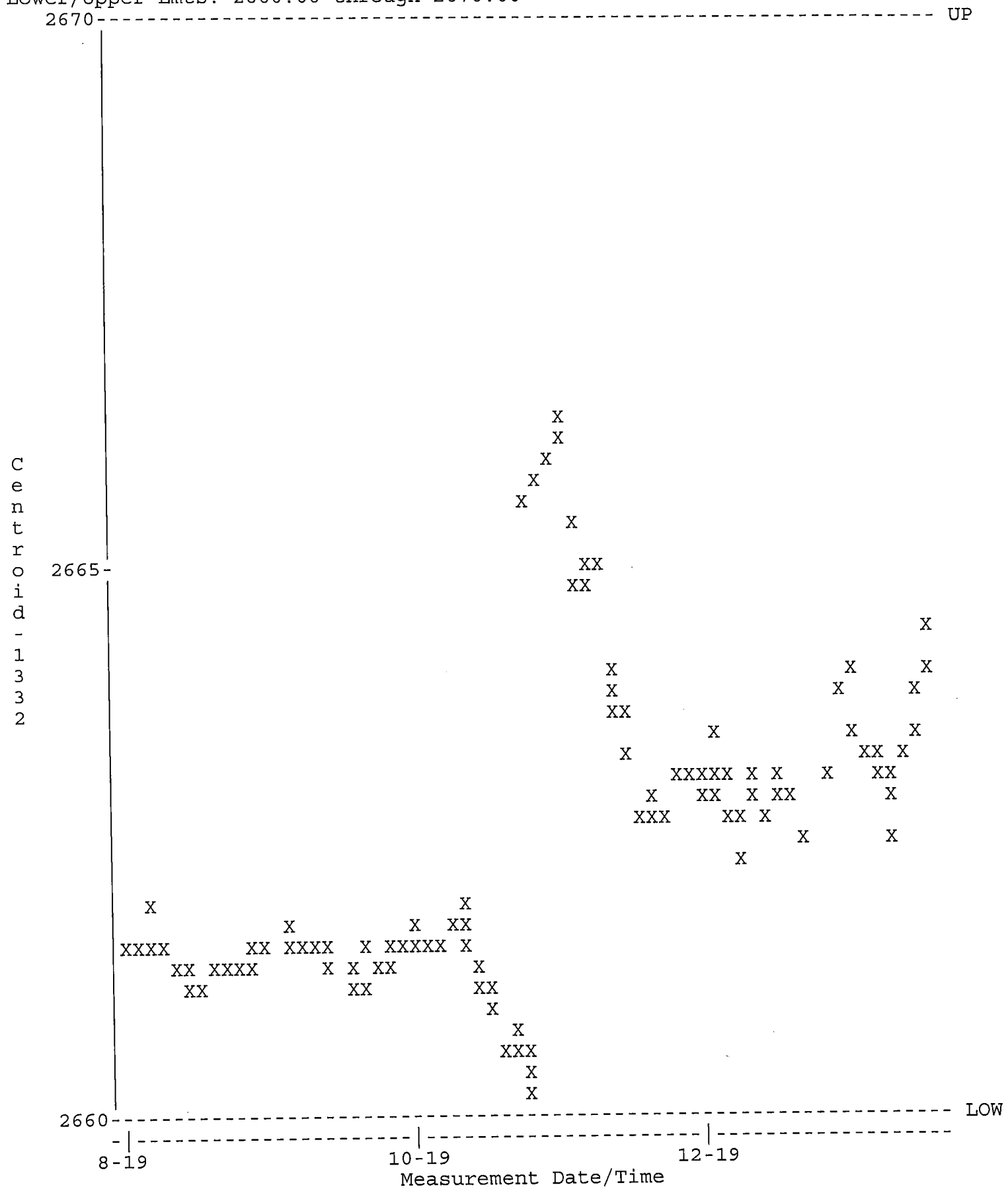
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION          ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,   -0.138
```

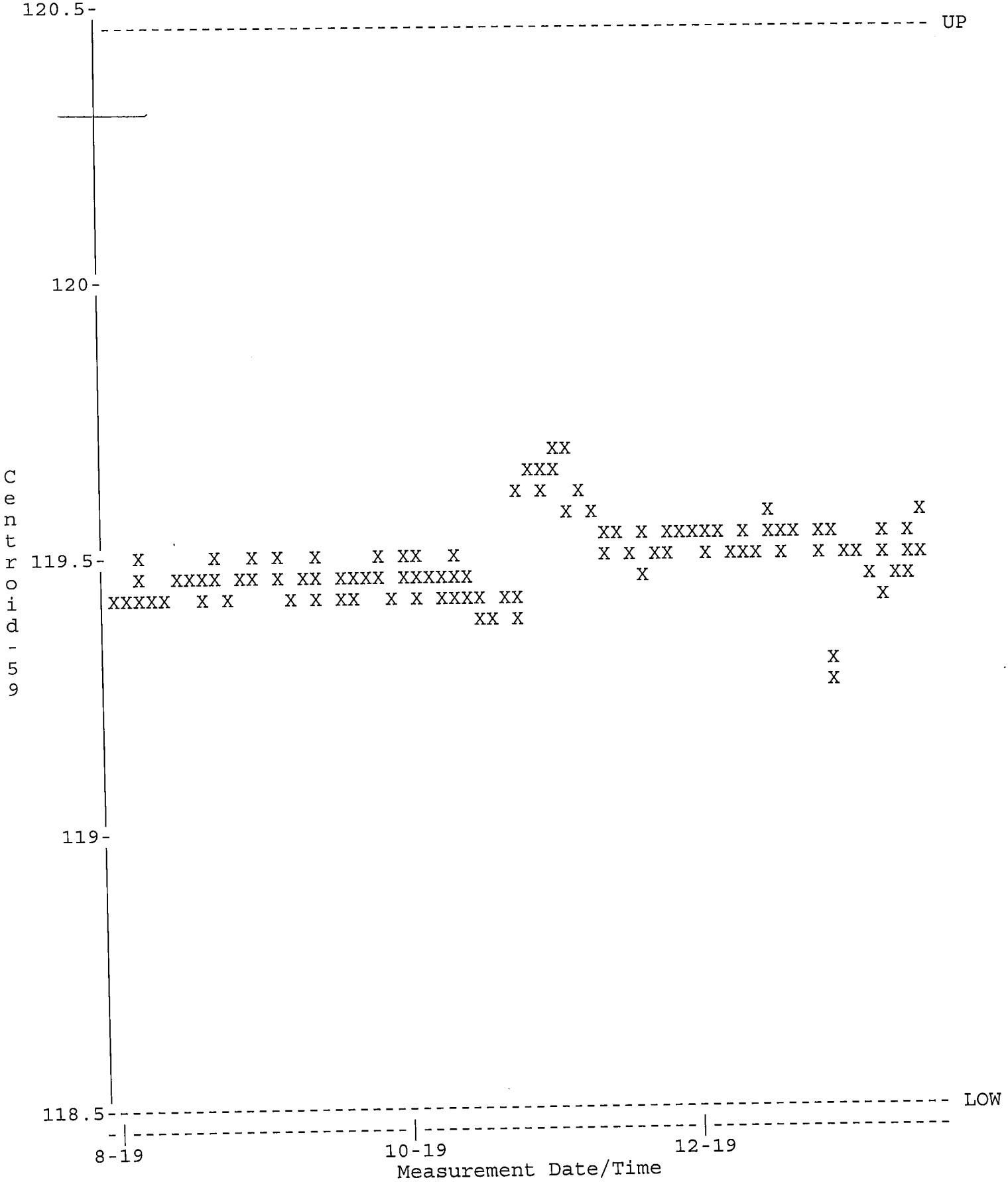
GAMMA SPECTROSCOPY

Daily Source and Background Checks

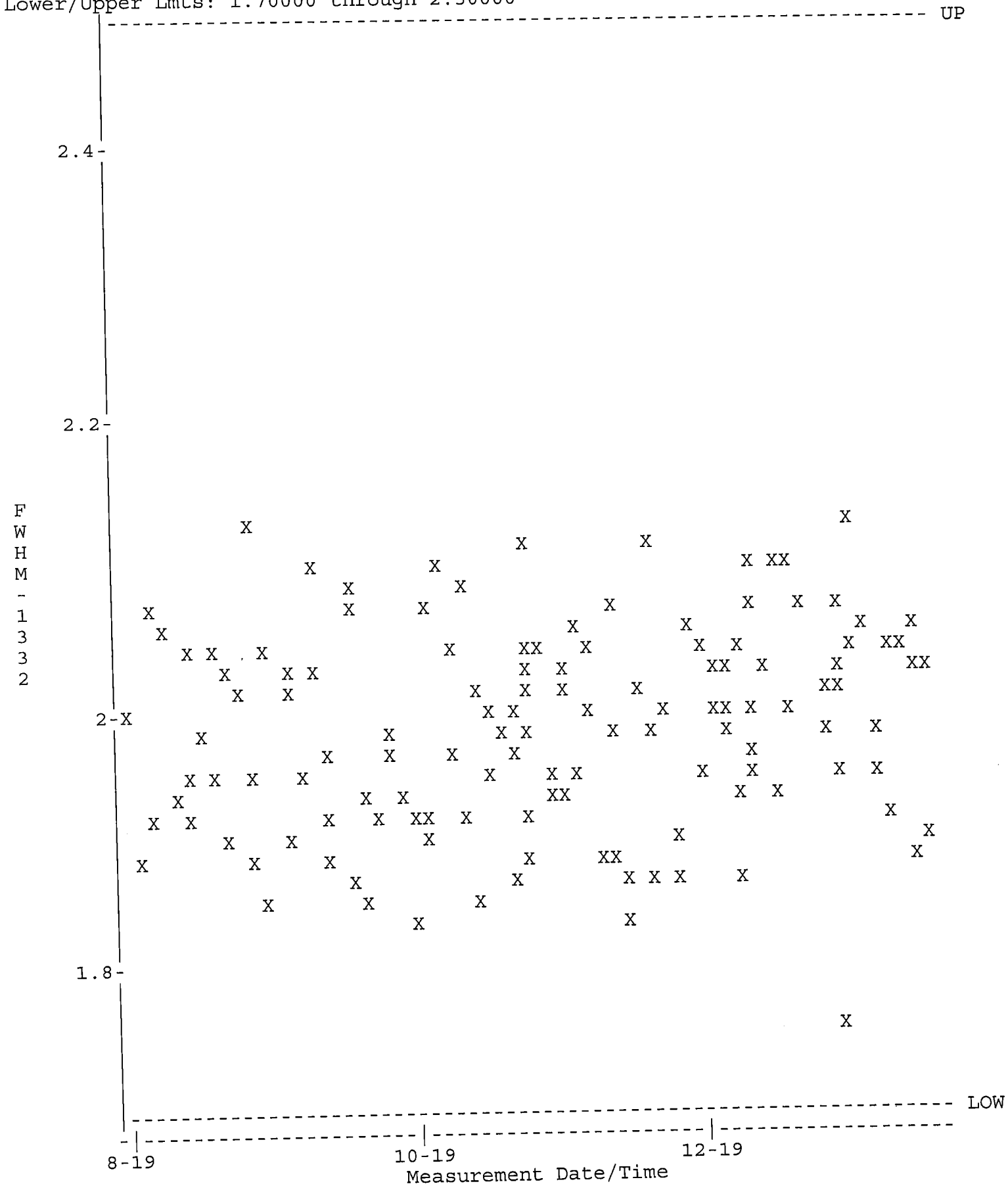
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



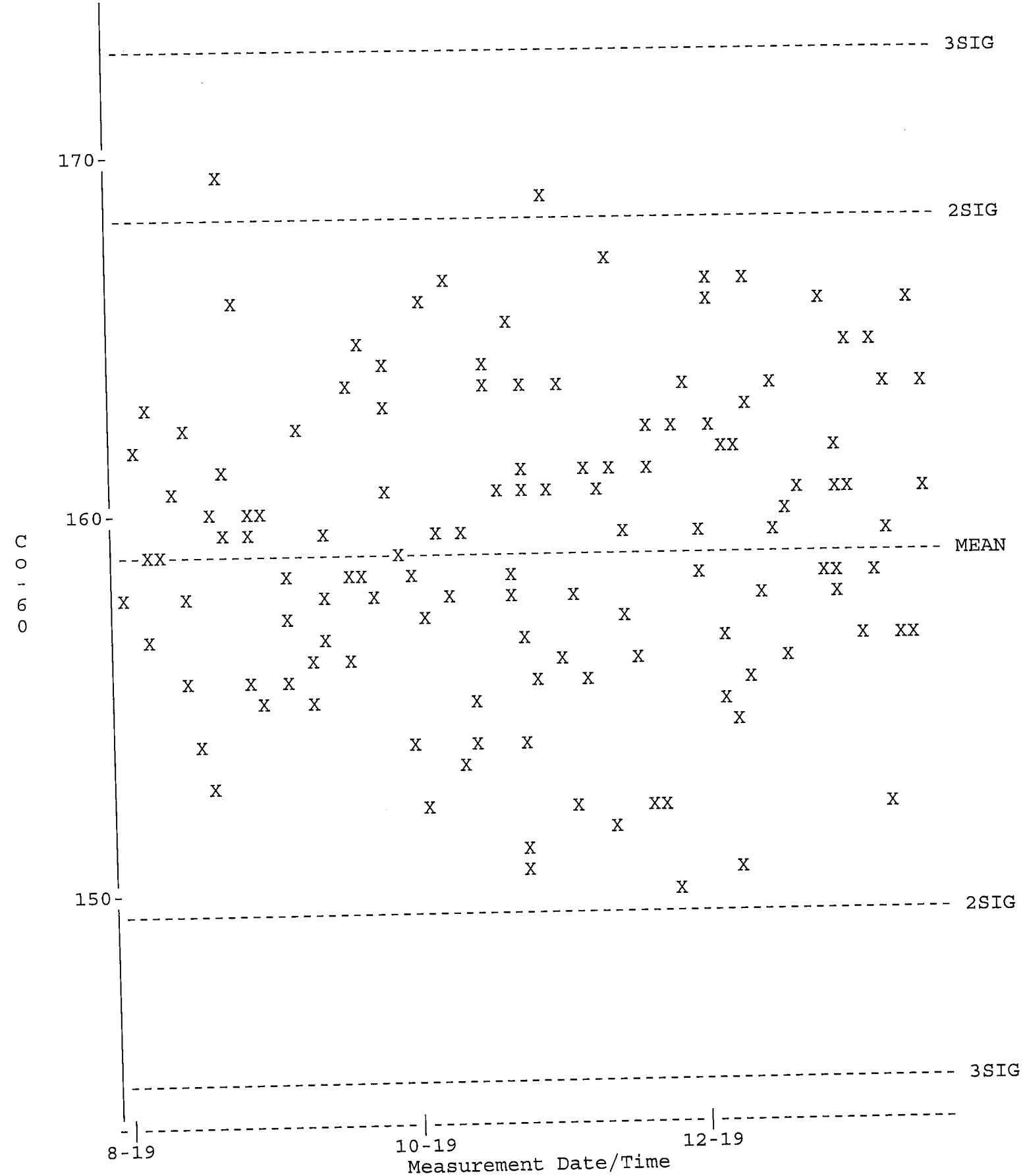
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



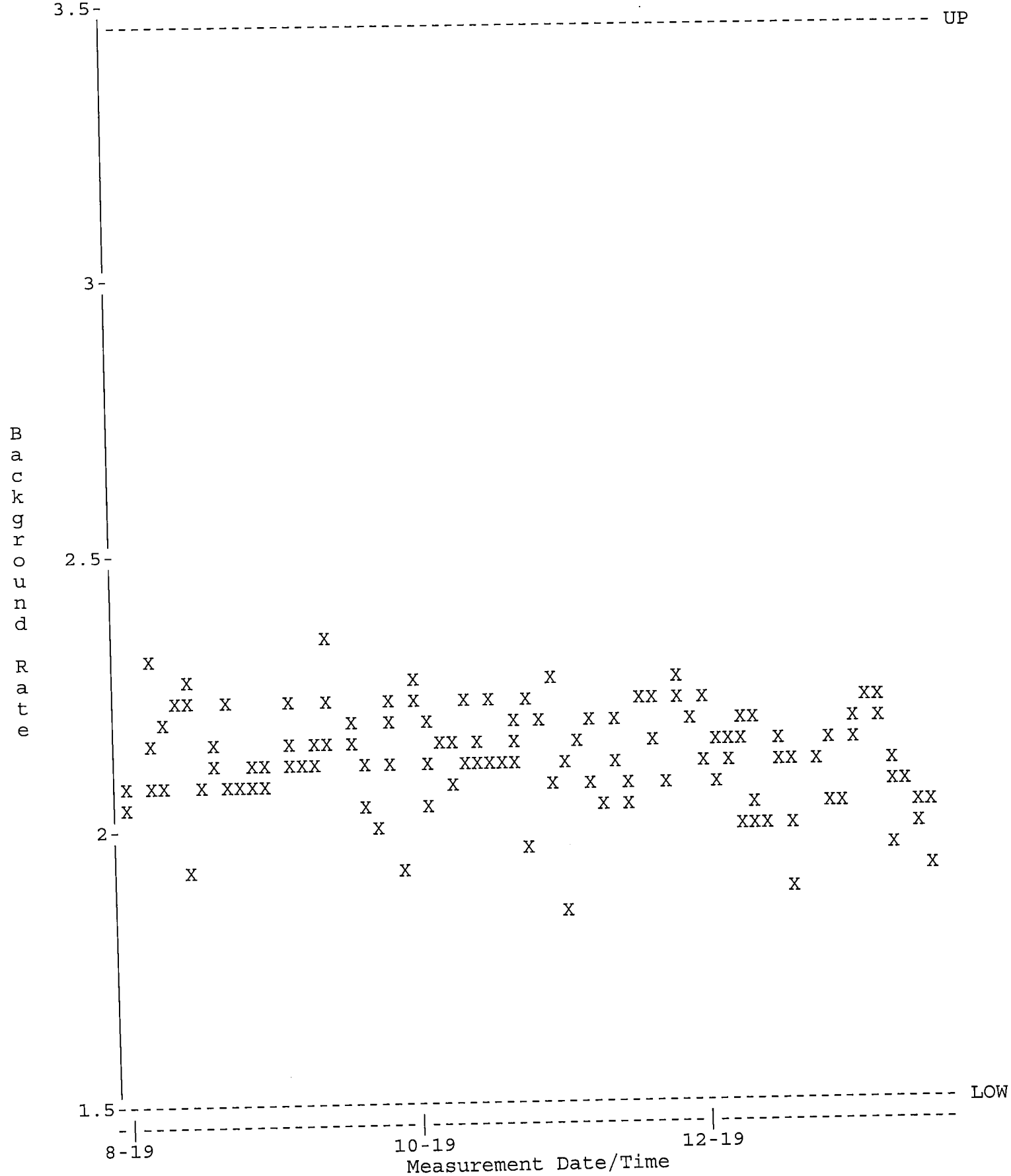
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



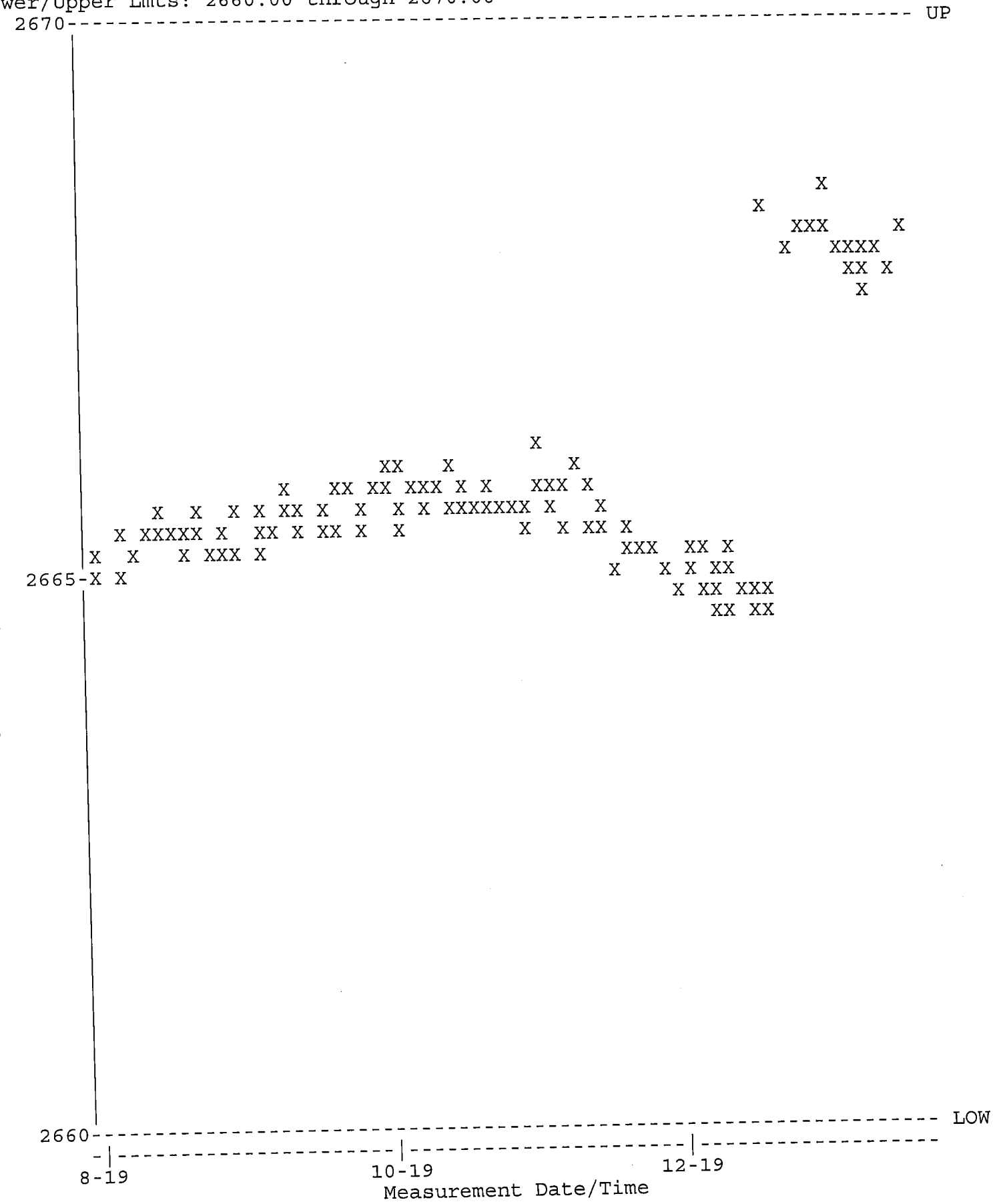
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



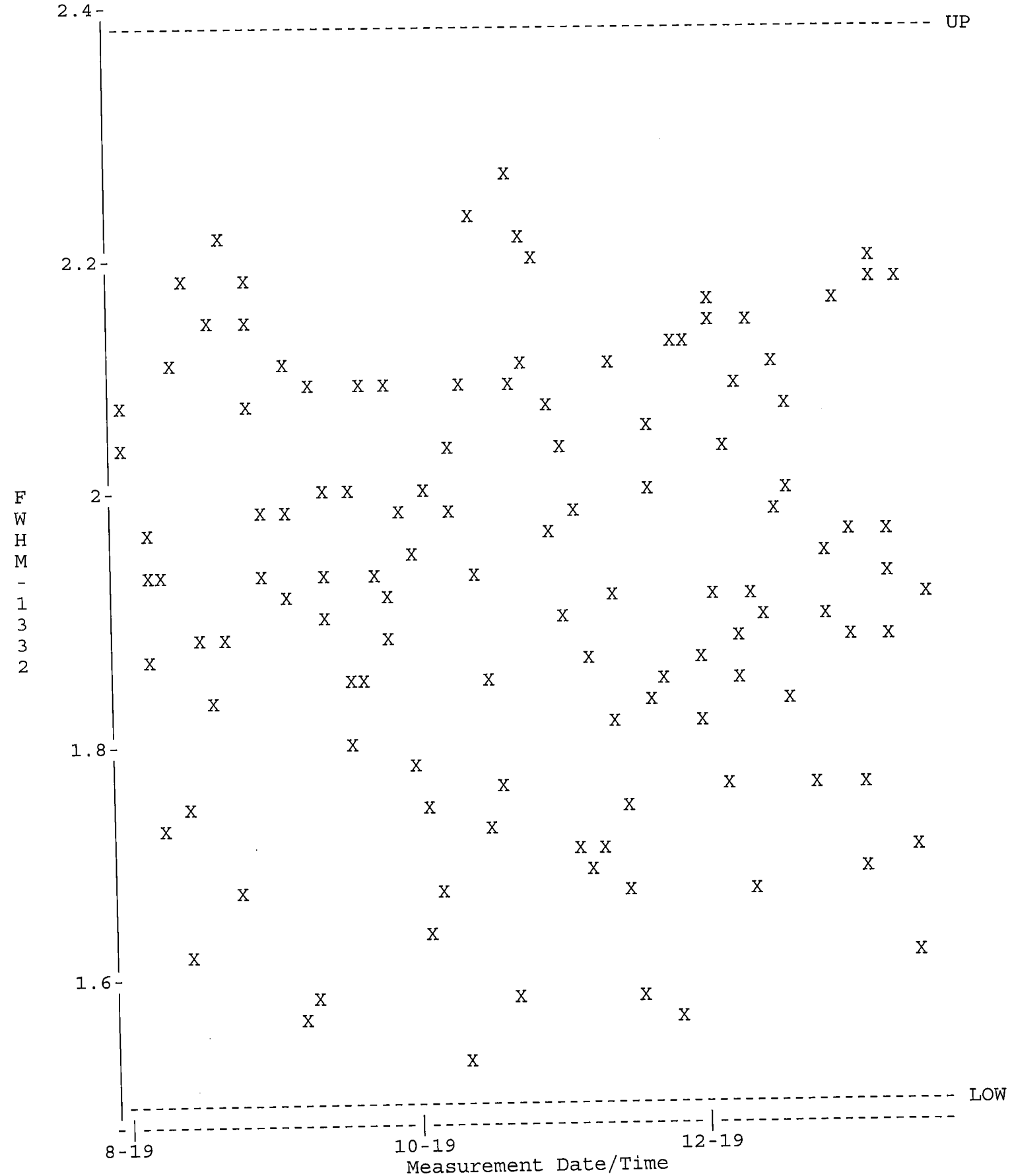
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



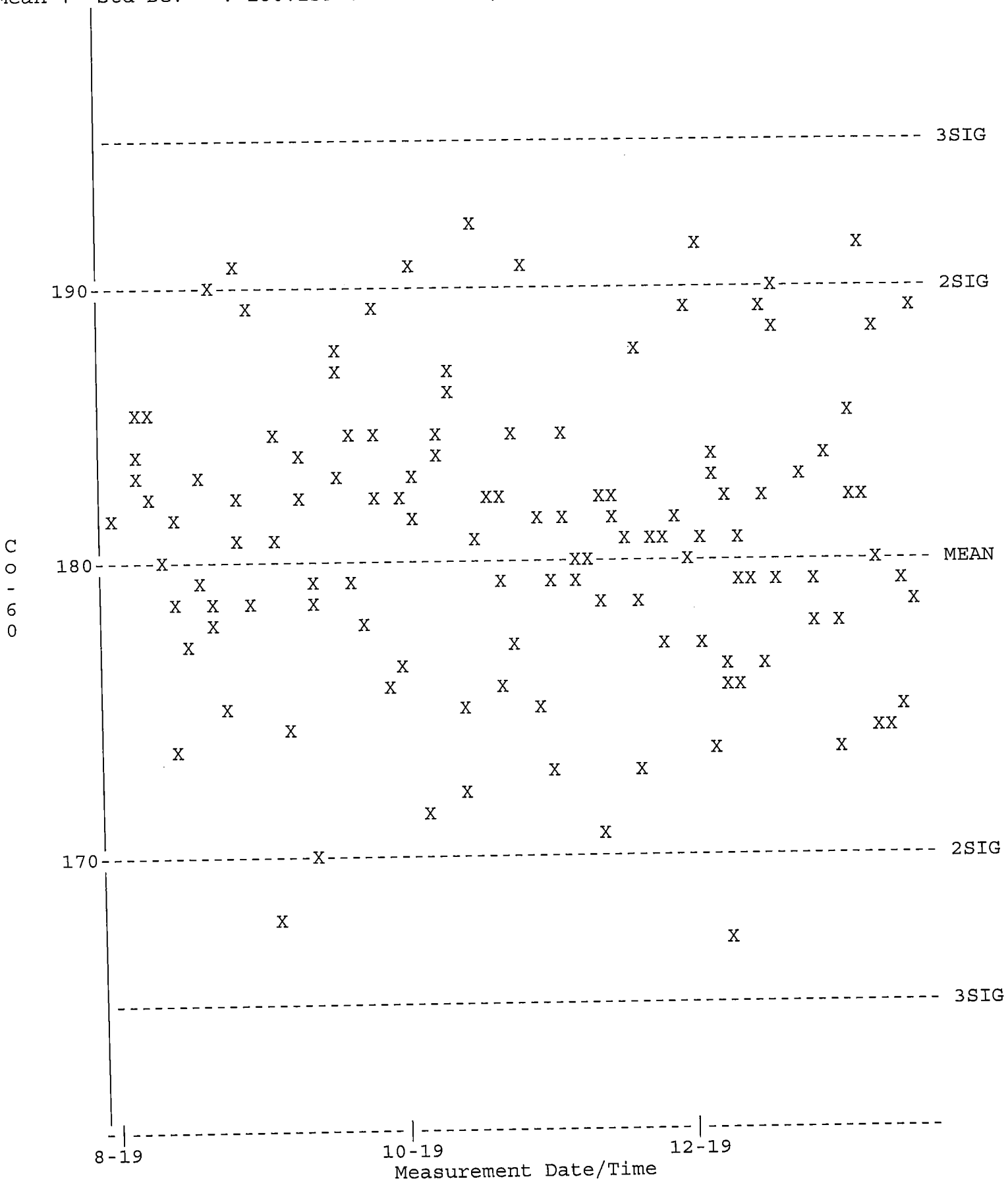
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



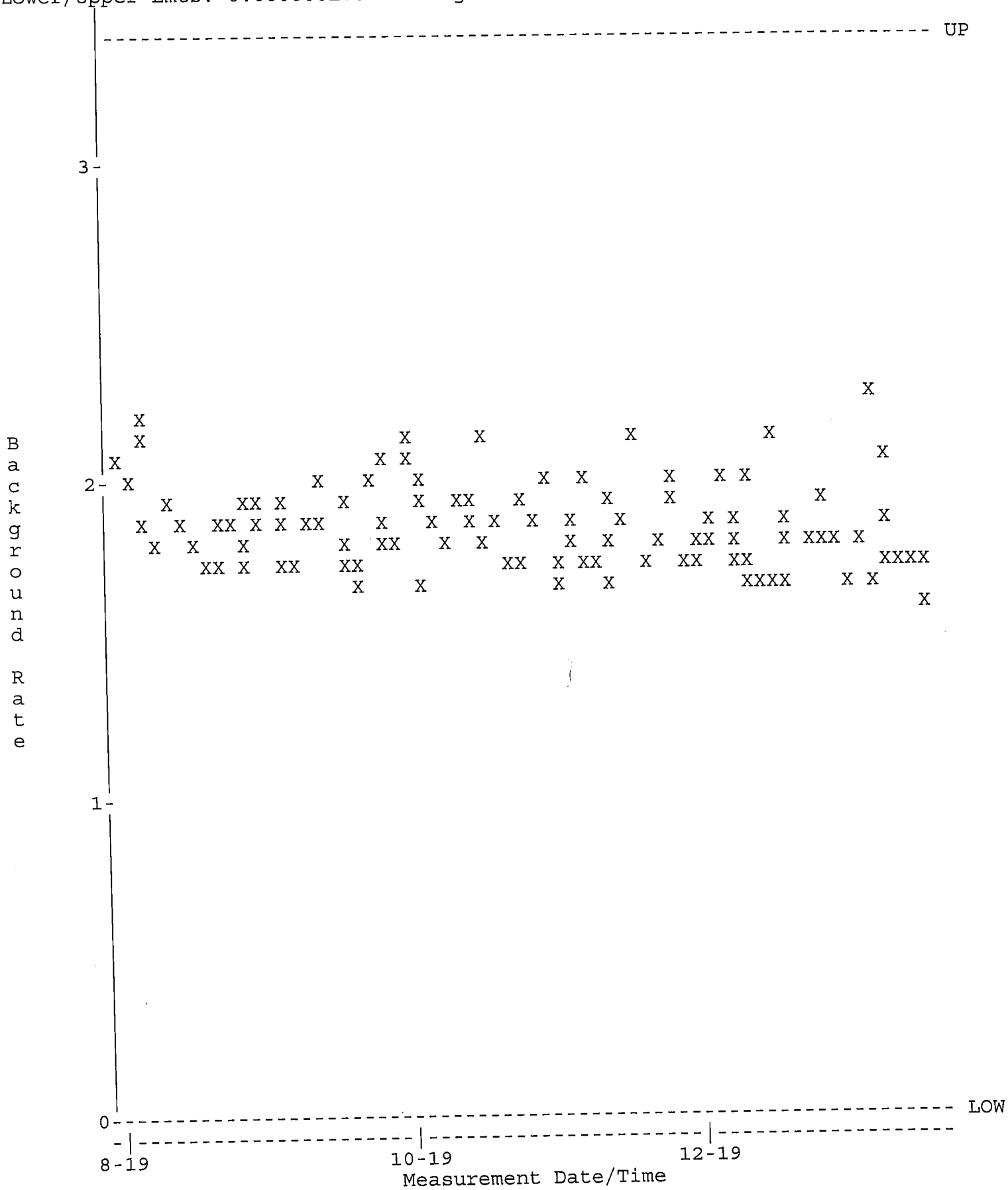
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



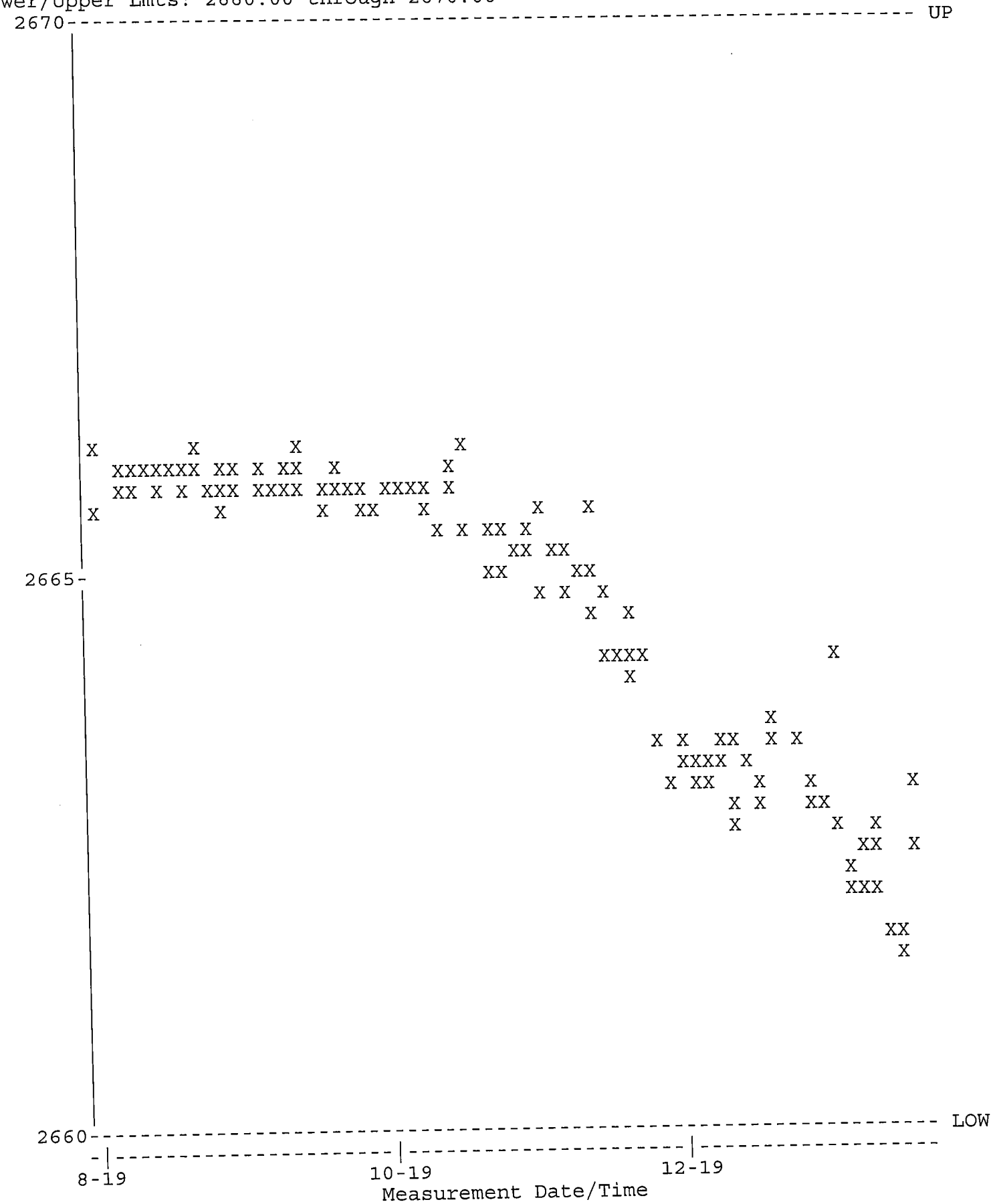
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



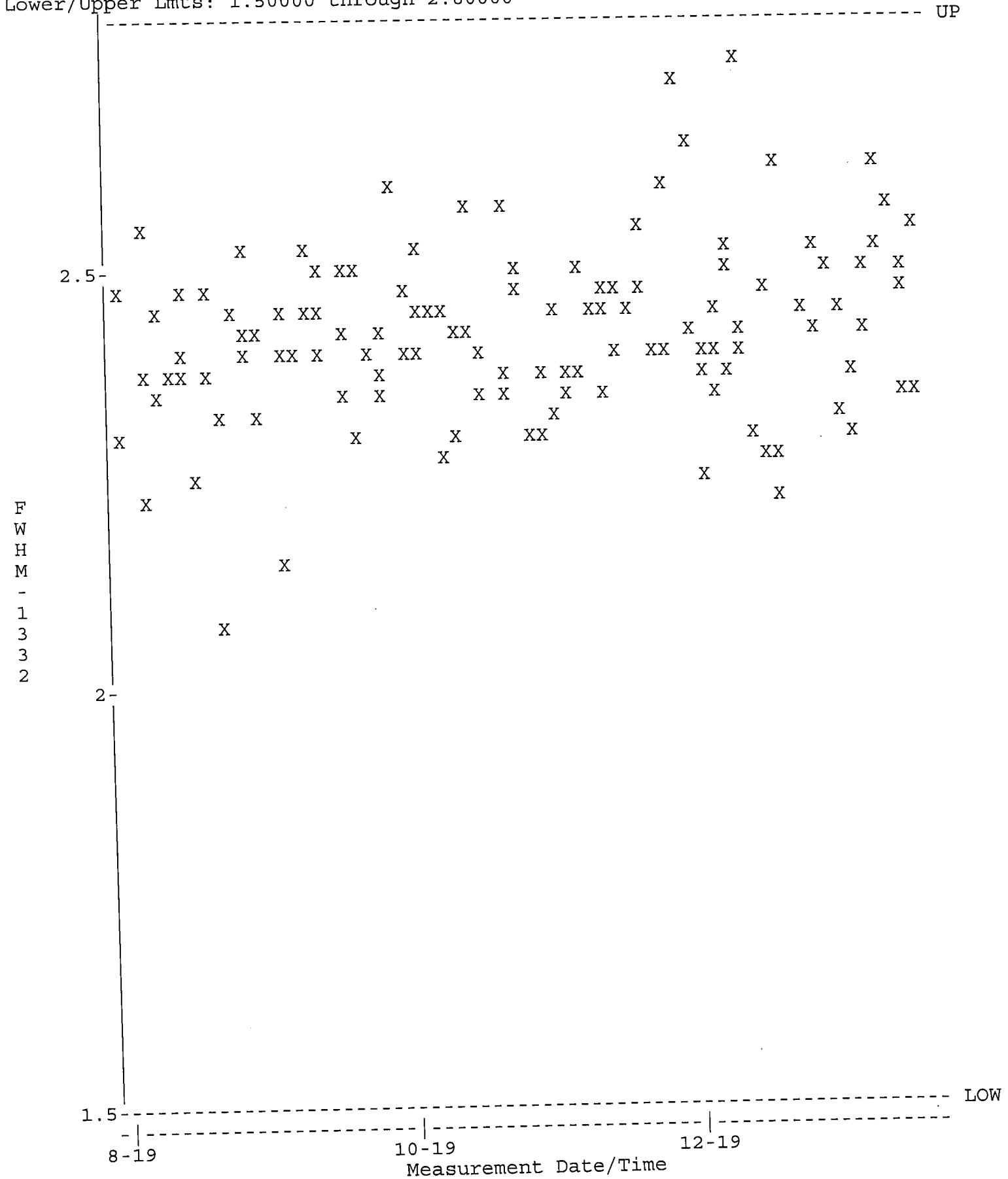
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



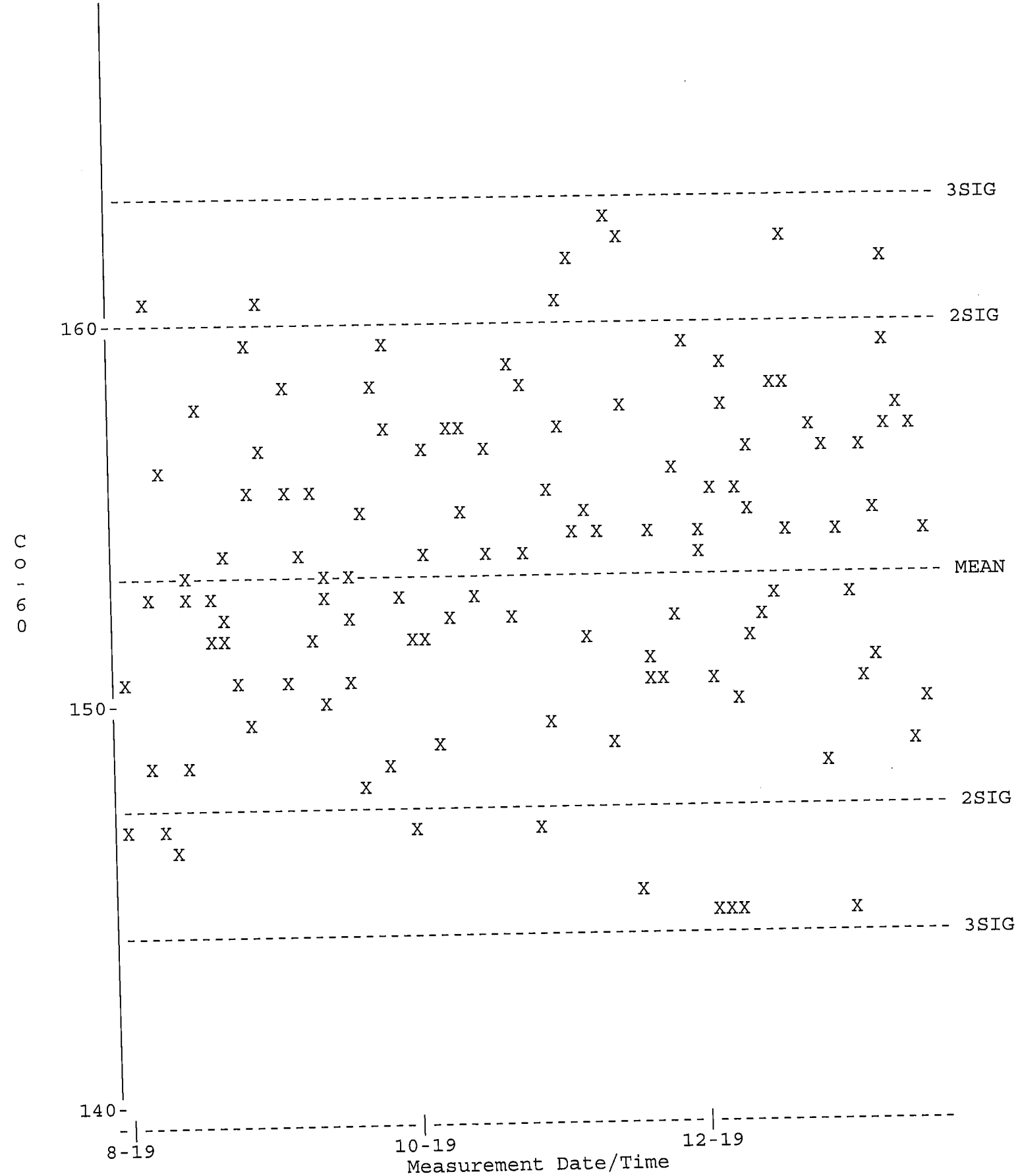
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



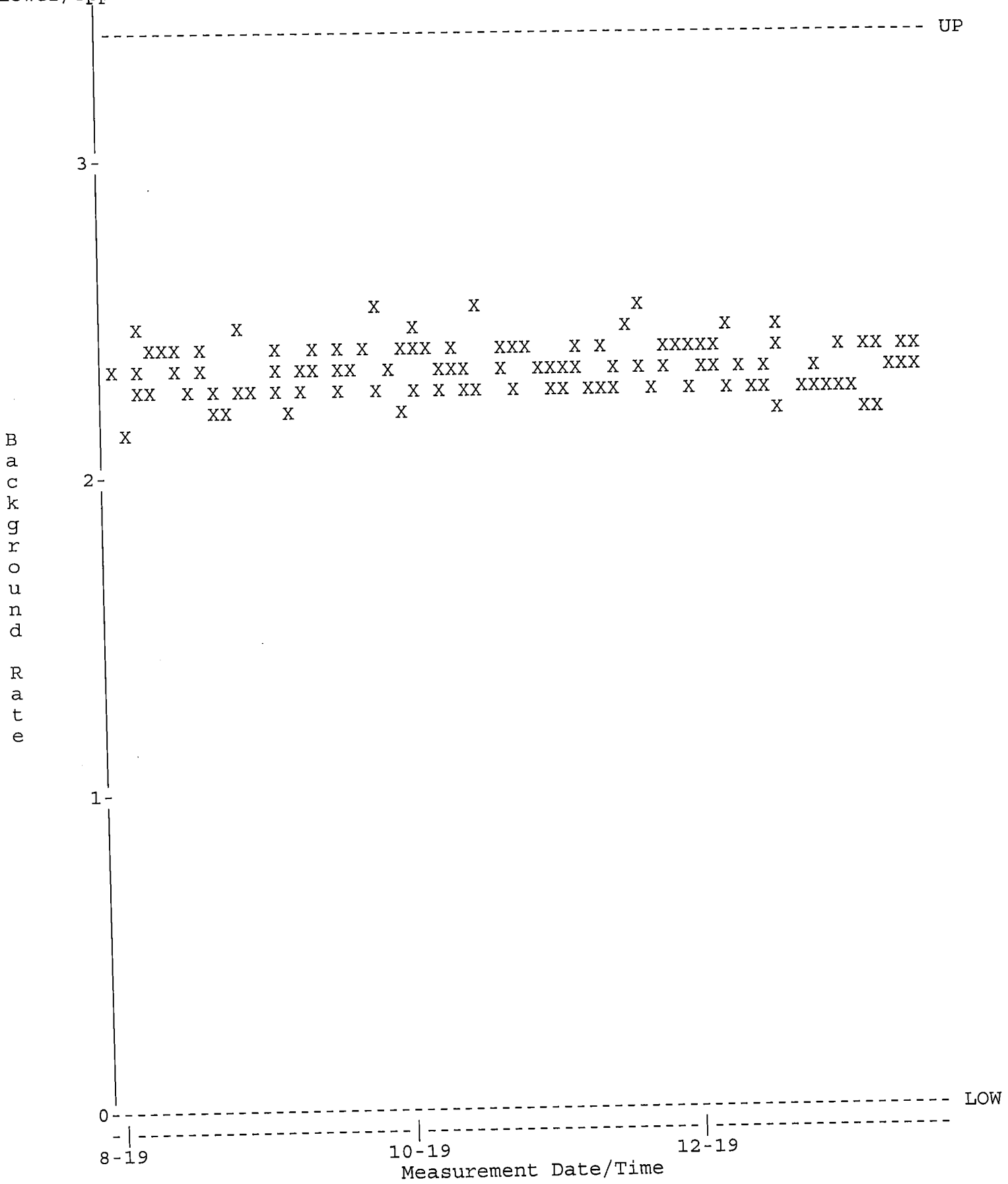
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000

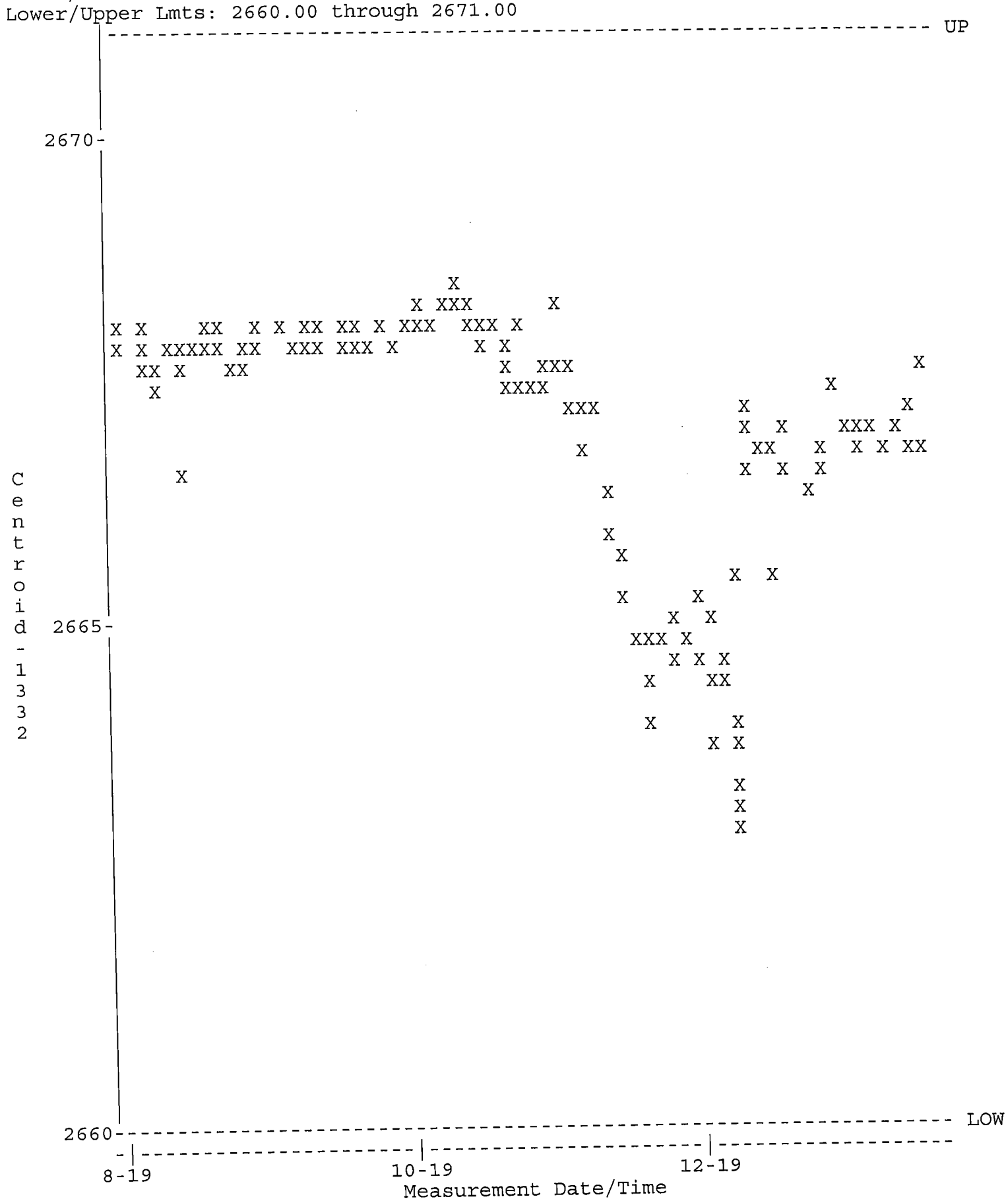


QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)

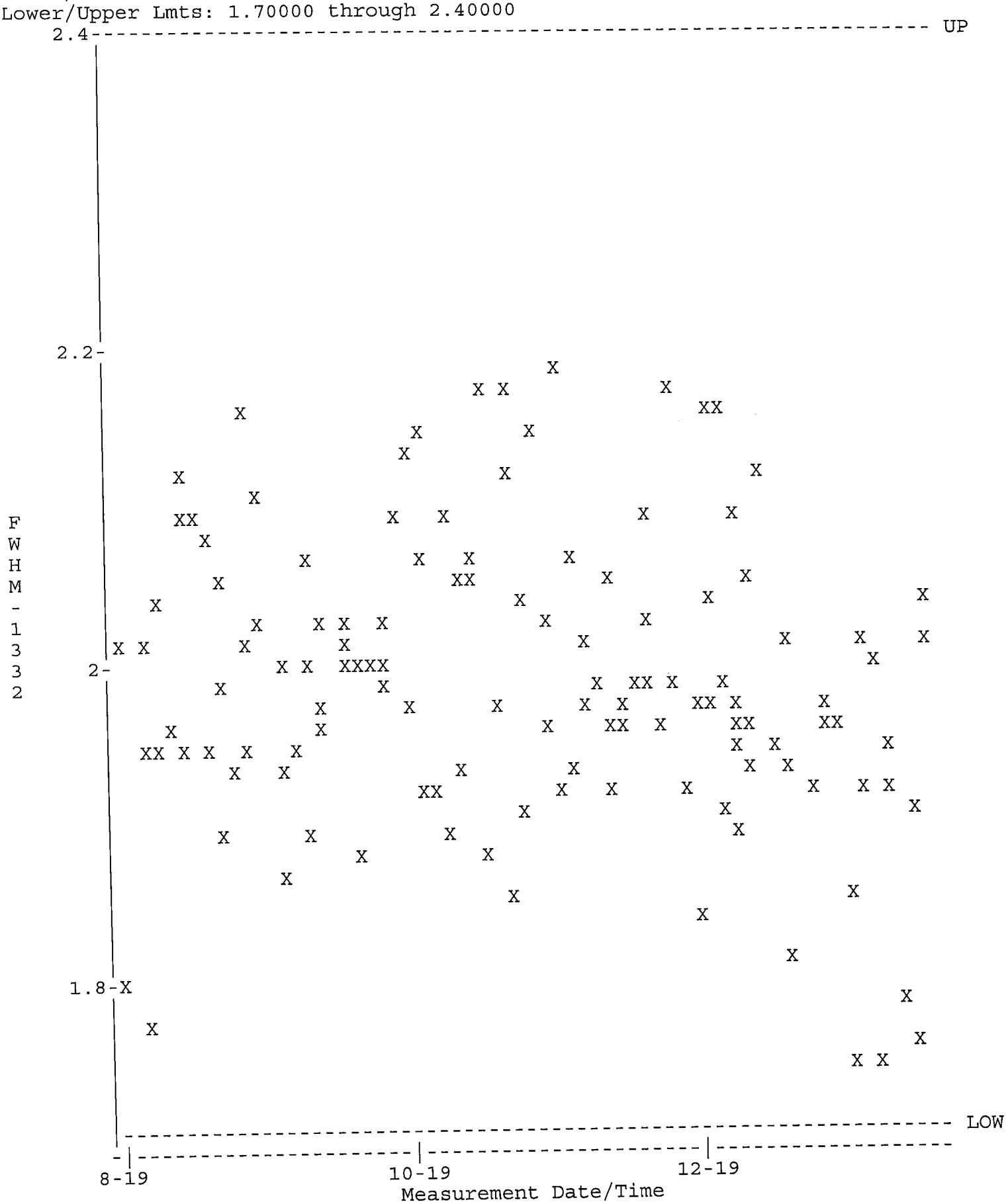


QA filename : DKB100:[GAMMA.QUALITY]TBE07_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000

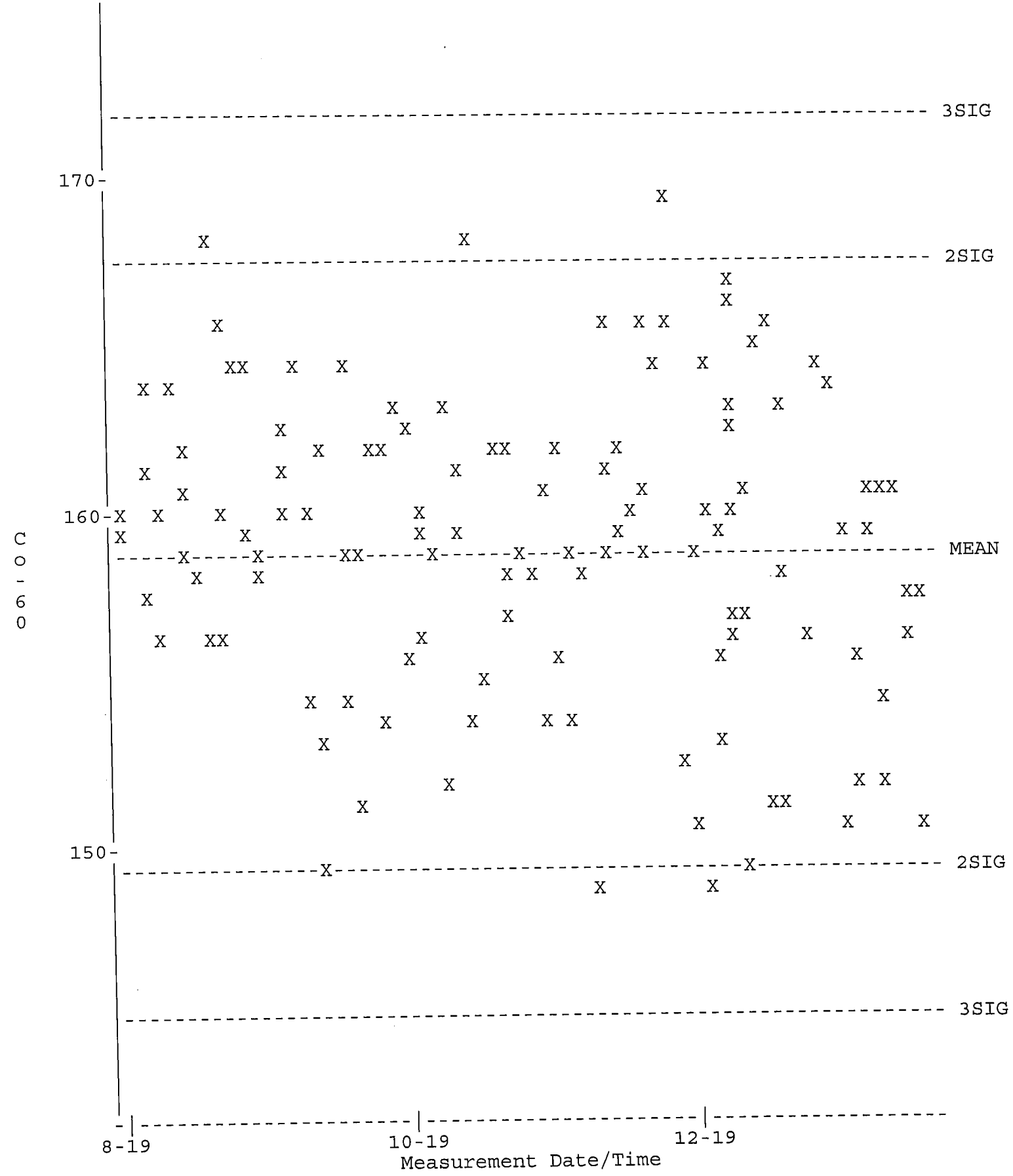



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00
UP
2670
2665
2660
LOW
Centroid-1332
8-19
10-19
12-19
Measurement Date/Time

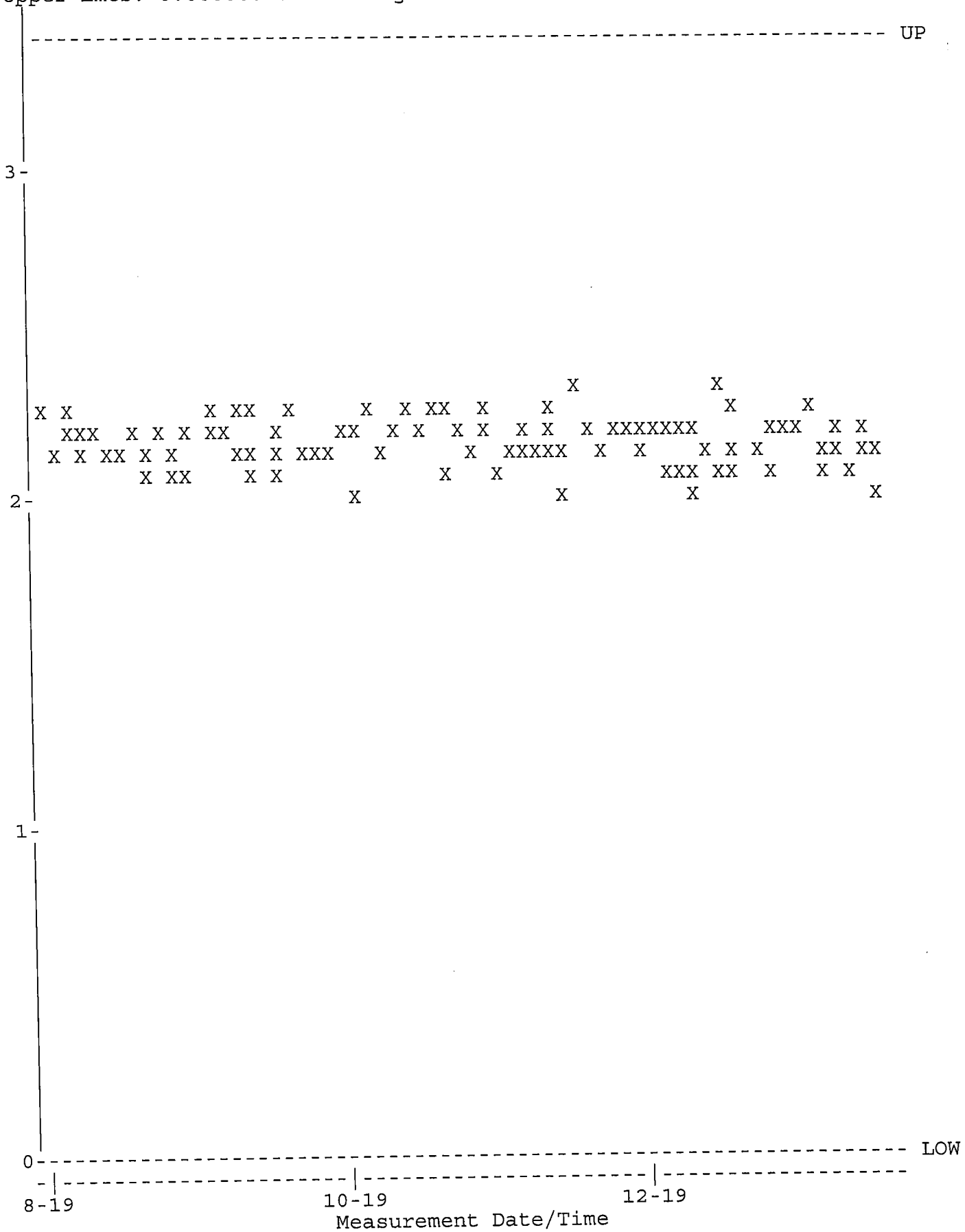
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



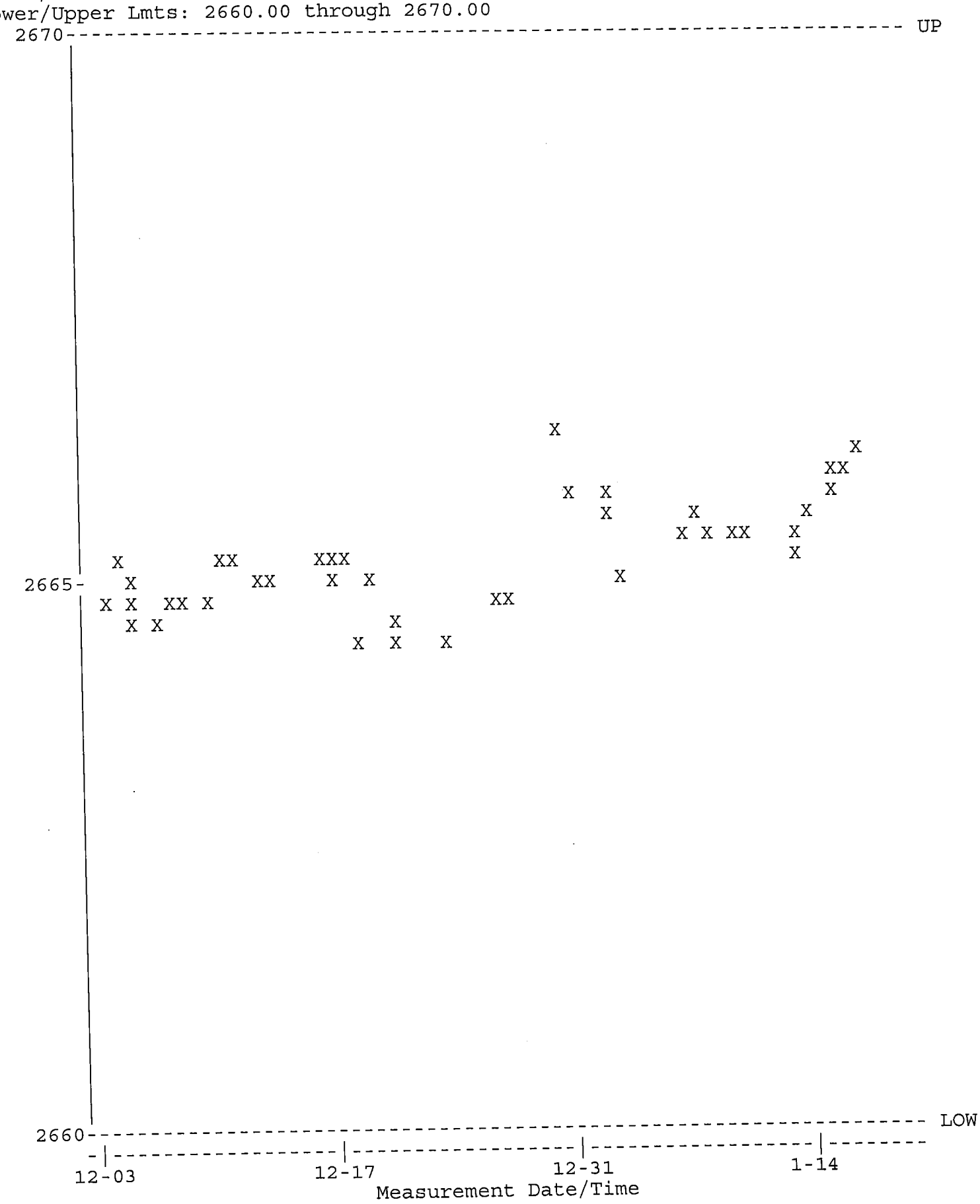
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



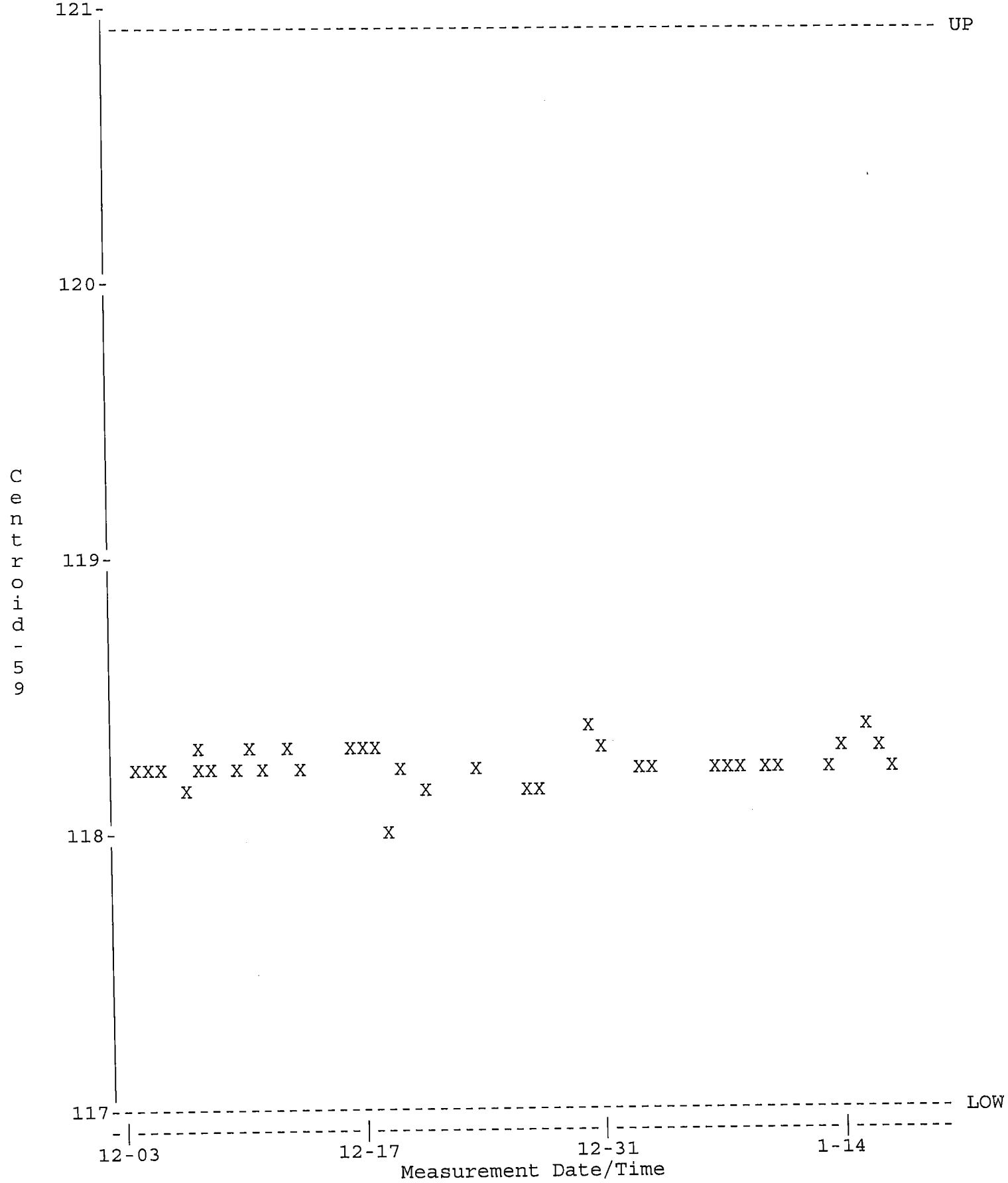
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



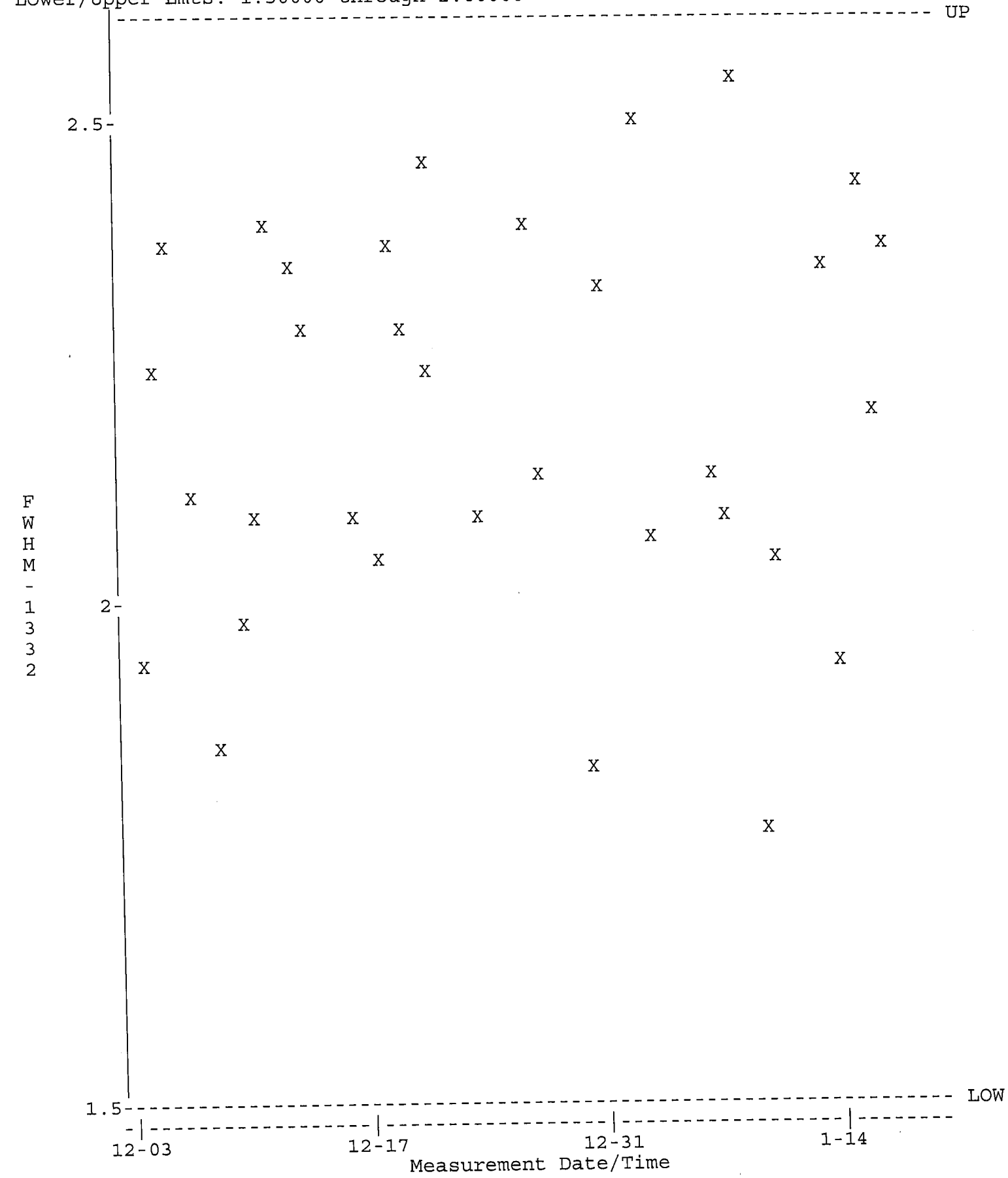
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



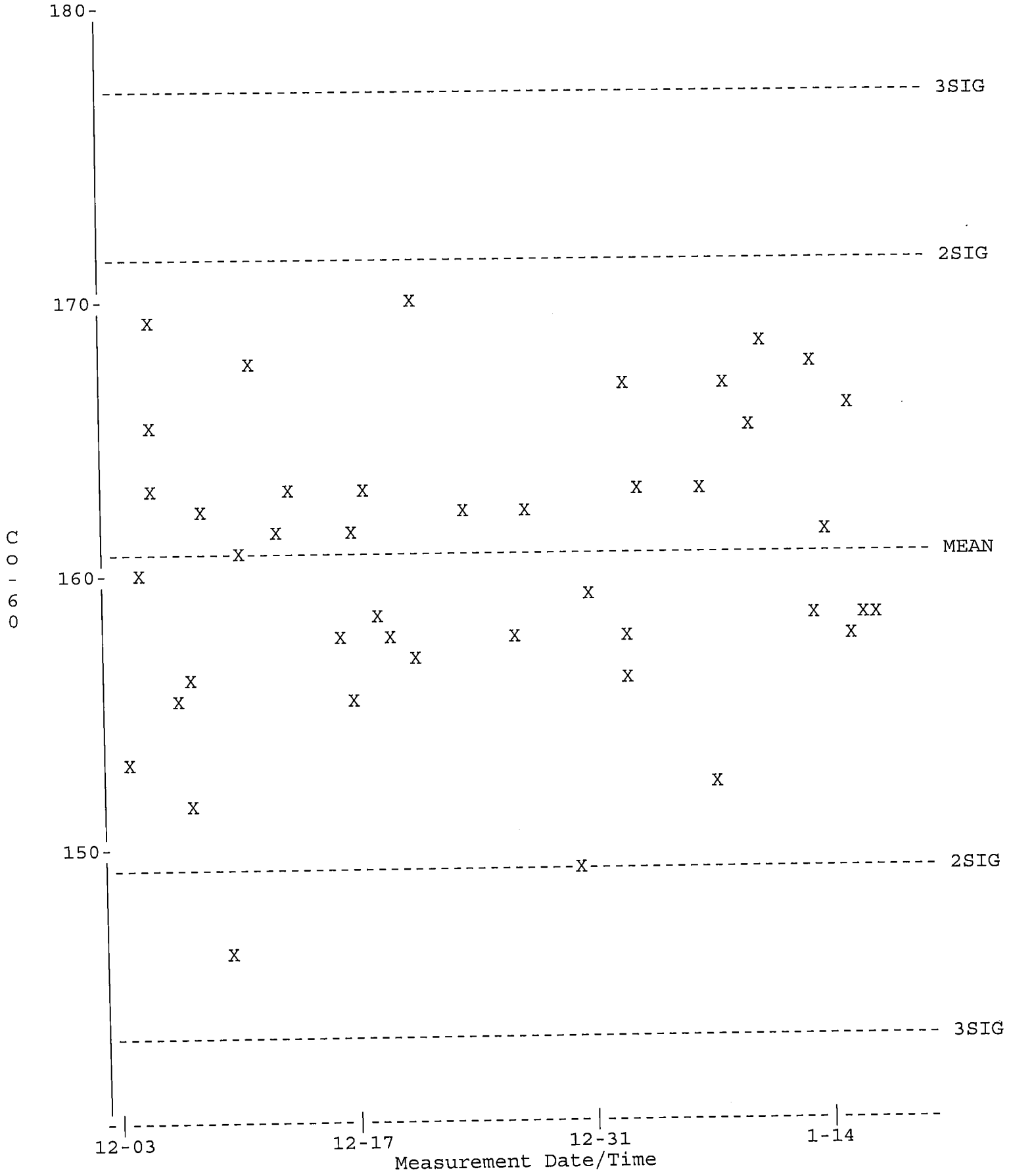
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



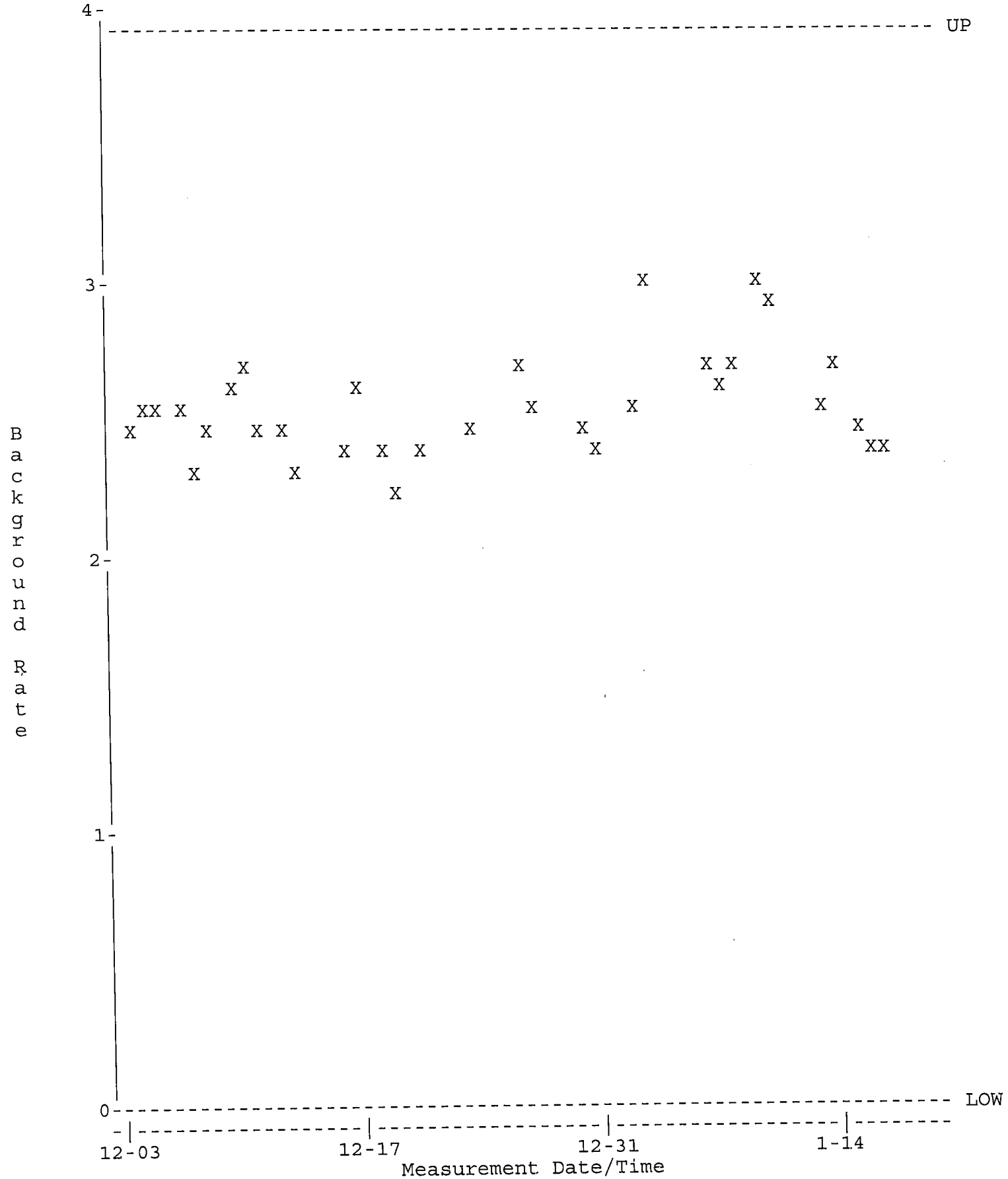
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



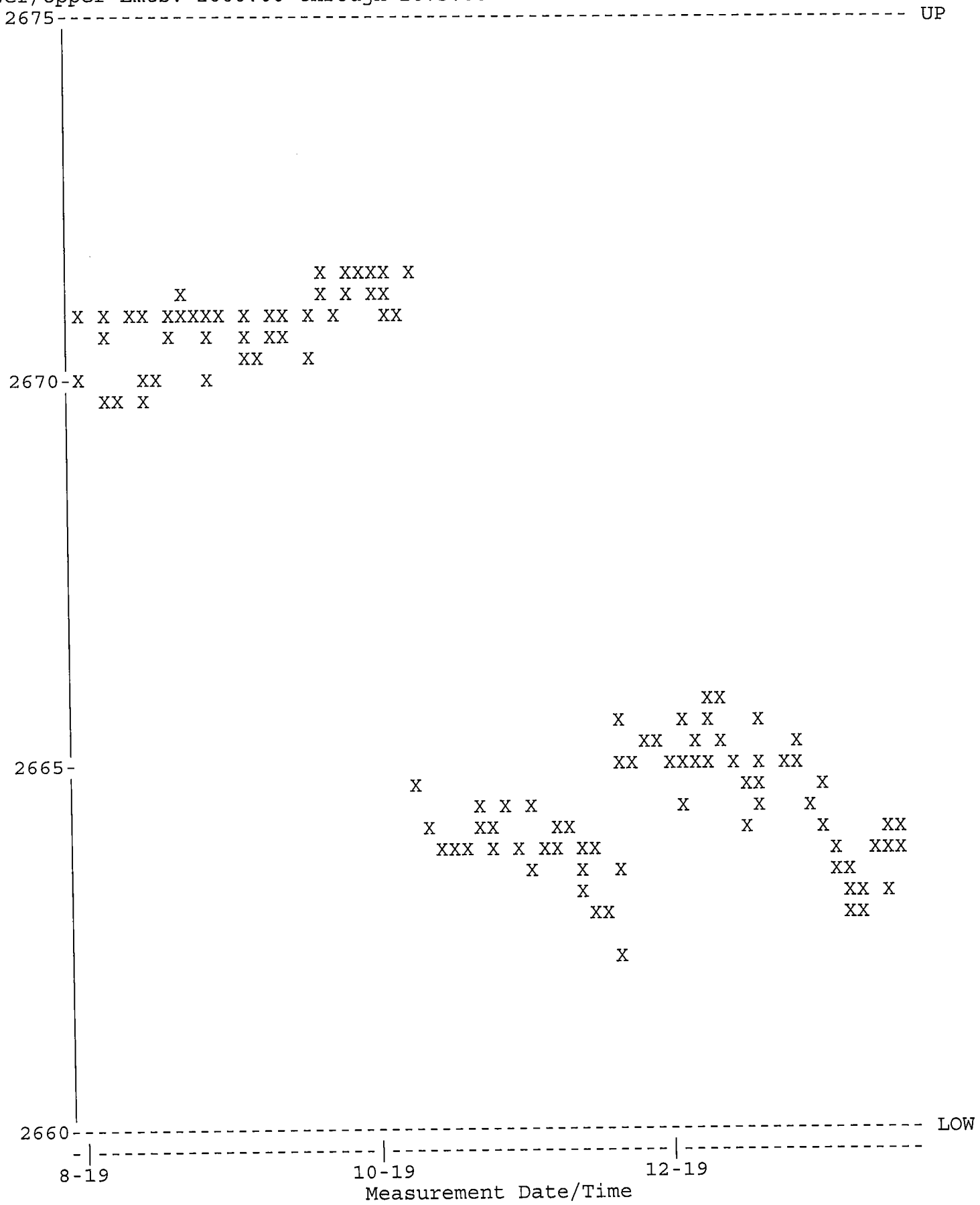
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



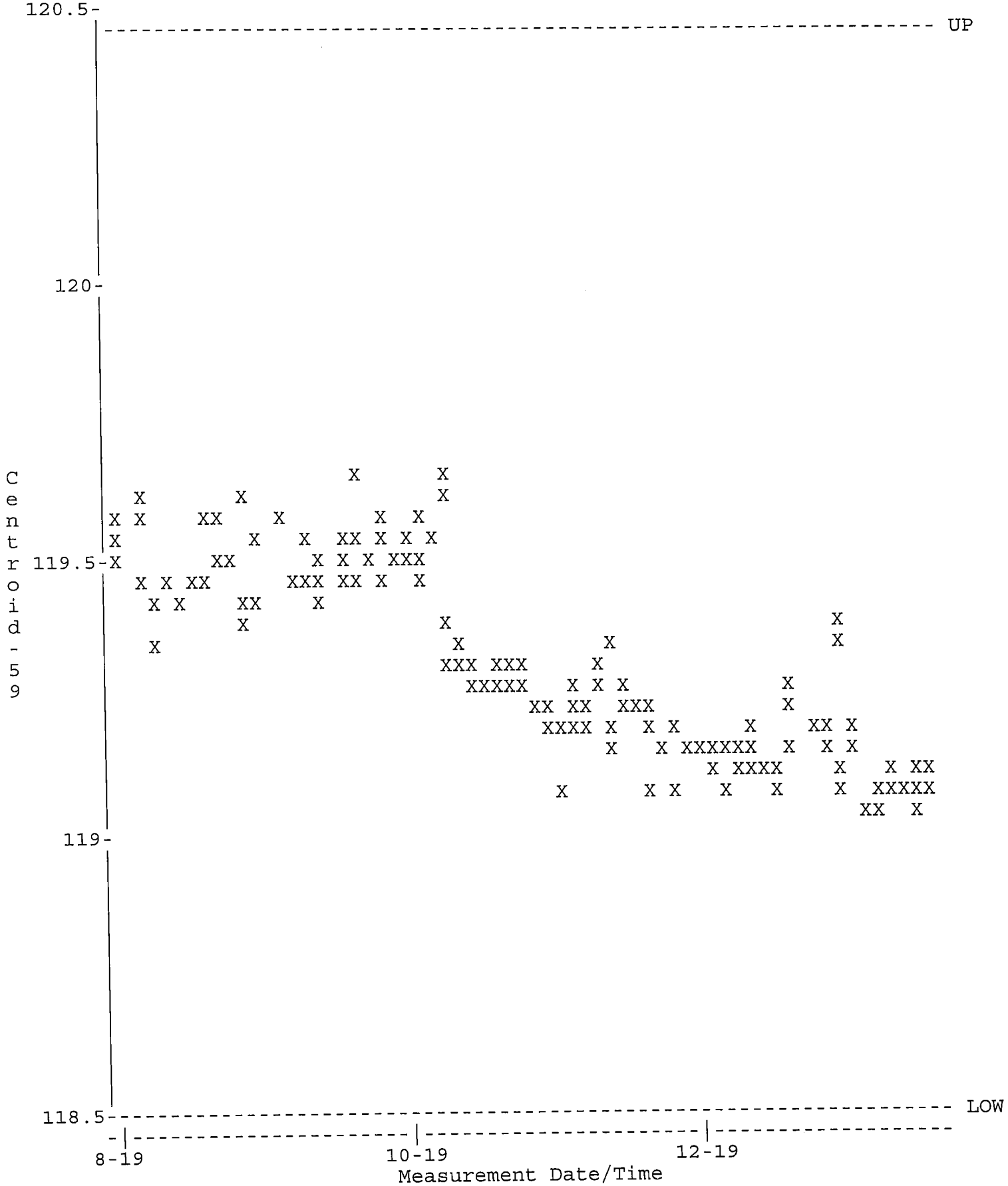
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



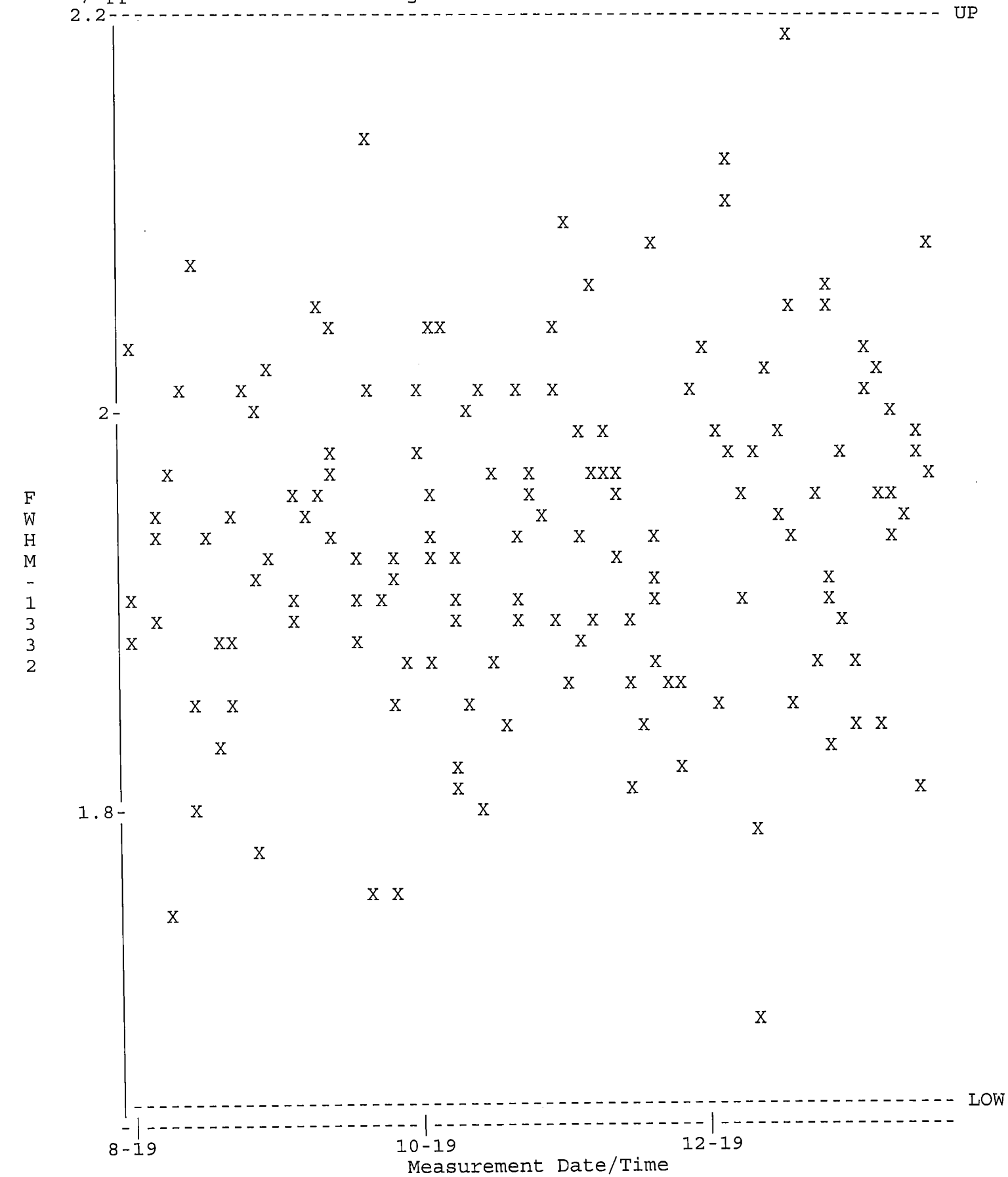
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



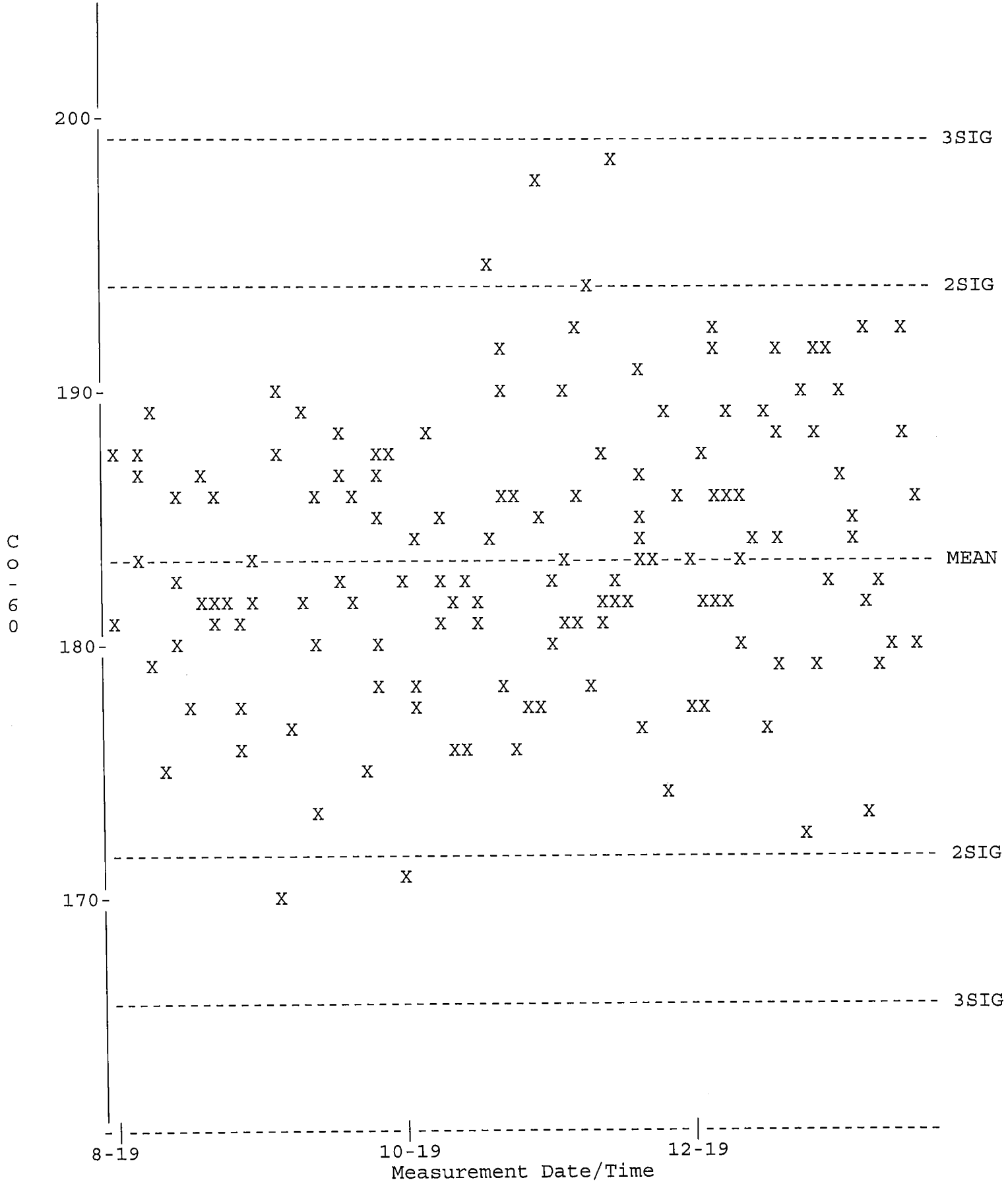
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



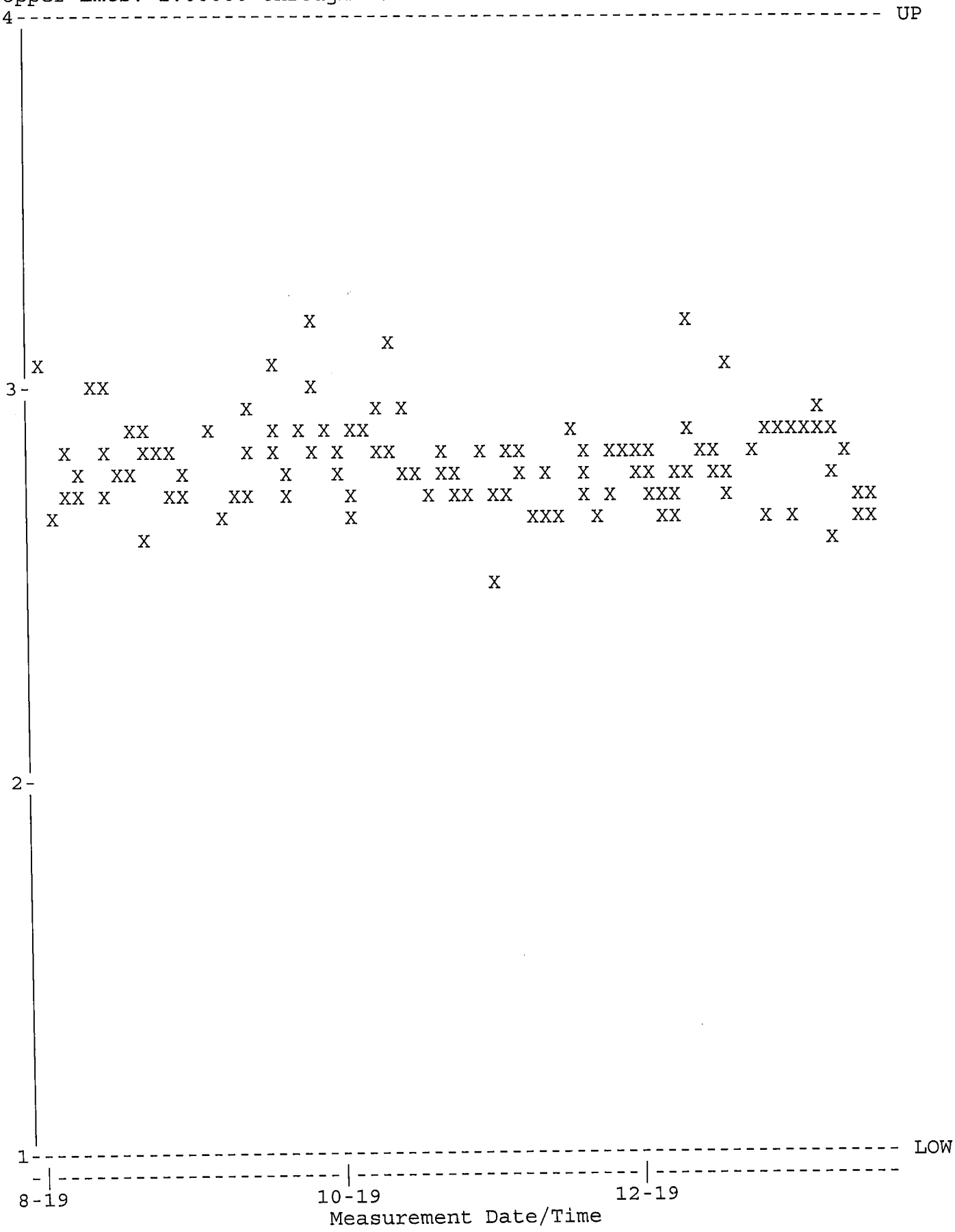
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



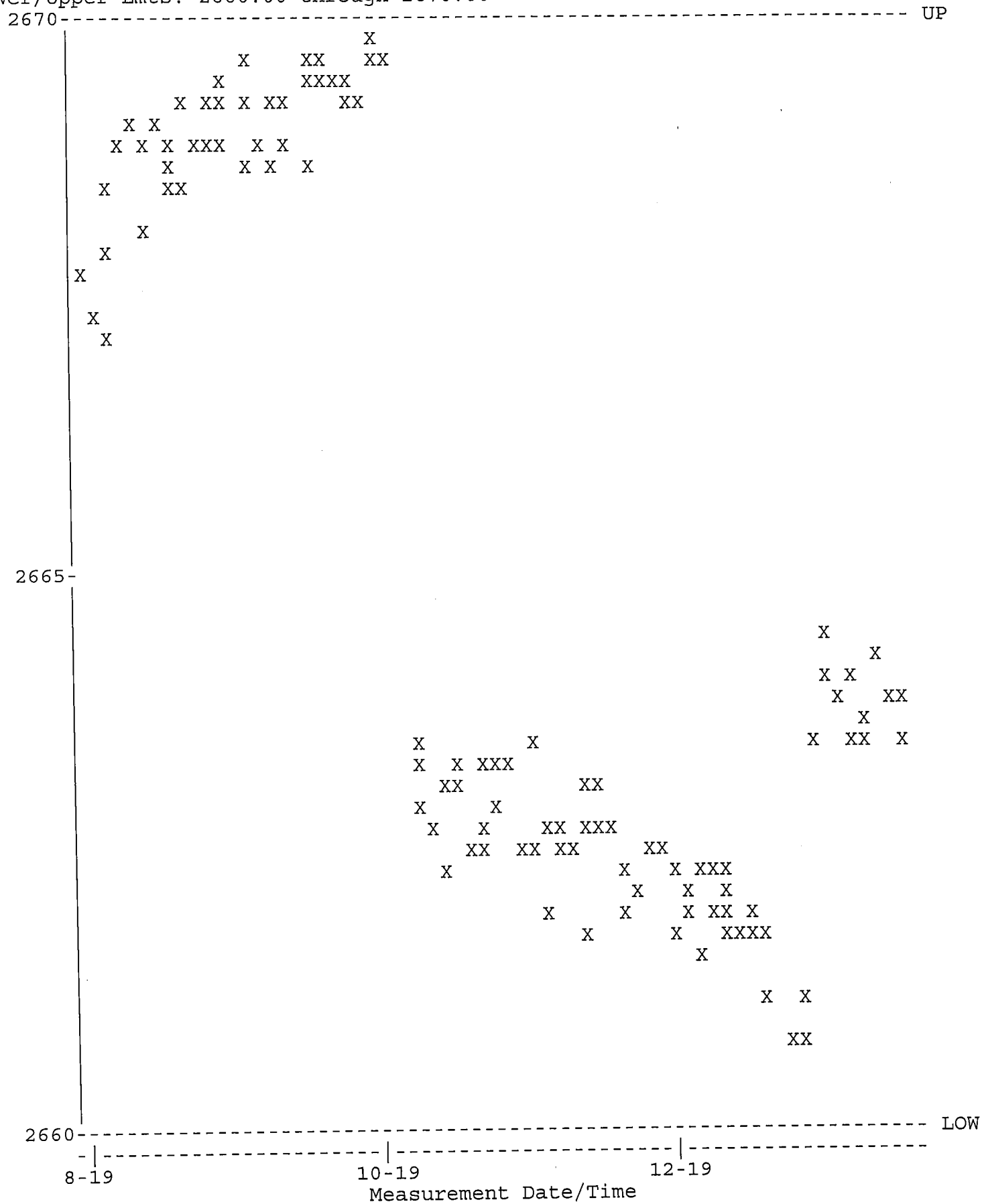
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



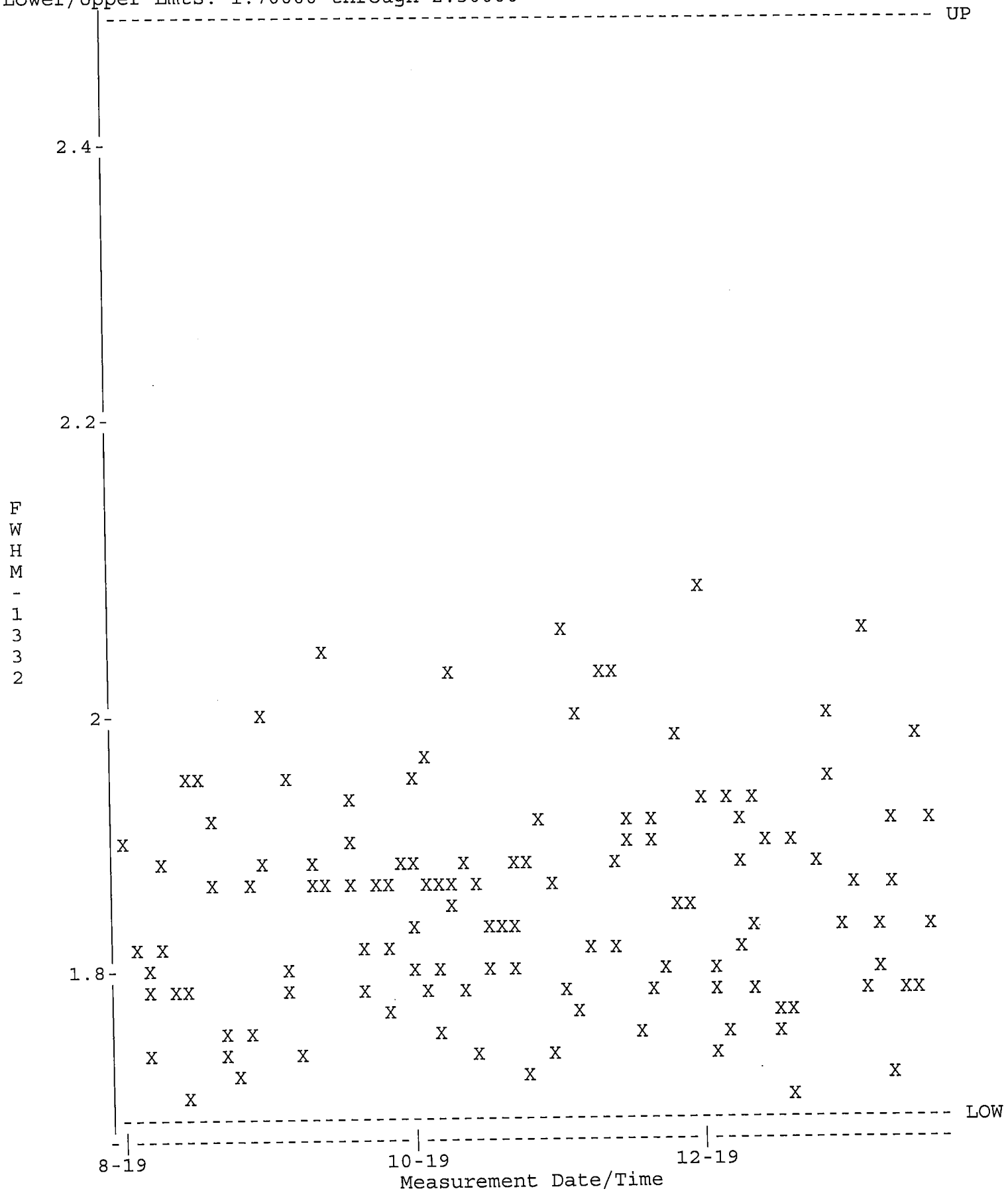
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



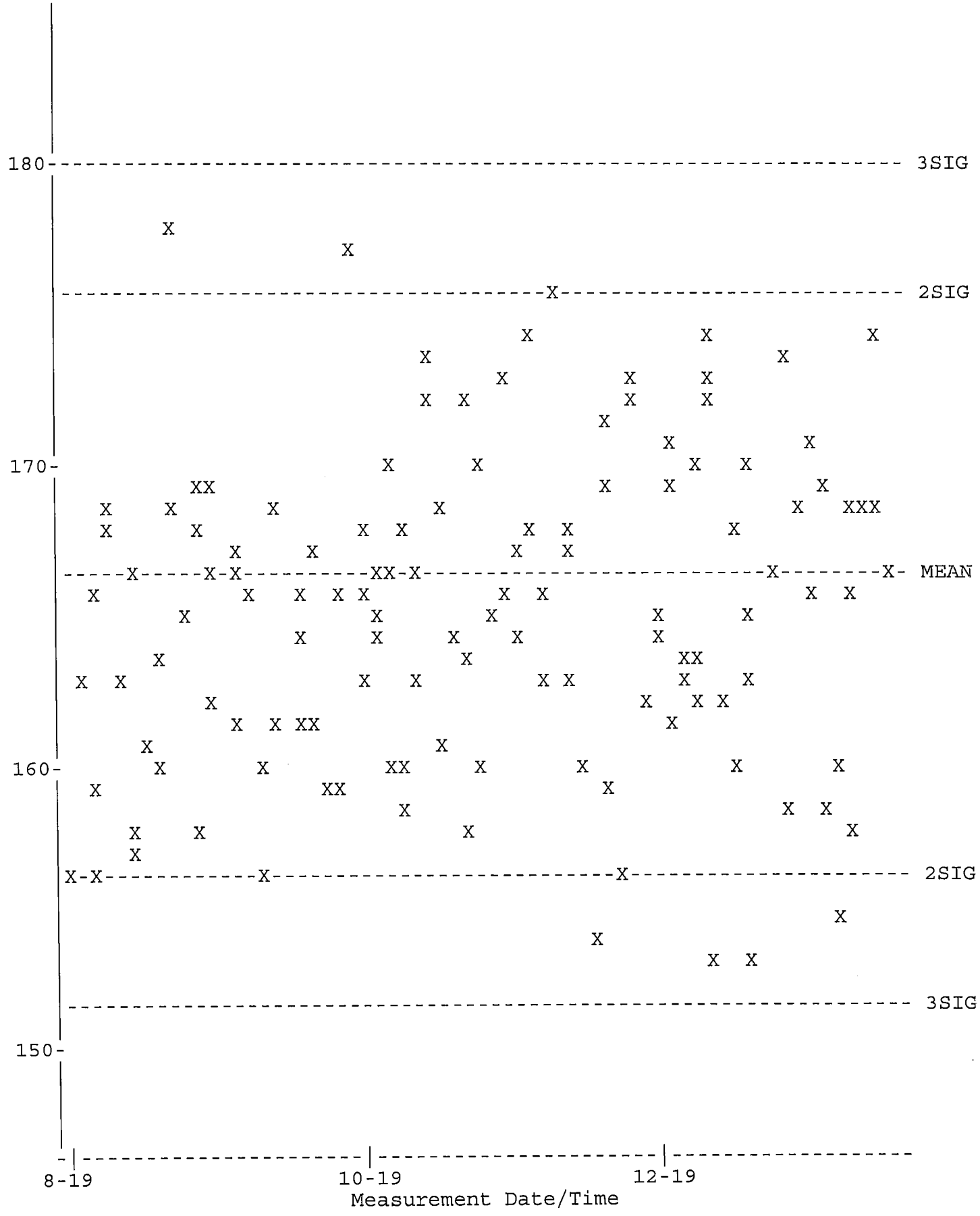
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



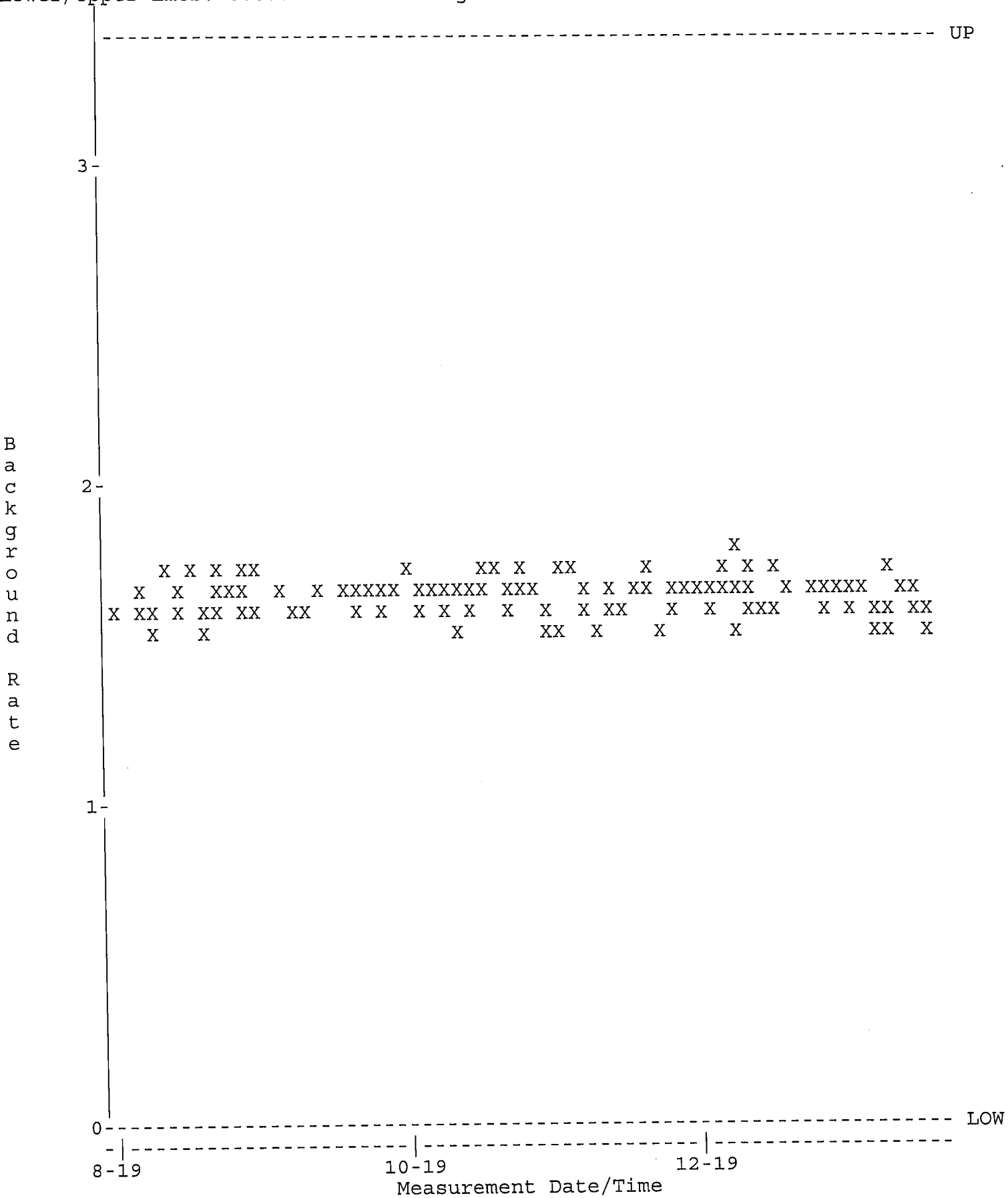
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



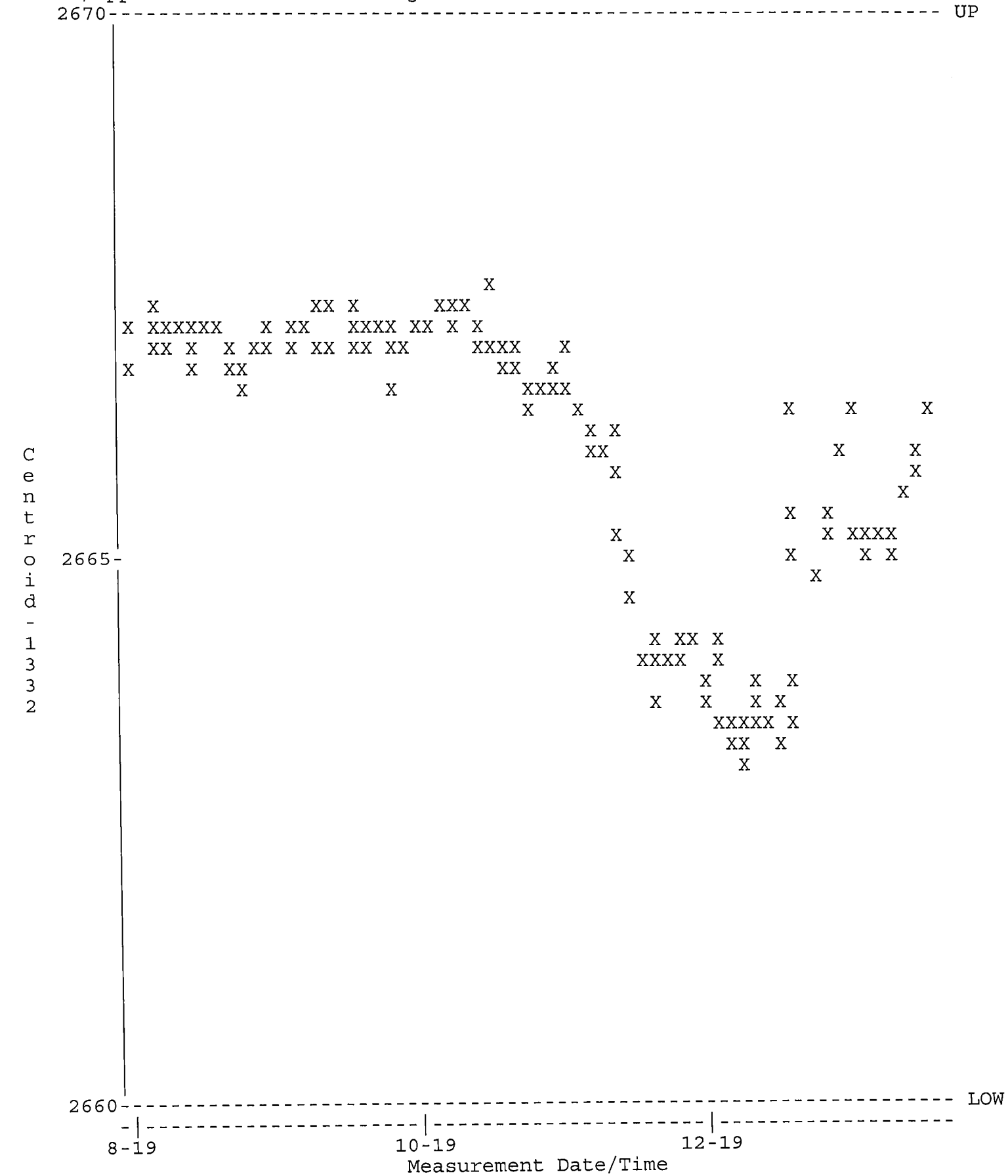
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



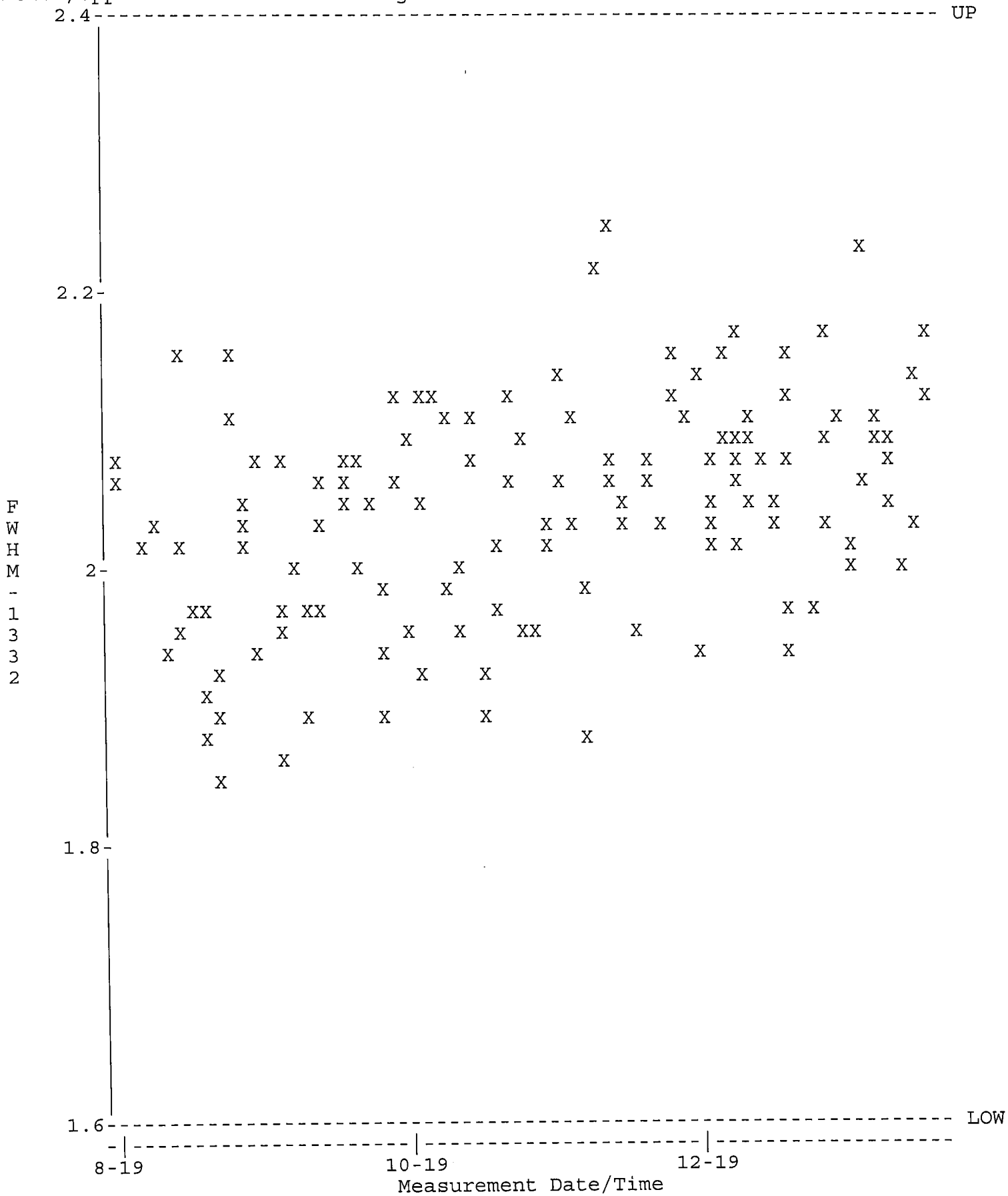
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



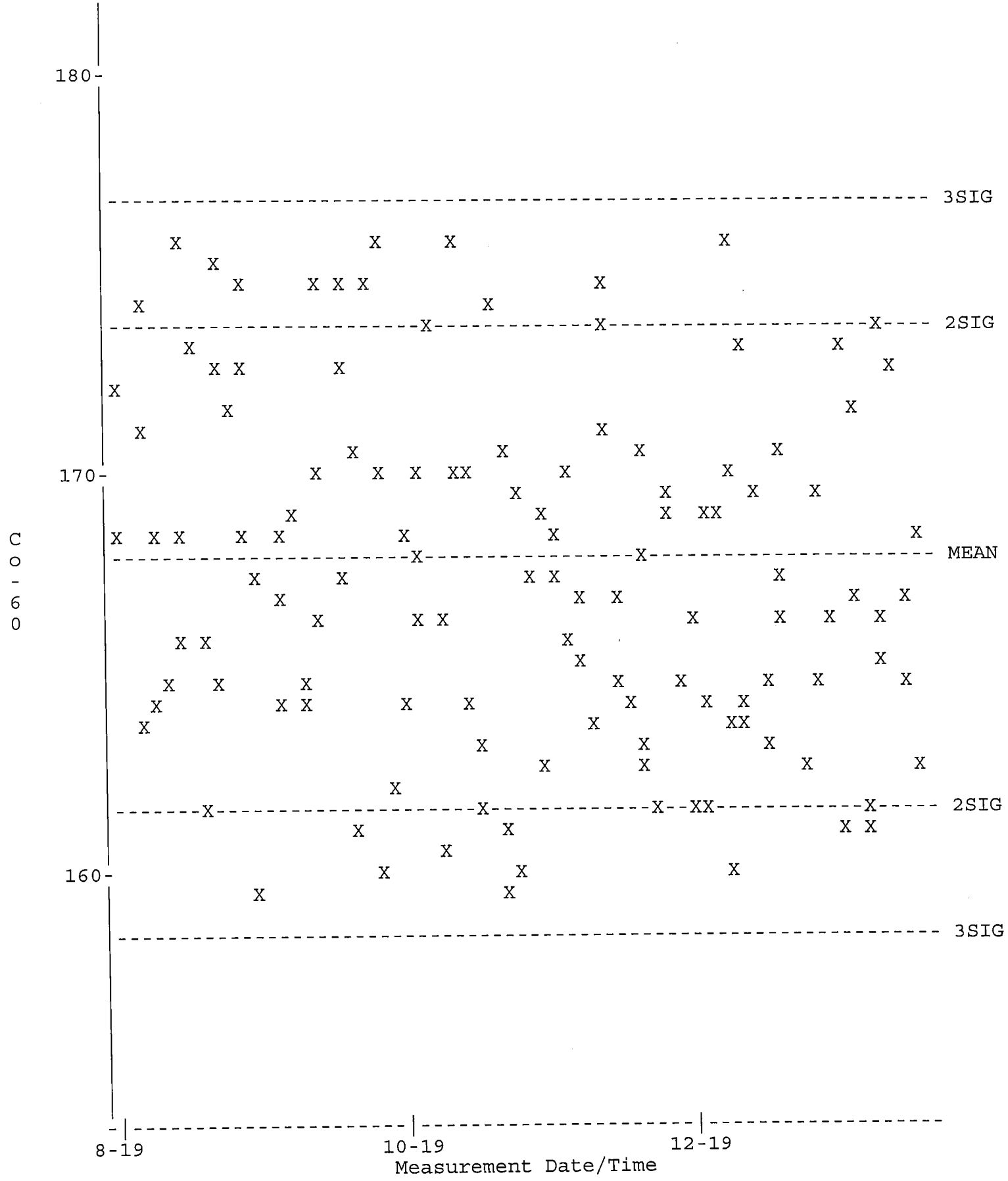
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



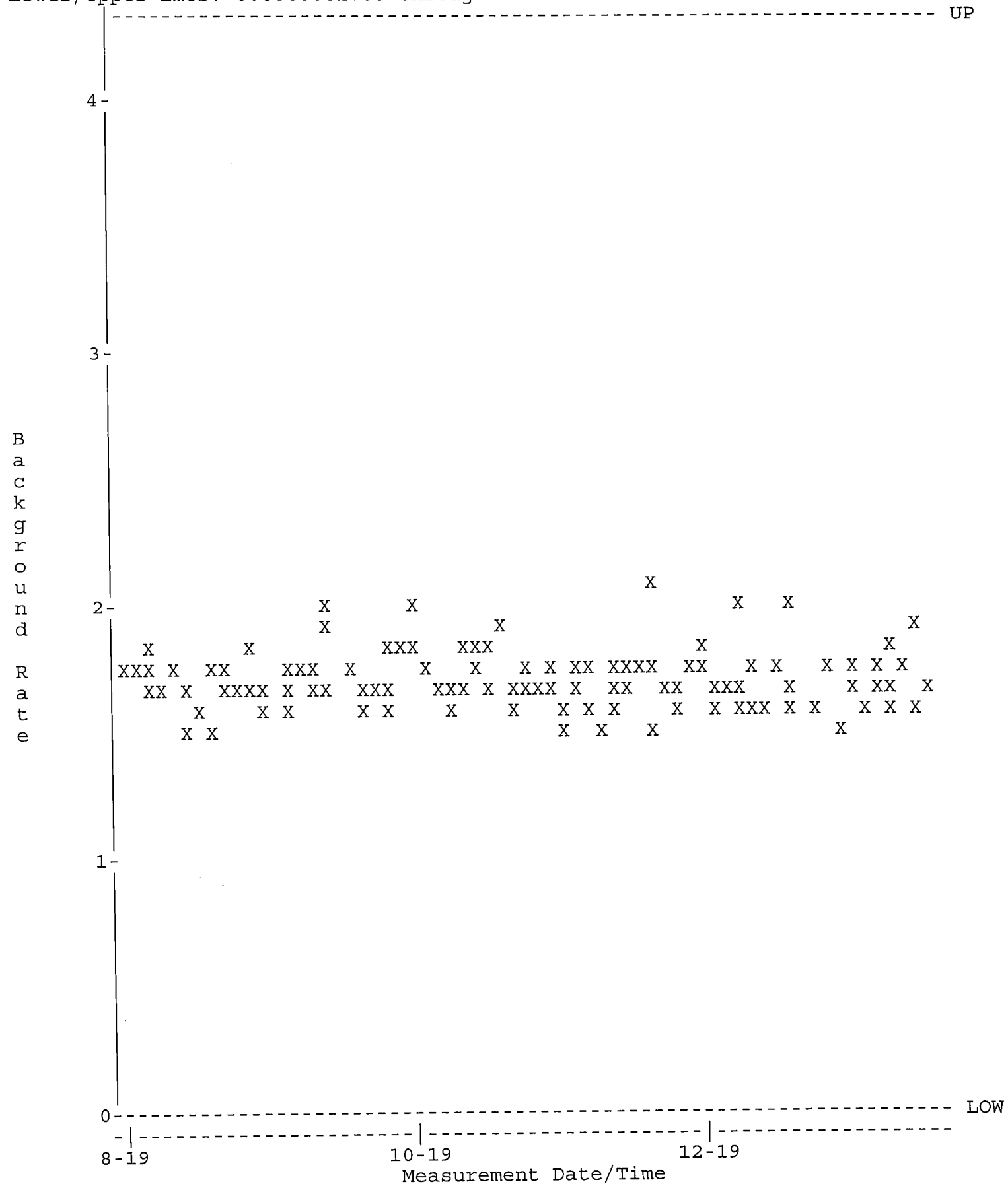
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 16:27:57.35
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 30-DEC-2019 15:15:44.52

LIMS No., Customer Name, Client ID: L85481-1 S TEXAS

Sample ID : 01L85481-1
Sample Type : S
Quantity : 1.43460E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:40:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:11:39.93
Live time : 0 01:11:39.17

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.81*	74	105	1.42	371.85	4.00E+00	1.72E-02	28.7	8.52E-01
2	1	238.45*	289	146	1.08	477.05	3.47E+00	6.73E-02	9.8	4.53E+00
3	1	295.12*	76	98	1.64	590.30	2.98E+00	1.76E-02	29.3	2.09E+00
4	1	338.28	66	43	1.17	676.56	2.68E+00	1.53E-02	20.3	3.56E+00
5	1	351.74*	170	44	1.26	703.46	2.60E+00	3.94E-02	11.4	1.80E+00
6	1	510.91*	51	34	2.40	1021.57	1.91E+00	1.18E-02	35.5	2.53E+00
7	1	582.78*	140	36	1.62	1165.21	1.71E+00	3.25E-02	12.5	1.56E+00
8	1	608.77*	98	58	1.38	1217.17	1.64E+00	2.27E-02	20.8	2.07E+00
9	1	910.79*	68	34	2.08	1820.82	1.15E+00	1.57E-02	23.4	1.75E+00
10	1	968.68	41	25	1.60	1936.54	1.09E+00	9.47E-03	27.1	2.27E+00
11	1	1460.22*	163	8	2.46	2919.13	7.73E-01	3.79E-02	8.9	5.17E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85481-1 Acquisition date : 30-DEC-2019 15:15:44

Total number of lines in spectrum	11	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85481-1 Acquisition date : 30-DEC-2019 15:15:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.81	74	105	1.42	371.85	367	9	1.72E-02	57.4	4.00E+00	
1	238.45	289	146	1.08	477.05	472	9	6.73E-02	19.6	3.47E+00	
1	295.12	76	98	1.64	590.30	586	12	1.76E-02	58.6	2.98E+00	
1	338.28	66	43	1.17	676.56	673	7	1.53E-02	40.7	2.68E+00	
1	351.74	170	44	1.26	703.46	698	11	3.94E-02	22.8	2.60E+00	
1	510.91	51	34	2.40	1021.57	1016	13	1.18E-02	71.0	1.91E+00	
1	582.78	140	36	1.62	1165.21	1159	13	3.25E-02	25.1	1.71E+00	
1	608.77	98	58	1.38	1217.17	1209	15	2.27E-02	41.7	1.64E+00	
1	910.79	68	34	2.08	1820.82	1815	17	1.57E-02	46.8	1.15E+00	
1	968.68	41	25	1.60	1936.54	1931	10	9.47E-03	54.1	1.09E+00	
1	1460.22	163	8	2.46	2919.13	2913	14	3.79E-02	17.9	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 11
Number of unidentified lines 11
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.255E-02		5.456E-02	9.548E-02	0.000E+00	0.236

```
A,01L85481-1      ,12/30/2019 16:27,12/06/2019 12:40,   1.435E+02,L85481-1 S TEX
B,01L85481-1      ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137  ,NO ,   2.255E-02,   5.456E-02,   9.548E-02,,    0.236
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:28:33.69
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:41.29

LIMS No., Customer Name, Client ID: L85481-2 S TEXAS

Sample ID : 07L85481-2
Sample Type : S
Quantity : 1.11420E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:42:00.0
Geometry : 07S100121819
BKGFILE : 07BG122719MT
Real Time : 0 01:08:20.37
Live time : 0 01:08:19.73

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	239.15*	196	163	1.30	477.65	2.89E+00	4.78E-02	15.0	2.01E+00
2	1	295.61*	88	82	2.23	590.53	2.50E+00	2.15E-02	24.8	6.95E-01
3	1	352.25*	127	78	1.45	703.75	2.20E+00	3.09E-02	17.6	1.50E+00
4	1	583.66*	104	20	2.17	1166.37	1.52E+00	2.54E-02	13.7	1.41E+00
5	1	609.82*	111	49	1.89	1218.66	1.47E+00	2.71E-02	16.8	1.02E+00
6	1	911.42*	49	33	2.31	1821.49	1.07E+00	1.19E-02	30.5	1.21E+00
7	1	1461.34*	116	4	3.02	2920.45	7.39E-01	2.82E-02	11.7	1.19E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85481-2 Acquisition date : 31-DEC-2019 09:19:41

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85481-2 Acquisition date : 31-DEC-2019 09:19:41

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	239.15	196	163	1.30	477.65	471	11	4.78E-02	29.9	2.89E+00	
1	295.61	88	82	2.23	590.53	585	13	2.15E-02	49.6	2.50E+00	
1	352.25	127	78	1.45	703.75	698	13	3.09E-02	35.1	2.20E+00	
1	583.66	104	20	2.17	1166.37	1160	13	2.54E-02	27.5	1.52E+00	
1	609.82	111	49	1.89	1218.66	1212	13	2.71E-02	33.5	1.47E+00	
1	911.42	49	33	2.31	1821.49	1813	15	1.19E-02	61.0	1.07E+00	
1	1461.34	116	4	3.02	2920.45	2913	17	2.82E-02	23.3	7.39E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.279E-02		7.539E-02	1.187E-01	0.000E+00	-0.276

```
A,07L85481-2       ,12/31/2019 10:28,12/06/2019 12:42,   1.114E+02,L85481-2 S TEX
B,07L85481-2       ,HUDSON              ,12/26/2019 10:37,07S100121819
C,CS-137  ,NO ,  -3.279E-02,   7.539E-02,   1.187E-01,,   -0.276
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:29:17.56
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:44.47

LIMS No., Customer Name, Client ID: L85481-3 S TEXAS

Sample ID : 13L85481-3
Sample Type : S
Quantity : 2.31820E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 6-DEC-2019 12:44:00.0
Geometry : 13FS082019
BKGFILE : 13BG122719MT
Real Time : 0 01:08:54.96
Live time : 0 01:08:53.54

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	74.84*	89	243	1.02	149.52	1.69E+00	2.16E-02	30.2	5.03E+00
2	1	77.27*	126	196	0.99	154.37	1.79E+00	3.04E-02	20.3	5.54E+00
3	1	186.07*	78	179	1.49	371.71	2.44E+00	1.90E-02	35.6	7.52E-01
4	1	238.52*	411	211	0.91	476.50	2.14E+00	9.94E-02	8.1	3.09E+00
5	1	241.68*	71	151	1.28	482.81	2.12E+00	1.72E-02	33.0	2.10E+00
6	1	295.09*	111	86	1.05	589.54	1.85E+00	2.69E-02	18.1	5.02E-01
7	1	338.71*	76	102	2.60	676.71	1.68E+00	1.84E-02	32.6	4.24E+00
8	1	351.85*	233	78	1.21	702.96	1.63E+00	5.65E-02	10.6	1.31E+00
9	1	510.91*	73	96	3.17	1020.88	1.22E+00	1.76E-02	39.4	1.02E+00
10	1	582.96*	129	56	1.77	1164.92	1.10E+00	3.12E-02	16.6	1.14E+00
11	1	609.23*	180	57	1.52	1217.44	1.07E+00	4.36E-02	12.1	1.62E+00
12	1	911.30*	87	40	1.91	1821.57	7.75E-01	2.11E-02	19.2	2.40E+00
13	1	968.78*	59	14	2.03	1936.56	7.39E-01	1.44E-02	18.0	7.15E-01
14	1	1120.52*	52	24	2.37	2240.21	6.59E-01	1.27E-02	25.8	2.13E+00
15	1	1460.70*	216	10	2.00	2921.21	5.40E-01	5.23E-02	8.6	1.01E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85481-3 Acquisition date : 31-DEC-2019 09:19:44

Total number of lines in spectrum	15	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85481-3 Acquisition date : 31-DEC-2019 09:19:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.84	89	243	1.02	149.52	147	6	2.16E-02	60.3	1.69E+00	
1	77.27	126	196	0.99	154.37	152	6	3.04E-02	40.5	1.79E+00	
1	186.07	78	179	1.49	371.71	368	10	1.90E-02	71.1	2.44E+00	
1	238.52	411	211	0.91	476.50	472	9	9.94E-02	16.1	2.14E+00	
1	241.68	71	151	1.28	482.81	481	8	1.72E-02	66.1	2.12E+00	
1	295.09	111	86	1.05	589.54	586	9	2.69E-02	36.1	1.85E+00	
1	338.71	76	102	2.60	676.71	670	15	1.84E-02	65.2	1.68E+00	
1	351.85	233	78	1.21	702.96	697	12	5.65E-02	21.1	1.63E+00	
1	510.91	73	96	3.17	1020.88	1013	20	1.76E-02	78.8	1.22E+00	
1	582.96	129	56	1.77	1164.92	1157	17	3.12E-02	33.2	1.10E+00	
1	609.23	180	57	1.52	1217.44	1212	13	4.36E-02	24.3	1.07E+00	
1	911.30	87	40	1.91	1821.57	1815	14	2.11E-02	38.3	7.75E-01	
1	968.78	59	14	2.03	1936.56	1932	10	1.44E-02	36.1	7.39E-01	
1	1120.52	52	24	2.37	2240.21	2231	16	1.27E-02	51.7	6.59E-01	
1	1460.70	216	10	2.00	2921.21	2911	21	5.23E-02	17.2	5.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 15
Number of unidentified lines 15
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.459E-02		6.434E-02	9.875E-02	0.000E+00	-0.249

A,13L85481-3 ,12/31/2019 10:29,12/06/2019 12:44, 2.318E+02,L85481-3 S TEX
B,13L85481-3 ,HUDSON ,12/27/2019 09:44,13FS082019
C,CS-137 ,NO , -2.459E-02, 6.434E-02, 9.875E-02,, -0.249

Analyst: hBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 20:48:27.81
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 31-DEC-2019 17:48:00.79

LIMS No., Customer Name, Client ID: L85481-4 S TEXAS

Sample ID : 13L85481-4
Sample Type : S
Quantity : 1.31630E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 6-DEC-2019 12:46:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 03:00:03.34
Live time : 0 03:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.85*	24	328	1.47	371.28	3.25E+00	2.21E-03	151.7	2.91E+00
2	1	238.56*	573	431	1.10	476.58	2.78E+00	5.30E-02	8.1	3.83E+00
3	1	295.30*	154	265	1.32	589.97	2.37E+00	1.43E-02	23.6	3.02E+00
4	1	338.08*	125	240	1.59	675.44	2.14E+00	1.16E-02	27.8	1.43E+00
5	1	351.82*	305	250	1.13	702.90	2.07E+00	2.82E-02	12.7	9.57E-01
6	1	510.84*	66	219	2.49	1020.74	1.54E+00	6.10E-03	60.1	1.18E+00
7	1	583.16*	213	120	1.43	1165.32	1.38E+00	1.97E-02	13.1	1.26E+00
8	1	609.07*	214	157	1.46	1217.12	1.34E+00	1.98E-02	14.8	2.44E+00
9	1	911.10*	130	85	1.88	1821.16	9.71E-01	1.21E-02	18.0	7.56E-01
10	1	968.91*	87	68	2.01	1936.83	9.25E-01	8.04E-03	22.8	1.29E+00
11	1	1120.30*	59	52	1.77	2239.76	8.24E-01	5.46E-03	30.7	1.64E+00
12	1	1460.53*	337	34	2.13	2920.87	6.66E-01	3.12E-02	7.4	2.19E+00
13	1	1764.36*	18	30	2.11	3529.48	5.74E-01	1.64E-03	81.9	1.06E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85481-4 Acquisition date : 31-DEC-2019 17:48:00

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85481-4 Acquisition date : 31-DEC-2019 17:48:00

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.85	24	328	1.47	371.28	367	9	2.21E-03	****	3.25E+00	
1	238.56	573	431	1.10	476.58	471	10	5.30E-02	16.2	2.78E+00	
1	295.30	154	265	1.32	589.97	584	12	1.43E-02	47.3	2.37E+00	
1	338.08	125	240	1.59	675.44	669	13	1.16E-02	55.6	2.14E+00	
1	351.82	305	250	1.13	702.90	696	13	2.82E-02	25.5	2.07E+00	
1	510.84	66	219	2.49	1020.74	1014	16	6.10E-03	****	1.54E+00	
1	583.16	213	120	1.43	1165.32	1158	13	1.97E-02	26.3	1.38E+00	
1	609.07	214	157	1.46	1217.12	1211	13	1.98E-02	29.7	1.34E+00	
1	911.10	130	85	1.88	1821.16	1815	14	1.21E-02	35.9	9.71E-01	
1	968.91	87	68	2.01	1936.83	1931	12	8.04E-03	45.7	9.25E-01	
1	1120.30	59	52	1.77	2239.76	2231	14	5.46E-03	61.3	8.24E-01	
1	1460.53	337	34	2.13	2920.87	2915	14	3.12E-02	14.8	6.66E-01	
1	1764.36	18	30	2.11	3529.48	3521	17	1.64E-03	****	5.74E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.259E-02		4.441E-02	7.308E-02	0.000E+00	0.172

```
A,13L85481-4       ,12/31/2019 20:48,12/06/2019 12:46,   1.316E+02,L85481-4 S TEX
B,13L85481-4       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137  ,NO ,    1.259E-02,   4.441E-02,   7.308E-02,,    0.172
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 20:48:24.82
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 31-DEC-2019 17:48:04.08

LIMS No., Customer Name, Client ID: L85481-5 S TEXAS

Sample ID : 15L85481-5
Sample Type : S
Quantity : 1.34250E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:48:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 03:00:01.34
Live time : 0 03:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	238.61*	674	193	1.12	472.72	3.18E+00	6.24E-02	5.2	1.72E+00
2	3	241.56*	121	237	1.53	478.64	3.15E+00	1.12E-02	27.2	
3	1	295.17*	200	203	1.20	586.10	2.67E+00	1.86E-02	16.4	1.95E+00
4	1	338.28	112	151	1.36	672.53	2.37E+00	1.04E-02	22.2	1.32E+00
5	1	351.99*	305	153	1.24	700.00	2.28E+00	2.82E-02	10.0	3.34E+00
6	1	511.25*	45	180	2.43	1019.25	1.60E+00	4.21E-03	80.8	2.55E+00
7	1	583.47*	188	83	1.83	1164.03	1.41E+00	1.74E-02	12.6	4.89E+00
8	1	609.42*	202	103	1.74	1216.04	1.35E+00	1.87E-02	13.5	2.47E+00
9	1	911.13*	140	35	1.64	1820.83	9.28E-01	1.30E-02	11.9	1.59E+00
10	1	969.05	61	51	1.55	1936.93	8.78E-01	5.60E-03	27.7	1.24E+00
11	1	1120.20*	53	44	2.31	2239.90	7.70E-01	4.90E-03	33.8	6.27E-01
12	1	1461.06*	338	18	2.25	2923.12	6.13E-01	3.13E-02	6.7	1.33E+00
13	1	1764.49*	40	10	2.78	3531.30	5.27E-01	3.70E-03	26.1	9.82E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85481-5 Acquisition date : 31-DEC-2019 17:48:04

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85481-5 Acquisition date : 31-DEC-2019 17:48:04

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	238.61	674	193	1.12	472.72	468	16	6.24E-02	10.5	3.18E+00	
3	241.56	121	237	1.53	478.64	468	16	1.12E-02	54.3	3.15E+00	
1	295.17	200	203	1.20	586.10	580	12	1.86E-02	32.7	2.67E+00	
1	338.28	112	151	1.36	672.53	668	9	1.04E-02	44.4	2.37E+00	
1	351.99	305	153	1.24	700.00	695	10	2.82E-02	19.9	2.28E+00	
1	511.25	45	180	2.43	1019.25	1013	17	4.21E-03	****	1.60E+00	
1	583.47	188	83	1.83	1164.03	1159	11	1.74E-02	25.1	1.41E+00	
1	609.42	202	103	1.74	1216.04	1210	14	1.87E-02	27.0	1.35E+00	
1	911.13	140	35	1.64	1820.83	1816	10	1.30E-02	23.9	9.28E-01	
1	969.05	61	51	1.55	1936.93	1933	12	5.60E-03	55.4	8.78E-01	
1	1120.20	53	44	2.31	2239.90	2230	17	4.90E-03	67.7	7.70E-01	
1	1461.06	338	18	2.25	2923.12	2914	21	3.13E-02	13.5	6.13E-01	
1	1764.49	40	10	2.78	3531.30	3524	14	3.70E-03	52.1	5.27E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.237E-02		4.300E-02	6.646E-02	0.000E+00	-0.487

```
A,15L85481-5       ,12/31/2019 20:48,12/06/2019 12:48,   1.343E+02,L85481-5 S TEX
B,15L85481-5       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137   ,NO ,   -3.237E-02,   4.300E-02,   6.646E-02,,   -0.487
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:29:44.78
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:45.76

LIMS No., Customer Name, Client ID: L85481-6 S TEXAS

Sample ID : 15L85481-6
Sample Type : S
Quantity : 2.62750E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:50:00.0
Geometry : 15FS082219
BKGFILE : 15BG122719MT
Real Time : 0 01:09:31.57
Live time : 0 01:09:30.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	74.72*	163	196	1.15	144.18	1.81E+00	3.91E-02	17.1	3.70E+00
2	1	77.02	195	187	1.15	148.79	1.93E+00	4.68E-02	14.8	
3	1	186.04*	92	164	1.67	367.34	2.85E+00	2.20E-02	28.9	1.11E+00
4	3	238.64*	521	114	1.12	472.78	2.43E+00	1.25E-01	5.5	1.63E+00
5	3	241.76*	129	106	1.71	479.03	2.41E+00	3.09E-02	20.9	
6	1	295.25*	129	70	1.29	586.26	2.06E+00	3.08E-02	14.9	2.15E+00
7	1	338.32	78	118	1.33	672.60	1.84E+00	1.86E-02	31.1	1.64E+00
8	1	351.85*	262	105	1.28	699.73	1.78E+00	6.28E-02	10.8	1.42E+00
9	1	510.63*	14	66	2.01	1018.01	1.29E+00	3.42E-03	141.1	1.26E+00
10	1	583.33*	146	47	1.61	1163.74	1.15E+00	3.49E-02	12.8	1.57E+00
11	1	609.31*	180	30	1.61	1215.83	1.10E+00	4.31E-02	9.9	1.45E+00
12	1	911.39*	76	41	1.79	1821.34	7.69E-01	1.82E-02	22.2	3.08E+00
13	1	969.34	63	23	2.19	1937.51	7.27E-01	1.50E-02	22.1	9.12E-01
14	1	1461.01*	237	4	2.26	2923.02	5.06E-01	5.68E-02	7.0	6.87E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85481-6 Acquisition date : 31-DEC-2019 09:19:45

Total number of lines in spectrum	14	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85481-6 Acquisition date : 31-DEC-2019 09:19:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.72	163	196	1.15	144.18	137	19	3.91E-02	34.3	1.81E+00	
1	77.02	195	187	1.15	148.79	137	19	4.68E-02	29.5	1.93E+00	
1	186.04	92	164	1.67	367.34	363	10	2.20E-02	57.7	2.85E+00	
3	238.64	521	114	1.12	472.78	468	21	1.25E-01	11.0	2.43E+00	
3	241.76	129	106	1.71	479.03	468	21	3.09E-02	41.8	2.41E+00	
1	295.25	129	70	1.29	586.26	583	8	3.08E-02	29.8	2.06E+00	
1	338.32	78	118	1.33	672.60	667	13	1.86E-02	62.1	1.84E+00	
1	351.85	262	105	1.28	699.73	693	15	6.28E-02	21.6	1.78E+00	
1	510.63	14	66	2.01	1018.01	1012	13	3.42E-03	****	1.29E+00	
1	583.33	146	47	1.61	1163.74	1156	13	3.49E-02	25.6	1.15E+00	
1	609.31	180	30	1.61	1215.83	1210	11	4.31E-02	19.9	1.10E+00	
1	911.39	76	41	1.79	1821.34	1814	17	1.82E-02	44.4	7.69E-01	
1	969.34	63	23	2.19	1937.51	1932	14	1.50E-02	44.2	7.27E-01	
1	1461.01	237	4	2.26	2923.02	2916	15	5.68E-02	13.9	5.06E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 14
Number of unidentified lines 14
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.603E-02		4.759E-02	8.151E-02	0.000E+00	0.197

```
A,15L85481-6       ,12/31/2019 10:29,12/06/2019 12:50,   2.628E+02,L85481-6 S TEX
B,15L85481-6       ,HUDSON              ,12/27/2019 10:10,15FS082219
C,CS-137  ,NO ,    1.603E-02,   4.759E-02,   8.151E-02,,     0.197
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:31:18.24
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:46.34

LIMS No., Customer Name, Client ID: L85481-7 S TEXAS

Sample ID : 14L85481-7
Sample Type : S
Quantity : 2.78680E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:52:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:11:01.31
Live time : 0 01:11:00.03

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	74.85*	133	202	0.90	146.94	2.00E+00	3.12E-02	17.5	3.82E+00
2	2	77.01	253	186	0.96	151.27	2.10E+00	5.93E-02	10.9	
3	1	186.00*	65	226	1.76	369.29	2.64E+00	1.53E-02	50.4	2.14E+00
4	1	238.57*	510	163	0.93	474.44	2.24E+00	1.20E-01	5.9	9.80E+00
5	1	295.14*	159	66	1.17	587.62	1.89E+00	3.74E-02	12.4	3.63E-01
6	1	338.37	95	133	1.60	674.11	1.69E+00	2.22E-02	28.3	2.38E+00
7	1	351.82*	251	93	1.29	701.01	1.63E+00	5.89E-02	10.2	1.97E+00
8	1	510.88*	57	75	3.00	1019.26	1.17E+00	1.33E-02	44.2	2.41E+00
9	1	583.09	199	39	1.41	1163.73	1.03E+00	4.66E-02	9.7	1.08E+00
10	1	609.46*	201	42	1.57	1216.49	9.94E-01	4.73E-02	10.2	1.26E+00
11	1	911.63	102	26	2.40	1821.19	6.94E-01	2.39E-02	14.8	1.99E+00
12	1	1120.66	38	16	1.56	2239.58	5.79E-01	9.03E-03	27.1	4.35E-01
13	1	1461.16*	238	18	1.89	2921.22	4.61E-01	5.58E-02	7.9	9.38E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85481-7 Acquisition date : 31-DEC-2019 09:19:46

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85481-7 Acquisition date : 31-DEC-2019 09:19:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.85	133	202	0.90	146.94	143	14	3.12E-02	35.1	2.00E+00	
2	77.01	253	186	0.96	151.27	143	14	5.93E-02	21.8	2.10E+00	
1	186.00	65	226	1.76	369.29	362	13	1.53E-02	****	2.64E+00	
1	238.57	510	163	0.93	474.44	470	8	1.20E-01	11.8	2.24E+00	
1	295.14	159	66	1.17	587.62	584	9	3.74E-02	24.8	1.89E+00	
1	338.37	95	133	1.60	674.11	668	15	2.22E-02	56.6	1.69E+00	
1	351.82	251	93	1.29	701.01	695	12	5.89E-02	20.5	1.63E+00	
1	510.88	57	75	3.00	1019.26	1012	19	1.33E-02	88.4	1.17E+00	
1	583.09	199	39	1.41	1163.73	1157	14	4.66E-02	19.5	1.03E+00	
1	609.46	201	42	1.57	1216.49	1209	14	4.73E-02	20.4	9.94E-01	
1	911.63	102	26	2.40	1821.19	1814	15	2.39E-02	29.6	6.94E-01	
1	1120.66	38	16	1.56	2239.58	2233	13	9.03E-03	54.2	5.79E-01	
1	1461.16	238	18	1.89	2921.22	2911	17	5.58E-02	15.7	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-8.438E-03		5.179E-02	8.210E-02	0.000E+00	-0.103

```
A,14L85481-7       ,12/31/2019 10:31,12/06/2019 12:52,   2.787E+02,L85481-7 S TEX
B,14L85481-7       ,HUDSON              ,12/30/2019 12:20,14FS092319
C,CS-137   ,NO ,   -8.438E-03,   5.179E-02,   8.210E-02,,   -0.103
```

Analyst: MBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:31:50.53
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 31-DEC-2019 09:19:48.66

LIMS No., Customer Name, Client ID: L85481-8 S TEXAS

Sample ID : 08L85481-8
Sample Type : S
Quantity : 2.80350E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:54:00.0
Geometry : 08FS082119
BKGFILE : 08BG122719MT
Real Time : 0 01:11:33.12
Live time : 0 01:11:31.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	77.24	101	295	1.23	162.08	1.61E+00	2.34E-02	32.3	7.64E+00
2	1	185.96*	122	197	1.97	379.06	2.38E+00	2.83E-02	26.1	8.35E-01
3	2	238.64*	415	109	1.21	484.18	2.07E+00	9.67E-02	6.6	1.55E+00
4	2	241.76	109	155	1.68	490.42	2.06E+00	2.53E-02	26.1	
5	1	295.38*	107	117	1.73	597.43	1.78E+00	2.49E-02	22.5	1.70E+00
6	1	338.33	70	131	1.39	683.12	1.59E+00	1.64E-02	33.5	7.93E-01
7	1	351.83*	248	98	1.20	710.07	1.54E+00	5.78E-02	10.6	1.85E+00
8	1	511.39*	41	71	2.96	1028.47	1.12E+00	9.51E-03	59.2	3.02E+00
9	1	583.30*	121	86	1.61	1171.97	1.00E+00	2.82E-02	19.8	1.64E+00
10	1	609.38*	174	43	1.48	1224.00	9.64E-01	4.05E-02	11.1	9.23E-01
11	1	911.34*	95	24	1.90	1826.50	6.91E-01	2.21E-02	15.5	1.48E+00
12	1	969.20*	69	14	2.31	1941.94	6.58E-01	1.61E-02	16.8	1.19E+00
13	1	1120.64*	34	26	1.28	2244.08	5.87E-01	7.90E-03	40.7	1.66E+00
14	1	1460.90*	217	7	2.13	2922.90	4.77E-01	5.07E-02	7.8	1.40E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85481-8 Acquisition date : 31-DEC-2019 09:19:48

Total number of lines in spectrum	14	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85481-8 Acquisition date : 31-DEC-2019 09:19:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	77.24	101	295	1.23	162.08	159	8	2.34E-02	64.6	1.61E+00	
1	185.96	122	197	1.97	379.06	372	13	2.83E-02	52.2	2.38E+00	
2	238.64	415	109	1.21	484.18	477	19	9.67E-02	13.1	2.07E+00	
2	241.76	109	155	1.68	490.42	477	19	2.53E-02	52.2	2.06E+00	
1	295.38	107	117	1.73	597.43	592	11	2.49E-02	45.1	1.78E+00	
1	338.33	70	131	1.39	683.12	678	11	1.64E-02	66.9	1.59E+00	
1	351.83	248	98	1.20	710.07	705	12	5.78E-02	21.1	1.54E+00	
1	511.39	41	71	2.96	1028.47	1020	18	9.51E-03	****	1.12E+00	
1	583.30	121	86	1.61	1171.97	1165	16	2.82E-02	39.5	1.00E+00	
1	609.38	174	43	1.48	1224.00	1219	11	4.05E-02	22.1	9.64E-01	
1	911.34	95	24	1.90	1826.50	1820	15	2.21E-02	31.1	6.91E-01	
1	969.20	69	14	2.31	1941.94	1937	11	1.61E-02	33.6	6.58E-01	
1	1120.64	34	26	1.28	2244.08	2239	15	7.90E-03	81.5	5.87E-01	
1	1460.90	217	7	2.13	2922.90	2917	13	5.07E-02	15.5	4.77E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 14
Number of unidentified lines 14
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.910E-02		5.404E-02	9.400E-02	0.000E+00	0.310

```
A,08L85481-8       ,12/31/2019 10:31,12/06/2019 12:54,   2.804E+02,L85481-8 S TEX
B,08L85481-8       ,HUDSON              ,12/26/2019 12:50,08FS082119
C,CS-137  ,NO ,   2.910E-02,   5.404E-02,   9.400E-02,,    0.310
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:32:23.59
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:50.52

LIMS No., Customer Name, Client ID: L85481-9 S TEXAS

Sample ID : 02L85481-9
Sample Type : S
Quantity : 3.03220E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 12:56:00.0
Geometry : 02FS101619
BKGFILE : 02BG122719MT
Real Time : 0 01:12:02.55
Live time : 0 01:12:01.60

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	74.96*	110	199	0.86	134.79	2.36E+00	2.55E-02	21.0	2.81E+00
2	2	77.10	184	163	0.83	139.09	2.44E+00	4.25E-02	12.9	
3	0	238.56*	310	147	1.01	464.32	2.29E+00	7.17E-02	8.6	
4	0	295.41*	136	65	1.03	578.82	1.94E+00	3.15E-02	13.8	
5	0	338.64	62	89	1.11	665.92	1.74E+00	1.44E-02	30.6	
6	0	351.97*	254	84	1.12	692.77	1.68E+00	5.87E-02	9.6	
7	0	510.92*	76	46	1.81	1012.98	1.22E+00	1.75E-02	27.3	
8	0	583.39*	123	47	1.34	1158.97	1.09E+00	2.85E-02	14.6	
9	0	609.58*	161	66	1.56	1211.74	1.05E+00	3.73E-02	14.1	
10	0	911.31*	81	15	2.18	1819.68	7.44E-01	1.86E-02	15.5	
11	0	969.24	66	15	1.26	1936.40	7.06E-01	1.52E-02	17.6	
12	0	1120.05*	44	8	1.59	2240.29	6.24E-01	1.03E-02	20.6	
13	0	1460.61*	203	4	1.76	2926.59	4.98E-01	4.69E-02	7.6	
14	0	1764.57*	39	0	1.67	3539.24	4.26E-01	8.92E-03	17.8	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85481-9 Acquisition date : 31-DEC-2019 09:19:50

Total number of lines in spectrum	14	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.96	110	199	0.86	134.79	131	19	2.55E-02	42.0	2.36E+00	
2	77.10	184	163	0.83	139.09	131	19	4.25E-02	25.8	2.44E+00	
0	238.56	310	147	1.01	464.32	460	8	7.17E-02	17.3	2.29E+00	
0	295.41	136	65	1.03	578.82	575	8	3.15E-02	27.6	1.94E+00	
0	338.64	62	89	1.11	665.92	663	10	1.44E-02	61.2	1.74E+00	
0	351.97	254	84	1.12	692.77	688	11	5.87E-02	19.1	1.68E+00	
0	510.92	76	46	1.81	1012.98	1007	16	1.75E-02	54.6	1.22E+00	
0	583.39	123	47	1.34	1158.97	1154	13	2.85E-02	29.3	1.09E+00	
0	609.58	161	66	1.56	1211.74	1206	15	3.73E-02	28.2	1.05E+00	
0	911.31	81	15	2.18	1819.68	1814	13	1.86E-02	30.9	7.44E-01	
0	969.24	66	15	1.26	1936.40	1930	13	1.52E-02	35.2	7.06E-01	
0	1120.05	44	8	1.59	2240.29	2235	14	1.03E-02	41.3	6.24E-01	
0	1460.61	203	4	1.76	2926.59	2918	17	4.69E-02	15.3	4.98E-01	
0	1764.57	39	0	1.67	3539.24	3532	15	8.92E-03	35.5	4.26E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 14
Number of unidentified lines 14
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	4.826E-03		3.920E-02	6.385E-02	0.000E+00	0.076

```
A,02L85481-9       ,12/31/2019 10:32,12/06/2019 12:56,   3.032E+02,L85481-9 S TEX
B,02L85481-9       ,HUDSON              ,12/27/2019 09:41,02FS101619
C,CS-137  ,NO ,    4.826E-03,   3.920E-02,   6.385E-02,,    0.076
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 17:35:09.19
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 31-DEC-2019 16:05:04.97

LIMS No., Customer Name, Client ID: L85481-10 S TEXAS

Sample ID : 15L85481-10 Smple Date: 6-DEC-2019 12:58:00.0
Sample Type : S Geometry : 15FS082219
Quantity : 3.26270E+02 g Dry BKGFILE : 15BG122719MT
Start Channel : 190 Energy Tol : 2.00000 Real Time : 0 01:29:55.86
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 01:29:54.94
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

2

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.62*	109	181	1.71	366.50	2.85E+00	2.03E-02	25.0	3.54E+00
2	1	238.56*	587	319	1.17	472.62	2.43E+00	1.09E-01	7.5	9.06E-01
3	1	295.21*	175	135	1.17	586.18	2.06E+00	3.25E-02	14.8	3.43E+00
4	1	338.50	132	129	1.41	672.96	1.84E+00	2.44E-02	20.5	2.43E+00
5	1	351.86*	300	103	1.32	699.75	1.78E+00	5.56E-02	9.2	1.10E+00
6	1	583.15*	210	60	1.46	1163.38	1.15E+00	3.89E-02	10.8	8.77E-01
7	1	609.42*	238	65	1.47	1216.04	1.10E+00	4.41E-02	9.8	6.93E-01
8	1	911.13*	147	35	2.19	1820.83	7.69E-01	2.72E-02	12.6	1.04E+00
9	1	1120.50*	48	35	2.62	2240.51	6.38E-01	8.98E-03	29.7	4.58E+00
10	1	1460.90*	279	13	2.22	2922.80	5.06E-01	5.17E-02	7.0	5.26E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85481-10 Acquisition date : 31-DEC-2019 16:05:04

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85481-10 Acquisition date : 31-DEC-2019 16:05:04

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.62	109	181	1.71	366.50	362	9	2.03E-02	50.0	2.85E+00	
1	238.56	587	319	1.17	472.62	465	12	1.09E-01	14.9	2.43E+00	
1	295.21	175	135	1.17	586.18	581	10	3.25E-02	29.6	2.06E+00	
1	338.50	132	129	1.41	672.96	666	14	2.44E-02	41.0	1.84E+00	
1	351.86	300	103	1.32	699.75	693	12	5.56E-02	18.5	1.78E+00	
1	583.15	210	60	1.46	1163.38	1155	15	3.89E-02	21.6	1.15E+00	
1	609.42	238	65	1.47	1216.04	1211	12	4.41E-02	19.5	1.10E+00	
1	911.13	147	35	2.19	1820.83	1814	18	2.72E-02	25.1	7.69E-01	
1	1120.50	48	35	2.62	2240.51	2234	13	8.98E-03	59.3	6.38E-01	
1	1460.90	279	13	2.22	2922.80	2913	18	5.17E-02	13.9	5.06E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-7.342E-03		3.240E-02	5.209E-02	0.000E+00	-0.141

```
A,15L85481-10      ,12/31/2019 17:35,12/06/2019 12:58,   3.263E+02,L85481-10 S TE
B,15L85481-10      ,HUDSON              ,12/27/2019 10:10,15FS082219
C,CS-137   ,NO ,   -7.342E-03,   3.240E-02,   5.209E-02,,   -0.141
```

Analyst: KBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 17:35:46.02
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 31-DEC-2019 16:05:07.36

LIMS No., Customer Name, Client ID: L85481-11 S TEXAS

Sample ID : 08L85481-11
Sample Type : S
Quantity : 3.39540E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 13:00:00.0
Geometry : 08FS082119
BKGFILE : 08BG122719MT
Real Time : 0 01:30:32.84
Live time : 0 01:30:31.33

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.80*	93	309	1.28	378.74	2.38E+00	1.71E-02	39.9	1.85E+00
2	1	238.26*	549	449	1.12	483.44	2.08E+00	1.01E-01	9.0	2.14E+00
3	1	294.65*	142	182	2.06	595.96	1.78E+00	2.62E-02	22.3	1.88E+00
4	1	337.61	124	147	1.99	681.70	1.59E+00	2.29E-02	22.8	2.14E+00
5	1	351.54*	290	141	1.37	709.50	1.54E+00	5.34E-02	10.3	1.01E+00
6	1	510.33*	65	78	2.67	1026.36	1.12E+00	1.19E-02	36.8	1.23E+00
7	1	582.79*	197	102	1.64	1170.94	1.00E+00	3.63E-02	13.4	9.87E-01
8	1	608.98*	200	88	1.67	1223.20	9.65E-01	3.68E-02	13.1	1.30E+00
9	1	910.85*	154	40	2.20	1825.52	6.92E-01	2.84E-02	12.6	1.73E+00
10	1	968.49*	85	22	1.93	1940.52	6.58E-01	1.56E-02	15.5	7.54E-01
11	1	1119.59*	42	48	1.92	2241.99	5.87E-01	7.72E-03	41.0	5.53E-01
12	1	1460.37*	296	30	1.90	2921.85	4.77E-01	5.45E-02	7.6	6.63E-01
13	1	1763.96*	38	2	2.02	3527.44	4.11E-01	6.93E-03	20.2	8.61E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85481-11 Acquisition date : 31-DEC-2019 16:05:07

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.80	93	309	1.28	378.74	373	12	1.71E-02	79.8	2.38E+00	
1	238.26	549	449	1.12	483.44	478	13	1.01E-01	18.1	2.08E+00	
1	294.65	142	182	2.06	595.96	589	14	2.62E-02	44.6	1.78E+00	
1	337.61	124	147	1.99	681.70	675	14	2.29E-02	45.6	1.59E+00	
1	351.54	290	141	1.37	709.50	704	12	5.34E-02	20.6	1.54E+00	
1	510.33	65	78	2.67	1026.36	1020	14	1.19E-02	73.6	1.12E+00	
1	582.79	197	102	1.64	1170.94	1165	15	3.63E-02	26.8	1.00E+00	
1	608.98	200	88	1.67	1223.20	1215	16	3.68E-02	26.3	9.65E-01	
1	910.85	154	40	2.20	1825.52	1818	16	2.84E-02	25.2	6.92E-01	
1	968.49	85	22	1.93	1940.52	1936	10	1.56E-02	30.9	6.58E-01	
1	1119.59	42	48	1.92	2241.99	2234	16	7.72E-03	82.0	5.87E-01	
1	1460.37	296	30	1.90	2921.85	2911	19	5.45E-02	15.2	4.77E-01	
1	1763.96	38	2	2.02	3527.44	3521	11	6.93E-03	40.3	4.11E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.826E-02		4.086E-02	6.432E-02	0.000E+00	-0.284

```
A,08L85481-11      ,12/31/2019 17:35,12/06/2019 13:00,   3.395E+02,L85481-11 S TE
B,08L85481-11      ,HUDSON              ,12/26/2019 12:50,08FS082119
C,CS-137   ,NO ,   -1.826E-02,   4.086E-02,   6.432E-02,,   -0.284
```

Analyst: YHA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:49:33.65
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 2-JAN-2020 12:40:59.91

LIMS No., Customer Name, Client ID: WG32723-1 S TEXAS

Sample ID : 08WG32723-1
Sample Type : S
Quantity : 3.40650E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 12:30:00.0
Geometry : 08FS082119
BKGFILE : 08BG122719MT
Real Time : 0 01:08:28.71
Live time : 0 01:08:27.66

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.71*	288	255	1.25	484.32	2.07E+00	7.02E-02	13.1	2.95E+00
2	1	295.84*	124	109	1.86	598.33	1.77E+00	3.02E-02	20.4	6.53E+00
3	1	338.29	83	84	1.97	683.04	1.59E+00	2.03E-02	28.0	2.51E+00
4	1	352.02*	203	102	1.67	710.44	1.54E+00	4.95E-02	12.9	1.08E+00
5	1	510.95*	20	91	2.43	1027.58	1.12E+00	4.94E-03	126.9	1.84E+00
6	1	583.20*	121	60	2.25	1171.75	1.00E+00	2.94E-02	17.9	1.06E+00
7	1	609.54*	161	74	1.42	1224.33	9.64E-01	3.93E-02	14.4	7.82E-01
8	1	911.39*	79	20	1.99	1826.60	6.91E-01	1.91E-02	17.3	6.11E-01
9	1	969.12*	37	18	1.62	1941.78	6.58E-01	9.04E-03	29.7	8.71E-01
10	1	1460.82*	201	0	2.03	2922.73	4.77E-01	4.89E-02	7.7	7.04E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 08WG32723-1 Acquisition date : 2-JAN-2020 12:40:59

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08WG32723-1 Acquisition date : 2-JAN-2020 12:40:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.71	288	255	1.25	484.32	479	13	7.02E-02	26.2	2.07E+00	
1	295.84	124	109	1.86	598.33	592	13	3.02E-02	40.8	1.77E+00	
1	338.29	83	84	1.97	683.04	675	16	2.03E-02	56.0	1.59E+00	
1	352.02	203	102	1.67	710.44	703	14	4.95E-02	25.8	1.54E+00	
1	510.95	20	91	2.43	1027.58	1019	19	4.94E-03	****	1.12E+00	
1	583.20	121	60	2.25	1171.75	1164	18	2.94E-02	35.9	1.00E+00	
1	609.54	161	74	1.42	1224.33	1218	15	3.93E-02	28.8	9.64E-01	
1	911.39	79	20	1.99	1826.60	1820	14	1.91E-02	34.7	6.91E-01	
1	969.12	37	18	1.62	1941.78	1938	12	9.04E-03	59.4	6.58E-01	
1	1460.82	201	0	2.03	2922.73	2916	14	4.89E-02	15.4	4.77E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-4.478E-02		4.074E-02	5.710E-02	0.000E+00	-0.784

```
A,08WG32723-1      ,01/02/2020 13:49,12/07/2019 12:30,   3.406E+02,WG32723-1 S TE
B,08WG32723-1      ,HUDSON                ,12/26/2019 12:50,08FS082119
C,CS-137   ,NO ,   -4.478E-02,    4.074E-02,    5.710E-02,,    -0.784
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 10:36:22.31
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 09:26:31.37

LIMS No., Customer Name, Client ID: WG32733-1 S TEXAS

Sample ID : 14WG32733-1
Sample Type : S
Quantity : 3.39540E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 13:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:09:35.84
Live time : 0 01:09:34.56

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	6	238.64*	558	77	1.07	474.58	2.24E+00	1.34E-01	4.8	1.91E+00
2	6	241.78	162	93	1.89	480.87	2.22E+00	3.89E-02	18.4	
3	1	295.27*	157	102	1.32	587.88	1.89E+00	3.76E-02	14.8	1.10E+00
4	1	338.53	104	71	1.09	674.42	1.68E+00	2.49E-02	17.7	1.92E+00
5	1	352.07*	232	80	1.20	701.51	1.63E+00	5.57E-02	10.2	3.01E+00
6	1	511.32*	27	80	2.47	1020.14	1.17E+00	6.53E-03	81.6	2.07E+00
7	1	583.38	146	79	1.30	1164.32	1.03E+00	3.51E-02	14.7	2.80E+00
8	1	609.43*	189	38	1.57	1216.44	9.94E-01	4.52E-02	10.5	4.67E-01
9	1	911.68	105	42	1.84	1821.30	6.94E-01	2.52E-02	16.7	1.34E+00
10	1	969.67	48	16	1.20	1937.35	6.57E-01	1.15E-02	22.0	6.86E-01
11	1	1121.08	37	27	1.66	2240.41	5.79E-01	8.81E-03	33.7	5.36E-01
12	1	1461.31*	215	14	1.80	2921.51	4.61E-01	5.15E-02	8.1	1.66E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	238.64	558	77	1.07	474.58	470	18	1.34E-01	9.6	2.24E+00	
6	241.78	162	93	1.89	480.87	470	18	3.89E-02	36.8	2.22E+00	
1	295.27	157	102	1.32	587.88	584	10	3.76E-02	29.6	1.89E+00	
1	338.53	104	71	1.09	674.42	670	9	2.49E-02	35.3	1.68E+00	
1	352.07	232	80	1.20	701.51	696	11	5.57E-02	20.3	1.63E+00	
1	511.32	27	80	2.47	1020.14	1014	14	6.53E-03	****	1.17E+00	
1	583.38	146	79	1.30	1164.32	1160	12	3.51E-02	29.4	1.03E+00	
1	609.43	189	38	1.57	1216.44	1211	15	4.52E-02	20.9	9.94E-01	
1	911.68	105	42	1.84	1821.30	1815	14	2.52E-02	33.4	6.94E-01	
1	969.67	48	16	1.20	1937.35	1933	9	1.15E-02	44.0	6.57E-01	
1	1121.08	37	27	1.66	2240.41	2236	12	8.81E-03	67.5	5.79E-01	
1	1461.31	215	14	1.80	2921.51	2914	14	5.15E-02	16.2	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.207E-02		4.220E-02	6.578E-02	0.000E+00	-0.184

```
A,14WG32733-1     ,01/02/2020 10:36,12/06/2019 13:00,   3.395E+02,WG32733-1 S TE
B,14WG32733-1     ,HUDSON             ,12/30/2019 12:20,14FS092319
C,CS-137  ,NO ,  -1.207E-02,   4.220E-02,   6.578E-02,,   -0.184
```

GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85481

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32723-1	S	DUP	GELI	340.65 g dry	12/30/19	KT	BALANCE 8							WG32723
WG32733-1	S	DUP	GELI	339.54 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85481-1	S		GELI	143.46 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-2	S		GELI	111.42 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-3	S		GELI	231.82 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-4	S		GELI	131.63 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-5	S		GELI	134.25 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-6	S		GELI	262.75 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-7	S		GELI	278.68 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-8	S		GELI	280.35 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-9	S		GELI	303.22 g dry	12/30/19	KT	BALANCE 8							WG32723
L85481-10	S		GELI	326.27 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85481-11	S		GELI	339.54 g dry	12/30/19	WBG	BALANCE 8							WG32733

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.01
100.00	100.01
1000.00	1000.04

Check Date: 30-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 30-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME
	pCi/ml	BI YIELD	
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

Standards Prepared by: [signature] 2/21/15

Calibration by: Keith Jett 2/21/15

Y COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

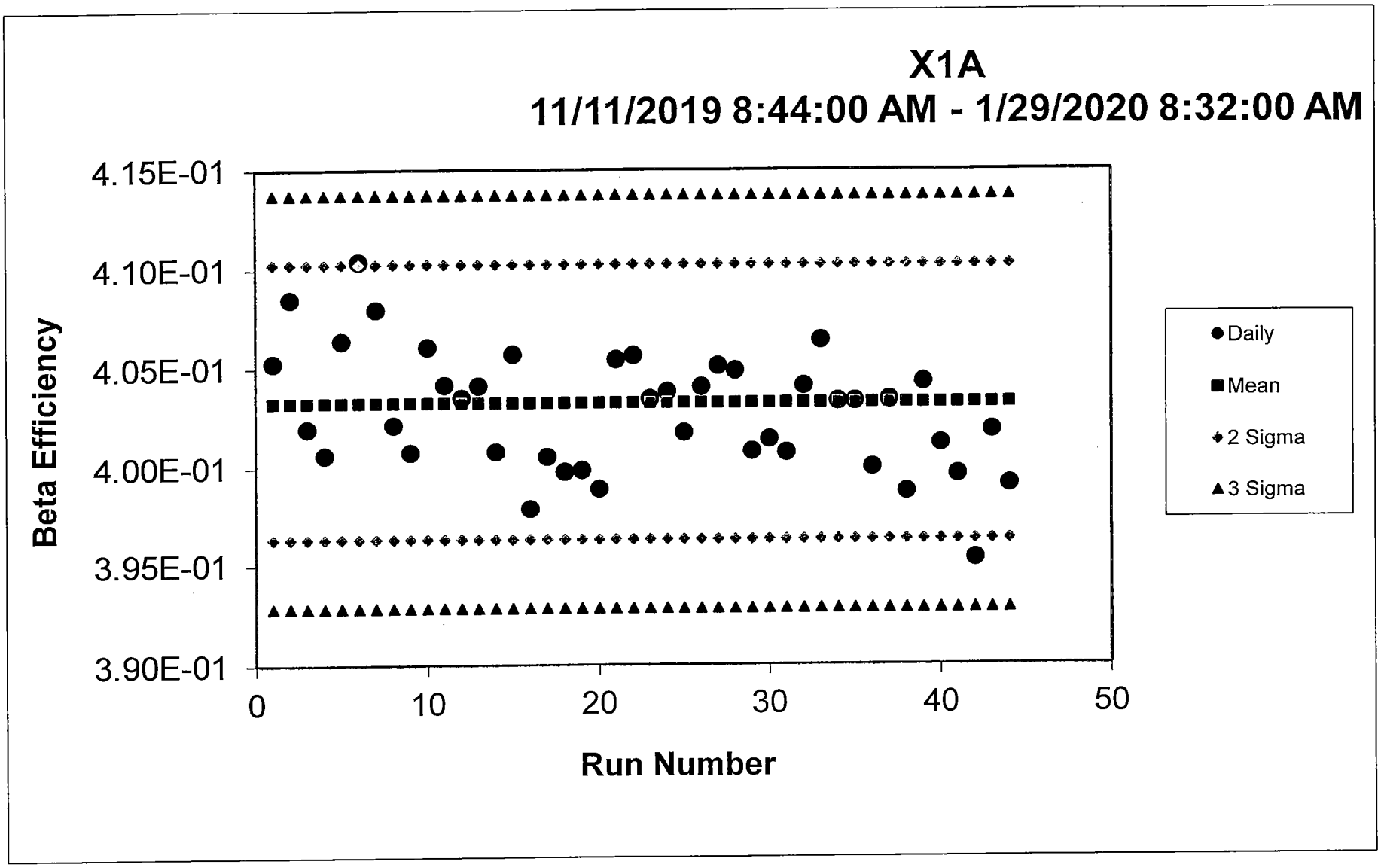
210PB-061014	Activity pCi/ml	BI YIELD	MILK DATE/TIME
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

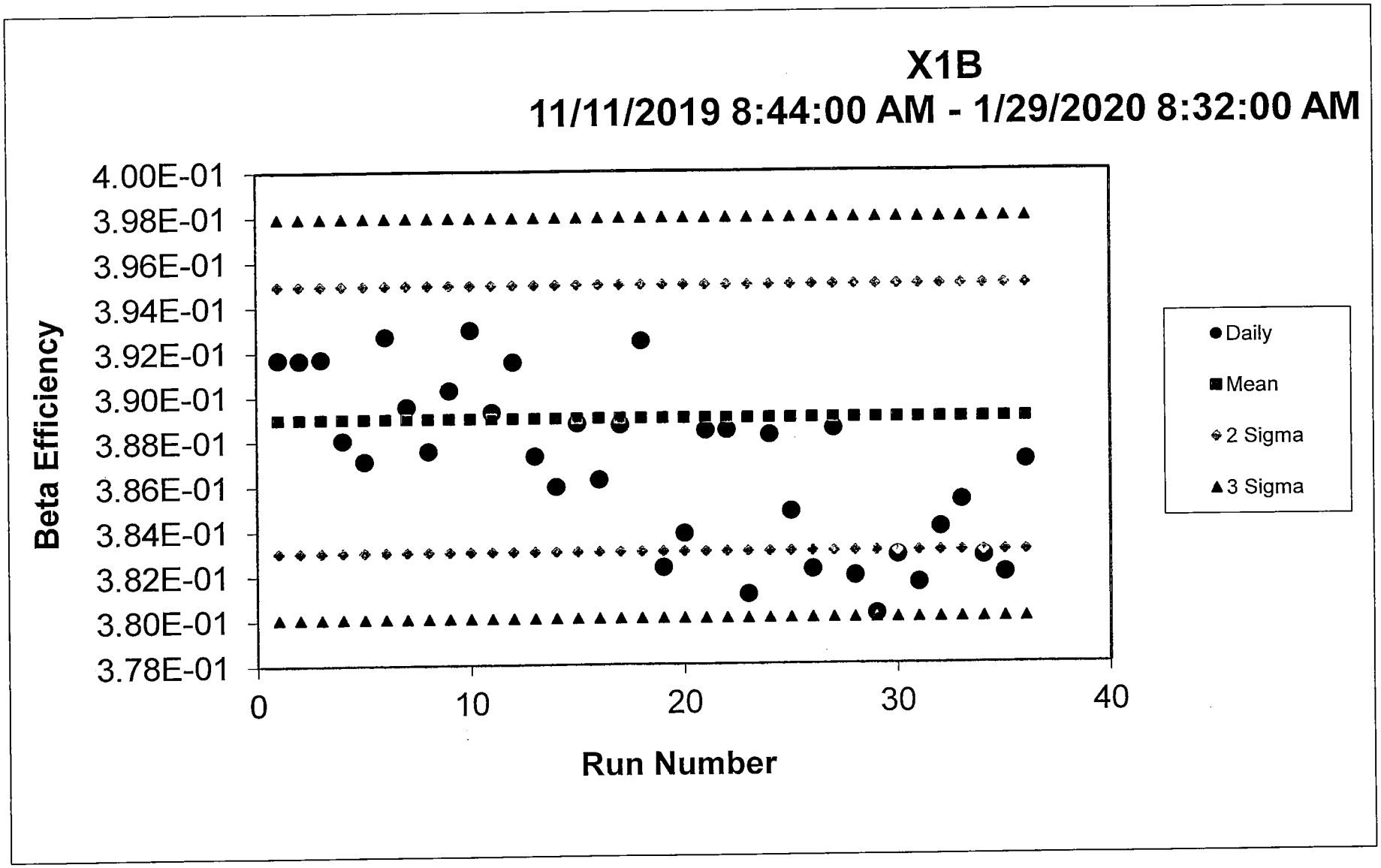
Standards Prepared by: [signature] 2/21/15

Calibration by: Keith Jett 2/21/15

LEAD 210

Daily Source and Background Checks


X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma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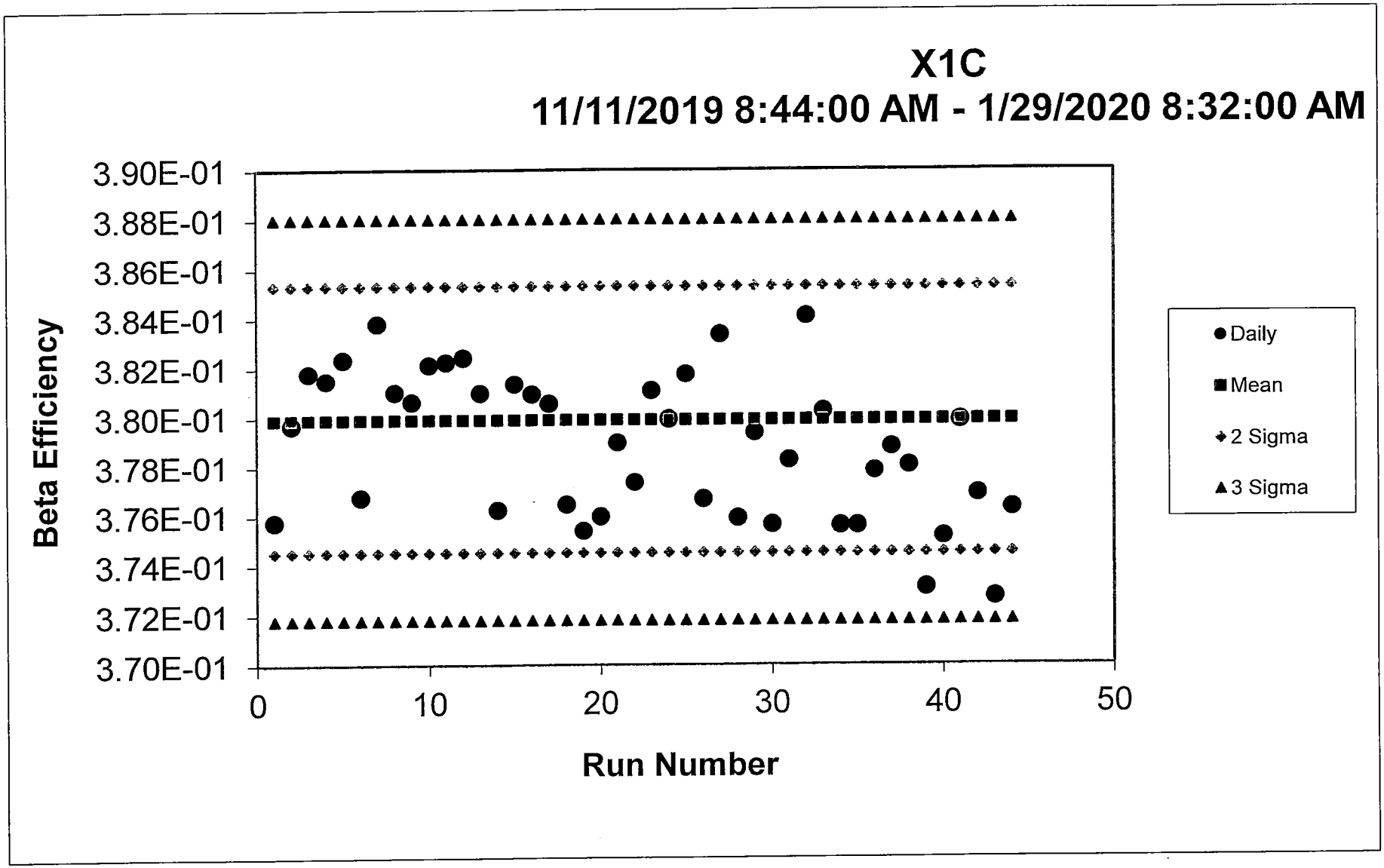
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1C
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
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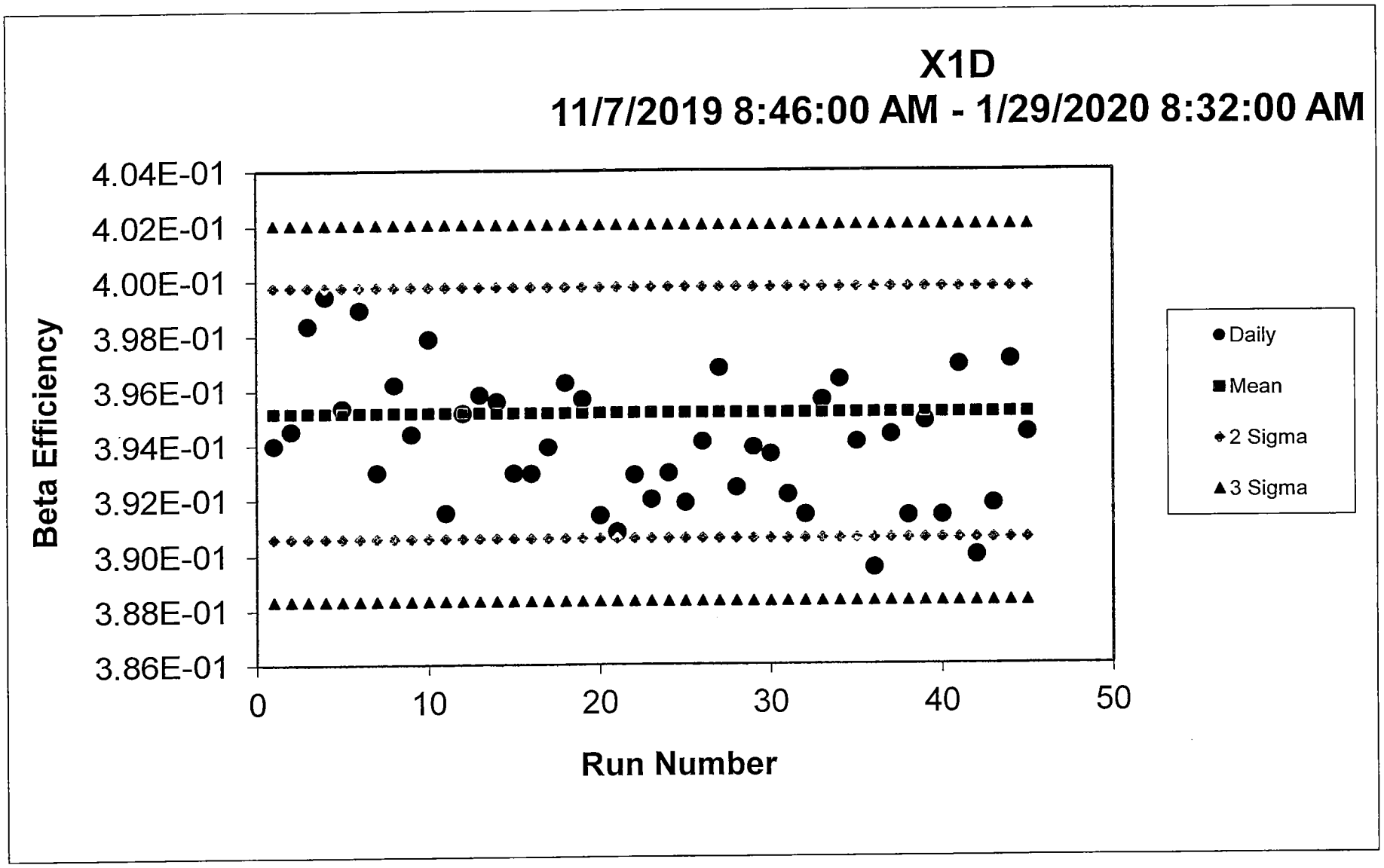
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1D
11/7/2019 8:46:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.04E-01
4.02E-01
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
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3.86E-01
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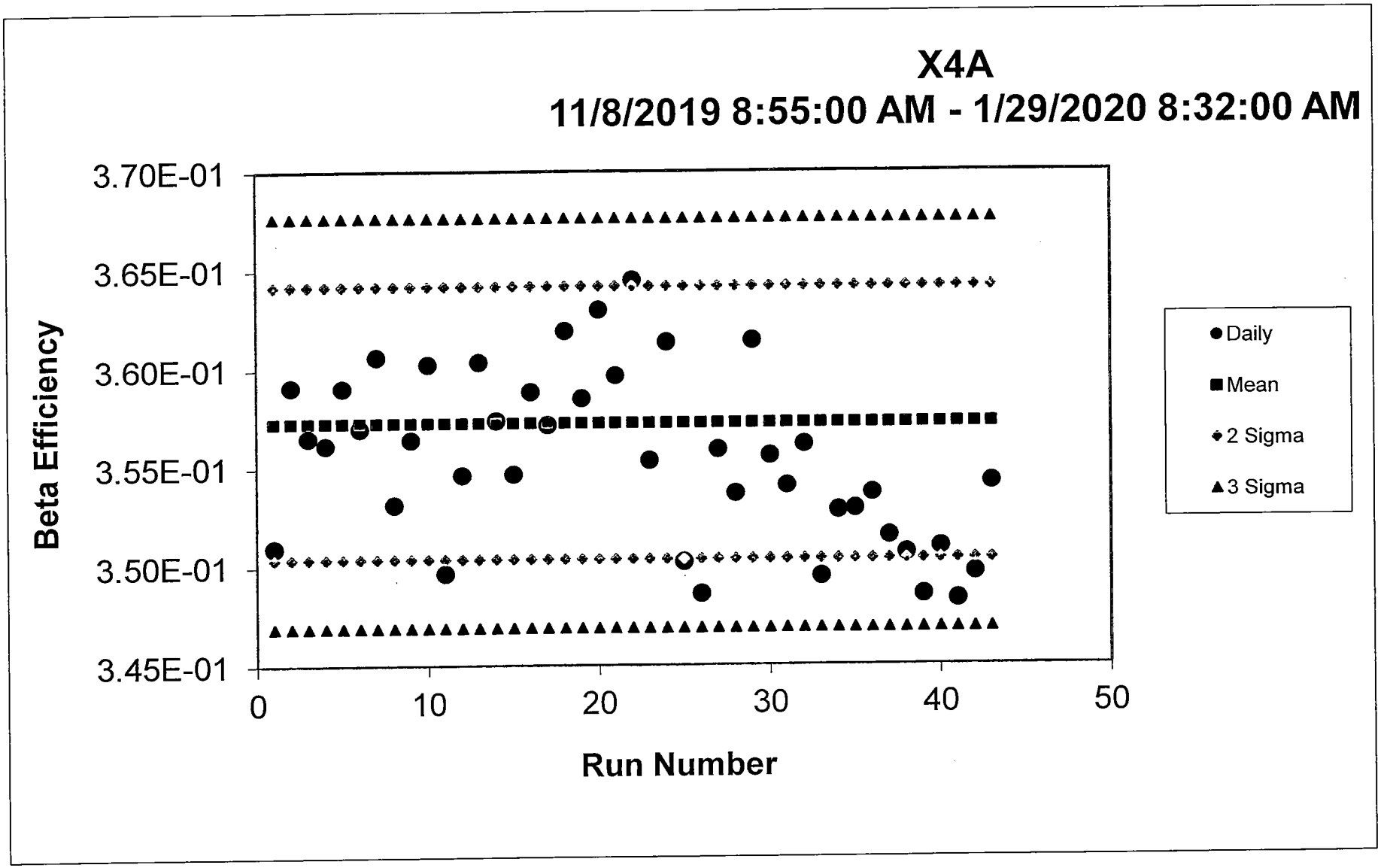
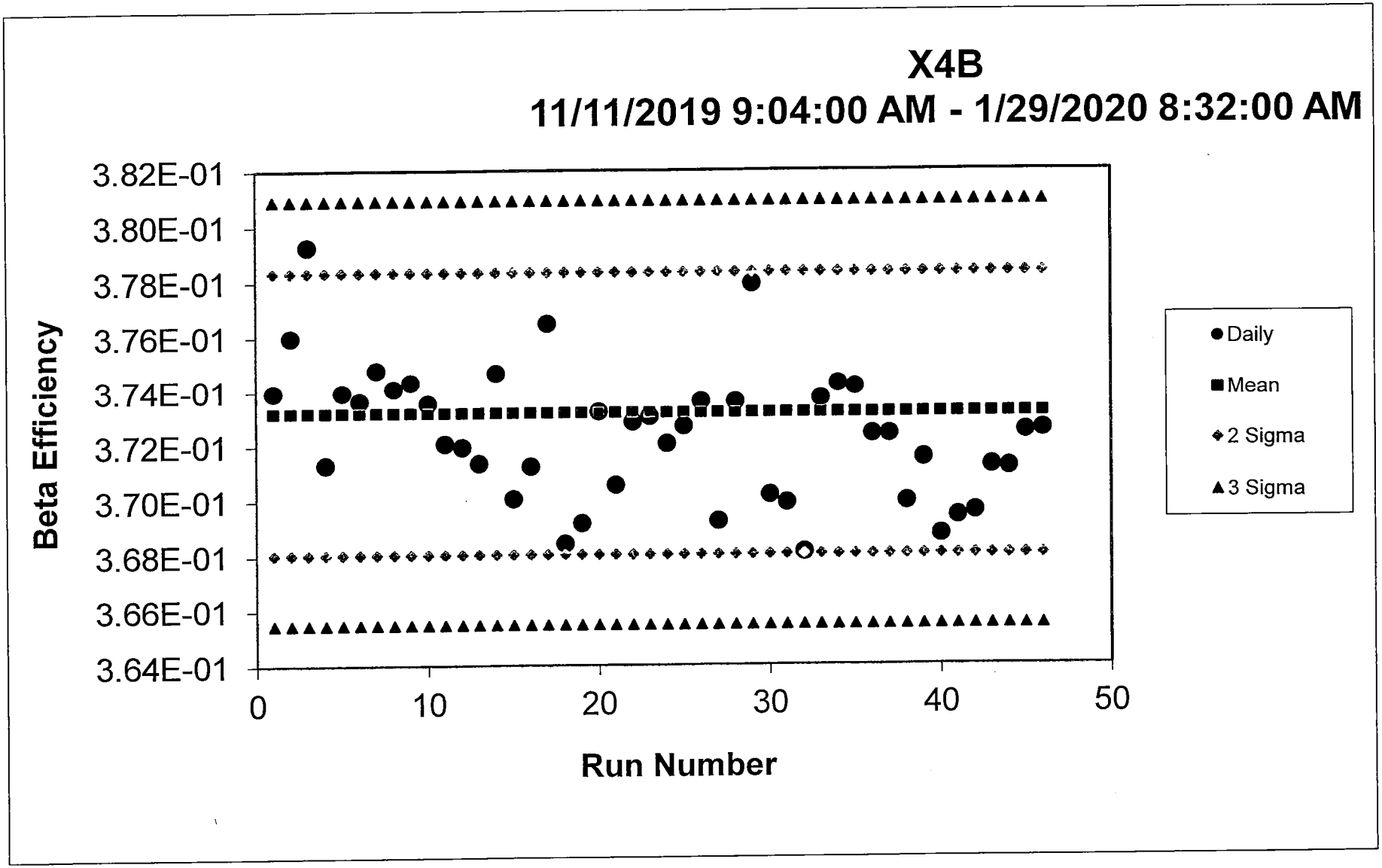
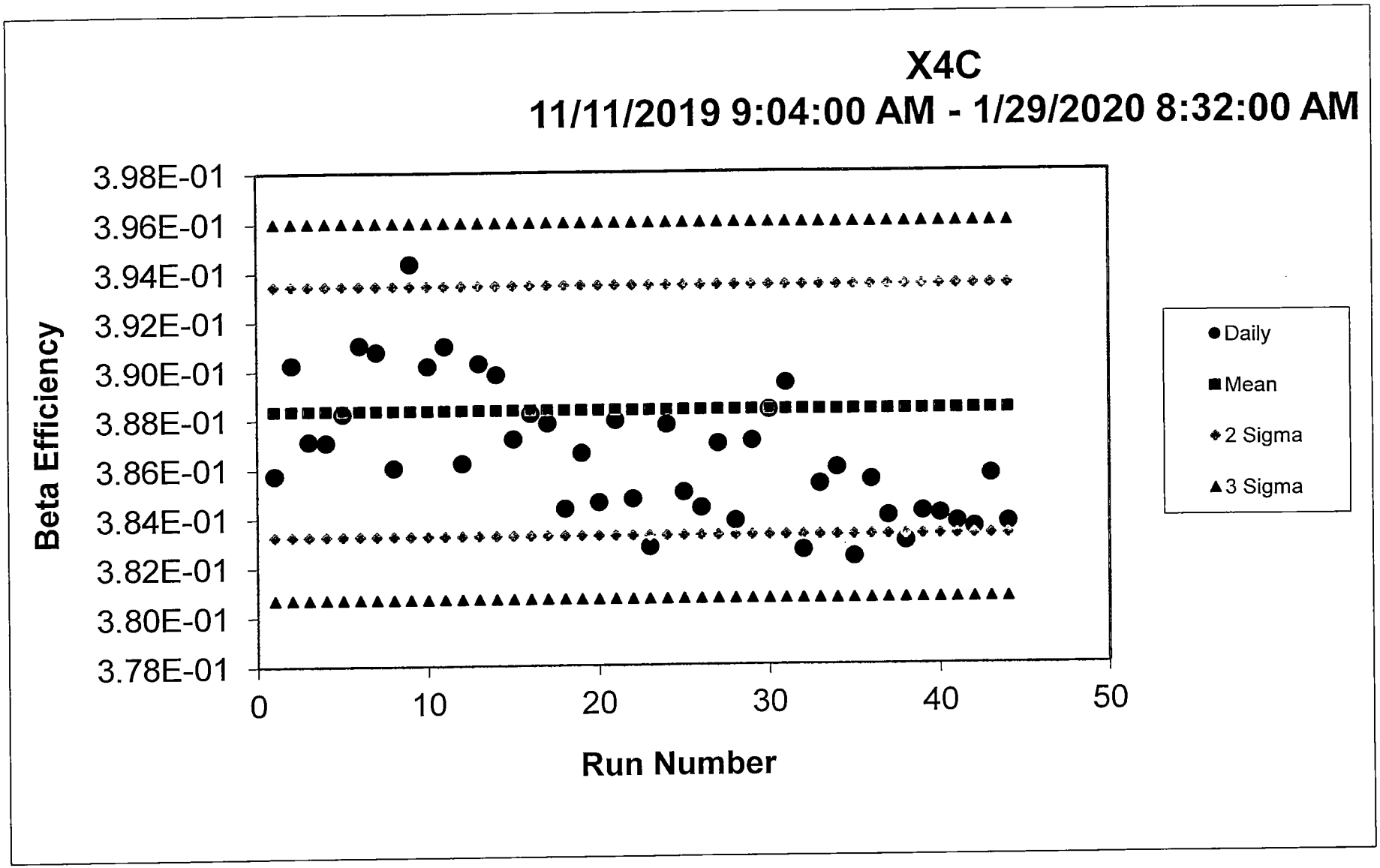
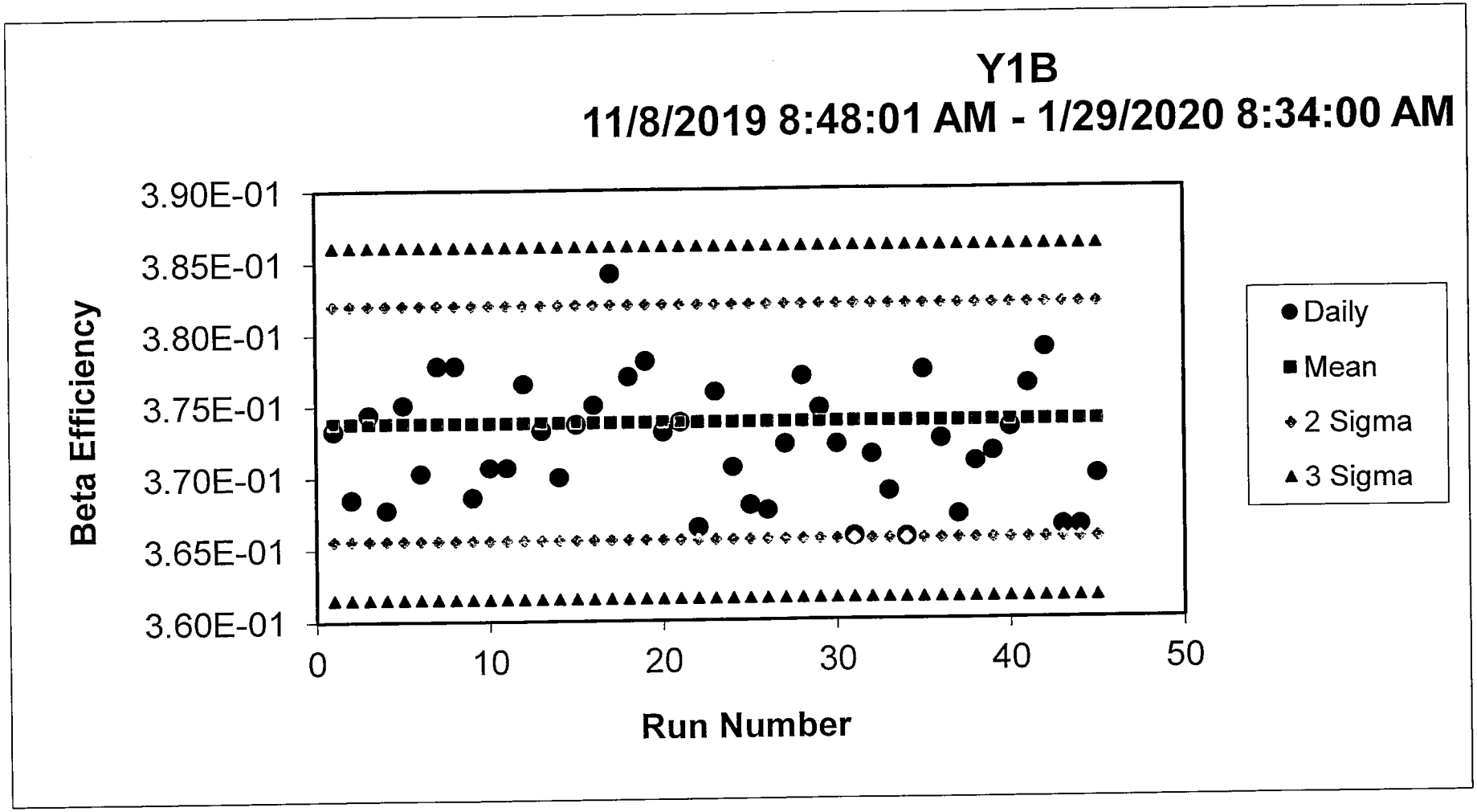
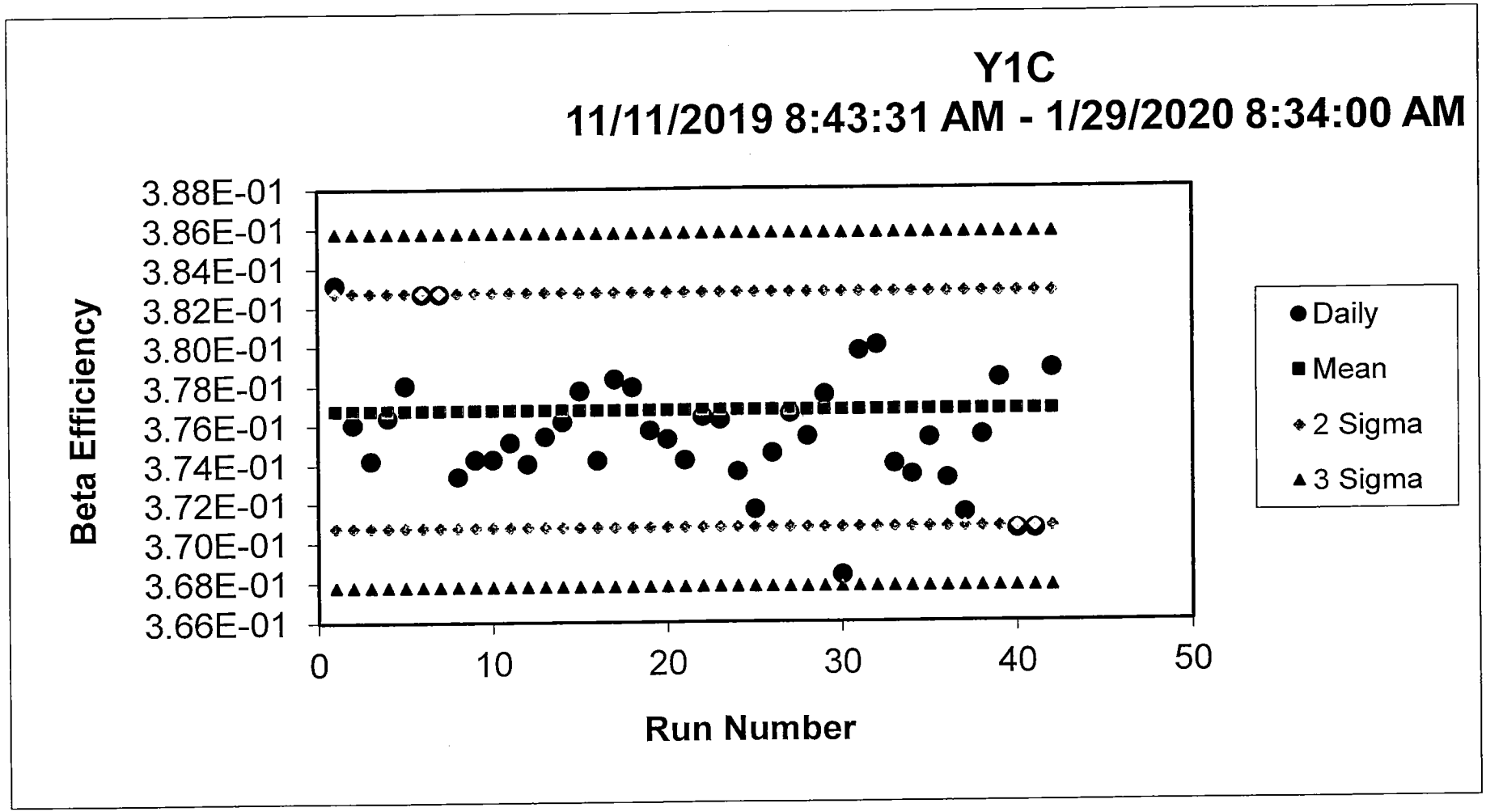
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

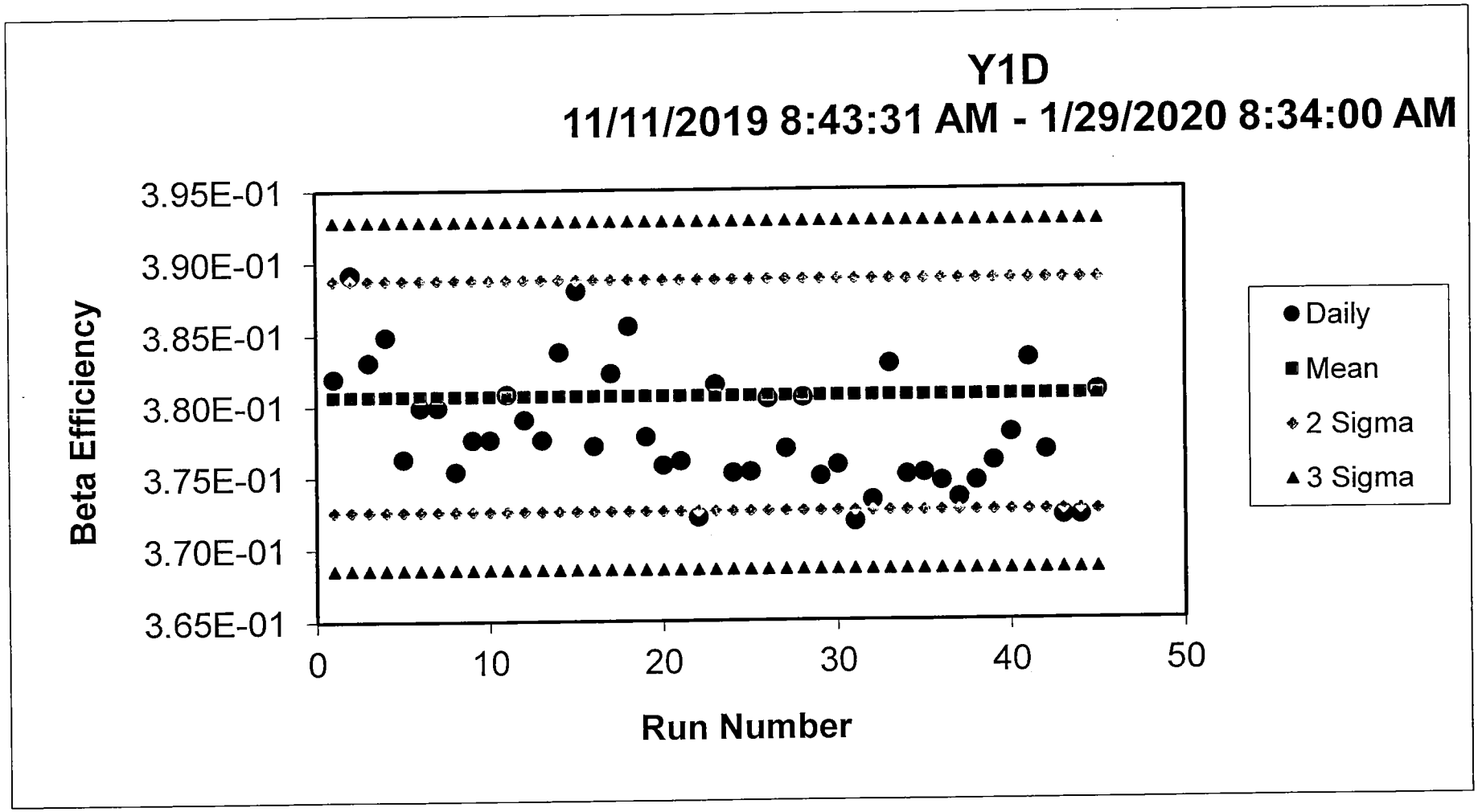

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

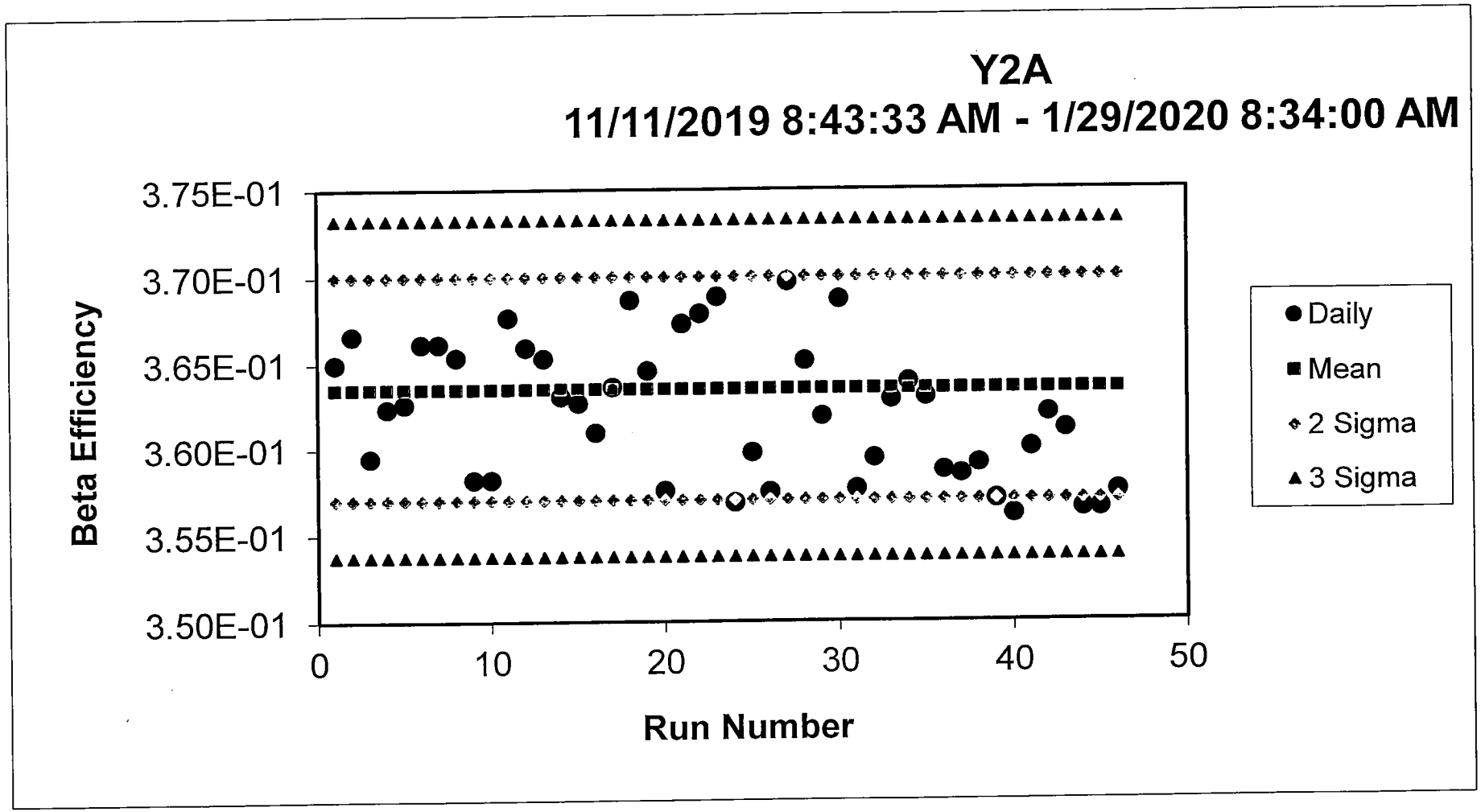

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

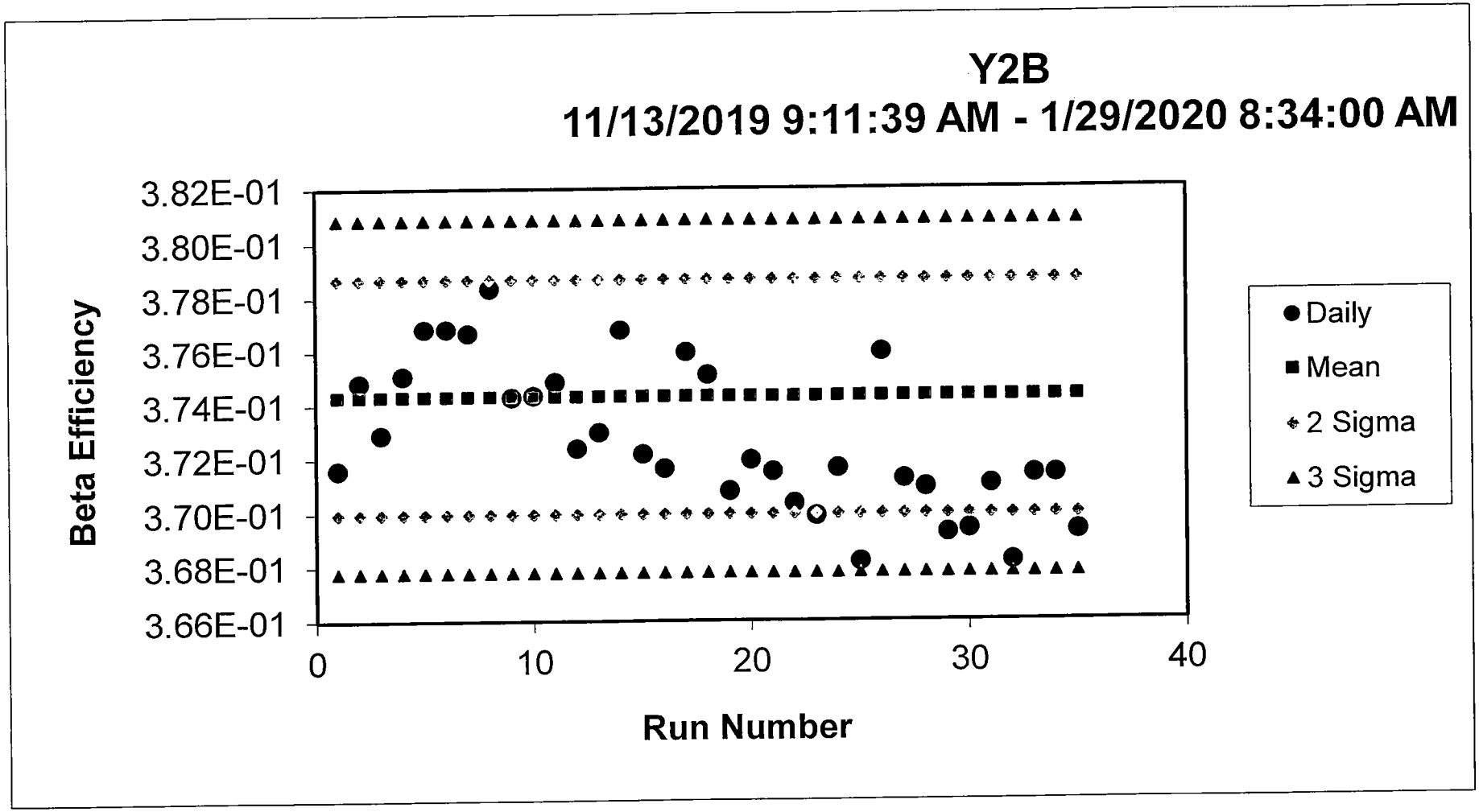

X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

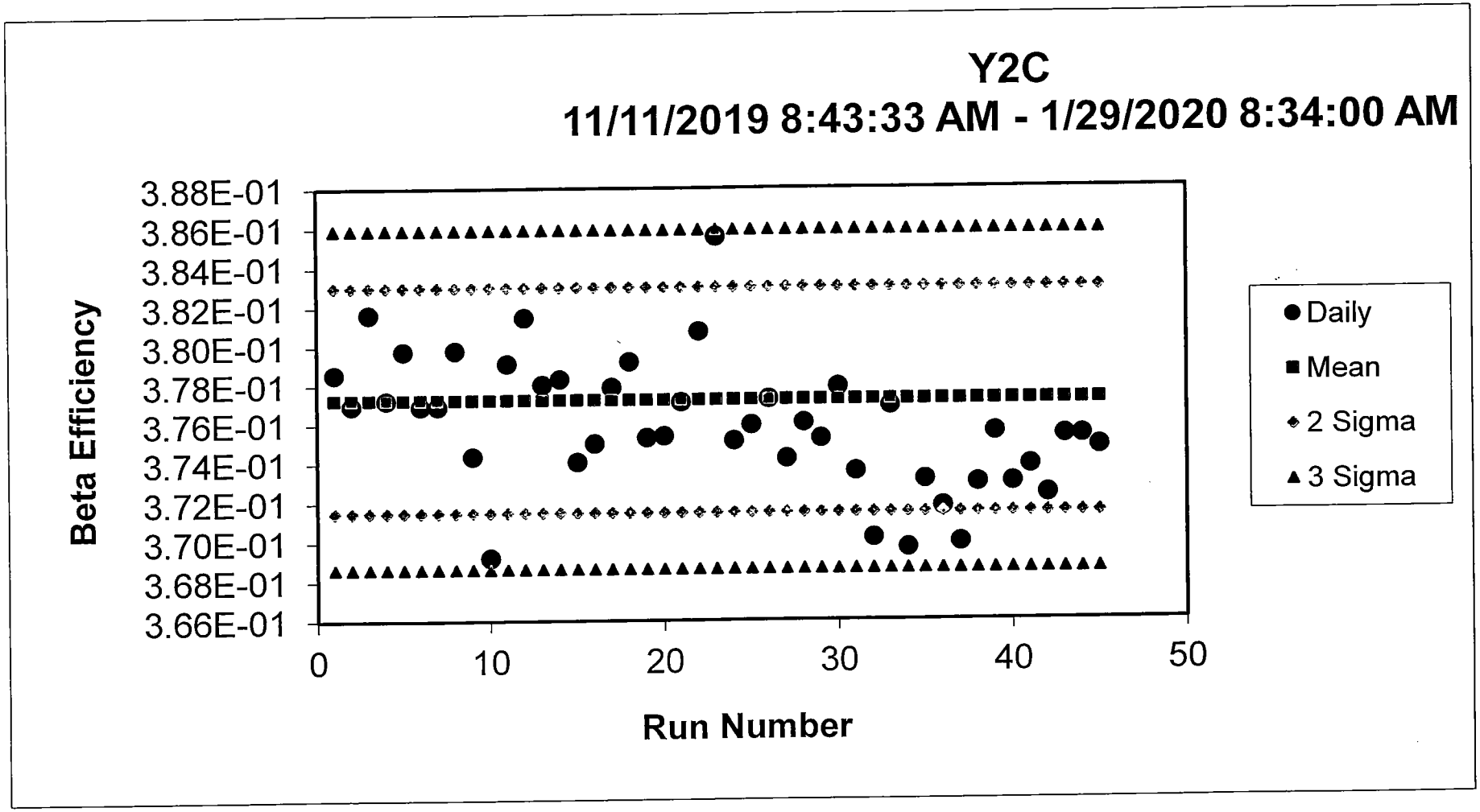

Y1B
11/8/2019 8:48:01 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

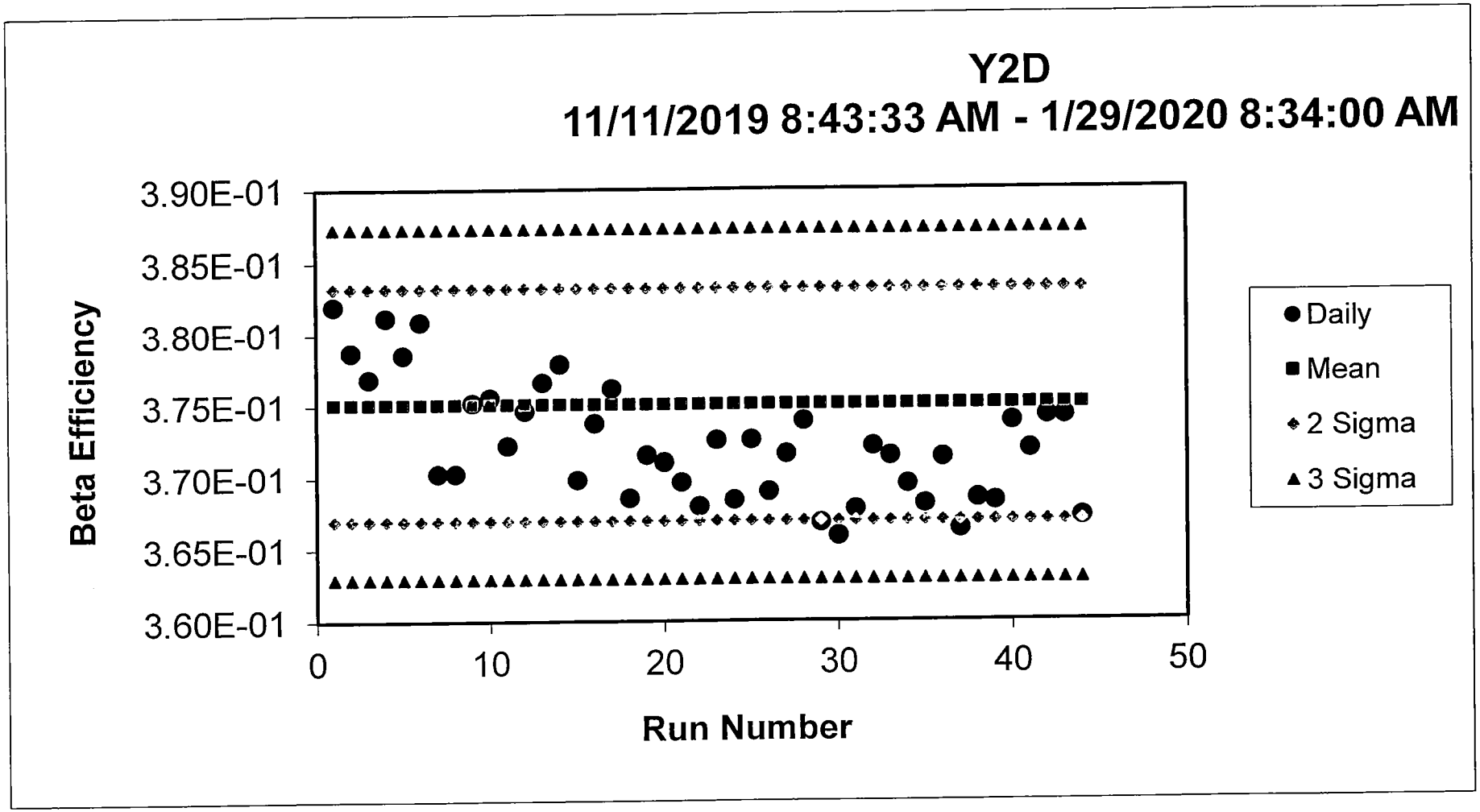

Y1C
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

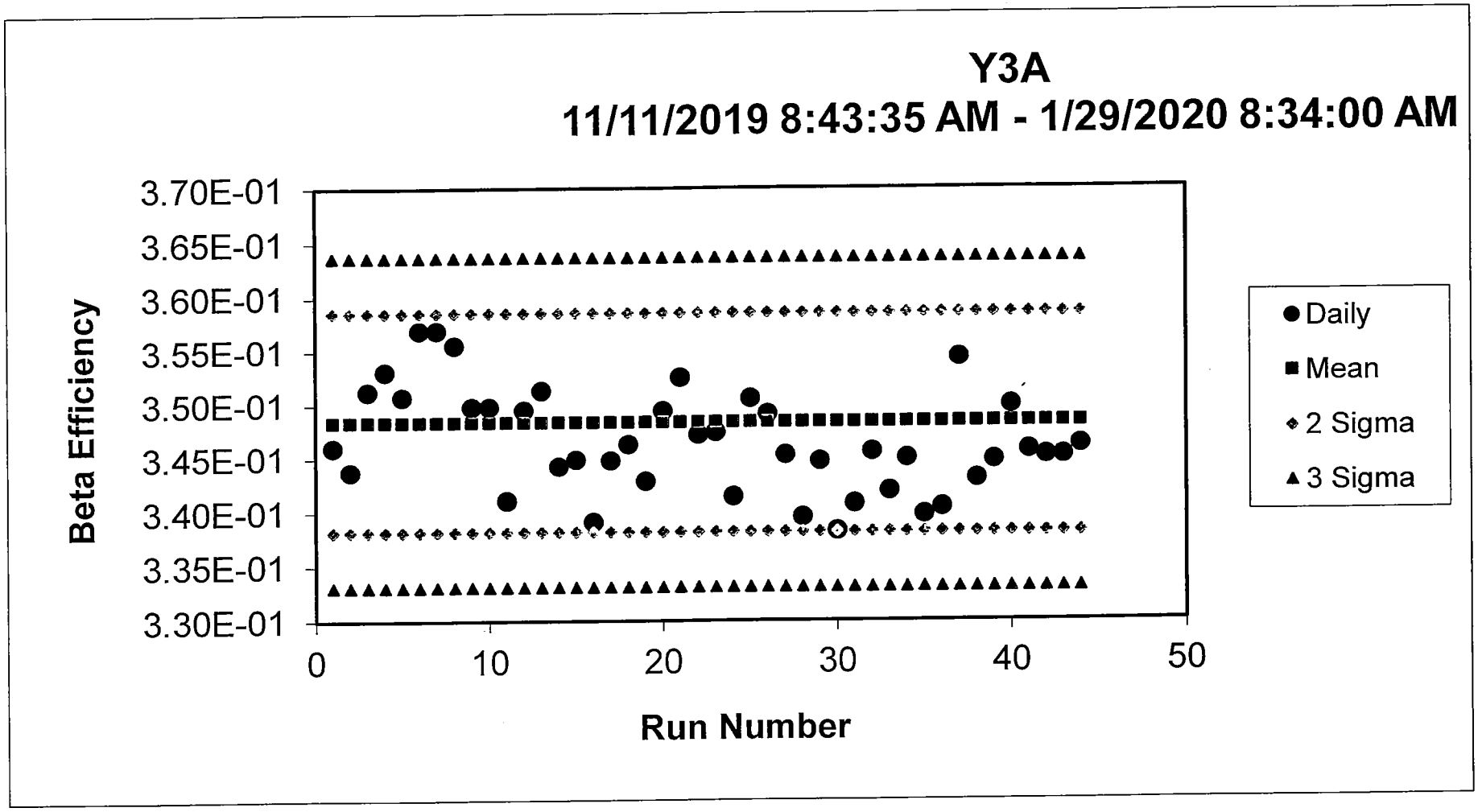

Y1D
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

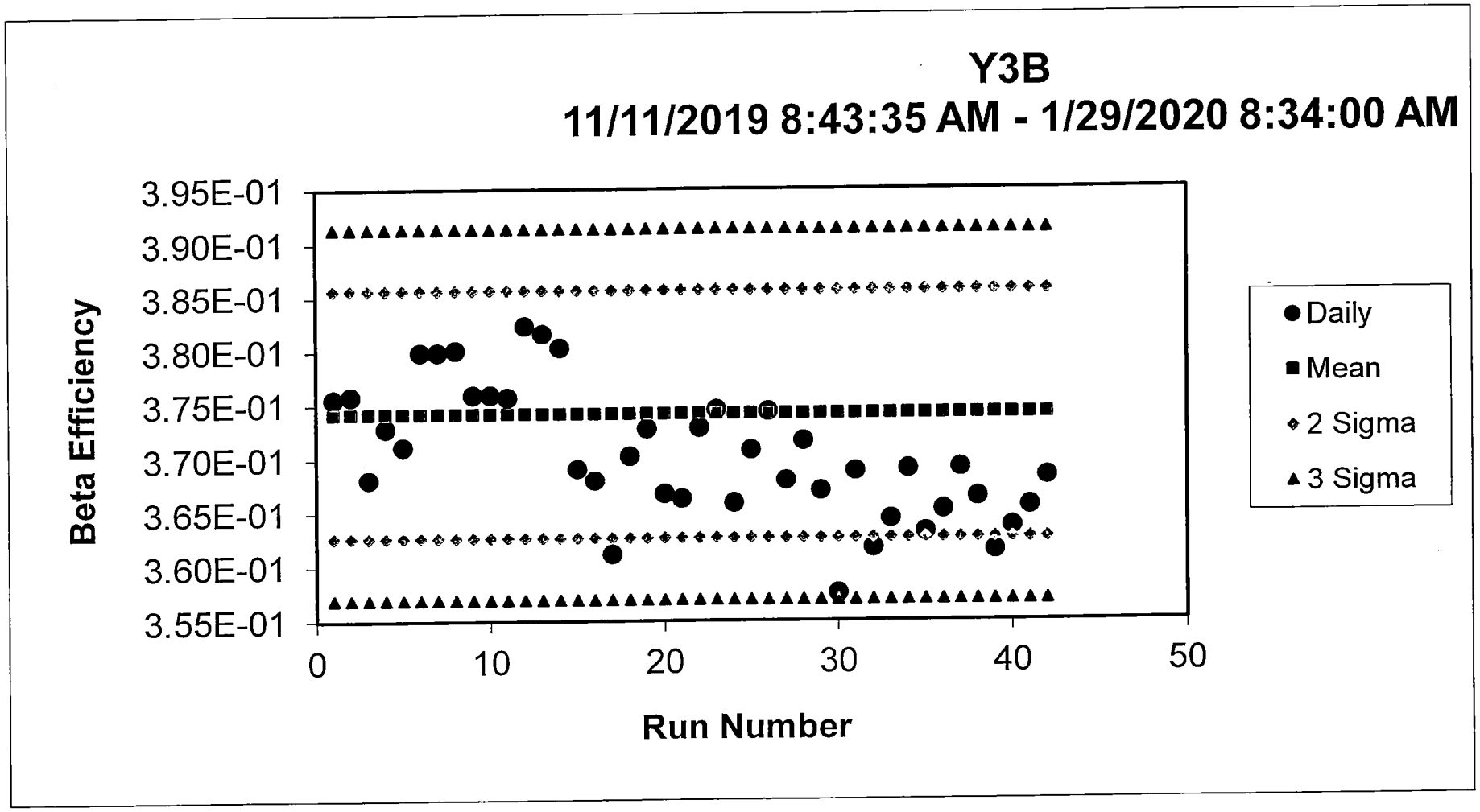

Y2A
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

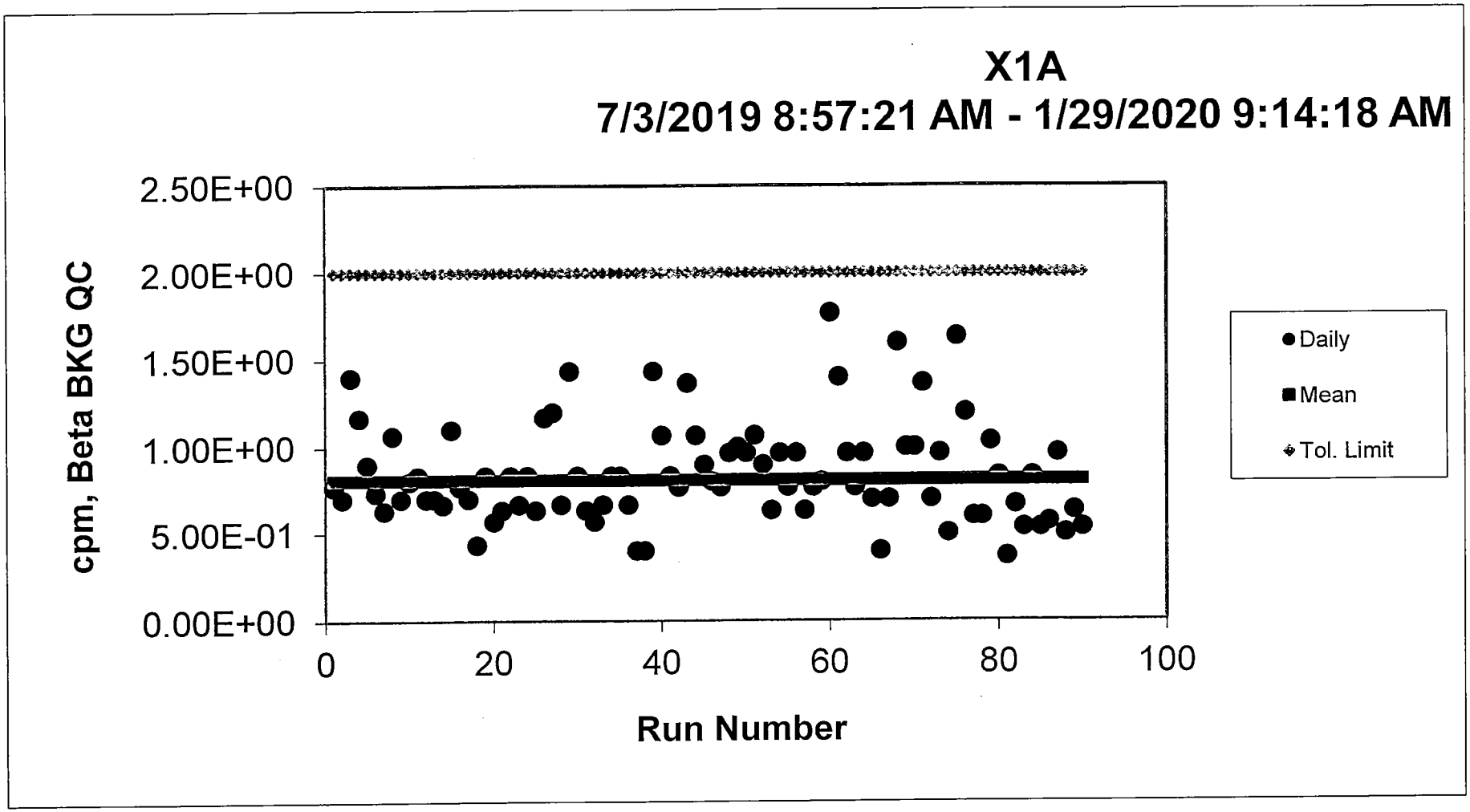

Y2B
11/13/2019 9:11:39 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma

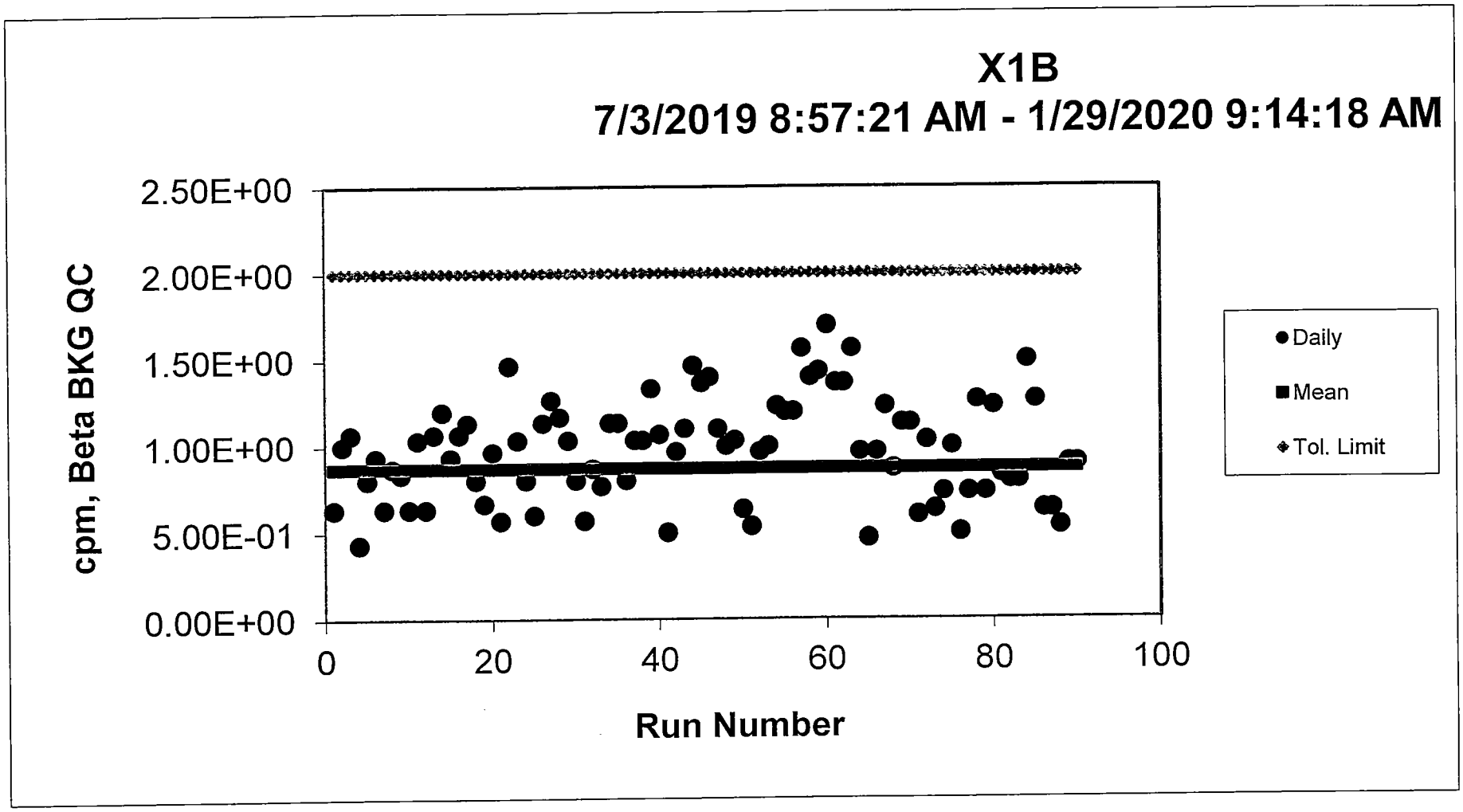

Y2C
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

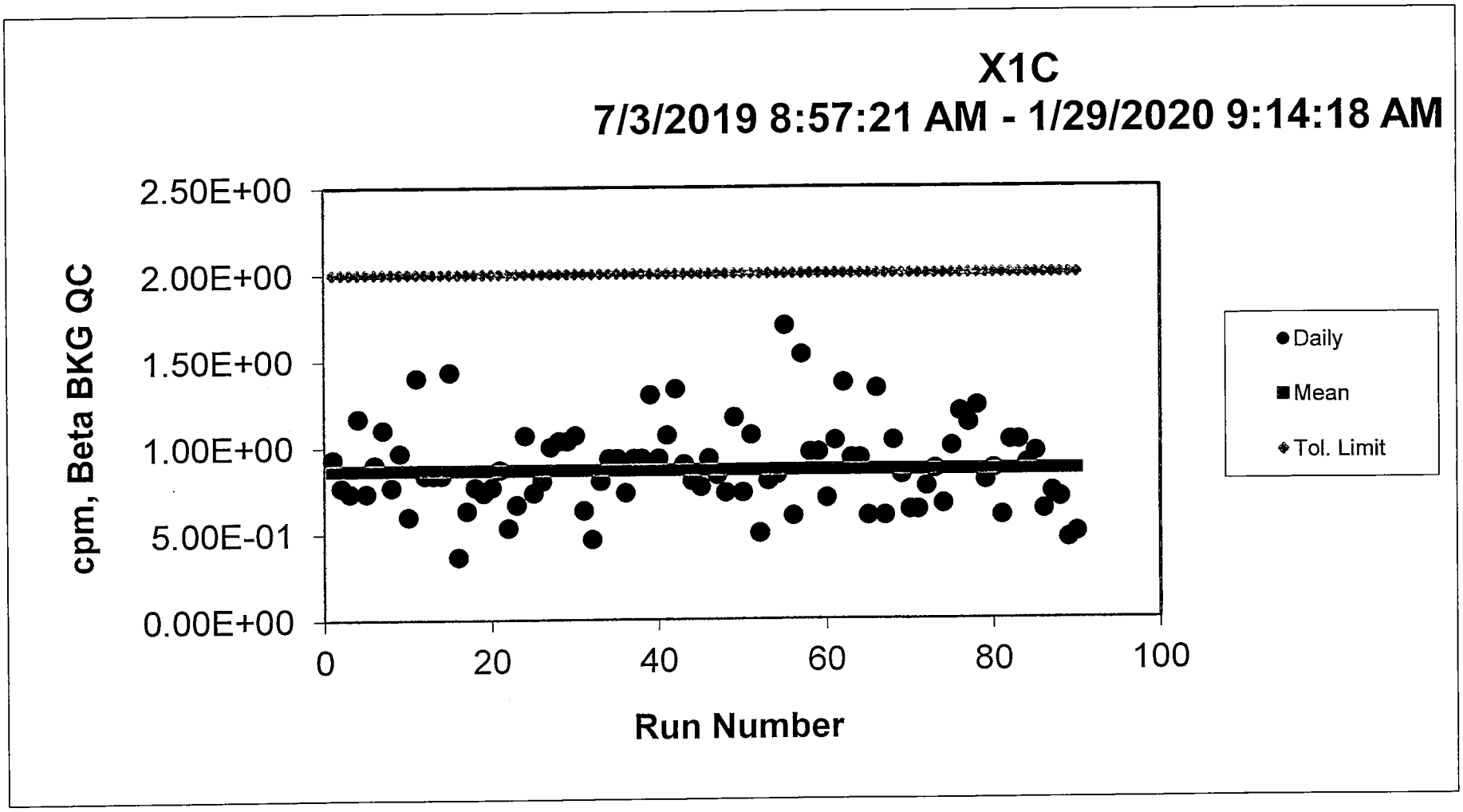

Y2D
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

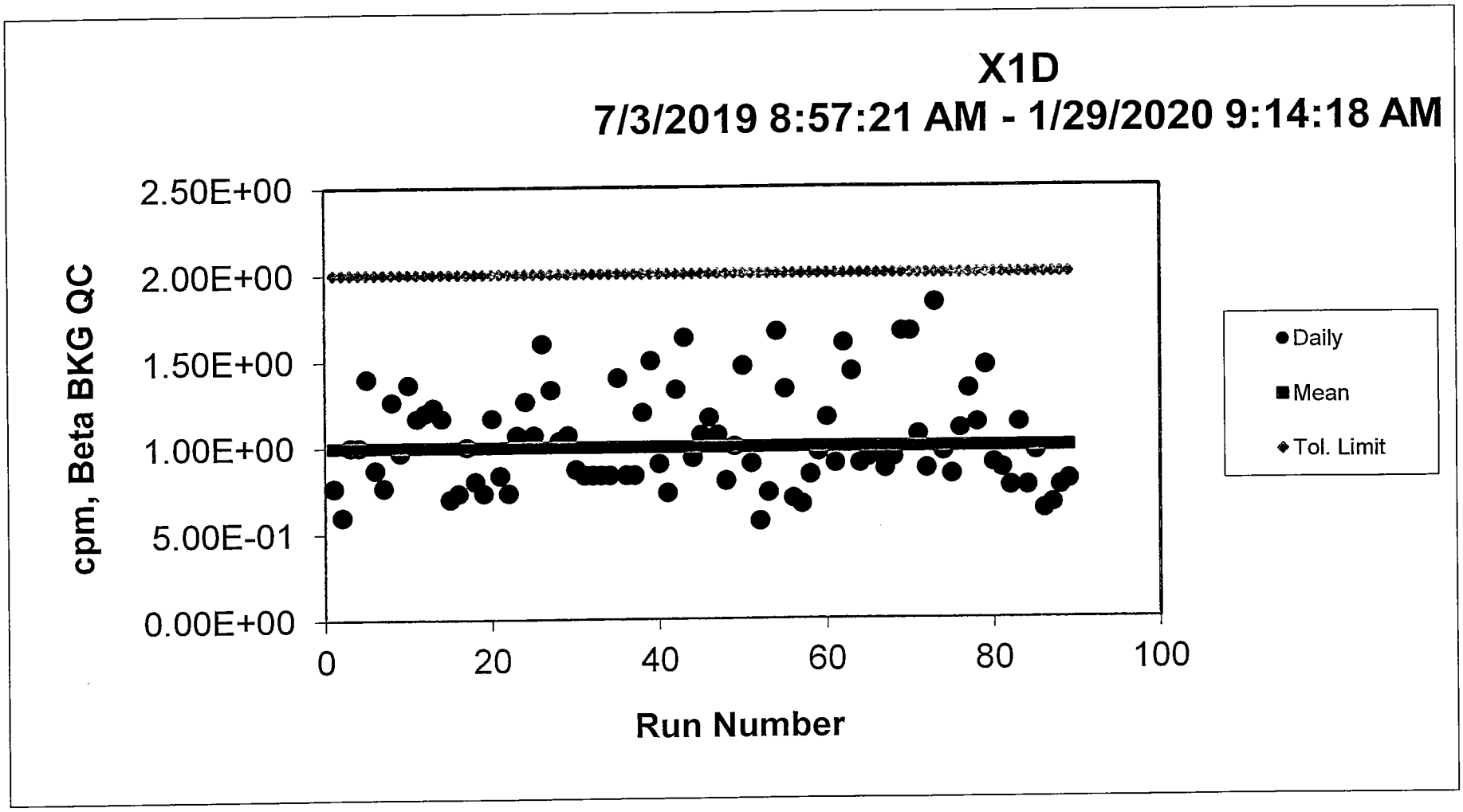

Y3A
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
3.40E-01
3.35E-01
3.30E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

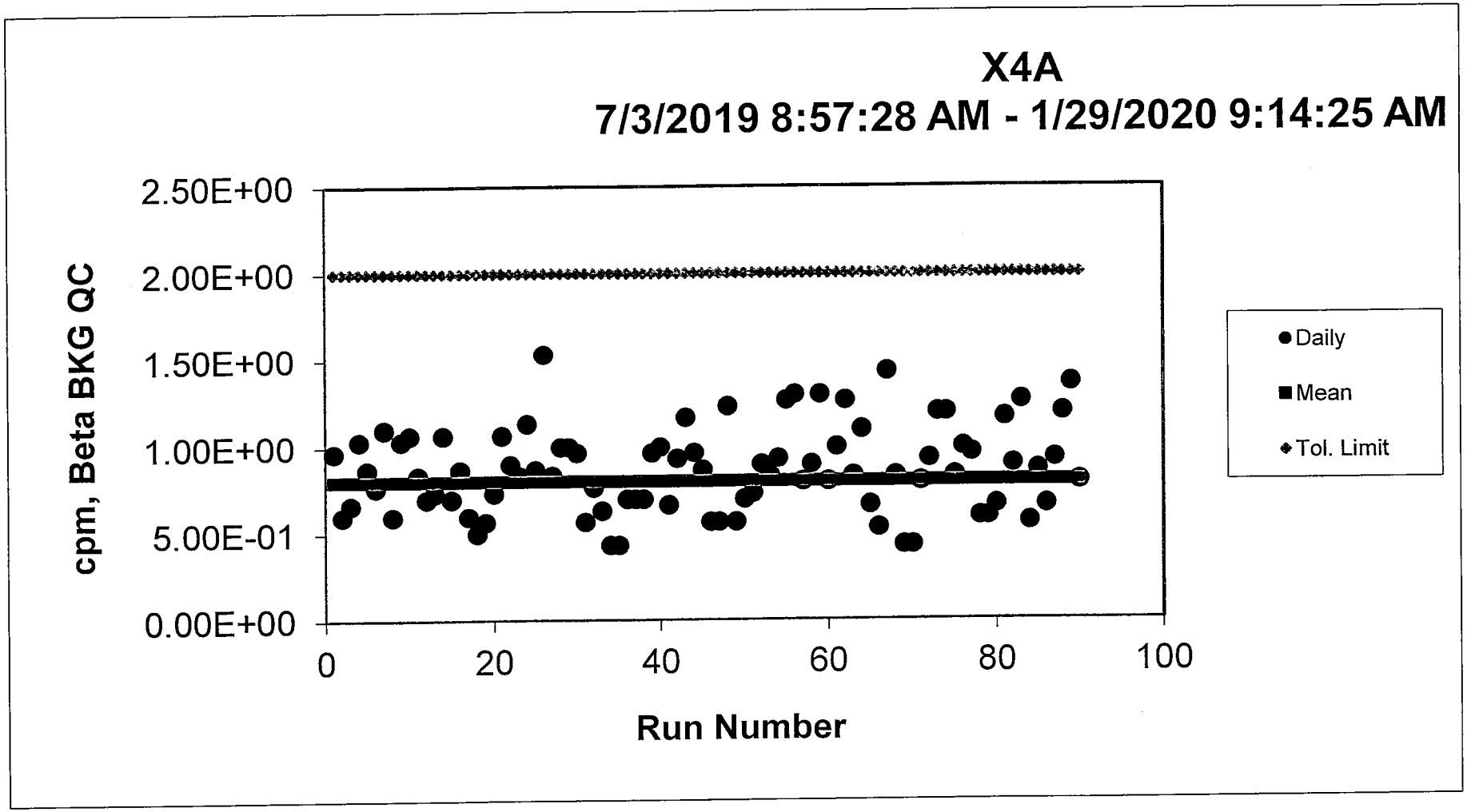

Y3B
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

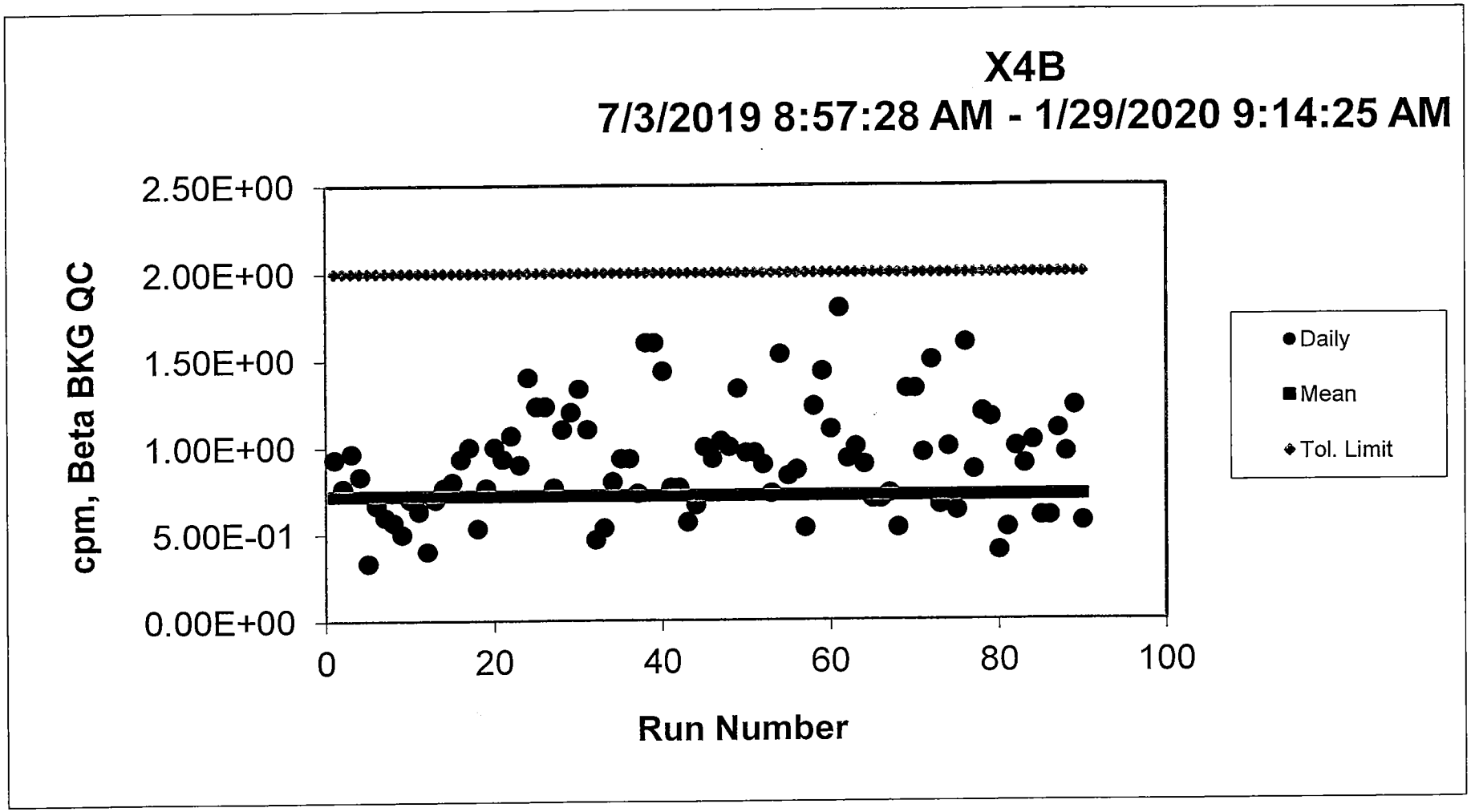

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

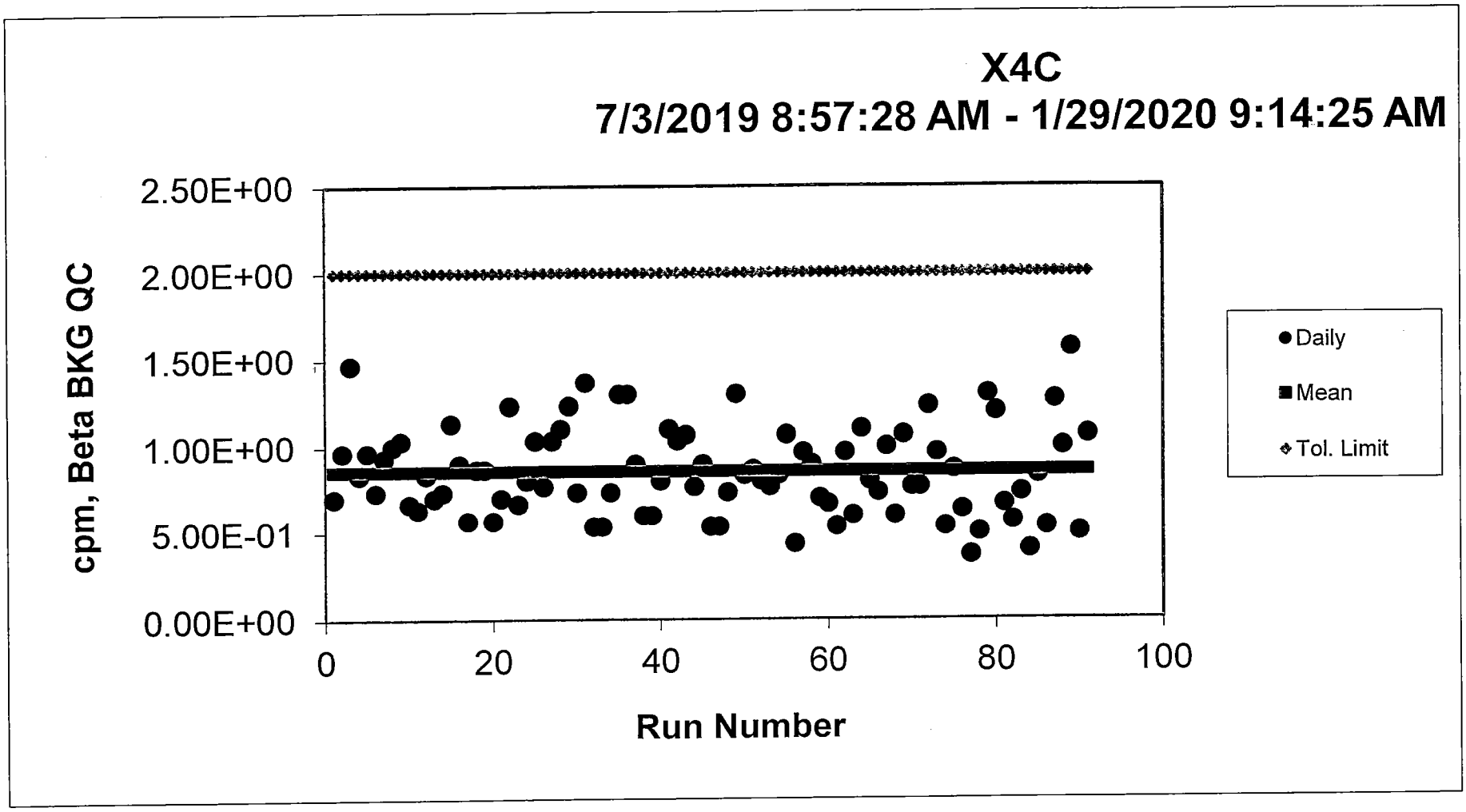

X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

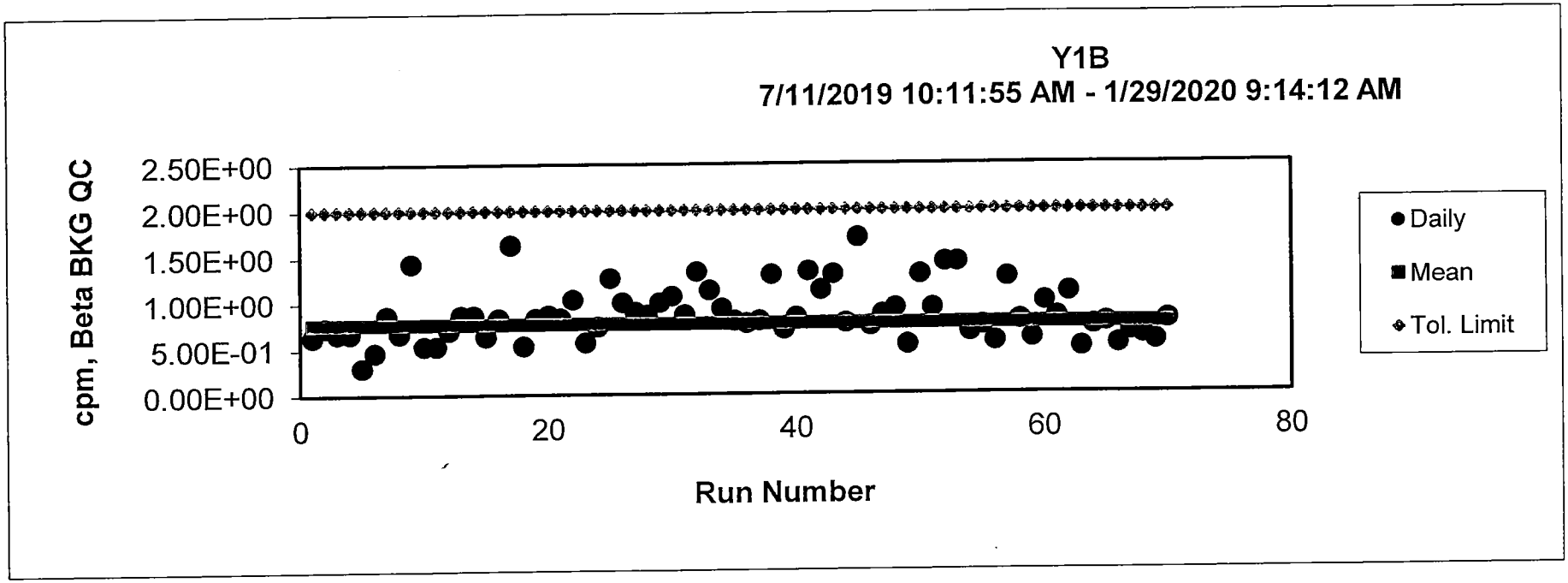

X1C
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

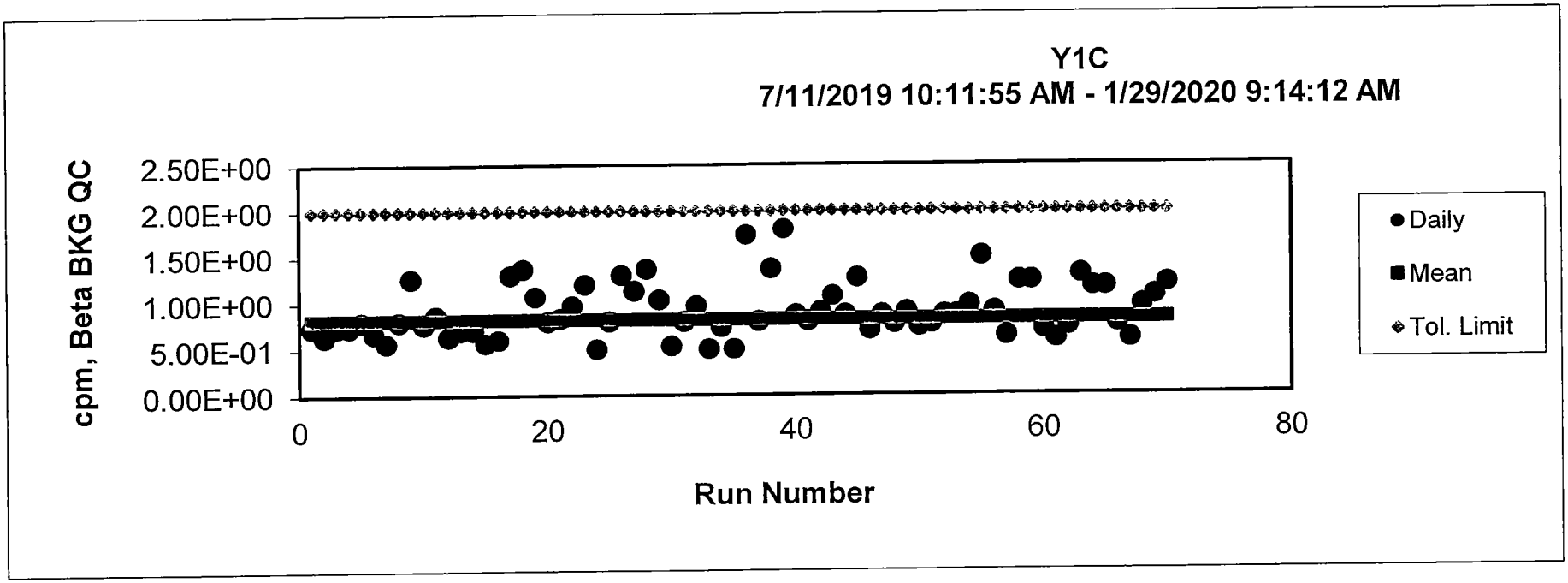

X1D
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

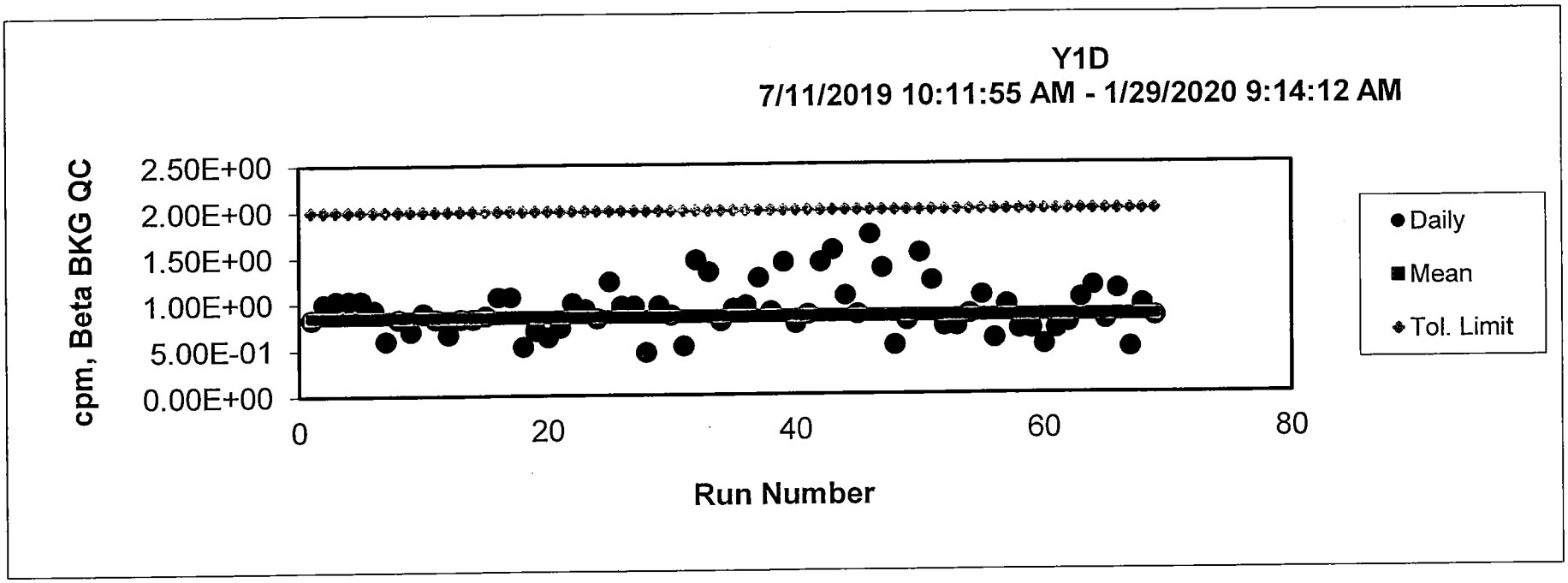

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

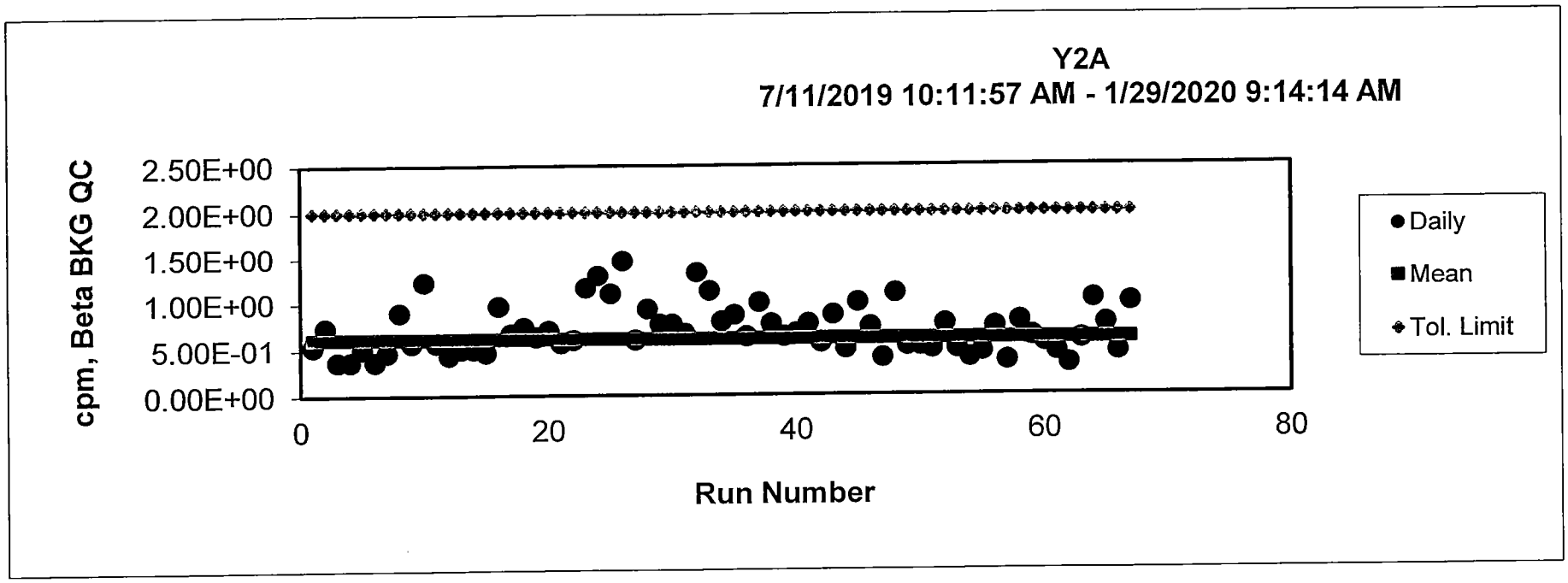

X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

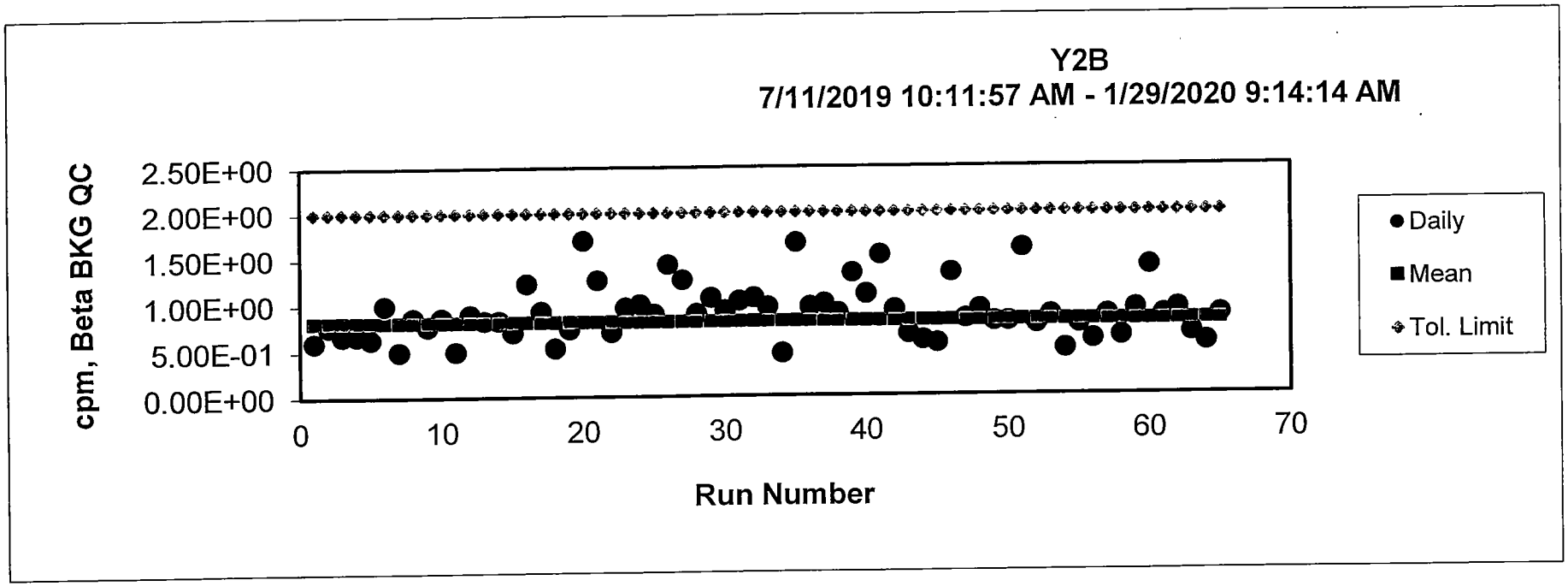

X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

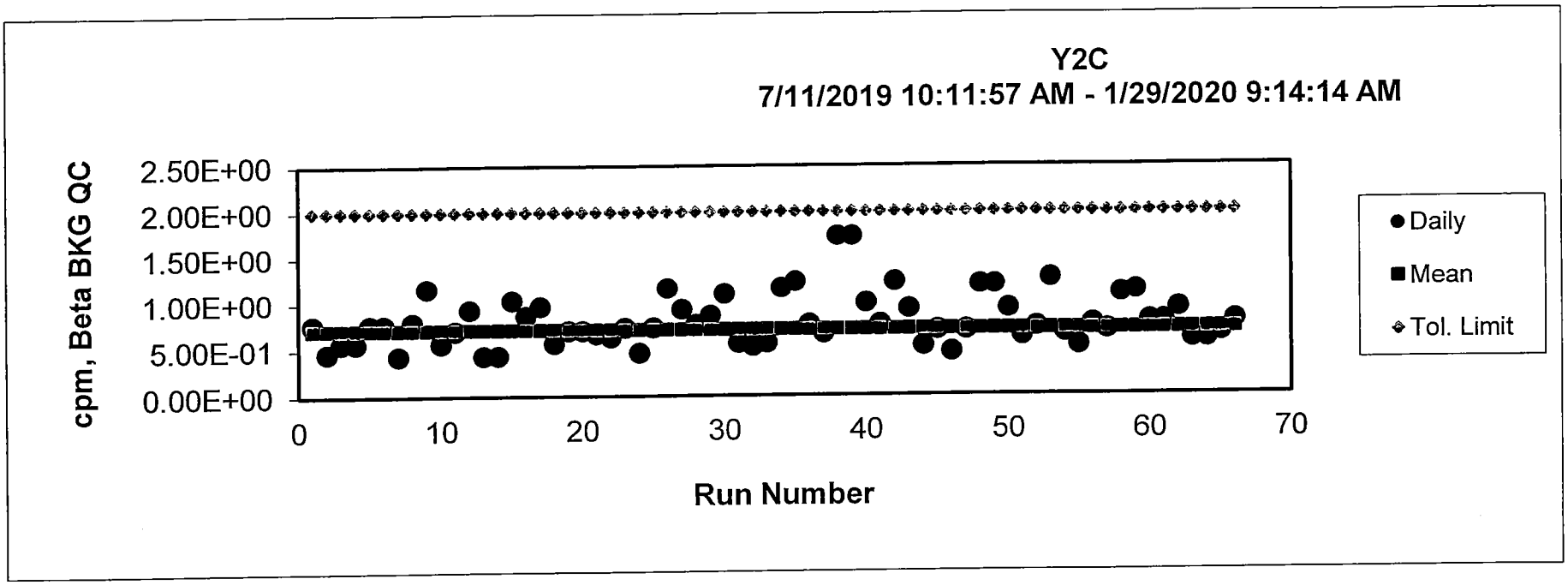

Y1B
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

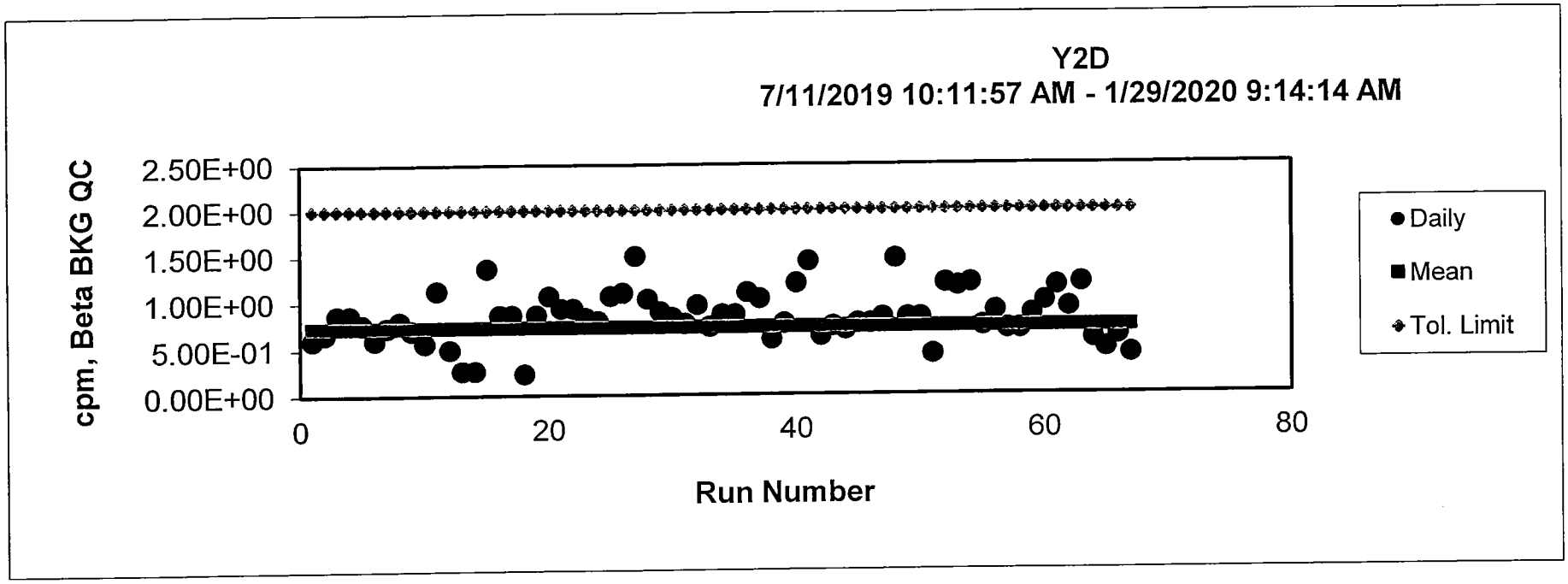

Y1C
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

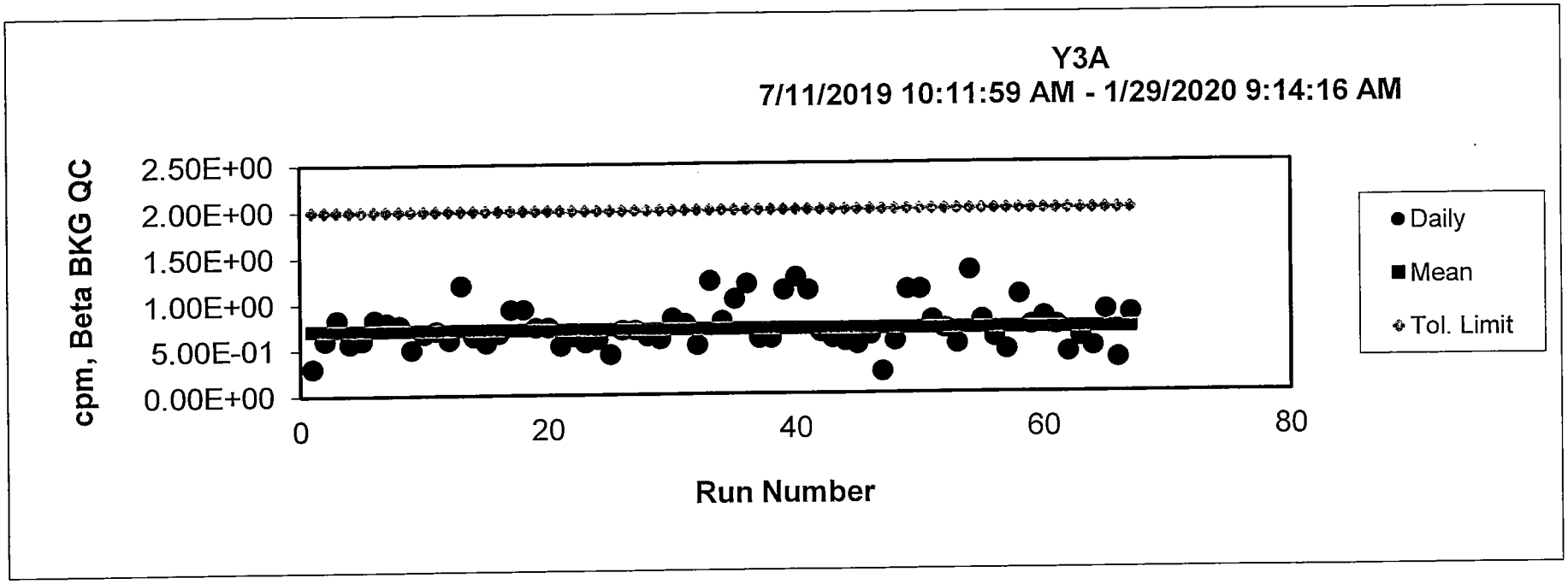

Y1D
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

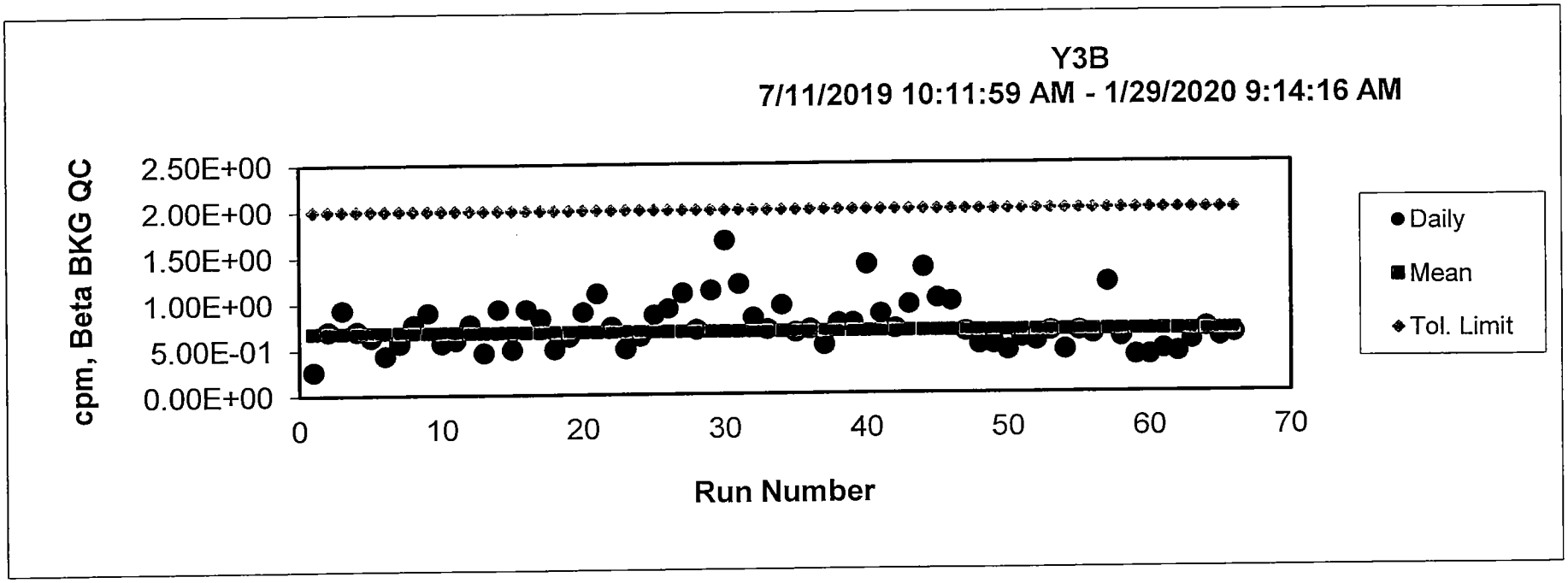

Y2A
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2B
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2C
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2D
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3A
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3B
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32842

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	60.26%	536.3
recovery 2	64.94%	578
recovery 3	70.91%	631.1
Average	65.37%	
2 sigma	10.68	
RPD for highest and lowest	16.24	
< 30	yes	

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 12:00:57.98
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 16-JAN-2020 10:20:37.56

LIMS No., Customer Name, Client ID: L85480-7 GAMMA COUNT

Sample ID : 08L85480-7
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 16-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.76
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.83	2279	641	1.29	153.30	9.17E+00	3.80E-01	3.0	1.76E+00
2	3	74.99*	3878	495	1.21	157.61	9.96E+00	6.46E-01	2.0	
3	3	84.82*	1836	399	1.35	177.21	1.31E+01	3.06E-01	3.0	1.04E+00
4	3	87.50	639	317	1.30	182.57	1.38E+01	1.06E-01	6.9	
5	1	569.95	6162	226	1.50	1145.32	5.92E+00	1.03E+00	1.4	7.61E-01
6	1	1063.98	2600	90	1.78	2131.05	2.95E+00	4.33E-01	2.2	6.29E-01
7	1	1633.81	214	15	2.19	3267.82	1.91E+00	3.56E-02	8.0	8.10E-01
8	1	1770.67	169	13	2.08	3540.84	1.80E+00	2.81E-02	8.9	7.98E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2600	74.50*	2.951E+00	5.328E+02	5.329E+02	4.33
	1770.24	169	6.87	1.802E+00	6.134E+02	6.134E+02	17.88

Flag: "*" = Keyline

$$\frac{536.3\ pCi}{890.55\ pCi} = 0.6022$$

Summary of Nuclide Activity
Sample ID : 08L85480-7

Acquisition date : 16-JAN-2020 10:20:37

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.328E+02	5.329E+02	0.231E+02	4.33	
			---------	---------			
	Total Activity :		5.328E+02	5.329E+02			
	Grand Total Activity :		5.328E+02	5.329E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08L85480-7

Acquisition date : 16-JAN-2020 10:20:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.83	2279	641	1.29	153.30	145	18	3.80E-01	6.0	9.17E+00	
3	74.99	3878	495	1.21	157.61	145	18	6.46E-01	4.1	9.96E+00	
3	84.82	1836	399	1.35	177.21	172	19	3.06E-01	6.0	1.31E+01	
3	87.50	639	317	1.30	182.57	172	19	1.06E-01	13.9	1.38E+01	
1	569.95	6162	226	1.50	1145.32	1139	15	1.03E+00	2.8	5.92E+00	
1	1633.81	214	15	2.19	3267.82	3260	15	3.56E-02	15.9	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.362E+02	5.363E+02	0.226E+02	4.21	
	Total Activity :		5.362E+02	5.363E+02			

Grand Total Activity : 5.362E+02 5.363E+02

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.363E+02	2.257E+01	6.336E+00	0.000E+00	84.641

```
A,08L85480-7      ,01/16/2020 12:00,01/16/2020 00:00,   1.000E+00,L85480-7 GAMMA
B,08L85480-7      ,BI207                ,12/26/2019 12:50,0825MM092019
C,BI-207   ,YES,   5.363E+02,   2.257E+01,   6.336E+00,,   84.641
```

Analyst: SR

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 12:01:00.06
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-JAN-2020 10:20:35.93

LIMS No., Customer Name, Client ID: L85480-8

Sample ID : 02L85480-8
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 16-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:40:03.12
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.85*	4031	845	0.92	130.47	1.63E+01	6.72E-01	2.0	1.86E+00
2	3	75.00*	6839	509	0.89	134.80	1.70E+01	1.14E+00	1.3	
3	3	84.81*	2903	340	1.15	154.56	1.96E+01	4.84E-01	2.1	2.99E+00
4	3	87.47	970	220	1.06	159.91	2.01E+01	1.62E-01	4.2	
5	0	569.74	6730	293	1.32	1131.29	6.31E+00	1.12E+00	1.3	
6	0	1063.72	2924	76	1.85	2126.32	3.08E+00	4.87E-01	2.0	
7	0	1633.37	256	16	1.80	3273.88	1.95E+00	4.27E-02	7.2	
8	0	1770.49	185	3	2.18	3550.12	1.84E+00	3.08E-02	7.6	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2924	74.50*	3.081E+00	5.738E+02	5.739E+02	3.97
	1770.24	185	6.87	1.839E+00	6.593E+02	6.593E+02	15.24

Flag: "*" = Keyline

$$\frac{578\ pCi}{890.55\ pCi} = 0.6490$$

Summary of Nuclide Activity
Sample ID : 02L85480-8

Acquisition date : 16-JAN-2020 10:20:35

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.738E+02	5.739E+02	0.228E+02	3.97	
			---	---			
	Total Activity :		5.738E+02	5.739E+02			
	Grand Total Activity :		5.738E+02	5.739E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02L85480-8

Acquisition date : 16-JAN-2020 10:20:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.85	4031	845	0.92	130.47	125	20	6.72E-01	3.9	1.63E+01	
3	75.00	6839	509	0.89	134.80	125	20	1.14E+00	2.7	1.70E+01	
3	84.81	2903	340	1.15	154.56	148	18	4.84E-01	4.3	1.96E+01	
3	87.47	970	220	1.06	159.91	148	18	1.62E-01	8.4	2.01E+01	
0	569.74	6730	293	1.32	1131.29	1124	15	1.12E+00	2.7	6.31E+00	
0	1633.37	256	16	1.80	3273.88	3266	16	4.27E-02	14.3	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.780E+02	5.780E+02	0.222E+02	3.84	
	Total Activity :		5.780E+02	5.780E+02*			
	Grand Total Activity :		5.780E+02	5.780E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.780E+02	2.219E+01	6.207E+00	0.000E+00	93.125

A,02L85480-8 ,01/16/2020 12:01,01/16/2020 00:00, 1.000E+00,L85480-8
B,02L85480-8 ,BI207 ,01/15/2020 08:15,0225MM103019
C,BI-207 ,YES, 5.780E+02, 2.219E+01, 6.207E+00,, 93.125

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 12:03:17.86
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 16-JAN-2020 10:20:34.76

LIMS No., Customer Name, Client ID: L85480-9 GAMMA COUNT

Sample ID : 02L85480-9
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 16-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:40:37.80
Live time : 0 01:40:35.17

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.88*	2492	619	1.00	146.17	8.70E+00	4.13E-01	2.5	3.36E+00
2	4	75.03*	4522	429	0.96	150.47	9.48E+00	7.49E-01	1.7	
3	3	84.83*	2097	427	1.15	170.07	1.27E+01	3.48E-01	2.7	1.45E+00
4	3	87.43	669	356	1.01	175.25	1.34E+01	1.11E-01	6.1	
5	1	569.76	8622	314	1.38	1139.19	7.08E+00	1.43E+00	1.2	1.49E+00
6	1	1063.93	3711	146	1.78	2126.93	3.52E+00	6.15E-01	1.8	8.97E-01
7	1	1633.77	389	8	2.23	3266.07	2.30E+00	6.44E-02	5.4	1.14E+00
8	1	1770.66	201	6	2.28	3539.76	2.18E+00	3.34E-02	7.5	1.54E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	3711	74.50*	3.524E+00	6.330E+02	6.330E+02	3.62
	1770.24	201	6.87	2.181E+00	6.019E+02	6.019E+02	15.00

Flag: "*" = Keyline

$$\frac{631.1\ pCi}{890.55\ pCi} = 0.7087$$

Summary of Nuclide Activity
Sample ID : 02L85480-9

Acquisition date : 16-JAN-2020 10:20:34

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	6.330E+02	6.330E+02	0.229E+02	3.62	
	Total Activity :		6.330E+02	6.330E+02			
	Grand Total Activity :		6.330E+02	6.330E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02L85480-9
Acquisition date : 16-JAN-2020 10:20:34

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.88	2492	619	1.00	146.17	139	20	4.13E-01	5.1	8.70E+00	
4	75.03	4522	429	0.96	150.47	139	20	7.49E-01	3.4	9.48E+00	
3	84.83	2097	427	1.15	170.07	164	17	3.48E-01	5.5	1.27E+01	
3	87.43	669	356	1.01	175.25	164	17	1.11E-01	12.3	1.34E+01	
1	569.76	8622	314	1.38	1139.19	1132	15	1.43E+00	2.3	7.08E+00	
1	1633.77	389	8	2.23	3266.07	3258	16	6.44E-02	10.8	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	6.311E+02	6.311E+02	0.222E+02	3.52	
	Total Activity :		6.311E+02	6.311E+02			
	Grand Total Activity :		6.311E+02	6.311E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	6.311E+02	2.221E+01	6.441E+00	0.000E+00	97.981

```
A,02L85480-9       ,01/16/2020 12:03,01/16/2020 00:00,   1.000E+00,L85480-9 GAMMA
B,02L85480-9       ,BI207              ,12/30/2019 11:02,0125MM091319
C,BI-207  ,YES,   6.311E+02,   2.221E+01,   6.441E+00,,   97.981
```

Pb-210 Recovery

Work Group

WG32932

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	64.66%	575.5
recovery 2	64.44%	573.5
recovery 3	61.57%	548
Average	63.56%	
2 sigma	3.45	
RPD for highest and lowest	4.90	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:23:19.19
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:35.86

LIMS No., Customer Name, Client ID: L85483-2BI207 GAMMA COUNT

Sample ID : 01L85483-2BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:41:25.27
Live time : 0 01:41:22.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.78*	2304	577	0.98	146.00	8.67E+00	3.79E-01	2.7	3.99E+00
2	3	74.94*	4104	454	0.97	150.31	9.44E+00	6.75E-01	1.9	
3	3	84.80*	1829	453	1.16	170.00	1.27E+01	3.01E-01	3.0	1.26E+00
4	3	87.34	613	319	1.07	175.07	1.34E+01	1.01E-01	6.5	
5	1	569.48	7957	210	1.38	1138.28	7.08E+00	1.31E+00	1.2	1.14E+00
6	1	1063.33	3398	115	1.75	2125.16	3.53E+00	5.59E-01	1.9	8.55E-01
7	1	1632.82	351	15	2.14	3263.54	2.30E+00	5.77E-02	6.0	8.17E-01
8	1	1769.48	201	17	2.11	3536.75	2.18E+00	3.30E-02	8.6	6.80E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	3398	74.50*	3.526E+00	5.747E+02	5.747E+02	3.70
	1770.24	201	6.87	2.182E+00	5.946E+02	5.946E+02	17.13

Flag: "*" = Keyline

Sample ID : 01L85483-2BI207 Acquisition date : 27-JAN-2020 08:38:35

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.747E+02	5.747E+02	0.213E+02	3.70	
	Total Activity :		5.747E+02	5.747E+02			
	Grand Total Activity :		5.747E+02	5.747E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85483-2BI207 Acquisition date : 27-JAN-2020 08:38:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.78	2304	577	0.98	146.00	140	20	3.79E-01	5.3	8.67E+00	
3	74.94	4104	454	0.97	150.31	140	20	6.75E-01	3.8	9.44E+00	
3	84.80	1829	453	1.16	170.00	165	15	3.01E-01	6.1	1.27E+01	
3	87.34	613	319	1.07	175.07	165	15	1.01E-01	13.0	1.34E+01	
1	569.48	7957	210	1.38	1138.28	1130	16	1.31E+00	2.4	7.08E+00	
1	1632.82	351	15	2.14	3263.54	3257	17	5.77E-02	12.0	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.755E+02	5.755E+02	0.208E+02	3.62	
	Total Activity :		5.755E+02	5.755E+02			
Grand Total Activity :			5.755E+02	5.755E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.755E+02	2.082E+01	6.744E+00	0.000E+00	85.340

```
A,01L85483-2BI207 ,01/27/2020 10:23,01/27/2020 00:00,   1.000E+00,L85483-2BI207
B,01L85483-2BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.755E+02,   2.082E+01,   6.744E+00,,   85.340
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:21:33.22
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:38.66

LIMS No., Customer Name, Client ID: L85483-3BI207 GAMMA COUNTT

Sample ID : 02L85483-3BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation- Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:41:04.70
Live time : 0 01:41:01.42

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	4152	770	0.91	130.38	1.62E+01	6.85E-01	1.9	2.95E+00
2	2	74.97*	7141	481	0.89	134.74	1.70E+01	1.18E+00	1.3	
3	3	84.80*	3054	387	1.14	154.54	1.96E+01	5.04E-01	2.1	3.19E+00
4	3	87.40	968	274	1.03	159.77	2.01E+01	1.60E-01	4.3	
5	0	569.65	7070	227	1.39	1131.10	6.31E+00	1.17E+00	1.3	
6	0	1063.53	2970	107	1.76	2125.93	3.08E+00	4.90E-01	2.0	
7	0	1633.12	274	17	2.04	3273.38	1.95E+00	4.53E-02	6.8	
8	0	1770.34	144	16	1.57	3549.83	1.84E+00	2.37E-02	10.2	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2970	74.50*	3.082E+00	5.768E+02	5.768E+02	4.00
	1770.24	144	6.87	1.840E+00	5.071E+02	5.071E+02	20.30

Flag: "*" = Keyline

Sample ID : 02L85483-3BI207 Acquisition date : 27-JAN-2020 08:38:38

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.768E+02	5.768E+02	0.231E+02	4.00	
	Total Activity :		5.768E+02	5.768E+02			
	Grand Total Activity :		5.768E+02	5.768E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85483-3BI207 Acquisition date : 27-JAN-2020 08:38:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	4152	770	0.91	130.38	123	23	6.85E-01	3.8	1.62E+01	
2	74.97	7141	481	0.89	134.74	123	23	1.18E+00	2.6	1.70E+01	
3	84.80	3054	387	1.14	154.54	148	17	5.04E-01	4.2	1.96E+01	
3	87.40	968	274	1.03	159.77	148	17	1.60E-01	8.7	2.01E+01	
0	569.65	7070	227	1.39	1131.10	1124	15	1.17E+00	2.6	6.31E+00	
0	1633.12	274	17	2.04	3273.38	3266	13	4.53E-02	13.5	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.735E+02	5.735E+02	0.225E+02	3.93	
	Total Activity :		5.735E+02	5.735E+02			
Grand Total Activity :			5.735E+02	5.735E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.735E+02	2.251E+01	6.743E+00	0.000E+00	85.049

```
A,02L85483-3BI207 ,01/27/2020 10:21,01/27/2020 00:00,   1.000E+00,L85483-3BI207
B,02L85483-3BI207 ,BI207                ,01/15/2020 08:15,0225MM103019
C,BI-207  ,YES,   5.735E+02,   2.251E+01,   6.743E+00,,   85.049
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:18:55.17
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-JAN-2020 08:38:41.00

LIMS No., Customer Name, Client ID: L85483-4BI207 GAMMA COUNT

Sample ID : 08L85483-4BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.78
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.75	2536	662	1.40	152.56	9.14E+00	4.23E-01	2.7	3.82E+00
2	3	74.94*	4056	466	1.18	156.95	9.94E+00	6.76E-01	2.0	
3	3	84.75*	1976	376	1.38	176.54	1.31E+01	3.29E-01	2.8	9.49E-01
4	3	87.42	676	292	1.25	181.86	1.38E+01	1.13E-01	6.7	
5	1	569.41	6438	180	1.51	1144.30	5.93E+00	1.07E+00	1.3	1.80E+00
6	1	1063.15	2675	77	1.80	2129.66	2.95E+00	4.46E-01	2.1	2.83E+00
7	1	1632.76	206	18	1.92	3265.78	1.91E+00	3.43E-02	8.2	5.55E-01
8	1	1769.84	152	0	2.13	3539.08	1.80E+00	2.53E-02	8.1	3.91E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2675	74.50*	2.953E+00	5.476E+02	5.477E+02	4.16
	1770.24	152	6.87	1.802E+00	5.526E+02	5.526E+02	16.23

Flag: "*" = Keyline

Sample ID : 08L85483-4BI207 Acquisition date : 27-JAN-2020 08:38:41

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.476E+02	5.477E+02	0.228E+02	4.16	
	Total Activity :		5.476E+02	5.477E+02			
	Grand Total Activity :		5.476E+02	5.477E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.75	2536	662	1.40	152.56	144	28	4.23E-01	5.3	9.14E+00	
3	74.94	4056	466	1.18	156.95	144	28	6.76E-01	4.1	9.94E+00	
3	84.75	1976	376	1.38	176.54	171	16	3.29E-01	5.6	1.31E+01	
3	87.42	676	292	1.25	181.86	171	16	1.13E-01	13.4	1.38E+01	
1	569.41	6438	180	1.51	1144.30	1137	16	1.07E+00	2.7	5.93E+00	
1	1632.76	206	18	1.92	3265.78	3259	14	3.43E-02	16.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.479E+02	5.480E+02	0.221E+02	4.03	
	Total Activity :		5.479E+02	5.480E+02			
	Grand Total Activity :		5.479E+02	5.480E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.480E+02	2.206E+01	8.700E+00	0.000E+00	62.987

```
A,08L85483-4BI207 ,01/27/2020 10:18,01/27/2020 00:00,   1.000E+00,L85483-4BI207
B,08L85483-4BI207 ,BI207                ,01/21/2020 08:55,0825MM092019
C,BI-207  ,YES,   5.480E+02,   2.206E+01,   8.700E+00,,   62.987
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

TBE-RDS03 — 01/29/20 12:32 —

Work Order: **L85481** — Customer: **GHD Services, Inc.**

Analysis: **PB-210** — Project: **GH001-3EJACINTO-19**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85481-1		PB-210	06-dec-19 12:40	6.2388 g dry		01-15-20 11:20	.0462	69.16	01-15-20 23:47	Y1B	1801	800 M	809	800 M	.292	.964	CJF
11187072-120619-SS-SJSSA03 (0-2.5 CM) Activity: **4.87E-01** Error: 5.02E-02 MDC: 6.51E-02 pCi/gDry							**L85481-1**				**PB-210**						
L85481-2		PB-210	06-dec-19 12:42	6.2957 g dry		01-15-20 11:20	.0499	74.7	01-15-20 23:47	Y1C	1760	800 M	751	800 M	.278	.964	CJF
11187072-120619-SS-SJSSA03 (7.5-10 CM) Activity: **5.16E-01** Error: 5.12E-02 MDC: 6.53E-02 pCi/gDry							**L85481-2**				**PB-210**						
L85481-3		PB-210	06-dec-19 12:44	6.2159 g dry		01-15-20 11:20	.04	59.88	01-15-20 23:47	Y1D	1567	800 M	1015	800 M	.286	.964	CJF
11187072-120619-SS-SJSSA03 (15-17.5 CM) Activity: **2.78E-01** Error: 5.11E-02 MDC: 7.47E-02 pCi/gDry							**L85481-3**				**PB-210**						
L85481-4		PB-210	06-dec-19 12:46	6.0949 g dry		01-15-20 11:20	.0441	66.02	01-15-20 23:47	Y2A	1265	800 M	724	800 M	.263	.964	CJF
11187072-120619-SS-SJSSA03 (22.5-25 CM) Activity: **3.02E-01** Error: 4.98E-02 MDC: 7.00E-02 pCi/gDry							**L85481-4**				**PB-210**						
L85481-5		PB-210	06-dec-19 12:48	6.1007 g dry		01-15-20 11:20	.0464	69.46	01-15-20 23:47	Y2B	1577	800 M	675	800 M	.296	.964	CJF
11187072-120619-SS-SJSSA03 (30-32.5 CM) Activity: **4.47E-01** Error: 4.71E-02 MDC: 6.00E-02 pCi/gDry							**L85481-5**				**PB-210**						
L85481-6		PB-210	06-dec-19 12:50	6.1933 g dry		01-15-20 11:20	.0428	64.07	01-15-20 23:47	Y2C	1403	800 M	850	800 M	.306	.964	CJF
11187072-120619-SS-SJSSA03 (37.5-40 CM) Activity: **2.61E-01** Error: 4.47E-02 MDC: 6.40E-02 pCi/gDry							**L85481-6**				**PB-210**						
L85481-7		PB-210	06-dec-19 12:52	6.0598 g dry		01-15-20 11:20	.0476	71.26	01-15-20 23:47	Y2D	1550	800 M	647	800 M	.295	.964	CJF
11187072-120619-SS-SJSSA03 (45-47.5 CM) Activity: **4.52E-01** Error: 4.69E-02 MDC: 5.93E-02 pCi/gDry							**L85481-7**				**PB-210**						
L85481-8		PB-210	06-dec-19 12:54	6.0445 g dry		01-15-20 11:20	.0476	71.26	01-15-20 23:47	Y3A	1305	800 M	780	800 M	.271	.964	CJF
11187072-120619-SS-SJSSA03 (52.5-55 CM)																	

Work Order: **L85481**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85481-8	PB-210	06-dec-19 12:54	6.0445 g dry	01-15-20 11:20	.0476	71.26	01-15-20 23:47	Y3A	1305	800 M	780	800 M	.271	.964	CJF
11187072-120619-SS-SJSSA03 (52.5-55 CM) Activity: **2.86E-01** Error: 4.98E-02 MDC: 7.10E-02 pCi/gDry				**L85481-8**			**PB-210**								
L85481-9	PB-210	06-dec-19 12:56	6.1958 g dry	01-15-20 11:20	.0494	73.95	01-15-20 23:47	Y3B	994	800 M	882	800 M	.287	.964	CJF
11187072-120619-SS-SJSSA03 (60-62.5 CM) Activity: 5.63E-02 Error: 4.35E-02 MDC: **6.95E-02** pCi/gDry				L85481-9			PB-210								
L85481-10	PB-210	06-dec-19 12:58	6.6059 g dry	01-24-20 10:30	.0544	81.44	01-24-20 22:42	X1C	1569	800 M	772	800 M	.275	.965	KSC
11187072-120619-SS-SJSSA03 (70-72.5 CM) Activity: **4.02E-01** Error: 4.89E-02 MDC: 6.54E-02 pCi/gDry				**L85481-10**			**PB-210**								
L85481-11	PB-210	06-dec-19 13:00	6.413 g dry	01-24-20 10:30	.0527	78.89	01-24-20 22:42	X1D	1942	800 M	1003	800 M	.283	.965	KSC
11187072-120619-SS-SJSSA03 (80-82.5 CM) Activity: **4.76E-01** Error: 5.50E-02 MDC: 7.48E-02 pCi/gDry				**L85481-11**			**PB-210**								

Raw Data Sheet (rawdata)

TBE-RDS03

01/29/20 12:32

Work Order: **WG32842** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32842-1		PB-210	14-jan-20 00:00	100 %		01-15-20 11:20	.0486	72.75	01-15-20 23:40	X1A	702	800 M	811	800 M	.311	.968	CJF
Blank Samples																	
Activity: -3.12E-01	Error: 2.23E-01	MDC: **3.80E-01**	pCi/Total		WG32842-1		PB-210										
WG32842-2		PB-210	01-jul-91 12:00	100 %		01-15-20 11:20	.0495	74.1	01-15-20 16:28	X4B	701	15 M	802	800 M	.294	.4	CJF
Laboratory Control Samples																	
Activity: **2.68E+02**	Error: 2.07E+01	MDC: 7.07E+00	pCi/Total		**WG32842-2**		**PB-210**										
WG32842-3		PB-210	07-dec-19 12:28	6.3556 g dry		01-15-20 11:20	.0596	89.22	01-15-20 23:40	X1B	1536	800 M	892	800 M	.296	.965	CJF
11187072-120719-SS-SJSSA02 (70-72.5 CM)																	
Activity: **3.06E-01**	Error: 4.69E-02	MDC: 6.62E-02	pCi/gDry		**WG32842-3**		**PB-210**										
WG32842-4		PB-210	07-dec-19 12:26	6.2542 g dry		01-15-20 11:20	.0473	70.81	01-15-20 16:28	X4C	768	15 M	749	800 M	.276	.968	CJF
11187072-120719-SS-SJSSA02 (60-62.5 CM)																	
Activity: **2.07E+01**	Error: 1.52E+00	MDC: 4.80E-01	pCi/gDry		**WG32842-4**		**PB-210**										
WG32842-5		PB-210	07-dec-19 12:26	6.4713 g dry		01-15-20 11:20	.034	50.9	01-15-20 16:28	X4D	821	15 M	813	800 M	.286	.968	CJF
MS																	
Activity: **2.07E+01**	Error: 1.47E+00	MDC: 4.66E-01	pCi/gDry		**WG32842-5**		**PB-210**										

Raw Data Sheet (rawdata)

01/29/20 12:33

Work Order: **WG32932** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32932-1		PB-210	24-jan-20 00:00	100 %		01-24-20 10:30	.0415	62.13	01-24-20 22:42	X1A	940	800 M	811	800 M	.311	.969	KSC
Blank Samples																	
Activity: 3.79E-01	Error: 2.46E-01	MDC: **3.90E-01**	pCi/Total		WG32932-1		PB-210										
WG32932-2		PB-210	01-jul-91 12:00	100 %		01-24-20 10:30	.0462	69.16	01-24-20 15:45	X4A	689	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **2.58E+02**	Error: 2.01E+01	MDC: 6.76E+00	pCi/Total		**WG32932-2**		**PB-210**										
WG32932-3		PB-210	08-dec-19 15:30	6.4435 g dry		01-24-20 10:30	.0502	75.15	01-28-20 22:45	Y3B	1574	800 M	882	800 M	.287	.555	KSC
11187072-120819-BN-SJSSA05 (30-32.5 CM)																	
Activity: **5.97E-01**	Error: 8.56E-02	MDC: 1.20E-01	pCi/gDry		**WG32932-3**		**PB-210**										
WG32932-4		PB-210	08-dec-19 00:00	6.2002 g dry		01-24-20 10:30	.0635	95.06	01-24-20 15:45	X4B	802	15 M	802	800 M	.294	.967	KSC
11187072-120819-BN-SJSSA05 (7.5-10 CM)																	
Activity: **2.11E+01**	Error: 1.52E+00	MDC: 4.85E-01	pCi/gDry		**WG32932-4**		**PB-210**										
WG32932-5		PB-210	08-dec-19 00:00	6.119 g dry		01-24-20 10:30	.0398	59.68	01-24-20 15:45	X4C	636	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **1.80E+01**	Error: 1.46E+00	MDC: 5.05E-01	pCi/gDry		**WG32932-5**		**PB-210**										

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85480-11	1355	4.66	800.00	01/15/2020 23:47		6.2080	g	pCi	PB-210	0.305	2.66E-01	4.37E-02	6.18E-02	g Dry	0.653	0.9640	790.	800.0	
L85481-1	1801	4.66	800.00	01/15/2020 23:47		6.2388	g	pCi	PB-210	0.292	4.87E-01	5.02E-02	6.51E-02	g Dry	0.653	0.9639	809.	800.0	
L85481-2	1760	4.66	800.00	01/15/2020 23:47		6.2957	g	pCi	PB-210	0.278	5.16E-01	5.12E-02	6.53E-02	g Dry	0.653	0.9639	751.	800.0	
L85481-3	1567	4.66	800.00	01/15/2020 23:47		6.2159	g	pCi	PB-210	0.286	2.78E-01	5.11E-02	7.47E-02	g Dry	0.653	0.9639	1015.	800.0	
L85481-4	1265	4.66	800.00	01/15/2020 23:47		6.0949	g	pCi	PB-210	0.263	3.02E-01	4.98E-02	7.00E-02	g Dry	0.653	0.9639	724.	800.0	
L85481-5	1577	4.66	800.00	01/15/2020 23:47		6.1007	g	pCi	PB-210	0.296	4.47E-01	4.71E-02	6.00E-02	g Dry	0.653	0.9639	675.	800.0	
L85481-6	1403	4.66	800.00	01/15/2020 23:47		6.1933	g	pCi	PB-210	0.306	2.61E-01	4.47E-02	6.40E-02	g Dry	0.653	0.9639	850.	800.0	
L85481-7	1550	4.66	800.00	01/15/2020 23:47		6.0598	g	pCi	PB-210	0.295	4.52E-01	4.69E-02	5.93E-02	g Dry	0.653	0.9639	647.	800.0	
L85481-8	1305	4.66	800.00	01/15/2020 23:47		6.0445	g	pCi	PB-210	0.271	2.86E-01	4.98E-02	7.10E-02	g Dry	0.653	0.9639	780.	800.0	
L85481-9	994	4.66	800.00	01/15/2020 23:47		6.1958	g	pCi	PB-210	0.287	5.63E-02	4.35E-02	6.95E-02	g Dry	0.653	0.9639	882.	800.0	

1/17/20
Reviewed Date

KOJ 1/17/20

Data Filename: Y011520N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85480-11	22	1355	1/15/2020 23:47	800 800MIN	1650
1 b	b l85481-1	29	1801	1/15/2020 23:47	800 800MIN	1650
1 c	b l85481-2	26	1760	1/15/2020 23:47	800 800MIN	1650
1 d	b l85481-3	31	1567	1/15/2020 23:47	800 800MIN	1650
2 a	b l85481-4	24	1265	1/15/2020 23:47	800 800MIN	1650
2 b	b l85481-5	27	1577	1/15/2020 23:47	800 800MIN	1650
2 c	b l85481-6	24	1403	1/15/2020 23:47	800 800MIN	1650
2 d	b l85481-7	23	1550	1/15/2020 23:47	800 800MIN	1650
3 a	b l85481-8	28	1305	1/15/2020 23:47	800 800MIN	1650
3 b	b l85481-9	29	994	1/15/2020 23:47	800 800MIN	1650
3 c		21	597	1/15/2020 23:47	800 800MIN	1650
3 d				1/15/2020 23:47	800 800MIN	1650
4 a		0	0	1/15/2020 23:47	800 800MIN	1650
4 b		0	0	1/15/2020 23:47	800 800MIN	1650
4 c		0	0	1/15/2020 23:47	800 800MIN	1650
4 d		0	0	1/15/2020 23:47	800 800MIN	1650

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-1	940	4.66	800.00	01/24/2020 22:42		1.0000	%	pCi	PB-210	0.311	3.79E-01	2.46E-01	3.90E-01	Total	0.636	0.9686	811.	800.0	
~~WG32932-3~~	~~1989~~	~~4.66~~	~~800.00~~	~~01/24/2020 22:42~~		~~6.4435~~	~~g~~	~~pCi~~	~~PB-210~~	~~0.296~~	~~5.29E-01~~	~~5.17E-02~~	~~6.71E-02~~	~~g Dry~~	~~0.636~~	~~0.9648~~	~~892.~~	~~800.0~~	
L85481-10	1569	4.66	800.00	01/24/2020 22:42		6.6059	g	pCi	PB-210	0.275	4.02E-01	4.89E-02	6.54E-02	g Dry	0.636	0.9646	772.	800.0	
L85481-11	1942	4.66	800.00	01/24/2020 22:42		6.4130	g	pCi	PB-210	0.283	4.76E-01	5.50E-02	7.48E-02	g Dry	0.636	0.9646	1003.	800.0	
L85482-1	3095	4.66	800.00	01/24/2020 22:42		6.0193	g	pCi	PB-210	0.312	1.11E+00	6.13E-02	6.54E-02	g Dry	0.636	0.9648	822.	800.0	
L85482-2	2695	4.66	800.00	01/24/2020 22:42		6.4011	g	pCi	PB-210	0.267	1.00E+00	6.39E-02	7.23E-02	g Dry	0.636	0.9648	832.	800.0	
L85482-3	2747	4.66	800.00	01/24/2020 22:42		6.6447	g	pCi	PB-210	0.281	9.30E-01	5.92E-02	6.73E-02	g Dry	0.636	0.9648	860.	800.0	
L85482-4	2833	4.66	800.00	01/24/2020 22:42		6.5085	g	pCi	PB-210	0.263	8.89E-01	6.81E-02	8.60E-02	g Dry	0.636	0.9648	1179.	800.0	
L85482-5	2969	4.66	800.00	01/24/2020 22:42		6.5447	g	pCi	PB-210	0.293	1.05E+00	5.86E-02	6.22E-02	g Dry	0.636	0.9648	777.	800.0	
L85482-6	2129	4.66	800.00	01/24/2020 22:42		6.3253	g	pCi	PB-210	0.309	6.38E-01	5.05E-02	6.06E-02	g Dry	0.636	0.9648	769.	800.0	
L85482-7	2014	4.66	800.00	01/24/2020 22:42		6.2422	g	pCi	PB-210	0.294	6.07E-01	5.31E-02	6.61E-02	g Dry	0.636	0.9648	802.	800.0	
L85482-8	2290	4.66	800.00	01/24/2020 22:42		6.1568	g	pCi	PB-210	0.276	8.32E-01	5.95E-02	6.89E-02	g Dry	0.636	0.9648	749.	800.0	
L85482-9	2538	4.66	800.00	01/24/2020 22:42		6.2843	g	pCi	PB-210	0.286	8.81E-01	5.91E-02	6.78E-02	g Dry	0.636	0.9648	813.	800.0	

MDL 1/28/20
Reviewed Date

Data Filename: X012420N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

U 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32932-1	31	940	1/24/2020 22:42	800 800MIN	1580
1 b	b wg32932-3	42	1989	1/24/2020 22:42	800 800MIN	1580
1 c	b l85481-10	44	1569	1/24/2020 22:42	800 800MIN	1580
1 d	b l85481-11	35	1942	1/24/2020 22:42	800 800MIN	1580
2 a		17	2170	1/24/2020 22:42	800 800MIN	1580
2 b		22	697	1/24/2020 22:42	800 800MIN	1580
2 c	b l85482-1	31	3095	1/24/2020 22:42	800 800MIN	1580
2 d		30	662	1/24/2020 22:42	800 800MIN	1580
3 a	b l85482-2	17	2695	1/24/2020 22:42	800 800MIN	1580
3 b	b l85482-3	37	2747	1/24/2020 22:42	800 800MIN	1580
3 c	b l85482-4	31	2833	1/24/2020 22:42	800 800MIN	1580
3 d	b l85482-5	53	2969	1/24/2020 22:42	800 800MIN	1580
4 a	b l85482-6	32	2129	1/24/2020 22:42	800 800MIN	1580
4 b	b l85482-7	37	2014	1/24/2020 22:42	800 800MIN	1580
4 c	b l85482-8	22	2290	1/24/2020 22:42	800 800MIN	1580
4 d	b l85482-9	35	2538	1/24/2020 22:42	800 800MIN	1580

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85483-5	972	4.66	800.00	01/28/2020 22:45		6.2452	g	pCi	PB-210	0.271	1.81E-01	7.90E-02	1.23E-01	g Dry	0.636	0.5546	780.	800.0	
WG32932-3	1574	4.66	800.00	01/28/2020 22:45		6.4435	g	pCi	PB-210	0.287	5.97E-01	8.56E-02	1.19E-01	g Dry	0.636	0.5546	882.	800.0	

KEJ 1/29/20
Reviewed Date

MSA 1/29/20

Data Filename: Y012820N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/28/2020 22:45	800 800MIN	1650
1 b				1/28/2020 22:45	800 800MIN	1650
1 c				1/28/2020 22:45	800 800MIN	1650
1 d				1/28/2020 22:45	800 800MIN	1650
2 a				1/28/2020 22:45	800 800MIN	1650
2 b				1/28/2020 22:45	800 800MIN	1650
2 c				1/28/2020 22:45	800 800MIN	1650
2 d				1/28/2020 22:45	800 800MIN	1650
3 a	b l85483-5	18	972	1/28/2020 22:45	800 800MIN	1650
3 b	b wg32932-3	11	1574	1/28/2020 22:45	800 800MIN	1650
3 c		16	643	1/28/2020 22:45	800 800MIN	1650
3 d		24	1054	1/28/2020 22:45	800 800MIN	1650
4 a		0	0	1/28/2020 22:45	800 800MIN	1650
4 b		0	0	1/28/2020 22:45	800 800MIN	1650
4 c		0	0	1/28/2020 22:45	800 800MIN	1650
4 d		0	0	1/28/2020 22:45	800 800MIN	1650

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-2	689	4.66	15.00	01/24/2020 15:45		1.0000	%	pCi	PB-210	0.309	2.58E+02	2.01E+01	6.76E+00	Total	0.636	0.3995	769.	800.0	
WG32932-4	802	4.66	15.00	01/24/2020 15:45		6.2002	g	pCi	PB-210	0.294	2.11E+01	1.52E+00	4.85E-01	g Dry	0.636	0.9670	802.	800.0	
WG32932-5	636	4.66	15.00	01/24/2020 15:45		6.1190	g	pCi	PB-210	0.276	1.80E+01	1.46E+00	5.05E-01	g Dry	0.636	0.9670	749.	800.0	

JSH 1/28/20
Reviewed Date

Data Filename: X012420AS.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

LLOS 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/24/2020 15:10	15 15MIN	1580
1 b				1/24/2020 15:10	15 15MIN	1580
1 c				1/24/2020 15:10	15 15MIN	1580
1 d				1/24/2020 15:10	15 15MIN	1580
2 a				1/24/2020 15:10	15 15MIN	1580
2 b				1/24/2020 15:10	15 15MIN	1580
2 c				1/24/2020 15:10	15 15MIN	1580
2 d				1/24/2020 15:10	15 15MIN	1580
3 a				1/24/2020 15:45	15 15MIN	1580
3 b				1/24/2020 15:45	15 15MIN	1580
3 c				1/24/2020 15:45	15 15MIN	1580
3 d				1/24/2020 15:45	15 15MIN	1580
4 a	b wg32932-2	4	689	1/24/2020 15:45	15 15MIN	1580
4 b	b wg32932-4	5	802	1/24/2020 15:45	15 15MIN	1580
4 c	b wg32932-5	6	636	1/24/2020 15:45	15 15MIN	1580
4 d		1	8	1/24/2020 15:45	15 15MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32842-1	702	4.66	800.00	01/15/2020 23:40		1.0000	%	pCi	PB-210	0.311	-3.12E-01	2.23E-01	3.80E-01	Total	0.653	0.9677	811.	800.0	
WG32842-3	1536	4.66	800.00	01/15/2020 23:40		6.3556	g	pCi	PB-210	0.296	3.06E-01	4.69E-02	6.62E-02	g Dry	0.653	0.9647	892.	800.0	
L85480-1	2047	4.66	800.00	01/15/2020 23:40		6.3022	g	pCi	PB-210	0.275	6.57E-01	5.47E-02	6.67E-02	g Dry	0.653	0.9647	772.	800.0	
L85480-2	2072	4.66	800.00	01/15/2020 23:40		6.1161	g	pCi	PB-210	0.283	5.52E-01	5.73E-02	7.63E-02	g Dry	0.653	0.9647	1003.	800.0	
L85480-3	1579	4.66	800.00	01/15/2020 23:40		6.2718	g	pCi	PB-210	0.312	3.46E-01	4.48E-02	6.11E-02	g Dry	0.653	0.9647	822.	800.0	
L85480-4	1363	4.66	800.00	01/15/2020 23:40		6.3483	g	pCi	PB-210	0.267	2.80E-01	4.95E-02	7.10E-02	g Dry	0.653	0.9647	832.	800.0	
L85480-5	1304	4.66	800.00	01/15/2020 23:40		6.2474	g	pCi	PB-210	0.281	2.26E-01	4.74E-02	6.97E-02	g Dry	0.653	0.9647	860.	800.0	
L85480-6	1638	4.66	800.00	01/15/2020 23:40		6.3820	g	pCi	PB-210	0.263	2.45E-01	5.66E-02	8.53E-02	g Dry	0.653	0.9647	1179.	800.0	
L85480-7	1482	4.66	800.00	01/15/2020 23:40		6.2839	g	pCi	PB-210	0.293	3.42E-01	4.61E-02	6.31E-02	g Dry	0.653	0.9647	777.	800.0	
L85480-8	1458	4.66	800.00	01/15/2020 23:40		6.1263	g	pCi	PB-210	0.294	3.26E-01	4.72E-02	6.55E-02	g Dry	0.653	0.9647	802.	800.0	
L85480-9	1382	4.66	800.00	01/15/2020 23:40		6.1896	g	pCi	PB-210	0.276	3.31E-01	4.83E-02	6.67E-02	g Dry	0.653	0.9647	749.	800.0	
L85480-10	1557	4.66	800.00	01/15/2020 23:40		6.1172	g	pCi	PB-210	0.286	3.80E-01	4.97E-02	6.78E-02	g Dry	0.653	0.9647	813.	800.0	

11/16/20
Reviewed Date

1/16/20

Data Filename: X011520N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32842-1	31	702	1/15/2020 23:40	800 400MIN	1580
1 b	b wg32842-3	38	1536	1/15/2020 23:40	800 400MIN	1580
1 c	b l85480-1	53	2047	1/15/2020 23:40	800 400MIN	1580
1 d	b l85480-2	38	2072	1/15/2020 23:40	800 400MIN	1580
2 a		21	1928	1/15/2020 23:40	800 400MIN	1580
2 b		28	624	1/15/2020 23:40	800 400MIN	1580
2 c	b l85480-3	40	1579	1/15/2020 23:40	800 400MIN	1580
2 d		28	609	1/15/2020 23:40	800 400MIN	1580
3 a	b l85480-4	36	1363	1/15/2020 23:40	800 400MIN	1580
3 b	b l85480-5	31	1304	1/15/2020 23:40	800 400MIN	1580
3 c	b l85480-6	34	1638	1/15/2020 23:40	800 400MIN	1580
3 d	b l85480-7	49	1482	1/15/2020 23:40	800 400MIN	1580
4 a		4	127	1/15/2020 23:40	800 400MIN	1580
4 b	b l85480-8	41	1458	1/15/2020 23:40	800 400MIN	1580
4 c	b l85480-9	24	1382	1/15/2020 23:40	800 400MIN	1580
4 d	b l85480-10	43	1557	1/15/2020 23:40	800 400MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32842-2	701	4.66	15.00	01/15/2020 16:28		1.0000	%	pCi	PB-210	0.294	2.68E+02	2.07E+01	7.07E+00	Total	0.653	0.4001	802.	800.0	
WG32842-4	768	4.66	15.00	01/15/2020 16:28		6.2542	g	pCi	PB-210	0.276	2.07E+01	1.52E+00	4.80E-01	g Dry	0.653	0.9683	749.	800.0	
WG32842-5	821	4.66	15.00	01/15/2020 16:28		6.4713	g	pCi	PB-210	0.286	2.07E+01	1.47E+00	4.66E-01	g Dry	0.653	0.9683	813.	800.0	

Reviewed 1/17/20 Date

Data Filename: X011520A.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/17/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a		0	13	1/15/2020 16:28	15 15MIN	1580
1 b		0	18	1/15/2020 16:28	15 15MIN	1580
1 c		0	20	1/15/2020 16:28	15 15MIN	1580
1 d		0	18	1/15/2020 16:28	15 15MIN	1580
2 a		0	29	1/15/2020 16:28	15 15MIN	1580
2 b		0	7	1/15/2020 16:28	15 15MIN	1580
2 c		0	19	1/15/2020 16:28	15 15MIN	1580
2 d		0	13	1/15/2020 16:28	15 15MIN	1580
3 a		0	18	1/15/2020 16:28	15 15MIN	1580
3 b		0	17	1/15/2020 16:28	15 15MIN	1580
3 c		0	33	1/15/2020 16:28	15 15MIN	1580
3 d		1	22	1/15/2020 16:28	15 15MIN	1580
4 a		0	2	1/15/2020 16:28	15 15MIN	1580
4 b	b wg32842-2	4	701	1/15/2020 16:28	15 15MIN	1580
4 c	b wg32842-4	0	768	1/15/2020 16:28	15 15MIN	1580
4 d	b wg32842-5	9	821	1/15/2020 16:28	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85481

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32842-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32842-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32842-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02
WG32932-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32932-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32932-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32842-1	WO	BLK	PB-210	100 %	01/14/20	CJF		.0303	BALANCE 10	.0789	BALANCE 10	.0486	01/15/20	WG32842
WG32842-2	WO	LCS	PB-210	100 %	01/14/20	CJF		.0304	BALANCE 10	.0799	BALANCE 10	.0495	01/15/20	WG32842
WG32842-3	S	DUP	PB-210	6.3556 g dry	01/14/20	CJF	BALANCE 7	.0305	BALANCE 10	.0901	BALANCE 10	.0596	01/15/20	WG32842
WG32842-4	S	MS	PB-210	6.2542 g dry	01/14/20	CJF	BALANCE 7	.0303	BALANCE 10	.0776	BALANCE 10	.0473	01/15/20	WG32842
WG32842-5	S	MSD	PB-210	6.4713 g dry	01/14/20	CJF	BALANCE 7	.0304	BALANCE 10	.0644	BALANCE 10	.0340	01/15/20	WG32842
WG32932-1	WO	BLK	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0750	BALANCE 10	.0415	01/24/20	WG32932
WG32932-2	WO	LCS	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0793	BALANCE 10	.0462	01/24/20	WG32932
WG32932-3	S	DUP	PB-210	6.4435 g dry	01/24/20	KSC	BALANCE 7	.0333	BALANCE 10	.0835	BALANCE 10	.0502	01/24/20	WG32932
WG32932-4	S	MS	PB-210	6.2002 g dry	01/24/20	KSC	BALANCE 7	.0339	BALANCE 10	.0974	BALANCE 10	.0635	01/24/20	WG32932
WG32932-5	S	MSD	PB-210	6.119 g dry	01/24/20	KSC	BALANCE 7	.0338	BALANCE 10	.0736	BALANCE 10	.0398	01/24/20	WG32932
L85481-1	S		PB-210	6.2388 g dry	01/14/20	CJF	BALANCE 7	.0302	BALANCE 10	.0764	BALANCE 10	.0462	01/15/20	WG32842
L85481-2	S		PB-210	6.2957 g dry	01/14/20	CJF	BALANCE 7	.0304	BALANCE 10	.0803	BALANCE 10	.0499	01/15/20	WG32842
L85481-3	S		PB-210	6.2159 g dry	01/14/20	CJF	BALANCE 7	.0302	BALANCE 10	.0702	BALANCE 10	.0400	01/15/20	WG32842
L85481-4	S		PB-210	6.0949 g dry	01/14/20	CJF	BALANCE 7	.0301	BALANCE 10	.0742	BALANCE 10	.0441	01/15/20	WG32842
L85481-5	S		PB-210	6.1007 g dry	01/14/20	CJF	BALANCE 7	.0301	BALANCE 10	.0765	BALANCE 10	.0464	01/15/20	WG32842
L85481-6	S		PB-210	6.1933 g dry	01/14/20	CJF	BALANCE 7	.0301	BALANCE 10	.0729	BALANCE 10	.0428	01/15/20	WG32842
L85481-7	S		PB-210	6.0598 g dry	01/14/20	CJF	BALANCE 7	.0305	BALANCE 10	.0781	BALANCE 10	.0476	01/15/20	WG32842
L85481-8	S		PB-210	6.0445 g dry	01/14/20	CJF	BALANCE 7	.0300	BALANCE 10	.0776	BALANCE 10	.0476	01/15/20	WG32842
L85481-9	S		PB-210	6.1958 g dry	01/14/20	CJF	BALANCE 7	.0301	BALANCE 10	.0795	BALANCE 10	.0494	01/15/20	WG32842

PB-210

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
L85481-10	S		PB-210	6.6059 g dry	01/24/20	KSC	BALANCE 7	.0343	BALANCE 10	.0887	BALANCE 10	.0544	01/24/20	WG32932
L85481-11	S		PB-210	6.413 g dry	01/24/20	KSC	BALANCE 7	.0337	BALANCE 10	.0864	BALANCE 10	.0527	01/24/20	WG32932

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0008

Check Date: 14-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 14-JAN-20

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 24-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 24-JAN-20

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0000

Check Date: 15-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 15-JAN-20

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0000

Check Date: 24-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 24-JAN-20

Daily Pipette Tolerance Check
for: L85481

Instrument: PIPETTE 13
Model: WHEATON ACURA 821
Serial #: 10031686
Description: ADJ VOLUME .2-1

Known	Result
.5	.5041
1	1.0032

Check Date: 15-JAN-20
Analyst: CJF
Balance: BALANCE 10
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIPETTE 13	15-JAN-20

Daily Pipette Tolerance Check
for: L85481

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5039
1	1.0027

Check Date: 24-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	24-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

CALIBRATION No. 0146

Description

Principal radionuclide: Lead-210

Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24

Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI 18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85481

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85481-1	11187072-120619-SS-SJSSA03 (0-2.5 CM)	256.14	665.04	482.11	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	44.74
L85481-2	11187072-120619-SS-SJSSA03 (7.5-10 CM)	256.99	667.98	503.09	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	40.12
L85481-3	11187072-120619-SS-SJSSA03 (15-17.5 CM)	255.5	689.12	532.37	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	36.15
L85481-4	11187072-120619-SS-SJSSA03 (22.5-25 CM)	256.17	701.28	543.8	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	35.38
L85481-5	11187072-120619-SS-SJSSA03 (30-32.5 CM)	257.32	727.97	571.61	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	33.22
L85481-6	11187072-120619-SS-SJSSA03 (37.5-40 CM)	257.56	752.1	586.43	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	33.5
L85481-7	11187072-120619-SS-SJSSA03 (45-47.5 CM)	256.43	790.97	600.71	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	35.59
L85481-8	11187072-120619-SS-SJSSA03 (52.5-55 CM)	255.23	808.92	633.62	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	31.66
L85481-9	11187072-120619-SS-SJSSA03 (60-62.5 CM)	258.05	985.85	710.08	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	37.89
L85481-10	11187072-120619-SS-SJSSA03 (70-72.5 CM)	256.29	943.69	633.88	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	45.07
L85481-11	11187072-120619-SS-SJSSA03 (80-82.5 CM)	257.4	947.63	697.32	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	36.26

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 23-DEC-19

Daily Balance Tolerance Check Reports

for : L85481

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 27-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85484

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85484
GH001-3EJACINTO-19

01/31/2020 11:32

Sample Receipt

The following sample(s) were received on December 16, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120619-SS-SJSSA06 (0-2.5 CM)	L85484-1	
11187072-120619-SS-SJSSA06 (7.5-10 CM)	L85484-2	
11187072-120619-SS-SJSSA06 (15-17.5 CM)	L85484-3	
11187072-120619-SS-SJSSA06 (22.5-25 CM)	L85484-4	
11187072-120619-SS-SJSSA06 (30-32.5 CM)	L85484-5	
11187072-120619-SS-SJSSA06 (37.5-40 CM)	L85484-6	
11187072-120619-SS-SJSSA06 (45-47.5 CM)	L85484-7	
11187072-120619-SS-SJSSA06 (52.5-55 CM)	L85484-8	
11187072-120619-SS-SJSSA06 (60-62.5 CM)	L85484-9	
11187072-120619-SS-SJSSA06 (70-72.5 CM)	L85484-10	
11187072-120619-SS-SJSSA06 (80-82.5 CM)	L85484-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
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Case Narrative - L85484
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01/31/2020 11:32

Special Considerations

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32735.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120819-BN-SJSSA05 (70-72.5 CM)	L85483-10	WG32735-1

PB-210

Quality Control

Quality control sample(s) analyzed as WG32883. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120919-BN-SJSSA07 (22.5-25 CM)	L85485-4	WG32883-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

TELEDYNE
BROWN ENGINEERING, INC.
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Knoxville, TN 37931-3133

Case Narrative - L85484
GH001-3EJACINTO-19

01/31/2020 11:32

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 17:51

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85484

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA06 (0-2.5 CM)** Collect Start: 12/06/2019 15:40 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 23.34
LIMS Number: L85484-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.21E-01**	5.70E-02	8.62E-02	pCi/gDry		6.3574	g dry	12/06/19 15:40	01/21/20	800	M	+			
CS-137	2007	-8.64E-03	3.69E-02	**6.48E-02**	pCi/g Dry		353.54	g dry	12/06/19 15:40	12/31/19	5535	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (7.5-10 CM)** Collect Start: 12/06/2019 15:42 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 38.09
LIMS Number: L85484-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.61E-01**	4.93E-02	7.45E-02	pCi/gDry		6.7569	g dry	12/06/19 15:42	01/21/20	800	M	+			
CS-137	2007	1.89E-02	3.06E-02	**5.37E-02**	pCi/g Dry		342.75	g dry	12/06/19 15:42	12/31/19	5557	Sec	U	-	No	

Sample ID: **11187072-120619-SS-SJSSA06 (15-17.5 CM)** Collect Start: 12/06/2019 15:44 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 34.26
LIMS Number: L85484-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.39E-02**	4.91E-02	7.73E-02	pCi/gDry		6.0512	g dry	12/06/19 15:44	01/21/20	800	M	+			
CS-137	2007	-2.67E-02	2.79E-02	**3.91E-02**	pCi/g Dry		380	g dry	12/06/19 15:44	12/31/19	5498	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 17:51

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85484

GHD Services, Inc.

Janie Smith

GH001-3EJACINTO-19

Sample ID: **11187072-120619-SS-SJSSA06 (22.5-25 CM)** Collect Start: 12/06/2019 15:46 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 21.08
LIMS Number: L85484-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.15E-01**	4.76E-02	6.92E-02	pCi/gDry		6.1257	g dry	12/06/19 15:46	01/21/20	800	M	+			
CS-137	2007	2.83E-02	3.49E-02	**6.26E-02**	pCi/g Dry		314.09	g dry	12/06/19 15:46	12/31/19	5576	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (30-32.5 CM)** Collect Start: 12/06/2019 15:48 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 20.07
LIMS Number: L85484-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.13E-01**	5.22E-02	8.14E-02	pCi/gDry		6.2244	g dry	12/06/19 15:48	01/21/20	800	M	+			
CS-137	2007	-5.07E-02	6.43E-02	**1.08E-01**	pCi/g Dry		166.03	g dry	12/06/19 15:48	12/31/19	3985	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (37.5-40 CM)** Collect Start: 12/06/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 20.56
LIMS Number: L85484-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.52E-02**	5.13E-02	8.13E-02	pCi/gDry		6.252	g dry	12/06/19 15:50	01/21/20	800	M	+			
CS-137	2007	3.28E-04	3.36E-02	**5.44E-02**	pCi/g Dry		328.92	g dry	12/06/19 15:50	12/31/19	5594	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 17:51

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85484

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA06 (45-47.5 CM)** Collect Start: 12/06/2019 15:52 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 20.17
LIMS Number: L85484-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.66E-01**	4.78E-02	7.23E-02	pCi/gDry		6.6032	g dry	12/06/19 15:52	01/21/20	800	M	+			
CS-137	2007	7.54E-03	4.60E-02	**7.87E-02**	pCi/g Dry		152.86	g dry	12/06/19 15:52	12/31/19	4023	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (52.5-55 CM)** Collect Start: 12/06/2019 15:54 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 18.94
LIMS Number: L85484-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	4.20E-02	4.34E-02	**6.97E-02**	pCi/gDry		6.4522	g dry	12/06/19 15:54	01/21/20	800	M	U			
CS-137	2007	-2.05E-02	3.37E-02	**4.97E-02**	pCi/g Dry		307.45	g dry	12/06/19 15:54	12/31/19	5612	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (60-62.5 CM)** Collect Start: 12/06/2019 15:56 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 18.69
LIMS Number: L85484-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.13E-01**	4.85E-02	7.56E-02	pCi/gDry		6.5644	g dry	12/06/19 15:56	01/21/20	800	M	+			
CS-137	2007	-2.79E-02	2.40E-02	**3.50E-02**	pCi/g Dry		363.51	g dry	12/06/19 15:56	12/31/19	5630	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 17:51

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85484

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120619-SS-SJSSA06 (70-72.5 CM)** Collect Start: 12/06/2019 15:58 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 19.74
LIMS Number: L85484-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.88E-01**	5.40E-02	8.15E-02	pCi/gDry		6.0873	g dry	12/06/19 15:58	01/21/20	800	M	+			
CS-137	2007	-1.49E-02	3.43E-02	**5.25E-02**	pCi/g Dry		345.26	g dry	12/06/19 15:58	12/31/19	5651	Sec	U		No	

Sample ID: **11187072-120619-SS-SJSSA06 (80-82.5 CM)** Collect Start: 12/06/2019 16:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 23.25
LIMS Number: L85484-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.41E-02**	5.31E-02	8.42E-02	pCi/gDry		6.5434	g dry	12/06/19 16:00	01/21/20	800	M	+			
CS-137	2007	-3.02E-03	2.71E-02	**4.48E-02**	pCi/g Dry		379.75	g dry	12/06/19 16:00	12/31/19	5668	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85484

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32735-1	All non-detects.	S						<50	U	NE
L85483-10										

GAMMA

Associated Samples for WG32735

Sample #	Client ID
L85484-1	11187072-120619-SS-SJSSA06 (0-2.5 CM)
L85484-2	11187072-120619-SS-SJSSA06 (7.5-10 CM)
L85484-3	11187072-120619-SS-SJSSA06 (15-17.5 CM)
L85484-4	11187072-120619-SS-SJSSA06 (22.5-25 CM)
L85484-5	11187072-120619-SS-SJSSA06 (30-32.5 CM)
L85484-6	11187072-120619-SS-SJSSA06 (37.5-40 CM)
L85484-7	11187072-120619-SS-SJSSA06 (45-47.5 CM)
L85484-8	11187072-120619-SS-SJSSA06 (52.5-55 CM)
L85484-9	11187072-120619-SS-SJSSA06 (60-62.5 CM)
L85484-10	11187072-120619-SS-SJSSA06 (70-72.5 CM)
L85484-11	11187072-120619-SS-SJSSA06 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85484

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32883-1	PB-210	WO	01/21/2020 01:06	< 4.510E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32883-2	PB-210	WO	01/20/2020 18:16	3.18E+02	3.060E+02	pCi/Total	96.4	75-125	+	P

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32883-3	PB-210	S	01/21/2020 01:06	1.050E+00	8.320E-01	pCi/gDry	23.2	<50	+	P
L85485-4										

Matrix Spike Summary

				Decay Corrected							
TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32883-4	PB-210	S	01/20/2020 18:16	2.12E+01	1.130E-01	2.460E+01	pCi/gDry	115.6	60-140	+	P
L85484-9											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85484

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Decay Corrected Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32883-5	PB-210	S	01/20/2020 18:16	2.09E+01	2.250E+01	107.4	pCi/gDry	7.4	<30	+	P
WG32883-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02**	**pCi/ml**									
Spike Vol:	**5.00E-01**	**ml**									

PB-210

Associated Samples for WG32883

Sample #	Client ID
L85484-1	11187072-120619-SS-SJSSA06 (0-2.5 CM)
L85484-2	11187072-120619-SS-SJSSA06 (7.5-10 CM)
L85484-3	11187072-120619-SS-SJSSA06 (15-17.5 CM)
L85484-4	11187072-120619-SS-SJSSA06 (22.5-25 CM)
L85484-5	11187072-120619-SS-SJSSA06 (30-32.5 CM)
L85484-6	11187072-120619-SS-SJSSA06 (37.5-40 CM)
L85484-7	11187072-120619-SS-SJSSA06 (45-47.5 CM)
L85484-8	11187072-120619-SS-SJSSA06 (52.5-55 CM)
L85484-9	11187072-120619-SS-SJSSA06 (60-62.5 CM)
L85484-10	11187072-120619-SS-SJSSA06 (70-72.5 CM)
L85484-11	11187072-120619-SS-SJSSA06 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

L85484

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Page _____ of _____

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:
P - 10CFR61, 10CFR50, Other high level: _____
Turn-around-time 10 days
Hazardous Material in Shipment Yes_____* No_____

Lims# _____
(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start	Collection Date/Time Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120619-SS-SJSSA06 (0-2.5 cm)	Soil		12/6/2019 1540		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (7.5-10 cm)	Soil		12/6/2019 1542		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (15-17.5 cm)	Soil		12/6/2019 1544		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (22.5-25 cm)	Soil		12/6/2019 1546		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (30-32.5 cm)	Soil		12/6/2019 1548		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (37.5-40 cm)	Soil		12/6/2019 1550		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (45-47.5 cm)	Soil		12/6/2019 1552		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (52.5-55 cm)	Soil		12/6/2019 1554		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (60-62.5 cm)	Soil		12/6/2019 1556		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (70-72.5 cm)	Soil		12/6/2019 1558		16 oz	1	S	Isotopes
	11187072-120619-SS-SJSSA06 (80-82.5 cm)	Soil		12/6/2019 1600		16 oz	1	S	Isotopes
									** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N. Gomez	Date: 12-11-19 N. Gomez	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Tracy Lopp	Date: 12-16-19 10:30	Received by:	Date:	Received by:	Date:

12/19/19 17:56

SR #: SR64448

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 **LIMS #L85484**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:

Notify Date:

Notify Method:

Notify Comment:

Client Response

Person Responding:

Response Date:

Response Method:

Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

01/29/20 17:54

SR #: SR64448

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 **LIMS #L85484**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:

Notify Date:

Notify Method:

Notify Comment:

Client Response

Person Responding:

Response Date:

Response Method:

Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85484

****

L85484-1 S 11187072-120619-SS-SJSSA06 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/21/20

****

L85484-2 S 11187072-120619-SS-SJSSA06 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/21/20

****

L85484-3 S 11187072-120619-SS-SJSSA06 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/21/20

****

L85484-4 S 11187072-120619-SS-SJSSA06 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	12/31/19
Count Room	PB-210	KOJ	01/21/20

****

L85484-5 S 11187072-120619-SS-SJSSA06 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85484

L85484-5	**S**	**11187072-120619-SS-SJSSA06 (30-32.5 CM)**		
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-6	**S**	**11187072-120619-SS-SJSSA06 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-7	**S**	**11187072-120619-SS-SJSSA06 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-8	**S**	**11187072-120619-SS-SJSSA06 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-9	**S**	**11187072-120619-SS-SJSSA06 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-10	**S**	**11187072-120619-SS-SJSSA06 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85484

L85484-10	**S**	**11187072-120619-SS-SJSSA06 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

****

L85484-11	**S**	**11187072-120619-SS-SJSSA06 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	12/31/19
Count Room	PB-210		KOJ	01/21/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

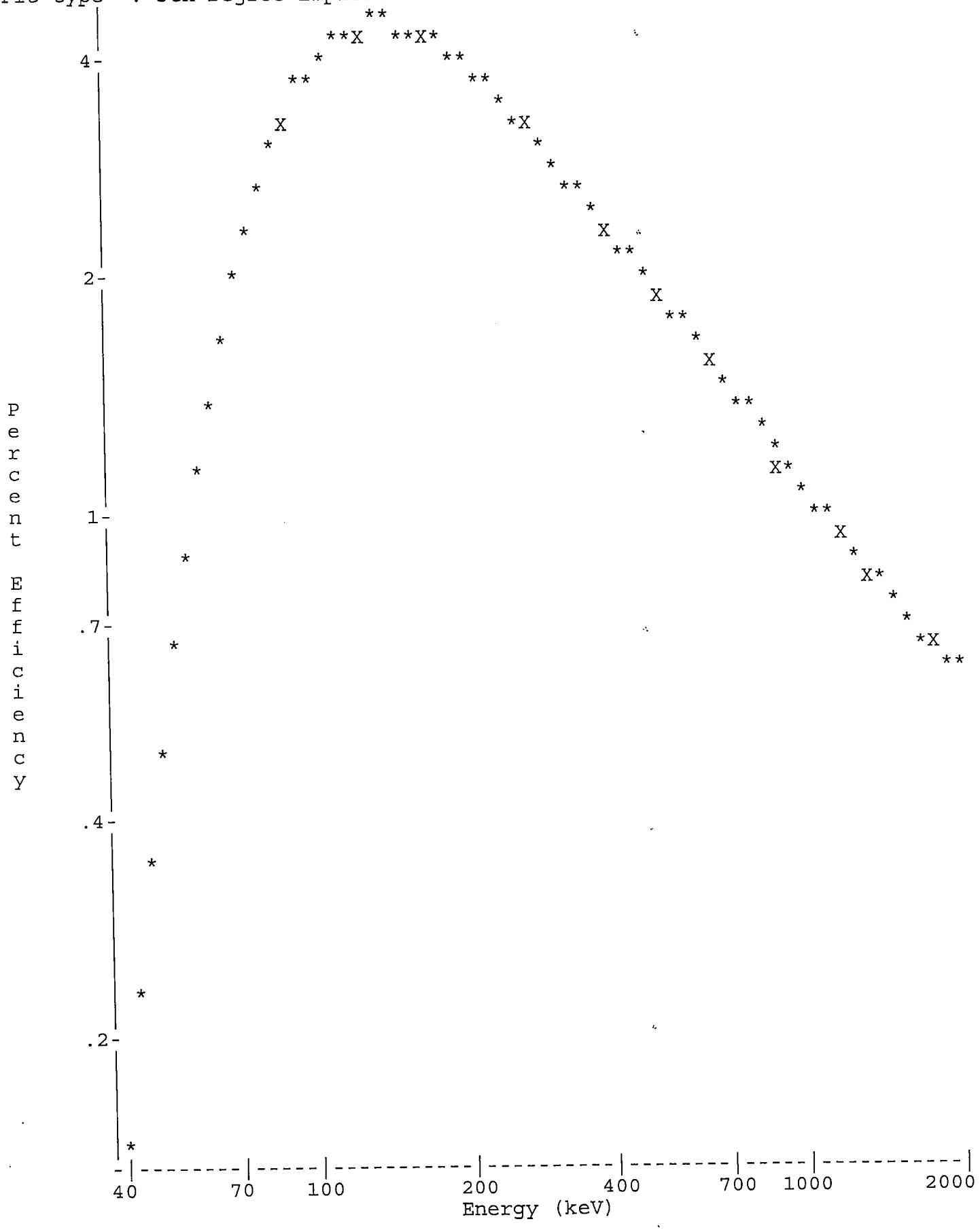
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Geometry : 01S100122019
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr. BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION         ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1003.0	-0.36%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.44%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.7	-0.44%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.5	-4.83%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.1	-0.28%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	242.5	-1.43%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.1	2.04%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	397.5	-2.15%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.7	1.01%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.6	-0.27%

Eff. Name: **01FS092019**

Analyst: KOJ

Sec. Review: Analyst:

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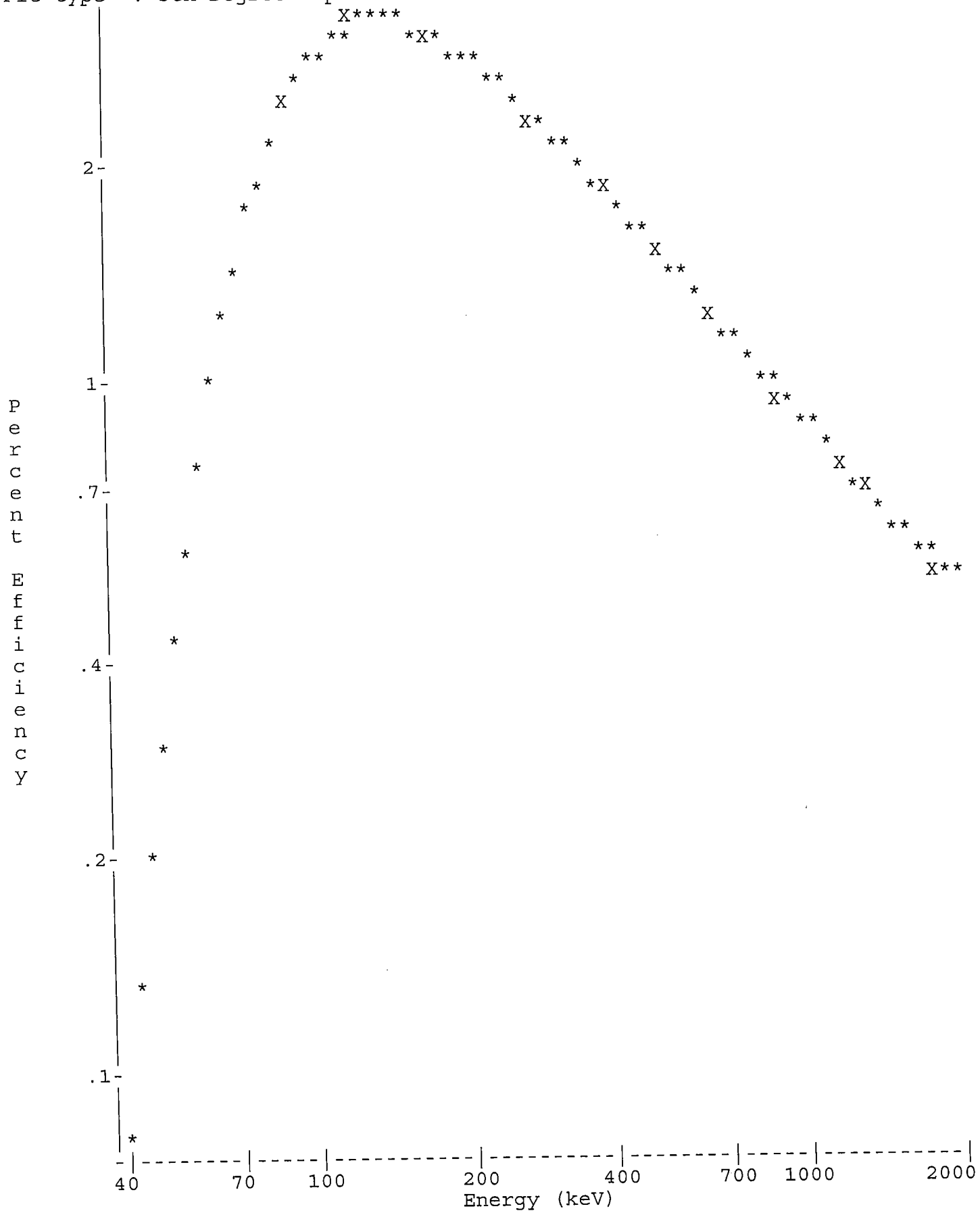
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-SEP-2019 11:11:58.99
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-SEP-2019 14:53:56.61

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 01FS092019 Smple Date: 1-JUN-2019 12:00:00.0
Sample Type : STD Geometry : 01FS092019
Quantity : 1.00000E+00 TOTAL BKGFILE : 01BG083019MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 08:00:52.59
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 08:00:00.00
MDA Multiple : 4.6600 Library Used: CALIBRATION

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.36	1354	9054	1.30	93.16	2.48E-01	4.70E-02	11.9	5.84E+00
2	1	72.82	824	8680	0.70	145.98	1.68E+00	2.86E-02	18.2	1.97E+00
3	1	88.03	22271	13241	0.90	176.35	2.44E+00	7.73E-01	1.2	2.42E+00
4	1	122.05	23771	14131	0.94	244.26	3.20E+00	8.25E-01	1.2	1.62E+00
5	1	136.47	3115	11141	1.00	273.05	3.26E+00	1.08E-01	6.4	7.37E-01
6	1	165.86	21215	11712	0.99	331.72	3.16E+00	7.37E-01	1.2	1.43E+00
7	1	255.18	1958	8332	1.42	510.02	2.52E+00	6.80E-02	8.7	3.79E+00
8	1	279.21	15788	9564	1.07	558.00	2.37E+00	5.48E-01	1.4	6.58E-01
9	1	391.73	33522	7061	1.19	782.62	1.84E+00	1.16E+00	0.7	1.83E+00
10	1	513.98	31460	7064	1.27	1026.69	1.49E+00	1.09E+00	0.8	4.26E+00
11	1	661.58	51909	5923	1.42	1321.40	1.22E+00	1.80E+00	0.5	1.38E+00
12	1	813.93	564	2651	1.54	1625.61	1.03E+00	1.96E-02	17.6	7.28E-01
13	1	898.00	49119	5061	1.61	1793.48	9.47E-01	1.71E+00	0.6	3.21E+00
14	1	1173.25	42656	2857	1.82	2343.15	7.57E-01	1.48E+00	0.6	4.80E+00
15	4	1325.12	927	1650	2.82	2646.46	6.86E-01	3.22E-02	10.1	4.36E+00
16	4	1332.54	38840	1002	1.94	2661.28	6.82E-01	1.35E+00	0.5	
17	1	1835.98	30171	513	2.31	3666.90	5.40E-01	1.05E+00	0.6	8.35E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 23-SEP-2019 11:11
Detector :
Geometry : 01FS092019
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-SEP-2019 11:13:00.34
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-SEP-2019 14:53:56.61

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 01FS092019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01FS092019
BKGFILE : 01BG083019MT
Real Time : 0 08:00:52.59
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.36	1354	9054	1.30	93.16	2.48E-01	4.70E-02	11.9	5.84E+00
2	1	72.82*	739	8680	0.70	145.98	1.68E+00	2.57E-02	20.4	1.97E+00
3	1	88.03*	22212	13241	0.90	176.35	2.44E+00	7.71E-01	1.2	2.42E+00
4	1	122.05	23771	14131	0.94	244.26	3.20E+00	8.25E-01	1.2	1.62E+00
5	1	136.47	3115	11141	1.00	273.05	3.26E+00	1.08E-01	6.4	7.37E-01
6	1	165.86	21215	11712	0.99	331.72	3.16E+00	7.37E-01	1.2	1.43E+00
7	1	255.18	1958	8332	1.42	510.02	2.52E+00	6.80E-02	8.7	3.79E+00
8	1	279.21	15788	9564	1.07	558.00	2.37E+00	5.48E-01	1.4	6.58E-01
9	1	391.73	33522	7061	1.19	782.62	1.84E+00	1.16E+00	0.7	1.83E+00
10	1	513.98	31460	7064	1.27	1026.69	1.49E+00	1.09E+00	0.8	4.26E+00
11	1	661.58	51909	5923	1.42	1321.40	1.22E+00	1.80E+00	0.5	1.38E+00
12	1	813.93	564	2651	1.54	1625.61	1.03E+00	1.96E-02	17.6	7.28E-01
13	1	898.00	49119	5061	1.61	1793.48	9.47E-01	1.71E+00	0.6	3.21E+00
14	1	1173.25	42656	2857	1.82	2343.15	7.57E-01	1.48E+00	0.6	4.80E+00
15	4	1325.12	927	1650	2.82	2646.46	6.86E-01	3.22E-02	10.1	4.36E+00
16	4	1332.54	38840	1002	1.94	2661.28	6.82E-01	1.35E+00	0.5	
17	1	1835.98	30171	513	2.31	3666.90	5.40E-01	1.05E+00	0.6	8.35E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22212	3.72*	2.441E+00	8.493E+02	1.003E+03	2.31
03-CO57	122.06	23771	85.51*	3.201E+00	3.015E+01	4.009E+01	2.34
04-CE139	165.85	21215	80.35*	3.164E+00	2.897E+01	5.074E+01	2.36
05-HG203	279.20	15788	81.46*	2.372E+00	2.837E+01	1.485E+02	2.88
06-SN113	391.69	33522	64.90*	1.844E+00	9.727E+01	1.901E+02	1.46
07-SR85	513.99	31460	99.27*	1.491E+00	7.379E+01	2.425E+02	1.56
08-CS137	661.65	51909	85.12*	1.218E+00	1.739E+02	1.751E+02	1.08
09-Y88	898.02	49119	93.40*	9.468E-01	1.929E+02	3.975E+02	1.12
10-CO60	1173.22	42656	100.00	7.573E-01	1.956E+02	2.036E+02	1.15
	1332.49	38840	100.00*	6.825E-01	1.976E+02	2.057E+02	1.07
12-Y88	1836.01	30171	99.38*	5.397E-01	1.953E+02	4.026E+02	1.22

Flag: "*" = Keyline

Summary of Nuclide Activity Page
Sample ID : 01FS092019 Acquisition date : 20-SEP-2019 14:5

Total number of lines in spectrum 17
Number of unidentified lines 6
Number of lines tentatively identified by NID 11 64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.18	8.493E+02	1.003E+03	0.023E+03	2.31	
03-CO57	270.90D	1.33	3.015E+01	4.009E+01	0.094E+01	2.34	
04-CE139	137.66D	1.75	2.897E+01	5.074E+01	0.120E+01	2.36	
05-HG203	46.61D	5.23	2.837E+01	1.485E+02	0.043E+02	2.88	
06-SN113	115.10D	1.95	9.727E+01	1.901E+02	0.028E+02	1.46	
07-SR85	64.84D	3.29	7.379E+01	2.425E+02	0.038E+02	1.56	
08-CS137	30.17Y	1.01	1.739E+02	1.751E+02	0.019E+02	1.08	
09-Y88	106.65D	2.06	1.929E+02	3.975E+02	0.045E+02	1.12	
10-CO60	5.27Y	1.04	1.976E+02	2.057E+02	0.022E+02	1.07	
12-Y88	106.65D	2.06	1.953E+02	4.026E+02	0.049E+02	1.22	
	Total Activity :		1.868E+03	2.856E+03			
	Grand Total Activity :		1.868E+03	2.856E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flag
1	46.36	1354	9054	1.30	93.16	90	7	4.70E-02	23.9	2.48E-01	
1	72.82	739	8680	0.70	145.98	143	6	2.57E-02	40.7	1.68E+00	
1	136.47	3115	11141	1.00	273.05	269	9	1.08E-01	12.7	3.26E+00	
1	255.18	1958	8332	1.42	510.02	506	9	6.80E-02	17.4	2.52E+00	
1	813.93	564	2651	1.54	1625.61	1621	10	1.96E-02	35.1	1.03E+00	
4	1325.12	927	1650	2.82	2646.46	2637	34	3.22E-02	20.1	6.86E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.18	8.493E+02	1.003E+03	0.023E+03	2.31	
03-CO57	270.90D	1.33	3.015E+01	4.009E+01	0.094E+01	2.34	
04-CE139	137.66D	1.75	2.897E+01	5.074E+01	0.120E+01	2.36	
05-HG203	46.61D	5.23	2.837E+01	1.485E+02	0.043E+02	2.88	
06-SN113	115.10D	1.95	9.727E+01	1.901E+02	0.028E+02	1.46	
07-SR85	64.84D	3.29	7.379E+01	2.425E+02	0.038E+02	1.56	
08-CS137	30.17Y	1.01	1.739E+02	1.751E+02	0.019E+02	1.08	
09-Y88	106.65D	2.06	1.929E+02	3.975E+02	0.045E+02	1.12	
10-CO60	5.27Y	1.04	1.967E+02	2.047E+02	0.016E+02	0.78	
12-Y88	106.65D	2.06	1.953E+02	4.026E+02	0.049E+02	1.22	
	Total Activity :		1.867E+03	2.855E+03			

Grand Total Activity : 1.867E+03 2.855E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.003E+03	2.317E+01	1.829E+01	0.000E+00	54.850
03-CO57	4.009E+01	9.379E-01	6.550E-01	0.000E+00	61.200
04-CE139	5.074E+01	1.195E+00	9.193E-01	0.000E+00	55.197
05-HG203	1.485E+02	4.283E+00	3.326E+00	0.000E+00	44.634

06-SN113	1.901E+02	2.783E+00	1.839E+00	0.000E+00	103.
07-SR85	2.425E+02	3.776E+00	2.428E+00	0.000E+00	99.85
08-CS137	1.751E+02	1.895E+00	9.704E-01	0.000E+00	180.423
09-Y88	3.975E+02	4.463E+00	2.056E+00	0.000E+00	193.385
10-CO60	2.047E+02	1.602E+00	7.731E-01	0.000E+00	264.766
12-Y88	4.026E+02	4.893E+00	1.084E+00	0.000E+00	371.284

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-1.135E+00		2.373E+00	3.785E+00	0.000E+00	-0.300

```
A,01FS092019       ,09/23/2019 11:13,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,01FS092019       ,CALIBRATION          ,09/23/2019 11:11,01FS092019
C,02-CD109,YES,   1.003E+03,   2.317E+01,   1.829E+01,,   54.850
C,03-CO57 ,YES,   4.009E+01,   9.379E-01,   6.550E-01,,   61.200
C,04-CE139,YES,   5.074E+01,   1.195E+00,   9.193E-01,,   55.197
C,05-HG203,YES,   1.485E+02,   4.283E+00,   3.326E+00,,   44.634
C,06-SN113,YES,   1.901E+02,   2.783E+00,   1.839E+00,,  103.370
C,07-SR85 ,YES,   2.425E+02,   3.776E+00,   2.428E+00,,   99.859
C,08-CS137,YES,   1.751E+02,   1.895E+00,   9.704E-01,,  180.423
C,09-Y88  ,YES,   3.975E+02,   4.463E+00,   2.056E+00,,  193.385
C,10-CO60 ,YES,   2.047E+02,   1.602E+00,   7.731E-01,,  264.766
C,12-Y88  ,YES,   4.026E+02,   4.893E+00,   1.084E+00,,  371.284
C,01-AM241,NO ,  -1.135E+00,   2.373E+00,   3.785E+00,,   -0.300
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E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	1.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.5	-0.85%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.4	-6.18%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.8	2.19%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.1	1.45%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.3	-1.95%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **02FS101619**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:22:11.24
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

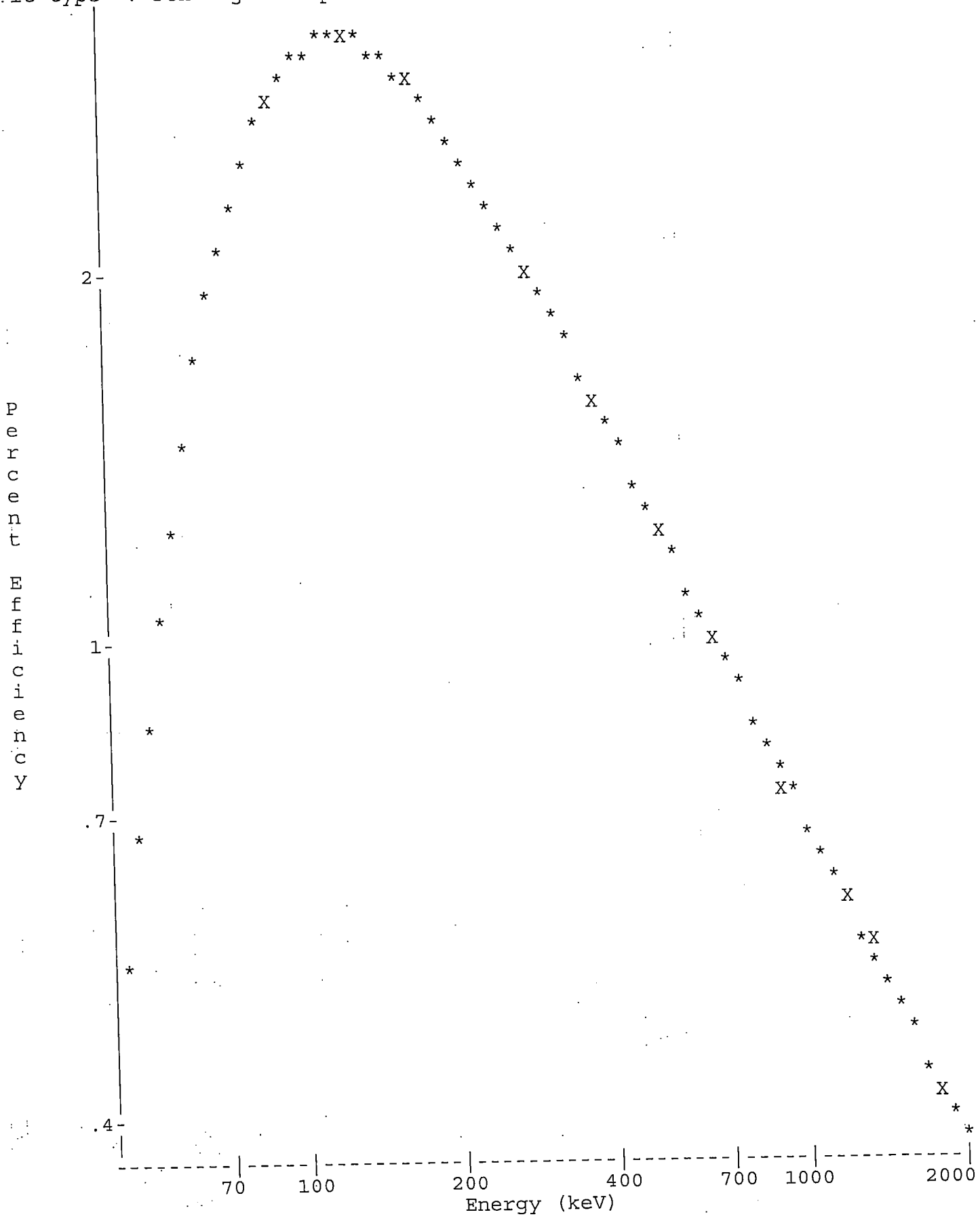
LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83	564	8430	0.76	130.32	2.27E+00	1.57E-02	24.5	
3	0	74.91	934	9437	0.89	134.50	2.36E+00	2.60E-02	16.8	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 23-OCT-2019 11:22
Detector :
Fit type : 5th Degree Empirical
Geometry : 02FS101619



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 23-OCT-2019 11:24:19.51
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 16-OCT-2019 16:42:09.11

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 02FS101619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02FS101619
BKGFILE : 02BG100419MT
Real Time : 0 10:01:11.90
Live time : 0 10:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42	5517	12304	0.97	77.18	7.25E-01	1.53E-01	3.9	
2	0	72.83*	367	8430	0.76	130.32	2.27E+00	1.02E-02	37.9	
3	0	74.91*	566	9437	0.89	134.50	2.36E+00	1.57E-02	27.9	
4	0	88.02	30520	15655	0.86	160.89	2.79E+00	8.48E-01	1.0	
5	0	122.03	27203	11895	1.01	229.33	3.12E+00	7.56E-01	0.9	
6	0	136.42	3307	10852	1.02	258.29	3.07E+00	9.19E-02	5.9	
7	0	165.83	21006	11741	1.06	317.47	2.87E+00	5.83E-01	1.2	
8	0	255.20	1294	6301	1.06	497.31	2.18E+00	3.60E-02	10.6	
9	0	279.20	11312	8121	1.11	545.62	2.03E+00	3.14E-01	1.8	
10	0	391.72	30582	7684	1.21	772.05	1.54E+00	8.49E-01	0.8	
11	0	514.06	24029	6596	1.27	1018.27	1.22E+00	6.67E-01	0.9	
12	0	661.67	51844	6203	1.42	1315.37	9.80E-01	1.44E+00	0.5	
13	0	813.91	535	3063	1.25	1621.81	8.20E-01	1.49E-02	20.5	
14	0	898.02	41334	5327	1.59	1791.11	7.54E-01	1.15E+00	0.6	
15	0	1173.18	41920	2619	1.83	2345.05	5.99E-01	1.16E+00	0.6	
16	0	1332.46	37860	1752	1.88	2665.73	5.38E-01	1.05E+00	0.6	
17	0	1836.03	24340	541	2.25	3679.72	4.13E-01	6.76E-01	0.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	30520	3.72*	2.787E+00	8.177E+02	1.004E+03	1.92
03-CO57	122.06	27203	85.51*	3.115E+00	2.837E+01	4.032E+01	1.88
04-CE139	165.85	21006	80.35*	2.871E+00	2.530E+01	5.053E+01	2.37
05-HG203	279.20	11312	81.46*	2.033E+00	1.897E+01	1.464E+02	3.53
06-SN113	391.69	30582	64.90*	1.537E+00	8.514E+01	1.948E+02	1.64
07-SR85	513.99	24029	99.27*	1.218E+00	5.519E+01	2.398E+02	1.88
08-CS137	661.65	51844	85.12*	9.804E-01	1.726E+02	1.741E+02	1.10
09-Y88	898.02	41334	93.40*	7.538E-01	1.631E+02	3.983E+02	1.27
10-CO60	1173.22	41920	100.00	5.995E-01	1.943E+02	2.041E+02	1.14
	1332.49	37860	100.00*	5.380E-01	1.955E+02	2.054E+02	1.16
12-Y88	1836.01	24340	99.38*	4.130E-01	1.647E+02	4.024E+02	1.38

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02FS101619

Acquisition date : 16-OCT-2019 16:42:09

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.955E+02	2.054E+02	0.024E+02	1.16	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02FS101619

Acquisition date : 16-OCT-2019 16:42:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.42	5517	12304	0.97	77.18	73	9	1.53E-01	7.8	7.25E-01	
0	72.83	367	8430	0.76	130.32	128	5	1.02E-02	75.8	2.27E+00	
0	74.91	566	9437	0.89	134.50	133	6	1.57E-02	55.8	2.36E+00	
0	136.42	3307	10852	1.02	258.29	254	9	9.19E-02	11.9	3.07E+00	
0	255.20	1294	6301	1.06	497.31	494	7	3.60E-02	21.1	2.18E+00	
0	813.91	535	3063	1.25	1621.81	1617	11	1.49E-02	40.9	8.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.23	8.177E+02	1.004E+03	0.019E+03	1.92	
03-CO57	270.90D	1.42	2.837E+01	4.032E+01	0.076E+01	1.88	
04-CE139	137.66D	2.00	2.530E+01	5.053E+01	0.120E+01	2.37	
05-HG203	46.61D	7.72	1.897E+01	1.464E+02	0.052E+02	3.53	
06-SN113	115.10D	2.29	8.514E+01	1.948E+02	0.032E+02	1.64	
07-SR85	64.84D	4.34	5.519E+01	2.398E+02	0.045E+02	1.88	
08-CS137	30.17Y	1.01	1.726E+02	1.741E+02	0.019E+02	1.10	
09-Y88	106.65D	2.44	1.631E+02	3.983E+02	0.051E+02	1.27	
10-CO60	5.27Y	1.05	1.949E+02	2.047E+02	0.017E+02	0.81	
12-Y88	106.65D	2.44	1.647E+02	4.024E+02	0.055E+02	1.38	
			---------	---------			
	Total Activity :		1.726E+03	2.856E+03			

Grand Total Activity : 1.726E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.931E+01	1.399E+01	0.000E+00	71.812
03-CO57	4.032E+01	7.596E-01	5.940E-01	0.000E+00	67.880
04-CE139	5.053E+01	1.199E+00	9.364E-01	0.000E+00	53.956
05-HG203	1.464E+02	5.164E+00	4.514E+00	0.000E+00	32.428

)6-SN113	1.948E+02	3.201E+00	1.997E+00	0.000E+00	97.501
)7-SR85	2.398E+02	4.518E+00	3.114E+00	0.000E+00	76.999
)8-CS137	1.741E+02	1.913E+00	9.420E-01	0.000E+00	184.792
)9-Y88	3.983E+02	5.073E+00	2.457E+00	0.000E+00	162.132
10-CO60	2.047E+02	1.662E+00	9.297E-01	0.000E+00	220.224
12-Y88	4.024E+02	5.538E+00	1.349E+00	0.000E+00	298.263

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.202E-01		1.166E+00	1.825E+00	0.000E+00	-0.175

```
A,02FS101619       ,10/23/2019 11:24,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,02FS101619       ,CALIBRATION          ,10/23/2019 11:22,02FS101619
C,02-CD109,YES,   1.004E+03,   1.931E+01,   1.399E+01,,   71.812
C,03-CO57 ,YES,   4.032E+01,   7.596E-01,   5.940E-01,,   67.880
C,04-CE139,YES,   5.053E+01,   1.199E+00,   9.364E-01,,   53.956
C,05-HG203,YES,   1.464E+02,   5.164E+00,   4.514E+00,,   32.428
C,06-SN113,YES,   1.948E+02,   3.201E+00,   1.997E+00,,   97.501
C,07-SR85 ,YES,   2.398E+02,   4.518E+00,   3.114E+00,,   76.999
C,08-CS137,YES,   1.741E+02,   1.913E+00,   9.420E-01,,  184.792
C,09-Y88  ,YES,   3.983E+02,   5.073E+00,   2.457E+00,,  162.132
C,10-CO60 ,YES,   2.047E+02,   1.662E+00,   9.297E-01,,  220.224
C,12-Y88  ,YES,   4.024E+02,   5.538E+00,   1.349E+00,,  298.263
C,01-AM241,NO ,  -3.202E-01,   1.166E+00,   1.825E+00,,   -0.175
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1000.0	-0.66%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.5	1.46%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.1	-1.70%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.1	-4.45%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.5	0.46%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.5	-2.24%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.1	2.04%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.7	-1.85%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.1	-0.16%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.9	1.11%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.7	-0.25%

Eff. Name: **07FS090619**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 11:41:02.81
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 6-SEP-2019 12:36:57.98

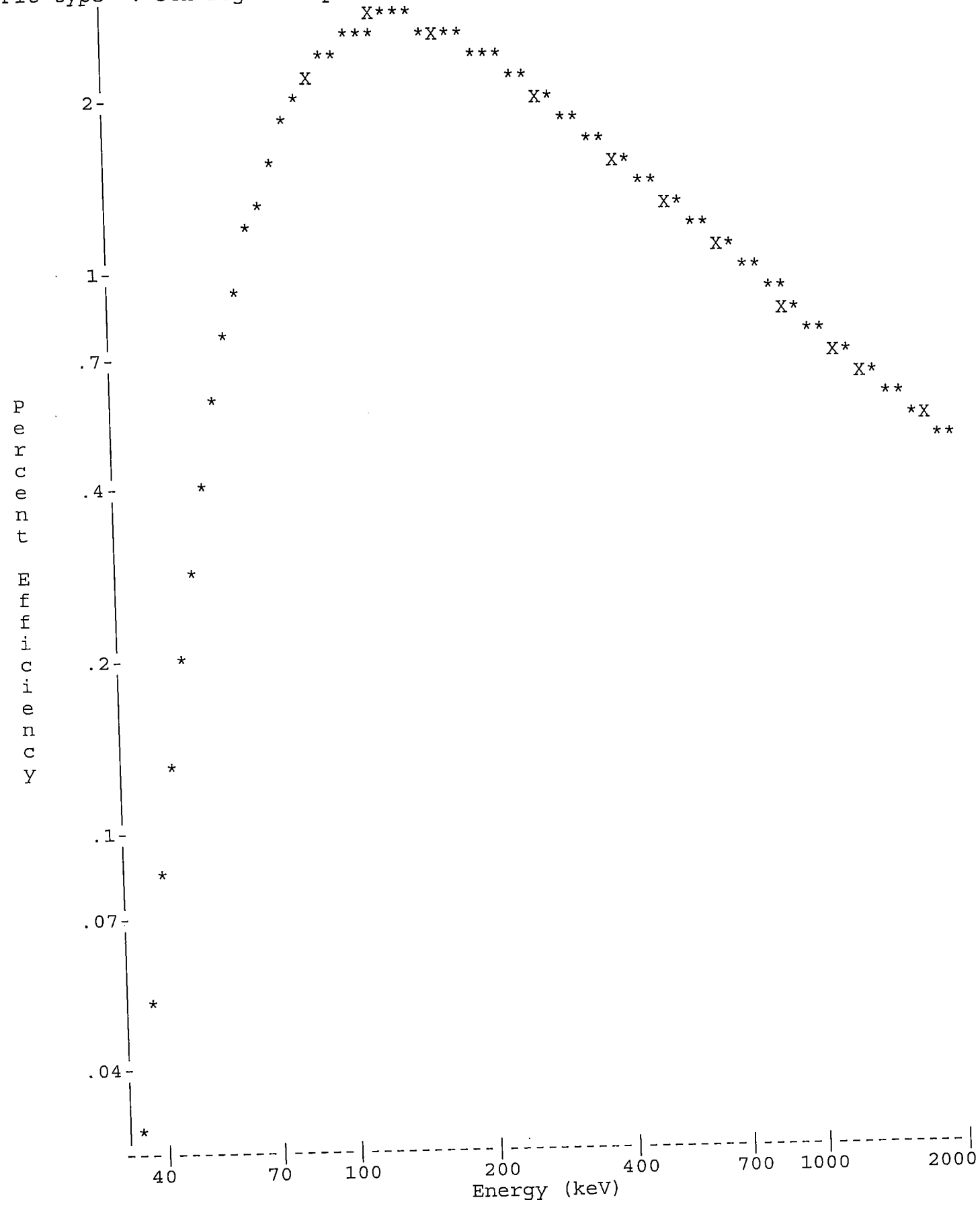
LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 07FS090619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07FS090619
BKGFILE : 07BG083019MT
Real Time : 0 07:00:46.47
Live time : 0 07:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	723	7868	1.25	93.07	2.57E-01	2.87E-02	21.5	1.68E+00
2	2	70.99	540	6311	1.31	142.23	1.41E+00	2.14E-02	23.8	3.39E+00
3	2	72.81	1413	8650	1.33	145.86	1.50E+00	5.61E-02	11.9	
4	2	74.94	1226	8901	1.33	150.14	1.60E+00	4.86E-02	13.7	
5	10	84.99	2410	15557	2.60	170.24	2.01E+00	9.56E-02	11.7	1.87E+00
6	10	88.04	17155	8256	1.31	176.34	2.11E+00	6.81E-01	1.2	
7	1	122.06	18279	13117	1.32	244.41	2.69E+00	7.25E-01	1.5	1.09E+00
8	1	136.46	2171	9049	1.17	273.24	2.72E+00	8.61E-02	8.2	3.21E-01
9	1	165.86	16390	12248	1.32	332.07	2.64E+00	6.50E-01	1.6	2.65E-01
10	1	255.13	1528	7394	1.58	510.69	2.12E+00	6.06E-02	10.8	4.03E-01
11	1	279.18	14444	8276	1.41	558.82	2.00E+00	5.73E-01	1.5	3.55E-01
12	1	391.69	27680	6909	1.52	783.91	1.59E+00	1.10E+00	0.9	2.00E+00
13	7	511.69	1752	4513	3.37	1024.00	1.31E+00	6.95E-02	9.8	2.28E+00
14	7	514.00	27862	3745	1.57	1028.62	1.31E+00	1.11E+00	0.7	
15	1	661.65	40730	6003	1.76	1324.02	1.09E+00	1.62E+00	0.7	2.49E+00
16	1	813.64	636	2852	2.60	1628.06	9.37E-01	2.52E-02	17.7	1.15E+00
17	1	898.04	43458	4254	1.97	1796.89	8.71E-01	1.72E+00	0.6	3.72E+00
18	1	1173.22	35204	2352	2.22	2347.30	7.12E-01	1.40E+00	0.6	1.15E+01
19	3	1325.10	932	1247	3.13	2651.05	6.50E-01	3.70E-02	9.7	6.55E+00
20	3	1332.48	32443	851	2.37	2665.81	6.48E-01	1.29E+00	0.6	
21	1	1836.00	27850	462	2.87	3672.70	5.19E-01	1.11E+00	0.6	1.69E+01

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 19-SEP-2019 11:41
Detector :
Fit type : 5th Degree Empirical
Geometry : 07FS090619



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 11:42:21.62
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 6-SEP-2019 12:36:57.98

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 07FS090619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07FS090619
BKGFILE : 07BG083019MT
Real Time : 0 07:00:46.47
Live time : 0 07:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	723	7868	1.25	93.07	2.57E-01	2.87E-02	21.5	1.68E+00
2	2	72.81*	1263	8650	1.33	145.86	1.50E+00	5.01E-02	13.3	3.39E+00
3	2	74.94*	848	8901	1.33	150.14	1.60E+00	3.36E-02	20.0	
4	10	84.99*	2195	15557	2.60	170.24	2.01E+00	8.71E-02	12.9	1.87E+00
5	10	88.04*	17096	8256	1.31	176.34	2.11E+00	6.78E-01	1.2	
6	1	122.06	18279	13117	1.32	244.41	2.69E+00	7.25E-01	1.5	1.09E+00
7	1	136.46	2171	9049	1.17	273.24	2.72E+00	8.61E-02	8.2	3.21E-01
8	1	165.86	16390	12248	1.32	332.07	2.64E+00	6.50E-01	1.6	2.65E-01
9	1	255.13	1528	7394	1.58	510.69	2.12E+00	6.06E-02	10.8	4.03E-01
10	1	279.18	14444	8276	1.41	558.82	2.00E+00	5.73E-01	1.5	3.55E-01
11	1	391.69	27680	6909	1.52	783.91	1.59E+00	1.10E+00	0.9	2.00E+00
12	7	511.69*	863	4513	3.37	1024.00	1.31E+00	3.43E-02	20.1	2.28E+00
13	7	514.00	27862	3745	1.57	1028.62	1.31E+00	1.11E+00	0.7	
14	1	661.65	40730	6003	1.76	1324.02	1.09E+00	1.62E+00	0.7	2.49E+00
15	1	813.64	636	2852	2.60	1628.06	9.37E-01	2.52E-02	17.7	1.15E+00
16	1	898.04	43458	4254	1.97	1796.89	8.71E-01	1.72E+00	0.6	3.72E+00
17	1	1173.22	35204	2352	2.22	2347.30	7.12E-01	1.40E+00	0.6	1.15E+01
18	3	1325.10	932	1247	3.13	2651.05	6.50E-01	3.70E-02	9.7	6.55E+00
19	3	1332.48	32443	851	2.37	2665.81	6.48E-01	1.29E+00	0.6	
20	1	1836.00	27850	462	2.87	3672.70	5.19E-01	1.11E+00	0.6	1.69E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17096	3.72*	2.109E+00	8.648E+02	1.000E+03	2.43
03-CO57	122.06	18279	85.51*	2.686E+00	3.158E+01	4.050E+01	2.99
04-CE139	165.85	16390	80.35*	2.635E+00	3.072E+01	5.010E+01	3.20
05-HG203	279.20	14444	81.46*	2.002E+00	3.515E+01	1.491E+02	3.02
06-SN113	391.69	27680	64.90*	1.587E+00	1.067E+02	1.915E+02	1.75
07-SR85	513.99	27862	99.27*	1.309E+00	8.511E+01	2.405E+02	1.46
08-CS137	661.65	40730	85.12*	1.091E+00	1.740E+02	1.751E+02	1.32
09-Y88	898.02	43458	93.40*	8.710E-01	2.120E+02	3.987E+02	1.19
10-CO60	1173.22	35204	100.00	7.122E-01	1.962E+02	2.031E+02	1.26
	1332.49	32443	100.00*	6.476E-01	1.988E+02	2.059E+02	1.18

12-Y88	1836.01	27850	99.38*	5.193E-01	2.141E+02	4.027E+02	1.28

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07FS090619

Acquisition date : 6-SEP-2019 12:36:57

Total number of lines in spectrum	20	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	11	55.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.16	8.648E+02	1.000E+03	0.024E+03	2.43	
03-CO57	270.90D	1.28	3.158E+01	4.050E+01	0.121E+01	2.99	
04-CE139	137.66D	1.63	3.072E+01	5.010E+01	0.160E+01	3.20	
05-HG203	46.61D	4.24	3.515E+01	1.491E+02	0.045E+02	3.02	
06-SN113	115.10D	1.80	1.067E+02	1.915E+02	0.034E+02	1.75	
07-SR85	64.84D	2.83	8.511E+01	2.405E+02	0.035E+02	1.46	
08-CS137	30.17Y	1.01	1.740E+02	1.751E+02	0.023E+02	1.32	
09-Y88	106.65D	1.88	2.120E+02	3.987E+02	0.048E+02	1.19	
10-CO60	5.27Y	1.04	1.988E+02	2.059E+02	0.024E+02	1.18	
12-Y88	106.65D	1.88	2.141E+02	4.027E+02	0.052E+02	1.28	
	Total Activity :		1.953E+03	2.854E+03			

Grand Total Activity : 1.953E+03 2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07FS090619 Acquisition date : 6-SEP-2019 12:36:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.42	723	7868	1.25	93.07	90	8	2.87E-02	43.1	2.57E-01	
2	72.81	1263	8650	1.33	145.86	139	15	5.01E-02	26.6	1.50E+00	
2	74.94	848	8901	1.33	150.14	139	15	3.36E-02	39.9	1.60E+00	
10	84.99	2195	15557	2.60	170.24	163	20	8.71E-02	25.7	2.01E+00	
1	136.46	2171	9049	1.17	273.24	269	9	8.61E-02	16.4	2.72E+00	
1	255.13	1528	7394	1.58	510.69	506	10	6.06E-02	21.7	2.12E+00	
7	511.69	863	4513	3.37	1024.00	1019	16	3.43E-02	40.1	1.31E+00	
1	813.64	636	2852	2.60	1628.06	1621	13	2.52E-02	35.4	9.37E-01	
3	1325.10	932	1247	3.13	2651.05	2640	36	3.70E-02	19.4	6.50E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	20	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	11	55.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.16	8.648E+02	1.000E+03	0.024E+03	2.43	
03-CO57	270.90D	1.28	3.158E+01	4.050E+01	0.121E+01	2.99	
04-CE139	137.66D	1.63	3.072E+01	5.010E+01	0.160E+01	3.20	
05-HG203	46.61D	4.24	3.515E+01	1.491E+02	0.045E+02	3.02	
06-SN113	115.10D	1.80	1.067E+02	1.915E+02	0.034E+02	1.75	
07-SR85	64.84D	2.83	8.511E+01	2.405E+02	0.035E+02	1.46	
08-CS137	30.17Y	1.01	1.740E+02	1.751E+02	0.023E+02	1.32	
09-Y88	106.65D	1.88	2.120E+02	3.987E+02	0.048E+02	1.19	
10-CO60	5.27Y	1.04	1.976E+02	2.046E+02	0.018E+02	0.86	
12-Y88	106.65D	1.88	2.141E+02	4.027E+02	0.052E+02	1.28	
	Total Activity :		1.952E+03	2.853E+03			

Grand Total Activity : 1.952E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.000E+03	2.431E+01	2.325E+01	0.000E+00	43.023

03-CO57	4.050E+01	1.209E+00	8.864E-01	0.000E+00	45.687
04-CE139	5.010E+01	1.603E+00	1.215E+00	0.000E+00	41.246
05-HG203	1.491E+02	4.509E+00	3.737E+00	0.000E+00	39.897
06-SN113	1.915E+02	3.360E+00	2.213E+00	0.000E+00	86.534
07-SR85	2.405E+02	3.503E+00	2.546E+00	0.000E+00	94.471
08-CS137	1.751E+02	2.314E+00	1.240E+00	0.000E+00	141.189
09-Y88	3.987E+02	4.753E+00	2.331E+00	0.000E+00	171.031
10-CO60	2.046E+02	1.761E+00	9.111E-01	0.000E+00	224.565
12-Y88	4.027E+02	5.154E+00	1.120E+00	0.000E+00	359.397

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.850E-01		3.013E+00	4.892E+00	0.000E+00	0.140

```
A,07FS090619      ,09/19/2019 11:42,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,07FS090619      ,CALIBRATION         ,09/19/2019 11:41,07FS090619
C,02-CD109,YES,   1.000E+03,   2.431E+01,   2.325E+01,,   43.023
C,03-CO57 ,YES,   4.050E+01,   1.209E+00,   8.864E-01,,   45.687
C,04-CE139,YES,   5.010E+01,   1.603E+00,   1.215E+00,,   41.246
C,05-HG203,YES,   1.491E+02,   4.509E+00,   3.737E+00,,   39.897
C,06-SN113,YES,   1.915E+02,   3.360E+00,   2.213E+00,,   86.534
C,07-SR85 ,YES,   2.405E+02,   3.503E+00,   2.546E+00,,   94.471
C,08-CS137,YES,   1.751E+02,   2.314E+00,   1.240E+00,,  141.189
C,09-Y88  ,YES,   3.987E+02,   4.753E+00,   2.331E+00,,  171.031
C,10-CO60 ,YES,   2.046E+02,   1.761E+00,   9.111E-01,,  224.565
C,12-Y88  ,YES,   4.027E+02,   5.154E+00,   1.120E+00,,  359.397
C,01-AM241,NO ,   6.850E-01,   3.013E+00,   4.892E+00,,    0.140
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1008.0	0.14%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.34%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.38%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.3	-4.96%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.2	0.30%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.7	1.80%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	401.4	-1.19%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.5	-0.45%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.0	-0.17%

Eff. Name: **08FS082119**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 08:55:06.66
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 21-AUG-2019 18:04:47.31

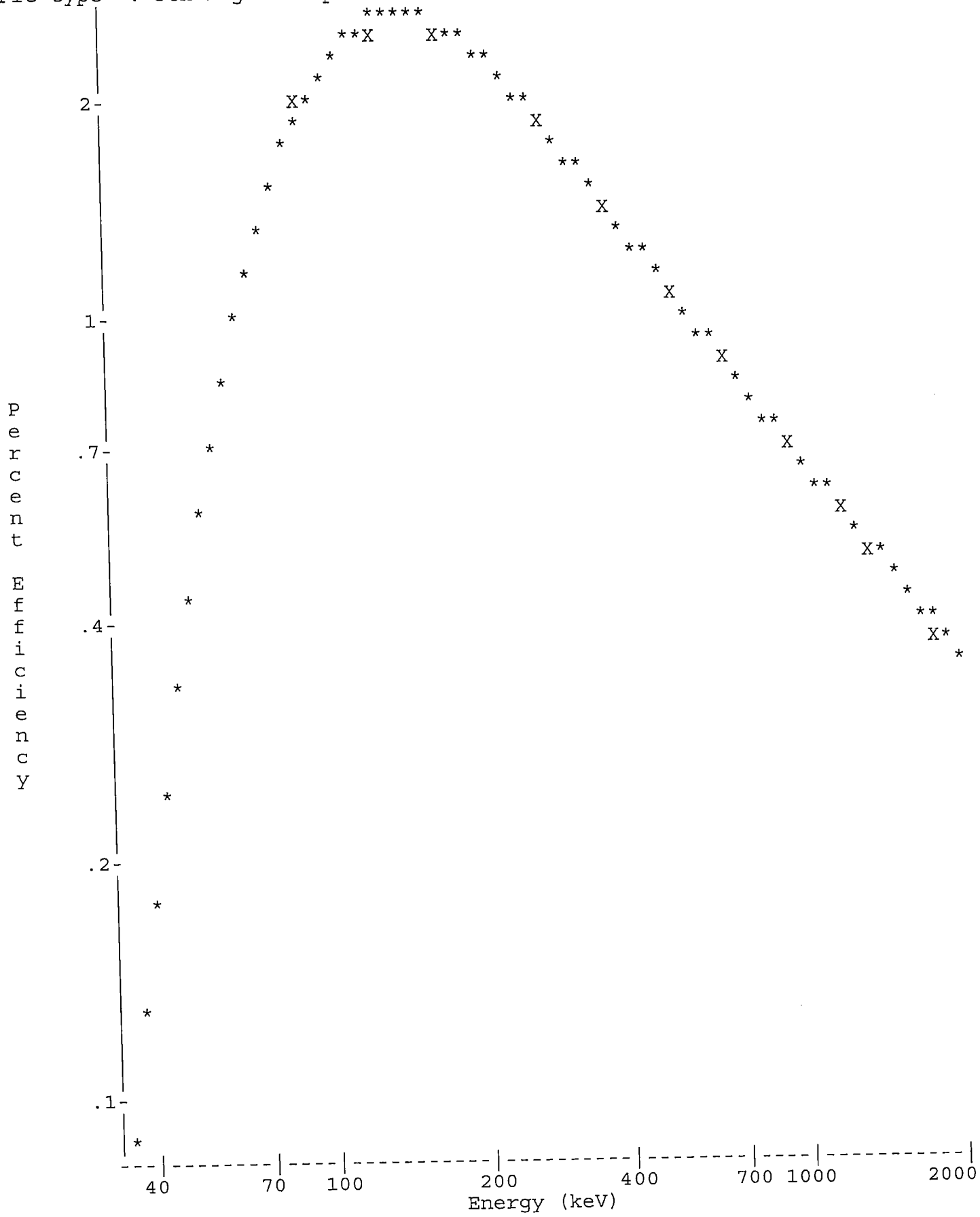
LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 08FS082119
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08FS082119
BKGFILE : 08BG080219MT
Real Time : 0 08:01:01.12
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.12	1063	9567	1.41	100.32	3.37E-01	3.69E-02	16.2	7.09E-01
2	5	72.64	912	6888	0.78	153.26	1.43E+00	3.17E-02	14.0	2.85E+00
3	5	74.79	995	9297	1.18	157.55	1.52E+00	3.46E-02	16.6	
4	1	87.93	18629	14860	1.21	183.77	1.95E+00	6.47E-01	1.5	1.30E+00
5	1	122.04	19918	14987	1.22	251.87	2.49E+00	6.92E-01	1.4	5.18E-01
6	1	136.48	2499	11723	1.24	280.69	2.54E+00	8.68E-02	8.4	5.49E-01
7	1	165.89	19327	13241	1.31	339.42	2.48E+00	6.71E-01	1.4	9.99E-01
8	1	255.22	1649	8731	1.63	517.72	1.98E+00	5.73E-02	10.9	2.70E+00
9	1	279.25	19222	10812	1.40	565.70	1.85E+00	6.67E-01	1.4	2.45E+00
10	1	391.75	30813	7163	1.46	790.26	1.41E+00	1.07E+00	0.8	1.05E+00
11	1	514.03	32148	6647	1.53	1034.34	1.11E+00	1.12E+00	0.8	7.50E-01
12	1	661.65	38325	5757	1.62	1328.99	8.99E-01	1.33E+00	0.7	8.85E-01
13	1	813.99	822	3049	1.94	1633.04	7.58E-01	2.85E-02	14.3	7.21E-01
14	1	898.01	44495	4191	1.77	1800.73	7.00E-01	1.54E+00	0.6	2.49E+00
15	1	1173.18	32041	2259	1.90	2349.91	5.66E-01	1.11E+00	0.7	9.03E-01
16	1	1324.89	839	1616	2.70	2652.68	5.14E-01	2.91E-02	11.5	5.53E-01
17	1	1332.45	29455	1243	2.01	2667.76	5.12E-01	1.02E+00	0.6	2.22E+00
18	1	1460.65	170	878	1.47	2923.58	4.77E-01	5.91E-03	33.4	7.48E-01
19	1	1836.03	27069	460	2.26	3672.65	3.98E-01	9.40E-01	0.6	1.41E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 19-SEP-2019 08:55
Detector :
Geometry : 08FS082119
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 08:56:35.43
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 21-AUG-2019 18:04:47.31

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 08FS082119
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08FS082119
BKGFILE : 08BG080219MT
Real Time : 0 08:01:01.12
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.12	1063	9567	1.41	100.32	3.37E-01	3.69E-02	16.2	7.09E-01
2	5	72.64*	698	6888	0.78	153.26	1.43E+00	2.42E-02	18.6	2.85E+00
3	5	74.79*	669	9297	1.18	157.55	1.52E+00	2.32E-02	24.8	
4	1	87.93	18629	14860	1.21	183.77	1.95E+00	6.47E-01	1.5	1.30E+00
5	1	122.04	19918	14987	1.22	251.87	2.49E+00	6.92E-01	1.4	5.18E-01
6	1	136.48	2499	11723	1.24	280.69	2.54E+00	8.68E-02	8.4	5.49E-01
7	1	165.89	19327	13241	1.31	339.42	2.48E+00	6.71E-01	1.4	9.99E-01
8	1	255.22	1649	8731	1.63	517.72	1.98E+00	5.73E-02	10.9	2.70E+00
9	1	279.25	19222	10812	1.40	565.70	1.85E+00	6.67E-01	1.4	2.45E+00
10	1	391.75	30813	7163	1.46	790.26	1.41E+00	1.07E+00	0.8	1.05E+00
11	1	514.03	32148	6647	1.53	1034.34	1.11E+00	1.12E+00	0.8	7.50E-01
12	1	661.65	38325	5757	1.62	1328.99	8.99E-01	1.33E+00	0.7	8.85E-01
13	1	813.99	822	3049	1.94	1633.04	7.58E-01	2.85E-02	14.3	7.21E-01
14	1	898.01	44495	4191	1.77	1800.73	7.00E-01	1.54E+00	0.6	2.49E+00
15	1	1173.18	32041	2259	1.90	2349.91	5.66E-01	1.11E+00	0.7	9.03E-01
16	1	1324.89	839	1616	2.70	2652.68	5.14E-01	2.91E-02	11.5	5.53E-01
17	1	1332.45	29455	1243	2.01	2667.76	5.12E-01	1.02E+00	0.6	2.22E+00
18	1	1836.03	27069	460	2.26	3672.65	3.98E-01	9.40E-01	0.6	1.41E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	18629	3.72*	1.949E+00	8.920E+02	1.008E+03	2.95
03-CO57	122.06	19918	85.51*	2.487E+00	3.252E+01	4.005E+01	2.84
04-CE139	165.85	19327	80.35*	2.479E+00	3.369E+01	5.077E+01	2.79
05-HG203	279.20	19222	81.46*	1.854E+00	4.420E+01	1.483E+02	2.72
06-SN113	391.69	30813	64.90*	1.408E+00	1.171E+02	1.912E+02	1.61
07-SR85	513.99	32148	99.27*	1.115E+00	1.009E+02	2.408E+02	1.55
08-CS137	661.65	38325	85.12*	8.994E-01	1.738E+02	1.747E+02	1.34
09-Y88	898.02	44495	93.40*	6.995E-01	2.365E+02	4.014E+02	1.15
10-CO60	1173.22	32041	100.00	5.658E-01	1.966E+02	2.025E+02	1.32
	1332.49	29455	100.00*	5.122E-01	1.997E+02	2.056E+02	1.27
12-Y88	1836.01	27069	99.38*	3.984E-01	2.374E+02	4.030E+02	1.28

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 08FS082119

Acquisition date : 21-AUG-2019 18:04:47

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.920E+02	1.008E+03	0.030E+03	2.95	
03-CO57	270.90D	1.23	3.252E+01	4.005E+01	0.114E+01	2.84	
04-CE139	137.66D	1.51	3.369E+01	5.077E+01	0.141E+01	2.79	
05-HG203	46.61D	3.36	4.420E+01	1.483E+02	0.040E+02	2.72	
06-SN113	115.10D	1.63	1.171E+02	1.912E+02	0.031E+02	1.61	
07-SR85	64.84D	2.39	1.009E+02	2.408E+02	0.037E+02	1.55	
08-CS137	30.17Y	1.01	1.738E+02	1.747E+02	0.023E+02	1.34	
09-Y88	106.65D	1.70	2.365E+02	4.014E+02	0.046E+02	1.15	
10-CO60	5.27Y	1.03	1.997E+02	2.056E+02	0.026E+02	1.27	
12-Y88	106.65D	1.70	2.374E+02	4.030E+02	0.052E+02	1.28	
			---------	---------			
	Total Activity :		2.068E+03	2.864E+03			

Grand Total Activity :	2.068E+03	2.864E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.12	1063	9567	1.41	100.32	97	8	3.69E-02	32.5	3.37E-01	
5	72.64	698	6888	0.78	153.26	150	11	2.42E-02	37.1	1.43E+00	
5	74.79	669	9297	1.18	157.55	150	11	2.32E-02	49.6	1.52E+00	
1	136.48	2499	11723	1.24	280.69	276	10	8.68E-02	16.7	2.54E+00	
1	255.22	1649	8731	1.63	517.72	514	10	5.73E-02	21.8	1.98E+00	
1	813.99	822	3049	1.94	1633.04	1626	13	2.85E-02	28.6	7.58E-01	
1	1324.89	839	1616	2.70	2652.68	2643	17	2.91E-02	23.1	5.14E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.920E+02	1.008E+03	0.030E+03	2.95	
03-CO57	270.90D	1.23	3.252E+01	4.005E+01	0.114E+01	2.84	
04-CE139	137.66D	1.51	3.369E+01	5.077E+01	0.141E+01	2.79	
05-HG203	46.61D	3.36	4.420E+01	1.483E+02	0.040E+02	2.72	
06-SN113	115.10D	1.63	1.171E+02	1.912E+02	0.031E+02	1.61	
07-SR85	64.84D	2.39	1.009E+02	2.408E+02	0.037E+02	1.55	
08-CS137	30.17Y	1.01	1.738E+02	1.747E+02	0.023E+02	1.34	
09-Y88	106.65D	1.70	2.365E+02	4.014E+02	0.046E+02	1.15	
10-CO60	5.27Y	1.03	1.982E+02	2.041E+02	0.019E+02	0.92	
12-Y88	106.65D	1.70	2.374E+02	4.030E+02	0.052E+02	1.28	
	Total Activity :		2.066E+03	2.862E+03			

Grand Total Activity : 2.066E+03 2.862E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.008E+03	2.969E+01	2.497E+01	0.000E+00	40.348
03-CO57	4.005E+01	1.139E+00	8.926E-01	0.000E+00	44.875
04-CE139	5.077E+01	1.414E+00	1.124E+00	0.000E+00	45.158

05-HG203	1.483E+02	4.034E+00	2.914E+00	0.000E+00	50.904
06-SN113	1.912E+02	3.074E+00	2.067E+00	0.000E+00	92.499
07-SR85	2.408E+02	3.722E+00	2.366E+00	0.000E+00	101.805
08-CS137	1.747E+02	2.341E+00	1.324E+00	0.000E+00	131.994
09-Y88	4.014E+02	4.622E+00	2.209E+00	0.000E+00	181.726
10-CO60	2.041E+02	1.870E+00	1.036E+00	0.000E+00	196.948
12-Y88	4.030E+02	5.172E+00	1.117E+00	0.000E+00	360.898

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-1.481E+00		2.830E+00	4.513E+00	0.000E+00	-0.328

```
A,08FS082119      ,09/19/2019 08:56,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,08FS082119      ,CALIBRATION          ,09/19/2019 08:55,08FS082119
C,02-CD109,YES,   1.008E+03,   2.969E+01,   2.497E+01,,   40.348
C,03-CO57 ,YES,   4.005E+01,   1.139E+00,   8.926E-01,,   44.875
C,04-CE139,YES,   5.077E+01,   1.414E+00,   1.124E+00,,   45.158
C,05-HG203,YES,   1.483E+02,   4.034E+00,   2.914E+00,,   50.904
C,06-SN113,YES,   1.912E+02,   3.074E+00,   2.067E+00,,   92.499
C,07-SR85 ,YES,   2.408E+02,   3.722E+00,   2.366E+00,,  101.805
C,08-CS137,YES,   1.747E+02,   2.341E+00,   1.324E+00,,  131.994
C,09-Y88  ,YES,   4.014E+02,   4.622E+00,   2.209E+00,,  181.726
C,10-CO60 ,YES,   2.041E+02,   1.870E+00,   1.036E+00,,  196.948
C,12-Y88  ,YES,   4.030E+02,   5.172E+00,   1.117E+00,,  360.898
C,01-AM241,NO ,  -1.481E+00,   2.830E+00,   4.513E+00,,   -0.328
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

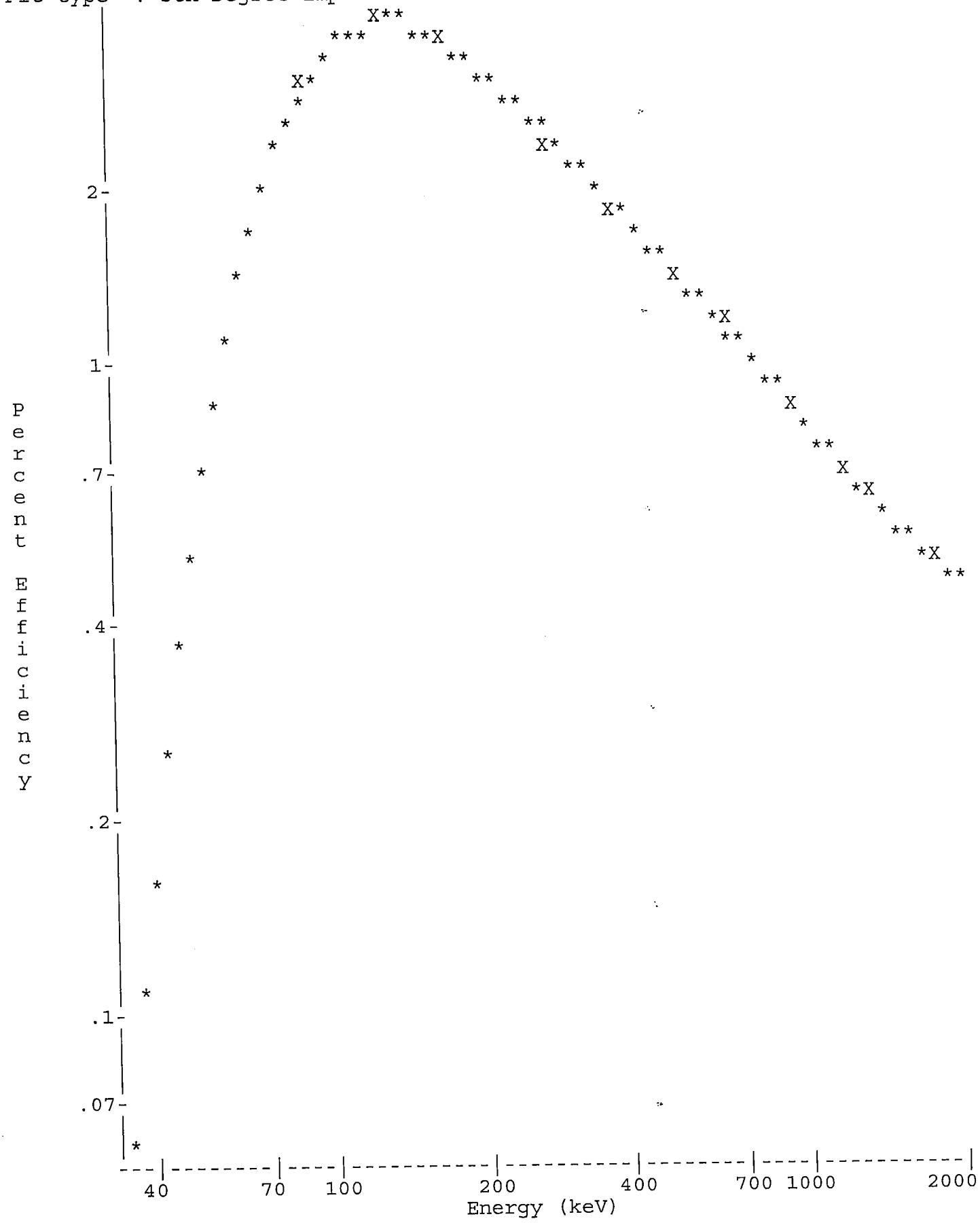
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819     ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819     ,CALIBRATION          ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Pb-210	22.26Y	46.6	72.1		4.18%	762.12	31.86	812.7	6.64%
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1018.0	1.13%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.21%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.93%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	153.3	-1.76%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	195.6	2.61%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	227.1	-7.69%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.2	1.51%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	401.7	-1.11%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.1	0.82%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.7	0.00%

Eff. Name: **11FS112019**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-DEC-2019 10:03:09.96
TBE11 31-TP20610B HpGe ******* Aquisition Date/Time: 20-NOV-2019 16:10:13.65

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML CALIBRATION REF DATE 06

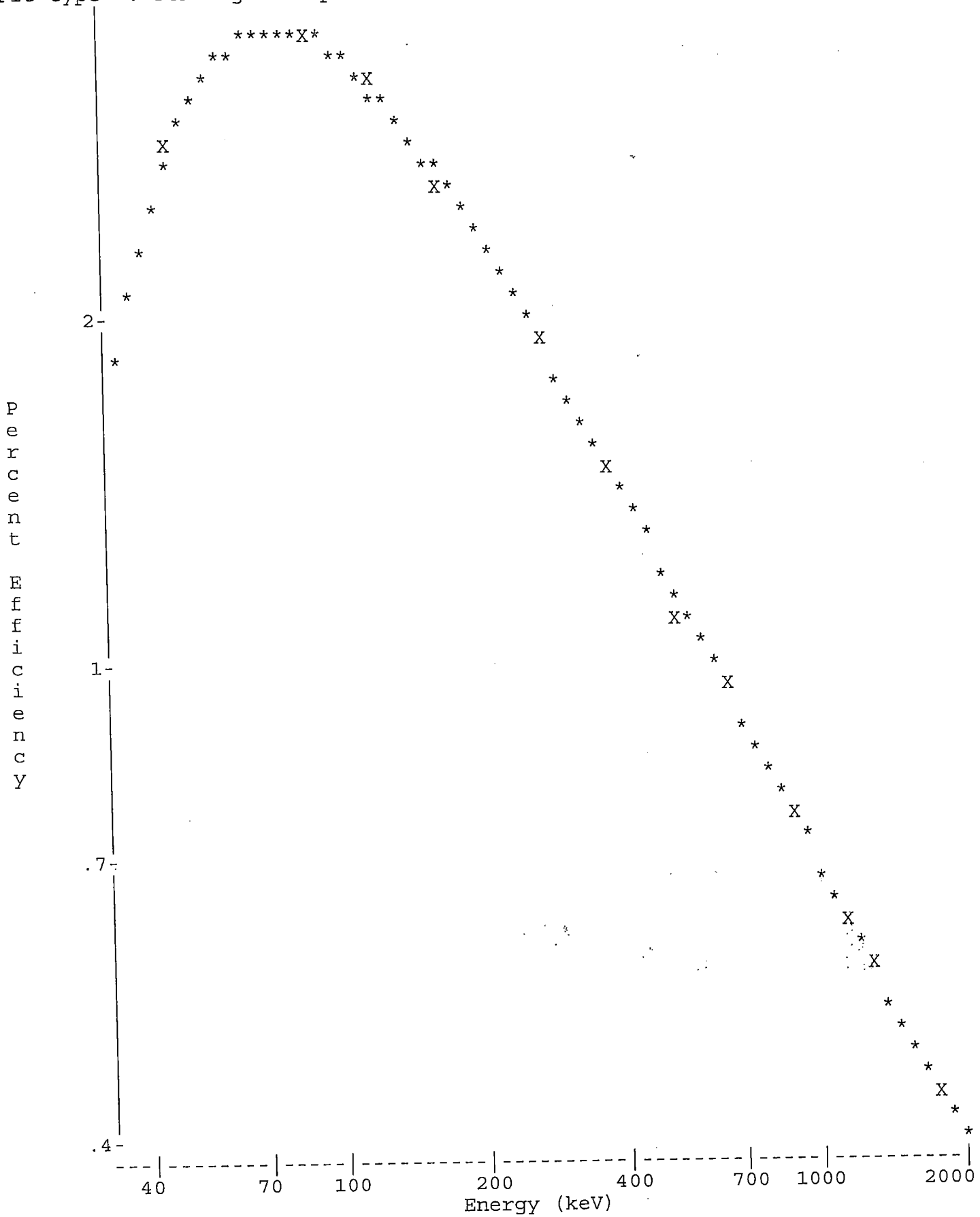
Sample ID : 11FS112019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11FS112019
BKGFILE : NOBKG
Real Time : 0 17:27:37.32
Live time : 0 17:25:38.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.46	55308	30134	1.40	91.95	2.70E+00	8.82E-01	0.8	
2	2	66.76	1421	19562	1.56	132.54	3.36E+00	2.27E-02	18.2	1.97E+01
3	2	72.75	4981	17904	1.31	144.54	3.41E+00	7.94E-02	5.0	
4	2	74.99	6576	22644	1.58	149.01	3.42E+00	1.05E-01	4.6	
5	8	84.78	6815	37279	2.85	168.60	3.40E+00	1.09E-01	7.3	6.12E+00
6	8	88.03	62143	15824	1.37	175.10	3.39E+00	9.91E-01	0.5	
7	0	122.05	42225	21536	1.46	243.16	3.06E+00	6.73E-01	0.9	
8	0	136.48	5504	17871	1.42	272.02	2.90E+00	8.77E-02	4.9	
9	0	165.86	27215	19016	1.48	330.79	2.60E+00	4.34E-01	1.2	
10	0	255.12	1804	11318	1.52	509.34	1.96E+00	2.88E-02	10.9	
11	0	279.24	11055	13391	1.58	557.59	1.84E+00	1.76E-01	2.3	
12	0	351.85	497	8484	1.27	702.83	1.55E+00	7.92E-03	33.8	
13	0	391.73	40260	12202	1.65	782.60	1.43E+00	6.42E-01	0.8	
14	8	511.74	4444	8595	3.63	1022.64	1.16E+00	7.08E-02	5.4	2.00E+00
15	8	514.08	25932	6860	1.67	1027.32	1.16E+00	4.13E-01	0.9	
16	0	609.20	627	5337	1.51	1217.58	1.02E+00	9.99E-03	22.2	
17	0	661.64	87500	11111	1.87	1322.47	9.51E-01	1.39E+00	0.4	
18	0	813.84	890	4381	1.85	1626.89	8.06E-01	1.42E-02	14.8	
19	0	897.99	57091	8621	2.05	1795.19	7.44E-01	9.10E-01	0.6	
20	0	1173.18	72596	5046	2.21	2345.56	6.00E-01	1.16E+00	0.5	
21	3	1325.68	1372	2091	3.13	2650.56	5.45E-01	2.19E-02	9.0	7.80E+01
22	3	1332.48	66358	1656	2.59	2664.16	5.43E-01	1.06E+00	0.4	
23	0	1836.00	35064	956	2.69	3671.06	4.27E-01	5.59E-01	0.6	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 4-DEC-2019 10:03:
Detector :
Fit type : 5th Degree Empirical

Geometry : 11FS112019



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-DEC-2019 10:04:41.40
TBE11 31-TP20610B HpGe ******* Aquisition Date/Time: 20-NOV-2019 16:10:13.65

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML CALIBRATION REF DATE 06

Sample ID : 11FS112019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION_PB

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11FS112019
BKGFILE : NOBKG
Real Time : 0 17:27:37.32
Live time : 0 17:25:38.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.46	55308	30134	1.40	91.95	2.70E+00	8.82E-01	0.8	
2	2	66.76	1421	19562	1.56	132.54	3.36E+00	2.27E-02	18.2	1.97E+01
3	2	72.75	4981	17904	1.31	144.54	3.41E+00	7.94E-02	5.0	
4	2	74.99	6576	22644	1.58	149.01	3.42E+00	1.05E-01	4.6	
5	8	84.78	6815	37279	2.85	168.60	3.40E+00	1.09E-01	7.3	6.12E+00
6	8	88.03	62143	15824	1.37	175.10	3.39E+00	9.91E-01	0.5	
7	0	122.05	42225	21536	1.46	243.16	3.06E+00	6.73E-01	0.9	
8	0	136.48	5504	17871	1.42	272.02	2.90E+00	8.77E-02	4.9	
9	0	165.86	27215	19016	1.48	330.79	2.60E+00	4.34E-01	1.2	
10	0	255.12	1804	11318	1.52	509.34	1.96E+00	2.88E-02	10.9	
11	0	279.24	11055	13391	1.58	557.59	1.84E+00	1.76E-01	2.3	
12	0	351.85	497	8484	1.27	702.83	1.55E+00	7.92E-03	33.8	
13	0	391.73	40260	12202	1.65	782.60	1.43E+00	6.42E-01	0.8	
14	8	511.74	4444	8595	3.63	1022.64	1.16E+00	7.08E-02	5.4	2.00E+00
15	8	514.08	25932	6860	1.67	1027.32	1.16E+00	4.13E-01	0.9	
16	0	609.20	627	5337	1.51	1217.58	1.02E+00	9.99E-03	22.2	
17	0	661.64	87500	11111	1.87	1322.47	9.51E-01	1.39E+00	0.4	
18	0	813.84	890	4381	1.85	1626.89	8.06E-01	1.42E-02	14.8	
19	0	897.99	57091	8621	2.05	1795.19	7.44E-01	9.10E-01	0.6	
20	0	1173.18	72596	5046	2.21	2345.56	6.00E-01	1.16E+00	0.5	
21	3	1325.68	1372	2091	3.13	2650.56	5.45E-01	2.19E-02	9.0	7.80E+01
22	3	1332.48	66358	1656	2.59	2664.16	5.43E-01	1.06E+00	0.4	
23	0	1836.00	35064	956	2.69	3671.06	4.27E-01	5.59E-01	0.6	

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
03-PB210	46.50	55308	4.05*	2.703E+00	8.053E+02	8.172E+02	1.59
04-CD109	88.03	62143	3.72*	3.387E+00	7.860E+02	1.018E+03	1.08
05-CO57	122.06	42225	85.51*	3.060E+00	2.572E+01	4.000E+01	1.70
06-CE139	165.85	27215	80.35*	2.602E+00	2.075E+01	4.947E+01	2.36
07-HG203	279.20	11055	81.46*	1.835E+00	1.179E+01	1.533E+02	4.60
08-SN113	391.69	40260	64.90*	1.429E+00	6.921E+01	1.956E+02	1.56
09-SR85	513.99	25932	99.27*	1.160E+00	3.591E+01	2.271E+02	1.77
10-CS137	661.65	87500	85.12*	9.508E-01	1.723E+02	1.742E+02	0.89
11-Y88	898.02	57091	93.40*	7.443E-01	1.309E+02	4.017E+02	1.14

12-CO60	1173.22	72596	100.00	6.004E-01	1.927E+02	2.051E+02	0.91
	1332.49	66358	100.00*	5.429E-01	1.948E+02	2.073E+02	0.82
14-Y88	1836.01	35064	99.38*	4.275E-01	1.315E+02	4.037E+02	1.16

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11FS112019

Acquisition date : 20-NOV-2019 16:10:13

Total number of lines in spectrum	23	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	12	52.17%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
03-PB210	22.26Y	1.01	8.053E+02	8.172E+02	0.130E+02	1.59	
04-CD109	462.90D	1.29	7.860E+02	1.018E+03	0.011E+03	1.08	
05-CO57	270.90D	1.55	2.572E+01	4.000E+01	0.068E+01	1.70	
06-CE139	137.66D	2.38	2.075E+01	4.947E+01	0.117E+01	2.36	
07-HG203	46.61D	13.0	1.179E+01	1.533E+02	0.071E+02	4.60	
08-SN113	115.10D	2.83	6.921E+01	1.956E+02	0.030E+02	1.56	
09-SR85	64.84D	6.32	3.591E+01	2.271E+02	0.040E+02	1.77	
10-CS137	30.17Y	1.01	1.723E+02	1.742E+02	0.015E+02	0.89	
11-Y88	106.65D	3.07	1.309E+02	4.017E+02	0.046E+02	1.14	
12-CO60	5.27Y	1.06	1.948E+02	2.073E+02	0.017E+02	0.82	
14-Y88	106.65D	3.07	1.315E+02	4.037E+02	0.047E+02	1.16	
			---------	---------			
	Total Activity :		2.384E+03	3.687E+03			
	Grand Total Activity :		2.384E+03	3.687E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11FS112019 Acquisition date : 20-NOV-2019 16:10:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	66.76	1421	19562	1.56	132.54	128	30	2.27E-02	36.3	3.36E+00	
2	72.75	4981	17904	1.31	144.54	128	30	7.94E-02	10.0	3.41E+00	
2	74.99	6576	22644	1.58	149.01	128	30	1.05E-01	9.1	3.42E+00	
8	84.78	6815	37279	2.85	168.60	160	22	1.09E-01	14.6	3.40E+00	
0	136.48	5504	17871	1.42	272.02	267	11	8.77E-02	9.8	2.90E+00	
0	255.12	1804	11318	1.52	509.34	505	9	2.88E-02	21.8	1.96E+00	
0	351.85	497	8484	1.27	702.83	700	9	7.92E-03	67.5	1.55E+00	
8	511.74	4444	8595	3.63	1022.64	1017	18	7.08E-02	10.9	1.16E+00	
0	609.20	627	5337	1.51	1217.58	1213	10	9.99E-03	44.3	1.02E+00	
0	813.84	890	4381	1.85	1626.89	1622	11	1.42E-02	29.6	8.06E-01	
3	1325.68	1372	2091	3.13	2650.56	2640	34	2.19E-02	18.1	5.45E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	23	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	12	52.17%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
03-PB210	22.26Y	1.01	8.053E+02	8.172E+02	0.130E+02	1.59	
04-CD109	462.90D	1.29	7.860E+02	1.018E+03	0.011E+03	1.08	
05-CO57	270.90D	1.55	2.572E+01	4.000E+01	0.068E+01	1.70	
06-CE139	137.66D	2.38	2.075E+01	4.947E+01	0.117E+01	2.36	
07-HG203	46.61D	13.0	1.179E+01	1.533E+02	0.071E+02	4.60	
08-SN113	115.10D	2.83	6.921E+01	1.956E+02	0.030E+02	1.56	
09-SR85	64.84D	6.32	3.591E+01	2.271E+02	0.040E+02	1.77	
10-CS137	30.17Y	1.01	1.723E+02	1.742E+02	0.015E+02	0.89	
11-Y88	106.65D	3.07	1.309E+02	4.017E+02	0.046E+02	1.14	
12-CO60	5.27Y	1.06	1.939E+02	2.063E+02	0.013E+02	0.61	
14-Y88	106.65D	3.07	1.315E+02	4.037E+02	0.047E+02	1.16	
	Total Activity :		2.383E+03	3.686E+03			

Grand Total Activity : 2.383E+03 3.686E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Activity	Act error	MDA	MDA error	Act/MDA

Nuclide	(BQ/TOTAL)		(BQ/TOTAL)		
03-PB210	8.172E+02	1.300E+01	8.917E+00	0.000E+00	91.648
04-CD109	1.018E+03	1.100E+01	9.847E+00	0.000E+00	103.354
05-CO57	4.000E+01	6.807E-01	5.481E-01	0.000E+00	72.984
06-CE139	4.947E+01	1.169E+00	9.969E-01	0.000E+00	49.618
07-HG203	1.533E+02	7.059E+00	6.771E+00	0.000E+00	22.647
08-SN113	1.956E+02	3.046E+00	2.145E+00	0.000E+00	91.207
09-SR85	2.271E+02	4.030E+00	3.485E+00	0.000E+00	65.162
10-CS137	1.742E+02	1.549E+00	7.599E-01	0.000E+00	229.241
11-Y88	4.017E+02	4.596E+00	2.531E+00	0.000E+00	158.757
12-CO60	2.063E+02	1.256E+00	5.563E-01	0.000E+00	370.833
14-Y88	4.037E+02	4.693E+00	1.166E+00	0.000E+00	346.327

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-CO57	1.905E+04		3.284E+02	6.422E+02	0.000E+00	29.666
02-CE139	2.347E+01		5.018E+00	8.646E+00	0.000E+00	2.714

```
A,11FS112019      ,12/04/2019 10:04,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,11FS112019      ,CALIBRATION_PB      ,12/04/2019 10:03,11FS112019
C,03-PB210,YES,   8.172E+02,   1.300E+01,   8.917E+00,,   91.648
C,04-CD109,YES,   1.018E+03,   1.100E+01,   9.847E+00,,  103.354
C,05-CO57 ,YES,   4.000E+01,   6.807E-01,   5.481E-01,,   72.984
C,06-CE139,YES,   4.947E+01,   1.169E+00,   9.969E-01,,   49.618
C,07-HG203,YES,   1.533E+02,   7.059E+00,   6.771E+00,,   22.647
C,08-SN113,YES,   1.956E+02,   3.046E+00,   2.145E+00,,   91.207
C,09-SR85 ,YES,   2.271E+02,   4.030E+00,   3.485E+00,,   65.162
C,10-CS137,YES,   1.742E+02,   1.549E+00,   7.599E-01,,  229.241
C,11-Y88  ,YES,   4.017E+02,   4.596E+00,   2.531E+00,,  158.757
C,12-CO60 ,YES,   2.063E+02,   1.256E+00,   5.563E-01,,  370.833
C,14-Y88  ,YES,   4.037E+02,   4.693E+00,   1.166E+00,,  346.327
C,01-CO57 ,NO ,   1.905E+04,   3.284E+02,   6.422E+02,,   29.666
C,02-CE139,NO ,   2.347E+01,   5.018E+00,   8.646E+00,,    2.714
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

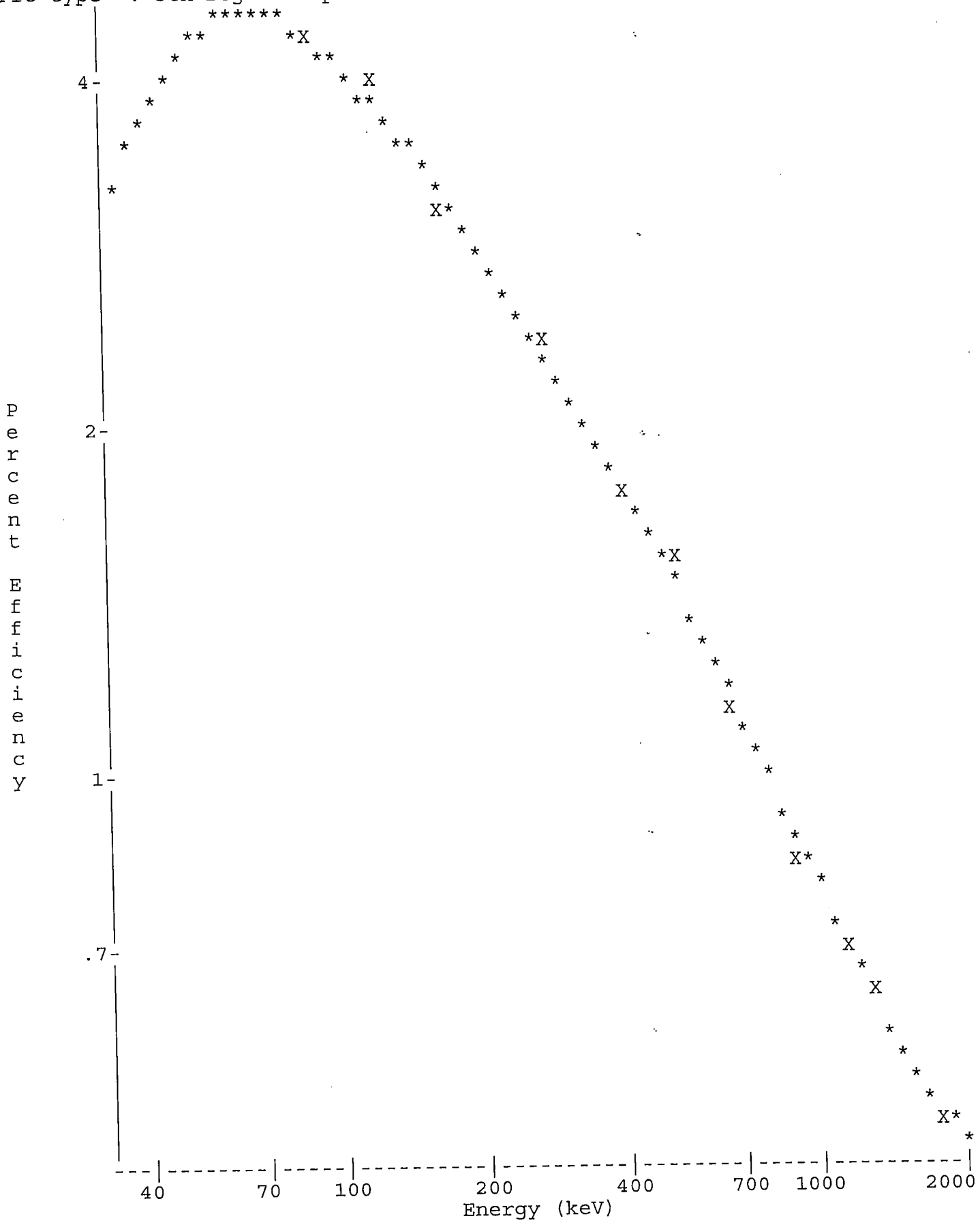
Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919 Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919     ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919     ,CALIBRATION          ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,   1.013E+03,   1.793E+01,   1.499E+01,,   67.586
C,03-CO57 ,YES,   4.118E+01,   1.003E+00,   7.649E-01,,   53.831
C,04-CE139,YES,   4.917E+01,   1.826E+00,   1.518E+00,,   32.396
C,05-HG203,YES,   1.496E+02,   1.412E+01,   1.379E+01,,   10.849
C,06-SN113,YES,   1.882E+02,   4.968E+00,   3.497E+00,,   53.812
C,07-SR85 ,YES,   2.596E+02,   1.031E+01,   6.619E+00,,   39.220
C,08-CS137,YES,   1.689E+02,   2.289E+00,   1.088E+00,,  155.266
C,09-Y88  ,YES,   3.885E+02,   7.711E+00,   4.625E+00,,   83.996
C,10-CO60 ,YES,   2.075E+02,   2.028E+00,   1.127E+00,,  184.062
C,12-Y88  ,YES,   4.004E+02,   8.223E+00,   2.218E+00,,  180.562
C,01-AM241,NO ,  -6.041E-01,   5.435E-01,   9.051E-01,,   -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.04%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.1	0.23%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	147.8	-5.28%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.8	-0.96%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	246.3	0.11%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.4	-1.92%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.7	-0.36%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.4	1.35%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **13FS082019**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-AUG-2019 10:16:42.98
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-AUG-2019 08:54:14.90

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

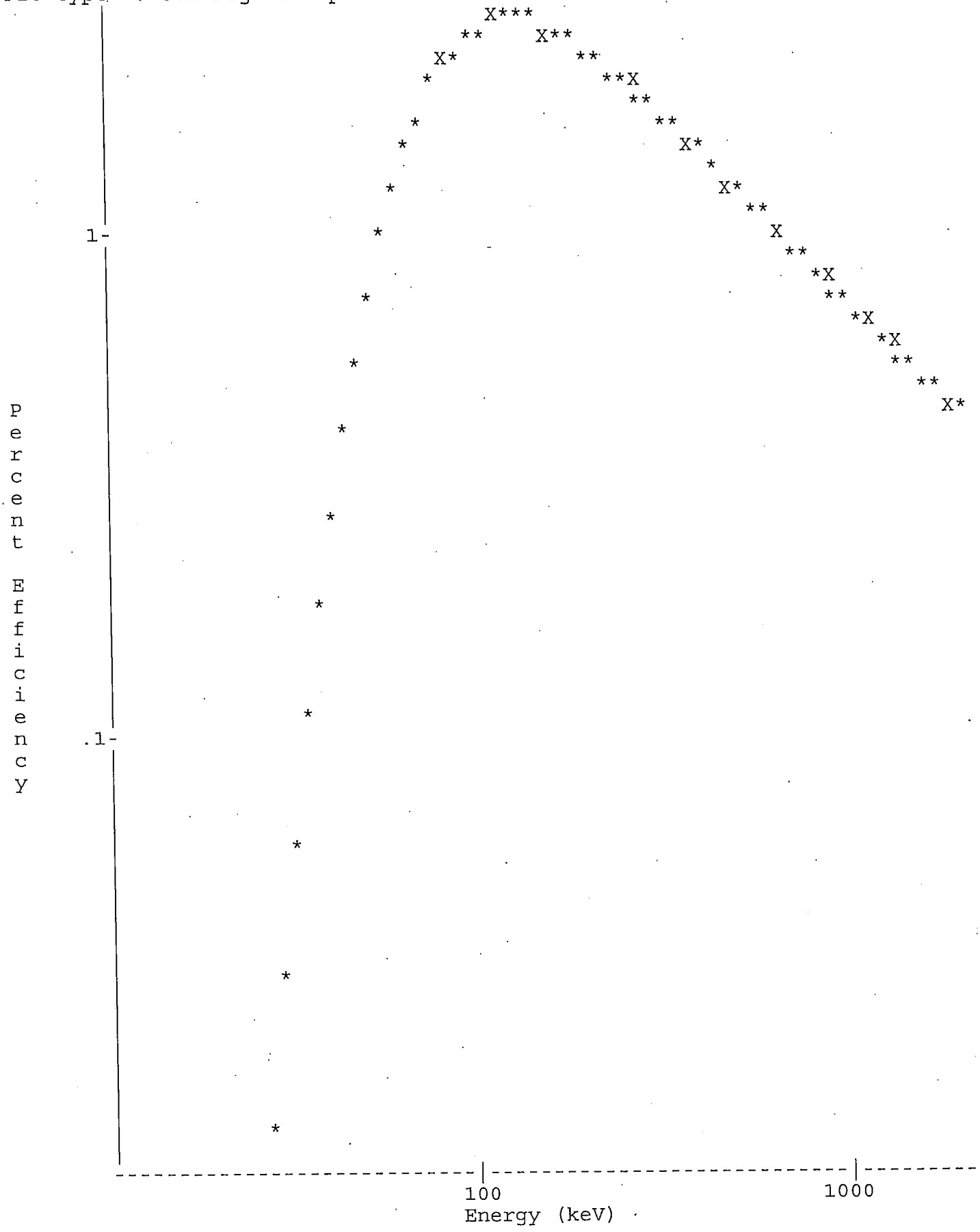
Sample ID : 13FS082019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13FS082019
BKGFILE : 13BG080219MT
Real Time : 0 04:30:28.32
Live time : 0 04:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.63	952	5532	1.58	93.52	3.82E-01	5.88E-02	13.9	2.84E+00
2	1	75.09	636	4877	0.76	150.48	1.70E+00	3.93E-02	17.7	2.63E+00
3	3	84.98	682	5836	1.13	170.29	2.05E+00	4.21E-02	18.6	4.81E+00
4	3	88.10	11529	4415	0.95	176.52	2.14E+00	7.12E-01	1.3	
5	1	122.09	11819	7154	0.96	244.58	2.62E+00	7.30E-01	1.6	1.92E+00
6	1	136.48	1523	5514	0.91	273.40	2.65E+00	9.40E-02	8.8	3.51E-01
7	1	165.85	11357	6444	1.00	332.19	2.55E+00	7.01E-01	1.6	9.75E-01
8	1	255.20	848	4560	1.19	511.12	2.05E+00	5.24E-02	14.8	7.49E-01
9	1	279.16	11437	5054	1.10	559.11	1.93E+00	7.06E-01	1.5	1.95E+00
10	1	391.69	18429	4007	1.20	784.50	1.50E+00	1.14E+00	1.0	6.11E-01
11	1	513.96	20517	4034	1.26	1029.44	1.22E+00	1.27E+00	1.0	7.97E-01
12	1	661.54	23771	3194	1.40	1325.16	9.98E-01	1.47E+00	0.8	2.51E+00
13	1	813.68	554	1450	1.71	1630.11	8.48E-01	3.42E-02	13.9	4.50E-01
14	1	897.97	28112	2268	1.58	1799.11	7.84E-01	1.74E+00	0.7	1.58E+00
15	1	1173.32	20296	1360	1.76	2351.31	6.36E-01	1.25E+00	0.8	1.18E+00
16	1	1324.80	530	925	2.58	2655.22	5.80E-01	3.27E-02	13.6	2.03E+00
17	1	1332.60	18766	897	1.86	2670.86	5.78E-01	1.16E+00	0.8	3.05E+00
18	1	1460.97	204	565	1.45	2928.48	5.40E-01	1.26E-02	22.7	1.03E+00
19	1	1835.93	17820	322	2.21	3681.29	4.63E-01	1.10E+00	0.8	2.41E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 21-AUG-2019 10:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 13FS082019



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-AUG-2019 10:19:15.10
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-AUG-2019 08:54:14.90

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 13FS082019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13FS082019
BKGFILE : 13BG080219MT
Real Time : 0 04:30:28.32
Live time : 0 04:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.63	952	5532	1.58	93.52	3.82E-01	5.88E-02	13.9	2.84E+00
2	1	75.09*	424	4877	0.76	150.48	1.70E+00	2.62E-02	26.7	2.63E+00
3	3	84.98*	537	5836	1.13	170.29	2.05E+00	3.31E-02	23.6	4.81E+00
4	3	88.10*	11469	4415	0.95	176.52	2.14E+00	7.08E-01	1.3	
5	1	122.09	11819	7154	0.96	244.58	2.62E+00	7.30E-01	1.6	1.92E+00
6	1	136.48	1523	5514	0.91	273.40	2.65E+00	9.40E-02	8.8	3.51E-01
7	1	165.85	11357	6444	1.00	332.19	2.55E+00	7.01E-01	1.6	9.75E-01
8	1	255.20	848	4560	1.19	511.12	2.05E+00	5.24E-02	14.8	7.49E-01
9	1	279.16	11437	5054	1.10	559.11	1.93E+00	7.06E-01	1.5	1.95E+00
10	1	391.69	18429	4007	1.20	784.50	1.50E+00	1.14E+00	1.0	6.11E-01
11	1	513.96	20517	4034	1.26	1029.44	1.22E+00	1.27E+00	1.0	7.97E-01
12	1	661.54	23771	3194	1.40	1325.16	9.98E-01	1.47E+00	0.8	2.51E+00
13	1	813.68	554	1450	1.71	1630.11	8.48E-01	3.42E-02	13.9	4.50E-01
14	1	897.97	28112	2268	1.58	1799.11	7.84E-01	1.74E+00	0.7	1.58E+00
15	1	1173.32	20296	1360	1.76	2351.31	6.36E-01	1.25E+00	0.8	1.18E+00
16	1	1324.80	530	925	2.58	2655.22	5.80E-01	3.27E-02	13.6	2.03E+00
17	1	1332.60	18766	897	1.86	2670.86	5.78E-01	1.16E+00	0.8	3.05E+00
18	1	1460.97*	9	565	1.45	2928.48	5.40E-01	5.56E-04	518.0	1.03E+00
19	1	1835.93	17820	322	2.21	3681.29	4.63E-01	1.10E+00	0.8	2.41E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	11469	3.72*	2.143E+00	8.879E+02	1.001E+03	2.64
03-CO57	122.06	11819	85.51*	2.624E+00	3.251E+01	3.990E+01	3.25
04-CE139	165.85	11357	80.35*	2.555E+00	3.415E+01	5.108E+01	3.25
05-HG203	279.20	11437	81.46*	1.926E+00	4.500E+01	1.478E+02	3.06
06-SN113	391.69	18429	64.90*	1.503E+00	1.167E+02	1.888E+02	2.02
07-SR85	513.99	20517	99.27*	1.218E+00	1.048E+02	2.463E+02	1.91
08-CS137	661.65	23771	85.12*	9.985E-01	1.726E+02	1.735E+02	1.65
09-Y88	898.02	28112	93.40*	7.842E-01	2.369E+02	3.984E+02	1.40
10-CO60	1173.22	20296	100.00	6.362E-01	1.969E+02	2.027E+02	1.64
	1332.49	18766	100.00*	5.776E-01	2.006E+02	2.064E+02	1.62
12-Y88	1836.01	17820	99.38*	4.625E-01	2.393E+02	4.024E+02	1.59

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13FS082019

Acquisition date : 20-AUG-2019 08:54:14

Total number of lines in spectrum	19	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	11	57.89%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.879E+02	1.001E+03	0.026E+03	2.64	
03-CO57	270.90D	1.23	3.251E+01	3.990E+01	0.130E+01	3.25	
04-CE139	137.66D	1.50	3.415E+01	5.108E+01	0.166E+01	3.25	
05-HG203	46.61D	3.28	4.500E+01	1.478E+02	0.045E+02	3.06	
06-SN113	115.10D	1.62	1.167E+02	1.888E+02	0.038E+02	2.02	
07-SR85	64.84D	2.35	1.048E+02	2.463E+02	0.047E+02	1.91	
08-CS137	30.17Y	1.01	1.726E+02	1.735E+02	0.029E+02	1.65	
09-Y88	106.65D	1.68	2.369E+02	3.984E+02	0.056E+02	1.40	
10-CO60	5.27Y	1.03	2.006E+02	2.064E+02	0.033E+02	1.62	
12-Y88	106.65D	1.68	2.393E+02	4.024E+02	0.064E+02	1.59	
			---------	---------			
	Total Activity :		2.071E+03	2.856E+03			

Grand Total Activity : 2.071E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13FS082019 Acquisition date : 20-AUG-2019 08:54:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.63	952	5532	1.58	93.52	90	8	5.88E-02	27.7	3.82E-01	
1	75.09	424	4877	0.76	150.48	149	6	2.62E-02	53.4	1.70E+00	
3	84.98	537	5836	1.13	170.29	167	17	3.31E-02	47.3	2.05E+00	
1	136.48	1523	5514	0.91	273.40	269	8	9.40E-02	17.7	2.65E+00	
1	255.20	848	4560	1.19	511.12	507	9	5.24E-02	29.5	2.05E+00	
1	813.68	554	1450	1.71	1630.11	1625	11	3.42E-02	27.9	8.48E-01	
1	1324.80	530	925	2.58	2655.22	2647	16	3.27E-02	27.1	5.80E-01	
1	1460.97	9	565	1.45	2928.48	2924	10	5.56E-04	****	5.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	19	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	11	57.89%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.879E+02	1.001E+03	0.026E+03	2.64	
03-CO57	270.90D	1.23	3.251E+01	3.990E+01	0.130E+01	3.25	
04-CE139	137.66D	1.50	3.415E+01	5.108E+01	0.166E+01	3.25	
05-HG203	46.61D	3.28	4.500E+01	1.478E+02	0.045E+02	3.06	
06-SN113	115.10D	1.62	1.167E+02	1.888E+02	0.038E+02	2.02	
07-SR85	64.84D	2.35	1.048E+02	2.463E+02	0.047E+02	1.91	
08-CS137	30.17Y	1.01	1.726E+02	1.735E+02	0.029E+02	1.65	
09-Y88	106.65D	1.68	2.369E+02	3.984E+02	0.056E+02	1.40	
10-CO60	5.27Y	1.03	1.987E+02	2.045E+02	0.024E+02	1.15	
12-Y88	106.65D	1.68	2.393E+02	4.024E+02	0.064E+02	1.59	
	Total Activity :		2.069E+03	2.854E+03			

Grand Total Activity : 2.069E+03 2.854E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	2.641E+01	2.624E+01	0.000E+00	38.148
03-CO57	3.990E+01	1.298E+00	9.884E-01	0.000E+00	40.365
04-CE139	5.108E+01	1.660E+00	1.303E+00	0.000E+00	39.206
05-HG203	1.478E+02	4.520E+00	3.390E+00	0.000E+00	43.597
06-SN113	1.888E+02	3.813E+00	2.383E+00	0.000E+00	79.237
07-SR85	2.463E+02	4.698E+00	2.782E+00	0.000E+00	88.540
08-CS137	1.735E+02	2.860E+00	1.539E+00	0.000E+00	112.780

09-Y88	3.984E+02	5.561E+00	2.634E+00	0.000E+00	151.268
10-CO60	2.045E+02	2.354E+00	1.275E+00	0.000E+00	160.438
12-Y88	4.024E+02	6.399E+00	1.374E+00	0.000E+00	292.959

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-8.058E-01		2.990E+00	4.682E+00	0.000E+00	-0.172

```
A,13FS082019      ,08/21/2019 10:19,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,13FS082019      ,CALIBRATION         ,08/21/2019 10:16,13FS082019
C,02-CD109,YES,   1.001E+03,   2.641E+01,   2.624E+01,,   38.148
C,03-CO57 ,YES,   3.990E+01,   1.298E+00,   9.884E-01,,   40.365
C,04-CE139,YES,   5.108E+01,   1.660E+00,   1.303E+00,,   39.206
C,05-HG203,YES,   1.478E+02,   4.520E+00,   3.390E+00,,   43.597
C,06-SN113,YES,   1.888E+02,   3.813E+00,   2.383E+00,,   79.237
C,07-SR85 ,YES,   2.463E+02,   4.698E+00,   2.782E+00,,   88.540
C,08-CS137,YES,   1.735E+02,   2.860E+00,   1.539E+00,,  112.780
C,09-Y88  ,YES,   3.984E+02,   5.561E+00,   2.634E+00,,  151.268
C,10-CO60 ,YES,   2.045E+02,   2.354E+00,   1.275E+00,,  160.438
C,12-Y88  ,YES,   4.024E+02,   6.399E+00,   1.374E+00,,  292.959
C,01-AM241,NO ,  -8.058E-01,   2.990E+00,   4.682E+00,,   -0.172
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.03%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.2	-5.03%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.3	0.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.4	2.21%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.9	-1.31%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.5	0.04%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.4	0.37%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.3	-0.10%

Eff. Name: **14FS092319**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:28:32.55
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

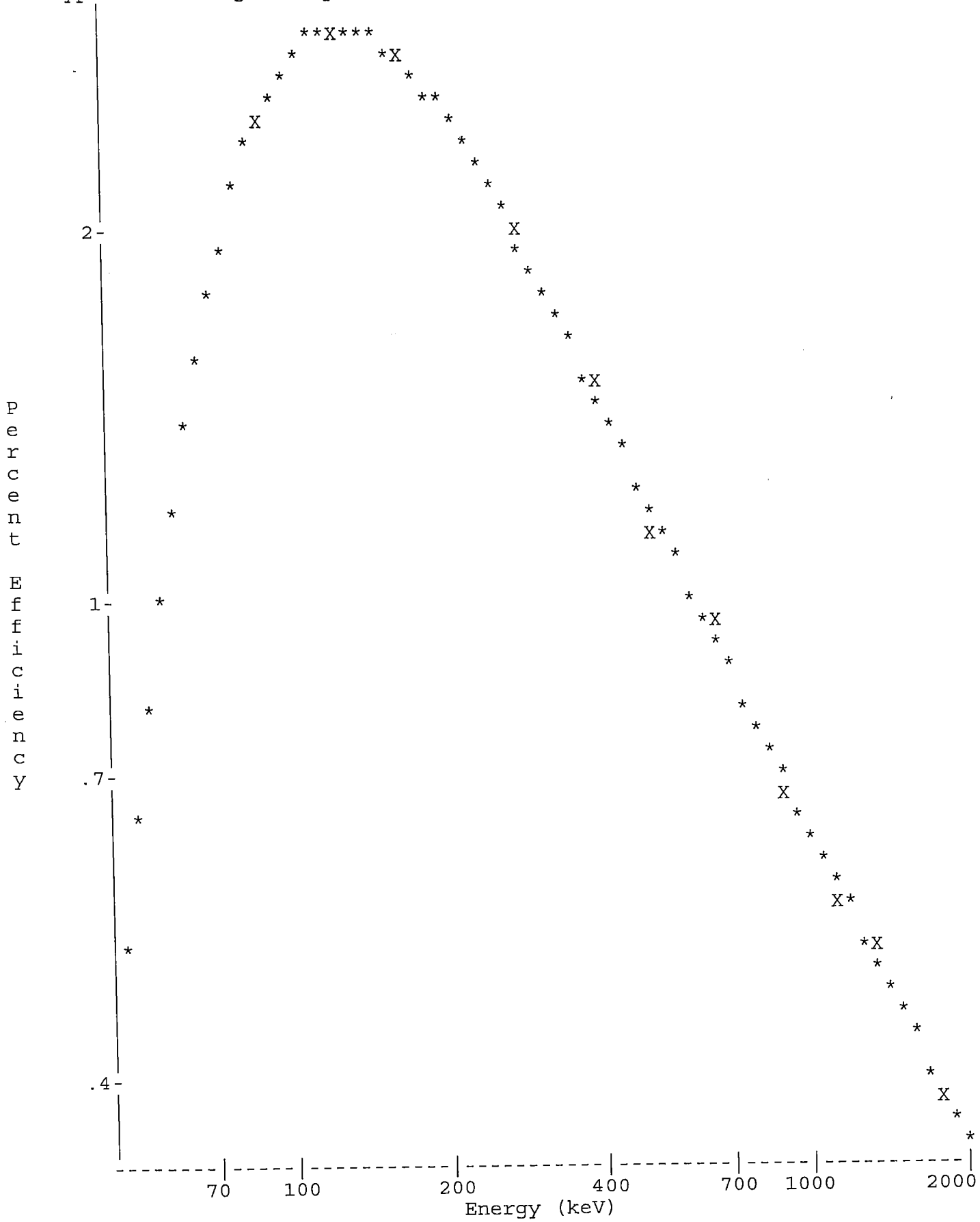
LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88	930	7993	0.67	142.98	1.91E+00	3.23E-02	15.5	3.92E+00
2	1	88.04	22566	11237	0.84	173.39	2.48E+00	7.84E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 24-SEP-2019 09:28
Detector :
Geometry : 14FS092319
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:29:25.42
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88*	833	7993	0.67	142.98	1.91E+00	2.89E-02	17.4	3.92E+00
2	1	88.04*	22524	11237	0.84	173.39	2.48E+00	7.82E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22524	3.72*	2.482E+00	8.470E+02	1.005E+03	2.17
03-CO57	122.06	21617	85.51*	2.947E+00	2.979E+01	3.991E+01	2.43
04-CE139	165.85	18496	80.35*	2.790E+00	2.865E+01	5.095E+01	2.36
05-HG203	279.20	12600	81.46*	1.983E+00	2.708E+01	1.482E+02	3.26
06-SN113	391.69	26599	64.90*	1.481E+00	9.608E+01	1.913E+02	1.71
07-SR85	513.99	23420	99.27*	1.160E+00	7.064E+01	2.397E+02	1.69
08-CS137	661.65	39429	85.12*	9.236E-01	1.741E+02	1.754E+02	1.28
09-Y88	898.02	36083	93.40*	7.034E-01	1.907E+02	4.009E+02	1.30
10-CO60	1173.22	31293	100.00	5.564E-01	1.953E+02	2.035E+02	1.31
	1332.49	28155	100.00*	4.985E-01	1.961E+02	2.044E+02	1.36
12-Y88	1836.01	20920	99.38*	3.810E-01	1.918E+02	4.033E+02	1.47

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14FS092319

Acquisition date : 23-SEP-2019 15:30:35

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.961E+02	2.044E+02	0.028E+02	1.36	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14FS092319 Acquisition date : 23-SEP-2019 15:30:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	72.88	833	7993	0.67	142.98	140	6	2.89E-02	34.7	1.91E+00	
1	136.48	2593	8436	0.91	270.51	267	8	9.00E-02	12.9	2.94E+00	
1	255.02	1548	6283	1.29	508.23	504	8	5.37E-02	18.4	2.13E+00	
1	813.99	785	2402	1.87	1629.33	1623	11	2.73E-02	25.1	7.67E-01	
1	1324.77	739	1286	2.84	2654.08	2646	15	2.56E-02	22.4	5.01E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.957E+02	2.039E+02	0.019E+02	0.95	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.182E+01	1.629E+01	0.000E+00	61.714
03-CO57	3.991E+01	9.700E-01	6.523E-01	0.000E+00	61.183
04-CE139	5.095E+01	1.203E+00	9.498E-01	0.000E+00	53.639
05-HG203	1.482E+02	4.830E+00	3.642E+00	0.000E+00	40.696
06-SN113	1.913E+02	3.264E+00	2.022E+00	0.000E+00	94.570

07-SR85	2.397E+02	4.057E+00	2.935E+00	0.000E+00	81.684
08-CS137	1.754E+02	2.249E+00	1.116E+00	0.000E+00	157.102
09-Y88	4.009E+02	5.192E+00	2.528E+00	0.000E+00	158.546
10-CO60	2.039E+02	1.928E+00	9.329E-01	0.000E+00	218.563
12-Y88	4.033E+02	5.932E+00	1.447E+00	0.000E+00	278.709

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	9.143E-01		1.537E+00	2.519E+00	0.000E+00	0.363

```
A,14FS092319      ,09/24/2019 09:29,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,14FS092319      ,CALIBRATION          ,09/24/2019 09:28,14FS092319
C,02-CD109,YES,   1.005E+03,   2.182E+01,   1.629E+01,,   61.714
C,03-CO57 ,YES,   3.991E+01,   9.700E-01,   6.523E-01,,   61.183
C,04-CE139,YES,   5.095E+01,   1.203E+00,   9.498E-01,,   53.639
C,05-HG203,YES,   1.482E+02,   4.830E+00,   3.642E+00,,   40.696
C,06-SN113,YES,   1.913E+02,   3.264E+00,   2.022E+00,,   94.570
C,07-SR85 ,YES,   2.397E+02,   4.057E+00,   2.935E+00,,   81.684
C,08-CS137,YES,   1.754E+02,   2.249E+00,   1.116E+00,,  157.102
C,09-Y88  ,YES,   4.009E+02,   5.192E+00,   2.528E+00,,  158.546
C,10-CO60 ,YES,   2.039E+02,   1.928E+00,   9.329E-01,,  218.563
C,12-Y88  ,YES,   4.033E+02,   5.932E+00,   1.447E+00,,  278.709
C,01-AM241,NO ,   9.143E-01,   1.537E+00,   2.519E+00,,    0.363
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.11%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.1	0.33%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	192.6	1.04%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	242.2	-1.55%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.2	2.09%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.7	-2.84%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.3	0.43%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.9	1.11%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.2	-0.37%

Eff. Name: **15FS082219**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 10:37:18.65
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 22-AUG-2019 11:17:01.43

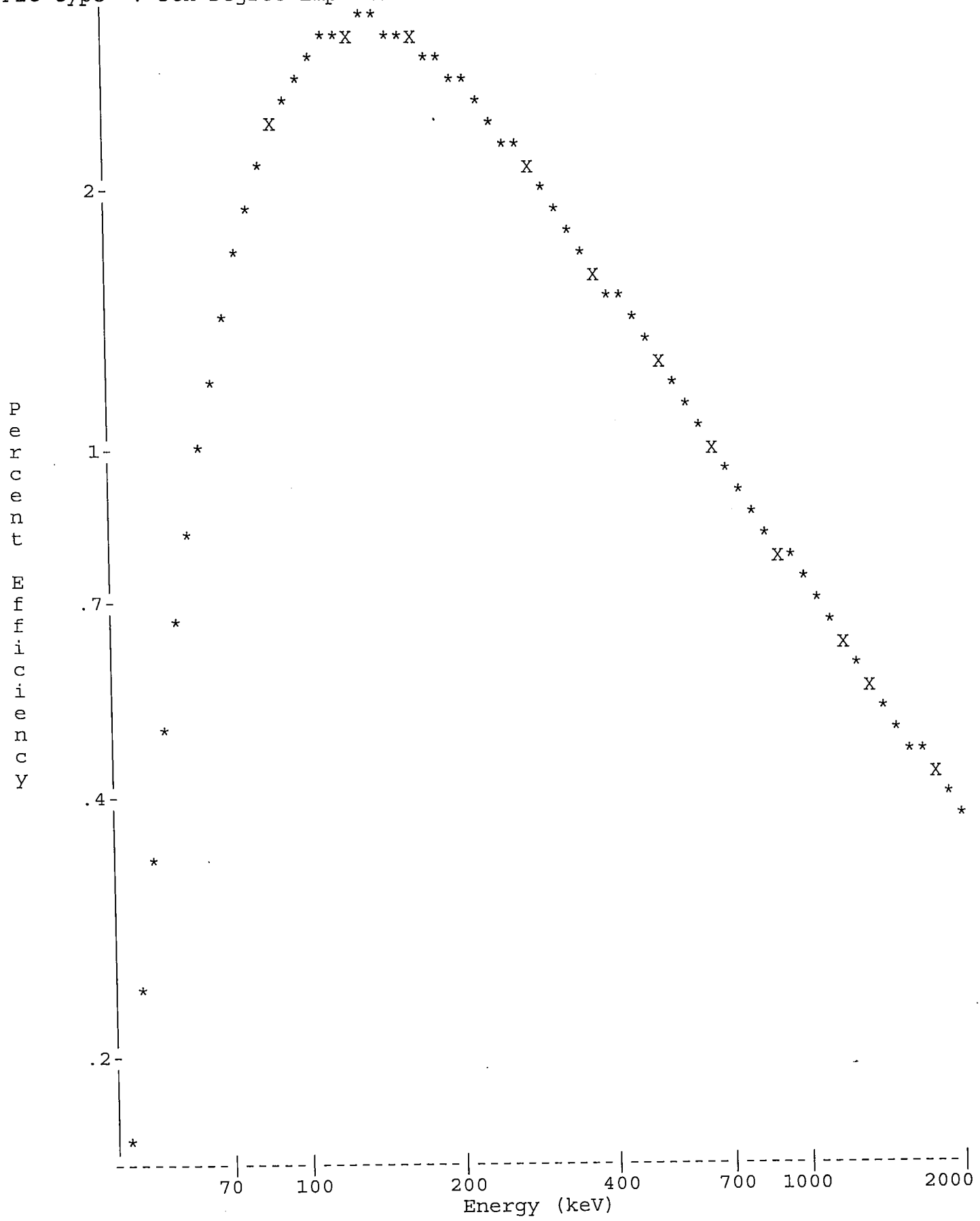
LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 15FS082219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15FS082219
BKGFILE : 15BG080219MT
Real Time : 0 04:00:26.59
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.49	530	4425	0.84	87.54	2.80E-01	3.68E-02	20.4	5.45E-01
2	1	72.87	490	5274	0.80	140.47	1.71E+00	3.40E-02	23.7	5.38E+00
3	1	88.05	11550	7152	0.97	170.91	2.42E+00	8.02E-01	1.6	1.79E+00
4	1	122.07	12365	6461	0.98	239.15	3.10E+00	8.59E-01	1.5	2.58E+00
5	1	136.43	1709	6035	1.15	267.94	3.13E+00	1.19E-01	8.5	1.38E+00
6	1	165.85	11743	7142	1.02	326.95	3.00E+00	8.15E-01	1.7	7.14E-01
7	1	255.10	912	4452	1.14	505.96	2.31E+00	6.34E-02	13.6	1.13E+00
8	1	279.17	10900	5330	1.13	554.24	2.16E+00	7.57E-01	1.6	1.90E+00
9	1	391.68	17847	3174	1.21	779.88	1.62E+00	1.24E+00	1.0	1.88E+00
10	1	513.98	18460	3433	1.30	1025.16	1.28E+00	1.28E+00	1.0	7.94E-01
11	1	661.64	21884	3122	1.46	1321.28	1.02E+00	1.52E+00	0.9	2.26E+00
12	1	813.95	439	1392	1.47	1626.70	8.51E-01	3.05E-02	17.2	7.19E-01
13	1	898.03	24259	2289	1.64	1795.31	7.79E-01	1.68E+00	0.8	1.76E+00
14	1	1173.23	17504	1380	1.85	2347.12	6.13E-01	1.22E+00	0.9	2.05E+00
15	1	1324.62	451	768	2.88	2650.65	5.51E-01	3.13E-02	13.9	2.14E+00
16	1	1332.51	15774	936	1.99	2666.46	5.48E-01	1.10E+00	0.9	1.32E+00
17	1	1835.99	14288	332	2.36	3675.81	4.23E-01	9.92E-01	0.9	2.31E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 19-SEP-2019 10:37
Detector :
Geometry : 15FS082219
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-SEP-2019 10:38:48.29
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 22-AUG-2019 11:17:01.43

LIMS No., Customer Name, Client ID: FISH/SOIL 5ML MIXED GAMMA REF DATE 060119

Sample ID : 15FS082219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15FS082219
BKGFILE : 15BG080219MT
Real Time : 0 04:00:26.59
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.49	530	4425	0.84	87.54	2.80E-01	3.68E-02	20.4	5.45E-01
2	1	72.87*	408	5274	0.80	140.47	1.71E+00	2.83E-02	28.5	5.38E+00
3	1	88.05*	11513	7152	0.97	170.91	2.42E+00	7.99E-01	1.6	1.79E+00
4	1	122.07	12365	6461	0.98	239.15	3.10E+00	8.59E-01	1.5	2.58E+00
5	1	136.43	1709	6035	1.15	267.94	3.13E+00	1.19E-01	8.5	1.38E+00
6	1	165.85	11743	7142	1.02	326.95	3.00E+00	8.15E-01	1.7	7.14E-01
7	1	255.10	912	4452	1.14	505.96	2.31E+00	6.34E-02	13.6	1.13E+00
8	1	279.17	10900	5330	1.13	554.24	2.16E+00	7.57E-01	1.6	1.90E+00
9	1	391.68	17847	3174	1.21	779.88	1.62E+00	1.24E+00	1.0	1.88E+00
10	1	513.98	18460	3433	1.30	1025.16	1.28E+00	1.28E+00	1.0	7.94E-01
11	1	661.64	21884	3122	1.46	1321.28	1.02E+00	1.52E+00	0.9	2.26E+00
12	1	813.95	439	1392	1.47	1626.70	8.51E-01	3.05E-02	17.2	7.19E-01
13	1	898.03	24259	2289	1.64	1795.31	7.79E-01	1.68E+00	0.8	1.76E+00
14	1	1173.23	17504	1380	1.85	2347.12	6.13E-01	1.22E+00	0.9	2.05E+00
15	1	1324.62	451	768	2.88	2650.65	5.51E-01	3.13E-02	13.9	2.14E+00
16	1	1332.51	15774	936	1.99	2666.46	5.48E-01	1.10E+00	0.9	1.32E+00
17	1	1835.99	14288	332	2.36	3675.81	4.23E-01	9.92E-01	0.9	2.31E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	11513	3.72*	2.424E+00	8.865E+02	1.002E+03	3.26
03-CO57	122.06	12365	85.51*	3.100E+00	3.240E+01	3.996E+01	2.96
04-CE139	165.85	11743	80.35*	3.000E+00	3.382E+01	5.113E+01	3.35
05-HG203	279.20	10900	81.46*	2.157E+00	4.308E+01	1.459E+02	3.30
06-SN113	391.69	17847	64.90*	1.625E+00	1.175E+02	1.926E+02	1.94
07-SR85	513.99	18460	99.27*	1.282E+00	1.008E+02	2.422E+02	1.96
08-CS137	661.65	21884	85.12*	1.024E+00	1.743E+02	1.752E+02	1.76
09-Y88	898.02	24259	93.40*	7.789E-01	2.316E+02	3.947E+02	1.55
10-CO60	1173.22	17504	100.00	6.127E-01	1.984E+02	2.043E+02	1.84
	1332.49	15774	100.00*	5.478E-01	1.999E+02	2.059E+02	1.83
12-Y88	1836.01	14288	99.38*	4.231E-01	2.360E+02	4.022E+02	1.82

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15FS082219 Acquisition date : 22-AUG-2019 11:17:01

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.865E+02	1.002E+03	0.033E+03	3.26	
03-CO57	270.90D	1.23	3.240E+01	3.996E+01	0.118E+01	2.96	
04-CE139	137.66D	1.51	3.382E+01	5.113E+01	0.171E+01	3.35	
05-HG203	46.61D	3.39	4.308E+01	1.459E+02	0.048E+02	3.30	
06-SN113	115.10D	1.64	1.175E+02	1.926E+02	0.037E+02	1.94	
07-SR85	64.84D	2.40	1.008E+02	2.422E+02	0.047E+02	1.96	
08-CS137	30.17Y	1.01	1.743E+02	1.752E+02	0.031E+02	1.76	
09-Y88	106.65D	1.70	2.316E+02	3.947E+02	0.061E+02	1.55	
10-CO60	5.27Y	1.03	1.999E+02	2.059E+02	0.038E+02	1.83	
12-Y88	106.65D	1.70	2.360E+02	4.022E+02	0.073E+02	1.82	
			---------	---------			
	Total Activity :		2.056E+03	2.852E+03			

Grand Total Activity :	2.056E+03	2.852E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15FS082219
Acquisition date : 22-AUG-2019 11:17:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.49	530	4425	0.84	87.54	86	6	3.68E-02	40.7	2.80E-01	
1	72.87	408	5274	0.80	140.47	138	6	2.83E-02	56.9	1.71E+00	
1	136.43	1709	6035	1.15	267.94	264	9	1.19E-01	17.1	3.13E+00	
1	255.10	912	4452	1.14	505.96	502	9	6.34E-02	27.2	2.31E+00	
1	813.95	439	1392	1.47	1626.70	1621	11	3.05E-02	34.3	8.51E-01	
1	1324.62	451	768	2.88	2650.65	2644	14	3.13E-02	27.8	5.51E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	11	64.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.13	8.865E+02	1.002E+03	0.033E+03	3.26	
03-CO57	270.90D	1.23	3.240E+01	3.996E+01	0.118E+01	2.96	
04-CE139	137.66D	1.51	3.382E+01	5.113E+01	0.171E+01	3.35	
05-HG203	46.61D	3.39	4.308E+01	1.459E+02	0.048E+02	3.30	
06-SN113	115.10D	1.64	1.175E+02	1.926E+02	0.037E+02	1.94	
07-SR85	64.84D	2.40	1.008E+02	2.422E+02	0.047E+02	1.96	
08-CS137	30.17Y	1.01	1.743E+02	1.752E+02	0.031E+02	1.76	
09-Y88	106.65D	1.70	2.316E+02	3.947E+02	0.061E+02	1.55	
10-CO60	5.27Y	1.03	1.992E+02	2.051E+02	0.027E+02	1.30	
12-Y88	106.65D	1.70	2.360E+02	4.022E+02	0.073E+02	1.82	
			---------	---------			
	Total Activity :		2.055E+03	2.852E+03			

Grand Total Activity : 2.055E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	3.266E+01	2.699E+01	0.000E+00	37.141
03-CO57	3.996E+01	1.181E+00	9.508E-01	0.000E+00	42.033
04-CE139	5.113E+01	1.714E+00	1.284E+00	0.000E+00	39.821
05-HG203	1.459E+02	4.816E+00	3.439E+00	0.000E+00	42.437

06-SN113	1.926E+02	3.740E+00	2.415E+00	0.000E+00	79.766
07-SR85	2.422E+02	4.740E+00	2.989E+00	0.000E+00	81.055
08-CS137	1.752E+02	3.077E+00	1.634E+00	0.000E+00	107.208
09-Y88	3.947E+02	6.112E+00	2.971E+00	0.000E+00	132.878
10-CO60	2.051E+02	2.659E+00	1.436E+00	0.000E+00	142.848
12-Y88	4.022E+02	7.314E+00	1.675E+00	0.000E+00	240.199

---- Non-Identified Nuclides ----

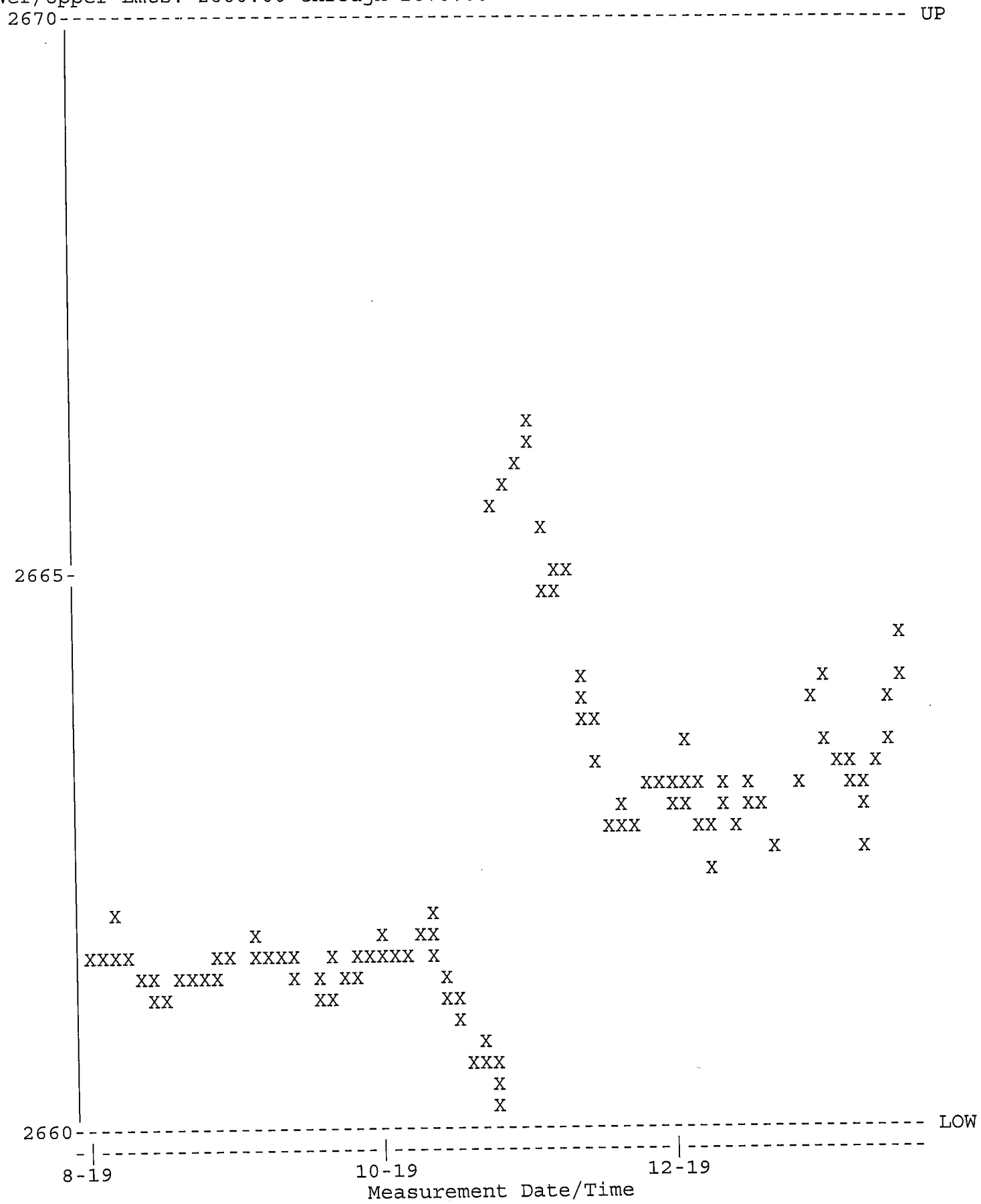
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	1.342E+00		3.579E+00	5.660E+00	0.000E+00	0.237

```
A,15FS082219       ,09/19/2019 10:38,06/01/2019 12:00,   1.000E+00,FISH/SOIL 5ML
B,15FS082219       ,CALIBRATION         ,09/19/2019 10:37,15FS082219
C,02-CD109,YES,   1.002E+03,   3.266E+01,   2.699E+01,,   37.141
C,03-CO57 ,YES,   3.996E+01,   1.181E+00,   9.508E-01,,   42.033
C,04-CE139,YES,   5.113E+01,   1.714E+00,   1.284E+00,,   39.821
C,05-HG203,YES,   1.459E+02,   4.816E+00,   3.439E+00,,   42.437
C,06-SN113,YES,   1.926E+02,   3.740E+00,   2.415E+00,,   79.766
C,07-SR85 ,YES,   2.422E+02,   4.740E+00,   2.989E+00,,   81.055
C,08-CS137,YES,   1.752E+02,   3.077E+00,   1.634E+00,,  107.208
C,09-Y88  ,YES,   3.947E+02,   6.112E+00,   2.971E+00,,  132.878
C,10-CO60 ,YES,   2.051E+02,   2.659E+00,   1.436E+00,,  142.848
C,12-Y88  ,YES,   4.022E+02,   7.314E+00,   1.675E+00,,  240.199
C,01-AM241,NO ,   1.342E+00,   3.579E+00,   5.660E+00,,    0.237
```

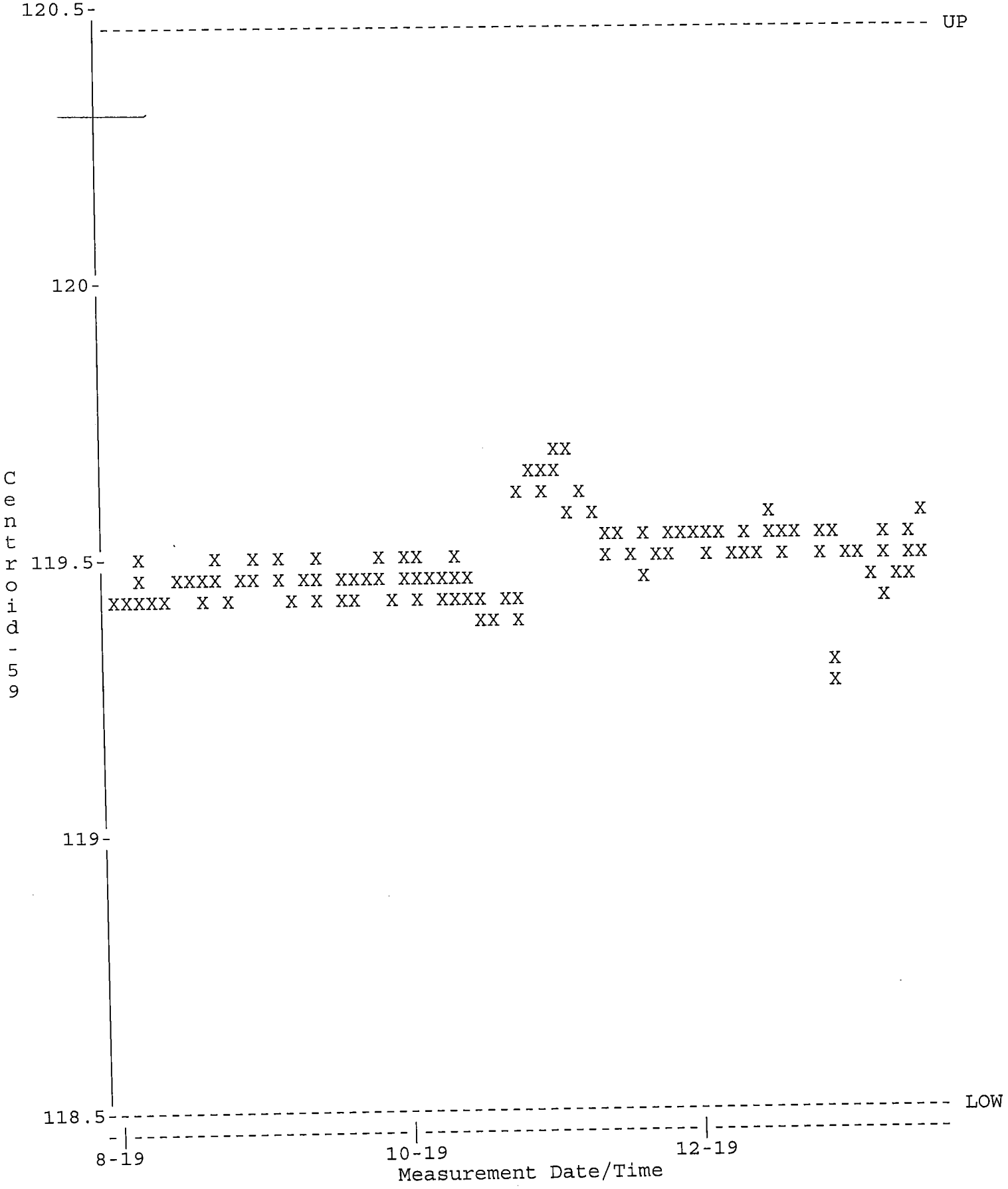
GAMMA SPECTROSCOPY

Daily Source and Background Checks

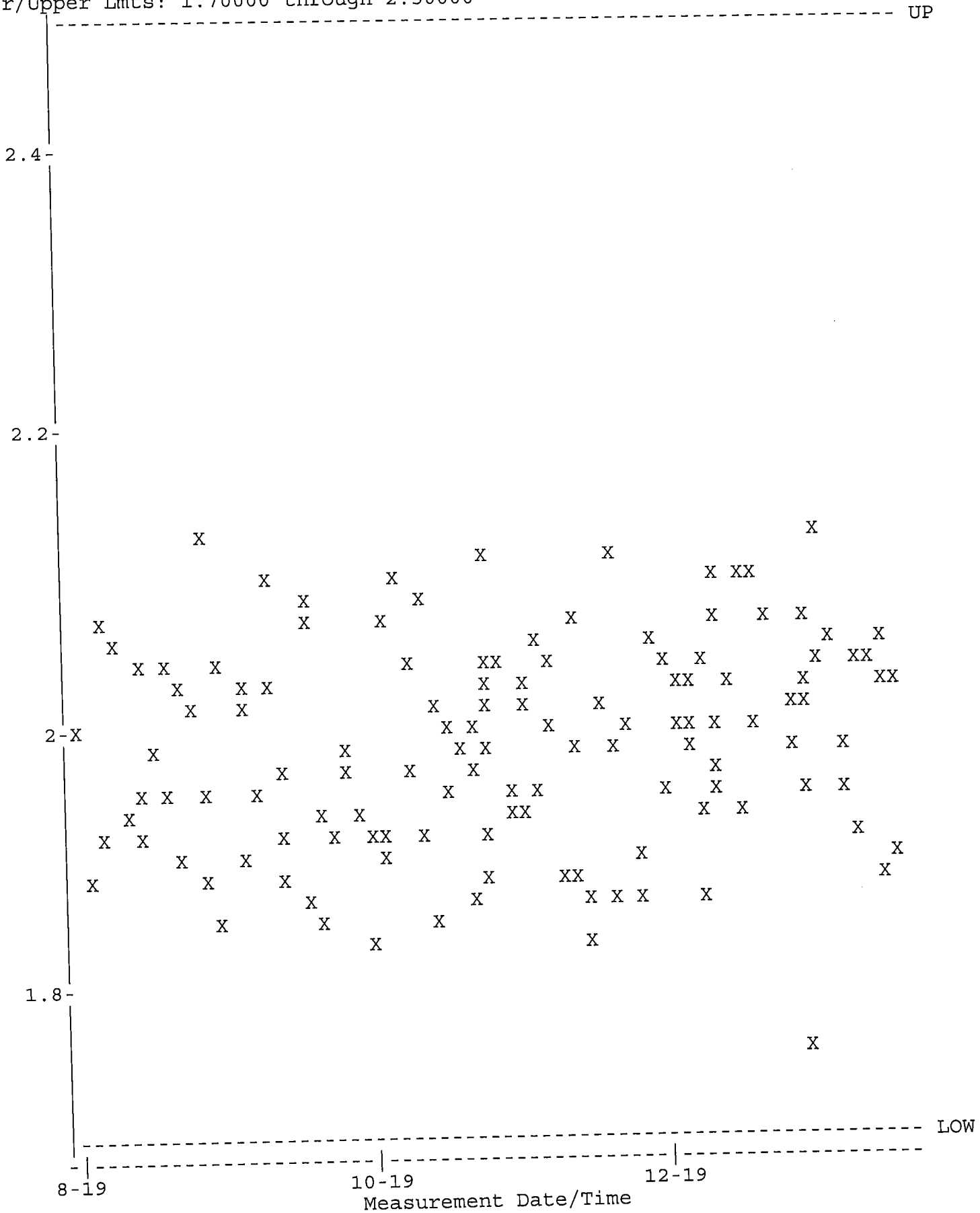
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



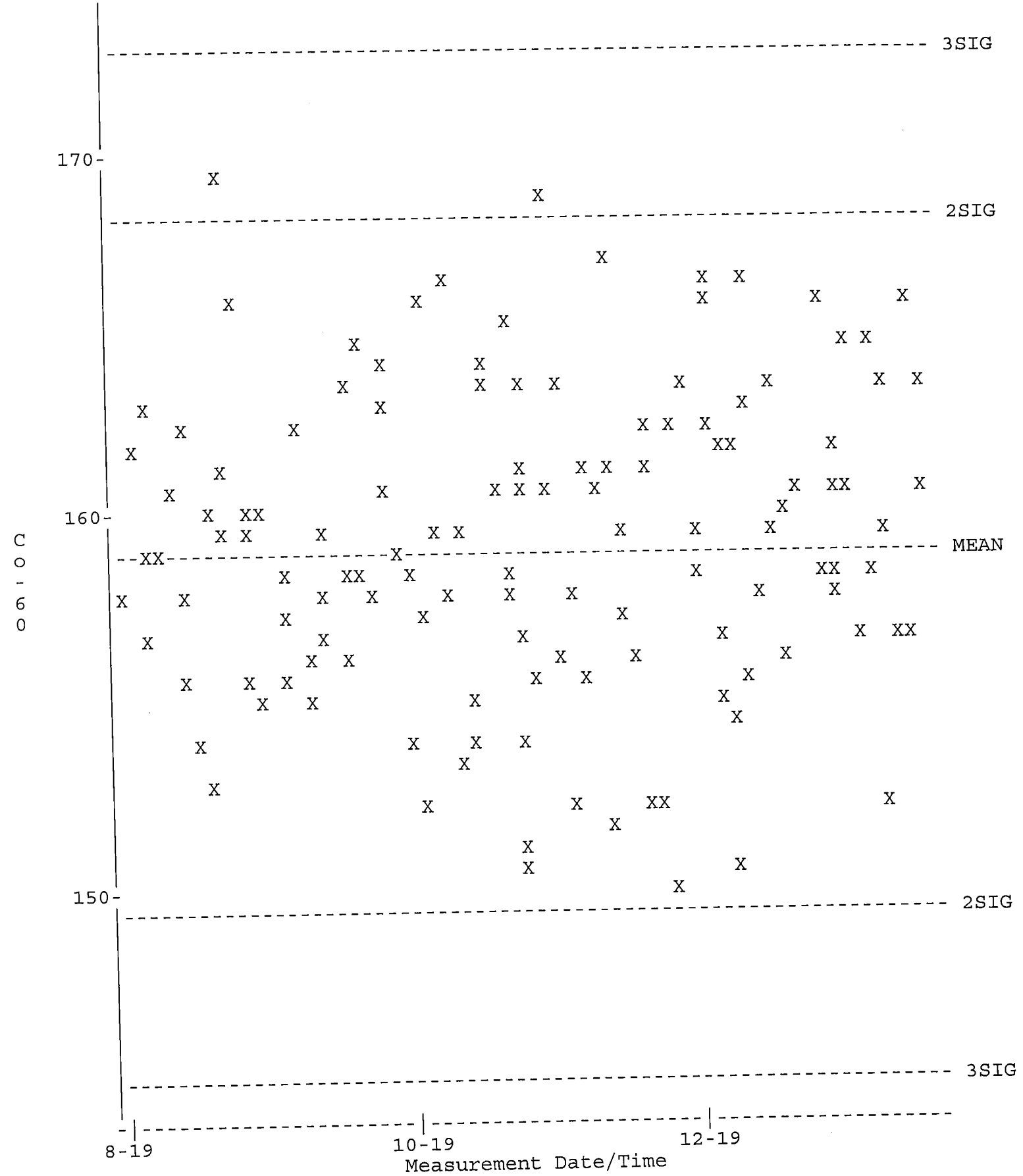
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



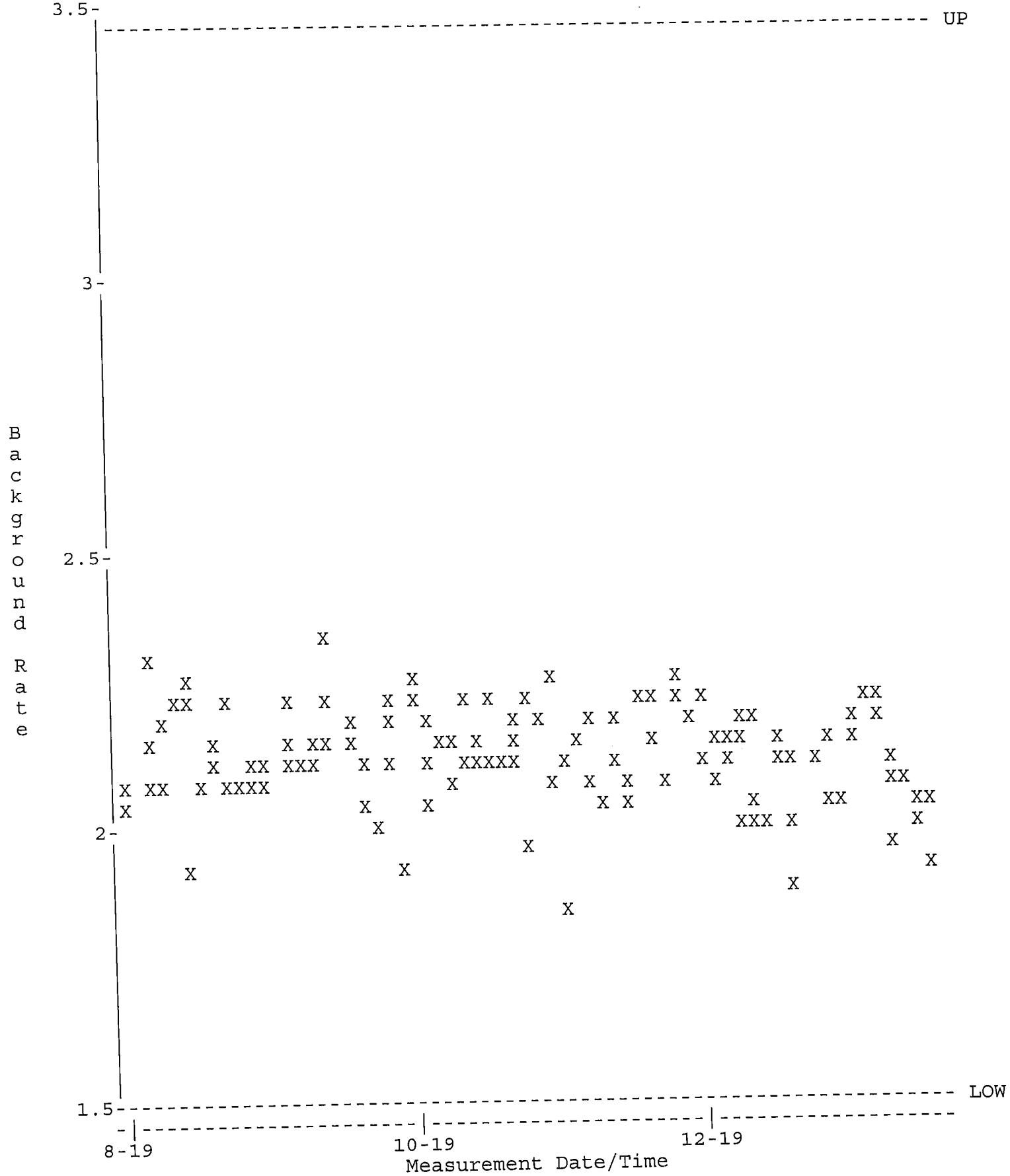
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



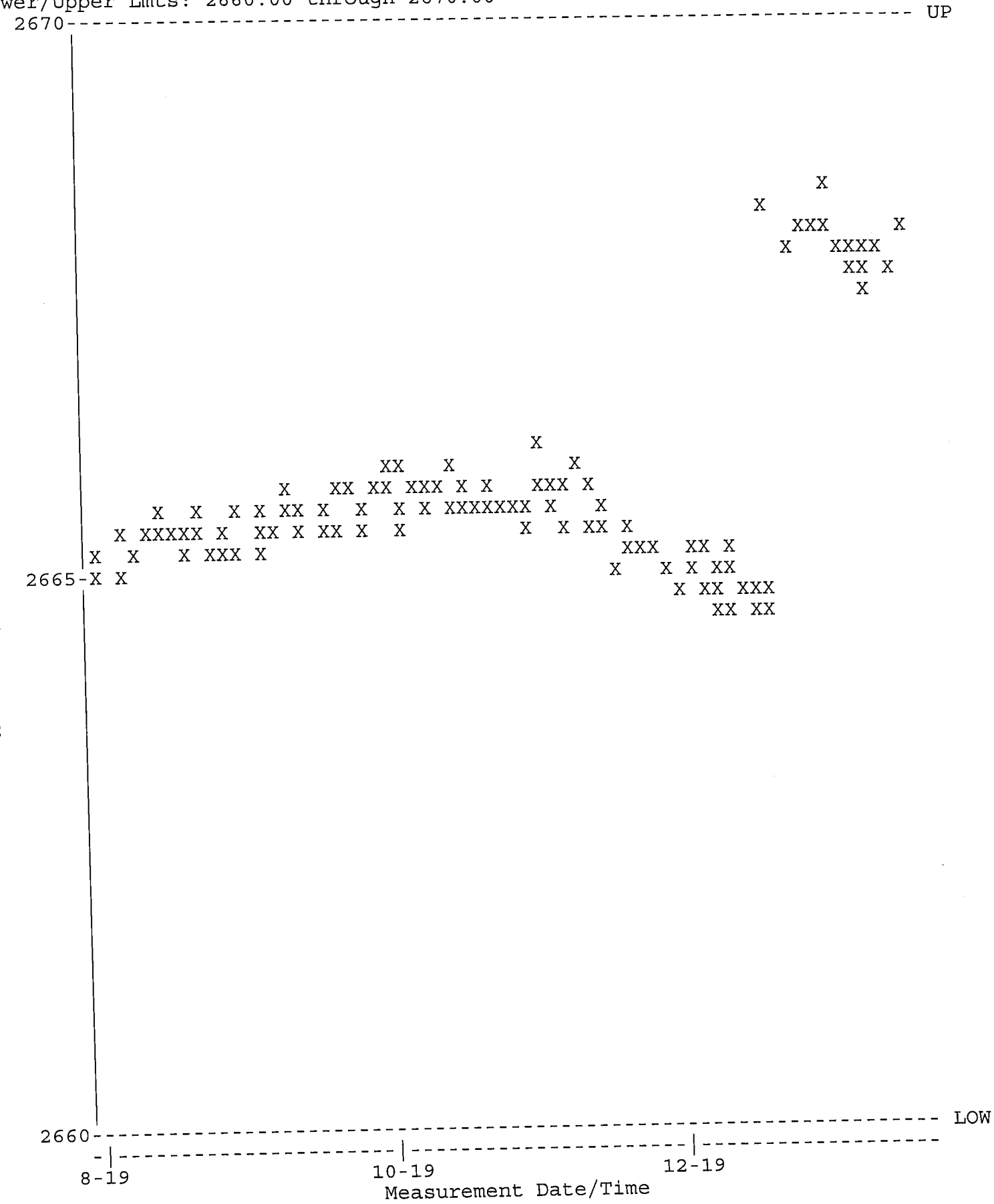
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



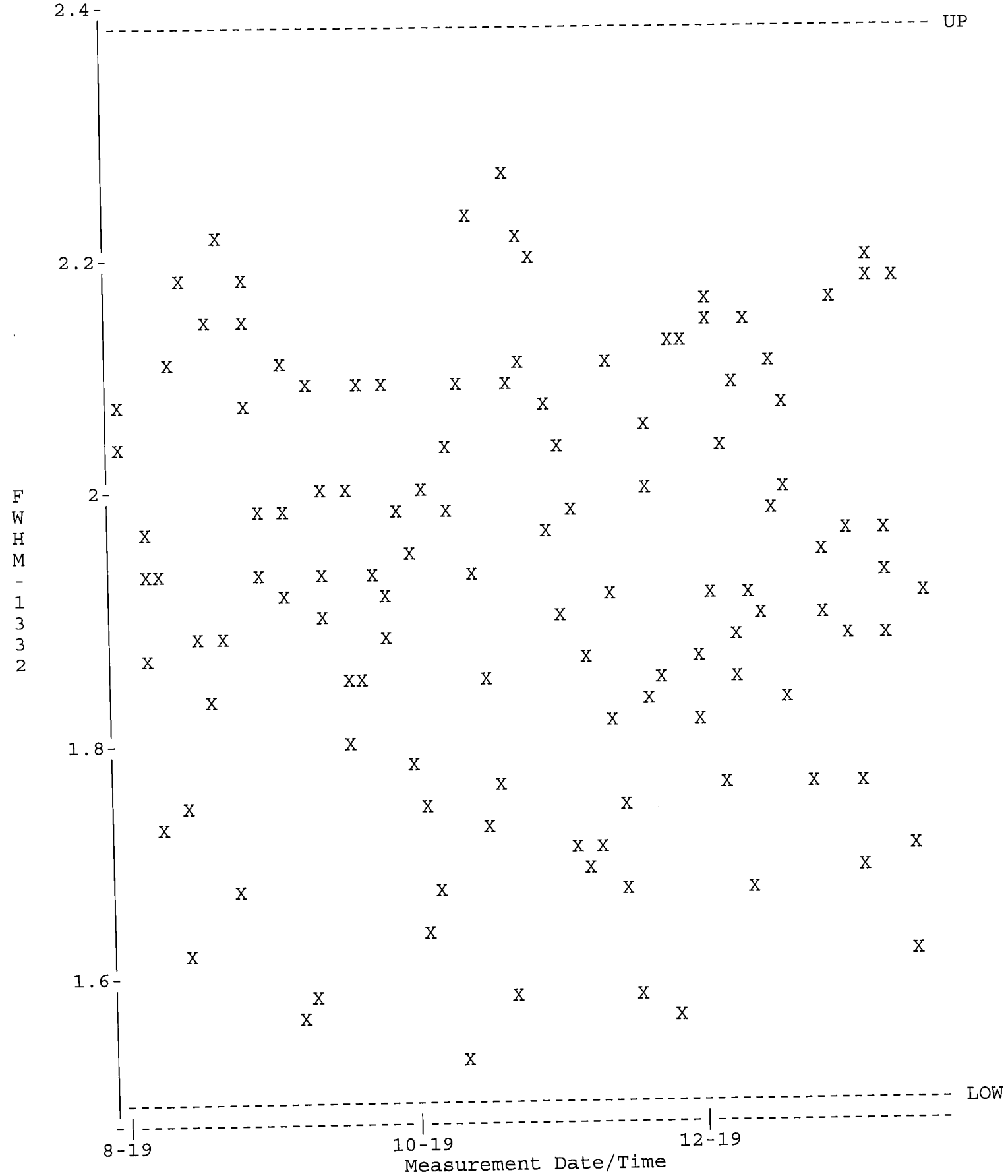
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



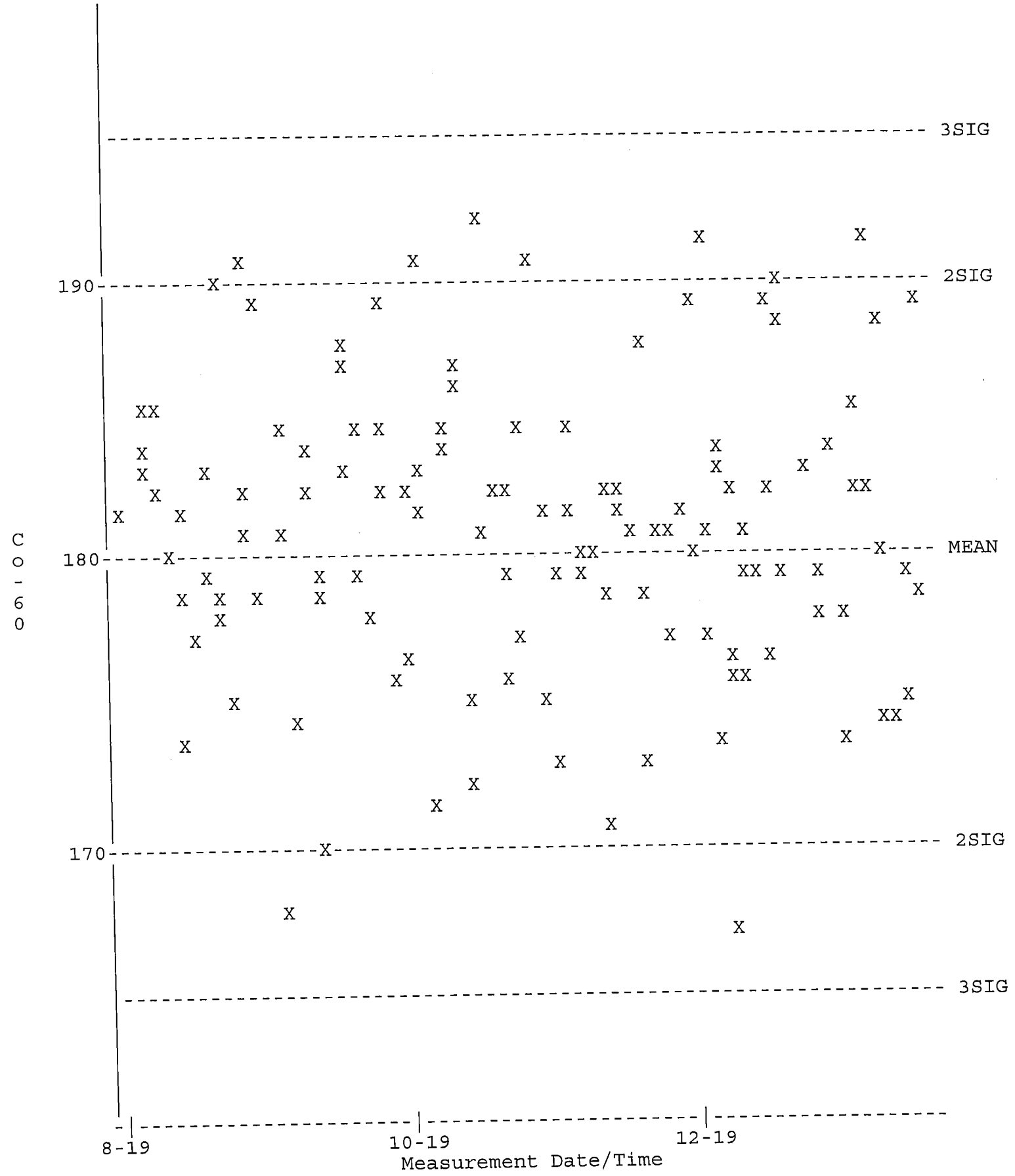
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



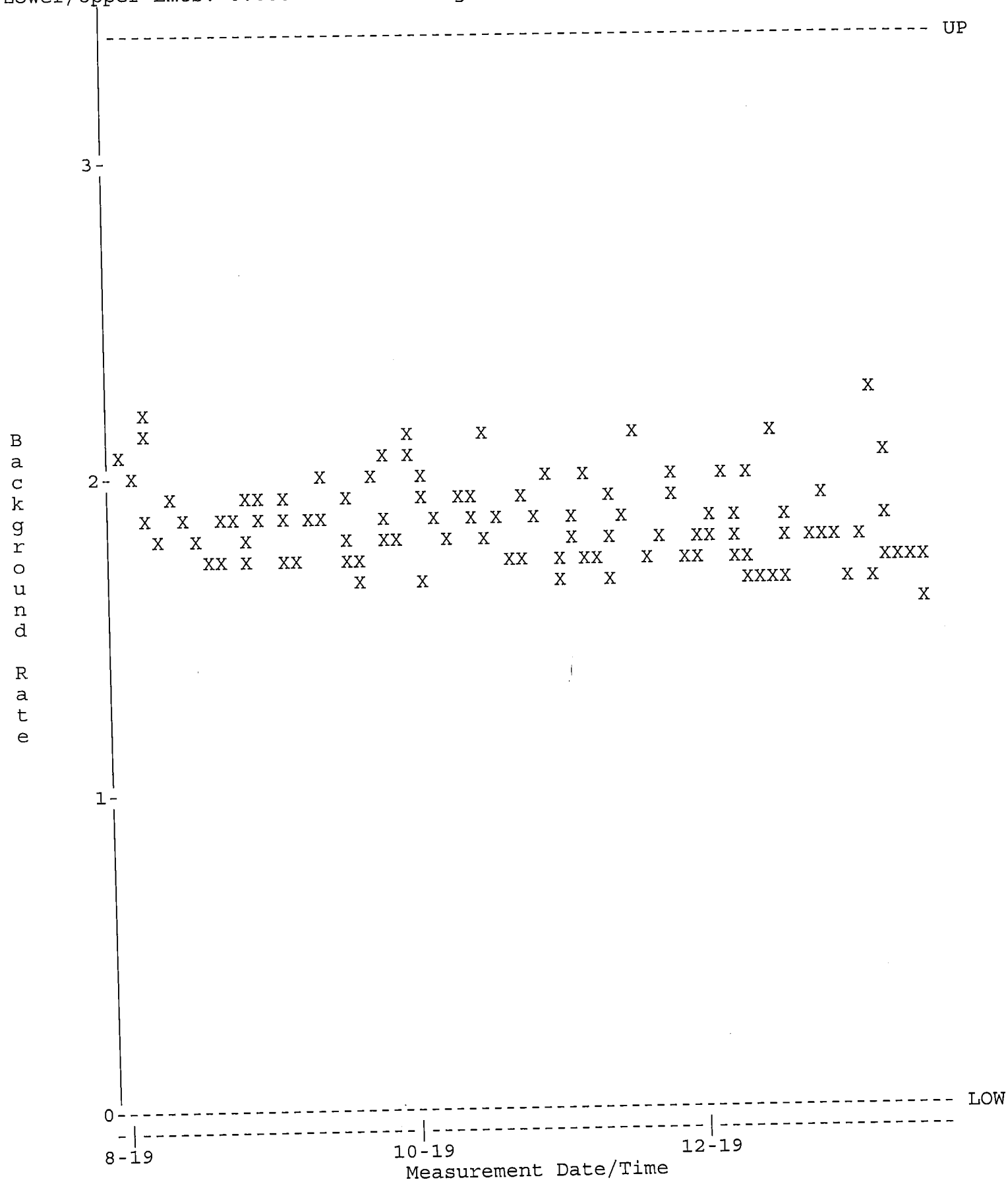
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



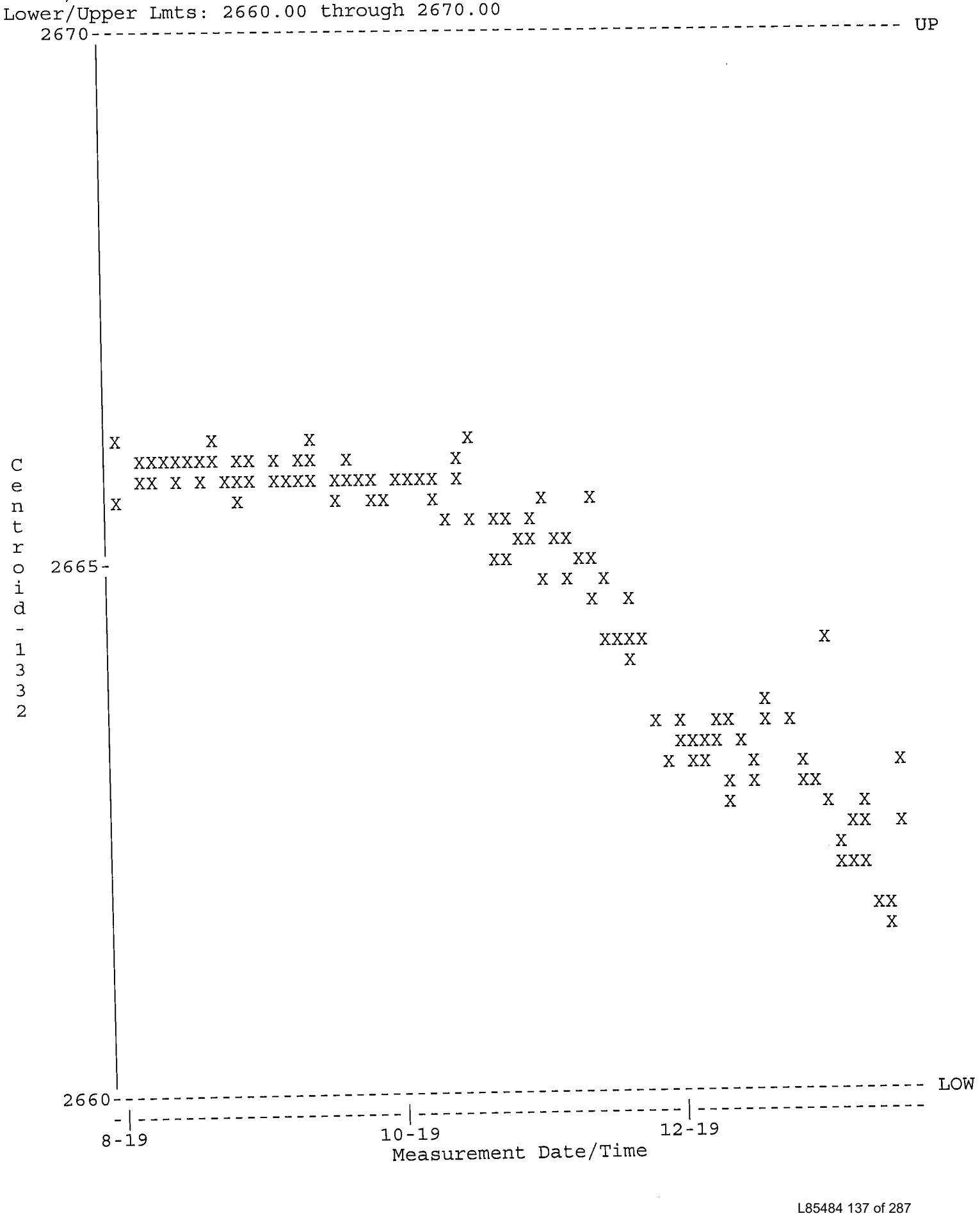
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



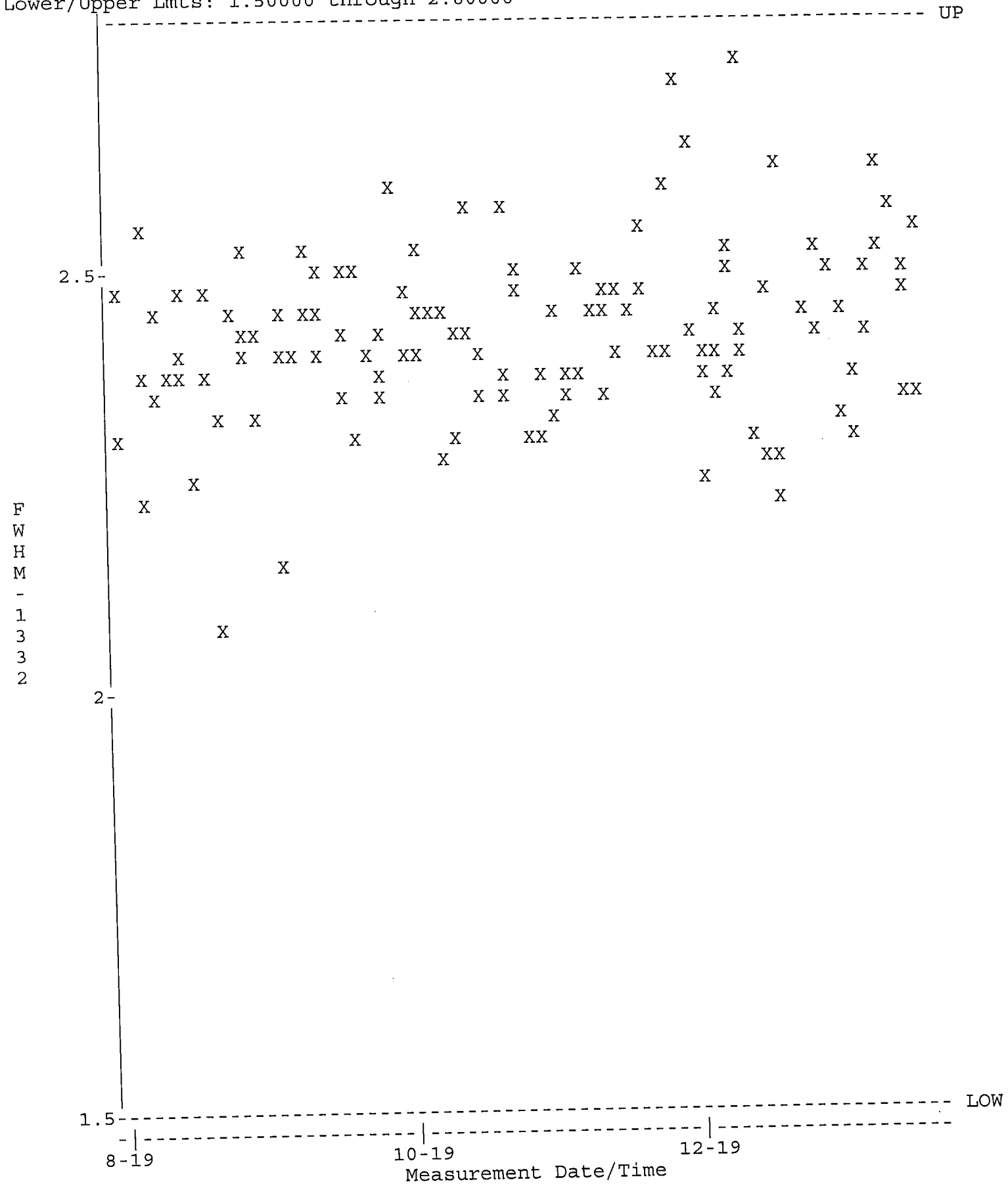
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



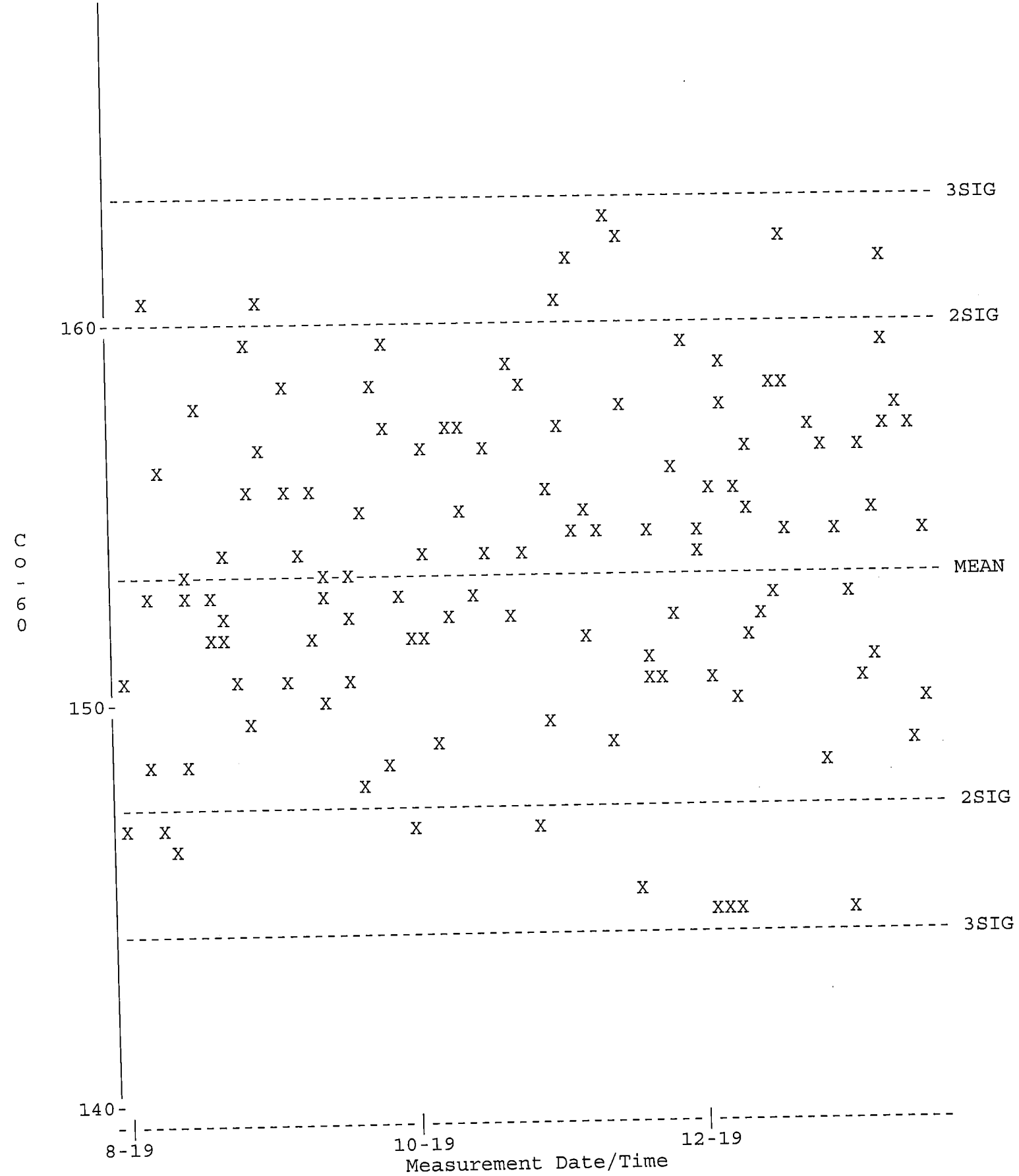
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



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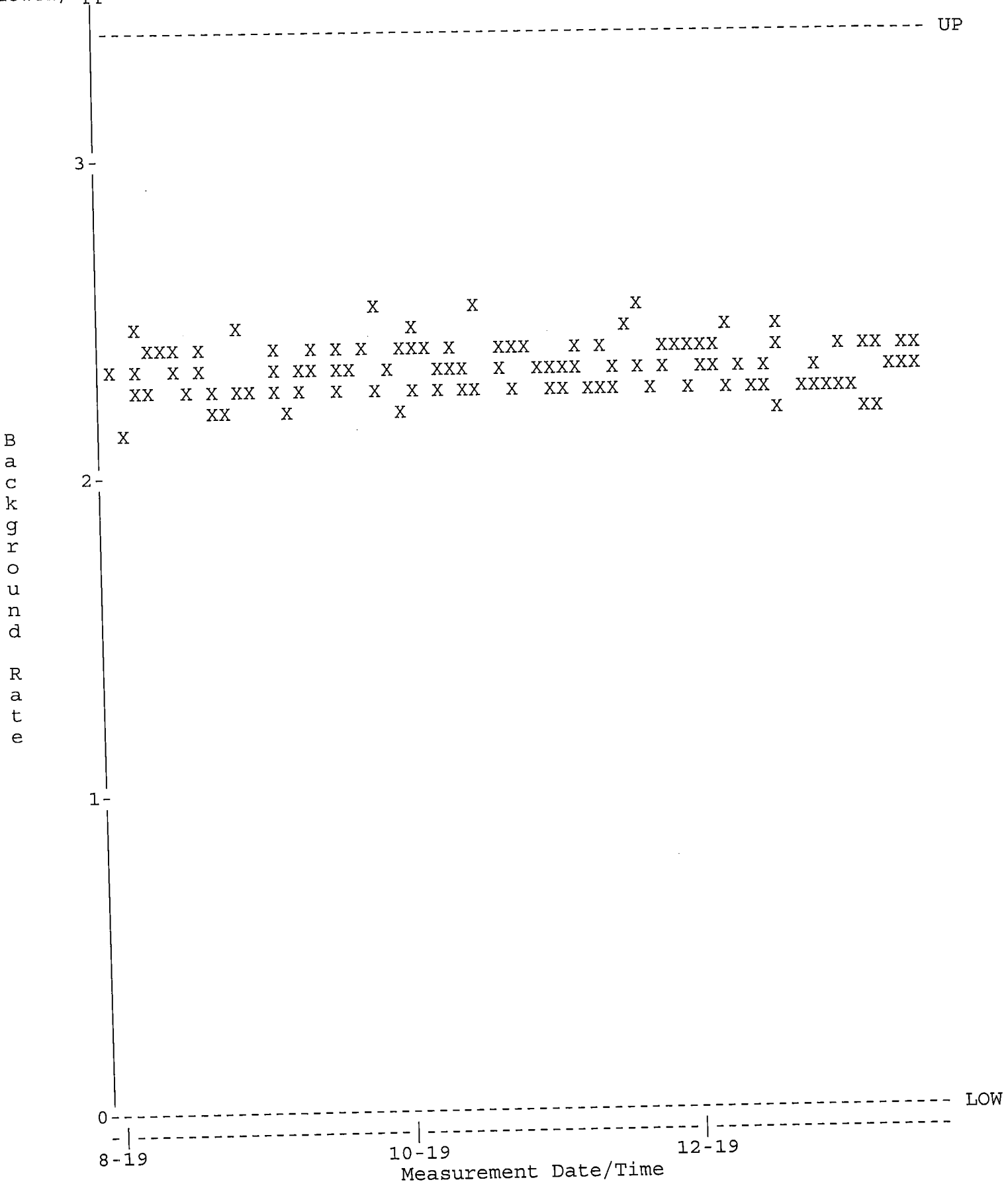
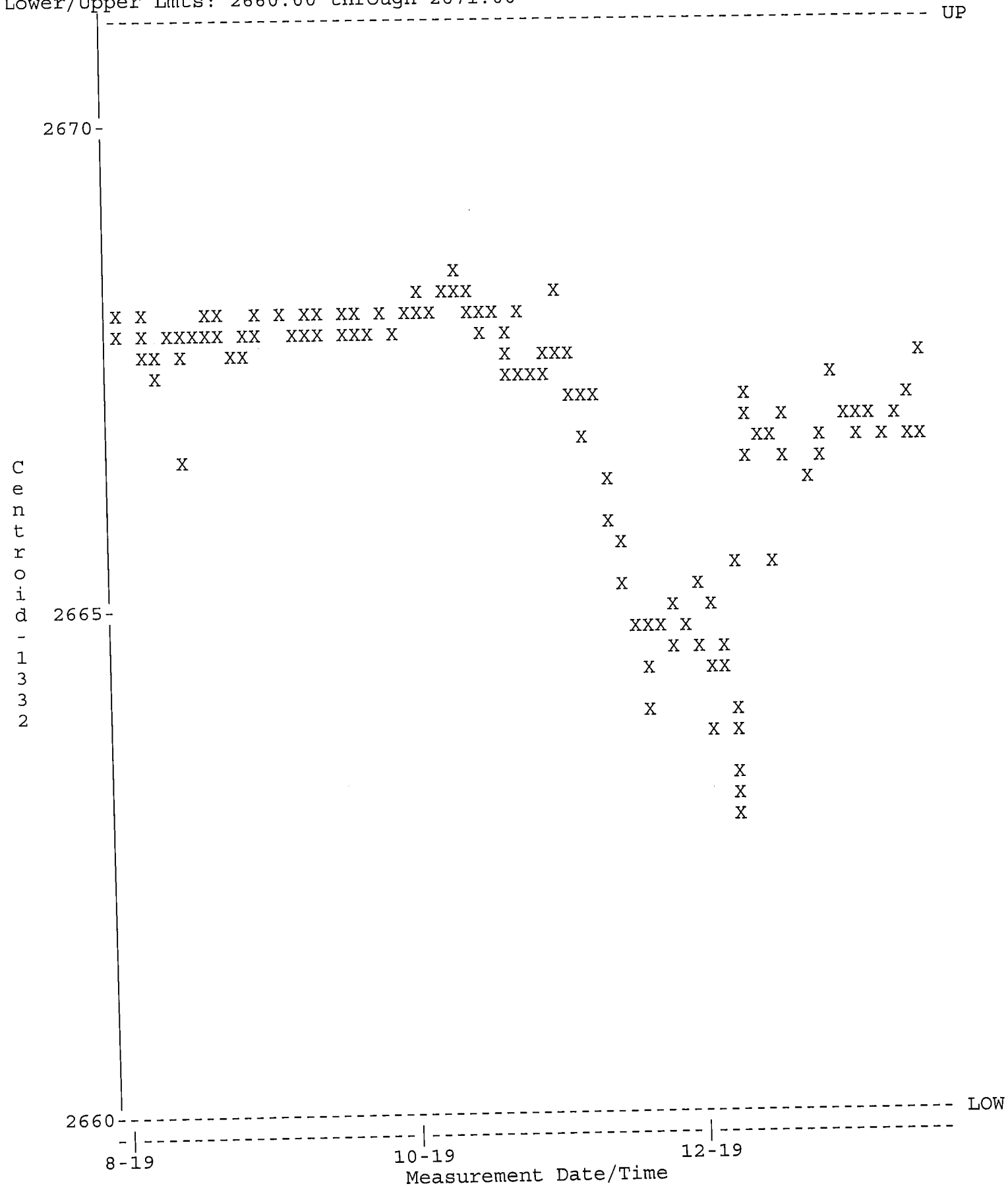
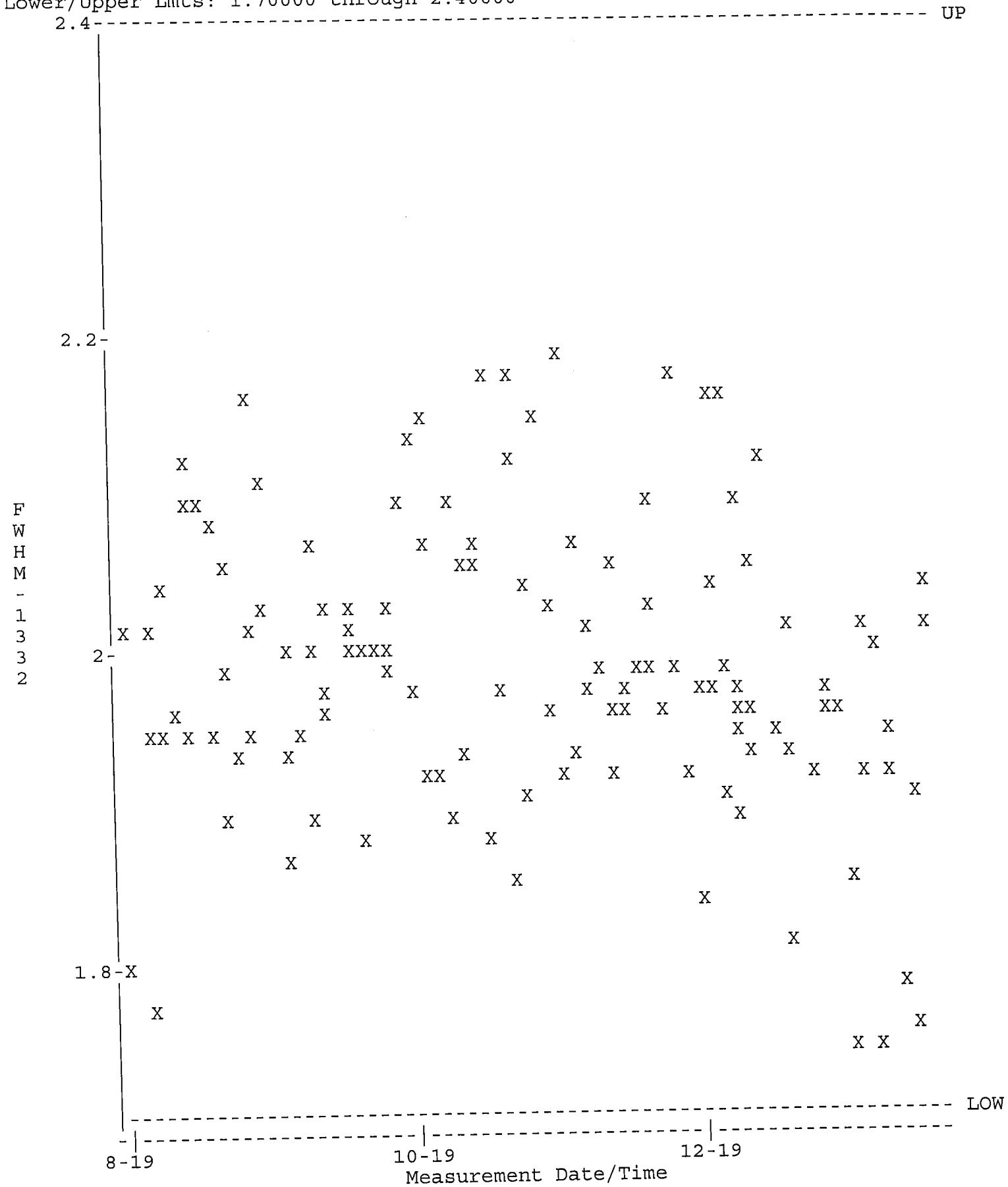
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



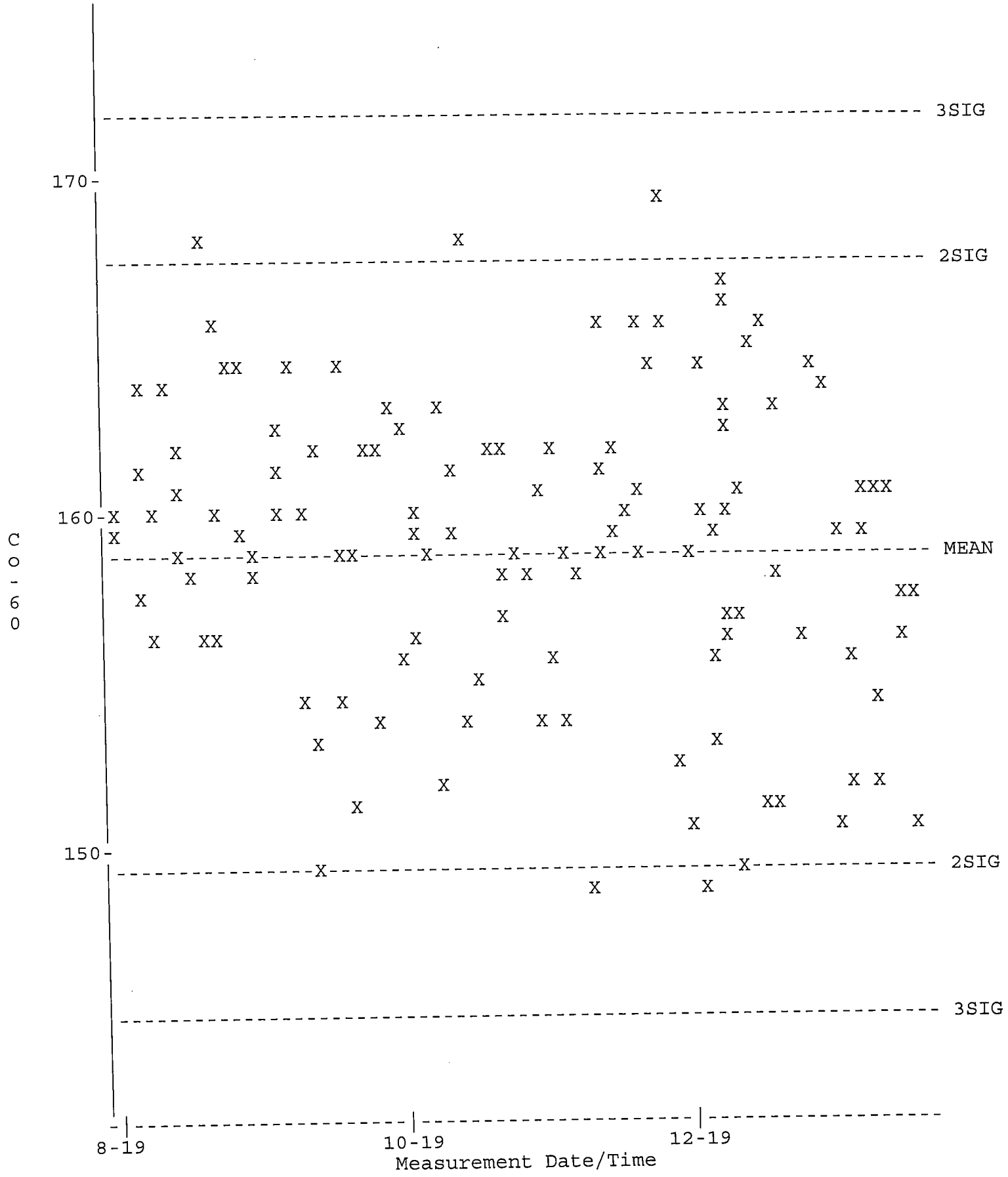
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



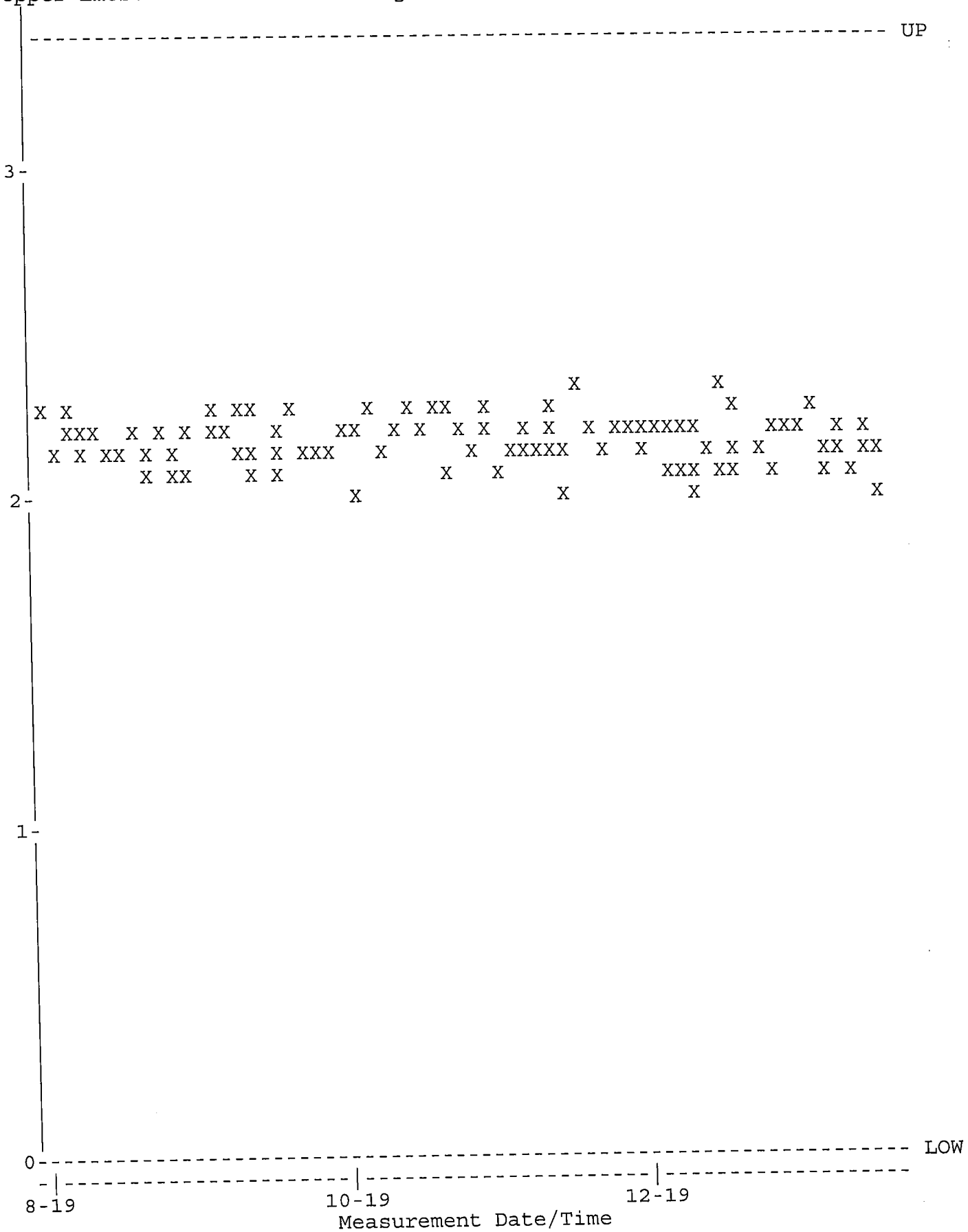
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



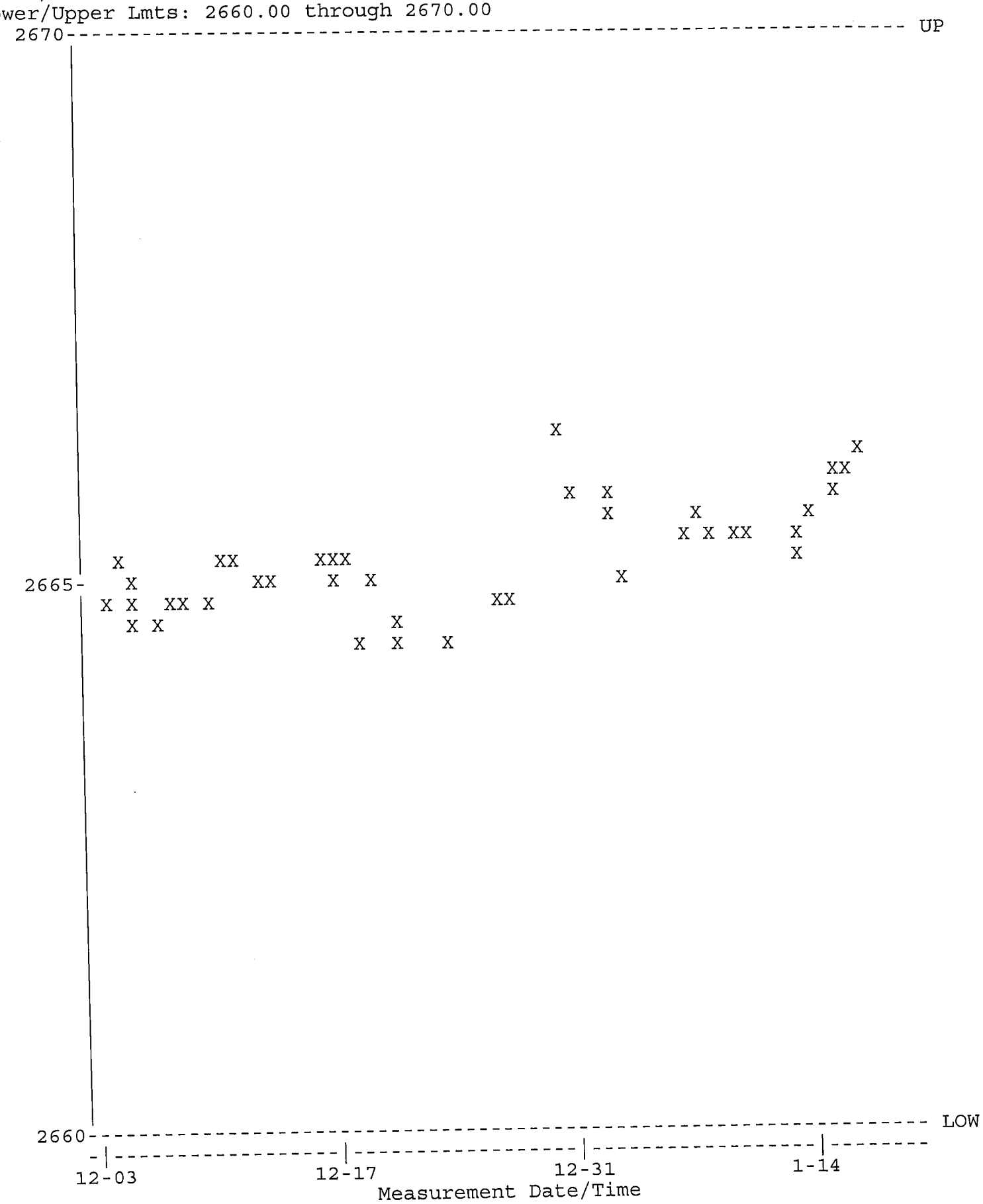
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



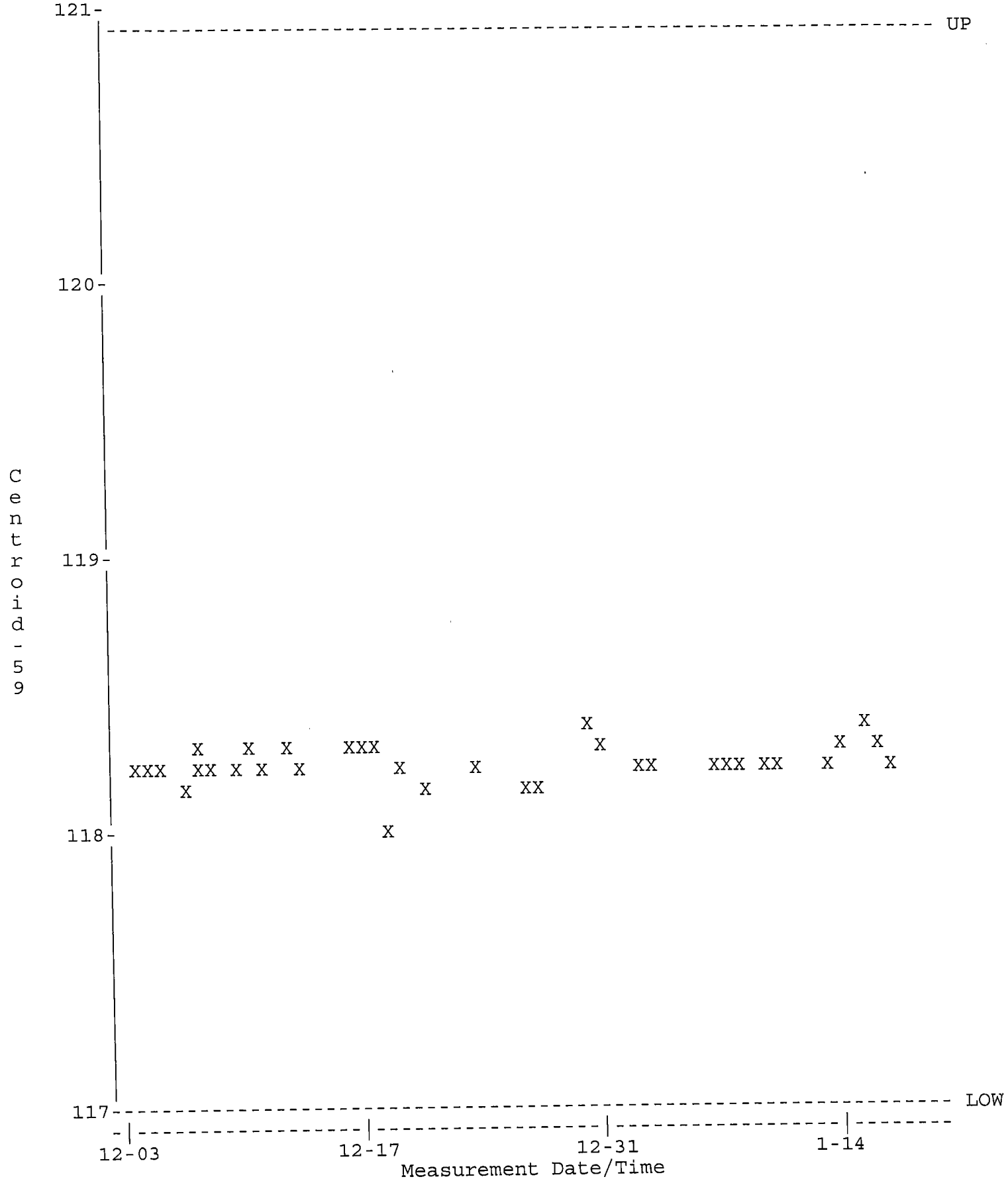
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



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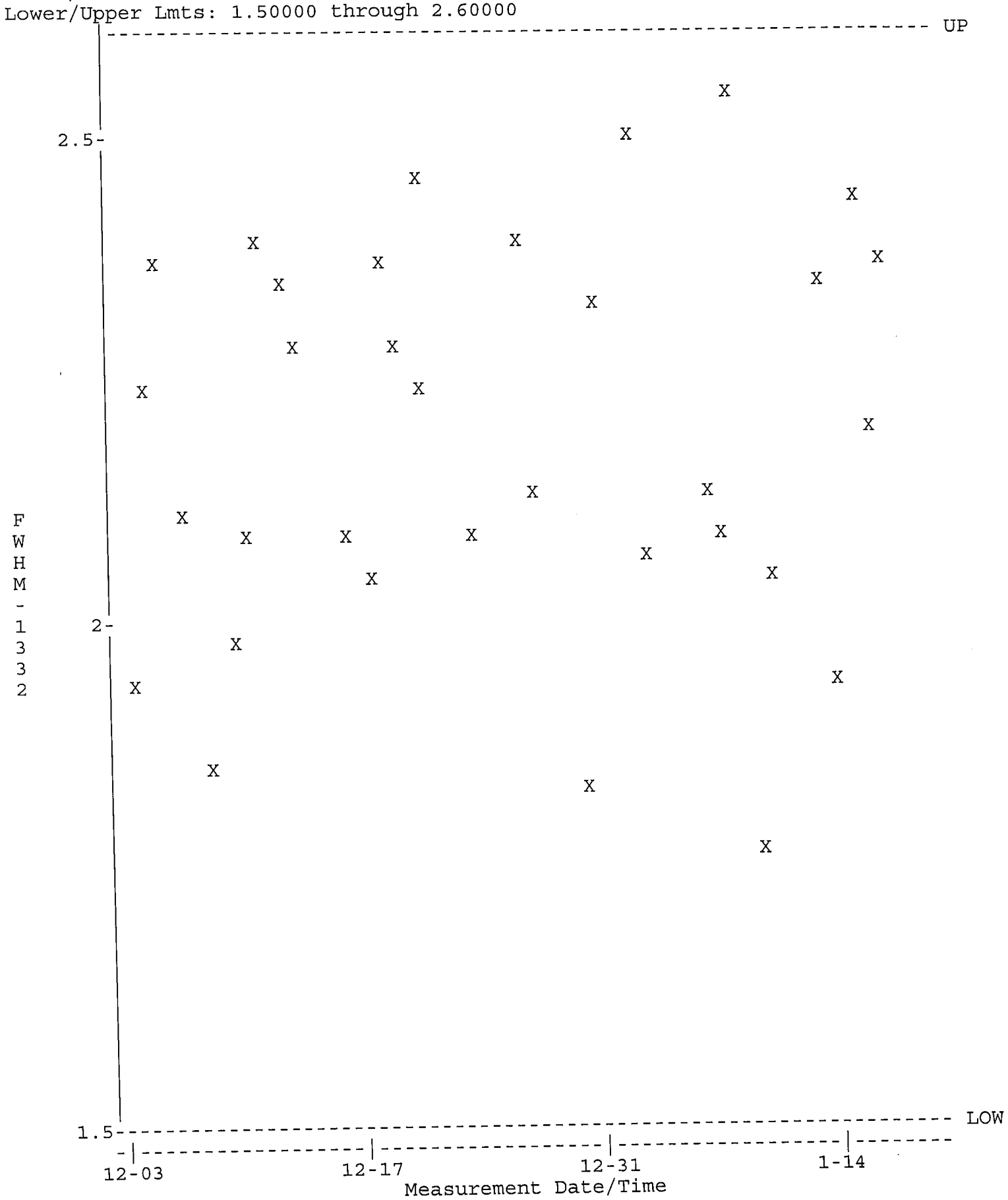
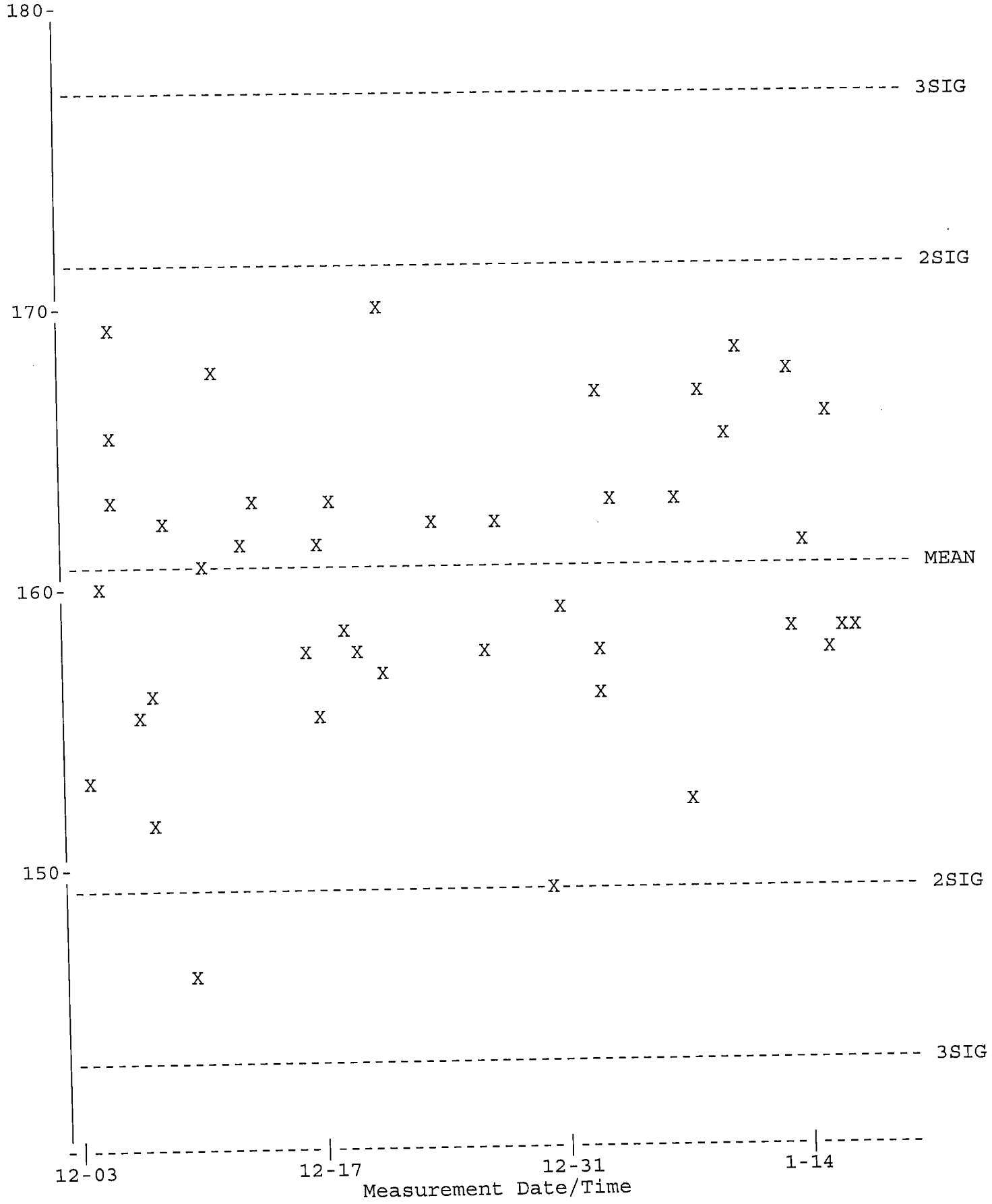
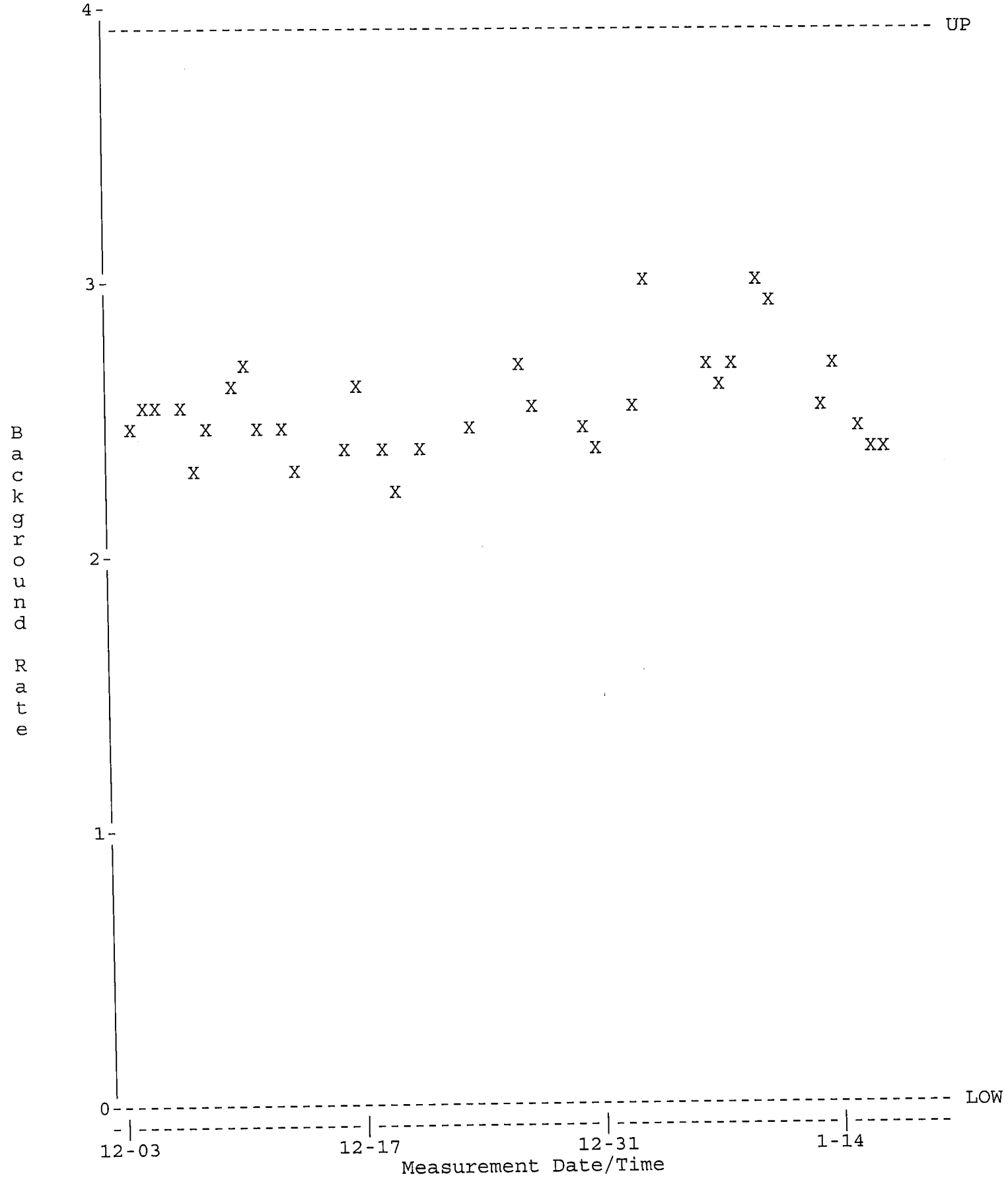
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



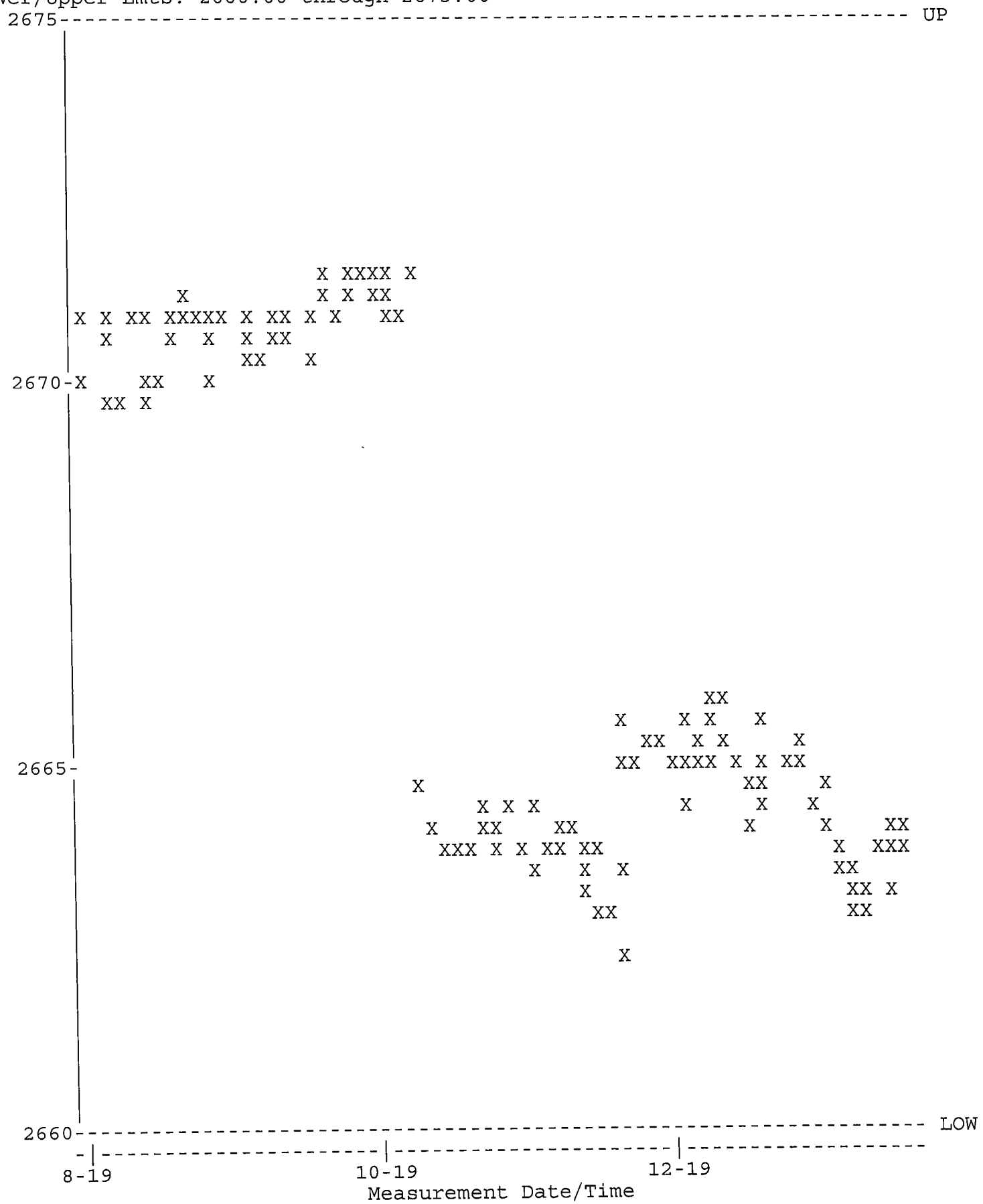
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



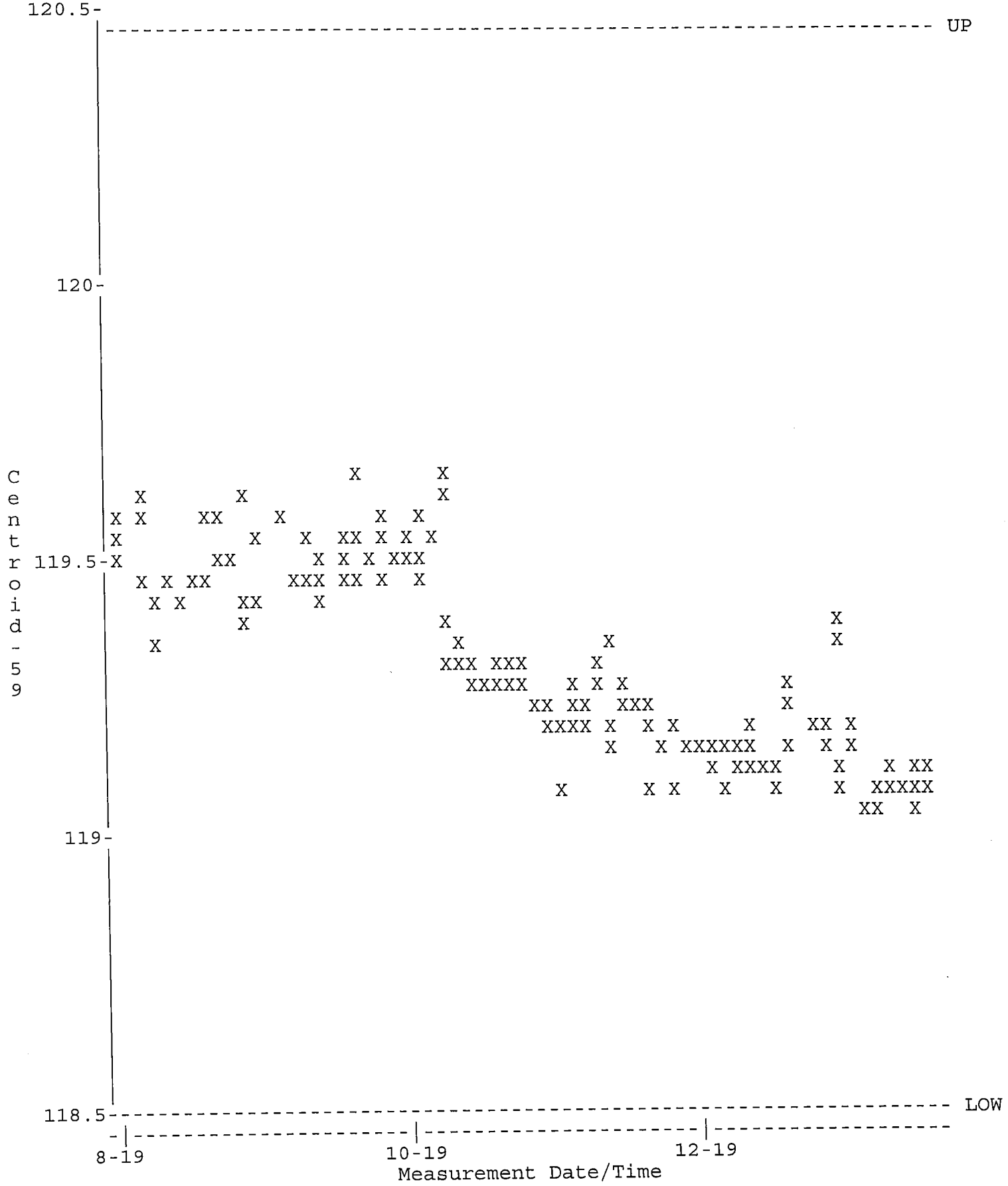
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



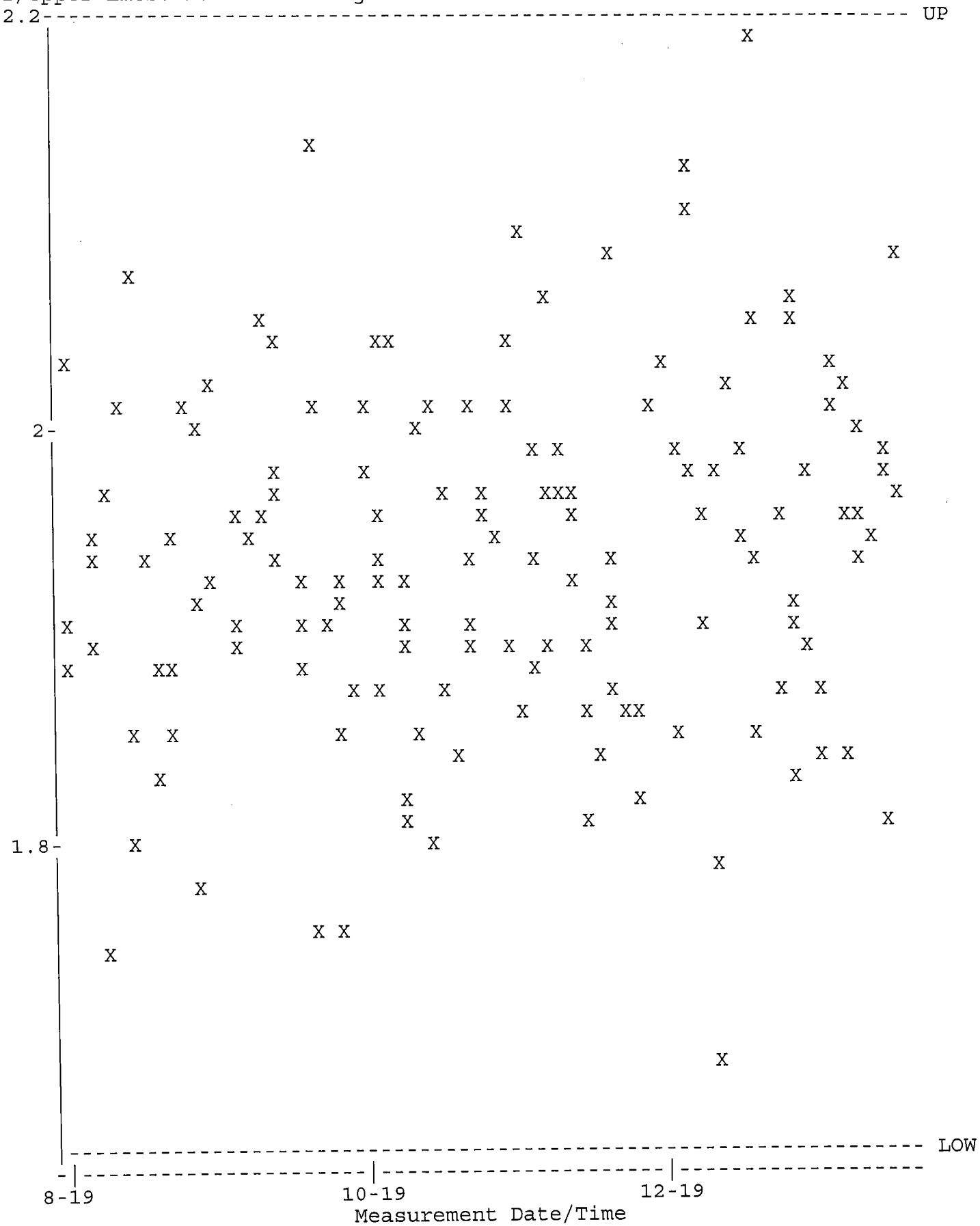
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



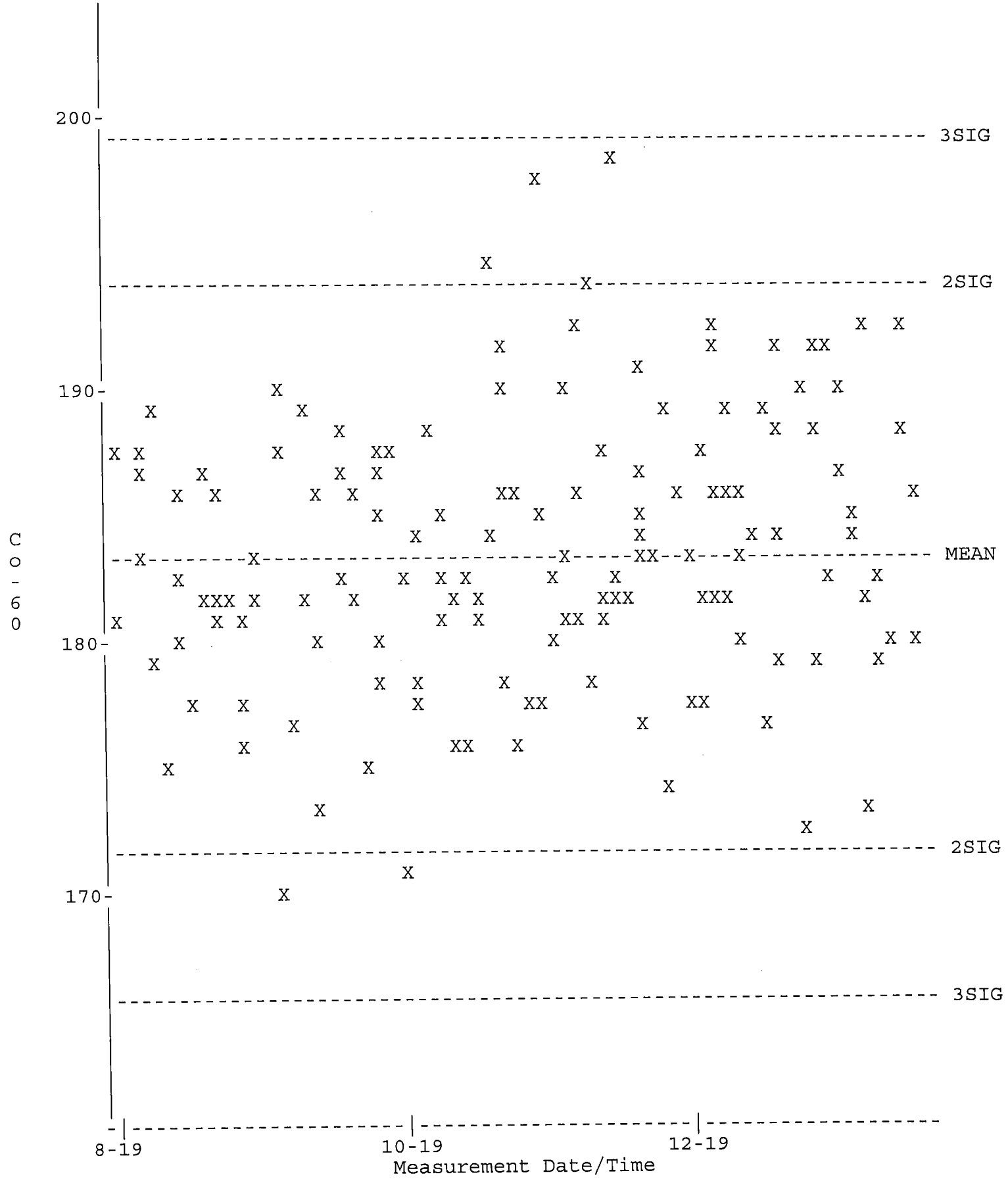
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



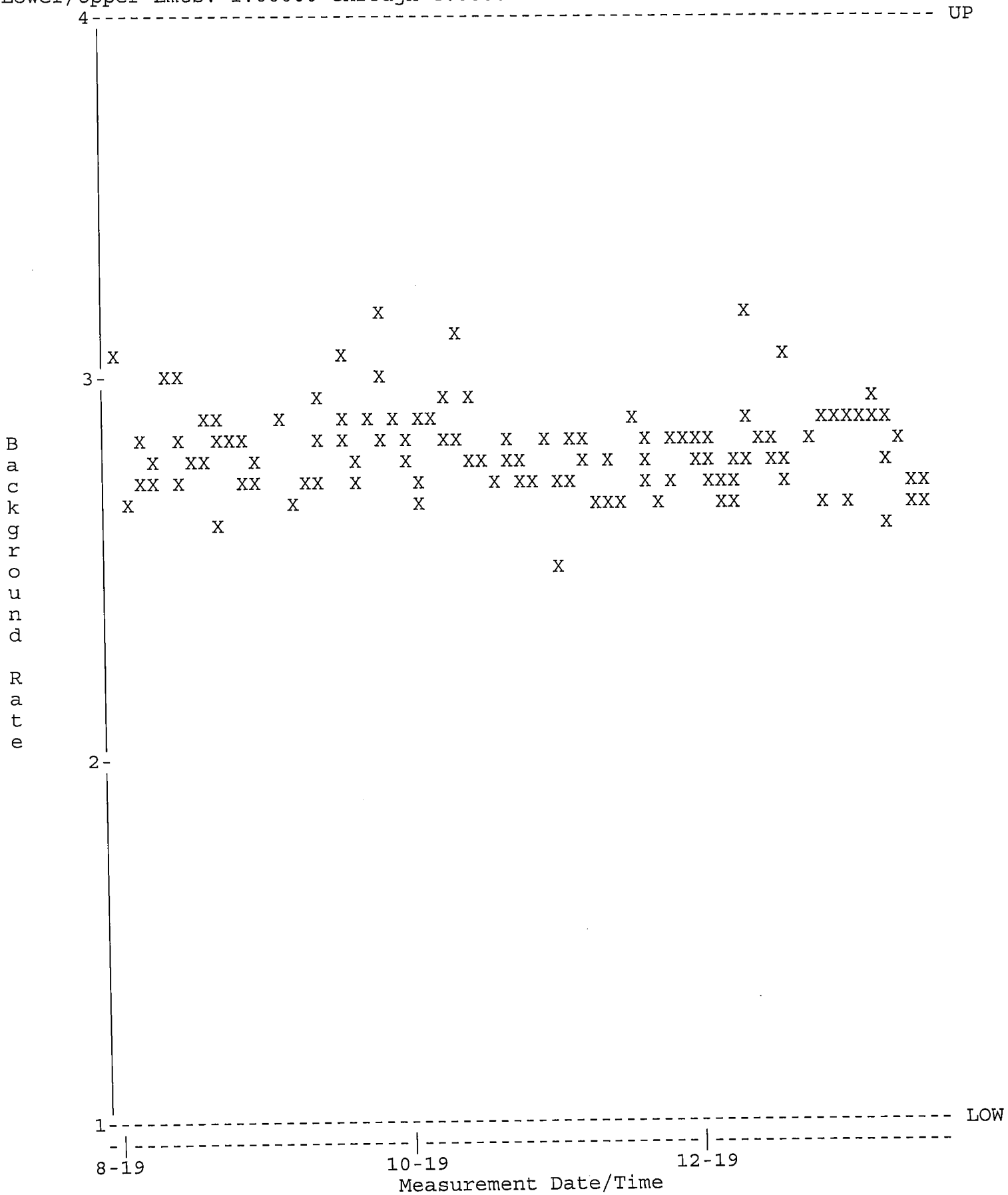
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



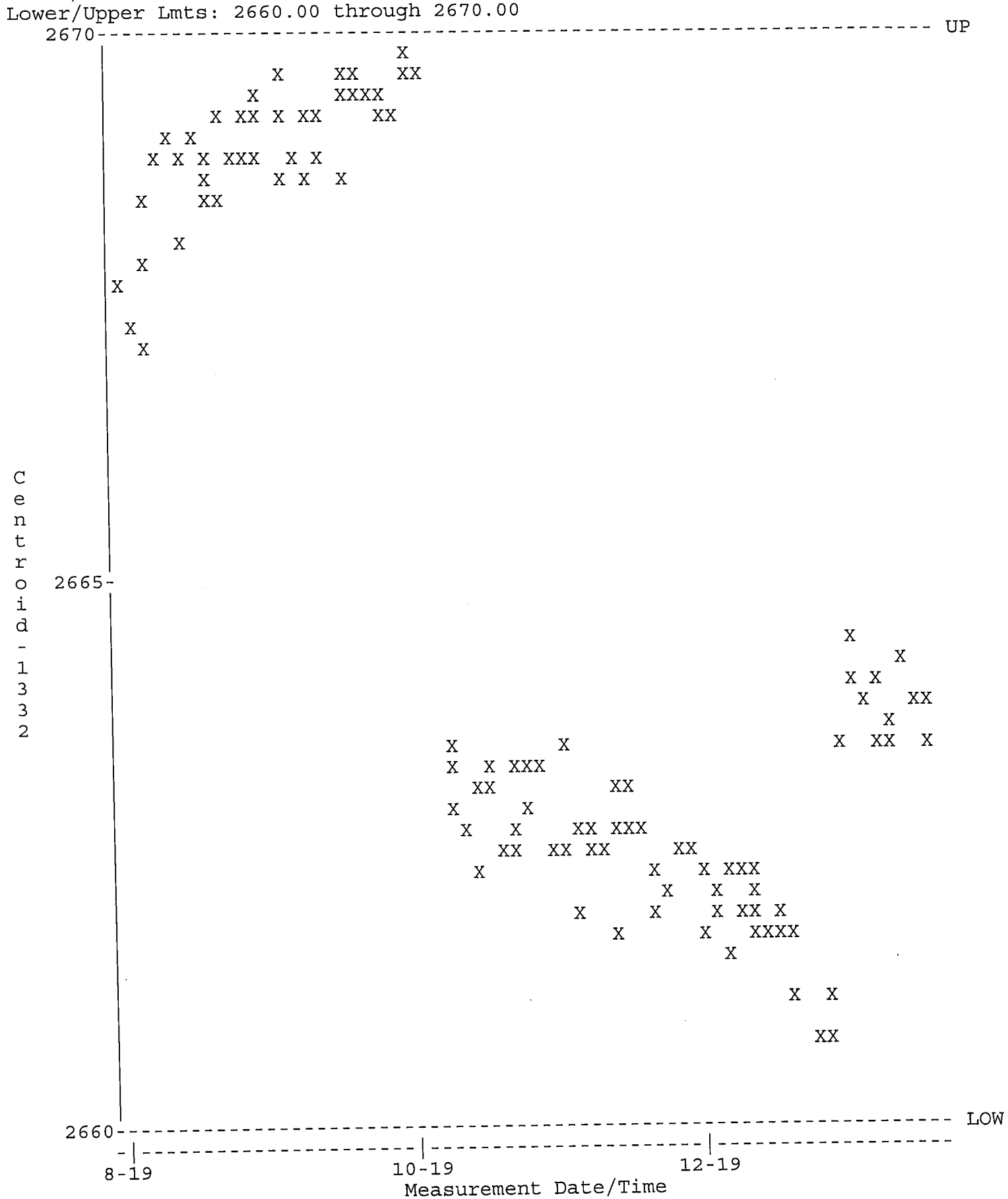
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



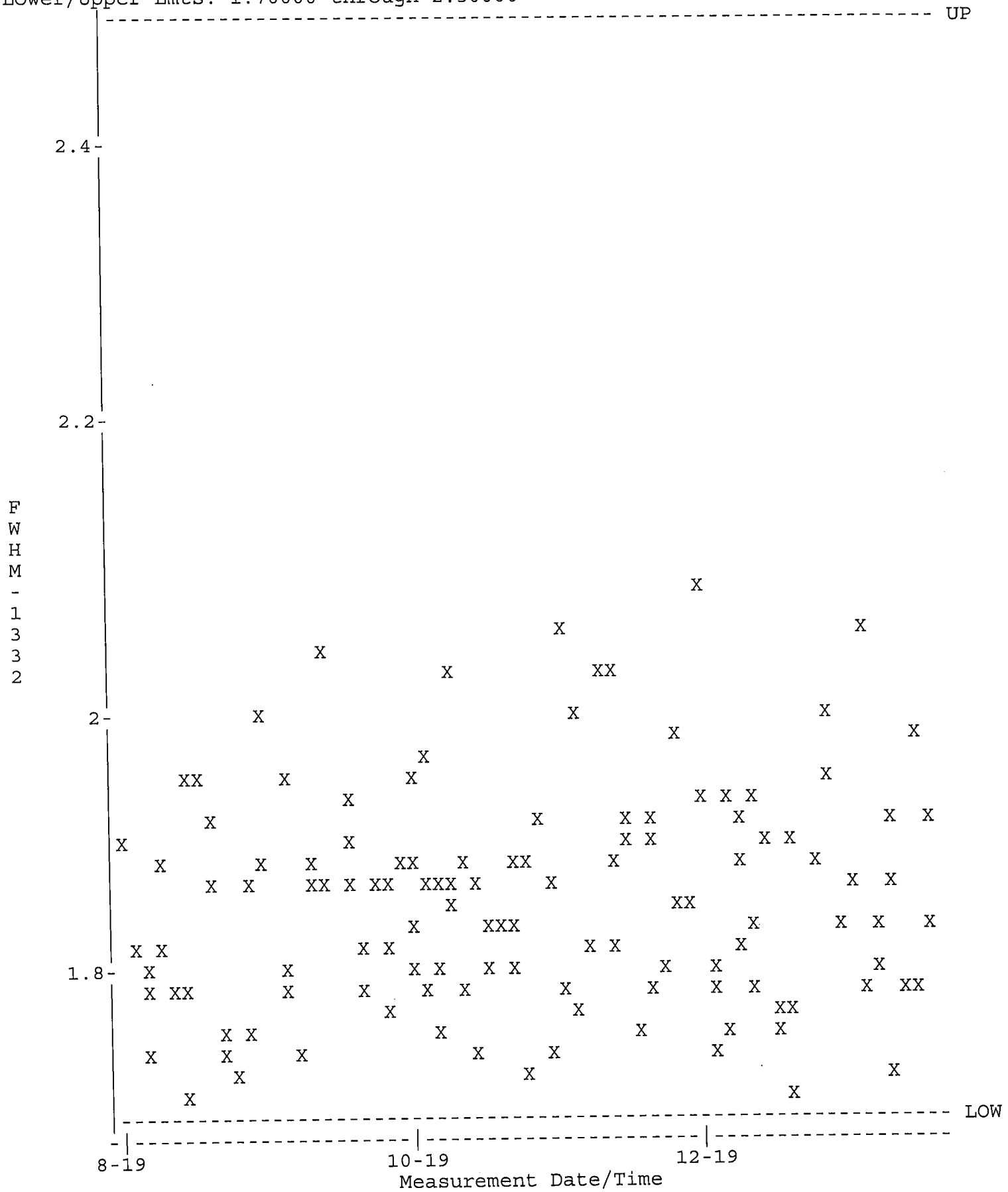
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



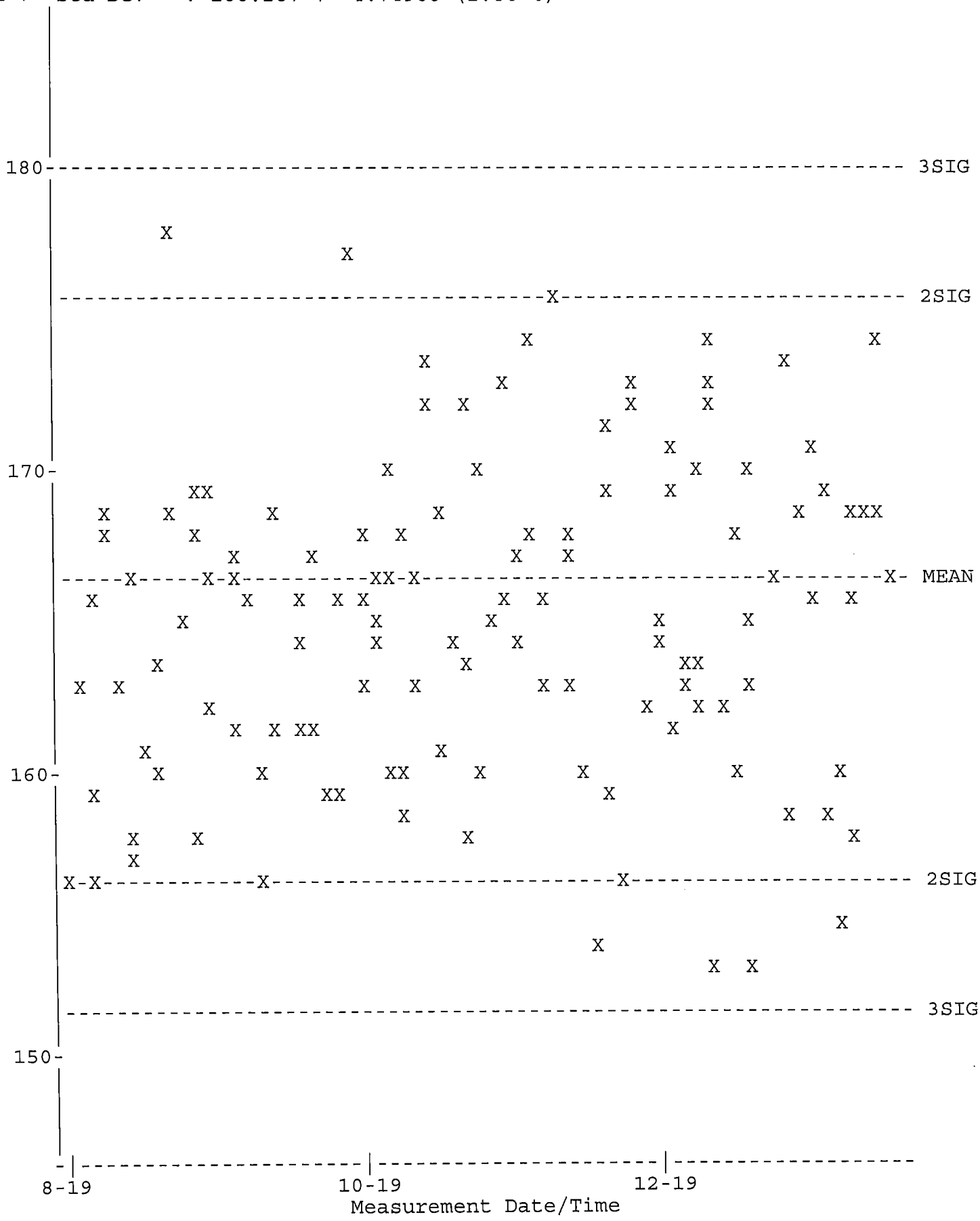
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



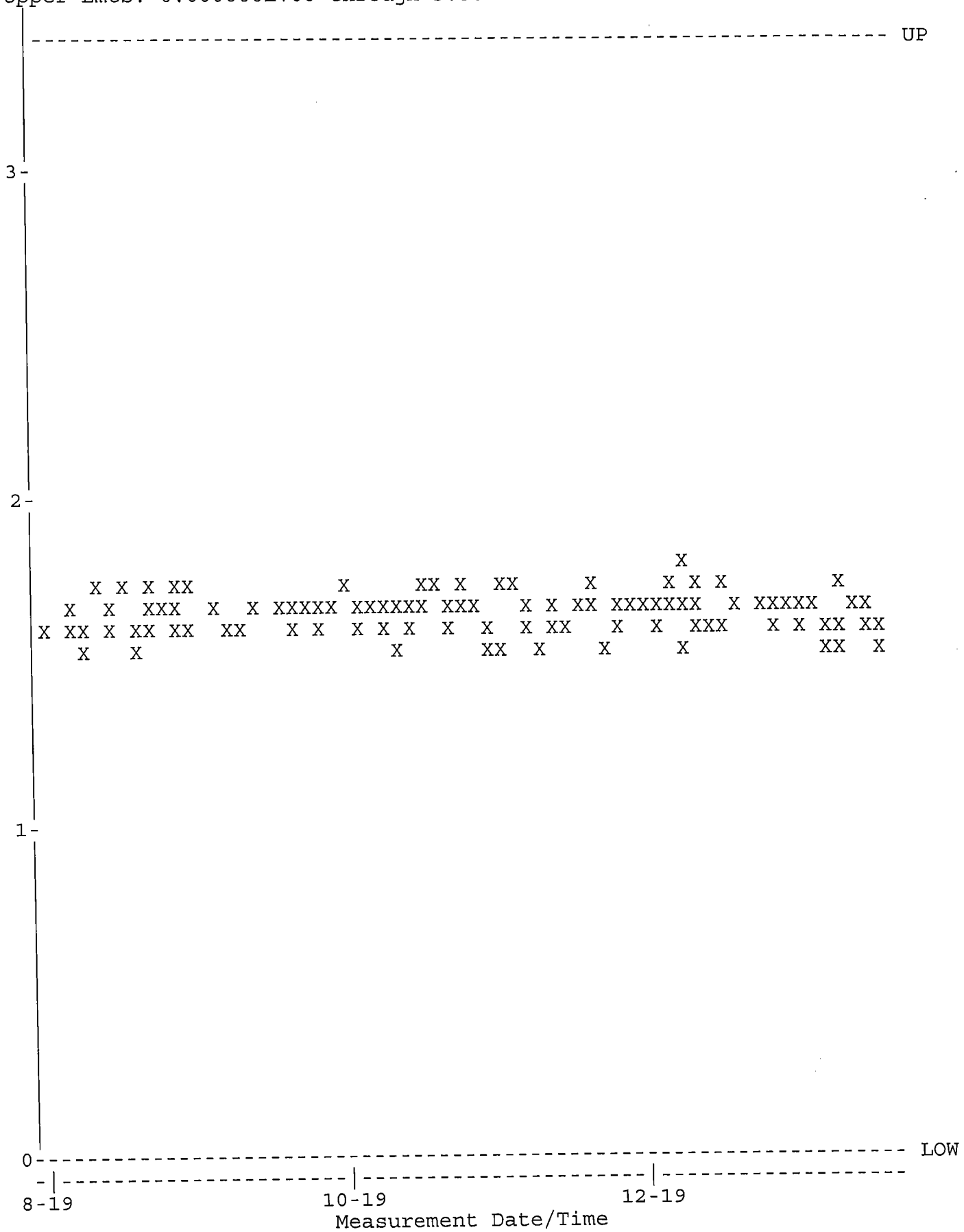
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



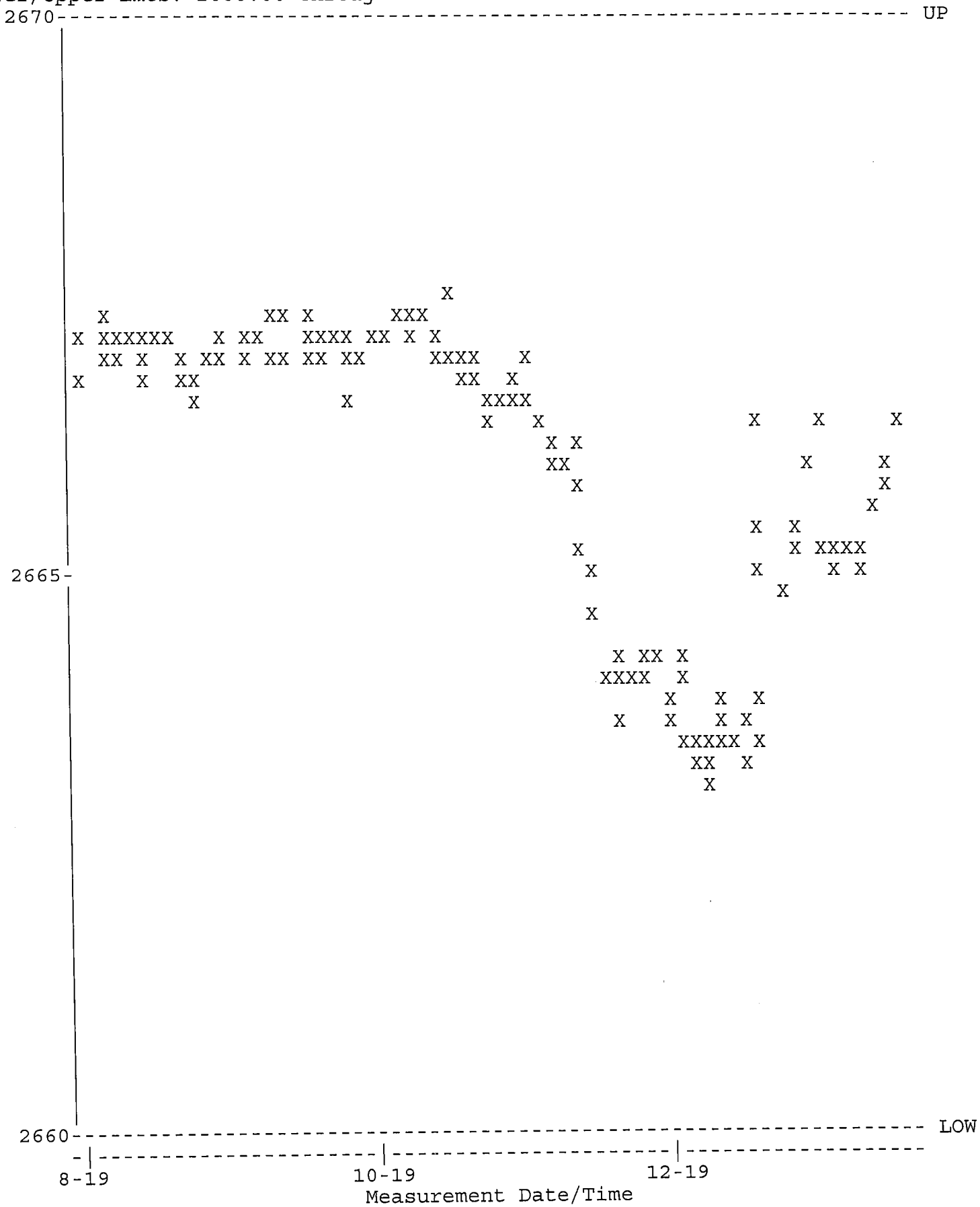
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



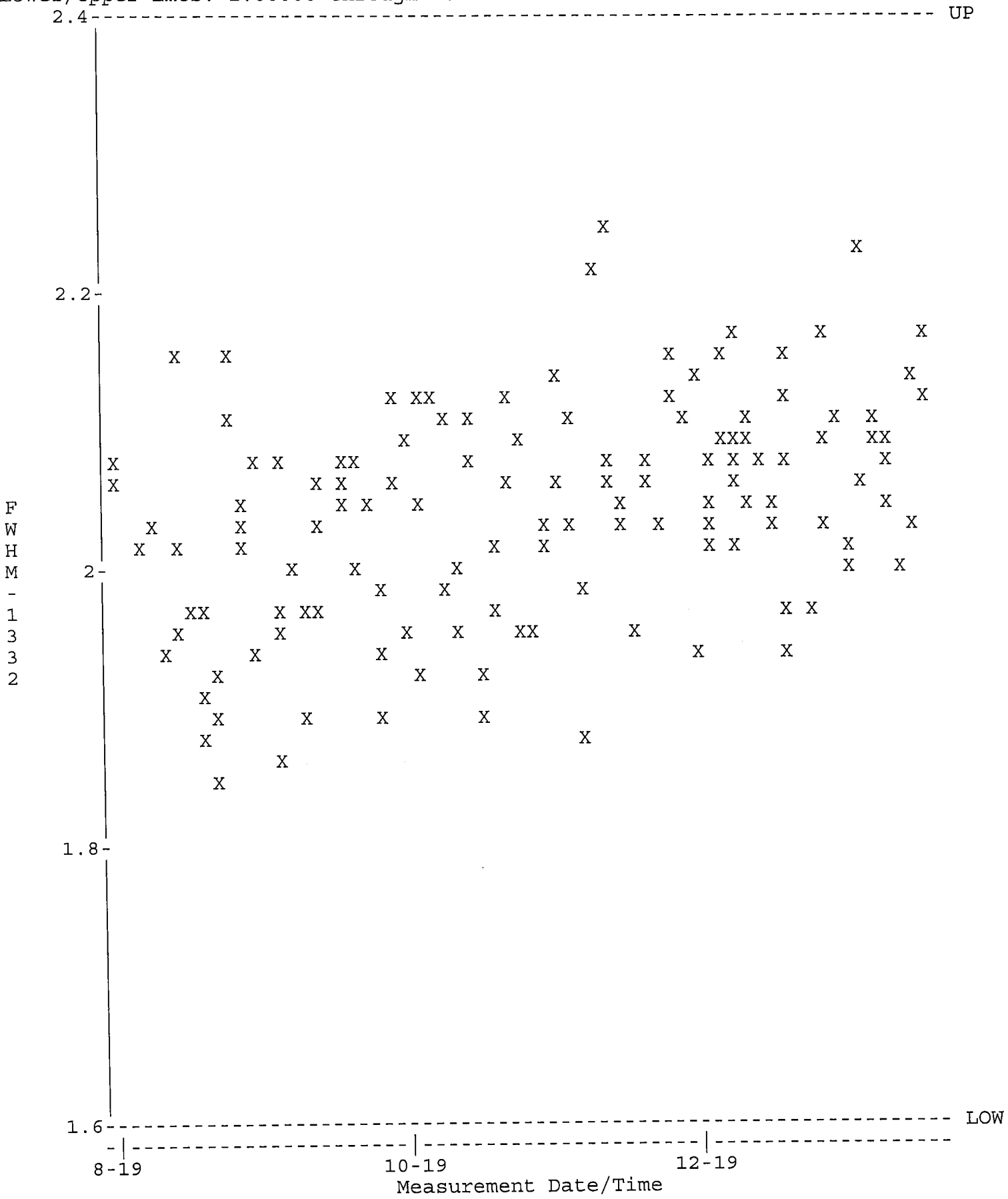
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



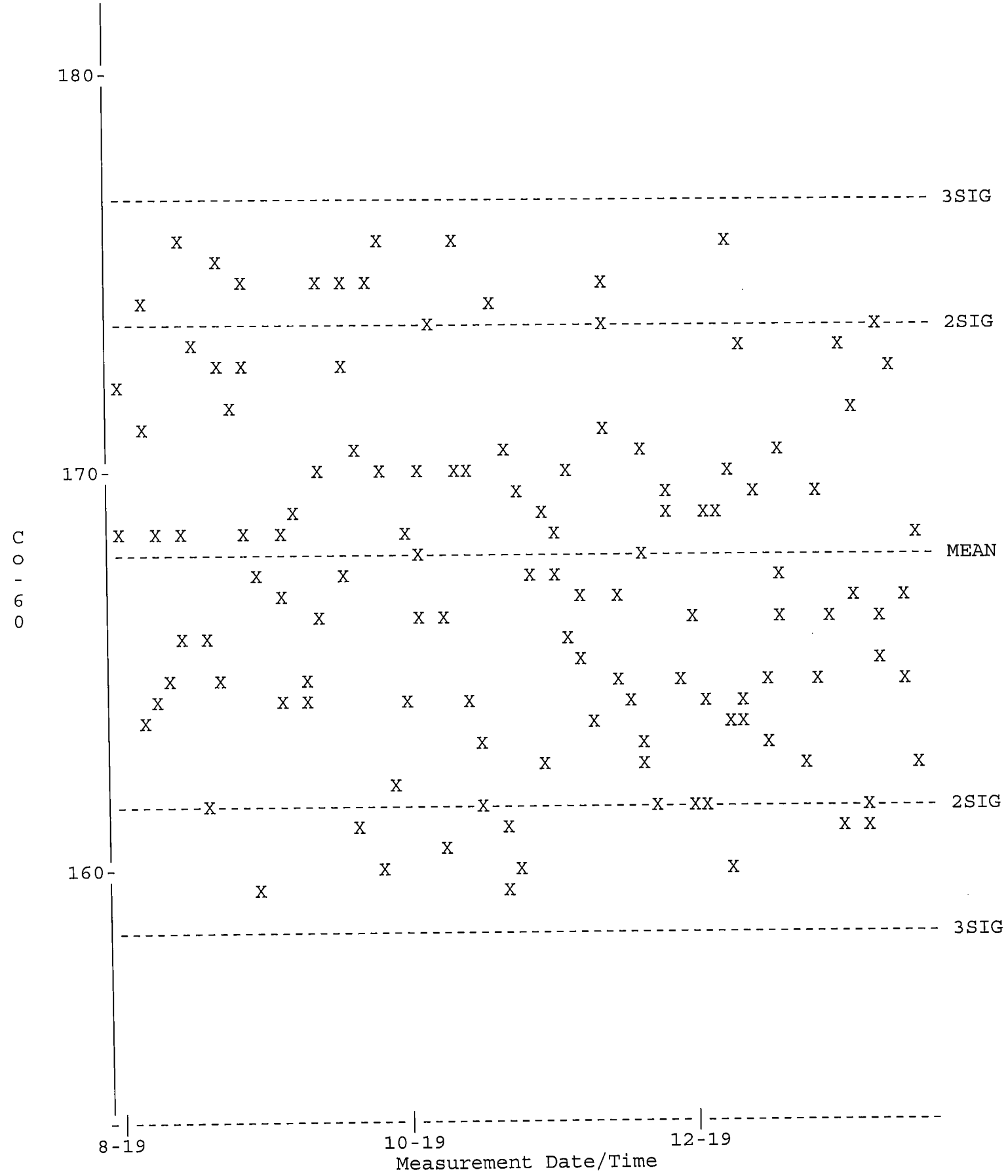
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



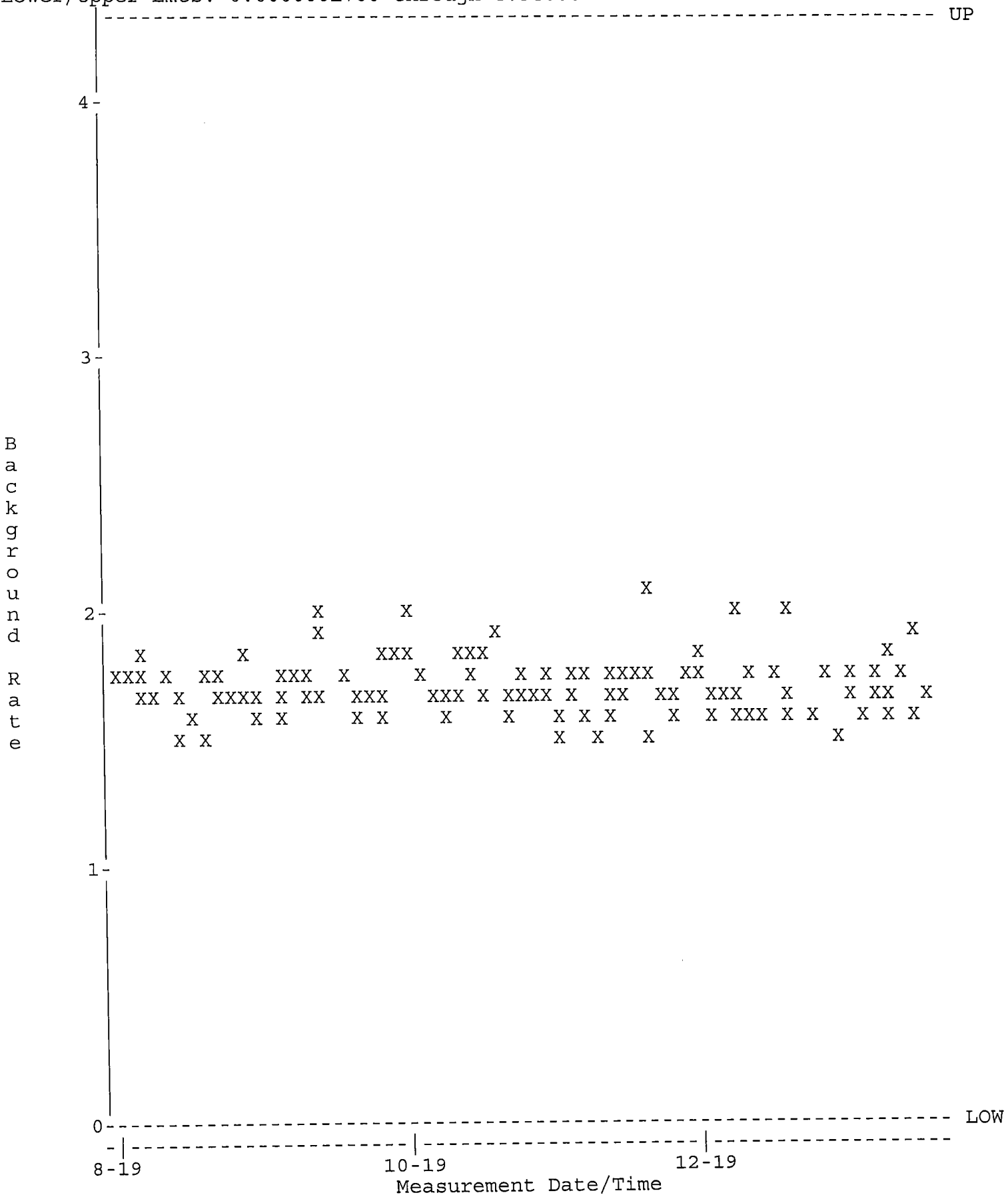
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: NBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:16:29.99
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:38.99

LIMS No., Customer Name, Client ID: L85484-1 S TEXAS

Sample ID : 11L85484-1
Sample Type : S
Quantity : 3.53540E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:40:00.0
Geometry : 11FS112019
BKGFILE : 11BG122719MT
Real Time : 0 01:32:17.47
Live time : 0 01:32:14.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.42*	21	204	1.42	91.99	2.70E+00	3.78E-03	133.2	
2	2	75.06*	167	271	1.58	149.29	3.42E+00	3.01E-02	23.0	5.40E+00
3	2	77.16	257	236	1.31	153.50	3.42E+00	4.65E-02	12.9	
4	0	239.26*	305	281	1.51	477.85	2.05E+00	5.52E-02	13.9	
5	0	352.21*	160	83	1.53	703.84	1.55E+00	2.88E-02	13.7	
6	0	511.29*	35	112	2.19	1022.12	1.16E+00	6.34E-03	84.0	
7	0	583.57*	53	60	1.20	1166.75	1.05E+00	9.52E-03	33.9	
8	0	609.63*	133	60	1.23	1218.89	1.01E+00	2.40E-02	15.7	
9	0	911.30	109	17	2.40	1822.44	7.36E-01	1.97E-02	13.5	
10	0	1461.17*	264	13	2.21	2922.46	5.06E-01	4.77E-02	7.3	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85484-1 Acquisition date : 31-DEC-2019 10:43:38

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.42	21	204	1.42	91.99	88	9	3.78E-03	****	2.70E+00	
2	75.06	167	271	1.58	149.29	141	22	3.01E-02	45.9	3.42E+00	
2	77.16	257	236	1.31	153.50	141	22	4.65E-02	25.8	3.42E+00	
0	239.26	305	281	1.51	477.85	470	17	5.52E-02	27.8	2.05E+00	
0	352.21	160	83	1.53	703.84	699	9	2.88E-02	27.5	1.55E+00	
0	511.29	35	112	2.19	1022.12	1013	18	6.34E-03	****	1.16E+00	
0	583.57	53	60	1.20	1166.75	1162	12	9.52E-03	67.8	1.05E+00	
0	609.63	133	60	1.23	1218.89	1213	13	2.40E-02	31.5	1.01E+00	
0	911.30	109	17	2.40	1822.44	1813	22	1.97E-02	27.1	7.36E-01	
0	1461.17	264	13	2.21	2922.46	2913	18	4.77E-02	14.7	5.06E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-8.636E-03		3.688E-02	6.482E-02	0.000E+00	-0.133

```
A,11L85484-1       ,12/31/2019 12:16,12/06/2019 15:40,   3.535E+02,L85484-1 S TEX
B,11L85484-1       ,HUDSON              ,12/26/2019 12:27,11FS112019
C,CS-137  ,NO ,  -8.636E-03,   3.688E-02,   6.482E-02,,   -0.133
```

Analyst: KBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:16:46.42
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:39.52

LIMS No., Customer Name, Client ID: L85484-2 S TEXAS

Sample ID : 15L85484-2
Sample Type : S
Quantity : 3.42750E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:42:00.0
Geometry : 15FS082219
BKGFILE : 15BG122719MT
Real Time : 0 01:32:37.79
Live time : 0 01:32:37.06

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.78*	64	206	1.36	366.82	2.85E+00	1.15E-02	46.5	1.22E+00
2	1	238.48*	223	199	1.03	472.47	2.43E+00	4.01E-02	11.6	1.18E+01
3	1	295.47*	126	111	1.77	586.70	2.06E+00	2.26E-02	21.3	2.23E+00
4	1	338.43	64	99	1.36	672.82	1.84E+00	1.16E-02	31.3	2.70E+00
5	1	351.91*	212	77	1.45	699.84	1.78E+00	3.82E-02	11.3	1.61E+00
6	1	511.03*	48	77	2.83	1018.82	1.29E+00	8.65E-03	48.1	3.42E+00
7	1	583.42*	100	46	1.42	1163.94	1.15E+00	1.80E-02	18.0	1.83E+00
8	1	609.32*	154	28	1.69	1215.83	1.10E+00	2.76E-02	11.0	1.32E+00
9	1	911.22*	78	26	2.41	1821.01	7.69E-01	1.41E-02	20.1	1.16E+00
10	1	1461.01*	239	35	2.20	2923.02	5.06E-01	4.30E-02	8.8	1.49E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85484-2 Acquisition date : 31-DEC-2019 10:43:39

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85484-2 Acquisition date : 31-DEC-2019 10:43:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.78	64	206	1.36	366.82	362	11	1.15E-02	93.1	2.85E+00	
1	238.48	223	199	1.03	472.47	468	8	4.01E-02	23.2	2.43E+00	
1	295.47	126	111	1.77	586.70	579	15	2.26E-02	42.7	2.06E+00	
1	338.43	64	99	1.36	672.82	668	10	1.16E-02	62.6	1.84E+00	
1	351.91	212	77	1.45	699.84	694	12	3.82E-02	22.5	1.78E+00	
1	511.03	48	77	2.83	1018.82	1012	16	8.65E-03	96.1	1.29E+00	
1	583.42	100	46	1.42	1163.94	1159	12	1.80E-02	36.0	1.15E+00	
1	609.32	154	28	1.69	1215.83	1210	11	2.76E-02	22.1	1.10E+00	
1	911.22	78	26	2.41	1821.01	1813	20	1.41E-02	40.2	7.69E-01	
1	1461.01	239	35	2.20	2923.02	2912	19	4.30E-02	17.7	5.06E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.888E-02		3.063E-02	5.367E-02	0.000E+00	0.352

A,15L85484-2 ,12/31/2019 12:16,12/06/2019 15:42, 3.428E+02,L85484-2 S TEX
B,15L85484-2 ,HUDSON ,12/27/2019 10:10,15FS082219
C,CS-137 ,NO , 1.888E-02, 3.063E-02, 5.367E-02,, 0.352

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 17:36:48.64
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 31-DEC-2019 16:04:59.15

LIMS No., Customer Name, Client ID: L85484-3 S TEXAS

Sample ID	: 02L85484-3		Smple Date: 6-DEC-2019 15:44:00.0
Sample Type	: S		Geometry : 02FS101619
Quantity	: 3.80000E+02 g Dry		BKGFILE : 02BG122719MT
Start Channel	: 190	Energy Tol : 2.00000	Real Time : 0 01:31:38.58
End Channel	: 4090	Pk Srch Sens: 9.00000	Live time : 0 01:31:37.53
MDA Multiple	: 4.6600	Library Used: HUDSON	

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	185.99*	86	242	1.20	358.43	2.70E+00	1.56E-02	38.6	
2	0	238.46*	218	168	1.00	464.11	2.29E+00	3.96E-02	11.9	
3	0	295.26*	148	91	1.09	578.54	1.94E+00	2.68E-02	15.7	
4	0	351.99*	150	99	1.24	692.82	1.68E+00	2.72E-02	15.7	
5	0	511.05*	45	80	1.97	1013.25	1.22E+00	8.22E-03	53.7	
6	0	583.15*	83	36	1.30	1158.49	1.09E+00	1.52E-02	18.4	
7	0	609.52*	131	72	1.40	1211.63	1.05E+00	2.39E-02	17.4	
8	0	911.40*	58	20	1.29	1819.86	7.44E-01	1.05E-02	20.3	
9	0	1460.68*	240	15	1.76	2926.74	4.98E-01	4.36E-02	7.5	
10	0	1764.58*	18	8	1.44	3539.26	4.26E-01	3.19E-03	42.3	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85484-3 Acquisition date : 31-DEC-2019 16:04:59

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	185.99	86	242	1.20	358.43	353	12	1.56E-02	77.1	2.70E+00	
0	238.46	218	168	1.00	464.11	460	8	3.96E-02	23.7	2.29E+00	
0	295.26	148	91	1.09	578.54	573	12	2.68E-02	31.4	1.94E+00	
0	351.99	150	99	1.24	692.82	687	11	2.72E-02	31.5	1.68E+00	
0	511.05	45	80	1.97	1013.25	1005	16	8.22E-03	****	1.22E+00	
0	583.15	83	36	1.30	1158.49	1154	11	1.52E-02	36.8	1.09E+00	
0	609.52	131	72	1.40	1211.63	1204	16	2.39E-02	34.7	1.05E+00	
0	911.40	58	20	1.29	1819.86	1815	10	1.05E-02	40.7	7.44E-01	
0	1460.68	240	15	1.76	2926.74	2919	14	4.36E-02	15.0	4.98E-01	
0	1764.58	18	8	1.44	3539.26	3533	10	3.19E-03	84.6	4.26E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.673E-02		2.794E-02	3.911E-02	0.000E+00	-0.684

```
A,02L85484-3       ,12/31/2019 17:36,12/06/2019 15:44,   3.800E+02,L85484-3 S TEX
B,02L85484-3       ,HUDSON              ,12/27/2019 09:41,02FS101619
C,CS-137  ,NO ,  -2.673E-02,   2.794E-02,   3.911E-02,,   -0.684
```

Analyst: KBP

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:17:04.50
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 31-DEC-2019 10:43:41.59

LIMS No., Customer Name, Client ID: L85484-4 S TEXAS

Sample ID : 08L85484-4
Sample Type : S
Quantity : 3.14090E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:46:00.0
Geometry : 08FS082119
BKGFILE : 08BG122719MT
Real Time : 0 01:32:57.16
Live time : 0 01:32:55.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	186.05*	62	166	1.63	379.24	2.38E+00	1.12E-02	40.3	3.34E+00
2	1	238.34*	191	282	0.97	483.59	2.07E+00	3.43E-02	17.7	3.27E+00
3	1	295.23*	123	137	2.70	597.12	1.78E+00	2.20E-02	24.1	1.76E+00
4	1	351.68*	187	74	1.67	709.77	1.54E+00	3.35E-02	13.4	3.54E+00
5	1	510.85*	18	70	2.77	1027.38	1.12E+00	3.30E-03	121.2	1.63E+00
6	1	583.33*	92	58	1.81	1172.02	1.00E+00	1.65E-02	21.1	2.48E+00
7	1	609.42*	127	54	1.47	1224.08	9.64E-01	2.29E-02	15.4	4.16E-01
8	1	911.50*	27	46	1.51	1826.83	6.91E-01	4.89E-03	54.5	2.17E+00
9	1	1460.89*	208	12	2.17	2922.88	4.77E-01	3.72E-02	8.7	8.50E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85484-4 Acquisition date : 31-DEC-2019 10:43:41

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	186.05	62	166	1.63	379.24	375	9	1.12E-02	80.5	2.38E+00	
1	238.34	191	282	0.97	483.59	480	10	3.43E-02	35.5	2.07E+00	
1	295.23	123	137	2.70	597.12	593	17	2.20E-02	48.3	1.78E+00	
1	351.68	187	74	1.67	709.77	703	15	3.35E-02	26.9	1.54E+00	
1	510.85	18	70	2.77	1027.38	1020	14	3.30E-03	****	1.12E+00	
1	583.33	92	58	1.81	1172.02	1166	14	1.65E-02	42.3	1.00E+00	
1	609.42	127	54	1.47	1224.08	1218	12	2.29E-02	30.9	9.64E-01	
1	911.50	27	46	1.51	1826.83	1825	10	4.89E-03	****	6.91E-01	
1	1460.89	208	12	2.17	2922.88	2916	17	3.72E-02	17.4	4.77E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.833E-02		3.486E-02	6.255E-02	0.000E+00	0.453

```
A,08L85484-4       ,12/31/2019 12:17,12/06/2019 15:46,   3.141E+02,L85484-4 S TEX
B,08L85484-4       ,HUDSON              ,12/26/2019 12:50,08FS082119
C,CS-137   ,NO ,   2.833E-02,   3.486E-02,   6.255E-02,,     0.453
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:26:30.44
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:31.39

LIMS No., Customer Name, Client ID: L85484-5 S TEXAS

Sample ID : 11L85484-5
Sample Type : S
Quantity : 1.66030E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:48:00.0
Geometry : 11S100121919
BKGFILE : 11BG122719MT
Real Time : 0 01:06:27.15
Live time : 0 01:06:25.31

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.67*	78	104	1.14	476.66	2.60E+00	1.95E-02	26.8	
2	0	295.71*	71	58	1.63	590.79	2.24E+00	1.78E-02	23.6	
3	0	352.66*	98	86	1.64	704.74	1.98E+00	2.45E-02	23.9	
4	0	609.95*	73	62	2.12	1219.52	1.27E+00	1.82E-02	28.7	
5	0	1461.12*	82	0	2.23	2922.37	5.95E-01	2.07E-02	12.6	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85484-5 Acquisition date : 31-DEC-2019 09:19:31

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85484-5 Acquisition date : 31-DEC-2019 09:19:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.67	78	104	1.14	476.66	472	9	1.95E-02	53.6	2.60E+00	
0	295.71	71	58	1.63	590.79	586	9	1.78E-02	47.3	2.24E+00	
0	352.66	98	86	1.64	704.74	697	15	2.45E-02	47.7	1.98E+00	
0	609.95	73	62	2.12	1219.52	1212	17	1.82E-02	57.4	1.27E+00	
0	1461.12	82	0	2.23	2922.37	2914	16	2.07E-02	25.3	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-5.068E-02		6.432E-02	1.076E-01	0.000E+00	-0.471

```
A,11L85484-5       ,12/31/2019 10:26,12/06/2019 15:48,   1.660E+02,L85484-5 S TEX
B,11L85484-5       ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137   ,NO ,   -5.068E-02,   6.432E-02,   1.076E-01,,   -0.471
```

Analyst: KBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:17:33.01
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:45.31

LIMS No., Customer Name, Client ID: L85484-6 S TEXAS

Sample ID : 14L85484-6
Sample Type : S
Quantity : 3.28920E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:50:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:33:15.08
Live time : 0 01:33:13.68

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	74.70*	102	170	0.95	146.66	2.00E+00	1.83E-02	23.3	2.71E+00
2	2	77.02	198	153	0.95	151.28	2.10E+00	3.55E-02	12.4	
3	1	186.08*	72	195	1.68	369.44	2.64E+00	1.29E-02	41.6	9.79E-01
4	1	238.60*	323	155	0.92	474.51	2.24E+00	5.77E-02	8.9	2.21E-01
5	1	295.01*	100	72	1.24	587.36	1.89E+00	1.79E-02	19.0	2.41E+00
6	1	338.47	67	66	0.74	674.30	1.68E+00	1.19E-02	22.3	2.15E+01
7	1	351.88*	228	52	1.22	701.13	1.63E+00	4.08E-02	9.1	6.81E-01
8	1	511.12*	42	81	2.74	1019.74	1.17E+00	7.56E-03	58.9	1.68E+00
9	1	583.43	112	29	1.56	1164.41	1.03E+00	1.99E-02	13.3	2.33E+00
10	1	609.50*	160	52	1.47	1216.58	9.94E-01	2.87E-02	12.9	9.05E-01
11	1	911.44	86	16	2.51	1820.81	6.94E-01	1.54E-02	16.2	9.02E-01
12	1	1461.14*	243	7	1.91	2921.19	4.61E-01	4.34E-02	7.1	1.56E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85484-6 Acquisition date : 31-DEC-2019 10:43:45

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85484-6 Acquisition date : 31-DEC-2019 10:43:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.70	102	170	0.95	146.66	141	15	1.83E-02	46.5	2.00E+00	
2	77.02	198	153	0.95	151.28	141	15	3.55E-02	24.9	2.10E+00	
1	186.08	72	195	1.68	369.44	364	12	1.29E-02	83.1	2.64E+00	
1	238.60	323	155	0.92	474.51	469	9	5.77E-02	17.9	2.24E+00	
1	295.01	100	72	1.24	587.36	583	9	1.79E-02	38.0	1.89E+00	
1	338.47	67	66	0.74	674.30	674	5	1.19E-02	44.7	1.68E+00	
1	351.88	228	52	1.22	701.13	697	9	4.08E-02	18.2	1.63E+00	
1	511.12	42	81	2.74	1019.74	1011	18	7.56E-03	****	1.17E+00	
1	583.43	112	29	1.56	1164.41	1160	9	1.99E-02	26.5	1.03E+00	
1	609.50	160	52	1.47	1216.58	1211	14	2.87E-02	25.7	9.94E-01	
1	911.44	86	16	2.51	1820.81	1814	18	1.54E-02	32.4	6.94E-01	
1	1461.14	243	7	1.91	2921.19	2914	13	4.34E-02	14.3	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.276E-04		3.360E-02	5.440E-02	0.000E+00	0.006

A,14L85484-6 ,12/31/2019 12:17,12/06/2019 15:50, 3.289E+02,L85484-6 S TEX
B,14L85484-6 ,HUDSON ,12/30/2019 12:20,14FS092319
C,CS-137 ,NO , 3.276E-04, 3.360E-02, 5.440E-02,, 0.006

Analyst: MBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 10:27:09.49
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 31-DEC-2019 09:19:37.67

LIMS No., Customer Name, Client ID: L85484-7 S TEXAS

Sample ID : 01L85484-7
Sample Type : S
Quantity : 1.52860E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:52:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:07:03.47
Live time : 0 01:07:02.81

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	74.76*	43	95	0.87	149.94	2.49E+00	1.06E-02	39.3	1.04E+00
2	1	77.23	42	109	0.96	154.87	2.67E+00	1.05E-02	41.8	
3	1	185.78*	30	95	1.30	371.80	4.00E+00	7.54E-03	67.0	1.53E+00
4	4	238.66*	180	49	1.21	477.47	3.47E+00	4.48E-02	10.0	1.58E+00
5	4	241.83	67	59	1.70	483.81	3.44E+00	1.66E-02	26.4	
6	1	295.22*	102	51	1.31	590.51	2.98E+00	2.53E-02	17.9	2.64E+00
7	1	351.93*	126	45	1.47	703.84	2.60E+00	3.14E-02	14.2	1.52E+00
8	1	511.00*	22	58	3.24	1021.76	1.91E+00	5.49E-03	104.4	1.20E+00
9	1	583.24*	62	9	1.86	1166.15	1.70E+00	1.54E-02	17.3	1.56E+00
10	1	609.17*	135	50	1.84	1217.97	1.64E+00	3.35E-02	15.4	1.54E+00
11	1	910.98*	38	2	2.16	1821.21	1.15E+00	9.39E-03	19.7	1.91E+00
12	1	1120.36*	24	5	1.63	2239.73	9.63E-01	6.02E-03	32.0	1.83E+00
13	1	1460.82*	108	0	2.38	2920.32	7.73E-01	2.70E-02	10.5	9.78E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85484-7 Acquisition date : 31-DEC-2019 09:19:37

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.76	43	95	0.87	149.94	147	14	1.06E-02	78.6	2.49E+00	
1	77.23	42	109	0.96	154.87	147	14	1.05E-02	83.6	2.67E+00	
1	185.78	30	95	1.30	371.80	367	10	7.54E-03	****	4.00E+00	
4	238.66	180	49	1.21	477.47	472	18	4.48E-02	20.0	3.47E+00	
4	241.83	67	59	1.70	483.81	472	18	1.66E-02	52.8	3.44E+00	
1	295.22	102	51	1.31	590.51	585	12	2.53E-02	35.8	2.98E+00	
1	351.93	126	45	1.47	703.84	699	10	3.14E-02	28.5	2.60E+00	
1	511.00	22	58	3.24	1021.76	1014	23	5.49E-03	****	1.91E+00	
1	583.24	62	9	1.86	1166.15	1159	12	1.54E-02	34.5	1.70E+00	
1	609.17	135	50	1.84	1217.97	1211	17	3.35E-02	30.8	1.64E+00	
1	910.98	38	2	2.16	1821.21	1817	10	9.39E-03	39.3	1.15E+00	
1	1120.36	24	5	1.63	2239.73	2232	12	6.02E-03	63.9	9.63E-01	
1	1460.82	108	0	2.38	2920.32	2913	14	2.70E-02	21.0	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	7.538E-03		4.602E-02	7.865E-02	0.000E+00	0.096

```
A,01L85484-7       ,12/31/2019 10:27,12/06/2019 15:52,   1.529E+02,L85484-7 S TEX
B,01L85484-7       ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137  ,NO ,    7.538E-03,   4.602E-02,   7.865E-02,,     0.096
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:17:50.94
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:46.48

LIMS No., Customer Name, Client ID: L85484-8 S TEXAS

Sample ID : 02L85484-8
Sample Type : S
Quantity : 3.07450E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:54:00.0
Geometry : 02FS101619
BKGFILE : 02BG122719MT
Real Time : 0 01:33:33.00
Live time : 0 01:33:31.93

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	77.14	146	198	0.99	139.17	2.45E+00	2.60E-02	17.4	
2	0	186.08*	92	162	1.16	358.60	2.70E+00	1.65E-02	29.4	
3	0	238.70*	289	141	1.16	464.60	2.29E+00	5.15E-02	9.4	
4	0	295.19*	143	87	1.00	578.39	1.95E+00	2.55E-02	15.7	
5	0	352.13*	229	76	1.26	693.10	1.68E+00	4.08E-02	10.5	
6	0	583.49*	119	42	1.32	1159.19	1.09E+00	2.12E-02	15.0	
7	0	609.27*	180	68	1.40	1211.12	1.05E+00	3.21E-02	13.0	
8	0	911.13*	53	25	2.05	1819.30	7.45E-01	9.51E-03	23.4	
9	0	1460.75*	225	9	1.73	2926.87	4.98E-01	4.02E-02	7.5	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85484-8 Acquisition date : 31-DEC-2019 10:43:46

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85484-8 Acquisition date : 31-DEC-2019 10:43:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	77.14	146	198	0.99	139.17	137	6	2.60E-02	34.8	2.45E+00	
0	186.08	92	162	1.16	358.60	354	11	1.65E-02	58.9	2.70E+00	
0	238.70	289	141	1.16	464.60	460	8	5.15E-02	18.7	2.29E+00	
0	295.19	143	87	1.00	578.39	573	11	2.55E-02	31.3	1.95E+00	
0	352.13	229	76	1.26	693.10	688	12	4.08E-02	20.9	1.68E+00	
0	583.49	119	42	1.32	1159.19	1152	14	2.12E-02	30.0	1.09E+00	
0	609.27	180	68	1.40	1211.12	1203	16	3.21E-02	26.0	1.05E+00	
0	911.13	53	25	2.05	1819.30	1814	11	9.51E-03	46.8	7.45E-01	
0	1460.75	225	9	1.73	2926.87	2918	17	4.02E-02	15.1	4.98E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.051E-02		3.368E-02	4.970E-02	0.000E+00	-0.413

```
A,02L85484-8       ,12/31/2019 12:17,12/06/2019 15:54,   3.075E+02,L85484-8 S TEX
B,02L85484-8       ,HUDSON              ,12/27/2019 09:41,02FS101619
C,CS-137  ,NO ,  -2.051E-02,   3.368E-02,   4.970E-02,,   -0.413
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:18:09.93
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:48.85

LIMS No., Customer Name, Client ID: L85484-9 S TEXAS

Sample ID : 01L85484-9
Sample Type : S
Quantity : 3.63510E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 15:56:00.0
Geometry : 01FS092019
BKGFILE : 01BG122719MT
Real Time : 0 01:33:51.21
Live time : 0 01:33:50.14

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	77.29	112	268	0.86	155.00	1.93E+00	1.99E-02	26.7	2.91E+00
2	1	92.78*	67	214	1.33	185.94	2.62E+00	1.19E-02	41.5	1.16E+00
3	1	185.85*	75	172	1.20	371.95	3.03E+00	1.34E-02	33.6	1.49E+00
4	1	238.45*	341	205	1.22	477.05	2.64E+00	6.05E-02	8.9	2.32E+01
5	1	241.72	136	88	1.48	483.59	2.62E+00	2.42E-02	14.2	2.33E-01
6	1	295.21*	223	103	1.31	590.48	2.28E+00	3.96E-02	11.5	1.08E+00
7	1	338.39	76	134	1.29	676.79	2.06E+00	1.35E-02	30.5	1.08E+00
8	1	351.92*	272	148	1.20	703.82	2.00E+00	4.83E-02	11.5	7.90E-01
9	1	510.96*	75	107	2.79	1021.67	1.50E+00	1.32E-02	39.6	8.71E-01
10	1	583.10*	110	95	1.92	1165.85	1.35E+00	1.95E-02	21.9	1.73E+00
11	1	609.22*	214	61	1.44	1218.06	1.30E+00	3.80E-02	10.5	1.46E+00
12	1	911.20*	94	28	2.04	1821.64	9.35E-01	1.67E-02	15.9	1.57E+00
13	1	969.02	63	24	2.44	1937.23	8.88E-01	1.11E-02	20.0	3.24E+00
14	1	1120.25*	57	28	2.56	2239.51	7.87E-01	1.02E-02	24.1	3.21E+00
15	1	1460.79*	347	20	2.22	2920.26	6.35E-01	6.17E-02	6.3	7.64E-01
16	1	1764.66*	37	8	2.71	3527.76	5.54E-01	6.55E-03	23.1	1.63E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85484-9 Acquisition date : 31-DEC-2019 10:43:48

Total number of lines in spectrum	16	
Number of unidentified lines	16	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85484-9 Acquisition date : 31-DEC-2019 10:43:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	77.29	112	268	0.86	155.00	152	7	1.99E-02	53.4	1.93E+00	
1	92.78	67	214	1.33	185.94	183	8	1.19E-02	83.1	2.62E+00	
1	185.85	75	172	1.20	371.95	368	8	1.34E-02	67.2	3.03E+00	
1	238.45	341	205	1.22	477.05	471	10	6.05E-02	17.7	2.64E+00	
1	241.72	136	88	1.48	483.59	481	7	2.42E-02	28.4	2.62E+00	
1	295.21	223	103	1.31	590.48	583	12	3.96E-02	23.1	2.28E+00	
1	338.39	76	134	1.29	676.79	672	10	1.35E-02	61.1	2.06E+00	
1	351.92	272	148	1.20	703.82	697	14	4.83E-02	23.0	2.00E+00	
1	510.96	75	107	2.79	1021.67	1014	20	1.32E-02	79.3	1.50E+00	
1	583.10	110	95	1.92	1165.85	1160	16	1.95E-02	43.8	1.35E+00	
1	609.22	214	61	1.44	1218.06	1212	13	3.80E-02	21.1	1.30E+00	
1	911.20	94	28	2.04	1821.64	1816	14	1.67E-02	31.8	9.35E-01	
1	969.02	63	24	2.44	1937.23	1931	12	1.11E-02	40.0	8.88E-01	
1	1120.25	57	28	2.56	2239.51	2234	13	1.02E-02	48.2	7.87E-01	
1	1460.79	347	20	2.22	2920.26	2912	16	6.17E-02	12.6	6.35E-01	
1	1764.66	37	8	2.71	3527.76	3522	11	6.55E-03	46.1	5.54E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 16
Number of unidentified lines 16
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.790E-02		2.395E-02	3.504E-02	0.000E+00	-0.796

```
A,01L85484-9       ,12/31/2019 12:18,12/06/2019 15:56,   3.635E+02,L85484-9 S TEX
B,01L85484-9       ,HUDSON              ,12/30/2019 11:02,01FS092019
C,CS-137  ,NO ,  -2.790E-02,   2.395E-02,   3.504E-02,,   -0.796
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:18:31.06
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:50.01

LIMS No., Customer Name, Client ID: L85484-10 S TEXAS

Sample ID : 13L85484-10
Sample Type : S
Quantity : 3.45260E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 6-DEC-2019 15:58:00.0
Geometry : 13FS082019
BKGFILE : 13BG122719MT
Real Time : 0 01:34:12.74
Live time : 0 01:34:10.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	93.02*	89	301	2.07	185.84	2.27E+00	1.57E-02	45.8	4.99E+00
2	1	185.98*	103	207	2.23	371.54	2.44E+00	1.82E-02	30.5	3.40E+00
3	1	238.50*	270	153	1.04	476.47	2.14E+00	4.77E-02	10.4	3.14E+00
4	1	241.98*	85	129	1.66	483.43	2.12E+00	1.51E-02	27.7	1.95E+00
5	1	294.79*	119	128	1.51	588.93	1.85E+00	2.10E-02	21.0	5.94E+00
6	1	351.81*	222	99	1.43	702.89	1.63E+00	3.93E-02	11.7	3.71E+00
7	1	510.79*	7	109	2.58	1020.64	1.22E+00	1.31E-03	357.2	9.88E-01
8	1	582.94*	114	69	1.62	1164.88	1.10E+00	2.02E-02	17.8	7.23E-01
9	1	609.23*	196	91	1.61	1217.45	1.07E+00	3.46E-02	14.1	2.19E+00
10	1	910.91*	71	31	2.12	1820.80	7.75E-01	1.26E-02	21.6	1.08E+00
11	1	1460.54*	304	0	2.27	2920.89	5.40E-01	5.38E-02	6.5	9.09E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85484-10 Acquisition date : 31-DEC-2019 10:43:50

Total number of lines in spectrum	11	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85484-10 Acquisition date : 31-DEC-2019 10:43:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	93.02	89	301	2.07	185.84	179	14	1.57E-02	91.6	2.27E+00	
1	185.98	103	207	2.23	371.54	368	11	1.82E-02	60.9	2.44E+00	
1	238.50	270	153	1.04	476.47	473	8	4.77E-02	20.7	2.14E+00	
1	241.98	85	129	1.66	483.43	481	9	1.51E-02	55.5	2.12E+00	
1	294.79	119	128	1.51	588.93	584	10	2.10E-02	42.1	1.85E+00	
1	351.81	222	99	1.43	702.89	698	11	3.93E-02	23.4	1.63E+00	
1	510.79	7	109	2.58	1020.64	1014	14	1.31E-03	****	1.22E+00	
1	582.94	114	69	1.62	1164.88	1158	12	2.02E-02	35.7	1.10E+00	
1	609.23	196	91	1.61	1217.45	1211	16	3.46E-02	28.2	1.07E+00	
1	910.91	71	31	2.12	1820.80	1815	14	1.26E-02	43.3	7.75E-01	
1	1460.54	304	0	2.27	2920.89	2913	18	5.38E-02	13.0	5.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 11
Number of unidentified lines 11
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.494E-02		3.429E-02	5.251E-02	0.000E+00	-0.285

```
A,13L85484-10     ,12/31/2019 12:18,12/06/2019 15:58,   3.453E+02,L85484-10 S TE
B,13L85484-10     ,HUDSON              ,12/27/2019 09:44,13FS082019
C,CS-137  ,NO ,  -1.494E-02,   3.429E-02,   5.251E-02,,   -0.285
```

Analyst: hBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 31-DEC-2019 12:18:50.41
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 31-DEC-2019 10:43:51.98

LIMS No., Customer Name, Client ID: L85484-11 S TEXAS

Sample ID : 07L85484-11
Sample Type : S
Quantity : 3.79750E+02 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 16:00:00.0
Geometry : 07FS090619
BKGFILE : 07BG122719MT
Real Time : 0 01:34:28.88
Live time : 0 01:34:27.88

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	239.05*	322	201	1.32	477.45	2.21E+00	5.68E-02	9.9	7.36E-01
2	1	295.65*	167	117	1.50	590.59	1.93E+00	2.94E-02	15.0	2.13E+00
3	1	352.49*	284	154	2.02	704.24	1.71E+00	5.02E-02	12.5	2.21E+00
4	1	583.75*	160	56	1.97	1166.54	1.19E+00	2.82E-02	13.4	1.43E+00
5	1	609.83*	186	86	2.17	1218.67	1.16E+00	3.29E-02	13.7	2.67E+00
6	1	911.47*	87	21	2.60	1821.60	8.61E-01	1.53E-02	16.2	1.06E+00
7	1	1461.38*	302	21	2.43	2920.52	6.05E-01	5.33E-02	7.2	1.03E+00
8	1	1765.08*	52	0	3.94	3527.33	5.32E-01	9.26E-03	15.1	8.13E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85484-11 Acquisition date : 31-DEC-2019 10:43:51

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85484-11 Acquisition date : 31-DEC-2019 10:43:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	239.05	322	201	1.32	477.45	473	9	5.68E-02	19.8	2.21E+00	
1	295.65	167	117	1.50	590.59	584	11	2.94E-02	30.1	1.93E+00	
1	352.49	284	154	2.02	704.24	695	19	5.02E-02	24.9	1.71E+00	
1	583.75	160	56	1.97	1166.54	1159	15	2.82E-02	26.8	1.19E+00	
1	609.83	186	86	2.17	1218.67	1211	15	3.29E-02	27.4	1.16E+00	
1	911.47	87	21	2.60	1821.60	1815	14	1.53E-02	32.4	8.61E-01	
1	1461.38	302	21	2.43	2920.52	2913	17	5.33E-02	14.4	6.05E-01	
1	1765.08	52	0	3.94	3527.33	3519	15	9.26E-03	30.3	5.32E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.019E-03		2.713E-02	4.477E-02	0.000E+00	-0.067

```
A,07L85484-11      ,12/31/2019 12:18,12/06/2019 16:00,   3.798E+02,L85484-11 S TE
B,07L85484-11      ,HUDSON              ,12/26/2019 10:37,07FS090619
C,CS-137   ,NO ,   -3.019E-03,   2.713E-02,   4.477E-02,,   -0.067
```

Analyst: KBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 6-JAN-2020 12:00:38.66
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 2-JAN-2020 16:11:19.12

LIMS No., Customer Name, Client ID: WG32735-1 S TEXAS

Sample ID : 08WG32735-1
Sample Type : S
Quantity : 1.37120E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:55:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:08:02.70
Live time : 0 01:08:01.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.58*	182	110	1.28	484.08	2.70E+00	4.45E-02	13.3	4.09E+00
2	1	295.46*	38	77	1.41	597.58	2.29E+00	9.28E-03	48.1	2.40E+00
3	1	352.01*	104	63	1.53	710.42	1.98E+00	2.54E-02	18.1	1.37E+00
4	1	511.13*	35	49	3.30	1027.95	1.44E+00	8.57E-03	64.4	1.55E+00
5	1	583.49*	41	39	1.36	1172.34	1.28E+00	1.01E-02	37.5	1.71E+00
6	1	609.38*	63	36	1.79	1223.99	1.24E+00	1.55E-02	24.9	1.84E+00
7	1	911.55*	41	7	2.16	1826.92	8.72E-01	1.01E-02	21.0	9.04E-01
8	1	1461.02*	93	10	1.94	2923.13	5.83E-01	2.28E-02	14.3	9.48E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.58	182	110	1.28	484.08	480	10	4.45E-02	26.7	2.70E+00	
1	295.46	38	77	1.41	597.58	593	10	9.28E-03	96.2	2.29E+00	
1	352.01	104	63	1.53	710.42	705	10	2.54E-02	36.2	1.98E+00	
1	511.13	35	49	3.30	1027.95	1018	24	8.57E-03	****	1.44E+00	
1	583.49	41	39	1.36	1172.34	1166	16	1.01E-02	75.1	1.28E+00	
1	609.38	63	36	1.79	1223.99	1217	14	1.55E-02	49.8	1.24E+00	
1	911.55	41	7	2.16	1826.92	1822	10	1.01E-02	42.0	8.72E-01	
1	1461.02	93	10	1.94	2923.13	2916	14	2.28E-02	28.6	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.690E-03		6.916E-02	1.146E-01	0.000E+00	0.032

```
A,08WG32735-1      ,01/06/2020 12:00,12/08/2019 15:55,   1.371E+02,WG32735-1 S TE
B,08WG32735-1      ,HUDSON                ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,   3.690E-03,   6.916E-02,   1.146E-01,,    0.032
```

GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85484

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32735-1	S	DUP	GELI	137.12 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-1	S		GELI	353.54 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-2	S		GELI	342.75 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-3	S		GELI	380 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-4	S		GELI	314.09 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-5	S		GELI	166.03 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-6	S		GELI	328.92 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-7	S		GELI	152.86 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-8	S		GELI	307.45 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-9	S		GELI	363.51 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-10	S		GELI	345.26 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85484-11	S		GELI	379.75 g dry	12/30/19	WBG	BALANCE 8							WG32735

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85484

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.01
100.00	100.01
1000.00	1000.04

Check Date: 30-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 30-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME				
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55				
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

Standards Prepared by: [signature] 2/21/15

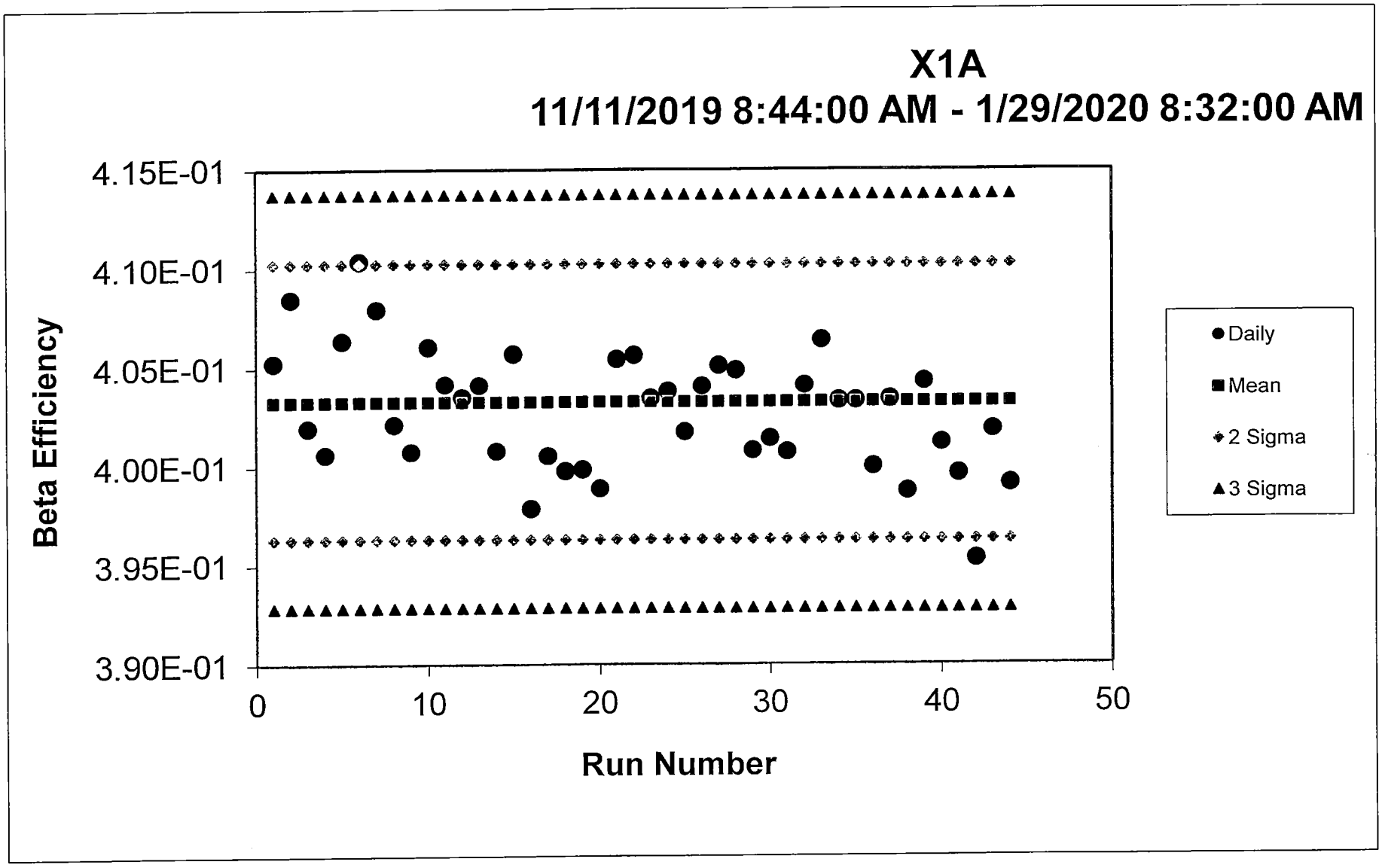
Calibration by: Keith Jett 2/21/15

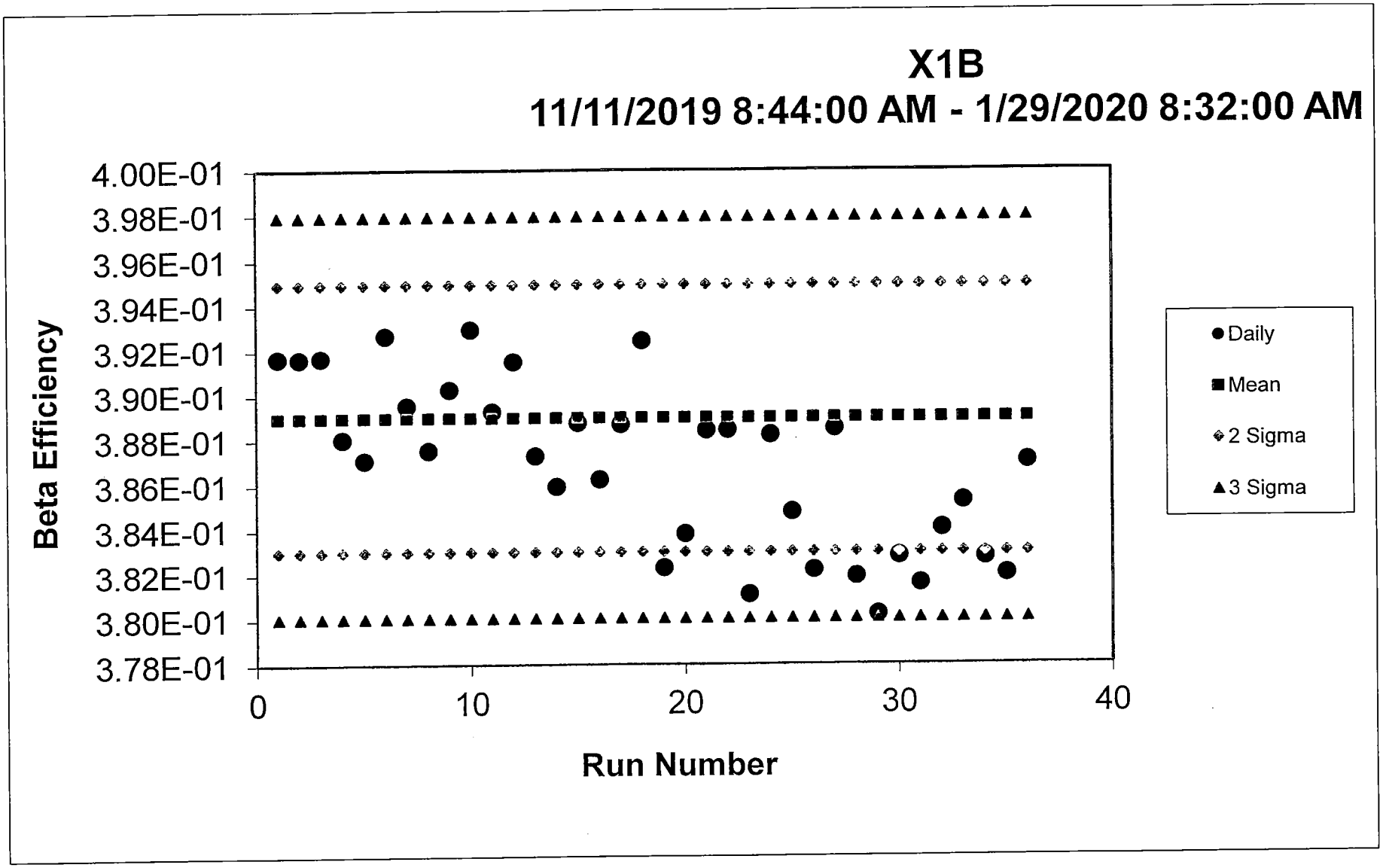
Y COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

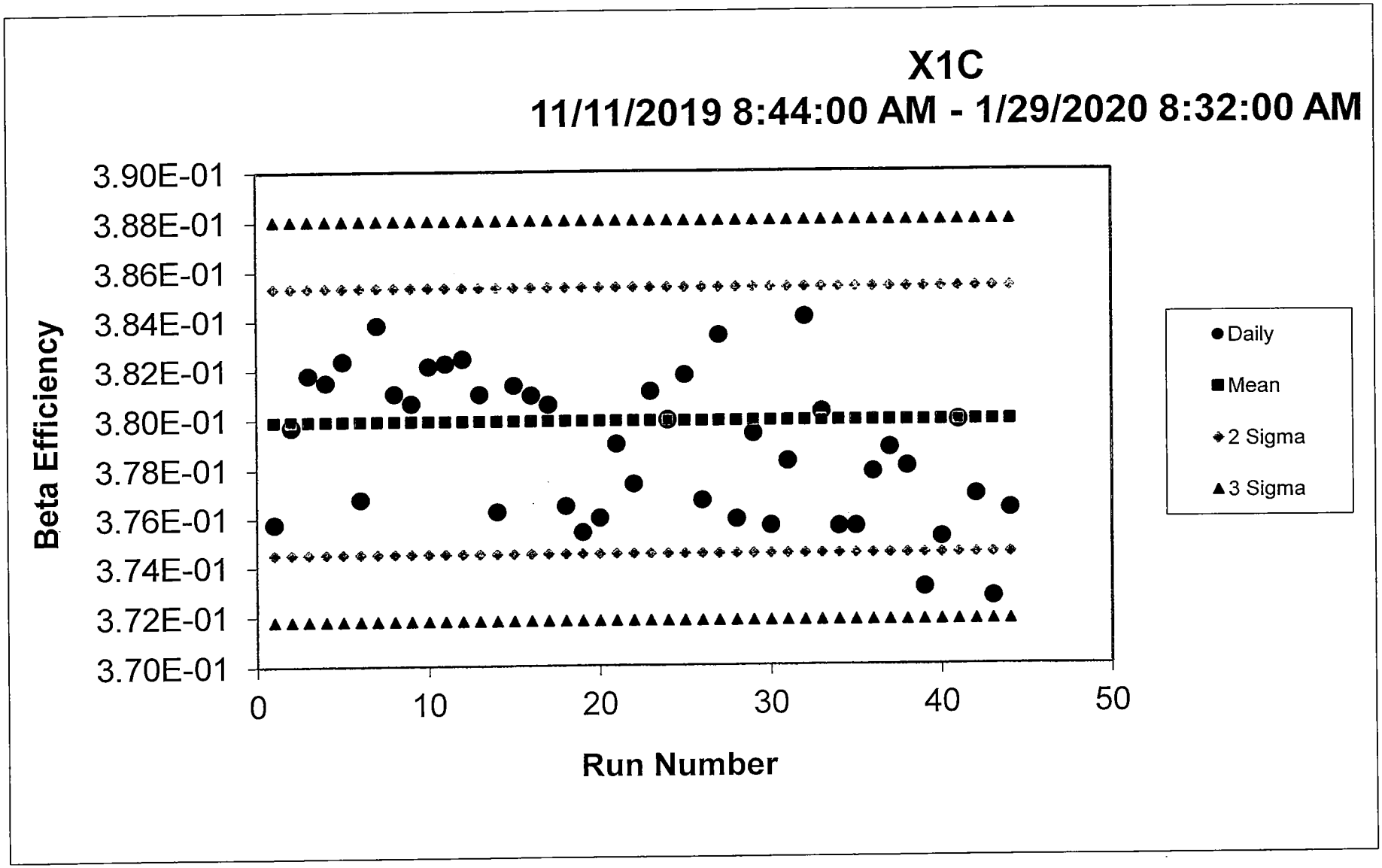
210PB-061014	Activity		MILK DATE/TIME	Standards Prepared by:	2/21/15
	pCi/ml	BI YIELD			
210PB-061014-1	2013	0.577	2/11/2015 13:55	Calibration by: Keith Jett	2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55		
210PB-061014-3	2013	0.577	2/11/2015 13:55		
210PB-061014-4	2013	0.577	2/11/2015 13:55		
210PB-061014-5	2013	0.577	2/11/2015 13:55		
210PB-061014-6	2013	0.577	2/11/2015 13:55		

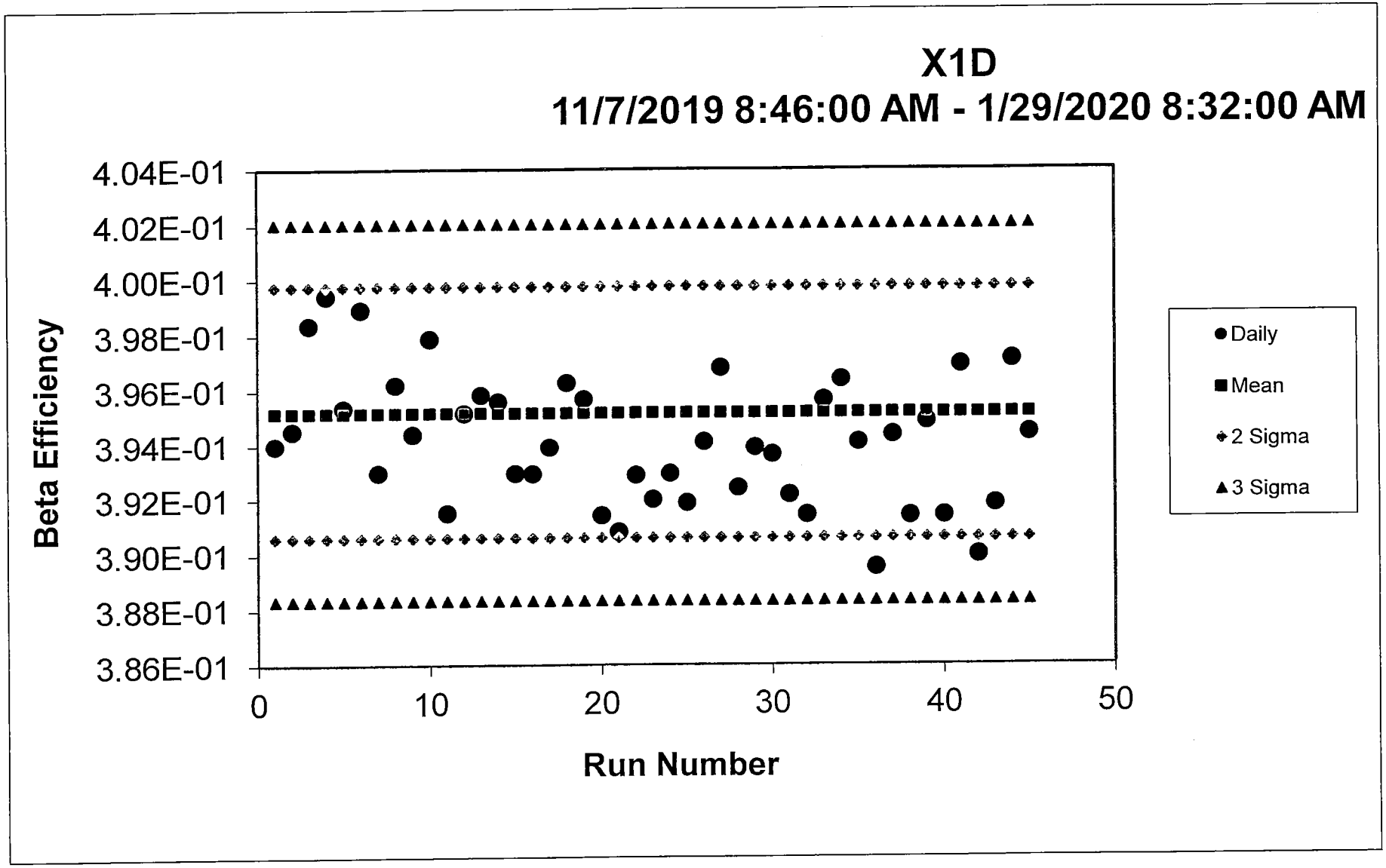
LEAD 210

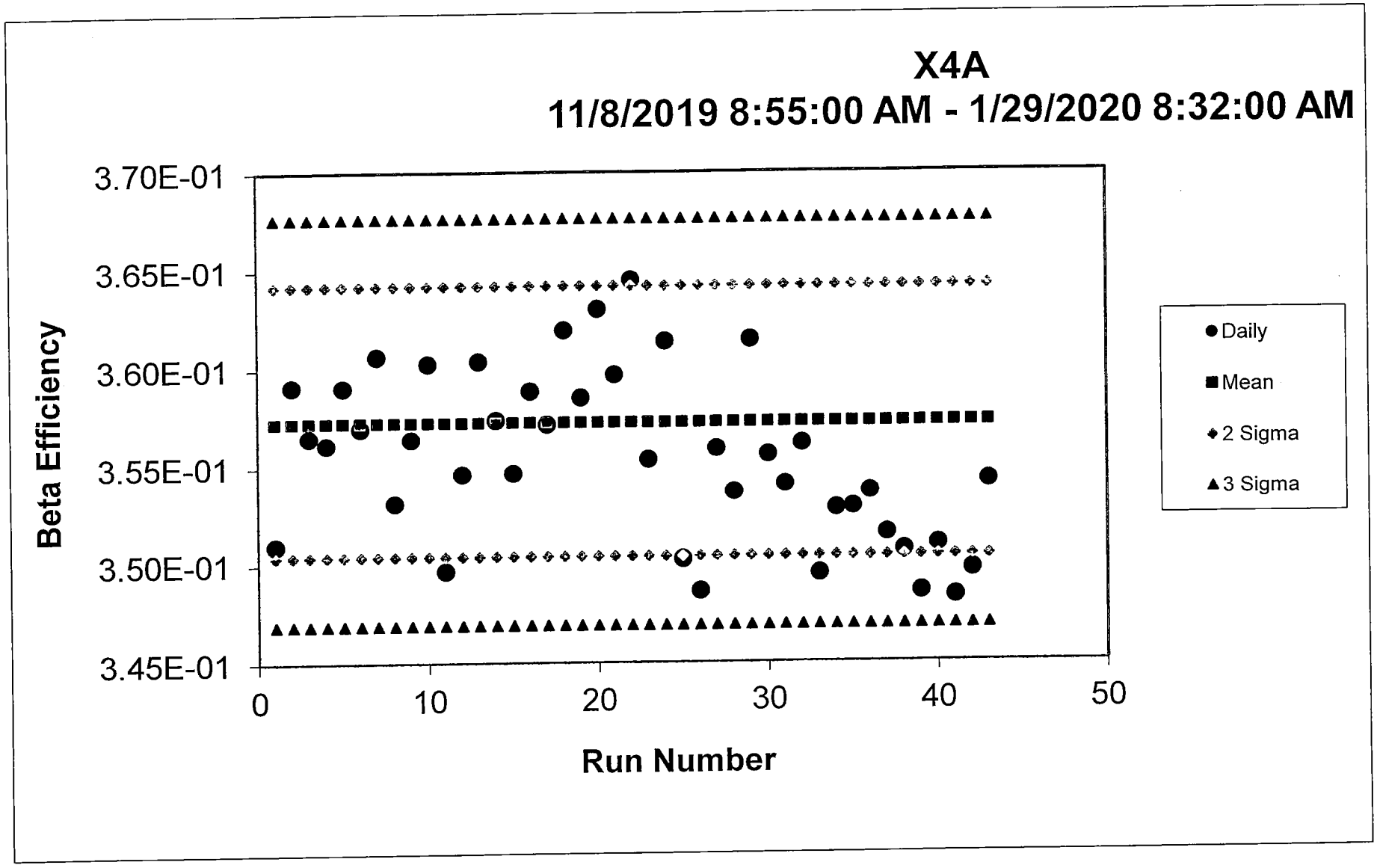
Daily Source and Background Checks

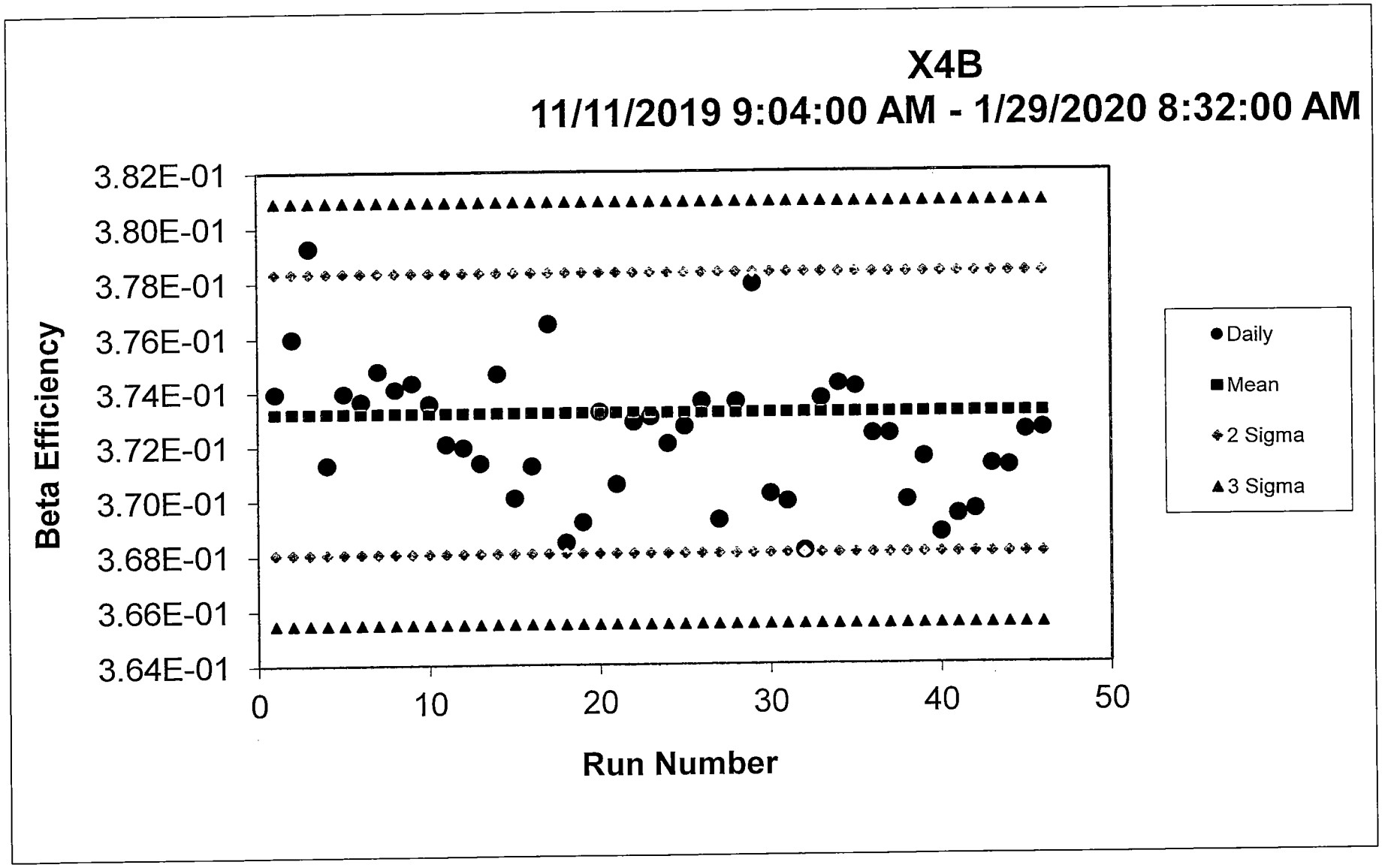

X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

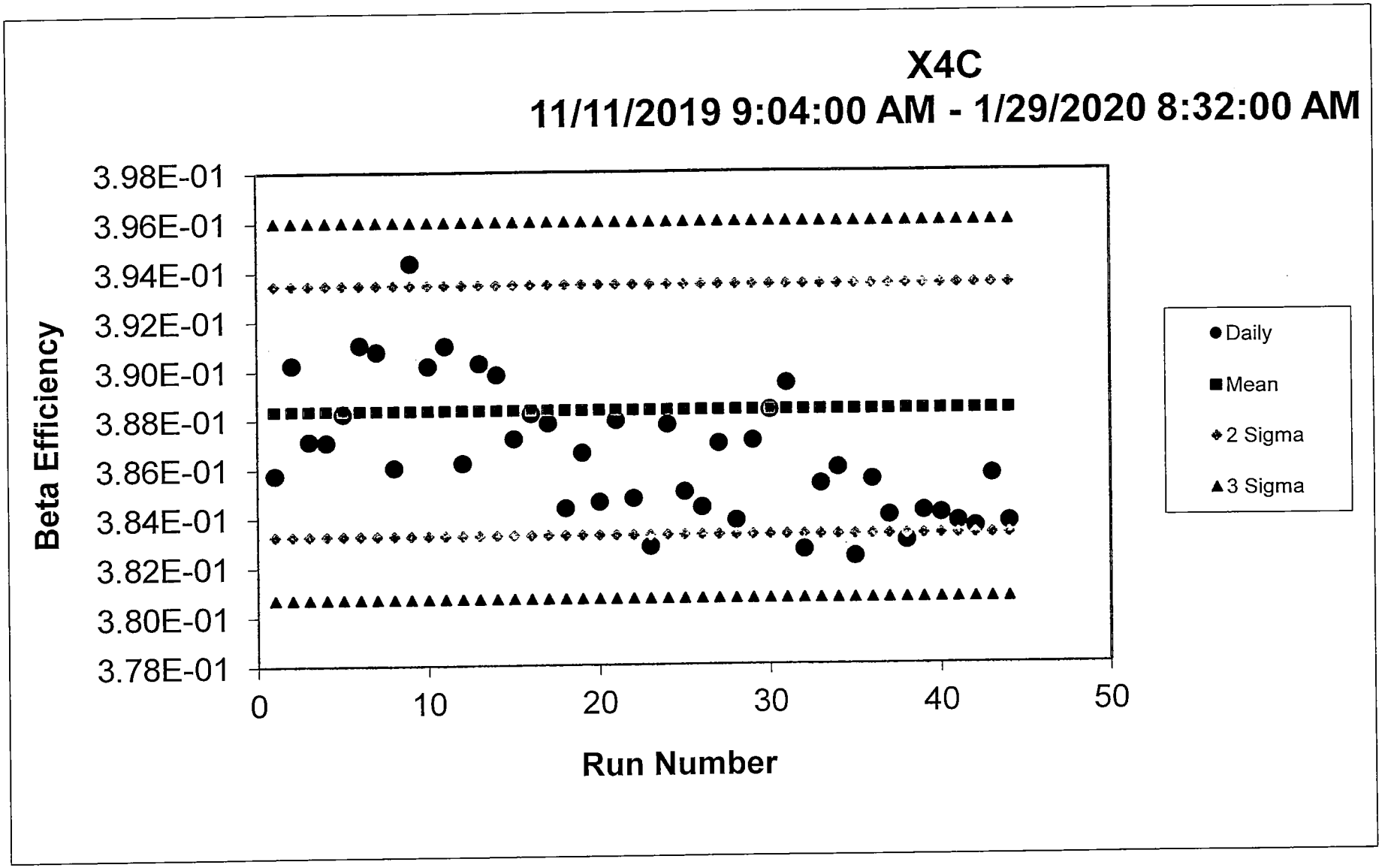

X1B
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma

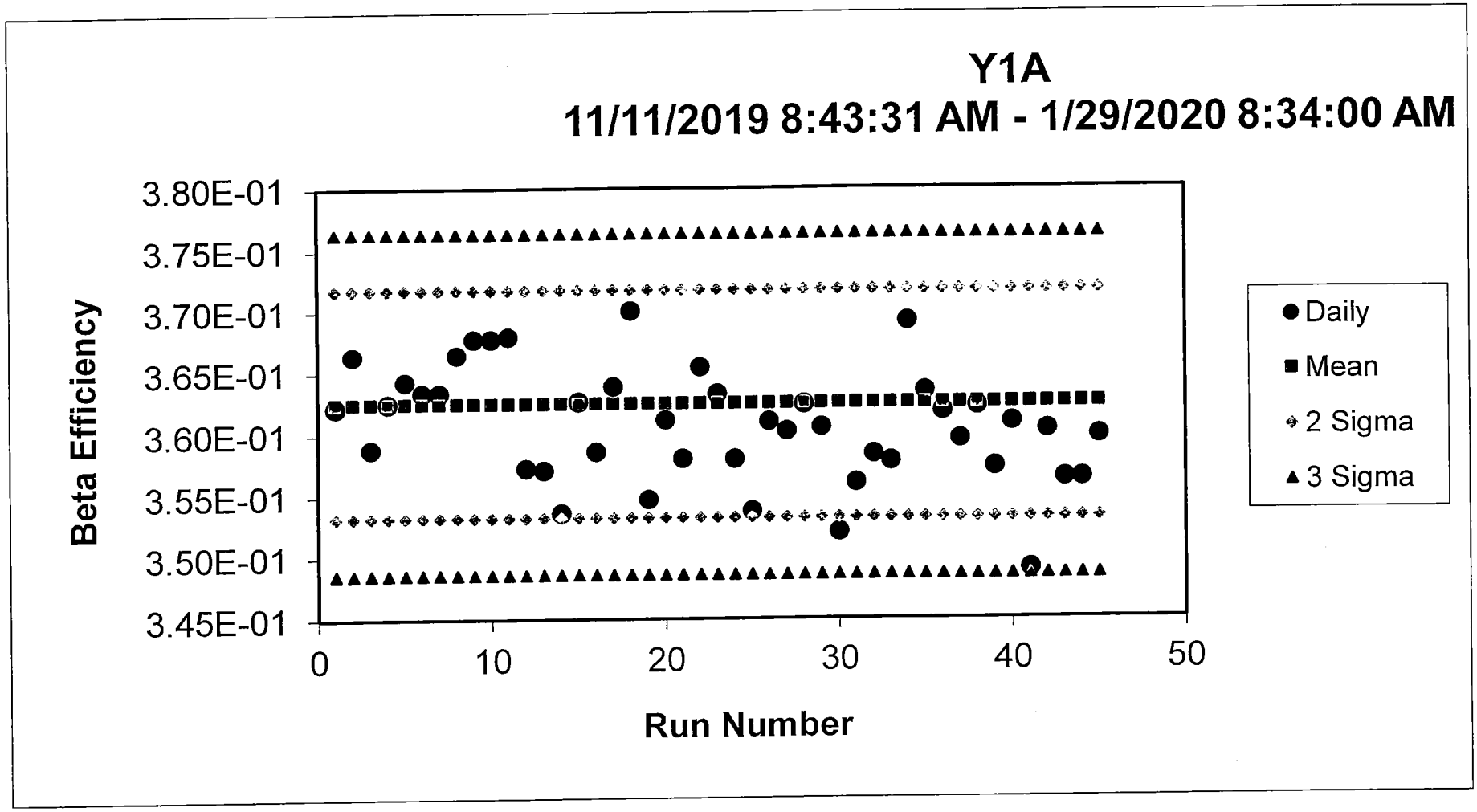

X1C
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

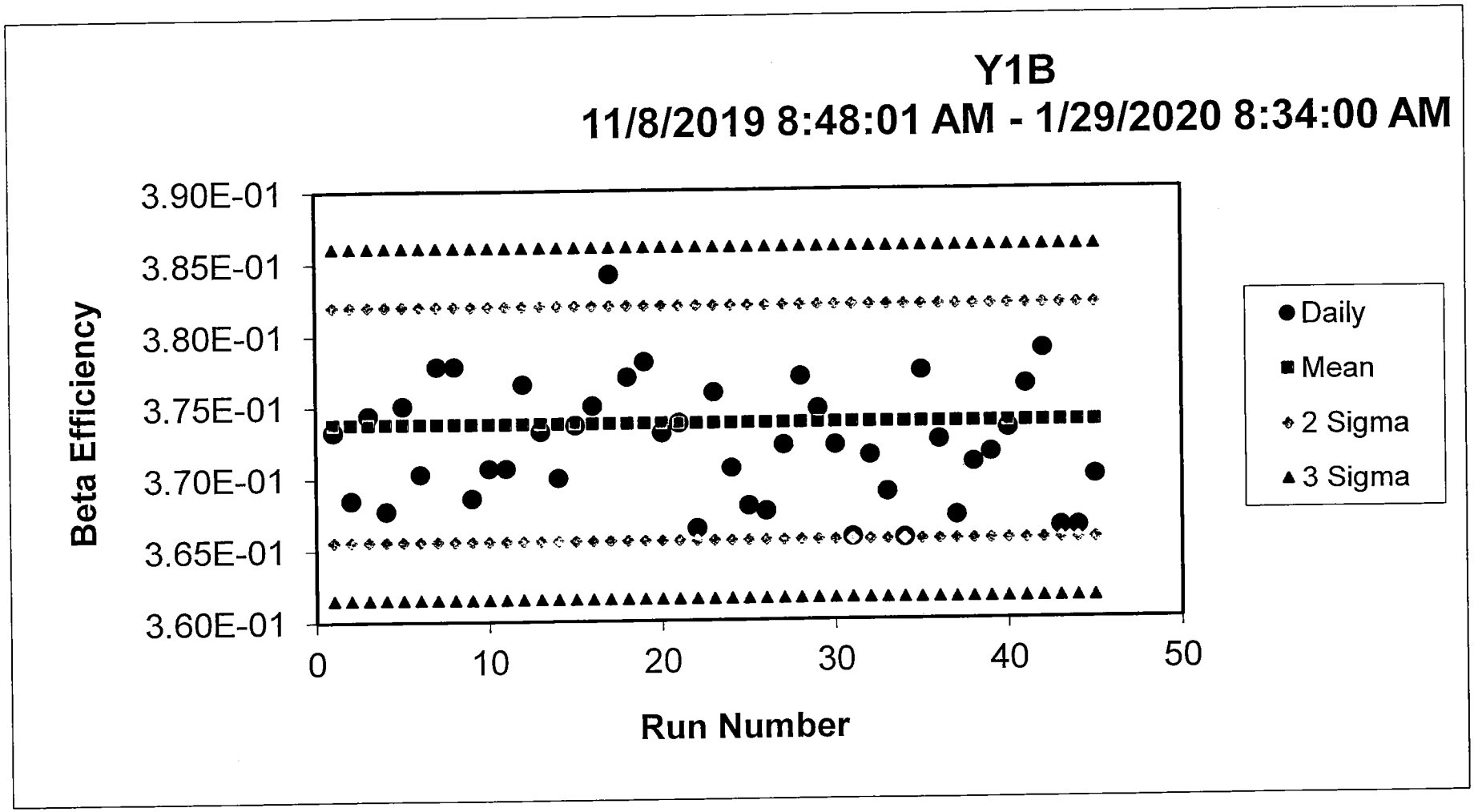

X1D
11/7/2019 8:46:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.04E-01
4.02E-01
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

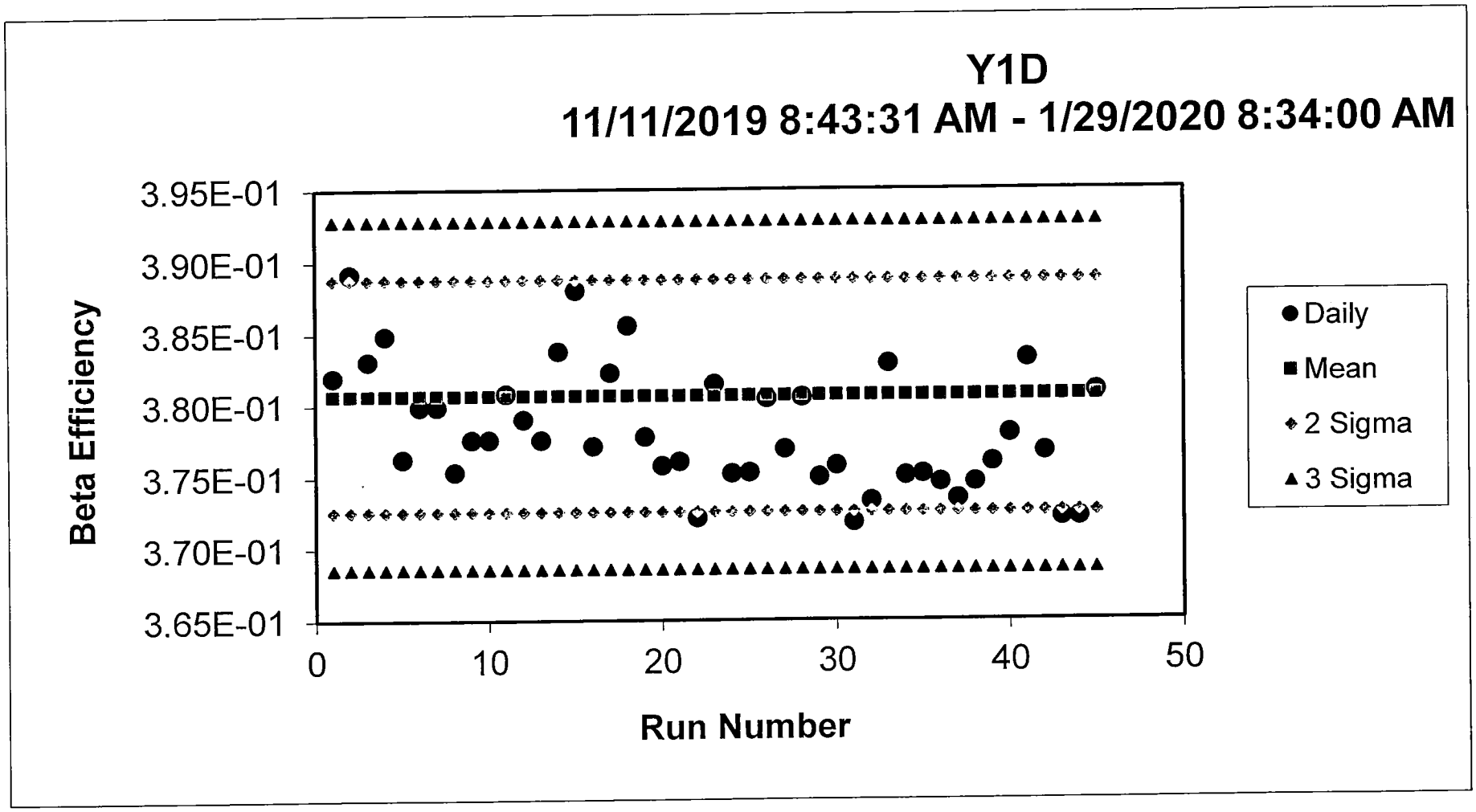

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

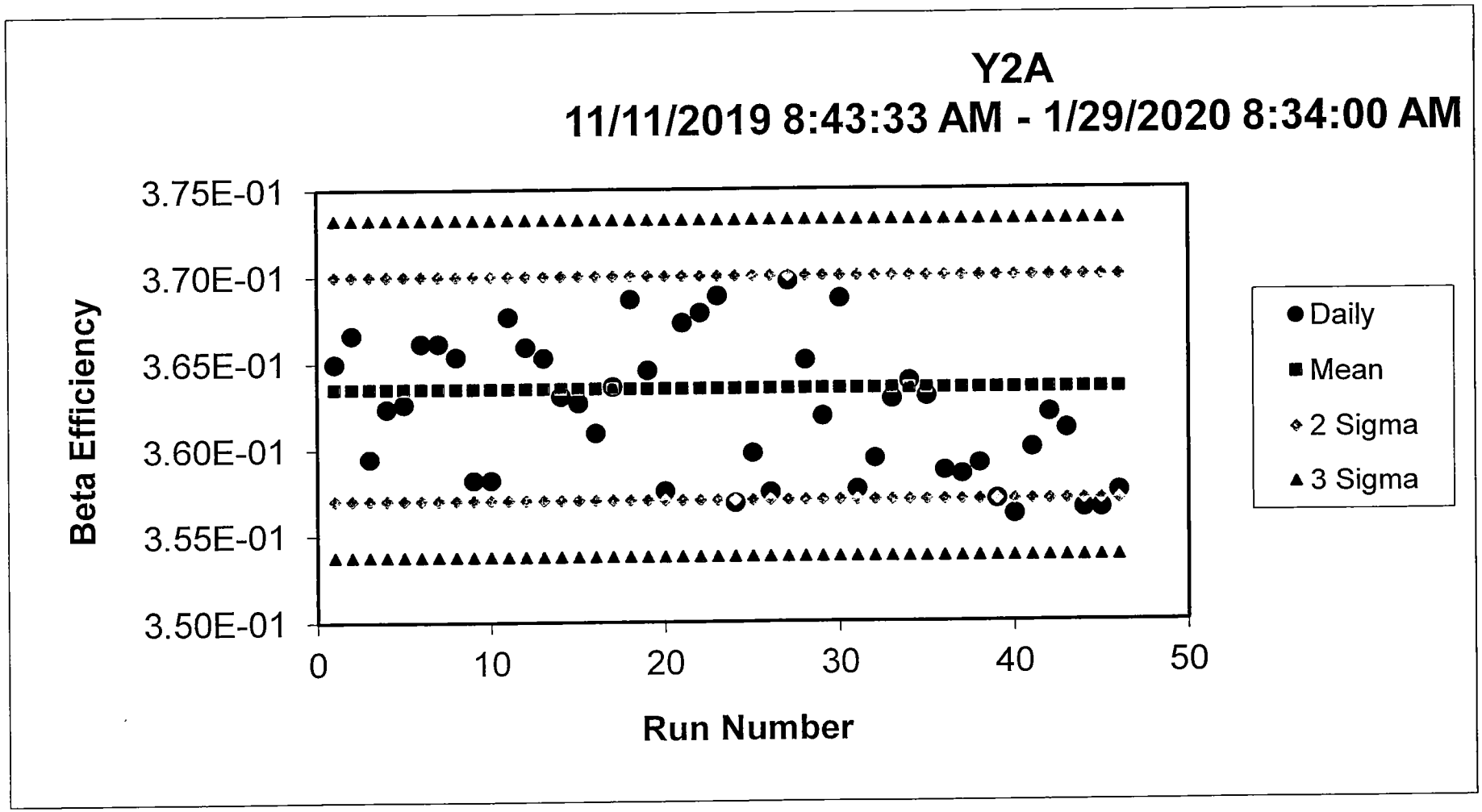

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

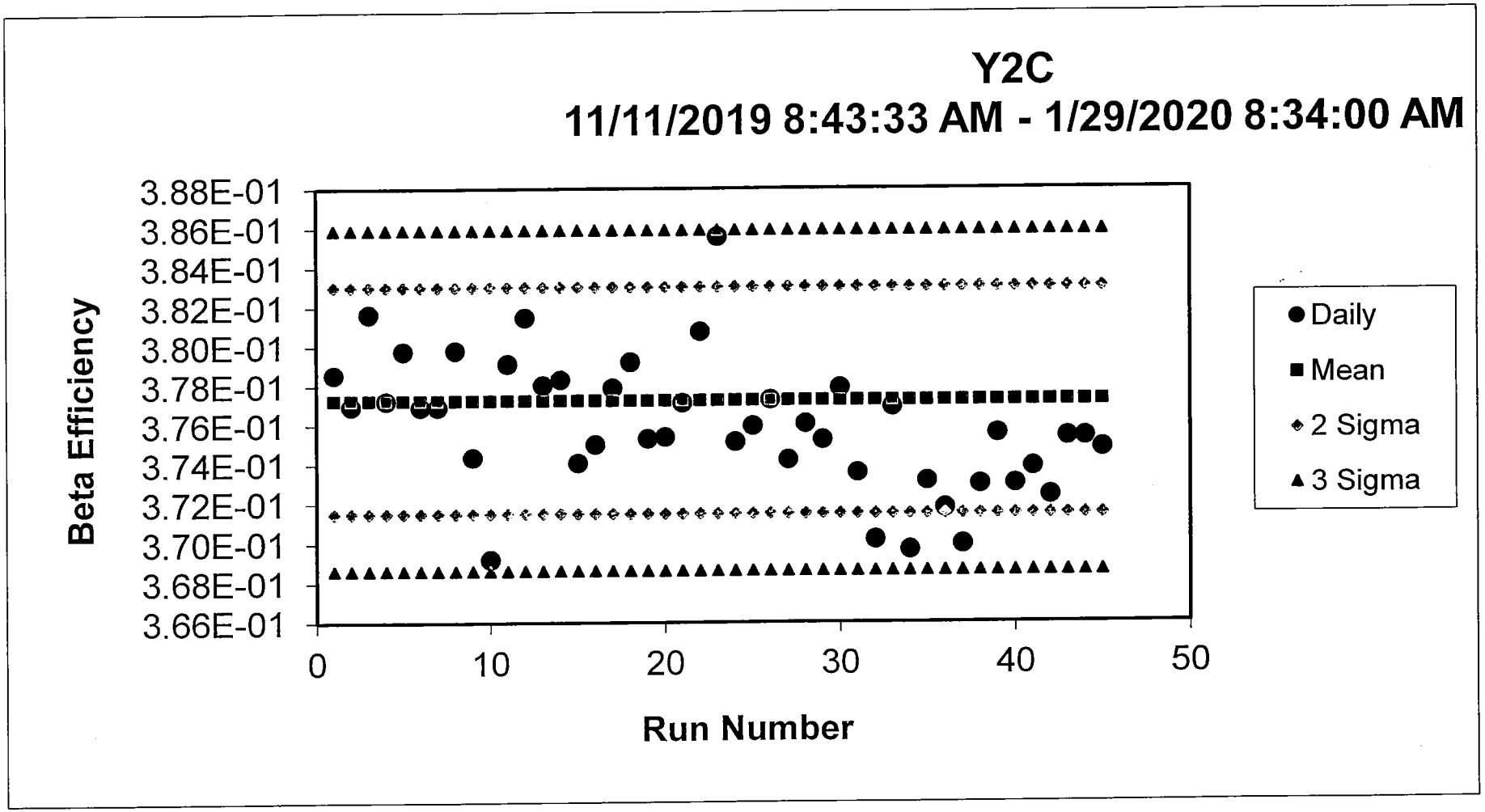

X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

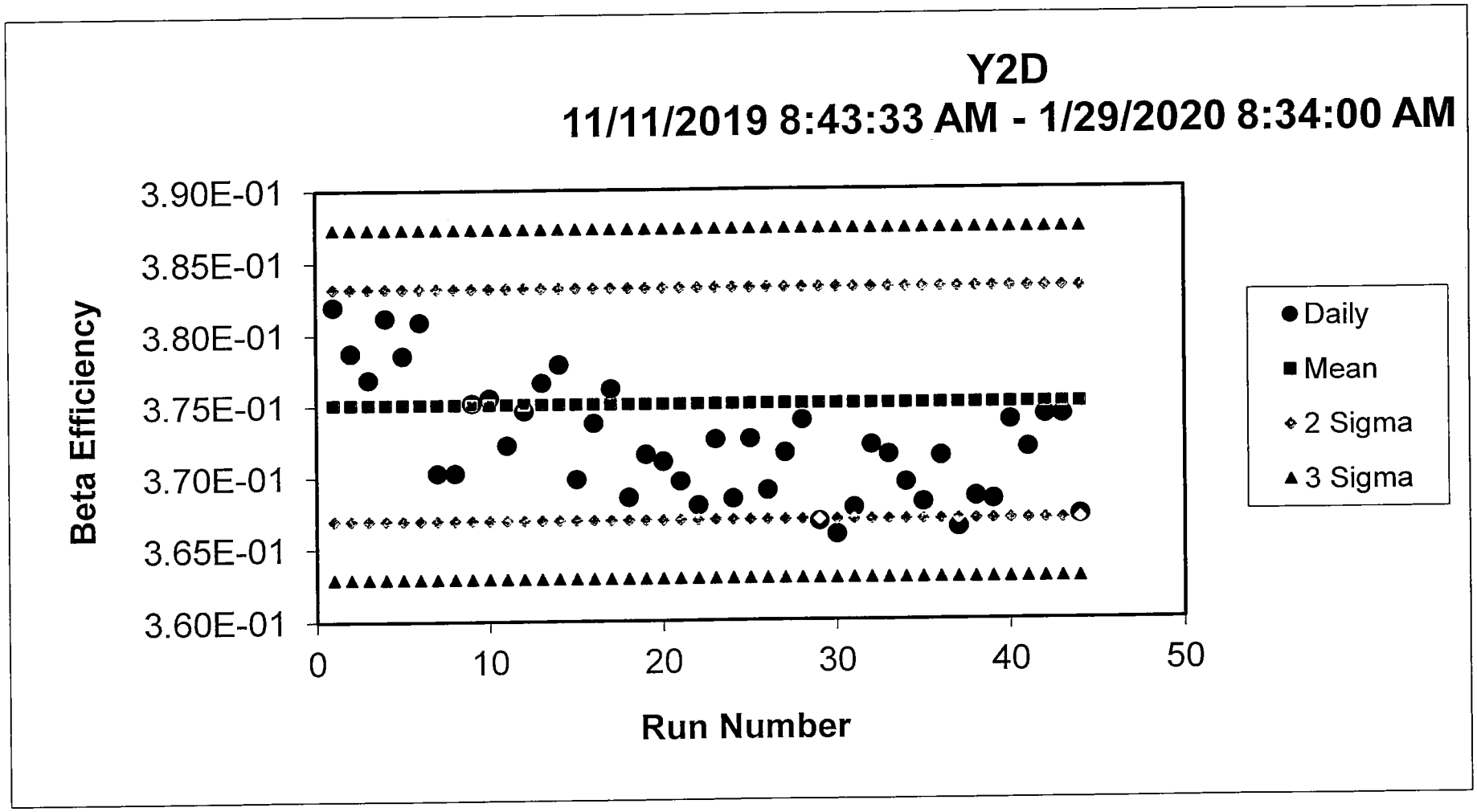

Y1A
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

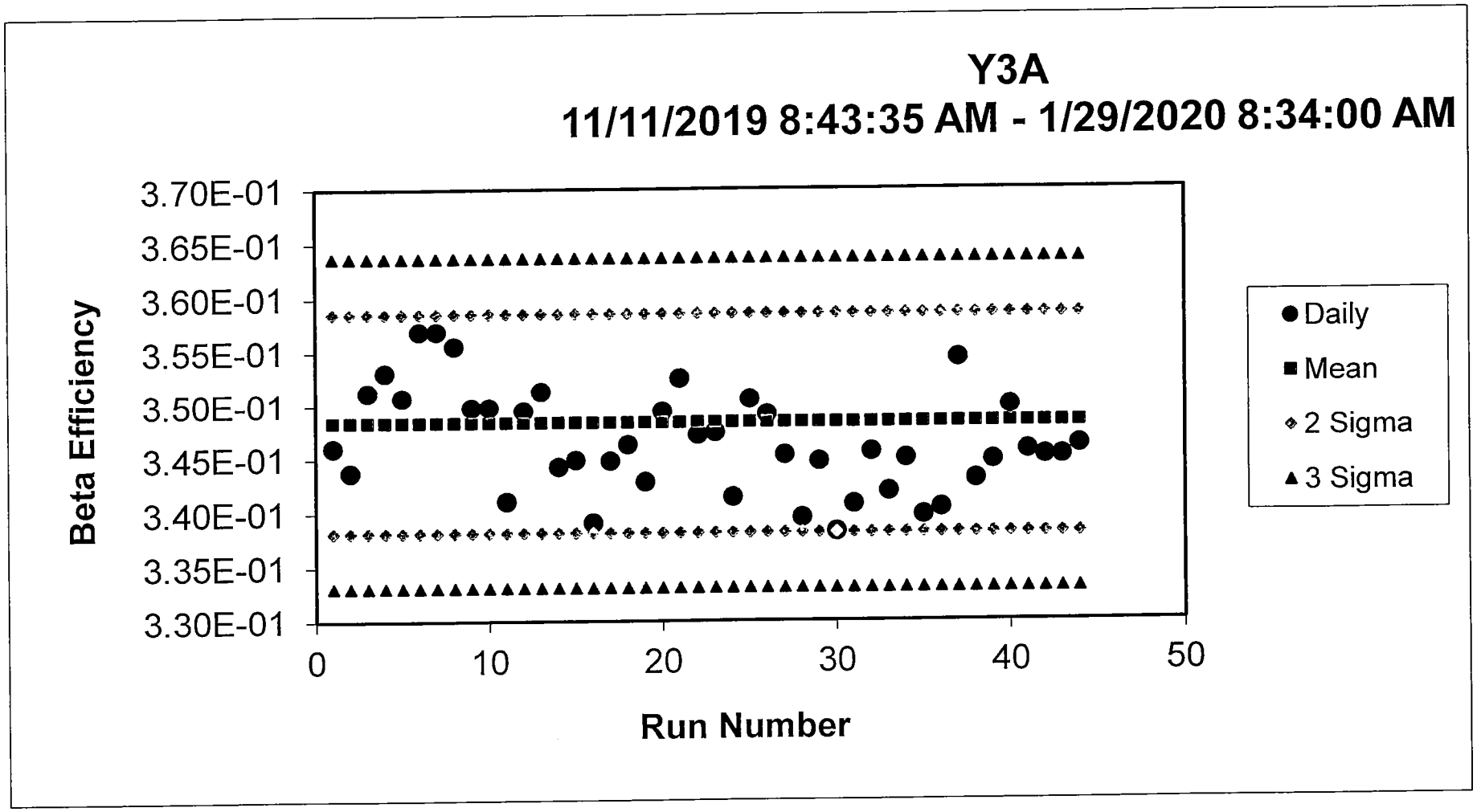

Y1B
11/8/2019 8:48:01 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

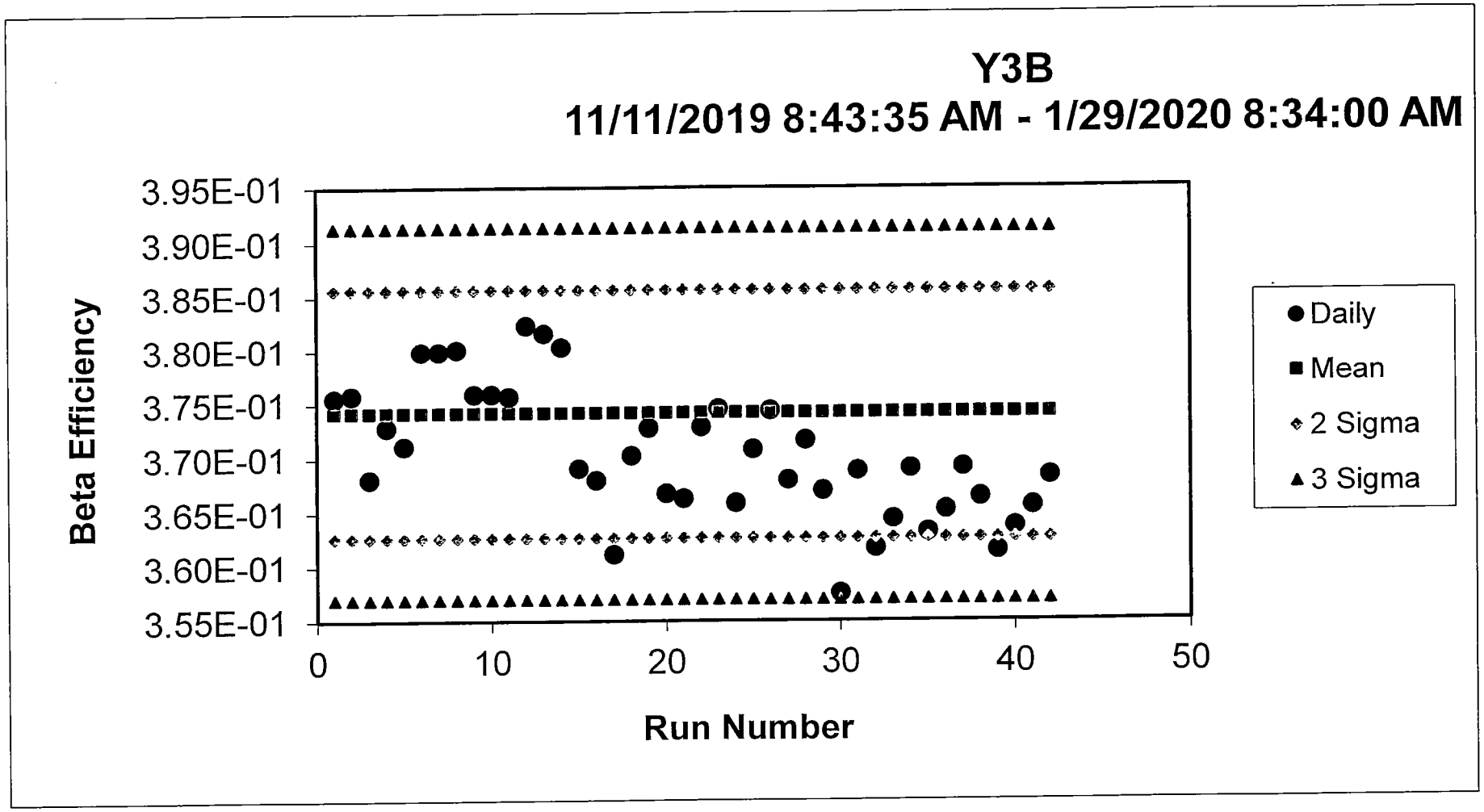

Y1D
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

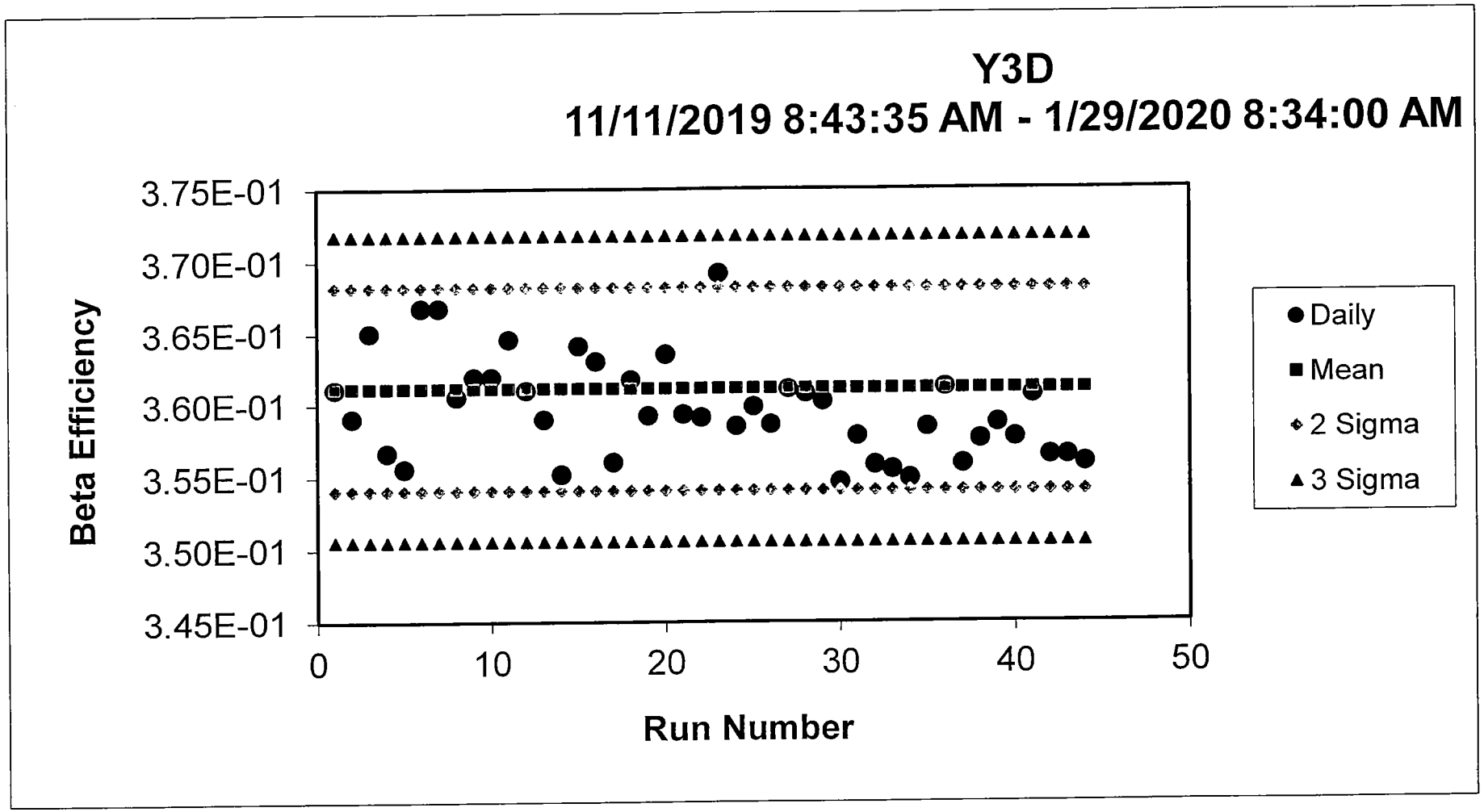

Y2A
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

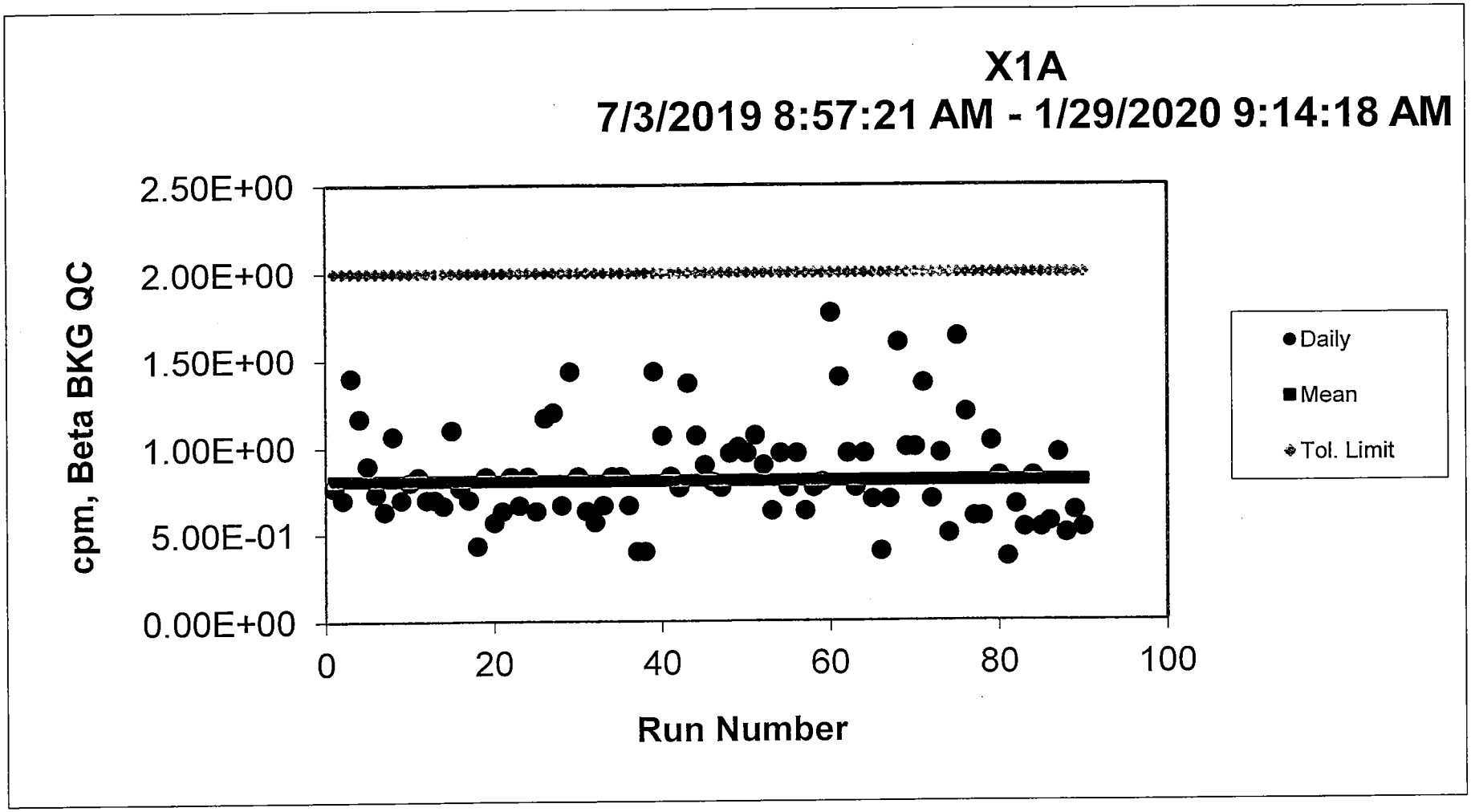

Y2C
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

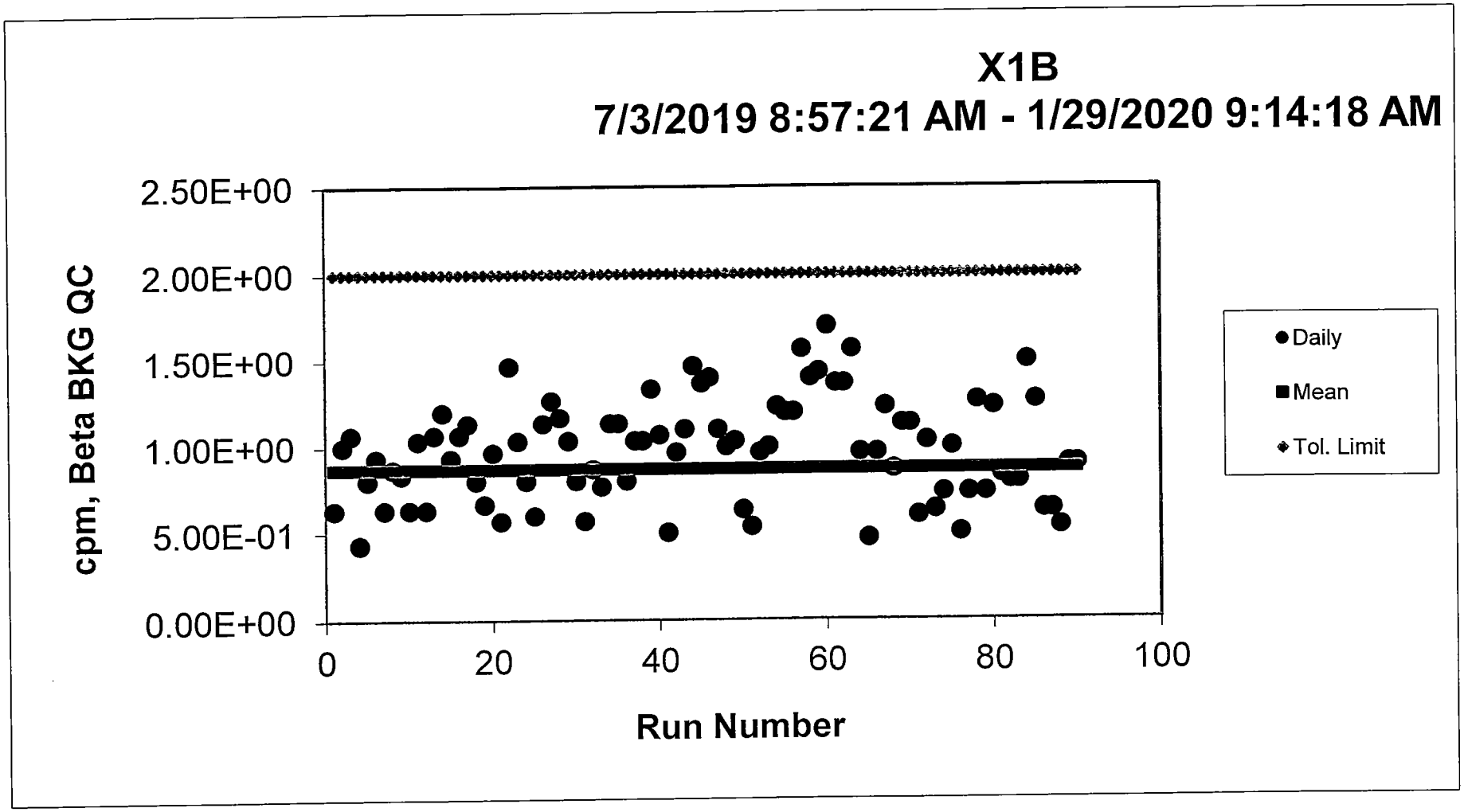

Y2D
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

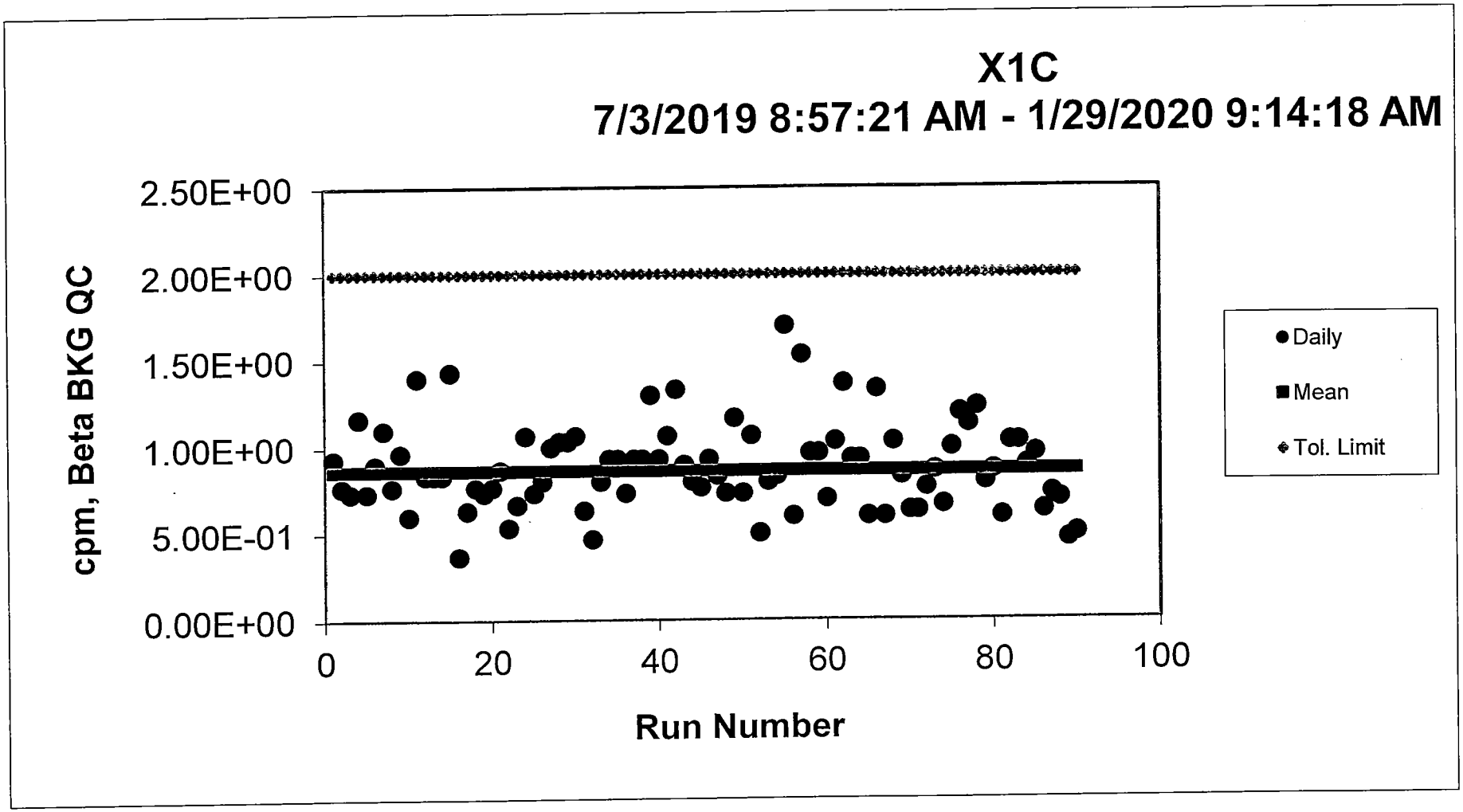

Y3A
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
3.40E-01
3.35E-01
3.30E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

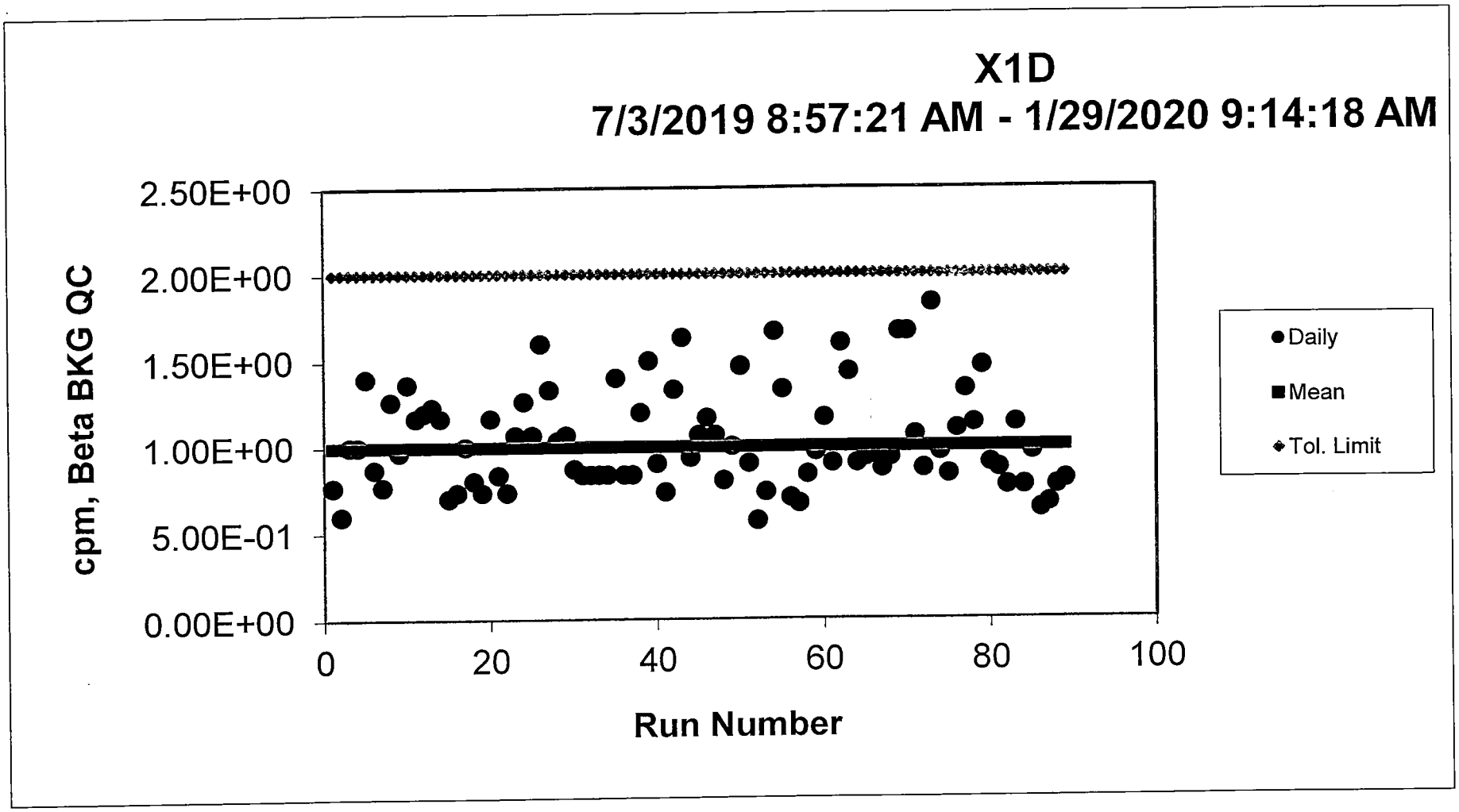

Y3B
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

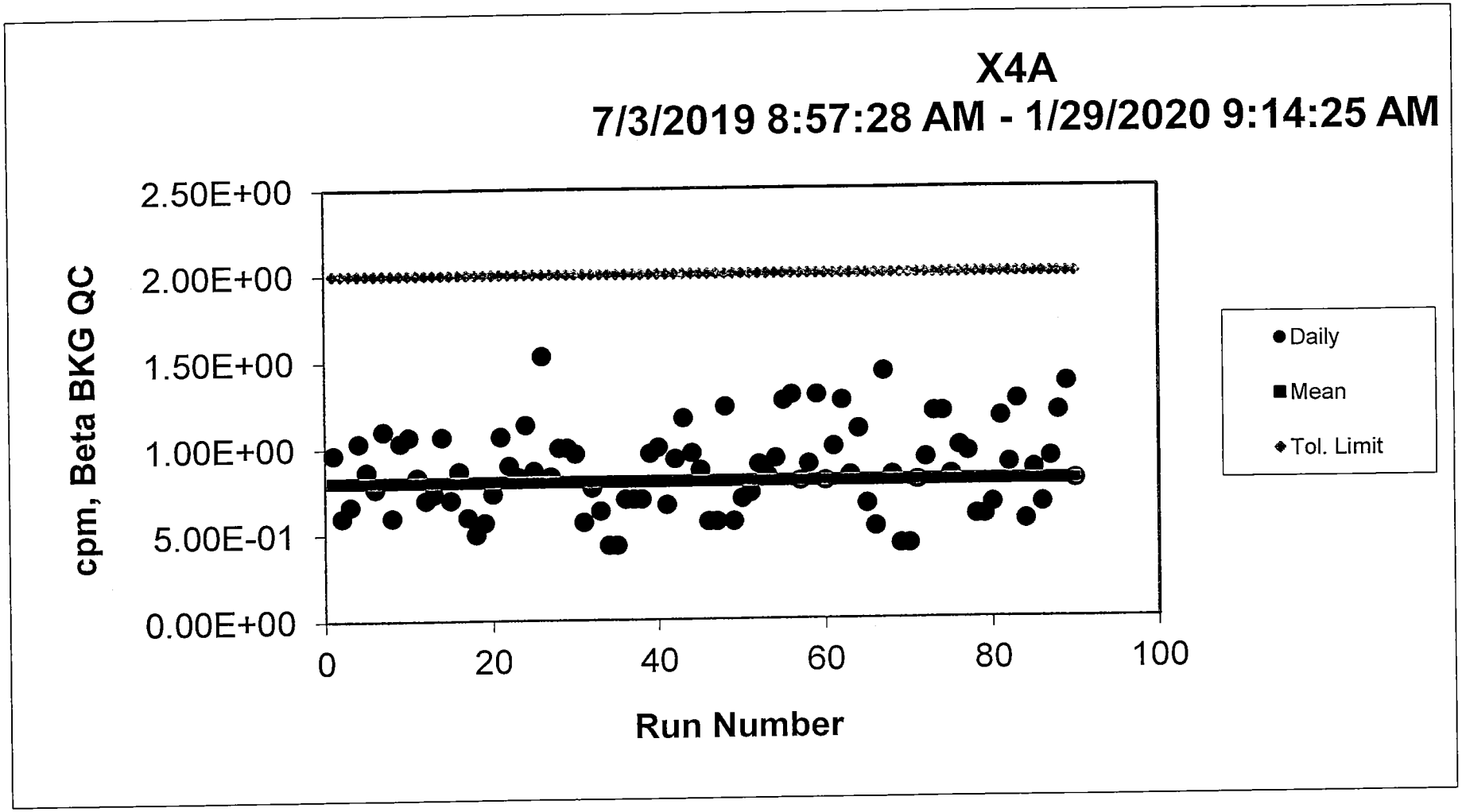

Y3D
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

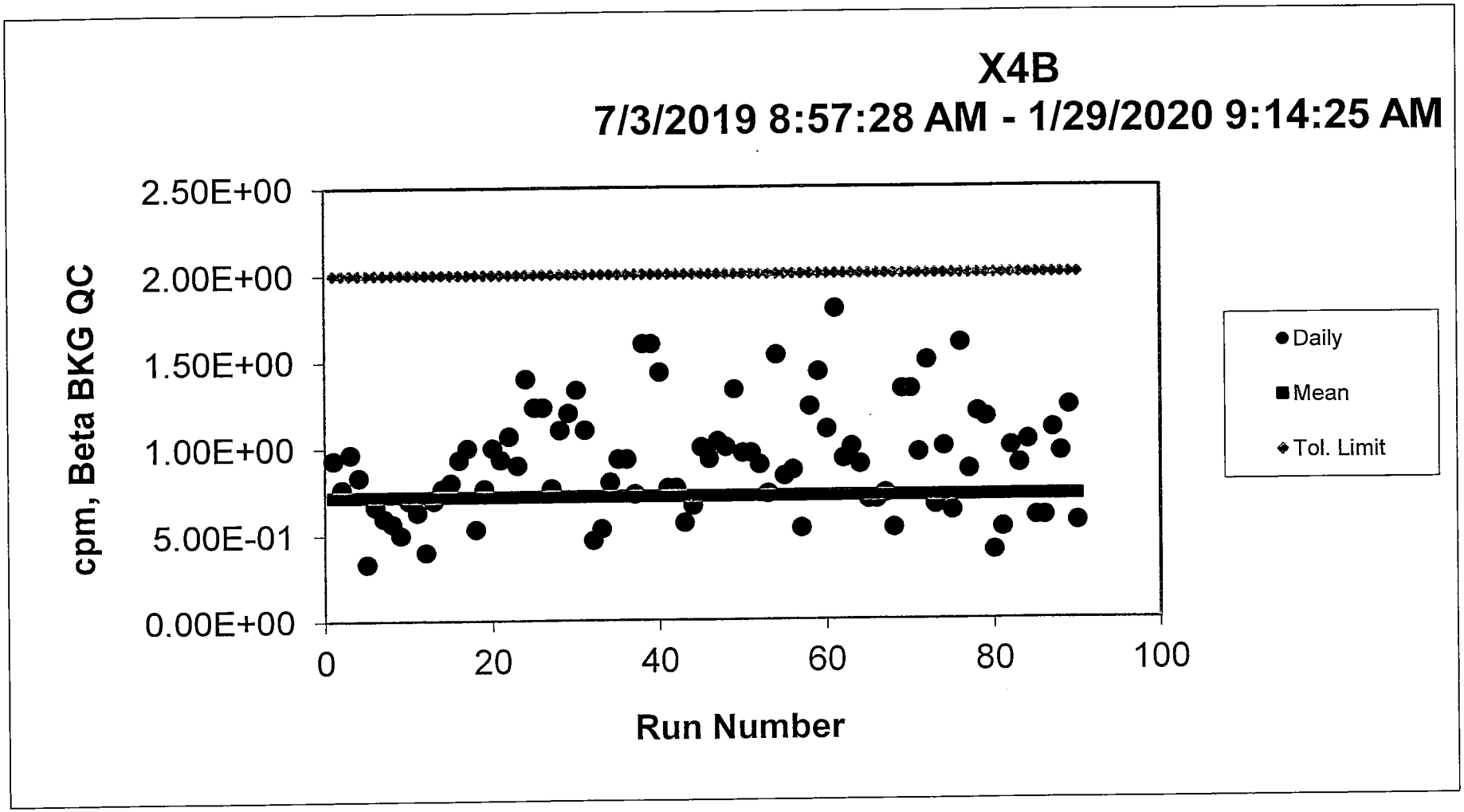

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

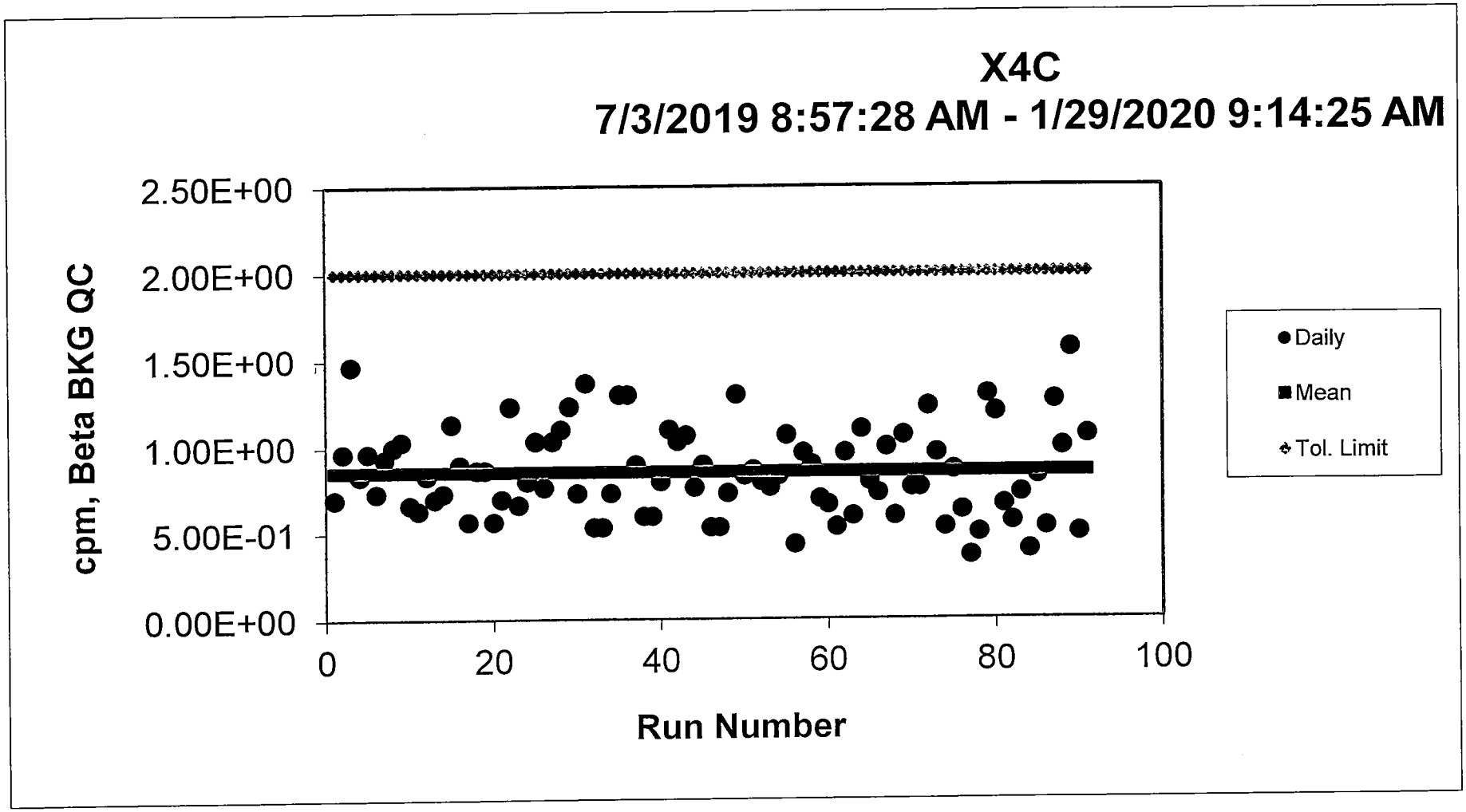

X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

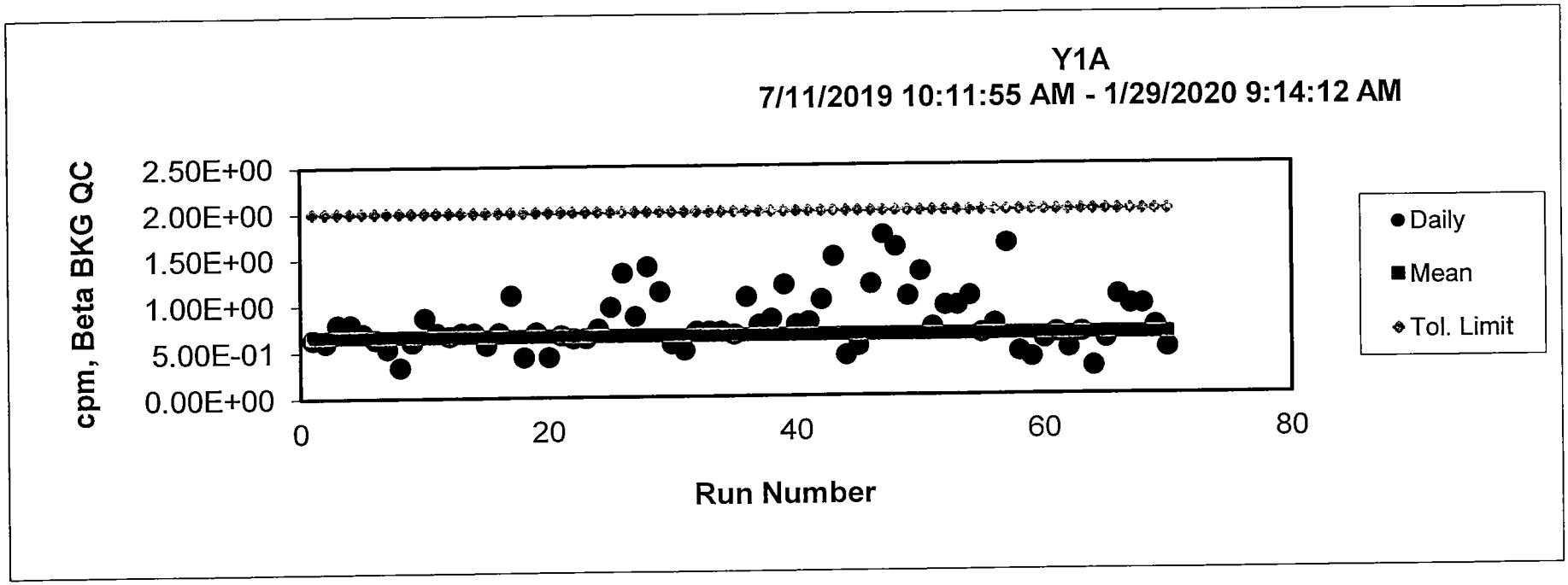

X1C
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

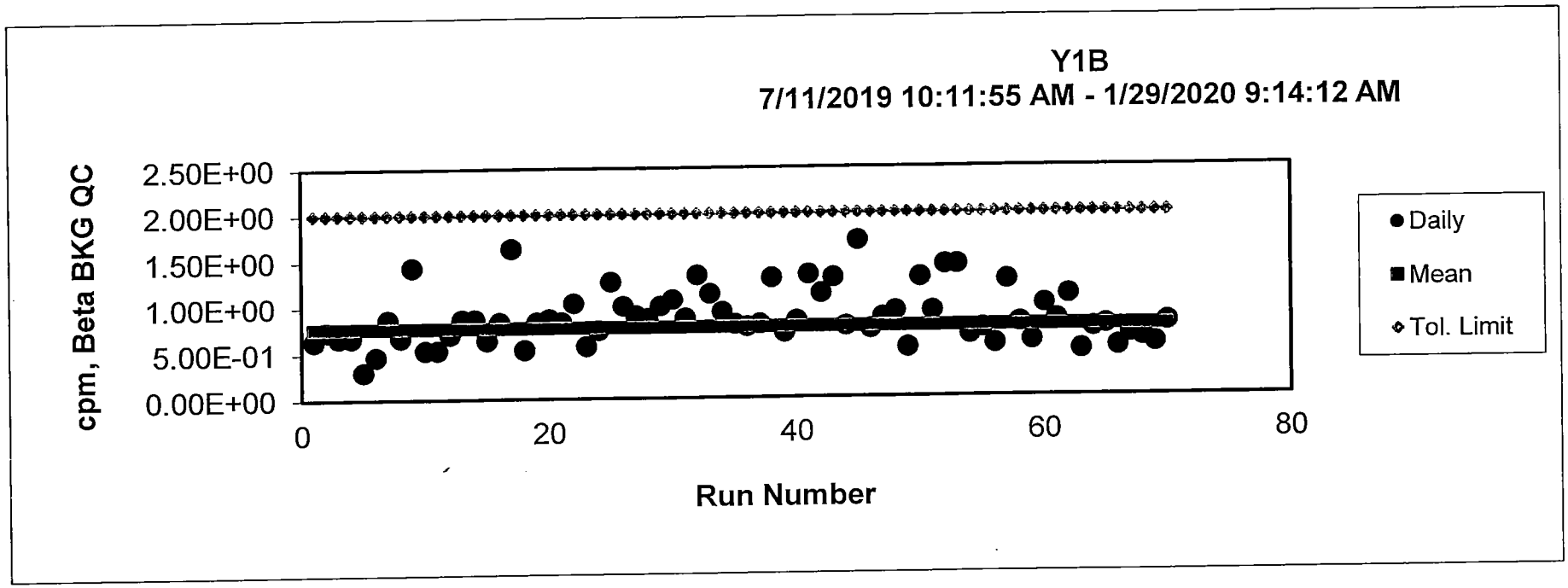

X1D
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

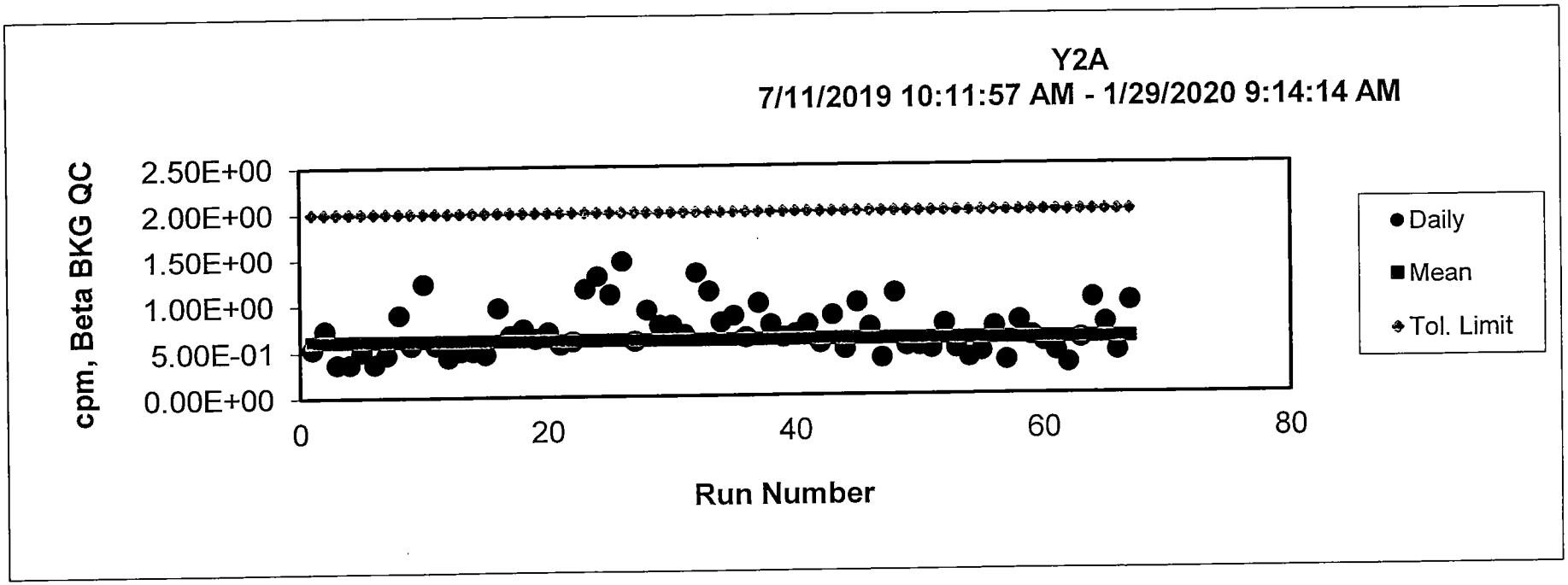

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

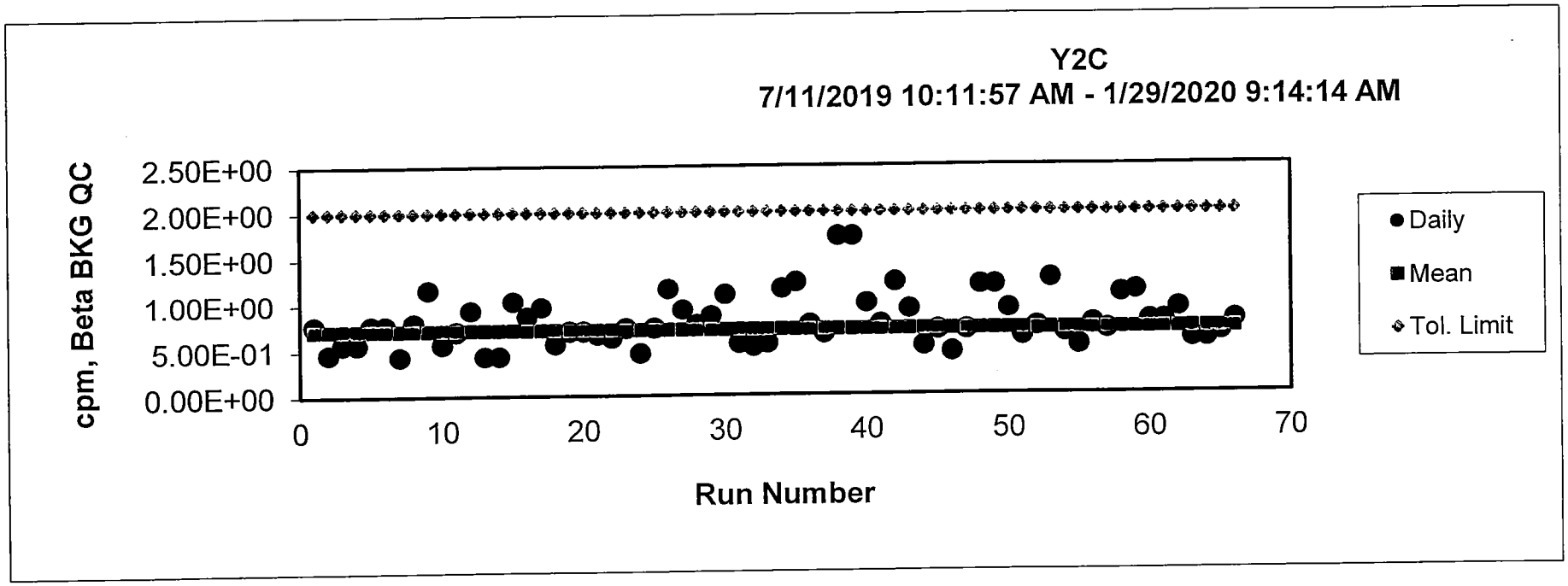

X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

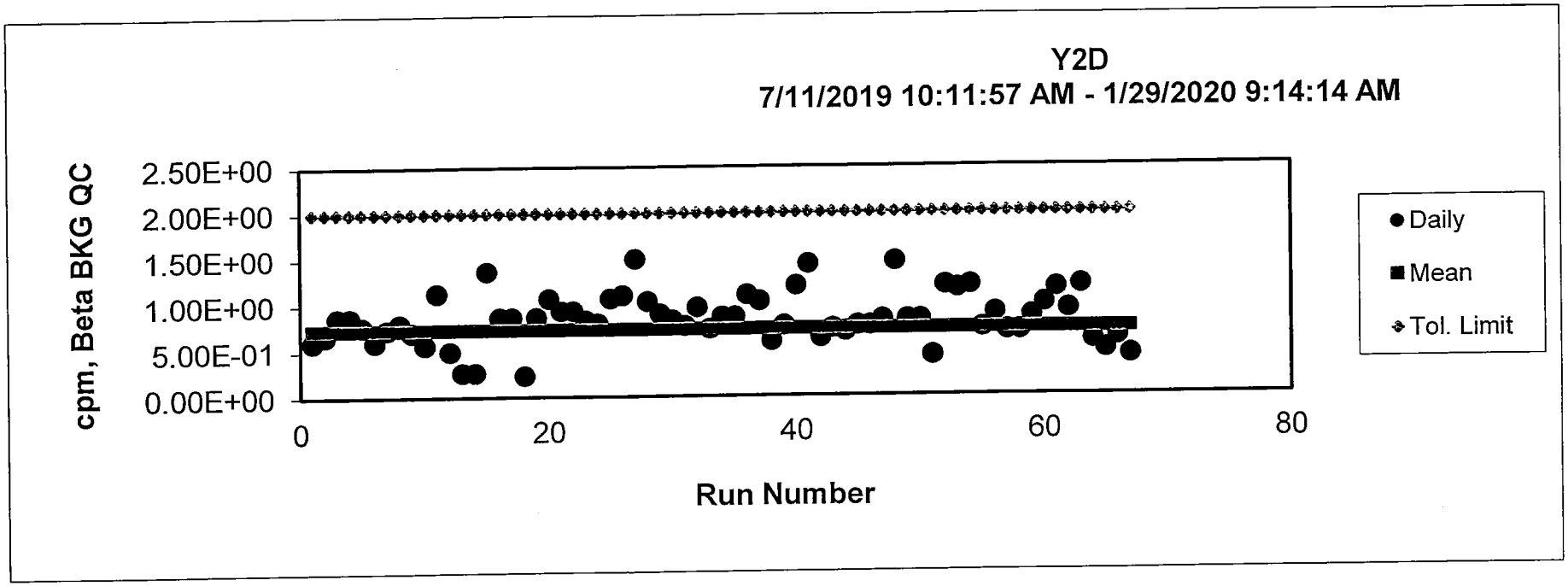

X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

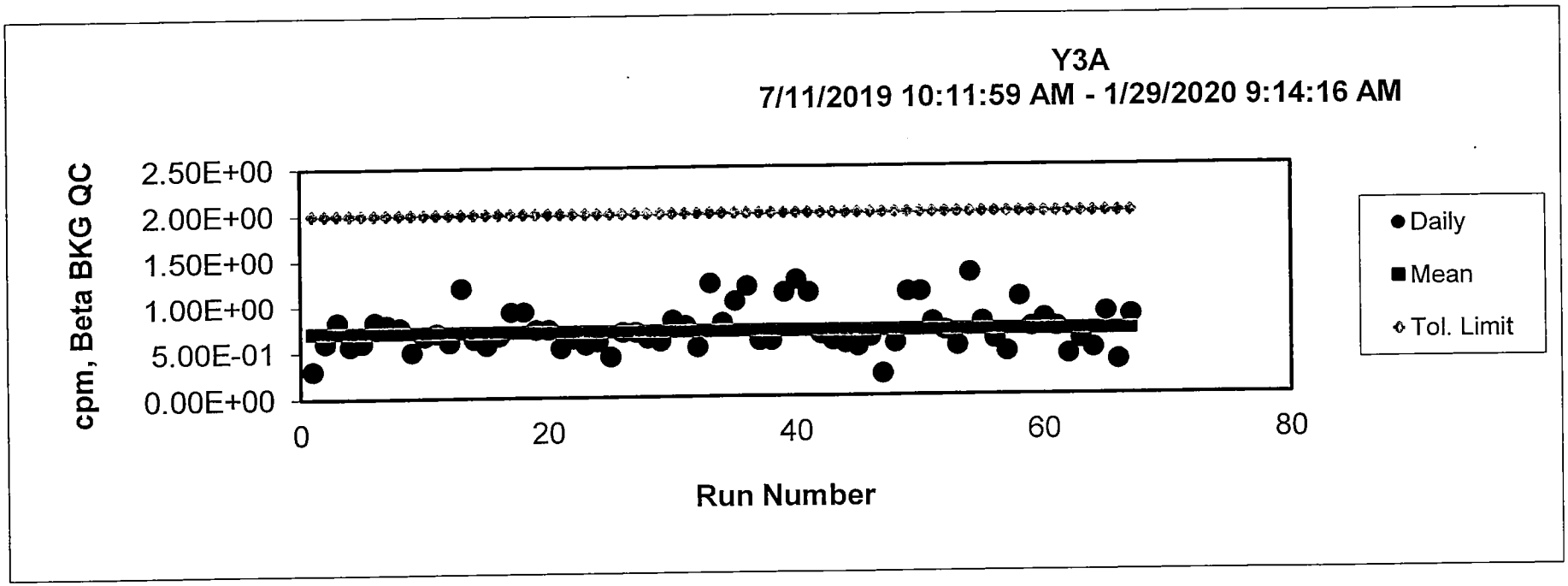

Y1A
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

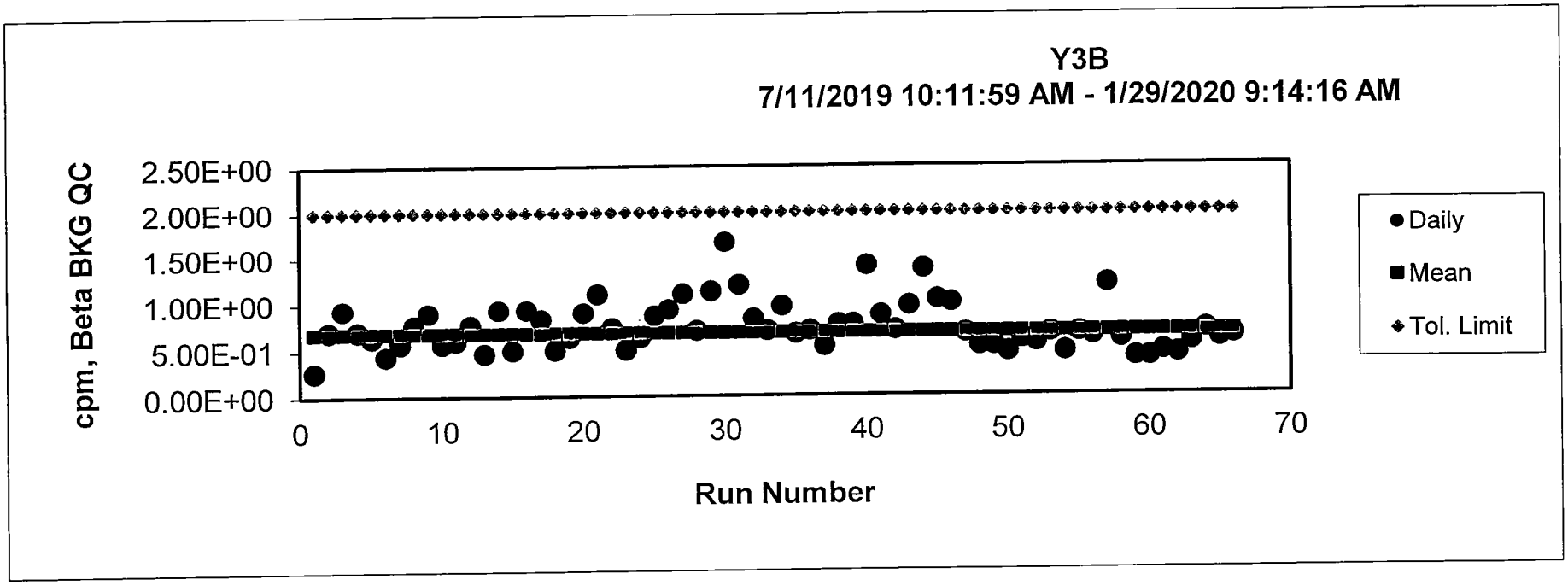

Y1B
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

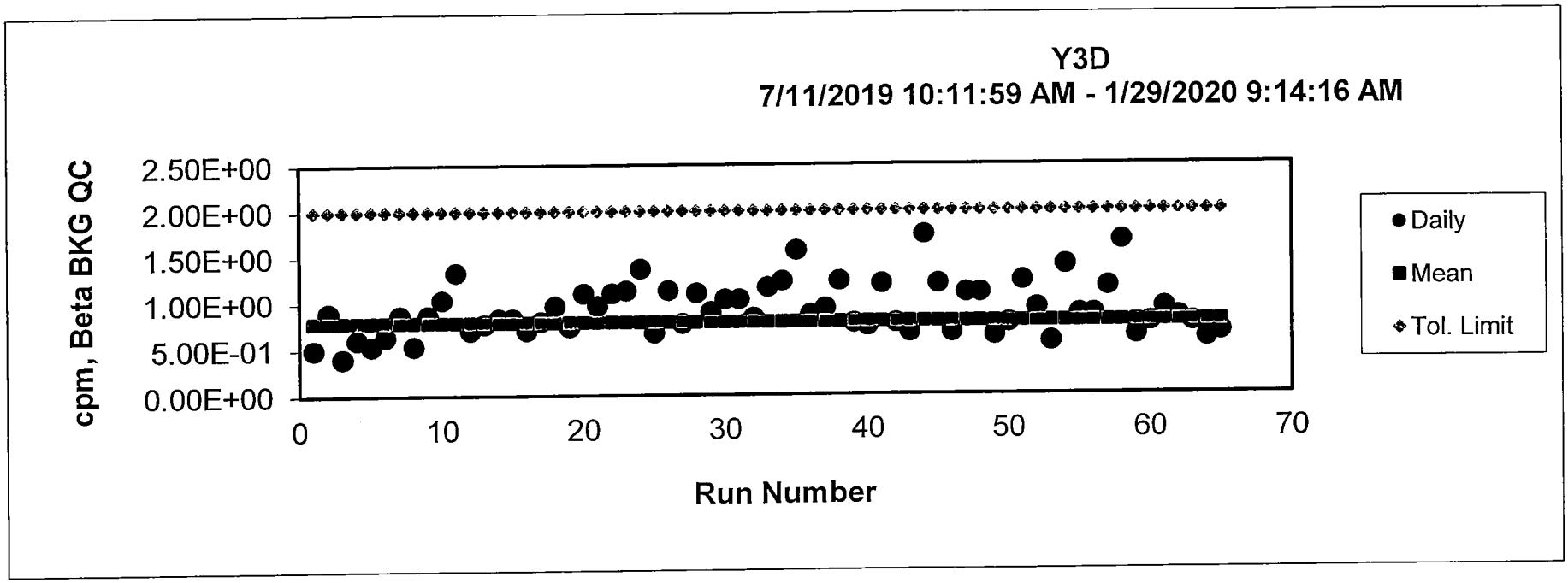

Y2A
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2C
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2D
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3A
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3B
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y3D
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	56.18%	500
recovery 2	52.04%	463.2
recovery 3	57.64%	513
Average	55.29%	
2 sigma	5.80	
RPD for highest and lowest	10.20	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:01:43.40
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:28.08

LIMS No., Customer Name, Client ID: L85484-9 BI207 GAMMA COUNT

Sample ID : 01L85484-9BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:40:02.14
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.82*	2011	506	0.98	146.08	8.68E+00	3.35E-01	2.8	3.21E+00
2	3	74.99*	3408	362	0.93	150.42	9.46E+00	5.68E-01	2.0	
3	3	84.83*	1760	311	1.17	170.06	1.27E+01	2.93E-01	2.9	1.25E+00
4	3	87.41	595	264	1.26	175.22	1.34E+01	9.91E-02	7.8	
5	1	569.66	6949	256	1.37	1138.64	7.08E+00	1.16E+00	1.3	1.71E+00
6	1	1063.67	2916	81	1.80	2125.84	3.53E+00	4.86E-01	2.0	1.80E+00
7	1	1633.39	312	29	2.02	3264.66	2.30E+00	5.20E-02	6.7	7.73E-01
8	1	1770.03	165	3	2.18	3537.86	2.18E+00	2.76E-02	8.4	2.23E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2916	74.50*	3.525E+00	5.001E+02	5.001E+02	3.97
	1770.24	165	6.87	2.181E+00	4.973E+02	4.973E+02	16.80

Flag: "*" = Keyline

$$\frac{500\ pCi}{890} = 0.5618$$

Summary of Nuclide Activity
Sample ID : 01L85484-9BI207

Acquisition date : 21-JAN-2020 09:21:28

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.001E+02	5.001E+02	0.198E+02	3.97	
			---	---			
	Total Activity :		5.001E+02	5.001E+02			
	Grand Total Activity :		5.001E+02	5.001E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01L85484-9BI207 Acquisition date : 21-JAN-2020 09:21:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.82	2011	506	0.98	146.08	140	17	3.35E-01	5.6	8.68E+00	
3	74.99	3408	362	0.93	150.42	140	17	5.68E-01	4.0	9.46E+00	
3	84.83	1760	311	1.17	170.06	164	16	2.93E-01	5.9	1.27E+01	
3	87.41	595	264	1.26	175.22	164	16	9.91E-02	15.6	1.34E+01	
1	569.66	6949	256	1.37	1138.64	1131	16	1.16E+00	2.6	7.08E+00	
1	1633.39	312	29	2.02	3264.66	3257	14	5.20E-02	13.4	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.000E+02	5.000E+02	0.193E+02	3.86	
			---	---			
	Total Activity :		5.000E+02	5.000E+02			
	Grand Total Activity :		5.000E+02	5.000E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.000E+02	1.930E+01	5.820E+00	0.000E+00	85.906

```
A,01L85484-9BI207 ,01/21/2020 11:01,01/21/2020 00:00,   1.000E+00,L85484-9 BI207
B,01L85484-9BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.000E+02,   1.930E+01,   5.820E+00,,   85.906
```

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:01.34
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:29.40

LIMS No., Customer Name, Client ID: L85484-10 BI207 GAMMA COUNT

Sample ID : 02L85484-10BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:40:02.74
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	3578	537	0.91	130.38	1.62E+01	5.96E-01	1.9	3.47E+00
2	2	74.98*	6005	386	0.89	134.76	1.70E+01	1.00E+00	1.4	
3	3	84.81*	2338	368	1.13	154.54	1.96E+01	3.90E-01	2.5	1.97E+00
4	3	87.43	832	260	1.09	159.82	2.01E+01	1.39E-01	5.0	
5	0	569.73	5676	224	1.36	1131.26	6.31E+00	9.46E-01	1.4	
6	0	1063.66	2356	76	1.58	2126.19	3.08E+00	3.93E-01	2.2	
7	0	1633.34	225	13	1.80	3273.82	1.95E+00	3.75E-02	7.6	
8	0	1770.23	137	19	1.72	3549.60	1.84E+00	2.28E-02	11.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2356	74.50*	3.081E+00	4.622E+02	4.622E+02	4.44
	1770.24	137	6.87	1.840E+00	4.879E+02	4.879E+02	21.98

Flag: "*" = Keyline

$$\frac{463.2\ pCi}{890} = 0.5204$$

Summary of Nuclide Activity
Sample ID : 02L85484-10BI207

Acquisition date : 21-JAN-2020 09:21:29

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.622E+02	4.622E+02	0.205E+02	4.44	
		Total Activity :	4.622E+02	4.622E+02			
		Grand Total Activity :	4.622E+02	4.622E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02L85484-10BI207 Acquisition date : 21-JAN-2020 09:21:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	3578	537	0.91	130.38	123	24	5.96E-01	3.8	1.62E+01	
2	74.98	6005	386	0.89	134.76	123	24	1.00E+00	2.8	1.70E+01	
3	84.81	2338	368	1.13	154.54	150	15	3.90E-01	5.0	1.96E+01	
3	87.43	832	260	1.09	159.82	150	15	1.39E-01	10.0	2.01E+01	
0	569.73	5676	224	1.36	1131.26	1124	15	9.46E-01	2.9	6.31E+00	
0	1633.34	225	13	1.80	3273.82	3265	17	3.75E-02	15.2	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.631E+02	4.632E+02	0.202E+02	4.35	
			---	---			
	Total Activity :		4.631E+02	4.632E+02			
	Grand Total Activity :		4.631E+02	4.632E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	4.632E+02	2.016E+01	5.918E+00	0.000E+00	78.261

A,02L85484-10BI207,01/21/2020 11:02,01/21/2020 00:00, 1.000E+00,L85484-10 BI20
B,02L85484-10BI207,BI207   ,01/15/2020 08:15,0225MM103019
C,BI-207 ,YES, 4.632E+02, 2.016E+01, 5.918E+00,, 78.261

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:00.91
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 21-JAN-2020 09:21:30.31

LIMS No., Customer Name, Client ID: L85484-11 BI207 GAMMA COUNT

Sample ID : 08L85484-11BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.60
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.84	2258	597	1.34	152.75	9.18E+00	3.76E-01	3.1	1.95E+00
2	3	75.01*	3718	456	1.21	157.09	9.97E+00	6.20E-01	2.2	
3	5	84.87*	1726	417	1.39	176.77	1.31E+01	2.88E-01	3.2	6.90E-01
4	5	87.50	562	358	1.46	182.02	1.38E+01	9.37E-02	8.6	
5	1	569.66	5652	202	1.51	1144.79	5.92E+00	9.42E-01	1.4	2.03E+00
6	1	1063.54	2494	75	1.75	2130.43	2.95E+00	4.16E-01	2.2	6.11E-01
7	1	1633.37	193	7	2.11	3266.99	1.91E+00	3.21E-02	7.9	1.01E+00
8	1	1770.55	154	6	2.35	3540.50	1.80E+00	2.56E-02	9.0	7.94E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2494	74.50*	2.952E+00	5.107E+02	5.108E+02	4.32
	1770.24	154	6.87	1.802E+00	5.590E+02	5.590E+02	18.00

Flag: "*" = Keyline

$$\frac{513\ pCi}{890} = 0.5764$$

Summary of Nuclide Activity
Sample ID : 08L85484-11BI207

Acquisition date : 21-JAN-2020 09:21:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.107E+02	5.108E+02	0.221E+02	4.32	
		Total Activity :	5.107E+02	5.108E+02			
		Grand Total Activity :	5.107E+02	5.108E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : 08L85484-11BI207 Acquisition date : 21-JAN-2020 09:21:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.84	2258	597	1.34	152.75	145	18	3.76E-01	6.3	9.18E+00	
3	75.01	3718	456	1.21	157.09	145	18	6.20E-01	4.3	9.97E+00	
5	84.87	1726	417	1.39	176.77	171	19	2.88E-01	6.4	1.31E+01	
5	87.50	562	358	1.46	182.02	171	19	9.37E-02	17.3	1.38E+01	
1	569.66	5652	202	1.51	1144.79	1139	14	9.42E-01	2.9	5.92E+00	
1	1633.37	193	7	2.11	3266.99	3260	14	3.21E-02	15.7	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.130E+02	5.130E+02	0.216E+02	4.20	
			---	---			
	Total Activity :		5.130E+02	5.130E+02			
	Grand Total Activity :		5.130E+02	5.130E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.130E+02	2.156E+01	7.136E+00	0.000E+00	71.880

A,08L85484-11BI207,01/21/2020 11:02,01/21/2020 00:00, 1.000E+00,L85484-11 BI20
B,08L85484-11BI207,BI207   ,01/21/2020 08:55,0825MM092019
C,BI-207 ,YES, 5.130E+02, 2.156E+01, 7.136E+00,, 71.880

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/29/20 18:25

Work Order: **L85484** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85484-1		PB-210	06-dec-19 15:40	6.3574 g dry		01-20-20 13:00	.0516	77.25	01-21-20 01:06	Y1D	1396	800 M	1015	800 M	.286	.965	KSC
11187072-120619-SS-SJSSA06 (0-2.5 CM) Activity: **2.21E-01** Error: 5.70E-02 MDC: 8.62E-02 pCi/gDry						**L85484-1**			**PB-210**								
L85484-2		PB-210	06-dec-19 15:42	6.7569 g dry		01-20-20 13:00	.0669	100.15	01-21-20 01:06	Y2A	995	800 M	724	800 M	.263	.965	KSC
11187072-120619-SS-SJSSA06 (7.5-10 CM) Activity: **1.61E-01** Error: 4.93E-02 MDC: 7.45E-02 pCi/gDry						**L85484-2**			**PB-210**								
L85484-3		PB-210	06-dec-19 15:44	6.0512 g dry		01-20-20 13:00	.06	89.82	01-21-20 01:06	Y2C	1015	800 M	850	800 M	.306	.965	KSC
11187072-120619-SS-SJSSA06 (15-17.5 CM) Activity: **9.39E-02** Error: 4.91E-02 MDC: 7.73E-02 pCi/gDry						**L85484-3**			**PB-210**								
L85484-4		PB-210	06-dec-19 15:46	6.1257 g dry		01-20-20 13:00	.0632	94.61	01-21-20 01:06	Y2D	1015	800 M	647	800 M	.295	.965	KSC
11187072-120619-SS-SJSSA06 (22.5-25 CM) Activity: **2.15E-01** Error: 4.76E-02 MDC: 6.92E-02 pCi/gDry						**L85484-4**			**PB-210**								
L85484-5		PB-210	06-dec-19 15:48	6.2244 g dry		01-20-20 13:00	.0588	88.02	01-21-20 01:06	Y3A	961	800 M	780	800 M	.271	.965	KSC
11187072-120619-SS-SJSSA06 (30-32.5 CM) Activity: **1.13E-01** Error: 5.22E-02 MDC: 8.14E-02 pCi/gDry						**L85484-5**			**PB-210**								
L85484-6		PB-210	06-dec-19 15:50	6.252 g dry		01-20-20 13:00	.0662	99.1	01-21-20 01:06	Y3B	1027	800 M	882	800 M	.287	.965	KSC
11187072-120619-SS-SJSSA06 (37.5-40 CM) Activity: **8.52E-02** Error: 5.13E-02 MDC: 8.13E-02 pCi/gDry						**L85484-6**			**PB-210**								
L85484-7		PB-210	06-dec-19 15:52	6.6032 g dry		01-20-20 13:00	.0666	99.7	01-21-20 01:06	Y3D	1128	800 M	822	800 M	.295	.965	KSC
11187072-120619-SS-SJSSA06 (45-47.5 CM) Activity: **1.66E-01** Error: 4.78E-02 MDC: 7.23E-02 pCi/gDry						**L85484-7**			**PB-210**								
L85484-8		PB-210	06-dec-19 15:54	6.4522 g dry		01-20-20 13:00	.0584	87.43	01-21-20 01:08	X1A	891	800 M	811	800 M	.311	.965	KSC
11187072-120619-SS-SJSSA06 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/29/20 18:25

Work Order: **L85484**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85484-8	PB-210	06-dec-19 15:54	6.4522 g dry	01-20-20 13:00	.0584	87.43	01-21-20 01:08	X1A	891	800 M	811	800 M	.311	.965	KSC
11187072-120619-SS-SJSSA06 (52.5-55 CM) Activity: 4.20E-02 Error: 4.34E-02 MDC: **6.97E-02** pCi/gDry				L85484-8			PB-210								
L85484-9	PB-210	06-dec-19 15:56	6.5644 g dry	01-20-20 13:00	.0569	85.18	01-21-20 01:08	X1B	1099	800 M	892	800 M	.296	.965	KSC
11187072-120619-SS-SJSSA06 (60-62.5 CM) Activity: **1.13E-01** Error: 4.85E-02 MDC: 7.56E-02 pCi/gDry				**L85484-9**			**PB-210**								
L85484-10	PB-210	06-dec-19 15:58	6.0873 g dry	01-20-20 13:00	.0676	101.2	01-21-20 01:08	X1C	1070	800 M	772	800 M	.275	.965	KSC
11187072-120619-SS-SJSSA06 (70-72.5 CM) Activity: **1.88E-01** Error: 5.40E-02 MDC: 8.15E-02 pCi/gDry				**L85484-10**			**PB-210**								
L85484-11	PB-210	06-dec-19 16:00	6.5434 g dry	01-20-20 13:00	.0673	100.75	01-21-20 01:08	X1D	1168	800 M	1003	800 M	.283	.965	KSC
11187072-120619-SS-SJSSA06 (80-82.5 CM) Activity: **9.41E-02** Error: 5.31E-02 MDC: 8.42E-02 pCi/gDry				**L85484-11**			**PB-210**								

Raw Data Sheet (rawdata)

TBE-RDS03

01/29/20 18:26

Work Order: **WG32883** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

K+1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32883-1		PB-210	20-jan-20 00:00	100 %		01-20-20 13:00	.0634	94 91	01-21-20 01:06	Y1A	887	800 M	790	800 M	.305	.969	KSC
Blank Samples																	
Activity: 3.34E-01 Error: 2.82E-01 MDC: **4.51E-01** pCi/Total							WG32883-1		PB-210								
WG32883-2		PB-210	01-jul-91 12:00	100 %		01-20-20 13:00	.0483	72 31	01-20-20 18:16	X4A	710	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **3.06E+02** Error: 2.34E+01 MDC: 7.77E+00 pCi/Total							**WG32883-2**		**PB-210**								
WG32883-3		PB-210	09-dec-19 15:10	6.5667 g dry		01-20-20 13:00	.0582	87 13	01-21-20 01:06	Y1B	2321	800 M	809	800 M	.292	.966	KSC
11187072-120919-BN-SJSSA07 (22.5-25 CM)																	
Activity: **8.32E-01** Error: 6.16E-02 MDC: 7.29E-02 pCi/gDry							**WG32883-3**		**PB-210**								
WG32883-4		PB-210	09-dec-19 15:10	6.1818 g dry		01-20-20 13:00	.0631	94 46	01-20-20 18:16	X4B	812	15 M	802	800 M	.294	.967	KSC
11187072-120619-SS-SJSSA06 (60-62.5 CM)																	
Activity: **2.46E+01** Error: 1.76E+00 MDC: 5.59E-01 pCi/gDry							**WG32883-4**		**PB-210**								
WG32883-5		PB-210	09-dec-19 15:10	6.2777 g dry		01-20-20 13:00	.055	82 34	01-20-20 18:16	X4C	709	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **2.25E+01** Error: 1.72E+00 MDC: 5.66E-01 pCi/gDry							**WG32883-5**		**PB-210**								

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-1	887	4.66	800.00	01/21/2020 01:06		1.0000	%	pCi	PB-210	0.305	3.34E-01	2.82E-01	4.51E-01	Total	0.553	0.9691	790.	800.0	
WG32883-3	2321	4.66	800.00	01/21/2020 01:06		6.5667	g	pCi	PB-210	0.292	8.32E-01	6.16E-02	7.29E-02	g Dry	0.553	0.9657	809.	800.0	
L85484-1	1396	4.66	800.00	01/21/2020 01:06		6.3574	g	pCi	PB-210	0.286	2.21E-01	5.70E-02	8.62E-02	g Dry	0.553	0.9655	1015.	800.0	
L85484-2	995	4.66	800.00	01/21/2020 01:06		6.7569	g	pCi	PB-210	0.263	1.61E-01	4.93E-02	7.45E-02	g Dry	0.553	0.9655	724.	800.0	
L85484-3	1015	4.66	800.00	01/21/2020 01:06		6.0512	g	pCi	PB-210	0.306	9.39E-02	4.91E-02	7.73E-02	g Dry	0.553	0.9655	850.	800.0	
L85484-4	1015	4.66	800.00	01/21/2020 01:06		6.1257	g	pCi	PB-210	0.295	2.15E-01	4.76E-02	6.92E-02	g Dry	0.553	0.9655	647.	800.0	
L85484-5	961	4.66	800.00	01/21/2020 01:06		6.2244	g	pCi	PB-210	0.271	1.13E-01	5.22E-02	8.14E-02	g Dry	0.553	0.9655	780.	800.0	
L85484-6	1027	4.66	800.00	01/21/2020 01:06		6.2520	g	pCi	PB-210	0.287	8.52E-02	5.13E-02	8.13E-02	g Dry	0.553	0.9655	882.	800.0	
L85484-7	1128	4.66	800.00	01/21/2020 01:06		6.6032	g	pCi	PB-210	0.295	1.66E-01	4.78E-02	7.23E-02	g Dry	0.553	0.9655	822.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: Y012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32883-1	34	887	1/21/2020 1:06	800 800MIN	1650
1 b	b wg32883-3	43	2321	1/21/2020 1:06	800 800MIN	1650
1 c		9	900	1/21/2020 1:06	800 800MIN	1650
1 d	b l85484-1	54	1396	1/21/2020 1:06	800 800MIN	1650
2 a	b l85484-2	22	995	1/21/2020 1:06	800 800MIN	1650
2 b		7	875	1/21/2020 1:06	800 800MIN	1650
2 c	b l85484-3	26	1015	1/21/2020 1:06	800 800MIN	1650
2 d	b l85484-4	24	1015	1/21/2020 1:06	800 800MIN	1650
3 a	b l85484-5	18	961	1/21/2020 1:06	800 800MIN	1650
3 b	b l85484-6	34	1027	1/21/2020 1:06	800 800MIN	1650
3 c		22	610	1/21/2020 1:06	800 800MIN	1650
3 d	b l85484-7	24	1128	1/21/2020 1:06	800 800MIN	1650
4 a		0	0	1/21/2020 1:06	800 800MIN	1650
4 b		0	0	1/21/2020 1:06	800 800MIN	1650
4 c		0	0	1/21/2020 1:06	800 800MIN	1650
4 d		0	0	1/21/2020 1:06	800 800MIN	1650

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85484-8	891	4.66	800.00	01/21/2020 01:08		6.4522	g	pCi	PB-210	0.311	4.20E-02	4.34E-02	6.97E-02	g Dry	0.553	0.9653	811.	800.0	
L85484-9	1099	4.66	800.00	01/21/2020 01:08		6.5644	g	pCi	PB-210	0.296	1.13E-01	4.85E-02	7.56E-02	g Dry	0.553	0.9653	892.	800.0	
L85484-10	1070	4.66	800.00	01/21/2020 01:08		6.0873	g	pCi	PB-210	0.275	1.88E-01	5.40E-02	8.15E-02	g Dry	0.553	0.9653	772.	800.0	
L85484-11	1168	4.66	800.00	01/21/2020 01:08		6.5434	g	pCi	PB-210	0.283	9.41E-02	5.31E-02	8.42E-02	g Dry	0.553	0.9653	1003.	800.0	
L85485-1	2509	4.66	800.00	01/21/2020 01:08		6.3088	g	pCi	PB-210	0.312	9.05E-01	6.20E-02	7.17E-02	g Dry	0.553	0.9655	822.	800.0	
L85485-2	2150	4.66	800.00	01/21/2020 01:08		6.1094	g	pCi	PB-210	0.267	8.53E-01	7.07E-02	8.70E-02	g Dry	0.553	0.9655	832.	800.0	
L85485-3	2320	4.66	800.00	01/21/2020 01:08		6.0215	g	pCi	PB-210	0.281	9.12E-01	7.04E-02	8.53E-02	g Dry	0.553	0.9655	860.	800.0	
L85485-4	2836	4.66	800.00	01/21/2020 01:08		6.3387	g	pCi	PB-210	0.263	1.05E+00	8.03E-02	1.01E-01	g Dry	0.553	0.9655	1179.	800.0	
L85483-8	1312	4.66	800.00	01/21/2020 01:08		6.0716	g	pCi	PB-210	0.293	3.17E-01	5.42E-02	7.70E-02	g Dry	0.553	0.9654	777.	800.0	
L85483-9	1392	4.66	800.00	01/21/2020 01:08		6.0288	g	pCi	PB-210	0.309	3.52E-01	5.26E-02	7.31E-02	g Dry	0.553	0.9654	769.	800.0	
L85483-10	1552	4.66	800.00	01/21/2020 01:08		6.0897	g	pCi	PB-210	0.294	4.42E-01	5.72E-02	7.78E-02	g Dry	0.553	0.9654	802.	800.0	
L85483-11	1335	4.66	800.00	01/21/2020 01:08		6.1373	g	pCi	PB-210	0.276	3.65E-01	5.68E-02	7.94E-02	g Dry	0.553	0.9654	749.	800.0	
L85483-12	1388	4.66	800.00	01/21/2020 01:08		6.3621	g	pCi	PB-210	0.286	3.33E-01	5.44E-02	7.70E-02	g Dry	0.553	0.9654	813.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: X012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85484-8	20	891	1/21/2020 1:08	800 800MIN	1580
1 b	b l85484-9	37	1099	1/21/2020 1:08	800 800MIN	1580
1 c	b l85484-10	29	1070	1/21/2020 1:08	800 800MIN	1580
1 d	b l85484-11	35	1168	1/21/2020 1:08	800 800MIN	1580
2 a		21	2152	1/21/2020 1:08	800 800MIN	1580
2 b		22	618	1/21/2020 1:08	800 800MIN	1580
2 c	b l85485-1	27	2509	1/21/2020 1:08	800 800MIN	1580
2 d		21	578	1/21/2020 1:08	800 800MIN	1580
3 a	b l85485-2	26	2150	1/21/2020 1:08	800 800MIN	1580
3 b	b l85485-3	40	2320	1/21/2020 1:08	800 800MIN	1580
3 c	b l85485-4	25	2836	1/21/2020 1:08	800 800MIN	1580
3 d	b l85483-8	43	1312	1/21/2020 1:08	800 800MIN	1580
4 a	b l85483-9	62	1392	1/21/2020 1:08	800 800MIN	1580
4 b	b l85483-10	44	1552	1/21/2020 1:08	800 800MIN	1580
4 c	b l85483-11	24	1335	1/21/2020 1:08	800 800MIN	1580
4 d	b l85483-12	50	1388	1/21/2020 1:08	800 800MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-2	710	4.66	15.00	01/20/2020 18:16		1.0000	%	pCi	PB-210	0.309	3.06E+02	2.34E+01	7.77E+00	Total	0.553	0.3996	769.	800.0	
WG32883-4	812	4.66	15.00	01/20/2020 18:16		6.1818	g	pCi	PB-210	0.294	2.46E+01	1.76E+00	5.59E-01	g Dry	0.553	0.9673	802.	800.0	
WG32883-5	709	4.66	15.00	01/20/2020 18:16		6.2777	g	pCi	PB-210	0.276	2.25E+01	1.72E+00	5.66E-01	g Dry	0.553	0.9673	749.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: X012020A.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a		1	8	1/20/2020 18:16	15 15MIN	1580
1 b		0	21	1/20/2020 18:16	15 15MIN	1580
1 c		0	10	1/20/2020 18:16	15 15MIN	1580
1 d		0	11	1/20/2020 18:16	15 15MIN	1580
2 a		0	45	1/20/2020 18:16	15 15MIN	1580
2 b		0	13	1/20/2020 18:16	15 15MIN	1580
2 c		0	15	1/20/2020 18:16	15 15MIN	1580
2 d		0	17	1/20/2020 18:16	15 15MIN	1580
3 a		0	9	1/20/2020 18:16	15 15MIN	1580
3 b		0	14	1/20/2020 18:16	15 15MIN	1580
3 c		0	27	1/20/2020 18:16	15 15MIN	1580
3 d		0	13	1/20/2020 18:16	15 15MIN	1580
4 a	b wg32883-2	7	710	1/20/2020 18:16	15 15MIN	1580
4 b	b wg32883-4	3	812	1/20/2020 18:16	15 15MIN	1580
4 c	b wg32883-5	5	709	1/20/2020 18:16	15 15MIN	1580
4 d		0	15	1/20/2020 18:16	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85484

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32883-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32883-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32883-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32883-1	WO	BLK	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0320	BALANCE 10	.0954	BALANCE 10	.0634	01/20/20	WG32883
WG32883-2	WO	LCS	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0331	BALANCE 10	.0814	BALANCE 10	.0483	01/20/20	WG32883
WG32883-3	S	DUP	PB-210	6.5667 g dry	01/20/20	KSC	BALANCE 10	.0335	BALANCE 10	.0917	BALANCE 10	.0582	01/20/20	WG32883
WG32883-4	S	MS	PB-210	6.1818 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0961	BALANCE 10	.0631	01/20/20	WG32883
WG32883-5	S	MSD	PB-210	6.2777 g dry	01/20/20	KSC	BALANCE 10	.0328	BALANCE 10	.0878	BALANCE 10	.0550	01/20/20	WG32883
L85484-1	S		PB-210	6.3574 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0846	BALANCE 10	.0516	01/20/20	WG32883
L85484-2	S		PB-210	6.7569 g dry	01/20/20	KSC	BALANCE 10	.0321	BALANCE 10	.0990	BALANCE 10	.0669	01/20/20	WG32883
L85484-3	S		PB-210	6.0512 g dry	01/20/20	KSC	BALANCE 10	.0326	BALANCE 10	.0926	BALANCE 10	.0600	01/20/20	WG32883
L85484-4	S		PB-210	6.1257 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0962	BALANCE 10	.0632	01/20/20	WG32883
L85484-5	S		PB-210	6.2244 g dry	01/20/20	KSC	BALANCE 10	.0325	BALANCE 10	.0913	BALANCE 10	.0588	01/20/20	WG32883
L85484-6	S		PB-210	6.252 g dry	01/20/20	KSC	BALANCE 10	.0325	BALANCE 10	.0987	BALANCE 10	.0662	01/20/20	WG32883
L85484-7	S		PB-210	6.6032 g dry	01/20/20	KSC	BALANCE 10	.0327	BALANCE 10	.0993	BALANCE 10	.0666	01/20/20	WG32883
L85484-8	S		PB-210	6.4522 g dry	01/20/20	KSC	BALANCE 10	.0325	BALANCE 10	.0909	BALANCE 10	.0584	01/20/20	WG32883
L85484-9	S		PB-210	6.5644 g dry	01/20/20	KSC	BALANCE 10	.0324	BALANCE 10	.0893	BALANCE 10	.0569	01/20/20	WG32883
L85484-10	S		PB-210	6.0873 g dry	01/20/20	KSC	BALANCE 10	.0322	BALANCE 10	.0998	BALANCE 10	.0676	01/20/20	WG32883
L85484-11	S		PB-210	6.5434 g dry	01/20/20	KSC	BALANCE 10	.0324	BALANCE 10	.0997	BALANCE 10	.0673	01/20/20	WG32883

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85484

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0001

Check Date: 20-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod		
PB-210	BALANCE 10	20-JAN-20

Daily Pipette Tolerance Check
for: L85484

Instrument: PIP ENV #7
Model: FISHERBRAND ELITE
Serial #: LU04803
Description: 100 - 1000 uL

Known	Result
.2	.2
1	.9996

Check Date: 20-JAN-20
Analyst: CRH
Balance: BALANCE 11
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #7	20-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ

Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

NAMAS
CALIBRATION
No. 0146

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI 18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85484

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85484-1	11187072-120619-SS-SJSSA06 (0-2.5 CM)	254.6	847.3	708.97	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	23.34
L85484-2	11187072-120619-SS-SJSSA06 (7.5-10 CM)	255.7	866.3	633.75	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	38.09
L85484-3	11187072-120619-SS-SJSSA06 (15-17.5 CM)	257.7	914.8	689.68	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	34.26
L85484-4	11187072-120619-SS-SJSSA06 (22.5-25 CM)	255	676.7	587.8	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	21.08
L85484-5	11187072-120619-SS-SJSSA06 (30-32.5 CM)	257.63	583.1	517.79	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	20.07
L85484-6	11187072-120619-SS-SJSSA06 (37.5-40 CM)	254.2	684.6	596.13	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	20.56
L85484-7	11187072-120619-SS-SJSSA06 (45-47.5 CM)	256.18	628	553.01	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	20.17
L85484-8	11187072-120619-SS-SJSSA06 (52.5-55 CM)	255.62	663	585.83	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	18.94
L85484-9	11187072-120619-SS-SJSSA06 (60-62.5 CM)	256.07	789	689.4	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	18.69
L85484-10	11187072-120619-SS-SJSSA06 (70-72.5 CM)	256.57	811.3	701.78	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	19.74
L85484-11	11187072-120619-SS-SJSSA06 (80-82.5 CM)	256.8	878.2	733.7	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	23.25

Daily Balance Tolerance Check Reports

for : L85484

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	23-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85479

GHD Services

January 30, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85479
GH001-3EJACINTO-19

01/31/2020 12:39

Sample Receipt

The following sample(s) were received on December 17, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120719-SS-SJSSA01 (0-2.5 CM)	L85479-1	
11187072-120719-SS-SJSSA01 (7.5-10 CM)	L85479-2	
11187072-120719-SS-SJSSA01 (15-17.5 CM)	L85479-3	
11187072-120719-SS-SJSSA01 (22.5-25 CM)	L85479-4	
11187072-120719-SS-SJSSA01 (30-32.5 CM)	L85479-5	
11187072-120719-SS-SJSSA01 (37.5-40 CM)	L85479-6	
11187072-120719-SS-SJSSA01 (45-47.5 CM)	L85479-7	
11187072-120719-SS-SJSSA01 (52.5-55 CM)	L85479-8	
11187072-120719-SS-SJSSA01 (60-62.5 CM)	L85479-9	
11187072-120719-SS-SJSSA01 (70-72.5 CM)	L85479-10	
11187072-120719-SS-SJSSA01 (80-82.5 CM)	L85479-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
BROWN ENGINEERING, INC.
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Knoxville, TN 37931-3133

Case Narrative - L85479
GH001-3EJACINTO-19

01/31/2020 12:39

Special Considerations

Sample Receipt L85479-1

The sample container for 11187072-120719-SS-SJSSA01 0-2.5 cm) was broken during transit to the laboratory. The solid content portion of the sample was salvaged and used for the analyses.

Lead 210 L85479-1 through 11

The method blank for workgroup WG32943 was slightly above the MDC of 4.06E-01 pCi/total with an activity/uncertainty of 4.28E-01 +/- 2.57E-01 pCi/total. Since all other quality control results for this workgroup met the required criteria, the data is reported for consideration of acceptability. If determined that the data associated with this workgroup is unacceptable, please let us know and we will reanalyze all associated samples.

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32680.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
BLACK POINT	L85528-3	WG32680-1

TELEDYNE
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Case Narrative - L85479
GH001-3EJACINTO-19

01/31/2020 12:39

PB-210

Quality Control

Quality control sample(s) analyzed as WG32943. Carrier(s): BI19-1.

Method Blank
All blank(s) within acceptance limits, unless otherwise noted.

Blank Samples	WG32943-1	Failed

Laboratory Control Sample
All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample
All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #	
11187072-120719-SS-SJSSA01 (15-17.5 CM)	L85479-3	WG32943-3	Failed

Matrix Spike
All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate
Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/30/20 18:34

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85479

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120719-SS-SJSSA01 (0-2.5 CM)** Collect Start: 12/07/2019 15:30 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 49.22
LIMS Number: L85479-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**7.13E-01**	5.64E-02	6.75E-02	pCi/gDry		6.5413	g dry	12/07/19 15:30	01/27/20	800	M	+			
CS-137	2007	-1.72E-02	8.43E-02	**1.32E-01**	pCi/g Dry		122.04	g dry	12/07/19 15:30	01/03/20	4812	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (7.5-10 CM)** Collect Start: 12/07/2019 15:32 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 56.06
LIMS Number: L85479-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.94E-01**	5.88E-02	7.26E-02	pCi/gDry		6.1145	g dry	12/07/19 15:32	01/27/20	800	M	+			
CS-137	2007	2.03E-02	1.13E-01	**1.90E-01**	pCi/g Dry		31.52	g dry	12/07/19 15:32	01/16/20	6048	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (15-17.5 CM)** Collect Start: 12/07/2019 15:34 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 50.72
LIMS Number: L85479-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.00E-01**	5.13E-02	6.63E-02	pCi/gDry		6.183	g dry	12/07/19 15:34	01/27/20	800	M	+			
CS-137	2007	1.02E-01	9.90E-02	**1.85E-01**	pCi/g Dry		58.09	g dry	12/07/19 15:34	01/16/20	4637	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/30/20 18:34

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85479

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120719-SS-SJSSA01 (22.5-25 CM)** Collect Start: 12/07/2019 15:36 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 51.07
LIMS Number: L85479-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.35E-01**	5.45E-02	6.75E-02	pCi/gDry		6.4319	g dry	12/07/19 15:36	01/27/20	800	M	+			
CS-137	2007	6.34E-02	8.26E-02	**1.50E-01**	pCi/g Dry		58.46	g dry	12/07/19 15:36	01/16/20	4664	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (30-32.5 CM)** Collect Start: 12/07/2019 15:38 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 50.78
LIMS Number: L85479-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.82E-01**	5.77E-02	7.04E-02	pCi/gDry		6.2427	g dry	12/07/19 15:38	01/27/20	800	M	+			
CS-137	2007	-1.04E-02	8.68E-02	**1.38E-01**	pCi/g Dry		87.81	g dry	12/07/19 15:38	01/16/20	4685	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (37.5-40 CM)** Collect Start: 12/07/2019 15:40 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 48.37
LIMS Number: L85479-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.13E-01**	5.90E-02	8.02E-02	pCi/gDry		6.1896	g dry	12/07/19 15:40	01/27/20	800	M	+			
CS-137	2007	-5.42E-02	7.95E-02	**1.21E-01**	pCi/g Dry		108.63	g dry	12/07/19 15:40	01/03/20	3762	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/30/20 18:34

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85479

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120719-SS-SJSSA01 (45-47.5 CM)** Collect Start: 12/07/2019 15:42 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 43.6
LIMS Number: L85479-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.38E-01**	5.83E-02	7.56E-02	pCi/gDry		6.0376	g dry	12/07/19 15:42	01/27/20	800	M	+			
CS-137	2007	-6.07E-02	7.00E-02	**9.62E-02**	pCi/g Dry		141.51	g dry	12/07/19 15:42	01/03/20	3804	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (52.5-55 CM)** Collect Start: 12/07/2019 15:44 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 46
LIMS Number: L85479-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**5.99E-01**	5.32E-02	6.48E-02	pCi/gDry		6.0456	g dry	12/07/19 15:44	01/27/20	800	M	+			
CS-137	2007	-1.95E-02	6.29E-02	**9.83E-02**	pCi/g Dry		126.13	g dry	12/07/19 15:44	01/03/20	3821	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (60-62.5 CM)** Collect Start: 12/07/2019 15:46 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 49.04
LIMS Number: L85479-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.65E-01**	5.03E-02	6.64E-02	pCi/gDry		6.3849	g dry	12/07/19 15:46	01/27/20	800	M	+			
CS-137	2007	-1.29E-02	7.26E-02	**1.14E-01**	pCi/g Dry		130.14	g dry	12/07/19 15:46	01/03/20	3842	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/30/20 18:34

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85479

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120719-SS-SJSSA01 (70-72.5 CM)** Collect Start: 12/07/2019 15:48 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 41.75
LIMS Number: L85479-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.56E-01**	4.78E-02	6.05E-02	pCi/gDry		6.3493	g dry	12/07/19 15:48	01/27/20	800	M	+			
CS-137	2007	-3.97E-03	7.96E-02	**1.44E-01**	pCi/g Dry		122.03	g dry	12/07/19 15:48	01/03/20	4826	Sec	U		No	

Sample ID: **11187072-120719-SS-SJSSA01 (80-82.5 CM)** Collect Start: 12/07/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 41.12
LIMS Number: L85479-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.99E-01**	5.04E-02	6.81E-02	pCi/gDry		6.7413	g dry	12/07/19 15:50	01/27/20	800	M	+			
CS-137	2007	-2.10E-02	8.38E-02	**1.33E-01**	pCi/g Dry		131.8	g dry	12/07/19 15:50	01/03/20	3895	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85479

GH001-3EJACINTO-19

01/31/2020 08:59

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32680-1 L85528-3	K-40	VA	12/19/2019 18:27	6.795E+00	6.496E+00	pCi/g Wet	4.5	<50	+	P
WG32680-1 L85528-3	BE-7	VA	12/19/2019 18:27	< 1.506E-01	2.955E-01	pCi/g Wet		<50	*	P

GAMMA

Associated Samples for WG32680

Sample #	Client ID
L85479-1	11187072-120719-SS-SJSSA01 (0-2.5 CM)
L85479-2	11187072-120719-SS-SJSSA01 (7.5-10 CM)
L85479-3	11187072-120719-SS-SJSSA01 (15-17.5 CM)
L85479-4	11187072-120719-SS-SJSSA01 (22.5-25 CM)
L85479-5	11187072-120719-SS-SJSSA01 (30-32.5 CM)
L85479-6	11187072-120719-SS-SJSSA01 (37.5-40 CM)
L85479-7	11187072-120719-SS-SJSSA01 (45-47.5 CM)
L85479-8	11187072-120719-SS-SJSSA01 (52.5-55 CM)
L85479-9	11187072-120719-SS-SJSSA01 (60-62.5 CM)
L85479-10	11187072-120719-SS-SJSSA01 (70-72.5 CM)
L85479-11	11187072-120719-SS-SJSSA01 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85479

GH001-3EJACINTO-19

01/31/2020 08:59

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32943-1	PB-210	WO	01/27/2020 23:27	4.280E-01	pCi/Total	+	F

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32943-2	PB-210	WO	01/27/2020 16:15	3.18E+02	2.450E+02	pCi/Total	77.2	75-125	+	P

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32943-3	PB-210	S	01/27/2020 23:27	5.000E-01	7.030E-01	pCi/gDry	33.8	<50	+	P
L85479-3										

Matrix Spike Summary

				Decay Corrected							
TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32943-4	PB-210	S	01/27/2020 16:15	2.13E+01	6.350E-01	1.970E+01	pCi/gDry	89.7	60-140	+	P
L85479-4											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85479

GH001-3EJACINTO-19

01/31/2020 08:59

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Decay Corrected Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32943-5	PB-210	S	01/27/2020 16:15	1.96E+01	1.600E+01	81.5	pCi/gDry		<30	+	
L85479-5											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

PB-210

Associated Samples for WG32943

Sample #	Client ID
L85479-1	11187072-120719-SS-SJSSA01 (0-2.5 CM)
L85479-2	11187072-120719-SS-SJSSA01 (7.5-10 CM)
L85479-3	11187072-120719-SS-SJSSA01 (15-17.5 CM)
L85479-4	11187072-120719-SS-SJSSA01 (22.5-25 CM)
L85479-5	11187072-120719-SS-SJSSA01 (30-32.5 CM)
L85479-6	11187072-120719-SS-SJSSA01 (37.5-40 CM)
L85479-7	11187072-120719-SS-SJSSA01 (45-47.5 CM)
L85479-8	11187072-120719-SS-SJSSA01 (52.5-55 CM)
L85479-9	11187072-120719-SS-SJSSA01 (60-62.5 CM)
L85479-10	11187072-120719-SS-SJSSA01 (70-72.5 CM)
L85479-11	11187072-120719-SS-SJSSA01 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:
P - 10CFR61, 10CFR50, Other high level: _____
Turn-around-time 10 days
Hazardous Material in Shipment Yes_____* No_____

Lims# L85479
(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start	Collection Date/Time Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120719-SS-SJSSA01 (0-2.5 cm)	Soil		12/7/2019 1530		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (7.5-10 cm)	Soil		12/7/2019 1532		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (15-17.5 cm)	Soil		12/7/2019 1534		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (22.5-25 cm)	Soil		12/7/2019 1536		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (30-32.5 cm)	Soil		12/7/2019 1538		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (37.5-40 cm)	Soil		12/7/2019 1540		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (45-47.5 cm)	Soil		12/7/2019 1542		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (52.5-55 cm)	Soil		12/7/2019 1544		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (60-62.5 cm)	Soil		12/7/2019 1546		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (70-72.5 cm)	Soil		12/7/2019 1548		16 oz	1	S	Isotopes
	11187072-120719-SS-SJSSA01 (80-82.5 cm)	Soil		12/7/2019 1550		16 oz	1	S	Isotopes
									** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: [signature]	Date: 12-11-19 1000	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Kenny Cooper	Date: 12-17-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 09:42

SR #: SR64443

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 **LIMS #L85479**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/17/19

Notification of Variance

Person Notified: Stefanie Castracane Contacted By: K. Thurman
Notify Date: 12/18/19
Notify Method: Email
Notify Comment: See note 3.

Client Response

Person Responding: Stefanie Castracane
Response Date: 12/18/19
Response Method: Email
Response Comment Proceed with analysis.

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.			N	
	11187072-120719-SS-SJSSA01 (0-2.5 cm)				Sample container broken. Solid content of sample was salvaged.
4	Chain of custody received with samples.			Y	
5	All samples listed on chain of custody received.			Y	
6	Sample container labels present and legible.			Y	
7	Information on container labels correspond with chain of custody.			Y	
8	Sample(s) properly preserved.			Y	
9	Sample(s) appropriate container(s).			Y	
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85479

****

L85479-1 S 11187072-120719-SS-SJSSA01 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85479-2 S 11187072-120719-SS-SJSSA01 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	SMC	01/16/20
Count Room	PB-210	MSA	01/27/20

****

L85479-3 S 11187072-120719-SS-SJSSA01 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	SMC	01/16/20
Count Room	PB-210	MSA	01/27/20

****

L85479-4 S 11187072-120719-SS-SJSSA01 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	SMC	01/16/20
Count Room	PB-210	MSA	01/27/20

****

L85479-5 S 11187072-120719-SS-SJSSA01 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

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L85479-5 S 11187072-120719-SS-SJSSA01 (30-32.5 CM)

Count Room	GELI	SMC	01/16/20
Count Room	PB-210	MSA	01/27/20

****

L85479-6 S 11187072-120719-SS-SJSSA01 (37.5-40 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85479-7 S 11187072-120719-SS-SJSSA01 (45-47.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/19/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85479-8 S 11187072-120719-SS-SJSSA01 (52.5-55 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85479-9 S 11187072-120719-SS-SJSSA01 (60-62.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	SMC	12/19/19
Aliquot	PB-210	CJF	01/27/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	MSA	01/27/20

****

L85479-10 S 11187072-120719-SS-SJSSA01 (70-72.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85479

L85479-10	**S**	**11187072-120719-SS-SJSSA01 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		SMC	12/19/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		MSA	01/27/20

****

L85479-11	**S**	**11187072-120719-SS-SJSSA01 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		SMC	12/19/19
Aliquot	PB-210		CJF	01/27/20
Aliquot	SAMPLE PREP			
Count Room	GELI		L854	01/03/20
Count Room	PB-210		MSA	01/27/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-DEC-2019 12:48:28.78
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 27-NOV-2019 14:51:41.97

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG112719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD

Smple Date: 27-NOV-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:35.80
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	75.65	1549	6621	1.38	157.39	154	11	7.17E-03	10.6	1.00E+01
2	1	85.27	916	3955	1.20	176.59	173	8	4.24E-03	12.3	2.42E+00
3	1	93.31	1010	3781	1.30	192.65	189	9	4.68E-03	11.4	7.06E-01
4	1	186.43	827	3821	1.21	378.48	374	9	3.83E-03	13.9	6.38E-01
5	1	239.37	1135	3230	1.27	484.11	480	9	5.25E-03	9.5	5.91E-01
6	1	295.89	485	2490	1.33	596.89	592	9	2.25E-03	19.0	1.96E+00
7	1	352.61	701	1832	1.42	710.04	706	8	3.24E-03	11.2	1.22E+00
8	1	511.61	5787	3029	3.04	1027.22	1018	24	2.68E-02	2.9	4.96E+00
9	1	583.83	599	1336	1.93	1171.27	1166	12	2.77E-03	12.9	1.03E+00
10	1	609.82	834	1386	1.92	1223.11	1218	11	3.86E-03	9.3	3.47E+00
11	1	847.41	500	956	2.32	1696.89	1691	14	2.32E-03	13.8	2.66E+00
12	1	911.73	359	741	1.64	1825.13	1820	12	1.66E-03	16.0	1.36E+00
13	1	1120.54	297	565	2.72	2241.37	2233	14	1.38E-03	18.0	1.48E+00
14	1	1461.48	1643	405	2.15	2920.76	2910	19	7.61E-03	3.8	2.31E+00
15	1	1765.30	340	205	2.56	3525.94	3517	16	1.57E-03	10.9	9.61E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

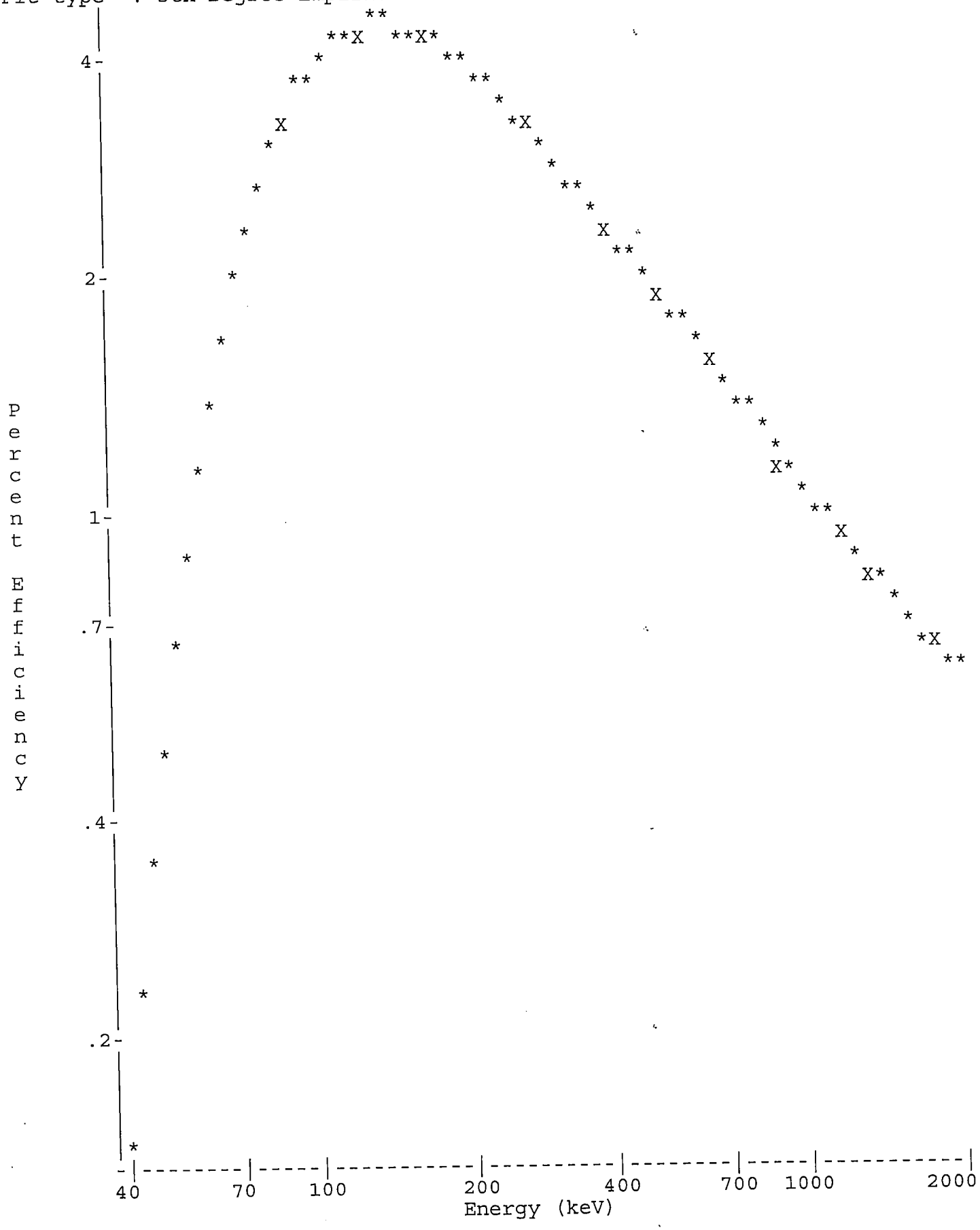
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Fit type : 5th Degree Empirical
Geometry : 01S100122019



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr. BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION         ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1000.0	-0.66%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.9	2.42%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.81%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.0	-4.51%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.2	-0.33%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.3	-4.41%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.8	0.68%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **02S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:35:57.63
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

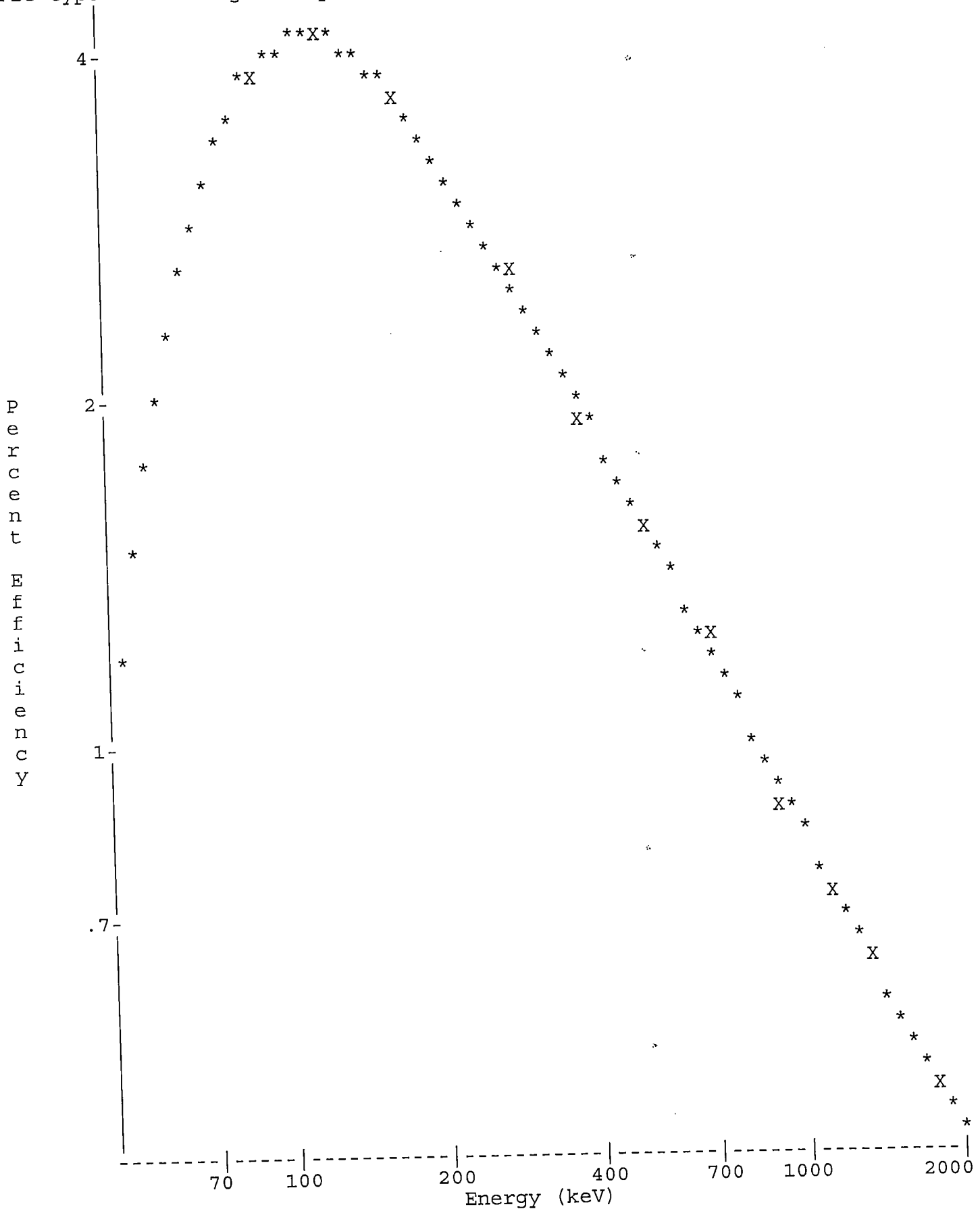
Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01	20751	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 26-DEC-2019 15:35
Detector :
Fit type : 5th Degree Empirical

Geometry : 02S100122619



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:37:02.02
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01*	20721	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	20721	3.72*	3.836E+00	7.325E+02	1.000E+03	2.03
03-CO57	122.06	16760	85.51*	4.118E+00	2.401E+01	4.088E+01	2.45
04-CE139	165.85	10237	80.35*	3.699E+00	1.738E+01	4.953E+01	3.79
05-HG203	279.20	2806	81.46*	2.573E+00	6.754E+00	1.490E+02	10.62
06-SN113	391.69	13677	64.90*	1.939E+00	5.481E+01	1.919E+02	2.60
07-SR85	513.99	8001	99.27*	1.533E+00	2.653E+01	2.452E+02	4.03
08-CS137	661.65	35448	85.12*	1.227E+00	1.712E+02	1.735E+02	1.28
09-Y88	898.02	17345	93.40*	9.325E-01	1.005E+02	3.883E+02	2.11
10-CO60	1173.22	27594	100.00	7.326E-01	1.900E+02	2.048E+02	1.39
	1332.49	24954	100.00*	6.543E-01	1.924E+02	2.073E+02	1.38
12-Y88	1836.01	10418	99.38*	5.015E-01	1.054E+02	4.075E+02	2.15

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.924E+02	2.073E+02	0.029E+02	1.38	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.431E+03	2.853E+03			

Grand Total Activity : 1.431E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02S100122619
Acquisition date : 26-DEC-2019 09:58:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	136.48	2099	5349	1.05	258.55	254	10	1.06E-01	13.8	4.02E+00	
0	255.05	599	3512	1.04	497.28	494	8	3.02E-02	35.2	2.76E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.912E+02	2.060E+02	0.020E+02	0.98	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.430E+03	2.852E+03			

Grand Total Activity : 1.430E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.000E+03	2.029E+01	1.387E+01	0.000E+00	72.130
03-CO57	4.088E+01	1.003E+00	6.475E-01	0.000E+00	63.137
04-CE139	4.953E+01	1.875E+00	1.276E+00	0.000E+00	38.822
05-HG203	1.490E+02	1.581E+01	1.316E+01	0.000E+00	11.321
06-SN113	1.919E+02	4.986E+00	3.384E+00	0.000E+00	56.693
07-SR85	2.452E+02	9.888E+00	7.118E+00	0.000E+00	34.444
08-CS137	1.735E+02	2.216E+00	1.070E+00	0.000E+00	162.084
09-Y88	3.883E+02	8.201E+00	4.714E+00	0.000E+00	82.370

10-CO60	2.060E+02	2.019E+00	1.108E+00	0.000E+00	185.886
12-Y88	4.075E+02	8.772E+00	2.373E+00	0.000E+00	171.753

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.643E-01		9.277E-01	1.517E+00	0.000E+00	0.240

```
A,02S100122619     ,12/26/2019 15:37,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,02S100122619     ,CALIBRATION          ,12/26/2019 15:35,02S100122619
C,02-CD109,YES,   1.000E+03,   2.029E+01,   1.387E+01,,   72.130
C,03-CO57 ,YES,   4.088E+01,   1.003E+00,   6.475E-01,,   63.137
C,04-CE139,YES,   4.953E+01,   1.875E+00,   1.276E+00,,   38.822
C,05-HG203,YES,   1.490E+02,   1.581E+01,   1.316E+01,,   11.321
C,06-SN113,YES,   1.919E+02,   4.986E+00,   3.384E+00,,   56.693
C,07-SR85 ,YES,   2.452E+02,   9.888E+00,   7.118E+00,,   34.444
C,08-CS137,YES,   1.735E+02,   2.216E+00,   1.070E+00,,  162.084
C,09-Y88  ,YES,   3.883E+02,   8.201E+00,   4.714E+00,,   82.370
C,10-CO60 ,YES,   2.060E+02,   2.019E+00,   1.108E+00,,  185.886
C,12-Y88  ,YES,   4.075E+02,   8.772E+00,   2.373E+00,,  171.753
C,01-AM241,NO ,   3.643E-01,   9.277E-01,   1.517E+00,,    0.240
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S25 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.14%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.9	-0.05%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	143.3	-8.17%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.3	0.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	247.8	0.72%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.9	1.34%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	390.3	-3.92%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.9	0.73%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.6	1.94%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.3	-0.59%

Eff. Name: **07S25121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:27:43.64
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 14:56:31.96

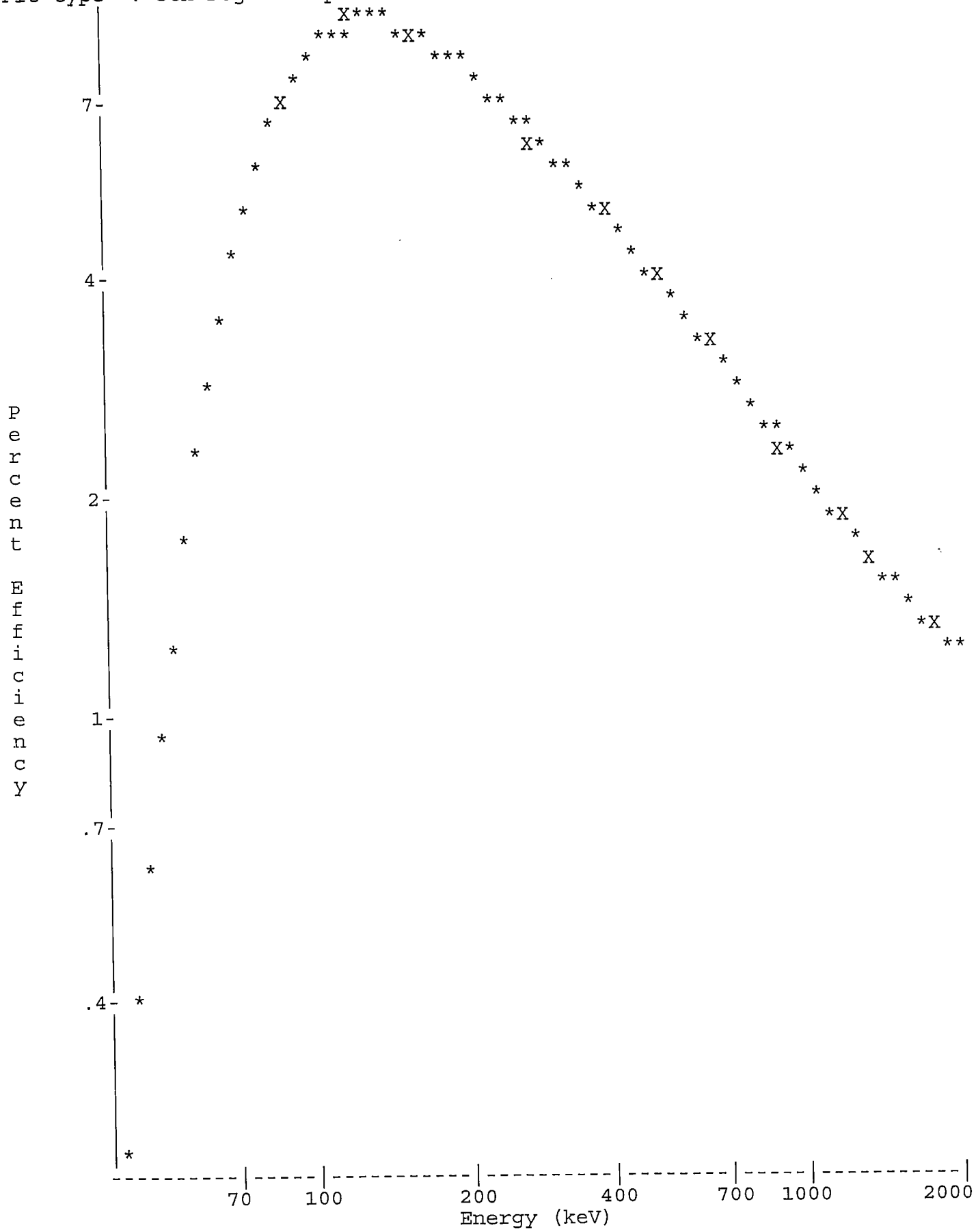
LIMS No., Customer Name, Client ID: S25 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S25121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S25121819
BKGFILE : 07BG112719MT
Real Time : 0 02:17:08.44
Live time : 0 02:16:43.01

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.64	773	4715	1.33	92.73	7.18E-01	9.43E-02	16.4	7.52E-01
2	1	88.05	15405	5939	1.26	175.52	6.78E+00	1.88E+00	1.3	5.87E-01
3	1	122.07	14618	4613	1.29	243.53	8.70E+00	1.78E+00	1.2	6.83E-01
4	1	136.44	2070	4130	1.47	272.27	8.80E+00	2.52E-01	6.2	4.05E+00
5	1	165.84	10361	5634	1.38	331.06	8.46E+00	1.26E+00	1.8	1.03E+00
6	1	255.21	771	3174	1.55	509.71	6.63E+00	9.39E-02	13.6	2.09E+00
7	1	279.18	3032	3952	1.44	557.65	6.21E+00	3.70E-01	4.5	4.54E-01
8	1	391.68	14556	3443	1.54	782.53	4.77E+00	1.77E+00	1.2	1.82E+00
9	1	514.00	9029	3517	1.66	1027.05	3.80E+00	1.10E+00	1.8	4.47E+00
10	1	661.65	36547	2915	1.77	1322.19	3.05E+00	4.46E+00	0.6	4.17E+00
11	1	898.04	18756	2766	2.00	1794.67	2.30E+00	2.29E+00	1.0	6.67E+00
12	1	1173.22	28118	1516	2.24	2344.63	1.80E+00	3.43E+00	0.7	5.22E+00
13	1	1332.48	25432	837	2.41	2662.88	1.60E+00	3.10E+00	0.7	1.02E+01
14	1	1836.00	11248	356	2.94	3668.97	1.26E+00	1.37E+00	1.0	1.21E+01

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:27
Detector :
Geometry : 07S25121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:29:22.88
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 14:56:31.96

LIMS No., Customer Name, Client ID: S25 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S25121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S25121819
BKGFILE : 07BG112719MT
Real Time : 0 02:17:08.44
Live time : 0 02:16:43.01

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.64	773	4715	1.33	92.73	7.18E-01	9.43E-02	16.4	7.52E-01
2	1	88.05	15405	5939	1.26	175.52	6.78E+00	1.88E+00	1.3	5.87E-01
3	1	122.07	14618	4613	1.29	243.53	8.70E+00	1.78E+00	1.2	6.83E-01
4	1	136.44	2070	4130	1.47	272.27	8.80E+00	2.52E-01	6.2	4.05E+00
5	1	165.84	10361	5634	1.38	331.06	8.46E+00	1.26E+00	1.8	1.03E+00
6	1	255.21	771	3174	1.55	509.71	6.63E+00	9.39E-02	13.6	2.09E+00
7	1	279.18	3032	3952	1.44	557.65	6.21E+00	3.70E-01	4.5	4.54E-01
8	1	391.68	14556	3443	1.54	782.53	4.77E+00	1.77E+00	1.2	1.82E+00
9	1	514.00	9029	3517	1.66	1027.05	3.80E+00	1.10E+00	1.8	4.47E+00
10	1	661.65	36547	2915	1.77	1322.19	3.05E+00	4.46E+00	0.6	4.17E+00
11	1	898.04	18756	2766	2.00	1794.67	2.30E+00	2.29E+00	1.0	6.67E+00
12	1	1173.22	28118	1516	2.24	2344.63	1.80E+00	3.43E+00	0.7	5.22E+00
13	1	1332.48	25432	837	2.41	2662.88	1.60E+00	3.10E+00	0.7	1.02E+01
14	1	1836.00	11248	356	2.94	3668.97	1.26E+00	1.37E+00	1.0	1.21E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15405	3.72*	6.778E+00	7.448E+02	1.005E+03	2.55
03-CO57	122.06	14618	85.51*	8.701E+00	2.395E+01	3.997E+01	2.41
04-CE139	165.85	10361	80.35*	8.456E+00	1.859E+01	5.094E+01	3.65
05-HG203	279.20	3032	81.46*	6.215E+00	7.301E+00	1.433E+02	9.06
06-SN113	391.69	14556	64.90*	4.771E+00	5.731E+01	1.913E+02	2.31
07-SR85	513.99	9029	99.27*	3.802E+00	2.916E+01	2.478E+02	3.62
08-CS137	661.65	36547	85.12*	3.048E+00	1.717E+02	1.739E+02	1.24
09-Y88	898.02	18756	93.40*	2.304E+00	1.063E+02	3.903E+02	1.95
10-CO60	1173.22	28118	100.00	1.798E+00	1.907E+02	2.049E+02	1.37
	1332.49	25432	100.00*	1.605E+00	1.932E+02	2.076E+02	1.39
12-Y88	1836.01	11248	99.38*	1.263E+00	1.093E+02	4.013E+02	2.07

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S25121819

Acquisition date : 18-DEC-2019 14:56:31

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.448E+02	1.005E+03	0.026E+03	2.55	
03-CO57	270.90D	1.67	2.395E+01	3.997E+01	0.096E+01	2.41	
04-CE139	137.66D	2.74	1.859E+01	5.094E+01	0.186E+01	3.65	
05-HG203	46.61D	19.6	7.301E+00	1.433E+02	0.130E+02	9.06	
06-SN113	115.10D	3.34	5.731E+01	1.913E+02	0.044E+02	2.31	
07-SR85	64.84D	8.50	2.916E+01	2.478E+02	0.090E+02	3.62	
08-CS137	30.17Y	1.01	1.717E+02	1.739E+02	0.022E+02	1.24	
09-Y88	106.65D	3.67	1.063E+02	3.903E+02	0.076E+02	1.95	
10-CO60	5.27Y	1.07	1.932E+02	2.076E+02	0.029E+02	1.39	
12-Y88	106.65D	3.67	1.093E+02	4.013E+02	0.083E+02	2.07	
			---------	---------			
	Total Activity :		1.462E+03	2.852E+03			

Grand Total Activity : 1.462E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S25121819

Acquisition date : 18-DEC-2019 14:56:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.64	773	4715	1.33	92.73	89	9	9.43E-02	32.9	7.18E-01	
1	136.44	2070	4130	1.47	272.27	267	10	2.52E-01	12.4	8.80E+00	
1	255.21	771	3174	1.55	509.71	506	9	9.39E-02	27.3	6.63E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.448E+02	1.005E+03	0.026E+03	2.55	
03-CO57	270.90D	1.67	2.395E+01	3.997E+01	0.096E+01	2.41	
04-CE139	137.66D	2.74	1.859E+01	5.094E+01	0.186E+01	3.65	
05-HG203	46.61D	19.6	7.301E+00	1.433E+02	0.130E+02	9.06	
06-SN113	115.10D	3.34	5.731E+01	1.913E+02	0.044E+02	2.31	
07-SR85	64.84D	8.50	2.916E+01	2.478E+02	0.090E+02	3.62	
08-CS137	30.17Y	1.01	1.717E+02	1.739E+02	0.022E+02	1.24	
09-Y88	106.65D	3.67	1.063E+02	3.903E+02	0.076E+02	1.95	
10-CO60	5.27Y	1.07	1.919E+02	2.062E+02	0.020E+02	0.97	
12-Y88	106.65D	3.67	1.093E+02	4.013E+02	0.083E+02	2.07	
			---------	---------			
	Total Activity :		1.460E+03	2.850E+03			

Grand Total Activity : 1.460E+03 2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.559E+01	1.912E+01	0.000E+00	52.567
03-CO57	3.997E+01	9.624E-01	7.562E-01	0.000E+00	52.860
04-CE139	5.094E+01	1.861E+00	1.275E+00	0.000E+00	39.947
05-HG203	1.433E+02	1.298E+01	1.199E+01	0.000E+00	11.946
06-SN113	1.913E+02	4.427E+00	3.216E+00	0.000E+00	59.495
07-SR85	2.478E+02	8.982E+00	6.105E+00	0.000E+00	40.592
08-CS137	1.739E+02	2.157E+00	1.016E+00	0.000E+00	171.218

09-Y88	3.903E+02	7.605E+00	4.371E+00	0.000E+00	89.291
10-CO60	2.062E+02	2.009E+00	1.090E+00	0.000E+00	189.159
12-Y88	4.013E+02	8.294E+00	2.498E+00	0.000E+00	160.653

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.223E-01		2.177E+00	3.537E+00	0.000E+00	0.119

```
A,07S25121819     ,12/26/2019 10:29,06/01/2019 12:00,   1.000E+00,S25 5ML MIXED
B,07S25121819     ,CALIBRATION          ,12/26/2019 10:27,07S25121819
C,02-CD109,YES,   1.005E+03,   2.559E+01,   1.912E+01,,    52.567
C,03-CO57 ,YES,   3.997E+01,   9.624E-01,   7.562E-01,,    52.860
C,04-CE139,YES,   5.094E+01,   1.861E+00,   1.275E+00,,    39.947
C,05-HG203,YES,   1.433E+02,   1.298E+01,   1.199E+01,,    11.946
C,06-SN113,YES,   1.913E+02,   4.427E+00,   3.216E+00,,    59.495
C,07-SR85 ,YES,   2.478E+02,   8.982E+00,   6.105E+00,,    40.592
C,08-CS137,YES,   1.739E+02,   2.157E+00,   1.016E+00,,   171.218
C,09-Y88  ,YES,   3.903E+02,   7.605E+00,   4.371E+00,,    89.291
C,10-CO60 ,YES,   2.062E+02,   2.009E+00,   1.090E+00,,   189.159
C,12-Y88  ,YES,   4.013E+02,   8.294E+00,   2.498E+00,,   160.653
C,01-AM241,NO ,   4.223E-01,   2.177E+00,   3.537E+00,,     0.119
```

E & Z 1921-50-1 Mixed Gamma
4/1/17 12:00 PM

3.5 Liter Marinelli

		Orig. Wt	5.1827	Volume	50				
		Wt Used	4.2308	Aliquot	7.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Am-241	432.2y	59.5	378.3		35.90%	624.15	224.07	626.3	0.34%
Cd-109	462.9d	88.0	521.3		3.72%	8300.33	308.77	8483.0	2.20%
Co-57	271.8d	122.1	473.5		85.51%	327.98	280.46	319.4	-2.62%
Ce-139	137.64d	165.9	562.6		80.35%	414.73	333.23	421.4	1.61%
Hg-203	46.6d	279.2	1735		77.30%	1329.45	1027.66		
Sn-113	115.09d	391.7	1711		64.90%	1561.55	1013.45	1590.0	1.82%
Sr-85	64.849	514.0	3383		98.40%	2036.37	2003.79		
Cs-137	30.17y	661.6	2077		85.12%	1445.29	1230.23	1442.0	-0.23%
Y-88	106.65d	898.0	5241		93.40%	3323.67	3104.31	3247.0	-2.31%
Co-60	5.27y	1173.2	2889		100.00%	1711.19	1711.19	1716.0	0.28%
Co-60	5.27y	1332.5	2892		100.00%	1712.97	1712.97	1732.0	1.11%
Y-88	106.65d	1836.0	5542		99.38%	3303.07	3282.59	3275.0	-0.85%

Eff. Name: **0835L021219**

Analyst: KOJ KJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 25-FEB-2019 10:46:56.25
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 12-FEB-2019 15:53:30.23

LIMS No., Customer Name, Client ID: 3.5L MARINELLI E&Z 1921-50-1

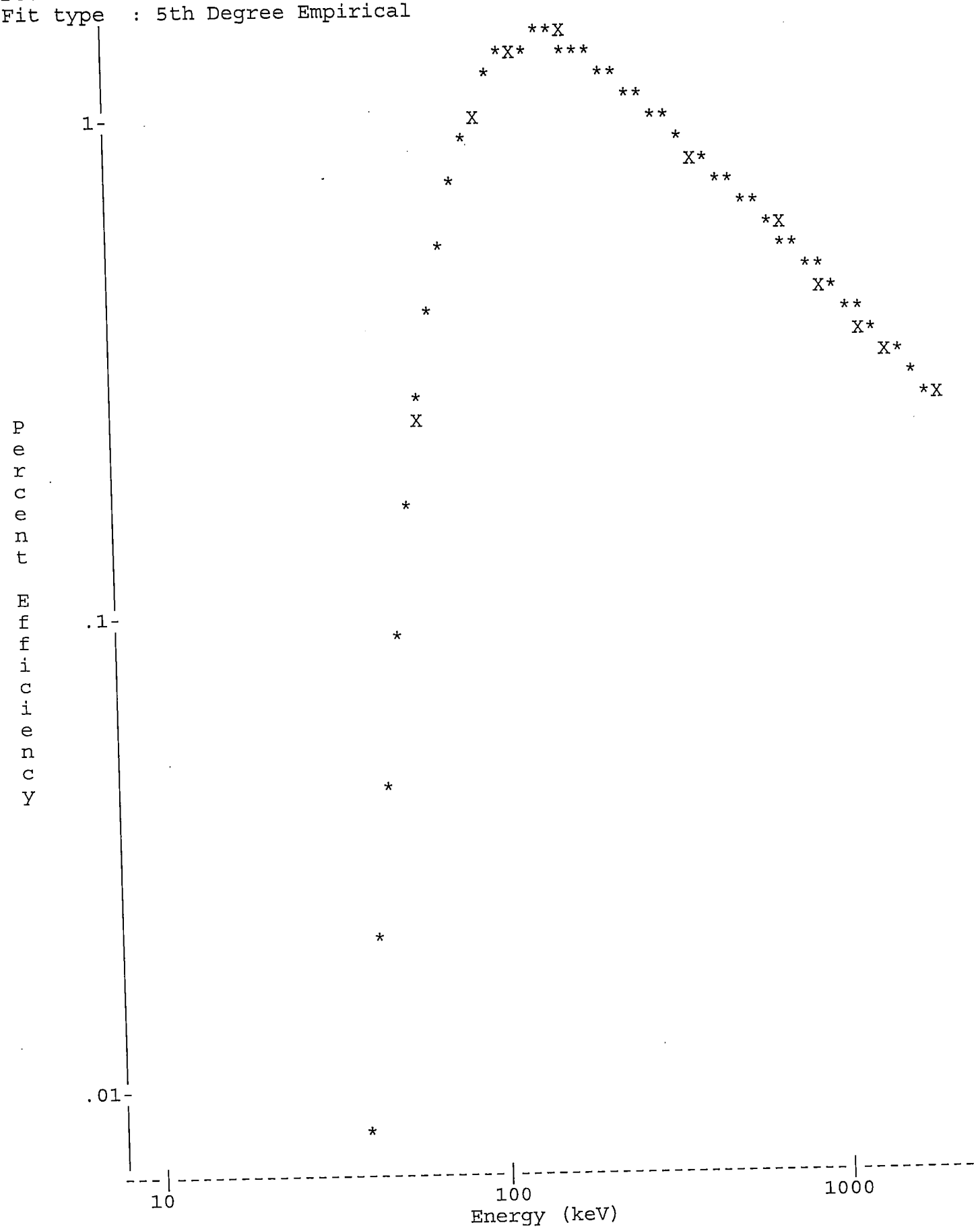
Sample ID : 0835L021219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 5.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-APR-2017 12:00:00.0
Geometry : 0835L021219
BKGFILE : NOBKG
Real Time : 1 03:08:31.04
Live time : 1 03:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	59.45	54728	137729	1.24	126.26	2.51E-01	5.63E-01	1.4	2.02E+01
2	1	74.99	3886	80747	1.17	157.24	6.66E-01	4.00E-02	11.7	1.14E+00
3	9	85.47	9116	138984	2.41	178.13	9.40E-01	9.38E-02	7.8	6.38E+00
4	9	88.02	110197	92634	1.19	183.21	9.99E-01	1.13E+00	0.6	
5	1	122.08	66793	133434	1.22	251.13	1.44E+00	6.87E-01	1.1	5.69E+00
6	1	136.48	7999	102946	1.16	279.85	1.49E+00	8.23E-02	7.0	1.01E+00
7	1	165.90	15383	103188	1.25	338.51	1.45E+00	1.58E-01	3.9	5.58E-01
8	1	310.84	1023	48800	0.84	627.48	1.02E+00	1.05E-02	35.9	2.87E+00
9	1	391.75	14247	57475	1.33	788.78	8.67E-01	1.47E-01	3.3	2.50E-01
10	1	510.98	1560	28900	1.49	1026.49	7.20E-01	1.60E-02	18.3	2.79E+00
11	1	661.66	683991	45191	1.53	1326.86	5.99E-01	7.04E+00	0.1	1.08E+01
12	1	898.03	16542	35299	1.69	1798.00	4.74E-01	1.70E-01	2.4	8.91E-01
13	1	1173.18	498832	23019	1.83	2346.41	3.82E-01	5.13E+00	0.2	1.09E+01
14	1	1332.45	454426	5930	1.91	2663.79	3.45E-01	4.68E+00	0.2	1.34E+01
15	1	1460.76	848	1822	2.01	2919.49	3.21E-01	8.72E-03	11.5	1.25E+00
16	1	1763.69	209	647	3.76	3523.10	2.82E-01	2.15E-03	26.2	3.94E+00
17	1	1836.03	10290	986	2.17	3667.23	2.75E-01	1.06E-01	1.2	1.00E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 25-FEB-2019 10:46
Detector :
Fit type : 5th Degree Empirical

Geometry : 0835L021219



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 25-FEB-2019 10:54:40.51
TBE08 51-N22985A HpGe ******** Aquisition Date/Time: 12-FEB-2019 15:53:30.23

LIMS No., Customer Name, Client ID: 3.5L MARINELLI E&Z 1921-50-1

Sample ID : 0835L021219
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 25 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 5.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-APR-2017 12:00:00.0
Geometry : 0835L021219
BKGFILE : 08BG022119MT
Real Time : 1 03:08:31.04
Live time : 1 03:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	59.45	54728	137729	1.24	126.26	2.51E-01	5.63E-01	1.4	2.02E+01
2	1	74.99*	2951	80747	1.17	157.24	6.66E-01	3.04E-02	15.8	1.14E+00
3	9	85.47*	8248	138984	2.41	178.13	9.40E-01	8.49E-02	8.8	6.38E+00
4	9	88.02	110197	92634	1.19	183.21	9.99E-01	1.13E+00	0.6	
5	1	122.08	66793	133434	1.22	251.13	1.44E+00	6.87E-01	1.1	5.69E+00
6	1	136.48	7999	102946	1.16	279.85	1.49E+00	8.23E-02	7.0	1.01E+00
7	1	165.90	15383	103188	1.25	338.51	1.45E+00	1.58E-01	3.9	5.58E-01
8	1	310.84	1023	48800	0.84	627.48	1.02E+00	1.05E-02	35.9	2.87E+00
9	1	391.75	14247	57475	1.33	788.78	8.67E-01	1.47E-01	3.3	2.50E-01
10	1	661.66	683991	45191	1.53	1326.86	5.99E-01	7.04E+00	0.1	1.08E+01
11	1	898.03	16542	35299	1.69	1798.00	4.74E-01	1.70E-01	2.4	8.91E-01
12	1	1173.18*	498749	23019	1.83	2346.41	3.82E-01	5.13E+00	0.2	1.09E+01
13	1	1332.45*	454358	5930	1.91	2663.79	3.45E-01	4.67E+00	0.2	1.34E+01
14	1	1460.76*	211	1822	2.01	2919.49	3.21E-01	2.18E-03	51.7	1.25E+00
15	1	1763.69*	79	647	3.76	3523.10	2.82E-01	8.18E-04	81.6	3.94E+00
16	1	1836.03	10290	986	2.17	3667.23	2.75E-01	1.06E-01	1.2	1.00E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
01-AM241	59.54	54728	35.90*	2.512E-01	6.245E+02	6.263E+02	2.77
02-CD109	88.03	110197	3.72*	9.986E-01	3.052E+03	8.483E+03	1.11
03-CO57	122.06	66793	85.51*	1.443E+00	5.568E+01	3.194E+02	2.19
04-CE139	165.85	15383	80.35*	1.454E+00	1.354E+01	4.214E+02	7.71
06-SN113	391.69	14247	64.90*	8.667E-01	2.606E+01	1.590E+03	6.52
08-CS137	661.65	683991	85.12*	5.986E-01	1.381E+03	1.442E+03	0.28
09-Y88	898.02	16542	93.40*	4.745E-01	3.840E+01	3.247E+03	4.81
10-CO60	1173.22	498749	100.00	3.825E-01	1.342E+03	1.716E+03	0.32
	1332.49	454358	100.00*	3.451E-01	1.354E+03	1.732E+03	0.31
12-Y88	1836.01	10290	99.38*	2.750E-01	3.874E+01	3.275E+03	2.44

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 0835L021219

Acquisition date : 12-FEB-2019 15:53:30

Total number of lines in spectrum	16	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	10	62.50%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
01-AM241	432.70Y	1.00	6.245E+02	6.263E+02	0.173E+02	2.77	
02-CD109	462.90D	2.78	3.052E+03	8.483E+03	0.094E+03	1.11	
03-CO57	270.90D	5.74	5.568E+01	3.194E+02	0.070E+02	2.19	
04-CE139	137.66D	31.1	1.354E+01	4.214E+02	0.325E+02	7.71	
06-SN113	115.10D	61.0	2.606E+01	1.590E+03	0.104E+03	6.52	
08-CS137	30.17Y	1.04	1.381E+03	1.442E+03	0.004E+03	0.28	
09-Y88	106.65D	84.5	3.840E+01	3.247E+03	0.156E+03	4.81	
10-CO60	5.27Y	1.28	1.354E+03	1.732E+03	0.005E+03	0.31	
12-Y88	106.65D	84.5	3.874E+01	3.275E+03	0.080E+03	2.44	
	Total Activity :		6.584E+03	2.114E+04			

Grand Total Activity : 6.584E+03 2.114E+04

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 0835L021219

Acquisition date : 12-FEB-2019 15:53:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.99	2951	80747	1.17	157.24	155	6	3.04E-02	31.6	6.66E-01	
9	85.47	8248	138984	2.41	178.13	173	16	8.49E-02	17.6	9.40E-01	
1	136.48	7999	102946	1.16	279.85	277	8	8.23E-02	14.1	1.49E+00	
1	310.84	1023	48800	0.84	627.48	625	7	1.05E-02	71.9	1.02E+00	
1	1460.76	211	1822	2.01	2919.49	2911	15	2.18E-03	****	3.21E-01	
1	1763.69	79	647	3.76	3523.10	3516	13	8.18E-04	****	2.82E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	10	62.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
01-AM241	432.70Y	1.00	6.245E+02	6.263E+02	0.173E+02	2.77	
02-CD109	462.90D	2.78	3.052E+03	8.483E+03	0.094E+03	1.11	
03-CO57	270.90D	5.74	5.568E+01	3.194E+02	0.070E+02	2.19	
04-CE139	137.66D	31.1	1.354E+01	4.214E+02	0.325E+02	7.71	
06-SN113	115.10D	61.0	2.606E+01	1.590E+03	0.104E+03	6.52	
08-CS137	30.17Y	1.04	1.381E+03	1.442E+03	0.004E+03	0.28	
09-Y88	106.65D	84.5	3.840E+01	3.247E+03	0.156E+03	4.81	
10-CO60	5.27Y	1.28	1.354E+03	1.732E+03	0.005E+03	0.31	
12-Y88	106.65D	84.5	3.874E+01	3.275E+03	0.080E+03	2.44	
			---------	---------			
	Total Activity :		6.584E+03	2.114E+04			

Grand Total Activity : 6.584E+03 2.114E+04

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.263E+02	1.733E+01	1.348E+01	0.000E+00	46.458
02-CD109	8.483E+03	9.380E+01	9.634E+01	0.000E+00	88.054
03-CO57	3.194E+02	6.994E+00	6.091E+00	0.000E+00	52.436
04-CE139	4.214E+02	3.247E+01	3.290E+01	0.000E+00	12.806
06-SN113	1.590E+03	1.037E+02	1.014E+02	0.000E+00	15.692

08-CS137	1.442E+03	4.054E+00	1.374E+00	0.000E+00	1049.281
09-Y88	3.247E+03	1.560E+02	1.401E+02	0.000E+00	23.167
10-CO60	1.732E+03	5.361E+00	9.221E-01	0.000E+00	1878.198
12-Y88	3.275E+03	7.983E+01	3.408E+01	0.000E+00	96.091

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
05-HG203	-1.054E+04		1.894E+04	3.080E+04	0.000E+00	-0.342
07-SR85	-2.030E+03		9.996E+02	1.688E+03	0.000E+00	-1.203

```
A,0835L021219      ,02/25/2019 10:54,04/01/2017 12:00,   1.000E+00,3.5L MARINELLI
B,0835L021219      ,CALIBRATION          ,02/25/2019 10:46,0835L021219
C,01-AM241,YES,   6.263E+02,   1.733E+01,   1.348E+01,,   46.458
C,02-CD109,YES,   8.483E+03,   9.380E+01,   9.634E+01,,   88.054
C,03-CO57 ,YES,   3.194E+02,   6.994E+00,   6.091E+00,,   52.436
C,04-CE139,YES,   4.214E+02,   3.247E+01,   3.290E+01,,   12.806
C,06-SN113,YES,   1.590E+03,   1.037E+02,   1.014E+02,,   15.692
C,08-CS137,YES,   1.442E+03,   4.054E+00,   1.374E+00,, 1049.281
C,09-Y88  ,YES,   3.247E+03,   1.560E+02,   1.401E+02,,   23.167
C,10-CO60 ,YES,   1.732E+03,   5.361E+00,   9.221E-01,, 1878.198
C,12-Y88  ,YES,   3.275E+03,   7.983E+01,   3.408E+01,,   96.091
C,05-HG203,NO ,  -1.054E+04,   1.894E+04,   3.080E+04,,   -0.342
C,07-SR85 ,NO ,  -2.030E+03,   9.996E+02,   1.688E+03,,   -1.203
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

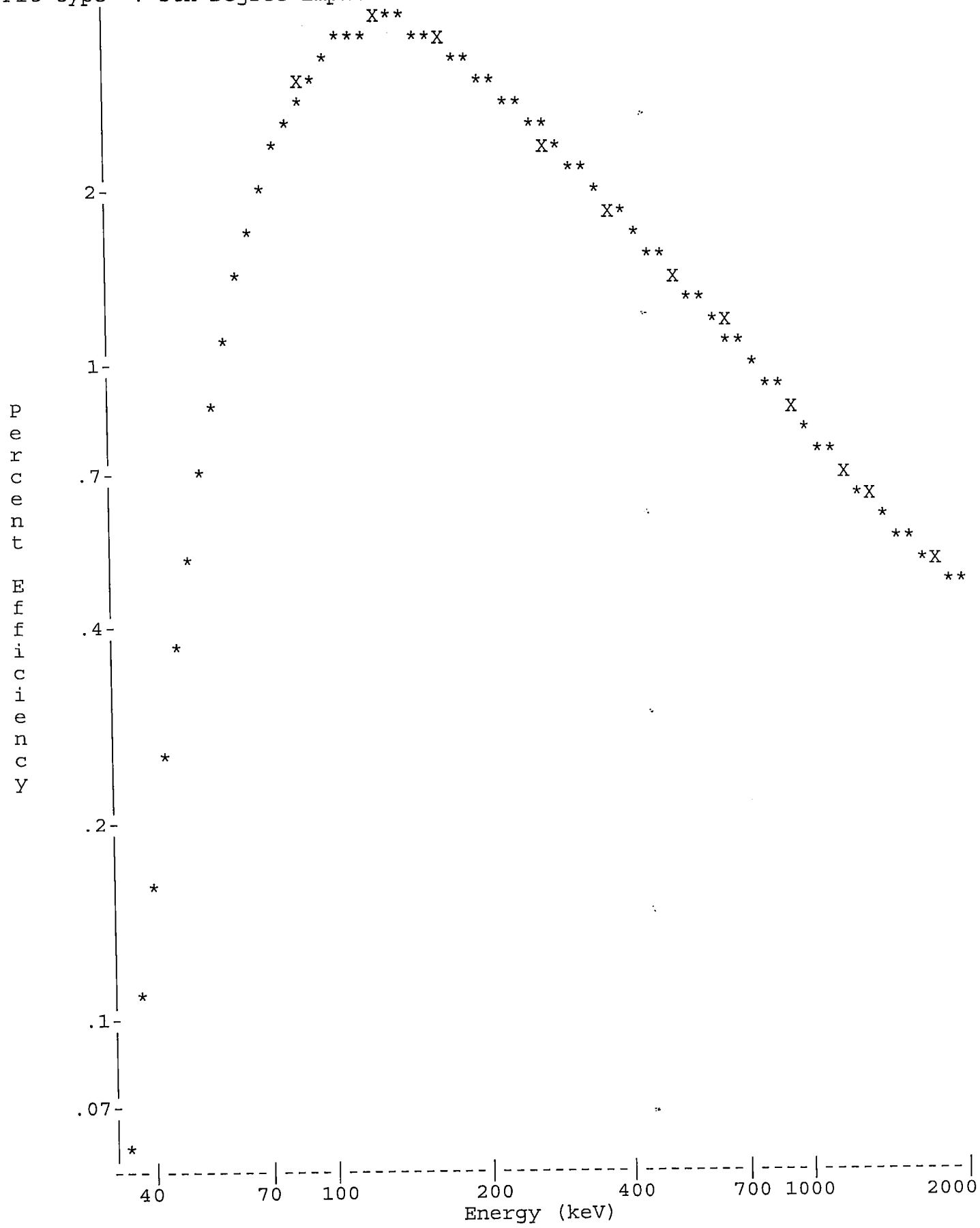
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819     ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819     ,CALIBRATION          ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,    1.007E+03,   2.299E+01,   1.793E+01,,    56.179
C,03-CO57 ,YES,    4.012E+01,   9.998E-01,   7.168E-01,,    55.974
C,04-CE139,YES,    5.081E+01,   1.584E+00,   1.251E+00,,    40.618
C,05-HG203,YES,    1.451E+02,   1.186E+01,   1.148E+01,,    12.645
C,06-SN113,YES,    1.936E+02,   4.389E+00,   3.027E+00,,    63.964
C,07-SR85 ,YES,    2.388E+02,   7.859E+00,   6.014E+00,,    39.715
C,08-CS137,YES,    1.755E+02,   1.909E+00,   9.339E-01,,   187.942
C,09-Y88  ,YES,    3.968E+02,   6.572E+00,   3.849E+00,,   103.094
C,10-CO60 ,YES,    2.047E+02,   1.711E+00,   8.137E-01,,   251.542
C,12-Y88  ,YES,    4.031E+02,   6.862E+00,   1.621E+00,,   248.741
C,01-AM241,NO ,    4.717E-02,   1.930E+00,   3.063E+00,,     0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

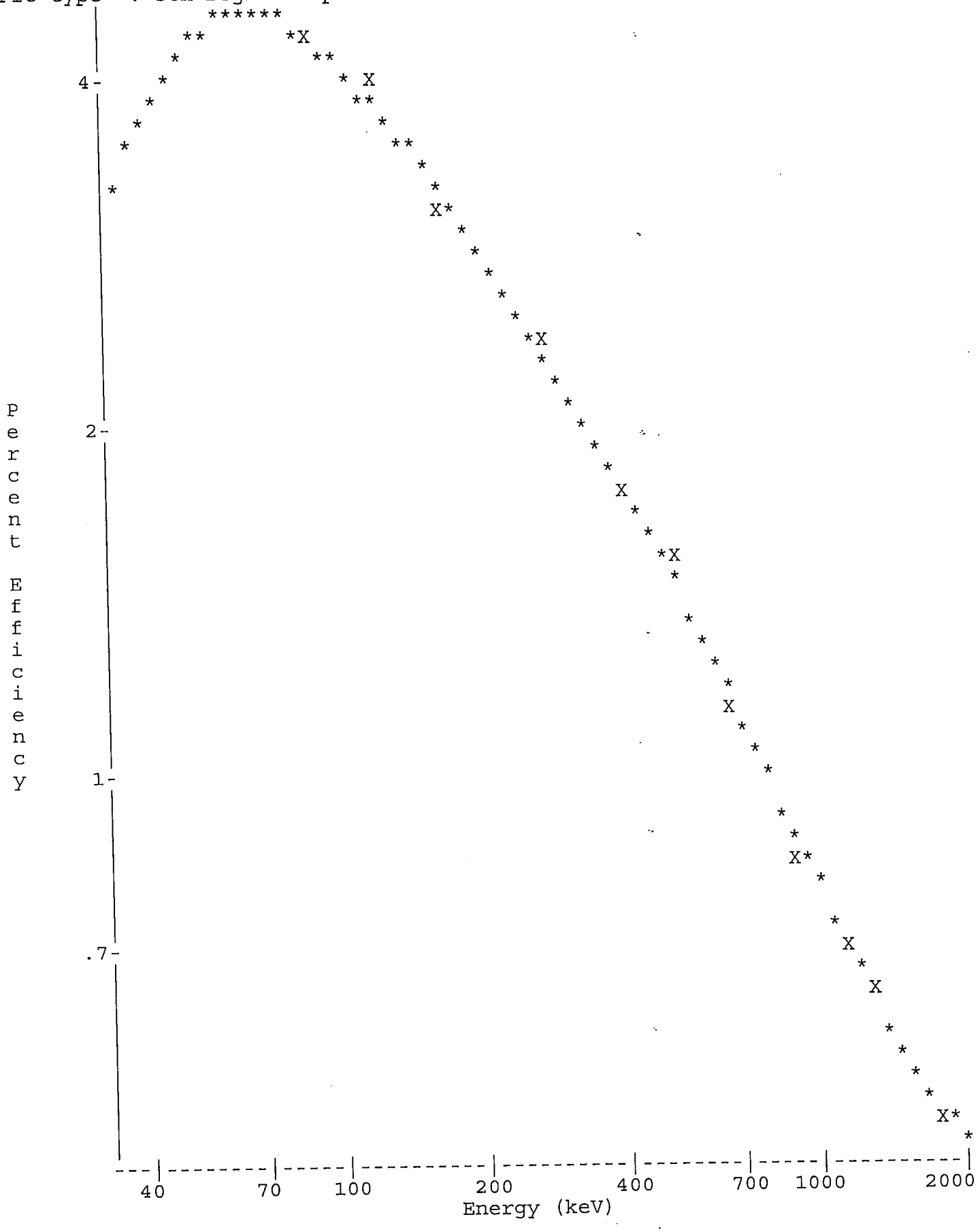
Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum 16
Number of unidentified lines 5
Number of lines tentatively identified by NID 11 68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919 Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919     ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919     ,CALIBRATION          ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,   1.013E+03,   1.793E+01,   1.499E+01,,   67.586
C,03-CO57 ,YES,   4.118E+01,   1.003E+00,   7.649E-01,,   53.831
C,04-CE139,YES,   4.917E+01,   1.826E+00,   1.518E+00,,   32.396
C,05-HG203,YES,   1.496E+02,   1.412E+01,   1.379E+01,,   10.849
C,06-SN113,YES,   1.882E+02,   4.968E+00,   3.497E+00,,   53.812
C,07-SR85 ,YES,   2.596E+02,   1.031E+01,   6.619E+00,,   39.220
C,08-CS137,YES,   1.689E+02,   2.289E+00,   1.088E+00,,  155.266
C,09-Y88  ,YES,   3.885E+02,   7.711E+00,   4.625E+00,,   83.996
C,10-CO60 ,YES,   2.075E+02,   2.028E+00,   1.127E+00,,  184.062
C,12-Y88  ,YES,   4.004E+02,   8.223E+00,   2.218E+00,,  180.562
C,01-AM241,NO ,  -6.041E-01,   5.435E-01,   9.051E-01,,   -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.38%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.2	-4.39%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.5	-0.07%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	397.7	-2.10%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.9	0.62%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.8	-0.22%

Eff. Name: **13S50122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:37:26.43
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

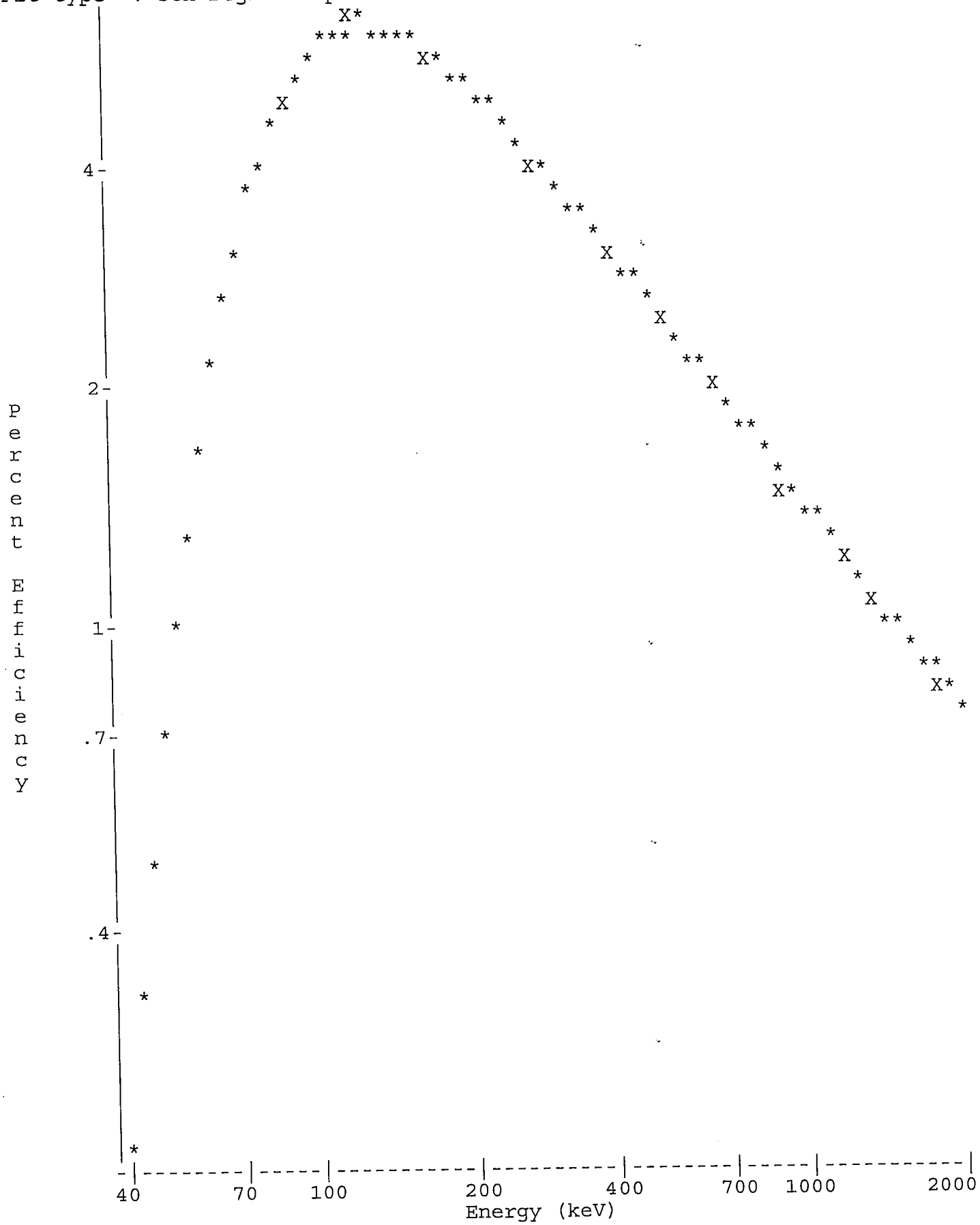
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09	17288	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 26-DEC-2019 12:37
Detector :
Geometry : 13S50122019
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:38:31.00
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09*	17258	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17258	3.72*	4.962E+00	7.420E+02	1.004E+03	2.50
03-CO57	122.06	15662	85.51*	6.091E+00	2.387E+01	4.002E+01	2.41
04-CE139	165.85	10655	80.35*	5.732E+00	1.836E+01	5.077E+01	3.32
05-HG203	279.20	3091	81.46*	4.070E+00	7.398E+00	1.492E+02	7.85
06-SN113	391.69	14314	64.90*	3.101E+00	5.644E+01	1.905E+02	2.51
07-SR85	513.99	8581	99.27*	2.479E+00	2.767E+01	2.398E+02	3.49
08-CS137	661.65	37318	85.12*	2.004E+00	1.736E+02	1.759E+02	1.24
09-Y88	898.02	19331	93.40*	1.535E+00	1.070E+02	3.977E+02	1.77
10-CO60	1173.22	28896	100.00	1.208E+00	1.898E+02	2.041E+02	1.34
	1332.49	25910	100.00*	1.079E+00	1.905E+02	2.049E+02	1.35
12-Y88	1836.01	11314	99.38*	8.338E-01	1.084E+02	4.028E+02	2.03

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S50122019 Acquisition date : 20-DEC-2019 10:22:33

Total number of lines in spectrum 15
Number of unidentified lines 4
Number of lines tentatively identified by NID 11 73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.905E+02	2.049E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
	Total Activity :		1.455E+03	2.856E+03			

Grand Total Activity : 1.455E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S50122019 Acquisition date : 20-DEC-2019 10:22:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.58	1425	5698	1.09	93.19	89	9	1.13E-01	19.8	5.94E-01	
1	136.46	1921	4498	0.98	272.76	268	9	1.52E-01	13.4	6.08E+00	
1	255.08	790	3264	1.12	509.78	506	8	6.27E-02	26.0	4.36E+00	
1	813.79	347	1406	1.61	1626.95	1623	9	2.75E-02	40.5	1.67E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.902E+02	2.045E+02	0.019E+02	0.95	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
			---------	---------			
	Total Activity :		1.455E+03	2.855E+03			

Grand Total Activity : 1.455E+03 2.855E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	2.508E+01	1.634E+01	0.000E+00	61.461
03-CO57	4.002E+01	9.649E-01	6.597E-01	0.000E+00	60.658
04-CE139	5.077E+01	1.688E+00	1.174E+00	0.000E+00	43.250
05-HG203	1.492E+02	1.171E+01	1.177E+01	0.000E+00	12.672
06-SN113	1.905E+02	4.790E+00	3.019E+00	0.000E+00	63.113
07-SR85	2.398E+02	8.369E+00	6.343E+00	0.000E+00	37.808
08-CS137	1.759E+02	2.176E+00	9.851E-01	0.000E+00	178.514
09-Y88	3.977E+02	7.037E+00	4.082E+00	0.000E+00	97.440
10-CO60	2.045E+02	1.950E+00	9.557E-01	0.000E+00	214.000
12-Y88	4.028E+02	8.185E+00	2.205E+00	0.000E+00	182.657

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.681E-02		1.711E+00	2.719E+00	0.000E+00	0.025

```
A,13S50122019     ,12/26/2019 12:38,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,13S50122019     ,CALIBRATION         ,12/26/2019 12:37,13S50122019
C,02-CD109,YES,   1.004E+03,   2.508E+01,   1.634E+01,,   61.461
C,03-CO57 ,YES,   4.002E+01,   9.649E-01,   6.597E-01,,   60.658
C,04-CE139,YES,   5.077E+01,   1.688E+00,   1.174E+00,,   43.250
C,05-HG203,YES,   1.492E+02,   1.171E+01,   1.177E+01,,   12.672
C,06-SN113,YES,   1.905E+02,   4.790E+00,   3.019E+00,,   63.113
C,07-SR85 ,YES,   2.398E+02,   8.369E+00,   6.343E+00,,   37.808
C,08-CS137,YES,   1.759E+02,   2.176E+00,   9.851E-01,,  178.514
C,09-Y88  ,YES,   3.977E+02,   7.037E+00,   4.082E+00,,   97.440
C,10-CO60 ,YES,   2.045E+02,   1.950E+00,   9.557E-01,,  214.000
C,12-Y88  ,YES,   4.028E+02,   8.185E+00,   2.205E+00,,  182.657
C,01-AM241,NO ,   6.681E-02,   1.711E+00,   2.719E+00,,    0.025
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

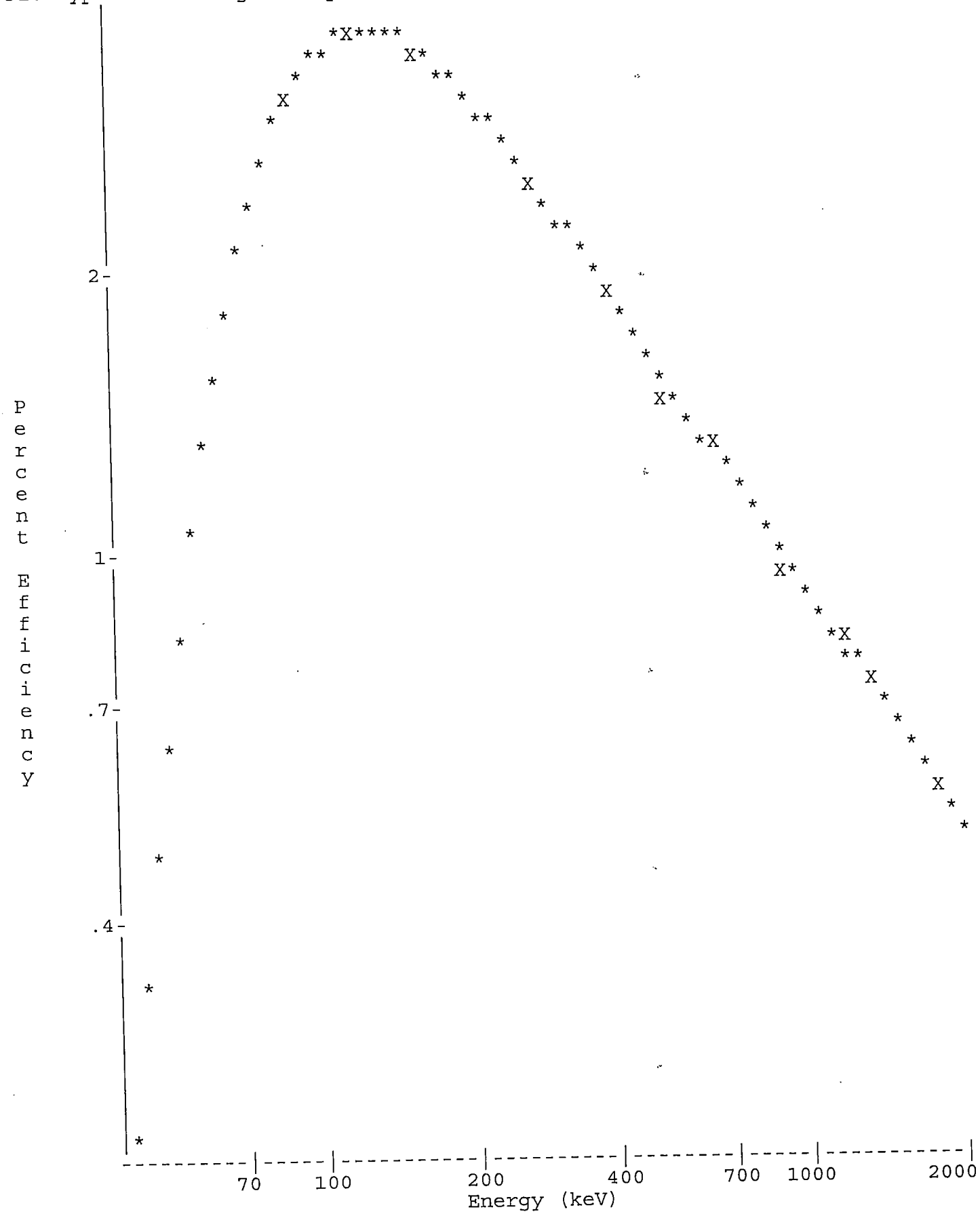
Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Fit type : 5th Degree Empirical

Geometry : 13S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619 Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,    1.001E+03,   1.649E+01,   1.349E+01,,    74.206
C,03-CO57 ,YES,    4.016E+01,   9.167E-01,   6.087E-01,,    65.978
C,04-CE139,YES,    5.064E+01,   1.454E+00,   1.122E+00,,    45.151
C,05-HG203,YES,    1.465E+02,   1.200E+01,   1.135E+01,,    12.914
C,06-SN113,YES,    1.946E+02,   4.137E+00,   2.774E+00,,    70.169
C,07-SR85 ,YES,    2.340E+02,   7.150E+00,   6.009E+00,,    38.945
C,08-CS137,YES,    1.774E+02,   1.808E+00,   8.215E-01,,   215.917
C,09-Y88  ,YES,    3.981E+02,   6.404E+00,   3.602E+00,,   110.531
C,10-CO60 ,YES,    2.044E+02,   1.570E+00,   6.527E-01,,   313.158
C,12-Y88  ,YES,    4.024E+02,   6.717E+00,   1.716E+00,,   234.561
C,01-AM241,NO ,    3.682E-02,   1.283E+00,   2.034E+00,,     0.018
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.59%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.95%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	150.0	-3.87%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.0	-2.85%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.2	-2.96%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.5	1.02%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.7	0.52%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **14S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:24:05.41
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

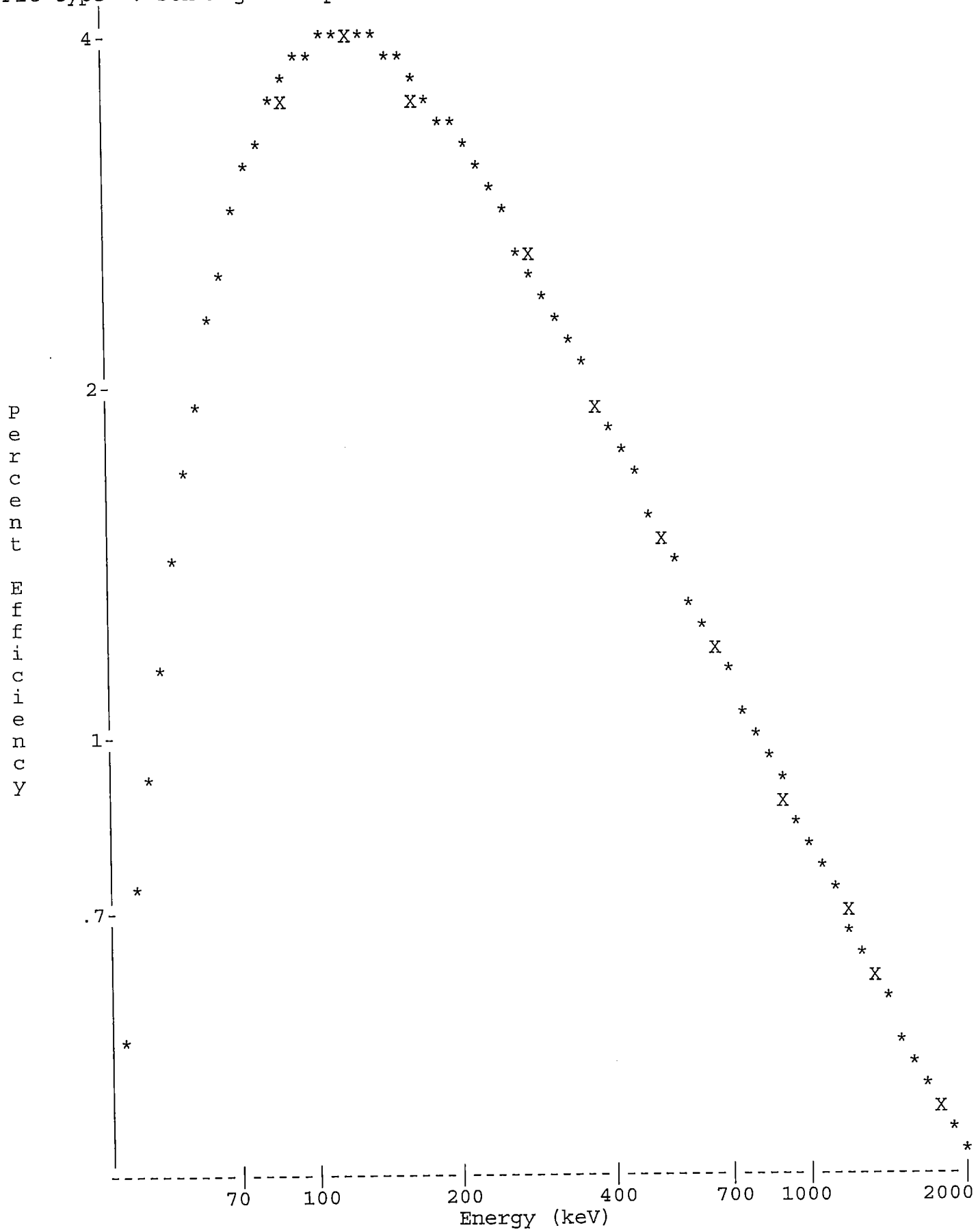
Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04	32058	12538	0.83	172.85	3.58E+00	9.89E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:24
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S100121919



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:25:19.21
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04*	31996	12538	0.83	172.85	3.58E+00	9.88E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	31996	3.72*	3.583E+00	7.409E+02	1.002E+03	1.73
03-CO57	122.06	26983	85.51*	4.020E+00	2.422E+01	4.055E+01	1.86
04-CE139	165.85	17412	80.35*	3.689E+00	1.813E+01	4.997E+01	2.69
05-HG203	279.20	5080	81.46*	2.562E+00	7.514E+00	1.500E+02	6.17
06-SN113	391.69	22811	64.90*	1.900E+00	5.709E+01	1.919E+02	1.95
07-SR85	513.99	13219	99.27*	1.480E+00	2.778E+01	2.390E+02	2.65
08-CS137	661.65	56112	85.12*	1.170E+00	1.739E+02	1.761E+02	1.00
09-Y88	898.02	28414	93.40*	8.814E-01	1.065E+02	3.942E+02	1.67
10-CO60	1173.22	42734	100.00	6.902E-01	1.911E+02	2.055E+02	1.12
	1332.49	37990	100.00*	6.159E-01	1.904E+02	2.047E+02	1.12
12-Y88	1836.01	16457	99.38*	4.701E-01	1.087E+02	4.024E+02	1.68

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.904E+02	2.047E+02	0.023E+02	1.12	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.455E+03	2.850E+03			

Grand Total Activity : 1.455E+03 2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.59	4343	10904	0.86	89.98	85	10	1.34E-01	9.5	8.97E-01	
1	136.46	3364	8189	0.88	269.65	266	9	1.04E-01	10.3	3.96E+00	
1	255.15	1158	6685	1.01	506.97	503	9	3.58E-02	26.1	2.76E+00	
1	814.14	447	2399	1.31	1624.80	1621	9	1.38E-02	40.6	9.65E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.907E+02	2.051E+02	0.016E+02	0.79	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.456E+03	2.851E+03			

Grand Total Activity : 1.456E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	1.735E+01	1.123E+01	0.000E+00	89.212
03-CO57	4.055E+01	7.526E-01	4.988E-01	0.000E+00	81.300
04-CE139	4.997E+01	1.344E+00	9.308E-01	0.000E+00	53.682
05-HG203	1.500E+02	9.263E+00	8.996E+00	0.000E+00	16.675
06-SN113	1.919E+02	3.750E+00	2.454E+00	0.000E+00	78.204
07-SR85	2.390E+02	6.325E+00	5.015E+00	0.000E+00	47.655

08-CS137	1.761E+02	1.758E+00	7.913E-01	0.000E+00	222.526
09-Y88	3.942E+02	6.575E+00	3.397E+00	0.000E+00	116.066
10-CO60	2.051E+02	1.624E+00	8.097E-01	0.000E+00	253.272
12-Y88	4.024E+02	6.761E+00	1.762E+00	0.000E+00	228.349

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.911E-03		8.383E-01	1.367E+00	0.000E+00	0.005

```
A,14S100121919    ,12/26/2019 10:25,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,14S100121919    ,CALIBRATION         ,12/26/2019 10:24,14S100121919
C,02-CD109,YES,   1.002E+03,   1.735E+01,   1.123E+01,,    89.212
C,03-CO57 ,YES,   4.055E+01,   7.526E-01,   4.988E-01,,    81.300
C,04-CE139,YES,   4.997E+01,   1.344E+00,   9.308E-01,,    53.682
C,05-HG203,YES,   1.500E+02,   9.263E+00,   8.996E+00,,    16.675
C,06-SN113,YES,   1.919E+02,   3.750E+00,   2.454E+00,,    78.204
C,07-SR85 ,YES,   2.390E+02,   6.325E+00,   5.015E+00,,    47.655
C,08-CS137,YES,   1.761E+02,   1.758E+00,   7.913E-01,,   222.526
C,09-Y88  ,YES,   3.942E+02,   6.575E+00,   3.397E+00,,   116.066
C,10-CO60 ,YES,   2.051E+02,   1.624E+00,   8.097E-01,,   253.272
C,12-Y88  ,YES,   4.024E+02,   6.761E+00,   1.762E+00,,   228.349
C,01-AM241,NO ,   6.911E-03,   8.383E-01,   1.367E+00,,     0.005
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.29%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.01%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.3	-6.24%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	192.2	0.83%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	241.6	-1.80%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	395.0	-2.76%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.5	0.91%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.1	-0.39%

Eff. Name: **15S50121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:48:06.80
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 19-DEC-2019 18:26:45.60

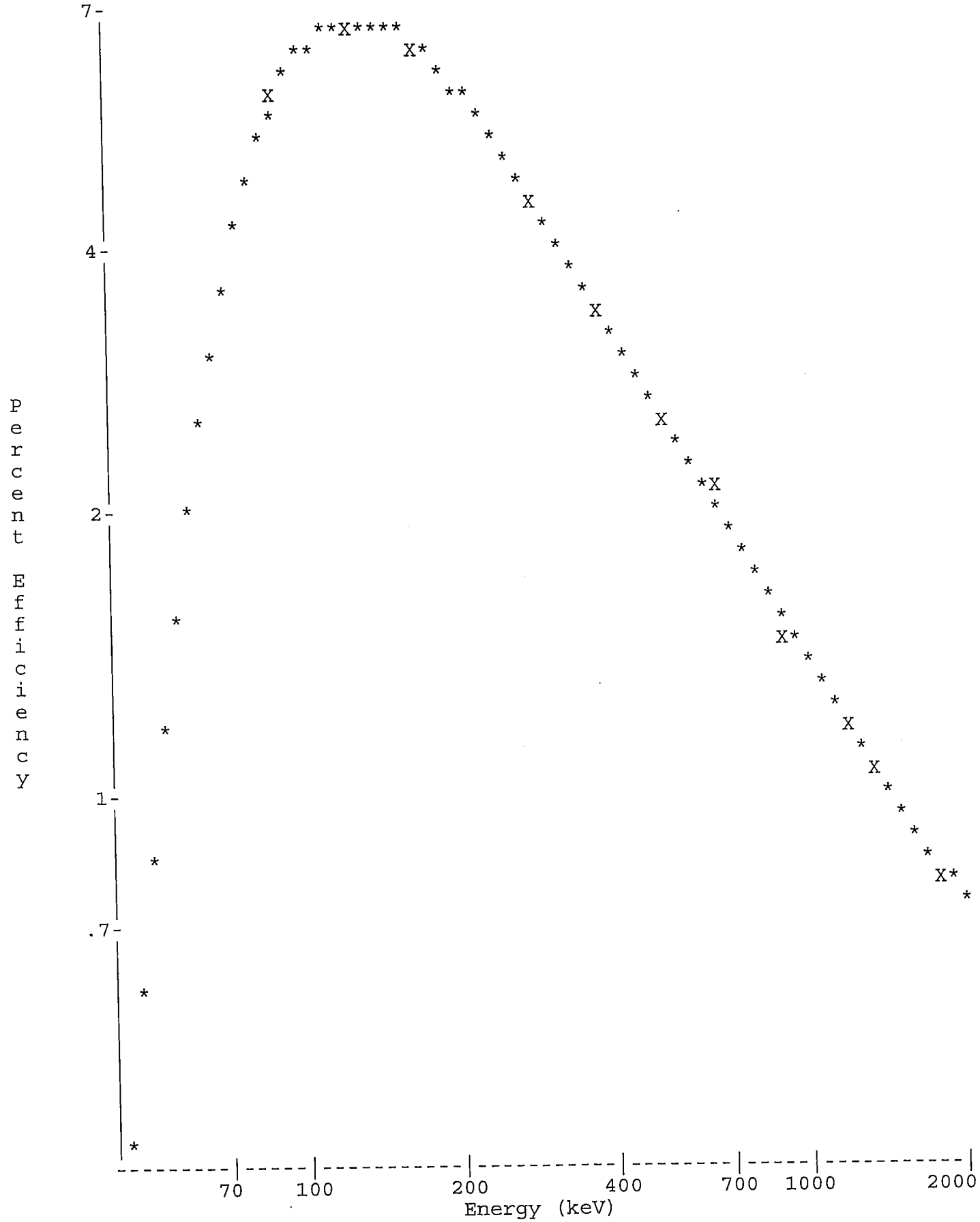
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S50121919
BKGFILE : 15BG112719MT
Real Time : 0 14:39:15.56
Live time : 0 14:37:18.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.56	5843	20714	0.99	87.52	7.01E-01	1.11E-01	4.3	2.71E+00
2	1	88.05	81663	28269	1.03	170.71	5.61E+00	1.55E+00	0.5	9.58E+00
3	1	122.06	74289	34552	1.06	238.90	6.91E+00	1.41E+00	0.6	1.20E+01
4	1	136.47	9424	18901	1.03	267.79	6.90E+00	1.79E-01	2.7	9.90E-01
5	1	165.86	50719	26733	1.09	326.70	6.49E+00	9.64E-01	0.8	4.39E+00
6	1	255.05	2865	15550	1.14	505.51	4.87E+00	5.44E-02	7.8	1.14E+00
7	1	279.17	14147	19050	1.20	553.87	4.52E+00	2.69E-01	2.1	8.91E-01
8	1	391.68	65296	18279	1.28	779.41	3.35E+00	1.24E+00	0.6	9.44E-01
9	1	514.00	38091	15698	1.37	1024.61	2.60E+00	7.24E-01	0.9	1.81E+00
10	1	661.64	159012	14174	1.49	1320.56	2.05E+00	3.02E+00	0.3	1.11E+01
11	1	814.04	1189	6683	1.48	1626.04	1.68E+00	2.26E-02	13.2	8.50E-01
12	1	898.04	79744	13128	1.69	1794.40	1.52E+00	1.51E+00	0.5	4.78E+00
13	1	1173.23	116971	7688	1.91	2345.97	1.17E+00	2.22E+00	0.3	6.46E+00
14	7	1325.97	2039	4203	3.94	2652.08	1.05E+00	3.87E-02	9.0	1.30E+01
15	7	1332.50	104685	1967	2.02	2665.16	1.04E+00	1.99E+00	0.3	
16	1	1835.99	45299	1454	2.42	3674.11	7.98E-01	8.61E-01	0.5	5.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 10:48
Detector :
Geometry : 15S50121919
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:57:04.37
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 19-DEC-2019 18:26:45.60

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S50121919
BKGFILE : 15BG112719MT
Real Time : 0 14:39:15.56
Live time : 0 14:37:18.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.56*	5756	20714	0.99	87.52	7.01E-01	1.09E-01	4.4	2.71E+00
2	1	88.05	81663	28269	1.03	170.71	5.61E+00	1.55E+00	0.5	9.58E+00
3	1	122.06	74289	34552	1.06	238.90	6.91E+00	1.41E+00	0.6	1.20E+01
4	1	136.47	9424	18901	1.03	267.79	6.90E+00	1.79E-01	2.7	9.90E-01
5	1	165.86	50719	26733	1.09	326.70	6.49E+00	9.64E-01	0.8	4.39E+00
6	1	255.05	2865	15550	1.14	505.51	4.87E+00	5.44E-02	7.8	1.14E+00
7	1	279.17	14147	19050	1.20	553.87	4.52E+00	2.69E-01	2.1	8.91E-01
8	1	391.68	65296	18279	1.28	779.41	3.35E+00	1.24E+00	0.6	9.44E-01
9	1	514.00	38091	15698	1.37	1024.61	2.60E+00	7.24E-01	0.9	1.81E+00
10	1	661.64	159012	14174	1.49	1320.56	2.05E+00	3.02E+00	0.3	1.11E+01
11	1	814.04	1189	6683	1.48	1626.04	1.68E+00	2.26E-02	13.2	8.50E-01
12	1	898.04	79744	13128	1.69	1794.40	1.52E+00	1.51E+00	0.5	4.78E+00
13	1	1173.23	116971	7688	1.91	2345.97	1.17E+00	2.22E+00	0.3	6.46E+00
14	7	1325.97	2039	4203	3.94	2652.08	1.05E+00	3.87E-02	9.0	1.30E+01
15	7	1332.50	104685	1967	2.02	2665.16	1.04E+00	1.99E+00	0.3	
16	1	1835.99	45299	1454	2.42	3674.11	7.98E-01	8.61E-01	0.5	5.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	81663	3.72*	5.615E+00	7.428E+02	1.004E+03	1.03
03-CO57	122.06	74289	85.51*	6.906E+00	2.390E+01	4.003E+01	1.27
04-CE139	165.85	50719	80.35*	6.494E+00	1.847E+01	5.096E+01	1.57
05-HG203	279.20	14147	81.46*	4.517E+00	7.304E+00	1.463E+02	4.14
06-SN113	391.69	65296	64.90*	3.348E+00	5.709E+01	1.922E+02	1.16
07-SR85	513.99	38091	99.27*	2.603E+00	2.800E+01	2.416E+02	1.71
08-CS137	661.65	159012	85.12*	2.048E+00	1.733E+02	1.755E+02	0.60
09-Y88	898.02	79744	93.40*	1.522E+00	1.066E+02	3.950E+02	0.97
10-CO60	1173.22	116971	100.00	1.173E+00	1.894E+02	2.036E+02	0.69
	1332.49	104685	100.00*	1.041E+00	1.911E+02	2.055E+02	0.64
12-Y88	1836.01	45299	99.38*	7.982E-01	1.085E+02	4.021E+02	1.04

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S50121919

Acquisition date : 19-DEC-2019 18:26:45

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.428E+02	1.004E+03	0.010E+03	1.03	
03-CO57	270.90D	1.67	2.390E+01	4.003E+01	0.051E+01	1.27	
04-CE139	137.66D	2.76	1.847E+01	5.096E+01	0.080E+01	1.57	
05-HG203	46.61D	20.0	7.304E+00	1.463E+02	0.061E+02	4.14	
06-SN113	115.10D	3.37	5.709E+01	1.922E+02	0.022E+02	1.16	
07-SR85	64.84D	8.63	2.800E+01	2.416E+02	0.041E+02	1.71	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.011E+02	0.60	
09-Y88	106.65D	3.71	1.066E+02	3.950E+02	0.038E+02	0.97	
10-CO60	5.27Y	1.08	1.911E+02	2.055E+02	0.013E+02	0.64	
12-Y88	106.65D	3.71	1.085E+02	4.021E+02	0.042E+02	1.04	
			---------	---------			
	Total Activity :		1.457E+03	2.854E+03			

Grand Total Activity : 1.457E+03 2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S50121919 Acquisition date : 19-DEC-2019 18:26:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.56	5756	20714	0.99	87.52	85	7	1.09E-01	8.8	7.01E-01	
1	136.47	9424	18901	1.03	267.79	264	8	1.79E-01	5.5	6.90E+00	
1	255.05	2865	15550	1.14	505.51	502	8	5.44E-02	15.5	4.87E+00	
1	814.04	1189	6683	1.48	1626.04	1621	10	2.26E-02	26.4	1.68E+00	
7	1325.97	2039	4203	3.94	2652.08	2641	33	3.87E-02	17.9	1.05E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.428E+02	1.004E+03	0.010E+03	1.03	
03-CO57	270.90D	1.67	2.390E+01	4.003E+01	0.051E+01	1.27	
04-CE139	137.66D	2.76	1.847E+01	5.096E+01	0.080E+01	1.57	
05-HG203	46.61D	20.0	7.304E+00	1.463E+02	0.061E+02	4.14	
06-SN113	115.10D	3.37	5.709E+01	1.922E+02	0.022E+02	1.16	
07-SR85	64.84D	8.63	2.800E+01	2.416E+02	0.041E+02	1.71	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.011E+02	0.60	
09-Y88	106.65D	3.71	1.066E+02	3.950E+02	0.038E+02	0.97	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.001E+03	0.47	
12-Y88	106.65D	3.71	1.085E+02	4.021E+02	0.042E+02	1.04	
			---------	---------			
	Total Activity :		1.456E+03	2.853E+03			

Grand Total Activity : 1.456E+03 2.853E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.032E+01	7.743E+00	0.000E+00	129.723
03-CO57	4.003E+01	5.069E-01	3.133E-01	0.000E+00	127.768
04-CE139	5.096E+01	7.993E-01	5.589E-01	0.000E+00	91.179
05-HG203	1.463E+02	6.057E+00	5.441E+00	0.000E+00	26.897
06-SN113	1.922E+02	2.230E+00	1.477E+00	0.000E+00	130.120

07-SR85	2.416E+02	4.135E+00	3.011E+00	0.000E+00	80.236
08-CS137	1.755E+02	1.053E+00	4.884E-01	0.000E+00	359.343
09-Y88	3.950E+02	3.826E+00	2.112E+00	0.000E+00	187.049
10-CO60	2.046E+02	9.613E-01	4.225E-01	0.000E+00	484.272
12-Y88	4.021E+02	4.201E+00	1.144E+00	0.000E+00	351.355

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.241E-01		7.760E-01	1.329E+00	0.000E+00	0.469

```
A,15S50121919     ,12/26/2019 10:57,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,15S50121919     ,CALIBRATION         ,12/26/2019 10:48,15S50121919
C,02-CD109,YES,   1.004E+03,   1.032E+01,   7.743E+00,,  129.723
C,03-CO57 ,YES,   4.003E+01,   5.069E-01,   3.133E-01,,  127.768
C,04-CE139,YES,   5.096E+01,   7.993E-01,   5.589E-01,,   91.179
C,05-HG203,YES,   1.463E+02,   6.057E+00,   5.441E+00,,   26.897
C,06-SN113,YES,   1.922E+02,   2.230E+00,   1.477E+00,,  130.120
C,07-SR85 ,YES,   2.416E+02,   4.135E+00,   3.011E+00,,   80.236
C,08-CS137,YES,   1.755E+02,   1.053E+00,   4.884E-01,,  359.343
C,09-Y88  ,YES,   3.950E+02,   3.826E+00,   2.112E+00,,  187.049
C,10-CO60 ,YES,   2.046E+02,   9.613E-01,   4.225E-01,,  484.272
C,12-Y88  ,YES,   4.021E+02,   4.201E+00,   1.144E+00,,  351.355
C,01-AM241,NO ,   6.241E-01,   7.760E-01,   1.329E+00,,    0.469
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

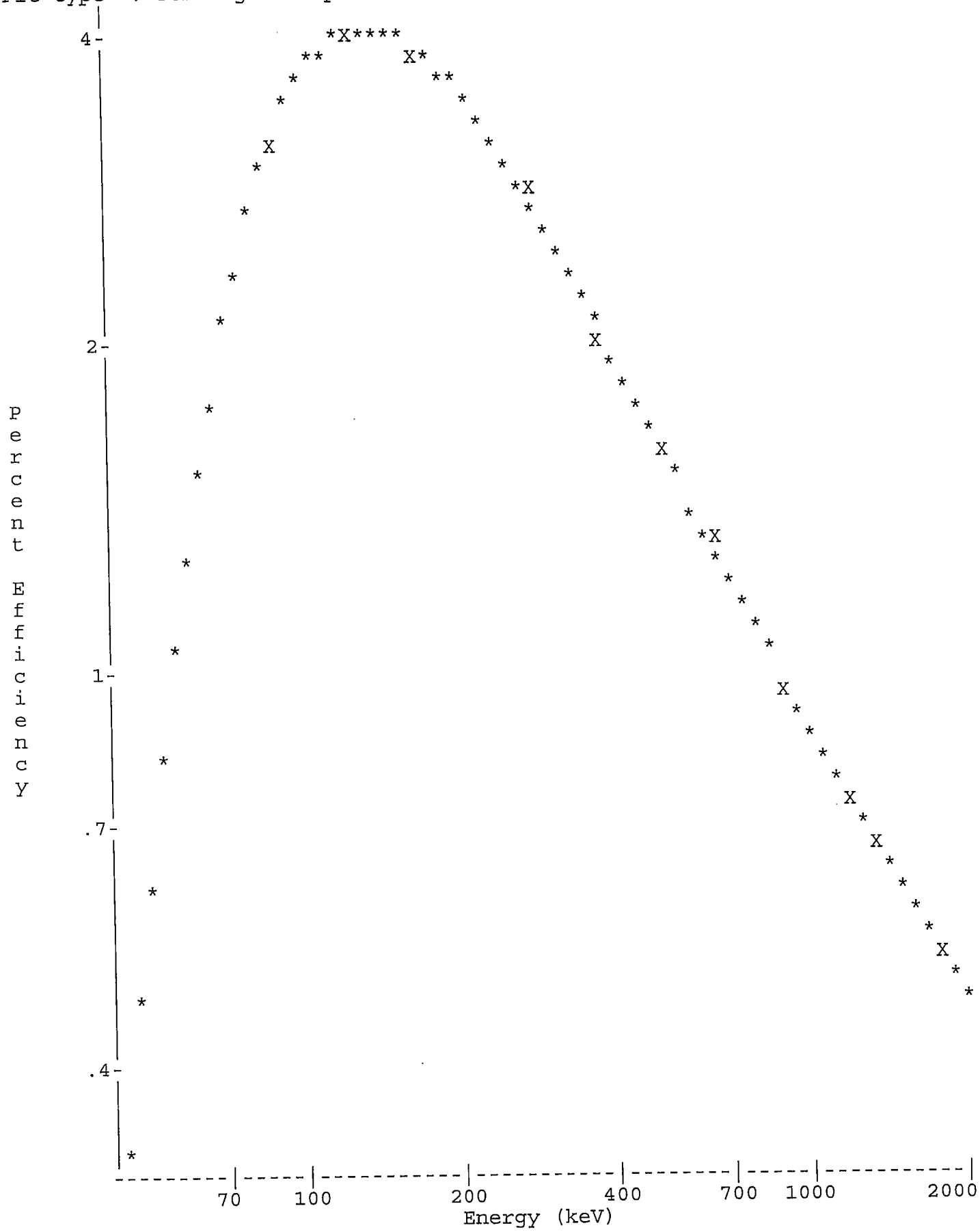
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity :	1.465E+03	2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION         ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,   -0.138
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GAMMA SPECTROSCOPY

Daily Source and Background Checks

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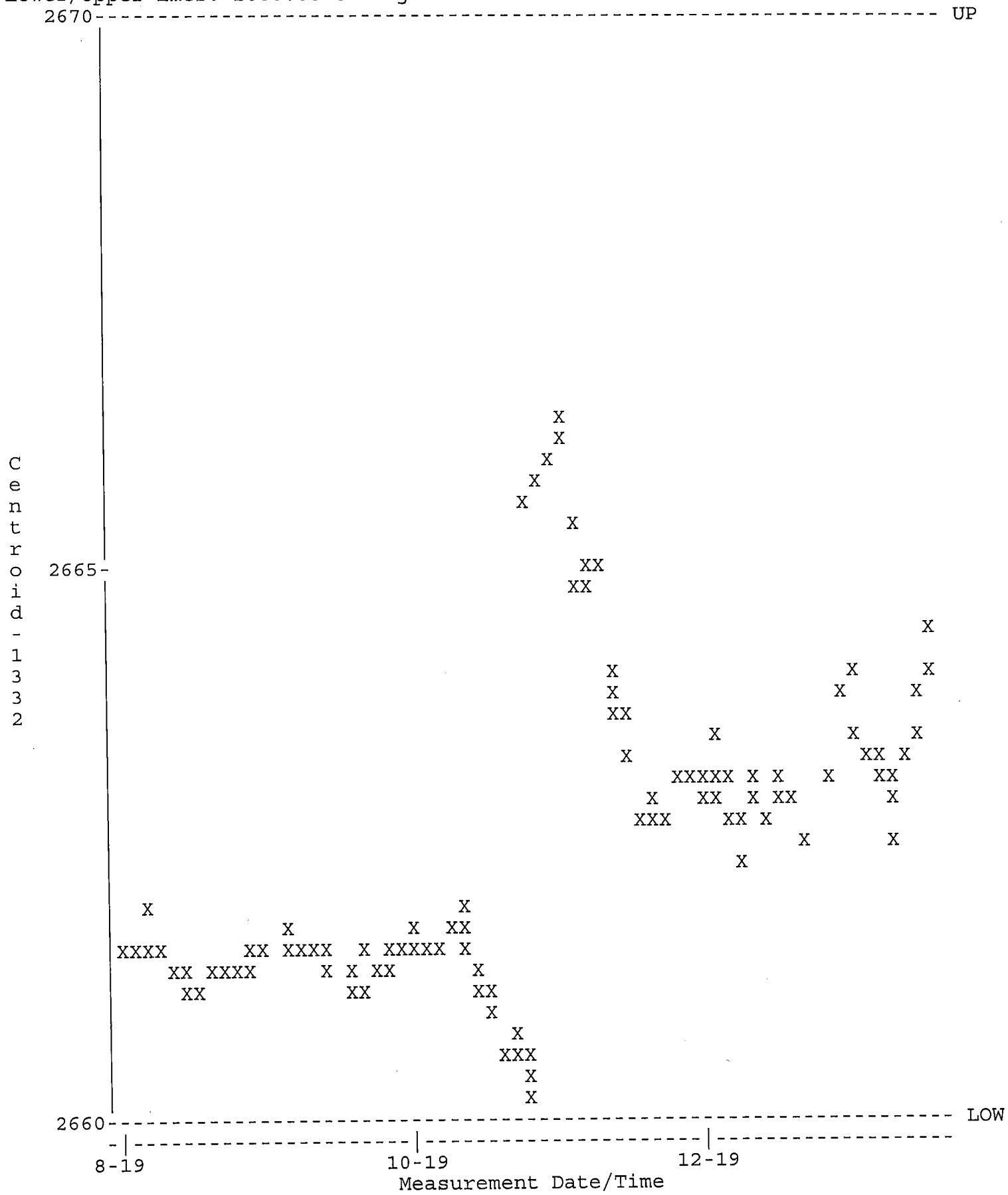
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



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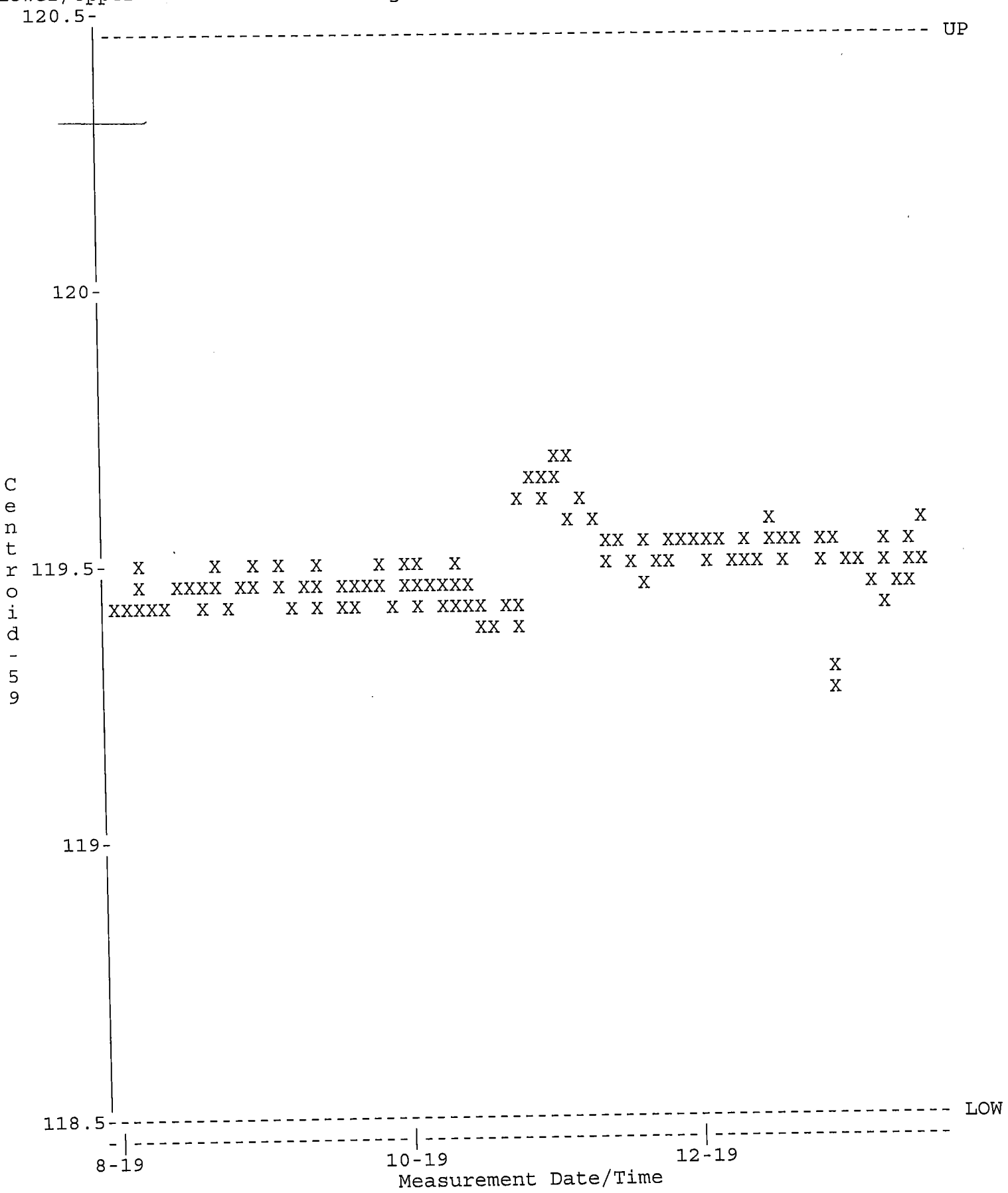

QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
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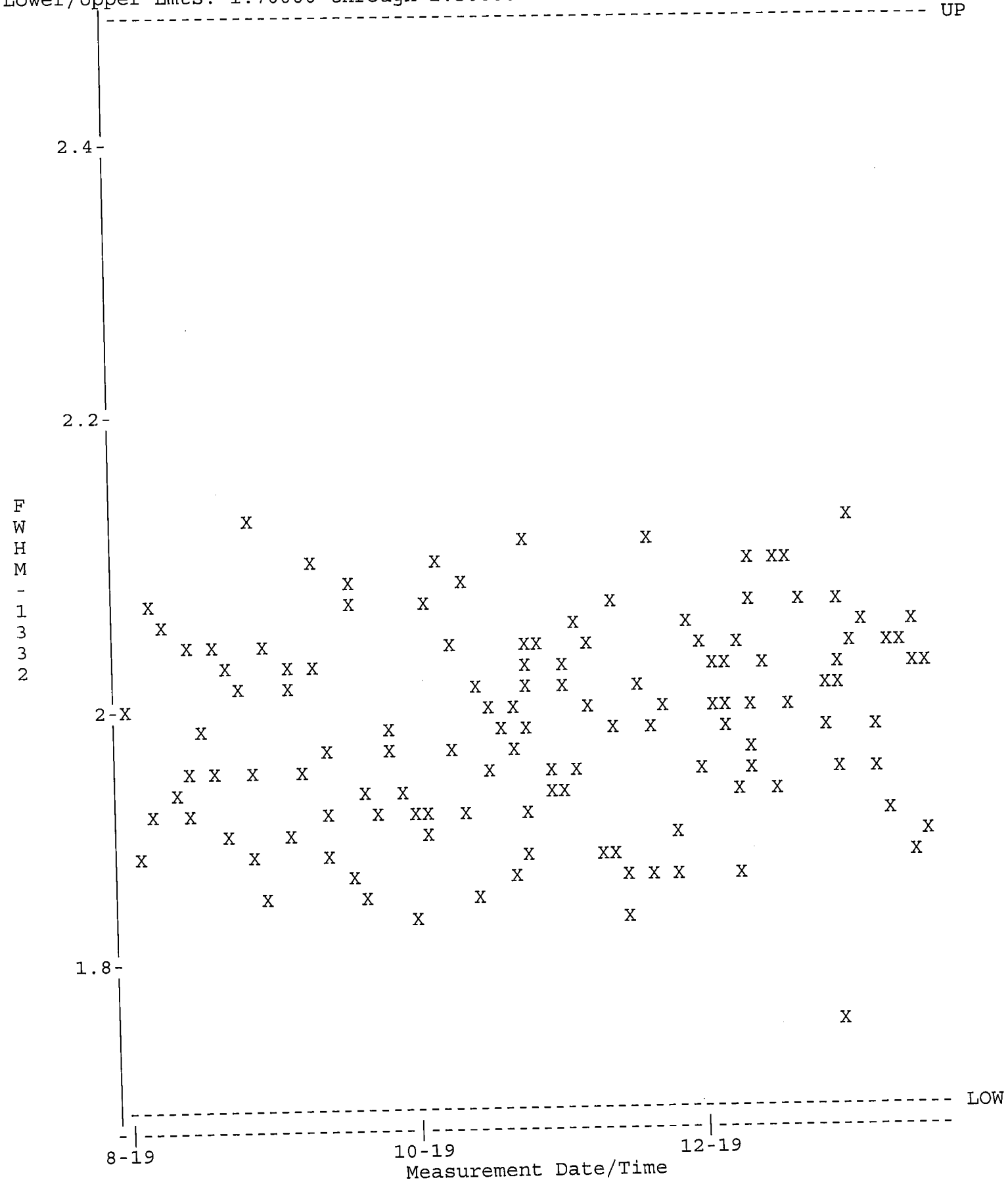
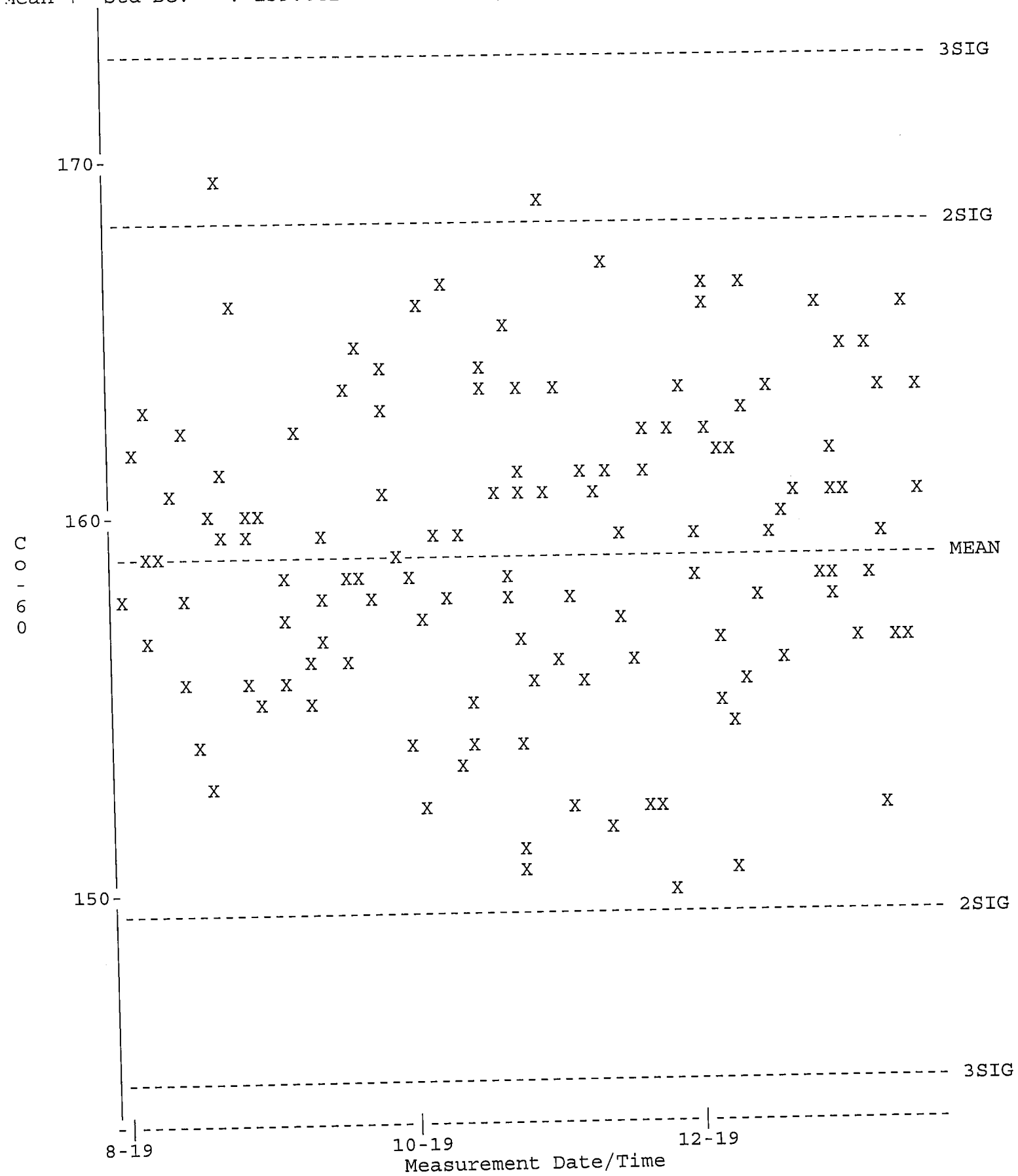
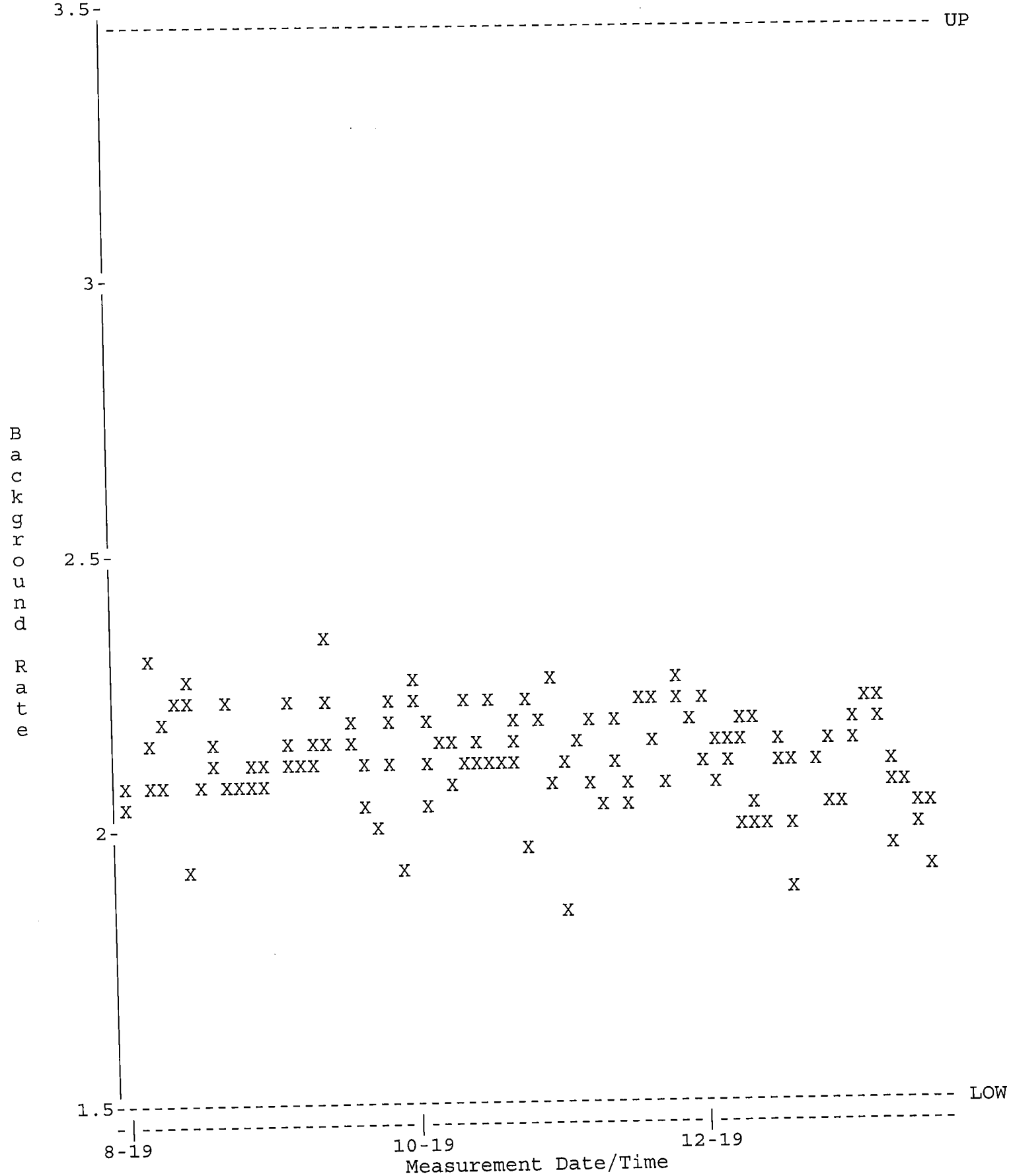


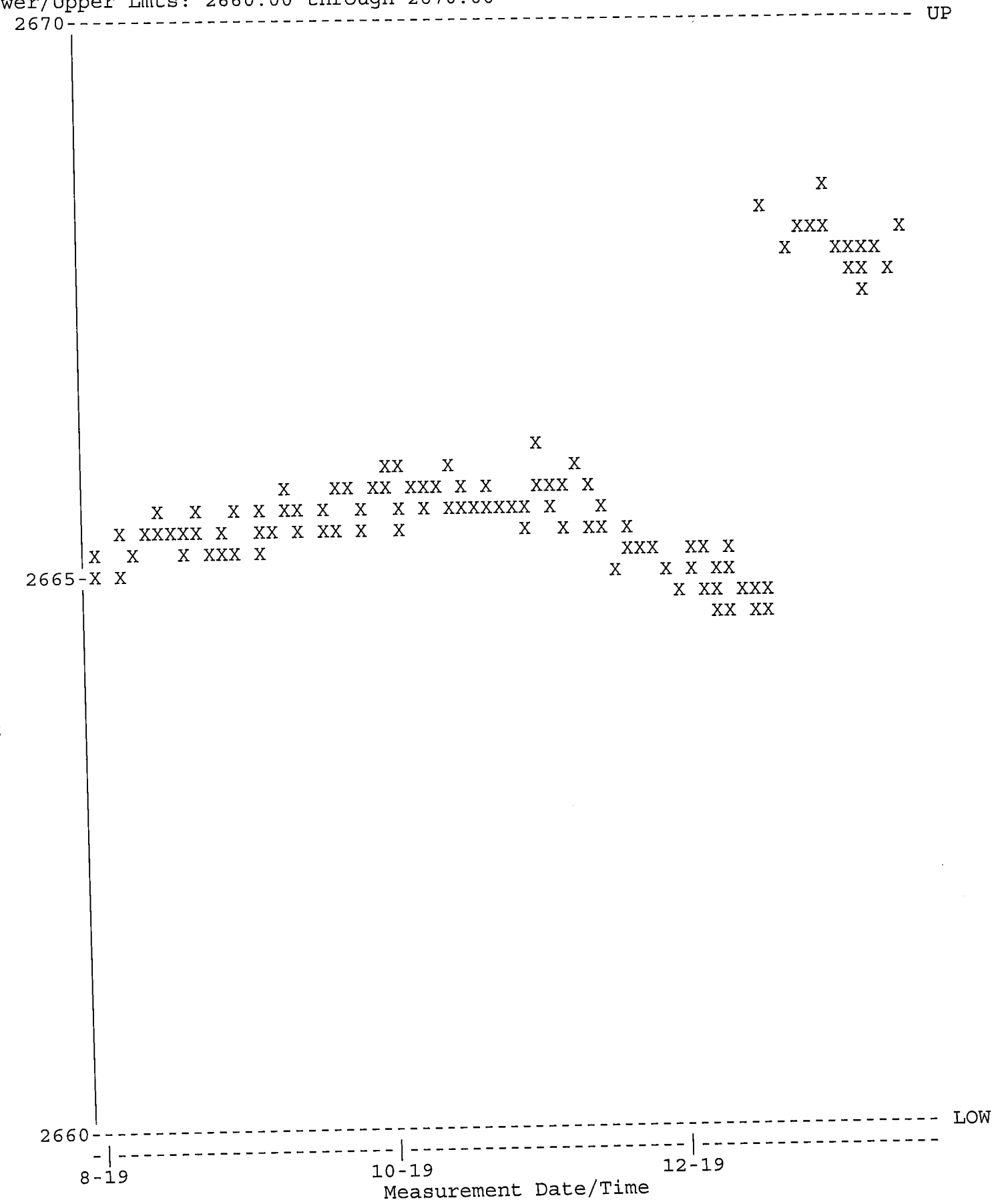
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



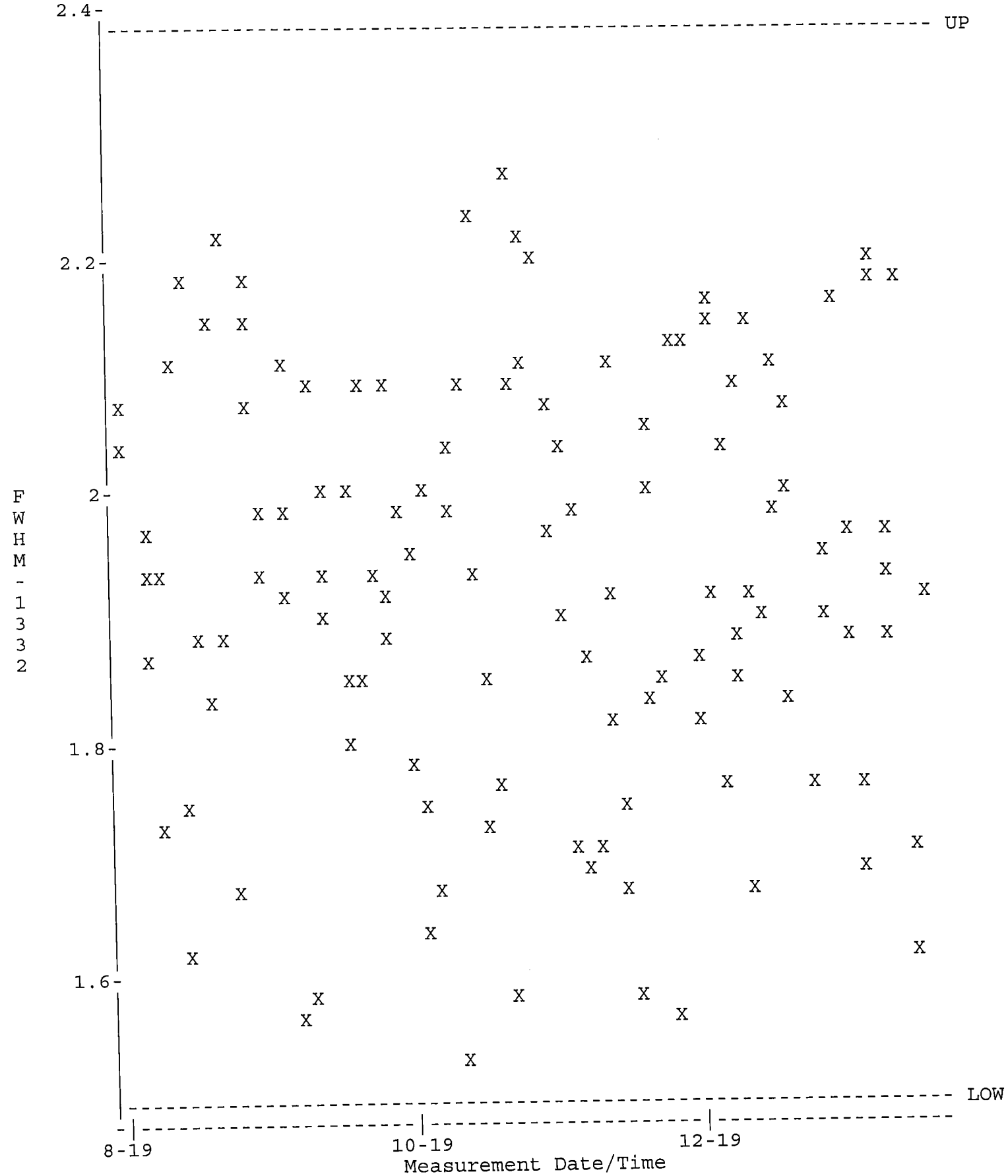
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



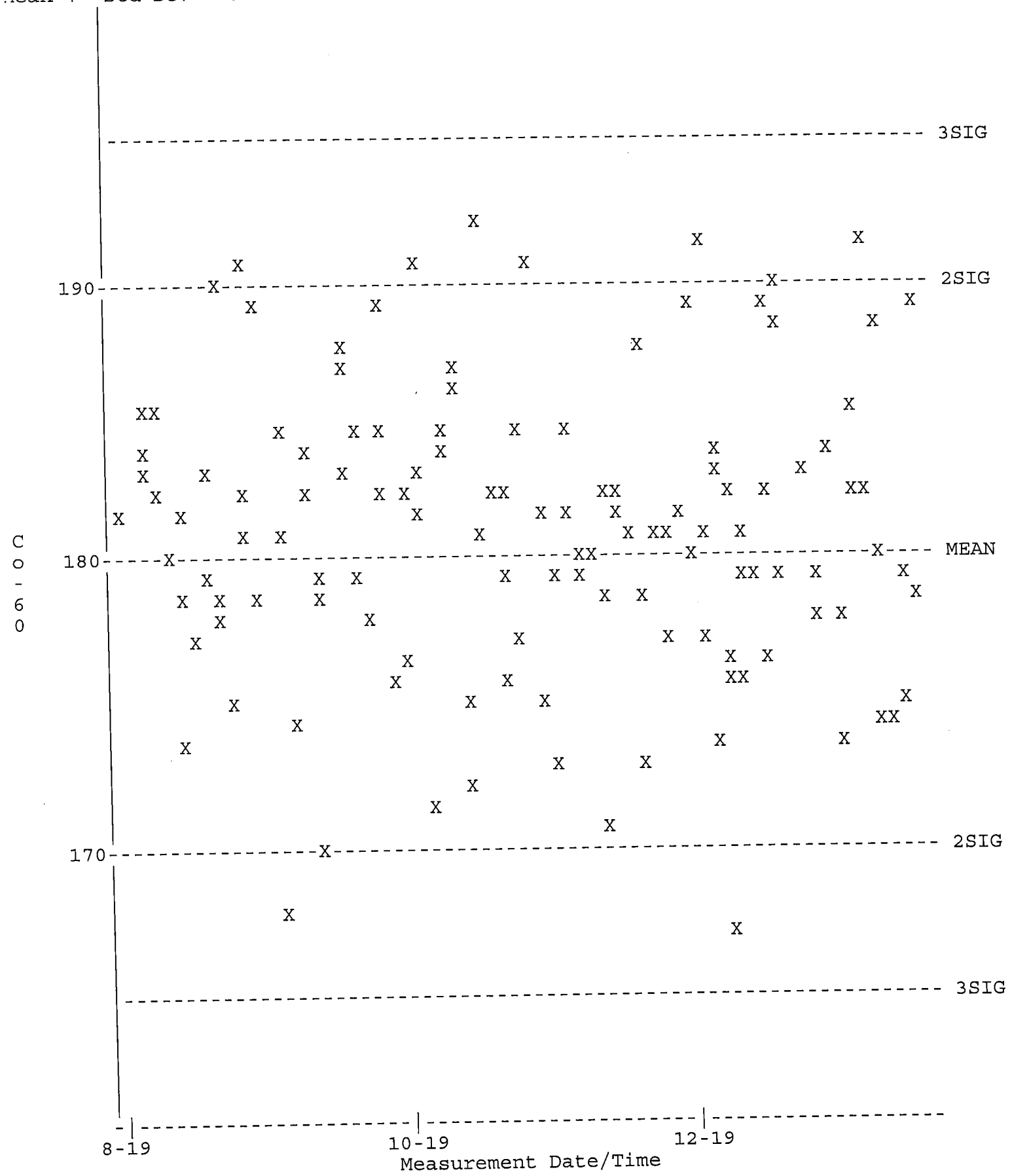
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



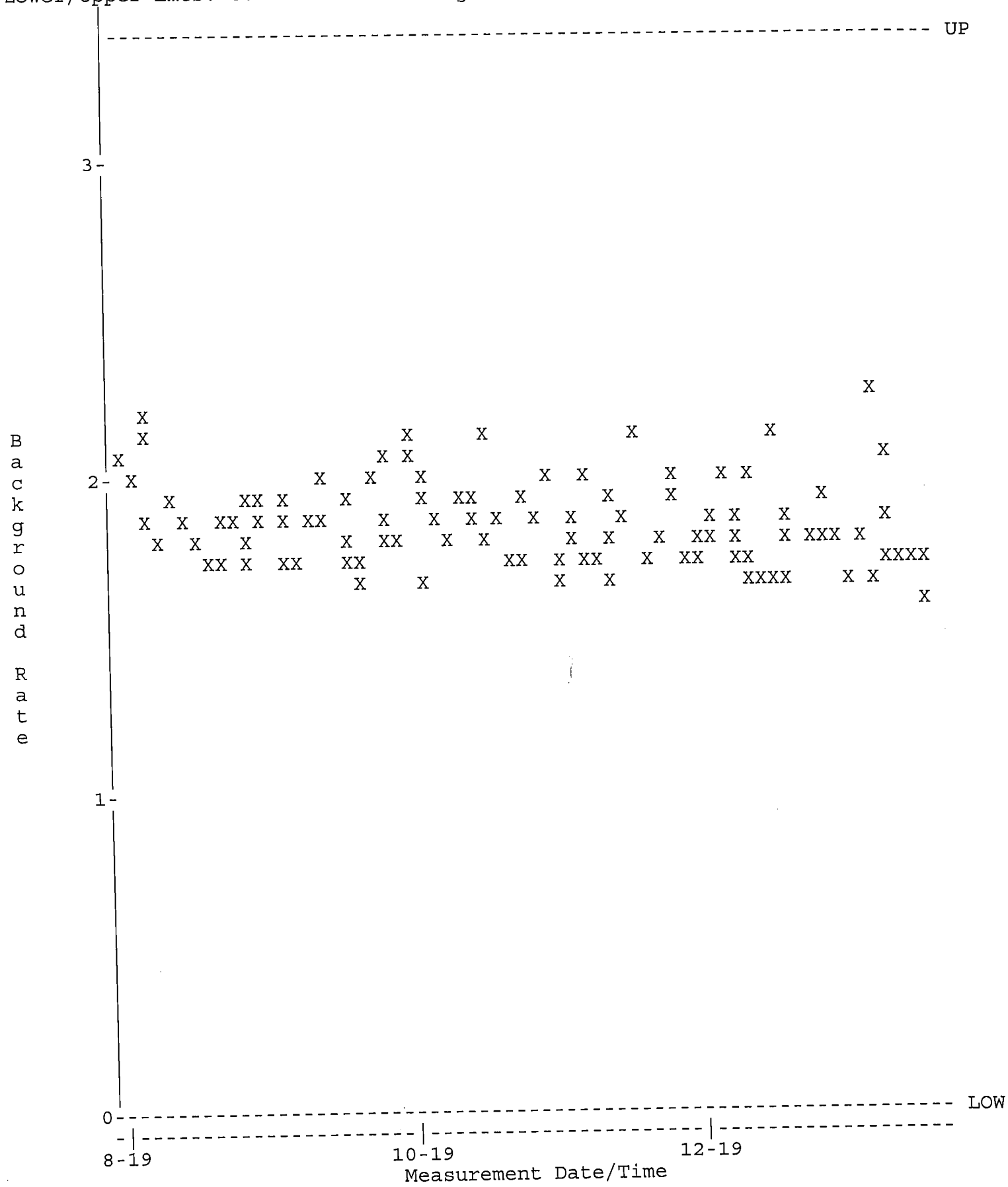
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



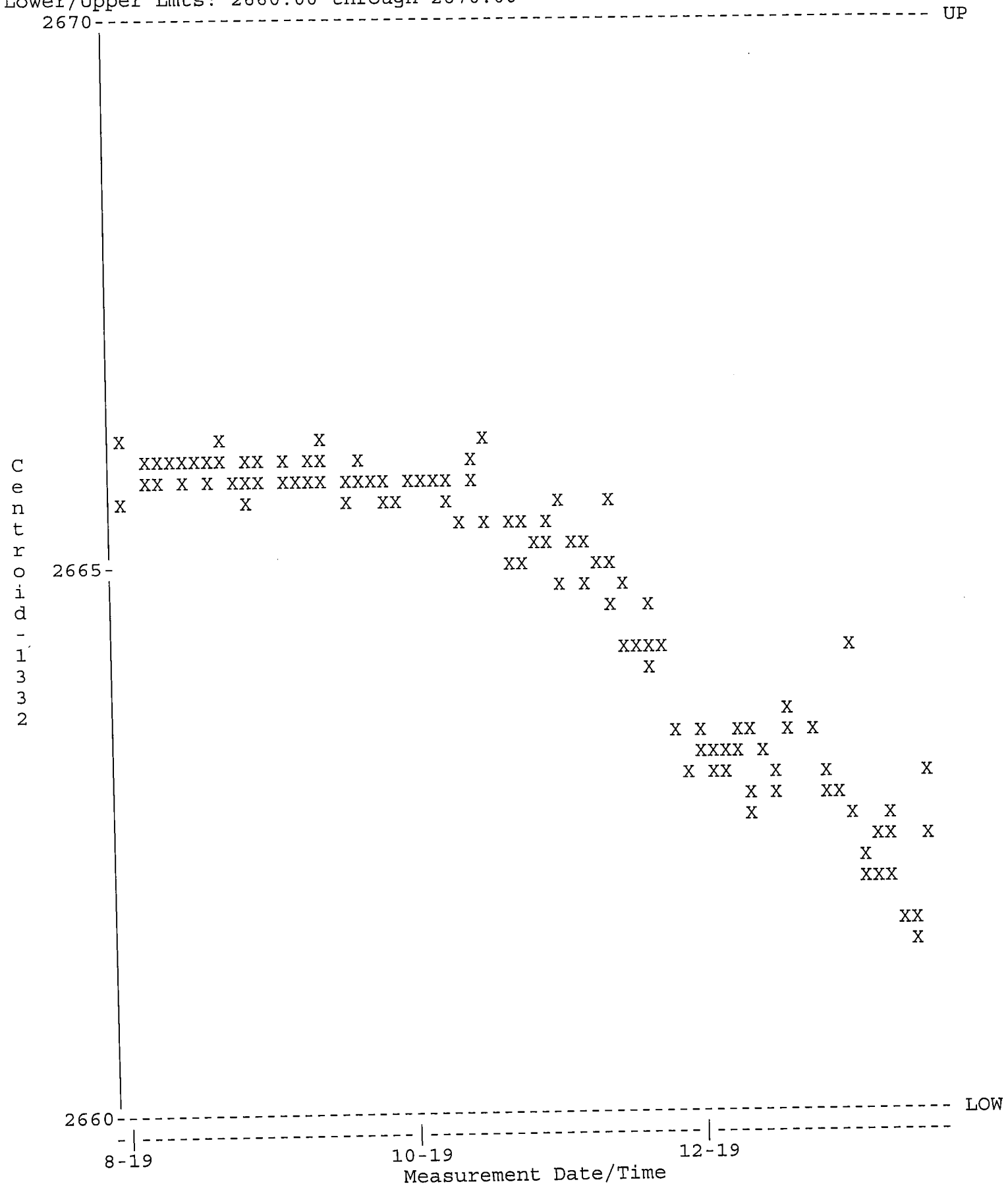
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



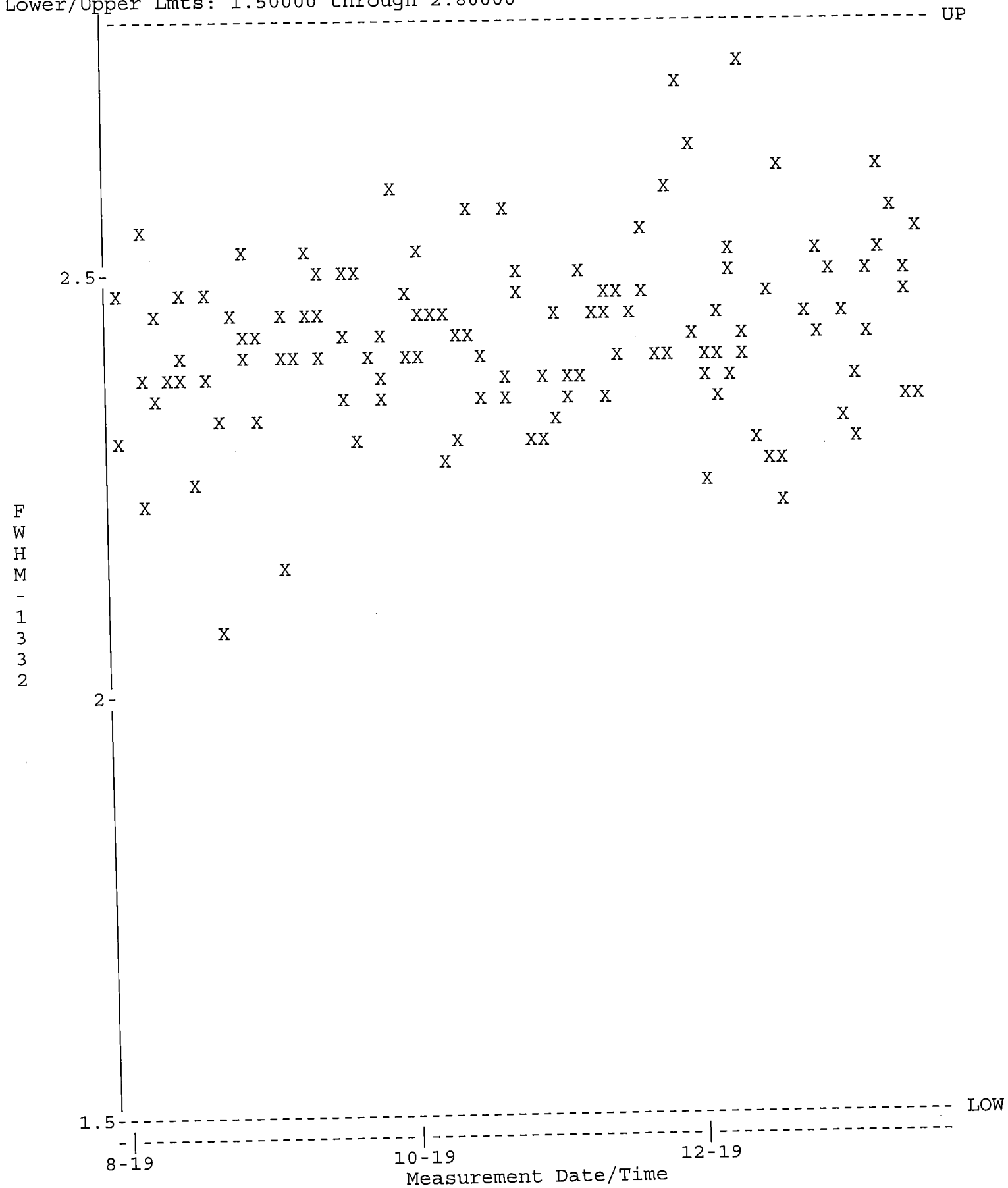
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



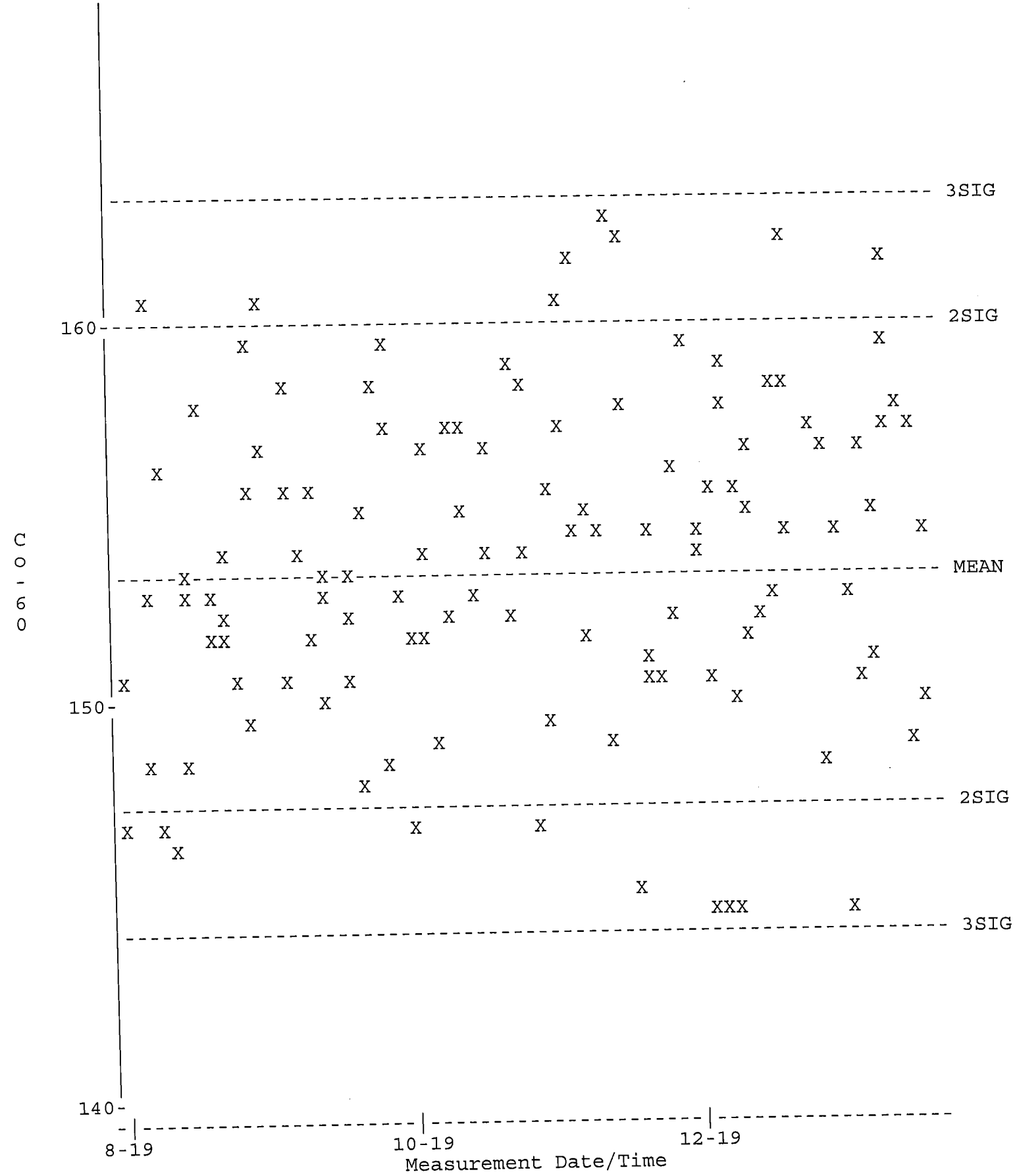
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



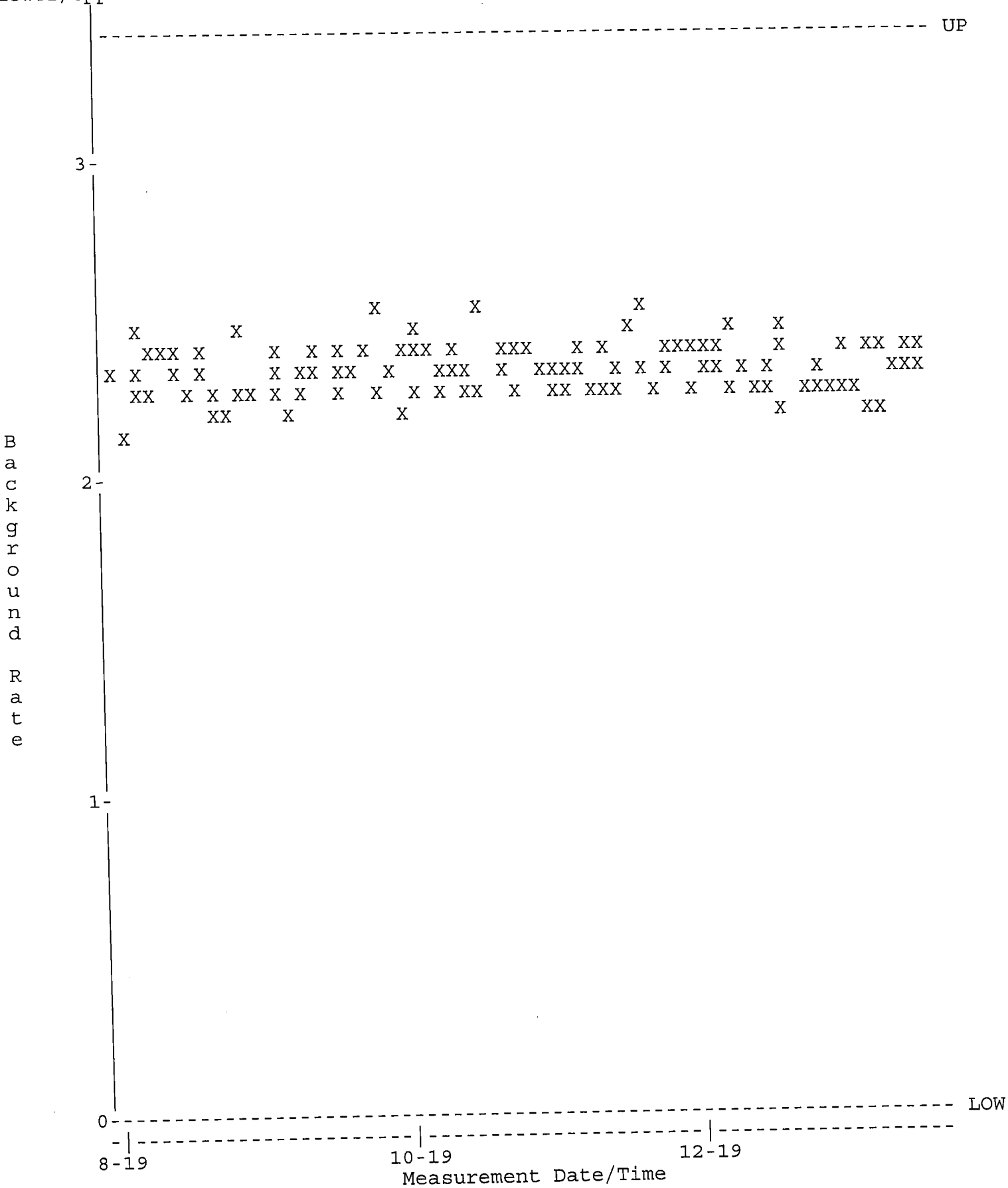
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



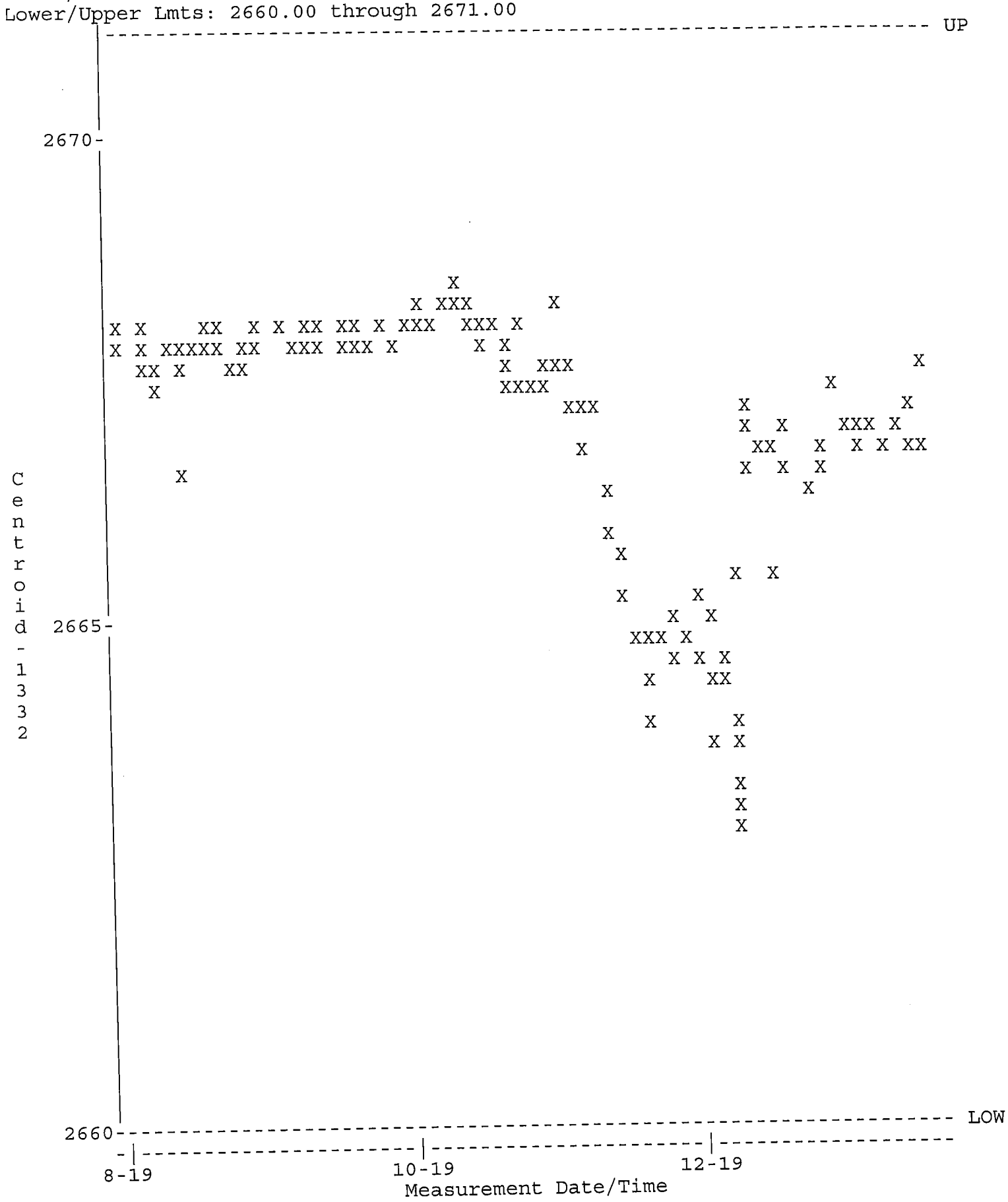
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



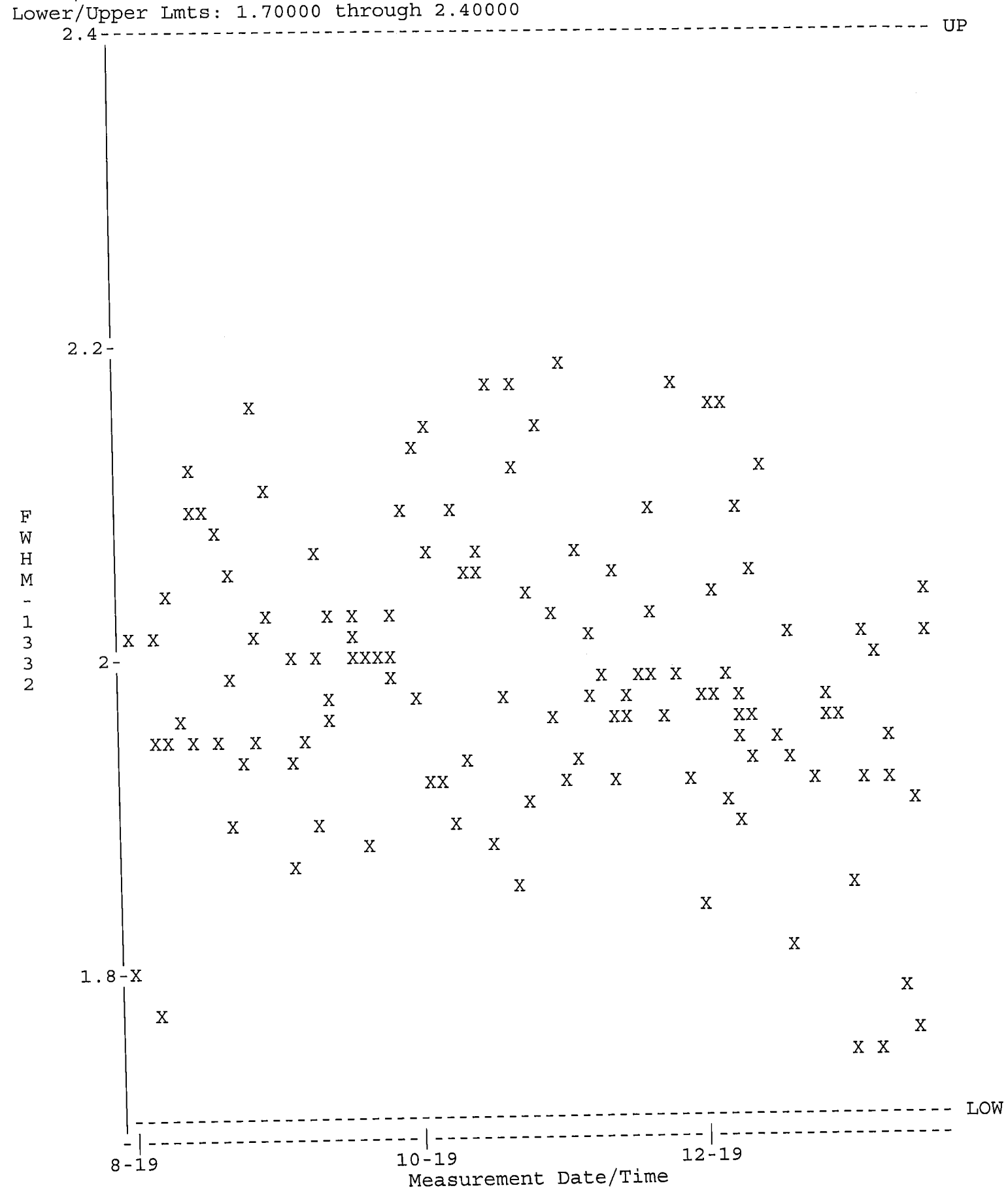
QA filename : DKB100:[GAMMA.QUALITY]TBE07_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



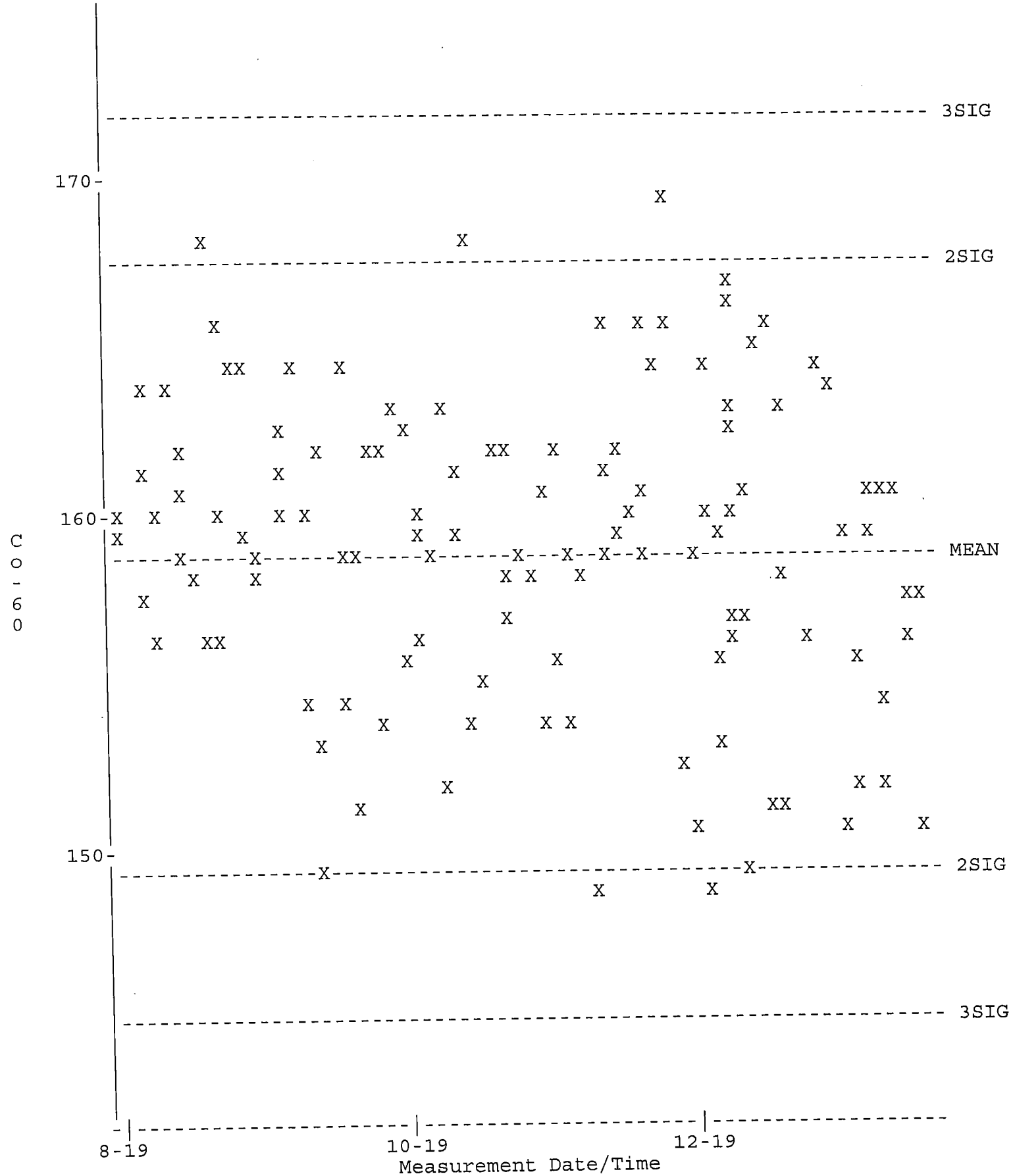
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



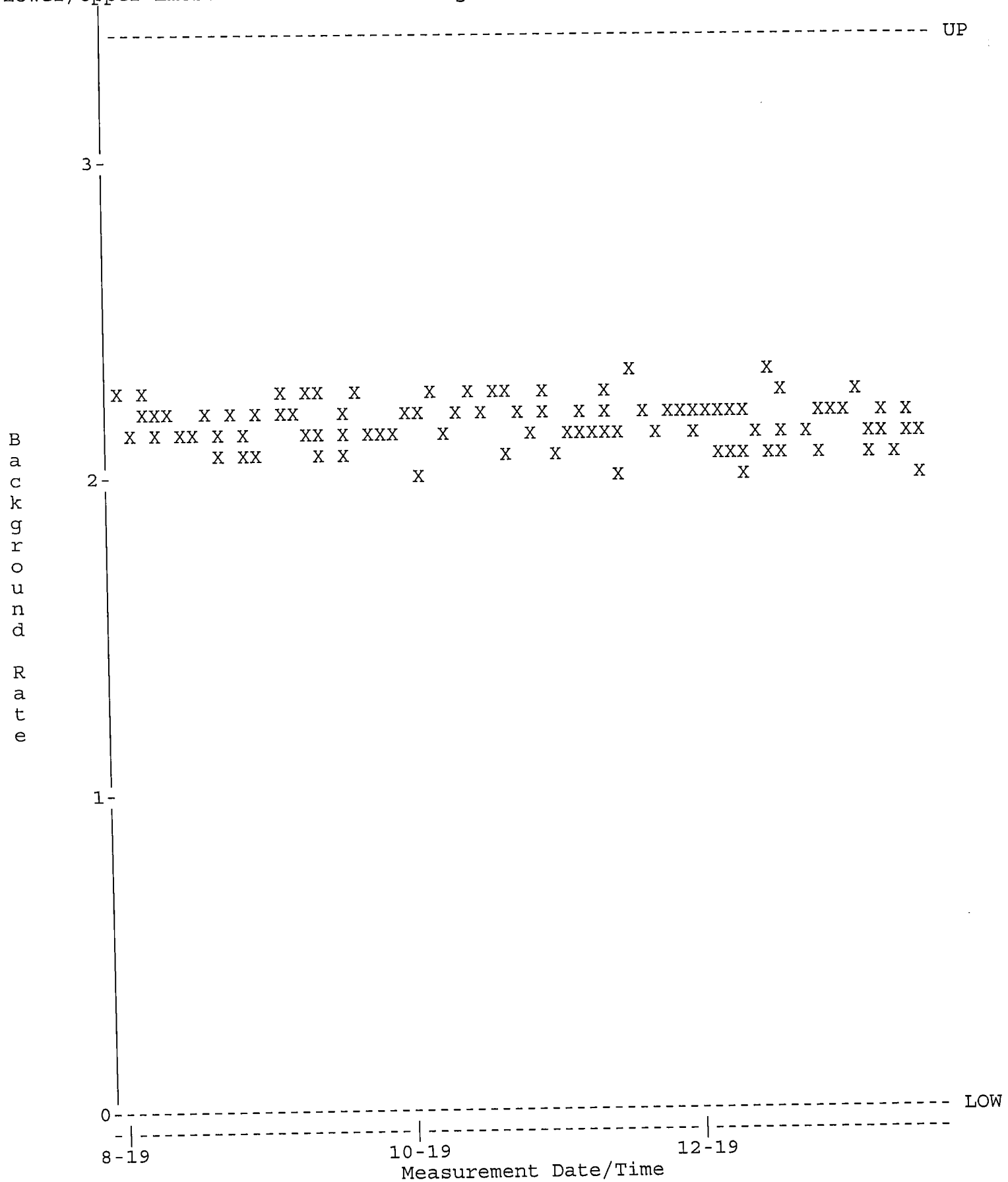
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



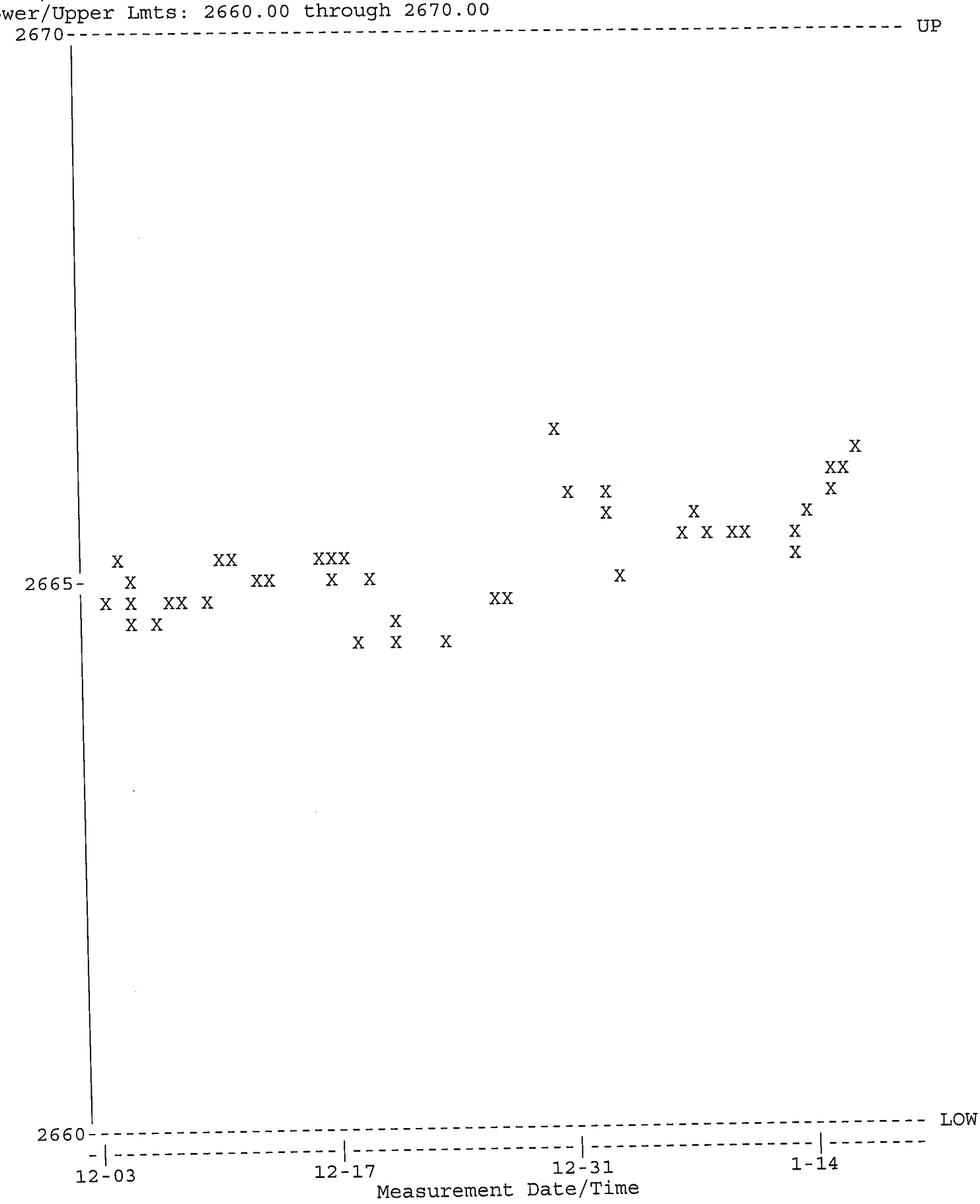
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



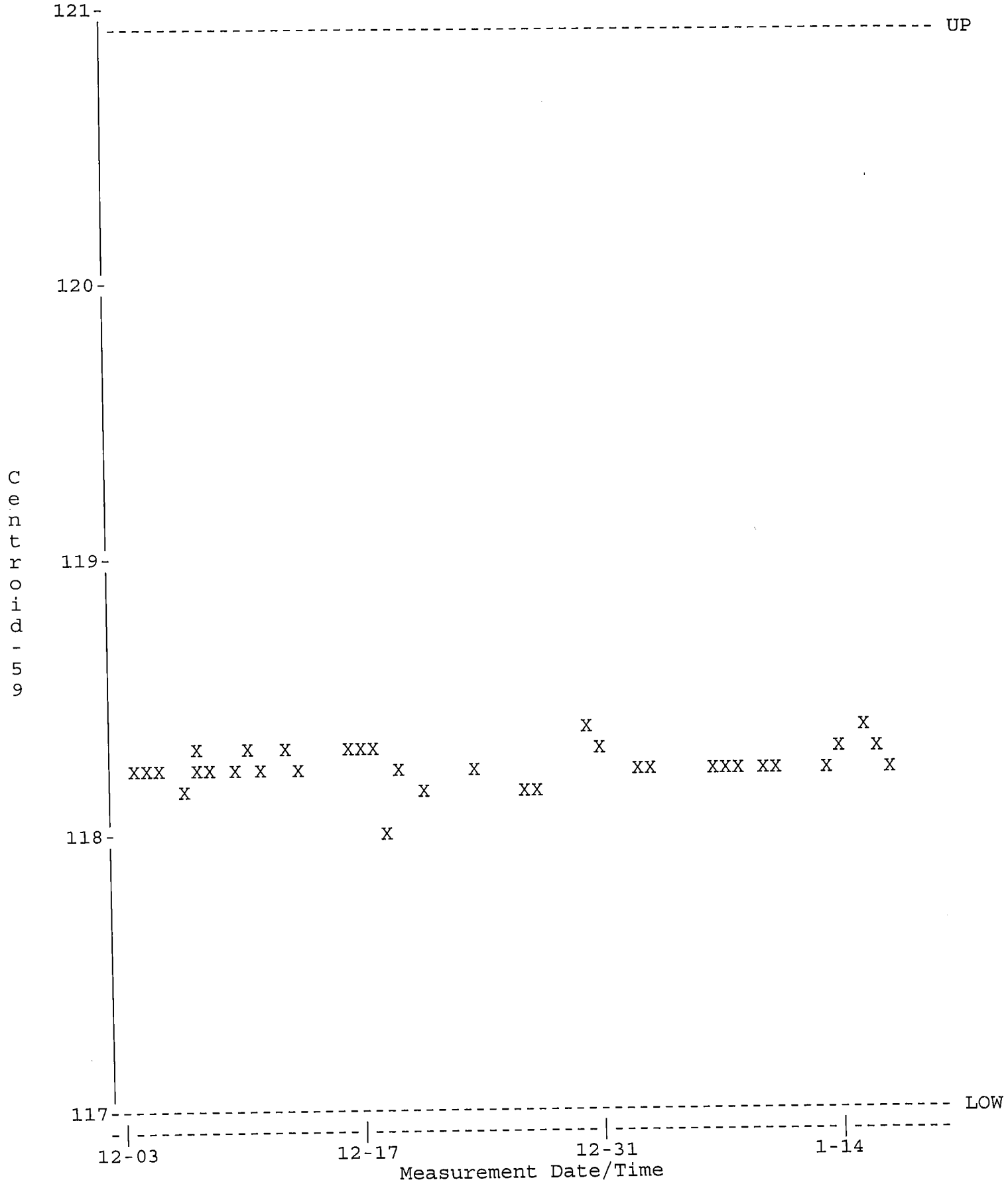
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



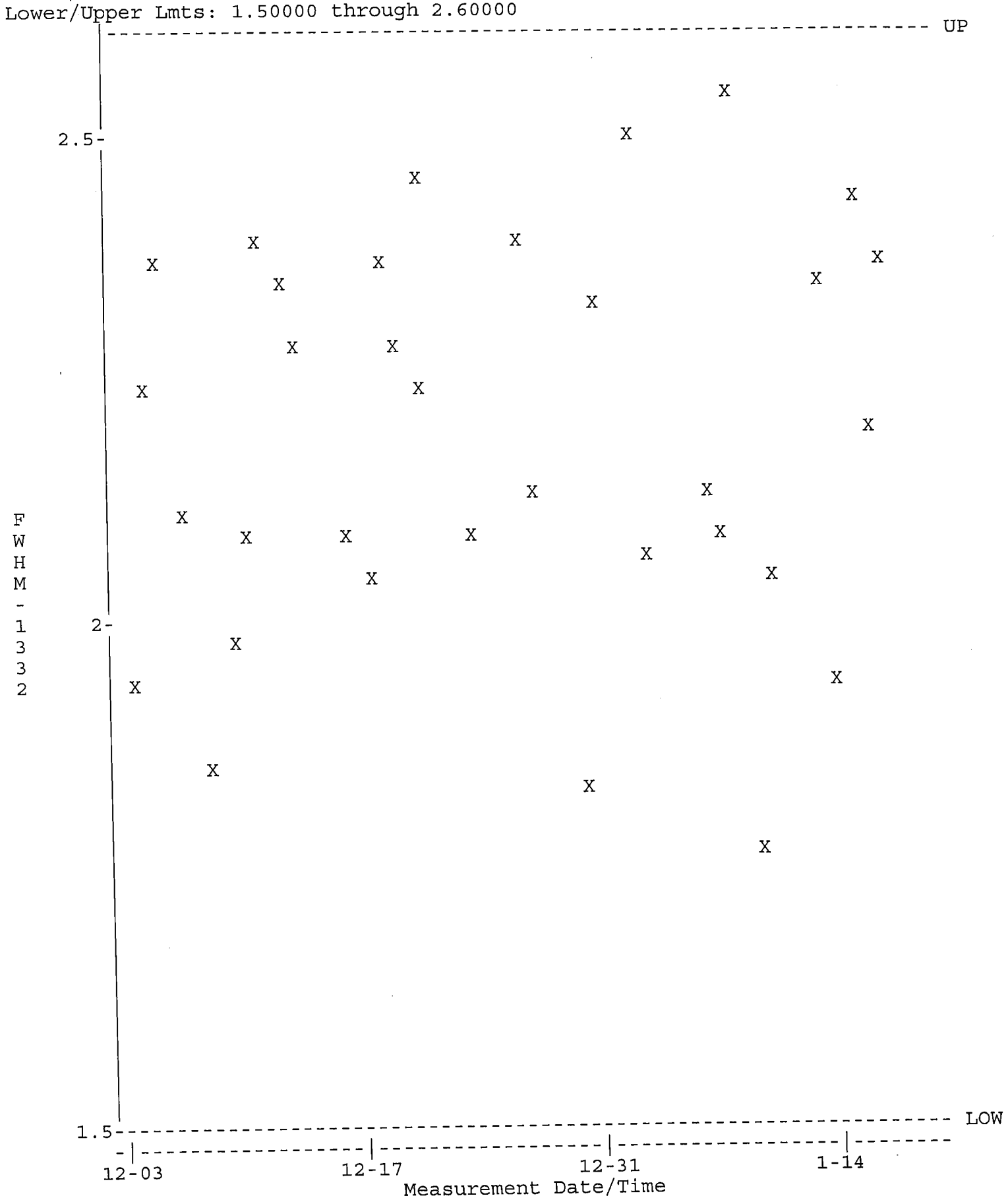
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



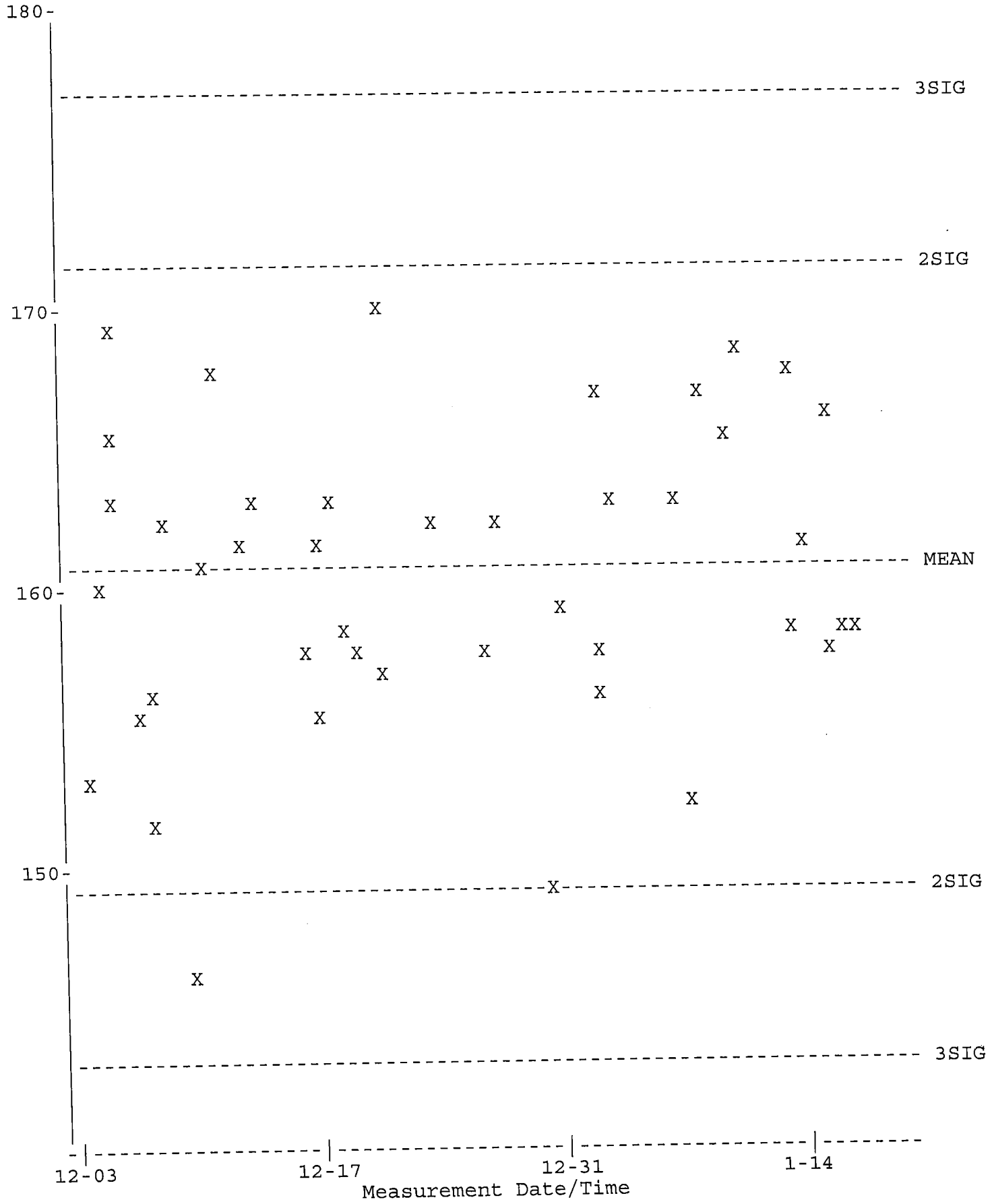
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



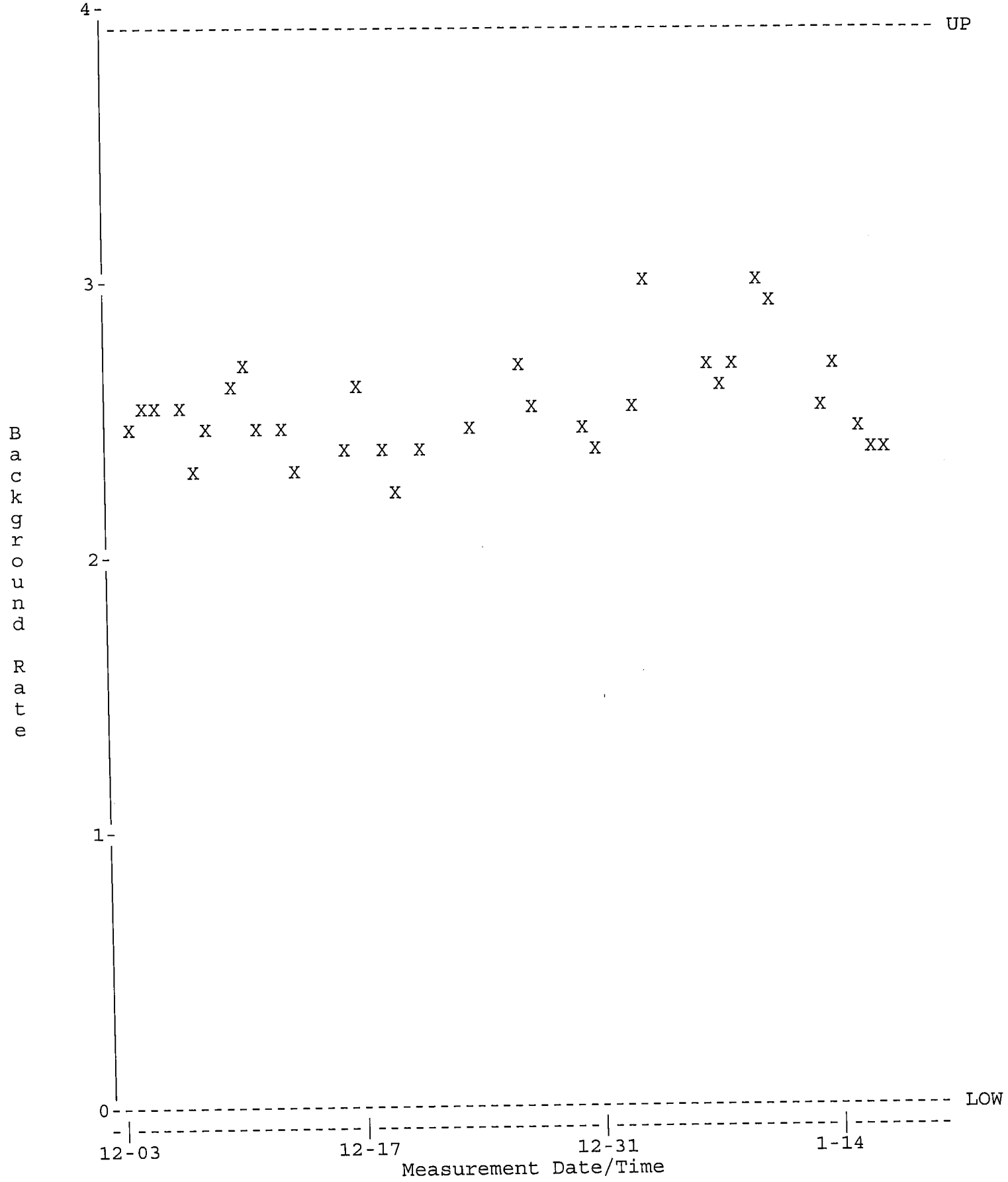
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



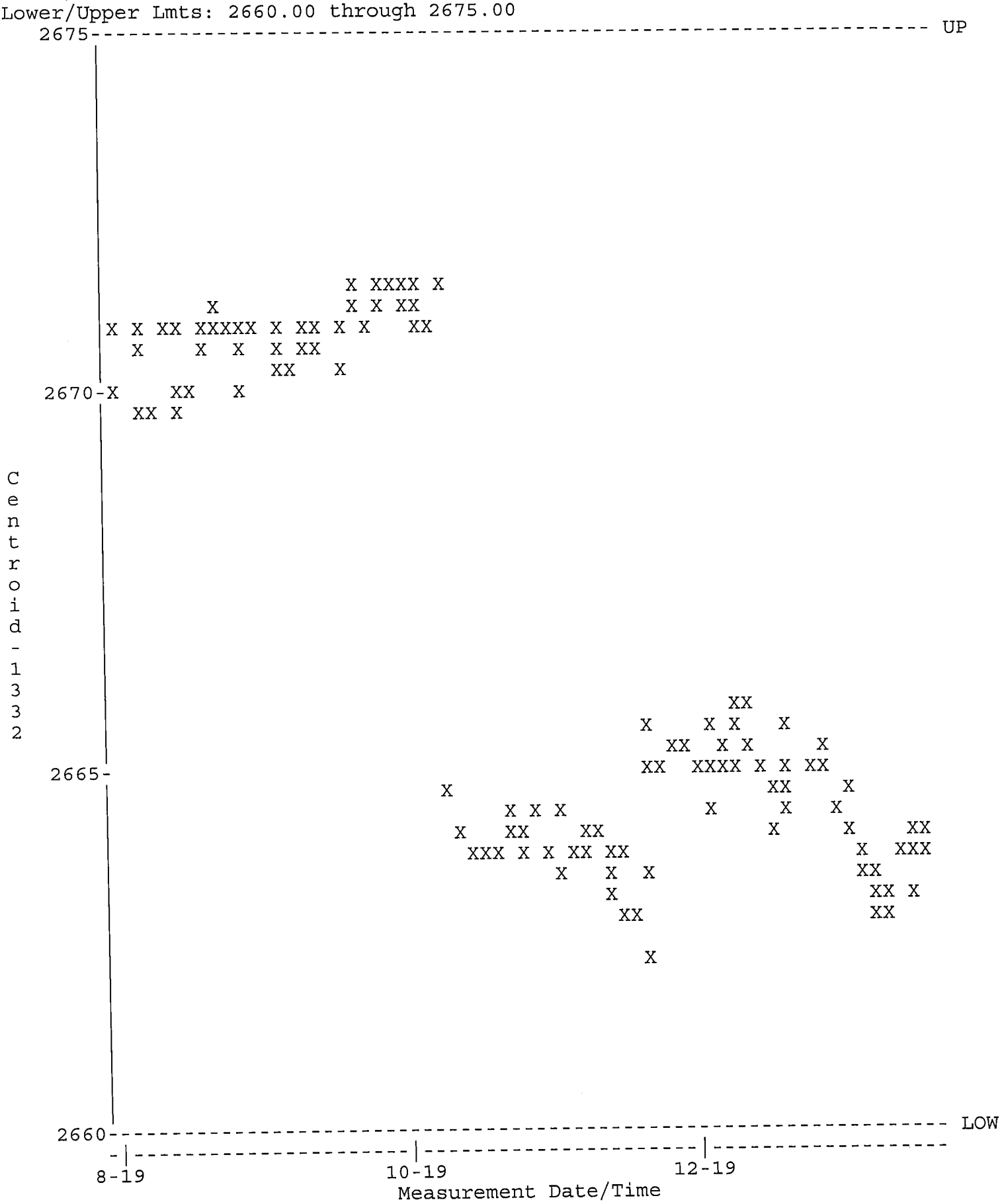
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



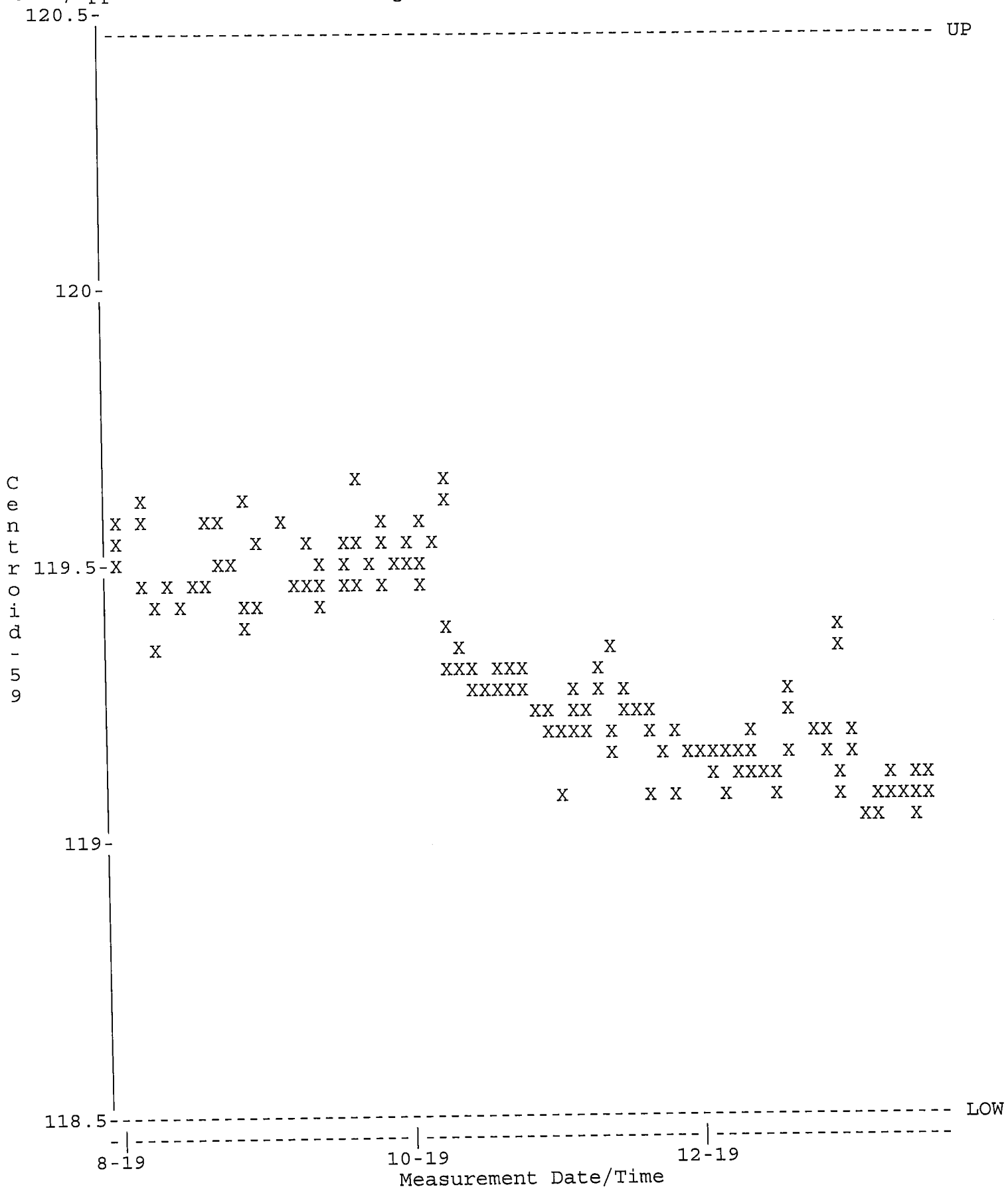
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



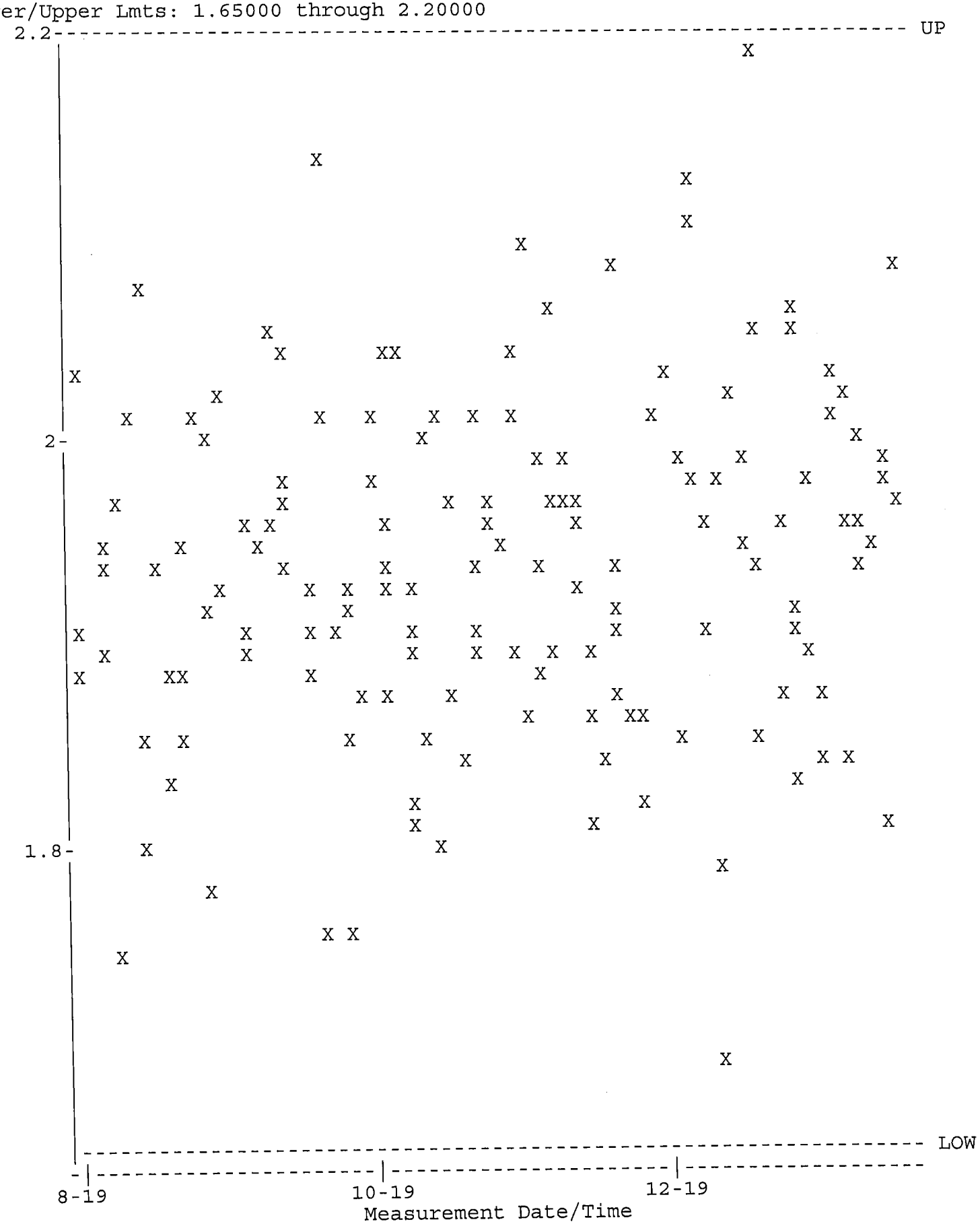
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



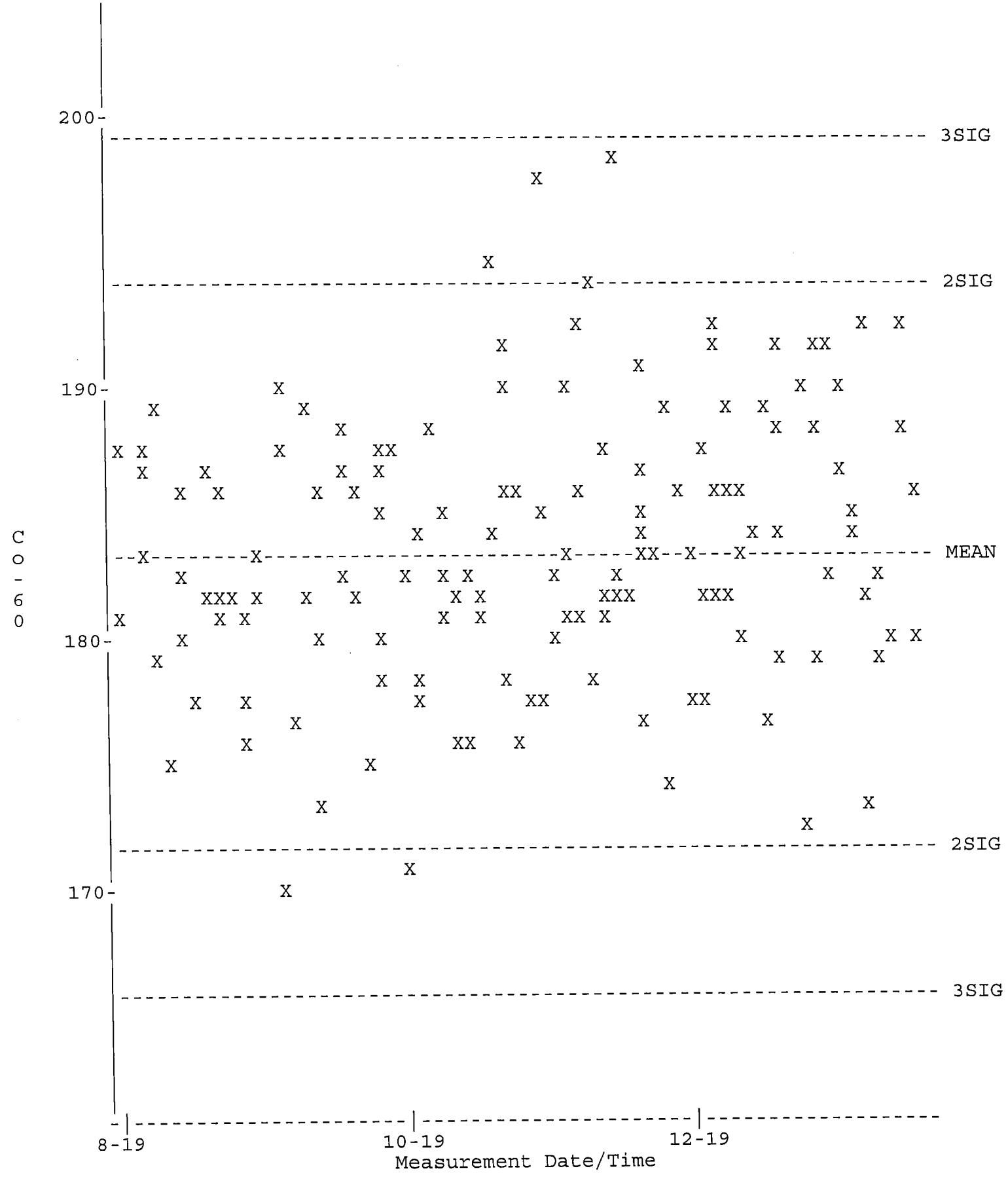
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



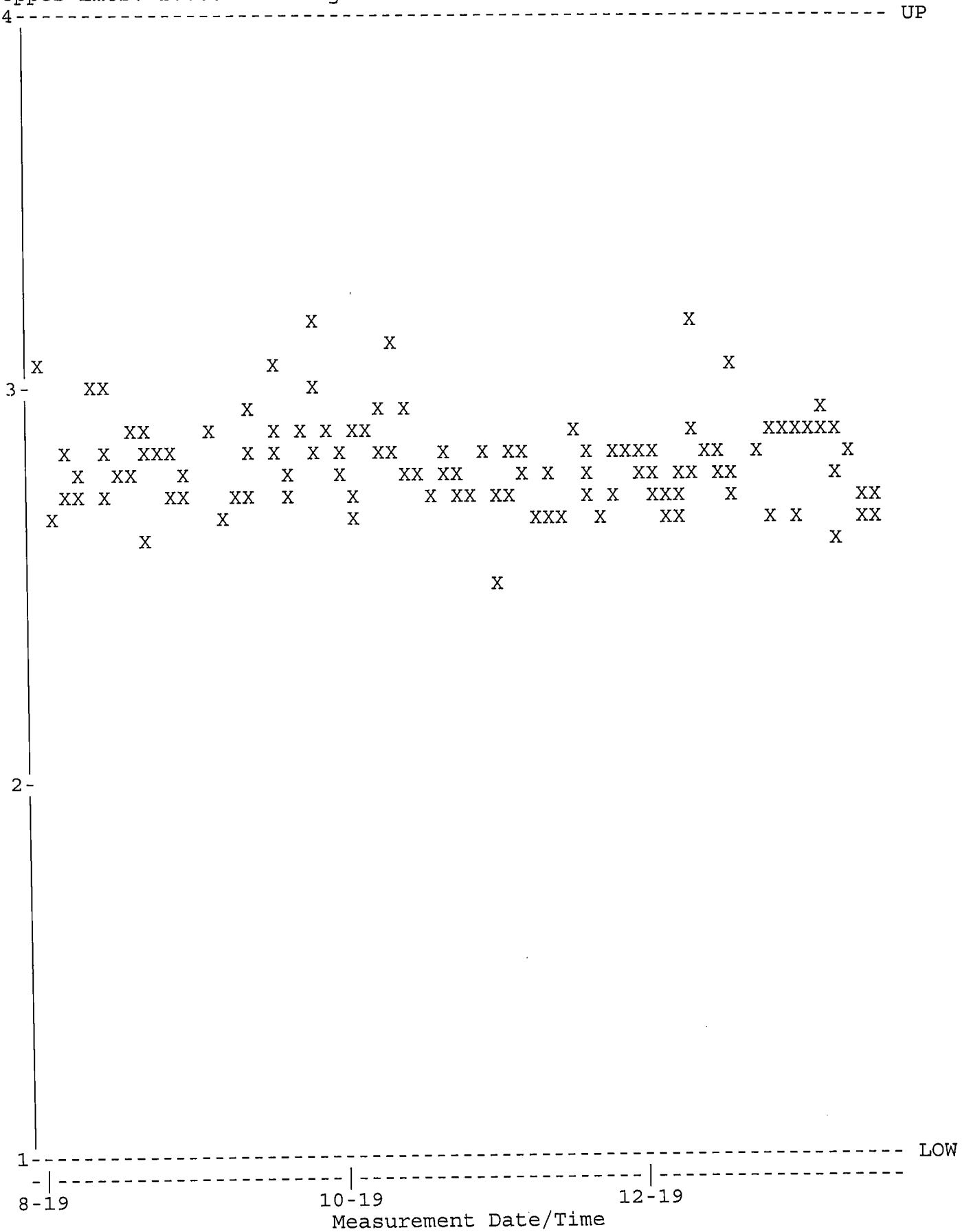
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



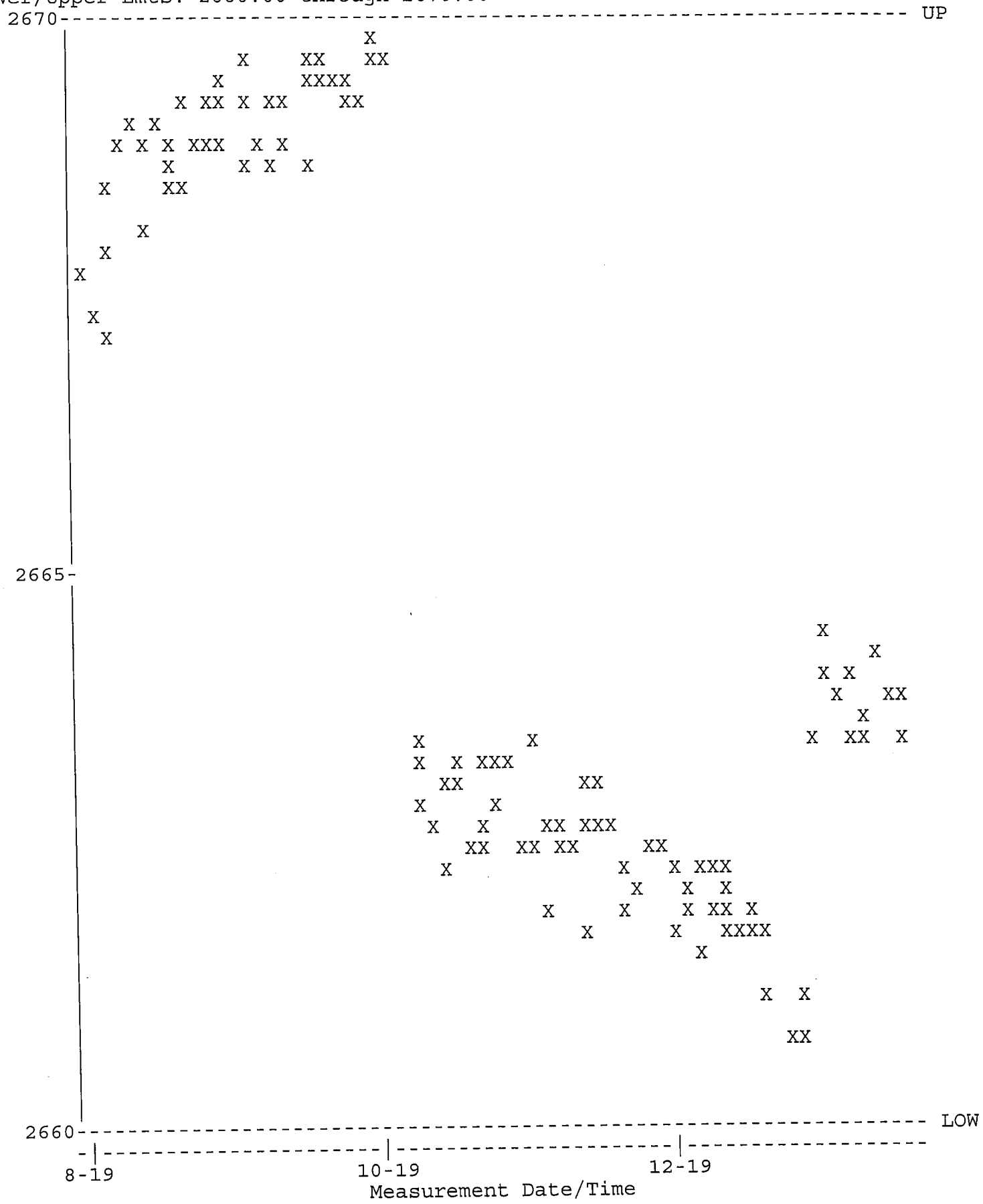
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



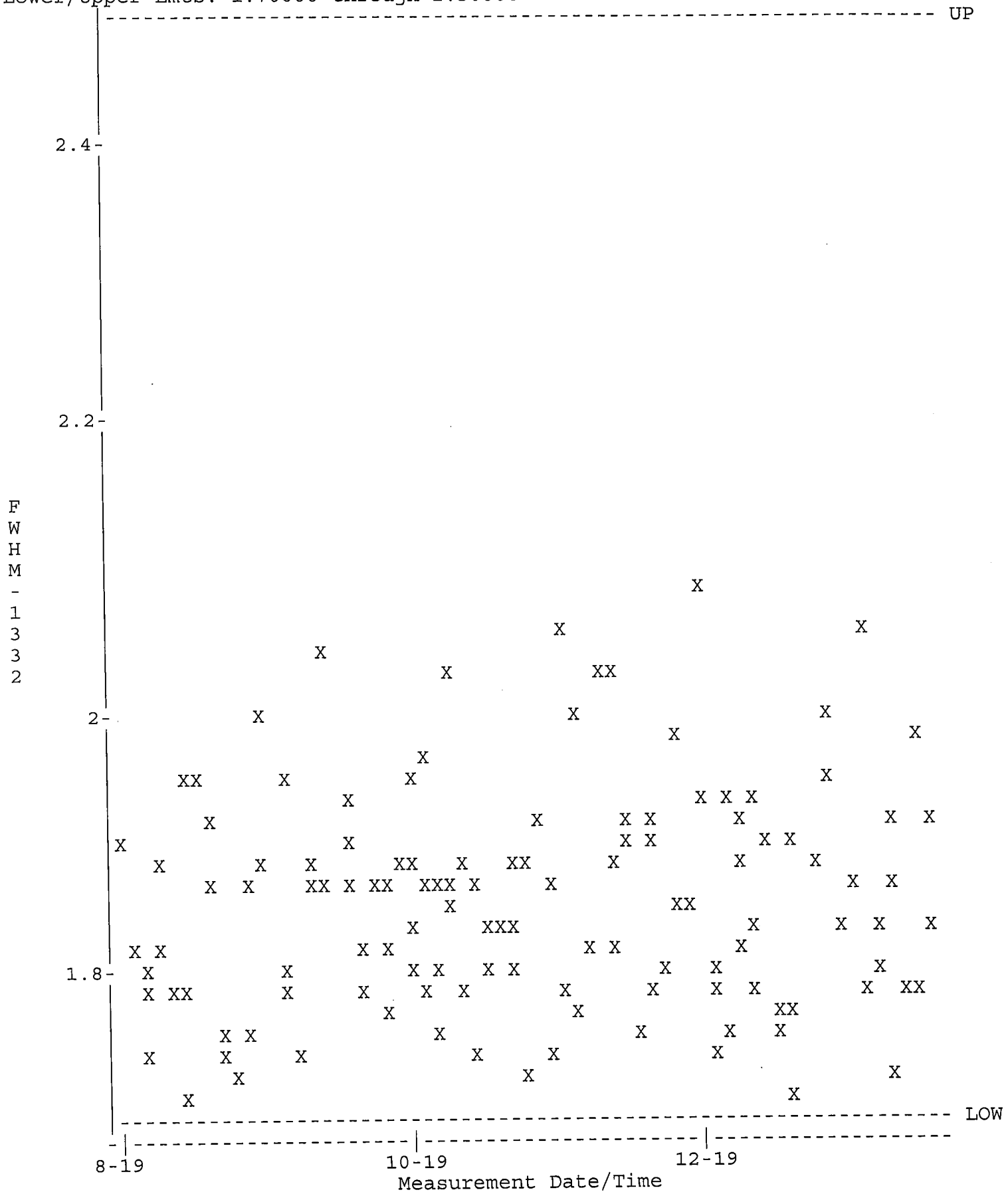
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



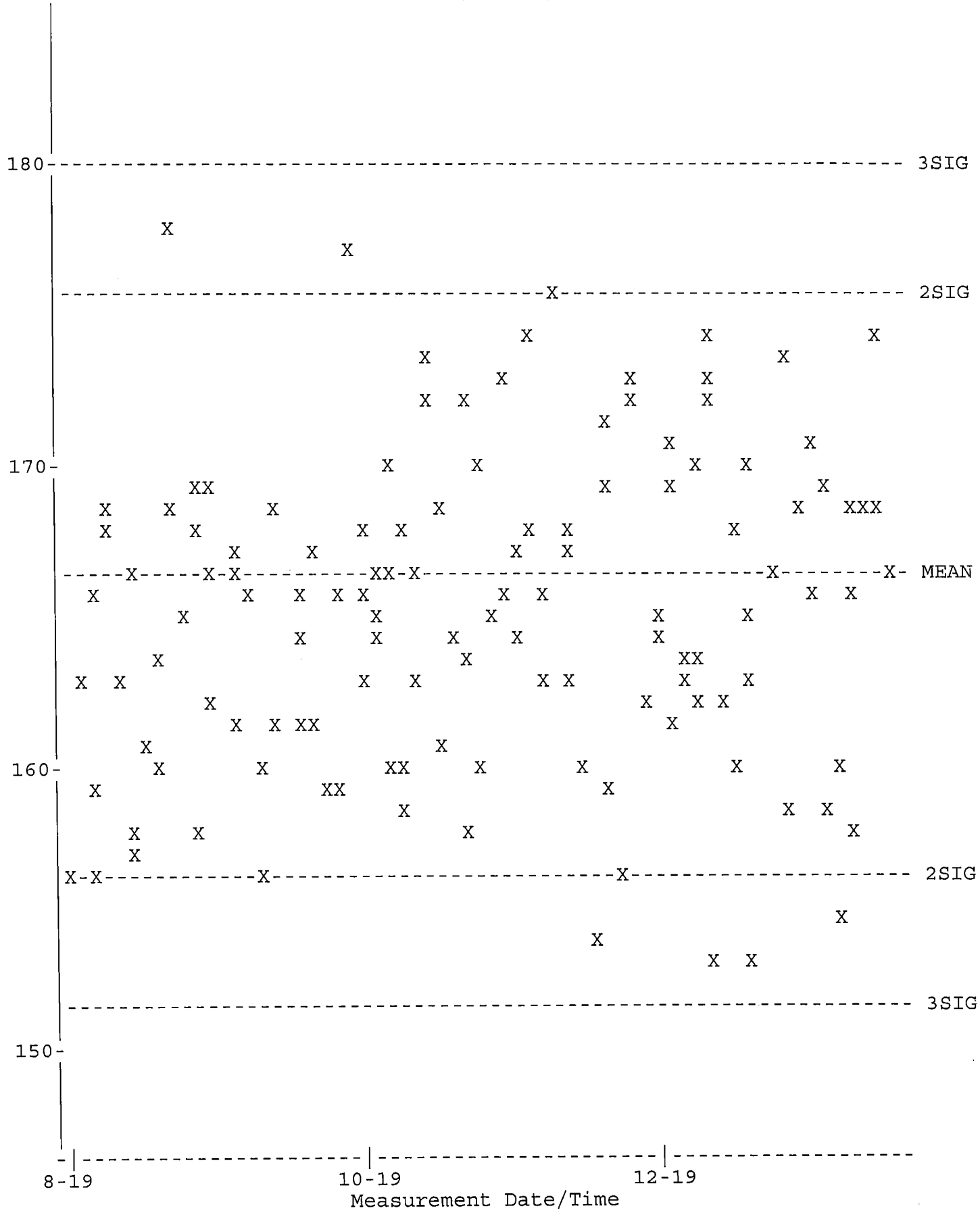
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



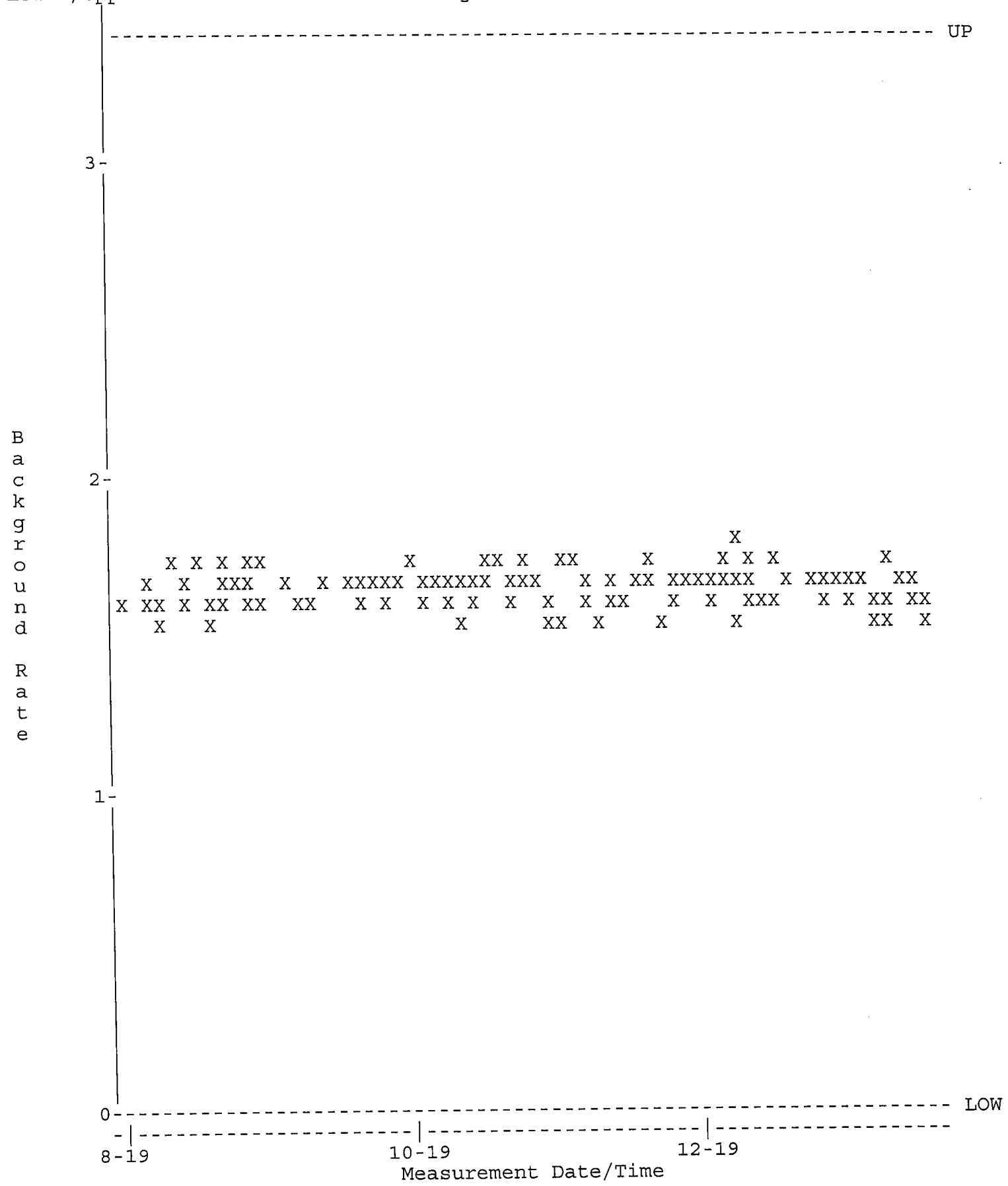
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



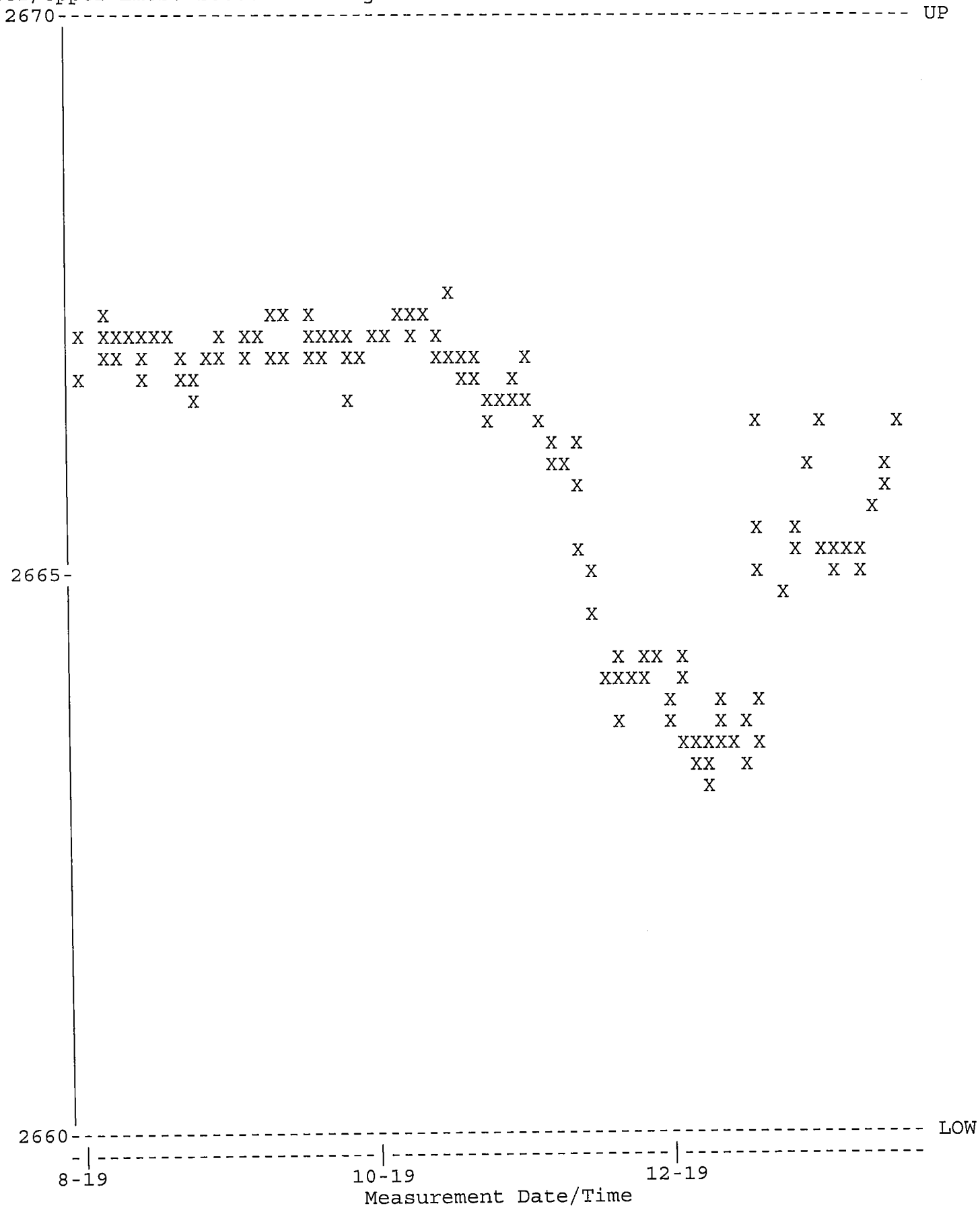
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



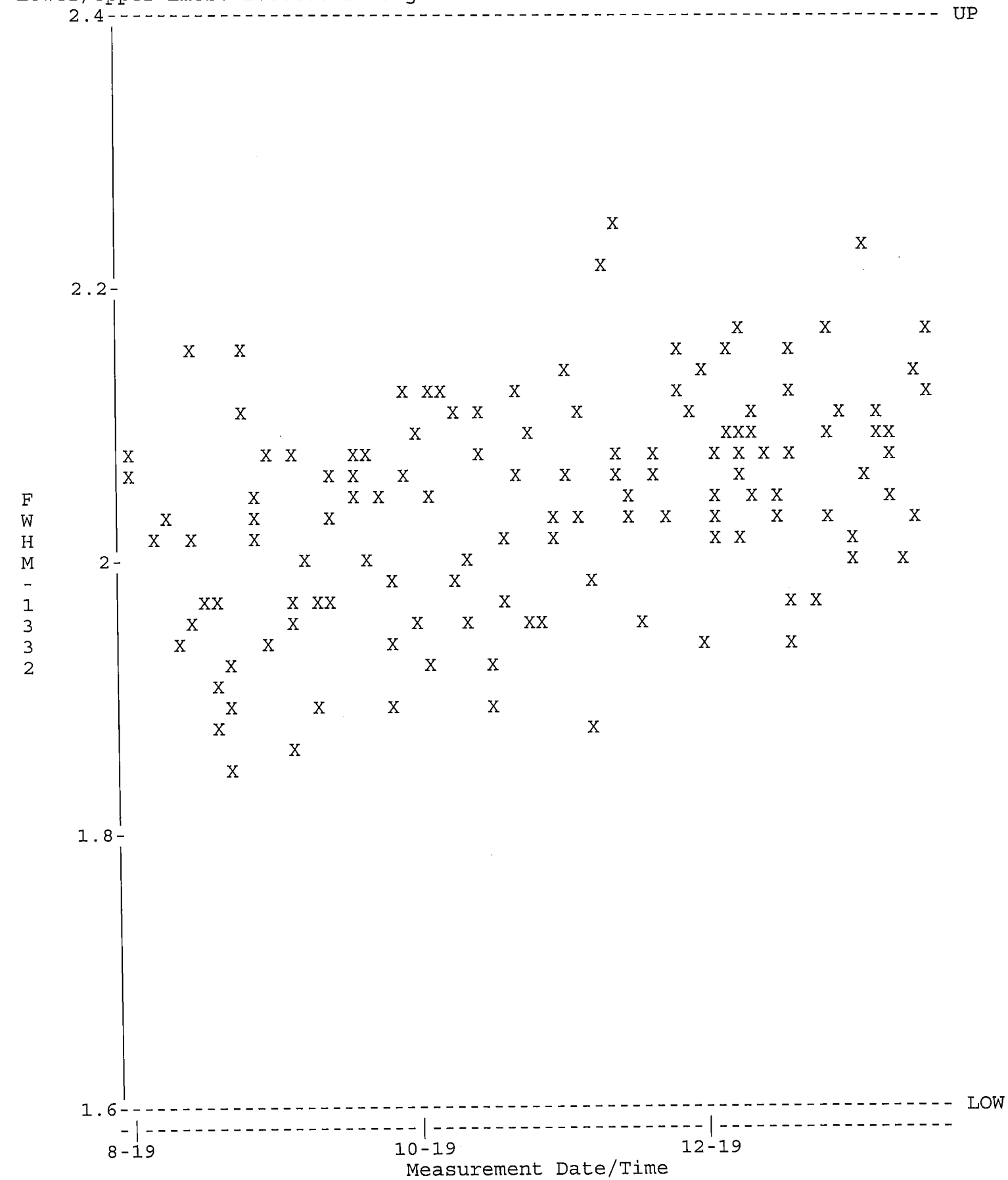
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



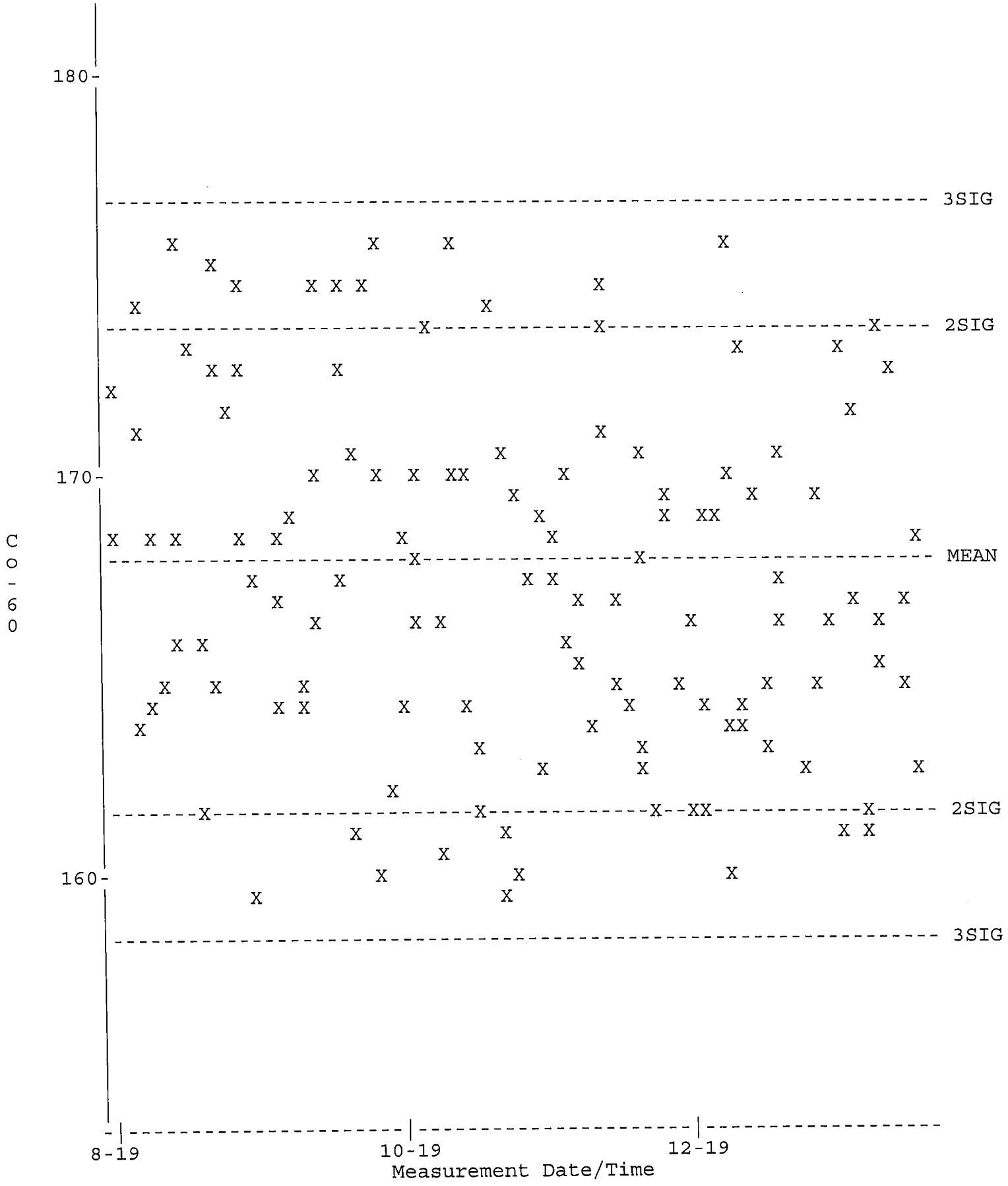
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



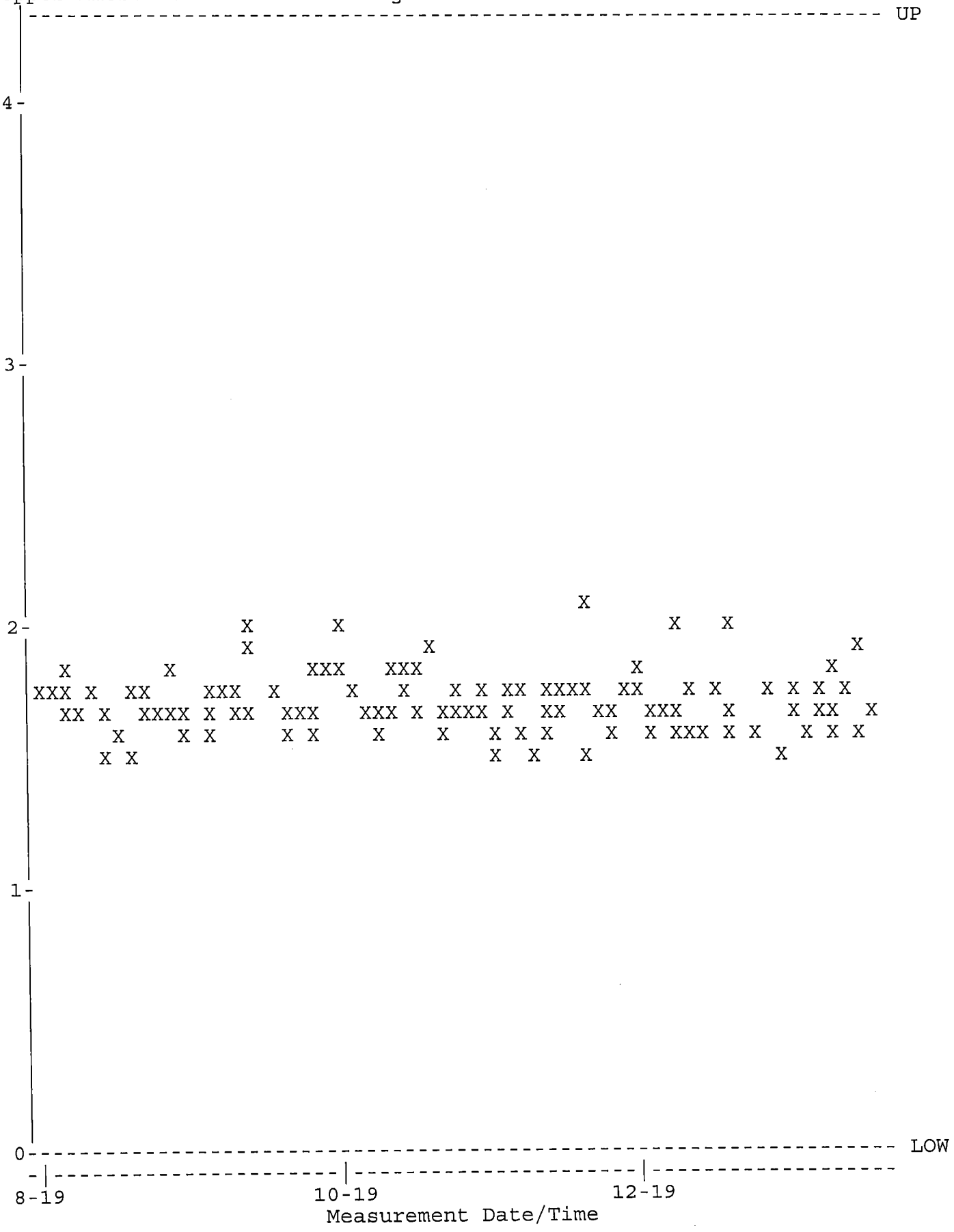
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:20:03.44
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:33.10

LIMS No., Customer Name, Client ID: L85479-1 S TEXAS

Sample ID : 13L85479-1
Sample Type : S
Quantity : 1.22040E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 7-DEC-2019 15:30:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 01:20:13.66
Live time : 0 01:20:12.12

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.89*	41	160	1.89	371.36	3.25E+00	8.59E-03	63.2	1.35E+00
2	1	238.50*	242	207	0.94	476.47	2.78E+00	5.04E-02	12.9	1.44E+00
3	1	294.94*	68	113	1.30	589.24	2.38E+00	1.41E-02	29.8	1.22E+00
4	1	351.78*	119	90	1.15	702.82	2.07E+00	2.48E-02	19.2	2.60E+00
5	1	510.42*	10	99	2.80	1019.90	1.54E+00	2.12E-03	253.1	1.11E+00
6	1	582.68*	92	38	2.15	1164.36	1.38E+00	1.91E-02	18.5	6.50E-01
7	1	608.85*	154	32	1.59	1216.68	1.34E+00	3.20E-02	12.0	1.93E+00
8	1	910.78*	58	20	1.73	1820.53	9.71E-01	1.20E-02	21.2	1.90E+00
9	1	968.32*	45	12	1.78	1935.64	9.25E-01	9.26E-03	20.9	1.74E+00
10	1	1459.97	191	0	2.12	2919.75	6.67E-01	3.96E-02	7.5	1.52E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85479-1 Acquisition date : 3-JAN-2020 15:59:33

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85479-1 Acquisition date : 3-JAN-2020 15:59:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.89	41	160	1.89	371.36	367	10	8.59E-03	****	3.25E+00	
1	238.50	242	207	0.94	476.47	472	10	5.04E-02	25.8	2.78E+00	
1	294.94	68	113	1.30	589.24	585	7	1.41E-02	59.7	2.38E+00	
1	351.78	119	90	1.15	702.82	698	11	2.48E-02	38.4	2.07E+00	
1	510.42	10	99	2.80	1019.90	1013	16	2.12E-03	****	1.54E+00	
1	582.68	92	38	2.15	1164.36	1159	14	1.91E-02	37.0	1.38E+00	
1	608.85	154	32	1.59	1216.68	1211	12	3.20E-02	24.0	1.34E+00	
1	910.78	58	20	1.73	1820.53	1816	10	1.20E-02	42.5	9.71E-01	
1	968.32	45	12	1.78	1935.64	1932	8	9.26E-03	41.8	9.25E-01	
1	1459.97	191	0	2.12	2919.75	2913	16	3.96E-02	14.9	6.67E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.716E-02		8.434E-02	1.323E-01	0.000E+00	-0.130

```
A,13L85479-1       ,01/03/2020 17:20,12/07/2019 15:30,   1.220E+02,L85479-1 S TEX
B,13L85479-1       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,   -1.716E-02,   8.434E-02,   1.323E-01,,   -0.130
```

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:25:14.38
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 16-JAN-2020 12:44:16.90

LIMS No., Customer Name, Client ID: L85479-2 S TEXAS

Sample ID : 07L85479-2
Sample Type : S
Quantity : 3.15200E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:32:00.0
Geometry : 07S25121819
BKGFILE : 07BG122719MT
Real Time : 0 01:40:48.58
Live time : 0 01:40:47.80

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.77*	174	180	1.44	476.84	6.94E+00	2.88E-02	17.7	1.50E+00
2	1	352.44*	86	43	2.01	703.92	5.19E+00	1.43E-02	22.6	2.64E+00
3	1	583.56*	99	49	1.74	1165.64	3.41E+00	1.64E-02	18.4	1.44E+00
4	1	609.82*	37	56	1.65	1218.10	3.28E+00	6.13E-03	50.7	1.65E+00
5	1	911.58*	63	9	2.90	1820.93	2.27E+00	1.04E-02	19.4	3.46E+00
6	1	1460.93*	58	6	2.46	2918.38	1.49E+00	9.53E-03	21.3	1.46E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85479-2 Acquisition date : 16-JAN-2020 12:44:16

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85479-2 Acquisition date : 16-JAN-2020 12:44:16

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.77	174	180	1.44	476.84	472	12	2.88E-02	35.4	6.94E+00	
1	352.44	86	43	2.01	703.92	697	15	1.43E-02	45.2	5.19E+00	
1	583.56	99	49	1.74	1165.64	1161	14	1.64E-02	36.9	3.41E+00	
1	609.82	37	56	1.65	1218.10	1210	14	6.13E-03	****	3.28E+00	
1	911.58	63	9	2.90	1820.93	1814	18	1.04E-02	38.7	2.27E+00	
1	1460.93	58	6	2.46	2918.38	2911	14	9.53E-03	42.7	1.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.032E-02		1.132E-01	1.896E-01	0.000E+00	0.107

```
A,07L85479-2       ,01/16/2020 14:25,12/07/2019 15:32,   3.152E+01,L85479-2 S TEX
B,07L85479-2       ,HUDSON              ,01/14/2020 08:35,07S25121819
C,CS-137  ,NO ,    2.032E-02,   1.132E-01,   1.896E-01,,    0.107
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:01:53.53
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 16-JAN-2020 12:44:18.25

LIMS No., Customer Name, Client ID: L85479-3 S TEXAS

Sample ID : 13L85479-3
Sample Type : S
Quantity : 5.80900E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 7-DEC-2019 15:34:00.0
Geometry : 13S50122019
BKGFILE : 13BG122719MT
Real Time : 0 01:17:18.32
Live time : 0 01:17:16.93

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	92.86*	1	201	1.39	185.57	5.27E+00	2.51E-04	*****	5.22E+00
2	1	185.77*	3	138	1.27	371.01	5.41E+00	5.71E-04	924.9	1.77E+00
3	1	238.61*	168	169	0.97	476.51	4.58E+00	3.61E-02	16.1	9.84E-01
4	1	295.30*	37	89	1.37	589.71	3.89E+00	7.88E-03	51.5	8.67E-01
5	1	351.90*	73	70	1.47	702.74	3.38E+00	1.57E-02	27.9	9.09E-01
6	1	510.91*	25	83	2.88	1020.37	2.49E+00	5.38E-03	105.4	1.26E+00
7	1	583.11*	48	55	1.10	1164.64	2.23E+00	1.03E-02	37.9	1.98E+00
8	1	609.63*	48	33	2.26	1217.64	2.15E+00	1.04E-02	31.9	2.88E+00
9	1	911.40*	52	11	1.45	1821.01	1.51E+00	1.12E-02	20.4	1.59E+00
10	1	1460.50*	77	9	2.04	2920.18	9.97E-01	1.66E-02	17.0	3.08E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85479-3 Acquisition date : 16-JAN-2020 12:44:18

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	92.86	1	201	1.39	185.57	181	9	2.51E-04	****	5.27E+00	
1	185.77	3	138	1.27	371.01	365	11	5.71E-04	****	5.41E+00	
1	238.61	168	169	0.97	476.51	474	9	3.61E-02	32.1	4.58E+00	
1	295.30	37	89	1.37	589.71	585	9	7.88E-03	****	3.89E+00	
1	351.90	73	70	1.47	702.74	698	12	1.57E-02	55.7	3.38E+00	
1	510.91	25	83	2.88	1020.37	1012	21	5.38E-03	****	2.49E+00	
1	583.11	48	55	1.10	1164.64	1158	15	1.03E-02	75.7	2.23E+00	
1	609.63	48	33	2.26	1217.64	1211	13	1.04E-02	63.9	2.15E+00	
1	911.40	52	11	1.45	1821.01	1816	11	1.12E-02	40.8	1.51E+00	
1	1460.50	77	9	2.04	2920.18	2914	12	1.66E-02	33.9	9.97E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.023E-01		9.896E-02	1.845E-01	0.000E+00	0.554

```
A,13L85479-3       ,01/16/2020 14:01,12/07/2019 15:34,   5.809E+01,L85479-3 S TEX
B,13L85479-3       ,HUDSON              ,01/15/2020 08:42,13S50122019
C,CS-137  ,NO ,    1.023E-01,   9.896E-02,   1.845E-01,,    0.554
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:02:09.69
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 16-JAN-2020 12:44:19.00

LIMS No., Customer Name, Client ID: L85479-4 S TEXAS

Sample ID : 15L85479-4
Sample Type : S
Quantity : 5.84600E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:36:00.0
Geometry : 15S50121919
BKGFILE : 15BG122719MT
Real Time : 0 01:17:44.04
Live time : 0 01:17:43.53

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.48*	221	186	1.00	472.47	5.14E+00	4.75E-02	13.7	1.15E+00
2	1	351.91*	97	40	1.42	699.85	3.69E+00	2.09E-02	17.5	6.35E-01
3	1	511.02*	46	31	2.90	1018.80	2.62E+00	9.83E-03	40.6	1.70E+00
4	1	583.43*	72	13	1.71	1163.95	2.31E+00	1.54E-02	16.4	2.38E+00
5	1	609.42*	56	8	1.84	1216.04	2.22E+00	1.19E-02	18.7	1.32E+00
6	1	911.40*	47	12	2.25	1821.37	1.50E+00	1.01E-02	22.2	4.54E-01
7	1	1461.17*	85	18	1.95	2923.34	9.58E-01	1.82E-02	16.0	7.08E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85479-4 Acquisition date : 16-JAN-2020 12:44:19

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85479-4 Acquisition date : 16-JAN-2020 12:44:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.48	221	186	1.00	472.47	468	11	4.75E-02	27.4	5.14E+00	
1	351.91	97	40	1.42	699.85	695	12	2.09E-02	35.0	3.69E+00	
1	511.02	46	31	2.90	1018.80	1013	19	9.83E-03	81.2	2.62E+00	
1	583.43	72	13	1.71	1163.95	1157	12	1.54E-02	32.8	2.31E+00	
1	609.42	56	8	1.84	1216.04	1212	9	1.19E-02	37.3	2.22E+00	
1	911.40	47	12	2.25	1821.37	1812	15	1.01E-02	44.3	1.50E+00	
1	1461.17	85	18	1.95	2923.34	2917	14	1.82E-02	31.9	9.58E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	6.339E-02		8.256E-02	1.497E-01	0.000E+00	0.423

```
A,15L85479-4       ,01/16/2020 14:02,12/07/2019 15:36,   5.846E+01,L85479-4 S TEX
B,15L85479-4       ,HUDSON              ,12/27/2019 10:10,15S50121919
C,CS-137  ,NO ,    6.339E-02,   8.256E-02,   1.497E-01,,    0.423
```

Analyst: SM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-JAN-2020 14:02:31.37
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 16-JAN-2020 12:44:20.49

LIMS No., Customer Name, Client ID: L85479-5 S TEXAS

Sample ID : 14L85479-5
Sample Type : S
Quantity : 8.78100E+01 g Dry
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:38:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:18:06.27
Live time : 0 01:18:05.29

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.55*	151	88	0.97	474.41	2.91E+00	3.23E-02	13.5	6.56E+00
2	1	295.38*	50	56	1.40	588.10	2.44E+00	1.08E-02	31.2	3.94E-01
3	1	351.80*	67	48	1.30	700.97	2.09E+00	1.43E-02	25.6	1.32E+00
4	1	510.94*	15	48	1.85	1019.37	1.49E+00	3.13E-03	133.1	2.01E+00
5	1	583.44	62	14	1.20	1164.44	1.32E+00	1.33E-02	18.1	2.36E+00
6	1	609.08*	61	18	2.04	1215.74	1.26E+00	1.31E-02	20.2	5.99E-01
7	1	911.33	52	31	2.37	1820.60	8.70E-01	1.10E-02	27.9	8.85E-01
8	1	1461.07*	89	12	1.96	2921.04	5.68E-01	1.89E-02	14.8	9.81E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85479-5 Acquisition date : 16-JAN-2020 12:44:20

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85479-5 Acquisition date : 16-JAN-2020 12:44:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.55	151	88	0.97	474.41	470	8	3.23E-02	26.9	2.91E+00	
1	295.38	50	56	1.40	588.10	583	9	1.08E-02	62.4	2.44E+00	
1	351.80	67	48	1.30	700.97	695	12	1.43E-02	51.2	2.09E+00	
1	510.94	15	48	1.85	1019.37	1012	16	3.13E-03	****	1.49E+00	
1	583.44	62	14	1.20	1164.44	1159	11	1.33E-02	36.2	1.32E+00	
1	609.08	61	18	2.04	1215.74	1211	12	1.31E-02	40.4	1.26E+00	
1	911.33	52	31	2.37	1820.60	1815	17	1.10E-02	55.9	8.70E-01	
1	1461.07	89	12	1.96	2921.04	2913	16	1.89E-02	29.6	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.037E-02		8.681E-02	1.376E-01	0.000E+00	-0.075

```
A,14L85479-5       ,01/16/2020 14:02,12/07/2019 15:38,   8.781E+01,L85479-5 S TEX
B,14L85479-5       ,HUDSON             ,12/30/2019 12:20,14S100121919
C,CS-137  ,NO ,  -1.037E-02,   8.681E-02,   1.376E-01,,   -0.075
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:02:36.74
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:38.99

LIMS No., Customer Name, Client ID: L85479-6 S TEXAS

Sample ID : 01L85479-6
Sample Type : S
Quantity : 1.08630E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:40:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:02:42.27
Live time : 0 01:02:41.65

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.74*	40	106	1.08	371.72	4.00E+00	1.06E-02	49.1	1.75E+00
2	5	238.50*	243	75	1.26	477.15	3.47E+00	6.45E-02	9.0	1.30E+00
3	5	241.40	70	70	1.41	482.95	3.44E+00	1.87E-02	24.8	
4	1	295.16*	62	59	1.10	590.40	2.98E+00	1.65E-02	26.7	4.76E-01
5	1	338.08	63	54	1.52	676.17	2.68E+00	1.67E-02	27.0	1.17E+00
6	1	351.88*	101	47	1.23	703.75	2.60E+00	2.69E-02	17.1	1.33E+00
7	1	510.83*	35	59	2.50	1021.41	1.91E+00	9.42E-03	58.7	9.09E-01
8	1	582.86*	74	42	1.37	1165.38	1.70E+00	1.97E-02	21.6	2.17E+00
9	1	608.96*	85	21	2.05	1217.55	1.64E+00	2.27E-02	16.8	2.77E+00
10	1	910.78*	57	12	1.66	1820.80	1.15E+00	1.52E-02	18.7	6.70E-01
11	1	968.67	41	12	1.80	1936.52	1.09E+00	1.09E-02	22.5	5.73E-01
12	1	1460.24*	98	11	2.10	2919.16	7.73E-01	2.60E-02	12.5	8.53E-01
13	1	1764.20*	16	0	1.43	3526.83	6.73E-01	4.16E-03	32.4	6.77E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85479-6 Acquisition date : 3-JAN-2020 15:59:38

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85479-6 Acquisition date : 3-JAN-2020 15:59:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.74	40	106	1.08	371.72	367	8	1.06E-02	98.3	4.00E+00	
5	238.50	243	75	1.26	477.15	471	17	6.45E-02	18.1	3.47E+00	
5	241.40	70	70	1.41	482.95	471	17	1.87E-02	49.6	3.44E+00	
1	295.16	62	59	1.10	590.40	587	9	1.65E-02	53.3	2.98E+00	
1	338.08	63	54	1.52	676.17	670	12	1.67E-02	54.0	2.68E+00	
1	351.88	101	47	1.23	703.75	699	10	2.69E-02	34.3	2.60E+00	
1	510.83	35	59	2.50	1021.41	1014	15	9.42E-03	****	1.91E+00	
1	582.86	74	42	1.37	1165.38	1160	12	1.97E-02	43.2	1.70E+00	
1	608.96	85	21	2.05	1217.55	1210	14	2.27E-02	33.6	1.64E+00	
1	910.78	57	12	1.66	1820.80	1814	12	1.52E-02	37.5	1.15E+00	
1	968.67	41	12	1.80	1936.52	1932	9	1.09E-02	45.0	1.09E+00	
1	1460.24	98	11	2.10	2919.16	2912	13	2.60E-02	25.1	7.73E-01	
1	1764.20	16	0	1.43	3526.83	3520	11	4.16E-03	64.8	6.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-5.415E-02		7.948E-02	1.214E-01	0.000E+00	-0.446

```
A,01L85479-6       ,01/03/2020 17:02,12/07/2019 15:40,   1.086E+02,L85479-6 S TEX
B,01L85479-6       ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137  ,NO ,  -5.415E-02,   7.948E-02,   1.214E-01,,   -0.446
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:03:11.51
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:39.39

LIMS No., Customer Name, Client ID: L85479-7 S TEXAS

Sample ID : 02L85479-7
Sample Type : S
Quantity : 1.41510E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:42:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:03:24.51
Live time : 0 01:03:23.80

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.71*	211	154	1.13	464.62	2.91E+00	5.55E-02	13.4	
2	0	295.28*	65	55	1.12	578.58	2.46E+00	1.71E-02	24.0	
3	0	338.28	58	35	1.13	665.19	2.20E+00	1.52E-02	22.2	
4	0	351.96*	104	87	1.20	692.75	2.12E+00	2.72E-02	21.3	
5	0	510.90*	104	22	2.29	1012.95	1.54E+00	2.74E-02	17.3	
6	0	583.14*	73	35	1.31	1158.47	1.37E+00	1.91E-02	21.1	
7	0	609.13*	71	37	1.36	1210.84	1.32E+00	1.86E-02	21.6	
8	0	911.13*	56	7	1.64	1819.30	9.20E-01	1.48E-02	16.8	
9	0	1120.18*	30	6	1.43	2240.54	7.64E-01	8.00E-03	25.6	
10	0	1460.58*	112	8	1.76	2926.53	6.04E-01	2.94E-02	11.3	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85479-7 Acquisition date : 3-JAN-2020 15:59:39

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85479-7 Acquisition date : 3-JAN-2020 15:59:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.71	211	154	1.13	464.62	458	11	5.55E-02	26.8	2.91E+00	
0	295.28	65	55	1.12	578.58	574	9	1.71E-02	48.0	2.46E+00	
0	338.28	58	35	1.13	665.19	661	8	1.52E-02	44.4	2.20E+00	
0	351.96	104	87	1.20	692.75	687	13	2.72E-02	42.6	2.12E+00	
0	510.90	104	22	2.29	1012.95	1004	18	2.74E-02	34.7	1.54E+00	
0	583.14	73	35	1.31	1158.47	1152	14	1.91E-02	42.3	1.37E+00	
0	609.13	71	37	1.36	1210.84	1206	12	1.86E-02	43.2	1.32E+00	
0	911.13	56	7	1.64	1819.30	1814	13	1.48E-02	33.7	9.20E-01	
0	1120.18	30	6	1.43	2240.54	2235	12	8.00E-03	51.2	7.64E-01	
0	1460.58	112	8	1.76	2926.53	2921	12	2.94E-02	22.6	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-6.069E-02		7.003E-02	9.617E-02	0.000E+00	-0.631

```
A,02L85479-7       ,01/03/2020 17:03,12/07/2019 15:42,   1.415E+02,L85479-7 S TEX
B,02L85479-7       ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137   ,NO ,   -6.069E-02,   7.003E-02,   9.617E-02,,   -0.631
```

Analyst: NBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:03:27.86
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:39.59

LIMS No., Customer Name, Client ID: L85479-8 S TEXAS

Sample ID : 15L85479-8
Sample Type : S
Quantity : 1.26130E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:44:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 01:03:41.64
Live time : 0 01:03:41.15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	238.58*	262	62	1.15	472.66	3.18E+00	6.87E-02	7.9	1.90E+00
2	4	241.71*	80	48	1.78	478.95	3.15E+00	2.10E-02	22.1	
3	1	294.94*	71	63	2.05	585.64	2.68E+00	1.86E-02	26.2	3.10E+00
4	1	339.45	32	107	0.78	674.88	2.36E+00	8.45E-03	75.8	6.84E+00
5	1	351.70*	98	59	1.34	699.43	2.28E+00	2.56E-02	19.0	2.63E+00
6	1	510.80*	50	26	2.44	1018.35	1.60E+00	1.30E-02	33.3	1.14E+00
7	1	583.14*	87	19	1.75	1163.36	1.41E+00	2.27E-02	15.3	1.71E+00
8	1	609.08*	81	61	1.95	1215.35	1.35E+00	2.12E-02	25.4	1.76E+00
9	1	910.99*	48	18	2.03	1820.55	9.29E-01	1.25E-02	23.9	3.42E-01
10	1	1460.49*	108	6	2.11	2921.98	6.13E-01	2.83E-02	11.2	3.24E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85479-8 Acquisition date : 3-JAN-2020 15:59:39

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85479-8 Acquisition date : 3-JAN-2020 15:59:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	238.58	262	62	1.15	472.66	468	16	6.87E-02	15.8	3.18E+00	
4	241.71	80	48	1.78	478.95	468	16	2.10E-02	44.1	3.15E+00	
1	294.94	71	63	2.05	585.64	579	12	1.86E-02	52.5	2.68E+00	
1	339.45	32	107	0.78	674.88	667	16	8.45E-03	****	2.36E+00	
1	351.70	98	59	1.34	699.43	695	11	2.56E-02	38.0	2.28E+00	
1	510.80	50	26	2.44	1018.35	1012	15	1.30E-02	66.7	1.60E+00	
1	583.14	87	19	1.75	1163.36	1158	12	2.27E-02	30.5	1.41E+00	
1	609.08	81	61	1.95	1215.35	1207	18	2.12E-02	50.9	1.35E+00	
1	910.99	48	18	2.03	1820.55	1814	13	1.25E-02	47.9	9.29E-01	
1	1460.49	108	6	2.11	2921.98	2916	12	2.83E-02	22.3	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.951E-02		6.292E-02	9.826E-02	0.000E+00	-0.199

```
A,15L85479-8       ,01/03/2020 17:03,12/07/2019 15:44,   1.261E+02,L85479-8 S TEX
B,15L85479-8       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137  ,NO ,  -1.951E-02,   6.292E-02,   9.826E-02,,   -0.199
```

Analyst: KDA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:03:46.77
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:40.03

LIMS No., Customer Name, Client ID: L85479-9 S TEXAS

Sample ID : 14L85479-9
Sample Type : S
Quantity : 1.30140E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:46:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:04:02.70
Live time : 0 01:04:01.78

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.90*	44	67	1.32	369.09	3.46E+00	1.14E-02	37.3	1.07E+00
2	6	238.56*	302	46	1.02	474.42	2.91E+00	7.86E-02	6.8	2.68E+00
3	6	241.67	96	53	1.89	480.65	2.88E+00	2.49E-02	23.2	
4	1	295.24*	75	63	1.44	587.82	2.44E+00	1.96E-02	23.3	1.08E+00
5	1	338.09	77	44	1.48	673.53	2.17E+00	1.99E-02	18.8	1.51E+00
6	1	351.87*	112	66	1.44	701.11	2.09E+00	2.92E-02	18.3	1.03E+00
7	1	511.11*	19	39	2.31	1019.71	1.49E+00	4.85E-03	89.7	1.03E+00
8	1	583.39	87	37	1.84	1164.33	1.32E+00	2.26E-02	18.3	3.43E+00
9	1	609.24*	62	49	1.31	1216.05	1.26E+00	1.62E-02	28.2	1.69E+00
10	1	911.15	51	16	2.18	1820.24	8.70E-01	1.33E-02	21.7	1.46E+00
11	1	969.07	43	9	1.97	1936.16	8.22E-01	1.13E-02	20.3	1.05E+00
12	1	1460.76*	98	0	2.05	2920.42	5.68E-01	2.56E-02	10.9	1.32E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85479-9 Acquisition date : 3-JAN-2020 15:59:40

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85479-9 Acquisition date : 3-JAN-2020 15:59:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.90	44	67	1.32	369.09	365	8	1.14E-02	74.7	3.46E+00	
6	238.56	302	46	1.02	474.42	470	16	7.86E-02	13.5	2.91E+00	
6	241.67	96	53	1.89	480.65	470	16	2.49E-02	46.5	2.88E+00	
1	295.24	75	63	1.44	587.82	582	10	1.96E-02	46.6	2.44E+00	
1	338.09	77	44	1.48	673.53	670	8	1.99E-02	37.7	2.17E+00	
1	351.87	112	66	1.44	701.11	696	13	2.92E-02	36.7	2.09E+00	
1	511.11	19	39	2.31	1019.71	1014	13	4.85E-03	****	1.49E+00	
1	583.39	87	37	1.84	1164.33	1158	13	2.26E-02	36.7	1.32E+00	
1	609.24	62	49	1.31	1216.05	1209	14	1.62E-02	56.5	1.26E+00	
1	911.15	51	16	2.18	1820.24	1814	13	1.33E-02	43.5	8.70E-01	
1	969.07	43	9	1.97	1936.16	1932	11	1.13E-02	40.7	8.22E-01	
1	1460.76	98	0	2.05	2920.42	2915	10	2.56E-02	21.8	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.289E-02		7.255E-02	1.139E-01	0.000E+00	-0.113

```
A,14L85479-9       ,01/03/2020 17:03,12/07/2019 15:46,   1.301E+02,L85479-9 S TEX
B,14L85479-9       ,HUDSON              ,12/30/2019 12:20,14S100121919
C,CS-137   ,NO ,   -1.289E-02,   7.255E-02,   1.139E-01,,   -0.113
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:20:13.22
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 3-JAN-2020 15:59:41.59

LIMS No., Customer Name, Client ID: L85479-10 S TEXAS

Sample ID	: 11L85479-10	Smple Date	: 7-DEC-2019 15:48:00.0
Sample Type	: S	Geometry	: 11S100121919
Quantity	: 1.22030E+02 g Dry	BKGFILE	: 11BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:20:28.22
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:20:25.90
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.61*	220	183	1.51	476.54	2.60E+00	4.57E-02	13.8	
2	0	352.27*	82	100	1.40	703.97	1.98E+00	1.69E-02	28.2	
3	0	583.55*	82	55	1.56	1166.70	1.32E+00	1.69E-02	23.7	
4	0	609.37*	105	31	1.67	1218.36	1.27E+00	2.18E-02	15.3	
5	0	911.37	48	30	1.51	1822.56	8.91E-01	9.95E-03	28.8	
6	0	1460.82*	115	12	1.76	2921.76	5.95E-01	2.38E-02	12.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85479-10 Acquisition date : 3-JAN-2020 15:59:41

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85479-10 Acquisition date : 3-JAN-2020 15:59:41

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.61	220	183	1.51	476.54	472	11	4.57E-02	27.5	2.60E+00	
0	352.27	82	100	1.40	703.97	699	12	1.69E-02	56.4	1.98E+00	
0	583.55	82	55	1.56	1166.70	1159	16	1.69E-02	47.4	1.32E+00	
0	609.37	105	31	1.67	1218.36	1213	11	2.18E-02	30.5	1.27E+00	
0	911.37	48	30	1.51	1822.56	1814	15	9.95E-03	57.5	8.91E-01	
0	1460.82	115	12	1.76	2921.76	2912	17	2.38E-02	25.4	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.971E-03		7.964E-02	1.443E-01	0.000E+00	-0.028

```
A,11L85479-10     ,01/03/2020 17:20,12/07/2019 15:48,   1.220E+02,L85479-10 S TE
B,11L85479-10     ,HUDSON             ,12/26/2019 12:27,11S100121919
C,CS-137  ,NO ,  -3.971E-03,   7.964E-02,   1.443E-01,,   -0.028
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 17:04:45.44
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 3-JAN-2020 15:59:43.25

LIMS No., Customer Name, Client ID: L85479-11 S TEXAS

Sample ID : 08L85479-11
Sample Type : S
Quantity : 1.31800E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 7-DEC-2019 15:50:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:04:56.31
Live time : 0 01:04:55.48

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.32*	211	144	1.98	483.56	2.70E+00	5.42E-02	14.8	4.43E+00
2	1	294.81*	54	86	1.25	596.28	2.29E+00	1.38E-02	35.5	2.14E+00
3	1	351.57*	138	59	2.04	709.56	1.98E+00	3.55E-02	15.2	9.49E-01
4	1	510.34*	19	50	3.07	1026.37	1.44E+00	4.82E-03	107.5	1.57E+00
5	1	582.80*	97	24	1.63	1170.96	1.29E+00	2.49E-02	14.6	1.18E+00
6	1	609.00*	59	41	1.87	1223.24	1.24E+00	1.51E-02	28.3	1.04E+00
7	1	910.90*	44	39	1.94	1825.63	8.72E-01	1.13E-02	34.5	2.70E+00
8	1	1460.19*	133	13	2.13	2921.48	5.83E-01	3.42E-02	11.3	8.48E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85479-11 Acquisition date : 3-JAN-2020 15:59:43

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.32	211	144	1.98	483.56	478	15	5.42E-02	29.6	2.70E+00	
1	294.81	54	86	1.25	596.28	593	10	1.38E-02	71.0	2.29E+00	
1	351.57	138	59	2.04	709.56	703	14	3.55E-02	30.4	1.98E+00	
1	510.34	19	50	3.07	1026.37	1018	18	4.82E-03	****	1.44E+00	
1	582.80	97	24	1.63	1170.96	1166	11	2.49E-02	29.2	1.29E+00	
1	609.00	59	41	1.87	1223.24	1215	14	1.51E-02	56.6	1.24E+00	
1	910.90	44	39	1.94	1825.63	1819	15	1.13E-02	69.0	8.72E-01	
1	1460.19	133	13	2.13	2921.48	2915	14	3.42E-02	22.6	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.095E-02		8.375E-02	1.333E-01	0.000E+00	-0.157

```
A,08L85479-11      ,01/03/2020 17:04,12/07/2019 15:50,   1.318E+02,L85479-11 S TE
B,08L85479-11      ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,   -2.095E-02,   8.375E-02,   1.333E-01,,   -0.157
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-DEC-2019 20:27:56.58
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 19-DEC-2019 18:27:45.23

LIMS No., Customer Name, Client ID: WG32680-1 VA DOMINION - MILLSTONE REMP

Sample ID : 08WG32680-1 Smple Date: 18-DEC-2019 09:25:00.
Sample Type : VA Geometry : 0835L021219
Quantity : 1.46020E+03 g Wet BKGFILE : 08BG112719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 02:00:01.56
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 02:00:00.00
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	239.05*	91	212	1.69	485.03	1.21E+00	1.26E-02	34.7	6.86E-01
2	1	477.83	89	72	1.60	961.59	7.55E-01	1.23E-02	21.4	1.14E+00
3	1	1460.98*	866	17	2.06	2923.09	3.21E-01	1.20E-01	3.7	8.78E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/g Wet	Decay Corr pCi/g Wet	2-Sigma %Error
BE-7	477.59	89	10.42*	7.547E-01	2.901E-01	2.955E-01	42.73

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/g Wet	Decay Corr pCi/g Wet	2-Sigma %Error
K-40	1460.81	866	10.67*	3.212E-01	6.496E+00	6.496E+00	7.40
TH-228	238.63	91	44.60*	1.213E+00	4.309E-02	4.315E-02	69.38
	240.98	91	3.95	1.213E+00	4.865E-01	4.872E-01	69.38

Flag: "*" = Keyline

Sample ID : 08WG32680-1 Acquisition date : 19-DEC-2019 18:27:45

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type : activation

Nuclide	Hlife	Decay	Uncorrected pCi/g Wet	Decay Corr pCi/g Wet	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BE-7	53.44D	1.02	2.901E-01	2.955E-01	1.263E-01	42.73	
	Total Activity :		2.901E-01	2.955E-01			

Nuclide Type : natural

Nuclide	Hlife	Decay	Uncorrected pCi/g Wet	Decay Corr pCi/g Wet	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	6.496E+00	6.496E+00	0.481E+00	7.40	
TH-228	1.91Y	1.00	4.309E-02	4.315E-02	2.994E-02	69.38	
	Total Activity :		6.539E+00	6.539E+00			
Grand Total Activity :			6.829E+00	6.834E+00			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

None

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type : activation

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/g Wet	Wtd Mean Decay Corr pCi/g Wet	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BE-7	53.44D	1.02	2.901E-01	2.955E-01	1.263E-01	42.73	
	Total Activity :		2.901E-01	2.955E-01			

Nuclide Type : natural

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/g Wet	Wtd Mean Decay Corr pCi/g Wet	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	6.496E+00	6.496E+00	0.481E+00	7.40	
TH-228	1.91Y	1.00	4.309E-02	4.315E-02	2.994E-02	69.38	
	Total Activity :		6.539E+00	6.539E+00			
Grand Total Activity :			6.829E+00	6.834E+00			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/g Wet)	Act error	MDA (pCi/g Wet)	MDA error	Act/MDA
BE-7	2.955E-01	1.263E-01	1.367E-01	0.000E+00	2.162
K-40	6.496E+00	4.807E-01	1.410E-01	0.000E+00	46.055
TH-228	4.315E-02	2.994E-02	2.783E-02	0.000E+00	1.550

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Wet)	K.L. Ided	Act error	MDA (pCi/g Wet)	MDA error	Act/MDA
NA-22	8.029E-03		1.206E-02	2.143E-02	0.000E+00	0.375

NA-24	9.086E-03	4.678E-02	7.933E-02	0.000E+00	0.115
CR-51	-9.048E-03	7.850E-02	1.305E-01	0.000E+00	-0.069
MN-54	-2.966E-03	1.068E-02	1.670E-02	0.000E+00	-0.178
CO-56	1.441E-03	1.120E-02	1.925E-02	0.000E+00	0.075
CO-57	-6.450E-04	8.578E-03	1.391E-02	0.000E+00	-0.046
CO-58	-6.939E-03	9.581E-03	1.411E-02	0.000E+00	-0.492
FE-59	5.712E-03	2.204E-02	3.764E-02	0.000E+00	0.152
CO-60	4.254E-03	1.206E-02	2.073E-02	0.000E+00	0.205
ZN-65	-1.425E-02	2.601E-02	4.098E-02	0.000E+00	-0.348
SE-75	-7.453E-03	1.264E-02	2.059E-02	0.000E+00	-0.362
Y-88	1.558E-03	6.779E-03	1.171E-02	0.000E+00	0.133
NB-94	-1.290E-04	1.040E-02	1.670E-02	0.000E+00	-0.008
NB-95	3.434E-03	9.327E-03	1.570E-02	0.000E+00	0.219
ZR-95	6.972E-03	1.714E-02	2.896E-02	0.000E+00	0.241
ZRNB-95	3.434E-03	9.327E-03	1.570E-02	0.000E+00	0.219
MO-99	-7.414E-02	1.142E-01	1.731E-01	0.000E+00	-0.428
RU-103	4.869E-03	9.045E-03	1.561E-02	0.000E+00	0.312
RU-106	2.372E-02	9.727E-02	1.623E-01	0.000E+00	0.146
AG-110m	-2.258E-03	9.443E-03	1.501E-02	0.000E+00	-0.150
SN-113	-1.246E-02	1.213E-02	1.860E-02	0.000E+00	-0.670
SB-124	6.499E-03	9.750E-03	1.686E-02	0.000E+00	0.386
SB-125	1.636E-03	2.767E-02	4.608E-02	0.000E+00	0.035
TE-129M	-1.086E-01	1.193E-01	1.836E-01	0.000E+00	-0.591
I-131	2.827E-03	1.107E-02	1.878E-02	0.000E+00	0.151
TE-132	7.472E-03	1.215E-02	2.012E-02	0.000E+00	0.371
BA-133	-2.139E-02	1.391E-02	2.083E-02	0.000E+00	-1.027
CS-134	9.257E-03	1.028E-02	1.833E-02	0.000E+00	0.505
CS-136	7.568E-03	1.195E-02	2.046E-02	0.000E+00	0.370
CS-137	1.260E-02	1.040E-02	1.892E-02	0.000E+00	0.666
CE-139	7.098E-03	9.148E-03	1.536E-02	0.000E+00	0.462
BA-140	8.202E-03	3.424E-02	5.752E-02	0.000E+00	0.143
BALA140	4.120E-03	8.440E-03	1.529E-02	0.000E+00	0.269
LA-140	4.120E-03	8.440E-03	1.529E-02	0.000E+00	0.269
CE-141	6.808E-03	1.547E-02	2.561E-02	0.000E+00	0.266
CE-144	-4.701E-02	6.757E-02	1.058E-01	0.000E+00	-0.444
EU-152	-3.633E-03	2.951E-02	4.890E-02	0.000E+00	-0.074
EU-154	-3.528E-03	1.830E-02	2.949E-02	0.000E+00	-0.120
RA-226	1.246E-01	2.370E-01	3.981E-01	0.000E+00	0.313
AC-228	4.049E-02	4.264E-02	7.933E-02	0.000E+00	0.510
TH-232	4.047E-02	4.262E-02	7.930E-02	0.000E+00	0.510

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Wet)	K.L. Ided	Act error	MDA (pCi/g Wet)	MDA error	Act/MDA
U-235	1.720E-02		6.999E-02	1.148E-01	0.000E+00	0.150
U-238	1.205E+00		1.115E+00	2.072E+00	0.000E+00	0.581
NP-239	-3.456E-02		5.316E-02	8.386E-02	0.000E+00	-0.412
AM-241	2.506E-02		1.169E-01	1.951E-01	0.000E+00	0.128

```
A,08WG32680-1     ,12/19/2019 20:27,12/18/2019 09:25,   1.460E+03,WG32680-1 VA D
B,08WG32680-1     ,LIBD                ,12/19/2019 14:31,0835L021219
C,BE-7     ,YES,   2.955E-01,   1.263E-01,   1.367E-01,,    2.162
C,K-40     ,YES,   6.496E+00,   4.807E-01,   1.410E-01,,   46.055
C,TH-228   ,YES,   4.315E-02,   2.994E-02,   2.783E-02,,    1.550
C,NA-22    ,NO ,   8.029E-03,   1.206E-02,   2.143E-02,,    0.375
C,NA-24    ,NO ,   9.086E-03,   4.678E-02,   7.933E-02,,    0.115
C,CR-51    ,NO ,  -9.048E-03,   7.850E-02,   1.305E-01,,   -0.069
C,MN-54    ,NO ,  -2.966E-03,   1.068E-02,   1.670E-02,,   -0.178
C,CO-56    ,NO ,   1.441E-03,   1.120E-02,   1.925E-02,,    0.075
C,CO-57    ,NO ,  -6.450E-04,   8.578E-03,   1.391E-02,,   -0.046
C,CO-58    ,NO ,  -6.939E-03,   9.581E-03,   1.411E-02,,   -0.492
C,FE-59    ,NO ,   5.712E-03,   2.204E-02,   3.764E-02,,    0.152
C,CO-60    ,NO ,   4.254E-03,   1.206E-02,   2.073E-02,,    0.205
C,ZN-65    ,NO ,  -1.425E-02,   2.601E-02,   4.098E-02,,   -0.348
C,SE-75    ,NO ,  -7.453E-03,   1.264E-02,   2.059E-02,,   -0.362
C,Y-88     ,NO ,   1.558E-03,   6.779E-03,   1.171E-02,,    0.133
C,NB-94    ,NO ,  -1.290E-04,   1.040E-02,   1.670E-02,,   -0.008
C,NB-95    ,NO ,   3.434E-03,   9.327E-03,   1.570E-02,,    0.219
C,ZR-95    ,NO ,   6.972E-03,   1.714E-02,   2.896E-02,,    0.241
C,ZRNB-95  ,NO ,   3.434E-03,   9.327E-03,   1.570E-02,,    0.219
C,MO-99    ,NO ,  -7.414E-02,   1.142E-01,   1.731E-01,,   -0.428
C,RU-103   ,NO ,   4.869E-03,   9.045E-03,   1.561E-02,,    0.312
C,RU-106   ,NO ,   2.372E-02,   9.727E-02,   1.623E-01,,    0.146
C,AG-110m  ,NO ,  -2.258E-03,   9.443E-03,   1.501E-02,,   -0.150
C,SN-113   ,NO ,  -1.246E-02,   1.213E-02,   1.860E-02,,   -0.670
C,SB-124   ,NO ,   6.499E-03,   9.750E-03,   1.686E-02,,    0.386
C,SB-125   ,NO ,   1.636E-03,   2.767E-02,   4.608E-02,,    0.035
C,TE-129M  ,NO ,  -1.086E-01,   1.193E-01,   1.836E-01,,   -0.591
C,I-131    ,NO ,   2.827E-03,   1.107E-02,   1.878E-02,,    0.151
C,TE-132   ,NO ,   7.472E-03,   1.215E-02,   2.012E-02,,    0.371
C,BA-133   ,NO ,  -2.139E-02,   1.391E-02,   2.083E-02,,   -1.027
C,CS-134   ,NO ,   9.257E-03,   1.028E-02,   1.833E-02,,    0.505
C,CS-136   ,NO ,   7.568E-03,   1.195E-02,   2.046E-02,,    0.370
C,CS-137   ,NO ,   1.260E-02,   1.040E-02,   1.892E-02,,    0.666
C,CE-139   ,NO ,   7.098E-03,   9.148E-03,   1.536E-02,,    0.462
C,BA-140   ,NO ,   8.202E-03,   3.424E-02,   5.752E-02,,    0.143
C,BALA140  ,NO ,   4.120E-03,   8.440E-03,   1.529E-02,,    0.269
C,LA-140   ,NO ,   4.120E-03,   8.440E-03,   1.529E-02,,    0.269
C,CE-141   ,NO ,   6.808E-03,   1.547E-02,   2.561E-02,,    0.266
C,CE-144   ,NO ,  -4.701E-02,   6.757E-02,   1.058E-01,,   -0.444
C,EU-152   ,NO ,  -3.633E-03,   2.951E-02,   4.890E-02,,   -0.074
C,EU-154   ,NO ,  -3.528E-03,   1.830E-02,   2.949E-02,,   -0.120
C,RA-226   ,NO ,   1.246E-01,   2.370E-01,   3.981E-01,,    0.313
C,AC-228   ,NO ,   4.049E-02,   4.264E-02,   7.933E-02,,    0.510
C,TH-232   ,NO ,   4.047E-02,   4.262E-02,   7.930E-02,,    0.510
C,U-235    ,NO ,   1.720E-02,   6.999E-02,   1.148E-01,,    0.150
C,U-238    ,NO ,   1.205E+00,   1.115E+00,   2.072E+00,,    0.581
C,NP-239   ,NO ,  -3.456E-02,   5.316E-02,   8.386E-02,,   -0.412
C,AM-241   ,NO ,   2.506E-02,   1.169E-01,   1.951E-01,,    0.128
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GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85479

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32680-1	VA	DUP	GELI	1460.2 g wet	12/19/19	SMC	BALANCE 8							WG32680
L85479-1	S		GELI	122.04 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-2	S		GELI	31.52 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-3	S		GELI	58.09 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-4	S		GELI	58.46 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-5	S		GELI	87.81 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-6	S		GELI	108.63 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-7	S		GELI	141.51 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-8	S		GELI	126.13 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-9	S		GELI	130.14 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-10	S		GELI	122.03 g dry	12/19/19	SMC	BALANCE 8							WG32680
L85479-11	S		GELI	131.8 g dry	12/19/19	SMC	BALANCE 8							WG32680

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.01
1000.00	1000.12

Check Date: 19-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
GELI	BALANCE 8	19-DEC-19
NONE	BALANCE 8	19-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME
	pCi/ml	BI YIELD	
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

Standards Prepared by: [signature] 2/21/15

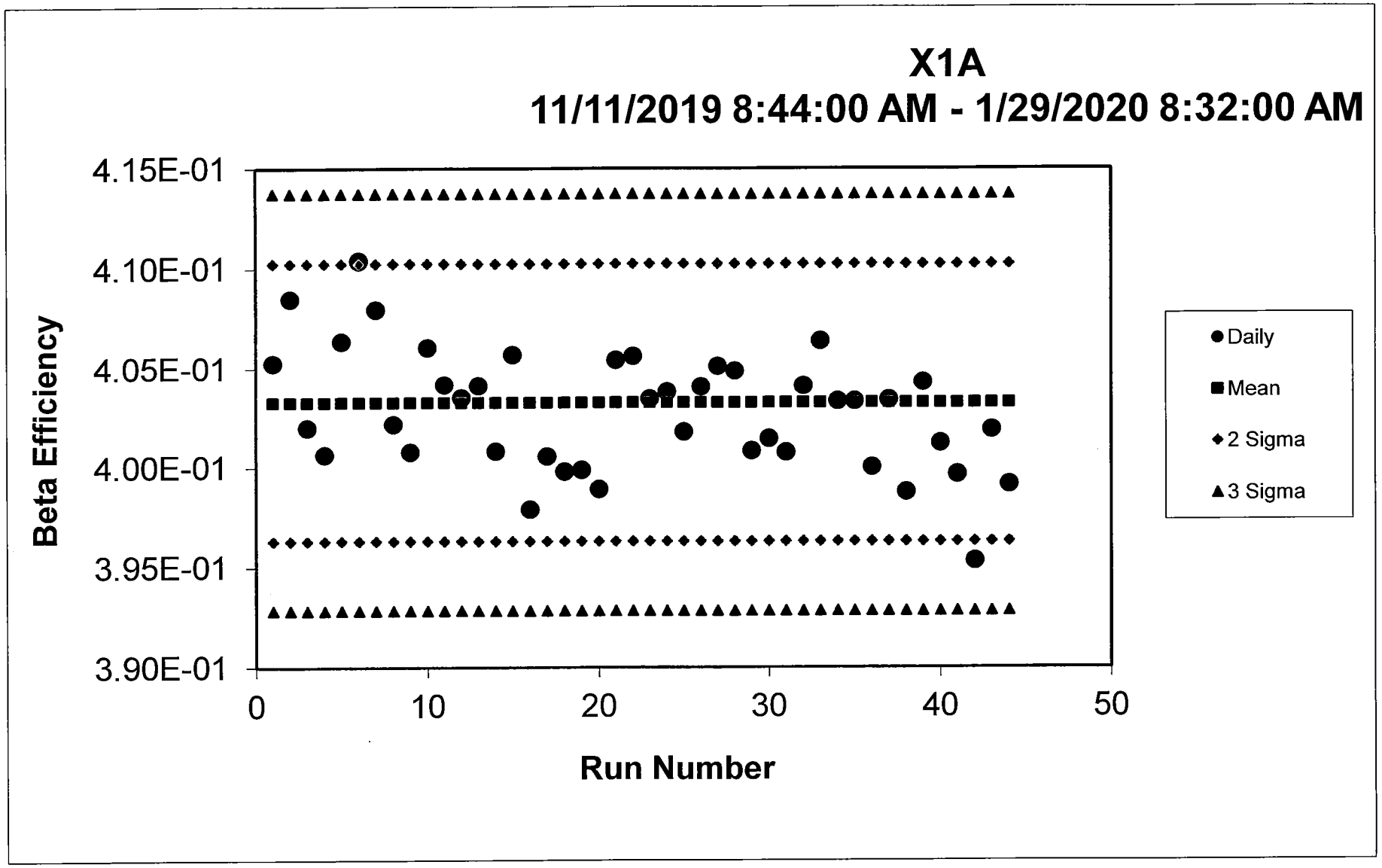
Calibration by: Keith Jett 2/21/15

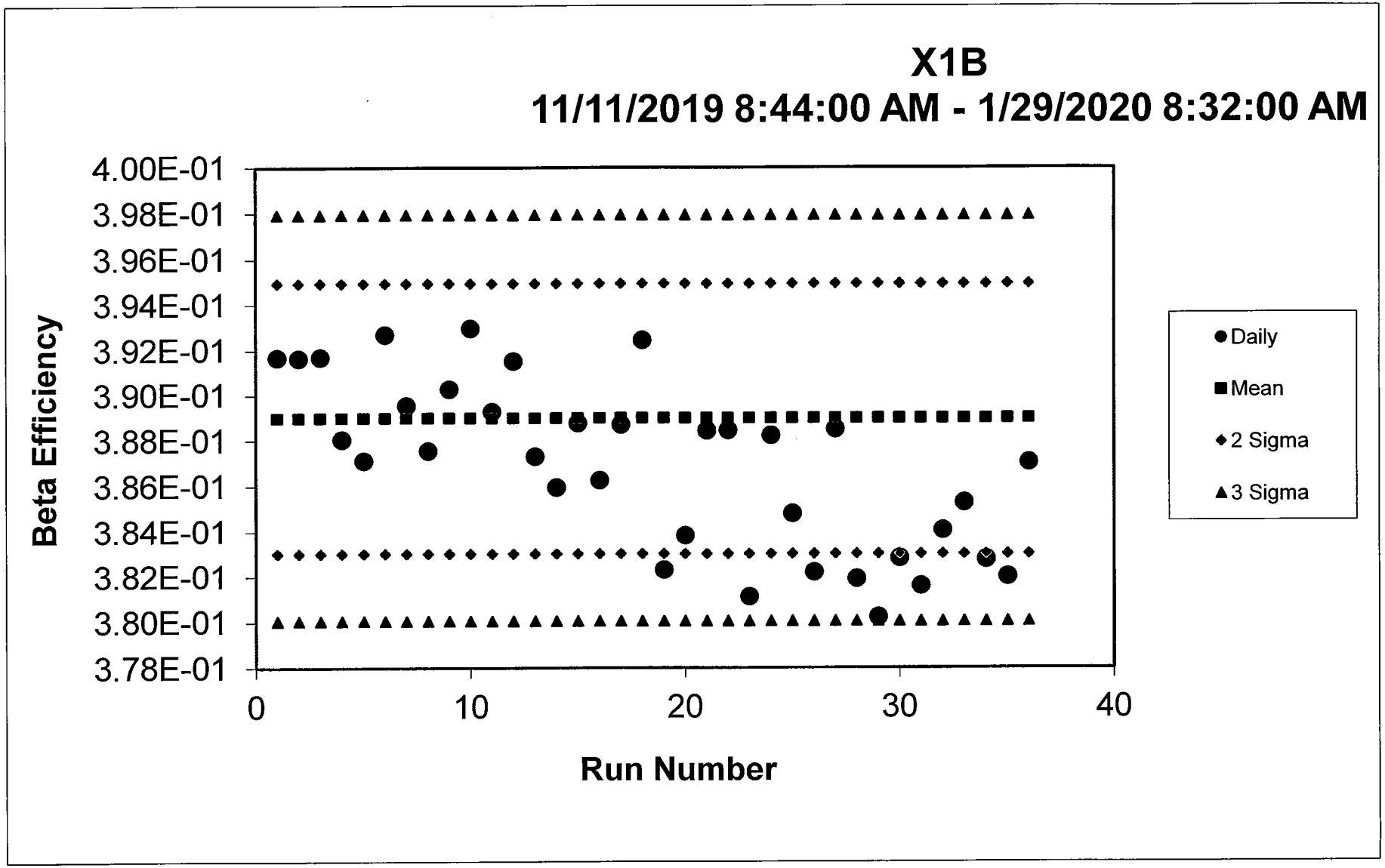
Y COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

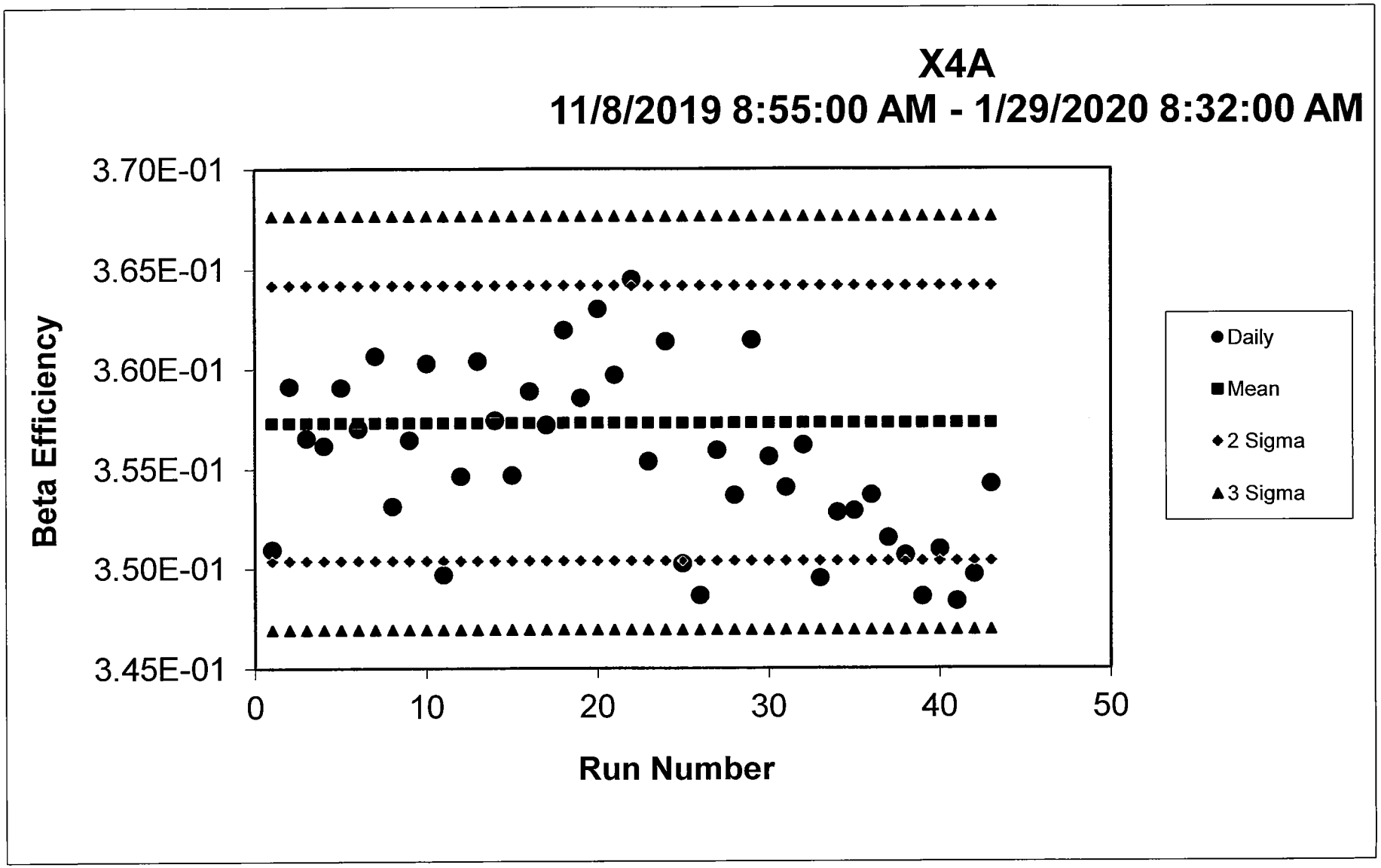
210PB-061014	Activity		MILK DATE/TIME		Standards Prepared by:		2/21/15
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55		Calibration by: Keith Jett		2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

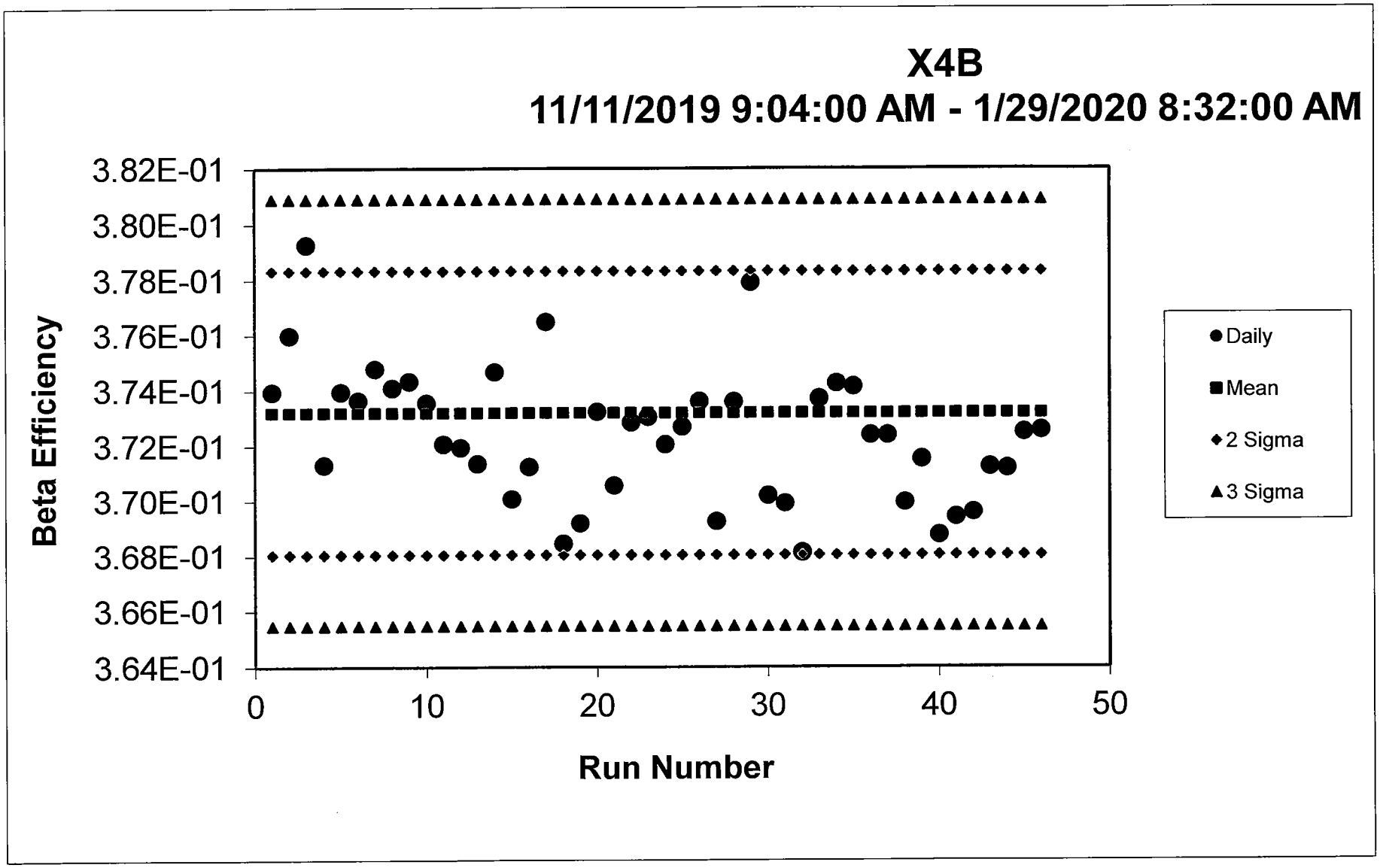
LEAD 210

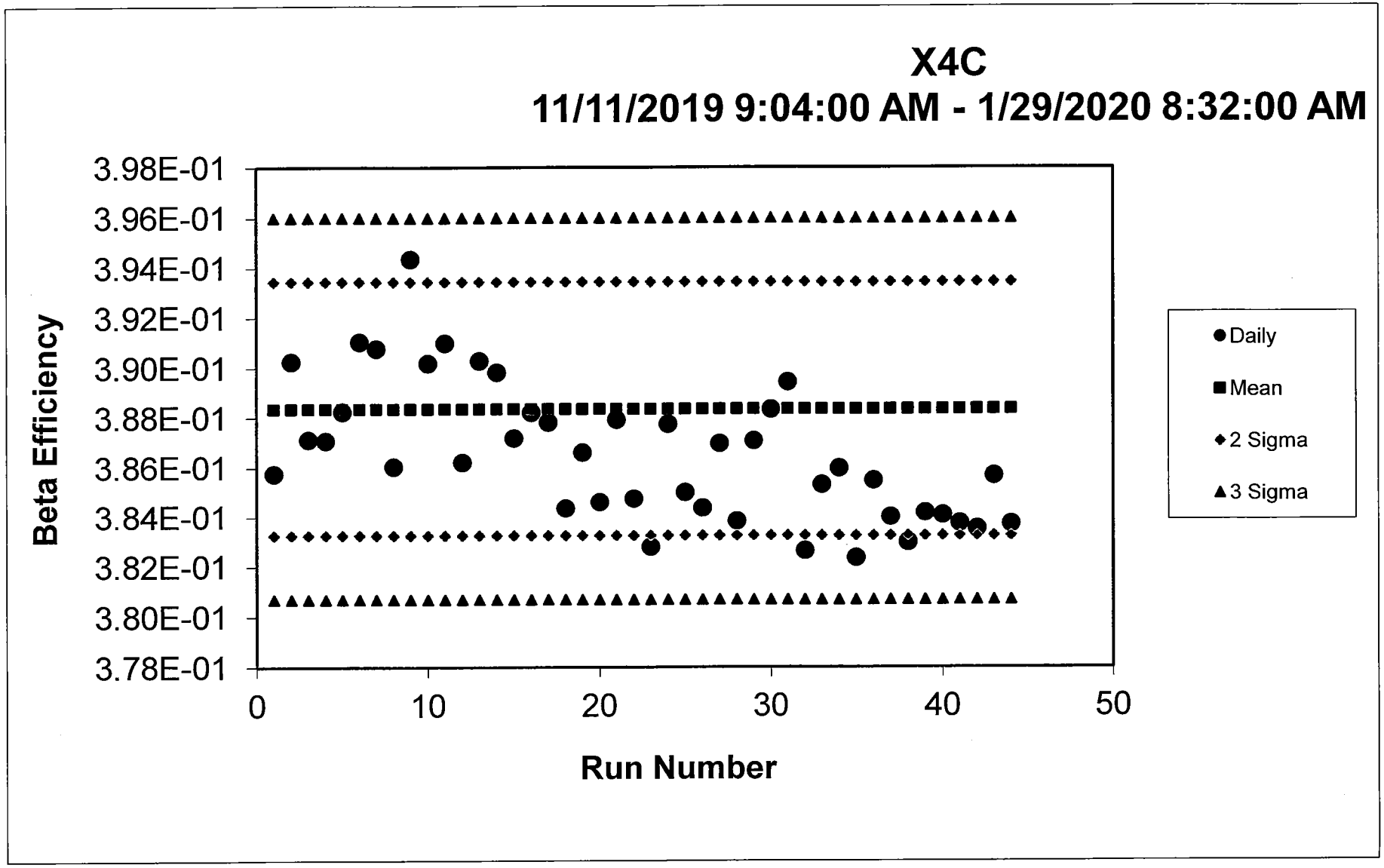
Daily Source and Background Checks

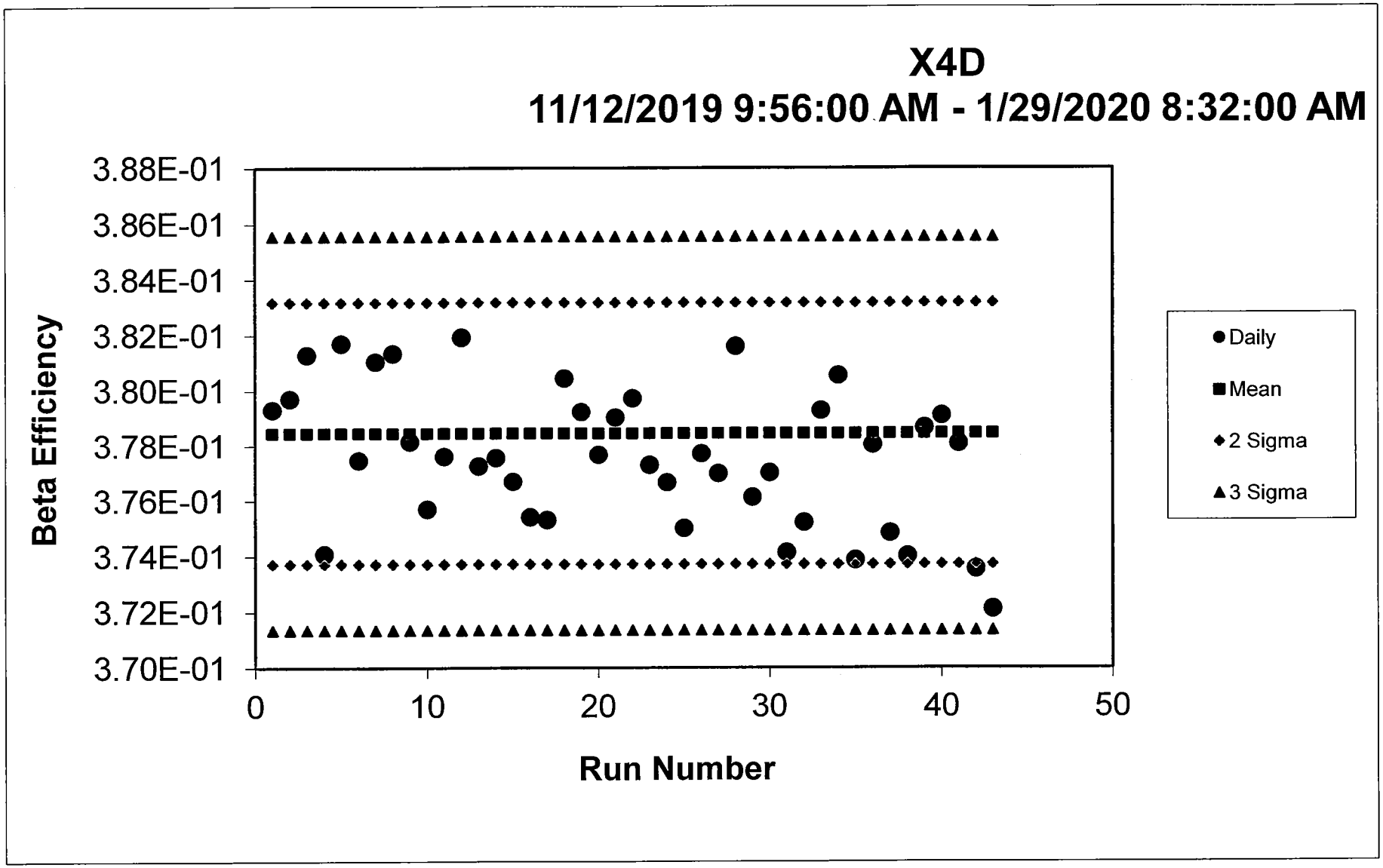

X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

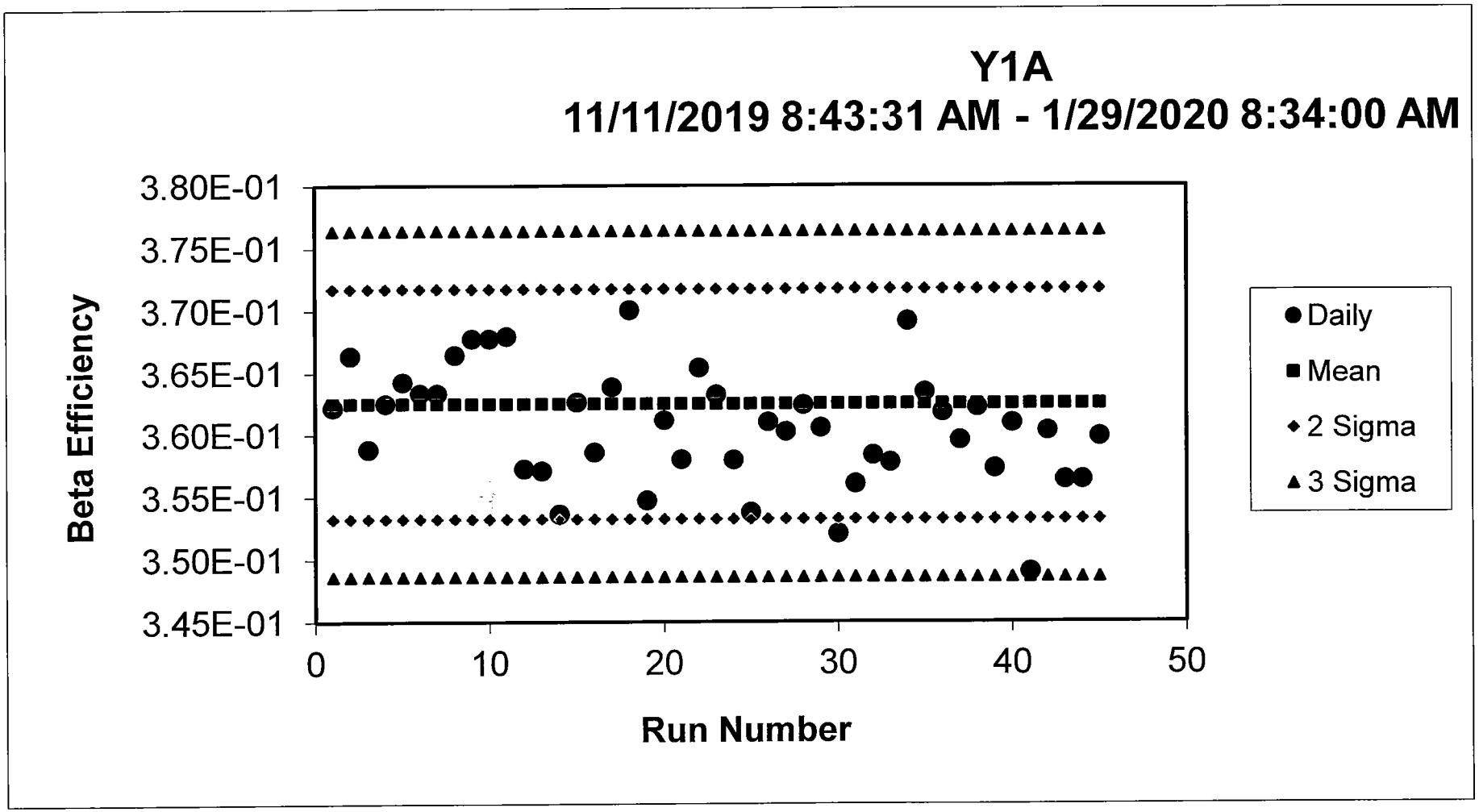

X1B
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma

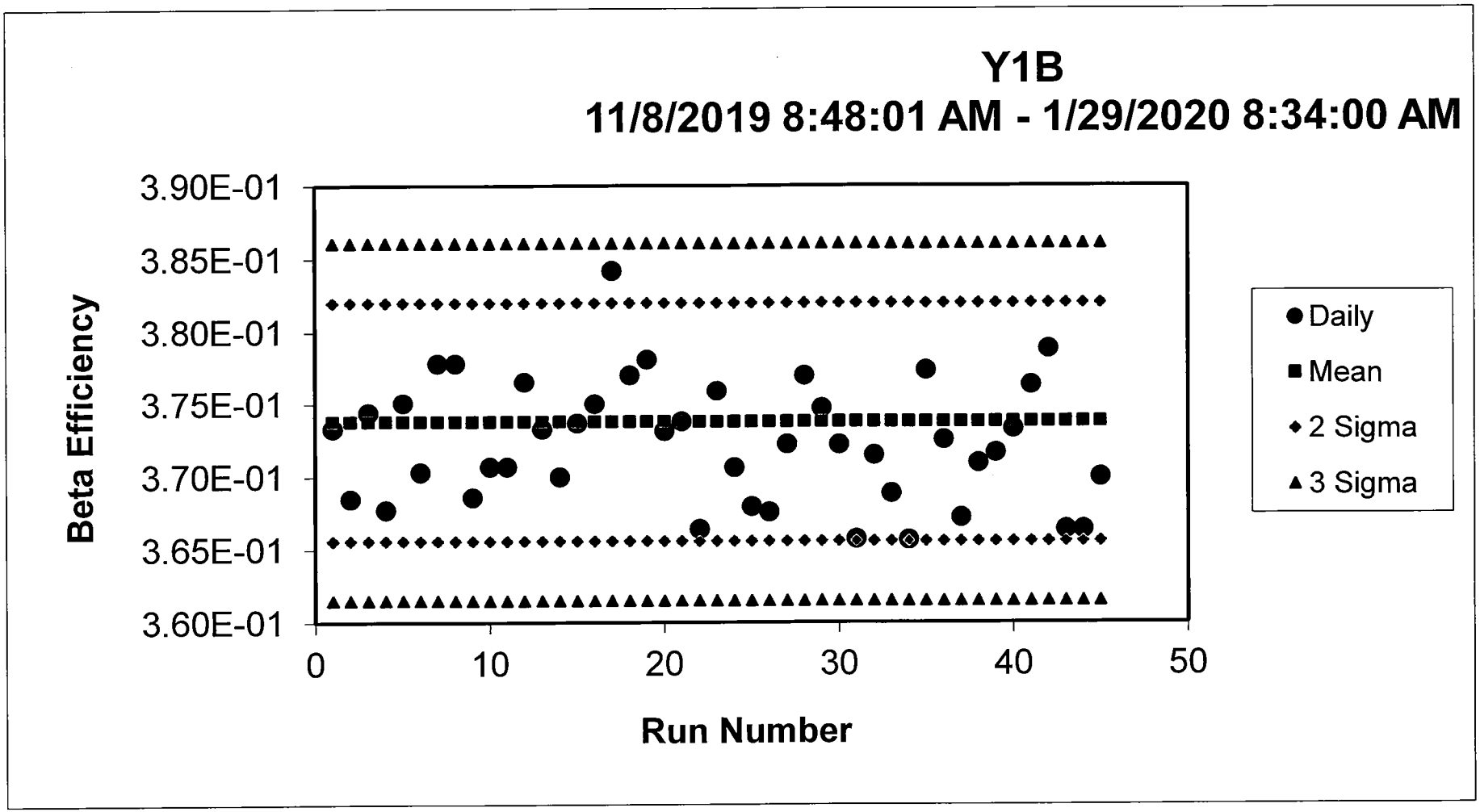

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

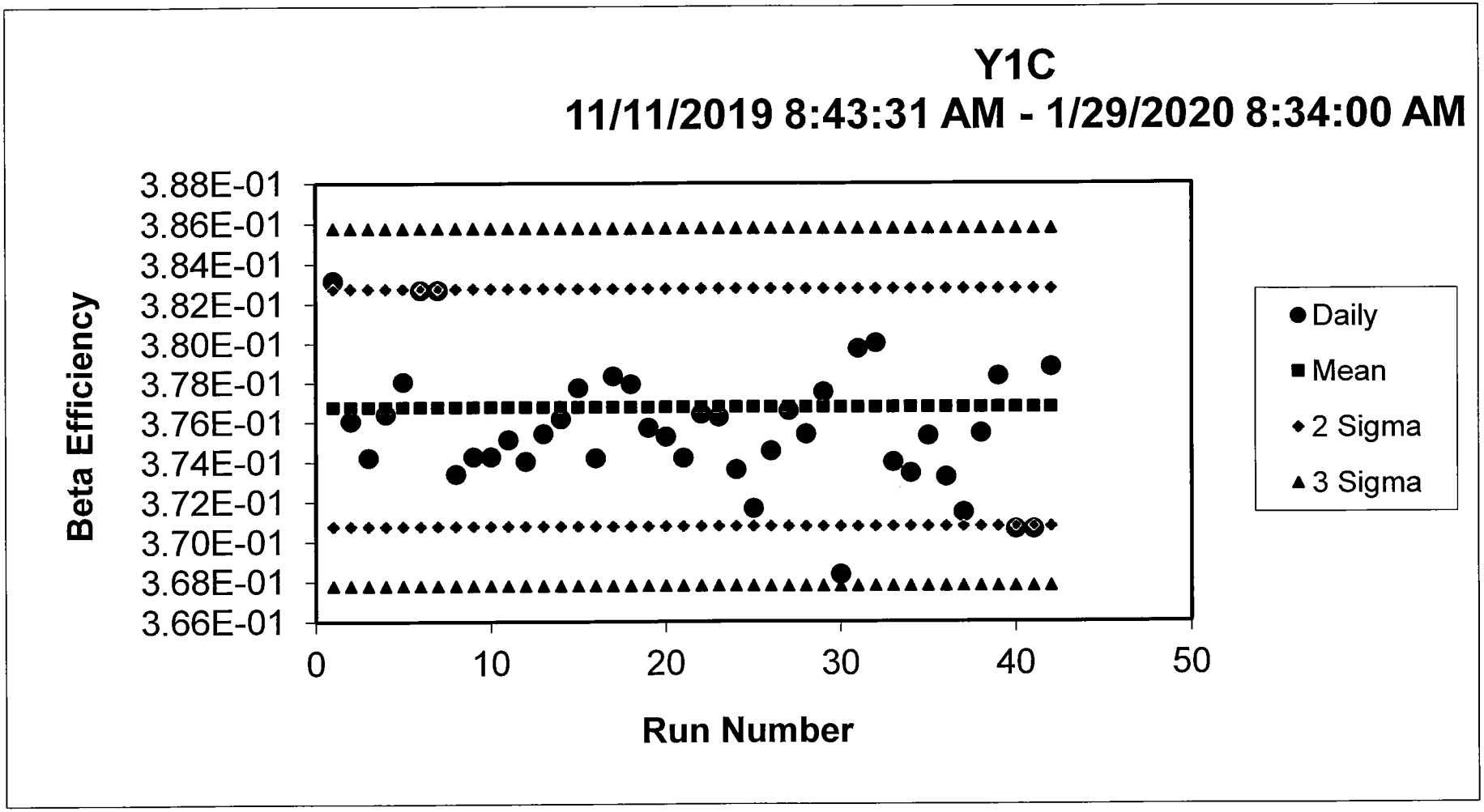

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

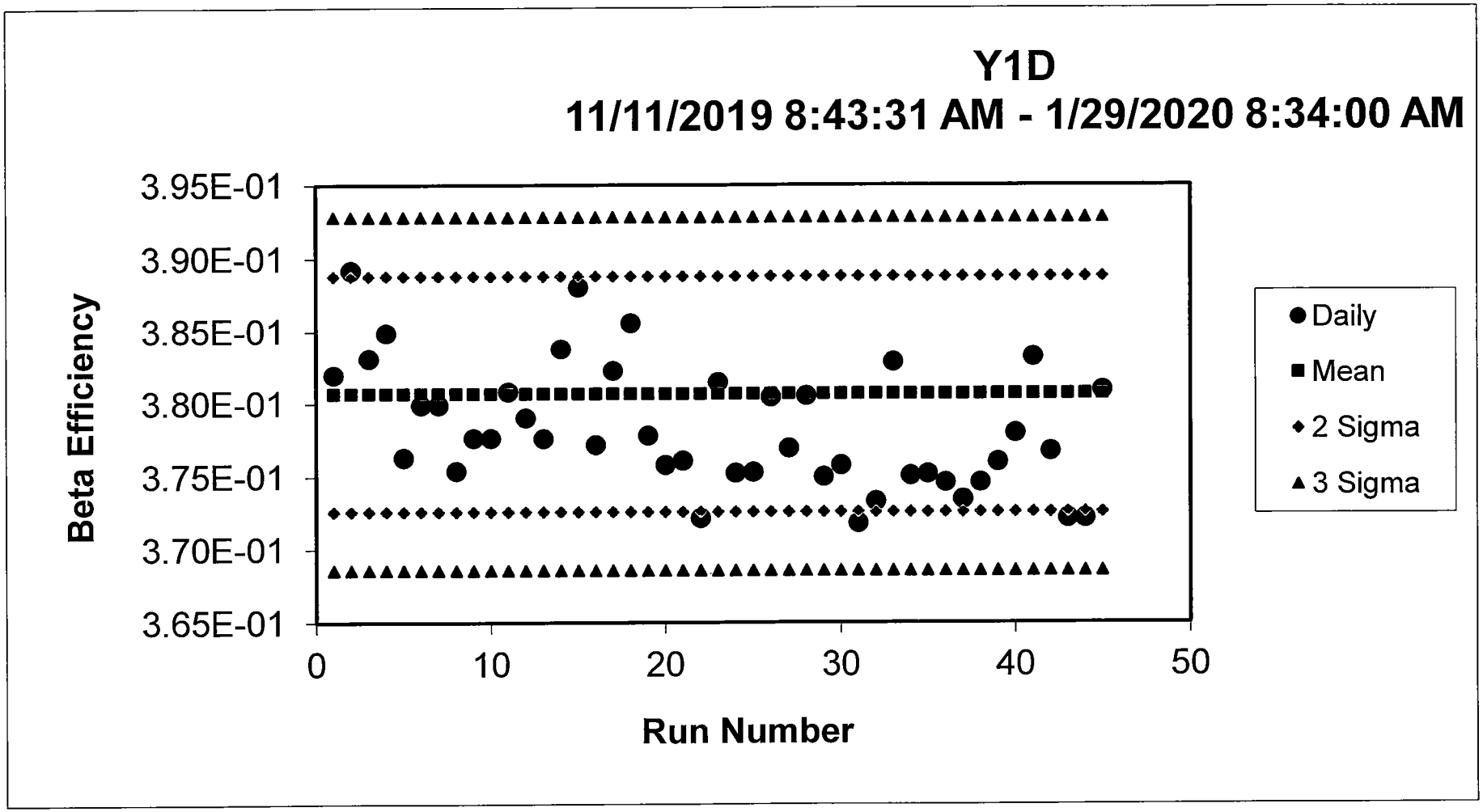

X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

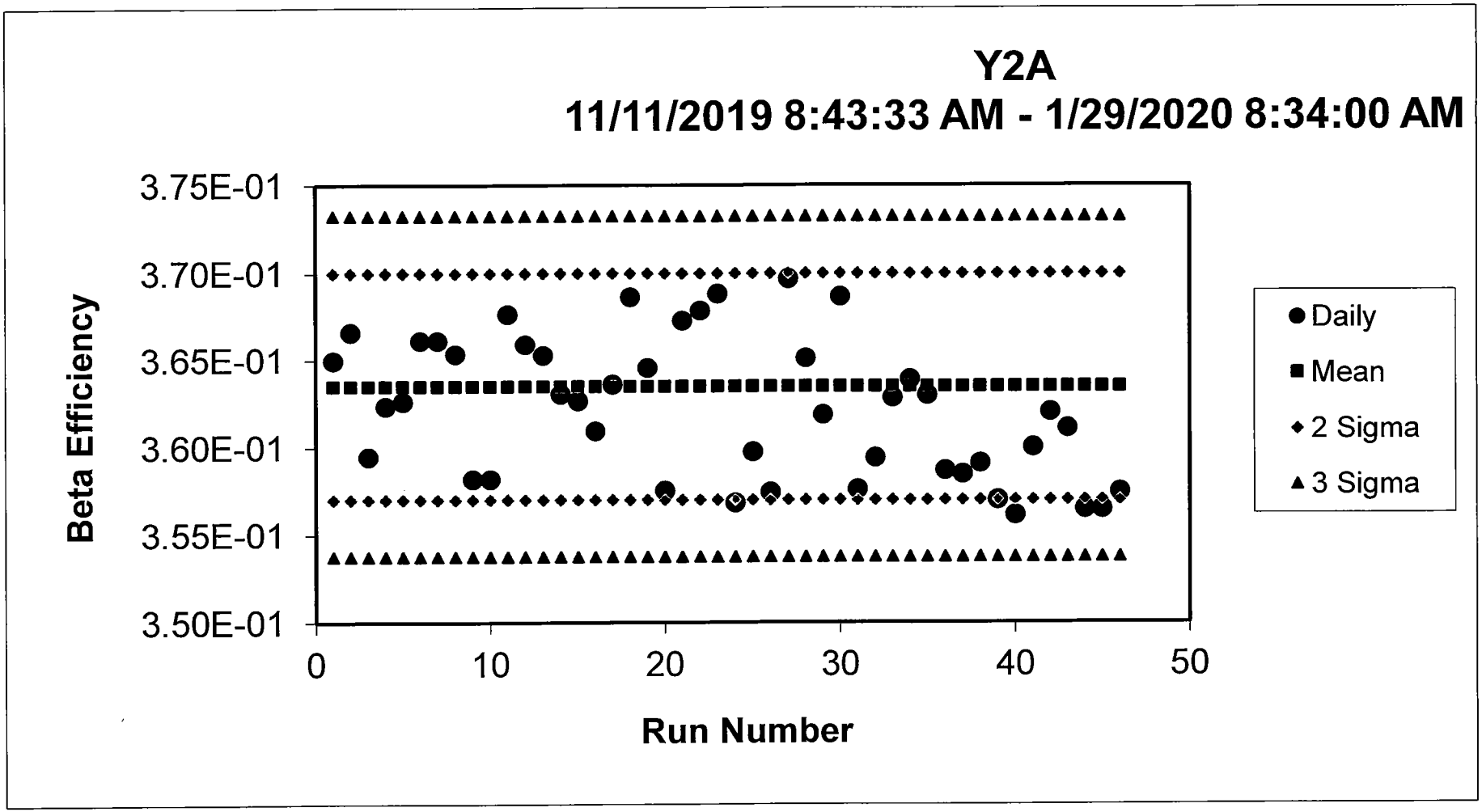

X4D
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

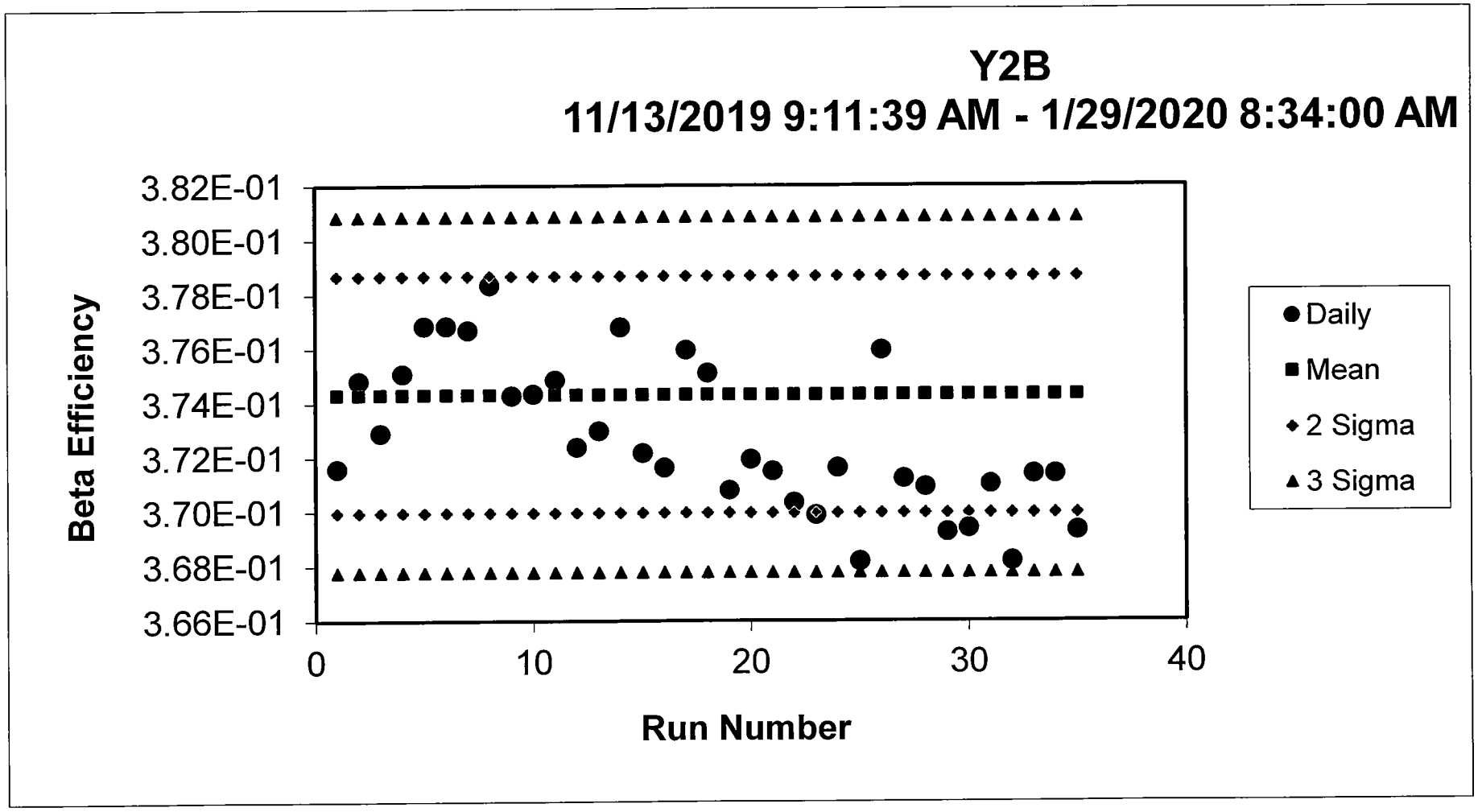

Y1A
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1B
11/8/2019 8:48:01 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1C
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1D
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y2A
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y2B
11/13/2019 9:11:39 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
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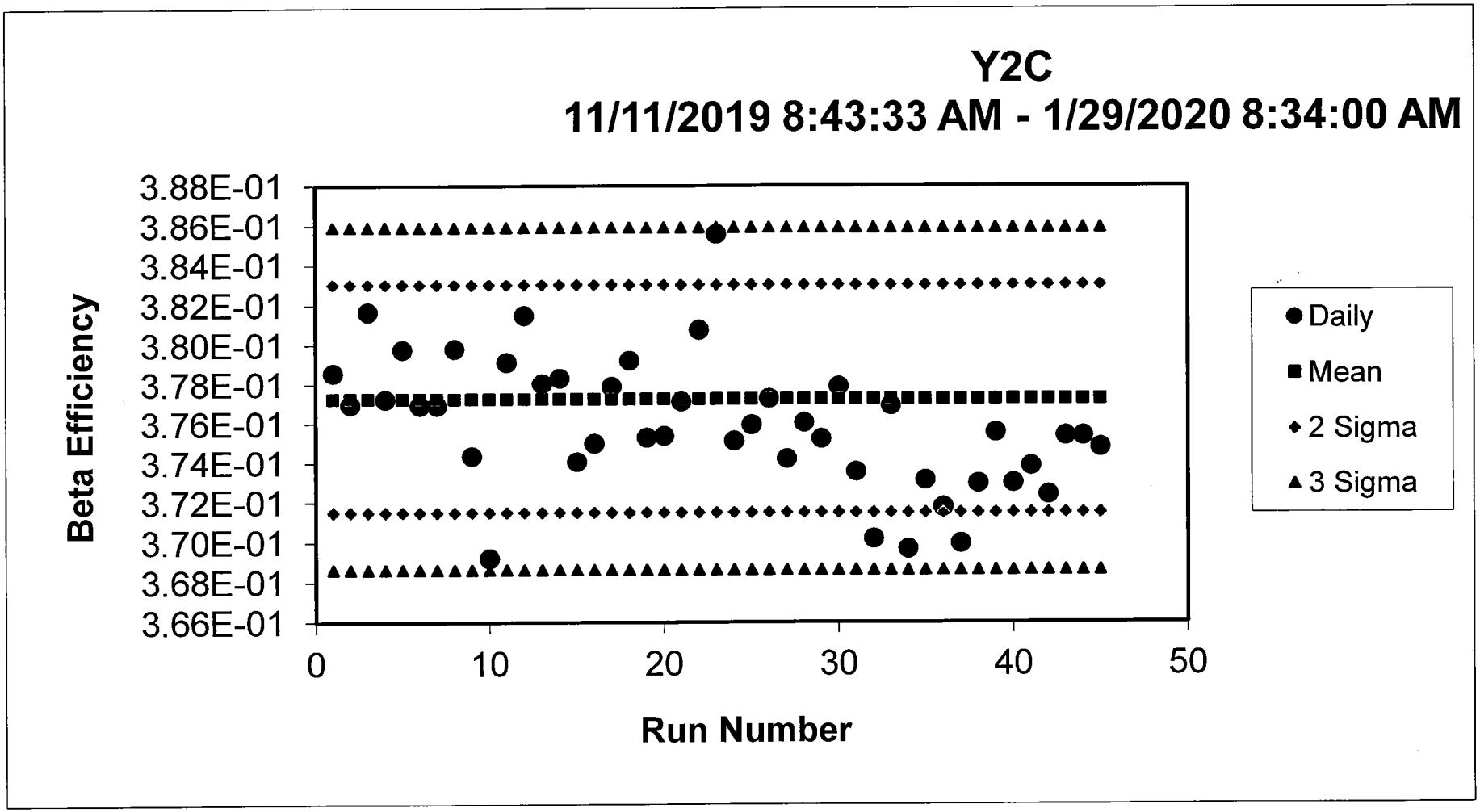
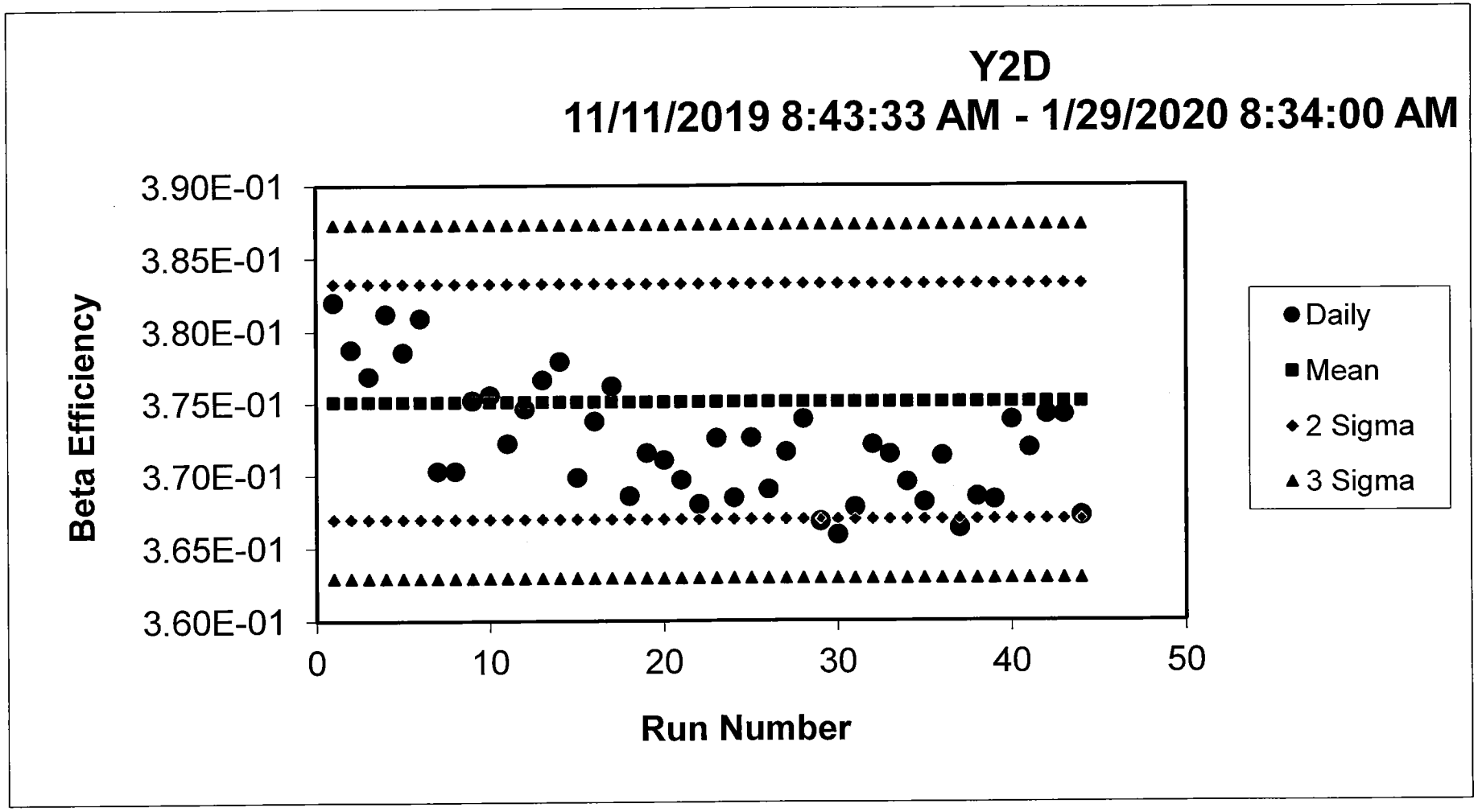
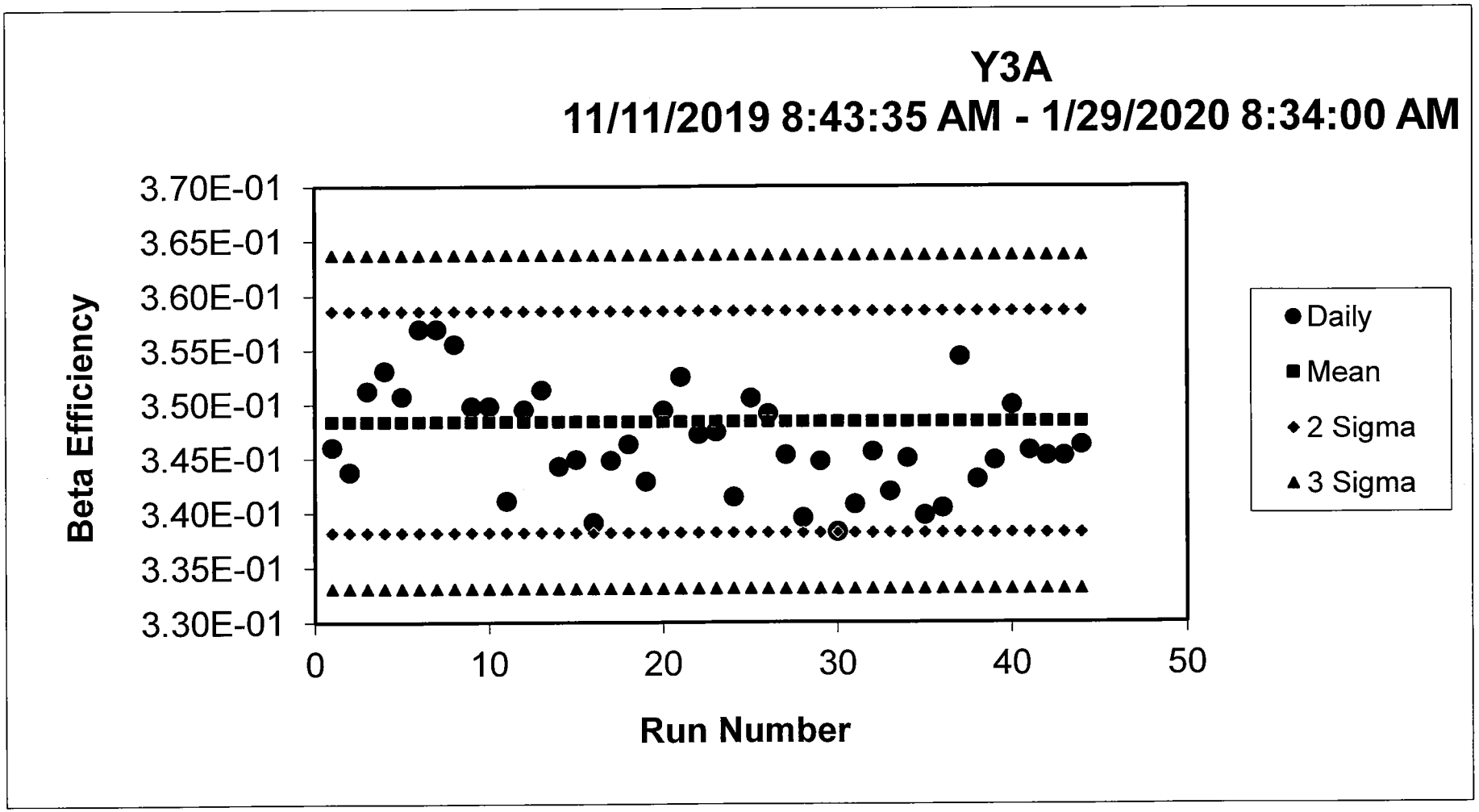
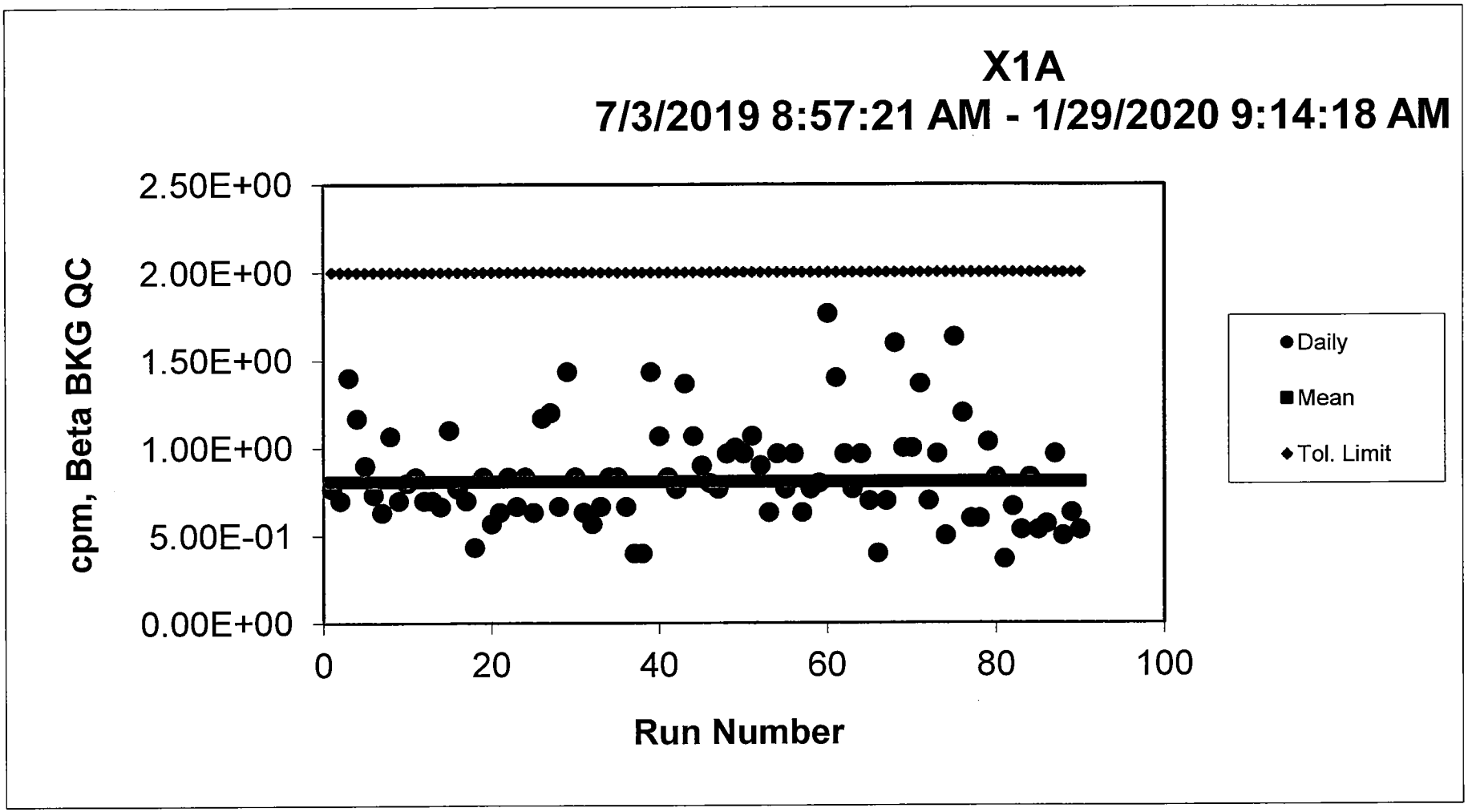
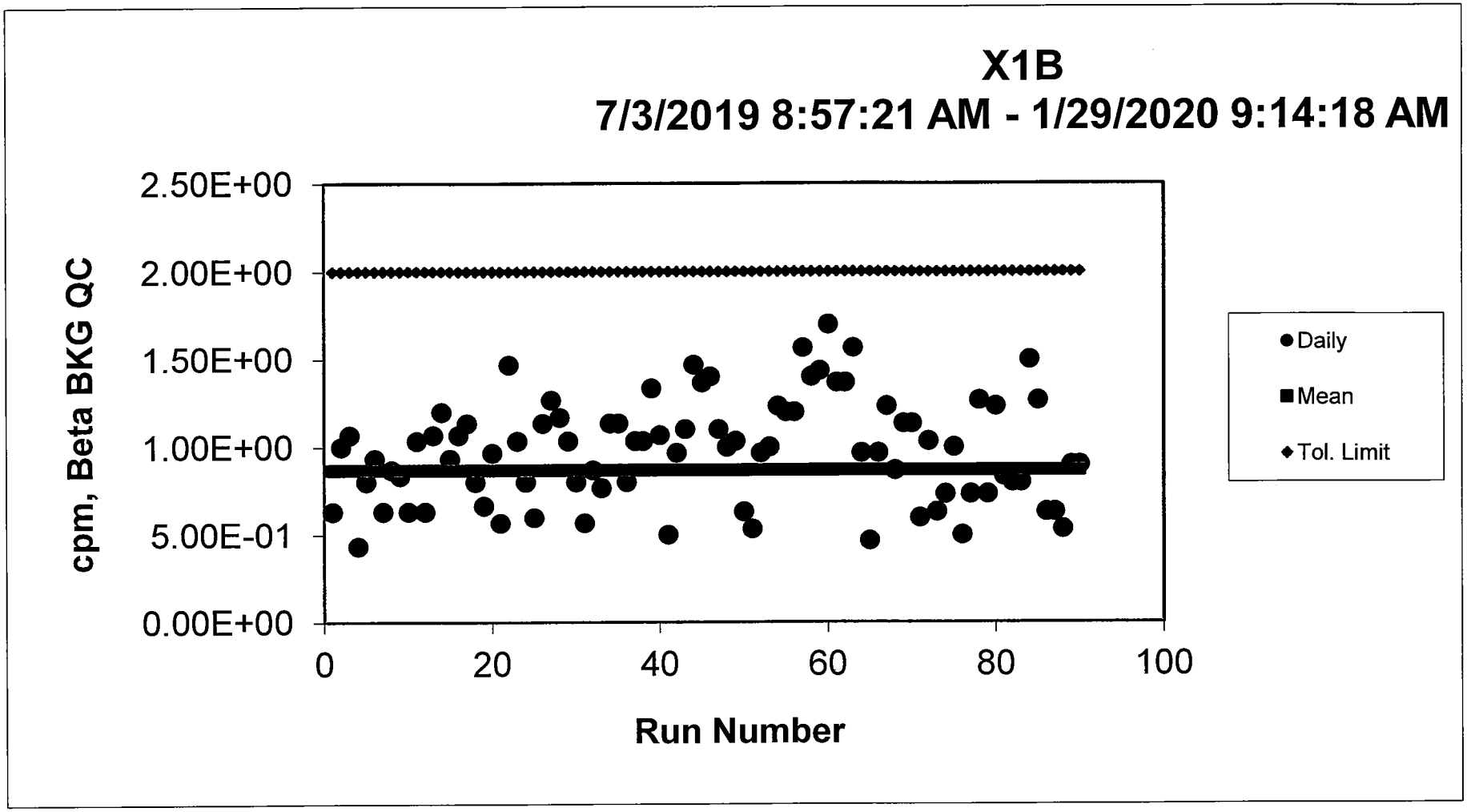
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma

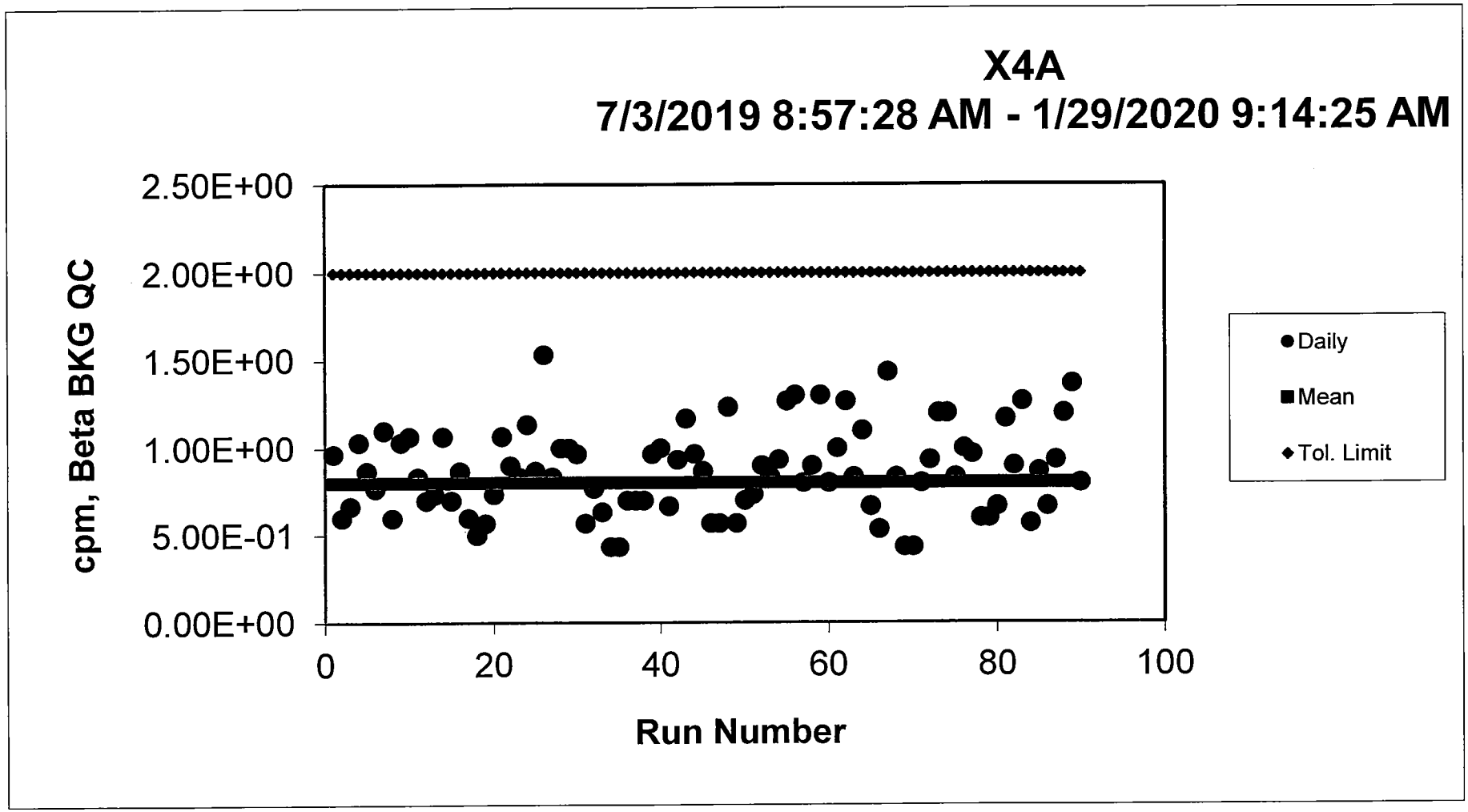

Y2C
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

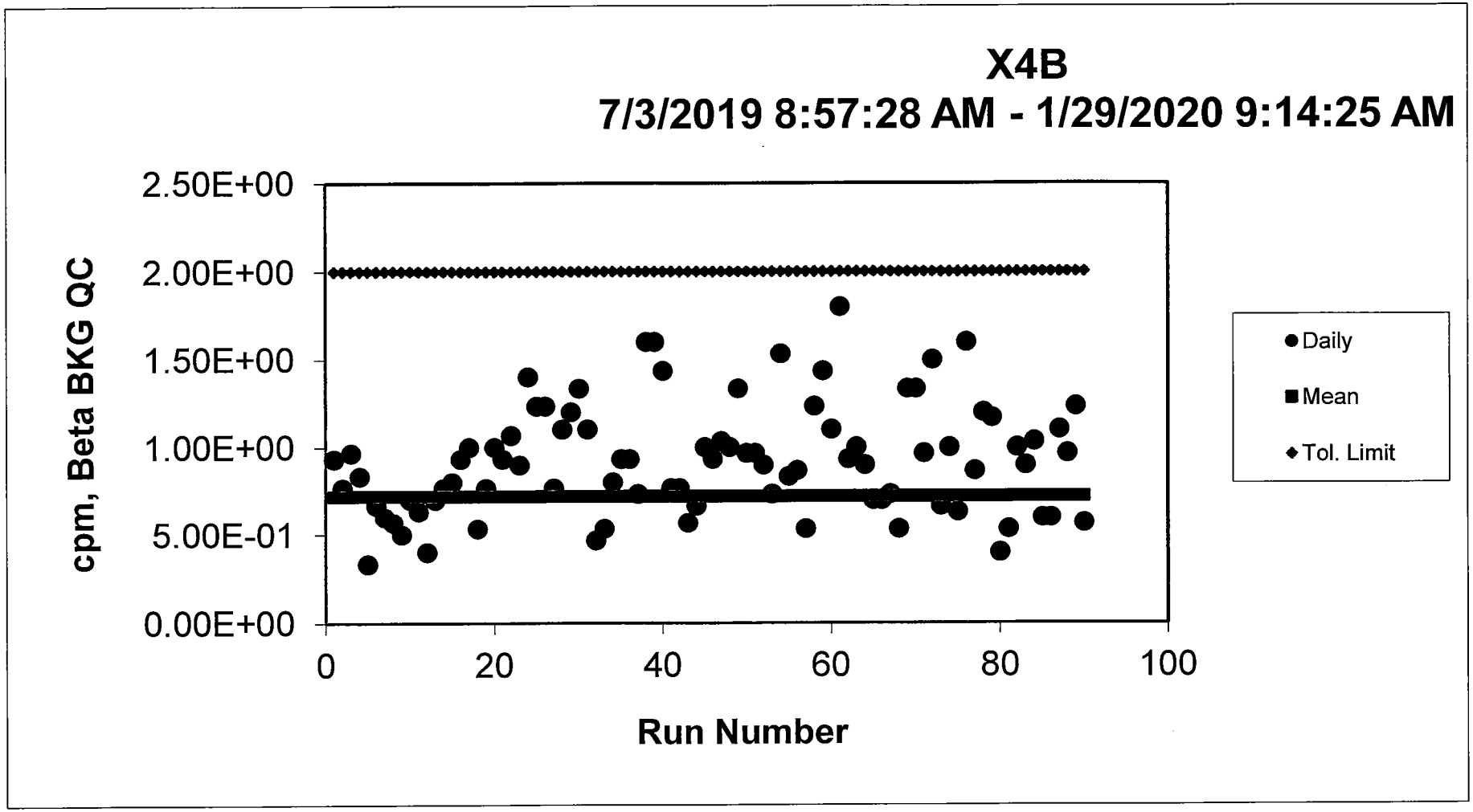

Y2D
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

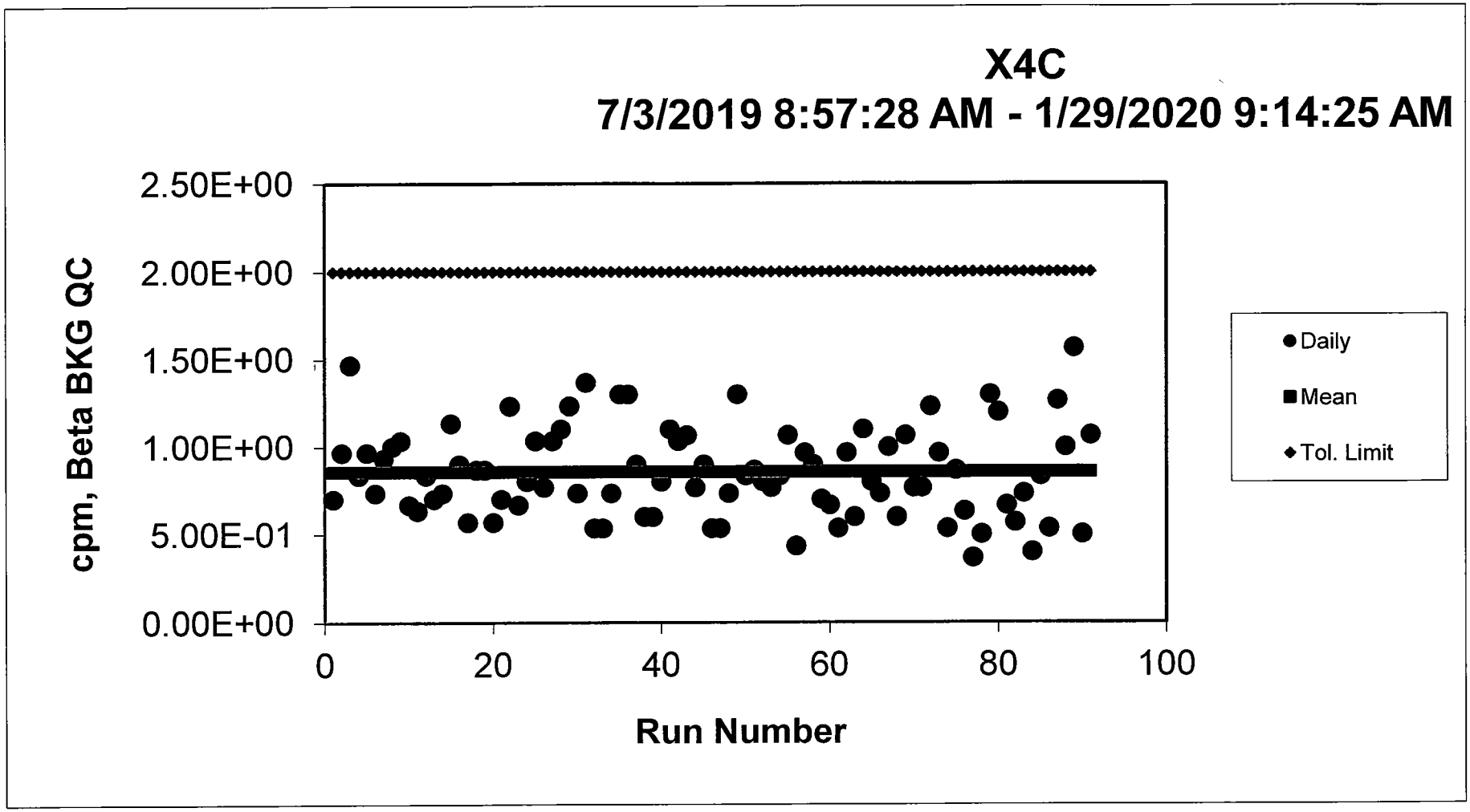

Y3A
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
3.40E-01
3.35E-01
3.30E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

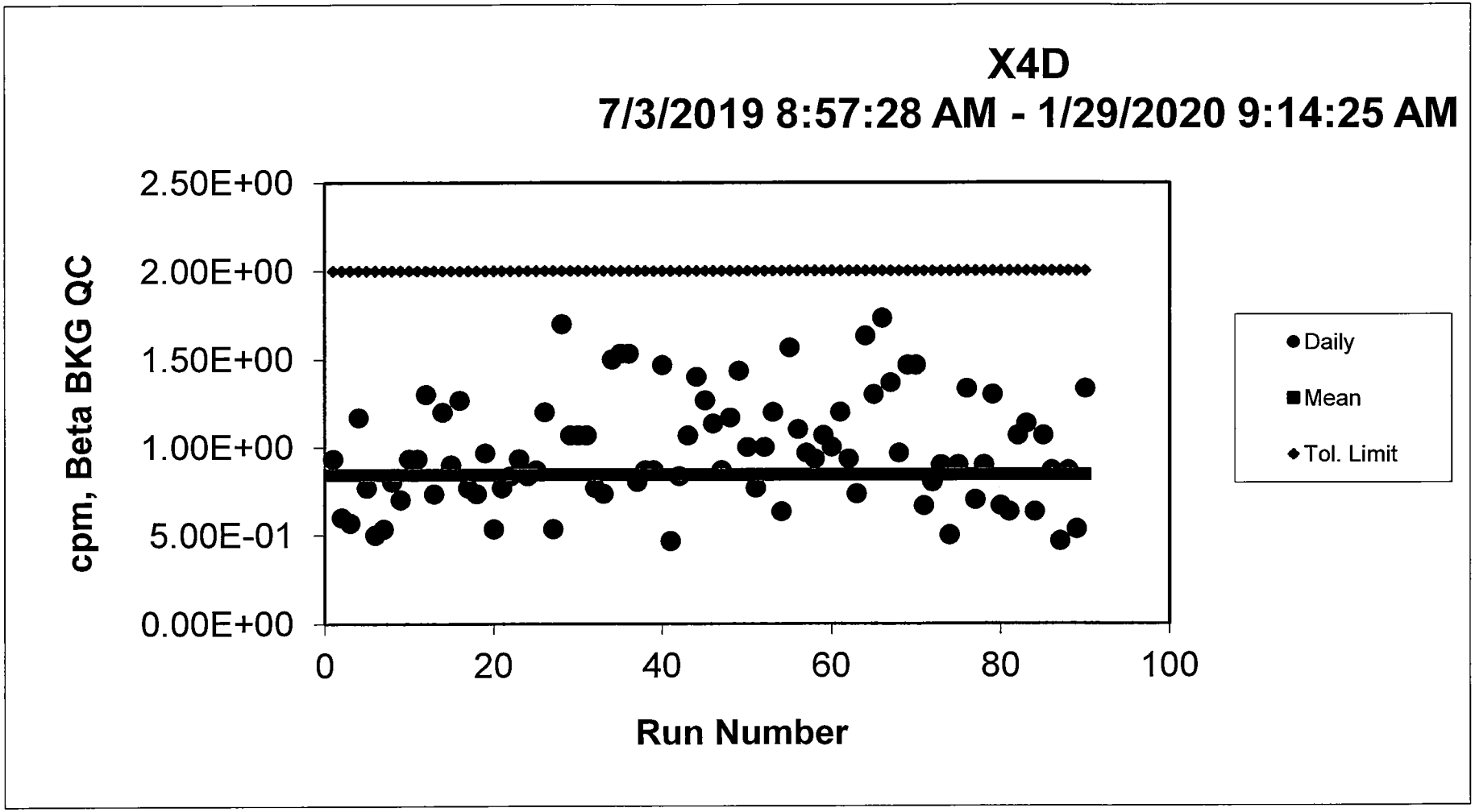

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

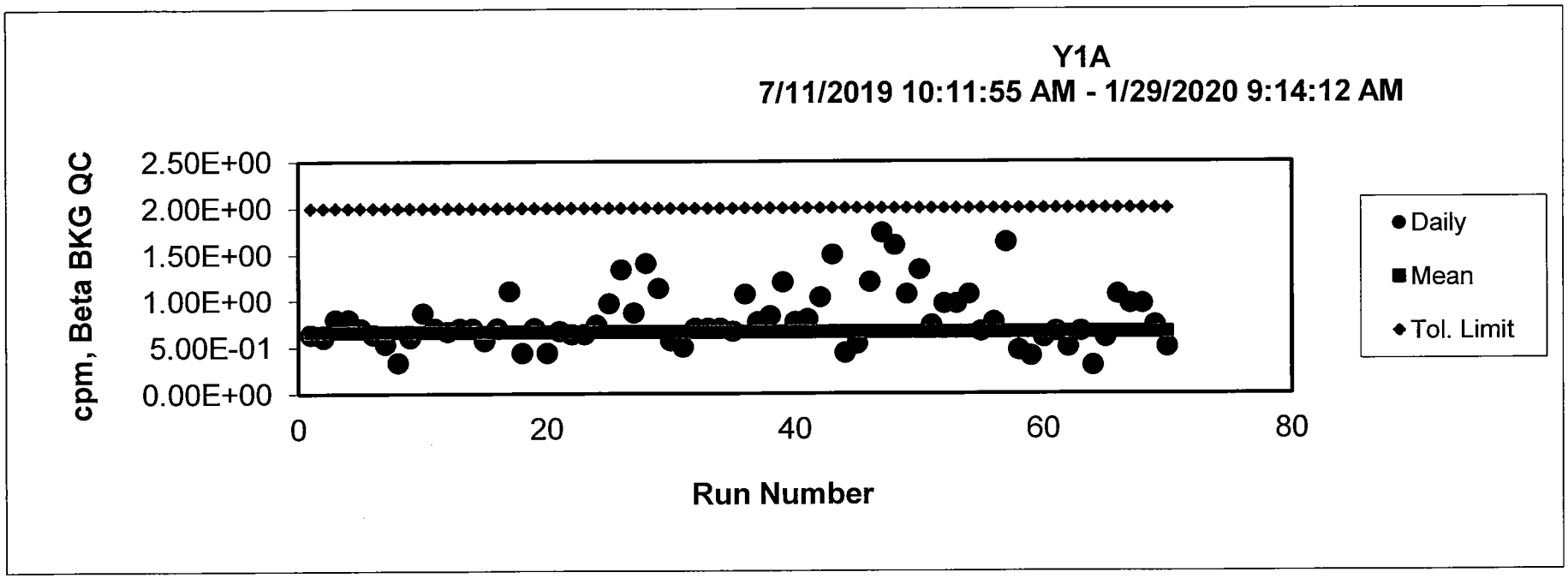

X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

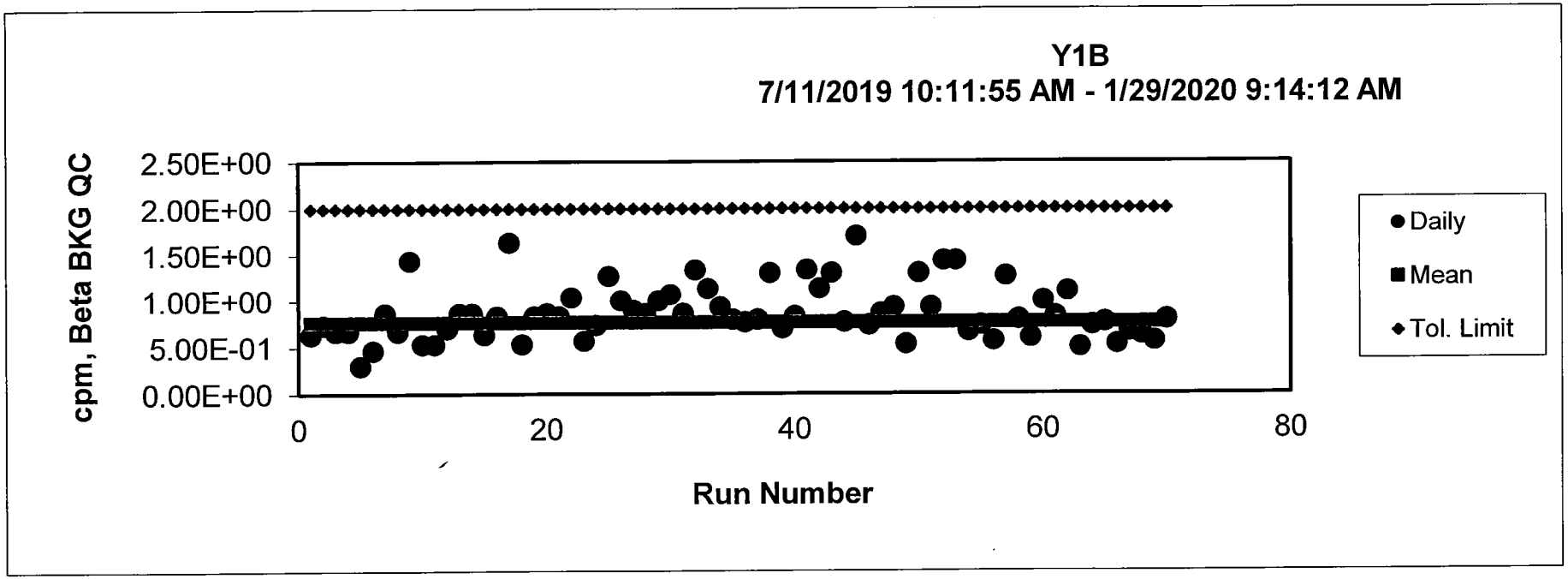

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

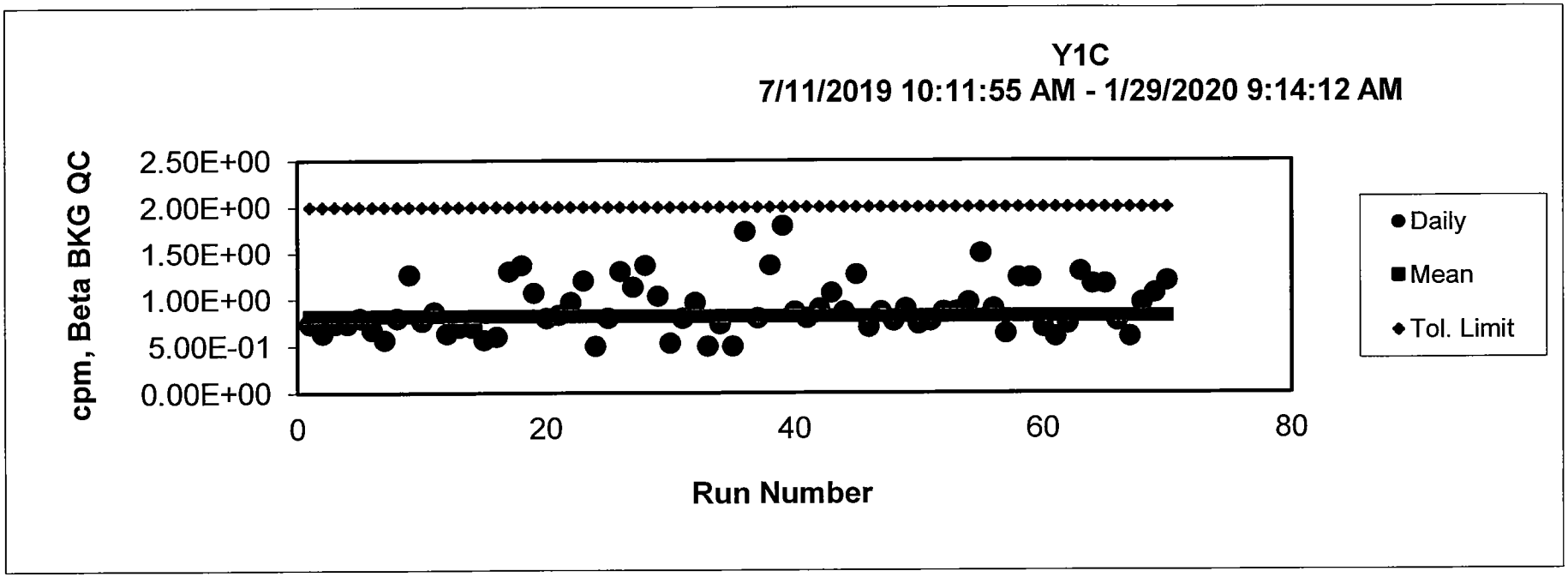

X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

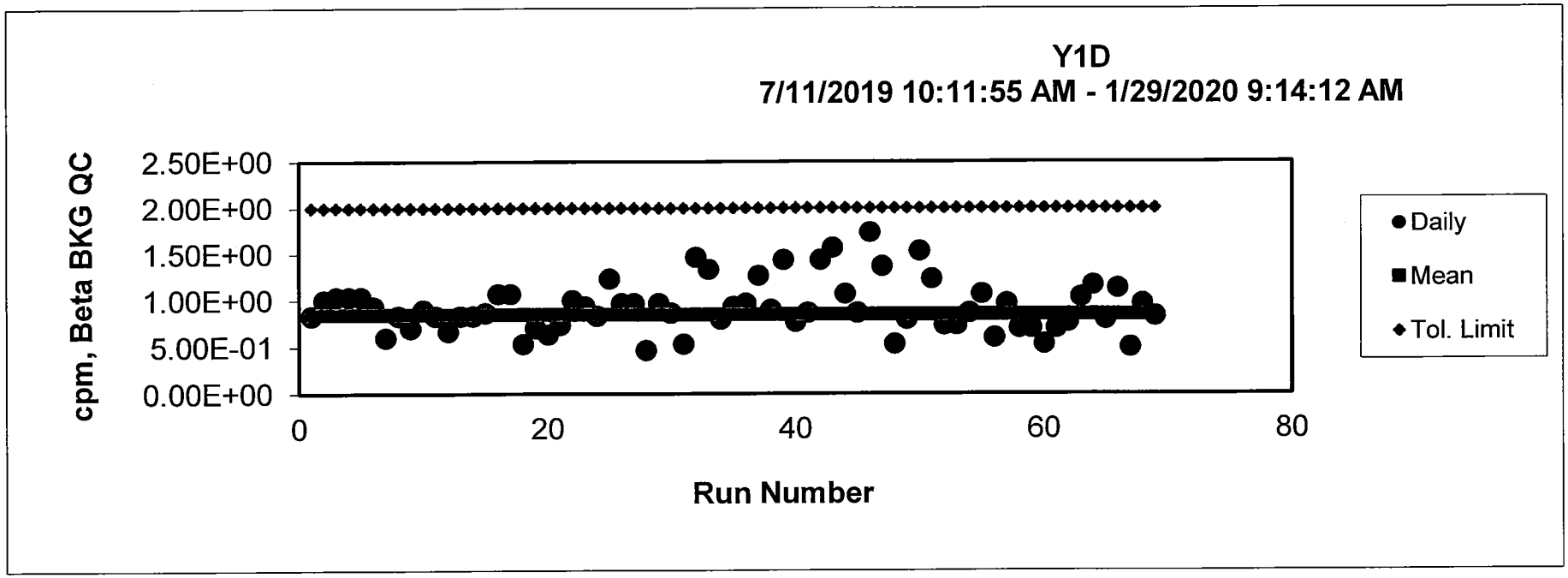

X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

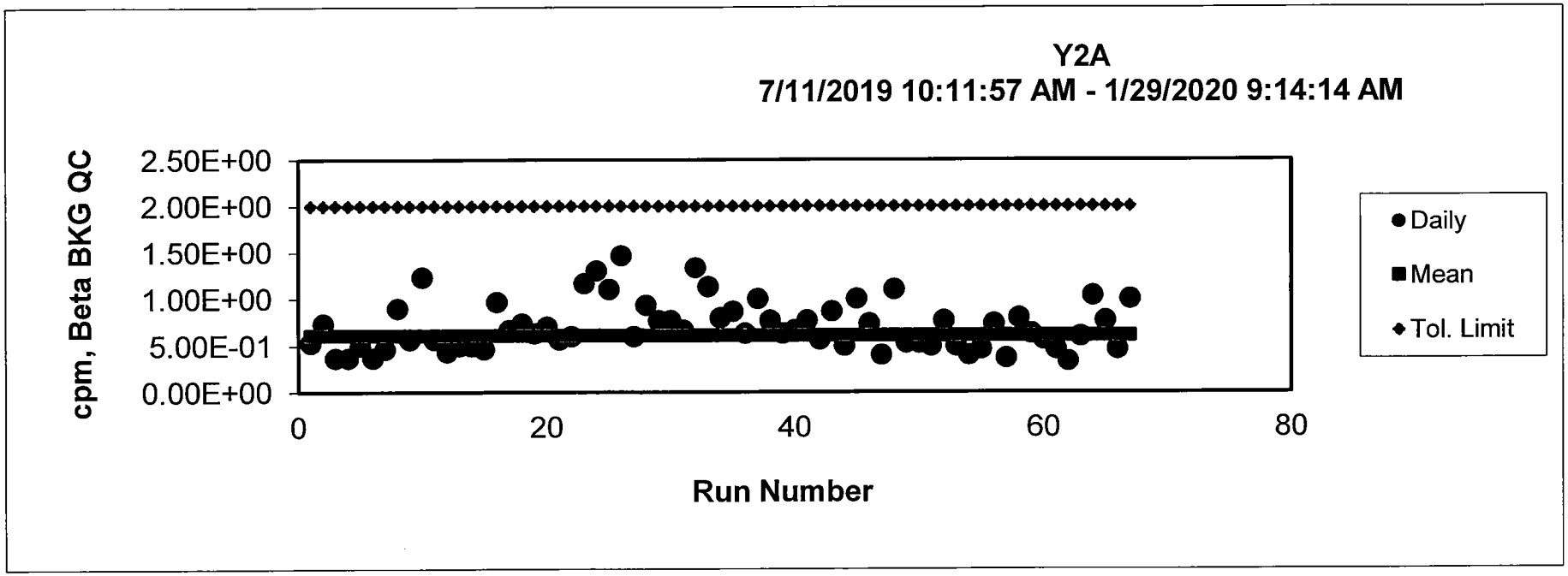

X4D
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

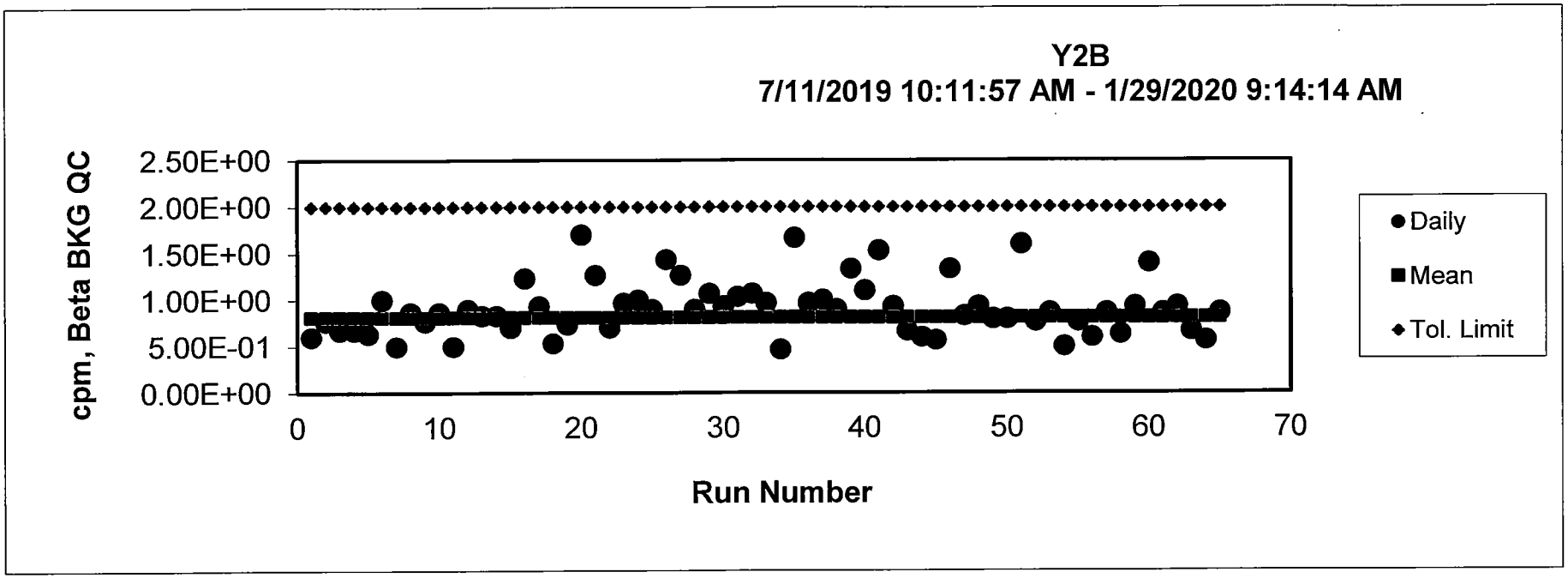

Y1A
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

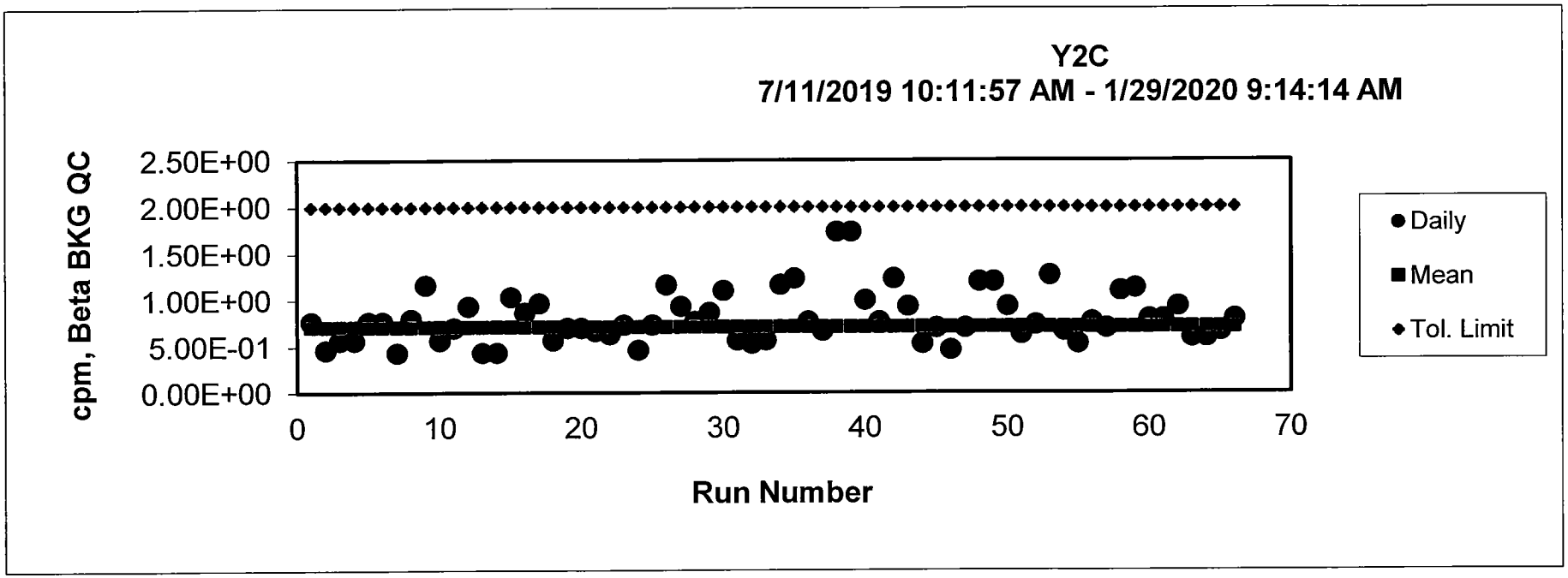

Y1B
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

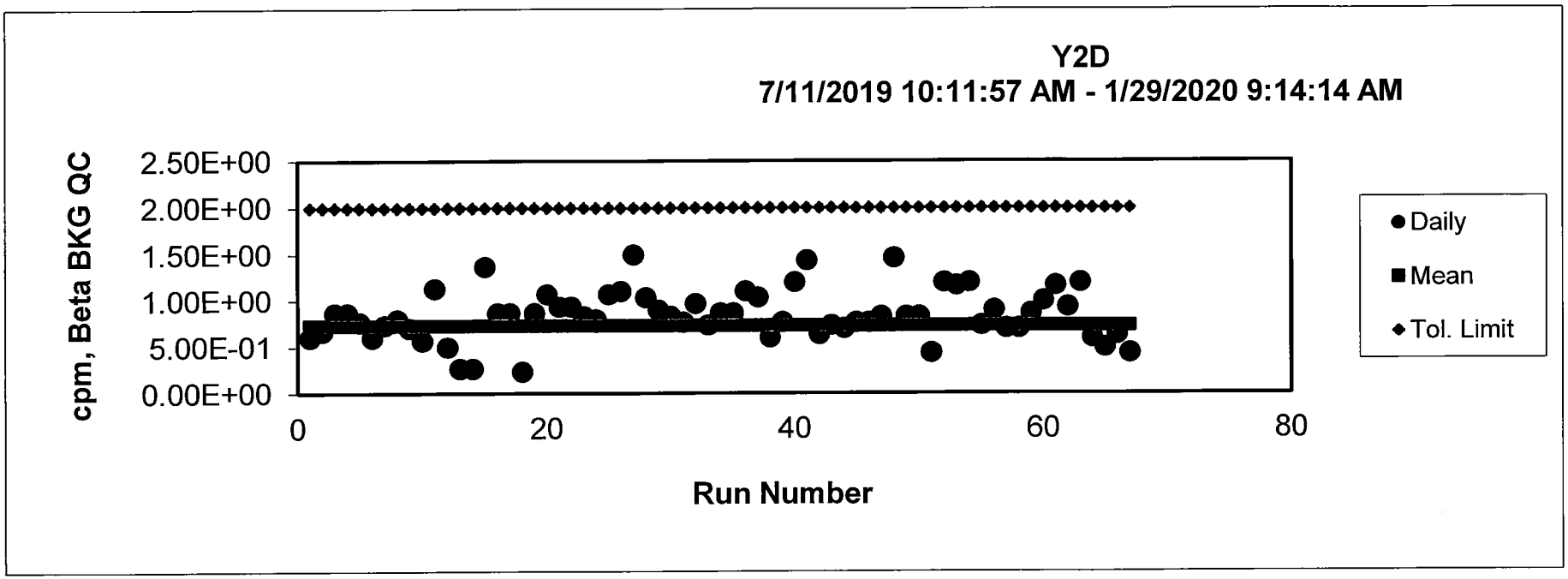

Y1C
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

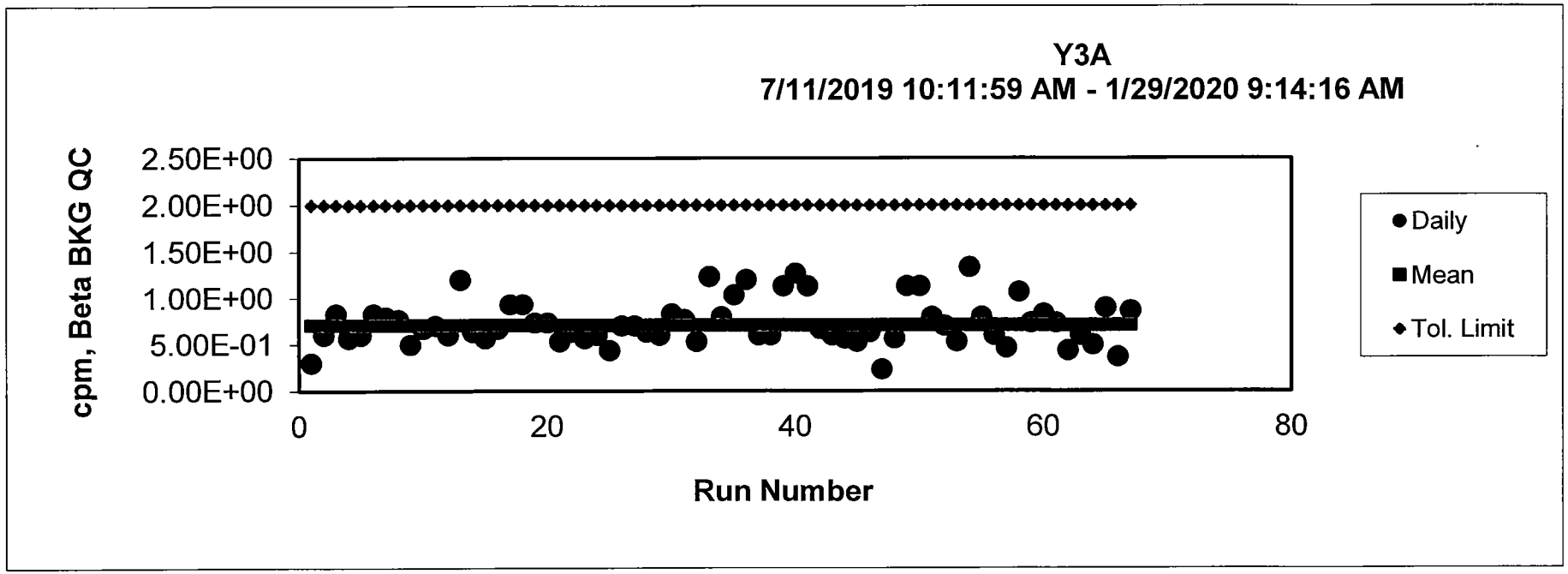

Y1D
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2A
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2B
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2C
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2D
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3A
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32943

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	64.93%	577.9
recovery 2	58.69%	522.3
recovery 3	60.21%	535.9
Average	61.28%	
2 sigma	6.51	
RPD for highest and lowest	10.11	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:21:38.82
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 28-JAN-2020 08:41:25.24

LIMS No., Customer Name, Client ID: l85486-3BI207 GAMMA COUNT

Sample ID : 14L85486-3BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 1425MM101619
BKGFILE : 14BG122719MT
Real Time : 0 01:40:03.47
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.68*	3371	570	0.93	142.61	1.27E+01	5.62E-01	2.1	5.39E+00
2	4	74.84*	5797	358	0.89	146.94	1.35E+01	9.66E-01	1.4	
3	4	84.68*	2470	376	1.09	166.62	1.69E+01	4.12E-01	2.4	5.02E-01
4	4	87.26	883	237	1.04	171.78	1.76E+01	1.47E-01	4.6	
5	1	569.65	6874	268	1.31	1136.84	6.14E+00	1.15E+00	1.3	1.90E+00
6	1	1063.71	2846	69	1.63	2125.57	3.00E+00	4.74E-01	2.0	1.71E+00
7	1	1633.41	266	29	1.89	3266.10	1.91E+00	4.44E-02	7.4	1.22E+00
8	1	1770.35	176	0	2.17	3540.32	1.80E+00	2.93E-02	7.6	1.40E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2846	74.50*	2.995E+00	5.745E+02	5.745E+02	3.98
	1770.24	176	6.87	1.799E+00	6.400E+02	6.400E+02	15.28

Flag: "*" = Keyline

Sample ID : 14L85486-3BI207 Acquisition date : 28-JAN-2020 08:41:25

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.745E+02	5.745E+02	0.229E+02	3.98	
	Total Activity :		5.745E+02	5.745E+02			
	Grand Total Activity :		5.745E+02	5.745E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85486-3BI207 Acquisition date : 28-JAN-2020 08:41:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.68	3371	570	0.93	142.61	137	19	5.62E-01	4.1	1.27E+01	
4	74.84	5797	358	0.89	146.94	137	19	9.66E-01	2.9	1.35E+01	
4	84.68	2470	376	1.09	166.62	161	16	4.12E-01	4.8	1.69E+01	
4	87.26	883	237	1.04	171.78	161	16	1.47E-01	9.1	1.76E+01	
1	569.65	6874	268	1.31	1136.84	1129	16	1.15E+00	2.6	6.14E+00	
1	1633.41	266	29	1.89	3266.10	3256	16	4.44E-02	14.8	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.779E+02	5.779E+02	0.223E+02	3.85	
			---	---			
	Total Activity :		5.779E+02	5.779E+02			
Grand Total Activity :			5.779E+02	5.779E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.779E+02	2.226E+01	7.320E+00	0.000E+00	78.946

```
A,14L85486-3BI207 ,01/28/2020 10:21,01/28/2020 00:00,   1.000E+00,l85486-3BI207
B,14L85486-3BI207 ,BI207                ,12/30/2019 12:20,1425MM101619
C,BI-207  ,YES,   5.779E+02,   2.226E+01,   7.320E+00,,   78.946
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:21:49.46
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 28-JAN-2020 08:41:26.50

LIMS No., Customer Name, Client ID: L85486-4BI207 GAMMA COUNT

Sample ID : 13L85486-4BI207
Sample Type : pCi
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentfied

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 1325MM091319
BKGFILE : 13BG122719MT
Real Time : 0 01:40:02.82
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.87*	2216	600	1.02	145.66	9.79E+00	3.69E-01	2.8	2.94E+00
2	3	75.01*	3904	512	0.96	149.94	1.05E+01	6.51E-01	1.9	
3	3	84.83*	1780	387	1.17	169.53	1.36E+01	2.97E-01	3.0	1.98E+00
4	3	87.40*	580	321	1.23	174.66	1.43E+01	9.66E-02	7.3	
5	1	569.76	6175	203	1.35	1137.71	6.29E+00	1.03E+00	1.4	1.91E+00
6	1	1063.81	2736	69	1.72	2125.45	3.19E+00	4.56E-01	2.0	9.98E-01
7	1	1460.72*	8	15	1.92	2919.93	2.29E+00	1.32E-03	62.4	8.76E-01
8	1	1633.24	268	35	1.85	3265.53	2.08E+00	4.47E-02	8.2	5.12E-01
9	1	1769.95	176	3	2.17	3539.51	1.97E+00	2.93E-02	7.8	3.97E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2736	74.50*	3.188E+00	5.188E+02	5.189E+02	4.10
	1770.24	176	6.87	1.967E+00	5.861E+02	5.861E+02	15.59

Flag: "*" = Keyline

Sample ID : 13L85486-4BI207 Acquisition date : 28-JAN-2020 08:41:26

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.188E+02	5.189E+02	0.213E+02	4.10	
		Total Activity :	5.188E+02	5.189E+02			
		Grand Total Activity :	5.188E+02	5.189E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85486-4BI207 Acquisition date : 28-JAN-2020 08:41:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.87	2216	600	1.02	145.66	140	16	3.69E-01	5.6	9.79E+00	
3	75.01	3904	512	0.96	149.94	140	16	6.51E-01	3.8	1.05E+01	
3	84.83	1780	387	1.17	169.53	164	17	2.97E-01	6.0	1.36E+01	
3	87.40	580	321	1.23	174.66	164	17	9.66E-02	14.7	1.43E+01	
1	569.76	6175	203	1.35	1137.71	1131	14	1.03E+00	2.7	6.29E+00	
1	1460.72	8	15	1.92	2919.93	2913	15	1.32E-03	****	2.29E+00	
1	1633.24	268	35	1.85	3265.53	3256	20	4.47E-02	16.5	2.08E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.223E+02	5.223E+02	0.207E+02	3.96	
	Total Activity :		5.223E+02	5.223E+02			
Grand Total Activity :			5.223E+02	5.223E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.223E+02	2.070E+01	6.783E+00	0.000E+00	77.002

```
A,13L85486-4BI207 ,01/28/2020 10:21,01/28/2020 00:00,   1.000E+00,L85486-4BI207
B,13L85486-4BI207 ,BI207               ,01/23/2020 09:03,1325MM091319
C,BI-207  ,YES,   5.223E+02,   2.070E+01,   6.783E+00,,   77.002
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 28-JAN-2020 10:20:45.85
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 28-JAN-2020 08:40:25.29

LIMS No., Customer Name, Client ID: L85486-5BI207 GAMMA COUNT

Sample ID : 08L85486-5BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 28-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.73
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.71	2217	661	1.31	152.49	9.13E+00	3.70E-01	3.3	2.81E+00
2	2	74.90*	3899	517	1.25	156.86	9.92E+00	6.50E-01	2.1	
3	2	84.76*	1834	431	1.45	176.55	1.31E+01	3.06E-01	3.1	1.27E+00
4	2	87.36	649	339	1.44	181.75	1.38E+01	1.08E-01	8.2	
5	1	569.39	6064	264	1.49	1144.25	5.93E+00	1.01E+00	1.4	1.01E+00
6	1	1063.09	2602	71	1.77	2129.54	2.95E+00	4.34E-01	2.1	1.00E+00
7	1	1459.92*	3	24	1.31	2921.11	2.10E+00	5.11E-04	56.5	1.02E+00
8	1	1632.82	272	0	2.02	3265.90	1.91E+00	4.54E-02	6.2	1.46E+00
9	1	1769.62	166	4	2.10	3538.64	1.80E+00	2.76E-02	8.4	9.67E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2602	74.50*	2.954E+00	5.326E+02	5.326E+02	4.23
	1770.24	166	6.87	1.802E+00	6.025E+02	6.025E+02	16.78

Flag: "*" = Keyline

Sample ID : 08L85486-5BI207 Acquisition date : 28-JAN-2020 08:40:25

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.326E+02	5.326E+02	0.226E+02	4.23	
		Total Activity :	5.326E+02	5.326E+02			
		Grand Total Activity :	5.326E+02	5.326E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85486-5BI207 Acquisition date : 28-JAN-2020 08:40:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.71	2217	661	1.31	152.49	147	19	3.70E-01	6.6	9.13E+00	
2	74.90	3899	517	1.25	156.86	147	19	6.50E-01	4.2	9.92E+00	
2	84.76	1834	431	1.45	176.55	169	20	3.06E-01	6.3	1.31E+01	
2	87.36	649	339	1.44	181.75	169	20	1.08E-01	16.5	1.38E+01	
1	569.39	6064	264	1.49	1144.25	1135	17	1.01E+00	2.9	5.93E+00	
1	1459.92	3	24	1.31	2921.11	2914	17	5.11E-04	****	2.10E+00	
1	1632.82	272	0	2.02	3265.90	3258	16	4.54E-02	12.4	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.359E+02	5.359E+02	0.220E+02	4.11	
	Total Activity :		5.359E+02	5.359E+02			
Grand Total Activity :			5.359E+02	5.359E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.359E+02	2.201E+01	6.565E+00	0.000E+00	81.637

```
A,08L85486-5BI207 ,01/28/2020 10:20,01/28/2020 00:00,   1.000E+00,L85486-5BI207
B,08L85486-5BI207 ,BI207                ,01/21/2020 08:55,0825MM092019
C,BI-207  ,YES,   5.359E+02,   2.201E+01,   6.565E+00,,   81.637
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/30/20 18:40

Work Order: **L85479** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85479-1		PB-210	07-dec-19 15:30	6.5413 g dry		01-27-20 10:40	.0426	63.77	01-27-20 23:27	X4C	2096	800 M	749	800 M	.276	.961	CJF
11187072-120719-SS-SJSSA01 (0-2.5 CM) Activity: **7.13E-01** Error: 5.64E-02 MDC: 6.75E-02 pCi/gDry							**L85479-1**				**PB-210**						
L85479-2		PB-210	07-dec-19 15:32	6.1145 g dry		01-27-20 10:40	.0432	64.67	01-27-20 23:27	X4D	2083	800 M	813	800 M	.286	.961	CJF
11187072-120719-SS-SJSSA01 (7.5-10 CM) Activity: **6.94E-01** Error: 5.88E-02 MDC: 7.26E-02 pCi/gDry							**L85479-2**				**PB-210**						
L85479-3		PB-210	07-dec-19 15:34	6.183 g dry		01-27-20 10:40	.0427	63.92	01-27-20 23:28	Y1A	1777	800 M	790	800 M	.305	.961	CJF
11187072-120719-SS-SJSSA01 (15-17.5 CM) Activity: **5.00E-01** Error: 5.13E-02 MDC: 6.63E-02 pCi/gDry							**L85479-3**				**PB-210**						
L85479-4		PB-210	07-dec-19 15:36	6.4319 g dry		01-27-20 10:40	.0455	68.11	01-27-20 23:28	Y1B	2055	800 M	809	800 M	.292	.961	CJF
11187072-120719-SS-SJSSA01 (22.5-25 CM) Activity: **6.35E-01** Error: 5.45E-02 MDC: 6.75E-02 pCi/gDry							**L85479-4**				**PB-210**						
L85479-5		PB-210	07-dec-19 15:38	6.2427 g dry		01-27-20 10:40	.0419	62.72	01-27-20 23:28	Y1C	1989	800 M	751	800 M	.278	.961	CJF
11187072-120719-SS-SJSSA01 (30-32.5 CM) Activity: **6.82E-01** Error: 5.77E-02 MDC: 7.04E-02 pCi/gDry							**L85479-5**				**PB-210**						
L85479-6		PB-210	07-dec-19 15:40	6.1896 g dry		01-27-20 10:40	.0465	69.61	01-27-20 23:28	Y1D	1964	800 M	1015	800 M	.286	.961	CJF
11187072-120719-SS-SJSSA01 (37.5-40 CM) Activity: **5.13E-01** Error: 5.90E-02 MDC: 8.02E-02 pCi/gDry							**L85479-6**				**PB-210**						
L85479-7		PB-210	07-dec-19 15:42	6.0376 g dry		01-27-20 10:40	.0452	67.66	01-27-20 23:28	Y2A	1617	800 M	724	800 M	.263	.961	CJF
11187072-120719-SS-SJSSA01 (45-47.5 CM) Activity: **5.38E-01** Error: 5.83E-02 MDC: 7.56E-02 pCi/gDry							**L85479-7**				**PB-210**						
L85479-8		PB-210	07-dec-19 15:44	6.0456 g dry		01-27-20 10:40	.0462	69.16	01-27-20 23:28	Y2B	1794	800 M	675	800 M	.296	.961	CJF
11187072-120719-SS-SJSSA01 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/30/20 18:40

Work Order: **L85479**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

JF 1/30/20

L85479-8	PB-210	07-dec-19 15:44	6.0456 g dry	01-27-20 10:40	.0462	69.16	01-27-20 23:28	Y2B	1794	800 M	675	800 M	.296	.961	CJF
11187072-120719-SS-SJSSA01 (52.5-55 CM) Activity: **5.99E-01** Error: 5.32E-02 MDC: 6.48E-02 pCi/gDry				**L85479-8**			**PB-210**								
L85479-9	PB-210	07-dec-19 15:46	6.3849 g dry	01-27-20 10:40	.0411	61.53	01-27-20 23:28	Y2C	1802	800 M	850	800 M	.306	.961	CJF
11187072-120719-SS-SJSSA01 (60-62.5 CM) Activity: **4.65E-01** Error: 5.03E-02 MDC: 6.64E-02 pCi/gDry				**L85479-9**			**PB-210**								
L85479-10	PB-210	07-dec-19 15:48	6.3493 g dry	01-27-20 10:40	.043	64.37	01-27-20 23:28	Y2D	1540	800 M	647	800 M	.295	.961	CJF
11187072-120719-SS-SJSSA01 (70-72.5 CM) Activity: **4.56E-01** Error: 4.78E-02 MDC: 6.05E-02 pCi/gDry				**L85479-10**			**PB-210**								
L85479-11	PB-210	07-dec-19 15:50	6.7413 g dry	01-27-20 10:40	.0428	64.07	01-27-20 23:28	Y3A	1542	800 M	780	800 M	.271	.961	CJF
11187072-120719-SS-SJSSA01 (80-82.5 CM) Activity: **3.99E-01** Error: 5.04E-02 MDC: 6.81E-02 pCi/gDry				**L85479-11**			**PB-210**								

Raw Data Sheet (rawdata)

TBE-RDS03 — 01/30/20 18:40 —

Work Order: **WG32943** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32943-1		PB-210	27-jan-20 00:00	100 %		01-27-20 10:40	.0327	48.95	01-27-20 23:27	X1A	951	800 M	811	800 M	.311	.965	CJF
Blank Samples																	
Activity: **4.28E-01** Error: 2.57E-01 MDC: 4.06E-01 pCi/Total							**WG32943-1**			**PB-210**							
WG32943-2		PB-210	01-jul-91 12:00	100 %		01-27-20 10:40	.0354	52.99	01-27-20 16:15	X4A	632	15 M	769	800 M	.309	.399	CJF
Laboratory Control Samples																	
Activity: **2.45E+02** Error: 2.00E+01 MDC: 7.03E+00 pCi/Total							**WG32943-2**			**PB-210**							
WG32943-3		PB-210	07-dec-19 15:34	6.2216 g dry		01-27-20 10:40	.0469	70.21	01-27-20 23:27	X1B	2244	800 M	892	800 M	.296	.961	CJF
11187072-120719-SS-SJSSA01 (15-17.5 CM)																	
Activity: **7.03E-01** Error: 5.82E-02 MDC: 7.23E-02 pCi/gDry							**WG32943-3**			**PB-210**							
WG32943-4		PB-210	07-dec-19 15:36	6.1587 g dry		01-27-20 10:40	.0428	64.07	01-27-20 16:15	X4B	715	15 M	802	800 M	.294	.965	CJF
11187072-120719-SS-S																	
Activity: **1.97E+01** Error: 1.50E+00 MDC: 5.07E-01 pCi/gDry							**WG32943-4**			**PB-210**							
WG32943-5		PB-210	07-dec-19 15:38	6.6687 g dry		01-27-20 10:40	.0383	57.84	01-27-20 16:15	X4C	594	15 M	749	800 M	.276	.965	CJF
11187072-120719-SS-S																	
Activity: **1.60E+01** Error: 1.34E+00 MDC: 4.82E-01 pCi/gDry							**WG32943-5**			**PB-210**							

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85479-3	1777	4.66	800.00	01/27/2020 23:28		6.1830	g	pCi	PB-210	0.305	5.00E-01	5.13E-02	6.63E-02	g Dry	0.613	0.9611	790.	800.0	
L85479-4	2055	4.66	800.00	01/27/2020 23:28		6.4319	g	pCi	PB-210	0.292	6.35E-01	5.45E-02	6.75E-02	g Dry	0.613	0.9611	809.	800.0	
L85479-5	1989	4.66	800.00	01/27/2020 23:28		6.2427	g	pCi	PB-210	0.278	6.82E-01	5.77E-02	7.04E-02	g Dry	0.613	0.9611	751.	800.0	
L85479-6	1964	4.66	800.00	01/27/2020 23:28		6.1896	g	pCi	PB-210	0.286	5.13E-01	5.90E-02	8.02E-02	g Dry	0.613	0.9611	1015.	800.0	
L85479-7	1617	4.66	800.00	01/27/2020 23:28		6.0376	g	pCi	PB-210	0.263	5.38E-01	5.83E-02	7.56E-02	g Dry	0.613	0.9611	724.	800.0	
L85479-8	1794	4.66	800.00	01/27/2020 23:28		6.0456	g	pCi	PB-210	0.296	5.99E-01	5.32E-02	6.48E-02	g Dry	0.613	0.9611	675.	800.0	
L85479-9	1802	4.66	800.00	01/27/2020 23:28		6.3849	g	pCi	PB-210	0.306	4.65E-01	5.03E-02	6.64E-02	g Dry	0.613	0.9611	850.	800.0	
L85479-10	1540	4.66	800.00	01/27/2020 23:28		6.3493	g	pCi	PB-210	0.295	4.56E-01	4.78E-02	6.05E-02	g Dry	0.613	0.9611	647.	800.0	
L85479-11	1542	4.66	800.00	01/27/2020 23:28		6.7413	g	pCi	PB-210	0.271	3.99E-01	5.04E-02	6.81E-02	g Dry	0.613	0.9611	780.	800.0	

11/28/20
Reviewed Date

1/28/20

Data Filename: Y012720N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85479-3	34	1777	1/27/2020 23:28	800 800MIN	1650
1 b	b l85479-4	15	2055	1/27/2020 23:28	800 800MIN	1650
1 c	b l85479-5	32	1989	1/27/2020 23:28	800 800MIN	1650
1 d	b l85479-6	39	1964	1/27/2020 23:28	800 800MIN	1650
2 a	b l85479-7	23	1617	1/27/2020 23:28	800 800MIN	1650
2 b	b l85479-8	27	1794	1/27/2020 23:28	800 800MIN	1650
2 c	b l85479-9	26	1802	1/27/2020 23:28	800 800MIN	1650
2 d	b l85479-10	29	1540	1/27/2020 23:28	800 800MIN	1650
3 a	b l85479-11	34	1542	1/27/2020 23:28	800 800MIN	1650
3 b		9	623	1/27/2020 23:28	800 800MIN	1650
3 c		14	635	1/27/2020 23:28	800 800MIN	1650
3 d		14	1044	1/27/2020 23:28	800 800MIN	1650
4 a		0	0	1/27/2020 23:28	800 800MIN	1650
4 b		0	0	1/27/2020 23:28	800 800MIN	1650
4 c		0	0	1/27/2020 23:28	800 800MIN	1650
4 d		0	0	1/27/2020 23:28	800 800MIN	1650

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32943-1	951	4.66	800.00	01/27/2020 23:27		1.0000	%	pCi	PB-210	0.311	4.28E-01	2.57E-01	4.06E-01	Total	0.613	0.9653	811.	800.0	
WG32943-3	2244	4.66	800.00	01/27/2020 23:27		6.2216	g	pCi	PB-210	0.296	7.03E-01	5.82E-02	7.23E-02	g Dry	0.613	0.9612	892.	800.0	
L85486-3	829	4.66	800.00	01/27/2020 23:27		6.5832	g	pCi	PB-210	0.275	3.01E-02	4.22E-02	6.83E-02	g Dry	0.613	0.9609	772.	800.0	
L85486-4	917	4.66	800.00	01/27/2020 23:27		6.0107	g	pCi	PB-210	0.283	-4.84E-02	4.93E-02	8.30E-02	g Dry	0.613	0.9609	1003.	800.0	
L85486-5	756	4.66	800.00	01/27/2020 23:27		6.0199	g	pCi	PB-210	0.312	-3.37E-02	4.05E-02	6.81E-02	g Dry	0.613	0.9609	822.	800.0	
L85486-6	1973	4.66	800.00	01/27/2020 23:27		6.6994	g	pCi	PB-210	0.267	6.11E-01	5.67E-02	7.20E-02	g Dry	0.613	0.9609	832.	800.0	
L85486-7	2329	4.66	800.00	01/27/2020 23:27		6.0108	g	pCi	PB-210	0.281	8.33E-01	6.41E-02	7.75E-02	g Dry	0.613	0.9609	860.	800.0	
L85486-8	2101	4.66	800.00	01/27/2020 23:27		6.2164	g	pCi	PB-210	0.263	5.40E-01	6.71E-02	9.37E-02	g Dry	0.613	0.9609	1179.	800.0	
L85486-9	1326	4.66	800.00	01/27/2020 23:27		6.0934	g	pCi	PB-210	0.293	2.94E-01	4.91E-02	6.96E-02	g Dry	0.613	0.9609	777.	800.0	
L85486-10	1937	4.66	800.00	01/27/2020 23:27		6.0605	g	pCi	PB-210	0.309	5.96E-01	5.31E-02	6.59E-02	g Dry	0.613	0.9609	769.	800.0	
L85486-11	1799	4.66	800.00	01/27/2020 23:27		6.1933	g	pCi	PB-210	0.294	5.24E-01	5.36E-02	6.93E-02	g Dry	0.613	0.9609	802.	800.0	
L85479-1	2096	4.66	800.00	01/27/2020 23:27		6.5413	g	pCi	PB-210	0.276	7.13E-01	5.64E-02	6.75E-02	g Dry	0.613	0.9612	749.	800.0	
L85479-2	2083	4.66	800.00	01/27/2020 23:27		6.1145	g	pCi	PB-210	0.286	6.94E-01	5.88E-02	7.26E-02	g Dry	0.613	0.9612	813.	800.0	

1/30/20
Reviewed Date

1/30/20

Data Filename: X012720N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32943-1	41	951	1/27/2020 23:27	800 800MIN	1580
1 b	b wg32943-3	50	2244	1/27/2020 23:27	800 800MIN	1580
1 c	b l85486-3	30	829	1/27/2020 23:27	800 800MIN	1580
1 d	b l85486-4	32	917	1/27/2020 23:27	800 800MIN	1580
2 a		15	2214	1/27/2020 23:27	800 800MIN	1580
2 b		32	650	1/27/2020 23:27	800 800MIN	1580
2 c	b l85486-5	25	756	1/27/2020 23:27	800 800MIN	1580
2 d		21	621	1/27/2020 23:27	800 800MIN	1580
3 a	b l85486-6	27	1973	1/27/2020 23:27	800 800MIN	1580
3 b	b l85486-7	30	2329	1/27/2020 23:27	800 800MIN	1580
3 c	b l85486-8	25	2101	1/27/2020 23:27	800 800MIN	1580
3 d	b l85486-9	49	1326	1/27/2020 23:27	800 800MIN	1580
4 a	b l85486-10	38	1937	1/27/2020 23:27	800 800MIN	1580
4 b	b l85486-11	35	1799	1/27/2020 23:27	800 800MIN	1580
4 c	b l85479-1	40	2096	1/27/2020 23:27	800 800MIN	1580
4 d	b l85479-2	38	2083	1/27/2020 23:27	800 800MIN	1580

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32943-2	632	4.66	15.00	01/27/2020 16:15		1.0000	%	pCi	PB-210	0.309	2.45E+02	2.00E+01	7.03E+00	Total	0.613	0.3987	769.	800.0	
WG32943-4	715	4.66	15.00	01/27/2020 16:15		6.1587	g	pCi	PB-210	0.294	1.97E+01	1.50E+00	5.07E-01	g Dry	0.613	0.9648	802.	800.0	
WG32943-5	594	4.66	15.00	01/27/2020 16:15		6.6687	g	pCi	PB-210	0.276	1.60E+01	1.34E+00	4.82E-01	g Dry	0.613	0.9648	749.	800.0	

Reviewed 1/28/20 Date

Data Filename: X012720AS.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/27/2020 16:15	15 15MIN	1580
1 b				1/27/2020 16:15	15 15MIN	1580
1 c				1/27/2020 16:15	15 15MIN	1580
1 d				1/27/2020 16:15	15 15MIN	1580
2 a				1/27/2020 16:15	15 15MIN	1580
2 b				1/27/2020 16:15	15 15MIN	1580
2 c				1/27/2020 16:15	15 15MIN	1580
2 d				1/27/2020 16:15	15 15MIN	1580
3 a				1/27/2020 16:15	15 15MIN	1580
3 b				1/27/2020 16:15	15 15MIN	1580
3 c				1/27/2020 16:15	15 15MIN	1580
3 d				1/27/2020 16:15	15 15MIN	1580
4 a	b wg32943-2	4	632	1/27/2020 16:15	15 15MIN	1580
4 b	b wg32943-4	4	715	1/27/2020 16:15	15 15MIN	1580
4 c	b wg32943-5	0	594	1/27/2020 16:15	15 15MIN	1580
4 d		0	15	1/27/2020 16:15	15 15MIN	1580

LEAD 210

Prep and Run Logs

L85479

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32943-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32943-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32943-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32943-1	WO	BLK	PB-210	100 %	01/27/20	CJF		.0312	BALANCE 7	.0639	BALANCE 10	.0327	01/27/20	WG32943
WG32943-2	WO	LCS	PB-210	100 %	01/27/20	CJF		.0317	BALANCE 7	.0671	BALANCE 10	.0354	01/27/20	WG32943
WG32943-3	S	DUP	PB-210	6.2216 g dry	01/27/20	CJF	BALANCE 7	.0319	BALANCE 7	.0788	BALANCE 10	.0469	01/27/20	WG32943
WG32943-4	S	MS	PB-210	6.1587 g dry	01/27/20	CJF	BALANCE 7	.0312	BALANCE 7	.0740	BALANCE 10	.0428	01/27/20	WG32943
WG32943-5	S	MSD	PB-210	6.6687 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0693	BALANCE 10	.0383	01/27/20	WG32943
L85479-1	S		PB-210	6.5413 g dry	01/27/20	CJF	BALANCE 7	.0308	BALANCE 7	.0734	BALANCE 10	.0426	01/27/20	WG32943
L85479-2	S		PB-210	6.1145 g dry	01/27/20	CJF	BALANCE 7	.0313	BALANCE 7	.0745	BALANCE 10	.0432	01/27/20	WG32943
L85479-3	S		PB-210	6.183 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0737	BALANCE 10	.0427	01/27/20	WG32943
L85479-4	S		PB-210	6.4319 g dry	01/27/20	CJF	BALANCE 7	.0308	BALANCE 7	.0763	BALANCE 10	.0455	01/27/20	WG32943
L85479-5	S		PB-210	6.2427 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0729	BALANCE 10	.0419	01/27/20	WG32943
L85479-6	S		PB-210	6.1896 g dry	01/27/20	CJF	BALANCE 7	.0307	BALANCE 7	.0772	BALANCE 10	.0465	01/27/20	WG32943
L85479-7	S		PB-210	6.0376 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0762	BALANCE 10	.0452	01/27/20	WG32943
L85479-8	S		PB-210	6.0456 g dry	01/27/20	CJF	BALANCE 7	.0310	BALANCE 7	.0772	BALANCE 10	.0462	01/27/20	WG32943
L85479-9	S		PB-210	6.3849 g dry	01/27/20	CJF	BALANCE 7	.0307	BALANCE 7	.0718	BALANCE 10	.0411	01/27/20	WG32943
L85479-10	S		PB-210	6.3493 g dry	01/27/20	CJF	BALANCE 7	.0307	BALANCE 7	.0737	BALANCE 10	.0430	01/27/20	WG32943
L85479-11	S		PB-210	6.7413 g dry	01/27/20	CJF	BALANCE 7	.0308	BALANCE 7	.0736	BALANCE 10	.0428	01/27/20	WG32943

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	.9999
100.0000	100.0011

Check Date: 27-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 27-JAN-20

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0001
100.0000	99.9999

Check Date: 27-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 27-JAN-20

Daily Pipette Tolerance Check
for: L85479

Instrument: PIPETTE 13
Model: WHEATON ACURA 821
Serial #: 10031686
Description: ADJ VOLUME .2-1

Known	Result
.5	.5023
1	1.0044

Check Date: 27-JAN-20
Analyst: CJF
Balance: BALANCE 10
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIPETTE 13	27-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ

Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

NAMAS
CALIBRATION
No. 0146

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85479

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85479-1	11187072-120719-SS-SJSSA01 (0-2.5 CM)	265.44	586.6	428.51	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	49.22
L85479-2	11187072-120719-SS-SJSSA01 (7.5-10 CM)	266.81	585.98	407.06	BALANCE 8	12/19/19	BALANCE 8	12/20/19	KT	56.06
L85479-3	11187072-120719-SS-SJSSA01 (15-17.5 CM)	267.68	632.91	447.66	BALANCE 8	12/19/19	BALANCE 8	12/20/19	KT	50.72
L85479-4	11187072-120719-SS-SJSSA01 (22.5-25 CM)	265.42	658.57	457.77	BALANCE 8	12/19/19	BALANCE 8	12/20/19	KT	51.07
L85479-5	11187072-120719-SS-SJSSA01 (30-32.5 CM)	11.44	414.76	209.95	BALANCE 8	12/19/19	BALANCE 8	12/20/19	KT	50.78
L85479-6	11187072-120719-SS-SJSSA01 (37.5-40 CM)	266.44	626.39	452.28	BALANCE 8	12/19/19	BALANCE 8	12/23/19	KT	48.37
L85479-7	11187072-120719-SS-SJSSA01 (45-47.5 CM)	264.54	689.16	504.03	BALANCE 8	12/19/19	BALANCE 8	12/23/19	KT	43.6
L85479-8	11187072-120719-SS-SJSSA01 (52.5-55 CM)	269.42	586.36	440.56	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	46
L85479-9	11187072-120719-SS-SJSSA01 (60-62.5 CM)	266.04	689.25	481.71	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	49.04
L85479-10	11187072-120719-SS-SJSSA01 (70-72.5 CM)	267.16	805.13	580.52	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	41.75
L85479-11	11187072-120719-SS-SJSSA01 (80-82.5 CM)	268.89	707.67	527.24	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	41.12

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.01
1000.00	1000.12

Check Date: 19-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
GELI	BALANCE 8	19-DEC-19
NONE	BALANCE 8	19-DEC-19

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.13

Check Date: 20-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 20-DEC-19

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Prod

NONE BALANCE 8 23-DEC-19

Daily Balance Tolerance Check Reports

for : L85479

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 27-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85483

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85483
GH001-3EJACINTO-19

01/31/2020 11:30

Sample Receipt

The following sample(s) were received on December 17, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120819-BN-SJSSA05 (0-2.5 CM)	L85483-1	
11187072-120819-BN-SJSSA05 (7.5-10 CM)	L85483-2	
11187072-120819-BN-SJSSA05 (15-17.5 CM)	L85483-3	
11187072-120819-BN-SJSSA05 (22.5-25 CM)	L85483-4	
11187072-120819-BN-SJSSA05 (30-32.5 CM)	L85483-5	
11187072-120819-BN-SJSSA05 (37.5-40 CM)	L85483-6	
11187072-120819-BN-SJSSA05 (45-47.5 CM)	L85483-7	
11187072-120819-BN-SJSSA05 (52.5-55 CM)	L85483-8	
11187072-120819-BN-SJSSA05 (60-62.5 CM)	L85483-9	
11187072-120819-BN-SJSSA05 (70-72.5 CM)	L85483-10	
11187072-120819-BN-SJSSA05 (80-82.5 CM)	L85483-11	
11187072-120819-BN-DUP1	L85483-12	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
BROWN ENGINEERING, INC.
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2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85483
GH001-3EJACINTO-19

01/31/2020 11:30

Special Considerations

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32733,WG32735.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120619-SS-SJSSA03 (80-82.5 CM)	L85481-11	WG32733-1
11187072-120819-BN-SJSSA05 (70-72.5 CM)	L85483-10	WG32735-1

PB-210

Quality Control

Quality control sample(s) analyzed as WG32883,WG32932. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120819-BN-SJSSA05 (30-32.5 CM)	L85483-5	WG32932-3
11187072-120919-BN-SJSSA07 (22.5-25 CM)	L85485-4	WG32883-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85483
GH001-3EJACINTO-19

01/31/2020 11:30

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 16:42

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85483

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA05 (0-2.5 CM)** Collect Start: 12/08/2019 15:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 27.04
LIMS Number: L85483-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.12E-01**	5.20E-02	7.82E-02	pCi/gDry		6.0661	g dry	12/08/19 15:10	01/24/20	800	M	+			
CS-137	2007	1.74E-03	6.60E-02	**1.06E-01**	pCi/g Dry		153.48	g dry	12/08/19 15:10	01/02/20	4179	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (7.5-10 CM)** Collect Start: 12/08/2019 15:15 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 25.41
LIMS Number: L85483-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**2.59E-01**	4.86E-02	6.97E-02	pCi/gDry		6.2617	g dry	12/08/19 15:15	01/24/20	800	M	+			
CS-137	2007	-1.47E-02	6.10E-02	**1.10E-01**	pCi/g Dry		150.51	g dry	12/08/19 15:15	01/02/20	4201	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (15-17.5 CM)** Collect Start: 12/08/2019 15:20 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 22.17
LIMS Number: L85483-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.50E-01**	4.23E-02	5.57E-02	pCi/gDry		6.7266	g dry	12/08/19 15:20	01/24/20	800	M	+			
CS-137	2007	-7.90E-03	6.58E-02	**1.08E-01**	pCi/g Dry		144.24	g dry	12/08/19 15:20	01/02/20	4302	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85483

GHD Services, Inc.
GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA05 (22.5-25 CM)** Collect Start: 12/08/2019 15:25 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 22.96
LIMS Number: L85483-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.19E-01**	4.22E-02	6.50E-02	pCi/gDry		6.2372	g dry	12/08/19 15:25	01/24/20	800	M	+			
CS-137	2007	1.69E-02	4.56E-02	**7.98E-02**	pCi/g Dry		149.1	g dry	12/08/19 15:25	01/02/20	4382	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (30-32.5 CM)** Collect Start: 12/08/2019 15:30 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 21.55
LIMS Number: L85483-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.81E-01**	7.90E-02	1.23E-01	pCi/gDry		6.2452	g dry	12/08/19 15:30	01/28/20	800	M	+			
CS-137	2007	2.53E-02	5.62E-02	**9.78E-02**	pCi/g Dry		162.39	g dry	12/08/19 15:30	01/02/20	4772	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (37.5-40 CM)** Collect Start: 12/08/2019 15:35 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 20.35
LIMS Number: L85483-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**7.30E-02**	4.55E-02	7.20E-02	pCi/gDry		6.0966	g dry	12/08/19 15:35	01/24/20	800	M	+			
CS-137	2007	-3.33E-02	5.01E-02	**7.14E-02**	pCi/g Dry		157.01	g dry	12/08/19 15:35	01/02/20	4406	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 16:42

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85483

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA05 (45-47.5 CM)** Collect Start: 12/08/2019 15:40 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 26.78
LIMS Number: L85483-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-3.76E-02	4.18E-02	**7.04E-02**	pCi/gDry		6.257	g dry	12/08/19 15:40	01/24/20	800	M	U			
CS-137	2007	6.07E-03	4.04E-02	**6.65E-02**	pCi/g Dry		170.39	g dry	12/08/19 15:40	01/02/20	4426	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (52.5-55 CM)** Collect Start: 12/08/2019 15:45 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 22.03
LIMS Number: L85483-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.17E-01**	5.42E-02	7.70E-02	pCi/gDry		6.0716	g dry	12/08/19 15:45	01/21/20	800	M	+			
CS-137	2007	-6.45E-04	5.95E-02	**9.54E-02**	pCi/g Dry		158.54	g dry	12/08/19 15:45	01/02/20	4762	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (60-62.5 CM)** Collect Start: 12/08/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 17.97
LIMS Number: L85483-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.52E-01**	5.26E-02	7.31E-02	pCi/gDry		6.0288	g dry	12/08/19 15:50	01/21/20	800	M	+			
CS-137	2007	3.36E-02	4.94E-02	**8.83E-02**	pCi/g Dry		163.19	g dry	12/08/19 15:50	01/02/20	4785	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 16:42

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85483

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA05 (70-72.5 CM)** Collect Start: 12/08/2019 15:55 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 24.38
LIMS Number: L85483-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**4.42E-01**	5.72E-02	7.78E-02	pCi/gDry		6.0897	g dry	12/08/19 15:55	01/21/20	800	M	+			
CS-137	2007	3.69E-03	6.92E-02	**1.15E-01**	pCi/g Dry		137.12	g dry	12/08/19 15:55	01/02/20	4082	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA05 (80-82.5 CM)** Collect Start: 12/08/2019 16:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 27.43
LIMS Number: L85483-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.65E-01**	5.68E-02	7.94E-02	pCi/gDry		6.1373	g dry	12/08/19 16:00	01/21/20	800	M	+			
CS-137	2007	-1.07E-02	4.21E-02	**6.59E-02**	pCi/g Dry		278.59	g dry	12/08/19 16:00	01/02/20	4969	Sec	U		No	

Sample ID: **11187072-120819-BN-DUP1** Collect Start: 12/08/2019 12:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 27.45
LIMS Number: L85483-12

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**3.33E-01**	5.44E-02	7.70E-02	pCi/gDry		6.3621	g dry	12/08/19 12:00	01/21/20	800	M	+			
CS-137	2007	-2.03E-02	6.92E-02	**1.22E-01**	pCi/g Dry		139.82	g dry	12/08/19 12:00	01/02/20	4884	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85483

GH001-3EJACINTO-19

01/31/2020 09:02

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32733-1 L85481-11	All non-detects.	S						<50	U	NE
WG32735-1 L85483-10	All non-detects.	S						<50	U	NE

GAMMA

Associated Samples for WG32733

Sample #	Client ID
L85483-1	11187072-120819-BN-SJSSA05 (0-2.5 CM)
L85483-2	11187072-120819-BN-SJSSA05 (7.5-10 CM)
L85483-3	11187072-120819-BN-SJSSA05 (15-17.5 CM)
L85483-4	11187072-120819-BN-SJSSA05 (22.5-25 CM)
L85483-5	11187072-120819-BN-SJSSA05 (30-32.5 CM)
L85483-6	11187072-120819-BN-SJSSA05 (37.5-40 CM)
L85483-7	11187072-120819-BN-SJSSA05 (45-47.5 CM)

GAMMA

Associated Samples for WG32735

Sample #	Client ID
L85483-8	11187072-120819-BN-SJSSA05 (52.5-55 CM)
L85483-9	11187072-120819-BN-SJSSA05 (60-62.5 CM)
L85483-10	11187072-120819-BN-SJSSA05 (70-72.5 CM)
L85483-11	11187072-120819-BN-SJSSA05 (80-82.5 CM)
L85483-12	11187072-120819-BN-DUP1

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85483

GH001-3EJACINTO-19

01/31/2020 09:02

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32883-1	PB-210	WO	01/21/2020 01:06	< 4.510E-01	pCi/Total	U	P
WG32932-1	PB-210	WO	01/24/2020 22:42	< 3.900E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32883-2	PB-210	WO	01/20/2020 18:16	3.18E+02	3.060E+02	pCi/Total	96.4	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									
WG32932-2	PB-210	WO	01/24/2020 15:45	3.18E+02	2.580E+02	pCi/Total	81.3	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32883-3 L85485-4	PB-210	S	01/21/2020 01:06	1.050E+00	8.320E-01	pCi/gDry	23.2	<50	+	P
WG32932-3 L85483-5	PB-210	S	01/28/2020 22:45	1.810E-01	5.970E-01	pCi/gDry		<50	*	NE

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85483

GH001-3EJACINTO-19

01/31/2020 09:02

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32883-4	PB-210	S	01/20/2020 18:16	2.12E+01	1.130E-01	2.460E+01	pCi/gDry	115.6	60-140	+	P
L85484-9											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32932-4	PB-210	S	01/24/2020 15:45	2.11E+01	2.590E-01	2.110E+01	pCi/gDry	98.7	60-140	+	P
L85483-2											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32883-5	PB-210	S	01/20/2020 18:16	2.09E+01	2.250E+01	107.4	pCi/gDry	7.4	<30	+	P
WG32883-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32932-5	PB-210	S	01/24/2020 15:45	2.14E+01	1.800E+01	82.9	pCi/gDry	17.4	<30	+	P
WG32932-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85483

GH001-3EJACINTO-19

01/31/2020 09:02

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Associated Samples for WG32883

Sample #	Client ID
L85483-8	11187072-120819-BN-SJSSA05 (52.5-55 CM)
L85483-9	11187072-120819-BN-SJSSA05 (60-62.5 CM)
L85483-10	11187072-120819-BN-SJSSA05 (70-72.5 CM)
L85483-11	11187072-120819-BN-SJSSA05 (80-82.5 CM)
L85483-12	11187072-120819-BN-DUP1

PB-210

Associated Samples for WG32932

Sample #	Client ID
L85483-1	11187072-120819-BN-SJSSA05 (0-2.5 CM)
L85483-2	11187072-120819-BN-SJSSA05 (7.5-10 CM)
L85483-3	11187072-120819-BN-SJSSA05 (15-17.5 CM)
L85483-4	11187072-120819-BN-SJSSA05 (22.5-25 CM)
L85483-5	11187072-120819-BN-SJSSA05 (30-32.5 CM)
L85483-6	11187072-120819-BN-SJSSA05 (37.5-40 CM)
L85483-7	11187072-120819-BN-SJSSA05 (45-47.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

TELEDYNE
BROWN ENGINEERING
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request
Chain of Custody

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:
P - 10CFR61, 10CFR50, Other high level: _____
Turn-around-time 10 days
Hazardous Material in Shipment Yes_____* No_____

Lims# L85483 KL 12-17-19
L85483
(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start		Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120819-BN-SJSSA05 (0-2.5 cm)	Soil		12/8/2019	1510		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (7.5-10 cm)	Soil		12/8/2019	1515		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (15-17.5 cm)	Soil		12/8/2019	1520		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (22.5-25 cm)	Soil		12/8/2019	1525		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (30-32.5 cm)	Soil		12/8/2019	1530		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (37.5-40 cm)	Soil		12/8/2019	1535		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (45-47.5 cm)	Soil		12/8/2019	1540		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (52.5-55 cm)	Soil		12/8/2019	1545		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (60-62.5 cm)	Soil		12/8/2019	1550		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (70-72.5 cm)	Soil		12/8/2019	1555		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA05 (80-82.5 cm)	Soil		12/8/2019	1600		16 oz	1	S	Isotopes
	11187072-120819-BN-DUP1	Soil		N/A			16 oz	1	S	Isotopes
										** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N. Gray	Date: 12-11-19 1200	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Kenny Cook	Date: 12-17-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 16:45

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

SR #: SR64447

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 LIMS #L85483

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/17/19

Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85483

****

L85483-1 S 11187072-120819-BN-SJSSA05 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85483-2 S 11187072-120819-BN-SJSSA05 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85483-3 S 11187072-120819-BN-SJSSA05 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85483-4 S 11187072-120819-BN-SJSSA05 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85483-5 S 11187072-120819-BN-SJSSA05 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85483

L85483-5	**S**	**11187072-120819-BN-SJSSA05 (30-32.5 CM)**		
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		MSA	01/28/20

****

L85483-6	**S**	**11187072-120819-BN-SJSSA05 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		MSA	01/24/20

****

L85483-7	**S**	**11187072-120819-BN-SJSSA05 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		MSA	01/24/20

****

L85483-8	**S**	**11187072-120819-BN-SJSSA05 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		KOJ	01/21/20

****

L85483-9	**S**	**11187072-120819-BN-SJSSA05 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		KOJ	01/21/20

****

L85483-10	**S**	**11187072-120819-BN-SJSSA05 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85483

L85483-10	**S**	**11187072-120819-BN-SJSSA05 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		KOJ	01/21/20

****

L85483-11	**S**	**11187072-120819-BN-SJSSA05 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		KOJ	01/21/20

****

L85483-12	**S**	**11187072-120819-BN-DUP1**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/20/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		KOJ	01/21/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

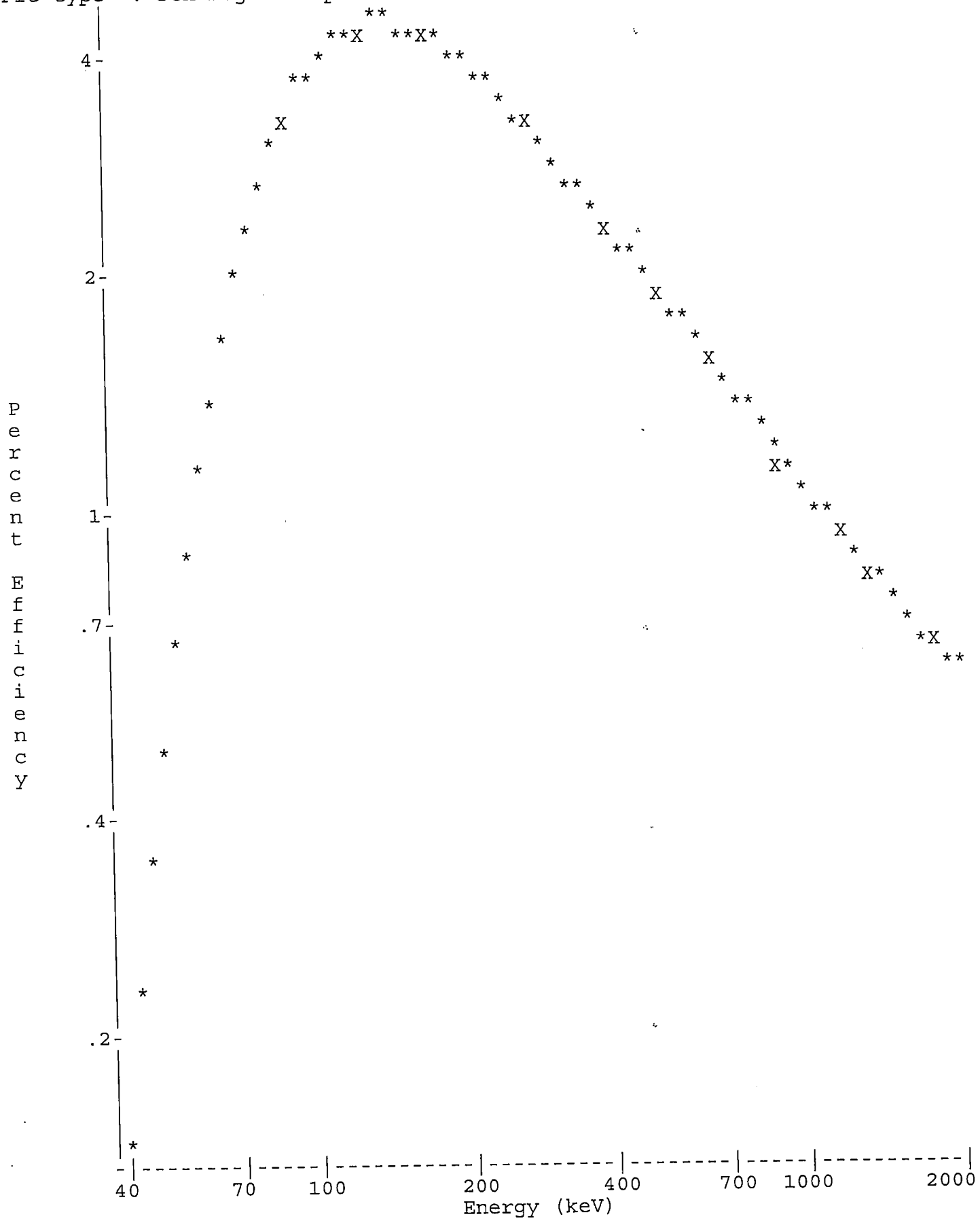
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Geometry : 01S100122019
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr. BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION          ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1000.0	-0.66%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.9	2.42%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.81%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.0	-4.51%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.2	-0.33%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.3	-4.41%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.8	0.68%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **02S100122619**

Analyst: KOJ

Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:35:57.63
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

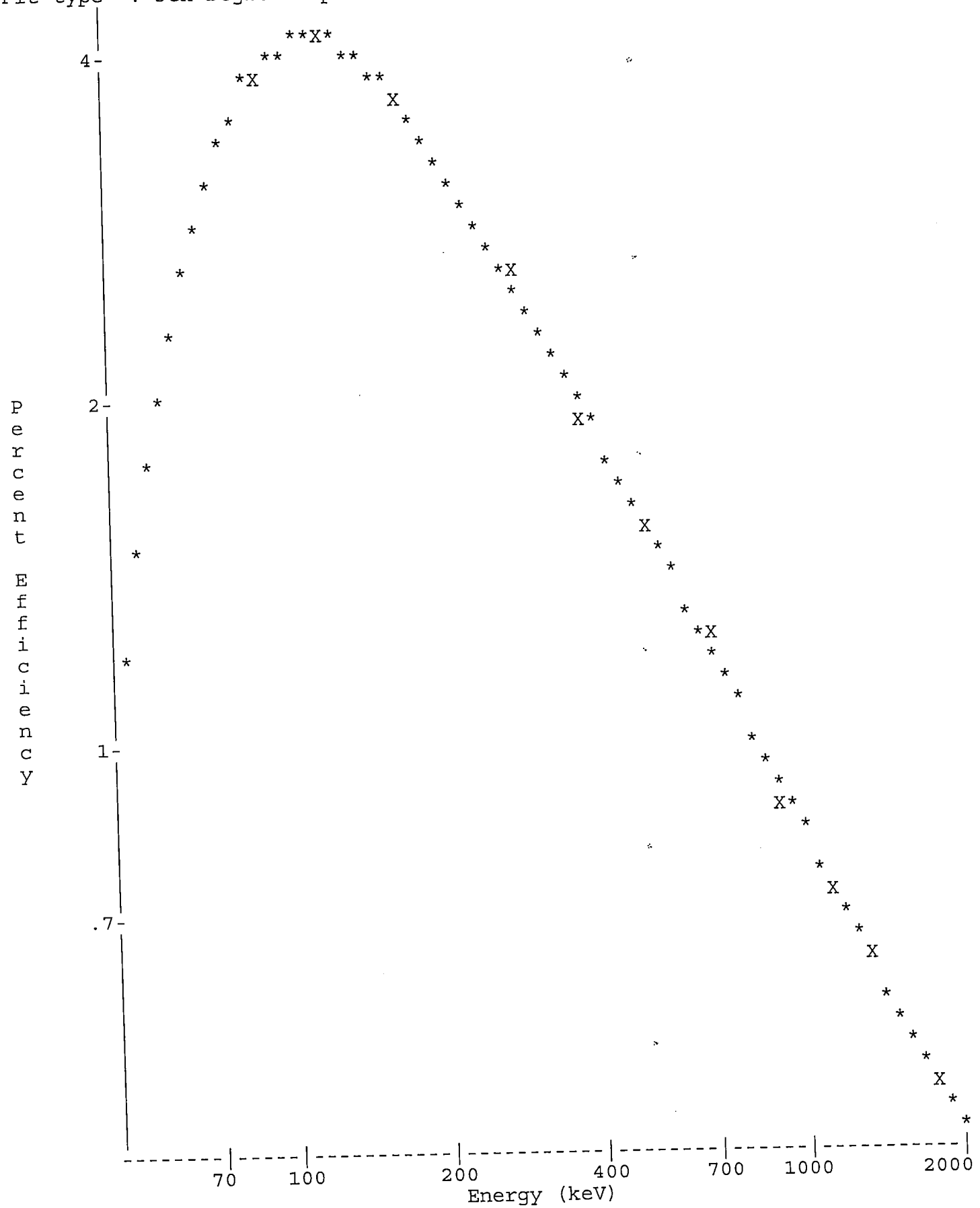
Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01	20751	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 26-DEC-2019 15:35
Detector :
Fit type : 5th Degree Empirical

Geometry : 02S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:37:02.02
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01*	20721	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	20721	3.72*	3.836E+00	7.325E+02	1.000E+03	2.03
03-CO57	122.06	16760	85.51*	4.118E+00	2.401E+01	4.088E+01	2.45
04-CE139	165.85	10237	80.35*	3.699E+00	1.738E+01	4.953E+01	3.79
05-HG203	279.20	2806	81.46*	2.573E+00	6.754E+00	1.490E+02	10.62
06-SN113	391.69	13677	64.90*	1.939E+00	5.481E+01	1.919E+02	2.60
07-SR85	513.99	8001	99.27*	1.533E+00	2.653E+01	2.452E+02	4.03
08-CS137	661.65	35448	85.12*	1.227E+00	1.712E+02	1.735E+02	1.28
09-Y88	898.02	17345	93.40*	9.325E-01	1.005E+02	3.883E+02	2.11
10-CO60	1173.22	27594	100.00	7.326E-01	1.900E+02	2.048E+02	1.39
	1332.49	24954	100.00*	6.543E-01	1.924E+02	2.073E+02	1.38
12-Y88	1836.01	10418	99.38*	5.015E-01	1.054E+02	4.075E+02	2.15

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.924E+02	2.073E+02	0.029E+02	1.38	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.431E+03	2.853E+03			

Grand Total Activity :	1.431E+03	2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	136.48	2099	5349	1.05	258.55	254	10	1.06E-01	13.8	4.02E+00	
0	255.05	599	3512	1.04	497.28	494	8	3.02E-02	35.2	2.76E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.912E+02	2.060E+02	0.020E+02	0.98	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.430E+03	2.852E+03			

Grand Total Activity : 1.430E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.000E+03	2.029E+01	1.387E+01	0.000E+00	72.130
03-CO57	4.088E+01	1.003E+00	6.475E-01	0.000E+00	63.137
04-CE139	4.953E+01	1.875E+00	1.276E+00	0.000E+00	38.822
05-HG203	1.490E+02	1.581E+01	1.316E+01	0.000E+00	11.321
06-SN113	1.919E+02	4.986E+00	3.384E+00	0.000E+00	56.693
07-SR85	2.452E+02	9.888E+00	7.118E+00	0.000E+00	34.444
08-CS137	1.735E+02	2.216E+00	1.070E+00	0.000E+00	162.084
09-Y88	3.883E+02	8.201E+00	4.714E+00	0.000E+00	82.370

10-CO60	2.060E+02	2.019E+00	1.108E+00	0.000E+00	185.886
12-Y88	4.075E+02	8.772E+00	2.373E+00	0.000E+00	171.753

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.643E-01		9.277E-01	1.517E+00	0.000E+00	0.240

```
A,02S100122619     ,12/26/2019 15:37,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,02S100122619     ,CALIBRATION          ,12/26/2019 15:35,02S100122619
C,02-CD109,YES,   1.000E+03,   2.029E+01,   1.387E+01,,    72.130
C,03-CO57 ,YES,   4.088E+01,   1.003E+00,   6.475E-01,,    63.137
C,04-CE139,YES,   4.953E+01,   1.875E+00,   1.276E+00,,    38.822
C,05-HG203,YES,   1.490E+02,   1.581E+01,   1.316E+01,,    11.321
C,06-SN113,YES,   1.919E+02,   4.986E+00,   3.384E+00,,    56.693
C,07-SR85 ,YES,   2.452E+02,   9.888E+00,   7.118E+00,,    34.444
C,08-CS137,YES,   1.735E+02,   2.216E+00,   1.070E+00,,   162.084
C,09-Y88  ,YES,   3.883E+02,   8.201E+00,   4.714E+00,,    82.370
C,10-CO60 ,YES,   2.060E+02,   2.019E+00,   1.108E+00,,   185.886
C,12-Y88  ,YES,   4.075E+02,   8.772E+00,   2.373E+00,,   171.753
C,01-AM241,NO ,   3.643E-01,   9.277E-01,   1.517E+00,,     0.240
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

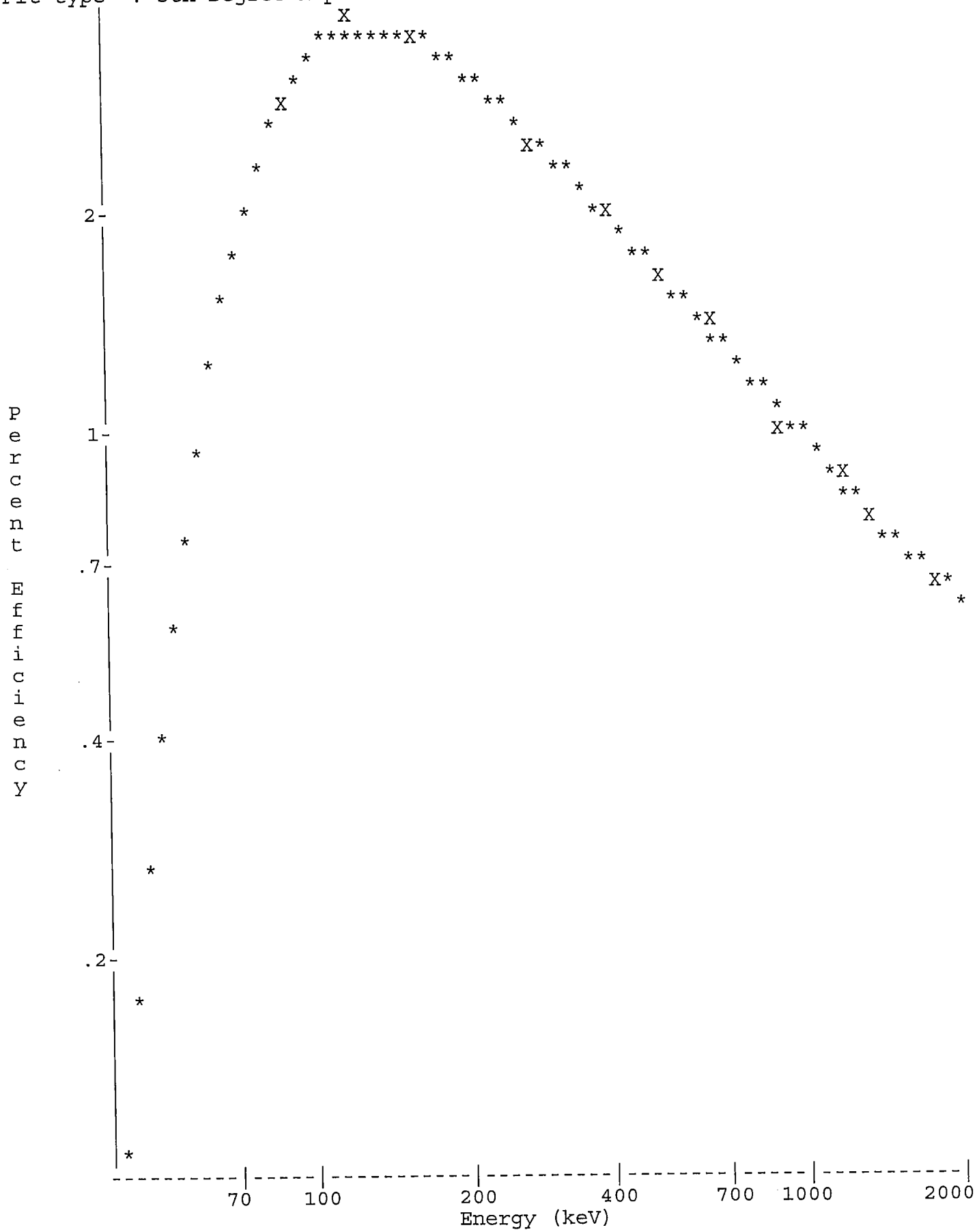
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Geometry : 07S100121819
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity :	1.463E+03	2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
	Total Activity :		1.462E+03	2.853E+03			

Grand Total Activity : 1.462E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,  1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,  4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,  5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,  1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,  1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,  2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,  1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,  3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,  2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,  4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,  2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

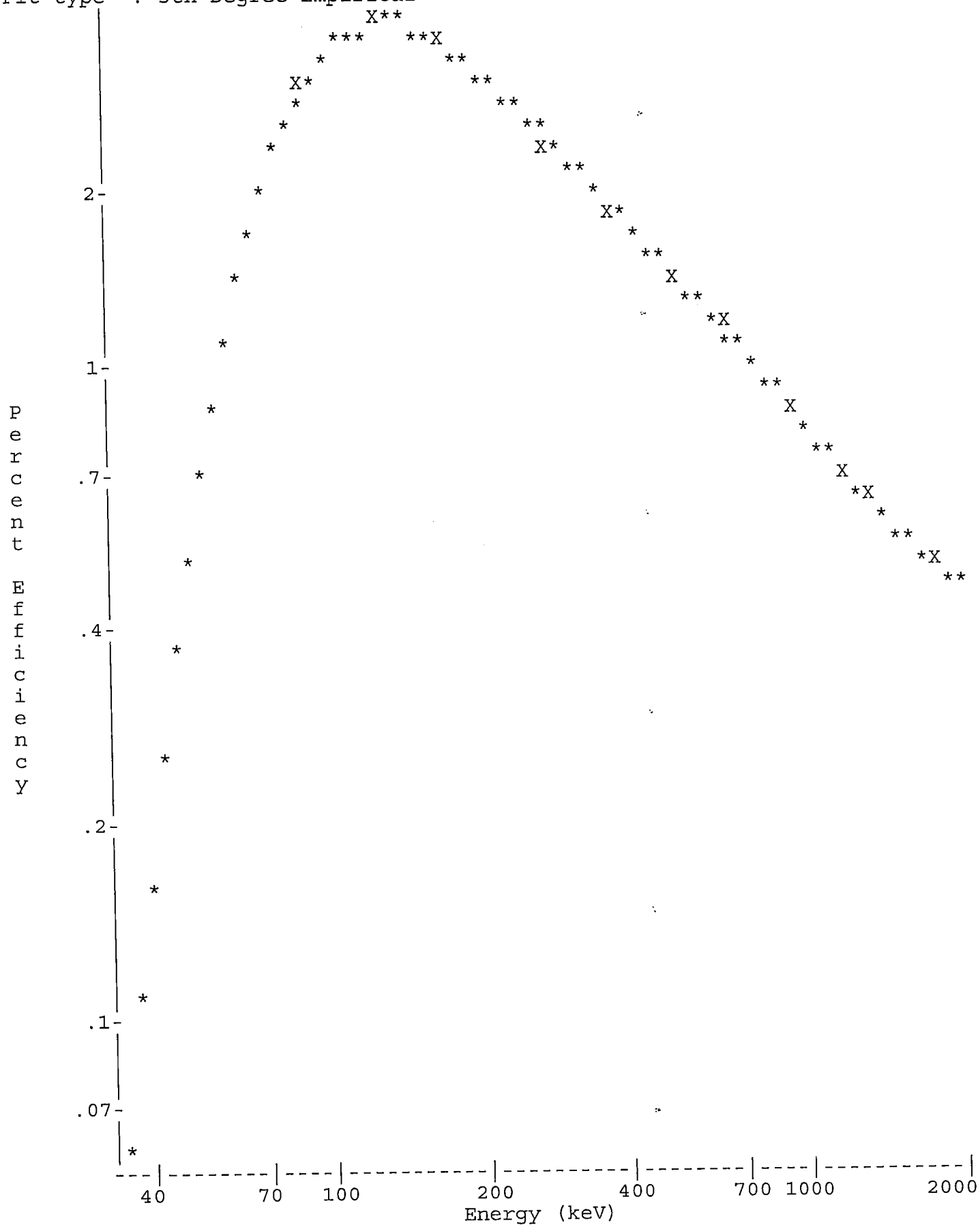
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---	---			
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819    ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819    ,CALIBRATION          ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

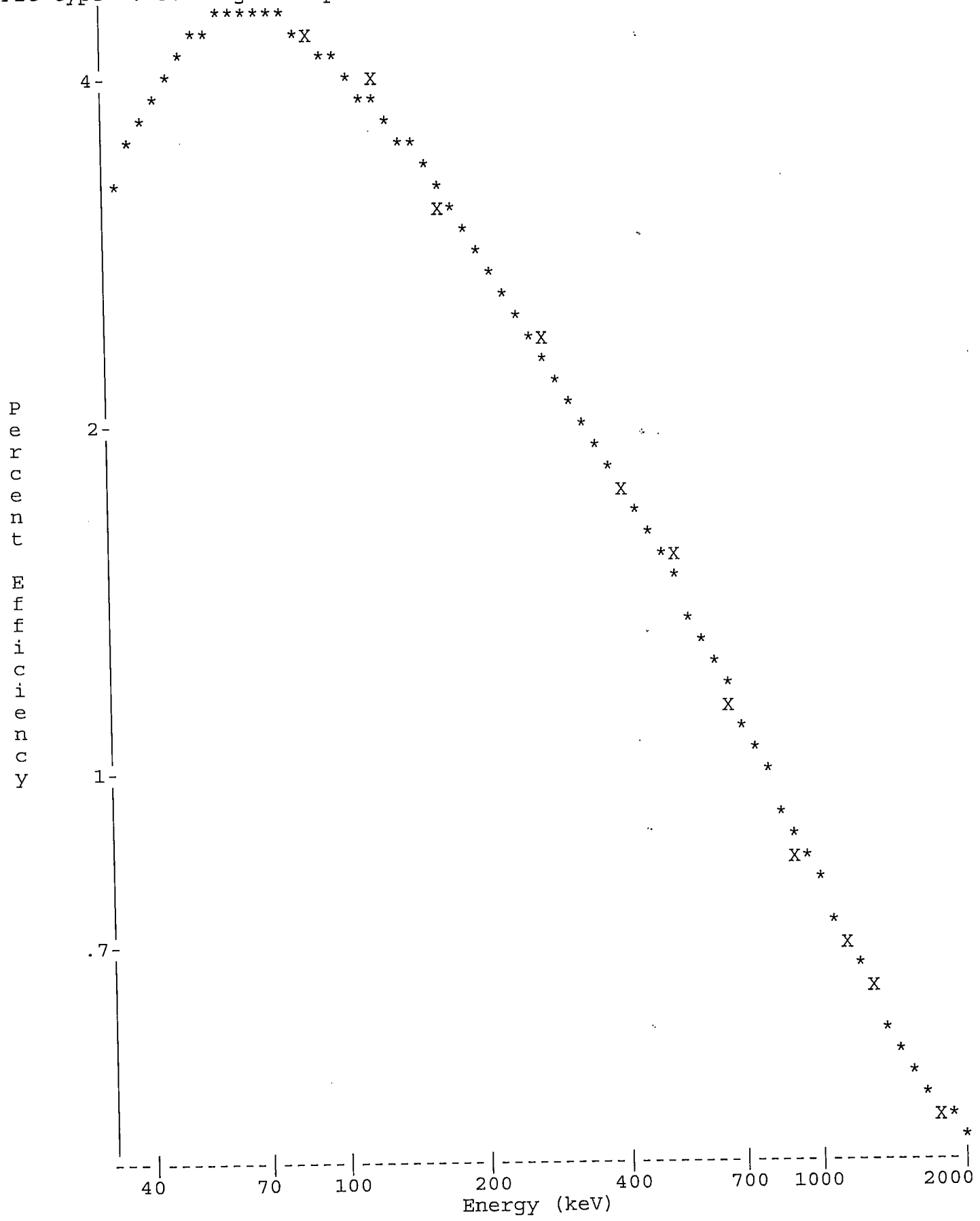
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Geometry : 11S100121919
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919 Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919     ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919     ,CALIBRATION          ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,   1.013E+03,   1.793E+01,   1.499E+01,,   67.586
C,03-CO57 ,YES,   4.118E+01,   1.003E+00,   7.649E-01,,   53.831
C,04-CE139,YES,   4.917E+01,   1.826E+00,   1.518E+00,,   32.396
C,05-HG203,YES,   1.496E+02,   1.412E+01,   1.379E+01,,   10.849
C,06-SN113,YES,   1.882E+02,   4.968E+00,   3.497E+00,,   53.812
C,07-SR85 ,YES,   2.596E+02,   1.031E+01,   6.619E+00,,   39.220
C,08-CS137,YES,   1.689E+02,   2.289E+00,   1.088E+00,,  155.266
C,09-Y88  ,YES,   3.885E+02,   7.711E+00,   4.625E+00,,   83.996
C,10-CO60 ,YES,   2.075E+02,   2.028E+00,   1.127E+00,,  184.062
C,12-Y88  ,YES,   4.004E+02,   8.223E+00,   2.218E+00,,  180.562
C,01-AM241,NO ,  -6.041E-01,   5.435E-01,   9.051E-01,,   -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

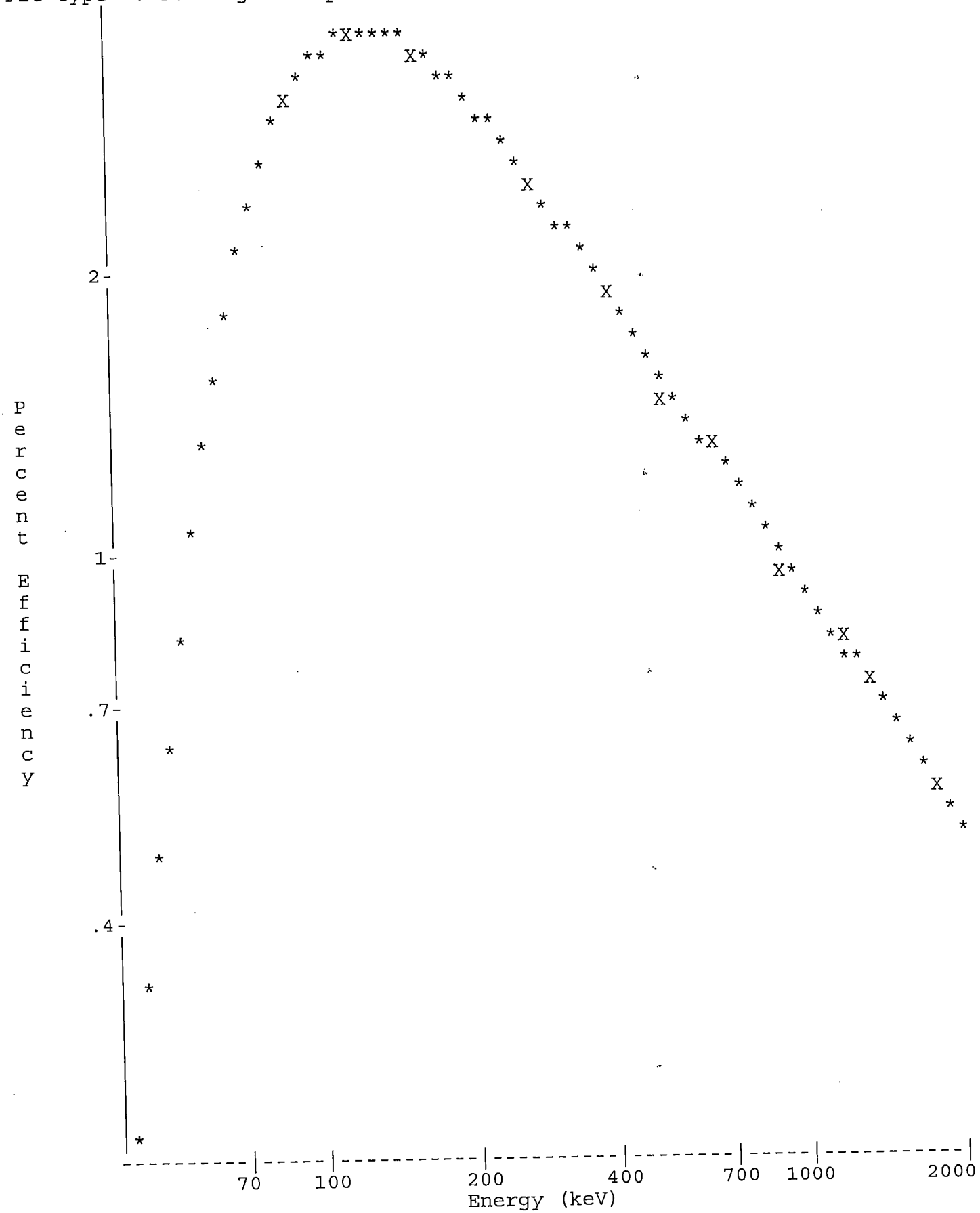
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Geometry : 13S100122619
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Peak Evaluation - Identified and Unidentfied

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,   1.001E+03,   1.649E+01,   1.349E+01,,    74.206
C,03-CO57 ,YES,   4.016E+01,   9.167E-01,   6.087E-01,,    65.978
C,04-CE139,YES,   5.064E+01,   1.454E+00,   1.122E+00,,    45.151
C,05-HG203,YES,   1.465E+02,   1.200E+01,   1.135E+01,,    12.914
C,06-SN113,YES,   1.946E+02,   4.137E+00,   2.774E+00,,    70.169
C,07-SR85 ,YES,   2.340E+02,   7.150E+00,   6.009E+00,,    38.945
C,08-CS137,YES,   1.774E+02,   1.808E+00,   8.215E-01,,   215.917
C,09-Y88  ,YES,   3.981E+02,   6.404E+00,   3.602E+00,,   110.531
C,10-CO60 ,YES,   2.044E+02,   1.570E+00,   6.527E-01,,   313.158
C,12-Y88  ,YES,   4.024E+02,   6.717E+00,   1.716E+00,,   234.561
C,01-AM241,NO ,   3.682E-02,   1.283E+00,   2.034E+00,,     0.018
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E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.03%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.2	-5.03%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.3	0.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.4	2.21%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.9	-1.31%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.5	0.04%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.4	0.37%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.3	-0.10%

Eff. Name: **14FS092319**

Analyst: KOJ

Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:28:32.55
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

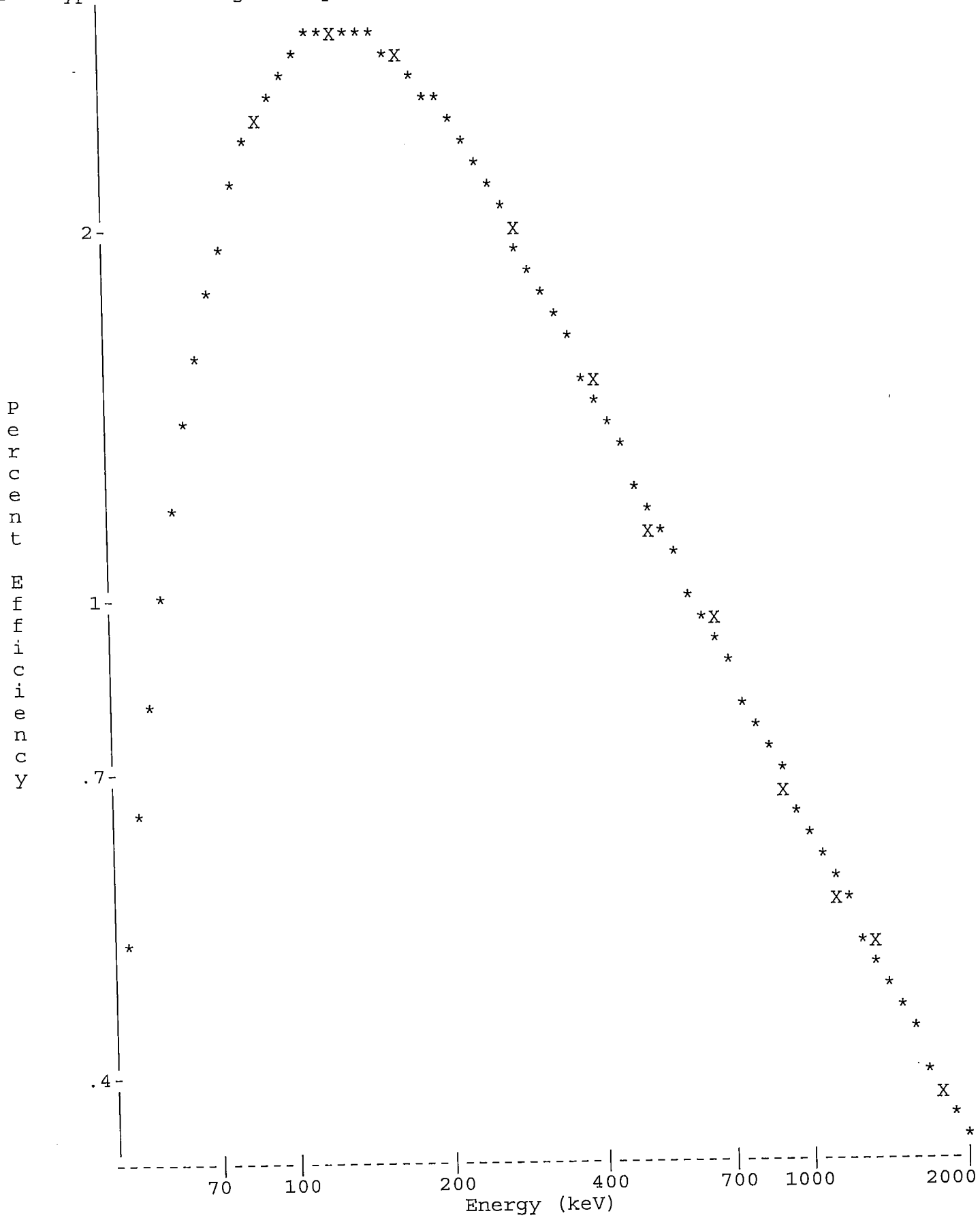
Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88	930	7993	0.67	142.98	1.91E+00	3.23E-02	15.5	3.92E+00
2	1	88.04	22566	11237	0.84	173.39	2.48E+00	7.84E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 24-SEP-2019 09:28
Detector :
Fit type : 5th Degree Empirical

Geometry : 14FS092319



Sec. Review: Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:29:25.42
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88*	833	7993	0.67	142.98	1.91E+00	2.89E-02	17.4	3.92E+00
2	1	88.04*	22524	11237	0.84	173.39	2.48E+00	7.82E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22524	3.72*	2.482E+00	8.470E+02	1.005E+03	2.17
03-CO57	122.06	21617	85.51*	2.947E+00	2.979E+01	3.991E+01	2.43
04-CE139	165.85	18496	80.35*	2.790E+00	2.865E+01	5.095E+01	2.36
05-HG203	279.20	12600	81.46*	1.983E+00	2.708E+01	1.482E+02	3.26
06-SN113	391.69	26599	64.90*	1.481E+00	9.608E+01	1.913E+02	1.71
07-SR85	513.99	23420	99.27*	1.160E+00	7.064E+01	2.397E+02	1.69
08-CS137	661.65	39429	85.12*	9.236E-01	1.741E+02	1.754E+02	1.28
09-Y88	898.02	36083	93.40*	7.034E-01	1.907E+02	4.009E+02	1.30
10-CO60	1173.22	31293	100.00	5.564E-01	1.953E+02	2.035E+02	1.31
	1332.49	28155	100.00*	4.985E-01	1.961E+02	2.044E+02	1.36
12-Y88	1836.01	20920	99.38*	3.810E-01	1.918E+02	4.033E+02	1.47

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14FS092319

Acquisition date : 23-SEP-2019 15:30:35

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.961E+02	2.044E+02	0.028E+02	1.36	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14FS092319
Acquisition date : 23-SEP-2019 15:30:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	72.88	833	7993	0.67	142.98	140	6	2.89E-02	34.7	1.91E+00	
1	136.48	2593	8436	0.91	270.51	267	8	9.00E-02	12.9	2.94E+00	
1	255.02	1548	6283	1.29	508.23	504	8	5.37E-02	18.4	2.13E+00	
1	813.99	785	2402	1.87	1629.33	1623	11	2.73E-02	25.1	7.67E-01	
1	1324.77	739	1286	2.84	2654.08	2646	15	2.56E-02	22.4	5.01E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.957E+02	2.039E+02	0.019E+02	0.95	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.182E+01	1.629E+01	0.000E+00	61.714
03-CO57	3.991E+01	9.700E-01	6.523E-01	0.000E+00	61.183
04-CE139	5.095E+01	1.203E+00	9.498E-01	0.000E+00	53.639
05-HG203	1.482E+02	4.830E+00	3.642E+00	0.000E+00	40.696
06-SN113	1.913E+02	3.264E+00	2.022E+00	0.000E+00	94.570

07-SR85	2.397E+02	4.057E+00	2.935E+00	0.000E+00	81.684
08-CS137	1.754E+02	2.249E+00	1.116E+00	0.000E+00	157.102
09-Y88	4.009E+02	5.192E+00	2.528E+00	0.000E+00	158.546
10-CO60	2.039E+02	1.928E+00	9.329E-01	0.000E+00	218.563
12-Y88	4.033E+02	5.932E+00	1.447E+00	0.000E+00	278.709

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	9.143E-01		1.537E+00	2.519E+00	0.000E+00	0.363

```
A,14FS092319       ,09/24/2019 09:29,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,14FS092319       ,CALIBRATION          ,09/24/2019 09:28,14FS092319
C,02-CD109,YES,   1.005E+03,   2.182E+01,   1.629E+01,,    61.714
C,03-CO57 ,YES,   3.991E+01,   9.700E-01,   6.523E-01,,    61.183
C,04-CE139,YES,   5.095E+01,   1.203E+00,   9.498E-01,,    53.639
C,05-HG203,YES,   1.482E+02,   4.830E+00,   3.642E+00,,    40.696
C,06-SN113,YES,   1.913E+02,   3.264E+00,   2.022E+00,,    94.570
C,07-SR85 ,YES,   2.397E+02,   4.057E+00,   2.935E+00,,    81.684
C,08-CS137,YES,   1.754E+02,   2.249E+00,   1.116E+00,,   157.102
C,09-Y88  ,YES,   4.009E+02,   5.192E+00,   2.528E+00,,   158.546
C,10-CO60 ,YES,   2.039E+02,   1.928E+00,   9.329E-01,,   218.563
C,12-Y88  ,YES,   4.033E+02,   5.932E+00,   1.447E+00,,   278.709
C,01-AM241,NO ,   9.143E-01,   1.537E+00,   2.519E+00,,     0.363
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.59%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.95%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	150.0	-3.87%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.0	-2.85%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.2	-2.96%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.5	1.02%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.7	0.52%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **14S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:24:05.41
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

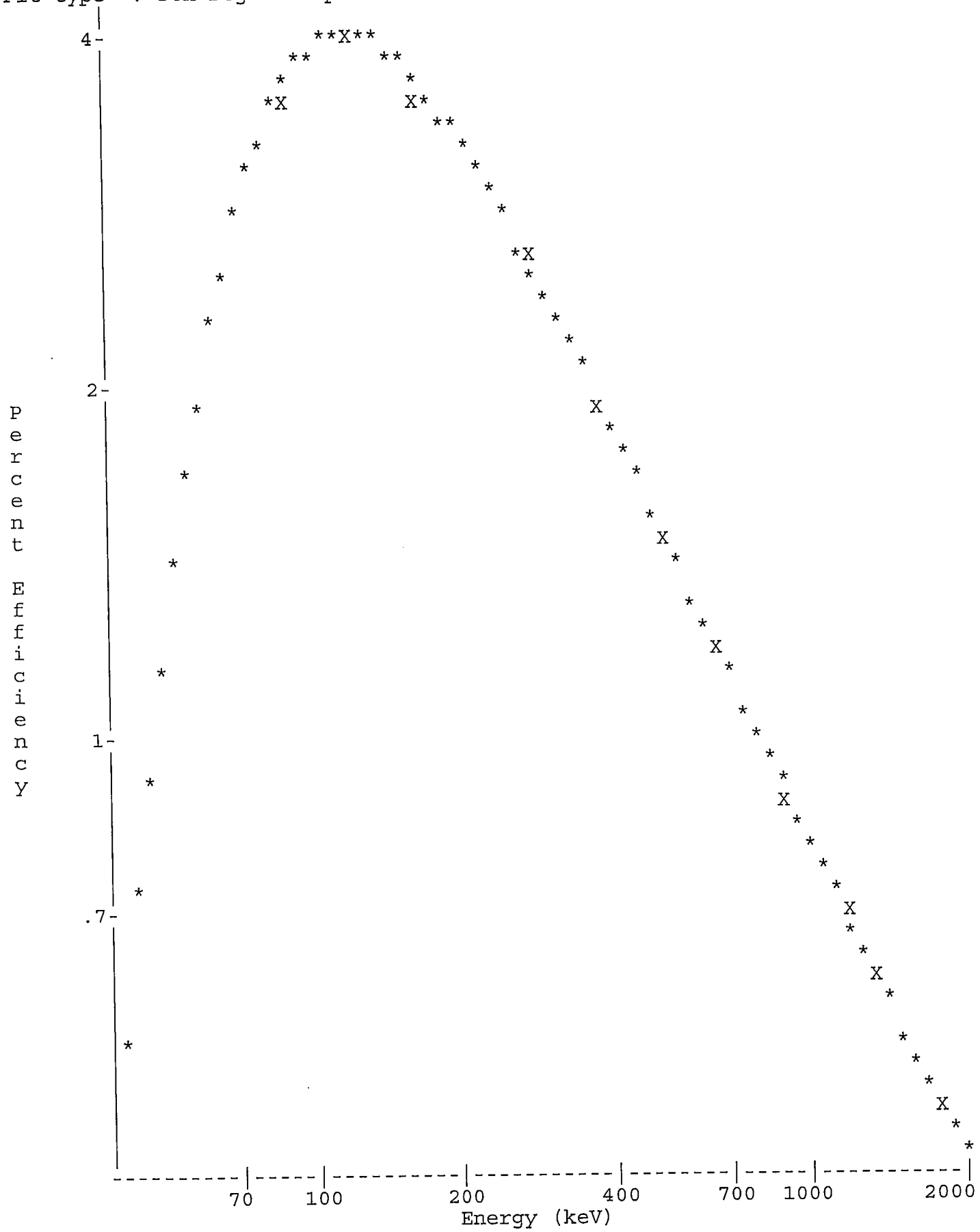
Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04	32058	12538	0.83	172.85	3.58E+00	9.89E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:24
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:25:19.21
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04*	31996	12538	0.83	172.85	3.58E+00	9.88E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	31996	3.72*	3.583E+00	7.409E+02	1.002E+03	1.73
03-CO57	122.06	26983	85.51*	4.020E+00	2.422E+01	4.055E+01	1.86
04-CE139	165.85	17412	80.35*	3.689E+00	1.813E+01	4.997E+01	2.69
05-HG203	279.20	5080	81.46*	2.562E+00	7.514E+00	1.500E+02	6.17
06-SN113	391.69	22811	64.90*	1.900E+00	5.709E+01	1.919E+02	1.95
07-SR85	513.99	13219	99.27*	1.480E+00	2.778E+01	2.390E+02	2.65
08-CS137	661.65	56112	85.12*	1.170E+00	1.739E+02	1.761E+02	1.00
09-Y88	898.02	28414	93.40*	8.814E-01	1.065E+02	3.942E+02	1.67
10-CO60	1173.22	42734	100.00	6.902E-01	1.911E+02	2.055E+02	1.12
	1332.49	37990	100.00*	6.159E-01	1.904E+02	2.047E+02	1.12
12-Y88	1836.01	16457	99.38*	4.701E-01	1.087E+02	4.024E+02	1.68

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.904E+02	2.047E+02	0.023E+02	1.12	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.455E+03	2.850E+03			

Grand Total Activity : 1.455E+03 2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S100121919 Acquisition date : 19-DEC-2019 15:29:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.59	4343	10904	0.86	89.98	85	10	1.34E-01	9.5	8.97E-01	
1	136.46	3364	8189	0.88	269.65	266	9	1.04E-01	10.3	3.96E+00	
1	255.15	1158	6685	1.01	506.97	503	9	3.58E-02	26.1	2.76E+00	
1	814.14	447	2399	1.31	1624.80	1621	9	1.38E-02	40.6	9.65E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.907E+02	2.051E+02	0.016E+02	0.79	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
	Total Activity :		1.456E+03	2.851E+03			

Grand Total Activity : 1.456E+03 2.851E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	1.735E+01	1.123E+01	0.000E+00	89.212
03-CO57	4.055E+01	7.526E-01	4.988E-01	0.000E+00	81.300
04-CE139	4.997E+01	1.344E+00	9.308E-01	0.000E+00	53.682
05-HG203	1.500E+02	9.263E+00	8.996E+00	0.000E+00	16.675
06-SN113	1.919E+02	3.750E+00	2.454E+00	0.000E+00	78.204
07-SR85	2.390E+02	6.325E+00	5.015E+00	0.000E+00	47.655

08-CS137	1.761E+02	1.758E+00	7.913E-01	0.000E+00	222.526
09-Y88	3.942E+02	6.575E+00	3.397E+00	0.000E+00	116.066
10-CO60	2.051E+02	1.624E+00	8.097E-01	0.000E+00	253.272
12-Y88	4.024E+02	6.761E+00	1.762E+00	0.000E+00	228.349

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.911E-03		8.383E-01	1.367E+00	0.000E+00	0.005

```
A,14S100121919    ,12/26/2019 10:25,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,14S100121919    ,CALIBRATION          ,12/26/2019 10:24,14S100121919
C,02-CD109,YES,   1.002E+03,   1.735E+01,   1.123E+01,,    89.212
C,03-CO57 ,YES,   4.055E+01,   7.526E-01,   4.988E-01,,    81.300
C,04-CE139,YES,   4.997E+01,   1.344E+00,   9.308E-01,,    53.682
C,05-HG203,YES,   1.500E+02,   9.263E+00,   8.996E+00,,    16.675
C,06-SN113,YES,   1.919E+02,   3.750E+00,   2.454E+00,,    78.204
C,07-SR85 ,YES,   2.390E+02,   6.325E+00,   5.015E+00,,    47.655
C,08-CS137,YES,   1.761E+02,   1.758E+00,   7.913E-01,,   222.526
C,09-Y88  ,YES,   3.942E+02,   6.575E+00,   3.397E+00,,   116.066
C,10-CO60 ,YES,   2.051E+02,   1.624E+00,   8.097E-01,,   253.272
C,12-Y88  ,YES,   4.024E+02,   6.761E+00,   1.762E+00,,   228.349
C,01-AM241,NO ,   6.911E-03,   8.383E-01,   1.367E+00,,     0.005
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

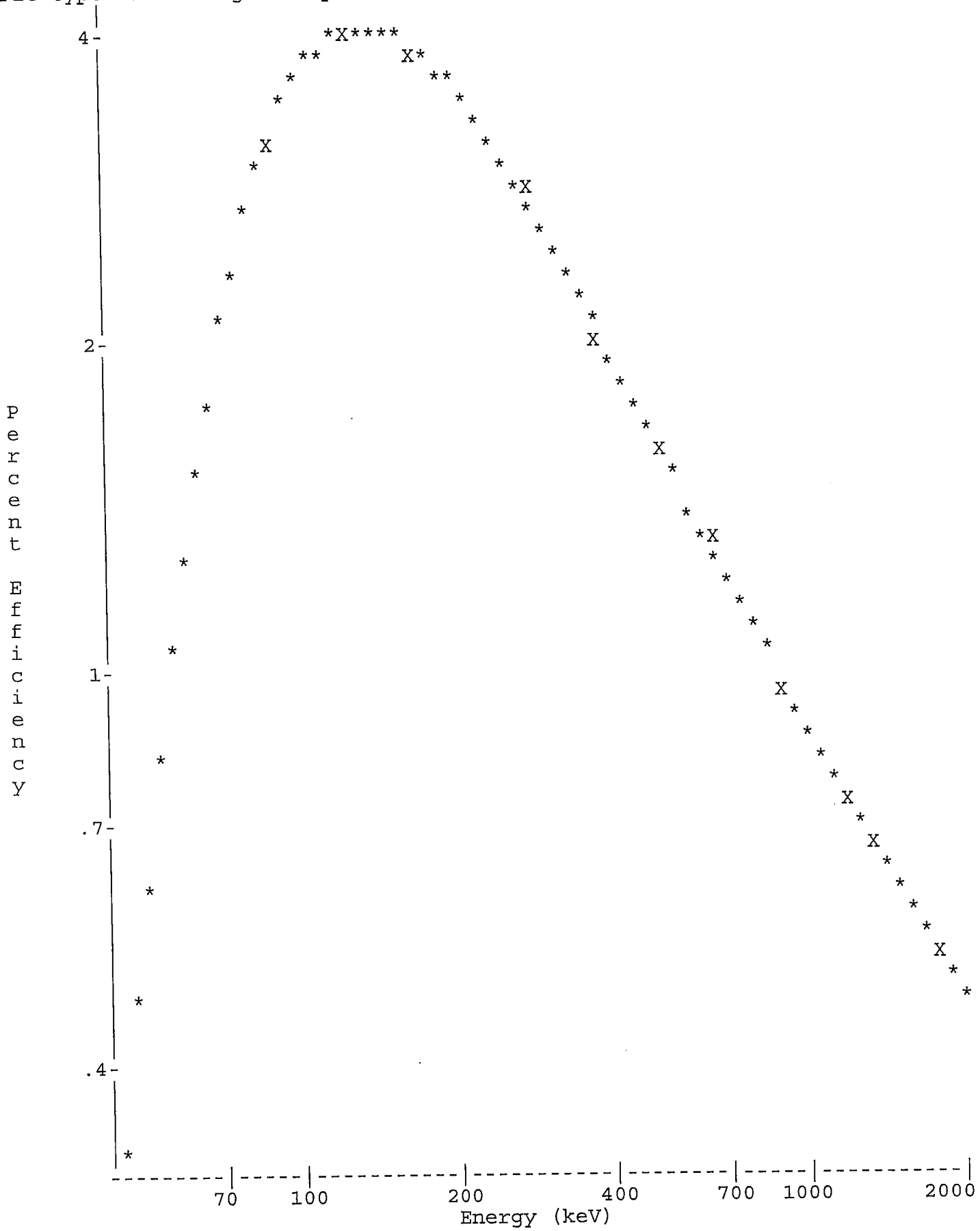
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity :	1.465E+03	2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

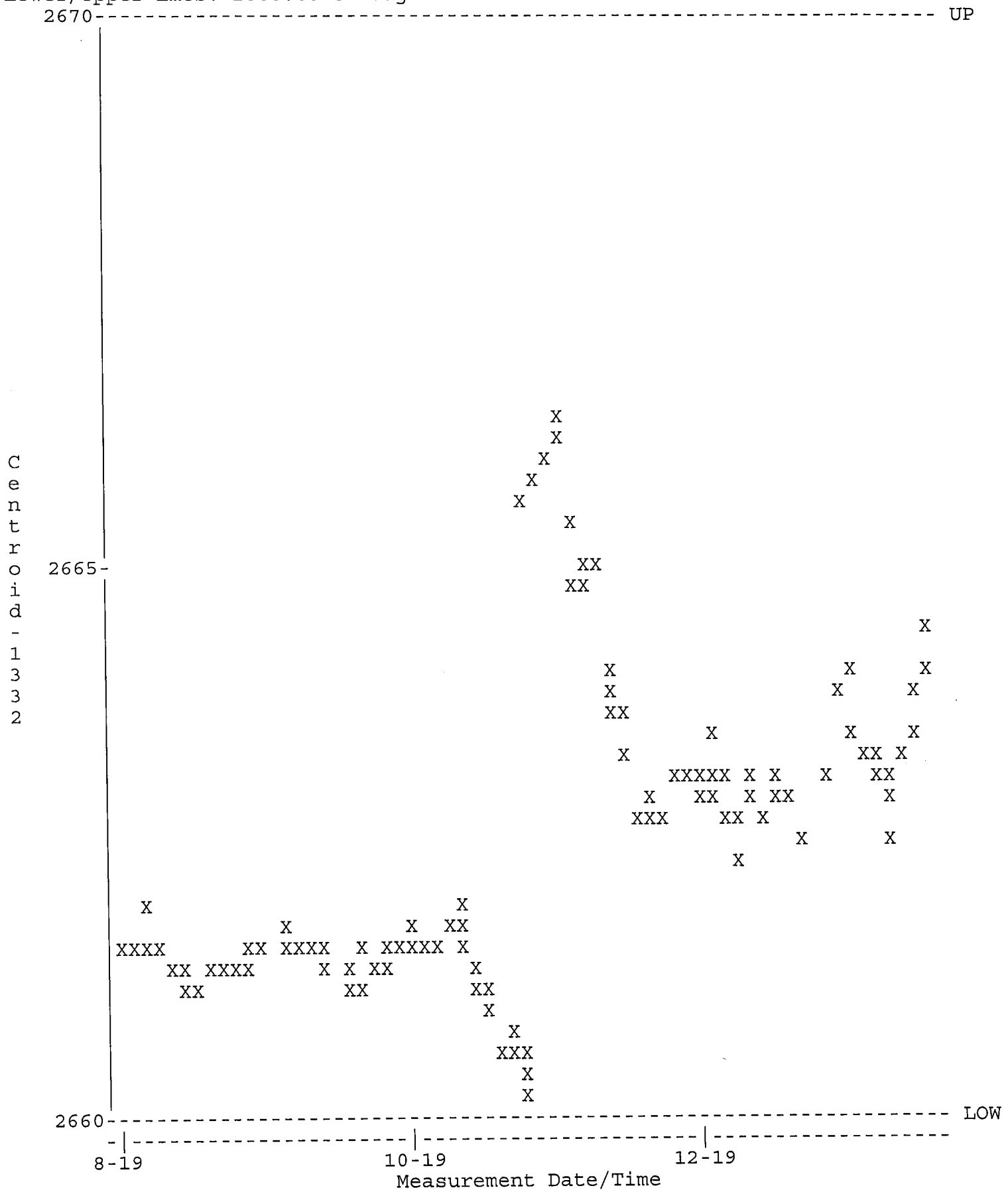
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION         ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,   -0.138
```

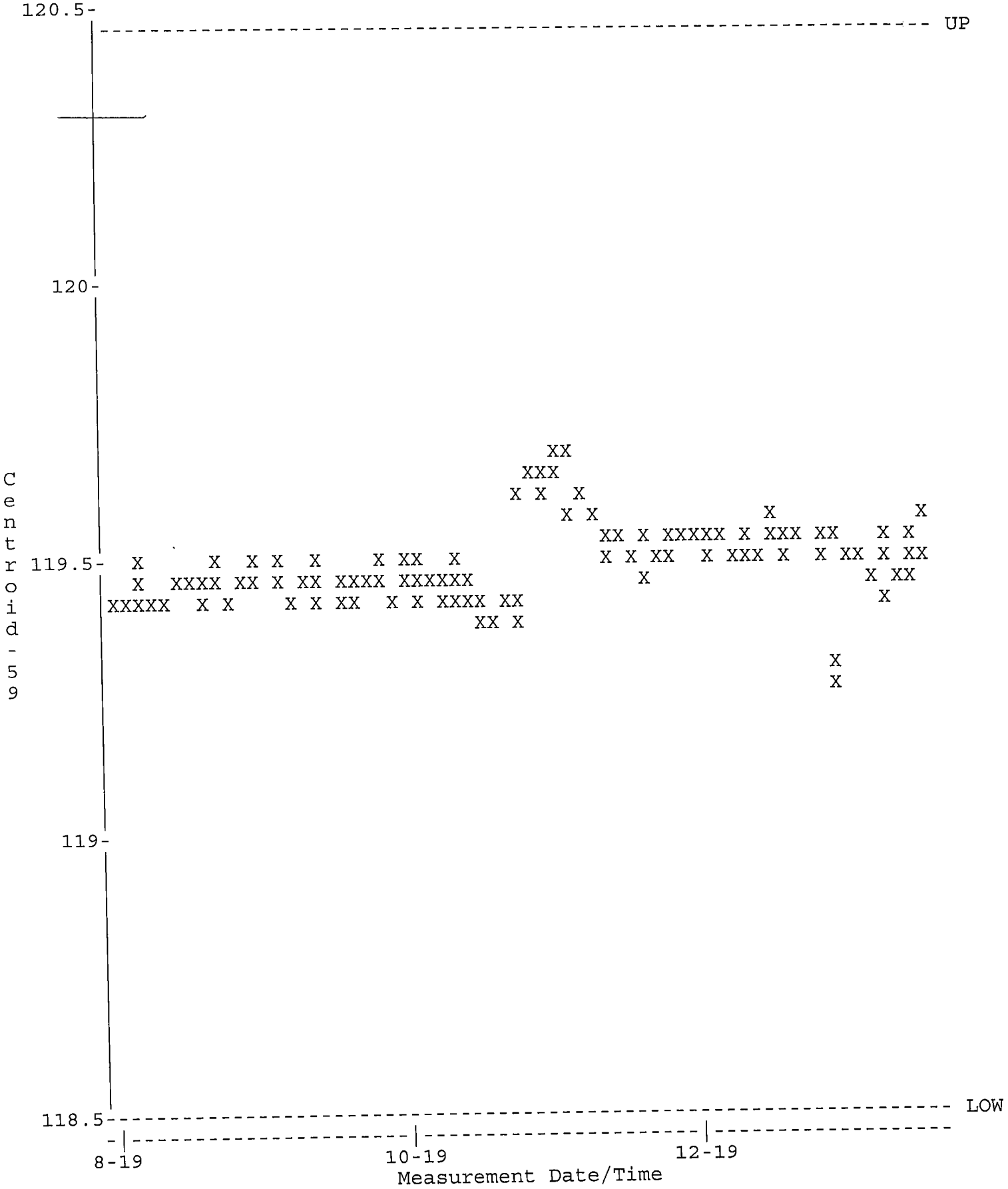
GAMMA SPECTROSCOPY

Daily Source and Background Checks

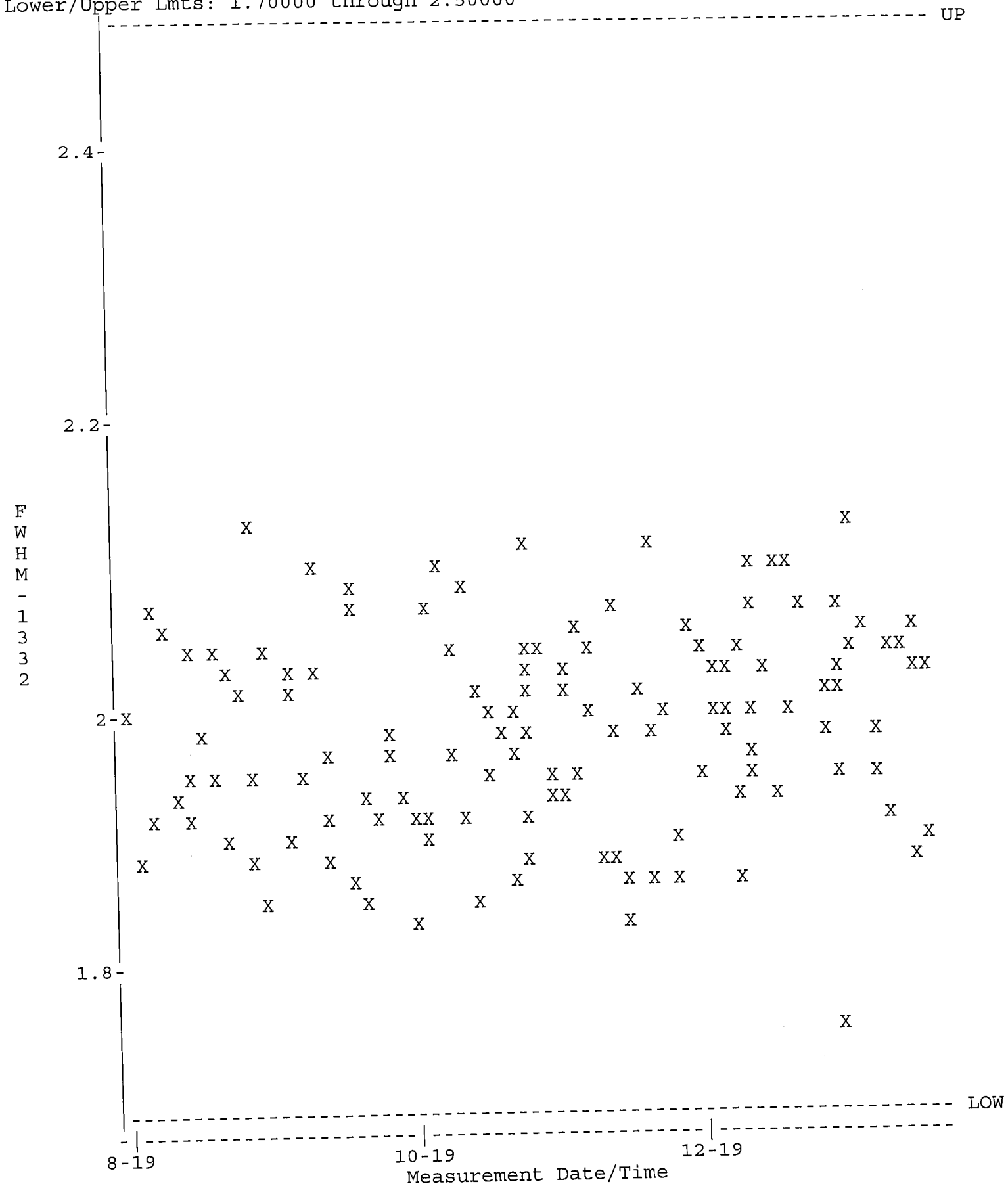
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



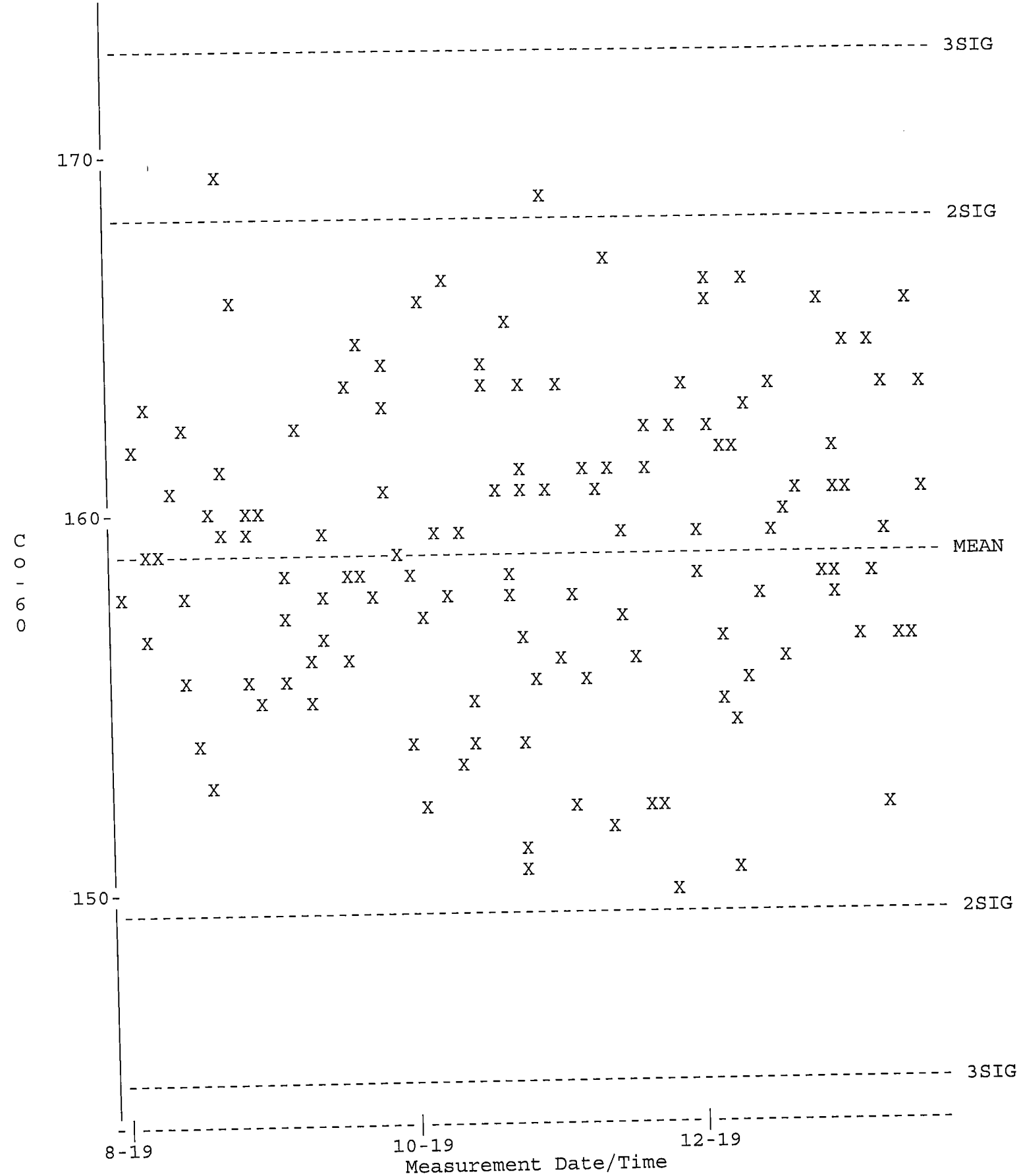
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



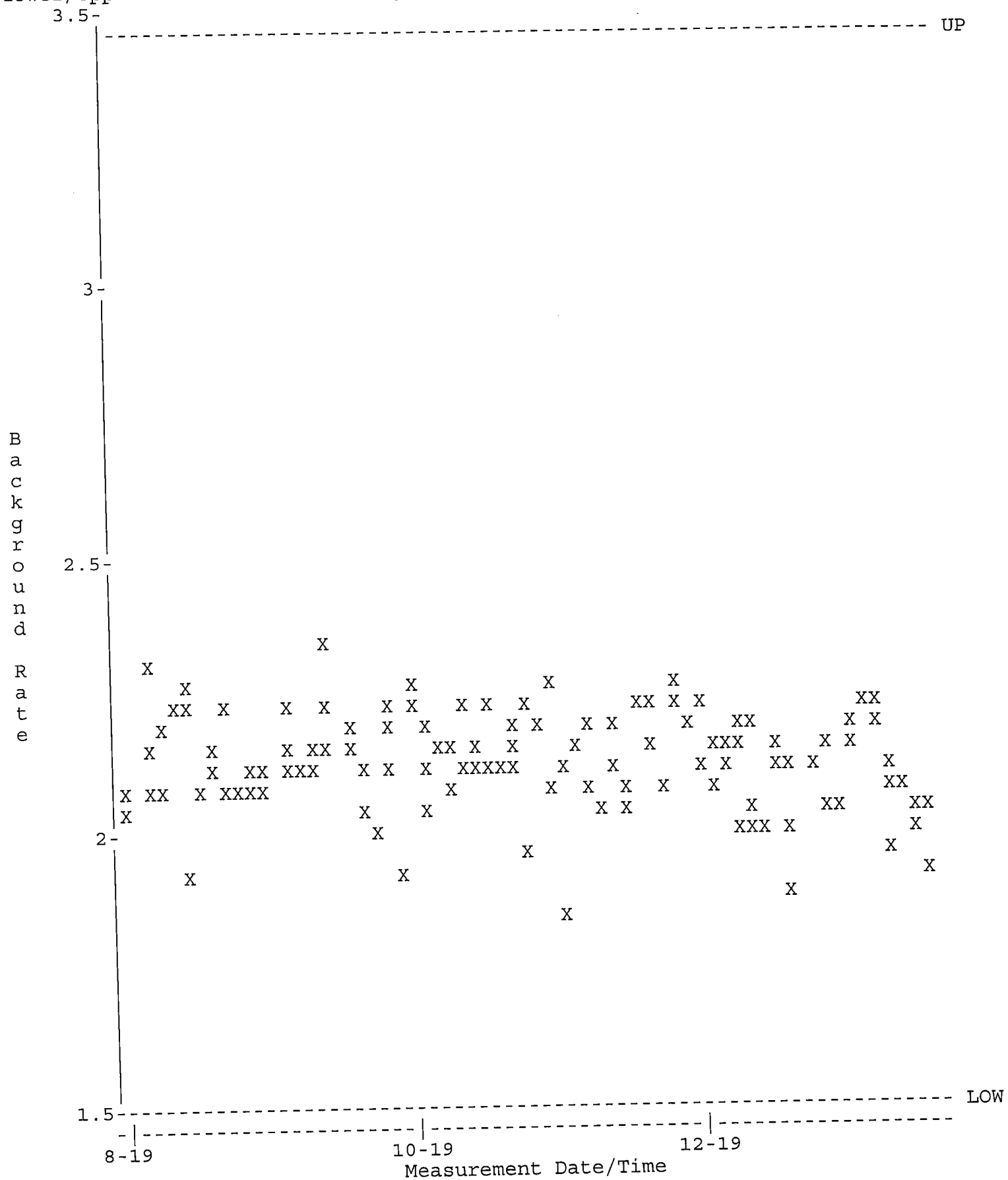
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



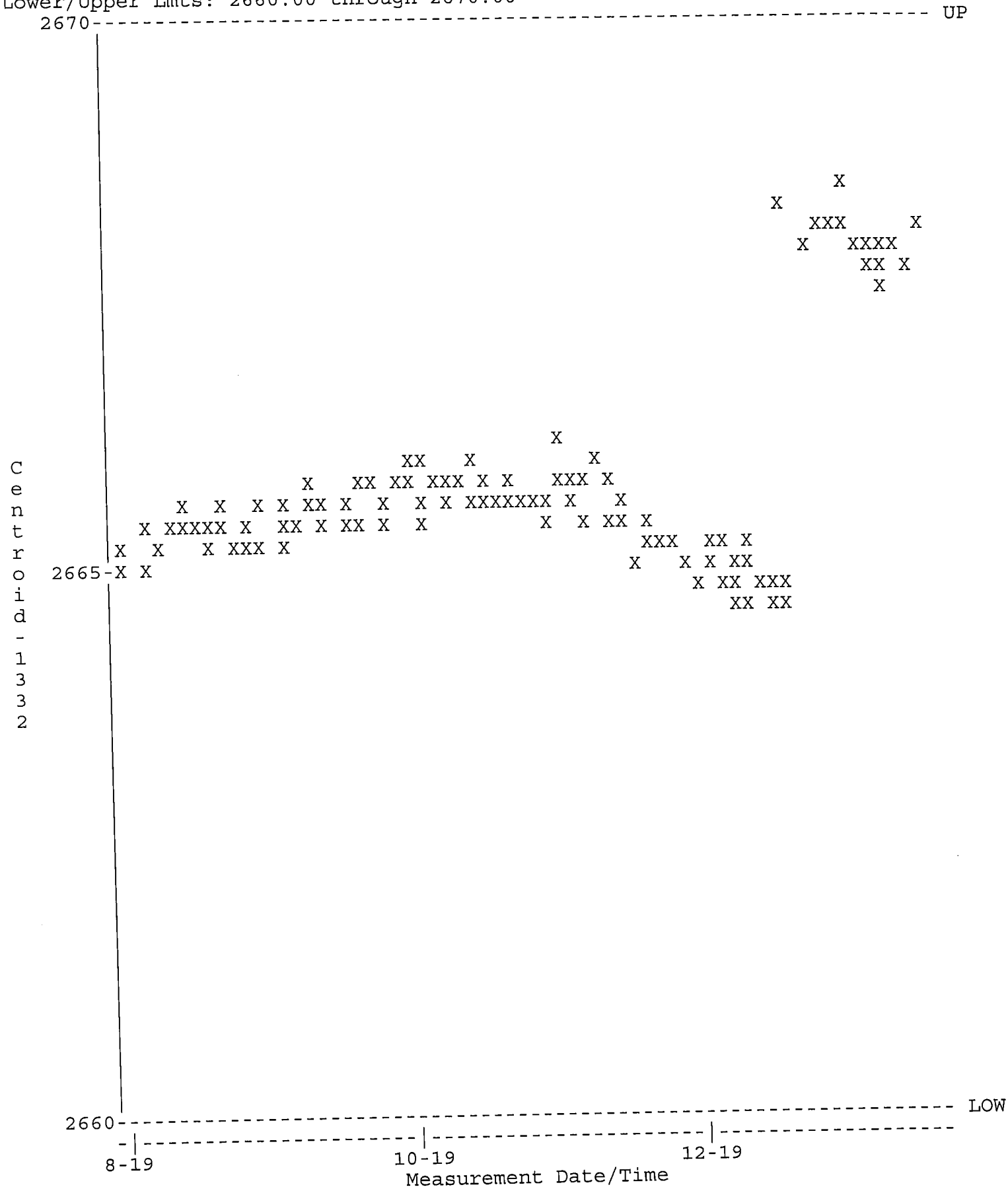
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



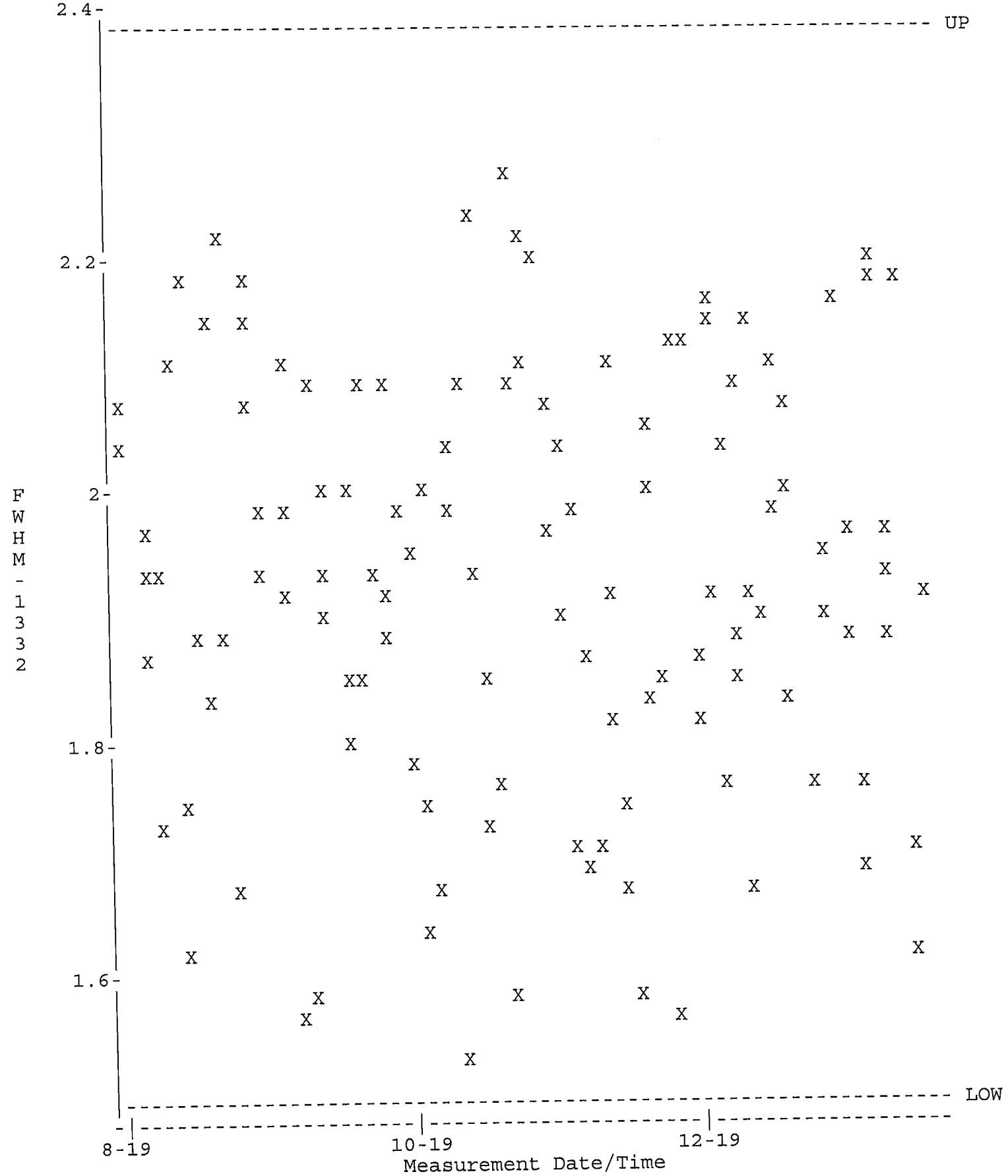
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



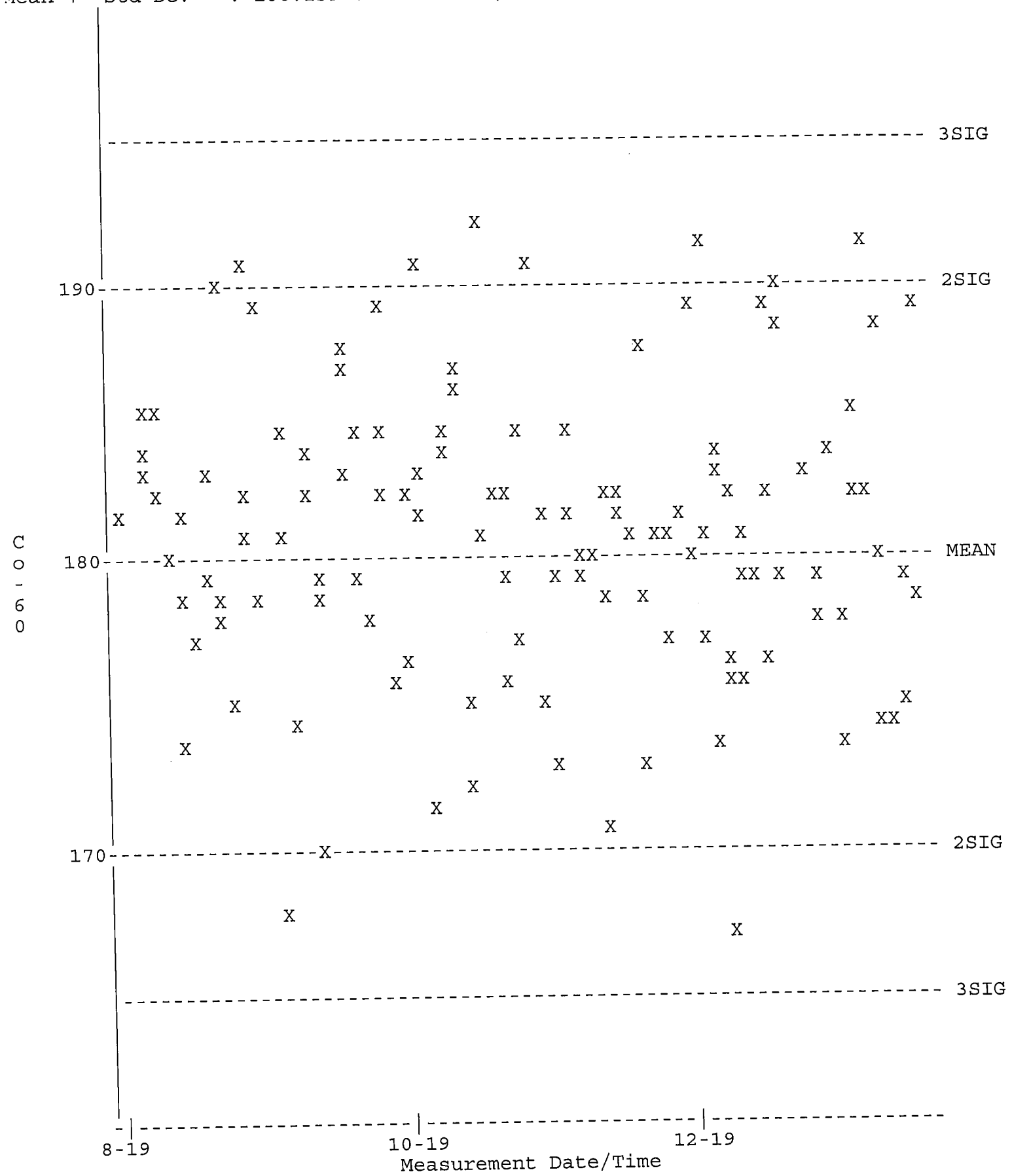
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



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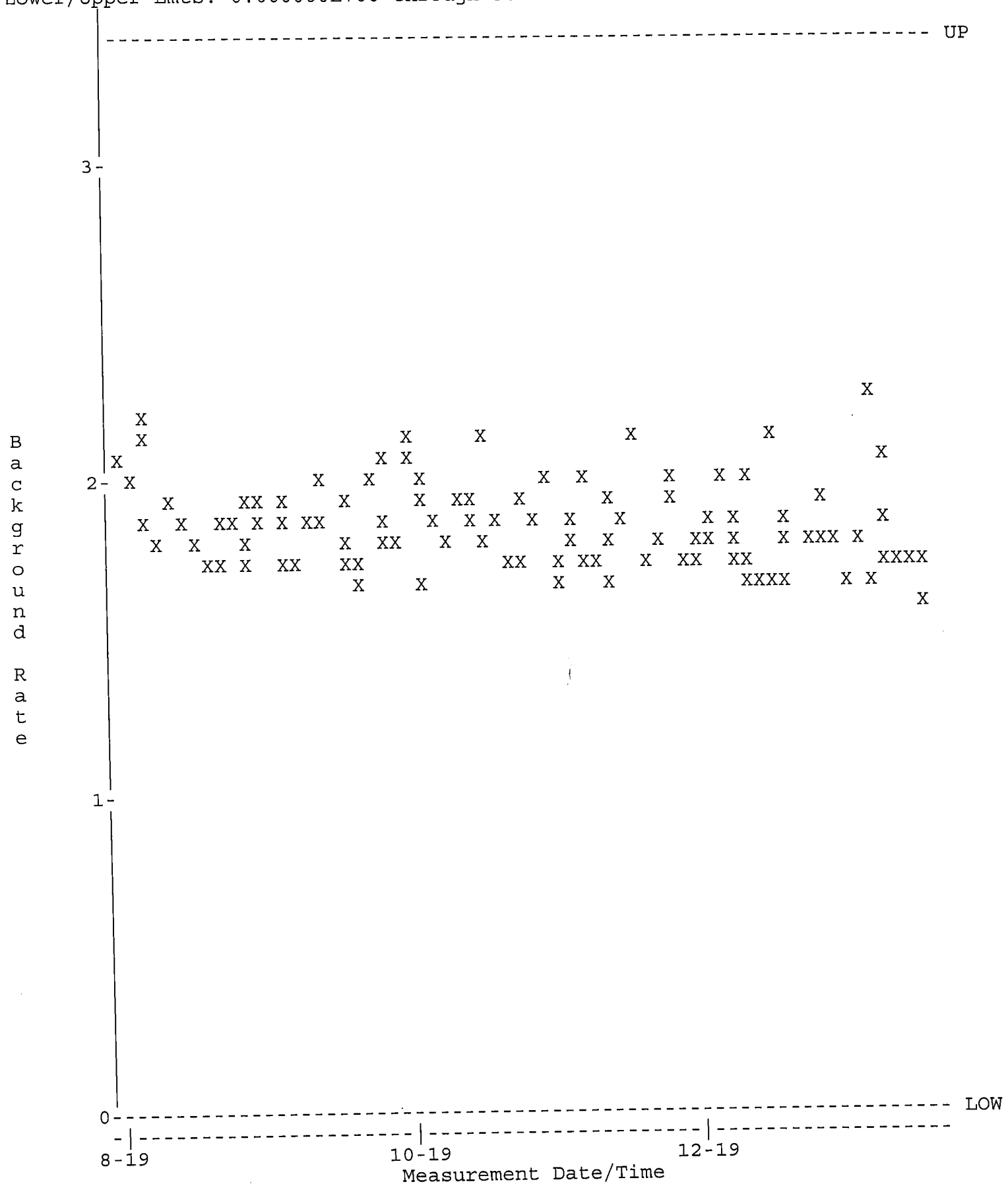
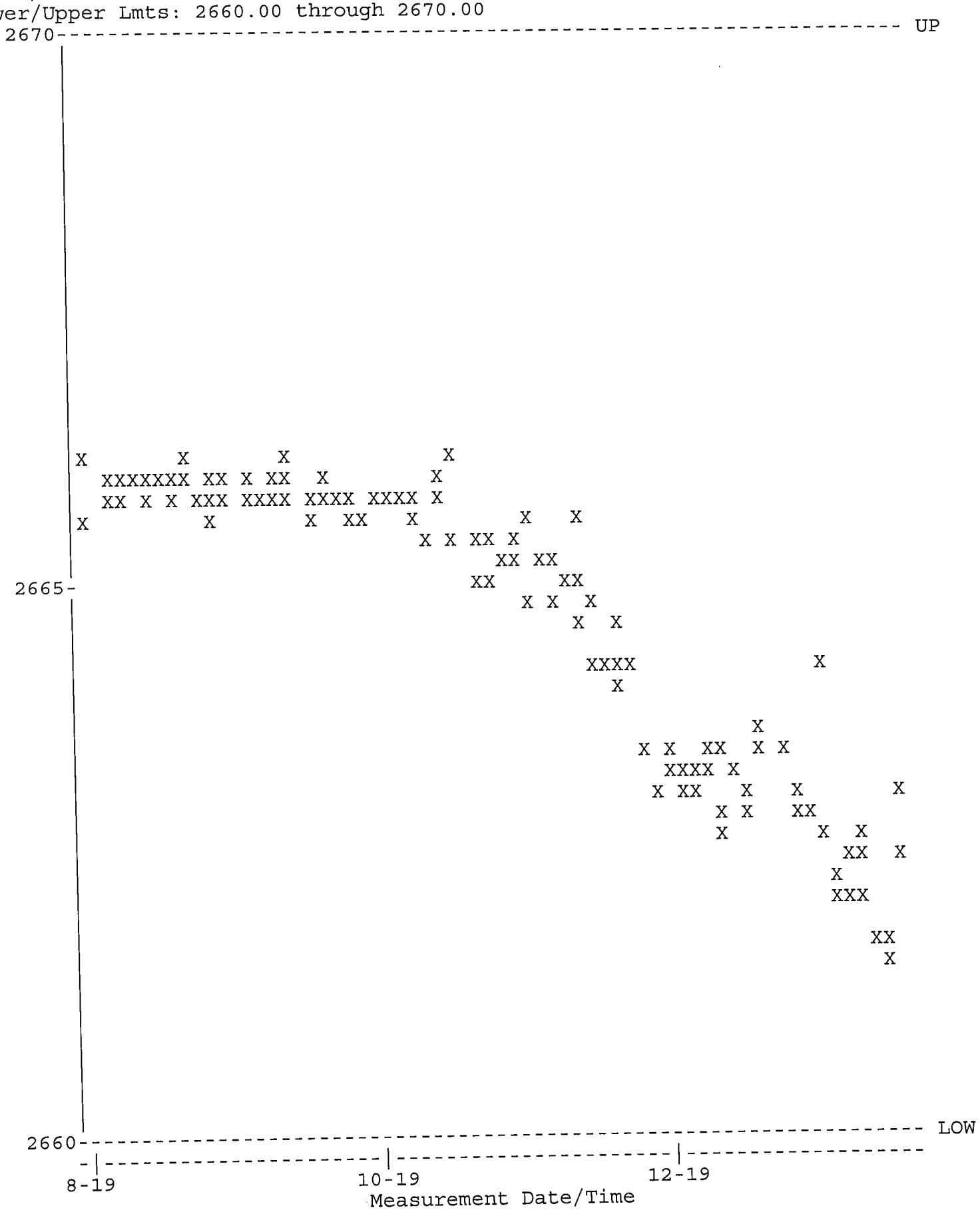
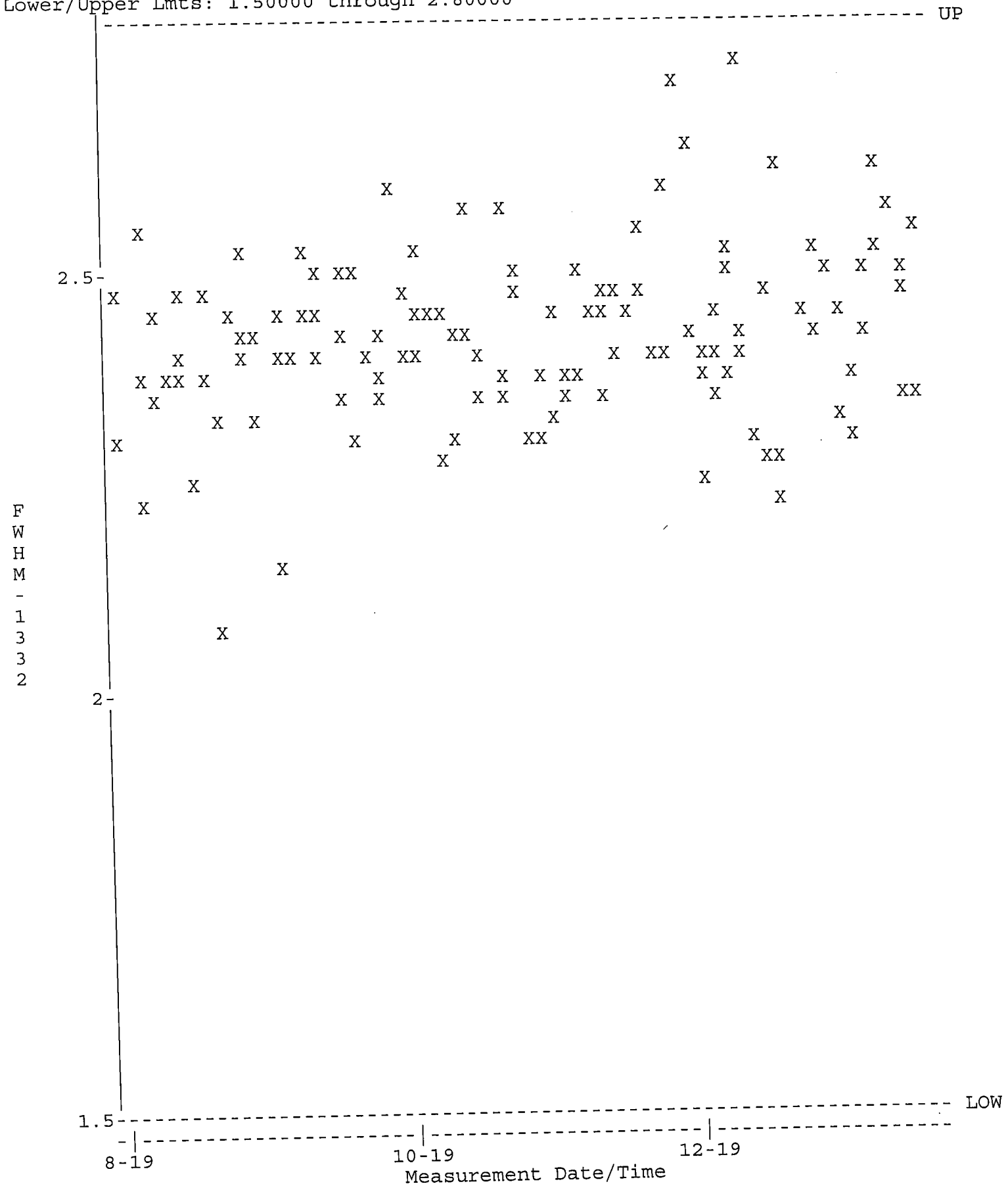
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



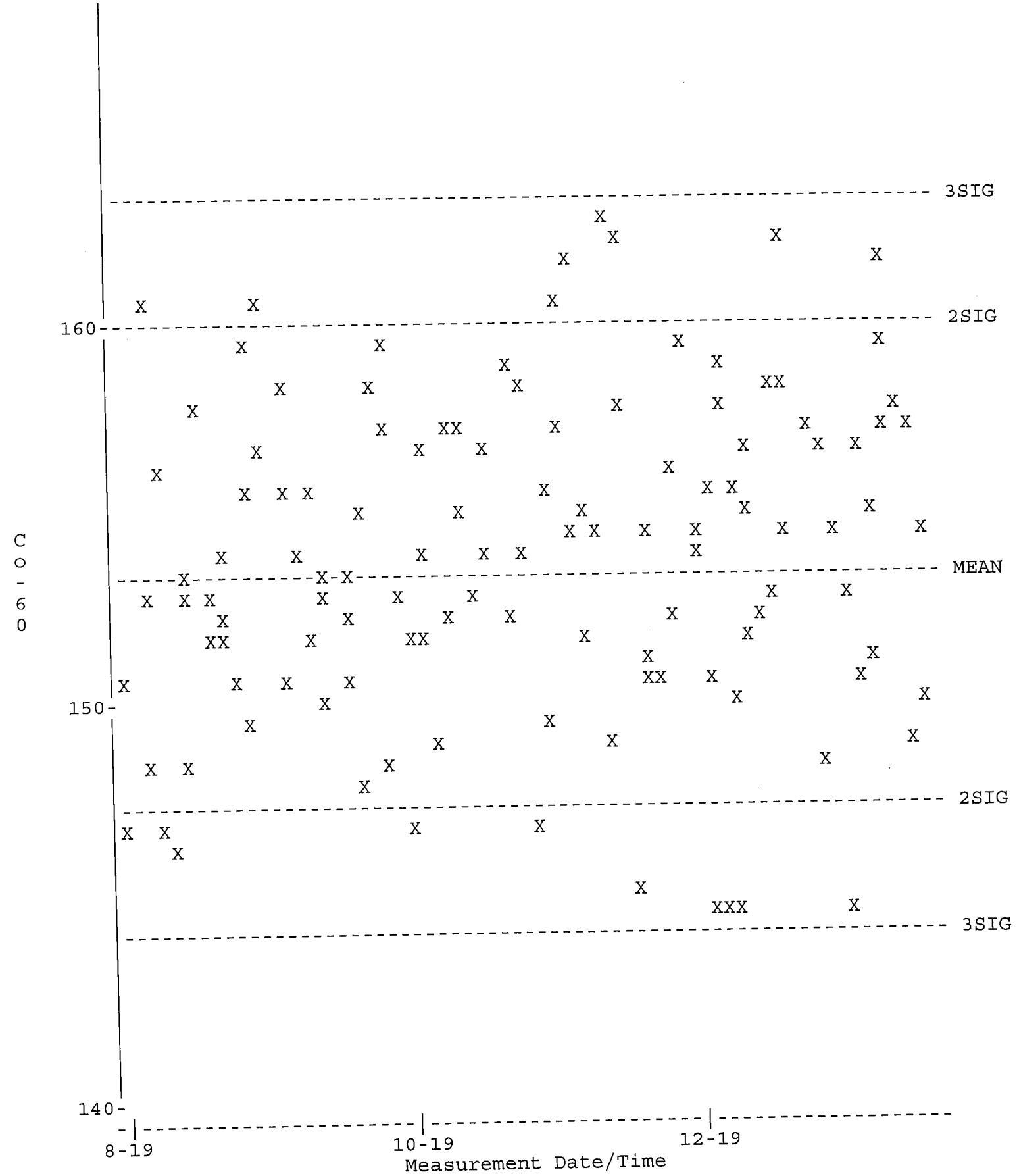
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



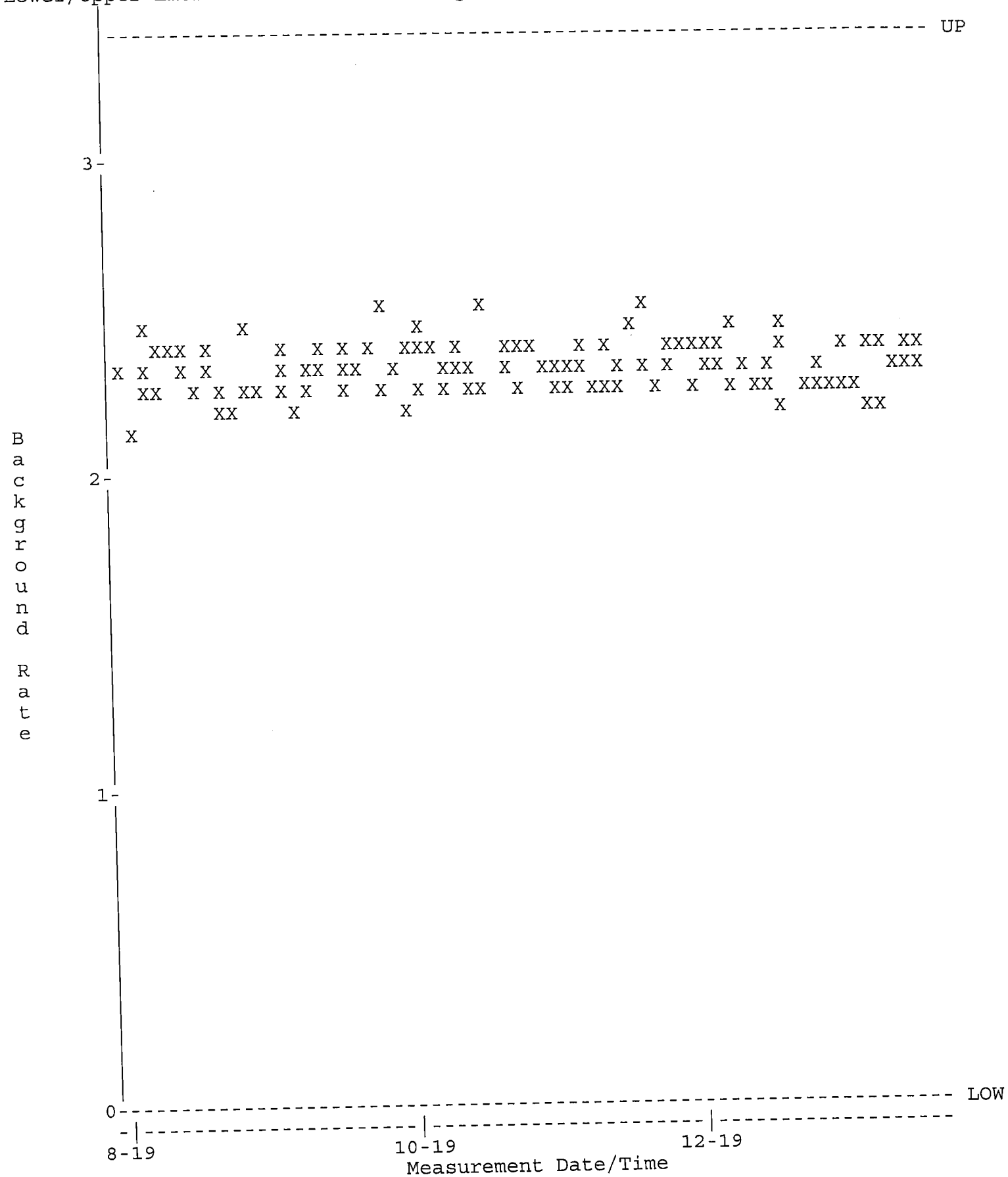
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



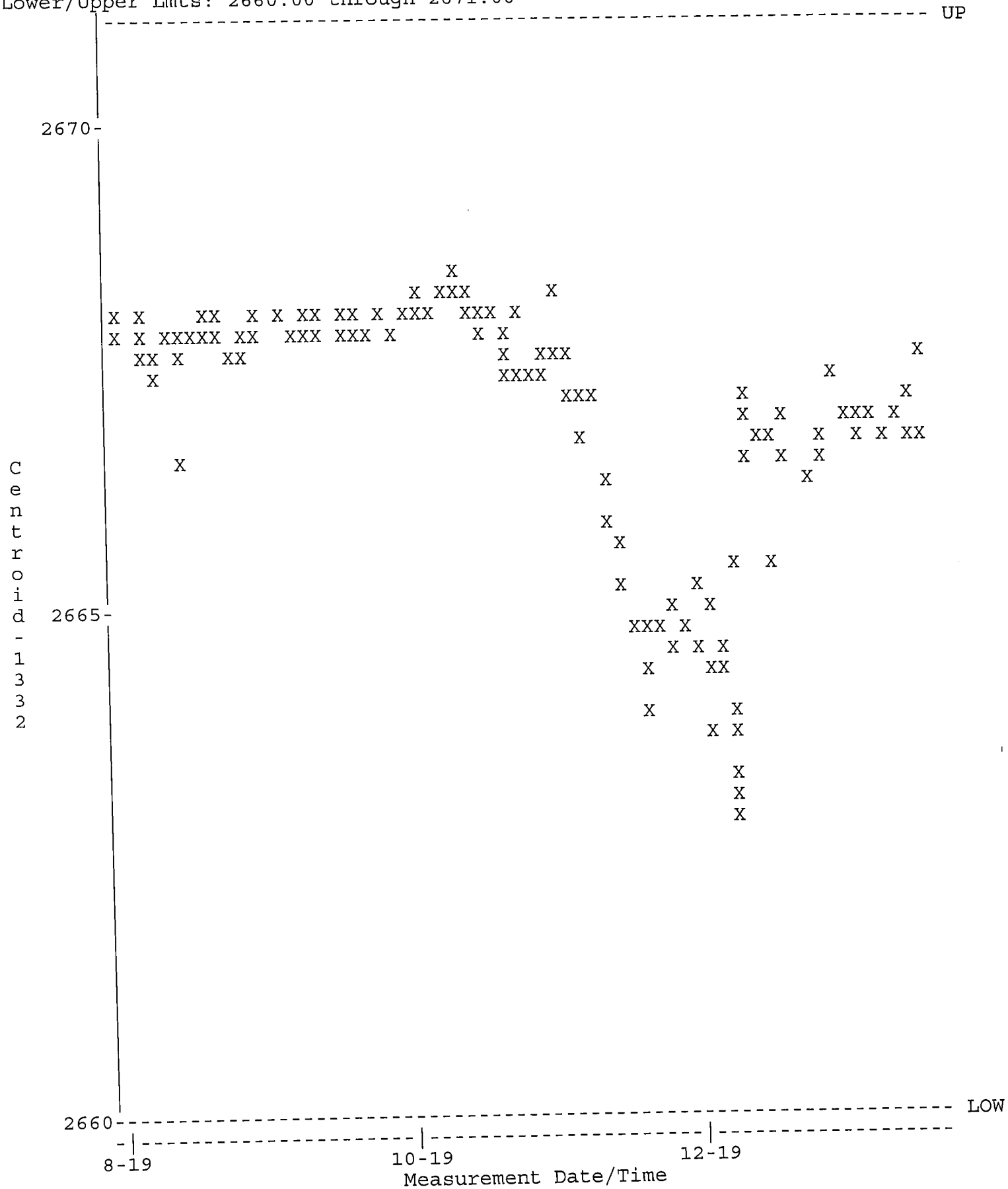
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



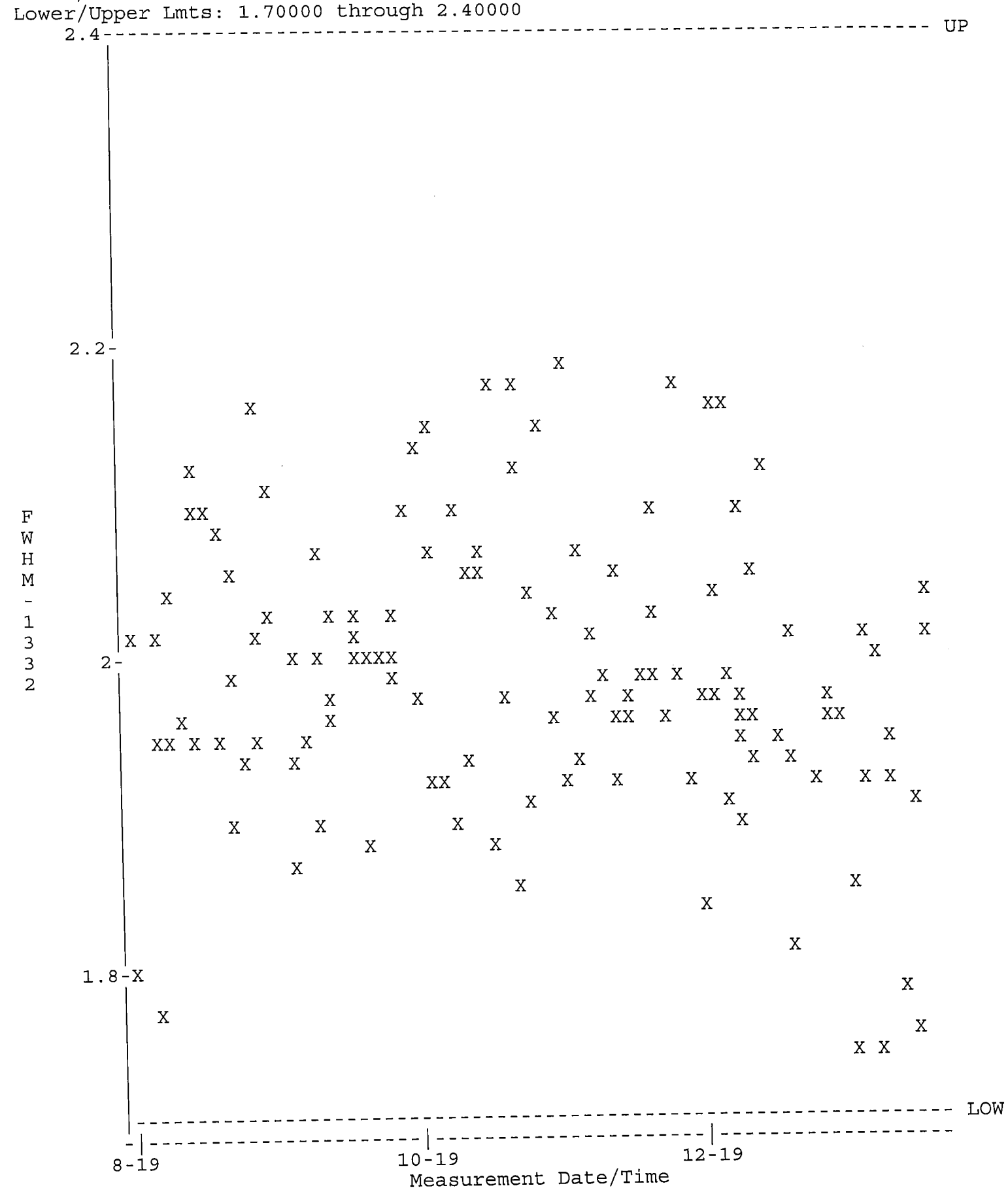
QA filename : DKB100:[GAMMA.QUALITY]TBE07_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



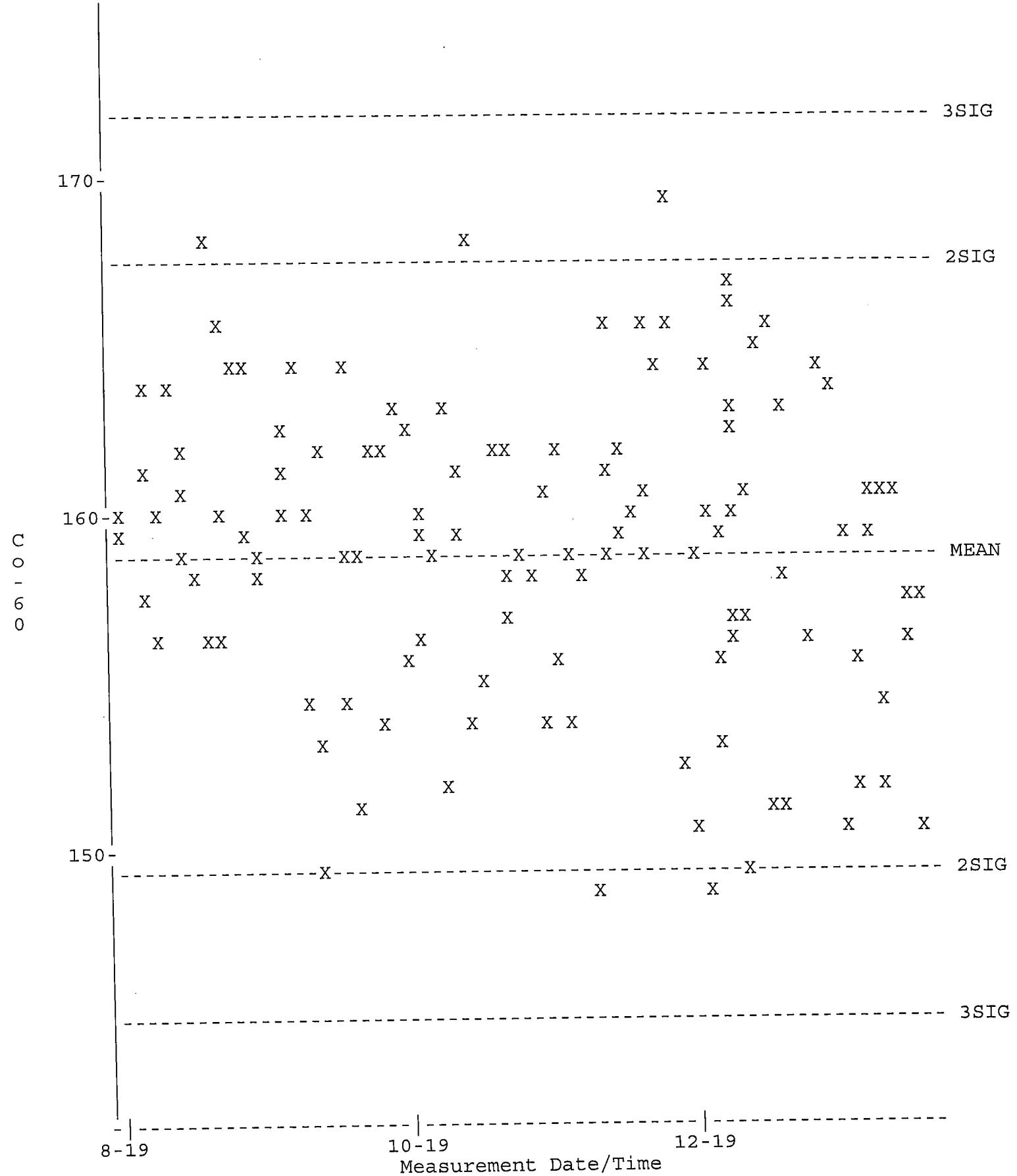
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



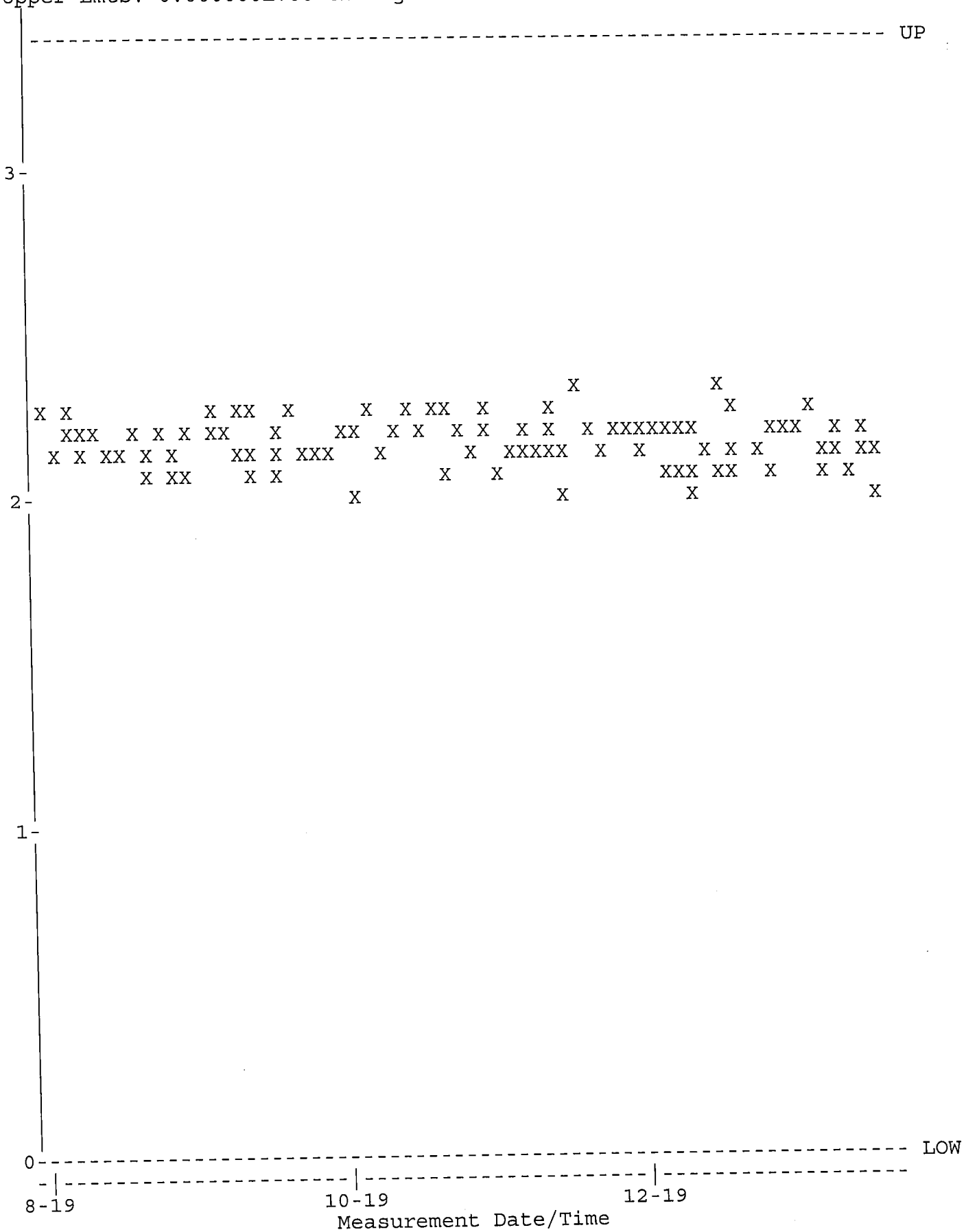
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



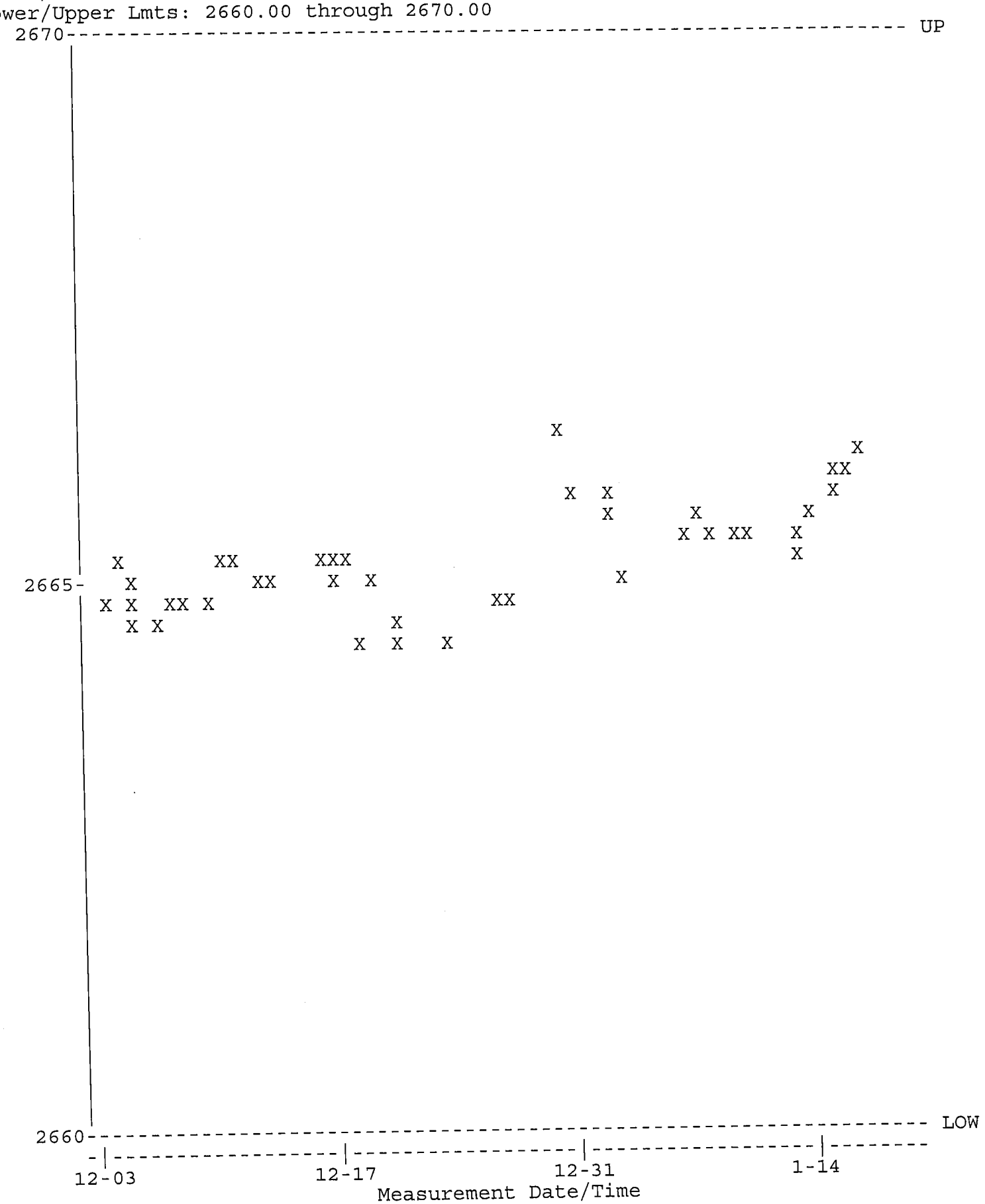
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



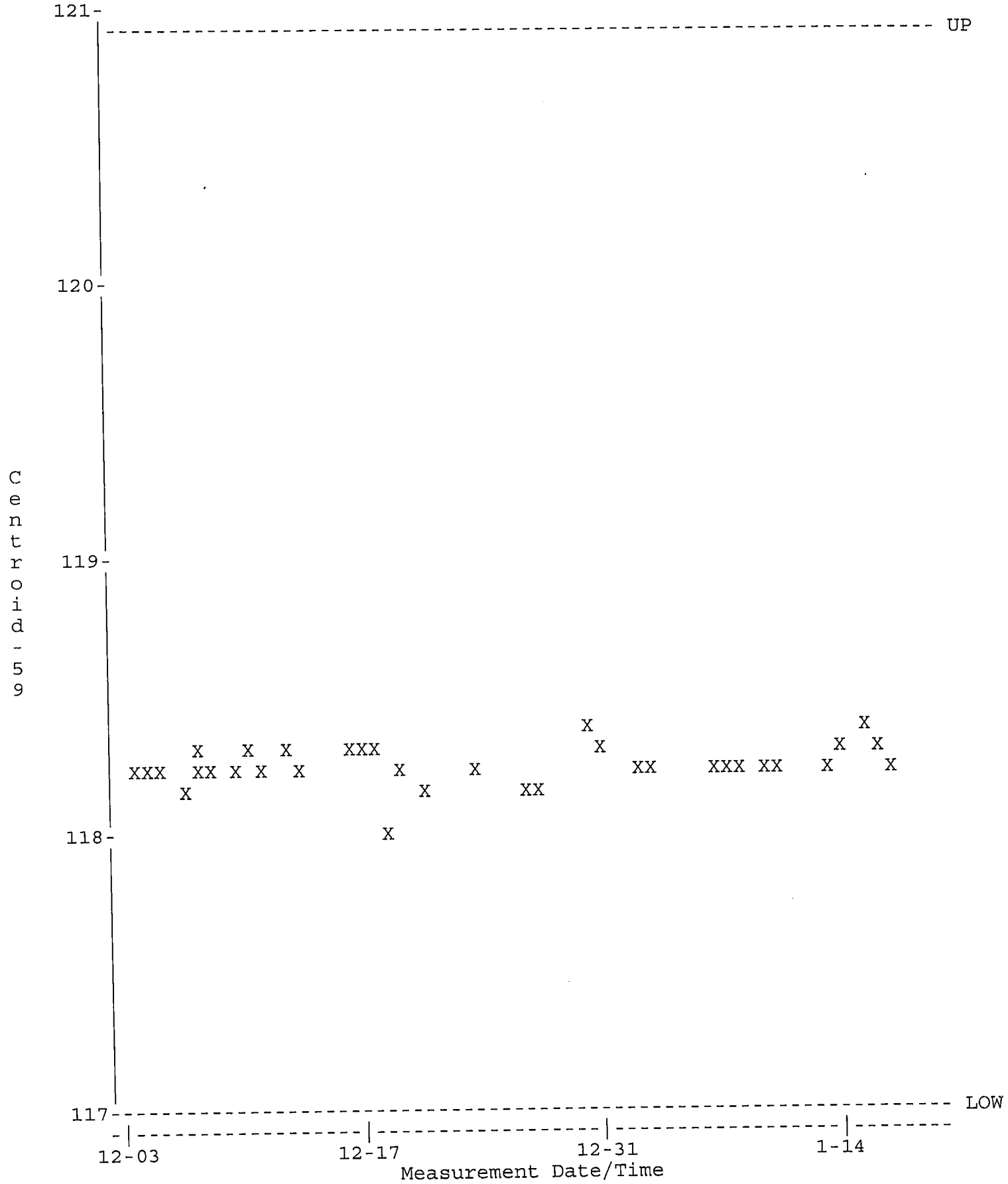
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



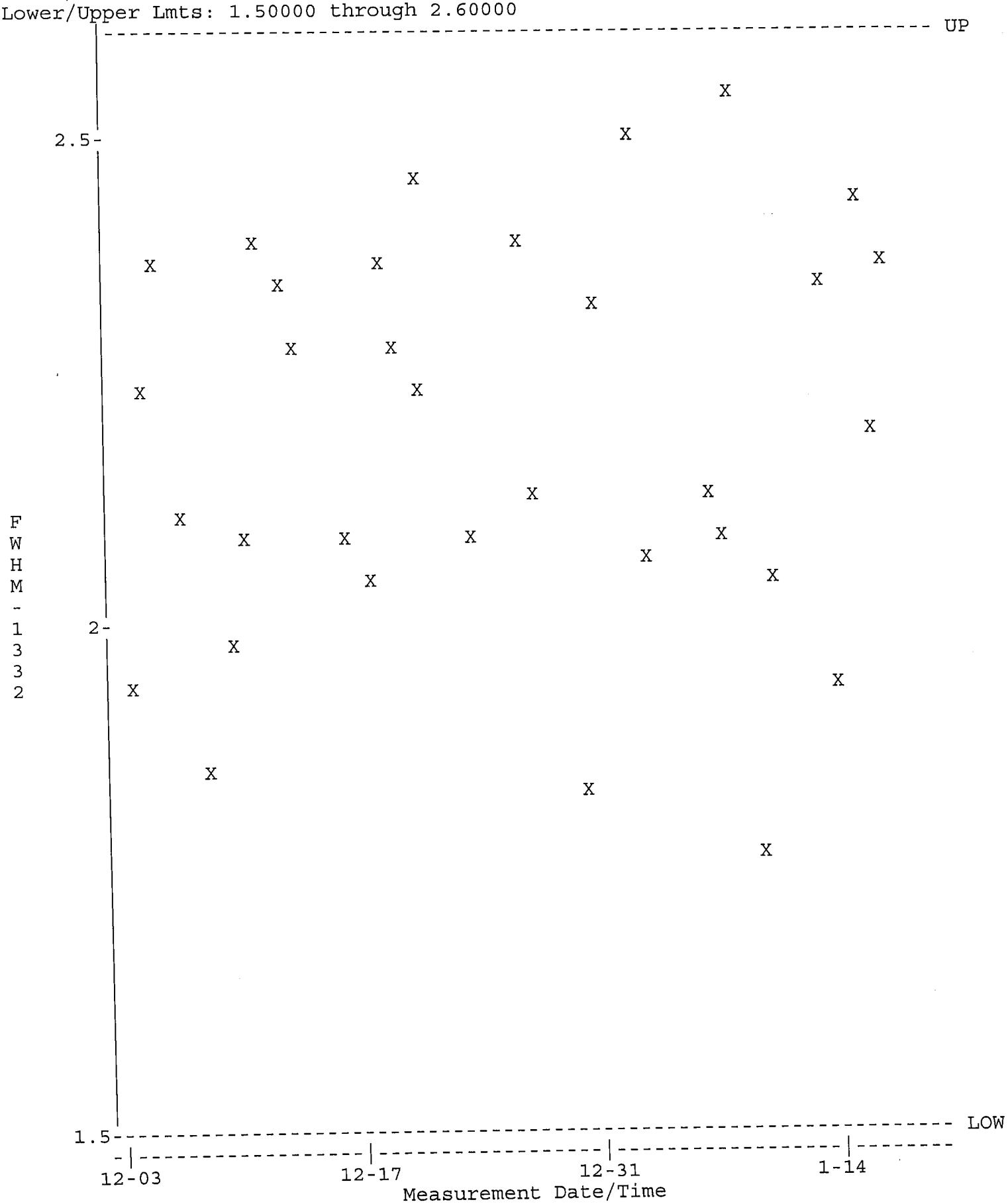
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



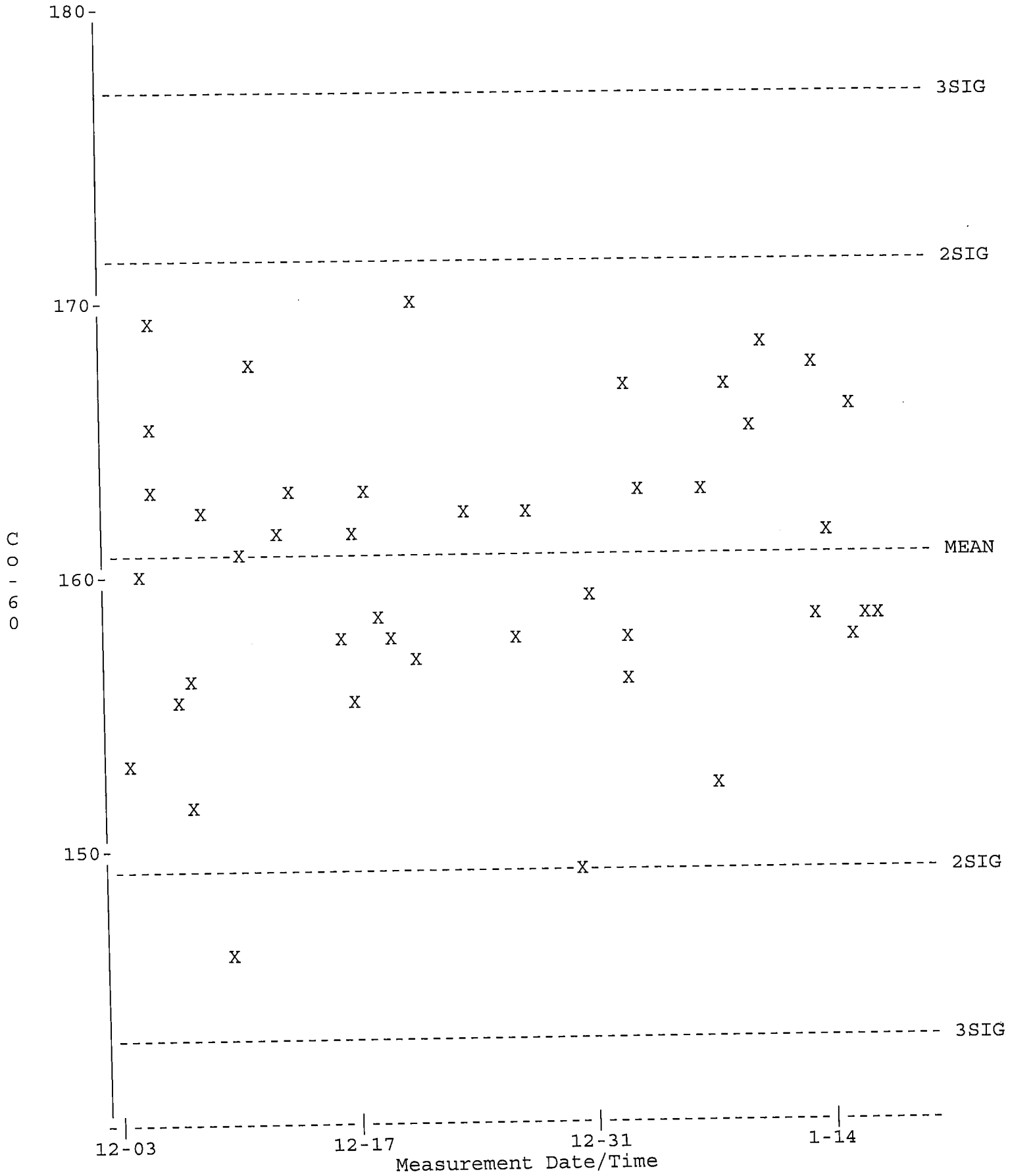
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



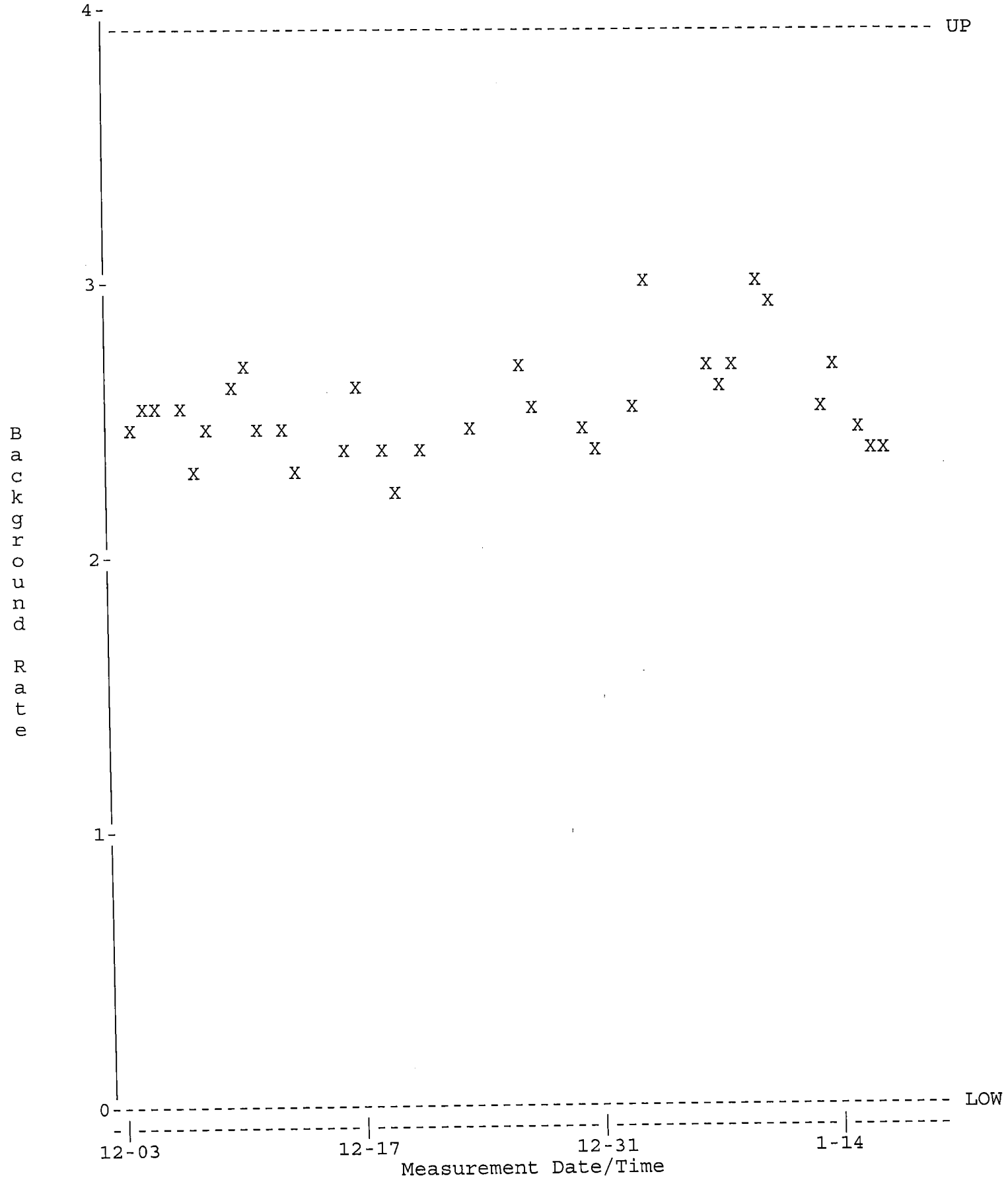
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



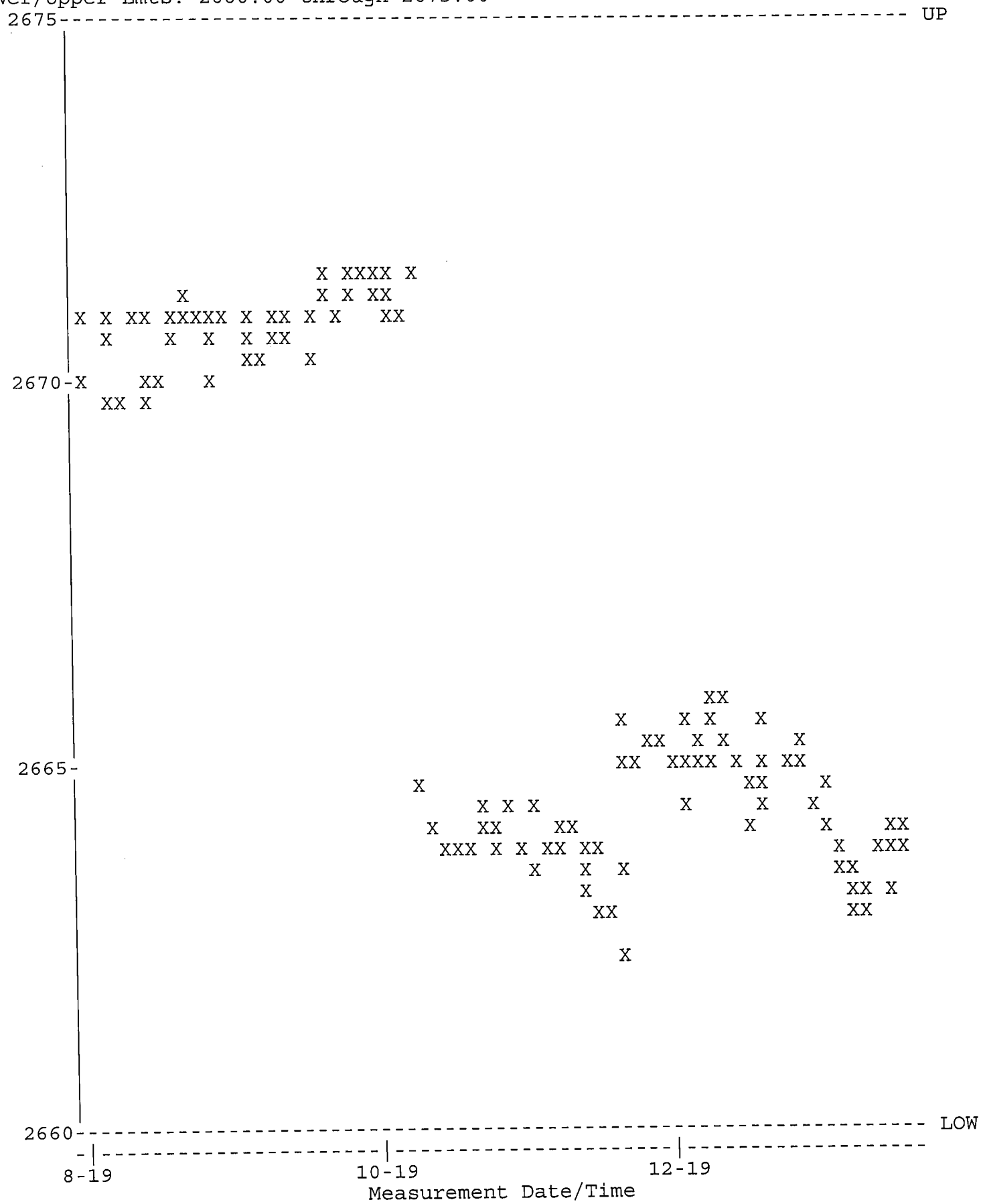
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



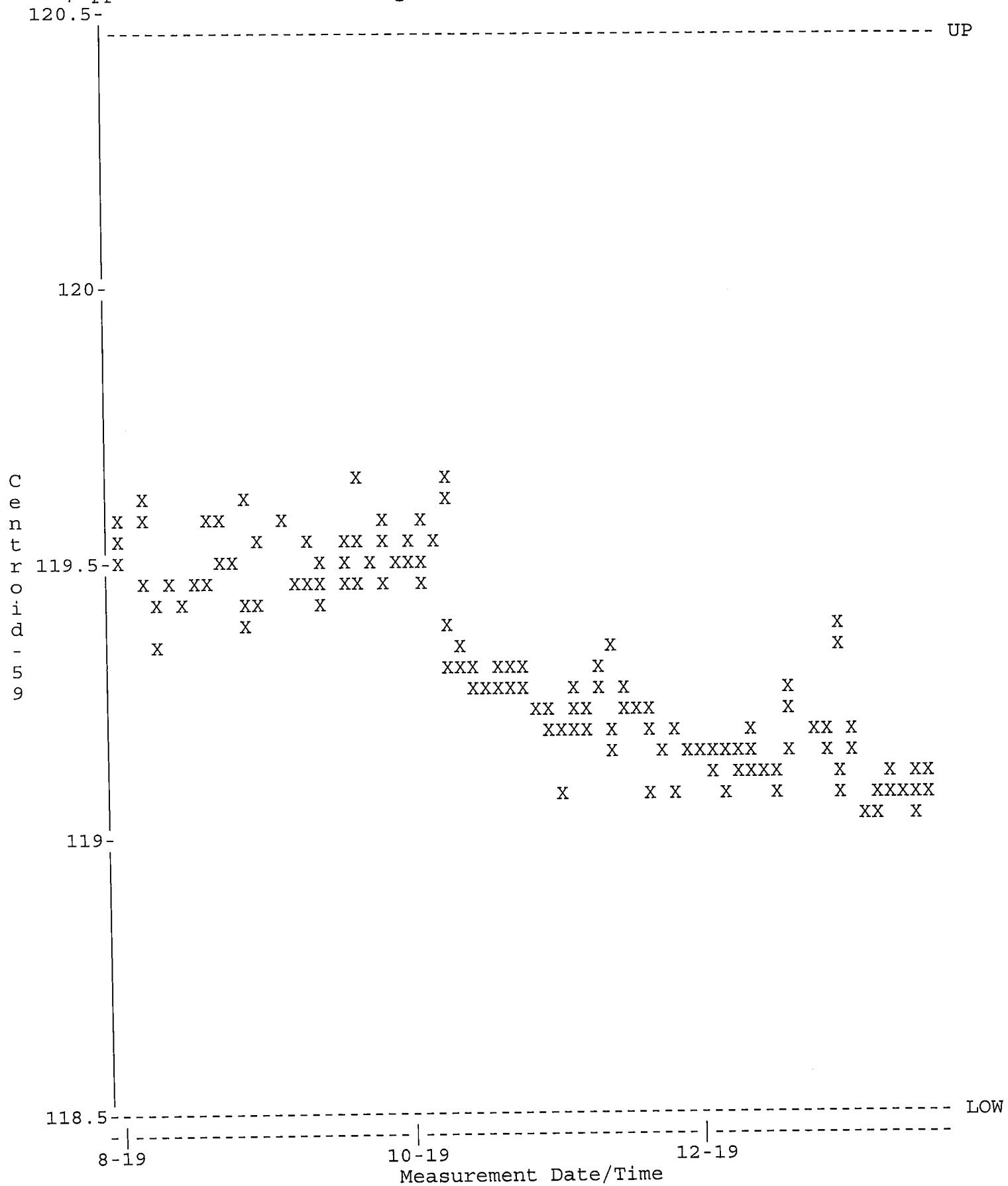
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



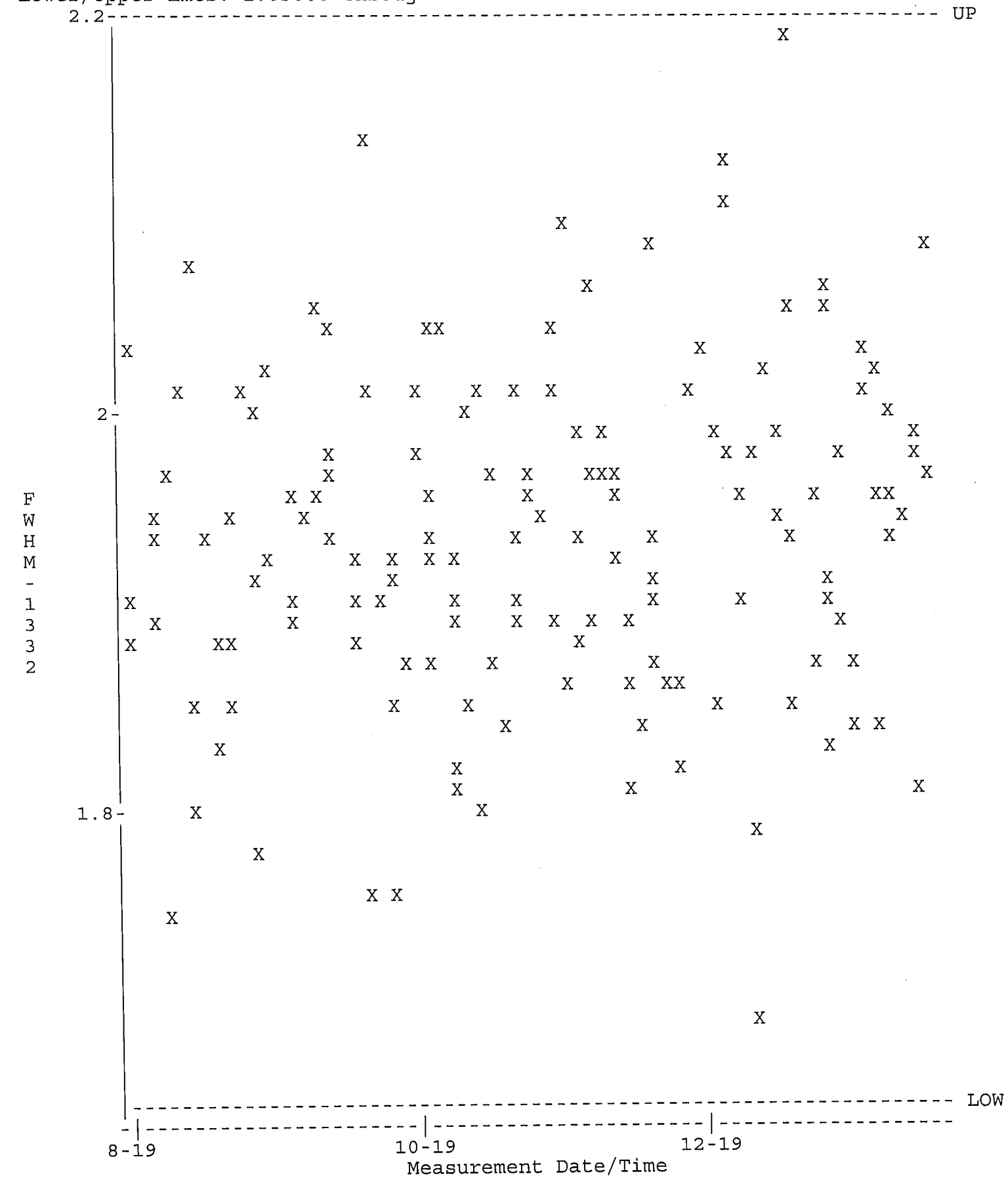
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



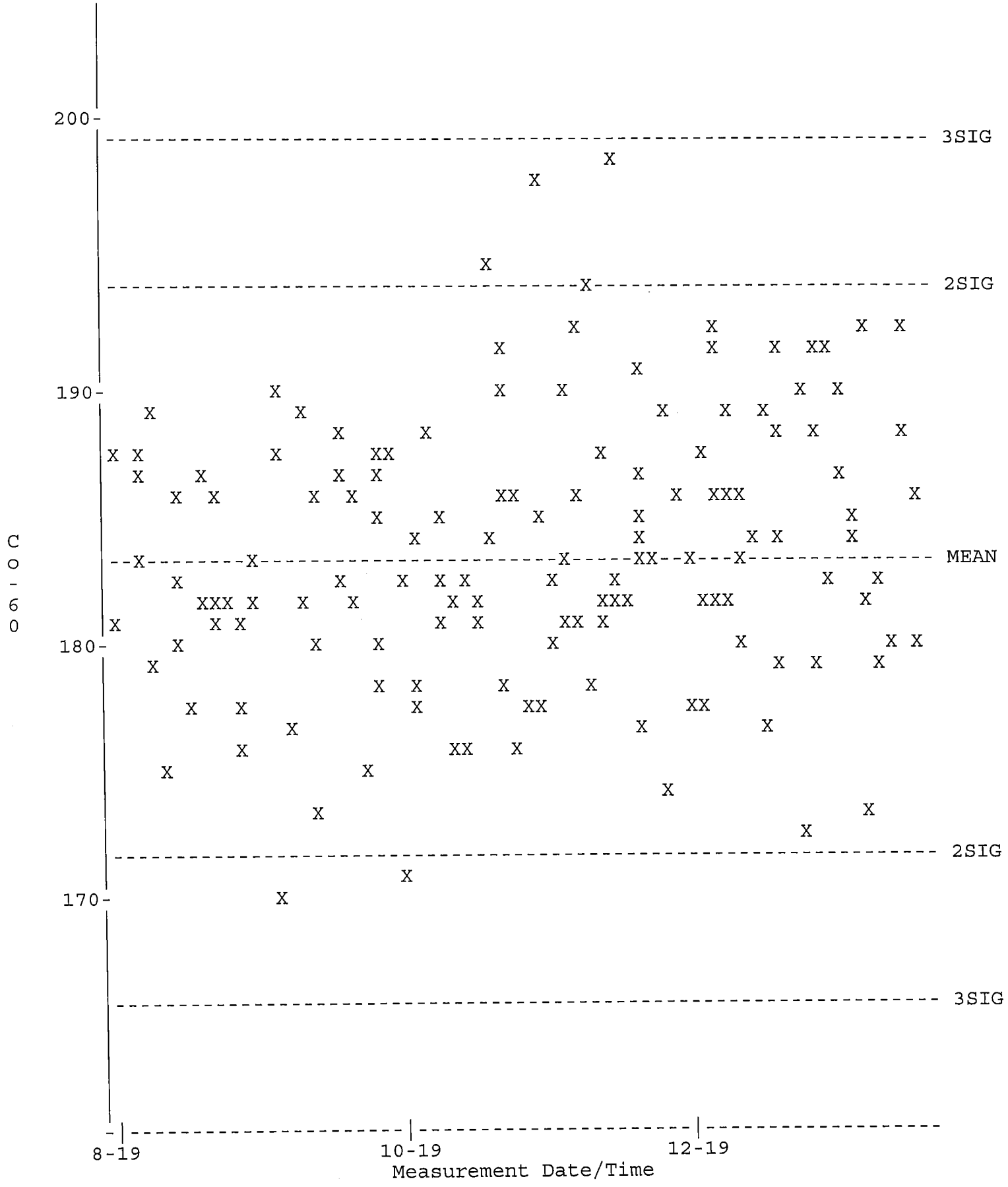
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



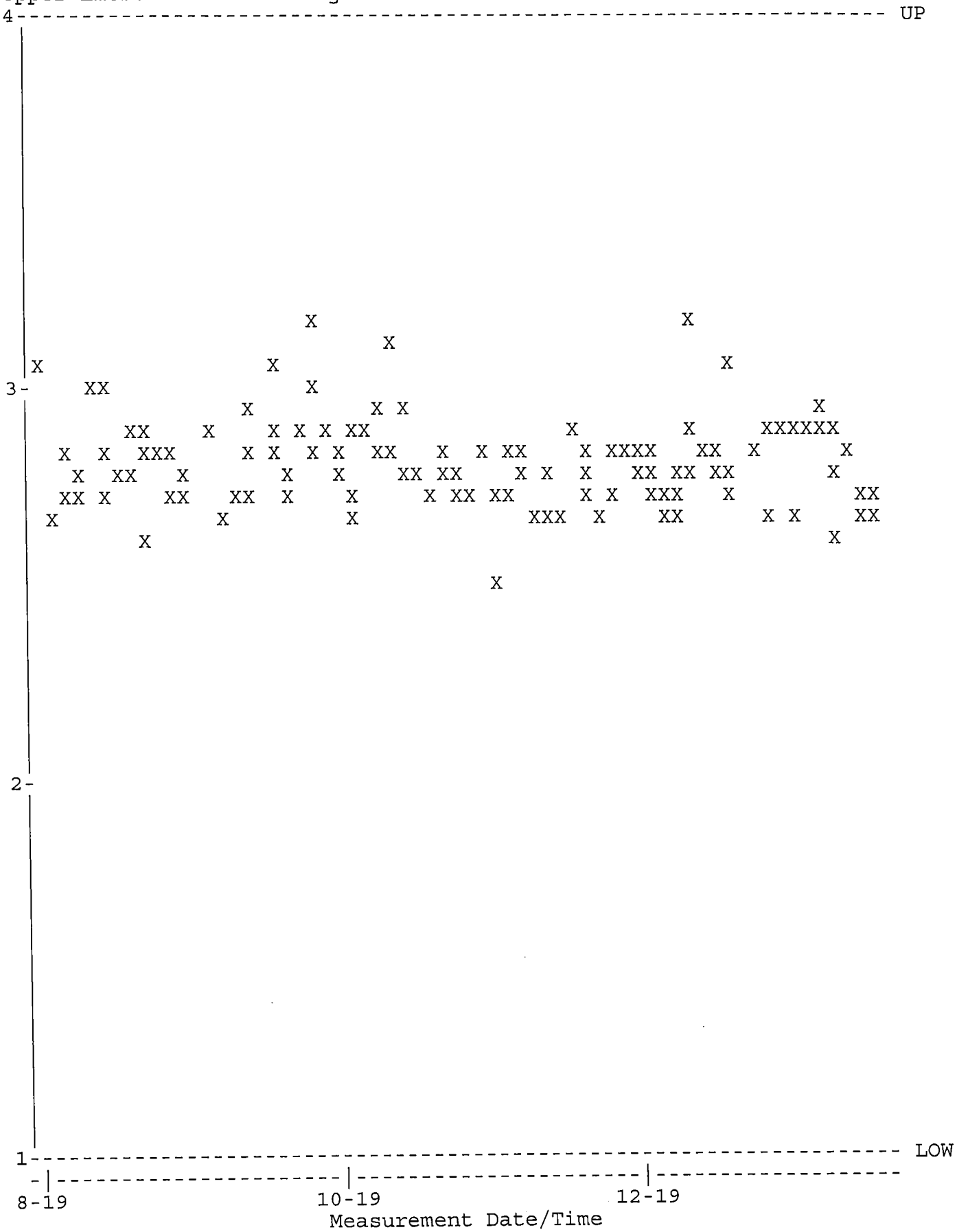
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



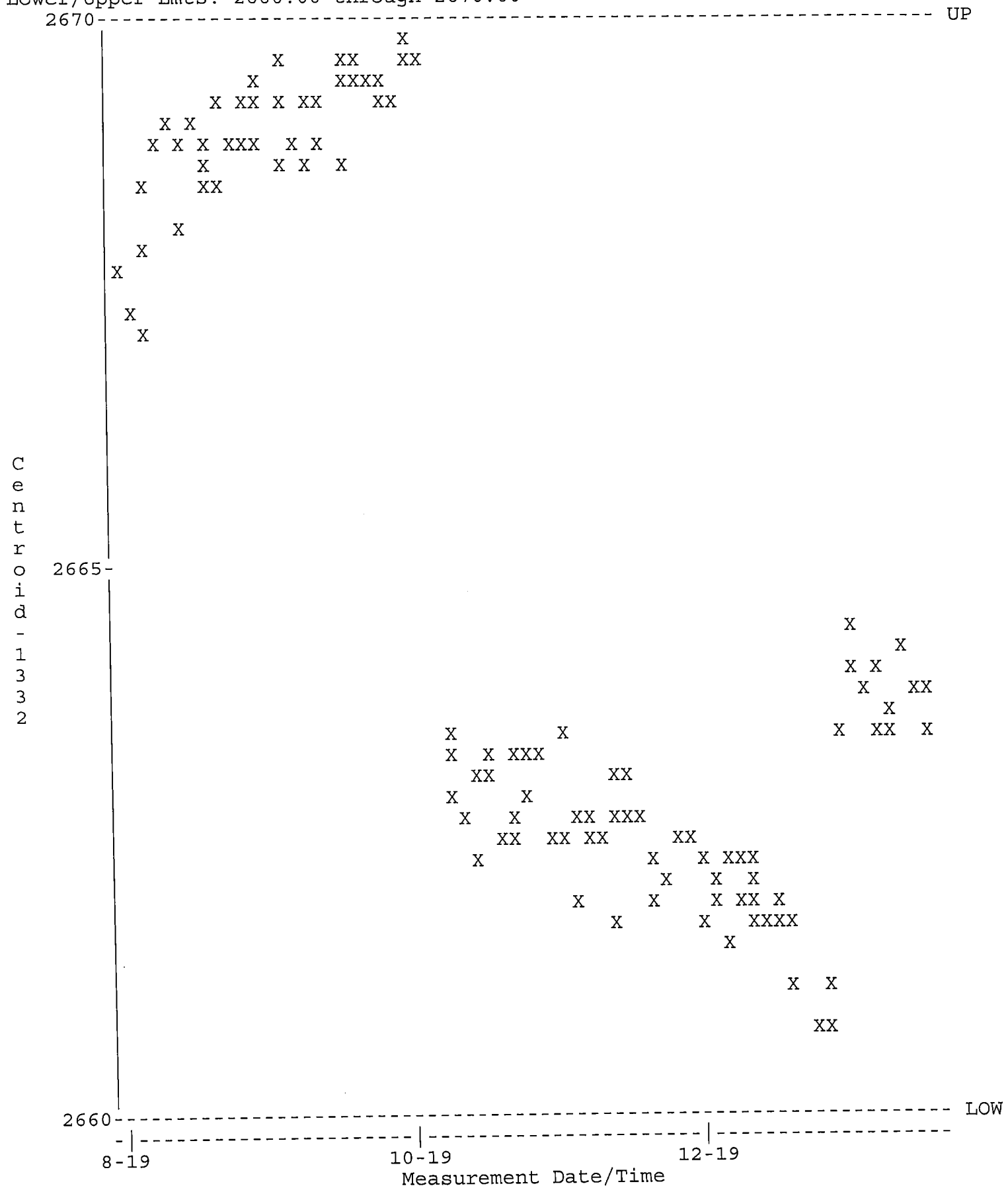
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



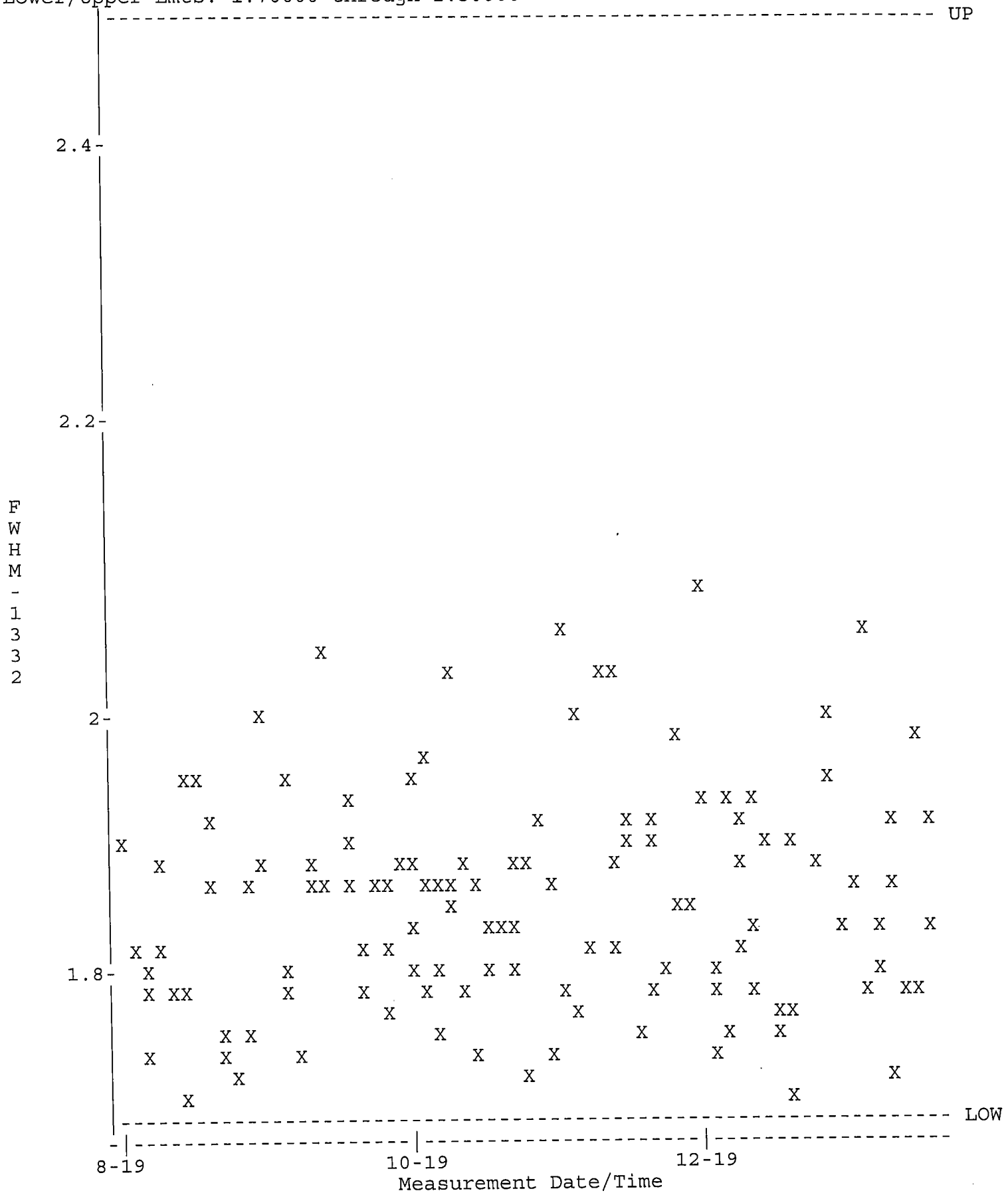
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



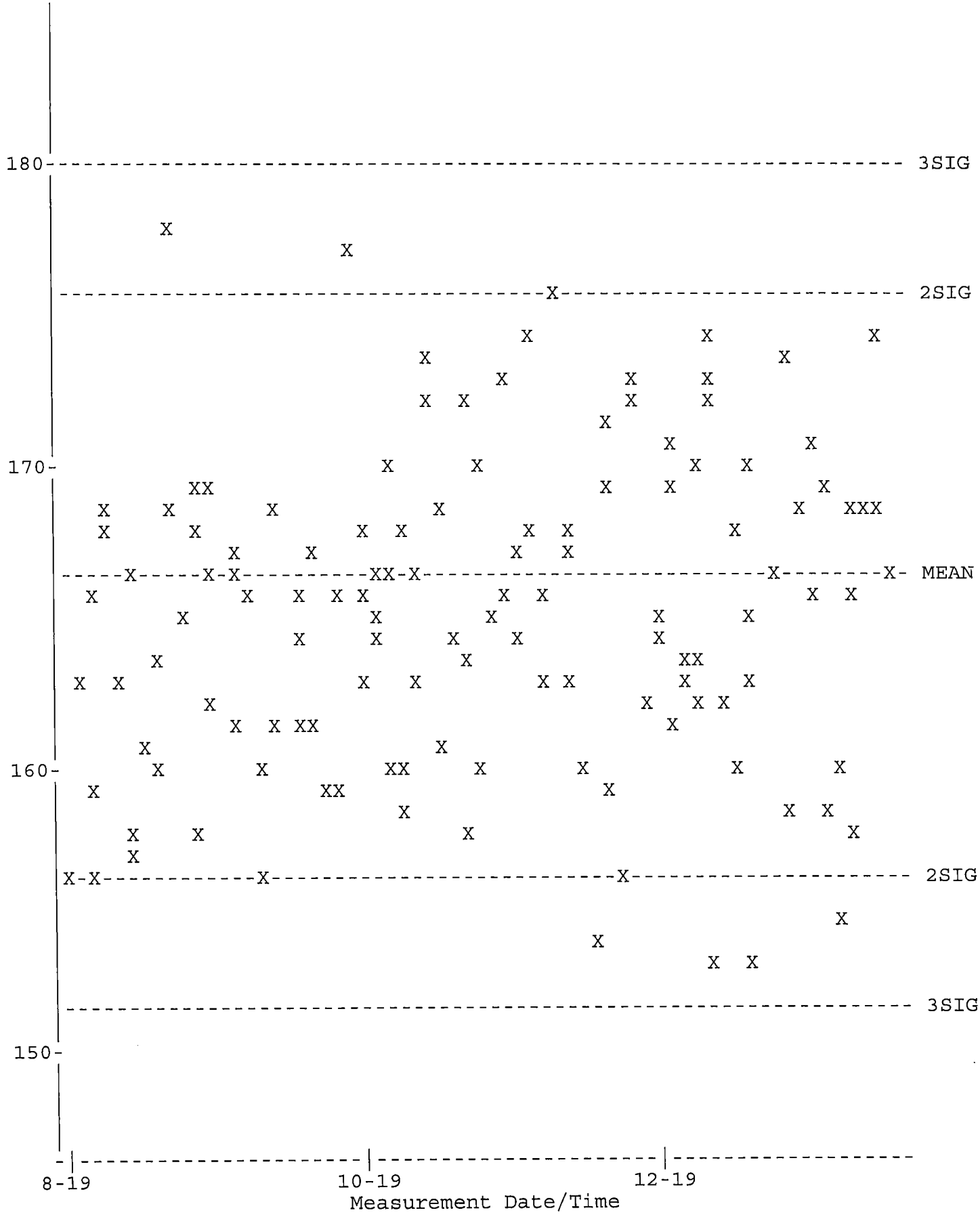
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



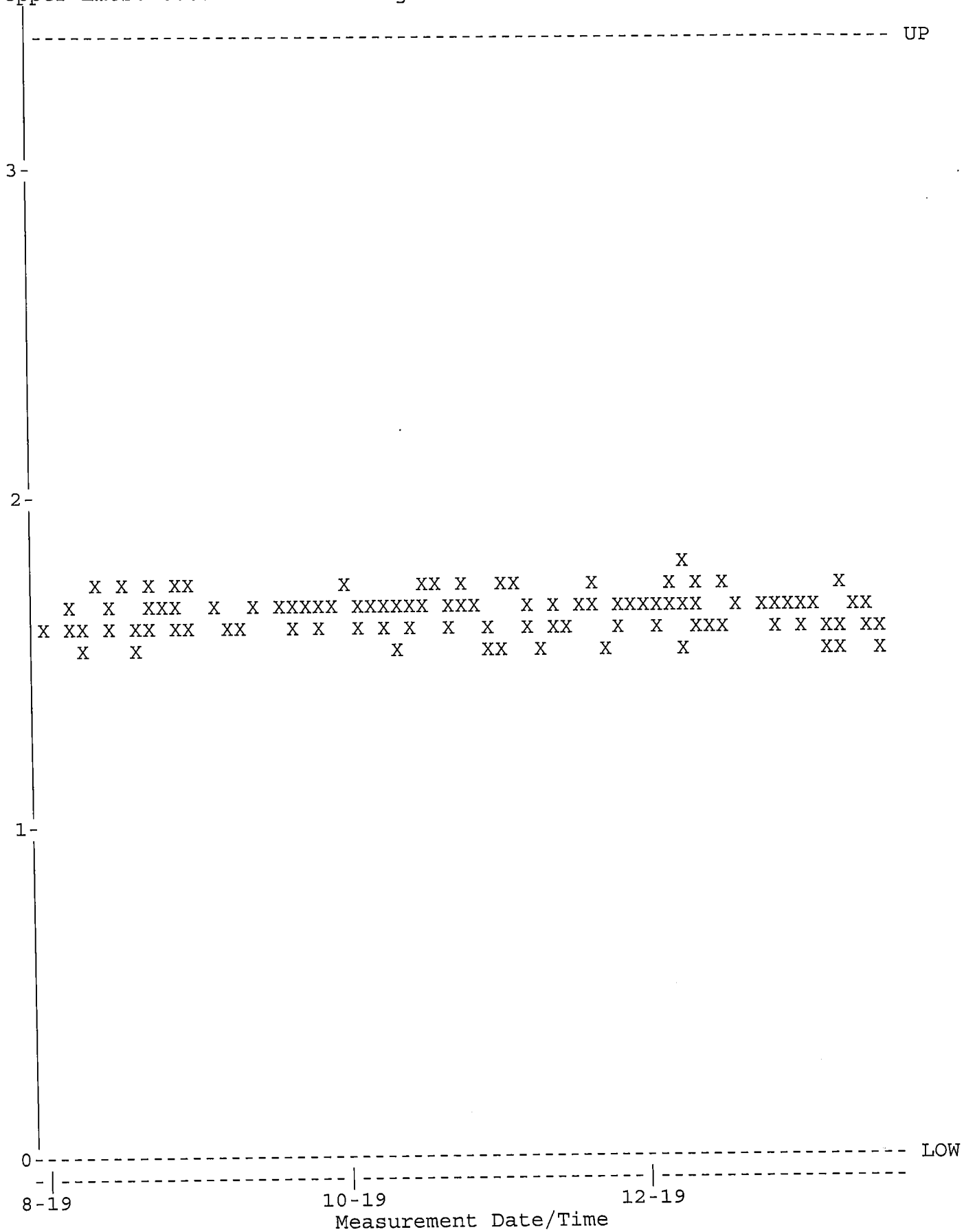
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



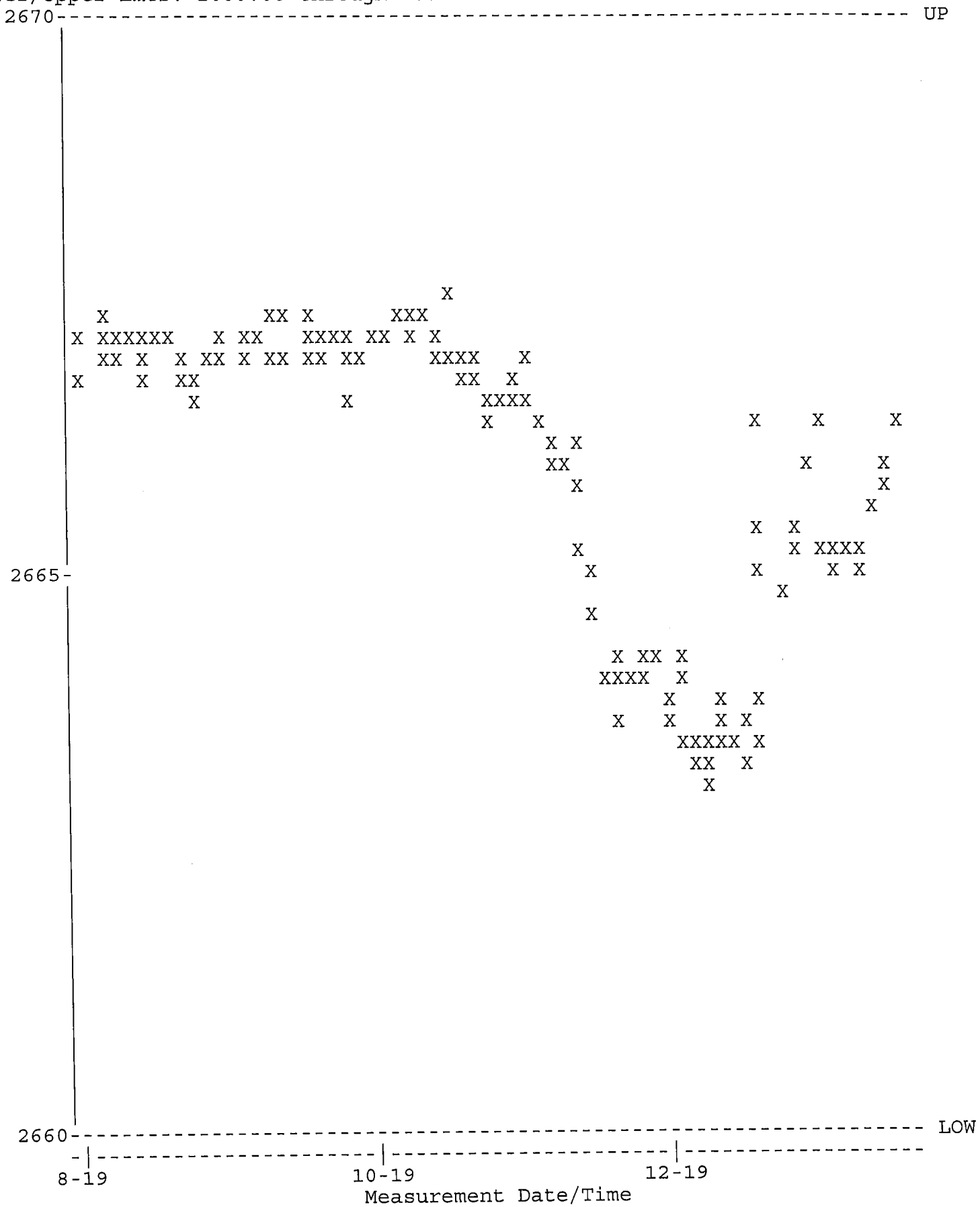
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



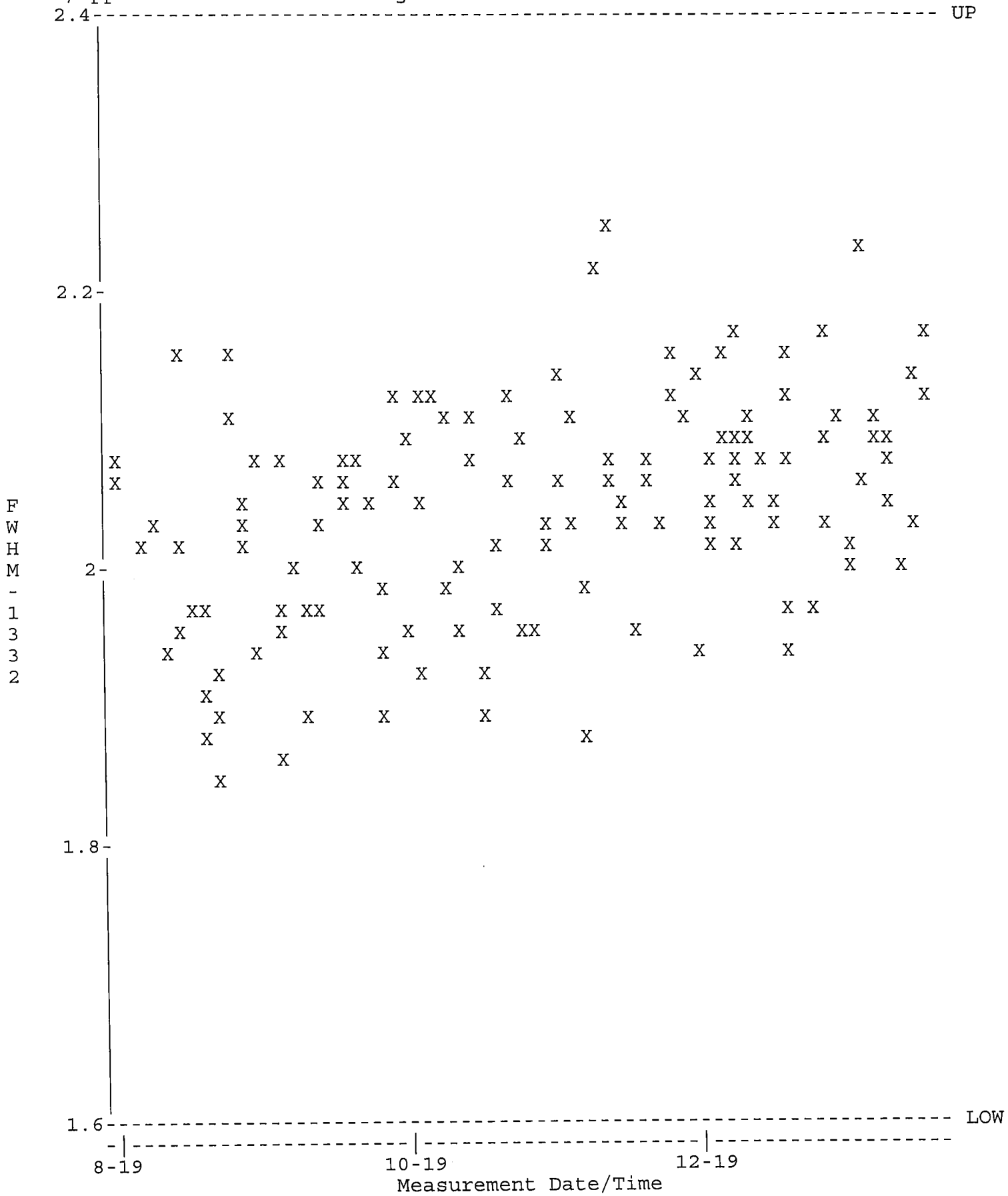
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



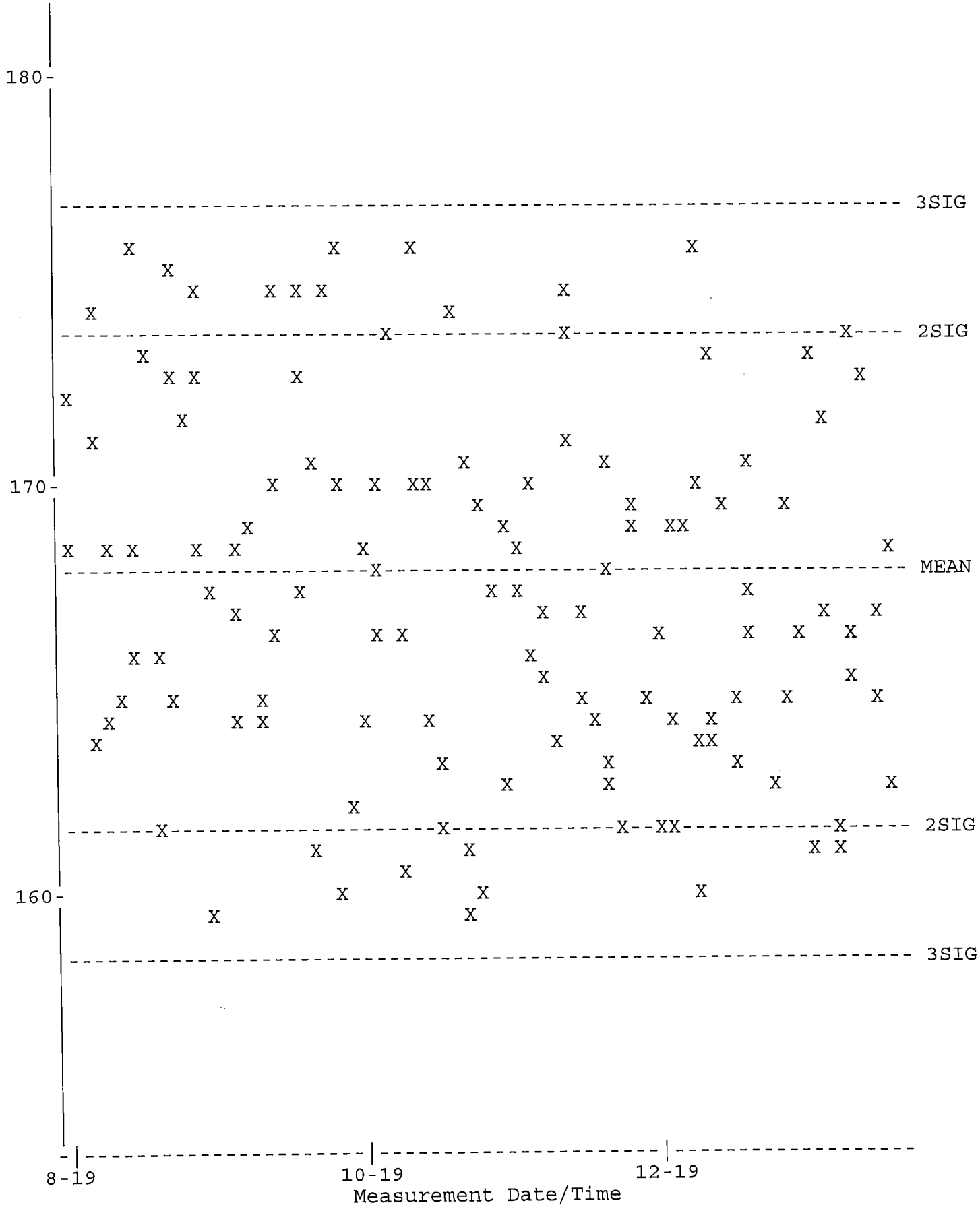
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



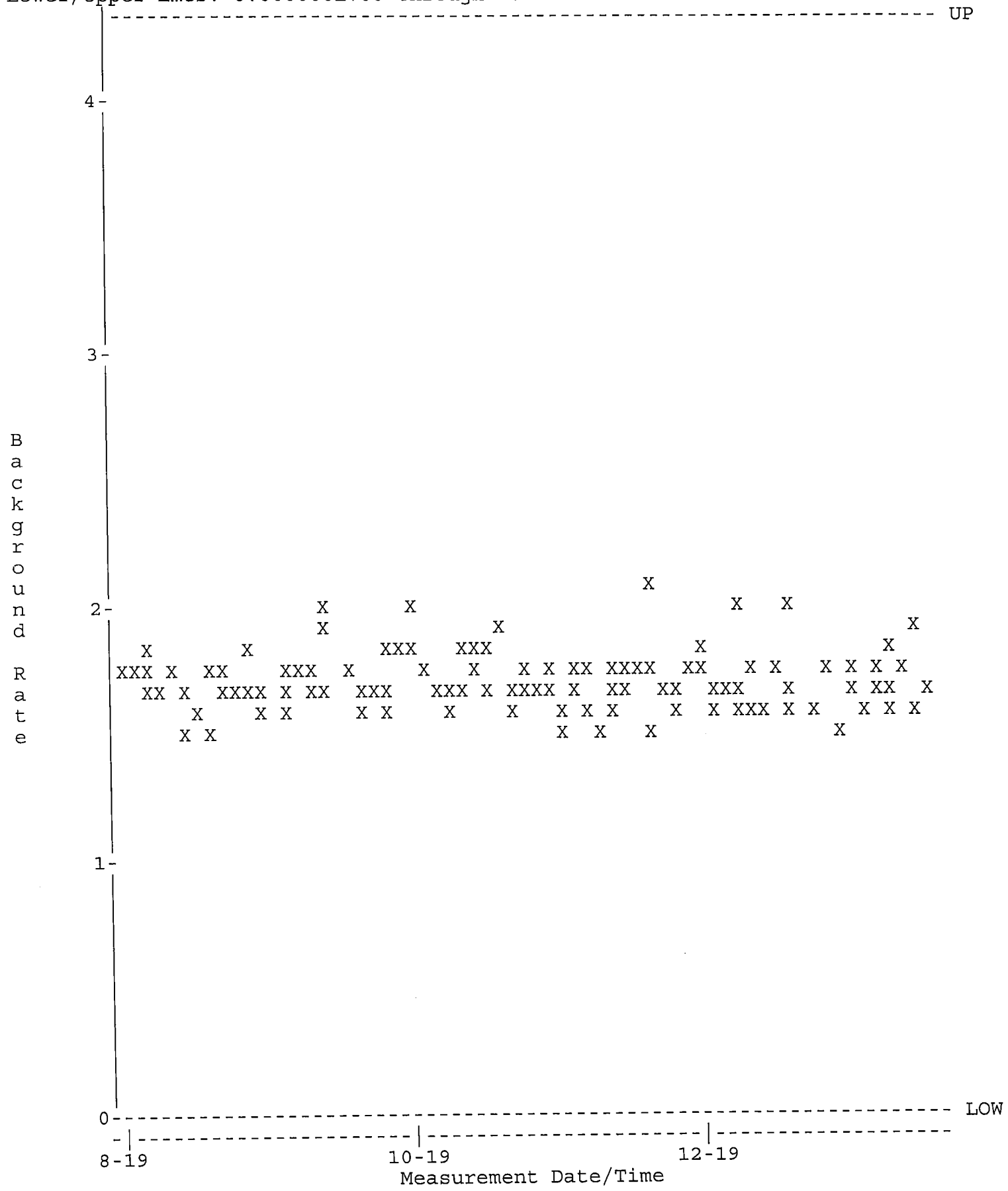
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KRA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:50:40.41
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:51.38

LIMS No., Customer Name, Client ID: L85483-1 S TEXAS

Sample ID : 13L85483-1
Sample Type : S
Quantity : 1.53480E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 8-DEC-2019 15:10:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 01:09:40.26
Live time : 0 01:09:38.98

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.59*	23	136	1.12	370.76	3.25E+00	5.48E-03	103.1	1.71E+00
2	1	238.46*	139	108	1.12	476.39	2.78E+00	3.33E-02	16.0	3.00E+00
3	1	295.06*	69	78	1.42	589.47	2.38E+00	1.65E-02	27.8	1.87E+00
4	1	351.81*	123	105	1.25	702.89	2.07E+00	2.94E-02	20.4	1.08E+00
5	1	510.94*	31	70	2.97	1020.94	1.54E+00	7.47E-03	76.9	1.26E+00
6	1	583.15*	22	51	1.72	1165.29	1.38E+00	5.22E-03	67.8	5.98E+00
7	1	609.00*	65	49	1.59	1216.98	1.34E+00	1.56E-02	26.6	5.80E-01
8	1	911.03*	33	8	1.77	1821.03	9.71E-01	8.00E-03	28.5	8.88E-01
9	1	1460.47*	89	28	1.86	2920.75	6.66E-01	2.13E-02	17.6	1.70E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85483-1 Acquisition date : 2-JAN-2020 12:40:51

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85483-1 Acquisition date : 2-JAN-2020 12:40:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.59	23	136	1.12	370.76	367	10	5.48E-03	****	3.25E+00	
1	238.46	139	108	1.12	476.39	473	8	3.33E-02	32.1	2.78E+00	
1	295.06	69	78	1.42	589.47	585	10	1.65E-02	55.5	2.38E+00	
1	351.81	123	105	1.25	702.89	697	13	2.94E-02	40.8	2.07E+00	
1	510.94	31	70	2.97	1020.94	1014	17	7.47E-03	****	1.54E+00	
1	583.15	22	51	1.72	1165.29	1160	10	5.22E-03	****	1.38E+00	
1	609.00	65	49	1.59	1216.98	1213	13	1.56E-02	53.3	1.34E+00	
1	911.03	33	8	1.77	1821.03	1813	15	8.00E-03	57.0	9.71E-01	
1	1460.47	89	28	1.86	2920.75	2914	12	2.13E-02	35.3	6.66E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.744E-03		6.604E-02	1.064E-01	0.000E+00	0.016

```
A,13L85483-1       ,01/02/2020 13:50,12/08/2019 15:10,   1.535E+02,L85483-1 S TEX
B,13L85483-1       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,   1.744E-03,   6.604E-02,   1.064E-01,,    0.016
```

Analyst: MBA

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:51:03.78
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:51.76

LIMS No., Customer Name, Client ID: L85483-2 S TEXAS

Sample ID	: 11L85483-2		Smple Date: 8-DEC-2019 15:15:00.0
Sample Type	: S		Geometry : 11S100121919
Quantity	: 1.50510E+02 g Dry		BKGFILE : 11BG122719MT
Start Channel	: 190	Energy Tol : 2.00000	Real Time : 0 01:10:03.13
End Channel	: 4090	Pk Srch Sens: 9.00000	Live time : 0 01:10:01.04
MDA Multiple	: 4.6600	Library Used: HUDSON	

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.60*	141	152	1.29	476.53	2.60E+00	3.34E-02	19.5	
2	0	352.20*	61	114	1.26	703.82	1.98E+00	1.46E-02	41.1	
3	0	511.30*	30	58	2.56	1022.15	1.48E+00	7.05E-03	76.9	
4	0	609.86*	50	70	2.02	1219.34	1.27E+00	1.20E-02	41.7	
5	0	1461.21*	109	4	1.19	2922.55	5.95E-01	2.60E-02	11.4	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85483-2 Acquisition date : 2-JAN-2020 12:40:51

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85483-2 Acquisition date : 2-JAN-2020 12:40:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.60	141	152	1.29	476.53	472	12	3.34E-02	39.1	2.60E+00	
0	352.20	61	114	1.26	703.82	697	15	1.46E-02	82.2	1.98E+00	
0	511.30	30	58	2.56	1022.15	1014	19	7.05E-03	****	1.48E+00	
0	609.86	50	70	2.02	1219.34	1211	16	1.20E-02	83.3	1.27E+00	
0	1461.21	109	4	1.19	2922.55	2915	16	2.60E-02	22.9	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.469E-02		6.103E-02	1.099E-01	0.000E+00	-0.134

```
A,11L85483-2       ,01/02/2020 13:51,12/08/2019 15:15,   1.505E+02,L85483-2 S TEX
B,11L85483-2       ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137   ,NO ,   -1.469E-02,   6.103E-02,   1.099E-01,,   -0.134
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:52:43.69
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:52.94

LIMS No., Customer Name, Client ID: L85483-3 S TEXAS

Sample ID	: 07L85483-3	Smple Date	: 8-DEC-2019 15:20:00.0
Sample Type	: S	Geometry	: 07S100121819
Quantity	: 1.44240E+02 g Dry	BKGFILE	: 07BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:11:42.85
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:11:42.20
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.27*	351	123	3.78	475.88	2.90E+00	8.17E-02	8.8	3.50E+01
2	1	295.36*	66	97	1.37	590.03	2.50E+00	1.52E-02	32.4	8.40E-01
3	1	352.00*	125	69	1.72	703.25	2.21E+00	2.91E-02	16.4	1.38E+00
4	1	583.44*	50	54	2.45	1165.91	1.52E+00	1.16E-02	35.8	1.59E+00
5	1	609.19*	73	50	1.90	1217.40	1.47E+00	1.70E-02	23.1	1.46E+00
6	1	911.51*	57	22	2.35	1821.68	1.07E+00	1.32E-02	21.3	1.16E+00
7	1	1460.81*	114	22	2.39	2919.39	7.39E-01	2.65E-02	14.3	1.45E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85483-3 Acquisition date : 2-JAN-2020 12:40:52

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85483-3 Acquisition date : 2-JAN-2020 12:40:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.27	351	123	3.78	475.88	471	16	8.17E-02	17.5	2.90E+00	
1	295.36	66	97	1.37	590.03	585	11	1.52E-02	64.8	2.50E+00	
1	352.00	125	69	1.72	703.25	698	11	2.91E-02	32.7	2.21E+00	
1	583.44	50	54	2.45	1165.91	1161	15	1.16E-02	71.6	1.52E+00	
1	609.19	73	50	1.90	1217.40	1213	12	1.70E-02	46.2	1.47E+00	
1	911.51	57	22	2.35	1821.68	1817	11	1.32E-02	42.6	1.07E+00	
1	1460.81	114	22	2.39	2919.39	2912	15	2.65E-02	28.5	7.39E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-7.904E-03		6.582E-02	1.084E-01	0.000E+00	-0.073

A,07L85483-3 ,01/02/2020 13:52,12/08/2019 15:20, 1.442E+02,L85483-3 S TEX
B,07L85483-3 ,HUDSON ,12/26/2019 10:37,07S100121819
C,CS-137 ,NO , -7.904E-03, 6.582E-02, 1.084E-01,, -0.073

Analyst: hBA

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:54:04.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:54.28

LIMS No., Customer Name, Client ID: L85483-4 S TEXAS

Sample ID : 01L85483-4
Sample Type : S
Quantity : 1.49100E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:25:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:13:02.62
Live time : 0 01:13:01.92

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.78*	36	149	1.33	371.79	4.00E+00	8.19E-03	72.6	9.35E-01
2	5	238.58*	268	51	1.16	477.31	3.47E+00	6.12E-02	7.7	1.91E+00
3	5	241.86	92	67	1.87	483.88	3.44E+00	2.10E-02	24.2	
4	1	295.17*	79	68	1.40	590.41	2.98E+00	1.80E-02	23.5	9.92E-01
5	1	338.20	39	83	1.62	676.41	2.68E+00	8.89E-03	46.2	2.62E+00
6	1	351.81*	129	107	1.20	703.61	2.60E+00	2.95E-02	19.7	2.38E+00
7	1	582.93*	45	47	1.56	1165.52	1.70E+00	1.03E-02	33.3	2.06E+00
8	1	609.05*	77	58	1.58	1217.73	1.64E+00	1.75E-02	23.5	6.09E+00
9	1	910.95*	52	16	2.94	1821.14	1.15E+00	1.20E-02	21.6	1.22E+00
10	1	968.76	50	23	3.02	1936.70	1.09E+00	1.14E-02	26.9	2.72E+00
11	1	1120.27*	32	10	2.03	2239.55	9.63E-01	7.21E-03	28.4	3.37E-01
12	1	1460.44*	152	0	2.15	2919.55	7.73E-01	3.47E-02	8.7	7.27E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85483-4 Acquisition date : 2-JAN-2020 12:40:54

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85483-4 Acquisition date : 2-JAN-2020 12:40:54

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.78	36	149	1.33	371.79	367	12	8.19E-03	****	4.00E+00	
5	238.58	268	51	1.16	477.31	470	22	6.12E-02	15.3	3.47E+00	
5	241.86	92	67	1.87	483.88	470	22	2.10E-02	48.3	3.44E+00	
1	295.17	79	68	1.40	590.41	586	10	1.80E-02	47.1	2.98E+00	
1	338.20	39	83	1.62	676.41	671	10	8.89E-03	92.4	2.68E+00	
1	351.81	129	107	1.20	703.61	697	14	2.95E-02	39.3	2.60E+00	
1	582.93	45	47	1.56	1165.52	1159	11	1.03E-02	66.6	1.70E+00	
1	609.05	77	58	1.58	1217.73	1213	11	1.75E-02	47.1	1.64E+00	
1	910.95	52	16	2.94	1821.14	1815	13	1.20E-02	43.3	1.15E+00	
1	968.76	50	23	3.02	1936.70	1931	16	1.14E-02	53.9	1.09E+00	
1	1120.27	32	10	2.03	2239.55	2233	13	7.21E-03	56.9	9.63E-01	
1	1460.44	152	0	2.15	2919.55	2912	15	3.47E-02	17.5	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.689E-02		4.556E-02	7.979E-02	0.000E+00	0.212

```
A,01L85483-4       ,01/02/2020 13:54,12/08/2019 15:25,   1.491E+02,L85483-4 S TEX
B,01L85483-4       ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137   ,NO ,   1.689E-02,   4.556E-02,   7.979E-02,,    0.212
```

Analyst: KBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 15:57:25.86
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:37:49.81

LIMS No., Customer Name, Client ID: L85483-5 S TEXAS

Sample ID : 07L85483-5
Sample Type : S
Quantity : 1.62390E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:30:00.0
Geometry : 07S100121819
BKGFILE : 07BG122719MT
Real Time : 0 01:19:32.54
Live time : 0 01:19:31.83

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.77*	167	151	1.13	476.88	2.89E+00	3.50E-02	16.3	3.49E-01
2	1	295.40*	72	97	1.24	590.11	2.50E+00	1.51E-02	29.6	9.88E-01
3	1	352.07*	121	75	1.74	703.40	2.21E+00	2.54E-02	19.1	7.65E-01
4	1	583.20*	68	95	1.96	1165.44	1.52E+00	1.43E-02	35.8	4.69E-01
5	1	609.50*	77	69	1.93	1218.01	1.47E+00	1.62E-02	26.8	7.40E-01
6	1	911.38*	70	20	2.60	1821.42	1.07E+00	1.47E-02	18.0	3.22E+00
7	1	971.18	36	50	1.18	1940.94	1.02E+00	7.53E-03	54.7	1.62E+01
8	1	1120.00*	40	13	2.86	2238.35	9.08E-01	8.48E-03	27.8	2.42E+00
9	1	1460.68*	149	3	2.37	2919.13	7.40E-01	3.12E-02	10.0	8.10E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85483-5 Acquisition date : 2-JAN-2020 14:37:49

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85483-5 Acquisition date : 2-JAN-2020 14:37:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.77	167	151	1.13	476.88	471	10	3.50E-02	32.6	2.89E+00	
1	295.40	72	97	1.24	590.11	585	10	1.51E-02	59.2	2.50E+00	
1	352.07	121	75	1.74	703.40	696	15	2.54E-02	38.2	2.21E+00	
1	583.20	68	95	1.96	1165.44	1157	18	1.43E-02	71.7	1.52E+00	
1	609.50	77	69	1.93	1218.01	1213	14	1.62E-02	53.6	1.47E+00	
1	911.38	70	20	2.60	1821.42	1815	13	1.47E-02	36.1	1.07E+00	
1	971.18	36	50	1.18	1940.94	1930	22	7.53E-03	****	1.02E+00	
1	1120.00	40	13	2.86	2238.35	2230	17	8.48E-03	55.6	9.08E-01	
1	1460.68	149	3	2.37	2919.13	2910	16	3.12E-02	20.0	7.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.529E-02		5.617E-02	9.782E-02	0.000E+00	0.259

```
A,07L85483-5       ,01/02/2020 15:57,12/08/2019 15:30,   1.624E+02,L85483-5 S TEX
B,07L85483-5       ,HUDSON              ,12/26/2019 10:37,07S100121819
C,CS-137  ,NO ,   2.529E-02,   5.617E-02,   9.782E-02,,    0.259
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:54:33.79
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:55.92

LIMS No., Customer Name, Client ID: L85483-6 S TEXAS

Sample ID : 14L85483-6
Sample Type : S
Quantity : 1.57010E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:35:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:13:26.55
Live time : 0 01:13:25.60

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.52*	124	118	0.91	474.35	2.91E+00	2.82E-02	18.4	2.26E+00
2	1	295.07*	81	58	1.28	587.47	2.44E+00	1.84E-02	22.2	1.17E+00
3	1	351.87*	127	74	1.21	701.12	2.09E+00	2.88E-02	16.1	2.29E+00
4	1	583.42	50	27	1.43	1164.40	1.32E+00	1.15E-02	23.9	2.70E+00
5	1	609.39*	83	30	1.74	1216.37	1.26E+00	1.89E-02	18.0	7.41E-01
6	1	910.88	36	14	1.63	1819.69	8.70E-01	8.22E-03	28.2	7.31E-01
7	1	1460.69*	104	2	2.36	2920.27	5.68E-01	2.35E-02	11.4	1.99E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85483-6 Acquisition date : 2-JAN-2020 12:40:55

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85483-6 Acquisition date : 2-JAN-2020 12:40:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.52	124	118	0.91	474.35	470	9	2.82E-02	36.8	2.91E+00	
1	295.07	81	58	1.28	587.47	582	11	1.84E-02	44.5	2.44E+00	
1	351.87	127	74	1.21	701.12	696	11	2.88E-02	32.2	2.09E+00	
1	583.42	50	27	1.43	1164.40	1159	10	1.15E-02	47.8	1.32E+00	
1	609.39	83	30	1.74	1216.37	1211	13	1.89E-02	36.0	1.26E+00	
1	910.88	36	14	1.63	1819.69	1813	14	8.22E-03	56.3	8.70E-01	
1	1460.69	104	2	2.36	2920.27	2911	14	2.35E-02	22.8	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.325E-02		5.011E-02	7.139E-02	0.000E+00	-0.466

```
A,14L85483-6       ,01/02/2020 13:54,12/08/2019 15:35,   1.570E+02,L85483-6 S TEX
B,14L85483-6       ,HUDSON              ,12/30/2019 12:20,14S100121919
C,CS-137   ,NO ,   -3.325E-02,   5.011E-02,   7.139E-02,,   -0.466
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 13:54:55.24
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 2-JAN-2020 12:40:58.15

LIMS No., Customer Name, Client ID: L85483-7 S TEXAS

Sample ID : 02L85483-7
Sample Type : S
Quantity : 1.70390E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:40:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:13:47.10
Live time : 0 01:13:46.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.66*	136	117	1.07	464.51	2.91E+00	3.08E-02	15.5	
2	0	295.39*	90	48	1.15	578.79	2.46E+00	2.04E-02	18.1	
3	0	351.95*	137	34	1.06	692.72	2.12E+00	3.09E-02	12.6	
4	0	583.12*	62	30	1.46	1158.45	1.37E+00	1.41E-02	23.3	
5	0	609.38*	85	36	1.13	1211.34	1.32E+00	1.91E-02	18.4	
6	0	910.78*	43	0	1.57	1818.61	9.21E-01	9.71E-03	16.5	
7	0	1460.51*	133	7	2.16	2926.39	6.04E-01	3.01E-02	10.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85483-7 Acquisition date : 2-JAN-2020 12:40:58

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85483-7 Acquisition date : 2-JAN-2020 12:40:58

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.66	136	117	1.07	464.51	460	8	3.08E-02	31.0	2.91E+00	
0	295.39	90	48	1.15	578.79	575	9	2.04E-02	36.1	2.46E+00	
0	351.95	137	34	1.06	692.72	688	11	3.09E-02	25.2	2.12E+00	
0	583.12	62	30	1.46	1158.45	1150	15	1.41E-02	46.7	1.37E+00	
0	609.38	85	36	1.13	1211.34	1206	11	1.91E-02	36.7	1.32E+00	
0	910.78	43	0	1.57	1818.61	1813	11	9.71E-03	32.9	9.21E-01	
0	1460.51	133	7	2.16	2926.39	2920	13	3.01E-02	19.9	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	6.072E-03		4.037E-02	6.645E-02	0.000E+00	0.091

```
A,02L85483-7       ,01/02/2020 13:54,12/08/2019 15:40,   1.704E+02,L85483-7 S TEX
B,02L85483-7       ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137  ,NO ,    6.072E-03,   4.037E-02,   6.645E-02,,    0.091
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 15:59:15.62
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:39:42.27

LIMS No., Customer Name, Client ID: L85483-8 S TEXAS

Sample ID : 13L85483-8
Sample Type : S
Quantity : 1.58540E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 8-DEC-2019 15:45:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 01:19:23.70
Live time : 0 01:19:22.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.61*	10	154	1.34	370.80	3.25E+00	2.13E-03	235.7	2.75E+00
2	1	238.52*	192	100	0.98	476.50	2.78E+00	4.03E-02	11.5	2.22E+00
3	1	295.36*	76	67	1.21	590.09	2.37E+00	1.60E-02	24.5	2.72E+00
4	1	351.78*	80	91	1.17	702.84	2.07E+00	1.68E-02	28.2	5.43E+00
5	1	510.73*	17	107	3.06	1020.53	1.54E+00	3.65E-03	158.3	1.10E+00
6	1	582.44*	78	33	2.14	1163.88	1.38E+00	1.64E-02	19.4	1.02E+00
7	1	609.19*	93	53	1.80	1217.36	1.34E+00	1.94E-02	20.0	1.57E+00
8	1	910.84*	27	20	1.65	1820.65	9.71E-01	5.65E-03	37.5	1.69E+00
9	1	1460.48*	109	0	2.03	2920.78	6.66E-01	2.29E-02	12.2	1.39E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85483-8 Acquisition date : 2-JAN-2020 14:39:42

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85483-8 Acquisition date : 2-JAN-2020 14:39:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.61	10	154	1.34	370.80	367	9	2.13E-03	****	3.25E+00	
1	238.52	192	100	0.98	476.50	473	7	4.03E-02	23.0	2.78E+00	
1	295.36	76	67	1.21	590.09	585	9	1.60E-02	49.1	2.37E+00	
1	351.78	80	91	1.17	702.84	697	11	1.68E-02	56.3	2.07E+00	
1	510.73	17	107	3.06	1020.53	1014	18	3.65E-03	****	1.54E+00	
1	582.44	78	33	2.14	1163.88	1158	12	1.64E-02	38.9	1.38E+00	
1	609.19	93	53	1.80	1217.36	1212	11	1.94E-02	39.9	1.34E+00	
1	910.84	27	20	1.65	1820.65	1817	8	5.65E-03	75.0	9.71E-01	
1	1460.48	109	0	2.03	2920.78	2915	13	2.29E-02	24.4	6.66E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-6.454E-04		5.946E-02	9.536E-02	0.000E+00	-0.007

```
A,13L85483-8       ,01/02/2020 15:59,12/08/2019 15:45,   1.585E+02,L85483-8 S TEX
B,13L85483-8       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,   -6.454E-04,   5.946E-02,   9.536E-02,,   -0.007
```

Analyst: KBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 15:59:34.06
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:39:45.18

LIMS No., Customer Name, Client ID: L85483-9 S TEXAS

Sample ID : 15L85483-9
Sample Type : S
Quantity : 1.63190E+02 g Dry
Start Channel : 80 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:50:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 01:19:45.25
Live time : 0 01:19:44.70

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.42*	142	140	1.13	472.34	3.18E+00	2.96E-02	16.2	6.56E+00
2	1	295.39*	79	90	1.52	586.55	2.67E+00	1.66E-02	28.5	1.28E+00
3	1	351.62*	118	55	1.58	699.27	2.28E+00	2.47E-02	17.3	2.61E+00
4	1	511.22*	16	41	3.46	1019.19	1.60E+00	3.33E-03	124.0	1.56E+00
5	1	582.86*	59	33	2.08	1162.80	1.41E+00	1.23E-02	24.8	1.71E+00
6	1	609.38*	59	60	1.98	1215.96	1.35E+00	1.24E-02	34.4	2.32E+00
7	1	911.22*	33	13	1.70	1821.01	9.28E-01	6.88E-03	29.8	4.07E-01
8	1	1460.67*	102	7	2.37	2922.34	6.13E-01	2.14E-02	12.0	8.66E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85483-9 Acquisition date : 2-JAN-2020 14:39:45

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85483-9 Acquisition date : 2-JAN-2020 14:39:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.42	142	140	1.13	472.34	467	9	2.96E-02	32.4	3.18E+00	
1	295.39	79	90	1.52	586.55	579	14	1.66E-02	56.9	2.67E+00	
1	351.62	118	55	1.58	699.27	692	14	2.47E-02	34.7	2.28E+00	
1	511.22	16	41	3.46	1019.19	1011	18	3.33E-03	****	1.60E+00	
1	582.86	59	33	2.08	1162.80	1155	13	1.23E-02	49.6	1.41E+00	
1	609.38	59	60	1.98	1215.96	1209	17	1.24E-02	68.8	1.35E+00	
1	911.22	33	13	1.70	1821.01	1814	13	6.88E-03	59.6	9.28E-01	
1	1460.67	102	7	2.37	2922.34	2915	14	2.14E-02	24.1	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.363E-02		4.935E-02	8.828E-02	0.000E+00	0.381

```
A,15L85483-9      ,01/02/2020 15:59,12/08/2019 15:50,   1.632E+02,L85483-9 S TEX
B,15L85483-9      ,HUDSON             ,12/27/2019 10:10,15S100121719
C,CS-137  ,NO ,   3.363E-02,   4.935E-02,   8.828E-02,,    0.381
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 16:00:24.53
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:37:49.59

LIMS No., Customer Name, Client ID: L85483-10 S TEXAS

Sample ID : 01L85483-10
Sample Type : S
Quantity : 1.37120E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:55:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:22:26.31
Live time : 0 01:22:25.51

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.76*	58	128	1.50	371.75	4.00E+00	1.17E-02	41.1	1.82E+00
2	2	238.62*	254	83	0.97	477.40	3.47E+00	5.14E-02	8.7	5.69E-01
3	2	241.68	64	114	1.41	483.51	3.44E+00	1.30E-02	32.0	
4	1	295.29*	134	72	1.60	590.64	2.98E+00	2.71E-02	16.0	1.66E+00
5	1	337.96	58	56	1.37	675.92	2.68E+00	1.18E-02	26.9	9.21E-01
6	1	351.98*	163	67	1.32	703.95	2.60E+00	3.30E-02	13.4	2.16E+00
7	1	510.77*	20	84	2.78	1021.31	1.91E+00	4.01E-03	133.1	9.87E-01
8	1	583.04*	112	34	2.39	1165.74	1.70E+00	2.26E-02	15.6	4.08E+00
9	1	609.14*	120	59	1.32	1217.90	1.64E+00	2.42E-02	17.2	1.77E+00
10	1	911.28*	62	38	3.13	1821.80	1.15E+00	1.25E-02	30.3	2.26E+00
11	1	968.38	47	12	2.11	1935.94	1.09E+00	9.53E-03	20.5	1.26E+00
12	1	1460.45*	156	7	1.92	2919.58	7.73E-01	3.16E-02	9.5	4.66E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85483-10 Acquisition date : 2-JAN-2020 14:37:49

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85483-10 Acquisition date : 2-JAN-2020 14:37:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.76	58	128	1.50	371.75	367	10	1.17E-02	82.2	4.00E+00	
2	238.62	254	83	0.97	477.40	472	21	5.14E-02	17.4	3.47E+00	
2	241.68	64	114	1.41	483.51	472	21	1.30E-02	64.1	3.44E+00	
1	295.29	134	72	1.60	590.64	584	12	2.71E-02	31.9	2.98E+00	
1	337.96	58	56	1.37	675.92	671	9	1.18E-02	53.8	2.68E+00	
1	351.98	163	67	1.32	703.95	697	12	3.30E-02	26.9	2.60E+00	
1	510.77	20	84	2.78	1021.31	1013	20	4.01E-03	****	1.91E+00	
1	583.04	112	34	2.39	1165.74	1158	15	2.26E-02	31.3	1.70E+00	
1	609.14	120	59	1.32	1217.90	1211	14	2.42E-02	34.3	1.64E+00	
1	911.28	62	38	3.13	1821.80	1811	25	1.25E-02	60.6	1.15E+00	
1	968.38	47	12	2.11	1935.94	1932	11	9.53E-03	41.0	1.09E+00	
1	1460.45	156	7	1.92	2919.58	2912	15	3.16E-02	18.9	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.263E-02		4.864E-02	8.377E-02	0.000E+00	0.151

```
A,01L85483-10      ,01/02/2020 16:00,12/08/2019 15:55,   1.371E+02,L85483-10 S TE
B,01L85483-10      ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137   ,NO ,   1.263E-02,   4.864E-02,   8.377E-02,,    0.151
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 16:00:52.19
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:37:52.17

LIMS No., Customer Name, Client ID: L85483-11 S TEXAS

Sample ID : 14L85483-11
Sample Type : S
Quantity : 2.78590E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 16:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:22:50.45
Live time : 0 01:22:49.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.96*	127	139	1.36	369.20	2.64E+00	2.55E-02	19.1	1.38E+00
2	1	238.54*	454	195	0.94	474.39	2.24E+00	9.14E-02	7.6	9.65E-01
3	1	241.96	121	94	1.14	481.22	2.22E+00	2.43E-02	16.2	2.02E+00
4	1	295.16*	167	142	1.03	587.66	1.89E+00	3.37E-02	16.4	1.41E+00
5	1	338.46	143	96	2.48	674.28	1.68E+00	2.87E-02	17.4	6.57E+00
6	1	351.88*	261	90	1.22	701.13	1.63E+00	5.25E-02	9.7	2.65E+00
7	1	510.75*	47	84	2.52	1018.99	1.17E+00	9.52E-03	49.0	1.30E+00
8	1	583.46	117	51	1.46	1164.46	1.03E+00	2.35E-02	15.9	4.25E+00
9	1	609.21*	190	49	1.40	1216.00	9.95E-01	3.81E-02	11.1	1.44E+00
10	1	911.31	122	4	1.66	1820.56	6.94E-01	2.45E-02	10.3	1.42E+00
11	1	969.11	53	33	1.67	1936.23	6.58E-01	1.06E-02	26.2	4.86E-01
12	1	1120.59	44	31	1.99	2239.43	5.79E-01	8.79E-03	31.5	3.28E-01
13	1	1461.02*	224	11	1.83	2920.93	4.61E-01	4.51E-02	7.6	1.78E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85483-11 Acquisition date : 2-JAN-2020 14:37:52

Total number of lines in spectrum	13	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85483-11 Acquisition date : 2-JAN-2020 14:37:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.96	127	139	1.36	369.20	365	9	2.55E-02	38.3	2.64E+00	
1	238.54	454	195	0.94	474.39	468	10	9.14E-02	15.1	2.24E+00	
1	241.96	121	94	1.14	481.22	479	6	2.43E-02	32.3	2.22E+00	
1	295.16	167	142	1.03	587.66	582	12	3.37E-02	32.8	1.89E+00	
1	338.46	143	96	2.48	674.28	669	14	2.87E-02	34.9	1.68E+00	
1	351.88	261	90	1.22	701.13	696	11	5.25E-02	19.4	1.63E+00	
1	510.75	47	84	2.52	1018.99	1012	14	9.52E-03	98.0	1.17E+00	
1	583.46	117	51	1.46	1164.46	1159	12	2.35E-02	31.7	1.03E+00	
1	609.21	190	49	1.40	1216.00	1209	13	3.81E-02	22.2	9.95E-01	
1	911.31	122	4	1.66	1820.56	1814	15	2.45E-02	20.7	6.94E-01	
1	969.11	53	33	1.67	1936.23	1932	12	1.06E-02	52.3	6.58E-01	
1	1120.59	44	31	1.99	2239.43	2233	14	8.79E-03	63.0	5.79E-01	
1	1461.02	224	11	1.83	2920.93	2914	14	4.51E-02	15.3	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 13
Number of unidentified lines 13
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.067E-02		4.211E-02	6.587E-02	0.000E+00	-0.162

```
A,14L85483-11      ,01/02/2020 16:00,12/08/2019 16:00,    2.786E+02,L85483-11 S TE
B,14L85483-11      ,HUDSON                ,12/30/2019 12:20,14FS092319
C,CS-137   ,NO ,   -1.067E-02,    4.211E-02,    6.587E-02,,    -0.162
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 16:01:18.34
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:39:45.59

LIMS No., Customer Name, Client ID: L85483-12 S TEXAS

Sample ID : 11L85483-12
Sample Type : S
Quantity : 1.39820E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG122719MT
Real Time : 0 01:21:26.67
Live time : 0 01:21:24.24

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	239.27*	354	170	1.52	477.86	2.59E+00	7.25E-02	10.2	
2	0	295.49*	58	92	1.20	590.35	2.24E+00	1.19E-02	34.8	
3	0	352.14*	123	139	1.58	703.70	1.98E+00	2.52E-02	24.9	
4	0	511.38*	35	85	2.00	1022.32	1.48E+00	7.15E-03	77.5	
5	0	583.58*	113	64	1.94	1166.76	1.32E+00	2.32E-02	19.5	
6	0	609.73*	102	70	1.58	1219.08	1.27E+00	2.08E-02	22.0	
7	0	1460.99*	146	8	2.31	2922.11	5.95E-01	2.99E-02	10.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85483-12 Acquisition date : 2-JAN-2020 14:39:45

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85483-12 Acquisition date : 2-JAN-2020 14:39:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	239.27	354	170	1.52	477.86	469	18	7.25E-02	20.5	2.59E+00	
0	295.49	58	92	1.20	590.35	586	10	1.19E-02	69.7	2.24E+00	
0	352.14	123	139	1.58	703.70	695	18	2.52E-02	49.7	1.98E+00	
0	511.38	35	85	2.00	1022.32	1012	20	7.15E-03	****	1.48E+00	
0	583.58	113	64	1.94	1166.76	1159	19	2.32E-02	39.0	1.32E+00	
0	609.73	102	70	1.58	1219.08	1212	16	2.08E-02	44.0	1.27E+00	
0	1460.99	146	8	2.31	2922.11	2914	16	2.99E-02	20.2	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.028E-02		6.922E-02	1.223E-01	0.000E+00	-0.166

```
A,11L85483-12      ,01/02/2020 16:01,12/08/2019 12:00,   1.398E+02,L85483-12 S TE
B,11L85483-12      ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137   ,NO ,   -2.028E-02,   6.922E-02,   1.223E-01,,   -0.166
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 10:36:22.31
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 09:26:31.37

LIMS No., Customer Name, Client ID: WG32733-1 S TEXAS

Sample ID : 14WG32733-1
Sample Type : S
Quantity : 3.39540E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 13:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:09:35.84
Live time : 0 01:09:34.56

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	6	238.64*	558	77	1.07	474.58	2.24E+00	1.34E-01	4.8	1.91E+00
2	6	241.78	162	93	1.89	480.87	2.22E+00	3.89E-02	18.4	
3	1	295.27*	157	102	1.32	587.88	1.89E+00	3.76E-02	14.8	1.10E+00
4	1	338.53	104	71	1.09	674.42	1.68E+00	2.49E-02	17.7	1.92E+00
5	1	352.07*	232	80	1.20	701.51	1.63E+00	5.57E-02	10.2	3.01E+00
6	1	511.32*	27	80	2.47	1020.14	1.17E+00	6.53E-03	81.6	2.07E+00
7	1	583.38	146	79	1.30	1164.32	1.03E+00	3.51E-02	14.7	2.80E+00
8	1	609.43*	189	38	1.57	1216.44	9.94E-01	4.52E-02	10.5	4.67E-01
9	1	911.68	105	42	1.84	1821.30	6.94E-01	2.52E-02	16.7	1.34E+00
10	1	969.67	48	16	1.20	1937.35	6.57E-01	1.15E-02	22.0	6.86E-01
11	1	1121.08	37	27	1.66	2240.41	5.79E-01	8.81E-03	33.7	5.36E-01
12	1	1461.31*	215	14	1.80	2921.51	4.61E-01	5.15E-02	8.1	1.66E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	238.64	558	77	1.07	474.58	470	18	1.34E-01	9.6	2.24E+00	
6	241.78	162	93	1.89	480.87	470	18	3.89E-02	36.8	2.22E+00	
1	295.27	157	102	1.32	587.88	584	10	3.76E-02	29.6	1.89E+00	
1	338.53	104	71	1.09	674.42	670	9	2.49E-02	35.3	1.68E+00	
1	352.07	232	80	1.20	701.51	696	11	5.57E-02	20.3	1.63E+00	
1	511.32	27	80	2.47	1020.14	1014	14	6.53E-03	****	1.17E+00	
1	583.38	146	79	1.30	1164.32	1160	12	3.51E-02	29.4	1.03E+00	
1	609.43	189	38	1.57	1216.44	1211	15	4.52E-02	20.9	9.94E-01	
1	911.68	105	42	1.84	1821.30	1815	14	2.52E-02	33.4	6.94E-01	
1	969.67	48	16	1.20	1937.35	1933	9	1.15E-02	44.0	6.57E-01	
1	1121.08	37	27	1.66	2240.41	2236	12	8.81E-03	67.5	5.79E-01	
1	1461.31	215	14	1.80	2921.51	2914	14	5.15E-02	16.2	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.207E-02		4.220E-02	6.578E-02	0.000E+00	-0.184

```
A,14WG32733-1      ,01/02/2020 10:36,12/06/2019 13:00,   3.395E+02,WG32733-1 S TE
B,14WG32733-1      ,HUDSON              ,12/30/2019 12:20,14FS092319
C,CS-137   ,NO ,   -1.207E-02,   4.220E-02,   6.578E-02,,   -0.184
```

Analyst: KBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 6-JAN-2020 12:00:38.66
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 2-JAN-2020 16:11:19.12

LIMS No., Customer Name, Client ID: WG32735-1 S TEXAS

Sample ID : 08WG32735-1
Sample Type : S
Quantity : 1.37120E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:55:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:08:02.70
Live time : 0 01:08:01.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.58*	182	110	1.28	484.08	2.70E+00	4.45E-02	13.3	4.09E+00
2	1	295.46*	38	77	1.41	597.58	2.29E+00	9.28E-03	48.1	2.40E+00
3	1	352.01*	104	63	1.53	710.42	1.98E+00	2.54E-02	18.1	1.37E+00
4	1	511.13*	35	49	3.30	1027.95	1.44E+00	8.57E-03	64.4	1.55E+00
5	1	583.49*	41	39	1.36	1172.34	1.28E+00	1.01E-02	37.5	1.71E+00
6	1	609.38*	63	36	1.79	1223.99	1.24E+00	1.55E-02	24.9	1.84E+00
7	1	911.55*	41	7	2.16	1826.92	8.72E-01	1.01E-02	21.0	9.04E-01
8	1	1461.02*	93	10	1.94	2923.13	5.83E-01	2.28E-02	14.3	9.48E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.58	182	110	1.28	484.08	480	10	4.45E-02	26.7	2.70E+00	
1	295.46	38	77	1.41	597.58	593	10	9.28E-03	96.2	2.29E+00	
1	352.01	104	63	1.53	710.42	705	10	2.54E-02	36.2	1.98E+00	
1	511.13	35	49	3.30	1027.95	1018	24	8.57E-03	****	1.44E+00	
1	583.49	41	39	1.36	1172.34	1166	16	1.01E-02	75.1	1.28E+00	
1	609.38	63	36	1.79	1223.99	1217	14	1.55E-02	49.8	1.24E+00	
1	911.55	41	7	2.16	1826.92	1822	10	1.01E-02	42.0	8.72E-01	
1	1461.02	93	10	1.94	2923.13	2916	14	2.28E-02	28.6	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.690E-03		6.916E-02	1.146E-01	0.000E+00	0.032

A,08WG32735-1 ,01/06/2020 12:00,12/08/2019 15:55, 1.371E+02,WG32735-1 S TE
B,08WG32735-1 ,HUDSON ,12/26/2019 12:50,08S100121819
C,CS-137 ,NO , 3.690E-03, 6.916E-02, 1.146E-01,, 0.032

GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85483

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32733-1	S	DUP	GELI	339.54 g dry	12/30/19	WBG	BALANCE 8							WG32733
WG32735-1	S	DUP	GELI	137.12 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85483-1	S		GELI	153.48 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-2	S		GELI	150.51 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-3	S		GELI	144.24 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-4	S		GELI	149.1 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-5	S		GELI	162.39 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-6	S		GELI	157.01 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-7	S		GELI	170.39 g dry	12/30/19	WBG	BALANCE 8							WG32733
L85483-8	S		GELI	158.54 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85483-9	S		GELI	163.19 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85483-10	S		GELI	137.12 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85483-11	S		GELI	278.59 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85483-12	S		GELI	139.82 g dry	12/30/19	WBG	BALANCE 8							WG32735

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.01
100.00	100.01
1000.00	1000.04

Check Date: 30-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 30-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME		Standards Prepared by:		2/21/15
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55		Calibration by:	Keith Jett	2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

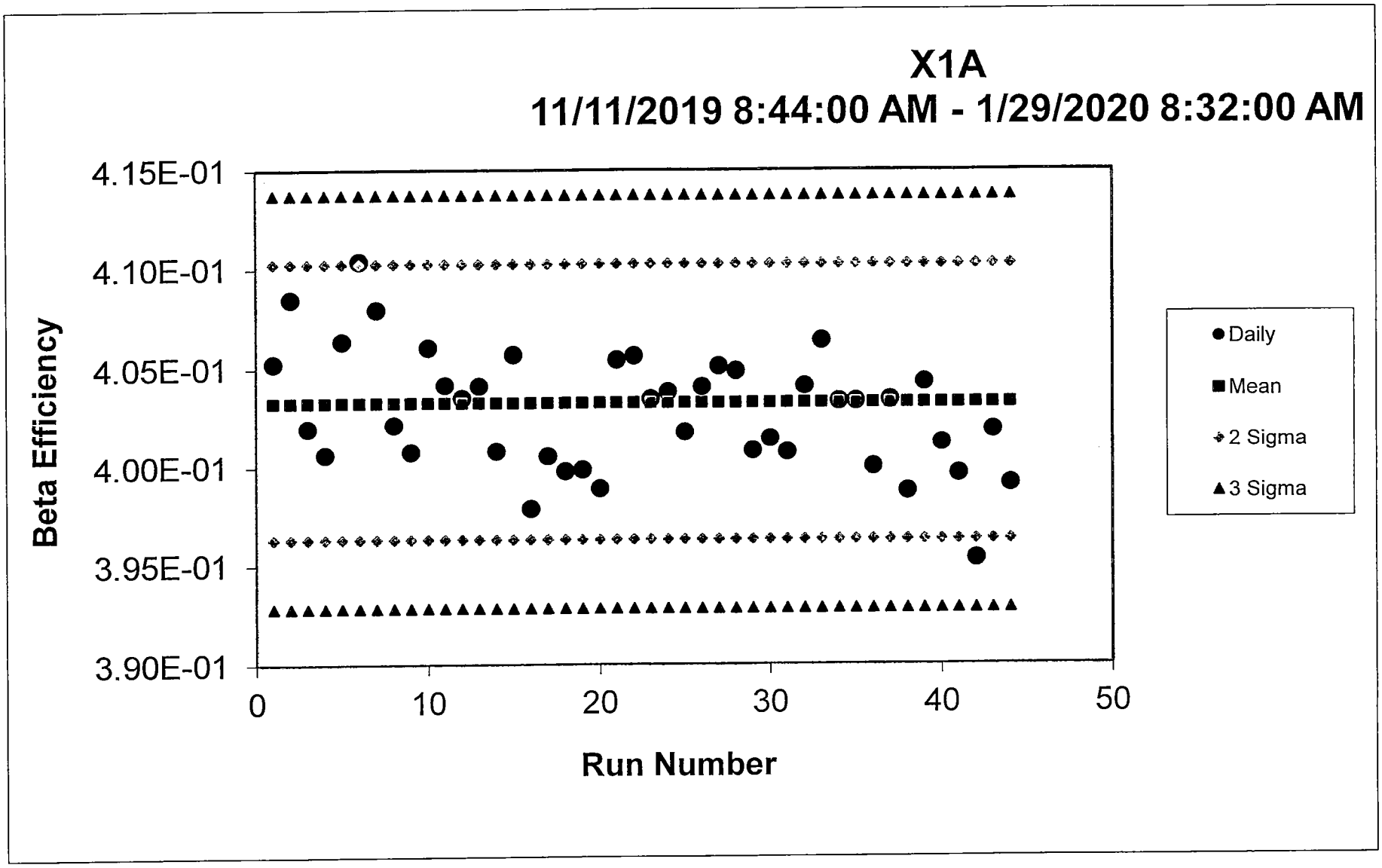
Y COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

210PB-061014	Activity		MILK DATE/TIME		Standards Prepared by:		2/21/15
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55		Calibration by: Keith Jett		2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

LEAD 210

Daily Source and Background Checks


X1A
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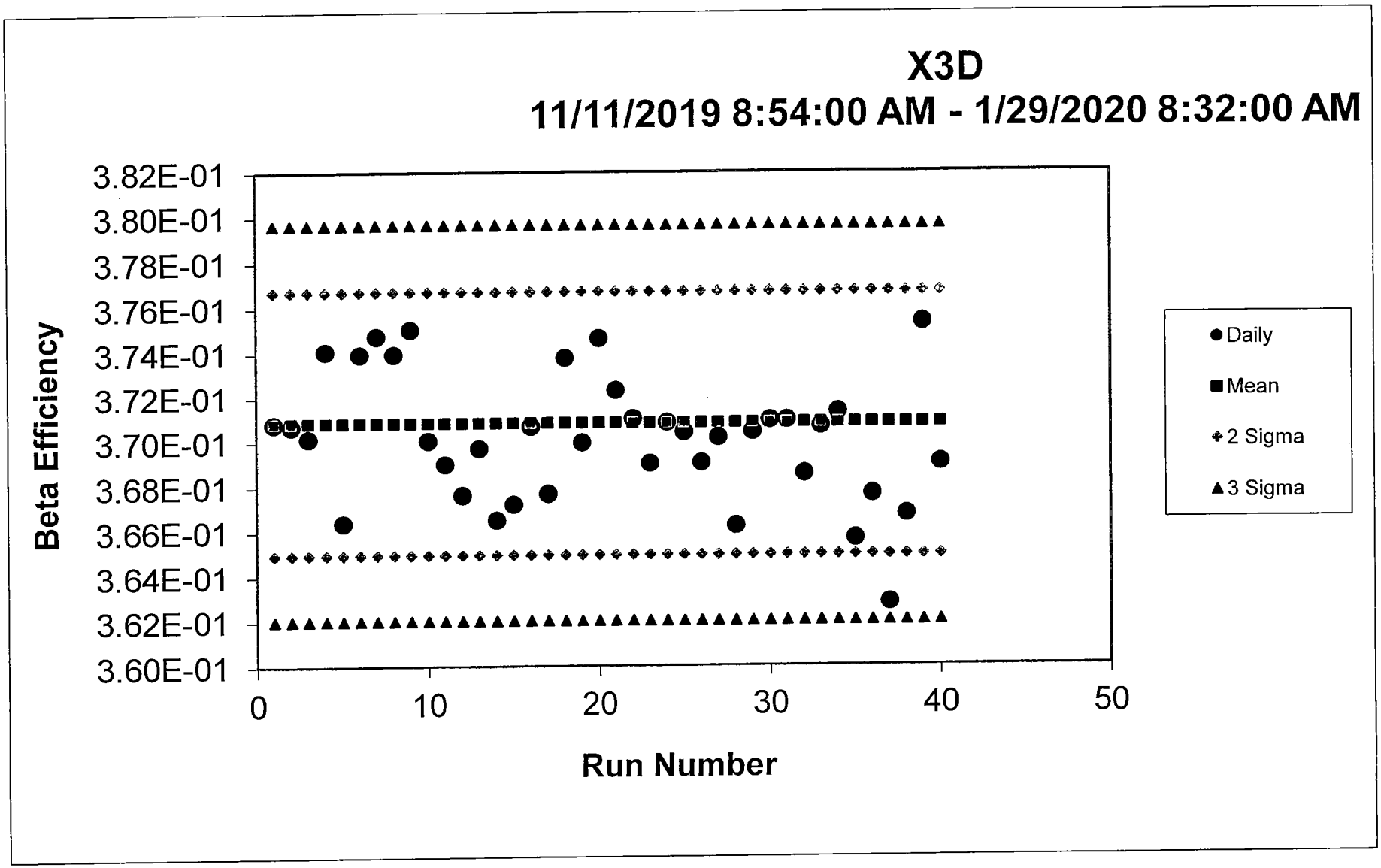
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X3D
11/11/2019 8:54:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
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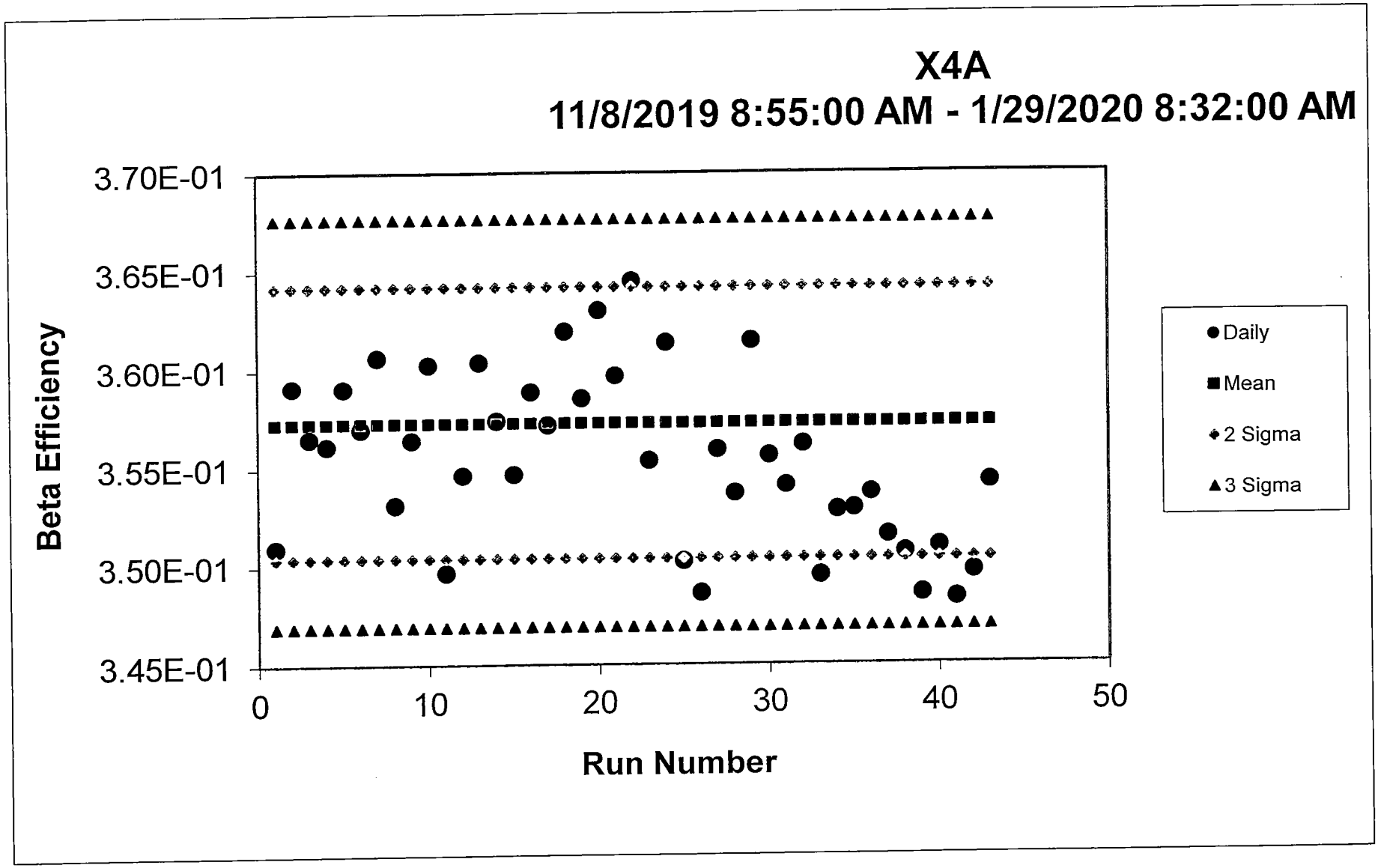
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
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3.60E-01
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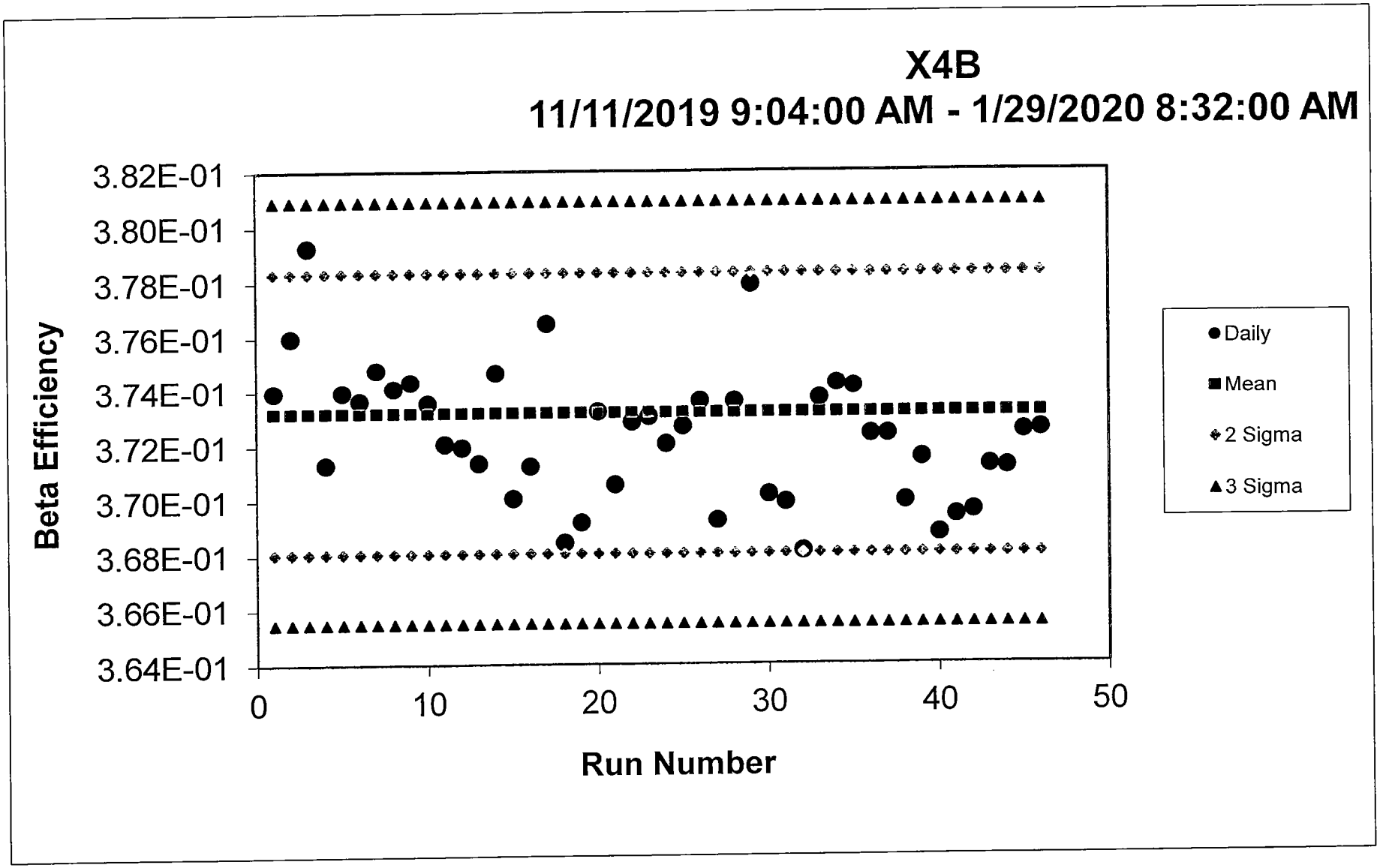
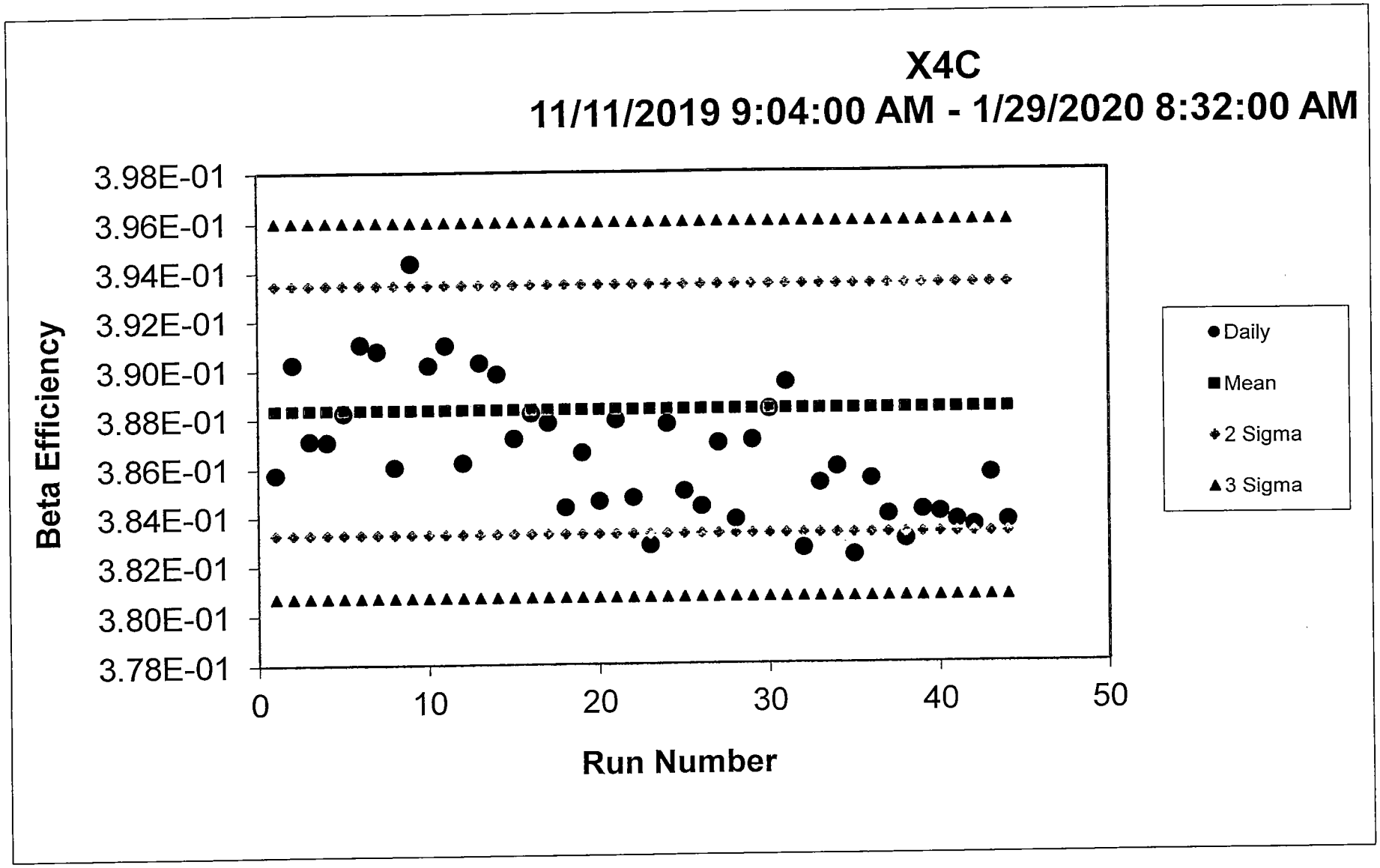
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
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3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
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20
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40
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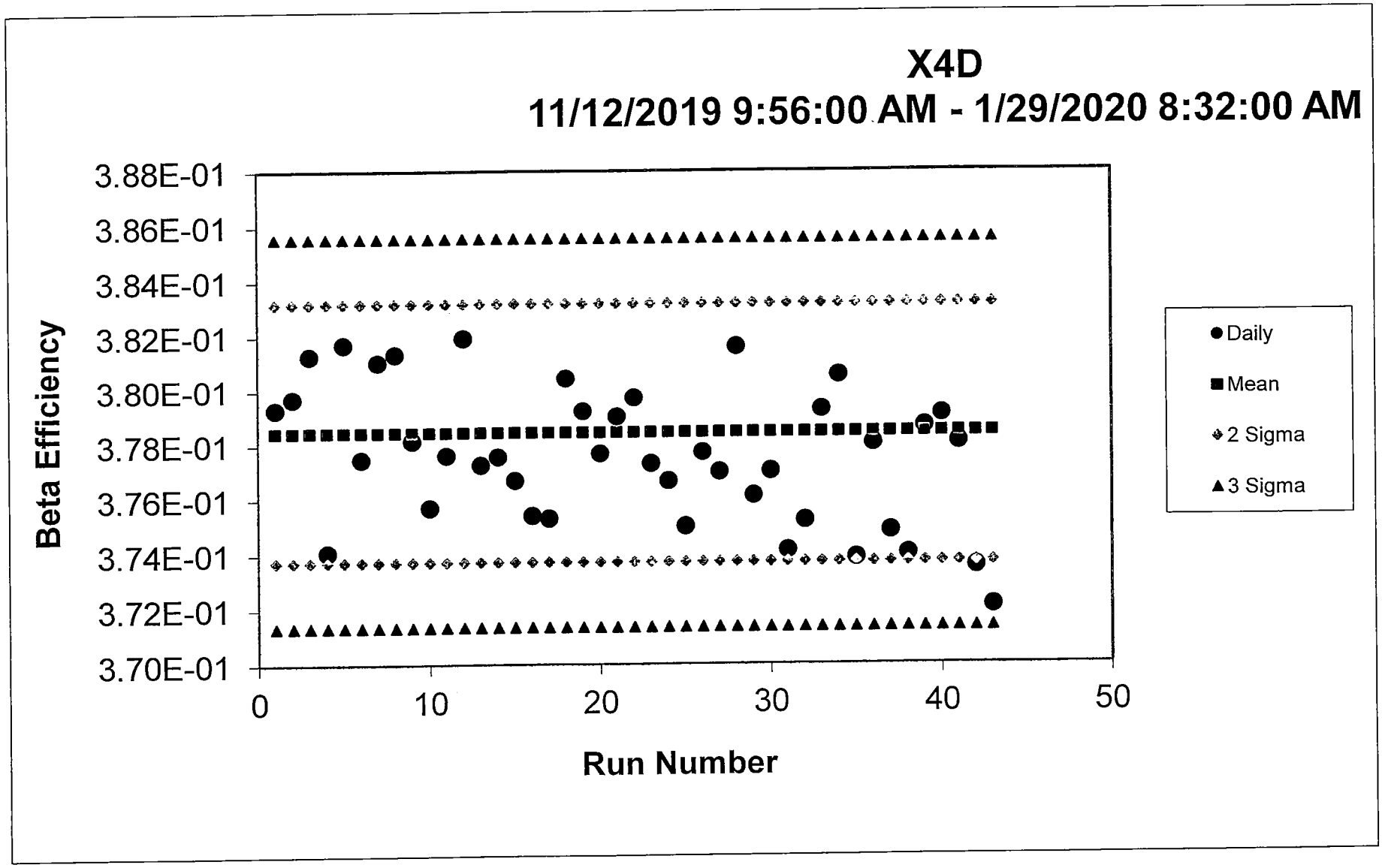
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4D
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
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3.86E-01
3.84E-01
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3.78E-01
3.76E-01
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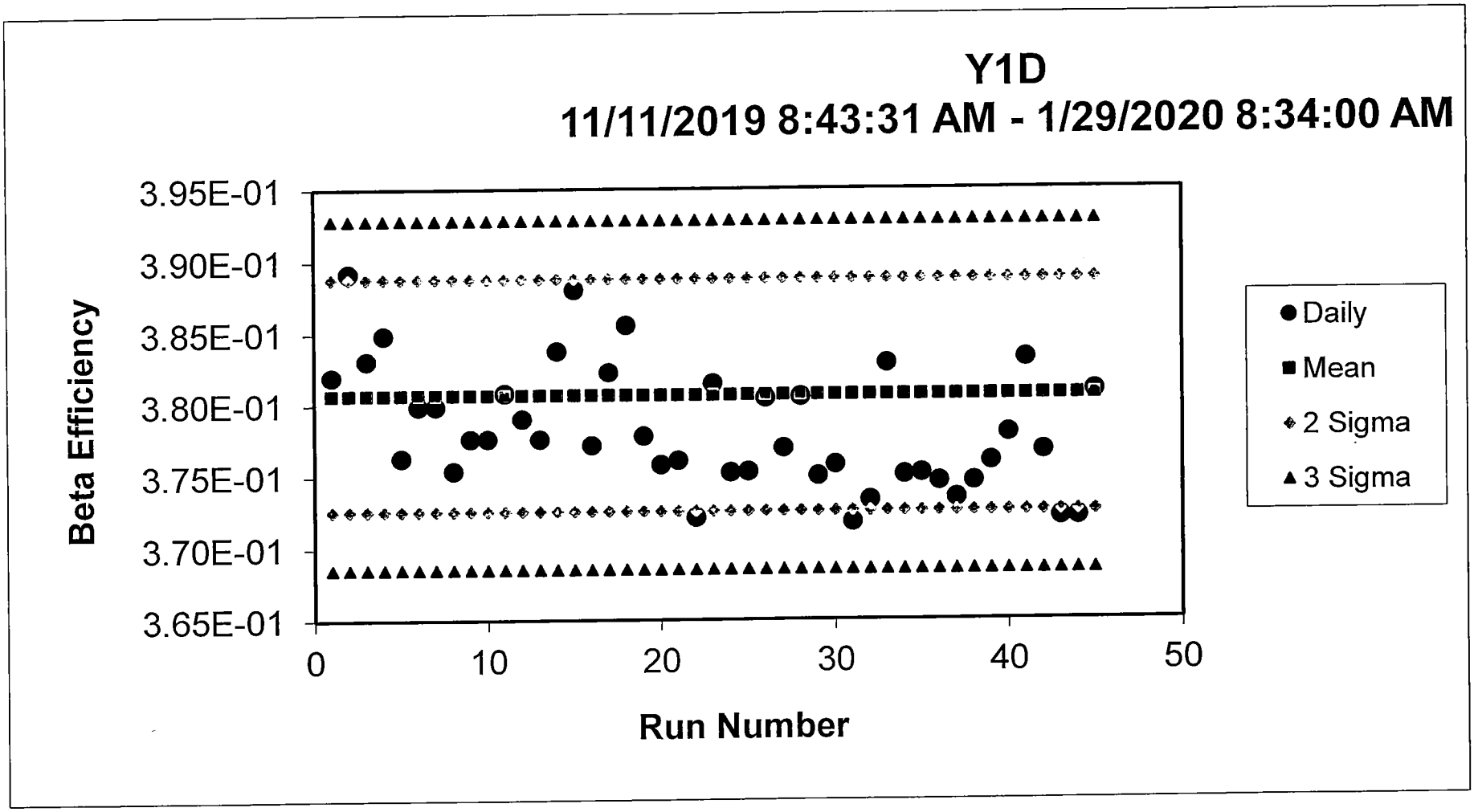
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1D
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
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3.90E-01
3.85E-01
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30
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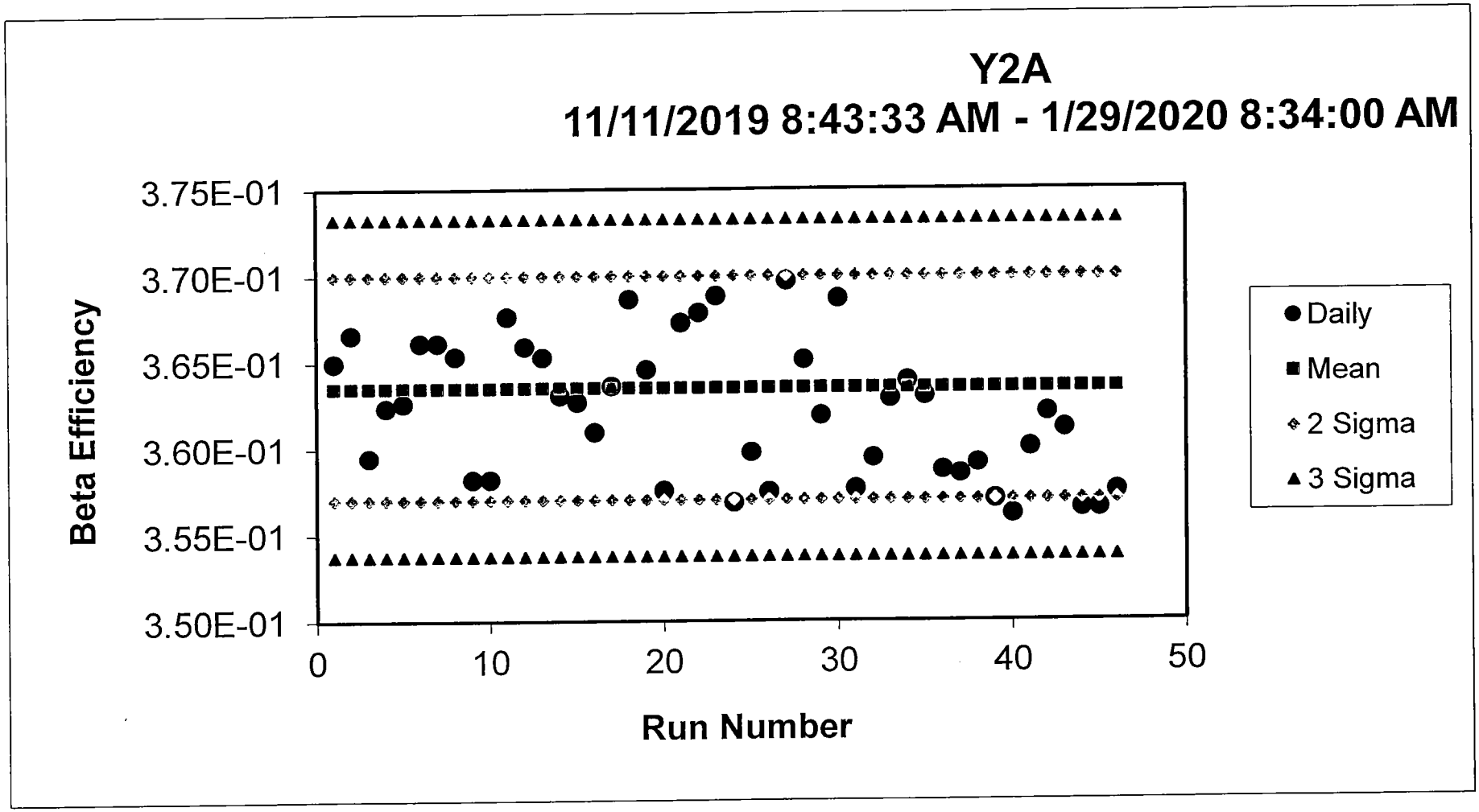
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y2A
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
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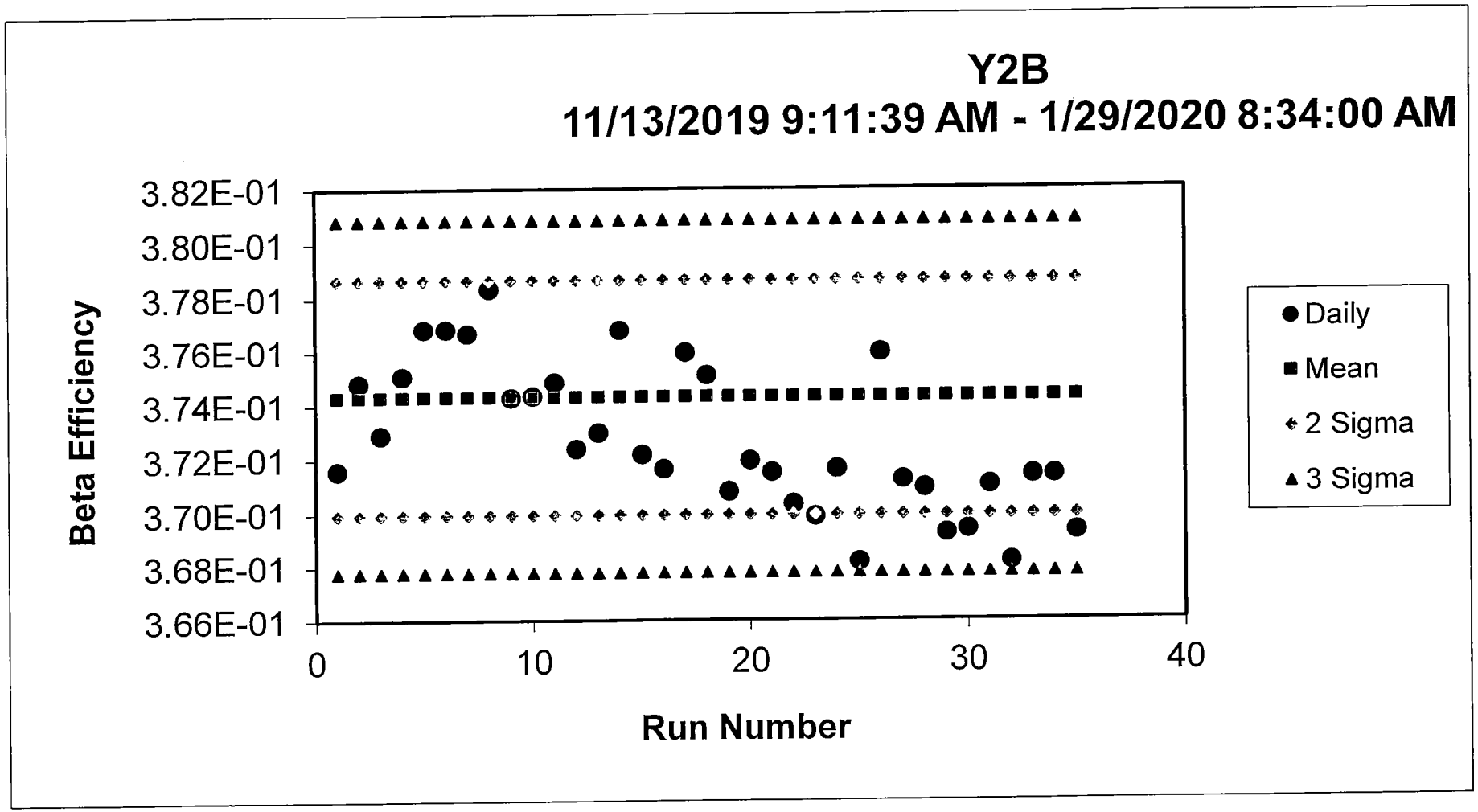
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y2B
11/13/2019 9:11:39 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
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3.80E-01
3.78E-01
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3.74E-01
3.72E-01
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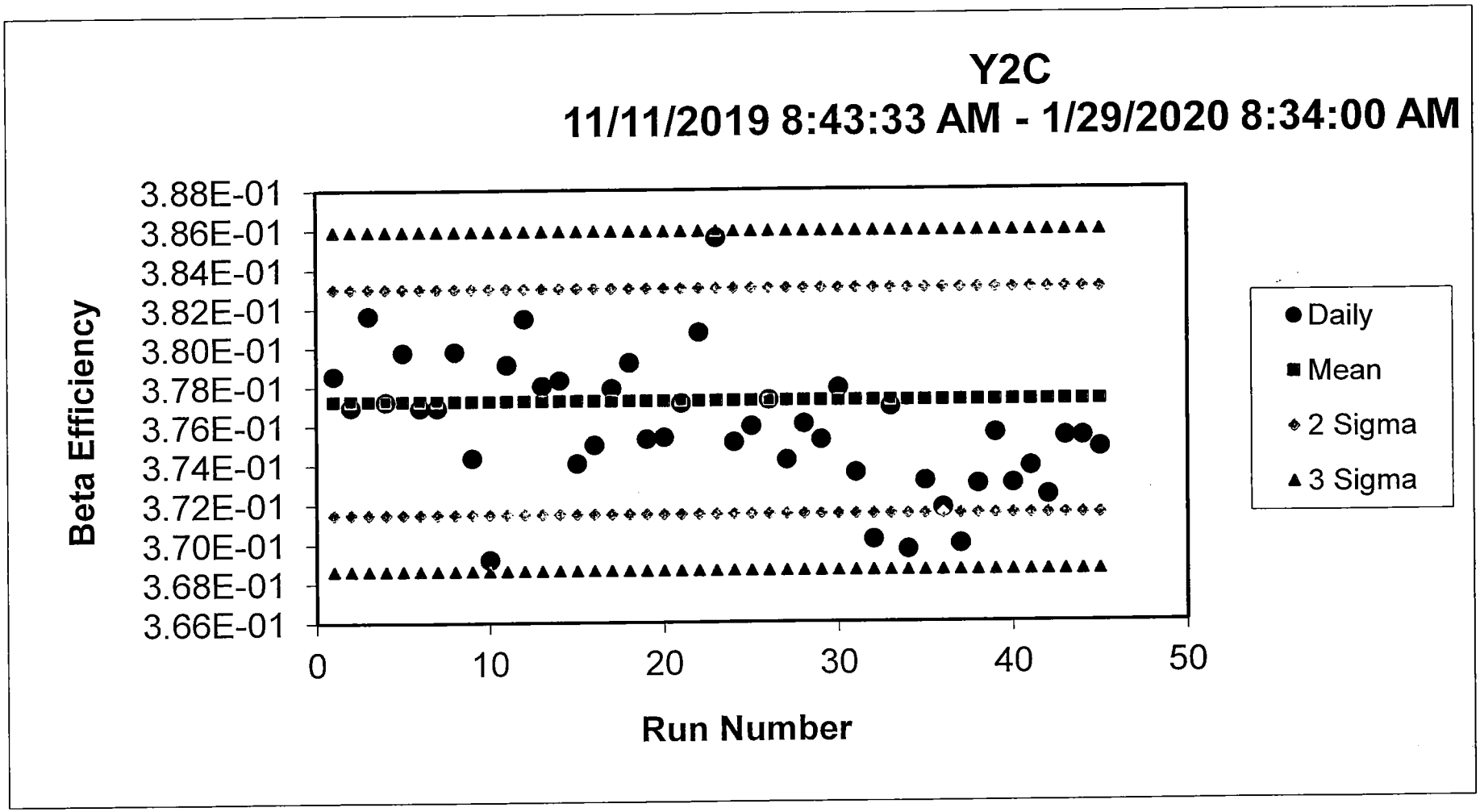
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y2C
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
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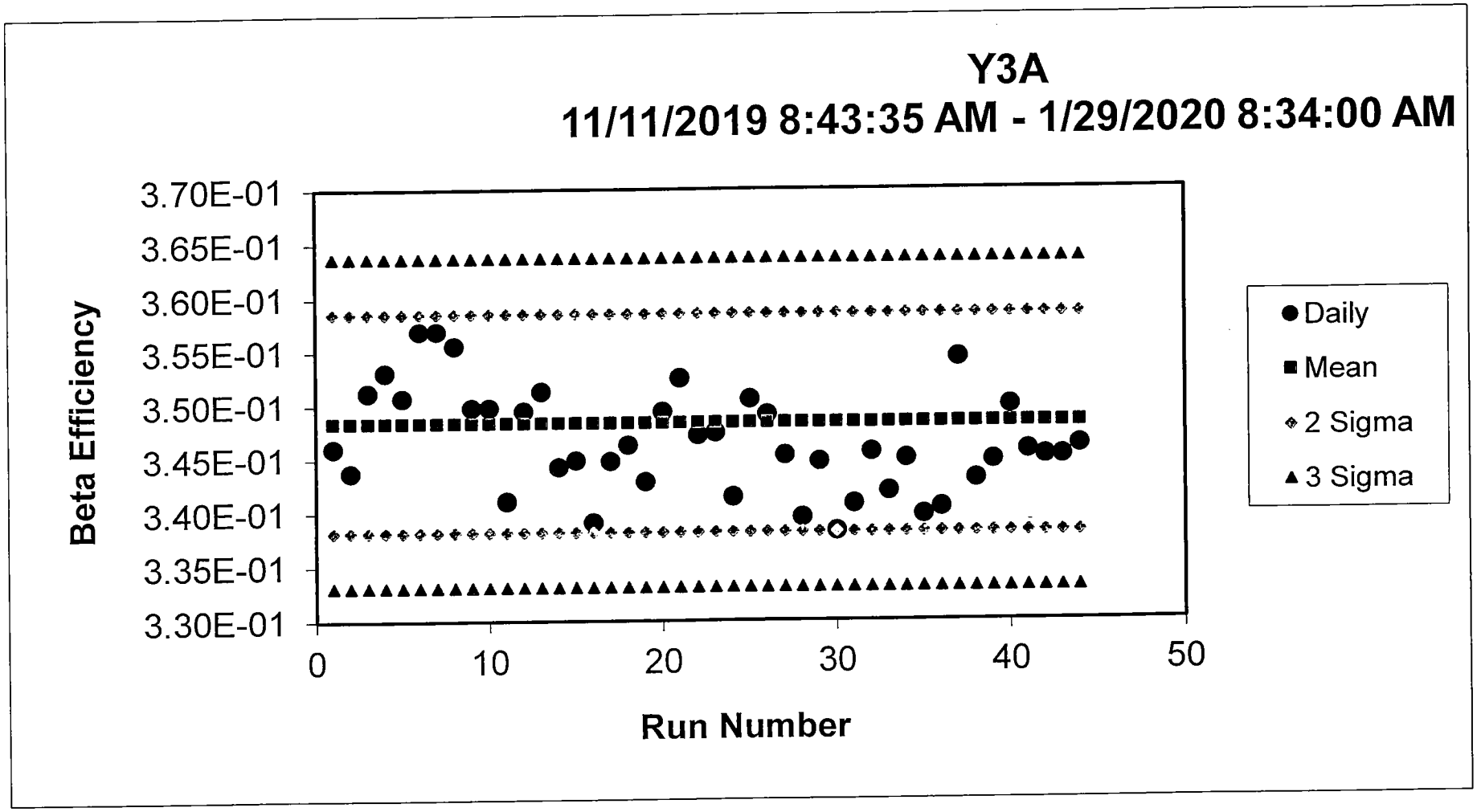
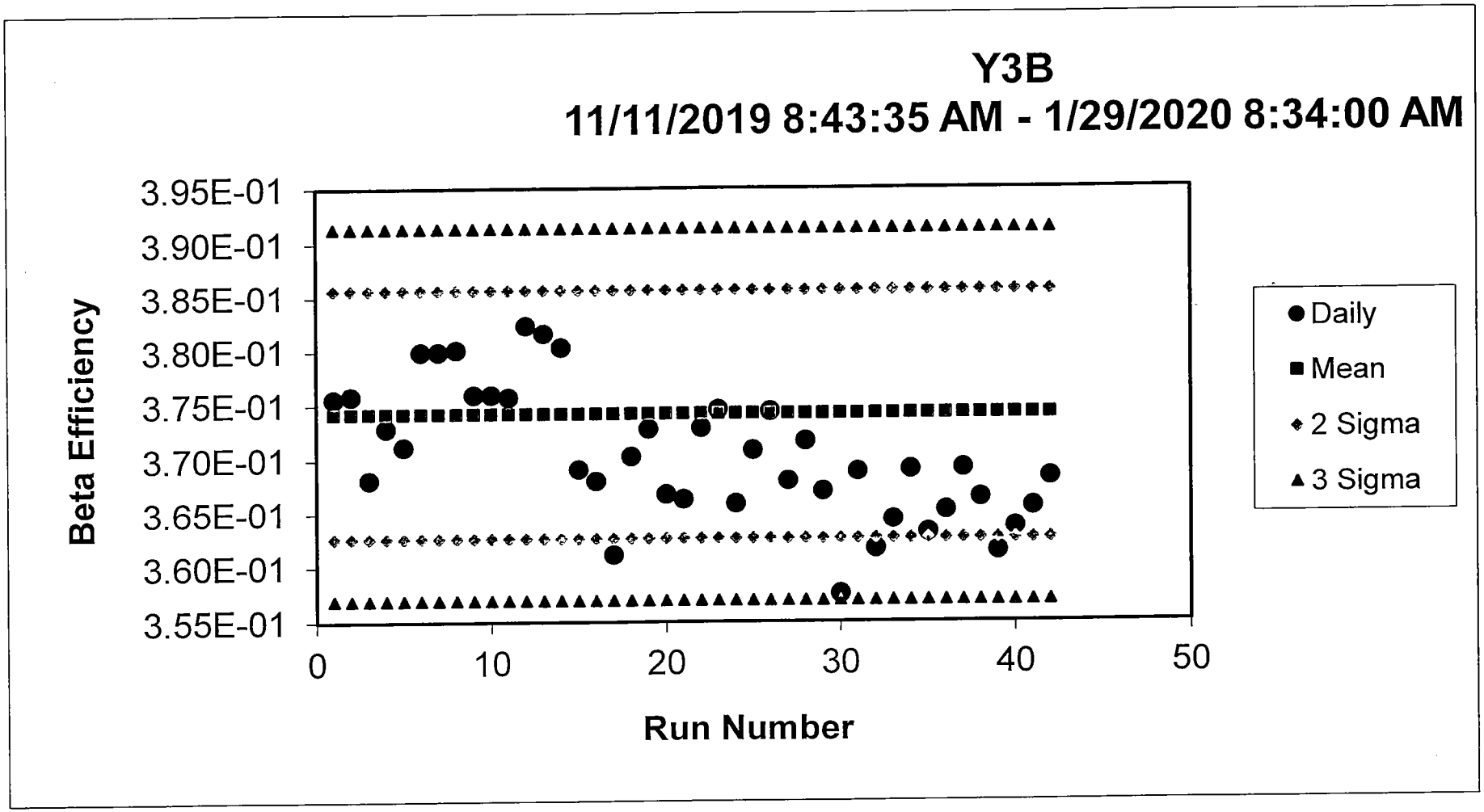
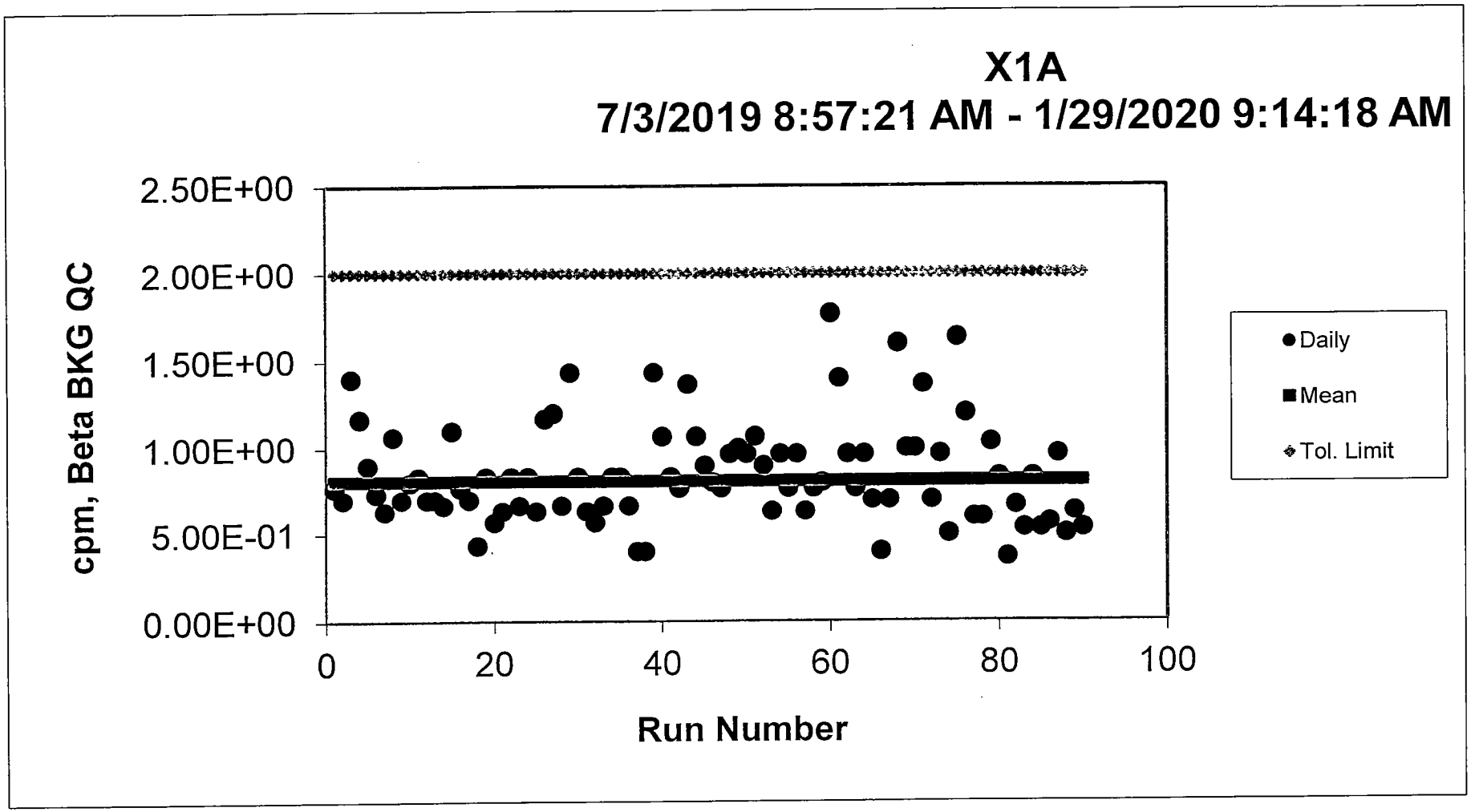
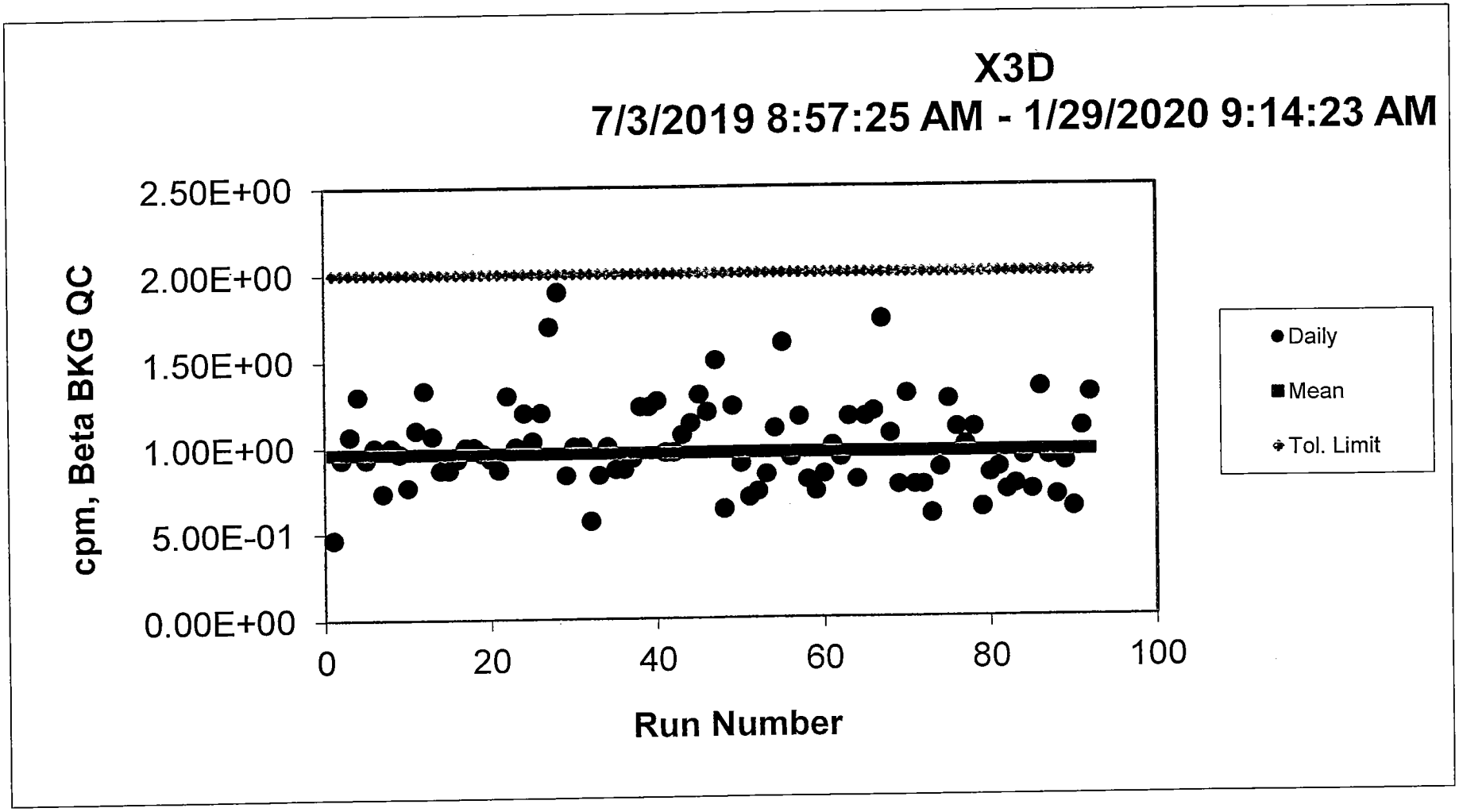
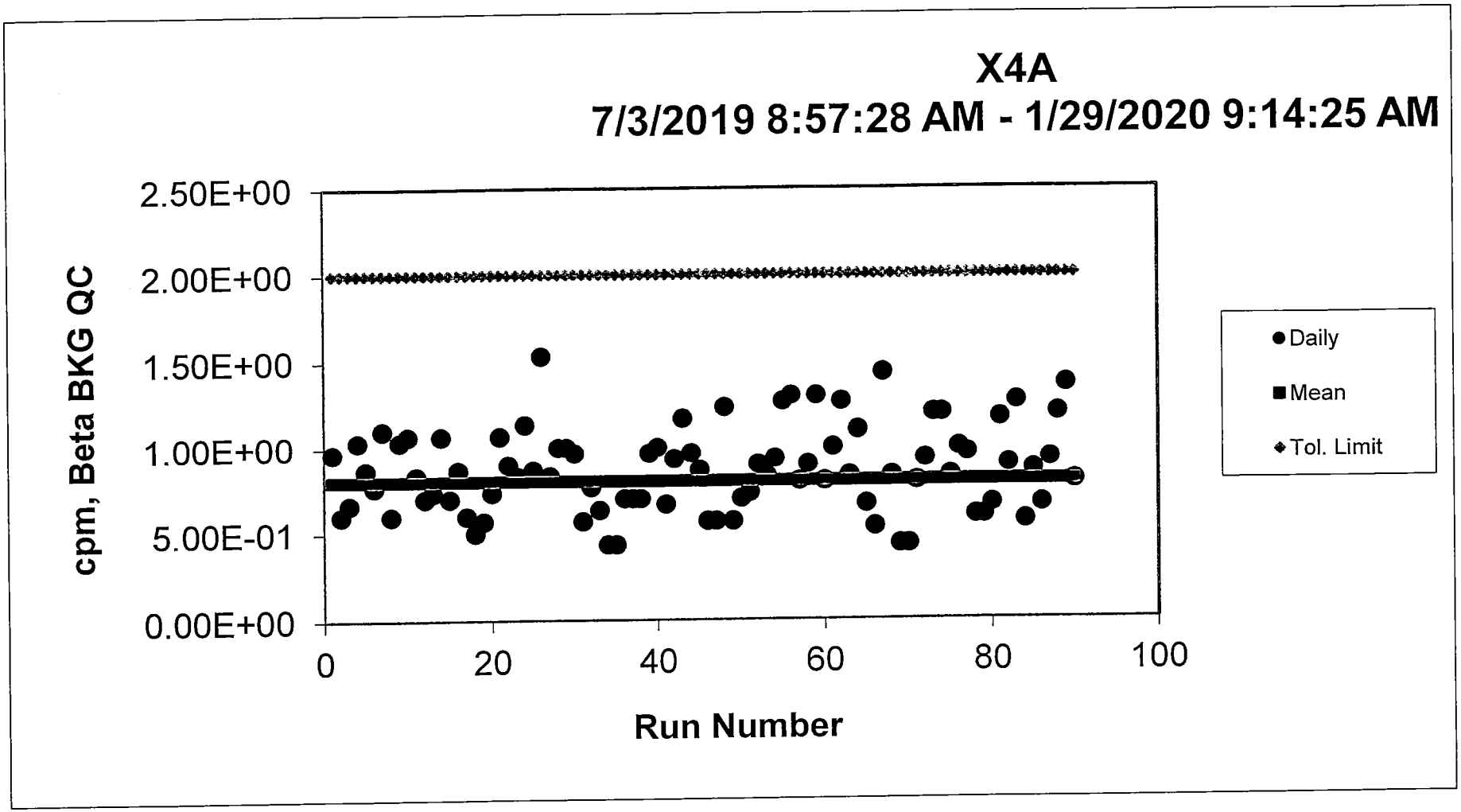
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

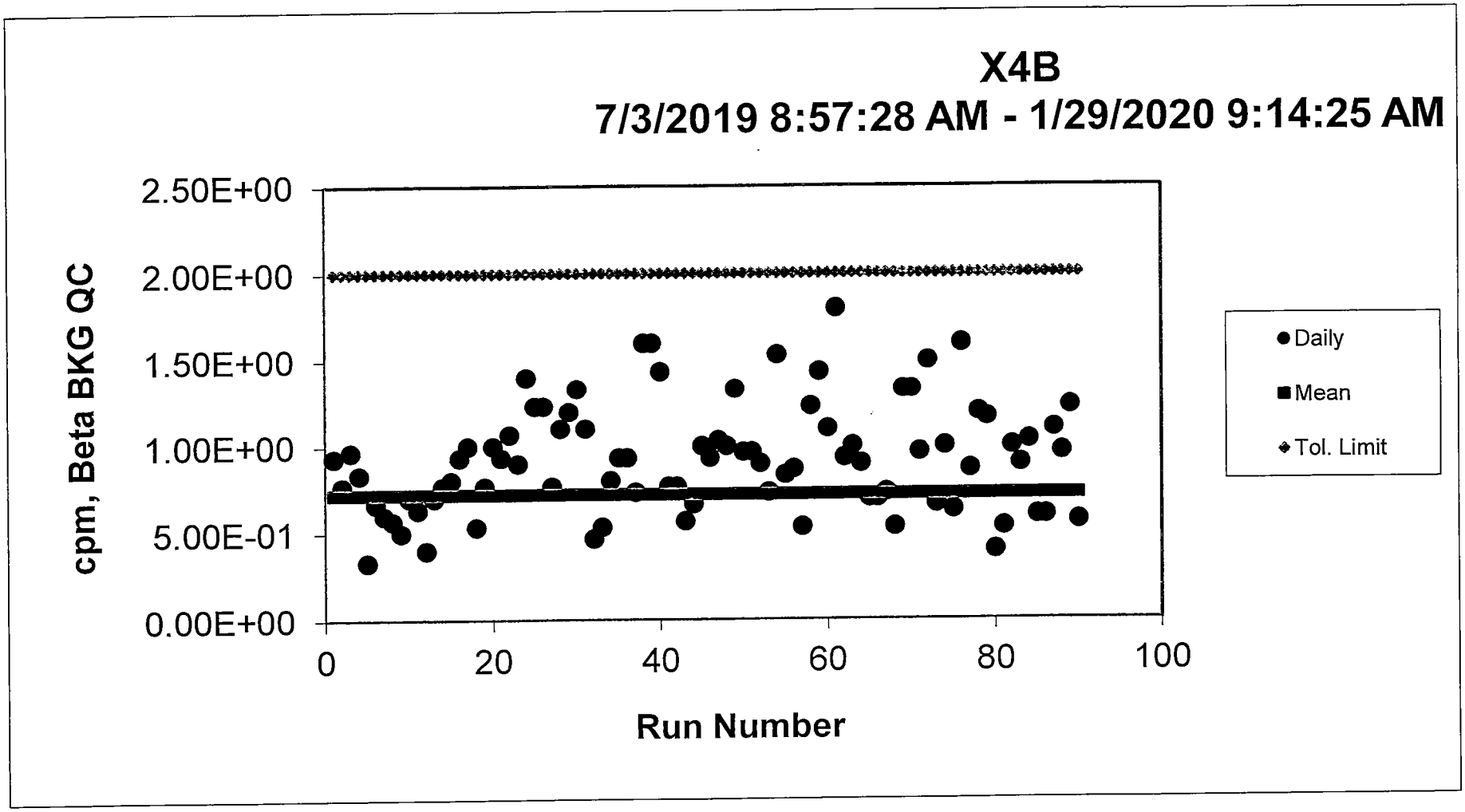

Y3A
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
3.40E-01
3.35E-01
3.30E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

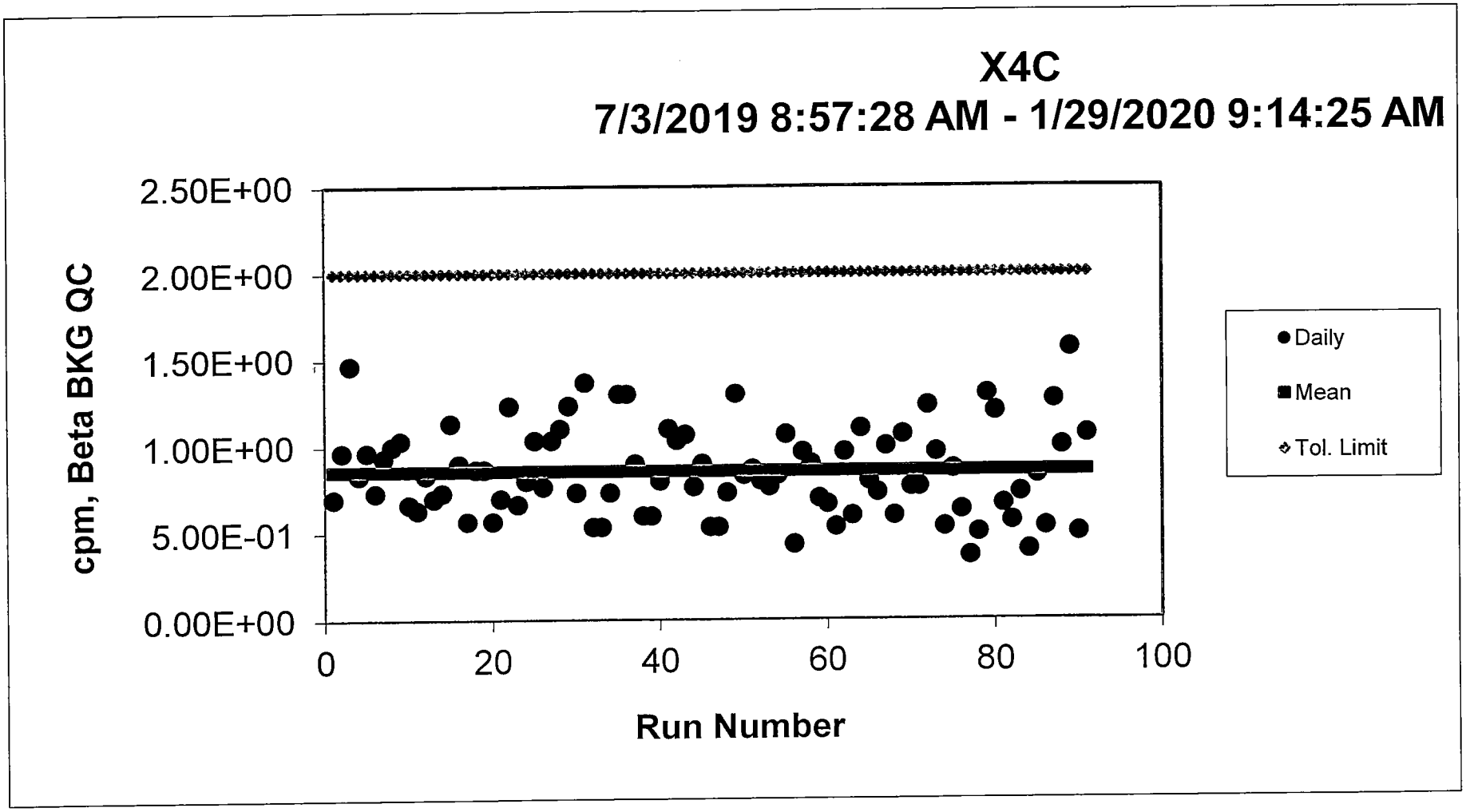

Y3B
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

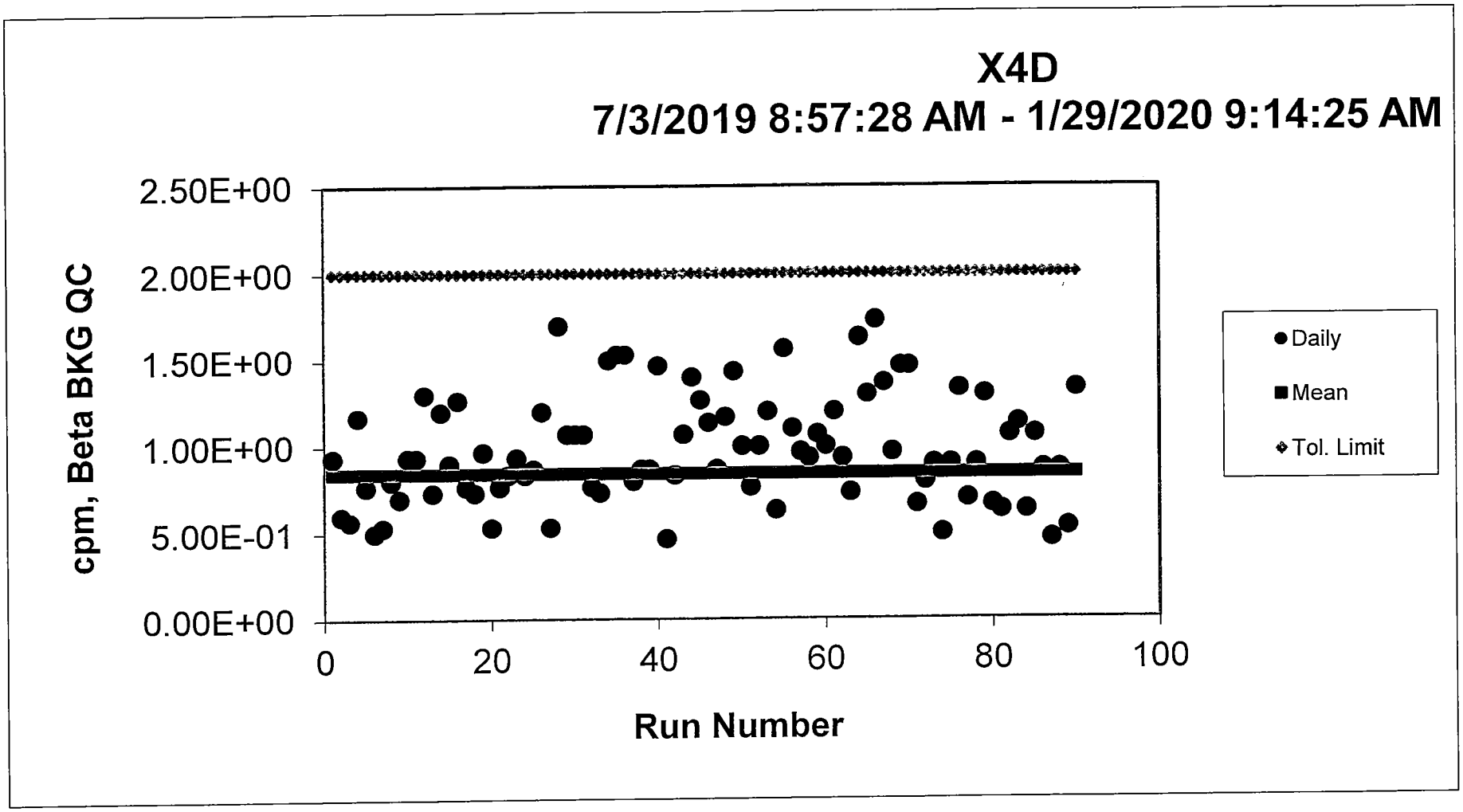

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

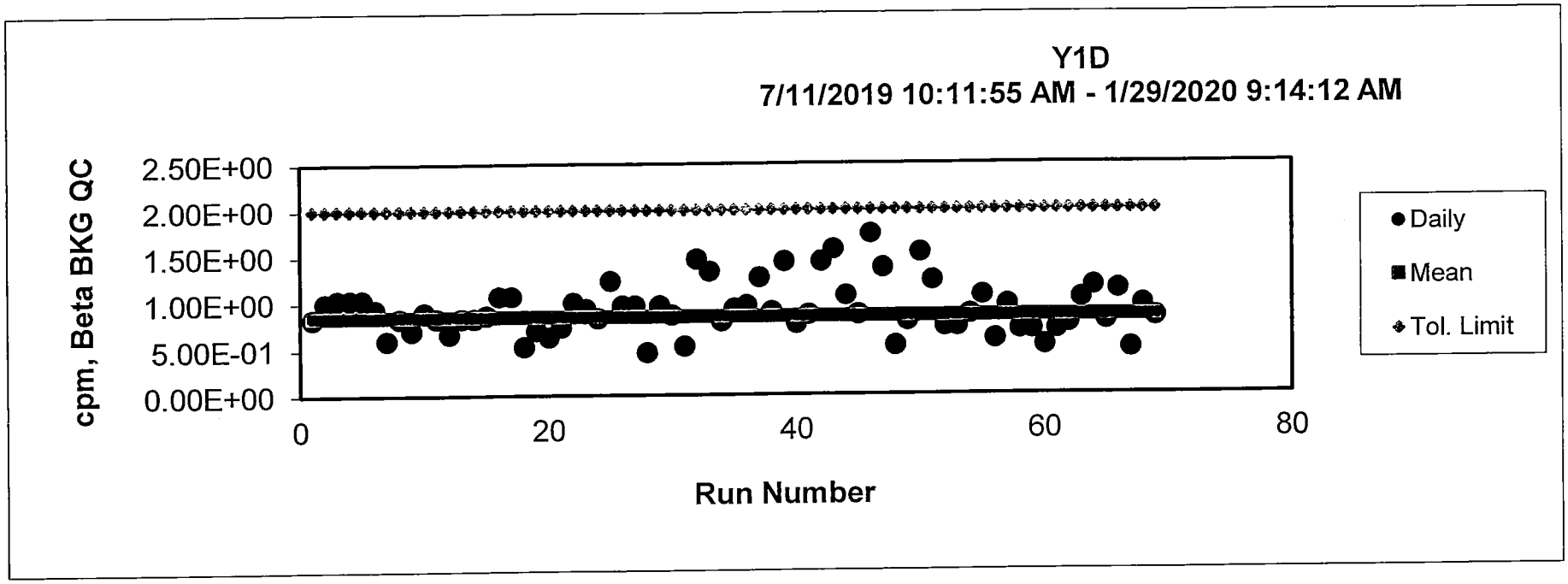

X3D
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

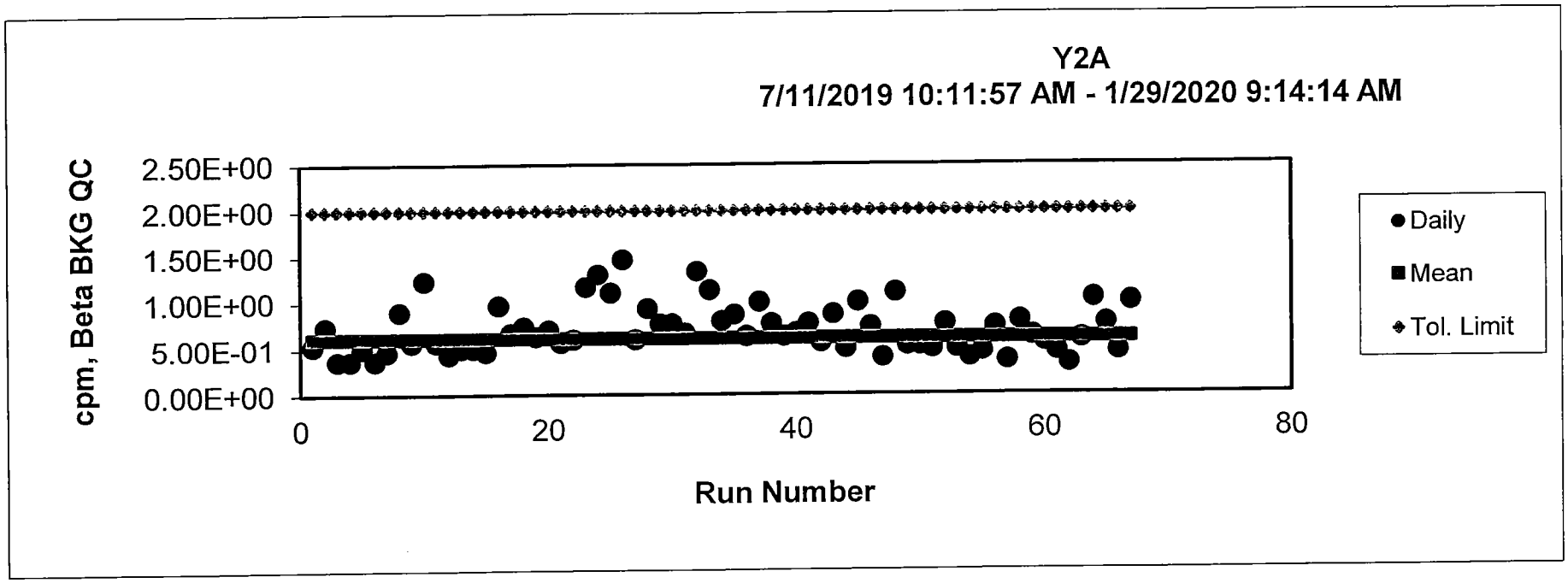

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

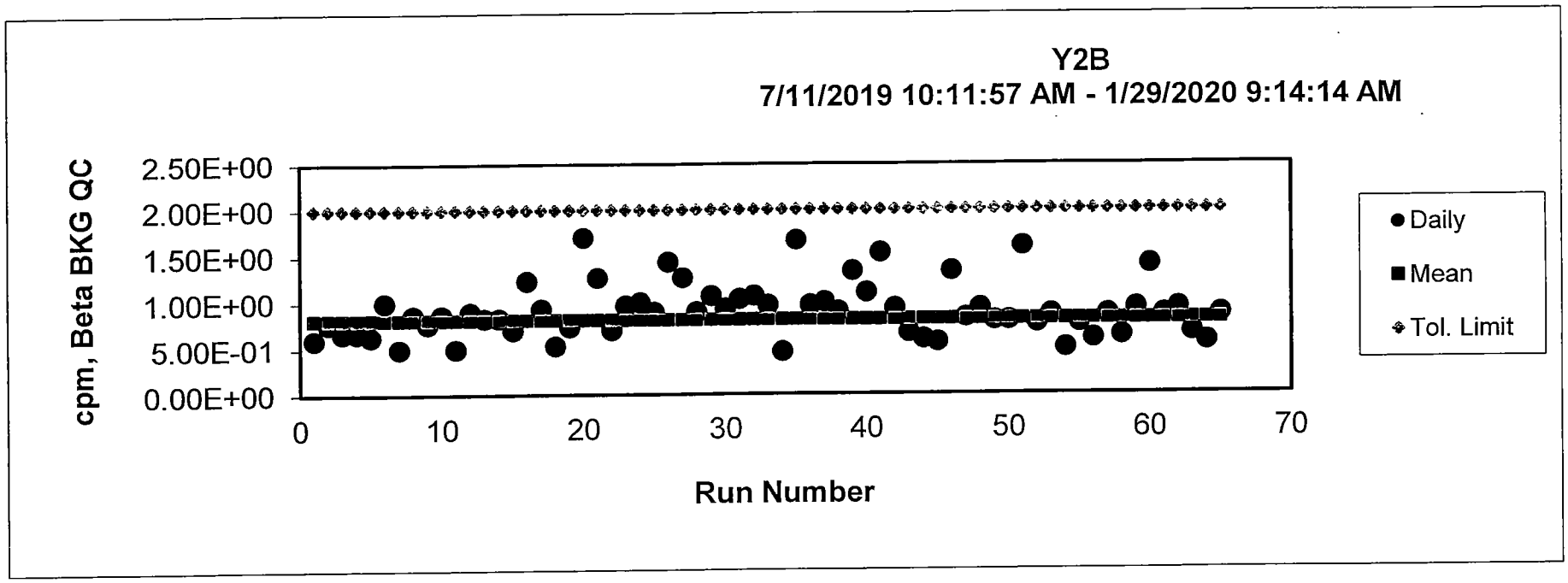

X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

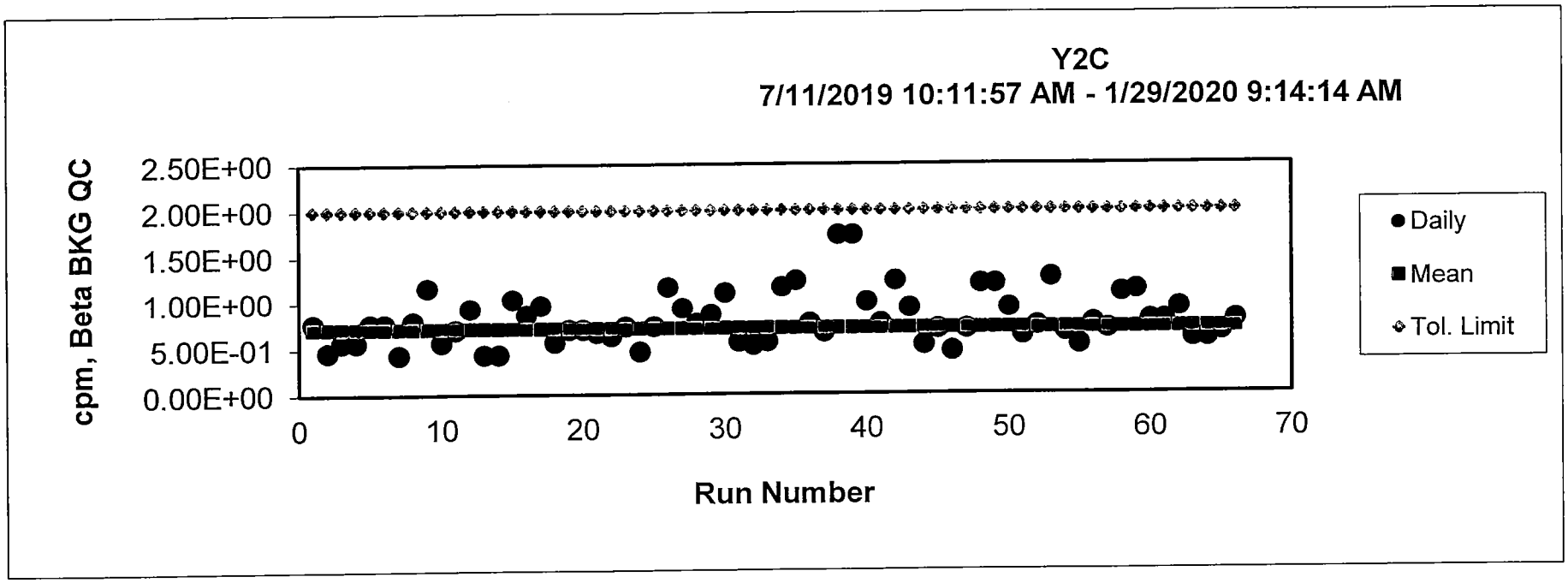

X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

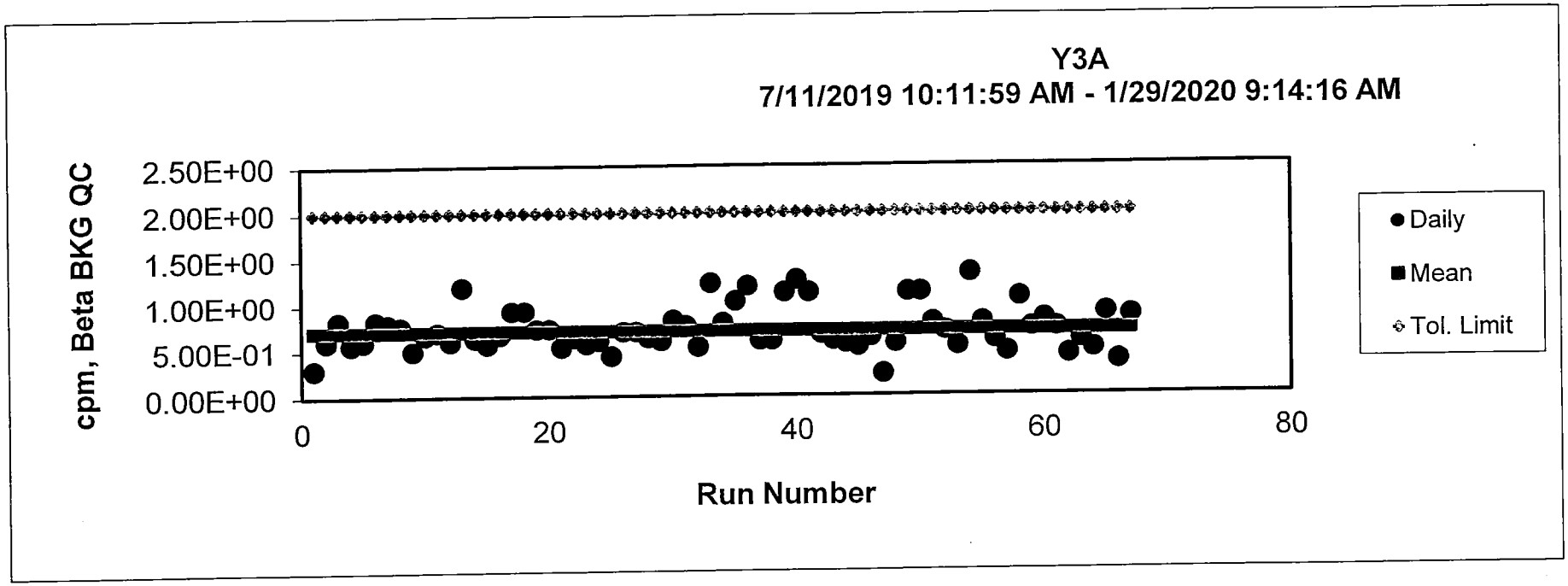

X4D
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

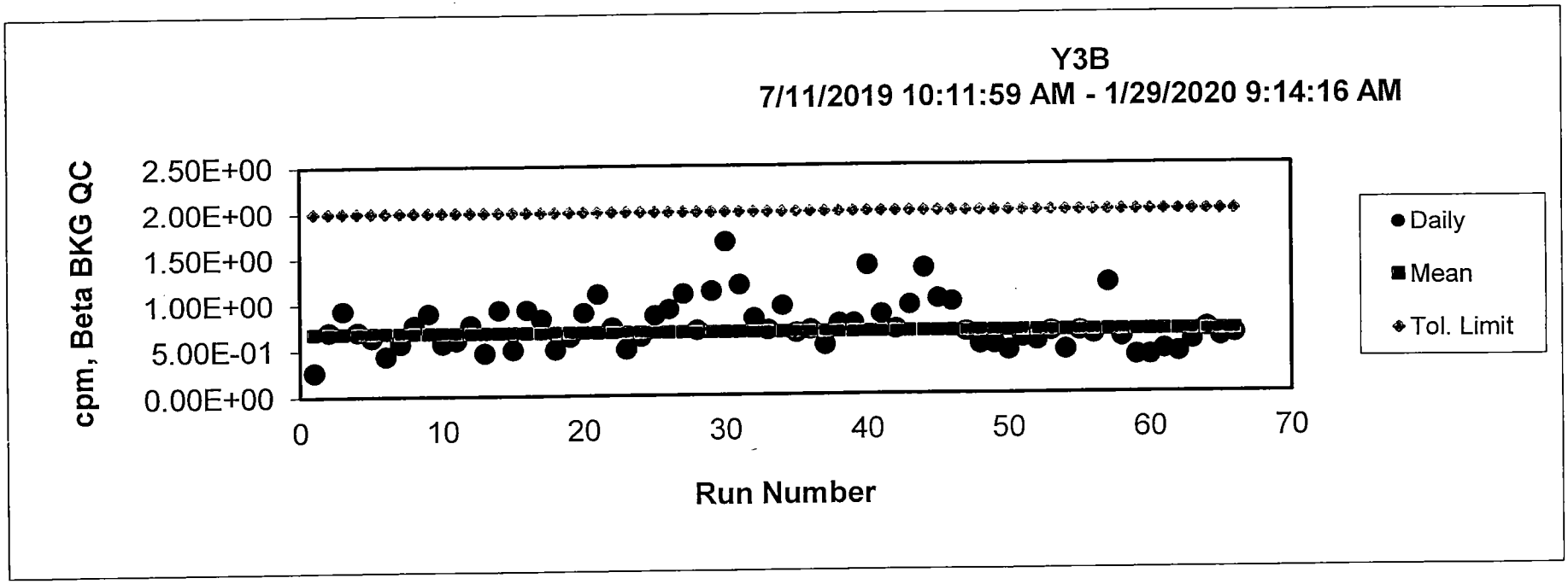

Y1D
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2A
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2B
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2C
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y3A
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y3B
7/11/2019 10:11:59 AM - 1/29/2020 9:14:16 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	56.18%	500
recovery 2	52.04%	463.2
recovery 3	57.64%	513
Average	55.29%	
2 sigma	5.80	
RPD for highest and lowest	10.20	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:01:43.40
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:28.08

LIMS No., Customer Name, Client ID: L85484-9 BI207 GAMMA COUNT

Sample ID : 01L85484-9BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:40:02.14
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.82*	2011	506	0.98	146.08	8.68E+00	3.35E-01	2.8	3.21E+00
2	3	74.99*	3408	362	0.93	150.42	9.46E+00	5.68E-01	2.0	
3	3	84.83*	1760	311	1.17	170.06	1.27E+01	2.93E-01	2.9	1.25E+00
4	3	87.41	595	264	1.26	175.22	1.34E+01	9.91E-02	7.8	
5	1	569.66	6949	256	1.37	1138.64	7.08E+00	1.16E+00	1.3	1.71E+00
6	1	1063.67	2916	81	1.80	2125.84	3.53E+00	4.86E-01	2.0	1.80E+00
7	1	1633.39	312	29	2.02	3264.66	2.30E+00	5.20E-02	6.7	7.73E-01
8	1	1770.03	165	3	2.18	3537.86	2.18E+00	2.76E-02	8.4	2.23E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2916	74.50*	3.525E+00	5.001E+02	5.001E+02	3.97
	1770.24	165	6.87	2.181E+00	4.973E+02	4.973E+02	16.80

Flag: "*" = Keyline

$\frac{500\ pCi}{890} = 0.5618$

Summary of Nuclide Activity
Sample ID : 01L85484-9BI207

Acquisition date : 21-JAN-2020 09:21:28

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.001E+02	5.001E+02	0.198E+02	3.97	
			---	---			
Total Activity :			5.001E+02	5.001E+02			
Grand Total Activity :			5.001E+02	5.001E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01L85484-9BI207 Acquisition date : 21-JAN-2020 09:21:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.82	2011	506	0.98	146.08	140	17	3.35E-01	5.6	8.68E+00	
3	74.99	3408	362	0.93	150.42	140	17	5.68E-01	4.0	9.46E+00	
3	84.83	1760	311	1.17	170.06	164	16	2.93E-01	5.9	1.27E+01	
3	87.41	595	264	1.26	175.22	164	16	9.91E-02	15.6	1.34E+01	
1	569.66	6949	256	1.37	1138.64	1131	16	1.16E+00	2.6	7.08E+00	
1	1633.39	312	29	2.02	3264.66	3257	14	5.20E-02	13.4	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.000E+02	5.000E+02	0.193E+02	3.86	
			---	---			
	Total Activity :		5.000E+02	5.000E+02			
	Grand Total Activity :		5.000E+02	5.000E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.000E+02	1.930E+01	5.820E+00	0.000E+00	85.906

```
A,01L85484-9BI207 ,01/21/2020 11:01,01/21/2020 00:00,   1.000E+00,L85484-9 BI207
B,01L85484-9BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.000E+02,   1.930E+01,   5.820E+00,,   85.906
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:01.34
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:29.40

LIMS No., Customer Name, Client ID: L85484-10 BI207 GAMMA COUNT

Sample ID : 02L85484-10BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:40:02.74
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	3578	537	0.91	130.38	1.62E+01	5.96E-01	1.9	3.47E+00
2	2	74.98*	6005	386	0.89	134.76	1.70E+01	1.00E+00	1.4	
3	3	84.81*	2338	368	1.13	154.54	1.96E+01	3.90E-01	2.5	1.97E+00
4	3	87.43	832	260	1.09	159.82	2.01E+01	1.39E-01	5.0	
5	0	569.73	5676	224	1.36	1131.26	6.31E+00	9.46E-01	1.4	
6	0	1063.66	2356	76	1.58	2126.19	3.08E+00	3.93E-01	2.2	
7	0	1633.34	225	13	1.80	3273.82	1.95E+00	3.75E-02	7.6	
8	0	1770.23	137	19	1.72	3549.60	1.84E+00	2.28E-02	11.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2356	74.50*	3.081E+00	4.622E+02	4.622E+02	4.44
	1770.24	137	6.87	1.840E+00	4.879E+02	4.879E+02	21.98

Flag: "*" = Keyline

$$\frac{463.2\ pCi}{890} = 0.5204$$

Summary of Nuclide Activity
Sample ID : 02L85484-10BI207

Acquisition date : 21-JAN-2020 09:21:29

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.622E+02	4.622E+02	0.205E+02	4.44	
		Total Activity :	4.622E+02	4.622E+02			
		Grand Total Activity :	4.622E+02	4.622E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02L85484-10BI207 Acquisition date : 21-JAN-2020 09:21:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	3578	537	0.91	130.38	123	24	5.96E-01	3.8	1.62E+01	
2	74.98	6005	386	0.89	134.76	123	24	1.00E+00	2.8	1.70E+01	
3	84.81	2338	368	1.13	154.54	150	15	3.90E-01	5.0	1.96E+01	
3	87.43	832	260	1.09	159.82	150	15	1.39E-01	10.0	2.01E+01	
0	569.73	5676	224	1.36	1131.26	1124	15	9.46E-01	2.9	6.31E+00	
0	1633.34	225	13	1.80	3273.82	3265	17	3.75E-02	15.2	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.631E+02	4.632E+02	0.202E+02	4.35	
			---	---			
	Total Activity :		4.631E+02	4.632E+02			
	Grand Total Activity :		4.631E+02	4.632E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	4.632E+02	2.016E+01	5.918E+00	0.000E+00	78.261

A,02L85484-10BI207,01/21/2020 11:02,01/21/2020 00:00, 1.000E+00,L85484-10 BI20
B,02L85484-10BI207,BI207   ,01/15/2020 08:15,0225MM103019
C,BI-207 ,YES, 4.632E+02, 2.016E+01, 5.918E+00,, 78.261

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:00.91
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 21-JAN-2020 09:21:30.31

LIMS No., Customer Name, Client ID: L85484-11 BI207 GAMMA COUNT

Sample ID : 08L85484-11BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.60
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.84	2258	597	1.34	152.75	9.18E+00	3.76E-01	3.1	1.95E+00
2	3	75.01*	3718	456	1.21	157.09	9.97E+00	6.20E-01	2.2	
3	5	84.87*	1726	417	1.39	176.77	1.31E+01	2.88E-01	3.2	6.90E-01
4	5	87.50	562	358	1.46	182.02	1.38E+01	9.37E-02	8.6	
5	1	569.66	5652	202	1.51	1144.79	5.92E+00	9.42E-01	1.4	2.03E+00
6	1	1063.54	2494	75	1.75	2130.43	2.95E+00	4.16E-01	2.2	6.11E-01
7	1	1633.37	193	7	2.11	3266.99	1.91E+00	3.21E-02	7.9	1.01E+00
8	1	1770.55	154	6	2.35	3540.50	1.80E+00	2.56E-02	9.0	7.94E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2494	74.50*	2.952E+00	5.107E+02	5.108E+02	4.32
	1770.24	154	6.87	1.802E+00	5.590E+02	5.590E+02	18.00

Flag: "*" = Keyline

$\frac{513\ pCi}{890} = 0.5764$

Summary of Nuclide Activity
Sample ID : 08L85484-11BI207 Acquisition date : 21-JAN-2020 09:21:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.107E+02	5.108E+02	0.221E+02	4.32	
		Total Activity :	5.107E+02	5.108E+02			
		Grand Total Activity :	5.107E+02	5.108E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08L85484-11BI207 Acquisition date : 21-JAN-2020 09:21:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.84	2258	597	1.34	152.75	145	18	3.76E-01	6.3	9.18E+00	
3	75.01	3718	456	1.21	157.09	145	18	6.20E-01	4.3	9.97E+00	
5	84.87	1726	417	1.39	176.77	171	19	2.88E-01	6.4	1.31E+01	
5	87.50	562	358	1.46	182.02	171	19	9.37E-02	17.3	1.38E+01	
1	569.66	5652	202	1.51	1144.79	1139	14	9.42E-01	2.9	5.92E+00	
1	1633.37	193	7	2.11	3266.99	3260	14	3.21E-02	15.7	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.130E+02	5.130E+02	0.216E+02	4.20	
			---	---			
Total Activity :			5.130E+02	5.130E+02			
Grand Total Activity :			5.130E+02	5.130E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.130E+02	2.156E+01	7.136E+00	0.000E+00	71.880

A,08L85484-11BI207,01/21/2020 11:02,01/21/2020 00:00, 1.000E+00,L85484-11 BI20
B,08L85484-11BI207,BI207 ,01/21/2020 08:55,0825MM092019
C,BI-207 ,YES, 5.130E+02, 2.156E+01, 7.136E+00,, 71.880

Pb-210 Recovery

Work Group

WG32932

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	64.66%	575.5
recovery 2	64.44%	573.5
recovery 3	61.57%	548
Average	63.56%	
2 sigma	3.45	
RPD for highest and lowest	4.90	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:23:19.19
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:35.86

LIMS No., Customer Name, Client ID: L85483-2BI207 GAMMA COUNT

Sample ID : 01L85483-2BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:41:25.27
Live time : 0 01:41:22.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.78*	2304	577	0.98	146.00	8.67E+00	3.79E-01	2.7	3.99E+00
2	3	74.94*	4104	454	0.97	150.31	9.44E+00	6.75E-01	1.9	
3	3	84.80*	1829	453	1.16	170.00	1.27E+01	3.01E-01	3.0	1.26E+00
4	3	87.34	613	319	1.07	175.07	1.34E+01	1.01E-01	6.5	
5	1	569.48	7957	210	1.38	1138.28	7.08E+00	1.31E+00	1.2	1.14E+00
6	1	1063.33	3398	115	1.75	2125.16	3.53E+00	5.59E-01	1.9	8.55E-01
7	1	1632.82	351	15	2.14	3263.54	2.30E+00	5.77E-02	6.0	8.17E-01
8	1	1769.48	201	17	2.11	3536.75	2.18E+00	3.30E-02	8.6	6.80E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	3398	74.50*	3.526E+00	5.747E+02	5.747E+02	3.70
	1770.24	201	6.87	2.182E+00	5.946E+02	5.946E+02	17.13

Flag: "*" = Keyline

Sample ID : 01L85483-2BI207 Acquisition date : 27-JAN-2020 08:38:35

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.747E+02	5.747E+02	0.213E+02	3.70	
	Total Activity :		5.747E+02	5.747E+02			
	Grand Total Activity :		5.747E+02	5.747E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.78	2304	577	0.98	146.00	140	20	3.79E-01	5.3	8.67E+00	
3	74.94	4104	454	0.97	150.31	140	20	6.75E-01	3.8	9.44E+00	
3	84.80	1829	453	1.16	170.00	165	15	3.01E-01	6.1	1.27E+01	
3	87.34	613	319	1.07	175.07	165	15	1.01E-01	13.0	1.34E+01	
1	569.48	7957	210	1.38	1138.28	1130	16	1.31E+00	2.4	7.08E+00	
1	1632.82	351	15	2.14	3263.54	3257	17	5.77E-02	12.0	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.755E+02	5.755E+02	0.208E+02	3.62	
	Total Activity :		5.755E+02	5.755E+02			
	Grand Total Activity :		5.755E+02	5.755E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.755E+02	2.082E+01	6.744E+00	0.000E+00	85.340

```
A,01L85483-2BI207 ,01/27/2020 10:23,01/27/2020 00:00,   1.000E+00,L85483-2BI207
B,01L85483-2BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.755E+02,   2.082E+01,   6.744E+00,,   85.340
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:21:33.22
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:38.66

LIMS No., Customer Name, Client ID: L85483-3BI207 GAMMA COUNTT

Sample ID : 02L85483-3BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation:- Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:41:04.70
Live time : 0 01:41:01.42

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	4152	770	0.91	130.38	1.62E+01	6.85E-01	1.9	2.95E+00
2	2	74.97*	7141	481	0.89	134.74	1.70E+01	1.18E+00	1.3	
3	3	84.80*	3054	387	1.14	154.54	1.96E+01	5.04E-01	2.1	3.19E+00
4	3	87.40	968	274	1.03	159.77	2.01E+01	1.60E-01	4.3	
5	0	569.65	7070	227	1.39	1131.10	6.31E+00	1.17E+00	1.3	
6	0	1063.53	2970	107	1.76	2125.93	3.08E+00	4.90E-01	2.0	
7	0	1633.12	274	17	2.04	3273.38	1.95E+00	4.53E-02	6.8	
8	0	1770.34	144	16	1.57	3549.83	1.84E+00	2.37E-02	10.2	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2970	74.50*	3.082E+00	5.768E+02	5.768E+02	4.00
	1770.24	144	6.87	1.840E+00	5.071E+02	5.071E+02	20.30

Flag: "*" = Keyline

Sample ID : 02L85483-3BI207 Acquisition date : 27-JAN-2020 08:38:38

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.768E+02	5.768E+02	0.231E+02	4.00	
	Total Activity :		5.768E+02	5.768E+02			
	Grand Total Activity :		5.768E+02	5.768E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	4152	770	0.91	130.38	123	23	6.85E-01	3.8	1.62E+01	
2	74.97	7141	481	0.89	134.74	123	23	1.18E+00	2.6	1.70E+01	
3	84.80	3054	387	1.14	154.54	148	17	5.04E-01	4.2	1.96E+01	
3	87.40	968	274	1.03	159.77	148	17	1.60E-01	8.7	2.01E+01	
0	569.65	7070	227	1.39	1131.10	1124	15	1.17E+00	2.6	6.31E+00	
0	1633.12	274	17	2.04	3273.38	3266	13	4.53E-02	13.5	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.735E+02	5.735E+02	0.225E+02	3.93	
	Total Activity :		5.735E+02	5.735E+02			
Grand Total Activity :			5.735E+02	5.735E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.735E+02	2.251E+01	6.743E+00	0.000E+00	85.049

```
A,02L85483-3BI207 ,01/27/2020 10:21,01/27/2020 00:00,   1.000E+00,L85483-3BI207
B,02L85483-3BI207 ,BI207                ,01/15/2020 08:15,0225MM103019
C,BI-207  ,YES,   5.735E+02,   2.251E+01,   6.743E+00,,   85.049
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:18:55.17
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-JAN-2020 08:38:41.00

LIMS No., Customer Name, Client ID: L85483-4BI207 GAMMA COUNT

Sample ID : 08L85483-4BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.78
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.75	2536	662	1.40	152.56	9.14E+00	4.23E-01	2.7	3.82E+00
2	3	74.94*	4056	466	1.18	156.95	9.94E+00	6.76E-01	2.0	
3	3	84.75*	1976	376	1.38	176.54	1.31E+01	3.29E-01	2.8	9.49E-01
4	3	87.42	676	292	1.25	181.86	1.38E+01	1.13E-01	6.7	
5	1	569.41	6438	180	1.51	1144.30	5.93E+00	1.07E+00	1.3	1.80E+00
6	1	1063.15	2675	77	1.80	2129.66	2.95E+00	4.46E-01	2.1	2.83E+00
7	1	1632.76	206	18	1.92	3265.78	1.91E+00	3.43E-02	8.2	5.55E-01
8	1	1769.84	152	0	2.13	3539.08	1.80E+00	2.53E-02	8.1	3.91E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2675	74.50*	2.953E+00	5.476E+02	5.477E+02	4.16
	1770.24	152	6.87	1.802E+00	5.526E+02	5.526E+02	16.23

Flag: "*" = Keyline

Sample ID : 08L85483-4BI207 Acquisition date : 27-JAN-2020 08:38:41

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.476E+02	5.477E+02	0.228E+02	4.16	
	Total Activity :		5.476E+02	5.477E+02			
	Grand Total Activity :		5.476E+02	5.477E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.75	2536	662	1.40	152.56	144	28	4.23E-01	5.3	9.14E+00	
3	74.94	4056	466	1.18	156.95	144	28	6.76E-01	4.1	9.94E+00	
3	84.75	1976	376	1.38	176.54	171	16	3.29E-01	5.6	1.31E+01	
3	87.42	676	292	1.25	181.86	171	16	1.13E-01	13.4	1.38E+01	
1	569.41	6438	180	1.51	1144.30	1137	16	1.07E+00	2.7	5.93E+00	
1	1632.76	206	18	1.92	3265.78	3259	14	3.43E-02	16.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.479E+02	5.480E+02	0.221E+02	4.03	
	Total Activity :		5.479E+02	5.480E+02			
	Grand Total Activity :		5.479E+02	5.480E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.480E+02	2.206E+01	8.700E+00	0.000E+00	62.987

```
A,08L85483-4BI207 ,01/27/2020 10:18,01/27/2020 00:00,   1.000E+00,L85483-4BI207
B,08L85483-4BI207 ,BI207                ,01/21/2020 08:55,0825MM092019
C,BI-207  ,YES,   5.480E+02,   2.206E+01,   8.700E+00,,   62.987
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/29/20 17:18

Work Order: **L85483** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

KT 11/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85483-1		PB-210	08-dec-19 15:10	6.0661 g dry		01-24-20 10:30	.0639	95.66	01-24-20 21:53	Y1D	1418	800 M	1015	800 M	.286	.969	KSC
11187072-120819-BN-SJSSA05 (0-2.5 CM) Activity: **2.12E-01** Error: 5.20E-02 MDC: 7.82E-02 pCi/gDry							**L85483-1**				**PB-210**						
L85483-2		PB-210	08-dec-19 15:15	6.2617 g dry		01-24-20 10:30	.0502	75.15	01-24-20 21:53	Y2A	1190	800 M	724	800 M	.263	.969	KSC
11187072-120819-BN-SJSSA05 (7.5-10 CM) Activity: **2.59E-01** Error: 4.86E-02 MDC: 6.97E-02 pCi/gDry							**L85483-2**				**PB-210**						
L85483-3		PB-210	08-dec-19 15:20	6.7266 g dry		01-24-20 10:30	.0492	73.65	01-24-20 21:53	Y2B	1436	800 M	675	800 M	.296	.969	KSC
11187072-120819-BN-SJSSA05 (15-17.5 CM) Activity: **3.50E-01** Error: 4.23E-02 MDC: 5.57E-02 pCi/gDry							**L85483-3**				**PB-210**						
L85483-4		PB-210	08-dec-19 15:25	6.2372 g dry		01-24-20 10:30	.0481	72.01	01-24-20 21:53	Y2C	1098	800 M	850	800 M	.306	.969	KSC
11187072-120819-BN-SJSSA05 (22.5-25 CM) Activity: **1.19E-01** Error: 4.22E-02 MDC: 6.50E-02 pCi/gDry							**L85483-4**				**PB-210**						
L85483-5		PB-210	08-dec-19 15:30	6.2452 g dry		01-24-20 10:30	.0578	86.53	01-28-20 22:45	Y3A	972	800 M	780	800 M	.271	.555	KSC
11187072-120819-BN-SJSSA05 (30-32.5 CM) Activity: **1.81E-01** Error: 7.90E-02 MDC: 1.23E-01 pCi/gDry							**L85483-5**				**PB-210**						
L85483-6		PB-210	08-dec-19 15:35	6.0966 g dry		01-24-20 10:30	.0472	70.66	01-24-20 21:53	Y3A	912	800 M	780	800 M	.271	.969	KSC
11187072-120819-BN-SJSSA05 (37.5-40 CM) Activity: **7.30E-02** Error: 4.55E-02 MDC: 7.20E-02 pCi/gDry							**L85483-6**				**PB-210**						
L85483-7		PB-210	08-dec-19 15:40	6.257 g dry		01-24-20 10:30	.0661	98.95	01-24-20 21:53	Y3B	808	800 M	882	800 M	.287	.969	KSC
11187072-120819-BN-SJSSA05 (45-47.5 CM) Activity: -3.76E-02 Error: 4.18E-02 MDC: **7.04E-02** pCi/gDry							L85483-7				PB-210						
L85483-8		PB-210	08-dec-19 15:45	6.0716 g dry		01-20-20 13:00	.0466	69.76	01-21-20 01:08	X3D	1312	800 M	777	800 M	.293	.965	KSC
11187072-120819-BN-SJSSA05 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/29/20 17:18

Work Order: **L85483**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

LT 1/30/20

L85483-8	PB-210	08-dec-19 15:45	6.0716 g dry	01-20-20 13:00	.0466	69.76	01-21-20 01:08	X3D	1312	800 M	777	800 M	.293	.965	KSC
11187072-120819-BN-SJSSA05 (52.5-55 CM) Activity: **3.17E-01** Error: 5.42E-02 MDC: 7.70E-02 pCi/gDry				**L85483-8**			**PB-210**								
L85483-9	PB-210	08-dec-19 15:50	6.0288 g dry	01-20-20 13:00	.0443	66.32	01-21-20 01:08	X4A	1392	800 M	769	800 M	.309	.965	KSC
11187072-120819-BN-SJSSA05 (60-62.5 CM) Activity: **3.52E-01** Error: 5.26E-02 MDC: 7.31E-02 pCi/gDry				**L85483-9**			**PB-210**								
L85483-10	PB-210	08-dec-19 15:55	6.0897 g dry	01-20-20 13:00	.0541	80.99	01-21-20 01:08	X4B	1552	800 M	802	800 M	.294	.965	KSC
11187072-120819-BN-SJSSA05 (70-72.5 CM) Activity: **4.42E-01** Error: 5.72E-02 MDC: 7.78E-02 pCi/gDry				**L85483-10**			**PB-210**								
L85483-11	PB-210	08-dec-19 16:00	6.1373 g dry	01-20-20 13:00	.0596	89.22	01-21-20 01:08	X4C	1335	800 M	749	800 M	.276	.965	KSC
11187072-120819-BN-SJSSA05 (80-82.5 CM) Activity: **3.65E-01** Error: 5.68E-02 MDC: 7.94E-02 pCi/gDry				**L85483-11**			**PB-210**								
L85483-12	PB-210	08-dec-19 12:00	6.3621 g dry	01-20-20 13:00	.0525	78.59	01-21-20 01:08	X4D	1388	800 M	813	800 M	.286	.965	KSC
11187072-120819-BN-DUP1 Activity: **3.33E-01** Error: 5.44E-02 MDC: 7.70E-02 pCi/gDry				**L85483-12**			**PB-210**								

Raw Data Sheet (rawdata)

01/29/20 17:19

Work Order: **WG32932** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32932-1		PB-210	24-jan-20 00:00	100 %		01-24-20 10:30	.0415	62.13	01-24-20 22:42	X1A	940	800 M	811	800 M	.311	.969	KSC
Blank Samples																	
Activity: 3.79E-01	Error: 2.46E-01	MDC: **3.90E-01**	pCi/Total			WG32932-1		PB-210									
WG32932-2		PB-210	01-jul-91 12:00	100 %		01-24-20 10:30	.0462	69.16	01-24-20 15:45	X4A	689	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **2.58E+02**	Error: 2.01E+01	MDC: 6.76E+00	pCi/Total			**WG32932-2**		**PB-210**									
WG32932-3		PB-210	08-dec-19 15:30	6.4435 g dry		01-24-20 10:30	.0502	75.15	01-28-20 22:45	Y3B	1574	800 M	882	800 M	.287	.555	KSC
11187072-120819-BN-SJSSA05 (30-32.5 CM)																	
Activity: **5.97E-01**	Error: 8.56E-02	MDC: 1.20E-01	pCi/gDry			**WG32932-3**		**PB-210**									
WG32932-4		PB-210	08-dec-19 00:00	6.2002 g dry		01-24-20 10:30	.0635	95.06	01-24-20 15:45	X4B	802	15 M	802	800 M	.294	.967	KSC
11187072-120819-BN-SJSSA05 (7.5-10 CM)																	
Activity: **2.11E+01**	Error: 1.52E+00	MDC: 4.85E-01	pCi/gDry			**WG32932-4**		**PB-210**									
WG32932-5		PB-210	08-dec-19 00:00	6.119 g dry		01-24-20 10:30	.0398	59.58	01-24-20 15:45	X4C	636	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **1.80E+01**	Error: 1.46E+00	MDC: 5.05E-01	pCi/gDry			**WG32932-5**		**PB-210**									

Raw Data Sheet (rawdata)

01/29/20 17:19

Work Order: **WG32883** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

JCT 1/31/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32883-1		PB-210	20-jan-20 00:00	100 %		01-20-20 13:00	.0634	94.91	01-21-20 01:06	Y1A	887	800 M	790	800 M	.305	.969	KSC
Blank Samples																	
Activity: 3.34E-01 Error: 2.82E-01 MDC: **4.51E-01** pCi/Total							WG32883-1		PB-210								
WG32883-2		PB-210	01-jul-91 12:00	100 %		01-20-20 13:00	.0483	72.31	01-20-20 18:16	X4A	710	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **3.06E+02** Error: 2.34E+01 MDC: 7.77E+00 pCi/Total							**WG32883-2**		**PB-210**								
WG32883-3		PB-210	09-dec-19 15:10	6.5667 g dry		01-20-20 13:00	.0582	87.13	01-21-20 01:06	Y1B	2321	800 M	809	800 M	.292	.966	KSC
11187072-120919-BN-SJSSA07 (22.5-25 CM)																	
Activity: **8.32E-01** Error: 6.16E-02 MDC: 7.29E-02 pCi/gDry							**WG32883-3**		**PB-210**								
WG32883-4		PB-210	09-dec-19 15:10	6.1818 g dry		01-20-20 13:00	.0631	94.46	01-20-20 18:16	X4B	812	15 M	802	800 M	.294	.967	KSC
11187072-120619-SS-SJSSA06 (60-62.5 CM)																	
Activity: **2.46E+01** Error: 1.76E+00 MDC: 5.59E-01 pCi/gDry							**WG32883-4**		**PB-210**								
WG32883-5		PB-210	09-dec-19 15:10	6.2777 g dry		01-20-20 13:00	.055	82.84	01-20-20 18:16	X4C	709	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **2.25E+01** Error: 1.72E+00 MDC: 5.66E-01 pCi/gDry							**WG32883-5**		**PB-210**								

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85482-10	2697	4.66	800.00	01/24/2020 21:53		6.7906	g	pCi	PB-210	0.305	8.40E-01	5.20E-02	5.77E-02	g Dry	0.636	0.9694	790.	800.0	
L85482-11	2336	4.66	800.00	01/24/2020 21:53		6.3850	g	pCi	PB-210	0.292	7.49E-01	5.50E-02	6.50E-02	g Dry	0.636	0.9694	809.	800.0	
L85483-1	1418	4.66	800.00	01/24/2020 21:53		6.0661	g	pCi	PB-210	0.286	2.12E-01	5.20E-02	7.82E-02	g Dry	0.636	0.9693	1015.	800.0	
L85483-2	1190	4.66	800.00	01/24/2020 21:53		6.2617	g	pCi	PB-210	0.263	2.59E-01	4.86E-02	6.97E-02	g Dry	0.636	0.9693	724.	800.0	
L85483-3	1436	4.66	800.00	01/24/2020 21:53		6.7266	g	pCi	PB-210	0.296	3.50E-01	4.23E-02	5.57E-02	g Dry	0.636	0.9693	675.	800.0	
L85483-4	1098	4.66	800.00	01/24/2020 21:53		6.2372	g	pCi	PB-210	0.306	1.19E-01	4.22E-02	6.50E-02	g Dry	0.636	0.9693	850.	800.0	
~~L85483-5~~	~~1163~~	~~4.66~~	~~800.00~~	~~01/24/2020 21:53~~		~~6.2452~~	~~g~~	~~pCi~~	~~PB-210~~	~~0.295~~	~~2.56E-01~~	~~4.22E-02~~	~~5.88E-02~~	~~g Dry~~	~~0.636~~	~~0.9693~~	~~647.~~	~~800.0~~	
L85483-6	912	4.66	800.00	01/24/2020 21:53		6.0966	g	pCi	PB-210	0.271	7.30E-02	4.55E-02	7.20E-02	g Dry	0.636	0.9693	780.	800.0	
L85483-7	808	4.66	800.00	01/24/2020 21:53		6.2570	g	pCi	PB-210	0.287	-3.76E-02	4.18E-02	7.04E-02	g Dry	0.636	0.9693	882.	800.0	

LDA 1/28/20
Reviewed Date

Data Filename: Y012420N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

U 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85482-10	25	2697	1/24/2020 21:53	800 800MIN	1650
1 b	b l85482-11	24	2336	1/24/2020 21:53	800 800MIN	1650
1 c		12	902	1/24/2020 21:53	800 800MIN	1650
1 d	b l85483-1	31	1418	1/24/2020 21:53	800 800MIN	1650
2 a	b l85483-2	22	1190	1/24/2020 21:53	800 800MIN	1650
2 b	b l85483-3	38	1436	1/24/2020 21:53	800 800MIN	1650
2 c	b l85483-4	30	1098	1/24/2020 21:53	800 800MIN	1650
2 d	b l85483-5	30	1163	1/24/2020 21:53	800 800MIN	1650
3 a	b l85483-6	32	912	1/24/2020 21:53	800 800MIN	1650
3 b	b l85483-7	15	808	1/24/2020 21:53	800 800MIN	1650
3 c		18	625	1/24/2020 21:53	800 800MIN	1650
3 d		11	1142	1/24/2020 21:53	800 800MIN	1650
4 a		0	0	1/24/2020 21:53	800 800MIN	1650
4 b		0	0	1/24/2020 21:53	800 800MIN	1650
4 c		0	0	1/24/2020 21:53	800 800MIN	1650
4 d		0	0	1/24/2020 21:53	800 800MIN	1650

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85483-5	972	4.66	800.00	01/28/2020 22:45		6.2452	g	pCi	PB-210	0.271	1.81E-01	7.90E-02	1.23E-01	g Dry	0.636	0.5546	780.	800.0	
WG32932-3	1574	4.66	800.00	01/28/2020 22:45		6.4435	g	pCi	PB-210	0.287	5.97E-01	8.56E-02	1.19E-01	g Dry	0.636	0.5546	882.	800.0	

KEL 1/29/20
Reviewed Date

MDF 1/29/20

Data Filename: Y012820N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/28/2020 22:45	800 800MIN	1650
1 b				1/28/2020 22:45	800 800MIN	1650
1 c				1/28/2020 22:45	800 800MIN	1650
1 d				1/28/2020 22:45	800 800MIN	1650
2 a				1/28/2020 22:45	800 800MIN	1650
2 b				1/28/2020 22:45	800 800MIN	1650
2 c				1/28/2020 22:45	800 800MIN	1650
2 d				1/28/2020 22:45	800 800MIN	1650
3 a	b l85483-5	18	972	1/28/2020 22:45	800 800MIN	1650
3 b	b wg32932-3	11	1574	1/28/2020 22:45	800 800MIN	1650
3 c		16	643	1/28/2020 22:45	800 800MIN	1650
3 d		24	1054	1/28/2020 22:45	800 800MIN	1650
4 a		0	0	1/28/2020 22:45	800 800MIN	1650
4 b		0	0	1/28/2020 22:45	800 800MIN	1650
4 c		0	0	1/28/2020 22:45	800 800MIN	1650
4 d		0	0	1/28/2020 22:45	800 800MIN	1650

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85484-8	891	4.66	800.00	01/21/2020 01:08		6.4522	g	pCi	PB-210	0.311	4.20E-02	4.34E-02	6.97E-02	g Dry	0.553	0.9653	811.	800.0	
L85484-9	1099	4.66	800.00	01/21/2020 01:08		6.5644	g	pCi	PB-210	0.296	1.13E-01	4.85E-02	7.56E-02	g Dry	0.553	0.9653	892.	800.0	
L85484-10	1070	4.66	800.00	01/21/2020 01:08		6.0873	g	pCi	PB-210	0.275	1.88E-01	5.40E-02	8.15E-02	g Dry	0.553	0.9653	772.	800.0	
L85484-11	1168	4.66	800.00	01/21/2020 01:08		6.5434	g	pCi	PB-210	0.283	9.41E-02	5.31E-02	8.42E-02	g Dry	0.553	0.9653	1003.	800.0	
L85485-1	2509	4.66	800.00	01/21/2020 01:08		6.3088	g	pCi	PB-210	0.312	9.05E-01	6.20E-02	7.17E-02	g Dry	0.553	0.9655	822.	800.0	
L85485-2	2150	4.66	800.00	01/21/2020 01:08		6.1094	g	pCi	PB-210	0.267	8.53E-01	7.07E-02	8.70E-02	g Dry	0.553	0.9655	832.	800.0	
L85485-3	2320	4.66	800.00	01/21/2020 01:08		6.0215	g	pCi	PB-210	0.281	9.12E-01	7.04E-02	8.53E-02	g Dry	0.553	0.9655	860.	800.0	
L85485-4	2836	4.66	800.00	01/21/2020 01:08		6.3387	g	pCi	PB-210	0.263	1.05E+00	8.03E-02	1.01E-01	g Dry	0.553	0.9655	1179.	800.0	
L85483-8	1312	4.66	800.00	01/21/2020 01:08		6.0716	g	pCi	PB-210	0.293	3.17E-01	5.42E-02	7.70E-02	g Dry	0.553	0.9654	777.	800.0	
L85483-9	1392	4.66	800.00	01/21/2020 01:08		6.0288	g	pCi	PB-210	0.309	3.52E-01	5.26E-02	7.31E-02	g Dry	0.553	0.9654	769.	800.0	
L85483-10	1552	4.66	800.00	01/21/2020 01:08		6.0897	g	pCi	PB-210	0.294	4.42E-01	5.72E-02	7.78E-02	g Dry	0.553	0.9654	802.	800.0	
L85483-11	1335	4.66	800.00	01/21/2020 01:08		6.1373	g	pCi	PB-210	0.276	3.65E-01	5.68E-02	7.94E-02	g Dry	0.553	0.9654	749.	800.0	
L85483-12	1388	4.66	800.00	01/21/2020 01:08		6.3621	g	pCi	PB-210	0.286	3.33E-01	5.44E-02	7.70E-02	g Dry	0.553	0.9654	813.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: X012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85484-8	20	891	1/21/2020 1:08	800 800MIN	1580
1 b	b l85484-9	37	1099	1/21/2020 1:08	800 800MIN	1580
1 c	b l85484-10	29	1070	1/21/2020 1:08	800 800MIN	1580
1 d	b l85484-11	35	1168	1/21/2020 1:08	800 800MIN	1580
2 a		21	2152	1/21/2020 1:08	800 800MIN	1580
2 b		22	618	1/21/2020 1:08	800 800MIN	1580
2 c	b l85485-1	27	2509	1/21/2020 1:08	800 800MIN	1580
2 d		21	578	1/21/2020 1:08	800 800MIN	1580
3 a	b l85485-2	26	2150	1/21/2020 1:08	800 800MIN	1580
3 b	b l85485-3	40	2320	1/21/2020 1:08	800 800MIN	1580
3 c	b l85485-4	25	2836	1/21/2020 1:08	800 800MIN	1580
3 d	b l85483-8	43	1312	1/21/2020 1:08	800 800MIN	1580
4 a	b l85483-9	62	1392	1/21/2020 1:08	800 800MIN	1580
4 b	b l85483-10	44	1552	1/21/2020 1:08	800 800MIN	1580
4 c	b l85483-11	24	1335	1/21/2020 1:08	800 800MIN	1580
4 d	b l85483-12	50	1388	1/21/2020 1:08	800 800MIN	1580

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-1	940	4.66	800.00	01/24/2020 22:42		1.0000	%	pCi	PB-210	0.311	3.79E-01	2.46E-01	3.90E-01	Total	0.636	0.9686	811.	800.0	
~~WG32932-3~~	~~1989~~	~~4.66~~	~~800.00~~	~~01/24/2020 22:42~~		~~6.4435~~	~~g~~	~~pCi~~	~~PB-210~~	~~0.296~~	~~5.29E-01~~	~~5.17E-02~~	~~6.71E-02~~	~~g Dry~~	~~0.636~~	~~0.9648~~	~~892.~~	~~800.0~~	
L85481-10	1569	4.66	800.00	01/24/2020 22:42		6.6059	g	pCi	PB-210	0.275	4.02E-01	4.89E-02	6.54E-02	g Dry	0.636	0.9646	772.	800.0	
L85481-11	1942	4.66	800.00	01/24/2020 22:42		6.4130	g	pCi	PB-210	0.283	4.76E-01	5.50E-02	7.48E-02	g Dry	0.636	0.9646	1003.	800.0	
L85482-1	3095	4.66	800.00	01/24/2020 22:42		6.0193	g	pCi	PB-210	0.312	1.11E+00	6.13E-02	6.54E-02	g Dry	0.636	0.9648	822.	800.0	
L85482-2	2695	4.66	800.00	01/24/2020 22:42		6.4011	g	pCi	PB-210	0.267	1.00E+00	6.39E-02	7.23E-02	g Dry	0.636	0.9648	832.	800.0	
L85482-3	2747	4.66	800.00	01/24/2020 22:42		6.6447	g	pCi	PB-210	0.281	9.30E-01	5.92E-02	6.73E-02	g Dry	0.636	0.9648	860.	800.0	
L85482-4	2833	4.66	800.00	01/24/2020 22:42		6.5085	g	pCi	PB-210	0.263	8.89E-01	6.81E-02	8.60E-02	g Dry	0.636	0.9648	1179.	800.0	
L85482-5	2969	4.66	800.00	01/24/2020 22:42		6.5447	g	pCi	PB-210	0.293	1.05E+00	5.86E-02	6.22E-02	g Dry	0.636	0.9648	777.	800.0	
L85482-6	2129	4.66	800.00	01/24/2020 22:42		6.3253	g	pCi	PB-210	0.309	6.38E-01	5.05E-02	6.06E-02	g Dry	0.636	0.9648	769.	800.0	
L85482-7	2014	4.66	800.00	01/24/2020 22:42		6.2422	g	pCi	PB-210	0.294	6.07E-01	5.31E-02	6.61E-02	g Dry	0.636	0.9648	802.	800.0	
L85482-8	2290	4.66	800.00	01/24/2020 22:42		6.1568	g	pCi	PB-210	0.276	8.32E-01	5.95E-02	6.89E-02	g Dry	0.636	0.9648	749.	800.0	
L85482-9	2538	4.66	800.00	01/24/2020 22:42		6.2843	g	pCi	PB-210	0.286	8.81E-01	5.91E-02	6.78E-02	g Dry	0.636	0.9648	813.	800.0	

MSL 1/28/20
Reviewed Date

Data Filename: X012420N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

U 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32932-1	31	940	1/24/2020 22:42	800 800MIN	1580
1 b	b wg32932-3	42	1989	1/24/2020 22:42	800 800MIN	1580
1 c	b l85481-10	44	1569	1/24/2020 22:42	800 800MIN	1580
1 d	b l85481-11	35	1942	1/24/2020 22:42	800 800MIN	1580
2 a		17	2170	1/24/2020 22:42	800 800MIN	1580
2 b		22	697	1/24/2020 22:42	800 800MIN	1580
2 c	b l85482-1	31	3095	1/24/2020 22:42	800 800MIN	1580
2 d		30	662	1/24/2020 22:42	800 800MIN	1580
3 a	b l85482-2	17	2695	1/24/2020 22:42	800 800MIN	1580
3 b	b l85482-3	37	2747	1/24/2020 22:42	800 800MIN	1580
3 c	b l85482-4	31	2833	1/24/2020 22:42	800 800MIN	1580
3 d	b l85482-5	53	2969	1/24/2020 22:42	800 800MIN	1580
4 a	b l85482-6	32	2129	1/24/2020 22:42	800 800MIN	1580
4 b	b l85482-7	37	2014	1/24/2020 22:42	800 800MIN	1580
4 c	b l85482-8	22	2290	1/24/2020 22:42	800 800MIN	1580
4 d	b l85482-9	35	2538	1/24/2020 22:42	800 800MIN	1580

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-2	689	4.66	15.00	01/24/2020 15:45		1.0000	%	pCi	PB-210	0.309	2.58E+02	2.01E+01	6.76E+00	Total	0.636	0.3995	769.	800.0	
WG32932-4	802	4.66	15.00	01/24/2020 15:45		6.2002	g	pCi	PB-210	0.294	2.11E+01	1.52E+00	4.85E-01	g Dry	0.636	0.9670	802.	800.0	
WG32932-5	636	4.66	15.00	01/24/2020 15:45		6.1190	g	pCi	PB-210	0.276	1.80E+01	1.46E+00	5.05E-01	g Dry	0.636	0.9670	749.	800.0	

WCA 1/28/20
Reviewed Date

Data Filename: X012420AS.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

WCA 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/24/2020 15:10	15 15MIN	1580
1 b				1/24/2020 15:10	15 15MIN	1580
1 c				1/24/2020 15:10	15 15MIN	1580
1 d				1/24/2020 15:10	15 15MIN	1580
2 a				1/24/2020 15:10	15 15MIN	1580
2 b				1/24/2020 15:10	15 15MIN	1580
2 c				1/24/2020 15:10	15 15MIN	1580
2 d				1/24/2020 15:10	15 15MIN	1580
3 a				1/24/2020 15:45	15 15MIN	1580
3 b				1/24/2020 15:45	15 15MIN	1580
3 c				1/24/2020 15:45	15 15MIN	1580
3 d				1/24/2020 15:45	15 15MIN	1580
4 a	b wg32932-2	4	689	1/24/2020 15:45	15 15MIN	1580
4 b	b wg32932-4	5	802	1/24/2020 15:45	15 15MIN	1580
4 c	b wg32932-5	6	636	1/24/2020 15:45	15 15MIN	1580
4 d		1	8	1/24/2020 15:45	15 15MIN	1580

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-1	887	4.66	800.00	01/21/2020 01:06		1.0000	%	pCi	PB-210	0.305	3.34E-01	2.82E-01	4.51E-01	Total	0.553	0.9691	790.	800.0	
WG32883-3	2321	4.66	800.00	01/21/2020 01:06		6.5667	g	pCi	PB-210	0.292	8.32E-01	6.16E-02	7.29E-02	g Dry	0.553	0.9657	809.	800.0	
L85484-1	1396	4.66	800.00	01/21/2020 01:06		6.3574	g	pCi	PB-210	0.286	2.21E-01	5.70E-02	8.62E-02	g Dry	0.553	0.9655	1015.	800.0	
L85484-2	995	4.66	800.00	01/21/2020 01:06		6.7569	g	pCi	PB-210	0.263	1.61E-01	4.93E-02	7.45E-02	g Dry	0.553	0.9655	724.	800.0	
L85484-3	1015	4.66	800.00	01/21/2020 01:06		6.0512	g	pCi	PB-210	0.306	9.39E-02	4.91E-02	7.73E-02	g Dry	0.553	0.9655	850.	800.0	
L85484-4	1015	4.66	800.00	01/21/2020 01:06		6.1257	g	pCi	PB-210	0.295	2.15E-01	4.76E-02	6.92E-02	g Dry	0.553	0.9655	647.	800.0	
L85484-5	961	4.66	800.00	01/21/2020 01:06		6.2244	g	pCi	PB-210	0.271	1.13E-01	5.22E-02	8.14E-02	g Dry	0.553	0.9655	780.	800.0	
L85484-6	1027	4.66	800.00	01/21/2020 01:06		6.2520	g	pCi	PB-210	0.287	8.52E-02	5.13E-02	8.13E-02	g Dry	0.553	0.9655	882.	800.0	
L85484-7	1128	4.66	800.00	01/21/2020 01:06		6.6032	g	pCi	PB-210	0.295	1.66E-01	4.78E-02	7.23E-02	g Dry	0.553	0.9655	822.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: Y012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32883-1	34	887	1/21/2020 1:06	800 800MIN	1650
1 b	b wg32883-3	43	2321	1/21/2020 1:06	800 800MIN	1650
1 c		9	900	1/21/2020 1:06	800 800MIN	1650
1 d	b l85484-1	54	1396	1/21/2020 1:06	800 800MIN	1650
2 a	b l85484-2	22	995	1/21/2020 1:06	800 800MIN	1650
2 b		7	875	1/21/2020 1:06	800 800MIN	1650
2 c	b l85484-3	26	1015	1/21/2020 1:06	800 800MIN	1650
2 d	b l85484-4	24	1015	1/21/2020 1:06	800 800MIN	1650
3 a	b l85484-5	18	961	1/21/2020 1:06	800 800MIN	1650
3 b	b l85484-6	34	1027	1/21/2020 1:06	800 800MIN	1650
3 c		22	610	1/21/2020 1:06	800 800MIN	1650
3 d	b l85484-7	24	1128	1/21/2020 1:06	800 800MIN	1650
4 a		0	0	1/21/2020 1:06	800 800MIN	1650
4 b		0	0	1/21/2020 1:06	800 800MIN	1650
4 c		0	0	1/21/2020 1:06	800 800MIN	1650
4 d		0	0	1/21/2020 1:06	800 800MIN	1650

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-2	710	4.66	15.00	01/20/2020 18:16		1.0000	%	pCi	PB-210	0.309	3.06E+02	2.34E+01	7.77E+00	Total	0.553	0.3996	769.	800.0	
WG32883-4	812	4.66	15.00	01/20/2020 18:16		6.1818	g	pCi	PB-210	0.294	2.46E+01	1.76E+00	5.59E-01	g Dry	0.553	0.9673	802.	800.0	
WG32883-5	709	4.66	15.00	01/20/2020 18:16		6.2777	g	pCi	PB-210	0.276	2.25E+01	1.72E+00	5.66E-01	g Dry	0.553	0.9673	749.	800.0	

Reviewed 1/21/20 Date

1/21/20

Data Filename: X012020A.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a		1	8	1/20/2020 18:16	15 15MIN	1580
1 b		0	21	1/20/2020 18:16	15 15MIN	1580
1 c		0	10	1/20/2020 18:16	15 15MIN	1580
1 d		0	11	1/20/2020 18:16	15 15MIN	1580
2 a		0	45	1/20/2020 18:16	15 15MIN	1580
2 b		0	13	1/20/2020 18:16	15 15MIN	1580
2 c		0	15	1/20/2020 18:16	15 15MIN	1580
2 d		0	17	1/20/2020 18:16	15 15MIN	1580
3 a		0	9	1/20/2020 18:16	15 15MIN	1580
3 b		0	14	1/20/2020 18:16	15 15MIN	1580
3 c		0	27	1/20/2020 18:16	15 15MIN	1580
3 d		0	13	1/20/2020 18:16	15 15MIN	1580
4 a	b wg32883-2	7	710	1/20/2020 18:16	15 15MIN	1580
4 b	b wg32883-4	3	812	1/20/2020 18:16	15 15MIN	1580
4 c	b wg32883-5	5	709	1/20/2020 18:16	15 15MIN	1580
4 d		0	15	1/20/2020 18:16	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85483

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32883-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32883-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32883-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02
WG32932-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32932-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32932-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32883-1	WO	BLK	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0320	BALANCE 10	.0954	BALANCE 10	.0634	01/20/20	WG32883
WG32883-2	WO	LCS	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0331	BALANCE 10	.0814	BALANCE 10	.0483	01/20/20	WG32883
WG32883-3	S	DUP	PB-210	6.5667 g dry	01/20/20	KSC	BALANCE 10	.0335	BALANCE 10	.0917	BALANCE 10	.0582	01/20/20	WG32883
WG32883-4	S	MS	PB-210	6.1818 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0961	BALANCE 10	.0631	01/20/20	WG32883
WG32883-5	S	MSD	PB-210	6.2777 g dry	01/20/20	KSC	BALANCE 10	.0328	BALANCE 10	.0878	BALANCE 10	.0550	01/20/20	WG32883
WG32932-1	WO	BLK	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0750	BALANCE 10	.0415	01/24/20	WG32932
WG32932-2	WO	LCS	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0793	BALANCE 10	.0462	01/24/20	WG32932
WG32932-3	S	DUP	PB-210	6.4435 g dry	01/24/20	KSC	BALANCE 7	.0333	BALANCE 10	.0835	BALANCE 10	.0502	01/24/20	WG32932
WG32932-4	S	MS	PB-210	6.2002 g dry	01/24/20	KSC	BALANCE 7	.0339	BALANCE 10	.0974	BALANCE 10	.0635	01/24/20	WG32932
WG32932-5	S	MSD	PB-210	6.119 g dry	01/24/20	KSC	BALANCE 7	.0338	BALANCE 10	.0736	BALANCE 10	.0398	01/24/20	WG32932
L85483-1	S		PB-210	6.0661 g dry	01/24/20	KSC	BALANCE 7	.0339	BALANCE 10	.0978	BALANCE 10	.0639	01/24/20	WG32932
L85483-2	S		PB-210	6.2617 g dry	01/24/20	KSC	BALANCE 7	.0336	BALANCE 10	.0838	BALANCE 10	.0502	01/24/20	WG32932
L85483-3	S		PB-210	6.7266 g dry	01/24/20	KSC	BALANCE 7	.0338	BALANCE 10	.0830	BALANCE 10	.0492	01/24/20	WG32932
L85483-4	S		PB-210	6.2372 g dry	01/24/20	KSC	BALANCE 7	.0334	BALANCE 10	.0815	BALANCE 10	.0481	01/24/20	WG32932
L85483-5	S		PB-210	6.2452 g dry	01/24/20	KSC	BALANCE 7	.0332	BALANCE 10	.0910	BALANCE 10	.0578	01/24/20	WG32932
L85483-6	S		PB-210	6.0966 g dry	01/24/20	KSC	BALANCE 7	.0343	BALANCE 10	.0815	BALANCE 10	.0472	01/24/20	WG32932
L85483-7	S		PB-210	6.257 g dry	01/24/20	KSC	BALANCE 7	.0337	BALANCE 10	.0998	BALANCE 10	.0661	01/24/20	WG32932
L85483-8	S		PB-210	6.0716 g dry	01/20/20	KSC	BALANCE 10	.0328	BALANCE 10	.0794	BALANCE 10	.0466	01/20/20	WG32883
L85483-9	S		PB-210	6.0288 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0773	BALANCE 10	.0443	01/20/20	WG32883

PB-210

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
L85483-10	S		PB-210	6.0897 g dry	01/20/20	KSC	BALANCE 10	.0329	BALANCE 10	.0870	BALANCE 10	.0541	01/20/20	WG32883
L85483-11	S		PB-210	6.1373 g dry	01/20/20	KSC	BALANCE 10	.0325	BALANCE 10	.0921	BALANCE 10	.0596	01/20/20	WG32883
L85483-12	S		PB-210	6.3621 g dry	01/20/20	KSC	BALANCE 10	.0321	BALANCE 10	.0846	BALANCE 10	.0525	01/20/20	WG32883

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 24-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 24-JAN-20

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0001

Check Date: 20-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 20-JAN-20

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0000

Check Date: 24-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 24-JAN-20

Daily Pipette Tolerance Check
for: L85483

Instrument: PIP ENV #7
Model: FISHERBRAND ELITE
Serial #: LU04803
Description: 100 - 1000 uL

Known	Result
.2	.2
1	.9996

Check Date: 20-JAN-20
Analyst: CRH
Balance: BALANCE 11
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #7	20-JAN-20

Daily Pipette Tolerance Check
for: L85483

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5039
1	1.0027

Check Date: 24-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	24-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

NAMAS
CALIBRATION
No. 0146

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210
Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI 18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85483

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85483-1	11187072-120819-BN-SJSSA05 (0-2.5 CM)	257.01	618	520.4	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	27.04
L85483-2	11187072-120819-BN-SJSSA05 (7.5-10 CM)	257.01	667	562.83	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	25.41
L85483-3	11187072-120819-BN-SJSSA05 (15-17.5 CM)	254.44	619.2	538.34	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	22.17
L85483-4	11187072-120819-BN-SJSSA05 (22.5-25 CM)	255.97	655.2	563.55	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	22.96
L85483-5	11187072-120819-BN-SJSSA05 (30-32.5 CM)	257.8	557	492.52	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	21.55
L85483-6	11187072-120819-BN-SJSSA05 (37.5-40 CM)	255.8	570.4	506.39	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	20.35
L85483-7	11187072-120819-BN-SJSSA05 (45-47.5 CM)	256.5	558	477.27	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	26.78
L85483-8	11187072-120819-BN-SJSSA05 (52.5-55 CM)	254.3	541.5	478.24	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	22.03
L85483-9	11187072-120819-BN-SJSSA05 (60-62.5 CM)	256.3	604.4	541.83	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	17.97
L85483-10	11187072-120819-BN-SJSSA05 (70-72.5 CM)	256.5	783.7	655.15	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	24.38
L85483-11	11187072-120819-BN-SJSSA05 (80-82.5 CM)	257	800.4	651.33	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	27.43
L85483-12	11187072-120819-BN-DUP1	257.8	575.3	488.16	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	27.45

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	23-DEC-19

Daily Balance Tolerance Check Reports

for : L85483

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 27-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85487

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85487
GH001-3EJACINTO-19

01/31/2020 11:35

Sample Receipt

The following sample(s) were received on December 16, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120819-BN-SJSSA09 (0-2.5 CM)	L85487-1	
11187072-120819-BN-SJSSA09 (7.5-10 CM)	L85487-2	
11187072-120819-BN-SJSSA09 (15-17.5 CM)	L85487-3	
11187072-120819-BN-SJSSA09 (22.5-25 CM)	L85487-4	
11187072-120819-BN-SJSSA09 (30-32.5 CM)	L85487-5	
11187072-120819-BN-SJSSA09 (37.5-40 CM)	L85487-6	
11187072-120819-BN-SJSSA09 (45-47.5 CM)	L85487-7	
11187072-120819-BN-SJSSA09 (52.5-55 CM)	L85487-8	
11187072-120819-BN-SJSSA09 (60-62.5 CM)	L85487-9	
11187072-120819-BN-SJSSA09 (70-72.5 CM)	L85487-10	
11187072-120819-BN-SJSSA09 (80-82.5 CM)	L85487-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
BROWN ENGINEERING, INC.
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2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85487
GH001-3EJACINTO-19

01/31/2020 11:35

Special Considerations

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32748.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120819-BN-SJSSA09 (0-2.5 CM)	L85487-1	WG32748-1

PB-210

Quality Control

Quality control sample(s) analyzed as WG32861. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120919-BN-SJSSA07 (52.5-55 CM)	L85485-8	WG32861-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85487
GH001-3EJACINTO-19

01/31/2020 11:35

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 15:26

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85487

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA09 (0-2.5 CM)** Collect Start: 12/08/2019 12:20 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.44
LIMS Number: L85487-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.50E-02**	4.28E-02	6.67E-02	pCi/gDry		6.0382	g dry	12/08/19 12:20	01/17/20	800	M	+			
CS-137	2007	-5.69E-02	5.82E-02	**8.42E-02**	pCi/g Dry		95.46	g dry	12/08/19 12:20	01/03/20	3975	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (7.5-10 CM)** Collect Start: 12/08/2019 12:25 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 18.24
LIMS Number: L85487-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	6.20E-02	4.51E-02	**7.18E-02**	pCi/gDry		6.0298	g dry	12/08/19 12:25	01/17/20	800	M	U			
CS-137	2007	3.22E-02	5.37E-02	**9.61E-02**	pCi/g Dry		95.79	g dry	12/08/19 12:25	01/03/20	4000	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (15-17.5 CM)** Collect Start: 12/08/2019 12:30 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.47
LIMS Number: L85487-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.67E-02**	4.67E-02	7.30E-02	pCi/gDry		6.1019	g dry	12/08/19 12:30	01/17/20	800	M	+			
CS-137	2007	-9.69E-03	5.07E-02	**8.25E-02**	pCi/g Dry		176.47	g dry	12/08/19 12:30	01/03/20	3721	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 15:26

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85487

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA09 (22.5-25 CM)** Collect Start: 12/08/2019 12:35 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.54
LIMS Number: L85487-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	6.28E-02	4.59E-02	**7.32E-02**	pCi/gDry		6.1182	g dry	12/08/19 12:35	01/17/20	800	M	U			
CS-137	2007	8.62E-03	6.20E-02	**1.15E-01**	pCi/g Dry		186.29	g dry	12/08/19 12:35	01/03/20	3742	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (30-32.5 CM)** Collect Start: 12/08/2019 12:40 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 19.99
LIMS Number: L85487-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**7.55E-02**	4.32E-02	6.82E-02	pCi/gDry		6.0556	g dry	12/08/19 12:40	01/16/20	800	M	+			
CS-137	2007	-4.02E-03	5.74E-02	**9.36E-02**	pCi/g Dry		193.38	g dry	12/08/19 12:40	01/03/20	4023	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (37.5-40 CM)** Collect Start: 12/08/2019 12:45 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.22
LIMS Number: L85487-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	5.33E-02	4.46E-02	**7.14E-02**	pCi/gDry		6.1243	g dry	12/08/19 12:45	01/16/20	800	M	U			
CS-137	2007	-6.31E-03	4.70E-02	**7.58E-02**	pCi/g Dry		102.66	g dry	12/08/19 12:45	01/03/20	4053	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 15:26

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85487

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA09 (45-47.5 CM)** Collect Start: 12/08/2019 12:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 21.78
LIMS Number: L85487-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.20E-01**	4.73E-02	7.30E-02	pCi/gDry		6.0578	g dry	12/08/19 12:50	01/16/20	800	M	+			
CS-137	2007	-1.59E-02	3.96E-02	**6.06E-02**	pCi/g Dry		193.78	g dry	12/08/19 12:50	01/03/20	3790	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (52.5-55 CM)** Collect Start: 12/08/2019 12:55 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 16.52
LIMS Number: L85487-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-1.89E-02	4.81E-02	**8.00E-02**	pCi/gDry		6.2478	g dry	12/08/19 12:55	01/16/20	800	M	U			
CS-137	2007	-3.00E-03	5.24E-02	**8.34E-02**	pCi/g Dry		191.18	g dry	12/08/19 12:55	01/03/20	3820	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (60-62.5 CM)** Collect Start: 12/08/2019 13:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 53.43
LIMS Number: L85487-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	3.80E-02	4.61E-02	**7.44E-02**	pCi/gDry		6.1753	g dry	12/08/19 13:00	01/16/20	800	M	U			
CS-137	2007	-1.01E-02	6.03E-02	**9.46E-02**	pCi/g Dry		99.64	g dry	12/08/19 13:00	01/03/20	4072	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 15:26

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85487

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120819-BN-SJSSA09 (70-72.5 CM)** Collect Start: 12/08/2019 13:05 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 16.86
LIMS Number: L85487-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.16E-02**	4.51E-02	7.11E-02	pCi/gDry		6.0066	g dry	12/08/19 13:05	01/16/20	800	M	+			
CS-137	2007	-9.52E-03	6.70E-02	**1.22E-01**	pCi/g Dry		96.91	g dry	12/08/19 13:05	01/03/20	4217	Sec	U		No	

Sample ID: **11187072-120819-BN-SJSSA09 (80-82.5 CM)** Collect Start: 12/08/2019 13:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 16.45
LIMS Number: L85487-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.05E-01**	4.17E-02	6.40E-02	pCi/gDry		6.0438	g dry	12/08/19 13:10	01/16/20	800	M	+			
CS-137	2007	-6.05E-03	3.51E-02	**5.70E-02**	pCi/g Dry		185.71	g dry	12/08/19 13:10	01/03/20	3858	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85487

GH001-3EJACINTO-19

01/31/2020 09:05

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32748-1	All non-detects.	S						<50	U	NE
L85487-1										

GAMMA
Associated Samples for WG32748

Sample #	Client ID
L85487-1	11187072-120819-BN-SJSSA09 (0-2.5 CM)
L85487-2	11187072-120819-BN-SJSSA09 (7.5-10 CM)
L85487-3	11187072-120819-BN-SJSSA09 (15-17.5 CM)
L85487-4	11187072-120819-BN-SJSSA09 (22.5-25 CM)
L85487-5	11187072-120819-BN-SJSSA09 (30-32.5 CM)
L85487-6	11187072-120819-BN-SJSSA09 (37.5-40 CM)
L85487-7	11187072-120819-BN-SJSSA09 (45-47.5 CM)
L85487-8	11187072-120819-BN-SJSSA09 (52.5-55 CM)
L85487-9	11187072-120819-BN-SJSSA09 (60-62.5 CM)
L85487-10	11187072-120819-BN-SJSSA09 (70-72.5 CM)
L85487-11	11187072-120819-BN-SJSSA09 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85487

GH001-3EJACINTO-19

01/31/2020 09:05

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32861-1	PB-210	WO	01/17/2020 00:04	< 4.100E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-2	PB-210	WO	01/16/2020 17:03	3.18E+02	3.150E+02	pCi/Total	99.2	75-125	+	P

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32861-3	PB-210	S	01/17/2020 00:04	< 8.080E-02	< 7.540E-02	pCi/gDry		<50	**	NE
L85485-8										

Matrix Spike Summary

				Decay Corrected							
TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-4	PB-210	S	01/16/2020 17:03	2.17E+01	8.150E-02	2.000E+01	pCi/gDry	92.0	60-140	+	P
L85485-9											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85487

GH001-3EJACINTO-19

01/31/2020 09:05

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32861-5	PB-210	S	01/16/2020 17:03	2.11E+01	2.280E+01	107.7	pCi/gDry	15.7	<30	+	P
WG32861-4											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

PB-210

Associated Samples for WG32861

Sample #	Client ID
L85487-1	11187072-120819-BN-SJSSA09 (0-2.5 CM)
L85487-2	11187072-120819-BN-SJSSA09 (7.5-10 CM)
L85487-3	11187072-120819-BN-SJSSA09 (15-17.5 CM)
L85487-4	11187072-120819-BN-SJSSA09 (22.5-25 CM)
L85487-5	11187072-120819-BN-SJSSA09 (30-32.5 CM)
L85487-6	11187072-120819-BN-SJSSA09 (37.5-40 CM)
L85487-7	11187072-120819-BN-SJSSA09 (45-47.5 CM)
L85487-8	11187072-120819-BN-SJSSA09 (52.5-55 CM)
L85487-9	11187072-120819-BN-SJSSA09 (60-62.5 CM)
L85487-10	11187072-120819-BN-SJSSA09 (70-72.5 CM)
L85487-11	11187072-120819-BN-SJSSA09 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

L85487

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Page _____ of _____

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:

P - 10CFR61, 10CFR50, Other high level: _____

Turn-around-time 10 days

Hazardous Material in Shipment Yes_____* No_____

Lims# _____

(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start		Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120819-BN-SJSSA09 (0-2.5 cm)	Soil		12/8/2019	1220		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (7.5-10 cm)	Soil		12/8/2019	1225		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (15-17.5 cm)	Soil		12/8/2019	1230		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (22.5-25 cm)	Soil		12/8/2019	1235		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (30-32.5 cm)	Soil		12/8/2019	1240		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (37.5-40 cm)	Soil		12/8/2019	1245		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (45-47.5 cm)	Soil		12/8/2019	1250		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (52.5-55 cm)	Soil		12/8/2019	1255		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (60-62.5 cm)	Soil		12/8/2019	1300		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (70-72.5 cm)	Soil		12/8/2019	1305		16 oz	1	S	Isotopes
	11187072-120819-BN-SJSSA09 (80-82.5 cm)	Soil		12/8/2019	1310		16 oz	1	S	Isotopes
										** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N Groves	Date: 12-11-19 1000	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Ky Loop	Date: 12-16-19 1030	Received by:	Date:	Received by:	Date:

12/17/19 14:56

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

SR #: SR64451

Client: GHD Services, INc. **Project #:** GH001-3EJACINTO-19 **LIMS #L85487**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85487

****

L85487-1 S 11187072-120819-BN-SJSSA09 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/17/20

****

L85487-2 S 11187072-120819-BN-SJSSA09 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/17/20

****

L85487-3 S 11187072-120819-BN-SJSSA09 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/17/20

****

L85487-4 S 11187072-120819-BN-SJSSA09 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/17/20

****

L85487-5 S 11187072-120819-BN-SJSSA09 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KBA	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85487

L85487-5	**S**	**11187072-120819-BN-SJSSA09 (30-32.5 CM)**		
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-6	**S**	**11187072-120819-BN-SJSSA09 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-7	**S**	**11187072-120819-BN-SJSSA09 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-8	**S**	**11187072-120819-BN-SJSSA09 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-9	**S**	**11187072-120819-BN-SJSSA09 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-10	**S**	**11187072-120819-BN-SJSSA09 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85487

L85487-10	**S**	**11187072-120819-BN-SJSSA09 (70-72.5 CM)**		
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

****

L85487-11	**S**	**11187072-120819-BN-SJSSA09 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KBA	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/16/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.11%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	0.09%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	147.8	-5.28%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.3	-1.22%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	246.7	0.28%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	393.4	-3.16%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.9	-0.44%

Eff. Name: **01S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:07:13.99
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

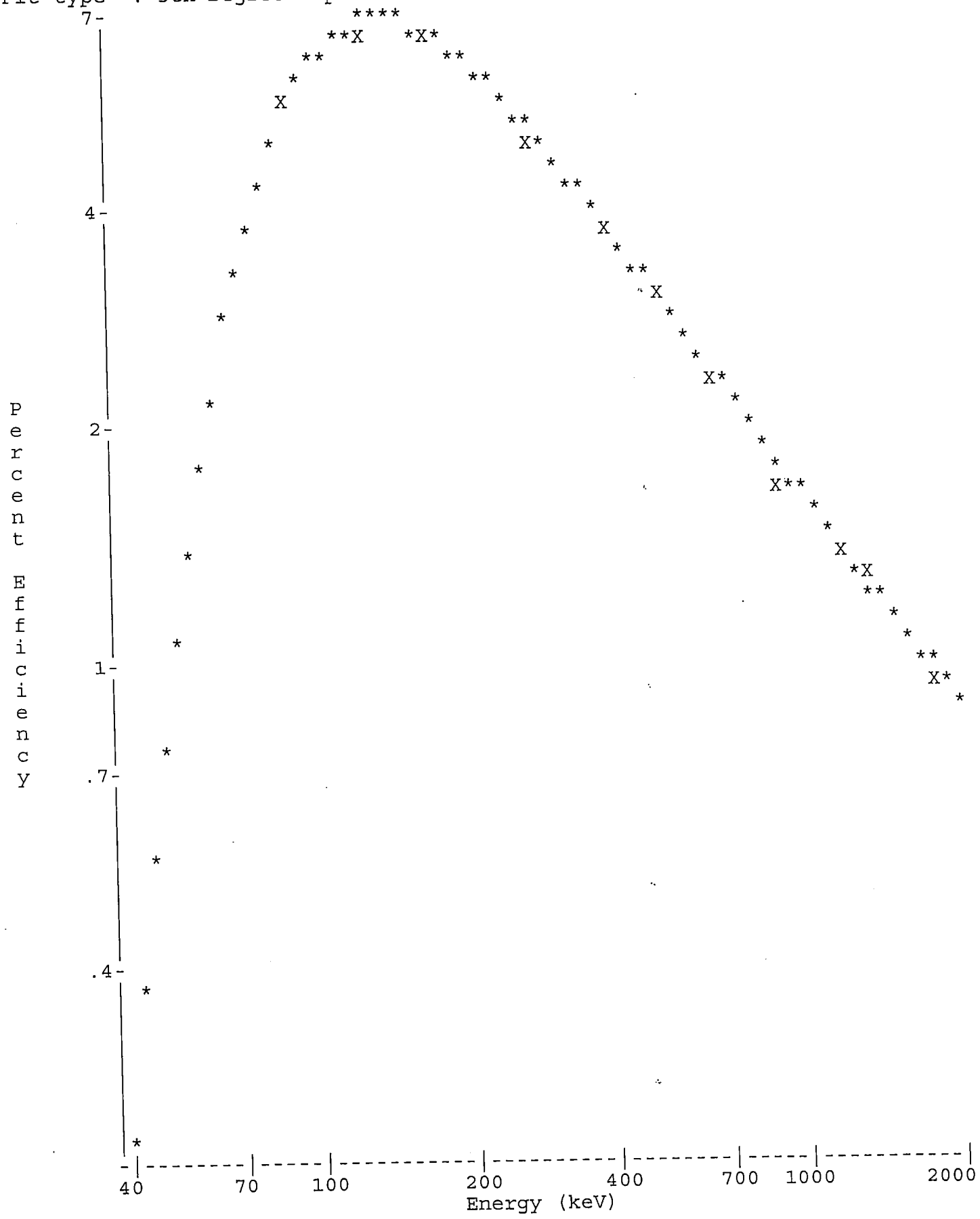
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:07
Detector :
Fit type : 5th Degree Empirical
Geometry : 01S50121819



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:08:12.65
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17271	3.72*	5.417E+00	7.463E+02	1.007E+03	2.51
03-CO57	122.06	16346	85.51*	6.949E+00	2.396E+01	3.996E+01	2.56
04-CE139	165.85	11692	80.35*	6.800E+00	1.864E+01	5.101E+01	2.93
05-HG203	279.20	3520	81.46*	4.980E+00	7.558E+00	1.478E+02	7.01
06-SN113	391.69	15884	64.90*	3.773E+00	5.649E+01	1.883E+02	2.25
07-SR85	513.99	9867	99.27*	2.975E+00	2.909E+01	2.467E+02	3.24
08-CS137	661.65	40004	85.12*	2.370E+00	1.727E+02	1.749E+02	1.21
09-Y88	898.02	20588	93.40*	1.790E+00	1.073E+02	3.934E+02	1.78
10-CO60	1173.22	30476	100.00	1.401E+00	1.895E+02	2.036E+02	1.30
	1332.49	27605	100.00*	1.251E+00	1.922E+02	2.066E+02	1.24
12-Y88	1836.01	12120	99.38*	9.693E-01	1.096E+02	4.019E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S50121819

Acquisition date : 18-DEC-2019 09:33:10

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.922E+02	2.066E+02	0.026E+02	1.24	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
	Total Activity :		1.464E+03	2.857E+03			

Grand Total Activity : 1.464E+03 2.857E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S50121819

Acquisition date : 18-DEC-2019 09:33:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	920	5096	0.99	93.48	90	8	8.01E-02	27.7	6.67E-01	
1	136.44	2036	4705	0.94	273.16	269	9	1.77E-01	12.9	7.04E+00	
1	255.14	930	3804	1.39	510.25	506	9	8.10E-02	24.8	5.33E+00	
1	813.78	308	1377	1.86	1626.23	1622	9	2.68E-02	44.7	1.96E+00	
6	1325.32	486	646	3.46	2648.36	2639	32	4.24E-02	27.2	1.26E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.909E+02	2.051E+02	0.018E+02	0.90	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.462E+03	2.856E+03			

Grand Total Activity : 1.462E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.526E+01	1.648E+01	0.000E+00	61.105
03-CO57	3.996E+01	1.023E+00	6.263E-01	0.000E+00	63.800
04-CE139	5.101E+01	1.497E+00	1.120E+00	0.000E+00	45.534
05-HG203	1.478E+02	1.036E+01	1.028E+01	0.000E+00	14.375
06-SN113	1.883E+02	4.237E+00	2.782E+00	0.000E+00	67.691

07-SR85	2.467E+02	7.990E+00	5.565E+00	0.000E+00	44.324
08-CS137	1.749E+02	2.112E+00	9.060E-01	0.000E+00	193.016
09-Y88	3.934E+02	7.009E+00	3.818E+00	0.000E+00	103.035
10-CO60	2.051E+02	1.841E+00	7.669E-01	0.000E+00	267.488
12-Y88	4.019E+02	7.900E+00	1.919E+00	0.000E+00	209.476

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	1.656E+00		1.724E+00	2.796E+00	0.000E+00	0.592

```
A,01S50121819     ,12/26/2019 12:08,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,01S50121819     ,CALIBRATION          ,12/26/2019 12:07,01S50121819
C,02-CD109,YES,   1.007E+03,   2.526E+01,   1.648E+01,,   61.105
C,03-CO57 ,YES,   3.996E+01,   1.023E+00,   6.263E-01,,   63.800
C,04-CE139,YES,   5.101E+01,   1.497E+00,   1.120E+00,,   45.534
C,05-HG203,YES,   1.478E+02,   1.036E+01,   1.028E+01,,   14.375
C,06-SN113,YES,   1.883E+02,   4.237E+00,   2.782E+00,,   67.691
C,07-SR85 ,YES,   2.467E+02,   7.990E+00,   5.565E+00,,   44.324
C,08-CS137,YES,   1.749E+02,   2.112E+00,   9.060E-01,,  193.016
C,09-Y88  ,YES,   3.934E+02,   7.009E+00,   3.818E+00,,  103.035
C,10-CO60 ,YES,   2.051E+02,   1.841E+00,   7.669E-01,,  267.488
C,12-Y88  ,YES,   4.019E+02,   7.900E+00,   1.919E+00,,  209.476
C,01-AM241,NO ,   1.656E+00,   1.724E+00,   2.796E+00,,    0.592
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

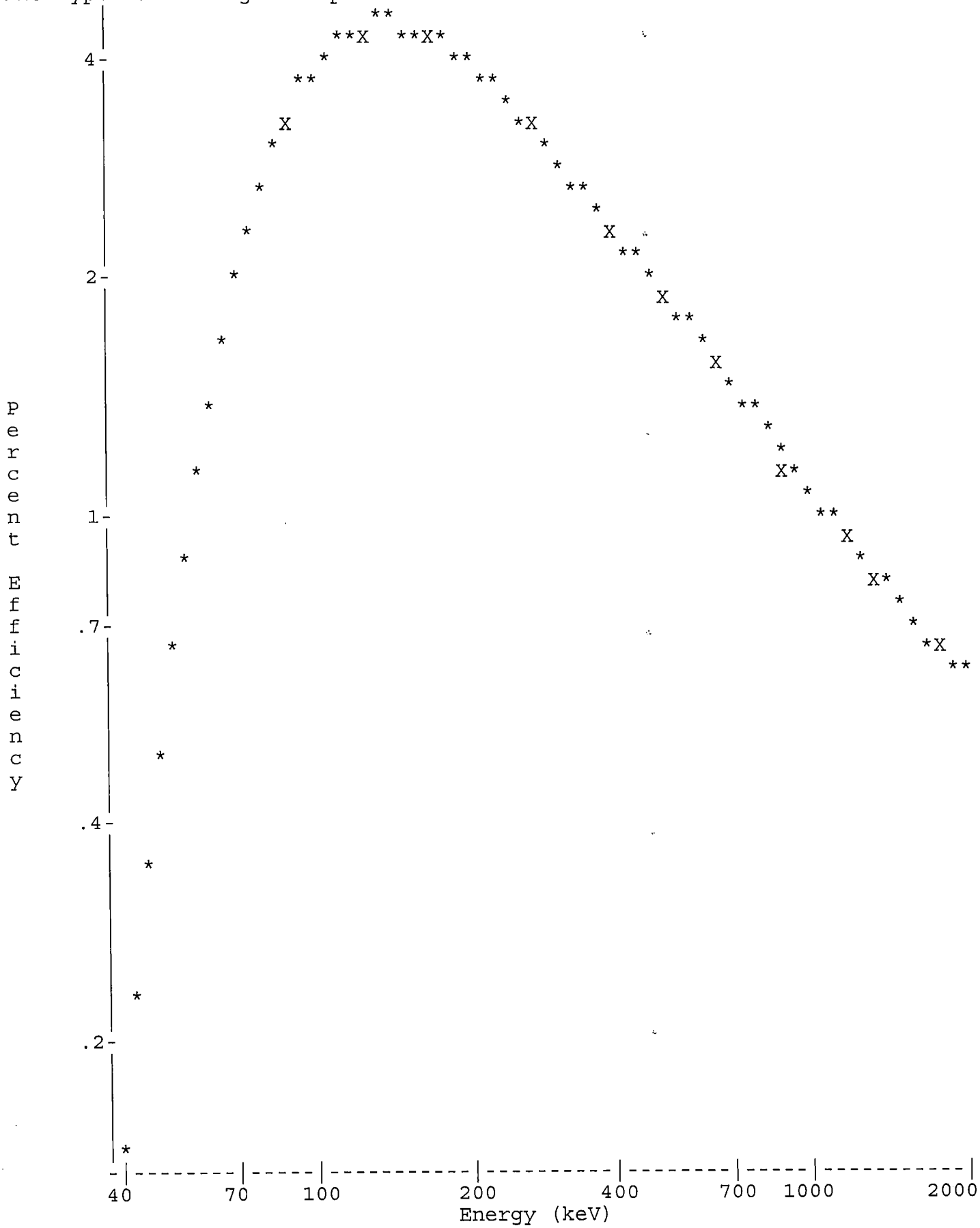
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Geometry : 01S100122019
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019 Smple Date: 1-JUN-2019 12:00:00.0
Sample Type : STD Geometry : 01S100122019
Quantity : 1.00000E+00 TOTAL BKGFILE : 01BG112719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 04:36:58.30
End Channel : 4090 Pk Srch Sens: 7.00000 Live time : 0 04:36:31.86
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum 15
Number of unidentified lines 4
Number of lines tentatively identified by NID 11 73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.455E+03	2.858E+03			
	Grand Total Activity :		1.455E+03	2.858E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION         ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

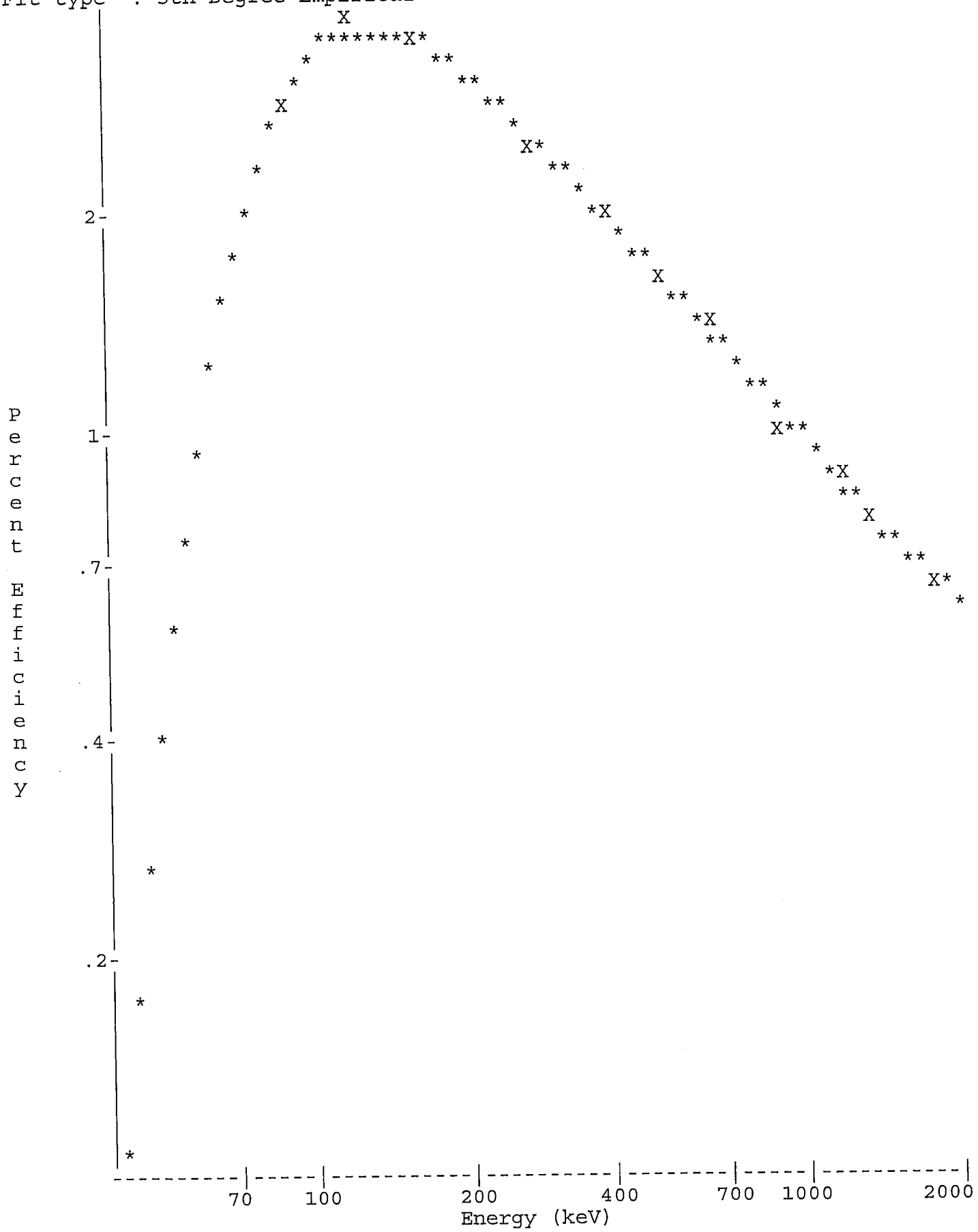
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Geometry : 07S100121819
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity :	1.463E+03	2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
	Total Activity :		1.462E+03	2.853E+03			

Grand Total Activity : 1.462E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,   1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,   4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,   5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,   1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,   1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,   2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,   1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,   3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,   2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,   4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,   2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1006.0	-0.06%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.64%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.4	-1.07%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	151.4	-2.98%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.4	-0.12%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	237.4	-3.50%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.7	2.97%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.4	-1.92%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **07S50121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:32:16.69
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:11.82

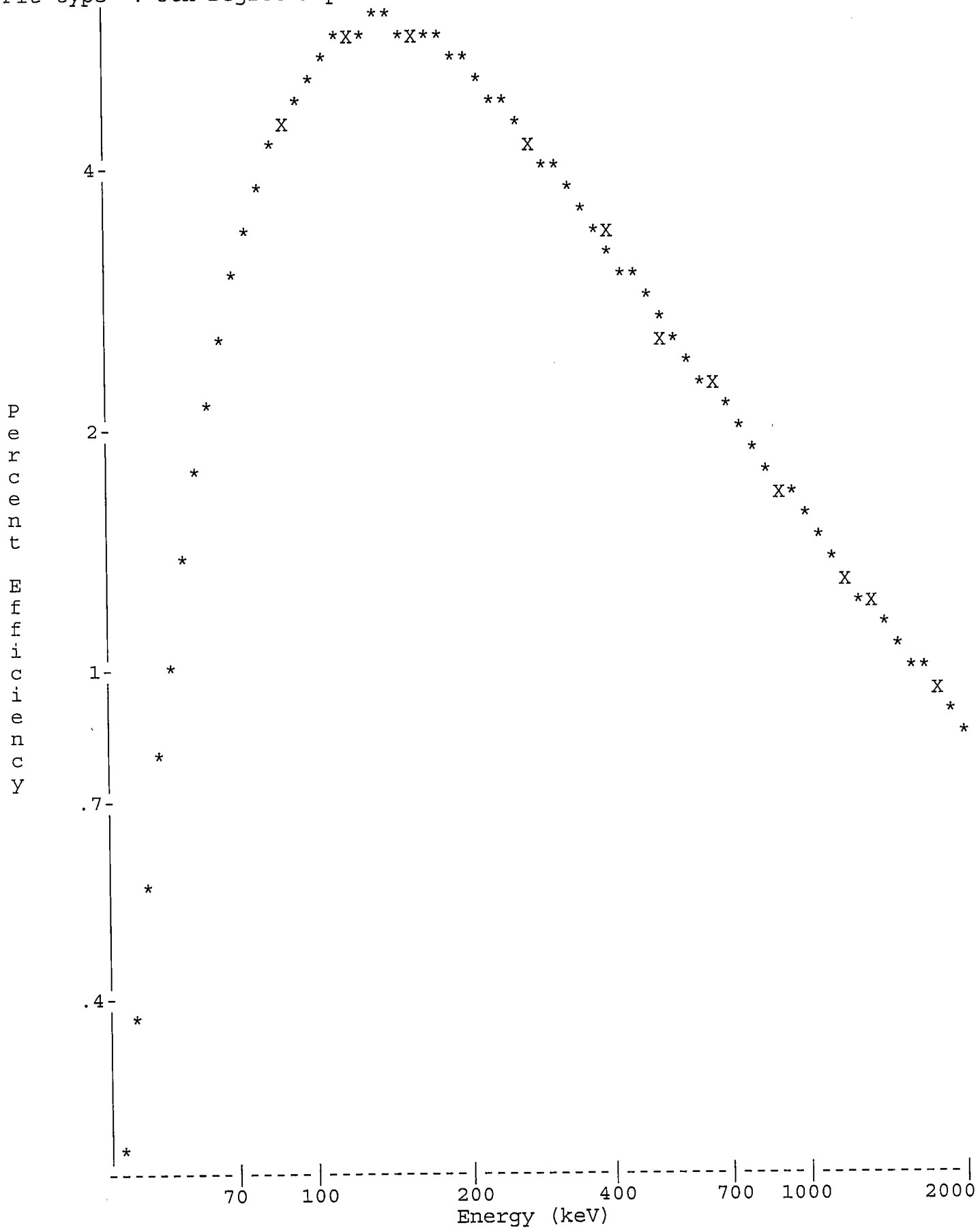
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S50121919
BKGFILE : 07BG112719MT
Real Time : 0 04:00:33.43
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	1013	5688	1.34	92.49	6.46E-01	7.03E-02	13.3	3.66E+00
2	1	88.05	18668	7723	1.26	175.72	4.68E+00	1.30E+00	1.2	1.42E+00
3	1	122.06	17748	7182	1.29	243.73	6.00E+00	1.23E+00	1.2	1.11E+00
4	1	136.46	2338	5997	1.31	272.53	6.10E+00	1.62E-01	6.8	5.64E-01
5	1	165.85	12535	6367	1.35	331.30	5.91E+00	8.71E-01	1.6	8.93E-01
6	1	254.99	869	4294	1.41	509.55	4.67E+00	6.04E-02	14.0	8.10E-01
7	1	279.18	3907	4225	1.46	557.91	4.37E+00	2.71E-01	3.5	2.37E+00
8	1	391.68	17653	5052	1.54	782.84	3.33E+00	1.23E+00	1.1	1.33E+00
9	1	514.00	10480	4788	1.58	1027.39	2.65E+00	7.28E-01	1.7	2.50E+00
10	1	661.65	45729	4417	1.77	1322.58	2.14E+00	3.18E+00	0.6	3.85E+00
11	1	898.05	24017	3743	2.01	1795.15	1.65E+00	1.67E+00	0.9	3.68E+00
12	1	1173.21	36281	2149	2.26	2345.16	1.33E+00	2.52E+00	0.6	8.66E+00
13	1	1332.48	32763	1232	2.42	2663.48	1.20E+00	2.28E+00	0.6	1.11E+01
14	1	1836.00	14659	367	2.90	3669.70	9.38E-01	1.02E+00	0.9	8.57E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:32
Detector :
Geometry : 07S50121919
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:35:18.42
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:11.82

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S50121919
BKGFILE : 07BG112719MT
Real Time : 0 04:00:33.43
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	1013	5688	1.34	92.49	6.46E-01	7.03E-02	13.3	3.66E+00
2	1	88.05	18668	7723	1.26	175.72	4.68E+00	1.30E+00	1.2	1.42E+00
3	1	122.06	17748	7182	1.29	243.73	6.00E+00	1.23E+00	1.2	1.11E+00
4	1	136.46	2338	5997	1.31	272.53	6.10E+00	1.62E-01	6.8	5.64E-01
5	1	165.85	12535	6367	1.35	331.30	5.91E+00	8.71E-01	1.6	8.93E-01
6	1	254.99	869	4294	1.41	509.55	4.67E+00	6.04E-02	14.0	8.10E-01
7	1	279.18	3907	4225	1.46	557.91	4.37E+00	2.71E-01	3.5	2.37E+00
8	1	391.68	17653	5052	1.54	782.84	3.33E+00	1.23E+00	1.1	1.33E+00
9	1	514.00	10480	4788	1.58	1027.39	2.65E+00	7.28E-01	1.7	2.50E+00
10	1	661.65	45729	4417	1.77	1322.58	2.14E+00	3.18E+00	0.6	3.85E+00
11	1	898.05	24017	3743	2.01	1795.15	1.65E+00	1.67E+00	0.9	3.68E+00
12	1	1173.21	36281	2149	2.26	2345.16	1.33E+00	2.52E+00	0.6	8.66E+00
13	1	1332.48	32763	1232	2.42	2663.48	1.20E+00	2.28E+00	0.6	1.11E+01
14	1	1836.00	14659	367	2.90	3669.70	9.38E-01	1.02E+00	0.9	8.57E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	18668	3.72*	4.681E+00	7.445E+02	1.006E+03	2.30
03-CO57	122.06	17748	85.51*	6.000E+00	2.402E+01	4.017E+01	2.38
04-CE139	165.85	12535	80.35*	5.911E+00	1.833E+01	5.042E+01	3.12
05-HG203	279.20	3907	81.46*	4.369E+00	7.624E+00	1.514E+02	7.00
06-SN113	391.69	17653	64.90*	3.329E+00	5.674E+01	1.904E+02	2.28
07-SR85	513.99	10480	99.27*	2.647E+00	2.769E+01	2.374E+02	3.43
08-CS137	661.65	45729	85.12*	2.138E+00	1.745E+02	1.767E+02	1.16
09-Y88	898.02	24017	93.40*	1.655E+00	1.079E+02	3.984E+02	1.78
10-CO60	1173.22	36281	100.00	1.327E+00	1.898E+02	2.041E+02	1.24
	1332.49	32763	100.00*	1.198E+00	1.899E+02	2.042E+02	1.23
12-Y88	1836.01	14659	99.38*	9.382E-01	1.092E+02	4.031E+02	1.80

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S50121919

Acquisition date : 19-DEC-2019 09:30:11

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.445E+02	1.006E+03	0.023E+03	2.30	
03-CO57	270.90D	1.67	2.402E+01	4.017E+01	0.096E+01	2.38	
04-CE139	137.66D	2.75	1.833E+01	5.042E+01	0.157E+01	3.12	
05-HG203	46.61D	19.9	7.624E+00	1.514E+02	0.106E+02	7.00	
06-SN113	115.10D	3.35	5.674E+01	1.904E+02	0.043E+02	2.28	
07-SR85	64.84D	8.57	2.769E+01	2.374E+02	0.082E+02	3.43	
08-CS137	30.17Y	1.01	1.745E+02	1.767E+02	0.020E+02	1.16	
09-Y88	106.65D	3.69	1.079E+02	3.984E+02	0.071E+02	1.78	
10-CO60	5.27Y	1.08	1.899E+02	2.042E+02	0.025E+02	1.23	
12-Y88	106.65D	3.69	1.092E+02	4.031E+02	0.073E+02	1.80	
			---------	---------			
	Total Activity :		1.460E+03	2.858E+03			
	Grand Total Activity :		1.460E+03	2.858E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S50121919 Acquisition date : 19-DEC-2019 09:30:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.42	1013	5688	1.34	92.49	89	8	7.03E-02	26.5	6.46E-01	
1	136.46	2338	5997	1.31	272.53	267	11	1.62E-01	13.5	6.10E+00	
1	254.99	869	4294	1.41	509.55	505	9	6.04E-02	28.0	4.67E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.445E+02	1.006E+03	0.023E+03	2.30	
03-CO57	270.90D	1.67	2.402E+01	4.017E+01	0.096E+01	2.38	
04-CE139	137.66D	2.75	1.833E+01	5.042E+01	0.157E+01	3.12	
05-HG203	46.61D	19.9	7.624E+00	1.514E+02	0.106E+02	7.00	
06-SN113	115.10D	3.35	5.674E+01	1.904E+02	0.043E+02	2.28	
07-SR85	64.84D	8.57	2.769E+01	2.374E+02	0.082E+02	3.43	
08-CS137	30.17Y	1.01	1.745E+02	1.767E+02	0.020E+02	1.16	
09-Y88	106.65D	3.69	1.079E+02	3.984E+02	0.071E+02	1.78	
10-CO60	5.27Y	1.08	1.899E+02	2.041E+02	0.018E+02	0.87	
12-Y88	106.65D	3.69	1.092E+02	4.031E+02	0.073E+02	1.80	
			---------	---------			
	Total Activity :		1.460E+03	2.858E+03			

Grand Total Activity : 1.460E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.006E+03	2.315E+01	1.852E+01	0.000E+00	54.306
03-CO57	4.017E+01	9.571E-01	7.111E-01	0.000E+00	56.498
04-CE139	5.042E+01	1.575E+00	1.230E+00	0.000E+00	40.995
05-HG203	1.514E+02	1.060E+01	1.124E+01	0.000E+00	13.464
06-SN113	1.904E+02	4.343E+00	3.001E+00	0.000E+00	63.426
07-SR85	2.374E+02	8.153E+00	6.091E+00	0.000E+00	38.973
08-CS137	1.767E+02	2.048E+00	9.455E-01	0.000E+00	186.903

09-Y88	3.984E+02	7.102E+00	3.906E+00	0.000E+00	102.000
10-CO60	2.041E+02	1.786E+00	9.393E-01	0.000E+00	217.324
12-Y88	4.031E+02	7.268E+00	1.958E+00	0.000E+00	205.841

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-5.982E-01		1.856E+00	3.004E+00	0.000E+00	-0.199

```
A,07S50121919     ,12/26/2019 10:35,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,07S50121919     ,CALIBRATION          ,12/26/2019 10:32,07S50121919
C,02-CD109,YES,   1.006E+03,   2.315E+01,   1.852E+01,,   54.306
C,03-CO57 ,YES,   4.017E+01,   9.571E-01,   7.111E-01,,   56.498
C,04-CE139,YES,   5.042E+01,   1.575E+00,   1.230E+00,,   40.995
C,05-HG203,YES,   1.514E+02,   1.060E+01,   1.124E+01,,   13.464
C,06-SN113,YES,   1.904E+02,   4.343E+00,   3.001E+00,,   63.426
C,07-SR85 ,YES,   2.374E+02,   8.153E+00,   6.091E+00,,   38.973
C,08-CS137,YES,   1.767E+02,   2.048E+00,   9.455E-01,,  186.903
C,09-Y88  ,YES,   3.984E+02,   7.102E+00,   3.906E+00,,  102.000
C,10-CO60 ,YES,   2.041E+02,   1.786E+00,   9.393E-01,,  217.324
C,12-Y88  ,YES,   4.031E+02,   7.268E+00,   1.958E+00,,  205.841
C,01-AM241,NO ,  -5.982E-01,   1.856E+00,   3.004E+00,,   -0.199
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

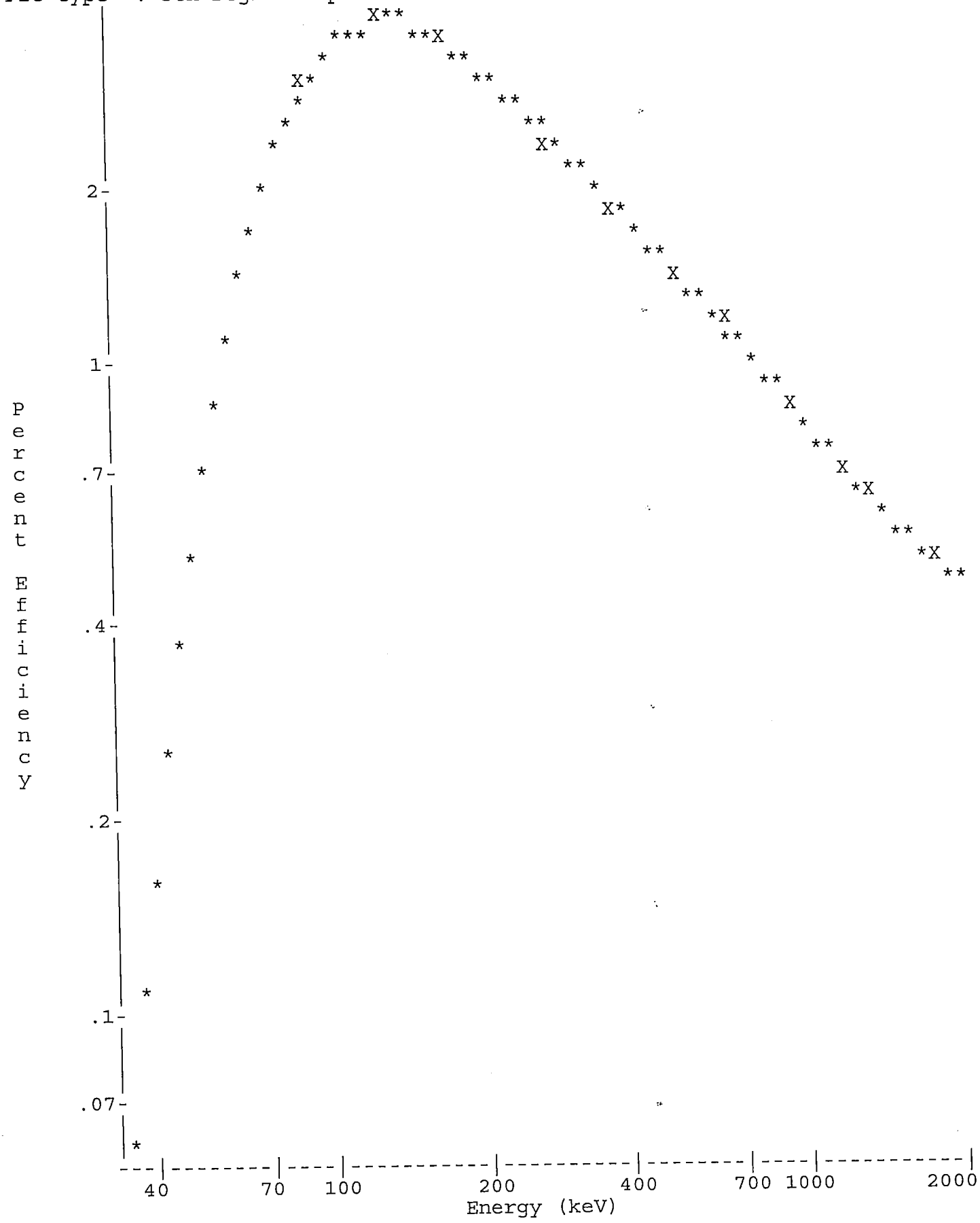
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819    ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819    ,CALIBRATION         ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

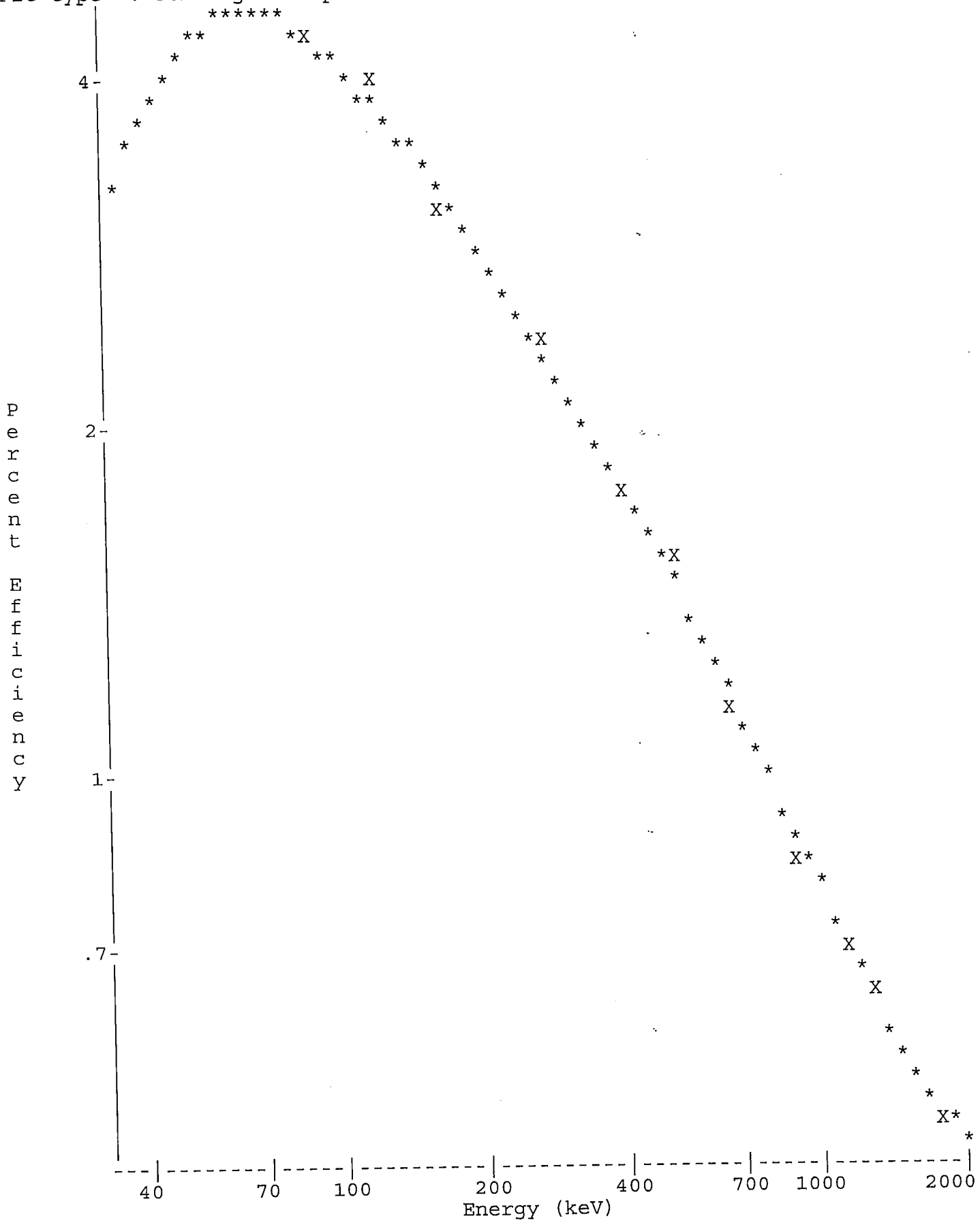
Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919    ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919    ,CALIBRATION         ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,   1.013E+03,   1.793E+01,   1.499E+01,,   67.586
C,03-CO57 ,YES,   4.118E+01,   1.003E+00,   7.649E-01,,   53.831
C,04-CE139,YES,   4.917E+01,   1.826E+00,   1.518E+00,,   32.396
C,05-HG203,YES,   1.496E+02,   1.412E+01,   1.379E+01,,   10.849
C,06-SN113,YES,   1.882E+02,   4.968E+00,   3.497E+00,,   53.812
C,07-SR85 ,YES,   2.596E+02,   1.031E+01,   6.619E+00,,   39.220
C,08-CS137,YES,   1.689E+02,   2.289E+00,   1.088E+00,,  155.266
C,09-Y88  ,YES,   3.885E+02,   7.711E+00,   4.625E+00,,   83.996
C,10-CO60 ,YES,   2.075E+02,   2.028E+00,   1.127E+00,,  184.062
C,12-Y88  ,YES,   4.004E+02,   8.223E+00,   2.218E+00,,  180.562
C,01-AM241,NO ,  -6.041E-01,   5.435E-01,   9.051E-01,,   -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1006.0	-0.06%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.5	3.92%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	48.2	-5.44%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	161.2	3.30%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	195.4	2.51%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	237.4	-3.50%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.2	3.26%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	401.1	-1.26%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.2	0.87%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	203.0	-0.32%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **11S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:13:14.79
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 18-DEC-2019 12:47:43.02

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

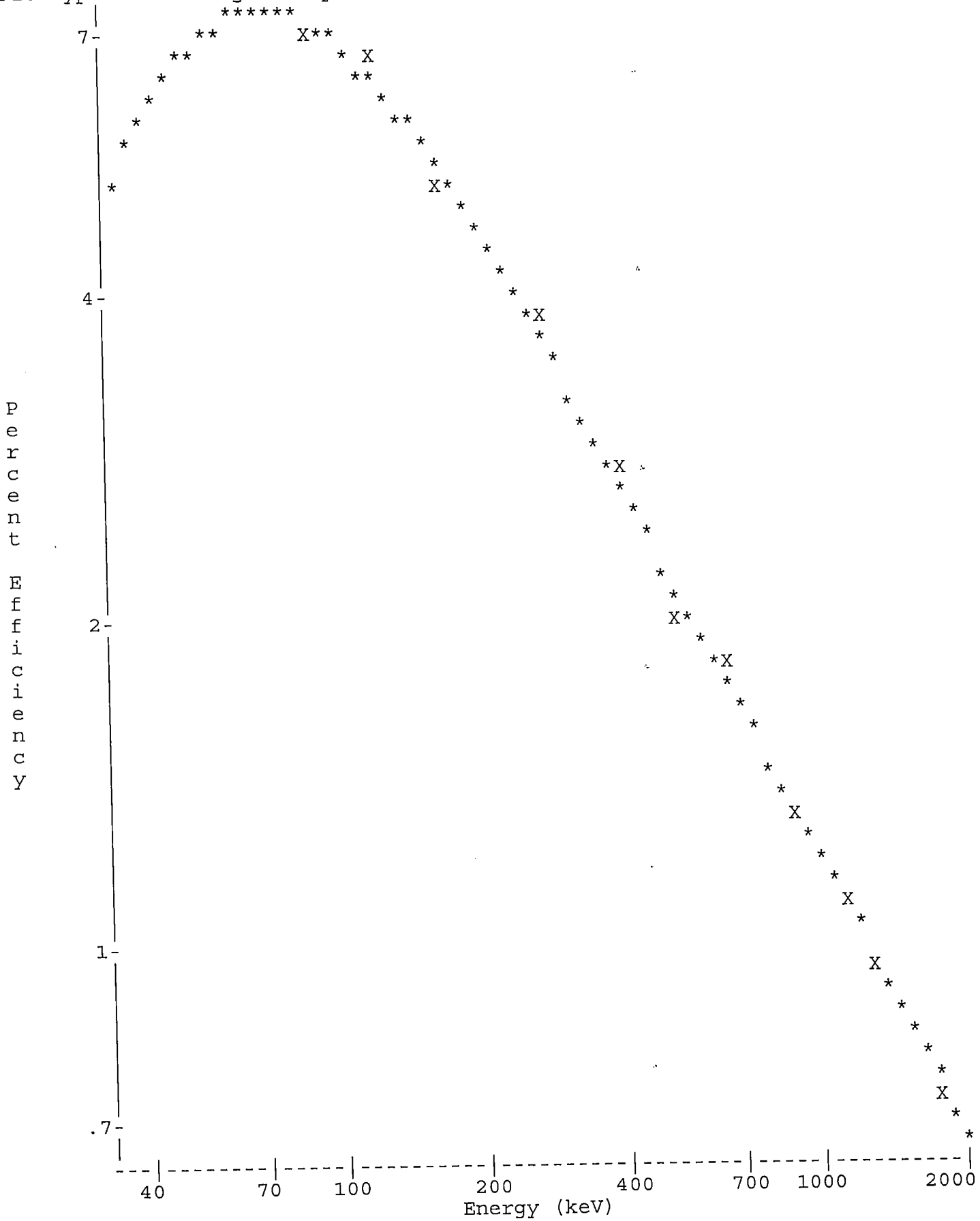
Sample ID : 11S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S50121819
BKGFILE : 11BG112719MT
Real Time : 0 03:46:41.61
Live time : 0 03:45:57.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.49	28911	9660	1.40	92.06	6.56E+00	2.13E+00	0.9	
2	0	75.22	520	6287	0.90	149.55	7.43E+00	3.84E-02	27.0	
3	0	88.03	27395	7771	1.41	175.20	7.27E+00	2.02E+00	0.9	
4	0	122.05	18602	6243	1.46	243.27	6.46E+00	1.37E+00	1.1	
5	0	136.49	2351	4406	1.44	272.17	6.08E+00	1.73E-01	5.7	
6	0	165.86	10336	4773	1.52	330.94	5.39E+00	7.62E-01	1.6	
7	0	199.23	418	3693	1.51	397.70	4.74E+00	3.09E-02	25.6	
8	0	255.31	472	3399	1.11	509.93	3.91E+00	3.48E-02	22.7	
9	0	279.10	3299	4526	1.55	557.54	3.63E+00	2.43E-01	4.7	
10	0	391.72	14071	4008	1.68	782.88	2.73E+00	1.04E+00	1.3	
11	0	514.04	8152	3688	1.71	1027.64	2.17E+00	6.01E-01	2.0	
12	0	661.64	35340	3260	1.87	1322.97	1.75E+00	2.61E+00	0.6	
13	0	898.01	18766	3059	2.00	1795.90	1.36E+00	1.38E+00	1.0	
14	0	1173.19	28107	1699	2.23	2346.47	1.09E+00	2.07E+00	0.7	
15	0	1332.49	24977	1153	2.36	2665.17	9.75E-01	1.84E+00	0.7	
16	0	1836.01	10864	297	2.57	3672.49	7.34E-01	8.01E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:13
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S50121819



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:14:19.85
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 18-DEC-2019 12:47:43.02

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S50121819
BKGFILE : 11BG112719MT
Real Time : 0 03:46:41.61
Live time : 0 03:45:57.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.49*	28703	9660	1.40	92.06	6.56E+00	2.12E+00	0.9	
2	0	75.22*	72	6287	0.90	149.55	7.43E+00	5.31E-03	196.1	
3	0	88.03*	27332	7771	1.41	175.20	7.27E+00	2.02E+00	0.9	
4	0	122.05	18602	6243	1.46	243.27	6.46E+00	1.37E+00	1.1	
5	0	136.49	2351	4406	1.44	272.17	6.08E+00	1.73E-01	5.7	
6	0	165.86	10336	4773	1.52	330.94	5.39E+00	7.62E-01	1.6	
7	0	199.23	418	3693	1.51	397.70	4.74E+00	3.09E-02	25.6	
8	0	255.31	472	3399	1.11	509.93	3.91E+00	3.48E-02	22.7	
9	0	279.10	3299	4526	1.55	557.54	3.63E+00	2.43E-01	4.7	
10	0	391.72	14071	4008	1.68	782.88	2.73E+00	1.04E+00	1.3	
11	0	514.04	8152	3688	1.71	1027.64	2.17E+00	6.01E-01	2.0	
12	0	661.64	35340	3260	1.87	1322.97	1.75E+00	2.61E+00	0.6	
13	0	898.01	18766	3059	2.00	1795.90	1.36E+00	1.38E+00	1.0	
14	0	1173.19	28107	1699	2.23	2346.47	1.09E+00	2.07E+00	0.7	
15	0	1332.49	24977	1153	2.36	2665.17	9.75E-01	1.84E+00	0.7	
16	0	1836.01	10864	297	2.57	3672.49	7.34E-01	8.01E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	27332	3.72*	7.270E+00	7.455E+02	1.006E+03	1.80
03-CO57	122.06	18602	85.51*	6.455E+00	2.486E+01	4.148E+01	2.29
04-CE139	165.85	10336	80.35*	5.393E+00	1.759E+01	4.819E+01	3.25
05-HG203	279.20	3299	81.46*	3.633E+00	8.224E+00	1.612E+02	9.32
06-SN113	391.69	14071	64.90*	2.731E+00	5.855E+01	1.954E+02	2.55
07-SR85	513.99	8152	99.27*	2.166E+00	2.796E+01	2.374E+02	3.92
08-CS137	661.65	35340	85.12*	1.750E+00	1.750E+02	1.772E+02	1.30
09-Y88	898.02	18766	93.40*	1.357E+00	1.092E+02	4.011E+02	2.03
10-CO60	1173.22	28107	100.00	1.086E+00	1.909E+02	2.052E+02	1.42
	1332.49	24977	100.00*	9.751E-01	1.889E+02	2.030E+02	1.42
12-Y88	1836.01	10864	99.38*	7.343E-01	1.098E+02	4.032E+02	2.09

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S50121819

Acquisition date : 18-DEC-2019 12:47:43

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.455E+02	1.006E+03	0.018E+03	1.80	
03-CO57	270.90D	1.67	2.486E+01	4.148E+01	0.095E+01	2.29	
04-CE139	137.66D	2.74	1.759E+01	4.819E+01	0.157E+01	3.25	
05-HG203	46.61D	19.6	8.224E+00	1.612E+02	0.150E+02	9.32	
06-SN113	115.10D	3.34	5.855E+01	1.954E+02	0.050E+02	2.55	
07-SR85	64.84D	8.49	2.796E+01	2.374E+02	0.093E+02	3.92	
08-CS137	30.17Y	1.01	1.750E+02	1.772E+02	0.023E+02	1.30	
09-Y88	106.65D	3.67	1.092E+02	4.011E+02	0.081E+02	2.03	
10-CO60	5.27Y	1.07	1.889E+02	2.030E+02	0.029E+02	1.42	
12-Y88	106.65D	3.67	1.098E+02	4.032E+02	0.084E+02	2.09	
	Total Activity :		1.466E+03	2.874E+03			

Grand Total Activity : 1.466E+03 2.874E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S50121819
Acquisition date : 18-DEC-2019 12:47:43

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.49	28703	9660	1.40	92.06	86	13	2.12E+00	1.9	6.56E+00	
0	75.22	72	6287	0.90	149.55	146	8	5.31E-03	****	7.43E+00	
0	136.49	2351	4406	1.44	272.17	267	10	1.73E-01	11.3	6.08E+00	
0	199.23	418	3693	1.51	397.70	395	8	3.09E-02	51.3	4.74E+00	
0	255.31	472	3399	1.11	509.93	506	9	3.48E-02	45.5	3.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.455E+02	1.006E+03	0.018E+03	1.80	
03-CO57	270.90D	1.67	2.486E+01	4.148E+01	0.095E+01	2.29	
04-CE139	137.66D	2.74	1.759E+01	4.819E+01	0.157E+01	3.25	
05-HG203	46.61D	19.6	8.224E+00	1.612E+02	0.150E+02	9.32	
06-SN113	115.10D	3.34	5.855E+01	1.954E+02	0.050E+02	2.55	
07-SR85	64.84D	8.49	2.796E+01	2.374E+02	0.093E+02	3.92	
08-CS137	30.17Y	1.01	1.750E+02	1.772E+02	0.023E+02	1.30	
09-Y88	106.65D	3.67	1.092E+02	4.011E+02	0.081E+02	2.03	
10-CO60	5.27Y	1.07	1.899E+02	2.041E+02	0.020E+02	1.00	
12-Y88	106.65D	3.67	1.098E+02	4.032E+02	0.084E+02	2.09	
			---------	---------			
	Total Activity :		1.467E+03	2.875E+03			

Grand Total Activity : 1.467E+03 2.875E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.006E+03	1.807E+01	1.322E+01	0.000E+00	76.080
03-CO57	4.148E+01	9.485E-01	6.726E-01	0.000E+00	61.665
04-CE139	4.819E+01	1.566E+00	1.358E+00	0.000E+00	35.490
05-HG203	1.612E+02	1.503E+01	1.309E+01	0.000E+00	12.319
06-SN113	1.954E+02	4.977E+00	3.498E+00	0.000E+00	55.856

07-SR85	2.374E+02	9.307E+00	7.023E+00	0.000E+00	33.813
08-CS137	1.772E+02	2.297E+00	1.100E+00	0.000E+00	161.086
09-Y88	4.011E+02	8.140E+00	4.509E+00	0.000E+00	88.957
10-CO60	2.041E+02	2.049E+00	1.112E+00	0.000E+00	183.540
12-Y88	4.032E+02	8.438E+00	2.376E+00	0.000E+00	169.648

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-4.500E-01		5.041E-01	8.374E-01	0.000E+00	-0.537

```
A,11S50121819     ,12/26/2019 12:14,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,11S50121819     ,CALIBRATION         ,12/26/2019 12:13,11S50121819
C,02-CD109,YES,   1.006E+03,   1.807E+01,   1.322E+01,,   76.080
C,03-CO57 ,YES,   4.148E+01,   9.485E-01,   6.726E-01,,   61.665
C,04-CE139,YES,   4.819E+01,   1.566E+00,   1.358E+00,,   35.490
C,05-HG203,YES,   1.612E+02,   1.503E+01,   1.309E+01,,   12.319
C,06-SN113,YES,   1.954E+02,   4.977E+00,   3.498E+00,,   55.856
C,07-SR85 ,YES,   2.374E+02,   9.307E+00,   7.023E+00,,   33.813
C,08-CS137,YES,   1.772E+02,   2.297E+00,   1.100E+00,,  161.086
C,09-Y88  ,YES,   4.011E+02,   8.140E+00,   4.509E+00,,   88.957
C,10-CO60 ,YES,   2.041E+02,   2.049E+00,   1.112E+00,,  183.540
C,12-Y88  ,YES,   4.032E+02,   8.438E+00,   2.376E+00,,  169.648
C,01-AM241,NO ,  -4.500E-01,   5.041E-01,   8.374E-01,,   -0.537
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.38%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.2	-4.39%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.5	-0.07%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.8	-2.53%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	397.7	-2.10%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.9	0.62%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.8	-0.22%

Eff. Name: **13S50122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:37:26.43
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

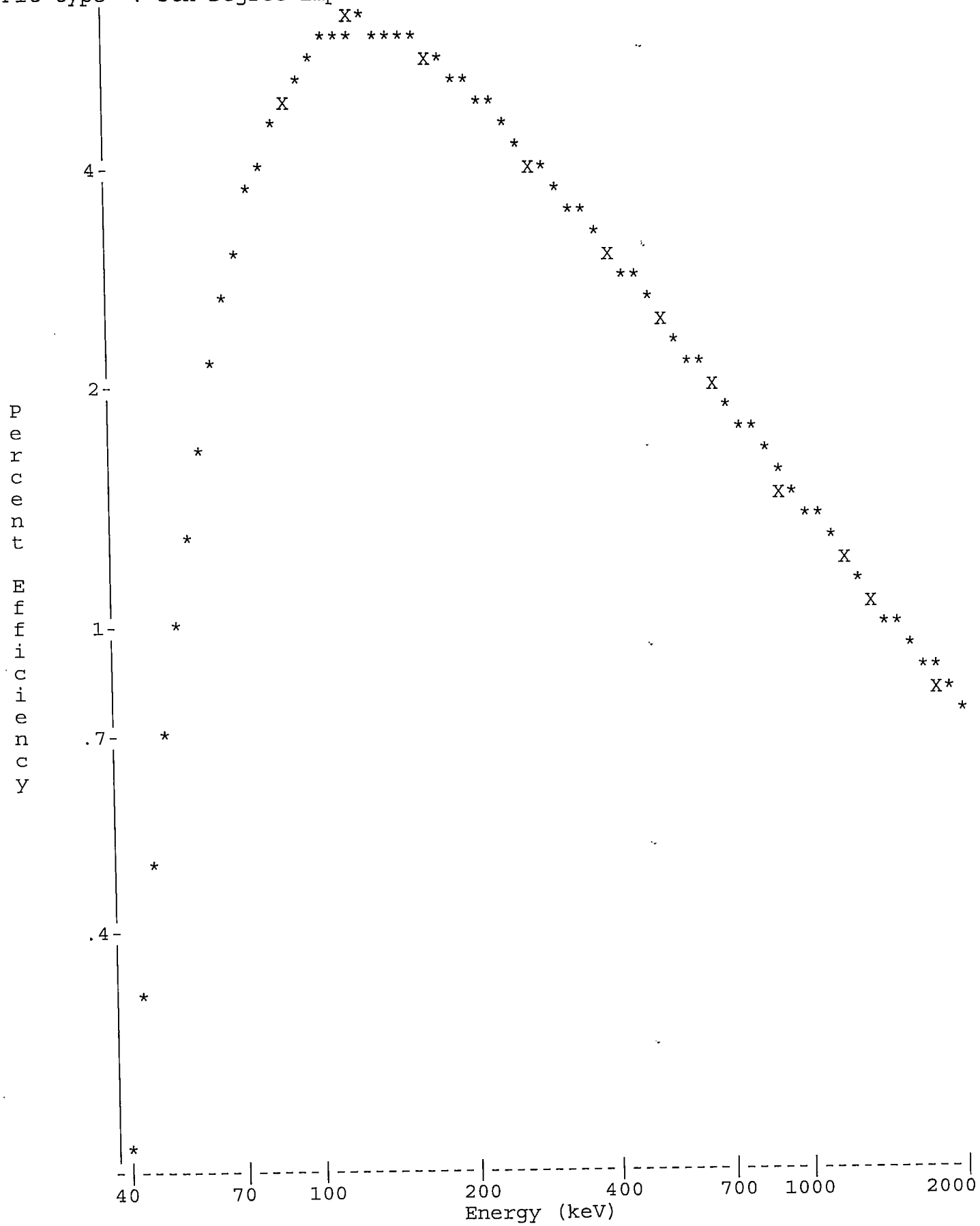
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09	17288	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 26-DEC-2019 12:37
Detector :
Geometry : 13S50122019
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:38:31.00
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:33.04

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S50122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG112719MT
Real Time : 0 03:30:25.52
Live time : 0 03:30:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.58	1425	5698	1.09	93.19	5.94E-01	1.13E-01	9.9	3.79E+00
2	1	88.09*	17258	7596	0.90	176.12	4.96E+00	1.37E+00	1.2	2.76E+00
3	1	122.09	15662	5678	0.93	244.04	6.09E+00	1.24E+00	1.2	2.38E-01
4	1	136.46	1921	4498	0.98	272.76	6.08E+00	1.52E-01	6.7	1.74E+00
5	1	165.85	10655	5481	1.00	331.48	5.73E+00	8.46E-01	1.7	7.06E-01
6	1	255.08	790	3264	1.12	509.78	4.36E+00	6.27E-02	13.0	2.13E+00
7	1	279.16	3091	3582	1.09	557.91	4.07E+00	2.45E-01	3.9	8.17E-01
8	1	391.70	14314	4211	1.18	782.87	3.10E+00	1.14E+00	1.3	1.99E+00
9	1	513.95	8581	3388	1.28	1027.27	2.48E+00	6.81E-01	1.7	3.07E+00
10	1	661.54	37318	3338	1.43	1322.41	2.00E+00	2.96E+00	0.6	1.29E+00
11	1	813.79	347	1406	1.61	1626.95	1.67E+00	2.75E-02	20.2	3.76E-01
12	1	897.98	19331	2309	1.59	1795.39	1.54E+00	1.53E+00	0.9	1.28E+00
13	1	1173.32	28896	1562	1.79	2346.47	1.21E+00	2.29E+00	0.7	1.61E+00
14	1	1332.59	25910	898	1.91	2665.37	1.08E+00	2.06E+00	0.7	3.30E+00
15	1	1835.93	11314	293	2.23	3673.81	8.34E-01	8.98E-01	1.0	3.79E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17258	3.72*	4.962E+00	7.420E+02	1.004E+03	2.50
03-CO57	122.06	15662	85.51*	6.091E+00	2.387E+01	4.002E+01	2.41
04-CE139	165.85	10655	80.35*	5.732E+00	1.836E+01	5.077E+01	3.32
05-HG203	279.20	3091	81.46*	4.070E+00	7.398E+00	1.492E+02	7.85
06-SN113	391.69	14314	64.90*	3.101E+00	5.644E+01	1.905E+02	2.51
07-SR85	513.99	8581	99.27*	2.479E+00	2.767E+01	2.398E+02	3.49
08-CS137	661.65	37318	85.12*	2.004E+00	1.736E+02	1.759E+02	1.24
09-Y88	898.02	19331	93.40*	1.535E+00	1.070E+02	3.977E+02	1.77
10-CO60	1173.22	28896	100.00	1.208E+00	1.898E+02	2.041E+02	1.34
	1332.49	25910	100.00*	1.079E+00	1.905E+02	2.049E+02	1.35
12-Y88	1836.01	11314	99.38*	8.338E-01	1.084E+02	4.028E+02	2.03

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S50122019

Acquisition date : 20-DEC-2019 10:22:33

Total number of lines in spectrum 15
Number of unidentified lines 4
Number of lines tentatively identified by NID 11 73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.905E+02	2.049E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
	Total Activity :		1.455E+03	2.856E+03			

Grand Total Activity : 1.455E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S50122019 Acquisition date : 20-DEC-2019 10:22:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.58	1425	5698	1.09	93.19	89	9	1.13E-01	19.8	5.94E-01	
1	136.46	1921	4498	0.98	272.76	268	9	1.52E-01	13.4	6.08E+00	
1	255.08	790	3264	1.12	509.78	506	8	6.27E-02	26.0	4.36E+00	
1	813.79	347	1406	1.61	1626.95	1623	9	2.75E-02	40.5	1.67E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.420E+02	1.004E+03	0.025E+03	2.50	
03-CO57	270.90D	1.68	2.387E+01	4.002E+01	0.096E+01	2.41	
04-CE139	137.66D	2.77	1.836E+01	5.077E+01	0.169E+01	3.32	
05-HG203	46.61D	20.2	7.398E+00	1.492E+02	0.117E+02	7.85	
06-SN113	115.10D	3.38	5.644E+01	1.905E+02	0.048E+02	2.51	
07-SR85	64.84D	8.67	2.767E+01	2.398E+02	0.084E+02	3.49	
08-CS137	30.17Y	1.01	1.736E+02	1.759E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.070E+02	3.977E+02	0.070E+02	1.77	
10-CO60	5.27Y	1.08	1.902E+02	2.045E+02	0.019E+02	0.95	
12-Y88	106.65D	3.72	1.084E+02	4.028E+02	0.082E+02	2.03	
	Total Activity :		1.455E+03	2.855E+03			

Grand Total Activity : 1.455E+03 2.855E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	2.508E+01	1.634E+01	0.000E+00	61.461
03-CO57	4.002E+01	9.649E-01	6.597E-01	0.000E+00	60.658
04-CE139	5.077E+01	1.688E+00	1.174E+00	0.000E+00	43.250
05-HG203	1.492E+02	1.171E+01	1.177E+01	0.000E+00	12.672
06-SN113	1.905E+02	4.790E+00	3.019E+00	0.000E+00	63.113
07-SR85	2.398E+02	8.369E+00	6.343E+00	0.000E+00	37.808
08-CS137	1.759E+02	2.176E+00	9.851E-01	0.000E+00	178.514
09-Y88	3.977E+02	7.037E+00	4.082E+00	0.000E+00	97.440
10-CO60	2.045E+02	1.950E+00	9.557E-01	0.000E+00	214.000
12-Y88	4.028E+02	8.185E+00	2.205E+00	0.000E+00	182.657

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.681E-02		1.711E+00	2.719E+00	0.000E+00	0.025

```
A,13S50122019     ,12/26/2019 12:38,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,13S50122019     ,CALIBRATION         ,12/26/2019 12:37,13S50122019
C,02-CD109,YES,   1.004E+03,   2.508E+01,   1.634E+01,,   61.461
C,03-CO57 ,YES,   4.002E+01,   9.649E-01,   6.597E-01,,   60.658
C,04-CE139,YES,   5.077E+01,   1.688E+00,   1.174E+00,,   43.250
C,05-HG203,YES,   1.492E+02,   1.171E+01,   1.177E+01,,   12.672
C,06-SN113,YES,   1.905E+02,   4.790E+00,   3.019E+00,,   63.113
C,07-SR85 ,YES,   2.398E+02,   8.369E+00,   6.343E+00,,   37.808
C,08-CS137,YES,   1.759E+02,   2.176E+00,   9.851E-01,,  178.514
C,09-Y88  ,YES,   3.977E+02,   7.037E+00,   4.082E+00,,   97.440
C,10-CO60 ,YES,   2.045E+02,   1.950E+00,   9.557E-01,,  214.000
C,12-Y88  ,YES,   4.028E+02,   8.185E+00,   2.205E+00,,  182.657
C,01-AM241,NO ,   6.681E-02,   1.711E+00,   2.719E+00,,    0.025
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

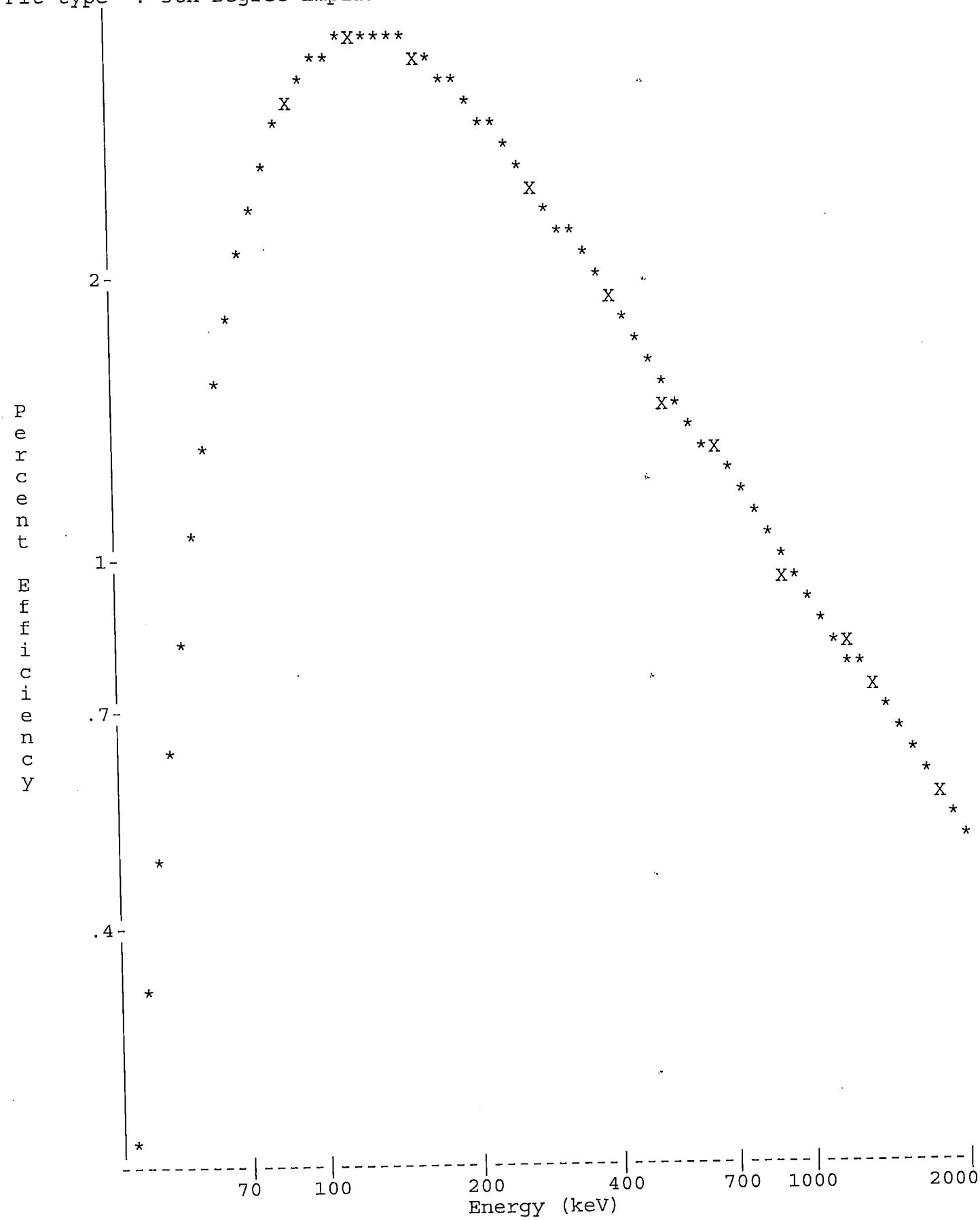
Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Fit type : 5th Degree Empirical

Geometry : 13S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum 18
Number of unidentified lines 7
Number of lines tentatively identified by NID 11 61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,    1.001E+03,   1.649E+01,   1.349E+01,,    74.206
C,03-CO57 ,YES,    4.016E+01,   9.167E-01,   6.087E-01,,    65.978
C,04-CE139,YES,    5.064E+01,   1.454E+00,   1.122E+00,,    45.151
C,05-HG203,YES,    1.465E+02,   1.200E+01,   1.135E+01,,    12.914
C,06-SN113,YES,    1.946E+02,   4.137E+00,   2.774E+00,,    70.169
C,07-SR85 ,YES,    2.340E+02,   7.150E+00,   6.009E+00,,    38.945
C,08-CS137,YES,    1.774E+02,   1.808E+00,   8.215E-01,,   215.917
C,09-Y88  ,YES,    3.981E+02,   6.404E+00,   3.602E+00,,   110.531
C,10-CO60 ,YES,    2.044E+02,   1.570E+00,   6.527E-01,,   313.158
C,12-Y88  ,YES,    4.024E+02,   6.717E+00,   1.716E+00,,   234.561
C,01-AM241,NO ,    3.682E-02,   1.283E+00,   2.034E+00,,     0.018
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.64%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.8	0.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.0	-0.41%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	390.0	-3.99%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.8	0.19%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.7	1.99%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.2	-0.62%

Eff. Name: **14S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:13:21.15
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 18-DEC-2019 18:27:23.49

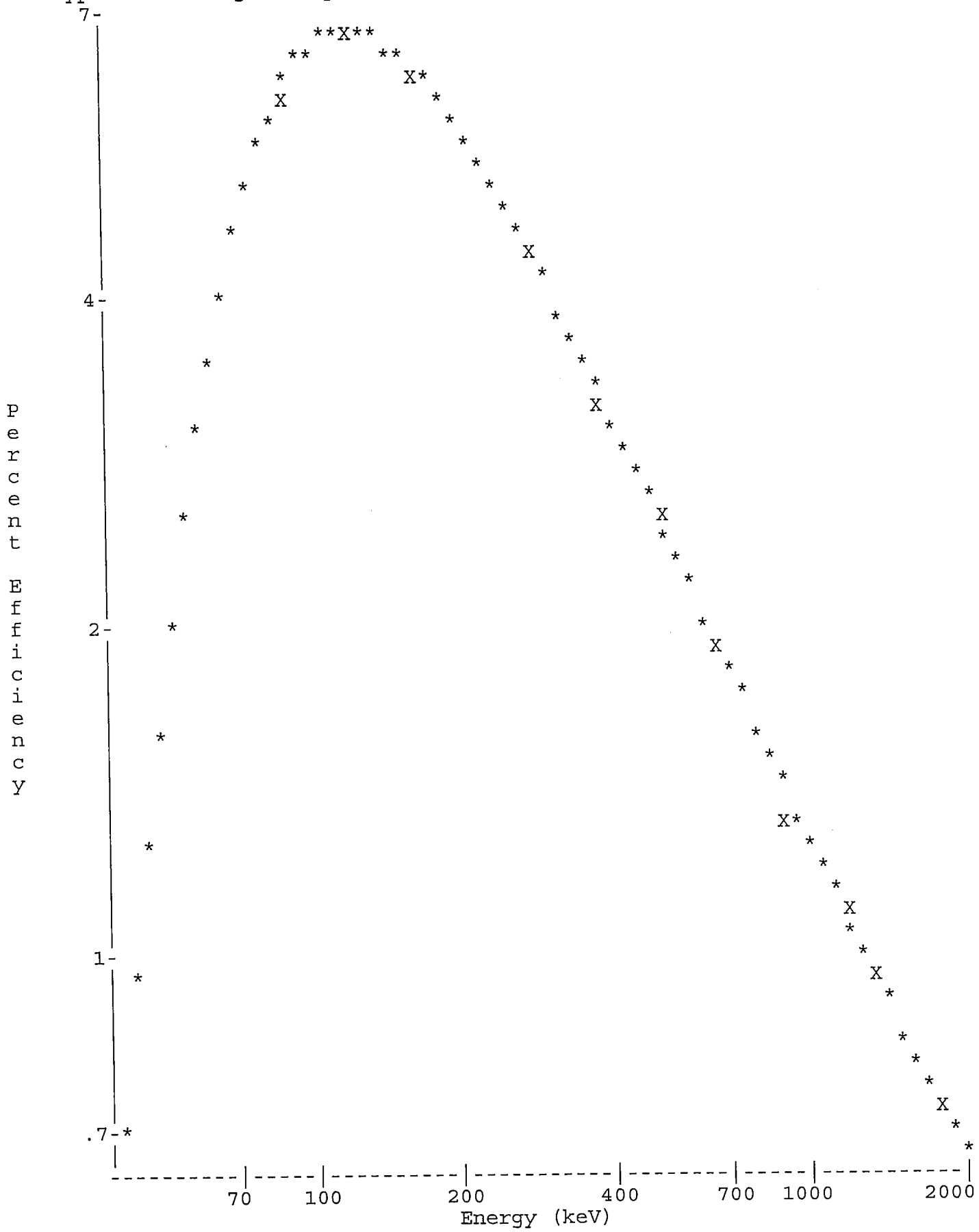
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S50121819 Smple Date: 1-JUN-2019 12:00:00.0
Sample Type : STD Geometry : 14S50121819
Quantity : 1.00000E+00 TOTAL BKGFILE : 14BG112719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 05:00:55.75
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 05:00:00.00
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.60	3975	8207	0.80	89.97	1.23E+00	2.21E-01	4.4	1.01E+00
2	1	88.03	29704	9669	0.83	172.80	5.96E+00	1.65E+00	0.8	1.73E+00
3	1	122.05	25406	7639	0.87	240.81	6.86E+00	1.41E+00	0.9	7.42E-01
4	1	136.47	3417	6463	0.91	269.64	6.78E+00	1.90E-01	4.6	1.40E+00
5	1	165.85	16937	6942	0.94	328.39	6.32E+00	9.41E-01	1.2	4.44E+00
6	1	255.14	946	5634	1.02	506.90	4.68E+00	5.26E-02	14.7	2.67E+00
7	1	279.20	4711	5617	1.03	555.01	4.34E+00	2.62E-01	3.3	8.02E-01
8	1	391.70	21167	5331	1.14	779.95	3.17E+00	1.18E+00	1.0	3.27E+00
9	1	514.00	12546	4517	1.26	1024.50	2.44E+00	6.97E-01	1.4	2.89E+00
10	1	661.64	50588	4509	1.35	1319.73	1.91E+00	2.81E+00	0.5	1.04E+01
11	1	814.05	471	2381	1.67	1624.53	1.55E+00	2.62E-02	20.5	7.24E-01
12	1	898.03	25137	3936	1.52	1792.49	1.41E+00	1.40E+00	0.8	1.05E+01
13	1	1173.22	37091	2183	1.73	2342.95	1.09E+00	2.06E+00	0.6	1.23E+01
14	4	1325.69	557	849	2.69	2647.95	9.68E-01	3.09E-02	12.3	1.49E+01
15	4	1332.48	33523	497	1.86	2661.54	9.64E-01	1.86E+00	0.6	
16	1	1836.00	14220	330	2.19	3668.98	7.29E-01	7.90E-01	0.9	9.11E+00

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:13
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S50121819



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:14:52.93
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 18-DEC-2019 18:27:23.49

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S50121819 Smple Date: 1-JUN-2019 12:00:00.0
Sample Type : STD Geometry : 14S50121819
Quantity : 1.00000E+00 TOTAL BKGFILE : 14BG112719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 05:00:55.75
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 05:00:00.00
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.60	3975	8207	0.80	89.97	1.23E+00	2.21E-01	4.4	1.01E+00
2	1	88.03*	29669	9669	0.83	172.80	5.96E+00	1.65E+00	0.8	1.73E+00
3	1	122.05	25406	7639	0.87	240.81	6.86E+00	1.41E+00	0.9	7.42E-01
4	1	136.47	3417	6463	0.91	269.64	6.78E+00	1.90E-01	4.6	1.40E+00
5	1	165.85	16937	6942	0.94	328.39	6.32E+00	9.41E-01	1.2	4.44E+00
6	1	255.14	946	5634	1.02	506.90	4.68E+00	5.26E-02	14.7	2.67E+00
7	1	279.20	4711	5617	1.03	555.01	4.34E+00	2.62E-01	3.3	8.02E-01
8	1	391.70	21167	5331	1.14	779.95	3.17E+00	1.18E+00	1.0	3.27E+00
9	1	514.00	12546	4517	1.26	1024.50	2.44E+00	6.97E-01	1.4	2.89E+00
10	1	661.64	50588	4509	1.35	1319.73	1.91E+00	2.81E+00	0.5	1.04E+01
11	1	814.05	471	2381	1.67	1624.53	1.55E+00	2.62E-02	20.5	7.24E-01
12	1	898.03	25137	3936	1.52	1792.49	1.41E+00	1.40E+00	0.8	1.05E+01
13	1	1173.22	37091	2183	1.73	2342.95	1.09E+00	2.06E+00	0.6	1.23E+01
14	4	1325.69	557	849	2.69	2647.95	9.68E-01	3.09E-02	12.3	1.49E+01
15	4	1332.48	33523	497	1.86	2661.54	9.64E-01	1.86E+00	0.6	
16	1	1836.00	14220	330	2.19	3668.98	7.29E-01	7.90E-01	0.9	9.11E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	29669	3.72*	5.957E+00	7.439E+02	1.004E+03	1.66
03-CO57	122.06	25406	85.51*	6.862E+00	2.405E+01	4.017E+01	1.77
04-CE139	165.85	16937	80.35*	6.322E+00	1.852E+01	5.081E+01	2.41
05-HG203	279.20	4711	81.46*	4.336E+00	7.411E+00	1.459E+02	6.63
06-SN113	391.69	21167	64.90*	3.174E+00	5.708E+01	1.908E+02	1.95
07-SR85	513.99	12546	99.27*	2.441E+00	2.877E+01	2.450E+02	2.80
08-CS137	661.65	50588	85.12*	1.905E+00	1.733E+02	1.755E+02	1.06
09-Y88	898.02	25137	93.40*	1.410E+00	1.061E+02	3.900E+02	1.69
10-CO60	1173.22	37091	100.00	1.087E+00	1.896E+02	2.038E+02	1.19
	1332.49	33523	100.00*	9.636E-01	1.933E+02	2.077E+02	1.12
12-Y88	1836.01	14220	99.38*	7.286E-01	1.091E+02	4.012E+02	1.81

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S50121819

Acquisition date : 18-DEC-2019 18:27:23

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.439E+02	1.004E+03	0.017E+03	1.66	
03-CO57	270.90D	1.67	2.405E+01	4.017E+01	0.071E+01	1.77	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.122E+01	2.41	
05-HG203	46.61D	19.7	7.411E+00	1.459E+02	0.097E+02	6.63	
06-SN113	115.10D	3.34	5.708E+01	1.908E+02	0.037E+02	1.95	
07-SR85	64.84D	8.52	2.877E+01	2.450E+02	0.068E+02	2.80	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.06	
09-Y88	106.65D	3.68	1.061E+02	3.900E+02	0.066E+02	1.69	
10-CO60	5.27Y	1.07	1.933E+02	2.077E+02	0.023E+02	1.12	
12-Y88	106.65D	3.68	1.091E+02	4.012E+02	0.073E+02	1.81	
			---------	---------			
	Total Activity :		1.461E+03	2.851E+03			

Grand Total Activity : 1.461E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.60	3975	8207	0.80	89.97	86	9	2.21E-01	8.9	1.23E+00	
1	136.47	3417	6463	0.91	269.64	266	9	1.90E-01	9.2	6.78E+00	
1	255.14	946	5634	1.02	506.90	503	9	5.26E-02	29.4	4.68E+00	
1	814.05	471	2381	1.67	1624.53	1620	11	2.62E-02	41.1	1.55E+00	
4	1325.69	557	849	2.69	2647.95	2638	41	3.09E-02	24.7	9.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.439E+02	1.004E+03	0.017E+03	1.66	
03-CO57	270.90D	1.67	2.405E+01	4.017E+01	0.071E+01	1.77	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.122E+01	2.41	
05-HG203	46.61D	19.7	7.411E+00	1.459E+02	0.097E+02	6.63	
06-SN113	115.10D	3.34	5.708E+01	1.908E+02	0.037E+02	1.95	
07-SR85	64.84D	8.52	2.877E+01	2.450E+02	0.068E+02	2.80	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.06	
09-Y88	106.65D	3.68	1.061E+02	3.900E+02	0.066E+02	1.69	
10-CO60	5.27Y	1.07	1.915E+02	2.058E+02	0.017E+02	0.82	
12-Y88	106.65D	3.68	1.091E+02	4.012E+02	0.073E+02	1.81	
	Total Activity :		1.460E+03	2.849E+03			
	Grand Total Activity :		1.460E+03	2.849E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.668E+01	1.105E+01	0.000E+00	90.837
03-CO57	4.017E+01	7.098E-01	4.762E-01	0.000E+00	84.344
04-CE139	5.081E+01	1.223E+00	8.613E-01	0.000E+00	58.990
05-HG203	1.459E+02	9.677E+00	8.561E+00	0.000E+00	17.038
06-SN113	1.908E+02	3.725E+00	2.394E+00	0.000E+00	79.689

07-SR85	2.450E+02	6.850E+00	4.859E+00	0.000E+00	50.418
08-CS137	1.755E+02	1.867E+00	8.217E-01	0.000E+00	213.594
09-Y88	3.900E+02	6.600E+00	3.616E+00	0.000E+00	107.864
10-CO60	2.058E+02	1.683E+00	6.831E-01	0.000E+00	301.314
12-Y88	4.012E+02	7.282E+00	1.902E+00	0.000E+00	210.961

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.835E-01		8.979E-01	1.467E+00	0.000E+00	0.193

```
A,14S50121819     ,12/26/2019 10:14,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,14S50121819     ,CALIBRATION         ,12/26/2019 10:13,14S50121819
C,02-CD109,YES,   1.004E+03,   1.668E+01,   1.105E+01,,   90.837
C,03-CO57 ,YES,   4.017E+01,   7.098E-01,   4.762E-01,,   84.344
C,04-CE139,YES,   5.081E+01,   1.223E+00,   8.613E-01,,   58.990
C,05-HG203,YES,   1.459E+02,   9.677E+00,   8.561E+00,,   17.038
C,06-SN113,YES,   1.908E+02,   3.725E+00,   2.394E+00,,   79.689
C,07-SR85 ,YES,   2.450E+02,   6.850E+00,   4.859E+00,,   50.418
C,08-CS137,YES,   1.755E+02,   1.867E+00,   8.217E-01,,  213.594
C,09-Y88  ,YES,   3.900E+02,   6.600E+00,   3.616E+00,,  107.864
C,10-CO60 ,YES,   2.058E+02,   1.683E+00,   6.831E-01,,  301.314
C,12-Y88  ,YES,   4.012E+02,   7.282E+00,   1.902E+00,,  210.961
C,01-AM241,NO ,   2.835E-01,   8.979E-01,   1.467E+00,,    0.193
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.29%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.01%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.3	-6.24%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	192.2	0.83%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	241.6	-1.80%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	395.0	-2.76%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.5	0.91%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.1	-0.39%

Eff. Name: **15S50121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:48:06.80
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 19-DEC-2019 18:26:45.60

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

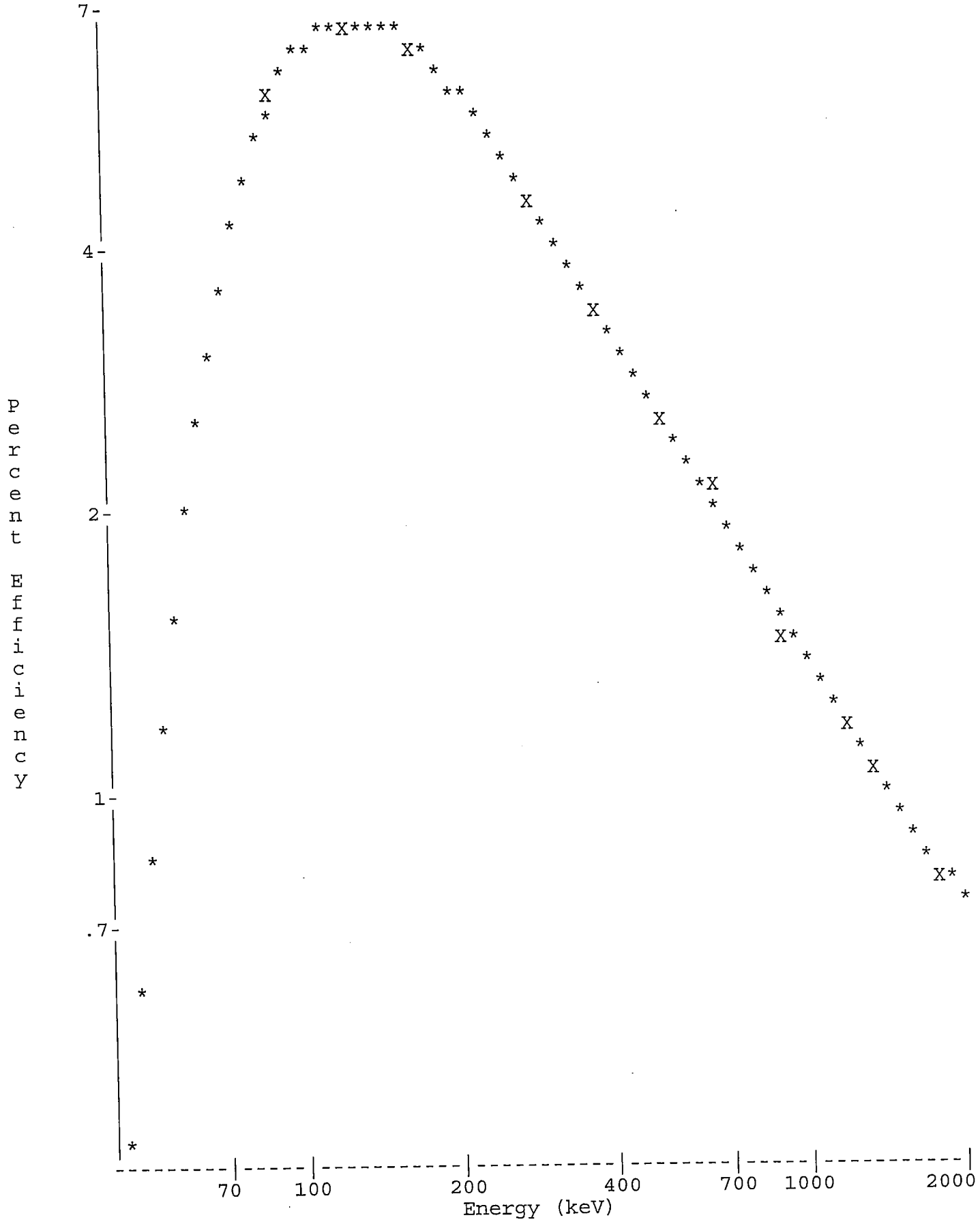
Sample ID : 15S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S50121919
BKGFILE : 15BG112719MT
Real Time : 0 14:39:15.56
Live time : 0 14:37:18.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.56	5843	20714	0.99	87.52	7.01E-01	1.11E-01	4.3	2.71E+00
2	1	88.05	81663	28269	1.03	170.71	5.61E+00	1.55E+00	0.5	9.58E+00
3	1	122.06	74289	34552	1.06	238.90	6.91E+00	1.41E+00	0.6	1.20E+01
4	1	136.47	9424	18901	1.03	267.79	6.90E+00	1.79E-01	2.7	9.90E-01
5	1	165.86	50719	26733	1.09	326.70	6.49E+00	9.64E-01	0.8	4.39E+00
6	1	255.05	2865	15550	1.14	505.51	4.87E+00	5.44E-02	7.8	1.14E+00
7	1	279.17	14147	19050	1.20	553.87	4.52E+00	2.69E-01	2.1	8.91E-01
8	1	391.68	65296	18279	1.28	779.41	3.35E+00	1.24E+00	0.6	9.44E-01
9	1	514.00	38091	15698	1.37	1024.61	2.60E+00	7.24E-01	0.9	1.81E+00
10	1	661.64	159012	14174	1.49	1320.56	2.05E+00	3.02E+00	0.3	1.11E+01
11	1	814.04	1189	6683	1.48	1626.04	1.68E+00	2.26E-02	13.2	8.50E-01
12	1	898.04	79744	13128	1.69	1794.40	1.52E+00	1.51E+00	0.5	4.78E+00
13	1	1173.23	116971	7688	1.91	2345.97	1.17E+00	2.22E+00	0.3	6.46E+00
14	7	1325.97	2039	4203	3.94	2652.08	1.05E+00	3.87E-02	9.0	1.30E+01
15	7	1332.50	104685	1967	2.02	2665.16	1.04E+00	1.99E+00	0.3	
16	1	1835.99	45299	1454	2.42	3674.11	7.98E-01	8.61E-01	0.5	5.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 10:48
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S50121919



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:57:04.37
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 19-DEC-2019 18:26:45.60

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S50121919
BKGFILE : 15BG112719MT
Real Time : 0 14:39:15.56
Live time : 0 14:37:18.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.56*	5756	20714	0.99	87.52	7.01E-01	1.09E-01	4.4	2.71E+00
2	1	88.05	81663	28269	1.03	170.71	5.61E+00	1.55E+00	0.5	9.58E+00
3	1	122.06	74289	34552	1.06	238.90	6.91E+00	1.41E+00	0.6	1.20E+01
4	1	136.47	9424	18901	1.03	267.79	6.90E+00	1.79E-01	2.7	9.90E-01
5	1	165.86	50719	26733	1.09	326.70	6.49E+00	9.64E-01	0.8	4.39E+00
6	1	255.05	2865	15550	1.14	505.51	4.87E+00	5.44E-02	7.8	1.14E+00
7	1	279.17	14147	19050	1.20	553.87	4.52E+00	2.69E-01	2.1	8.91E-01
8	1	391.68	65296	18279	1.28	779.41	3.35E+00	1.24E+00	0.6	9.44E-01
9	1	514.00	38091	15698	1.37	1024.61	2.60E+00	7.24E-01	0.9	1.81E+00
10	1	661.64	159012	14174	1.49	1320.56	2.05E+00	3.02E+00	0.3	1.11E+01
11	1	814.04	1189	6683	1.48	1626.04	1.68E+00	2.26E-02	13.2	8.50E-01
12	1	898.04	79744	13128	1.69	1794.40	1.52E+00	1.51E+00	0.5	4.78E+00
13	1	1173.23	116971	7688	1.91	2345.97	1.17E+00	2.22E+00	0.3	6.46E+00
14	7	1325.97	2039	4203	3.94	2652.08	1.05E+00	3.87E-02	9.0	1.30E+01
15	7	1332.50	104685	1967	2.02	2665.16	1.04E+00	1.99E+00	0.3	
16	1	1835.99	45299	1454	2.42	3674.11	7.98E-01	8.61E-01	0.5	5.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	81663	3.72*	5.615E+00	7.428E+02	1.004E+03	1.03
03-CO57	122.06	74289	85.51*	6.906E+00	2.390E+01	4.003E+01	1.27
04-CE139	165.85	50719	80.35*	6.494E+00	1.847E+01	5.096E+01	1.57
05-HG203	279.20	14147	81.46*	4.517E+00	7.304E+00	1.463E+02	4.14
06-SN113	391.69	65296	64.90*	3.348E+00	5.709E+01	1.922E+02	1.16
07-SR85	513.99	38091	99.27*	2.603E+00	2.800E+01	2.416E+02	1.71
08-CS137	661.65	159012	85.12*	2.048E+00	1.733E+02	1.755E+02	0.60
09-Y88	898.02	79744	93.40*	1.522E+00	1.066E+02	3.950E+02	0.97
10-CO60	1173.22	116971	100.00	1.173E+00	1.894E+02	2.036E+02	0.69
	1332.49	104685	100.00*	1.041E+00	1.911E+02	2.055E+02	0.64
12-Y88	1836.01	45299	99.38*	7.982E-01	1.085E+02	4.021E+02	1.04

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S50121919

Acquisition date : 19-DEC-2019 18:26:45

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.428E+02	1.004E+03	0.010E+03	1.03	
03-CO57	270.90D	1.67	2.390E+01	4.003E+01	0.051E+01	1.27	
04-CE139	137.66D	2.76	1.847E+01	5.096E+01	0.080E+01	1.57	
05-HG203	46.61D	20.0	7.304E+00	1.463E+02	0.061E+02	4.14	
06-SN113	115.10D	3.37	5.709E+01	1.922E+02	0.022E+02	1.16	
07-SR85	64.84D	8.63	2.800E+01	2.416E+02	0.041E+02	1.71	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.011E+02	0.60	
09-Y88	106.65D	3.71	1.066E+02	3.950E+02	0.038E+02	0.97	
10-CO60	5.27Y	1.08	1.911E+02	2.055E+02	0.013E+02	0.64	
12-Y88	106.65D	3.71	1.085E+02	4.021E+02	0.042E+02	1.04	
			---------	---------			
	Total Activity :		1.457E+03	2.854E+03			

Grand Total Activity : 1.457E+03 2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S50121919
Acquisition date : 19-DEC-2019 18:26:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.56	5756	20714	0.99	87.52	85	7	1.09E-01	8.8	7.01E-01	
1	136.47	9424	18901	1.03	267.79	264	8	1.79E-01	5.5	6.90E+00	
1	255.05	2865	15550	1.14	505.51	502	8	5.44E-02	15.5	4.87E+00	
1	814.04	1189	6683	1.48	1626.04	1621	10	2.26E-02	26.4	1.68E+00	
7	1325.97	2039	4203	3.94	2652.08	2641	33	3.87E-02	17.9	1.05E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.428E+02	1.004E+03	0.010E+03	1.03	
03-CO57	270.90D	1.67	2.390E+01	4.003E+01	0.051E+01	1.27	
04-CE139	137.66D	2.76	1.847E+01	5.096E+01	0.080E+01	1.57	
05-HG203	46.61D	20.0	7.304E+00	1.463E+02	0.061E+02	4.14	
06-SN113	115.10D	3.37	5.709E+01	1.922E+02	0.022E+02	1.16	
07-SR85	64.84D	8.63	2.800E+01	2.416E+02	0.041E+02	1.71	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.011E+02	0.60	
09-Y88	106.65D	3.71	1.066E+02	3.950E+02	0.038E+02	0.97	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.001E+03	0.47	
12-Y88	106.65D	3.71	1.085E+02	4.021E+02	0.042E+02	1.04	
	Total Activity :		1.456E+03	2.853E+03			

Grand Total Activity : 1.456E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.032E+01	7.743E+00	0.000E+00	129.723
03-CO57	4.003E+01	5.069E-01	3.133E-01	0.000E+00	127.768
04-CE139	5.096E+01	7.993E-01	5.589E-01	0.000E+00	91.179
05-HG203	1.463E+02	6.057E+00	5.441E+00	0.000E+00	26.897
06-SN113	1.922E+02	2.230E+00	1.477E+00	0.000E+00	130.120

07-SR85	2.416E+02	4.135E+00	3.011E+00	0.000E+00	80.236
08-CS137	1.755E+02	1.053E+00	4.884E-01	0.000E+00	359.343
09-Y88	3.950E+02	3.826E+00	2.112E+00	0.000E+00	187.049
10-CO60	2.046E+02	9.613E-01	4.225E-01	0.000E+00	484.272
12-Y88	4.021E+02	4.201E+00	1.144E+00	0.000E+00	351.355

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.241E-01		7.760E-01	1.329E+00	0.000E+00	0.469

```
A,15S50121919     ,12/26/2019 10:57,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,15S50121919     ,CALIBRATION          ,12/26/2019 10:48,15S50121919
C,02-CD109,YES,   1.004E+03,   1.032E+01,   7.743E+00,,  129.723
C,03-CO57 ,YES,   4.003E+01,   5.069E-01,   3.133E-01,,  127.768
C,04-CE139,YES,   5.096E+01,   7.993E-01,   5.589E-01,,   91.179
C,05-HG203,YES,   1.463E+02,   6.057E+00,   5.441E+00,,   26.897
C,06-SN113,YES,   1.922E+02,   2.230E+00,   1.477E+00,,  130.120
C,07-SR85 ,YES,   2.416E+02,   4.135E+00,   3.011E+00,,   80.236
C,08-CS137,YES,   1.755E+02,   1.053E+00,   4.884E-01,,  359.343
C,09-Y88  ,YES,   3.950E+02,   3.826E+00,   2.112E+00,,  187.049
C,10-CO60 ,YES,   2.046E+02,   9.613E-01,   4.225E-01,,  484.272
C,12-Y88  ,YES,   4.021E+02,   4.201E+00,   1.144E+00,,  351.355
C,01-AM241,NO ,   6.241E-01,   7.760E-01,   1.329E+00,,    0.469
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

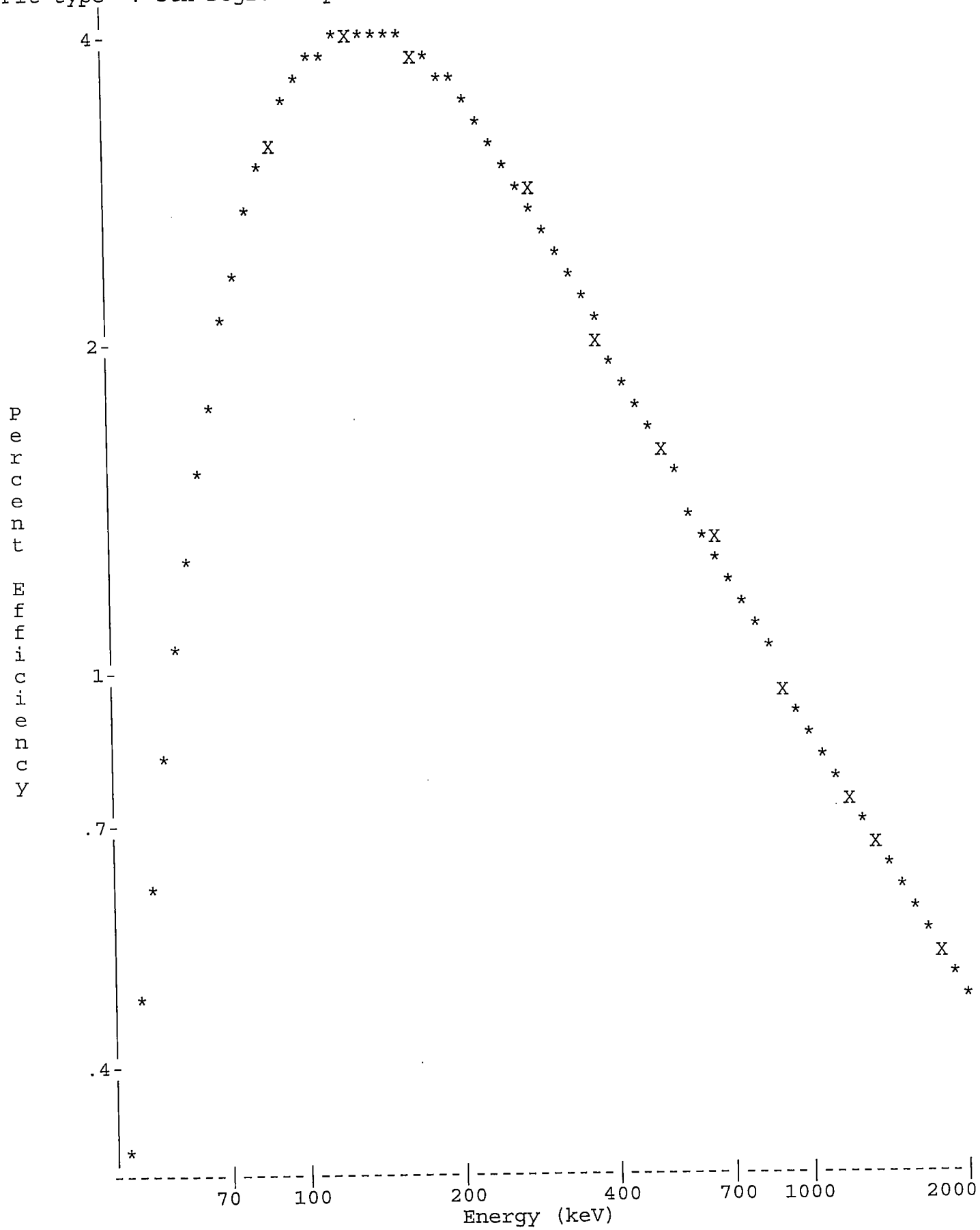
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity : 1.465E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

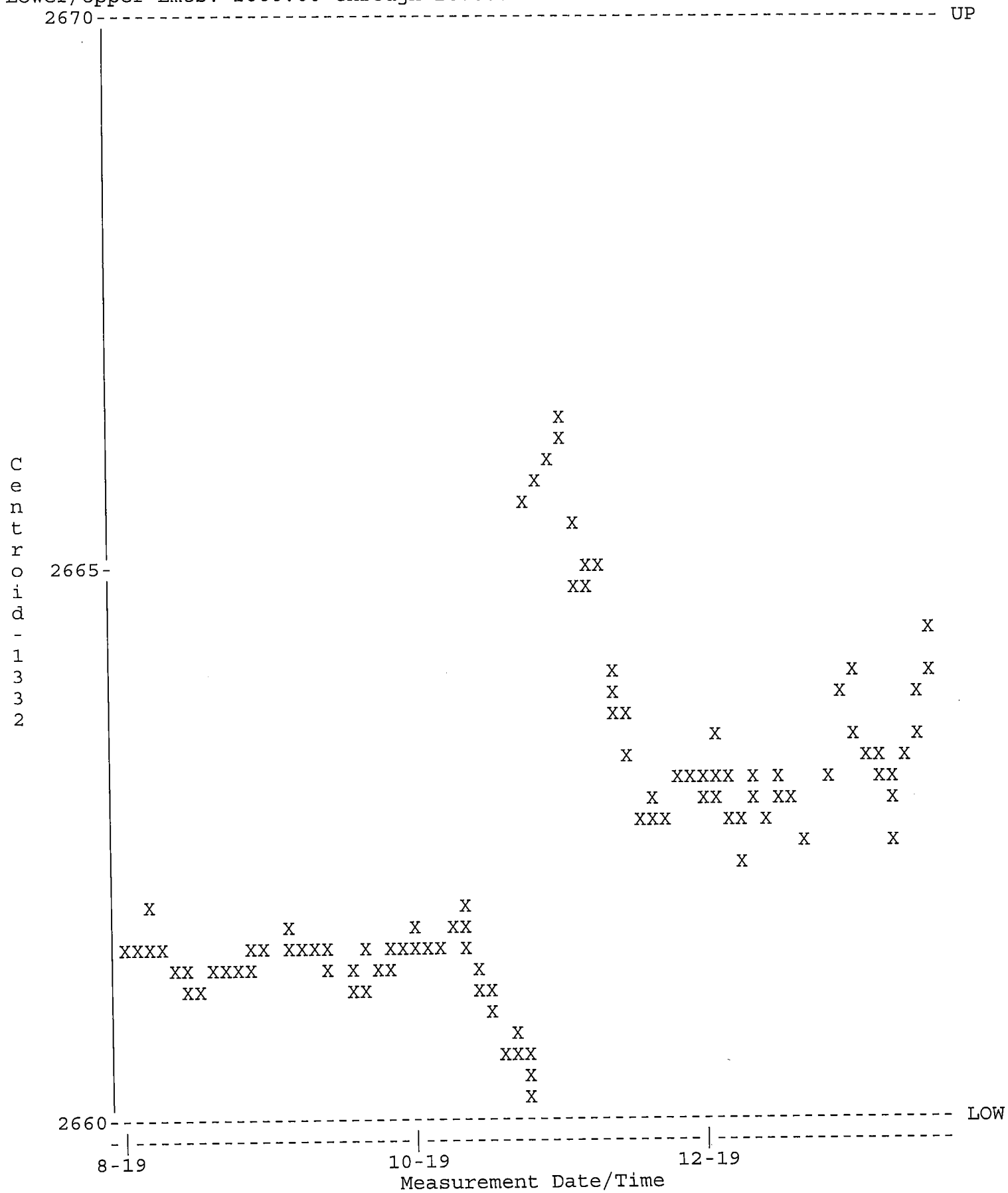
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION          ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,    65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,    68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,    47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,    16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,    72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,    44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,   201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,   110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,   227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,   221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,    -0.138
```

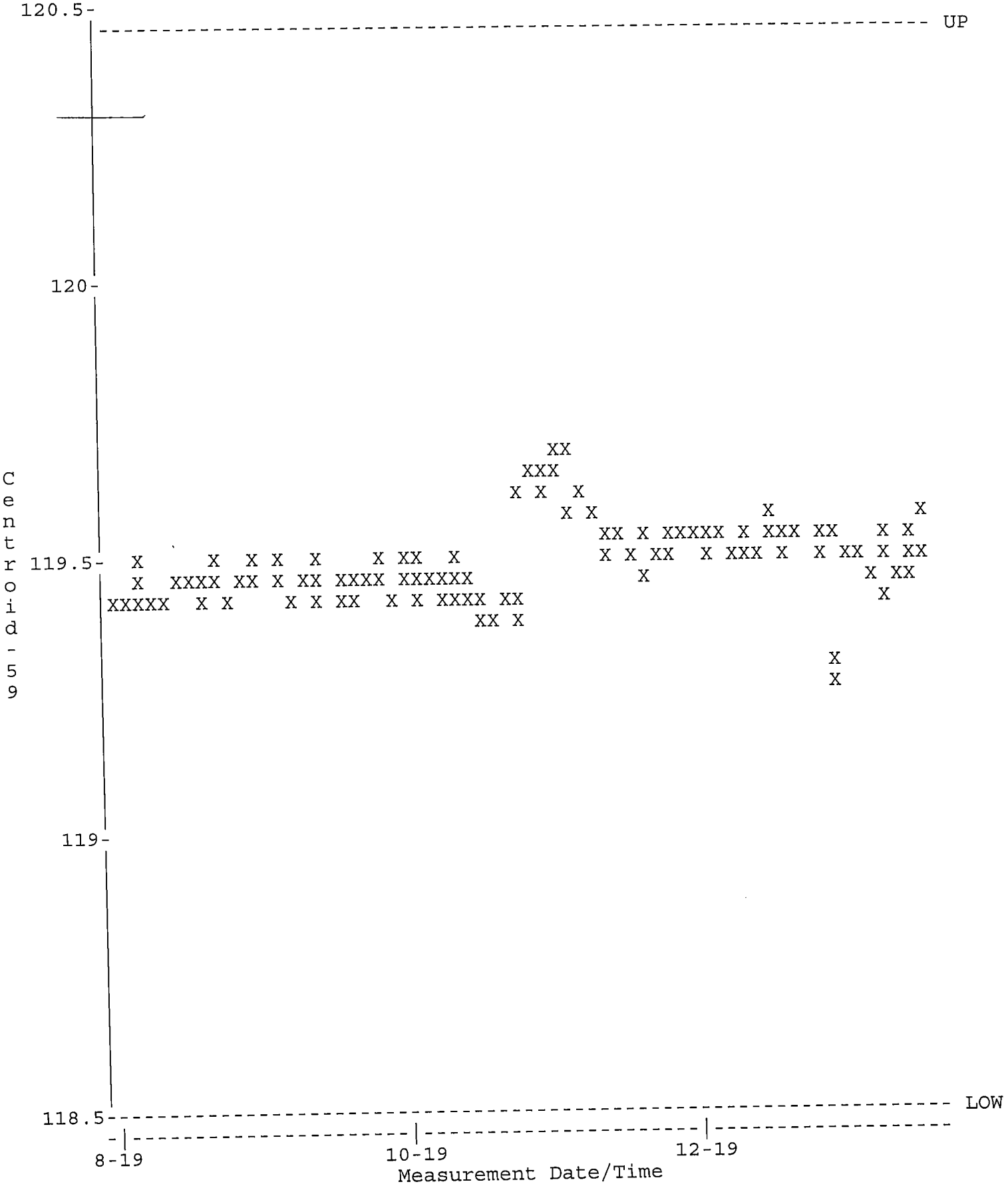
GAMMA SPECTROSCOPY

Daily Source and Background Checks

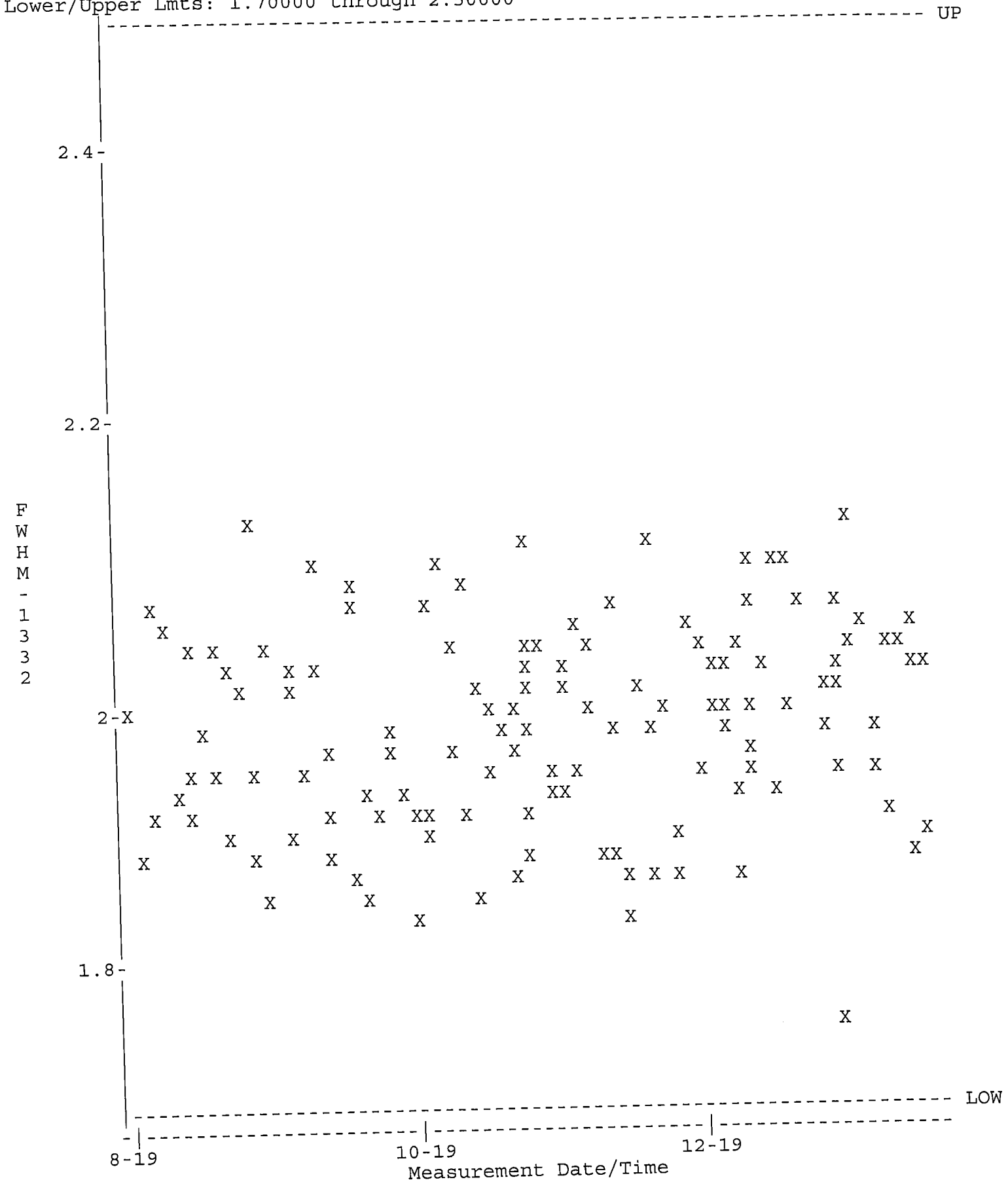
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



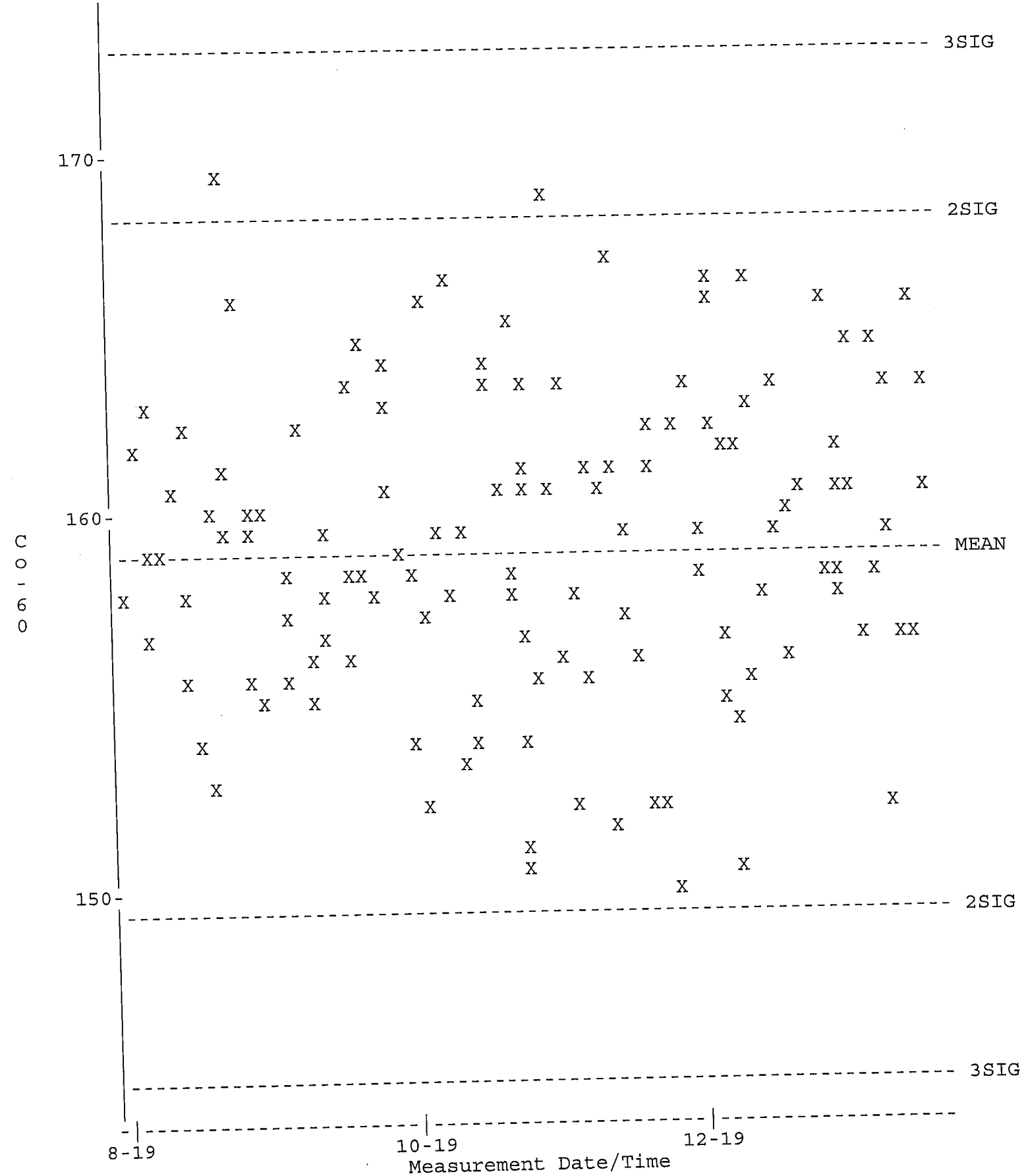
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



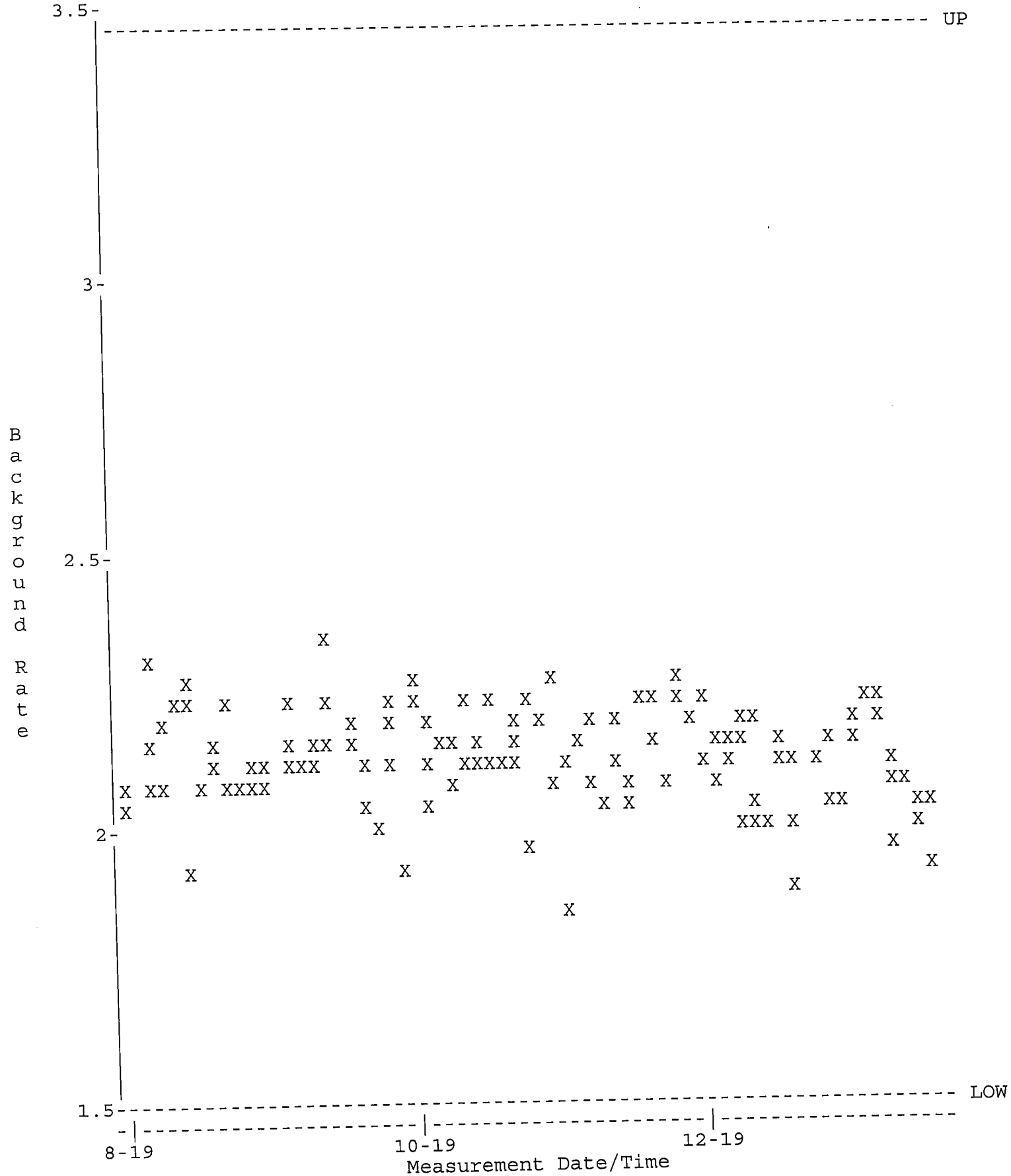
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



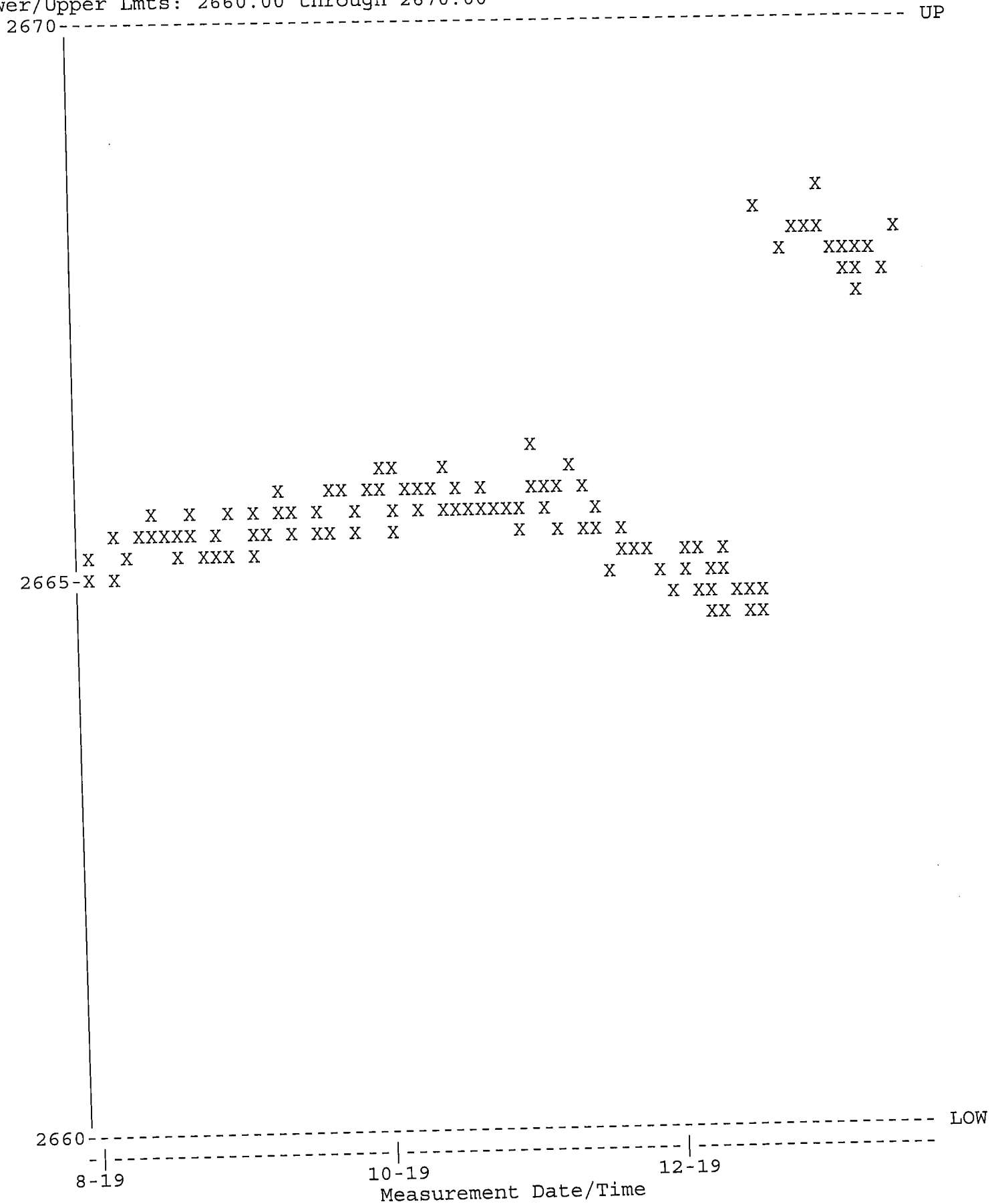
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



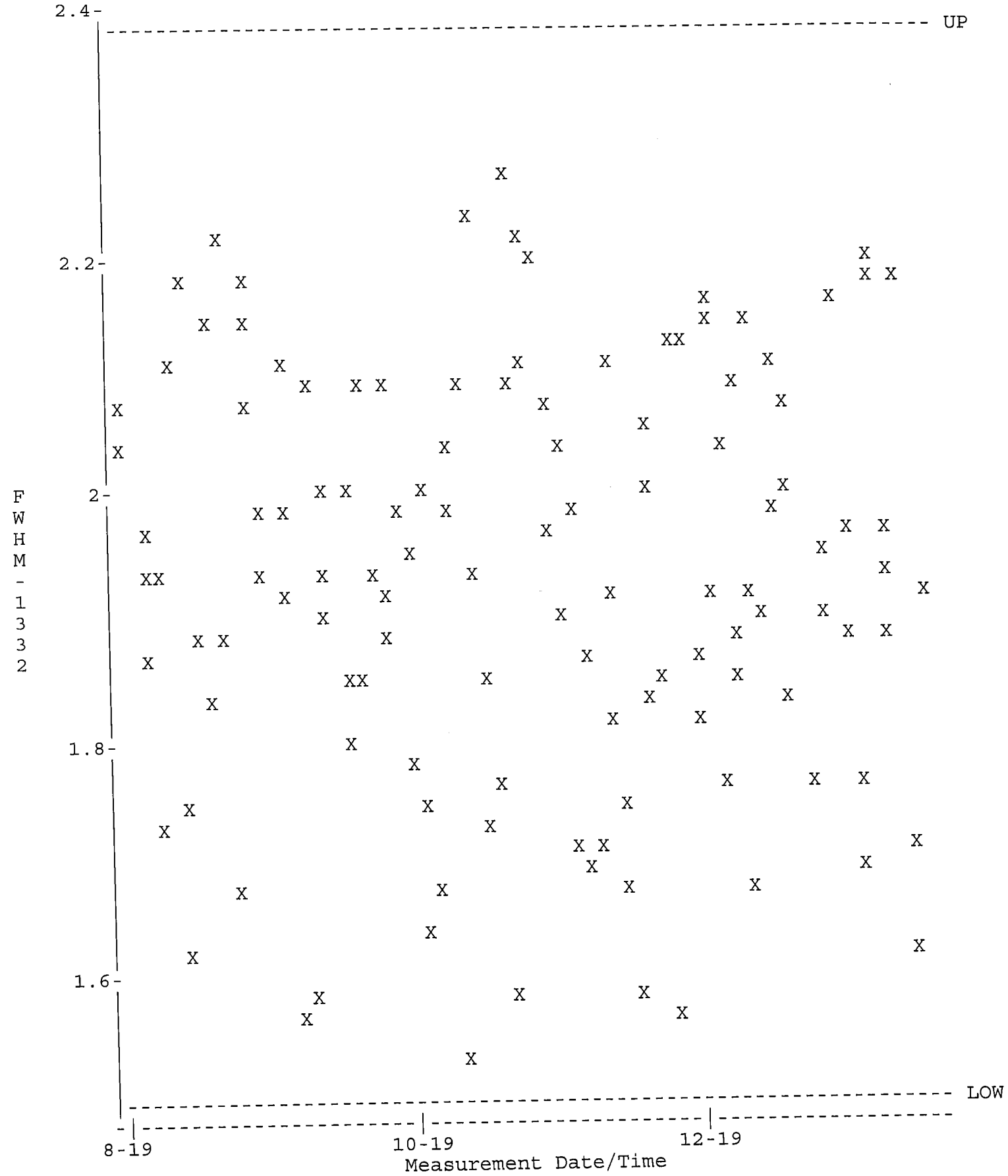
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



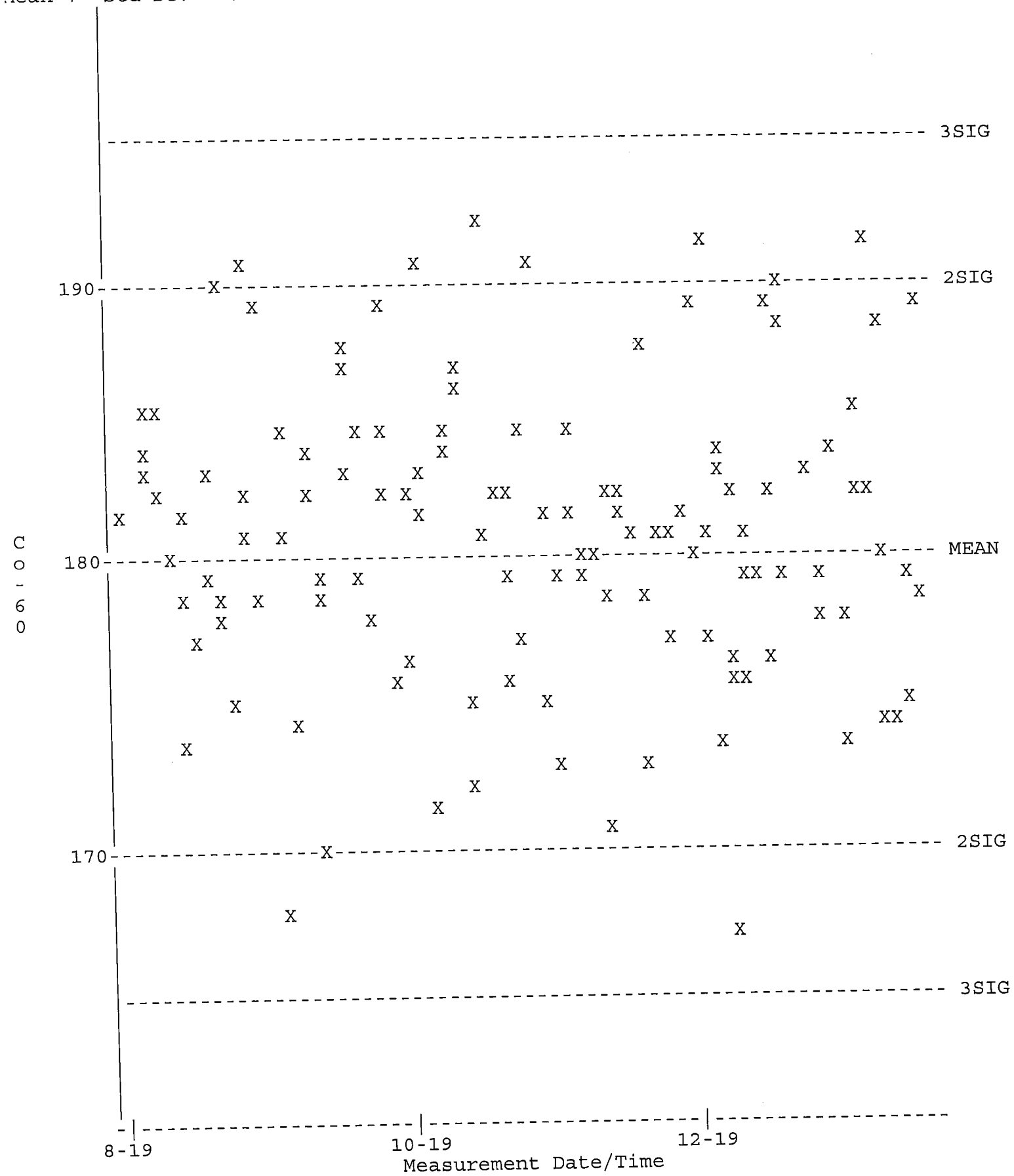
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



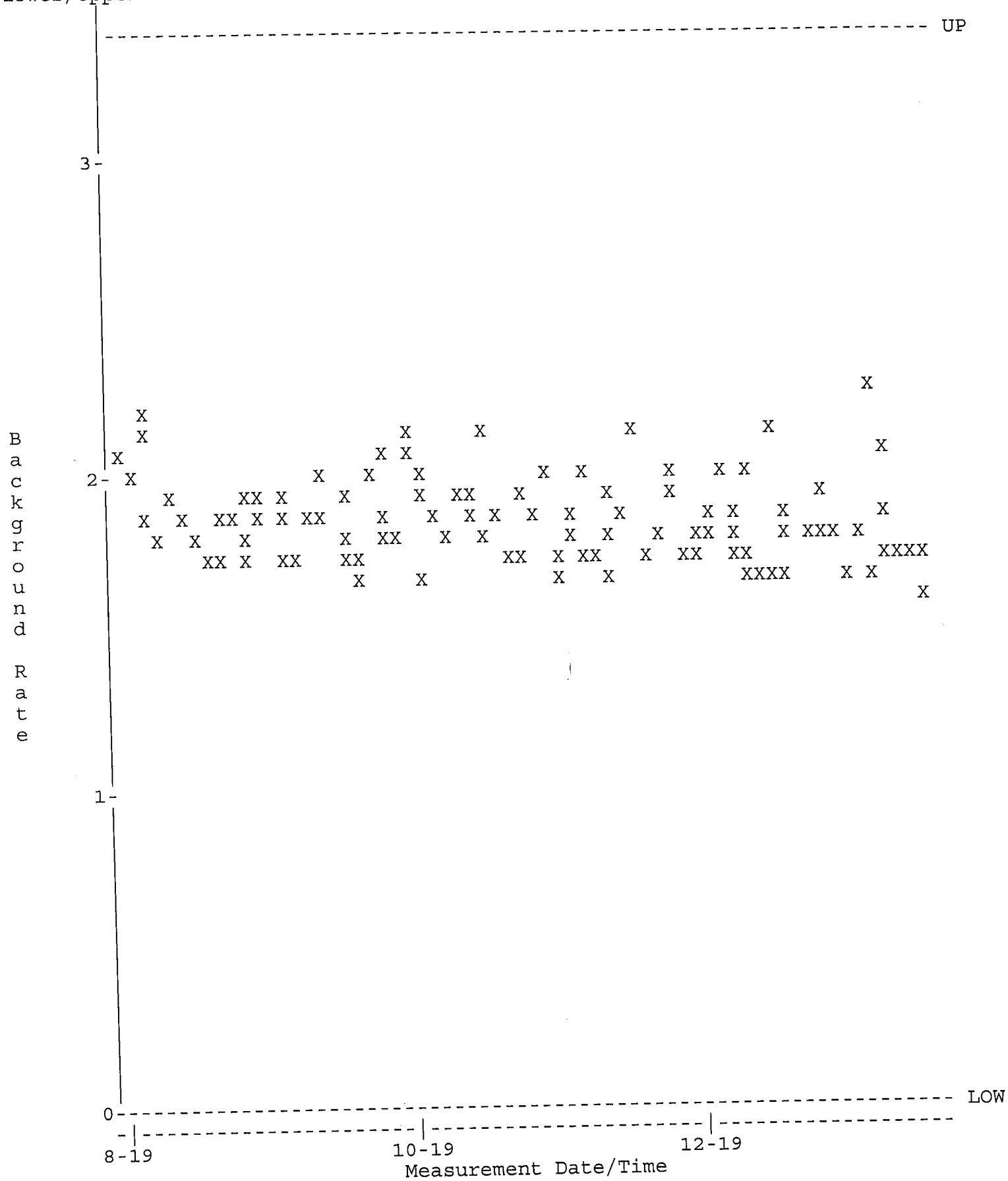
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



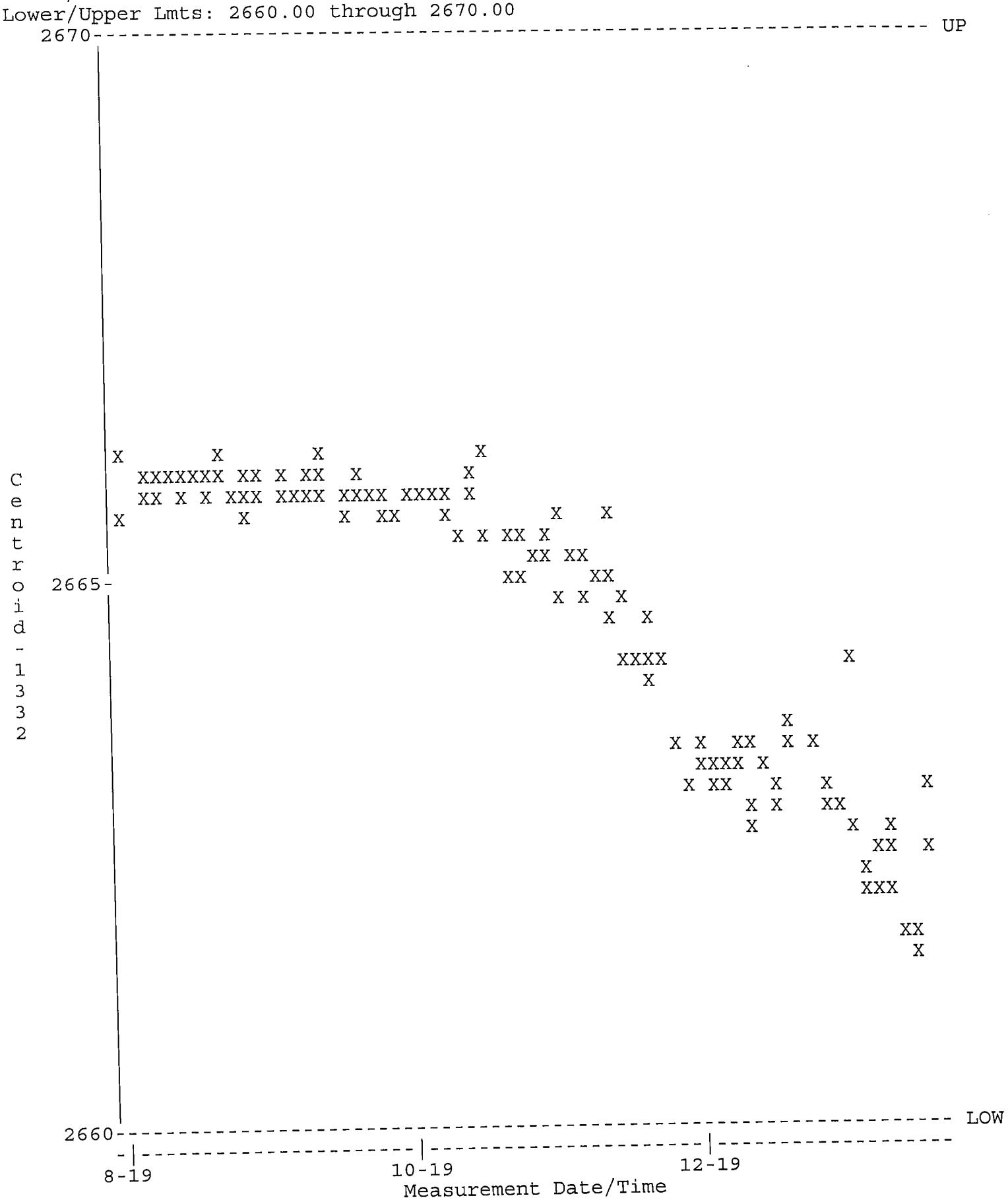
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



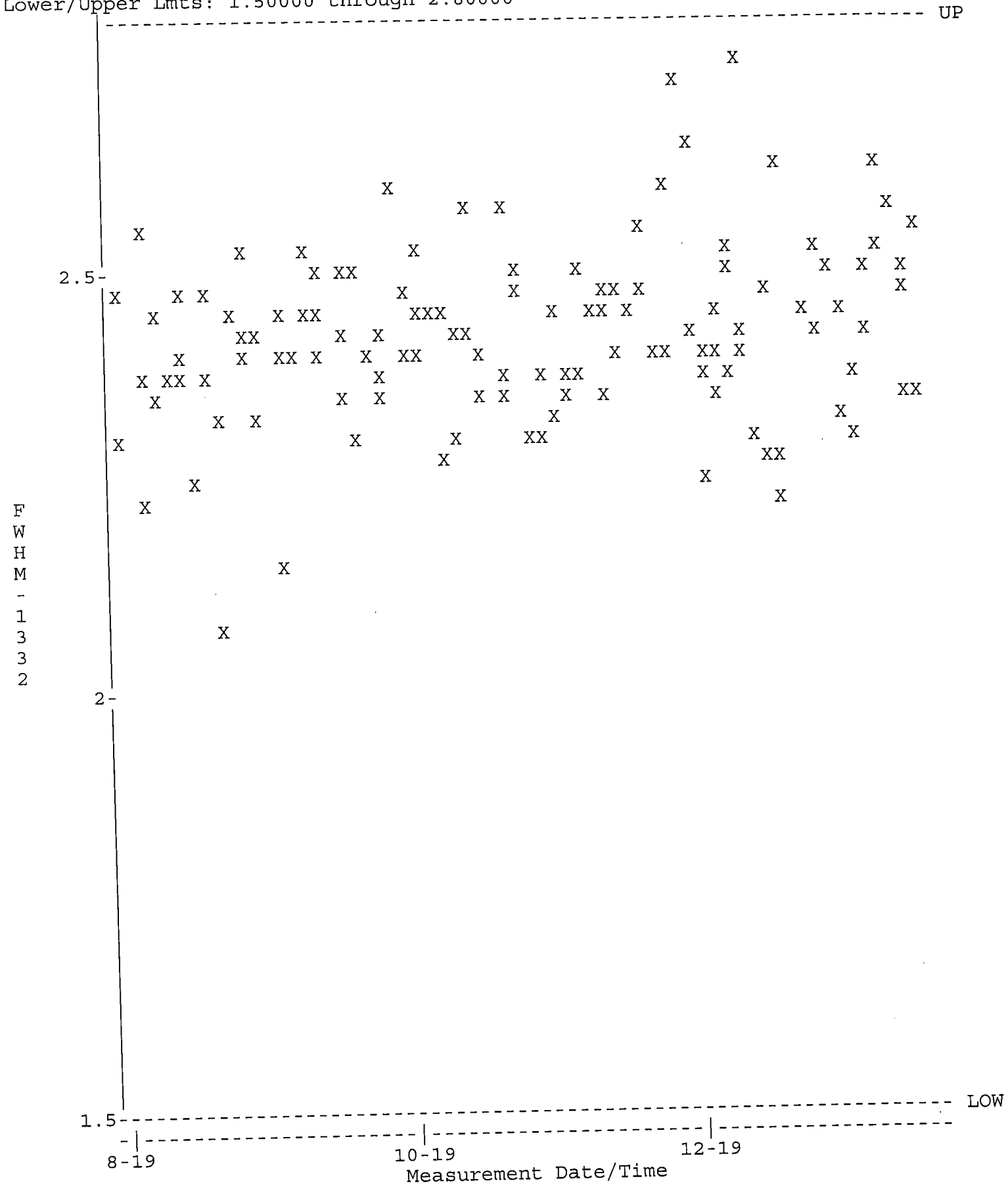
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



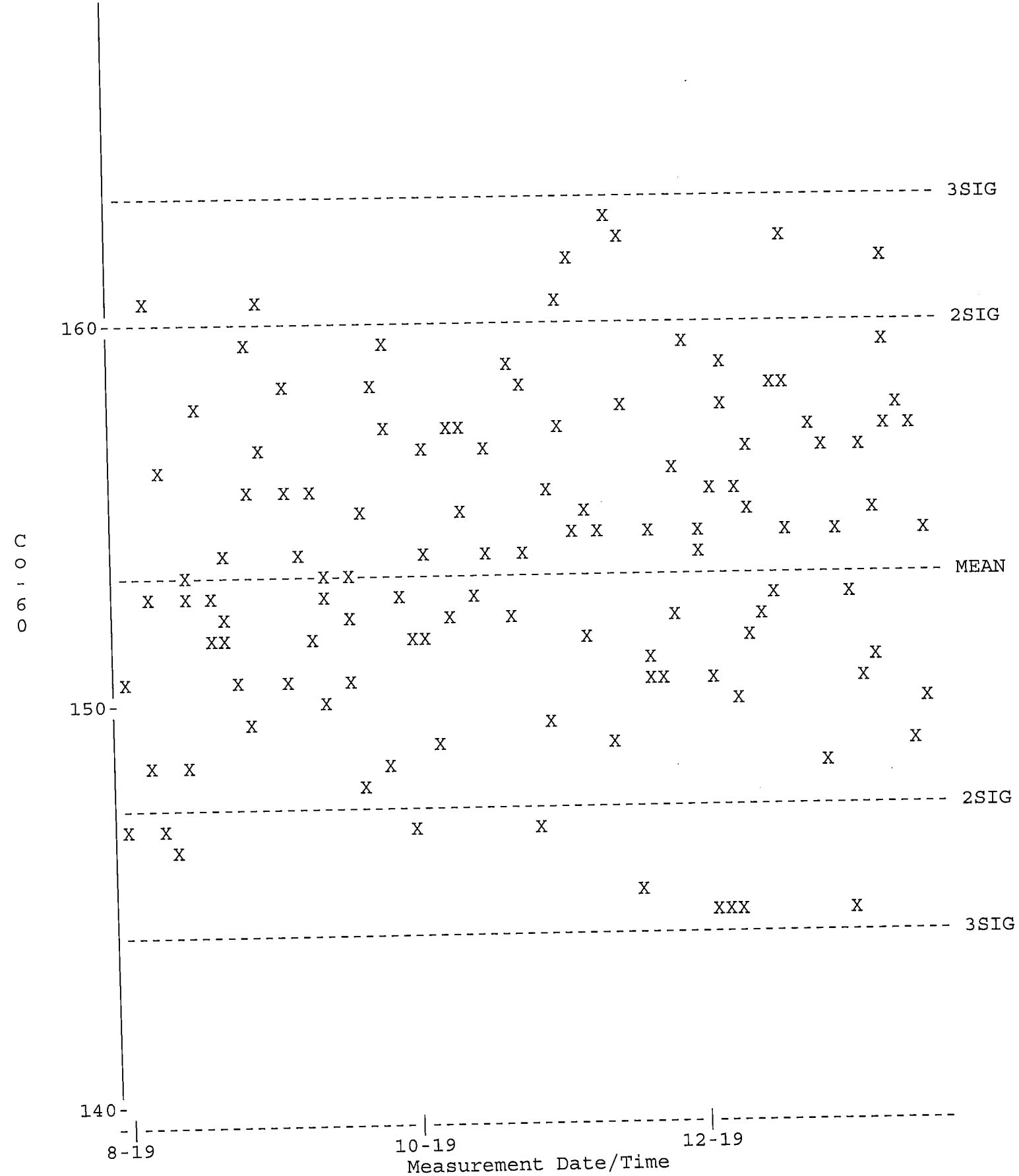
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



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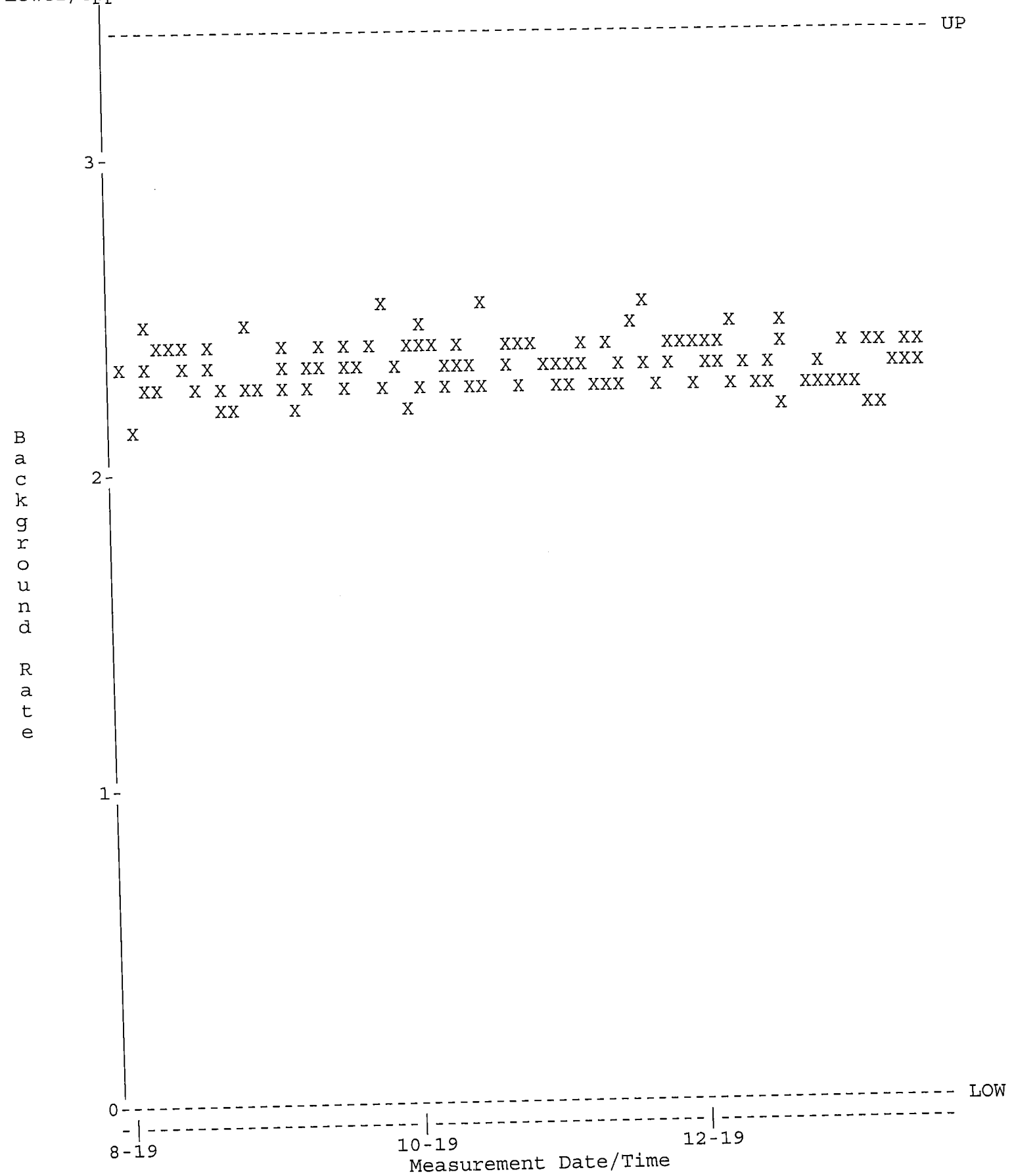
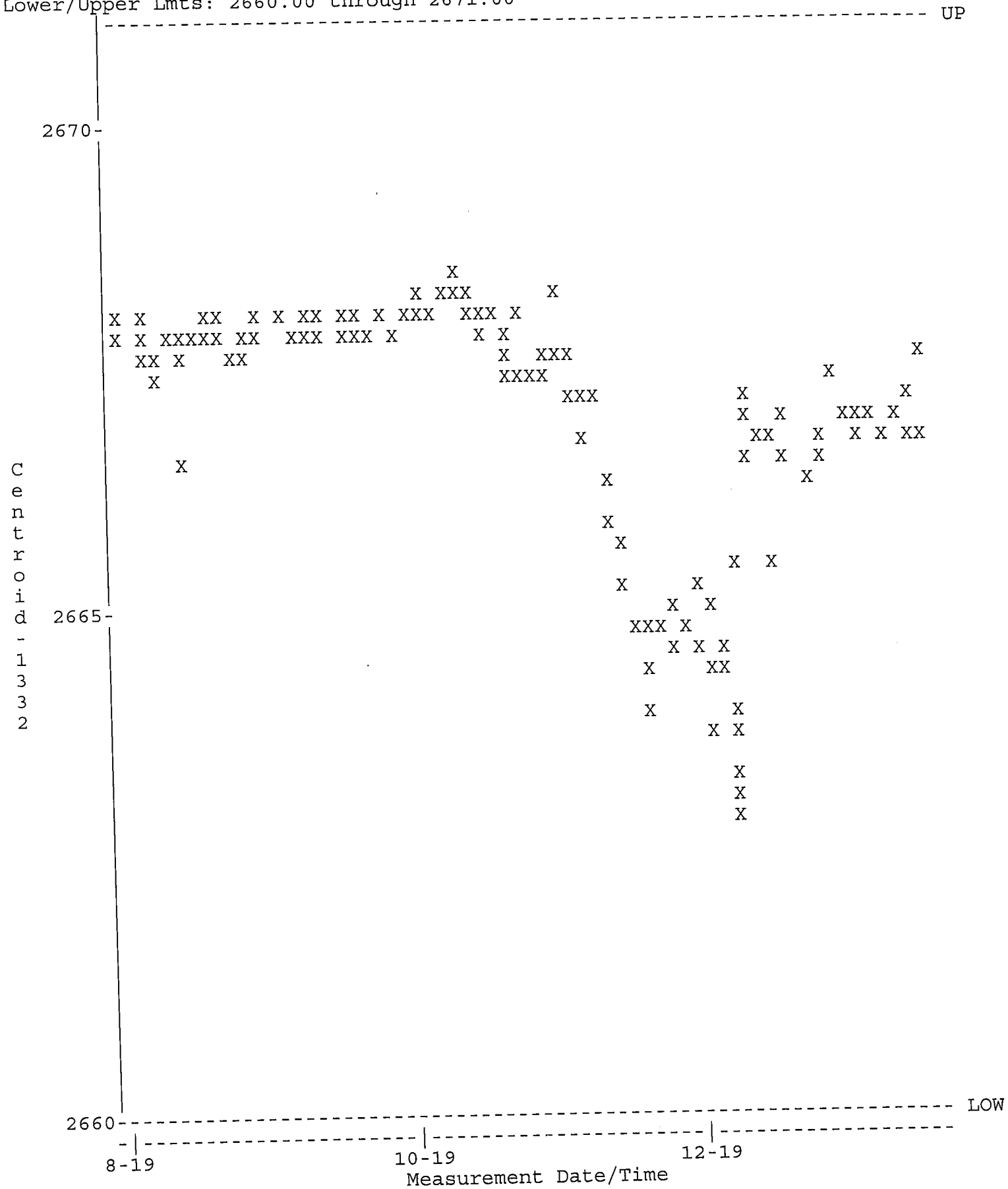
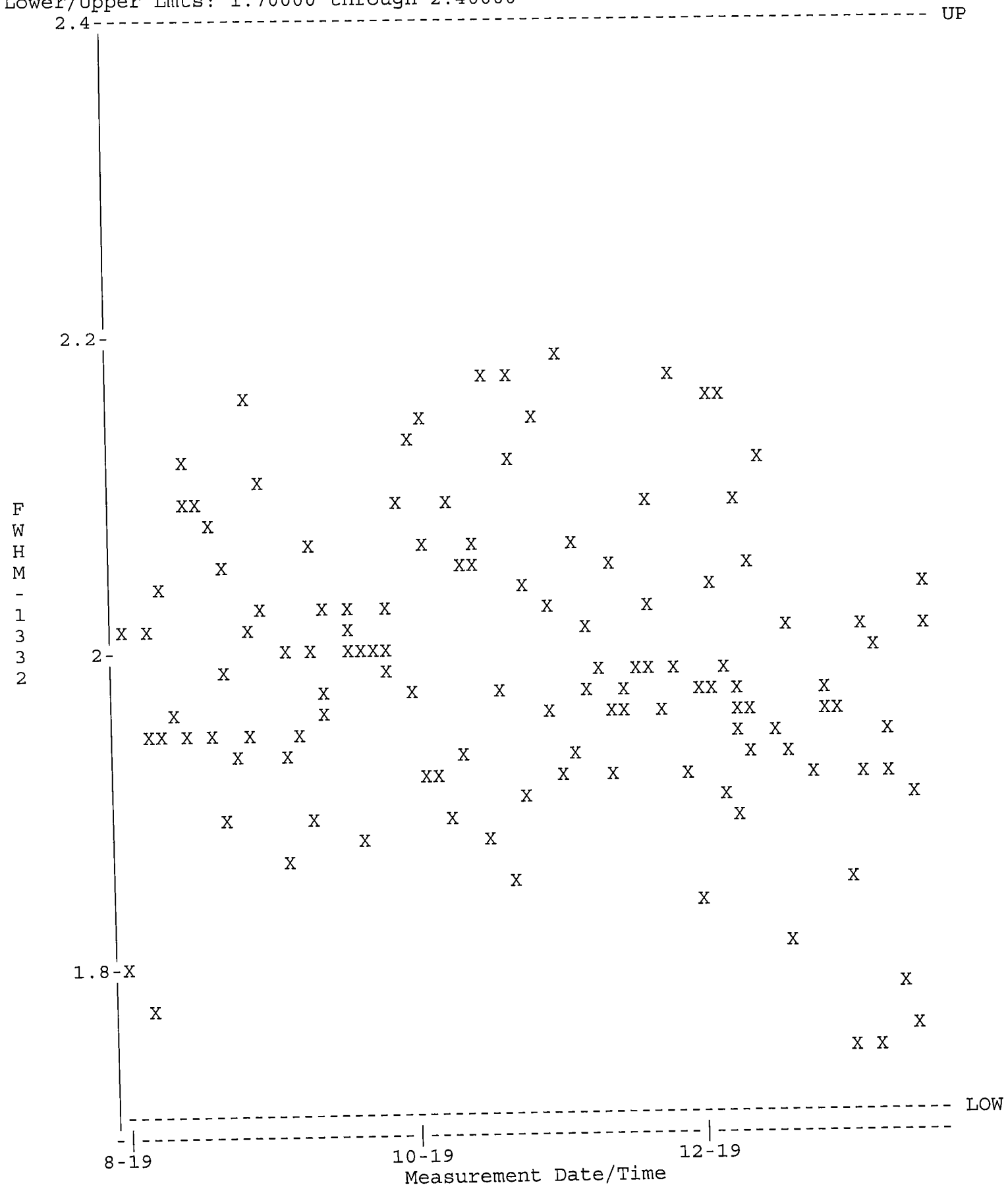
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



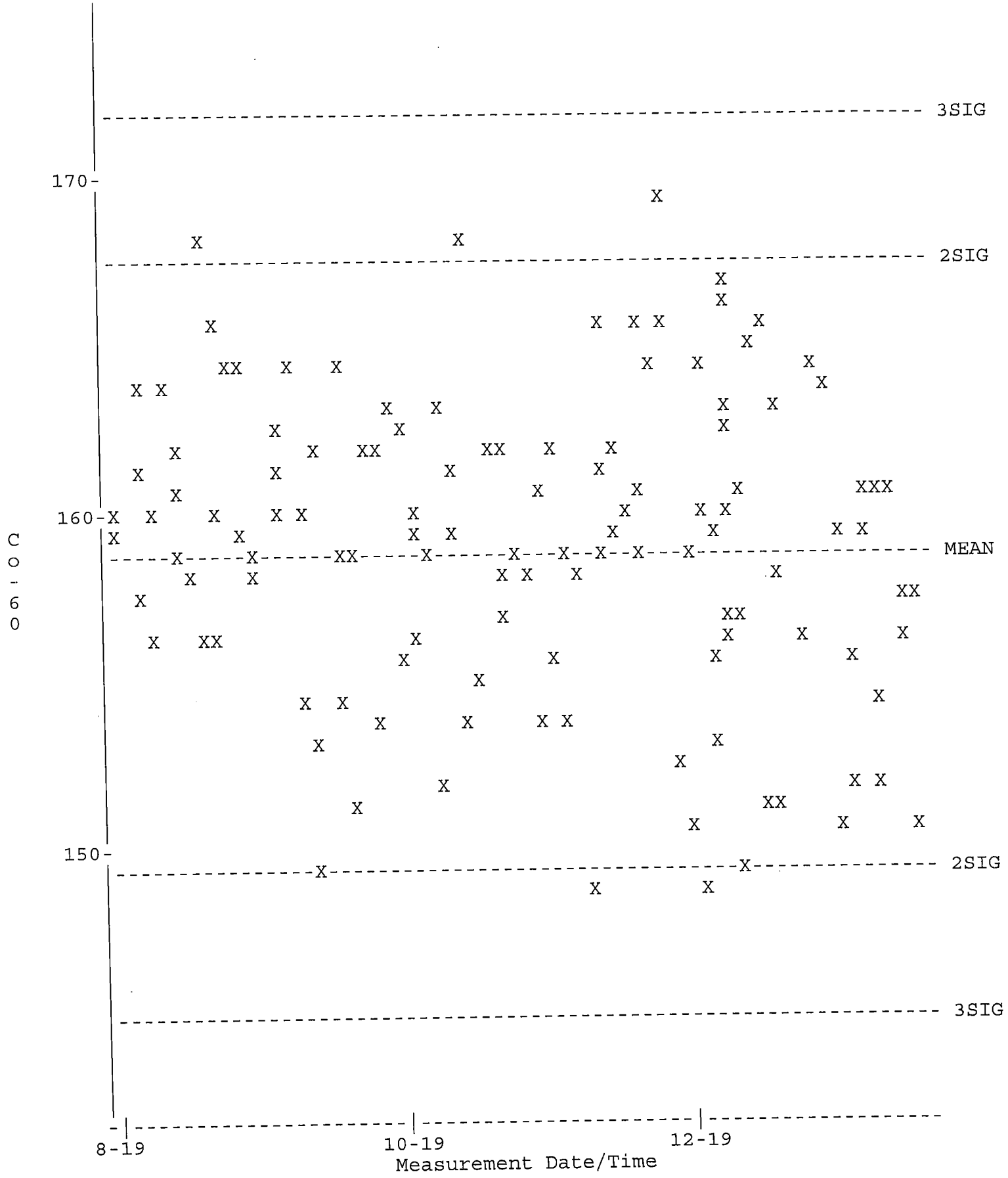
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



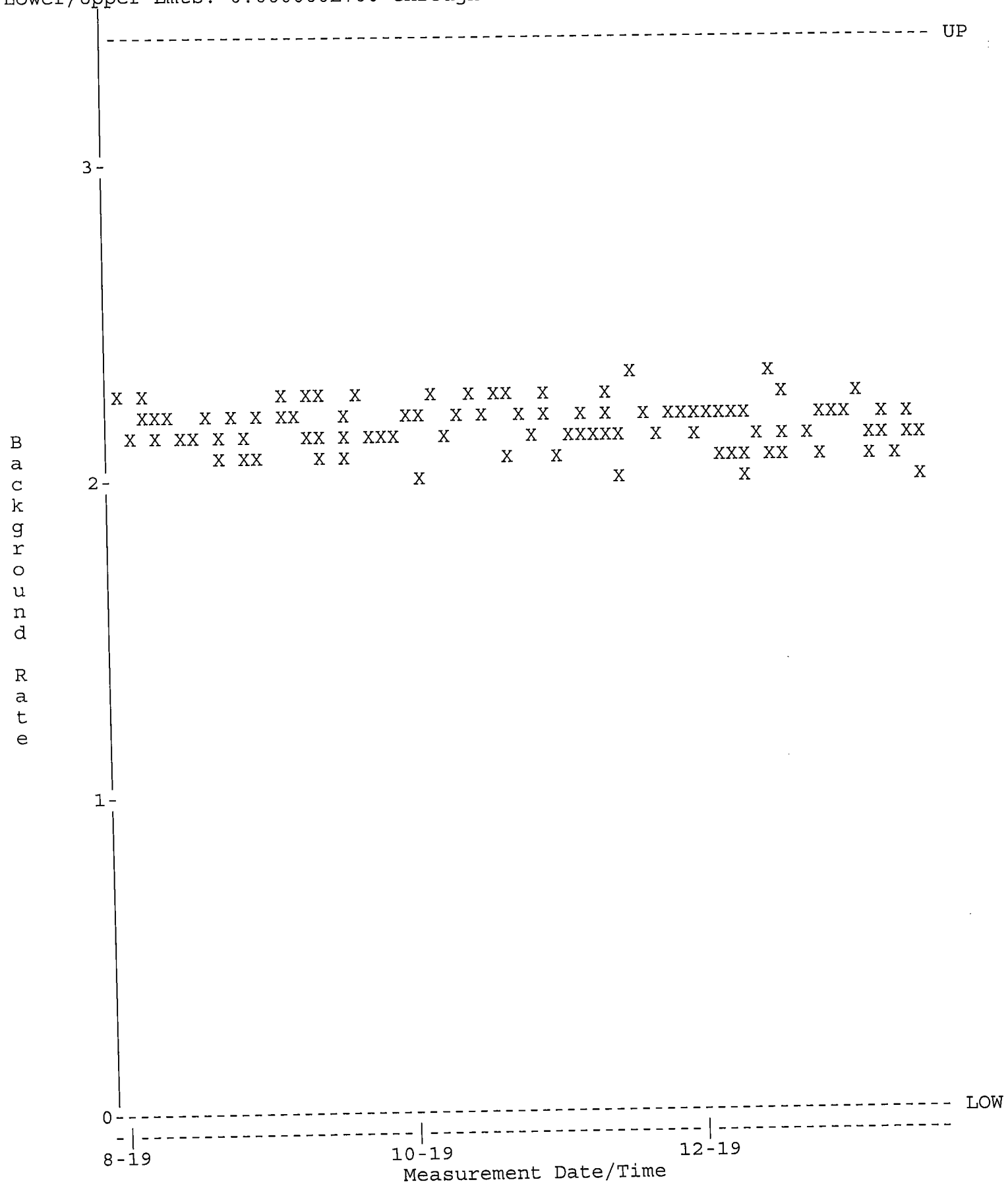
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



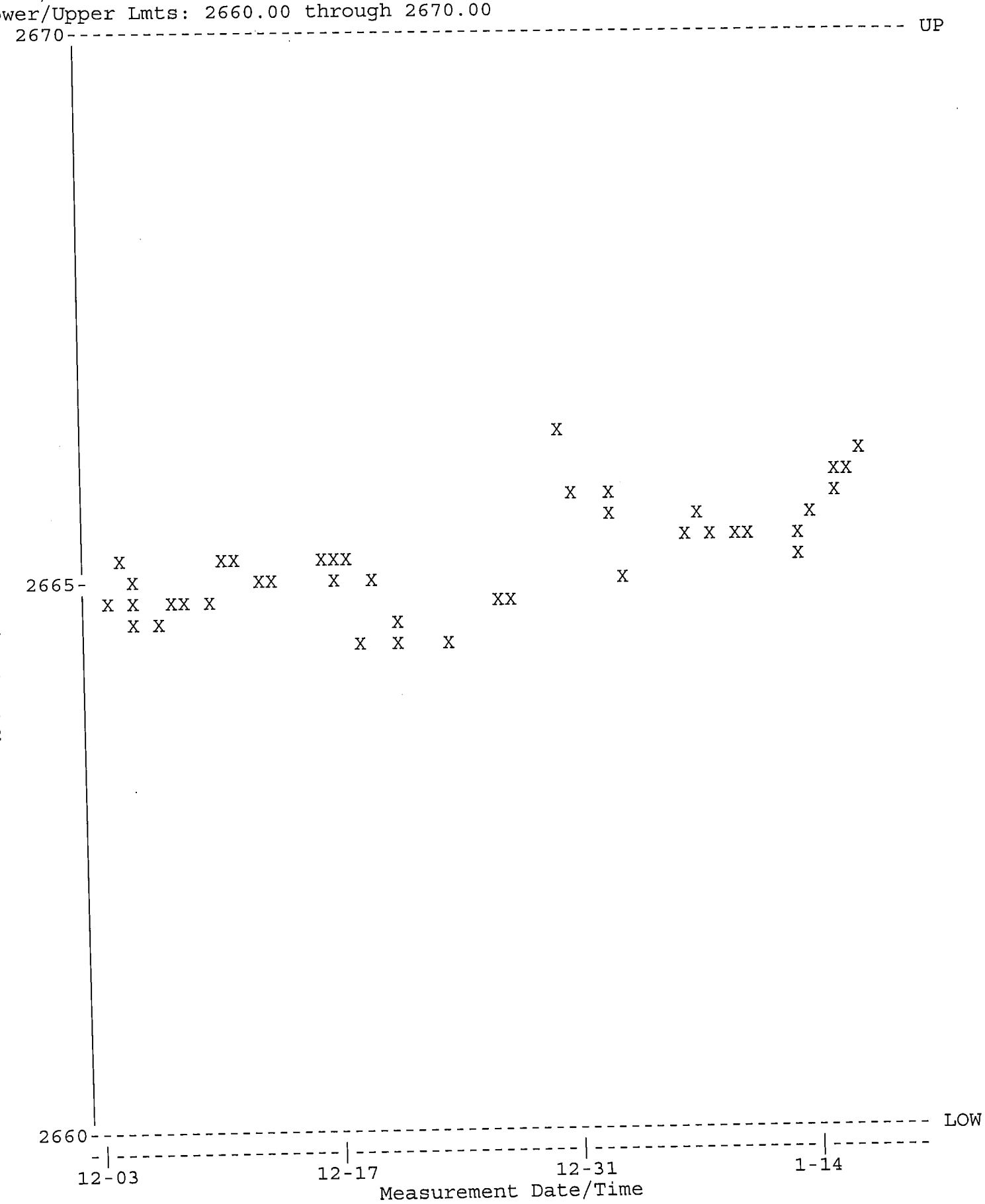
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



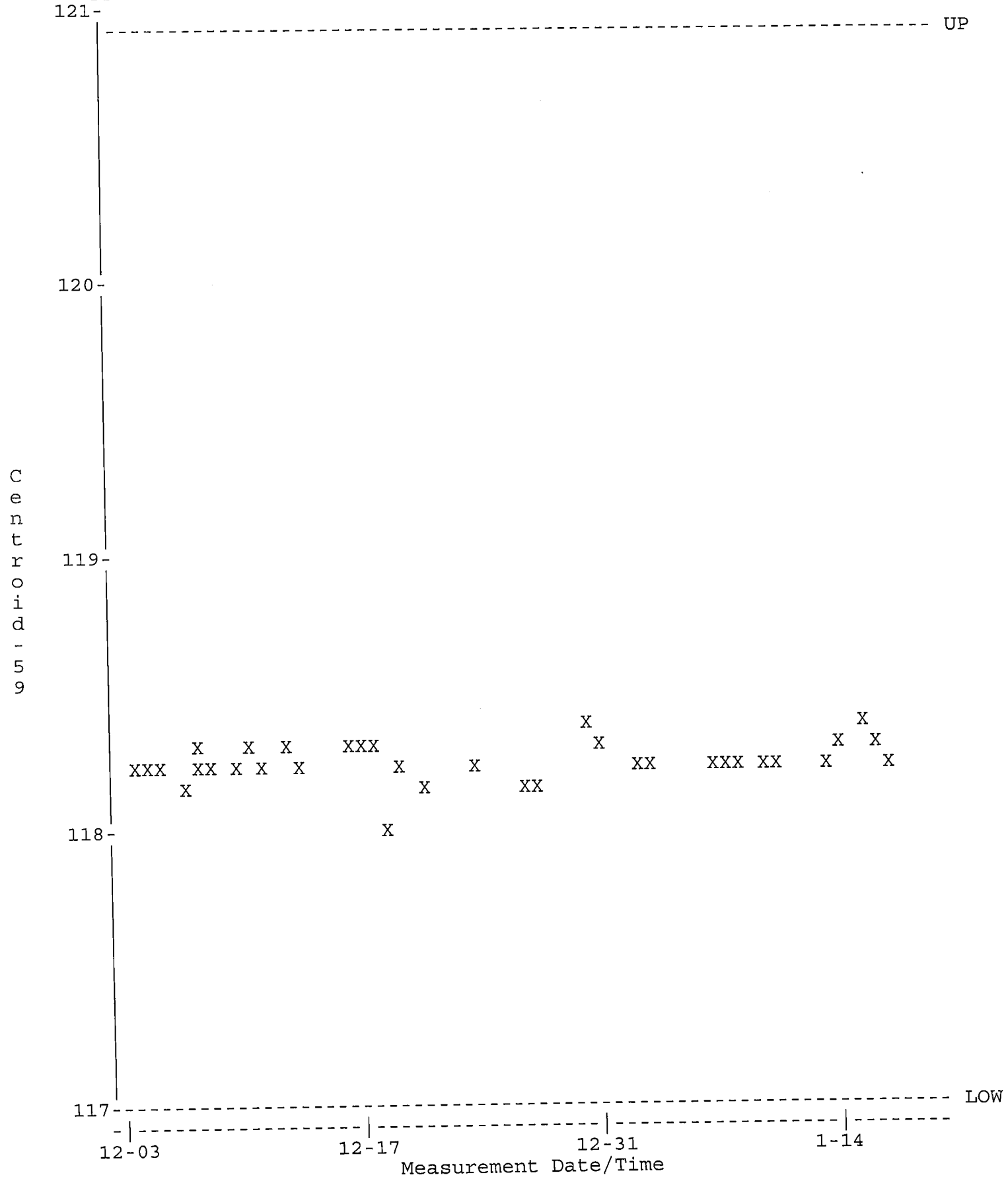
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



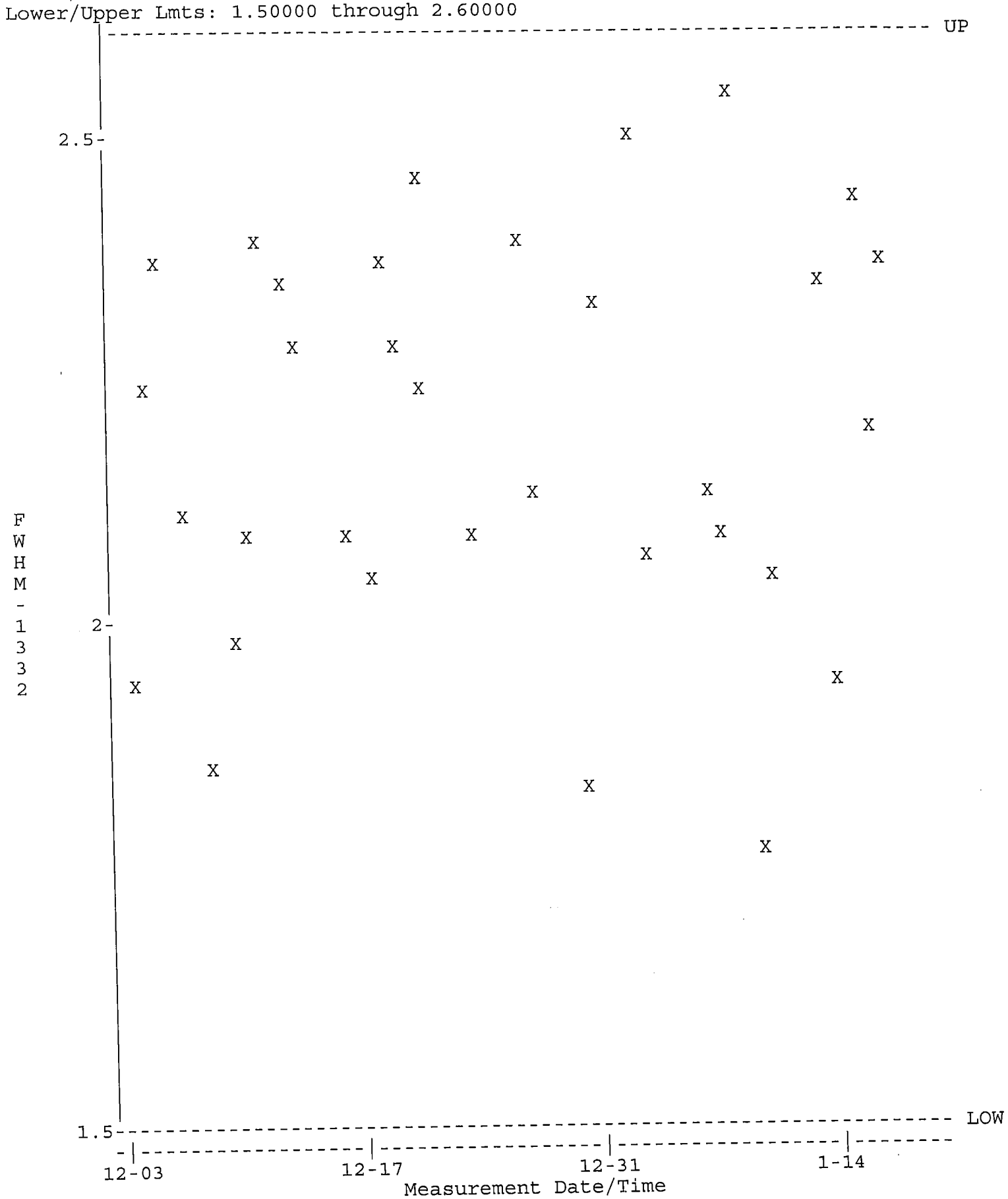
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



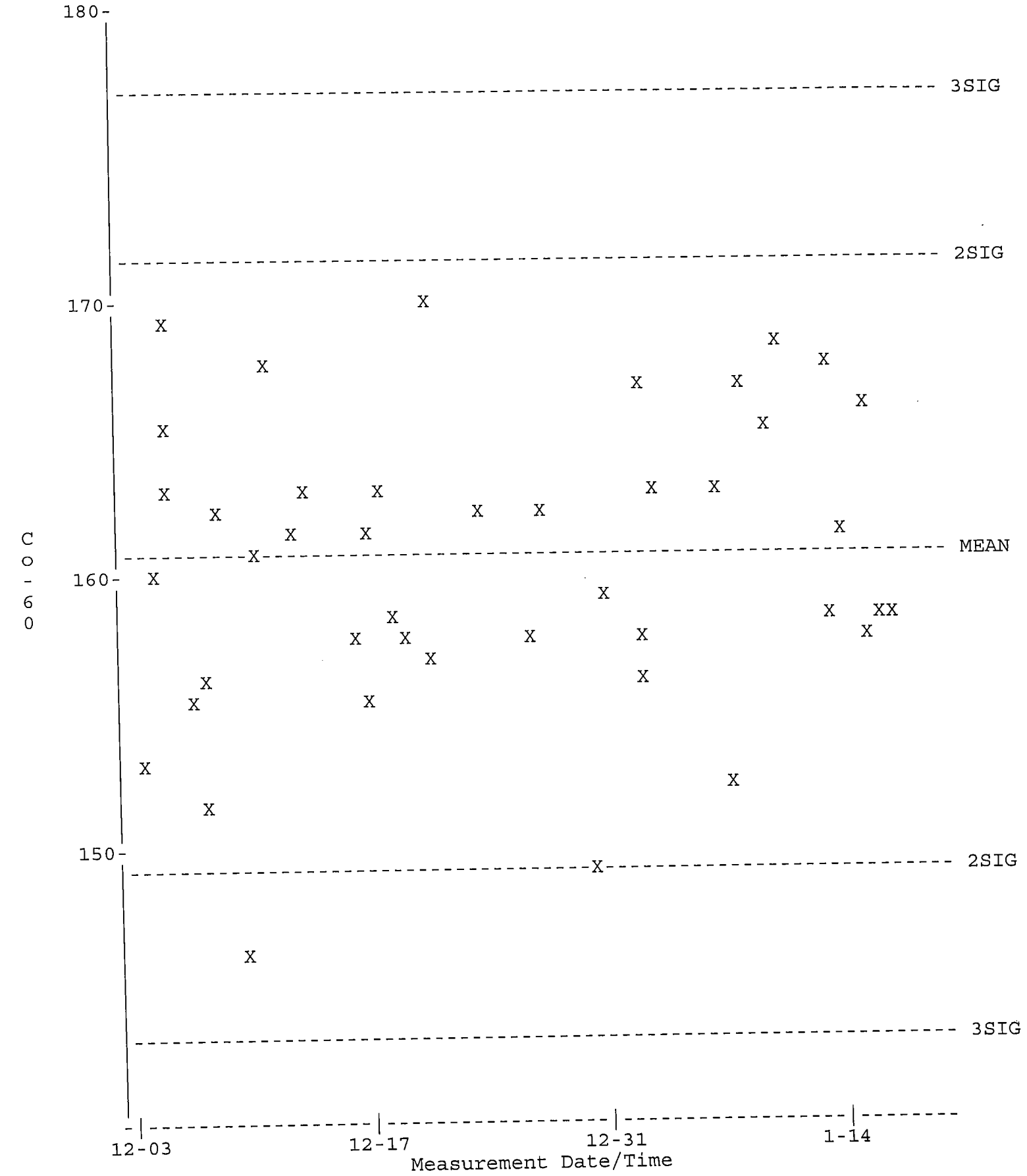
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



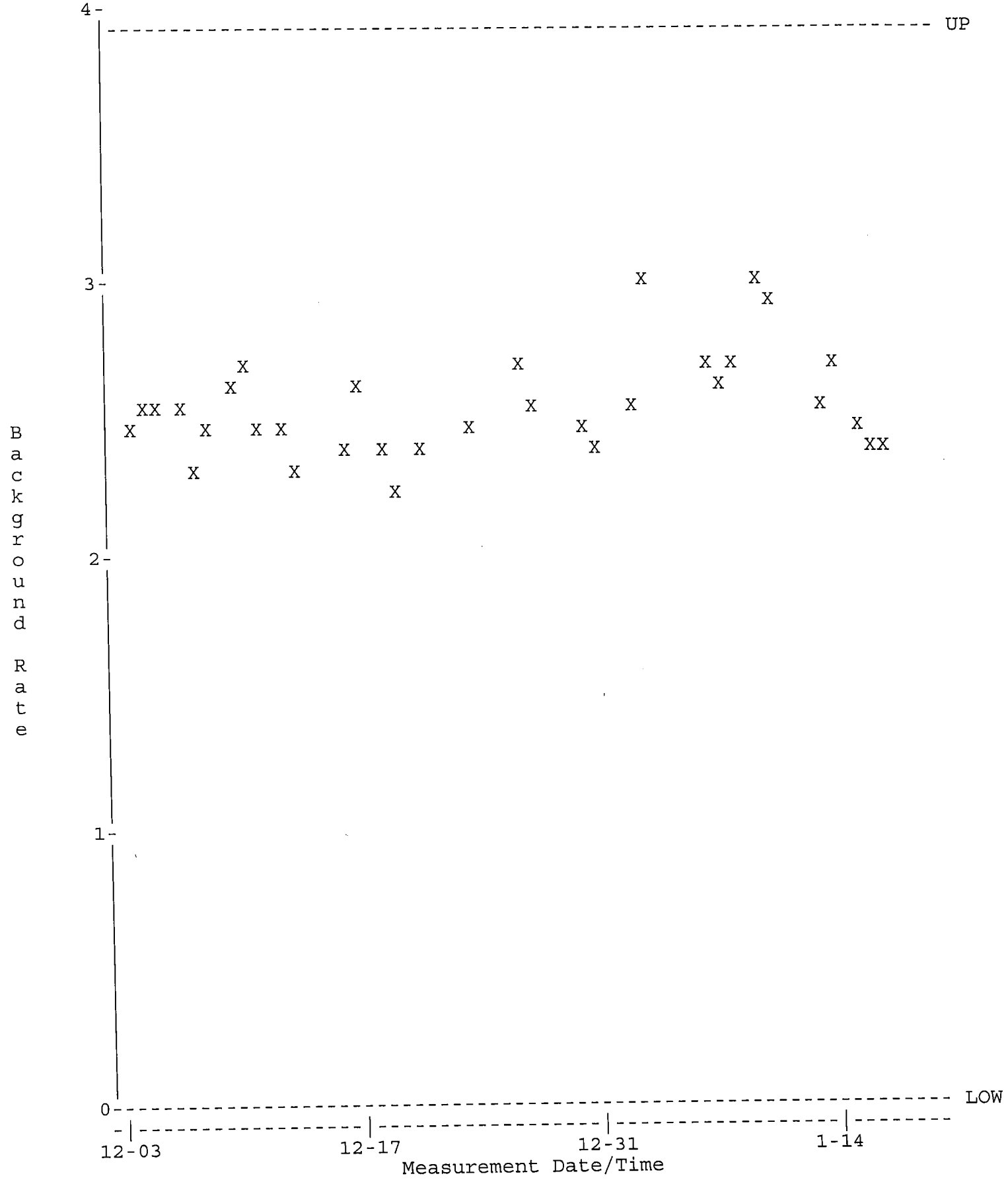
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



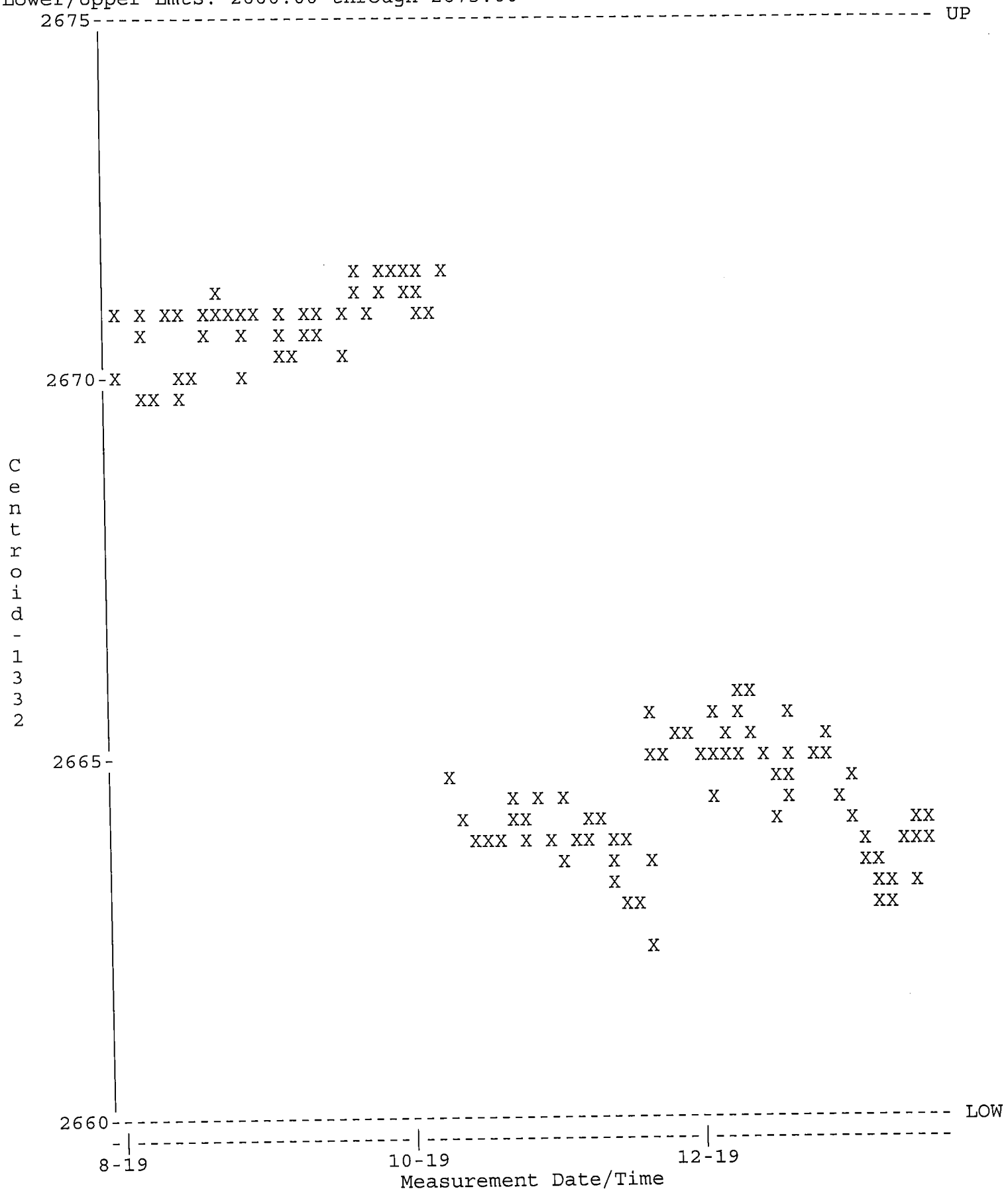
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



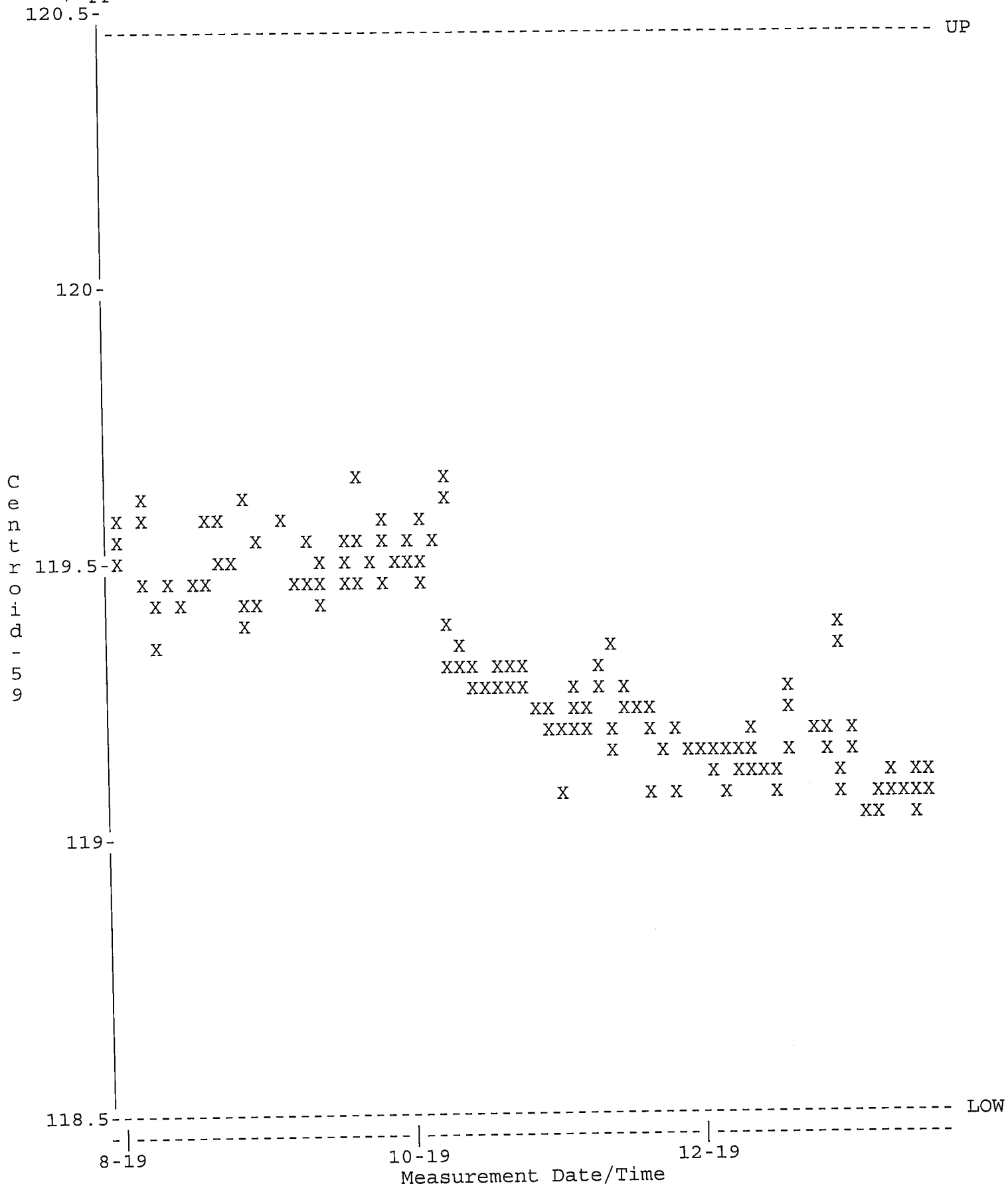
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



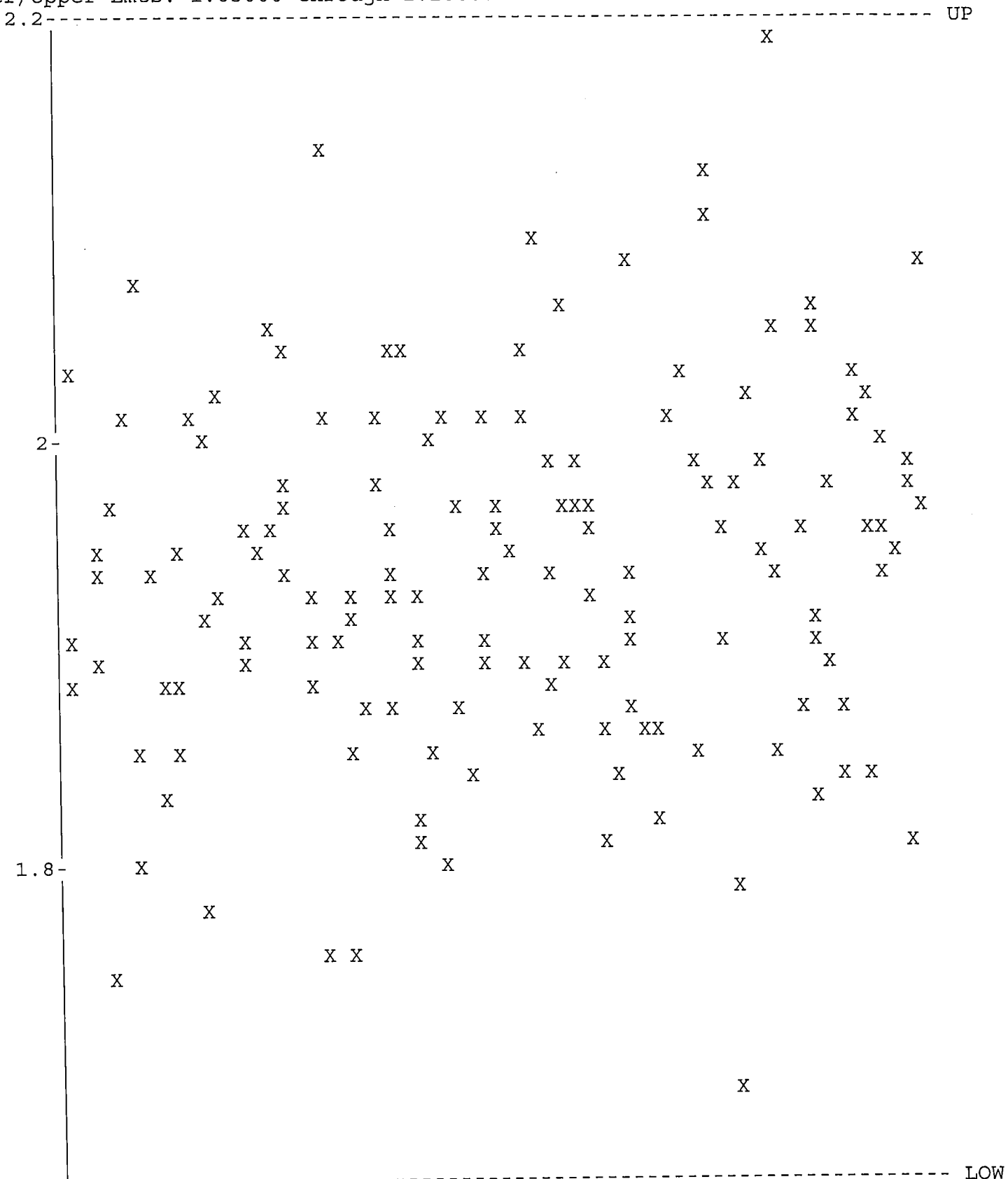
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



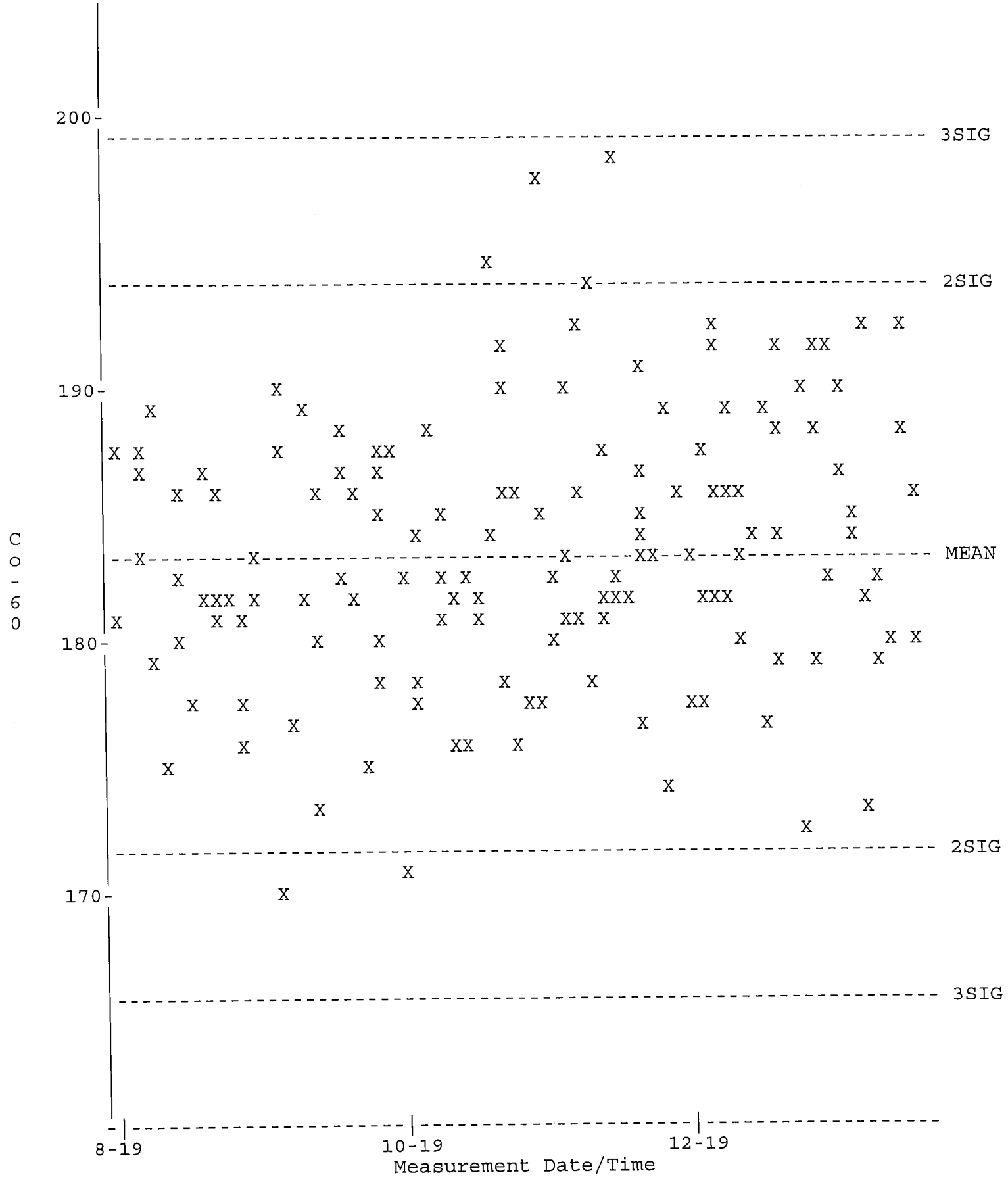
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



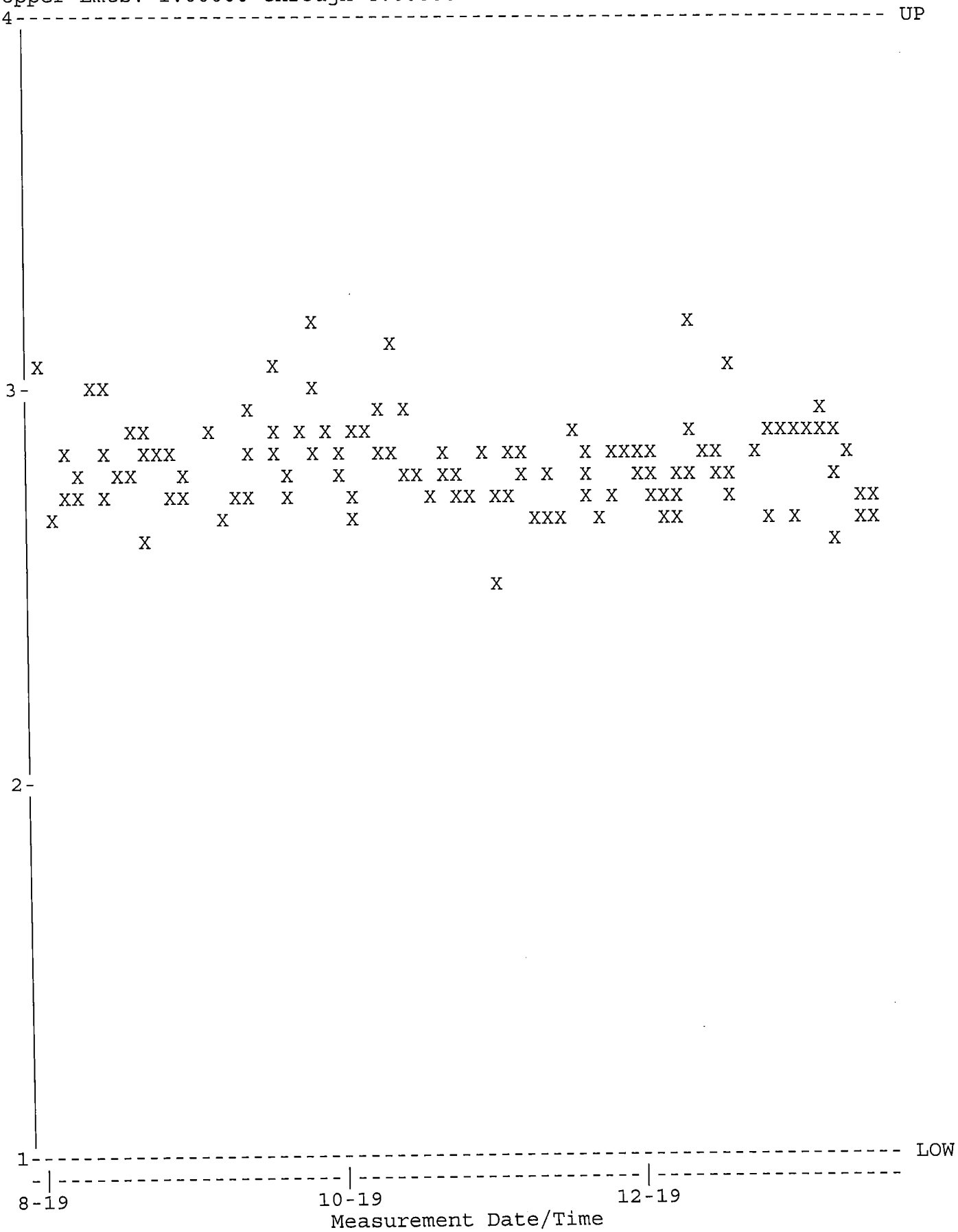
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



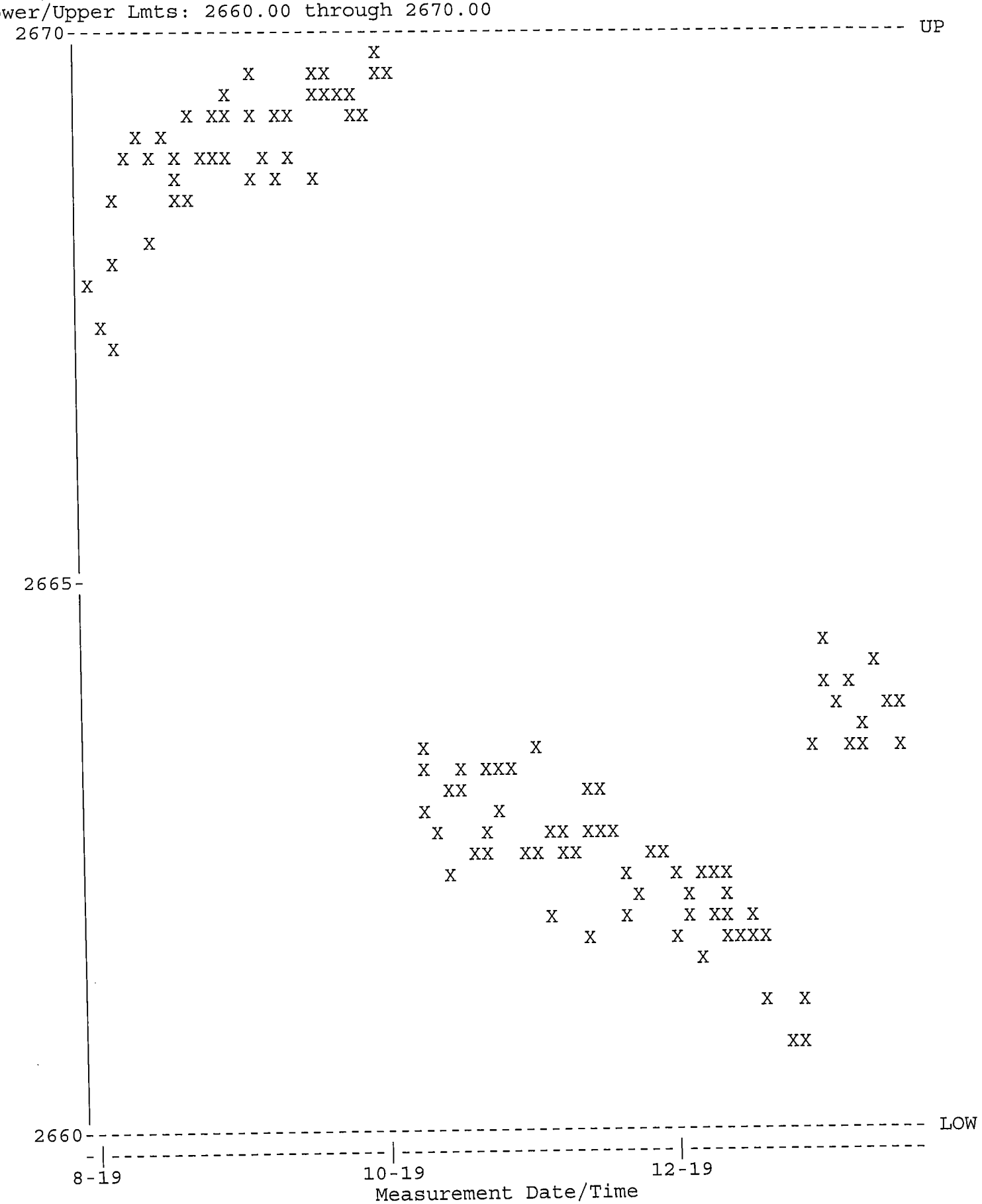
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



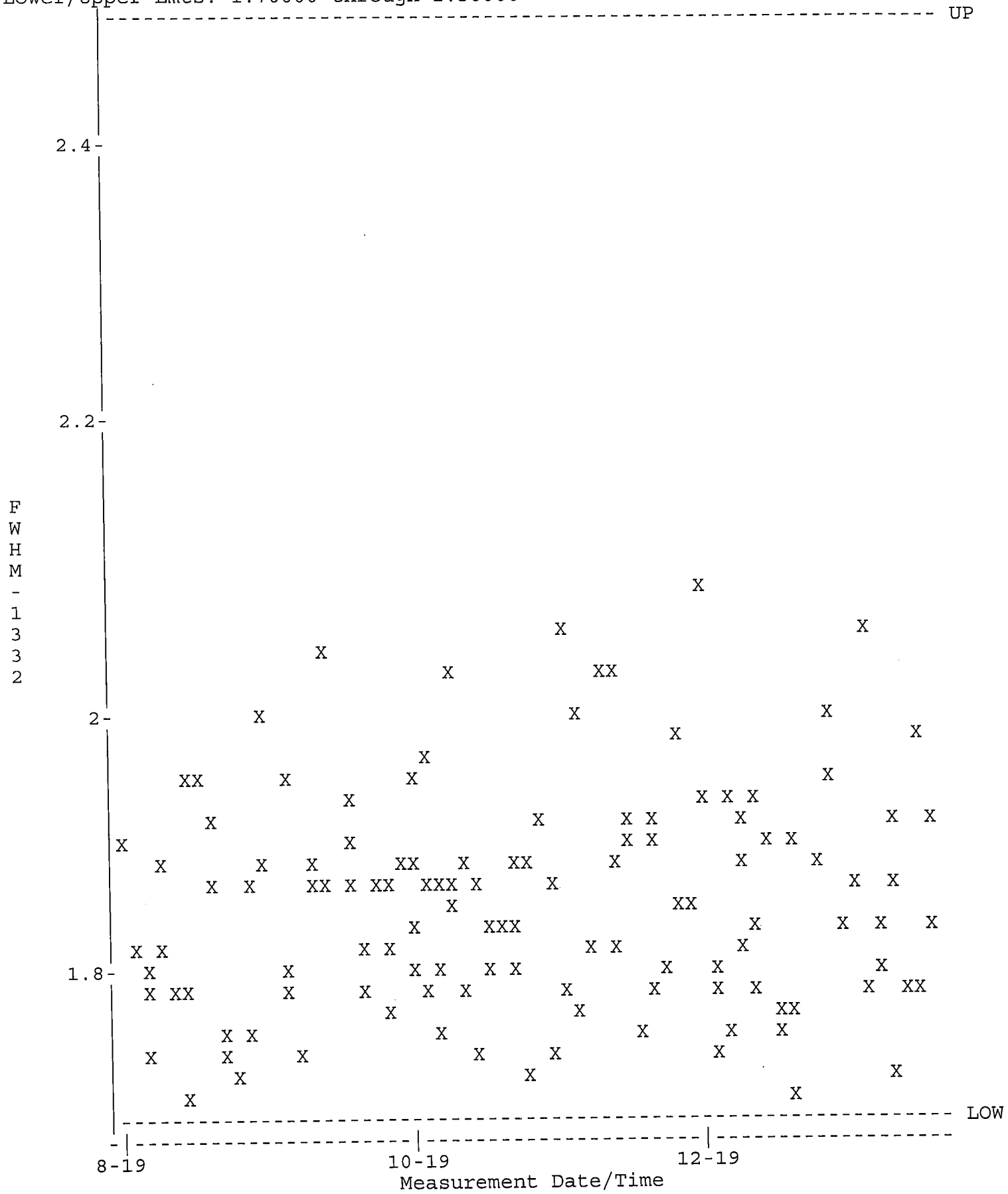
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



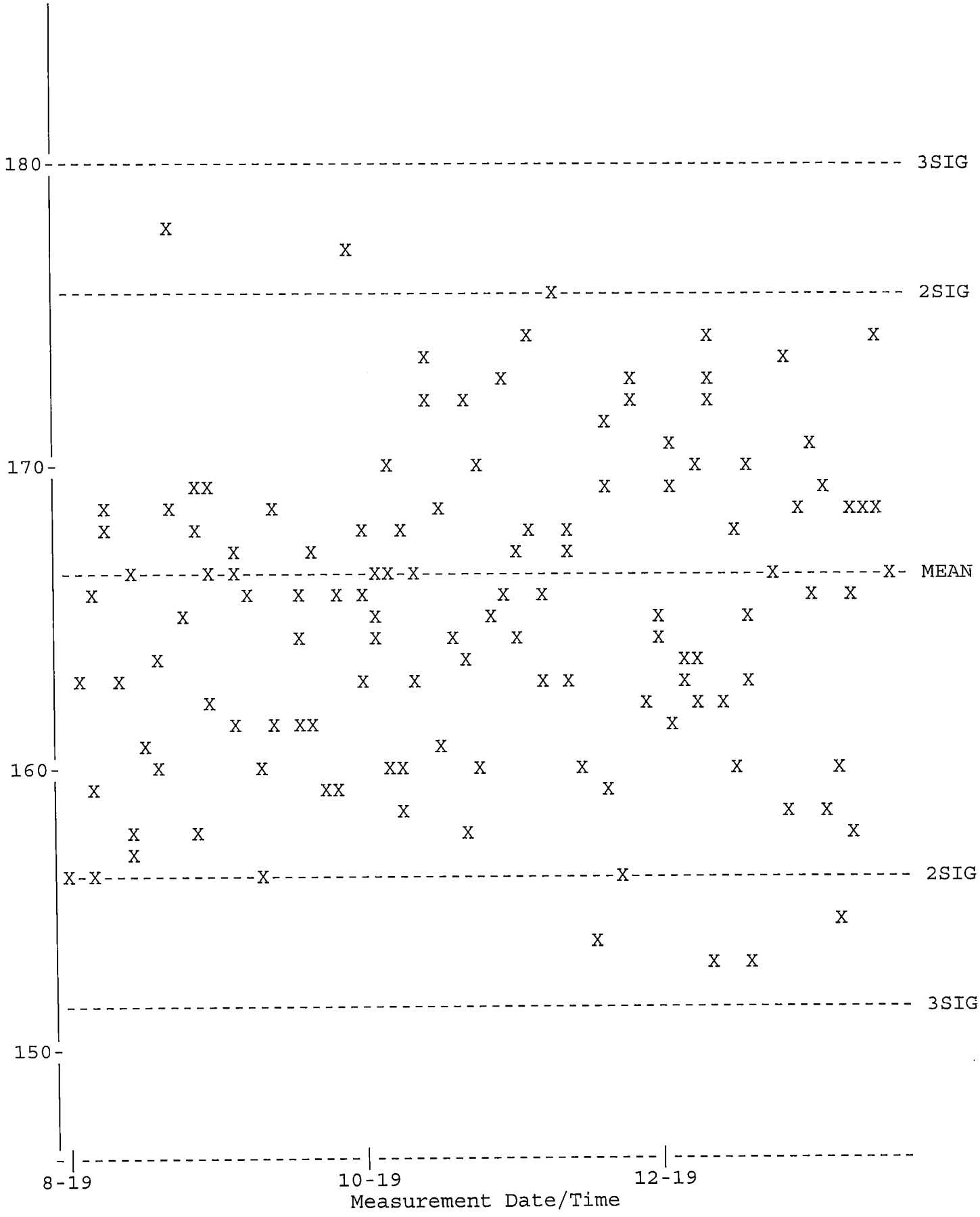
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



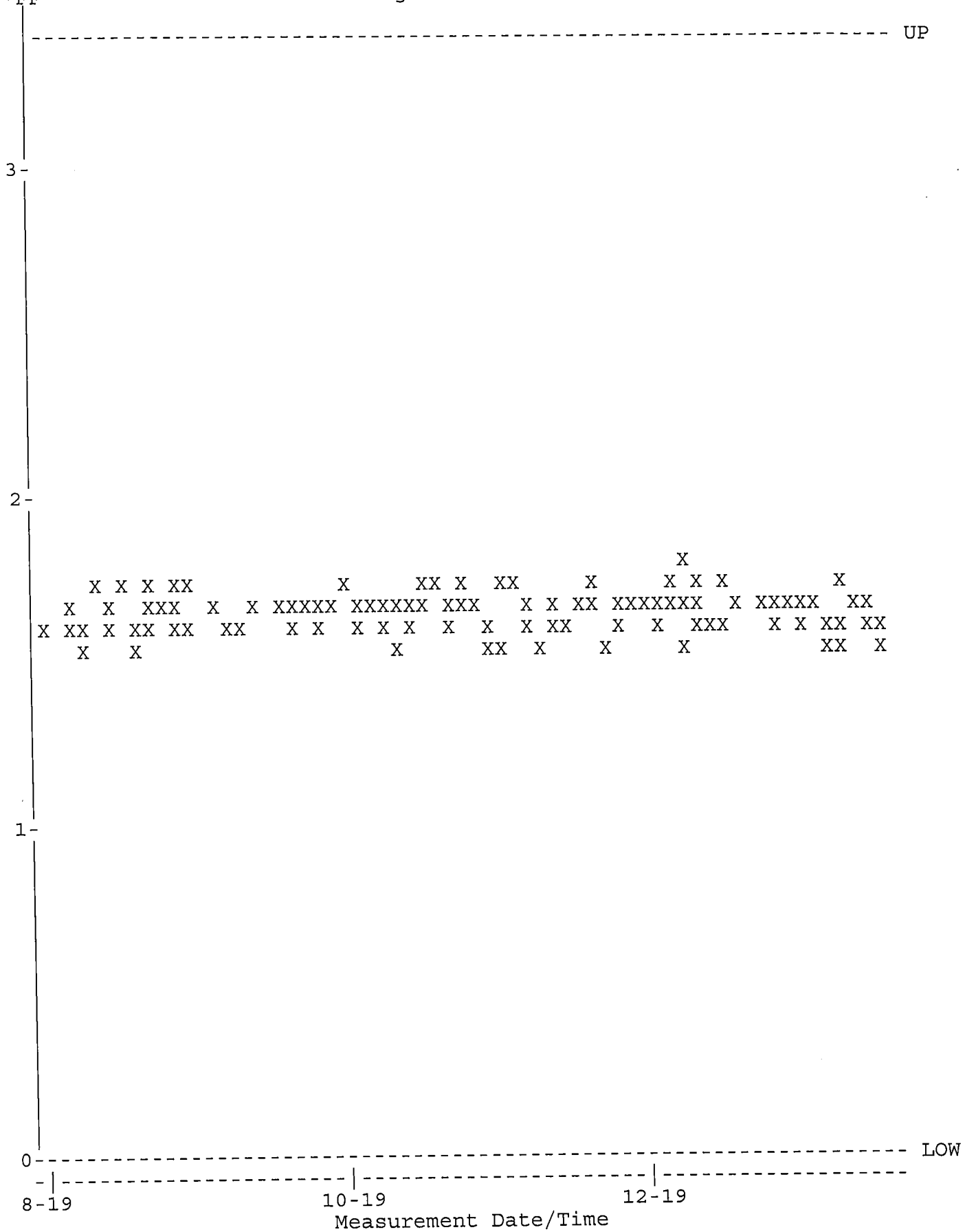
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



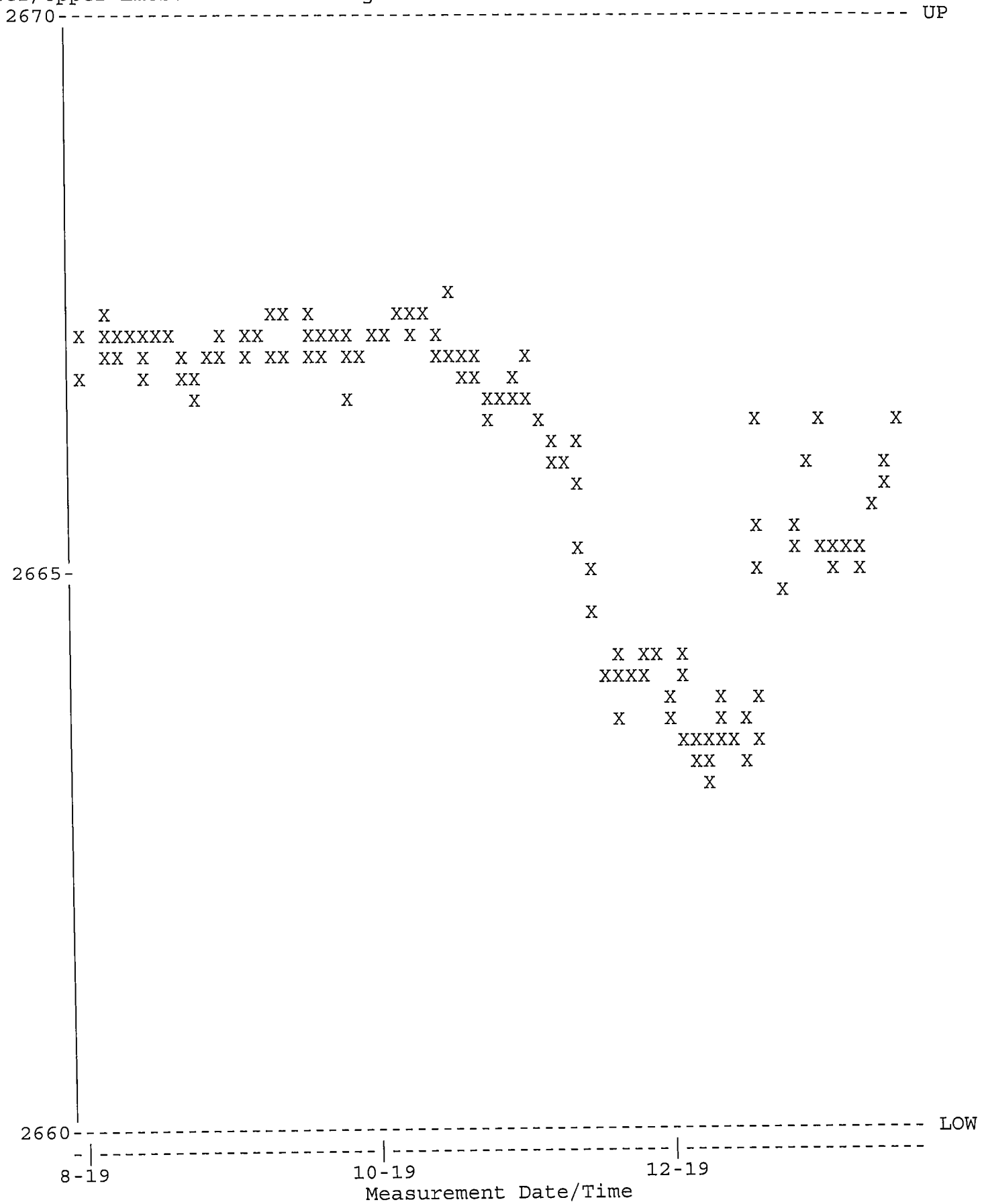
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



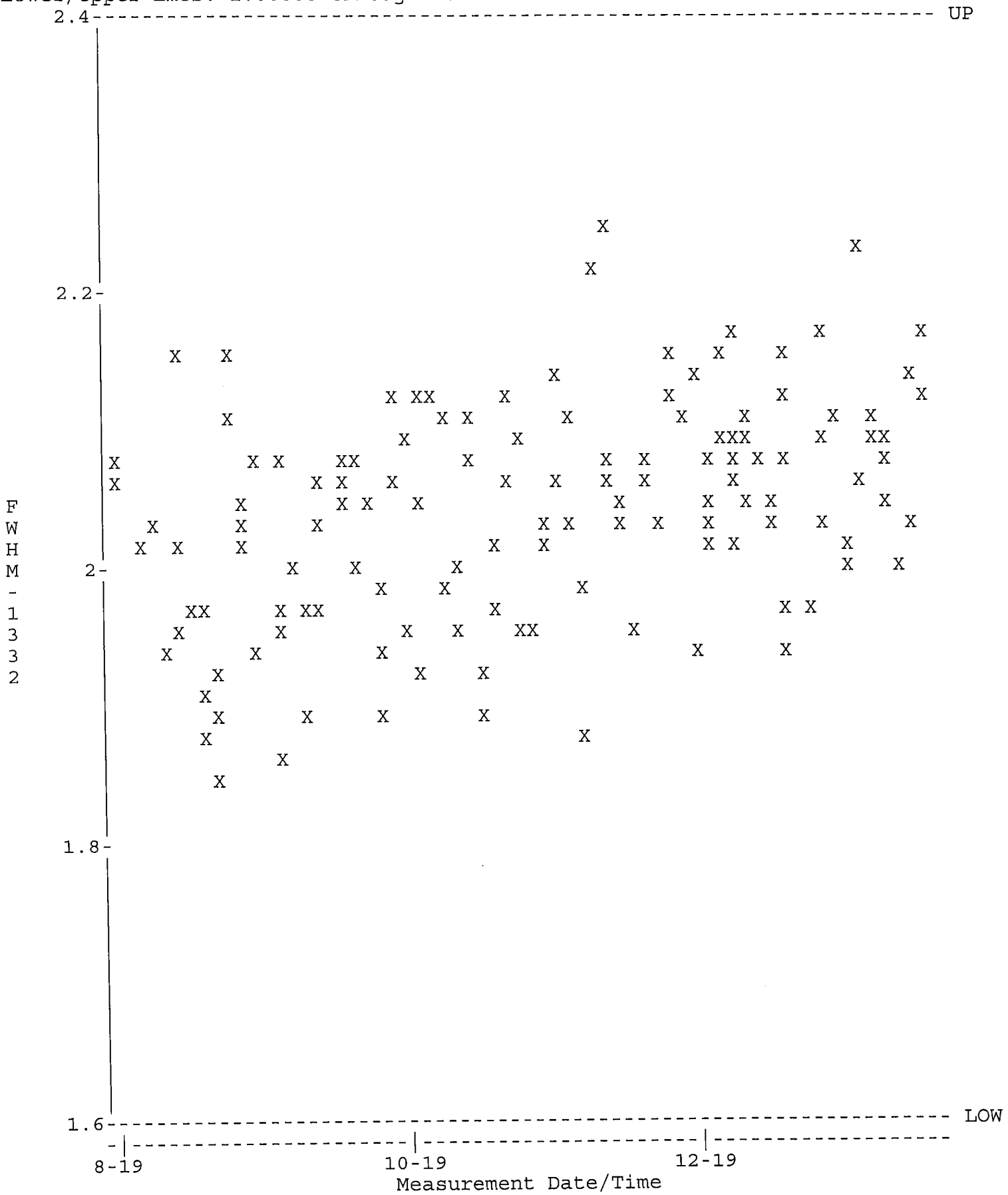
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



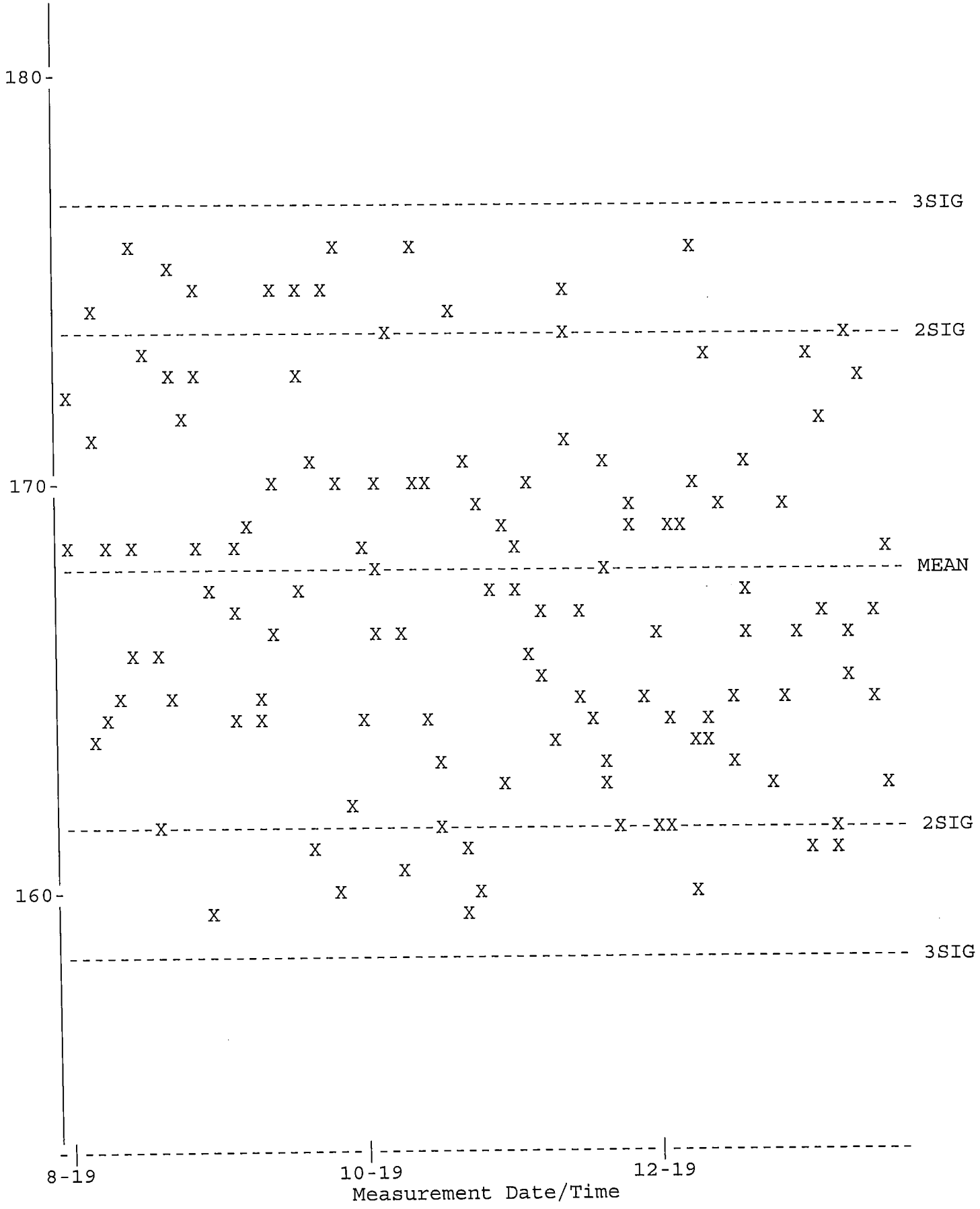
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



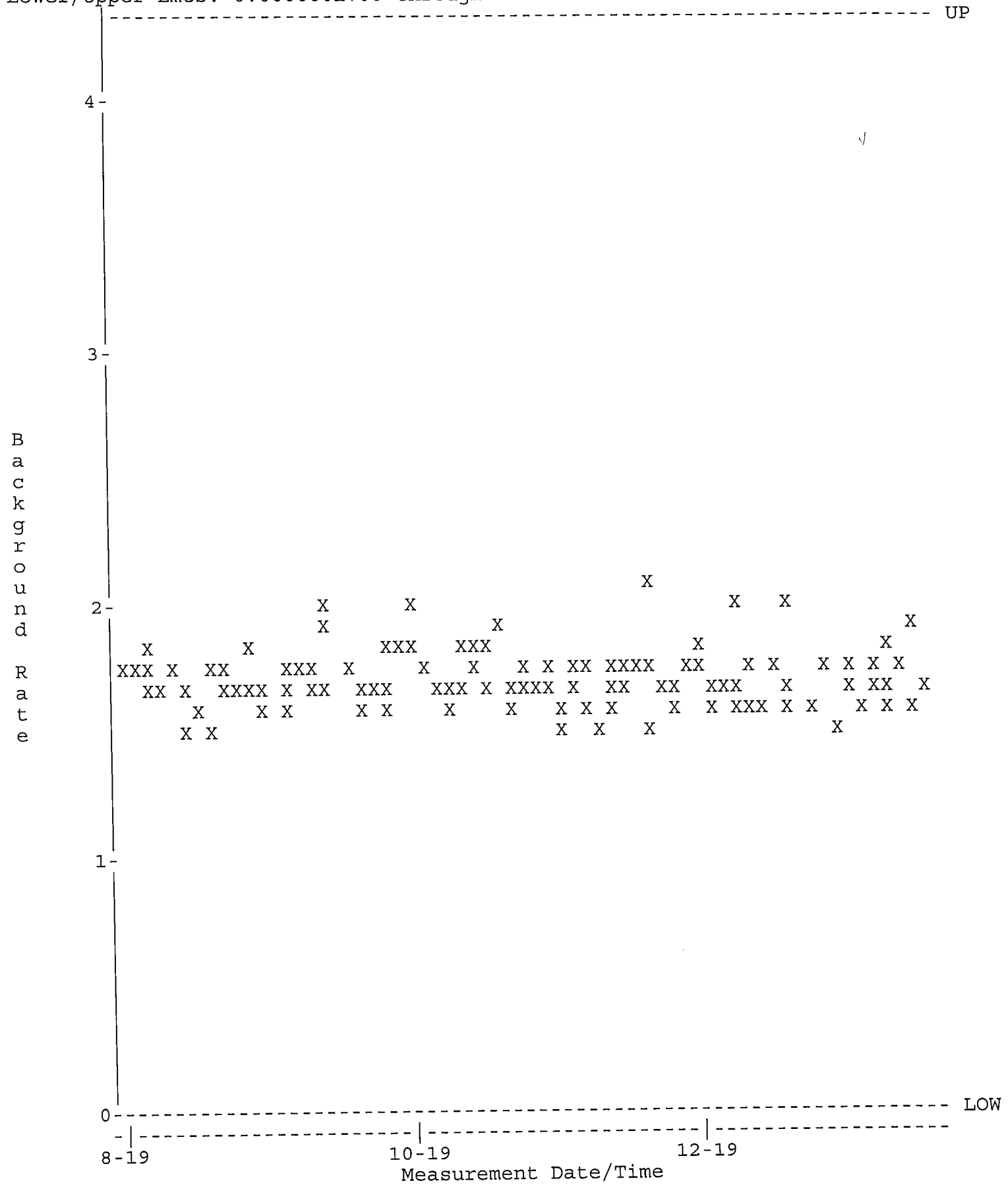
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:15:49.12
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:23.91

LIMS No., Customer Name, Client ID: L85487-1 S TEXAS

Sample ID	: 07L85487-1	Smple Date	: 8-DEC-2019 12:20:00.0
Sample Type	: S	Geometry	: 07S50121919
Quantity	: 9.54600E+01 g Dry	BKGFILE	: 07BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:06:15.57
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:06:15.04
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.52*	57	70	1.66	476.39	4.89E+00	1.43E-02	32.2	1.13E+00
2	1	351.77*	73	57	1.90	702.80	3.64E+00	1.84E-02	24.8	1.12E+00
3	1	609.35*	68	47	2.00	1217.72	2.29E+00	1.72E-02	24.9	1.30E+00
4	1	1460.34*	72	12	2.52	2918.45	1.11E+00	1.80E-02	17.9	7.13E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85487-1 Acquisition date : 3-JAN-2020 09:09:23

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85487-1 Acquisition date : 3-JAN-2020 09:09:23

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.52	57	70	1.66	476.39	471	10	1.43E-02	64.4	4.89E+00	
1	351.77	73	57	1.90	702.80	698	12	1.84E-02	49.7	3.64E+00	
1	609.35	68	47	2.00	1217.72	1212	12	1.72E-02	49.9	2.29E+00	
1	1460.34	72	12	2.52	2918.45	2910	15	1.80E-02	35.8	1.11E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 4
Number of unidentified lines 4
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-5.688E-02		5.819E-02	8.415E-02	0.000E+00	-0.676

```
A,07L85487-1       ,01/03/2020 10:15,12/08/2019 12:20,   9.546E+01,L85487-1 S TEX
B,07L85487-1       ,HUDSON              ,12/26/2019 10:37,07S50121919
C,CS-137   ,NO ,   -5.688E-02,   5.819E-02,   8.415E-02,,   -0.676
```

Analyst: KBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:16:19.33
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:27.27

LIMS No., Customer Name, Client ID: L85487-2 S TEXAS

Sample ID	: 01L85487-2	Smple Date:	8-DEC-2019 12:25:00.0
Sample Type	: S	Geometry	: 01S50121819
Quantity	: 9.57900E+01 g Dry	BKGFILE	: 01BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:06:40.44
End Channel	: 4090 Pk Srch Sens: 7.00000	Live time	: 0 01:06:39.85
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	186.03*	24	99	1.24	372.31	6.48E+00	5.93E-03	89.4	1.71E+00
2	1	239.49*	42	144	1.31	479.13	5.57E+00	1.04E-02	68.0	1.13E+01
3	1	295.18*	65	81	1.20	590.43	4.77E+00	1.63E-02	31.1	1.10E+00
4	1	351.72*	137	56	1.41	703.43	4.13E+00	3.43E-02	15.1	1.81E+00
5	1	608.88*	90	31	1.53	1217.38	2.56E+00	2.24E-02	17.2	1.45E+00
6	1	1120.02*	23	9	2.40	2239.05	1.46E+00	5.84E-03	34.7	1.59E+00
7	1	1460.73*	77	4	2.40	2920.13	1.16E+00	1.92E-02	13.8	4.61E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85487-2 Acquisition date : 3-JAN-2020 09:09:27

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85487-2 Acquisition date : 3-JAN-2020 09:09:27

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	186.03	24	99	1.24	372.31	368	11	5.93E-03	****	6.48E+00	
1	239.49	42	144	1.31	479.13	473	14	1.04E-02	****	5.57E+00	
1	295.18	65	81	1.20	590.43	585	12	1.63E-02	62.2	4.77E+00	
1	351.72	137	56	1.41	703.43	696	14	3.43E-02	30.2	4.13E+00	
1	608.88	90	31	1.53	1217.38	1213	12	2.24E-02	34.4	2.56E+00	
1	1120.02	23	9	2.40	2239.05	2233	12	5.84E-03	69.5	1.46E+00	
1	1460.73	77	4	2.40	2920.13	2911	15	1.92E-02	27.6	1.16E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.220E-02		5.366E-02	9.609E-02	0.000E+00	0.335

```
A,01L85487-2       ,01/03/2020 10:16,12/08/2019 12:25,   9.579E+01,L85487-2 S TEX
B,01L85487-2       ,HUDSON              ,12/30/2019 11:02,01S50121819
C,CS-137   ,NO ,   3.220E-02,   5.366E-02,   9.609E-02,,    0.335
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:05:58.76
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:03:55.21

LIMS No., Customer Name, Client ID: L85487-3 S TEXAS

Sample ID	: 07L85487-3	Smple Date	: 8-DEC-2019 12:30:00.0
Sample Type	: S	Geometry	: 07S100121819
Quantity	: 1.76470E+02 g Dry	BKGFILE	: 07BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:02:01.68
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:02:01.18
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	295.21*	49	67	1.89	589.72	2.50E+00	1.32E-02	39.1	2.06E+00
2	1	351.96*	94	58	1.59	703.19	2.21E+00	2.53E-02	21.5	1.72E+00
3	1	609.30*	98	59	1.74	1217.62	1.47E+00	2.63E-02	21.8	1.04E+00
4	1	1460.38*	64	7	2.43	2918.54	7.40E-01	1.73E-02	18.3	6.98E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85487-3 Acquisition date : 3-JAN-2020 13:03:55

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85487-3 Acquisition date : 3-JAN-2020 13:03:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	295.21	49	67	1.89	589.72	585	12	1.32E-02	78.1	2.50E+00	
1	351.96	94	58	1.59	703.19	697	14	2.53E-02	43.0	2.21E+00	
1	609.30	98	59	1.74	1217.62	1210	17	2.63E-02	43.6	1.47E+00	
1	1460.38	64	7	2.43	2918.54	2911	15	1.73E-02	36.7	7.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 4
Number of unidentified lines 4
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-9.686E-03		5.073E-02	8.249E-02	0.000E+00	-0.117

```
A,07L85487-3       ,01/03/2020 14:05,12/08/2019 12:30,   1.765E+02,L85487-3 S TEX
B,07L85487-3       ,HUDSON              ,12/26/2019 10:37,07S100121819
C,CS-137   ,NO ,   -9.686E-03,   5.073E-02,   8.249E-02,,   -0.117
```

Analyst: MBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:06:29.94
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:03:59.86

LIMS No., Customer Name, Client ID: L85487-4 S TEXAS

Sample ID	: 11L85487-4		Smple Date: 8-DEC-2019 12:35:00.0
Sample Type	: S		Geometry : 11S100121919
Quantity	: 1.86290E+02 g Dry		BKGFILE : 11BG122719MT
Start Channel	: 190	Energy Tol : 2.00000	Real Time : 0 01:02:23.85
End Channel	: 4090	Pk Srch Sens: 9.00000	Live time : 0 01:02:22.01
MDA Multiple	: 4.6600	Library Used: HUDSON	

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	352.14*	106	53	1.18	703.70	1.98E+00	2.83E-02	17.5	
2	0	511.53*	17	55	3.24	1022.60	1.48E+00	4.49E-03	127.2	
3	0	609.23*	92	68	1.76	1218.09	1.27E+00	2.47E-02	23.5	
4	0	1460.87*	40	15	2.11	2921.88	5.95E-01	1.07E-02	29.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85487-4 Acquisition date : 3-JAN-2020 13:03:59

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85487-4 Acquisition date : 3-JAN-2020 13:03:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	352.14	106	53	1.18	703.70	699	11	2.83E-02	35.0	1.98E+00	
0	511.53	17	55	3.24	1022.60	1012	18	4.49E-03	****	1.48E+00	
0	609.23	92	68	1.76	1218.09	1210	18	2.47E-02	47.1	1.27E+00	
0	1460.87	40	15	2.11	2921.88	2914	15	1.07E-02	57.9	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 4
Number of unidentified lines 4
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	8.622E-03		6.196E-02	1.153E-01	0.000E+00	0.075

```
A,11L85487-4       ,01/03/2020 14:06,12/08/2019 12:35,   1.863E+02,L85487-4 S TEX
B,11L85487-4       ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137  ,NO ,    8.622E-03,   6.196E-02,   1.153E-01,,    0.075
```

Analyst: KBH

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:16:37.34
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 3-JAN-2020 09:09:27.52

LIMS No., Customer Name, Client ID: L85487-5 S TEXAS

Sample ID	: 08L85487-5	Smple Date:	8-DEC-2019 12:40:00.0
Sample Type	: S	Geometry	: 08S100121819
Quantity	: 1.93380E+02 g Dry	BKGFILE	: 08BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:07:04.22
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:07:03.31
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	239.68*	103	226	4.47	486.26	2.69E+00	2.56E-02	35.4	5.42E+00
2	1	295.44*	158	99	1.62	597.53	2.29E+00	3.92E-02	16.7	1.04E+00
3	1	351.92*	241	55	1.50	710.25	1.98E+00	5.98E-02	9.6	4.18E+00
4	1	609.26*	211	76	1.52	1223.77	1.24E+00	5.25E-02	11.5	3.24E+00
5	1	1120.23*	53	8	1.95	2243.28	7.29E-01	1.33E-02	18.0	3.73E-01
6	1	1460.72*	67	3	2.01	2922.55	5.83E-01	1.65E-02	15.8	5.12E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85487-5 Acquisition date : 3-JAN-2020 09:09:27

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85487-5 Acquisition date : 3-JAN-2020 09:09:27

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	239.68	103	226	4.47	486.26	478	17	2.56E-02	70.7	2.69E+00	
1	295.44	158	99	1.62	597.53	590	16	3.92E-02	33.4	2.29E+00	
1	351.92	241	55	1.50	710.25	703	13	5.98E-02	19.1	1.98E+00	
1	609.26	211	76	1.52	1223.77	1217	15	5.25E-02	23.0	1.24E+00	
1	1120.23	53	8	1.95	2243.28	2237	11	1.33E-02	35.9	7.29E-01	
1	1460.72	67	3	2.01	2922.55	2917	12	1.65E-02	31.7	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-4.020E-03		5.740E-02	9.361E-02	0.000E+00	-0.043

```
A,08L85487-5       ,01/03/2020 10:16,12/08/2019 12:40,   1.934E+02,L85487-5 S TEX
B,08L85487-5       ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,   -4.020E-03,   5.740E-02,   9.361E-02,,   -0.043
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:17:09.19
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:27.76

LIMS No., Customer Name, Client ID: L85487-6 S TEXAS

Sample ID	: 15L85487-6	Smple Date	: 8-DEC-2019 12:45:00.0
Sample Type	: S	Geometry	: 15S50121919
Quantity	: 1.02660E+02 g Dry	BKGFILE	: 15BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:07:33.38
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:07:32.96
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.47*	60	79	1.49	472.44	5.14E+00	1.47E-02	33.9	1.16E+00
2	1	295.30*	34	60	1.46	586.37	4.31E+00	8.39E-03	52.4	2.71E+00
3	1	351.83*	76	50	1.72	699.69	3.69E+00	1.87E-02	25.7	1.58E+00
4	1	609.21*	55	32	1.76	1215.62	2.22E+00	1.35E-02	27.1	1.17E+00
5	1	1460.50*	33	8	1.85	2921.99	9.58E-01	8.08E-03	29.9	8.70E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85487-6 Acquisition date : 3-JAN-2020 09:09:27

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.47	60	79	1.49	472.44	465	12	1.47E-02	67.8	5.14E+00	
1	295.30	34	60	1.46	586.37	581	12	8.39E-03	****	4.31E+00	
1	351.83	76	50	1.72	699.69	692	16	1.87E-02	51.4	3.69E+00	
1	609.21	55	32	1.76	1215.62	1209	14	1.35E-02	54.2	2.22E+00	
1	1460.50	33	8	1.85	2921.99	2914	16	8.08E-03	59.8	9.58E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-6.314E-03		4.698E-02	7.580E-02	0.000E+00	-0.083

A,15L85487-6 ,01/03/2020 10:17,12/08/2019 12:45, 1.027E+02,L85487-6 S TEX
B,15L85487-6 ,HUDSON ,12/27/2019 10:10,15S50121919
C,CS-137 ,NO , -6.314E-03, 4.698E-02, 7.580E-02,, -0.083

Analyst: KBP

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:07:22.42
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:04:01.27

LIMS No., Customer Name, Client ID: L85487-7 S TEXAS

Sample ID : 15L85487-7
Sample Type : S
Quantity : 1.93780E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 12:50:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 01:03:10.75
Live time : 0 01:03:10.33

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.37*	74	61	1.27	472.23	3.18E+00	1.96E-02	22.9	7.70E-01
2	1	294.89*	43	60	1.57	585.55	2.68E+00	1.13E-02	38.4	2.15E+00
3	1	351.67*	125	53	1.41	699.36	2.28E+00	3.30E-02	15.9	2.07E+00
4	1	510.56*	10	56	2.77	1017.87	1.60E+00	2.54E-03	216.7	6.36E-01
5	1	609.41*	88	20	2.27	1216.02	1.35E+00	2.33E-02	16.8	2.41E+00
6	1	1460.67*	49	7	2.75	2922.34	6.13E-01	1.29E-02	20.5	2.36E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85487-7 Acquisition date : 3-JAN-2020 13:04:01

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85487-7 Acquisition date : 3-JAN-2020 13:04:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.37	74	61	1.27	472.23	468	9	1.96E-02	45.7	3.18E+00	
1	294.89	43	60	1.57	585.55	581	10	1.13E-02	76.8	2.68E+00	
1	351.67	125	53	1.41	699.36	693	13	3.30E-02	31.7	2.28E+00	
1	510.56	10	56	2.77	1017.87	1010	19	2.54E-03	****	1.60E+00	
1	609.41	88	20	2.27	1216.02	1210	15	2.33E-02	33.6	1.35E+00	
1	1460.67	49	7	2.75	2922.34	2914	14	1.29E-02	40.9	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.592E-02		3.959E-02	6.056E-02	0.000E+00	-0.263

```
A,15L85487-7       ,01/03/2020 14:07,12/08/2019 12:50,   1.938E+02,L85487-7 S TEX
B,15L85487-7       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137   ,NO ,   -1.592E-02,   3.959E-02,   6.056E-02,,   -0.263
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:07:55.74
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:04:03.28

LIMS No., Customer Name, Client ID: L85487-8 S TEXAS

Sample ID	: 13L85487-8	Smple Date:	8-DEC-2019 12:55:00.0
Sample Type	: S	Geometry	: 13S100122619
Quantity	: 1.91180E+02 g Dry	BKGFILE	: 13BG122719MT
Start Channel	: 190 Energy Tol : 1.00000	Real Time	: 0 01:03:40.66
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:03:39.52
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentfied

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.49*	59	74	1.10	476.45	2.78E+00	1.54E-02	29.8	1.41E+00
2	1	295.12*	58	67	1.70	589.61	2.38E+00	1.52E-02	32.4	2.06E+00
3	1	351.65*	77	34	1.20	702.56	2.07E+00	2.01E-02	19.3	2.66E+00
4	1	608.85*	71	53	1.51	1216.68	1.34E+00	1.86E-02	26.1	7.61E-01
5	1	1459.91	121	9	2.02	2919.62	6.67E-01	3.17E-02	11.0	1.40E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85487-8 Acquisition date : 3-JAN-2020 13:04:03

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85487-8 Acquisition date : 3-JAN-2020 13:04:03

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.49	59	74	1.10	476.45	472	8	1.54E-02	59.5	2.78E+00	
1	295.12	58	67	1.70	589.61	584	11	1.52E-02	64.7	2.38E+00	
1	351.65	77	34	1.20	702.56	698	9	2.01E-02	38.6	2.07E+00	
1	608.85	71	53	1.51	1216.68	1210	14	1.86E-02	52.3	1.34E+00	
1	1459.91	121	9	2.02	2919.62	2910	17	3.17E-02	22.1	6.67E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-3.003E-03		5.239E-02	8.343E-02	0.000E+00	-0.036

```
A,13L85487-8       ,01/03/2020 14:07,12/08/2019 12:55,   1.912E+02,L85487-8 S TEX
B,13L85487-8       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,   -3.003E-03,   5.239E-02,   8.343E-02,,   -0.036
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:17:32.59
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:29.20

LIMS No., Customer Name, Client ID: L85487-9 S TEXAS

Sample ID : 13L85487-9
Sample Type : S
Quantity : 9.96400E+01 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 8-DEC-2019 13:00:00.0
Geometry : 13S50122019
BKGFILE : 13BG122719MT
Real Time : 0 01:07:53.33
Live time : 0 01:07:52.11

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.45*	65	71	1.25	476.37	4.59E+00	1.59E-02	26.5	4.69E+00
2	1	294.98*	76	72	1.41	589.33	3.90E+00	1.85E-02	26.5	1.17E+00
3	1	351.98*	85	67	1.54	703.23	3.38E+00	2.09E-02	22.2	3.51E+00
4	1	510.82*	32	51	3.38	1020.71	2.49E+00	7.95E-03	66.9	1.75E+00
5	1	608.95*	116	28	1.44	1216.88	2.15E+00	2.85E-02	13.2	5.48E+00
6	1	1460.27*	66	19	2.38	2920.36	9.97E-01	1.62E-02	21.7	1.00E+00
7	1	1763.95*	19	7	1.93	3528.66	8.58E-01	4.58E-03	41.8	1.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85487-9 Acquisition date : 3-JAN-2020 09:09:29

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85487-9 Acquisition date : 3-JAN-2020 09:09:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.45	65	71	1.25	476.37	473	7	1.59E-02	53.0	4.59E+00	
1	294.98	76	72	1.41	589.33	583	12	1.85E-02	53.0	3.90E+00	
1	351.98	85	67	1.54	703.23	698	10	2.09E-02	44.4	3.38E+00	
1	510.82	32	51	3.38	1020.71	1013	17	7.95E-03	****	2.49E+00	
1	608.95	116	28	1.44	1216.88	1214	9	2.85E-02	26.4	2.15E+00	
1	1460.27	66	19	2.38	2920.36	2913	15	1.62E-02	43.5	9.97E-01	
1	1763.95	19	7	1.93	3528.66	3521	13	4.58E-03	83.7	8.58E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.006E-02		6.032E-02	9.455E-02	0.000E+00	-0.106

```
A,13L85487-9       ,01/03/2020 10:17,12/08/2019 13:00,   9.964E+01,L85487-9 S TEX
B,13L85487-9       ,HUDSON              ,12/27/2019 09:44,13S50122019
C,CS-137   ,NO ,   -1.006E-02,   6.032E-02,   9.455E-02,,   -0.106
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:20:02.07
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:31.40

LIMS No., Customer Name, Client ID: L85487-10 S TEXAS

Sample ID	: 11L85487-10	Smple Date:	8-DEC-2019 13:05:00.0
Sample Type	: S	Geometry	: 11S50121819
Quantity	: 9.69100E+01 g Dry	BKGFILE	: 11BG122719MT
Start Channel	: 190 Energy Tol : 2.00000	Real Time	: 0 01:10:19.15
End Channel	: 4090 Pk Srch Sens: 9.00000	Live time	: 0 01:10:17.13
MDA Multiple	: 4.6600 Library Used: HUDSON		

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	294.85*	91	93	1.63	589.07	3.47E+00	2.16E-02	26.4	
2	0	352.02*	139	63	1.38	703.46	2.99E+00	3.28E-02	15.5	
3	0	609.33*	126	34	1.89	1218.29	1.88E+00	2.98E-02	14.1	
4	0	1460.85*	44	5	2.74	2921.83	9.01E-01	1.05E-02	21.9	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85487-10 Acquisition date : 3-JAN-2020 09:09:31

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85487-10 Acquisition date : 3-JAN-2020 09:09:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	294.85	91	93	1.63	589.07	582	16	2.16E-02	52.8	3.47E+00	
0	352.02	139	63	1.38	703.46	696	14	3.28E-02	31.0	2.99E+00	
0	609.33	126	34	1.89	1218.29	1212	14	2.98E-02	28.3	1.88E+00	
0	1460.85	44	5	2.74	2921.83	2914	17	1.05E-02	43.8	9.01E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 4
Number of unidentified lines 4
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-9.520E-03		6.699E-02	1.217E-01	0.000E+00	-0.078

```
A,11L85487-10      ,01/03/2020 10:20,12/08/2019 13:05,   9.691E+01,L85487-10 S TE
B,11L85487-10      ,HUDSON              ,12/26/2019 12:27,11S50121819
C,CS-137   ,NO ,   -9.520E-03,   6.699E-02,   1.217E-01,,   -0.078
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:08:29.27
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:03:59.65

LIMS No., Customer Name, Client ID: L85487-11 S TEXAS

Sample ID : 01L85487-11
Sample Type : S
Quantity : 1.85710E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 13:10:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:04:18.14
Live time : 0 01:04:17.60

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.40*	57	101	1.23	476.96	3.47E+00	1.46E-02	36.9	1.76E+00
2	1	294.82*	68	33	1.69	589.71	2.98E+00	1.76E-02	20.8	3.63E+00
3	1	351.65*	79	63	1.20	703.29	2.60E+00	2.05E-02	23.3	1.04E+00
4	1	582.91*	49	22	1.80	1165.49	1.70E+00	1.27E-02	23.9	5.94E-01
5	1	608.96*	99	42	1.59	1217.55	1.64E+00	2.57E-02	16.8	3.70E+00
6	1	1119.63*	23	11	1.92	2238.27	9.64E-01	6.02E-03	34.8	4.50E-01
7	1	1459.87*	82	0	2.25	2918.42	7.73E-01	2.13E-02	12.3	7.63E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85487-11 Acquisition date : 3-JAN-2020 13:03:59

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85487-11 Acquisition date : 3-JAN-2020 13:03:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.40	57	101	1.23	476.96	472	10	1.46E-02	73.8	3.47E+00	
1	294.82	68	33	1.69	589.71	585	9	1.76E-02	41.6	2.98E+00	
1	351.65	79	63	1.20	703.29	698	11	2.05E-02	46.6	2.60E+00	
1	582.91	49	22	1.80	1165.49	1159	11	1.27E-02	47.7	1.70E+00	
1	608.96	99	42	1.59	1217.55	1211	12	2.57E-02	33.7	1.64E+00	
1	1119.63	23	11	1.92	2238.27	2232	11	6.02E-03	69.5	9.64E-01	
1	1459.87	82	0	2.25	2918.42	2912	13	2.13E-02	24.7	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-6.054E-03		3.507E-02	5.701E-02	0.000E+00	-0.106

```
A,01L85487-11      ,01/03/2020 14:08,12/08/2019 13:10,   1.857E+02,L85487-11 S TE
B,01L85487-11      ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137   ,NO ,   -6.054E-03,   3.507E-02,   5.701E-02,,   -0.106
```

Analyst: HBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:09:07.11
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:04:07.91

LIMS No., Customer Name, Client ID: WG32748-1 S TEXAS

Sample ID : 14WG32748-1
Sample Type : S
Quantity : 9.54600E+01 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 12:20:00.0
Geometry : 14S50121819
BKGFILE : 14BG122719MT
Real Time : 0 01:04:53.36
Live time : 0 01:04:52.61

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.52*	45	74	1.17	474.34	4.95E+00	1.16E-02	40.4	1.15E+00
2	1	295.19*	32	36	1.53	587.72	4.13E+00	8.10E-03	42.9	1.94E+00
3	1	351.67*	58	22	1.31	700.71	3.51E+00	1.50E-02	20.6	6.58E-01
4	1	609.18*	52	16	2.88	1215.94	2.07E+00	1.32E-02	22.6	4.10E+00
5	1	1460.85*	40	3	2.37	2920.61	8.86E-01	1.03E-02	20.3	5.62E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14WG32748-1 Acquisition date : 3-JAN-2020 13:04:07

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14WG32748-1 Acquisition date : 3-JAN-2020 13:04:07

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.52	45	74	1.17	474.34	470	11	1.16E-02	80.9	4.95E+00	
1	295.19	32	36	1.53	587.72	584	10	8.10E-03	85.7	4.13E+00	
1	351.67	58	22	1.31	700.71	697	8	1.50E-02	41.1	3.51E+00	
1	609.18	52	16	2.88	1215.94	1212	13	1.32E-02	45.1	2.07E+00	
1	1460.85	40	3	2.37	2920.61	2915	12	1.03E-02	40.7	8.86E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-4.084E-02		5.188E-02	7.053E-02	0.000E+00	-0.579

```
A,14WG32748-1      ,01/03/2020 14:09,12/08/2019 12:20,   9.546E+01,WG32748-1 S TE
B,14WG32748-1      ,HUDSON              ,12/30/2019 12:20,14S50121819
C,CS-137   ,NO ,   -4.084E-02,   5.188E-02,   7.053E-02,,   -0.579
```

GAMMA SPECTROSCOPY

Prep and Run Logs

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32748-1	S	DUP	GELI	95.46 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-1	S		GELI	95.46 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-2	S		GELI	95.79 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-3	S		GELI	176.47 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-4	S		GELI	186.29 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-5	S		GELI	193.38 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-6	S		GELI	102.66 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-7	S		GELI	193.78 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-8	S		GELI	191.18 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-9	S		GELI	99.64 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-10	S		GELI	96.91 g dry	01/02/20	KT	BALANCE 8							WG32748
L85487-11	S		GELI	185.71 g dry	01/02/20	KT	BALANCE 8							WG32748

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85487

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 02-JAN-20

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 02-JAN-20

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME		Standards Prepared by:		2/21/15
	pCi/ml	BI YIELD					
210PB-061014-1	2013	0.577	2/11/2015 13:55		Calibration by:	Keith Jett	2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55				
210PB-061014-3	2013	0.577	2/11/2015 13:55				
210PB-061014-4	2013	0.577	2/11/2015 13:55				
210PB-061014-5	2013	0.577	2/11/2015 13:55				
210PB-061014-6	2013	0.577	2/11/2015 13:55				

Y COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

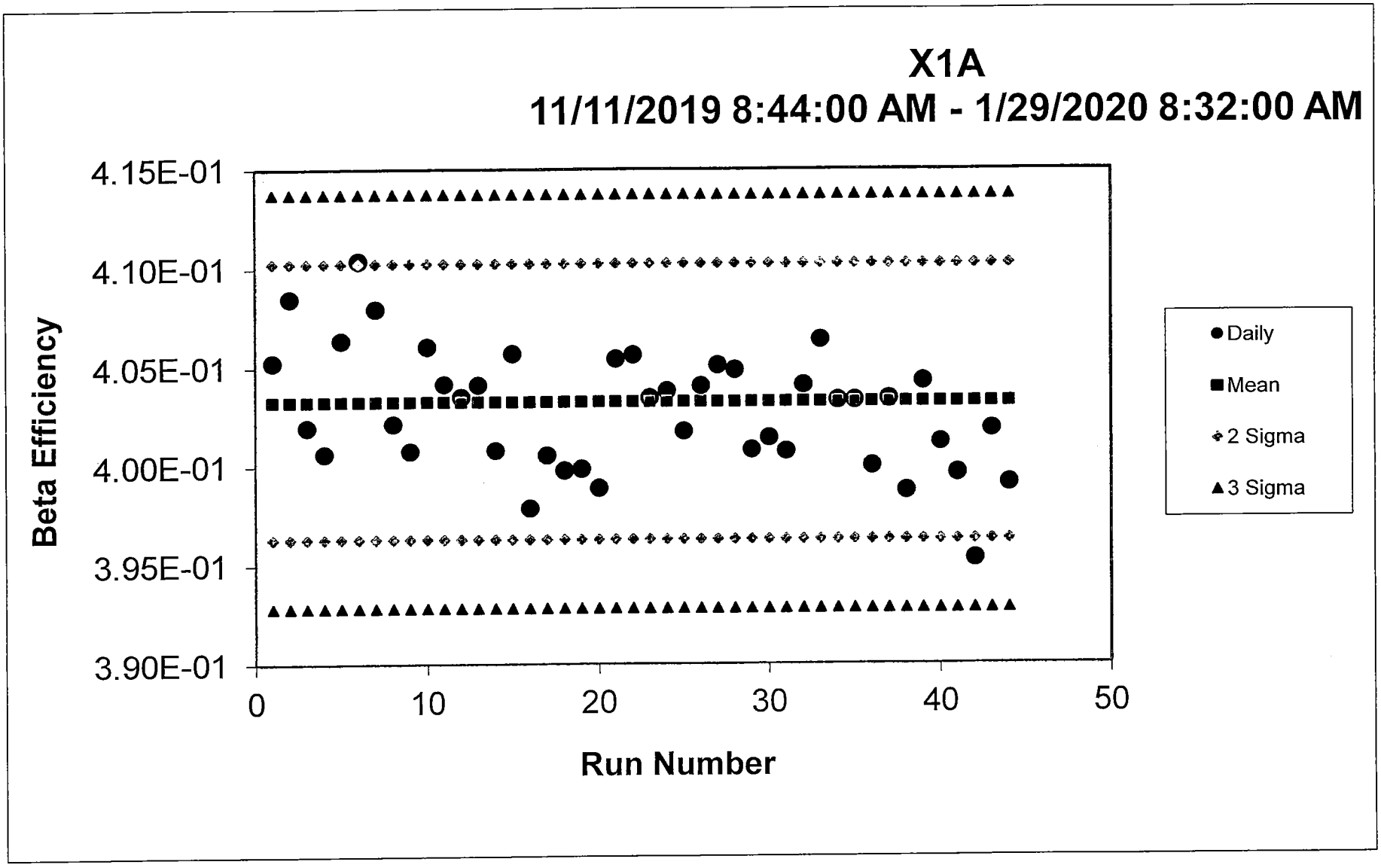
210PB-061014	Activity pCi/ml	BI YIELD	MILK DATE/TIME
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

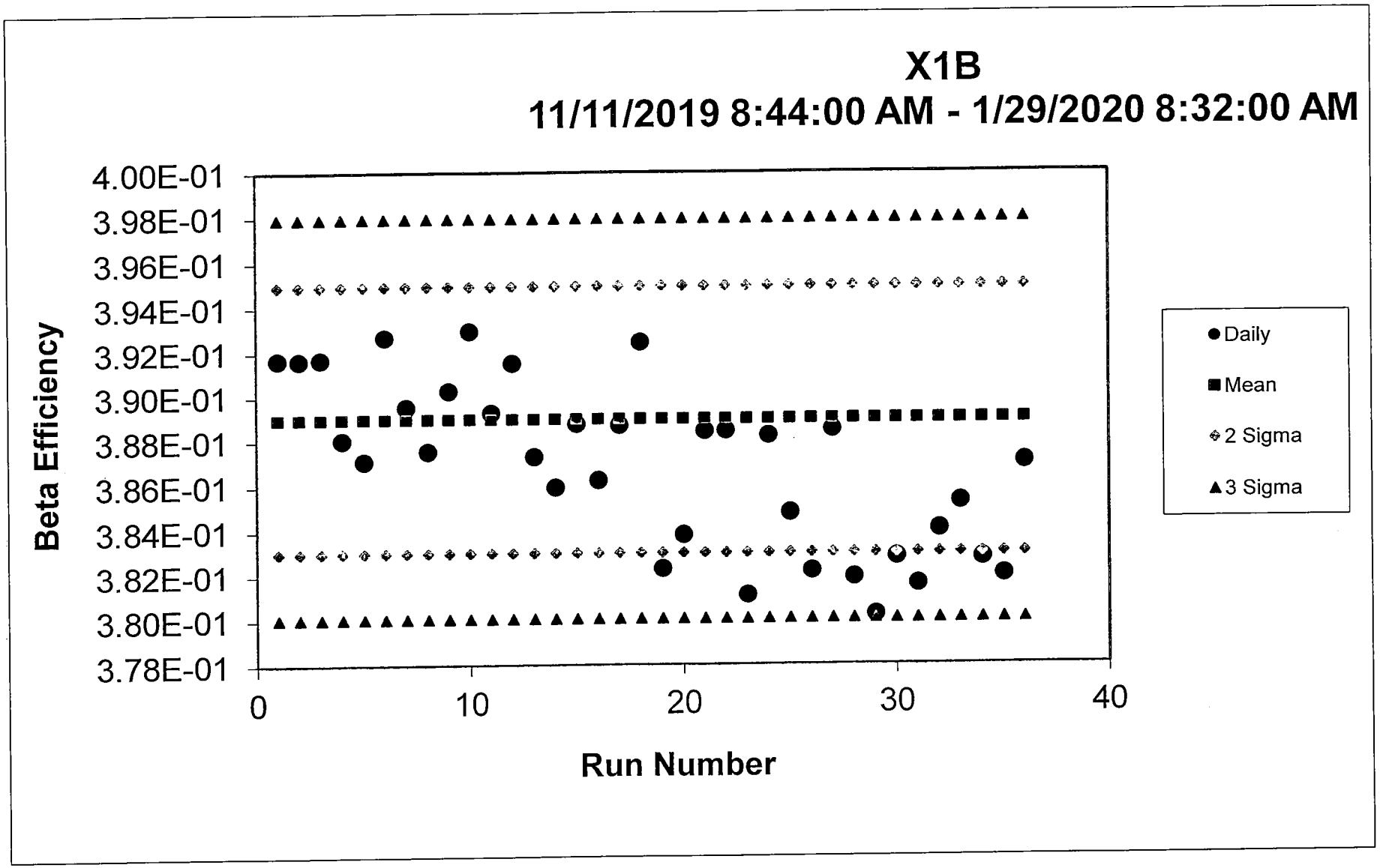
Standards Prepared by: [signature] 2/21/15

Calibration by: Keith Jett 2/21/15

LEAD 210

Daily Source and Background Checks


X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1B
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
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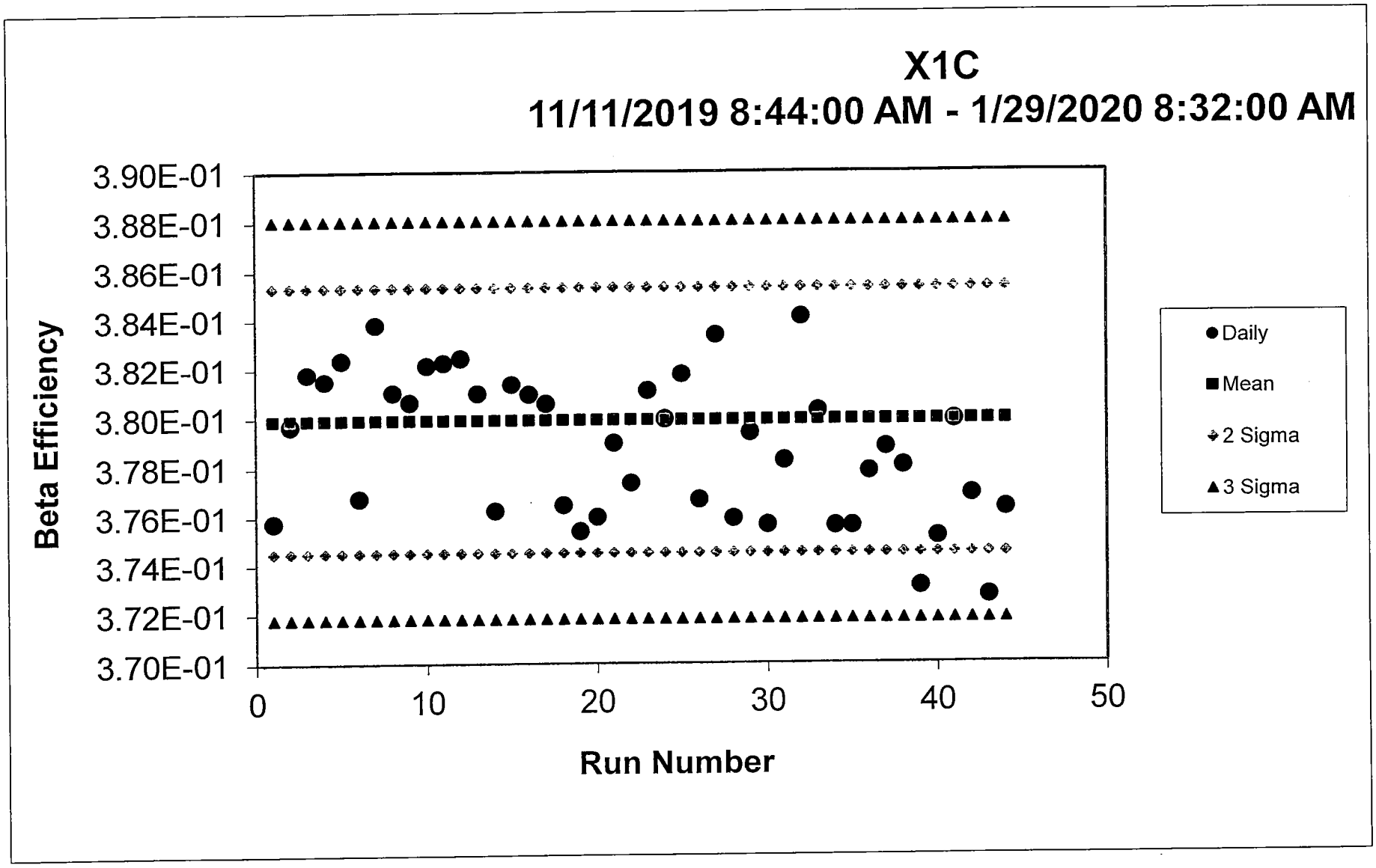
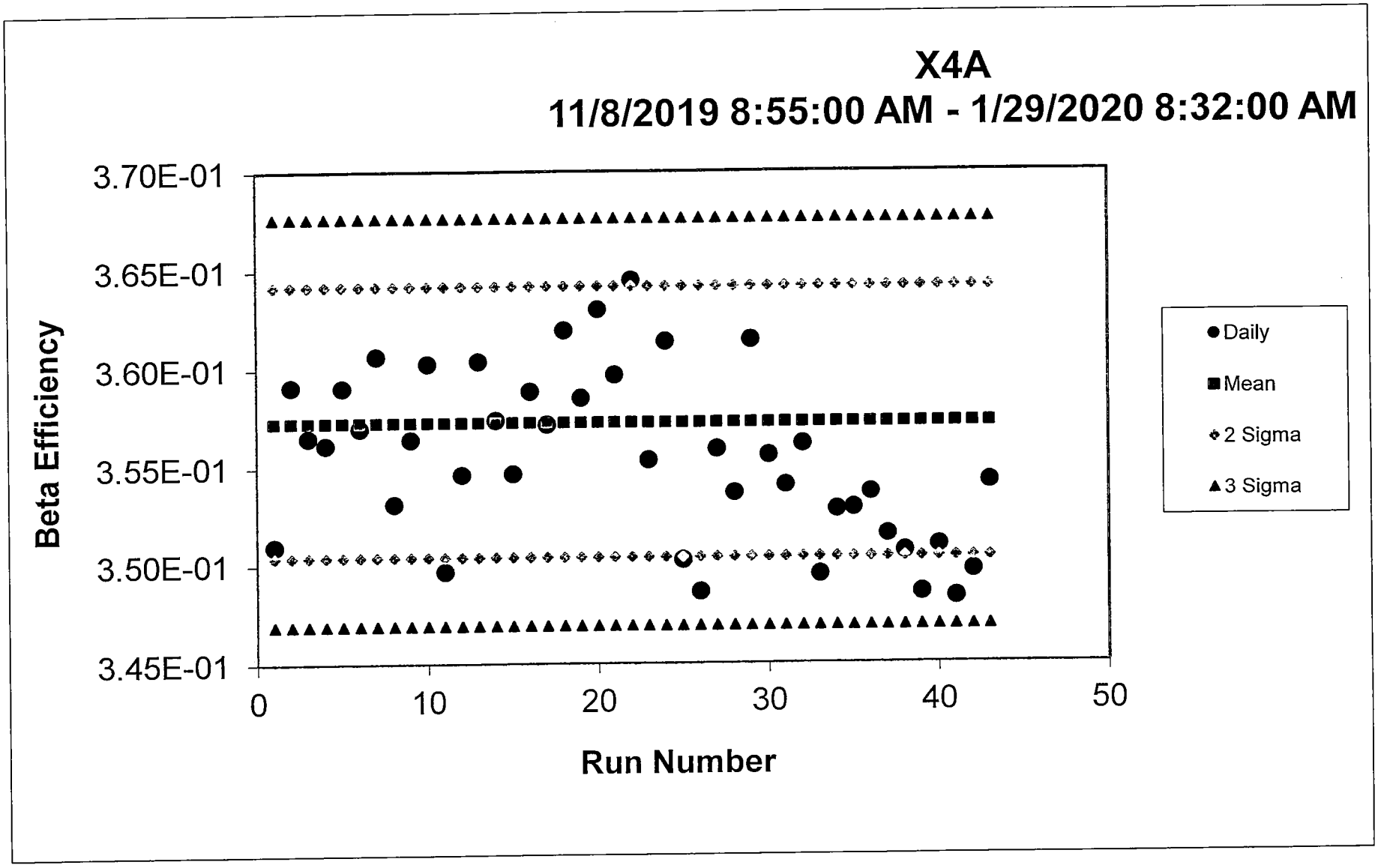
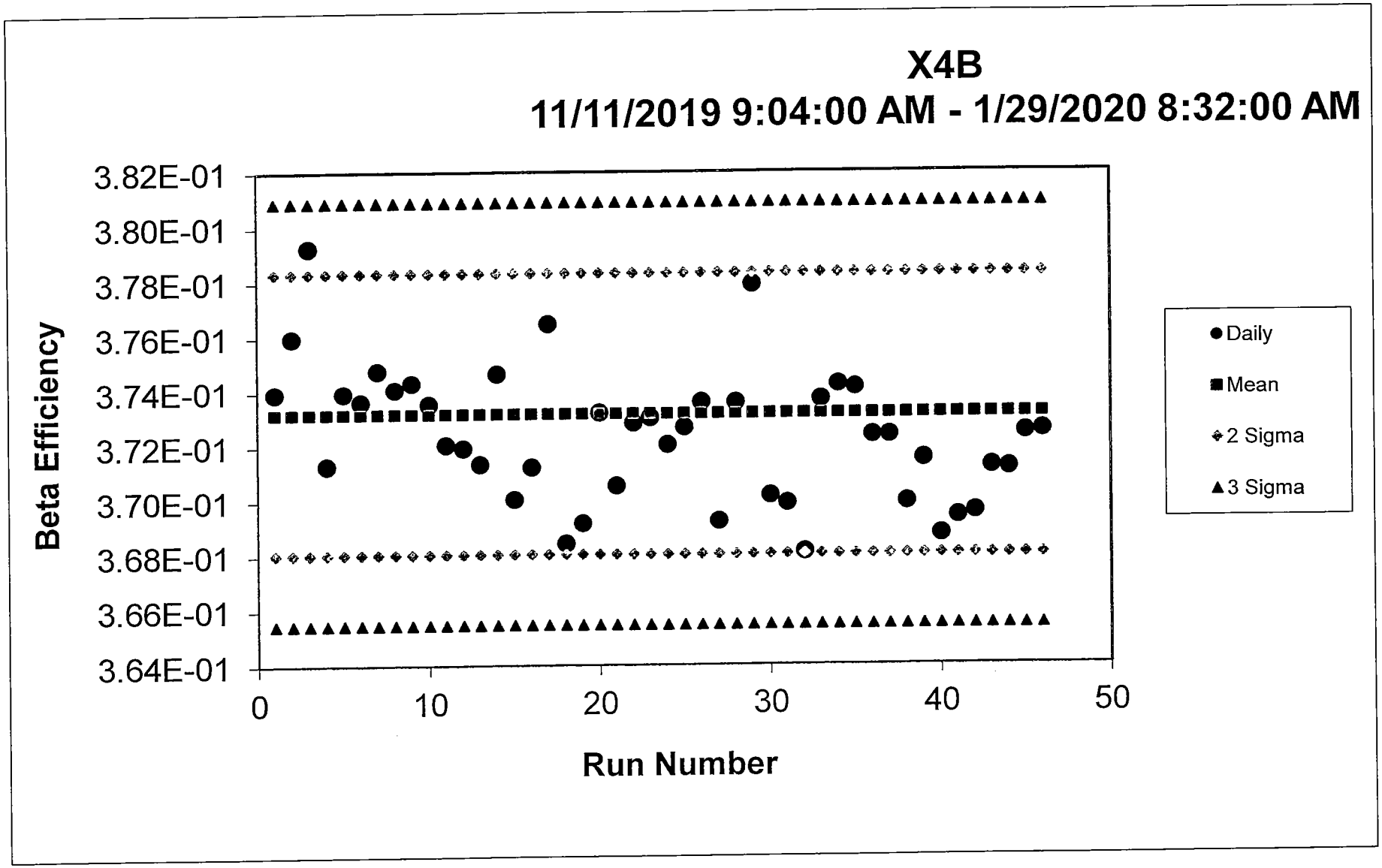
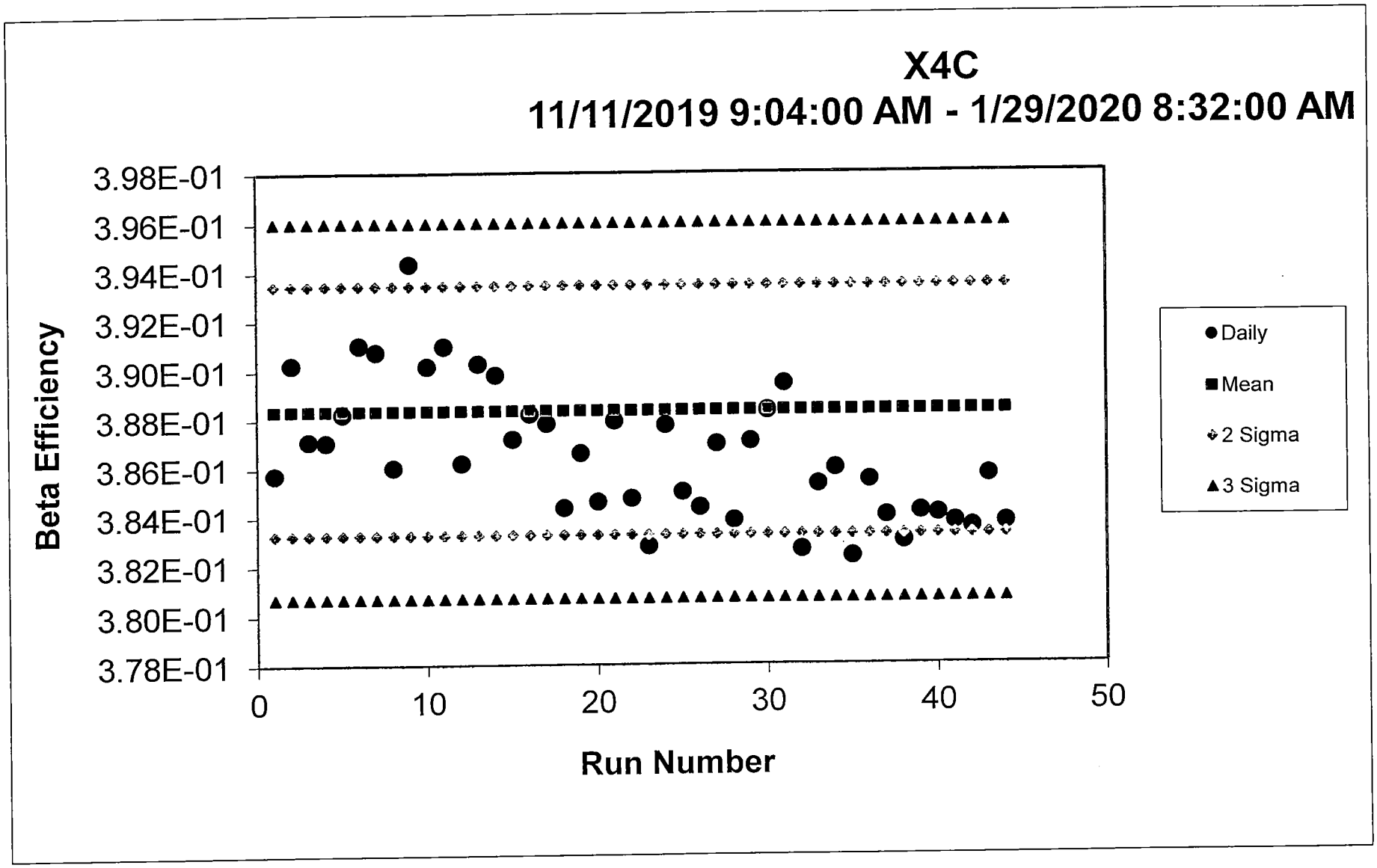
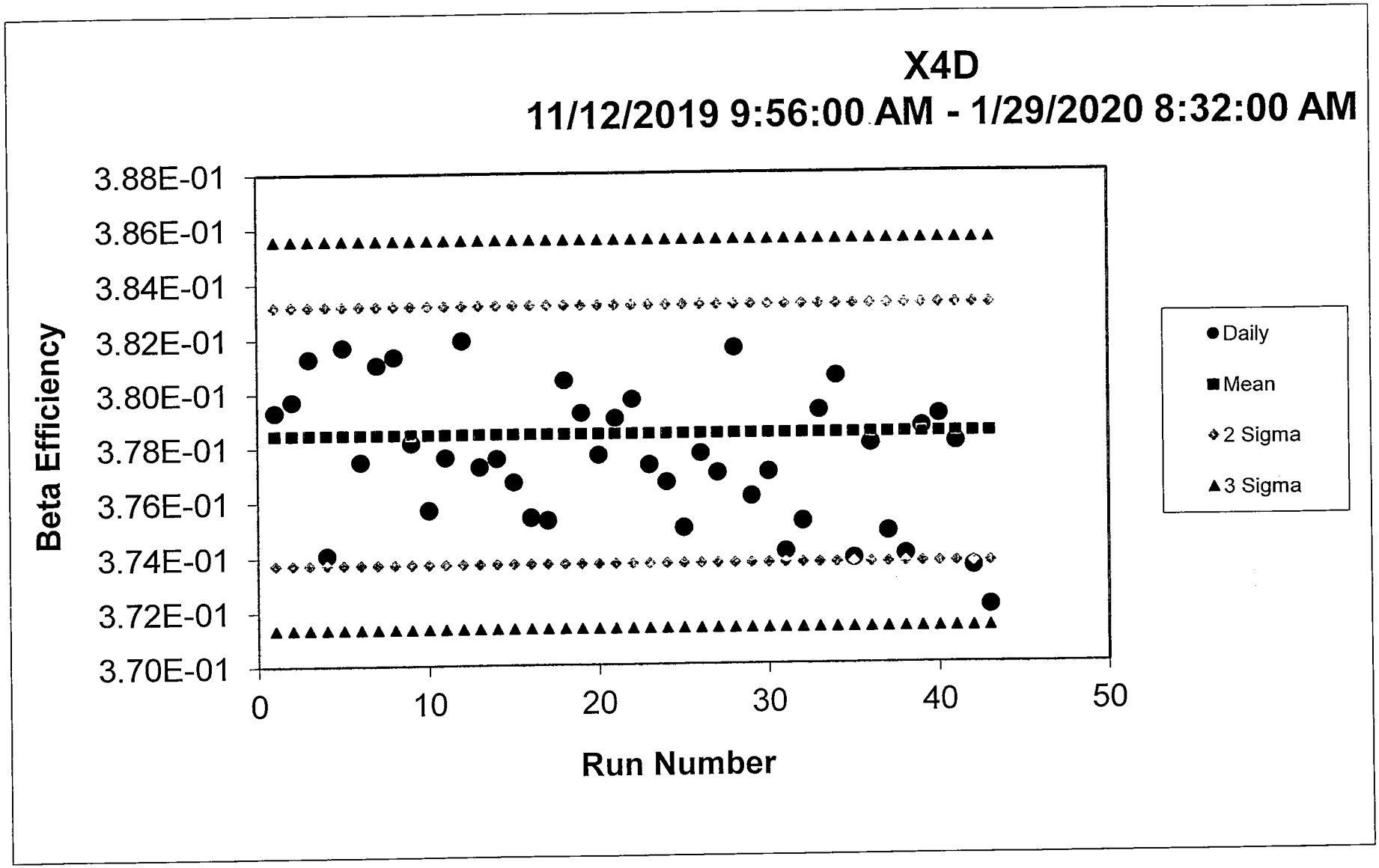
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1C
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X4D
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
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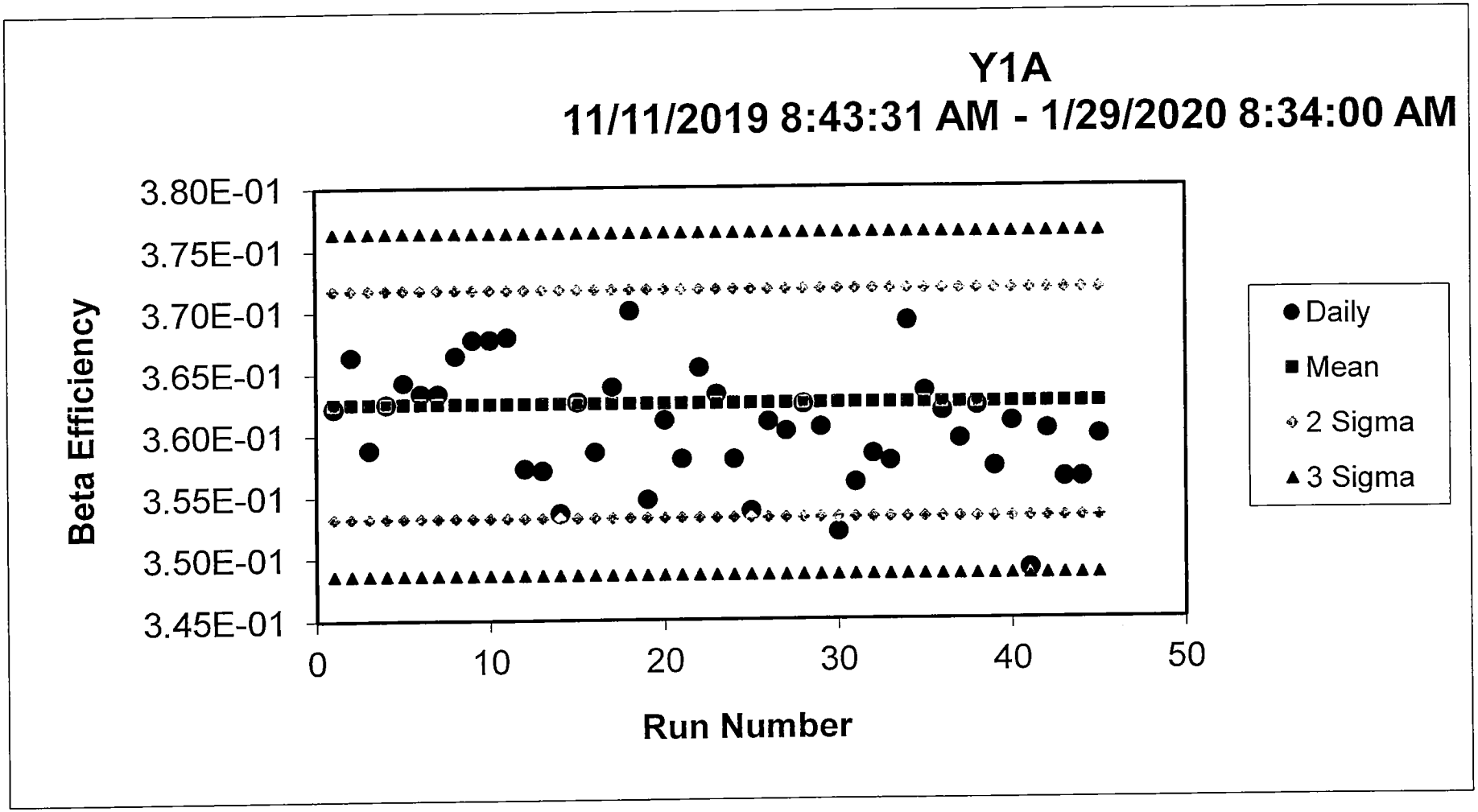
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1A
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
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3.45E-01
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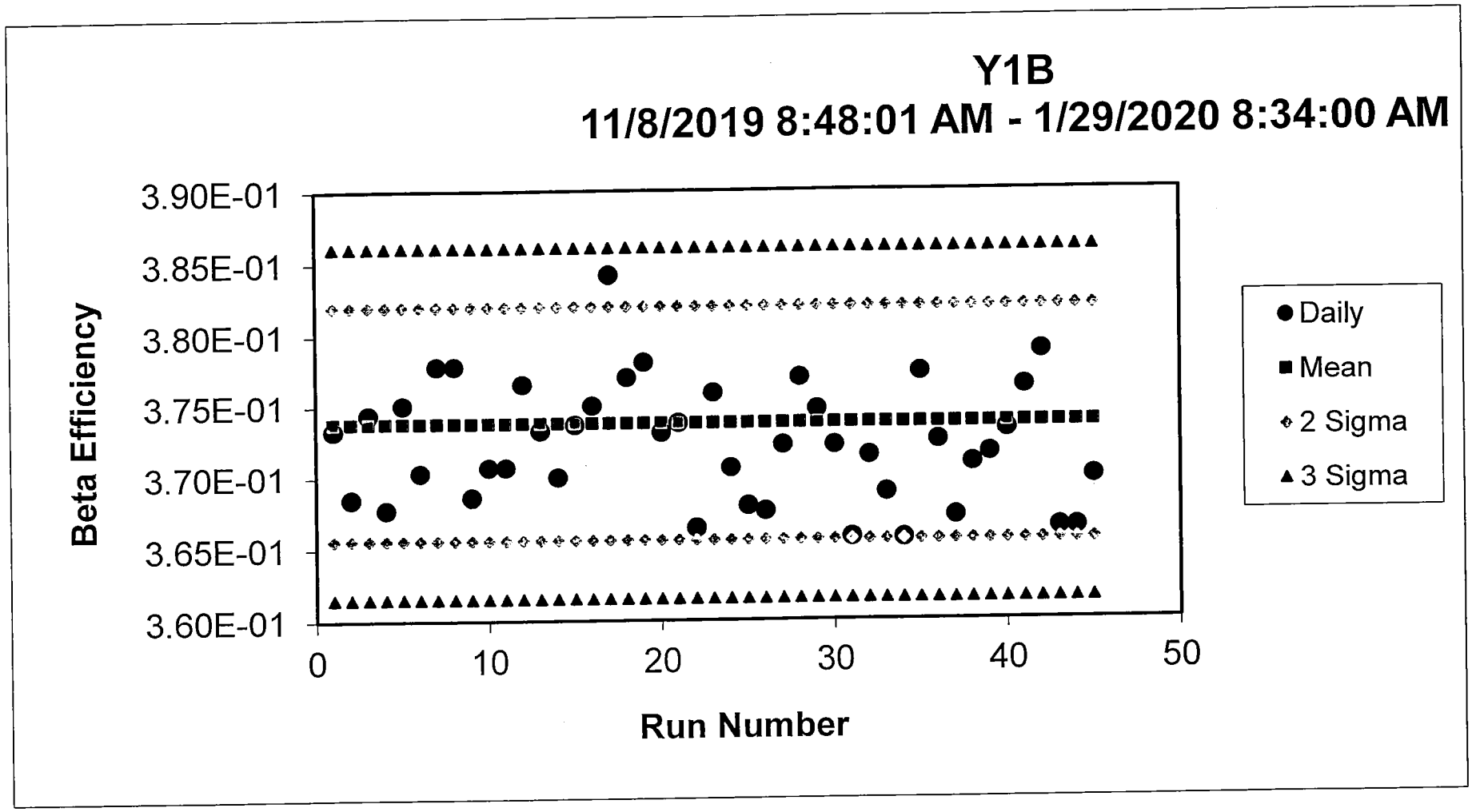
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


Y1B
11/8/2019 8:48:01 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
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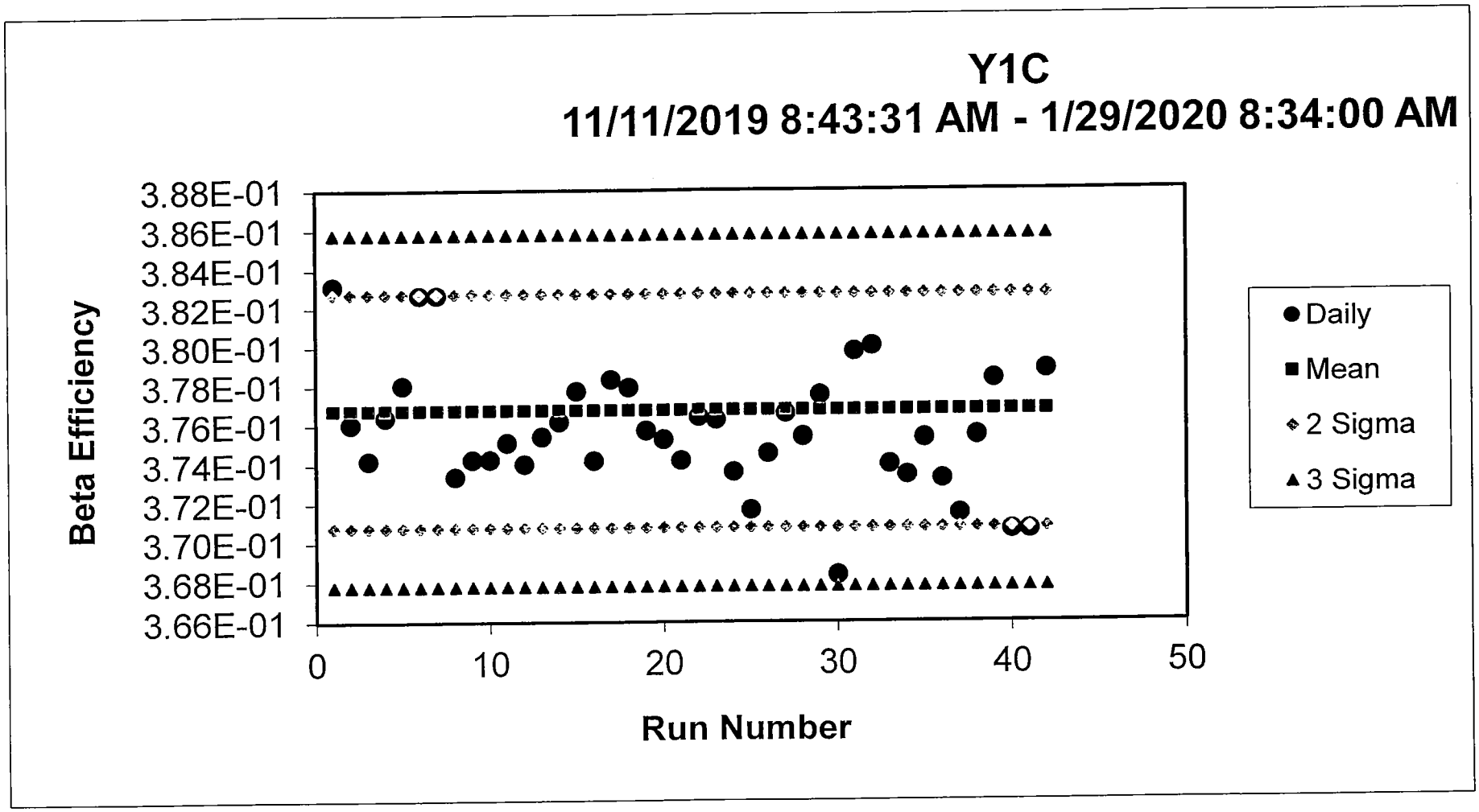
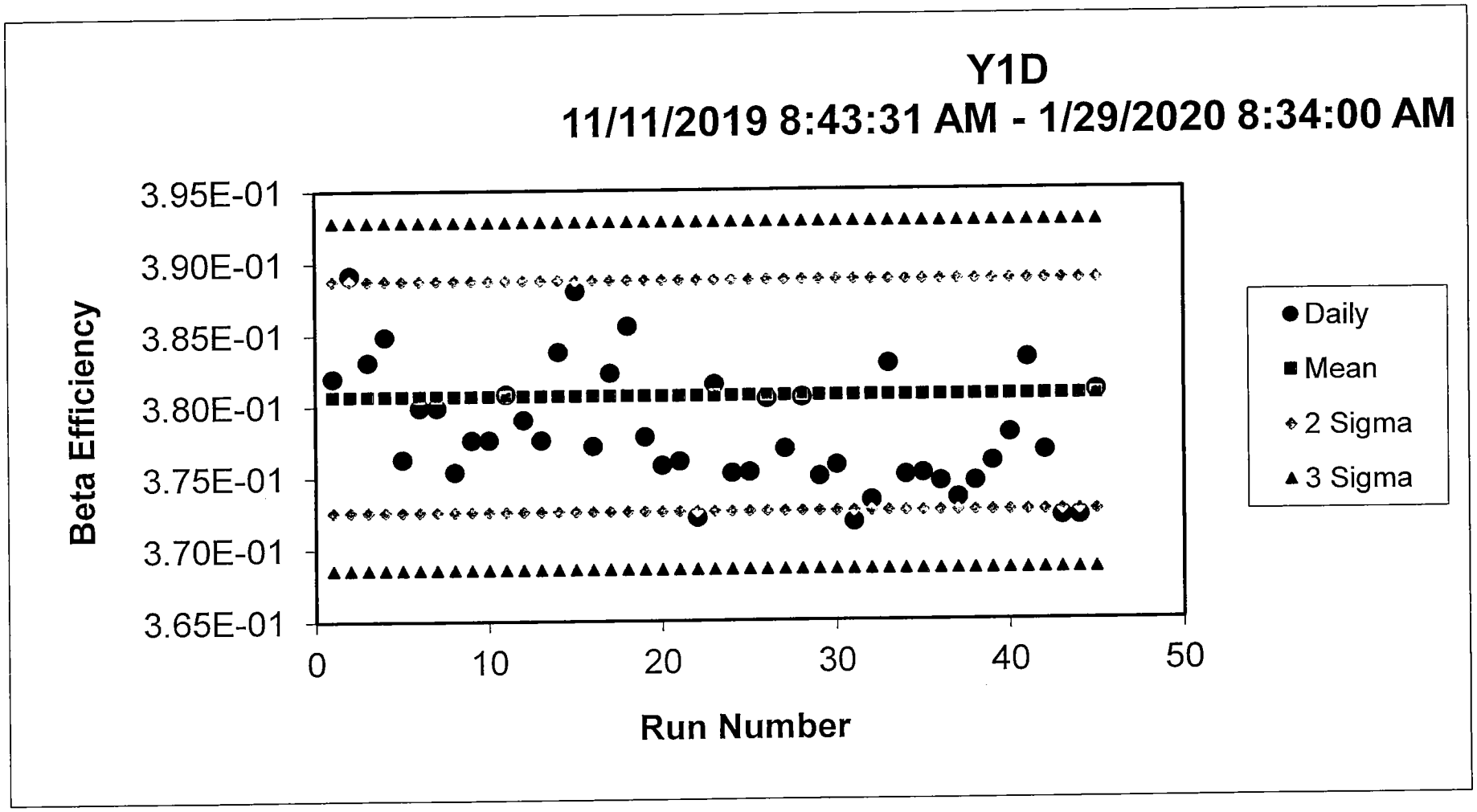
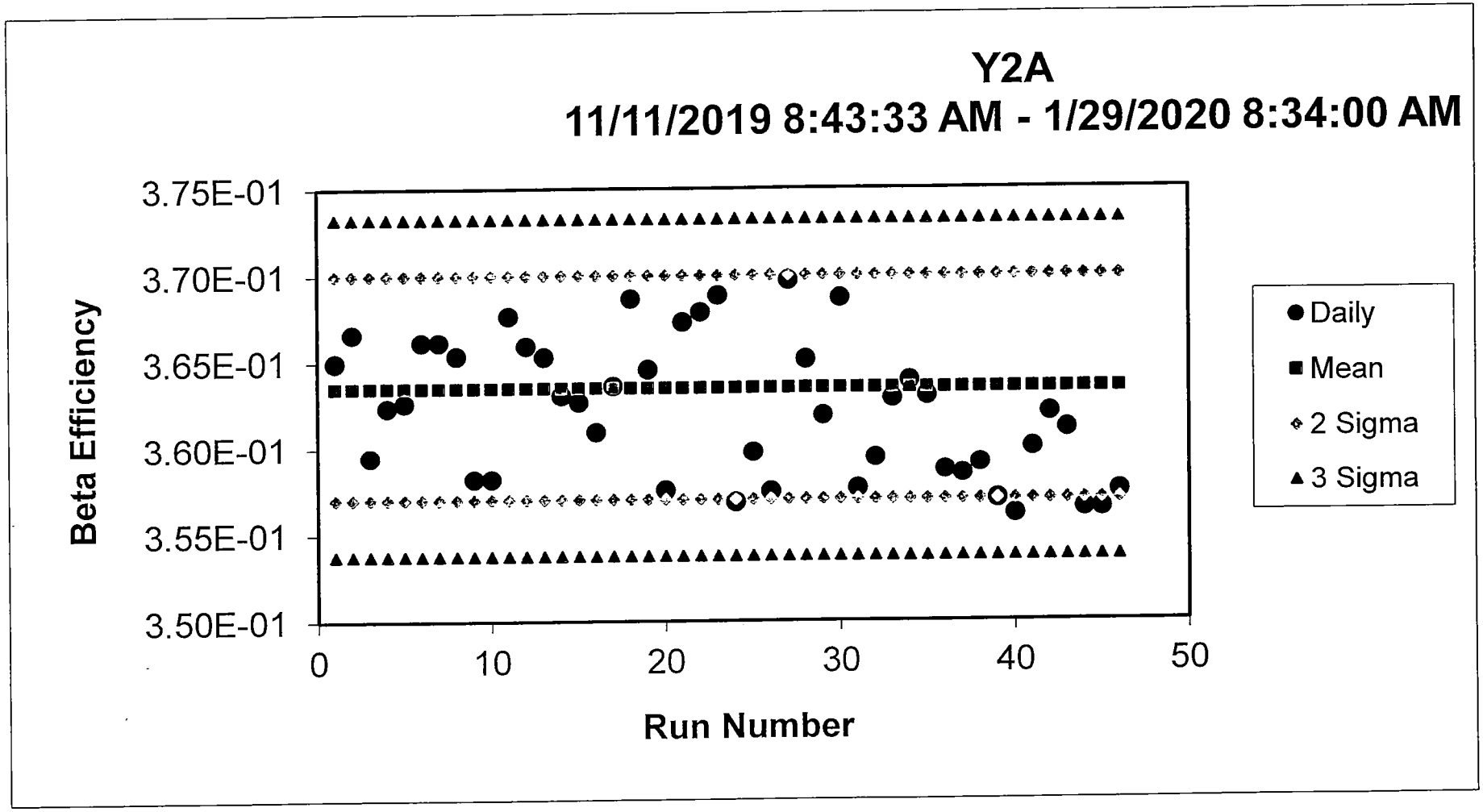
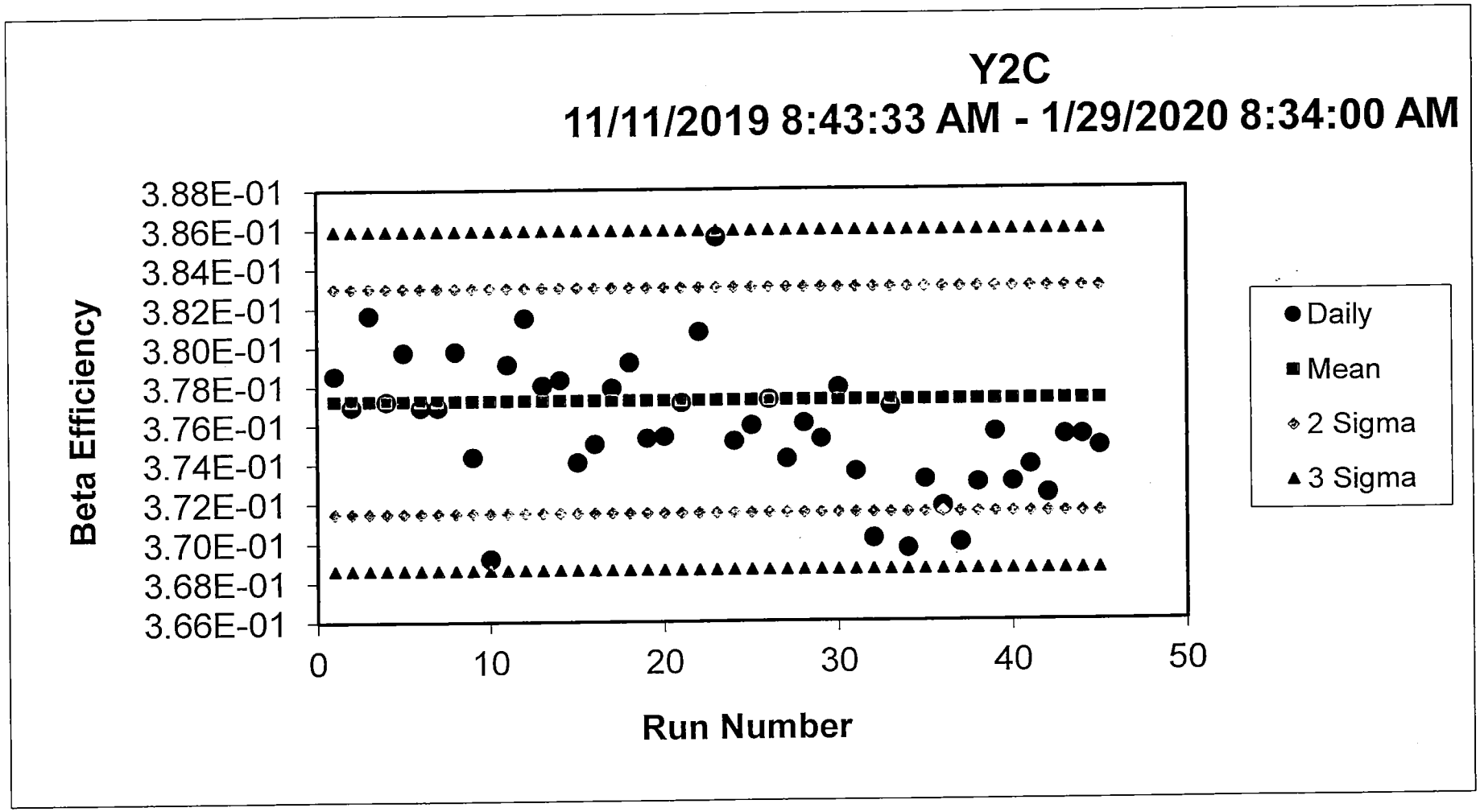
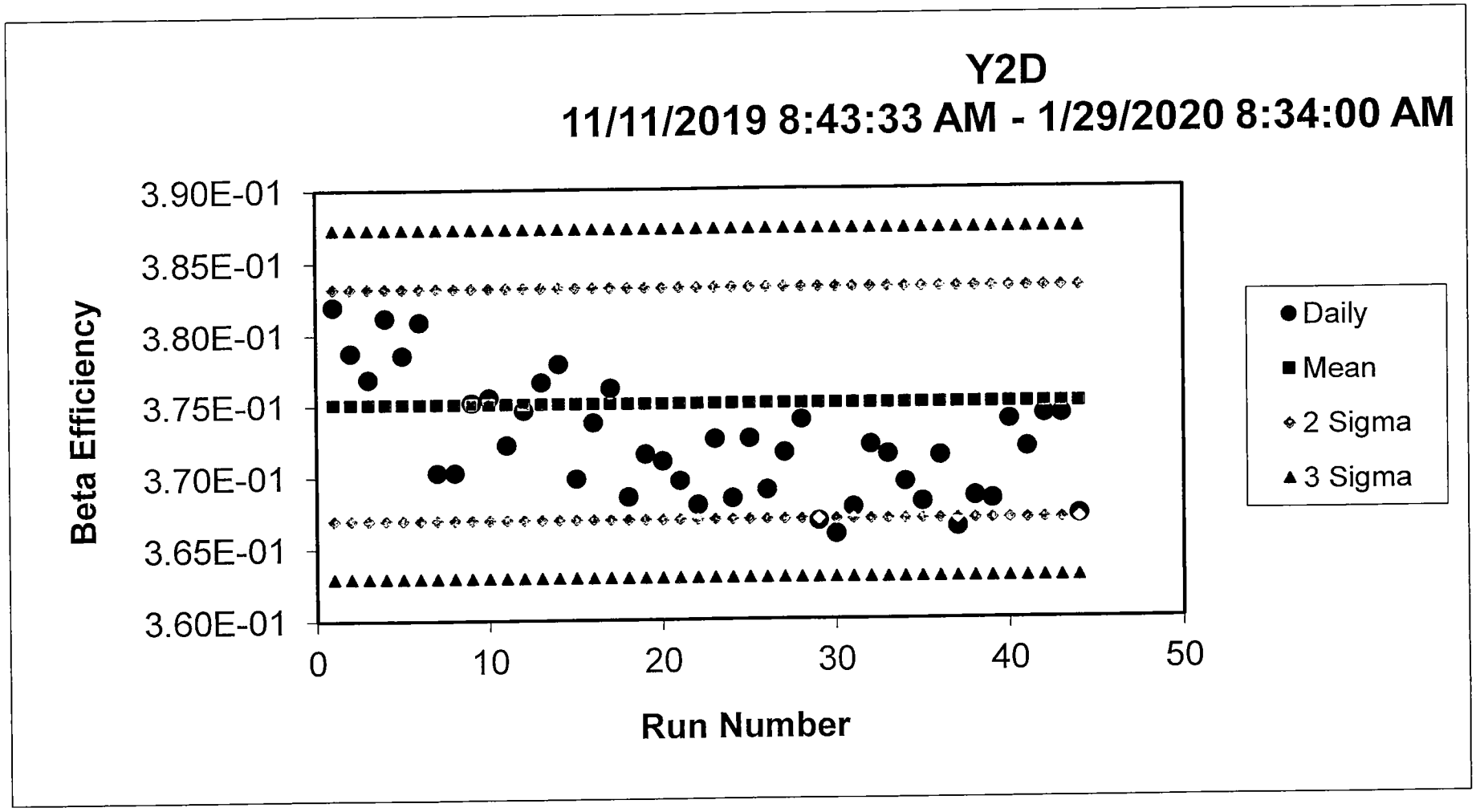
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

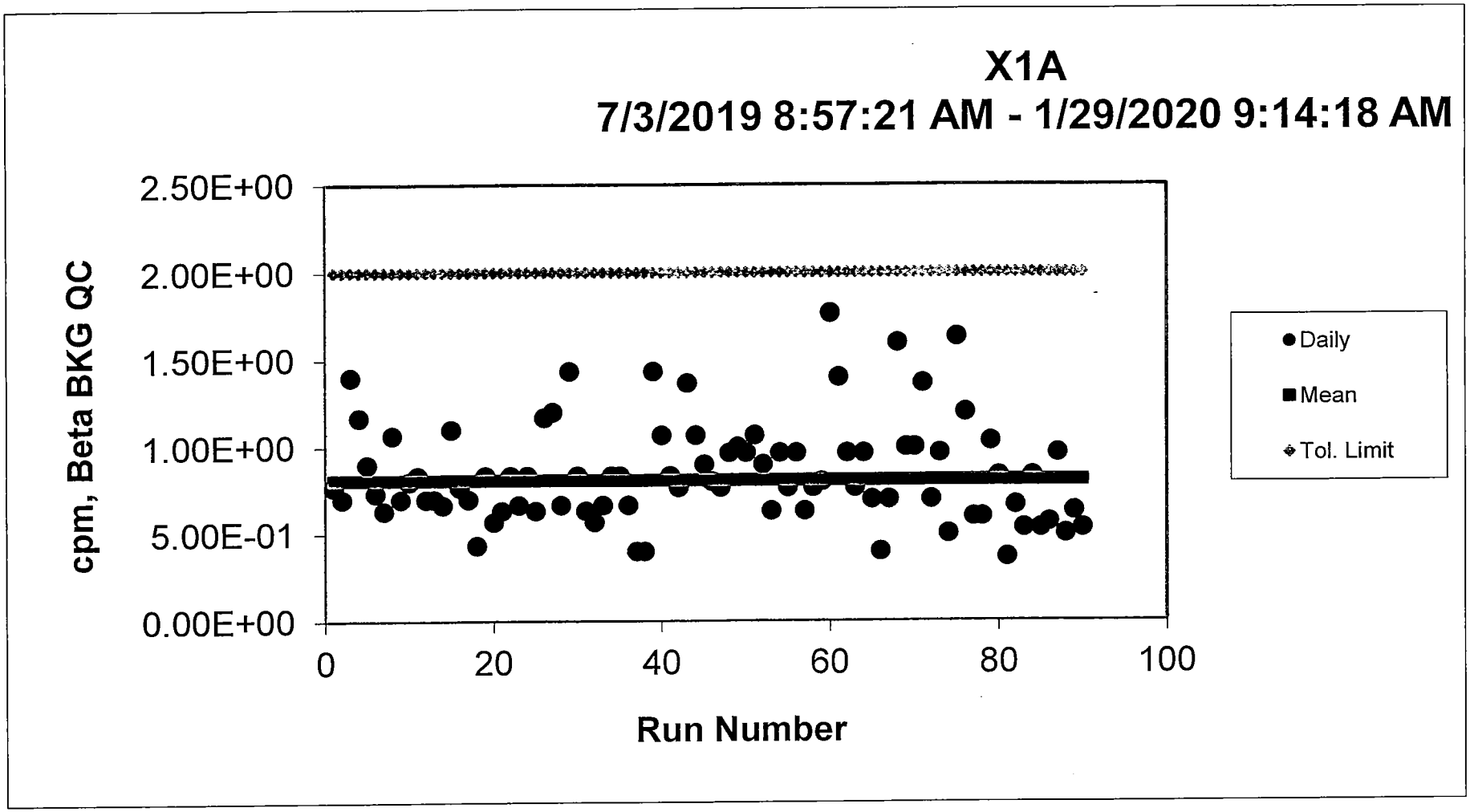

Y1C
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

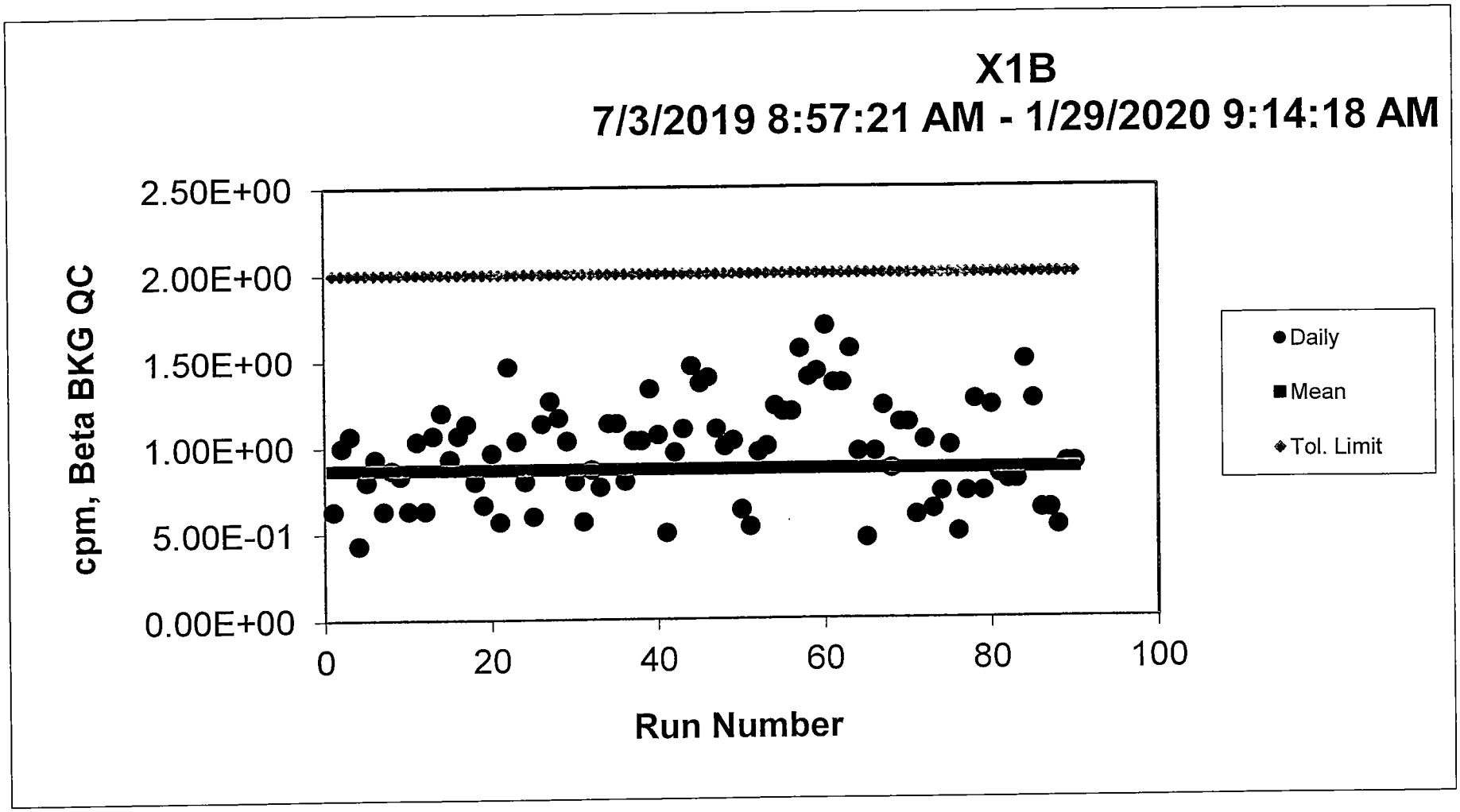

Y1D
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

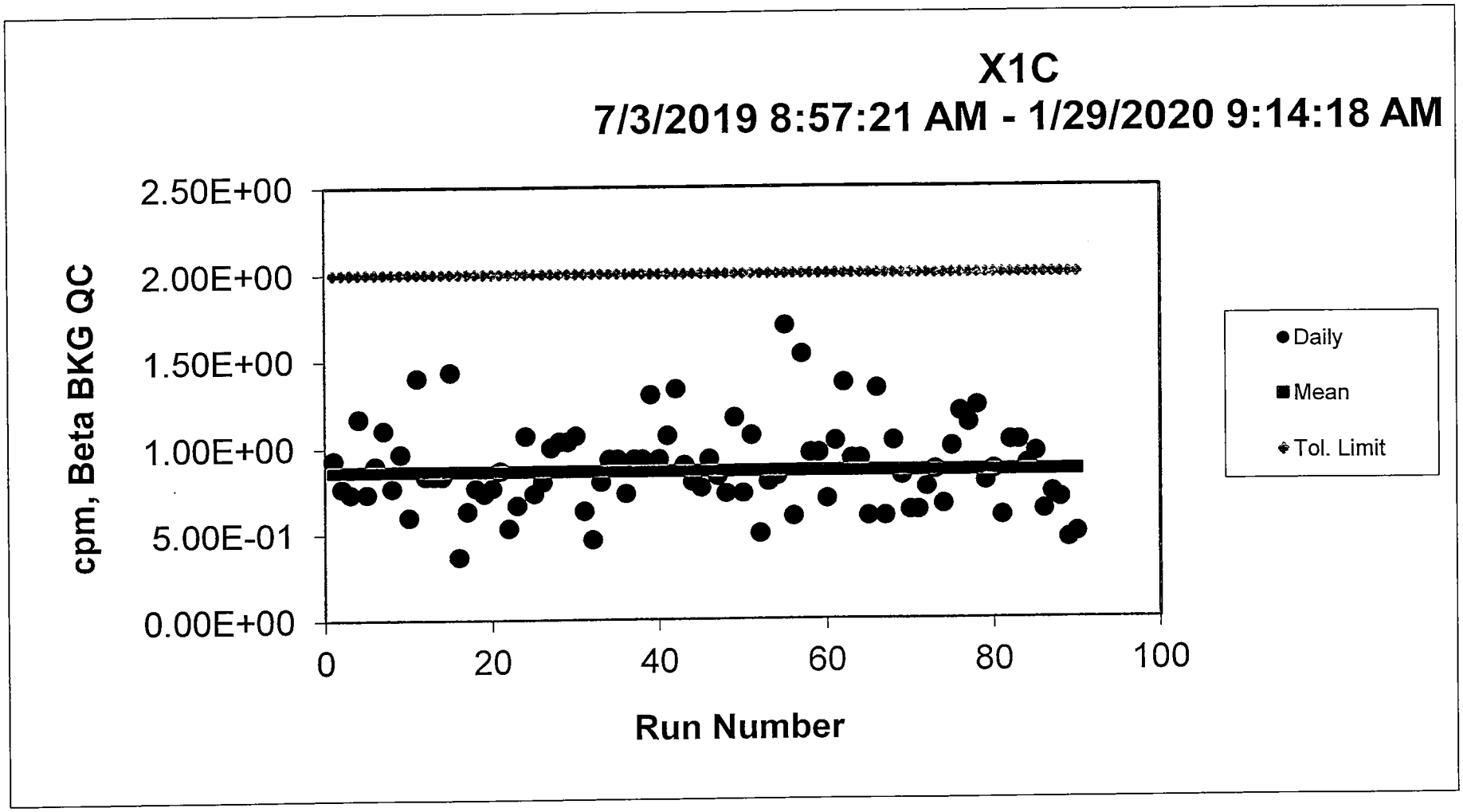

Y2A
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

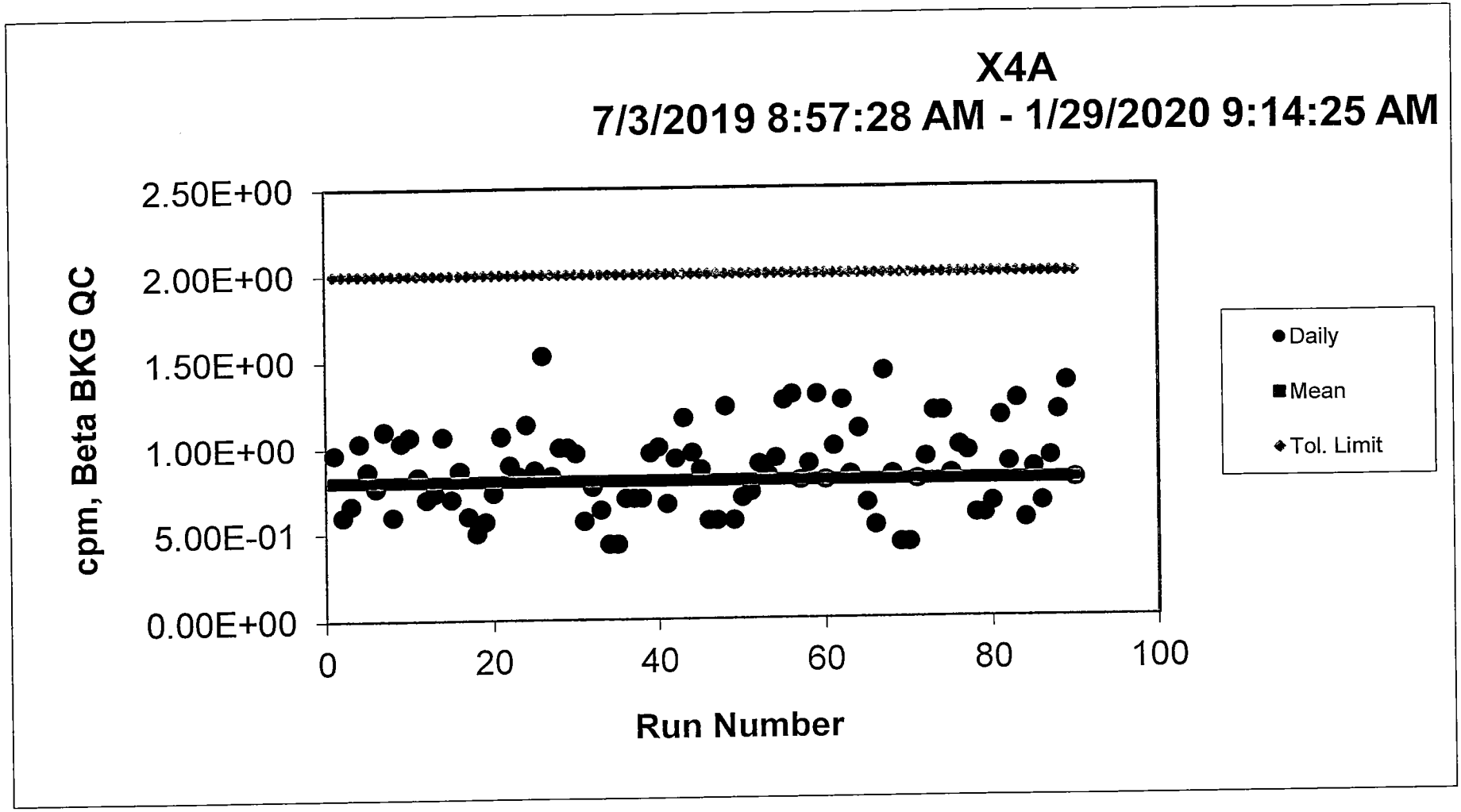

Y2C
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

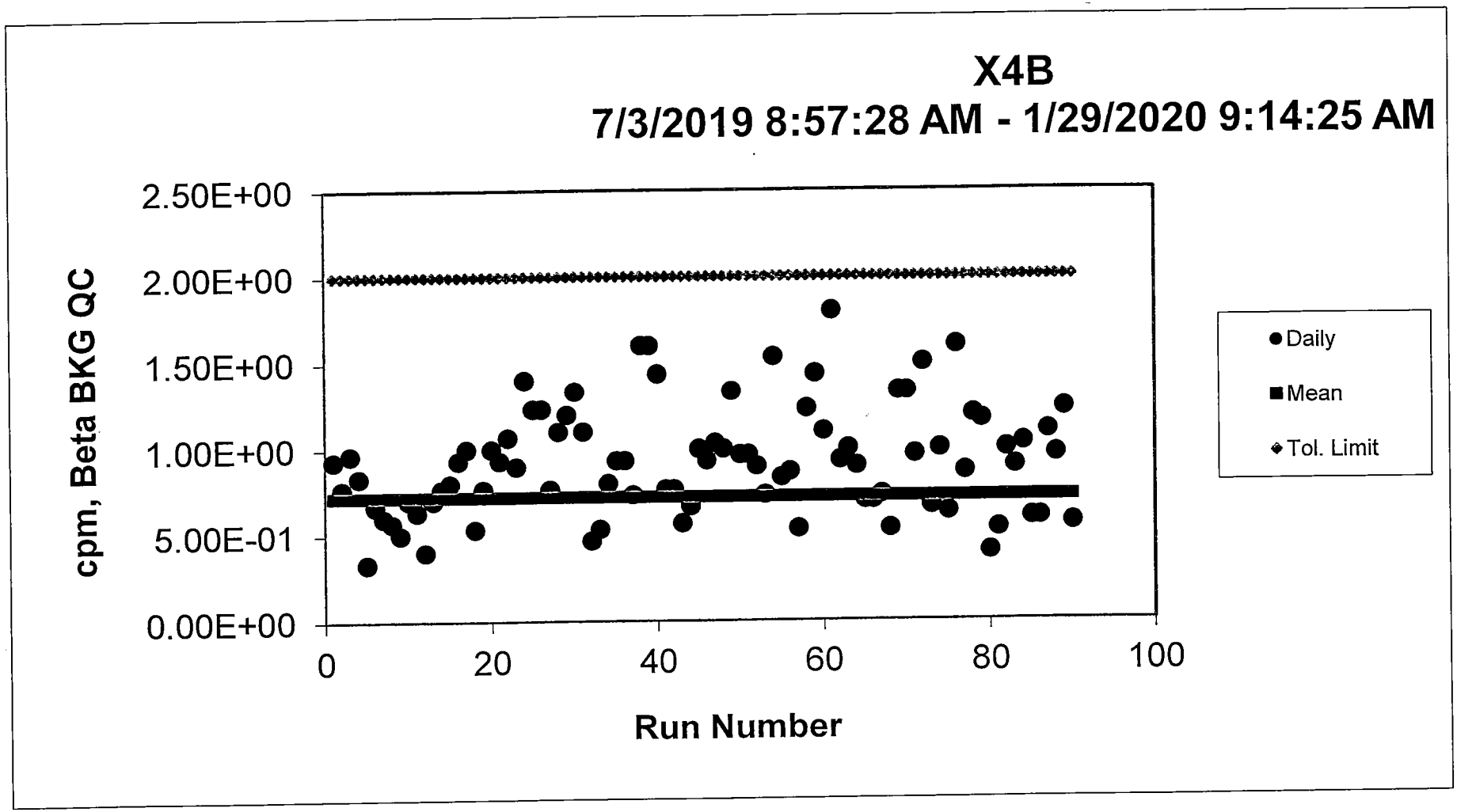

Y2D
11/11/2019 8:43:33 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

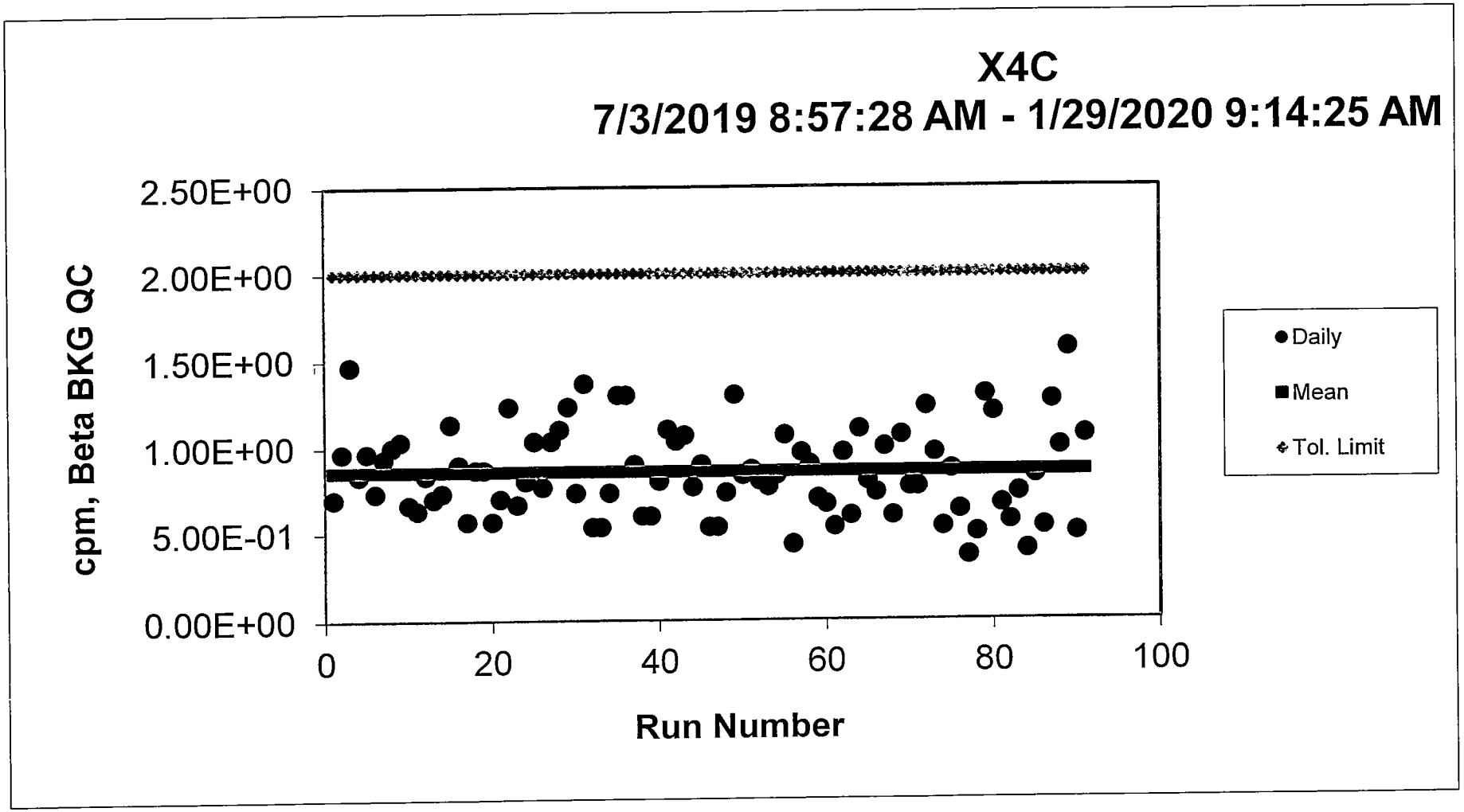

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

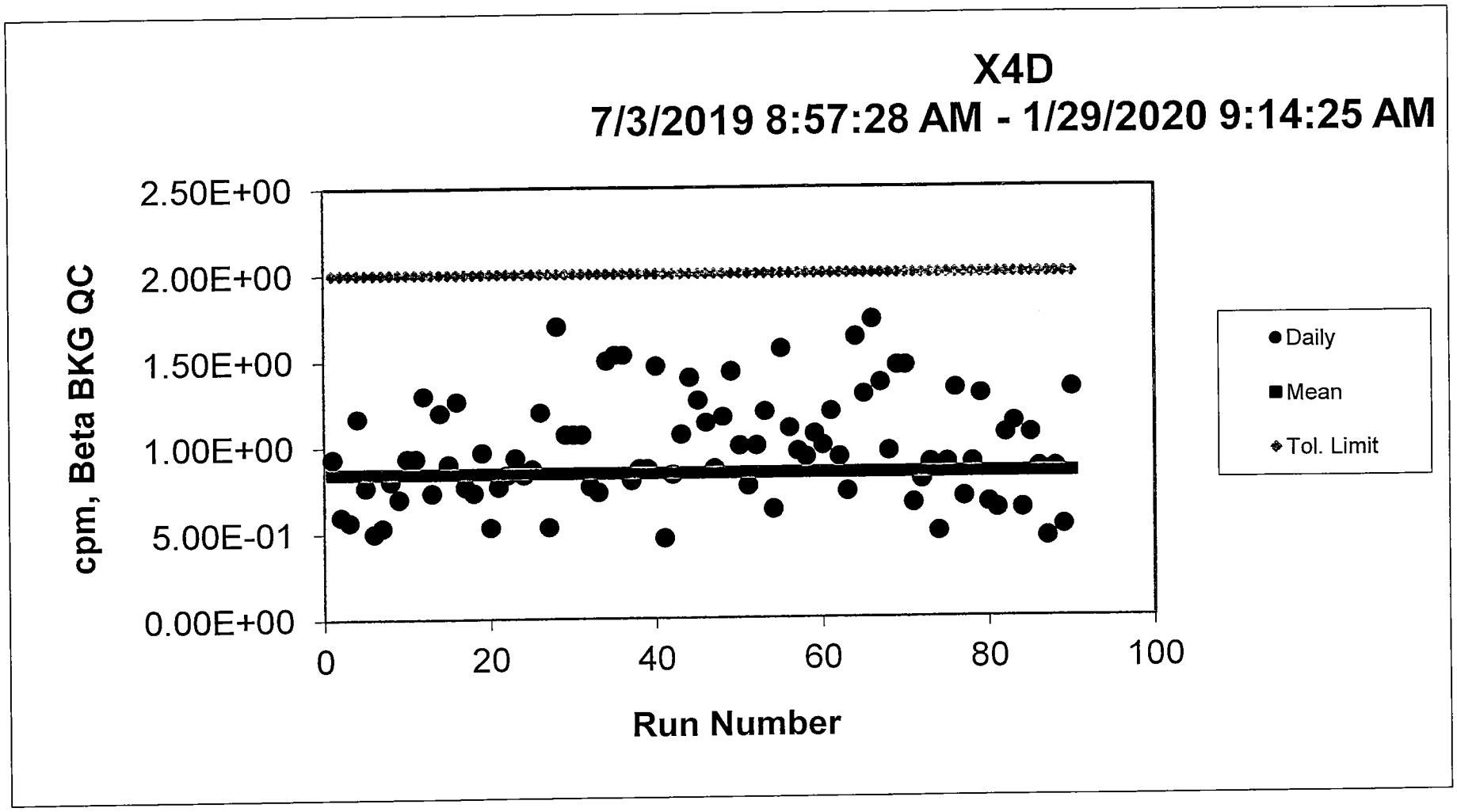

X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

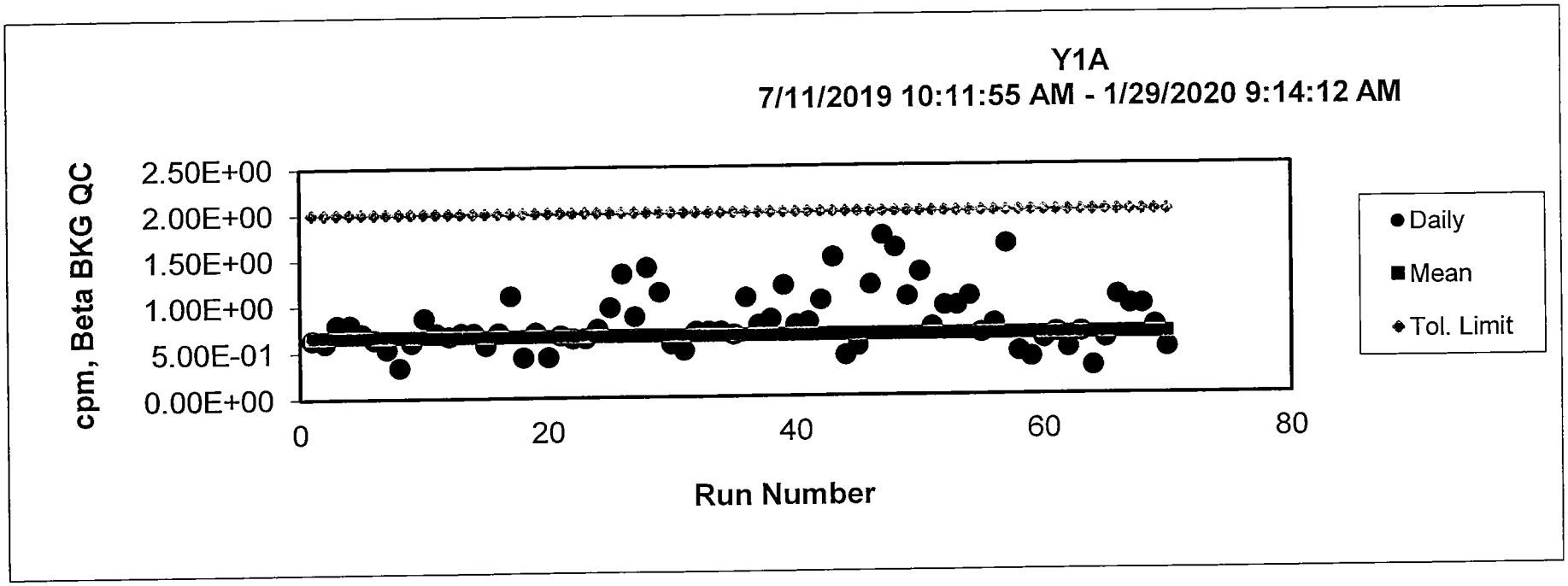

X1C
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

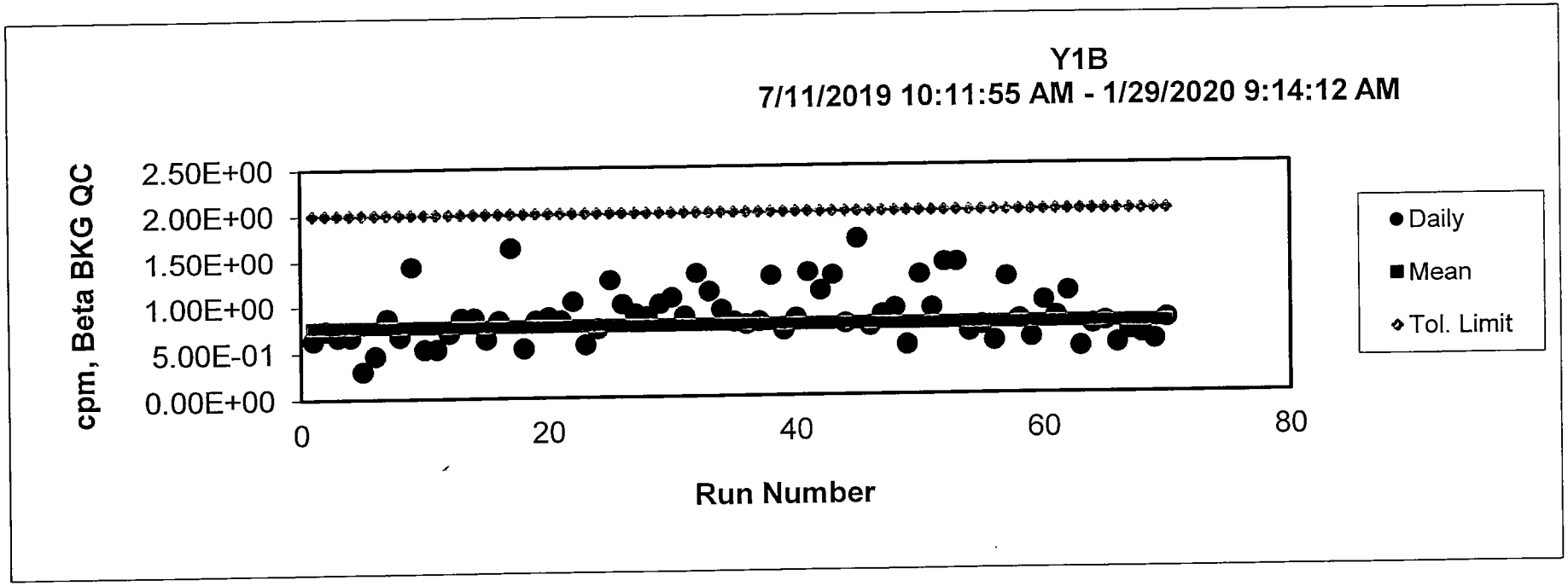

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

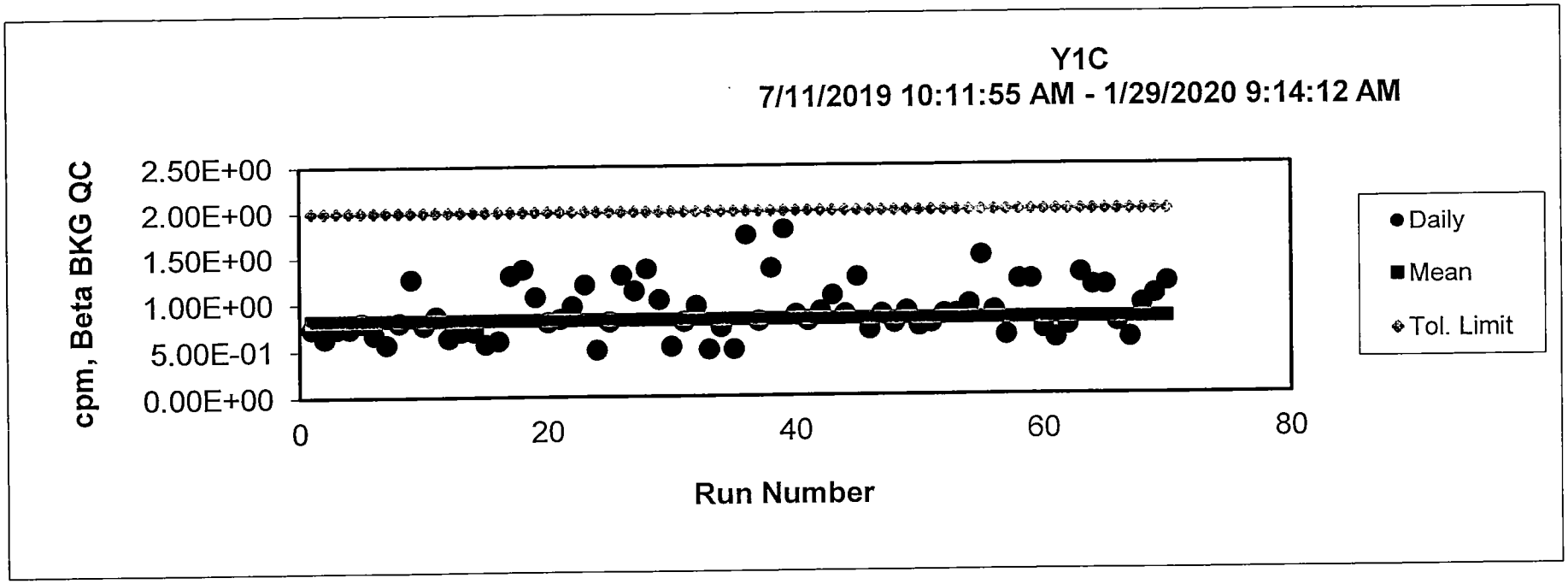

X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

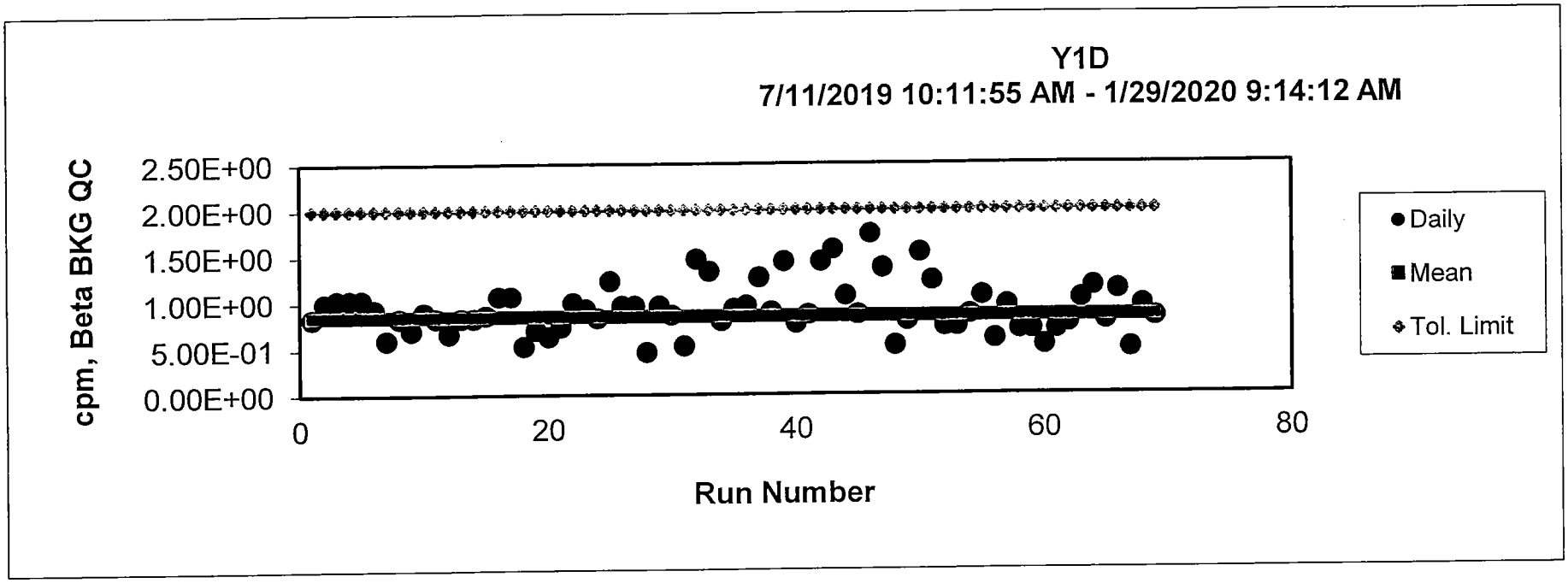

X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

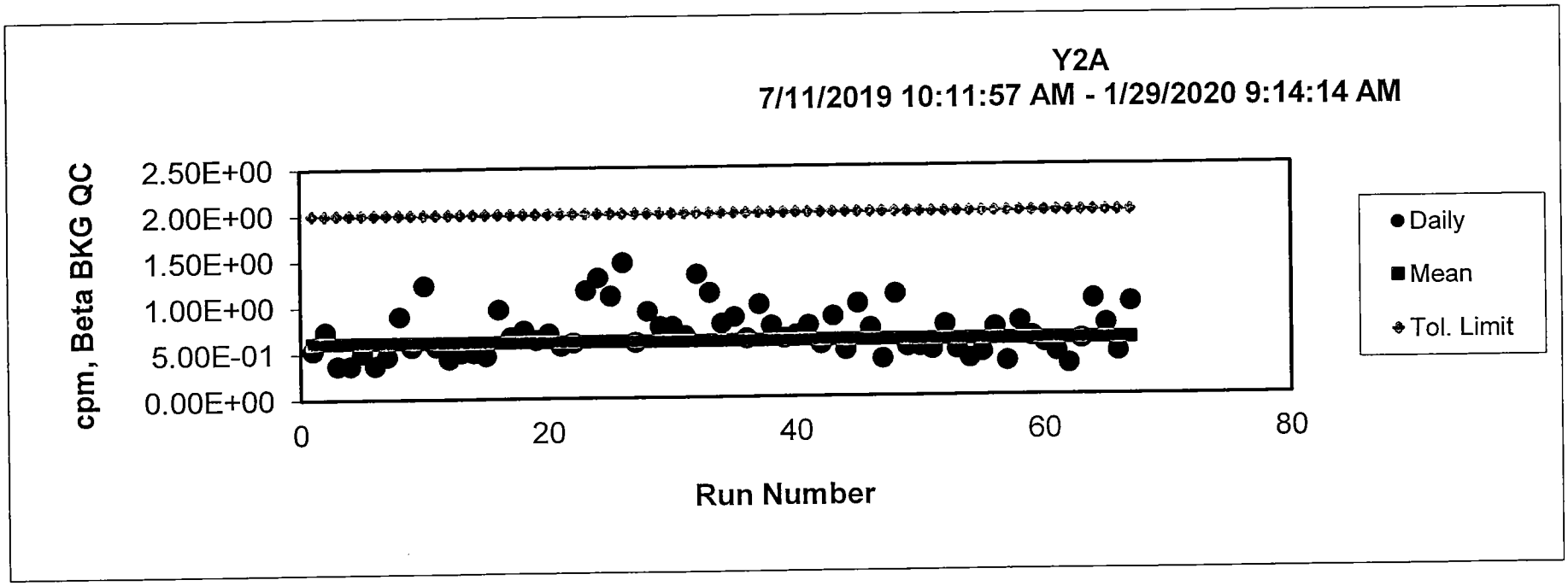

X4D
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

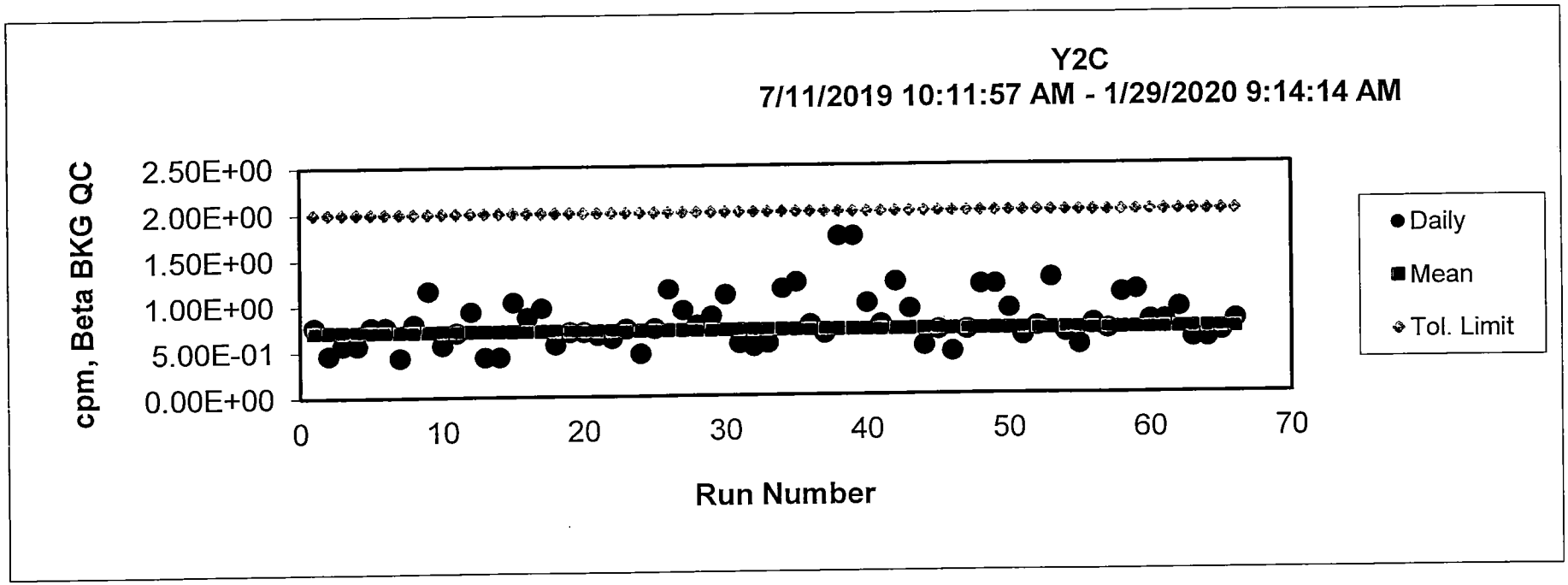

Y1A
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

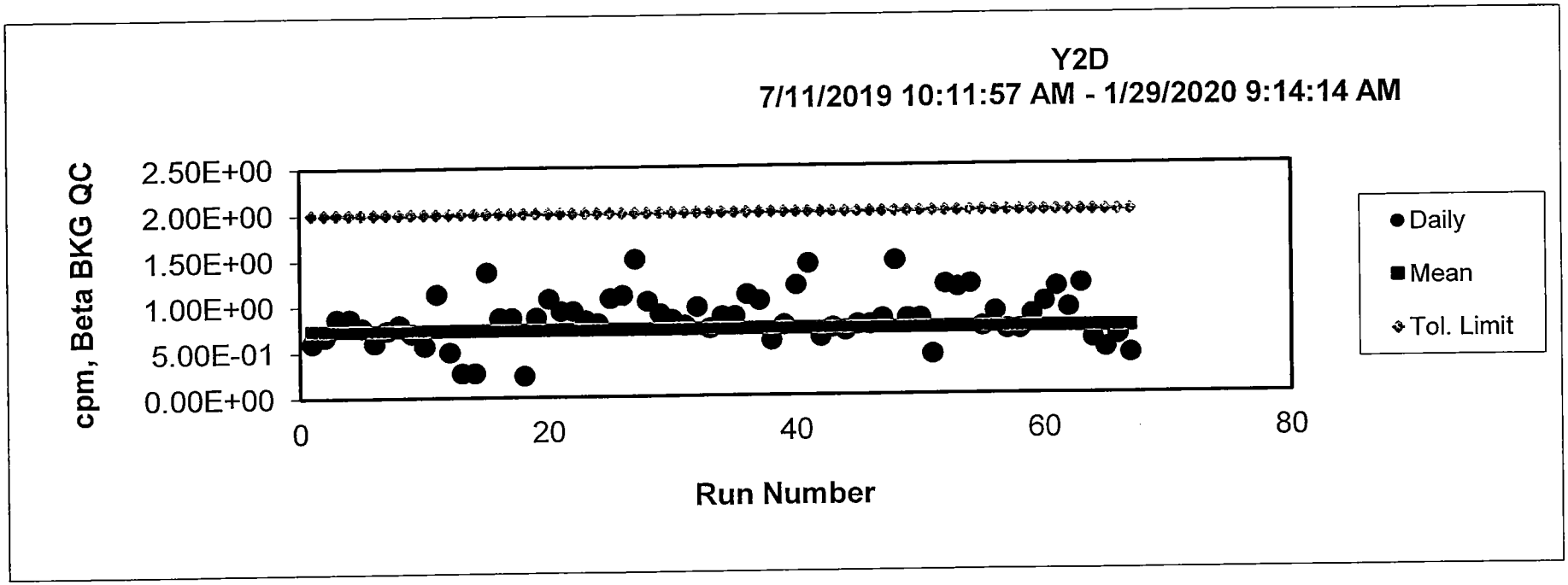

Y1B
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y1C
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y1D
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2A
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y2C
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
10
20
30
40
50
60
70
Run Number
Daily
Mean
Tol. Limit


Y2D
7/11/2019 10:11:57 AM - 1/29/2020 9:14:14 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32861

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	58.29%	518.8
recovery 2	62.51%	556.3
Average	60.40%	
2 sigma	5.96	
RPD for highest and lowest	6.98	
< 30	yes	

Analyst: JM

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:52.41
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.00

LIMS No., Customer Name, Client ID: L85485-6

Sample ID : 13L85485-6BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentfied

Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1325MM091319
BKGFILE : 13BG122719MT
Real Time : 0 01:40:02.74
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.86*	2284	506	1.06	145.65	9.78E+00	3.81E-01	2.6	4.83E+00
2	2	75.02*	4138	386	0.97	149.98	1.06E+01	6.90E-01	1.8	
3	3	84.85*	1843	352	1.10	169.60	1.36E+01	3.07E-01	2.9	3.03E+00
4	3	87.50*	604	305	1.20	174.87	1.43E+01	1.01E-01	7.0	
5	1	569.79	6425	292	1.31	1138.04	6.29E+00	1.07E+00	1.4	1.10E+00
6	1	1063.87	2737	61	1.73	2126.06	3.19E+00	4.56E-01	2.0	1.48E+00
7	1	1461.10*	0	40	2.28	2921.38	2.29E+00	2.85E-05	*****	7.36E-01
8	1	1633.17	272	7	2.05	3266.16	2.08E+00	4.53E-02	6.5	8.55E-01
9	1	1769.83	153	16	2.30	3540.13	1.97E+00	2.55E-02	9.8	1.34E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2737	74.50*	3.188E+00	5.192E+02	5.192E+02	4.03
	1770.24	153	6.87	1.967E+00	5.094E+02	5.094E+02	19.57

Flag: "*" = Keyline

$\frac{518.8\ pCi}{890.5} = 0.5826$

Sample ID : 13L85485-6BI207 Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.192E+02	5.192E+02	0.209E+02	4.03	
			---------	---------			
	Total Activity :		5.192E+02	5.192E+02			
	Grand Total Activity :		5.192E+02	5.192E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85485-6BI207 Acquisition date : 17-JAN-2020 08:49:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.86	2284	506	1.06	145.65	139	19	3.81E-01	5.2	9.78E+00	
2	75.02	4138	386	0.97	149.98	139	19	6.90E-01	3.6	1.06E+01	
3	84.85	1843	352	1.10	169.60	163	28	3.07E-01	5.8	1.36E+01	
3	87.50	604	305	1.20	174.87	163	28	1.01E-01	14.0	1.43E+01	
1	569.79	6425	292	1.31	1138.04	1130	16	1.07E+00	2.8	6.29E+00	
1	1461.10	0	40	2.28	2921.38	2912	16	2.85E-05	****	2.29E+00	
1	1633.17	272	7	2.05	3266.16	3258	14	4.53E-02	12.9	2.08E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.188E+02	5.188E+02	0.205E+02	3.94	
	Total Activity :		5.188E+02	5.188E+02			
Grand Total Activity :			5.188E+02	5.188E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.188E+02	2.046E+01	6.886E+00	0.000E+00	75.337

```
A,13L85485-6BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-6
B,13L85485-6BI207 ,BI207              ,01/15/2020 08:42,1325MM091319
C,BI-207  ,YES,   5.188E+02,   2.046E+01,   6.886E+00,,   75.337
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:47.89
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.63

LIMS No., Customer Name, Client ID: L85485-7

Sample ID : 14L85485-7BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1425MM101619
BKGFILE : 14BG122719MT
Real Time : 0 01:40:03.35
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.67*	3242	567	0.92	142.59	1.27E+01	5.40E-01	2.1	2.26E+00
2	4	74.84*	5777	357	0.91	146.92	1.35E+01	9.63E-01	1.4	
3	5	84.63*	2427	379	1.09	166.51	1.69E+01	4.04E-01	2.4	2.38E+00
4	5	87.21	727	254	0.98	171.67	1.76E+01	1.21E-01	5.2	
5	1	569.55	6686	218	1.29	1136.65	6.14E+00	1.11E+00	1.3	1.83E+00
6	1	1063.55	2748	104	1.61	2125.26	3.00E+00	4.58E-01	2.1	1.24E+00
7	1	1633.09	281	6	1.95	3265.47	1.91E+00	4.68E-02	6.3	1.66E+00
8	1	1770.11	161	8	1.90	3539.85	1.80E+00	2.69E-02	8.8	9.45E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2748	74.50*	2.996E+00	5.547E+02	5.547E+02	4.18
	1770.24	161	6.87	1.799E+00	5.878E+02	5.879E+02	17.63

Flag: "*" = Keyline

$$\frac{556.3\ pCi}{890.5} = 0.6247$$

Summary of Nuclide Activity
Sample ID : 14L85485-7BI207

Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.547E+02	5.547E+02	0.232E+02	4.18	
			---	---			
	Total Activity :		5.547E+02	5.547E+02			
	Grand Total Activity :		5.547E+02	5.547E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : 14L85485-7BI207 Acquisition date : 17-JAN-2020 08:49:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.67	3242	567	0.92	142.59	137	21	5.40E-01	4.2	1.27E+01	
4	74.84	5777	357	0.91	146.92	137	21	9.63E-01	2.9	1.35E+01	
5	84.63	2427	379	1.09	166.51	161	15	4.04E-01	4.9	1.69E+01	
5	87.21	727	254	0.98	171.67	161	15	1.21E-01	10.5	1.76E+01	
1	569.55	6686	218	1.29	1136.65	1130	14	1.11E+00	2.6	6.14E+00	
1	1633.09	281	6	1.95	3265.47	3259	12	4.68E-02	12.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.563E+02	5.563E+02	0.226E+02	4.06	
	Total Activity :		5.563E+02	5.563E+02			
Grand Total Activity :			5.563E+02	5.563E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.563E+02	2.261E+01	7.072E+00	0.000E+00	78.661

```
A,14L85485-7BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-7
B,14L85485-7BI207 ,BI207              ,12/30/2019 12:20,1425MM101619
C,BI-207  ,YES,   5.563E+02,   2.261E+01,   7.072E+00,,   78.661
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/29/20 16:25

Work Order: **L85487** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

kr 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85487-1		PB-210	08-dec-19 12:20	6.0382 g dry		01-16-20 12:15	.0511	76.5	01-17-20 00:04	X4A	953	800 M	769	800 M	.309	.968	KSC
11187072-120819-BN-SJSSA09 (0-2.5 CM) Activity: **9.50E-02** Error: 4.28E-02 MDC: 6.67E-02 pCi/gDry							**L85487-1**		**PB-210**								
L85487-2		PB-210	08-dec-19 12:25	6.0298 g dry		01-16-20 12:15	.0362	54.19	01-17-20 00:04	X4B	916	800 M	802	800 M	.294	.968	KSC
11187072-120819-BN-SJSSA09 (7.5-10 CM) Activity: 6.20E-02 Error: 4.51E-02 MDC: **7.18E-02** pCi/gDry							L85487-2		PB-210								
L85487-3		PB-210	08-dec-19 12:30	6.1019 g dry		01-16-20 12:15	.0546	81.74	01-17-20 00:04	X4C	918	800 M	749	800 M	.276	.968	KSC
11187072-120819-BN-SJSSA09 (15-17.5 CM) Activity: **9.67E-02** Error: 4.67E-02 MDC: 7.30E-02 pCi/gDry							**L85487-3**		**PB-210**								
L85487-4		PB-210	08-dec-19 12:35	6.1182 g dry		01-16-20 12:15	.0545	81.59	01-17-20 00:04	X4D	927	800 M	813	800 M	.286	.968	KSC
11187072-120819-BN-SJSSA09 (22.5-25 CM) Activity: 6.28E-02 Error: 4.59E-02 MDC: **7.32E-02** pCi/gDry							L85487-4		PB-210								
L85487-5		PB-210	08-dec-19 12:40	6.0556 g dry		01-16-20 12:15	.0488	73.05	01-16-20 23:48	Y1A	935	800 M	790	800 M	.305	.969	KSC
11187072-120819-BN-SJSSA09 (30-32.5 CM) Activity: **7.55E-02** Error: 4.32E-02 MDC: 6.82E-02 pCi/gDry							**L85487-5**		**PB-210**								
L85487-6		PB-210	08-dec-19 12:45	6.1243 g dry		01-16-20 12:15	.049	73.35	01-16-20 23:48	Y1B	908	800 M	809	800 M	.292	.969	KSC
11187072-120819-BN-SJSSA09 (37.5-40 CM) Activity: 5.33E-02 Error: 4.46E-02 MDC: **7.14E-02** pCi/gDry							L85487-6		PB-210								
L85487-7		PB-210	08-dec-19 12:50	6.0578 g dry		01-16-20 12:15	.0481	72.01	01-16-20 23:48	Y1C	961	800 M	751	800 M	.278	.969	KSC
11187072-120819-BN-SJSSA09 (45-47.5 CM) Activity: **1.20E-01** Error: 4.73E-02 MDC: 7.30E-02 pCi/gDry							**L85487-7**		**PB-210**								
L85487-8		PB-210	08-dec-19 12:55	6.2478 g dry		01-16-20 12:15	.0514	76.95	01-16-20 23:48	Y1D	980	800 M	1015	800 M	.286	.969	KSC
11187072-120819-BN-SJSSA09 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/29/20 16:25

Work Order: **L85487**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85487-8	PB-210	08-dec-19 12:55	6.2478 g dry		01-16-20 12:15	.0514	76	95	01-16-20 23:48	Y1D	980	800 M	1015	800 M	.286	.969	KSC
11187072-120819-BN-SJSSA09 (52.5-55 CM) Activity: -1.89E-02 Error: 4.81E-02 MDC: **8.00E-02** pCi/gDry						L85487-8			PB-210								
L85487-9	PB-210	08-dec-19 13:00	6.1753 g dry		01-16-20 12:15	.0362	54	19	01-16-20 23:48	Y2A	788	800 M	724	800 M	.263	.969	KSC
11187072-120819-BN-SJSSA09 (60-62.5 CM) Activity: 3.80E-02 Error: 4.61E-02 MDC: **7.44E-02** pCi/gDry						L85487-9			PB-210								
L85487-10	PB-210	08-dec-19 13:05	6.0066 g dry		01-16-20 12:15	.045	67	37	01-16-20 23:48	Y2C	1006	800 M	850	800 M	.306	.969	KSC
11187072-120819-BN-SJSSA09 (70-72.5 CM) Activity: **8.16E-02** Error: 4.51E-02 MDC: 7.11E-02 pCi/gDry						**L85487-10**			**PB-210**								
L85487-11	PB-210	08-dec-19 13:10	6.0438 g dry		01-16-20 12:15	.0542	81	14	01-16-20 23:48	Y2D	842	800 M	647	800 M	.295	.969	KSC
11187072-120819-BN-SJSSA09 (80-82.5 CM) Activity: **1.05E-01** Error: 4.17E-02 MDC: 6.40E-02 pCi/gDry						**L85487-11**			**PB-210**								

Raw Data Sheet (rawdata)

01/29/20 16:26

Work Order: **WG32861** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32861-1		PB-210	16-jan-20 00:00	100 %		01-16-20 12:15	.0552	82.63	01-17-20 00:04	X1A	720	800 M	811	800 M	.311	.971	KSC
Blank Samples																	
Activity: -2.81E-01	Error: 2.42E-01		MDC: **4.10E-01**	pCi/Total		WG32861-1			PB-210								
WG32861-2		PB-210	01-jul-91 12:00	100 %		01-16-20 12:15	.0562	84.13	01-16-20 17:03	X1A	806	15 M	811	800 M	.311	.401	KSC
Laboratory Control Samples																	
Activity: **3.15E+02**	Error: 2.27E+01		MDC: 7.25E+00	pCi/Total		**WG32861-2**			**PB-210**								
WG32861-3		PB-210	09-dec-19 15:20	6.0209 g dry		01-16-20 12:15	.0553	82.78	01-17-20 00:04	X1B	1014	800 M	892	800 M	.296	.968	KSC
11187072-120919-BN-SJSSA07 (52.5-55 CM)																	
Activity: 6.61E-02	Error: 4.73E-02		MDC: **7.54E-02**	pCi/gDry		WG32861-3			PB-210								
WG32861-4		PB-210	09-dec-19 15:25	6.0423 g dry		01-16-20 12:15	.0658	98.5	01-16-20 17:03	X1B	715	15 M	892	800 M	.296	.97	KSC
11187072-120919-BN-SJSSA07 (60-62.5 CM)																	
Activity: **2.00E+01**	Error: 1.54E+00		MDC: 5.47E-01	pCi/gDry		**WG32861-4**			**PB-210**								
WG32861-5		PB-210	09-dec-19 15:25	6.2017 g dry		01-16-20 12:15	.0654	97.9	01-16-20 17:03	X1C	775	15 M	772	800 M	.275	.97	KSC
MS																	
Activity: **2.28E+01**	Error: 1.67E+00		MDC: 5.32E-01	pCi/gDry		**WG32861-5**			**PB-210**								

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-1	720	4.66	800.00	01/17/2020 00:04		1.0000	%	pCi	PB-210	0.311	-2.81E-01	2.42E-01	4.10E-01	Total	0.604	0.9707	811.	800.0	
WG32861-3	1014	4.66	800.00	01/17/2020 00:04		6.0209	g	pCi	PB-210	0.296	6.61E-02	4.73E-02	7.54E-02	g Dry	0.604	0.9676	892.	800.0	
L85485-5	1895	4.66	800.00	01/17/2020 00:04		6.0068	g	pCi	PB-210	0.275	6.55E-01	6.02E-02	7.55E-02	g Dry	0.604	0.9676	772.	800.0	
L85485-6	1283	4.66	800.00	01/17/2020 00:04		6.1186	g	pCi	PB-210	0.283	1.56E-01	5.33E-02	8.23E-02	g Dry	0.604	0.9676	1003.	800.0	
L85485-7	895	4.66	800.00	01/17/2020 00:04		6.0611	g	pCi	PB-210	0.312	3.73E-02	4.23E-02	6.82E-02	g Dry	0.604	0.9676	822.	800.0	
L85485-8	911	4.66	800.00	01/17/2020 00:04		6.0152	g	pCi	PB-210	0.267	4.75E-02	5.02E-02	8.08E-02	g Dry	0.604	0.9676	832.	800.0	
L85485-9	1011	4.66	800.00	01/17/2020 00:04		6.3645	g	pCi	PB-210	0.281	8.15E-02	4.67E-02	7.38E-02	g Dry	0.604	0.9676	860.	800.0	
L85485-10	1173	4.66	800.00	01/17/2020 00:04		6.0648	g	pCi	PB-210	0.263	-3.63E-03	5.87E-02	9.69E-02	g Dry	0.604	0.9676	1179.	800.0	
L85485-11	1149	4.66	800.00	01/17/2020 00:04		6.1694	g	pCi	PB-210	0.293	1.98E-01	4.68E-02	6.93E-02	g Dry	0.604	0.9676	777.	800.0	
L85487-1	953	4.66	800.00	01/17/2020 00:04		6.0382	g	pCi	PB-210	0.309	9.50E-02	4.28E-02	6.67E-02	g Dry	0.604	0.9675	769.	800.0	
L85487-2	916	4.66	800.00	01/17/2020 00:04		6.0298	g	pCi	PB-210	0.294	6.20E-02	4.51E-02	7.18E-02	g Dry	0.604	0.9675	802.	800.0	
L85487-3	918	4.66	800.00	01/17/2020 00:04		6.1019	g	pCi	PB-210	0.276	9.67E-02	4.67E-02	7.30E-02	g Dry	0.604	0.9675	749.	800.0	
L85487-4	927	4.66	800.00	01/17/2020 00:04		6.1182	g	pCi	PB-210	0.286	6.28E-02	4.59E-02	7.32E-02	g Dry	0.604	0.9675	813.	800.0	

1/17/20
Reviewed Date

KOJ 1/17/20

Data Filename: X011620N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-1	30	720	1/17/2020 0:04	800 800MIN	1580
1 b	b wg32861-3	44	1014	1/17/2020 0:04	800 800MIN	1580
1 c	b l85485-5	37	1895	1/17/2020 0:04	800 800MIN	1580
1 d	b l85485-6	38	1283	1/17/2020 0:04	800 800MIN	1580
2 a		15	2126	1/17/2020 0:04	800 800MIN	1580
2 b		27	558	1/17/2020 0:04	800 800MIN	1580
2 c	b l85485-7	18	895	1/17/2020 0:04	800 800MIN	1580
2 d		14	569	1/17/2020 0:04	800 800MIN	1580
3 a	b l85485-8	26	911	1/17/2020 0:04	800 800MIN	1580
3 b	b l85485-9	26	1011	1/17/2020 0:04	800 800MIN	1580
3 c	b l85485-10	27	1173	1/17/2020 0:04	800 800MIN	1580
3 d	b l85485-11	27	1149	1/17/2020 0:04	800 800MIN	1580
4 a	b l85487-1	43	953	1/17/2020 0:04	800 800MIN	1580
4 b	b l85487-2	25	916	1/17/2020 0:04	800 800MIN	1580
4 c	b l85487-3	30	918	1/17/2020 0:04	800 800MIN	1580
4 d	b l85487-4	30	927	1/17/2020 0:04	800 800MIN	1580

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85487-5	935	4.66	800.00	01/16/2020 23:48		6.0556	g	pCi	PB-210	0.305	7.55E-02	4.32E-02	6.82E-02	g Dry	0.604	0.9690	790.	800.0	
L85487-6	908	4.66	800.00	01/16/2020 23:48		6.1243	g	pCi	PB-210	0.292	5.33E-02	4.46E-02	7.14E-02	g Dry	0.604	0.9690	809.	800.0	
L85487-7	961	4.66	800.00	01/16/2020 23:48		6.0578	g	pCi	PB-210	0.278	1.20E-01	4.73E-02	7.30E-02	g Dry	0.604	0.9690	751.	800.0	
L85487-8	980	4.66	800.00	01/16/2020 23:48		6.2478	g	pCi	PB-210	0.286	-1.89E-02	4.81E-02	8.00E-02	g Dry	0.604	0.9690	1015.	800.0	
L85487-9	788	4.66	800.00	01/16/2020 23:48		6.1753	g	pCi	PB-210	0.263	3.80E-02	4.61E-02	7.44E-02	g Dry	0.604	0.9690	724.	800.0	
L85487-10	1006	4.66	800.00	01/16/2020 23:48		6.0066	g	pCi	PB-210	0.306	8.16E-02	4.51E-02	7.11E-02	g Dry	0.604	0.9690	850.	800.0	
L85487-11	842	4.66	800.00	01/16/2020 23:48		6.0438	g	pCi	PB-210	0.295	1.05E-01	4.17E-02	6.40E-02	g Dry	0.604	0.9690	647.	800.0	
L85486-1	877	4.66	800.00	01/16/2020 23:48		6.0856	g	pCi	PB-210	0.271	5.66E-02	4.75E-02	7.60E-02	g Dry	0.604	0.9687	780.	800.0	
L85486-2	807	4.66	800.00	01/16/2020 23:48		6.1250	g	pCi	PB-210	0.287	-4.11E-02	4.50E-02	7.58E-02	g Dry	0.604	0.9687	882.	800.0	

11/17/20
Reviewed Date

KOJ 11/17/20

Data Filename: Y011620N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85487-5	27	935	1/16/2020 23:48	800 800MIN	1650
1 b	b l85487-6	19	908	1/16/2020 23:48	800 800MIN	1650
1 c	b l85487-7	40	961	1/16/2020 23:48	800 800MIN	1650
1 d	b l85487-8	39	980	1/16/2020 23:48	800 800MIN	1650
2 a	b l85487-9	29	788	1/16/2020 23:48	800 800MIN	1650
2 b		11	912	1/16/2020 23:48	800 800MIN	1650
2 c	b l85487-10	27	1006	1/16/2020 23:48	800 800MIN	1650
2 d	b l85487-11	21	842	1/16/2020 23:48	800 800MIN	1650
3 a	b l85486-1	22	877	1/16/2020 23:48	800 800MIN	1650
3 b	b l85486-2	25	807	1/16/2020 23:48	800 800MIN	1650
3 c		16	584	1/16/2020 23:48	800 800MIN	1650
3 d		7	1065	1/16/2020 23:48	800 800MIN	1650
4 a		0	0	1/16/2020 23:48	800 800MIN	1650
4 b		0	0	1/16/2020 23:48	800 800MIN	1650
4 c		0	0	1/16/2020 23:48	800 800MIN	1650
4 d		0	0	1/16/2020 23:48	800 800MIN	1650

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-2	806	4.66	15.00	01/16/2020 17:03		1.0000	%	pCi	PB-210	0.311	3.15E+02	2.27E+01	7.25E+00	Total	0.604	0.4008	811.	800.0	
WG32861-4	715	4.66	15.00	01/16/2020 17:03		6.0423	g	pCi	PB-210	0.296	2.00E+01	1.54E+00	5.47E-01	g Dry	0.604	0.9703	892.	800.0	
WG32861-5	775	4.66	15.00	01/16/2020 17:03		6.2017	g	pCi	PB-210	0.275	2.28E+01	1.67E+00	5.32E-01	g Dry	0.604	0.9703	772.	800.0	

1/17/20
Reviewed Date

Data Filename: X011620F.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/17/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-2	7	806	1/16/2020 17:03	15 15MIN	1580
1 b	b wg32861-4	3	715	1/17/2020 17:03	15 15MIN	1580
1 c	b wg32861-5	2	775	1/18/2020 17:03	15 15MIN	1580
1 d		1	20	1/19/2020 17:03	15 15MIN	1580
2 a		0	52	1/20/2020 17:03	15 15MIN	1580
2 b		1	10	1/21/2020 17:03	15 15MIN	1580
2 c		0	11	1/22/2020 17:03	15 15MIN	1580
2 d		0	9	1/23/2020 17:03	15 15MIN	1580
3 a		0	10	1/24/2020 17:03	15 15MIN	1580
3 b		0	912	1/25/2020 17:03	15 15MIN	1580
3 c		0	15	1/26/2020 17:03	15 15MIN	1580
3 d		0	16	1/27/2020 17:03	15 15MIN	1580
4 a		1	10	1/28/2020 17:03	15 15MIN	1580
4 b		0	16	1/29/2020 17:03	15 15MIN	1580
4 c		0	15	1/30/2020 17:03	15 15MIN	1580
4 d		0	17	1/31/2020 17:03	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85487

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32861-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32861-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32861-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32861-1	WO	BLK	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0353	BALANCE 7	.0905	BALANCE 7	.0552	01/16/20	WG32861
WG32861-2	WO	LCS	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0356	BALANCE 7	.0918	BALANCE 7	.0562	01/16/20	WG32861
WG32861-3	S	DUP	PB-210	6.0209 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0348	BALANCE 7	.0901	BALANCE 7	.0553	01/16/20	WG32861
WG32861-4	S	MS	PB-210	6.0423 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0350	BALANCE 7	.1008	BALANCE 7	.0658	01/16/20	WG32861
WG32861-5	S	MSD	PB-210	6.2017 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0341	BALANCE 7	.0995	BALANCE 7	.0654	01/16/20	WG32861
L85487-1	S		PB-210	6.0382 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0340	BALANCE 7	.0851	BALANCE 7	.0511	01/16/20	WG32861
L85487-2	S		PB-210	6.0298 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0338	BALANCE 7	.0700	BALANCE 7	.0362	01/16/20	WG32861
L85487-3	S		PB-210	6.1019 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0332	BALANCE 7	.0878	BALANCE 7	.0546	01/16/20	WG32861
L85487-4	S		PB-210	6.1182 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0342	BALANCE 7	.0887	BALANCE 7	.0545	01/16/20	WG32861
L85487-5	S		PB-210	6.0556 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0335	BALANCE 7	.0823	BALANCE 7	.0488	01/16/20	WG32861
L85487-6	S		PB-210	6.1243 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0340	BALANCE 7	.0830	BALANCE 7	.0490	01/16/20	WG32861
L85487-7	S		PB-210	6.0578 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0331	BALANCE 7	.0812	BALANCE 7	.0481	01/16/20	WG32861
L85487-8	S		PB-210	6.2478 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0334	BALANCE 7	.0848	BALANCE 7	.0514	01/16/20	WG32861
L85487-9	S		PB-210	6.1753 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0338	BALANCE 7	.0700	BALANCE 7	.0362	01/16/20	WG32861
L85487-10	S		PB-210	6.0066 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0338	BALANCE 7	.0788	BALANCE 7	.0450	01/16/20	WG32861
L85487-11	S		PB-210	6.0438 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0332	BALANCE 7	.0874	BALANCE 7	.0542	01/16/20	WG32861

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85487

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 16-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 16-JAN-20

Daily Pipette Tolerance Check
for: L85487

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5043
1	1.0031

Check Date: 16-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	16-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ Date: 01/25/05

Amersham International plc
Amersham Laboratories

NAMAS
CALIBRATION
No. 0146

Certificate of calibration of absolutely standardized radioactive solution

P 30621

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210
Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID:	BI19-1 SD ~~BI18-1~~ SD
Reagent Lot # :	~~006116~~ 07410
Reagent Manufacturer:	Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]

Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter

Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85487

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85487-1	11187072-120819-BN-SJSSA09 (0-2.5	258.6	446.3	413.56	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	17.44
	CM)									
L85487-2	11187072-120819-BN-SJSSA09 (7.5-10	259.4	500.5	456.52	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	18.24
	CM)									
L85487-3	11187072-120819-BN-SJSSA09 (15-17.5	259	523.8	477.53	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	17.47
	CM)									
L85487-4	11187072-120819-BN-SJSSA09 (22.5-25	257.3	546.5	495.78	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	17.54
	CM)									
L85487-5	11187072-120819-BN-SJSSA09 (30-32.5	258.1	589.9	523.58	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	19.99
	CM)									
L85487-6	11187072-120819-BN-SJSSA09 (37.5-40	257.1	464.1	428.46	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	17.22
	CM)									
L85487-7	11187072-120819-BN-SJSSA09 (45-47.5	258.4	606	530.29	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	21.78
	CM)									
L85487-8	11187072-120819-BN-SJSSA09 (52.5-55	259.9	592.5	537.54	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	16.52
	CM)									
L85487-9	11187072-120819-BN-SJSSA09 (60-62.5	258.4	588.1	411.95	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	53.43
	CM)									
L85487-10	11187072-120819-BN-SJSSA09 (70-72.5	260.2	489.5	450.84	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	16.86
	CM)									
L85487-11	11187072-120819-BN-SJSSA09 (80-82.5	259.3	532.4	487.47	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KBA	16.45
	CM)									

Daily Balance Tolerance Check Reports

for : L85487

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	23-DEC-19

Daily Balance Tolerance Check Reports

for : L85487

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	27-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85482

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85482
GH001-3EJACINTO-19

01/31/2020 11:29

Sample Receipt

The following sample(s) were received on December 17, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120919-BN-SJSSA04 (0-2.5 CM)	L85482-1	
11187072-120919-BN-SJSSA04 (7.5-10 CM)	L85482-2	
11187072-120919-BN-SJSSA04 (15-17.5 CM)	L85482-3	
11187072-120919-BN-SJSSA04 (22.5-25 CM)	L85482-4	
11187072-120919-BN-SJSSA04 (30-32.5 CM)	L85482-5	
11187072-120919-BN-SJSSA04 (37.5-40 CM)	L85482-6	
11187072-120919-BN-SJSSA04 (45-47.5 CM)	L85482-7	
11187072-120919-BN-SJSSA04 (52.5-55 CM)	L85482-8	
11187072-120919-BN-SJSSA04 (60-62.5 CM)	L85482-9	
11187072-120919-BN-SJSSA04 (70-72.5 CM)	L85482-10	
11187072-120919-BN-SJSSA04 (80-82.5 CM)	L85482-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
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Case Narrative - L85482
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01/31/2020 11:29

Special Considerations

The following samples arrived at the laboratory with the container lids that were broken which resulted in the liquid portion of the samples leaking into the shipment container.

L85482-7 11187072-120919-BN-SJSSA04 (45-47.5 CM)
L85482-10 11187072-120919-BN-SJSSA04 (70-72.5 CM)
L85482-11 11187072-120919-BN-SJSSA04 (80-82.5 CM)

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32733.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120619-SS-SJSSA03 (80-82.5 CM)	L85481-11	WG32733-1

TELEDYNE
BROWN ENGINEERING, INC.
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Knoxville, TN 37931-3133

Case Narrative - L85482
GH001-3EJACINTO-19

01/31/2020 11:29

PB-210

Quality Control

Quality control sample(s) analyzed as WG32932. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120819-BN-SJSSA05 (30-32.5 CM)	L85483-5	WG32932-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 13:07

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85482

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA04 (0-2.5 CM)** Collect Start: 12/09/2019 15:45 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 54.68
LIMS Number: L85482-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.11E+00**	6.13E-02	6.54E-02	pCi/gDry		6.0193	g dry	12/09/19 15:45	01/24/20	800	M	+			
CS-137	2007	5.84E-02	8.16E-02	**1.42E-01**	pCi/g Dry		121.41	g dry	12/09/19 15:45	01/02/20	4574	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (7.5-10 CM)** Collect Start: 12/09/2019 15:45 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 56
LIMS Number: L85482-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.00E+00**	6.39E-02	7.23E-02	pCi/gDry		6.4011	g dry	12/09/19 15:45	01/24/20	800	M	+			
CS-137	2007	4.02E-02	3.80E-02	**6.65E-02**	pCi/g Dry		70.37	g dry	12/09/19 15:45	01/02/20	21600	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (15-17.5 CM)** Collect Start: 12/09/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 54.51
LIMS Number: L85482-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.30E-01**	5.92E-02	6.73E-02	pCi/gDry		6.6447	g dry	12/09/19 15:50	01/24/20	800	M	+			
CS-137	2007	9.44E-03	2.80E-02	**4.76E-02**	pCi/g Dry		77.05	g dry	12/09/19 15:50	01/02/20	21600	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 13:07

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85482

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA04 (22.5-25 CM)** Collect Start: 12/09/2019 15:50 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 50.48
LIMS Number: L85482-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.89E-01**	6.81E-02	8.60E-02	pCi/gDry		6.5085	g dry	12/09/19 15:50	01/24/20	800	M	+			
CS-137	2007	2.92E-02	7.06E-02	**1.22E-01**	pCi/g Dry		144.89	g dry	12/09/19 15:50	01/02/20	4698	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (30-32.5 CM)** Collect Start: 12/09/2019 15:55 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 52.25
LIMS Number: L85482-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.05E+00**	5.86E-02	6.22E-02	pCi/gDry		6.5447	g dry	12/09/19 15:55	01/24/20	800	M	+			
CS-137	2007	3.76E-02	6.58E-02	**1.14E-01**	pCi/g Dry		133.65	g dry	12/09/19 15:55	01/02/20	4176	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (37.5-40 CM)** Collect Start: 12/09/2019 15:55 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 65.24
LIMS Number: L85482-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.38E-01**	5.05E-02	6.06E-02	pCi/gDry		6.3253	g dry	12/09/19 15:55	01/24/20	800	M	+			
CS-137	2007	-4.41E-02	6.26E-02	**9.03E-02**	pCi/g Dry		147.37	g dry	12/09/19 15:55	01/02/20	4705	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 13:07

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85482

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA04 (45-47.5 CM)** Collect Start: 12/09/2019 16:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 55.94
LIMS Number: L85482-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.07E-01**	5.31E-02	6.61E-02	pCi/gDry		6.2422	g dry	12/09/19 16:00	01/24/20	800	M	+			
CS-137	2007	1.53E-02	7.70E-02	**1.28E-01**	pCi/g Dry		126.39	g dry	12/09/19 16:00	01/02/20	4203	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (52.5-55 CM)** Collect Start: 12/09/2019 16:00 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 57.3
LIMS Number: L85482-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.32E-01**	5.95E-02	6.89E-02	pCi/gDry		6.1568	g dry	12/09/19 16:00	01/24/20	800	M	+			
CS-137	2007	-2.22E-02	7.85E-02	**1.27E-01**	pCi/g Dry		101.64	g dry	12/09/19 16:00	01/02/20	4267	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (60-62.5 CM)** Collect Start: 12/09/2019 16:05 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 55.67
LIMS Number: L85482-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.81E-01**	5.91E-02	6.78E-02	pCi/gDry		6.2843	g dry	12/09/19 16:05	01/24/20	800	M	+			
CS-137	2007	3.07E-02	7.50E-02	**1.29E-01**	pCi/g Dry		126.38	g dry	12/09/19 16:05	01/02/20	4609	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 13:07

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85482

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA04 (70-72.5 CM)** Collect Start: 12/09/2019 16:05 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 56.81
LIMS Number: L85482-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.40E-01**	5.20E-02	5.77E-02	pCi/gDry		6.7906	g dry	12/09/19 16:05	01/24/20	800	M	+			
CS-137	2007	-6.36E-02	8.87E-02	**1.50E-01**	pCi/g Dry		106.43	g dry	12/09/19 16:05	01/02/20	4666	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA04 (80-82.5 CM)** Collect Start: 12/09/2019 16:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/17/2019 % Moisture: 52.47
LIMS Number: L85482-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**7.49E-01**	5.50E-02	6.50E-02	pCi/gDry		6.385	g dry	12/09/19 16:10	01/24/20	800	M	+			
CS-137	2007	3.25E-02	8.94E-02	**1.54E-01**	pCi/g Dry		99.96	g dry	12/09/19 16:10	01/02/20	5558	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

QC RESULTS

QC Summary Report for L85482

GH001-3EJACINTO-19

01/31/2020 09:01

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32733-1	All non-detects.	S						<50	U	NE
L85481-11										

GAMMA

Associated Samples for WG32733

Sample #	Client ID
L85482-1	11187072-120919-BN-SJSSA04 (0-2.5 CM)
L85482-2	11187072-120919-BN-SJSSA04 (7.5-10 CM)
L85482-3	11187072-120919-BN-SJSSA04 (15-17.5 CM)
L85482-4	11187072-120919-BN-SJSSA04 (22.5-25 CM)
L85482-5	11187072-120919-BN-SJSSA04 (30-32.5 CM)
L85482-6	11187072-120919-BN-SJSSA04 (37.5-40 CM)
L85482-7	11187072-120919-BN-SJSSA04 (45-47.5 CM)
L85482-8	11187072-120919-BN-SJSSA04 (52.5-55 CM)
L85482-9	11187072-120919-BN-SJSSA04 (60-62.5 CM)
L85482-10	11187072-120919-BN-SJSSA04 (70-72.5 CM)
L85482-11	11187072-120919-BN-SJSSA04 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85482

GH001-3EJACINTO-19

01/31/2020 09:01

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32932-1	PB-210	WO	01/24/2020 22:42	< 3.900E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32932-2	PB-210	WO	01/24/2020 15:45	3.18E+02	2.580E+02	pCi/Total	81.3	75-125	+	P

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32932-3	PB-210	S	01/28/2020 22:45	1.810E-01	5.970E-01	pCi/gDry		<50	*	NE
L85483-5										

Matrix Spike Summary

				Decay Corrected							
TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32932-4	PB-210	S	01/24/2020 15:45	2.11E+01	2.590E-01	2.110E+01	pCi/gDry	98.7	60-140	+	P
L85483-2											

Spike ID: **210PB-012505**
Spike Conc: **6.35E+02 pCi/ml**
Spike Vol: **5.00E-01 ml**

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85482

GH001-3EJACINTO-19

01/31/2020 09:01

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32932-5	PB-210	S	01/24/2020 15:45	2.14E+01	1.800E+01	82.9	pCi/gDry	17.4	<30	+	P
WG32932-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02**	**pCi/ml**									
Spike Vol:	**5.00E-01**	**ml**									

PB-210

Associated Samples for WG32932

Sample #	Client ID
L85482-1	11187072-120919-BN-SJSSA04 (0-2.5 CM)
L85482-2	11187072-120919-BN-SJSSA04 (7.5-10 CM)
L85482-3	11187072-120919-BN-SJSSA04 (15-17.5 CM)
L85482-4	11187072-120919-BN-SJSSA04 (22.5-25 CM)
L85482-5	11187072-120919-BN-SJSSA04 (30-32.5 CM)
L85482-6	11187072-120919-BN-SJSSA04 (37.5-40 CM)
L85482-7	11187072-120919-BN-SJSSA04 (45-47.5 CM)
L85482-8	11187072-120919-BN-SJSSA04 (52.5-55 CM)
L85482-9	11187072-120919-BN-SJSSA04 (60-62.5 CM)
L85482-10	11187072-120919-BN-SJSSA04 (70-72.5 CM)
L85482-11	11187072-120919-BN-SJSSA04 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

TELEDYNE BROWN ENGINEERING
A Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:

P - 10CFR61, 10CFR50, Other high level: _____

Turn-around-time 10 days

Hazardous Material in Shipment Yes_____* No_____

Lims# L85482

(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start		Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120919-BN-SJSSA04 (0-2.5 cm)	Soil		12/9/2019	1545		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (7.5-10 cm)	Soil		12/9/2019	1545		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (15-17.5 cm)	Soil		12/9/2019	1550		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (22.5-25 cm)	Soil		12/9/2019	1550		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (30-32.5 cm)	Soil		12/9/2019	1555		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (37.5-40 cm)	Soil		12/9/2019	1555		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (45-47.5 cm)	Soil		12/9/2019	1600		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (52.5-55 cm)	Soil		12/9/2019	1600		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (60-62.5 cm)	Soil		12/9/2019	1605		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (70-72.5 cm)	Soil		12/9/2019	1605		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA04 (80-82.5 cm)	Soil		12/9/2019	1610		16 oz	1	S	Isotopes
										** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: J. Graves	Date: 12-11-19 1000	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Kay Lee	Date: 12-17-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 13:10

SR #: SR64446

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 **LIMS #L85482**

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/17/19

Notification of Variance

Person Notified: Stefanie Castracane Contacted By: K. Thurman
Notify Date: 12/18/19
Notify Method: Email
Notify Comment: See note 3.

Client Response

Person Responding: Stefanie Castracane
Response Date: 12/18/19
Response Method: Email
Response Comment Proceed with analysis.

	Criteria	Yes No NA	Comment
1	Shipping container custody seals present and intact.	NA	
2	Sample container custody seals present and intact.	NA	
3	Sample containers received in good condition. 11187072-120919-BN-SJSSA04 (45-47.5 cm) 11187072-120919-BN-SJSSA04 (70-72.5 cm) 11187072-120919-BN-SJSSA04 (80-82.5 cm)	N	Lids were cracked, liquid inside containers leaked.
4	Chain of custody received with samples.	Y	
5	All samples listed on chain of custody received.	Y	
6	Sample container labels present and legible.	Y	
7	Information on container labels correspond with chain of custody.	Y	
8	Sample(s) properly preserved.	Y	
9	Sample(s) appropriate container(s).	Y	
For Hazardous Materials Only:			
10	Other. (Describe)	NA	
11	Paperwork shows TBE and shippers name, address and phone number.	NA	
12	Paperwork shows sample quantity information.	NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85482

****

L85482-1 S 11187072-120919-BN-SJSSA04 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-2 S 11187072-120919-BN-SJSSA04 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-3 S 11187072-120919-BN-SJSSA04 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-4 S 11187072-120919-BN-SJSSA04 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-5 S 11187072-120919-BN-SJSSA04 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		

L85482-5 S 11187072-120919-BN-SJSSA04 (30-32.5 CM)

Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-6 S 11187072-120919-BN-SJSSA04 (37.5-40 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-7 S 11187072-120919-BN-SJSSA04 (45-47.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-8 S 11187072-120919-BN-SJSSA04 (52.5-55 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-9 S 11187072-120919-BN-SJSSA04 (60-62.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/24/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	MSA	01/24/20

****

L85482-10 S 11187072-120919-BN-SJSSA04 (70-72.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/17/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85482

L85482-10	**S**	**11187072-120919-BN-SJSSA04 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		MSA	01/24/20

****

L85482-11	**S**	**11187072-120919-BN-SJSSA04 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/17/19
%Moisture			KT	12/23/19
Aliquot	GELI		WBG	12/30/19
Aliquot	PB-210		KSC	01/24/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/02/20
Count Room	PB-210		MSA	01/24/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.0	0.11%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	0.09%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	147.8	-5.28%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.3	-1.22%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	246.7	0.28%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	393.4	-3.16%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.6	0.09%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.9	-0.44%

Eff. Name: **01S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:07:13.99
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

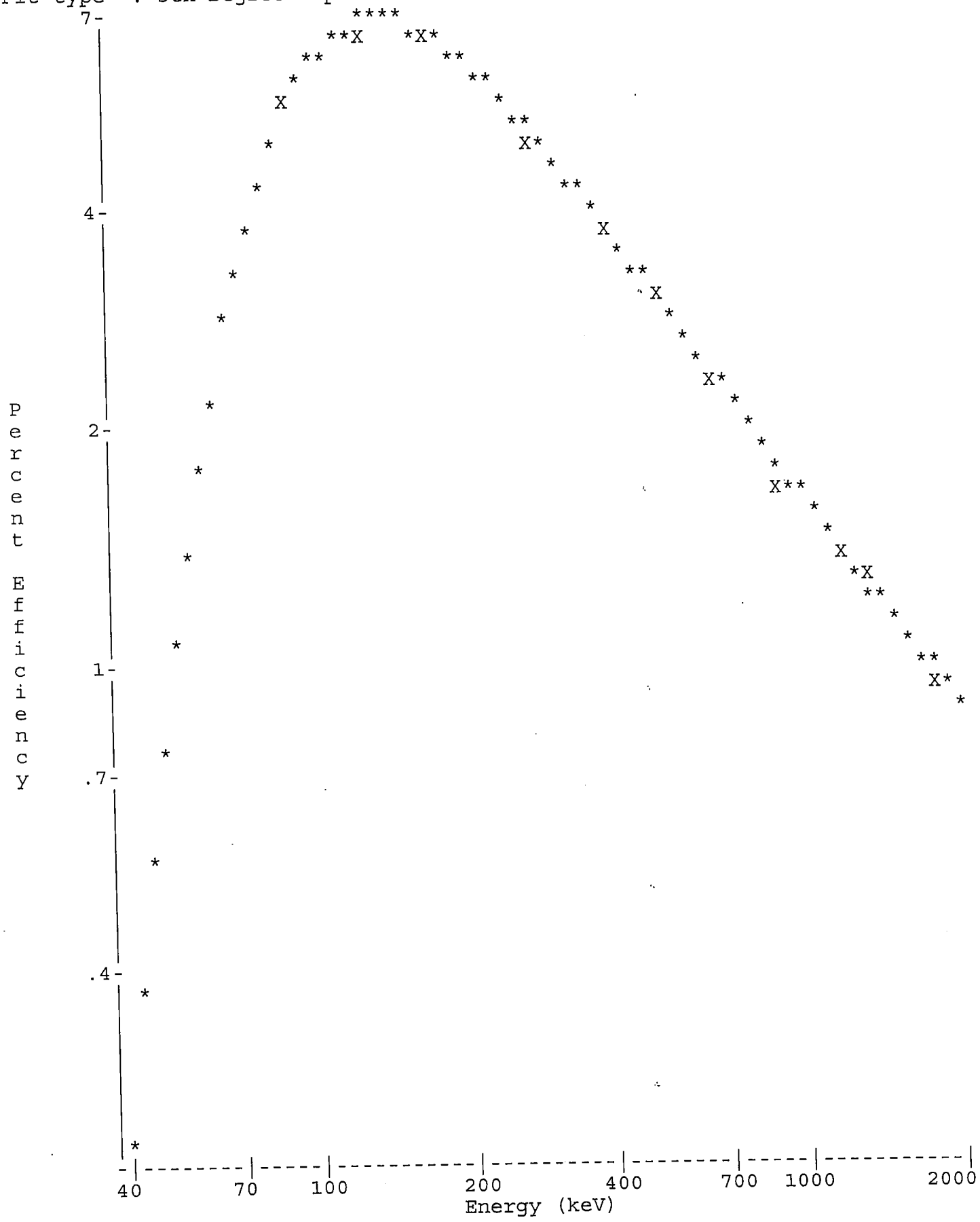
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:07
Detector :
Geometry : 01S50121819
Fit type : 5th Degree Empirical



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:08:12.65
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:10.18

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S50121819
BKGFILE : 01BG112719MT
Real Time : 0 03:11:49.84
Live time : 0 03:11:22.89

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	920	5096	0.99	93.48	6.67E-01	8.01E-02	13.9	1.15E+00
2	1	88.03	17271	7828	0.91	176.46	5.42E+00	1.50E+00	1.3	9.85E-01
3	1	122.05	16346	6804	0.94	244.41	6.95E+00	1.42E+00	1.3	2.40E+00
4	1	136.44	2036	4705	0.94	273.16	7.04E+00	1.77E-01	6.5	5.89E-01
5	1	165.86	11692	5071	1.00	331.92	6.80E+00	1.02E+00	1.5	1.53E+00
6	1	255.14	930	3804	1.39	510.25	5.33E+00	8.10E-02	12.4	1.26E+00
7	1	279.22	3520	3590	1.12	558.35	4.98E+00	3.07E-01	3.5	8.30E-01
8	1	391.73	15884	4000	1.19	783.10	3.77E+00	1.38E+00	1.1	7.83E-01
9	1	513.97	9867	3626	1.29	1027.26	2.98E+00	8.59E-01	1.6	1.99E+00
10	1	661.59	40004	3626	1.43	1322.18	2.37E+00	3.48E+00	0.6	2.23E+00
11	1	813.78	308	1377	1.86	1626.23	1.96E+00	2.68E-02	22.3	1.52E+00
12	1	898.01	20588	2729	1.63	1794.52	1.79E+00	1.79E+00	0.9	1.50E+00
13	1	1173.25	30476	1552	1.85	2344.47	1.40E+00	2.65E+00	0.6	4.32E+00
14	6	1325.32	486	646	3.46	2648.36	1.26E+00	4.24E-02	13.6	5.31E+00
15	6	1332.52	27605	402	1.98	2662.76	1.25E+00	2.40E+00	0.6	
16	1	1835.98	12120	313	2.34	3668.96	9.69E-01	1.06E+00	1.0	5.25E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	17271	3.72*	5.417E+00	7.463E+02	1.007E+03	2.51
03-CO57	122.06	16346	85.51*	6.949E+00	2.396E+01	3.996E+01	2.56
04-CE139	165.85	11692	80.35*	6.800E+00	1.864E+01	5.101E+01	2.93
05-HG203	279.20	3520	81.46*	4.980E+00	7.558E+00	1.478E+02	7.01
06-SN113	391.69	15884	64.90*	3.773E+00	5.649E+01	1.883E+02	2.25
07-SR85	513.99	9867	99.27*	2.975E+00	2.909E+01	2.467E+02	3.24
08-CS137	661.65	40004	85.12*	2.370E+00	1.727E+02	1.749E+02	1.21
09-Y88	898.02	20588	93.40*	1.790E+00	1.073E+02	3.934E+02	1.78
10-CO60	1173.22	30476	100.00	1.401E+00	1.895E+02	2.036E+02	1.30
	1332.49	27605	100.00*	1.251E+00	1.922E+02	2.066E+02	1.24
12-Y88	1836.01	12120	99.38*	9.693E-01	1.096E+02	4.019E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S50121819

Acquisition date : 18-DEC-2019 09:33:10

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.922E+02	2.066E+02	0.026E+02	1.24	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
	Total Activity :		1.464E+03	2.857E+03			

Grand Total Activity : 1.464E+03 2.857E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S50121819
Acquisition date : 18-DEC-2019 09:33:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	920	5096	0.99	93.48	90	8	8.01E-02	27.7	6.67E-01	
1	136.44	2036	4705	0.94	273.16	269	9	1.77E-01	12.9	7.04E+00	
1	255.14	930	3804	1.39	510.25	506	9	8.10E-02	24.8	5.33E+00	
1	813.78	308	1377	1.86	1626.23	1622	9	2.68E-02	44.7	1.96E+00	
6	1325.32	486	646	3.46	2648.36	2639	32	4.24E-02	27.2	1.26E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.025E+03	2.51	
03-CO57	270.90D	1.67	2.396E+01	3.996E+01	0.102E+01	2.56	
04-CE139	137.66D	2.74	1.864E+01	5.101E+01	0.150E+01	2.93	
05-HG203	46.61D	19.6	7.558E+00	1.478E+02	0.104E+02	7.01	
06-SN113	115.10D	3.33	5.649E+01	1.883E+02	0.042E+02	2.25	
07-SR85	64.84D	8.48	2.909E+01	2.467E+02	0.080E+02	3.24	
08-CS137	30.17Y	1.01	1.727E+02	1.749E+02	0.021E+02	1.21	
09-Y88	106.65D	3.67	1.073E+02	3.934E+02	0.070E+02	1.78	
10-CO60	5.27Y	1.07	1.909E+02	2.051E+02	0.018E+02	0.90	
12-Y88	106.65D	3.67	1.096E+02	4.019E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.462E+03	2.856E+03			

Grand Total Activity : 1.462E+03 2.856E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.526E+01	1.648E+01	0.000E+00	61.105
03-CO57	3.996E+01	1.023E+00	6.263E-01	0.000E+00	63.800
04-CE139	5.101E+01	1.497E+00	1.120E+00	0.000E+00	45.534
05-HG203	1.478E+02	1.036E+01	1.028E+01	0.000E+00	14.375
06-SN113	1.883E+02	4.237E+00	2.782E+00	0.000E+00	67.691

07-SR85	2.467E+02	7.990E+00	5.565E+00	0.000E+00	44.324
08-CS137	1.749E+02	2.112E+00	9.060E-01	0.000E+00	193.016
09-Y88	3.934E+02	7.009E+00	3.818E+00	0.000E+00	103.035
10-CO60	2.051E+02	1.841E+00	7.669E-01	0.000E+00	267.488
12-Y88	4.019E+02	7.900E+00	1.919E+00	0.000E+00	209.476

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	1.656E+00		1.724E+00	2.796E+00	0.000E+00	0.592

```
A,01S50121819     ,12/26/2019 12:08,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,01S50121819     ,CALIBRATION          ,12/26/2019 12:07,01S50121819
C,02-CD109,YES,   1.007E+03,   2.526E+01,   1.648E+01,,   61.105
C,03-CO57 ,YES,   3.996E+01,   1.023E+00,   6.263E-01,,   63.800
C,04-CE139,YES,   5.101E+01,   1.497E+00,   1.120E+00,,   45.534
C,05-HG203,YES,   1.478E+02,   1.036E+01,   1.028E+01,,   14.375
C,06-SN113,YES,   1.883E+02,   4.237E+00,   2.782E+00,,   67.691
C,07-SR85 ,YES,   2.467E+02,   7.990E+00,   5.565E+00,,   44.324
C,08-CS137,YES,   1.749E+02,   2.112E+00,   9.060E-01,,  193.016
C,09-Y88  ,YES,   3.934E+02,   7.009E+00,   3.818E+00,,  103.035
C,10-CO60 ,YES,   2.051E+02,   1.841E+00,   7.669E-01,,  267.488
C,12-Y88  ,YES,   4.019E+02,   7.900E+00,   1.919E+00,,  209.476
C,01-AM241,NO ,   1.656E+00,   1.724E+00,   2.796E+00,,    0.592
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

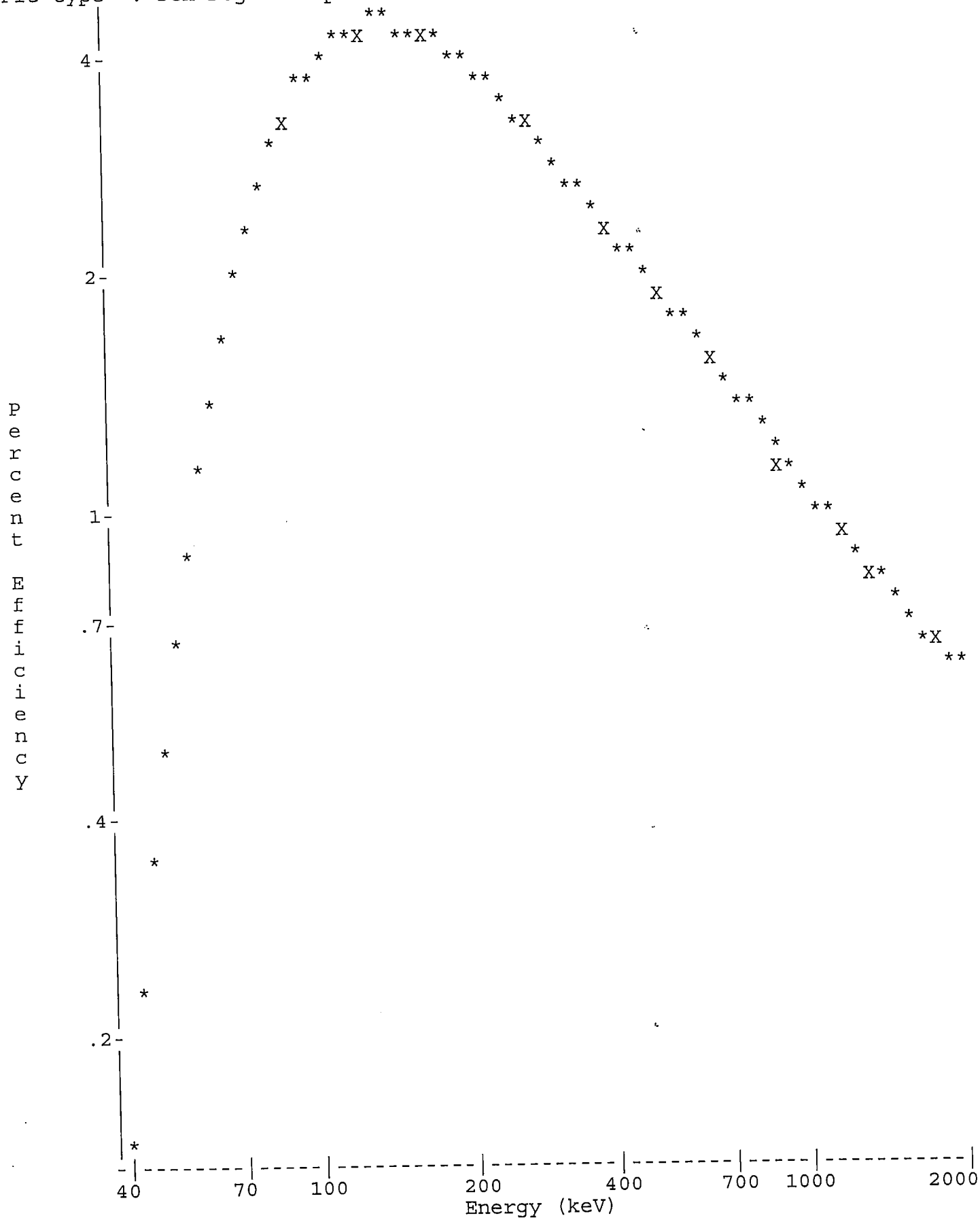
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Fit type : 5th Degree Empirical
Geometry : 01S100122019



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum 15
Number of unidentified lines 4
Number of lines tentatively identified by NID 11 73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr. BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019     ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019     ,CALIBRATION          ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1000.0	-0.66%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.9	2.42%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.81%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.0	-4.51%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.2	-0.33%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.3	-4.41%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.8	0.68%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **02S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:35:57.63
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

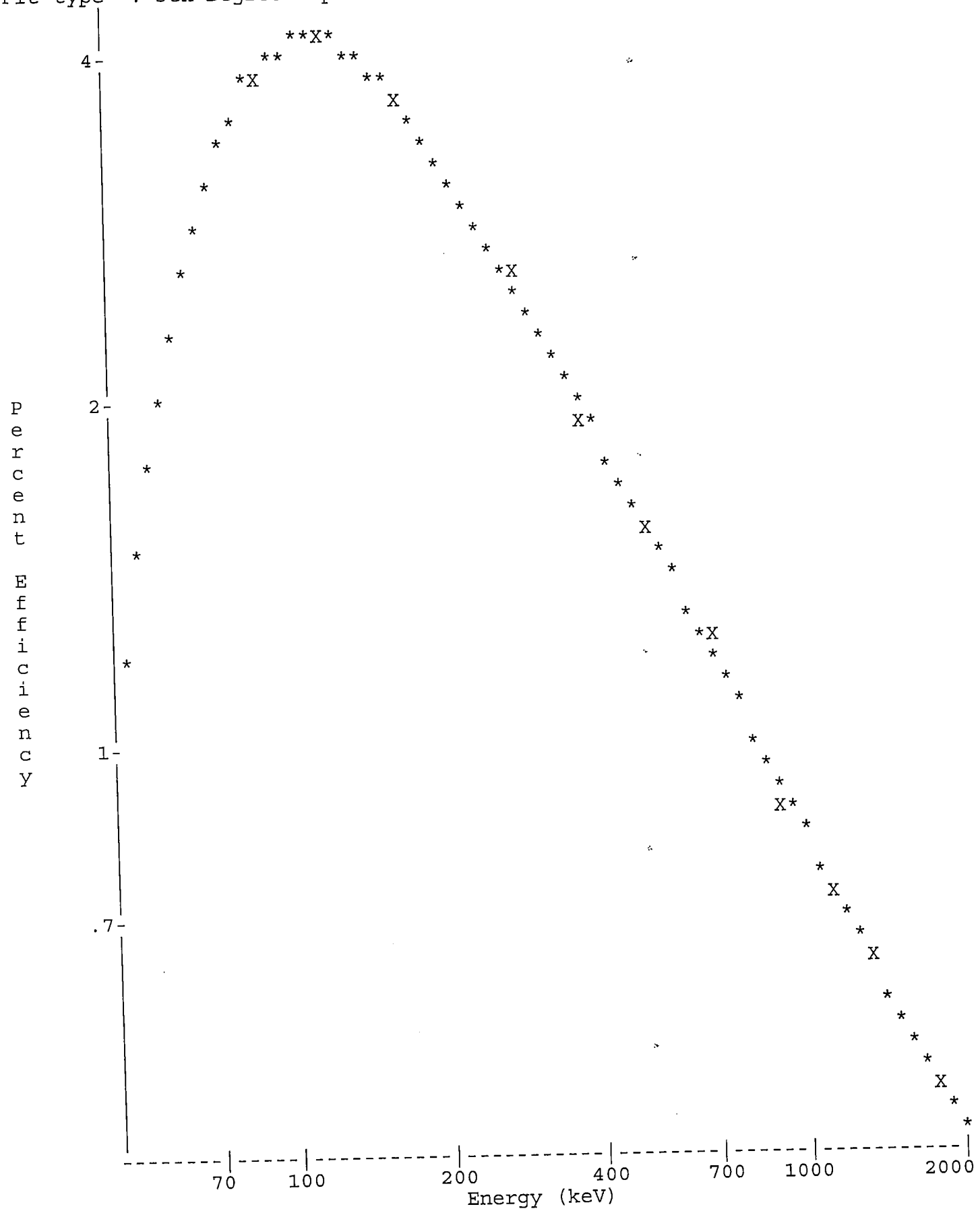
Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01	20751	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 26-DEC-2019 15:35
Detector :
Fit type : 5th Degree Empirical

Geometry : 02S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:37:02.02
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01*	20721	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	20721	3.72*	3.836E+00	7.325E+02	1.000E+03	2.03
03-CO57	122.06	16760	85.51*	4.118E+00	2.401E+01	4.088E+01	2.45
04-CE139	165.85	10237	80.35*	3.699E+00	1.738E+01	4.953E+01	3.79
05-HG203	279.20	2806	81.46*	2.573E+00	6.754E+00	1.490E+02	10.62
06-SN113	391.69	13677	64.90*	1.939E+00	5.481E+01	1.919E+02	2.60
07-SR85	513.99	8001	99.27*	1.533E+00	2.653E+01	2.452E+02	4.03
08-CS137	661.65	35448	85.12*	1.227E+00	1.712E+02	1.735E+02	1.28
09-Y88	898.02	17345	93.40*	9.325E-01	1.005E+02	3.883E+02	2.11
10-CO60	1173.22	27594	100.00	7.326E-01	1.900E+02	2.048E+02	1.39
	1332.49	24954	100.00*	6.543E-01	1.924E+02	2.073E+02	1.38
12-Y88	1836.01	10418	99.38*	5.015E-01	1.054E+02	4.075E+02	2.15

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

Total number of lines in spectrum 13
Number of unidentified lines 2
Number of lines tentatively identified by NID 11 84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.924E+02	2.073E+02	0.029E+02	1.38	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
	Total Activity :		1.431E+03	2.853E+03			

Grand Total Activity : 1.431E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	136.48	2099	5349	1.05	258.55	254	10	1.06E-01	13.8	4.02E+00	
0	255.05	599	3512	1.04	497.28	494	8	3.02E-02	35.2	2.76E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.912E+02	2.060E+02	0.020E+02	0.98	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
	Total Activity :		1.430E+03	2.852E+03			

Grand Total Activity : 1.430E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.000E+03	2.029E+01	1.387E+01	0.000E+00	72.130
03-CO57	4.088E+01	1.003E+00	6.475E-01	0.000E+00	63.137
04-CE139	4.953E+01	1.875E+00	1.276E+00	0.000E+00	38.822
05-HG203	1.490E+02	1.581E+01	1.316E+01	0.000E+00	11.321
06-SN113	1.919E+02	4.986E+00	3.384E+00	0.000E+00	56.693
07-SR85	2.452E+02	9.888E+00	7.118E+00	0.000E+00	34.444
08-CS137	1.735E+02	2.216E+00	1.070E+00	0.000E+00	162.084
09-Y88	3.883E+02	8.201E+00	4.714E+00	0.000E+00	82.370

10-CO60	2.060E+02	2.019E+00	1.108E+00	0.000E+00	185.886
12-Y88	4.075E+02	8.772E+00	2.373E+00	0.000E+00	171.753

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.643E-01		9.277E-01	1.517E+00	0.000E+00	0.240

```
A,02S100122619     ,12/26/2019 15:37,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,02S100122619     ,CALIBRATION          ,12/26/2019 15:35,02S100122619
C,02-CD109,YES,   1.000E+03,   2.029E+01,   1.387E+01,,    72.130
C,03-CO57 ,YES,   4.088E+01,   1.003E+00,   6.475E-01,,    63.137
C,04-CE139,YES,   4.953E+01,   1.875E+00,   1.276E+00,,    38.822
C,05-HG203,YES,   1.490E+02,   1.581E+01,   1.316E+01,,    11.321
C,06-SN113,YES,   1.919E+02,   4.986E+00,   3.384E+00,,    56.693
C,07-SR85 ,YES,   2.452E+02,   9.888E+00,   7.118E+00,,    34.444
C,08-CS137,YES,   1.735E+02,   2.216E+00,   1.070E+00,,   162.084
C,09-Y88  ,YES,   3.883E+02,   8.201E+00,   4.714E+00,,    82.370
C,10-CO60 ,YES,   2.060E+02,   2.019E+00,   1.108E+00,,   185.886
C,12-Y88  ,YES,   4.075E+02,   8.772E+00,   2.373E+00,,   171.753
C,01-AM241,NO ,   3.643E-01,   9.277E-01,   1.517E+00,,     0.240
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1006.0	-0.06%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.64%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.4	-1.07%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	151.4	-2.98%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.4	-0.12%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	237.4	-3.50%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.7	2.97%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.4	-1.92%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.1	0.33%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **07S50121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:32:16.69
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:11.82

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

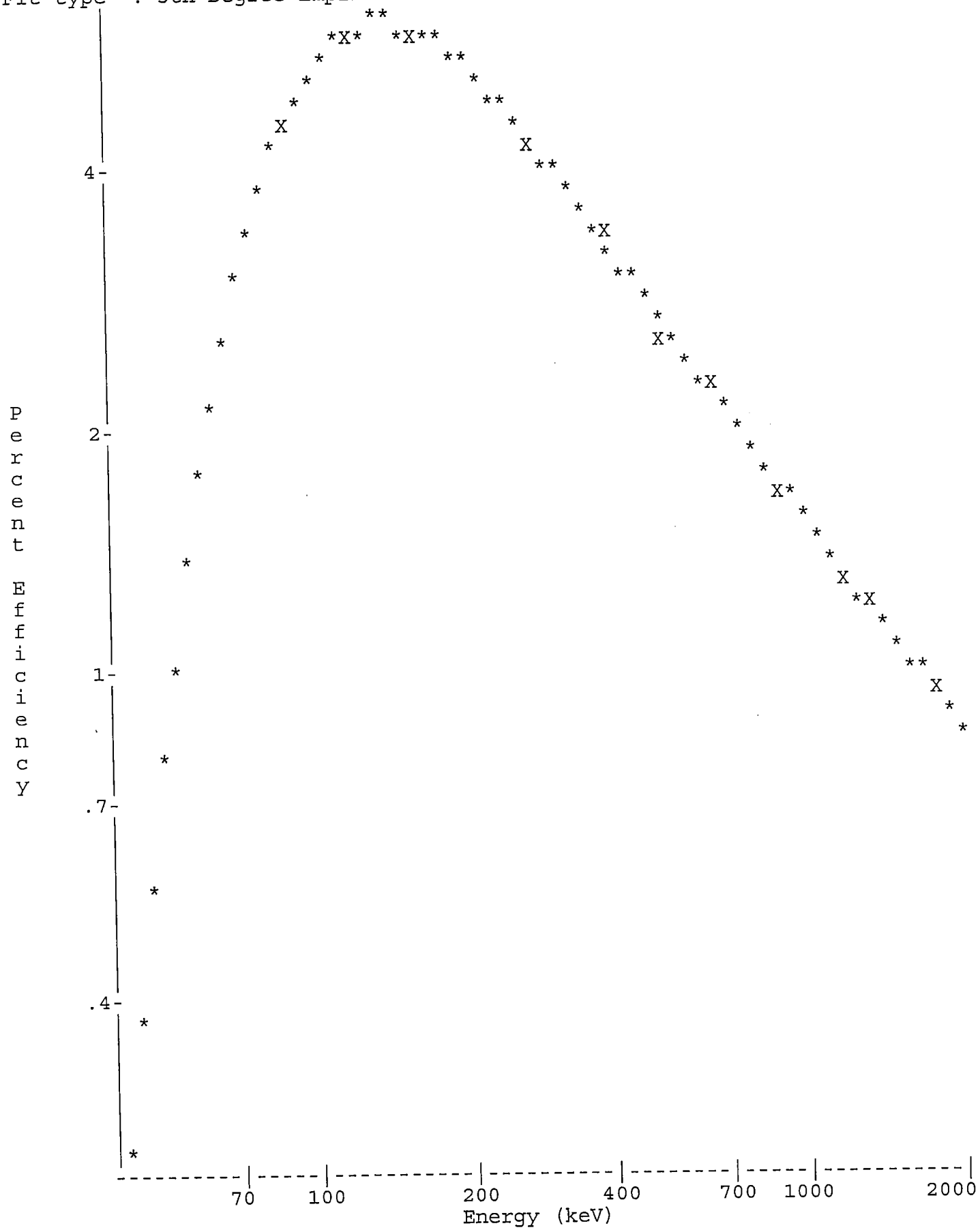
Sample ID : 07S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S50121919
BKGFILE : 07BG112719MT
Real Time : 0 04:00:33.43
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	1013	5688	1.34	92.49	6.46E-01	7.03E-02	13.3	3.66E+00
2	1	88.05	18668	7723	1.26	175.72	4.68E+00	1.30E+00	1.2	1.42E+00
3	1	122.06	17748	7182	1.29	243.73	6.00E+00	1.23E+00	1.2	1.11E+00
4	1	136.46	2338	5997	1.31	272.53	6.10E+00	1.62E-01	6.8	5.64E-01
5	1	165.85	12535	6367	1.35	331.30	5.91E+00	8.71E-01	1.6	8.93E-01
6	1	254.99	869	4294	1.41	509.55	4.67E+00	6.04E-02	14.0	8.10E-01
7	1	279.18	3907	4225	1.46	557.91	4.37E+00	2.71E-01	3.5	2.37E+00
8	1	391.68	17653	5052	1.54	782.84	3.33E+00	1.23E+00	1.1	1.33E+00
9	1	514.00	10480	4788	1.58	1027.39	2.65E+00	7.28E-01	1.7	2.50E+00
10	1	661.65	45729	4417	1.77	1322.58	2.14E+00	3.18E+00	0.6	3.85E+00
11	1	898.05	24017	3743	2.01	1795.15	1.65E+00	1.67E+00	0.9	3.68E+00
12	1	1173.21	36281	2149	2.26	2345.16	1.33E+00	2.52E+00	0.6	8.66E+00
13	1	1332.48	32763	1232	2.42	2663.48	1.20E+00	2.28E+00	0.6	1.11E+01
14	1	1836.00	14659	367	2.90	3669.70	9.38E-01	1.02E+00	0.9	8.57E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:32
Detector :
Fit type : 5th Degree Empirical

Geometry : 07S50121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:35:18.42
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:11.82

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S50121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S50121919
BKGFILE : 07BG112719MT
Real Time : 0 04:00:33.43
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.42	1013	5688	1.34	92.49	6.46E-01	7.03E-02	13.3	3.66E+00
2	1	88.05	18668	7723	1.26	175.72	4.68E+00	1.30E+00	1.2	1.42E+00
3	1	122.06	17748	7182	1.29	243.73	6.00E+00	1.23E+00	1.2	1.11E+00
4	1	136.46	2338	5997	1.31	272.53	6.10E+00	1.62E-01	6.8	5.64E-01
5	1	165.85	12535	6367	1.35	331.30	5.91E+00	8.71E-01	1.6	8.93E-01
6	1	254.99	869	4294	1.41	509.55	4.67E+00	6.04E-02	14.0	8.10E-01
7	1	279.18	3907	4225	1.46	557.91	4.37E+00	2.71E-01	3.5	2.37E+00
8	1	391.68	17653	5052	1.54	782.84	3.33E+00	1.23E+00	1.1	1.33E+00
9	1	514.00	10480	4788	1.58	1027.39	2.65E+00	7.28E-01	1.7	2.50E+00
10	1	661.65	45729	4417	1.77	1322.58	2.14E+00	3.18E+00	0.6	3.85E+00
11	1	898.05	24017	3743	2.01	1795.15	1.65E+00	1.67E+00	0.9	3.68E+00
12	1	1173.21	36281	2149	2.26	2345.16	1.33E+00	2.52E+00	0.6	8.66E+00
13	1	1332.48	32763	1232	2.42	2663.48	1.20E+00	2.28E+00	0.6	1.11E+01
14	1	1836.00	14659	367	2.90	3669.70	9.38E-01	1.02E+00	0.9	8.57E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	18668	3.72*	4.681E+00	7.445E+02	1.006E+03	2.30
03-CO57	122.06	17748	85.51*	6.000E+00	2.402E+01	4.017E+01	2.38
04-CE139	165.85	12535	80.35*	5.911E+00	1.833E+01	5.042E+01	3.12
05-HG203	279.20	3907	81.46*	4.369E+00	7.624E+00	1.514E+02	7.00
06-SN113	391.69	17653	64.90*	3.329E+00	5.674E+01	1.904E+02	2.28
07-SR85	513.99	10480	99.27*	2.647E+00	2.769E+01	2.374E+02	3.43
08-CS137	661.65	45729	85.12*	2.138E+00	1.745E+02	1.767E+02	1.16
09-Y88	898.02	24017	93.40*	1.655E+00	1.079E+02	3.984E+02	1.78
10-CO60	1173.22	36281	100.00	1.327E+00	1.898E+02	2.041E+02	1.24
	1332.49	32763	100.00*	1.198E+00	1.899E+02	2.042E+02	1.23
12-Y88	1836.01	14659	99.38*	9.382E-01	1.092E+02	4.031E+02	1.80

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S50121919

Acquisition date : 19-DEC-2019 09:30:11

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.445E+02	1.006E+03	0.023E+03	2.30	
03-CO57	270.90D	1.67	2.402E+01	4.017E+01	0.096E+01	2.38	
04-CE139	137.66D	2.75	1.833E+01	5.042E+01	0.157E+01	3.12	
05-HG203	46.61D	19.9	7.624E+00	1.514E+02	0.106E+02	7.00	
06-SN113	115.10D	3.35	5.674E+01	1.904E+02	0.043E+02	2.28	
07-SR85	64.84D	8.57	2.769E+01	2.374E+02	0.082E+02	3.43	
08-CS137	30.17Y	1.01	1.745E+02	1.767E+02	0.020E+02	1.16	
09-Y88	106.65D	3.69	1.079E+02	3.984E+02	0.071E+02	1.78	
10-CO60	5.27Y	1.08	1.899E+02	2.042E+02	0.025E+02	1.23	
12-Y88	106.65D	3.69	1.092E+02	4.031E+02	0.073E+02	1.80	
			---------	---------			
	Total Activity :		1.460E+03	2.858E+03			

Grand Total Activity : 1.460E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S50121919

Acquisition date : 19-DEC-2019 09:30:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.42	1013	5688	1.34	92.49	89	8	7.03E-02	26.5	6.46E-01	
1	136.46	2338	5997	1.31	272.53	267	11	1.62E-01	13.5	6.10E+00	
1	254.99	869	4294	1.41	509.55	505	9	6.04E-02	28.0	4.67E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.445E+02	1.006E+03	0.023E+03	2.30	
03-CO57	270.90D	1.67	2.402E+01	4.017E+01	0.096E+01	2.38	
04-CE139	137.66D	2.75	1.833E+01	5.042E+01	0.157E+01	3.12	
05-HG203	46.61D	19.9	7.624E+00	1.514E+02	0.106E+02	7.00	
06-SN113	115.10D	3.35	5.674E+01	1.904E+02	0.043E+02	2.28	
07-SR85	64.84D	8.57	2.769E+01	2.374E+02	0.082E+02	3.43	
08-CS137	30.17Y	1.01	1.745E+02	1.767E+02	0.020E+02	1.16	
09-Y88	106.65D	3.69	1.079E+02	3.984E+02	0.071E+02	1.78	
10-CO60	5.27Y	1.08	1.899E+02	2.041E+02	0.018E+02	0.87	
12-Y88	106.65D	3.69	1.092E+02	4.031E+02	0.073E+02	1.80	
	Total Activity :		1.460E+03	2.858E+03			

Grand Total Activity : 1.460E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.006E+03	2.315E+01	1.852E+01	0.000E+00	54.306
03-CO57	4.017E+01	9.571E-01	7.111E-01	0.000E+00	56.498
04-CE139	5.042E+01	1.575E+00	1.230E+00	0.000E+00	40.995
05-HG203	1.514E+02	1.060E+01	1.124E+01	0.000E+00	13.464
06-SN113	1.904E+02	4.343E+00	3.001E+00	0.000E+00	63.426
07-SR85	2.374E+02	8.153E+00	6.091E+00	0.000E+00	38.973
08-CS137	1.767E+02	2.048E+00	9.455E-01	0.000E+00	186.903

09-Y88	3.984E+02	7.102E+00	3.906E+00	0.000E+00	102.000
10-CO60	2.041E+02	1.786E+00	9.393E-01	0.000E+00	217.324
12-Y88	4.031E+02	7.268E+00	1.958E+00	0.000E+00	205.841

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-5.982E-01		1.856E+00	3.004E+00	0.000E+00	-0.199

```
A,07S50121919     ,12/26/2019 10:35,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,07S50121919     ,CALIBRATION         ,12/26/2019 10:32,07S50121919
C,02-CD109,YES,   1.006E+03,   2.315E+01,   1.852E+01,,   54.306
C,03-CO57 ,YES,   4.017E+01,   9.571E-01,   7.111E-01,,   56.498
C,04-CE139,YES,   5.042E+01,   1.575E+00,   1.230E+00,,   40.995
C,05-HG203,YES,   1.514E+02,   1.060E+01,   1.124E+01,,   13.464
C,06-SN113,YES,   1.904E+02,   4.343E+00,   3.001E+00,,   63.426
C,07-SR85 ,YES,   2.374E+02,   8.153E+00,   6.091E+00,,   38.973
C,08-CS137,YES,   1.767E+02,   2.048E+00,   9.455E-01,,  186.903
C,09-Y88  ,YES,   3.984E+02,   7.102E+00,   3.906E+00,,  102.000
C,10-CO60 ,YES,   2.041E+02,   1.786E+00,   9.393E-01,,  217.324
C,12-Y88  ,YES,   4.031E+02,   7.268E+00,   1.958E+00,,  205.841
C,01-AM241,NO ,  -5.982E-01,   1.856E+00,   3.004E+00,,   -0.199
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

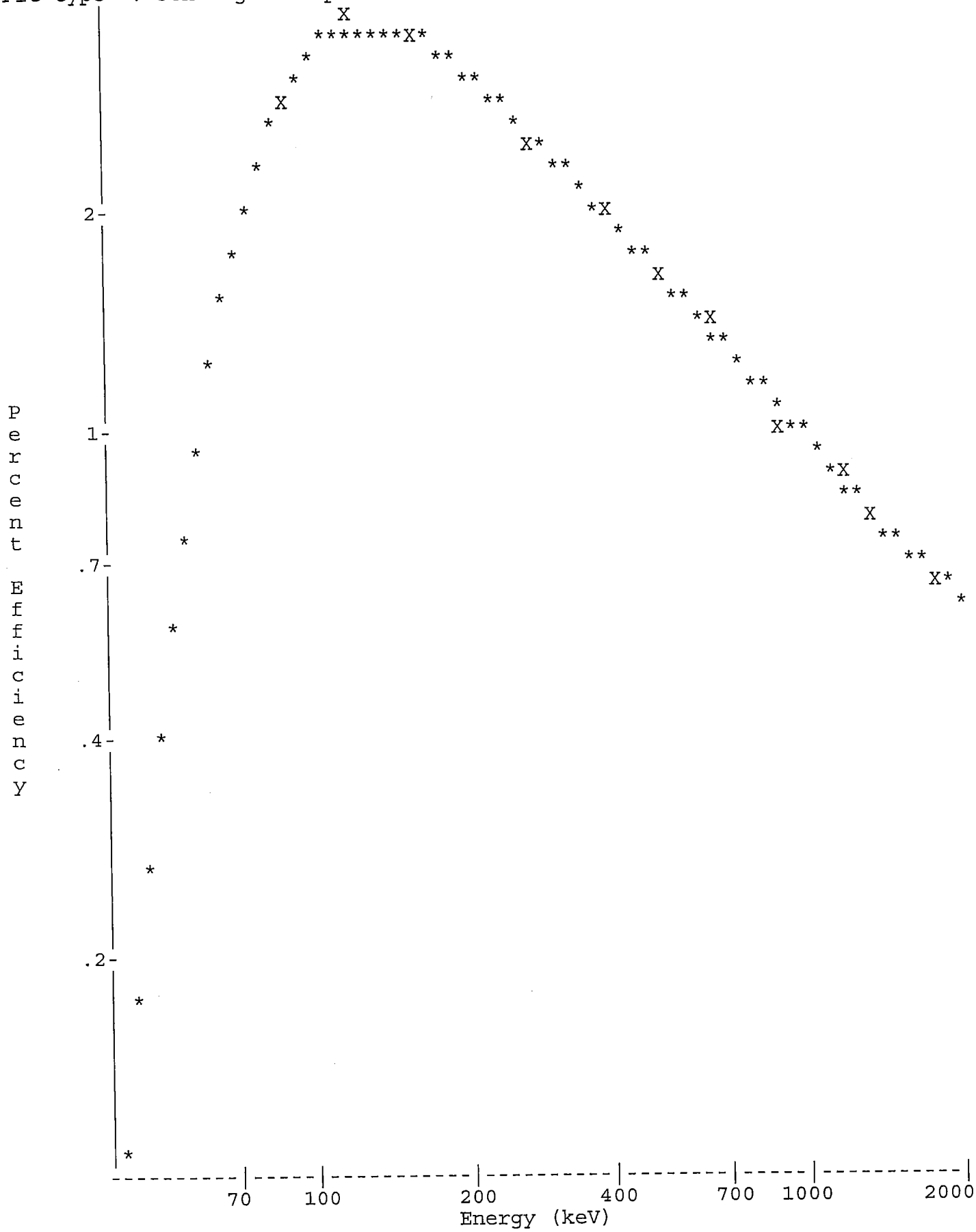
Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Fit type : 5th Degree Empirical

Geometry : 07S100121819



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity : 1.463E+03 2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819
Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
	Total Activity :		1.462E+03	2.853E+03			

Grand Total Activity : 1.462E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,  1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,  4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,  5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,  1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,  1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,  2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,  1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,  3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,  2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,  4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,  2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

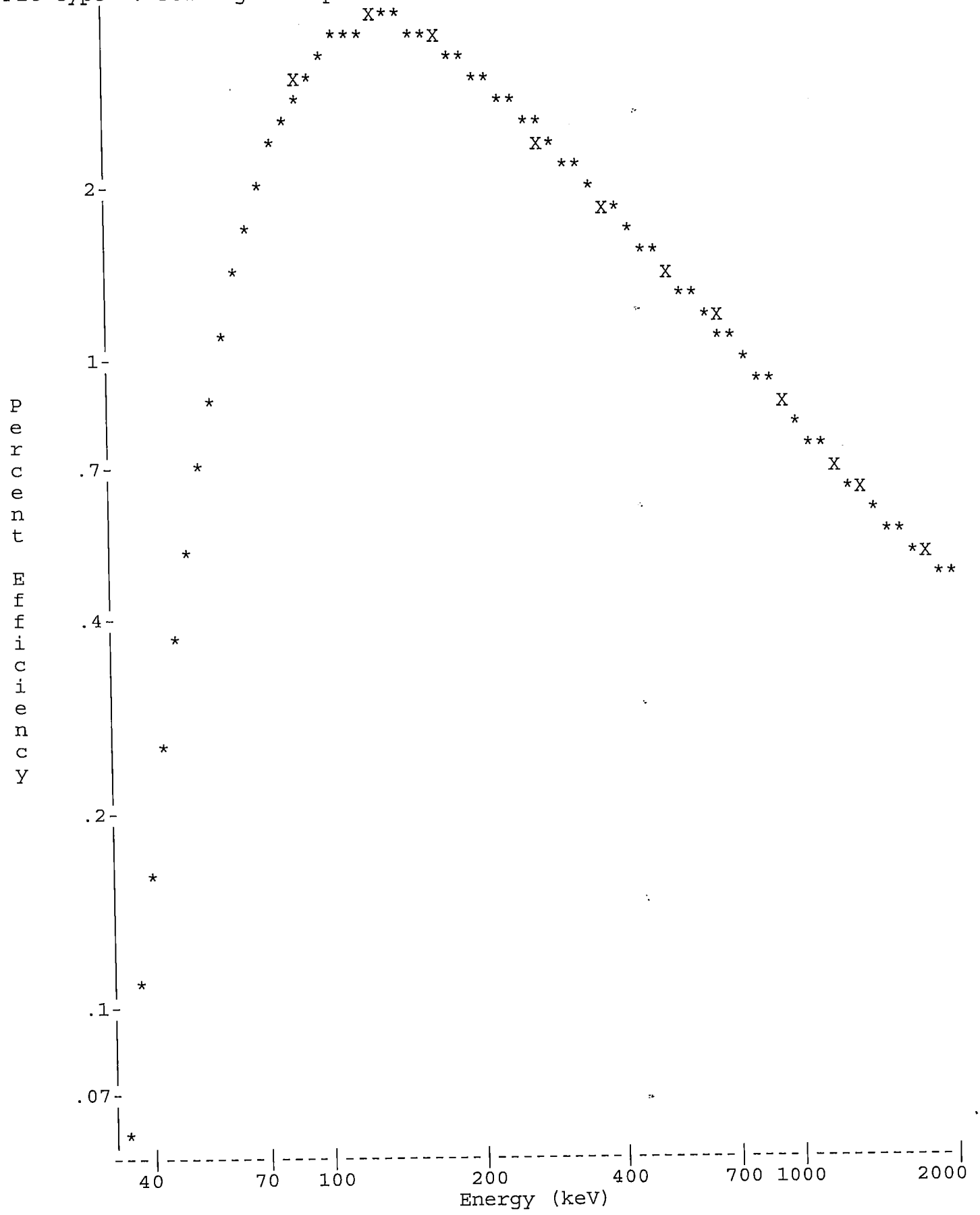
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819    ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819    ,CALIBRATION         ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

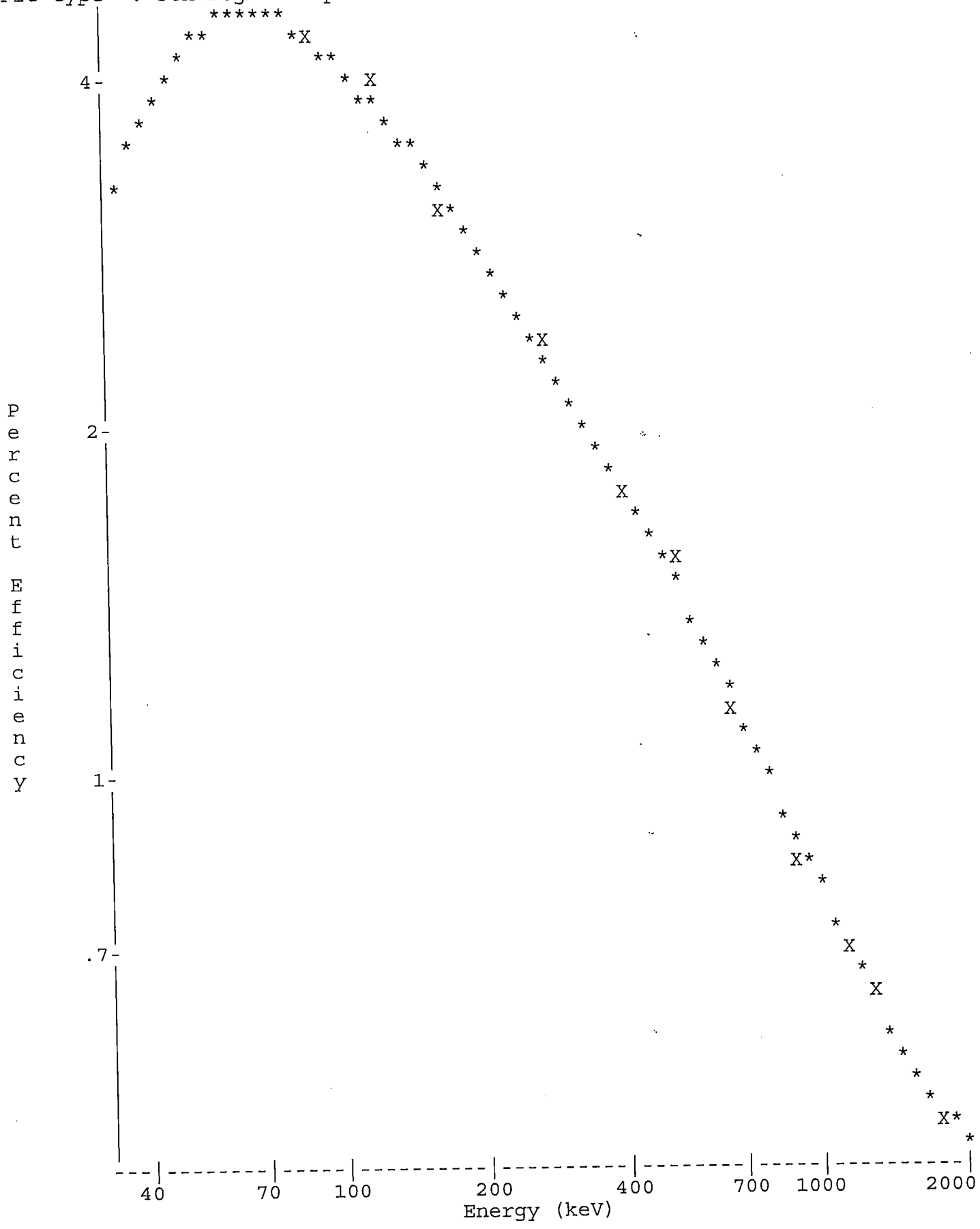
Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919 Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919     ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919     ,CALIBRATION          ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,    1.013E+03,    1.793E+01,    1.499E+01,,    67.586
C,03-CO57 ,YES,    4.118E+01,    1.003E+00,    7.649E-01,,    53.831
C,04-CE139,YES,    4.917E+01,    1.826E+00,    1.518E+00,,    32.396
C,05-HG203,YES,    1.496E+02,    1.412E+01,    1.379E+01,,    10.849
C,06-SN113,YES,    1.882E+02,    4.968E+00,    3.497E+00,,    53.812
C,07-SR85 ,YES,    2.596E+02,    1.031E+01,    6.619E+00,,    39.220
C,08-CS137,YES,    1.689E+02,    2.289E+00,    1.088E+00,,   155.266
C,09-Y88  ,YES,    3.885E+02,    7.711E+00,    4.625E+00,,    83.996
C,10-CO60 ,YES,    2.075E+02,    2.028E+00,    1.127E+00,,   184.062
C,12-Y88  ,YES,    4.004E+02,    8.223E+00,    2.218E+00,,   180.562
C,01-AM241,NO ,   -6.041E-01,    5.435E-01,    9.051E-01,,    -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

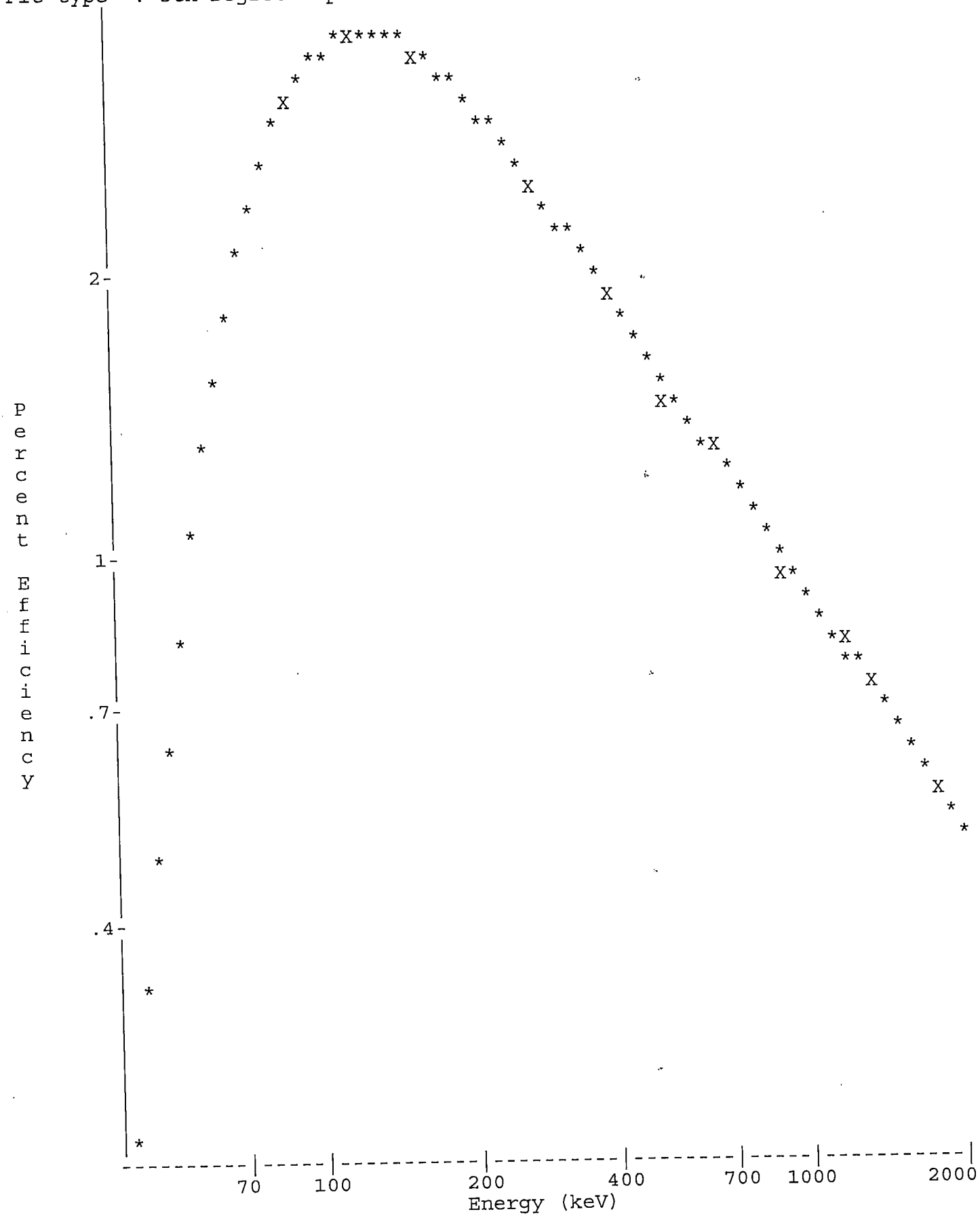
Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Fit type : 5th Degree Empirical

Geometry : 13S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,   1.001E+03,   1.649E+01,   1.349E+01,,   74.206
C,03-CO57 ,YES,   4.016E+01,   9.167E-01,   6.087E-01,,   65.978
C,04-CE139,YES,   5.064E+01,   1.454E+00,   1.122E+00,,   45.151
C,05-HG203,YES,   1.465E+02,   1.200E+01,   1.135E+01,,   12.914
C,06-SN113,YES,   1.946E+02,   4.137E+00,   2.774E+00,,   70.169
C,07-SR85 ,YES,   2.340E+02,   7.150E+00,   6.009E+00,,   38.945
C,08-CS137,YES,   1.774E+02,   1.808E+00,   8.215E-01,,  215.917
C,09-Y88  ,YES,   3.981E+02,   6.404E+00,   3.602E+00,,  110.531
C,10-CO60 ,YES,   2.044E+02,   1.570E+00,   6.527E-01,,  313.158
C,12-Y88  ,YES,   4.024E+02,   6.717E+00,   1.716E+00,,  234.561
C,01-AM241,NO ,   3.682E-02,   1.283E+00,   2.034E+00,,    0.018
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

FISH/SOIL Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
Nuclide	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	39.9	-0.01%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	51.0	-0.03%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	148.2	-5.03%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.3	0.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.4	2.21%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.9	-1.31%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.5	0.04%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.4	0.37%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.3	-0.10%

Eff. Name: **14FS092319**

Analyst: KOJ

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:28:32.55
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

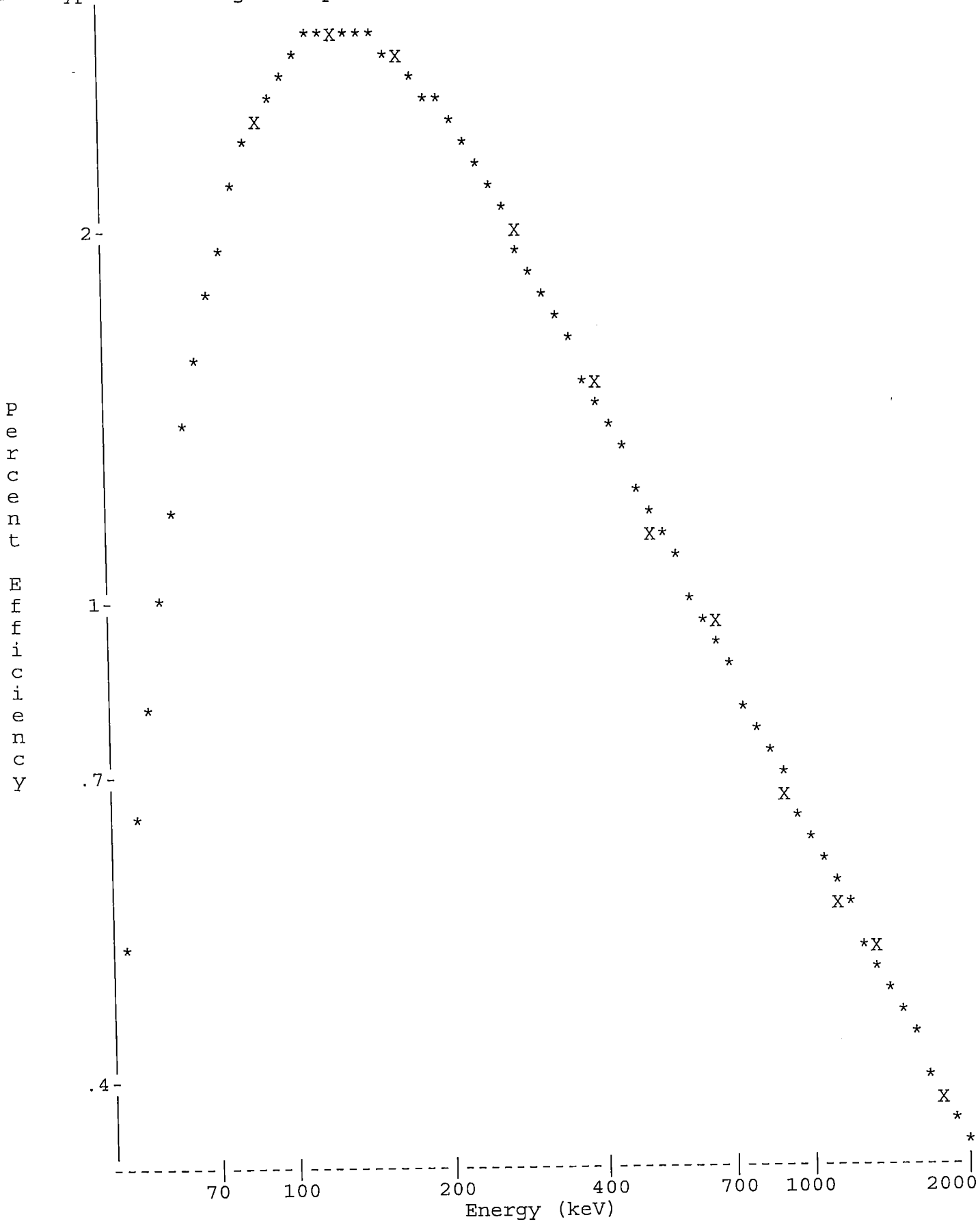
LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88	930	7993	0.67	142.98	1.91E+00	3.23E-02	15.5	3.92E+00
2	1	88.04	22566	11237	0.84	173.39	2.48E+00	7.84E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 24-SEP-2019 09:28
Detector :
Geometry : 14FS092319
Fit type : 5th Degree Empirical



Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 24-SEP-2019 09:29:25.42
TBE14 31-TP10760A HpGe ******* Aquisition Date/Time: 23-SEP-2019 15:30:35.28

LIMS No., Customer Name, Client ID: FISH/SOIL BOTTLE 5ML MIXED GAMMA REF DATE 06

Sample ID : 14FS092319
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 90 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG083019MT
Real Time : 0 08:01:05.01
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	72.88*	833	7993	0.67	142.98	1.91E+00	2.89E-02	17.4	3.92E+00
2	1	88.04*	22524	11237	0.84	173.39	2.48E+00	7.82E-01	1.1	1.66E+00
3	1	122.06	21617	12430	0.87	241.59	2.95E+00	7.51E-01	1.2	5.79E-01
4	1	136.48	2593	8436	0.91	270.51	2.94E+00	9.00E-02	6.5	1.26E+00
5	1	165.85	18496	8869	0.91	329.41	2.79E+00	6.42E-01	1.2	2.24E+00
6	1	255.02	1548	6283	1.29	508.23	2.13E+00	5.37E-02	9.2	5.32E+00
7	1	279.18	12600	7831	1.02	556.68	1.98E+00	4.37E-01	1.6	6.13E-01
8	1	391.70	26599	6190	1.12	782.33	1.48E+00	9.24E-01	0.9	3.19E+00
9	1	514.00	23420	4293	1.21	1027.61	1.16E+00	8.13E-01	0.8	1.25E+00
10	1	661.64	39429	5087	1.36	1323.73	9.24E-01	1.37E+00	0.6	9.82E+00
11	1	813.99	785	2402	1.87	1629.33	7.67E-01	2.73E-02	12.6	2.34E+00
12	1	898.03	36083	3871	1.53	1797.91	7.03E-01	1.25E+00	0.6	1.17E+01
13	1	1173.23	31293	1985	1.72	2350.03	5.56E-01	1.09E+00	0.7	1.14E+01
14	1	1324.77	739	1286	2.84	2654.08	5.01E-01	2.56E-02	11.2	1.08E+00
15	1	1332.48	28155	1543	1.83	2669.57	4.98E-01	9.78E-01	0.7	9.47E+00
16	1	1836.00	20920	399	2.14	3680.03	3.81E-01	7.26E-01	0.7	1.61E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22524	3.72*	2.482E+00	8.470E+02	1.005E+03	2.17
03-CO57	122.06	21617	85.51*	2.947E+00	2.979E+01	3.991E+01	2.43
04-CE139	165.85	18496	80.35*	2.790E+00	2.865E+01	5.095E+01	2.36
05-HG203	279.20	12600	81.46*	1.983E+00	2.708E+01	1.482E+02	3.26
06-SN113	391.69	26599	64.90*	1.481E+00	9.608E+01	1.913E+02	1.71
07-SR85	513.99	23420	99.27*	1.160E+00	7.064E+01	2.397E+02	1.69
08-CS137	661.65	39429	85.12*	9.236E-01	1.741E+02	1.754E+02	1.28
09-Y88	898.02	36083	93.40*	7.034E-01	1.907E+02	4.009E+02	1.30
10-CO60	1173.22	31293	100.00	5.564E-01	1.953E+02	2.035E+02	1.31
	1332.49	28155	100.00*	4.985E-01	1.961E+02	2.044E+02	1.36
12-Y88	1836.01	20920	99.38*	3.810E-01	1.918E+02	4.033E+02	1.47

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14FS092319

Acquisition date : 23-SEP-2019 15:30:35

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.961E+02	2.044E+02	0.028E+02	1.36	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14FS092319
Acquisition date : 23-SEP-2019 15:30:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	72.88	833	7993	0.67	142.98	140	6	2.89E-02	34.7	1.91E+00	
1	136.48	2593	8436	0.91	270.51	267	8	9.00E-02	12.9	2.94E+00	
1	255.02	1548	6283	1.29	508.23	504	8	5.37E-02	18.4	2.13E+00	
1	813.99	785	2402	1.87	1629.33	1623	11	2.73E-02	25.1	7.67E-01	
1	1324.77	739	1286	2.84	2654.08	2646	15	2.56E-02	22.4	5.01E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.19	8.470E+02	1.005E+03	0.022E+03	2.17	
03-CO57	270.90D	1.34	2.979E+01	3.991E+01	0.097E+01	2.43	
04-CE139	137.66D	1.78	2.865E+01	5.095E+01	0.120E+01	2.36	
05-HG203	46.61D	5.47	2.708E+01	1.482E+02	0.048E+02	3.26	
06-SN113	115.10D	1.99	9.608E+01	1.913E+02	0.033E+02	1.71	
07-SR85	64.84D	3.39	7.064E+01	2.397E+02	0.041E+02	1.69	
08-CS137	30.17Y	1.01	1.741E+02	1.754E+02	0.022E+02	1.28	
09-Y88	106.65D	2.10	1.907E+02	4.009E+02	0.052E+02	1.30	
10-CO60	5.27Y	1.04	1.957E+02	2.039E+02	0.019E+02	0.95	
12-Y88	106.65D	2.10	1.918E+02	4.033E+02	0.059E+02	1.47	
			---------	---------			
	Total Activity :		1.852E+03	2.859E+03			

Grand Total Activity : 1.852E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.182E+01	1.629E+01	0.000E+00	61.714
03-CO57	3.991E+01	9.700E-01	6.523E-01	0.000E+00	61.183
04-CE139	5.095E+01	1.203E+00	9.498E-01	0.000E+00	53.639
05-HG203	1.482E+02	4.830E+00	3.642E+00	0.000E+00	40.696
06-SN113	1.913E+02	3.264E+00	2.022E+00	0.000E+00	94.570

07-SR85	2.397E+02	4.057E+00	2.935E+00	0.000E+00	81.684
08-CS137	1.754E+02	2.249E+00	1.116E+00	0.000E+00	157.102
09-Y88	4.009E+02	5.192E+00	2.528E+00	0.000E+00	158.546
10-CO60	2.039E+02	1.928E+00	9.329E-01	0.000E+00	218.563
12-Y88	4.033E+02	5.932E+00	1.447E+00	0.000E+00	278.709

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	9.143E-01		1.537E+00	2.519E+00	0.000E+00	0.363

```
A,14FS092319       ,09/24/2019 09:29,06/01/2019 12:00,   1.000E+00,FISH/SOIL BOTT
B,14FS092319       ,CALIBRATION          ,09/24/2019 09:28,14FS092319
C,02-CD109,YES,   1.005E+03,   2.182E+01,   1.629E+01,,   61.714
C,03-CO57 ,YES,   3.991E+01,   9.700E-01,   6.523E-01,,   61.183
C,04-CE139,YES,   5.095E+01,   1.203E+00,   9.498E-01,,   53.639
C,05-HG203,YES,   1.482E+02,   4.830E+00,   3.642E+00,,   40.696
C,06-SN113,YES,   1.913E+02,   3.264E+00,   2.022E+00,,   94.570
C,07-SR85 ,YES,   2.397E+02,   4.057E+00,   2.935E+00,,   81.684
C,08-CS137,YES,   1.754E+02,   2.249E+00,   1.116E+00,,  157.102
C,09-Y88  ,YES,   4.009E+02,   5.192E+00,   2.528E+00,,  158.546
C,10-CO60 ,YES,   2.039E+02,   1.928E+00,   9.329E-01,,  218.563
C,12-Y88  ,YES,   4.033E+02,   5.932E+00,   1.447E+00,,  278.709
C,01-AM241,NO ,   9.143E-01,   1.537E+00,   2.519E+00,,    0.363
```

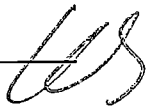
E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.59%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.95%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	150.0	-3.87%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.0	-2.85%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.2	-2.96%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.5	1.02%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.7	0.52%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **14S100121919**

Analyst: KOJ



Analyst:

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:24:05.41
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

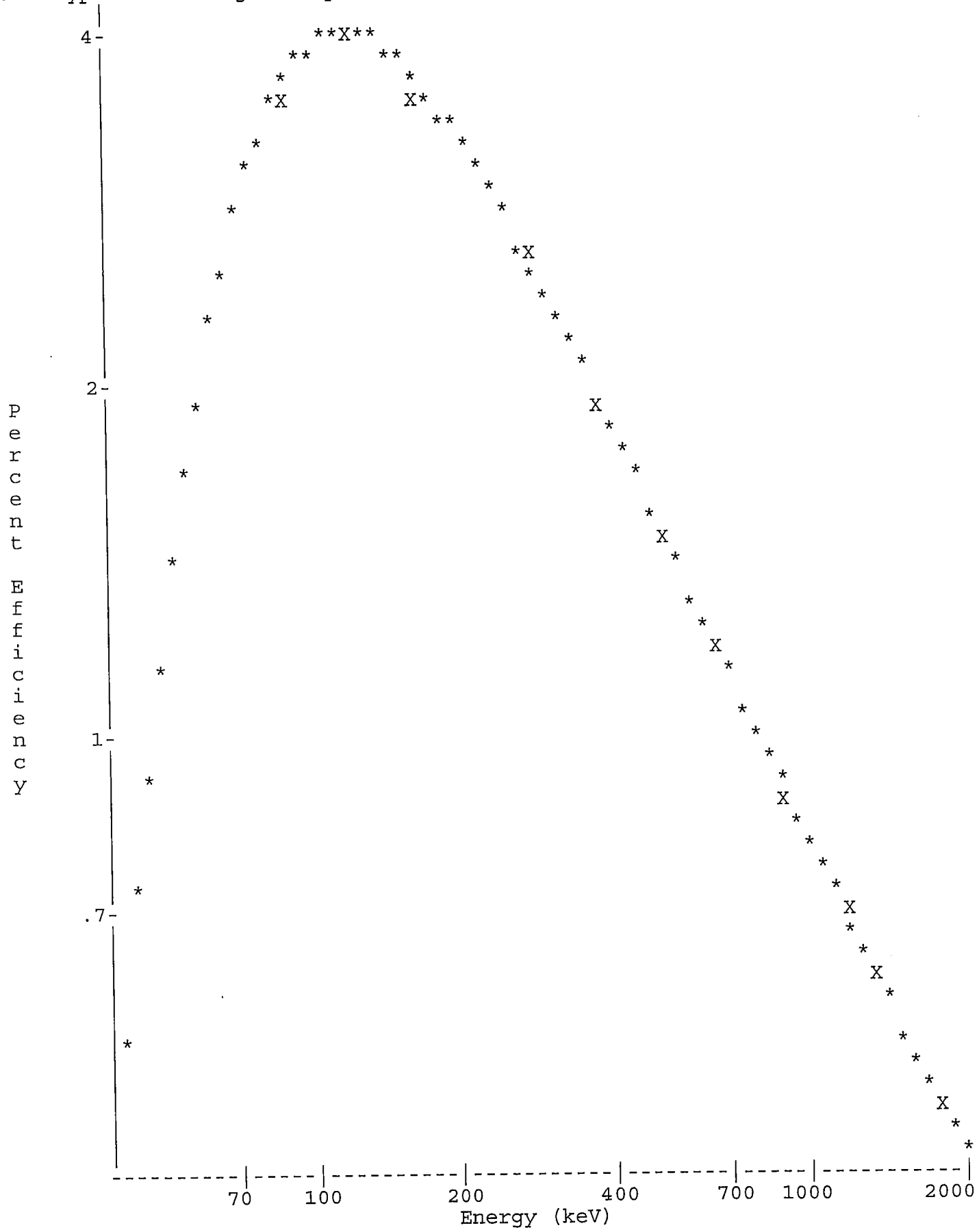
Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04	32058	12538	0.83	172.85	3.58E+00	9.89E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:24
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:25:19.21
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04*	31996	12538	0.83	172.85	3.58E+00	9.88E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	31996	3.72*	3.583E+00	7.409E+02	1.002E+03	1.73
03-CO57	122.06	26983	85.51*	4.020E+00	2.422E+01	4.055E+01	1.86
04-CE139	165.85	17412	80.35*	3.689E+00	1.813E+01	4.997E+01	2.69
05-HG203	279.20	5080	81.46*	2.562E+00	7.514E+00	1.500E+02	6.17
06-SN113	391.69	22811	64.90*	1.900E+00	5.709E+01	1.919E+02	1.95
07-SR85	513.99	13219	99.27*	1.480E+00	2.778E+01	2.390E+02	2.65
08-CS137	661.65	56112	85.12*	1.170E+00	1.739E+02	1.761E+02	1.00
09-Y88	898.02	28414	93.40*	8.814E-01	1.065E+02	3.942E+02	1.67
10-CO60	1173.22	42734	100.00	6.902E-01	1.911E+02	2.055E+02	1.12
	1332.49	37990	100.00*	6.159E-01	1.904E+02	2.047E+02	1.12
12-Y88	1836.01	16457	99.38*	4.701E-01	1.087E+02	4.024E+02	1.68

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.904E+02	2.047E+02	0.023E+02	1.12	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.455E+03	2.850E+03			

Grand Total Activity : 1.455E+03 2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.59	4343	10904	0.86	89.98	85	10	1.34E-01	9.5	8.97E-01	
1	136.46	3364	8189	0.88	269.65	266	9	1.04E-01	10.3	3.96E+00	
1	255.15	1158	6685	1.01	506.97	503	9	3.58E-02	26.1	2.76E+00	
1	814.14	447	2399	1.31	1624.80	1621	9	1.38E-02	40.6	9.65E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.907E+02	2.051E+02	0.016E+02	0.79	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.456E+03	2.851E+03			

Grand Total Activity : 1.456E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	1.735E+01	1.123E+01	0.000E+00	89.212
03-CO57	4.055E+01	7.526E-01	4.988E-01	0.000E+00	81.300
04-CE139	4.997E+01	1.344E+00	9.308E-01	0.000E+00	53.682
05-HG203	1.500E+02	9.263E+00	8.996E+00	0.000E+00	16.675
06-SN113	1.919E+02	3.750E+00	2.454E+00	0.000E+00	78.204
07-SR85	2.390E+02	6.325E+00	5.015E+00	0.000E+00	47.655

08-CS137	1.761E+02	1.758E+00	7.913E-01	0.000E+00	222.526
09-Y88	3.942E+02	6.575E+00	3.397E+00	0.000E+00	116.066
10-CO60	2.051E+02	1.624E+00	8.097E-01	0.000E+00	253.272
12-Y88	4.024E+02	6.761E+00	1.762E+00	0.000E+00	228.349

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.911E-03		8.383E-01	1.367E+00	0.000E+00	0.005

```
A,14S100121919    ,12/26/2019 10:25,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,14S100121919    ,CALIBRATION         ,12/26/2019 10:24,14S100121919
C,02-CD109,YES,   1.002E+03,   1.735E+01,   1.123E+01,,   89.212
C,03-CO57 ,YES,   4.055E+01,   7.526E-01,   4.988E-01,,   81.300
C,04-CE139,YES,   4.997E+01,   1.344E+00,   9.308E-01,,   53.682
C,05-HG203,YES,   1.500E+02,   9.263E+00,   8.996E+00,,   16.675
C,06-SN113,YES,   1.919E+02,   3.750E+00,   2.454E+00,,   78.204
C,07-SR85 ,YES,   2.390E+02,   6.325E+00,   5.015E+00,,   47.655
C,08-CS137,YES,   1.761E+02,   1.758E+00,   7.913E-01,,  222.526
C,09-Y88  ,YES,   3.942E+02,   6.575E+00,   3.397E+00,,  116.066
C,10-CO60 ,YES,   2.051E+02,   1.624E+00,   8.097E-01,,  253.272
C,12-Y88  ,YES,   4.024E+02,   6.761E+00,   1.762E+00,,  228.349
C,01-AM241,NO ,   6.911E-03,   8.383E-01,   1.367E+00,,    0.005
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

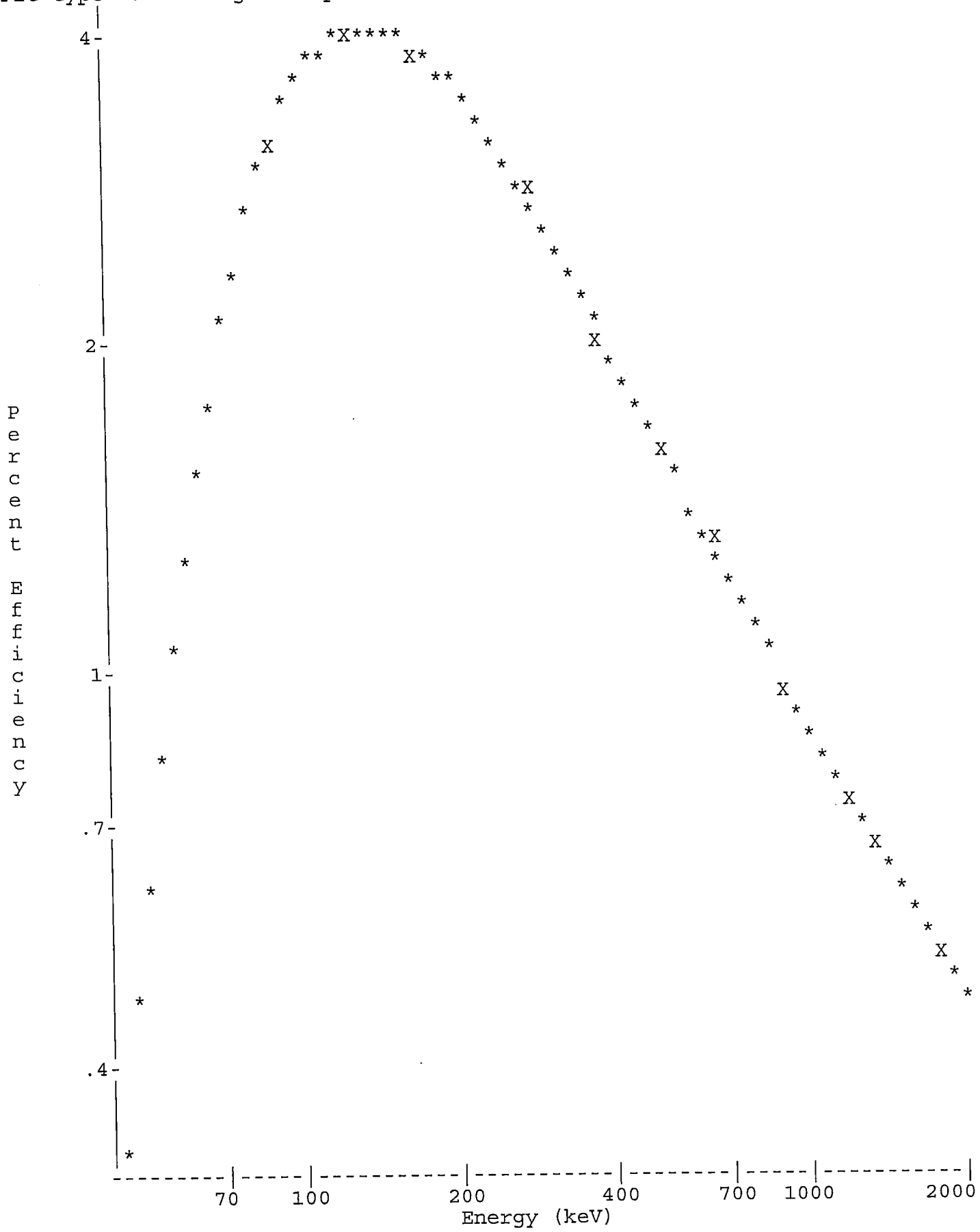
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity : 1.465E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION         ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
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GAMMA SPECTROSCOPY

Daily Source and Background Checks

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Parameter Name : PSCENTRD (Centroid-1332)
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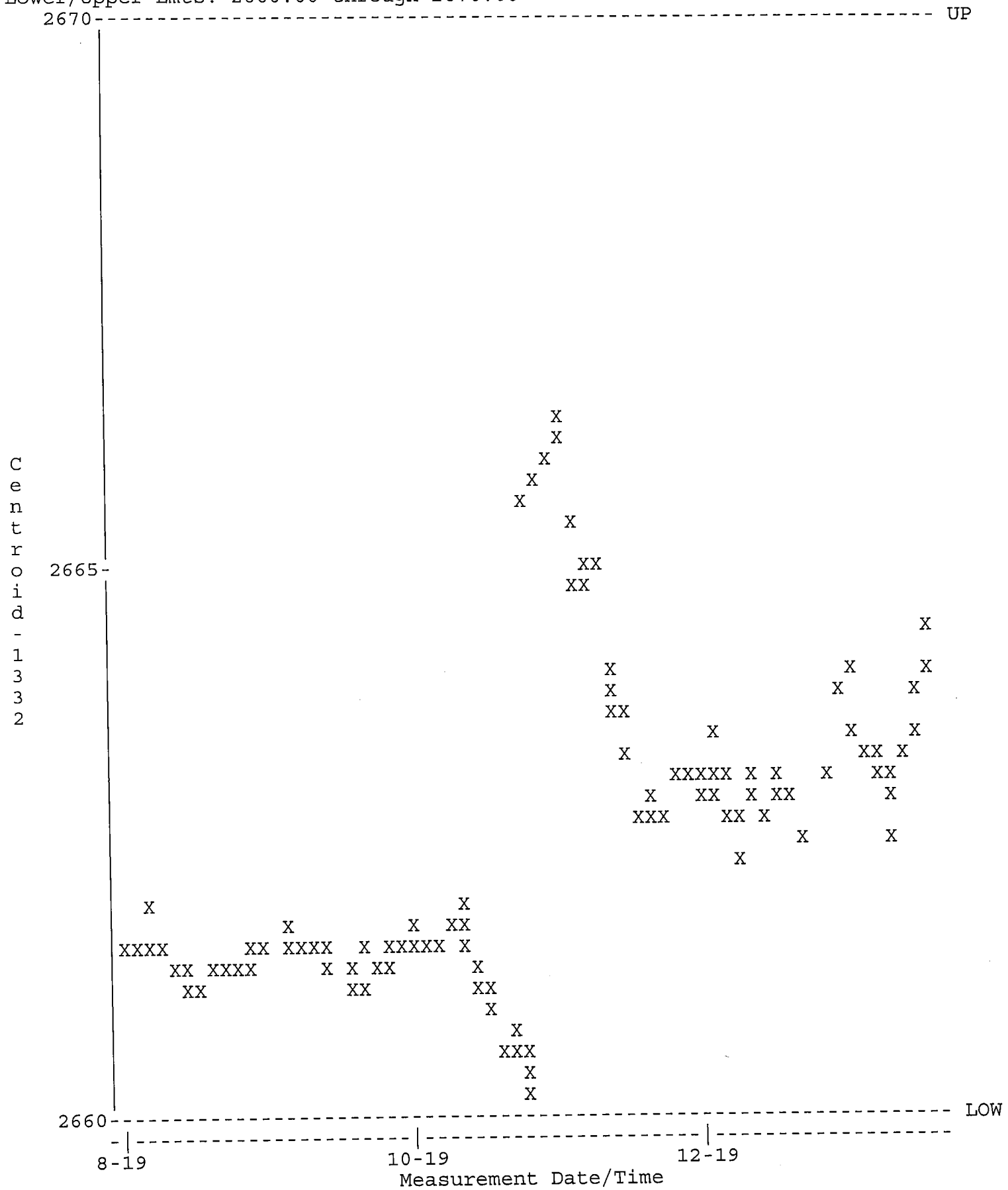
Lower/Upper Lmts: 2660.00 through 2670.00



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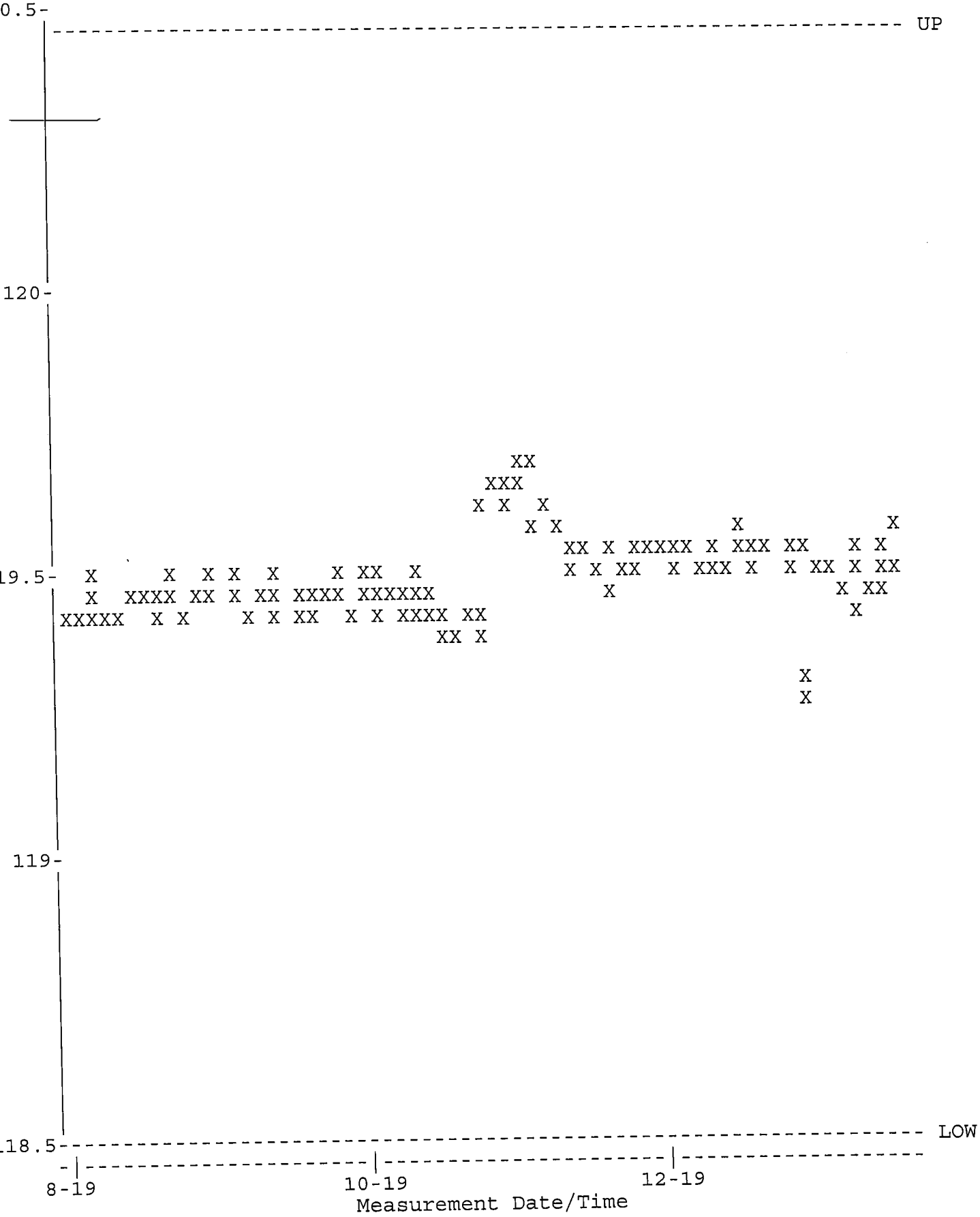

QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
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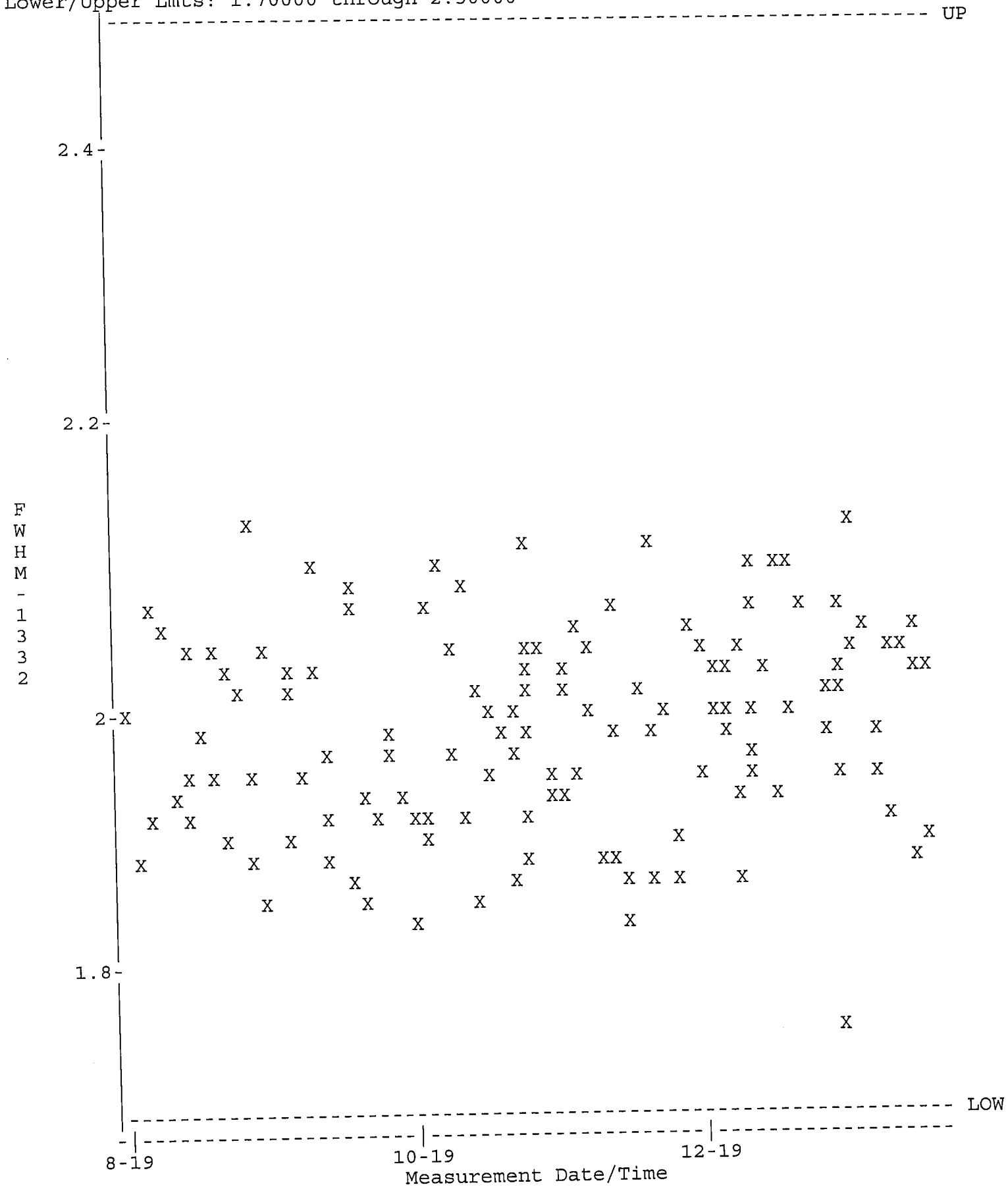
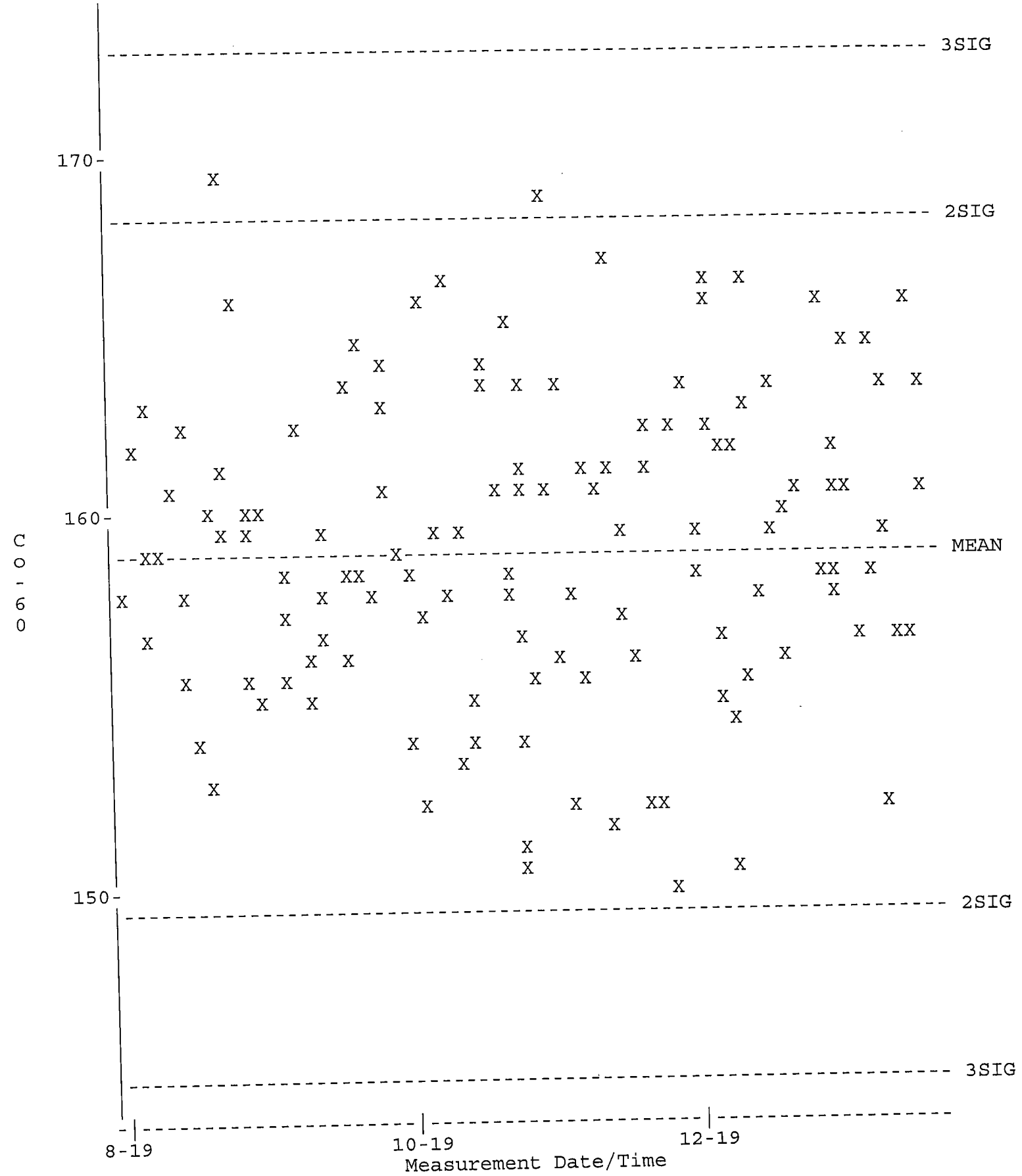
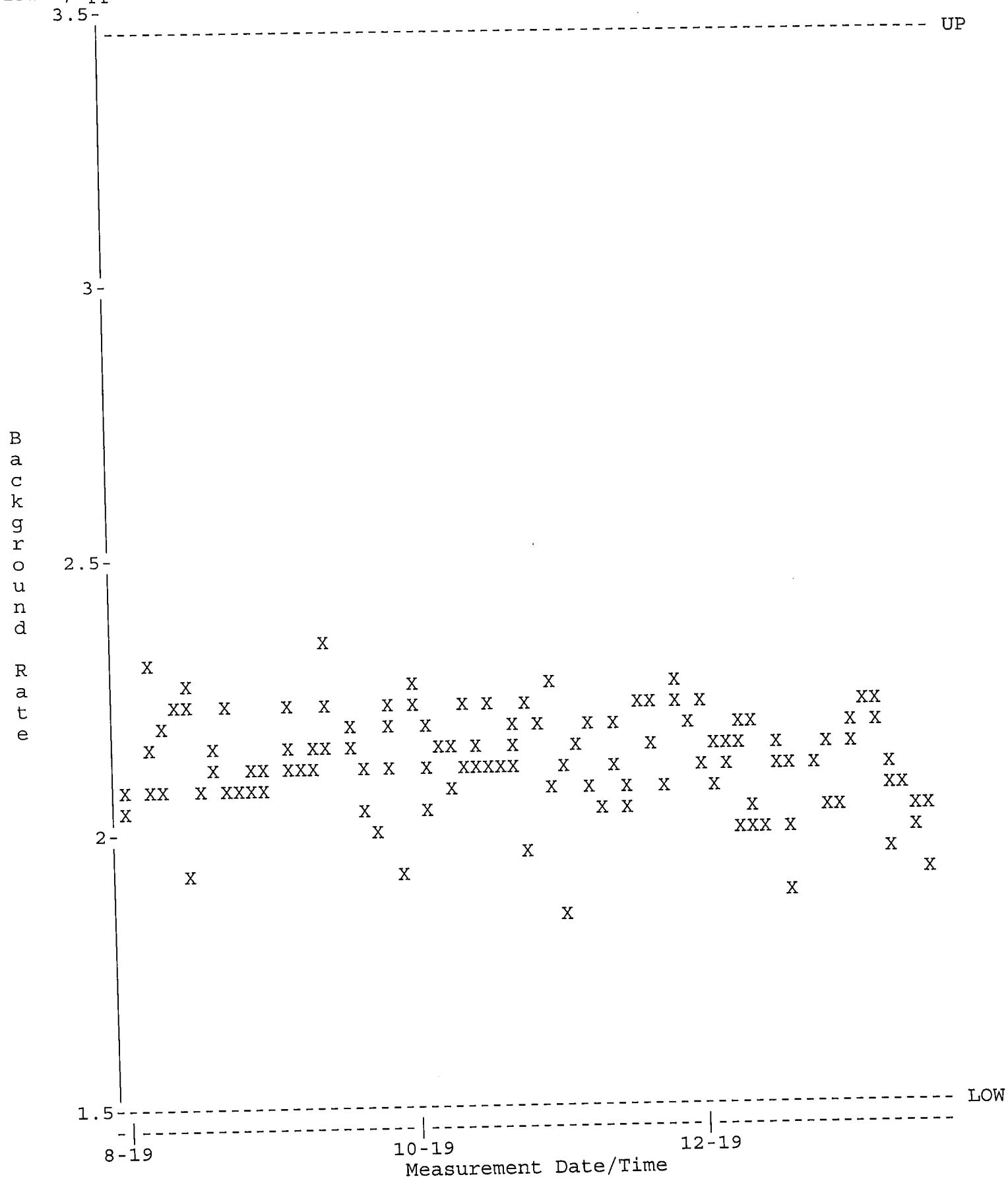
Lower/Upper Lmts: 1.70000 through 2.50000



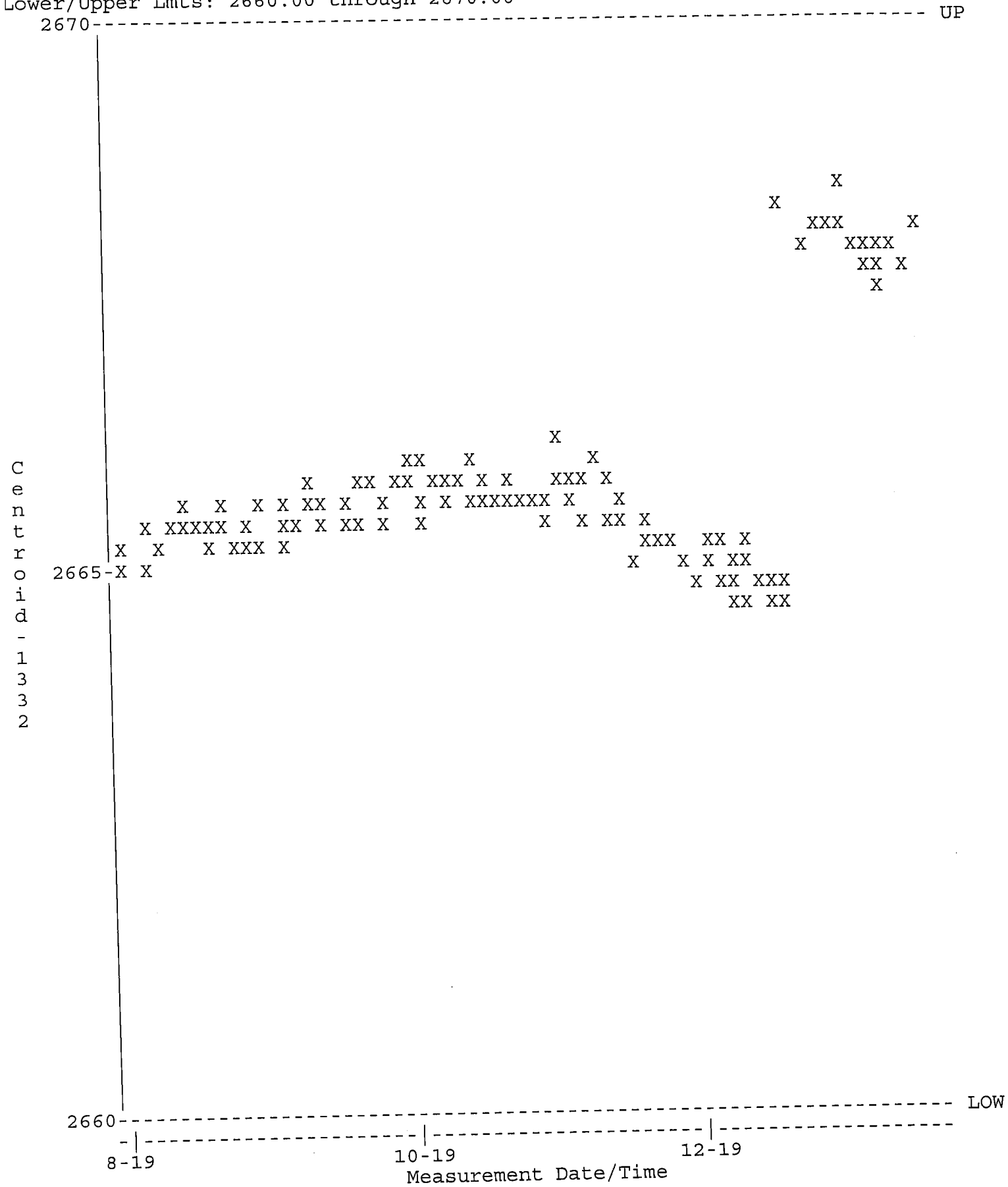
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



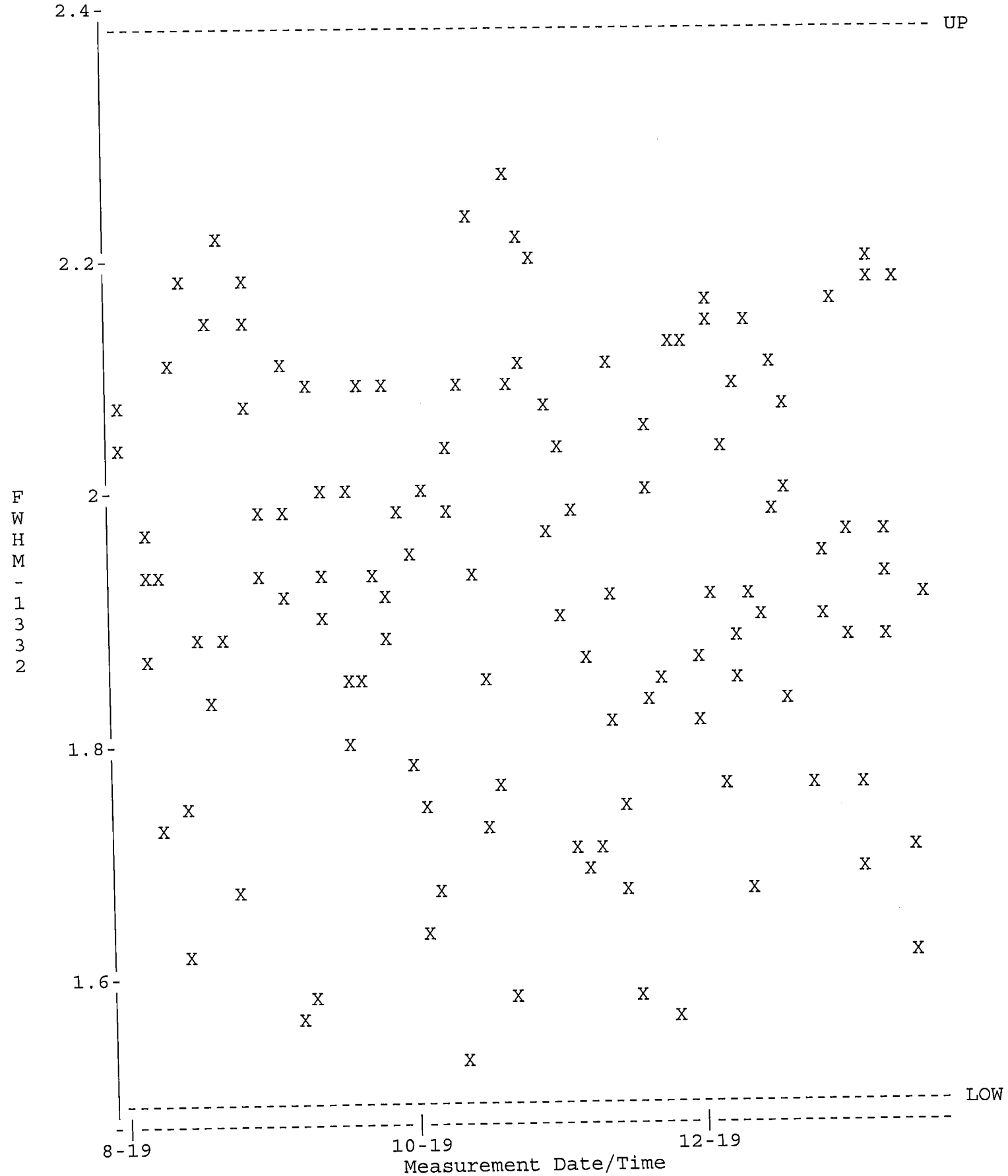
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



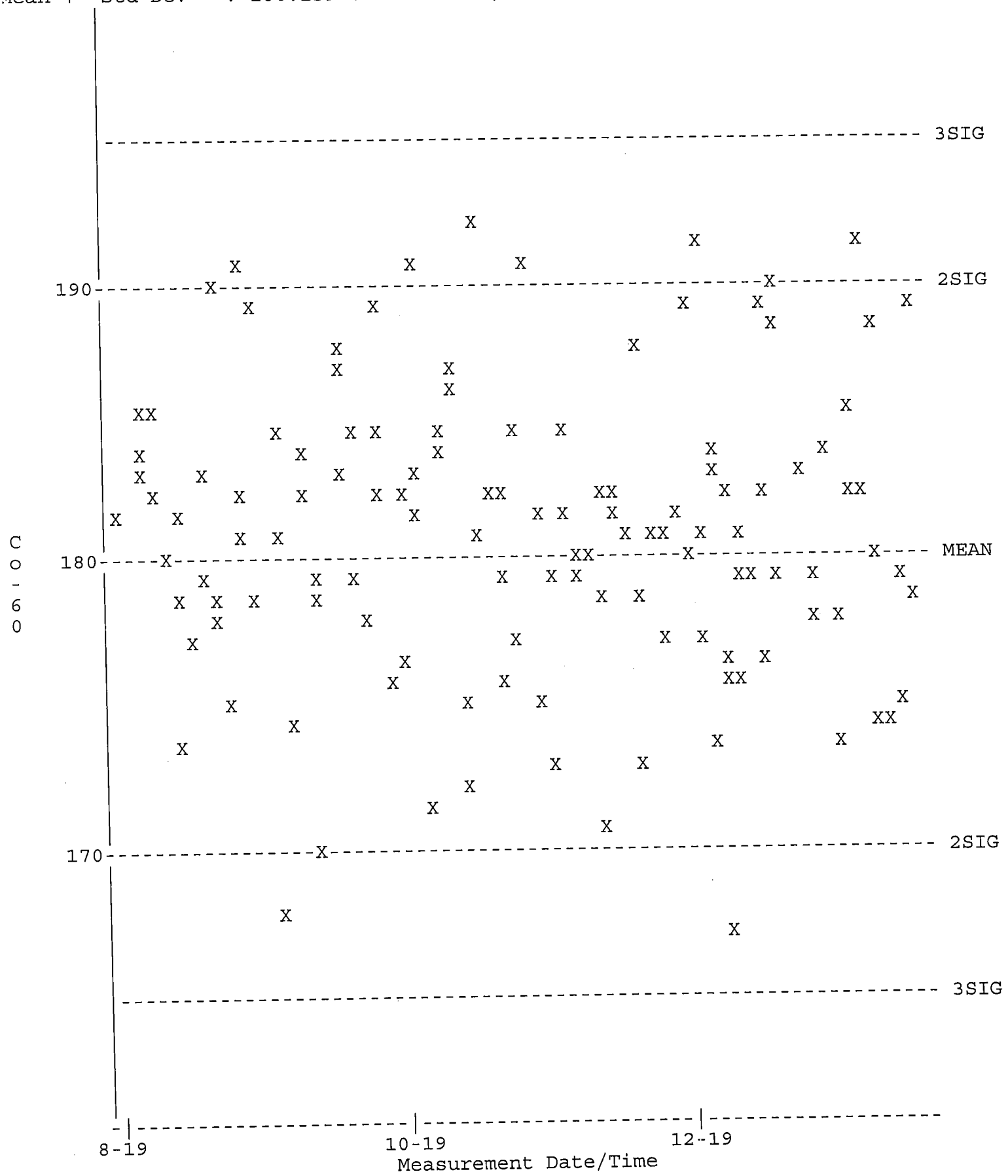
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



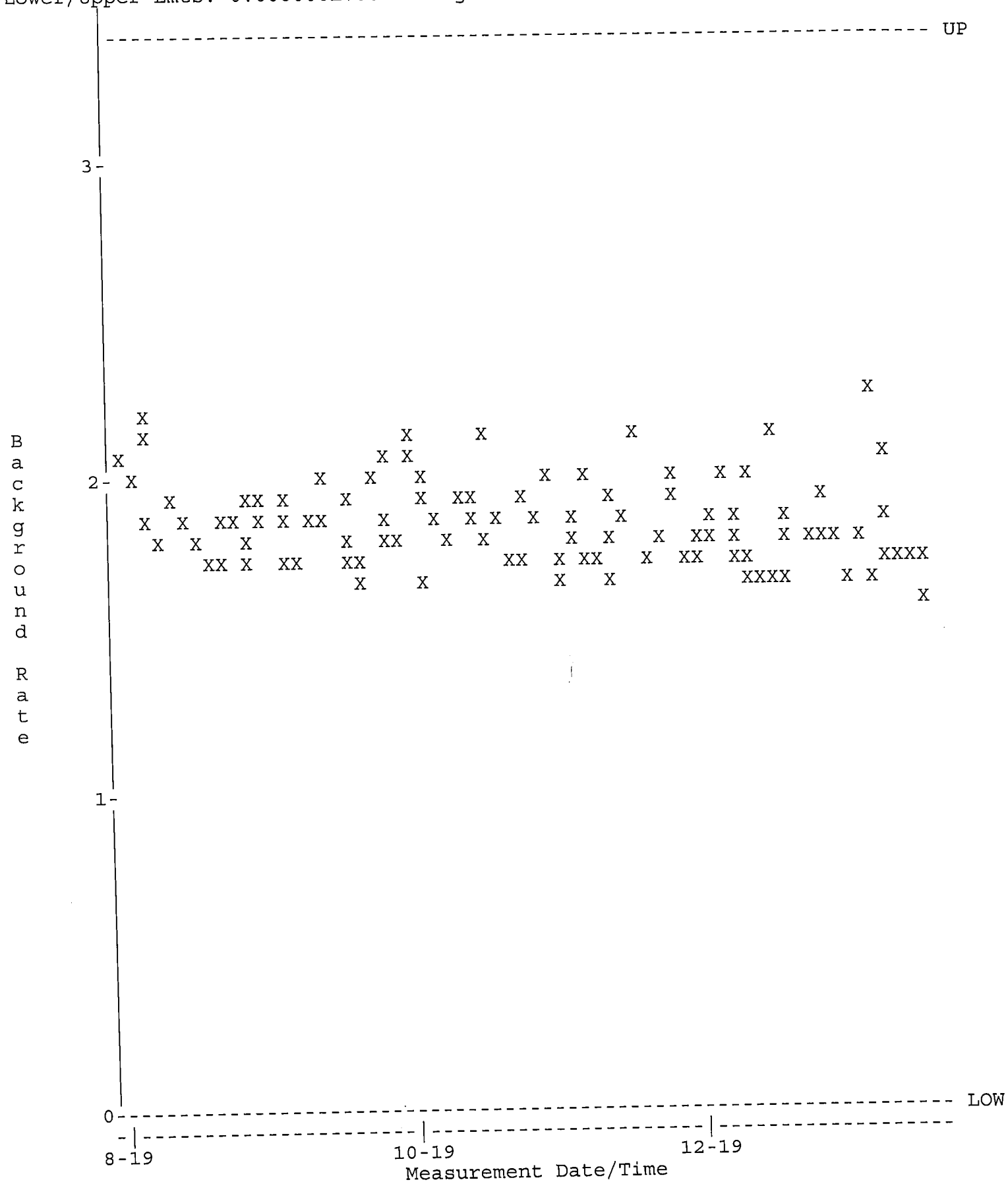
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



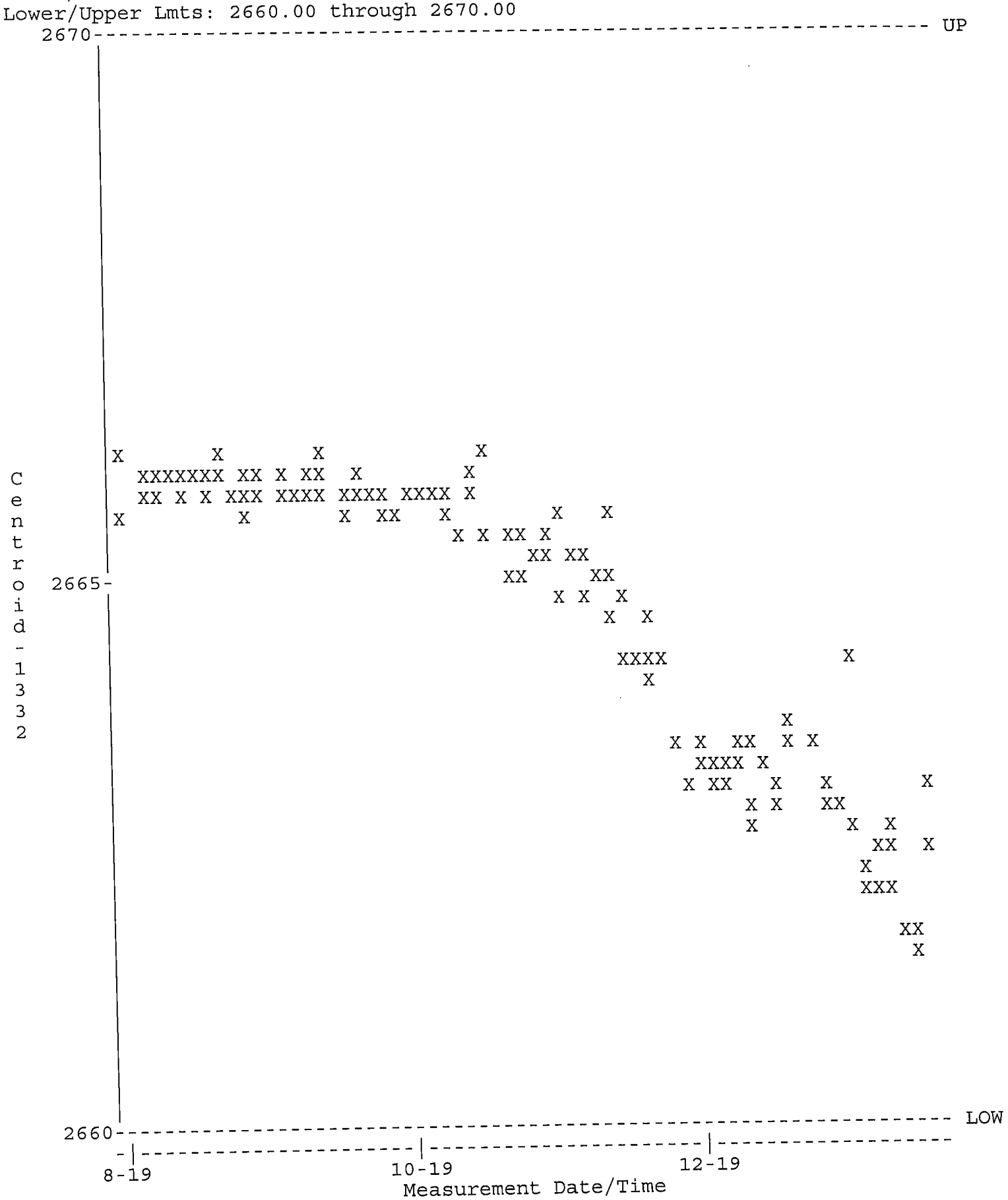
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



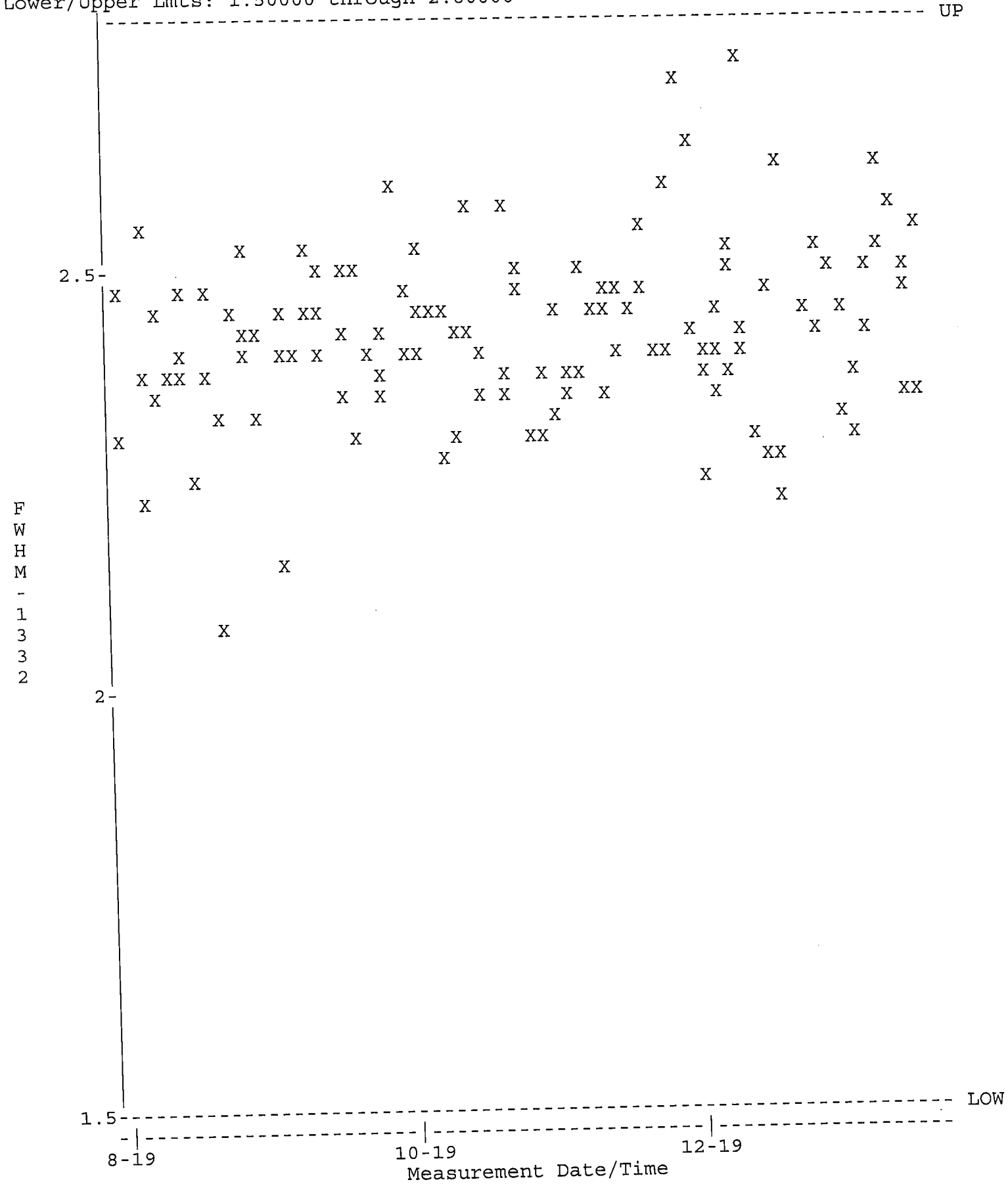
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



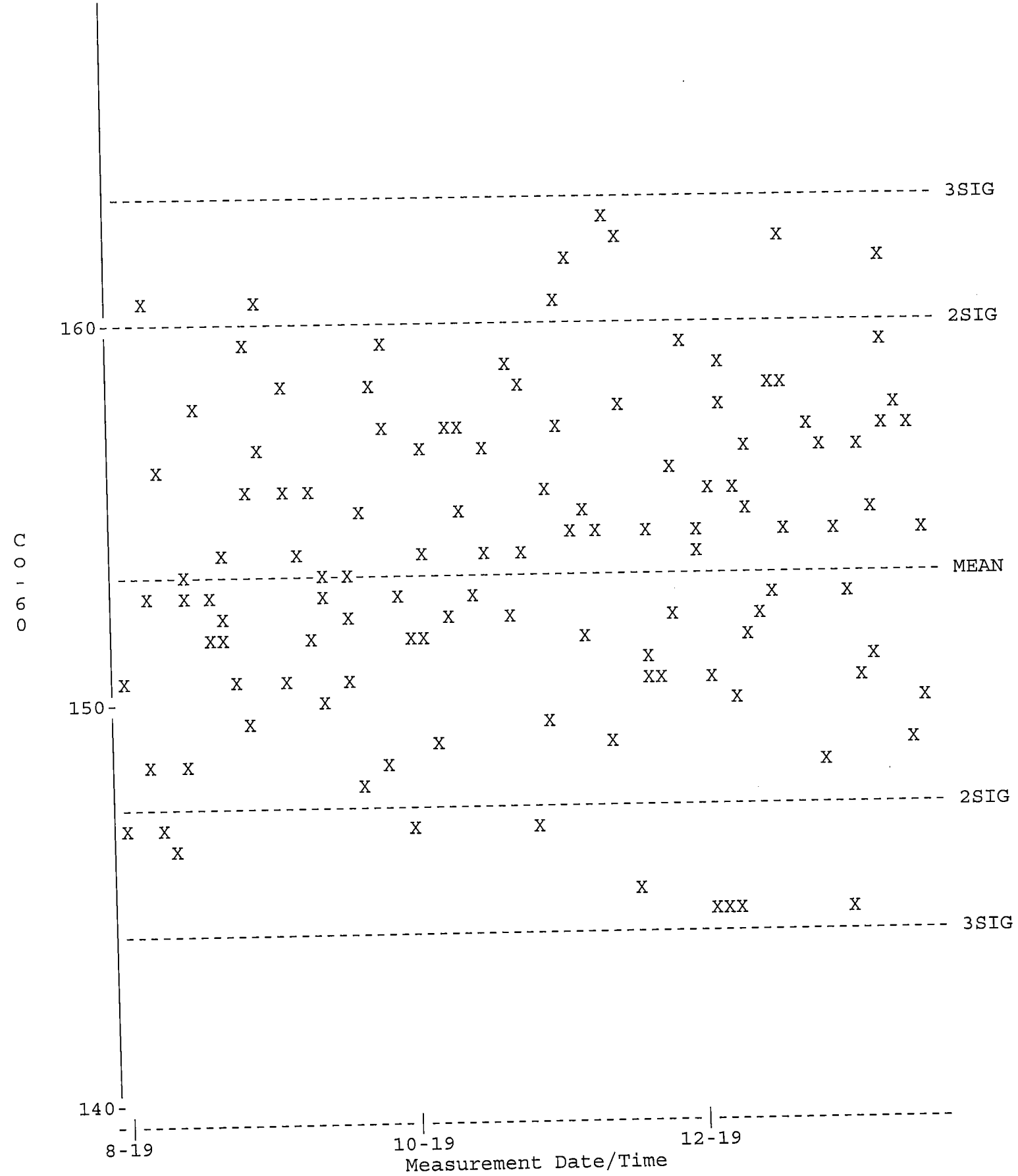
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



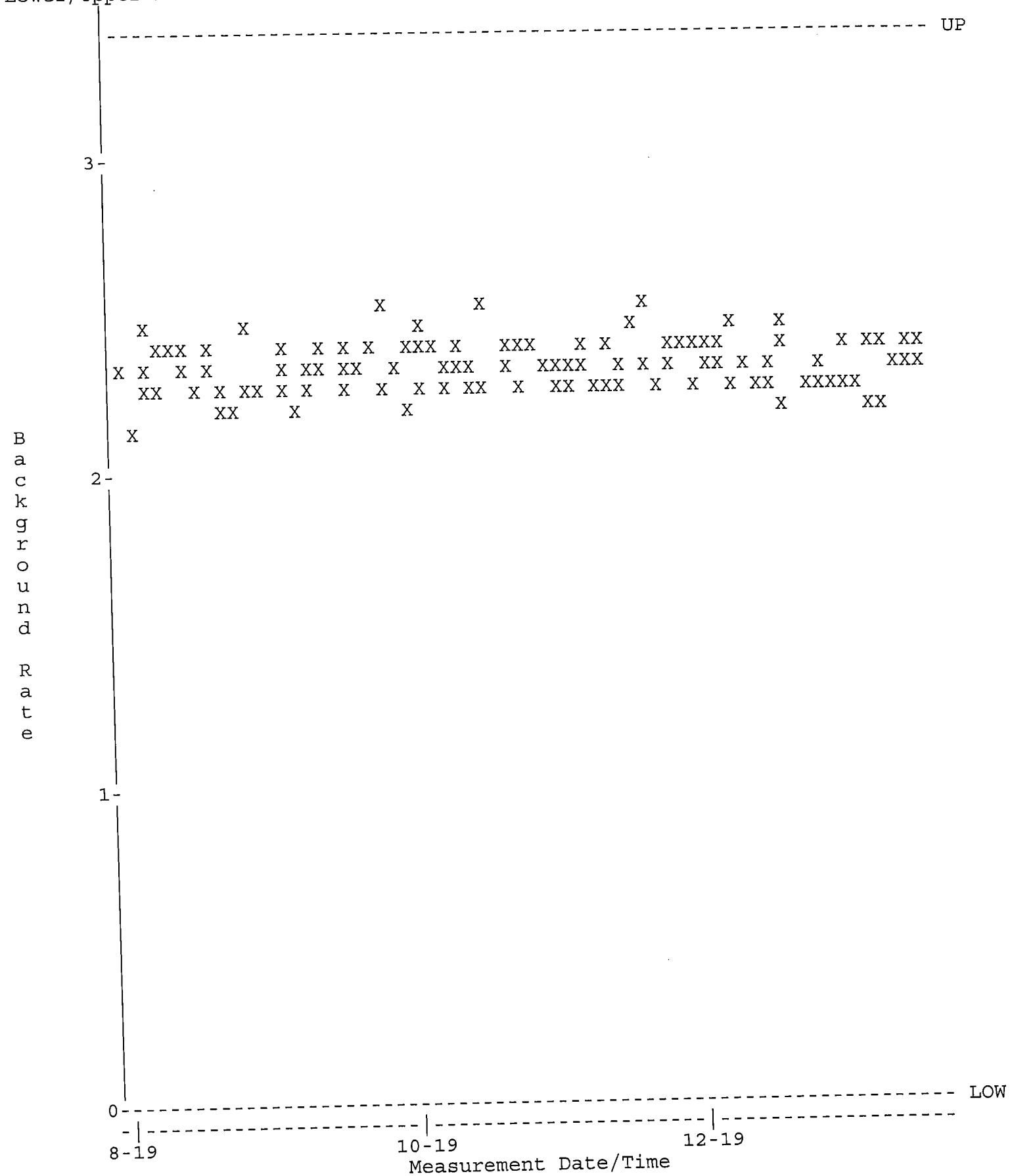
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



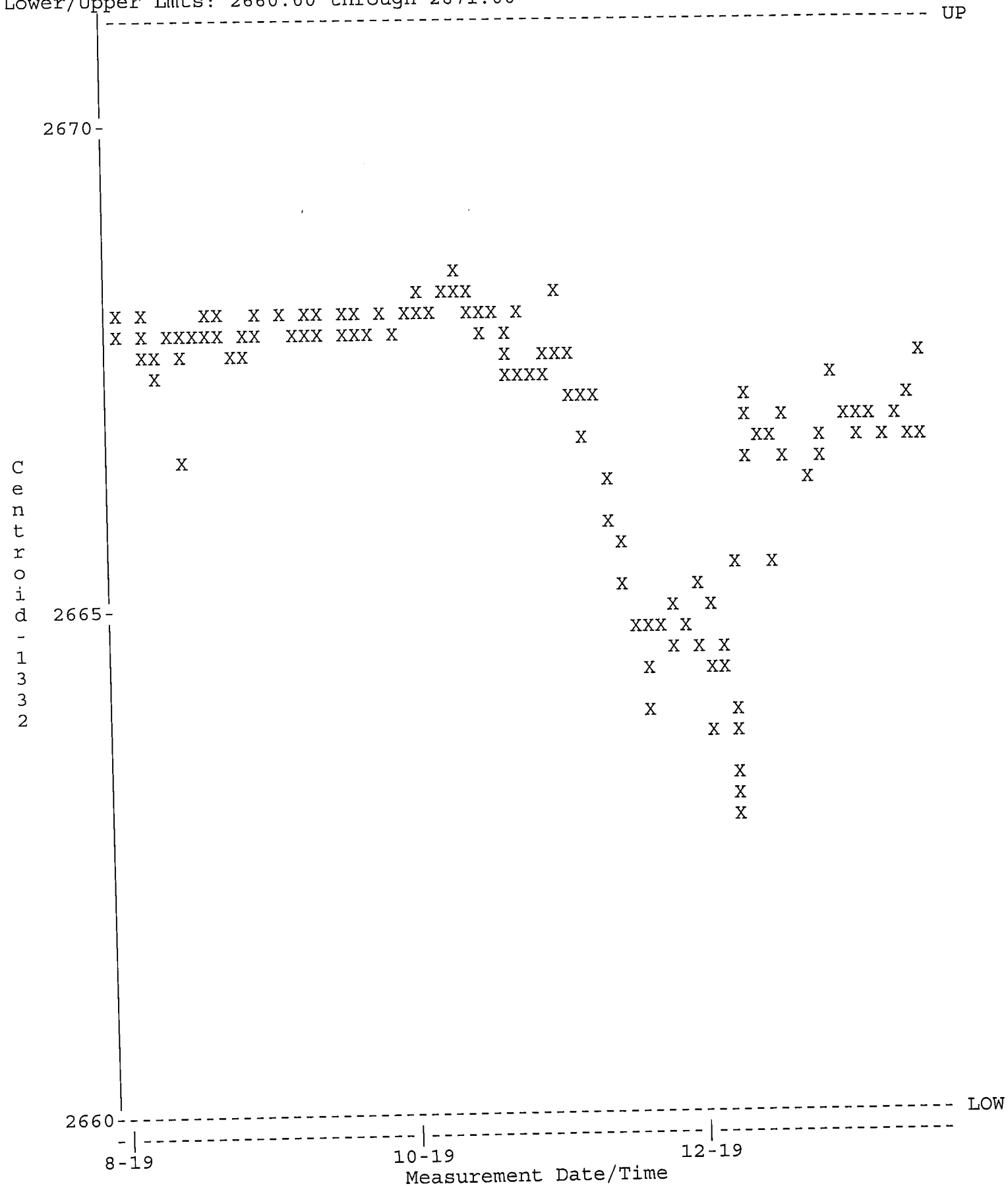
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



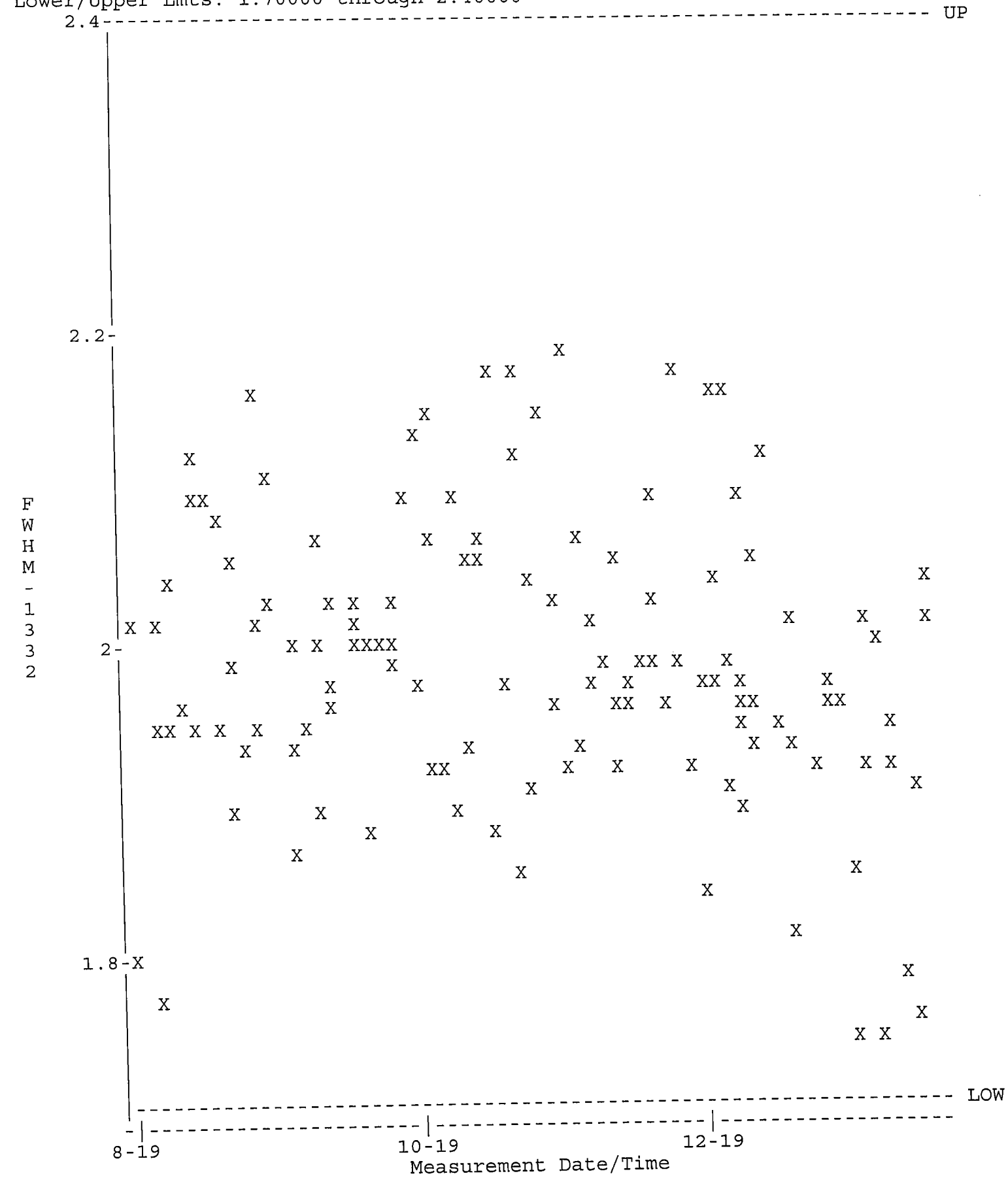
QA filename : DKB100:[GAMMA.QUALITY]TBE07_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



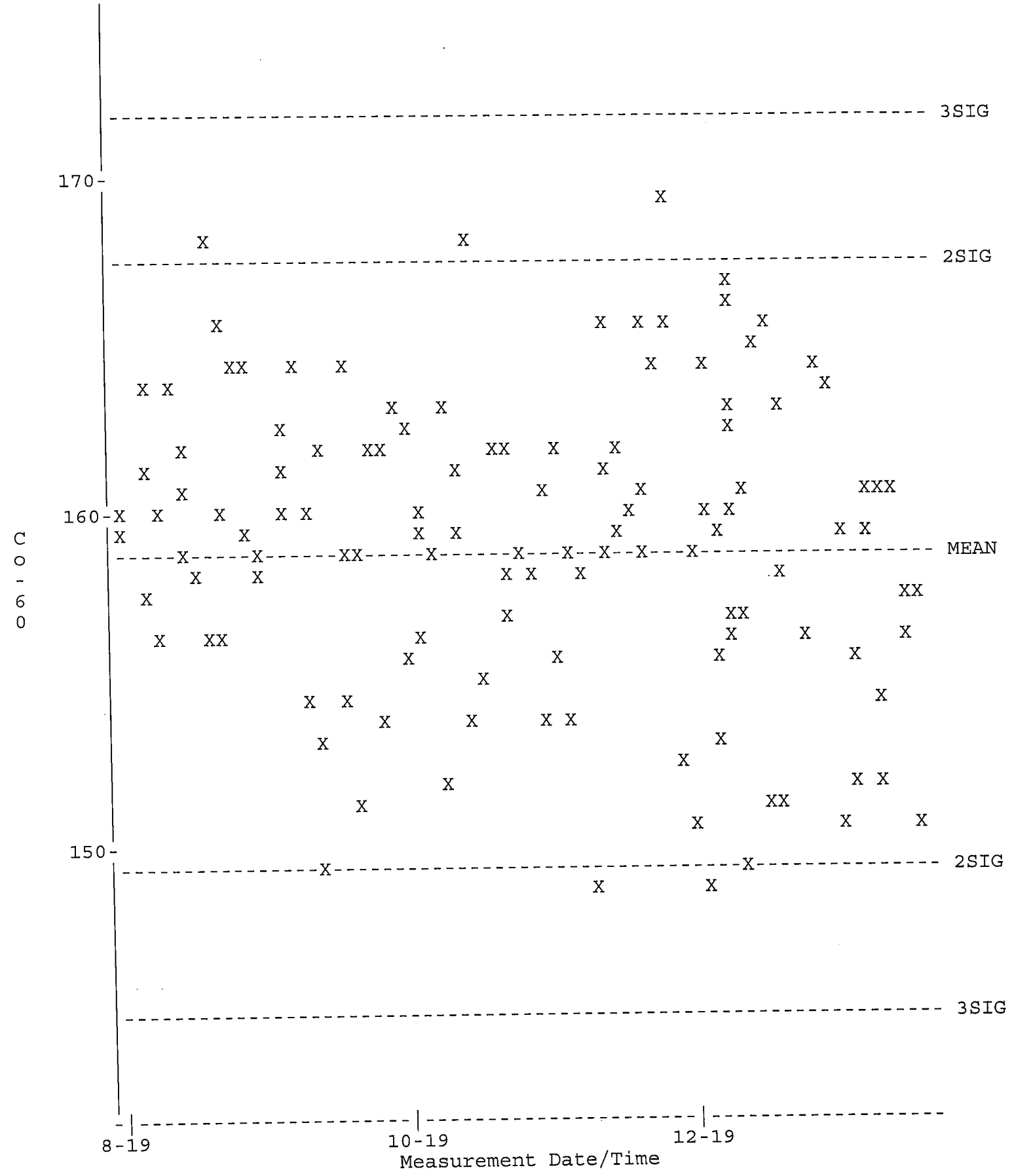
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



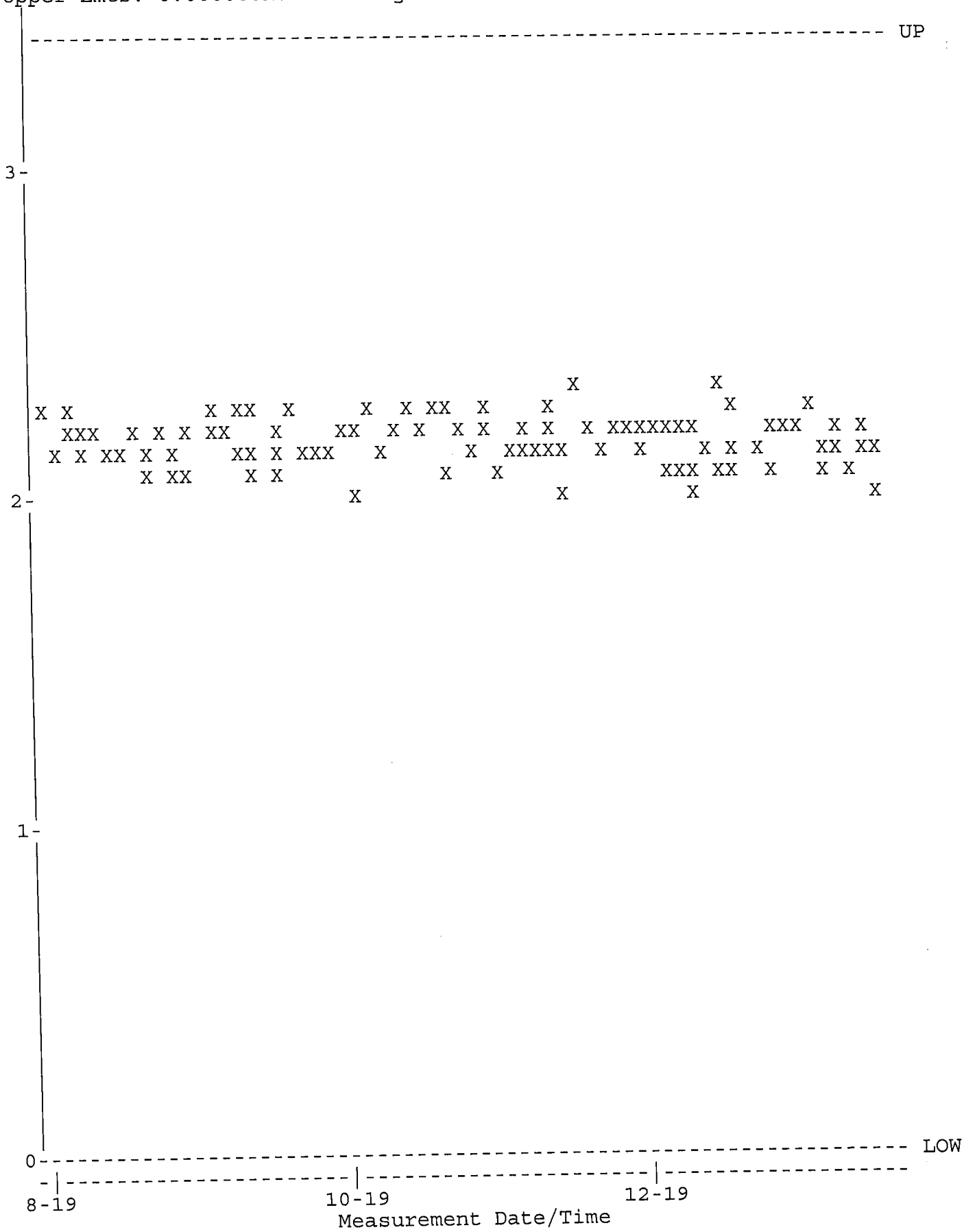
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



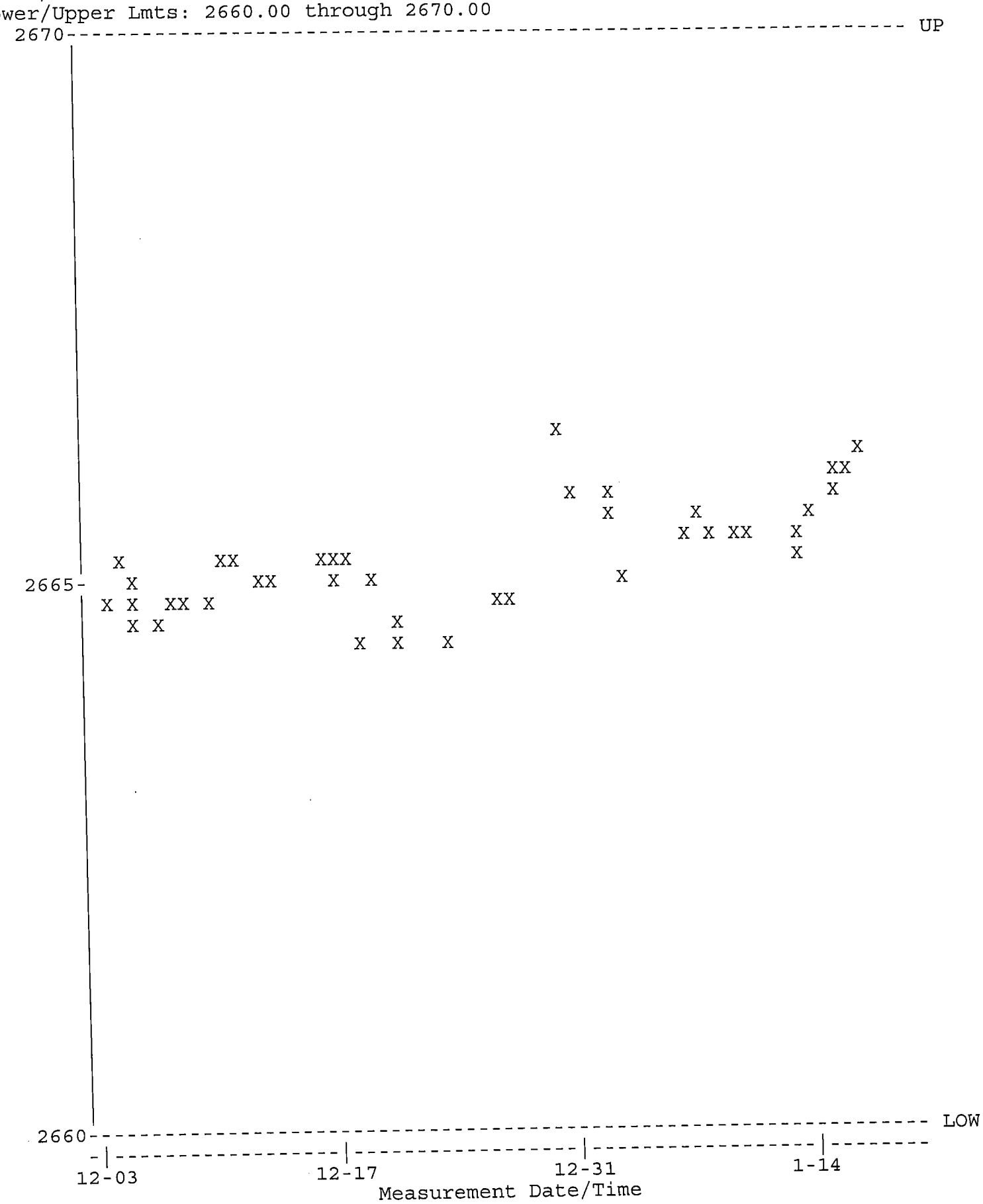
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



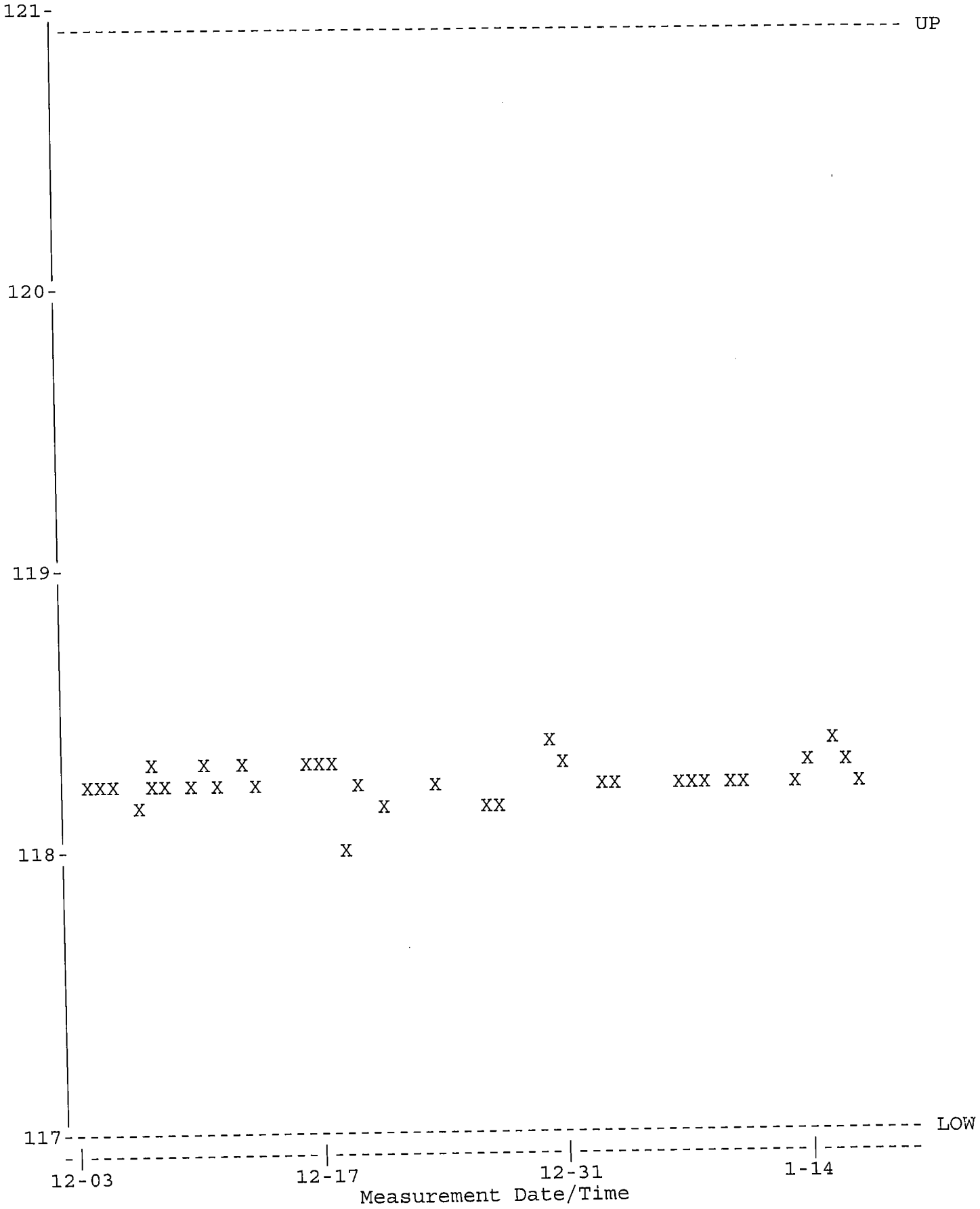
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



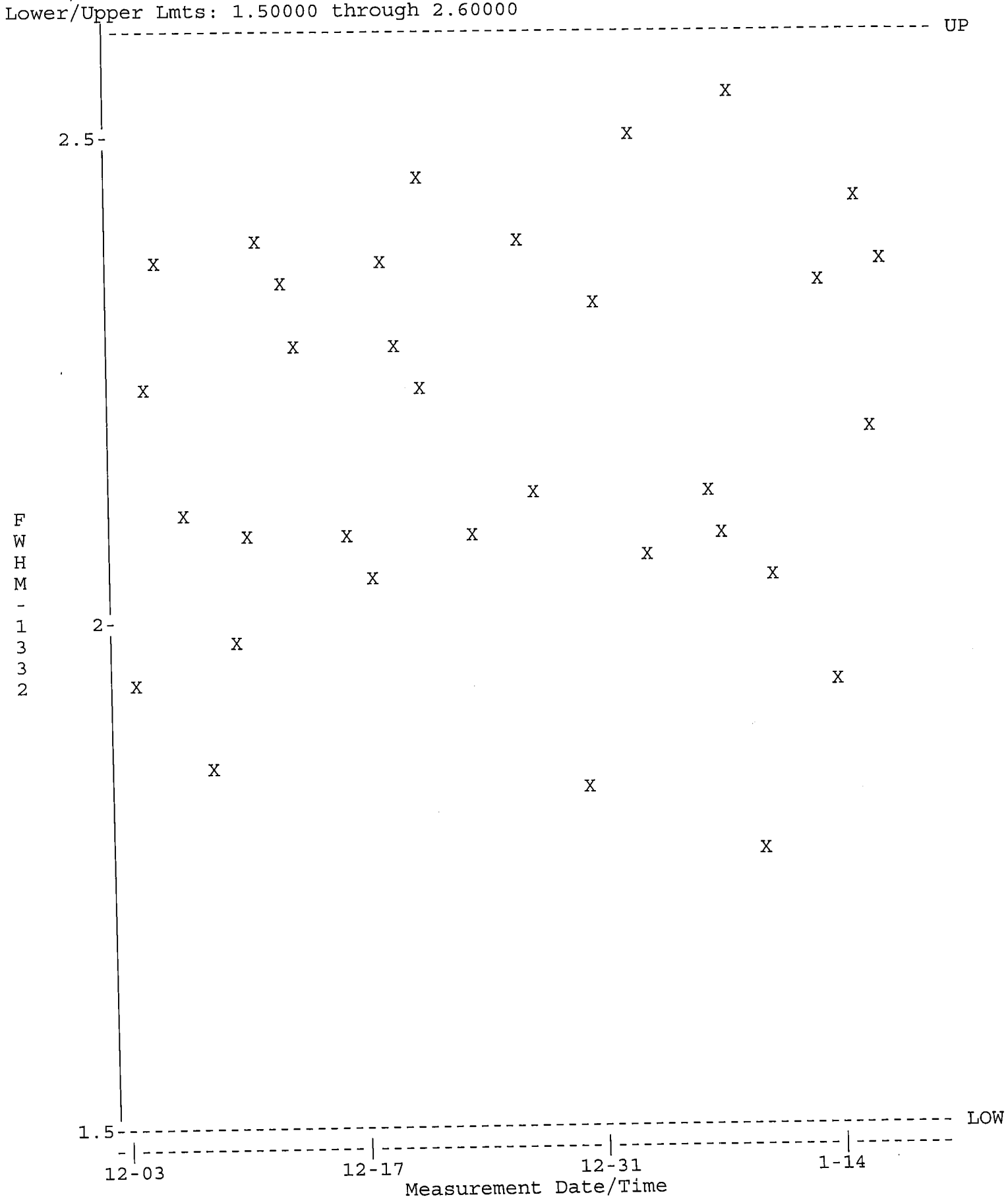
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



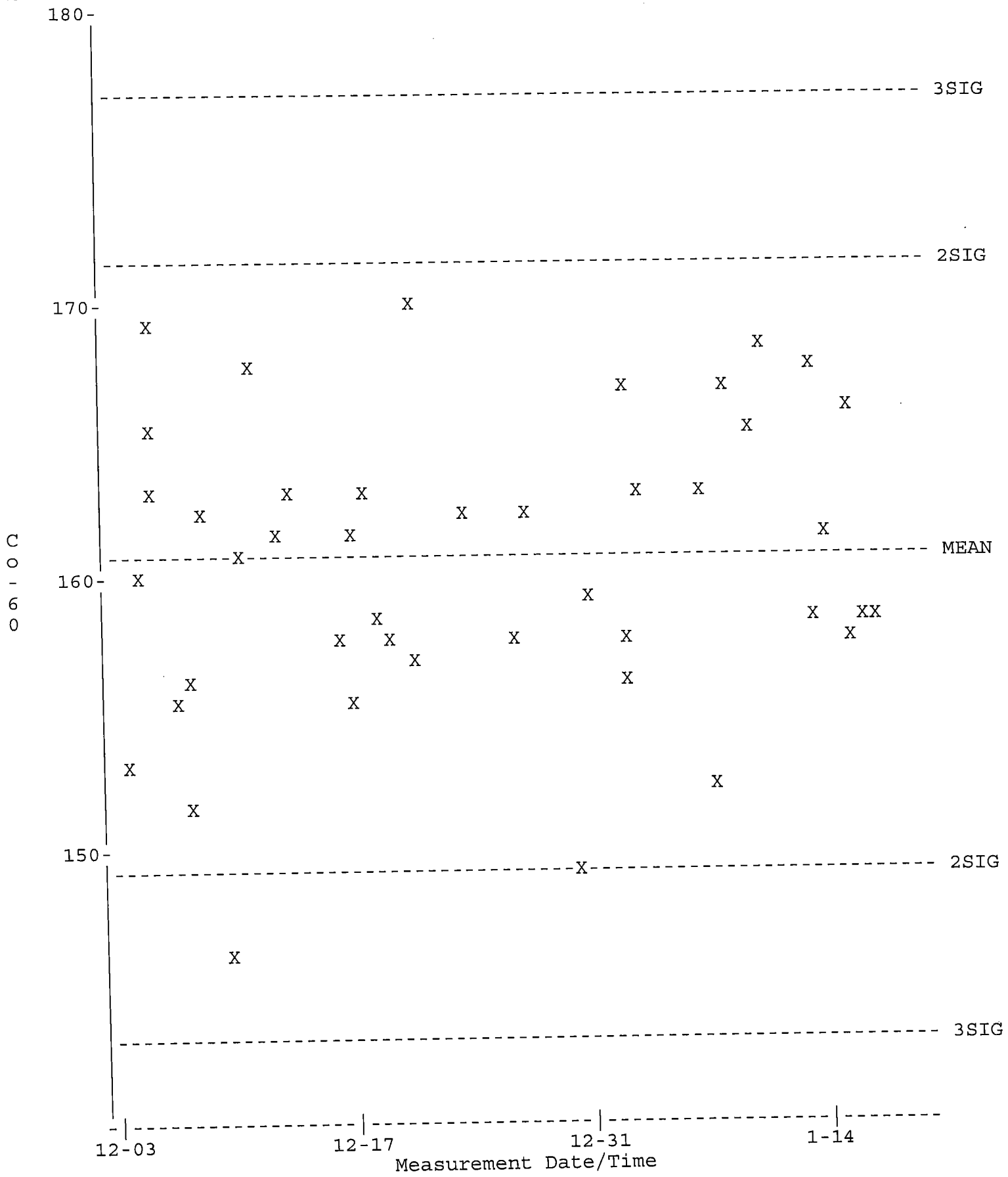
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



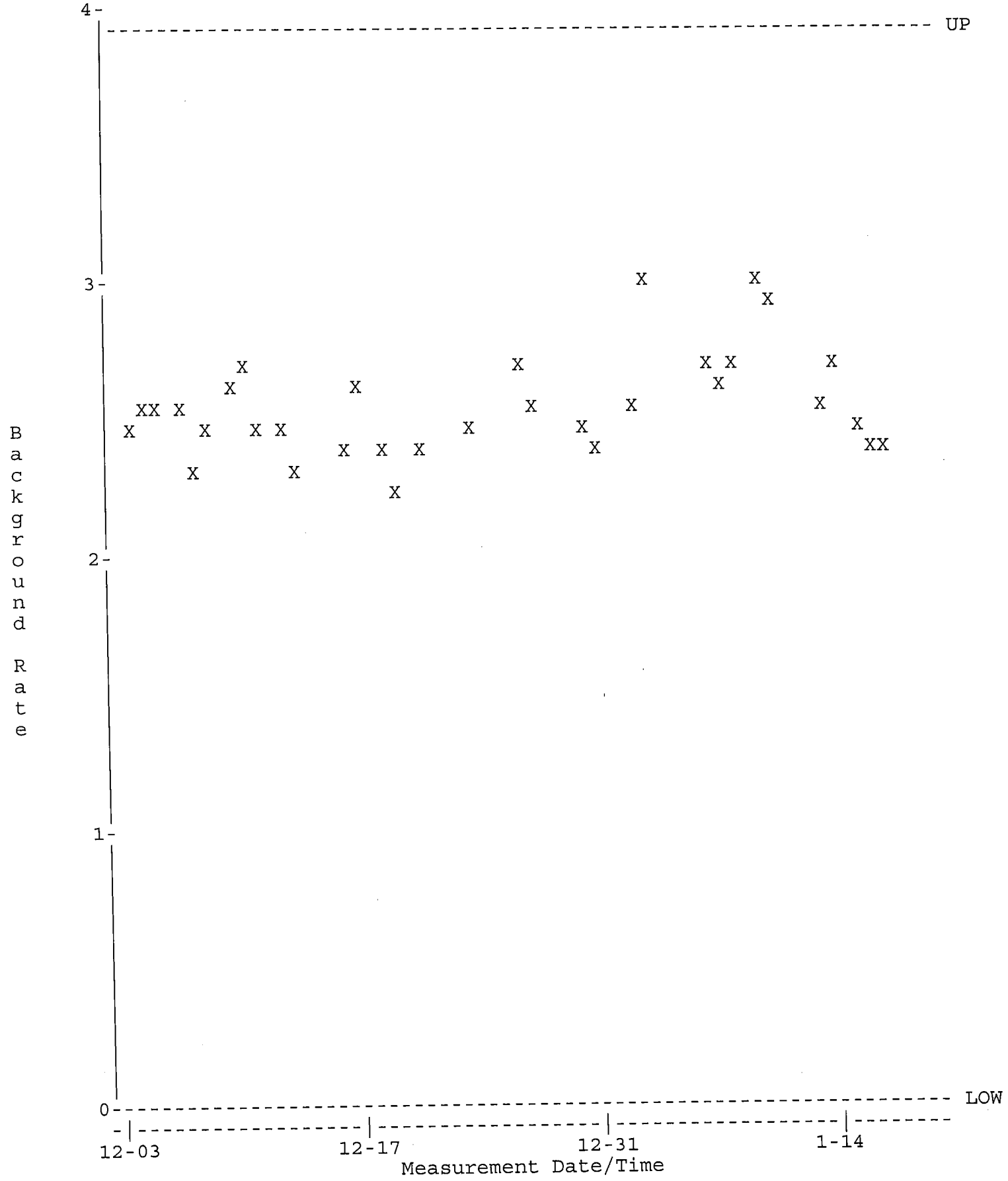
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



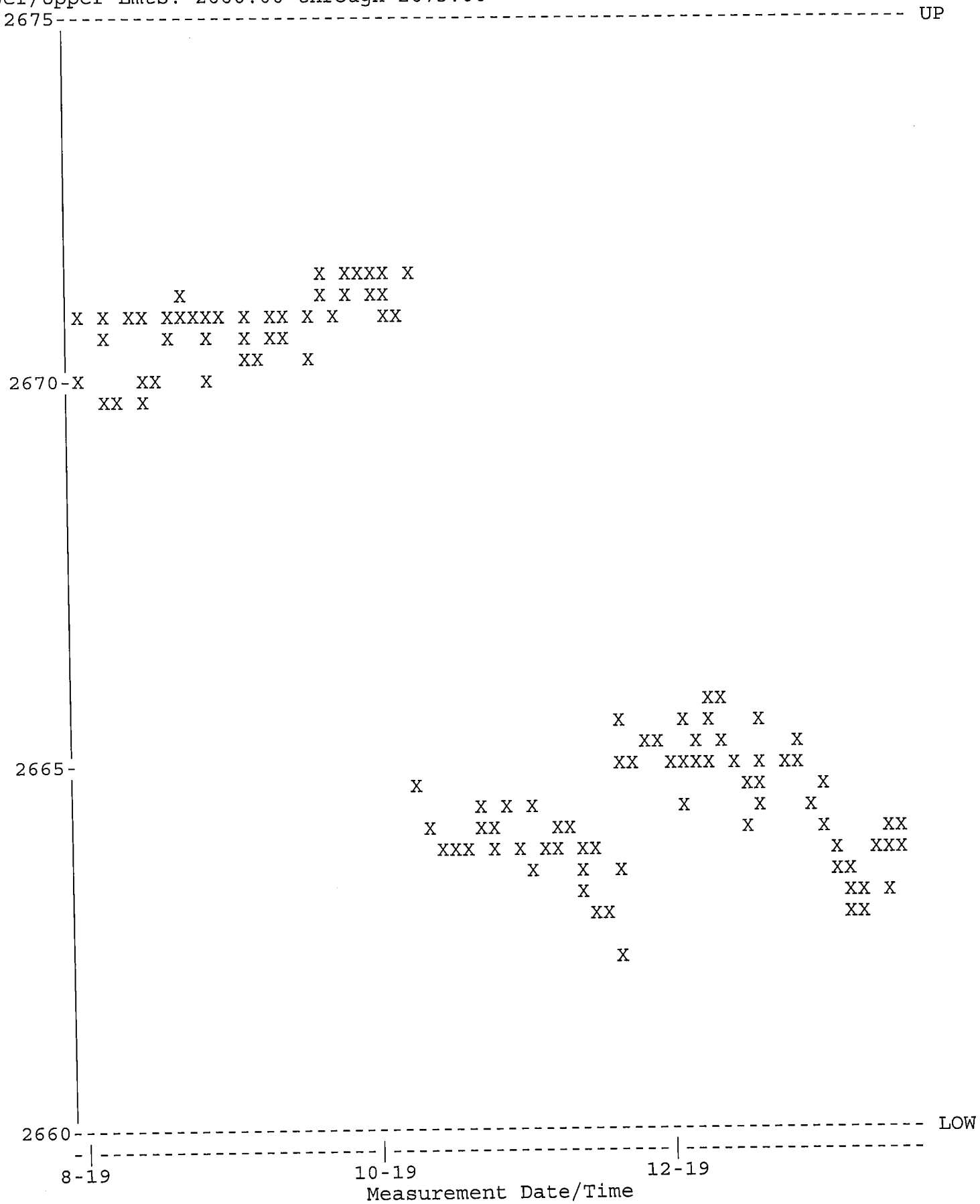
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



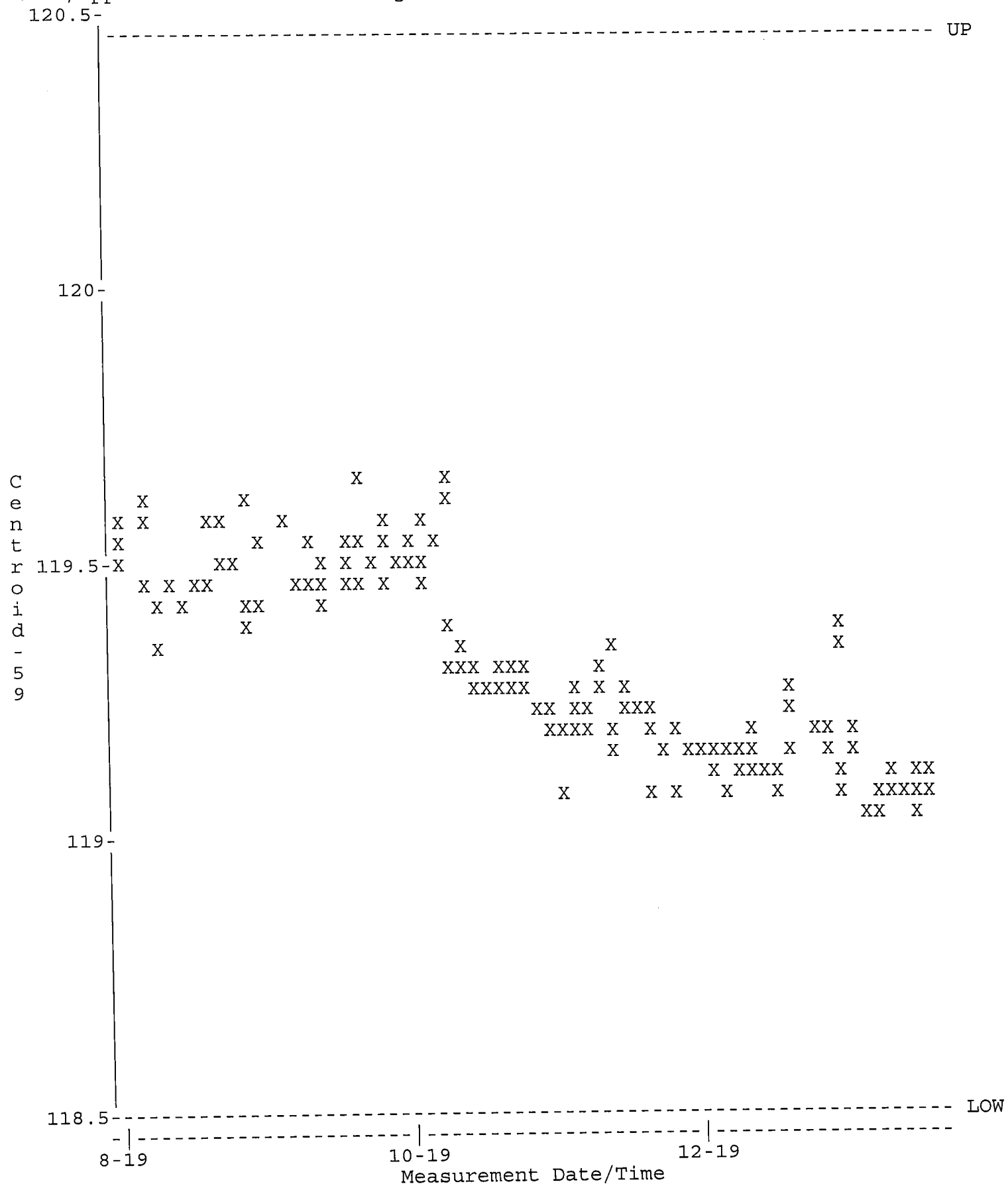
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



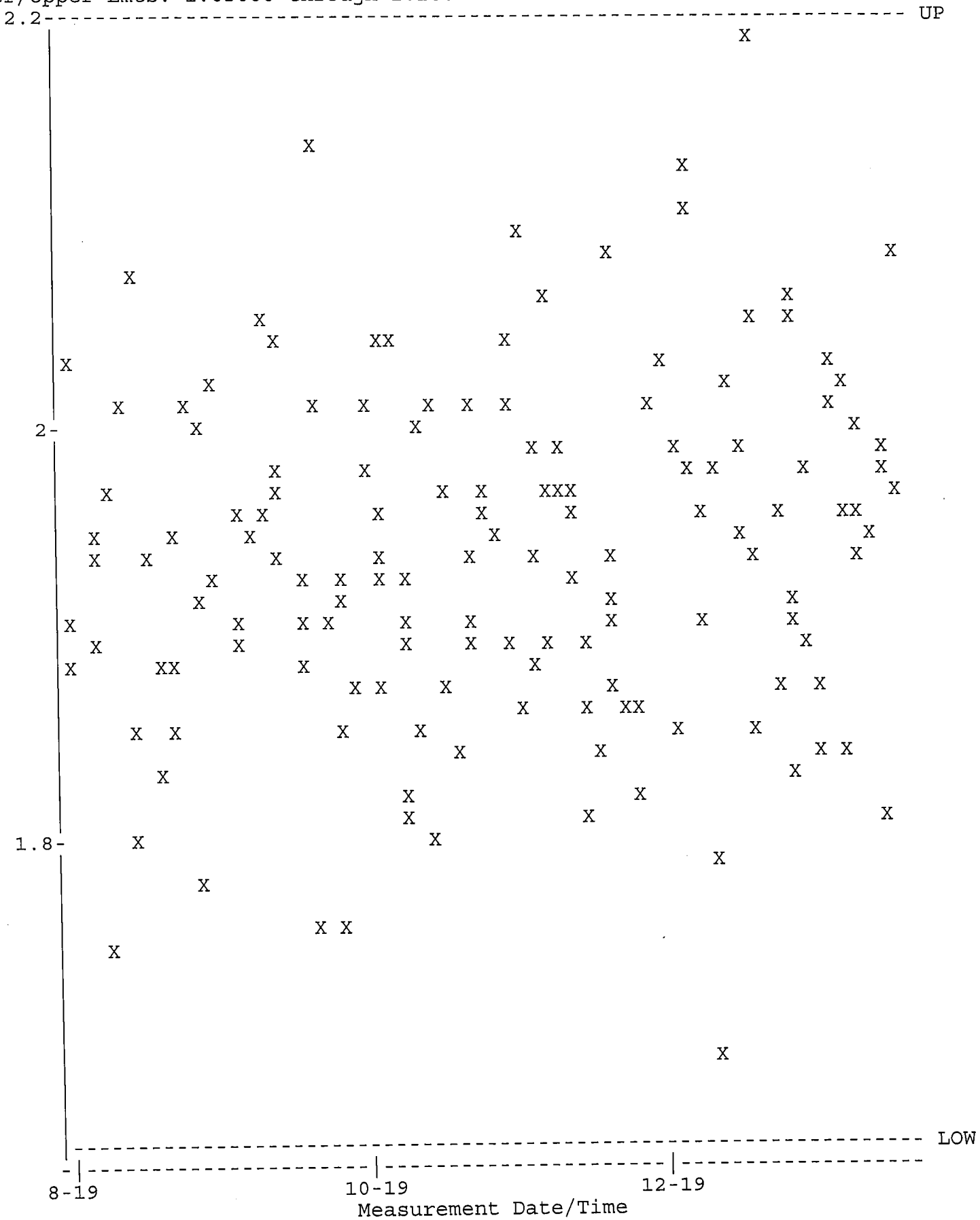
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



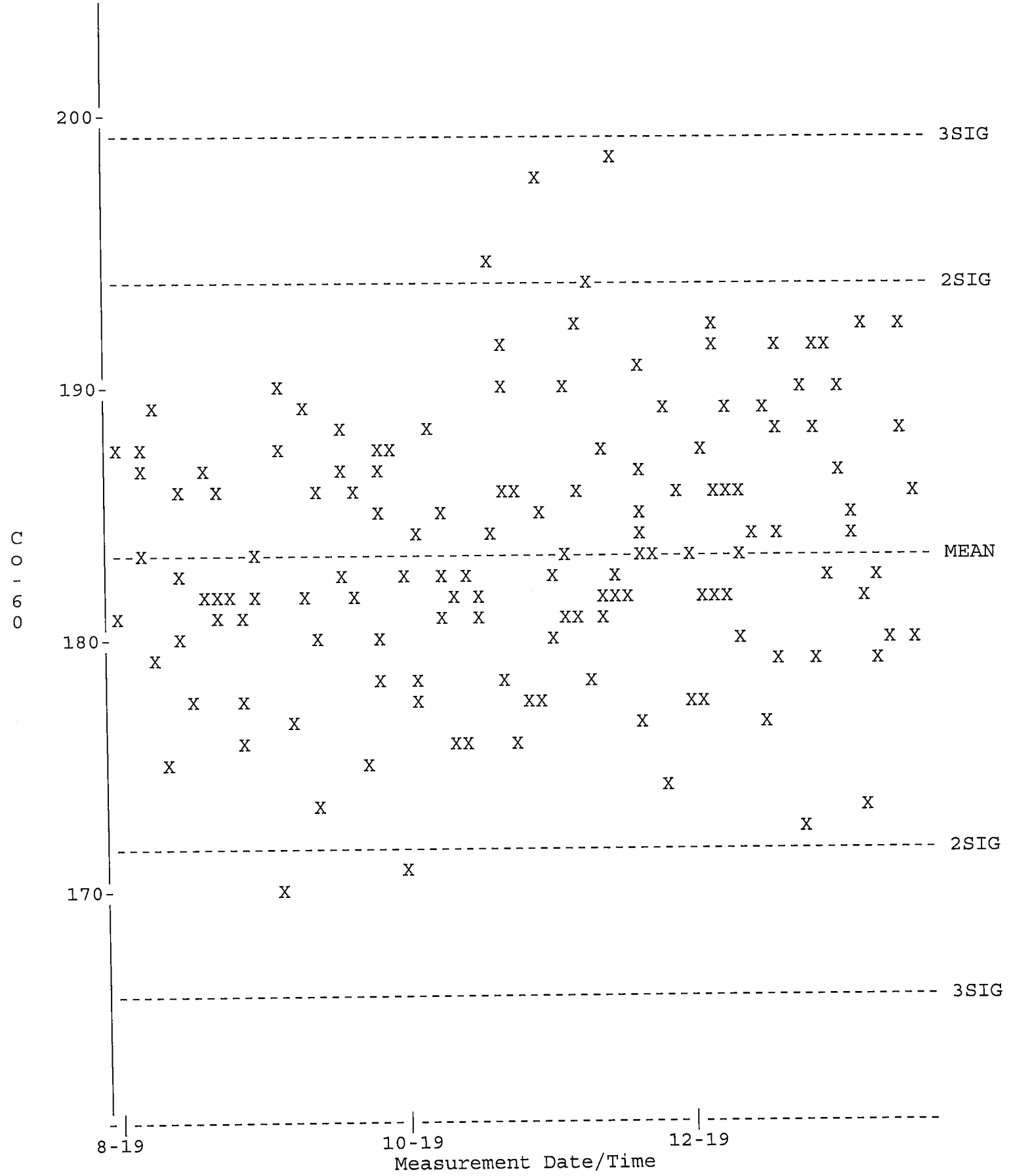
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



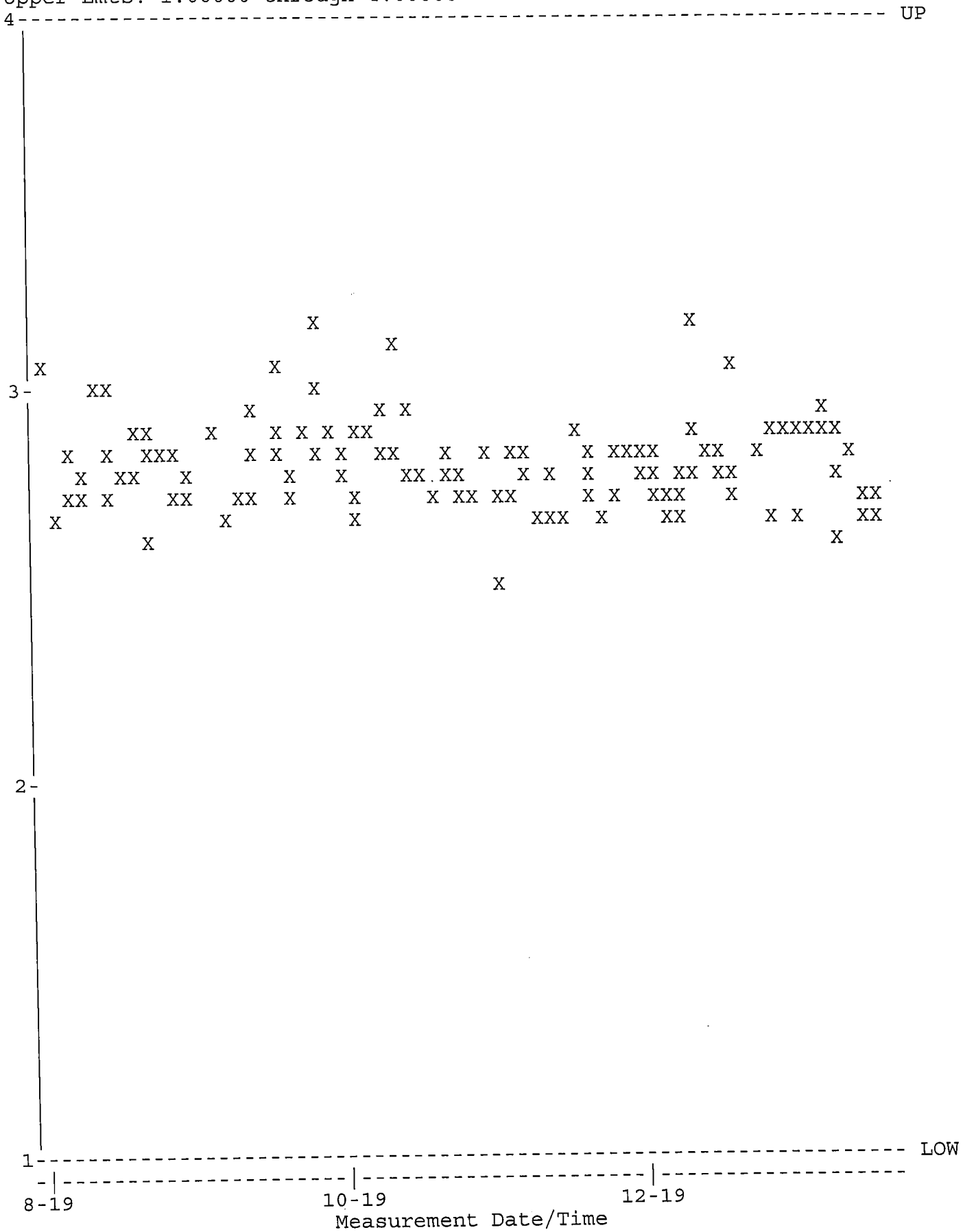
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



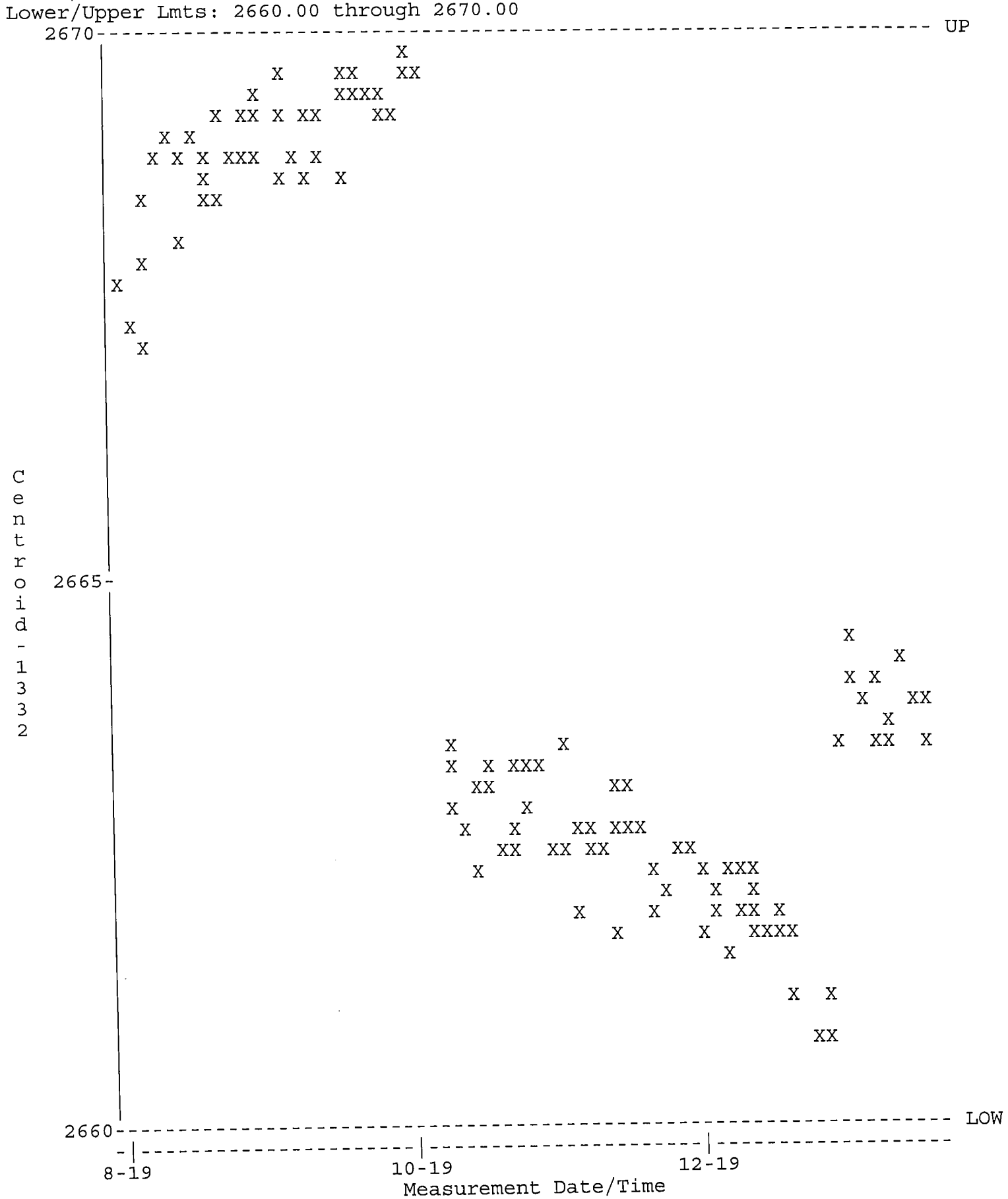
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



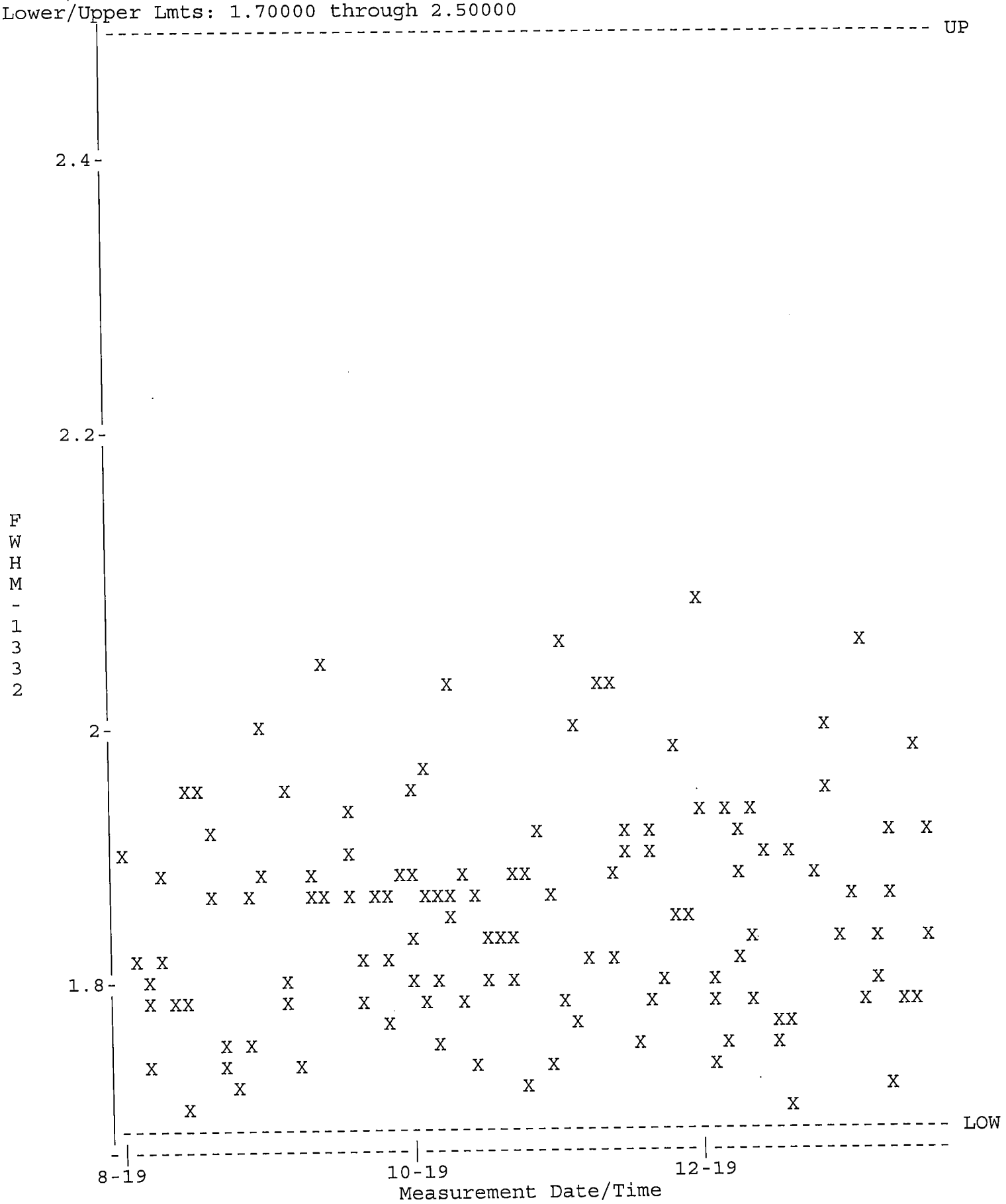
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



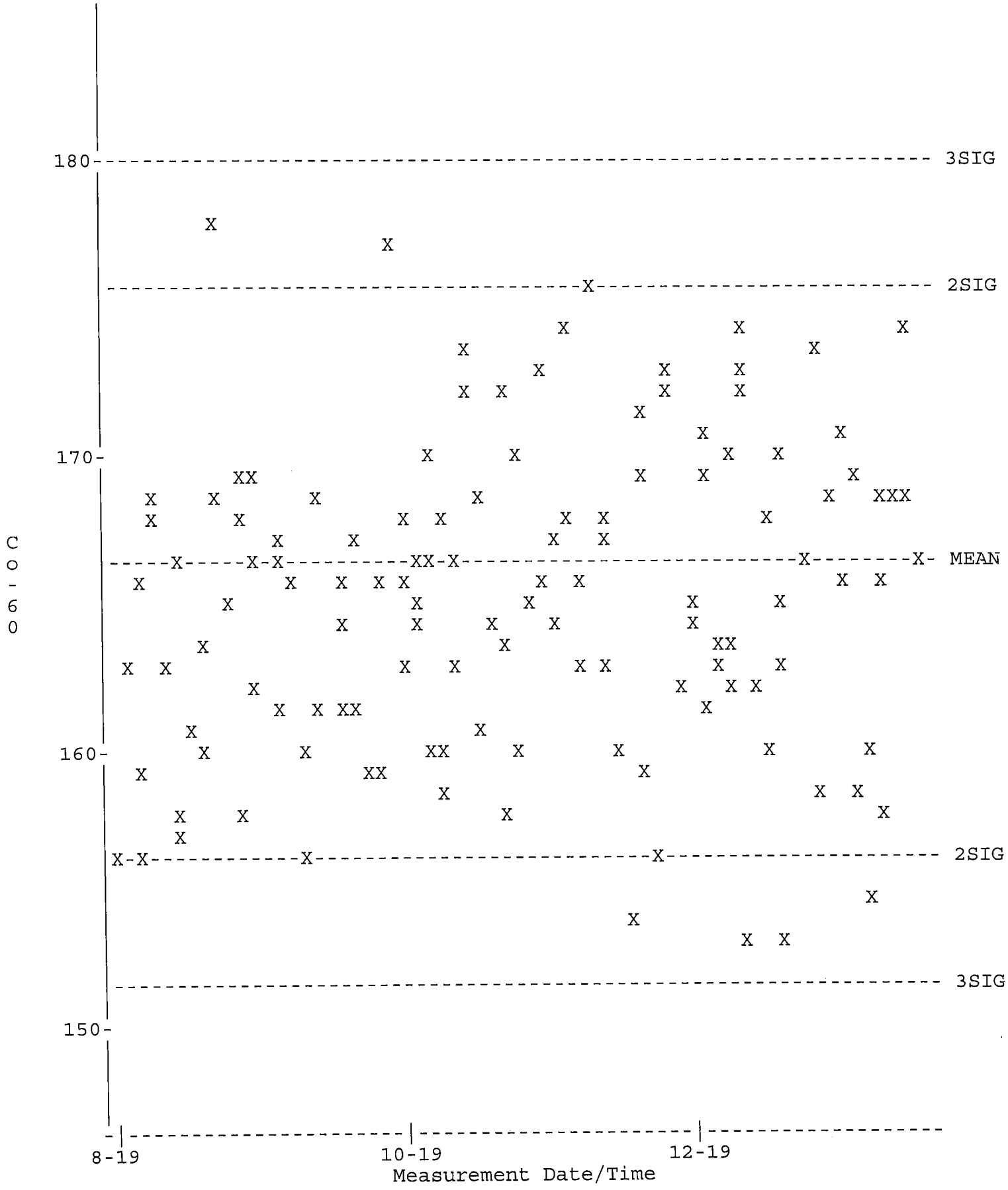
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



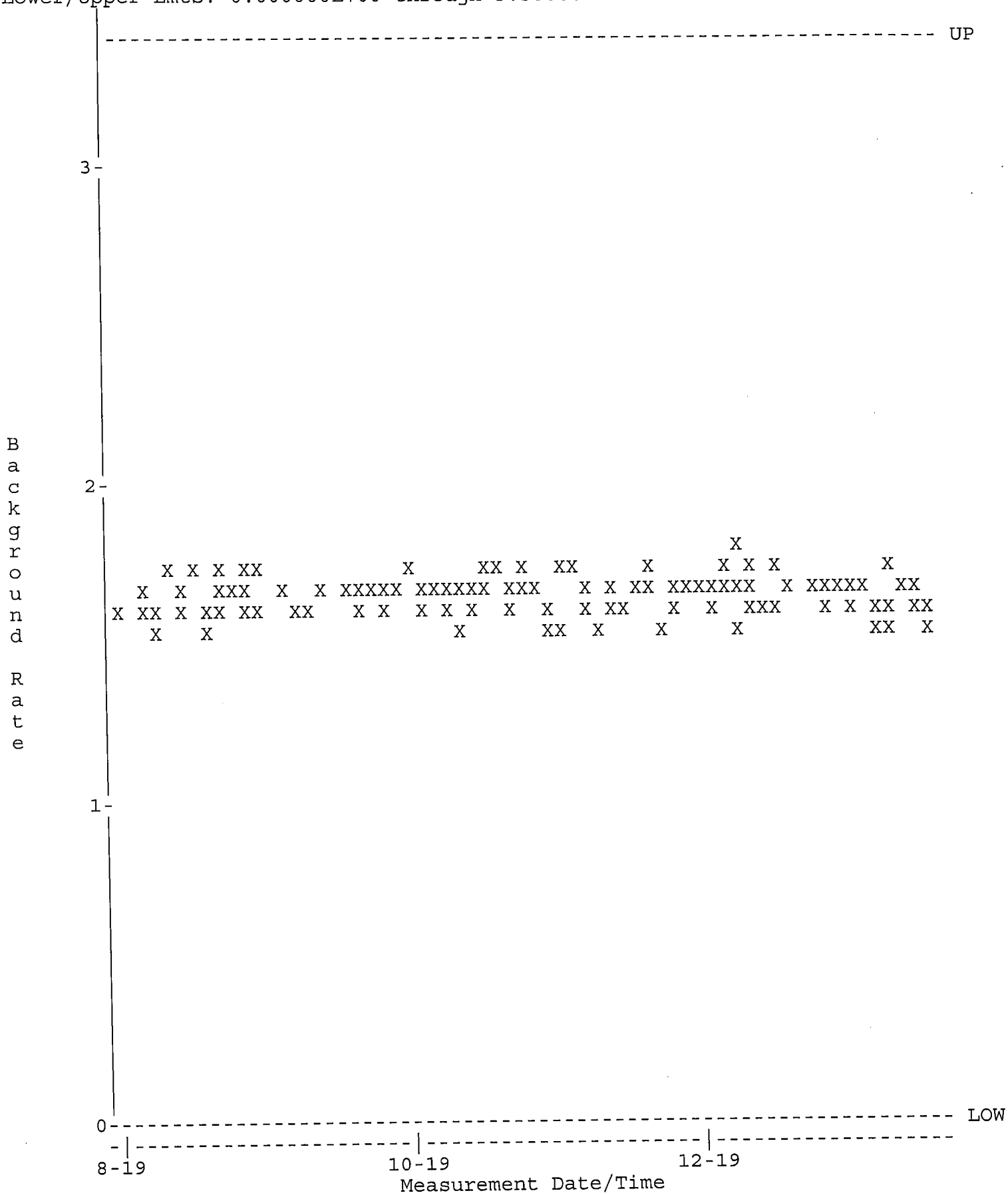
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



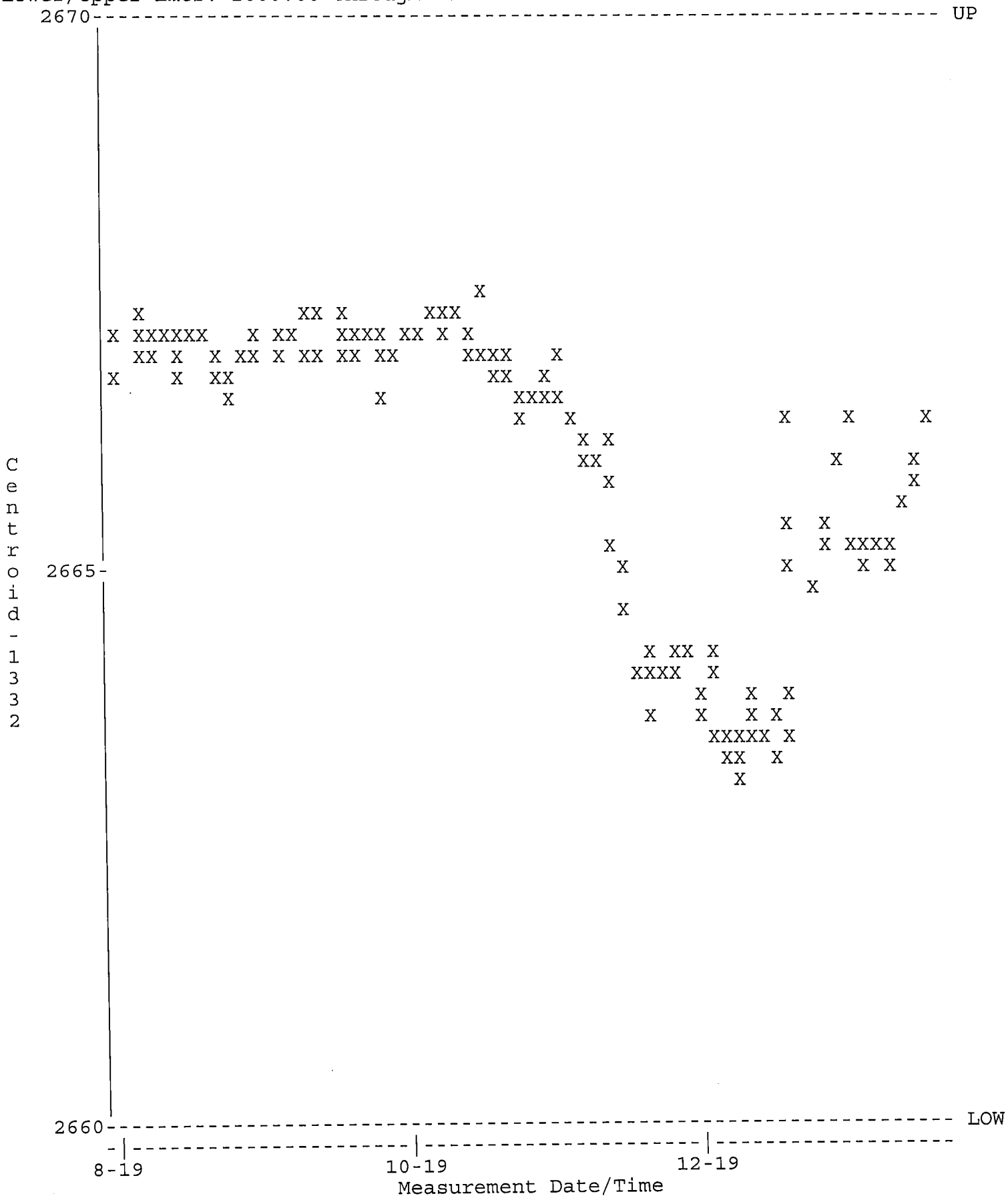
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



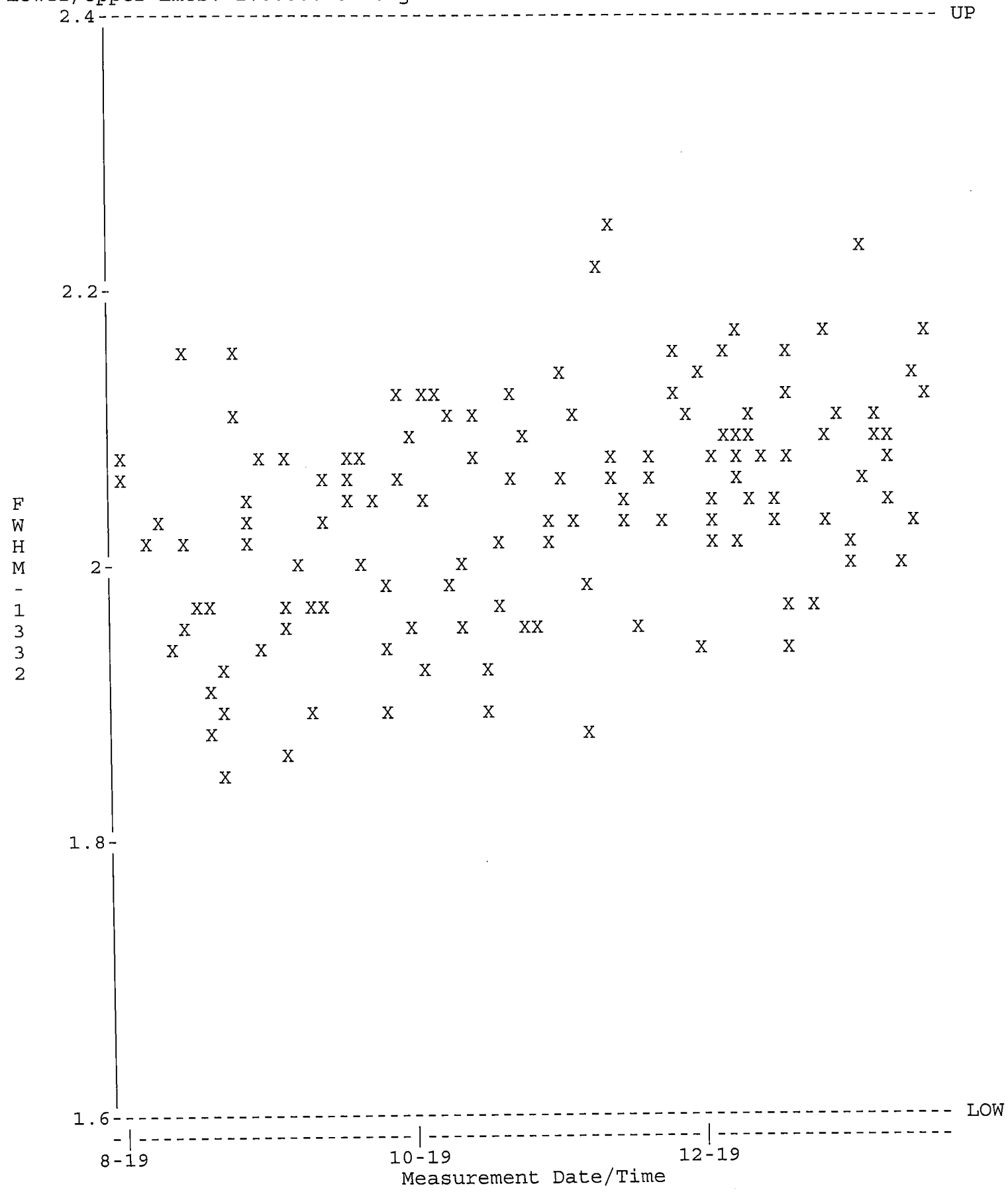
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



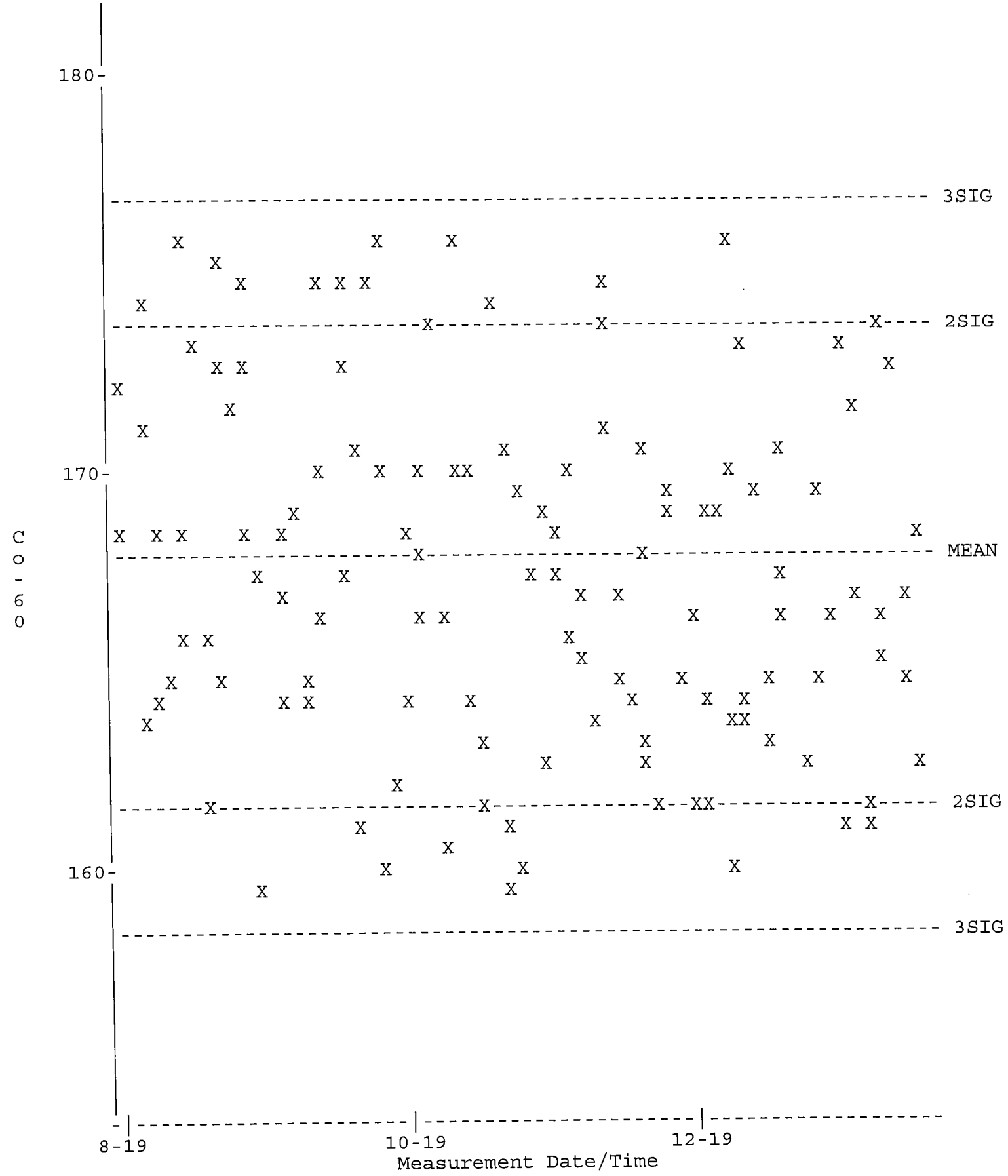
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



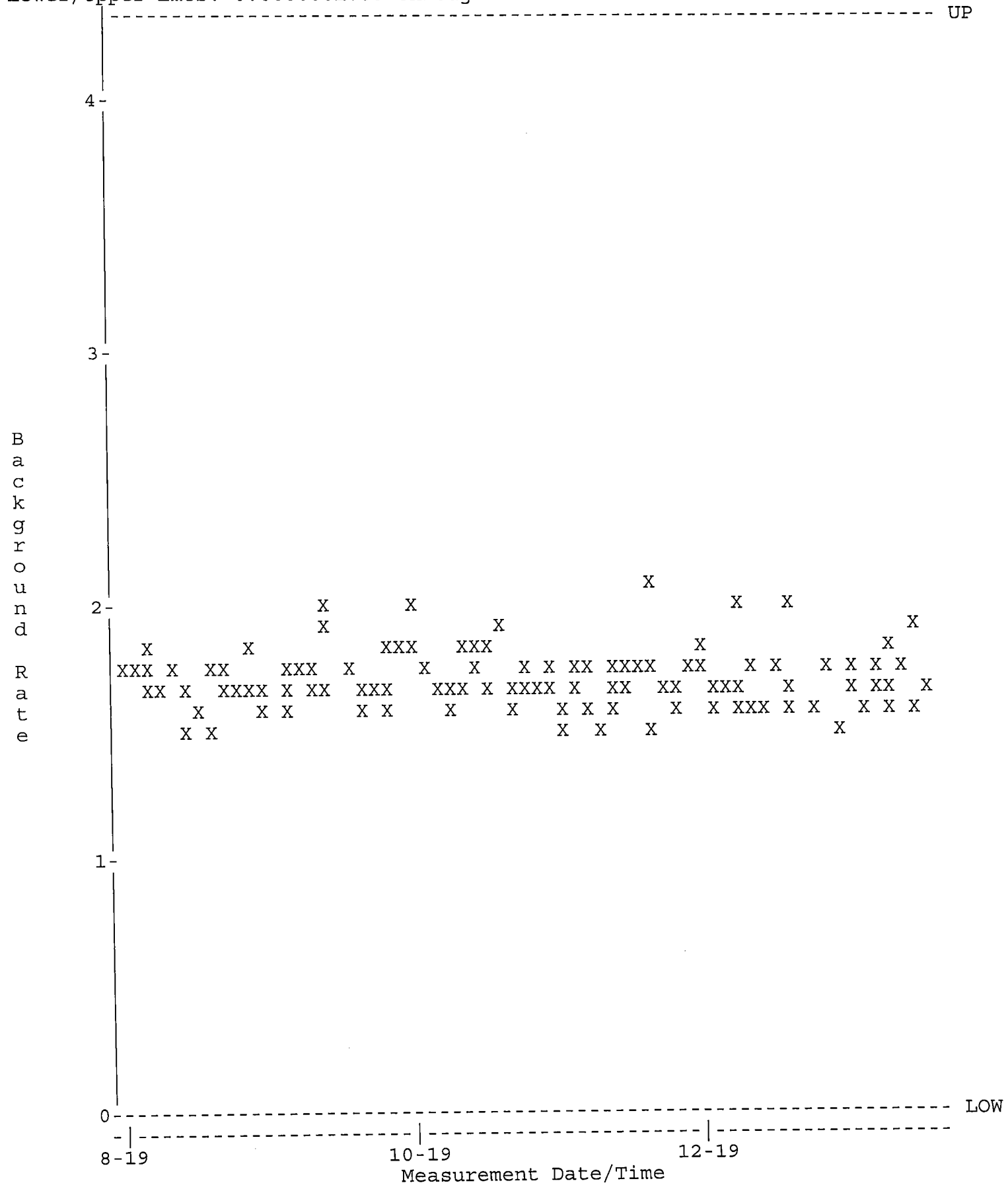
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:27:42.46
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:05.50

LIMS No., Customer Name, Client ID: L85482-1 S TEXAS

Sample ID : 13L85482-1
Sample Type : S
Quantity : 1.21410E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 9-DEC-2019 15:45:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 01:16:15.48
Live time : 0 01:16:14.04

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	186.19*	57	133	1.29	371.96	3.25E+00	1.25E-02	41.3	9.53E-01
2	1	238.49*	297	153	0.96	476.44	2.78E+00	6.49E-02	9.8	2.56E+00
3	1	294.84*	74	84	1.50	589.05	2.38E+00	1.62E-02	27.1	1.37E+00
4	1	337.78*	82	84	1.55	674.84	2.14E+00	1.80E-02	24.9	2.94E+00
5	1	351.70*	90	75	1.24	702.67	2.07E+00	1.97E-02	23.8	2.09E+00
6	1	510.87*	17	92	2.70	1020.80	1.54E+00	3.72E-03	149.1	7.22E-01
7	1	582.68*	82	41	1.69	1164.37	1.38E+00	1.80E-02	20.9	3.78E+00
8	1	609.11*	68	64	1.18	1217.22	1.34E+00	1.49E-02	28.0	5.98E-01
9	1	910.94*	58	44	1.61	1820.84	9.71E-01	1.27E-02	29.6	2.47E+00
10	1	1460.13*	148	6	2.26	2920.07	6.67E-01	3.24E-02	10.3	4.13E-01
11	1	1763.96*	25	3	2.46	3528.68	5.74E-01	5.54E-03	28.2	8.01E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85482-1 Acquisition date : 2-JAN-2020 16:11:05

Total number of lines in spectrum	11	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85482-1 Acquisition date : 2-JAN-2020 16:11:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	186.19	57	133	1.29	371.96	367	9	1.25E-02	82.6	3.25E+00	
1	238.49	297	153	0.96	476.44	471	10	6.49E-02	19.6	2.78E+00	
1	294.84	74	84	1.50	589.05	583	10	1.62E-02	54.1	2.38E+00	
1	337.78	82	84	1.55	674.84	669	12	1.80E-02	49.8	2.14E+00	
1	351.70	90	75	1.24	702.67	696	12	1.97E-02	47.6	2.07E+00	
1	510.87	17	92	2.70	1020.80	1012	16	3.72E-03	****	1.54E+00	
1	582.68	82	41	1.69	1164.37	1157	13	1.80E-02	41.8	1.38E+00	
1	609.11	68	64	1.18	1217.22	1212	12	1.49E-02	56.1	1.34E+00	
1	910.94	58	44	1.61	1820.84	1814	16	1.27E-02	59.2	9.71E-01	
1	1460.13	148	6	2.26	2920.07	2913	13	3.24E-02	20.6	6.67E-01	
1	1763.96	25	3	2.46	3528.68	3523	12	5.54E-03	56.3	5.74E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 11
Number of unidentified lines 11
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	5.839E-02		8.159E-02	1.421E-01	0.000E+00	0.411

```
A,13L85482-1       ,01/02/2020 17:27,12/09/2019 15:45,   1.214E+02,L85482-1 S TEX
B,13L85482-1       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,   5.839E-02,   8.159E-02,   1.421E-01,,    0.411
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 23:46:17.96
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 2-JAN-2020 17:46:07.74

LIMS No., Customer Name, Client ID: L85482-2 S TEXAS

Sample ID : 07L85482-2
Sample Type : S
Quantity : 7.03700E+01 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 9-DEC-2019 15:45:00.0
Geometry : 07S50121919
BKGFILE : 07BG122719MT
Real Time : 0 06:00:03.16
Live time : 0 06:00:00.00

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.50*	1101	901	1.38	476.35	4.89E+00	5.10E-02	6.9	4.50E+00
2	1	295.07*	248	432	1.31	589.45	4.19E+00	1.15E-02	18.4	9.94E-01
3	1	338.13	295	481	2.81	675.53	3.76E+00	1.37E-02	16.9	7.60E-01
4	1	351.80*	553	405	1.65	702.86	3.64E+00	2.56E-02	9.5	1.58E+00
5	1	582.92*	353	257	1.68	1164.88	2.38E+00	1.64E-02	11.4	1.57E+00
6	1	609.00*	266	258	1.78	1217.01	2.29E+00	1.23E-02	15.1	2.20E+00
7	1	911.02*	271	100	2.38	1820.68	1.64E+00	1.26E-02	10.2	1.78E+00
8	1	968.81*	157	95	2.24	1936.19	1.55E+00	7.29E-03	15.1	6.93E-01
9	1	1120.17*	69	93	2.14	2238.69	1.38E+00	3.19E-03	34.5	7.32E-01
10	1	1460.41*	578	54	2.66	2918.59	1.11E+00	2.68E-02	6.0	1.54E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85482-2 Acquisition date : 2-JAN-2020 17:46:07

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85482-2 Acquisition date : 2-JAN-2020 17:46:07

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.50	1101	901	1.38	476.35	470	15	5.10E-02	13.8	4.89E+00	
1	295.07	248	432	1.31	589.45	584	11	1.15E-02	36.9	4.19E+00	
1	338.13	295	481	2.81	675.53	669	14	1.37E-02	33.8	3.76E+00	
1	351.80	553	405	1.65	702.86	695	15	2.56E-02	19.0	3.64E+00	
1	582.92	353	257	1.68	1164.88	1156	14	1.64E-02	22.8	2.38E+00	
1	609.00	266	258	1.78	1217.01	1212	13	1.23E-02	30.1	2.29E+00	
1	911.02	271	100	2.38	1820.68	1815	13	1.26E-02	20.4	1.64E+00	
1	968.81	157	95	2.24	1936.19	1931	11	7.29E-03	30.3	1.55E+00	
1	1120.17	69	93	2.14	2238.69	2232	13	3.19E-03	69.0	1.38E+00	
1	1460.41	578	54	2.66	2918.59	2906	23	2.68E-02	12.0	1.11E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	4.019E-02		3.796E-02	6.650E-02	0.000E+00	0.604

```
A,07L85482-2       ,01/02/2020 23:46,12/09/2019 15:45,   7.037E+01,L85482-2 S TEX
B,07L85482-2       ,HUDSON              ,12/26/2019 10:37,07S50121919
C,CS-137  ,NO ,   4.019E-02,   3.796E-02,   6.650E-02,,    0.604
```

Analyst: HBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 23:36:00.08
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 2-JAN-2020 17:35:40.81

LIMS No., Customer Name, Client ID: L85482-3 S TEXAS

Sample ID : 01L85482-3
Sample Type : S
Quantity : 7.70500E+01 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:50:00.0
Geometry : 01S50121819
BKGFILE : 01BG122719MT
Real Time : 0 06:00:03.29
Live time : 0 06:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.66*	196	531	1.35	371.56	6.49E+00	9.09E-03	23.9	3.11E+00
2	5	238.58*	1210	309	1.05	477.31	5.59E+00	5.60E-02	3.8	1.88E+00
3	5	241.52	310	431	1.59	483.19	5.54E+00	1.44E-02	16.1	
4	1	295.24*	246	388	0.99	590.56	4.77E+00	1.14E-02	17.0	1.38E+00
5	1	338.29	261	463	1.77	676.59	4.27E+00	1.21E-02	19.2	2.14E+00
6	1	351.80*	457	444	1.15	703.58	4.13E+00	2.11E-02	10.7	1.35E+00
7	1	510.72*	141	293	2.75	1021.20	2.99E+00	6.51E-03	36.2	1.87E+00
8	1	582.92*	381	170	1.34	1165.49	2.66E+00	1.76E-02	8.6	1.99E+00
9	1	609.06*	354	300	1.41	1217.74	2.55E+00	1.64E-02	12.5	1.72E+00
10	1	726.94	89	132	2.09	1453.35	2.17E+00	4.12E-03	27.5	2.01E+00
11	1	910.93*	214	109	1.42	1821.11	1.77E+00	9.89E-03	12.3	1.02E+00
12	1	968.71	156	95	1.90	1936.60	1.67E+00	7.22E-03	15.5	7.22E-01
13	1	1119.89*	101	98	1.97	2238.78	1.46E+00	4.70E-03	23.2	1.91E+00
14	1	1460.33*	578	60	2.12	2919.34	1.16E+00	2.67E-02	5.5	1.88E+00
15	1	1763.99*	76	24	2.37	3526.41	9.97E-01	3.52E-03	19.9	2.57E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85482-3 Acquisition date : 2-JAN-2020 17:35:40

Total number of lines in spectrum	15	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85482-3 Acquisition date : 2-JAN-2020 17:35:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.66	196	531	1.35	371.56	367	9	9.09E-03	47.8	6.49E+00	
5	238.58	1210	309	1.05	477.31	473	15	5.60E-02	7.6	5.59E+00	
5	241.52	310	431	1.59	483.19	473	15	1.44E-02	32.1	5.54E+00	
1	295.24	246	388	0.99	590.56	586	10	1.14E-02	34.0	4.77E+00	
1	338.29	261	463	1.77	676.59	670	15	1.21E-02	38.4	4.27E+00	
1	351.80	457	444	1.15	703.58	698	12	2.11E-02	21.5	4.13E+00	
1	510.72	141	293	2.75	1021.20	1013	18	6.51E-03	72.4	2.99E+00	
1	582.92	381	170	1.34	1165.49	1161	11	1.76E-02	17.2	2.66E+00	
1	609.06	354	300	1.41	1217.74	1211	15	1.64E-02	24.9	2.55E+00	
1	726.94	89	132	2.09	1453.35	1448	11	4.12E-03	55.0	2.17E+00	
1	910.93	214	109	1.42	1821.11	1816	11	9.89E-03	24.5	1.77E+00	
1	968.71	156	95	1.90	1936.60	1932	13	7.22E-03	30.9	1.67E+00	
1	1119.89	101	98	1.97	2238.78	2232	13	4.70E-03	46.4	1.46E+00	
1	1460.33	578	60	2.12	2919.34	2910	17	2.67E-02	11.0	1.16E+00	
1	1763.99	76	24	2.37	3526.41	3520	12	3.52E-03	39.7	9.97E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 15
Number of unidentified lines 15
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	9.444E-03		2.799E-02	4.764E-02	0.000E+00	0.198

```
A,01L85482-3       ,01/02/2020 23:36,12/09/2019 15:50,   7.705E+01,L85482-3 S TEX
B,01L85482-3       ,HUDSON              ,12/30/2019 11:02,01S50121819
C,CS-137  ,NO ,    9.444E-03,   2.799E-02,   4.764E-02,,    0.198
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 15:56:07.04
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 2-JAN-2020 14:37:38.39

LIMS No., Customer Name, Client ID: L85482-4 S TEXAS

Sample ID : 08L85482-4 Smple Date: 9-DEC-2019 15:50:00.0
Sample Type : S Geometry : 08S100121819
Quantity : 1.44890E+02 g Dry BKGFILE : 08BG122719MT
Start Channel : 190 Energy Tol : 2.00000 Real Time : 0 01:18:19.32
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 01:18:18.34
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.78*	198	154	0.99	484.47	2.69E+00	4.22E-02	13.4	3.97E-01
2	1	295.66*	88	108	2.50	597.99	2.28E+00	1.87E-02	28.9	1.70E+00
3	1	352.07*	118	80	1.47	710.55	1.98E+00	2.51E-02	17.3	5.98E+00
4	1	583.35*	71	52	1.59	1172.05	1.28E+00	1.51E-02	25.2	1.03E+00
5	1	609.52*	80	51	1.67	1224.27	1.24E+00	1.69E-02	22.8	1.83E+00
6	1	911.60*	61	8	2.70	1827.01	8.72E-01	1.31E-02	16.8	4.82E-01
7	1	1460.91*	104	13	2.04	2922.92	5.83E-01	2.20E-02	14.2	1.02E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85482-4 Acquisition date : 2-JAN-2020 14:37:38

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85482-4 Acquisition date : 2-JAN-2020 14:37:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.78	198	154	0.99	484.47	481	9	4.22E-02	26.8	2.69E+00	
1	295.66	88	108	2.50	597.99	590	15	1.87E-02	57.9	2.28E+00	
1	352.07	118	80	1.47	710.55	705	10	2.51E-02	34.6	1.98E+00	
1	583.35	71	52	1.59	1172.05	1166	13	1.51E-02	50.4	1.28E+00	
1	609.52	80	51	1.67	1224.27	1218	13	1.69E-02	45.5	1.24E+00	
1	911.60	61	8	2.70	1827.01	1820	15	1.31E-02	33.6	8.72E-01	
1	1460.91	104	13	2.04	2922.92	2916	15	2.20E-02	28.4	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.922E-02		7.060E-02	1.216E-01	0.000E+00	0.240

```
A,08L85482-4       ,01/02/2020 15:56,12/09/2019 15:50,   1.449E+02,L85482-4 S TEX
B,08L85482-4       ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,   2.922E-02,   7.060E-02,   1.216E-01,,    0.240
```

Analyst: BBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:20:49.90
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:05.76

LIMS No., Customer Name, Client ID: L85482-5 S TEXAS

Sample ID : 02L85482-5
Sample Type : S
Quantity : 1.33650E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:55:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:09:36.76
Live time : 0 01:09:36.02

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.67*	197	118	1.00	464.53	2.91E+00	4.72E-02	12.3	
2	0	295.35*	60	75	1.35	578.72	2.46E+00	1.44E-02	32.7	
3	0	338.68	46	68	1.04	665.99	2.19E+00	1.11E-02	36.3	
4	0	351.89*	123	39	0.98	692.60	2.12E+00	2.94E-02	13.8	
5	0	511.19*	40	53	1.84	1013.52	1.54E+00	9.53E-03	52.9	
6	0	583.28*	91	31	1.27	1158.76	1.37E+00	2.18E-02	17.0	
7	0	608.94*	84	28	1.23	1210.45	1.32E+00	2.01E-02	18.0	
8	0	911.11*	51	13	1.59	1819.28	9.20E-01	1.22E-02	20.5	
9	0	968.83	41	9	1.49	1935.57	8.71E-01	9.89E-03	20.3	
10	0	1460.28*	94	3	2.14	2925.93	6.04E-01	2.24E-02	11.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85482-5 Acquisition date : 2-JAN-2020 16:11:05

Total number of lines in spectrum	10	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85482-5 Acquisition date : 2-JAN-2020 16:11:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.67	197	118	1.00	464.53	460	9	4.72E-02	24.5	2.91E+00	
0	295.35	60	75	1.35	578.72	575	12	1.44E-02	65.4	2.46E+00	
0	338.68	46	68	1.04	665.99	661	10	1.11E-02	72.6	2.19E+00	
0	351.89	123	39	0.98	692.60	688	10	2.94E-02	27.6	2.12E+00	
0	511.19	40	53	1.84	1013.52	1006	18	9.53E-03	****	1.54E+00	
0	583.28	91	31	1.27	1158.76	1152	14	2.18E-02	34.0	1.37E+00	
0	608.94	84	28	1.23	1210.45	1203	13	2.01E-02	35.9	1.32E+00	
0	911.11	51	13	1.59	1819.28	1814	11	1.22E-02	41.0	9.20E-01	
0	968.83	41	9	1.49	1935.57	1931	9	9.89E-03	40.6	8.71E-01	
0	1460.28	94	3	2.14	2925.93	2920	12	2.24E-02	23.4	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 10
Number of unidentified lines 10
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.763E-02		6.580E-02	1.144E-01	0.000E+00	0.329

```
A,02L85482-5      ,01/02/2020 17:20,12/09/2019 15:55,   1.336E+02,L85482-5 S TEX
B,02L85482-5      ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137  ,NO ,   3.763E-02,   6.580E-02,   1.144E-01,,    0.329
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 15:56:24.27
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 2-JAN-2020 14:37:53.27

LIMS No., Customer Name, Client ID: L85482-6 S TEXAS

Sample ID : 02L85482-6
Sample Type : S
Quantity : 1.47370E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:55:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:18:26.26
Live time : 0 01:18:25.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.60*	256	135	0.98	464.40	2.91E+00	5.45E-02	10.5	
2	0	295.62*	41	65	1.44	579.25	2.46E+00	8.63E-03	38.6	
3	0	338.45	78	53	1.34	665.54	2.20E+00	1.67E-02	20.6	
4	0	352.00*	121	64	1.66	692.83	2.12E+00	2.57E-02	16.0	
5	0	582.81*	111	20	1.11	1157.81	1.37E+00	2.36E-02	12.8	
6	0	609.17*	91	27	1.54	1210.93	1.32E+00	1.94E-02	15.9	
7	0	911.10*	64	12	1.85	1819.26	9.20E-01	1.35E-02	17.2	
8	0	1460.50*	115	7	1.34	2926.38	6.04E-01	2.44E-02	11.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85482-6 Acquisition date : 2-JAN-2020 14:37:53

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85482-6 Acquisition date : 2-JAN-2020 14:37:53

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.60	256	135	0.98	464.40	460	9	5.45E-02	20.9	2.91E+00	
0	295.62	41	65	1.44	579.25	575	7	8.63E-03	77.2	2.46E+00	
0	338.45	78	53	1.34	665.54	660	10	1.67E-02	41.3	2.20E+00	
0	352.00	121	64	1.66	692.83	688	10	2.57E-02	32.0	2.12E+00	
0	582.81	111	20	1.11	1157.81	1151	13	2.36E-02	25.6	1.37E+00	
0	609.17	91	27	1.54	1210.93	1206	10	1.94E-02	31.8	1.32E+00	
0	911.10	64	12	1.85	1819.26	1814	12	1.35E-02	34.3	9.20E-01	
0	1460.50	115	7	1.34	2926.38	2920	14	2.44E-02	22.2	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-4.409E-02		6.255E-02	9.033E-02	0.000E+00	-0.488

```
A,02L85482-6       ,01/02/2020 15:56,12/09/2019 15:55,   1.474E+02,L85482-6 S TEX
B,02L85482-6       ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137  ,NO ,  -4.409E-02,   6.255E-02,   9.033E-02,,   -0.488
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:21:14.29
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:05.91

LIMS No., Customer Name, Client ID: L85482-7 S TEXAS

Sample ID : 14L85482-7
Sample Type : S
Quantity : 1.26390E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 16:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 01:10:04.28
Live time : 0 01:10:03.28

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.57*	293	105	0.93	474.44	2.91E+00	6.97E-02	8.6	1.82E+00
2	1	295.14*	61	46	1.69	587.62	2.44E+00	1.46E-02	24.9	2.98E+00
3	1	338.35	74	32	1.43	674.05	2.17E+00	1.77E-02	18.0	8.36E-01
4	1	351.90*	76	53	1.13	701.18	2.09E+00	1.81E-02	22.6	8.66E-01
5	1	583.18	93	38	1.62	1163.92	1.32E+00	2.22E-02	16.1	1.93E+00
6	1	609.15*	77	21	1.46	1215.89	1.26E+00	1.83E-02	17.6	1.41E+00
7	1	911.15	56	29	1.61	1820.24	8.70E-01	1.33E-02	24.0	1.98E+00
8	1	1460.80*	128	0	2.09	2920.50	5.68E-01	3.05E-02	9.5	6.94E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85482-7 Acquisition date : 2-JAN-2020 16:11:05

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85482-7 Acquisition date : 2-JAN-2020 16:11:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.57	293	105	0.93	474.44	469	9	6.97E-02	17.3	2.91E+00	
1	295.14	61	46	1.69	587.62	584	9	1.46E-02	49.7	2.44E+00	
1	338.35	74	32	1.43	674.05	670	10	1.77E-02	36.0	2.17E+00	
1	351.90	76	53	1.13	701.18	697	10	1.81E-02	45.3	2.09E+00	
1	583.18	93	38	1.62	1163.92	1160	10	2.22E-02	32.3	1.32E+00	
1	609.15	77	21	1.46	1215.89	1210	12	1.83E-02	35.2	1.26E+00	
1	911.15	56	29	1.61	1820.24	1814	15	1.33E-02	48.1	8.70E-01	
1	1460.80	128	0	2.09	2920.50	2914	13	3.05E-02	19.0	5.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.530E-02		7.696E-02	1.280E-01	0.000E+00	0.120

```
A,14L85482-7       ,01/02/2020 17:21,12/09/2019 16:00,   1.264E+02,L85482-7 S TEX
B,14L85482-7       ,HUDSON              ,12/30/2019 12:20,14S100121919
C,CS-137   ,NO ,   1.530E-02,   7.696E-02,   1.280E-01,,    0.120
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:22:29.00
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:07.58

LIMS No., Customer Name, Client ID: L85482-8 S TEXAS

Sample ID : 01L85482-8
Sample Type : S
Quantity : 1.01640E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 16:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:11:07.48
Live time : 0 01:11:06.76

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.98*	48	119	1.53	372.20	3.99E+00	1.12E-02	47.5	1.06E+00
2	4	238.59*	340	81	0.95	477.34	3.47E+00	7.96E-02	6.9	1.42E+00
3	4	241.53	95	99	1.70	483.22	3.44E+00	2.23E-02	27.3	
4	1	295.08*	53	116	1.22	590.22	2.98E+00	1.25E-02	43.6	1.28E+00
5	1	338.18	79	32	1.31	676.36	2.68E+00	1.86E-02	16.5	1.49E+00
6	1	351.80*	130	61	1.41	703.58	2.60E+00	3.05E-02	15.3	3.32E+00
7	1	510.79*	70	49	3.17	1021.33	1.91E+00	1.64E-02	31.2	1.88E+00
8	1	582.95*	127	26	1.77	1165.57	1.70E+00	2.97E-02	12.3	2.62E+00
9	1	609.01*	80	36	1.82	1217.64	1.64E+00	1.87E-02	19.6	5.65E-01
10	1	910.85*	71	16	1.60	1820.94	1.15E+00	1.66E-02	17.3	8.20E-01
11	1	968.67	53	11	2.04	1936.51	1.09E+00	1.24E-02	17.8	4.56E-01
12	1	1460.56*	141	7	1.98	2919.80	7.73E-01	3.32E-02	9.7	7.18E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85482-8 Acquisition date : 2-JAN-2020 16:11:07

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85482-8 Acquisition date : 2-JAN-2020 16:11:07

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.98	48	119	1.53	372.20	367	10	1.12E-02	94.9	3.99E+00	
4	238.59	340	81	0.95	477.34	473	15	7.96E-02	13.9	3.47E+00	
4	241.53	95	99	1.70	483.22	473	15	2.23E-02	54.7	3.44E+00	
1	295.08	53	116	1.22	590.22	585	12	1.25E-02	87.2	2.98E+00	
1	338.18	79	32	1.31	676.36	673	7	1.86E-02	33.0	2.68E+00	
1	351.80	130	61	1.41	703.58	699	11	3.05E-02	30.5	2.60E+00	
1	510.79	70	49	3.17	1021.33	1013	19	1.64E-02	62.3	1.91E+00	
1	582.95	127	26	1.77	1165.57	1161	11	2.97E-02	24.7	1.70E+00	
1	609.01	80	36	1.82	1217.64	1211	12	1.87E-02	39.3	1.64E+00	
1	910.85	71	16	1.60	1820.94	1813	13	1.66E-02	34.7	1.15E+00	
1	968.67	53	11	2.04	1936.51	1932	9	1.24E-02	35.6	1.09E+00	
1	1460.56	141	7	1.98	2919.80	2913	13	3.32E-02	19.4	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.219E-02		7.849E-02	1.268E-01	0.000E+00	-0.175

```
A,01L85482-8       ,01/02/2020 17:22,12/09/2019 16:00,   1.016E+02,L85482-8 S TEX
B,01L85482-8       ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137  ,NO ,  -2.219E-02,   7.849E-02,   1.268E-01,,   -0.175
```

Analyst: YBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:28:10.43
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:09.73

LIMS No., Customer Name, Client ID: L85482-9 S TEXAS

Sample ID : 15L85482-9
Sample Type : S
Quantity : 1.26380E+02 g Dry
Start Channel : 80 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 9-DEC-2019 16:05:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 01:16:49.87
Live time : 0 01:16:49.22

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	74.67*	71	199	0.81	144.08	2.48E+00	1.53E-02	35.7	6.06E+00
2	1	77.09	160	148	0.81	148.94	2.64E+00	3.48E-02	14.4	1.37E+00
3	1	238.41*	336	272	1.09	472.31	3.18E+00	7.29E-02	11.7	3.48E+00
4	1	295.11*	76	81	1.25	585.99	2.67E+00	1.64E-02	26.4	1.40E+00
5	1	338.50	82	79	1.70	672.96	2.37E+00	1.79E-02	22.9	7.48E-01
6	1	351.74*	157	52	1.46	699.50	2.28E+00	3.40E-02	12.6	8.20E-01
7	1	510.82*	40	62	2.45	1018.39	1.60E+00	8.66E-03	50.2	2.86E+00
8	1	583.21*	121	32	1.47	1163.51	1.41E+00	2.63E-02	13.0	1.54E+00
9	1	609.17*	114	42	1.61	1215.55	1.35E+00	2.47E-02	15.8	1.20E+00
10	1	911.13*	86	23	1.98	1820.83	9.28E-01	1.87E-02	16.4	1.03E+00
11	1	1460.70*	162	11	2.05	2922.41	6.13E-01	3.51E-02	9.3	5.31E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85482-9 Acquisition date : 2-JAN-2020 16:11:09

Total number of lines in spectrum	11	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85482-9 Acquisition date : 2-JAN-2020 16:11:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.67	71	199	0.81	144.08	141	6	1.53E-02	71.3	2.48E+00	
1	77.09	160	148	0.81	148.94	147	6	3.48E-02	28.8	2.64E+00	
1	238.41	336	272	1.09	472.31	466	13	7.29E-02	23.4	3.18E+00	
1	295.11	76	81	1.25	585.99	579	11	1.64E-02	52.9	2.67E+00	
1	338.50	82	79	1.70	672.96	669	10	1.79E-02	45.9	2.37E+00	
1	351.74	157	52	1.46	699.50	694	11	3.40E-02	25.2	2.28E+00	
1	510.82	40	62	2.45	1018.39	1013	12	8.66E-03	****	1.60E+00	
1	583.21	121	32	1.47	1163.51	1157	11	2.63E-02	25.9	1.41E+00	
1	609.17	114	42	1.61	1215.55	1209	13	2.47E-02	31.7	1.35E+00	
1	911.13	86	23	1.98	1820.83	1816	13	1.87E-02	32.8	9.28E-01	
1	1460.70	162	11	2.05	2922.41	2915	14	3.51E-02	18.5	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 11
Number of unidentified lines 11
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.071E-02		7.496E-02	1.293E-01	0.000E+00	0.238

```
A,15L85482-9       ,01/02/2020 17:28,12/09/2019 16:05,   1.264E+02,L85482-9 S TEX
B,15L85482-9       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137  ,NO ,   3.071E-02,   7.496E-02,   1.293E-01,,    0.238
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:29:04.71
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:11.29

LIMS No., Customer Name, Client ID: L85482-10 S TEXAS

Sample ID : 11L85482-10
Sample Type : S
Quantity : 1.06430E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Smple Date: 9-DEC-2019 16:05:00.0
Geometry : 11S100121919
BKGFILE : 11BG122719MT
Real Time : 0 01:17:48.24
Live time : 0 01:17:45.87

Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.80*	327	243	1.28	476.92	2.60E+00	7.01E-02	11.5	
2	0	337.67	125	66	1.51	674.74	2.04E+00	2.67E-02	16.5	
3	0	352.10*	137	113	1.65	703.62	1.98E+00	2.95E-02	20.6	
4	0	511.26*	26	117	2.73	1022.08	1.48E+00	5.65E-03	117.4	
5	0	583.57*	118	56	1.46	1166.75	1.32E+00	2.52E-02	17.0	
6	0	609.68*	51	60	1.95	1218.98	1.27E+00	1.10E-02	35.4	
7	0	911.49	99	36	1.84	1822.82	8.91E-01	2.12E-02	17.4	
8	0	1461.08*	168	0	2.28	2922.28	5.95E-01	3.61E-02	8.4	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85482-10 Acquisition date : 2-JAN-2020 16:11:11

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85482-10 Acquisition date : 2-JAN-2020 16:11:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.80	327	243	1.28	476.92	471	14	7.01E-02	23.1	2.60E+00	
0	337.67	125	66	1.51	674.74	667	14	2.67E-02	33.0	2.04E+00	
0	352.10	137	113	1.65	703.62	695	18	2.95E-02	41.1	1.98E+00	
0	511.26	26	117	2.73	1022.08	1015	22	5.65E-03	****	1.48E+00	
0	583.57	118	56	1.46	1166.75	1160	15	2.52E-02	34.0	1.32E+00	
0	609.68	51	60	1.95	1218.98	1213	12	1.10E-02	70.8	1.27E+00	
0	911.49	99	36	1.84	1822.82	1815	18	2.12E-02	34.8	8.91E-01	
0	1461.08	168	0	2.28	2922.28	2915	16	3.61E-02	16.8	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-6.358E-02		8.865E-02	1.496E-01	0.000E+00	-0.425

```
A,11L85482-10      ,01/02/2020 17:29,12/09/2019 16:05,   1.064E+02,L85482-10 S TE
B,11L85482-10      ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137   ,NO ,   -6.358E-02,   8.865E-02,   1.496E-01,,   -0.425
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 17:43:55.13
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 2-JAN-2020 16:11:13.01

LIMS No., Customer Name, Client ID: L85482-11 S TEXAS

Sample ID : 07L85482-11
Sample Type : S
Quantity : 9.99600E+01 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 16:10:00.0
Geometry : 07S100121819
BKGFILE : 07BG122719MT
Real Time : 0 01:32:38.86
Live time : 0 01:32:37.95

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.94*	383	222	1.71	477.22	2.89E+00	6.90E-02	10.3	5.03E+00
2	1	297.42	171	223	8.68	594.14	2.49E+00	3.07E-02	24.6	4.48E+00
3	1	338.75	75	111	1.79	676.78	2.27E+00	1.34E-02	29.0	9.45E-01
4	1	352.02*	109	121	1.74	703.29	2.21E+00	1.96E-02	24.5	1.93E+00
5	1	583.20*	122	73	2.09	1165.45	1.52E+00	2.20E-02	18.3	8.95E-01
6	1	609.13*	130	77	2.05	1217.28	1.47E+00	2.35E-02	18.1	3.06E+00
7	1	910.95*	130	30	2.83	1820.55	1.07E+00	2.33E-02	13.1	1.46E+00
8	1	969.29*	50	55	1.47	1937.15	1.02E+00	9.03E-03	37.1	1.48E+00
9	1	1460.60*	217	13	2.43	2918.98	7.40E-01	3.90E-02	8.7	8.35E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85482-11 Acquisition date : 2-JAN-2020 16:11:13

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.94	383	222	1.71	477.22	471	15	6.90E-02	20.6	2.89E+00	
1	297.42	171	223	8.68	594.14	585	24	3.07E-02	49.3	2.49E+00	
1	338.75	75	111	1.79	676.78	672	10	1.34E-02	57.9	2.27E+00	
1	352.02	109	121	1.74	703.29	695	14	1.96E-02	49.0	2.21E+00	
1	583.20	122	73	2.09	1165.45	1156	16	2.20E-02	36.7	1.52E+00	
1	609.13	130	77	2.05	1217.28	1208	18	2.35E-02	36.2	1.47E+00	
1	910.95	130	30	2.83	1820.55	1813	15	2.33E-02	26.1	1.07E+00	
1	969.29	50	55	1.47	1937.15	1929	15	9.03E-03	74.1	1.02E+00	
1	1460.60	217	13	2.43	2918.98	2909	18	3.90E-02	17.3	7.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.254E-02		8.935E-01	1.537E-01	0.000E+00	0.212

```
A,07L85482-11     ,01/02/2020 17:43,12/09/2019 16:10,   9.996E+01,L85482-11 S TE
B,07L85482-11     ,HUDSON             ,12/26/2019 10:37,07S100121819
C,CS-137  ,NO ,   3.254E-02,   8.935E-02,   1.537E-01,,    0.212
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 10:36:22.31
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 09:26:31.37

LIMS No., Customer Name, Client ID: WG32733-1 S TEXAS

Sample ID : 14WG32733-1
Sample Type : S
Quantity : 3.39540E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 6-DEC-2019 13:00:00.0
Geometry : 14FS092319
BKGFILE : 14BG122719MT
Real Time : 0 01:09:35.84
Live time : 0 01:09:34.56

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	6	238.64*	558	77	1.07	474.58	2.24E+00	1.34E-01	4.8	1.91E+00
2	6	241.78	162	93	1.89	480.87	2.22E+00	3.89E-02	18.4	
3	1	295.27*	157	102	1.32	587.88	1.89E+00	3.76E-02	14.8	1.10E+00
4	1	338.53	104	71	1.09	674.42	1.68E+00	2.49E-02	17.7	1.92E+00
5	1	352.07*	232	80	1.20	701.51	1.63E+00	5.57E-02	10.2	3.01E+00
6	1	511.32*	27	80	2.47	1020.14	1.17E+00	6.53E-03	81.6	2.07E+00
7	1	583.38	146	79	1.30	1164.32	1.03E+00	3.51E-02	14.7	2.80E+00
8	1	609.43*	189	38	1.57	1216.44	9.94E-01	4.52E-02	10.5	4.67E-01
9	1	911.68	105	42	1.84	1821.30	6.94E-01	2.52E-02	16.7	1.34E+00
10	1	969.67	48	16	1.20	1937.35	6.57E-01	1.15E-02	22.0	6.86E-01
11	1	1121.08	37	27	1.66	2240.41	5.79E-01	8.81E-03	33.7	5.36E-01
12	1	1461.31*	215	14	1.80	2921.51	4.61E-01	5.15E-02	8.1	1.66E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14WG32733-1 Acquisition date : 2-JAN-2020 09:26:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	238.64	558	77	1.07	474.58	470	18	1.34E-01	9.6	2.24E+00	
6	241.78	162	93	1.89	480.87	470	18	3.89E-02	36.8	2.22E+00	
1	295.27	157	102	1.32	587.88	584	10	3.76E-02	29.6	1.89E+00	
1	338.53	104	71	1.09	674.42	670	9	2.49E-02	35.3	1.68E+00	
1	352.07	232	80	1.20	701.51	696	11	5.57E-02	20.3	1.63E+00	
1	511.32	27	80	2.47	1020.14	1014	14	6.53E-03	****	1.17E+00	
1	583.38	146	79	1.30	1164.32	1160	12	3.51E-02	29.4	1.03E+00	
1	609.43	189	38	1.57	1216.44	1211	15	4.52E-02	20.9	9.94E-01	
1	911.68	105	42	1.84	1821.30	1815	14	2.52E-02	33.4	6.94E-01	
1	969.67	48	16	1.20	1937.35	1933	9	1.15E-02	44.0	6.57E-01	
1	1121.08	37	27	1.66	2240.41	2236	12	8.81E-03	67.5	5.79E-01	
1	1461.31	215	14	1.80	2921.51	2914	14	5.15E-02	16.2	4.61E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-1.207E-02		4.220E-02	6.578E-02	0.000E+00	-0.184

```
A,14WG32733-1      ,01/02/2020 10:36,12/06/2019 13:00,   3.395E+02,WG32733-1 S TE
B,14WG32733-1      ,HUDSON              ,12/30/2019 12:20,14FS092319
C,CS-137   ,NO ,   -1.207E-02,   4.220E-02,   6.578E-02,,   -0.184
```

GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85482

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32932-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32932-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32932-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32932-1	WO	BLK	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0750	BALANCE 10	.0415	01/24/20	WG32932
WG32932-2	WO	LCS	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0793	BALANCE 10	.0462	01/24/20	WG32932
WG32932-3	S	DUP	PB-210	6.4435 g dry	01/24/20	KSC	BALANCE 7	.0333	BALANCE 10	.0835	BALANCE 10	.0502	01/24/20	WG32932
WG32932-4	S	MS	PB-210	6.2002 g dry	01/24/20	KSC	BALANCE 7	.0339	BALANCE 10	.0974	BALANCE 10	.0635	01/24/20	WG32932
WG32932-5	S	MSD	PB-210	6.119 g dry	01/24/20	KSC	BALANCE 7	.0338	BALANCE 10	.0736	BALANCE 10	.0398	01/24/20	WG32932
L85482-1	S		PB-210	6.0193 g dry	01/24/20	KSC	BALANCE 7	.0336	BALANCE 10	.0900	BALANCE 10	.0564	01/24/20	WG32932
L85482-2	S		PB-210	6.4011 g dry	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0887	BALANCE 10	.0556	01/24/20	WG32932
L85482-3	S		PB-210	6.6447 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0868	BALANCE 10	.0533	01/24/20	WG32932
L85482-4	S		PB-210	6.5085 g dry	01/24/20	KSC	BALANCE 7	.0334	BALANCE 10	.0860	BALANCE 10	.0526	01/24/20	WG32932
L85482-5	S		PB-210	6.5447 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0901	BALANCE 10	.0566	01/24/20	WG32932
L85482-6	S		PB-210	6.3253 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0869	BALANCE 10	.0534	01/24/20	WG32932
L85482-7	S		PB-210	6.2422 g dry	01/24/20	KSC	BALANCE 7	.0329	BALANCE 10	.0939	BALANCE 10	.0610	01/24/20	WG32932
L85482-8	S		PB-210	6.1568 g dry	01/24/20	KSC	BALANCE 7	.0340	BALANCE 10	.0884	BALANCE 10	.0544	01/24/20	WG32932
L85482-9	S		PB-210	6.2843 g dry	01/24/20	KSC	BALANCE 7	.0332	BALANCE 10	.0886	BALANCE 10	.0554	01/24/20	WG32932
L85482-10	S		PB-210	6.7906 g dry	01/24/20	KSC	BALANCE 7	.0334	BALANCE 10	.0787	BALANCE 10	.0453	01/24/20	WG32932
L85482-11	S		PB-210	6.385 g dry	01/24/20	KSC	BALANCE 7	.0343	BALANCE 10	.0822	BALANCE 10	.0479	01/24/20	WG32932

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85482

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.01
100.00	100.01
1000.00	1000.04

Check Date: 30-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 30-DEC-19

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME			
	pCi/ml	BI YIELD				
210PB-061014-1	2013	0.577	2/11/2015 13:55			
210PB-061014-2	2013	0.577	2/11/2015 13:55			
210PB-061014-3	2013	0.577	2/11/2015 13:55			
210PB-061014-4	2013	0.577	2/11/2015 13:55			
210PB-061014-5	2013	0.577	2/11/2015 13:55			
210PB-061014-6	2013	0.577	2/11/2015 13:55			

Standards Prepared by: [signature] 2/21/15

Calibration by: Keith Jett 2/21/15

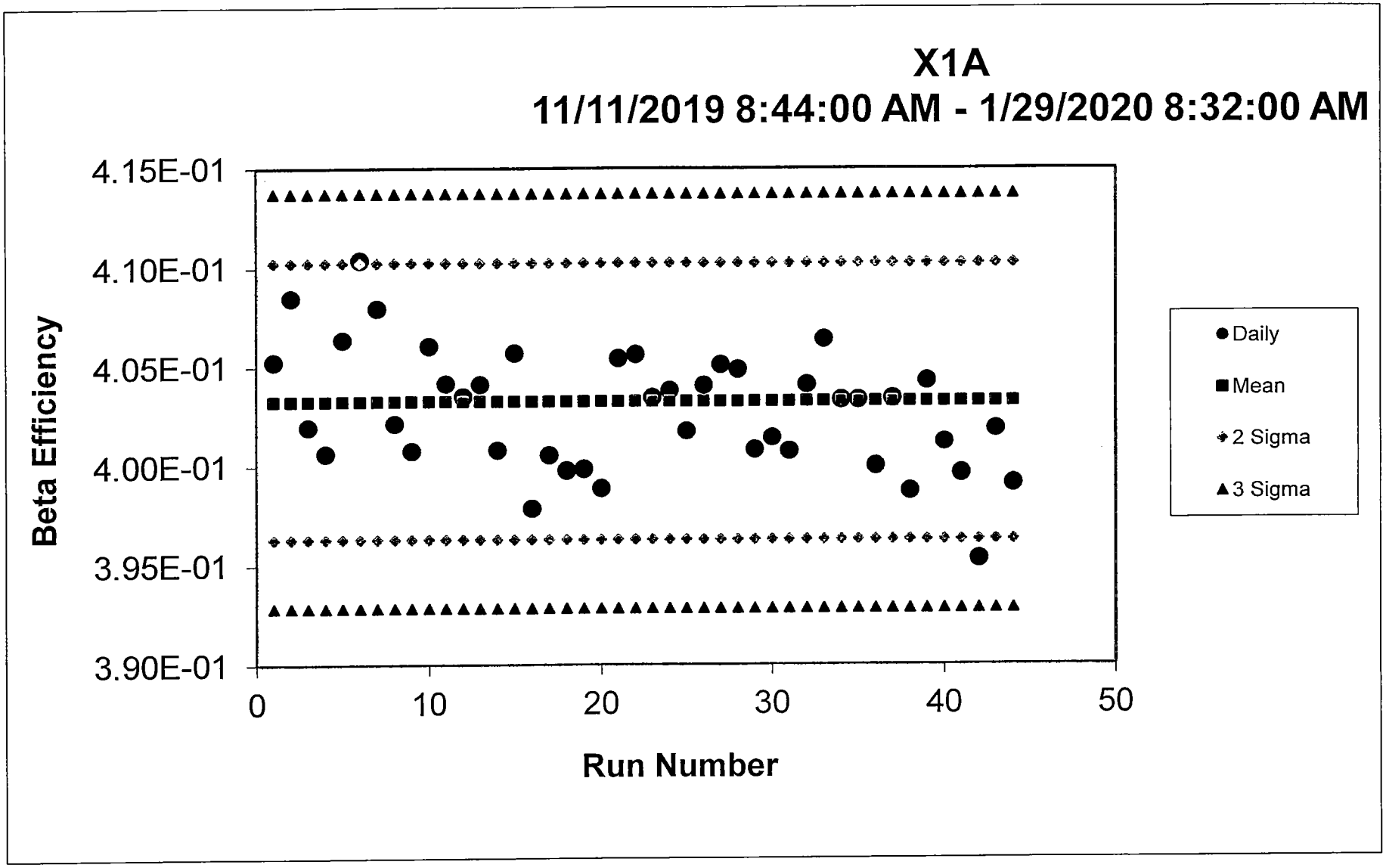
Y COUNTER PB-210/BI-210 CALIBRATION

Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

210PB-061014	Activity		MILK DATE/TIME	Standards Prepared by:	2/21/15
	pCi/ml	BI YIELD			
210PB-061014-1	2013	0.577	2/11/2015 13:55	Calibration by: Keith Jett	2/21/15
210PB-061014-2	2013	0.577	2/11/2015 13:55		
210PB-061014-3	2013	0.577	2/11/2015 13:55		
210PB-061014-4	2013	0.577	2/11/2015 13:55		
210PB-061014-5	2013	0.577	2/11/2015 13:55		
210PB-061014-6	2013	0.577	2/11/2015 13:55		

LEAD 210

Daily Source and Background Checks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Beta Efficiency
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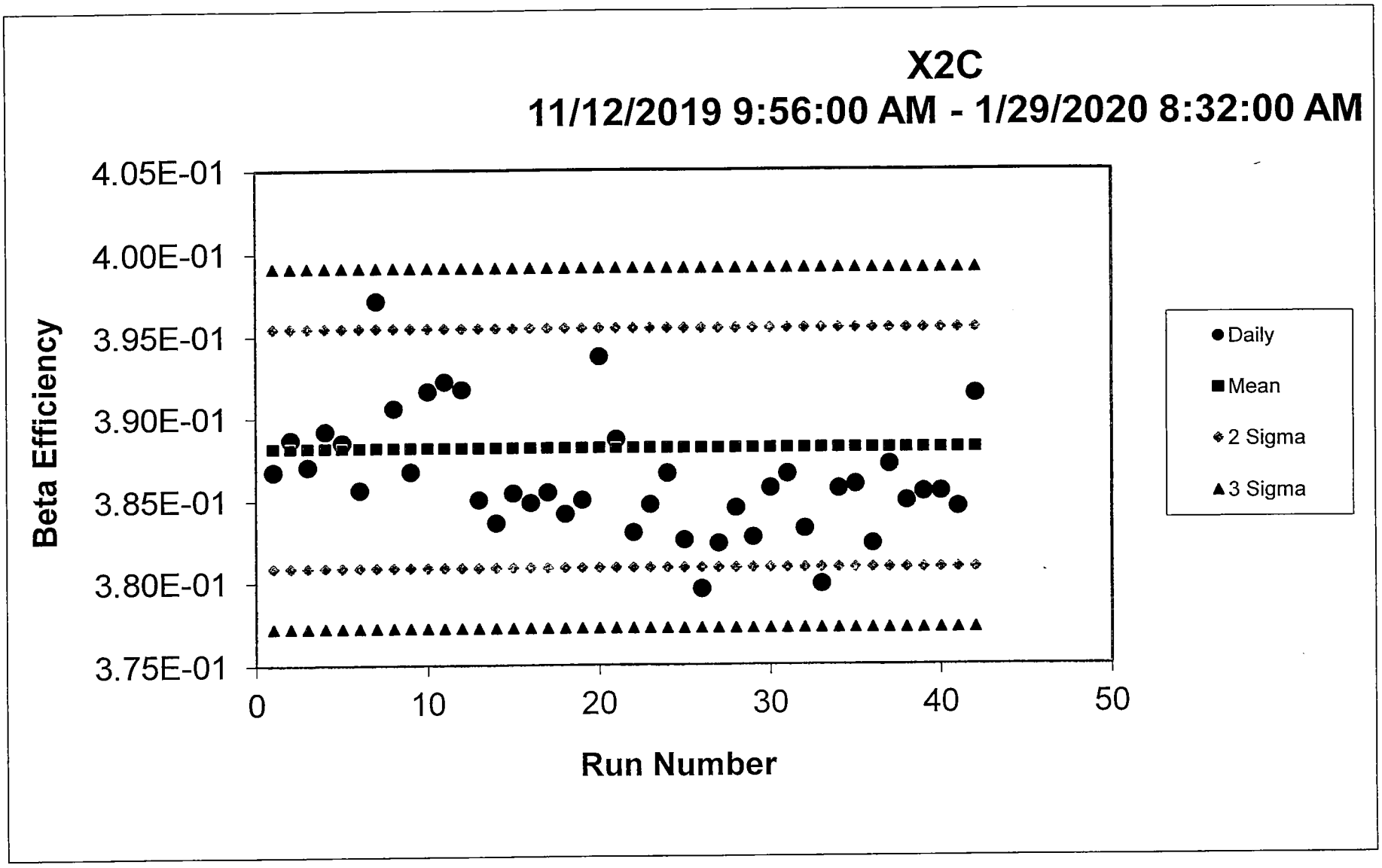
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma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Beta Efficiency
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4.00E-01
3.95E-01
3.90E-01
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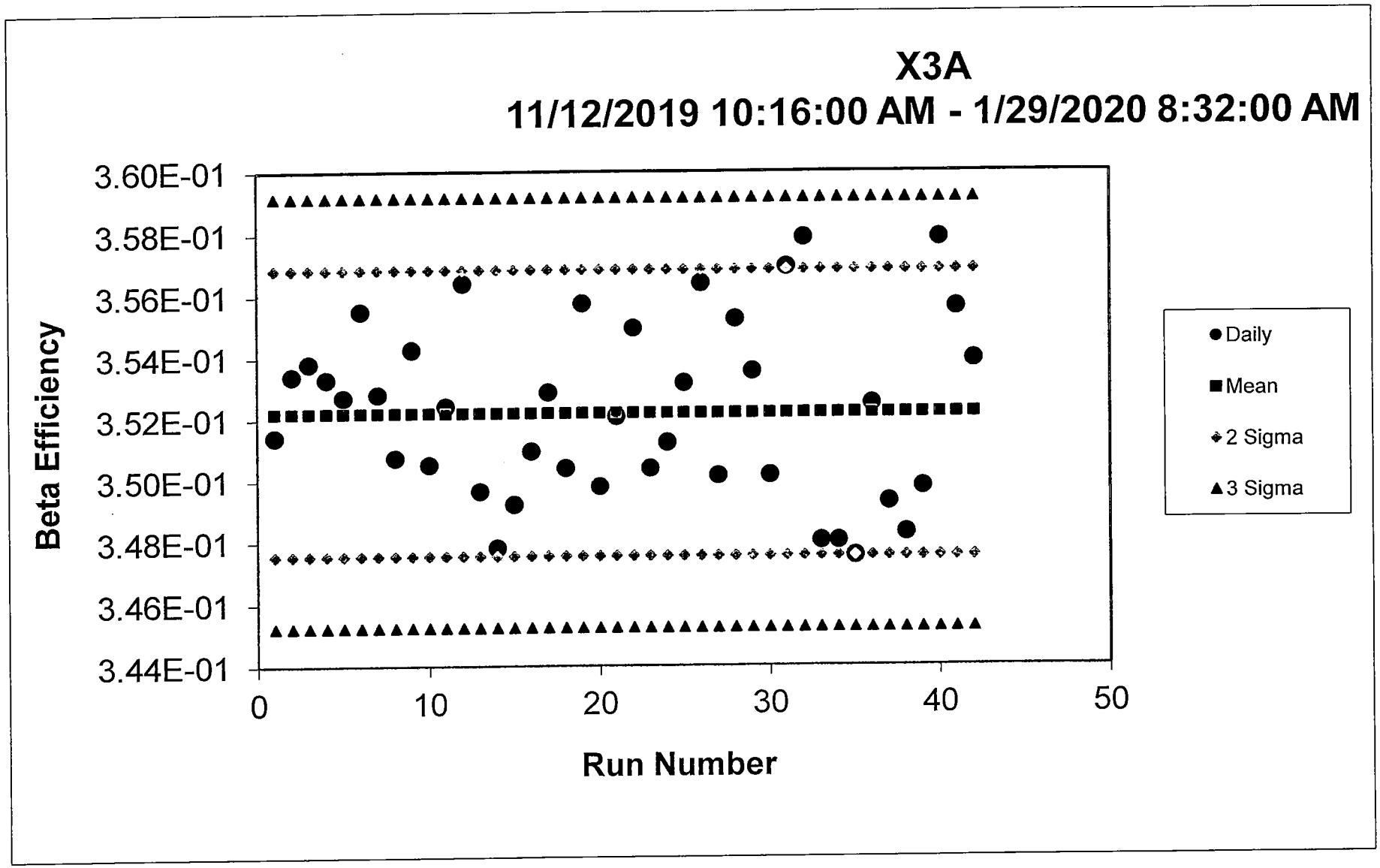
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma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Beta Efficiency
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3.58E-01
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3.52E-01
3.50E-01
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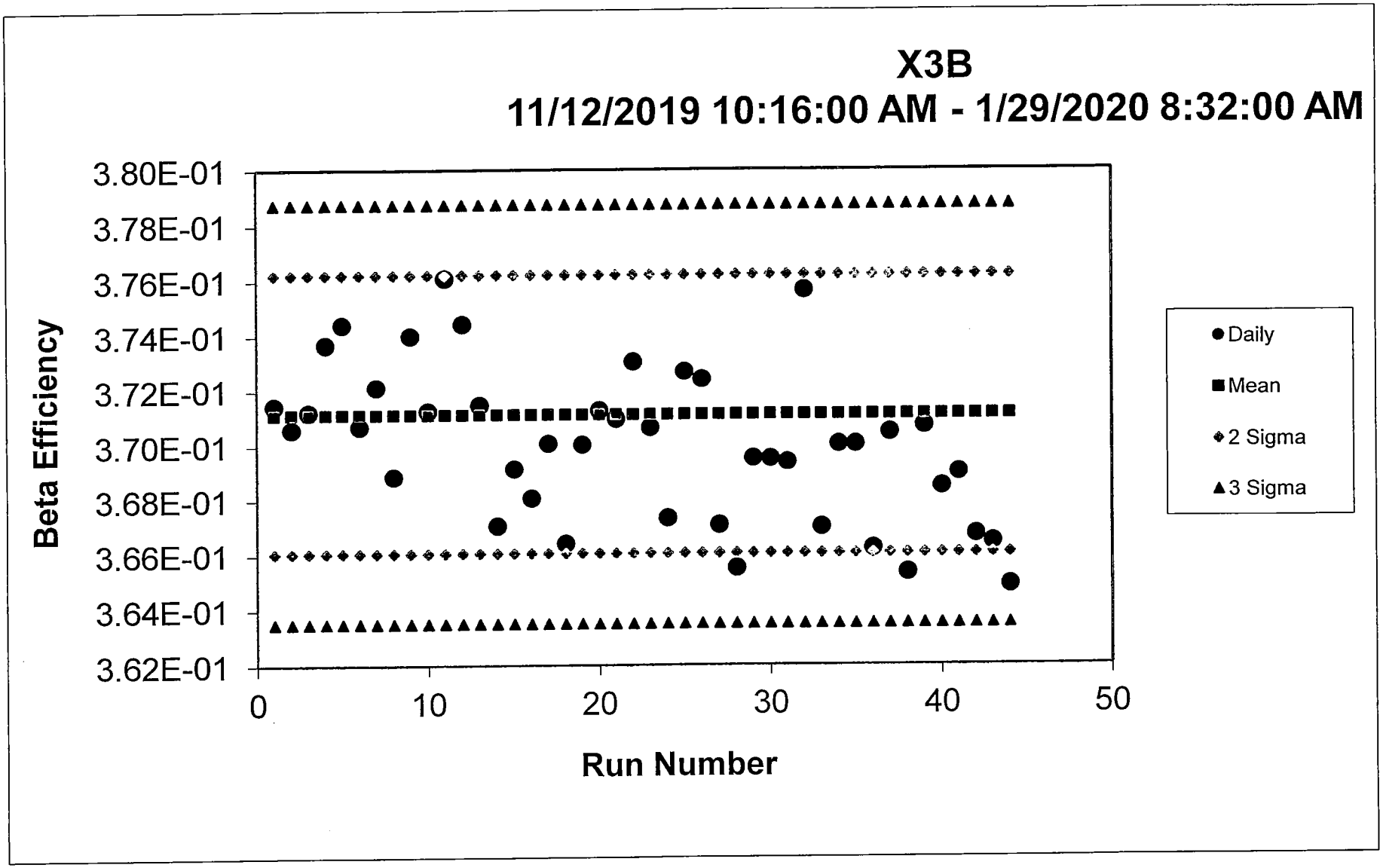
Run Number
Daily
Mean
2 Sigma
3 Sigma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11/12/2019 10:16:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
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3.72E-01
3.70E-01
3.68E-01
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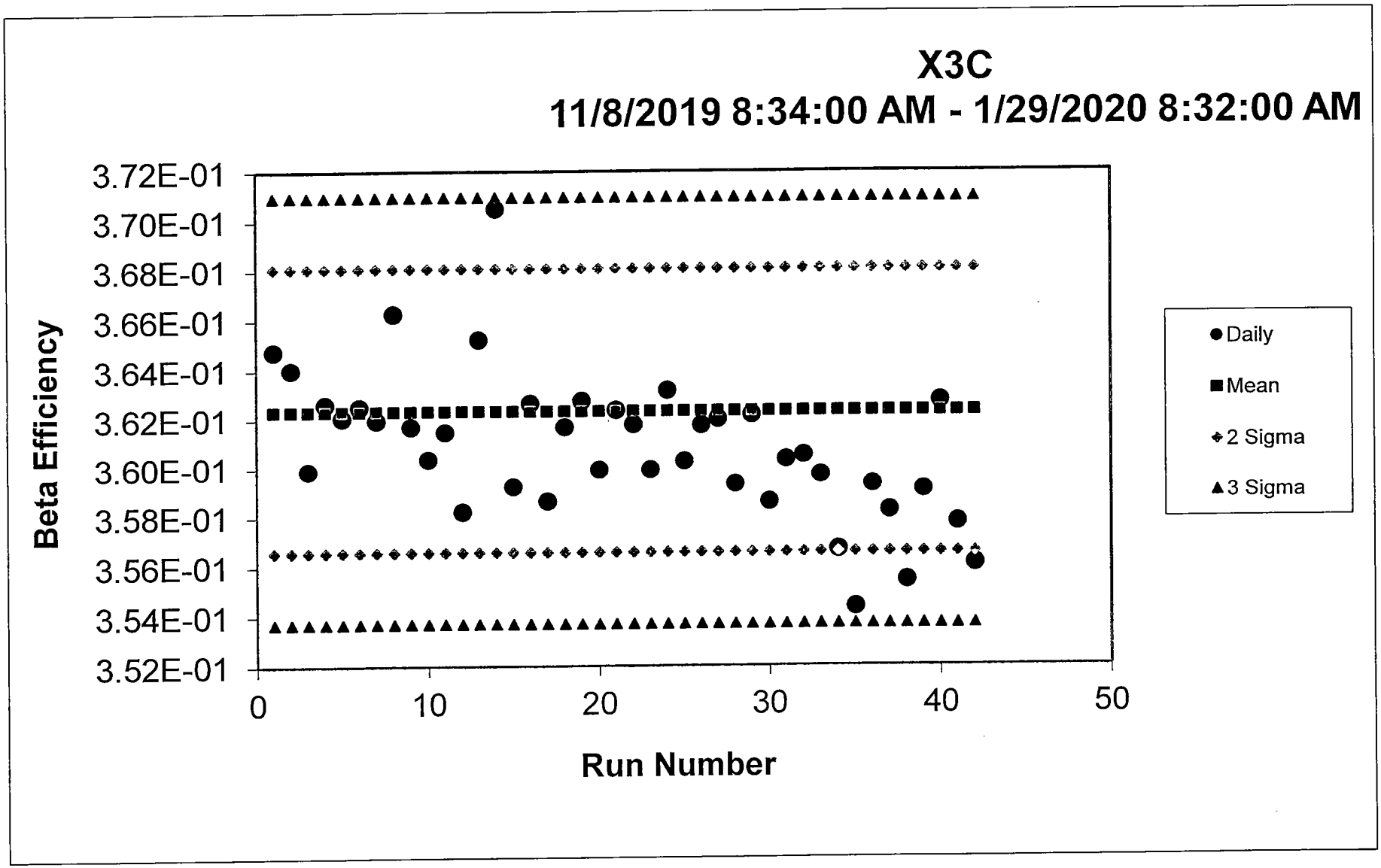
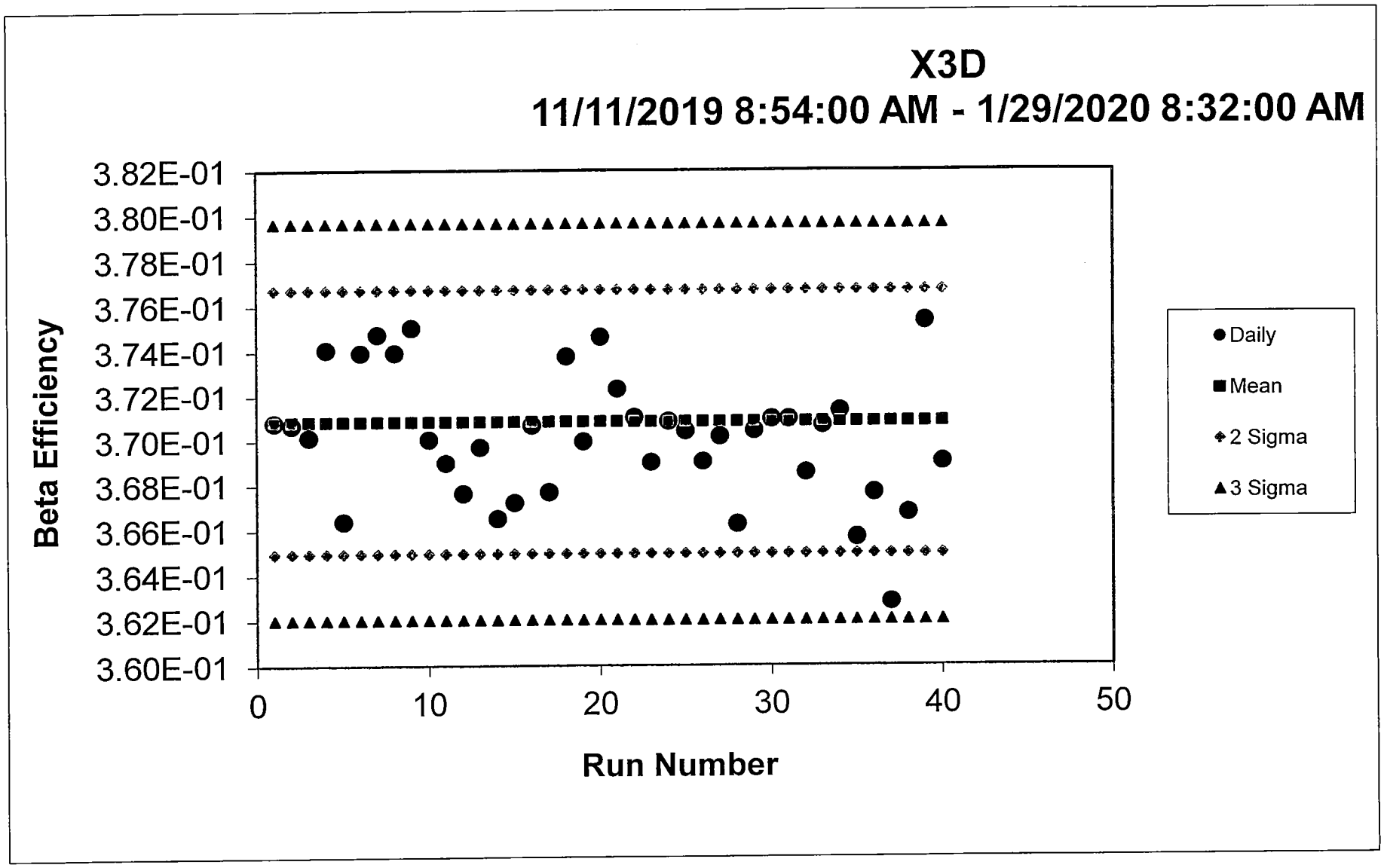
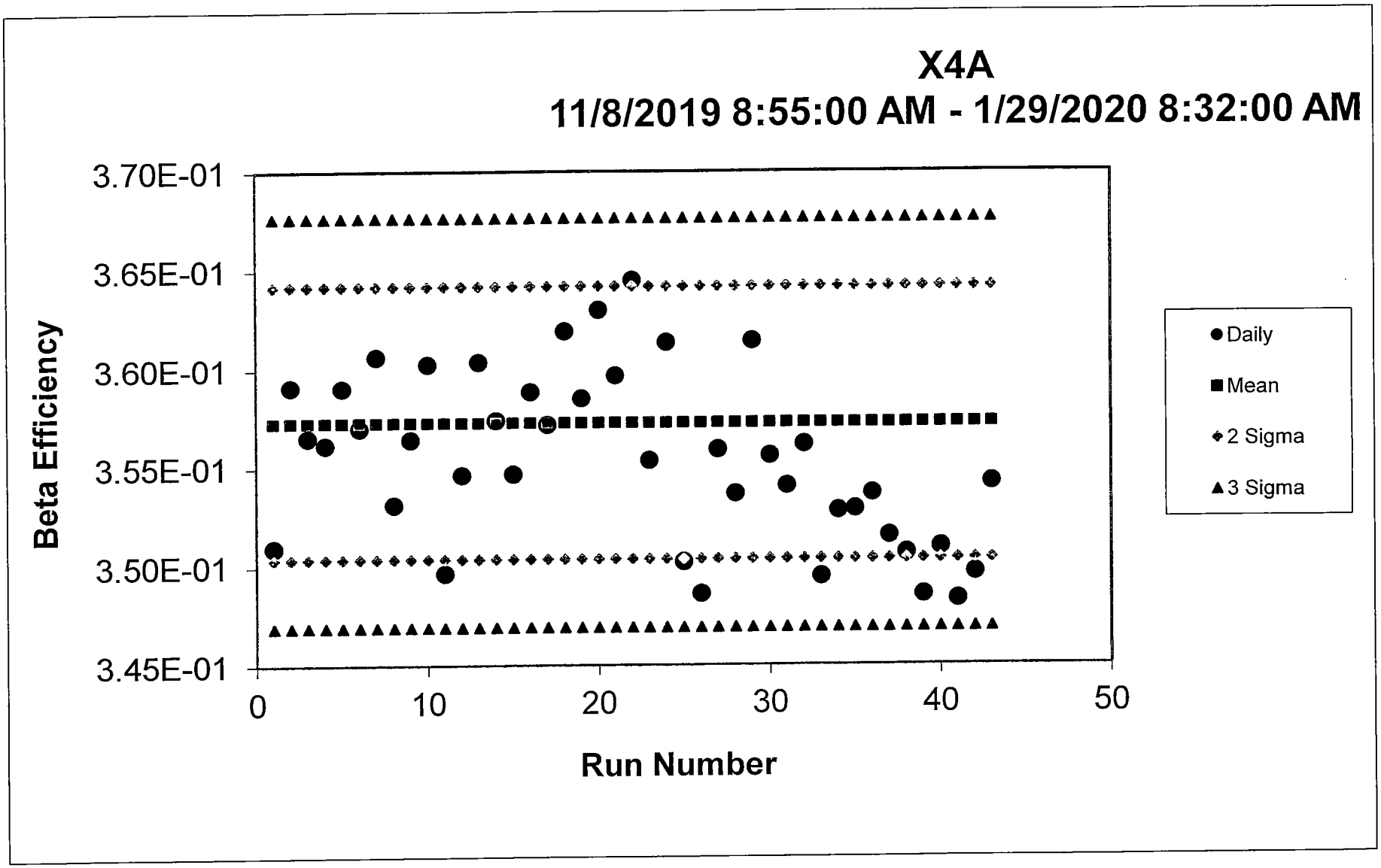
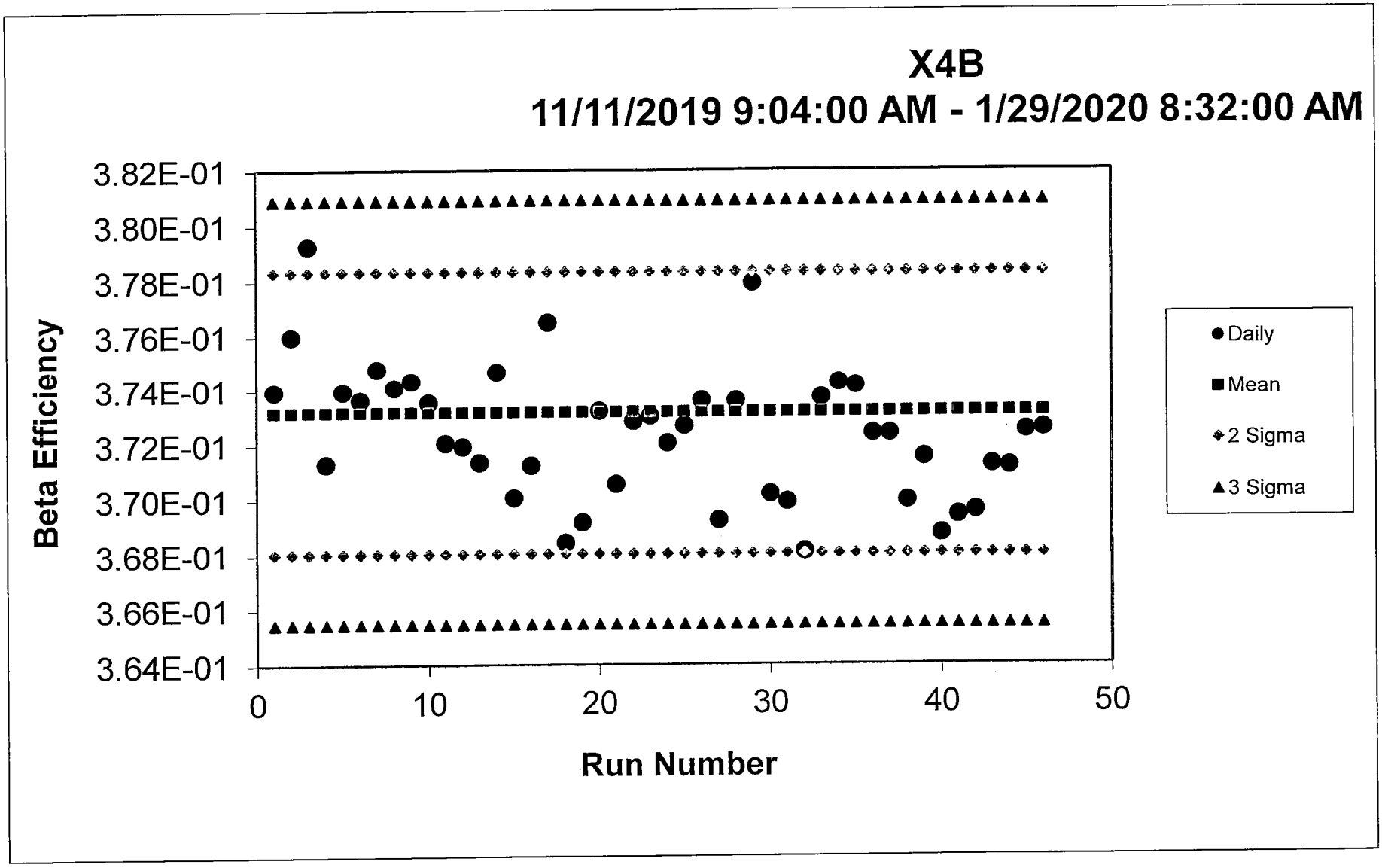
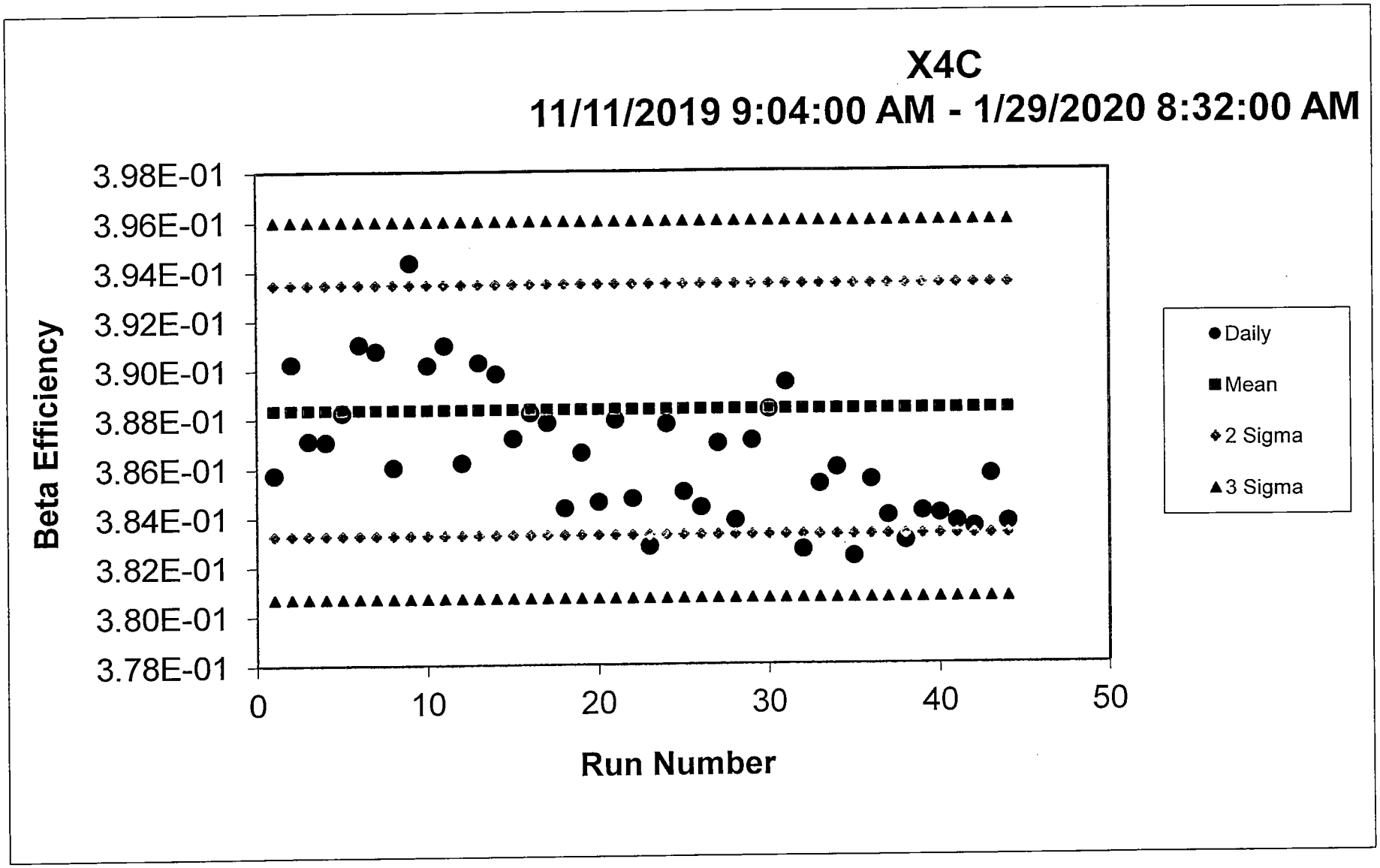
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

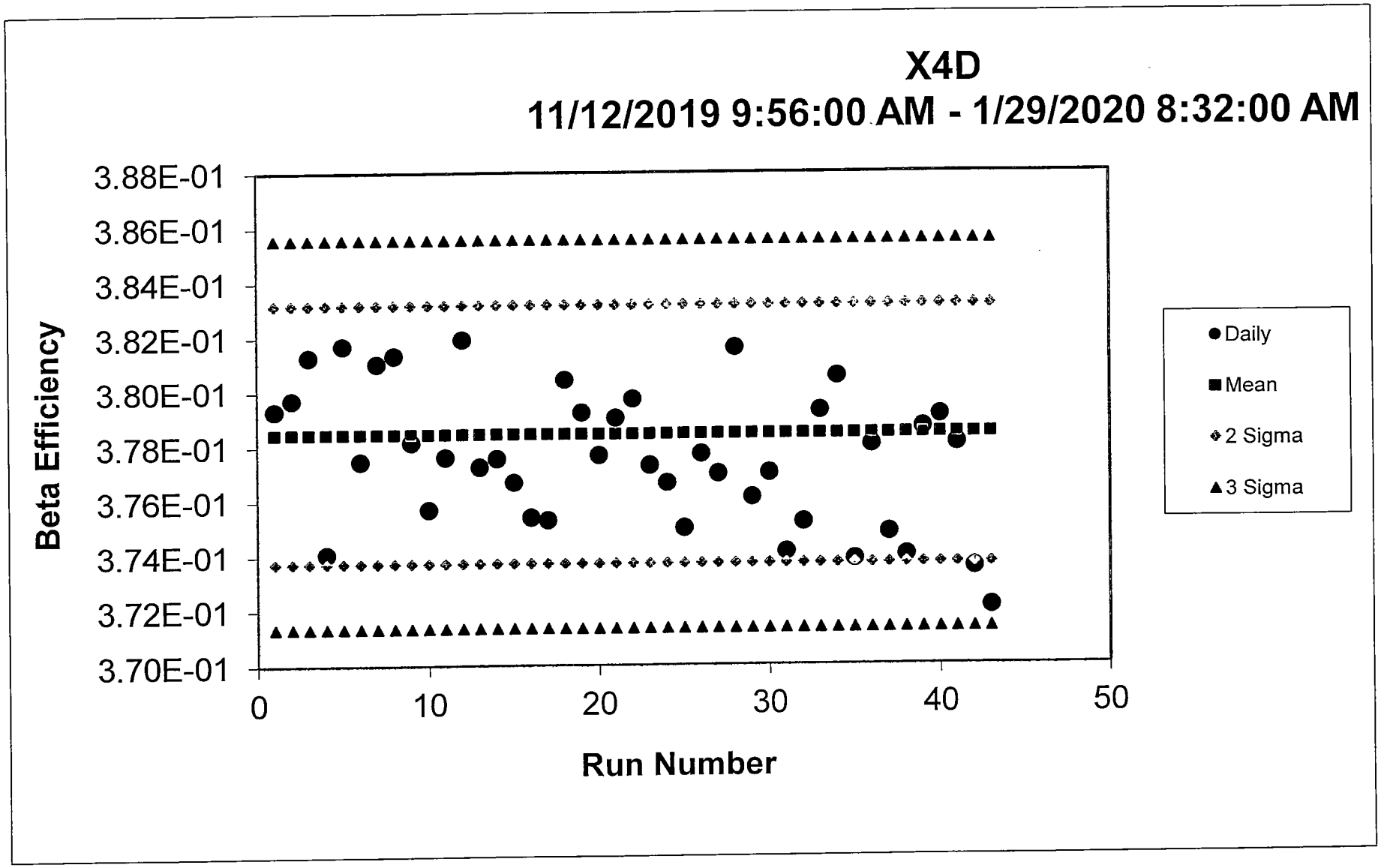

X3C
11/8/2019 8:34:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
3.58E-01
3.56E-01
3.54E-01
3.52E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

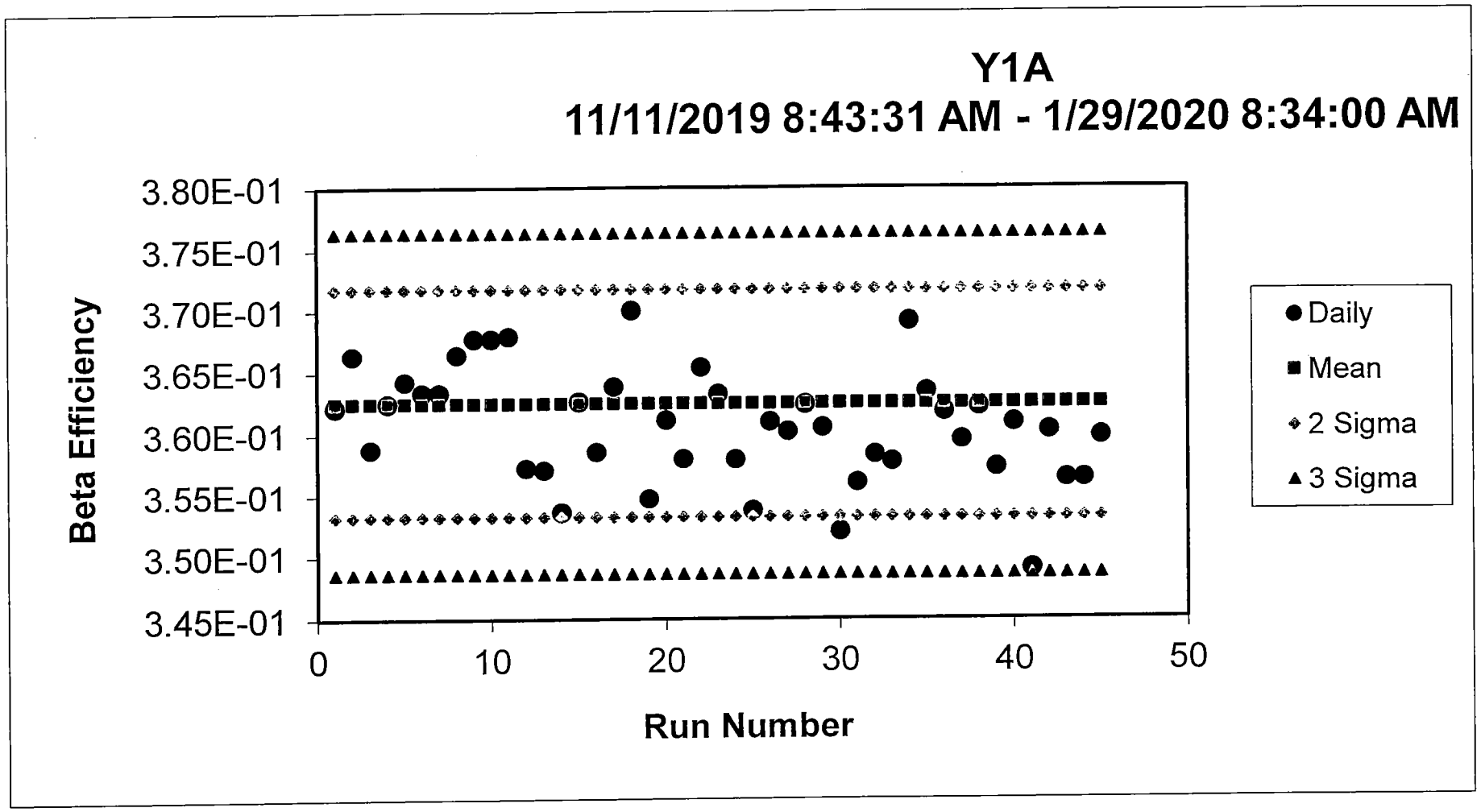

X3D
11/11/2019 8:54:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

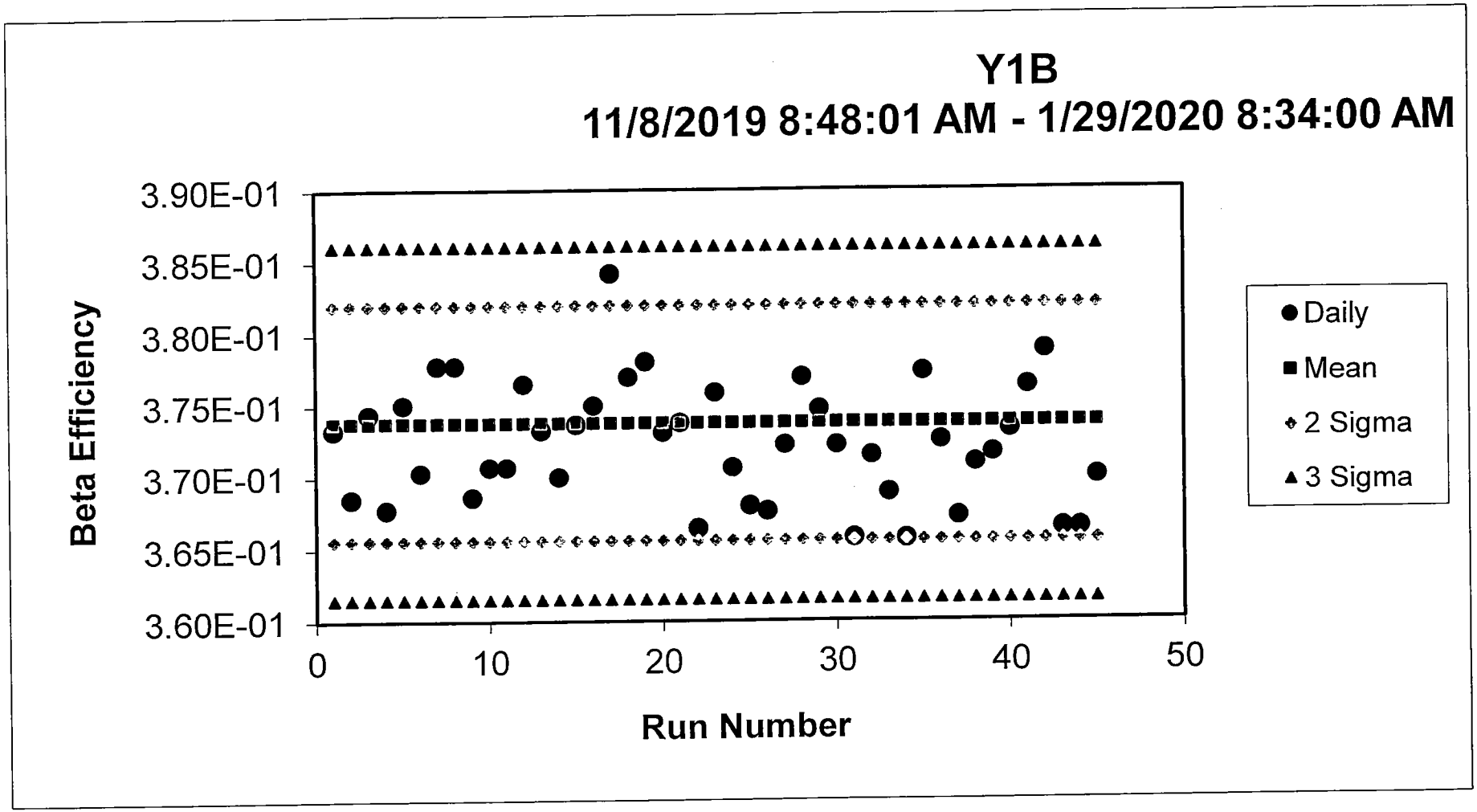

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

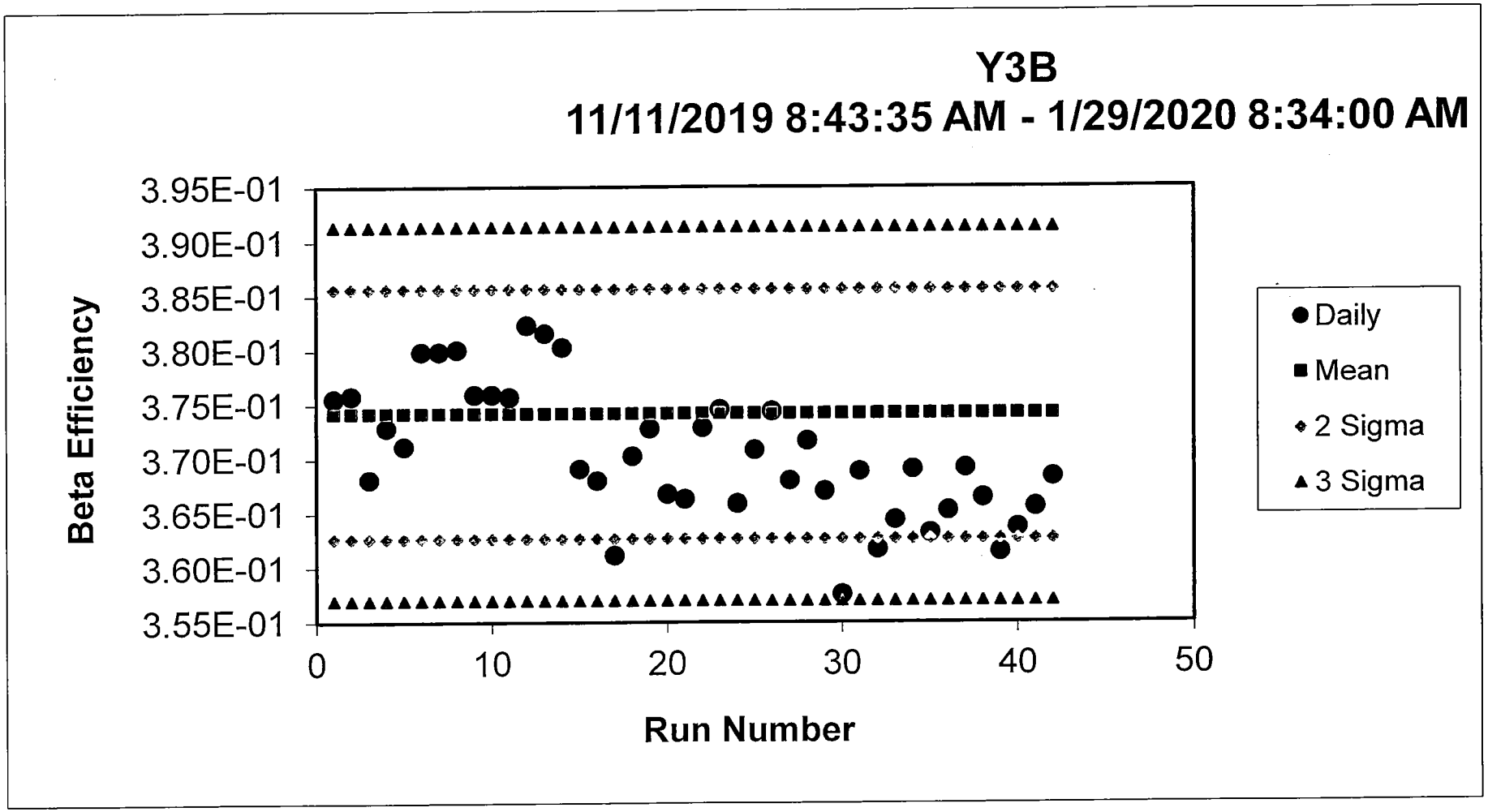

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

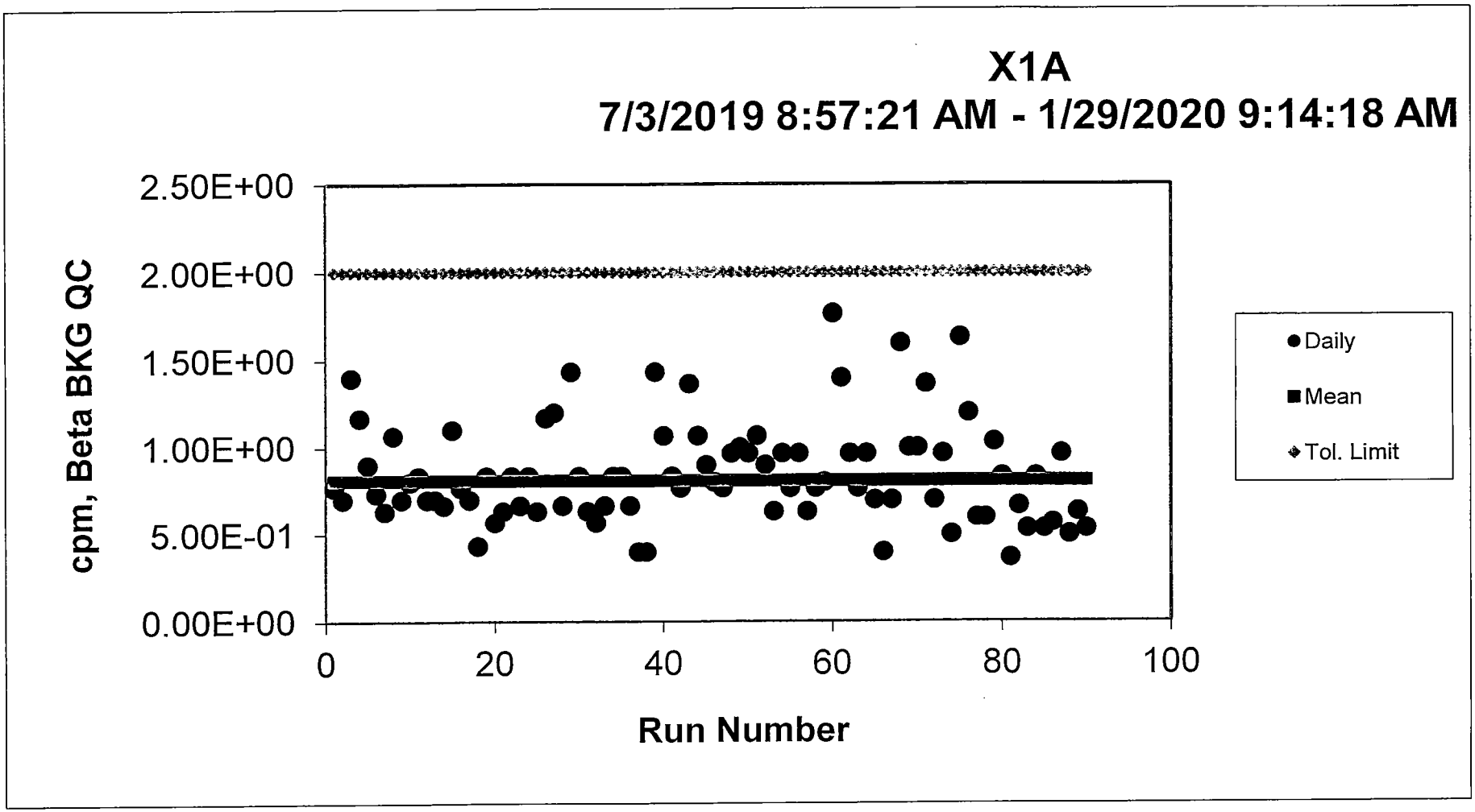

X4C
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

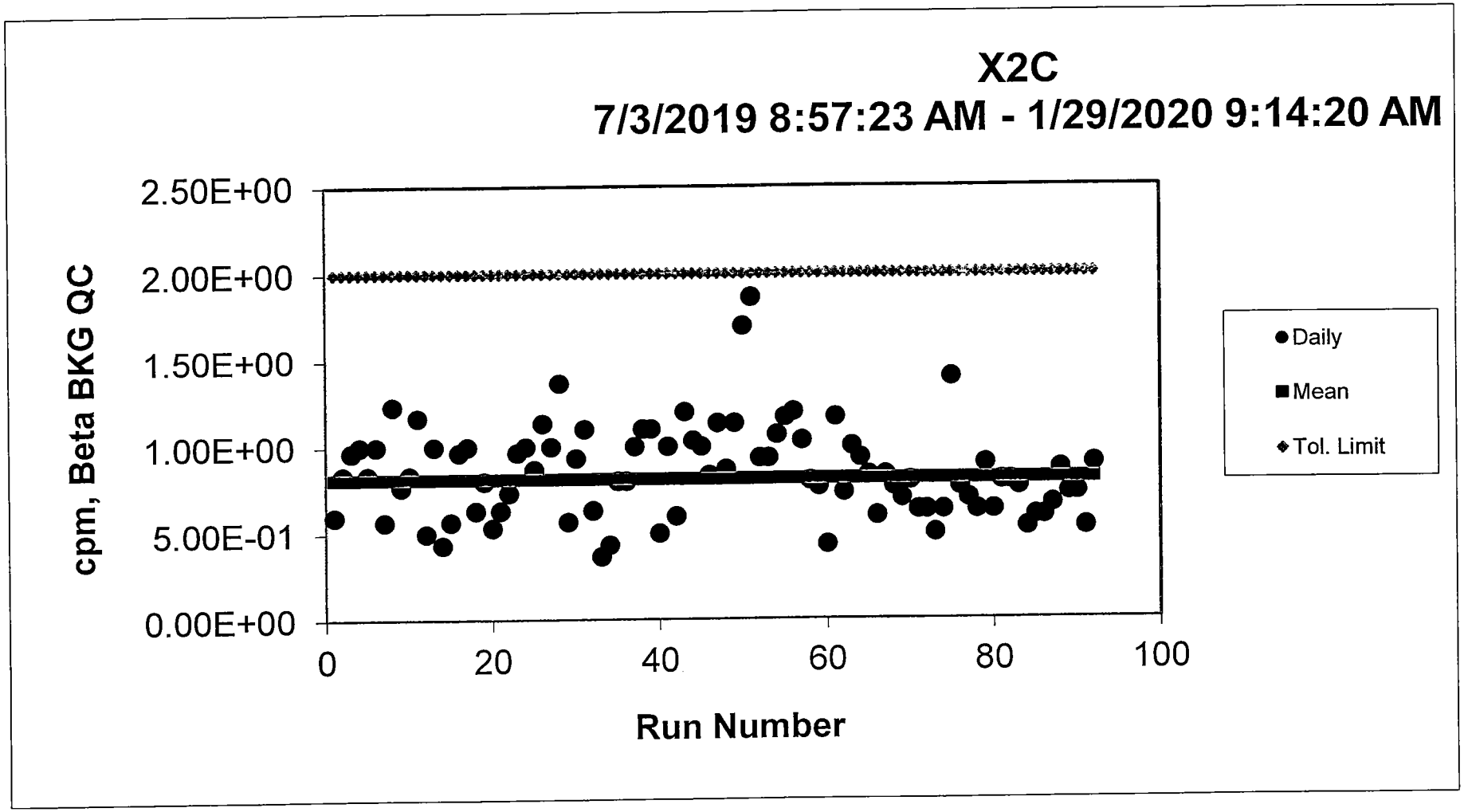

X4D
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

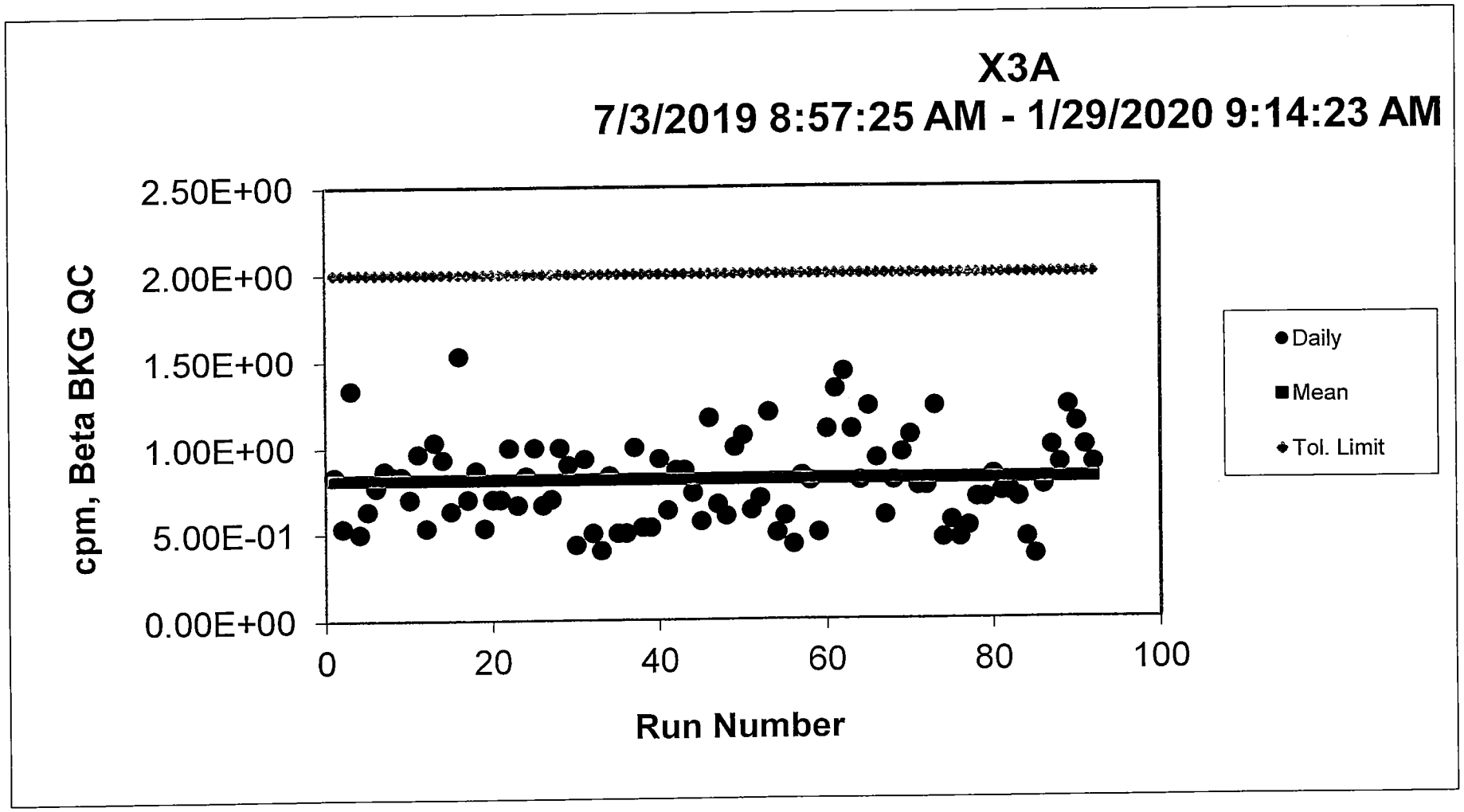

Y1A
11/11/2019 8:43:31 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

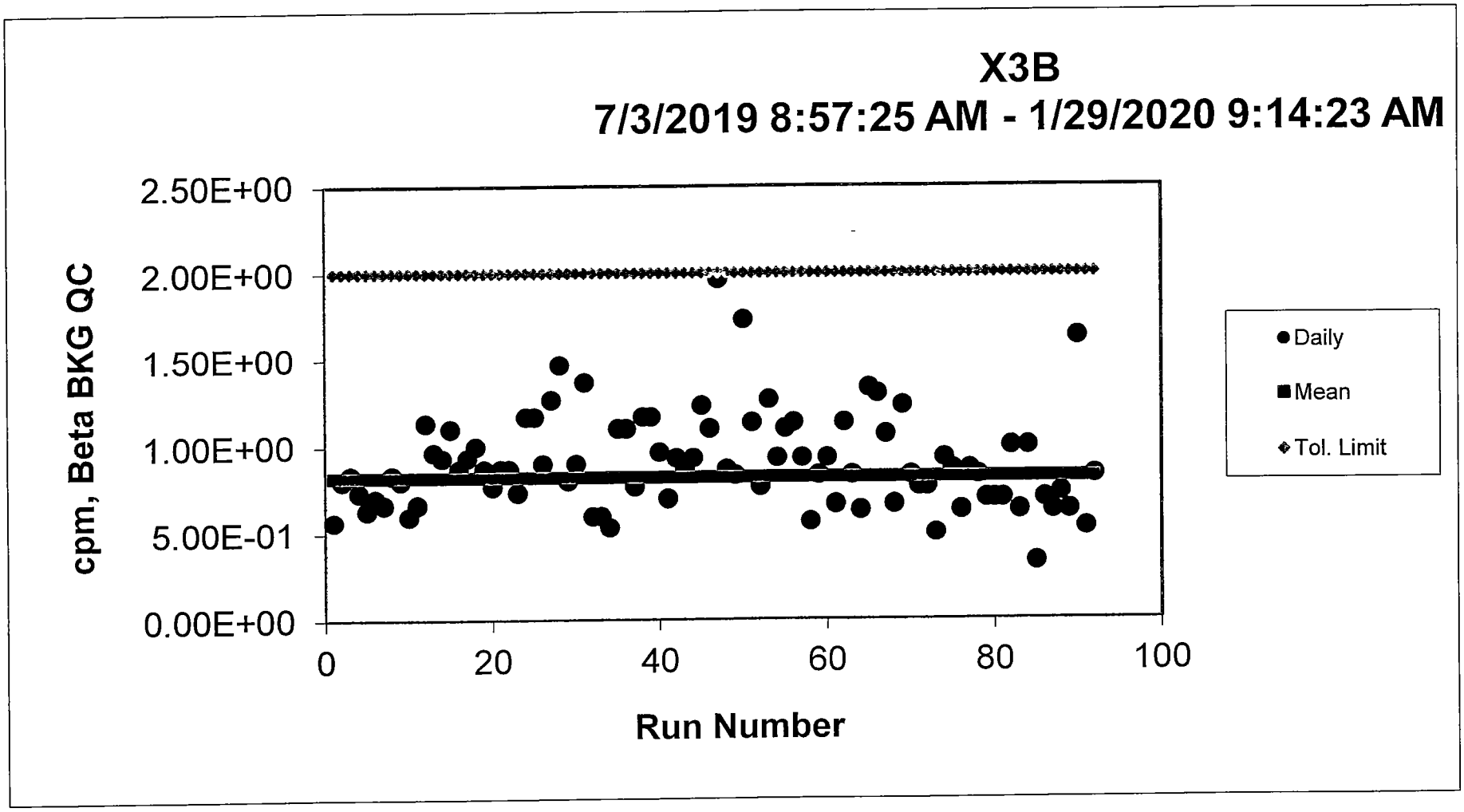

Y1B
11/8/2019 8:48:01 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

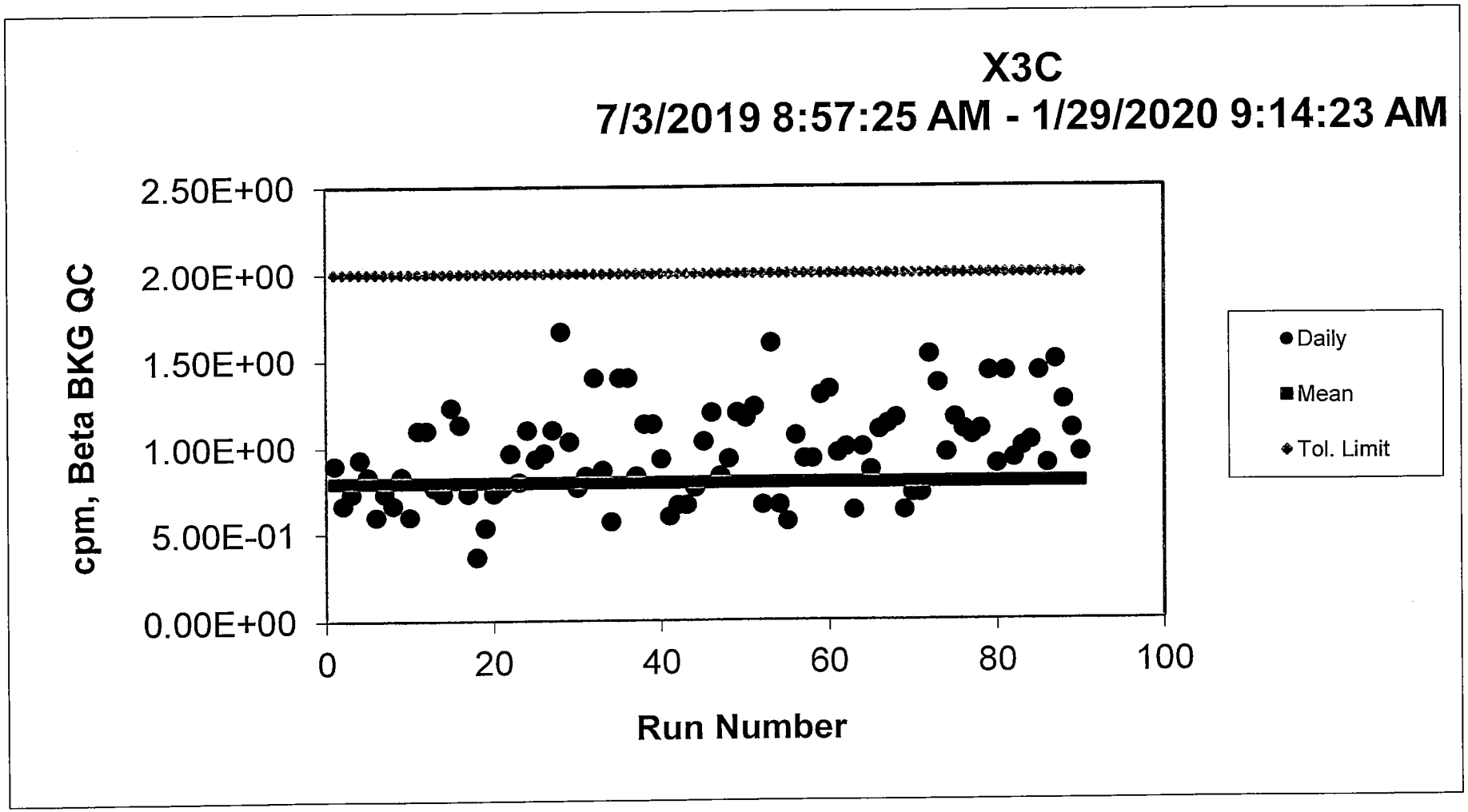

Y3B
11/11/2019 8:43:35 AM - 1/29/2020 8:34:00 AM
Beta Efficiency
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
3.70E-01
3.65E-01
3.60E-01
3.55E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

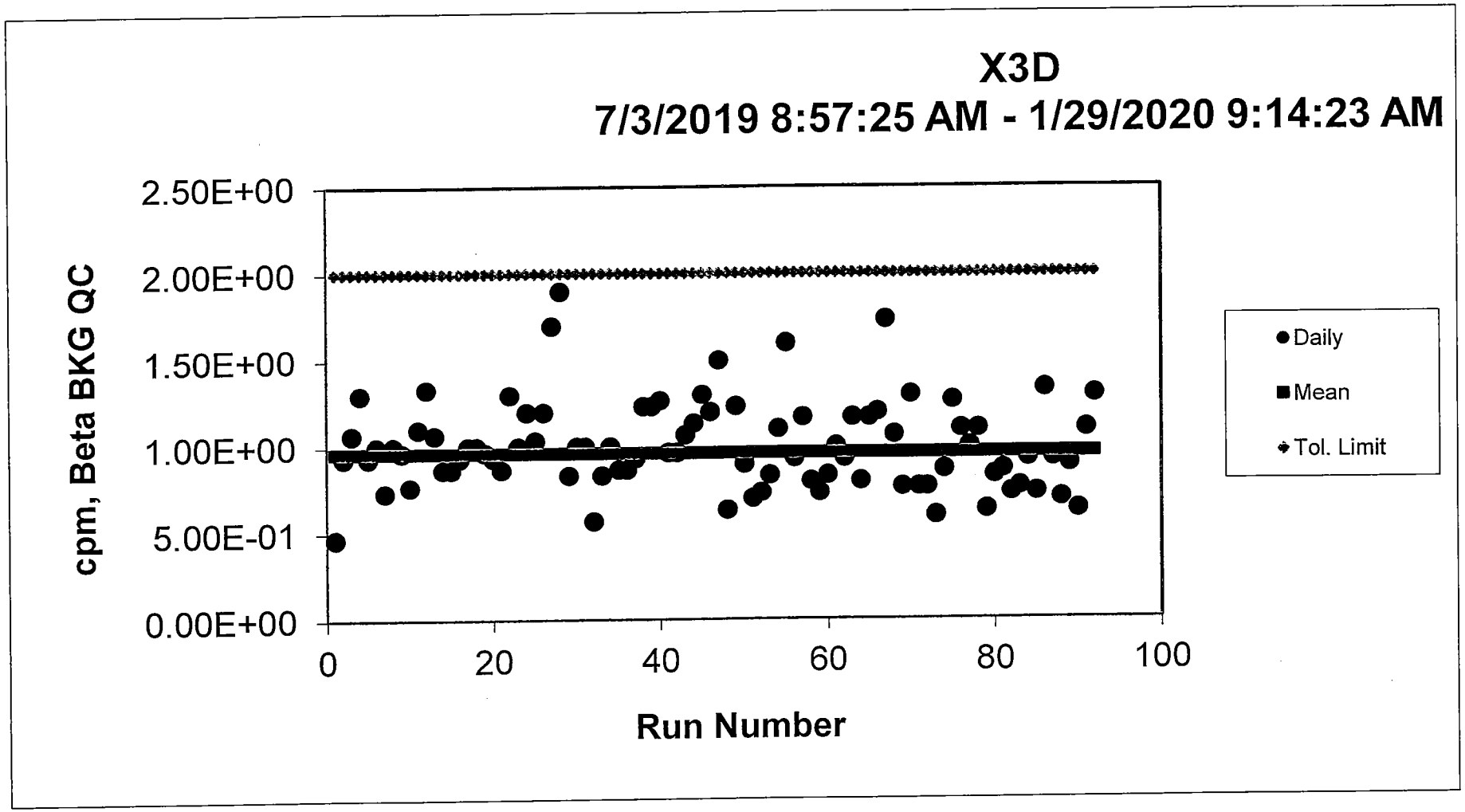

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

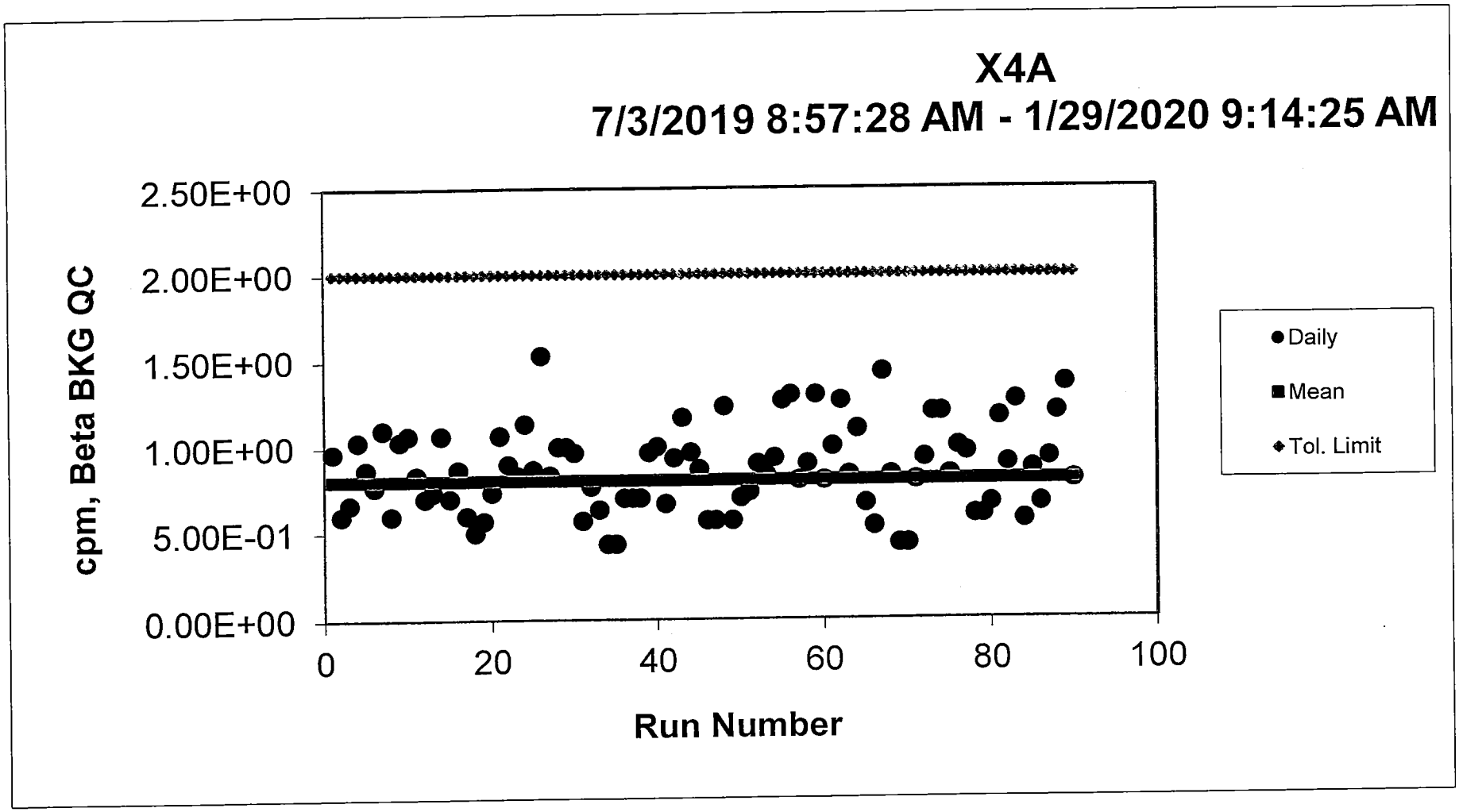

X2C
7/3/2019 8:57:23 AM - 1/29/2020 9:14:20 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

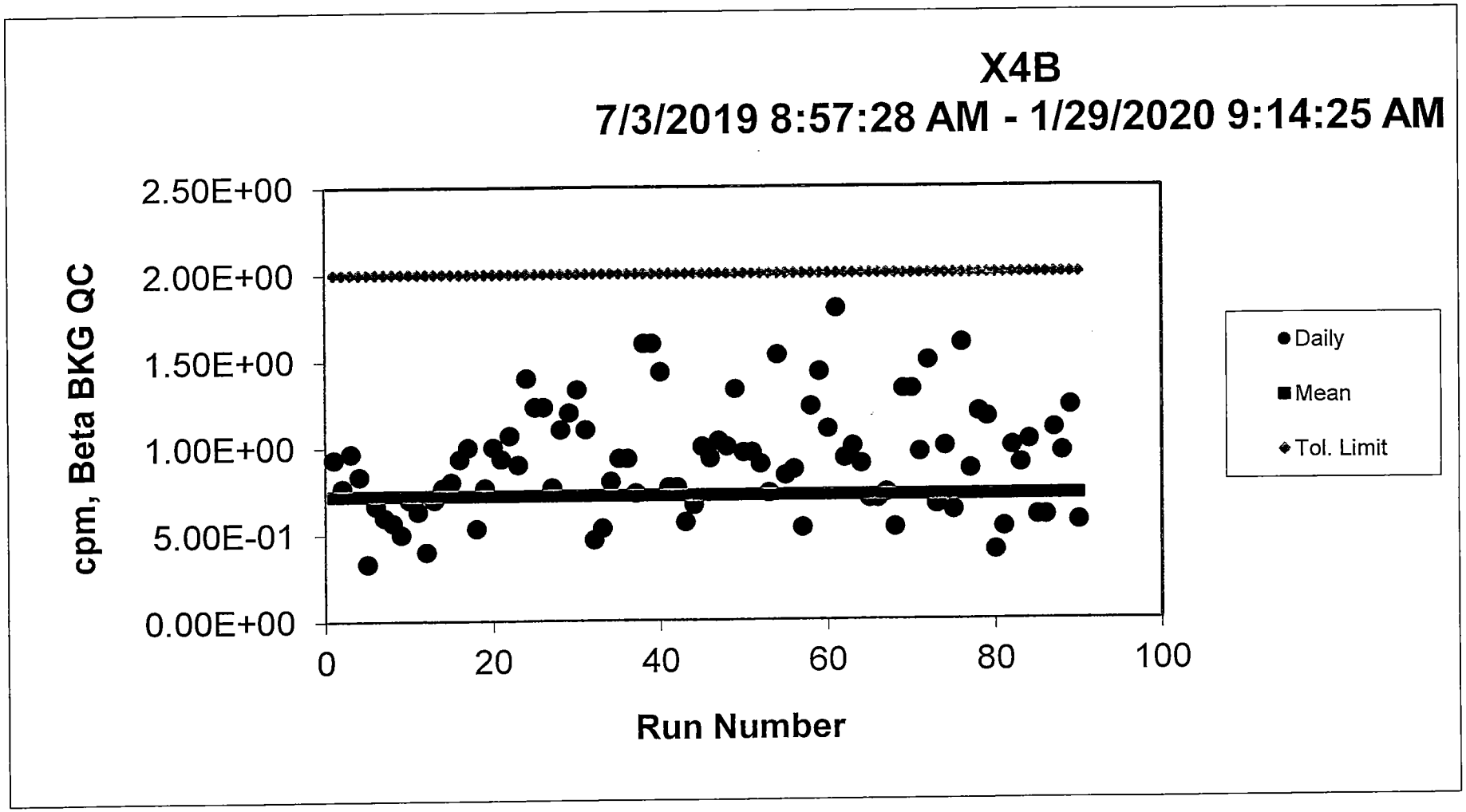

X3A
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

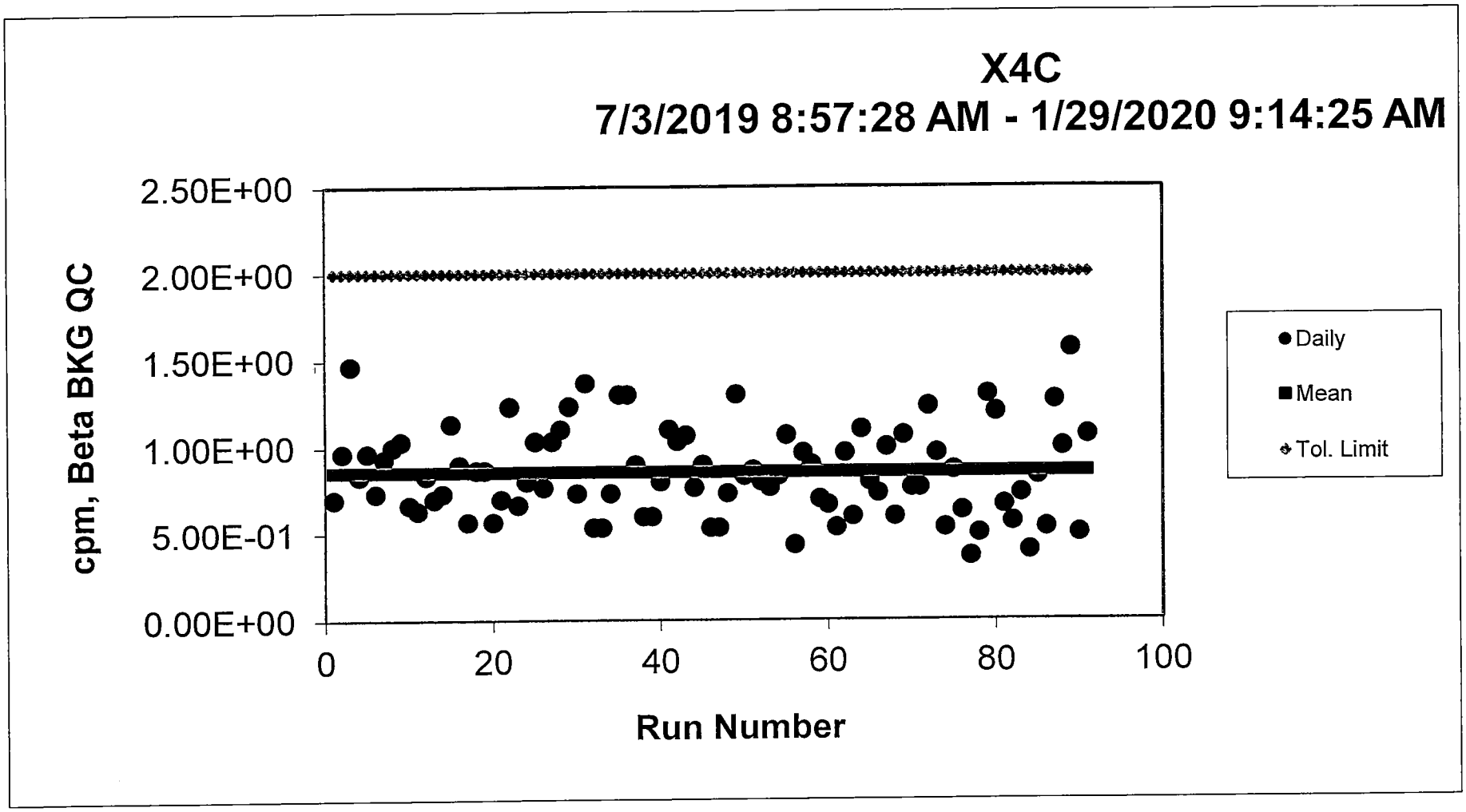

X3B
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

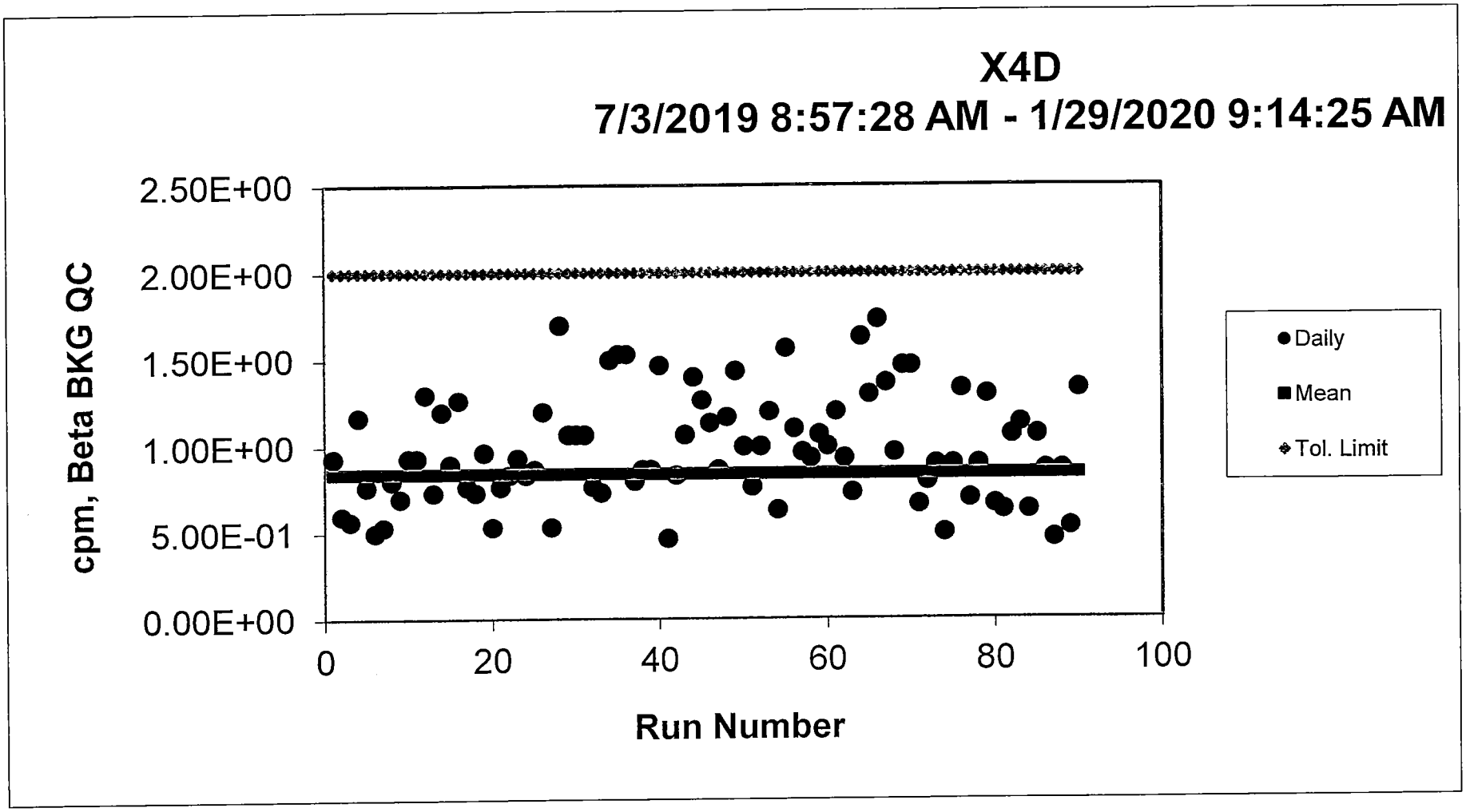

X3C
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

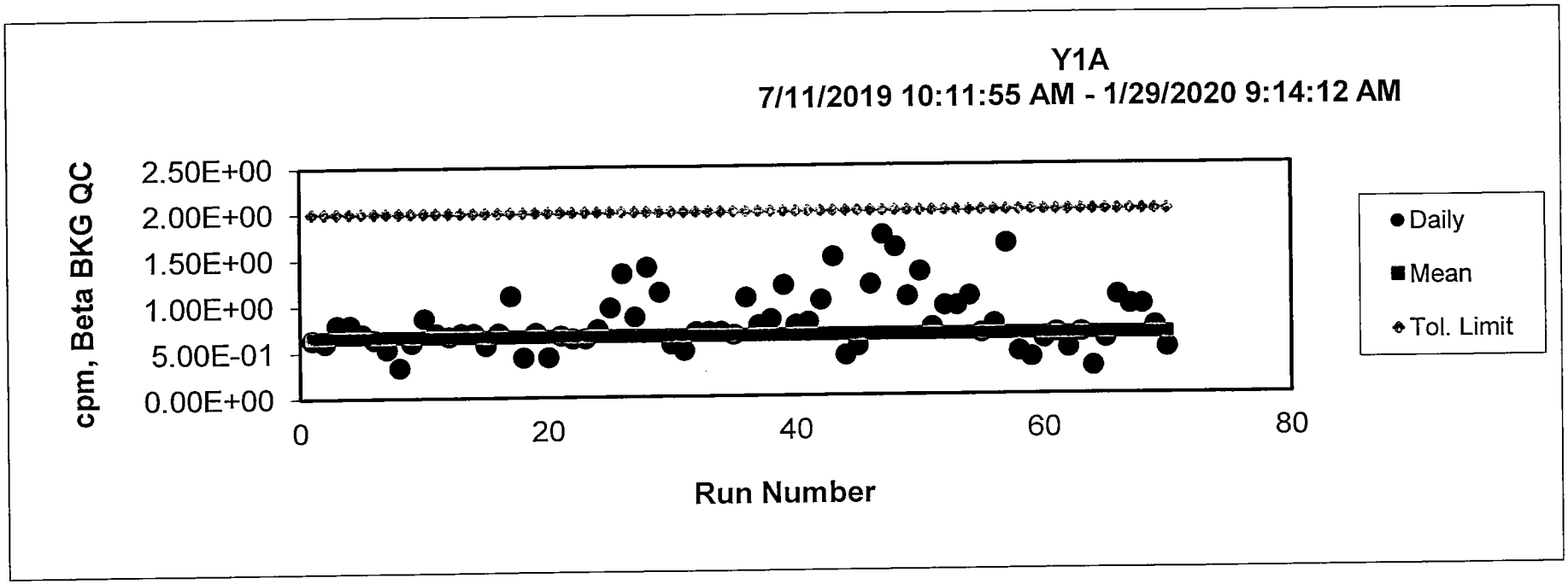

X3D
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

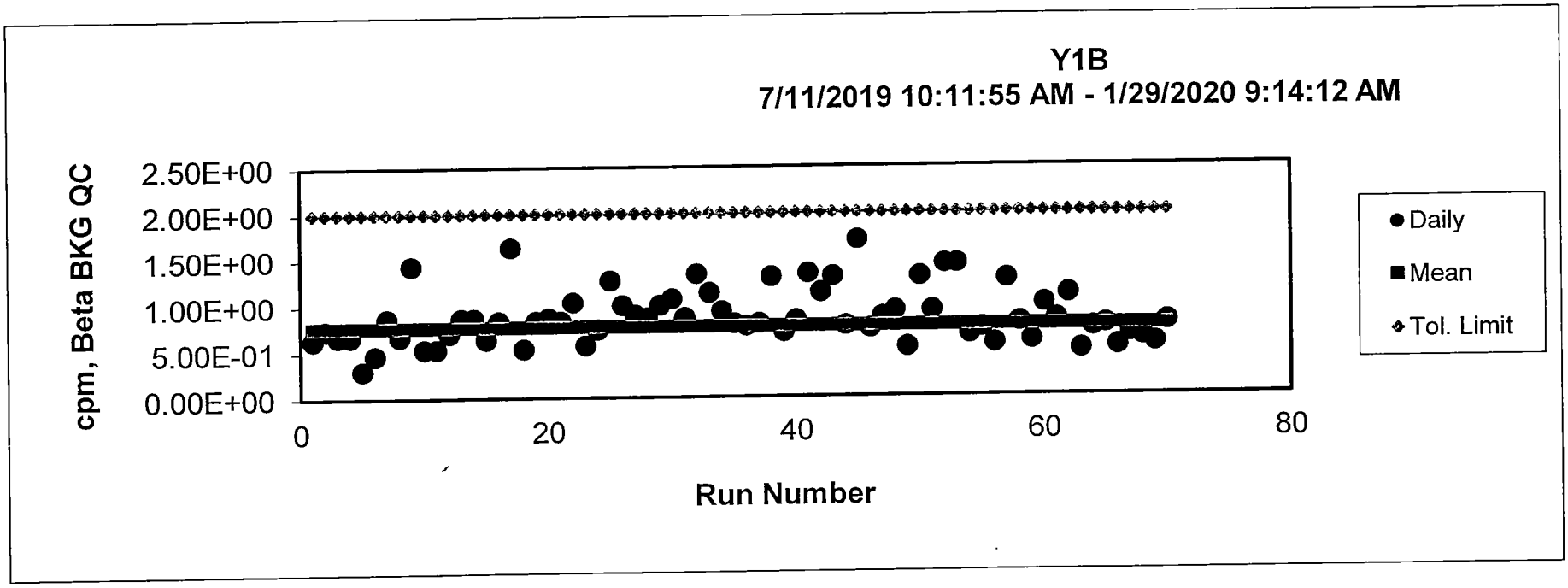

X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4C
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4D
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


Y1A
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit


Y1B
7/11/2019 10:11:55 AM - 1/29/2020 9:14:12 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32932

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	64.66%	575.5
recovery 2	64.44%	573.5
recovery 3	61.57%	548
Average	63.56%	
2 sigma	3.45	
RPD for highest and lowest	4.90	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:23:19.19
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:35.86

LIMS No., Customer Name, Client ID: L85483-2BI207 GAMMA COUNT

Sample ID : 01L85483-2BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:41:25.27
Live time : 0 01:41:22.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.78*	2304	577	0.98	146.00	8.67E+00	3.79E-01	2.7	3.99E+00
2	3	74.94*	4104	454	0.97	150.31	9.44E+00	6.75E-01	1.9	
3	3	84.80*	1829	453	1.16	170.00	1.27E+01	3.01E-01	3.0	1.26E+00
4	3	87.34	613	319	1.07	175.07	1.34E+01	1.01E-01	6.5	
5	1	569.48	7957	210	1.38	1138.28	7.08E+00	1.31E+00	1.2	1.14E+00
6	1	1063.33	3398	115	1.75	2125.16	3.53E+00	5.59E-01	1.9	8.55E-01
7	1	1632.82	351	15	2.14	3263.54	2.30E+00	5.77E-02	6.0	8.17E-01
8	1	1769.48	201	17	2.11	3536.75	2.18E+00	3.30E-02	8.6	6.80E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	3398	74.50*	3.526E+00	5.747E+02	5.747E+02	3.70
	1770.24	201	6.87	2.182E+00	5.946E+02	5.946E+02	17.13

Flag: "*" = Keyline

Sample ID : 01L85483-2BI207 Acquisition date : 27-JAN-2020 08:38:35

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.747E+02	5.747E+02	0.213E+02	3.70	
	Total Activity :		5.747E+02	5.747E+02			
	Grand Total Activity :		5.747E+02	5.747E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.78	2304	577	0.98	146.00	140	20	3.79E-01	5.3	8.67E+00	
3	74.94	4104	454	0.97	150.31	140	20	6.75E-01	3.8	9.44E+00	
3	84.80	1829	453	1.16	170.00	165	15	3.01E-01	6.1	1.27E+01	
3	87.34	613	319	1.07	175.07	165	15	1.01E-01	13.0	1.34E+01	
1	569.48	7957	210	1.38	1138.28	1130	16	1.31E+00	2.4	7.08E+00	
1	1632.82	351	15	2.14	3263.54	3257	17	5.77E-02	12.0	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.755E+02	5.755E+02	0.208E+02	3.62	
	Total Activity :		5.755E+02	5.755E+02			
	Grand Total Activity :		5.755E+02	5.755E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.755E+02	2.082E+01	6.744E+00	0.000E+00	85.340

```
A,01L85483-2BI207 ,01/27/2020 10:23,01/27/2020 00:00,   1.000E+00,L85483-2BI207
B,01L85483-2BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.755E+02,   2.082E+01,   6.744E+00,,   85.340
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:21:33.22
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-JAN-2020 08:38:38.66

LIMS No., Customer Name, Client ID: L85483-3BI207 GAMMA COUNTT

Sample ID : 02L85483-3BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0225MM103019
BKGFILE : 02BG122719MT
Real Time : 0 01:41:04.70
Live time : 0 01:41:01.42

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	4152	770	0.91	130.38	1.62E+01	6.85E-01	1.9	2.95E+00
2	2	74.97*	7141	481	0.89	134.74	1.70E+01	1.18E+00	1.3	
3	3	84.80*	3054	387	1.14	154.54	1.96E+01	5.04E-01	2.1	3.19E+00
4	3	87.40	968	274	1.03	159.77	2.01E+01	1.60E-01	4.3	
5	0	569.65	7070	227	1.39	1131.10	6.31E+00	1.17E+00	1.3	
6	0	1063.53	2970	107	1.76	2125.93	3.08E+00	4.90E-01	2.0	
7	0	1633.12	274	17	2.04	3273.38	1.95E+00	4.53E-02	6.8	
8	0	1770.34	144	16	1.57	3549.83	1.84E+00	2.37E-02	10.2	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2970	74.50*	3.082E+00	5.768E+02	5.768E+02	4.00
	1770.24	144	6.87	1.840E+00	5.071E+02	5.071E+02	20.30

Flag: "*" = Keyline

Sample ID : 02L85483-3BI207 Acquisition date : 27-JAN-2020 08:38:38

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.768E+02	5.768E+02	0.231E+02	4.00	
	Total Activity :		5.768E+02	5.768E+02			
	Grand Total Activity :		5.768E+02	5.768E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	4152	770	0.91	130.38	123	23	6.85E-01	3.8	1.62E+01	
2	74.97	7141	481	0.89	134.74	123	23	1.18E+00	2.6	1.70E+01	
3	84.80	3054	387	1.14	154.54	148	17	5.04E-01	4.2	1.96E+01	
3	87.40	968	274	1.03	159.77	148	17	1.60E-01	8.7	2.01E+01	
0	569.65	7070	227	1.39	1131.10	1124	15	1.17E+00	2.6	6.31E+00	
0	1633.12	274	17	2.04	3273.38	3266	13	4.53E-02	13.5	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.735E+02	5.735E+02	0.225E+02	3.93	
	Total Activity :		5.735E+02	5.735E+02			
Grand Total Activity :			5.735E+02	5.735E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.735E+02	2.251E+01	6.743E+00	0.000E+00	85.049

```
A,02L85483-3BI207 ,01/27/2020 10:21,01/27/2020 00:00,   1.000E+00,L85483-3BI207
B,02L85483-3BI207 ,BI207                ,01/15/2020 08:15,0225MM103019
C,BI-207  ,YES,   5.735E+02,   2.251E+01,   6.743E+00,,   85.049
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-JAN-2020 10:18:55.17
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-JAN-2020 08:38:41.00

LIMS No., Customer Name, Client ID: L85483-4BI207 GAMMA COUNT

Sample ID : 08L85483-4BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 27-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.78
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.75	2536	662	1.40	152.56	9.14E+00	4.23E-01	2.7	3.82E+00
2	3	74.94*	4056	466	1.18	156.95	9.94E+00	6.76E-01	2.0	
3	3	84.75*	1976	376	1.38	176.54	1.31E+01	3.29E-01	2.8	9.49E-01
4	3	87.42	676	292	1.25	181.86	1.38E+01	1.13E-01	6.7	
5	1	569.41	6438	180	1.51	1144.30	5.93E+00	1.07E+00	1.3	1.80E+00
6	1	1063.15	2675	77	1.80	2129.66	2.95E+00	4.46E-01	2.1	2.83E+00
7	1	1632.76	206	18	1.92	3265.78	1.91E+00	3.43E-02	8.2	5.55E-01
8	1	1769.84	152	0	2.13	3539.08	1.80E+00	2.53E-02	8.1	3.91E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2675	74.50*	2.953E+00	5.476E+02	5.477E+02	4.16
	1770.24	152	6.87	1.802E+00	5.526E+02	5.526E+02	16.23

Flag: "*" = Keyline

Sample ID : 08L85483-4BI207 Acquisition date : 27-JAN-2020 08:38:41

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.476E+02	5.477E+02	0.228E+02	4.16	
	Total Activity :		5.476E+02	5.477E+02			
	Grand Total Activity :		5.476E+02	5.477E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.75	2536	662	1.40	152.56	144	28	4.23E-01	5.3	9.14E+00	
3	74.94	4056	466	1.18	156.95	144	28	6.76E-01	4.1	9.94E+00	
3	84.75	1976	376	1.38	176.54	171	16	3.29E-01	5.6	1.31E+01	
3	87.42	676	292	1.25	181.86	171	16	1.13E-01	13.4	1.38E+01	
1	569.41	6438	180	1.51	1144.30	1137	16	1.07E+00	2.7	5.93E+00	
1	1632.76	206	18	1.92	3265.78	3259	14	3.43E-02	16.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.479E+02	5.480E+02	0.221E+02	4.03	
	Total Activity :		5.479E+02	5.480E+02			
	Grand Total Activity :		5.479E+02	5.480E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.480E+02	2.206E+01	8.700E+00	0.000E+00	62.987

```
A,08L85483-4BI207 ,01/27/2020 10:18,01/27/2020 00:00,   1.000E+00,L85483-4BI207
B,08L85483-4BI207 ,BI207              ,01/21/2020 08:55,0825MM092019
C,BI-207  ,YES,   5.480E+02,   2.206E+01,   8.700E+00,,   62.987
```

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/29/20 13:49

Work Order: **L85482** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85482-1		PB-210	09-dec-19 15:45	6.0193 g dry		01-24-20 10:30	.0564	84.43	01-24-20 22:42	X2C	3095	800 M	822	800 M	.312	.965	KSC
11187072-120919-BN-SJSSA04 (0-2.5 CM) Activity: **1.11E+00** Error: 6.13E-02 MDC: 6.54E-02 pCi/gDry							**L85482-1**			**PB-210**							
L85482-2		PB-210	09-dec-19 15:45	6.4011 g dry		01-24-20 10:30	.0556	83.23	01-24-20 22:42	X3A	2695	800 M	832	800 M	.267	.965	KSC
11187072-120919-BN-SJSSA04 (7.5-10 CM) Activity: **1.00E+00** Error: 6.39E-02 MDC: 7.23E-02 pCi/gDry							**L85482-2**			**PB-210**							
L85482-3		PB-210	09-dec-19 15:50	6.6447 g dry		01-24-20 10:30	.0533	79.79	01-24-20 22:42	X3B	2747	800 M	860	800 M	.281	.965	KSC
11187072-120919-BN-SJSSA04 (15-17.5 CM) Activity: **9.30E-01** Error: 5.92E-02 MDC: 6.73E-02 pCi/gDry							**L85482-3**			**PB-210**							
L85482-4		PB-210	09-dec-19 15:50	6.5085 g dry		01-24-20 10:30	.0526	78.74	01-24-20 22:42	X3C	2833	800 M	1179	800 M	.263	.965	KSC
11187072-120919-BN-SJSSA04 (22.5-25 CM) Activity: **8.89E-01** Error: 6.81E-02 MDC: 8.60E-02 pCi/gDry							**L85482-4**			**PB-210**							
L85482-5		PB-210	09-dec-19 15:55	6.5447 g dry		01-24-20 10:30	.0566	84.73	01-24-20 22:42	X3D	2969	800 M	777	800 M	.293	.965	KSC
11187072-120919-BN-SJSSA04 (30-32.5 CM) Activity: **1.05E+00** Error: 5.86E-02 MDC: 6.22E-02 pCi/gDry							**L85482-5**			**PB-210**							
L85482-6		PB-210	09-dec-19 15:55	6.3253 g dry		01-24-20 10:30	.0534	79.94	01-24-20 22:42	X4A	2129	800 M	769	800 M	.309	.965	KSC
11187072-120919-BN-SJSSA04 (37.5-40 CM) Activity: **6.38E-01** Error: 5.05E-02 MDC: 6.06E-02 pCi/gDry							**L85482-6**			**PB-210**							
L85482-7		PB-210	09-dec-19 16:00	6.2422 g dry		01-24-20 10:30	.061	91.32	01-24-20 22:42	X4B	2014	800 M	802	800 M	.294	.965	KSC
11187072-120919-BN-SJSSA04 (45-47.5 CM) Activity: **6.07E-01** Error: 5.31E-02 MDC: 6.61E-02 pCi/gDry							**L85482-7**			**PB-210**							
L85482-8		PB-210	09-dec-19 16:00	6.1568 g dry		01-24-20 10:30	.0544	81.44	01-24-20 22:42	X4C	2290	800 M	749	800 M	.276	.965	KSC
11187072-120919-BN-SJSSA04 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/29/20 13:49

Work Order: **L85482**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85482-8	PB-210	09-dec-19 16:00	6.1568 g dry	01-24-20 10:30	.0544	81.44	01-24-20 22:42	X4C	2290	800 M	749	800 M	.276	.965	KSC
11187072-120919-BN-SJSSA04 (52.5-55 CM) Activity: **8.32E-01** Error: 5.95E-02 MDC: 6.89E-02 pCi/gDry				**L85482-8**			**PB-210**								
L85482-9	PB-210	09-dec-19 16:05	6.2843 g dry	01-24-20 10:30	.0554	82.93	01-24-20 22:42	X4D	2538	800 M	813	800 M	.286	.965	KSC
11187072-120919-BN-SJSSA04 (60-62.5 CM) Activity: **8.81E-01** Error: 5.91E-02 MDC: 6.78E-02 pCi/gDry				**L85482-9**			**PB-210**								
L85482-10	PB-210	09-dec-19 16:05	6.7906 g dry	01-24-20 10:30	.0453	67.81	01-24-20 21:53	Y1A	2697	800 M	790	800 M	.305	.969	KSC
11187072-120919-BN-SJSSA04 (70-72.5 CM) Activity: **8.40E-01** Error: 5.20E-02 MDC: 5.77E-02 pCi/gDry				**L85482-10**			**PB-210**								
L85482-11	PB-210	09-dec-19 16:10	6.385 g dry	01-24-20 10:30	.0479	71.71	01-24-20 21:53	Y1B	2336	800 M	809	800 M	.292	.969	KSC
11187072-120919-BN-SJSSA04 (80-82.5 CM) Activity: **7.49E-01** Error: 5.50E-02 MDC: 6.50E-02 pCi/gDry				**L85482-11**			**PB-210**								

Raw Data Sheet (rawdata)

TBE-RDS03 — 01/29/20 13:50 —

Work Order: **WG32932** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32932-1		PB-210	24-jan-20 00:00	100 %		01-24-20 10:30	.0415	62.13	01-24-20 22:42	X1A	940	800 M	811	800 M	.311	.969	KSC
Blank Samples																	
Activity: 3.79E-01	Error: 2.46E-01		MDC: **3.90E-01**	pCi/Total		WG32932-1			PB-210								
WG32932-2		PB-210	01-jul-91 12:00	100 %		01-24-20 10:30	.0462	69.16	01-24-20 15:45	X4A	689	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **2.58E+02**	Error: 2.01E+01		MDC: 6.76E+00	pCi/Total		**WG32932-2**			**PB-210**								
WG32932-3		PB-210	08-dec-19 15:30	6.4435 g dry		01-24-20 10:30	.0502	75.15	01-28-20 22:45	Y3B	1574	800 M	882	800 M	.287	.555	KSC
11187072-120819-BN-SJSSA05 (30-32.5 CM)																	
Activity: **5.97E-01**	Error: 8.56E-02		MDC: 1.20E-01	pCi/gDry		**WG32932-3**			**PB-210**								
WG32932-4		PB-210	08-dec-19 00:00	6.2002 g dry		01-24-20 10:30	.0635	95.06	01-24-20 15:45	X4B	802	15 M	802	800 M	.294	.967	KSC
11187072-120819-BN-SJSSA05 (7.5-10 CM)																	
Activity: **2.11E+01**	Error: 1.52E+00		MDC: 4.85E-01	pCi/gDry		**WG32932-4**			**PB-210**								
WG32932-5		PB-210	08-dec-19 00:00	6.119 g dry		01-24-20 10:30	.0398	59.68	01-24-20 15:45	X4C	636	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **1.80E+01**	Error: 1.46E+00		MDC: 5.05E-01	pCi/gDry		**WG32932-5**			**PB-210**								

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-1	940	4.66	800.00	01/24/2020 22:42		1.0000	%	pCi	PB-210	0.311	3.79E-01	2.46E-01	3.90E-01	Total	0.636	0.9686	811.	800.0	
~~WG32932-3~~	~~1989~~	~~4.66~~	~~800.00~~	~~01/24/2020 22:42~~		6.4435	g	pCi	PB-210	0.296	5.29E-01	5.17E-02	6.71E-02	g Dry	0.636	0.9648	892.	800.0	
L85481-10	1569	4.66	800.00	01/24/2020 22:42		6.6059	g	pCi	PB-210	0.275	4.02E-01	4.89E-02	6.54E-02	g Dry	0.636	0.9646	772.	800.0	
L85481-11	1942	4.66	800.00	01/24/2020 22:42		6.4130	g	pCi	PB-210	0.283	4.76E-01	5.50E-02	7.48E-02	g Dry	0.636	0.9646	1003.	800.0	
L85482-1	3095	4.66	800.00	01/24/2020 22:42		6.0193	g	pCi	PB-210	0.312	1.11E+00	6.13E-02	6.54E-02	g Dry	0.636	0.9648	822.	800.0	
L85482-2	2695	4.66	800.00	01/24/2020 22:42		6.4011	g	pCi	PB-210	0.267	1.00E+00	6.39E-02	7.23E-02	g Dry	0.636	0.9648	832.	800.0	
L85482-3	2747	4.66	800.00	01/24/2020 22:42		6.6447	g	pCi	PB-210	0.281	9.30E-01	5.92E-02	6.73E-02	g Dry	0.636	0.9648	860.	800.0	
L85482-4	2833	4.66	800.00	01/24/2020 22:42		6.5085	g	pCi	PB-210	0.263	8.89E-01	6.81E-02	8.60E-02	g Dry	0.636	0.9648	1179.	800.0	
L85482-5	2969	4.66	800.00	01/24/2020 22:42		6.5447	g	pCi	PB-210	0.293	1.05E+00	5.86E-02	6.22E-02	g Dry	0.636	0.9648	777.	800.0	
L85482-6	2129	4.66	800.00	01/24/2020 22:42		6.3253	g	pCi	PB-210	0.309	6.38E-01	5.05E-02	6.06E-02	g Dry	0.636	0.9648	769.	800.0	
L85482-7	2014	4.66	800.00	01/24/2020 22:42		6.2422	g	pCi	PB-210	0.294	6.07E-01	5.31E-02	6.61E-02	g Dry	0.636	0.9648	802.	800.0	
L85482-8	2290	4.66	800.00	01/24/2020 22:42		6.1568	g	pCi	PB-210	0.276	8.32E-01	5.95E-02	6.89E-02	g Dry	0.636	0.9648	749.	800.0	
L85482-9	2538	4.66	800.00	01/24/2020 22:42		6.2843	g	pCi	PB-210	0.286	8.81E-01	5.91E-02	6.78E-02	g Dry	0.636	0.9648	813.	800.0	

1/28/20
Reviewed Date

Data Filename: X012420N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32932-1	31	940	1/24/2020 22:42	800 800MIN	1580
1 b	b wg32932-3	42	1989	1/24/2020 22:42	800 800MIN	1580
1 c	b l85481-10	44	1569	1/24/2020 22:42	800 800MIN	1580
1 d	b l85481-11	35	1942	1/24/2020 22:42	800 800MIN	1580
2 a		17	2170	1/24/2020 22:42	800 800MIN	1580
2 b		22	697	1/24/2020 22:42	800 800MIN	1580
2 c	b l85482-1	31	3095	1/24/2020 22:42	800 800MIN	1580
2 d		30	662	1/24/2020 22:42	800 800MIN	1580
3 a	b l85482-2	17	2695	1/24/2020 22:42	800 800MIN	1580
3 b	b l85482-3	37	2747	1/24/2020 22:42	800 800MIN	1580
3 c	b l85482-4	31	2833	1/24/2020 22:42	800 800MIN	1580
3 d	b l85482-5	53	2969	1/24/2020 22:42	800 800MIN	1580
4 a	b l85482-6	32	2129	1/24/2020 22:42	800 800MIN	1580
4 b	b l85482-7	37	2014	1/24/2020 22:42	800 800MIN	1580
4 c	b l85482-8	22	2290	1/24/2020 22:42	800 800MIN	1580
4 d	b l85482-9	35	2538	1/24/2020 22:42	800 800MIN	1580

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85482-10	2697	4.66	800.00	01/24/2020 21:53		6.7906	g	pCi	PB-210	0.305	8.40E-01	5.20E-02	5.77E-02	g Dry	0.636	0.9694	790.	800.0	
L85482-11	2336	4.66	800.00	01/24/2020 21:53		6.3850	g	pCi	PB-210	0.292	7.49E-01	5.50E-02	6.50E-02	g Dry	0.636	0.9694	809.	800.0	
L85483-1	1418	4.66	800.00	01/24/2020 21:53		6.0661	g	pCi	PB-210	0.286	2.12E-01	5.20E-02	7.82E-02	g Dry	0.636	0.9693	1015.	800.0	
L85483-2	1190	4.66	800.00	01/24/2020 21:53		6.2617	g	pCi	PB-210	0.263	2.59E-01	4.86E-02	6.97E-02	g Dry	0.636	0.9693	724.	800.0	
L85483-3	1436	4.66	800.00	01/24/2020 21:53		6.7266	g	pCi	PB-210	0.296	3.50E-01	4.23E-02	5.57E-02	g Dry	0.636	0.9693	675.	800.0	
L85483-4	1098	4.66	800.00	01/24/2020 21:53		6.2372	g	pCi	PB-210	0.306	1.19E-01	4.22E-02	6.50E-02	g Dry	0.636	0.9693	850.	800.0	
~~L85483-5~~	~~1163~~	~~4.66~~	~~800.00~~	~~01/24/2020 21:53~~		~~6.2452~~	~~g~~	~~pCi~~	~~PB-210~~	~~0.295~~	~~2.56E-01~~	~~4.22E-02~~	~~5.88E-02~~	~~g Dry~~	~~0.636~~	~~0.9693~~	~~647.~~	~~800.0~~	
L85483-6	912	4.66	800.00	01/24/2020 21:53		6.0966	g	pCi	PB-210	0.271	7.30E-02	4.55E-02	7.20E-02	g Dry	0.636	0.9693	780.	800.0	
L85483-7	808	4.66	800.00	01/24/2020 21:53		6.2570	g	pCi	PB-210	0.287	-3.76E-02	4.18E-02	7.04E-02	g Dry	0.636	0.9693	882.	800.0	

LQA 1/28/20
Reviewed Date

Data Filename: Y012420N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

U 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85482-10	25	2697	1/24/2020 21:53	800 800MIN	1650
1 b	b l85482-11	24	2336	1/24/2020 21:53	800 800MIN	1650
1 c		12	902	1/24/2020 21:53	800 800MIN	1650
1 d	b l85483-1	31	1418	1/24/2020 21:53	800 800MIN	1650
2 a	b l85483-2	22	1190	1/24/2020 21:53	800 800MIN	1650
2 b	b l85483-3	38	1436	1/24/2020 21:53	800 800MIN	1650
2 c	b l85483-4	30	1098	1/24/2020 21:53	800 800MIN	1650
2 d	b l85483-5	30	1163	1/24/2020 21:53	800 800MIN	1650
3 a	b l85483-6	32	912	1/24/2020 21:53	800 800MIN	1650
3 b	b l85483-7	15	808	1/24/2020 21:53	800 800MIN	1650
3 c		18	625	1/24/2020 21:53	800 800MIN	1650
3 d		11	1142	1/24/2020 21:53	800 800MIN	1650
4 a		0	0	1/24/2020 21:53	800 800MIN	1650
4 b		0	0	1/24/2020 21:53	800 800MIN	1650
4 c		0	0	1/24/2020 21:53	800 800MIN	1650
4 d		0	0	1/24/2020 21:53	800 800MIN	1650

Counter ID: Y Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85483-5	972	4.66	800.00	01/28/2020 22:45		6.2452	g	pCi	PB-210	0.271	1.81E-01	7.90E-02	1.23E-01	g Dry	0.636	0.5546	780.	800.0	
WG32932-3	1574	4.66	800.00	01/28/2020 22:45		6.4435	g	pCi	PB-210	0.287	5.97E-01	8.56E-02	1.19E-01	g Dry	0.636	0.5546	882.	800.0	

1/29/20
Reviewed Date

MSA 1/29/20

Data Filename: Y012820N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/28/2020 22:45	800 800MIN	1650
1 b				1/28/2020 22:45	800 800MIN	1650
1 c				1/28/2020 22:45	800 800MIN	1650
1 d				1/28/2020 22:45	800 800MIN	1650
2 a				1/28/2020 22:45	800 800MIN	1650
2 b				1/28/2020 22:45	800 800MIN	1650
2 c				1/28/2020 22:45	800 800MIN	1650
2 d				1/28/2020 22:45	800 800MIN	1650
3 a	b l85483-5	18	972	1/28/2020 22:45	800 800MIN	1650
3 b	b wg32932-3	11	1574	1/28/2020 22:45	800 800MIN	1650
3 c		16	643	1/28/2020 22:45	800 800MIN	1650
3 d		24	1054	1/28/2020 22:45	800 800MIN	1650
4 a		0	0	1/28/2020 22:45	800 800MIN	1650
4 b		0	0	1/28/2020 22:45	800 800MIN	1650
4 c		0	0	1/28/2020 22:45	800 800MIN	1650
4 d		0	0	1/28/2020 22:45	800 800MIN	1650

Counter ID: X Analyst: MSA

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32932-2	689	4.66	15.00	01/24/2020 15:45		1.0000	%	pCi	PB-210	0.309	2.58E+02	2.01E+01	6.76E+00	Total	0.636	0.3995	769.	800.0	
WG32932-4	802	4.66	15.00	01/24/2020 15:45		6.2002	g	pCi	PB-210	0.294	2.11E+01	1.52E+00	4.85E-01	g Dry	0.636	0.9670	802.	800.0	
WG32932-5	636	4.66	15.00	01/24/2020 15:45		6.1190	g	pCi	PB-210	0.276	1.80E+01	1.46E+00	5.05E-01	g Dry	0.636	0.9670	749.	800.0	

MSA 1/28/20
Reviewed Date

Data Filename: X012420AS.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

LDS 1/28/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a				1/24/2020 15:10	15 15MIN	1580
1 b				1/24/2020 15:10	15 15MIN	1580
1 c				1/24/2020 15:10	15 15MIN	1580
1 d				1/24/2020 15:10	15 15MIN	1580
2 a				1/24/2020 15:10	15 15MIN	1580
2 b				1/24/2020 15:10	15 15MIN	1580
2 c				1/24/2020 15:10	15 15MIN	1580
2 d				1/24/2020 15:10	15 15MIN	1580
3 a				1/24/2020 15:45	15 15MIN	1580
3 b				1/24/2020 15:45	15 15MIN	1580
3 c				1/24/2020 15:45	15 15MIN	1580
3 d				1/24/2020 15:45	15 15MIN	1580
4 a	b wg32932-2	4	689	1/24/2020 15:45	15 15MIN	1580
4 b	b wg32932-4	5	802	1/24/2020 15:45	15 15MIN	1580
4 c	b wg32932-5	6	636	1/24/2020 15:45	15 15MIN	1580
4 d		1	8	1/24/2020 15:45	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85482

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32932-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32932-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32932-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32932-1	WO	BLK	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0750	BALANCE 10	.0415	01/24/20	WG32932
WG32932-2	WO	LCS	PB-210	100 %	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0793	BALANCE 10	.0462	01/24/20	WG32932
WG32932-3	S	DUP	PB-210	6.4435 g dry	01/24/20	KSC	BALANCE 7	.0333	BALANCE 10	.0835	BALANCE 10	.0502	01/24/20	WG32932
WG32932-4	S	MS	PB-210	6.2002 g dry	01/24/20	KSC	BALANCE 7	.0339	BALANCE 10	.0974	BALANCE 10	.0635	01/24/20	WG32932
WG32932-5	S	MSD	PB-210	6.119 g dry	01/24/20	KSC	BALANCE 7	.0338	BALANCE 10	.0736	BALANCE 10	.0398	01/24/20	WG32932
L85482-1	S		PB-210	6.0193 g dry	01/24/20	KSC	BALANCE 7	.0336	BALANCE 10	.0900	BALANCE 10	.0564	01/24/20	WG32932
L85482-2	S		PB-210	6.4011 g dry	01/24/20	KSC	BALANCE 7	.0331	BALANCE 10	.0887	BALANCE 10	.0556	01/24/20	WG32932
L85482-3	S		PB-210	6.6447 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0868	BALANCE 10	.0533	01/24/20	WG32932
L85482-4	S		PB-210	6.5085 g dry	01/24/20	KSC	BALANCE 7	.0334	BALANCE 10	.0860	BALANCE 10	.0526	01/24/20	WG32932
L85482-5	S		PB-210	6.5447 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0901	BALANCE 10	.0566	01/24/20	WG32932
L85482-6	S		PB-210	6.3253 g dry	01/24/20	KSC	BALANCE 7	.0335	BALANCE 10	.0869	BALANCE 10	.0534	01/24/20	WG32932
L85482-7	S		PB-210	6.2422 g dry	01/24/20	KSC	BALANCE 7	.0329	BALANCE 10	.0939	BALANCE 10	.0610	01/24/20	WG32932
L85482-8	S		PB-210	6.1568 g dry	01/24/20	KSC	BALANCE 7	.0340	BALANCE 10	.0884	BALANCE 10	.0544	01/24/20	WG32932
L85482-9	S		PB-210	6.2843 g dry	01/24/20	KSC	BALANCE 7	.0332	BALANCE 10	.0886	BALANCE 10	.0554	01/24/20	WG32932
L85482-10	S		PB-210	6.7906 g dry	01/24/20	KSC	BALANCE 7	.0334	BALANCE 10	.0787	BALANCE 10	.0453	01/24/20	WG32932
L85482-11	S		PB-210	6.385 g dry	01/24/20	KSC	BALANCE 7	.0343	BALANCE 10	.0822	BALANCE 10	.0479	01/24/20	WG32932

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85482

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 24-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 24-JAN-20

Daily Balance Tolerance Check Reports

for : L85482

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0000

Check Date: 24-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 24-JAN-20

Daily Pipette Tolerance Check
for: L85482

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5039
1	1.0027

Check Date: 24-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	24-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ

Date: 01/25/05

Amersham International plc
Amersham Laboratories

NAMAS
CALIBRATION
No. 0146

Certificate of calibration of absolutely standardized radioactive solution

P 30621

Description

Principal radionuclide: Lead-210
Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24
Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardiz as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan [signature] / [signature]
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jeter
Reviewed Date: 12/10/19

PERCENT MOISTURE

Percent Moisture Report

Run Date: 01/29/2020

L85482

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85482-1	11187072-120919-BN-SJSSA04 (0-2.5 CM)	256.81	559.91	394.17	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	54.68
L85482-2	11187072-120919-BN-SJSSA04 (7.5-10 CM)	256.75	509.17	367.81	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	56
L85482-3	11187072-120919-BN-SJSSA04 (15-17.5 CM)	256.94	555.91	392.95	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	54.51
L85482-4	11187072-120919-BN-SJSSA04 (22.5-25 CM)	256.12	590.89	421.91	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	50.48
L85482-5	11187072-120919-BN-SJSSA04 (30-32.5 CM)	256.13	669.7	453.63	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	52.25
L85482-6	11187072-120919-BN-SJSSA04 (37.5-40 CM)	257.21	736.27	423.74	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	65.24
L85482-7	11187072-120919-BN-SJSSA04 (45-47.5 CM)	258.07	635.72	424.45	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	55.94
L85482-8	11187072-120919-BN-SJSSA04 (52.5-55 CM)	255.89	648.6	423.58	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	57.3
L85482-9	11187072-120919-BN-SJSSA04 (60-62.5 CM)	256	652.7	431.85	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	55.67
L85482-10	11187072-120919-BN-SJSSA04 (70-72.5 CM)	257.13	657.7	430.15	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	56.81
L85482-11	11187072-120919-BN-SJSSA04 (80-82.5 CM)	256.75	658.8	447.85	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	52.47

Daily Balance Tolerance Check Reports

for : L85482

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 23-DEC-19

Daily Balance Tolerance Check Reports

for : L85482

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod		
NONE	BALANCE 8	27-DEC-19

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Work Order #: L85485

GHD Services

January 29, 2020

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TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Deborah Brennan
GHD Services, Inc.
9033 Meridian Way
West Chester OH 45069

Case Narrative - L85485
GH001-3EJACINTO-19

01/31/2020 11:33

Sample Receipt

The following sample(s) were received on December 16, 2019 in good condition, unless otherwise noted.

Cross Reference Table

Client ID	Laboratory ID	Station ID(if applicable)
11187072-120919-BN-SJSSA07 (0-2.5 CM)	L85485-1	
11187072-120919-BN-SJSSA07 (7.5-10 CM)	L85485-2	
11187072-120919-BN-SJSSA07 (15-17.5 CM)	L85485-3	
11187072-120919-BN-SJSSA07 (22.5-25 CM)	L85485-4	
11187072-120919-BN-SJSSA07 (30-32.5 CM)	L85485-5	
11187072-120919-BN-SJSSA07 (37.5-40 CM)	L85485-6	
11187072-120919-BN-SJSSA07 (45-47.5 CM)	L85485-7	
11187072-120919-BN-SJSSA07 (52.5-55 CM)	L85485-8	
11187072-120919-BN-SJSSA07 (60-62.5 CM)	L85485-9	
11187072-120919-BN-SJSSA07 (70-72.5 CM)	L85485-10	
11187072-120919-BN-SJSSA07 (80-82.5 CM)	L85485-11	

Sample Analysis

Instrument(s) used for all analyses were in calibration.
Standard solution(s) used in analyses were National Institute of Standards and Technology (NIST) traceable.

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85485
GH001-3EJACINTO-19

01/31/2020 11:33

Special Considerations

Gamma Spectroscopy

Quality Control

Quality control sample(s) analyzed as WG32735,WG32748.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120819-BN-SJSSA05 (70-72.5 CM)	L85483-10	WG32735-1
11187072-120819-BN-SJSSA09 (0-2.5 CM)	L85487-1	WG32748-1

PB-210

Quality Control

Quality control sample(s) analyzed as WG32861,WG32883. Carrier(s): BI19-1.

Method Blank

All blank(s) within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control sample(s) within acceptance limits, unless otherwise noted.

Duplicate Sample

All duplicate result(s) were within acceptance limits, unless otherwise noted. Duplicate(s) were analyzed for the following sample(s).

Client ID	Laboratory ID	QC Sample #
11187072-120919-BN-SJSSA07 (22.5-25 CM)	L85485-4	WG32883-3
11187072-120919-BN-SJSSA07 (52.5-55 CM)	L85485-8	WG32861-3

Matrix Spike

All matrix spike result(s) within acceptance limits, unless otherwise noted.

Matrix Spike Duplicate

Matrix spike duplicate result was within acceptance limits, unless otherwise noted.

TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133

Case Narrative - L85485
GH001-3EJACINTO-19

01/31/2020 11:33

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

ANALYTICAL RESULTS

Report of Analysis

01/29/20 18:39

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85485

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA07 (0-2.5 CM)** Collect Start: 12/09/2019 15:05 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 52.18
LIMS Number: L85485-1

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.05E-01**	6.20E-02	7.17E-02	pCi/gDry		6.3088	g dry	12/09/19 15:05	01/21/20	800	M	+			
CS-137	2007	2.20E-02	6.30E-02	**1.12E-01**	pCi/g Dry		101.6	g dry	12/09/19 15:05	01/02/20	14400	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (7.5-10 CM)** Collect Start: 12/09/2019 15:05 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 54.92
LIMS Number: L85485-2

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.53E-01**	7.07E-02	8.70E-02	pCi/gDry		6.1094	g dry	12/09/19 15:05	01/21/20	800	M	+			
CS-137	2007	3.07E-02	3.33E-02	**5.78E-02**	pCi/g Dry		146.6	g dry	12/09/19 15:05	01/02/20	14400	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (15-17.5 CM)** Collect Start: 12/09/2019 15:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 53.84
LIMS Number: L85485-3

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**9.12E-01**	7.04E-02	8.53E-02	pCi/gDry		6.0215	g dry	12/09/19 15:10	01/21/20	800	M	+			
CS-137	2007	-9.73E-03	6.58E-02	**1.03E-01**	pCi/g Dry		155.43	g dry	12/09/19 15:10	01/03/20	4241	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 18:39

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85485

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA07 (22.5-25 CM)** Collect Start: 12/09/2019 15:10 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 52.5
LIMS Number: L85485-4

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.05E+00**	8.03E-02	1.01E-01	pCi/gDry		6.3387	g dry	12/09/19 15:10	01/21/20	800	M	+			
CS-137	2007	4.86E-02	3.91E-02	**6.79E-02**	pCi/g Dry		144.5	g dry	12/09/19 15:10	01/02/20	14400	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (30-32.5 CM)** Collect Start: 12/09/2019 15:15 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 42.11
LIMS Number: L85485-5

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**6.55E-01**	6.02E-02	7.55E-02	pCi/gDry		6.0068	g dry	12/09/19 15:15	01/17/20	800	M	+			
CS-137	2007	1.33E-02	5.85E-02	**1.00E-01**	pCi/g Dry		160.77	g dry	12/09/19 15:15	01/03/20	4202	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (37.5-40 CM)** Collect Start: 12/09/2019 15:15 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 23.26
LIMS Number: L85485-6

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.56E-01**	5.33E-02	8.23E-02	pCi/gDry		6.1186	g dry	12/09/19 15:15	01/17/20	800	M	+			
CS-137	2007	-2.37E-02	4.34E-02	**6.53E-02**	pCi/g Dry		179.76	g dry	12/09/19 15:15	01/03/20	4226	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 18:39

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85485

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA07 (45-47.5 CM)** Collect Start: 12/09/2019 15:20 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 19.79
LIMS Number: L85485-7

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	3.73E-02	4.23E-02	**6.82E-02**	pCi/gDry		6.0611	g dry	12/09/19 15:20	01/17/20	800	M	U			
CS-137	2007	-2.86E-02	3.48E-02	**5.02E-02**	pCi/g Dry		172.94	g dry	12/09/19 15:20	01/03/20	4244	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (52.5-55 CM)** Collect Start: 12/09/2019 15:20 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 19.93
LIMS Number: L85485-8

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	4.75E-02	5.02E-02	**8.08E-02**	pCi/gDry		6.0152	g dry	12/09/19 15:20	01/17/20	800	M	U			
CS-137	2007	1.15E-02	4.50E-02	**7.51E-02**	pCi/g Dry		182.69	g dry	12/09/19 15:20	01/03/20	4024	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (60-62.5 CM)** Collect Start: 12/09/2019 15:25 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 18.66
LIMS Number: L85485-9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**8.15E-02**	4.67E-02	7.38E-02	pCi/gDry		6.3645	g dry	12/09/19 15:25	01/17/20	800	M	+			
CS-137	2007	-2.09E-02	5.21E-02	**9.19E-02**	pCi/g Dry		173.05	g dry	12/09/19 15:25	01/03/20	4262	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

01/29/20 18:39

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L85485

GHD Services, Inc.

GH001-3EJACINTO-19

Janie Smith

Sample ID: **11187072-120919-BN-SJSSA07 (70-72.5 CM)** Collect Start: 12/09/2019 15:25 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 17.25
LIMS Number: L85485-10

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	-3.63E-03	5.87E-02	**9.69E-02**	pCi/gDry		6.0648	g dry	12/09/19 15:25	01/17/20	800	M	U			
CS-137	2007	5.19E-04	5.55E-02	**8.92E-02**	pCi/g Dry		178.14	g dry	12/09/19 15:25	01/03/20	4279	Sec	U		No	

Sample ID: **11187072-120919-BN-SJSSA07 (80-82.5 CM)** Collect Start: 12/09/2019 15:30 Matrix: Soil (S)
Station: Collect Stop: Volume:
Description: Receive Date: 12/16/2019 % Moisture: 21.69
LIMS Number: L85485-11

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
PB-210	2015	**1.98E-01**	4.68E-02	6.93E-02	pCi/gDry		6.1694	g dry	12/09/19 15:30	01/17/20	800	M	+			
CS-137	2007	8.61E-03	4.79E-02	**8.10E-02**	pCi/g Dry		181.46	g dry	12/09/19 15:30	01/03/20	4051	Sec	U		No	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

TBE-ROA013

QC RESULTS

QC Summary Report for L85485

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

GAMMA

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32735-1 L85483-10	All non-detects.	S						<50	U	NE
WG32748-1 L85487-1	All non-detects.	S						<50	U	NE

GAMMA

Associated Samples for WG32735

Sample #	Client ID
L85485-1	11187072-120919-BN-SJSSA07 (0-2.5 CM)
L85485-2	11187072-120919-BN-SJSSA07 (7.5-10 CM)
L85485-3	11187072-120919-BN-SJSSA07 (15-17.5 CM)
L85485-4	11187072-120919-BN-SJSSA07 (22.5-25 CM)

GAMMA

Associated Samples for WG32748

Sample #	Client ID
L85485-5	11187072-120919-BN-SJSSA07 (30-32.5 CM)
L85485-6	11187072-120919-BN-SJSSA07 (37.5-40 CM)
L85485-7	11187072-120919-BN-SJSSA07 (45-47.5 CM)
L85485-8	11187072-120919-BN-SJSSA07 (52.5-55 CM)
L85485-9	11187072-120919-BN-SJSSA07 (60-62.5 CM)
L85485-10	11187072-120919-BN-SJSSA07 (70-72.5 CM)
L85485-11	11187072-120919-BN-SJSSA07 (80-82.5 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85485

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Method Blank Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Blank Result	Units	Qualifier	P/F
WG32861-1	PB-210	WO	01/17/2020 00:04	< 4.100E-01	pCi/Total	U	P
WG32883-1	PB-210	WO	01/21/2020 01:06	< 4.510E-01	pCi/Total	U	P

LCS Sample Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	LCS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-2	PB-210	WO	01/16/2020 17:03	3.18E+02	3.150E+02	pCi/Total	99.2	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									
WG32883-2	PB-210	WO	01/20/2020 18:16	3.18E+02	3.060E+02	pCi/Total	96.4	75-125	+	P
Spike ID:	**210PB-012505**									
Spike Conc:	**6.35E+02 pCi/ml**									
Spike Vol:	**5.00E-01 ml**									

Duplicate Summary

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Original Result	DUP Result	Units	RPD	Range	Qualifier	P/F
WG32861-3 L85485-8	PB-210	S	01/17/2020 00:04	< 8.080E-02	< 7.540E-02	pCi/gDry		<50	**	NE
WG32883-3 L85485-4	PB-210	S	01/21/2020 01:06	1.050E+00	8.320E-01	pCi/gDry	23.2	<50	+	P

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85485

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Matrix Spike Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	Original Result	MS Result	Units	Spike Recovery	Range	Qualifier	P/F
WG32861-4	PB-210	S	01/16/2020 17:03	2.17E+01	8.150E-02	2.000E+01	pCi/gDry	92.0	60-140	+	P
L85485-9											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32883-4	PB-210	S	01/20/2020 18:16	2.12E+01	1.130E-01	2.460E+01	pCi/gDry	115.6	60-140	+	P
L85484-9											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

Matrix Spike Duplicate Summary

Decay Corrected

TBE Sample ID	Radionuclide	Matrix	Count Date/Time	Spike Known	MSD Result	MSD Recovery	Units	RPD	Range	Qualifier	P/F
WG32861-5	PB-210	S	01/16/2020 17:03	2.11E+01	2.280E+01	107.7	pCi/gDry	15.7	<30	+	P
WG32861-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										
WG32883-5	PB-210	S	01/20/2020 18:16	2.09E+01	2.250E+01	107.4	pCi/gDry	7.4	<30	+	P
WG32883-4											
Spike ID:	**210PB-012505**										
Spike Conc:	**6.35E+02 pCi/ml**										
Spike Vol:	**5.00E-01 ml**										

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

QC Summary Report for L85485

GH001-3EJACINTO-19

01/31/2020 09:03

TELEDYNE BROWN ENGINEERING
Everywhereyoulook™

PB-210

Associated Samples for WG32861

Sample #	Client ID
L85485-5	11187072-120919-BN-SJSSA07 (30-32.5 CM)
L85485-6	11187072-120919-BN-SJSSA07 (37.5-40 CM)
L85485-7	11187072-120919-BN-SJSSA07 (45-47.5 CM)
L85485-8	11187072-120919-BN-SJSSA07 (52.5-55 CM)
L85485-9	11187072-120919-BN-SJSSA07 (60-62.5 CM)
L85485-10	11187072-120919-BN-SJSSA07 (70-72.5 CM)
L85485-11	11187072-120919-BN-SJSSA07 (80-82.5 CM)

PB-210

Associated Samples for WG32883

Sample #	Client ID
L85485-1	11187072-120919-BN-SJSSA07 (0-2.5 CM)
L85485-2	11187072-120919-BN-SJSSA07 (7.5-10 CM)
L85485-3	11187072-120919-BN-SJSSA07 (15-17.5 CM)
L85485-4	11187072-120919-BN-SJSSA07 (22.5-25 CM)

+	Positive Result
U	Compound/analyte was analyzed, peak not identified and/or not detected above MDC
*	< 5 times the MDC are not evaluated
**	Nuclide not detected
***	Spiking level < 5 times activity
P	Pass
F	Fail
NE	Not evaluated

SAMPLE RECEIPT

L85485

TELEDYNE BROWN ENGINEERING
a Teledyne Technologies Company

2508 Quality Lane
Knoxville, TN 37931
865 690-6819

Analysis Request Chain of Custody

Page _____ of _____

Client Name: GHD Services, Inc.
Client Address: 5551 Corporate Blvd. Ste. 200
Baton Rouge, LA 70808

Phone Number: 225-292-9007
Email: janie.smith@ghd.com

Contact: Janie Smith

E - Environmental:

P - 10CFR61, 10CFR50, Other high level: _____

Turn-around-time 10 days

Hazardous Material in Shipment Yes____* No_____

Lims# _____

(for lab use)

T.I. Number (for lab use)	Client Sample ID	Description	Station	Collection Date/Time Start	Collection Date/Time Stop	Volume	Units	Matrix or type	Analysis Request
	11187072-120919-BN-SJSSA07 (0-2.5 cm)	Soil		12/9/2019 1505		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (7.5-10 cm)	Soil		12/9/2019 1505		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (15-17.5 cm)	Soil		12/9/2019 1510		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (22.5-25 cm)	Soil		12/9/2019 1510		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (30-32.5 cm)	Soil		12/9/2019 1515		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (37.5-40 cm)	Soil		12/9/2019 1515		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (45-47.5 cm)	Soil		12/9/2019 1520		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (52.5-55 cm)	Soil		12/9/2019 1520		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (60-62.5 cm)	Soil		12/9/2019 1525		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (70-72.5 cm)	Soil		12/9/2019 1525		16 oz	1	S	Isotopes
	11187072-120919-BN-SJSSA07 (80-82.5 cm)	Soil		12/9/2019 1530		16 oz	1	S	Isotopes
									** SEE SSOW

* If shipment contains Hazardous Material - You must provide a list of the hazards and volumes.

Special Instructions: _____

Relinquished by: N Gomez	Date: 12-11-19 1000	Relinquished by:	Date:	Relinquished by:	Date:
Received by: Kyle	Date: 12-16-19 10:30	Received by:	Date:	Received by:	Date:

01/29/20 18:42

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

SR #: SR64449

Client: GHD Services, INc. Project #: GH001-3EJACINTO-19 LIMS #L85485

Initiated By: KTHURMAN
Init Date: 12/16/19 Receive Date: 12/16/19

Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes	No	NA	Comment
1	Shipping container custody seals present and intact.			NA	
2	Sample container custody seals present and intact.			NA	
3	Sample containers received in good condition.	Y			
4	Chain of custody received with samples.	Y			
5	All samples listed on chain of custody received.	Y			
6	Sample container labels present and legible.	Y			
7	Information on container labels correspond with chain of custody.	Y			
8	Sample(s) properly preserved.	Y			
9	Sample(s) appropriate container(s).	Y			
For Hazardous Materials Only:					
10	Other. (Describe)			NA	
11	Paperwork shows TBE and shippers name, address and phone number.			NA	
12	Paperwork shows sample quantity information.			NA	

INTERNAL CHAIN OF CUSTODY

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85485

****

L85485-1 S 11187072-120919-BN-SJSSA07 (0-2.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	KOJ	01/21/20

****

L85485-2 S 11187072-120919-BN-SJSSA07 (7.5-10 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	KOJ	01/21/20

****

L85485-3 S 11187072-120919-BN-SJSSA07 (15-17.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/03/20
Count Room	PB-210	KOJ	01/21/20

****

L85485-4 S 11187072-120919-BN-SJSSA07 (22.5-25 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	WBG	12/30/19
Aliquot	PB-210	KSC	01/20/20
Aliquot	SAMPLE PREP		
Count Room	GELI	KBA	01/02/20
Count Room	PB-210	KOJ	01/21/20

****

L85485-5 S 11187072-120919-BN-SJSSA07 (30-32.5 CM)

Process step	Prod	Analyst	Date
Login		KNOXLAB	12/16/19
%Moisture		KT	12/23/19
Aliquot	GELI	KT	01/02/20
Aliquot	PB-210	KSC	01/16/20
Aliquot	SAMPLE PREP		

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85485

L85485-5	**S**	**11187072-120919-BN-SJSSA07 (30-32.5 CM)**		
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-6	**S**	**11187072-120919-BN-SJSSA07 (37.5-40 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-7	**S**	**11187072-120919-BN-SJSSA07 (45-47.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-8	**S**	**11187072-120919-BN-SJSSA07 (52.5-55 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-9	**S**	**11187072-120919-BN-SJSSA07 (60-62.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-10	**S**	**11187072-120919-BN-SJSSA07 (70-72.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19

Teledyne Brown Engineering
Internal Chain of Custody
Supplemental Sheet

L85485

L85485-10	**S**	**11187072-120919-BN-SJSSA07 (70-72.5 CM)**		
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

****

L85485-11	**S**	**11187072-120919-BN-SJSSA07 (80-82.5 CM)**		
Process step	Prod		Analyst	Date
Login			KNOXLAB	12/16/19
%Moisture			KT	12/23/19
Aliquot	GELI		KT	01/02/20
Aliquot	PB-210		KSC	01/16/20
Aliquot	SAMPLE PREP			
Count Room	GELI		KBA	01/03/20
Count Room	PB-210		KOJ	01/17/20

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Background

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:35:22.96
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:54.91

LIMS No., Customer Name, Client ID: BKG

Sample ID : 01BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 01FT082219
BKGFILE : NOBKG
Real Time : 2 11:13:10.76
Live time : 2 11:12:45.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.26	351	4085	0.75	126.97	124	7	1.64E-03	30.6	1.54E+00
2	3	72.78	659	2879	0.83	145.98	142	12	3.09E-03	12.8	1.23E+00
3	3	74.93	1536	2899	0.88	150.27	142	12	7.21E-03	5.8	
4	1	84.71	846	3940	1.14	169.80	166	8	3.97E-03	13.3	1.87E+00
5	1	92.62	1739	3629	1.08	185.60	182	8	8.16E-03	6.5	1.14E+00
6	1	139.79	455	3178	1.45	279.82	276	8	2.14E-03	22.0	9.85E-01
7	1	185.75	1660	3740	1.11	371.61	367	10	7.79E-03	7.3	1.12E+00
8	1	198.32	458	2905	1.39	396.71	393	8	2.15E-03	20.9	1.73E+00
9	1	238.61	861	2351	0.95	477.17	474	7	4.04E-03	9.9	1.36E+00
10	1	295.08	658	2273	1.47	589.97	585	9	3.09E-03	13.6	6.52E+00
11	1	351.98	1076	2342	1.28	703.62	698	11	5.05E-03	9.2	1.31E+00
12	1	511.03	5859	2640	2.72	1021.30	1014	18	2.75E-02	2.4	9.91E-01
13	1	583.18	343	1209	1.38	1165.43	1161	10	1.61E-03	19.7	1.16E+00
14	1	609.31	915	1247	1.34	1217.64	1213	9	4.29E-03	7.7	1.79E+00
15	1	802.99	214	689	1.49	1604.55	1600	9	1.01E-03	23.0	1.72E+00
16	1	846.81	459	1005	1.66	1692.09	1685	13	2.16E-03	14.9	1.16E+00
17	1	911.02	267	622	2.50	1820.38	1815	12	1.25E-03	19.7	1.99E+00
18	1	1000.90	200	468	1.88	1999.96	1995	10	9.40E-04	21.4	1.69E+00
19	1	1120.41	244	595	1.75	2238.74	2233	12	1.14E-03	21.0	4.64E-01
20	1	1460.95	853	341	2.14	2919.23	2909	17	4.00E-03	6.1	1.63E+00
21	1	1764.67	295	357	2.53	3526.24	3515	19	1.38E-03	16.5	6.40E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:34:25.52
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:41:55.76

LIMS No., Customer Name, Client ID: BKG

Sample ID : 02BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 02FT082119
BKGFILE : NOBKG
Real Time : 2 11:13:12.14
Live time : 2 11:12:47.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	63.23	654	2393	0.99	111.14	107	14	3.07E-03	12.5	2.37E+00
2	3	66.38	486	2374	1.00	117.50	107	14	2.28E-03	16.7	
3	4	72.80	990	2962	0.92	130.43	126	13	4.64E-03	9.3	3.95E+00
4	4	74.96	1937	2526	0.80	134.79	126	13	9.08E-03	4.5	
5	0	84.68	1050	2948	1.11	154.35	151	7	4.93E-03	9.0	
6	0	92.69	1676	3484	1.06	170.49	166	9	7.86E-03	6.8	
7	0	185.71	1243	2817	1.15	357.86	354	8	5.83E-03	7.9	
8	0	238.74	643	2389	1.03	464.69	461	8	3.01E-03	13.8	
9	0	295.43	825	2472	1.19	578.87	574	12	3.87E-03	12.5	
10	0	352.00	1102	1812	1.21	692.84	688	10	5.17E-03	7.8	
11	0	511.04	5241	1961	2.54	1013.23	1006	16	2.46E-02	2.3	
12	0	583.19	289	1067	1.36	1158.57	1154	11	1.36E-03	22.7	
13	0	609.23	959	1240	1.35	1211.05	1204	12	4.50E-03	8.0	
14	0	846.54	443	948	1.48	1689.17	1681	14	2.08E-03	15.5	
15	0	911.55	290	536	1.60	1820.15	1814	13	1.36E-03	17.6	
16	0	1120.46	313	395	1.83	2241.11	2236	12	1.47E-03	14.0	
17	0	1460.83	684	306	1.66	2927.04	2920	16	3.21E-03	6.9	
18	0	1764.52	368	242	2.31	3539.13	3530	22	1.73E-03	12.0	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:13.63
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.87

LIMS No., Customer Name, Client ID: BKG

Sample ID : 07BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 07FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:23.99
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.18	515	3294	1.19	125.81	123	7	2.39E-03	18.9	7.69E-01
2	1	66.39	473	3420	1.34	132.23	129	7	2.19E-03	21.0	8.65E-01
3	2	72.74	1453	4790	1.26	144.94	140	13	6.73E-03	8.9	2.14E+00
4	2	74.86	2550	4406	1.13	149.18	140	13	1.18E-02	4.8	
5	4	84.73	1733	4101	1.53	168.91	163	16	8.02E-03	7.1	1.35E+00
6	4	87.19	608	3243	1.20	173.82	163	16	2.82E-03	16.4	
7	1	92.60	1539	4820	1.33	184.64	180	11	7.12E-03	9.1	1.70E+00
8	1	185.68	1247	4297	1.42	370.75	366	10	5.77E-03	10.2	8.65E-01
9	2	238.57	1492	3358	1.65	476.49	470	18	6.91E-03	7.8	2.68E+00
10	2	241.66	551	3437	1.64	482.66	470	18	2.55E-03	20.4	
11	1	295.17	957	2823	1.41	589.64	585	10	4.43E-03	10.9	8.33E-01
12	1	351.88	1491	2663	1.53	703.02	698	11	6.90E-03	7.2	8.91E-01
13	1	510.90	7542	3840	2.95	1020.91	1011	24	3.49E-02	2.5	2.17E+00
14	1	583.16	432	1447	1.35	1165.36	1161	10	2.00E-03	17.2	7.08E-01
15	1	609.27	1437	2243	1.61	1217.56	1211	14	6.65E-03	7.5	1.28E+00
16	1	846.51	869	1352	3.17	1691.76	1682	16	4.02E-03	10.0	5.43E+00
17	1	911.13	394	826	1.65	1820.90	1816	11	1.82E-03	15.0	5.86E-01
18	1	969.02	262	686	1.59	1936.62	1932	10	1.22E-03	19.7	7.48E-01
19	1	1120.04	380	937	2.17	2238.44	2230	17	1.76E-03	19.2	1.63E+00
20	1	1460.76	2050	487	2.54	2919.30	2911	19	9.49E-03	3.4	3.22E+00
21	1	1764.88	463	427	2.83	3526.93	3519	19	2.14E-03	11.8	2.49E+00

Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:36:40.89
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 27-DEC-2019 11:41:49.78

LIMS No., Customer Name, Client ID: BKG

Sample ID : 08BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 08FT082019
BKGFILE : NOBKG
Real Time : 2 11:13:11.59
Live time : 2 11:12:36.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.94	1553	6706	1.46	157.50	154	11	7.29E-03	10.6	5.15E+00
2	1	84.49	757	5441	1.22	176.56	172	10	3.55E-03	18.5	2.40E+00
3	1	92.56	971	4568	1.42	192.66	188	10	4.55E-03	13.4	1.86E+00
4	1	185.77	910	3326	1.29	378.69	375	8	4.27E-03	11.5	1.46E+00
5	1	238.66	1009	3816	1.23	484.22	480	10	4.73E-03	11.8	7.18E-01
6	1	295.31	897	3050	2.01	597.27	592	11	4.21E-03	12.4	1.48E+00
7	1	352.12	1288	2784	1.72	710.64	705	12	6.04E-03	8.7	1.82E+00
8	1	511.01	5510	2683	2.99	1027.71	1019	19	2.59E-02	2.6	1.96E+00
9	1	583.28	548	1511	2.21	1171.92	1166	12	2.57E-03	14.7	4.71E+00
10	1	609.36	1185	1696	1.87	1223.96	1218	14	5.56E-03	8.0	1.24E+00
11	1	846.61	360	864	2.15	1697.34	1692	11	1.69E-03	16.6	3.24E+00
12	1	911.17	422	806	1.87	1826.16	1820	13	1.98E-03	14.7	1.47E+00
13	1	968.30	230	901	2.57	1940.15	1933	14	1.08E-03	28.2	6.08E+00
14	1	1120.55	343	623	2.56	2243.91	2237	14	1.61E-03	16.4	1.81E+00
15	1	1460.72	1596	352	2.07	2922.55	2915	16	7.49E-03	3.6	8.25E-01
16	1	1764.27	321	280	2.31	3528.07	3520	16	1.51E-03	12.9	5.71E-01

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:23.68
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.04

LIMS No., Customer Name, Client ID: BKG

Sample ID : 11BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 11FT112019
BKGFILE : NOBKG
Real Time : 2 12:01:33.17
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.56	3121	5481	1.35	92.28	87	11	1.45E-02	4.9	
2	0	63.67	2801	8349	1.53	126.51	120	15	1.30E-02	7.3	
3	3	72.78	3310	5173	1.28	144.74	140	25	1.53E-02	4.3	2.49E+01
4	3	74.94	7735	5946	1.74	149.06	140	25	3.58E-02	2.3	
5	3	84.76	3299	4621	1.56	168.71	164	14	1.53E-02	4.1	2.03E+00
6	3	87.35	997	3601	1.24	173.90	164	14	4.61E-03	10.9	
7	0	92.63	2900	5005	1.42	184.46	180	10	1.34E-02	4.9	
8	0	185.77	1414	4959	1.58	370.81	366	11	6.55E-03	10.0	
9	0	238.68	843	3257	1.41	476.68	473	8	3.90E-03	12.2	
10	0	295.40	864	3660	1.44	590.18	585	12	4.00E-03	14.4	
11	0	352.05	1673	2828	1.57	703.51	698	12	7.75E-03	6.8	
12	0	511.02	7671	3350	2.83	1021.60	1012	21	3.55E-02	2.2	
13	0	583.59	536	1452	1.84	1166.78	1162	11	2.48E-03	14.4	
14	0	609.29	1451	2127	2.03	1218.20	1211	14	6.72E-03	7.2	
15	0	803.37	384	1236	1.71	1606.50	1599	16	1.78E-03	21.1	
16	0	846.92	592	1117	1.80	1693.63	1688	11	2.74E-03	11.7	
17	0	1120.07	402	714	2.71	2240.10	2234	13	1.86E-03	14.6	
18	0	1460.98	1331	552	2.32	2922.10	2913	20	6.16E-03	5.1	
19	0	1764.84	370	461	2.12	3529.94	3520	21	1.71E-03	15.4	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:44.67
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:26.59

LIMS No., Customer Name, Client ID: BKG

Sample ID : 13BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentfied

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 13FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:58.54
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.35	989	4867	0.88	126.57	123	7	4.58E-03	12.1	1.04E+00
2	4	72.90	1470	3598	0.86	145.65	141	17	6.80E-03	6.6	1.51E+00
3	4	75.05	3064	3999	0.95	149.93	141	17	1.42E-02	3.8	
4	4	77.13	585	3102	0.80	154.09	141	17	2.71E-03	15.3	
5	1	84.80	1633	4362	1.05	169.41	166	7	7.56E-03	7.2	6.79E-01
6	1	87.50	579	2944	0.93	174.81	173	5	2.68E-03	14.7	2.67E+00
7	1	92.68	3394	4949	1.04	185.15	181	8	1.57E-02	4.0	6.62E+00
8	1	143.85	523	4408	1.10	287.37	284	8	2.42E-03	22.4	2.45E+00
9	1	185.69	2690	5183	1.08	370.96	366	10	1.25E-02	5.4	1.64E+00
10	1	238.60	1371	3640	0.96	476.67	473	8	6.35E-03	8.0	3.61E+00
11	1	241.80	483	3093	1.37	483.07	481	7	2.23E-03	19.6	2.27E+00
12	1	295.19	1055	3448	1.10	589.74	585	10	4.89E-03	10.9	1.56E+00
13	1	338.01	405	2532	1.43	675.31	672	8	1.87E-03	22.0	4.08E+00
14	1	351.97	1858	2501	1.18	703.21	699	9	8.60E-03	5.4	1.01E+00
15	1	511.01	7076	3830	2.67	1021.09	1013	19	3.28E-02	2.4	2.02E+00
16	1	583.14	676	2094	1.43	1165.28	1158	13	3.13E-03	14.5	1.48E+00
17	1	609.29	1705	1807	1.44	1217.57	1213	10	7.89E-03	5.3	1.23E+00
18	1	847.01	526	1263	1.88	1692.96	1688	12	2.43E-03	14.2	2.51E+00
19	1	911.25	575	881	1.58	1821.48	1817	11	2.66E-03	10.8	6.32E-01
20	1	969.07	290	866	1.62	1937.15	1931	11	1.34E-03	20.5	6.02E-01
21	1	1001.07	240	758	1.37	2001.16	1996	10	1.11E-03	22.4	1.62E+00
22	1	1120.42	516	713	1.63	2240.01	2235	11	2.39E-03	10.9	1.40E+00
23	1	1238.58	217	775	1.86	2476.49	2469	13	1.01E-03	27.2	2.28E+00
24	1	1460.99	2590	671	1.85	2921.80	2914	19	1.20E-02	3.1	8.97E-01
25	1	1764.53	609	316	2.38	3529.81	3523	16	2.82E-03	7.7	1.05E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:31.05
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:27.63

LIMS No., Customer Name, Client ID: BKG

Sample ID : 14BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 17-DEC-2019 00:00:00.
Geometry : 14FT082119
BKGFILE : NOBKG
Real Time : 2 12:00:36.20
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.78	916	2697	0.97	142.34	139	11	4.24E-03	9.6	3.87E+00
2	3	74.98	1815	2204	0.77	146.73	139	11	8.40E-03	4.6	
3	1	84.73	997	3302	1.03	166.23	162	8	4.61E-03	10.4	8.67E-01
4	1	92.59	929	2842	1.04	181.94	178	8	4.30E-03	10.4	1.84E+00
5	1	185.69	735	2686	1.10	368.09	364	8	3.40E-03	12.7	8.44E-01
6	1	238.59	504	2130	1.00	473.86	470	8	2.33E-03	16.4	1.02E+00
7	1	295.16	461	1909	1.10	586.96	583	9	2.14E-03	17.7	2.29E-01
8	1	351.85	954	1598	1.37	700.31	696	10	4.42E-03	8.5	1.85E+00
9	1	510.89	4336	2259	2.73	1018.33	1010	19	2.01E-02	3.0	1.33E+00
10	1	609.21	660	1134	1.37	1214.94	1210	11	3.05E-03	10.6	3.50E-01
11	1	846.58	402	747	1.52	1689.67	1684	12	1.86E-03	14.5	8.74E-01
12	1	1460.38	807	260	1.96	2917.53	2909	16	3.74E-03	5.7	1.88E+00
13	1	1763.96	220	173	2.45	3524.95	3517	15	1.02E-03	14.8	1.01E+00

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 30-DEC-2019 09:41:37.20
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 27-DEC-2019 11:11:28.20

LIMS No., Customer Name, Client ID: BKG

Sample ID : 15BG122719MT
Sample Type : PCI
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: LIBD
Peak Evaluation - Identified and Unidentified

Smple Date: 27-DEC-2019 00:00:00.
Geometry : 15FT082019
BKGFILE : NOBKG
Real Time : 2 12:00:17.35
Live time : 2 12:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	63.14	741	2803	1.07	120.96	118	7	3.43E-03	12.4	4.87E-01
2	3	72.77	1120	3505	1.14	140.27	137	11	5.18E-03	9.4	3.79E+00
3	3	74.82	2256	3061	0.98	144.38	137	11	1.04E-02	4.5	
4	3	84.65	1344	3052	1.37	164.09	157	16	6.22E-03	7.6	1.12E+00
5	3	87.28	496	2200	1.02	169.36	157	16	2.29E-03	15.9	
6	1	92.49	1869	3604	1.19	179.81	176	10	8.65E-03	6.4	1.28E+00
7	1	185.69	1193	3413	1.07	366.63	362	10	5.52E-03	9.6	6.82E-01
8	1	198.23	330	2190	1.23	391.78	389	7	1.53E-03	24.1	1.78E+00
9	1	238.52	822	2247	1.13	472.54	469	8	3.81E-03	10.6	1.21E+00
10	1	242.00	388	2037	1.38	479.51	476	8	1.80E-03	20.8	1.36E+00
11	1	295.15	758	2075	1.56	586.07	581	10	3.51E-03	11.7	4.03E+00
12	1	351.82	1126	2121	1.27	699.66	694	12	5.21E-03	8.7	5.11E-01
13	1	510.92	5140	2260	2.82	1018.59	1010	20	2.38E-02	2.7	1.70E+00
14	1	583.03	298	984	1.30	1163.14	1159	10	1.38E-03	20.5	2.57E+00
15	1	609.21	945	1269	1.46	1215.61	1209	12	4.37E-03	8.2	1.30E+00
16	1	846.79	429	648	1.60	1691.86	1687	11	1.99E-03	12.5	8.10E-01
17	1	911.23	198	489	2.29	1821.04	1816	11	9.18E-04	22.9	2.34E+00
18	1	1120.17	256	411	2.30	2239.83	2234	12	1.19E-03	17.3	2.34E+00
19	1	1460.49	667	368	2.51	2921.98	2913	22	3.09E-03	8.4	1.32E+00
20	1	1764.15	314	191	2.46	3530.62	3524	13	1.45E-03	10.7	8.73E-01

GAMMA SPECTROSCOPY

Initial Calibration

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.4	1.26%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.83%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.0	-1.31%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.9	-0.90%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	240.8	-2.12%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.0	-2.52%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.9	0.23%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.4	0.86%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.5	-0.30%

Eff. Name: **01S100122019**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:09:50.63
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

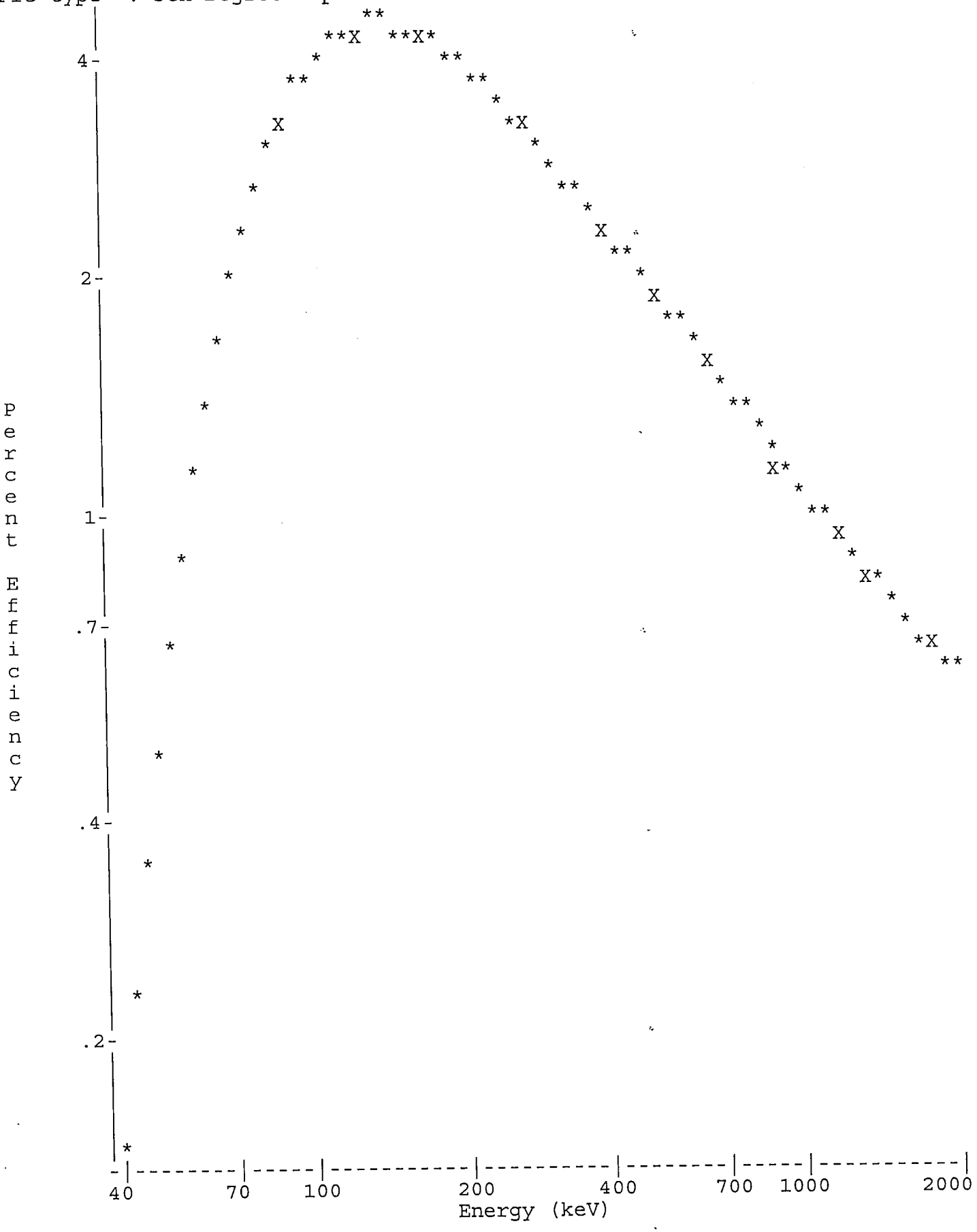
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Spectrum : MCA0:[NDSCOUNT]TBE01$1
Calib Date: 26-DEC-2019 12:09
Detector :
Geometry : 01S100122019
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:10:49.58
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 20-DEC-2019 10:22:31.18

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 01S100122019
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 01S100122019
BKGFILE : 01BG112719MT
Real Time : 0 04:36:58.30
Live time : 0 04:36:31.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.45	950	4410	0.97	93.40	4.15E-01	5.73E-02	12.0	1.63E+00
2	1	88.03	15172	6841	0.91	176.43	3.31E+00	9.14E-01	1.3	1.62E+00
3	1	122.06	14527	5169	0.95	244.40	4.25E+00	8.76E-01	1.2	1.26E+00
4	1	136.48	1843	4829	0.98	273.20	4.31E+00	1.11E-01	7.2	1.23E+00
5	1	165.87	10073	5269	0.98	331.90	4.18E+00	6.07E-01	1.7	6.11E-01
6	1	255.05	795	3920	1.34	510.00	3.31E+00	4.79E-02	14.6	3.31E+00
7	1	279.19	3205	4210	1.16	558.22	3.11E+00	1.93E-01	4.3	2.73E+00
8	1	391.73	14354	4169	1.20	783.02	2.38E+00	8.65E-01	1.2	1.58E+00
9	1	513.98	8686	3610	1.26	1027.21	1.90E+00	5.24E-01	1.8	2.99E+00
10	1	661.59	37522	3264	1.43	1322.06	1.53E+00	2.26E+00	0.6	3.24E+00
11	1	898.01	19293	2508	1.62	1794.38	1.17E+00	1.16E+00	0.9	1.83E+00
12	1	1173.25	29119	1235	1.85	2344.32	9.26E-01	1.75E+00	0.6	3.96E+00
13	1	1324.69	345	809	3.09	2646.94	8.36E-01	2.08E-02	19.2	9.61E-01
14	1	1332.53	26359	918	1.97	2662.60	8.32E-01	1.59E+00	0.7	4.19E+00
15	1	1835.98	11713	252	2.33	3668.78	6.56E-01	7.06E-01	1.0	6.78E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15172	3.72*	3.311E+00	7.423E+02	1.005E+03	2.62
03-CO57	122.06	14527	85.51*	4.248E+00	2.410E+01	4.042E+01	2.44
04-CE139	165.85	10073	80.35*	4.176E+00	1.809E+01	5.003E+01	3.35
05-HG203	279.20	3205	81.46*	3.106E+00	7.636E+00	1.540E+02	8.61
06-SN113	391.69	14354	64.90*	2.382E+00	5.595E+01	1.889E+02	2.50
07-SR85	513.99	8686	99.27*	1.899E+00	2.778E+01	2.408E+02	3.53
08-CS137	661.65	37522	85.12*	1.528E+00	1.739E+02	1.761E+02	1.24
09-Y88	898.02	19293	93.40*	1.169E+00	1.065E+02	3.960E+02	1.83
10-CO60	1173.22	29119	100.00	9.257E-01	1.896E+02	2.039E+02	1.29
	1332.49	26359	100.00*	8.318E-01	1.910E+02	2.054E+02	1.35
12-Y88	1836.01	11713	99.38*	6.562E-01	1.083E+02	4.025E+02	1.97

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 01S100122019

Acquisition date : 20-DEC-2019 10:22:31

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.910E+02	2.054E+02	0.028E+02	1.35	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.456E+03	2.859E+03			

Grand Total Activity : 1.456E+03 2.859E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 01S100122019 Acquisition date : 20-DEC-2019 10:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.45	950	4410	0.97	93.40	90	7	5.73E-02	24.1	4.15E-01	
1	136.48	1843	4829	0.98	273.20	269	9	1.11E-01	14.4	4.31E+00	
1	255.05	795	3920	1.34	510.00	506	9	4.79E-02	29.2	3.31E+00	
1	1324.69	345	809	3.09	2646.94	2638	16	2.08E-02	38.5	8.36E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.423E+02	1.005E+03	0.026E+03	2.62	
03-CO57	270.90D	1.68	2.410E+01	4.042E+01	0.099E+01	2.44	
04-CE139	137.66D	2.77	1.809E+01	5.003E+01	0.168E+01	3.35	
05-HG203	46.61D	20.2	7.636E+00	1.540E+02	0.133E+02	8.61	
06-SN113	115.10D	3.38	5.595E+01	1.889E+02	0.047E+02	2.50	
07-SR85	64.84D	8.67	2.778E+01	2.408E+02	0.085E+02	3.53	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.022E+02	1.24	
09-Y88	106.65D	3.72	1.065E+02	3.960E+02	0.073E+02	1.83	
10-CO60	5.27Y	1.08	1.903E+02	2.046E+02	0.019E+02	0.93	
12-Y88	106.65D	3.72	1.083E+02	4.025E+02	0.079E+02	1.97	
			---------	---------			
	Total Activity :		1.455E+03	2.858E+03			

Grand Total Activity : 1.455E+03 2.858E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.635E+01	1.845E+01	0.000E+00	54.436
03-CO57	4.042E+01	9.863E-01	7.301E-01	0.000E+00	55.360
04-CE139	5.003E+01	1.678E+00	1.278E+00	0.000E+00	39.161
05-HG203	1.540E+02	1.326E+01	1.155E+01	0.000E+00	13.336
06-SN113	1.889E+02	4.721E+00	3.038E+00	0.000E+00	62.174
07-SR85	2.408E+02	8.503E+00	6.459E+00	0.000E+00	37.277

08-CS137	1.761E+02	2.184E+00	9.446E-01	0.000E+00	186.433
09-Y88	3.960E+02	7.265E+00	4.032E+00	0.000E+00	98.206
10-CO60	2.046E+02	1.913E+00	7.990E-01	0.000E+00	256.063
12-Y88	4.025E+02	7.933E+00	2.044E+00	0.000E+00	196.903

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-2.153E+00		1.989E+00	3.122E+00	0.000E+00	-0.690

```
A,01S100122019    ,12/26/2019 12:10,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,01S100122019    ,CALIBRATION          ,12/26/2019 12:09,01S100122019
C,02-CD109,YES,   1.005E+03,   2.635E+01,   1.845E+01,,   54.436
C,03-CO57 ,YES,   4.042E+01,   9.863E-01,   7.301E-01,,   55.360
C,04-CE139,YES,   5.003E+01,   1.678E+00,   1.278E+00,,   39.161
C,05-HG203,YES,   1.540E+02,   1.326E+01,   1.155E+01,,   13.336
C,06-SN113,YES,   1.889E+02,   4.721E+00,   3.038E+00,,   62.174
C,07-SR85 ,YES,   2.408E+02,   8.503E+00,   6.459E+00,,   37.277
C,08-CS137,YES,   1.761E+02,   2.184E+00,   9.446E-01,,  186.433
C,09-Y88  ,YES,   3.960E+02,   7.265E+00,   4.032E+00,,   98.206
C,10-CO60 ,YES,   2.046E+02,   1.913E+00,   7.990E-01,,  256.063
C,12-Y88  ,YES,   4.025E+02,   7.933E+00,   2.044E+00,,  196.903
C,01-AM241,NO ,  -2.153E+00,   1.989E+00,   3.122E+00,,   -0.690
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1000.0	-0.66%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.9	2.42%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.5	-2.81%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.0	-4.51%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.2	-0.33%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	173.5	1.10%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.3	-4.41%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.8	0.68%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.3	1.80%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **02S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:35:57.63
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

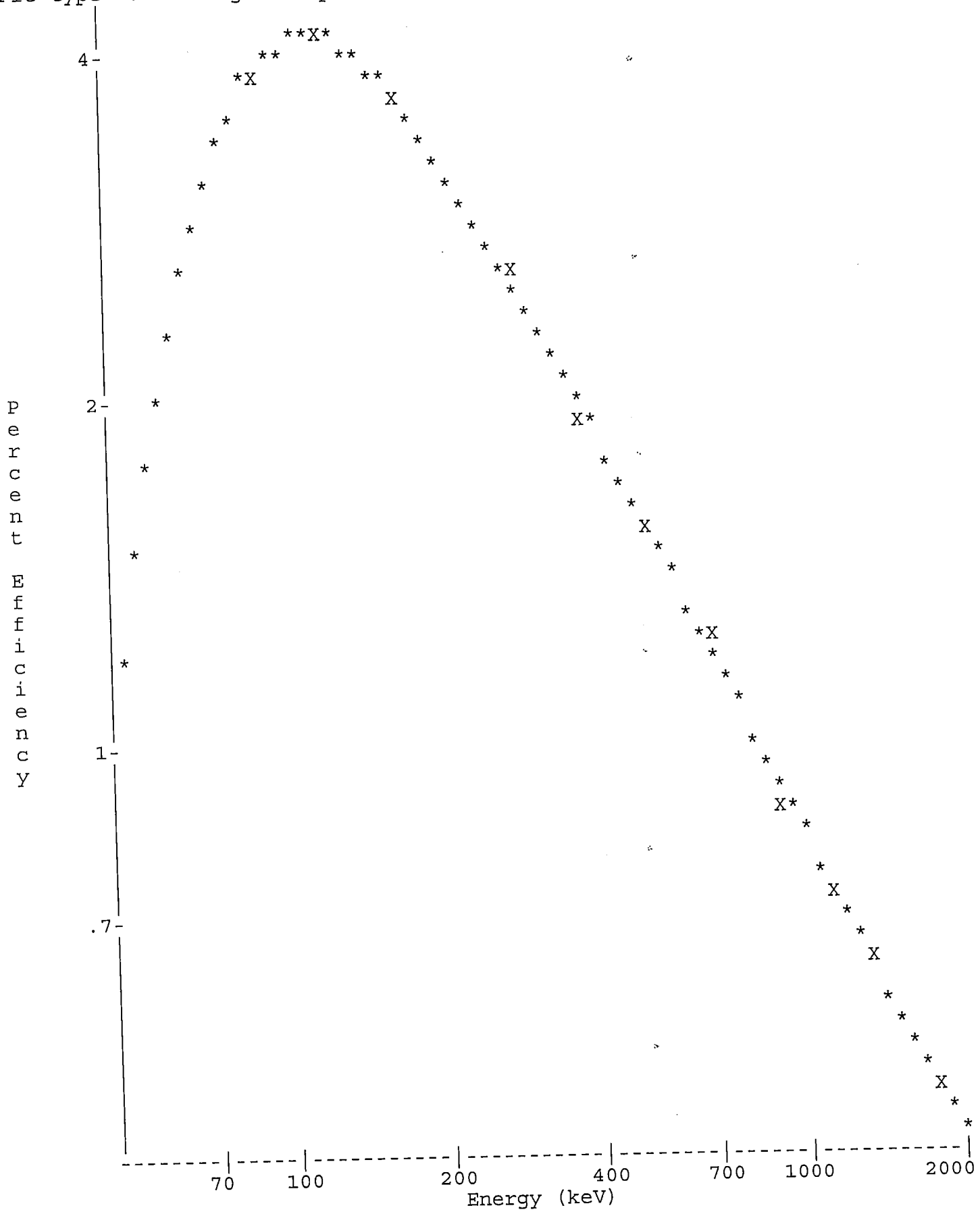
Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01	20751	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Spectrum : MCA0:[NDSCOUNT]TBE02$1
Calib Date: 26-DEC-2019 15:35
Detector :
Fit type : 5th Degree Empirical

Geometry : 02S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 15:37:02.02
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 26-DEC-2019 09:58:13.35

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 02S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 02S100122619
BKGFILE : 02BG112719MT
Real Time : 0 05:31:02.78
Live time : 0 05:30:24.87

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	88.01*	20721	7216	0.83	160.97	3.84E+00	1.05E+00	1.0	
2	0	122.07	16760	6672	1.04	229.54	4.12E+00	8.45E-01	1.2	
3	0	136.48	2099	5349	1.05	258.55	4.02E+00	1.06E-01	6.9	
4	0	165.84	10237	6815	1.03	317.67	3.70E+00	5.16E-01	1.9	
5	0	255.05	599	3512	1.04	497.28	2.76E+00	3.02E-02	17.6	
6	0	279.15	2806	4847	1.12	545.81	2.57E+00	1.42E-01	5.3	
7	0	391.71	13677	4213	1.27	772.44	1.94E+00	6.90E-01	1.3	
8	0	514.07	8001	3879	1.41	1018.82	1.53E+00	4.04E-01	2.0	
9	0	661.66	35448	3335	1.59	1316.03	1.23E+00	1.79E+00	0.6	
10	0	898.03	17345	3091	1.89	1792.05	9.32E-01	8.75E-01	1.1	
11	0	1173.19	27594	1565	2.15	2346.25	7.33E-01	1.39E+00	0.7	
12	0	1332.46	24954	837	2.31	2667.05	6.54E-01	1.26E+00	0.7	
13	0	1835.98	10418	316	2.79	3681.44	5.02E-01	5.26E-01	1.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	20721	3.72*	3.836E+00	7.325E+02	1.000E+03	2.03
03-CO57	122.06	16760	85.51*	4.118E+00	2.401E+01	4.088E+01	2.45
04-CE139	165.85	10237	80.35*	3.699E+00	1.738E+01	4.953E+01	3.79
05-HG203	279.20	2806	81.46*	2.573E+00	6.754E+00	1.490E+02	10.62
06-SN113	391.69	13677	64.90*	1.939E+00	5.481E+01	1.919E+02	2.60
07-SR85	513.99	8001	99.27*	1.533E+00	2.653E+01	2.452E+02	4.03
08-CS137	661.65	35448	85.12*	1.227E+00	1.712E+02	1.735E+02	1.28
09-Y88	898.02	17345	93.40*	9.325E-01	1.005E+02	3.883E+02	2.11
10-CO60	1173.22	27594	100.00	7.326E-01	1.900E+02	2.048E+02	1.39
	1332.49	24954	100.00*	6.543E-01	1.924E+02	2.073E+02	1.38
12-Y88	1836.01	10418	99.38*	5.015E-01	1.054E+02	4.075E+02	2.15

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

Total number of lines in spectrum 13
Number of unidentified lines 2
Number of lines tentatively identified by NID 11 84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.924E+02	2.073E+02	0.029E+02	1.38	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.431E+03	2.853E+03			

Grand Total Activity : 1.431E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 02S100122619

Acquisition date : 26-DEC-2019 09:58:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	136.48	2099	5349	1.05	258.55	254	10	1.06E-01	13.8	4.02E+00	
0	255.05	599	3512	1.04	497.28	494	8	3.02E-02	35.2	2.76E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	13	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	11	84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.325E+02	1.000E+03	0.020E+03	2.03	
03-CO57	270.90D	1.70	2.401E+01	4.088E+01	0.100E+01	2.45	
04-CE139	137.66D	2.85	1.738E+01	4.953E+01	0.187E+01	3.79	
05-HG203	46.61D	22.1	6.754E+00	1.490E+02	0.158E+02	10.62	
06-SN113	115.10D	3.50	5.481E+01	1.919E+02	0.050E+02	2.60	
07-SR85	64.84D	9.24	2.653E+01	2.452E+02	0.099E+02	4.03	
08-CS137	30.17Y	1.01	1.712E+02	1.735E+02	0.022E+02	1.28	
09-Y88	106.65D	3.87	1.005E+02	3.883E+02	0.082E+02	2.11	
10-CO60	5.27Y	1.08	1.912E+02	2.060E+02	0.020E+02	0.98	
12-Y88	106.65D	3.87	1.054E+02	4.075E+02	0.088E+02	2.15	
			---------	---------			
	Total Activity :		1.430E+03	2.852E+03			

Grand Total Activity : 1.430E+03 2.852E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.000E+03	2.029E+01	1.387E+01	0.000E+00	72.130
03-CO57	4.088E+01	1.003E+00	6.475E-01	0.000E+00	63.137
04-CE139	4.953E+01	1.875E+00	1.276E+00	0.000E+00	38.822
05-HG203	1.490E+02	1.581E+01	1.316E+01	0.000E+00	11.321
06-SN113	1.919E+02	4.986E+00	3.384E+00	0.000E+00	56.693
07-SR85	2.452E+02	9.888E+00	7.118E+00	0.000E+00	34.444
08-CS137	1.735E+02	2.216E+00	1.070E+00	0.000E+00	162.084
09-Y88	3.883E+02	8.201E+00	4.714E+00	0.000E+00	82.370

10-CO60	2.060E+02	2.019E+00	1.108E+00	0.000E+00	185.886
12-Y88	4.075E+02	8.772E+00	2.373E+00	0.000E+00	171.753

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.643E-01		9.277E-01	1.517E+00	0.000E+00	0.240

```
A,02S100122619     ,12/26/2019 15:37,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,02S100122619     ,CALIBRATION          ,12/26/2019 15:35,02S100122619
C,02-CD109,YES,   1.000E+03,   2.029E+01,   1.387E+01,,    72.130
C,03-CO57 ,YES,   4.088E+01,   1.003E+00,   6.475E-01,,    63.137
C,04-CE139,YES,   4.953E+01,   1.875E+00,   1.276E+00,,    38.822
C,05-HG203,YES,   1.490E+02,   1.581E+01,   1.316E+01,,    11.321
C,06-SN113,YES,   1.919E+02,   4.986E+00,   3.384E+00,,    56.693
C,07-SR85 ,YES,   2.452E+02,   9.888E+00,   7.118E+00,,    34.444
C,08-CS137,YES,   1.735E+02,   2.216E+00,   1.070E+00,,   162.084
C,09-Y88  ,YES,   3.883E+02,   8.201E+00,   4.714E+00,,    82.370
C,10-CO60 ,YES,   2.060E+02,   2.019E+00,   1.108E+00,,   185.886
C,12-Y88  ,YES,   4.075E+02,   8.772E+00,   2.373E+00,,   171.753
C,01-AM241,NO ,   3.643E-01,   9.277E-01,   1.517E+00,,     0.240
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.3	0.84%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.79%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.2	1.35%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.7	-2.57%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	174.9	1.92%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.5	-2.39%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	204.0	0.28%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	205.6	0.96%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.3	-0.35%

Eff. Name: **07S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:37:08.02
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

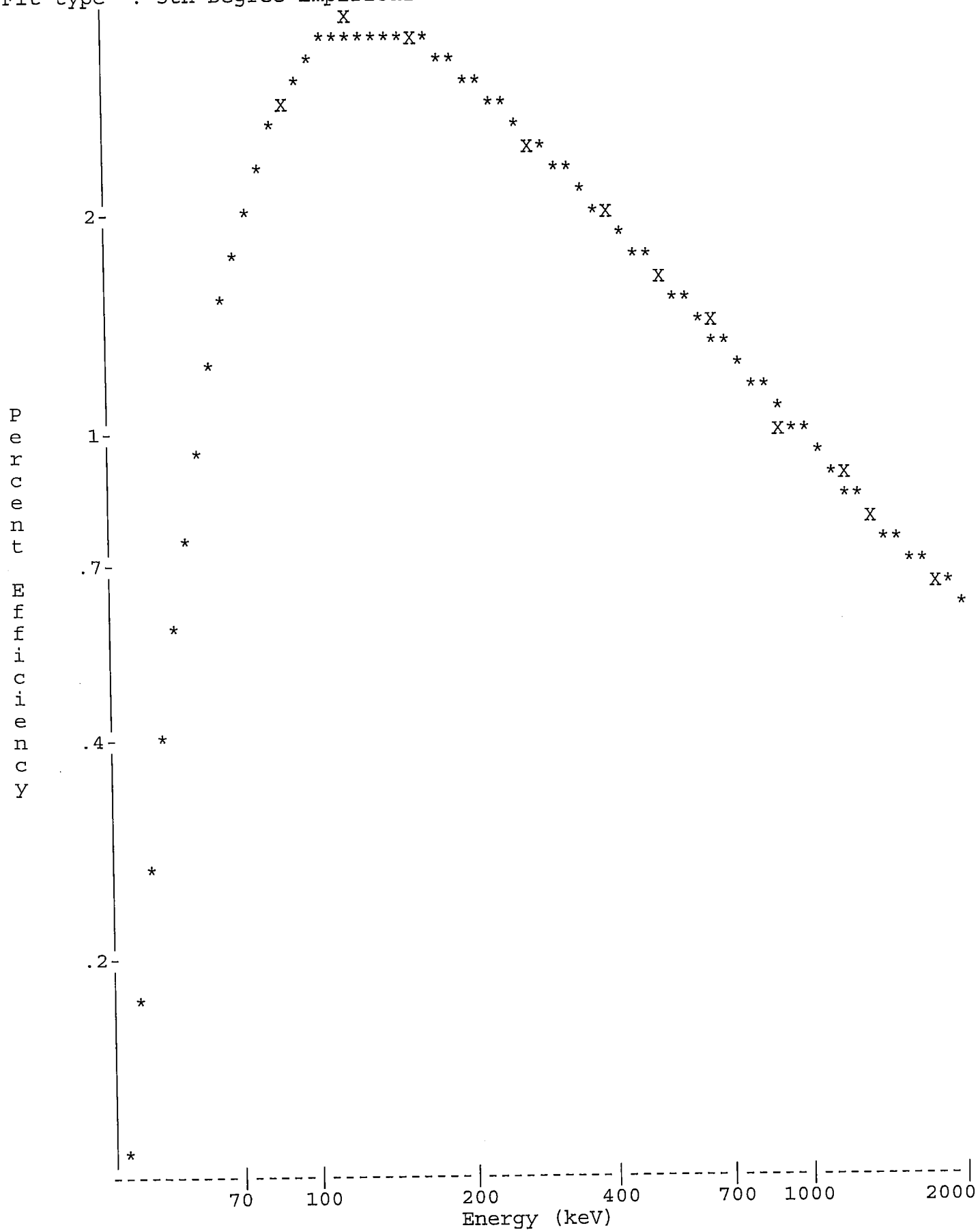
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08	561	4995	1.06	149.61	2.19E+00	2.91E-02	21.3	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Spectrum : MCA0:[NDSCOUNT]TBE07$1
Calib Date: 26-DEC-2019 10:37
Detector :
Geometry : 07S100121819
Fit type : 5th Degree Empirical



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:38:31.66
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 18-DEC-2019 09:33:09.29

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 07S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 07S100121819
BKGFILE : 07BG112719MT
Real Time : 0 05:21:15.93
Live time : 0 05:20:45.36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.48	1429	6575	1.94	92.43	3.05E-01	7.42E-02	11.3	4.78E+00
2	1	75.08*	279	4995	1.06	149.61	2.19E+00	1.45E-02	43.0	2.51E+00
3	1	88.05	15509	9105	1.25	175.54	2.91E+00	8.06E-01	1.5	1.31E+00
4	1	122.06	14574	6687	1.29	243.54	3.67E+00	7.57E-01	1.4	1.91E+00
5	1	136.44	1861	5450	1.33	272.30	3.69E+00	9.67E-02	7.8	1.93E+00
6	1	165.84	10075	6382	1.30	331.08	3.53E+00	5.24E-01	1.9	5.71E-01
7	1	255.10	772	4019	1.58	509.52	2.77E+00	4.01E-02	15.2	1.71E+00
8	1	279.19	3041	4533	1.35	557.69	2.60E+00	1.58E-01	4.6	7.26E-01
9	1	391.67	14763	5264	1.52	782.57	2.04E+00	7.67E-01	1.4	9.94E-01
10	1	514.02	9011	4479	1.61	1027.15	1.67E+00	4.68E-01	1.9	7.27E-01
11	1	661.64	39032	3383	1.77	1322.25	1.38E+00	2.03E+00	0.6	2.71E+00
12	1	898.03	21069	3093	1.98	1794.74	1.08E+00	1.09E+00	0.9	2.59E+00
13	1	1173.22	31953	1708	2.28	2344.70	8.75E-01	1.66E+00	0.6	8.48E+00
14	1	1332.48	29159	981	2.42	2662.97	7.92E-01	1.52E+00	0.6	9.83E+00
15	1	1836.00	13400	270	2.94	3669.01	6.39E-01	6.96E-01	0.9	9.15E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	15509	3.72*	2.909E+00	7.447E+02	1.005E+03	3.04
03-CO57	122.06	14574	85.51*	3.671E+00	2.412E+01	4.025E+01	2.74
04-CE139	165.85	10075	80.35*	3.528E+00	1.847E+01	5.056E+01	3.75
05-HG203	279.20	3041	81.46*	2.603E+00	7.451E+00	1.459E+02	9.30
06-SN113	391.69	14763	64.90*	2.041E+00	5.792E+01	1.932E+02	2.70
07-SR85	513.99	9011	99.27*	1.670E+00	2.825E+01	2.397E+02	3.84
08-CS137	661.65	39032	85.12*	1.379E+00	1.728E+02	1.749E+02	1.20
09-Y88	898.02	21069	93.40*	1.085E+00	1.081E+02	3.965E+02	1.82
10-CO60	1173.22	31953	100.00	8.748E-01	1.898E+02	2.040E+02	1.29
	1332.49	29159	100.00*	7.919E-01	1.913E+02	2.056E+02	1.28
12-Y88	1836.01	13400	99.38*	6.391E-01	1.096E+02	4.023E+02	1.85

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.913E+02	2.056E+02	0.026E+02	1.28	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
			---------	---------			
	Total Activity :		1.463E+03	2.854E+03			

Grand Total Activity :	1.463E+03	2.854E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 07S100121819

Acquisition date : 18-DEC-2019 09:33:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.48	1429	6575	1.94	92.43	87	11	7.42E-02	22.6	3.05E-01	
1	75.08	279	4995	1.06	149.61	147	7	1.45E-02	86.0	2.19E+00	
1	136.44	1861	5450	1.33	272.30	268	10	9.67E-02	15.5	3.69E+00	
1	255.10	772	4019	1.58	509.52	505	9	4.01E-02	30.4	2.77E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.447E+02	1.005E+03	0.031E+03	3.04	
03-CO57	270.90D	1.67	2.412E+01	4.025E+01	0.110E+01	2.74	
04-CE139	137.66D	2.74	1.847E+01	5.056E+01	0.190E+01	3.75	
05-HG203	46.61D	19.6	7.451E+00	1.459E+02	0.136E+02	9.30	
06-SN113	115.10D	3.34	5.792E+01	1.932E+02	0.052E+02	2.70	
07-SR85	64.84D	8.48	2.825E+01	2.397E+02	0.092E+02	3.84	
08-CS137	30.17Y	1.01	1.728E+02	1.749E+02	0.021E+02	1.20	
09-Y88	106.65D	3.67	1.081E+02	3.965E+02	0.072E+02	1.82	
10-CO60	5.27Y	1.07	1.906E+02	2.048E+02	0.019E+02	0.91	
12-Y88	106.65D	3.67	1.096E+02	4.023E+02	0.074E+02	1.85	
	Total Activity :		1.462E+03	2.853E+03			

Grand Total Activity : 1.462E+03 2.853E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	3.056E+01	2.103E+01	0.000E+00	47.787
03-CO57	4.025E+01	1.102E+00	8.335E-01	0.000E+00	48.286
04-CE139	5.056E+01	1.897E+00	1.474E+00	0.000E+00	34.291
05-HG203	1.459E+02	1.356E+01	1.329E+01	0.000E+00	10.971
06-SN113	1.932E+02	5.222E+00	3.490E+00	0.000E+00	55.360
07-SR85	2.397E+02	9.202E+00	6.912E+00	0.000E+00	34.670

08-CS137	1.749E+02	2.107E+00	1.046E+00	0.000E+00	167.217
09-Y88	3.965E+02	7.203E+00	4.263E+00	0.000E+00	93.005
10-CO60	2.048E+02	1.860E+00	1.005E+00	0.000E+00	203.826
12-Y88	4.023E+02	7.427E+00	1.973E+00	0.000E+00	203.850

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.183E+00		2.267E+00	3.761E+00	0.000E+00	0.581

```
A,07S100121819    ,12/26/2019 10:38,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,07S100121819    ,CALIBRATION         ,12/26/2019 10:37,07S100121819
C,02-CD109,YES,  1.005E+03,   3.056E+01,   2.103E+01,,   47.787
C,03-CO57 ,YES,  4.025E+01,   1.102E+00,   8.335E-01,,   48.286
C,04-CE139,YES,  5.056E+01,   1.897E+00,   1.474E+00,,   34.291
C,05-HG203,YES,  1.459E+02,   1.356E+01,   1.329E+01,,   10.971
C,06-SN113,YES,  1.932E+02,   5.222E+00,   3.490E+00,,   55.360
C,07-SR85 ,YES,  2.397E+02,   9.202E+00,   6.912E+00,,   34.670
C,08-CS137,YES,  1.749E+02,   2.107E+00,   1.046E+00,,  167.217
C,09-Y88  ,YES,  3.965E+02,   7.203E+00,   4.263E+00,,   93.005
C,10-CO60 ,YES,  2.048E+02,   1.860E+00,   1.005E+00,,  203.826
C,12-Y88  ,YES,  4.023E+02,   7.427E+00,   1.973E+00,,  203.850
C,01-AM241,NO ,  2.183E+00,   2.267E+00,   3.761E+00,,    0.581
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1007.0	0.04%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.1	0.51%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.1	-1.25%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	193.6	1.56%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	238.8	-2.93%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	396.8	-2.32%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.2	-0.11%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.1	1.21%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.1	-0.15%

Eff. Name: **08S100121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:50:33.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

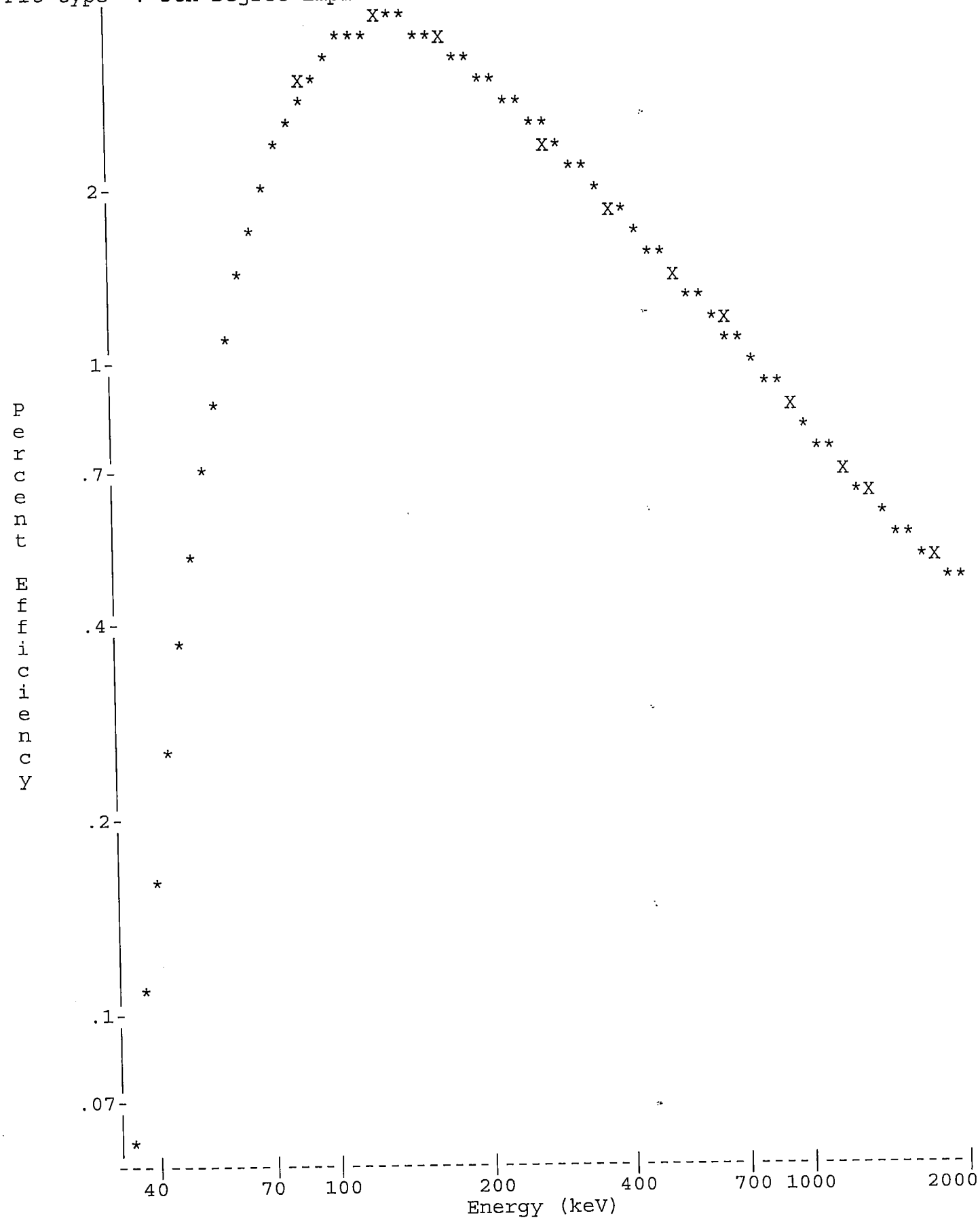
LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Spectrum : MCA0:[NDSCOUNT]TBE08$1
Calib Date: 26-DEC-2019 12:50
Detector :
Geometry : 08S100121819
Fit type : 5th Degree Empirical



Analyst:

==========
VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:52:08.68
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 18-DEC-2019 18:27:26.45

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 08S100121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 08S100121819
BKGFILE : 08BG112719MT
Real Time : 0 08:00:49.00
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.18	1634	7997	1.29	100.11	3.56E-01	5.67E-02	10.2	4.21E-01
2	1	87.92	22549	11509	1.24	183.40	2.82E+00	7.83E-01	1.1	1.48E+00
3	1	122.03	20753	10824	1.30	251.47	3.51E+00	7.21E-01	1.2	3.21E+00
4	1	136.46	2549	8355	1.23	280.28	3.52E+00	8.85E-02	7.2	8.17E-01
5	1	165.90	14341	8884	1.32	339.02	3.35E+00	4.98E-01	1.6	1.08E+00
6	1	255.00	1012	4949	1.56	516.84	2.57E+00	3.51E-02	12.4	2.31E+00
7	1	279.27	4133	6505	1.42	565.26	2.39E+00	1.43E-01	4.1	4.03E-01
8	1	391.74	19565	6562	1.48	789.71	1.81E+00	6.79E-01	1.1	1.23E+00
9	1	514.05	11479	5528	1.54	1033.78	1.43E+00	3.99E-01	1.6	5.15E-01
10	1	661.64	48949	4561	1.64	1328.28	1.15E+00	1.70E+00	0.5	2.56E+00
11	1	898.01	25618	4054	1.78	1799.90	8.83E-01	8.90E-01	0.8	1.40E+00
12	1	1173.18	38134	2219	1.93	2348.90	7.00E-01	1.32E+00	0.6	1.98E+00
13	1	1332.44	34720	1127	1.99	2666.64	6.29E-01	1.21E+00	0.6	1.43E+00
14	1	1836.04	15407	257	2.25	3671.21	4.91E-01	5.35E-01	0.9	1.80E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	22549	3.72*	2.820E+00	7.463E+02	1.007E+03	2.28
03-CO57	122.06	20753	85.51*	3.508E+00	2.402E+01	4.012E+01	2.49
04-CE139	165.85	14341	80.35*	3.346E+00	1.852E+01	5.081E+01	3.12
05-HG203	279.20	4133	81.46*	2.391E+00	7.367E+00	1.451E+02	8.17
06-SN113	391.69	19565	64.90*	1.808E+00	5.791E+01	1.936E+02	2.27
07-SR85	513.99	11479	99.27*	1.433E+00	2.802E+01	2.388E+02	3.29
08-CS137	661.65	48949	85.12*	1.152E+00	1.733E+02	1.755E+02	1.09
09-Y88	898.02	25618	93.40*	8.831E-01	1.078E+02	3.968E+02	1.66
10-CO60	1173.22	38134	100.00	7.003E-01	1.891E+02	2.032E+02	1.19
	1332.49	34720	100.00*	6.288E-01	1.917E+02	2.061E+02	1.17
12-Y88	1836.01	15407	99.38*	4.913E-01	1.096E+02	4.031E+02	1.70

Flag: "*" = Keyline

Total number of lines in spectrum 14
Number of unidentified lines 3
Number of lines tentatively identified by NID 11 78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.917E+02	2.061E+02	0.024E+02	1.17	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.465E+03	2.858E+03			

Grand Total Activity : 1.465E+03 2.858E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 08S100121819 Acquisition date : 18-DEC-2019 18:27:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.18	1634	7997	1.29	100.11	96	9	5.67E-02	20.4	3.56E-01	
1	136.46	2549	8355	1.23	280.28	275	11	8.85E-02	14.5	3.52E+00	
1	255.00	1012	4949	1.56	516.84	513	8	3.51E-02	24.9	2.57E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	14	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	11	78.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.463E+02	1.007E+03	0.023E+03	2.28	
03-CO57	270.90D	1.67	2.402E+01	4.012E+01	0.010E+02	2.49	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.158E+01	3.12	
05-HG203	46.61D	19.7	7.367E+00	1.451E+02	0.119E+02	8.17	
06-SN113	115.10D	3.34	5.791E+01	1.936E+02	0.044E+02	2.27	
07-SR85	64.84D	8.52	2.802E+01	2.388E+02	0.079E+02	3.29	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.09	
09-Y88	106.65D	3.68	1.078E+02	3.968E+02	0.066E+02	1.66	
10-CO60	5.27Y	1.07	1.904E+02	2.047E+02	0.017E+02	0.84	
12-Y88	106.65D	3.68	1.096E+02	4.031E+02	0.069E+02	1.70	
			---------	---------			
	Total Activity :		1.463E+03	2.856E+03			

Grand Total Activity : 1.463E+03 2.856E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.007E+03	2.299E+01	1.793E+01	0.000E+00	56.179
03-CO57	4.012E+01	9.998E-01	7.168E-01	0.000E+00	55.974
04-CE139	5.081E+01	1.584E+00	1.251E+00	0.000E+00	40.618
05-HG203	1.451E+02	1.186E+01	1.148E+01	0.000E+00	12.645
06-SN113	1.936E+02	4.389E+00	3.027E+00	0.000E+00	63.964
07-SR85	2.388E+02	7.859E+00	6.014E+00	0.000E+00	39.715
08-CS137	1.755E+02	1.909E+00	9.339E-01	0.000E+00	187.942

09-Y88	3.968E+02	6.572E+00	3.849E+00	0.000E+00	103.094
10-CO60	2.047E+02	1.711E+00	8.137E-01	0.000E+00	251.542
12-Y88	4.031E+02	6.862E+00	1.621E+00	0.000E+00	248.741

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	4.717E-02		1.930E+00	3.063E+00	0.000E+00	0.015

```
A,08S100121819    ,12/26/2019 12:52,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,08S100121819    ,CALIBRATION         ,12/26/2019 12:50,08S100121819
C,02-CD109,YES,   1.007E+03,   2.299E+01,   1.793E+01,,   56.179
C,03-CO57 ,YES,   4.012E+01,   9.998E-01,   7.168E-01,,   55.974
C,04-CE139,YES,   5.081E+01,   1.584E+00,   1.251E+00,,   40.618
C,05-HG203,YES,   1.451E+02,   1.186E+01,   1.148E+01,,   12.645
C,06-SN113,YES,   1.936E+02,   4.389E+00,   3.027E+00,,   63.964
C,07-SR85 ,YES,   2.388E+02,   7.859E+00,   6.014E+00,,   39.715
C,08-CS137,YES,   1.755E+02,   1.909E+00,   9.339E-01,,  187.942
C,09-Y88  ,YES,   3.968E+02,   6.572E+00,   3.849E+00,,  103.094
C,10-CO60 ,YES,   2.047E+02,   1.711E+00,   8.137E-01,,  251.542
C,12-Y88  ,YES,   4.031E+02,   6.862E+00,   1.621E+00,,  248.741
C,01-AM241,NO ,   4.717E-02,   1.930E+00,   3.063E+00,,    0.015
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1013.0	0.63%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	41.2	3.17%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	49.2	-3.52%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	149.6	-4.13%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.2	-1.27%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	259.6	5.52%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	168.9	-1.58%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	388.5	-4.36%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	208.3	2.40%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.6	1.45%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	400.4	-0.82%

Eff. Name: **11S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:16:09.89
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

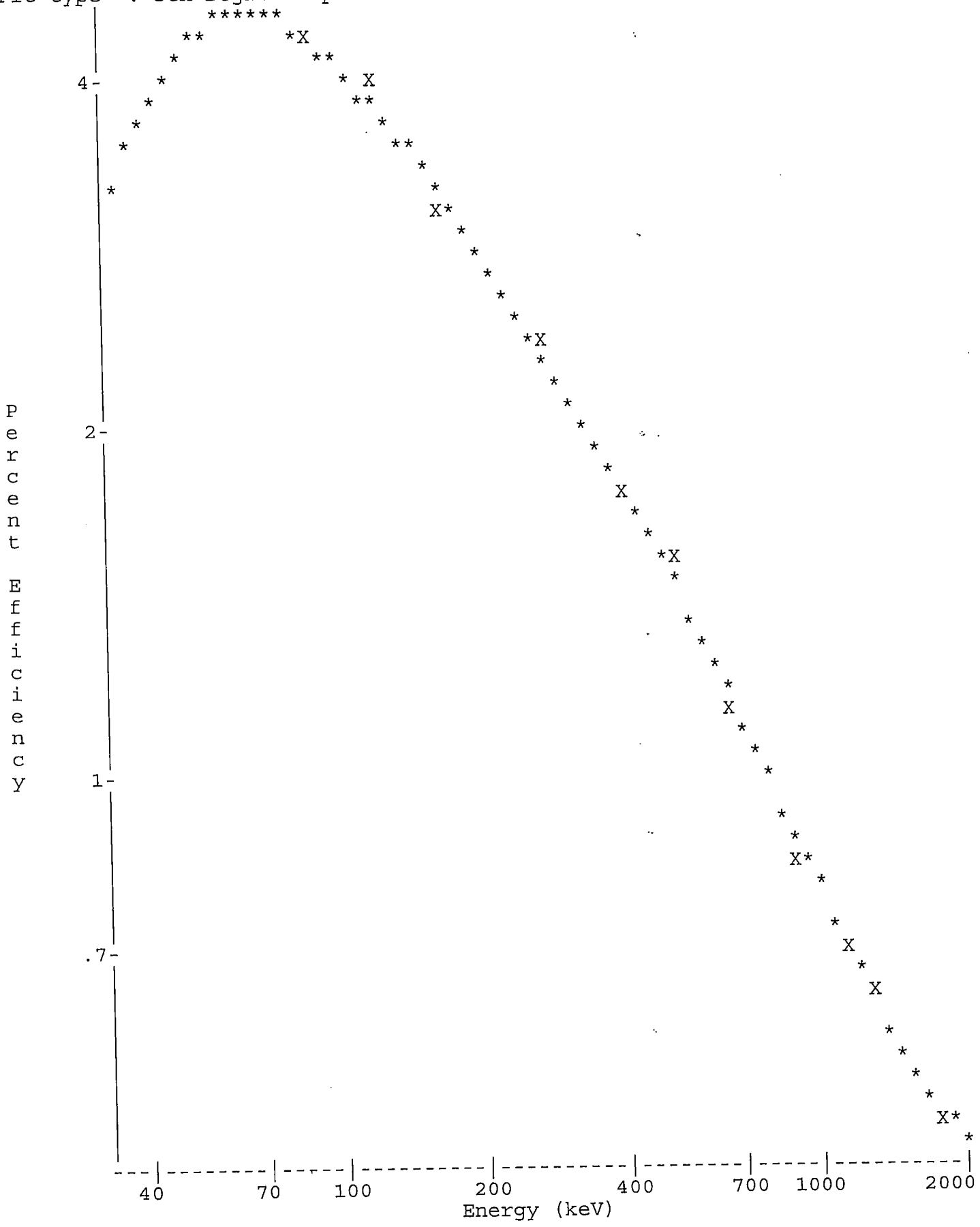
Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44	27393	13173	1.42	91.96	4.17E+00	1.28E+00	1.1	
2	3	72.79	1540	7404	1.54	144.67	4.57E+00	7.19E-02	10.5	2.97E+00
3	3	75.02	1592	5667	1.18	149.14	4.55E+00	7.44E-02	8.3	
4	0	88.03	26304	7505	1.42	175.16	4.39E+00	1.23E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Spectrum : MCA0:[NDSCOUNT]TBE11$1
Calib Date: 26-DEC-2019 12:16
Detector :
Fit type : 5th Degree Empirical

Geometry : 11S100121919



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 12:17:11.80
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 19-DEC-2019 09:30:13.51

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 11S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 70 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 11S100121919
BKGFILE : 11BG112719MT
Real Time : 0 05:57:33.15
Live time : 0 05:56:46.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	46.44*	27064	13173	1.42	91.96	4.17E+00	1.26E+00	1.1	
2	3	72.79*	1121	7404	1.54	144.67	4.57E+00	5.24E-02	14.4	2.97E+00
3	3	75.02*	884	5667	1.18	149.14	4.55E+00	4.13E-02	15.1	
4	0	88.03*	26205	7505	1.42	175.16	4.39E+00	1.22E+00	0.9	
5	0	122.04	17356	6780	1.43	243.20	3.85E+00	8.11E-01	1.2	
6	0	136.48	2119	5322	1.57	272.09	3.64E+00	9.90E-02	6.8	
7	0	165.84	10032	6166	1.56	330.83	3.26E+00	4.69E-01	1.9	
8	0	255.04	703	4054	1.59	509.27	2.49E+00	3.28E-02	17.4	
9	0	279.26	3067	4464	1.57	557.73	2.34E+00	1.43E-01	4.7	
10	0	391.73	14215	4415	1.66	782.73	1.82E+00	6.64E-01	1.3	
11	0	513.80	9458	4490	1.84	1026.94	1.47E+00	4.42E-01	2.0	
12	0	661.70	36024	4077	1.85	1322.82	1.19E+00	1.68E+00	0.7	
13	0	898.06	18988	3150	2.04	1795.66	9.03E-01	8.87E-01	1.0	
14	0	1173.21	29524	1777	2.26	2346.11	7.12E-01	1.38E+00	0.7	
15	0	1332.51	26313	1179	2.42	2664.80	6.39E-01	1.23E+00	0.7	
16	0	1835.98	11756	392	2.87	3672.01	5.10E-01	5.49E-01	1.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	26205	3.72*	4.389E+00	7.498E+02	1.013E+03	1.77
03-CO57	122.06	17356	85.51*	3.851E+00	2.462E+01	4.118E+01	2.44
04-CE139	165.85	10032	80.35*	3.264E+00	1.787E+01	4.917E+01	3.71
05-HG203	279.20	3067	81.46*	2.336E+00	7.530E+00	1.496E+02	9.44
06-SN113	391.69	14215	64.90*	1.825E+00	5.608E+01	1.882E+02	2.64
07-SR85	513.99	9458	99.27*	1.470E+00	3.027E+01	2.596E+02	3.97
08-CS137	661.65	36024	85.12*	1.186E+00	1.668E+02	1.689E+02	1.36
09-Y88	898.02	18988	93.40*	9.028E-01	1.052E+02	3.885E+02	1.98
10-CO60	1173.22	29524	100.00	7.119E-01	1.937E+02	2.083E+02	1.38
	1332.49	26313	100.00*	6.395E-01	1.922E+02	2.066E+02	1.39
12-Y88	1836.01	11756	99.38*	5.097E-01	1.084E+02	4.004E+02	2.05

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 11S100121919

Acquisition date : 19-DEC-2019 09:30:13

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.922E+02	2.066E+02	0.029E+02	1.39	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
			---------	---------			
	Total Activity :		1.459E+03	2.865E+03			

Grand Total Activity : 1.459E+03 2.865E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 11S100121919 Acquisition date : 19-DEC-2019 09:30:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.44	27064	13173	1.42	91.96	84	16	1.26E+00	2.3	4.17E+00	
3	72.79	1121	7404	1.54	144.67	139	15	5.24E-02	28.8	4.57E+00	
3	75.02	884	5667	1.18	149.14	139	15	4.13E-02	30.3	4.55E+00	
0	136.48	2119	5322	1.57	272.09	267	10	9.90E-02	13.6	3.64E+00	
0	255.04	703	4054	1.59	509.27	505	10	3.28E-02	34.7	2.49E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.498E+02	1.013E+03	0.018E+03	1.77	
03-CO57	270.90D	1.67	2.462E+01	4.118E+01	0.100E+01	2.44	
04-CE139	137.66D	2.75	1.787E+01	4.917E+01	0.183E+01	3.71	
05-HG203	46.61D	19.9	7.530E+00	1.496E+02	0.141E+02	9.44	
06-SN113	115.10D	3.36	5.608E+01	1.882E+02	0.050E+02	2.64	
07-SR85	64.84D	8.58	3.027E+01	2.596E+02	0.103E+02	3.97	
08-CS137	30.17Y	1.01	1.668E+02	1.689E+02	0.023E+02	1.36	
09-Y88	106.65D	3.69	1.052E+02	3.885E+02	0.077E+02	1.98	
10-CO60	5.27Y	1.08	1.930E+02	2.075E+02	0.020E+02	0.98	
12-Y88	106.65D	3.69	1.084E+02	4.004E+02	0.082E+02	2.05	
	Total Activity :		1.460E+03	2.866E+03			

Grand Total Activity : 1.460E+03 2.866E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.013E+03	1.793E+01	1.499E+01	0.000E+00	67.586
03-CO57	4.118E+01	1.003E+00	7.649E-01	0.000E+00	53.831
04-CE139	4.917E+01	1.826E+00	1.518E+00	0.000E+00	32.396
05-HG203	1.496E+02	1.412E+01	1.379E+01	0.000E+00	10.849
06-SN113	1.882E+02	4.968E+00	3.497E+00	0.000E+00	53.812

07-SR85	2.596E+02	1.031E+01	6.619E+00	0.000E+00	39.220
08-CS137	1.689E+02	2.289E+00	1.088E+00	0.000E+00	155.266
09-Y88	3.885E+02	7.711E+00	4.625E+00	0.000E+00	83.996
10-CO60	2.075E+02	2.028E+00	1.127E+00	0.000E+00	184.062
12-Y88	4.004E+02	8.223E+00	2.218E+00	0.000E+00	180.562

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-6.041E-01		5.435E-01	9.051E-01	0.000E+00	-0.667

```
A,11S100121919     ,12/26/2019 12:17,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,11S100121919     ,CALIBRATION          ,12/26/2019 12:16,11S100121919
C,02-CD109,YES,   1.013E+03,   1.793E+01,   1.499E+01,,   67.586
C,03-CO57 ,YES,   4.118E+01,   1.003E+00,   7.649E-01,,   53.831
C,04-CE139,YES,   4.917E+01,   1.826E+00,   1.518E+00,,   32.396
C,05-HG203,YES,   1.496E+02,   1.412E+01,   1.379E+01,,   10.849
C,06-SN113,YES,   1.882E+02,   4.968E+00,   3.497E+00,,   53.812
C,07-SR85 ,YES,   2.596E+02,   1.031E+01,   6.619E+00,,   39.220
C,08-CS137,YES,   1.689E+02,   2.289E+00,   1.088E+00,,  155.266
C,09-Y88  ,YES,   3.885E+02,   7.711E+00,   4.625E+00,,   83.996
C,10-CO60 ,YES,   2.075E+02,   2.028E+00,   1.127E+00,,  184.062
C,12-Y88  ,YES,   4.004E+02,   8.223E+00,   2.218E+00,,  180.562
C,01-AM241,NO ,  -6.041E-01,   5.435E-01,   9.051E-01,,   -0.667
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1001.0	-0.56%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.61%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.6	-0.64%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	146.5	-6.12%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	194.6	2.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	234.0	-4.89%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	177.4	3.38%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	398.1	-2.00%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	202.2	-0.60%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	206.3	1.30%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	407.5	0.94%

Eff. Name: **13S100122619**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:44:57.77
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

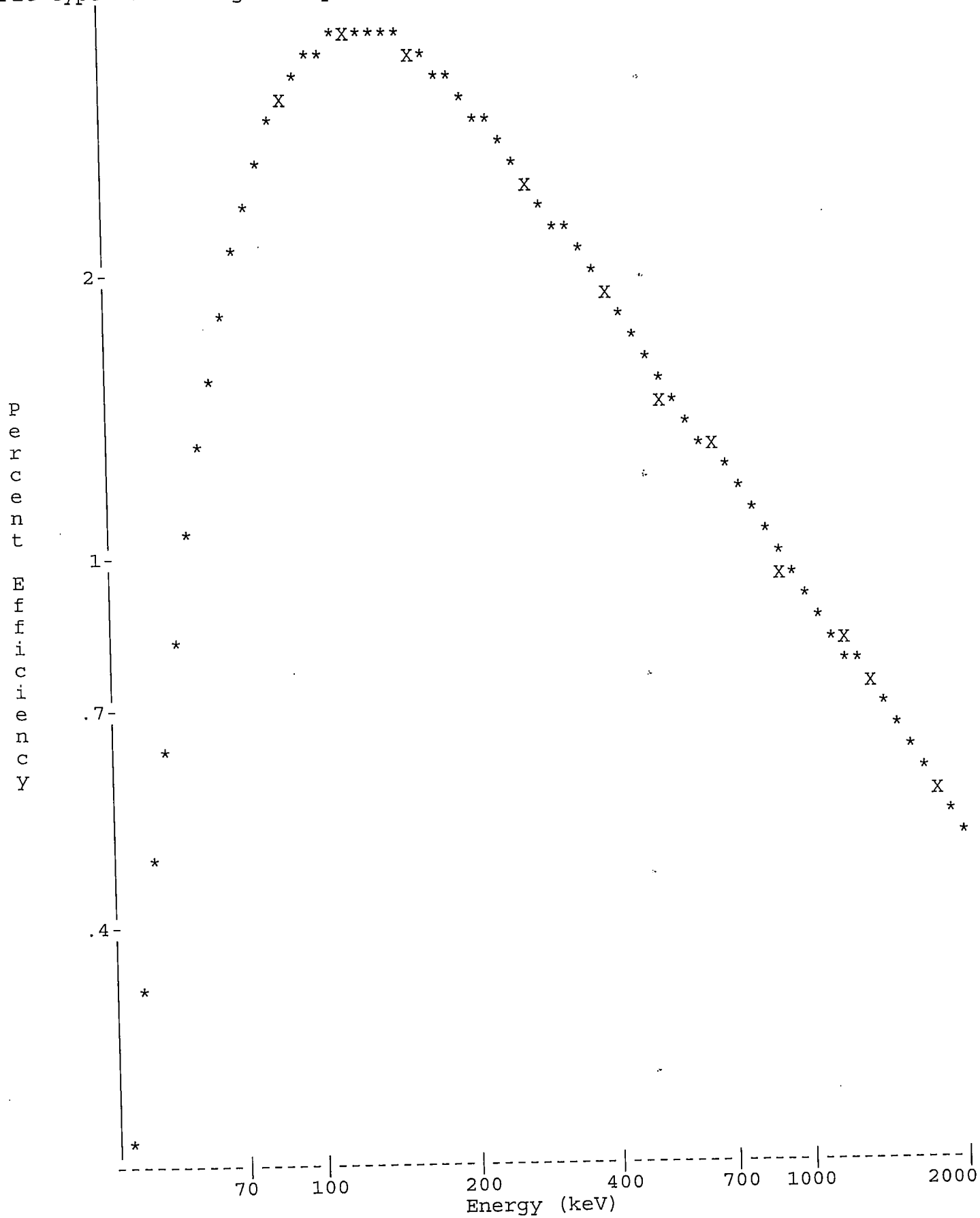
Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07	964	6134	0.81	149.98	2.43E+00	3.35E-02	13.2	2.22E+00
3	10	85.34	2003	12894	2.14	170.49	2.93E+00	6.96E-02	13.5	1.10E+01
4	10	88.09	23892	5449	0.95	175.98	3.03E+00	8.30E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1460.66	331	769	1.96	2921.13	6.66E-01	1.15E-02	18.9	4.00E+00
19	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Spectrum : MCA0:[NDSCOUNT]TBE13$1
Calib Date: 27-DEC-2019 09:44
Detector :
Fit type : 5th Degree Empirical

Geometry : 13S100122619



Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 27-DEC-2019 09:45:55.51
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 26-DEC-2019 17:15:06.36

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 13S100122619
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentfied

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 13S100122619
BKGFILE : 13BG112719MT
Real Time : 0 08:00:40.29
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.61	1649	8662	0.85	93.13	5.50E-01	5.73E-02	10.5	9.82E-01
2	1	75.07*	570	6134	0.81	149.98	2.43E+00	1.98E-02	22.5	2.22E+00
3	10	85.34*	1791	12894	2.14	170.49	2.93E+00	6.22E-02	15.2	1.10E+01
4	10	88.09*	23823	5449	0.95	175.98	3.03E+00	8.27E-01	0.8	
5	1	122.08	21017	9696	0.95	243.89	3.62E+00	7.30E-01	1.1	3.57E+00
6	1	136.47	2883	7569	1.03	272.63	3.62E+00	1.00E-01	6.0	1.03E+00
7	1	165.85	14076	7597	0.96	331.33	3.43E+00	4.89E-01	1.4	1.17E+00
8	1	255.11	993	5186	1.14	509.66	2.65E+00	3.45E-02	13.0	7.15E-01
9	1	279.16	3843	5979	1.08	557.72	2.48E+00	1.33E-01	4.1	1.76E+00
10	1	391.69	19702	6015	1.19	782.59	1.90E+00	6.84E-01	1.1	1.18E+00
11	1	513.97	11022	5086	1.24	1027.00	1.53E+00	3.83E-01	1.5	5.32E+00
12	1	661.54	53670	4623	1.41	1322.05	1.25E+00	1.86E+00	0.5	1.13E+00
13	1	813.84	504	2576	1.63	1626.62	1.06E+00	1.75E-02	19.9	1.97E+00
14	1	897.97	27147	4284	1.60	1794.90	9.82E-01	9.43E-01	0.8	5.62E-01
15	1	1173.32	42878	2755	1.78	2345.86	7.94E-01	1.49E+00	0.6	1.84E+00
16	3	1325.20	513	1054	2.50	2649.91	7.20E-01	1.78E-02	14.1	3.27E+00
17	3	1332.60	39531	701	1.90	2664.70	7.17E-01	1.37E+00	0.5	
18	1	1835.93	16545	393	2.22	3672.90	5.57E-01	5.74E-01	0.8	4.20E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	23823	3.72*	3.035E+00	7.328E+02	1.001E+03	1.65
03-CO57	122.06	21017	85.51*	3.622E+00	2.356E+01	4.016E+01	2.28
04-CE139	165.85	14076	80.35*	3.430E+00	1.774E+01	5.064E+01	2.87
05-HG203	279.20	3843	81.46*	2.479E+00	6.609E+00	1.465E+02	8.19
06-SN113	391.69	19702	64.90*	1.900E+00	5.549E+01	1.946E+02	2.13
07-SR85	513.99	11022	99.27*	1.528E+00	2.522E+01	2.340E+02	3.05
08-CS137	661.65	53670	85.12*	1.251E+00	1.751E+02	1.774E+02	1.02
09-Y88	898.02	27147	93.40*	9.820E-01	1.028E+02	3.981E+02	1.61
10-CO60	1173.22	42878	100.00	7.939E-01	1.875E+02	2.022E+02	1.14
	1332.49	39531	100.00*	7.171E-01	1.914E+02	2.063E+02	1.04

12-Y88	1836.01	16545	99.38*	5.565E-01	1.039E+02	4.024E+02	1.67

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.914E+02	2.063E+02	0.021E+02	1.04	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.434E+03	2.851E+03			

Grand Total Activity : 1.434E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 13S100122619

Acquisition date : 26-DEC-2019 17:15:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.61	1649	8662	0.85	93.13	89	9	5.73E-02	21.0	5.50E-01	
1	75.07	570	6134	0.81	149.98	148	6	1.98E-02	45.0	2.43E+00	
10	85.34	1791	12894	2.14	170.49	163	18	6.22E-02	30.3	2.93E+00	
1	136.47	2883	7569	1.03	272.63	268	10	1.00E-01	11.9	3.62E+00	
1	255.11	993	5186	1.14	509.66	506	8	3.45E-02	25.9	2.65E+00	
1	813.84	504	2576	1.63	1626.62	1621	11	1.75E-02	39.9	1.06E+00	
3	1325.20	513	1054	2.50	2649.91	2642	32	1.78E-02	28.2	7.20E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	18	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	11	61.11%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.37	7.328E+02	1.001E+03	0.016E+03	1.65	
03-CO57	270.90D	1.70	2.356E+01	4.016E+01	0.092E+01	2.28	
04-CE139	137.66D	2.86	1.774E+01	5.064E+01	0.145E+01	2.87	
05-HG203	46.61D	22.2	6.609E+00	1.465E+02	0.120E+02	8.19	
06-SN113	115.10D	3.51	5.549E+01	1.946E+02	0.041E+02	2.13	
07-SR85	64.84D	9.28	2.522E+01	2.340E+02	0.071E+02	3.05	
08-CS137	30.17Y	1.01	1.751E+02	1.774E+02	0.018E+02	1.02	
09-Y88	106.65D	3.87	1.028E+02	3.981E+02	0.064E+02	1.61	
10-CO60	5.27Y	1.08	1.896E+02	2.044E+02	0.016E+02	0.77	
12-Y88	106.65D	3.87	1.039E+02	4.024E+02	0.067E+02	1.67	
			---------	---------			
	Total Activity :		1.433E+03	2.849E+03			

Grand Total Activity : 1.433E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.001E+03	1.649E+01	1.349E+01	0.000E+00	74.206
03-CO57	4.016E+01	9.167E-01	6.087E-01	0.000E+00	65.978
04-CE139	5.064E+01	1.454E+00	1.122E+00	0.000E+00	45.151
05-HG203	1.465E+02	1.200E+01	1.135E+01	0.000E+00	12.914
06-SN113	1.946E+02	4.137E+00	2.774E+00	0.000E+00	70.169
07-SR85	2.340E+02	7.150E+00	6.009E+00	0.000E+00	38.945
08-CS137	1.774E+02	1.808E+00	8.215E-01	0.000E+00	215.917
09-Y88	3.981E+02	6.404E+00	3.602E+00	0.000E+00	110.531

10-CO60	2.044E+02	1.570E+00	6.527E-01	0.000E+00	313.158
12-Y88	4.024E+02	6.717E+00	1.716E+00	0.000E+00	234.561

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	3.682E-02		1.283E+00	2.034E+00	0.000E+00	0.018

```
A,13S100122619     ,12/27/2019 09:45,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,13S100122619     ,CALIBRATION          ,12/27/2019 09:44,13S100122619
C,02-CD109,YES,   1.001E+03,   1.649E+01,   1.349E+01,,   74.206
C,03-CO57 ,YES,   4.016E+01,   9.167E-01,   6.087E-01,,   65.978
C,04-CE139,YES,   5.064E+01,   1.454E+00,   1.122E+00,,   45.151
C,05-HG203,YES,   1.465E+02,   1.200E+01,   1.135E+01,,   12.914
C,06-SN113,YES,   1.946E+02,   4.137E+00,   2.774E+00,,   70.169
C,07-SR85 ,YES,   2.340E+02,   7.150E+00,   6.009E+00,,   38.945
C,08-CS137,YES,   1.774E+02,   1.808E+00,   8.215E-01,,  215.917
C,09-Y88  ,YES,   3.981E+02,   6.404E+00,   3.602E+00,,  110.531
C,10-CO60 ,YES,   2.044E+02,   1.570E+00,   6.527E-01,,  313.158
C,12-Y88  ,YES,   4.024E+02,   6.717E+00,   1.716E+00,,  234.561
C,01-AM241,NO ,   3.682E-02,   1.283E+00,   2.034E+00,,    0.018
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1002.0	-0.46%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.59%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.95%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	150.0	-3.87%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	191.9	0.67%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.0	-2.85%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	176.1	2.62%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	394.2	-2.96%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	205.5	1.02%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.7	0.52%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	402.4	-0.32%

Eff. Name: **14S100121919**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:24:05.41
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

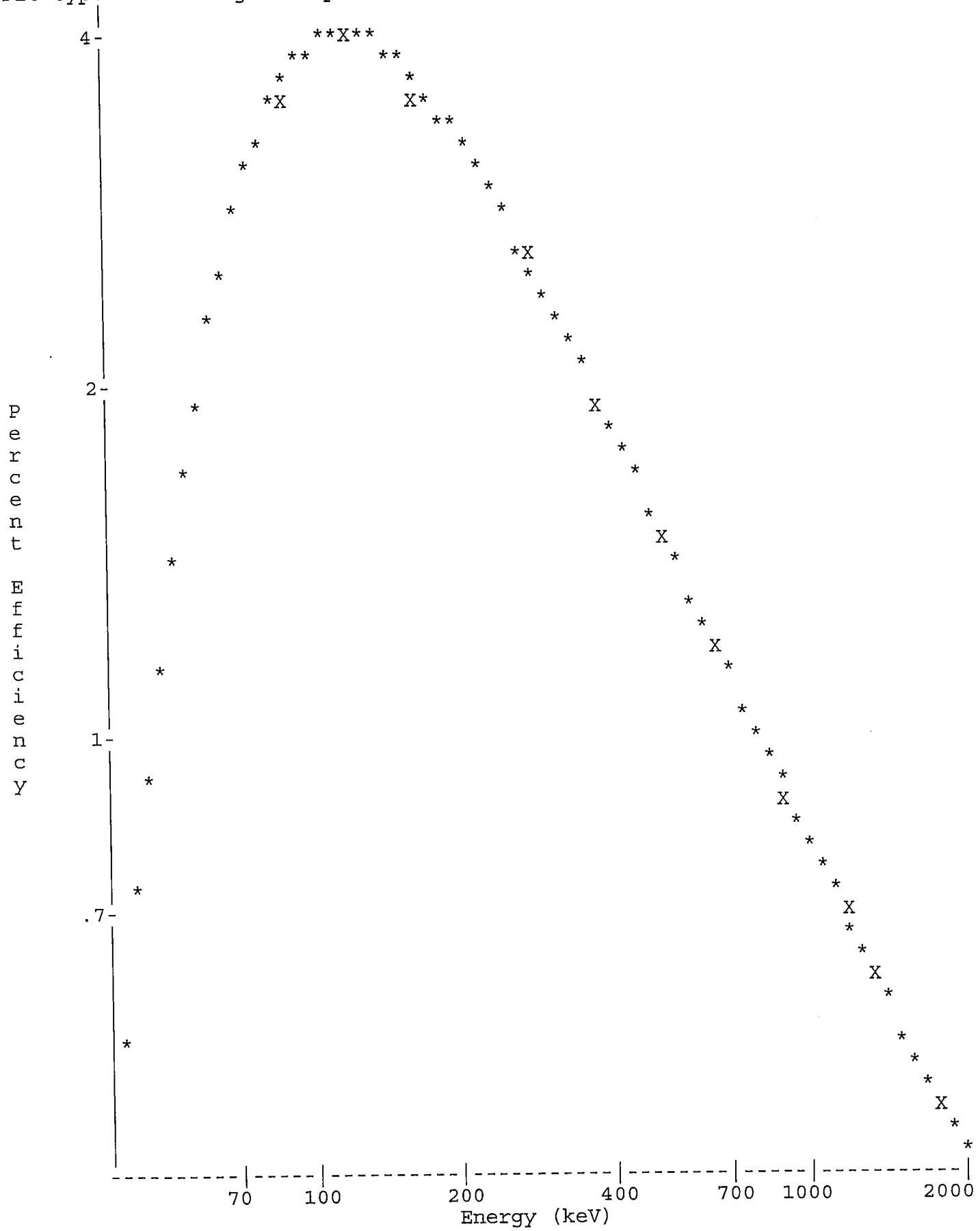
Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04	32058	12538	0.83	172.85	3.58E+00	9.89E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:24
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S100121919



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:25:19.21
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 19-DEC-2019 15:29:26.12

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S100121919
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S100121919
BKGFILE : 14BG112719MT
Real Time : 0 09:01:06.30
Live time : 0 09:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.59	4343	10904	0.86	89.98	8.97E-01	1.34E-01	4.8	3.15E+00
2	1	88.04*	31996	12538	0.83	172.85	3.58E+00	9.88E-01	0.9	2.14E+00
3	1	122.05	26983	10075	0.88	240.85	4.02E+00	8.33E-01	0.9	1.92E+00
4	1	136.46	3364	8189	0.88	269.65	3.96E+00	1.04E-01	5.2	4.70E-01
5	1	165.85	17412	9914	0.91	328.41	3.69E+00	5.37E-01	1.3	1.10E+00
6	1	255.15	1158	6685	1.01	506.97	2.76E+00	3.58E-02	13.1	1.18E+00
7	1	279.19	5080	6009	1.01	555.03	2.56E+00	1.57E-01	3.1	5.17E-01
8	1	391.69	22811	6687	1.13	779.98	1.90E+00	7.04E-01	1.0	1.38E+00
9	1	514.02	13219	4975	1.19	1024.59	1.48E+00	4.08E-01	1.3	1.12E+00
10	1	661.64	56112	4910	1.36	1319.81	1.17E+00	1.73E+00	0.5	1.09E+01
11	1	814.14	447	2399	1.31	1624.80	9.65E-01	1.38E-02	20.3	6.19E-01
12	1	898.03	28414	5248	1.53	1792.58	8.81E-01	8.77E-01	0.8	6.48E+00
13	1	1173.22	42734	2511	1.72	2343.05	6.90E-01	1.32E+00	0.6	1.51E+01
14	1	1332.47	37990	1308	1.84	2661.63	6.16E-01	1.17E+00	0.6	2.28E+01
15	1	1836.01	16457	385	2.14	3669.12	4.70E-01	5.08E-01	0.8	1.14E+01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	31996	3.72*	3.583E+00	7.409E+02	1.002E+03	1.73
03-CO57	122.06	26983	85.51*	4.020E+00	2.422E+01	4.055E+01	1.86
04-CE139	165.85	17412	80.35*	3.689E+00	1.813E+01	4.997E+01	2.69
05-HG203	279.20	5080	81.46*	2.562E+00	7.514E+00	1.500E+02	6.17
06-SN113	391.69	22811	64.90*	1.900E+00	5.709E+01	1.919E+02	1.95
07-SR85	513.99	13219	99.27*	1.480E+00	2.778E+01	2.390E+02	2.65
08-CS137	661.65	56112	85.12*	1.170E+00	1.739E+02	1.761E+02	1.00
09-Y88	898.02	28414	93.40*	8.814E-01	1.065E+02	3.942E+02	1.67
10-CO60	1173.22	42734	100.00	6.902E-01	1.911E+02	2.055E+02	1.12
	1332.49	37990	100.00*	6.159E-01	1.904E+02	2.047E+02	1.12
12-Y88	1836.01	16457	99.38*	4.701E-01	1.087E+02	4.024E+02	1.68

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S100121919

Acquisition date : 19-DEC-2019 15:29:26

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.904E+02	2.047E+02	0.023E+02	1.12	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
			---------	---------			
	Total Activity :		1.455E+03	2.850E+03			

Grand Total Activity :	1.455E+03	2.850E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S100121919
Acquisition date : 19-DEC-2019 15:29:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.59	4343	10904	0.86	89.98	85	10	1.34E-01	9.5	8.97E-01	
1	136.46	3364	8189	0.88	269.65	266	9	1.04E-01	10.3	3.96E+00	
1	255.15	1158	6685	1.01	506.97	503	9	3.58E-02	26.1	2.76E+00	
1	814.14	447	2399	1.31	1624.80	1621	9	1.38E-02	40.6	9.65E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.409E+02	1.002E+03	0.017E+03	1.73	
03-CO57	270.90D	1.67	2.422E+01	4.055E+01	0.075E+01	1.86	
04-CE139	137.66D	2.76	1.813E+01	4.997E+01	0.134E+01	2.69	
05-HG203	46.61D	20.0	7.514E+00	1.500E+02	0.093E+02	6.17	
06-SN113	115.10D	3.36	5.709E+01	1.919E+02	0.037E+02	1.95	
07-SR85	64.84D	8.60	2.778E+01	2.390E+02	0.063E+02	2.65	
08-CS137	30.17Y	1.01	1.739E+02	1.761E+02	0.018E+02	1.00	
09-Y88	106.65D	3.70	1.065E+02	3.942E+02	0.066E+02	1.67	
10-CO60	5.27Y	1.08	1.907E+02	2.051E+02	0.016E+02	0.79	
12-Y88	106.65D	3.70	1.087E+02	4.024E+02	0.068E+02	1.68	
	Total Activity :		1.456E+03	2.851E+03			

Grand Total Activity : 1.456E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.002E+03	1.735E+01	1.123E+01	0.000E+00	89.212
03-CO57	4.055E+01	7.526E-01	4.988E-01	0.000E+00	81.300
04-CE139	4.997E+01	1.344E+00	9.308E-01	0.000E+00	53.682
05-HG203	1.500E+02	9.263E+00	8.996E+00	0.000E+00	16.675
06-SN113	1.919E+02	3.750E+00	2.454E+00	0.000E+00	78.204
07-SR85	2.390E+02	6.325E+00	5.015E+00	0.000E+00	47.655

08-CS137	1.761E+02	1.758E+00	7.913E-01	0.000E+00	222.526
09-Y88	3.942E+02	6.575E+00	3.397E+00	0.000E+00	116.066
10-CO60	2.051E+02	1.624E+00	8.097E-01	0.000E+00	253.272
12-Y88	4.024E+02	6.761E+00	1.762E+00	0.000E+00	228.349

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	6.911E-03		8.383E-01	1.367E+00	0.000E+00	0.005

```
A,14S100121919    ,12/26/2019 10:25,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,14S100121919    ,CALIBRATION         ,12/26/2019 10:24,14S100121919
C,02-CD109,YES,   1.002E+03,   1.735E+01,   1.123E+01,,   89.212
C,03-CO57 ,YES,   4.055E+01,   7.526E-01,   4.988E-01,,   81.300
C,04-CE139,YES,   4.997E+01,   1.344E+00,   9.308E-01,,   53.682
C,05-HG203,YES,   1.500E+02,   9.263E+00,   8.996E+00,,   16.675
C,06-SN113,YES,   1.919E+02,   3.750E+00,   2.454E+00,,   78.204
C,07-SR85 ,YES,   2.390E+02,   6.325E+00,   5.015E+00,,   47.655
C,08-CS137,YES,   1.761E+02,   1.758E+00,   7.913E-01,,  222.526
C,09-Y88  ,YES,   3.942E+02,   6.575E+00,   3.397E+00,,  116.066
C,10-CO60 ,YES,   2.051E+02,   1.624E+00,   8.097E-01,,  253.272
C,12-Y88  ,YES,   4.024E+02,   6.761E+00,   1.762E+00,,  228.349
C,01-AM241,NO ,   6.911E-03,   8.383E-01,   1.367E+00,,    0.005
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S50 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s/	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1004.0	-0.26%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.2	0.64%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.8	-0.30%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	145.9	-6.50%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	190.8	0.09%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	245.0	-0.41%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.5	2.27%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	390.0	-3.99%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.8	0.19%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	207.7	1.99%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	401.2	-0.62%

Eff. Name: **14S50121819**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:13:21.15
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 18-DEC-2019 18:27:23.49

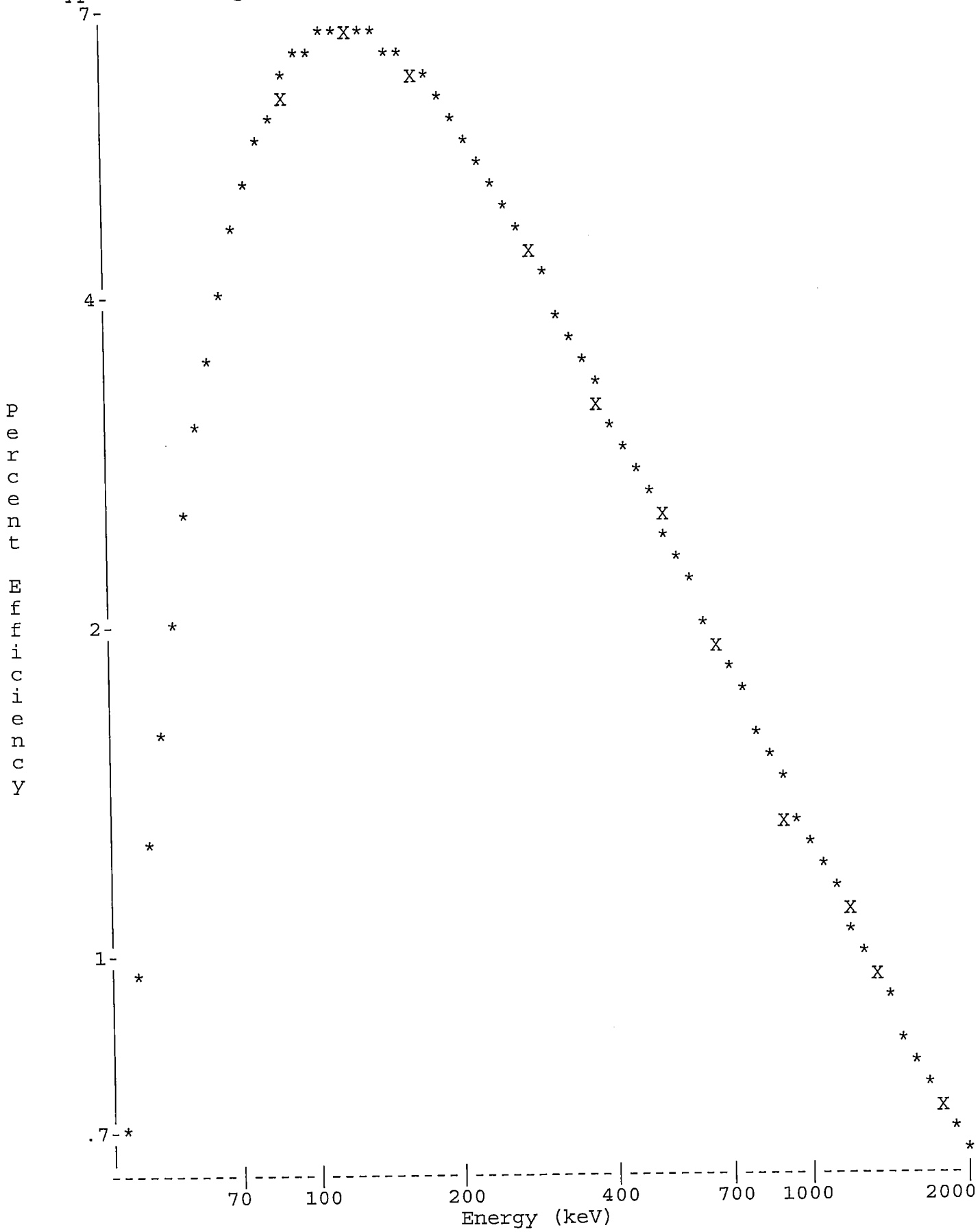
LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S50121819 Smple Date: 1-JUN-2019 12:00:00.0
Sample Type : STD Geometry : 14S50121819
Quantity : 1.00000E+00 TOTAL BKGFILE : 14BG112719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 05:00:55.75
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 05:00:00.00
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.60	3975	8207	0.80	89.97	1.23E+00	2.21E-01	4.4	1.01E+00
2	1	88.03	29704	9669	0.83	172.80	5.96E+00	1.65E+00	0.8	1.73E+00
3	1	122.05	25406	7639	0.87	240.81	6.86E+00	1.41E+00	0.9	7.42E-01
4	1	136.47	3417	6463	0.91	269.64	6.78E+00	1.90E-01	4.6	1.40E+00
5	1	165.85	16937	6942	0.94	328.39	6.32E+00	9.41E-01	1.2	4.44E+00
6	1	255.14	946	5634	1.02	506.90	4.68E+00	5.26E-02	14.7	2.67E+00
7	1	279.20	4711	5617	1.03	555.01	4.34E+00	2.62E-01	3.3	8.02E-01
8	1	391.70	21167	5331	1.14	779.95	3.17E+00	1.18E+00	1.0	3.27E+00
9	1	514.00	12546	4517	1.26	1024.50	2.44E+00	6.97E-01	1.4	2.89E+00
10	1	661.64	50588	4509	1.35	1319.73	1.91E+00	2.81E+00	0.5	1.04E+01
11	1	814.05	471	2381	1.67	1624.53	1.55E+00	2.62E-02	20.5	7.24E-01
12	1	898.03	25137	3936	1.52	1792.49	1.41E+00	1.40E+00	0.8	1.05E+01
13	1	1173.22	37091	2183	1.73	2342.95	1.09E+00	2.06E+00	0.6	1.23E+01
14	4	1325.69	557	849	2.69	2647.95	9.68E-01	3.09E-02	12.3	1.49E+01
15	4	1332.48	33523	497	1.86	2661.54	9.64E-01	1.86E+00	0.6	
16	1	1836.00	14220	330	2.19	3668.98	7.29E-01	7.90E-01	0.9	9.11E+00

Spectrum : MCA0:[NDSCOUNT]TBE14$1
Calib Date: 26-DEC-2019 10:13
Detector :
Fit type : 5th Degree Empirical

Geometry : 14S50121819



Analyst:

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 10:14:52.93
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 18-DEC-2019 18:27:23.49

LIMS No., Customer Name, Client ID: S50 5ML MIXED GAMMA CALIBRATION

Sample ID : 14S50121819
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 14S50121819
BKGFILE : 14BG112719MT
Real Time : 0 05:00:55.75
Live time : 0 05:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.60	3975	8207	0.80	89.97	1.23E+00	2.21E-01	4.4	1.01E+00
2	1	88.03*	29669	9669	0.83	172.80	5.96E+00	1.65E+00	0.8	1.73E+00
3	1	122.05	25406	7639	0.87	240.81	6.86E+00	1.41E+00	0.9	7.42E-01
4	1	136.47	3417	6463	0.91	269.64	6.78E+00	1.90E-01	4.6	1.40E+00
5	1	165.85	16937	6942	0.94	328.39	6.32E+00	9.41E-01	1.2	4.44E+00
6	1	255.14	946	5634	1.02	506.90	4.68E+00	5.26E-02	14.7	2.67E+00
7	1	279.20	4711	5617	1.03	555.01	4.34E+00	2.62E-01	3.3	8.02E-01
8	1	391.70	21167	5331	1.14	779.95	3.17E+00	1.18E+00	1.0	3.27E+00
9	1	514.00	12546	4517	1.26	1024.50	2.44E+00	6.97E-01	1.4	2.89E+00
10	1	661.64	50588	4509	1.35	1319.73	1.91E+00	2.81E+00	0.5	1.04E+01
11	1	814.05	471	2381	1.67	1624.53	1.55E+00	2.62E-02	20.5	7.24E-01
12	1	898.03	25137	3936	1.52	1792.49	1.41E+00	1.40E+00	0.8	1.05E+01
13	1	1173.22	37091	2183	1.73	2342.95	1.09E+00	2.06E+00	0.6	1.23E+01
14	4	1325.69	557	849	2.69	2647.95	9.68E-01	3.09E-02	12.3	1.49E+01
15	4	1332.48	33523	497	1.86	2661.54	9.64E-01	1.86E+00	0.6	
16	1	1836.00	14220	330	2.19	3668.98	7.29E-01	7.90E-01	0.9	9.11E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	29669	3.72*	5.957E+00	7.439E+02	1.004E+03	1.66
03-CO57	122.06	25406	85.51*	6.862E+00	2.405E+01	4.017E+01	1.77
04-CE139	165.85	16937	80.35*	6.322E+00	1.852E+01	5.081E+01	2.41
05-HG203	279.20	4711	81.46*	4.336E+00	7.411E+00	1.459E+02	6.63
06-SN113	391.69	21167	64.90*	3.174E+00	5.708E+01	1.908E+02	1.95
07-SR85	513.99	12546	99.27*	2.441E+00	2.877E+01	2.450E+02	2.80
08-CS137	661.65	50588	85.12*	1.905E+00	1.733E+02	1.755E+02	1.06
09-Y88	898.02	25137	93.40*	1.410E+00	1.061E+02	3.900E+02	1.69
10-CO60	1173.22	37091	100.00	1.087E+00	1.896E+02	2.038E+02	1.19
	1332.49	33523	100.00*	9.636E-01	1.933E+02	2.077E+02	1.12
12-Y88	1836.01	14220	99.38*	7.286E-01	1.091E+02	4.012E+02	1.81

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 14S50121819

Acquisition date : 18-DEC-2019 18:27:23

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.439E+02	1.004E+03	0.017E+03	1.66	
03-CO57	270.90D	1.67	2.405E+01	4.017E+01	0.071E+01	1.77	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.122E+01	2.41	
05-HG203	46.61D	19.7	7.411E+00	1.459E+02	0.097E+02	6.63	
06-SN113	115.10D	3.34	5.708E+01	1.908E+02	0.037E+02	1.95	
07-SR85	64.84D	8.52	2.877E+01	2.450E+02	0.068E+02	2.80	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.06	
09-Y88	106.65D	3.68	1.061E+02	3.900E+02	0.066E+02	1.69	
10-CO60	5.27Y	1.07	1.933E+02	2.077E+02	0.023E+02	1.12	
12-Y88	106.65D	3.68	1.091E+02	4.012E+02	0.073E+02	1.81	
			---------	---------			
	Total Activity :		1.461E+03	2.851E+03			

Grand Total Activity : 1.461E+03 2.851E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 14S50121819
Acquisition date : 18-DEC-2019 18:27:23

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.60	3975	8207	0.80	89.97	86	9	2.21E-01	8.9	1.23E+00	
1	136.47	3417	6463	0.91	269.64	266	9	1.90E-01	9.2	6.78E+00	
1	255.14	946	5634	1.02	506.90	503	9	5.26E-02	29.4	4.68E+00	
1	814.05	471	2381	1.67	1624.53	1620	11	2.62E-02	41.1	1.55E+00	
4	1325.69	557	849	2.69	2647.95	2638	41	3.09E-02	24.7	9.68E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	16	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	11	68.75%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.439E+02	1.004E+03	0.017E+03	1.66	
03-CO57	270.90D	1.67	2.405E+01	4.017E+01	0.071E+01	1.77	
04-CE139	137.66D	2.74	1.852E+01	5.081E+01	0.122E+01	2.41	
05-HG203	46.61D	19.7	7.411E+00	1.459E+02	0.097E+02	6.63	
06-SN113	115.10D	3.34	5.708E+01	1.908E+02	0.037E+02	1.95	
07-SR85	64.84D	8.52	2.877E+01	2.450E+02	0.068E+02	2.80	
08-CS137	30.17Y	1.01	1.733E+02	1.755E+02	0.019E+02	1.06	
09-Y88	106.65D	3.68	1.061E+02	3.900E+02	0.066E+02	1.69	
10-CO60	5.27Y	1.07	1.915E+02	2.058E+02	0.017E+02	0.82	
12-Y88	106.65D	3.68	1.091E+02	4.012E+02	0.073E+02	1.81	
	Total Activity :		1.460E+03	2.849E+03			

Grand Total Activity : 1.460E+03 2.849E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.004E+03	1.668E+01	1.105E+01	0.000E+00	90.837
03-CO57	4.017E+01	7.098E-01	4.762E-01	0.000E+00	84.344
04-CE139	5.081E+01	1.223E+00	8.613E-01	0.000E+00	58.990
05-HG203	1.459E+02	9.677E+00	8.561E+00	0.000E+00	17.038
06-SN113	1.908E+02	3.725E+00	2.394E+00	0.000E+00	79.689

07-SR85	2.450E+02	6.850E+00	4.859E+00	0.000E+00	50.418
08-CS137	1.755E+02	1.867E+00	8.217E-01	0.000E+00	213.594
09-Y88	3.900E+02	6.600E+00	3.616E+00	0.000E+00	107.864
10-CO60	2.058E+02	1.683E+00	6.831E-01	0.000E+00	301.314
12-Y88	4.012E+02	7.282E+00	1.902E+00	0.000E+00	210.961

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	2.835E-01		8.979E-01	1.467E+00	0.000E+00	0.193

```
A,14S50121819     ,12/26/2019 10:14,06/01/2019 12:00,   1.000E+00,S50 5ML MIXED
B,14S50121819     ,CALIBRATION          ,12/26/2019 10:13,14S50121819
C,02-CD109,YES,   1.004E+03,   1.668E+01,   1.105E+01,,    90.837
C,03-CO57 ,YES,   4.017E+01,   7.098E-01,   4.762E-01,,    84.344
C,04-CE139,YES,   5.081E+01,   1.223E+00,   8.613E-01,,    58.990
C,05-HG203,YES,   1.459E+02,   9.677E+00,   8.561E+00,,    17.038
C,06-SN113,YES,   1.908E+02,   3.725E+00,   2.394E+00,,    79.689
C,07-SR85 ,YES,   2.450E+02,   6.850E+00,   4.859E+00,,    50.418
C,08-CS137,YES,   1.755E+02,   1.867E+00,   8.217E-01,,   213.594
C,09-Y88  ,YES,   3.900E+02,   6.600E+00,   3.616E+00,,   107.864
C,10-CO60 ,YES,   2.058E+02,   1.683E+00,   6.831E-01,,   301.314
C,12-Y88  ,YES,   4.012E+02,   7.282E+00,   1.902E+00,,   210.961
C,01-AM241,NO ,   2.835E-01,   8.979E-01,   1.467E+00,,     0.193
```

E & Z 2088-10-1 Mixed Gamma
6/1/19 12:00 PM

S100 Bottle

		Orig. Wt	5.1617	Volume	50				
		Wt Used	4.4184	Aliquot	5.0000	Certificate	Aliquoted	Actual	Percent
	Half-Life	Energy(KeV)	ate G/s	%err	%abn	Bq/Tot	G/S	Bq/Tot	Diff
Cd-109	462.9d	88.0	84.75		3.72%	1006.61	37.45	1005.0	-0.16%
Co-57	271.8d	122.1	77.25		85.51%	39.92	34.13	40.6	1.76%
Ce-139	137.64d	165.9	92.68		80.35%	50.96	40.95	50.0	-1.97%
Hg-203	46.6d	279.2	273		77.30%	156.04	120.62	154.5	-0.99%
Sn-113	115.09d	391.7	280		64.90%	190.62	123.72	188.1	-1.32%
Sr-85	64.849	514.0	547.9		98.40%	246.02	242.08	239.6	-2.61%
Cs-137	30.17y	661.6	330.6		85.12%	171.61	146.07	175.9	2.50%
Y-88	106.65d	898.0	858.7		93.40%	406.22	379.41	400.3	-1.46%
Co-60	5.27y	1173.2	460.4		100.00%	203.42	203.42	203.7	0.14%
Co-60	5.27y	1332.5	460.9		100.00%	203.64	203.64	204.2	0.27%
Y-88	106.65d	1836.0	908		99.38%	403.69	401.19	403.2	-0.12%

Eff. Name: **15S100121719**

Analyst: KOJ

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:02:22.10
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

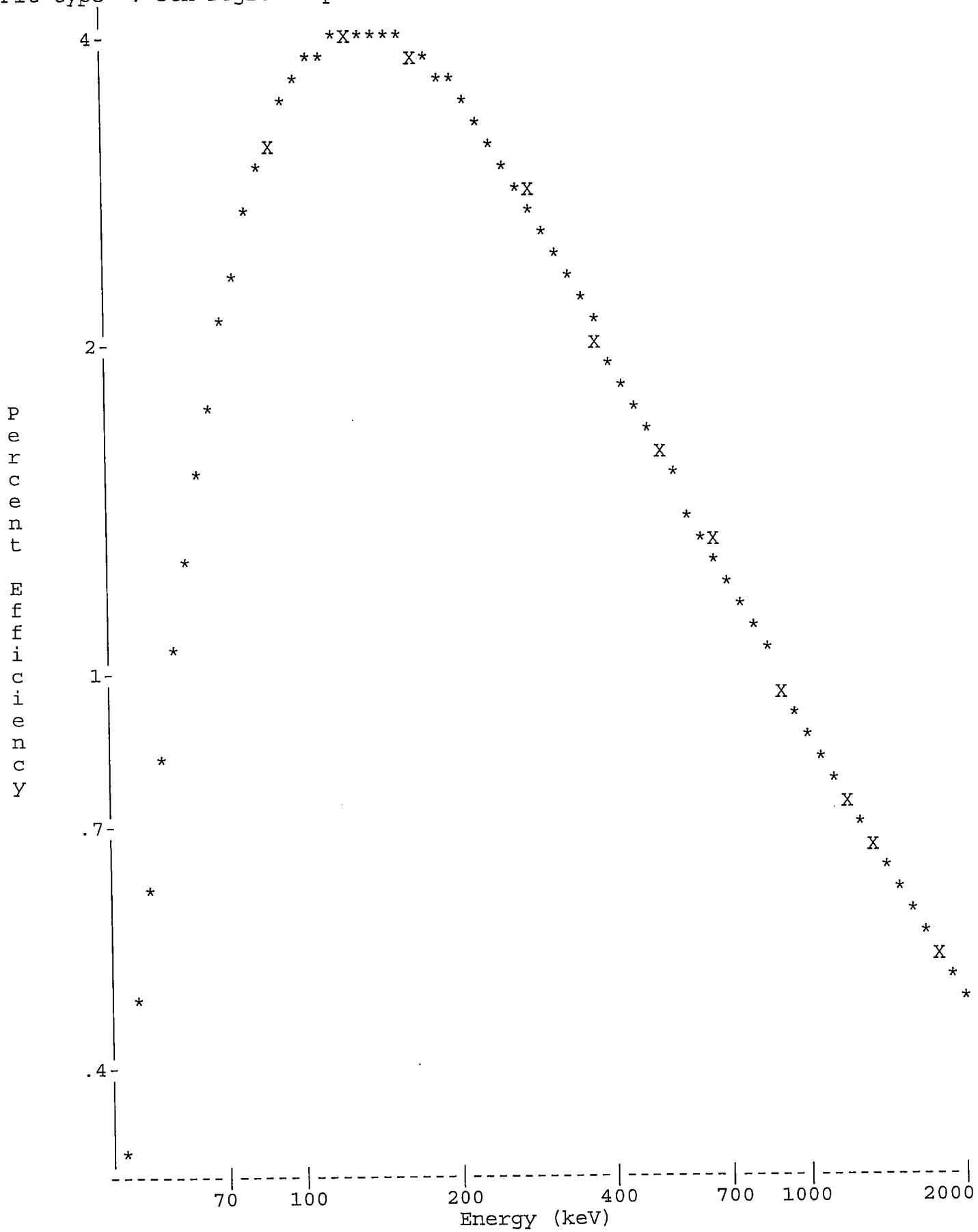
Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46	1771	7771	1.04	87.31	5.13E-01	6.15E-02	8.6	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Spectrum : MCA0:[NDSCOUNT]TBE15$1
Calib Date: 26-DEC-2019 11:02
Detector :
Fit type : 5th Degree Empirical

Geometry : 15S100121719



Analyst:

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 26-DEC-2019 11:03:44.47
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 17-DEC-2019 17:50:39.58

LIMS No., Customer Name, Client ID: S100 5ML MIXED GAMMA CALIBRATION

Sample ID : 15S100121719
Sample Type : STD
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: CALIBRATION
Peak Evaluation - Identified and Unidentified

Smple Date: 1-JUN-2019 12:00:00.0
Geometry : 15S100121719
BKGFILE : 15BG112719MT
Real Time : 0 08:00:42.26
Live time : 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	46.46*	1723	7771	1.04	87.31	5.13E-01	5.98E-02	8.9	2.12E+00
2	1	88.05	25746	14202	1.04	170.64	3.22E+00	8.94E-01	1.1	3.91E+00
3	1	122.06	24312	13179	1.06	238.79	4.05E+00	8.44E-01	1.2	4.35E+00
4	1	136.47	3352	8440	1.16	267.67	4.09E+00	1.16E-01	5.4	3.17E+00
5	1	165.85	16652	8705	1.10	326.54	3.93E+00	5.78E-01	1.3	6.17E-01
6	1	255.01	1163	5534	1.27	505.18	3.02E+00	4.04E-02	11.5	3.24E+00
7	1	279.20	5239	6144	1.28	553.65	2.80E+00	1.82E-01	3.1	4.59E+00
8	1	391.67	21856	6546	1.28	778.99	2.07E+00	7.59E-01	1.0	1.92E+00
9	1	513.99	12954	5812	1.37	1024.07	1.59E+00	4.50E-01	1.5	8.62E-01
10	1	661.64	53315	6206	1.50	1319.87	1.25E+00	1.85E+00	0.6	2.69E+00
11	1	814.01	492	2156	1.57	1625.12	1.03E+00	1.71E-02	17.6	5.40E-01
12	1	898.03	27717	4410	1.69	1793.44	9.41E-01	9.62E-01	0.8	2.67E+00
13	1	1173.23	40376	2705	1.91	2344.71	7.40E-01	1.40E+00	0.6	1.97E+00
14	1	1332.50	36251	1393	2.02	2663.72	6.62E-01	1.26E+00	0.6	1.92E+00
15	1	1835.99	16141	429	2.41	3672.11	5.11E-01	5.60E-01	0.9	2.37E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	2-Sigma %Error
02-CD109	88.03	25746	3.72*	3.224E+00	7.454E+02	1.005E+03	2.26
03-CO57	122.06	24312	85.51*	4.048E+00	2.439E+01	4.062E+01	2.39
04-CE139	165.85	16652	80.35*	3.931E+00	1.831E+01	4.996E+01	2.61
05-HG203	279.20	5239	81.46*	2.804E+00	7.965E+00	1.545E+02	6.24
06-SN113	391.69	21856	64.90*	2.066E+00	5.660E+01	1.881E+02	2.05
07-SR85	513.99	12954	99.27*	1.594E+00	2.842E+01	2.396E+02	3.03
08-CS137	661.65	53315	85.12*	1.252E+00	1.737E+02	1.759E+02	1.11
09-Y88	898.02	27717	93.40*	9.409E-01	1.095E+02	4.003E+02	1.61
10-CO60	1173.22	40376	100.00	7.396E-01	1.896E+02	2.037E+02	1.18
	1332.49	36251	100.00*	6.623E-01	1.900E+02	2.042E+02	1.16
12-Y88	1836.01	16141	99.38*	5.112E-01	1.103E+02	4.032E+02	1.73

Flag: "*" = Keyline

Summary of Nuclide Activity
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected BQ/TOTAL	Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.900E+02	2.042E+02	0.024E+02	1.16	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.465E+03	2.861E+03			

Grand Total Activity : 1.465E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Unidentified Energy Lines
Sample ID : 15S100121719

Acquisition date : 17-DEC-2019 17:50:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	46.46	1723	7771	1.04	87.31	85	7	5.98E-02	17.8	5.13E-01	
1	136.47	3352	8440	1.16	267.67	263	10	1.16E-01	10.8	4.09E+00	
1	255.01	1163	5534	1.27	505.18	501	8	4.04E-02	22.9	3.02E+00	
1	814.01	492	2156	1.57	1625.12	1621	9	1.71E-02	35.1	1.03E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	15	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	11	73.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected BQ/TOTAL	Wtd Mean Decay Corr BQ/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
02-CD109	462.90D	1.35	7.454E+02	1.005E+03	0.023E+03	2.26	
03-CO57	270.90D	1.67	2.439E+01	4.062E+01	0.097E+01	2.39	
04-CE139	137.66D	2.73	1.831E+01	4.996E+01	0.130E+01	2.61	
05-HG203	46.61D	19.4	7.965E+00	1.545E+02	0.096E+02	6.24	
06-SN113	115.10D	3.32	5.660E+01	1.881E+02	0.038E+02	2.05	
07-SR85	64.84D	8.43	2.842E+01	2.396E+02	0.073E+02	3.03	
08-CS137	30.17Y	1.01	1.737E+02	1.759E+02	0.020E+02	1.11	
09-Y88	106.65D	3.65	1.095E+02	4.003E+02	0.065E+02	1.61	
10-CO60	5.27Y	1.07	1.898E+02	2.039E+02	0.017E+02	0.83	
12-Y88	106.65D	3.65	1.103E+02	4.032E+02	0.070E+02	1.73	
			---------	---------			
	Total Activity :		1.464E+03	2.861E+03			

Grand Total Activity : 1.464E+03 2.861E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (BQ/TOTAL)	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
02-CD109	1.005E+03	2.268E+01	1.540E+01	0.000E+00	65.225
03-CO57	4.062E+01	9.703E-01	5.963E-01	0.000E+00	68.125
04-CE139	4.996E+01	1.304E+00	1.041E+00	0.000E+00	47.994
05-HG203	1.545E+02	9.637E+00	9.385E+00	0.000E+00	16.465
06-SN113	1.881E+02	3.847E+00	2.586E+00	0.000E+00	72.728
07-SR85	2.396E+02	7.257E+00	5.436E+00	0.000E+00	44.073

08-CS137	1.759E+02	1.955E+00	8.736E-01	0.000E+00	201.317
09-Y88	4.003E+02	6.455E+00	3.606E+00	0.000E+00	110.982
10-CO60	2.039E+02	1.690E+00	8.965E-01	0.000E+00	227.496
12-Y88	4.032E+02	6.962E+00	1.823E+00	0.000E+00	221.108

---- Non-Identified Nuclides ----

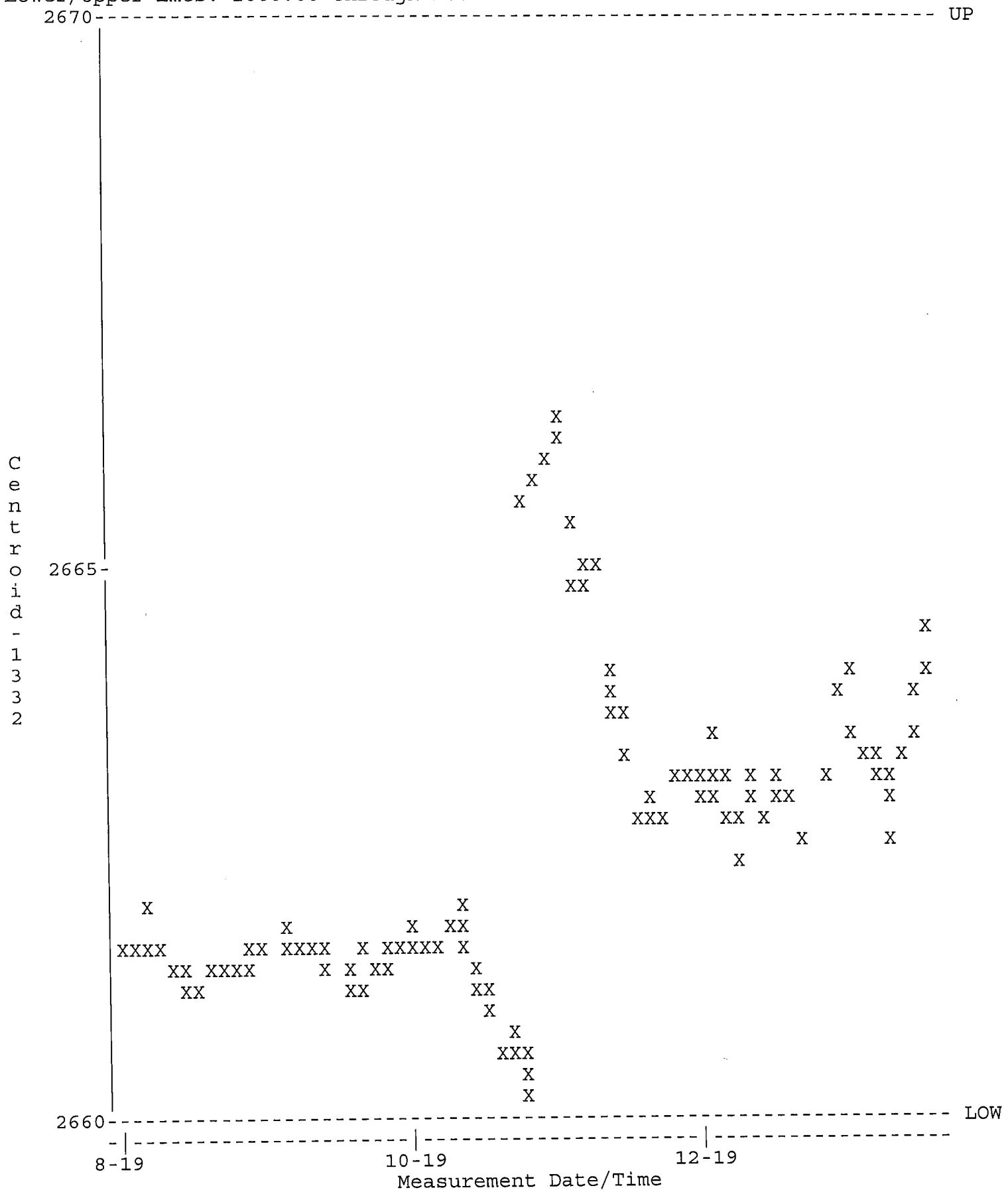
Nuclide	Key-Line Activity (BQ/TOTAL)	K.L. Ided	Act error	MDA (BQ/TOTAL)	MDA error	Act/MDA
01-AM241	-3.314E-01		1.415E+00	2.394E+00	0.000E+00	-0.138

```
A,15S100121719    ,12/26/2019 11:03,06/01/2019 12:00,   1.000E+00,S100 5ML MIXED
B,15S100121719    ,CALIBRATION         ,12/26/2019 11:02,15S100121719
C,02-CD109,YES,   1.005E+03,   2.268E+01,   1.540E+01,,   65.225
C,03-CO57 ,YES,   4.062E+01,   9.703E-01,   5.963E-01,,   68.125
C,04-CE139,YES,   4.996E+01,   1.304E+00,   1.041E+00,,   47.994
C,05-HG203,YES,   1.545E+02,   9.637E+00,   9.385E+00,,   16.465
C,06-SN113,YES,   1.881E+02,   3.847E+00,   2.586E+00,,   72.728
C,07-SR85 ,YES,   2.396E+02,   7.257E+00,   5.436E+00,,   44.073
C,08-CS137,YES,   1.759E+02,   1.955E+00,   8.736E-01,,  201.317
C,09-Y88  ,YES,   4.003E+02,   6.455E+00,   3.606E+00,,  110.982
C,10-CO60 ,YES,   2.039E+02,   1.690E+00,   8.965E-01,,  227.496
C,12-Y88  ,YES,   4.032E+02,   6.962E+00,   1.823E+00,,  221.108
C,01-AM241,NO ,  -3.314E-01,   1.415E+00,   2.394E+00,,   -0.138
```

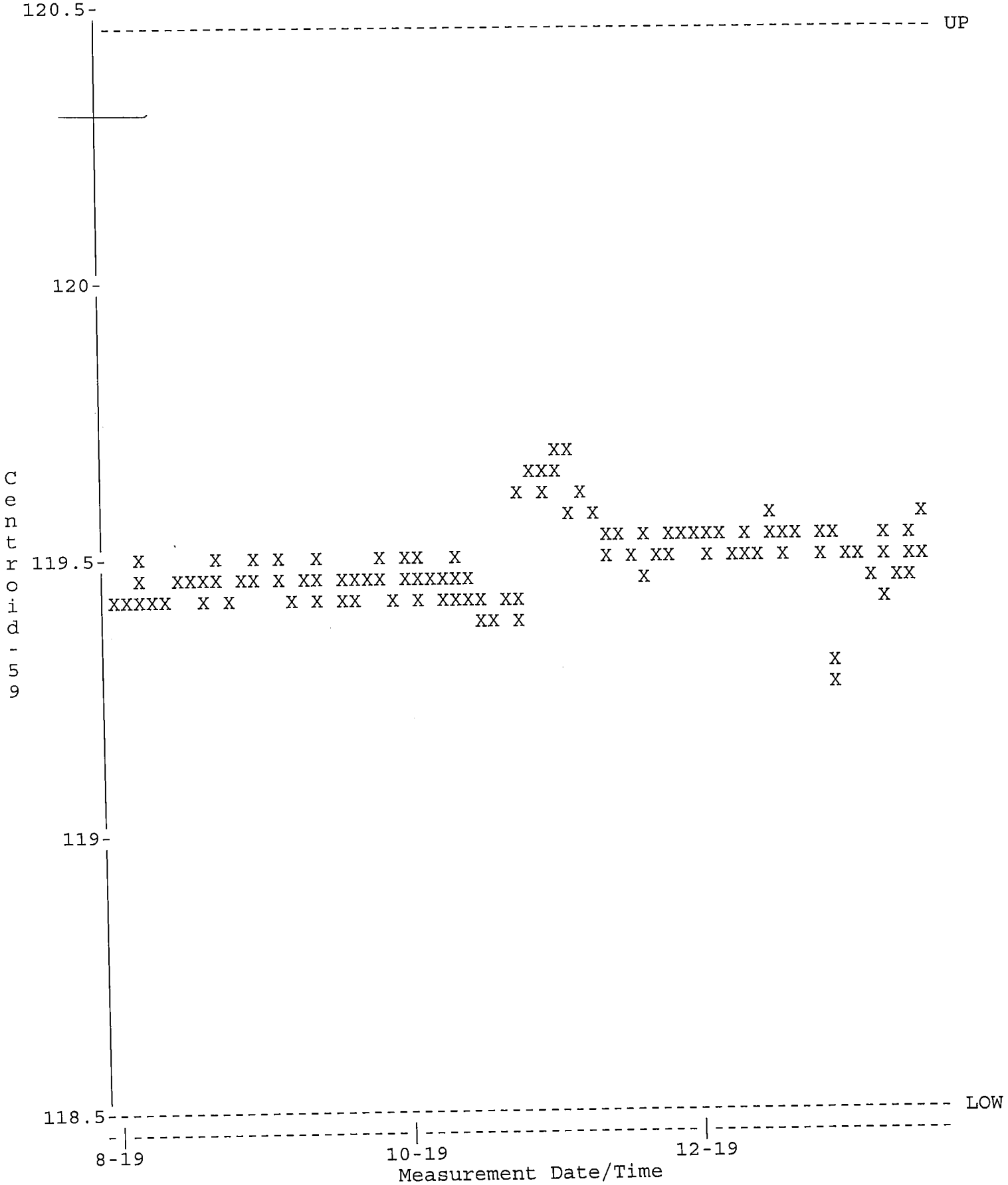
GAMMA SPECTROSCOPY

Daily Source and Background Checks

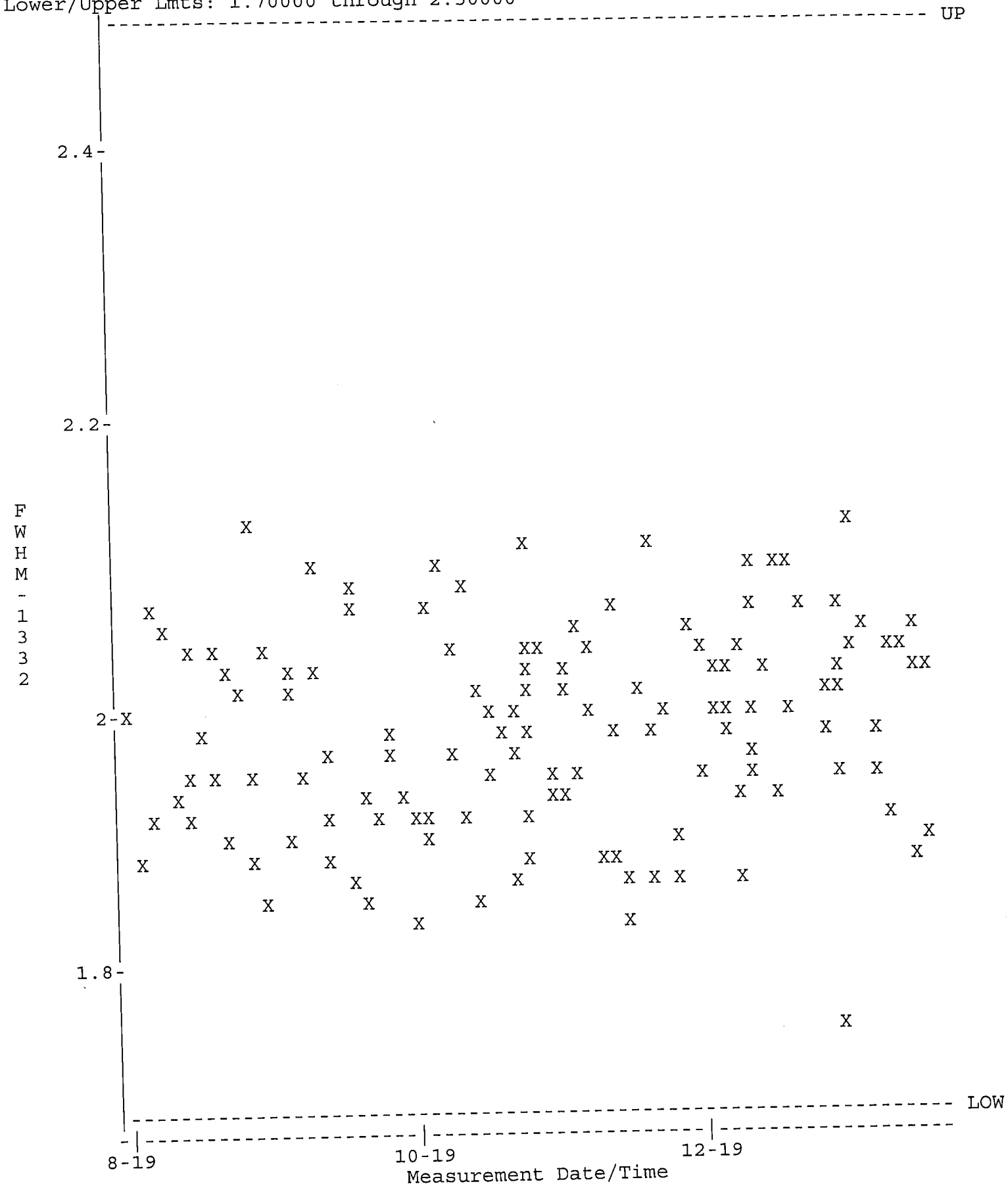
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



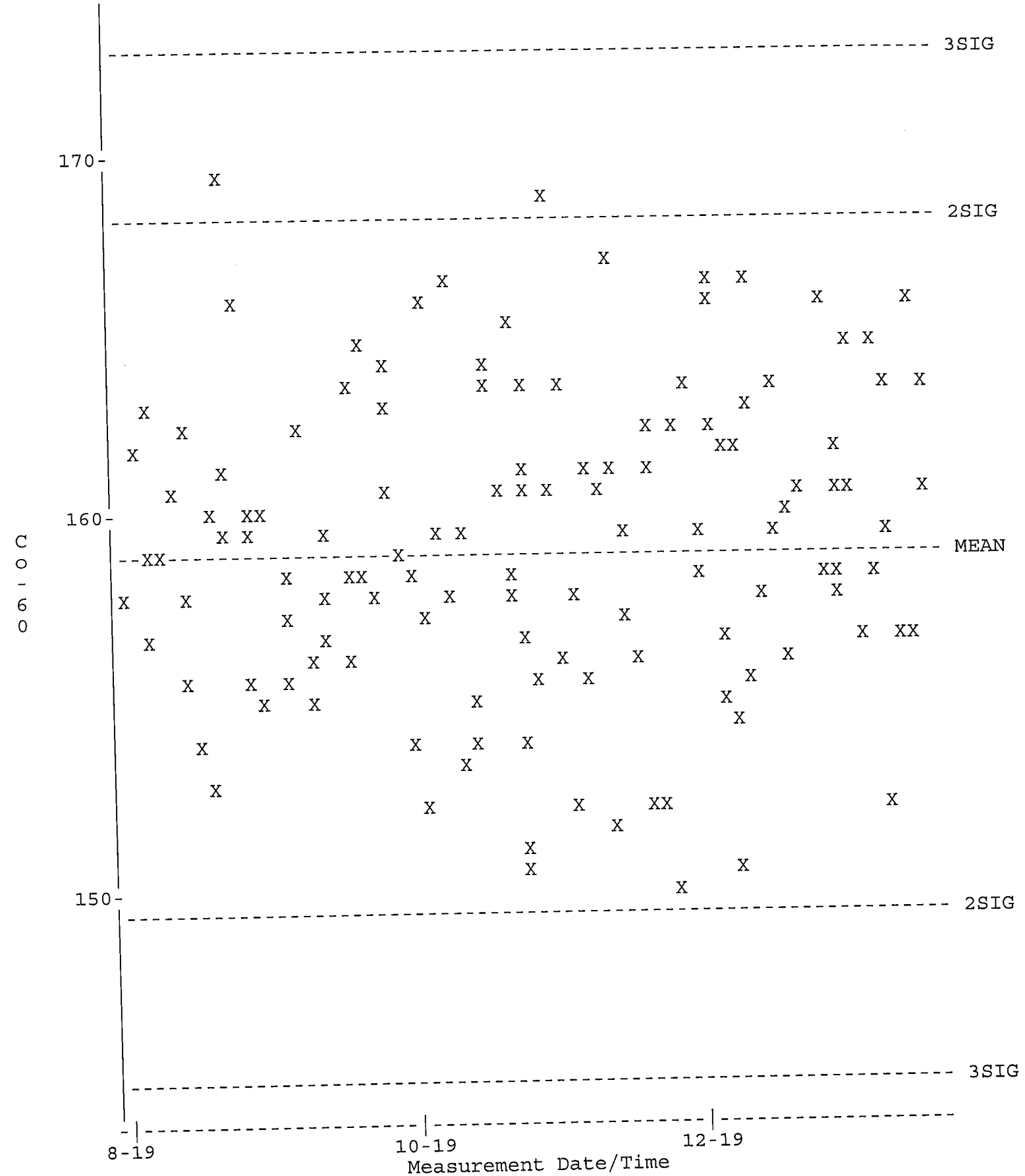
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



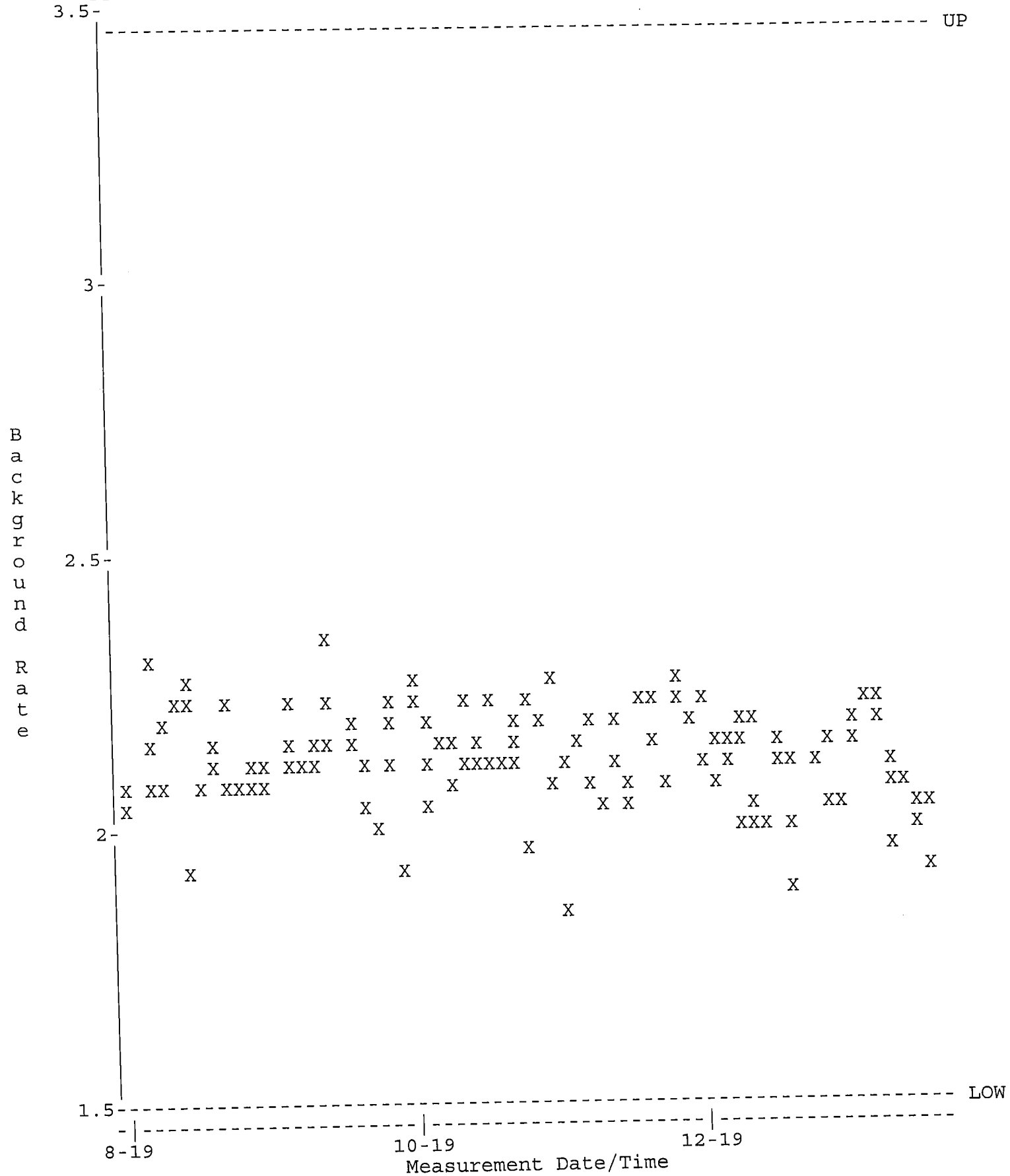
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



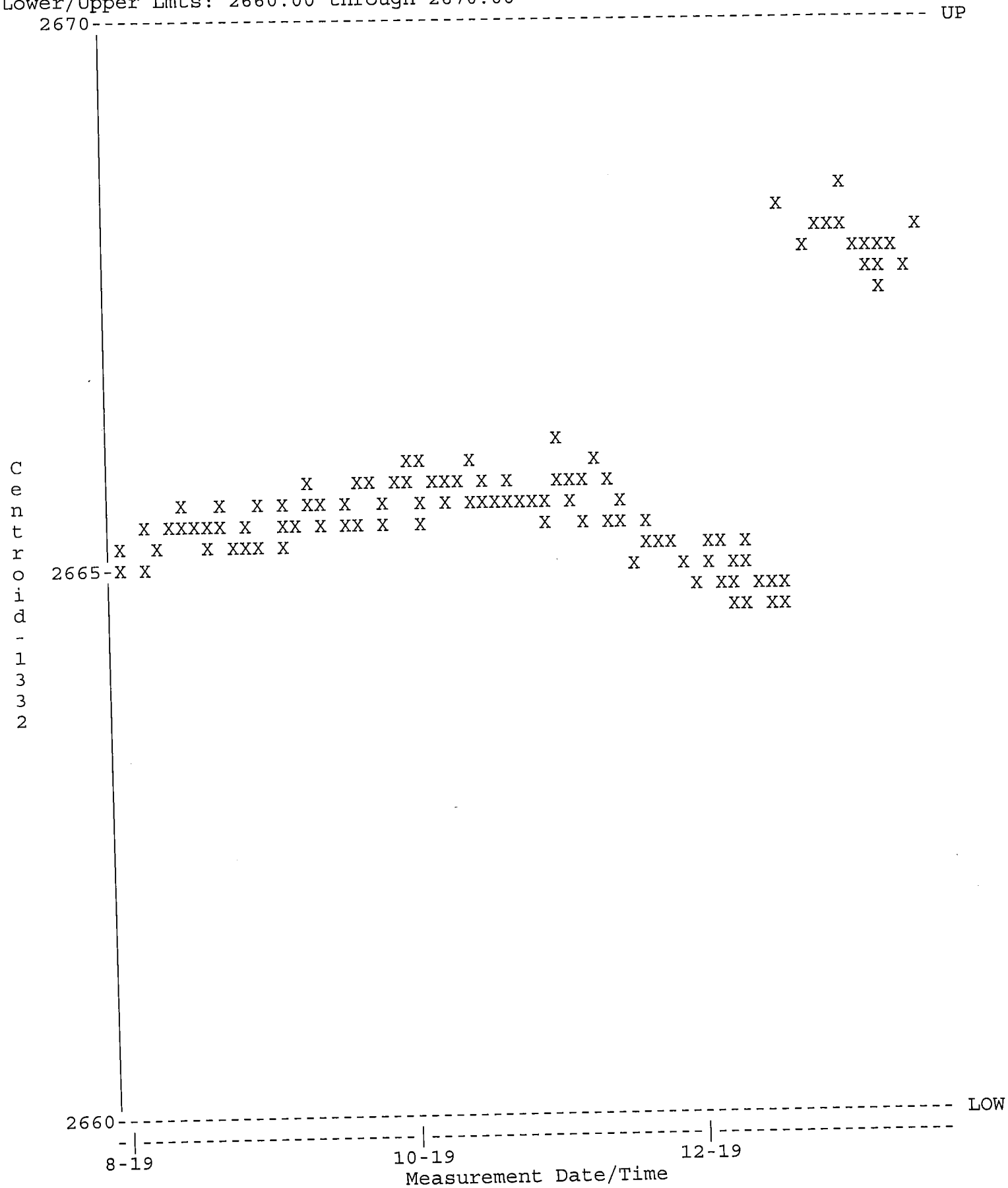
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE01_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 159.042 +- 4.74263 (2.98 %)



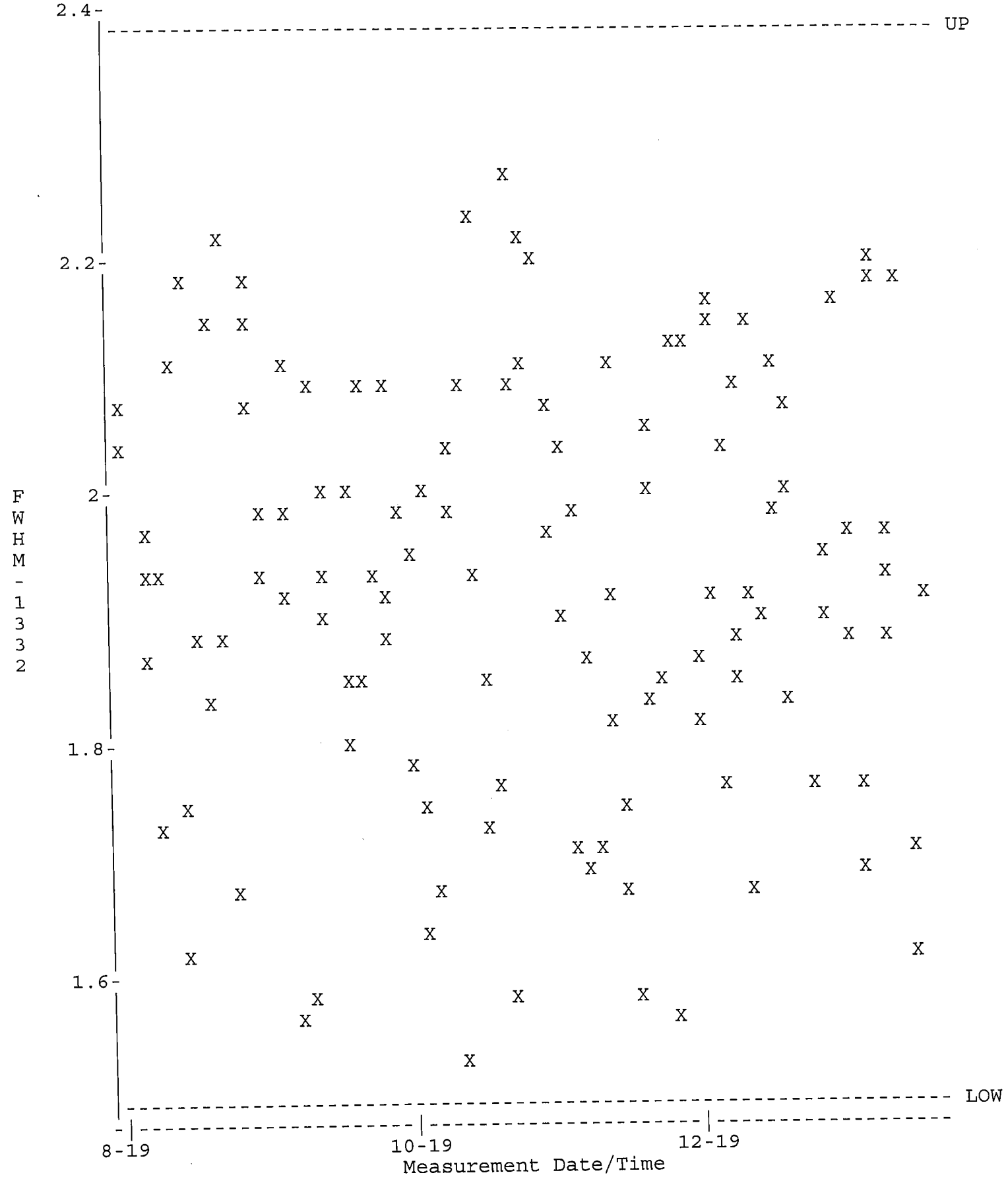
QA filename : DKB100:[GAMMA.QUALITY]TBE01_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 3.50000



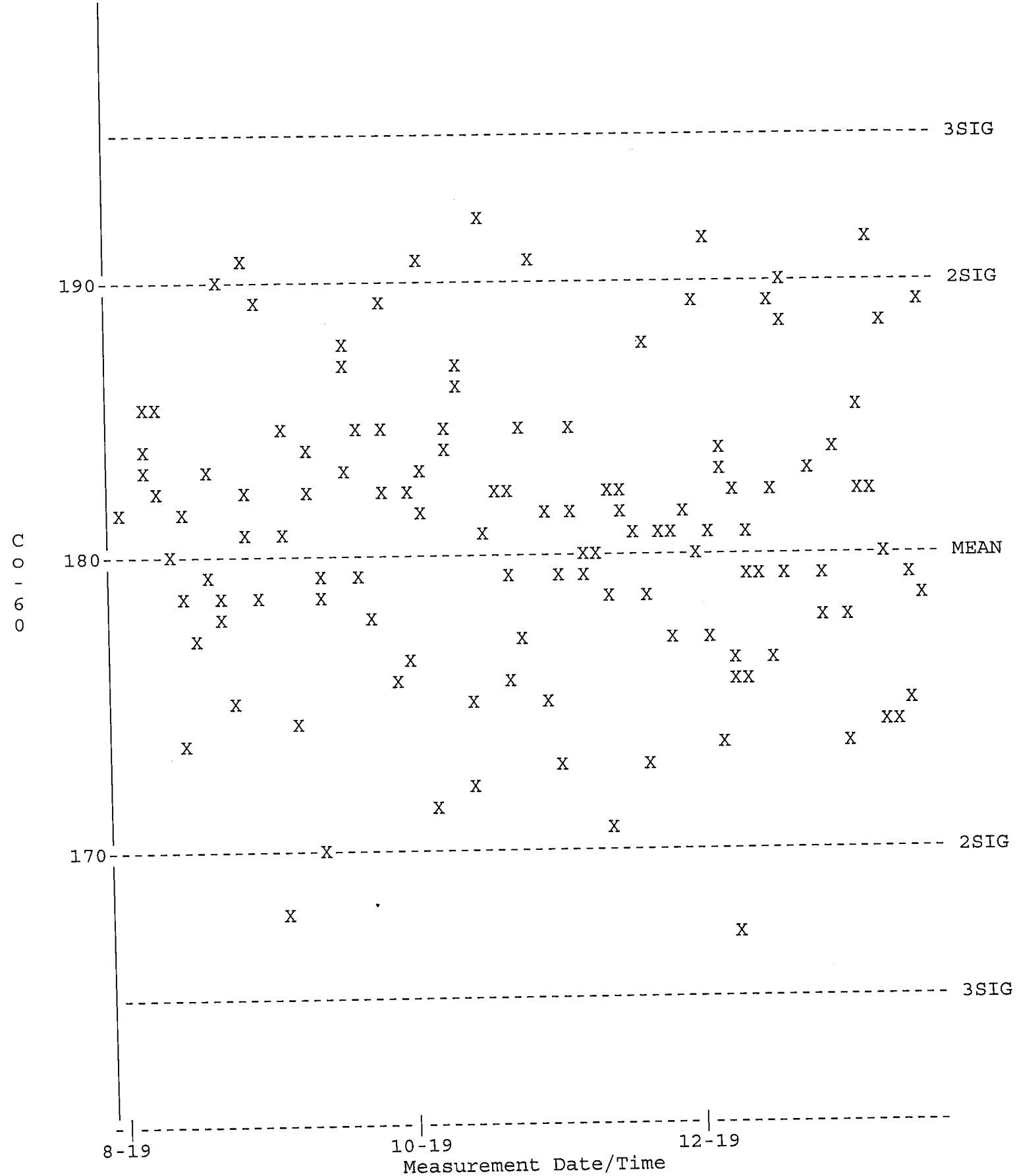
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



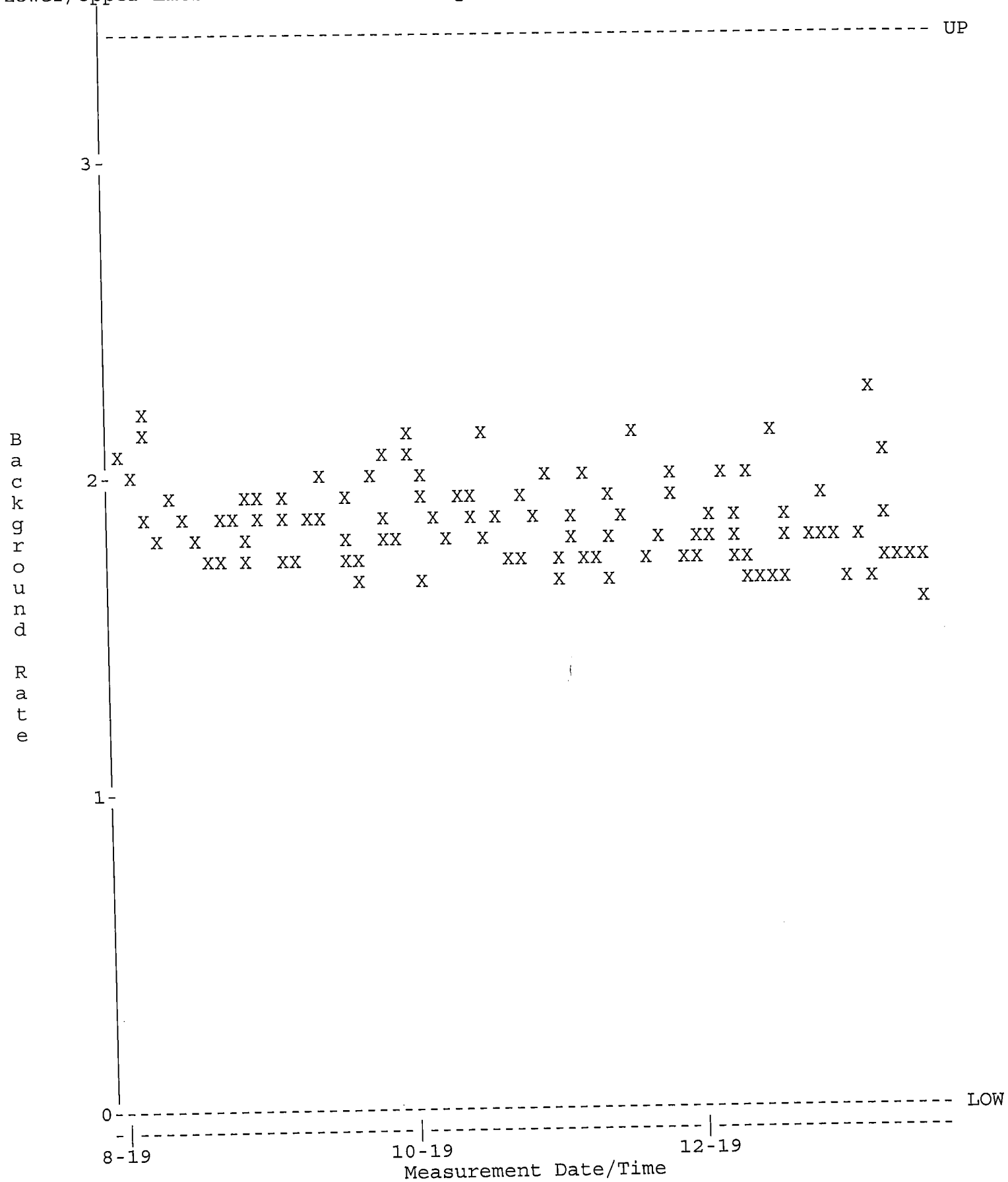
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.40000



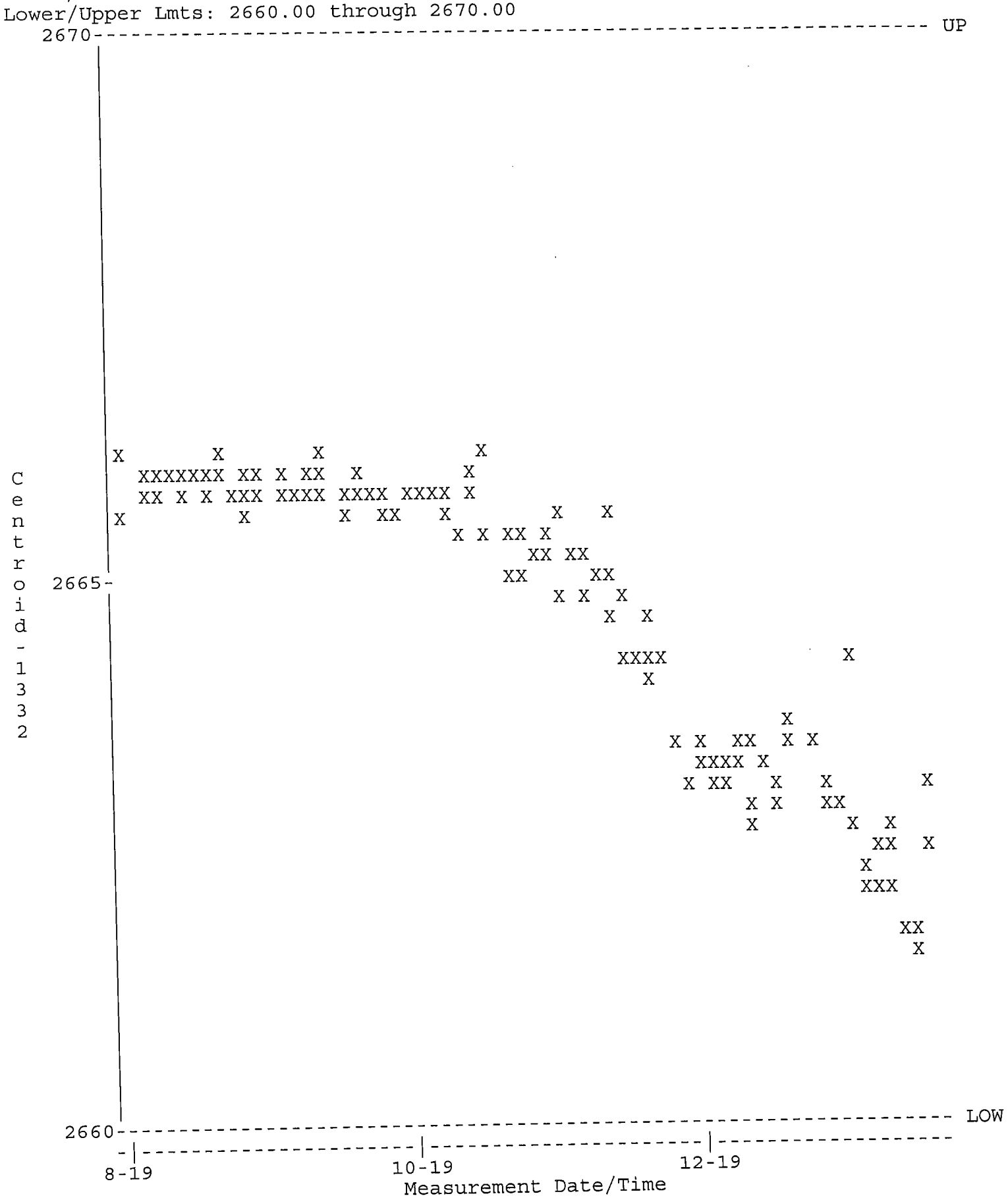
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE02_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 180.159 +- 5.09623 (2.83 %)



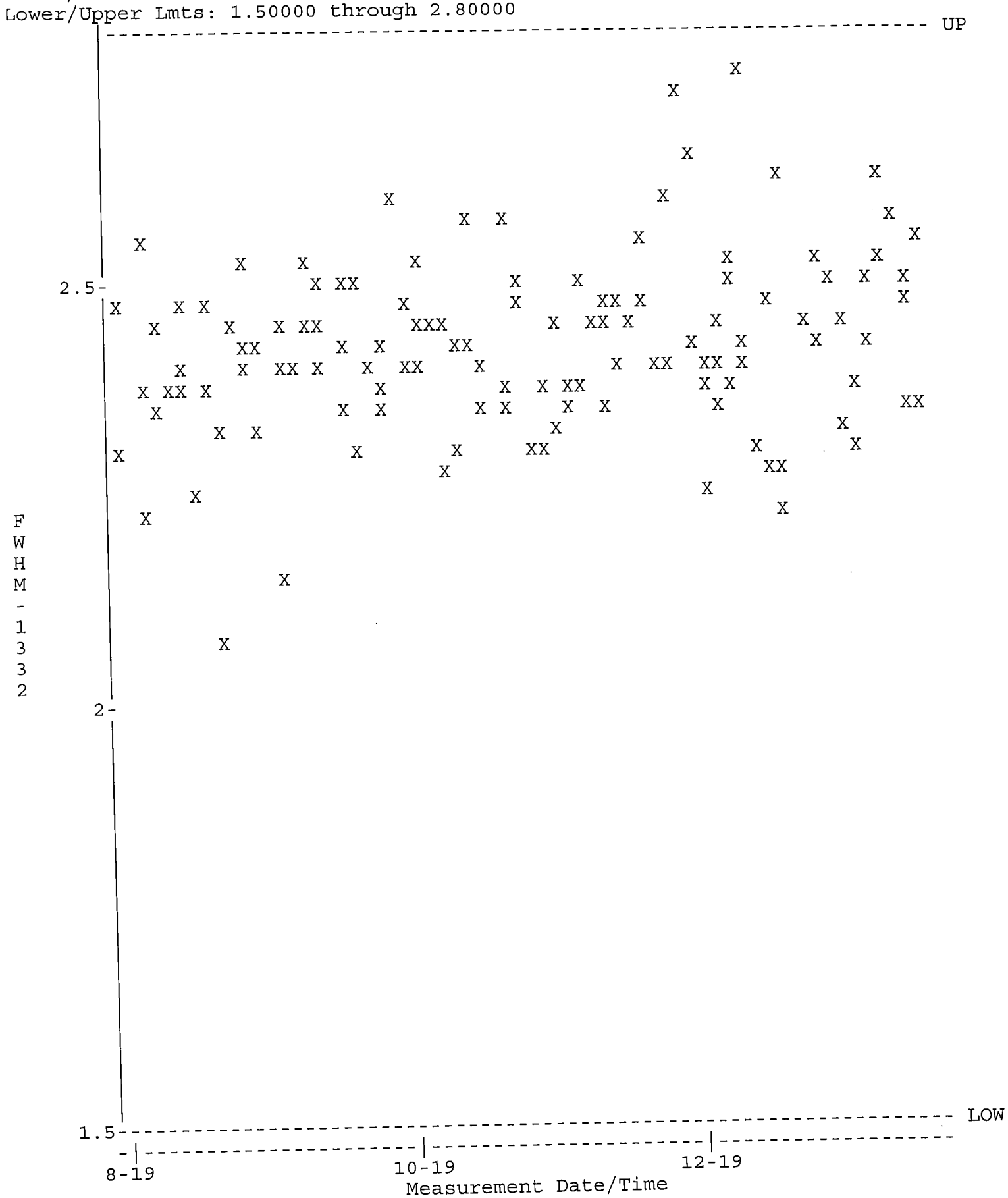
QA filename : DKB100:[GAMMA.QUALITY]TBE02_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



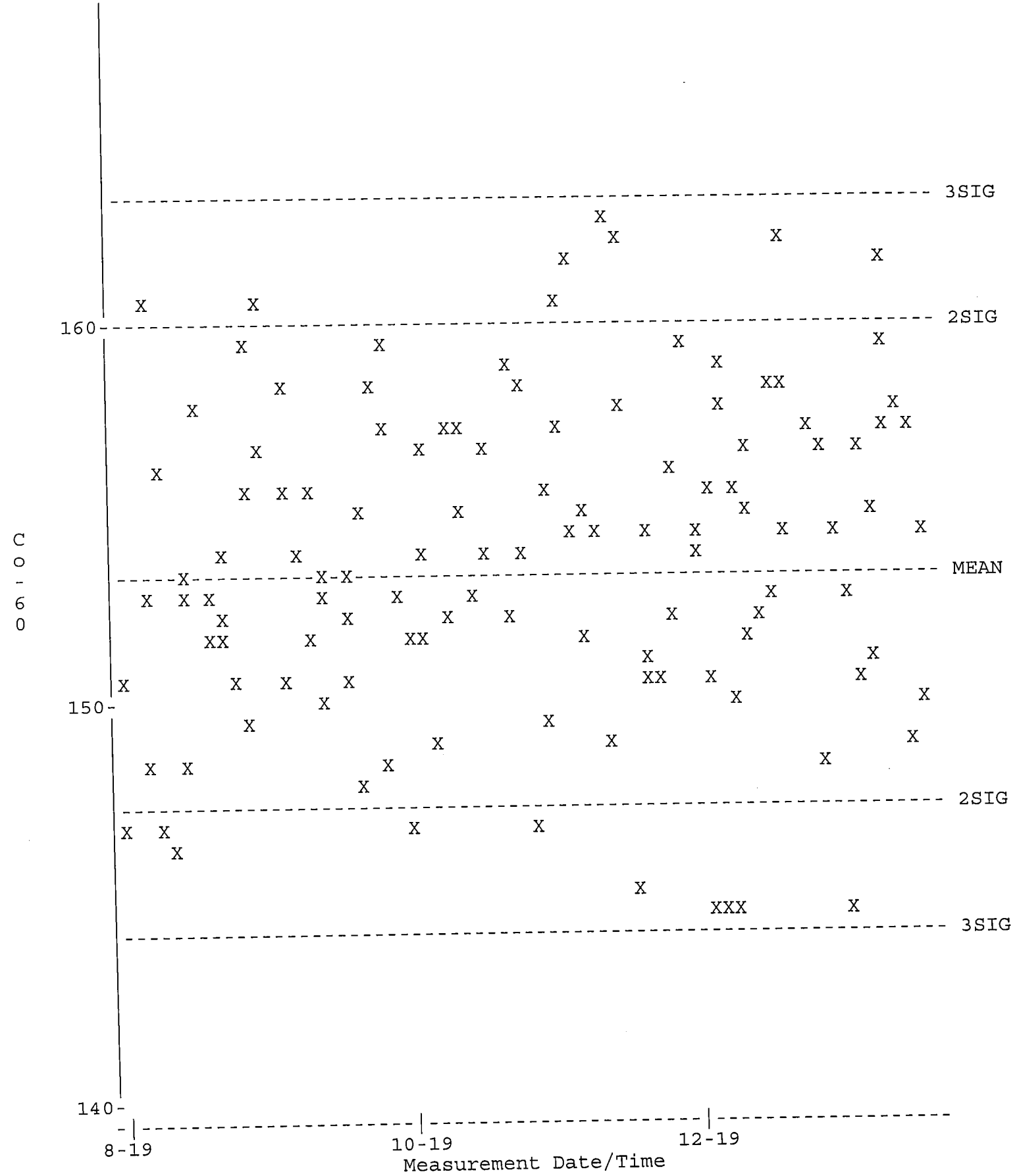
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



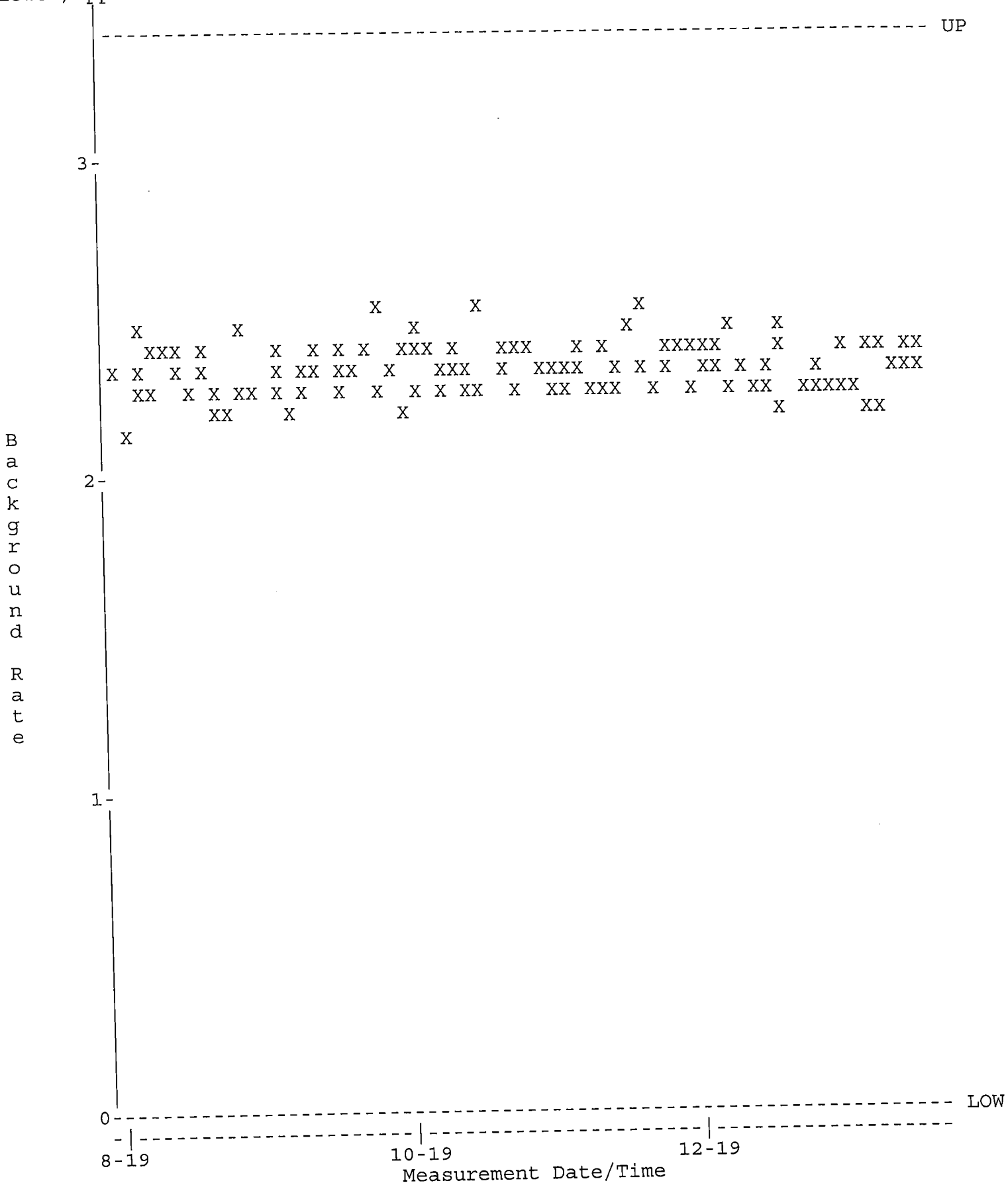
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.80000



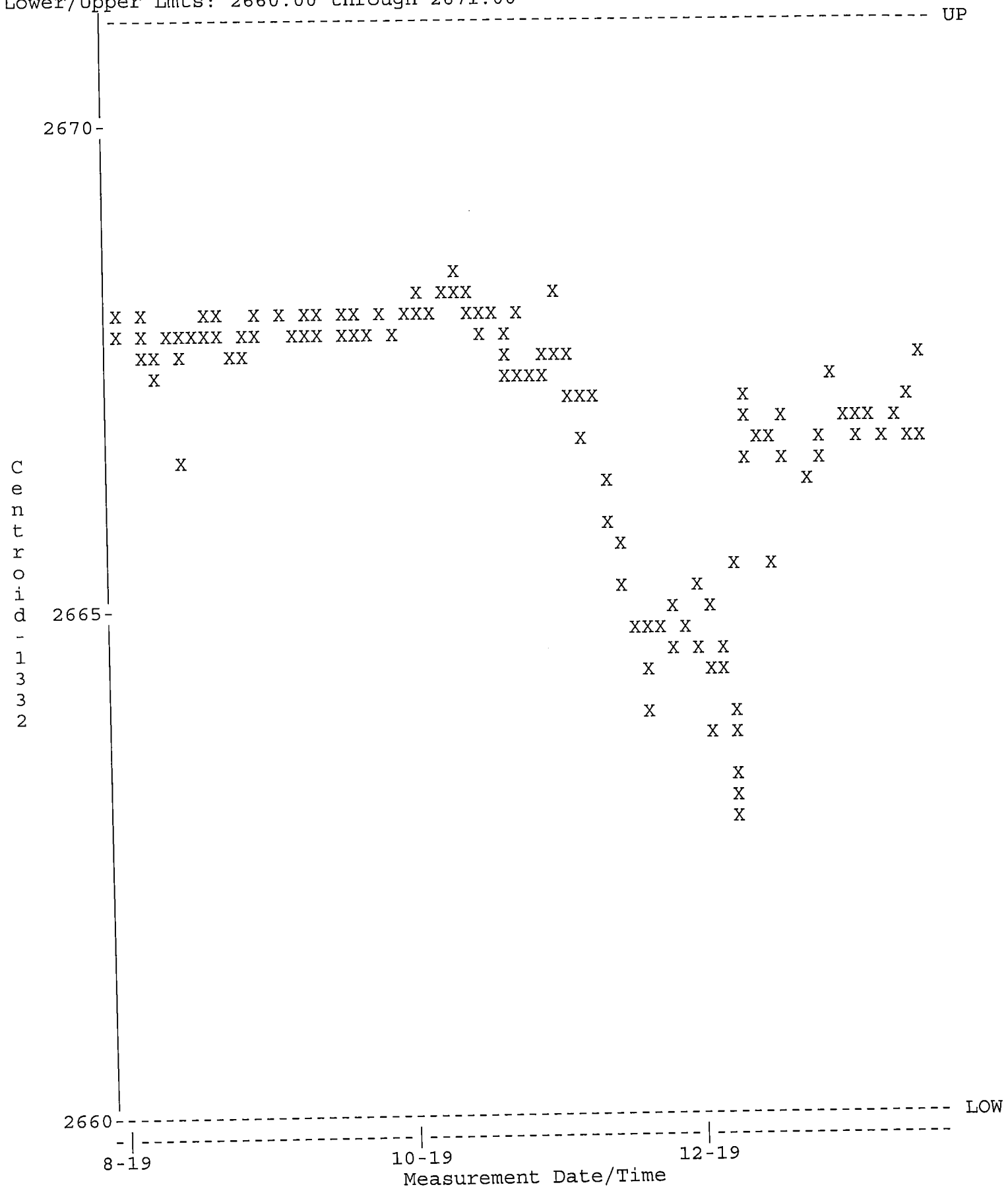
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE07_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 154.048 +- 3.18076 (2.06 %)



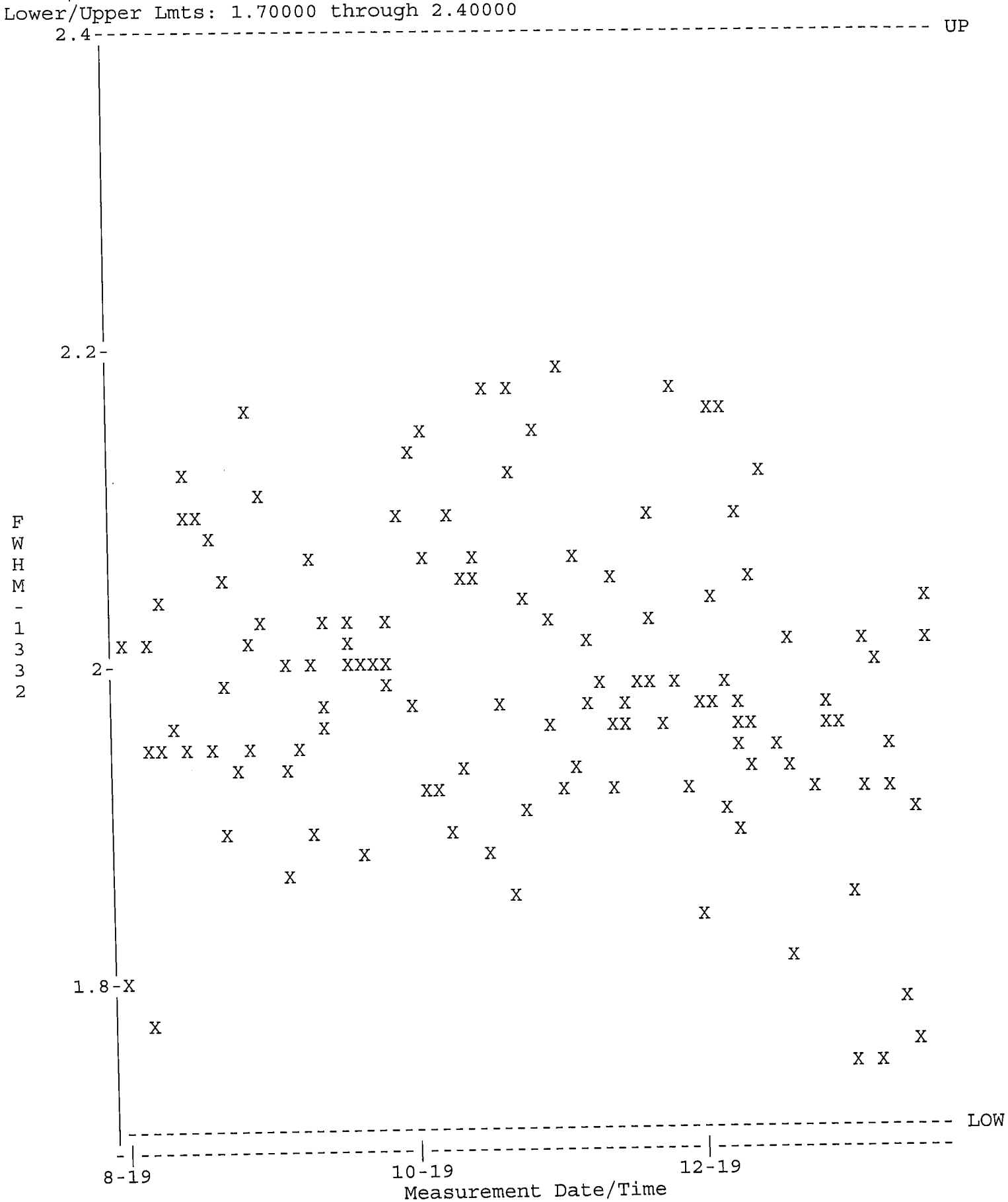
QA filename : DKB100:[GAMMA.QUALITY]TBE07_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



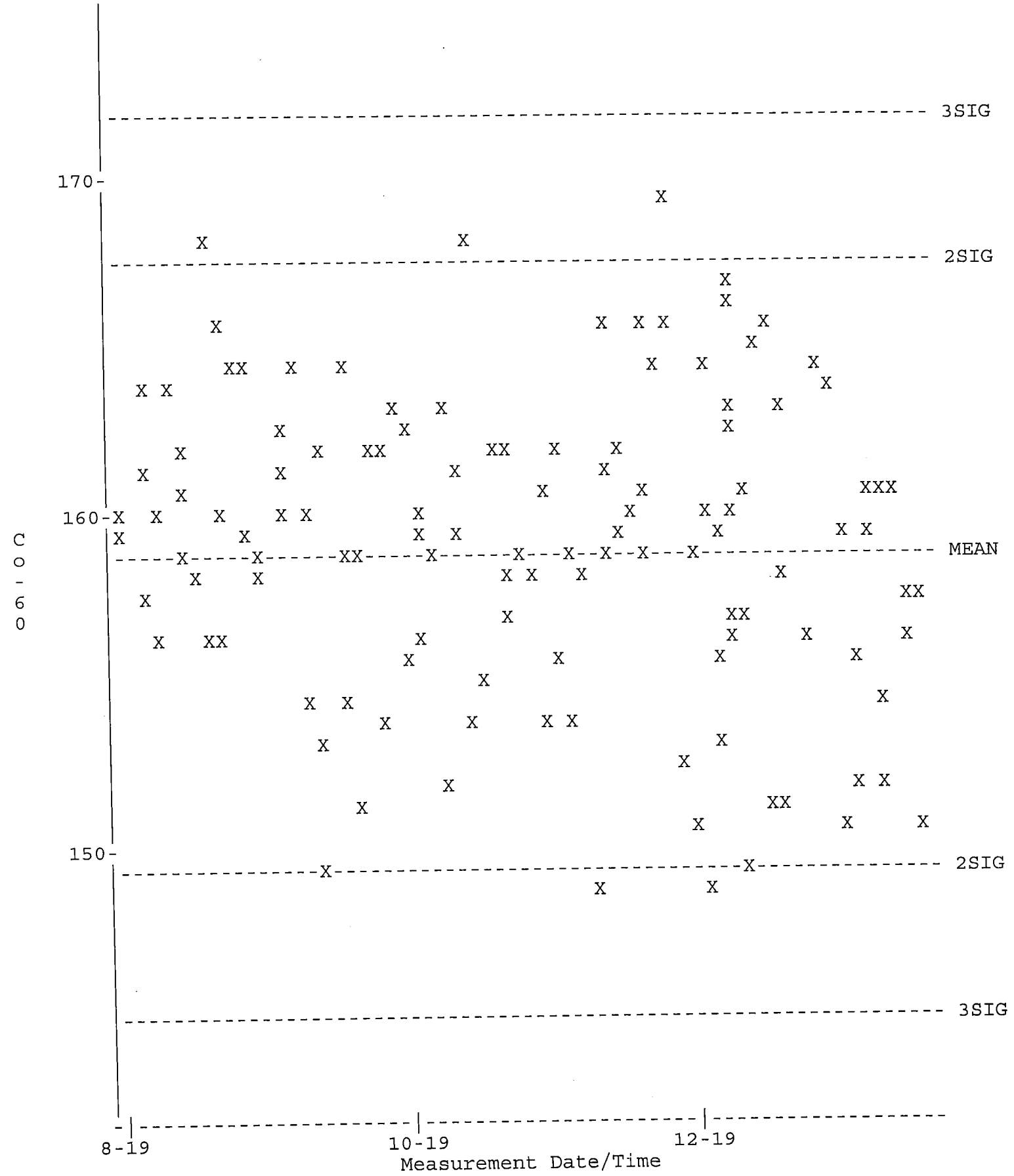
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2671.00



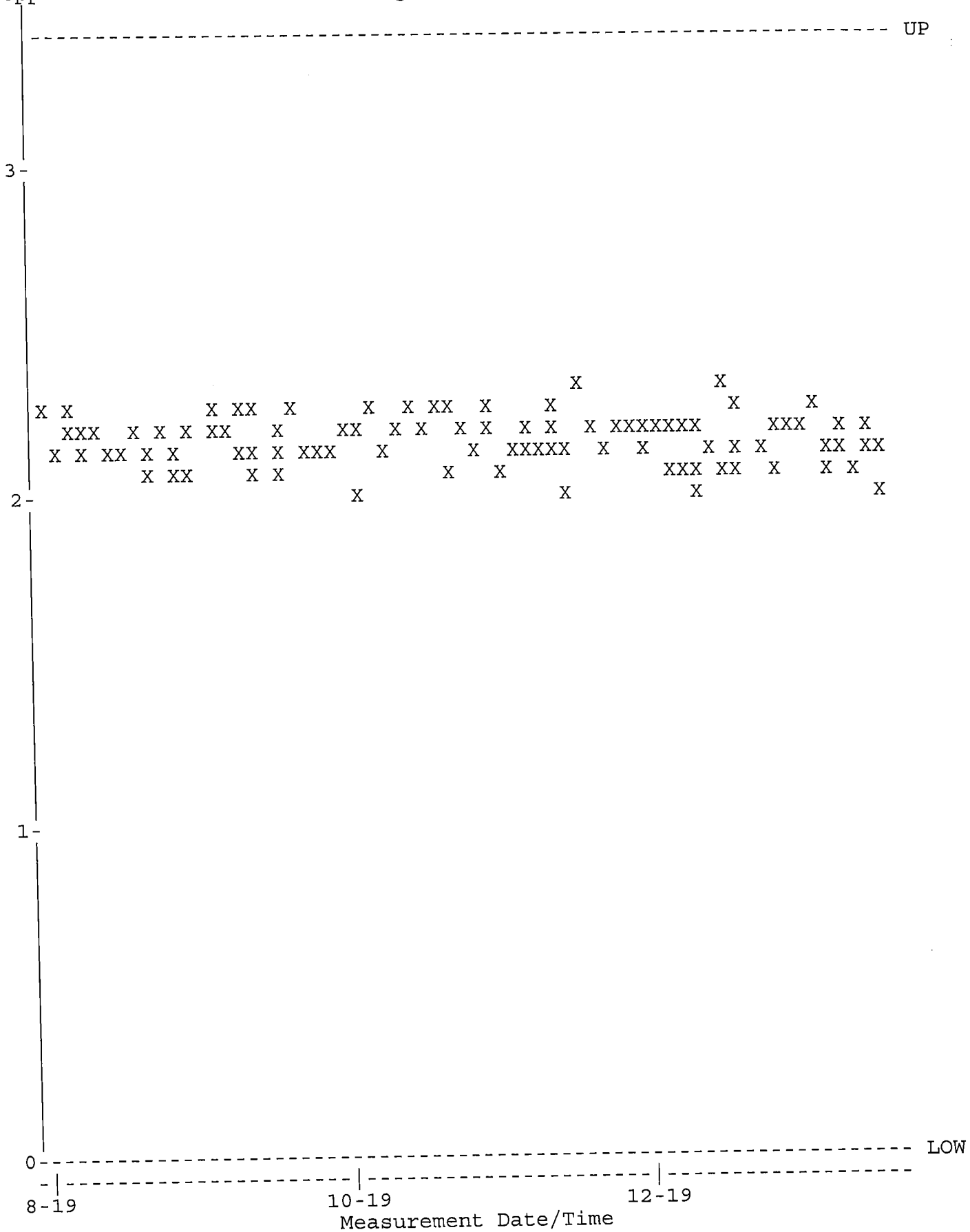
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.40000



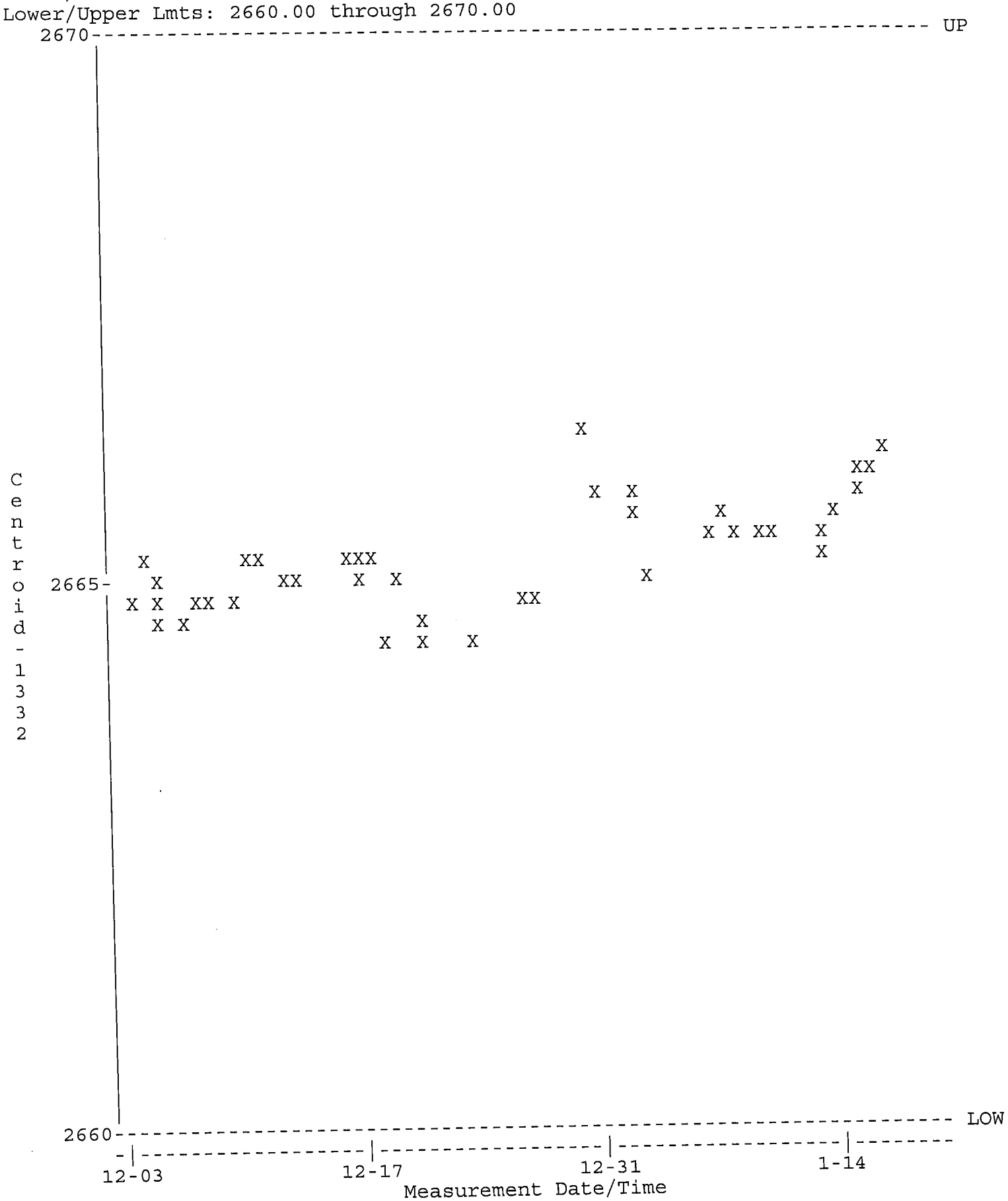
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE08_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 158.849 +- 4.44965 (2.80 %)



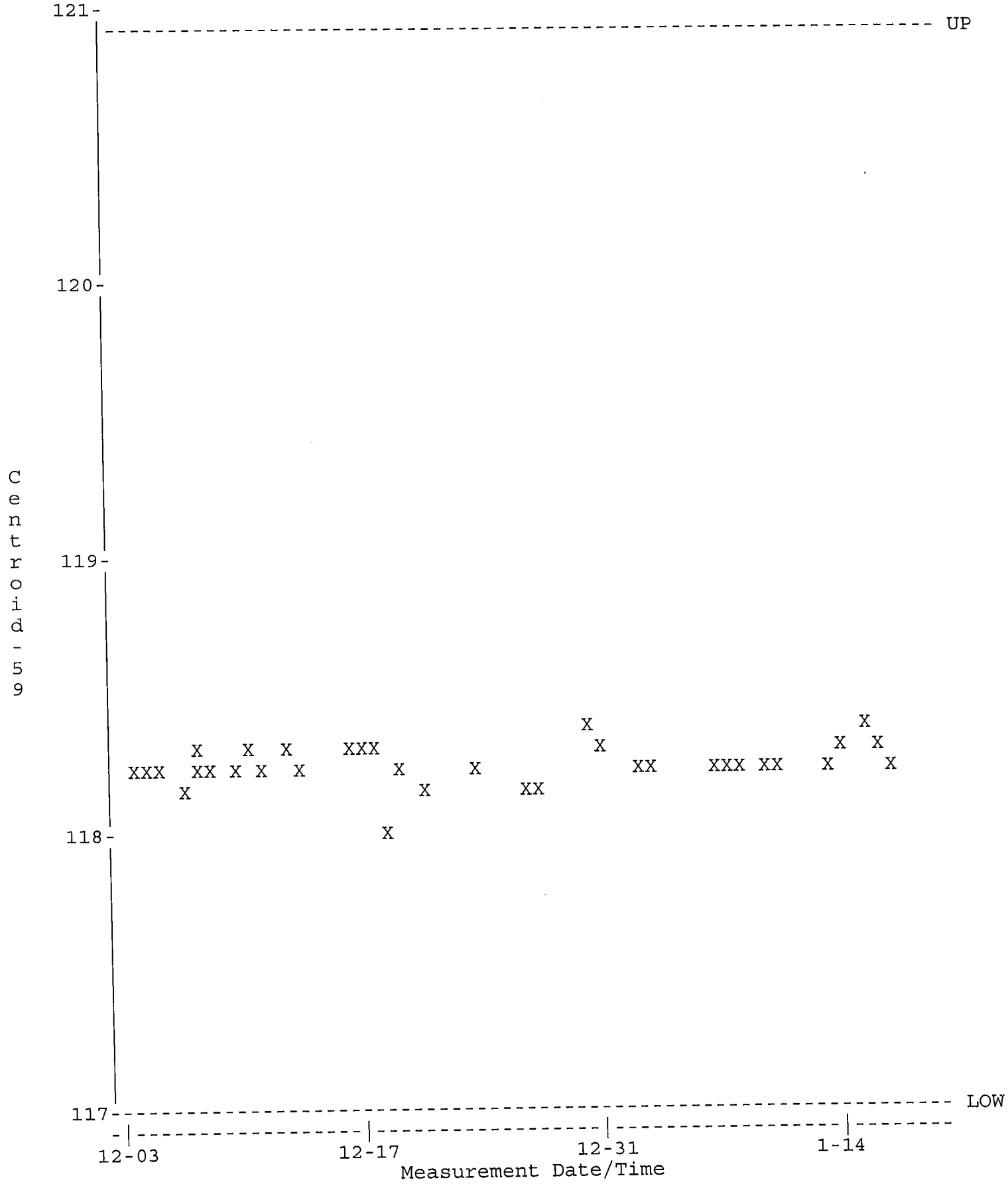
QA filename : DKB100:[GAMMA.QUALITY]TBE08_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



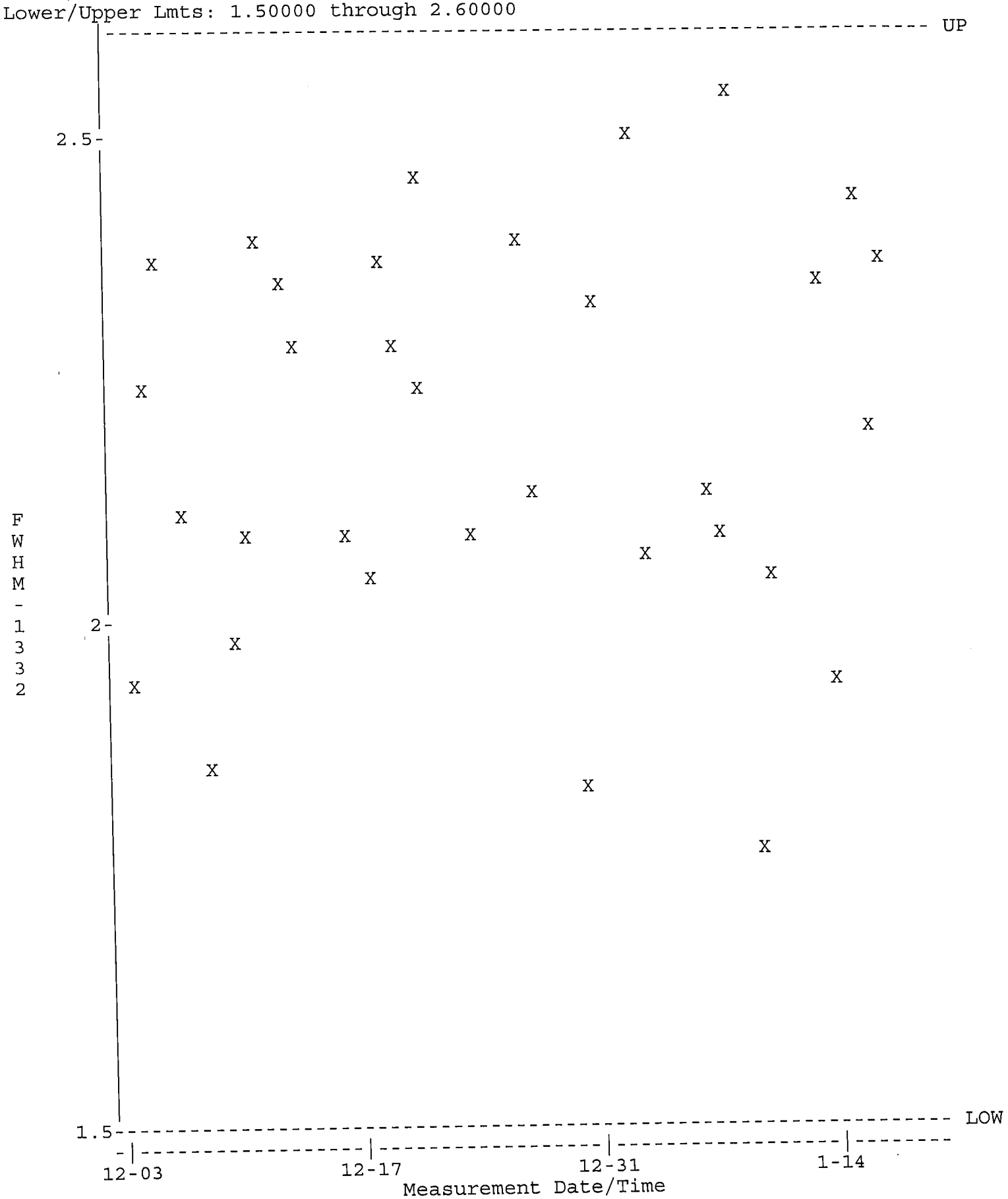
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



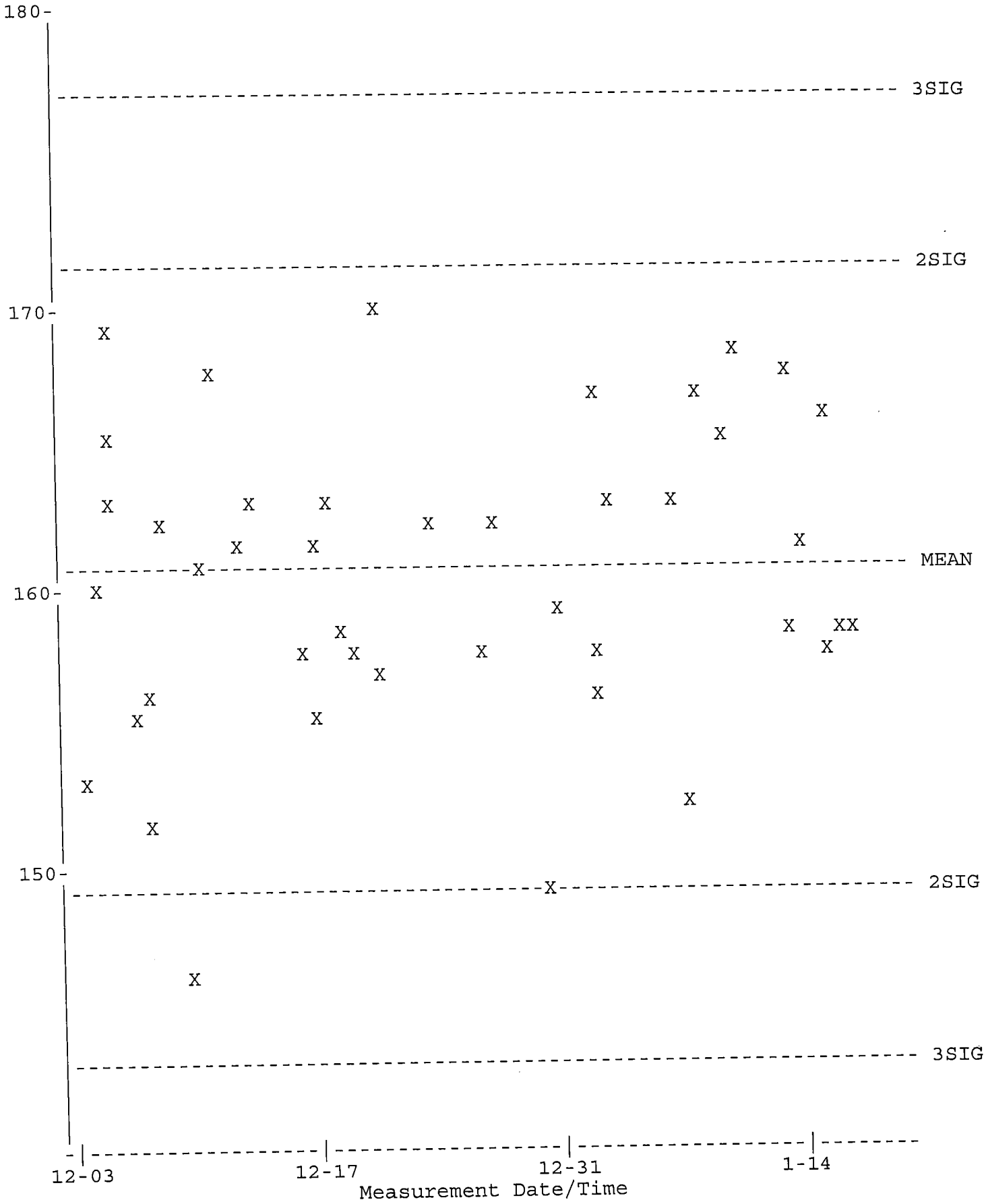
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 117.000 through 121.000



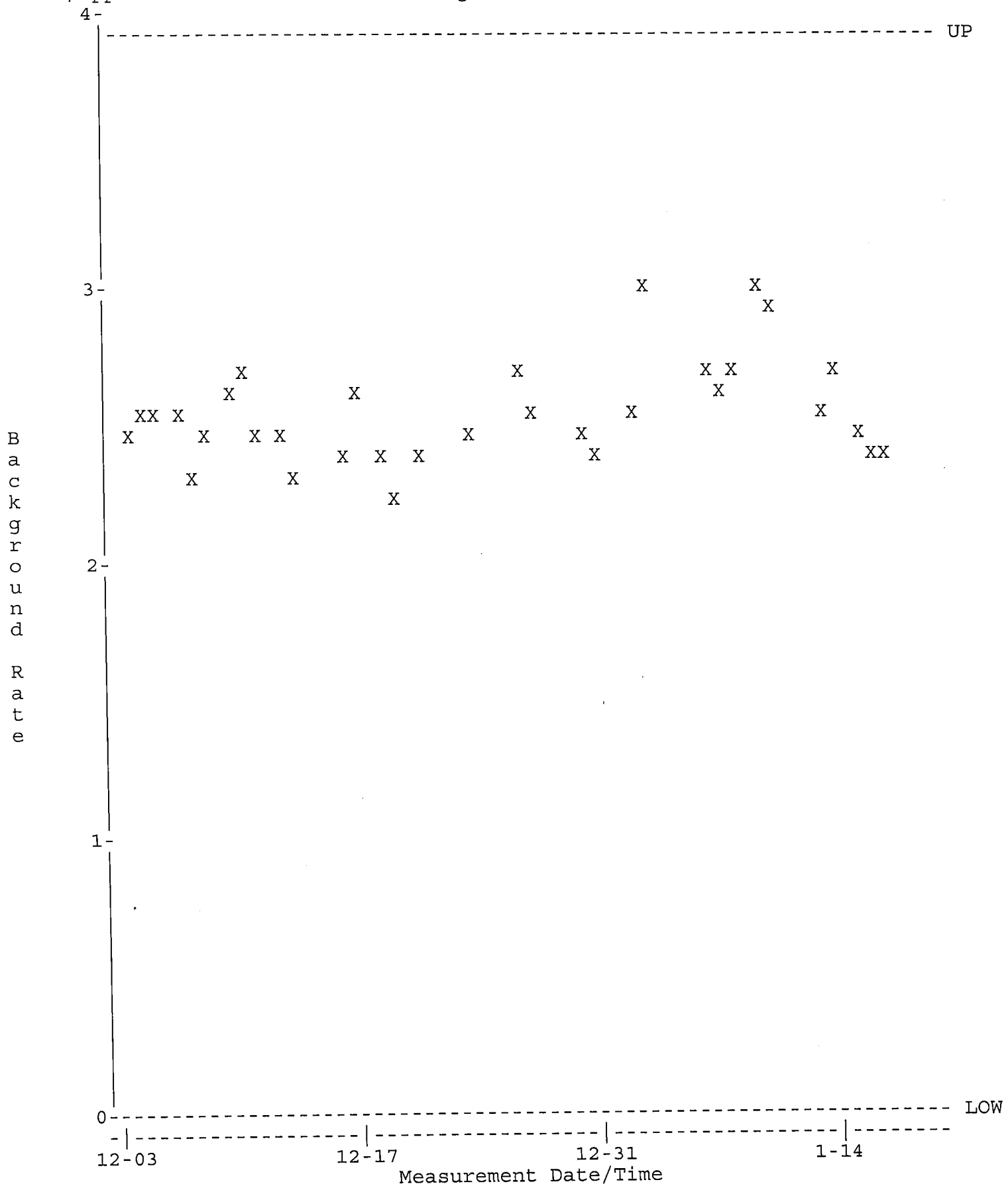
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.50000 through 2.60000



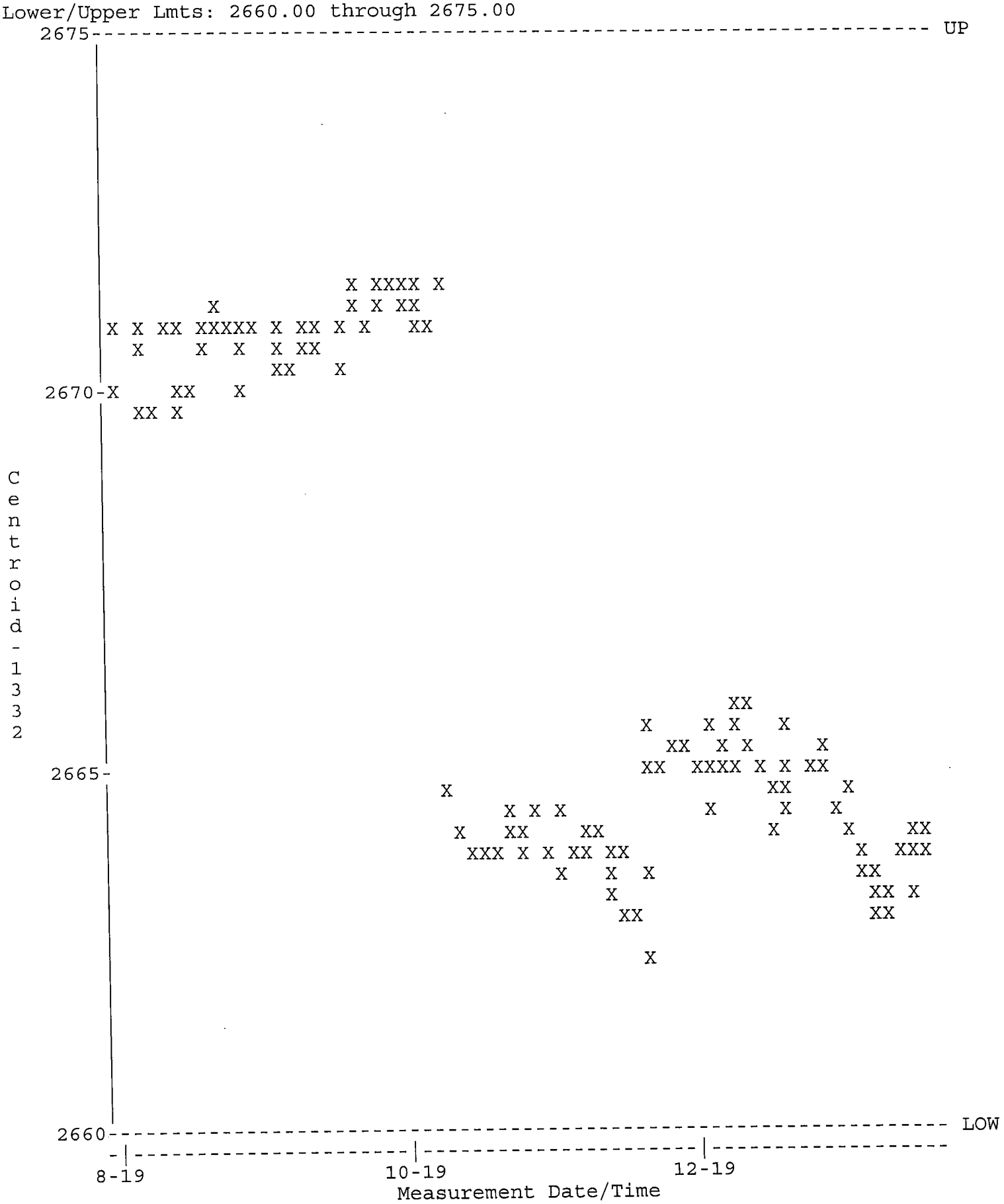
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE11_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 3-DEC-2019 17:27 through 20-JAN-2020 00:00
Mean +- Std Dev : 160.476 +- 5.62390 (3.50 %)



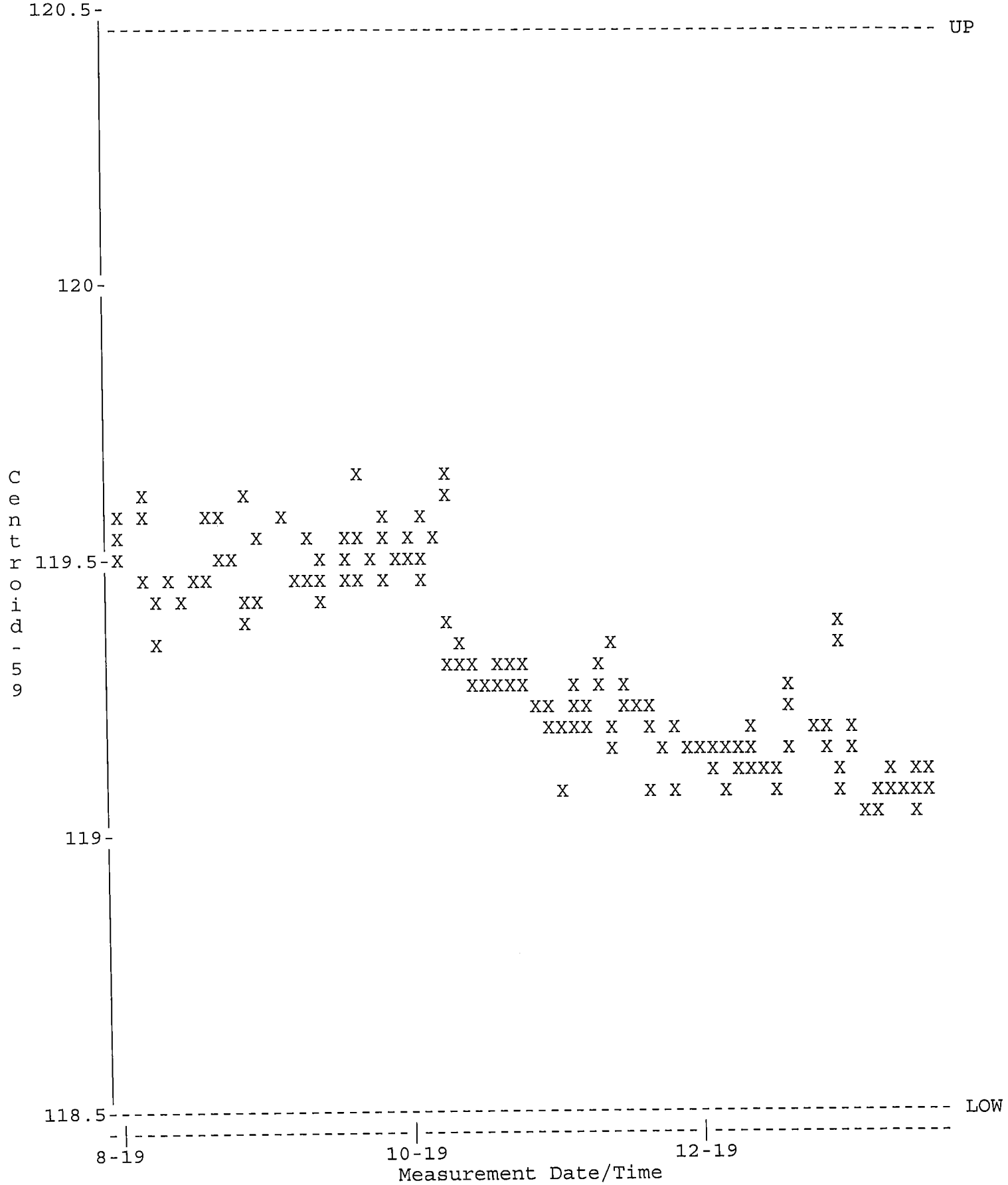
QA filename : DKB100:[GAMMA.QUALITY]TBE11_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 3-DEC-2019 17:49 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.00000



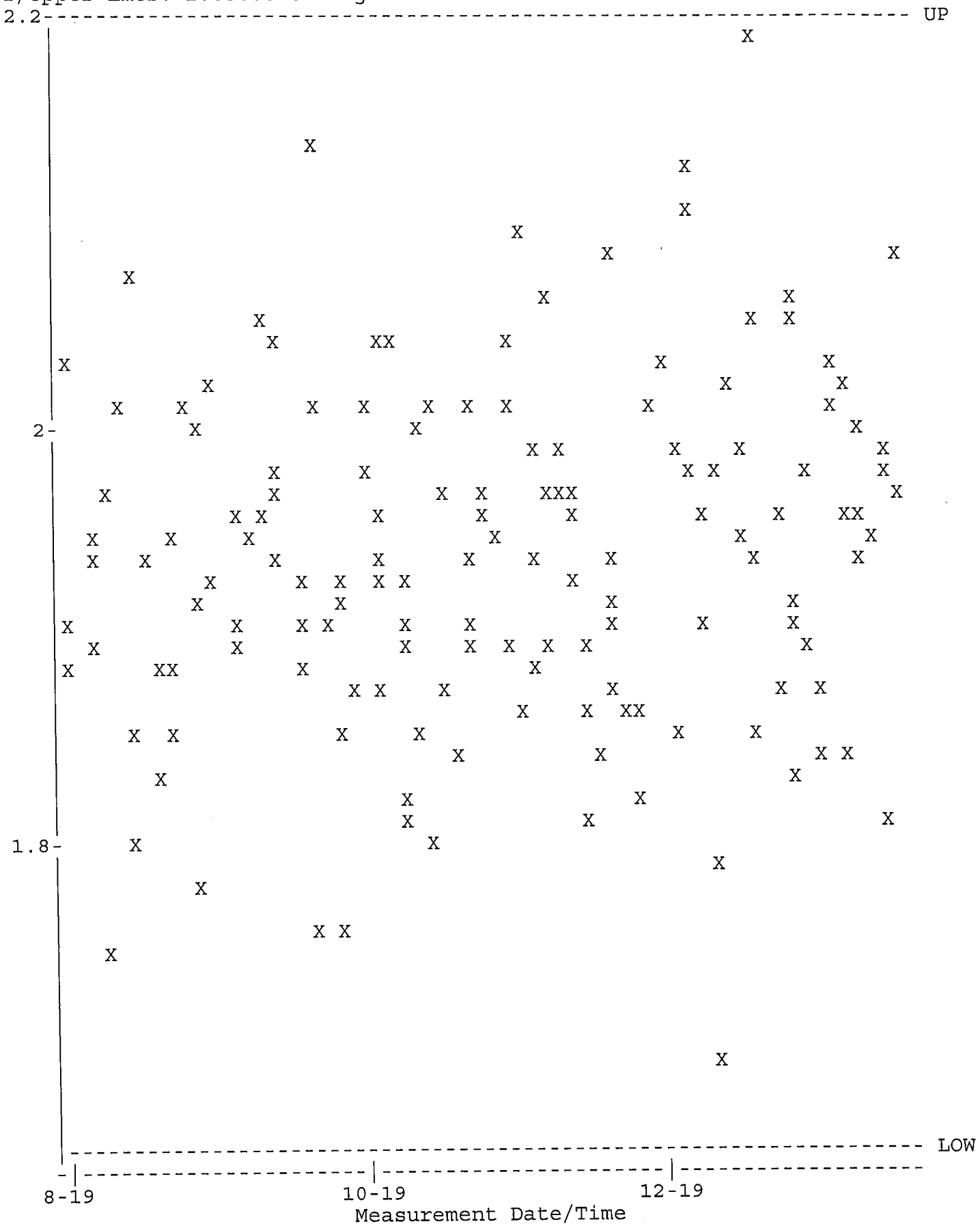
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2675.00



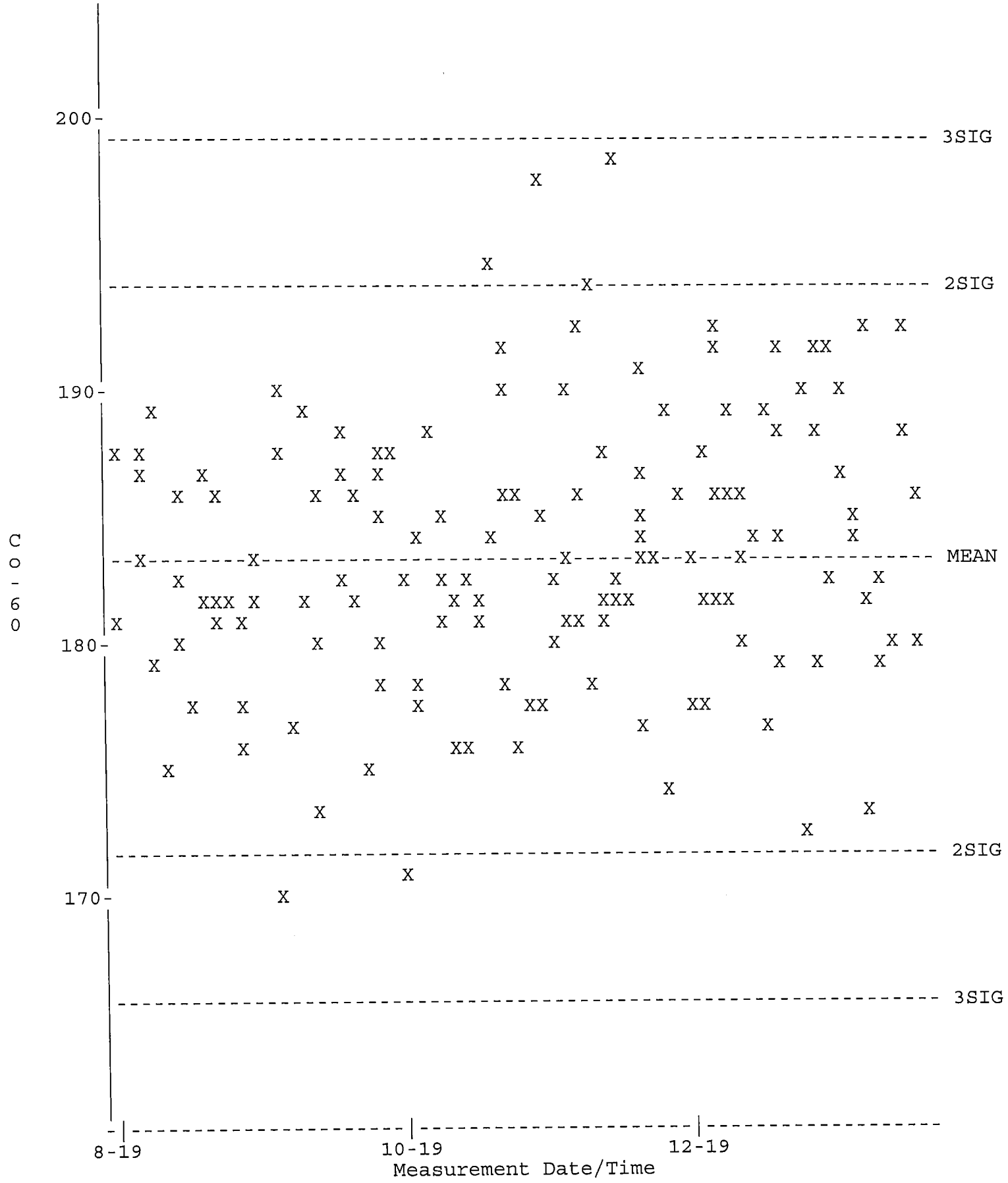
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSCENTRD-59 (Centroid-59)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 118.500 through 120.500



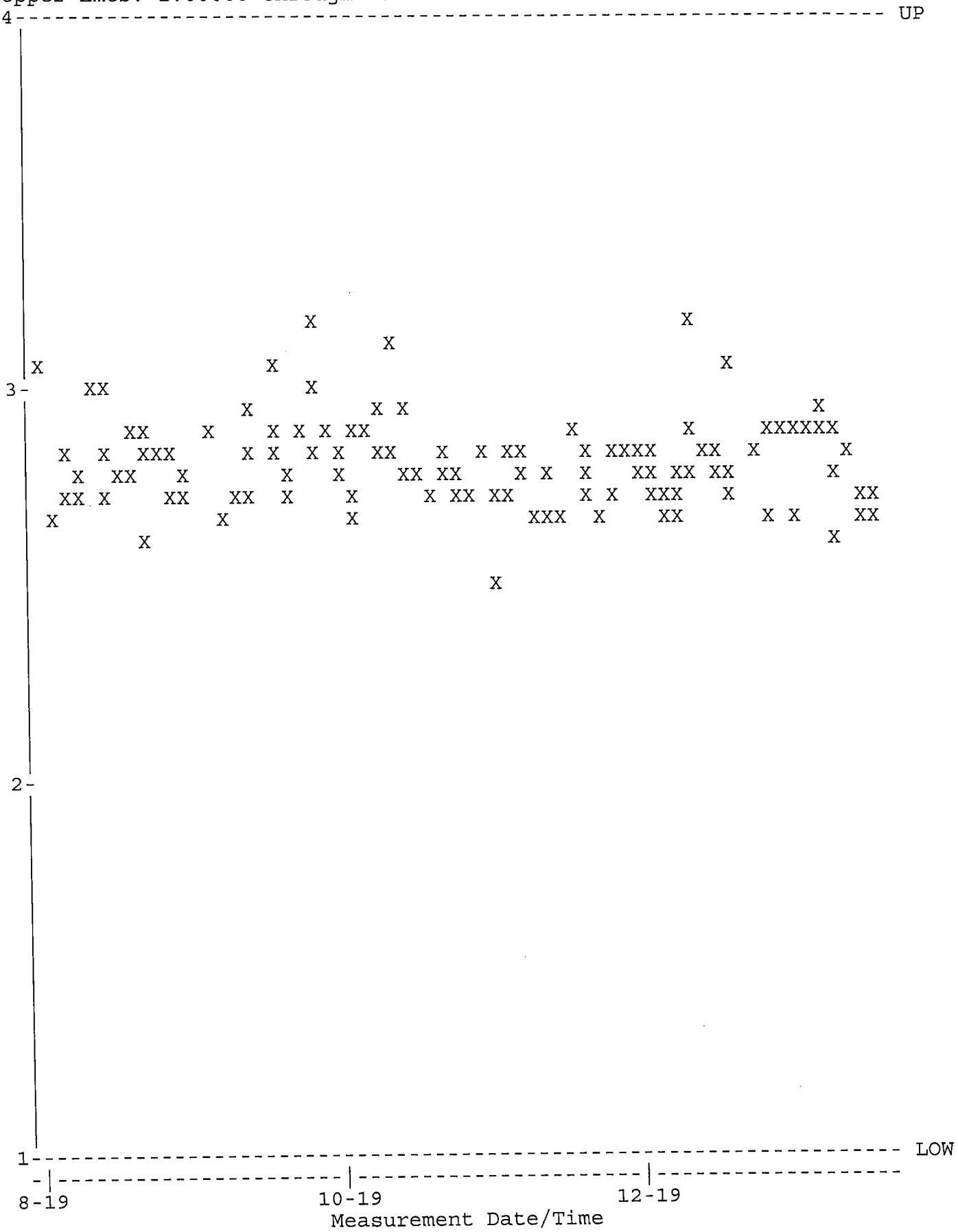
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.65000 through 2.20000



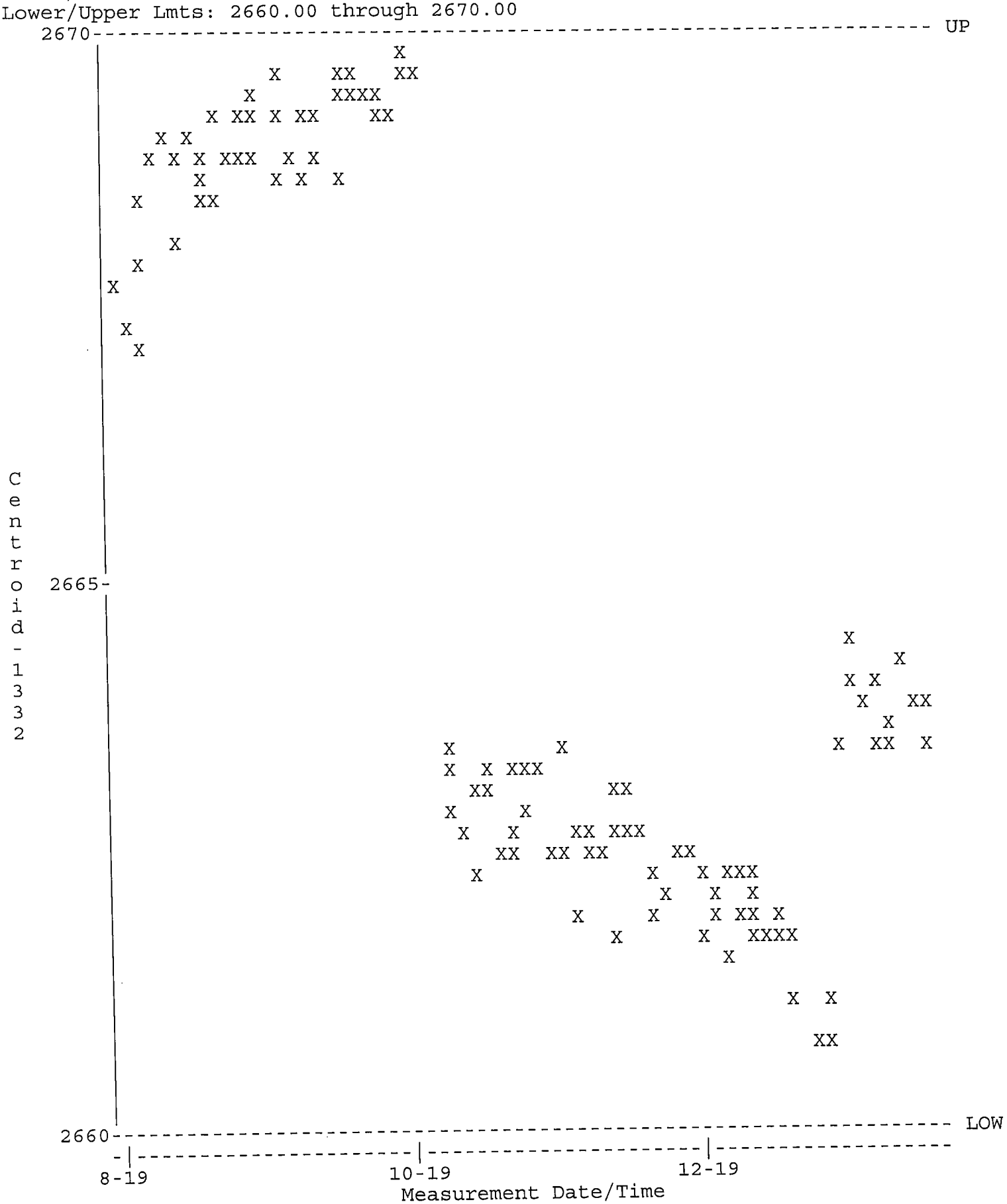
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE13_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 183.220 +- 5.68778 (3.10 %)



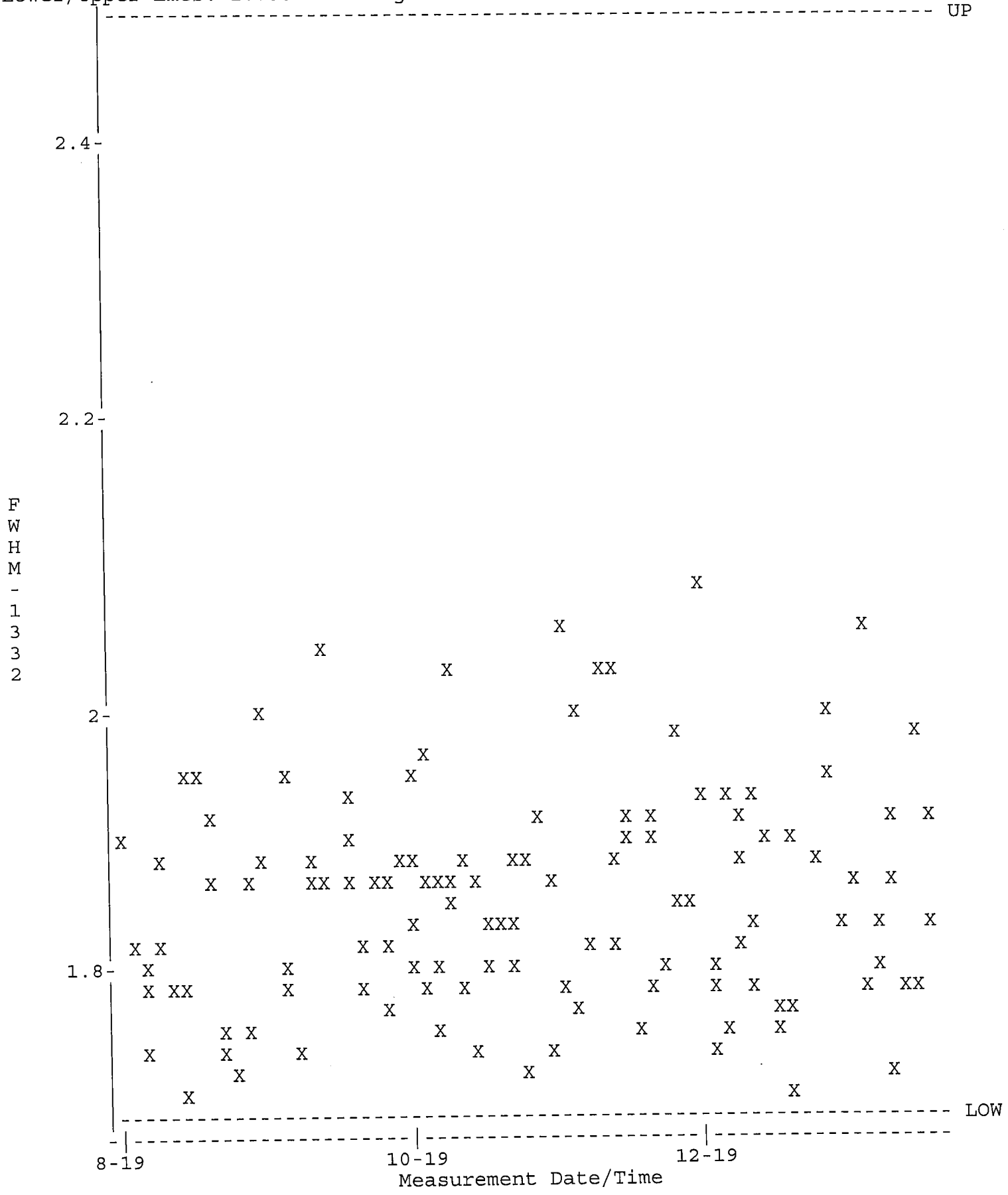
QA filename : DKB100:[GAMMA.QUALITY]TBE13_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.00000 through 4.00000



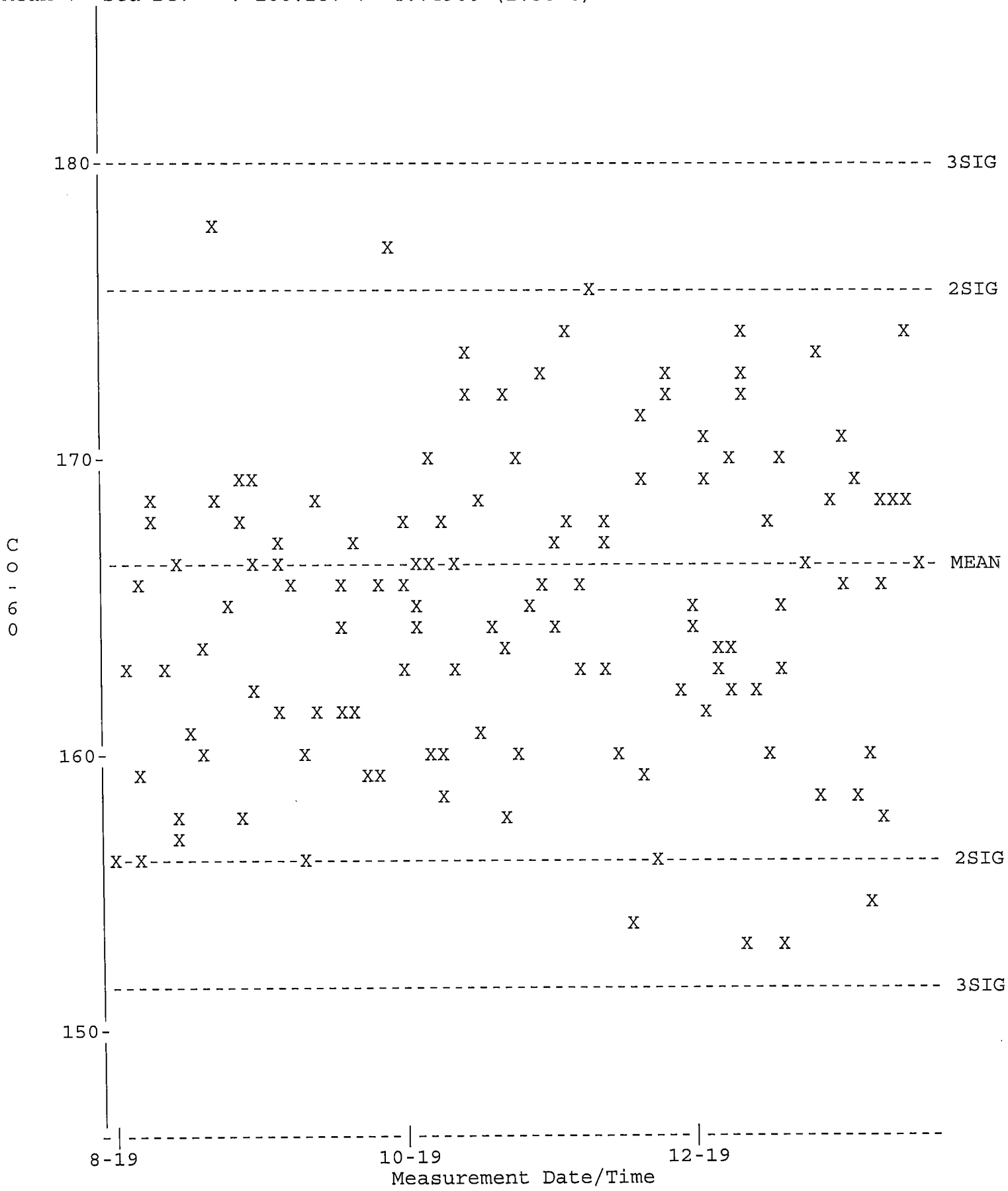
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



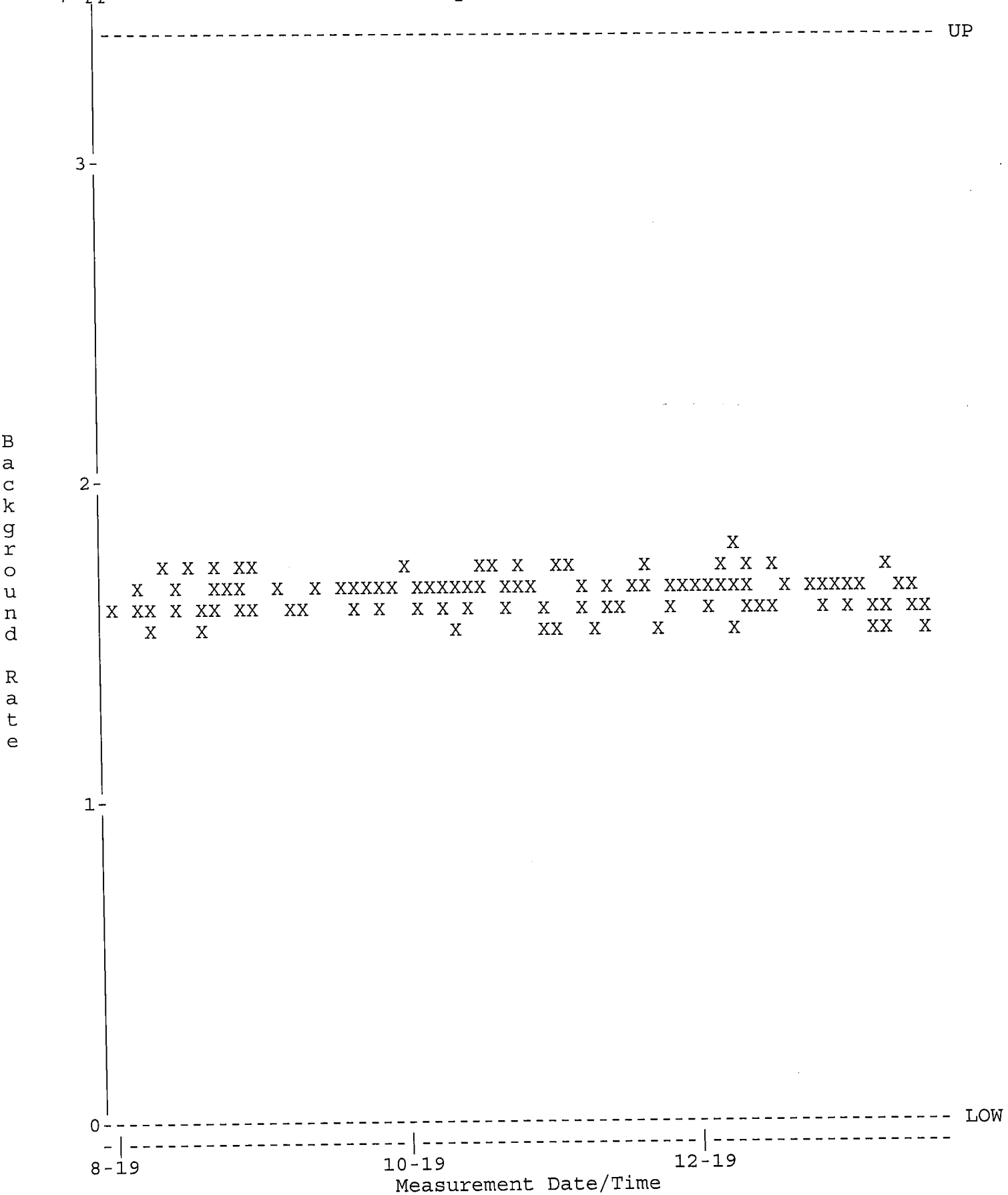
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.70000 through 2.50000



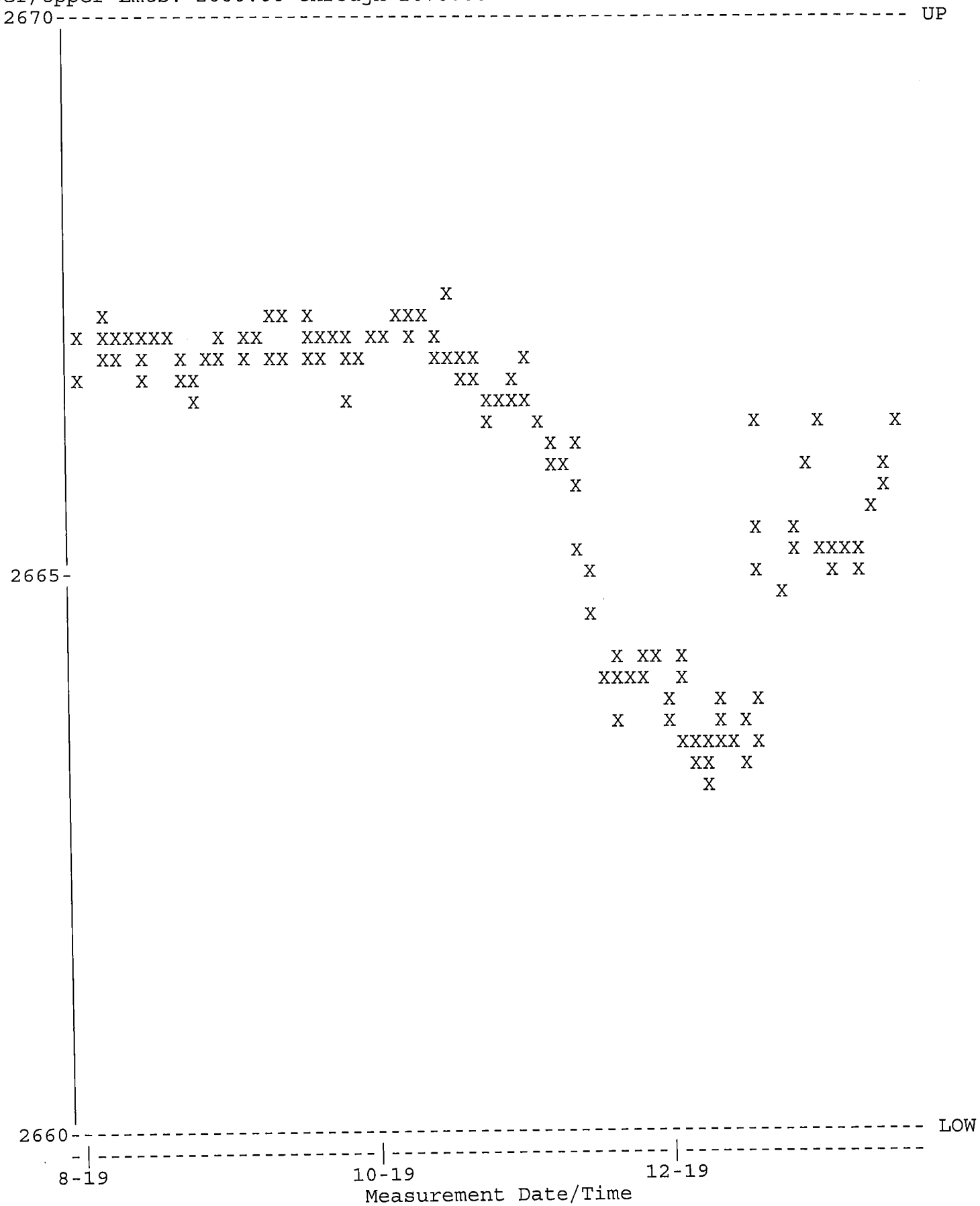
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE14_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Mean +- Std Dev : 166.287 +- 4.74966 (2.86 %)



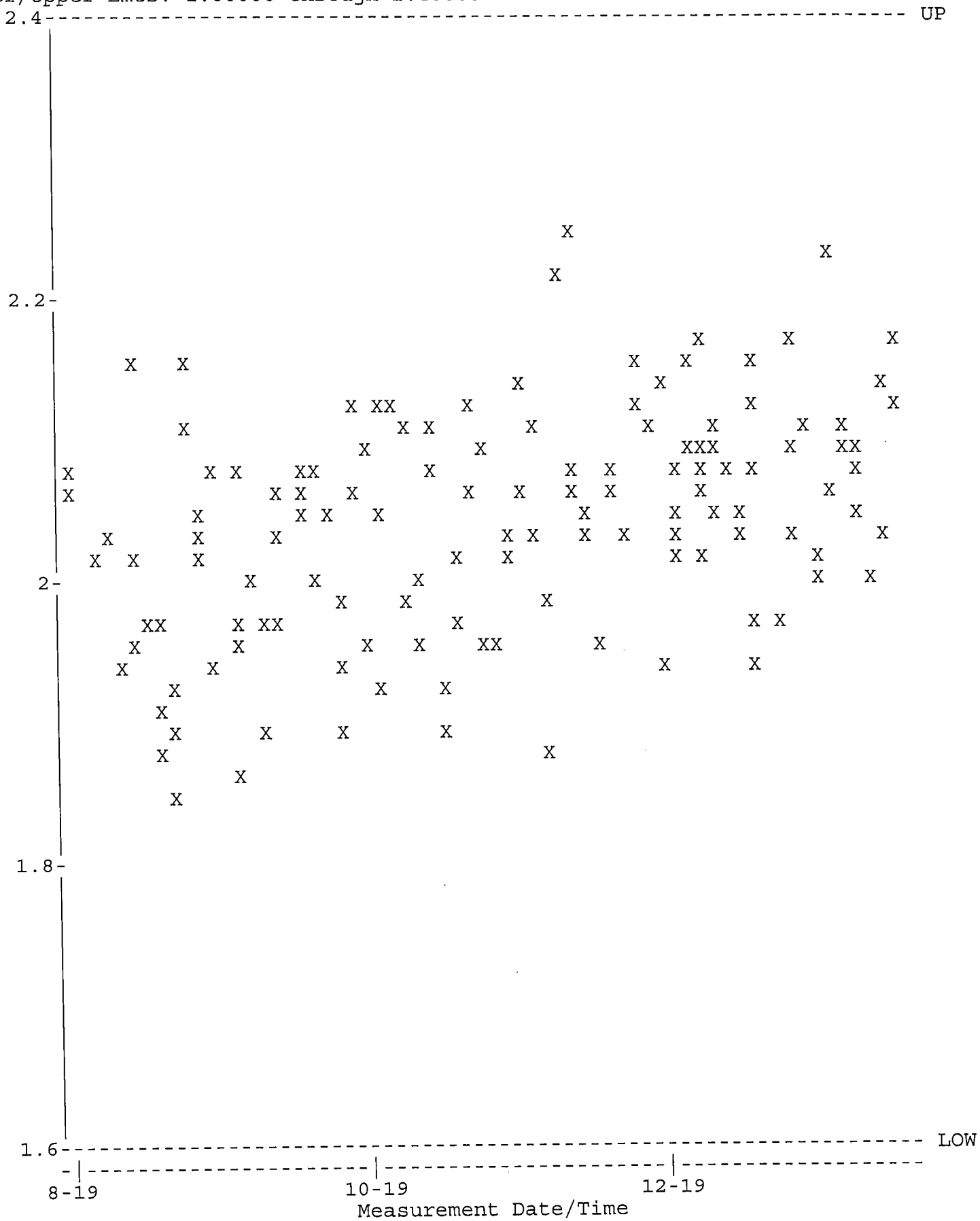
QA filename : DKB100:[GAMMA.QUALITY]TBE14_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 3.50000



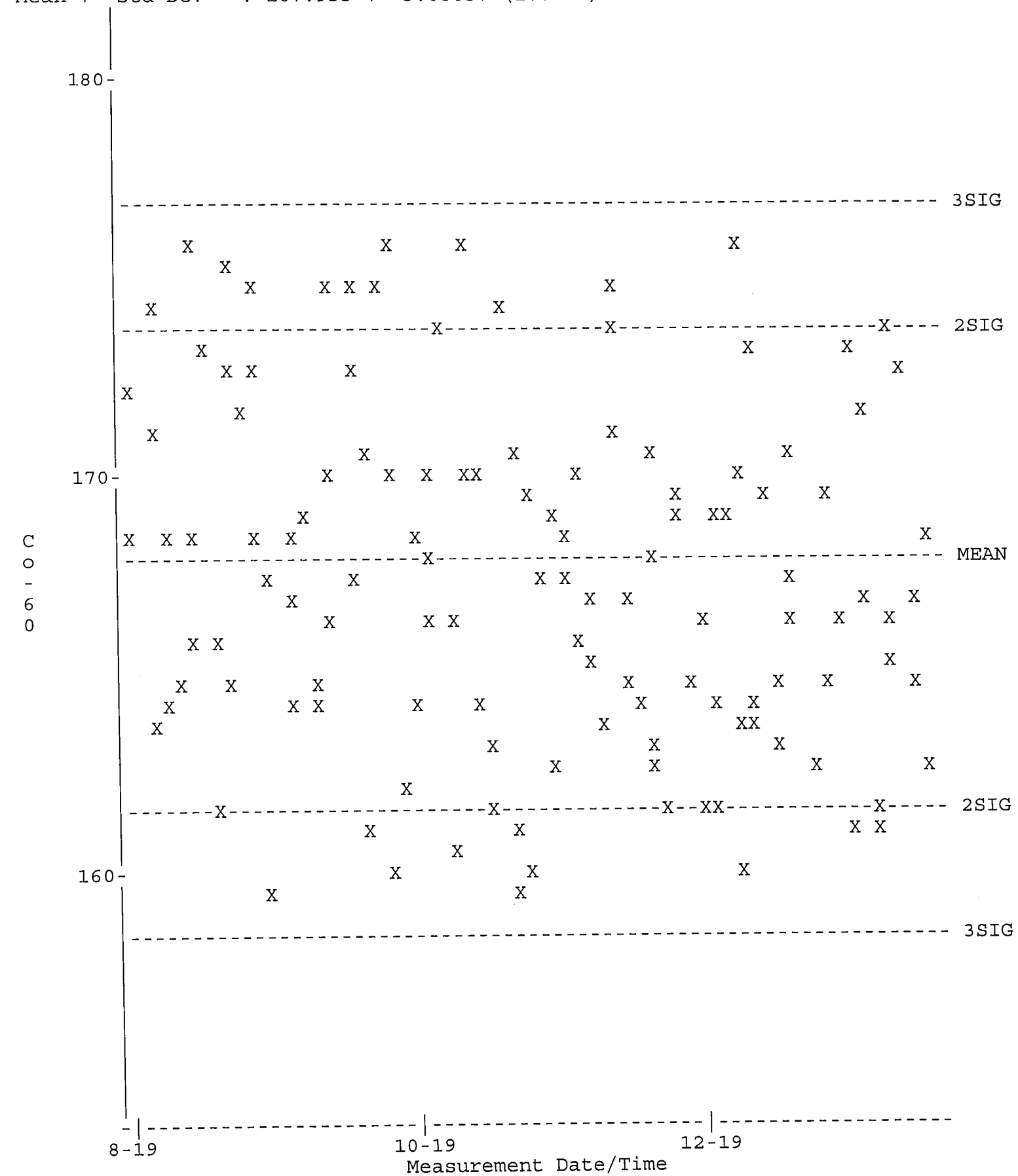
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSCENTRD (Centroid-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 2660.00 through 2670.00



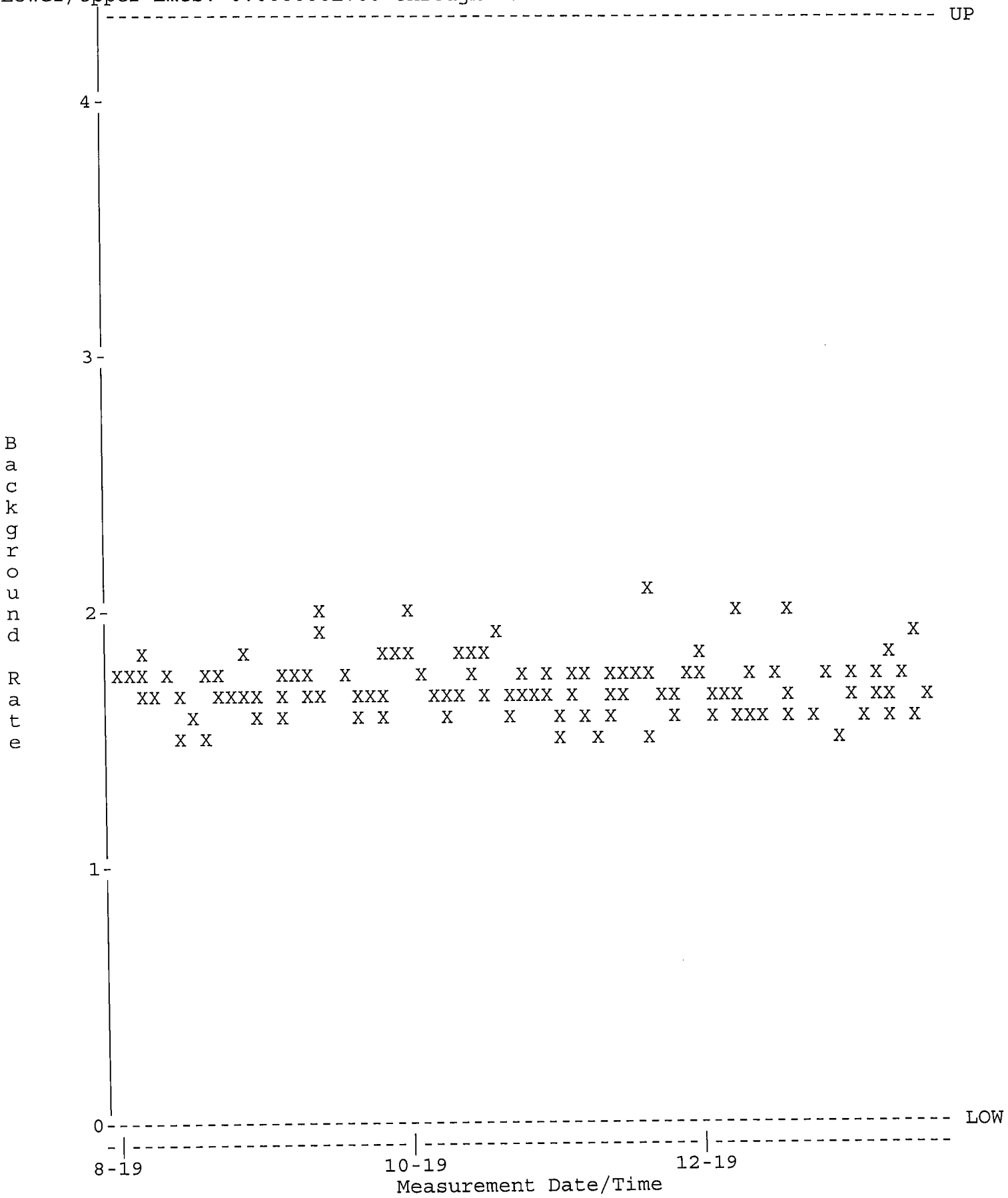
QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : PSFWHM-1332 (FWHM-1332)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Lower/Upper Lmts: 1.60000 through 2.40000



QA filename : DKB100:[GAMMA.QUALITY]NEW_TBE15_QC.QAF;1
Parameter Name : NCLWTMEAN-CO60 (Co-60)
Start/End Dates : 1-AUG-2019 07:14 through 20-JAN-2020 00:00
Mean +- Std Dev : 167.933 +- 3.08657 (1.84 %)



QA filename : DKB100:[GAMMA.QUALITY]TBE15_BKG_QC.QAF;1
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-AUG-2019 07:33 through 20-JAN-2020 00:00
Lower/Upper Lmts: 0.000000E+00 through 4.34000



GAMMA SPECTROSCOPY

Sample and QC Raw Data

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 21:35:53.29
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 2-JAN-2020 17:35:40.99

LIMS No., Customer Name, Client ID: L85485-1 S TEXAS

Sample ID : 11L85485-1
Sample Type : S
Quantity : 1.01600E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:05:00.0
Geometry : 11S100121919
BKGFILE : 11BG122719MT
Real Time : 0 04:00:07.09
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	185.80*	82	811	1.51	370.88	3.05E+00	5.71E-03	78.0	
2	0	238.54*	503	552	1.62	476.40	2.60E+00	3.49E-02	10.0	
3	0	295.53*	177	325	1.68	590.44	2.24E+00	1.23E-02	21.6	
4	0	338.47	159	296	1.67	676.35	2.04E+00	1.10E-02	23.7	
5	0	352.03*	281	463	1.63	703.48	1.98E+00	1.95E-02	19.5	
6	0	511.00*	88	318	2.87	1021.56	1.48E+00	6.09E-03	57.7	
7	0	582.84*	206	169	1.50	1165.29	1.32E+00	1.43E-02	16.2	
8	0	609.44*	302	260	1.53	1218.51	1.27E+00	2.10E-02	14.3	
9	0	911.56	130	96	1.61	1822.96	8.91E-01	9.03E-03	19.0	
10	0	1120.65*	66	92	2.38	2241.25	7.41E-01	4.56E-03	36.3	
11	0	1460.99*	294	48	2.18	2922.11	5.95E-01	2.04E-02	8.9	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85485-1 Acquisition date : 2-JAN-2020 17:35:40

Total number of lines in spectrum	11	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85485-1 Acquisition date : 2-JAN-2020 17:35:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	185.80	82	811	1.51	370.88	364	15	5.71E-03	****	3.05E+00	
0	238.54	503	552	1.62	476.40	472	10	3.49E-02	20.0	2.60E+00	
0	295.53	177	325	1.68	590.44	586	10	1.23E-02	43.2	2.24E+00	
0	338.47	159	296	1.67	676.35	668	13	1.10E-02	47.5	2.04E+00	
0	352.03	281	463	1.63	703.48	694	18	1.95E-02	38.9	1.98E+00	
0	511.00	88	318	2.87	1021.56	1012	19	6.09E-03	****	1.48E+00	
0	582.84	206	169	1.50	1165.29	1158	16	1.43E-02	32.4	1.32E+00	
0	609.44	302	260	1.53	1218.51	1210	18	2.10E-02	28.7	1.27E+00	
0	911.56	130	96	1.61	1822.96	1816	16	9.03E-03	38.0	8.91E-01	
0	1120.65	66	92	2.38	2241.25	2232	16	4.56E-03	72.6	7.41E-01	
0	1460.99	294	48	2.18	2922.11	2913	19	2.04E-02	17.7	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 11
Number of unidentified lines 11
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	2.196E-02		6.301E-02	1.120E-01	0.000E+00	0.196

```
A,11L85485-1      ,01/02/2020 21:35,12/09/2019 15:05,   1.016E+02,L85485-1 S TEX
B,11L85485-1      ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137  ,NO ,   2.196E-02,   6.301E-02,   1.120E-01,,    0.196
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 21:35:52.07
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 2-JAN-2020 17:35:41.53

LIMS No., Customer Name, Client ID: L85485-2 S TEXAS

Sample ID : 14L85485-2
Sample Type : S
Quantity : 1.46600E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:05:00.0
Geometry : 14S100121919
BKGFILE : 14BG122719MT
Real Time : 0 04:00:03.21
Live time : 0 04:00:00.00

KBA 1.3A

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.66*	94	372	1.46	368.61	3.47E+00	6.52E-03	41.3	1.84E+00
2	4	238.51*	716	178	0.94	474.33	2.91E+00	4.97E-02	4.9	1.39E+00
3	4	241.54	167	279	1.47	480.40	2.88E+00	1.16E-02	19.7	
4	1	295.04*	190	235	1.04	587.42	2.44E+00	1.32E-02	17.3	7.13E-01
5	1	338.32	101	244	1.22	674.01	2.17E+00	7.03E-03	33.0	1.31E+00
6	1	351.82*	354	194	1.36	701.01	2.09E+00	2.46E-02	10.1	3.20E+00
7	1	511.00*	92	195	2.71	1019.49	1.49E+00	6.42E-03	44.1	6.64E-01
8	1	583.21	232	99	1.55	1163.98	1.32E+00	1.61E-02	11.0	2.23E+00
9	1	609.35*	249	97	1.56	1216.27	1.26E+00	1.73E-02	11.0	1.89E+00
10	1	911.37	147	54	1.69	1820.68	8.69E-01	1.02E-02	13.3	1.06E+00
11	1	1460.91*	346	43	1.94	2920.71	5.68E-01	2.40E-02	7.2	2.24E+00
12	1	1765.04	64	7	1.69	3529.68	4.85E-01	4.42E-03	15.4	7.91E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14L85485-2 Acquisition date : 2-JAN-2020 17:35:41

Total number of lines in spectrum	12	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14L85485-2 Acquisition date : 2-JAN-2020 17:35:41

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.66	94	372	1.46	368.61	364	10	6.52E-03	82.5	3.47E+00	
4	238.51	716	178	0.94	474.33	467	19	4.97E-02	9.8	2.91E+00	
4	241.54	167	279	1.47	480.40	467	19	1.16E-02	39.4	2.88E+00	
1	295.04	190	235	1.04	587.42	582	10	1.32E-02	34.6	2.44E+00	
1	338.32	101	244	1.22	674.01	668	12	7.03E-03	65.9	2.17E+00	
1	351.82	354	194	1.36	701.01	694	12	2.46E-02	20.1	2.09E+00	
1	511.00	92	195	2.71	1019.49	1013	20	6.42E-03	88.3	1.49E+00	
1	583.21	232	99	1.55	1163.98	1159	12	1.61E-02	22.0	1.32E+00	
1	609.35	249	97	1.56	1216.27	1210	13	1.73E-02	22.0	1.26E+00	
1	911.37	147	54	1.69	1820.68	1814	13	1.02E-02	26.6	8.69E-01	
1	1460.91	346	43	1.94	2920.71	2914	15	2.40E-02	14.4	5.68E-01	
1	1765.04	64	7	1.69	3529.68	3522	13	4.42E-03	30.8	4.85E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 12
Number of unidentified lines 12
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.074E-02		3.325E-02	5.777E-02	0.000E+00	0.532

```
A,14L85485-2       ,01/02/2020 21:35,12/09/2019 15:05,   1.466E+02,L85485-2 S TEX
B,14L85485-2       ,HUDSON              ,12/30/2019 12:20,14S100121919
C,CS-137  ,NO ,   3.074E-02,   3.325E-02,   5.777E-02,,    0.532
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 10:20:24.12
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 3-JAN-2020 09:09:34.07

LIMS No., Customer Name, Client ID: L85485-3 S TEXAS

Sample ID : 02L85485-3
Sample Type : S
Quantity : 1.55430E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:10:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:10:41.36
Live time : 0 01:10:40.56

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.51*	209	129	1.10	464.22	2.91E+00	4.92E-02	12.6	
2	0	242.00	85	74	1.04	471.24	2.88E+00	2.01E-02	20.5	
3	0	295.35*	96	75	1.10	578.72	2.46E+00	2.27E-02	20.2	
4	0	351.86*	195	59	1.20	692.56	2.12E+00	4.59E-02	11.1	
5	0	583.17*	96	24	1.47	1158.55	1.37E+00	2.26E-02	15.6	
6	0	609.31*	148	39	1.44	1211.20	1.32E+00	3.49E-02	12.5	
7	0	911.09*	46	21	1.12	1819.23	9.20E-01	1.10E-02	24.2	
8	0	1120.44*	28	14	1.90	2241.06	7.64E-01	6.52E-03	31.7	
9	0	1460.36*	125	0	1.98	2926.09	6.04E-01	2.96E-02	9.4	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85485-3 Acquisition date : 3-JAN-2020 09:09:34

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85485-3 Acquisition date : 3-JAN-2020 09:09:34

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.51	209	129	1.10	464.22	459	10	4.92E-02	25.2	2.91E+00	
0	242.00	85	74	1.04	471.24	469	7	2.01E-02	41.0	2.88E+00	
0	295.35	96	75	1.10	578.72	574	10	2.27E-02	40.5	2.46E+00	
0	351.86	195	59	1.20	692.56	687	13	4.59E-02	22.2	2.12E+00	
0	583.17	96	24	1.47	1158.55	1151	16	2.26E-02	31.2	1.37E+00	
0	609.31	148	39	1.44	1211.20	1205	14	3.49E-02	25.0	1.32E+00	
0	911.09	46	21	1.12	1819.23	1812	11	1.10E-02	48.5	9.20E-01	
0	1120.44	28	14	1.90	2241.06	2236	8	6.52E-03	63.4	7.64E-01	
0	1460.36	125	0	1.98	2926.09	2918	15	2.96E-02	18.9	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-9.734E-03		6.580E-02	1.033E-01	0.000E+00	-0.094

```
A,02L85485-3       ,01/03/2020 10:20,12/09/2019 15:10,   1.554E+02,L85485-3 S TEX
B,02L85485-3       ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137   ,NO ,   -9.734E-03,   6.580E-02,   1.033E-01,,   -0.094
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-JAN-2020 21:36:11.81
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 2-JAN-2020 17:35:44.08

LIMS No., Customer Name, Client ID: L85485-4 S TEXAS

Sample ID : 13L85485-4
Sample Type : S
Quantity : 1.44500E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 9-DEC-2019 15:10:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 04:00:04.60
Live time : 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.60*	78	539	1.35	370.77	3.25E+00	5.45E-03	60.8	4.25E+00
2	6	238.52*	852	237	1.03	476.51	2.78E+00	5.92E-02	4.7	3.14E-01
3	6	241.40*	224	426	1.90	482.27	2.76E+00	1.56E-02	21.8	
4	1	295.00*	208	313	1.51	589.35	2.38E+00	1.45E-02	18.2	1.03E+00
5	1	338.22*	186	255	1.73	675.73	2.14E+00	1.29E-02	18.3	2.33E+00
6	1	351.73*	312	225	1.21	702.73	2.07E+00	2.17E-02	11.2	1.80E+00
7	1	510.76*	67	206	2.43	1020.58	1.54E+00	4.65E-03	61.0	1.35E+00
8	1	582.88*	283	186	1.29	1164.76	1.38E+00	1.96E-02	11.7	1.35E+00
9	1	608.86*	283	187	1.29	1216.71	1.34E+00	1.97E-02	11.9	2.55E+00
10	1	911.01*	157	134	1.89	1821.00	9.71E-01	1.09E-02	19.0	1.44E+00
11	1	968.53*	123	77	1.67	1936.07	9.25E-01	8.52E-03	17.8	1.05E+00
12	1	1120.10*	83	62	2.39	2239.35	8.24E-01	5.75E-03	24.8	6.50E-01
13	1	1460.35*	473	49	1.98	2920.51	6.67E-01	3.29E-02	6.5	2.07E+00
14	1	1764.24*	57	21	2.72	3529.24	5.74E-01	3.93E-03	25.1	1.23E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85485-4 Acquisition date : 2-JAN-2020 17:35:44

Total number of lines in spectrum	14	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85485-4 Acquisition date : 2-JAN-2020 17:35:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.60	78	539	1.35	370.77	366	10	5.45E-03	****	3.25E+00	
6	238.52	852	237	1.03	476.51	472	16	5.92E-02	9.3	2.78E+00	
6	241.40	224	426	1.90	482.27	472	16	1.56E-02	43.6	2.76E+00	
1	295.00	208	313	1.51	589.35	584	10	1.45E-02	36.4	2.38E+00	
1	338.22	186	255	1.73	675.73	671	10	1.29E-02	36.5	2.14E+00	
1	351.73	312	225	1.21	702.73	698	9	2.17E-02	22.4	2.07E+00	
1	510.76	67	206	2.43	1020.58	1013	15	4.65E-03	****	1.54E+00	
1	582.88	283	186	1.29	1164.76	1159	12	1.96E-02	23.4	1.38E+00	
1	608.86	283	187	1.29	1216.71	1211	11	1.97E-02	23.8	1.34E+00	
1	911.01	157	134	1.89	1821.00	1815	16	1.09E-02	38.0	9.71E-01	
1	968.53	123	77	1.67	1936.07	1932	13	8.52E-03	35.6	9.25E-01	
1	1120.10	83	62	2.39	2239.35	2233	14	5.75E-03	49.5	8.24E-01	
1	1460.35	473	49	1.98	2920.51	2911	16	3.29E-02	12.9	6.67E-01	
1	1764.24	57	21	2.72	3529.24	3523	13	3.93E-03	50.2	5.74E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 14
Number of unidentified lines 14
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	4.855E-02		3.908E-02	6.790E-02	0.000E+00	0.715

```
A,13L85485-4       ,01/02/2020 21:36,12/09/2019 15:10,   1.445E+02,L85485-4 S TEX
B,13L85485-4       ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137  ,NO ,   4.855E-02,   3.908E-02,   6.790E-02,,    0.715
```

Analyst: MBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:36:32.52
TBE07 31-TP10768B HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:25.68

LIMS No., Customer Name, Client ID: L85485-5 S TEXAS

Sample ID : 07L85485-5
Sample Type : S
Quantity : 1.60770E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:15:00.0
Geometry : 07S100121819
BKGFILE : 07BG122719MT
Real Time : 0 01:10:02.92
Live time : 0 01:10:02.27

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.44*	193	213	1.52	476.22	2.90E+00	4.58E-02	18.0	1.43E+00
2	1	295.23*	65	100	1.78	589.77	2.50E+00	1.54E-02	33.0	2.02E+00
3	1	351.80*	111	84	2.11	702.86	2.21E+00	2.64E-02	21.3	8.17E-01
4	1	510.90*	46	47	3.24	1020.91	1.68E+00	1.10E-02	46.8	1.38E+00
5	1	583.15*	74	46	2.11	1165.35	1.52E+00	1.75E-02	23.0	3.15E+00
6	1	609.14*	105	49	2.30	1217.30	1.47E+00	2.49E-02	19.4	1.02E+00
7	1	910.48*	60	23	2.96	1819.62	1.07E+00	1.43E-02	24.8	1.51E+00
8	1	1460.20*	145	8	2.68	2918.18	7.40E-01	3.44E-02	10.6	1.76E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 07L85485-5 Acquisition date : 3-JAN-2020 14:26:25

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 07L85485-5 Acquisition date : 3-JAN-2020 14:26:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.44	193	213	1.52	476.22	470	14	4.58E-02	36.1	2.90E+00	
1	295.23	65	100	1.78	589.77	584	11	1.54E-02	65.9	2.50E+00	
1	351.80	111	84	2.11	702.86	697	15	2.64E-02	42.6	2.21E+00	
1	510.90	46	47	3.24	1020.91	1012	17	1.10E-02	93.5	1.68E+00	
1	583.15	74	46	2.11	1165.35	1160	13	1.75E-02	46.0	1.52E+00	
1	609.14	105	49	2.30	1217.30	1212	17	2.49E-02	38.9	1.47E+00	
1	910.48	60	23	2.96	1819.62	1811	22	1.43E-02	49.6	1.07E+00	
1	1460.20	145	8	2.68	2918.18	2910	16	3.44E-02	21.2	7.40E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.332E-02		5.852E-02	1.000E-01	0.000E+00	0.133

```
A,07L85485-5       ,01/03/2020 15:36,12/09/2019 15:15,   1.608E+02,L85485-5 S TEX
B,07L85485-5       ,HUDSON              ,12/26/2019 10:37,07S100121819
C,CS-137   ,NO ,   1.332E-02,   5.852E-02,   1.000E-01,,    0.133
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:36:59.96
TBE15 51-TP12994B HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:26.71

LIMS No., Customer Name, Client ID: L85485-6 S TEXAS

Sample ID : 15L85485-6
Sample Type : S
Quantity : 1.79760E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:15:00.0
Geometry : 15S100121719
BKGFILE : 15BG122719MT
Real Time : 0 01:10:26.31
Live time : 0 01:10:25.83

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.68*	131	128	1.43	472.86	3.18E+00	3.11E-02	21.9	3.29E+00
2	1	295.23*	52	63	1.64	586.23	2.67E+00	1.24E-02	34.8	1.32E+00
3	1	351.84*	96	40	1.15	699.70	2.28E+00	2.26E-02	16.6	3.51E+00
4	1	582.80*	57	33	1.68	1162.68	1.41E+00	1.35E-02	25.2	8.00E-01
5	1	609.21*	97	27	1.49	1215.62	1.35E+00	2.29E-02	15.9	8.93E-01
6	1	911.17*	26	12	2.01	1820.90	9.28E-01	6.26E-03	34.2	1.06E+00
7	1	1460.74*	86	0	2.47	2922.48	6.13E-01	2.05E-02	11.8	8.49E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 15L85485-6 Acquisition date : 3-JAN-2020 14:26:26

Total number of lines in spectrum	7	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 15L85485-6 Acquisition date : 3-JAN-2020 14:26:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.68	131	128	1.43	472.86	467	15	3.11E-02	43.7	3.18E+00	
1	295.23	52	63	1.64	586.23	581	12	1.24E-02	69.5	2.67E+00	
1	351.84	96	40	1.15	699.70	697	8	2.26E-02	33.2	2.28E+00	
1	582.80	57	33	1.68	1162.68	1157	13	1.35E-02	50.3	1.41E+00	
1	609.21	97	27	1.49	1215.62	1210	13	2.29E-02	31.7	1.35E+00	
1	911.17	26	12	2.01	1820.90	1814	13	6.26E-03	68.5	9.28E-01	
1	1460.74	86	0	2.47	2922.48	2916	14	2.05E-02	23.6	6.13E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 7
Number of unidentified lines 7
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.369E-02		4.338E-02	6.529E-02	0.000E+00	-0.363

```
A,15L85485-6       ,01/03/2020 15:37,12/09/2019 15:15,   1.798E+02,L85485-6 S TEX
B,15L85485-6       ,HUDSON              ,12/27/2019 10:10,15S100121719
C,CS-137   ,NO ,   -2.369E-02,   4.338E-02,   6.529E-02,,   -0.363
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:37:29.53
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:28.85

LIMS No., Customer Name, Client ID: L85485-7 S TEXAS

Sample ID : 01L85485-7
Sample Type : S
Quantity : 1.72940E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 7.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:20:00.0
Geometry : 01S100122019
BKGFILE : 01BG122719MT
Real Time : 0 01:10:45.01
Live time : 0 01:10:44.38

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	185.17*	59	141	1.92	370.58	4.00E+00	1.39E-02	45.3	1.16E+00
2	1	238.55*	96	171	1.12	477.25	3.47E+00	2.26E-02	30.4	1.22E+00
3	1	295.26*	68	31	1.20	590.59	2.98E+00	1.60E-02	20.0	1.21E+00
4	1	351.57*	69	52	1.29	703.12	2.60E+00	1.64E-02	23.4	3.92E-01
5	1	511.09*	0	63	3.63	1021.94	1.91E+00	6.57E-05*****		1.73E+00
6	1	583.20*	42	35	1.75	1166.05	1.70E+00	9.93E-03	32.6	1.90E+00
7	1	609.03*	78	32	1.61	1217.67	1.64E+00	1.84E-02	19.8	1.81E+00
8	1	910.60*	42	13	2.70	1820.44	1.15E+00	1.00E-02	23.9	1.32E+00
9	1	1460.12*	75	7	2.22	2918.93	7.73E-01	1.76E-02	14.9	4.69E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 01L85485-7 Acquisition date : 3-JAN-2020 14:26:28

Total number of lines in spectrum	9	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85485-7 Acquisition date : 3-JAN-2020 14:26:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	185.17	59	141	1.92	370.58	366	14	1.39E-02	90.5	4.00E+00	
1	238.55	96	171	1.12	477.25	472	13	2.26E-02	60.9	3.47E+00	
1	295.26	68	31	1.20	590.59	586	9	1.60E-02	40.0	2.98E+00	
1	351.57	69	52	1.29	703.12	699	9	1.64E-02	46.8	2.60E+00	
1	511.09	0	63	3.63	1021.94	1014	25	6.57E-05	****	1.91E+00	
1	583.20	42	35	1.75	1166.05	1161	11	9.93E-03	65.3	1.70E+00	
1	609.03	78	32	1.61	1217.67	1212	12	1.84E-02	39.7	1.64E+00	
1	910.60	42	13	2.70	1820.44	1814	13	1.00E-02	47.9	1.15E+00	
1	1460.12	75	7	2.22	2918.93	2912	14	1.76E-02	29.7	7.73E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 9
Number of unidentified lines 9
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.862E-02		3.476E-02	5.020E-02	0.000E+00	-0.570

```
A,01L85485-7       ,01/03/2020 15:37,12/09/2019 15:20,   1.729E+02,L85485-7 S TEX
B,01L85485-7       ,HUDSON              ,12/30/2019 11:02,01S100122019
C,CS-137   ,NO ,   -2.862E-02,   3.476E-02,   5.020E-02,,   -0.570
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:10:57.47
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:03:49.66

LIMS No., Customer Name, Client ID: L85485-8 S TEXAS

Sample ID : 02L85485-8
Sample Type : S
Quantity : 1.82690E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:20:00.0
Geometry : 02S100122619
BKGFILE : 02BG122719MT
Real Time : 0 01:07:05.11
Live time : 0 01:07:04.48

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	239.34*	146	111	1.28	465.88	2.90E+00	3.62E-02	17.7	
2	0	295.23*	65	61	0.99	578.47	2.46E+00	1.61E-02	27.2	
3	0	351.80*	99	36	0.95	692.42	2.12E+00	2.46E-02	16.4	
4	0	608.80*	87	36	1.36	1210.17	1.32E+00	2.16E-02	18.5	
5	0	1459.57*	75	3	1.82	2924.51	6.04E-01	1.86E-02	13.6	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 02L85485-8 Acquisition date : 3-JAN-2020 13:03:49

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85485-8 Acquisition date : 3-JAN-2020 13:03:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	239.34	146	111	1.28	465.88	459	14	3.62E-02	35.3	2.90E+00	
0	295.23	65	61	0.99	578.47	572	11	1.61E-02	54.3	2.46E+00	
0	351.80	99	36	0.95	692.42	687	11	2.46E-02	32.8	2.12E+00	
0	608.80	87	36	1.36	1210.17	1203	13	2.16E-02	37.1	1.32E+00	
0	1459.57	75	3	1.82	2924.51	2918	14	1.86E-02	27.2	6.04E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	1.151E-02		4.497E-02	7.514E-02	0.000E+00	0.153

```
A,02L85485-8       ,01/03/2020 14:10,12/09/2019 15:20,   1.827E+02,L85485-8 S TEX
B,02L85485-8       ,HUDSON              ,12/27/2019 09:41,02S100122619
C,CS-137  ,NO ,   1.151E-02,   4.497E-02,   7.514E-02,,    0.153
```

Analyst: HBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:37:37.22
TBE11 59-TN51806A HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:29.04

LIMS No., Customer Name, Client ID: L85485-9 S TEXAS

Sample ID : 11L85485-9
Sample Type : S
Quantity : 1.73050E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:25:00.0
Geometry : 11S100121919
BKGFILE : 11BG122719MT
Real Time : 0 01:11:04.46
Live time : 0 01:11:02.47

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	238.69*	97	145	1.23	476.70	2.60E+00	2.27E-02	27.0	
2	0	295.34*	58	48	1.28	590.06	2.25E+00	1.37E-02	26.5	
3	0	352.02*	67	77	1.43	703.47	1.98E+00	1.57E-02	31.7	
4	0	511.02*	18	70	3.07	1021.59	1.48E+00	4.14E-03	139.0	
5	0	609.31*	51	44	1.21	1218.25	1.27E+00	1.19E-02	32.1	
6	0	1460.65*	68	5	2.07	2921.44	5.95E-01	1.60E-02	16.7	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 11L85485-9 Acquisition date : 3-JAN-2020 14:26:29

Total number of lines in spectrum	6	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 11L85485-9 Acquisition date : 3-JAN-2020 14:26:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	238.69	97	145	1.23	476.70	472	12	2.27E-02	54.1	2.60E+00	
0	295.34	58	48	1.28	590.06	586	9	1.37E-02	53.1	2.25E+00	
0	352.02	67	77	1.43	703.47	696	14	1.57E-02	63.4	1.98E+00	
0	511.02	18	70	3.07	1021.59	1013	20	4.14E-03	****	1.48E+00	
0	609.31	51	44	1.21	1218.25	1212	13	1.19E-02	64.2	1.27E+00	
0	1460.65	68	5	2.07	2921.44	2910	21	1.60E-02	33.3	5.95E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 6
Number of unidentified lines 6
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-2.093E-02		5.208E-02	9.191E-02	0.000E+00	-0.228

```
A,11L85485-9       ,01/03/2020 15:37,12/09/2019 15:25,   1.731E+02,L85485-9 S TEX
B,11L85485-9       ,HUDSON              ,12/26/2019 12:27,11S100121919
C,CS-137   ,NO ,   -2.093E-02,   5.208E-02,   9.191E-02,,   -0.228
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 15:38:05.78
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 3-JAN-2020 14:26:31.16

LIMS No., Customer Name, Client ID: L85485-10 S TEXAS

Sample ID : 13L85485-10
Sample Type : S
Quantity : 1.78140E+02 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentfied

Smple Date: 9-DEC-2019 15:25:00.0
Geometry : 13S100122619
BKGFILE : 13BG122719MT
Real Time : 0 01:11:20.07
Live time : 0 01:11:18.85

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.37*	64	70	1.29	476.21	2.78E+00	1.50E-02	25.3	6.98E+00
2	1	351.76*	66	76	1.99	702.79	2.07E+00	1.54E-02	33.5	1.49E+00
3	1	510.61*	33	63	2.72	1020.29	1.54E+00	7.63E-03	66.3	6.57E-01
4	1	608.83*	57	46	1.64	1216.64	1.34E+00	1.34E-02	30.0	1.30E+00
5	1	1459.96	116	3	1.82	2919.72	6.67E-01	2.70E-02	9.7	2.87E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 13L85485-10 Acquisition date : 3-JAN-2020 14:26:31

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 13L85485-10 Acquisition date : 3-JAN-2020 14:26:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.37	64	70	1.29	476.21	473	7	1.50E-02	50.6	2.78E+00	
1	351.76	66	76	1.99	702.79	696	15	1.54E-02	67.0	2.07E+00	
1	510.61	33	63	2.72	1020.29	1013	14	7.63E-03	****	1.54E+00	
1	608.83	57	46	1.64	1216.64	1211	13	1.34E-02	59.9	1.34E+00	
1	1459.96	116	3	1.82	2919.72	2914	11	2.70E-02	19.4	6.67E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	5.187E-04		5.545E-02	8.917E-02	0.000E+00	0.006

```
A,13L85485-10      ,01/03/2020 15:38,12/09/2019 15:25,   1.781E+02,L85485-10 S TE
B,13L85485-10      ,HUDSON              ,12/27/2019 09:44,13S100122619
C,CS-137   ,NO ,    5.187E-04,    5.545E-02,    8.917E-02,,     0.006
```

Analyst: KBA

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:11:25.40
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 3-JAN-2020 13:03:50.32

LIMS No., Customer Name, Client ID: L85485-11 S TEXAS

Sample ID : 08L85485-11
Sample Type : S
Quantity : 1.81460E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 9-DEC-2019 15:30:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:07:31.51
Live time : 0 01:07:30.72

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.65*	143	129	2.66	484.22	2.70E+00	3.53E-02	20.1	5.68E+00
2	1	351.85*	78	67	1.88	710.10	1.98E+00	1.93E-02	27.3	1.47E+00
3	1	608.89*	70	25	1.80	1223.03	1.24E+00	1.73E-02	19.7	8.07E-01
4	1	1460.36*	66	3	1.80	2921.82	5.83E-01	1.62E-02	16.8	1.14E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08L85485-11 Acquisition date : 3-JAN-2020 13:03:50

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85485-11 Acquisition date : 3-JAN-2020 13:03:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.65	143	129	2.66	484.22	479	15	3.53E-02	40.1	2.70E+00	
1	351.85	78	67	1.88	710.10	705	15	1.93E-02	54.7	1.98E+00	
1	608.89	70	25	1.80	1223.03	1217	11	1.73E-02	39.4	1.24E+00	
1	1460.36	66	3	1.80	2921.82	2914	14	1.62E-02	33.6	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 4
Number of unidentified lines 4
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	8.606E-03		4.787E-02	8.095E-02	0.000E+00	0.106

```
A,08L85485-11      ,01/03/2020 14:11,12/09/2019 15:30,   1.815E+02,L85485-11 S TE
B,08L85485-11      ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137   ,NO ,   8.606E-03,   4.787E-02,   8.095E-02,,    0.106
```

Analyst: KBD

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 6-JAN-2020 12:00:38.66
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 2-JAN-2020 16:11:19.12

LIMS No., Customer Name, Client ID: WG32735-1 S TEXAS

Sample ID : 08WG32735-1
Sample Type : S
Quantity : 1.37120E+02 g Dry
Start Channel : 190 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 15:55:00.0
Geometry : 08S100121819
BKGFILE : 08BG122719MT
Real Time : 0 01:08:02.70
Live time : 0 01:08:01.86

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.58*	182	110	1.28	484.08	2.70E+00	4.45E-02	13.3	4.09E+00
2	1	295.46*	38	77	1.41	597.58	2.29E+00	9.28E-03	48.1	2.40E+00
3	1	352.01*	104	63	1.53	710.42	1.98E+00	2.54E-02	18.1	1.37E+00
4	1	511.13*	35	49	3.30	1027.95	1.44E+00	8.57E-03	64.4	1.55E+00
5	1	583.49*	41	39	1.36	1172.34	1.28E+00	1.01E-02	37.5	1.71E+00
6	1	609.38*	63	36	1.79	1223.99	1.24E+00	1.55E-02	24.9	1.84E+00
7	1	911.55*	41	7	2.16	1826.92	8.72E-01	1.01E-02	21.0	9.04E-01
8	1	1461.02*	93	10	1.94	2923.13	5.83E-01	2.28E-02	14.3	9.48E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

Total number of lines in spectrum	8	
Number of unidentified lines	8	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08WG32735-1 Acquisition date : 2-JAN-2020 16:11:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.58	182	110	1.28	484.08	480	10	4.45E-02	26.7	2.70E+00	
1	295.46	38	77	1.41	597.58	593	10	9.28E-03	96.2	2.29E+00	
1	352.01	104	63	1.53	710.42	705	10	2.54E-02	36.2	1.98E+00	
1	511.13	35	49	3.30	1027.95	1018	24	8.57E-03	****	1.44E+00	
1	583.49	41	39	1.36	1172.34	1166	16	1.01E-02	75.1	1.28E+00	
1	609.38	63	36	1.79	1223.99	1217	14	1.55E-02	49.8	1.24E+00	
1	911.55	41	7	2.16	1826.92	1822	10	1.01E-02	42.0	8.72E-01	
1	1461.02	93	10	1.94	2923.13	2916	14	2.28E-02	28.6	5.83E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 8
Number of unidentified lines 8
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	3.690E-03		6.916E-02	1.146E-01	0.000E+00	0.032

```
A,08WG32735-1     ,01/06/2020 12:00,12/08/2019 15:55,   1.371E+02,WG32735-1 S TE
B,08WG32735-1     ,HUDSON              ,12/26/2019 12:50,08S100121819
C,CS-137  ,NO ,   3.690E-03,   6.916E-02,   1.146E-01,,    0.032
```

Analyst: KBA

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 3-JAN-2020 14:09:07.11
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 3-JAN-2020 13:04:07.91

LIMS No., Customer Name, Client ID: WG32748-1 S TEXAS

Sample ID : 14WG32748-1
Sample Type : S
Quantity : 9.54600E+01 g Dry
Start Channel : 190 Energy Tol : 1.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: HUDSON
Peak Evaluation - Identified and Unidentified

Smple Date: 8-DEC-2019 12:20:00.0
Geometry : 14S50121819
BKGFILE : 14BG122719MT
Real Time : 0 01:04:53.36
Live time : 0 01:04:52.61

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	238.52*	45	74	1.17	474.34	4.95E+00	1.16E-02	40.4	1.15E+00
2	1	295.19*	32	36	1.53	587.72	4.13E+00	8.10E-03	42.9	1.94E+00
3	1	351.67*	58	22	1.31	700.71	3.51E+00	1.50E-02	20.6	6.58E-01
4	1	609.18*	52	16	2.88	1215.94	2.07E+00	1.32E-02	22.6	4.10E+00
5	1	1460.85*	40	3	2.37	2920.61	8.86E-01	1.03E-02	20.3	5.62E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

Sample ID : 14WG32748-1 Acquisition date : 3-JAN-2020 13:04:07

Total number of lines in spectrum	5	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	0	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 14WG32748-1 Acquisition date : 3-JAN-2020 13:04:07

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	238.52	45	74	1.17	474.34	470	11	1.16E-02	80.9	4.95E+00	
1	295.19	32	36	1.53	587.72	584	10	8.10E-03	85.7	4.13E+00	
1	351.67	58	22	1.31	700.71	697	8	1.50E-02	41.1	3.51E+00	
1	609.18	52	16	2.88	1215.94	1212	13	1.32E-02	45.1	2.07E+00	
1	1460.85	40	3	2.37	2920.61	2915	12	1.03E-02	40.7	8.86E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum 5
Number of unidentified lines 5
Number of lines tentatively identified by NID 0 0.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/g Dry)	K.L. Ided	Act error	MDA (pCi/g Dry)	MDA error	Act/MDA
CS-137	-4.084E-02		5.188E-02	7.053E-02	0.000E+00	-0.579

```
A,14WG32748-1      ,01/03/2020 14:09,12/08/2019 12:20,   9.546E+01,WG32748-1 S TE
B,14WG32748-1      ,HUDSON              ,12/30/2019 12:20,14S50121819
C,CS-137   ,NO ,   -4.084E-02,   5.188E-02,   7.053E-02,,   -0.579
```

GAMMA SPECTROSCOPY

Prep and Run Logs

Logbook Page

L85485

GELI

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32735-1	S	DUP	GELI	137.12 g dry	12/30/19	WBG	BALANCE 8							WG32735
WG32748-1	S	DUP	GELI	95.46 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-1	S		GELI	101.6 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85485-2	S		GELI	146.6 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85485-3	S		GELI	155.43 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85485-4	S		GELI	144.5 g dry	12/30/19	WBG	BALANCE 8							WG32735
L85485-5	S		GELI	160.77 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-6	S		GELI	179.76 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-7	S		GELI	172.94 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-8	S		GELI	182.69 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-9	S		GELI	173.05 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-10	S		GELI	178.14 g dry	01/02/20	KT	BALANCE 8							WG32748
L85485-11	S		GELI	181.46 g dry	01/02/20	KT	BALANCE 8							WG32748

GAMMA SPECTROSCOPY

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.01
100.00	100.01
1000.00	1000.04

Check Date: 30-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 30-DEC-19

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 02-JAN-20

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

GELI BALANCE 8 02-JAN-20

LEAD 210

LEAD 210

Initial Calibration

X COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	940	18658	2/13/2015 10:10	30	1580	621.93	0.7749	1998	0.3112
1	b	#6	896	17727	2/13/2015 10:10	30	1580	590.90	0.7749	1998	0.2957
1	c	#7	42	16503	2/13/2015 10:10	30	1580	550.10	0.7749	1998	0.2753
1	d	#8	793	16949	2/13/2015 10:10	30	1580	564.97	0.7749	1998	0.2827
2	a	#9	5	15909	2/13/2015 10:10	30	1580	530.30	0.7749	1998	0.2654
2	b	#10	336	14247	2/13/2015 10:10	30	1580	474.90	0.7749	1998	0.2377
2	c	BIPO4 #5	868	18598	2/13/2015 10:52	30	1580	619.93	0.7719	1990	0.3115
2	d	#6	880	13022	2/13/2015 10:52	30	1580	434.07	0.7719	1990	0.2181
3	a	#7	5	15919	2/13/2015 10:52	30	1580	530.63	0.7718	1990	0.2666
3	b	#8	669	16745	2/13/2015 10:52	30	1580	558.17	0.7718	1990	0.2805
3	c	#9	3	15677	2/13/2015 10:52	30	1580	522.57	0.7718	1990	0.2626
3	d	#10	696	17488	2/13/2015 10:52	30	1580	582.93	0.7718	1990	0.2929
4	a	BIPO4 #5	861	18350	2/13/2015 12:00	30	1580	611.67	0.7668	1977	0.3094
4	b	#6	920	17425	2/13/2015 12:00	30	1580	580.83	0.7668	1977	0.2938
4	c	#7	2	16382	2/13/2015 12:00	30	1580	546.07	0.7668	1977	0.2762
4	d	#8	609	16975	2/13/2015 12:00	30	1580	565.83	0.7668	1977	0.2862

210PB-061014	Activity		MILK DATE/TIME			
	pCi/ml	BI YIELD		Standards Prepared by:		2/21/15
210PB-061014-1	2013	0.577	2/11/2015 13:55			
210PB-061014-2	2013	0.577	2/11/2015 13:55	Calibration by:	Keith Jett	2/21/15
210PB-061014-3	2013	0.577	2/11/2015 13:55			
210PB-061014-4	2013	0.577	2/11/2015 13:55			
210PB-061014-5	2013	0.577	2/11/2015 13:55			
210PB-061014-6	2013	0.577	2/11/2015 13:55			

Y COUNTER PB-210/BI-210 CALIBRATION												
Detector Number		Eff. STD	Alpha	Beta		Min Ctd	HV Value	Beta CPM	BI-210 D.F.	BI-210 DPM	BI-210 Beta Eff.
1	a	BIPO4 #5	927	17714	2/13/2015 15:55	30	1650	590.47	0.7497	1933	0.3054
1	b	#6	882	16925	2/13/2015 15:55	30	1650	564.17	0.7497	1933	0.2918
1	c	#7	121	16119	2/13/2015 15:55	30	1650	537.30	0.7497	1933	0.2779
1	d	#8	856	16581	2/13/2015 15:55	30	1650	552.70	0.7497	1933	0.2859
2	a	#9	6	15238	2/13/2015 15:55	30	1650	507.93	0.7497	1933	0.2627
2	b	#10	756	17135	2/13/2015 15:55	30	1650	571.17	0.7497	1933	0.2955
2	c	BIPO4 #5	1657	18377	2/18/2015 10:24	60	1650	306.28	0.3877	1000	0.3064
2	d	#6	2017	17684	2/18/2015 10:24	60	1650	294.73	0.3877	1000	0.2948
3	a	#7	90	16259	2/18/2015 10:24	60	1650	270.98	0.3877	1000	0.2711
3	b	#8	1726	17225	2/18/2015 10:24	60	1650	287.08	0.3877	1000	0.2872
3	c	#9	16	15783	2/18/2015 10:24	60	1650	263.05	0.3877	1000	0.2631
3	d	#10	1502	17714	2/18/2015 10:24	60	1650	295.23	0.3877	1000	0.2953
4	a	BIPO4 #5	3108	13982	2/20/2015 12:38	60	1650	233.03	0.2903	749	0.3113
4	b	#6	3099	13105	2/20/2015 12:38	60	1650	218.42	0.2903	749	0.2918
4	c	#7	3	12270	2/20/2015 12:38	60	1650	204.50	0.2903	749	0.2732
4	d	#8	2476	12496	2/20/2015 12:38	60	1650	208.27	0.2903	749	0.2782

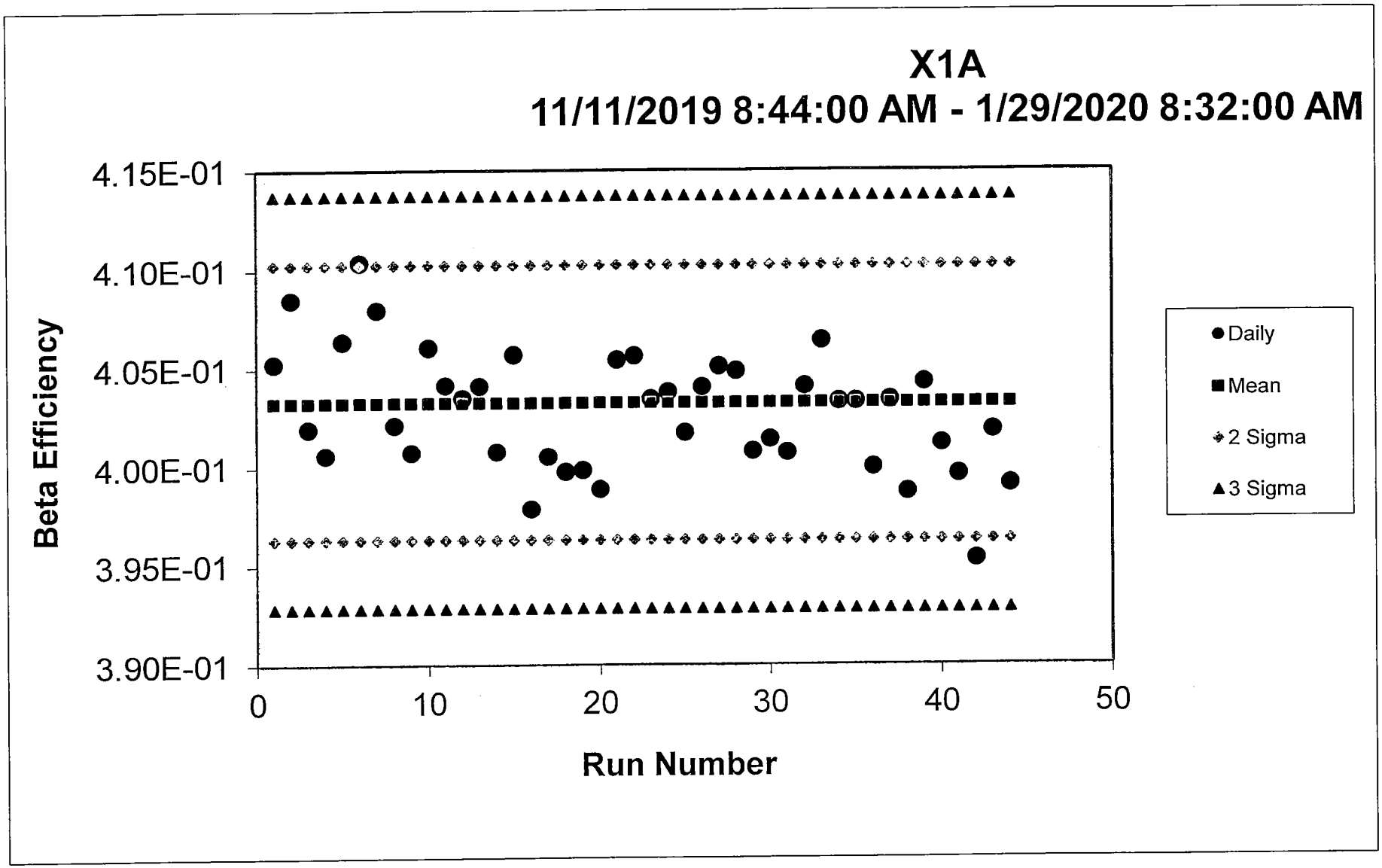
210PB-061014	Activity pCi/ml	BI YIELD	MILK DATE/TIME
210PB-061014-1	2013	0.577	2/11/2015 13:55
210PB-061014-2	2013	0.577	2/11/2015 13:55
210PB-061014-3	2013	0.577	2/11/2015 13:55
210PB-061014-4	2013	0.577	2/11/2015 13:55
210PB-061014-5	2013	0.577	2/11/2015 13:55
210PB-061014-6	2013	0.577	2/11/2015 13:55

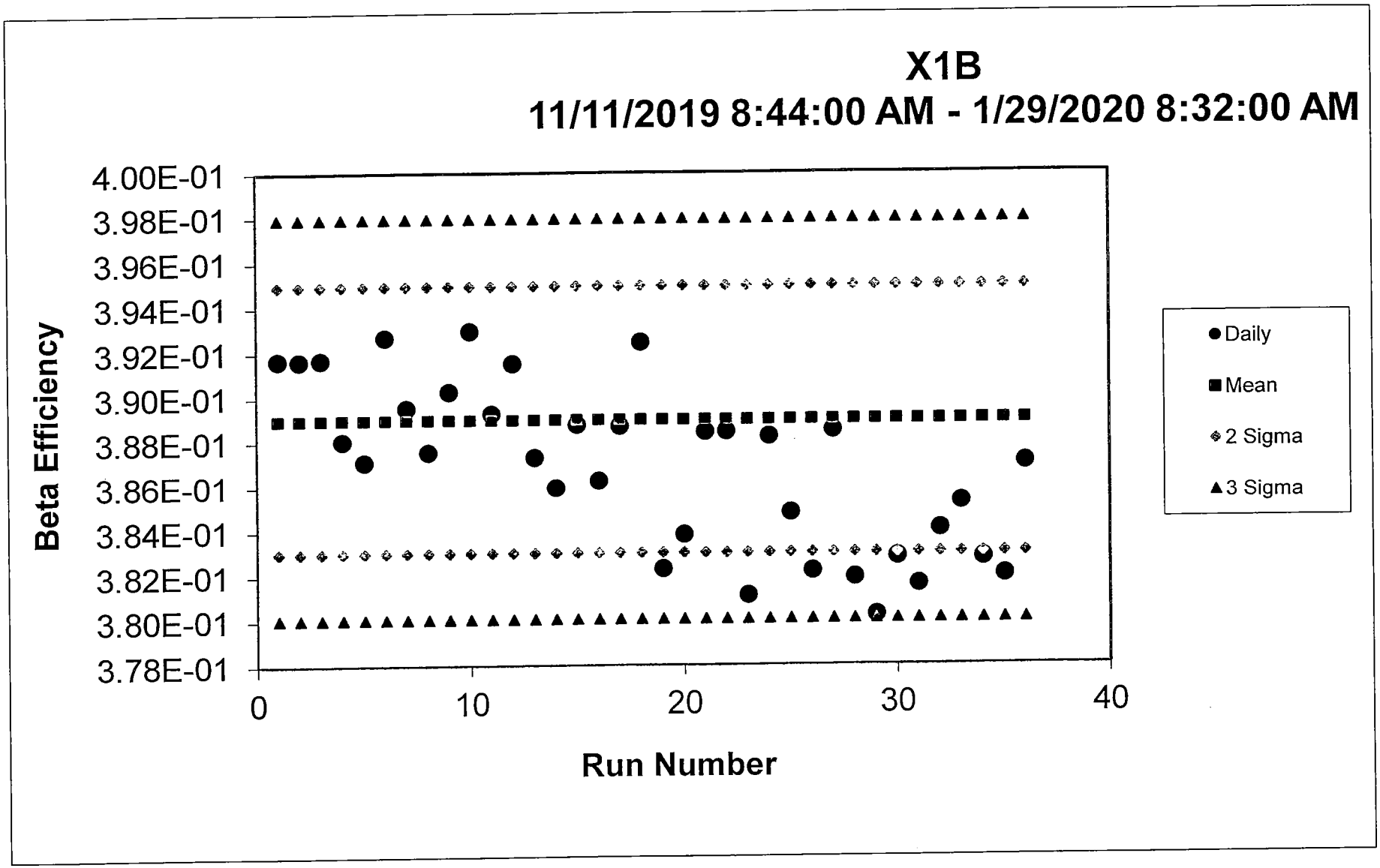
Standards Prepared by: [signature] 2/21/15

Calibration by: Keith Jett 2/21/15

LEAD 210

Daily Source and Background Checks


X1A
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.15E-01
4.10E-01
4.05E-01
4.00E-01
3.95E-01
3.90E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1B
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
3.88E-01
3.86E-01
3.84E-01
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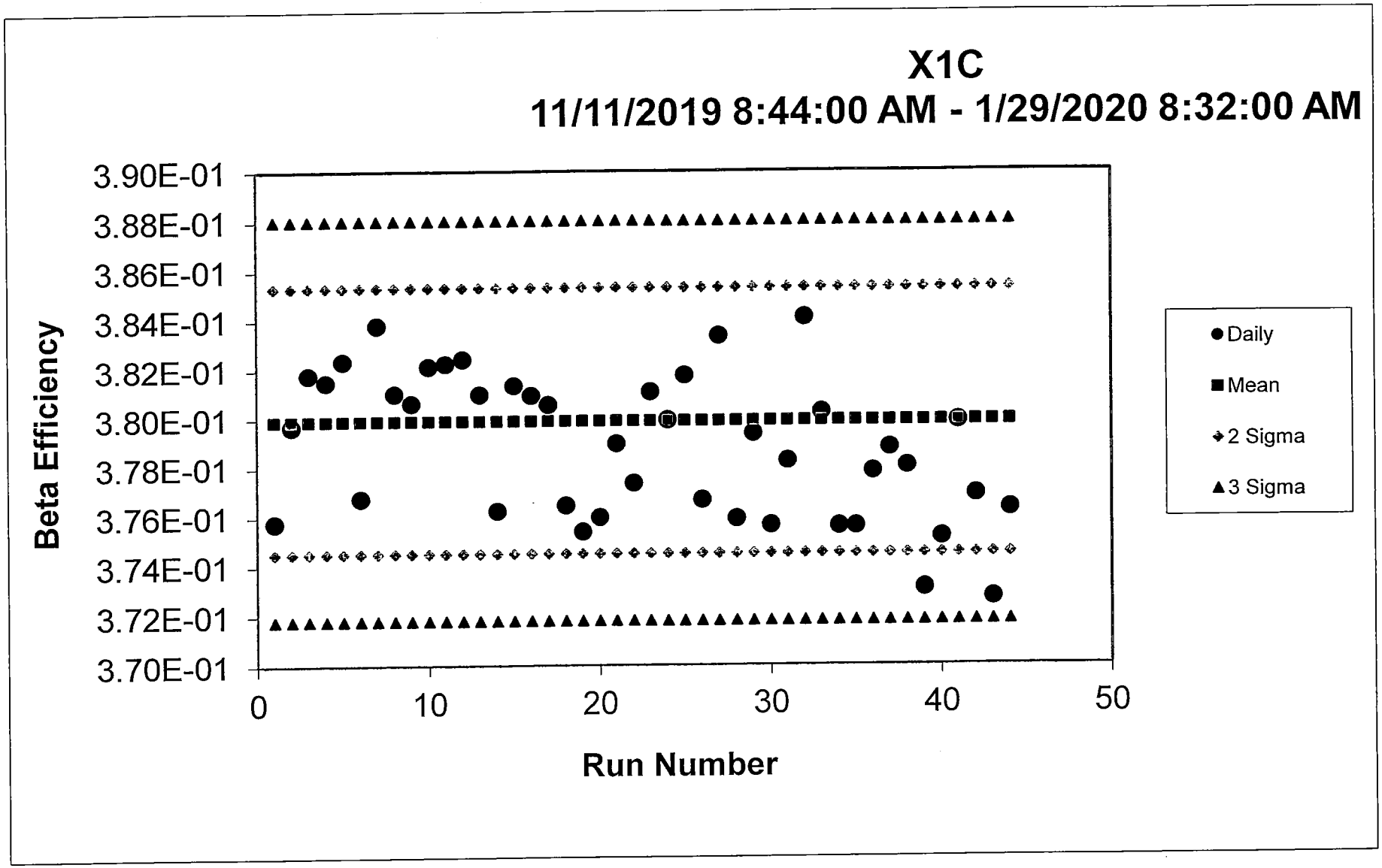
20
30
40
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1C
11/11/2019 8:44:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.90E-01
3.88E-01
3.86E-01
3.84E-01
3.82E-01
3.80E-01
3.78E-01
3.76E-01
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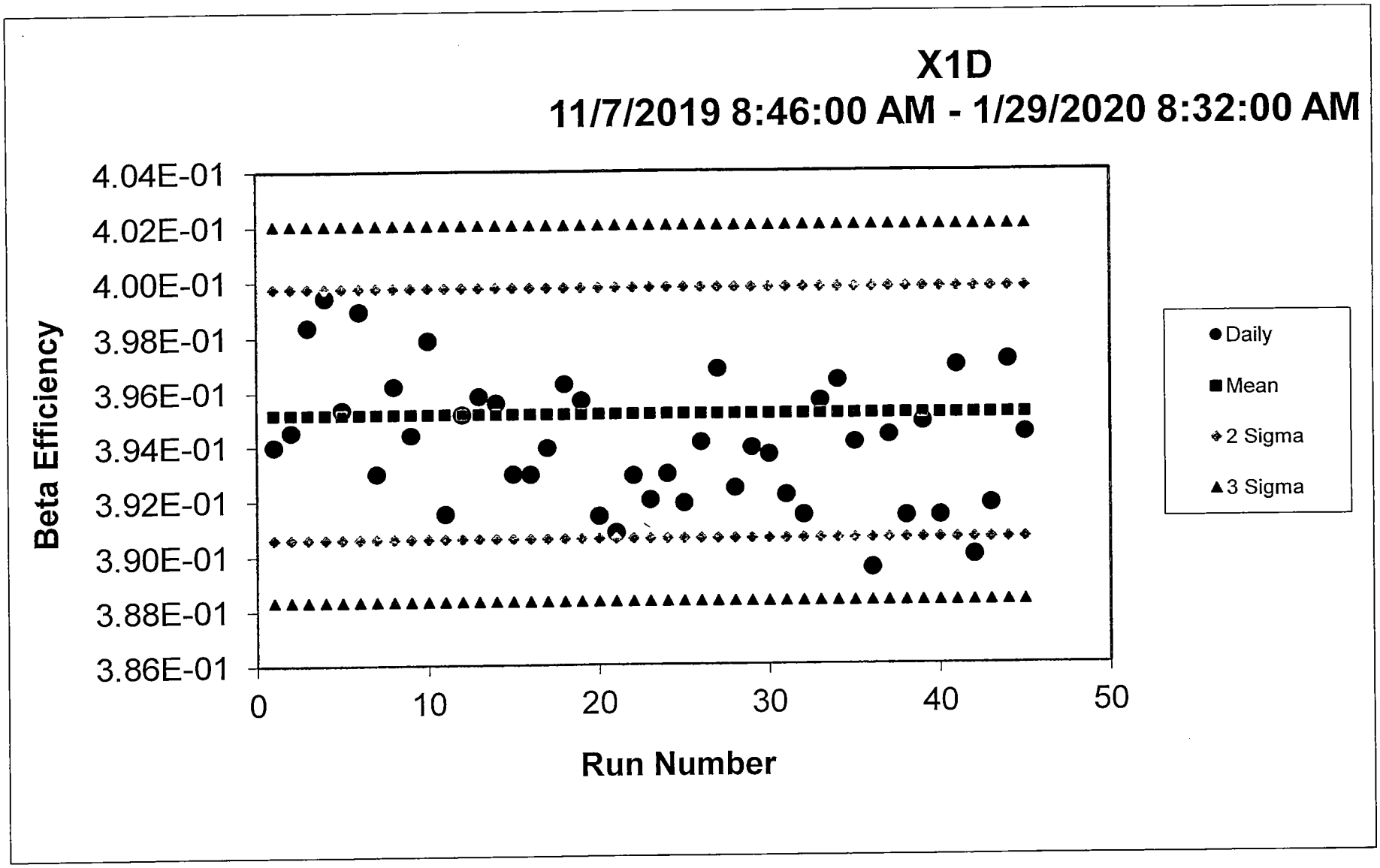
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X1D
11/7/2019 8:46:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.04E-01
4.02E-01
4.00E-01
3.98E-01
3.96E-01
3.94E-01
3.92E-01
3.90E-01
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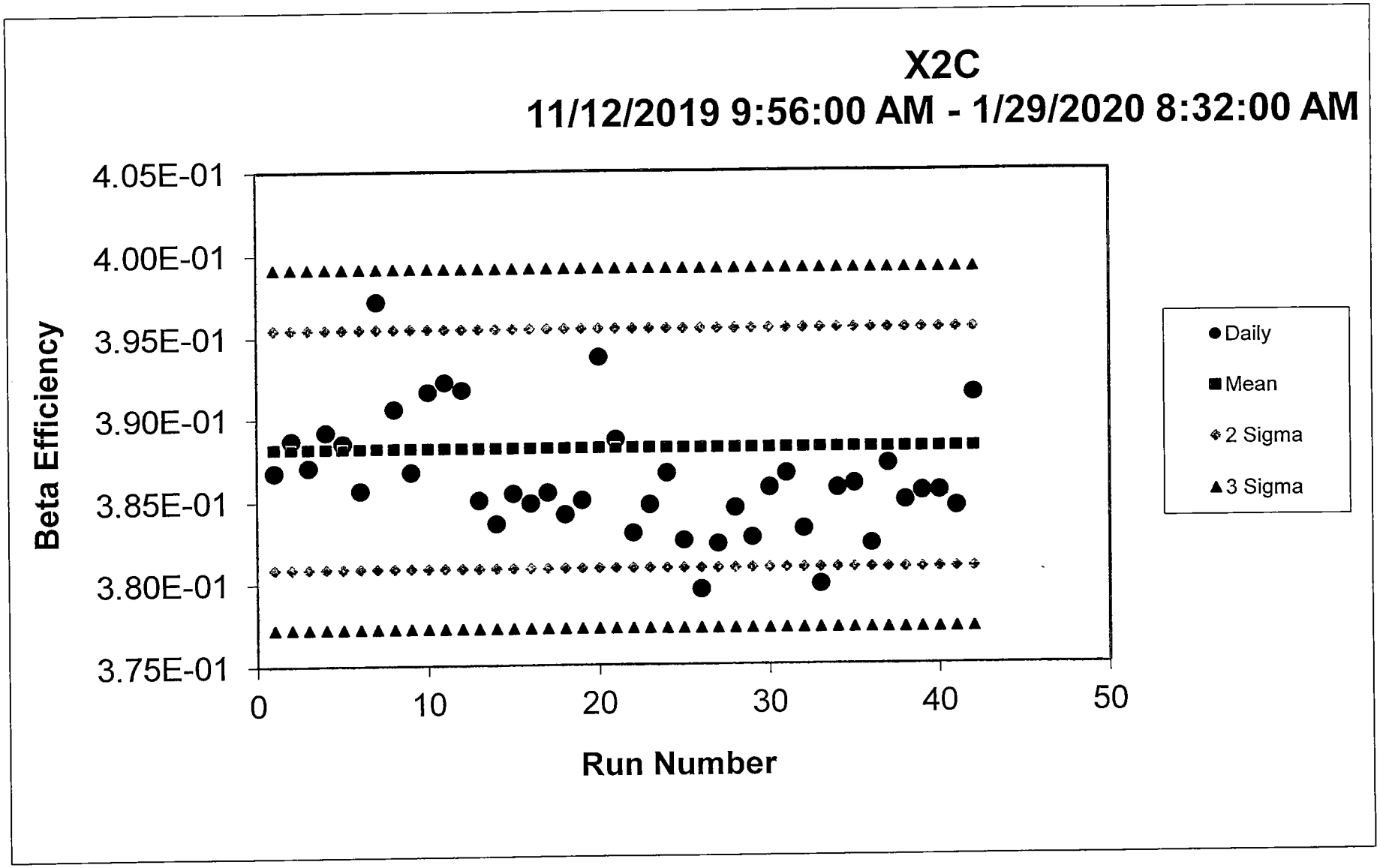
3.86E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma


X2C
11/12/2019 9:56:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
4.05E-01
4.00E-01
3.95E-01
3.90E-01
3.85E-01
3.80E-01
3.75E-01
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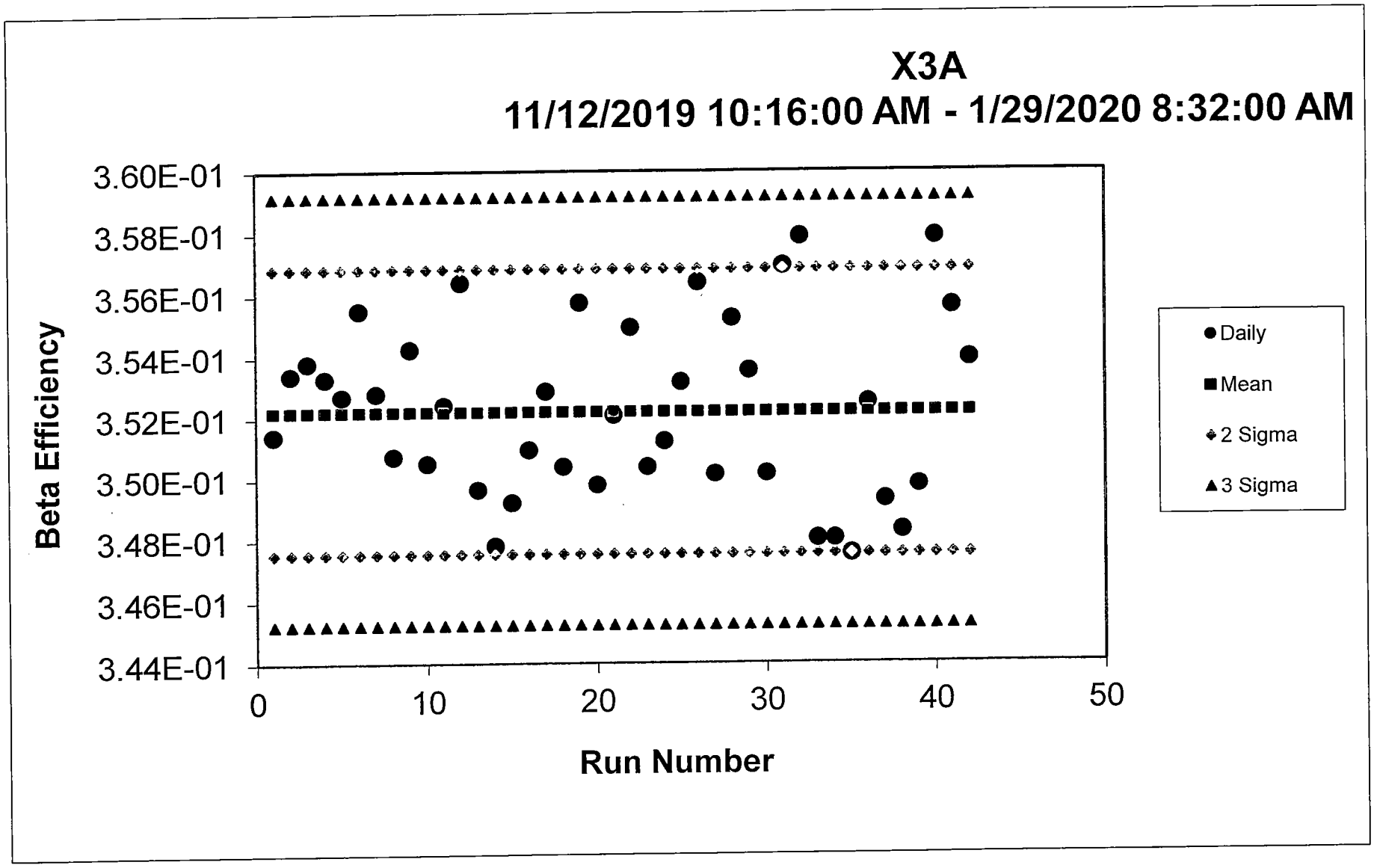
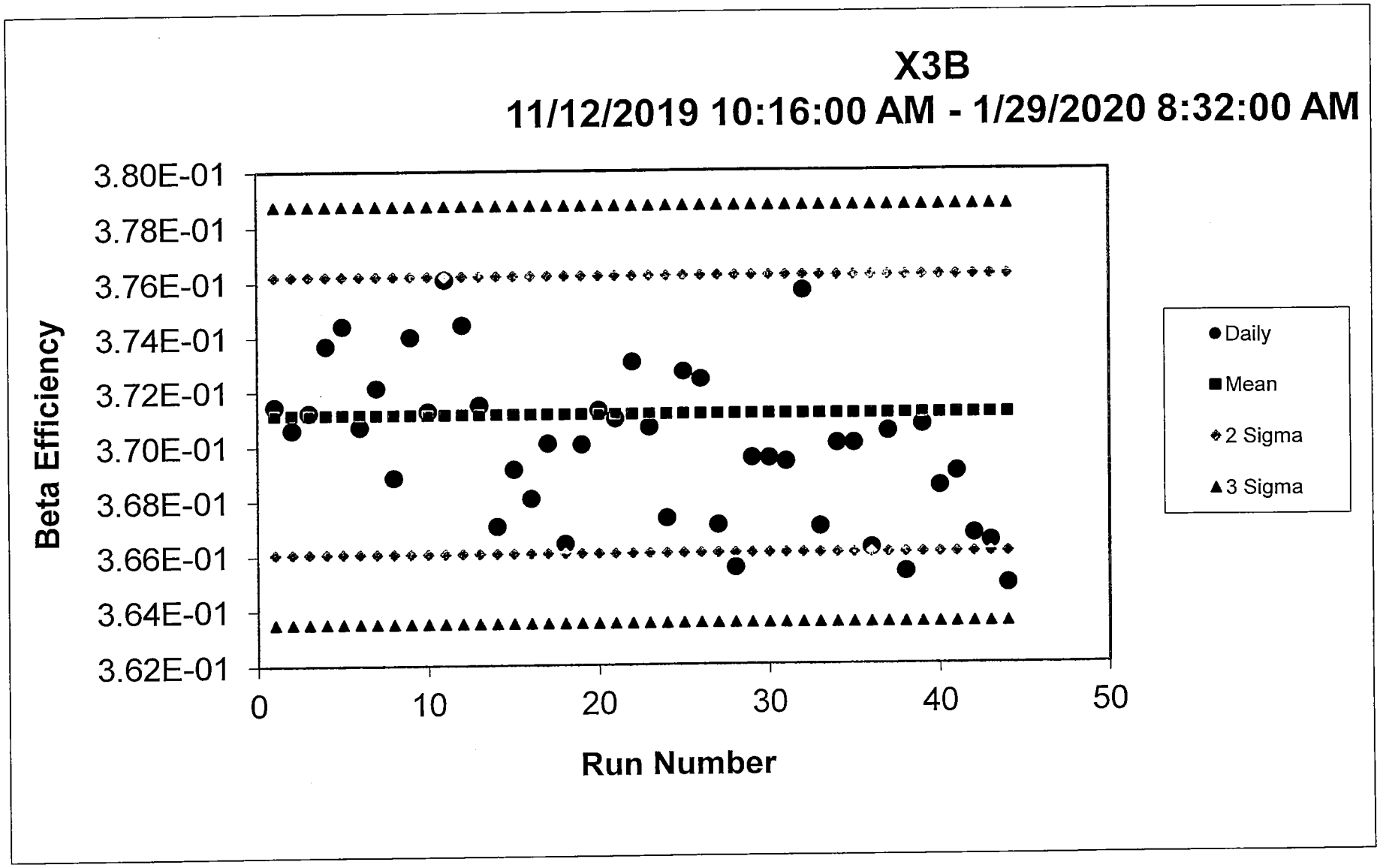
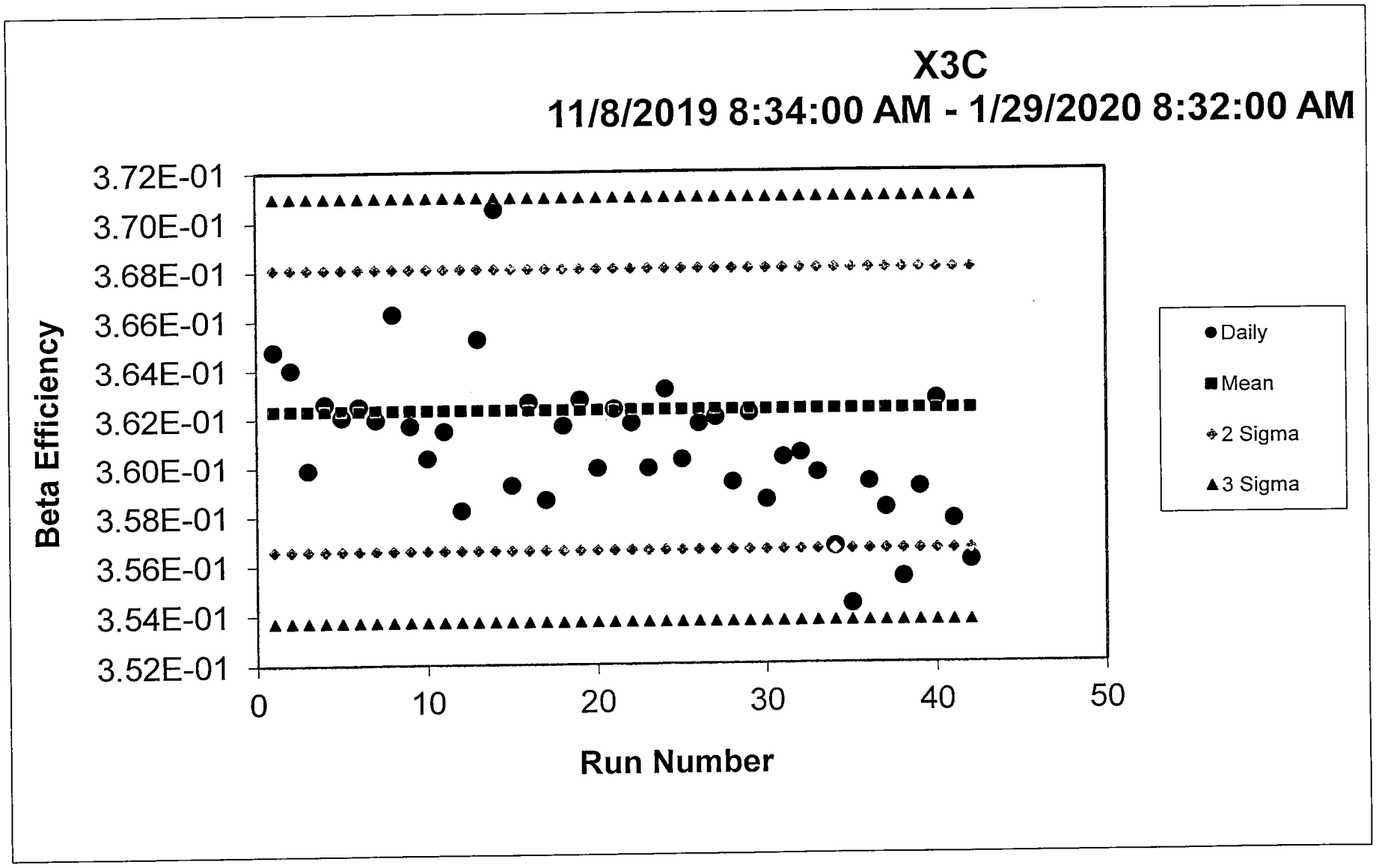
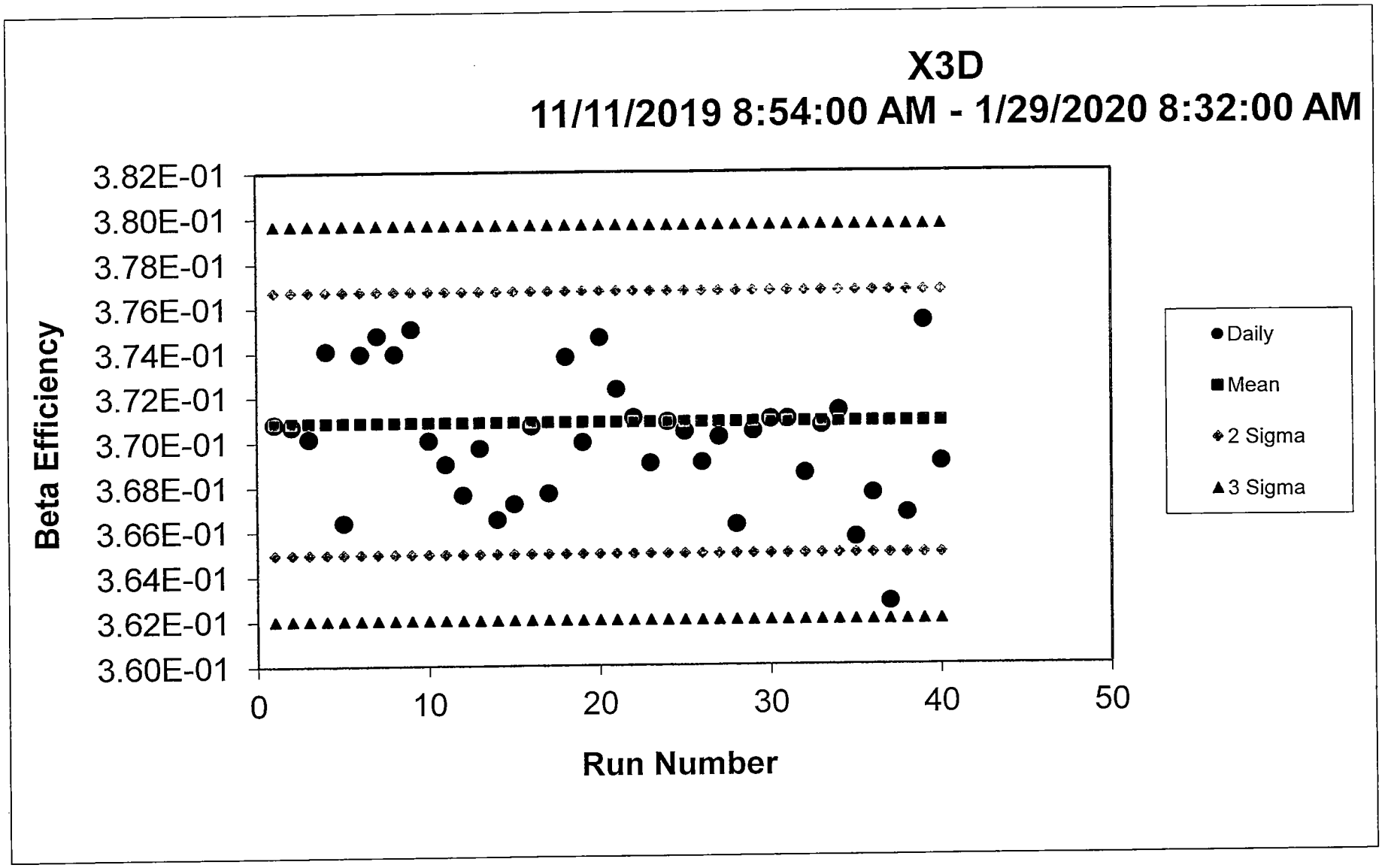
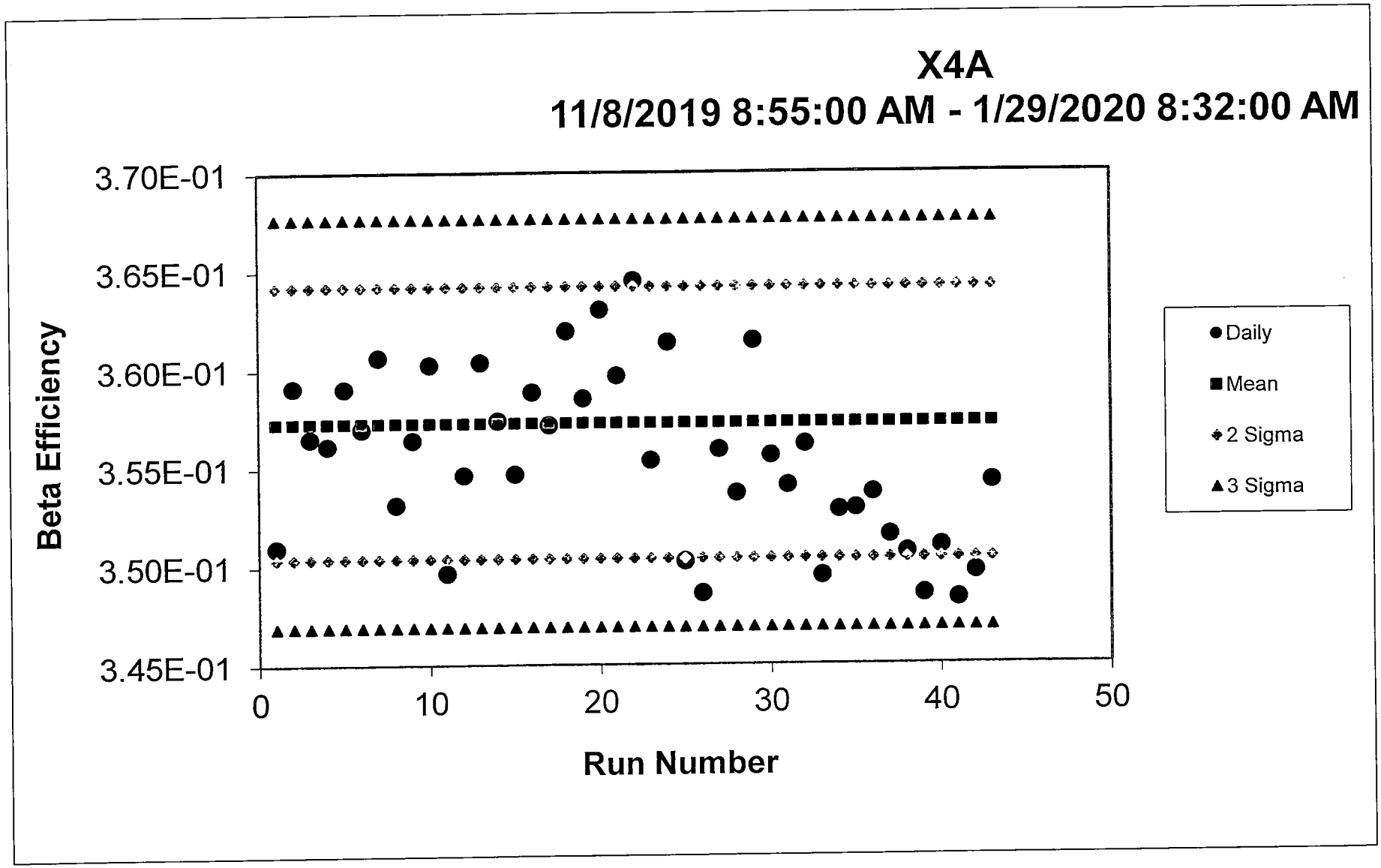
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

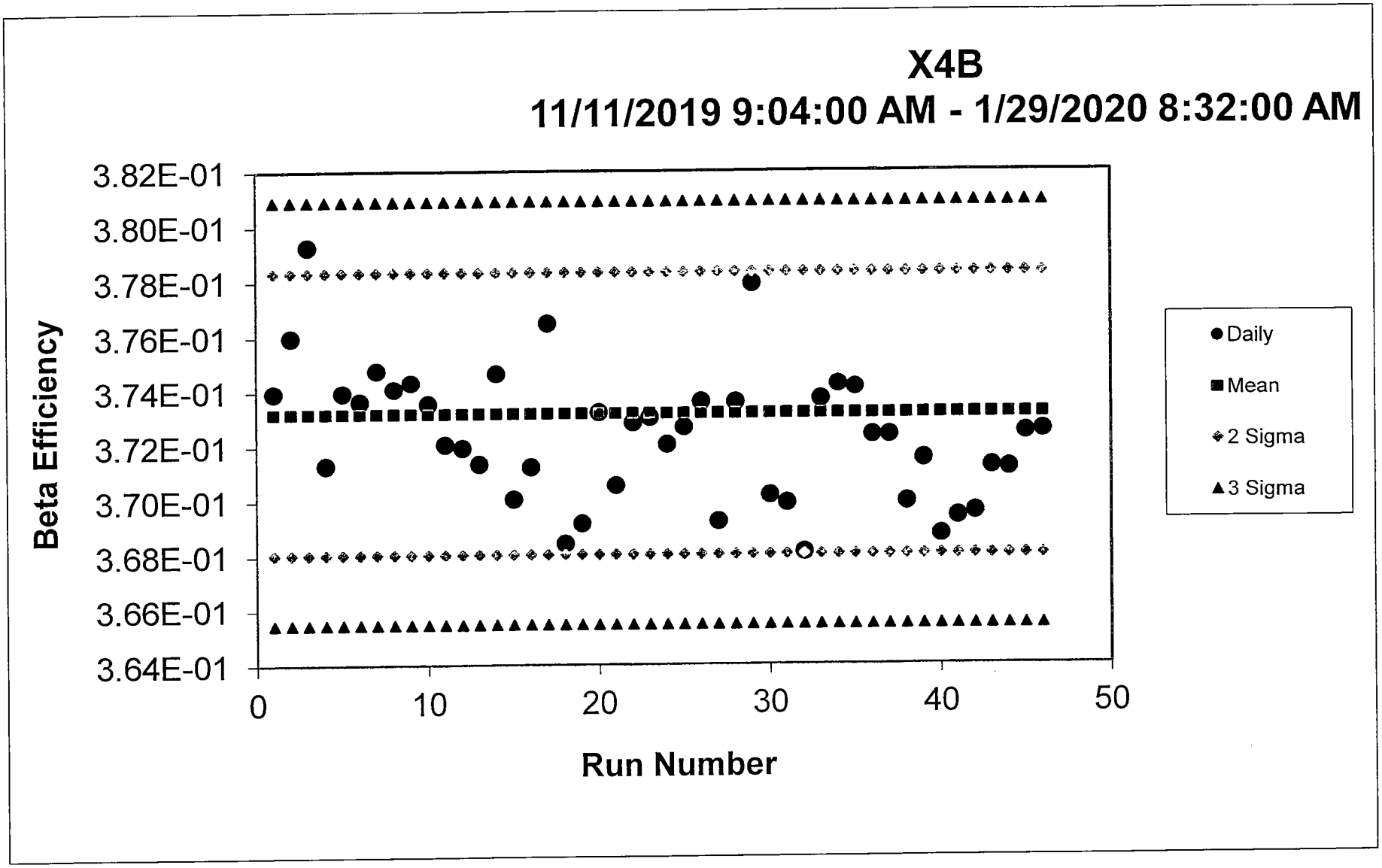

X3A
11/12/2019 10:16:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.60E-01
3.58E-01
3.56E-01
3.54E-01
3.52E-01
3.50E-01
3.48E-01
3.46E-01
3.44E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

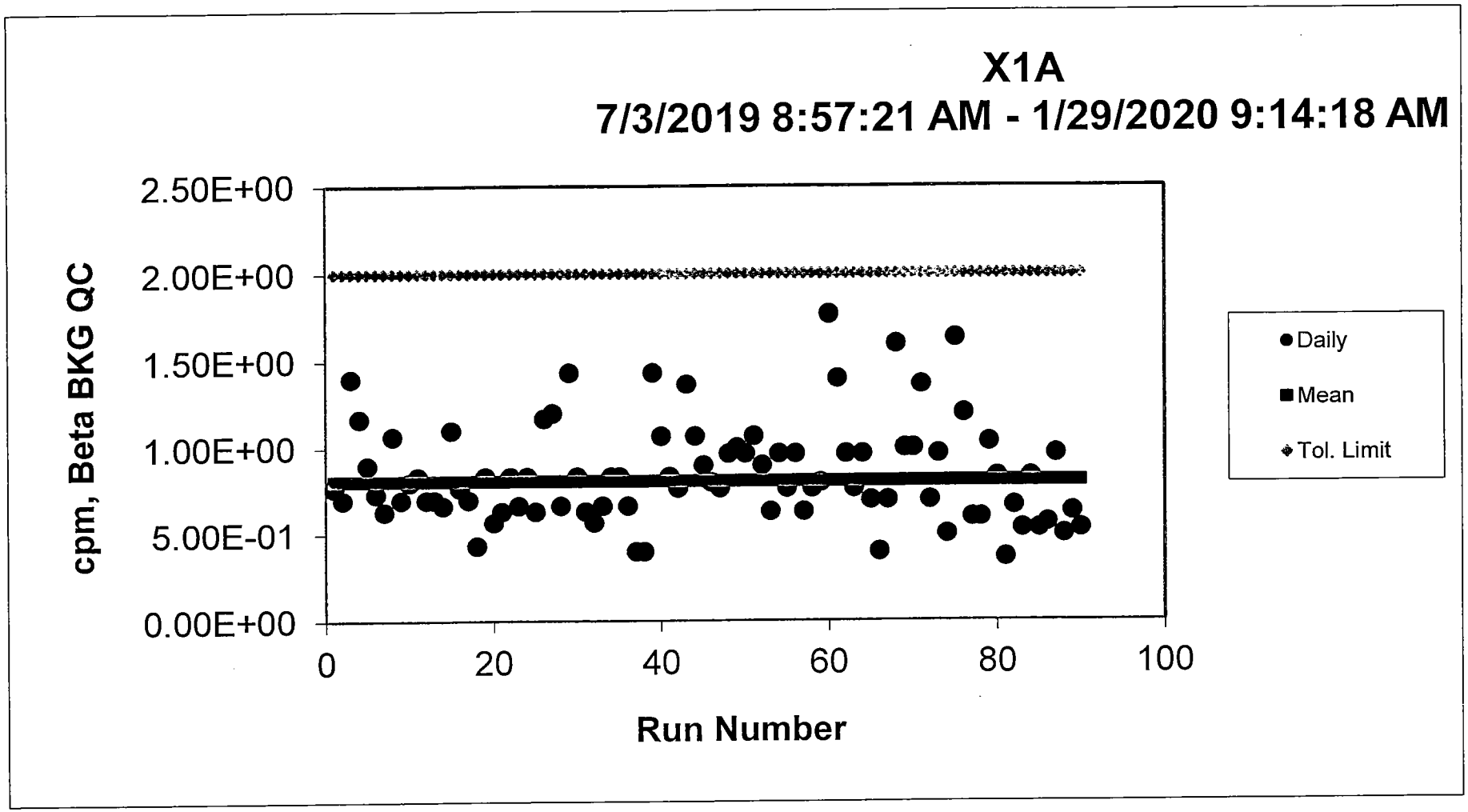

X3B
11/12/2019 10:16:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

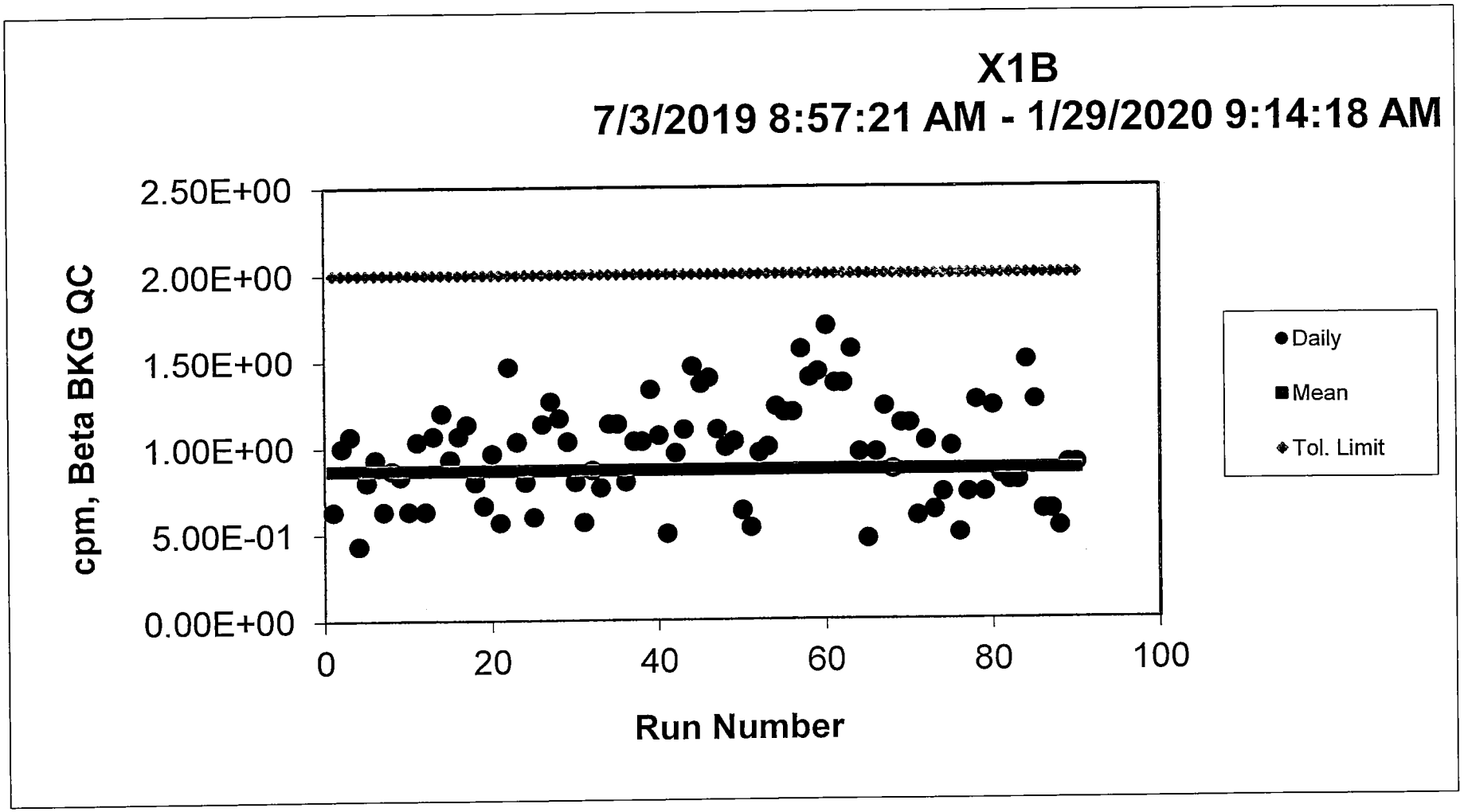

X3C
11/8/2019 8:34:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
3.58E-01
3.56E-01
3.54E-01
3.52E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

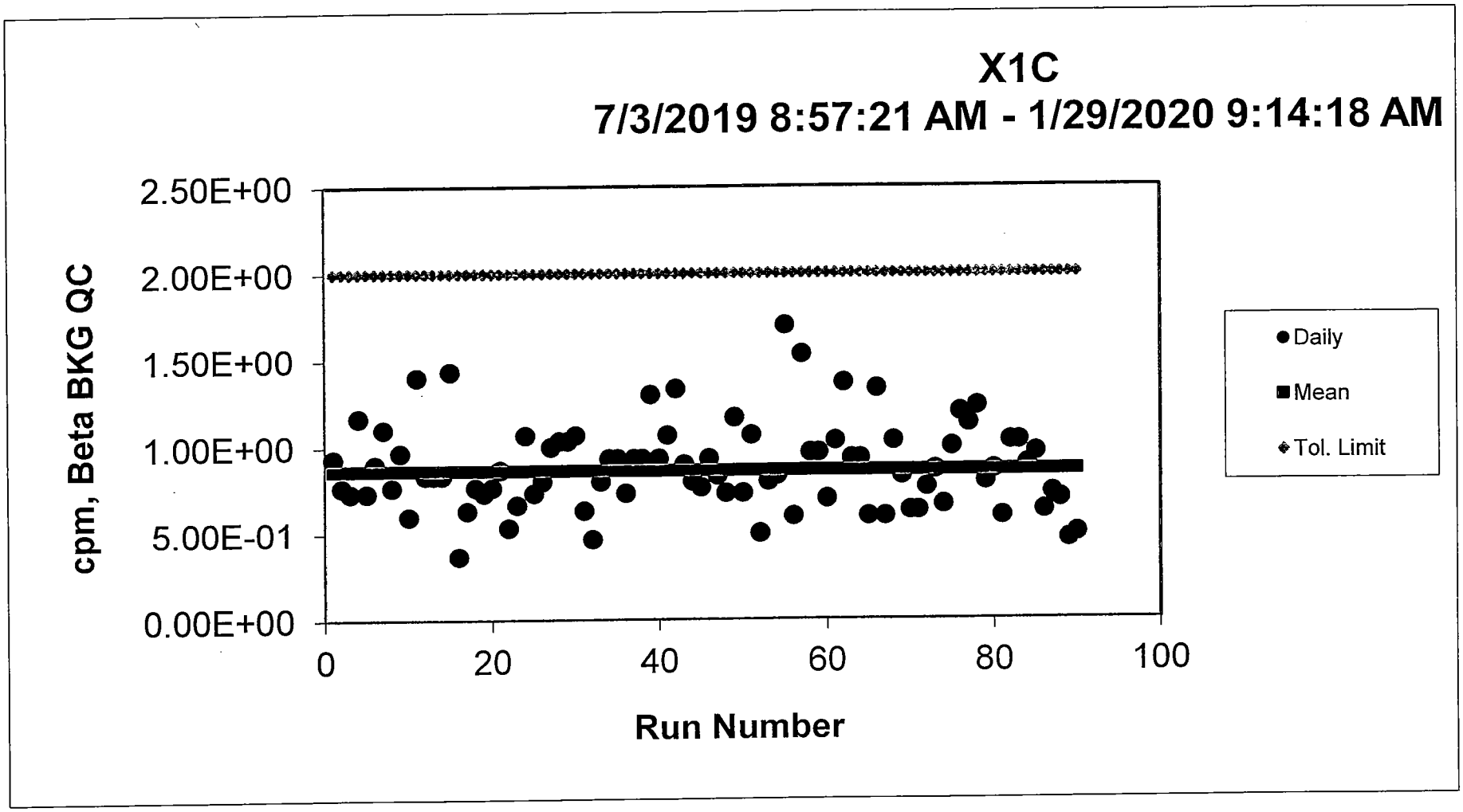

X3D
11/11/2019 8:54:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
3.62E-01
3.60E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

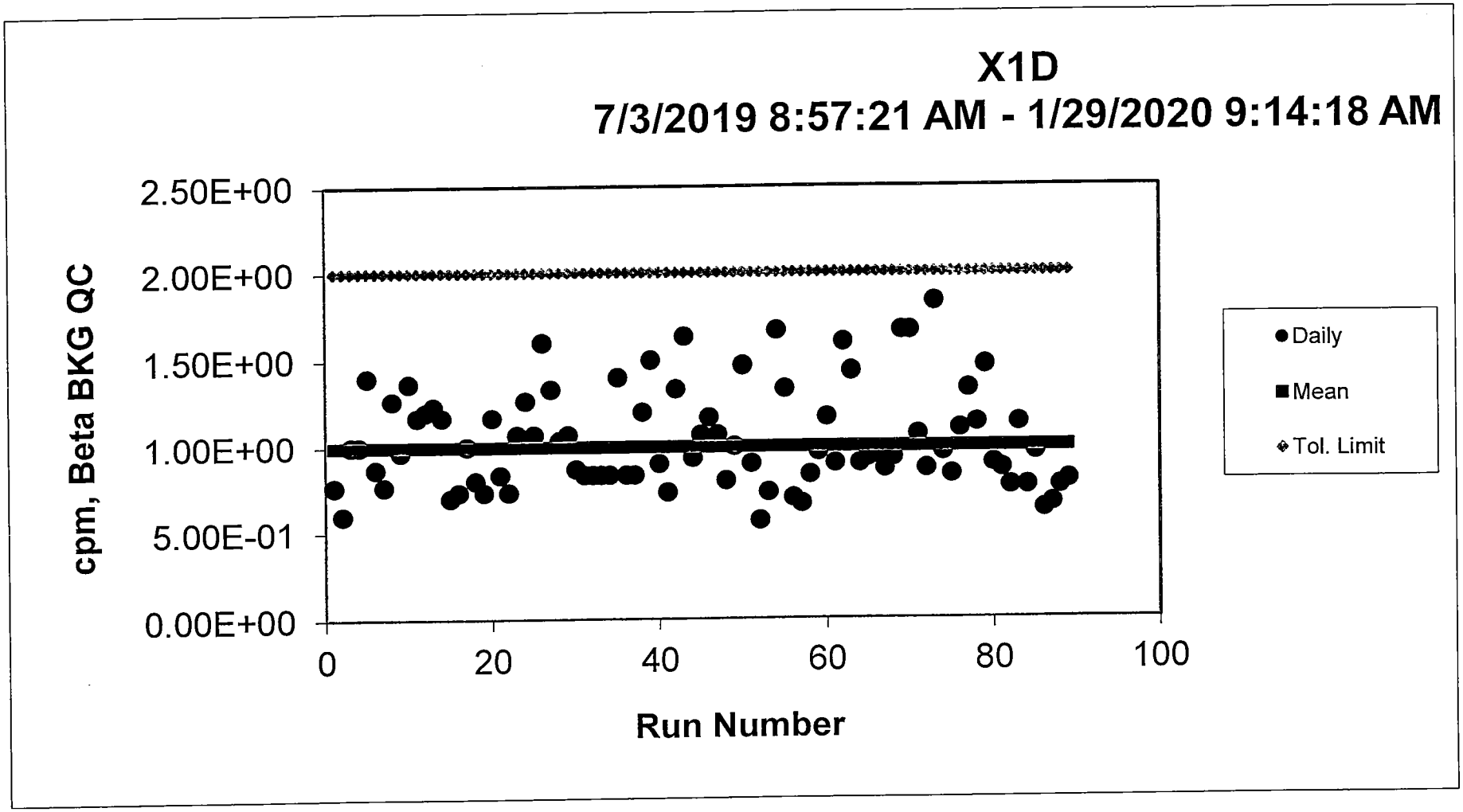

X4A
11/8/2019 8:55:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.70E-01
3.65E-01
3.60E-01
3.55E-01
3.50E-01
3.45E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

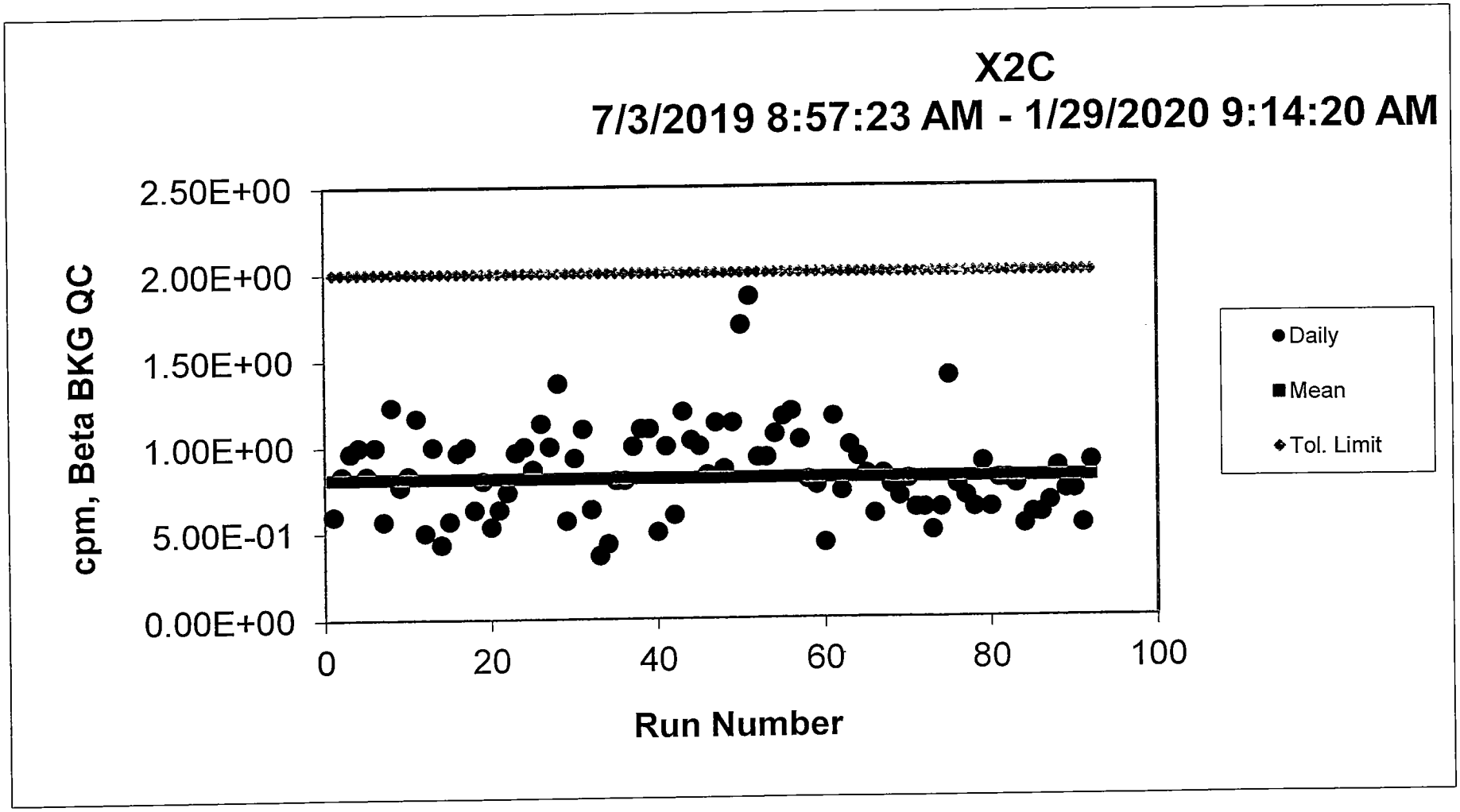

X4B
11/11/2019 9:04:00 AM - 1/29/2020 8:32:00 AM
Beta Efficiency
3.82E-01
3.80E-01
3.78E-01
3.76E-01
3.74E-01
3.72E-01
3.70E-01
3.68E-01
3.66E-01
3.64E-01
0
10
20
30
40
50
Run Number
Daily
Mean
2 Sigma
3 Sigma

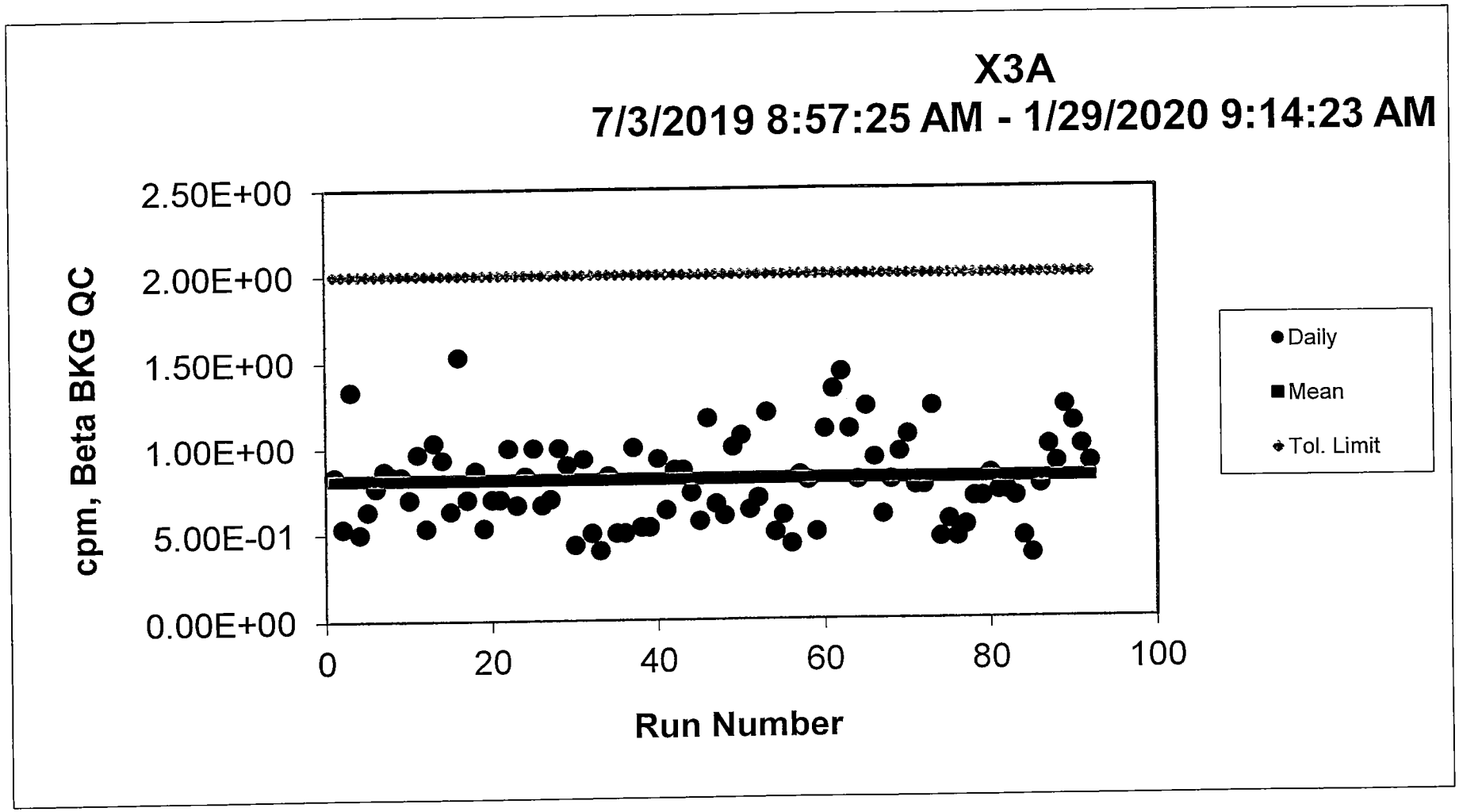

X1A
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

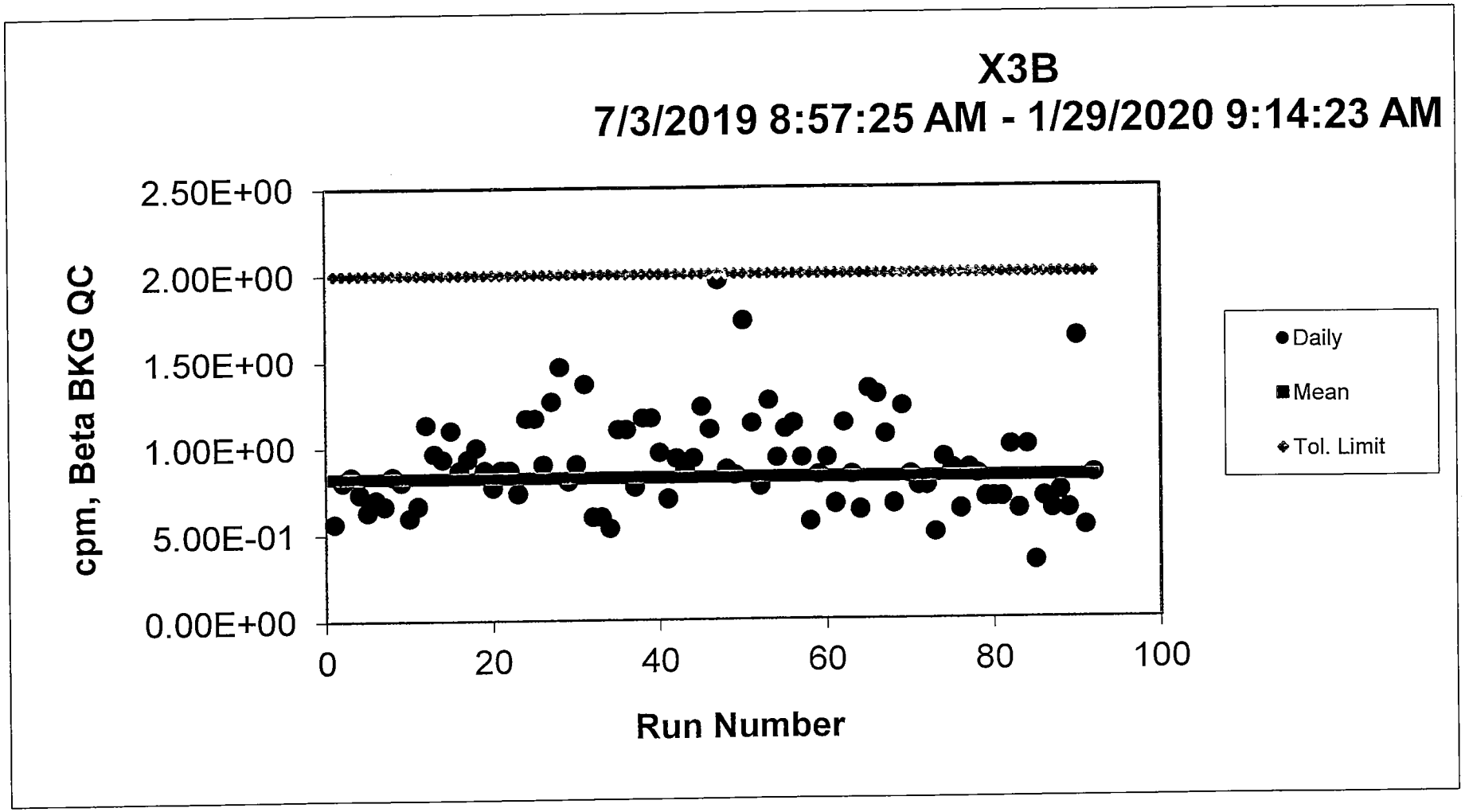

X1B
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

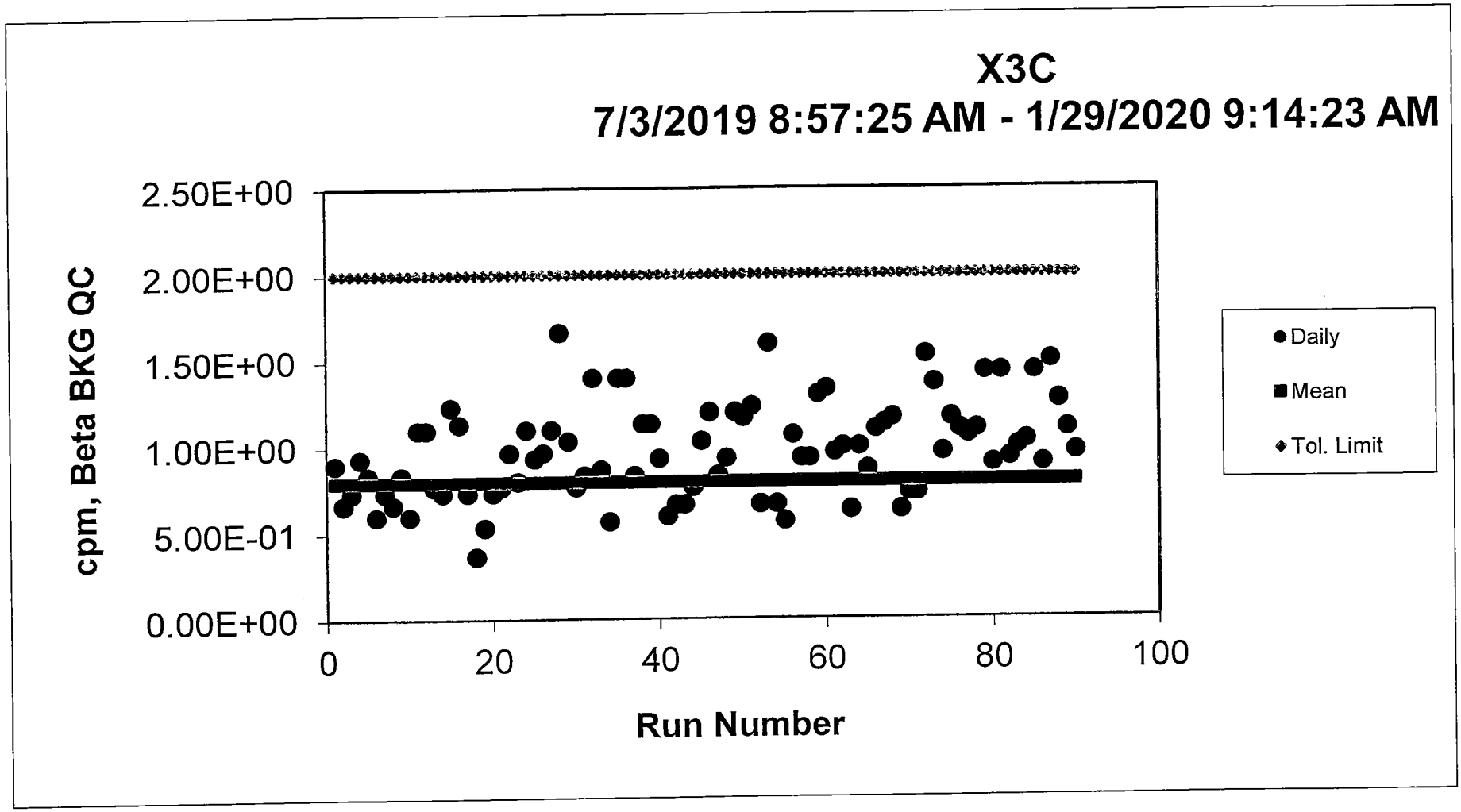

X1C
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

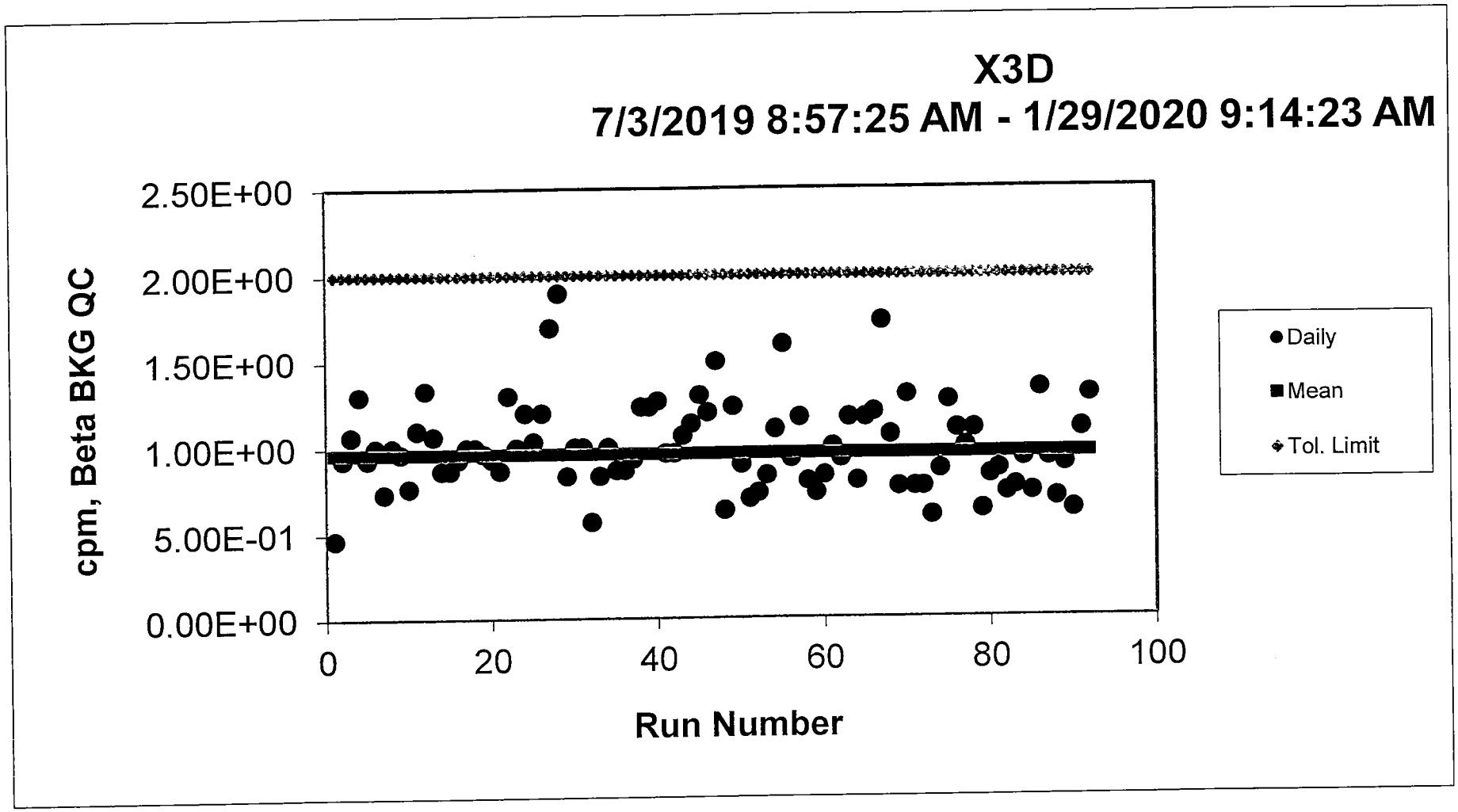

X1D
7/3/2019 8:57:21 AM - 1/29/2020 9:14:18 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

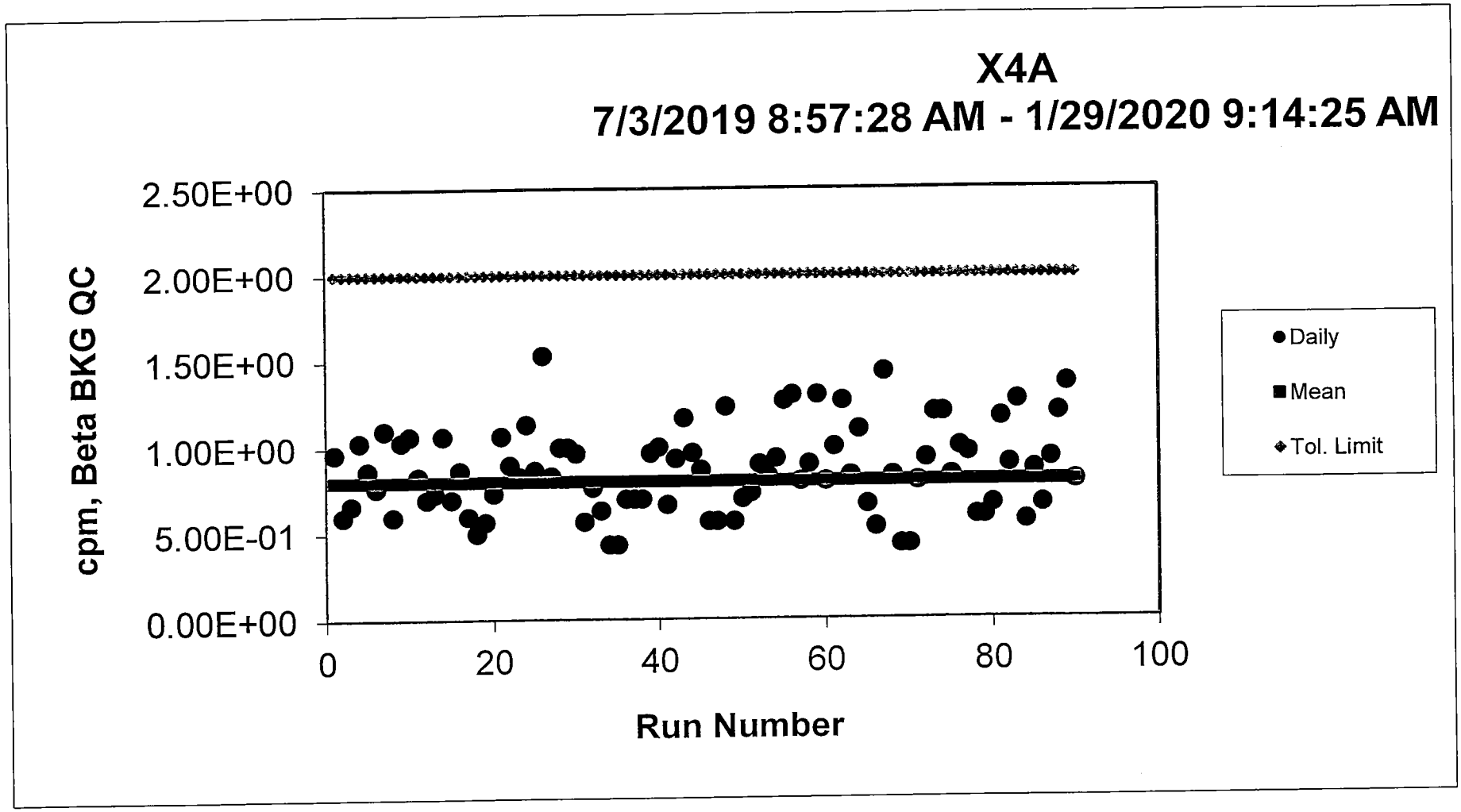

X2C
7/3/2019 8:57:23 AM - 1/29/2020 9:14:20 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

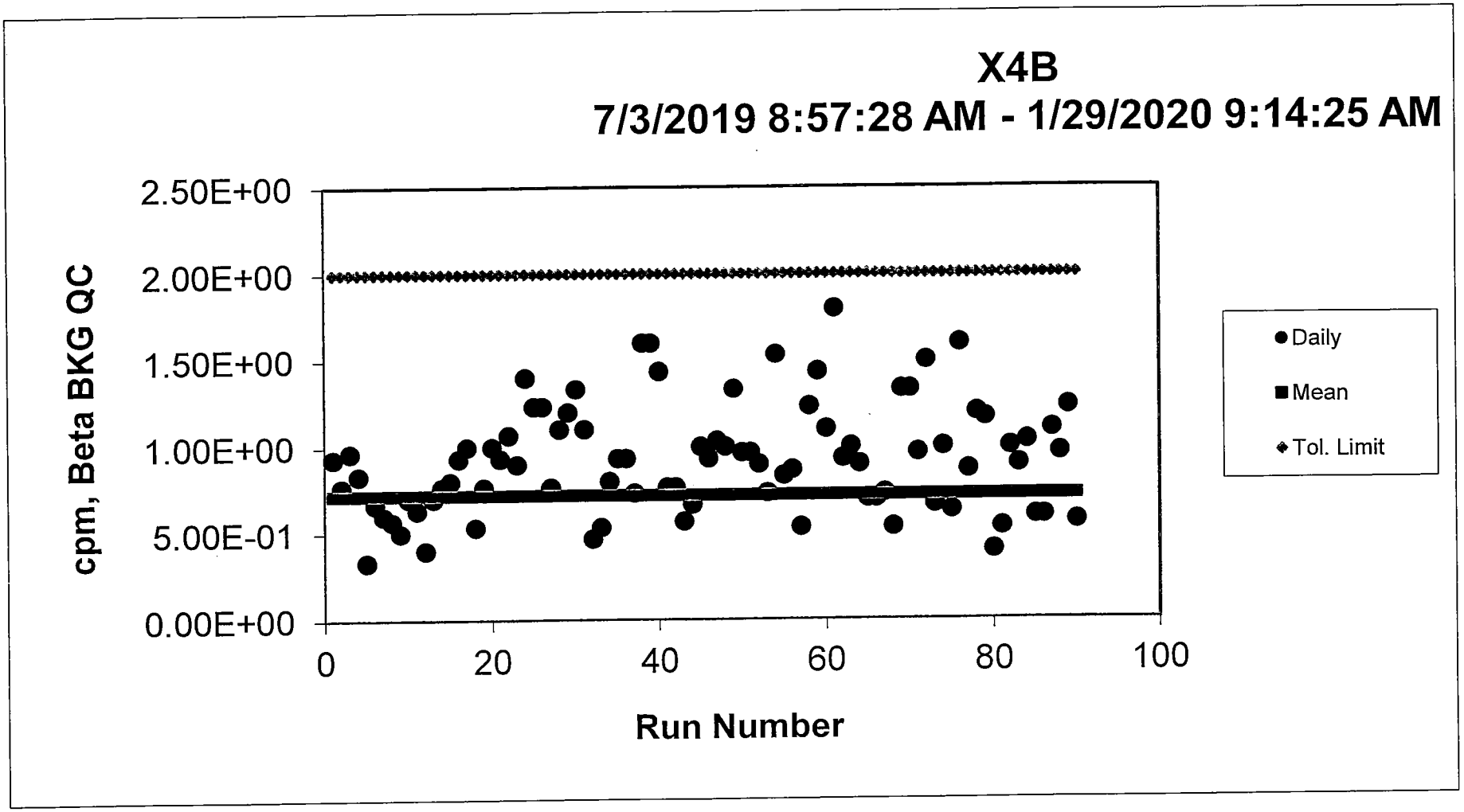

X3A
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3B
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3C
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X3D
7/3/2019 8:57:25 AM - 1/29/2020 9:14:23 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4A
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit


X4B
7/3/2019 8:57:28 AM - 1/29/2020 9:14:25 AM
cpm, Beta BKG QC
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
0
20
40
60
80
100
Run Number
Daily
Mean
Tol. Limit

LEAD 210

Recovery Data

Pb-210 Recovery

Work Group

WG32861

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	58.29%	518.8
recovery 2	62.51%	556.3
Average	60.40%	
2 sigma	5.96	
RPD for highest and lowest	6.98	
< 30	yes	

Analyst: [signature]

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:52.41
TBE13 31-TP10727B HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.00

LIMS No., Customer Name, Client ID: L85485-6

Sample ID : 13L85485-6BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentfied

Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1325MM091319
BKGFILE : 13BG122719MT
Real Time : 0 01:40:02.74
Live time : 0 01:40:00.00

[signature]

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.86*	2284	506	1.06	145.65	9.78E+00	3.81E-01	2.6	4.83E+00
2	2	75.02*	4138	386	0.97	149.98	1.06E+01	6.90E-01	1.8	
3	3	84.85*	1843	352	1.10	169.60	1.36E+01	3.07E-01	2.9	3.03E+00
4	3	87.50*	604	305	1.20	174.87	1.43E+01	1.01E-01	7.0	
5	1	569.79	6425	292	1.31	1138.04	6.29E+00	1.07E+00	1.4	1.10E+00
6	1	1063.87	2737	61	1.73	2126.06	3.19E+00	4.56E-01	2.0	1.48E+00
7	1	1461.10*	0	40	2.28	2921.38	2.29E+00	2.85E-05	*****	7.36E-01
8	1	1633.17	272	7	2.05	3266.16	2.08E+00	4.53E-02	6.5	8.55E-01
9	1	1769.83	153	16	2.30	3540.13	1.97E+00	2.55E-02	9.8	1.34E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2737	74.50*	3.188E+00	5.192E+02	5.192E+02	4.03
	1770.24	153	6.87	1.967E+00	5.094E+02	5.094E+02	19.57

Flag: "*" = Keyline

$$\frac{518.8\ pCi}{890.5} = 0.5826$$

Sample ID : 13L85485-6BI207 Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.192E+02	5.192E+02	0.209E+02	4.03	
		Total Activity :	5.192E+02	5.192E+02			
		Grand Total Activity :	5.192E+02	5.192E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.86	2284	506	1.06	145.65	139	19	3.81E-01	5.2	9.78E+00	
2	75.02	4138	386	0.97	149.98	139	19	6.90E-01	3.6	1.06E+01	
3	84.85	1843	352	1.10	169.60	163	28	3.07E-01	5.8	1.36E+01	
3	87.50	604	305	1.20	174.87	163	28	1.01E-01	14.0	1.43E+01	
1	569.79	6425	292	1.31	1138.04	1130	16	1.07E+00	2.8	6.29E+00	
1	1461.10	0	40	2.28	2921.38	2912	16	2.85E-05	****	2.29E+00	
1	1633.17	272	7	2.05	3266.16	3258	14	4.53E-02	12.9	2.08E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	9	
Number of unidentified lines	7	
Number of lines tentatively identified by NID	2	22.22%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.188E+02	5.188E+02	0.205E+02	3.94	
	Total Activity :		5.188E+02	5.188E+02			
Grand Total Activity :			5.188E+02	5.188E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.188E+02	2.046E+01	6.886E+00	0.000E+00	75.337

```
A,13L85485-6BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-6
B,13L85485-6BI207 ,BI207              ,01/15/2020 08:42,1325MM091319
C,BI-207  ,YES,   5.188E+02,   2.046E+01,   6.886E+00,,   75.337
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-JAN-2020 10:29:47.89
TBE14 54-TP42603C HpGe ******* Aquisition Date/Time: 17-JAN-2020 08:49:30.63

LIMS No., Customer Name, Client ID: L85485-7

Sample ID : 14L85485-7BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 17-JAN-2020 00:00:00.
Geometry : 1425MM101619
BKGFILE : 14BG122719MT
Real Time : 0 01:40:03.35
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	72.67*	3242	567	0.92	142.59	1.27E+01	5.40E-01	2.1	2.26E+00
2	4	74.84*	5777	357	0.91	146.92	1.35E+01	9.63E-01	1.4	
3	5	84.63*	2427	379	1.09	166.51	1.69E+01	4.04E-01	2.4	2.38E+00
4	5	87.21	727	254	0.98	171.67	1.76E+01	1.21E-01	5.2	
5	1	569.55	6686	218	1.29	1136.65	6.14E+00	1.11E+00	1.3	1.83E+00
6	1	1063.55	2748	104	1.61	2125.26	3.00E+00	4.58E-01	2.1	1.24E+00
7	1	1633.09	281	6	1.95	3265.47	1.91E+00	4.68E-02	6.3	1.66E+00
8	1	1770.11	161	8	1.90	3539.85	1.80E+00	2.69E-02	8.8	9.45E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2748	74.50*	2.996E+00	5.547E+02	5.547E+02	4.18
	1770.24	161	6.87	1.799E+00	5.878E+02	5.879E+02	17.63

Flag: "*" = Keyline

$$\frac{556.3\ pCi}{890.5} = 0.6247$$

Summary of Nuclide Activity
Sample ID : 14L85485-7BI207

Acquisition date : 17-JAN-2020 08:49:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.547E+02	5.547E+02	0.232E+02	4.18	
		Total Activity :	5.547E+02	5.547E+02			
		Grand Total Activity :	5.547E+02	5.547E+02			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : 14L85485-7BI207 Acquisition date : 17-JAN-2020 08:49:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.67	3242	567	0.92	142.59	137	21	5.40E-01	4.2	1.27E+01	
4	74.84	5777	357	0.91	146.92	137	21	9.63E-01	2.9	1.35E+01	
5	84.63	2427	379	1.09	166.51	161	15	4.04E-01	4.9	1.69E+01	
5	87.21	727	254	0.98	171.67	161	15	1.21E-01	10.5	1.76E+01	
1	569.55	6686	218	1.29	1136.65	1130	14	1.11E+00	2.6	6.14E+00	
1	1633.09	281	6	1.95	3265.47	3259	12	4.68E-02	12.5	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.563E+02	5.563E+02	0.226E+02	4.06	
			---	---			
Total Activity :			5.563E+02	5.563E+02			
Grand Total Activity :			5.563E+02	5.563E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.563E+02	2.261E+01	7.072E+00	0.000E+00	78.661

```
A,14L85485-7BI207 ,01/17/2020 10:29,01/17/2020 00:00,   1.000E+00,L85485-7
B,14L85485-7BI207 ,BI207               ,12/30/2019 12:20,1425MM101619
C,BI-207  ,YES,   5.563E+02,   2.261E+01,   7.072E+00,,   78.661
```

Pb-210 Recovery

Work Group

WG32883

Pb-210 Recovery (Bi-210)

Bi-207 Tracer	Percent recovery	Result
recovery 1	56.18%	500
recovery 2	52.04%	463.2
recovery 3	57.64%	513
Average	55.29%	
2 sigma	5.80	
RPD for highest and lowest	10.20	
< 30	yes	

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:01:43.40
TBE01 33-TP20784A HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:28.08

LIMS No., Customer Name, Client ID: L85484-9 BI207 GAMMA COUNT

Sample ID : 01L85484-9BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0125MM091319
BKGFILE : 01BG122719MT
Real Time : 0 01:40:02.14
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.82*	2011	506	0.98	146.08	8.68E+00	3.35E-01	2.8	3.21E+00
2	3	74.99*	3408	362	0.93	150.42	9.46E+00	5.68E-01	2.0	
3	3	84.83*	1760	311	1.17	170.06	1.27E+01	2.93E-01	2.9	1.25E+00
4	3	87.41	595	264	1.26	175.22	1.34E+01	9.91E-02	7.8	
5	1	569.66	6949	256	1.37	1138.64	7.08E+00	1.16E+00	1.3	1.71E+00
6	1	1063.67	2916	81	1.80	2125.84	3.53E+00	4.86E-01	2.0	1.80E+00
7	1	1633.39	312	29	2.02	3264.66	2.30E+00	5.20E-02	6.7	7.73E-01
8	1	1770.03	165	3	2.18	3537.86	2.18E+00	2.76E-02	8.4	2.23E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2916	74.50*	3.525E+00	5.001E+02	5.001E+02	3.97
	1770.24	165	6.87	2.181E+00	4.973E+02	4.973E+02	16.80

Flag: "*" = Keyline

$\frac{500\ pCi}{890} = 0.5618$

Sample ID : 01L85484-9BI207 Acquisition date : 21-JAN-2020 09:21:28

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.001E+02	5.001E+02	0.198E+02	3.97	
	Total Activity :		5.001E+02	5.001E+02			
	Grand Total Activity :		5.001E+02	5.001E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 01L85484-9BI207 Acquisition date : 21-JAN-2020 09:21:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.82	2011	506	0.98	146.08	140	17	3.35E-01	5.6	8.68E+00	
3	74.99	3408	362	0.93	150.42	140	17	5.68E-01	4.0	9.46E+00	
3	84.83	1760	311	1.17	170.06	164	16	2.93E-01	5.9	1.27E+01	
3	87.41	595	264	1.26	175.22	164	16	9.91E-02	15.6	1.34E+01	
1	569.66	6949	256	1.37	1138.64	1131	16	1.16E+00	2.6	7.08E+00	
1	1633.39	312	29	2.02	3264.66	3257	14	5.20E-02	13.4	2.30E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.000E+02	5.000E+02	0.193E+02	3.86	
	Total Activity :		5.000E+02	5.000E+02			
	Grand Total Activity :		5.000E+02	5.000E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.000E+02	1.930E+01	5.820E+00	0.000E+00	85.906

```
A,01L85484-9BI207 ,01/21/2020 11:01,01/21/2020 00:00,   1.000E+00,L85484-9 BI207
B,01L85484-9BI207 ,BI207                ,01/21/2020 09:16,0125MM091319
C,BI-207  ,YES,   5.000E+02,   1.930E+01,   5.820E+00,,   85.906
```

Analyst:

==========

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:01.34
TBE02 51-TP42214B HpGe ******* Aquisition Date/Time: 21-JAN-2020 09:21:29.40

LIMS No., Customer Name, Client ID: L85484-10 BI207 GAMMA COUNT

Sample ID : 02L85484-10BI207 Smple Date: 21-JAN-2020 00:00:00.
Sample Type : S Geometry : 0225MM103019
Quantity : 1.00000E+00 TOTAL BKGFILE : 02BG122719MT
Start Channel : 80 Energy Tol : 2.00000 Real Time : 0 01:40:02.74
End Channel : 4090 Pk Srch Sens: 9.00000 Live time : 0 01:40:00.00
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	72.81*	3578	537	0.91	130.38	1.62E+01	5.96E-01	1.9	3.47E+00
2	2	74.98*	6005	386	0.89	134.76	1.70E+01	1.00E+00	1.4	
3	3	84.81*	2338	368	1.13	154.54	1.96E+01	3.90E-01	2.5	1.97E+00
4	3	87.43	832	260	1.09	159.82	2.01E+01	1.39E-01	5.0	
5	0	569.73	5676	224	1.36	1131.26	6.31E+00	9.46E-01	1.4	
6	0	1063.66	2356	76	1.58	2126.19	3.08E+00	3.93E-01	2.2	
7	0	1633.34	225	13	1.80	3273.82	1.95E+00	3.75E-02	7.6	
8	0	1770.23	137	19	1.72	3549.60	1.84E+00	2.28E-02	11.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2356	74.50*	3.081E+00	4.622E+02	4.622E+02	4.44
	1770.24	137	6.87	1.840E+00	4.879E+02	4.879E+02	21.98

Flag: "*" = Keyline

$$\frac{463.2\ pCi}{890} = 0.5204$$

Sample ID : 02L85484-10BI207 Acquisition date : 21-JAN-2020 09:21:29

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.622E+02	4.622E+02	0.205E+02	4.44	
		Total Activity :	4.622E+02	4.622E+02			
		Grand Total Activity :	4.622E+02	4.622E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 02L85484-10BI207 Acquisition date : 21-JAN-2020 09:21:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.81	3578	537	0.91	130.38	123	24	5.96E-01	3.8	1.62E+01	
2	74.98	6005	386	0.89	134.76	123	24	1.00E+00	2.8	1.70E+01	
3	84.81	2338	368	1.13	154.54	150	15	3.90E-01	5.0	1.96E+01	
3	87.43	832	260	1.09	159.82	150	15	1.39E-01	10.0	2.01E+01	
0	569.73	5676	224	1.36	1131.26	1124	15	9.46E-01	2.9	6.31E+00	
0	1633.34	225	13	1.80	3273.82	3265	17	3.75E-02	15.2	1.95E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	4.631E+02	4.632E+02	0.202E+02	4.35	
	Total Activity :		4.631E+02	4.632E+02			
Grand Total Activity :			4.631E+02	4.632E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	4.632E+02	2.016E+01	5.918E+00	0.000E+00	78.261

```
A,02L85484-10BI207,01/21/2020 11:02,01/21/2020 00:00,   1.000E+00,L85484-10 BI20
B,02L85484-10BI207,BI207                ,01/15/2020 08:15,0225MM103019
C,BI-207  ,YES,   4.632E+02,   2.016E+01,   5.918E+00,,   78.261
```

Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 21-JAN-2020 11:02:00.91
TBE08 31-TP20610B HpGe ******** Aquisition Date/Time: 21-JAN-2020 09:21:30.31

LIMS No., Customer Name, Client ID: L85484-11 BI207 GAMMA COUNT

Sample ID : 08L85484-11BI207
Sample Type : S
Quantity : 1.00000E+00 TOTAL
Start Channel : 80 Energy Tol : 2.00000
End Channel : 4090 Pk Srch Sens: 9.00000
MDA Multiple : 4.6600 Library Used: BI207
Peak Evaluation - Identified and Unidentified

Smple Date: 21-JAN-2020 00:00:00.
Geometry : 0825MM092019
BKGFILE : 08BG122719MT
Real Time : 0 01:40:02.60
Live time : 0 01:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	3	72.84	2258	597	1.34	152.75	9.18E+00	3.76E-01	3.1	1.95E+00
2	3	75.01*	3718	456	1.21	157.09	9.97E+00	6.20E-01	2.2	
3	5	84.87*	1726	417	1.39	176.77	1.31E+01	2.88E-01	3.2	6.90E-01
4	5	87.50	562	358	1.46	182.02	1.38E+01	9.37E-02	8.6	
5	1	569.66	5652	202	1.51	1144.79	5.92E+00	9.42E-01	1.4	2.03E+00
6	1	1063.54	2494	75	1.75	2130.43	2.95E+00	4.16E-01	2.2	6.11E-01
7	1	1633.37	193	7	2.11	3266.99	1.91E+00	3.21E-02	7.9	1.01E+00
8	1	1770.55	154	6	2.35	3540.50	1.80E+00	2.56E-02	9.0	7.94E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	2-Sigma %Error
BI-207	1063.66	2494	74.50*	2.952E+00	5.107E+02	5.108E+02	4.32
	1770.24	154	6.87	1.802E+00	5.590E+02	5.590E+02	18.00

Flag: "*" = Keyline

$\frac{513\ pCi}{890} = 0.5764$

Sample ID : 08L85484-11BI207 Acquisition date : 21-JAN-2020 09:21:30

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected PCI/TOTAL	Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.107E+02	5.108E+02	0.221E+02	4.32	
	Total Activity :		5.107E+02	5.108E+02			
	Grand Total Activity :		5.107E+02	5.108E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 08L85484-11BI207 Acquisition date : 21-JAN-2020 09:21:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.84	2258	597	1.34	152.75	145	18	3.76E-01	6.3	9.18E+00	
3	75.01	3718	456	1.21	157.09	145	18	6.20E-01	4.3	9.97E+00	
5	84.87	1726	417	1.39	176.77	171	19	2.88E-01	6.4	1.31E+01	
5	87.50	562	358	1.46	182.02	171	19	9.37E-02	17.3	1.38E+01	
1	569.66	5652	202	1.51	1144.79	1139	14	9.42E-01	2.9	5.92E+00	
1	1633.37	193	7	2.11	3266.99	3260	14	3.21E-02	15.7	1.91E+00	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	8	
Number of unidentified lines	6	
Number of lines tentatively identified by NID	2	25.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected PCI/TOTAL	Wtd Mean Decay Corr PCI/TOTAL	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BI-207	31.55Y	1.00	5.130E+02	5.130E+02	0.216E+02	4.20	
	Total Activity :		5.130E+02	5.130E+02			
Grand Total Activity :			5.130E+02	5.130E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/TOTAL)	Act error	MDA (PCI/TOTAL)	MDA error	Act/MDA
BI-207	5.130E+02	2.156E+01	7.136E+00	0.000E+00	71.880

A,08L85484-11BI207,01/21/2020 11:02,01/21/2020 00:00, 1.000E+00,L85484-11 BI20
B,08L85484-11BI207,BI207   ,01/21/2020 08:55,0825MM092019
C,BI-207 ,YES, 5.130E+02, 2.156E+01, 7.136E+00,, 71.880

LEAD 210

Sample and QC Raw Data

Raw Data Sheet (rawdata)

01/29/20 19:14

Work Order: **L85485** Customer: **GHD Services, Inc.**

Analysis: **PB-210** Project: **GH001-3EJACINTO-19**

KT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
L85485-1		PB-210	09-dec-19 15:05	6.3088 g dry		01-20-20 13:00	.0674	100.9	01-21-20 01:08	X2C	2509	800 M	822	800 M	.312	.966	KSC
11187072-120919-BN-SJSSA07 (0-2.5 CM) Activity: **9.05E-01** Error: 6.20E-02 MDC: 7.17E-02 pCi/gDry							**L85485-1**				**PB-210**						
L85485-2		PB-210	09-dec-19 15:05	6.1094 g dry		01-20-20 13:00	.0686	102.69	01-21-20 01:08	X3A	2150	800 M	832	800 M	.267	.966	KSC
11187072-120919-BN-SJSSA07 (7.5-10 CM) Activity: **8.53E-01** Error: 7.07E-02 MDC: 8.70E-02 pCi/gDry							**L85485-2**				**PB-210**						
L85485-3		PB-210	09-dec-19 15:10	6.0215 g dry		01-20-20 13:00	.0606	90.72	01-21-20 01:08	X3B	2320	800 M	860	800 M	.281	.966	KSC
11187072-120919-BN-SJSSA07 (15-17.5 CM) Activity: **9.12E-01** Error: 7.04E-02 MDC: 8.53E-02 pCi/gDry							**L85485-3**				**PB-210**						
L85485-4		PB-210	09-dec-19 15:10	6.3387 g dry		01-20-20 13:00	.0766	114.67	01-21-20 01:08	X3C	2836	800 M	1179	800 M	.263	.966	KSC
11187072-120919-BN-SJSSA07 (22.5-25 CM) Activity: **1.05E+00** Error: 8.03E-02 MDC: 1.01E-01 pCi/gDry							**L85485-4**				**PB-210**						
L85485-5		PB-210	09-dec-19 15:15	6.0068 g dry		01-16-20 12:15	.0667	99.85	01-17-20 00:04	X1C	1895	800 M	772	800 M	.275	.968	KSC
11187072-120919-BN-SJSSA07 (30-32.5 CM) Activity: **6.55E-01** Error: 6.02E-02 MDC: 7.55E-02 pCi/gDry							**L85485-5**				**PB-210**						
L85485-6		PB-210	09-dec-19 15:15	6.1186 g dry		01-16-20 12:15	.0331	49.55	01-17-20 00:04	X1D	1283	800 M	1003	800 M	.283	.968	KSC
11187072-120919-BN-SJSSA07 (37.5-40 CM) Activity: **1.56E-01** Error: 5.33E-02 MDC: 8.23E-02 pCi/gDry							**L85485-6**				**PB-210**						
L85485-7		PB-210	09-dec-19 15:20	6.0611 g dry		01-16-20 12:15	.0444	66.47	01-17-20 00:04	X2C	895	800 M	822	800 M	.312	.968	KSC
11187072-120919-BN-SJSSA07 (45-47.5 CM) Activity: 3.73E-02 Error: 4.23E-02 MDC: **6.82E-02** pCi/gDry							L85485-7				PB-210						
L85485-8		PB-210	09-dec-19 15:20	6.0152 g dry		01-16-20 12:15	.0656	98.2	01-17-20 00:04	X3A	911	800 M	832	800 M	.267	.968	KSC
11187072-120919-BN-SJSSA07 (52.5-55 CM)																	

Raw Data Sheet (rawdata)

01/29/20 19:14

Work Order: **L85485**
PB-210

Customer: **GHD Services, Inc.**
GH001-3EJACINTO-19

KT 1/30/20

L85485-8	PB-210	09-dec-19 15:20	6.0152 g dry	01-16-20 12:15	.0656	98.72	01-17-20 00:04	X3A	911	800 M	832	800 M	.267	.968	KSC
11187072-120919-BN-SJSSA07 (52.5-55 CM) Activity: 4.75E-02 Error: 5.02E-02 MDC: **8.08E-02** pCi/gDry					L85485-8		PB-210								
L85485-9	PB-210	09-dec-19 15:25	6.3645 g dry	01-16-20 12:15	.0607	90.87	01-17-20 00:04	X3B	1011	800 M	860	800 M	.281	.968	KSC
11187072-120919-BN-SJSSA07 (60-62.5 CM) Activity: **8.15E-02** Error: 4.67E-02 MDC: 7.38E-02 pCi/gDry					**L85485-9**		**PB-210**								
L85485-10	PB-210	09-dec-19 15:25	6.0648 g dry	01-16-20 12:15	.0454	67.96	01-17-20 00:04	X3C	1173	800 M	1179	800 M	.263	.968	KSC
11187072-120919-BN-SJSSA07 (70-72.5 CM) Activity: -3.63E-03 Error: 5.87E-02 MDC: **9.69E-02** pCi/gDry					L85485-10		PB-210								
L85485-11	PB-210	09-dec-19 15:30	6.1694 g dry	01-16-20 12:15	.05	74.85	01-17-20 00:04	X3D	1149	800 M	777	800 M	.293	.968	KSC
11187072-120919-BN-SJSSA07 (80-82.5 CM) Activity: **1.98E-01** Error: 4.68E-02 MDC: 6.93E-02 pCi/gDry					**L85485-11**		**PB-210**								

Raw Data Sheet (rawdata)

01/29/20 19:15

Work Order: **WG32861**

Customer: **Teledyne Brown Engineering**

Analysis: **PB-210**

Project: **TE511-LABQC**

1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32861-1		PB-210	16-jan-20 00:00	100 %		01-16-20 12:15	.0552	82.63	01-17-20 00:04	X1A	720	800 M	811	800 M	.311	.971	KSC
Blank Samples																	
Activity: -2.81E-01	Error:	2.42E-01	MDC: **4.10E-01**	pCi/Total		WG32861-1			PB-210								
WG32861-2		PB-210	01-jul-91 12:00	100 %		01-16-20 12:15	.0562	84.13	01-16-20 17:03	X1A	806	15 M	811	800 M	.311	.401	KSC
Laboratory Control Samples																	
Activity: **3.15E+02**	Error:	2.27E+01	MDC: 7.25E+00	pCi/Total		**WG32861-2**			**PB-210**								
WG32861-3		PB-210	09-dec-19 15:20	6.0209 g dry		01-16-20 12:15	.0553	82.78	01-17-20 00:04	X1B	1014	800 M	892	800 M	.296	.968	KSC
11187072-120919-BN-SJSSA07 (52.5-55 CM)																	
Activity: 6.61E-02	Error:	4.73E-02	MDC: **7.54E-02**	pCi/gDry		WG32861-3			PB-210								
WG32861-4		PB-210	09-dec-19 15:25	6.0423 g dry		01-16-20 12:15	.0658	98.5	01-16-20 17:03	X1B	715	15 M	892	800 M	.296	.97	KSC
11187072-120919-BN-SJSSA07 (60-62.5 CM)																	
Activity: **2.00E+01**	Error:	1.54E+00	MDC: 5.47E-01	pCi/gDry		**WG32861-4**			**PB-210**								
WG32861-5		PB-210	09-dec-19 15:25	6.2017 g dry		01-16-20 12:15	.0654	97.9	01-16-20 17:03	X1C	775	15 M	772	800 M	.275	.97	KSC
MS																	
Activity: **2.28E+01**	Error:	1.67E+00	MDC: 5.32E-01	pCi/gDry		**WG32861-5**			**PB-210**								

Raw Data Sheet (rawdata)

01/29/20 19:15

Work Order: **WG32883** Customer: **Teledyne Brown Engineering**

Analysis: **PB-210** Project: **TE511-LABQC**

LT 1/30/20

Sample ID / Client ID	Run #	Analysis	Reference Date/Time	Volume/ Aliquot	Scavenge Date/Time	Milking Date/Time	Mount Weight	Recovery	Count Date/Time	Detector ID	Total Counts	Sample dt	Bkg Counts	Bkg dt	Eff.	Decay & Ingrowth Factor	Analy
WG32883-1		PB-210	20-jan-20 00:00	100 %		01-20-20 13:00	.0634	94.91	01-21-20 01:06	Y1A	887	800 M	790	800 M	.305	.969	KSC
Blank Samples																	
Activity: 3.34E-01	Error: 2.82E-01	MDC: **4.51E-01**	pCi/Total			WG32883-1		PB-210									
WG32883-2		PB-210	01-jul-91 12:00	100 %		01-20-20 13:00	.0483	72.31	01-20-20 18:16	X4A	710	15 M	769	800 M	.309	.4	KSC
Laboratory Control Samples																	
Activity: **3.06E+02**	Error: 2.34E+01	MDC: 7.77E+00	pCi/Total			**WG32883-2**		**PB-210**									
WG32883-3		PB-210	09-dec-19 15:10	6.5667 g dry		01-20-20 13:00	.0582	87.13	01-21-20 01:06	Y1B	2321	800 M	809	800 M	.292	.966	KSC
11187072-120919-BN-SJSSA07 (22.5-25 CM)																	
Activity: **8.32E-01**	Error: 6.16E-02	MDC: 7.29E-02	pCi/gDry			**WG32883-3**		**PB-210**									
WG32883-4		PB-210	09-dec-19 15:10	6.1818 g dry		01-20-20 13:00	.0631	94.46	01-20-20 18:16	X4B	812	15 M	802	800 M	.294	.967	KSC
11187072-120619-SS-SJSSA06 (60-62.5 CM)																	
Activity: **2.46E+01**	Error: 1.76E+00	MDC: 5.59E-01	pCi/gDry			**WG32883-4**		**PB-210**									
WG32883-5		PB-210	09-dec-19 15:10	6.2777 g dry		01-20-20 13:00	.055	82.34	01-20-20 18:16	X4C	709	15 M	749	800 M	.276	.967	KSC
MS																	
Activity: **2.25E+01**	Error: 1.72E+00	MDC: 5.66E-01	pCi/gDry			**WG32883-5**		**PB-210**									

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
L85484-8	891	4.66	800.00	01/21/2020 01:08		6.4522	g	pCi	PB-210	0.311	4.20E-02	4.34E-02	6.97E-02	g Dry	0.553	0.9653	811.	800.0	
L85484-9	1099	4.66	800.00	01/21/2020 01:08		6.5644	g	pCi	PB-210	0.296	1.13E-01	4.85E-02	7.56E-02	g Dry	0.553	0.9653	892.	800.0	
L85484-10	1070	4.66	800.00	01/21/2020 01:08		6.0873	g	pCi	PB-210	0.275	1.88E-01	5.40E-02	8.15E-02	g Dry	0.553	0.9653	772.	800.0	
L85484-11	1168	4.66	800.00	01/21/2020 01:08		6.5434	g	pCi	PB-210	0.283	9.41E-02	5.31E-02	8.42E-02	g Dry	0.553	0.9653	1003.	800.0	
L85485-1	2509	4.66	800.00	01/21/2020 01:08		6.3088	g	pCi	PB-210	0.312	9.05E-01	6.20E-02	7.17E-02	g Dry	0.553	0.9655	822.	800.0	
L85485-2	2150	4.66	800.00	01/21/2020 01:08		6.1094	g	pCi	PB-210	0.267	8.53E-01	7.07E-02	8.70E-02	g Dry	0.553	0.9655	832.	800.0	
L85485-3	2320	4.66	800.00	01/21/2020 01:08		6.0215	g	pCi	PB-210	0.281	9.12E-01	7.04E-02	8.53E-02	g Dry	0.553	0.9655	860.	800.0	
L85485-4	2836	4.66	800.00	01/21/2020 01:08		6.3387	g	pCi	PB-210	0.263	1.05E+00	8.03E-02	1.01E-01	g Dry	0.553	0.9655	1179.	800.0	
L85483-8	1312	4.66	800.00	01/21/2020 01:08		6.0716	g	pCi	PB-210	0.293	3.17E-01	5.42E-02	7.70E-02	g Dry	0.553	0.9654	777.	800.0	
L85483-9	1392	4.66	800.00	01/21/2020 01:08		6.0288	g	pCi	PB-210	0.309	3.52E-01	5.26E-02	7.31E-02	g Dry	0.553	0.9654	769.	800.0	
L85483-10	1552	4.66	800.00	01/21/2020 01:08		6.0897	g	pCi	PB-210	0.294	4.42E-01	5.72E-02	7.78E-02	g Dry	0.553	0.9654	802.	800.0	
L85483-11	1335	4.66	800.00	01/21/2020 01:08		6.1373	g	pCi	PB-210	0.276	3.65E-01	5.68E-02	7.94E-02	g Dry	0.553	0.9654	749.	800.0	
L85483-12	1388	4.66	800.00	01/21/2020 01:08		6.3621	g	pCi	PB-210	0.286	3.33E-01	5.44E-02	7.70E-02	g Dry	0.553	0.9654	813.	800.0	

KOJ 1/21/20
Reviewed Date

KOJ 1/21/20

Data Filename: X012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b l85484-8	20	891	1/21/2020 1:08	800 800MIN	1580
1 b	b l85484-9	37	1099	1/21/2020 1:08	800 800MIN	1580
1 c	b l85484-10	29	1070	1/21/2020 1:08	800 800MIN	1580
1 d	b l85484-11	35	1168	1/21/2020 1:08	800 800MIN	1580
2 a		21	2152	1/21/2020 1:08	800 800MIN	1580
2 b		22	618	1/21/2020 1:08	800 800MIN	1580
2 c	b l85485-1	27	2509	1/21/2020 1:08	800 800MIN	1580
2 d		21	578	1/21/2020 1:08	800 800MIN	1580
3 a	b l85485-2	26	2150	1/21/2020 1:08	800 800MIN	1580
3 b	b l85485-3	40	2320	1/21/2020 1:08	800 800MIN	1580
3 c	b l85485-4	25	2836	1/21/2020 1:08	800 800MIN	1580
3 d	b l85483-8	43	1312	1/21/2020 1:08	800 800MIN	1580
4 a	b l85483-9	62	1392	1/21/2020 1:08	800 800MIN	1580
4 b	b l85483-10	44	1552	1/21/2020 1:08	800 800MIN	1580
4 c	b l85483-11	24	1335	1/21/2020 1:08	800 800MIN	1580
4 d	b l85483-12	50	1388	1/21/2020 1:08	800 800MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-1	720	4.66	800.00	01/17/2020 00:04		1.0000	%	pCi	PB-210	0.311	-2.81E-01	2.42E-01	4.10E-01	Total	0.604	0.9707	811.	800.0	
WG32861-3	1014	4.66	800.00	01/17/2020 00:04		6.0209	g	pCi	PB-210	0.296	6.61E-02	4.73E-02	7.54E-02	g Dry	0.604	0.9676	892.	800.0	
L85485-5	1895	4.66	800.00	01/17/2020 00:04		6.0068	g	pCi	PB-210	0.275	6.55E-01	6.02E-02	7.55E-02	g Dry	0.604	0.9676	772.	800.0	
L85485-6	1283	4.66	800.00	01/17/2020 00:04		6.1186	g	pCi	PB-210	0.283	1.56E-01	5.33E-02	8.23E-02	g Dry	0.604	0.9676	1003.	800.0	
L85485-7	895	4.66	800.00	01/17/2020 00:04		6.0611	g	pCi	PB-210	0.312	3.73E-02	4.23E-02	6.82E-02	g Dry	0.604	0.9676	822.	800.0	
L85485-8	911	4.66	800.00	01/17/2020 00:04		6.0152	g	pCi	PB-210	0.267	4.75E-02	5.02E-02	8.08E-02	g Dry	0.604	0.9676	832.	800.0	
L85485-9	1011	4.66	800.00	01/17/2020 00:04		6.3645	g	pCi	PB-210	0.281	8.15E-02	4.67E-02	7.38E-02	g Dry	0.604	0.9676	860.	800.0	
L85485-10	1173	4.66	800.00	01/17/2020 00:04		6.0648	g	pCi	PB-210	0.263	-3.63E-03	5.87E-02	9.69E-02	g Dry	0.604	0.9676	1179.	800.0	
L85485-11	1149	4.66	800.00	01/17/2020 00:04		6.1694	g	pCi	PB-210	0.293	1.98E-01	4.68E-02	6.93E-02	g Dry	0.604	0.9676	777.	800.0	
L85487-1	953	4.66	800.00	01/17/2020 00:04		6.0382	g	pCi	PB-210	0.309	9.50E-02	4.28E-02	6.67E-02	g Dry	0.604	0.9675	769.	800.0	
L85487-2	916	4.66	800.00	01/17/2020 00:04		6.0298	g	pCi	PB-210	0.294	6.20E-02	4.51E-02	7.18E-02	g Dry	0.604	0.9675	802.	800.0	
L85487-3	918	4.66	800.00	01/17/2020 00:04		6.1019	g	pCi	PB-210	0.276	9.67E-02	4.67E-02	7.30E-02	g Dry	0.604	0.9675	749.	800.0	
L85487-4	927	4.66	800.00	01/17/2020 00:04		6.1182	g	pCi	PB-210	0.286	6.28E-02	4.59E-02	7.32E-02	g Dry	0.604	0.9675	813.	800.0	

1/17/20
Reviewed Date

WSL 1/17/20

Data Filename: X011620N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-1	30	720	1/17/2020 0:04	800 800MIN	1580
1 b	b wg32861-3	44	1014	1/17/2020 0:04	800 800MIN	1580
1 c	b l85485-5	37	1895	1/17/2020 0:04	800 800MIN	1580
1 d	b l85485-6	38	1283	1/17/2020 0:04	800 800MIN	1580
2 a		15	2126	1/17/2020 0:04	800 800MIN	1580
2 b		27	558	1/17/2020 0:04	800 800MIN	1580
2 c	b l85485-7	18	895	1/17/2020 0:04	800 800MIN	1580
2 d		14	569	1/17/2020 0:04	800 800MIN	1580
3 a	b l85485-8	26	911	1/17/2020 0:04	800 800MIN	1580
3 b	b l85485-9	26	1011	1/17/2020 0:04	800 800MIN	1580
3 c	b l85485-10	27	1173	1/17/2020 0:04	800 800MIN	1580
3 d	b l85485-11	27	1149	1/17/2020 0:04	800 800MIN	1580
4 a	b l85487-1	43	953	1/17/2020 0:04	800 800MIN	1580
4 b	b l85487-2	25	916	1/17/2020 0:04	800 800MIN	1580
4 c	b l85487-3	30	918	1/17/2020 0:04	800 800MIN	1580
4 d	b l85487-4	30	927	1/17/2020 0:04	800 800MIN	1580

Counter ID: Y Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-1	887	4.66	800.00	01/21/2020 01:06		1.0000	%	pCi	PB-210	0.305	3.34E-01	2.82E-01	4.51E-01	Total	0.553	0.9691	790.	800.0	
WG32883-3	2321	4.66	800.00	01/21/2020 01:06		6.5667	g	pCi	PB-210	0.292	8.32E-01	6.16E-02	7.29E-02	g Dry	0.553	0.9657	809.	800.0	
L85484-1	1396	4.66	800.00	01/21/2020 01:06		6.3574	g	pCi	PB-210	0.286	2.21E-01	5.70E-02	8.62E-02	g Dry	0.553	0.9655	1015.	800.0	
L85484-2	995	4.66	800.00	01/21/2020 01:06		6.7569	g	pCi	PB-210	0.263	1.61E-01	4.93E-02	7.45E-02	g Dry	0.553	0.9655	724.	800.0	
L85484-3	1015	4.66	800.00	01/21/2020 01:06		6.0512	g	pCi	PB-210	0.306	9.39E-02	4.91E-02	7.73E-02	g Dry	0.553	0.9655	850.	800.0	
L85484-4	1015	4.66	800.00	01/21/2020 01:06		6.1257	g	pCi	PB-210	0.295	2.15E-01	4.76E-02	6.92E-02	g Dry	0.553	0.9655	647.	800.0	
L85484-5	961	4.66	800.00	01/21/2020 01:06		6.2244	g	pCi	PB-210	0.271	1.13E-01	5.22E-02	8.14E-02	g Dry	0.553	0.9655	780.	800.0	
L85484-6	1027	4.66	800.00	01/21/2020 01:06		6.2520	g	pCi	PB-210	0.287	8.52E-02	5.13E-02	8.13E-02	g Dry	0.553	0.9655	882.	800.0	
L85484-7	1128	4.66	800.00	01/21/2020 01:06		6.6032	g	pCi	PB-210	0.295	1.66E-01	4.78E-02	7.23E-02	g Dry	0.553	0.9655	822.	800.0	

Reviewed 1/21/20 Date

1/21/20

Data Filename: Y012020N.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32883-1	34	887	1/21/2020 1:06	800 800MIN	1650
1 b	b wg32883-3	43	2321	1/21/2020 1:06	800 800MIN	1650
1 c		9	900	1/21/2020 1:06	800 800MIN	1650
1 d	b l85484-1	54	1396	1/21/2020 1:06	800 800MIN	1650
2 a	b l85484-2	22	995	1/21/2020 1:06	800 800MIN	1650
2 b		7	875	1/21/2020 1:06	800 800MIN	1650
2 c	b l85484-3	26	1015	1/21/2020 1:06	800 800MIN	1650
2 d	b l85484-4	24	1015	1/21/2020 1:06	800 800MIN	1650
3 a	b l85484-5	18	961	1/21/2020 1:06	800 800MIN	1650
3 b	b l85484-6	34	1027	1/21/2020 1:06	800 800MIN	1650
3 c		22	610	1/21/2020 1:06	800 800MIN	1650
3 d	b l85484-7	24	1128	1/21/2020 1:06	800 800MIN	1650
4 a		0	0	1/21/2020 1:06	800 800MIN	1650
4 b		0	0	1/21/2020 1:06	800 800MIN	1650
4 c		0	0	1/21/2020 1:06	800 800MIN	1650
4 d		0	0	1/21/2020 1:06	800 800MIN	1650

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32883-2	710	4.66	15.00	01/20/2020 18:16		1.0000	%	pCi	PB-210	0.309	3.06E+02	2.34E+01	7.77E+00	Total	0.553	0.3996	769.	800.0	
WG32883-4	812	4.66	15.00	01/20/2020 18:16		6.1818	g	pCi	PB-210	0.294	2.46E+01	1.76E+00	5.59E-01	g Dry	0.553	0.9673	802.	800.0	
WG32883-5	709	4.66	15.00	01/20/2020 18:16		6.2777	g	pCi	PB-210	0.276	2.25E+01	1.72E+00	5.66E-01	g Dry	0.553	0.9673	749.	800.0	

1/21/20
Reviewed Date

1/21/20

Data Filename: X012020A.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a		1	8	1/20/2020 18:16	15 15MIN	1580
1 b		0	21	1/20/2020 18:16	15 15MIN	1580
1 c		0	10	1/20/2020 18:16	15 15MIN	1580
1 d		0	11	1/20/2020 18:16	15 15MIN	1580
2 a		0	45	1/20/2020 18:16	15 15MIN	1580
2 b		0	13	1/20/2020 18:16	15 15MIN	1580
2 c		0	15	1/20/2020 18:16	15 15MIN	1580
2 d		0	17	1/20/2020 18:16	15 15MIN	1580
3 a		0	9	1/20/2020 18:16	15 15MIN	1580
3 b		0	14	1/20/2020 18:16	15 15MIN	1580
3 c		0	27	1/20/2020 18:16	15 15MIN	1580
3 d		0	13	1/20/2020 18:16	15 15MIN	1580
4 a	b wg32883-2	7	710	1/20/2020 18:16	15 15MIN	1580
4 b	b wg32883-4	3	812	1/20/2020 18:16	15 15MIN	1580
4 c	b wg32883-5	5	709	1/20/2020 18:16	15 15MIN	1580
4 d		0	15	1/20/2020 18:16	15 15MIN	1580

Counter ID: X Analyst: KOJ

Sample ID	Counts	MDAF*	Min. Ctd	Date/Time	Net Wt	Spl Vol	Spl Units	Act	Analysis	Eff	Res	Err	MDA	Act Units	Yield	DecayF	Bkg Cts	Bkg Ct Tim (M)	Flags
WG32861-2	806	4.66	15.00	01/16/2020 17:03		1.0000	%	pCi	PB-210	0.311	3.15E+02	2.27E+01	7.25E+00	Total	0.604	0.4008	811.	800.0	
WG32861-4	715	4.66	15.00	01/16/2020 17:03		6.0423	g	pCi	PB-210	0.296	2.00E+01	1.54E+00	5.47E-01	g Dry	0.604	0.9703	892.	800.0	
WG32861-5	775	4.66	15.00	01/16/2020 17:03		6.2017	g	pCi	PB-210	0.275	2.28E+01	1.67E+00	5.32E-01	g Dry	0.604	0.9703	772.	800.0	

1/17/20
Reviewed Date

Data Filename: X011620F.xls

MDAF*: 2.71 = 2.71/Sample Count Time + Normal MDA Calcs

Error calculations are 2-Sigma. If tpu flagged, error is TPU

1/17/20

Act = ((sam counts/sam ct time)-(bkgcts/bkgtim))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
Err = 2 * Sqr(sam counts/sam ct time^2+bkgcts/bkgtim^2)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decaf
TPU = 2 * Sqr((sam counts/sam ct time^2+bkgcts/bkgtim^2)+(net sample count rate ^ 2 * TPU factor))/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
MDA = mdaf * Sqr(bkgcts/bkgtim/sam ct time)/eff/putvol/splvolf*actvolf/actf/samaliq/yield/decayf
putvol: spl wt, splvolf: vol conv fac, actvolf: act vol conv fac, actf: act conv fac, samaliq: Spl Aliq

Calculated using BetaProp.XLS Workbook, V042106

1 a	b wg32861-2	7	806	1/16/2020 17:03	15 15MIN	1580
1 b	b wg32861-4	3	715	1/17/2020 17:03	15 15MIN	1580
1 c	b wg32861-5	2	775	1/18/2020 17:03	15 15MIN	1580
1 d		1	20	1/19/2020 17:03	15 15MIN	1580
2 a		0	52	1/20/2020 17:03	15 15MIN	1580
2 b		1	10	1/21/2020 17:03	15 15MIN	1580
2 c		0	11	1/22/2020 17:03	15 15MIN	1580
2 d		0	9	1/23/2020 17:03	15 15MIN	1580
3 a		0	10	1/24/2020 17:03	15 15MIN	1580
3 b		0	912	1/25/2020 17:03	15 15MIN	1580
3 c		0	15	1/26/2020 17:03	15 15MIN	1580
3 d		0	16	1/27/2020 17:03	15 15MIN	1580
4 a		1	10	1/28/2020 17:03	15 15MIN	1580
4 b		0	16	1/29/2020 17:03	15 15MIN	1580
4 c		0	15	1/30/2020 17:03	15 15MIN	1580
4 d		0	17	1/31/2020 17:03	15 15MIN	1580

LEAD 210

Prep and Run Logs

Logbook Page

L85485

PB-210

Sample#	Matrix	QC	Analysis	Spike Id	Spike Volume		Spike Conc
WG32861-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32861-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32861-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02
WG32883-2	WO	LCS	PB-210	210PB-012505	.5	mls	635.02
WG32883-4	S	MS	PB-210	210PB-012505	.5	mls	635.02
WG32883-5	S	MSD	PB-210	210PB-012505	.5	mls	635.02

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
WG32861-1	WO	BLK	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0353	BALANCE 7	.0905	BALANCE 7	.0552	01/16/20	WG32861
WG32861-2	WO	LCS	PB-210	100 %	01/16/20	KSC	CYLINDER - GRADUATED	.0356	BALANCE 7	.0918	BALANCE 7	.0562	01/16/20	WG32861
WG32861-3	S	DUP	PB-210	6.0209 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0348	BALANCE 7	.0901	BALANCE 7	.0553	01/16/20	WG32861
WG32861-4	S	MS	PB-210	6.0423 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0350	BALANCE 7	.1008	BALANCE 7	.0658	01/16/20	WG32861
WG32861-5	S	MSD	PB-210	6.2017 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0341	BALANCE 7	.0995	BALANCE 7	.0654	01/16/20	WG32861
WG32883-1	WO	BLK	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0320	BALANCE 10	.0954	BALANCE 10	.0634	01/20/20	WG32883
WG32883-2	WO	LCS	PB-210	100 %	01/20/20	KSC	BALANCE 10	.0331	BALANCE 10	.0814	BALANCE 10	.0483	01/20/20	WG32883
WG32883-3	S	DUP	PB-210	6.5667 g dry	01/20/20	KSC	BALANCE 10	.0335	BALANCE 10	.0917	BALANCE 10	.0582	01/20/20	WG32883
WG32883-4	S	MS	PB-210	6.1818 g dry	01/20/20	KSC	BALANCE 10	.0330	BALANCE 10	.0961	BALANCE 10	.0631	01/20/20	WG32883
WG32883-5	S	MSD	PB-210	6.2777 g dry	01/20/20	KSC	BALANCE 10	.0328	BALANCE 10	.0878	BALANCE 10	.0550	01/20/20	WG32883
L85485-1	S		PB-210	6.3088 g dry	01/20/20	KSC	BALANCE 10	.0326	BALANCE 10	.1000	BALANCE 10	.0674	01/20/20	WG32883
L85485-2	S		PB-210	6.1094 g dry	01/20/20	KSC	BALANCE 10	.0323	BALANCE 10	.1009	BALANCE 10	.0686	01/20/20	WG32883
L85485-3	S		PB-210	6.0215 g dry	01/20/20	KSC	BALANCE 10	.0325	BALANCE 10	.0931	BALANCE 10	.0606	01/20/20	WG32883
L85485-4	S		PB-210	6.3387 g dry	01/20/20	KSC	BALANCE 10	.0334	BALANCE 10	.1100	BALANCE 10	.0766	01/20/20	WG32883
L85485-5	S		PB-210	6.0068 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0343	BALANCE 7	.1010	BALANCE 7	.0667	01/16/20	WG32861
L85485-6	S		PB-210	6.1186 g dry	01/16/20	KSC	CYLINDER - GRADUATED	.0343	BALANCE 7	.0674	BALANCE 7	.0331	01/16/20	WG32861
L85485-7	S		PB-210	6.0611 g dry	01/16/20	KSC	CYLINDER -	.0344	BALANCE 7	.0788	BALANCE 7	.0444	01/16/20	WG32861

PB-210

Sample#	Matrix	QC	Analysis	Aliquot Volume / Units	Aliquot Date	Analyst	Aliquot Instrument	Tare Weight	Tare Balance	Final Weight	Final Balance	Mount Weight	Mount Date	Workgroup
L85485-8	S		PB-210	6.0152 g dry	01/16/20	KSC	GRADUATED CYLINDER - GRADUATED	.0342	BALANCE 7	.0998	BALANCE 7	.0656	01/16/20	WG32861
L85485-9	S		PB-210	6.3645 g dry	01/16/20	KSC	GRADUATED CYLINDER - GRADUATED	.0343	BALANCE 7	.0950	BALANCE 7	.0607	01/16/20	WG32861
L85485-10	S		PB-210	6.0648 g dry	01/16/20	KSC	GRADUATED CYLINDER - GRADUATED	.0338	BALANCE 7	.0792	BALANCE 7	.0454	01/16/20	WG32861
L85485-11	S		PB-210	6.1694 g dry	01/16/20	KSC	GRADUATED CYLINDER - GRADUATED	.0343	BALANCE 7	.0843	BALANCE 7	.0500	01/16/20	WG32861

LEAD 210

Balance and Pipette Check

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 7

Model: A&D HR200

Serial Number: 12103994

Description: 4 Place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0010

Check Date: 16-JAN-20

Analyst: DW

Weight Set Used: WTSET 2

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 7 16-JAN-20

Daily Pipette Tolerance Check
for: L85485

Instrument: PIP ENV #7
Model: FISHERBRAND ELITE
Serial #: LU04803
Description: 100 - 1000 uL

Known	Result
.2	.2
1	.9996

Check Date: 20-JAN-20
Analyst: CRH
Balance: BALANCE 11
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #7	20-JAN-20

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 10

Model: METTLER TOLEDO AL204

Serial Number: 1232380018

Description: 4 place Analytical Balance

Known Weight	Result Weight
.0100	.0100
1.0000	1.0000
100.0000	100.0001

Check Date: 20-JAN-20

Analyst: CJF

Weight Set Used: WTSET 1

Tolerance: 1%

Out of Range: N

Prod

PB-210 BALANCE 10 20-JAN-20

Daily Pipette Tolerance Check
for: L85485

Instrument: PIP ENV #6
Model: EPPENDORF
Serial #: 3317499
Description: 100 - 1000 uL

Known	Result
.5	.5043
1	1.0031

Check Date: 16-JAN-20
Analyst: DW
Balance: BALANCE 7
Room Temp: 21
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIP ENV #6	16-JAN-20

Daily Pipette Tolerance Check
for: L85479

Instrument: PIPETTE 13
Model: WHEATON ACURA 821
Serial #: 10031686
Description: ADJ VOLUME .2-1

Known	Result
.5	.5023
1	1.0044

Check Date: 27-JAN-20
Analyst: CJF
Balance: BALANCE 10
Room Temp: 20
Tolerance: 1%
Out of range: N

Prod	Instrument	Check Date
PB-210	PIPETTE 13	27-JAN-20

LEAD 210

Standard Certificates

%PB-
210%

Teledyne Brown Engineering

Source Certificate

Spike Id 210PB-012505

Nuclide: PB-210
Half Life: 22.26 YEARS
Original Std Id: P30621
Chemical Form: 1 M HNO3
Reference Date: 01-JUL-91
Expiration Date: 31-DEC-21
Activity: 635.02 pCi/ml
Total Uncertainty: 2.4
Comments: 10 ML 210PB-090393 DILUTED TO 100 ML

Prepared by: KOJ

Date: 01/25/05

Amersham International plc
Amersham Laboratories

Certificate of calibration of absolutely standardized radioactive solution

P 30621

CALIBRATION
No. 0146

Description

Principal radionuclide: Lead-210

Daughter radionuclide: Bismuth-210 + Polonium-210

Product code: RBZ.24

Solution number: S1/23/133

Measurement

Reference time:	1200 GMT on 1 July 1991	
Radioactive concentration of lead-210:	4.426	kilobecquerels per gram of solution
which is equivalent to:	119.6	nanocuries per gram of solution
Mass of solution:	5.3634	grams
Total activity of lead-210:	23.74	kilobecquerels
which is equivalent to:	642	nanocuries

Method of measurement:
Repeated 4-pi alpha counting over a period of 63 days

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 2.4 %

Random uncertainty: ± 0.6 % Systematic uncertainty: ± 1.8 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.02 %

Chemical Composition

2M HNO_3 containing 100 micrograms of lead and 100 micrograms of bismuth per ml.

Physical Data

Recommended half life: 22.3 ± 0.2 years

Lead-210: 100% beta particle emission.
Bismuth-210: 100% beta particle emission. Half life 5.01 ± 0.01 days.
Polonium-210: 100% alpha particle emission. Half life 138.38 ± 0.01 days.

Remarks

The ratio of the activity of bismuth-210 to the activity of lead-210 = 1.0006
At the reference time polonium-210 was in radioactive equilibrium with lead-210.
The ratio of the activity of polonium-210 to the activity of lead-210 was 1.0179
There is no guarantee that all the polonium-210 will remain in solution.
Tests made over 4 years on standardized solutions of lead-210 stored in glass ampoules have shown that loss of lead-210 from solution is negligible other than by radioactive decay.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST traceability as defined in NCRP 58 (1985).

Approved signatory

B D D Singleton

Amersham

Bismuth Carrier

Carrier ID: BI19-1 SD ~~BI18-1~~ SD
Reagent Lot # : ~~006116~~ 07410
Reagent Manufacturer: Fisher Scientific

Bismuth Carrier preparation:
Weigh 69.6 grams bismuth nitrate - $Bi(NO_3)_3.5H_2O$ - into a 1 liter beaker.
Add 1:19 HNO_3 to the 1 liter mark. Stir with magnetic stirrer until dissolved.
Transfer to the bismuth carrier volumetric flask and standardize as bimuth phosphate per procedure TBE-2015.

NOTES:
Used 5 beakers containing 15 milliliters of 5N HNO3.
Added one milliliter of carrier to each beaker.
proceeded with steps 9.4.9 - 9.5.7 of procedure TBE-2015.

Precipitate weights	1	2	3	4
Gross wgt, grams	0.1007	0.0939	0.0971	0.0971
Tare wgt, grams	0.0307	0.0301	0.0306	0.0303
Net wgt, grams	0.0700	0.0638	0.0665	0.0668

Average net wgt, grams 0.06678

Ratios	1	2	3	4
wgt/avg net wgt	1.0483	0.9554	0.9959	1.0004

Acceptable ratio range - 0.95 - 1.05

0.0668 grams BiPO4/1 mL carrier

Preparer Signature: Susan Ogilvie
Preparation Date: 12/10/2019

Reviewer Signature: Keith Jette
Reviewed Date: 12/10/19

PERCENT MOISTURE

Run Date: 01/29/2020

Percent Moisture Report

L85485

Sample#	Client ID	Tare Wt	Wet Wt	Dry Wt	Tare Balance/Date		Dry Balance/Date		Analyst	% Moist
L85485-1	11187072-120919-BN-SJSSA07 (0-2.5 CM)	256.28	556.7	399.95	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	52.18
L85485-2	11187072-120919-BN-SJSSA07 (7.5-10 CM)	255.52	630.4	424.5	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	54.92
L85485-3	11187072-120919-BN-SJSSA07 (15-17.5 CM)	260.1	726	475.15	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	53.84
L85485-4	11187072-120919-BN-SJSSA07 (22.5-25 CM)	257.61	644.1	441.2	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	52.5
L85485-5	11187072-120919-BN-SJSSA07 (30-32.5 CM)	258.34	642.7	480.85	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	42.11
L85485-6	11187072-120919-BN-SJSSA07 (37.5-40 CM)	260.58	732.9	623.06	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	23.26
L85485-7	11187072-120919-BN-SJSSA07 (45-47.5 CM)	256.84	754.3	655.87	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	19.79
L85485-8	11187072-120919-BN-SJSSA07 (52.5-55 CM)	256.78	678.2	594.2	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	19.93
L85485-9	11187072-120919-BN-SJSSA07 (60-62.5 CM)	258.48	688.4	608.18	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	18.66
L85485-10	11187072-120919-BN-SJSSA07 (70-72.5 CM)	257.73	687.8	613.62	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	17.25
L85485-11	11187072-120919-BN-SJSSA07 (80-82.5 CM)	258.13	615.3	537.84	BALANCE 8	12/23/19	BALANCE 8	12/27/19	KT	21.69

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.00
1000.00	1000.08

Check Date: 23-DEC-19

Analyst: KT

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 23-DEC-19

Daily Balance Tolerance Check Reports

for : L85485

Instrument: BALANCE 8

Model: A&D GF-6100

Serial Number: 14619637

Description: 6100 g capacity top loading balance

Known Weight	Result Weight
1.00	1.00
100.00	100.07
1000.00	1000.09

Check Date: 27-DEC-19

Analyst: WBG

Weight Set Used: WTSET 3

Tolerance: 1%

Out of Range: N

Prod

NONE BALANCE 8 27-DEC-19

Appendix K-2

Sand Separation Area Data Validation Memorandums

Memorandum

May 1, 2020

To:	Charles Munce	Ref. No.:	11187072
From:	Kathleen Shaw/cs/6-NF	Tel:	860 747-1800
cc:	Janie Smith Stefanie Castracane		

Subject: **Analytical Results and Reduced Validation**
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

1. Introduction

This document details a reduced validation of analytical results for soil samples collected in support of the San Jacinto River Waste Pits Superfund Site Investigation during December 2019. Samples were submitted to Teledyne Brown Engineering, Inc. in Knoxville, Tennessee. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Evaluation of the data was based on information obtained from the finished data sheets, chain of custody forms, blank data, duplicate data, laboratory control samples (LCS), matrix spike (MS) samples. The assessment of analytical and in-house data included checks for: data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method referenced in Table 3 and applicable guidance from the document entitled:

i) U.S. Environmental Protection Agency. 2004. Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP). USEPA 402-B-04-00IA. July 2004

This item will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

3. Chain-of-Custody Evaluation

During the sample confirmation receipt (SCR) inspection, the chain-of-custody (COC) was reviewed and compared to the SCR. The SCR confirmed that the samples were correctly logged for the requested parameters upon receipt at the laboratory. The COC was complete and accurate, the sample identification numbers and collection information was verified, and appropriate signatures documenting relinquishment were provided.

The sample container for 11187072-120719-SS-SJSSA01 (0-2.5 CM) was received broken and the contents salvaged; the sample container for 11187072-120919-BN-SJSSA04 (45-47.5 CM) was received with a broken lid and liquid contents leaked into the cooler; the project manager gave permission to proceed with analysis in both cases.

4. Initial Calibration

Initial calibration of the instruments ensures that they are capable of producing satisfactory quantitative data at the beginning of a series of analyses. The control limits for check sources and backgrounds shall be established using a minimum of 20 sequentially measured data points. For extended background count periods, a series of at least 10 single background measurements is acceptable. The background count times should be equal to or greater than sample count time unless precluded by extended low level sample count times. The calibration counting geometry used must be the same as that used with the analytical samples. Evaluate if standard sources have aged greater than the expiration date on the certificate. No samples shall be may be counted until these warning and control limits have been established.

Upon review of the data, it was determined that the instruments are capable of producing satisfactory quantitative data and the radiochemical control charts indicated no out of control conditions.

5. Continuing Calibration

To ensure that instrument calibration is acceptable throughout the sample analysis period, continuing calibration verification (CCV) standards are analyzed on a regular basis. Each reporting batch submitted should contain control charting data related to calibration verification for all detectors used in the analyses of the samples.

For this study, all analyte recoveries reported for the CCVs were within the specified limits.

6. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

A low concentration of lead-210 was detected in the method blank indicating a potential for laboratory contamination. All associated samples containing similar concentrations of the associated compound were assumed a reflection of laboratory contamination and are qualified non-detect in Table 4.

7. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

8. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

For this study, MS/MSD samples were prepared and analyzed by the laboratory as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

9. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1.

The duplicate results were evaluated per the "Guidelines". Duplicate results less than 5 times the minimum detectable concentration (MDC) are not evaluated. All RPD values were within the laboratory control limits, demonstrating acceptable analytical precision.

10. Chemical Yield - Tracers

Tracers are used in radiochemical separations methods to provide evaluation of chemical separation. Chemical yield is evaluated through the recovery of chemical species spiked into samples; it is evaluated radiometrically with a tracer. Each sample is spiked with a tracer, and sample results are adjusted for yields greater or less than 100 percent.

For this study, all analyte tracer recoveries reported were within the specified limits.

11. Field QA/QC Samples

The field QA/QC consisted of one field duplicate sample set.

11.1 Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision one field duplicate sample was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 100 percent for soil samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is two times the RL value for soil samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

12. Analyte Reporting

The laboratory reported radiochemistry results down to the laboratory's MDC for each analyte. Non-detect results were presented as non-detect at the RL in Table 2.

All soil results were reported on a dry weight basis.

13. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Sample Identification	Location	Matrix	Initial Sample Depth (cm bgs)	Final Sample Depth (cm bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis: Radiochemistry	Comments
11187072-120419-SS-SJSSA08 (0-2.5 CM)	SJSSA08	Soil	0	2.5	12/04/2019	15:50	X	
11187072-120419-SS-SJSSA08 (15-17.5 CM)	SJSSA08	Soil	15	17.5	12/04/2019	15:54	X	
11187072-120419-SS-SJSSA08 (22.5-25 CM)	SJSSA08	Soil	22.5	25	12/04/2019	15:56	X	
11187072-120419-SS-SJSSA08 (30-32.5 CM)	SJSSA08	Soil	30	32.5	12/04/2019	15:58	X	
11187072-120419-SS-SJSSA08 (37.5-40 CM)	SJSSA08	Soil	37.5	40	12/04/2019	16:00	X	
11187072-120419-SS-SJSSA08 (45-47.5 CM)	SJSSA08	Soil	45	47.5	12/04/2019	16:02	X	
11187072-120419-SS-SJSSA08 (52.5-55 CM)	SJSSA08	Soil	52.5	55	12/04/2019	16:04	X	
11187072-120419-SS-SJSSA08 (60-62.5 CM)	SJSSA08	Soil	60	62.5	12/04/2019	16:06	X	
11187072-120419-SS-SJSSA08 (7.5-10 CM)	SJSSA08	Soil	7.5	10	12/04/2019	15:52	X	
11187072-120419-SS-SJSSA08 (70-72.5 CM)	SJSSA08	Soil	70	72.5	12/04/2019	16:08	X	
11187072-120419-SS-SJSSA08 (80-82.5 CM)	SJSSA08	Soil	80	82.5	12/04/2019	16:10	X	
11187072-120619-SS-SJSSA03 (0-2.5 CM)	SJSSA03	Soil	0	2.5	12/06/2019	12:40	X	
11187072-120619-SS-SJSSA03 (15-17.5 CM)	SJSSA03	Soil	15	17.5	12/06/2019	12:44	X	
11187072-120619-SS-SJSSA03 (22.5-25 CM)	SJSSA03	Soil	22.5	25	12/06/2019	12:46	X	
11187072-120619-SS-SJSSA03 (30-32.5 CM)	SJSSA03	Soil	30	32.5	12/06/2019	12:48	X	
11187072-120619-SS-SJSSA03 (37.5-40 CM)	SJSSA03	Soil	37.5	40	12/06/2019	12:50	X	
11187072-120619-SS-SJSSA03 (45-47.5 CM)	SJSSA03	Soil	45	47.5	12/06/2019	12:52	X	
11187072-120619-SS-SJSSA03 (52.5-55 CM)	SJSSA03	Soil	52.5	55	12/06/2019	12:54	X	
11187072-120619-SS-SJSSA03 (60-62.5 CM)	SJSSA03	Soil	60	62.5	12/06/2019	12:56	X	
11187072-120619-SS-SJSSA03 (7.5-10 CM)	SJSSA03	Soil	7.5	10	12/06/2019	12:42	X	
11187072-120619-SS-SJSSA03 (70-72.5 CM)	SJSSA03	Soil	70	72.5	12/06/2019	12:58	X	Dup
11187072-120619-SS-SJSSA03 (80-82.5 CM)	SJSSA03	Soil	80	82.5	12/06/2019	13:00	X	Dup
11187072-120619-SS-SJSSA06 (0-2.5 CM)	SJSSA06	Soil	0	2.5	12/06/2019	15:40	X	
11187072-120619-SS-SJSSA06 (15-17.5 CM)	SJSSA06	Soil	15	17.5	12/06/2019	15:44	X	
11187072-120619-SS-SJSSA06 (22.5-25 CM)	SJSSA06	Soil	22.5	25	12/06/2019	15:46	X	
11187072-120619-SS-SJSSA06 (30-32.5 CM)	SJSSA06	Soil	30	32.5	12/06/2019	15:48	X	
11187072-120619-SS-SJSSA06 (37.5-40 CM)	SJSSA06	Soil	37.5	40	12/06/2019	15:50	X	
11187072-120619-SS-SJSSA06 (45-47.5 CM)	SJSSA06	Soil	45	47.5	12/06/2019	15:52	X	
11187072-120619-SS-SJSSA06 (52.5-55 CM)	SJSSA06	Soil	52.5	55	12/06/2019	15:54	X	

Table 1

Sample Collection and Analysis Summary
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San Jacinto, Harris County, Texas
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Sample Identification	Location	Matrix	Initial Sample Depth (cm bgs)	Final Sample Depth (cm bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis: Radiochemistry	Comments
11187072-120619-SS-SJSSA06 (60-62.5 CM)	SJSSA06	Soil	60	62.5	12/06/2019	15:56	X	MS/MSD
11187072-120619-SS-SJSSA06 (7.5-10 CM)	SJSSA06	Soil	7.5	10	12/06/2019	15:42	X	
11187072-120619-SS-SJSSA06 (70-72.5 CM)	SJSSA06	Soil	70	72.5	12/06/2019	15:58	X	
11187072-120619-SS-SJSSA06 (80-82.5 CM)	SJSSA06	Soil	80	82.5	12/06/2019	16:00	X	
11187072-120719-SS-SJSSA01 (0-2.5 CM)	SJSSA01	Soil	0	2.5	12/07/2019	15:30	X	
11187072-120719-SS-SJSSA01 (15-17.5 CM)	SJSSA01	Soil	15	17.5	12/07/2019	15:34	X	Dup
11187072-120719-SS-SJSSA01 (22.5-25 CM)	SJSSA01	Soil	22.5	25	12/07/2019	15:36	X	MS/MSD
11187072-120719-SS-SJSSA01 (30-32.5 CM)	SJSSA01	Soil	30	32.5	12/07/2019	15:38	X	
11187072-120719-SS-SJSSA01 (37.5-40 CM)	SJSSA01	Soil	37.5	40	12/07/2019	15:40	X	
11187072-120719-SS-SJSSA01 (45-47.5 CM)	SJSSA01	Soil	45	47.5	12/07/2019	15:42	X	
11187072-120719-SS-SJSSA01 (52.5-55 CM)	SJSSA01	Soil	52.5	55	12/07/2019	15:44	X	
11187072-120719-SS-SJSSA01 (60-62.5 CM)	SJSSA01	Soil	60	62.5	12/07/2019	15:46	X	
11187072-120719-SS-SJSSA01 (7.5-10 CM)	SJSSA01	Soil	7.5	10	12/07/2019	15:32	X	
11187072-120719-SS-SJSSA01 (70-72.5 CM)	SJSSA01	Soil	70	72.5	12/07/2019	15:48	X	
11187072-120719-SS-SJSSA01 (80-82.5 CM)	SJSSA01	Soil	80	82.5	12/07/2019	15:50	X	
11187072-120719-SS-SJSSA02 (0-2.5 CM)	SJSSA02	Soil	0	2.5	12/07/2019	12:10	X	
11187072-120719-SS-SJSSA02 (15-17.5 CM)	SJSSA02	Soil	15	17.5	12/07/2019	12:14	X	
11187072-120719-SS-SJSSA02 (22.5-25 CM)	SJSSA02	Soil	22.5	25	12/07/2019	12:16	X	
11187072-120719-SS-SJSSA02 (30-32.5 CM)	SJSSA02	Soil	30	32.5	12/07/2019	12:18	X	
11187072-120719-SS-SJSSA02 (37.5-40 CM)	SJSSA02	Soil	37.5	40	12/07/2019	12:20	X	
11187072-120719-SS-SJSSA02 (45-47.5 CM)	SJSSA02	Soil	45	47.5	12/07/2019	12:22	X	
11187072-120719-SS-SJSSA02 (52.5-55 CM)	SJSSA02	Soil	52.5	55	12/07/2019	12:24	X	
11187072-120719-SS-SJSSA02 (60-62.5 CM)	SJSSA02	Soil	60	62.5	12/07/2019	12:26	X	
11187072-120719-SS-SJSSA02 (7.5-10 CM)	SJSSA02	Soil	7.5	10	12/07/2019	12:12	X	
11187072-120719-SS-SJSSA02 (70-72.5 CM)	SJSSA02	Soil	70	72.5	12/07/2019	12:28	X	Dup
11187072-120719-SS-SJSSA02 (80-82.5 CM)	SJSSA02	Soil	80	82.5	12/07/2019	12:30	X	Dup
11187072-120819-BN-DUP1	SJSSA05	Soil	60	62.5	12/08/2019	12:00	X	Field Duplicate (SJSSA05(60-62.5))
11187072-120819-BN-SJSSA05 (0-2.5 CM)	SJSSA05	Soil	0	2.5	12/08/2019	15:10	X	
11187072-120819-BN-SJSSA05 (15-17.5 CM)	SJSSA05	Soil	15	17.5	12/08/2019	15:20	X	

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Sample Collection and Analysis Summary
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Sample Identification	Location	Matrix	Initial Sample Depth (cm bgs)	Final Sample Depth (cm bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis: Radiochemistry	Comments
11187072-120819-BN-SJSSA05 (22.5-25 CM)	SJSSA05	Soil	22.5	25	12/08/2019	15:25	X	
11187072-120819-BN-SJSSA05 (30-32.5 CM)	SJSSA05	Soil	30	32.5	12/08/2019	15:30	X	Dup
11187072-120819-BN-SJSSA05 (37.5-40 CM)	SJSSA05	Soil	37.5	40	12/08/2019	15:35	X	
11187072-120819-BN-SJSSA05 (45-47.5 CM)	SJSSA05	Soil	45	47.5	12/08/2019	15:40	X	
11187072-120819-BN-SJSSA05 (52.5-55 CM)	SJSSA05	Soil	52.5	55	12/08/2019	15:45	X	
11187072-120819-BN-SJSSA05 (60-62.5 CM)	SJSSA05	Soil	60	62.5	12/08/2019	15:50	X	
11187072-120819-BN-SJSSA05 (7.5-10 CM)	SJSSA05	Soil	7.5	10	12/08/2019	15:15	X	MS/MSD
11187072-120819-BN-SJSSA05 (70-72.5 CM)	SJSSA05	Soil	70	72.5	12/08/2019	15:55	X	
11187072-120819-BN-SJSSA05 (80-82.5 CM)	SJSSA05	Soil	80	82.5	12/08/2019	16:00	X	
11187072-120819-BN-SJSSA09 (0-2.5 CM)	SJSSA09	Soil	0	2.5	12/08/2019	12:20	X	Dup
11187072-120819-BN-SJSSA09 (15-17.5 CM)	SJSSA09	Soil	15	17.5	12/08/2019	12:30	X	
11187072-120819-BN-SJSSA09 (22.5-25 CM)	SJSSA09	Soil	22.5	25	12/08/2019	12:35	X	
11187072-120819-BN-SJSSA09 (30-32.5 CM)	SJSSA09	Soil	30	32.5	12/08/2019	12:40	X	
11187072-120819-BN-SJSSA09 (37.5-40 CM)	SJSSA09	Soil	37.5	40	12/08/2019	12:45	X	
11187072-120819-BN-SJSSA09 (45-47.5 CM)	SJSSA09	Soil	45	47.5	12/08/2019	12:50	X	
11187072-120819-BN-SJSSA09 (52.5-55 CM)	SJSSA09	Soil	52.5	55	12/08/2019	12:55	X	
11187072-120819-BN-SJSSA09 (60-62.5 CM)	SJSSA09	Soil	60	62.5	12/08/2019	13:00	X	
11187072-120819-BN-SJSSA09 (7.5-10 CM)	SJSSA09	Soil	7.5	10	12/08/2019	12:25	X	
11187072-120819-BN-SJSSA09 (70-72.5 CM)	SJSSA09	Soil	70	72.5	12/08/2019	13:05	X	
11187072-120819-BN-SJSSA09 (80-82.5 CM)	SJSSA09	Soil	80	82.5	12/08/2019	13:10	X	
11187072-120919-BN-SJSSA04 (0-2.5 CM)	SJSSA04	Soil	0	2.5	12/09/2019	15:45	X	
11187072-120919-BN-SJSSA04 (15-17.5 CM)	SJSSA04	Soil	15	17.5	12/09/2019	15:50	X	
11187072-120919-BN-SJSSA04 (22.5-25 CM)	SJSSA04	Soil	22.5	25	12/09/2019	15:50	X	
11187072-120919-BN-SJSSA04 (30-32.5 CM)	SJSSA04	Soil	30	32.5	12/09/2019	15:55	X	
11187072-120919-BN-SJSSA04 (37.5-40 CM)	SJSSA04	Soil	37.5	40	12/09/2019	15:55	X	
11187072-120919-BN-SJSSA04 (45-47.5 CM)	SJSSA04	Soil	45	47.5	12/09/2019	16:00	X	
11187072-120919-BN-SJSSA04 (52.5-55 CM)	SJSSA04	Soil	52.5	55	12/09/2019	16:00	X	
11187072-120919-BN-SJSSA04 (60-62.5 CM)	SJSSA04	Soil	60	62.5	12/09/2019	16:05	X	
11187072-120919-BN-SJSSA04 (7.5-10 CM)	SJSSA04	Soil	7.5	10	12/09/2019	15:45	X	

Table 1

Sample Collection and Analysis Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Sample Identification	Location	Matrix	Initial Sample Depth (cm bgs)	Final Sample Depth (cm bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis: Radiochemistry	Comments
11187072-120919-BN-SJSSA04 (70-72.5 CM)	SJSSA04	Soil	70	72.5	12/09/2019	16:05	X	
11187072-120919-BN-SJSSA04 (80-82.5 CM)	SJSSA04	Soil	80	82.5	12/09/2019	16:10	X	
11187072-120919-BN-SJSSA07 (0-2.5 CM)	SJSSA07	Soil	0	2.5	12/09/2019	15:05	X	
11187072-120919-BN-SJSSA07 (15-17.5 CM)	SJSSA07	Soil	15	17.5	12/09/2019	15:10	X	
11187072-120919-BN-SJSSA07 (22.5-25 CM)	SJSSA07	Soil	22.5	25	12/09/2019	15:10	X	Dup
11187072-120919-BN-SJSSA07 (30-32.5 CM)	SJSSA07	Soil	30	32.5	12/09/2019	15:15	X	
11187072-120919-BN-SJSSA07 (37.5-40 CM)	SJSSA07	Soil	37.5	40	12/09/2019	15:15	X	
11187072-120919-BN-SJSSA07 (45-47.5 CM)	SJSSA07	Soil	45	47.5	12/09/2019	15:20	X	
11187072-120919-BN-SJSSA07 (52.5-55 CM)	SJSSA07	Soil	52.5	55	12/09/2019	15:20	X	Dup
11187072-120919-BN-SJSSA07 (60-62.5 CM)	SJSSA07	Soil	60	62.5	12/09/2019	15:25	X	MS/MSD
11187072-120919-BN-SJSSA07 (7.5-10 CM)	SJSSA07	Soil	7.5	10	12/09/2019	15:05	X	
11187072-120919-BN-SJSSA07 (70-72.5 CM)	SJSSA07	Soil	70	72.5	12/09/2019	15:25	X	
11187072-120919-BN-SJSSA07 (80-82.5 CM)	SJSSA07	Soil	80	82.5	12/09/2019	15:30	X	

Notes:

cm bgs - Centimeters below ground surface
DUP - Laboratory Duplicate
MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 2

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (7.5-10 CM)**	**11187072-120719-SS-SJSSA01 (15-17.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**7.5-10 cm**	**15-17.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1896 ± 0.1132 U	0.1845 ± 0.09896 U
Lead-210	pCi/g	0.694 ± 0.0588	0.5 ± 0.0513

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (22.5-25 CM)**	**11187072-120719-SS-SJSSA01 (30-32.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**22.5-25 cm**	**30-32.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1497 ± 0.08256 U	0.1376 ± 0.08681 U
Lead-210	pCi/g	0.635 ± 0.0545	0.682 ± 0.0577

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (37.5-40 CM)**	**11187072-120719-SS-SJSSA01 (45-47.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**37.5-40 cm**	**45-47.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1214 ± 0.07948 U	0.09617 ± 0.07003 U
Lead-210	pCi/g	0.513 ± 0.059	0.538 ± 0.0583

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (52.5-55 CM)**	**11187072-120719-SS-SJSSA01 (60-62.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**52.5-55 cm**	**60-62.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09826 ± 0.06292 U	0.1139 ± 0.07255 U
Lead-210	pCi/g	0.599 ± 0.0532	0.465 ± 0.0503

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (70-72.5 CM)**	**11187072-120719-SS-SJSSA01 (80-82.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**70-72.5 cm**	**80-82.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1443 ± 0.07964 U	0.1333 ± 0.08375 U
Lead-210	pCi/g	0.456 ± 0.0478	0.399 ± 0.0504 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA01 (0-2.5 CM)**	**11187072-120719-SS-SJSSA02 (7.5-10 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**0-2.5 cm**	**7.5-10 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1323 ± 0.08434 U	0.114 ± 0.06986 U
Lead-210	pCi/g	0.713 ± 0.0564	0.552 ± 0.0573

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA02**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA02 (15-17.5 CM)**	**11187072-120719-SS-SJSSA02 (22.5-25 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**15-17.5 cm**	**22.5-25 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.08665 ± 0.05227 U	0.04357 ± 0.02621 U
Lead-210	pCi/g	0.346 ± 0.0448	0.28 ± 0.0495

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA02**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA02 (30-32.5 CM)**	**11187072-120719-SS-SJSSA02 (37.5-40 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**30-32.5 cm**	**37.5-40 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.03245 ± 0.02093 U	0.08767 ± 0.0544 U
Lead-210	pCi/g	0.226 ± 0.0474	0.245 ± 0.0566

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA02**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA02 (45-47.5 CM)**	**11187072-120719-SS-SJSSA02 (52.5-55 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**45-47.5 cm**	**52.5-55 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.06205 ± 0.04939 U	0.07463 ± 0.046 U
Lead-210	pCi/g	0.342 ± 0.0461	0.326 ± 0.0472

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA02**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA02 (60-62.5 CM)**	**11187072-120719-SS-SJSSA02 (70-72.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**60-62.5 cm**	**70-72.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.0845 ± 0.0547 U	0.06443 ± 0.03829 U
Lead-210	pCi/g	0.331 ± 0.0483	0.38 ± 0.0497

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA02**	**SJSSA02**
Sample Name:		**11187072-120719-SS-SJSSA02 (80-82.5 CM)**	**11187072-120719-SS-SJSSA02 (0-2.5 CM)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**80-82.5 cm**	**0-2.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.03835 ± 0.02381 U	0.1145 ± 0.07314 U
Lead-210	pCi/g	0.266 ± 0.0437	0.657 ± 0.0547

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA03**	**SJSSA03**
Sample Name:		**11187072-120619-SS-SJSSA03 (7.5-10 CM)**	**11187072-120619-SS-SJSSA03 (15-17.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**7.5-10 cm**	**15-17.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1187 ± 0.07539 U	0.09875 ± 0.06434 U
Lead-210	pCi/g	0.516 ± 0.0512	0.278 ± 0.0511

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA03**	**SJSSA03**
Sample Name:		**11187072-120619-SS-SJSSA03 (22.5-25 CM)**	**11187072-120619-SS-SJSSA03 (30-32.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**22.5-25 cm**	**30-32.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.07308 ± 0.04441 U	0.06646 ± 0.043 U
Lead-210	pCi/g	0.302 ± 0.0498	0.447 ± 0.0471

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA03**	**SJSSA03**
Sample Name:		**11187072-120619-SS-SJSSA03 (37.5-40 CM)**	**11187072-120619-SS-SJSSA03 (45-47.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**37.5-40 cm**	**45-47.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.08151 ± 0.04759 U	0.0821 ± 0.05179 U
Lead-210	pCi/g	0.261 ± 0.0447	0.452 ± 0.0469

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA03**	**SJSSA03**
Sample Name:		**11187072-120619-SS-SJSSA03 (52.5-55 CM)**	**11187072-120619-SS-SJSSA03 (60-62.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**52.5-55 cm**	**60-62.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.094 ± 0.05404 U	0.06385 ± 0.0392 U
Lead-210	pCi/g	0.286 ± 0.0498	0.0695 ± 0.0435 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA03**	**SJSSA03**
Sample Name:		**11187072-120619-SS-SJSSA03 (70-72.5 CM)**	**11187072-120619-SS-SJSSA03 (80-82.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**70-72.5 cm**	**80-82.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.05209 ± 0.0324 U	0.06432 ± 0.04086 U
Lead-210	pCi/g	0.402 ± 0.0489	0.476 ± 0.055

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA03**	**SJSSA04**
Sample Name:		**11187072-120619-SS-SJSSA03 (0-2.5 CM)**	**11187072-120919-BN-SJSSA04 (7.5-10 CM)**
Sample Date:		**12/06/2019**	**12/09/2019**
Depth:		**0-2.5 cm**	**7.5-10 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09548 ± 0.05456 U	0.0665 ± 0.03796 U
Lead-210	pCi/g	0.487 ± 0.0502	1 ± 0.0639

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
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Location ID:		**SJSSA04**	**SJSSA04**
Sample Name:		**11187072-120919-BN-SJSSA04 (15-17.5 CM)**	**11187072-120919-BN-SJSSA04 (22.5-25 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**15-17.5 cm**	**22.5-25 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.04764 ± 0.02799 U	0.1216 ± 0.0706 U
Lead-210	pCi/g	0.93 ± 0.0592	0.889 ± 0.0681

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA04**	**SJSSA04**
Sample Name:		**11187072-120919-BN-SJSSA04 (30-32.5 CM)**	**11187072-120919-BN-SJSSA04 (37.5-40 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**30-32.5 cm**	**37.5-40 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1144 ± 0.0658 U	0.09033 ± 0.06255 U
Lead-210	pCi/g	1.05 ± 0.0586	0.638 ± 0.0505

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
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December 2019

Location ID:		**SJSSA04**	**SJSSA04**
Sample Name:		**11187072-120919-BN-SJSSA04 (45-47.5 CM)**	**11187072-120919-BN-SJSSA04 (52.5-55 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**45-47.5 cm**	**52.5-55 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.128 ± 0.07696 U	0.1268 ± 0.07849 U
Lead-210	pCi/g	0.607 ± 0.0531	0.832 ± 0.0595

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA04**	**SJSSA04**
Sample Name:		**11187072-120919-BN-SJSSA04 (60-62.5 CM)**	**11187072-120919-BN-SJSSA04 (70-72.5 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**60-62.5 cm**	**70-72.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1293 ± 0.07496 U	0.1496 ± 0.08865 U
Lead-210	pCi/g	0.881 ± 0.0591	0.84 ± 0.052

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA04**	**SJSSA04**
Sample Name:		**11187072-120919-BN-SJSSA04 (80-82.5 CM)**	**11187072-120919-BN-SJSSA04 (0-2.5 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**80-82.5 cm**	**0-2.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1537 ± 0.08935 U	0.1421 ± 0.08159 U
Lead-210	pCi/g	0.749 ± 0.055	1.11 ± 0.0613

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-SJSSA05 (7.5-10 CM)**	**11187072-120819-BN-SJSSA05 (15-17.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**7.5-10 cm**	**15-17.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1099 ± 0.06103 U	0.1084 ± 0.06582 U
Lead-210	pCi/g	0.259 ± 0.0486	0.35 ± 0.0423

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-SJSSA05 (22.5-25 CM)**	**11187072-120819-BN-SJSSA05 (30-32.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**22.5-25 cm**	**30-32.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.07979 ± 0.04556 U	0.09782 ± 0.05617 U
Lead-210	pCi/g	0.119 ± 0.0422	0.181 ± 0.079

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-SJSSA05 (37.5-40 CM)**	**11187072-120819-BN-SJSSA05 (45-47.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**37.5-40 cm**	**45-47.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.07139 ± 0.05011 U	0.06645 ± 0.04037 U
Lead-210	pCi/g	0.073 ± 0.0455	0.0704 ± 0.0418 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-SJSSA05 (52.5-55 CM)**	**11187072-120819-BN-SJSSA05 (60-62.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**52.5-55 cm**	**60-62.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09536 ± 0.05946 U	0.08828 ± 0.04935 U
Lead-210	pCi/g	0.317 ± 0.0542	0.352 ± 0.0526

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-DUP1**	**11187072-120819-BN-SJSSA05 (70-72.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**60-62.5 cm**	**70-72.5 cm**
		Duplicate	
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1223 ± 0.06922 U	0.1146 ± 0.06916 U
Lead-210	pCi/g	0.333 ± 0.0544	0.442 ± 0.0572

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA05**	**SJSSA05**
Sample Name:		**11187072-120819-BN-SJSSA05 (80-82.5 CM)**	**11187072-120819-BN-SJSSA05 (0-2.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**80-82.5 cm**	**0-2.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.06587 ± 0.04211 U	0.1064 ± 0.06604 U
Lead-210	pCi/g	0.365 ± 0.0568	0.212 ± 0.052

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-SJSSA06 (7.5-10 CM)**	**11187072-120619-SS-SJSSA06 (15-17.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**7.5-10 cm**	**15-17.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.05367 ± 0.03063 U	0.03911 ± 0.02794 U
Lead-210	pCi/g	0.161 ± 0.0493	0.0939 ± 0.0491

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-SJSSA06 (22.5-25 CM)**	**11187072-120619-SS-SJSSA06 (30-32.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**22.5-25 cm**	**30-32.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.06255 ± 0.03486 U	0.1076 ± 0.06432 U
Lead-210	pCi/g	0.215 ± 0.0476	0.113 ± 0.0522

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-SJSSA06 (37.5-40 CM)**	**11187072-120619-SS-SJSSA06 (45-47.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**37.5-40 cm**	**45-47.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.0544 ± 0.0336 U	0.07865 ± 0.04602 U
Lead-210	pCi/g	0.0852 ± 0.0513	0.166 ± 0.0478

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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San Jacinto, Harris County, Texas
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Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-SJSSA06 (52.5-55 CM)**	**11187072-120619-SS-SJSSA06 (60-62.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**52.5-55 cm**	**60-62.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.0497 ± 0.03368 U	0.03504 ± 0.02395 U
Lead-210	pCi/g	0.0697 ± 0.0434 U	0.113 ± 0.0485

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-SJSSA06 (70-72.5 CM)**	**11187072-120619-SS-SJSSA06 (80-82.5 CM)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**70-72.5 cm**	**80-82.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.05251 ± 0.03429 U	0.04477 ± 0.02713 U
Lead-210	pCi/g	0.188 ± 0.054	0.0941 ± 0.0531

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA06**	**SJSSA07**
Sample Name:		**11187072-120619-SS-SJSSA06 (0-2.5 CM)**	**11187072-120919-BN-SJSSA07 (7.5-10 CM)**
Sample Date:		**12/06/2019**	**12/09/2019**
Depth:		**0-2.5 cm**	**7.5-10 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.06482 ± 0.03688 U	0.05777 ± 0.03325 U
Lead-210	pCi/g	0.221 ± 0.057	0.853 ± 0.0707

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
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Location ID:		**SJSSA07**	**SJSSA07**
Sample Name:		**11187072-120919-BN-SJSSA07 (15-17.5 CM)**	**11187072-120919-BN-SJSSA07 (22.5-25 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**15-17.5 cm**	**22.5-25 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1033 ± 0.0658 U	0.0679 ± 0.03908 U
Lead-210	pCi/g	0.912 ± 0.0704	1.05 ± 0.0803

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA07**	**SJSSA07**
Sample Name:		**11187072-120919-BN-SJSSA07 (30-32.5 CM)**	**11187072-120919-BN-SJSSA07 (37.5-40 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**30-32.5 cm**	**37.5-40 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1 ± 0.05852 U	0.06529 ± 0.04338 U
Lead-210	pCi/g	0.655 ± 0.0602	0.156 ± 0.0533

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
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Location ID:		**SJSSA07**	**SJSSA07**
Sample Name:		**11187072-120919-BN-SJSSA07 (45-47.5 CM)**	**11187072-120919-BN-SJSSA07 (52.5-55 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**45-47.5 cm**	**52.5-55 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.0502 ± 0.03476 U	0.07514 ± 0.04497 U
Lead-210	pCi/g	0.0682 ± 0.0423 U	0.0808 ± 0.0502 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
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Location ID:		**SJSSA07**	**SJSSA07**
Sample Name:		**11187072-120919-BN-SJSSA07 (60-62.5 CM)**	**11187072-120919-BN-SJSSA07 (70-72.5 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**60-62.5 cm**	**70-72.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09191 ± 0.05208 U	0.08917 ± 0.05545 U
Lead-210	pCi/g	0.0815 ± 0.0467	0.0969 ± 0.0587 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
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Location ID:		**SJSSA07**	**SJSSA07**
Sample Name:		**11187072-120919-BN-SJSSA07 (80-82.5 CM)**	**11187072-120919-BN-SJSSA07 (0-2.5 CM)**
Sample Date:		**12/09/2019**	**12/09/2019**
Depth:		**80-82.5 cm**	**0-2.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.08095 ± 0.04787 U	0.112 ± 0.06301 U
Lead-210	pCi/g	0.198 ± 0.0468	0.905 ± 0.062

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA08**
Sample Name:		**11187072-120419-SS-SJSSA08 (7.5-10 CM)**	**11187072-120419-SS-SJSSA08 (15-17.5 CM)**
Sample Date:		**12/04/2019**	**12/04/2019**
Depth:		**7.5-10 cm**	**15-17.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.0429 ± 0.02742 U	0.06693 ± 0.04252 U
Lead-210	pCi/g	0.0758 ± 0.045 U	0.0683 ± 0.0422 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA08**
Sample Name:		**11187072-120419-SS-SJSSA08 (22.5-25 CM)**	**11187072-120419-SS-SJSSA08 (30-32.5 CM)**
Sample Date:		**12/04/2019**	**12/04/2019**
Depth:		**22.5-25 cm**	**30-32.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09049 ± 0.04816 U	0.04994 ± 0.02875 U
Lead-210	pCi/g	0.083 ± 0.0493 U	0.0681 ± 0.0405 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA08**
Sample Name:		**11187072-120419-SS-SJSSA08 (37.5-40 CM)**	**11187072-120419-SS-SJSSA08 (45-47.5 CM)**
Sample Date:		**12/04/2019**	**12/04/2019**
Depth:		**37.5-40 cm**	**45-47.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1452 ± 0.07804 U	0.1771 ± 0.1092 U
Lead-210	pCi/g	0.611 ± 0.0567	0.833 ± 0.0641

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA08**
Sample Name:		**11187072-120419-SS-SJSSA08 (52.5-55 CM)**	**11187072-120419-SS-SJSSA08 (60-62.5 CM)**
Sample Date:		**12/04/2019**	**12/04/2019**
Depth:		**52.5-55 cm**	**60-62.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1565 ± 0.08324 U	0.1584 ± 0.0959 U
Lead-210	pCi/g	0.54 ± 0.0671	0.294 ± 0.0491 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA08**
Sample Name:		**11187072-120419-SS-SJSSA08 (70-72.5 CM)**	**11187072-120419-SS-SJSSA08 (80-82.5 CM)**
Sample Date:		**12/04/2019**	**12/04/2019**
Depth:		**70-72.5 cm**	**80-82.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.1831 ± 0.09753 U	0.183 ± 0.1084 U
Lead-210	pCi/g	0.596 ± 0.0531	0.524 ± 0.0536

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA08**	**SJSSA09**
Sample Name:		**11187072-120419-SS-SJSSA08 (0-2.5 CM)**	**11187072-120819-BN-SJSSA09 (7.5-10 CM)**
Sample Date:		**12/04/2019**	**12/08/2019**
Depth:		**0-2.5 cm**	**7.5-10 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.07898 ± 0.0474 U	0.09609 ± 0.05366 U
Lead-210	pCi/g	0.076 ± 0.0475 U	0.0718 ± 0.0451 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA09**	**SJSSA09**
Sample Name:		**11187072-120819-BN-SJSSA09 (15-17.5 CM)**	**11187072-120819-BN-SJSSA09 (22.5-25 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**15-17.5 cm**	**22.5-25 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.08249 ± 0.05073 U	0.1153 ± 0.06196 U
Lead-210	pCi/g	0.0967 ± 0.0467	0.0732 ± 0.0459 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA09**	**SJSSA09**
Sample Name:		**11187072-120819-BN-SJSSA09 (30-32.5 CM)**	**11187072-120819-BN-SJSSA09 (37.5-40 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**30-32.5 cm**	**37.5-40 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09361 ± 0.0574 U	0.0758 ± 0.04698 U
Lead-210	pCi/g	0.0755 ± 0.0432	0.0714 ± 0.0446 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA09**	**SJSSA09**
Sample Name:		**11187072-120819-BN-SJSSA09 (45-47.5 CM)**	**11187072-120819-BN-SJSSA09 (52.5-55 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**45-47.5 cm**	**52.5-55 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.06056 ± 0.03959 U	0.08343 ± 0.05239 U
Lead-210	pCi/g	0.12 ± 0.0473	0.08 ± 0.0481 U

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA09**	**SJSSA09**
Sample Name:		**11187072-120819-BN-SJSSA09 (60-62.5 CM)**	**11187072-120819-BN-SJSSA09 (70-72.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**60-62.5 cm**	**70-72.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.09455 ± 0.06032 U	0.1217 ± 0.06699 U
Lead-210	pCi/g	0.0744 ± 0.0461 U	0.0816 ± 0.0451

Notes:

U - Not detected at the associated reporting limit

Analytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA09**	**SJSSA09**
Sample Name:		**11187072-120819-BN-SJSSA09 (80-82.5 CM)**	**11187072-120819-BN-SJSSA09 (0-2.5 CM)**
Sample Date:		**12/08/2019**	**12/08/2019**
Depth:		**80-82.5 cm**	**0-2.5 cm**
Parameters	**Unit**		
Radiochemistry			
Cesium-137	pCi/g	0.05701 ± 0.03507 U	0.08415 ± 0.05819 U
Lead-210	pCi/g	0.105 ± 0.0417	0.095 ± 0.0428

Notes:

U - Not detected at the associated reporting limit

Table 3

Analytical Methods
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Parameter	Method	Matrix	Holding Time Collection to Analysis (Days)
Cesium 137, Lead-210	EPA 901.1 modified	Soil	180

Notes:

EPA - MCAWW - “Methods for Chemical Analysis of Water and Waste,” 'EPA-600/4-79-020, revised March 1983, with subsequent revisions

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blanks
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Pilot Study and Treatability
San Jacinto, Harris County, Texas
December 2019

Parameter	Analyte	Analysis Date (mm/dd/yyyy)	Blank Result	Sample ID	Original Result	Qualified Result	Units
Radiochemistry	Lead-210	01/27/2020	0.428	11187072-120719-SS-SJSSA01 (80-82.5 CM)	0.399 ± 0.0504	0.399 ± 0.0504 U	pCi/g
				11187072-120419-SS-SJSSA08 (60-62.5 CM)	0.294 ± 0.0491	0.294 ± 0.0491 U	pCi/g

Notes:

U - Not detected at the associated reporting limit

Memorandum

April 27, 2020

To:	Charles Munce	Ref. No.:	11187072
From:	Deborah Brennan/cs/5-NF	Tel:	513-285-1104
cc:	Janie Smith Stefanie Castracane		

Subject: **Analytical Results and Validation - High Resolution**
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event – Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

1. Introduction

This document details a validation of analytical results for soil boring samples collected in support of the Predesign Investigation Sampling Event – Sand Separation Area at the San Jacinto River Waste Pits Superfund Site from December 2019. Samples were submitted to Eurofins TestAmerica, Inc. at locations in Sacramento, California, and Knoxville, Tennessee. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. The sample delivery groups covered in the report are identified in Table 1. Evaluation of the data was based on information obtained from the finished data sheets, raw data, chain of custody forms, calibration data, blank data, recovery data from surrogate spikes/laboratory control samples (LCS), matrix spikes (MS) and field Quality Assurance/Quality Control (QA/QC) samples. The assessment of analytical and in-house data included checks for: data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) "Quality Assurance Project Plan, Final Second Phase Pre-Design Investigation", San Jacinto River Waste Pits Site, Harris County, Texas, Report No 6, June 3 2019

ii) "National Functional Guidelines for High Resolution Superfund Methods Data Review", OLEM 9200.3-115, EPA 542-B-16-001, April 2016

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

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2. Sample Holding Time and Preservation

The sample holding time criterion for the analyses are summarized in Table 3. The sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

3. Gas Chromatography/Mass Spectrometry (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check)

Prior to dioxin/furans analyses, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the method requires the analysis of the specific tuning compound perfluorokerosene (PFK). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

Tuning compounds were analyzed at the required frequency throughout the analysis period. All tuning criteria were met, indicating that proper optimization of the instrumentation was achieved.

4. Initial Calibration

To quantify dioxin/furans of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a minimum of a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the criteria cited in the methods.

The initial calibration data were reviewed. All compounds met the method criteria for sensitivity and linearity.

5. Continuing Calibration

To ensure that instrument calibration for the analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

Calibration standards were analyzed at the required frequency, and all results met the method criteria for instrument sensitivity and stability.

6. Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with the investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per analytical batch.

Several method blank results had low-level detections. Those investigative results of similar concentrations to those found in the method blanks were qualified as non-detect (U) as shown in Table 4.

7. Spiked C-13 Labeled PCDD/PCDF

In accordance with the method employed, all samples, blanks, and QC samples analyzed for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzo-p-furan (PCDD/PCDF) are spiked with labeled congeners prior to extraction to be an internal standard for the quantitation of native congeners, and to serve as surrogates for the assessment of method performance in the sample matrix.

All samples submitted for PCDD/PCDF determinations were spiked with the appropriate number of labeled compounds prior to sample extraction and analysis.

Labeled congener recoveries and ion abundance ratios were assessed against method control limits. All Dioxin/Furan recoveries were within the method acceptance ranges. However, one abundance ratio was outside of the acceptable limits, and the associated sample result was qualified as estimated as shown in Table 5.

8. Cleanup Standard Recoveries

C-37 labeled cleanup standards are added to all samples, blanks, and QC samples subsequent to extraction, but prior to the cleanup procedures to assess the efficiency of the cleanup procedures.

Cleanup standards were added to all samples, blanks, and QC samples prior to cleanup. All Dioxin/Furan recoveries were within the method acceptance ranges.

9. Laboratory Control Sample Analyses

LCS and/or LCS/laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS and/or LCS/LCSD contained all compounds of interest. All LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

10. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern

and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed. If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

MS/MSD analyses was performed as specified in Table 1. The laboratory performed additional site-specific MS/MSD analyses internally.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the exception of those shown in Table 6.

11. Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted “blind” to the laboratory, as specified in Table 1. The RPDs associated with this duplicate sample were assessed per the Guidelines.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the exception of those shown in Table 7 that showed elevated variability.

12. Analyte Reporting

The laboratory reported detected results down to the laboratory's estimated detection limit (EDL) for each analyte. Positive analyte detections less than the reporting limit (RL) but greater than the EDL were reported as estimated (J) in Table 2 unless otherwise qualified in the Memorandum. Non-detect results were presented as non-detect at the estimated detection limit (EDL) in Table 2.

All results were reported on a dry weight basis.

Diphenyl ether interferences were observed at the exact retention time and mass channel for several furans. All associated sample results were qualified as estimated as shown in Table 8.

13. Target Compound Identification/Sample Quantitation

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time, ion abundance ratio, and chromatography were evaluated according to the identification criteria established by the methods. An erroneous identification can be either a false-positive (reporting a target compound when it is not present in the sample) or false-negative (not reporting a compound that is present in the sample).

The samples identified in Table 1 were reviewed. Most congeners reported adhered to the specified identification criteria.

Some sample results were reported as positive hits although the ion abundance ratio was not met. The associated results were qualified as the estimated maximum possible concentration. A summary of these qualified data is presented in Table 9.

14. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

								Analysis/Parameters	
Sample Delivery Group	Sample Identification	Location	Matrix	Initial Sample Depth (ft. bgs)	Final Sample Depth (ft. bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	Comments
140-17578-1	11187072-120419-SS-SJSSA08(1-2)	SJSSA08	Soil	1	2	12/04/2019	15:35	X	
	11187072-120419-SS-SJSSA08(2-4)	SJSSA08	Soil	2	4	12/04/2019	15:40	X	
	11187072-120419-SS-SJSSA08(4-6)	SJSSA08	Soil	4	6	12/04/2019	15:45	X	
	11187072-120419-SS-SJSSA08(0-1)	SJSSA08	Soil	0	1	12/04/2019	15:30	X	
	11187072-120619-SS-SJSSA03(1-2)	SJSSA03	Soil	1	2	12/06/2019	12:25	X	
	11187072-120619-SS-SJSSA03(2-4)	SJSSA03	Soil	2	4	12/06/2019	12:30	X	
	11187072-120619-SS-SJSSA03(4-6)	SJSSA03	Soil	4	6	12/06/2019	12:35	X	
	11187072-120619-SS-SJSSA03(0-1)	SJSSA03	Soil	0	1	12/06/2019	12:20	X	
	11187072-120619-SS-SJSSA06(1-2)	SJSSA06	Soil	1	2	12/06/2019	15:25	X	
	11187072-120619-SS-DUP1	SJSSA06	Soil	1	2	12/06/2019	-	X	Field Duplicate for 11187072-120619-SS-SJSSA06(1-2)
	11187072-120619-SS-SJSSA06(2-4)	SJSSA06	Soil	2	4	12/06/2019	15:30	X	
	11187072-120619-SS-SJSSA06(4-6)	SJSSA06	Soil	4	6	12/06/2019	15:35	X	MS/MSD
	11187072-120619-SS-SJSSA06(0-1)	SJSSA06	Soil	0	1	12/06/2019	15:20	X	
	11187072-120719-SS-SJSSA02(1-2)	SJSSA02	Soil	1	2	12/07/2019	11:55	X	
	11187072-120719-SS-SJSSA02(2-4)	SJSSA02	Soil	2	4	12/07/2019	12:00	X	
	11187072-120719-SS-SJSSA02(4-6)	SJSSA02	Soil	4	6	12/07/2019	12:05	X	
	11187072-120719-SS-SJSSA02(0-1)	SJSSA02	Soil	0	1	12/07/2019	11:50	X	

Table 1

Sample Collection and Analysis Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

								Analysis/Parameters	
Sample Delivery Group	Sample Identification	Location	Matrix	Initial Sample Depth (ft. bgs)	Final Sample Depth (ft. bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	Comments
320-56911-1	11187072-120719-SS-SJSSA01 (1-2)	SJSSA01	Soil	1	2	12/07/2019	15:15	X	
	11187072-120719-SS-SJSSA01 (2-4)	SJSSA01	Soil	2	4	12/07/2019	15:20	X	
	11187072-120719-SS-SJSSA01 (4-6)	SJSSA01	Soil	4	6	12/07/2019	15:25	X	
	11187072-120719-SS-SJSSA01 (0-1)	SJSSA01	Soil	0	1	12/07/2019	15:10	X	
	11187072-120819-BN-SJSSA05 (1-2)	SJSSA05	Soil	1	2	12/08/2019	15:15	X	
	11187072-120819-BN-SJSSA05 (2-4)	SJSSA05	Soil	2	4	12/08/2019	15:20	X	
	11187072-120819-BN-SJSSA05 (4-6)	SJSSA05	Soil	4	6	12/08/2019	15:25	X	
	11187072-120819-BN-DUP2	SJSSA05	Soil	4	6	12/08/2019	-	X	Field Duplicate for 11187072-120819-BN-SJSSA05 (4-6)
	11187072-120819-BN-SJSSA05 (0-1)	SJSSA05	Soil	0	1	12/08/2019	15:10	X	
	11187072-120819-BN-SJSSA09 (1-2)	SJSSA09	Soil	1	2	12/08/2019	13:20	X	
	11187072-120819-BN-SJSSA09 (2-4)	SJSSA09	Soil	2	4	12/08/2019	13:25	X	
	11187072-120819-BN-SJSSA09 (4-6)	SJSSA09	Soil	4	6	12/08/2019	13:30	X	
	11187072-120819-BN-SJSSA09 (0-1)	SJSSA09	Soil	0	1	12/08/2019	13:15	X	

Table 1

Sample Collection and Analysis Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

								Analysis/Parameters	
Sample Delivery Group	Sample Identification	Location	Matrix	Initial Sample Depth (ft. bgs)	Final Sample Depth (ft. bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	Comments
320-56953-1	11187072-120919-BN-SJSSA04(1-2)	SJSSA04	Soil	1	2	12/09/2019	16:15	X	
	11187072-120919-BN-SJSSA04(2-4)	SJSSA04	Soil	2	4	12/09/2019	16:20	X	
	11187072-120919-BN-SJSSA04(4-6)	SJSSA04	Soil	4	6	12/09/2019	16:20	X	
	11187072-120919-BN-SJSSA04(0-1)	SJSSA04	Soil	0	1	12/09/2019	16:15	X	
	11187072-120919-BN-SJSSA07(1-2)	SJSSA07	Soil	1	2	12/09/2019	15:35	X	
	11187072-120919-BN-SJSSA07(2-4)	SJSSA07	Soil	2	4	12/09/2019	15:40	X	
	11187072-120919-BN-SJSSA07(4-6)	SJSSA07	Soil	4	6	12/09/2019	15:40	X	
	11187072-120919-BN-SJSSA07(0-1)	SJSSA07	Soil	0	1	12/09/2019	15:35	X	

Notes:

ft. bgs	- Feet below ground surface
DUP	- Laboratory Duplicate
MS/MSD	- Matrix Spike/Matrix Spike Duplicate
-	- Not Applicable

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA01**	**SJSSA01**
Sample Name:		**11187072-120719-SS-SJSSA01 (1-2)**	**11187072-120719-SS-SJSSA01 (2-4)**
Sample Date:		**12/07/2019**	**12/07/2019**
Depth:		**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	1100	330
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	23	4.5 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	41	16
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	2.5 J	0.86 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.19 U	0.14 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.65 J	0.54 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.79 J	0.25 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.96 U	0.62 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.39 J	0.096 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.4 J	1.5 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.41 J	0.20 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.32 U	0.29 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.74 J	0.44 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.20 J	0.095 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.14 U	0.12 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	7.0	3.4
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	21	15
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	170 J	63 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	7.4 J	2.7 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	41 J	27 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	3.5 J	0.45 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	5.3 J	6.6 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	1.5 J	0.44 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	11 J	11 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	31 J	15 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	10.4	5.43
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	10.6	5.63

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA01**	**SJSSA01**
	Sample Name:	**11187072-120719-SS-SJSSA01 (1-2)**	**11187072-120719-SS-SJSSA01 (2-4)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	57.4	53.6

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA01**	**SJSSA01**
	Sample Name:	**11187072-120719-SS-SJSSA01 (4-6)**	**11187072-120719-SS-SJSSA01 (0-1)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	1100	2400
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	35	48
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	45	62
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	3.9 J	6.6 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.65 J	1.0 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.81 J	1.0 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.7 J	1.8 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.3 J	1.5 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.74 J	0.91 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.5 J	3.2 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.12 U	0.15 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.29 U	0.48 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.2 J	1.1 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.14 U	0.55 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.17 U	0.75 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	12	8.6
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	38	27
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	160 J	210 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	11 J	17 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	46 J	49 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	5.5 J	7.4 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	10 J	9.6 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	3.3 J	4.0 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	17 J	14 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	53 J	38 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	17.4	14.4
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	17.6	14.4

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA01**	**SJSSA01**
	Sample Name:	**11187072-120719-SS-SJSSA01 (4-6)**	**11187072-120719-SS-SJSSA01 (0-1)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	57.2	45.2

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA02**	**SJSSA02**
	Sample Name:	**11187072-120719-SS-SJSSA02(1-2)**	**11187072-120719-SS-SJSSA02(2-4)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	510	1000
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	4.3 U	25
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	21	44
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	2.6 J	4.2 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.52 U	0.77 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.33 J	0.39 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.1 J	2.3 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.42 J	1.1 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.35 J	0.73 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.4 J	2.3 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.12 U	0.20 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.17 J	0.42 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.063 U	1.3 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.084 U	0.25 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.061 U	1.2 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	1.1 J	6.8
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	3.2	18
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	77 J	150 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	4.8 J	11 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	34 J	51 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	3.1 J	8.7 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	8.8 J	11 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	1.1 J	6.1 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	11 J	20 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	6.8 J	49 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	2.34	10.9
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	2.36	10.9

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA02**	**SJSSA02**
	Sample Name:	**11187072-120719-SS-SJSSA02(1-2)**	**11187072-120719-SS-SJSSA02(2-4)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	75.2	76.0

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA02**	**SJSSA02**
	Sample Name:	**11187072-120719-SS-SJSSA02(4-6)**	**11187072-120719-SS-SJSSA02(0-1)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	450	400
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	5.3 U	3.8 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	22	14 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	0.90 U	0.67 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.062 U	0.083 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.39 J	0.14 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.42 J	0.094 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.54 J	0.32 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.23 J	0.092 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.0 J	0.80 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.11 U	0.13 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.080 U	0.062 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.10 U	0.095 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.081 U	0.097 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.26 J	0.092 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	0.62 J	1.1 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	2.0	3.6 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	70 J	48 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	2.3 J	1.5 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	26 J	18 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	2.2 J	0.85 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	4.6 J	4.3 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.88 J	0.095 U
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	5.2 J	7.0 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	5.0 J	7.7 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	1.51	1.83
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	1.57	1.91

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA02**	**SJSSA02**
	Sample Name:	**11187072-120719-SS-SJSSA02(4-6)**	**11187072-120719-SS-SJSSA02(0-1)**
	Sample Date:	**12/07/2019**	**12/07/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	79.7	71.2

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA03**	**SJSSA03**
	Sample Name:	**11187072-120619-SS-SJSSA03(1-2)**	**11187072-120619-SS-SJSSA03(2-4)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	810	700
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	5.5 U	1.6 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	34	30
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	1.1 U	0.42 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.23 U	0.082 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.48 J	0.40 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.66 J	0.084 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.87 J	0.56 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.095 U	0.081 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.3 J	2.2 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.14 U	0.11 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.32 J	0.20 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.32 J	0.091 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.10 U	0.090 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.26 J	0.083 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	3.8	0.20 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	12	0.92 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	130 J	110 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	2.8 J	0.98 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	53 J	32 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	2.3 J	0.52 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	11 J	6.1 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	2.1 J	0.78 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	17 J	4.9 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	28 J	2.8 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	6.42	1.32
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	6.45	1.35

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA03**	**SJSSA03**
	Sample Name:	**11187072-120619-SS-SJSSA03(1-2)**	**11187072-120619-SS-SJSSA03(2-4)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	71.8	76.6

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA03**	**SJSSA03**
	Sample Name:	**11187072-120619-SS-SJSSA03(4-6)**	**11187072-120619-SS-SJSSA03(0-1)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	2300	980
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	120	10 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	90	41
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	11	2.2 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	1.5 J	0.35 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.95 J	0.56 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	2.6 J	4.1 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.7 J	0.79 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.5 J	1.2 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	3.9 J	2.7 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.21 U	0.096 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.62 J	0.40 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.1 J	4.6 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.34 J	0.37 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.89 J	4.9 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	8.5	8.4
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	24	34
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	270 J	160 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	27 J	5.0 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	61 J	53 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	24 J	8.8 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	9.3 J	12 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	16 J	19 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	15 J	20 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	58 J	82 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	14.8	15.5
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	14.8	15.5

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA03**	**SJSSA03**
	Sample Name:	**11187072-120619-SS-SJSSA03(4-6)**	**11187072-120619-SS-SJSSA03(0-1)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	67.8	62.3

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA04**	**SJSSA04**
	Sample Name:	**11187072-120919-BN-SJSSA04(1-2)**	**11187072-120919-BN-SJSSA04(2-4)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	2100	750
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	35 U	9.2 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	57	31
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	4.2 J	1.0 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.56 U	0.36 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.98 J	0.63 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.8 J	0.78 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.5 J	0.99 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.2 J	0.33 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.3 J	2.5 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.31 U	0.16 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.71 U	0.40 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.6 J	0.70 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.31 U	0.16 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.0 J	0.60 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	13	7.7
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	50	29
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	220 J	120 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	12 J	2.5 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	40 J	39 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	6.4 J	1.1 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	5.3 J	7.7 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	5.4 J	2.1 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	19 J	16 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	89 J	52 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	20.4	11.9
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	20.8	12.1

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA04**	**SJSSA04**
	Sample Name:	**11187072-120919-BN-SJSSA04(1-2)**	**11187072-120919-BN-SJSSA04(2-4)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	50.8	46.1

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA04**	**SJSSA04**
	Sample Name:	**11187072-120919-BN-SJSSA04(4-6)**	**11187072-120919-BN-SJSSA04(0-1)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	4700	720
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	190	12 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	180	31
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	20	1.7 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	2.2 U	0.32 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.9 J	0.63 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	5.6 J	1.2 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	4.4 J	0.88 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	2.6 J	0.41 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	5.7 J	2.4 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.39 J	0.61 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.88 J	0.40 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	3.9 J	1.1 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.92 J	0.16 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	2.1 J	0.77 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	31	11
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	110	43
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	610 J	130 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	65 J	4.9 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	96 J	41 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	29 J	4.1 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	13 J	8.9 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	16 J	2.7 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	39 J	21 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	180 J	72 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	49.2	16.7
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	49.3	16.9

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA04**	**SJSSA04**
	Sample Name:	**11187072-120919-BN-SJSSA04(4-6)**	**11187072-120919-BN-SJSSA04(0-1)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	42.6	41.6

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA05**	**SJSSA05**
	Sample Name:	**11187072-120819-BN-SJSSA05 (1-2)**	**11187072-120819-BN-SJSSA05 (2-4)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	190	140
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	3.4 U	4.3 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	8.0	7.2
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	0.49 J	0.63 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.23 J	0.39 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.36 J	0.31 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.26 J	0.21 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.29 U	0.41 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.090 U	0.12 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.71 J	0.76 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.31 J	0.20 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.15 U	0.13 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.33 J	0.24 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.071 U	0.094 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.094 U	0.10 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	1.5	0.76 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	6.0	2.9 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	29 J	25 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	1.4 J	1.9 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	11 J	12 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	0.57 J	0.41 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	2.4 J	3.3 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.33 J	0.24 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	4.0 J	4.1 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	9.1 J	4.1 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	2.42	1.33
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	2.53	1.44

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA05**	**SJSSA05**
	Sample Name:	**11187072-120819-BN-SJSSA05 (1-2)**	**11187072-120819-BN-SJSSA05 (2-4)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	71.3	75.8

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA05**	**SJSSA05**
	Sample Name:	**11187072-120819-BN-SJSSA05 (4-6)**	**11187072-120819-BN-DUP2**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**4-6 ft BGS**	**4-6 ft BGS**
			Duplicate
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	160	380
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	2.4 U	4.4 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	6.6 J	15
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	0.43 J	0.77 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.071 U	0.066 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.29 J	0.45 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.13 U	0.28 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.31 U	0.38 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.14 U	0.12 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.54 J	1.1 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.18 J	0.17 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.20 U	0.16 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.27 J	0.38 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.11 U	0.088 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.13 U	0.086 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	1.3 J	2.7
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	4.5	9.9 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	24 J	65 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	1.0 J	1.8 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	10 J	28 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	0.18 J	0.45 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	3.0 J	7.6 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.27 J	0.85 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	4.5 J	14 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	6.4 J	16 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	1.98	4.17
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	2.13	4.30

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA05**	**SJSSA05**
	Sample Name:	**11187072-120819-BN-SJSSA05 (4-6)**	**11187072-120819-BN-DUP2**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**4-6 ft BGS**	**4-6 ft BGS**
			Duplicate
Parameters	**Unit**		
General Chemistry			
Percent solids	%	68.5	76.5

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA05**	**SJSSA06**
Sample Name:		**11187072-120819-BN-SJSSA05 (0-1**	**11187072-120619-SS-SJSSA06(1-2)**
Sample Date:		**12/08/2019**	**12/06/2019**
Depth:		**0-1 ft BGS**	**1-2 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	550	210
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	10 J	4.8 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	18	9.9
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	1.5 J	2.7 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.27 J	1.0 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.37 J	0.20 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	2.1 J	9.2 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.56 U	0.24 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.49 J	2.4 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.4 J	0.72 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.10 U	0.17 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.18 U	0.70 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.8 J	6.2 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.11 U	0.32 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.0 J	5.1 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	18	83 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	78	300 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	70 J	38 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	3.7 J	5.3 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	20 J	11 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	3.5 J	15 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	3.3 J	2.2 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	4.5 J	20 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	22 J	94 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	130 J	650 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	27.0	117
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	27.1	117

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA05**	**SJSSA06**
	Sample Name:	**11187072-120819-BN-SJSSA05 (0-1**	**11187072-120619-SS-SJSSA06(1-2)**
	Sample Date:	**12/08/2019**	**12/06/2019**
	Depth:	**0-1 ft BGS**	**1-2 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	64.1	89.6

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Location ID:		**SJSSA06**	**SJSSA06**
Sample Name:		**11187072-120619-SS-DUP1**	**11187072-120619-SS-SJSSA06(2-4)**
Sample Date:		**12/06/2019**	**12/06/2019**
Depth:		**1-2 ft BGS**	**2-4 ft BGS**
		Duplicate	
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	230	200
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	9.0 U	3.4 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	12	9.3
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	19 J	2.8 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	9.3	0.93 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.71 J	0.16 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	120 J	9.7
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.91 J	0.42 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	31 J	2.3 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.2 J	0.58 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	2.8 J	0.15 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	7.7 J	0.68 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	160 J	6.2
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	9.5	0.37 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	190 J	5.4 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	360 J	82
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	1900 J	290
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	42 J	35 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	34 J	4.3 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	18 J	11 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	190 J	15 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	11 J	2.2 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	530 J	20 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	420 J	94 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	4500 J	640 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	637	115
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	637	115

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA06**	**SJSSA06**
	Sample Name:	**11187072-120619-SS-DUP1**	**11187072-120619-SS-SJSSA06(2-4)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
		Duplicate	
Parameters	**Unit**		
General Chemistry			
Percent solids	%	55.0	82.5

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA06**	**SJSSA06**
	Sample Name:	**11187072-120619-SS-SJSSA06(4-6)**	**11187072-120619-SS-SJSSA06(0-1)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	1300 J	380
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	46 U	10 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	75 J	16
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	100 J	3.1 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	41 J	0.79 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.65 U	0.20 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	420 J	9.6
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.64 U	0.45 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	110 J	2.3 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	4.0 J	0.87 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	7.3 J	0.24 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	25 J	0.69 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	250 J	6.6
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	11 J	0.35 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	170 J	4.7 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	2800	74
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	3900	270
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	250 J	55 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	180 J	6.1 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	62 J	14 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	630 J	16 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	28 J	2.7 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	700 J	19 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	3100 J	84 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	17000 J	600 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	3330	105
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	3330	105

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA06**	**SJSSA06**
	Sample Name:	**11187072-120619-SS-SJSSA06(4-6)**	**11187072-120619-SS-SJSSA06(0-1)**
	Sample Date:	**12/06/2019**	**12/06/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	60.9	83.6

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA07**	**SJSSA07**
	Sample Name:	**11187072-120919-BN-SJSSA07(1-2)**	**11187072-120919-BN-SJSSA07(2-4)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	430	36
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	5.4 U	0.17 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	16	1.4 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	0.64 U	0.15 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.21 U	0.17 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.40 J	0.19 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.12 U	0.092 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.59 J	0.11 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.15 J	0.088 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.3 J	0.096 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.097 U	0.071 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.28 U	0.15 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.16 U	0.11 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.093 U	0.070 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.16 U	0.12 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	1.1 J	0.10 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	2.7	0.073 U
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	75 J	5.7 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	1.5 J	0.17 U
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	20 J	1.9 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	0.15 J	0.092 U
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	4.2 J	0.28 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.17 U	0.12 U
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	3.8 J	0.40 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	3.1 J	0.073 U
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	1.90	0.030
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	2.09	0.213

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA07**	**SJSSA07**
	Sample Name:	**11187072-120919-BN-SJSSA07(1-2)**	**11187072-120919-BN-SJSSA07(2-4)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	64.4	81.7

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA07**	**SJSSA07**
	Sample Name:	**11187072-120919-BN-SJSSA07(4-6)**	**11187072-120919-BN-SJSSA07(0-1)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	890	2400
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	27 U	44
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	39	61
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	0.52 U	4.8 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.70 U	1.3 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.51 U	1.1 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.33 U	1.3 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.54 U	1.9 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.31 U	1.1 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.6 J	2.7 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.26 U	0.78 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.66 U	0.51 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.39 U	1.1 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.24 U	0.60 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.41 U	0.74 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	0.34 U	8.6
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	0.25 U	28
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	130 J	220 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	5.6 J	15 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	28 J	38 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	0.33 U	8.8 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	5.4 J	3.7 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.43 U	4.8 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	0.57 J	11 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	0.25 U	47 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	0.917	14.0
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	1.62	14.3

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA07**	**SJSSA07**
	Sample Name:	**11187072-120919-BN-SJSSA07(4-6)**	**11187072-120919-BN-SJSSA07(0-1)**
	Sample Date:	**12/09/2019**	**12/09/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	56.0	43.4

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA08**	**SJSSA08**
	Sample Name:	**11187072-120419-SS-SJSSA08(1-2)**	**11187072-120419-SS-SJSSA08(2-4)**
	Sample Date:	**12/04/2019**	**12/04/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	2600	3600
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	53	93
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	73	110
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	6.6 J	13
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	1.0 U	2.2 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.98 J	1.4 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	2.5 J	10
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	1.7 J	2.6 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	1.1 J	3.2 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	3.0 J	4.8 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.16 U	0.34 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.49 J	1.5 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	1.2 J	6.9 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.25 J	0.59 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.86 J	5.2 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	10	75
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	32	260
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	240 J	370 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	16 J	29 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	50 J	80 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	12 J	29 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	6.4 J	11 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	7.3 J	27 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	17 J	92 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	68 J	540 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	16.5	109
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	16.5	109

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA08**	**SJSSA08**
	Sample Name:	**11187072-120419-SS-SJSSA08(1-2)**	**11187072-120419-SS-SJSSA08(2-4)**
	Sample Date:	**12/04/2019**	**12/04/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	67.5	57.7

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA08**	**SJSSA08**
	Sample Name:	**11187072-120419-SS-SJSSA08(4-6)**	**11187072-120419-SS-SJSSA08(0-1)**
	Sample Date:	**12/04/2019**	**12/04/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	830	930
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	8.6 U	20
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	35	28
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	2.3 J	3.1 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.41 U	0.53 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.35 J	0.31 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	4.0 J	0.84 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.90 J	0.57 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.99 J	0.37 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	2.3 J	1.3 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.21 U	0.16 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.52 J	0.20 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	2.7 J	0.49 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.16 U	0.12 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	2.6 J	0.29 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	35	4.1
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	120	11
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	130 J	89 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	4.6 J	7.1 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	40 J	18 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	6.5 J	4.4 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	8.2 J	2.4 J
Total pentachlorodibenzofuran (PeCDF)	pg/g	8.7 J	3.6 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	47 J	6.4 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	260 J	26 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	49.9	6.44
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	49.9	6.45

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA08**	**SJSSA08**
	Sample Name:	**11187072-120419-SS-SJSSA08(4-6)**	**11187072-120419-SS-SJSSA08(0-1)**
	Sample Date:	**12/04/2019**	**12/04/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	70.1	76.3

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA09**	**SJSSA09**
	Sample Name:	**11187072-120819-BN-SJSSA09 (1-2)**	**11187072-120819-BN-SJSSA09 (2-4)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	180	180
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	3.6 U	4.1 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	6.2 J	6.1 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	1.2 J	1.1 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.35 J	0.56 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.096 U	0.24 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.78 J	3.3 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.50 U	0.21 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.32 J	0.82 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.58 J	0.44 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.28 J	0.46 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.15 U	0.18 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.64 J	1.2 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.073 U	0.10 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.079 U	0.61 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	4.4	9.7
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	20	44
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	18 J	22 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	4.0 J	2.5 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	4.3 J	5.0 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	3.3 J	4.6 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.15 U	0.18 U
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.74 J	2.7 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	4.4 J	11 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	29 J	68 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	6.75	15.0
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	6.87	15.1

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA09**	**SJSSA09**
	Sample Name:	**11187072-120819-BN-SJSSA09 (1-2)**	**11187072-120819-BN-SJSSA09 (2-4)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**1-2 ft BGS**	**2-4 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	75.2	78.4

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA09**	**SJSSA09**
	Sample Name:	**11187072-120819-BN-SJSSA09 (4-6)**	**11187072-120819-BN-SJSSA09 (0-1)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g	130	300
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g	7.3 U	4.4 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	5.5 J	7.4
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g	1.1 J	0.83 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g	0.32 J	0.087 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.27 J	0.087 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.64 J	0.33 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.19 U	0.31 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.28 J	0.073 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	0.36 J	0.34 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g	0.23 J	0.13 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.12 U	0.14 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.40 J	0.35 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g	0.094 U	0.070 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g	0.092 U	0.092 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	3.0	3.0
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g	14	13
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g	16 J	27 J
Total heptachlorodibenzofuran (HpCDF)	pg/g	3.0 J	2.3 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g	3.3 J	3.3 J
Total hexachlorodibenzofuran (HxCDF)	pg/g	1.2 J	0.83 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g	0.14 J	0.14 U
Total pentachlorodibenzofuran (PeCDF)	pg/g	0.40 J	0.76 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g	3.3 J	3.0 J
Total tetrachlorodibenzofuran (TCDF)	pg/g	20 J	19 J
Total WHO Dioxin TEQ(Human/Mammal)(ND=0)	pg/g	4.70	4.56
Total WHO Dioxin TEQ(Human/Mammal)(ND=0.5)	pg/g	4.79	4.67

Table 2

Aanlytical Results Summary
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event-Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

	Location ID:	**SJSSA09**	**SJSSA09**
	Sample Name:	**11187072-120819-BN-SJSSA09 (4-6)**	**11187072-120819-BN-SJSSA09 (0-1)**
	Sample Date:	**12/08/2019**	**12/08/2019**
	Depth:	**4-6 ft BGS**	**0-1 ft BGS**
Parameters	**Unit**		
General Chemistry			
Percent solids	%	75.4	71.0

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 3

Analytical Methods
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Method	Matrix	Holding Time Collection or Extraction to Analysis (Days)
Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	E1613	Soil	360

Notes:

E1613 - "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS", U.S. Environmental Protection Agency Office of Water Engineering and Analysis Division

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blanks
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Analyte	Extraction Date (mm/dd/yyyy)	Blank Result *	Sample ID	Original Result	Qualified Result	Units
Diox Fur	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	12/11/2019	1.32J	11187072-120619-SS-SJSSA06(1-2)	4.8 J	4.8 U	pg/g
				11187072-120619-SS-SJSSA06(2-4)	3.4 J	3.4 U	pg/g
				11187072-120619-SS-SJSSA06(4-6)	46 J	46 U	pg/g
				11187072-120619-SS-DUP1	9.0 J	9.0 U	pg/g
				11187072-120719-SS-SJSSA02(4-6)	5.3 J	5.3 U	pg/g
				11187072-120719-SS-SJSSA02(0-1)	3.8 J	3.8 U	pg/g
				11187072-120719-SS-SJSSA02(1-2)	4.3 J	4.3 U	pg/g
				11187072-120419-SS-SJSSA08(4-6)	8.6 J	8.6 U	pg/g
				11187072-120619-SS-SJSSA03(0-1)	10 J	10 U	pg/g
				11187072-120619-SS-SJSSA03(1-2)	5.5 J	5.5 U	pg/g
				11187072-120619-SS-SJSSA03(2-4)	1.6 J	1.6 U	pg/g
	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	12/11/2019	0.175J	11187072-120719-SS-SJSSA02(4-6)	0.90 J	0.90 U	pg/g
				11187072-120719-SS-SJSSA02(0-1)	0.67 J	0.67 U	pg/g
				11187072-120619-SS-SJSSA03(1-2)	1.1 J	1.1 U	pg/g
				11187072-120619-SS-SJSSA03(2-4)	0.42 J	0.42 U	pg/g
	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	12/11/2019	0.193J	11187072-120419-SS-SJSSA08(0-1)	0.53 J	0.53 U	pg/g
				11187072-120619-SS-SJSSA06(1-2)	1.0 J	1.0 U	pg/g
				11187072-120619-SS-SJSSA06(2-4)	0.93 J	0.93 U	pg/g
				11187072-120719-SS-SJSSA02(2-4)	0.77 J	0.77 U	pg/g
				11187072-120719-SS-SJSSA02(0-1)	0.083 J	0.083 U	pg/g
				11187072-120719-SS-SJSSA02(1-2)	0.52 J	0.52 U	pg/g
				11187072-120419-SS-SJSSA08(1-2)	1.0 J	1.0 U	pg/g
				11187072-120619-SS-SJSSA06(0-1)	0.79 J	0.79 U	pg/g
				11187072-120419-SS-SJSSA08(4-6)	0.41 J	0.41 U	pg/g
				11187072-120619-SS-SJSSA03(0-1)	0.35 J	0.35 U	pg/g
				11187072-120619-SS-SJSSA03(1-2)	0.23 J	0.23 U	pg/g

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blanks
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Analyte	Extraction Date (mm/dd/yyyy)	Blank Result *	Sample ID	Original Result	Qualified Result	Units
Diox Fur	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	12/11/2019	0.585J	11187072-120819-BN-SJSSA05 (1-2)	3.4 J	3.4 U	pg/g
				11187072-120819-BN-SJSSA05 (2-4)	4.3 J	4.3 U	pg/g
				11187072-120819-BN-SJSSA05 (4-6)	2.4 J	2.4 U	pg/g
				11187072-120819-BN-DUP2	4.4 J	4.4 U	pg/g
				11187072-120719-SS-SJSSA01 (2-4)	4.5 J	4.5 U	pg/g
				11187072-120819-BN-SJSSA09 (0-1)	4.4 J	4.4 U	pg/g
				11187072-120819-BN-SJSSA09 (1-2)	3.6 J	3.6 U	pg/g
				11187072-120819-BN-SJSSA09 (2-4)	4.1 J	4.1 U	pg/g
				11187072-120819-BN-SJSSA09 (4-6)	7.3 J	7.3 U	pg/g
	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	12/11/2019	0.116J	11187072-120819-BN-SJSSA05 (1-2)	0.29 J	0.29 U	pg/g
				11187072-120819-BN-SJSSA05 (2-4)	0.41 J	0.41 U	pg/g
				11187072-120819-BN-SJSSA05 (4-6)	0.31 J	0.31 U	pg/g
				11187072-120819-BN-DUP2	0.38 J	0.38 U	pg/g
				11187072-120719-SS-SJSSA01 (1-2)	0.96 J	0.96 U	pg/g
				11187072-120719-SS-SJSSA01 (2-4)	0.62 J	0.62 U	pg/g
				11187072-120819-BN-SJSSA09 (0-1)	0.31 J	0.31 U	pg/g
				11187072-120819-BN-SJSSA09 (1-2)	0.50 J	0.50 U	pg/g
				11187072-120819-BN-SJSSA09 (2-4)	0.21 J	0.21 U	pg/g
				11187072-120819-BN-SJSSA09 (4-6)	0.19 J	0.19 U	pg/g
				11187072-120819-BN-SJSSA05 (0-1)	0.56 J	0.56 U	pg/g
	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	12/12/2019	1.80J	11187072-120919-BN-SJSSA07(1-2)	5.4 J	5.4 U	pg/g
				11187072-120919-BN-SJSSA07(4-6)	27	27 U	pg/g
				11187072-120919-BN-SJSSA04(0-1)	12 J	12 U	pg/g
				11187072-120919-BN-SJSSA04(1-2)	35	35 U	pg/g
				11187072-120919-BN-SJSSA04(2-4)	9.2 J	9.2 U	pg/g

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blanks
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Analyte	Extraction Date (mm/dd/yyyy)	Blank Result *	Sample ID	Original Result	Qualified Result	Units
Diox Fur	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	12/12/2019	0.287J	11187072-120919-BN-SJSSA07(1-2)	0.64 J	0.64 U	pg/g
				11187072-120919-BN-SJSSA04(0-1)	1.7 J	1.7 U	pg/g
				11187072-120919-BN-SJSSA04(2-4)	1.0 J	1.0 U	pg/g
	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	12/12/2019	0.458J	11187072-120919-BN-SJSSA07(2-4)	1.4 J	1.4 U	pg/g
	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	12/12/2019	0.344J	11187072-120919-BN-SJSSA07(0-1)	1.3 J	1.3 U	pg/g
				11187072-120919-BN-SJSSA04(4-6)	2.2 J	2.2 U	pg/g

Notes:

* - Blank result adjusted for sample factors where applicable
U - Not detected at the associated reporting limit
J - Estimated concentration

Table 5

Qualified Sample Data Due to Outlying of Surrogate Ion Abundance Ratios
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Sample ID	Surrogate	Surrogate IAR	Control Limits IAR	Analyte	Qualified Result	Units
Diox Fur	11187072-120619-SS-SJSSA06(4-6)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) C13	1.81	1.32-1.78	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	25 J	pg/g

Notes:

J - Estimated concentration
IAR - Ion Abundance Ratio

Table 6

Qualified Sample Results Due to Outlying MS/MSD Results
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Sample ID	Analyte	MS % Recovery	MSD % Recovery	RPD (percent)	Control Limits % Recovery	Control Limits RPD	Qualified Result	Units
Diox Fur	11187072-120619-SS-SJSSA06(4-6)	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	201	145	12	78-144	25	1300 J	pg/g
		1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	55	60	2	82-122	25	100 J	pg/g
		1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0	0	5	72-134	25	420 J	pg/g
		1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	60	48	12	84-130	25	110 J	pg/g
		1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	14	12	2	80-134	25	250 J	pg/g
		2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	39	46	3	68-160	25	170 J	pg/g

Notes:

MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
J - Estimated concentration

Table 7

Qualified Sample Data Due to Variability in Field Duplicate Results
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Analyte	RPD/Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
Diox Fur	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	150	11187072-120619-SS-SJSSA06(1-2)	2.7 J	11187072-120619-SS-DUP1	19 J	pg/g
	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	172	11187072-120619-SS-SJSSA06(1-2)	9.2 J	11187072-120619-SS-DUP1	120 J	pg/g
	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	171	11187072-120619-SS-SJSSA06(1-2)	2.4 J	11187072-120619-SS-DUP1	31 J	pg/g
	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	185	11187072-120619-SS-SJSSA06(1-2)	6.2 J	11187072-120619-SS-DUP1	160 J	pg/g
	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	190	11187072-120619-SS-SJSSA06(1-2)	5.1 J	11187072-120619-SS-DUP1	190 J	pg/g
	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	146	11187072-120619-SS-SJSSA06(1-2)	300 J	11187072-120619-SS-DUP1	1900 J	pg/g
	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	125	11187072-120619-SS-SJSSA06(1-2)	83 J	11187072-120619-SS-DUP1	360 J	pg/g
	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	109	11187072-120819-BN-SJSSA05 (2-4)	2.9 J	11187072-120819-BN-DUP2	9.9 J	pg/g

Notes:

Diff - Difference (i.e., >1X RL for waters or >2XRL for soils)
RPD - Relative Percent Difference
J - Estimated concentration

Table 8

Qualified Sample Results Due to Diphenyl Ether Interference
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Sample ID	Analyte	Qualified Result	Units
Diox Fur	11187072-120419-SS-SJSSA08(0-1)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.37 J	pg/g
	11187072-120719-SS-SJSSA02(2-4)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.73 J	pg/g
	11187072-120419-SS-SJSSA08(1-2)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	1.1 J	pg/g
	11187072-120619-SS-SJSSA03(4-6)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	1.5 J	pg/g

Notes:

J - Estimated concentration

Table 9

Qualified Sample Results Due to Outlying Identification Criteria
San Jacinto River Waste Pits Superfund Site Investigation
Predesign Investigation Sampling Event - Sand Separation Area
San Jacinto, Harris County, Texas
December 2019

Parameter	Sample ID	Analyte	Qualified Result	Units
Diox Fur	11187072-120419-SS-SJSSA08(0-1)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.31 J	pg/g
	11187072-120419-SS-SJSSA08(0-1)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.37 J	pg/g
	11187072-120419-SS-SJSSA08(0-1)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.20 J	pg/g
	11187072-120419-SS-SJSSA08(1-2)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.49 J	pg/g
	11187072-120419-SS-SJSSA08(1-2)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.25 J	pg/g
	11187072-120419-SS-SJSSA08(1-2)	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.86 J	pg/g
	11187072-120419-SS-SJSSA08(2-4)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.34 J	pg/g
	11187072-120419-SS-SJSSA08(4-6)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.35 J	pg/g
	11187072-120419-SS-SJSSA08(4-6)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.99 J	pg/g
	11187072-120619-SS-DUP1	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.71 J	pg/g
	11187072-120619-SS-SJSSA03(0-1)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.79 J	pg/g
	11187072-120619-SS-SJSSA03(1-2)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.48 J	pg/g
	11187072-120619-SS-SJSSA03(1-2)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.87 J	pg/g
	11187072-120619-SS-SJSSA03(1-2)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.32 J	pg/g
	11187072-120619-SS-SJSSA03(2-4)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.56 J	pg/g
	11187072-120619-SS-SJSSA03(2-4)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	2.2 J	pg/g
	11187072-120619-SS-SJSSA03(2-4)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.20 J	pg/g
	11187072-120619-SS-SJSSA03(2-4)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.92 J	pg/g
	11187072-120619-SS-SJSSA03(2-4)	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.20 J	pg/g
	11187072-120619-SS-SJSSA03(4-6)	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	1.5 J	pg/g
	11187072-120619-SS-SJSSA03(4-6)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.95 J	pg/g
	11187072-120619-SS-SJSSA03(4-6)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.62 J	pg/g
	11187072-120619-SS-SJSSA03(4-6)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.34 J	pg/g
	11187072-120619-SS-SJSSA06(0-1)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.20 J	pg/g
	11187072-120619-SS-SJSSA06(0-1)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.35 J	pg/g

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San Jacinto, Harris County, Texas
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Parameter	Sample ID	Analyte	Qualified Result	Units
Diox Fur	11187072-120619-SS-SJSSA06(1-2)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.17 J	pg/g
	11187072-120619-SS-SJSSA06(1-2)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.32 J	pg/g
	11187072-120619-SS-SJSSA06(2-4)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.42 J	pg/g
	11187072-120619-SS-SJSSA06(2-4)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.15 J	pg/g
	11187072-120619-SS-SJSSA06(2-4)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.58 J	pg/g
	11187072-120619-SS-SJSSA06(2-4)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.68 J	pg/g
	11187072-120619-SS-SJSSA06(4-6)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	7.3 J	pg/g
	11187072-120719-SS-SJSSA01 (0-1)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1.5 J	pg/g
	11187072-120719-SS-SJSSA01 (0-1)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.48 J	pg/g
	11187072-120719-SS-SJSSA01 (1-2)	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.79 J	pg/g
	11187072-120719-SS-SJSSA01 (1-2)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.65 J	pg/g
	11187072-120719-SS-SJSSA01 (1-2)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.41 J	pg/g
	11187072-120719-SS-SJSSA01 (1-2)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.74 J	pg/g
	11187072-120719-SS-SJSSA01 (1-2)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.20 J	pg/g
	11187072-120719-SS-SJSSA01 (2-4)	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.25 J	pg/g
	11187072-120719-SS-SJSSA01 (2-4)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.20 J	pg/g
	11187072-120719-SS-SJSSA02(0-1)	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	14 J	pg/g
	11187072-120719-SS-SJSSA02(0-1)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.32 J	pg/g
	11187072-120719-SS-SJSSA02(0-1)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.6 J	pg/g
	11187072-120719-SS-SJSSA02(0-1)	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.1 J	pg/g
	11187072-120719-SS-SJSSA02(1-2)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.33 J	pg/g
	11187072-120719-SS-SJSSA02(1-2)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.17 J	pg/g
	11187072-120719-SS-SJSSA02(2-4)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.39 J	pg/g
	11187072-120719-SS-SJSSA02(2-4)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.73 J	pg/g
	11187072-120719-SS-SJSSA02(2-4)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.42 J	pg/g
	11187072-120719-SS-SJSSA02(4-6)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	1.0 J	pg/g
	11187072-120719-SS-SJSSA02(4-6)	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.62 J	pg/g

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Diox Fur	11187072-120819-BN-DUP2	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.17 J	pg/g
	11187072-120819-BN-SJSSA05 (0-1)	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.27 J	pg/g
	11187072-120819-BN-SJSSA05 (0-1)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.49 J	pg/g
	11187072-120819-BN-SJSSA05 (2-4)	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.21 J	pg/g
	11187072-120819-BN-SJSSA05 (2-4)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.31 J	pg/g
	11187072-120819-BN-SJSSA05 (2-4)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.20 J	pg/g
	11187072-120819-BN-SJSSA05 (2-4)	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.76 J	pg/g
	11187072-120819-BN-SJSSA05 (4-6)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.29 J	pg/g
	11187072-120819-BN-SJSSA05 (4-6)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.18 J	pg/g
	11187072-120819-BN-SJSSA05 (4-6)	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.3 J	pg/g
	11187072-120819-BN-SJSSA09 (0-1)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.13 J	pg/g
	11187072-120819-BN-SJSSA09 (0-1)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.35 J	pg/g
	11187072-120819-BN-SJSSA09 (1-2)	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.35 J	pg/g
	11187072-120819-BN-SJSSA09 (4-6)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.27 J	pg/g
	11187072-120819-BN-SJSSA09 (4-6)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.23 J	pg/g
	11187072-120919-BN-SJSSA04(0-1)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.63 J	pg/g
	11187072-120919-BN-SJSSA04(0-1)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.41 J	pg/g
	11187072-120919-BN-SJSSA04(0-1)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.61 J	pg/g
	11187072-120919-BN-SJSSA04(0-1)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	1.1 J	pg/g
	11187072-120919-BN-SJSSA04(1-2)	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4.2 J	pg/g
	11187072-120919-BN-SJSSA04(1-2)	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	1.8 J	pg/g
	11187072-120919-BN-SJSSA04(1-2)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.98 J	pg/g
	11187072-120919-BN-SJSSA04(1-2)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1.5 J	pg/g
	11187072-120919-BN-SJSSA04(1-2)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	1.6 J	pg/g
	11187072-120919-BN-SJSSA04(2-4)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.63 J	pg/g

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Diox Fur	11187072-120919-BN-SJSSA04(2-4)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.33 J	pg/g
	11187072-120919-BN-SJSSA04(2-4)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.70 J	pg/g
	11187072-120919-BN-SJSSA04(4-6)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.88 J	pg/g
	11187072-120919-BN-SJSSA04(4-6)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.92 J	pg/g
	11187072-120919-BN-SJSSA04(4-6)	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	2.1 J	pg/g
	11187072-120919-BN-SJSSA07(0-1)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	1.1 J	pg/g
	11187072-120919-BN-SJSSA07(0-1)	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.74 J	pg/g
	11187072-120919-BN-SJSSA07(1-2)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.40 J	pg/g
	11187072-120919-BN-SJSSA07(1-2)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.15 J	pg/g
	11187072-120919-BN-SJSSA07(2-4)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.19 J	pg/g

Notes:

J - Estimated concentration